Part 1 - Aims and Principles of Standardization

Part 2 - BPS Committee Organization and Preparation.

Part 3 - Working Procedure in Preparing Standards.

Part 4 - Guide for the Presentation and Editorial Practice of Philippine National Standards.

Part 5 - BPS Guidelines in the Preparation and Arrangement of Minutes.

a) Part 1: Aims and Principles of Standardization

Part 1 aims to promote the understanding and participation of standardization activities throughout the country by describing objectively and plainly issues concerning aims, effects and standardization scope, relations of legislation to standards, objectives and organization of PSA (predecesor of BPS), and other items.

Part 1 consists of the following items ;

1. Scope, 2. Reference, 3. Definitions (National standards body, Standard, Regulation etc.), 4. Aims of Standardization, 5. Principle of Standardization, 6. Standardization space, 7. General description of PSA, 8. Standards and technological development, 9. Standards and regulations, 10. International alignment, 11. PSA organization and objectives.

b) Part 2: PSA Committee Organization and Procedures

Part 2 describes the fundamental principles and policies affecting the composition of PSA's technical committees as well as the sub-committees and working groups under them.

1. Technical Committee (TC) is composed to be responsible for the standardization of a particular subject or a group of subjects.

2. For technical committees, defined fields of work are created by PSA.

3. The members of technical committees are selected on a representative basis, from organization such as trade or industry associations, professional institutions, academe, government agencies, consumers organization, and other interest concerned.

4. Each technical committee must have a maximum of fifteen members composed of representatives from the following category of interests.

   Co-Chairmen: PSA and Private sector

   Vice-chairman: Specialized government agency and private sector

   Members: academe, consumer organization, private sector

5. Membership to technical committees is limited to qualified and competent senior technical officers of the organization to be appointed by the Minister of Trade and Industry. When the organization has no technical person , the PSA may choose a person well acquainted with the production, inspection, or testing of the product. The PSA may also consider representatives from the manufacturers, suppliers or contractors in the subject are concerned only on occasions where an appropriate trade or industry associations not exist and after a through inquiry has shown that a suitable personnel from representative sources is not possible.

6. The PSA shall select the Secretary of the Technical committee from among the staff of the Product Standards Development Division.

7. The term of Technical Committee is for a period of three years. The PSA will review the composition of technical committees including the chairmanship every term with a view of making the committee more representative of all interests concerned.

8. When interests other than those represented at the meeting are to be invited, permission of the Co-Chairmen of the Technical Committee is obtained by the Secretary. Invitees may participate in the deliberations.

9. Meetings are convened by the TC Secretary. Notices of meeting are circulated at least one week before the date of the meeting. Minutes of the meeting are circulated within two (2) weeks after the conduct of the meeting.

10. Once the PSA decides on the products for which standards have to be set, it will then create sub-committees or working groups under TC. TC decides the set-up, defined fields of work, and composition of sub-committees or working groups. The PSA shall be the Secretary of the sub-committees or working groups.

11. The fee stipulated by PSA is paid to each member of TC. For reference to have an understanding about the functions of TC Secretary, the following responsibility are described.

- To calendar and arrange meetings, submits documents, prepares draft standards and minutes, and undertake the function of disseminating to TC members results of discussions or solutions to specific problems within ten (10) days after discussion or formulation of conclusion.

- To implement the decision taken by the technical committee and coordinate with other standards work in related fields.

- To collect information from various sources such as foreign standards, published papers and books and verifies status.

- To guide the technical committee on the principles and practice adopted by the PSA.

- To work closely with the Chairmen, in case of dispute, to come up with a formula to resolve the difficulty. It is necessary that such action outside the Committee as reporting to senior staff or Director of the PSA is sought for the solution if the matter of major importance is the subject of disagreement and if it is clear that the views are irreconcilable.

- To keep the Chairmen informed of all committee matters and related developments

- To coordinate and assess needs for standards publications well in advance and requisitions the same.

c) Part 3: Working Procedure in Preparing Standards

Part 3 of the series of A Standard for Standards presents clearly the procedure to be followed by the different technical committees, sub-committees and working groups of the PSA in the preparation of Philippine National Standards. This document outlines the significant stages in the preparation of Philippine National Standards by the technical committee method, the aim of which is to obtain and express a genuine consensus of export opinion in the form of a standard that is practical, realistic and acceptable to both the industry and the consumer.

1. Program of Work

1.1 The PSA prepares a "Program of Work" on standardization taking into consideration the following principles underlying the preparation of standards.

- They shall be in accordance with the rules of trade and industry and shall fulfill a generally recognized want.

- The interest of both producers and consumers shall be considered.

- Periodic review of standards already published shall be undertaken to establish whether such standards are still applicable in the light of current circumstances.

1.2 The PSA may entertain a request or proposal in writing from any authoritative body to develop a standard for any specific subject or to revise an existing standard. Standardization of any specific subject shall only be undertaken when the PSA is satisfied, as a result of its own research and consultation with producers and consumers, that the necessity for standardization has been established.

1.3 Once the PSA decides on the products for which standards have to be set, it will then create technical committees, and when necessary, sub-committees or working groups may also be organized.

2. Draft Philippine National Standards

2.1 The technical committee (TC) is the basic group responsible for deliberation and approval of draft standards.

2.2 When TC has several distinct items of work in its terms of reference, it may organize sub-committees (SC) or working groups (WG) to carry out the drafting and other preparatory work.

2.3 The basic stages in the preparation of a standard are as follows:

- Preliminary Draft: This may be an international standard or any foreign standard, a draft submitted by an interested organization or individual, a draft prepared by the staff of the Product Standards Development Division (PSDD), PSA, on the basis of researches and in consultation with the interests concerned, or a skeleton outline containing suggested clause headings. The preliminary draft is submitted to the relevant technical committee for deliberation and consideration.

- Committee Draft: It is a draft incorporating the decisions of the technical committee arising from its deliberations of the preliminary draft. In fact, it is the first formal statement of a genuine consensus of opinion of the members on a particular subject.

- Draft for Public Review: This is the most significant stage in the preparation of a standard. It expresses the committee's considered views as to the recommended contents of the standard. This draft which was approved by the TC is forwarded to the Director of PSA and is circulated for one month to all interests concerned or presented in a public hearing for criticisms and comments. When the period of one month has elapsed, all comments and criticisms received are evaluated and presented to the TC for consideration.

- Final Draft: This is a draft incorporating all modifications of the draft for public review, as a result of the technical committee's study of the comments received. It is this draft with minor editorial amendments that is presented for approval either as a mandatory or voluntary national standard by the Minister of Trade and Industry.

2.4 Publication of Philippine National Standards

- Mandatory national standards: Approved mandatory national standards are published in the Official Gazette or announced in any newspaper of general circulation for compliance and guidance of all concerned.

- Voluntary national standards: Approved voluntary national standards are printed for use by interested parties.

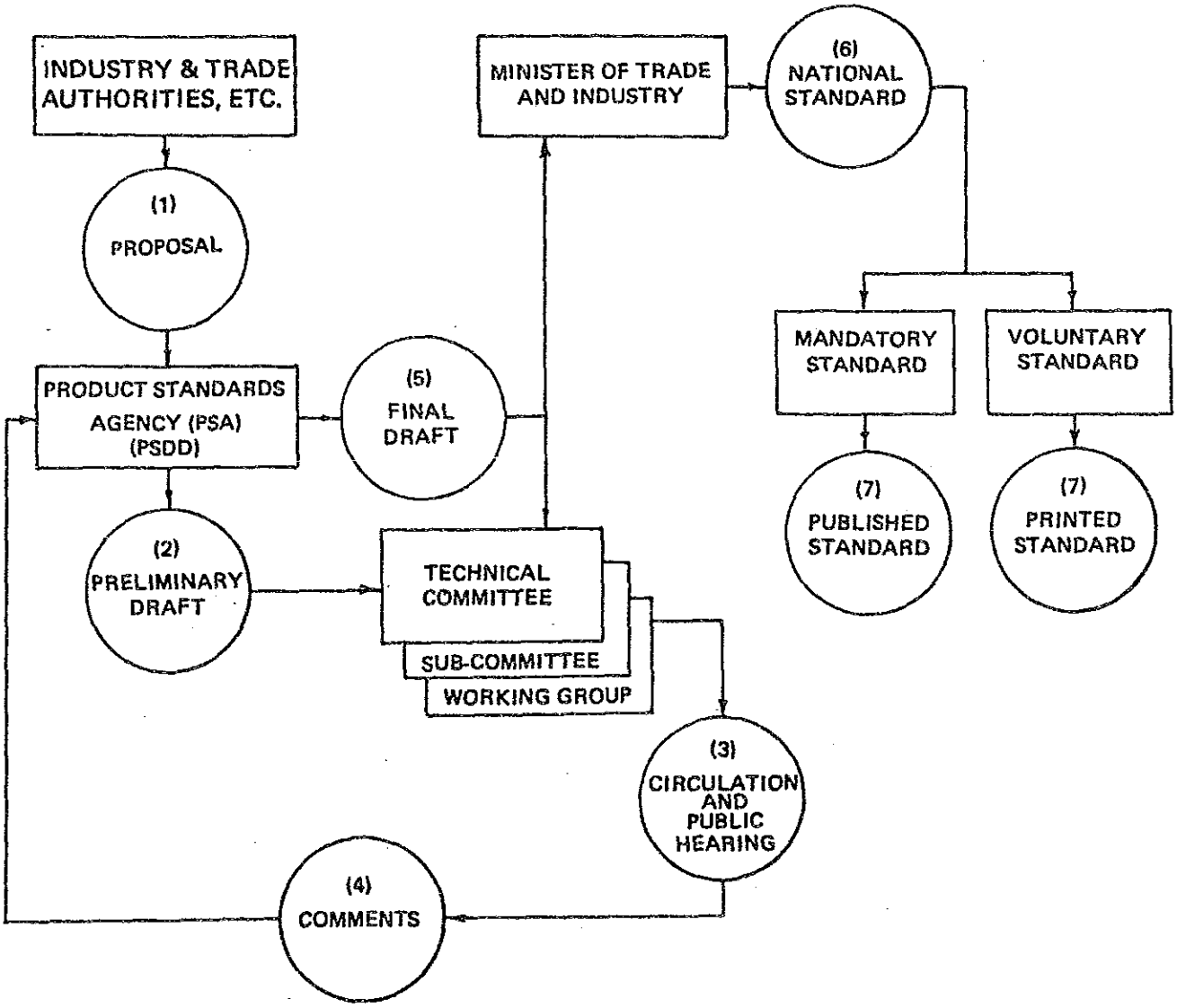
2.5 Standards Formulation System Flow

- A schematic diagram of the standards formulation systems flow is in Figure A2-11-1.

d) Part 4: Guide for the Presentation and Editorial Practice of Philippine National Standards

Part 4 was published to give rules and recommendation for the presentation, arrangement, drafting and editing of Philippine National Standards so as to avoid any need for changes in style, punctuation and arrangement in the approved document.

Figure A2-11-1 **Standards Formulation Sytems Flow**



1. Scope

2. Elements of Standards

2.1 Preliminary Elements

- Title Page
- Contents
- Foreword
- TC composition

2.2 Main Body - The main body contains all the technical contents of a standard.

- Title
- Scope
- References
- Definitions
- Product classification and designation
- Materials, design and manufacture
- Required characteristics
- Sampling
- Methods of Test
- Packaging
- Making and Labelling

2.3 Supplementary Elements

- Annexes
- Notes and Footnotes

3. Arrangement and Presentation of a Philippine National Standard

3.1 Title Page: The outside front cover of a standard should be edited in accordance with a style specified by BPS, and a lay-out of the title page gives necessary information relating to the document.

Numbering of Standards - Each Philippine National Standard is numbered serially in the order of publication followed by the year of issue. When a standard is revised, it retains the original number followed by the year of revision. Every page of a standard shall carry the number. For adopted standard issued by an organization the number of the standard is printed below the PNS number.

Universal Decimal Classification (UDC) - Every Philippine National Standard shall carry a classification number from the UDC.

3.2 Technical Committee composition: The Composition of the Technical committee appears in the back cover.

3.3 Table of Contents: This preliminary element is recommended to enable an overall of the Philippine National Standard and facilitate its consultation. The table of contents should normally list the main divisions, annexes, tables and figures.

3.4 Foreword

Every standard must have a forward. This follows the table of contents, and may refer to the following matters:

The relationship to existing national and international standards.

Any problem arising out of the work leading to publications.

Areas where knowledge is incomplete and on which comments are invited.

Limitation on relevance or application of the standard.

Reason for opting for certain requirements, test conditions and limits.

Special circumstances such as the relevance of statutory regulations, cases in the use of dangerous substances, etc.

List of publications used or consulted in the preparation of the standard.

3.5 Title

While being as concise as possible, the title shall indicate, without ambiguity, the subject matter of the Philippine National Standard in such a way as to distinguish it from that of other standards, at the same time not going into unnecessary details.

The title should be phrased in a direct style. It should be brief, but sufficient to indicate the general range of the standard.

3.6 Scope

Every Philippine National Standard or separately published part of a standard shall begin with a scope clause.

The scope clause shall state clearly what it specifies and the limits or range covered.

A specified form of expression shall be used in this clause.

3.7 References

A complete list of documents referred to in the standard shall be given.

A specified form of expression shall be used in this clause.

3.8 Definitions

Where it is necessary to assign specialized meaning to particular terms, the definitions of such terms should be grouped in the definition clause.

3.9 Product Classification and Designation

A statement of category (type, class or grade) and its designation shall be included whenever it is required.

3.10 Materials, Design and Manufacture

This element shall be included when these aspects of a product specification are open to standardization. e.g. by reference to specifications, or by stating limits on chemical composition mechanical properties.

3.11 Required Characteristics

This clause covers general characteristics of features of design or construction other than performance characteristics. The clause may include reference as to workmanship and finish.

3.12 Properties or Performance Requirements

3.13 Sampling

This clause specifies the conditions and method of sampling, as well as the method for the presentation of the samples.

It should also specify how the samples are to be taken, the statistical method to be adopted (attributes, variables) and the sampling plans.

Sampling requirements relating to assessment of conformity could, in certain cases, appear in a separate document.

3.14 Method of Test

This clause gives all the instructions concerning the procedure to be followed for determining the values of characteristics, or for checking compliance with stated requirements and for ensuring the reproducibility of the results.

Instructions relating to test methods shall be subdivided in the order (when appropriate): Principle, Reagent or materials, Apparatus, Preparation and preservation of test samples and test places, Procedure, Expression of results, Test report

3.15 Packaging

A standard should, when relevant, specify requirements for packaging of the products either to protect contamination or pollution arising from inadequate packaging.

3.16 Marking and Labeling

A Philippine National Standard shall mention the following:

Marking identifying the manufacturer or responsible vendor (trade name, trade mark, or identification mark).

Marking identifying the products (model or type reference or designation).

Marking can be applied, inter alia, by means of plates, labels, stamps, colors, threads, as appropriate.

3.17 Annexes: Annexes may be either:

Integral parts of the body of the Philippine National Standard which for reason of convenience are placed after the main text or,

Elements giving additional information, placed after the body of the Philippine National Standard of which they do not form an integral part.

3.18 Notes and Footnotes

A note, prefixed by the word "note" or a "footnote" may be included as portion of a clause to give explanatory or illustrative matter, or to set out recommendation not suitable for inclusion as part of the text.

Notes concerning a given table shall be placed immediately under the table.

3.19 Limitations

Matters relating to marks of conformity, certification of conformity or manufacture's declaration of conformity should not be included in the standard. However, it can be presented in the inside back cover.

The method by which control of quality during production is exercised by the manufacturer should not be defined in the standard not the means by which that control is independently checked by PSA.

4 Adoption of Other Standards

4.1 When PSA adopts international and other foreign or local standards as Philippine National Standards without deviation the words "Philippine National Standard, PNS/ " shall be stamped to printed copies without necessarily reproducing such adopted standards.

4.2 Additional national elements such as national cover, national foreword and other information shall provided to adopted standards with minor deviations. The following color band for title page is used to distinguish the type of each standard.

Blue - Voluntary Standard
Red - Mandatory Standard
Green - Sampling Methods
Orange - Code of Practice
Yellow - Test Methods
Violet - Terminology

e) Part 5 PSA Guidelines in the Preparation and Arrangement of Minutes

This is intended as a guide for PSA/TC Secretaries to assure that the minutes are records of all decisions reached as well as discussions taken which are necessary to provide the background for any important decision. Model Format of Minutes is shown in Table A2-11-1 (1), (2).

(7) DAO No.10-1987

This document was ordered by Secretary of DTI in 2 December, 1987 to create the Philippine Standards Council with a view to strengthening of national standardization projects such as quality improvement of locally manufactured products and promotion of consumer protection.

a) The Philippine Standards Council is organized with the heads or senior representatives of the following organizations.

1. Philippine Chamber of Commerce and Industry (PCCI)
2. Philippine Standards Association (PHILSA)
3. Philippine Technological Council (PTC)
4. Industrial Technology Development Institute, DOST (ITDI, DOST)
5. Bureau of Food and Drugs, DOH (BFD, DOH)
6. Procurement Service Office, DBM (PSO, DBM)
7. Bureau of Product Standards, DTI (BPS, DTI)

b) The Undersecretary of Trade and Industry for Regional Operations shall be the Chairman of the Council (Temporary Representatives).

c) Other organizations or individuals may be invited by the Council, as necessary, for specialized technical expertise.

d) The functions of the Council shall be as follows:

Table A2-11-1(1) **ANNEX 5A**

Model Format of Minutes

Private and Confidential -- For Committee Purposes Only

PRODUCT STANDARDS AGENCY

TC NO. TITLE Ref. TC No./Meeting 2

MINUTES : 2nd Meeting

DATE : Thursday, 01 April 1982

PLACE : PSA Conference Room, 3rd Floor
Trade & Industry Bldg., 361 Buendia Avenue Ext.
Makati, Metro Manila

PRESENT :

Co-Chairman	: 1.	(Name)	(Office)
	2.		
Vice-Chairman	: 3.		
Members	4.		
	5.		
	6.		
	7.		
	8.		
	9.		
	10.		
	11.		
	12.		
Technical Secretary	: 13.		
ABSENT	: 14.		
	15.		

1 Opening

1.1 The meeting was called to order at 2:00 P.M. with (name of Co-Chairman) presiding.

1.2 Apologies for absence were received from (name) of (firm) and (name) of (office)

2 Confirmation of Minutes

2.1 The body approved the minutes of the 1st meeting held on 26 March 1982 as presented with the following corrections:

2.1 .....
2.2 .....

3 Business Arising from the Minutes (If any)

4 Deliberation

4.1 The body discussed the draft standard .....
4.1.1 .....
4.1.2 .....
4.1.3 .....

4.2 The following decisions were made:
4.2.1 .....
4.2.2 .....

4.3 .....
4.4 .....

5 Other Matters

5.1 .....

5.2 .....

6 Agenda and Schedule of Next Meeting

6.1 .....
6.2 .....

7 Adjournment

7.1 The meeting was adjourned at (time)

PREPARED BY:

TC Secretary

ATTESTED:

Co-Chairman

Co-Chairman

MEMBERS:

1. To recommend national standardization policies for the promotion of the country's agro-industrial efficiency, productivity and growth; intensification of exports; advancement of science and technology; upgrading of the quality of Philippine products; and the protection of public health and safety

2. To propose guidelines for identifying and prioritizing products and other related subjects for national standardization

3. To institute measures for coordinating all standardization activities of government and private entities , and

4. To initiate appropriate actins for the promotion and wide usage of Philippine National Standards in manufacturing, trading, purchasing, engineering designs, and other needs.

e) The BPS shall act as the Secretariat to the Council.

(8) Implementing Guidelines on Government Procurement of BPS-Certified Products

This is an implementing guideline for the procurement of BPS-certified products by government agencies, and took effect as of 1 January, 1988 after being circulated as joint memorandum circular of DTI, Department of Budget and Management, and Commission on Audit. This aims to requiring the government procurement of BPS-certified products with priority for reasons of economy and public safety.

a) All national and local government offices, government-owned or controlled corporations shall limit, wherever applicable, their purchases of materials and supplies from manufacturers or importers that are duly certified by BPS under its PS Certification Marking Scheme, Import Commodity Clearance Scheme, or other quality certification schemes as conforming to PNS. To ensure the effective implementation of this Circular, BPS, PSO and SPB shall communicate and coordinate each other.

b) The BPS is in charge of the following authorities and the responsibilities.

1. To establish PNS for products, test methods and codes of practice to provide the technical bases for the manufacture or importation of quality and safe products and for the inspection, testing and certification of these products.

2. To conduct factory and product evaluations in relation to applications for the PS Mark licenses.

3. To grant the license to use the PS Mark to local manufacturers of products .

4. To suspend or cancel PS Mark licenses of manufacturers found not complying with the terms and conditions of their licenses.

5. To grant Import Commodity Clearances to importers whose products conform to PNSs or, if not available, applicable international or foreign standards, as determined by BPS and whose applications meet all other terms and conditions of such Import Commodity Clearances.

6. To accredit testing laboratories, which shall conduct, under BPS supervision and instruction, the necessary tests of products applying for the PS Mark license or Import Commodity Clearance.

7. To maintain a registry of local manufacturers who have been awarded the PS Mark licenses and importers with Import Commodity Clearances and to circles on a quarterly basis registry to COA, PSO, SPB, and all other government agencies, and to serve as the basis of government procurement offices in selecting suppliers of requisitioned materials and supplies.

8. To provide an information center to handle all inquiries from COA, PSO, SPB, and all other government agencies as well as suppliers and the general public regarding standards, certification and other matters related to the implementation of this Circular.

9. To coordinate with COA, PSO, SPB in every manner necessary to ensure the effective implementation of the Circular.

10. To inform COA, PSO, SPB and the general public of particulars regarding suspended or canceled PS Mark licenses.

11. To provide COA,PSO and SPB with PNSs and relevant foreign or international standards for their reference and evaluation.

12. To furnish SPB on a yearly basis its lists of standards for study, research and development by BPS and other standards-writing organizations in order to harmonize SPB's and BPS's work programs and avoid duplication of work.

13. To promote, through publications and seminars, the wide adoption of PNSs in government procurement procedures.

The authorities and responsibilities of DBM and COA are stated to ensure the steady implementation of government procurement of BPS-certified products with their concerted efforts.

Furthermore, Executive Order No. 359 was issued in 2 June, 1989 to strengthen the government procurement of BPS-certified products.

a) The Procurement Policy Board is organized with Secretaries and the representatives of the following organization to formulate the detailed rules pertaining to government procurement.

(Chairman) Secretary of Budget and Management (DBM)
(Members) Secretary of Finance (DOF)

Secretary of Trade and Industry (DTI)
Secretary of Health (DOH)
Secretary of National Defense (DND)
Secretary of Public Works and Highways (DPWH)
Secretary of Education, Culture and Sports (DECS)
Representatives from the Philippines Institute of Certified Public Accountants (PICPA)

b) The Board shall review and evaluate the effectiveness of central procurement system undertaken by DBM regularly.

c) DBM shall create regional offices of PSO to implement the government procurement in the regions.

d) All national government offices, national universities and colleges, and government-owned or controlled corporations except local government offices shall abide by the policy of government procurement.

e) PSO shall decide the operation of procurement system which takes into consideration the following items.

1. To formulate an annual procurement program pertaining to the procurement of new products

2. To conform the commodity concerned with the standards stipulated by BPS

(9) DAO No.4-1988

:Revised Rules and Regulations Concerning the Issuance of Import Commodity Clearance

This Order took effect in 1 July, 1988 to assure the implementation of import control clause stipulated in the provisions of Republic Act No. 4109 and Letter of Instructions No. 1208. All previous Orders governing the issuance of import commodity clearance were revoked by this Order, and all issuance of commodity clearance should be in compliance with this Order.

a) Scope

This Department Administrative Order prescribes the rules and regulations on the issuance of import commodity clearance to import shipments.

b) Application for Import Commodity Clearance

1. Importers of products covered by PNSs shall apply for import commodity clearance through the DTI's Regional Offices, upon arrival of their shipments at Customs but prior to Custom's release of the same.

