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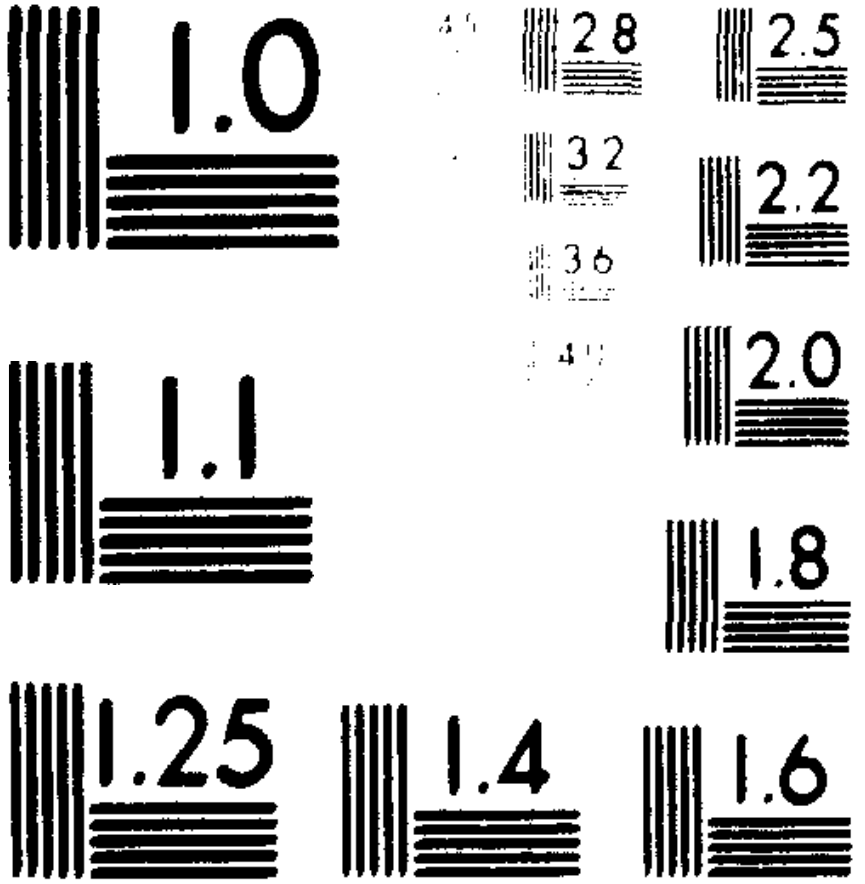

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December 1980

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The Plastics Industry in The Philippines

DP/PHI/77/004/A/01/37

Terminal Report

Prepared for the Government of the Philippines

by the United Nations Industrial Development Organization

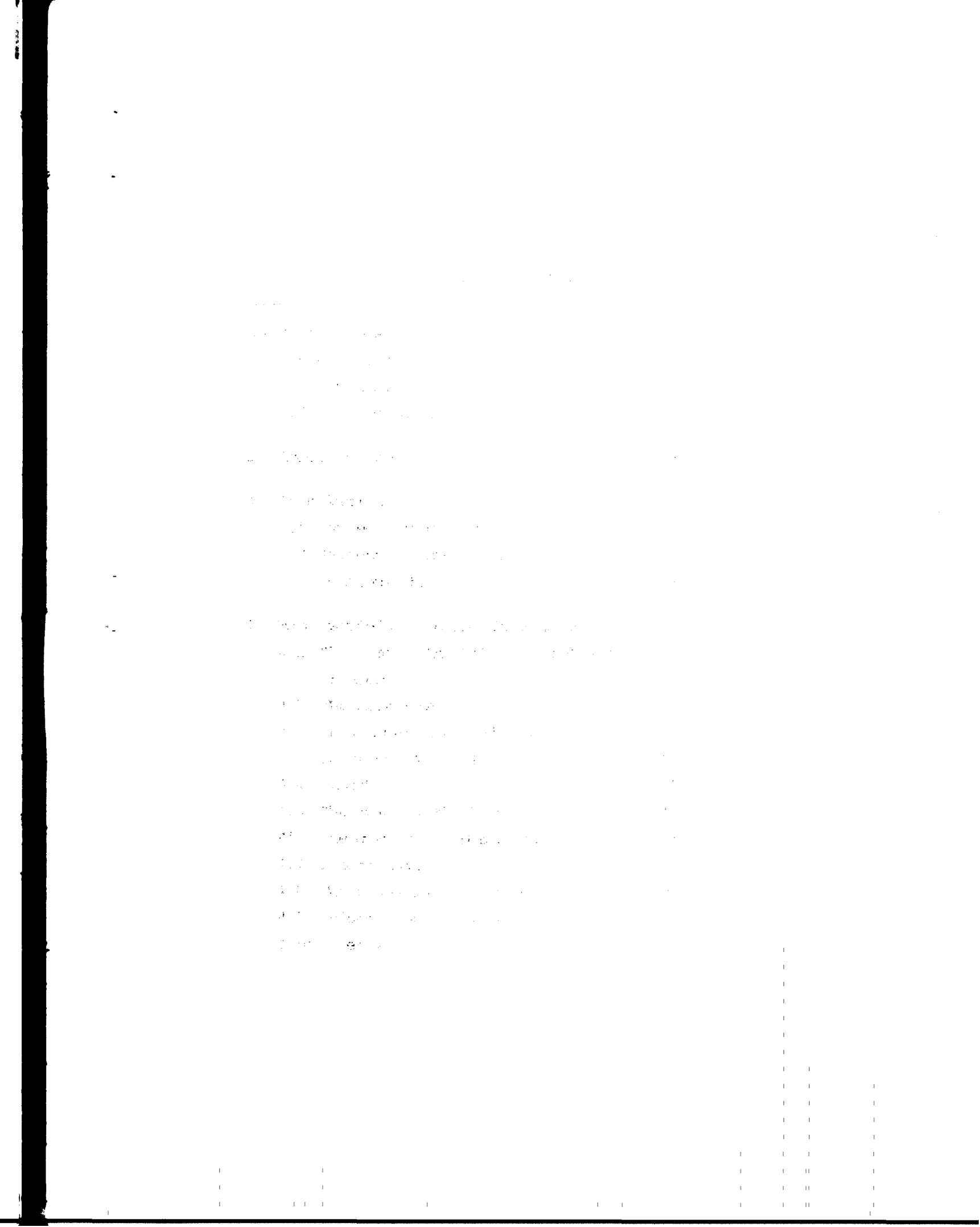
executing Agency for the United Nations Development Programme

Based on the Work of K.E. Andrews Consultant in

Plastics Production and Processing

United Nations Industrial Development Organisation

Vienna



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Summary

The report is based on visits to manufacturers of plastics materials and products discussions with traders, producers, Government institutions and industry associations. The key work comprised factory visits, workshops and seminars.

The main conclusions are that an Industry Plastics Development Centre should be set up and a programme of expert visits and fellowships should take place to sustain productivity and quality improvement. The whole has been drawn together in an integrated programme covering six years and this has been set out in a bar chart. All the relevant job descriptions for the programme and a draft project document for the Plastics Development Centre are provided in the form of Appendices.

Extensions to the project of which this forms part are included to maintain continuity and particularly to ensure that industry associations are persuaded to participate to the benefit of the industry and provide a focus of on-going dialogue with Government.

SPECIAL ABBREVIATIONS USED

tpa	Metric tonnes per annum
BOI	Board of Investments
QC	Quality Control
PVC	Polyvinyl chloride
PS	Polystyrene
GNP	Gross National Product
UK	United Kingdom
LDPE	Low Density Polyethylene
HDPE	High Density Polyethylene
PP	Polypropylene
CSMI	Commission on Small and Medium Industries
000tpa	Thousands of metric tonnes per annum
TV	Television
VCM	Vinyl chloride monomer
HIPS	High Impact Polystyrene
GP	General Purpose Plystyrene
MIRDC	Metals Industry Research & Development Center
CIF	Carriage Insurance and Freigh

A C K N O W L E D G M E N T S

I would like to thank the United Nations and the Government of the Republic of the Philippines for the opportunity to participate in this extremely interesting project. I would also like to thank my counterparts for their enthusiasm and industry during the mission and especially for the preparative work they had already done before my arrival without which it would have been impossible to complete the task in the allotted time.

1. Conclusions and Recommendations

1.1 Conclusions

1.1.1 Consumption of plastics in the field covered is at a rate of about 200,000 tpa at the present time. (cf. 3,600,000 tpa for a comparable population in a developed country) the growth rate is 8 - 9% (Europe 3 - 5%).

1.1.2 Exports are in the region of 10% and could grow significantly in the next two - five years.

1.1.3 The level of technology is variable, ranging from a high standard to a very low standard. The blow moulding and injection moulding sectors are the least advanced but the greatest deficiency is in productivity rather than quality. The mould making industry leaves much to be desired.

1.1.4 The main weakness of the industry lies in lack of management understanding and failure to recognise the profit improvement that can result from an uplift in technology. There are signs of increasing awareness in some industry sectors.

1.1.5 Material costs are high but what is more important, subject to wide fluctuations. This result is "Profit through trading" and a disproportionate part of capital being invested in inventory.

1.1.6 The method of calculating duty on imported resins based on "Home Consumption Values" offers some protection against dumping but fails to take account of the large swings in the export prices from developed countries that have occurred in recent years. The technique for duty calculation also results in preferential sourcing from countries with low internal petrochemical taxes and disregards the real export prices from other countries to the detriment of the Philippines.

1.1.7 The export incentives offered to BOI registered companies are well defined and the information is easily accessible to industry. Incentives to non-registered companies exist but there is no single source of information on these matters. This unnecessarily restricts exports.

1.1.8 Industry associations are poised to become a real force. A little more encouragement will achieve this objective and provide a credible focal point for a dialogue between Government and the industry.

1.2 Recommendations

Recommendations fall into three categories, the first two with UN assistance, one in the form of a new project and the others as extensions to the QC & Productivity Project No. Phi/77/004/A/01/37. The third proposed as a suggestion for local action by the Government of the Republic of the Philippines. The whole represents an integrated programme over a period of six years designed to uplift quality and productivity levels and provide an infrastructure to sustain further growth and development of technology to meet both domestic and export markets into the 1990's. Details of the timing are set out in a bar chart in Appendix 1.

1.2.1 New Project (A Plastics Research and Development Centre)

It is recommended that a Plastics Research and Development Centre should be included in the third country programme now being finalised. Details of the justification and breakdown of costs are given in a draft project document provided in Appendix 2. Brief details are provided on pages 19-20 of the Executive Summary.

1.2.2 Additions to QC and Projectivity Project No. Phi/77/004/A/01/87

1.2.2.1 It is recommended that a study tour be arranged for a representative group from the industry to the International Plastics fair to be held in Europe in September 1981, a selected number of European industry associations and some operating factories. The objectives would be to increase awareness of developed country standards of operations, assist in driving home the value of industry associations and provide first hand snapshot of the opportunities for export. The tour would be arranged and supervised by a UN expert. Details of the programme and outline costs are given in the Executive Summary (pages 21-22). A job description for the expert is given in Appendix 3.

1.2.2.2 It is recommended that a short visit be made by a UN expert in the last quarter of 1981 to finalise the project document for the Research and Development Centre. Costs and timing are given in the Executive Summary (page 24). A job description for the expert is given in Appendix 4.

1.2.2.3 It is suggested that a plastics management consultant be provided to advise a working party set up by

government to review raw material tariffs and export incentives as they apply to the plastics industry. The objective is to shift the emphasis from "Profit by Material Purchase" to "Profit from Technical Merit." Costs and timing are provided in the Executive Summary and full details of the background are given in Section (4.6), headed cost of raw materials. A job description for the expert is given in Appendix 5.

1.2.2.4 Three supplementary expert visits are recommended during 82/83 to give techno-managerial training in the main areas of production. These are designed to begin the process of productivity and quality improvement in the intervening period before the Research and Development Centre can become a reality. Details are provided in the Executive Summary and job descriptions for the experts can be found in Appendices 7, 8 and 9.

1.2.2.5 Three fellowships are recommended and details are given in the Management Summary.

1.3 Proposals for Local Implementation

1.3.1 It is suggested that methods of communicating export

incentives to non-registered companies be reviewed in depth by an appropriate independent working party.

It is recommended that every effort be made to fully utilise the facilities at MIRDC to assist the plastics industry.

2. Executive Summary.

The plastics industry is forming a growing part of Philippine life and already employs some 40,000 - 50,000 Philippine nationals. Total sales of the industry's products are 2.5 - 3.0 billion pesos annually. About half of this sum is represented by imports of raw plastics whilst the remainder is "added value" within the country. Exports, including small amounts of PVC and PS, represent 10% of total turnover. The steady growth of Philippine per capita purchasing power will bring about an increasing demand for indigenously produced plastics products in a wide range of industries including packaging, consumer durables, automotive, building and construction, leisure etc. and rate of growth will probably exceed that of GNP by 2 - 3% (total growth of plastics on present predictions 8 - 9%). In comparable developed societies (UK, 50,000,000 population, Philippines 18,000,000) consumption of plastics products is eight times (UK consumption of plastics in 1979 - 1.6 million tonnes, Philippine consumption of plastics estimated 0.19 million tonnes in 1980). It is therefore essential to sustain the impetus of assistance already given by the UN Development programme in preparation for maximisation of the polymer output of the proposed petrochemicals complex as a means to increase employment, take an increasing share of the domestic market from imports and increase penetration of export markets.

Consumption of PVC in the Philippines represents only 17.4% of total thermoplastics compared with 27.6% in the US. Even higher figures are found in other European countries particularly West Germany, but USA consumption lies intermediary between these two extremes. There are major differences, largely for historical rather than technical reasons, between the end use application of this resin in the European and US markets. The availability of PVC resin from non-petrochemical sources (carbide/alkali/chloride route) would suggest that it is desirable for the Philippines to examine and perhaps emulate European practice rather than US practice as a means of reducing the dependence of overall polymer consumption on imported oil derivatives.

The proposed petrochemical project needs careful consideration. Published plans do not provide adequate capacity to meet the projected demands of the industry. Nameplate polymer capacity in LDPE, HDPE and PP together needs to be in the region of 300,000 tpa if self sufficiency is to be achieved in the mid to late eighties. In addition low pressure processes should be used if possible, on energy saving grounds.

Developed countries continue to substitute metals by polymeric materials on the grounds of energy savings both during prime production (1 cubic metre of steel products require 8 - 10 times as much energy to produce as 1 cubic

metre of plastics products) and in subsequent use of the product (eg. weight and hence energy savings in automobiles).

The end effect is a reduction in oil consumption (presently plastics production represents no more than 3% of total oil consumption).

The technical performance of the Philippines plastics industry is varied. Some sectors and specific companies are equal to those in developed countries but others are poor. The major problem lies in managerial skills and inability to recognise that profit improvement and lower prices are possible through uplift of technical performance. Technical aid, together with management training, should achieve significant quality and productivity improvements and broaden the ability of the industry to compete in world markets on an export basis.

The cost of raw materials is high but, more important, far too subject to world capacity excesses/shortages. Hence wide swings in price take place. The "Home consumption value" concept for calculation of duty goes part of the way to solving this problem but fails to insulate the industry enough. As a result trading ability is more important than technical knowhow as a route to profit. It also shows preference to countries with low domestic tariff ratings regardless of their export prices.

The plastics industry associations are on the point of becoming a significant force with which Government can liaise. Much has been done, both before and during this mission, to promote and encourage the formation of a cohesive body. Continuity of effort to bring this to fruition is essential to capitalise on the work to date.

The incentive schemes operated by the BOI are of importance to the industry and real results have been achieved. Focusing the available information on incentives for all enterprises, whether registered or not, particularly in duty and sales tax draw back would do nothing to weaken this base and could well improve export performance.

Additional aid is recommended to continue to uplift the quality and productivity of the industry and the key proposal is the setting up of a plastics research and development centre to provide training, assistance and guidance in the development of the industry. In our view it is essential that industry shows a willingness to participate in such a venture as an expression of commitment to ensure their on-going success. This activity should be included in the third country programme now in the final stages of preparation whilst the further steps required to achieve this project and provide assistance in the intervening period should be treated as extensions to the existing QC and productivity project.

The whole represents an integrated programme of assistance over a period of six years designed to uplift the quality and productivity standards of the industry to world levels and provide continuing help to plastics producers into the 1990's.

2.1. A Plastics Research and Development Centre.

The setting up of a plastics research and development centre to maximise the benefits of plastics materials and to assist in the "on-going" development of the industry has been found to be an essential part of growth in almost every country in the world. Corresponding organisations exist in most developed countries, both in East and West. Some examples are the "Plastics and Rubber Research Association" in UK which is entirely industry funded and the "Plastics Demonstration Plant and School" in Poland which is supported by Government. Many others are funded on a sharing basis. Such a centre should be targeted to start operations in the Philippines as soon as practical.

The expense would be spread over 1981 - 1985 with a peak of material and equipment resource cost in 1982 - 1983 and human resource in 1984 - 1985.

Project start date October 1981 (pre-planning).

Completion and handover December 1986.

Outline Costs.

UNDP Inputs:

expendable supplies	US $ 20,000
equipment	US $ 300,000
provision for international personnel	US $ 250,000
provision for fellowships and study tours	US $ 40,000
miscellaneous and contingencies	US $ 20,000
Total	US $ 610,000

Government Inputs:

Estimated in man-months over first 3 years of operation.	2,500 man months
on-going	800 - 1,000 man months per annum.

Note: We recommend funding of "on-going" revenue cost to be shared between Philippine Government and industry associations.

2.2. Additions to the QC & Productivity Project.

Project No. PH/77/004/A/01/37

2.2.1. Study Tour for a Plastics Industry Group.

A significant amount of ground work has already been done to encourage industry associations to form a more cohesive group as a focus between industry and Government on the one hand, to sustain a dialogue and ensure that Government Policy takes account of the industry's needs, and on the other hand, as a route for the Government to influence industry in the national interest. This needs to be assisted further so as to obtain industry participation and commitment in the setting up of a plastics research and development centre as one of the tools for improving performance.

The best way to achieve this would be through first, a study/marketing tour by a selected group of entrepreneurs and Government staff representing the industry to Europe, timed to coincide with the annual International Plastics Exhibition in September 1981.

This tour would comprise:

a. A visit of about 4 days to the Plastics Exhibition in September 1981 at the Exhibition Centre in Birmingham, UK, with detailed examination of all processes being demonstrated, collection of up-to-date technical

performance data . collection of product samples and meetings with industry representatives.

b. A series of pre-arranged visits to Plastics Associations in the UK, France and West Germany etc. to obtain an understanding of the modis operandi plus the value of these institutions to industry and Government.

c. A series of factory visits to further extend exposure from (a) and provide an insight into product quality requirements in developed country markets so as to indicate the standards needed for exports and identify a few target markets.

The total time would be approximately two weeks.

Outline costs.

Fares for a group of 4 - 6 representatives from the Philippines	US $ 12,500
Substistence costs	US $ 10,000
Consultant to pre-arrange tour and act as guide (1 man month)	US $ 6,000
subsistance costs and fares	US $ 2,000
Total	US $ 30,500

Timing: September 1981.

2.2.2. Finalisation of Plastics Research and Development Centre.

This would comprise a visit by a consultant in October/November 1981 to consolidate the position of the industry association after the tour and finalise plans, with Government and Industry, for the Plastics Research and Development Centre.

Time; 1 man month.

Cost; US $ 6,000

Date; October/November 1981.

2.2.3. Productivity and Quality Incentives.

Our investigation has shown that many of the industry's problems relate to the fact that much of current profit is achieved by control of purchases of raw materials rather than technical merit. There is a need to review and revise incentives and tariffs to shift the emphasis from "profit by material purchase" to "profit and lower prices by quality and higher productivity". This can best be achieved through a working group comprising representatives of Government and industry assisted bya plastics management expert to examine and prepare proposals targeted to bring about this change in

direction. In our view, it is essential to generate the proper economic climate in the industry as a precursor to technical aid.

Time: 2 man months.

Cost: US $12,000

Date: November/December 1981

Note: It may be possible to combine these two missions.

2.2.4 Productivity and Quality Improvement

The main weakness identified in the Philippines Plastics Industry lies in the lack of management understanding of the need for technological advance and the profit improvement which can result. To bring about the necessary changes in attitude, it is suggested that a limited number of management technical missions take place between now and the inception of the research and development centre. This would sustain interest and dialogue in the inevitable hiatus and make a valuable start on process improvement in the industry.

This could take the form of three expert missions in 1982/83 to cover:

a. Injection and blow moulding

b. Extrusion and film blowing

c. PVC pipe and profile extrusion.

Such missions would comprise:

A man month of preparative effort in a developed area to obtain financial analysis, technical data and prepare detailed case studies exterpolated into the Philippine situation.

Preparative work by Philippine counterparts to prepare for a series of seminars and teach-ins.

One to two months in the Philippines devoted to technical/ management seminars.

Time: three missions spread over two years 1982/83

Cost: US $36,000

2.2.5 Fellowships

There is a need to train in more depth a person in the CSMI who will act as coordinator throughout the implementation of the total proposed programme. This would take the form of broad outline training in similar Development Centres/organisations in developed countries plus some limited time in operating factories, so as to ensure that the local counterpart coordinator is fully conversant with the language of the industry and has some understanding of the target standards which must be achieved.

In addition, we are of the opinion that it would be desirable to offer some detailed training to the technical staff member appointed by the Plastics manufacturers association. This will serve to ensure that the industry and Government's best interests are well served and at the same time do much to build on the relationship which is beginning to form.

Finally as the weakest area of technology is in injection moulding whatever can be done to enhance this technology will be very well spent. We suggest a fellowship for an individual in the mould design and manufacturing sector. The object would be to provide further capacity for design consultancy to meet the industry's growing demands.

Timing: Fellowships for Coordinator & Industry Association 1981

Fellowship for Mould designer 1982

Duration: 6 - 8 weeks for each

Cost : To be estimated locally

2.3 Suggestions for Local Implementation.

2.3.1 Review of Incentives

We would suggest that information on incentives for non-registered enterprises should be as readily available in the form of explana-

tory pamphlets as those for registered companies. The advantages of registration would be more obvious and entrepreneurs would be more likely to respond to the call for increased exports.

2.3.2 Continuity in Developing Relationships with the Industry

A great deal of credibility and trust has already been built up between the industry and the CSMI staff. Continuity of personnel to sustain industry contact is, in our view, one of the key factors to success and we recommend that this be given most serious consideration in any future programme.

3. Introduction

3.1 Project background

This mission represents a single part of the total programme arising from Project Document No. Phi/77/004/A01/37 signed on November 8th, 1978. The immediate objectives set out in the project document were as follows:

3.1.1 To determine the needs of the rural based small and medium industries with a view to improving product quality and productivity.

3.1.2 To develop the essential components of quality control and productivity improvement systems by co-ordinating the activities of existing public and private institutions in a nation-wide network that will, together with programmes designed and implemented during the project, serve as an infrastructure for further development.

3.1.3 To assess the adequacy of the infrastructure support developed based on the identified needs and requirements of rural based small and medium industries.

3.1.4 To develop a model of a delivery system for the improvement of productivity as well as for quality control which will define ways and means to optimise operations and resource utilisation.

3.1.5 To design and implement programmes geared to strengthen the infrastructure support developed during the project.

The prime Government body charged with implementation of the project is the "Commission for Small and Medium Industries" (CSMI) which forms part of the Ministry of Industry. Other government agencies playing an active role in the project implementation are as follows:

Ministry of Trade

Design Center Philippines

Development Academy of the Philippines

National Manpower and Youth Council

National Science Development Board

Institute for Small-Scale Industries, University of the Philippines

Six key industries were chosen to test and develop the best approach which, when proven, will provide the model for all other sectors. Amongs these key industries were Metals, Food Processing, Leather and

Plastics. It is the last of these which is the subject of this mission.

The overall contributions budgeted for the initial project were UNIDO $400,000 and the Philippine Government P3,005,000 spread over a period of two years. The current status of the Project is given in a revised project document presented to a tripartite review meeting which took place on November 4th 1980. Delays in implementation will yield a new completion date in 1981/1982.

3.2 The Method of Project Implementation

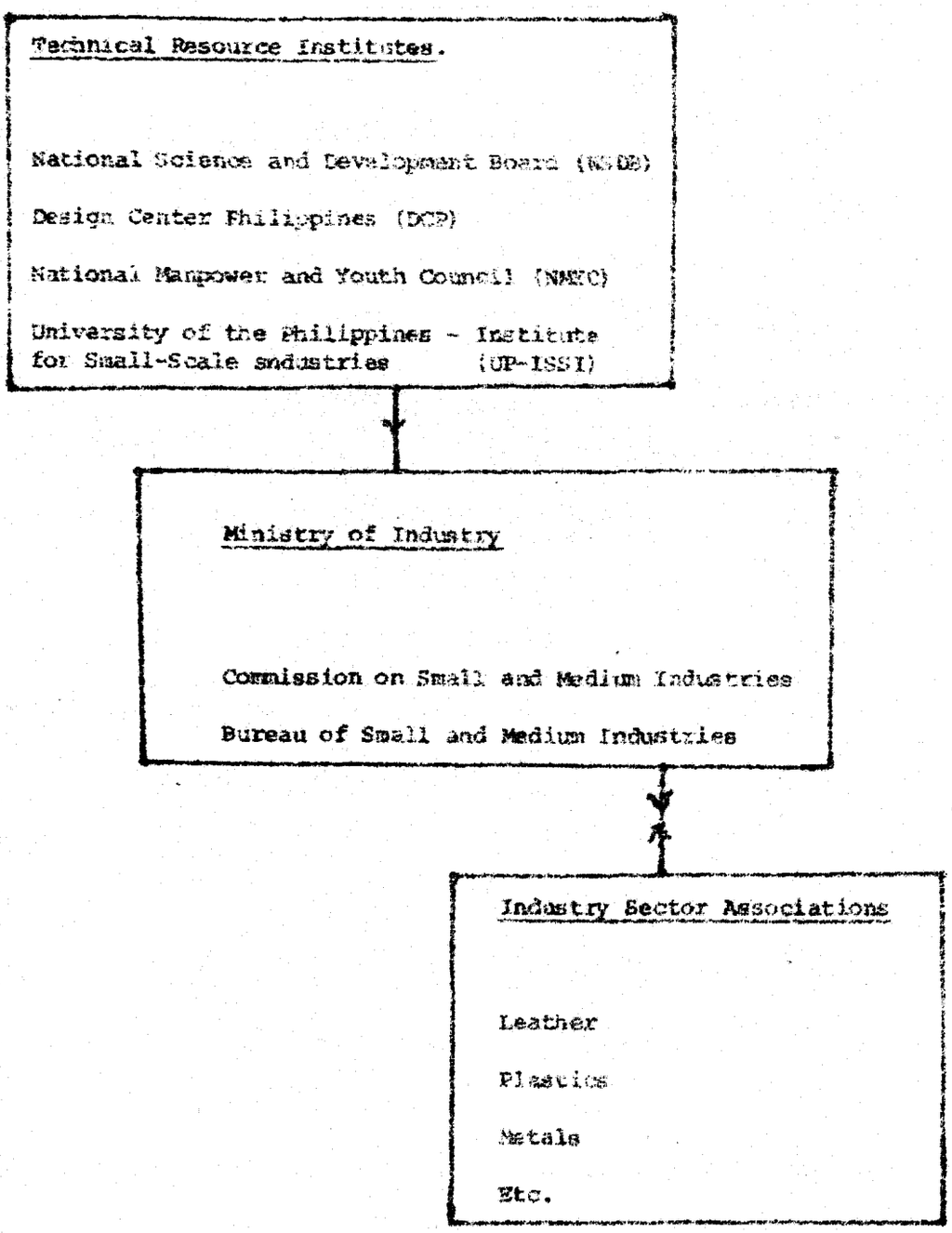
The work programme for each of the named industries has been split into three phases.

Phase I. An assessment of the "State of the Art."

Phase II. The development and evaluation of improvement programmes.

Phase III. Adjustment of the programmes for on-going use.

The method adopted is best understood by reference to the following diagram:


Technical Resource Institutes.
National Science and Development Board (NSDB)
Design Center Philippines (DCP)
National Manpower and Youth Council (NMYC)
University of the Philippines - Institute for Small-Scale Industries (UP-ISSI)
Ministry of Industry
Commission on Small and Medium Industries
Bureau of Small and Medium Industries
Industry Sector Associations
Leather
Plastics
Metals
Etc.

