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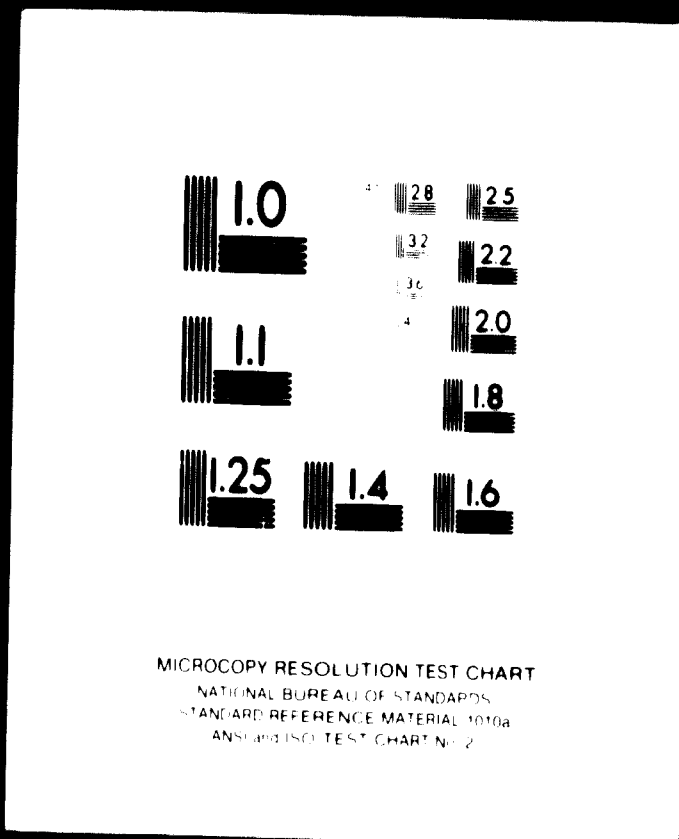
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BARBADOS .

FINAL REPORT .
INDUSTRIAL STANDARDIZATION
AND QUALITY CONTROL 1/

by

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UNIDO Expert

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1. Summary

REFERENCE

- 1.0 Report issued September, 1971. First Report on Assignment to Barbados as United Nations Expert in Industrial Standardisation and Quality Control
- 2.0 Report issued on November 1971. Final Report (Short time Assignment) to Barbados as United Nations Expert in Industrial Standardisation and Quality Control
- 3.0 Report issued February, 1972.. Progress Report. Assignment to Barbados as United Nations Expert in Industrial Standardisation and Quality Control.
- 4.0 Report issued May, 1972. Progress Report. Assignment to Barbados as United Nations Expert in Industrial Standardisation and Quality Control.
- 5.0 Report issued August, 1972. Progress Report. Assignment to Barbados as United Nations Expert in Industrial Standardisation and Quality Control.
- 6.0 Draft Project No. BAR/73 /AOI/37

Organisation and Administration of Barbados
National Standards Institution.

Part I. Introduction

The assignment commenced in August, 1971, as a short term assignment of three months duration. This was later converted to one of intermediate status for a total period of 18 months. The purpose of the project, however, remained substantially unaltered.

Purpose of the Project

The purpose of the project was to assist the Government of Barbados in the establishment of a Bureau of Industrial Standards and Quality Testing and Control Procedure.

The expert was expected to:

1. review and assess the existing situation with regard to industrial standards, quality control and testing activities, including the availability of facilities;
2. advise on the co-ordination of these activities on the regional (CARIFTA) level;
3. assess priorities to ensure quality control for products of vital economic interest;
4. review availability of local counterpart personnel as well as Government willingness to supply the necessary space for testing laboratories;
5. specify main testing equipment requirements;
6. assist establishment of an industrial standards bureau on a modest scale.
7. recommend further or alternative measures to promote and organize standardisation, quality control and testing activities in the country;
8. advise additional forms of technical assistance from United Nations Industrial Development Organization.

The expert was also expected to assist in the problem of the likely changeover to metric system of measurement following the general world trend. This was to be reviewed in the context of the regional action.

Part II. Progress of Work

The progress of work has been described in the reports sent periodically (these are indicated in the references). In order to keep the volume of the report to a minimum and avoid unnecessary repetition frequent references to these reports and particularly some annexures have been made.

This final report considered with the other reports and particularly the Report of the 5th November, 1971, gives a comprehensive account of the work done during the period of assignment.

1. Review of the general situation in regard to industrial standards, quality control and testing facilities

Situation as reported on 5 November, 1971 has not substantially altered but there is greater awareness of the need for standards for quality production and the imperative necessity of organizing quality test and control procedure. This is reflected in industry and commerce expressing effective support for the Barbados National Standards Institution (See 7).

At the present moment there are a few standards in the fields of:

- a) Pharmaceuticals (under statutory authority of the Chief Medical Officer of the Ministry of Health)
- b) Grade of Crops by the Barbados Marketing Corporation.

/Industry

Industry established with foreign collaboration or under licence use the standards of the collaborator but there is no conscious effort to use standards desirable as effective control technique.

There has been some appreciation now of the difference of quality control in the organisation and quality testing of finished produce (See Annexure A of 5th November, 1971 Report)

Situation of available laboratory equipment has shown slight improvements compared to what was reported in November, 1971. Further action to rectify the situation is indicated in later paragraphs.

2. Coordination of Standardisation, Quality Control and Testing Activity in the CARIFTA Region

Now that the standards bureaux will begin to function in a few of the Caribbean countries like Barbados, Trinidad and Tobago and Jamaica (already well established) the coordination might be pursued actively in the CARIFTA Secretariat. Both aspects of standardisation, viz.

- i) formulation of industrial standards; and
- ii) maintenance and use of fundamental standards of length, mass, volume, temperature, etc. must receive attention of the regional coordinating authority - the CARIFTA. This has been discussed in Report of the 5th November (particular reference is drawn to the Annexure C "metric change over").

Further regional coordination of industrial standards will proceed in two ways -

- 1) directly through CARIFTA, which can be the forum for the Caribbean Standards Coordination and Advisory Committee.
- 2) indirectly, by exchange of published and draft standards between various countries through their standards bodies.

/Coordination

Coordination of testing for quality and control procedure can be achieved only at a later stage after each country has established its control laboratories, its certification marks scheme and quality inspection prior to shipment for export. Coordination would then mean recognition of each others

- 1) test reports
- 2) certification marking; and
- 3) preshipment inspection for quality.

This will certainly facilitate inter-regional trade.

Sharing facilities of the Caribbean Industrial Research Institute (CARIRI) established with U.N. Aid in St. Augustine Campus in Trinidad could be for:

- a) testing work that require very expensive equipment and are not required frequently or which are of long duration.
- b) research work in connection with development of test and quality evaluation methods .
- c) development of substitutes to replace import of expensive raw materials or alternates to materials in short supply.

3. Assess priorities to ensure quality control of products of vital economic interest

Visits to various types of industries and meetings with different groups of manufacturers arranged through the courtesy of the Barbados Manufacturers' Association, the Barbados Industrial Development Corporation and meetings by special invitation have

/revealed

revealed that standardisation quality testing and control procedures could be immediately useful and beneficial in the following groups of industries.

Food Products

Building Components

Some Chemicals including pharmaceutical preparations.

Fertilisers and Feed Stuff

Garments and

Furnitures

Even the Sugar Producers' Association - who have excellent organisations for research control and testing, would welcome formulation of national standards.

Import of food stuff including spices and condiments - need special attention. The source of supply are many and variety particularly of canned foods is large. Imported food of the category is subjected to inspection under certain statutory acts and regulations. The inspection procedures are however, mostly subjective and there is room for improvement on scientific lines. Once these scientific methods of inspection testing and grading are developed and then coordinated on the regional level they will benefit the CARIFTA regional trade very effectively.

Few other fields which can benefit from standardisation mentioned by way of examples are:-

i) Paper trade

Adoption of International Paper Size

ISO R. -216-1981.

would result in removeable of great deal confusion and stocking problem in the import and use of paper. A plethora of paper sizes are currently used in the Island.

- ii) Pesticides, Fungicides and Rodenticides are today imported in Barbados under hundreds of trade names. So much so that same formulation is sold in different names for different purposes of the same purpose with conflicting claims of their efficacies. International Standards names and formulations should be introduced into the country.

4. Availability of Local Counterpart

Fortunately, Mr. Dudley B. Rhyned the U.N. Expert's Counterpart was available on August, 1971. He is an accomplished Chemist who has shown excellent aptitude for assimilating standardisation technology. He was from the very beginning most useful and contributed effectively in progressing the scheme. After acquiring in association with U.N. Expert the basic grounding in the philosophy and technique of standardisation, and quality control he was sent abroad on U.N. Fellowship for training for 4 months. The training scheme for him was worked out and is reported in Annexure D of Report of the 5th November, 1971. This scheme has been slightly rescheduled to enable him to:

1. Spend 3 months in India at the Indian Standards Institution (this has been completed)
2. Spend 1 week in Geneva at the International Organisation of Standards (ISO) and International Electrotechnical Commission.
3. Spend a few days in the United Kingdom at the British Standards Institution.
4. Spend a week in Toronto, Canada at Canadian Standards Association's Testing Laboratory.

He is scheduled to return before the end of October, 1972.

/s.

5. Space for Standards Institution and Laboratory

Government has made office space available for the U.N. Expert, his counterpart and supporting staff. The space available has accommodated the standards library and small committee facilities. However, space will be needed for the testing laboratory and future expansion of the Institution.

Government has favoured the establishment of a centralised laboratory complex to serve the various departments requiring comparable laboratory facilities. This is very desirable as it will lead to economy in construction and running costs.

It was decided that a Central Laboratory Complex will be planned for the Barbados National Standards Institution and for the Government Analyst which will also house the standards and ancillary departments of B.N.S.I. and its offices as well as the laboratory and offices of the Government Analyst. facilities like:

Library, Conference and Committee Rooms, Reproduction Photographic facilities maintenance, work shop, services will be shared and there will be room for future expansion.

The laboratories of the BNSI will also include the special Metrological Laboratory.

Plans are being worked out in collaboration with the Government Analyst.

6. Testing Equipments.

Except for the equipment available with the Government Analyst, the laboratories of the Ministry of Agriculture and those of the Sugar Producers' Association not much is available. The Government Analyst's laboratories also need more equipment and steps are being taken to augment his facilities.

A list has been prepared (see Annexure E of Report of November, 1971), for equipment needed for quality testing of the following priority items:

/Foods

Foods, Garments, Paints and Chemicals, including Fertilisers and Feed Stuff. More exhaustive list for the above fields and also those covering Building materials and for mechanical engineering industry and for the Metrological Laboratory will be completed as soon as Mr. Dudley Rhynd returns from his tour where he is making special study of laboratory facilities that must be built up.

7. Establishment of the Barbados National Standards Institution (BNSI)

The scheme for the standards Institution given in the Report of the 5th November, 1971 was accepted by the Central Planning Committee in December, 1971. The progress in getting the institution legally established has been reported in the subsequent progress reports. The drafts of the legal documents (as reported in August, 1972) was considered in the meeting for representatives of Government, Industry and Trade on the 5th September, 1972 and the finalised documents have been sent to the Government for registration of the Institution. All sections of industry, trade, and commerce; the consumer technical and professional bodies are cooperating with the Government in this joint endeavour.

8. Metrisation

Barbados Government has been considering the question of change over to the metric system of measurement since 1971. Mr. McConney Committee report favouring change over was submitted to the Government early this year. The United Nations Expert on Standardisation was consulted by the Government in the Ministry of Trade and his exhaustive report including details of procedure of change over has been with

the Government for some time (see Report dated February, 1972. Annexures I and II) and is being given active consideration. The Barbados National Standards Institution will be able to help very effectively in the task once the decision of the Government is taken.

9. Further measures to promote standardisation, quality control and testing activities in the country

Standards and the ancillary activities are essential in various levels such as - national, association, company and individual. The Barbados National Standards Institution will be concerned with the development of standards for the whole country covering all manufacturing units making like products for all types of users. National Standards will include methods of test, wherever called for, the complete standard will be the basis of quality control. However, benefits out of standards will accrue only when these are implemented widely in manufacturing, procuring, storing, transporting by the private sector, by the Government and by all those concerned with these activities.