2. An application for an import commodity clearance shall be made in forms obtainable free of charge from the DTI Regional/Provincial Offices. It shall be filed in triplicate together with the import entry, packing list, the original copy of the quality or test certificate (including test results) if any and other shipping documents.

3. An import shipment shall be evaluated by duly authorized DTI personnel to determine its conformity to the requirements of the applicable PNS.

4. All import shipments including those of the same product and brand, by the same importer and from the same country, shall be subject to sampling and testing by DTI. Shipments that may have been certified abroad as meeting foreign or international standards are also subject to sampling and testing by DTI.

5. Sampling and testing of import shipments, including those of the same product and brand, by the same importer and from the same country, shall be waived, provided the shipments are certified as meeting the applicable PNS by a reputable, competent testing organization in the country of origin and duly recognized by national standards body and/or relevant government authorities thereof; provide further, that the first five consecutive import shipments, notwithstanding their certification as meeting PNSs are sampled and tested by DTI and technical findings are found

consistent with the foreign test certificates that they meet the applicable PNS.

6. In the event that random checks at market outlets, which may include sampling and testing, reveal inconsistencies between, on the one hand, the actual quality of imported products that are no longer subject to per shipment inspections and , on the other, the test certificates issued them that they meet PNSs, all subsequent arrivals of such products of the same brand from the same country, and regardless of who the importers are , shall revert to a per shipment sampling and testing by DTI, notwithstanding their certification abroad as meeting PNSs.

c) Issuance of Conditional Release

1. Conditional release of an import shipment from customs' custody may be issued by the BPS Director or DTI Regional/ Provincial Director, upon the importer's compliance with Custom's requirements and if;

   - One hundred percent (100 %) inspection and testing of the shipment is required
   - Completion of testing will take more than 20 working days.

2. The transfer of the import shipment from customs' custody to the importer's or consignee's warehouse, where the technical evaluation may be performed, shall be escorted by DTI personnel. Pending the issuance of the import commodity clearance, no sale, use and/or transfer to any other place. In whole or in part, shall be made by the importer or any person.

d) Issuance of Import Commodity Clearance

1. The Import Commodity Clearance shall be issued on a per shipment basis by the BPS Director, DTI Regional or Provincial Director if the imported commodity conforms to the requirements of the PNS.

2. Commodities not conforming to the requirements of PNSs, and therefore not issued import commodity clearances, shall not be disposed off in the domestic market in any manner. They must be re-exported to their countries of origin or destroyed by the proper Philippine authorities.

e) Disposition of Samples

1. All samples drawn from a shipment for monitoring an testing purposes shall be returned to the importer, including those that have undergone destructive testing.

2. The importer shall withdraw his samples one (1) month after receipt of the notice to recover such samples.

3. The importer fails to withdraw the samples after date, DTI shall dispose off these samples in any manner, and it may deem appropriate, under existing accounting and auditing rules.

f) Fees

The following fees shall be charged;

1. Testing expense/fee - All expenses and fees charge by DTI and DTI designated laboratories for testing products shall be borne by the importer.

2. Import Commodity Clearance Fee - Two thousand pesos for every import commodity clearance

g) Penalties

Any violation of this Order shall be subject to the criminal penalties under RA No. 4109 without prejudice to the administrative penalties under EO No. 913, Series of 1983.

The brief outline of DAO No.4 (1988) is described above. The standards within the scope of the Circular is mandatory standards only according to the definition.

(10) Memorandum of Agreement on Joint Procedures for the Monitoring and Inspection of Imported Products Covered by Mandatory Philippine Standards

Under RA 4109, LOI 1208, EO 913 and EO 133, the BPS is responsible for establishing standards, for inspecting and testing Philippine and imported products against these standards, and for certifying accordingly products complying with standards. The Bureau of Customs (BOC) is responsible for clearing all importations prior to entry into the country, under RA 1937 and 4109, and Presidential Decree 1464. There is an imperative need for close coordination and collaboration among government agencies concerned to protect the public from sub-standard and unsafe imported products. The BPS and the BOC mutually agree to and stipulate the following to attain the objective of effectively monitoring the quality of imported products, covered by mandatory standards and certification.

a) Authorities and Responsibilities of the BPS

1. The BPS shall establish PNSs for products, as well as test methods and codes of practice, to provide the technical bases for the importation of quality and safe products and for the inspection, testing and certification of these products.

2. The BPS shall provide the BOC a list of mandatory standards , with the request that appropriate Customs Memorandum Circular (CMC) be issued to serve as bases for thee BOC to refer incoming shipments, covered by such standards, to the BPS, through the DTI Regional Offices, for inspection and testing.

3. The BPS , through the DTI Regional Offices and of the importers, shall inspect and obtain samples from import shipments, covered by mandatory standards, for testing and certification purposes.

4. After due testing the BPS, through the DTI Regional Offices, shall submit a report to the BOC Commissioner, through the Customs Collector concerned, on its findings, whether a shipment met the quality and safety standard or not.

5. The BPS shall grant Import Commodity Clearance (ICC) to importers whose products confirm to PNSs and whose applications meet all other terms and conditions of such ICC.

6. The BPS, through the DTI Regional Offices, may issue conditional release of an import shipment prior to issuance of ICC if:

   - One hundred percent inspection and testing of the shipment is required, and
   - Completion of testing will take more than 20 working days.

7. The BPS shall accredit testing laboratories, which shall conduct, under BPS supervision and instructions, the necessary tests of products applying for import commodity clearance.

8. The BPS shall provide BOC an update list of products for mandatory certification prior to their release from BOC's custody.

9. The BPS, through the DTI Regional Offices, may request the assistance of the PCCI-CCG in making preliminary quality inspection of incoming shipments, and later in coordinating, if necessary, which the BOC the facilitation of the release of shipments given ICC by BPS or the seizure by the BOC of shipments denied the ICC for failure to meet the applicable quality and safety standards.

b) Authorities and Responsibilities of the Bureau of Customs

1. The BOC may issue circular or orders containing the types of products covered by mandatory standards and certification by BPS, as guides for BOC personnel in the referral of products of BPS's inspection, testing and certification.

2. The BOC may require products covered by mandatory standards to secure ICC from the BPS, through the DTI Regional Offices, prior to and as pre-requisite for release by the BOC of their shipments.

3. The BOC shall release import shipments with ICC upon presentation by the importers, or their representatives, of copies of the ICC verified by the BOC against the original copies of such ICC in its possession.

4. The BOC shall inform BPS, through the DTI Regional Offices, of their actions taken on import shipments denied ICC for failure to meet the applicable quality and safety standards and therefore not allowed and into the Philippines, within two (2) days from BOC receipt of BPS's report under the item a) 4. above.

5. The BOC shall cause the re-exportation or destruction of sub-standard and unsafe import shipments.

Attached Information 12: Certification Procedure in PS Mark System

The applicant eligible for the use of PS Mark is limited to manufacturers including producers of banana, pineapple and other processed food regardless of companies or individuals. Therefore, wholesalers and other distributor are excluded. The manufacturers applying for PS Mark shall use BPS Form No.5 and submit the duly accomplished application form with factory assessment fee (2,000 pesos) to DTI Regional/ Provincial Office. This form must be signed by an authorized officer of the firm and sworn to before a notary public.

In this case, the application should be made for the standardization of a particular product or a group of products, and if the different scope of the standards is applied to the same product, the application shall be made respectively.

In case that the company in applying for PS Mark is a small- and medium-sized company with no adequate testing facility, the company will be able to deliver its sample to BPS Testing Laboratory or Accredited Testing Laboratory and request the testing.

BPS Form No.5 is shown on Page A2-58.

(1) The following documents are to be submitted by the applicant-firm in support of the application:

a) Articles of incorporation

b) Organization chart

c) Quality control staff complement, their designations, training courses attended and number of hours thereof

d) List of training courses regularly conducted by the company or other outside training courses attended by company personnel.

e) Flow process diagram indicating the inspection points, frequency of inspection and key quality characteristics to be inspected at each control point

f) Brief description of manufacturing process

g) Copy or summary of management policies

h) Copy or description of test plan and specifications used by the company

i) Copy of sampling plans

j) Copy or sample of work instructions or other related documents.

k) Sample copies of frequency tables, histograms and/or statistical control charts an records of inspection/test results.

l) Brief description of action taken on defectives.

m) Brief description of the system for the preservation, segregation and handling of all items.

n) Listing of measuring and testing equipment with nominal capacities at each inspection point and final product testing together with their evidence of ownership

o) Brief description of calibration program (including frequency of calibration)

p) Brief description of equipment maintenance program.

(2) Pre-qualification Assessment prior to the factory assessmenet

DTI Regional/Provincial Office shall not only check whether the application form is not filled up completely but also evaluate management policy and Q.C. and other activities of the company according to the all information submitted upon receipt of application.

If the application form is not duely accomplished, the applicant should re-apply afte filling up, and if technical deficiecincies are found in the course of the evaluaton, technical assistance is rendered to the applicant. It is only after these deficiencies are corrected can the PS Mark license be granted.

A claim against the notice from DTI Office may be made within 15 days after the receipt of the notice. The factory assessment can be taken for the applicant who passed pre-qualification assessment.

(3) Factory Assessment

Staff of BPS or DTI Regional/Provincial Office (thereafter Assessors, normally two persons) shall visit the applicant's factory and undertake the factory assessment. On-site factory assessment shall be made in a view of maintaining the consistency of factory assessment according to individual criteria by PSA (Predecessor to BPS) and minimum requirements to BPS Form No.10. Two of the basic requirements which must be met before the issuance of a license to use the PS Mark are:

In Factory Assessment Report, there are 1) Organization/Management, 2) Records and Documentation, 3) Quality Control Measures 4) Equipment and 5) Cleanliness and Environmental Conditions, as applied to the receiving inspection (RI), in-process inspection (II) and end-product inspection (EI). Phase are shown in Table A2-12-1.

Merits, ranging from 1-5 for each interacting item, are given depending on the condition of that interacting item. The five main quality control factors have been given equivalent total points of 20, 25, 25 and 10. Thus, calculation for points of each item is as follows:

Points obtained for 1 Q.C.factor = (Merits obtained for main Q.C.factor / Total merits obtainble in the same main Q.C.factor) x Equivalent pts. for the respective main Q.C.factor

An applicants is evaluated by summing up the points for each items.

Total Points	Classification
92 - 100	A: Optimum conditions exist
73 - 91.9	B: Certain degree of improvement is still possible
56 - 73.9	C: Improvement is desirable
38 - 55.9	D: Improvement is required
20 - 37.9	E: Undesirable conditions
Below 19.9	F: Unacceptable conditions

If the applicant belongs to the classification group D.E. or F. be cannot grans PS Mark checking items and minimum requirements for the applicant for license to use PS Mark are shown in Table A2-12-1.

BPS Form No. 10: Minimum BPS Requirements for Manufacturers for License to Use the PS Quality Certification Mark

Product: Portable Fire Extinguisher

1. Standard
   1.1 The manufacturer/refiller must have a copy of PNS 15:1983 in the plant.

2. Documents

   2.1 Copies of invoices of chemicals purchased must be available for inspection/scrutiny.

3. Manufacturing Equipment

   3.1 In addition to the regular manufacturing equipment the manufacturer/refiller must have compressor with air heater for drying of cylinders.

4. Testing/Measuring Equipment

   4.1 Hydrostatic pressure tester
   4.2 Platform scale of not more than 150kg capacity
   4.3 Liquid flame test equipment
   4.4 Leakage test pan

5. Quality Control Measures

   5.1 Quality Control Manual to include standards, procedures for inspection and test plan
   5.2 Sampling plan
   5.3 Records of the following tests
   5.3.1 Chemical analysis conducted by the BPS or a BPS accredited laboratory of every batch of chemicals purchased
   5.3.2 Hydrostatic pressure test
   5.3.3 Leakage Test
   5.3.4 Inspection records of valves, hoses, and gauges

6. Quality Control Staff
   6.1 Supervision be supervised by a licensed engineer

7. Other Documents Needed to Support Application

7.1 Organizational chart of the company

7.2 PRC Certificate of engineer

7.3 Contract of services of engineer

7.4 Evidence of ownership of manufacturing, testing facilities

7.5 Certification whether place used as factory is owned,leased or rented

7.6 List of quality control personnel, their qualifications and responsibilities

(4) Product Assessment

In case of product assessment on site, the assessor conforms whether the product is in compliance with the standards by having testing staff of the applicant-firm assess the product with their own testing facilities. In case the applicant has no testing equipment due to small-scale manufacturer etc., samples may be sent to one of BPS accredited laboratories to request testing.

(5) Sampling

The assessor takes a set of sample out of the products concerned and bring them to BPS testing laboratory or accredited testing laboratories. In other words, product assessment and testing by BPS accredited laboratory shall be undertaken to conform the justification of sampling and proper adjustment of testing and measuring equipment.

(6) Sample Testing

BPS testing laboratory or accredited testing laboratories undertake the assessment as to whether the product is in compliance with the standards. Testing charge is said by the applicant. The applicant cannot prohibited to contract the testing laboratory when sampling test is made there.

(7) Issuance of PS Mark Licensee

BPS makes a judgment as to whether PS Mark license is issued to the applicant-firm on the basis on factory assessment, product assessment and sampling test. Only when all BPS requirements are satisfied by the applicant, license to use PS Certification Mark be granted. If technical dificiencies are found in the course of the evaluation, technical assistance is rendered to the applicant who belongs to the classification group B or C. It is only after these deficiencies are corrected the can the PS Certification Mark license be granted.

(8) Requirements prior to the Issuance of License

The applicant should pay 3,000 pesos for BPS as license fee. Commitment of applicant-firm of consistently conduct a scheme of supervision for quality assurance.

Attached Information 13: Number of PS Mark Licencees (as of 1988-12-31)

Table A 2-13-1 (1) Number of PS Mark Licencees (As of 1988-12-31)

Categories	Name of Product(※ Mandatory)	NO. of Licencees
Chemicals	Liquified Petroleum Gas	3
	Acid, Hydrochloric	1
	Calcium Carbide	1
	Caustic Soda, Liquid	1
	Diculcium Phosphate	1
	Ferrosilicon, 75 %	1
	Fertilizer	2
	Medical Grade Oxygen(※)	39
	Resin, PVC	1
	Fuel Oil	3
	Fuel, Diesel	3
	Kerosene	3
	Motor Gasoline	3
	Sub total	62
Metals and Metallurgy	Alminum Alloys	1
	Pipes and Sheets, Galvanized Iron(※)	18
	Reinforcement Steel Bars(※)	9
	Steel Cylinders for LPG(※)	3
	Steel Pipe and Tube, Black & Hot Dipped Zinc Coated Longitudinally Welded	1
	Sub total	32
Construction Materials	Portland Cement (※)	17
	Pozzolan Cement (※)	20
	Conduit, Non-Metallic uPVC Corrugated Pliable	1
	Doors	1
	Flat Glass	1
	Concrete Hollow Block (※)	1
	Mineral Fiber Insulation	2
	Polyvinyl Chloride (PVC) Pipes and Fittings	1
	Liner Board	1
	Plywood and Veneer (※)	33
	Refractories	1
	Asbestos Cement	4
	Masonry Cement	1

Table A 2-13-1 (2)

Categories	Name of Product(※ Mandatory)	NO. of Licencees
Construction Materials	Glazed Ceramic Tiles	2
	Density Board	1
	Sub total	87
Automobile and Parts	Automotive Lead-Acid Storage Battery (※)	10
	Brake Fluid, Motor Vehicle (※)	2
	LPG Steel Cylinders for Use in Motor Vehicles (※)	1
	LPG System in Motor Vehicles (※)	1
	Low-Voltage Cables for Automobiles	1
	Pneumatic Tires (※)	3
	Inner Tube for Pneumatic Tires, Rubber (※)	3
	Sub total	21
Consumer Products	Battery, Dry Cell	3
	Dentifrice	4
	Detergent, Synthetic	5
	Wax, Floor	2
	Lighters, Disposable, Gas Filled	1
	Safety Matches (※)	3
	News Print	1
	Kraft Paper	1
	Multiwall Kraft Paper Bags for Cement	1
	Tissue Paper	4
	Ropes (Nylon, Polyester, Manila)	5
	Scouring Powder Compound	2
	Soaps, Laundry and Toilet	10
	Sewing Thread	2
	Mold, Furniture, Components, Rattan & Wicker	11
	Lumber, Kiln Dried & Air Dried	1
	Nail, Iron Wire (※)	2
	Sanitary Ware	2
	Sub total	60
Fire Fightings	Fire Extiguisher	96
	Sub total	96
Foodstuff	Tuna, Sardines & Mackerel, Canned	2
	Banana	12
	Banana Chips	1
	Catsup, Tomato	1

Table A 2- 13- 1 (3)

Categories	Name of Product(※ Mandatory)	NO. of Licencees
Foodstuff	Pineapple and Pineapple Product	7
	Sugar Cane, Molasses	36
	Tomato Juice	1
	Canned Tomato Sauce	1
	Vinegar	1
	Sub total	62
Electrical Products	Ballast for Fluorescent Lamps (※)	9
	Circuit Breaker (※)	3
	Copper Redraw Rods for Electrical Purposes	1
	Power Supply Cords	1
	Fuses, Electrical Purposes (※)	3
	Lamps, Incandescent (※)	3
	Edison Base Lampholders (※)	3
	Lamps, Fluorescent (※)	4
	Lampholder and Starterholder for Fluorescent Lamp (※)	3
	Starter for Fluorescent Lamp (※)	1
	Switches(※)	9
	Tape for Electrical Insulation(※)	1
	Thermoplastic Insulated Electric Wire and Cables (※)	15
	Magnet Wire (※)	2
	Room Air-Conditioner	2
	Plugs and Socket-Outlets (※)	5
	Electrical Conduit, uPVC (※)	4
	Carbon Black	1
	Sub total	70
	Total	490

Attached Information 14: Designated Products for Import Commodity Clearance (ICC)

Table A 2-14-1 (1) Designated Products for Import Commodity Clearance (ICC)

(Electrical Products)

1. Ballast for Fluorescent Lamps (P N S 1 2)
2. Circuit Breakers
3. Fluorescent Lamps (P N S 0 2)
4. Fluorescent Lamp luminaires
5. Electrical Cartridge Fuse (P N S 1 3)
6. Electrical Conduct,uPVC (P N S 1 4)
7. Thermoplastic Insulated Electric Wire and Cables (P N S 3 5)
8. Incandescent Lamps (P N S 3 8)
9. Copper Redraw Rod for Electrical Purposes (P N S 4 0)
10. Lampholders and Starterholders for Fluorescent Lamps (P N S 4 2)
11. Aluminium Redraw Rod for Electrical Purposes (P N S 4 3)
12. Starters for Fluorescent Lamps (P N S 4 5)
13. PVC Tapes for Electrical Insulation (P N S 7 9)
14. Edison Screw Lampholders (P N S 8 0)
15. Ballasts for High Pressure Mercury Vapor Lamps (P N S 1 0 5)
16. Polyvinyl Formal Enameled Copper Wires (P N S 1 0 9)
17. Polyester Amideimide Enameled Copper Wires (P N S 1 1 0)
18. Oleo-Resinous Enameled Copper Wires (P N S 1 1 1)
19. Lighting Sets Using Miniature and Sub-Miniature Lamps for Decorate Purposes for Indoor Use
20. Plugs and Receptacles
21. Switches

Table A 2－14－1 (2)

(Fire Fightings)

1. Fire Extinguisher (P N S 1 5, P N S 2 7)

2. Fire Hose (P N S 6 8)

3. Matches,Safety (P N S 0 9)

(Building and Construction Materials)

1. G.I.Pipes(Welded) (P N S 2 6)

2. G.I.Sheets (P N S 6 7)

3. Portland Cement (P N S 0 7)

4. Pozzolan Cement (P N S 6 3)

5. Reinforcement Steel Bars (P N S 4 9)

6. HD-PE Pipes(for Potable Water Supply) (P N S 5 5)

(Others)

1. Automotive Lead-Acid Storage Battery (P N S 0 6)

2. LPG Cylinders for Household Use (P N S 0 3)

3. LPG Cylinders for Automotive Use (P N S 0 4)

4. Medical Oxygen (P N S 1 0 3)

5. Pneumatic Tyres (P N S 2 5)

6. Rubber Inner Tubes (P N S 3 4)

7. Safety Matches (P N S 0 9)

Attached Information 15 :

LIST OF TESTING LABORATORIES ACCREDITED BY BPS (1/5)

Name of Lagoratory	Date of Accreditation	Field of Testing Accredited	Loca-tion
Metals Industry Research & Development Center (MIRDC)	1982-07-22	Metal testing	Manila
Philippine Textile Research Institute (PTRI)	1982-09-01	Textile & Textile roducts	Manila
Philippine Institute of Pure & Applied Chemistry (PIPAC)	1982-11-02	Chemical & chemical Products	Quezon
Industrial Test Masters, Inc., (ITM) (Note) ITM is presently not	1983-06-10	Requalifier of LPG cylinders active organization.	Quezon
Consolidated Industrial Gases, Inc. (CIGI)	1983-08-12	Nitrogen Oxygen Argon Hydrogen Carbon Dioxide Acetylene	Manila
Filippine Electro Industrial Corporation (FEIC)	1984-02-22	Requalifier of LPG cylinders	Manila

Attached Information 15 :

LIST OF TESTING LABORATORIES ACCREDITED BY BPS (2/5)

Name of Lagoratory	Date of Accreditation	Field of Testing Accredited	Location
Agricultural Machinery Testing & Evaluation Center (AMTEC)	1984-04-06	Hand tractor Thresher Drier Corn sheller Rice mill Weeder Transplanter Puddler Seeder Reaper Engine pump Sprayer Hammer mill Feed mixer Chaff cutter	Laguna
Asephil Marketing Corp. (ASEPHIL)	1984-06-21	Requalifier of LPG cylinders	Manila
Philippine Cement Industry Authority (Cement Central Laboratory -CCL)	1985-06-12	Portland cement (Types: I, II, III, IV & V) Pozzolan and blended cements	Manila
Ramcar Incorporated (RAMCAR)	1985-07-17	Automotive lead-acid storage battery	Queson

Attached Information 15 :

LIST OF TESTING LABORATORIES ACCREDITED BY BPS (3/5)

Name of Lagoratory	Date of Accreditation	Field of Testing Accredited	Location
Ostrea Mineral Lab., Inc. (OSTREA)	1985-07-19	Gold & silver assay Coal analysis Fertilizer and fertilizer products Feeds & feed products Soil analisis	Manila
National Food Authority (NFA)	1985-08-05	Palay Milled rice Corn grain Wheat Corn grits Mongo Grain testing Sorghum Soybeen Rice by-products Corn by-products Peanuts	Queson
Sime Darby Pilipinas, Inc. (SIME DARBY)	1985-08-30	Natural crumb rubber Peumatic tires	Manila
C. C. Unson Company, Inc. (CC UNSON)	1985-09-19	Automotive lead-acid storage battery	Queson
Philtread Tire & Ruber Corporation (FIRESTONE)	1985-11-25 1986-12-17	Peumatic tires Natural crumb rubber	Manila

Attached Information 15 :

LIST OF TESTING LABORATORIES ACCREDITED BY BPS (4/5)

Name of Lagoratory	Date of Accredit'n	Field of Testing Accredited	Loca-tion
Goodyear Tire & Rubber Co. of the Phils., Inc. (GOODYEAR)	1985-11-25	Peumatic tires	Las Pinas
University of San Carlos Testing Center (USCL)	1985-12-04	Chemical testing	Cebu
A. G. & E. Allied Services Company (AGE)	1986-03-18	Requalifier of LPG cylinders	Manila
Superior Gas and Equipment Company (SGE)	1988-03-24	Requalifier of LPG cylinders	Manila
Philips Electrical Lamps, Inc. (PHILIPS)	1988-04-07	Testing of incandescent lamps & fluorescent lamps	Manila
Refractories Corporation of the Philippines, Inc. (RCP)	1988-08-05	Testing of basic refractories and monolithics	Manila

Attached Information 15 :

LIST OF TESTING LABORATORIES ACCREDITED BY BPS (5/5)

Name of Lagoratory	Date of Accredit'n	Field of Testing Accrediied	Loca-tion
SGS Far East Limited -Phils. (SGS)	1988-09-09	Vegetable oils & food Water Coal & related fuels Mineral ores and concentrates Chemicals and fertilizers Structual building & Ceramics materials Industrial manufacturing materials	Manila
CME Engineering & Consuting	1988-09-27	Feeds, domestic &	Manila
Services (CME)		industrial waste, water, foods	

Source: BPS

ANNEX 3

THE PRESENT STATUS AND PROBLEMS OF THE TESTING AND INSPECTION ORGANIZATIONS RELATING TO THE PS MARK CERTIFICATION SYSTEM

ANNEX 3: THE PRESENT STATUS AND PROBLEMS OF THE TESTING AND INSPECTION ORGANIZATIONS RELATING TO THE PS MARK CERTIFICATION SYSTEM

Under PS Certification Mark System, 23 laboratories are accredited by BPS as of December 31, 1988, in addition to BPS laboratory, undertaking testing in their accredited fields. In this study, a questionnaire was sent to all of these laboratories to investigate the testing capability through the inquiry on the testing facilities and equipment owned, and their testing performance. The interview survey was also conducted to the major testing organizations at the same time.