In each industry sector, the Ministry of Industry (CSmI) has set up coordinating project teams targeted to help develop industrial associations which, together with government, can maximise use of the facilities of the technical resource institutes. These associations will also, hopwfully form the focus of long term dialogue with Government.

Significant progress has already been made in developing such a dialogue with industry associations though there is still a long way to go. In the Plastics industry, which is the subject of this mission, the contracts already made did much to facilitate access to the industry and assist the progress of the work during the mission.

The principal counterpart team for the project comprised:

Mr. Jose Ovilla - Project Development Division (CSMI)

Mr. Renato Viray
- Small Business Advisory Center

Mr. Renato Manalo

Regular consultations also took place with:

Mr. Emmanuel Almonte - Director of CSMI for the first half of the project.

Mr. Quintin G. Tan - Director of CSMI for the second half of the project.

Mr. Raul Bandera - Other members of the Project Development Division of the CSMI

Mr. Ernesto Payoyo -

3.3 Previous Studies

Three documents were available for study and briefing on arrival. They were as follows:

A UNIDO study conducted by Expert Roland J. Rossi in May 1973 and covering mainly the technical aspects of the injection moulding industry.

A "State of the Arts" review conducted by the University of the Philippines Institute for Small-Scale Industries in August 1978 and covering broad aspects of the Industry as a whole.

A study carried out by F. Bryant of Davy Pacific Pty. Ltd., Australia in April 1979 and commissioned by the Board of Investments as part of a feasibility study for a Petrochemicals project.

These reports put consumption overall of plastics materials at between 70 and 100,000 tpa and projected figures ranging from 100 - 200,000 tpa by 1980. Many of the conclusions were based on poor and insufficient data and overall there was no consistency in the conclusions.

4. Work carried out during the Mission.

The work carried out during the mission comprised detailed discussions with entrepreneurs coupled with factory visits, discussion with Government officials, both with the Ministry of Industry and with other Ministries, talks with traders and Industry Association representatives, visits to Government Research Centers and Workshop discussions with entrepreneurs. In all, some companies were visited most of them in Metro Manila but with some visits to provincial centers. Details of the visits are given in Appendix 9. The workshops provide an interface with at least 25% of the total industry. The analysis of the information obtained and the conclusions drawn fall into discrete categories which are dealt with individually. The main groups are as follows:

Overall assessment of the current industry size, past and projected growth rates, analysis of the industry consumption on a sectoral basis indigeneous production of materials, imports and exports and an outline analysis of the state of technology by process.

An examination of the tariff structure of the materials imported for the plastics industry, the incentives available to exporters and the effects of these factors.

An initial analysis of the financial parameters which operate in the industry and their implications for the future.

An appraisal of the industry associations and their usefulness to both Government and Industry.

Other miscellaneous activities and direct consultancy.

4.1 The Size of the Philippine Plastics Industry

The analysis of the historical and projected consumption of thermoplastics within the Philippines is drawn from a wide variety of sources including:

Discussion with the Industry itself

Discussion with Importers

Discussion with members of the Industry Associations

Analysis of Import statistics.

The following table represents a consensus view:

TABLE 1

Consumption of 000 tpa (metric tonnes) of mainstream plastics

	1978	1979	1980
Polyethylene (LD & HD)	63.9	61.5	70.0
Polypropylene	35.4	53.6	46.8
Polystyrene	20.0	22.0	24.0
PVC	31.7	31.2	33.6
Others	11.0	19.0	20.0
Total	162.0	187.3	194.4
Apparent growth rate		15.6%	3.8%

Careful discussion with industry sources has enabled us to evaluate the breakdown of consumption of polymers and end use applications in sufficient detail to provide guidelines on the size of the various processing sectors.

Consumption of LDPE and HDPE are approximately equal at about 35,000 tpa each. End use distribution is as follows:

TABLE 2

Distribution of End Uses of LDPE (1980)

	%	000 tpa
Film Extrusion	70.0	24.5
Injection Moulding	19.0	6.7
Extrusion & Lamination	8.0	2.8
Blow Moulding & Others	3.0	1.0
Total	100.0	35.0

TABLE 3

Distribution of End Uses of HDPE (1980)

	%	000 tpa
Injection Moulding	32.9	11.5
Blow Moulding	15.9	5.6
Monofilament	31.8	11.2
Extrusion twine & strand	0.9	0.3
Film Extrusion	18.4	6.4
Others	0.1	0.1
Total	100.0	35.0

In low density polyethylene, thin film for packaging, dominates as in most developed countries, likewise the use of HDPE in film is proceeding in parallel with other parts of the world. New developments in the use of blends for film as have appeared in Europe in the last five

years are not yet in evidence in the Philippine market. The major difference lies in the use of HDPE monofilament for rope and net production. This is virtually unknown in Europe where PP is the market leader for this application. During our factory visits , we did identify the basic reason for this difference. The breakdown for polypropylene consumption is as follows:

TABLE 4

Distribution of End Uses of Polypropylene (1980)

	%	000 tpa
Flat Yarn (for woven fabrics)	34.5	16.2
Injection Moulding	16.1	7.5
Monofilament	10.4	4.9
Film Extrusion	31.0	14.5
Twine	6.8	3.1
Others	1.2	0.6
Total	100.0	46.8

The production of PP film is by a water cooled bubble technique producing a Monoaxially oriented film of moderate clarity, in contrast to the biaxial process used in Western countries. This latter process is only suitable for very high volume production even though it produces much better quality film. The water cooled bubble technique is more suited to the present Philippine market demand, although this is changing

and plans are at the discussion stage to install a biaxial line to supply the cigarette packaging industry.

Consumption of PVC is estimated at 32,600 tonnes for 1980 and goes to a wide variety of outlets many of which we could not quantitatively evaluate. The dominant outlets are pipes, both pressure and conduit, callendered products, blown bottles (mainly for edible oil packaging) and to a lesser extent profile extrusion.

A limited amount of injection moulded pipe fittings and shoe soles are also produced. Other products encountered included floor tiles, many of which are made with recovered materials. There is minimal use in rainwater goods but in this area, appreciable growth can be expected. Our best estimate is given below but the figures should be treated with caution.

TABLE 5

Distribution of End Uses of PVC (1980)

	%	000 tpa
Pipes, pressure & electrical	29.8	10.0
Callendered products	29.8	10.0
Blown Bottles	6.0	2.0
Injection products	6.0	2.0
Others	28.4	9.6
Total	100.0	32.6

Consumption of Polystyrene at 24,00 tonnes is in three basic forms: General purpose, high impact and expandable beads. The injection expanded foam Process has not yet been introduced into the Philippines probably because pre-packaging of meat, vegetables and eggs is as yet only on a limited scale and the blow moulding/extrusion process is adequate. Fiber board trays and pulp fiber egg boxes are the dominant materials where pre-packaging is practised. The bulk of the general purpose polystyrene is consumed in the manufacture of toys and cosmetic packs and the high impact goes into shoe heels, vacuum formed disposable cups and other small applications.

The expanded products, while primarily employed for cold-store insulation, are used in the packaging of electronics and household appliances much as in the developed countries. New applications in seedling culture and in the export of watches from the Cebu Export Processing Zone were encountered. Our best estimate of the end use analysis, based on process rather than product, is as follows:

TABLE 6

Distribution by End Use Process of PS (1980)

	%	000 tpa
Injection	60.0	14.4
Vacuum Forming	30.0	7.2
Expanded	10.0	2.4
Total	100.0	24.0

the figures, like those for PVC, should be viewed with caution but are good enough for the purpose of assessing the total level of activity by processes.

Other plastics materials are very diverse and it has not been possible to identify the end uses in depth. Some examples were found. For example, production of acrylic materials amounts to 4 - 5,000 tpa but a significant proportion is re-exported, the remainder is mainly consumed by vacuum forming of signs, (2 - 3,000 tpa). Polycarbonate is used for blow moulding of sterilisable bottles for baby feeding but consumption is measured in hundreds of tonnes not thousands. Some ABS mouldings are used for automotive, TV and domestic appliances but complex mouldings are also imported because run lengths are inadequate to justify the capital cost of the moulds. Home production in these areas is established will grow when GNP and consequently, market size justify the cost. Production of nylon fibre from imports of Caprolactam is also small and goes entirely to the fabric manufacturing industry.

Summarizing these figures, we were able to identify the portions of the industry which are associated with the main processes. This provides a very useful tool to evaluate the priorities for technical assistance.

TABLE 7

Analysis of Polymer Consumption by Process (1980, 000 tpa)

Extrusion based processes	LDPE	HDPE	PP	PVC	PS	Others	Total	
Thin films	24.5	6.4	14.5	-	-	-	45.4	
Woven fibrillated films	-	-	16.2	-	-	-	16.2	
Monofilament	-	11.2	4.9	-	-	-	16.1	
Twine	-	0.3	3.1	-	-	-	3.4	
Pipes and others	2.8	-	-	10 - 15		-	12.8	
Sub total	27.3	17.9	38.7	10			94.9	
Injection Moulding	6.7	11.5	7.5	2.0	14.4	0.5	42.6	
Blow Moulding	1.0	5.5		2.0		0.5	9.0	
Vacuum Forming	-	-	-	-	7.2	3.0	10.2	
Callendaring	-	-	-	10.0	-	-	10.0	
Expandables	-	-	-	-	2.4	-	2.4	
Others including cable	-	0.1	0.6	9.6	-	16.0	26.3	
GRAND TOTAL	35.0	35.0	46.8	33.6	24.0	20.0	194.4	

Extrusion processes represent nearly half the total plastics industry of the Philippines followed by injection and blow moulding which have many common technical elements. All other processes are at this time relatively small.

4.2 The Growth Rate

Insufficient data is available to make very precise projections on the growth rate but some educated guesses are possible. In the years 1979 and 1980, respectively, the rates appear to have been 10.6 and 8.8 or 9.7% average. GNP growth rates were 6.8% in 1979 and 5.0% for the first half of 1980. In Europe, the plastics industry has traditionally exceeded GNP by up to 3% and bearing in mind the high stocking of raw materials in the Philippines in late 1979 in anticipation of polymer price rises (in the event polymer prices fell), the growth of the plastics industry in the Philippines seems to be following similar trends to those in the more developed countries.

A growth rate of 9% per annum compound would produce a plastics industry consuming about 300,000 tpa by 1985 and accelerated development could produce an increase in excess of this. In addition, if the present 2.3% population growth continues, this will add another 6.5 - 7% demand. In our view, plastics consumption in the Philippines will be between 300 - 350,000 tpa by 1985.

4.3 Importation and Production of Polymeric Materials

Only two of the basic materials are produced indigenously, PVC and PS. In each case, there are two small production plants. Mabuhay has a PVC

facility located in North Mindanao capable of 25,000 tpa and has operated at full rate when there was a world shortage of PVC. At present, it produces no more than 15 - 20,000 tpa. This plant had a capability based on the Dachide process to produce 8 - 10,000 tpa of VCM and plans are in hand to expand this. The second plant, Vinyl Consortium, located in Cavite, has a name plate capacity of 15,000 tpa but has never exceeded 50% production due to technical problems. All its VCM is imported.

The two polystyrene plants are operated by Philippines Petrochemicals (15,000 tpa nameplate capacity Dow process) and Polystyrene Manufacturing Co., Inc. (6,000 tpa nameplate capacity thought to be a bead process). The first of these two plants produces approximately 70% HIPS and 30% GP whilst the second is also capable of producing expandable bead. The main grade of GP offered is a medium flow (96°C Vicat softening) material. No easy flow grades are available for injection applications although we suspect this is because users are insufficiently aware of their needs to put pressure on the suppliers. The high impact material is medium impact grade.

All the polyolefinic materials are imported and the dominant suppliers are USA and second Japan. (60 - 70% of total) supplies from Japanese are declining. No significant quantities are obtained from Europe or from Communist countries. Published data states that the planned

petrochemicals complex will include 55,000 tpa of LDPE and 60,000 tpa of PP and be on stream by 1983/84. Whilst this capacity will meet current demand for two of the three polymers, it is unlikely to meet the 1985 requirements and will not supply the needs for HDPE where considerable growth can be expected. In our view, a planned name plate capacity of 100,000 tpa for each of the three polyers (i.e. LDPE, HDPE & PP) would be more in line with the needs. This would carry the Philippines through to 1990 when expansion might be achieved.

4.4 Exports

The figures for exports of plastics based products are difficult to separate from the statistics but we have encountered examples of polythene bag sales to Australia, toys on a worldwide basis and housewares, acrylic sheets, tableware, etc. to several countries. Some figures for the year 1979/80 are as follows:

TABLE 8

Exports of Plastics (1979 tonnes)

Basic Materials	
PS resin	3551
PVC resin	1954
Acrylic sheets	1546
Sub total	7051

Fabricated Products	
PVC tapes, etc.	93
Handbags of plastic	20
Table and Housewares	801
Miscellaneous	157
Sub total	10,000
GRAND TOTAL	17,060

Bearing in mind that this does not represent all classifications, the total plastics exports are probably in the region of 25,000 tpa of which about 15,000 tpa will be in fabricated products. In the fabricated product area, this represents 7 - 8% of production and is similar to that prevailing in Europe (UK 7%). The major difference lies in the exports of base resins where European figures are often as high as 25% of output. This will change with the growth of a full scale polymer industry but the Philippines will be at a disadvantage in this high technology capital intensive area of production with relatively small scale plants.

4.5 The State of the Technology

The industry comprises some 400 companies ranging from relatively large right down to small, one-machine operations. In terms of number

of companies, the greater proportion range from 6 - 8 machines, i.e., medium to small converters. Although we visited a number of companies, we were not able to see operations in every product type in the industry within the short time available but we did cover a sufficient range to gain an overall appreciation. In general terms, the level of technical knowledge ranges from very good to poor with some sectors being more advanced than others.

4.5.1 Injection Moulding Process

Only two plants we visited had a fully automated shops comparable to European or American practise. One was American owned and located in the Bataan Export Processing Zone, while the other supplies industrial parts. There could be others but we did not find them in our sample. In general, the industry operates on long cycles (30 - 40 secs) with poor cheaply constructed moulds and inadequate cooling. We only found one company in this sector, outside the Bataan plant that was equipped with chillers and very few that had adequate cooling towers. The majority of the machines were of Taiwan or Hongkong origin with just a few from Japan. The purchase of machines and moulds is almost exclusively on a price basis and delivery of 3 - 4 weeks is expected on moulds compared to 3 - 4 months in Western Europe and USA. A great deal needs to be done to bring about an understanding of the need for proper cooling

and good quality moulds which will substantially uplift product quality and productivity. There are some good mould makers but they tend to make poor moulds because users will not pay for better ones. Once the demand for better moulds grows, assistance to improve this part of the industry will be required. There is a first class facility at MIRDC which makes a significant contribution but at this time is grossly under-utilised. It must be understood that these problems do not emanate from scale. Much of the countries' plastics conversion industry is in the hands of small producers as it is in the developed countries. For comparison, the plastics mould-making industry in the USA is served by over 400 companies and the average size is in the region of 10 - 15 employees.

Although these problems are prima facie technical in character, their origins lie in lack of management understanding of the financial gains/productivity improvements which result from "doing it better." Management education is the key to the problem and there are many product areas within the Philippine plastics industry which could contribute more to exports, e.g., toys.

4.5.2 Blow Moulding Process

The problems of this industry sector are almost identical to those of the injection sector. In many ways, the processes

are similar in so much as they depend on a moulds and cooling. We found some evidence of poor understanding of choice of grade of material but much more evidence of the necessity to use improper grades because the correct ones were not available at a particular time due to stock situations.

4.5.3 Film Extrusion

Generally speaking, the quality and productivity in this area was good within the limitations of the equipment which in common with the rest of the industry was purchased from inferior sources (mainly Taiwan). Where attempts are being made to uplift productivity mechanical failure of the equipment is often the result. It should be clearly understood, as in the injection area, that scale of the industry is not the problem. Here again, a combined techno-management education programme is the major requirement.

4.5.4 Woven Plastics Products

This product group represents about 6% of the Philippines plastics production and is served by over thirty producers some of which are small and some very large. Many of the plants are located in Manila but there is also production in Cebu. The main outlet for these goods is in the packaging of rice, sugar,

etc. and consumption is spread on a countrywide basis. The extrusion and fibrillating machinery is of reasonable quality and here there is clear evidence of management understanding plus modern equipment. Many of the looms are very old but change has begun. In two plants, we saw Starlinger rotary looms from Austria working alongside very old machines, broadloom Sulzers have been ordered by one company for carpet backing. The wind of change is already active in this sector and within a few years, quality and productivity will be at world standards without significant assistance. In all probability, there are currently too many producers for the market size and they do have the same material import problems as others. We found little evidence of exports and a review of potential export markets would be worthwhile. It would be unwise to be too optimistic as the world market was in an overcapacity situation in 1978. Unfortunately, we do not have more recent data to hand.

4.5.5 Pipe Extrusion

The bulk of the Philippines' pipe extrusion is in PVC with some very small and some moderately large operations. As in most other areas of activity, there is a variability in the quality of machines and output. Pressure pipe production is

probably one of the most advanced areas within the Philippines although conduit leaves much to be desired. These are of the few areas where it is possible to regulate the quality of output through the National Standards institutions. Enforcement of rigid building standards coupled with national laid down quality levels, which may already exist would do much to raise industry quality levels to world standards.

4.5.6 Vacuum Forming

This area covers a wide range of products from acrylic signs to disposable cups. One factory which we visited producing disposable cups and similar articles was equipped with modern Illig (West German) form and cut machines and produced high quality products. Other articles in the market place are of poor quality. This market sector is at present small. Vacuum formed display signs are produced by extremely primitive techniques and are only satisfactory because of the dominance of stress free cast sheet. Extruded acrylic sheet which must come in the next year or two requires more sophisticated techniques.

4.5.7 Monofilament & Ropes

We only visited one producer in this sector but he was well

equipped and produced good products. The dominance of HDPE in this area by comparison with the developed world owes much to the tendency of PP to fibrillate during twisting. We were able to offer the producer a simple solution to this problem.

4.6 The Cost of Raw Materials

The cost of raw materials and their effect on the industry is one of the most complex problems that we have examined and there is little doubt that it must be a factor in retarding growth. Its effect is by no means the same in all sectors. PVC represents a special case where local manufacture coupled with some indigeneous monomer manufacture has provided a measure of price stability and comparability with world rates. This is reflected in some rationalisation and improvements in quality and productivity particularly in PVC pipes. The process is still incomplete and much remains to be done.

Polystyrene is also produced locally but prices are well in excess of world market levels although enquiries showed reasonable stability of monomer prices. Both producers have had problems and their accounts show a poor financial status. There may well be some measure of over protection in the tariff barriers. All the polyolefins (60% of Philippine plastics consumption) are presently imported and generally speaking between 30 - 40% higher in price (landed tax paid) than in developed

countries with the exception of Japan where local prices are comparable. It should be realised that these world price differences arise from variations in local petroleum tax situations which vary from country to country. The system of assessing duty depends on what are known as "Home Consumption Values." These are issued in a list at intervals by Customs and based on consular enquiries in the country of origin (examples in Appendices 10 and 11). Duty is levied on the "Home Consumption Values" or invoice value whichever is the higher and is currently about 40 - 50%, (listed duty is 30% but there are a number of other elements including 10% advance sales tax in the calculation). Clearly this is designed to overcome false invoicing and assist in stabilising prices. The system falls down in the present climate of world recessions mainly due to wide fluctuations in export prices from developed countries. Basically the system is sound but is insufficiently nimble to reflect current rapid changes in polymer availability in world markets and, as a consequence, turns plastics manufacturers into semi-dealers. The success of many of their operations is dependent on shrewd timing of purchases when prices dip and using stock when prices rise. This drives too much of the capital invested into raw material and leaves insufficient for the purchase of machines and technology. It also differentiates against countries with high internal petrochemical taxes and sometimes works to the disadvantage of the Philippines. The USA benefits most from this situation. We quote two examples of the wide swings in price level. LDPE from the USA in early 1979 was quoted

at $650 CIF, by mid year it rose to $1,000 and has now fallen back to $850 - $900. Very few local producers purchased at the high point and had sufficient stock to tide them over but the implications on their capital utilisation are clear. Likewise, polystyrene (not imported but available in Asian markets which are competitive for exports) was available at ₱10 - 11,000 (Peso equivalent $1 - ₱7.50) in early 1980 but is now changing hands at ₱7 - 8000 per tonne.

Summarising the current situation price levels in the Philippines and other world markets all in pesos per metric tonne, they are as follows:

TABLE 9

Present prices in Pesos (Range dependent on grade)

	PHIL.	USA	TAIWAN	JAPAN	EUROPE	AUSTRALIA
PVC	8,000	10-11,000	-	-	-	-
LDPE	10,000	6 -7,000	6-7,000	11-12,000	6-7,000	6-7,000
HDPE	11-12,000	6 -7,000	-	11-12,000	8-9,000	7-8,000
PS	12-14,000	7 -8,000	-	-	-	-
PP	11-12,000	7-8,000	-	8 -9,000	5,000	6-7,000

The effect of these factors varies from sector to sector in the plastics industry and is reflected in the state of development. For instance where added value is better and material content of selling price lower (woven PP fabrics 50 - 55%), the industry is technically

more advanced and using better quality equipment. In film blowing, the state of the art is about midway but in injection moulding and blowing operations (material content 70 - 75%) technology is poor and shows little sign of improvement. A complete review of the tariff system is required by a composite body which includes Government Industry and preferably an independent representative with wide knowledge of the plastics industry sector. Technical aid per se will not bring about improvement until the financial and management climate is right. Two situations need to be examined, the present/forward to the availability of Polyolefines from a Philippines Petrochemicals project and the long term.

The prime objectives must be:

a) To provide the Philippines plastics industry with competitive raw materials at going world prices to encourage more rapid growth.

b) To protect, for limited periods only, new polymer producing industries but at the same time provide a mechanism for growth of exports so as to maximise added value on imported crude oil in the longer term.

c) To ensure that local polymer producers are not over-protected and thus have insufficient motivation to match world levels of productivity and competence.

We suggest that for existing indigeneous polymers, a general lowering of tariffs is needed coupled with a review and modification of the present method of duty calculation to extend and adapt the usefulness of the "Home Consumption Price Concept." This should be targeted to offer better protection against any dumping and underutilisation of local production capacity coupled with optimisation of the advantages of world overproduction when it occurs. PVC where oil is not the prime base needs special treatment.

For new polymers coming on stream, initial high protection is desirable but exporters need aid to protect them from high internal prices caused by inefficiency during plant start up. Such start up can take as much as two years. During this period, it may be better to subsidise export converters to maximise capacity utilisation rather than allow continuation of imports of raw materials.

4.7 Export Incentives

Export incentives in the Philippines are essentially fiscal in character and range over a whole variety of areas including drawback of duty on raw materials reexported, relief from duties on machinery, relief on sales taxes, etc. For the purpose of examining their impact on the plastics industry, we need to look at three groups of enterprises:

Companies who operate in Export Processing Zones

Companies who are registered with the Board of Investments

Others.

Those operating in export processing zones represent a special category and their products go entirely for export. Some of these are Filipino but many are wholly foreign owned and controlled. The approach has successfully attracted overseas investors on the basis of less costly labour and requires no comment in the context of this mission.

The second group is well served in terms of information and there is no doubt that incentives available to registered enterprises are well presented and easily accessible to the entrepreneur who wishes to avail himself of the BOI's assistance. For the plastics industry, the period allowed (5 years) for write off of capital equipment is a little long. Many plastics machines have a relatively short life at high efficiency especially when run twenty four hours a day on a seven day week. Too long a period discourages re-investment and we suggest that this aspect should in due course be reviewed.

Unfortunately, many of the companies operating in the plastics industry are well established with equipment purchased from diverse sources with duty paid. They express the view, rightly or wrongly, that there is no advantage in registration with the BOI.

This group of companies will never individually export more than a small proportion of their output but collectively they could make a significant

contribution to the overall volume. The plastics industry, by its very nature, produces a diversity of small to medium enterprises throughout the world and the Philippines is no exception. In addition, it is this small type of operation that best fits the area of export opportunity. (e.g., toys) The larger enterprise best operates in such fields as PVC pipes, industrial components, etc. primarily oriented to the domestic market.

Information on export incentives for such small to medium non-registered enterprises is difficult to obtain and requires a good deal of research by the individual company management. Some of the regulations, such as the recent directives on the operations of manufacturing bonded warehouses (Appendix 12) could even be regarded as a disincentive. We have also had comments that it is better to import raw material for export orders than by indigeneously produced resin in the case of PS and PVC. We suggest that the incentives available to non-registered enterprises should be just as succinctly stated as those available to registered companies even if there is an obvious disparity in favour of registration. Entrepreneurs will be quick to take advantage of any such differences to the benefit of themselves, the BOI and the national economy. It is also important tomake sure that the industry is not at a disadvantage in world markets by the use of indigeneous resins.

4.8 The Financial Parameters

Within the time available to us we had some difficulties in identifying an adequate quantity of data to carry out a full financial analysis with meaningful results. We present here such data as we have and draw the limited implications that are possible.

We examined 15 companies and the average material content expressed as a percentage of sales was 63.8% this is considerably higher than in Europe (about 40-50% and demonstrates the importance of reviewing the handed cost of raw materials. Net income before a tax expressed as a % of sales was 4.7% and ranged from about 2-11%. In U K a comparable range of industries but based on a sample of some 300 companies is 3-16% with an average of 7.2%. With the high prevailing interest rates it is difficult to see how the companies survive and it must have a major depressing effect on investment in machinery. The relevant data for the companies examined is given in table 10. Table eleven shows a simple analysis of the capital employed in incentives and makes it very clear that the total proportion in raw material & finished products is very high. The figure of 93.6% is obviously distorted by the use of customers money (accounts receivable) but further adds weight to the need to review the cost of raw materials.

The rate of turnover of inventory is very variable and serves to demonstrate the normal control is often poor but analysis of this data gives some indication that companies with high inventory have good profits and although no more than a pointer adds weight

to the suggestion that some plastics producers depend on material trading as a means of producing profits. This is shown in the following table.