The best method of implementation of national standards is by organising standards activity in the companies on the basis of National Standards. Standardisation activity in the company level will lead to:

Variety rationalization

Quality control of incoming raw material

Quality control during production and thence to

quality maintenance up to the user end.

In the larger national interest the National Standards Institution will organise standardisation, at company level by running company standardisation courses for technicians from various units concerned with manufacture, trade, transportation and communication and even administration.

/Further

Further Implementation Conferences have to be organised by the National Standards Institution where the imperative need for adoption of national standards as a means of better production, etc. will be explained and popularised. Even when standards are evolved with active co-operation of all concerned - the implementation is not ipso-facto. Indeed implementation conference not only serves to remind the industry of the standards which they should use but also serves as excellent source of information-feed-back to the technical committees which are responsible for preparation and revision of standards

Part III

I. Additional forms of technical assistance from the United Nations Industrial Development Organisation

The services of the United Nations expert have been extended to the end of 1972 and the task of establishing the national standards body almost completed. The Barbados National Standards Institution as a joint venture will soon be registered under the Companies Act, 1910

Project "Organization and Administration of the Barbados National Standards Institution has been prepared and submitted to the Government for inclusion in the Country Programme of 1973-76.

This envisages UNIDO/UNEP assistance by way of -

1. Services of a Senior Technical Adviser for 20 m/m from middle of 1973 to middle of 1976.
2. U.N. Fellowship for 11 m/m for training of engineers and chemist for testing laboratories and engineer for metrological laboratory.

3. Equipment for -

- a) testing laboratories
- b) the metrological laboratory

(N.B.: A copy of the Draft Project prepared by expert for the Government's consideration was sent to the United Nations Industrial Development Organization on 23rd June, 1972. Comments have been received on the draft from UNIDO which could be discussed with the Section of the Americas UNIDO on 11th December, 1972 in Vienna).

The Work Plan aims at -

- i) Regular functioning of Standards Department
- ii) Work on initiating fundamentals of Quality Control techniques in the industry.
- iii) Revision of Weights and Measures Act.
- iv) Construction of building to house BSI as well as its laboratories and equipping the same, so as to start testing and Quality Control work.
- v) Establishment of the Certification Marking Scheme.
- vi) Initiation of Pre-shipment Inspection, to be completed by 1976.

Successful completion of the project would give Barbados a full pledged Standards Institution which will be able to:

- (1) Evolve standards in different fields as per needs of the country's economic and industrial development and suitable to the country's conditions rather than depend on standards of other countries which are often not complete answers to the nation's problems and requirements.

(2) Help quality production in the country for its needs and within its capabilities.

(3) Assure importation of the right quality materials best suited for the country and therefore in accordance with the standards laid down by the Institution. Thus gradually eliminating the need to import materials by brand names, very often at high prices.

(4) Establish quality control laboratory to help testing of quality of products of indigenous industries and the incoming raw materials.

(5) Organize certification marking scheme of the institution as a guarantee of quality of product.

(6) Help the industrial and agricultural production of the country on high quality level.

(7) Help economic production by instituting continuous quality control and total quality control in the industrial organisations thus avoiding -

- i) inefficient production runs (due to bad utilisation of man, machine and material);
- ii) large scale rejection of final product either as completely unusable or as lower standard product.

(8) Help establish a system of pre-shipment inspection of goods exported out of the country so as to guarantee export of quality goods only from the country.

(10) Help CARIFEA countries in -

- i) Coordination of their standards

/ii)

ii) Mutual recognition of each others certification marks.

iii) acceptance of each others preshipment inspection. prior to export.

(11) Actively contribute to change over to the metric system of measurement (SI).

Present state of work

The assignments major task of getting a national standards bureau is reaching completion. The Barbados National Standards Institution as a joint venture of Government and industry trade, etc. is being given the legal status under the Companies Act, 1910.

The U.N. Expert's counterpart - who will take over charge as the first director of the Institution is now completing the second phase of training abroad - in India - Geneva - United Kingdom and Canada.

Areas where the standardisation work has to start have been identified and some preliminary studies have been carried out. The work will start with the formation of committees as soon as the BNSI is officially registered under the Companies Act.

Recommendations

1. Further United Nations Industrial Development Organization help has been recommended in the form of this Project.

Organisation and Administration of the
Barbados National Standards Institution.

(See 8 above).

This indicates fully the work plan - covering the areas of involvement for the Government as well as the UNIDO/UNEP responsibility

/s.

2. It will now be necessary to push forward the preliminary organization of the General Council, Executive Committee, the Division Councils and the Technical Committees by the Director of the Institution.

3. Building plans for the central laboratory complex housing the BISI and its laboratories and the Government Analyst, his offices and laboratories have to be completed before the end of 1972.

4. It is recommended that the General Council give immediate attention to creating services conditions such as would attract the right type of personnel to man the technical posts of the Institution. This has become essential as there is general dearth of qualified engineers and scientists in the country. It has not been possible to recruit one junior engineer for the institution since February, 1972.

SUMMARY

The decision of the Government to establish the standards body as a joint undertaking of Government, Industry, Trade, Commerce, Consumer and others interested in standardisation is well on its way to becoming an accomplished fact.

The work of standardisation will start in the following selected fields:-

Foods and Foods Products

Building Components

Garments

Chemicals and Pharmaceuticals

to be followed by Furniture

Feeding stuffs and Fertilizers,

Pesticides, etc.

Basic requirements for testing laboratories have been worked out and they will be further elaborated and completed on return of Mr. Dudley Rhynd, U.N. Expert's Counterpart from U.N. Fellowship training in

/India

India-Geneva-United Kingdom and Canada, where he has been asked to make special study of the problem.

The requirements of the BNSI office and the laboratory complex are being finalized to form the basis for the architects to design the Central Laboratory Complex which will house the BNSI with its laboratories and the Government Analyst's Office and his laboratories.

The recommendations and comments made by the expert on metricisation and the introduction of a metric measures are under Government's active consideration. BNSI will play a very considerable role in the change over when it comes. Much ground work has already been done in which Mr. Rhind, the U.N. Expert's Counterpart has made valuable contribution.

Work plan contained in the Project (referred to above) gives the time schedule of development. When this project is concluded the Barbados National Standards Institution can be expected to be an active institution of its kind in the Caribbean, capable of -

1. Serving the country and the region in the fields of:

Standardisation

Quality Control

Certification Marking

Pre-shipment Inspection

and coordination of these activities

2. It will help -

- i) organise Company Standardisation activity and train engineers, scientists and others to become standards technologist in BNSI and in the industry.
- ii) the countries change over to the metric system (SI) of measurements.

BISI will also be able to help other countries of the Caribbean in the task of the changeover.

To attract the right type of technical and scientific personnel to the institution, service conditions must be formulated early by the General Council when it is formed. Its other task will be formation of Executive Committee, Divisional Council and other Committees and formulate Bye-Laws for administration of the Institution

7

ACTION
JUL - 3 1972
Mr. Trisciani
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UNITED NATIONS DEVELOPMENT PROGRAMME
Project of the Government of
Barbados

Title: Organisation and Administration of Barbados National Standards Institution

REGISTRY

Number: BAN/73/ 1A/02/37

Duration: 6 years 1973-1979
 SEP 16 1972

Sector: Industry

Subsector: Manufacturing and Commerce

Government Co-operating Agency:

Executing Agency: UNIDO

Date of Submission: September 1972

Starting Date: June 1973

Government Contribution:

UNDP Contribution:

A. proved:

 on behalf of the Government
 (signature)

Date: _____

_____ **on behalf of Executing Agency**
 (signature)

Date: _____

_____ **on behalf of UNDP**
 (signature)

Date: _____

I. BACKGROUND AND SUPPORTING INFORMATION

A. Justification for the Project

Under the stimulus provided by the Barbados Industrial Development Corporation since its inception, the industrial sector of Barbados has registered substantial expansion and began to replace imported goods by local goods in the domestic market. Special mention may be made in this connection to the garments, building materials, processed foods and pharmaceutical. Some of these products are also exported out of this country to member countries of the Caribbean Free Trade Association CARIFTA as well as to other countries.

Further the pattern of imports to Barbados has also undergone major shift by substitution of some of the manufactured products from the developed countries by goods of CARIFTA origin. Both these trends are likely to be intensified in the coming years. Accent on industrialisation and exchange of goods in the CARIFTA region will have far reaching consequences to industrial developments contemplated by Barbados on its own as well as on its CARIFTA associates.

To safeguard the interests of Barbados in the domestic market of imports from CARIFTA and the world market as well as exports from Barbados to CARIFTA countries, and to other countries of the world, attention to quality of goods being traded assumes crucial importance.

In this context the Government of Barbados has established in cooperation with all interests involved, the Barbados National Standards Institution to undertake diverse responsibility for maintenance of quality of goods entering the domestic market and those destined for export, in accordance with the needs technically assessed and established.

The establishment of national standards institution in Barbados is also in conformity with the resolution passed in CARIFTA Ministers Council in 1968. This as envisaged by CARIFTA Ministers Council in 1969 paves the way for regional coordination of standards.

The institution with its multi-purpose character would also help the process of change over by Barbados from FPS System to the metric system (SI) on a phased basis. It will also be the agency for the related activities of certification marking.

In its first phase extending over the period of the UNDP Country Programme of this country between 1973-76, the institution will embark on the modest programme as spelt out in later sections.

/D.

B. Institutional Framework

The Institution is being established by Registration under the Companies Act, 1910. It will be governed by a General Council with the Minister of Trade, Industry and Commerce as President. It will thus be an autonomous body like the Barbados Institute of Management and Productivity. While the Government will assume the major share of the financial responsibility of the establishment and operation of the institution particularly in the initial stages, the private industry and trade is expected to support its activities in all possible ways including financial contribution commensurate with its ability as well as benefits accruing to it.

The institution will be administered by a Director under policy directives obtained from the General Council. (See the schematic diagram appended).

C. Provision for Government follow-up

While increasing support from the private sector is foreseen, the Institution can count upon Government support as justified on merits on long term basis. It is the policy of the Government to use this institute as major infrastructural support for the promotion of industrial development and expansion of trade internal as well as foreign.

D. Other related activities

1. Starting with standardisation in the national level the institution will proceed to -

- a) contribute towards evolution of regional standards in the CARIFTA and later in the Central/Latin American region;
- b) actively participate in the International Standardisation work;
- c) organise company standardisation courses for the industrial sector.

2. Through the laboratory contribute to:

- a) the use of indigenous materials which are easily available and are cheap as alternatives to materials either imported from abroad or if indigenous are in short supply and/or are more expensive;
- b) establish alternative standard test methods which are economic and more suited to the capabilities of the local laboratories.

/B.

B. Future UNDP Assistance

This may have to be reviewed by the middle of 1974.

II. OBJECTIVES OF THE PROJECT

Class of Project in the proposed or approved Country
PROGRAMME

The project is identified and described in part

of the country programme for Barbados approved/
proposed.

A. Long-range objectives

1. Put the industrial and agricultural production of the country on high quality level and thus lead to overall economy of the nation.

2. Help economic production by instituting continuous quality control (still better total quality control) in the industrial organisation thus avoiding -

- i) inefficient production runs (due to bad utilization of man, machine and material);
- ii) large scale rejection of final product either as completely unusable or as sub-standard product;

This will add up to an increase of overall productivity.

3. Help establish a system of pre-shipment inspection of goods exported out of the country so as to assure the world market that only goods of acceptable quality are exported by Barbados.

B. Immediate objectives

1. Evolve standards suitable to the country's conditions and needs rather than depend on standards of other countries which are often not complete answers to the nation's problems and requirements.

2. Help quality production in the country for its needs and within its capabilities.

3. Assure importation of right quality of material i.e. qualities best suited for the country and therefore in accordance with the standards evolved by its national standards institution. Thus gradually eliminating the need for import of raw material by brand name, very often at high price.