The following sections present the evaluation results of testing capability of these organizations. The testing performance in the followings include that of testing other than that of PS Mark. The facilities and equipment required for testing of mandatory standards are listed and attached as Attached Information 1.

(1) BPS Laboratory (BPSL)

The BPS Laboratory is in Marikina, 20 kilometers from the BPS office. It employs a staff of seven who are engaged in work related to PS Mark in the electrical, mechanical and chemical fields.

As is noted in 3-3-3(2), the products which the accredited testing laboratories can test are limited, but BPSL must make a large number of tests, which amounted to more than 5,000 during 1988. The amount of testing performed during the past three years is shown in Table A3-1-1.

Among these tests, breakdown of the data for test samples shows that in addition to tests of safety matches accounting for more than half of all tests, more than 100 samples were received of: nails, ammonium phosphate, plastic bags, dry cell batteries, fire extinguishers, lighters, copy paper, toilet cleanser, ballasts for fluorescent lamp and insulation tape. (Refer to Table A3-1-2.)

The equipment possessed by BPSL, as shown in Tables A3-1-3 to A3-1-5, are all basic ones such as volt meter, Multimeter, Torque meter, Ballance, but because they are in need of repair, others are in need of calibration, and many are old, the actual number of test items which can be performed is limited and all of the PNS certification tests which the laboratory should be capable of performing cannot be performed. In particular, in the electrical and mechanical field, there are almost no tests that can be carried out.

Table A3-1-1 NUMBER OF TESTING SAMPLES TESTED BY BPSL

	1986	1987	1988
Testing samples	2,234	3,842	5,031

Source:BPS

Table A3-1-2 BREAKDOWN OF TESTING SAMPLES IN 1988 (1)

Product	Number
Building & Construction Materials	
-Bars, Steel Deformed	20
-Board, Solid Bleached	14
-Conduit, Electrical, uPVC	51
-Hollow Blocks	3
-Lumber	5
-Nails, Wire	255
-Pipes, B.I.	38
-Pipes, Polyethylene,High Density	12
-Pipes, uPVC for Portable Water	15
-Tiles, Ceramics	42
-Veneer	22
Chemical Products	
-Caustic Soda	2
-Electrolyte Battery	11
-Hydrochloric Acid	2
-Monoammonium Phosphate	100
-Resin Almaciga	1
-Sodium Bicarbonate	1
-Sulfuric Acid	2
Consumer Products	
-Bags for Cement, Multiwall Kraft Paper	4
-Bags, Plastics	110
-Bags, Polyethylene	10
-Battery, Automotive Lead Acid Storage	1
-Battery, Dry Cell	120
-Dentifrice	24
-Detergents, Synthetic	47
-Engine Support for Isuzu	2
-Fire Extinguisher, AFFF	18
-Fire Extinguisher, MAP	89
-Fire Extinguisher, $NaHCO_3$	2
-Fire Extinguisher, CO_2	5
-Board, Solid Bleached	14
-Floor Wax	4
-Gloves, Surgical	2
-Ink, Duplicating	1
-Lighters, Disposable	148
-Matches, Safety	2,563
-Notebooks	6
-Paper, Bond	25
-Paper, Book	31
-Paper, Copy	320
-Paper, Facial Tissue	21
-Paper, Extensible Sack	9
-Paper, Mineograph	25
-Paper, Stencil	3
-Paper, Scool Pads	6
-Paper, Toilet Tissue	50
-Raincoats	2
-Scouring Powder	15
-Soap, Laundry	32
-Soap, Toilet	131
-Toothbrush	8

Table A3-1-2 BREAKDOWN OF TESTING SAMPLES IN 1988 (2)

Product	Number
Electrical Products	
-Ballast	151
-Circuit Breaker	47
-Cord, Extension/Flexible	8
-Fuse	36
-Fuseholder	2
-Lampholder	22
-Lampholder, Edison Base	8
-Plug	2
-Receptacles	3
-Starter	15
-Starterholder	12
-Switch, Safety	39
-Switch, Snap	7
-Tape, Electrical	153
-Transformer	2
-Wire, Copper	1
-Wire, Insulated	6
-Wire, Magnet	4
-Wire, Automotive	11
-Wire, Thermoplastic	58

Source: BPS

Table A3-1-3 TESTING EQUIPMENT OWNED BY BPSL (ELECTRICAL)

Name	Q'ty	Year of purchase	Frequency of calibration
Portable Multimeter	1	1975	
Dial Thickness Gauge	1	1975	
AC Voltmeter	1	1975	
Pen Recorder	1	1980	
Digital AC Power Meter	1	1980	
Clamp device for Wheatstone Bridge	1	1980	
Circuit Breaker Tester	1	1980	
Dielectric Tester	1	1980	
Double Bridge	1	1980	
Insulation Tester	1	1980	
Variable Transformer	1	1980	
Voltage Current Meter	1	1980	
Fluorescent Lamp Ballast	1	1984	
Dial Thickness Gauge	1	1984	
Optical Parallel	2	1984	
Gauge Block Set	2	1984	
DC Voltmeter	2	1985	
AC Voltmeter	5	1985	
Tumbling Barrel	1	1985	
Dielectric Test Set-Up for PVC Tape	1	1986	
Dial Calipar	1	1986	
Micrometer	4	1986	
Vernier Caliper	2	1986	
Geared Motor	1	1986	
Standard Resistor	1	1986	
Torque Tester	1	1986	
AC/DC Adoptor	1	1986	
Automatic Voltage Regulator	3	1987	

Source: BPS

Table A3-1-4 TESTING EQUIPMENT OWNED BY BPSL (MECHANICAL)

Name	Q'ty	Year of purchase	Frequency of calibration
Tensile Tester	1	1975	
Universal Testing Machine	1	1975	
Moisture Tester	1	1977	
Photo Electric Resistance Photometer	1	1977	
Vacuum Pump	1	1977	
High Rate Discharge Tester	1	1978	
Reserve Capacity Tester	1	1978	
Tearing Tester	1	1979	
Curamold	1	1979	
Gilmore Needle	1	1979	
Vicat Needle	1	1979	
Flow Table	1	1979	
Cube Mold	1	1979	
Battery Charger	1	1979	
Mixer with Scrapper	1	1979	
Folding Endurance Tester	1	1979	
Stiffness Tester	1	1979	
Burst Tester	1	1979	
Compressive Tester	1	1979	
Flame Retardant Tester	1	1980	
Digital Lensometer	1	1981	
Weighing Scale	1	1984	
Retention Tester	1	1985	
Torque Tester	1	1985	
Dry Cell Battery(Deplition Tester)	1	1985	
Stereo Microscope	1	1986	
Table Vice	1		

Source: BPS

Table A3-1-5 TESTING EQUIPMENT OWNED BY BPSL (CHEMICAL)

Name	Q'ty	Year of purchase	Frequency of calibration
Analytical Balance	1	1975	Annually
Centifuge	1	1975	
Howard Trip Balance	1	1975	
Hygrometer	1	1975	
Electric Oven	1	1975	
pH Meter	2	1975	
Pressure Cooker	1	1975	
Sieves	9	1975	
Sieve Cover	2		
Sieve Pan	2		
Spectrophotometer	1	1975	
Viscosimeter	1	1975	
Water Bath	2	1975	
Distilling Still	1	1976	
Universal Oven	1	1978	
Vacuum Oven with Pump	1	1978	
Kjeldahl Digestion Apparatus	1	1979	
Fumehood Wood Assembly	1	1979	
Muffle Furnace	1	1979	
Hot Plate-Stirrer	2	1979	
Hot Plate	2	1983	
Balance	1	1984	
Laboratory Timer	2	1985	
Distilling Apparatus	1	1986	
Fumehood	1	1986	
Laboratory Stopwatch	1	1986	
Vacuum Pump	1	1987	

Source: BPS

If the equipment for electrical testing is classified according to age, it is found that 43.9% was acquired five or more years ago, and 29.3% was acquired 10 or more years ago. Because of the need to maintain accuracy, however, it is a general rule that testing equipment is recommened to replace at five year intervals. Thus, the equipment that is being used is extremely superannuated.

Similar analysis of the mechanical testing equipment shows that 84.6% was acquired five or more years ago, and 26.9% was acquired 10 or more years ago. Superannuation is also evident in this area.

In the case of chemical testing equipment, 83.3% of it was acquired 5 years or more ago, and 66.7% was acquired 10 years or more in the past, so superannuation is even more advanced in this area than in the other two.

Acquisition of new testing equipment by the BPSL is limited as follows:

It is therefore extremely difficult for BPSL to replace old equipment and to acquire advanced equipment.

The budget for operating costs for 1989 is:

Salaries & wages	427,908 pesos
Travel, transportation	42,000
Communications	12,000
Repairs	100,000
Consumables	84,000
Delivery services	60,000
Loss	75,000
Utilities	120,000
Other administrative	50,000
Total	970,908

Because the range of testing BPSL can undertake is limited, when the company applying for PS Mark has at its own facilities the equipment and supplies needed for testing, use is made of them, but this arrangement is not desirable from the viewpoint of increasing use of the PS Mark, especially when time and human resources constraints are considered. Testing capability of the BPSL is very low as measured by the number of pieces of equipment, and the number of test personnel, in each of the electric, mechanical and chemical areas. In order to increase use of the PS Certification Mark system, there is no alternative but to improve and replace equipment, and increase the number of personnel.

a) in case of the cost of testing and inspection equipment is less than 1,500 pesos. BPSL can procure the equipment within BPSL budget.

b) in case of the cost of testing and inspection equipment is less than 100,000 pesos. BPSL can procure the equipment within only after his proposal of acquisition in budget is approved.

Further, the BPSL lab is extremely crowded, and would have to be expended if new equipment is to be installed.

(2) Philips Electrical Lamps, Inc. (Philips)

Philips Electrical Lamps is the Philippines subsidiary of the famous Dutch company, and produces electrical lighting products in the Philippines. Philips' inspection department is the accredited testing laboratory of BPS for incandescent and fluorescent lamps.

Testing by Philips of its own products in the Philippines (similar to the procedure used in Holland) uses test sample picked up from same lot and one is sent to Philips is Holland and if the test values vary from the standards the product is sent to a Philips lab in the United States for analysis. Technical guidance will then be provided on the basis of the analysis results.

Test equipment at Philips comprises, limited sample of cap. photometric integrating sphere, temperature measuring equipment and a standard lamp (sent from the head office), as well as standard fluorescent lamp (from the head office) and a lamp life tester (10 arrays of incandescent and 14 arrays of fluorescent lamps). Equipment thus is limited to testing on fluorescent and incandescent lamps.

Because the testing equipment is intensively used for Philips' own products, there have not been many instances for PS Mark certification tests.

The testing capability of Philips, though limited to the two types of lamps, is acceptable. But because Philips does much testing of its own products, the facilities do not have excess capacity.

(3) AG & E Allied Services Co. (AGE)

AGE is a private corporation established in 1985 to do third-party inspection of LPG cylinders for re-filling, light metal assembly work, surface finishing, and painting. AGE is a accredited testing laboratory of BPS for LPG cylinders for requalification. It has 12 employees of which 3 are inspectors.

The number of inspections of cylinders during the past 3 years, for purposes of requalification, were: 540,000 in 1986, 230,000 in 1987, and 70,000 in 1988. These include tests not for PS Mark.

The equipment owned by AGE is adequate for PNS 41, "Conditions for Requalification of LPG Cylinders. (Refer to Table A3-1-6.) From the viewpoint of the facilities and experience of the company, its capability is adequate.

(4) Superior Gas & Equipment Co. Inc. (SGE)

SGE is a manufacturer of industrial and medical gases and chemicals founded in 1940 with a total of 189 employees, eight persons are testing technicians. SGE conducts inspection of LPG cylinders for requalification and analyses of various gases, and is a accredited testing laboratory of BPS for inspection of LPG cylinders for requalification. Its record of inspection for requalification of LPG cylinders shows a large increase in 1988 when became an accredited testing laboratory of BPS and has conducted over 2,000 tests including tests other than PS Mark Certification tests. (Refer to Table A3-1-7.)

Furthermore, the equipment owned by SEG are sufficient to conduct tests relating to the requalification of LPG cylinders as prescribed in the PNS standards, such as hydrostatic testing equipment, purity testers, etc. (Refer to Table A3-1-8.) The operating expenses of SGE in 1988 were as follows (unit: pesos):

Variable costs	
Materials	35,000
Utilities	
Water	5,000
Electricity	5,000
Fuel	1,000
Others	4,000
Fixed costs	
Salaries & wages	250,000
Administrative expenses	70,000
Repairs	30,000
Insurance/tax	9,000
Depreciation	31,000

Table A3-1-6 TESTING EQUIPMENT OWNED BY AGE

Name	Q'ty	Year of purchase	Frequency of calibration
Pressure Gauge	2		
Hydrotesting Equipment	2		
Hydrolic Pressure Pump	1		
Weighing Scale	2		

Source:AGE

Table A3-1-7 NUMBER OF TESTING SAMPLES TESTED BY SGE

	1986	1987	1988
Requalification			
-Steel Cylinder	2,949	3,056	3,043
-Steel Tube	0	0	104
-LPG Cylinder	7	28	2,434
Gas Analysis			
-Medical O_2	1,386	1,466	1,335
-Acetylene	57	62	54
-Hydrogen	108	130	175
-Carbon Dioxide	1,029	1,514	1,333
Gas Impurities			
-CO_2	40	43	41
-CO	40	43	41
-Nitrous Fumes	40	43	41
Moisture Contents	70	76	73

Source:SGE
Note: Testing other than PS certification testing are included in the figure in the table.

Table A3-1-8 TESTING EQUIPMENT OWNED BY SGE

Name	Q'ty	Year of purchase	Frequency of calibration
Hydrostatic Testing Equipment	2		
Oxygen Purity Tester	2		
Hydrogen Gas Purity Tester	1		
Acetylene Gas Purity Tester	2		
Carbon Dioxide Purity Tester	1		
Moisture Analyser	1		
Pump	2		

Source:SGE

(5) Asephil Manufacturing Corporation (Asephil)

Asephil is a private company established in 1978 to do repair and requalification certification of LPG cylinders, assemble furniture, and other lines of business. Of the total 100 employees, 11 are engaged in testing. The BPS has accredited Asephil for testing of LPG cylinders intended for requalification. During the past 3 years Asephil has conducted testing of 68,000 cylinders in 1986, 70,000 in 1987, and 69,000 in 1988 (including testing which did not lead to issuing a PS Mark). It was not possible to obtain detailed information about the company's testing equipment, but judging from the work done it is fully capable of testing on LPG cylinders intended for requalification.

Operating expenses incurred by Asephil during 1988 for inspection are as follows (unit: pesos):

Variable costs	
Materials	2,200,000
Utilities	
Water	43,000
Electricity	65,000
Fuel	160,000
Others	120,000
Fixed costs	
Salaries & wages	1,680,000
Repairs	60,000
Insurance	60,000
Tax	250,000
Depreciation	400,000

(6) Filipinas Electro Industrial Corporation (FEIC)

FEIC is a private company established in 1961 and is engaged in inspection of LPG cylinders, heaters, electric stoves and agricultural machinery. It has 31 inspectors. FEIC is accredited by the BPS for testing of LPG cylinders for requalification. The number of inspections performed during the past 3 years (including inspections not followed by provision of a PS Mark) were: 163,245 in 1986, 213,254 in 1987, and 262,003 in 1988.

Testing equipment owned by FEIC including mechanical testing equipment, bursting equipment etc. are capable of conducting tests for requalification of LPG gas cylinder specified by PNS, and the testing capability can meet the PNS in terms of testing equipment, number of

operators and actual testing performance. (Refer to Table A3-1-9.)

Operating costs of FEIC in 1988 were (unit: pesos):

Variable costs	50,212,870
Materials	
Utilities	
Water	1,200,000
Electricity	5,064,499
Fixed costs	
Salaries & wages	8,161,722
Administrative expenses	8,177,730
Repairs	4,176,333
Depreciation	365,881

(7) Goodyear Philippines Inc. (Goodyear)

Goodyear is a tire maker established in 1956, and its Quality Assurance Department is accredited by BPS as a testing laboratory under PS Certification Mark System. Seventeen persons are engaged in the Quality Assurance Department, and four of them are inspectors. In addition to doing testing for certification of the PS Mark, this department is engaged in evaluation, research and development of Goodyear products. Because they tend to give priority to their own company's tests, a somewhat long time is needed for tests and inspection for the PS Mark.

The number of tests of pneumatic tires carried out during the past 3 years are 307 in 1986, 310 in 1987, and 371 in 1988 (including tests not related to PS Mark license).

Major items of inspection equipment at the Quality Assurance Department of Goodyear are as shown in Table A3-1-10. It is thought that the company has endurance testing machines in addition to these, and their testing capability is seemed adequate.

Operating costs of the Quality Assurance Department were as follows (unit: pesos):

Variable costs	
Utilities	83,955
Materials	2,282
Others	19,652

Table A3-1-9 TESTING EQUIPMENT OWNED BY FEIC

Name	Q'ty	Year of purchase	Frequency of calibration
Mechanical Testing Equipment	1		Annualy
Volumetric Testing Equipment	1		Quarterly
Bursting Equipment	1		Quarterly
Pulsation Type Test Equipment	1		Quarterly

Source:FEIC

Table A3-1-10 TESTING EQUIPMENT OWNED BY GOODYEAR

Name	Q'ty	Year of purchase	Frequency of calibration
Tire Plunger Machine	1		Quarterly
Resiliometer	1	1964	Quarterly

Source:Goodyear

Fixed costs	
Salaries & wages	147,075
Repairs	41,321
Insurance	1,143
Tax	927
Other	19,074

(8) Sime Darby Philippines Inc. (Sime Darby)

Sime Darby is a tire maker established in 1955. It has in addition to its manufacturing division a tire testing center for tire testing a properties testing laboratory for tubes, and agricultural testing lab for tests of rubber. It is accredited by BPS for testing of tires and tubes as a testing laboratory under PS Certification Mark System.

1) Tire testing laboratory

This laboratory does work in the area of quality control of tires, management of materials, and performance tests. It has 4 testing personnel. The results for the past 3 years suggest that around 250 of tests performed is constant from year to year. (Refer to Table A3-1-11.) This laboratory has adequate facilities such as 4-position Tire Test Machine PNS 25 ("Tires") tests (including test not for PS Mark license). (Refer to Table A3-1-12.)

2) Properties Testing Laboratory

This laboratory has one person in charge of testing the properties of tires and tubes. During the past 3 years, the laboratory has conducted 243 tests in 1986, 226 tests in 1987, and 100 tests in 1988 (including tests not for PS Mark license).

3) Agricultural Testing Lab

The grade of natural rubber is determined by tests at this lab. During the past 3 years it has performed tests on 12,348 samples in 1986, 14,112 in 1987, and 17,210 in 1988. The equipment here is as listed in Table A3-1-13.

Sime Darby possesses adequate facilities, personnel and experience for testing the properties of tires and tire tubes. However, as same as other tire manufacturers, it is pointed out that testing time for PS Certification Mark is delayed because they give priority on their own products testing.

Table A3-1-11 NUMBER OF TESTING SAMPLES TESTED BY SIME DARBY (TIRE TEST CENTER)

	1986	1987	1988
Static	231	193	249
Endurance	203	208	238
High Speed	152	115	124

Source:Sime Darby
Note: Testing other than PS certification testing are included in the figure in the table.

Table A3-1-12 TESTING EQUIPMENT OWNED BY SIME DARBY (TIRE TEST CENTER)

Name	Q'ty	Year of purchase	Frequency of calibration
Tire Plunger Machine	1		every 6 mos.
X-Y Recorder	1		every 6 mos.
Bead Unseat	1		every 6 mos.
Electronic Force Calibration	1		every 6 mos.
Ring Dynamometer	1		

Source:Sime Darby

Table A3-1-13 TESTING EQUIPMENT OWNED BY SIME DARBY (AGRI-Lab)

Name	Q'ty	Year of purchase	Frequency of calibration
Analytical Balance	1		
Infra Red Heating Unit	44		
Oven	3		
Muffle Furnace	2		
Plastimeter	1		
Electrical Digestion Stand	2		
Distillation Unit	2		
Lab Mill	1		
Viscometer	1		

Source:Sime Darby

Operating cost at Sime Darby labs in 1988 were (unit: pesos):

Variable costs	
Utilities, etc.	489,716
Fixed costs	
Salaries & wages	799,338
Administrative expenses	527,227
Repairs	5,632
Insurance	14,740
Tax	43,500
Depreciation	321,453

(9) Philtread Tire & Rubber Corporation (Philtread)

Philtread is a maker of Firestone brand tires, established in 1957. It is accredited by BPS for testing tires and tire tubes under PS Mark System. It employs 27 testing personnel, as follows:

Production line (Finished Product) Inspectors	9
Technical Service Finished Product Inspectors	1
Q.A. Finished Product Inspectors	1
Q.A. Technician for Indoor Testing	2
SQC Process Engineers	5
Laboratory Process Engineers	4
Laboratory Analyst/Physical Testing Technician	2
Laboratory Mill Room Control Technician	3

Every year for the past 3 years the company has conducted more than 400 tests. (Refer to Table A3-1-14.) Philtread possesses adequate facilities such as Plunger/Bead Unseating Machine, Balancing Machine for tire and tire tube testing spedified in the PNS. (Refer to Table A3-1-15.) Philtread has adequate testing capability from the viewpoint of testing equipment possessed, number of testing engineers and actual testing words done. However, it is pointed out that testing time for PS Mark is delayed because they put priority on testing of their own products for R&D.

Table A3-1-14 NUMBER OF TESTING SAMPLES TESTED BY PHILTREAD

	1986	1987	1988
Non-Textile Raw Material	1,040	1,400	1,448
Wire and Textile Material	200	296	320
Tire Strength	71	78	63
Bead Unseat	70	70	54
Tire Indoor Test (Endurance and High Speed)	476	497	433

Source:Philtread
Note: Testing other than PS certification testing are included in the figure in the table.