Table 12

Inventory Turnover (times per annum)

	0-4	4-10	over 10
Average % Profit Before tax as % of net sales	5.4	5.8	2.6

Table 10

Analysis of basic financial Parameters of Philippines Plastics Coms (Data base 1979)

	FIRM SIZE	PRODUCT DESCRIPTION	A NET SALES	B NIBT INTER EXP.	C COST OF RM USED	C/A COST OF RM TO NET SALES	B/A NIBT TO NET SALES
I. Injection & Blow Mould:							
°Intern'l Container Corp. (INCON)	M	Toys, Containers and Novelties	₱ 5,170,552.	₱ 9	₱ 4,163,604.	.800	.020
°Paramount Plastics Mfg. Co.	M	Toys & Housewares	2,927,119.	11	1,865,895.	.637	.037
°Armel Plastic Co. Inc.	L	Containers	21,822,248.	88.	11,740,444.	.538	.040
°Plastimer Indus'l Corp.	L	Containers & Appl.Parts	22,060,830.	1,91	13,338,210.	.605	.086
II. Film/Sheet Extrusion:							
°Integrated Plastics Corp.	S	PP & PE Polybags	910,612.	2	645,027.	.708	.026
°Polyson Mfg. Corp.	L	PP Woven Sacks	7,418,103.	36	4,638,568.	.625	.05
°Itemcorp. Inc	L	PP Woven Sacks	64,210,069.	7,29	31,469,172.	.484	.112
III. Pipe (Tube) & Profile Extrusion:							
°Merlon Mfg. Co.	S	Hoses, Tubes, Cord, Lining & Piping	1,668,852.		1,139,938.	.683	.0056
°PVC, Inc.	M	PVC Pipes & Tubes	1,518,062.	13	863,543.	.568	.0885
IV. Monofilament Extrusion:							
°Everbright Net & Twine	L	Fishing Nets, Ropes & Twine	14,359,409.	40	9,595,168.	.668	.028
V. Calendering							
°Phil. Fabrikoid, Inc.	L	Leatherettes, Wall-papers & Sheets	30,703.335.	2,27	23,067,129.	.751	.074
VI. Vacuum/Thermo Forming							
°Vassar Industries, Inc.	L	Expanded PS Containers cups & trays	40,033,356.	2,060	21,463,422.	.536	.0514
VII. Expanded PS Liners & Boards							
°Polytex Industries	S	PS Boxes, Liners &Boards	2,547,578.	(68)	1,489,429.	.584	(026)
VIII. Lamination & Coating							
°Phil. Acrylic & Chem Corp.	M	Acrylic Cast Sheets/Panel	9,601,472.	630	5,7[illegible]	.599	.06[illegible]
°Polyindustries Inc.	[illegible]	[illegible]	[illegible]	1,39[illegible]	29 [illegible]	[illegible]	[illegible]

Table II

Analysis of Inventory and Rate of Turnaround

	FIRM SIZE	PRODUCT DESCRIPTION	A TOTAL CAPITAL EMPLOYED	B TAL IN TORIES	B/A INVENTORIES TO CAPITAL EMPL'D	INVENTORY TURNOVER
I. Injection & Blow Mould:						
°Intern'l Container Corp.	M		P 665,309.	,232.	.7278	10.6 x
°Paramount Plastics Mfg. Co.	M		886,380.	,471.	.7610	4.33 x
°Armel Plastic Co. Inc.	L		10,390,239.	,386.	.8728	2.4 x
°Plastimer Indus'l Corp.	L		6,939,938.	,934.	.5903	5.38 x
II. Film/Sheet Extrusion:						
°Integrated Plastics Corp.	S		146,629.	,011.	.130	47.8 x
°Polycon Mfg. Corp.	L		2,011,489.	,484.	1.107	3.32 x
°Itemcop. Inc.	L		30,830,304.	,608.	.7287	2.68 x
III. Pipe (Tube) & Profile Extrusion:						
°Nephan Mfg. Co.	S		138,625.	,068.	.9094	13.23 x
°PVC Incorporated	M		794,685.	,628.	2.215	.8622 x
IV. Monofilament Extrusion:						
°Everbright Net & Twine	L		2,727,779.	,779.	1.0144	3.07 x
V. Calendering						
°Phil. Fabrikoid, Inc.	L		13,775,478.	,571.	.879	2.53 x
VI. Vacuum/Thermo Forming						
°Vassar Industries, Inc.	L		23,291,816	,125.	.0804	21.37 x
VII. Expanded PS Liners & Boards						
°Polytex Industries	S		(196,956.)	,838.	(4.5)	2.87 x
VIII. Lamination & Coating						
°Phil. Acrylic & Chem Corp.	M		(46,423.)	.745.	(84.5R)	2.44 x
°Polyindustrial Co. Inc.	L		4,481,110.	,225.	1.448	4.635x
				ge in %	93.57%	

Note: Philippine Acrylic & Chemical Corporation has been ignored in computing the aver

4.9 Industry Associations

One of the key factors in the development of Small and Medium Industries in more advanced countries lies in the role of Industry Associations, many of which are coupled with Research and Development Centers. The individual entrepreneur has neither the resources nor the time to pay sufficient attention to new developments nor to represent his interests to Government bodies. Likewise, Governments do not have the resources to pay heed to the problems of an industry sector which speaks with several hundred different voices. One of the major factors already recognised by the Philippine Government is the need to persuade industry to organise itself and form a focal point for an on-going dialogue. A good deal of work has already been done in this direction. A significant proportion of the mission time was spent in assisting counterpart staff to further this process.

Three associations were identified. One dealing with PVC was small and of no real significance at this stage. Two much larger groups exist, one representing the polypropylene weavers and the other, a wider diversity of activities including injection moulding, film blowing, toy making, rope making and monofilament, etc. These last two groups are closely allied and represent approximately half of the total industry (about 200 out of 400). Regrettably, these associations are more in the nature of socially oriented clubs with limited activi-

ties including overseas trade fairs, visits, etc. They possess, as far as I was able to ascertain no paid technical staff and no organisation to carry out the bidding of the elected officers. They have premises in Caloocan City where much of the plastics industry is located and there seems to be little difficulty in funding such activities as are felt desirable. Recently, a younger, more active element are increasing their influence and becoming more aware of the desirability to extend and formalise the position of the associations. This process needs to be accelerated. In our view, whilst there is a need to develop industry associations to provide a focus for dialogue between Government and Industry for the common good, the key role of any industry association must be to promote and protect the interests of its members. Within this objective, we can define a number of factors which are extensions of the primary function.

To develop a profitable plastics industry with benefits to the companies, the employees, the customers, the suppliers and the national economy.

To improve the production and use of plastics in the domestic market.

To increase the country's exports of plastics products.

To increase local manufacturers' share of the domestic market at the expense of imports.

To overcome restraints on the industry whatever their source.

In order to perform these functions effectively, we recommend a three-tiered structure. This provides control of paid employees and at the same time insulates individual members from any adverse effects of airing controversial subjects with Government. It provides a mechanism for a totally free dialogue between the Industry, the Government and the public at large. The structure used in the U.K. is as follows:

A Council of elected members who are non-paid and have ultimate control. They define and check the programme of the associations' activities.

Paid officers who carry out the day to day functions of the institute including dialogue with Government and the public at large in line with Directives of the Council.

Working groups who are again elected by the various industry sectors and who formulate the elements of the overall programme to be submitted to Council for ratification. In these groups, the paid officers participate in meetings but not as chairman.

Also attached to this report in the form of Appendix 13 is a copy of the memorandum, articles of association and by-laws of the U.K. Rubber

And Plastics Research Association which, although going much further than we would recommend in the initial stages for the Philippines, contains the important elements which could be used as a guide. We sought professional opinion on its application within the framework of Philippine Laws and were advised that the main provisions would be generally acceptable although the format would need to be different.

4.10 Other work conducted during the mission

4.10.1 Two-day Workshop/Forum (Manila)

Toward the end of the mission, a two-day workshop/forum was organised in collaboration with the Philippine Plastic Industrial Association. This was well attended by members of the association but also attracted participants from other parts of the industry.

132 entrepreneurs were present (about 20% of the industry). Speakers representing most of the interested Government agencies were present and a free interchange of views took place to such an extent that on occasions there was a need to curtail question time. The extension of the dialogue with manufacturers enabled us to crystallise some of the views we had formed during the

factory visit programme and to broaden the base of opinion on which conclusions were formed. The complete programme is established in Appendix 14.

4.10.2 Discussion Meeting in Cebu

During a visit to Cebu, we were able to set up a meeting with over half of the plastics manufacturers operating in the area and to exchange views on the needs of the industry. Again, this contributed to conclusions.

4.10.3 Specific Consultancy Help

During many of the plant visits we were able to offer specific consultancy help on the problems encountered by theindustry. In some cases, second visits were arranged to follow up the assistance and carry out trials on the machines. Some examples are quoted:

Assistance with screw designs to improve performance of blown film lines.

Advise on dies for extrusion of PVC and foamed products.

Design suggestions and discussion of cooling towers and their relevance to improving injection moulding outputs.

Design of spiders in PVC dies and their relevance to out[illegible]
Burn-up.

Screw cooling in relation to output and [illegible].

Fibrillation in rope manufacture and the solutions.

Die pillar problems and wear on multi-cavity tools.

Slow screw back rates and the causes in injection moulding.

Identification of stress patterns in relation to multi-gating of thin sections.

The advantages of submerged gating.

The use of brine in chilled baths for nylon monofilament extrusion.

Exposed water channels to measure flow rates.

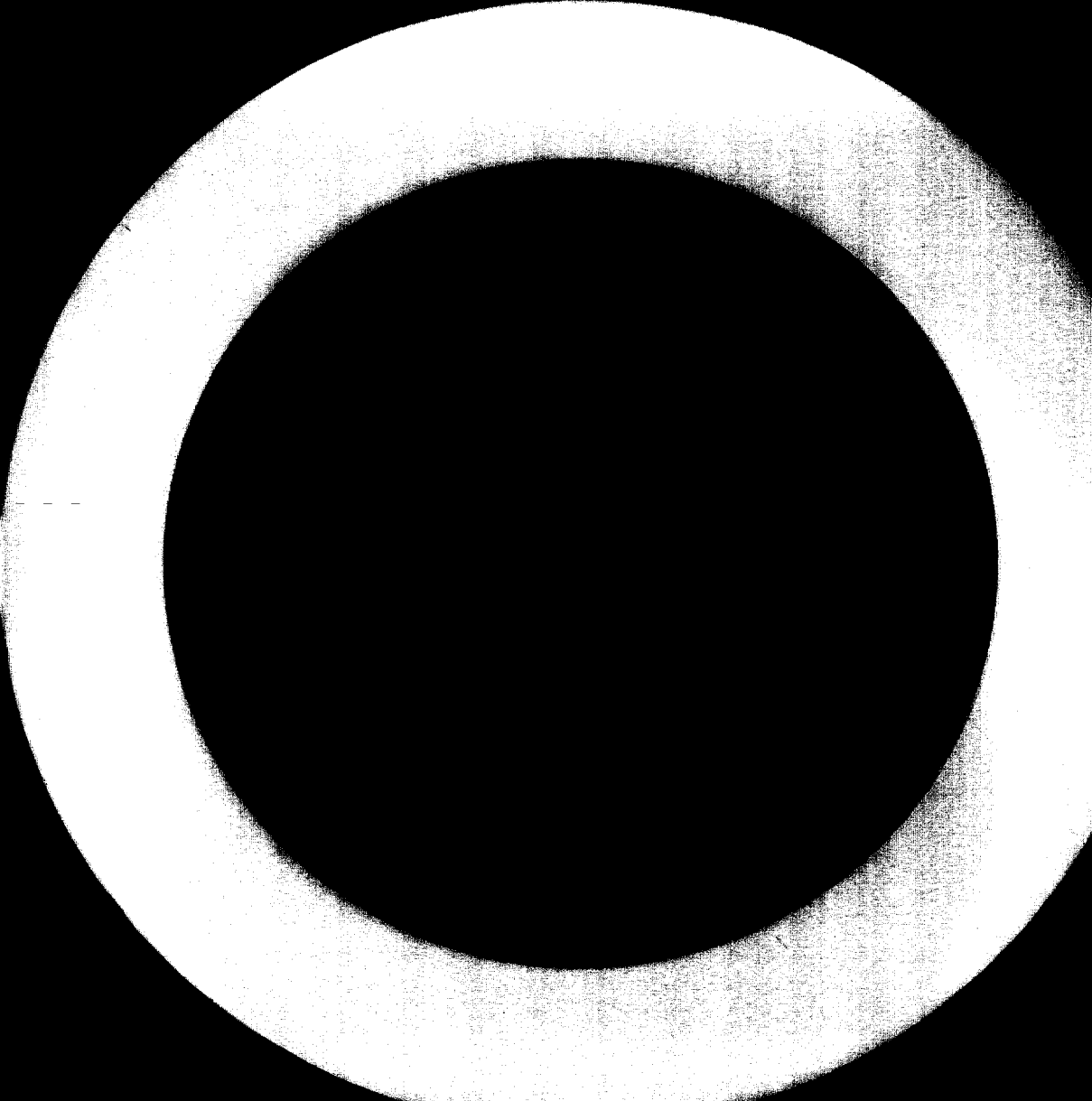
Schim tests for fisheye and gel particles in PVC.

Plug assist techniques in vacuum forming of deep sections.

Control of maximum demand and its effect on power consumption.

Air knife drying of strands during material recovery.

Continuous extruder techniques for lighting diffusers.



UNITED NATIONS DEVELOPMENT PROGRAMME

Project of the Government

Republic of the Philippines

Title: Plastics Development Centre (PDC)

Number: **Duration:**

Primary Function: Institutional building

Secondary Function: Direct Support

Sector: (Government Class)

(UNDP Class and Code) Industry

Sub-Sector: Plastics (UNDP Class and Code)

Industrial Services and Institutions

Executing Agency: United Nations Industrial Development Organization (UNIDO)

Estimated starting date:

Government inputs _____ (in local currency) **UNDP inputs** US $_____

Signed _____ **Date** _____
on behalf of the Government

Signed _____ **Date** _____
on behalf of the Executing Agency

Signed _____ **Date** _____
on behalf of the United Nations Development Programme

Part I Legal Context

This project document shall be the instrument (herein referred to as a Plan of Operation) envisaged in Article, paragraph of the Agreement between the Government of the Philippines and the United Nations Development Programme concerning assistance under the Special Fund Sector of the United Nations Development Programme, signed by the parties on _____.

Part II A Development Objective

The implementation of this project will assist in achieving the following long range objectives:

1. To improve productive use of the present capacity of polymeric material produced within the Philippines for the betterment of the national economy.
2. To make effective use of the additional polymer production from the Petrochemicals project (ref. PHI/80/012) planned in the third country programme.
3. To strengthen and support the plastics industry, make it more competitive in world markets and improve exports.
4. To improve the industry sector's ability to service other growing areas such as authomotive, domestic appliances, television, etc.
5. To create new employment opportunities

Part II B Immediate Objectives

Establishment of an operationally active and effective Plastics Development Centre (PDC) to undertake and provide technical support necessary forboth strengthening and expanding the Philippines plastics industry.

Controlled by a Governing Council, responsible for the overall policy and plan of the PDC, executed through the Director of the Centre, the PDC will enable the plastics industry to make a positive contribution to both rural and industrial development, through the development of appropriate applications of plastics, to increase outputs and productivity in those areas. This will be achieved by the PDC ensuring that the outputs of its operations are made known to the potential ultimate users utilising appropriate communications systems for this purpose.

Part II C Background and Justification

There are approximately 400 plastics processors in the country concentrated primarily in Metro Manila. Some units exist in Provincial centres but even these are associated with major cities. There are some large operators but the majority are small to medium companies who lack the resources to carry out the development work which is necessary to take advantage of export markets and keep up with the growing needs of the remainder of industry. At present the bulk materials are imported with the exception of polyvinyl chloride and polystyrene. The total consumption of plastics raw materials is about 200,000 tons including polythylene, polypropylene, polystyrene, polyvinyl chloride, nylon, acrylics and thermosetting plastics.

However, there are a number of problems encountered by the local plastics industry in their efforts to achieve an orderly, efficient and rapid expansion. Shortage of trained personnel, good mould making facilities, knowledge of requirements of plastics products for the consumer and sufficient experience in application development, are some of the immediate problems.

The Government is planning to set up a petrochemical complex with a published nameplate capacity of 55,000 tons of polyethylene and 60,000 tons of P.P. and it may well be that this will be substantially increased.

With a growth of the plastics industry, a communication system must be built up between the raw material producers, the equipment manufacturers, the plastics processors, the plastics trade and the consumers, to ensure that efforts are directed into the most beneficial channels for all.

The establishment of a Plastics Development Centre will play a key role in these activities. It will be established and equipped to provide technical support to the Philippines plastics industry to narrow the gap between the raw material producers, the plastics processors and the end product users, and to enable applied and research and development support for the plastics industry.

The Centre will also provide on-the-job training for selected individuals from the plastics industry in developing experience in processing technology and material testing. Technical seminars will be conducted periodically on new processing technology for the plastics processors and users.

During the initial phase of the project-concerted efforts will be directed to two major areas, packaging and industrial projects. Particular attention will be paid to the use of indigenous materials already available such as PVC.

With the increase in availability of polymer supply there will be an urgent need to maximise the efficiency of the processing capacity and improve quality & productivity. Particular attention will need to be paid to export markets.

These exports will ensure that the added-value benefits to be derived from increased polymer availability are fully exploited to the advantage of the national economy. The alternative is to export the polymer in the international market thus losing the potential of the added-value benefits.

In the situation of a freely available polymer supply, the plastics processing industry will find itself encountering more competitition in existing markets and will be forced to seek new market areas if the business is to remain viable. There will thus be an incentive to improve productivity by updating processing technology so that profitability can be improved, or maintained.

In entering new market areas where product performance becomes a main criteria, there will be a need to manufacture to standards and to utilize quality control. For a large number of processors this will be a new experience and will require communication and plastic industry back-up services to enable the industry to adapt itself to the changing circumstances. To reach the industry in the necessary depth requires the services of an organisation geared to plastic technology, application development,communication and service to industry. However, such an organization does not currently exist.

In order to assist and support the industry to successfully meet these challenges in market identification and development, applied technology development and transfer, and assisting in the creation of new employment opportunities through increasing process capacity, it is proposed that a new plastics technology institution be established.

This new institution should have close ties with other institutional bodies which are actively operating in the field of plastics, for example, Metals Institute Research and Development Centre,. This latter institution is already under the wing of the Ministry of Industry. Other interested parties such as the plastic associations should be asked to sit on the Governing Board of the new institution. The new institution will effectively function as a "Plastics Development Centre" (PDC).

This institution PDC will be developed to have the expertise and resource so that it can identify market areas, undertake application development programmes necessary to exploit new and existing market materials processes and products together with appropriate back-up services, of communications library, technical information, technical services, external liason/training, etc. In addition, the communications service will be developed to assist in increasing the processing production capacity of the industry and the in-plant training of the PDC personnel. By these means it will be possible to up-date the plastics processing technology, improve product quality and productivity, assist the industry to enter new market areas and expand existing markets, create new employment opportunities and improve export potential. Utilising these same resources and expertise the PDC would be equipped to play a significant part towards the implementation of the Government's Development Plan.

The use of plastics in packaging, rural development, building and exports have been indicated as areas of interest.

In rural development areas plastics can be used in a wide range of applications, covering pipe and fittings for potable (drinking) water supply, in drainage, for structures and particularly for building roof units, water storage systems, pumps, grain storage, etc. There is little doubt that suitable investigation will highlight other possible applications.

The PDC will provide assistance and support to increase the processing capacity of the industry, thus playing a positive role in employment generation and industrial development. Industrial growth in many sectors will increase the need for plastics parts. Already there is evidence of increasing interest in such as fan parts, blades, piping for wash basins, fan blades television parts and many others. The industrial growth will call for constantly improving and high technology. Some of industries which can be, and are now served, by the plastics industry are:

Domestic Appliances

Automotive industries

Fans and air conditioners

Building industry

Food packaging

Agriculture, irrigation, drainage and water conservation

T.V. and Radio

Typewriters Business machines and office equipment

Communications and Telephone

Furniture

Display signs

Batteries and storage cells

Industrial pumps and similar artifacts

Other facilities will be developed to cover formulations, compounding, extrusion, blow, injection and compression moulding, and re-cycling within this project. In addition, co-operation with existing institutional facilities will be sought to undertake the necessary chemical and instrumental analysis of plastics as part of the support operations for the Centre in its investigational programme.

The need for a strong auxilliary industry in both mould and die design and manufacture is a key factor in the long term development of the plastics industry. However, such an activity falls more naturally into engineering tool design and manufacture as a specialised area of that industry. It would therefore be more appropriate to develop such activities in conjunction with the MIRDC and hence the need to bring the PDC under the wing of the Ministry of Industry to ensure the closet cooperation between these two important units in the development of the Plastics industry.

The Central Institute of Plastics Engineering and Tools (CIPET) located in Madras, India has been established with UNDP/UNIDO assistance and now offers courses in mould design and moulding making on an international basis. Consideration can be given to the provision of long-term fellowships for appropriate courses at CIPET, which are of two and three years duration, although they also offer a selection of short specialised courses for personnal with some tool/mould-making experience, e.g. mould-polishing.

Part II D Outputs

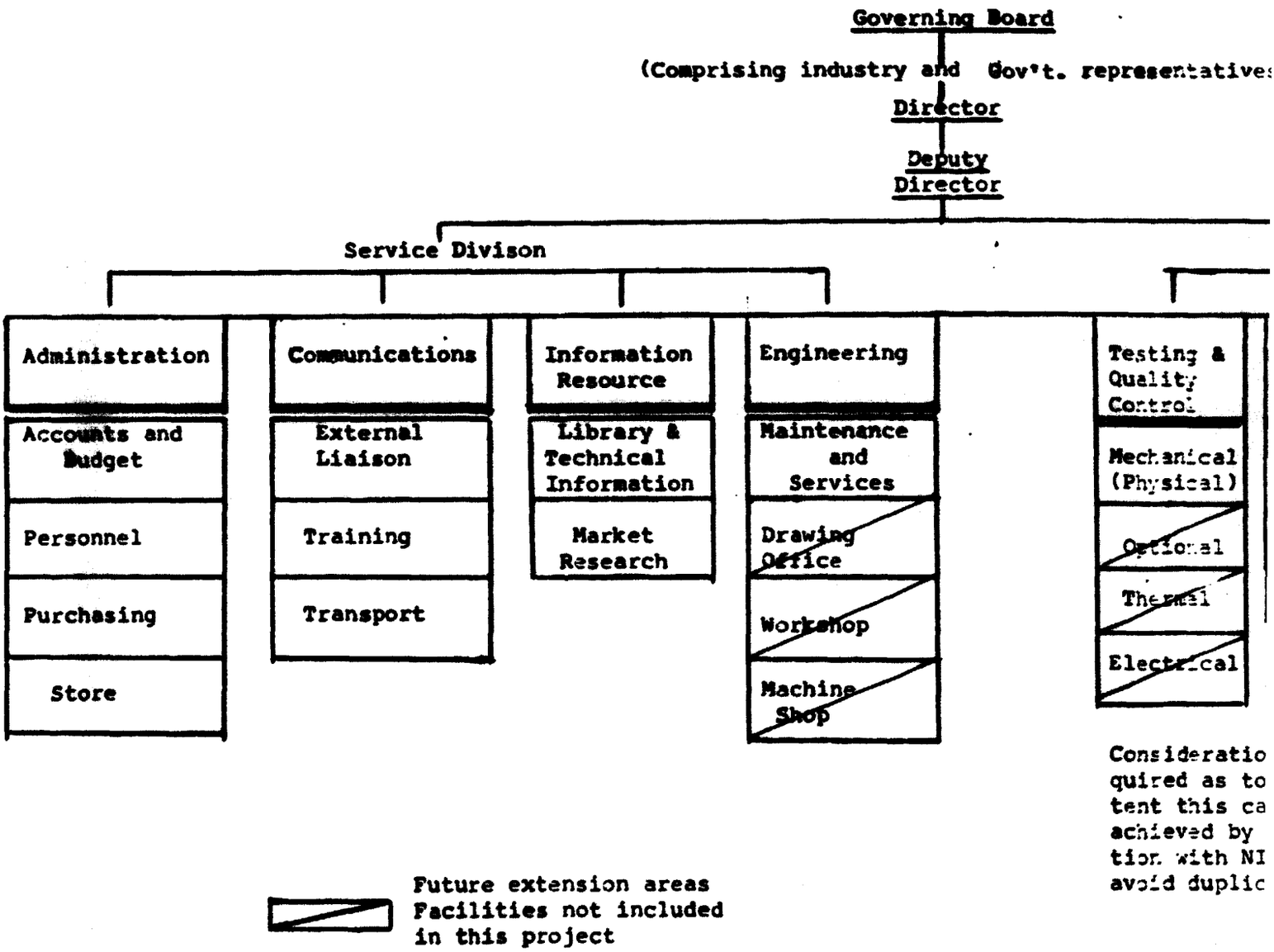
(Note: The outputs of this project include both the outputs of the institution-building operation as well as the outputs of the PDC's own programmes).

1. Establishment of a Plastics Development Centre, controlled by a Governing Council, with an established organizational structure and functioning management guided by an approved policy and implementing a comprehensive plan for the development of the Centre.
2. Buildings containing offices, lecture hall, laboratories for pilot plant, testing equipment, stores, information resource facilities, and engineering services.
3. Machinery, equipment and supplies, in place, tested and in use.
4. An inventory of expendable equipment and supplies, stores and operationally active stock control and purchasing system.
5. Trained staff personnel in specialized areas of plastics technology.
6. Interim and final reports of the development work, in hand, or completed undertaken by the PDC.
7. Nine active documents, approved as necessary, covering the following:
    a) Output profiles of PDC for five-year period
    b) Operationally active development programmes designed to achieve:
        1. Improved products and extended applications of plastics in both rural development, including agriculture, and in industrial applications.
        2. Improved productivity of processors.

3. Introduction of quality control in plastics processing operations.
4. Production of quality controlled plastics products in conjuction with the Philippines Standards Institute.
5. Draft standards for plastics products in both rural and industrial application in conjunction with the Philippines Standards Institute.
6. Improved extended and constantly up-dated knowledge of the application and technology of plastics in rural and industrial market areas.
7. Interchange of knowledge, ideas, technology with other related institutions.

c) Physical resources inventory and management
d) Long-term financial plan
e) Revenue sources
f) Annual budget estimates
g) Staff profile needs of the PDC
h) Induction and staff development
i) Staff performance assessment

8. Three manuals containing information and data covering the following:
   a) Establishing the profiles of outputs for the PDC
   b) Routine preventive maintenance procedures
   c) Developing elements for the PDC technology development programmes.



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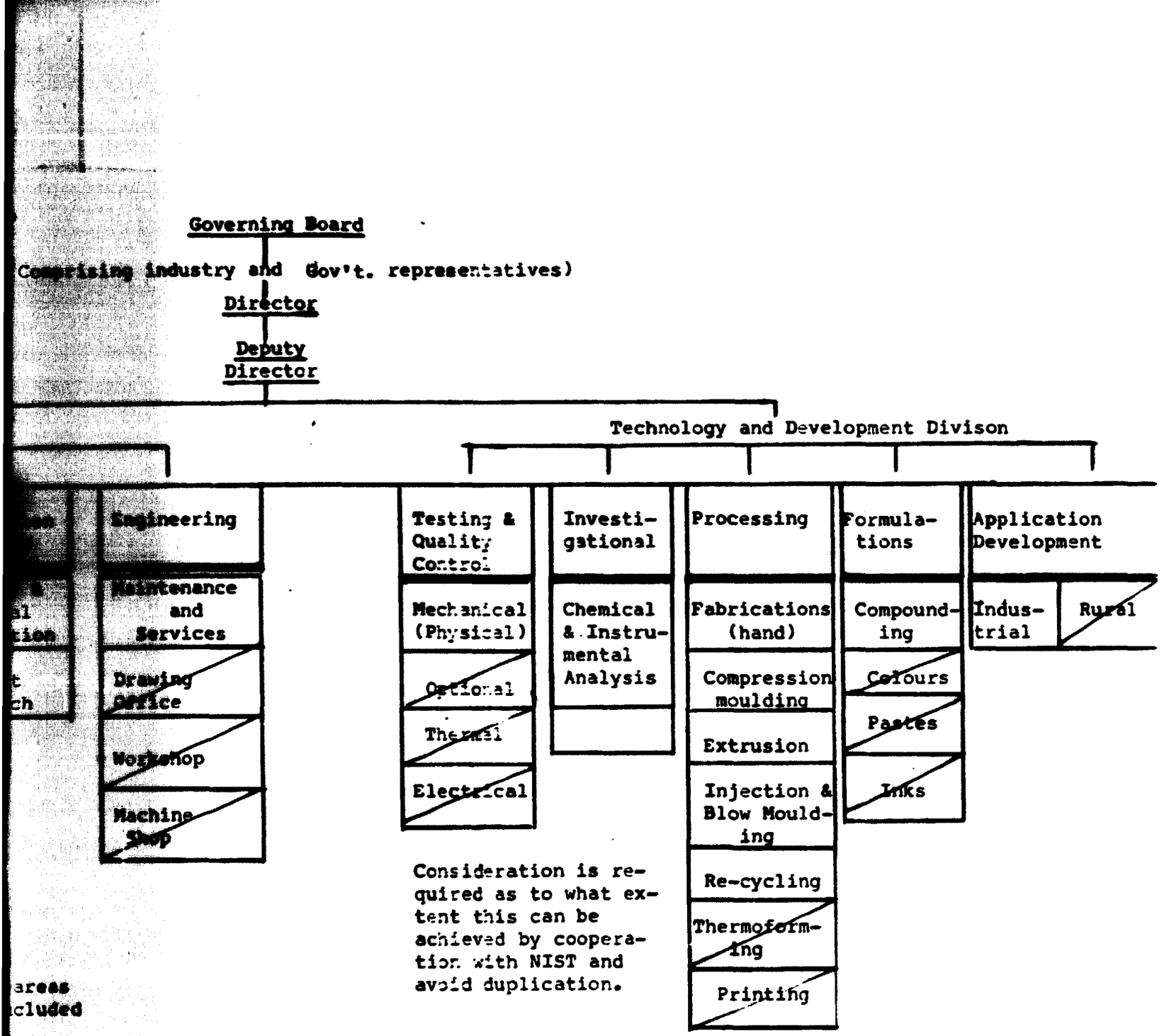

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SECTION 2

Part II E Activities

Description of project activities	Location	Starting date and duration
1. Formation of Governing Board	Manila	November 1981
2. Appointment of Director of PDC	Manila	April 1982
3. Appointment of project Technical Co-ordinator	Manila and travel within the country	May 1982 29 M/M Split missions
4. Provision of expert-selection of books and journals plastics technology library service		May 1982,
5. Development of a policy statement for IPC to be approved by the Governing Council and implemented	Manila	January 1982 3 months
6. Development of suitable organizational structure for PDC (Table A gives a possible outline) and modified as necessary from time to time	Manila	April 1982
7. Identification and development of necessary management functions, objectives and tasks which include policy-making;administrative management (including resources management);programme management; evaluation and forward planning;co-ordination and relations with governing authorities, Government, other organizations and institutions. etc.	Manila	June 1982 3 months
8. Preparation of staff possible document in co-operating job objectives, tasks descriptions, qualifications and experience required and other elements of a profile of staff needed for operating the PDC at optimum level, and its implementation	Manila	Sept. 1982 6 months
9. Appointment of National Staff	Manila	Oct. 1982 onwards
10. Provision of 3 fellowships for overseas training;		

	a. in plastics process, formulation and compound technology	Europe	2 m/m	
	b. in plastics injection and blow moulding technology	Europe	2 m/m	
	c. in production development and evaluation	Europe	3 m/m	Jan. 1983 onwards
	d. The extrusion technology with particular reference to film extrusion	Europe	2 m/m	
	e. In vacuum and pressure forming	Europe	3m/m	
11.	Preparation of a technical manual to support the development of a document detailing the outputs profiles of the PDC for a 5-year period of the project and explaining (a) the approach methods and techniques as well as the information and data to be used in preparing the outputs forecast documen; (b) how the approach, methods and techniques and what kinds of information and data should be used to modify the established profile of outputs;	Manila	June 1982 2 months	
12.	Prepartion of an outputs profile document, to be approved by the Governing Council and implemented, indicating the following:	Manila	June 1982 Onwards	
	a. the different types, categories and levels of outputs (products or services) which the PDC will produce over a five year period;			
	b. the quantitative and qualitative attributes of the outputs which will be produced;			
	c. a time based schedule, where applicable, for the production of the different outputs;i.e. justification of categories, quantities, qualitative attributes, and schedule.			