4. Help Coordinate standards among CARIFTA countries.

5. Establish quality control laboratory and then organise the Certification Marking Scheme of the institution.

C. Does the Project have investment potential?

The project per se does not have a direct investment potential. It will, however, contribute greatly towards better utilisation of investments in industrial production of the country.

III. WORK PLAN

A. Description of Project Activities

Location Bridgetown

<u>Project Activities</u>	<u>Proposed duration and starting date</u>
Provision of funds in the national budget for expenses on:	January - June 1973
1. Staff in position	
2. Temporary accommodation (kind)	
3. Construction of building for BMSI its laboratories and services	
4. Initiation of first standards preparation work	

1. Transfer of BMSI administration and standards office - library, etc. to the new building.	June - December 1973
2. Arrival of Senior Technical Adviser to the Director.	June
3. Tendering for and receipt of equipment and supplies including UTM component for testing laboratory.	July onwards
4. Progress in the formulation of standards on selected subjects.	June - December
5. Completion of construction of testing laboratory including fittings, services and furniture	"
6. Installation of the testing laboratory.	"
7. Prepare for Government the technical and administrative requirements for metrication.	"
8. Prepare the basic draft for the revised version of the Weights and Measures Act.	"

Location Bridgetown

<u>Project Activities</u>	<u>Proposed duration and starting date</u>
1. Continuation of standards formulation.	January - December 1974
2. Completion of the installation of equipment of testing laboratory	
3. Testing services to Industry	
4. Installation of the Metrological Laboratory	

January - December 1975

1. Fulfill functioning of standards making activity.
2. Advise Government with reference to certification marking scheme March 1975
3. Participate in the coordination of Regional Standards for the CARIFTA area and also the Latin American Region.
4. Active participation in international standards organisations.
5. Bringing into operation the certification marking activity. November 1975

January 1976

1. Continuation of the above activities on an enlarged scale.
2. Advise to Government on the introduction and implementation of the pre-shipment inspection for quality of goods.

B. Description of UNDP in: HTS

1. Assignment of international staff

Senior Technical Adviser to the Director BNSI to help:

- a) complete the setting up of the standards institution BNSI and commencing the task of preparing and publishing national standards;
- b) help plan the building of the laboratory and equipment including laboratory furniture fittings, etc., services like power, gas, water, compressed air, vacuum lines, etc.;
- c) set up the laboratory and commence work of testing and metrology;
- d) train the staff of the BNSI in several branches of its activities;
- e) organize the certification marking scheme;
- f) prepare basic material for introduction of pre-shipment inspection for quality of goods for export out of Barbados;
- g) contribute to the change over to the metric system (SI) of measurement, when Government makes the final decision to change over as recommended by the "National Committee on the introduction of metric system of weights and measures in Barbados";
- h) organize training in company-standardisation activity.

2. Provision of subcontractual services

None.

3. Training provisions

After initial training in the institution for six months some technical person may be required to undergo further training outside country with the help of U.N. Fellowships these are spelt out:

1) For Standardisation and/or Quality Control

a) Fellowship Duration

U.N.S.'s counterpart, Mr. Dudley Ehynd is about to leave on a U.N. fellowship to India, U.A.R., ISO/IEC Headquarters at Geneva and United Kingdom. U.N. documents authorising the travel are awaited. 6 m/a

b) One engineer who is being recruited will after working in E.N.S.I for 6 months for training abroad. 2 m/a

ii) For the Testing - Quality Control Laboratory

a) one analytical chemist after 6 months in E.N.S.I. and other Laboratories in Barbados 3 m/a

iii) For the metrology laboratory

One engineer after 3 months in the E.N.S.I. to the National Bureau of Standards Washington, U.S., U.S.C. or the National Physical Laboratory, Teddington, U.K. 4 m/a

4. UNDR - Required supplies and equipment

(a) Expendable
Chemicals and other supplies
Delivery date to begin August 1973

(b) Non-expendable equipment -
i) for testing laboratory chemical
Delivery date to begin August 1973

ii) for testing laboratory mechanical
Delivery date to begin August 1973

iii) metrological equipment and ancillaries
October 1973

Description of Government Inputs

1. Prerequisite activities

Government action for establishment of BMSI is already in progress.

When the decision to adopt metric (SI) system of measures is taken the Weights and Measures Act, 1956-10 and the rules and regulations thereunder will have to be revised by/or October of 1973.

Following legislations may have to be undertaken in subsequent years for developments as indicated under:-

- (a) Barbados National Standards Certification Mark.
- (b) Freshment Inspection Act, Barbados.

2. Assignment of National Staff

Staff designation

<u>a) Head of the Institution</u> <u>(Director)</u>	<u>Starting</u>	<u>Takeover</u>
Mr. Rhind has been working as UNE's counterpart since August, 1971, and will proceed soon on 6 months U.N. Fellowship for further training. He is being groomed to take over (U.N.E. will, if available, act as his Advisor).	August 1971	January 1973
 <u>b) Engineers and Chemists as required</u>		
i) one engineer is being recruited	1972	
ii) one chemist will be recruited when the laboratory building and services are completed		early 1973
iii) one engineer for testing and inspection in Engineering Laboratory		middle of 1973
iv) one engineer for metrological Laboratory		Middle of 1973
 <u>c) Secretarial and supporting staff</u>		
Secretary Administration and Finance	1973	1974
Stenographer - Secretary to Director	in position	
Typist	1972	
Library Assistant	in position	
Librarian	1974	
Messenger	in position	
	/staff ..	

Staff position will be reviewed from time to time by GC and provision made for recruitment.

Financial obligation in E.C.\$

Budget provision for the next three years consisting of -

cost for national staff

office equipment stationery, etc. at E.C. \$50,000 per annum (average is being made).

Three years E.C.\$150,000

Thereafter annual budget will be drawn up by the General Council.

3. Government-provided supplies and equipment

Building of laboratory E.C.\$460,000
complete with laboratory, furniture,
equipment and supplies like - power
gas pneumatic and hydraulic lines,
workshop, etc.

Training of nationals 5,000

Miscellaneous 10,000
175,000

say \$500,000

WORK PLAN - FAS GRANT

	1972	1973	1974	1975	1976
Prior obligations or reparatory activities by Government (legislation, premises, etc.)	Setting up of BMLI facilities taken by Government in December, 1971, further agreed to be industry financed establishment expected by September 1972. Planning the laboratories testing and metrology is expected to be completed by end of 1972.	Revision of heights and measures act to be undertaken. Construction of buildings to house laboratories and BMLI by middle of 1973. Equipping completed 1974.		Government action to establish the certification marking scheme	Legislative action to be initiated for fresh, sent inspection
Assignment of international staff	One U.S. Expert was assigned to Caracas initially 3 months in August, 1971	U.S. Senior Technical Adviser to Director June 1973			May 1976
Assignment of counterpart personnel	Already working since 1971 August. Will soon be sent on U.S. Fellowship for further training for 4 months overseas. He will be able to take charge of the Institution on his return after 4 months overseas training	How this service stands extended to end, 1972.			
Training Schedule	Counterpart, US Fellowship - 4 months, 1972				

BAR CHART (CONT'D)

	1972	1973	1974	1975	1976
Training Schedule (cont'd)		Engineer (2) 4 m/a Chemist 3 m/a/ 7 m/a	Engineer Petroleum 4 m/a		
Delivery of major items of equipment BMP		Expendable and non- expendable equipment for chemical laboratory to be completed by October, 1973 - September physical Laboratory equipment, etc. February, 1974	Petrological Labor- atory equipment etc. January to April, 1974		
Availability of Government supplies and equipment	Laboratory building and services. Plan- ning by 1972. By 1973 - office and chemical laboratory part should be com- pleted. The rest including complete services by mid 1974				
Provision for miscellaneous items					

**Project Budget covering 1973 Contribution
(in U.S. Dollars)**

COUNCIL REVENUES
Project No. 688

Title	TOTAL	1972		1973		1974		1975		1976		
		n/a	\$	n/a	\$	n/a	\$	n/a	\$	n/a	\$	
Project Personnel												
Senior Technical Advisor	30	90,000	12	30,000	10	15,000	12	30,000	12	30,000	6	15,000
Consultant	6				-		3	7,500	3	7,500		
Component Total	36	90,000	12	30,000	6	15,000	15	37,500				15,000
Training - 173, Polymers												
1) Counterpart (status Director)			4	2,000								
2) Engineers for standards work					2	1,100						
3) Analytical Chemist for Laboratory					3	1,400						
4) Engineers for inspection and testing					2	1,100						
5) Engineers for materials Lab							4	2,800				
Component Total	15	9,200	4	2,800	7	3,600	4	2,800				15,000
Equipment												
Transferable and Non-transferable		150,000										
Component Total		150,000		38,800		100,000		50,000				
Grand Total	51	249,200	16	32,800	13	118,600	19	204,300	12	37,500		15,000
	say	265,000	say	33,000	say	120,000	say	204,300				15,000

Not included in the total as project ends June 1973

Project Budget Gov. Finance Dept. 11
Comptroller General
(Local Currency 1975)

Country:
Project No:
Title:

Project Personnel	1972		1973		1974		1975	
	n/a	EC\$	n/a	EC\$	n/a	EC\$	n/a	EC\$
Comptroller to the Inspector General Director (1972)	12	9,000	12	12,000	12	12,000	12	12,000
Engineers	20	24,200	20	13,200	20	20,200	20	20,200
Analyst/Chemist	12	-	12	6,000	12	6,720	12	6,900
Secretary (Administration) Finance	20	-	6	3,200	12	6,720	12	6,950
Secretary to UNR/Minister	12	3,700	12	3,900	12	4,100	12	4,300
Librarian	12	-	12	5,700	12	5,000	12	6,200
Typist Clerk	60	9,120	12	1,600	24	3,600	24	3,800
Library Assistant	20	5,700	12	1,800	12	1,920	12	2,000
Messenger	48	7,800	12	1,920	12	2,040	24	3,040
Component total	200	100,400	20	50,040	12	63,370	12	67,000
Prisoners and buildings including services, furniture and fittings for 1972 and 1973		400,000		205,000		175,000		5,000
Miscellaneous		15,000		5,000		5,000		5,000
		615,000		390,000		180,000		5,000

Cost included on
Project starts from 1973

STANDARDIZATION - FEDERAL BUREAU OF INVESTIGATION - DEPARTMENT OF JUSTICE

Director (101) - Secretary

Director (101) - Secretary

Executive Committee

Standards

Director (101)