Table A3-1-15 TESTING EQUIPMENT OWNED BY PHILTREAD

Name	Q'ty	Year of purchase	Frequency of calibration
Vari-Heater	1		
Sun Lamp	1		
Viscosimeter	1		
Ball Rebount Tester	1		
Spectrophotometer	1		
Viscometer	1		
Balance	1		
Exhaust Hood	1		
Oven	2		
Muffle Furnace	1		
Open Cup Flash Tester	1		
Universal Furol Viscosimeter	1		
Distilling Unit	1		
Moisture Analyzer	1		
Potentiometer	1		
Sieve Tester	1		
Electrolytic Analyzer	1		
Olsien Tester	1		
Tint Tester	1		
Pellet Tester	1		
Tear Tester	1		
Heater with Electromagnetic Stirrer	1		
Acetone Extract	1		
Ohaus Balance	1		
Plastimeter	1		
Rheometer	1		
Modulus Tester	1		
Laboratory Mill	1		
Platen Press	1		
Electric Platen Press	1		
Shrinkage Tester	1		
Scott Tester	1		
Instron Tester	1		
Twist Tester	1		
Starrett Gauge	1		
Toledo Scale	1		
B of S Machine	2		
R Machine	1		
Plunger/Bead Unseating Machine	1		
X-ray Machine	1		
TUO Machine	1		
Micro-poise Balancing Machine	2		
Manual Runout Machine	2		

Source:Philtread

Operating costs are as follows (unit: pesos):

Variable costs	
Utilities	
Water	239,688
Electricity	1,478,871
Fuel	67,020
Fixed costs	
Salaries & wages	3,405,648
Administrative expenses	2,709,936
Repairs	606,972
Insurance	83,220
Tax	40,368
Depreciation	461,112

(10) C.C. Unson Company, Inc. (C.C. Unson)

C.C. Unson was established in 1949 as a maker of lead-acid storage batteries. Of the company's 4,749 employees, 29 are technicians during inspection and testing work. Results of tests over the past 3 years are shown in Table A3-1-16. This table shows the large variety of tests the company performs on batteries.

The equipment possessed by the company such as High Rate Capacity Tester, Life Cycle Tester is adequate for testing of tires specified in the PNS. (Refer to Table A3-1-17.)

Regarding the age of the equipment, 68.2% was acquired within the past 5 years and 27.3% was acquired 10 or more years ago. Much of the equipment being old, it is necessary that it be replaced. C.C. Unson has adequate equipment, personnel and experience for the work it does.

(11) Ramcar Incorporated (RAMCAR)

Ramcar, established in 1919, makes batteries and other products, and employs 8 persons in testing and inspection, including 6 technicians. Ramcar is as a testing laboratory under PS Certification Mark System accredited by BPS for testing of lead-acid storage batteries. Records of testing work performed show a steady increase in testing of materials; in 1988 more than 80,000 tests were performed, in addition to 3,000 inspections of batteries. (Refer to Tables A3-1-18 and A3-1-19.)

Table A3-1-16 NUMBER OF TESTING SAMPLES TESTED BY CC UNSON

	1986	1987	1988
Battery cases and covers	130,000	155,000	185,000
Sulfuric acid	90	92	126
PVC resin/PVC separator	151,400	153,300	169,550
Lead alloy	284	330	410
Battery plates	3,513	4,656	5,198
Battery			
Activation	447	1,064	926
Filled discharge	116	939	784
High rate	780	1,980	1,682
CCA	220	200	408
Reserve capacity	776	1,969	1,669
AH capacity	800	2,015	1,899
Vibration	72	72	72
Overcharge	6	6	18
Life cycle	30	36	36
Gasses	2	12	4
Cold activation	4	2	56

Source:CC UNSON
Note: Testing other than PS certification testing are included in the figure in the table.

Table A3-1-17 TESTING EQUIPMENT OWNED BY CC UNSON

Name	Q'ty	Year of purchase	Frequency of calibration
High Rate Capacity Tester	2	1973	Quarterly
Life Cycle Tester	7	1973	Quarterly
IB Capacity Tester	1	1973	Quarterly
Reserve Capacity Tester	9	1982	Quarterly
20-Hour Tester	1	1973	Quarterly
Battery Capacity Tester	2	1981	Quarterly
Vibration Tester	1	1973	Quarterly
Chargers	12	1988	Quarterly
Digital Multitester	5	1983	Quarterly
Digital Clamp Ammeter	1	1989	Quarterly
Upright Freezer	1	1985	Quarterly
Optical S.G. Checker	1	1988	Quarterly
Atomic Absorption Spectrophotometer	1	1982	Quarterly

Source:CC UNSON

Table A3-1-18 NUMBER OF TESTING SAMPLES TESTED BY RAMCAR

	1986	1987	1988
Raw/Inprocess material	56,835	72,356	86,034
Battery			3,268

Source:RAMCAR
Note: Testing other than PS certification testing are included in the figure in the table.

Table A3-1-19 TESTING EQUIPMENT OWNED BY RAMCAR

Name	Q'ty	Year of purchase	Frequency of calibration
Reserve Capacity Tester	5	1986	Weekly
Life Cycle Tester	9	1986	Quarterly
High Rate Discharger	1	1987	Quarterly
Battery Charger	2	1985	Weekly
Temperature Controlled Waterbath	2	1985	
Discharger	1	1985	Quarterly
Chest Freezer	1	1989	
Vibration Tester	1	1977	Quarterly
Asphalt Test Apparatus	1		
Mettler Balance	2		
Spectrophotometer	1	1980	
Oven Dryer	1	1987	
Weighing Scales	3		
Plate Vibration Testr	2	1979	
Sieve Shaker	1	1977	
Orsat Analyzer	1	1979	

Source:RAMCAR

Ramcar has adequate facilities such as Life Cycle Tester, High Rate Dischanger, etc. for testing batteries specified in the PNS.

21.4% of the equipment possessed by Ramcar was acquired within 5 years ago, and 7.1% was acquired 10 or more years ago. The equipment thus is relatively new.

Ramcar has adequate testing capability to conduct testing on batteries, judging from the equipment on hand, the number of testing personnel and its performance record.

(12) Metals Industry Research and Development Center (MIRDC)

MIRDC, established as a subsidiary body of DOST in 1966, was established with the objective of providing assistance and guidance for small and medium scale enterprises related to metal. It has the following major functions:

1. Materials and product tests : chemical analysis, corrosion testing, mechanical testing, non-destructive testing
2. Calibration of equipment for measurement of length and electrical
3. Machine tests : of welding, castings, heat treated materials
4. Technical information service
5. Technical guidance
6. Education and training

MIRDC is accredited by BPS for metal testing as a testing laboratory under PS Certification Mark System. Its organization is shown in Figure A3-1-1. Among the 267 employees, 36 are engaged in testing on materials and products and 2 in calibration.

The major items of equipment possessed by MIRDC cover a very wide range and enable MIRDC to do testing in the fields of metal and machinery for compliance with PNS standards. (Refer to Tables A3-1-20 through A3-1-24.)

This institution possesses a vehicle for provision of roving service. This makes it possible to do inspections at users' sites; there is a concentration on non-destructive testing in this mobile service.

Figure A3-1-1 Organization Chart of MIRDC

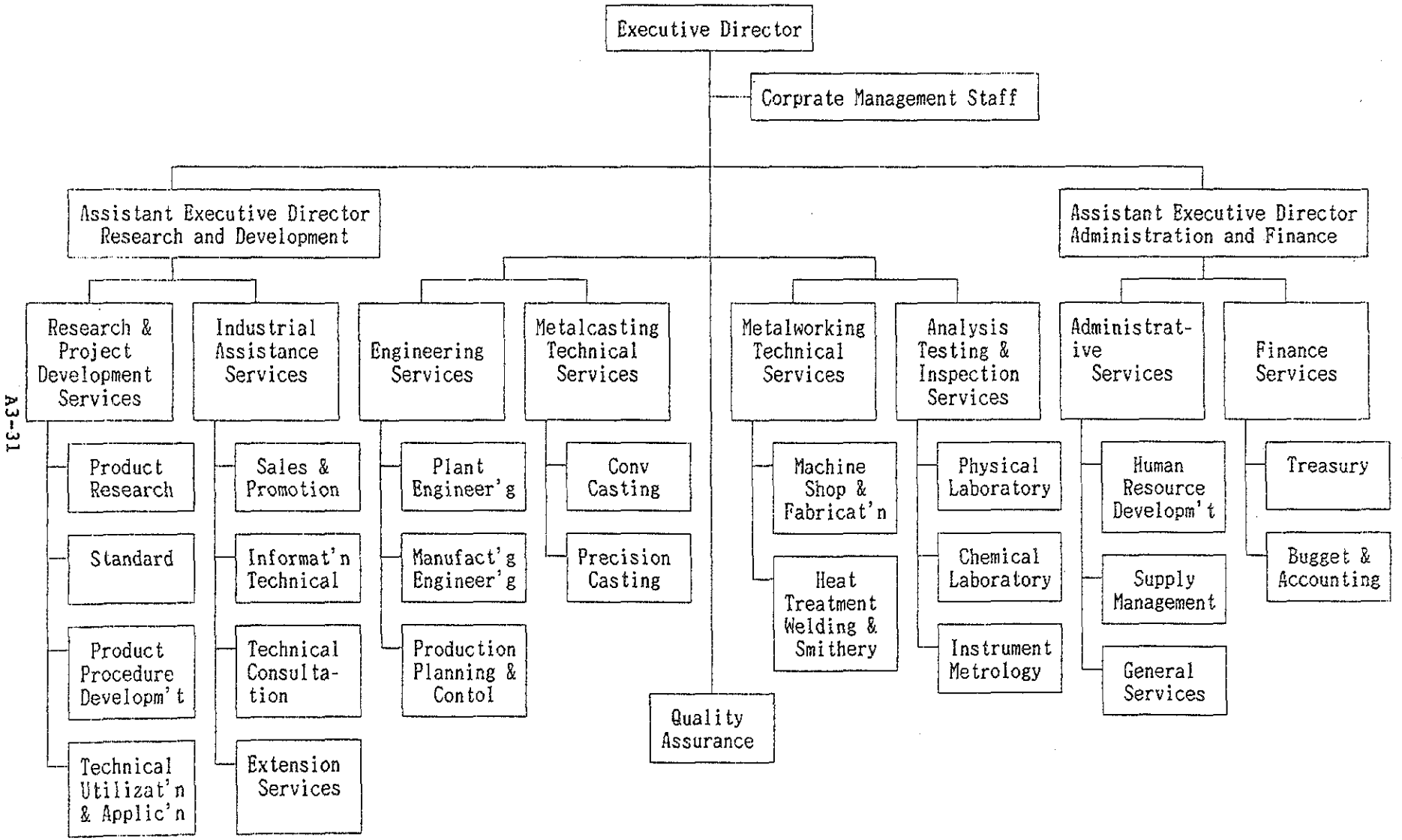


Table A3-1-20 TESTING EQUIPMENT OWNED BY MIRDC (CHEMICAL)

Name	Q'ty	Year of purchase	Frequency of calibration
Atomic absorption spectrophotometer	1		Daily
UV-visible spectrophotometer	1		Every time
Vacuum emission spectrometer	1		
C analyzer	1		
S analyzer	1		
Electroanalyzer	1		
Analytical balance	1		

Source:MIRDC

Table A3-1-21 TESTING EQUIPMENT OWNED BY MIRDC (CHEMICAL)

Name	Q'ty	Year of purchase	Frequency of calibration
Bendix tin deflater	1		Monthly
CrO_3 analyzer	1		
Corrosion rate meter	1		Every time
Pinhole detector	1		Every time
Analytical balance	1		Annually
pH/temperature meter	1		Every time

Source:MIRDC

Table A3-1-22 TESTING EQUIPMENT OWNED BY MIRDC (NON-DESTRUCTIVE TESTING)

Name	Q'ty	Year of purchase	Frequency of calibration
X-ray machine	1	1983	
Co-60 gamma ray machine	1	1980	
Cabinet X-ray machine	1	1976	
Ultrasonic detector	2	1973,76	Every 6 mos.
Ultrasonic flaw detector	1	1983	Every 6 mos.
Electromagnetic yoke	1	1982	
Transmission densitometer	1	1983	
High intensity film viewer	1	1982	
Pocket dosimeter	4	1982	Every 6 mos.
Universal survey meter	1	1980	Every 6 mos.
Magnetic particle testing equipment	1	1976	

Source:MIRDC

Table A3-1-23 TESTING EQUIPMENT OWNED BY MIRDC (MECHANICAL METALLURGY)

Name	Q'ty	Year of purchase	Frequency of calibration
Impact testing machine	1		Annually
Universal testing machine	1		Annually
Mohr & Federhaff testing machine	1		Annually
Universal tensile testing machine	1		Out of order
Schleorscope	2		
Brinnel hardness tester	1		
Micro hardness tester	1		
Brinnel hardness tester	1		
Rockwell hardness tester	2		
Erichsen cupping tester	1		
Vickers hardness testing machine	1		
Brinnel hardness tester	1		
Portable hardness tester	1		

Source:MIRDC

Table A3-1-24 TESTING EQUIPMENT OWNED BY MIRDC (PHYSICAL METALLURGY)

Name	Q'ty	Year of purchase	Frequency of calibration
Metallurgical Microscope	3		
Scanning Electron Microscope	1		
Energy Dispersive X-ray analyzer	1		
Sputter coater	1		
Moisture teller	1		
Sand rammer	1		
Perum meter	1		
Sand strength machine	1		
Surface texter	1		
Sieve shaker	1		
Sinter meter	1		
Flowability tester	1		
Urethylene blue clay tester	1		
Sand strength speedy moisture teller	1		
Electric penmeter	1		

Source:MIRDC

MIRDC performs calibration for length and electrical measurement. The equipment used for this is of working standard grade. (Refer to Table A3-1-25.)

Results of testing activity during the past 3 years show that a great number of tests have been performed. In particular, there were more than 5,000 metal-related inspections in 1988. (Refer to Table A3-1-26.)

Not many calibrations requests were met during these 3 years. In 1988 there were 20 for length, and 100 in the electrical area. Calibration services in electrical area rendered by MIRDC rose 12.5% in 1988 from a total of 80 in 1986, and are expected to increase more rapidly in the future. (Refer to Table A3-1-27.)

The budget in 1988, 3,534,000 pesos, was met by fee income for 40%; the rest came from the government.

Among the testing equipment, there are many items that are old, such as the Universal Testing Machine used for tensile tests as part of testing item for conducting testing for PS Mark Certification on steel bars for rainforcement; this is not automatic.

The following may be identified as problems related to MIRDC testing work.

1. There is a shortage of manpower because employees have left the organization, and this has influenced ability to carry out tests.

2. Equipment is out of date. Some equipment is in need of repair.

3. If a piece of equipment breaks down, MIRDC can repair it itself, but because the organization does not have the financial ability to replace circuit boards, it must use the procedure of testing individual parts one at a time, which is very harmful to efficiency.

(13) Cement Central Laboratory (CCL)

CCL, by means of guidance by UNIDO, receiving a supply of equipment as aid from UNDP/UNIDO. This body was formed by making the technical commission of the Philippine Cement Manufacturers Corporation (Philcemcor) into an independent center. It has the following objectives:

1. Collection of cement samples from cement mills and market, and performance of quality inspections

Table A3-1-25 METROLOGICAL EQUIPMENT OWNED BY MIRDC

Name	Q'ty	Year of purchase	Last calibration
Gauge blocks	1Set		1988, Feb.
Gauge blocks	1Set		1988, Sept.
Gauge blocks	1Set		1974, Oct.
Standard resistor	1		1972, Aug.
Standard resistor	4		Annually
Standard resistor	5		Annually
Guarded Wheatstone bridge	1		Annually
Kelvin bridge	1		Annually
DC voltage source	1		Annually
AC/DC differential	1		Annually
Millivolt potentiometer	4		Annually
Mercury-in-glass thermometer	2		1985
Manometer	1		Annually
Pneumatic calibrator	1		Annually

Source:MIRDC

Table A3-1-26 NUMBER OF TESTING SAMPLES TESTED BY MIRDC

	1986	1987	1988
Chemical	5,627	6,017	8,692
Corrosion	207	212	161
Non-destructive Testing	726	474	337
Mechanical, Metallurgy	3,521	6,090	5,226
Physical Metallurgy	490	496	407
Dimension	229	402	378

Source:MIRDC
Note: Testing other than PS certification testing are included in the figure in the table.

Table A3-1-27 CALIBRATION SERVICES RENDERED BY MIRDC

Metrological Quantity	1986	1987	1988
Length	22	8	20
Electrical	80	85	100

Source:MIRDC

2. Provision of technical guidance to cement mills

3. Standing position as a neutral agency in the event of a dispute over cement quality

4. Training

5. Provision of advice on quality

6. Undertaking research and development to identify new products

7. Secure accreditations to issue certification on behalf of foreign certification agencies

CCL is a non-profit making and independent body, and obtains all of its income from fees charged for its services. It has a staff of 11.

CCL does analysis of materials and testing of portland cement, mixed cement, concrete, coal, kraft paper and cement constituents. It offers technical services and training programs. It performs calibration for compression testing equipment.

CCL is accredited by the BPS for conducting test on cement and concrete under PS Certification Mark System and is a member of ASTM (American Society for Testing Materials).

The equipment owned by CCL such as Balance, Compression Tester, Gillmore Apparatus is sufficient for its cement tests specified in the PNS. All of testing equipment, however, has been purchased 5 or more years ago, and needs to be replaced. (Refer to Table A3-1-28.)

The method of testing performed by CCL is to collect samples once a month from 16 mills, and perform tests identical to those performed at the mills on identical samples, for comparison of the results. When the results show the sample does not meet the standard requirements, production is stopped until remedial measures bring the product up to the standard. In addition, BPS certification tests are performed, as well as follow-up testing after certification; no special problems are being encountered in implementing the PS Certification Mark System. Each of the 16 cement mills are licenced to put the PS Mark on their products. Testing requires 1.5 months.

Results for the past 3 years show an increase in the number of tests performed. (Refer to Table A3-1-29.)

Table A3-1-28 TESTING EQUIPMENT OWNED BY CCL

Name	Q'ty	Year of purchase	Frequency of calibration
Autoclave apparatus	1	1980	
Balance, analytical, Sartorius	1	1980	Annually
Balance, platform non-electrical	1	1983	Annually
Balance, top loading, Mettler	1	1980	Annually
Balance, top loading, Torsion	1	1980	Annually
Blaine apparatus	1	1980	Quarterly
Compression tester	1	1980	Quarterly
Crusher, laboratory jaw chipmunk	1	1982	
Curing box, Curamold	1	1983	
Distilling apparatus	1	1980	
Drum mill	1	1983	
Gilmore apparatus	1	1980	
Heat of hydration apparatus	1	1983	
Hot plate, Lindberg	1	1980	
Hot plate, 3D	1	1981	
Humidifier centrifugal	1	1982	
Humidifier laboratory	1	1980	
Humidity Chamber, Hotpack	1	1983	
Hygrometer	1	1983	
Length comparator	1	1980	
Load pacer, variable speed	1	1980	
Mixer, laboratory	1	1980	
Mortor and pestle mill	1	1982	
Proving ring 20,000lbs	1	1983	
Proving ring 250,000lbs	1	1980	
Pulverizer	1	1982	
Rigden's apparatus	1	1982	
Sieve shaker, to-tap	1	1980	
Thermohygrograph	1	1982	
Thermometer double scale	1	1983	
Vibrating machine, Motor cubes	1	1982	
Vicat apparatus	1	1982	
Water bath, Le Chatelier	1	1982	
Hardgrove machine	1	1983	
Balance, analytical, Torsion	1	1980	Annually
Balance moisture	1	1983	
Balance, top loading, Mettler	1	1980	Annually
Flame photometer	1	1983	Quarterly
Furnace, chamber	1	1982	
Furnace, muffle	1	1980	
Hot plate 3D	1	1981	
Hot plate, Lindberg	1	1980	
Hot plate w/magnetic stirrer	1	1982	Out of order
Hygrometer, Mason	1	1983	
Magnetic stirrer	3	1981	
Oven, mechnical convection	1	1980	
pH meter	1	1983	
Pyrometer, thermocouple	1	1983	
Turbidimeter Hellige	1	1980	
Turbidimeter Wagner	1	1983	
Vacuum pump	1	1980	
Water bath, Gallenkamp	1	1982	
Water bath, Heraeus	1	1981	
Colorimeter Adiabatic bomb	1	1982	
Furnace, Crucible	1	1982	
Oven, vacuum	1	1983	

Source: CCL

Table A3-1-29 NUMBER OF TESTING SAMPLES TESTED BY CCL

	1986	1987	1988
Portland Cement			
-Compressive strength	275	369	443
-Normal consistency	275	369	443
-Setting time	275	369	443
-Soundness	275	369	443
-Air content	275	369	443
-Density	168	225	346
-Fineness	275	369	443
-Potential expansion of portland cement exposed to sulfate	0	1	1
-Chemical analysis	275	369	443
Blended Cement			
-Compressive strength	168	225	346
-Normal consistency	168	225	269
-Setting time	168	225	269
-Soundness	168	225	269
-Air content	168	225	269
-Density	168	225	346
-Fineness	168	225	346
-Pozzolanic activity index			
-with lime	136	183	195
-with cement	136	183	195
-Chemical analysis	168	285	346
Coal			
-Proximate analysis	-	11	1
Cement raw material			
-Complete chemical analysis	41	56	46

Source:CCL
Note: Testing other than PS certification testing are included in the figure in the table.

CCL test performance capability, judging from such factors as equipment, number of technicians, and record thus far, is adequate with regard to cement testing specified in the PNS. It seems capable of handling its present work load but in the near future action will be needed to keep up to the increase in testing.

Operating costs in 1988 were (unit: pesos):

Variable costs	
Materials	158,865
Utilities	
Water	9,607
Electricity	138,000
Fuel	22,832
Others	144,225
Fixed costs	
Salaries & wages	421,412
Administrative expenses	60,579
Repairs	33,286
Insurance	19,895
Depreciation	403,253

(14) Consolidated Industrial Gases, Inc. (CIGI)

CIGI is a privately-owned gas producer formed by the merger of 3 companies in 1980.

The CIGI laboratory is accredited by BPS for gas analysis under PS Certification Mark System. It has 7 employees, including 3 technicians.

The tests performed follow BPS approved standards and CGA regulations, and when an exporter so requests, tests according to foreign standards are conducted. Tests are done for oxygen, argon, acetylene, carbon dioxide, hydrogen, and nitrogen etc. and for vessels for them.

CIGI's equipment includes mostly analytic equipment, and is adequate for PNS 103 (medical oxygen) tests. (Refer to Table A3-1-30.)

72.7% of the CIGI equipment such as O_2 Analyzer, IR Spectrophotometer is 5 or more years old and 63.6% is 10 or more years old. Because the equipment is so old, it should be replaced.

Table A3-1-30 TESTING EQUIPMENT OWNED BY CIGI

Name	Q'ty	Year of purchase	Frequency of calibration
Hagan O_2 analyzer	2	1977	Weekly
Alnor dew point	1	1980	Weekly
Teledyne O_2	1	1985	Weekly
HP gas chromatograph	2	1978	
Trace moisture analyzer	2	1978	Weekly
Infrared spectrophotometer	1	1978	Annually
Infrared spectrophotometer	1	1988	Annually
Oxygen analyzer	1	1984	Weekly

Source:CIGI

The number of instances of gas analysis and gas container testing performed has increased in recent year. Medical oxygen analysis work increased 50% in the 1986 period, to about 1,500 cases in 1988. (Refer to Table A3-1-31.)

At the present, analyses and testing are being performed up to the limit of CIGI's capability. Although there can be no increase in performance without acquisition of more, new equipment and an increase in the number of personnel, CIGI is fully capable of carrying out PS Mark Certification tests for medical oxygen.

Further, CIGI purchases standard gas from the U.S. and U.K., and supplies it to other parties for use in calibration.

(15) Philippine Institute of Pure and Applied Chemistry (PIPAC)

PIPAC is a non-profit institution established as an independent body in the campus of Ateneo University in 1973. A grant of a building and equipment was provided by the government of Japan in 1984, and major pieces of equipment were given to PIPAC by the Alexander von Humboldt Foundation of West Germany.

The major activities of PIPAC are:

1. Analysis, of agricultural products and raw materials for production of industrial products, as well as of intermediate and finished products.