13.	Preparation of a manual explaining the approach (a) the techniques as well as the information and data to be used in developing the various elements which constitute the PDC programme for applied research; a) how the approach, methods and techniques and what kind of information and data should be used in modifying the established programme; b) what kind of machinery should be established within the Centre to review, and modify as necessary, the programme, from time to time; and c) which users on groups users of the Centre's outputs or services should be consulted, and through what means, in regard to the contents of the programme and their modification.	Manila	June 1982 3 months
14.	Prepartion of the PDC's plastics technology programme setting out the purpose and scope of the applied research programme; the specific applied research activities or fields of applied research the methods and techniques to be used; the information data and related materials to be used; selection and scheduling of applied research activities or projects. These programmes will be expected to be designed to: a. increase productivity on indigenous equipment b. improve quality of products c. establish parameters for product performance d. initiate and draft quality standards	Manila	June 1982 Onwards

	e. evaluate raw materials, raw products, processed, equipment and applications		
16.	Preparation of job descriptions and training schedules for short-term consultants required for the PDC development programmes implementation; in total of 46 m/m, to be advised to UNIDO to enable recruitment procedures to be initiated.		August 1982 3 months and onwards as required
17.	Building and office provision		Start Sept. 1982 Completion Sept. 83
18.	Establish stores, inventory and stock control records	Manila	Sept. 1983
19.	Install office equipment and supplies	Manila	Sept. 1983 onwards
20.	Establish PDC organization and management functions: allocation of personnel	Manila	
21.	Installation and testing of equipment, checking and listing spares	Manila	Sept. 1983 onwards
22.	Collection and indexing of service manuals provided by machinery and equipment supplier	Manila	Sept. 1983 As required
23.	Preparation of annual budget estimates	Manila	April 1982 April 1983 April 1984 April 1985 3 months each year
24.	Initiation of discussion group meeting involving plastics technologies and counterparts from Industry & others relevant government agencies	Manila and travel travel within the country	Jan. 1983 and twice yearly
25.	Provision of international-fellowship for Director for Study Tour and consultations with European and U.S.A. plastics processing institutions.	Europe and U.S.A.	April 1983 3 m/m

	Consultations with machinery manufacturers organized by Technical Coordinator.		
26.	Preparation of manual routine preventive maintenance. Implementation with schedules and records	Manila	Sept. 1983
27.	Preparation of physical resources document setting out the following, and appropriate up-dating:	Manila & Europe	May 1982 Onwards
	a. an itemized list of buildings and other physical plant needed, with descriptions thereof in adequate detail, and with an indication of the parties responsible for carrying out repairs, etc., under contractual arrangements;		
	b. an itemized list of machinery and equipment and related spares needed, with specifications in adequate detail; a list of possible sources of supply of the machinery and equipment and related spares; and information on servicing agreements entered into with the institution by suppliers or other organizations;		
	c. an itemized list of expendable equipment and supplies, together with an indication of their purposes, sources of supply, optimum inventory levels, and storage and distribution arrangements;		
	d. a description of anyprogramme of maintenance established, its purposes, mode of execution, roles of different units of the institution in it, roles of any outside parties in it, etc.; and		
	e. description of the organization and procedures implemented to plan,procure, control and manage the physical resources of the institution.		

28.	Preparation of a revenue sources document incorporating alternative and recommended proposals concerning sources of revenue and the arrangements for obtaining needed finances. This should include proposals, together with explanations of implications, on such matters as fees (e.g.,for training, research and consultancy services), scholarships or fellowships, and official subventions.	Manila	May 1982 As required
29.	Execution of development programmes	Manila	Jan. 1984 Onwards
30.	Develop an evaluation, testing and technology support service for the industry	Manila	onwards
31.	Develop contacts with plastics raw material and machinery suppliers, with trade associations and appropriate Government organizations	Manila and travel within country	January 1984 Onwards as required
32.	Provision of short term international specialist consultants		
33.	Preparation and implementation of a system of PDC staff induction and development	Manila	October 1982 Onwards
34.	Initiation of discussions group meetings involving plastics technologists and counterparts from specific sectors of industry (as users of plastics products) to interchange information, ideas and experience. To develop coordination and cooperation in work programmes.	Manila and travel within country	April 1982, at regular intervals
35.	Investigate and identify areas of potential use of plastics in rural and industrial development	Manila and travel within country	September 1982 3 months
36.	Provision of 2 fellowhips for Study Tour and consultations at selected European and American plastics institutions. Technical coordinator as technical adviser/tour leader during Study tour.	Europe and U.S.A. (Note: this tour is season dependent)	Aug. Sept. 1982 3 m/m

37.	Design and execute programmes for development of applications, particularly in: Rural development,and packaging, and other industrial applications a. design and development of required products b. evaluation of existing and new products. c. demonstrations of applications and training installations and use	Manila	December 1983 Onwards
38.	Development of sister institutional arrangements in plastics technology to ensure continous interchange and updating of technical and technological information and services. Provision of specialised experts at short-notice. Regular visits to sister institutions.	Manila	January 1984
39.	Preparation of long-term and perspective financial plan for the PDC to be approved by the Governing Council and implemented		
40.	Preparation and implementation of a system of staff assessment	Manila	January 1984 Onwards
41.	Preparation and implementation of a comprehensive plan approved by the Governing Council for the phased development of the PDC as a whole, specifying to what extent and how each of the specific aspects are to be further developed following the termination of the UNIDO-assisted project.		
42.	Promote and assist introduction of quality control at plastics processors	Manila	Sept. 1984
43.	Commence technical information publications for the plastics processors with particular reference to small scale and potential entrepreneurs	Manila	Sept. 1984

44.	Provision of 6 fellowships for overseas technical study tours and visits to sister institutions	U.S.A.	Sept. 84 Onwards
45.	Design, develop or improve plastics products for specific applications at optimal cost/ performance ratio	Manila	June 1985 Onward
46.	Transfer the technology of improved processing, products, or applications to processors and users through demonstrations and training, lectures, seminars, workshops, industrial clinics and literature as appropriate	Manila and travel within country	January 1986 Onwards
47.	Project mid-term review	Manila	January 1985
48.	Annual reports	Manila	December 1982 December 1983 December 1984
49.	Termial Report	Manila	December 1985

Part II F Inputs

A. Description of Government Inputs

	Location	Starting Date
1. Assignment of National Staff		
a. Appointment of Director Of PTC (1)	Manila	April 1982
b. Deputy Director of PTC (1)	Manila	Oct. 1982
c. Technologists (5)	Manila and travel within country	Oct. 1982 as required
d. Engineers (1)	Manila	Aug. 1983
e. Assistant technologists (5)	Manila	Sept. 1983
f. Technicians (7)	Manila	Jan. 1984
g. Technical Information Officer (1) (Librarian)	Manila	Sept. 1983
h. External liaison and training officer (1)	Manila	Jan. 1984
i. Market research officer (1)	Manila and travel within country	Sept. 1983
j. Officers for Administration (2)	Manila	June 1983
2. Provision of a servicing personnel		
a. Process workers (6)	Manila	Jan. 1984 As required
b. Craftsmen for fabrication workshop and for general maintenance (2)	Manila	January 1984 As required
c. General workers (6)	Manila	Jan. 1984 As required
d. Foremen (Stores, Crafts, (3)	Manila	Jan. 1984 As required

Provision of servicing personnel	Location	Starting Date
e. Secretaries and shorthand typists (4)	Manila	May 1982 As required
f. Clerks (4)	Manila	Sept. 1983
g. Drivers (3)	Manila	May 1982 As required
h. Guards (6)	Manila	Sept. 1983 As required

3. Training provisions

Maintenance of trainess and participants on study tours and training programmes.

4. Government provided buildings, equipment and supplies

Expendable equipment and supplies

Description	Location	Delivery Date	Cost in US$ equivalent
a. Raw materials and semi-finished goods	Manila	As required	50,000.00
b. Film, pipes, fitting and other items, etc. for comparative trials	Manila	As required	5.000.00
c. Miscellaneous items for application trials	Manila	As required	5,000.00
d. Office supplies, (Photo-copy paper, carbons, pencils, etc.)	Manila	As required	to be determined
e. Acquisition of technical information through access to appropriate data banks		Jan. 1984 Jan. 1985	10,000.00

Non-expendable equipment Description	Location	Delivery Date	Cost in Philippine Pesos
a. Buildings (offices, stores, processing, testing,etc., lecture hall). Aount 850 sq.metres building area required with possibility of future extensions.	Manila	Jan. 1984	To be determined

b. Office furniture and equipment (chairs,desks, filing cabinets, telephones, teleprinter,electronic calculators, etc.)	Manila	As required	to be determined
c. Plastics fabrication workshop: benches, stools, handtools (chisels, spanners, screwdrivers, saws,planes, vices, drills, and bits, etc.)	Manila	Oct. 1983	to be determined

d. Technical equipment

Description	Location	Delivery Date	Cost in US$ equivalent
Testing and quality control			
1. Metrology equipment (thickness meters, temperature indicators, pyrometers, etc., pressure indicators and recorders, travelling microscope)	Manila	Oct. 1983	14,000
2. Density column	Manila	Oct. 1983	1,000
3. Shore hardness tester	Manila	Oct. 1983	250
4. Balance, single pan, automatic tare C-1,0-3 and 0-5 kg. to 1 mg. accuracy	Manila	Oct. 1983	2,500
5. Test specimen cutting press and cutting knives	Manila	Oct. 1983	1,000
Library services			
6. Photocopier	Manila	Oct. 1983	6,000
Audio-visual equipment			
7. Microphones, amplifier and control unit loudspeaker (for lecture hall) and spares	Manila	Oct. 1983	1,500
8. Loudspeakers (2)	Manila	Oct. 1983	300

9. Photographic facilities - darkroom equipment, 35mm still camera, 16mm movie camera, editing and lighting units, etc.	Manila	Oct. 1983	2,500
Compounding operations			
10. Balance: 0-1 kg single pan type	Manila	Oct. 1983	2,000
11. Scales: 0-5 kg. direct reading	Manila	Oct. 1983	1,500
Processing operations			
12. Scales)-50 kg.	Manila	Oct. 1983	2,500
13. Single pan balance 0-5 kg.	Manila	Oct. 1983	2,000
Fabrication operations			
14. Scales 0-50 kg.	Manila	Oct.1973	500
15. Scales 0-1 kg.	Manila	Oct. 1983	500
16. Protective clothing,	Manila	Oct. 1983	to be determined
e. Transport:			
1. Car for director	Manila	April 1982	to be determined
2. UNIDO project car for international staff	Manila	Sept. 1983	to be determined
3. Estate wagon for general use	Manila	Sept. 1983	to be determined
f. Equipment for drawing office	Manila	Jan. 1984	to be determined
g. Maintenance workshop equipment:power drill, lathe, mechanical saw, grinding wheel, work benches	Manila	Jan. 1984	to be determined
h. Books and journals for library		Jan. 1984 Jan. 1985	1,000 1,000

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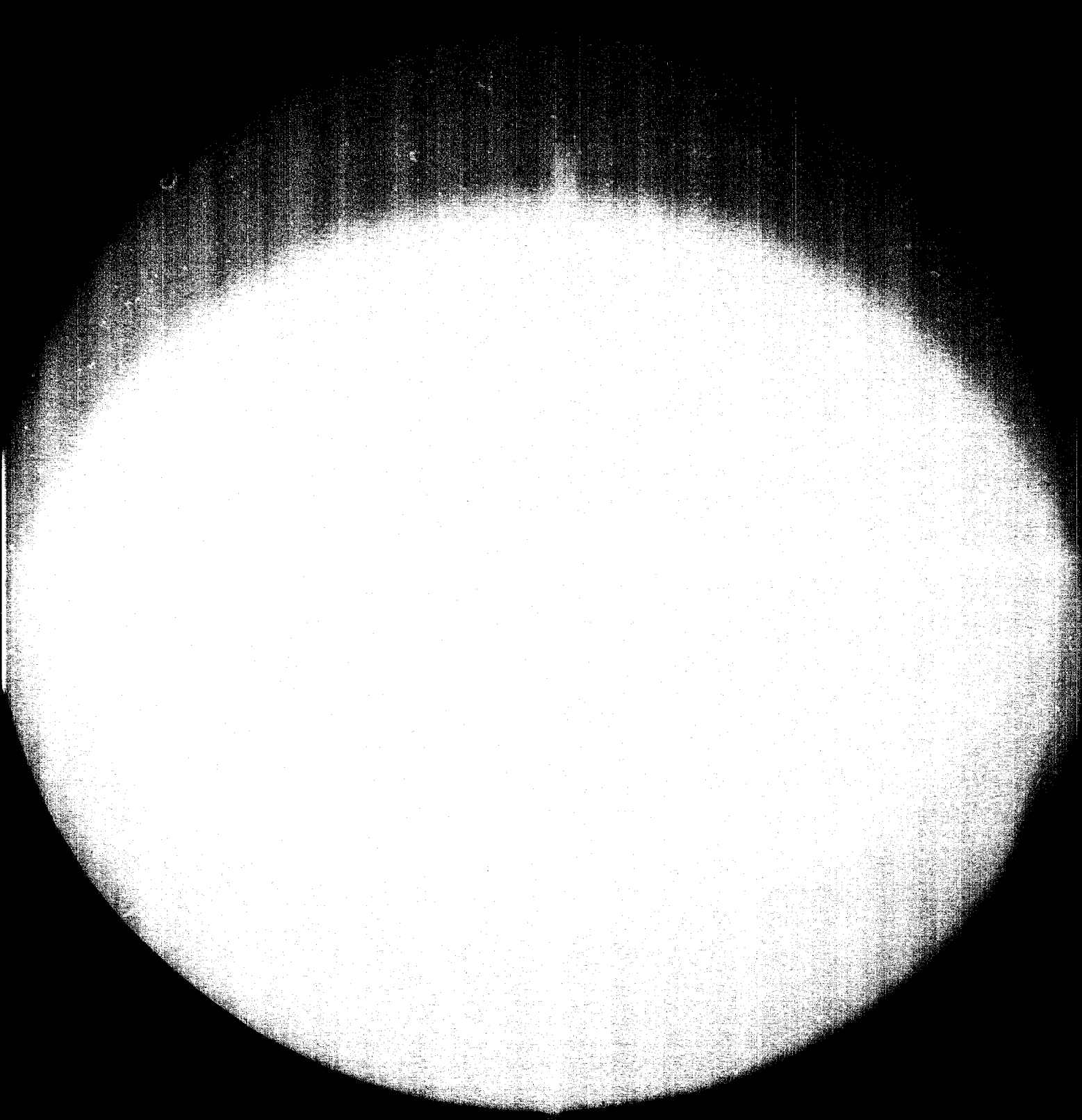


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[redacted]. Description of WBP inputs

1. [redacted] personnel

a. Project coordinator (2 m/m)

He should be a plastics technologist with extensive experience in both a wide range of flexible packaging technology, and also in development and application work. He should also be particularly experienced in the development of specifications and control of such operations and tests and be able to collaborate effectively.

He must have commercial experience and be a skilled administrator, able to [redacted] the overall technical coordination of the project. Previous experience of developing countries is highly desirable.

Language: English

The Technical Coordinator will undertake his duties on a split mission basis. One part to be or more visits to the PRC during the construction phase, another part by [redacted] continu-

approximately 1 m/m per year; an intensive period during start up and monitoring and assistance in the final two years.

The essential element is flexibility of arrangements to suit the project needs. He will additionally accompany some of the study tours as technical adviser.

b. Consultants (12.5 m/m)

The following descriptions of consultants are given to assist in setting out some of the possible potential needs. They will be made available to the project for short-term assignments. These are by way of example only and do not in any way restrict the nature of specialist expertise that may be required:

1. Consultant in extrusion technology

He should be a plastics technologist with production experience in plant pipe production, preferably covering both PVC and PE. He should have both theoretical knowledge and skills in matters of extrusion and dimensional control. He should also have had experience in pipe and profile extrusion with knowledge of the correct take-off and pipe cutting systems. Some experience of pipe installation would be advantageous. Previous experience of working in a developing country desirable.

Language: English.

2. Consultant in injection moulding and blow moulding

He should be a plastics technologist/engineer with experience of both hand operated and automatic equipment.

He should be capable of training in machine setting, and have a knowledge of injection blow mould setting. He should have experience of the properties of polymers and be able to advise on fault finding and corrective technology. Previous experience of developing countries is advantageous.

3. Consultant in testing of plastics

He should be a plastics technologist/testing engineer with experience of product testing. He should be capable of setting up test equipment and carrying out routine test programmes. Experience of interpretation of results obtained is essential and should be related to corrective technology. He should be able to sketch and advise on the making of simple test equipment like the dart-impact tester and demonstrate its use. He should have experience of quality control and how this can be applied in small scale and rural industry. He should have experience of determining performance parameters and designing draft quality standards.

Previous experience in developing countries essential.

Language : English

4. Consultant in plastics formulation compounding and recycling

He should be a plastcis technologist with a wide range and in depth experience of the development of formulation of plastics compound and preparation of compounds and master batches both at pilot plant and full scale production. He should be able to evaluate polymers and raw materials available locally and to use a Brabender Plastograph to interpret results of the compound formulations. He should be able to adviseion the interpretation of the results in terms of formulation construction and modification.

It is essential that he has detailed experience of PVC compounds and in both rigid and plasticised grades. Experience is also required in formulations of additives of polyolefins. Experience of lecturing on this subject is desirable, as is previous experience in developing countries.

2. Training Provisions

a. The Government will submit a total of three candidates from the plastics technologies who will be supported in their travel and subsistence expenses to attend technology training courses in specified subjects, starting February 1979 in overseas countries. These courses will cover the following:

i. plastics processing, formulations and compounding technology (9 m/m)

ii. plastics product development and evaluation (6 m/m)

b. The Government will submit one senior candidate from the PDC who will be supported in his travel and subsistence expenses to attend a study tour consisting of consultancies and visits to selected plastics technology institutes in Europe and the U.S.A. to discuss and investigate possible sister-institutional arrangements. The Technical Co-ordinator will accompany him on the tour and act as technical adviser. (2 m/m)

c. The Government, within this project period, will submit a total of six candidates from the PDC who will be supported in their travel and subsistence expenses to attend selected seminars, symposia, meetings, conferences, exhibitions, etc. on plastics technology, plastics application or related subjects, at various dates in overseas countries. (6 m/m)

3. UNDP provided supplies and equipment

Expendable	Delivery date	Cost in US $
1. Special grades of film, pipes and fittings, etc. for comparative trials.	as required	10,000
2. Special grade raw materials for processing technology development	as required	10,000
	Total	US$ 20,000

Non-expendable

Equipment for testing and quality control	Source	Delivery	Cost in US $
1. Melt flow indexer, accessories and spares	Davenport, UK	1979	10,000
2. Tensible tester with accessories for tensile strength, elongation at break modulus, compression set (D638-68, D695-69, D790-70)	Instron, UK	1979	60,000

Equipment for testing and quality control		Source	Delivery	Cost in US $
	3.	Elmendorf tear test (D1004-66)	Davenport,UK	1979	2,500
	4.	Non-contact temperature indicator (infra-red)	Germany	1979	4,000
	5.	Brabender Plasticorder complete with recording unit, accessories and spares (measures plastics viscosity/temperature)	Brabenden, Germany	1979	50,000
	6.	Pressure tester for pipes (short term test)	various	1980	1,000
	7.	Haze and optical meter with accessories	Gardner U.S.A.	1979	10,000
	8.	Oven, electricity operated up to 200°C± 2°C with shelves and fan ventilated. Stainless steel internally.	various	1979	3,000
	9.	Dart impact tester (for film)	Davenport,UK	1979	3,000
	10.	Universal Izod impact test with accessories and spares (d256-70)	various	1979	9,000
	11.	Moisture vapour permeability	Yarsley,UK	1979	2,500
	12.	Gas permeability (1434-66)	Davenport,UK	1979	1,000
	13.	Multipurpose 100 ton hydraulic press, fitted with automatic programming, pattern size approximately 350 X 350mm, fitted with heated and water cooled platterns	various	1979	20,000
Audio-visual equipment for demonstration and training					
	14.	35mm automatic slide projector with QI light source and spares	various	1979	300
	15.	Tape recorder with electronic cueing equipment for automatic slide operation, with accessories and spares	various	1979	250
	16.	Screen	various	1979	60
	17.	Powder-blender, Kenwood type	Kenwood and Hobart	1979	2,500
	18.	Spares and miscellaneous items of equipment			4,000

Pilot plant for plastics fabrication		Source	Delivery	Cost in US $
19.	Impulse heat sealer	various	1979	1,200
Pilot plant for processing				
Extrusion unit				
20.	Multipurpose 32mm extruder, variable speed controlled screw, fitted with bottm fed, centre mandrel die for blown film processing	Betol, UK	Jan. 1980	20.000
21.	Adjustable slot cooling rings, one for 32mm extruder-die position and one in bubble length	Betol, UK	Jan. 1980	3,500
22.	Film assembly unit with adjustable height nip-rolls, take-off unit for centre and surface wind-up, and equipped with air blower unit	Betol, UK	Jan. 1980	20,000
23.	Rotating die for blown film extrusion and assembly trolley	Betol, UK	Jan. 1980	8,000
24.	Granulator	various	Jan. 1980	4,000
25.	Magnetic separator	various	Jan. 1980	2,500
26.	Vacuum sizing and cooling bath (for 32mm extruder) for pipe and section extrusion	Betol, UK	Jan. 1981	15,000
27.	Caterpillar take-off, with speed control and pipe saw cutter	Betol, UK	Jan. 1981	15,000
28.	Dies for pipe and section	various	Jan. 1980	5,000
29.	Additional extruder screws (4)	Betol, UK	Jan. 1980	4,000
Injection moulding unit				
30.	Automatice injection machine, 60 ton clamping pressure, 4 ounce shot capacity	Windsor India or UK	Jan. 1981	15,000
31.	Test moulds	various	Jan. 1981	4,000
		Total		310,310

For Information Only

ADDITIONAL EQUIPMENT REQUIREMENT

The following equipment will be required for the project at a latter date but is currently not included.

The plastics industry should be persuaded to make some equipment available to the project on a temporary loan basis as a gesture of their involvement, however, .. old a design it may be. This could enable the P.D.C. to undertake some programmes in blow moulding

Pilot plant for processing section:

Blow moulding unit	Source	Delivery	Cost in US $
1. Blow moulding equipment with one table action	Bekum		40,000
2. Test moulds	various		4,000
3. Mould cooling unit	various		4,000

Part II 6 - Preparation of Work Plan

1. See attached table (page____).

2. A detailed Work Plan for the implementation of the project will be prepared by the project co-ordinator in consultation with the Director of the Project. This will be done at the start of the project and brought forward periodically. The agreed upon Work Plan will be

attached to the Project Document as Annex I and will be considered part of that document.

Part II H - Preparation of the Framework for Effective Participation of National and International Staff in the Project

The activity necessary to produce the indicated outputs and achieve the project's immediate objective will be carried out jointly by the national and international staff assigned to it. The representative roles of the national and international staff will be determined by their leaders, by mutual discussion and agreement at the beginning of the project and set out in a Framework of Effective Participation of National and International Staff for the project. The Framework, which will be attached to the Project Document as an annex, will be reviewed from time to time. The respective roles of the national and international staff shall be in accordance with the established concept and specific purposes of technical co-operation.

Part II I - Development Support Communication

The results of the trials leading to cost-effective applications of plastics in industry will need to be disseminated to the producers and the ultimate users. This can be achieved through utilization of the existing CSMI & SBAC organisations. Additional support communications may be required but this cannot be identified at this stage.

Part II J - Institutional Framework

The Council for small and Medium Industries was first established as an arm, of the Ministry of Industry. The Deputy Minister of Industry acts as its chairman and an appointed Director carries the functions of the organization.

To supervise the implementation of the PBC and follow up its operation a special committee will need to be formed. With responsibility to the Ministry of Industry the suggested representation could be:

1. CSMI
2. MIRDC
3. NIST
4. Philippine Plastics Association
5. Philippine Plastics Weavers Associations
6. Ministry of Trade
7. NEDA
8. Representatives of other appropriate organizations

It is also suggested that this committee be further broadened to include additional members as follows:

1. Resident Representative of UNDP or his nominee
2. UNIDO representative or nominee

The Governing Council of the PBC. should be a smaller body with direct responsibility to the Ministry of Industry.

The Council will be responsible for the policy and coordination necessary to meet the objectives of the project, as set forth in this project document, preparing reports, evaluating the progress of the project and reporting to the UNDP about the project.

It will the administrative body controlling the policy of the PTC and will thus have the authority necessary to make such changes as may be required to ensure that the Centre fully serves the interests of the plastic industry in the future.

The Ministry of Industry will intitially fund the PDC operational running costs from its own budget but with some on going support negotaited with the Plastics Manufecturers Associations.

The location of the centers has to be selected, and should be in a situation colse to the centre of plastics activity in Caloocan City or Quezon.

Part II K - Prior obligations and prerequisites for project implementation

1. By the Government - prior obligations

   a) The Government, through the concerned Ministries, will take budgetary action, make financial appropriations and release funds in such a manner as may enable the PTC to meet its financial commitments in respect of the project as and when they fall due. In this respect a sum of _____ will be deposited in the name of PTC as a starting point for funding a rotating account. This deposit will be made at the start of the project in April 1982.

      Note: The sum to be deposited should represent approximately 25% of the estimated annual running costs of the PDC).

   b) The Director of the PTC should be selected and identified so that he is available to the project at the beginning of April 1982, to enable the project timetable to be maintained.

c) A plan of the building, together with land, which is to be made available for the exclusive use of the project, including land for future expansion, shall be drawn up and submitted to UNDP for their approval.

By the Government - prerequisites

1. This project documents has been drafted on the basis that there would be available to the project, through CSMI expertise for general administration and management, planning and control of both human and financial resources. If this is not so then short-term consultants will be required for this purpose. This feature is to be clarified.
2. The building and land shall be transferred to the project immediately it starts otherwise implementation slippage will occur. The project is drafted on the basis that the first part of the building will be completed in January 1988.
3. The Governing Council will be formed and functioning before the project starts to insure that the project has a controlling organization to whom the director of the PDC is responsible upon his appointment.