Standards Section

Development/Standard

Production of Standards

Library

Technical Secretary

Systems of Standards

Analysis of Standards

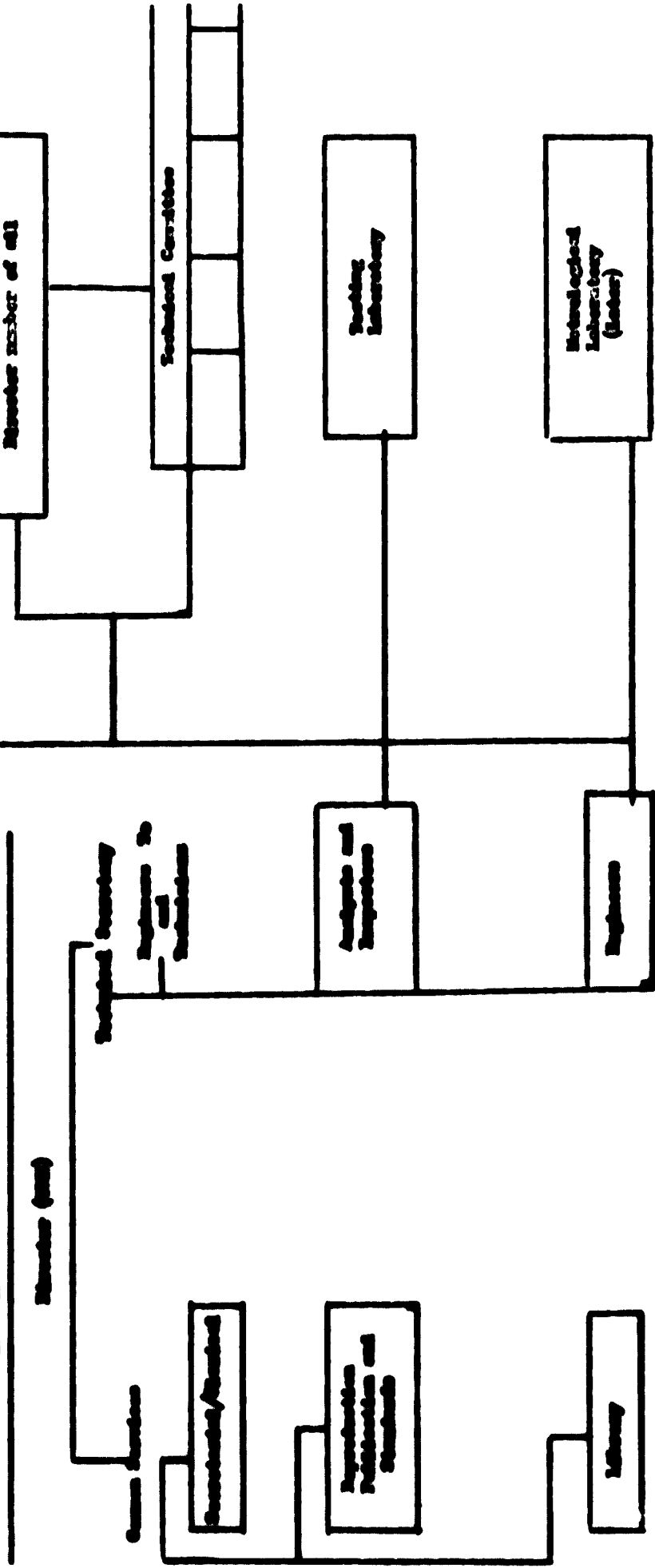
Reference

Technical Standards Committee
Member number of all

Technical Committee

Testing Laboratory

Metrotech Laboratory
(History)



Note on Quality ControlIts role in Industrial Development of a CountryI. What is Quality Control

"Quality Control" (Q.C.) is an accepted scientific method for improvement of quality, enhancement of productivity, reduction of cost and creation of consumers confidence. Proper use of Quality Control can give substantial improvement without any capital investment worth, none or excessive drainage of foreign exchange".

"By quick examination in factories not having any quality control practices, it is not unusual to find rejection as high as 20% to 40%. The general tendency in most industries is to lay more emphasis on inspection in the hope of turning out quality goods. Inspection is at best a post mortem and helps to sort out the defectives". How much better would it be to prevent the disease that killed the patient than the revealing of the ailment by the post mortem. Taking the analogy further, medical check-up at frequent intervals helps to keep a person fit and take preventive action when required. Quality Control applied in the production unit - similarly keeps production on the healthy lines, with low rejection, high productivity and so on. Thus Quality Control consists of -

- i) inspection of the final product preceded by
- ii) control at each step of production and be satisfied that it is up to quality, then letting it proceed to the next phase.

II. Relation of Quality Control to Standardization

What quality control attempts is to control something, i.e. quality of a component, material or finished product. Its prerequisite is the exact and correct description of quality, in the most exact terms possible which we call a specification. This standard specification gives all requirements such as dimensions, finishes, etc., which are necessary for proper functioning of the article. Specification must also include standard methods of tests to evaluate these properties. It is not possible, however, for the laboratory to test all the material going to the market - not only is it more expensive than even the manufacturing cost, but the test might often be a destructive one; as the possibility of 100% test is out of the question except when the test is not destructive, and the material has to have an extreme reliability in action, such as the parts of the Apollo Space Craft. Even then 100% inspection is not a guarantee of 100% perfect performance.

Statistical Quality Control is a technique which makes quality examination more accurate and the methodology is spelt out in standards like -

- (1) IS: 1548-1960. Manual on basic principles of lot sampling
- (2) IS: 2500(Part I)-1963. Sampling Inspection Tables: Inspection by attributes and counts of defects.
- (3) IS: 2500(Part II)-1965. Sampling Inspection Tables: Inspection of variables for percentage in defects.

Further application of statistics to quality control has developed the method of quality control during production. These have been subjects of standardization like:

/IS:

IS: 397-1952 (being revised now). Method for statistical quality control during production by use of control charts.

Other standards in use are:

- (1) IS: 5420(Part I)-1969. Guide on precision of test methods and principles of basic application
- (2) IS: 5002-1969. Methods for determination of sample size to estimate the average quality of the lot or process.
- (3) IS: 4905-1968. Methods of Random sampling.

Of course, similar standards are also available from other national bodies and particularly from the United States where statistical quality control took its roots.

III. Types of Quality Control

This has already been covered to some extent in paragraph 1. But to make the point clear and to show what further developments have taken place, it is better once again to classify them.

- i) quality control by inspection of the finished product which has been compared to a post mortem.

If done on the basis of specification which includes methods of inspection, of testing and by the use of satisfactory methods of sampling, gives a good idea of the quality of the lot. It does not however, help the manufacturer beyond preventing his organisation from putting out sub-standard material. An outside certifying authority has to be careful and must make it clear that his certificate appertains to the sample received by him unless he has assured himself that the sampling has been properly done.

- ii) Introduction of quality control in the manufacturing unit gives tremendous benefits to the organisation. This means inspection and control at each stage of production all along the line. This avoids wastage as further processing of material or part is halted at the stage at which a defect is detected. This defect may be rectifiable, and after removing the defect it gets back into the production line or it may have to be rejected - thus avoiding further work on something which will ultimately lead to a product that has to be rejected. All the further processing has thus been avoided. When statistical principles of quality control are applied to this inplant control procedure, it leads to far greater benefits. For it not only eliminates defects but prevents defects from occurring by giving early warning of unsatisfactory working tendencies which might lead to rejection. It sort of shows the yellow light for the control man, or even the workman after due indoctrination, that the process needs remedial measures. If the remedy is applied in time the production gets back to the proper line, thus loss in production is minimized.
- iii) The S²C, however, does not do away with final testing from a lot of the finished product, the latter becomes a part of the S²C.

/Total

IV. Total Quality Control (TQC)

Later development of SQC is what is called total quality control which has also statistical principles as its basis but broadens its coverage. TQC starts with quality control of the supplier of raw materials, components, etc. This may sound bizarre. But this technique is a part of what is called "vendor rating". It is quality control applied to the supplier, rejecting the unreliable vendor for one or more of the many reasons. Once the right supplier/s is selected, the Quality Control described in ii) is followed but starts with Q.C. of the material purchased. T.Q.C., however, does not stop where ii) does but follows the product through many more channels like - handling, packaging, distributing and even consumer reaction. Findings of the latter are fed back to the manufacturer's Q.C. unit for proper action.

Requirements for various types of quality control for -

A. Test Laboratory equipped to test different types of materials -

Agricultural Products

Food Products

Garments (including fabric imported or indigenous)

Chemicals

Pharmaceuticals

Animal and Poultry Feeds

Fertilisers

Insecticides

Fungicides

Detergents, etc.

Engineering and Building Materials and Components,
etc. etc.

B. Inspection Agency

- (1) to do on-the-spot simple tests including visual examination (condition of packing, damages, etc. and also other examinations which can be done by means of simple instruments like -

Lengths - Measures

Weights - Measures

Gauges, etc., and

- (2) draw samples as laid down in the standards so that the sample represents the lot as far as practicable, for detailed and complete analysis in the Laboratory. It should be possible to start this as soon as standards are ready and the laboratory is started.

/The

The standards must be available and the manufacturer must be ready to start inplant quality control procedure. The National Standards Body will be willing to help the factory. The factory, must therefore have a laboratory equipped to undertake all the test at different levels of production and at the required frequency. Secondly, the testing personnel and control Inspectors to control quality with the necessary authority from top management to hold up production until the defectives are rectified or rejected.

Total Quality Control does nothing more than S.Q.C. only broadens field of control on both sides of the line - the incoming material of the supplier and also outgoing manufactured product to the consumer through the different channels.

ANNEXURE 'B'

// List of equipment proposed to be obtained by
Government Analyst Laboratory Barbados

- (1) Gas chromatography and Accessories.
- (2) Infra-red Absorption Spectrophotometer
- (3) Ultra-violet Absorption Spectrophotometer
- (4) Fluorimeter
- (5) Electrophoresis Equipment
- (6) Equipment for Thin Layer and Paper Chromatography
- (7) Fraction collector for Column Chromatography
- (8) Pollution Testing equipment (smoke-control work)
- (9) Atomic Absorption Spectrophotometer
- (10) Refrigerated Centrifuge.

This is new addition of sophisticated equipment to the usual equipment available with the department which is one of very long standing.

Metric Change Over

The Government of Barbados is considering changing over from the FPS to the Metric System of Measurement and to enquire into the matter, a Committee under the Chairmanship of Mr. Frank McConney has been set up. Here are the following terms of reference:-

To enquire into and determine the desirability and practicability of the early adoption of the Metric System of Weights and Measures in Barbados, taking into consideration the economic circumstances of the country, including its external relations, the likely cost, and the administrative and technical requirements of the conversion programme.

A similar study was carried out by an Expert Committee appointed by the Cabinet of Trinidad on implications of changing to the Metric System under the Chairmanship of Dr. I.D.C. Inbert who submitted an excellent Report which the United Nations Expert had the chance to read through the courtesy of Mr. F. McConney. The conclusions and recommendations of the Inbert Committee are given as Appendix I.

One would wholeheartedly agree with the conclusions of the Inbert Committee. One can also say that by the end of the 70's of this century there would be a world-wide system of Measurements based on the Metric System or rather the Systeme Internationale (S.I.).

The Government has rightly stressed that the change over would have some meaning and content with the English speaking Caribbean if adopted on a general basis. As sovereign states each of the CARIFTA partners must have its own Weights and Measures based on the system which is definitely going to be a world-wide system, i.e. the S.I. The originator of the imperial system (FPS), namely, U.K. has planned to go completely Metric by 1975. More than 130 countries have already gone completely metric and many more are in the process of doing so.

Barbados must also prepare to go metric. Standard Bodies have to play a very important role in the task of the change over to the Metric System. This has been so in India as well as in the United Kingdom where the ISI and the BSI have played most leading roles. The ISI constitution has laid down as one of its main tasks "to consider and recommend to the Government of India, national standards for measurements of lengths, weights, volume and energy". The President of the United Kingdom Board of Trade has said "the foundation of the change (metric system) must be a series of British Standards". On this analogy the National Standards Body of Barbados would have to play a very important role to bring about this change over. In this connection see first Report of the United Nations Expert.

As a first move, it is desirable to consider the preparation of the draft Proposal entitled "the Standards of Weights and Measures Act". The question where CARIFTA would be most effective is in the maintenance of a Metrological Centre for work on maintenance of the Primary Standards of length, Mass (Weight), Volume, etc. for the entire Caribbean Region. Standardisation has two distinctive aspects:

- (1) dealing with fundamental standards of length, mass, time, unit of electricity, temperature, lumens. In the United Kingdom, as well as in India. "The National Physical Laboratories" in Teddington and in New Delhi respectively are responsible for the custody, research, calibration, etc. of these fundamental standards of measurement.
- (2) Establishment of Industrial Standards, which is the responsibility of National Standards Body of the country like ISI, BSI, AFTON (France) DINA (Germany) and so on.

The part the Standards Body plays in the effective working and control of weights and measures, etc. is by laying down standards for construction, accuracies, etc. for weights, lengths, etc. for commerce and trade purposes. They also work on accuracies of measuring instruments as well as that of mass, lengths, etc.

It will, therefore, be seen that an early decision will have to be taken in the matter. The question of the Weights and Measures must be considered very soon as otherwise Barbadian economy would suffer by continuing on a system which the world will discard very soon.

Now the organisation for Metrology i.e. the laboratory for maintaining the Primary Standards which in U.K. and India are departments of the National Physical Laboratories - the same is the case in Germany and other developed nations - will have to be established. This would be very sophisticated and highly expensive undertaking. Nor is it necessary or feasible for each country in the CARIFTA region to establish such an institution. I would suggest that CARIFTA may take up this question.