2. Research, by PIPAC on its own and jointly with other entities, in the areas of basic and applied research.

3. Training, regarding research and quality control.

4. Testing, for compliance with industrial standards.

5. Environmental assessment, of natural water, sediment, factory effluent, fish and shellfish life, and pollution of land crops.

6. Guidance for in-house analytic procedures and quality control.

7. Technical consultation.

8. Maintenance and calibration of measuring equipment, and performance of simple repair and correction.

Table A3-1-31 NUMBER OF TESTING SAMPLES TESTED BY CIGI

	1986	1987	1988
LOX strage tank	156	156	156
LIN strage tank	156	156	156
LAR strage tank	104	104	156
LIN tankers/trailers	2,261	2,512	2,630
LOX tankers/trailers	2,307	2,563	2,833
LAR skid tank	-	-	10
LIN PGS 45	65	72	80
LOX PGS 45	76	80	92
Instrument C_2H_2	606	673	748
Instrument air	790	878	976
Medical air	2,070	2,300	2,555
Welding grade Ar	13,631	15,145	16,828
High purity Ar	1,600	1,885	2,094
UHP Ar	1,731	1,924	3,847
Argoshields	5,203	5,781	6,423
Instrument CO_2	241	269	298
Food grade CO_2	706	804	1,871
Gas mixtures	890	994	1,104
High purity H_2	11,550	12,837	14,263
Food grade H_2	2,157	2,397	2,663
Hydrogen trailers	150	171	190
Medical N_2O	830	930	1,028
Instrument N_2O	57	63	170
High purity N_2	5,608	6,232	6,924
UHP Nitrogen	1,000	1,112	1,235
Food grade N_2	2,084	2,530	2,820
High purity O_2	797	1,088	1,209
Medical O_2	980	1,030	1,488
Calcium Carbide	19	20	28
Methanol samples	30	37	65

Source:CIGI
Note: Testing other than PS certification testing are included in the figure in the table.

PIPAC is accredited by BPS for analysis of chemical products as a testing laboratory under PS Certification Mark System, and is accredited by the Fertilizer and Pesticide Authority.

Employees number 32 of whom 22 are technicians concerned mostly with work with chemicals. The organization is shown in Figure A3-1-2.

PIPAC has relatively modern analytic equipment. (Refer to Table A3-1-32.)

An average of about 600 tests have been performed during the past 3 years. (Refer to Table A3-1-33.)

PIPAC had a budget of 1.2 million pesos in 1988.

Judging from the equipment and technicians at PIPAC, this body has underutilized potential. But because financial constraints prevent purchase of the requisite quantities of glassware and supplies, full use cannot be made of the relatively modern equipment, and much work is being performed by manual. As a result, the precision of the analytic work is very low relative to the potential affordable by the equipment. Therefore, PIPAC is operating at a sub-optimal level.

(16) National Food Authority (NFA)

NFA was established in 1972 with the objective of offering services for physical, biological and chemical analysis of foods, and providing research and evaluation services regarding analytic equipment. The NFA Laboratory Services Division is composed of the Bio-Physical and Culinary Testing Section and the Chemical Laboratory Section. It has 15 employees. Major function of the Laboratory Services Division are as follows:

1. Setting official levels for properties and quality of foods, on the basis of various analyses and tests using standard criteria.

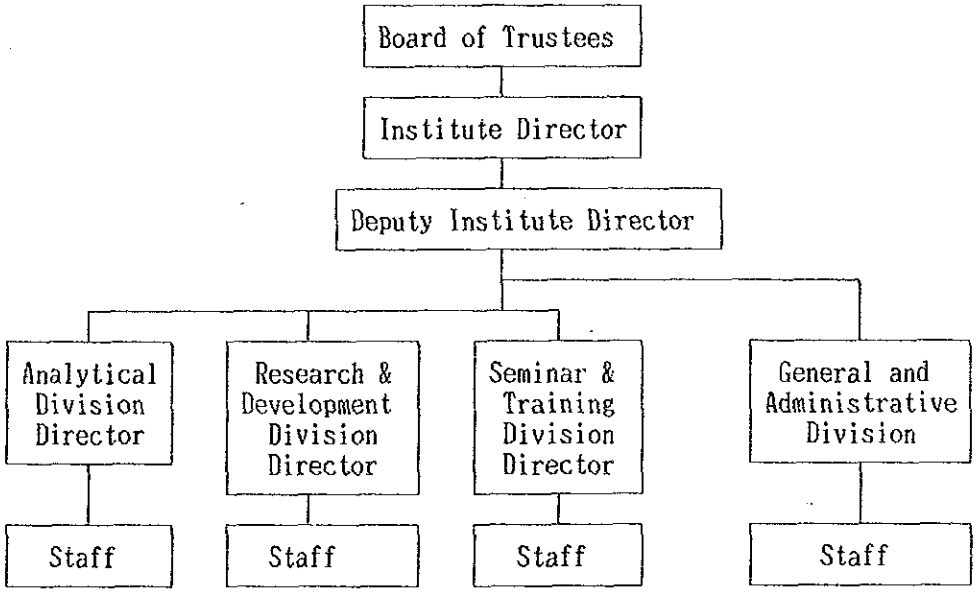
2. Determination of the chemical composition and nutritional values of foods, by means of various tests and analyses.

3. Supervision and evaluation of analysis and testing at labs operated by private companies.

4. Supply of testing services to other agencies and labs.

5. Evaluation of equipment and facilities for detailed analysis.

Figure A3-1-2 ORGANIZATION CHART OF PIPAC



Source:PIPAC

Table A3-1-32 TESTING EQUIPMENT OWNED BY PIPAC

Name	Q'ty	Year of purchase	Frequency of calibration
Atomic absorption spectrophotometer	1		
Gas chromatograph	3		
Mass spectrometer	1		
High performance liquid chromatograph	1		
Infrared spectrophotometer	2		
Nuclear magnetic resonance spectrometer	1		
Polarographic Analyzer	1		
Ultraviolet Spectrometer	1		
pH specific ion meter	1		

Source:PIPAC

Table A3-1-33 NUMBER OF TESTING SAMPLES TESTED BY PIPAC

	1986	1987	1988
Analisys	608	595	619

Source:PIPAC
Note: Testing other than PS certification testing are included in the figure in the table.

NFA is accredited by BPS in the area of foods, grains, and fruits as a testing laboratory under PS Certification Mark System.

During the past 3 years analysis has been mostly of grains. In 1986 there were more than 2,000 analyses, and in 1988 more than 1,000. (Refer to Table A3-1-34.)

Regarding analytic equipment for grains and fruits such as Balance, Moisture Meter, pH Meter, most of the equipment is for basic analysis. (Refer to Table A3-1-35.)

93.4% of the equipment was bought 5 or more years ago, and 78.7% was bought 10 or more years ago. The equipment thus is old and in need of replacement.

At present NFA is performing tests up to the limit of its capability, and NFA itself believes that it cannot do more than it is now doing. There are few instances of approving use of the PS Mark for foods, and these are not included in results of certification work performed in the last 3 years.

Analysis work capability is low because the available equipment is not advanced.

Operating costs in 1988 comprised 80,000 pesos for variable items and 1,557,984 pesos for fixed items.

(17) SGS Far East Ltd., Philippines (SGS)

The Societe Generale de Surveillance is an inspection company with 150 subsidiaries in 140 countries. The Philippines subsidiary began functioning in 1979. The head office is in Manila and branches are in Cebu, Batangas, Bacolod and Manila North Harbor.

The SGS organization is as follows:

1. Agricultural and fumigation division
2. Minerals and chemicals division
3. Special mineral services
4. Laboratory
5. Consumer products division

SGS undertakes inspection of agro-products, analysis of ores, weighing of consignment, non-destructive testing, etc. In addition to being accredited by BPS for chemicals, architectural materials, etc. as a testing laboratory under PS Certification Mark System, SGS has close relationships with ASTM, PSQC, PCCI, ECCP, PISA, UL and others. 7 personnels work on analytic lab out of the 181 employees.

Table A3-1-34 NUMBER OF TESTING SAMPLES TESTED BY NFA

	1986	1987	1988
Wheat Flour	416	90	45
Semolina Flour	13	2	1
Rice Flour	17	0	0
Indigenous Flour	0	19	19
Non-Grains	82	7	4
Milled Rice	462	217	525
Wheat Grains	9	2	0
Mongo	6	3	9
Brown Rice	286	11	30
Parboiled Brown Rice	0	0	23
Parboiled Milled Rice	0	0	23
White Corngrits	0	0	33
Palay (rice plant)	241	105	138
Corngrains	396	40	122
Soybean Grains	14	5	0
Soybean Meal	102	0	0
Corngrits	6	0	0
By-product	66	6	105
Parboiled Rice	0	2	0
Sorghum	4	0	0
Skimmilk	1	0	0
VMX	7	0	59

Source:NFA
Note: Testing other than PS certification testing are included in the figure in the table.

Table A3-1-35 TESTING EQUIPMENT OWNED BY NFA

Name	Q'ty	Year of purchase	Frequency of calibration
Aspirator	2	1980	
Weight per Liter Tester	1	1975	
Beam Balance	8	1977	
Top Loader Balance	1	1977	
Testing Husker	4	1975	
Testing Mill	1		
Testing Thickness Grader	3	1986	
Testing Rice Grader	2	1973	
Sample Mixer/Divider	1	1976	
Moisture Meter	5	1976	
Whiteness Tester	2	1976	
Rice Polisher	6	1975	
Platform Balance	2	1982	
Amylograph	1	1979	
Farinograph	1	1979	
Extensograph	1	1979	
Flour Mill	1	1979	
Gluten Washer	1	1977	
Blender	2	1978	
Muffle Furnace	2		
Hot Plate	1	1978	
Lab Grinder	1	1979	
Autoclave	1	1976	
Analytical Balance	4	1978	
Oven	5	1976	
Distilling Apparatus	1	1984	
pH Meter	2		
Fluorotoxin Meter	1	1978	
Crude Fiber Digesting Apparatus	1	1978	
Crude Fiber Apparatus	1	1978	
Crude Fat Extractor	1	1978	

Source:NFA

Most SGS equipment, is of relatively basic nature such as Balance, Colorimeter, Oven, and Furnace. SGS is a sponsor for supply of consumables and replacement parts for equipment owned by ITDI, and they are available relatively easily. (Refer to Table A3-1-36.)

41.3% of the equipment was bought 5 or more years ago, and no equipment is more than 10 years old. The equipment at SGS thus is relatively new.

SGS became accredited by BPS in 1988 and thus does not yet have a record of achievement in PS Mark Certification work, but is now expanding its facilities in order to take on a higher volume of work.

On the basis of a contract with Exxon Chemical, since June, 1988, calibration has been performed every 6 months for a prover tank and 15 meters. The calibration equipment owned by SGS is calibrated by NSTL and comprises a standard pipette (working standard class, 50L), a master meter, and a prover tank (working standard class, 200L).

There are 10 persons assigned to calibration work.

(18) Ostrea Mineral Laboratories (OSTREA)

OSTREA is a private inspection firm founded in 1976 which conducts analyses, research and development and has a testing staff of sixteen persons consisting of nine chemical-related, three metal-related and three others. The main effort of the testing operation is the analysis of gold ores filling the requests of firms and individuals, and conducts tests on about 10,000 samples in a busy month and an average of about 2,000 samples a month. OSTREA is an accredited testing laboratory of BPS with respect to analyses of gold and silver, analysis of coal, analysis of fertilizer, feed, and soil. The results of the tests of the past three years are shown in Table A3-1-37, indicating that very few tests are done other than analysis of gold ores.

The testing equipment owned by OSTREA comprises two sets of atomic absorption spectrophotometer, in addition to which there are many analytical equipment for analysis of gold, 31.7% of the equipment being purchased within 5 years, more are older than 10 years, thus relatively new. (Refer to Table A3-1-38.) There is almost no record of PS Mark license in the accredited test field and OSTERA does not contribute very much for the PS Certification Mark System at this stage.

Table A3-1-36 TESTING EQUIPMENT OWNED BY SGS

Name	Q'ty	Year of purchase	Frequency of calibration
Top Loading Balance	1	1987	
Analytical Balance	1	1987	
Colony Counter	1	1987	
Colorimeter	1	1987	
Hand Refractometer	1	1987	
Heating Mantle	3	1987	
Incubator	1	1987	
Kjeltec Digester	1	1987	
Kjeltec Distillation	1	1987	
Stereo Microscope	1	1987	
Compound Microscope	1	1987	
Oven	2	1987	
Cyclotec Mill	1	1987	
pH Meter	1	1986	
Kelvinator Refrigerator	1	1987	
Pressure Cooker	1	1987	
Spectronic 20	1	1987	
Water Bath	2	1987	
Flash Point Apparatus	1	1987	
Adiabatic Bomb Calorimeter	1	1981	
Ash Furnace	3	1981	
VCM Furnace	1	1981	
VCM Vertical Furnace	1	1983	
Analytical Balance	2	1981	
Mechanical Convection Oven	1		
Min-Free Space Oven for Coal	1	1983	
Dynaflow Fume Cupboard	1	1983	
Hotplate	1	1982	
Mechanical Balance	2	1981	
Differential Thermometer	3	1982	
Jaw Crusher	1	1982	
Pulveriser	1	1982	
Hammer Mill	1	1981	
Water Glass Still	1	1986	
Magnetic Stirer	1	1986	
Vacuum Dessicator with Motor	1	1984	
U-Tube Manometer	1	1984	

Source:SGS

Table A3-1-37 NUMBER OF TESTING SAMPLES TESTED BY OSTREA

	1986	1987	1988
Coal samples	60	44	8
Fertilizers	124	16	25
Feeds	1	1	7

Source:OSTREA
Note: Testing other than PS certification testing are included in the figure in the table.

Table A3-1-38 TESTING EQUIPMENT OWNED BY OSTREA

Name	Q'ty	Year of purchase	Frequency of calibration
Water Bath	1	1981	
Atomic Absorption Spectophotometer	1	1981	Quarterly
Solution Balance	1	1981	Quarterly
Nitrous Oxide Burner	1	1981	
Air Acetylene Burner	1	1981	
Bomb Calorimeter	1	1982	Annually
Vacuum Pump Filter System	1	1982	
Pneumotive Vacuum Pump	1	1982	
Deonizer	1	1983	
Mettler Analytical Balance	1	1983	Annually
Jaw Crusher	1	1983	
Platinum Crucible	2	1983	
Dial-O-Gram Balance	1	1984	
Recorder	1	1984	
Cupel Making Machine	1	1984	
Selenium Hollow Cathode Lamp	1	1984	
Mercury Hollow Cathode Lamp	1	1984	
Nebulizer for AAS	1	1984	
Carbon Rod Atomizer	1	1984	
pH Meter	2	1985	
Electro Cahn Balance	1	1985	
Roaster Machine	1	1985	
Moisture Determination Balance	1	1985	
Fabracation of LPG Fired Burner	1	1986	
Air Compressor	1	1987	
Set of Weight	1	1987	
Chemical Pump	1	1987	
Dry Chemical F.E. Map Refilling	1	1988	
Disc Pulverizer	1	1988	
Graphite Crucible	1	1988	
Multi-Tester	1	1988	
Magnetic Starter	1	1988	
Top Loading Sartorious Balance	1	1988	Annually
Atomic Absorption Spectophotometer	1	1988	
Cast Pulverizer Plate	4	1988	
Standard Nebulizer Assembly	1	1988	

Source:OSTREA

(19) CME Engineering and Consulting Services (CME)

CME is a private inspection company which conducts various analyses and is an accredited testing laboratory of BPS for analysis of feed, industrial wastes, water and food. The size of the staff is twelve persons, of which five persons are chemists. The record of tests during the past three years is 1,300 cases, a considerable record, including tests other than the PS Mark Certification tests. (Refer to Table A3-1-39.)

Furthermore, the testing equipment owned by CME are mainly basic equipment such as balances, PH meters, etc. and they are all equipment purchased within three years. (Refer to Table A3-1-40.) There is hardly any record which comes under the PS Certification Mark System in the field of tests CME was accredited, and there is little contribution to the PS Certification Mark System at this stage.

(20) University of San Carlos Laboratory (USCL)

University of San Carlos is a university located in Cebu with about 12,000 enrolled students on 3 campuses. USCL is the research institute for chemistry and biochemistry of the college of Science of the University of San Carlos, with five inspectors and is an accredited testing laboratory of BPS for chemical analysis under PS Certification Mark System. USCL is the only accredited testing laboratory outside of Metro Manila. This testing laboratory seems to be somewhat inefficient in testing because the laboratory is used for classroom work too. The main testing equipment owned by the testing laboratory of USCL are all old except for UV visible spectro-photometer and auto titrating apparatus, and many of them are basic. (Refer to Table A3-1-41.) The record of tests over the past three years are mainly analyses of various types but the number of cases is not large. (Refer to Table A3-1-42.)

Moreover, the operating budget for 1988 is as follows (unit: pesos):

Variable costs	
Materials	14,000
Utilities	
Water	6,000
Electricity	12,000
Fuel	5,000
Others	2,000

Table A3-1-39 NUMBER OF TESTING SAMPLES TESTED BY CME

	1986	1987	1988
Feed/Domestic and Industrial Waste, Water and Foods	500	500	1,500

Source:CME
Note: Testing other than PS certification testing are included in the figure in the table.

Table A3-1-40 TESTING EQUIPMENT OWNED BY CME

Name	Q'ty	Year of purchase	Frequency of calibration
Thermometer	1	1988	
Analytical Balance	1	1988	
Top Loading Balance	1	1986	Quarterly
Colorimeter	1	1986	Quarterly
pH Meter	4	1986	
Drying Oven	2	1986	
Mercury Analyser	1	1988	Annually
Spectrophotometer	2	1988	
Wate Bath	1	1988	

Source:CME

Table A3-1-41 TESTING EQUIPMENT OWNED BY USCL

Name	Q'ty	Year of purchase	Frequency of calibration
pH Meter	1		
Analytical Balance	1		
UV Visible Spectrophotometer	1		
Auto Titrating Apparatus	1		
Dry Oven	1		
Refrigerator	1		
Refractometer	1		

Source:USCL

Table A3-1-42 NUMBER OF TESTING SAMPLES TESTED BY USCL

	1986	1987	1988
Molasses	2	2	2
Raw Sugar	2	2	3
Monoammonuim Phsphate	3	2	5
G.I. Sheet	3	1	1
Sulferic Acid	-	-	1
Toilet Soap	2	-	-
Drinking Water	38	39	58
Marine Water	14	16	17
Industrial Water and wastewater	4	23	22
Reflectorized Paint	1	1	-
Sweetened Banana Chips	1	1	1
Coal	1	1	1

Source : USCL
Note: Testing other than PS certification testing are included in the figure in the table.

Fixed costs

Salaries and wages	127,600
Administrative expenses	5,000
Repairs	2,640
SSS premium	4,200
Pension	750
Registration fees	500
Depreciation	10,000

The problems at USCL in conducting tests is that manual analysis are the mainstream because instrumental analysis is not possible on account of the testing equipment owned, thus the accuracy of analysis is poor and also the time required for the analysis is excessive. Also, the analysis is limited to inorganics. Although there are many food processing industries in Cebu, the demand for testing and analysis this region cannot be met because the equipment of USCL is poor and the factories of this region send their test samples to Manila for analysis.

(21) Philippine Textile Research Institute (PTRI)

PTRI was founded in 1967 as a division of the then National Science Development Board (NSDB) and was transferred to the Department of Trade and Industry in 1981 by Executive Order No.700. Subsequently in 1987, it was transferred to the Department of Science and Technology (DOST) by Executive Order No.128.

The objectives of PTRI are as follows:

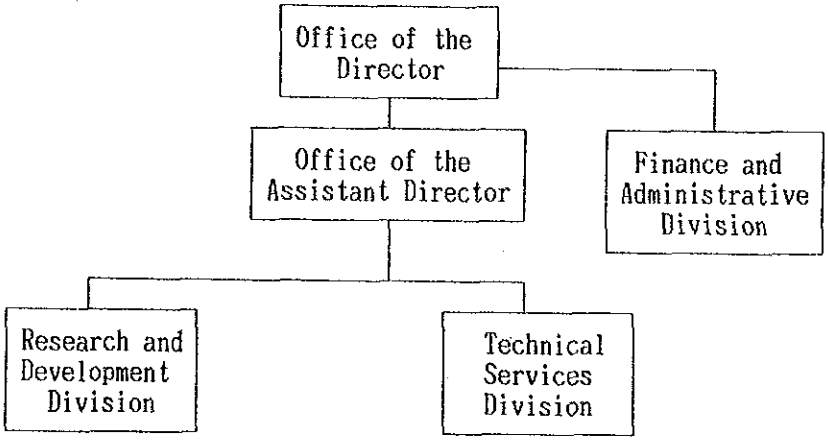
1. to conduct research and development
2. to extend the results of the research
3. to conduct technical assistance and training

PTRI consists of three divisions, namely, the Research and Development Division in charge of testing and inspection, the Technical Services Division in charge of processing technology, and the Finance and Administrative Division in charge of general affairs. The organization is depicted in Figure A3-1-3.

PTRI is an accredited testing laboratory of BPS for fibers and woven fabric and is also a public testing laboratory of the International Wool Secretariat (IWS). PTRI has 15 testing personnel.

The testing and inspection equipment owned by PTRI cover all tests from fiber to woven fabric such as fade-o-meter, fabric tearing tester, balance, and the utilization rate is

Figure A3-1-3 ORGANIZATION CHART OF PTRI



Source:PTRI

good. (Refer to Table A3-1-43.) The equipment, however, are old and need to be replaced. Furthermore, they have only simple testing equipment for chemical analysis such as spectrophotometer and the tests performed are only analyses of composition and tests for acetaldehyde content.

With respect to processing technology equipment, spinning, weaving, dyeing and treatments are organized but many are old. The tests conducted by using these equipment are performed according to patterns and the testing capacity is high.

The performance of tests by PTRI during the past three years, including tests other than PS Certification Mark tests, are voluminous. (Refer to Table A3-1-44).

The operating expenses of PTRI in 1988 are as follows:

Variable costs	
Materials	180,000
Utilities	144,000
Fixed costs	
Salaries and wages	793,000
Administrative expenses	144,000
Repairs/maintenance	120,000
Insurance	30,000

Problems in testing by PTRI are listed as follows:

1. Many of the testing equipment owned are old and some of them are out of order.
2. Replacement and modernization of the equipment are difficult because of budgetary limitation.
3. There is no equipment to match the modern methods of tests.
4. Repair parts are difficult to obtain.
5. Testing technicians are short in quantity and quality.

Table A3-1-43 TESTING EQUIPMENT OWNED BY PTRI

Name	Q'ty	Year of purchase	Frequency of calibration
Fabric Streak Analyzer	1		
Fade-O-Meter	2		
Random Tumble Pilling Tester	1		
Mullen Burst Tester	1		
Electrical Automatic Wrap Reel with Fractioning Device	1		
Fabric Tearing Tester	1		
Washing Machine	1		
Fabric-Abrasion Flex CSI Stoll	1		
Heavy Duty Dryer	1		
Crease/Wrinkle Recovery Tester	1		
Crimp Tester	1		
Stiffness Tester	1		
Air Permeability Tester	1		
IIC Fineness Maturity Tester	1		
Fibrogrsph	2		
Flammability Tester	1		
Instron	2		
Yarn Evenness Tester Integrator Spectrograph	1		
Yarn Strength Automatic Tester	1		
Projection Microscope	1		
Zetopan Microscope	1		
Mettlen Balance	2		
Santorious Balance	1		
Cool Ace	1		
Memmert Oven	2		
Spectrophotometer	1		
Grating Infrared Spectrophotometer	1		
Crockmeter Tester	1		
Perspirometer Tester	2		
Launderometer	1		
Furnace	1		
Corning Hot Plate	1		
Water Bath	1		
Wrist Action Shaker	1		
Wringer	1		
Refrigerator	1		
Autoclave	1		
Vacuum Pump	1		
Vari-heat Extraction Apparatus	1		

Source:PTRI

Table A3-1-44 NUMBER OF TESTING SAMPLES TESTED BY PTRI

	1986	1987	1988
Fibers	1,275	1,338	1,210
Yarns	930	844	862
Fabrics	1,512	1,871	2,517
Chemicals/Dyestuffs	31	34	38
Upholstery Materials	416	386	302
Carpets	326	183	212
Others	853	894	897

Source:PTRI
Note: Testing other than PS certification testing are included in the figure in the table.