2. By UNDP/UNIDO - prerequisites

The training arrangement facilities for the following covering:

plastics processing, formulation, compounding technology,

plastics product development,

plastics injection etc.

shall be completed by September 1982 to enable the fellowships to start by early 83 latest.

Part II L - Future UNDP assistance

During the course of implementation of this project it will be possible to assess if additional facilities are required to strengthen the Philippines plastics industry. Further, it is to be expected that this project will become key reference project through arousing the interests and needs of the Asrean regions. In order to serve those needs adequately the facilities of thePPIC will undoubtedly require expansion.

In addition this document indicates additional equipment required for the project to the value of US dollars 48,000 which should be the least contribution of the industry to the capital equipment. The purchase of this equipment will also involve additional fellowships and experts estimated at approximately US dollars 12,000. UNDP assistance will be required to meet these need.

Part III - Schedules of Monitoring Evaluation and Reports

A. Tripartite Monitoring Review

This project will be subject to periodic review in accordance with the policies and procedures established by UNDP for monitoring project and programme implementations.

A technical review will be undertaken by UNIDO.

B. Evaluation

This project will be subject to evaluation, in accordance with the policies and procedures established for this purpose by UNDP. The organization, terms of reference and timing of the evaluation will be decided bu consultation between Government, UNDP and the Executive Agency concerned. The evaluation will be undertaken towards the end of the second year of operation.

Project Budget covering Government in contribution in kind (in pesos)

Country : Philippines

Project No. :

Title : Plastic Technology Centre

	Total		1982		1983		1984		1985		1986	
	m/m	₱	m/m	₱	m/m	₱	m/m	₱	m/m	₱	m/m	₱
Project Personnel												
Director	57		9		12		12		12		12	
Deputy Director	51		3		12		12		12		12	
Technologiest	228		6		42		60		60		12	
Engineers	40		20		4		12		12		12	
Assistant Technologiest	168		0		6		42		60		60	
Technician	252		0		20		84		84		84	
Librarian	39		0		3		12		12		12	
External relations officer	36		20		20		12		12		12	
Market Research officer	39		0		3		12		12		12	
Administrative	84		0		12		24		24		24	
Process workers	216		0		0		72		72		72	
Graftsmen	72		0		0		24		24		24	
General workers	216		0		0		72		72		72	
Foremen/Supervisors	108		0		0		36		36		36	
Secretaries/Shorthand typist	138		6		12		24		48		48	
Clerk	156		0		12		48		48		48	

Project budget summary Government contribution in kind (in person)

	TOTAL		1982		1983		1984		1985		1986	
	m/m	P	m/m	P	m/m	P	m/m	P	m/m	P	m/m	P
Drivers	133		3		12		36		36		36	
Guards	255		0		9		72		72		72	
Component Total	2258		27		139		666		708		708	
Training												
Maintenance of trainees on fellowship	15	-	-		10		5					
Maintenance of trainees on study tour	8	-	-		2		2		2		2	
Component Total	23	-	-		12		7		2		2	
Equipment												
Expendable												
Non-expendable												
Premises												
Component Total												
Miscellaneous												
Component Total												
GRAND TOTAL												

Project Budget covering UNDP contribution (in US$)

Country : Philippines

Project No. :

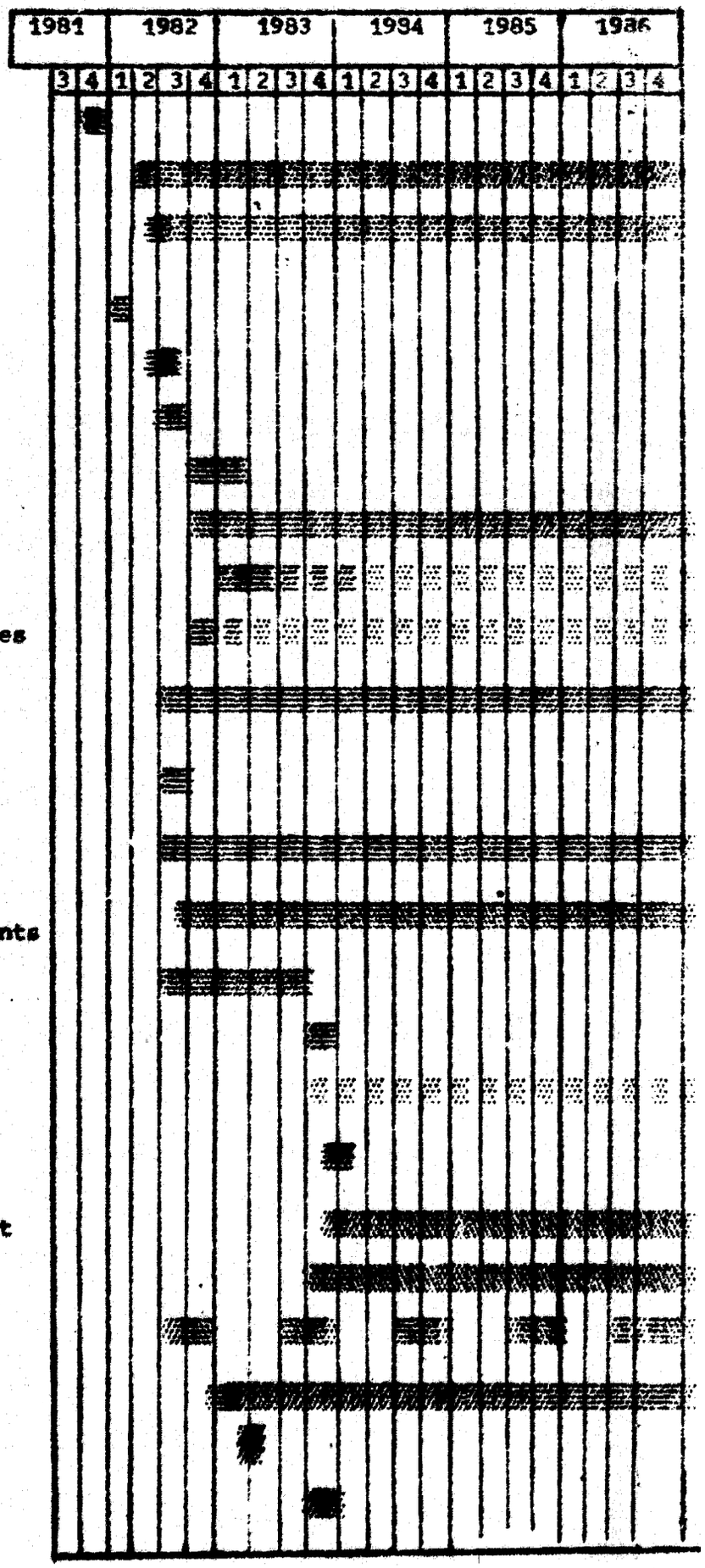
Title : Plastics Technology Centre

	TOTAL		1982		1983		1984		1985		1986	
	m/m	US $	m/m	US $	m/m	US $	m/m	US $	m/m	US $	m/m	US $
Personnel												
Project technical co-ordinator	29.0	174,000	2	12,000	3.0	18,000	12	72,000	6	36,000	6	36,000
Consultants (short-term)	12.5	75,000	-	- to be allocated during project					-			
Component Total	41.5	249,000	2	12,000	3.0	18,000	16	96,000	10	60,000	10.5	63,000
Training												
Fellowships	15	30,000	-	-	10	20,000	5	10,000		-		-
Study tours group training	8	16,000	-	-	2	4,000	2	4,000	2	4,000	2	4,000
Component Total	23	46,000			12	24,000	7	14,000	2	4,000	2	4,000
Equipment												
Expendible		20,000	-	-	-	2,000		8,000		5,000		5,000
Non-expendible		310,310		50,000		200,000		60,310		-		-
Component Total		330,310		50,000		202,000		68,310		5,000		5,000
Miscellaneous												
Non-specific inputs, (reporting costs, documentation costs, contingency etc.)		20,000	-	-	-	5,000		5,000		5,000		5,000
Component Total		20,000				5,000		5,000		5,000		5,000

TOTAL UNDP CONTRIBUTION US $ 645,310

WORK PLAN BAR CHART

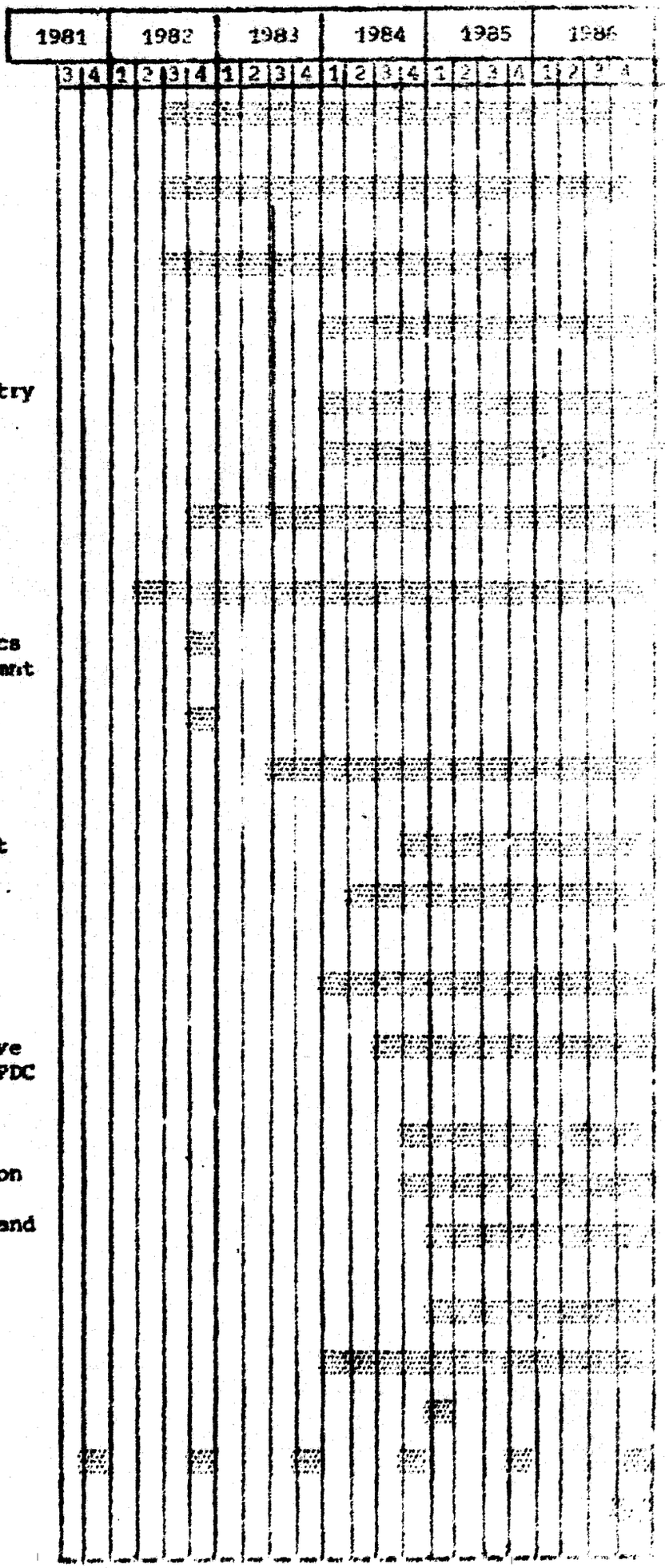
Activities



1. Establishment Governing Board
2. Appointment of Director PDC
3. Appointment Project Technical Co-ordinator
4. Develop Policy Statement
5. Develop Organizational structure
6. Develop management functions
7. Preparation staff profiles
8. Appointment of national staff
9. Overseas training programme
10. Preparation manual outputs profiles
11. Prepare and Implement Output profiles document
12. Preparation manual elements for applied research programmes
13. Preparation technology programmes
14. Preparation job descriptions and schedules for short-term consultants
15. Building
16. Establish stores
17. Install offices and supplies
18. Allocation personnel management functions
19. Installation and testing equipment
20. Collection service manuals
21. Preparation Annual Budget
22. Discussion groups
23. Study tour plastics institutions
24. Preparation manual preventive maintenance

WORK PLAN BAR CHART

Activities



25. Preparation physical resources document
26. Preparation of revenue sources document
27. Execute development programmes
28. Develop, test and support service to industry
29. Develop contacts plastics industry
30. Provision of short-term consultants
31. Prepare and implement staff development programmes
32. Discussion groups industry
33. Identification areas for plastics in rural and industrial development
34. Study tour plastics in industry
35. Design and implement programmes rural & industrial development
36. Sister-institutional arrangement
37. Preparation long-term financial plan
38. Prepare & implement Staff assessment system
39. Prepare & implement comprehensive plan for phased development of PDC
40. Introduction of quality control
41. Technical information publication
42. Overseas technical study tours and visits to sister-institutions
43. Develop plastics Systems
44. Transfer technology to Users
45. Mid-term project reviews
46. Annual Reports
47. Terminal Reports

APPENDIX 3

Project in the Philippines

Job Description

( )

Post Title	:	Expert in Management Consultancy to the Plastics industry in Europe
Duration	:	One month
Date Required	:	August - September 1981
Duty Station	:	Europe with limited travel

Duties

The Expert will liaise with the Commission on Small and Medium Industries (CSMI) of the Ministry of Industry and will report to the Project Director and will be specifically expected to:

1. Arrange a study tour for a group of representatives of the Philippines plastics manufacturers association and representatives from the CSMI to the International plastics fair to be held in September 1981 at Birmingham, England, Plastics industry associations within the EEC and selected operational factories in the area.

2. He will be responsible for liaising with the CSMI in Manila to select the organizations and make all the appointments and arrangements.

3. He will accompany the group and provide all the necessary introductions and share his impressions of the impact of the tour with the government coordinator attached to the party.

4. He will prepare a report setting out the details of the visit and his recommendations for further action that might be taken.

Qualifications

Experienced plastics consultant with wide contacts at Association and Industry level in the EEC. Experienced in discussion with Industry in Extrusion, injection and blow moulding and other conversion processes.

Language: English (possibly some German and/or French)

Background Information

UNIDO is placing strong emphasis on the development of small and medium scale industries (SMIs) in developing countries with a view to strengthening their capabilities and thus contribute to the acceleration of the industrialization processes in these countries.

In the country, where the Government is exerting strong efforts to develop the SMI sector, there is a felt need to view the quality and productivity improvement concern in a broad perspective to determine how an integrated approach may be used to provide assistance on quality and productivity improvement to the resource limited SMIs.

This project will be implemented in two phases by the Commission on Small and Medium Industries, the Government body which is in charge of co-ordinating efforts of all Government institutions geared toward the development of the SMI sector. Phase I was a survey of the needs of the SMI sector related to quality and productivity improvement and for theplastics industry sector and has now been completed. A master plan has been prepared composing an interim Phase II and a phase III culminating in a Plastics Development Centre. This mission represent a part of the Phase II programme.

APPENDIX 4

Job Description

( )

Post Title	:	Expert in Plastics consultancy
Duration	:	One month with the possibility of extension
Date Required	:	October - November 1981
Duty Station	:	Manila with travel within the country.

Duties

The expert will be attached to the Commission on Small and Medium Industries (CSMI) of the Ministry of Industry. He will report to the Project Director and the project team composed of representatives of the CSMI member-agencies and will be specifically expected to:

1. Finalise the project document for the Plastics Development Centre a draft of which is already available.

2. Together with local counterparts conduct such discussions/seminars with Industry associations and entrepreneurs as are necessary to obtain the private sectors commitment to participate with government in supporting the Plastics Development Centre and finalise the schedule for the centre's implementation.

3. Share his views with local counterparts and prepare a report setting out the findings of the mission, the up to date position of the project, and his recommendations on the next steps to implement the on-going programme.

Qualifications

Experienced Plastics consultant with extensive experience in all aspects of the Plastics industry. Extensive knowledge of small and medium-scale plastics industries and preferably familiar with the with the situation in the Philippines.

Language : English

Background Information

UNIDO is placing strong emphasis on the development of small and medium-scale industries (SMIs) in developing countries with a view to strengthening their capabilities and thus contribute to the acceleration of the industrialization processes in these countries.

In the country, where the Government is exerting strong efforts to develop the SMI sector, there is a felt need to view the quality and productivity improvement concern in a broad perspective to determine how an integrated approach may be used to provide assistance on quality and productivity improvement to the resource limited SMIs.

This project will be implemented in two phases by the Commission on Small and Medium Industries, the Government body which is in charge of co-ordinating efforts of all Government institutions geared toward the development of the SMI sector. Phase I was a survey of the needs of the SMI sector related to quality and productivity improvement and this has been completed in respect of the Plastics industry. This mission is part of Phase II, an interim step to the creation of a Plastics Development Centre.

APPENDIX 5

Project in the Philippines

Job Description

( )

Post Title	:	Expert in plastic management and familiar with technical and financial parameters of the Industry
Duration	:	Two months with the possibility of extension
Date Required	:	December - January 81/82
Duty Station	:	Manila with travel within the country

Duties

The expert will be attached to the Commission on Small and Medium Industries (CSMI) of the Ministry of Industry. He will report to the Project Director of a project team composed of relevent CSMI agencies and be specifically expected to:

1. Act as technical adviser to a Working party set up under the guidance of the Ministry of Industry to examine the effects of the present tarrif systems on the import of Plastics resins on the growth of the industry.

2. To advise the working party of the technical effects of the incentive schemes as they presently operate.

3. To advise the working party of likely effects on the industry's technical standards of any recommendations which it might make.

4. To share his views with members of the working party and counterparts in the CSMI. The expert will also be expected to prepare a final draft report, setting out his views on the technical and financial impact of the working party's recommendations on improvement of productivity and quality of products in the industry and his recommendations to Government on further action that might be taken.

Qualifications

Plastics consultant with extensive experience for plastics management particularly from a profit and production point of view. Capable of projecting and understanding the effect of changes in financial parameters on investment in new and improved technology.

Language : English

Beloground Information

UNIDO is placing strong emphasis on the development of small and medium-scale industries (SMIs) in developing countries with a view to strengthening their capabilities and thus contribute to the acceleration of the industrialization processes in these countries.

In the country, where the Government is exerting strong efforts to develop the SMI sector, there is a felt need to view the quality and productivity improvement concern in a broad perspective to determine how an integrated approach may be used to provide assistance on quality and productivity improvement to the resource limited SMIs.

This project will be implemented in two phases by the Commission on Small and Medium Industries, the Government body which is in charge of co-ordinating efforts of all Government institutions geared toward the development of the SMI sector. Phase I was a survey of the needs of the SMI sector related to quality and productivity improvement. This is part of Phase II, a series of missions designed to improve and strengthen the industry climate and technology in preparation for a Plastics Development Centre designed to maximise the utilisation of the Polymer available from the Petrochemicals project currently in the planning stage.

Appendix 6

Project in the Philippines

Job Description

( )

Post Title Expert in Management Consultancy in Injection and Blow Moulding industry

Duration 2/3 months with a possibility of extension

Date required July-Sept 1982.

Duty Station One month in a developed country

One to two months in the Philippines with extensive travel.

Duties

The Expert will be attached to the Commission on Small and Medium Industries (CSMI) of the Ministry of Industry. He will report to the project director of a project team composed of representatives of the CSMI member agencies and will be specifically expected to:

1. Assist in the implementation of Phase II of the project which is essentially to begin the process of Quality and Productivity improvement by series of seminars on profit & process improvement in the Plastics Industry sector.
2. To prepare a series of seminars on the injection & blow moulding sectors of industry based on case studies using selected data from comparable units in a developed area and comparing these with operations in the Philippines so as to draw out the key technical differences and their effect on productivity, quality & profit.

3. Conduct a series of workshops for entrepreneurs in the Philippines plastics industry base on the proposed work in conjunction with local experts, after the seminars he will share his views with be counterpart organization of the country and assist in identification of further steps to be included in the plastics development centre programme.

The expert will be expected to prepare a final report setting out the findings of the mission and his recommendations to the government for further action.

Qualifications — Experienced Plastics consultant with extensive experience in preparing case studies on process control in injection & blow moulding and wide contacts in the plastics industry of a developed country from which he can obtain base data.

Language — English

Background Information — UNIDO is placing strong emphasis on the development of small and medium scale industries (SMIs) in developing countries with a view to strengthening their capabilities and thus contribute to the acceleration of the industrialization processes in these countries.

In the country, where the Government is exerting strong efforts to develop the SMI sector, there is a felt need to view the quality and productivity improvement concern in a broad perspective to determine how an integrated approach may be used to provide assistance on quality and productivity improvement to the resource limited SMIs.

This project will be implemented in two phases by the Commission on Small and Medium Industries, the Government body which is in charge of co-ordinating efforts of all Government institutions geared toward the development of the SMI sector. Phase I was a survey of the needs of the SMI sector related to quality and productivity improvement.

Phase II encompasses a series of expert assistance programs as part of an overall master plan covering six years and targeted to uplift productivity and quality in the industry. The main instrument of this programme will be a Plastics development centre planned to come on stream in 1983/84.

Appendix 7

Project in the Philippines

Job Description

( )

Post Title Expert in Management Consultancy in Extrusion and Film blowing

Duration 2/3 months with a possibility of extension

Date required October 82 to January 83

Duty Station One month in a developed country

One to two months in the Philippines with extensive travel.

Duties

The Expert will be attached to the Commission on Small and Medium Industries (CSMI) of the Ministry of Industry. He will report to the project director of a project team composed of representatives of the CSMI member agencies and will be specifically expected to:

1. Assist in the implementation of Phase II of the project which is essentially to begin the process of Quality and Productivity improvement by series of seminars on profit & process improvement in the Plastics Industry sector.
2. To prepare a series of seminars on the extrusion and film blowing sectors of industry based on case studies using selected data from comparable units in a developed area and comparing these with operations in the Philippines so as to draw out the key technical differences and their effect on productivity, quality & profit.

3. Conduct a series of workshops for entrepreneurs in the Philippines plastics industry base on the proposal work in conjunction with local experts, after the seminars he will share his views with be counterpart organization of the country and assist in identification of further steps to be included in the plastics development centre programme.

The expert will be expected to prepare a final report setting out the findings of the mission and his recommendations to the government for further action.

Qualifications — Experienced Plastics consultant with extensive experience in preparing case studies on process control in extrusion and film blowing and wide contacts in the plastics industry of a developed country from which he can obtain base data.

Language — English

Background Information — UNIDO is placing strong emphasis on the development of small and medium scale industries (SMIs) in developing countries with a view to strengthening their capabilities and thus contribute to the acceleration of the industrialization processes in these countries.

In the country, where the Government is exerting strong efforts to develop the SMI sector, there is a felt need to view the quality and productivity improvement concern in a broad perspective to determine how an integrated approach may be used to provide assistance on quality and productivity improvement to the resource limited SMIs.

This project will be implemented in two phases by the Commission on Small and Medium Industries, the Government body which is in charge of co-ordinating efforts of all Government institutions geared toward the development of the SMI sector. Phase I was a survey of the needs of the SMI sector related to quality and productivity improvement.

Phase II encompasses a series of expert assistance programs as part of an overall master plan covering six years and targeted to uplift productivity and quality in the industry. The main instrument of this programme will be a Plastics development centre planned to come on stream in 1983/84.

Appendix 8

Project in the Philippines

Job Description

( )

Post Title Expert in Management Consultancy in PVC Pipe and Profiles

Duration 2/3 months with a possibility of extension

Date required Sept. Oct. 1983

Duty Station One month in a developed country

One to two months in the Philippines with extensive travel.

Duties

The Expert will be attached to the Commission on Small and Medium Industries (CSMI) of the Ministry of Industry. He will report to the project director of a project team composed of representatives of the CSMI member agencies and will be specifically expected to:

1. Assist in the implementation of Phase II of the project which is essentially to begin the process of Quality and Productivity improvement by series of seminars on profit & process improvement in the Plastics Industry sector.
2. To prepare a series of seminars on the PVC Pipe and profile sectors of industry based on case studies using selected data from comparable units in a developed area and comparing these with operations in the Philippines so as to draw out the key technical differences and their effect on productivity, quality & profit.

3. Conduct a series of workshops for entrepreneurs in the Philippines plastics industry base on the proposed work in conjunction with local experts, after the seminars he will share his views with he counterpart organization of the country and assist in identification of further steps to be included in the plastics development centre programme.

The expert will be expected to prepare a final report setting out the findings of the mission and his recommendations to the government for further action.

Qualifications — Experienced Plastics consultant with extensive experience in preparing case studies on process control in PVC Pipe and profile and wide contacts in the plastics industry of a developed country from which he can obtain base data.

Language — English

Background Information — UNIDO is placing strong emphasis on the development of small and medium scale industries (SMIs) in developing countries with a view to strengthening their capabilities and thus contribute to the acceleration of the industrialization processes in these countries.

In the country, where the Government is exerting strong efforts to develop the SMI sector, there is a felt need to view the quality and productivity improvement concern in a broad perspective to determine how an integrated approach may be used to provide assistance on quality and productivity improvement to the resource limited SMIs.

This project will be implemented in two phases by the Commission on Small and Medium Industries, the Government body which is in charge of co-ordinating efforts of all Government institutions aimed toward the development of the SMI sector. Phase I was a survey of the needs of the SMI sector related to quality and productivity improvement.

Phase II encompasses a series of expert assistance programs as part of an overall master plan covering six years and targeted to uplift productivity and quality in the industry. The main instrument of this programme will be a Plastics development centre planned to come on stream in 1983/84.

Appendix (9)

Plastics Industry

Visits Schedule

1. Tuesday 14th October 1980 Itemcop (Industrial Mfg. Co. of the Philippines

   Edsa, Mandaluyong. Tel No. 705471.

   Mr Victoriano Ron Agustin Gen. Manager.

   PP sacks for agriculture and carpet packaging (L)

2. Tuesday 14th October 2.0 pm. Polyware Philippines Inc.

   5 - A Dizon St. Tenejeros, Malabon Rizal. Tel No. 239383.

   Mr Po Sio Rin Owner/Manager

   PP and PE sheets/bags (profile extrusion) (S)

3. Wednesday 15th October 10.00 am. Integrated Plastics Corporation

   99 600 W Pascalal St. Malabon MM Tel. Nos. 235350, 224635, 341217.

   Mr Johnny Dychauco Owner/General Manager.

   PP bags, sheet or blow film extrusion. (M)

4. Wednesday 15 th October 2.0 pm. Araceli Plastics Products.

   418 5th St. 11th Avenue, Grace Park, Caloocan Tel No. 354840. 343217

   Mr Sontiago Owner/Gen. Manager .

   Housewares and kitchenwares , injection moulded (S)

5. Wednesday 15th October 4.00 PM. Writers Products & Co.

   167 8th Avenue, Caloocan City MM Tel No. 354469

   Mr Vicente Lim Managing/Partner

   shoe heels, ball pen holders (pipe and tube extrusion) (S)

6. Thursday 16th October 10.00 am. Paramount Plastic Mfg. Co. Inc.

   149-151 8th St. 11th Avenue, Grace Park, Tel. Nos. 355775, 351972.

   Mr Uy Beng Luy Managing/Partner

   Injection mould/rotational/vacuum forming (S)

7. Thursday 16th October 2.o pm. Andings Trading & Manufacturing

   406 Gen. Vicente Lim St. Navotas, Tel Nos. 208659, 208664

   Mr Joseph Tan. Gen. Manager.

   Toys (injection & blow and vacuum forming) (S)

8. Tuesday 21st October 10.00 am. .rmel Plastic Co. Inc.

2154 Pasong Tamo St. Makati MM Tel Nos. 880566, 884879.

Mr Ronald Lipio Personnel Manager/ Director

Containers (blow mould & injection. (M)

9. Tuesday 21st October 2.0 pm. Adventure

73 Rizal Extension Caloocan City, Tel Nos. 355075, 356188.

Mr Yenaro Chua, Owner/Gen. Manager.

Pipe tube extrusion(plastic moulded channels or sticks) (S)

10. Buenther Eng.g. Works, Wednesday 22nd October.

95 Guayabano Road, Northern Hill, Malabon. Tel Nos. 358835, 359018.

Mr Buenaventura Ong. Owner/Gen.Manager.

Mould maker and plastic containers. (M)

11. Wednesday 22nd October Polycon Mfg. Corp.

10 Guayabano Road, Northern Hills, Malabon. Tel No. 358805.

Mr Yao Koc Yiong. Director/Gen. Manager.