Caribbean Industrial Research Institute CARIRI established in 1970 by the Government of Trinidad and Tobago at St. Augustine. "The Establishment of bureaux of standards of necessity requires research and testing facilities in order that reliable and realistic standards may be established and maintained "Interested Caribbean Governments were welcome to employ the facilities of CARIRI on a fee per project basis " (from Chapter 16 B. "CARIFTA and The New Caribbean" published by the Commonwealth Caribbean Regional Secretariat May, 1971.

It is suggested that CARIRI with further help from the UNDP (this assistance was made available to establish CARIRI) set up a Metrological Centre for maintenance and research on the primary standards for the whole CARIFTA region. U.N. help is necessary as such a Laboratory would be extremely expensive and would require special air-conditioned rooms and very specialised staff. The Primary standards will be available from the International Metrological Organisation which has its seat in France. This International Organisation maintains its standards of lengths, mass, etc. which are accurate by definition, and a Metrological Centre (like NPL in New Delhi) has to get its primary standards calibrated from this International Organisation once in 10 years.

What would be necessary for Barbados a Sovereign State of CARIFTA is to have reference standards prepared (or purchased from abroad) and calibrated against the standards in the Metrological Laboratory of the Caribbean Region, or elsewhere and maintain these in their own Laboratories of reference standards which could be a wing of the Standards Body of Barbados.

The next step is to have a secondary working standards calibrated against the reference standards. These working standards, sufficient in number, should be sent to the centres from where the Weights, and Measures

Act will be enforced for use by the Inspectors of Weights and Measures to check measures that are in every day use in trade and commerce of the country.

Further the evolution, Barbados Standards will have to depend largely on the work which has been carried out in countries of the world - developed and developing. Most of the Standards will be of great use to us are now coming out in the Metric Measures. The International Standards of the ISO and (IEC), International Electrical Technical Commission are well based on the Metric System. So the source from which we will draw inspiration ISI, BSI, DIN, AFNOR, ISO, IEC, will be all metric, except those from the United States of America. U.S.A. and Canada are giving a serious thought to the question of the change over. There is very little doubt that these two big countries will sooner than later go over to the metric system. The NBS will help prepare conversion tables, conversion slides and easy reckoners for the public as well as accurate but national conversion guides for the industry.

Committee appointed by the
Cabinet of Trinidad and Tobago
Implications of the change to metric system etc.
Chairman - Dr. I.D.C. MCBERT, May, 1970

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. CONCLUSIONS

1. The Committee has come to the following conclusions:-

The rapid trend towards exclusive use of the metric system of weights and measures throughout the world, including the English-speaking countries, will ultimately force Trinidad and Tobago into an ever increasing use of metric units. Already, 90% of the world's population is using this system and 75% of world trade is conducted in it. Even the United States, which has less compulsion to change than most, is actively considering its use.

Delay in changing to the use of the metric system will increase the cost of eventual inevitable change and will adversely affect trade. Geographical and political membership of Latin American area, which is completely metric, must be an important consideration in accelerating a decision to change.

2. There has long been agreement in most countries that the metric system has inherent advantages over the imperial system. Its decimal nature and the simple relationships between its units facilitate all operations involving weights and measures, and lead to substantial efficiency over similar operations conducted in the imperial system. Moreover, Trinidad and Tobago already uses decimal currency and a change to the metric system will unify methods of calculation. The advantages of the metric system mentioned above are most evident in the form known as the International System of Units (SI), the internationally preferred system.
3. No meaningful estimate can be made of the costs and benefits of metrication. These will be largely determined by the date at which it commences, the period of change allowed and the amount of planning undertaken. Actual costs can be considerably minimised by careful planning and benefits are expected to outweigh costs in a reasonably short time. Cost advantages may be expected from the purchase of imported materials and equipment from a broadening metric market rather than from a shrinking imperial one. Local manufacturers, hoping for standard specifications which are being increasingly expressed in metric units on an international scale.
4. The metric system is already legal in Trinidad and Tobago and its use can, therefore, be commenced without immediate amendment to existing Weights and Measures Legislation. Complete revision will ultimately be needed so that clear provision can be made for the new system. Amendment to other legislation in which reference is made to weights and measures will have to be made at an early stage of the change.
5. Metrication will have to be a co-operative and progressive process and will best be achieved by systematic planning on the part of all sectors. Such planning should be done within a total national framework, organised and supervised by a suitably staffed national committee appointed by the Government.

Changes in the oil industry will have to receive special attention and may have to take place over a longer period than most other sectors because of the probable high cost.

6. A properly organised programme of public relations and education will be necessary to present change in such a way as to establish and maintain good relations with the public. Lectures, exhibitions, films, discussions, articles, leaflets, wall charts, posters and conversion tables are amongst the best means of disseminating information. Extensive use of the new media will also be required.

7. An early statement by Government of intention to change to the use of the metric system is necessary if a national programme is to be properly planned and undertaken. Such a statement would give all sectors the opportunity to allow for metrication in their planning and would focus public attention on the change at an early stage.

Training of Senior Officer of National Standards Body -
Barbados, West Indies

- 1.0. The functions of this Officer would be -
- 1.1 To act as Secretary to the Council or governing body of the Bureau which will include Senior members of Government Departments, as well as senior representatives of industry, commerce, professional bodies, research units, and technical education.
 - 1.2. To control and supervise the organisation of the Bureau, including finance, staffing, accommodation and external liaison.
 - 1.3 To convene Council, Industry, Standards and technical committee meetings and industrial commercial and other conferences.
 - 1.4 Liaison with the council on all matters pertaining to the Bureau's functions.
 - 1.5 Liaison with other national Standards bodies and also International Standards organisations.
 - 1.6. Organisation and control of circulation of minutes, agenda, reports, drafts of Standards to industry Standards and technical committee members, and associated interests.
 - 1.7 Establishment and control of the technical committee structure following the procedures laid down in Rules and Regulation to be drawn up for their conduct, and as directed by the Council, excluding decisions on technical matters.
 - 1.8. Control and management of libraries, test laboratories and inspection departments,
 - 1.9 Maintenance of plant, equipment, furniture, effects and premises of the Bureau.
 - 1.10 To keep abreast of general technical practices, in industry and maintain liaison with industrial and commercial associations.
 - 1.11 To co-ordinate common practice between Industry Standards or technical committees of the Bureau and other related outside bodies.
 - 1.12 To control the final format, editing, classification and preparation for publication of national Standards drawn up by the Bureau and approved by its Council.
 - 1.13 To act as conciliator when required, to reconcile divergent viewpoints and be able to preside over conferences convened to discuss all aspects of standardisation.

2.0 The chosen person has the opportunity to work with the U.N.E. for the period of the latter assignment in Barbados, which is expected to be extended to one year i.e. till 31st August, 1972. The following plan of training is based on this assumption as also the Government's acceptance of my recommendation that Mr. Dudley E. Ebynd my counterpart be the chosen person. I have formed a good opinion of his technical ability and drive. I also believe the interest of Barbados will be best secured by a Barbadian heading the post.

3.0 It is hoped that the Standards set up will be established by the Government by an act or an administrative order very soon. A separate note has already been submitted on the structures - initial modest one and a more elaborate one. That note read along with paragraph I will be the basis of the training programme of the officer-in-charge and the future Director.

Phase I.

Work with the U.N.E. for 6 - 8 months. During this period he will become conversant with the

basic philosophy of standardisation;

procedure of developing standards;

the duties of an efficient secretary of Division Council and technical committees and sub-committees;

acquiring of some experience of being Member-Secretary of the administrative councils;

preparation of Agenda of meetings and the minutes proceedings; and the other phases of the function as spelt out in paragraph 1.

Thus by this time he would have acquired all the basic knowledge but from a limited horizon. For greater efficiency particularly towards co-ordinating and collaborating with other national and international organisation he has to have a period of 3 months training in some countries - in the latter standards bodies. Also in regard to the working of the Weights and Measures department (see my note on Metricisation) and also to helping the country to go metric.

Phase II

Training abroad will be in the three countries -

- i) in one developing economically but having a strong standards organisation with all ancillary facilities, i.e. India.
 - ii) In the United Kingdom with which Barbados has many ties both cultural and technical. U.K. is changing over from the imperial system - originated in U.K. - to the metric system.
 - iii) Short periods in United States.
- i) India is developing her industry at a very fast rate and the Indian Standards Institution had been established in 1947 just to be there to help industrial growth in an orderly manner as far as was possible. It started in a very small way with 4 persons including the Director. Today it has about 9 Division Councils dealing with -
 1. Agriculture and Food.
 2. Chemicals
 3. Civil Engineering
 4. Consumer Products

5. Electrochemical
6. Hospital Equipment
7. Marine, Cargo movement and Packaging.
8. Mechanical Engineering
9. Structural and Metals. It is still expanding.

The Executive Committee has under its control the work on

- 1) Documentation and Library.
- 2) Statistical Methods applied to Standardization.

There are other advisory and miscellaneous committees like -

- 1) Implementation
- 2) Certification Marking
- 3) Women's Advisory Committee
- 4) Safety Committee

The implementation committee has the responsibility of running the training schemes:

- a) for newly recruited technicians who will ultimately be Secretaries of Technical Committees or man the C.M. Laboratories and inspector tes in the headquarters or branch offices;
- b) for technicians coming from other, mainly developing countries (to date about 80 from a dozen or more countries have taken advantage of the courses);
- c) for Company Standards personnel (more than 500 have been so trained).

The Certification marks department runs Quality Control courses mainly for -

- 1) C.M. Licensee's technicians and also
- ii) for certain classes of small scale industries on request.

India - through ISI has been the pioneer in the metric change over. Here he will have the opportunity of learning how India overcame the difficulties particularly how basic principles for rewriting non-metric standards were developed. In the ISI office where every opportunity will be given to work in these departments he will be able to attend meetings of technical committees and get acquainted with the job of Secretary. There will be an opportunity to see the working of Certification Marking - including visits to factories under license.- drawing samples - doing tests in the laboratory of the licensee Laboratory, work in the I.S.I. Laboratory.

Visits will be arranged to National Physical Laboratory New Delhi who are the custodians of Primary Standards of India. Here he will get acquainted with the calibration work required of the Weights and Measures department of Barbados N.S.J. Visit will also be arranged to the National Test House in Calcutta where he can study test of all varieties

/of materials.

of materials. India has devoted very special attention to development of small industries. Large organisation, the Commissioner of small scale Industries has established and is establishing many testing and prototype centres for quality production by the small entrepreneur. These should be visited with great advantage.

ISI is a fairly big organisation and has been for long periods the only member of a developing country in the ISO Council (including Vice Presidency for two terms, 6 years; and Presidency for one term - 3 years) and also that of the Committee of Action of IEC for many years. It will therefore be able to give the incumbent the necessary background information of working of these two International Organisations.

India, has an Export Inspection Council to control quality of exports from the country. Discussion with the Council will be also useful and can be arranged.

India has problems of environment - tropical and others - which are similar to West Indies - therefore a training of a month will be most useful.

- ii) The link with the British Isles and West Indies are many centuries old. It is, therefore, natural and correct to seek guidance and training from the United Kingdom. Like in many things, U.K. has been the first country to think of standards on a national basis. BSI can trace its origin from the beginning of the twentieth century. U.K. is, however, a very developed country and its Standards Institution is also highly developed. It will be the right sequence for the incumbent to have the next phase of his training in the United Kingdom and BSI. It has many more industry councils, technical committees, etc.

Of particular value will be the experience in metrication (metricisation) which they are pushing forward with great vigour. The educational and informative literature BSI has put forward is excellent and we could draw inspiration from these.

A week spent in their Testing Laboratory at Harlow Harsted will be very unique experience. Similarly the N.P.L. Teddington will offer unique opportunity for acquiring knowledge about Primary Standards their maintenance calibration, etc.

BSI has the further distinction of holding the largest number of Secretaries of ISO and many of the IEC. A sojourn in BSI will give information on ISO/IEC to supplement that obtained from ISI.

Other ancillary activities like consumer guidance are to be examined. A thorough study of the ancillary services like reproduction of documents, information centre, public relation must also be studied. Period of training envisaged is one month.