(22) Other testing and inspection laboratories

A number of the existing testing organizations including those accredited by BPS undertake the tests for R & D commissioned by manufacturers. Some of these organizations are summarized below.

a) National Engineering Center (NEC)

NEC was established in the Engineering Department of the University of the Philippines in 1978. It is an integrated research and development institute consisting of four centers; Training Center for Applied Geodesy and Photogrammetry (TCAGC), National Hydraulics Research Center (NHRC), Building Research Service Center (BRC) and Transport Training Center (TTC), and they engage about 40 persons of engineers in total.

NEC undertakes contract tests of steel bar for reinforced concrete. The number of contracted tests has currently been increasing, reflecting the current increasing trend of building and construction.

It has two units of universal testing machines which are the core of testing equipment installed there, but all of the equipment owned by NEC including the above machines are old and inadequate for conducting a wide scope of tests, except tensile, bending and compression tests of steel bar and compression test of concrete.

b) Food Development Center (FDC)

FDC was originally established as the Development Department of the Food Terminal Incorporated (FTI), and expanded its activity to conduct tests of food and development of food processing technologies and food products. In 1985, it was transferred to the National Food Authority (NFA) to undertake a wide scope of technical assistance to the food industry for the promotion of export of processed food. In 1988, FDC started a project to build a new laboratory, including a building and equipment, under the grant aid provided by the Japanese Government, to expand and upgrade its activity, which was completed in March, 1989.

The main activity of FDC is as follows:

1. Quality evaluation of food for exports
2. Quality certification of food shipped for exports
3. Development of food products and food processing technologies
4. Development of appropriate technology on quality control
5. Analysis of chemicals and microbiologies in food

6. Training of persons in charge of food processing, including technical extension services to factories
7. Seminar on food technology and quality control of food processing

The number of staff of FDC, at present, totals 56 persons against 70 persons of the planned staff. In 1988, the operating expenses of the organization was 3.4 million pesos, of which 1.3 million pesos was covered by the revenue of tests and other services.

Most of the test equipment which FDC possesses are modern equipment newly acquired, including high performance liquid chromatograph, single beam spectrophotometer, etc., and their technical capability is situated in a comparatively high level, so that they should be capable of conducting the tests as required by manufacturers and exporters of foodstuff. (Refer to Table A3-1-45.) Nevertheless, the following points may be problem areas for them:

1. Revenue from test fees and training fees is still inadequate to cover the operating expenses.

2. As no specialized engineers are engaged in the tests and inspection of foodstuff, they are less capable of examining measures for solving identified technical problems.

3. The number of staff who are qualified as trainers is very limited.

4. With respect to the products produced in the regions, tests are conducted on samples delivered from the regions. Some tests made particularly on bacteria indicate unreliable results because of change in quality which often occurs during transportation.

c) Labtest Philippines, Inc. (LABTEST)

Labtest Philippines, Inc. (LABTEST) is a subsidiary corporation in the Philippines of Labtest International Ltd. which is a private-owned international testing company based in Hong Kong. The facilities are still under construction, and the operation has been started with partially completed facilities to conduct chemical-related tests under contract. The completion of the facilities is scheduled to be in the latter part of 1989. Hence it is too early to evaluate the testing capability. Nevertheless, as the laboratory has wide spaces of testing rooms and is planned to be equipped with new equipment, it is expected that LABTEST would have adequate testing capability.

Table A3-1-45 TESTING EQUIPMENT OWNED BY FDC

Name	Q'ty	Year of purchase	Frequency of calibration
Single Beam Spectrophotometer			
TLC Densitometer Scanner			
Extraction Assembly			
Top Loading Balance			
Shaker-Water Bath Incubator			
High Performance Liquid Chromatograph			
Oven			
Maffle Furnace			
Water Bath			
Analytical Balance			
Incubator			
Biological Microscope			
Electric Top Loading Digital Balance			
Internal Pressure Testing Apparatus for Glass Container			
Drop Test Apparatus for Shipping Container			
Torque Meter			
Tensile Testing Meter			

Source:FDC

d) Forest Products Research and Development Institute (FPRDI)

FPRDI was established as one of the divisions in the Bureau of Forest of the Department of Agriculture and Natural Resources in 1954, and transferred to the University of the Philippines. Then, after several reorganizations, it belongs to DOST at present.

The main functionS of FPRDI are as follows:

1. Basic and applied R & D relating to forest products
2. Publication of the fruits of R & D
3. Technical guidance and training

All of the equipment which FPRDI possesses, such as tensile tester, tear tester, etc. are old. (Refer to Table A3-1-46.)

As many of those old equipment have been used without calibration, FPRDI's testing capability is low, so that they can be limited to conducting a part of certification test for veneer and plywood, but unable to perform research and development required by manufacturers. Nevertheless, as FPRDI is the only organization which can conduct such tests even in an incomplete manner, it is advised to enhance their testing capability so that it can be accredited as the authorized testing organization to conduct tests for PS Mark license with regard to veneer and plywood which are subject to mandatory certification.

e) Industrial Inspection (Int'l) Inc. (IIII)

IIII is a private testing company specializing mainly in the metal-related tests, undertaking mainly non-destructive testing of construction materials. The number of staff totals about 60 persons.

IIII possesses about 20 testing equipment including ultrasonic flaw detector, magnaflux flaw detector, and x-ray tester. In addition, it has facilities for soil analysis, but these facilities are out-of-date ones. IIII does not undertake any tests to be conducted in the course of manufacturing products; what is used to be undertaken is such as the test to be made for checking weld of reinforcing rod.

f) Philippine Trade Training Center (PTTC)

PTTC was established under the grant aid of the Japanese Government in 1988, belonging to the International Trade Group of the Department of Trade and Industry. The objective of this institution is to upgrade a level of business and technical knowledge of

Table A3-1-46 TESTING EQUIPMENT OWNED BY FPRDI

Name	Q'ty	Year of purchase	Frequency of calibration
Tensile Tester	1		
Folding Endurance Tester	1		
Concora	1		
Tear Tester	1		
Porosity/smoothness Tester	1		
High-pressure Liquid Chromatograph	1		
Gas Liquid Chromatograph	1		
Infra-red Spectrophotometer	1		
Universal Testing Machine	1		
Fade-O-Meter	1		
Abrasion Tester	1		
Water Bath	1		
Analytical Balance	1		
Riehle Shear Testing Machine	1		
Muffle Furnace	1		
Humidity Controlled Cabinet	1		
Universal Testing Machine	2		
Toughness Testing Machine	1		
Hydraulic Load Cell	1		

Source:FPRDI

exporters in order to promote the export of the Philippine products.

The main activity of PTTC is as follows:

1. Training on trade business practice and testing technology
2. Test and inspection of products for exports
3. Training on exhibition practice

The training on testing technology is conducted individually in the food testing laboratory, furniture testing laboratory and garment testing laboratory which are the subdivisions of PTTC. It aims to train engineers of public testing organizations and engineers engaged in test and inspection in private factories. The facilities of PTTC are used only for training in line with the objective, so they reject any tests for manufacturers or any other outside organizations. PTTC seldom undertakes tests as an exceptional case if such tests are requested by the persons who have completed the PTTC's training course. In such an event, however, PTTC provides only test data without certification.

The main testing equipment which PTTC possesses are summarized below:

1. Food Testing Laboratory
   - Water activity test apparatus
   - pH meter
   - Moisture meter
   - Recording thermometer
   - Viscometer
   - Electronic top loading digital balance

2. Furniture Testing Laboratory
   - Universal testing machine
   - Bending tester
   - Thermometer
   - Wood moisture meter
   - Salt spray meter
   - Impact tester
   - Digital multimeter

3. Garment Testing Laboratory
   - Abrasion tester
   - Tearing strength tester
   - Pilling machine
   - Yarn twist tester
   - UV spectrophotometer
   - Infrafed spectrophotometer
   - Gas chromatograph
   - Water bath

The programs prepared by PTTC for the training in 1989 and fee rates offered are as follows:

1. Training on the tests of textile and garment

   - From fibers to fabrics and selection of materials for garment quality
     (3 courses each for 5 days; Fee: 600 pesos per person)

   - Quality control techniques and their application to garment testing and inspection
     (3 courses each for 3 days; Fee: 600 pesos per person)

   - Physical testing and evaluation of fabrics and garments
     (2 courses each for 5 days; Fee: 900 pesos per person)

   - Chemical testing and evaluation of fabrics and garments
     (2 courses each for 5 days; Fee: 1,000 pesos per person)

   - Fabric and garment inspection
     (2 courses each for 5 days; Fee: 1,000 pesos per person)

2. Training on the tests of furniture

   - Testing and quality evaluation of furniture
     (5 courses each for 16 days; Fee: 850 pesos per person)

3. Training on the tests of food

   - Quality inspection and testing of frozen fish and other marine products
     (1 course for 5 days; Fee: 850 pesos per person)

   - Quality inspection and testing of fruits and vegetables preserved in sugar

(2 courses each for 5 days; Fee: 850 pesos per person)

- Quality control of food processing
  (1 course as provisional; Fee: 500 pesos per person)

- Quality inspection and testing of various shrimps products
  (1 course for 12 days as provisional; Fee: 2,000 pesos per person)

- Quality control on food processing
  (1 course as provisional; Fee: 2,000 pesos per person)

- Packing and labeling
  (1 course as provisional; Fee: 500 pesos per person)

By the request of clients, seminars are held at their factories. In such events, the expenses actually incurred are charged to the clients.

PTTC is not a testing institution in strict definition, but it contributes to the upgrading of testing capability of manufacturers through training activity. Nevertheless, it is observed that they suffer the following problems:

1. The engineers stationed in the regions have no chance to utilize the testing techniques trained in PTTC, because of no testing facilities available in the regions.

2. There are the cases where the exported goods are rejected as the result of test made in the importing countries for the factors which have not been identified by the test conducted in the Philippines, such as toxic substance, because of no facilities available for analyzing such factors.

3. Only a limited scope of standards and relevant information is available in BPS. Hence, it is difficult to obtain the standards to be used for the tests.

4. There is only few testing facilities available in the regions. It is necessary to establish testing facilities in the regions in meeting the requirements of regional industry which specializes in some fields.

5. Some Japanese experts engaged in such technical assistance have observation on the Philippine National Standards that:

   a) There seems to be some problems on the procedure for establishing the PNS in view of the fact that the standards applied by only one company has been adopted as PNS.

   b) The PNS standards relating to agricultural products define only sizes, so the definition is inadequate in substance.

   c) Consumers have little knowledge or understanding of the PNS.

Supplementary Information 1

Testing equipment necessary to perform the tests of the standards, aiming the PNS Standards, which are mandatory are listed below for each standard.

LIST OF TESTING APPARATUS FOR CONDUCTING TEST ITEMS SPECIFIED IN PNS

(1) Electrical

Wiring Device

PNS 02 Tubular Fluorescent Lamps
- Demension measuring apparatus
- Torsion testing apparatus
- Measuring apparatus for voltage, current and wattage
- Electrical and luminous Characteristics testing apparatus

PNS 12 Ballasts for Tubular Fluorescent Lamp
- Moisture Resistance testing apparatus
- Insulation resistance testing apparatus
- Dielectric strength testing apparatus
- Leakage current testing apparatus
- Inter-turn insulation testing apparatus
- Lamp arc current measuring apparatus
- Thermal endurance of windings testing apparatus
- Winding resistance testing apparatus
- Voltage across the capacitor testing apparatus
- Measuring apparatus for current and wattage
- Hood for heating test
- Thermocouple type thermal recorder
- Reference Lamp
- Rectifier
- Test corner
- Mechanical strength testing apparatus
- Dimension of screw measuring apparatus
- Dimension measuring apparatus
- Heat resistance testing apparatus
- Open voltage measuring apparatus
- Pre-heat current measuring apparatus
- Power factor measuring apparatus
- Wave form analyser
- Impedance measuring apparatus

PNS 13 Electrical Cartridge Fuse
- Temperature and humidity chamber
- Dimension measuring apparatus
- Temperature rise testing apparatus
- Overload blowing testing apparatus
- Short circuit testing apparatus

PNS 38 Incandescent Lamps
- Dimension measuring apparatus
- Insulation resistance testing apparatus
- Wattage measuring apparatus
- Life performance testing apparatus
- Temperature rise testing apparatus
- Life test apparatus

PNS 42 Lampholders and Starterholders for Fluorescent Lamps
- Contact pressure testing apparatus
- Dimension measuring apparatus
- Electric shock testing apparatus
- Pull test apparatus
- Moisture treatment testing apparatus
- Dust test apparatus
- Insulation resistance testing apparatus
- Electrical strength testing apparatus
- Performance test apparatus
- Endurance test apparatus
- Mechanical strength testing apparatus
- Pressure test apparatus
- Rotary test apparatus
- Screw dimension measuring apparatus
- Corrosion test apparatus
- Brittleness test apparatus
- Heat resistance testing apparatus
- Fire resistance testing apparatus
- Tracking resistance testing apparatus

PNS 45 Starters for Tubular Fluorescent Lamps
- Temperature and Humidity chamber
- Insulation resistance testing apparatus
- Electrical strength testing apparatus
- Dimension measuring apparatus
- Torque measuring apparatus
- Mechanical strength testing apparatus
- Heat resistance testing apparatus
- Starting test apparatus
- Endurance test apparatus
- Deactivated lamp test apparatus

PNS 74 Fluorescent Lighting Fixtures
- Dimension measuring apparatus
- Electric shock testing apparatus
- Strain relief test apparatus
- Temperature rise testing apparatus
- Grounding continuity testing apparatus
- Glass support test apparatus
- Flame test apparatus
- Submersible cycling test apparatus
- Oil immersion test apparatus
- Mechanical abuse test apparatus
- Accelerated aging test apparatus
- Water spray test apparatus

PNS 80 Edison Screw Lampholders
- Torque measuring apparatus
- Dimension measuring apparatus
- Electric shock testing apparatus
- Temperature cycle testing apparatus
- Strain and relief test apparatus
- Switch test apparatus
- Temperature and humidity chamber
- Insulation resistance testing apparatus
- Electrical strength test apparatus
- Connection strength testing apparatus
- Impact test apparatus
- Tumbling barrel
- Pressure test apparatus
- Screw connection testing apparatus
- Normal operation test apparatus
- Temperature test apparatus
- Temperature rise testing apparatus
- Heat resistance testing apparatus
- Arc resistance testing apparatus
- Season cracking resistance test apparatus
- Rusting resistance test apparatus

PNS 105 Ballasts for High Pressure Mercury Lamp
- Dimension measuring apparatus
- Temperature and humidity chamber
- Drip-proof test apparatus
- Impact test apparatus
- Temperature rise measuring apparatus
- Thermal endurance test apparatus
- Watt loss measuring apparatus
- Measuring apparatus for watt and current
- Short circuit current measuring apparatus
- Open voltage measuring apparatus
- Wave form analyser
- Magnetic influence testing apparatus

PNS 135 Electronic Ballasts
- Dimension measuring apparatus
- Electrical shock testing apparatus
- Temperature and humidity chamber
- Dielectric strength testing apparatus
- Abnormal condition test apparatus
- Short-circuit and open-circuit test apparatus
- Copper alloy content analyzing apparatus
- Screw connection testing apparatus
- Heat resistance test apparatus
- Corrosion resistance test apparatus
- Starting condition testing apparatus
- Operating condition testing apparatus
- Power factor measuring apparatus
- Supply current measuring apparatus
- Maximum current measuring apparatus
- Wave form analyser
- Magnetic screening test apparatus
- Impedance measuring apparatus
- Transient voltage measuring apparatus
- Endurance test apparatus

Material

PNS 14 uPVC Electrical Conduit
- Dimension measuring apparatus
- Softening temperature measuring apparatus
- Heat reversion testing appratus
- Water absorption testing apparatus
- Tensile strength test apparatus
- Elongation testing apparatus
- Acetone resistance testing apparatus
- Burning resistance testing apparatus
- Impact test apparatus
- Flattening test apparatus
- Insulation resistance testing apparatus
- Dielectric strength testing apparatus

PNS 79 PVC Tapes for Electrical Insulation
- Peeling-off test apparatus
- Dimension measuring apparatus
- Adhesive strength testing apparatus
- Tension and elongation testing apparatus
- Volume resistivity testing apparatus
- High Insulation resistance test apparatus
- Withstand voltage testing apparatus
- Heat test apparatus
- Weatherability test apparatus

Wire and Cable

PNS 35 Thermoplastic Insulated Electric Wires and Cables
- Density measuring apparatus
- Coefficient of linear expansion measuring apparatus
- Modulus of elasticity measuring apparatus
- Conductivity measuring apparatus
- Volume resistivity measuring apparatus
- Temperature coefficient of resistance apparatus
- Dimension measuring apparatus
- Weight measuring apparatus
- Electric resistance measuring apparatus
- Elongation measuring apparatus
- Insulation thickness measuring apparatus
- Dielectric test apparatus
- Insulation testing apparatus
- Electrical weight resistivity measuring apparatus
- Leakage resistance testing apparatus
- Flame retardant testing apparatus
- Water absorption testing apparatus
- Heat shock testing apparatus
- Deformation test apparatus
- Oil resistance testing apparatus
- Gasoline resistance testing apparatus
- Acid resistance testing apparatus
- Alkaly resistance testing apparatus

PNS 40 Copper Redraw Rod for Electrical Purpose
- Tensile testing apparatus
- Volume resistivity measuring apparatus
- Weight resistivity measuring apparatus
- Dimension measuring apparatus

PNS 43 EC Aluminum Redraw Rod for Electrical Purpose
- Chemical analyzer
- Tensile strength testing apparatus
- Electrical resistivity measuring apparatus
- Dimension measuring apparatus

PNS 109 Polyvinyl Formal Enameled Copper Wire
- Dimension measuring apparatus
- Conductor resistance measuring apparatus
- Pinhole test apparatus
- Flexibility test apparatus
- Adhesion test apparatus
- Abrasion resistance test apparatus
- Dielectric breakdown voltage test apparatus
- Deterioration resistance test apparatus
- Softening resistance test apparatus
- Solvent resistance test apparatus
- Acid resistance test apparatus
- Alkaly resistance test apparatus
- Oil resistance test apparatus
- Mixed solvent resistance test apparatus

PNS 110 Polyester Amideimide Enameled Copper Wire
- Dimension measuring apparatus
- Conductor resistance measuring apparatus
- Pinhole test apparatus
- Flexibility test apparatus
- Adhesion test apparatus
- Abrasion resistance test apparatus
- Dielectric breakdown voltage test apparatus
- Deterioration resistance test apparatus
- Softening resistance test apparatus
- Heat shock resistance test apparatus
- Solvent resistance test apparatus
- Acid resistance test apparatus
- Alkaly resistance test apparatus

PNS 111 Oreo-Resinous Enameled Copper Wire
- Dimension measuring apparatus
- Conductor resistance measuring apparatus
- Pinhole test apparatus
- Flexibility test apparatus
- Dielectric breakdown voltage test apparatus
- Deterioration resistance test apparatus
- Softening resistance test apparatus
- Acid resistance test apparatus
- Alkaly resistance test apparatus
- Oil resistance test apparatus
- Compound resistance apparatus

Motor Appliances

PNS 134 AC Electrical Fans
- Voltage variated condition test apparatus
- Starting test apparatus
- Power consumption measuring apparatus
- Temperature rise testing apparatus
- Insulation resistance testing apparatus
- Dielectric strength testing apparatus
- Leakage current measuring apparatus
- Endurance test apparatus
- Dimension measuring apparatus
- Stability test apparatus

Lighting Appliances

PNS 189 Lihgting Sets Using Miniature and Sub-Miniature Lamps for Decorative Purposes
- Heat resistance testing apparatus
- Measuring apparatus for voltage,current and wattage
- Endurance test apparatus
- Twist test apparatus
- Dimension measuring apparatus
- Pull test apparatus
- Dielectric strength testing apparatus
- Insulation resistance testing apparatus
- Temperature rise measuring apparatus

(2) Mechanical

LPG

PNS 03 Steel Cylinders for LPG
- Chemical composition analysing apparatus
- Tension test apparatus
- Bend test apparatus
- Wall thickness measuring apparatus
- Heat treatment testing apparatus
- Hydrostatic test apparatus
- Leakage test apparatus
- Tensile test apparatus
- Weld test apparatus
- Bursting test apparatus
- Radiographic inspection apparatus

PNS 04 Automotive LPG Steel Cylinders for Use in Motor Vehicles
- Chemical composition analysing apparatus
- Tension test apparatus
- Bend test apparatus
- Wall thickness measuring apparatus
- Heat treatment testing apparatus
- Hydrostatic test apparatus
- Leakage test apparatus
- Tensile test apparatus
- Weld test apparatus
- Bursting test apparatus
- Radiographic inspection apparatus

PNS 05 Use of LPG System in Internal Combustion Engine
The cylinder shall be designed and constructed in accordance with PNS 04:1983.