PP woven sacks (blown film extrusion) (L)

12. Thursday 23rd October 10.00 am. Incon Industrial Corp.

(International Containers Corporation)

155 Samson Road, Caloocan City, Tel Nos. 234872, 224179, 234179.

Mr Joe Fregil, Sales Manager.

Toys, (injection & blow moulding) and containers. (M)

13. Friday October 10th 10.00 am. Mabuhay Vinyl Corp.

Office. 6th floor AIU Building, De La Rosa St.cornerAlvevedo St.

Legaspi Village, Makati.

Plant. 1. Caloocan Compounding Plant, 158 Boni Serrano, 12th av. Caloocan

Plant 2. Assumption Heights, Iligan City. Tel Nos. 355148, 355001

Mr Victor G. Guevara, President.;

VCM and PVC producer (L)

14. October 24th Thursday. 4:00 pm. Philippine Petrochemical Products Inc.

Office. suite 700 Sarmiento Bldg, Ayala Av. Makati. Tel No. 882481, 899060

Plant. Rosario, Cavite.

Dr Rodolfo M Villarica. President.

GPS, HIPS producer.

15. Monday 27th October 10.00 am. Philippine Vinyl Consortium.

Office. 150 Amorsolo St. Manuel Go. Bldg. Legaspi Village, Makati.

Tel. Nos. 877575, 875586, 859646. 837572.

Plant. Rosario, Cavite.

Mr Jaime Palanca President, Mr Casten, EVP., Mr Crisostomo Flores, Marketing Manager, Mr Mey Luna, Plant manager.

16. Monday 10th November 10.00 am. Polyindustrial Co. Inc.

Plant. Canumay, Valenzuela, Tel Nos. 350922, 345601.

Office Room 206, 808 Ongpin St. Sta. Cruz. Manila. Tel No. 470315.

Mr Rodrigo Ong, President. Mr Efren Carlos, Plant supervisor.

acrylic casting sheets, polyester laminated plywood, amino alkaline coated plywood. (M)

17. Monday 10th November 3.0 pm. Ramax Industrial Co.

242 Pinaglabanan Ext., San Vuan, Metro Manila. Tel Nos, 702047, 705698.

Mr Hwang, President & Gen. Manager, Mr Togonon, Asst. Manager.

Disposable cups, electric toys and other amusement items.

Pipe and profile extrusion with thermo and vacuum forming machines. (m)

18. Tuesday 11th November 9.30 am. Philippine Fabrikoid Inc.

130 Kangkong, Baltnawak, Quezon City, Tel Nos. 345452, 357635, 350319.

Mr Claro U. Tolevitino, Export Manager, Mr Go, President.

PVC pipes, leatherette, vinyl aslestos floor tiles and wall covers/paper.

Banburys equipment and callendering. (L)

19. Tuesday 11th November 2.0 pm. Chan C. Brothers (Metals) Inc.

KM 23 Highway Anabu I, Imus, Cavite. Tel Nos. 8884(41) to (45)

Mr Robert Ching, VP operations.

Acrylic light diffusers, house and bathroom fixtures, table lamps.

Mechanical casting and vacuum forming machines. (M)

20. Tuesday 11th November 3.30 pm. Philippine Vinyl Consortium.

Rosario, Cavite. Tel Nos. 859646, 875586, 897572, 867341.

Mr Meynardo Luna, Plant manager.

PVC plant. (L)

21. Friday 7th November 3.0 pm. Transworld Trading Co. Inc.

Don Pablo Bldg. Amorsolo St, Makati. Tel Nos. 881326, 864926.

Mr Bun Chin Hwang, Vice President.

PP, PE, (HD) & (LD). "indent importer"

22. Thursday 13th November 10.0 am. Cebu Plastics Industries Inc.

San Isidro, Talisay, Cebu Tel Nos. 7 87 52, 7 82 49.

Mr William Burca Manager.

Plastic (PP) sacks for rice (M)

23. Thursday 13th November 11.00 am. Mandaue Foam Industries Inc.

Mandaue City.

Mr Robin T. Uy, Manager.

Polyurethane foam for pillows and mattresses. (M)

24. Thursday 13th November 2 .0 pm. Abe Industries.

Villa Aurora, Mabolo, Cebu City. Tel No. 7 96 75

Mr Ben See, Manager.

PE & PE plastic bags and kitchenware products. (S)

25. Thursday 13th November 3.0 pm. H & E Industries Inc.

M H del Pilar St. Mandaue, Cebu. Tel No. 8 32 18

Mr Montano Tan, Mr Frederick Ong.

Styropor boxes, containers and sheets. (S)

26. Thursday 13th November 4.0 pm. Stanley Plastic Prod Co. Inc. and
Cebu Williams Mfg. Co. Inc.
Libertad St. Mandaue. Tel No. 8 31 83.
Mr William Borromeo, Gen Manager.
Plastic wares, blow mould containers. (M)

27. Wednesday 26th November 10.30 am. Everbright Net & Twine Mfg. Co.
Edison Avenue, South Superhighway, Parañaque, MM Tel No. 828532
Mr Ang Koc Ching, Gen. Manager.
PP & PE ropes, twines and fishing nets, nylon twines. (L)

28. Wednesday 26th November 2.0 pm. Philippine Umbrella Factory Corp. Inc.
Vincente Reales, Valenzuala, Balucan, MM tel Nos. 487423, 408693.
Mr Philip L. Chua, President and Gen. Manager.
Electroplating of ABS moulded materials and any other steel products. (M)

29. Wednesday 26th November 4.0 pm. Plastimer Industrial Corp.
22 T. Santiago St. Barrio Canumay, Valenzuela, MM Tel No. 353541 - 42
Mr Jose Wong, Gen. Manager, Tel No. 358555
Injection & blow moulding, toothbrush making, appliance (TV) parts,
battery (12v) cases, electric fan blades.

30. Friday 24th October 9.0 am Bataan Export Processing Zone,

Mariveles, Bataan.

Assistant Manager.

31. Friday 24th October 10.00 am. Integrated Plastics Corp.

Bataan, BEPZ.

Mr Johnny Dychauco Owner/Gen. Manager.

PE & PP film and bags. (M)

32. Friday 24th October. 2.0 pm. Lotus Export Specialists Inc.

SFB Bldg. No. 4. BEPZ, Mariveles, Bataan. Tel No. 4692 - 042

Mr Lino. A. Del Rosario. Production Manager.

Sports shoes. (L)

33. Friday 24th October 3.30 pm. Mattel, Philippines,

BEPZ, Bataan.

Production Manager,

Dolls (Barby) (L)

34. Monday 15th December 8.30 am. Resincor Fibreglas. Reinforced Resins Corp. (Philippines).

Fiberglass Center, 160 JP Laurel, Bajada, Davao City. Tel No. 26 86 (DCTS)

Mr Jerry Perez de Tagle, Manager & President, Mr Lilo de Quin, Supervisor.

Sunroof Skylights, Ergonomic chairs, Fibreglass boats, Tray pans. (S)

35. Monday 15th December 11.0 am. JVA Management Corporation.

505 Aguho Street, Matina, Davao City. Tel No. 7 48 86, 7 48 87.

Tagum Plastics Inc.

Tagum, Davao del Norte.

Mr Deo B. Elizaga.

Polyethylene film for banana packaging (L)

36. Monday 15th December 12.00 Manly Industries Inc.

Tambongon, Lasang, Davao City, Tel No. 59 15 (DCTS)

Co Bun Ting President.

Polyethylene film for banana packaging, injection moulded products. (L).

APPENDIX (10)

Home Consumption Values Port of Manila

10 October 1990

ARTICLE/DESCRIPTION	HCV	Country of Origin
Geon Vinyl 8830		
80°C. Semi-rigid		
Insulation,UL		
Style 1061	$ 0.7070/ lb.	U.S.A.
Geon Vinyl 8845		
105°C.Insulation,		
Low-odor	$ 0.0690/ lb.	U.S.A.
Geon Vinyl 8884		
75°C TWM 90°C.AWM	0.5895/ lb.	U.S.A.
Geon Vinyl 8891		
105°C AWM	0.6490/ lb.	U.S.A.
Geon Vinyl 8896		
SPT-1 80°C	0.4755/lb.	U S.A.
Geon Vinyl 82888		
60°C Semi-rigid Insulation	0.5170/lb.	U.S.A.
Geon Vinyl 84059		
60°C Indoor Jacket,	0.4700/lb.	U.S.A.
Geon Vinyl 84519		
Outdoor jacket	0.6060/lb.	U.S.A.
Geon Vinyl 84370		
105°C AWM	0.6145/lb.	U.S.A.
Polyethylene Resin High Density		
Blow Molding	$ 910.00/MT	Australia
Blow Molding	YEN 312.5/kg.	Japan
Blow Molding	0.365/lb.	U.S.A.
Blow Molding Homopolymer	$ 0.365/lb.	U.S.A.
Blow Molding	$1,148.00/MT	Netherlands
Blow Molding	718.00/MT	Korea

ARTICLE/DESCRIPTION	MCV	Country of Origin
Low Density Film	$ 0.385/ lb.	U.S.A.
Low Density Film	788./MT	Australia
Low Density Film	YEN 321.5/ kg.	Japan
Low Molecular Ft. Polyethylene Emulsion Type	YEN 321.5/ kg.	Japan
Low Molecular Ft. Polyethylene None Emulsion Type	YEN 321.5/ kg.	Japan
Cast Stretch Film	$ 0.385/lb.	U.S.A.
Garment Film	$ 788.00/MT	Australia
Garment Film Thin Gauge	0.385/ lb.	U.S.A.
Garment Film	YEN 321.5/ kg.	Japan
Garment Film	$ 763.00/ MT	Taiwan
Garment Film 117 Excellent and consistent high speed draw and operationality;good toughliness in thin gauges	$ 0.385/ lb.	U.S.A.
Pallet Shrink Film	YEN 321.5/ kg.	Japan
Shrink Packaging General Purpose Film Shrink	0.385/ lb.	U.S.A.
Shrink Packaging High Strength Film in Shrink	0.380/lb.	U.S.A.
Packaging Film General Purpose	0.385/ lb.	U.S.A.
Packaging Film High Clarity packaging with good balance of optical and strength properties	40.5/ lb.	U.S.A.
Packaging Film Very high clarity packaging with good balance of optical & strength properties	40.5/ lb.	U.S.A.

Packaging 5.4 VA resin for strength film applications	$ 42.0/ lb.	U.S.A.
Packaging good strength good sealability	$ 42.0/ lb.	U.S.A.
Packaging copolymer packaging film with excellent strength and sealability	$ 42.0/ lb.	U.S.A.
Packaging Impact packaging film, improved strength	$ 40.5/ lb.	U.S.A.
Packaging Yields film with high clarity and stiffness for overwrap applications	$ 41.5/ lb.	U.S.A.
Rotational Molding	$ 788.00/MT	Australia
Rotational Molding	0.385/ lb.	U.S.A.
Rotational Molding	YEN 321.5/ kg.	Japan
Rotational Molding	YEN 763.00/MT	Taiwan
Specialty Sheeting	$ 0.385/ lb.	U.S.A.
General Molding Purpose	$ 0.385/ lb.	U.S.A.
General Molding Purpose	YEN 321.5 kg.	Japan
Molding Blow Molding grade-good processability	$ 40.0/ lb.	U.S.A.
Molding Good flow and dispersion characteristics for color concentrate base	$ 40.3/ lb.	U.S.A.
Molding High flow for lids	40.5/ lb.	U.S.A.

Molding		
Very high flow for lids	$ 40.5/ lb.	U.S.A.
Molding		
High flow, good gloss & stiffness for housewares	$ 38.5/ lb.	U.S.A.
Polypropylene Resin		
Yarn Grade	$ 780.00/MT	Australia
Yarn Grade	$ 0.47/ lb.	U.S.A.
Yarn Grade	YEN 252.00/ kg.	Japan
Yarn Grade	$1,249.85/ MT	Taiwan
Monofilament Grade	780.00/ MT	Australia
Monofilament Grade	0.47/ lb.	U.S.A.
Monofilament Grade	YEN 252.00/ kg.	Japan
Monofilament Grade	$1,249.09/ MT	Taiwan
Film Grade	780.00/ MT	Australia
Film Grade	0.47/ lb.	U.S.A.
Film Grade	YEN 252.00/ kg.	Japan
Film Grade	$1,360.73/ MT	Taiwan
Homopolymer Natural	0.47/lb.	U.S.A.
Homopolymer Natural	780.00/MT	Australia
Homopolymer Natural	YEN 252.00/kg.	Japan
Homopolymer Natural	$1,360.73/MT	Taiwan
Copolymer High Impact	0.32/lb.	U.S.A
Copolymer High Impact	850.00/MT	Australia
Copolymer High Impact	YEN 252.00/kg.	Japan
Copolymer High Impact	$1,360.73/MT	Taiwan
General Purpose	705.42/lb.	Canada
General Purpose	767.00/MT	China (PROC)
General Purpose	767.00/MT	Korea
General Purpose	784.00/MT	Hungary
General Purpose (Norway Origin)	304.25/MT	Rotterdam
General Purpose (Chechoslovakia)	482.00/MT	Hamburg
General Purpose(Chechoslovakia)	482.00/MT	Antwerp
General Purpose (Holland)	1.33DFL/kg.	Holland

APPENDIX (11)

HOME CONSUMPTION VALUES

Port of Cebu

A. Blow Moulding

1. High Density P.E.

Country	Value
Korea $	$ 718/metric ton
Australia	$ 910/Metric ton
Japan	YEN 245/kg.
U.S.A.	$ 365/lb.
Netherlands	$ 1,499/M.T.

2. Low Density P.E.

a. Clarity Film

Country	Value
Australia	$ 788/M.T.
U.S.A.	$ 913/M.T.
Japan	YEN 224.5/kg.
Taiwan	$ 763/M.T.

b. Film Grade

Belgium	$ 1,032/M.T.
U.S.A.	$ 869/M.T.
France	$ 999/kg.
Germany	$ .673/kg.
Italy	$ .684/kg.
Japan	YEN 224.5/kg.
U.K.	$72.706/100 kilos

c. Injection Grade

Belgium	$ .77/kg.
France	$ .999/kg.
Germany	$ .649/kg.
Italy	$ .649/kg.
Japan	YEN224.5/kg.

d. General Purpose

Korea	$ .85/ M.T.
China	$ 456/ M.T.
Finland	$ 865/ M.T.
Japan	YEN 224.5/kg.

e. Low Density Film

Japan	YEN 224.5/kg.
U.S.A	$ .335/lb.
Australia	$ 788/ MT

3. P.P. Resin

a. Yarn Grade

Australia	$ 780/M.T.
U.S.A.	$. 47/ lb.
Japan	YEN 230/kg.
Taiwan	$ 1,249.65/M.T.

b. Mono-filament

Australia	$ 780/M.T.
U.S.A.	$ 47/ lb.
Japan	YEN 230/kg.
Taiwan	$ 1,249.64/M.T.

c. Film Grade

Thailand	$ 1,360.73/M.T.
Japan	YEN 230/kg.
U.S.A.	$ 47/lb.
Australia	$ 780/ M.T.

d. Homo-polymer Natural

U.S.A.	$ .47/lb.
Australia	$ 780/M.T.
Japan	YEN 230/kg.
Taiwan	$ 1,360.73/M.T.

SOUNCE:

Valuation Department, Bureau of Customs
Cebu City

Appendix 17

REPUBLIC OF THE PHILIPPINES
MINISTRY OF FINANCE
BUREAU OF CUSTOMS
MANILA

"Support the New Society" June 19, 1979

CUSTOMS ADMINISTRATIVE ORDER
NO. 2-79

SUBJECT: Rules and Regulations for the Establishment, Operations, Supervision and Control of Bonded Manufacturing Warehouse (Except those covered by R.A. 3137)

By authority of Section 608 and pursuant to the provisions of Section 2001 to 2004 of the Tariff and Customs Code of the Philippines as amended by PD 34 and subsequently by PD 1464, the rules and regulations for the establishment, operation, supervision and control of Bonded Manufacturing Warehouses are hereby promulgated.

PART I - DEFINITION OF TERMS

1. Bonded Manufacturing Warehouse - This shall include the premises, rooms, compartments and other areas necessary for storing, processing, manufacturing of imported raw materials and by-products or watages incident thereto.

2. Duly Accredited Subcontractor - A subcontractor is any person, natural or juridical, authorized by Customs to perform an activity incidental to the processing of raw materials of a bonded manufacturinwarehouse by reason of the latter's insufficiency of operational facilities and/or lack of material time to fully process an importation.

PART III - GENERAL PROVISIONS

Sec. 1 - Whenever articles manufactured in any bonded manufacturing warehouse established under the provisions of Sec. 2001 of the TCCP, shall be exported directly therefrom or shall be duly laden for immediate

exportation under the supervision of the proper Customs official, such articles shall be exempt from duty.

Sec. 2 - Any imported material used in the manufacture of such articles, and any packages, coverings, brands and labels used in putting up the same may be conveyed without the payment of duty into any bonded manufacturing warehouse, and imported articles may be transferred without the payment of duty from any bonded warehouse into any bonded manufacturing warehouse, or to subcontractors duly accredited by the Bureau of Customs who shall process the same into semi-finished products and deliver such products back to the bonded manufacturing warehouse, therefrom to be exported; but this privilege shall not be held to apply to implements, machinery or apparatus to be used in the construction, repair or operation of any bonded manufacturing warehouse.

Sec. 3 - The operation of embroidery and apparel firms shall continue to be governed by RA 3137.

PART III - *ESTABLISHMENT OF BONDED MANUFACTURING WAREHOUSES*

Sec. 4 - Place of Application. Any person or firm desiring to establish a bonded manufacturing warehouse shall apply in writing to the Commissioner of Customs, thru the District Collector of Customs of the port where the majority of the importations to be warehoused shall be entered.

Sec. 5 - Documentation Requirements. At the instance of the filing of appliction, the applicant shall indicate in the letter of application the reasons for the application and whether or not, he desires to subcontract his importation.

1. If there is no subcontracting, the following documents shall be submitted:

   a. Instruments evidencing absolute ownership or lease contract covering the proposed warehouses;

   b. Plant location showing means of access to the property;

   c. Plant layout showing and describing the size and construction of the proposed warehouse together with the intended use of each room, section or compartment as well as the surrounding premises;

   d. Flow chart showing the nature of the work of manufacture/processing;

   e. Certified true copy of registration certificate with Securities and Exchange Commission, together with Articles of Incorporation and By-laws or Articles of Co-partnership, as the case may be;

   f. Certified true copy of registration certificate with the Bureau of Domestic Trade and Bureau of Internal Revenue;

   g. List of machinery and equipment;

   h. Certified true copy of Certificate of Registration with Board of Investments (BOI);

   i. BOI Indorsement of the application;

   j. Copy of Inspection Permit from Electrical Department;

   k. List of Articles to be manufactured;

l. List of all raw materials to be imported;

m. Formula of manufacture, patterns of sketches of articles to be exported;

n. Building (Mayor's) Permit;

o. Copy of project/feasibility study of its operations.

2. If an operational phase is to be subcontracted, the following additional documents have to be submitted, aside from the abovementioned;

a. Name of subcontractor;

b. Copy of contract with the subcontractor;

c. Certificate of accreditation of the subcontractor, if already accredited by the Bureau;

c. If contractor selected is not yet accredited, letter of application of subcontractor together with the documents required in Part IV, this CAO;

e. Flow Chart showing the specific processing to be subcontracted; and

f. List of raw materials to be subcontracted.

Sec. 6. - Guidelines in the Evaluation of the Application.

1. In order that an application for a bonded manufacturing warehouse shall be approved, the following physical conditions have to be satisfied:

a. Plant Location- The proposed bonded manufacturing warehouse shall be located in an accessible place to ensure easy inspection and/or supervision by Customs officials.

b. Compartments for Materials/Articles - Every bonded manufacturing warehouse shall have permanent compartments separated from the remainder of the premises to be used exclusively for the storage and safekeeping of all imported materials, finished articles ready for export, and by-products/wastages.

The compartments shall be properly secured to prevent any unauthorized person from having access thereto. For this purpose, such compartments shall each have two locks, the key of one lock shall be kept by the CBW Officer at all times and the key to the other lock shall be kept by the operator. The contents therein shall be properly arranged as to give all practicable convenience to authorized Customs Officials making the required examination, inspection or inventory.

c. Office Space for Customs Personnel- Accessible and adequate office space shall provide for the Customs personnel to be assigned at the bonded warehouse.

2. List of Raw Materials to be Imported - The list of raw materials to be imported for the use in the production of export products shall be as specific as possible. If there are local materials to be used, such shall also be specified. The technical evaluation made by the FOI on this aspect shall be submitted with the application.

3. List of Articles to be Manufactured for Export. - The submitted list of articles to be manufactured and exported shall indicate the specific names under which they will be known in the ordinary course of trade.

4. Formulas, Style or Patterns. - The formula of manufacture, patterns or sketches submitted shall specify in detail the usage of imported raw materials (and local materials, if any) for the production of certain quantity of finished products, to include the amount (%) of wastages incurred. If wastages are incurred in different stages of processing, such shall be indicated in the flow chart of manufacture.

Approval of theformula upon application shall be subject to a later verification on the actual operation.

Section 7 - Operational Requirements. Upon issuance of the permit to operate a bonded manufacturing warehouse, the owner or operator shall further comply with the following:

a. Pay to the District Collector of Customs concerned the warehouse supervision fees prescribed in appropriate Customs regulations.

b. File with District Collector of Customs concerned a Power of Attorney designating the person authorized to sign or act in his behalf in all transactions with the Bureau of Customs. If to be handled by brokers/ brokerages, a list of those authorized by the Operator shall be submitted.

c. File with the District Collector of Customs concerned a Performance Bond in the amount of two hundred thousand pesos (₱ 200,000) in Philippine currency to guarantee compliance with the provisions of laws and regulations affecting Customs bonded manufacturing warehouses.

PART IV - GUIDELINES FOR SUBCONTRACTING

Section 8.- Conditions for Subcontracting. A bonded manufacturing warehouse operator/owner may subcontract the processing of any one of his imported material without payment of duty, subject to the approval of the Commissioner of Customs upon recommendation of the District Collector. The following guidelines shall govern subcontracting operations:

1. Subcontracting jobs shall be undertaken only by duly accredited subcontractor.
2. There are generally two instance when subcontracting may be allowed:
   a. When due to insufficiency of operational facilities, the operator finds it necessary to subcontract certain stages of the manufacturing process.
   b. When due to lack of meterial time to fully process a certain importation, the operator finds it necessary to subcontract a certain portion of the said importation.
3. The stages to be subcontracted shall, whenever practicable, be specified upon submission of formula of manufacture.
4. Appropriate control measures should be undertaken to ensure the security and integrity of the duty free materials transferred from a bonded manufacturing warehouse to a subcontractor. For instance such items as garment materials should be pre-cut accordance with the approved patterns. The materials should be examined and accounted for by Customs personnel before transfer.

5. The CBW operator shall continue to be liable for any duty free materials transferred from his warehouse to a sub-contractor.

6. Finished materials subcontracted and the resulting wastages, if any, shall be returned to the bonded warehouse upon completion of the processing done by the subcontractor. Such materials should be examined by Customs personnel to account for the duty free raw materials used in the processing.

Sec. 9 - Requirements for Accreditation of Subcontractors.

A firm may be accredited as a subcontractor for Bonded Manufacturing warehouses by filing a written application to the Commissioner, thru the District Collector of Customs, together with the following documents:

1. Plant location and layout, showing means of access to the property;
2. List of machinery and equipment; and
3. Any of the following:
   a. Certified true copies of registration certificate with SEC, together with Articles of Incorporation and By-laws or Articles of Co-partnership;
   b. Certified true copies of Registration Certificate with the Bureau of Domestic Trade;
   c. Certified true copy of Certificates of Registration with Nacida.

PART V - OPERATIONAL PROVISIONS

Section 10 - Importation of a Bonded Manufacturing Warehouse.

1. Raw Materials to be Imported - Only raw materials approved by the Bureau to be imported for the use of the bonded manufacturing warehouse in its production of export products shall be transferred and entered in the said warehouse.

2. Transfer of Imported Materials to the Warehouse -

   a. Imported materials approved to be used in the manufacture of articles for exportation, and any package, covering, brand and label used in putting up the same may be transferred without the payment of duty to a Customs bonded manufacturing warehouse through a warehousing entry, or through a Special Permit to Transfer (SPT) or through a Transhipment permit, if from other ports of entry.

      If transferred through an SPT or Transhipment Permit, warehousing entry shall be filed within the reglementary period of five (5) days from the date of discharge. This period may, however, be extended for another five (5) days by the Collector.

   b. Transfers from the piers or other Customs premises to the bonded manufacturing warehouse shall always be accompanied by Customs Guard (s) and supported by Boatnotes issued in quadruplicate by the wharfinger concerned.

3. Bond Requirements - Before the transfer of the articles or materials from piers or other customs premises to the bonded manufacturing warehouse is allowed, the importer shall file a general or specific warehousing bond for such

articles, or materials, equivalent to the amount of duties, taxes and other charges due thereon, conditioned:

a. For the exportation of the finished products or of the materials imported and/or

b. For the payment of all duties, taxes and other charges due on such materials not exported within a period of nine (9) months from the date of such transfer or conveyance into the bonded manufacturing warehouse, which period may for sufficient reasons be extended for not more than three (3) months by the Commissioner.

4. Filing of Warehousing Entry

a. All imported materials or articles to be used in the manufacturing shall be entered through a warehousing entry at the port under whose jurisdiction such warehouse has been established. The warehousing entry shall be supported by a license permit to import from the Central Bank and/or other government offices or instrumentalities having jurisdiction on the matter. Machinery, implements, equipment or apparatus to be used in the operation of the business of any bonded manufacturing warehouse or in the construction or repair of such warehouse shall be subject to the payment of the corresponding customs duties and taxes due thereon and shall be entered under consumption entry supported by Central Bank Release Certificate and other required documents as in ordinary importation.

5. Examination of Imported Articles - Materials/ articles imported for the Customs Bonded Manufacturing Warehouse shall be examined in the place or other Customs jurisdiction like any other imported merchandise before their transfer to the bonded manufacturing warehouse. The importer/ consignee shall make a complete return on the face of the entry and shall attach thereto representative samples of the articles whenever practicable. In cases where the articles are covered by an SPF or Transhipment Permit, the Examiner shall make an initial return on the face of the transfer permit before transfer.

Sec. II - Withdrawal of Imported Articles from Bonded Manufacturing Warehouses.

1. For Production of Finished Products for Exportation

a. Filing of Requisition Slips.

(1) All withdrawals of raw materials from the bonded manufacturing warehouses for production/manufacture into export products shall be covered by requisition slips duly processed in the Bonded Warehouse Division, or its equivalent unit in other ports; Provided, however, that such imported materials/articles shall be covered by a warehousing entry before any withdrawal thereof can be made.

(2) The requisition slips shall specify the materials to be withdrawn, the quantities and value thereof, the import entry number covering said articles, the quantity and description of finished products to be

manufactured/produced, and the time involved for production.

b. Storage and Accounting of Finished Products and Wastages/By-Products after Production.

Finished products manufactured from the imported raw materials and wastages and/or by-products incurred in the production shall be stored and properly secured in the compartments provided for the purpose. The CBW Officer shall keep a careful account of the quantity, weight and description of such finished products and wastages/by-products for every requisition made.

2. Withdrawal of Imported Materials or Semi-Finished Products for Processing in Other Factories.

(a) Imported articles or semi-finished products may be transferred without the payment of duty from any bonded manufacturing warehouse into another bonded manufacturing warehouse, or to duly accredited subcontractors or manufacturers, who shall further process the same and then return the processed articles to the original bonded manufacturing warehouse.

(b) Before the transfer is made, examination and identification of the materials to be processed in another factory shall be done by authorized Customs personnel.

Withdrawal shall be covered by requisition slips and the transfer shall be effected by bonded, which transfer shall be underguarded until received by the OPF Officer/ subcontractor concerned. Return of the finished products to the bonded manufacturing warehouse shall be in the same manner, and shall be subject to re-examination.

(c) For the purpose of subcontracting and tranfer under this Section, the orginal importer/ operator shall continue to be accountable and liable for the materials transferred from his warehouse, conditioned to be returned and exported therefrom.

3. Withdrawal of Imported Raw Materials/Semi-Finished Products for Transfer to Another Bonded Manufacturing Warehouse, for Processing and Subsequent Exportation therefrom - Such a withdrawal, which would lead to the subsequent exportation of the finished product by the bonded manufacturing warehouse involved in the last processing stage, shall be subject first to the approval of the Commissioner of Customs.