- iii) On his way back the incumbent should spend one week in the Headquarters of American National Standards Institute - New York, and one week in Philadelphia at the Headquarters of American Society of Testing and Materials.

/Time

Time permitting he should also visit one or two of the many industrial concerns, like General Motors, who have very well organized Company Standards Departments.

He should return to Barbados 2 months before the U.N.E.'s assignment is completed so as to take over the Directorship completely on his shoulders.

There does not appear to be any need to recruit a short time Director from another country. The growth will be gradual and he will acquire the necessary wherewithal to carry the heavy burden. As a local man he will have many advantages.

Training Schedule:

Duration - 3 months

Time - April to June, 1972.

Countries and Organizations to be visited (the latter will draw up the programme).

- i) India - ISI - one month
- ii) U.K. - ISI - " "
- iii) U.S.A. - a) A.N.S.I. - New York - one week
b) A.S.T.M. - Philadelphia - one week
c) A company standards outfit - two weeks

Return to Barbados 2 months before U.N.E. leaves. Return early June, 1972.

ANNEXURE 'E'

Subject: Garments (Textiles)

1. Glass container or glazed china container which can be closed for fabric specimen (10cm. x 4 cm.) and chlorine solution.
2. Grey scales for assessing change in colour and staining.
3. Undyed cloths (wool, cotton, viscose rayon).
4. Heating device, providing even heat transfer at controlled temperatures at close contact with fabric specimen.
5. Glass bell, of capacity 6 litres.
6. Glass frame, for suspending specimen.
7. China dish 50 ml.
8. Perspiremeter/ or Hydrotest (American Association of Textile Chemists and Colorists).
9. Jacketed steamer for pressure cooker of dimensions 23 cms. (9 inches) in diameter, and 28 cms. (10 inches) high with accurate pressure gauge.
10. Suitable mechanical washing device which consist of a water bath containing a rotor fastened to shaft in which containers of 500 ml. capacity are rotated at a standard speed of 40±2 revolutions per minute. The temperature of the water bath is thermostatically controlled to maintain test solution at 40±2°C.
11. Bleached mercerised cotton cloth (poplin).
12. Thermostat
13. Non-corrodible (stainless steel) balls, approximately 6 mm. in diameter.
14. Black Panel thermometer (Atlas Electric Devices Co., 4114 North Ravenswood Avenue, Chicago 13, Illinois, U.S.A. and Quarzlarper GmbH, Hanau, Germany).
15. Xenon Arc lamp of correlated colour temperature 5500 to 6500°k.
16. Opaque card board, or other thin opaque material, e.g. thin aluminium or card board covered with aluminium foil.
17. Undyed, unbleached wool cloth.
18. Standards (Blue wool cloths dyed with the below list dyes.

Fastness ratings

Dye

1	Colour Index 2nd Edition, Acid Blue 104
2	Colour Index, 2nd Edition Acid Blue 109
3	Colour Index, 2nd Edition Acid Blue 89
4	Colour Index, 2nd Edition Acid Blue 181
5.	Colour Index, 2nd Edition Acid Blue 47
6	Colour Index, 2nd Edition Acid Blue 23
7	Colour Index, 2nd Edition Solubilised Vat Blue 5
8.	Colour Index, 2nd Edition, Solubilised Vat Blue 6

Paints and Varnishes

Equipment:

1. Tank (a convenient size being 700 mm x 400 mm x 400 mm.) fitted with a cover, a heater and thermostatic control.
2. 2 stop watches
3. Bend test apparatus*
4. Cupping test apparatus*
5. Lens of magnification x 10.
6. Scratch test apparatus Hand Operated Mechanised*
7. System for circulation and aeration of water, or a means for stirring used in conjunction with a source of dry, oil-free pressurised air (a pump)*
8. Test panels (ISO Recommendation R 1514: Standard panels for testing)

(a) of steel (furnished)

(b) of aluminium - 150mm x 100mm. x 1.25mm.

(c) of glass

(d) of tinplate

Specification for -

(a) steel panels

steel should be a fully killed cold reduced type
Grain size 0.030 mm.

Surface roughness 1.5 mm.

Richen cupping value 10 mm. on a sheet thickness of 0.8mm.

Specifications for

(b) aluminium panels

Either soft (annealed) or hard material should be used. The hard aluminium should have a tensile strength of at least 138 N/mm². Soft aluminium, a tensile strength 108 N/mm².

9. König Pendulum/Persos Pendulum.
10. Ballotini (small transparent glass spheres)
11. Brush soft-haired
12. Abrasive Paper (220 Silicon Carbide grit).
13. Sieves of nominal mesh apertures 125 mm. and 250 mm.

14. Broad Bladed stirrers
15. Sampling tubes of glass or metal
16. Small dip can*
17. Weighted sampling cans with valve closures, for taking samples at all levels.
18. Gauge, consisting of a block of hardened steel approximately 175 mm in length, 65mm in width and 13mm thick.

Graduation of typical gauges

<u>Depth Range</u>	<u>Interval of graduation</u>
<u>mm</u>	<u>mm</u>
100 to 0	10
50 to 0	5
25 to 0	2.5

19. Scraper, consisting of a single or double-edged blade of approximately 90 mm. long, 40 mm. wide and 6 mm. thick. The edge or edges on the long side should be straight, and rounded to a radius of approximately 0.25 mm.
20. Abel cup (B.S.3442) or
Tag Cup - USA Standard (Z11.24 and ASTM D 56).
21. Weatherometer.

EQUIPMENT AND CHEMICALS

Equipment

1. Photoelectric colorimeter (540 green filter)
2. Forceps 10 cms. long
3. Magnifying glass - with a handle 7.5 cms. length and a magnification of 10.
4. Physical Balance of sensitivity 5 μ g.
5. Sieves (4) - 4.00 mm.
3.35 mm.
1.70 mm.
1.00 mm.
6. Enamelled Plates - flat type; 30 cm. diameter with raised rims.
7. Small scoop - with handle of mild steel; in any of the following sizes:

Length mm.	Width mm.	Height mm.
100	100	25
75	65	25
25	20	25

8. Abrasion testing machine
9. Hydraulic press
10. Measuring instrument (Dial Gauge).
11. Steel (or some other material) square
12. Measuring metallic wedge
13. White porcelain bowls.
14. Stainless steel spoons
15. Abbe's Refractometer
16. Light source (a tungsten lamp or daylight bulb if 15 above has a compensator). Otherwise a monochromatic light or electric sodium vapour lamp).
17. Spectrophotometer
18. Conductivity Bridge with magic-eye indication for measuring the conductivity directly.
19. Soxhlet apparatus
20. Air Oven.
21. Specific Gravity bottle
22. Thermostatically controlled water bath.
23. Still for making distilled water
24. Mixer - Electric or other type with a mixing container.

25. Plastic Wash-bottles
26. Majonnier fat extraction Apparatus or Pohrig tubs.
27. Volumetric flasks
28. Graduated Flasks
29. Separating Funnel
30. Measuring cylinder (graduated, of glass and stoppered)
 - 25 mls } Capacity
 - 100 mls }
31. Pipette - delivery 0ml, 1ml (or 1.1. ml.) and 0.1 ml.
32. Test tubes (¹⁵⁰/16 mm.) and Durham Tubes ³⁸/8 mm.).
33. Dilution bottles, Tubes and Flasks
34. Desiccator
35. Kjeldahl Distillation apparatus
36. Centrifuge Tubes
38. Flat bottom moisture dish with cover - of stainless steel, nichel, aluminium or porcelain, having about 8 cm. diameter and 2.5 cm. depth.
39. Incubator
40. Porcelain dishes
41. Micrometer screw gauge or a suitable dial gauge reading accurately to 0.00 25 mm.
42. Analytical Balance
43. Balance Torsion or Simple type approx. 500 gm. capacity.
44. Basin - made of nickel or german silver, large enough to hold a normal sample.
45. Saccharimeter - graduated in International Sugar Scale and provided with a 200 mm. tube.
46. Long stemmed funnel
47. Stainless funnel - capable of holding 100 ml.
48. Refrigerator
49. Bacteriological Pipette
50. Pipette containers - preferably of metal, length about 400 mm.
51. Petri Dishes
52. Petri Dish containers
53. Hand Tally - A mechanical counting device, if available
54. PH meter or comparator with standard colour discs.
55. Media-making utensils.

56. Colony counter
57. Kettle - made of milk steel or aluminum sheet of 2 mm. thickness.
It's capacity shall be 500 ml., inside diameter 8.5 cm. and height
58. Grinding Mill.
59. Microscope
60. Muffle furnace
61. Gutzeit bottle
62. Watch glasses
63. Weighing Bottles
64. Autoclave
66. Burettes
67. Kjeldahl flask
68. Metric Tape - 0 to 5 metres, least count 1 mm.
69. Metric Scale - 1 metre, least count 1 mm.

Chemicals

1. Sodium potassium tartrate (Rochelle Salt)
2. Copper sulphate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$)
3. Sucrose
4. Hydrochloric acid concentrated
5. Sulphuric acid (Concentrated)
6. Petroleum ether
7. Benzene C.P.
8. Phenolphthalein
9. Potassium hydroxide
10. Sodium hydroxide
11. Alcohol (Ethyl)
12. Methyl Orange
13. Sodium Chloride
14. Diethyl ether, $(\text{C}_2\text{H}_5)_2\text{O}$
15. B. Naphthalene Sulphuric acid
16. Acetic anhydride
17. Chloroplatinic acid
18. Ammonium Chloride

19. Nitric Acid
20. Potassium Chromate
21. Silver Nitrate
22. Calcium Carbonate
23. Potassium dichromate
24. Ammonia (concentrated 830)
25. Ammonium Oxalate
26. Potassium permanganate
27. Bromocresol green
28. Glacial acetic acid
29. Mercuric bromide paper
30. Potassium Cyanide
31. Arsenic trioxide (As_2O_3)
32. Granulated Zinc
33. Stannous Chloride
34. Citric acid
35. Potassium cyanide
36. Dithionone (diphenyl thiocarbazono)
37. Ammonium Acetate
38. Sodium sulphide
39. Lead nitrate
40. Sodium Carbonate
41. Dextrose
42. Commercial Malt diastase
43. Ferric ammonium sulphate ($(NH_4)_2(SO_4)_3 \cdot 12H_2O$)
44. Potassium thiocyanate
45. Dextrose
46. Methyl red
47. Potassium sulphate (or anhydrous sodium sulphate)
48. 1, 2, 4, Aminonaphthol sulphonic acid
49. Sodium bisulphite
50. Sodium sulphite
51. Calcium Chloride
52. Ammonium Molybdate
53. Monopotassium phosphate (KH_2PO_4)

54. Trichloroacetic acid
55. Ninhydrin
56. Ascorbic acid
57. Sodium acetate
58. Methyl cellosolve (Ethylene-Glycol-Monoethyl ether) peroxide-free
59. Sodium nitroprusside
60. Glycine (Aminoacetic acid)
31. Phosphoric acid
62. Phosphotungstic acid
63. N-aryl alcohol
64. Lead acetate
65. Potassium aluminium sulphate
66. Potassium Chloride
67. Agar
68. Ammonium nitrate
69. Ammonium sulphate
70. Peptone
71. Maltose
72. Glycerol
73. Tartaric acid
74. Lactic acid
75. Dextrin
76. Yeast Extract
77. Chloroform
78. Mercuric oxide - nitrogenfree
79. Barium hydroxide
80. Pyrogallol
81. Tannic acid
82. Soluble starch
83. Kieselguhr
84. Sodium tungstate
85. Sodium cyanide
86. Uric acid
87. Barium Chloride

88. Potassium dichromate
89. Potassium ferrocyanide
90. Zinc acetate ($\text{Zn}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 2\text{H}_2\text{O}$)
91. Antimony trichloride SbCl_3
92. USP. Vitamin A (Reference Standard)
93. Bromine water
94. Isobutylalcohol
95. Potassium persulphate
96. Sodium taurocholate (or sodium tauroglycholate)
97. Lactose
98. Eosin
99. Crystal Violet
100. Rosaniline Acetate
101. Iron-wire-pure
102. Kieselguhr

Chemicals

1. Sodium hypochlorite of the following composition

Active chlorine		100 to 190
Sodium chloride	NaCl	12 to 17%
Sodium hydroxide	NaOH	2% maximum
Sodium carbonate	Na ₂ CO ₃	2% maximum

2. Soap containing not more than 5% moisture and complying with the following requirements based on dry mass

Free alkali, calculated as Na ₂ CO ₃	0.3% maximum
" " , calculated as NaOH	0.1% "
Total fatty matter	85% "
Titre of mixed fatty acids prepared from soap	30°C. maximum
Iodine value	50 "

Soap should be entirely free from fluorescent brightening agents.