PNS 41 Requalification of LPG Cylinders
- Hydrostatic test apparatus
- Air pressure test apparatus
- Water bath

PNS 100 LPG Stove for Household Use
- Material test apparatus-cycle counter
- Swelling test apparatus
- Mechanical strength test apparatus
- Gas soundness test apparatus
- Heat resistance testing apparatus
- Inclining test apparatus
- Temperature rise testing apparatus
- Thermal efficiency testing apparatus

Automotive

PNS 06 Automotive Lead-Acid Storage Batteries
- Impact resistance testing apparatus
- Electrical breakdown testing apparatus
- Acid resistance testing apparatus
- Bulge test apparatus
- Vibration test apparatus
- Charge test apparatus
- Discharge test apparatus

PNS 25 Pneumatic Tires
- Dimension measuring apparatus
- Bead unseating test apparatus
- Strength test apparatus
- Endurance test apparatus
- High speed performance test apparatus

PNS 34 Rubber Inner Tube for Pneumatic Tires
- Thickness measuring apparatus
- Tensile strength testing apparatus
- Elongation test apparatus
- Tesile strength of splice testing apparatus
- Aging test apparatus

PNS 130 Safety Glass for Automotive Application
- Dimension measuring apparatus
- Optical deviation and optical distortion testing apparatus
- Visible light transmission testing apparatus
- Humidity test apparatus
- Boil test apparatus
- Dart test apparatus
- Head-form impact resistance testing apparatus
- Ball drop test apparatus
- Uniformity test apparatus

PNS/DOT 3,4,5 Motor Vehicles Brake Fluid
- Equilibrium reflex boiling point measuring apparatus
- pH value measuring apparatus
- Corrosion test apparatus
- Evaporation test apparatus
- Oxidation resistance testing apparatus
- SBR cap measuring apparatus

Cement

PNS 07 Portland Cement
- Chemical composition analysing apparatus
- Alkali Measuring apparatus
- Test piece preparation apparatus
- Air content of mortor measuring apparatus
- Expansion and contraction measuring apparatus
- Turbidimeter
- Gillmore test apparatus
- Vicat test apparatus
- Compressive strength test apparatus
- Heat of hydration measuring apparatus

PNS 16 Concrete Hollow Blocks, Typr I
- Dimension measuring apparatus
- Compressive strength testing apparatus
- Moisture content testing apparatus

PNS 63 Pozzolan Cement
- Chemical composition analysing apparatus
- Fineness testing apparatus
- Expansion and contraction measuring apparatus
- Vicat test apparatus
- Air content of mortor measuring apparatus
- Compressive strength test apparatus
- Heat of hydration measuring apparatus
- Mortor expansion measuring apparatu
- Drying shrinkage measuring apparatus
- Pozzolanic activity test apparatus

Metals

PNS 26 Black and Hot-Dipped Zinc-coated Longitudinally Welded Steel Pipes for Ordinary Uses
- Dimension measuring apparatus
- Mass measuring apparatus
- Mass of Zinc coating measuring apparatus
- Hydraulic test apparatus
- Bending test apparatus
- Flattening test apparatus

PNS 49 Steel Bars for Concrete Reinforcement
- Chemical composition analysing apparatus
- Tensile strength testing apparatus
- Bending test apparatus
- Rebend testing apparatus
- Dimension measuring apparatus
- Mass measuring apparatus

PNS 67 Galvanized Steel Sheets and Coils
- Mass of Zinc coating measuring apparatus
- Dimension measuring apparatus
- Bending test appratus

PNS 77 Carbon Steel Wire Rods
Chemical composition analysing apparatus
Dimension measuring apparatus

PNS 136 Steel Wire Nails
Tensile strength testing apparatus

Others
PNS 55 High Density PE Pipes for Water Supply
Specific gravity measuring apparatus
Melt flow index measuring apparatus
Carbon black content measuring apparatus
Anti-oxidant measuring apparatus
Break strength testing apparatus
Elongation test apparatus
Dimension measuring apparatus
Burst pressure testing apparatus
Sustained pressure testing apparatus
Environmental stress cracking test apparatus

PNS 99 Pressurized Kerosene Stoves
Dimension measuring apparatus
Tilt test apparatus
Melting point measuring apparatus
Thermal efficiency testing apparatus
Temperature measuring apparatus
Maximum working pressure test apparatus
Safety pressure test apparatus
Bursting pressure test apparatus

PNS 137 Packaging and Labeling Safety Requirements for Toys
Dimension measuring apparatus

PNS 173 Dimensions and Tolerance for Sawn Timber
Dimension measuring apparatus
Moisture content measuring apparatus

PNS 194 Sawn Timber
Dimension measuring apparatus
Refer to ISO 3132,3347,3785,4470

PNS 196 Plywood
Dimension measuring apparatus
Bonding test apparatus
Moisture content measuring apparatus

(3) Chemical

Gas

PNS 103 Medical Grade Oxygen in Cylinders
- Purity measuring apparatus
- Impurities measuring apparatus
- Water content measuring apparatus

Consumer Products

PNS 09 Safety Matches for Commercial Purposes
- Dimension measuring apparatus
- Transverse breaking strength testing apparatus
- Damp proofness testing apparatus
- Ignition test apparatus
- Ignition under impact testing apparatus
- Adhesion testing apparatus

PNS 15 Portable Fire Extinguishers
- Pressure retention testing apparatus
- Leakage test apparatus
- Weight measuring apparatus
- Halon analysing apparatus
- Chemical composition analysing apparatus
- Halogenated hydrocarbon purity measuring apparatus
- Water content measuring apparatus
- Weld test apparatus
- Burst pressure testing apparatus
- Temperature chamber
- Electrical conductivity test apparatus
- Impact test apparatus
- Compaction test apparatus
- Minimum discharge testing apparatus
- Retention of charge measuring apparatus
- Operation duration measuring apparatus
- Drop test apparatus
- Non-destructive test apparatus
- Sierve analysis apparatus
- Insulation resistance testing apparatus
- Impurities measuring apparatus
- Mechanical strength testing apparatus
- Bursting disc operation apparatus
- Pressure test apparatus
- Thread measuring apparatus
- Material analysis apparatus
- Tensile strength testing apparatus
- Impact test apparatus
- Hardness testing apparatus
- Working pressure testing apparatus
- Electrical strength testing apparatus

PNS 27 Classification, Fire Testing and Rating of Portable Fire Extinguishers

- Temperature Chamber
- Dimension measuring apparatus
- Moisture content measuring apparatus
- Extinguishment test apparatus
- Distillation test apparatus
- Electrical conductivity test apparatus
- Fire point testing apparatus
- Weight measuring apparatus
- Moisture content measuring apparatus
- Melting appratus

PNS 68 Fire Hoses

- Dimension measuring apparatus
- Adhesive strength test apparatus
- Tensile strength testing apparatus
- Oil bath
- Elongation test apparatus
- Accelerated aging test apparatus
- Pressure test apparatus
- Burst test apparaus
- Kink test apparatus
- Twist test apparatus
- Warp test apparatus
- Rise test apparatus

ANNEX 4

THE QUALITY CONTROL PROMOTION ORGANIZATIONS, AND THE PRESENT STATE OF THEIR ACTIVITIES

ANNEX 4: THE QUALITY CONTROL PROMOTION ORGANIZATIONS AND THE PRESENT STATE OF THEIR ACTIVITIES

(1) PHILSA

1) Outline

From the necessity to establish standards for the products of the regions, PHILSA was organized to respond to the consumption by the public. A strong necessity had been recognized since a relatively early date after World War II. That is, the products of the regions were not able to compete against the imported good that flooded the market at that time.

The movement for improvement of the quality of the required products was promoted as a nationalization movement to strengthen the National Industrial Standardization Promotion Program supported by the strong protectionistic policies and campaigns of NEPA, Bureau of Commerce and PCI.

With the support of PCI, leading the group, CCP and NIST, PHILSA was officially organized on June 22, 1955 and was registered as a non-joint stock corporate person on June 27 of the same year.

With the invitation of ICA and the supports of NEC, a survey team of PHILSA was sent to U.S.A. and Europe in October, 1957 to survey and inspect the state of promotion of standardization.

In 1963, PHILSA received financial aid from the National Science Development Bureau to carry out Project 280 (establishment of standards for the Philippine products). The first was in 1963 in the amount of 17,000 pesos per year authorized as of April 29. From the following year, 21,000 pesos were paid each year for five consecutive years. The aid has been continued subsequently and the amount of aid is reviewed every five years. To give a recent example, 153,000 pesos were received in the half year period from January to June, 1985.

Corresponding to the standardization, memoranda of agreements were signed for inter-organizational cooperation and joint development among PHILSA, the Bureau of Supply Coordination, and the Bureau of Supervision of Food and Drugs. Furthermore, the leading research institutes and the scientific institute advocated to conduct the necessary tests and to provide knowledge on the most up-to-date research and development of products and raw materials relating to their research themes and anything relating to them, in order to

ensure the improvement of the quality of standards.

In order to exhibit their capability to the maximum, PHILSA takes measures to enhance the consciousness for standardization in various fields and for closer coordination among the private organizations, public organizations, and the government standardization organizations in addition to establishing standards for several types of commodities.

From 1955 to date, PHILSA completed standards for 325 items relating to products, materials and processes of the Philippines as one of their major projects. That is, they comprise building materials, construction materials, pulp products, paper products, export foods, electrical products, mechanical products, industrial chemicals, coatings components, coatings themselves, tools for coating operation, iron, steel, rubber, plastics, and others.

PHILSA always kept in mind the priorities set by the government, the industry and the consumers in formulating their business plans. The scope covered by PHILSA include courses, seminars, conferences to acquire technology relating to the measurement system, the national catalog system, and GATT. That PHILSA is engaged in a national project to contribute to the development of the economy and the industry of the Philippines in this way is for no other reason than that the importance of PHILSA is recognized. Appraising the contribution by PHILSA, BPS adopted the standards established by PHILSA as national standards of the Philippines.

2) Objective

The basic objective of PHILSA is to protect the interest of the general public by promoting the growth of industry in the regions and by establishing standards for the products produced in the regions.

PHILSA is a modest existence, but has a staff of aggressive executives and is striving to fulfill the following objectives:

- To satisfy the demand to "be able to produce product of optimum quality by method, process and at appropriate price", drafts will be formulated and standards registered for the detailed measurement methods, evaluation criteria and constraints which are realistic and understandable. In the course of a series of such operation, attention will be given to the cooperative system among industries of different fields.

- to give equal support to the efforts of both the producers and the consumers with respect to products now on the market, production processes and improvement of the standards of quality and the reliability at the stage of use.

- to render full assistance to efforts to reduce prices by improvement of efficiency of operation easily inducted, similarly as the implementation of quality control.

- to show PHILSA seals and stamps on products that meet the standards of PHILSA. To regularly use and to protect the above products. On the other hand, not to approve any application or labeling which may jeopardize the interests of PHILSA.

- to support the work of the government organizations involved in the establishment of various product standards.

- to furnish adequate knowledge and information. In addition to encourage the adoption of product quality by both the management and the consumers in order to protect themselves and to better understand the value of the article produced and the value of the article purchased.

- to protect the interests of both the producers and the consumers through the product standards established and the standards used in the production process.

(2) The Productivity and Development Center (PDC)

PDC belongs to the Development Academy of the Philippines (DAP) and was founded by the National Economic Council (NEC). Thus, this is a major organization responsible for standards in the Philippines.

NEC was renamed National Economic Development Authority (NEDA) in 1972 and PDC was assigned a position of a subordinate organization of NEDA.

In 1973, PDC was transferred from NEDA to the Development Academy of the Philippines (DAP) and continued to contribute to the development of the nation by improvement of productivity and the promotion of the Program.

PDC is also a national productivity organization and fulfills the foundation of the executing body of the Asian Productivity Organization (APO).

Mr. Eugan G. Manager, Vice-chairman of DAP, was appointed the Chairman of PDC. There are 74 officials in PDC of which 25 persons are managers, 30 persons are technical, and the rest are clerical and administrative. In addition, there are about 20 outside consultants who are commissioned as needed.

The organization of PDC is as shown in Figure A4-1-1.

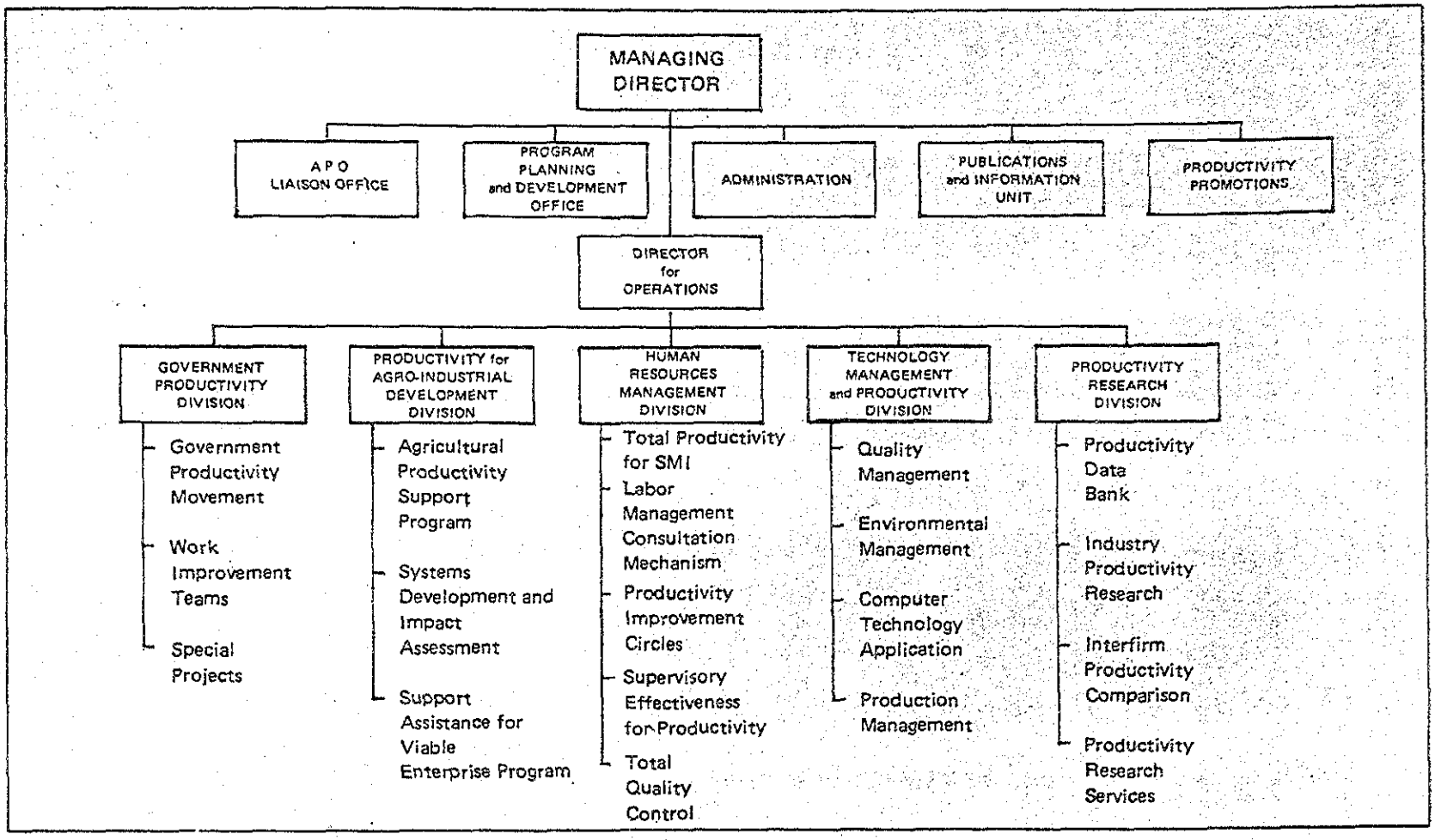


Figure A4-1-1 ORGANIZATIONAL STRUCTURE OF PDC

At PDC, the Productivity Improvement Circles Program (PIC Program) was started in 1979, with 200 or more companies participating.

National conventions of PIC are held and regional conventions are held in three to five cities in the regions.

(3) PPM

1) Outline

PPM is a non-joint stock, non-profit-making corporate person organized by the cooperation of organization of various fields, which contributes to the strengthening, support and promotion with respect to improvement of productivity in the Philippines. The objective is ensure efficient and effective utilization of resources through the cooperation and maintenance regarding national productivity program determined by the representatives of the main sectors of the economy.

PPM was first known as the National Productivity Movement but was conceived by the representatives at the 2nd National Productivity Conference held in October, 1983 and was founded in October, 1984.

The Philippine Chamber of Commerce formed the foundation and PDC of the Philippine Development Society, the Philippine Industrial Energy Research and Development Conference, National Manpower and Youths Conference, and other governmental organizations and private organizations and associations render support. The program and activity of this movement are implemented through the communication network of the staff of various organizations and committees.

The organization of PPM is as shown in Figure A4-1-2.

2) The goals and business plan for fiscal 1988

a) To satisfy the demand for improvement of productivity and quality, PPM aims at strengthening of capability, increase of membership, activity in the regions and maximum utilization of resources.

b) For the mutual benefit of all the organizations, to study the method of strengthening of the inter-sectional linkages, defining the scope for implementing cooperation and effort.

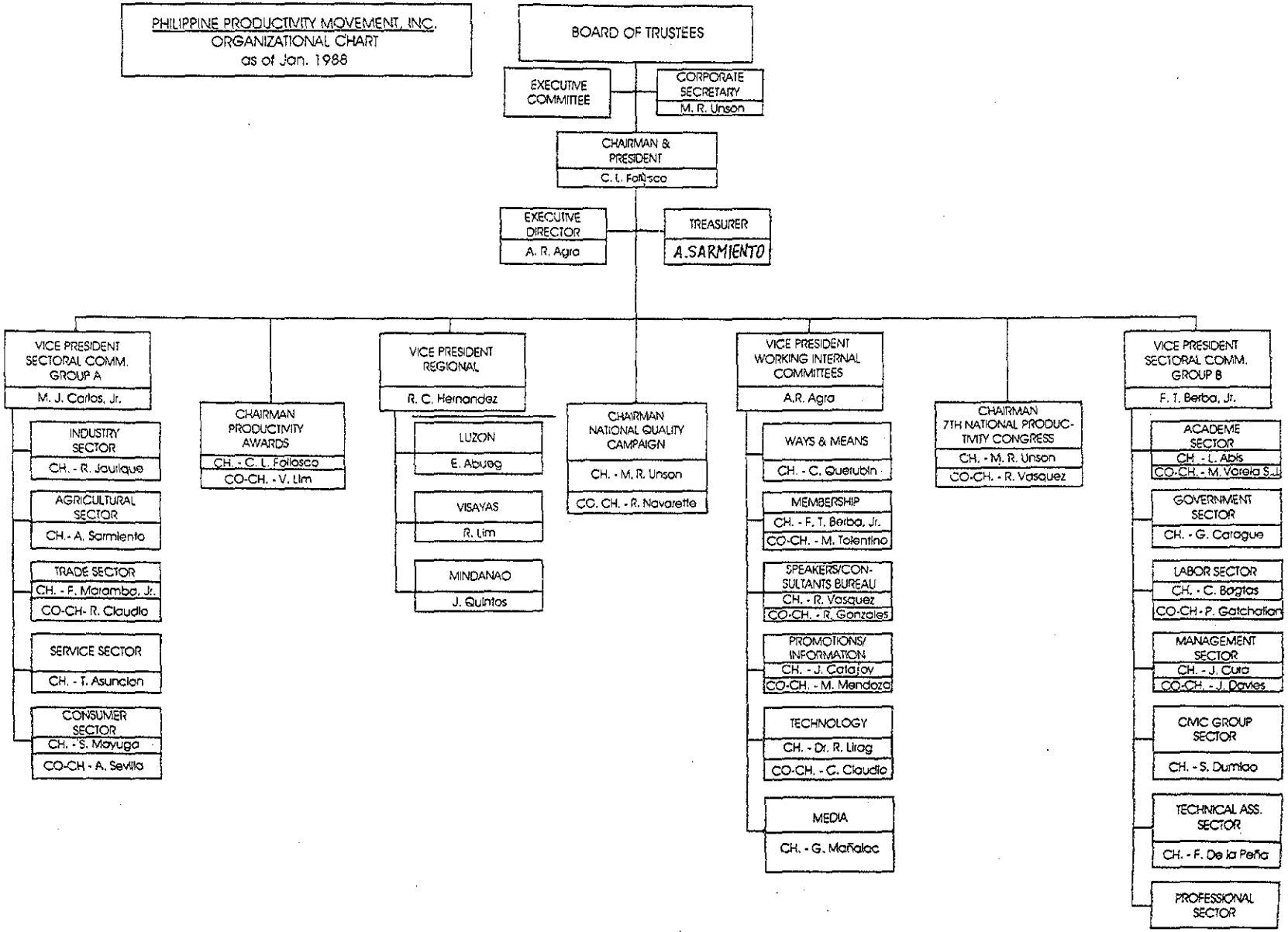


Figure A4-1-2 ORGANIZATIONAL STRUCTURE OF PPM

c) To extend and promote quality consciousness as a mode of life by carrying out the "Productivity Through Quality Campaign".

d) To promote, support and implement with surety technological development, evaluation of the appropriateness of possible technology and the improvement of existing technology.

e) To ascertain the implementation of the programs which respond to the sectorial preliminary conferences and the main conference which have taken place regarding the decisions made by the sectors.

3) The National Quality Campaign

a) Background

At the 6th National Productivity Conference held in October, 1987, it was recognized that the promotion of the improvement of quality at the individual, organized and national levels is most important. The delegates at the above conference reached an agreement on the philosophy that "quality reaches the highest level by the concern held by the people", that is, "quality is the product of the work of all people". Thus the implementation of NQC was decided.

NQC, responding most importantly to the top management of the manufacturing industry, was planned to elevate further the sense of responsibility and concern by an overall approach aiming at improvement of quality.

NQC was started officially on September 2, 1988, and the basic conceptional program of this activity was prepared at the beginning of this year.

b) Objective, goals, and items to be implemented

i) Ultimate objective

The ultimate objective of NQC is to contribute to the development of the nation by improvement of quality in the mode of life. Through such, the productivity of the entire nation will be improved and the quality of the products and services of the Philippines will be formed.

ii) The goals as a system are as follows:

1. to strengthen the quality consciousness throughout the nation.

2. to arouse the sense of responsibility and concern with respect to the overall approach to improvement of quality. To respect the leaders in the particular fields of industry, agriculture and service.

iii) The items implemented by NQC are as follows:

1. to mobilize the supporting organizations to participate in the quality movement in order to develop the present capability into group recognition (government, experts, civil organizations).

2. to extend what quality control is and to introduce how quality control was implemented in firms which were successful (success stories).

3. to provide information to people who are interested and desire to acquire knowledge regarding technical know-how.

c) Organization

At the beginning of 1988, the directorate group of NQC was organized by PPM. Mr. Miguel R. Unson was appointed to the chairman, Mr. Roberto A. Vaskes, council of PPM and former managing director of PDC and Mr. Renato V. Nabalete, Director of Bureau of BPS were appointed to vice-chairmen, and joined by Mr. Reynold S. Balmario of San Miguel Company, the core group of NQC was formed.

This year, the directorate group of NQC grew into a 14 member committee. Framework for the NQC is shown in Figure A4-1-3.

d) 1989 annual Plan and the direction of the movement

The members of the NQC committee are heads of sub-committees to coordinate the various activities of this campaign.

i) Preparation of data

Several basic data for an overall approach to the improvement of quality are accumulated. Such data include the following:

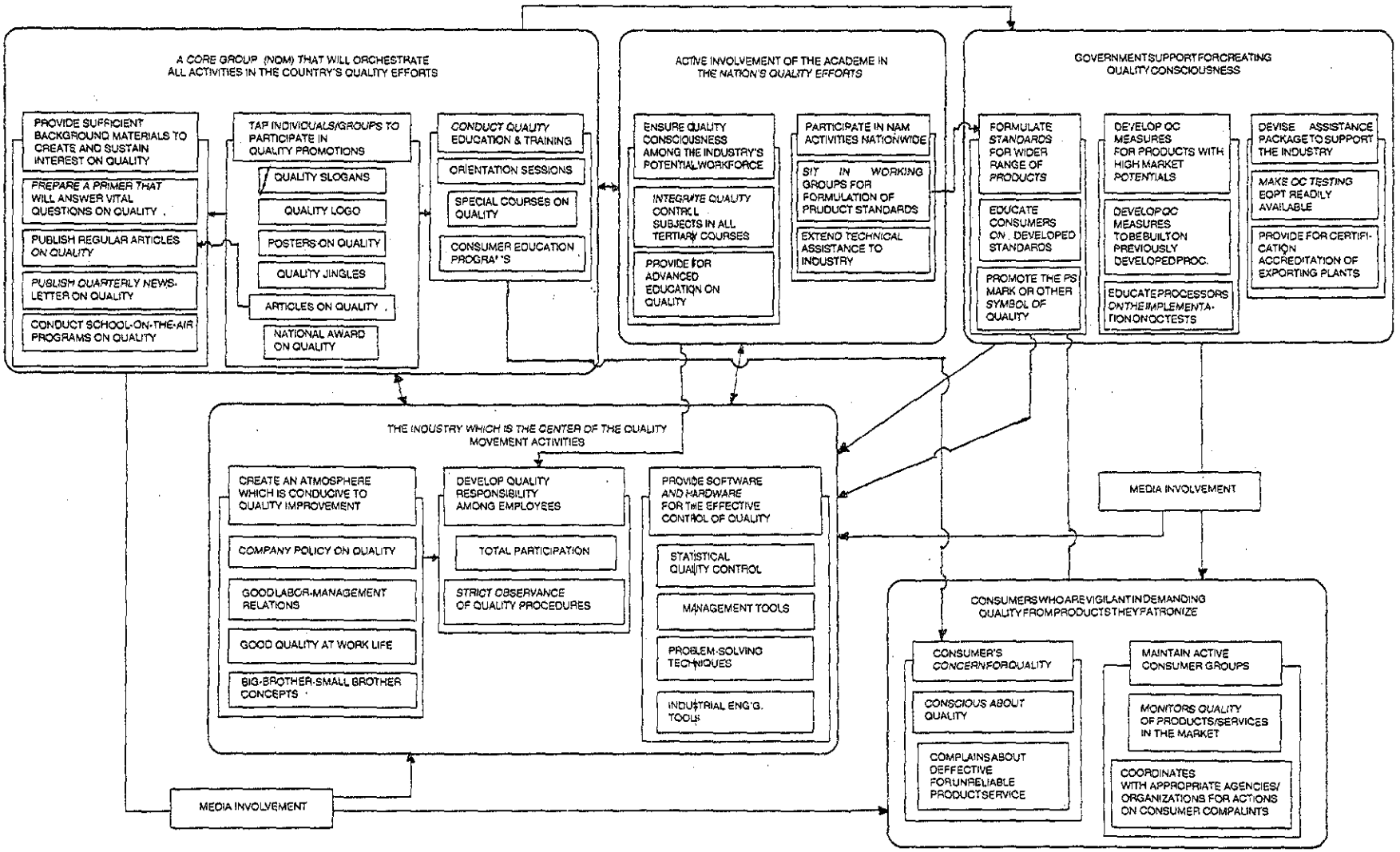


Figure A4-1-3 FRAMEWORK FOR THE NATIONAL QUALITY CAMPAIGN (NQC)

1. A Primer on Philippine Productivity Movement, Inc. (1988)

   This was published by the efforts of Mr. Ricky Gonzalez, Mr. Dod Peralta, Mr. Blessie Tolentino and Mr. Jimmy Castro. The illustrations were provided by the art group of SMC.