Sec. 12 - Exportation

1. Period of Exportation

Imported materials transferred or conveyed into any bonded manufacturing warehouse shall be used in the manufacture of articles for exportation and such export products shall be exported within a period of nine (9) months from date of such transfer or conveyance into the bonded manufacturing warehouse, unless such period for sufficient reasons is extended for not more than

three (3) months by the Owner/Claimer. Manufactured articles and materials not exported within the aforesaid period shall either be subject to duties and taxes or sold at public auction by the Collector of Customs for the satisfaction of duties and taxes and other charges due thereon.

2. Packing, Examination and Identification of Finished Products for Export.

a) All finished products for export shall first be examined and identified before packing for subsequent exportation.

b) The Customs Examiner or the authorized Customs Officer shall examine the goods and identify the articles being packed and make proper notations on the corresponding import entry/ entries of the raw materials involved.

c) The Container of finished products for export whenever feasible shall be securely sealed and conspicously and legibly marked with the country of origin, name and address of both the exporter and the consignee, package number and such other shipping marks required for proper identification of export products.

d) The Customs Examiner shall make the necessary marks or notations to signify that such goods have already been examined and passed for export in such place (s) so as to prevent any re-opening after examination, and shall issue the Certificate of

3. Making of Entry Inward/Outward - The Export Declaration number and date of Customs processing shall be duly entered in the relevant Import/Export Register maintained for the purpose.

4. Procession for Export - The processing of the cargo for export together with its examination thereof shall be in accordance with current rules and regulations governing export procedure.

5. Certificate of Loading

1. The products to be exported shall be delivered to the Customs Inspector on board the vessel or aircraft, in case of containerized cargoes, who shall carefully verify the container and ascertain that the seals have not been tampered with and are the ones specified in the Certificate of Identification. For containerized cargoes, delivery shall be made by the Integrated Container Control Officer (ICCO) personnel who shall ascertain that the container seal is intact and not tampered with. Certificate of Loading and Exportation shall then be countersigned by the Customs Inspector or ICCO personnel, depending on the cargoes. Such certificate

shall promptly notify the Licensee [illegible]
[illegible] Territorial Waste Management Officer [illegible]
discard.

2. Records of [illegible] shall be maintained [illegible]
of Section [illegible] and shall be available [illegible]
Export Corporation Inspector [illegible] and Territorial [illegible]
Waste Management Officer.

Sect. 13 - Wastages and By-Products.

1. By-products and wastages, in any condition or [illegible]
of manufacture. The raw materials from [illegible] processing
in a bonded manufacturing warehouse, and containers or
packing used for the imported raw materials, shall be
accounted for and liquidated in the following manner:

a. If to be used for domestic consumption, the Licensee
Exporter shall pay all the duties, taxes and other
charges due thereon at the rate that were imposed from
the foreign country, subject to the consent of the Central
Bank and/or other competent Territorial authorities on the
particular articles.

b. If the Licensee Exporter does not pay the duties and
taxes, disposition shall be done, either by condemnation,
donation, sale at public auction, etc., by the Destruction
Committee or any authorized unit of the Territorial
Government under the existing rules and regulations and procedures.

c. Re-exportation of wastages, by-products or other rather than

may be allowed, subject to all existing rules and regulations governing exportation thereof.

Sec. 14 - Liquidation of Raw Materials

1. There shall be a liquidation of raw materials before liquidation of entry and cancellation of bonds can be effected.
2. Within fifteen (15) days after exportation of finished products the Operator of the bonded manufacturing warehouse shall submit to the Chief, BWD, a Certificate of Liquidation which shall contain a list and copies of all export entries/declaration under which the raw materials had been exported as finished products and shall be accompanied by other proofs of exportation such as Certificate of Inspection, Identification and Loading and other documents pertinent to such exportation.
3. For wastages and by-products, documents pertinent to the manner they were disposed of, shall be submitted together with the proofs of exportation.
4. The bonded Warehouse Division shall make a careful accounting of the imported raw materials through verification of the records and all the submitted documents and shall accordingly make a Certification of Liquidation of Raw Materials, a copy of which shall be furnished the Bonds Division for partial cancellation of the bonds covering said raw materials.

Sec. 15 - Liquidation of Entry and Final Cancellation of Bonds.

When all the raw materials covered by a particular entry had been liquidated, the entry shall be transmitted to the Liquidation Division together with the Certificate of Liquidation of Raw Materials processed by the Bonded Warehouse Division.

Certificate of Liquidation submitted by the Bonded Export Declaration Agents, Verification of Import and Identification and Marking, and Examination Supervision, disposition of Warehouse Withdrawals for Export, Liquidation of the entry and final Verification of Stock.

PART VI - SUPERVISION AND CONTROL OF CUSTOMS BONDED WAREHOUSE AND AGENCY STAFFING.

Sec. 16 - Customs Personnel. The Collector of Customs concerned shall assign such number of Customs personnel necessary to supervise the operation of the Customs Bonded Warehouse and protect the interest of the Government. Provided, however, that there shall be assigned at least one (1) Customs Bonded Warehouse (CBW) Officer, one (1) CBW Asst. Officer and one (1) Customs Guard, and Provided, further, that the operator of the warehouse shall provide such Customs personnel with suitable working space complete with office facilities and equipment.

No employee shall be assigned as CBW Officer, CBW Asst. Officer and Customs Guard to any bonded warehouse the operator of which is related to said employee within the 3rd degree of consanguinity or affinity.

Sec. 17 - Duties and Responsibilities of CBW Officer and CBW Assistant Officer.

1. Receive and maintain complete and detailed records of all imported duty free equipment, supplies and raw materials entered in the warehouse.

2. Check the materials authorized for transfer to the subcontractor

for processing and determine if same were the ones used in the processing of the semi-finished or finished products returned to the warehouse.

3. Allow withdrawals only as authorized withdrawn by the Collector of Customs. In this connection, the CBW Officer shall conduct a physical and a records inventory of the warehouse at least once a month and shall report to the Collector of Customs all materials illegally withdrawn as well as materials and finished materials that remained beyond the maximum period allowed for storage and/or exportation.

4. Supervise the storage of materials in the warehouse to ensure easy and immediate location during spot examinations and regular inventory taking.

5. See to it that no alterations or changes in the location, lay-out and construction of the warehouse are affected without prior approval of the Collector of Customs.

6. Notify the Collector in case rejects, waste materials and by-products are to be disposed of;

7. See to it that no exportation is done without prior examination of the export products.

8. Supervise the packing of finished goods for export and maintain complete records thereof.

9. Report to the Collector of Customs all violations of Customs rules and regulations particularly those governing Customs bonded warehouses.

10. Perform such other duties as may be assigned to him by the Collector of Customs.

Sec. 18 - <u>Duties and Responsibilities of CBW Guards</u>

1. See to it that only those materials/products authorized to be brought in or withdrawn by the Collector of Customs are entered into or taken out of the warehouse.

2. Examine regularly the warehouse and surrounding premises and report to the Collector of Customs and to the management, weaknesses and/or threats to the security of the goods entered in the warehouse and the warehouse itself.
3. Conduct raw materials or semi-finished products from CBW to subcontractor and ensure that such articles are properly delivered to the accredited subcontractor. In case of exportation, conduct finished product from CBW to airport or pier until properly receipted for by the appropriate Customs officer thereat.
4. Report to the Collector of Customs all violations of Customs rules and regulations that comes to his attention.

SEC. 19 - Duties and Responsibilities of Customs Bonded Warehouse Inspectors.

1. Conduct periodic physical and records inventory of the warehouse assigned to him at least once every three (3) months for the following purpose:
   a. To determine if there are articles withdrawn without proper authority;
   b. To determine if there are articles in the bonded manufacturing warehouse that have exceeded the maximum period of storage or exportation;
   c. To determine if inventory reports and/or reports of violation of Customs rules and regulations have been rendered,
   d. To check on the adequacy and completeness and the recordings done by the CBW Officer;
   e. To check if the warehouse is properly mannedby Customs Guards or Customs Personnel; and

f. To determine compliance by the operator to all Customs laws and regulations on bonded manufacturing warehouse operations.

2. Recommend improvements of facilities and stockfiling to insure the proper safekeeping of the articles stored thereat.

3. Render report of findings, comments and recommendations on 1 and 2 above within one (1) week from date of mission order.

4. Perform such other related functions as the Collector may direct.

Sec. 20 - Duties and Responsibilities of Customs Bonded Warehouse Operator.

1. Present to the CBW Officer approved requisitions for withdrawals of export products or evidence of payment of duties, taxes and other charges for articles intended for local consumption before making such withdrawals from the warehouse.

2. Secure physically the warehouse in order to prevent pilferage, unauthorized withdrawals and loss of goods thru fires, floods, and such other occurences.

3. Maintain at all times in their place of business, and make available for inspection, books of accounts and other records as may be prescribed by the Bureau of Customs in connection with their business.

4. See to it that all materials subcontracted are returned to the warehouse within the period prescribed for the re-exportation of thefinished products.

5. Provide all the necessary office fixtures and supplies; equipment needed by Customs personnel assigned at the warehouse for the proper discharge of their functions.

6. Comply with all Customs rules and regulations governing the operations of Customs bonded manufacturing warehouses.

Sec. 21 - Working Hours.

1. Regular Office Hours - Customs employees assigned to work in Customs Bonded Manufacturing Warehouse shall be regular Customs employees who shall be appointed in accordance with the Civil Service rules and regulations. They shall observe strictly the regular office hours and record their office attendance in accordance with the Civil Service rules and regulations. They shall not go on leave without the permission of the Collector of Customs and their absence shall be promptly reported by the warehouse operator to the Collector of Customs.
2. Overtime - The Collector of Customs shall require overtime services upon request of the operator or whenever necessary and feasible. All work performed outside of the regular hours including Sundays and holidays shall be considered overtime hours.

The rate of overtime work shall be as provided for in pertinent orders on overtime.

Sec. 22 - Inspection of Warehouse/Subcontracting Firm Premises.

Premises of the bonded manufacturing warehouse and its subcontracting firm/warehouse, if any, shall bemade accesible to all authorized Customs officials or representatives upon presentation of an approved mission order or proper demand for occular inspection.

Sec. 23 - Books/Records.

Books of accounts and other records as may be prescribed by the Bureau of Customs shall be maintained by the oprator of the bonded warehouse and kept at all times in their place of business subject to immediate

inspection on demand by the authorized Customs officials or representatives.

Sec. 24 - Forms.

Forms to be used by the bonded warehouse operators in preparing their reports shall be as prescribed by the Bureau.

Sec. 25. - CBW Officer Monthly Report.

A monthly report shall be prepared by the CBW officer and submitted to the Chief, Bonded Warehouse Division or its equivalent office on the following:

a. Articles withdrawn without authority or pilfered from the warehouse during the month;

b. Overstaying materials in the warehouse;

c. Conditions of the warehouse and whether or not the warehouse still conforms to the conditions for its operations;

d. Violations of Customs rules and regulations by operator.

Sec. 26 - Quarterly Inventory Report.

An inventory of the merchandise stored in the warehouse shall be made at least once every quarter by the designating CBW inspector. The Collector, however, may require more frequent inventories whenever necessary. Such inventories must be checked with the Central Office records as well as with the CBW Officer's and operator's logbook. In the event of any discrepancy found, such matter shall be reported by the CBW inspector to the Collector of Customs for appropriate action.

Sec. 27 - Performance Evaluation Report.

The Collector of Customs shall conduct an annual performance evaluation of the operations of bonded manufacturing warehouses under his jurisdiction to ensure that their operations remain within the purview of Secs. 2001-2004 and on this basis, re-issuance, suspension or revocation of permit shall be made. A report on the above shall be ren-

...ered to the Commissioner.

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Sec. 29 - Unauthorized Withdrawal or Disposition

1. Withdrawal of raw materials for production/manufacture of export products from Bonded Manufacturing Warehouse without the duly processed requisition slip shall constitute a violation of the conditions of the General Bond for Bonded Manufacturing Warehouse and shall be a ground for the confiscation of the bond.

2. Any imported article/materials which are withdrawn without proper authority from any Bonded Manufacturing Warehouse, shall be subject to forfeiture as provided for in Section 2530 of the TCCP, as amended or in case of payment of duties, taxes, fees and other charges due, the surcharge imposable under Section 2501-A of P.D. 1464 shall be added thereto.

3. Any person who maliciously enters a Bonded Manufacturing Warehouse with intent to unlawfully remove therefrom any article/material or baggage, or any person who receives or transport any article/material unlawfully removed from such warehouse or shall aid or abet such removal shall be punished with a fine or not more than five years or both as provided for in Section 3505 of the TCCP as amended. The operator of a Bonded Manufacturing Warehouse who withdraws without proper authority merchandise and any Customs personnel who fails to report such unauthorized withdrawal shall be liable under Section 3504 of the TCCP as amended.

Sec. 30 - Manufactured Articles not Exported within the Allowable Period.

Manufactured article/materials not exported within the allowable period from date of transfer/conveyance of such materials into the bonded manufacturing warehouse shall either be subject to the payment of duties and taxes or sold at public auction by the Collector of Customs concerned for the satisfaction of duties and taxes and other charges due thereon.

Sec. 31 - Other Violations.

Violation of any provision of this Order for which delinquency no specific penaly is provided for by law shall be subject to the penaly in Section 3610 of the TCCP as amended by P.D. 34 and any violation of the terms and conditions of this Ordery by the Operator shall be sufficient cause for the revocation or non-renewal of his permit to operate.

PART VIII - REPEALING CLAUSE.

All Customs Administrative Orders, Memorandum Orders, Circulars, rules and regulations inconsistent herewith are hereby deemed, superseded and/or amended accordingly.

PART IX - EFFECTIVE CLAUSE.

This Order shall take effect upon aproval of the Minister of Finance.

RAMON J. FAGOLAN
Colonel PAF
Acting Commissioner of Customs

A P P R O V E D :

ALFREDO PIO DE RODA, JR.
Acting Minister of Finance
June 19, 1979

APPENDIX "F"

The Companies Act, 1948 to 1976

Company Limited by Guarantee and not having a Share Capital

MEMORANDUM OF ASSOCIATION

OF

Rubber and Plastics Research Association of Great Britain

1. The name of the Association is "Rubber and Plastics Research Association of Great Britain" (hereinafter called "the Association").

2. The registered office of the Association will be situated in England.

3. The objects for which the Association is established are:-

(a) To promote research into the nature, properties and uses of rubber, plastics and allied materials and processes and the methods of testing and applying the same and to that purpose to establish, maintain and conduct laboratories, workshops or other premises and facilities for studies and developments, and to provide grants for research and to contribute to any person or persons engaged therein, in Great Britain or elsewhere, and to encourage and promote co-operation between persons who are engaged or are likely to be engaged in such research.

(b) To prepare, edit, print, publish, issue, circulate or distribute books, papers, periodicals, pamphlets, circulars and lists of members and to hold meetings of or between the said industries or any of them and to establish, form and maintain reference, technical, commercial and other collections of literature, statistics, scientific data and other information relating to the said industries or any of them or to matters of interest to persons engaged therein, and to translate, compile, collect, publish, lend and sell, and endeavour to secure, co-operate in, or contribute to the publication, compilation, collection, publication and sale, by Parliament, Government Departments and other bodies or persons of any such literature and statistics and information, and to disseminate the same by means of the reading of papers, delivery of lectures, issue of reports, the appointment of advisory officers, or otherwise.

(c) To retain or employ skilled professional or technical advisers or workers in connection with the objects of the Association, and to pay therefor such fees or remuneration as may be thought expedient, and to provide, aid, maintain and endow schools, shops and homes for the education, instruction and support of students or persons who were or are then engaged in studying the manufacture involved in any of the said industries or connected therewith, whether in the laboratories of the Association or elsewhere, and to employ and remunerate as may be considered desirable instructors and supervisors for such students and also to grant scholarships to students engaged in studying the principles involved in any of the said industries or connected therewith, paying due regard to the provision of instruction by existing institutions.

(d) To encourage the discovery of and investigate and to take all steps as may be thought desirable to make known the nature and merits of inventions, improvements, processes, materials or designs which may seem capable of being used by Members of the Association for any of the purposes of the said industries or any of them, and to acquire any patents or licences relating to any such inventions, improvements or processes, and to acquire and register any designs or other distinguishing marks, whether for general or special purposes, with a view to the use thereof by Members of the Association and others upon such terms as may seem expedient, and to develop, perfect and test the value of such inventions, improvements, processes and designs by manufacture, experiment and placing on the

market any article or substances to which the same may be capable of application

(e) To apply to the Government, Public Bodies, Local Authorities, County and other bodies, corporations, companies or organisations for and accept grants of money and of land, hereditaments or rights and other assistance with a view to promoting any objects of the Association, and to discuss and negotiate with Government Departments, public and other bodies, companies or persons, all forms of research and other work and matters within the objects of the Association and to conform to any provisions upon which such grants and other payments may be made.

(f) To establish, promote, co-operate with, become a member of, act as or appoint trustees, agents or delegates for, control, manage, subscribe, afford financial assistance to or generally assist the work of any associations and institutions and other bodies incorporated or not incorporated, whose objects include scientific or technical research.

(g) To establish, maintain, conduct and manage the affairs of the Association in the United Kingdom and elsewhere as may seem expedient, and from time to time to determine the constitutional rights, privileges, obligations and duties of such branches, and, when thought fit, to dissolve and modify the same

(h) To undertake and execute any trusts which may be conducive to any of the objects of the Association.

(i) To carry out any of the above-mentioned research or other scientific work and to do all or any of the above-mentioned things whether affecting the whole of the said industries or merely one or more particular parts or sections of the said industries or any of them or the business of any particular Member or group of Members of the Association, and, in the case of work not affecting the whole of the said industries, to make such arrangements as to special payment by such particular sections or Members or groups of Members as may be expedient.

(j) To borrow or raise any money that may be required by the Association upon such terms as may be deemed advisable, and in particular by the issue of bonds, debentures, bills of exchange, promissory notes or other obligations or securities of the Association, or by mortgage or charge of all or any part of the property of the Association.

(k) To draw, make, accept, endorse, discount, execute and issue promissory notes, bills of exchange and other negotiable or transferable instruments

(l) To invest the moneys of the Association not immediately required for its purposes in or upon such investments, securities or property as may be thought fit, subject nevertheless to such conditions (if any) and such consents (if any) as may for the time being be imposed or required by law and subject also as hereinafter provided

(m) To purchase, take on lease or in exchange, hire or otherwise acquire any real and personal property, and in particular any land, buildings, workshops, factories, laboratories, machinery, plant, apparatus, appliances and any rights or privileges necessary or convenient for the purposes of the Association, and to construct, erect, alter, improve and maintain any buildings which may be from time to time required for the purposes of the Association, and to manage, develop, sell, demise, let, mortgage, dispose of, turn to account or otherwise deal with all or part of the same with a view to the promotion of the objects of the Association

(n) To pay all expenses preliminary or incidental to the formation of the Association and its registration

(o) To use the funds of the Association in the employment of persons of learning or skill, and the provision and use of buildings, and of instruments, materials and appliances, and of any of the equipment of the Association for any form of scientific studies which may be considered to have some bearing, whether immediate or ultimate, on practical problems involved in the nature or use of rubbers, plastics and allied materials for the industries associated therewith or allied thereto.

(p) To collect, arrange, collate and publish [illegible] proceedings, meetings, [illegible] to the said industries or any of them and to [illegible] maintain a library and [illegible] of the Association

(q) To provide [illegible] for the employees of the Association [illegible] upon [illegible] borrowed [illegible] aid in the [illegible] institution [illegible] provision of [illegible] the Association

(r) To establish and support [illegible] associations, institutions, funds [illegible] to benefit [illegible] dants [illegible] ances to any [illegible]

(s) To establish, promote or [illegible] promotion or formation of any subsidiary [illegible] the purpose of acquiring all or any of the property rights and liabilities of the Association or for any other purpose which may seem directly or indirectly calculated to benefit the Association provided that any such subsidiary company shall have regard to such rights as aforesaid in part to those of the Association and shall in its Memorandum provide the distribution of its income and property to its members to at least as great a degree as that to which the Association is subject under this sub-clause so prohibited

(t) To procure the Association to be registered or recognised in any part of the Commonwealth or in any foreign country or place as may be expedient

(u) To do all such other lawful things as may be incidental to or conducive to the attainment of the above objects

Provided always that nothing herein contained shall empower the Association to carry on the business of life assurance, personal accident assurance, fire insurance or employers' liability insurance or any business of insurance to which the Insurance Companies Act 1974 or any Act extending, amending or re-enacting the same applies or to re-insure any risks undertaken in any such business as aforesaid

Provided also that the objects of the Association shall not extend to the regulation of relations between workers and employers or between workers and organisations of employers

Provided also that in case the Association shall [illegible] subject to the jurisdiction of the Charity Commissioners or any authority having corresponding jurisdiction outside England and Wales, the Association shall not sell, mortgage, charge or lease the same without such authority approval or consent as may be required by law, and in regard thereto the Council or Trustees of the Association shall be chargeable for such property as may come into their hands, and shall be answerable and accountable for their own acts, receipts, neglects and defaults and for the due administration of such property in the same manner and to the same extent as they would as such Council or Trustees have been if no incorporation had been effected and the incorporation of the Association shall not diminish or impair any control or authority exercisable by the Chancery Division or the Charity Commissioners or any such other authority as aforesaid over such Council or Trustees, but they shall in regard to such property be subject jointly and severally to such control or authority as if the Association were not incorporated. In case the Association shall take or hold any property which may be subject to any trusts, the Association shall only deal with it or such in such manner as allowed by law having regard to such trusts

4 The income and property of the Association whencesoever derived, shall be applied solely towards the promotion of the objects of the Association

as set forth in the Memorandum of Association, a Member shall not sell or transfer [illegible] otherwise howsoever by way of profit to the Members of the Association.

Provided that nothing herein shall prevent the payment to any Member of the Association or [illegible] shall be appointed to any office, post or employment under the Association or to any company in which the Association shall be interested, or for any services rendered or for the supply of goods by any Member of the Association, but so that no Director shall be appointed to any office, post or employment under the Association or to any company in which the Association shall be interested, or for any services rendered or for the supply of goods by any Director of the Association, unless such appointment, services rendered or goods supplied are approved by the Council and the Director so appointed, rendering such services or supplying such goods shall not vote on any resolution of the Council relating to his appointment, services rendered or goods supplied by him, and provided also that no Director shall receive any remuneration for services rendered or goods supplied by him to the Association unless such remuneration is approved by the Council and the Director so remunerated shall not vote on any resolution of the Council relating to his remuneration, and provided also that nothing herein shall prevent any payment to any corporate body of which a Director of the Council may be a member or shareholder holding not more than one hundredth part of its capital, and Members shall not be disqualified by reason of such payment from voting in respect of any such payment.

Provided also that nothing herein shall prevent any Member of the Association, whether a Member of the Council or not, from entering into contracts and making, using, acquiring, and vending any articles and inventions for the ordinary course of his business for profit or otherwise, or for any benefit or participation in respect of any discovery, invention and patents resulting from the work of the Association.

5. The liability of the Members is limited.

6. Every Member of the Association undertakes to contribute to the assets of the Association in the event of the same being wound up during the time that he is a Member, or within one year afterwards, for payment of the debts and liabilities of the Association contracted before the time at which he ceases to be a Member and of the costs, charges and expenses of winding up the same and for the adjustment of the rights of the contributories amongst themselves, such amount as may be required not exceeding £5.

7. If upon the winding up or dissolution of the Association there remains, after the satisfaction of all its debts and liabilities, any property whatsoever the same shall not be paid to or distributed amongst the Members of the Association, but shall be given or transferred to some other British charitable institution or institutions having objects similar to the objects of the Association and which shall prohibit the distribution of its or their income and property amongst its or their Members to an extent at least as great as is imposed on the Association under or by virtue of paragraph 4 of this Memorandum, such institution or institutions to be determined by the Members of the Association at or before the time of dissolution, and if and so far as effect cannot be given to the aforesaid provision, then to some charitable object.

The Companies Acts 1948 to 1976

Company Limited by Guarantee and not having a Share Capital

ARTICLES OF ASSOCIATION

of

Rubber and Plastics Research Association of Great Britain

Interpretation

1. In the construction of these Articles the following words and expressions shall have the following meanings respectively unless there be something in the subject matter or context repugnant thereto:

"The Act" means the Companies Act, 1948 and every other Act for the time being incorporated therewith or any Act or Acts of Parliament amending the same.

"The Association" means the Rubber and Plastics Research Association of Great Britain.

"British Subject" means a citizen of the United Kingdom or the Colonies or of one of the countries mentioned in sub Section (3) of Section 1 of the British Nationality Act, 1948, or the Republic of Ireland and as such having the status of a British subject.

"The Office" means the registered office of the Association.

"The Council" means the Council of the Association as a body or where the context so permits a quorum of the members thereof present at a Council meeting.

"Secretary" includes any person appointed to perform the duties of the Secretary of the Association whether temporarily or otherwise.

"Notice" includes all written communications to Members.

"These Articles" means the Articles of Association for the time being of the Association.

"Month" means calendar month.

"In writing" and "written" include printing, lithography, photography and typewriting and all other modes of representing or reproducing words in visible form.

Words and expressions which have a special meaning assigned to them in the Act have the same meaning in these Articles.

Words importing the singular number include the plural and the converse applies; words importing males include females; words importing persons include corporations.

MEMBERS

Number of Members

2. For the purpose of registration the number of Members of the Association was declared to be 200, which number has been increased to not more than 1,000, but the Council may register a further increase in the number of Members whenever and as often as they think fit.

Objects of the Association

3. The Association is established for the purposes expressed in the Memorandum of Association.

Qualifications for Membership of Ordinary, Associate or Honorary Members

4. The membership of the Association shall consist of individuals and corporate bodies with the following status:—

(a) Ordinary Members, who shall be such individuals and corporations as

shall be carrying on business in connection with [illegible] or business allied thereto, or [illegible] in the [illegible] of machinery, equipment [illegible] thereafter, and/or [illegible] in [illegible] of the [illegible]

(iii) Associate Members who shall be [illegible] corporations and [illegible] contracted [illegible] officers of corporations [illegible]

(iv) Honorary Members, being persons [illegible] Members [illegible] and nominated for membership by the Council for special services [illegible] and elected at a General Meeting.

Provided also that any Member [illegible] class of membership [illegible] without prejudice to his admission as a Member [illegible] can be complied with by him.

Entitlement of Ordinary Members to vote at General Meetings

No Member, other than an Ordinary Member shall be entitled to vote at General Meetings. Members other than Ordinary Members shall be entitled to such of the privileges and benefits of membership of the Association as the Council may from time to time determine, but without power to vote at any General Meeting.

Right of Members to nominate a representative

5. A corporation, being a Member, shall nominate a person to act as its representative in the manner provided in Section [illegible] of the Act. [illegible] Representative shall have the right on behalf of the corporation (and to the extent only to which the corporation will if a person be entitled to do so) to attend meetings of the Association and vote thereat and generally exercise all rights of membership on behalf of the corporation. A corporation may, from time to time, revoke the nomination of such Representative and nominate another Representative in his place. All such nominations and revocations shall be intimated to the Council in writing duly signed.

Firms and unincorporated associations

6. No firm or unincorporated association may as such become a Member of the Association, but if any such firm or association should desire to obtain the advantages of membership it shall nominate one of its partners to act as its Representative, to apply in its name for membership, to sign the application as its Representative and to exercise the rights of membership on its behalf. Every person so applying for membership shall be subject to the same rules and regulations concerning admission and otherwise as any applicant not so nominated, and shall if admitted become and be a Member in his own right in the class in which he is admitted and have the same rights and be subject to the same liabilities and incidents as any Member not so nominated, subject, however, to the provisions of Article 7. The firm or unincorporated association shall deposit with the Secretary the nomination of such applicant for membership and shall give all information that may be reasonably required by the Council regarding such applicant.

A firm or unincorporated association which has nominated as its Representative one of its partners as aforesaid may from time to time revoke the nomination of such partner and subject to the consent of the Council, nominate another Representative in his place. Upon receipt by the Council of any such revocation such Member shall *ipso facto* cease to be a Member and any person nominated in his place shall, if duly approved by the Council, be and become a Member of the Association and the Representative of such firm or association in the place of the Representative whose nomination has been revoked as aforesaid.