3. Breathol AN (colour Index Azoic coupling component 4)
4. Brentamine Fast Scarlet R salt (colour Index Azoic Diazo-component B)
5. Azonel A
6. Lissapol MD
7. 1 - histidine mono-hydrochloride mono-hydrate.

PRELIMINARY OBSERVATIONS ON THE
STRUCTURES FOR THE BARBADOS NATIONAL
STANDARDS BODY (NSB)

Functions of a National Standards Body

Any developing country desiring to raise the standard of its economy depends very significantly on the rational development of its industries; trade and agriculture. Science and technology play an important part in the process. Industrial growth has to be balanced which would need:

- a) closer integration and co-ordination of industries of all categories small as well as large.
- b) optimum utilization of resources of men, material and machine;
- c) systematic exploration of un-utilized indigenous resources and newly developed materials which can be easily produced in the country;
- d) rapid development of services like transport, power, communication;
- e) best utilisation technical/knowhow and experience available in the world to the best advantage;
- f) in the importation of foreign technical knowhow lurks the danger of growth of unnecessary variety. A close check has to be kept to reduce this growth as it leads to wastage and problems of non-interchangeability, etc.
- g) assurance of consumer, satisfaction with the products of right quality at economical cost;
- h) raising quality of export leading to greater turnover and therefore larger foreign exchange earning. This will enable import of capital equipment and of all kinds of basic unavailable but needed raw materials;

2. Standardization ranks very high among the techniques which help in solving the above problems. It contributes to higher productivity by eliminating wastage of material during manufacture, handling transport and utilisation thus achieving overall economy. It serves the consumer by giving him the right quality and quantity. It also helps him to get the best service out of it, and above all it protects him against health and other user hazards. It rationalizes production and help eliminate unnecessary variety. It also helps import substitution by developing the use of alternative indigenous resources.

3. The standardization is thus essential for all aspects of economic activity and also all interests. It has of necessity to satisfy all interest. It must be "for all and by all" (ISO). Its development has to be the responsibility of the producer, consumer, trader, the Government, etc. in an co-operative venture. It is the universal practice to formulate standards through the committee procedure in which all concerned co-operate in evolving something on the consensus principle. Nowhere is the fixation arbitrary without consultation, the extent of which may vary from country to country depending on the socio economic conditions.

This report has not been cleared with the United Nations Industrial Development Organisation which does not therefore necessarily share the views expressed.

4. Standardisation is a specialised technique calling for great care. It has as its basis consolidated results of science, technology and experience. It is something which is not static but very dynamic as the pillars on which it stands are ever moving forward and developing.

5. The interests of those concerned in the formulation of standards are not always the same way, they are often antagonistic. The consumer is inclined to over-specify - asking for properties and qualities which are not essential or practical economically. The manufacturers, on the other hand, tend to press for lowering the quality. These two views must be co-ordinated through expert handling and a common denominator found by synthesis. Normally this objective is achieved through committees of experts from manufacturing, user, scientific and other interests set up by the National Standards Body. The Committee usually prepares draft of a standard on the basis of common agreement. This is widely circulated to interested parties and both in the country and abroad to elicit comments and views. The Committee meets again to consider these and arrives at a final standard. This process may have to be repeated several times before the final standard is published.

6. Thus the task of development of standards for the nation and its co-ordination with standards of other countries - Caribbean region in the first instance - is a very specialised activity. The National Standards Body must therefore, be well organised and staffed by experienced standards technical personnel not only to consider all views and co-ordinate them into a common level of understanding, but get the ultimate implementation of the standards in the country.

7. The National Standards Body will be called to achieve the following objectives:-

- a) To prepare national standards based on consensus principle through co-operation of all concerned.
- b) Promote general adoption and implementation of these national standards in the whole country for production, purchase and use.
- c) Continually check for revision amendment or withdrawal of these standards with the progress of technology and experience.
- d) To promote standardisation activity in the company level as a technical management function leading to quality control (at all levels - raw material production process and final product) - variety rationalisation simplification and allied techniques.
- e) To act as the national centre for exchange of information, co-ordination and co-operation in the standardisation work with other N.S.B.'s of the world and the regional and international bodies.

- f) To serve as a national source of information on subjects in standardization and allied fields.

To attain these objectives active participation must come from -

- Government Departments
- Organisations like Chambers of Commerce
- Manufacturers Organisations
- Trade Associations
- Professional Agencies-Associations
- Engineering Faculties of Universities and Technical Institutions.

Other activities which the National Standards Body will be called upon to undertake -

- g) Function as a centre for repository of fundamental standards (see note to the Director, Economic Planning Unit dated 25th September, 1971.
- h) Undertake tests for industry and issue certificates of compliance with standards.
- i) Administer the National Certification Mark Scheme.

8. The National Standards Body must be given a firm standing and measure of stability. The Government of Barbados has to take the initiative to establish the Barbados Standards Bureau (or institute, institution or association) by either passing a law or by an executive order. Such an order or statute has to spell out the functions and responsibilities of the N.S.B.; its organization, source of its finance; It must clearly indicate the extent of Government participation in its work. As indicated earlier it has to be a cooperative enterprise amongst all - Government Departments, Industry, Commerce, Technical Organisations and relevant University Faculties.

9. Three main possibilities exist in the administrative structure:

- a) A department of the Government as Soviet Union - who have recently elevated the organization to a Ministry.
- b) It may be a private organization free from Government control and not deriving any help from the treasury, as in the Federal Republic of Germany. It was so in the United States of America who has now gone over to the form a).
- c) A joint venture of the Government and the industry. The responsibility of its management would be shared by the two in proportion to the degree of development and Government interest (as participation in the industrial undertakings - in what is called the public sector enterprise); e.g. India, United Kingdom and many other countries.

/The

10. The co-operative approach is a must whatever the structural form. For without effective collaboration, cooperation and support from all parties concerned, standards work can not take off the ground. This would mean association of the representatives of industry, commerce, consumers, professional bodies, research organisation in the administration at the highest policy making level and all way down to the working levels. This is the type followed by most of the countries.

11. Two organisational charts are appended. One for an early formative stage - the other for a fully developed body (Appendix I and II).

Finances:

12. Financial requirements to start a national standards programme will not be heavy. It will consist of a staff salaries and miscellaneous expenditure. In the initial stages much of the expense will have to be borne by Barbados Government. This will ensure - a) active support of Government; and b) stability and unhampered developments to begin with. The industry, however, must from the beginning be ready to share the burden as co-partners of this great co-operative venture.

13. India about 25 years ago started with a small staff of four persons, the Director, Stenographer, a Clerk and a Messenger. The finance was largely Government and very small. Today it is one of the largest standards organisation in the world with 1,200 - 1,400 Committees serving and 6 - 8 branch offices in the sub-continent. The industrial contribution has grown larger and larger but the Government contribution percentage-wise has gone down year to year. A comparison is not really relevant, except to show that the best results are achieved with a small beginning and gradual and planned growth according to the needs.

14. Gradually other sources of income will generate such as industrial contribution, sale of standards and publications, test fees, certification marking income and so on.

Staffing:

15. Once the constitutional hurdles are crossed and before embarking on the technical work the staff question has to be tackled. The most important is the selection of the Head of the Institution. This will be the subject of another note.

Supporting Staff:

16. In the early stages of its work N.S.B. will not require a large staff. The following staff must be in position before initiating technical work:

- (a) one trained engineer to act as technical secretary (this is in addition to the U.N.E.'s counterpart - who will also act technical secretary to some committees;
- (b) a skeleton secretariat with administration and clerical assistance;
- (c) an organizer of library and information centre on standardisation. Already large number of ISO, ISI, ANSI Rumanian and other standards have been received and are still coming. (India has been requested to send ISI publication). These are precious sources for development of Barbados Standards. These have to be arranged by a person experienced in library work. Subsequently, this will also be able to act as information Centre.

Technical Works

17. Fundamental standards of length, mass, time etc. is of primary importance. (This has been the subject of a separate note to the Director, Economic Planning Unit).

Planning and establishment of priorities:

18. There can't be two opinions about necessity of good planning, and establishing priorities before embarking on the technical work. Planning enables the N.S.B. to fix the targets of achievement for expansion of its facilities and auxiliary services on a time basis, it also enables Government and industry to know before hand their financial commitments for standardization. Initial subjects well chosen and carefully executed will go a long way to bring home to the country the importance of N.S.B. and its work. This will secure more support - moral and material. More important, every care must be taken to get early implementation of standards. It must be recognized early that active participation in evolving a standard does not ipso-facto mean implementation by the party concerned. High percentages implementation of standards and benefits accruing therefrom are the best way to make a success of N.S.B. work.

19. The scope for standardization is all pervading. N.S.B. will have to choose first those subjects for its activity which will yield quick and maximum benefits. It is necessary to limit the fields as to begin with the staff of N.S.B. will be small and should not be overloaded as this might lead to low quality output.

19.1. The following priority areas have been suggested:-

1. Food products
2. Building components
3. Pharmaceutical preparations
4. Garments

20. Preliminary studies have revealed that work on the three items:

1. Food products (exports and imports)
2. Building components (as also building codes, etc.)
3. Garments (including imported textiles from which garments are made).

could be taken up. Further studies are planned in consultation with Barbados Manufacturers Association. Pharmaceuticals are under statutory control by the Chief Medical Officer under the Health Services Act, 1969-30 and various regulations therein.

21. As already mentioned, standardization is a very specialised job, it requires technical competence by those who participate. This is not always available in developing countries. Thus the best course to get early results would be to adopt and adapt -

- a) International Recommendation of ISO/IEC; and
- b) standards from countries with similar climatic and other conditions such as those of other Caribbean countries or of India.

/Councils

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Councils and Committees

22. N.S.B. will be required to set up administrative councils, technical division councils (on the industries chosen) as also specialized technical committees and sub-committees to undertake the task for formulation of standards. See Appendix II.

These subjects committees are the basic fundamental links of the organisation. They take the decisions on the technical contents of the standards. The division councils are responsible for overall supervision and planning of work of the industry as a whole.

The administrative councils are the Governing Councils (G.C.) and its executive Committee (E.C.). They are the supreme authority of the N.S.B.

The Governing Council and the Executive Council are served by the Head of the Standards Organisation acting as member-secretary.

The technical staff of the N.S.B. similarly act as Secretaries to the Technical Division Councils and the subject committees. They hold all the threads of the technical work in their hands. They ensure smooth working and collaboration of all members, prepare basic papers and documents and see that the decisions taken by the committee are implemented. They make available to the committee all technical data from other national and international standards or other relevant technical data.

In a developing country a technical secretary apart from the abovementioned task, has the onerous duty to guide discussions, educate members and explain the standardisation functions. The officers must be given proper training. A separate note is being prepared on the subject.