2. Posters and drapes relating to quality

   Many were made and distributed.

3. Visual-audio service relating to quality control

   Preparation to furnish visual-audio service relating to quality control is in progress. This group is scheduled to submit a proposal for visual-audio service by the 3rd quarter of this year for this project.

4. Quality control handbook or basic data

   In these, indications how to improve quality in an organization is to be included.

ii) Motivation of top management

The true objective and goal of this campaign are the revolution of the consciousness of all top management personnel. It is based on the philosophy that all efforts by the top management for improvement of quality will lead to success.

A forum for executives of quality control focused on Japanese experience was held at the Hotel Nikko Manila Garden on May 30, 1988. This was held with the cooperation of PDC. The keynote speeches were delivered by Mr. Ichiro Miyauchi of the Union of Japanese Scientists and Engineers (JUSE) and Mr. Roberto Garcia, President of Ramcar Company. This meeting also carried out the role of an introductory conference to promote the campaign. It was confirmed that orientations were carried out in some organizations.

iii) Development of promoters and leaders

Courses for developing personnel who promote or lead quality control were organized.

iv) Consultant group

A group of consultants was organized in 1988. Further strengthening is considered this year (1989). This consultant group may be expected to respond to requests for cooperation regarding quality control from every field.

This group is composed of the following:

a. CME Engineering Consultancy Services
b. Center for Organizational Development, Inc.
c. Guthrie-Jensen Consultants, Inc.
d. IGS Management and Consultancy Engineering
e. Lamberte Consultancy (Patricia Lamberte)
f. National engineering Center
g. Philippine Society for Quality Control
h. Philippine Standards Association
i. Productivity & Development Center
j. Quality Consultants International, Inc.
   (Ms. Gatchalian)
k. Sycip, Gorres, Velayo & Co.
l. Asia Business Consultants (ABC)

v) Formation of networks

As quality involves all people, NQC committee organized a group in the committee to maintain a close link among the academic societies, government, and organizations which aim at productivity and quality.

vi) The Quality Center (TQC)

TQC is considered as a milestone project of NQC. This Quality Center will strive to accumulate the most up-to-date quality management technology and will provide substantial content so that it will be used and be useful to the public and the industry employees.

vii) Awards relating to quality

NQC is one of the programs incorporated in the implementation plan of PPM and will support the awards by PSQC. There will be annual awards presented to excellent quality control practicing firms in October each year.

(4) PSQC

1) Outline

PSQC is the organization which has been most active in variable areas in regard with the quality control in Philippines.

PSQC, since the establishment, has worked for propagation and promotion of quality control in Philippines with a close connection with ASQC. Its energetic activity includes a symposium and seminar for quality control held in 1974 with attendance of Dr. Kaoru Ishikawa and Dr. J.M. Juran.

PSQC organized a symposium in the first national quality control week when the third week of October was determined as the national quality control week due to the presidential decree No. 1905 in 1979. In 1980 PSQC, in collaboration with PDC, commenced guidance for QC circles. Education for quality control has also been carried out in accordance with the annual program. The decree No. 35 of President Aquino in 1986 affirmed that the third week of October every year shall be the quality control week. Performances for the quality control week organized by PSQC have been conducted yearly. In 1988 PSQC initiated the system equivalent to Deming Application Prize in Japan, which is to award the firms of the most excellent result in the year as a significant extension to the quality control week events.

PSQC is aggressive to contribute international quality control activities as well; it organized the first APC-IQC '81 in 1981, in which establishment of APQCO was initiated.

2) Objectives

Objectives of PSQC are described as follows:

i) To perform propagation and promotion of theory and practice of QC and QA in order to establish true understanding for advantages of quality control and quality guarantee in industries.

ii) To conduct the following other special activities

1. To promote cooperation and information among personnel directly participating in forwarding quality control.

2. To appeal, promote and provoke the development and diffusion of technology and application of the quality control in the fields such as industries, management and so forth by means of seminar, conference, open forum, symposium, panel discussion, general assembly, publications and other measures.

3. To maintain knowledge in the updated technical development in the field of quality control by means of keeping close contact with associations, academic societies and other institutes which are established on the objectives similar to those of the Society.

3) Annual award to excellent quality control firms (OQCY)

A system to present annual awards to the excellent quality control firms, a system which corresponds to the Deming Application Prize in Japan, was launched in 1988.

The objective of this prize is to select and cite annually the firms that made excellent performance by practicing exemplary quality control, aiming to arouse interest to extend the techniques of quality control in all fields of production, management and others.

Any firm operating in the Philippines may apply for this prize.

The recipient of the award will be evaluated and selected on the basis of the following fields:

1. Implementation of quality control and the development, promotion, extension and improvement of the application of quality control.

2. Notable improvement of standards relating to quality and reliability of the quality of the products or services.

3. Notable contribution to consumer protection.

4. Improvement of profits by implementation of quality control.

5. Implementation of technical cooperation to other firms regarding the improvement of product quality (including material supplying firms).

6. Firms that are already practicing quality control effectively and are highly evaluated in and out of the country.

4) Quality control seminar

PSQC establishes its annual action program and carries it out to promote the quality control. Table A4-1-1 lists up seminars planned and performed by PSQC in fiscal year 1988 and 1989 (The latter includes planned ones).

Table A4-1-1 SEMINAR BY PSQC IN 1988 AND 1989

Seminars	No. of Days	1988	1989 incl. Plan
Management Development Program for Q.A.	6	1	–
Computerized Quality Control	4	1	1
Modern Trends for Quality Management	4	–	1
Statistical Quality Control	3	1	–
Application of Statistics in Q.A.	3	–	1
Non-Destructive Testing Seminar	3	1	–
Applied Microbiology/Aflatoxin	3	–	–
Profile of a Q.C. Manager	2	1	1
Vender-Vendee Relations	2	–	1
Dinamics of an Effective Quality Leadership	2	–	–

ANNEX 5

STRUCTURAL CHARACTERISTICS AND QUALITY IMPROVEMENT OF THE MAIN INDUSTRIAL SECTORS

ANNEX 5: STRUCTURAL CHARACTERISTICS AND QUALITY IMPROVEMENT OF THE MAIN INDUSTRIAL SECTORS

Chapter 1 Food Processing

(1) Status of the Industry, Structure of Production, and Features of the Market

The foodstuff industry occupies an extremely important position in the economy of the Philippines. As shown in Table A5-1-1, the value added of the food industry was 8.646 billion pesos, equivalent to 9.6% of the GDP and accounting for 40.1% of the vale added of the entire manufacturing sector. According to the 1984 Census, the industry has 1,427 companies each employing 10 or more persons (26.3% of all companies in manufacturing). The industry employs 121,244 persons (18.8% of the total in manufacturing), and the value of its shipments, 50.504 billion pesos, is 24.6% of that of manufacturing (see Table A5-1-2 for these indicators). Exports by the industry are shown in Table A5-1-3, for the period 1984-1988. In 1988 the food industry (excluding coconut and sugar) exported US$210 million; this was 20% of all food product export and 3% of all exports.

In the food industry, efforts are being made to further develop and improve that portion which is the source of non-traditional export products of the country, in fruit and vegetable processing, seafood processing, and meat processing. This chapter is devoted to analysis of these processed food products.

There are 42 companies engaged in processing of fruits and vegetables, including six large companies each having more than 100 million pesos a year of sales. These six companies are estimated to supply 75% of domestic production, and 80% of exports of processed fruits and vegetables. Of the 42 companies, 35 are in the Metro Manila area.

Concerning the supply conditions of major food products used for processing, the following are noteworthy. The area devoted to cultivation of bananas is 330,000 ha, and during the 1984-86 period annual production was 3.8 million tons. Multinational corporations contract with growers for the latter's crop, and provide support through quality control, cash subsidies, and other methods. Harvests are twice a year, in January-February and June-July. The area under pineapple is 60,000 ha, and production in 1986 was 1.6 million tons. The area contracted by Dole and Del Monte alone accounts for more than half of the total. Pineapples may be harvested throughout the year, so there is a steady supply of this food for processors. Production of mangoes, however, is unstable. In 1983 this amounted to 400,000 tons, but fell to 300,000 tons in 1986. Production of papayas during the 1970's grew at the annual average rate of 7% and surpassed the level of 100,000 tons

Table A5-1-1 GROSS VALUE ADDED IN FOOD MANUFACTURING INDUSTRY

(Unit: Million Pesos)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Food Manufacturing	4,245	4,558	4,922	8,622	7,865	8,419	8,803	9,099	9,246	9,344	8,646
All Manufacturing	16,537	17,481	19,532	21,108	22,239	23,175	23,959	24,535	25,108	23,319	21,541
GDP	68,361	72,962	77,990	82,797	88,346	92,706	96,207	98,999	99,920	93,927	89,803

Source: Philippine Statistical Yearbook

Table A5-1-2 STATUS OF FOOD MANUFACTURING INDUSTRY IN 1984

	All Manufacturing	Food Manufacturing	Share (%)
No. of Establishments	5,435	1,427	26.3
No. of Employees	645,516	121,244	18.8
Shipments (in Million Pesos)	204,890	50,504	24.6

Note: Data are for establishments with 10 or more workers.

Source: Philippine Statistical Yearbook

Table A5-1-3 EXPORTS OF FOOD PRODUCTS

(Unit: F.O.B. Value in '000 US$)

	1984	1985	1986	1987	1988
Food and Food Preparations (A)	944,003	827,490	875,887	893,027	1,061,434
Traditional Food Exports	505,933	361,232	305,724	305,926	299,324
Non-traditional Food Exports	438,071	466,258	570,164	587,100	762,110
Processd Food (B)	134,605	153,723	142,052	156,917	213,033
Meat and Meat Preparations	8	63	46	13	31
Dairy Products and Birds' Eggs	437	332	258	415	268
Fish Crustaceans & Mollusks & Prep.	51,492	56,028	59,242	68,533	108,491
Cereals and Cereal Preparations	2,015	5,032	5,402	6,492	7,590
Vegetables and Fruits	42,177	43,164	50,809	49,752	56,517
Sugar, Sugar Preparations and Honey	11,103	27,861	5,154	7,346	8,693
Coffee	1,599	1,051	1,095	1,003	606
Cocoa, Tea, Spices & Mfrs thereof	6,929	7,993	7,464	8,284	11,652
Feeding Stuff for Animals	4,377	2,320	1,520	1,310	2,015
Bevarages	2,794	2,283	3,215	5,524	5,489
Miscellaneous Edible Prods & Preaparations	8,676	7,595	7,846	8,515	11,682
Fresh Food	303,465	312,535	428,112	430,184	549,077
Total Exports (C)	5,390,646	4,628,954	4,841,780	5,720,239	7,074,190
Processed Food Export in:					
Total Food & Food Preparat'n Export (B/A) (%)	14.3	18.6	16.2	17.6	20.1
Total Export (B/C) (%)	2.5	3.3	2.9	2.7	3.0

Source: Food and Food Preparations, Direction of Philippine Trade and Export Performance 1987-1988

in 1981, but in recent years growth could not be sustained and in 1986 production was 95,000 tons. Production of major vegetables, as of 1983, was 104,000 tons of tomatoes, 63,000 tons of cabbages, 42,000 tons of onions, and 41,000 tons of potatoes. Processed tomatoes had been imported in the past, but the introduction of improved varieties made it possible to cultivate the fruit in the Philippines.

Regarding exports of processed fruits, bananas are primarily shipped in the form of banana chips, and exports of banana products in 1986 were valued at $10 million. Forty percent of this was shipped to the United States. Most processed pineapple is exported as canned fruit and the value of exports in 1986 was $84 million. Next in importance are pineapple juice concentrate, and whole pineapple juice. Exports of these latter products also in 1986 were $18 million and $6 million, respectively. Table A5-1-4 shows the exports of major products from 1980 to 1985.

Production of seafoods increased at the average annual rate of 4.7% from 1976 to 1985 when the output was 2.052 million tons. The major products are tuna, sardines, mackerel, shrimp, squid, crab, milkfish and bangas. Sardines and mackerel are consumed domestically, and almost all of the production is canned in tomato sauce. All tuna is exported. In 1985, output disaggregated by type of fishery showed the following pattern: 25% was accounted for by small ships of less than 50 tons operating in nearby waters, 51% was obtained by non-motorized boats such as traditional villages, and 24% was caught in freshwater or cultivated in fish farms. Fish farms are primarily used for shrimp, milkfish and some others, and during the ten years since 1976, production has tripled. (Refer to Table A5-1-5.)

The major companies engaged in seafood processing number 47, of which 11 are tuna canners, 16 are sardine canners, and 20 freeze shrimp, squid and other foods. Similar to the situation in fruit and vegetable processing, the five largest companies account for 80% of total production. Exports of seafoods in 1986 were 95,000 tons, valued at $197 million. The composition of exports was: 36,000 tons of tuna ($63 million), 12,000 tons of shrimp ($106 million), 2,000 tons of shrimp ($6 million), and 45,000 tons of seaweed products ($22 million). For tuna, canned products were valued at $50 million and frozen products valued at $13 million. The United States and Germany took 70% of canned output, and frozen products are primarily shipped to Japan which takes 70% of the total. Each of the large-scale companies in the seafood business provides quality control for the pre-processed product, process control, and inspection of processed foods. Exports of frozen shrimp show a pattern wherein the top four companies handle 50%, the top ten handle 50%, and the top 18 handle 80% of the total. As of 1986, 76% of exports were destined for Japan. Shrimp is farmed mostly in fresh or brackish water, and there are a large number of farms in Negros. The freezing is done in Manila. Almost all frozen shrimp is shipped out of Manila port, and only two companies are shipping directly from Cebu port. Almost

Table A5-1-4 EXPORTS OF PROCESSED FOOD PRODUCTS

(Unit: F.O.B. Value in '000 US$)

	1980	1982	1983	1984	1985
Canned Pineapples	82,098	87,550	73,627	87,085	88,787
Pineapple Concentrates	9,014	10,496	9,449	13,770	13,295
Pineapple Juice	5,798	9,245	4,413	6,726	5,076
Banana Crackers	4,815	6,207	7,178	10,108	10,126
Frozen Tuna	68,326	17,857	18,266	15,844	13,996
Canned Tuna	29,486	46,461	52,774	45,398	47,096
Frozen Shrimps & Prawns	20,681	32,735	36,076	34,801	62,523
Frozen Cattlefish & Squid	2,338	2,894	2,955	3,988	3,917

Source: Foreign Trade Statistics of the Philippines

Table A5-1-5 OUTPUT OF FISHERY PRODUCTS BY TYPE

(Unit: 1,000 tons)

	1976 (A)	1982	1983	1984	1985 (B)	(A)/(B) (%)
Ocean Fishery	508	526	519	513	512	100.8
Coast Fishery	726	978	1,146	1,089	1,045	143.9
Raising	159	392	445	478	495	311.3
Total	1,393	1,896	2,110	2,080	2,052	147.3

Source: Bureau of Fisheries and Aquatic Resources

all the important shrimp freezers in Manila are recipients of support from the FDC, whereby they maintain production standards, undertake quality control, and operate in-house inspection equipment. Dried seaweed products are exported to Japan, Europe and the United States where they are used as food additives.

Nineteen companies are engaged in processing of beef and pork meat. Annual production exceeds the level of 59,400 tons. Of these companies, 17 are in Greater Manila. Only four companies have their own slaughterhouses, and for the most part the meat that is processed in Manila is transported there over long distances. Seven companies process chicken meat; they have a capacity of 154 million broilers a year. Almost all of the chicken meat processors have experience in beef or pork, and from the late 1960s to the early 1970s acquired technology from abroad, so in comparison to beef and pork processing, in this industry the level of production facilities, quality control, and hygiene is higher. Broiler production has grown 10 to 15% a year since the start of the 1980s.

Of the beef, pork and chicken produced in the Philippines, 80% is sold fresh and 20% is processed. Forty percent of the processed meat is canned. At present domestic consumption of meat exceeds production and the difference is imported. Exports of meat are at a low level on the order of $1-3 million a year.

(2) Problems Related to Products and Materials

As overall problems of the food processing industry in the Philippines, including the fresh food industry therein, the followings deserve attention. First, most inspection of exports is done according to buyers' specifications, and there is a high rate of low-quality goods. The large-scale companies have their own quality control and inspection facilities, but this is not the case at most of the small-scale companies, which at best will request a quality inspection to be made by, Food Sciences faculty University of the Philippines. In the case of exports of frozen shrimp, it is said that a claim is registered for one container in a thousand. In addition to the insufficiency of quality control and inspection at the small-scale processing companies, in many cases these companies also lack the technical services departments needed to support export marketing efforts. In the Philippines, exports of processed food products by small-scale companies frequently is on the basis of small-lot, spot deals. In such cases, the buyer will on every occasion ask for samples and quality certification but because these companies lack a technical services departments, they are hard pressed to comply. Moreover, because process control is not adequate, production work standards cannot be formulated, and as another problem the hygiene standards are low.

Second, product development, and especially product development for export markets, is retarded. Among fruits and vegetables, with the exception of pineapple and banana, no

basis for export product development has been established. Despite the high quality of mangoes, papayas, guavas and other produce, because of a lack of processing technology and marketing skill, growth of both production and export quantities has been low and product development has lagged. The same is the case for seafood products: development of export products utilizing the smaller fish and shellfish caught in the Philippines is not being made.

Third, because processors are concentrated in the Manila area, it is necessary to transport the fresh produce long distances. As the example of the food and vegetable processors, as cited above, of the 42 major companies, no fewer than 35 are in the Metro Manila area. In the case of fruit in particular, long transport distances (or long transport times) translate into loss of quality. In the case of seafood products, because there is a shortage of landing facilities, freezing facilities, and other infrastructure everywhere except Manila, an excessive concentration in the Manila area has resulted. Of the sixty exporters of frozen shrimp, no fewer than 58 ship out of Manila. If tuna can be sold fresh for use in sushi, it will bring a price more than five times greater than if it is canned, but because of the long transport distances, all the tuna must be graded for canning.

Fourth, there are packaging problems. Packaging is indispensable for transport to market, but given the long transport distances within the country and to the major export markets, any inadequacy in packaging will result is a severe loss of product value. Looking at this on the basis of the different materials used, the following can be noted. The quality of tin-plate used for cans is low. The only company making tin-plate in the Philippines is National Steel. But the company's tin-plate is not uniform in thickness and coating. Can makers, with the exception of the largest firms, are not at the stage at which they can make quality inspection of the tin-plate they purchase. Because the quality of domestic-produced tin-plate is low, many companies rely on imports. This has the effect, however, of raising costs. According to a major exporter of frozen shrimp, packaging is 30-60% of production cost, and this is at least 30% higher than the situation in Thailand. Because packaging cost is high, the Philippines has lost market share to Thailand in the United States in recent years. A rather high number of claims are reported for pinholes and breaks in plastic packages; this is because of inadequate quality inspection at the forming stage, and because there is a high ratio of use of recycled raw materials. It has also been pointed out that in the case of glass bottles there is not adequate standardization of size and the caps are often poor.

Moreover, as a subject related to the raw materials used in the processing of fruits and vegetables when there is inadequate post-harvest treatment and storage technology, loss rates will be very high, and with the exception of the pineapple, there is high seasonality to production, while in the case of the mango, five years will elapse from the

time of planting to the collection of fruit, so the capital burden is high for a grower. In the case of seafood products, more than a half of the volume produced is obtained by village-level technology in the fisheries, as use of motorized boats and modern fishing methods is retarded, while fish farms, because of use of relatively crude methods, have low productivity.

(3) Tasks and Measures

Regarding overall problems of the foodstuff processing industry, it has been mentioned that almost all export inspection is done according to buyers' specifications. In view of this, in order to expand exports, first of all, need exists for establishment of an export inspection system. It is necessary that the BPS designate an inspection agency and give it full power to authorize export of food products. As the procedures to be followed for making such institutional reforms, since it would be effective from the viewpoint of gaining greater trust in export markets in general, those products for which inspection can be accomplished easily and quickly should first be identified, inspection systems for them should be established, and thereafter the use of this approach may be gradually expanded. With regard to quality, rather than seek a breakthrough to an extremely high level of quality, the minimum levels of quality which must be cleared should be established, and improvement should be sought at a gradual rate. Regarding inspection agencies, the FDC is thought to be capable from the viewpoint of facilities, but has a problem in the securing and training capable human resources. The FDC has, at the present time, on the basis of an agreement with the USFDA, is acting as a proxy for the latter. Similar arrangements should be sought on bilateral bases with Japan and European Community countries, while improving the Export Inspection System in overall terms. The FDC should adopt a "PS Mark" or similar mark of approval for export products, and publicize this overseas.

Second, regarding the Export Inspection System, it is necessary to establish a regional Laboratory of FDC in Cebu. Cebu is now developing as the nation's second-most-important industrial region, and the establishment of the regional Laboratory of FDC would be of great significance in promoting the food processing industry there. At such a Cebu Regional Laboratory, not only would export inspections be carried out, but technical guidance would be provided concerning product quality, and consulting services would be offered. The scale of the center would have to be determined in the context of its operational relationship to the FDC headquarters. Because there are relatively few companies outside of Cebu, there is no immediate need for other regional centers, but an important advance could be accomplished if Food Science faculties could be established in the regional colleges serving those areas, as the faculties could assist in improvement of inspection.

Third, in order to improve product quality, it is necessary to establish GMP (Good Manufacturing Practices) for each sub-sector. GMP is especially important for small business, which tends to suffer more from complaints about products and to have greater difficulty in establishing production work standards. At present, there are some companies that are paying the expenses for the FDC to compile GMP for them, but from the standpoint of the industry as a whole, it is deemed necessary that a budget allocation be made by the government for establishment of GMP.

Fourth, with regard to standards, for the present, these must be made voluntary. This industry is subject to oversight by the BFD and NMIC with regard to consumer protection, and PCC with regard to protection of the environment, and to make standards compulsory, beyond the regulation mentioned here, would invite opposition by the companies concerned. Moreover, many small-scale businesses would not be able to comply if compliance was mandatory. Therefore it would be a wiser policy to concentrate on providing guidance so that companies may practice quality control, and on creating a market environment wherein the companies are encouraged to supply better quality products to the market.

Fifth is standardization of packaging. Packages are essential elements for the development of the foodstuff industry, and particularly for the expansion of exports by that industry. For this pair of reasons, the FDC is encouraged to establish a package R&D department, which would establish standards. Because small-scale business in particular lacks awareness of the importance of proper packaging, there is a role for the FDC to provide guidance to them.

Sixth, the FDC should expand. Activities by the FDC are increasing year by year. The FDC is engaged in planning seminars, compiling manuals, training quality inspectors, and other activities, primarily through guidance to companies regarding product and package inspection and quality control. Training programs for quality inspectors are held four times a year, each of seven to ten days' duration. Participants number 20 to 25, and some participants come from provincial regions. For the FDC to further expand its activities, the development of human resources is necessary. The FDC should increase the level of the staffing, and undertake GMP programs.