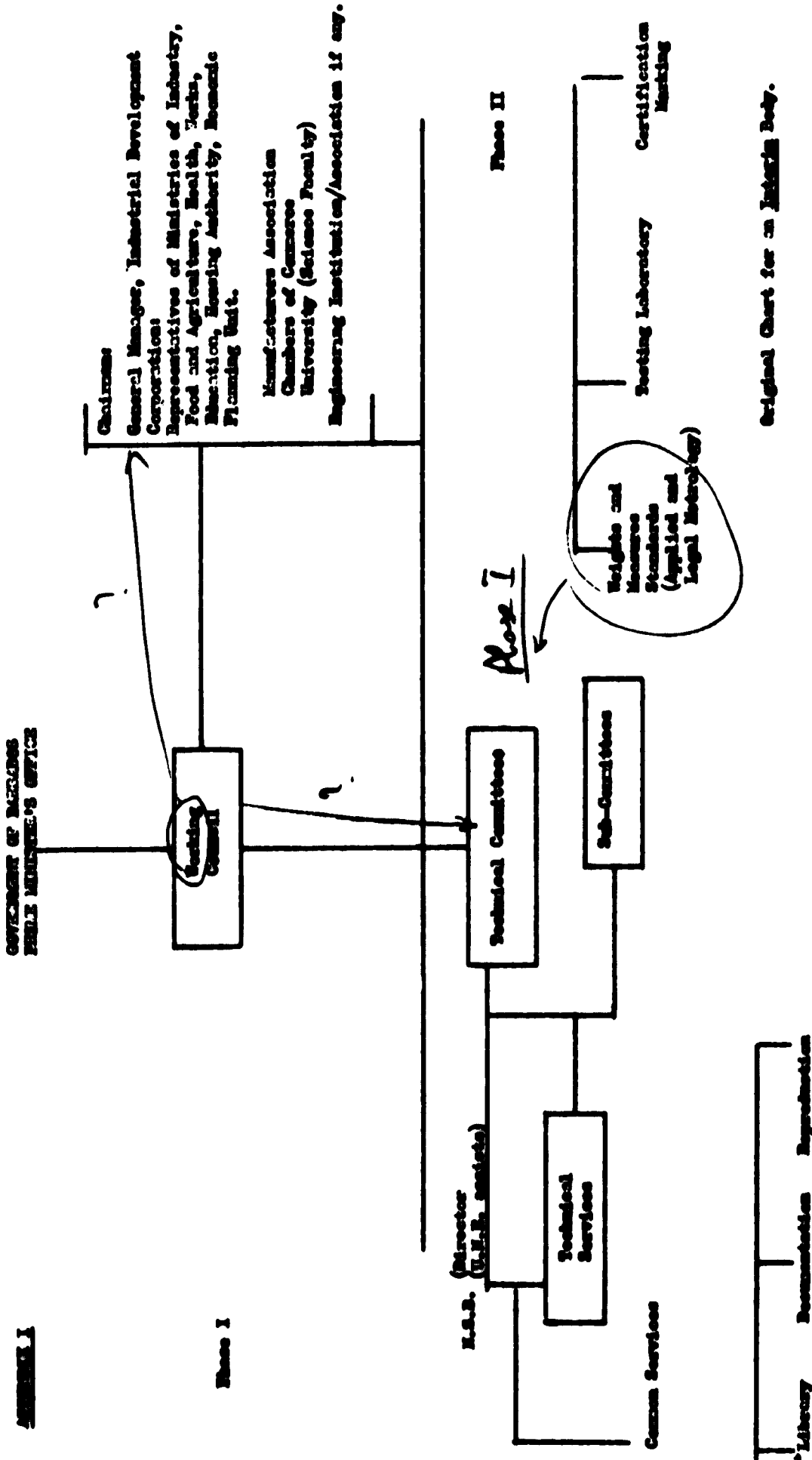
Apart from the Secretarial work a good deal of spade work has to be done by the technical staff including preparation of the first draft.

To make best use of the technical talent and time of these persons, they have to be assisted by non-technical staff - such as assistants, stenographers and typists - duplicator operators, etc.

Apart from the technical departments, other auxiliary services needed are also indicated in Appendices. The testing laboratory, the certification marking department will form subject matters of future notes. The note on the Weights and Measures department has already been submitted.

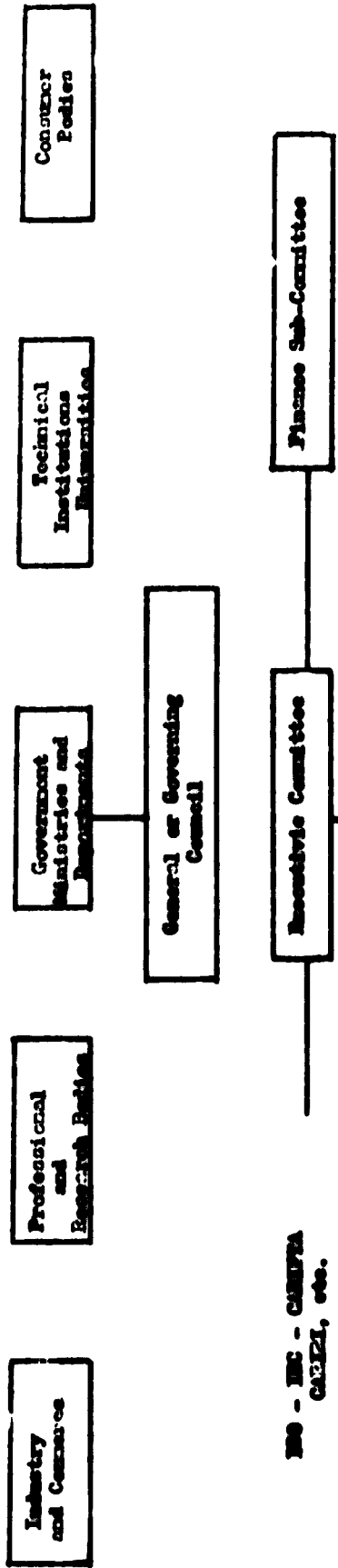
Regional Co-operation

The subject has been dealt with in my first report to the United Nations Industrial Development Organisation (copy endorsed to the Director, Economic Planning Unit). It will be seen in Appendix II that Liaison has been shown with International and Regional Organisation through the Executive Council.



Original Chart for a National Body.

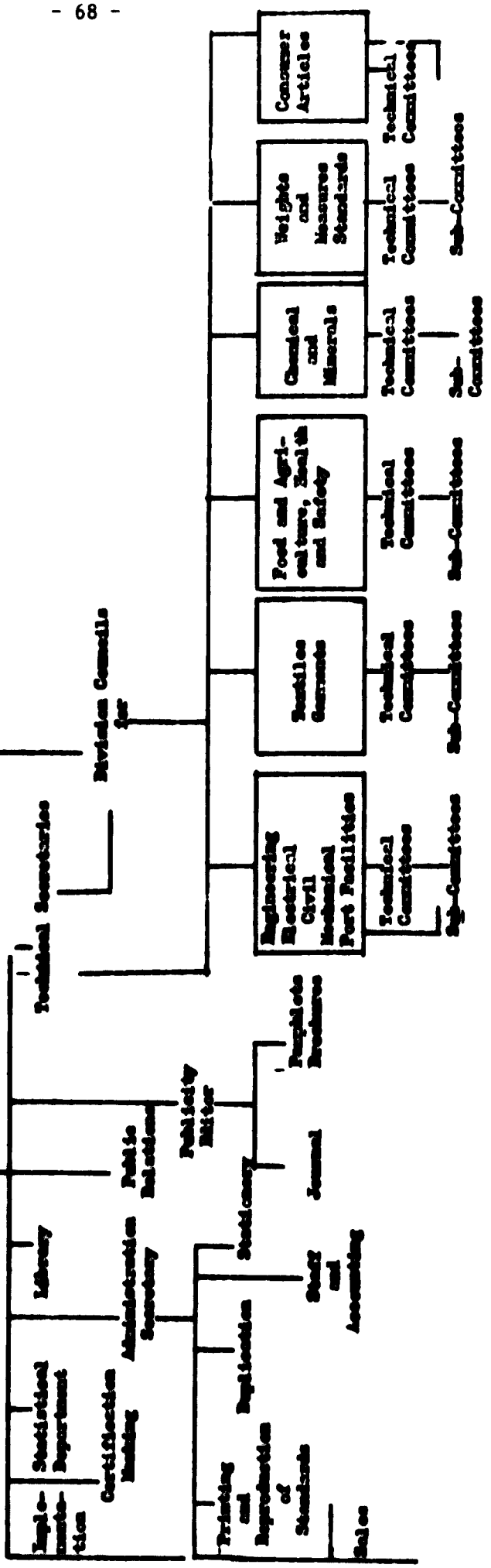
APPENDIX II



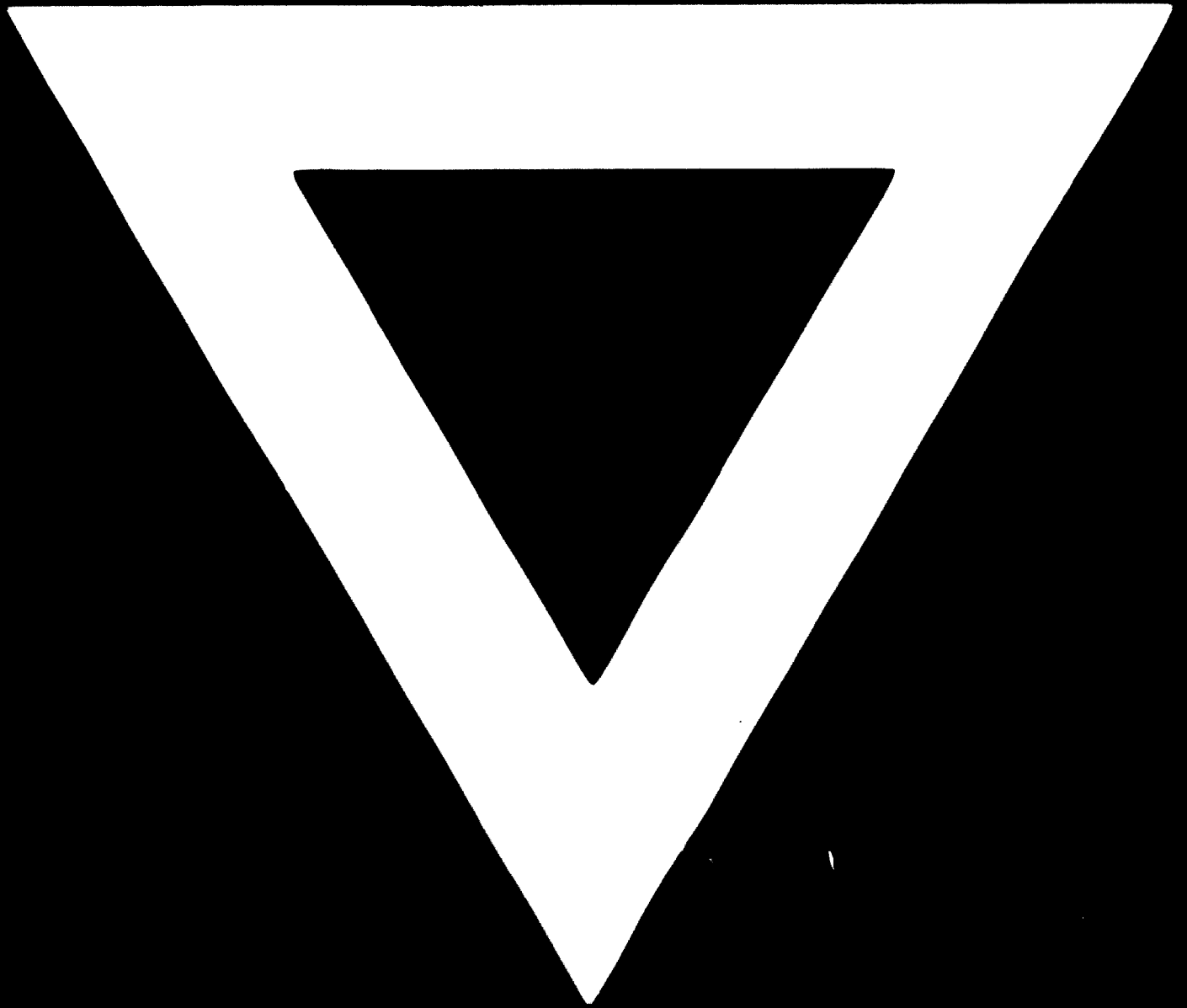
ISO - IEC - CEN/ISA
CAE/IZI, etc.

Director, ISO

Testing Laboratory



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86.01.10

AD.87.04

ILL 5.5+10