7. All nominations and revocations mentioned in Article 6 shall be in writing duly signed. Each such firm or unincorporated association shall at the date of such nomination give to the Council in writing full particulars of the nature of the firm or association and its places of business, and of the names, and private address of each partner thereof and all such further particulars as the Council shall require, and thereafter shall give such particulars when and as often as may be

required by the Council. Any change in the constitution or name of such firm or association or in the status of any of its members shall be immediately notified in writing to the Council who if they do not approve such change shall be entitled (without prejudice to Article 13) to give notice in writing to the partner representing such firm or association to terminate his membership and to withdraw from the Association, and shall at the same time refund to the proprietor of such firm a subscription having regard to the unexpired period for which it is paid, and thereupon such representative shall cease to be a Member and the firm or other incorporated association aforesaid shall have no further right to nominate a Member to act as its Representative. Any partner in such firm or shareholder in such association hereinbefore provided may attend any meeting of the Association (not being a Council or Committee meeting) but shall have no right of voting thereat provided that the Members present at any meeting may exclude persons who are not Members from such meeting by a resolution passed by a majority of the Members present and no special notice shall be required before the consideration of such resolution.

5. No individual or corporation shall be admitted to Membership of the Association unless an application for membership shall have been signed by him or on his behalf setting out such particulars as the Council shall require.

Application for membership

9. The Council shall in all cases have absolute discretion in deciding whether any individual or corporation shall or shall not be admitted to membership of the Association.

Non-liability of any of the Council or General Members

10. Any Member (other than an Honorary Member) may withdraw from the Association by giving notice in writing duly signed to the Secretary at least six months before the expiration of any financial year of the Association and on paying with such notice any unpaid subscription for the current year or subscription due for past years, and also for each and any subsequent year which such Member shall have guaranteed to subscribe on admission and thereupon such Member shall be deemed to have ceased to be a Member from the date of the expiration of such financial year. In default of such notice being so given, a Member shall be liable to pay the subscription for the ensuing year and in cases where any undertaking or guarantee has been given for subscriptions or donations for any given number of years the Member shall continue to be liable thereunder.

Withdrawal from the Association (Ordinary and Honorary Members)

11. Any Honorary Member may withdraw from the Association by giving notice in writing to the Secretary at any time and thereupon shall cease to be a Member.

Withdrawal from the Association - Honorary Members

12. Upon the retirement of any Member by notice as stated in Article 10, the Member shall not be entitled under any conditions to any repayment of any subscription or any part thereof whether paid for the current year or for a year or years in advance.

No repayment of subscriptions on withdrawal

13. Any Member may be removed from the Association by a resolution of the Council passed by a majority of at least three-fourths of the Council members present and voting at a special Council meeting of which not less than twenty-one days' previous notice specifying the intention to propose such resolution shall have been sent to the Member whose removal is in question and to all the members of the Council. Notice of the general nature of the grounds on which such resolution is proposed shall be sent to the Member whose removal is in question at least fourteen days before the meeting, and he shall be entitled to be heard by the Council at the meeting. On a Member being removed, the Council shall return the due proportion of such Member's current subscription (if any) having regard to the unexpired period for which it is paid.

Council's right to remove any Member

14. The rights of any Member shall be personal and shall not be transferable and shall cease upon the Member failing to pay the annual subscription within three months of its becoming due, or in the case of an individual on his becoming lunatic or of unsound mind or in any case of the Member ceasing to retain the qualifications on the ground of which the Member was admitted to membership.

Rights of Members not transferable

Nothing herein contained shall prejudice the rights of the Association to claim payment of the full amount of the [illegible] undertaken to pay or prove that the Member from [illegible] ship

Classes of Membership of Subsidiary Bodies

15. Any Ordinary or Associate Member or Patron Member [illegible] one or more divisions and which [illegible] subsidiary body") having [illegible] a subsidiary body or an Ordinary Member [illegible] the case of a subsidiary body of an [illegible] hereof may request that [illegible] privileges and benefits of membership [illegible] in connection with such [illegible] concerning any such subsidiary body [illegible] Council. The Council shall have power to [illegible]

(a) to determine whether or not any [illegible] privileges and benefits shall be [illegible] and benefits shall not extend to any subsidiary body [illegible] ship not enjoyed by the Parent Member [illegible]

(b) from time to time to withdraw all or any of the privileges and benefits extended

and a subsidiary body shall cease to enjoy any privileges and benefits of the Parent Member ceases to be a Member of the Association. A subsidiary body to which privileges and benefits are extended shall not be entitled to be represented at a Meeting of the Association and in particular shall not be entitled to receive or to attend or vote at any General Meeting.

DUTIES OF MEMBERS

Duties of Members

16. Every Member of the Association other than an Honorary Member shall be bound:—

(a) To pay to the Association such entrance fee (if any) and such annual subscription as shall be determined from time to time by the Council. Honorary Members shall not be entitled upon to pay any subscription. All payments shall be made at the times and in the manner prescribed by the conditions set out in the Bye Laws of the Association in force at the date of such payments.

(b) To observe the provisions of these Articles and of the Memorandum of Association and of the Bye Laws, rules and regulations of the Association for the time being in force.

(c) To pay and make good to the Association any loss or damage which the Association may sustain by any wilful act or default of such Member or any representative of such Member, but only if such act or default shall be a breach or any rule of law or any of the provisions of these Articles or of the Memorandum of Association or of any Bye Law, rule or regulation of the Association.

COUNCIL OF THE ASSOCIATION

Management by the Council

17. The business of the Association shall be managed by a Council, whose services shall be purely honorary. All members of the Council shall save as herein otherwise provided be Ordinary Members of the Association or representatives appointed under Article 5 of Ordinary Members.

Elected Council Members

18. The Council shall consist of not more than forty and not less than twelve members (hereinafter called "elected members") unless and until otherwise determined by the Association in General Meeting, such members to be in addition to any members appointed under Article 19 hereof.

19. The Council may [illegible] Council [illegible] Association [illegible] Association and [illegible] Council [illegible]

20. [illegible] Articles [illegible] [illegible] Council [illegible] [illegible] powers of [illegible] [illegible] of such corporate [illegible]

(2) The [illegible] [illegible] shall not [illegible]

(3) [illegible] [illegible] Council [illegible] [illegible] Council [illegible]

21. The members [illegible] adoption of these [illegible] the Council.

22. Every member of the [illegible] before entering on his duties [illegible] namely:—

"RUBBER AND PLASTICS RESEARCH ASSOCIATION OF GREAT BRITAIN

I [illegible]

hereby solemnly and sincerely declare that I will treat as secret and confidential all matters [illegible] Association or of any Member of the Association or of any [illegible] research work which may come to my knowledge [illegible] being a member of the Council of the Association or of any committee thereof."

23. The Association in General Meeting may appoint one President and such number of Vice-Presidents of the Association [illegible] President and Vice-Presidents shall be entitled to attend meetings of the Council and of the Association, and shall have no right to vote at such meetings. The President and Vice-Presidents for the time being shall [illegible] General Meeting of the Association but shall not be eligible for re-appointment. It shall not be necessary for any President or Vice-President [illegible] for office, either by way of subscription, donation or otherwise.

24. Subject to Articles 17, 25 and 26 a member of the Council shall be elected by the Association at each Annual General Meeting and [illegible] cease to hold office as provided by Article 25 hereof, but any member shall retain his office until the close of the meeting at which his successor

25. At each Annual General Meeting one third or the nearest [illegible] the Council shall retire or if their number is not a multiple of three, then the number nearest to one third shall retire. The members of the Council [illegible] be those who have been longest in office since their last election but as between persons who become members of Council on the same day they shall [illegible] (unless they otherwise agree among themselves) be determined by lot. All elected members so retiring shall be eligible for re-election.

If the vacated office of a retiring member of the Council [illegible] meeting at which he retires such retiring member shall [illegible] election be deemed to have been re-elected unless at such meeting it is expressly resolved not to fill his vacated office or unless a resolution for his re-election shall have been put to the meeting and lost.

Vacation of office by Members of Council

26 The office of a member of the Council shall forthwith be vacated:-

(a) If he becomes bankrupt or suspends payments or compounds with his creditors.

(b) If he becomes of unsound mind.

(c) If by notice in writing to the Council he resigns his office.

(d) If he be called upon in writing by at least three-fourths of all the elected members of the Council for the time being to resign office.

(e) If, not being a co-opted member, he ceases to be an Ordinary Member of the Association or the Representative of an Ordinary Member nominated under Article 5.

(f) If he becomes a foreign representative at a time when five other Members of the Council are foreign representatives.

(g) If he commits any breach of his declaration of secrecy under Article 22.

(h) If he is disqualified from holding office by any order made under section 188 of the Act or Section 28 of the Companies Act 1976 or Section 9 of the Insolvency Act 1976.

Appointment or retirement of Members of Council of age 70 or over

27. By virtue of sub-Section (7) of Section 185 of the Act, sub-Sections (1) to (6) of the said Section shall not apply to the Association.

Council to fill casual vacancies

28. Subject as aforesaid the Council shall be entitled to appoint any qualified person as a member of the Council to fill a casual vacancy, howsoever caused. The person so appointed shall hold office until the Annual General Meeting next after his appointment, but he shall then be eligible for re-election. He shall not be counted as one of the retiring members of Council for the purpose of Article 25.

Where the Council is reduced to less than 12 Members

29. No act or resolution of the Council shall be invalidated by reason of the existence of any vacancy or vacancies among members of the Council but if the number of elected members of the Council shall be reduced to less than twelve the continuing members may act for the purpose only of filling vacancies in the elected members or summoning a General Meeting of the Association.

Removal from office of a Member of Council

30. The Association may (pursuant to Section 184 of the Act) by ordinary resolution of which special notice has been given in accordance with Section 142 of the Act remove any member of the Council from office before the expiration of his period of office notwithstanding anything in these Articles or in any agreement between the Association and such member of Council.

POWERS OF THE COUNCIL OF THE ASSOCIATION

Sole control by the Council

31. The Council shall have sole control of all matters relating to the management and organisation of the Association. In addition to the powers and authorities by these Articles or otherwise expressly conferred upon them, they may exercise all such powers and do all such acts and things as may be exercised or done by the Association and are not hereby or by statute expressly directed or required to be exercised or done by the Association in General Meeting, but subject nevertheless to the provisions of any Acts of Parliament for the time being in force and of these Articles.

Specific powers of the Council

32. Without prejudice to the general powers conferred by the last preceding clause and the other powers contained by these Articles, it is hereby expressly declared that the Council shall have the following powers, that is to say:—

(a) To make and impose, vary and repeal Bye-Laws, rules and regulations for the administration and government of the Association and for carrying its objects into effect. Provided always that the same shall not in any way affect, vary or alter the provisions contained in these Articles.

(c) To pay all expenses incurred in promoting and carrying out the objects of the Association

(d) To purchase or otherwise acquire for the Association any property, rights or privileges which the Association may think it desirable to acquire upon such terms and conditions as the Council think fit.

(e) To secure the repayment of any moneys or contingent liabilities undertaken by the Association by mortgage of all or any of the property of the Association upon such terms as may be agreed upon.

(f) To take all steps and employ such persons as the Council may think fit to promote and establish branches of the Association and to appoint and at their discretion remove such officers, secretaries, officials, clerks, agents and servants (hereinafter referred to as "employees") for permanent, temporary or special services as the Council may from time to time think fit and to determine their duties and fix their salaries or emoluments and to require security in such instances and to such amounts as the Council may think fit.

(g) To engage professional or other assistance in connection with the business of the Association and subject to the provisions of the Memorandum of Association to pay reasonable fees or remuneration for the same as Council think fit.

(h) To appoint any person or persons whether incorporated or not to act as trustee or trustees to accept and hold in trust for the Association any property belonging to the Association or in which it is interested or for any other purposes and to execute and do all such deeds and things as may be requisite in relation to any such trust and to provide for the remuneration of such trustee or trustees.

(i) To institute, conduct, defend, compound or abandon any legal proceedings by or against the Association or its officers, or otherwise concerning the affairs of the Association and also to compound and allow time for payment or satisfaction of any debts due and of any claims or demands by or against the Association.

(j) To refer any claims or demands by or against the Association to arbitration and observe and perform the awards.

(k) To make and give receipts, releases and other discharges for money payable to the Association and for the claims and demands of the Association.

(l) To affix the seal of the Association to any instrument requiring the same.

(m) To determine who shall be entitled to sign on the Association's behalf bills, notes, receipts, acceptances, endorsements, cheques, releases, contracts and other documents.

(n) To invest the moneys of the Association not immediately required for its purposes in or upon such investments, securities or property as may be thought fit, subject nevertheless to such conditions (if any) and such consents (if any) as may for the time being be imposed or required by law and subject also to the provisions contained in the Memorandum of Association.

(o) To enter into all such negotiations and contracts and rescind and vary all such contracts and execute and do all such acts, deeds and things in the name and on behalf of the Association as Council may consider expedient for or in relation to any of the matters aforesaid or otherwise for the purposes of the Association.

(p) To delegate any of their powers (other than their powers under Article 70 hereof) to Committees consisting of such person or persons as the Council think fit and to make and impose upon such Committees such rules and

regulations and to vary the same from time to time as the Council think fit. Provided that no resolution of the Council shall have any effect or validity unless:

(i) a majority of the members present and entitled to vote thereat are Members of the Association; or

(ii) such a resolution is confirmed by the Council at a Committee of the Council specially for the purpose upon those actual members of the Council who are not members of the Committee which passed the resolution.

(q) To set up, constitute and regulate local branches of the Association consisting of Members of the Association in such places as they may think fit, and to authorise the Members of such branches to form councils consisting of Members of the Association to control and manage such local branches and to authorise the Members of such local branches or councils to co-opt persons as additional Members of their own branch, and to define the powers and duties of such branches and councils, and to make and impose bye-laws, rules and regulations for the administration and government of such branches and of such councils and to delegate any of their powers to such local branches and to such councils as Council think fit.

(r) To apply for or oppose the application by others for concessions, rights, charters and legislative acts and authorisations from any government or authority, and to apply for, oppose the application for or oppose or seek the revocation of patents.

(s) To appoint at any time and from time to time by power of attorney under the seal of the Association any persons to be the attorneys of the Association for such purposes outside the United Kingdom, with such powers, and for such period and subject to such conditions as the Council from time to time think fit, but so that the Council shall not be at liberty to delegate to any such attorneys any of the discretions vested in the Council by these Articles. Any such appointment may (if the Council think fit) be made of a Member or any of the members of any local branch established as aforesaid or of any company or of the members, directors, nominees or managers of any company or firm and any such power of attorney may contain such provisions for the protection or convenience of persons dealing with such attorneys as the Council think fit, and may authorise any such delegates or attorneys as aforesaid to sub-delegate all or any of the powers for the time being vested in them.

(t) To exercise the powers conferred by Section 35 of the Act, and such powers shall accordingly be vested in the Council. The Association may cause to be kept in any part of the world in which it transacts business a branch register of Members resident in such part of the world and the Council may from time to time make such provisions as Council think fit respecting the keeping of any such branch register.

(u) To make provision for compliance with any regulations which may be attached to the payment of any grant.

PROCEEDINGS OF THE COUNCIL

Quorum of the Council

33. The Council may meet together for the dispatch of business, adjourn and otherwise regulate their meetings and proceedings as Council think fit, and may determine the quorum necessary for the transaction of business. Until the Council otherwise determine, five elected members of the Council shall be a quorum.

Majority of the Members of the Quorum to be citizens of the United Kingdom

Notwithstanding that a minimum of five elected Members may be present, the Council shall only form a quorum if a majority of all the Members present are citizens of the United Kingdom and resident in the United Kingdom. No business of the Council having formed such quorum shall be transacted unless a majority of the quorum shall be citizens of the United Kingdom and resident in the United Kingdom.

Provided that

of Members

37. (1) The Council

until the

Meeting of the

election of Chairman

Article or the

not while holding

or be taken into account

retire by rotation

Meeting at which

(2) The Council

office shall be

(3) If their

should be

of the Council shall

38. The Council may

the Council. The Treasurer shall

Council following the

39. The Chairman or any three elected members of the Council

time, and the Secretary upon the request of

the Council shall, convene a meeting of the Council for

convened at the request of

the character of the business to be

shall be so given shall be

shall name an address at

notices served at such address shall

at any meeting of the Council shall

members present and voting at the

divided the Chairman shall

is entitled as a member of the Council.

40. A meeting of the Council at which a quorum is present and which

to exercise all or any of the

Articles of Association for

41. The meetings and proceedings of any

Council under Article 32(o) shall be governed by the provisions hereof

regulating the meetings and

applicable thereto, and are not

under Article 32(p).

42. All acts done by any meeting of the Council

Council or by any person acting as a member of the Council shall,

that it shall be afterwards discovered that

or continuance in office of the Council or

aforesaid or that they or any of them were disqualified

person had been duly elected

be a member of the Council or

SEAL

43. The Council shall

the purpose

(a) Of all appointments

(b) Of the names of the

the Council, and of the

each meeting

(c) Of all orders made by the Council and Committees of the Council;

(d) Of all resolutions and proceedings of General Meetings and meetings of members of the Association.

Inspection by members

41. Any such minutes as are required by clause 40 to be signed shall, if purporting to be signed by the chairman of the meeting at which the proceedings were had or by the chairman of the next succeeding meeting, be evidence of the proceedings recorded therein.

SECRETARY

Appointment of Secretary

42. The Council shall appoint a Secretary of the Association for such term, at such remuneration and upon such conditions as they may think fit; and any Secretary so appointed may be removed by them.

Duties of Secretary

43. The Secretary of the Association shall be responsible for keeping or causing to be kept the minutes of all meetings of the Association, of the Council and of Committees of the Council, for giving all notices required to be given by the Association or by the Council or any Committee of the Council, for the custody of the seal of the Association and for such other matters as may be prescribed by the Council. He may be removed from office by the Council, but shall be entitled to compensation for any loss of office or employment resulting from such removal.

Duties of Chief Executive Officer

44. Every president of the Association or of any Committee of the Council, the Secretary and Chief Executive Officer or other responsible person employed in the business of the Association shall, before entering upon the duties of his office, undertake in writing to observe strict secrecy respecting the business and affairs of the Association and of all its members, and respecting all knowledge or information which he may acquire concerning the business and affairs of any other person, firm or corporation which he may acquire in the course of his employment or duties as an officer of the Association, and not to use or divulge any such knowledge or information except so far as may be necessary in the proper discharge of his duties to the Association, unless he is required to do so by the Council or by a general meeting of the Association or by any court of law.

Restriction on members of Council and officers of the Association

45. Nothing in Articles 43 and 44 shall prevent the disclosure by any of the honorary members of the Council and of the Association or its officers of any information or proposal to be communicated by the Association or proved by the use of any information obtained by any member of the Council or of the Association not by virtue of his membership but in the ordinary course of his own business or the continued use of his previous ideas, and even in such business though caused or now substantially based upon such previous knowledge of the Association, subject to any rules and regulations which may from time to time be made by the Council with regard thereto.

Property in the Association's knowledge

46. Every endeavour of the Association engaged on research or other scientific work shall contract in writing that he will in consideration of his employment hold exclusively for the benefit of and assign to the Association at the cost of the Association all rights and ownership in and title to discoveries, inventions or other results arising in the course of such employment and specific to research or other scientific work.

SEAL AND NOTICES

Seal

47. The Secretary shall be responsible for the Council's common seal and shall not affix the same to any instrument except by the authority of a resolution of the Council or of a Committee of the Council authorised to affix the seal and in the presence of at least one member of the Council who shall sign every instrument to which the seal is affixed and shall make in the minute book an entry of the affixing of the seal and of the name of the member who has signed as aforesaid.

Service of notices

48. A notice may be served by the Association upon any member either personally or by sending it through the post in a prepaid letter addressed to such member at his registered address as appearing in the books of the Association and any notice so served by post shall be deemed to have been served on the day following that on which the letter containing the same is posted, and in proving such service it shall be sufficient to prove that the letter containing the notice was properly addressed and posted.

SEAL

49. The Council shall provide for the safe custody of the seal, and the seal shall never be used except by the authority of the Council or a Committee thereof previously given, and in the presence of two elected members of the Council at the least, who shall sign every instrument to which the seal is affixed and every such instrument shall be countersigned by the Secretary or some other person appointed by the Council.

Provision for seal

GENERAL MEETINGS

50. The Association shall in each year hold a general meeting as its Annual General Meeting in addition to any other meeting in that year, and shall specify the meeting as such in notices calling it, and not more than fifteen months shall elapse between the date of one Annual General Meeting of the Association and that of the next. The Annual General Meeting shall be held at such time and place as the Council shall determine.

Annual General Meeting

51. All general meetings other than Annual General Meetings shall be called Extraordinary General Meetings.

Extraordinary General Meetings

52. The Council may, whenever it thinks fit, convene an Extraordinary General Meeting and Extraordinary General Meetings shall also be convened on such requisition or, in default, may be convened by such requisitionists as provided by Section 132 of the Act. If at any time there are not sufficient members of the Council capable of acting and willing to form a quorum, any member of the Council or any two ordinary Members of the Association may convene an Extraordinary General Meeting in the same manner as nearly as possible as that in which meetings may be convened by the Council.

Circumstances in which Extraordinary General Meetings may be convened

53. An Annual General Meeting and a meeting called for the passing of a Special Resolution shall be called by twenty-one days' notice in writing at the least and a meeting of the Association other than an Annual General Meeting or a meeting for the passing of a Special Resolution shall be called by fourteen days' notice in writing at the least. The notice shall be exclusive of the day on which it is served or deemed to be served and of the day for which it is given, and shall specify the place, the day and the hour of meeting and, in case of special business, the general nature of that business and shall be given in manner hereinafter mentioned or in such other manner, if any, as may be prescribed by the Association in general meeting, to such persons including the Auditors as under these Articles or the Act are entitled to receive such notices from the Association.

Notice of Meeting

Provided that a meeting of the Association shall, notwithstanding that it is called by shorter notice than that specified in this Article, be deemed to have been duly called if it is so agreed—

(a) In case of a meeting called as the Annual General Meeting, by all the members entitled to attend and vote thereat; and

(b) In the case of any other meeting, by a majority in number of the members having a right to attend and vote at the meeting, being a majority together representing not less than ninety-five per cent of the total voting rights at that meeting of all the Members.

54. The accidental omission to give notice of a meeting to, or the non-receipt of a notice of a meeting by, any person entitled to receive such notice shall not invalidate the proceedings at that meeting.

Failure to give notice to person entitled

PROCEEDINGS AT GENERAL MEETINGS

55. The ordinary business of an Annual General Meeting shall be—

Business at an Annual General Meeting

(a) To receive and consider the income and expenditure account, the balance sheet, and the reports of the Council and the Auditors.

(e) To elect members of the Council in place of those retiring

(f) To appoint an Auditor or Auditors to hold office until the next Annual General Meeting

(g) To transact any other business which ought, pursuant to these Articles, to be transacted at an Annual General Meeting

Quorum for General Meetings

66. Every meeting of the Association shall be competent to proceed to business only if the Chairman or one of the Vice-Chairmen of the Council but should no such person be present or willing to do so, the meeting shall elect a Chairman from the members of the Council then present or if none such be present from the Members entitled to vote thereat.

Business at Annual General Meeting

67. No business shall be transacted at any Annual General Meeting unless a quorum of Ordinary Members is present at the time when the meeting proceeds to business save as herein otherwise provided. Save as herein otherwise provided, three Ordinary Members present in person shall be a quorum. For the purpose of this Article a corporation which is an Ordinary Member shall be deemed to be present if a duly authorised representative thereof is present in person.

Quorum for adjourned meetings

68. If within half an hour from the time appointed for the meeting a quorum is not present, the meeting if convened upon such requisition as aforesaid shall be dissolved, but in any other case it shall stand adjourned to the same day in the next week at the same time and place and if at such adjourned meeting a quorum as defined in Article 67 is not present, those Ordinary Members who are present shall be a quorum and may transact the business for which the meeting was called.

Voting at General Meetings

69. Every question except the election of Council shall submitted to a meeting shall be decided in the first instance by a show of hands, and in the case of an equality of votes the Chairman shall both on a show of hands and at a poll have a casting vote in addition to the vote to which he may be entitled as an Ordinary Member. Every Ordinary Member entitled to vote shall have one vote only whether on a show of hands or on a poll. This provision shall not apply to a corporation which is an Ordinary Member pursuant to Section 15(3) of the Act and duly authorised by such Ordinary Member pursuant to Section 15(4) of the Act to act as its representative.

Subscriptions in arrear

70. No Ordinary Member shall be entitled to vote if any subscription due from him shall remain in arrear for the space of one month.

Voting on resolutions

71. At any general meeting a resolution put to the vote of the meeting shall be decided on a show of hands unless a poll is (before or on the declaration of the result of the show of hands) demanded:

(a) By the Chairman, or

(b) By at least three Ordinary Members present in person or by proxy, or

(c) By any Ordinary Member or Ordinary Members present in person or by proxy and representing not less than one-tenth of the total voting rights of all the members having the right to vote at the meeting.

Unless a poll is so demanded a declaration by the Chairman that a resolution has on a show of hands been carried or carried unanimously or by a particular majority or lost or not carried by a particular majority, and an entry to that effect in the minute book of the Association shall be conclusive evidence of the fact without proof of the number or proportion of the votes recorded in favour of or against such resolution.

The demand for a poll may be withdrawn.

Procedure on a poll

72. Except as provided in Article 64 if a poll is duly demanded it shall be taken in such manner as the Chairman directs, and the result of the poll shall be deemed to be the resolution of the meeting at which the poll was demanded.

Time of poll

73. On a poll votes may be given either personally or by proxy.

64. A poll demanded on the election of a chairman or on a question of adjournment, shall be taken forthwith. A poll demanded on any other question shall be taken at such time as the Chairman of the meeting directs, and any poll other than that upon which a poll has been demanded may be taken pending the taking of any poll.

65. The instrument appointing a proxy shall be in writing under the hand of the appointer or of his attorney duly authorised in writing or, if the appointer is a corporation, either under its seal or under the hand of an officer or attorney duly authorised. A proxy need not be a Member of the Association.

66. The instrument appointing a proxy and the power of attorney or other authority, if any, under which it is signed or a notarially certified copy of that power or authority shall be deposited at the Office or at such other place in the United Kingdom as may be specified for that purpose in the notice convening the meeting not less than 48 hours before the time for holding the meeting or adjourned meeting at which the person named in the instrument proposes to vote or, in the case of a poll, not less than 24 hours before the time appointed for the taking of the poll, and in default the instrument of proxy shall not be treated as valid.

67. An instrument appointing a proxy shall be in the following form or a form as near thereto as circumstances admit:

"Holders and Powers Renewal Act, [illegible]

I [illegible]
in the County of [illegible] being a Member of the above-named Association, hereby appoint [illegible] of [illegible] or failing him [illegible] of [illegible] as my proxy to vote for me on my behalf at the [illegible] General Meeting of the Association to be held and at any adjournment thereof.

Signed this [illegible] day of [illegible] 19[illegible]

This form is to be used [illegible] in favour of [illegible] against [illegible]

Unless otherwise instructed the proxy will vote as he thinks fit.

*Strike out whichever is not desired."

68. The instrument appointing a proxy shall be signed by the appointer or, if such appointer is a corporation, under its common seal or the hand of its duly authorised officer or attorney, or if such appointer is a joint holder, by all the joint holders or any one of them.

69. A vote given in accordance with the terms of an instrument of proxy shall be valid notwithstanding the previous death or insanity of the principal or revocation of the proxy or of the authority under which the proxy was executed, provided that no intimation in writing of such death, insanity, revocation or transfer shall have been received by the Association at the Office before the commencement of the meeting or adjourned meeting at which the proxy is proposed to be used.

70. The Chairman may, with the consent of any meeting at which a quorum is present (and shall if so directed by the meeting), adjourn the meeting from time to time and from place to place, but no business shall be transacted at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place. When a meeting is adjourned for 30 days or more, notice of the adjourned meeting shall be given as in the case of an original meeting but it shall not be necessary to give notice of an adjournment or of the business to be transacted at an adjourned meeting.

ACCOUNTS

Proper Accounts to be kept

71. The Council shall cause accounting records to be kept in accordance with Section 12 of the Companies Act 1976.

Where books of account kept

72. The accounting records shall be kept at the Office or (subject to Section 12 (3) and (7) of the Companies Act 1976) at such other place or places as the Council think fit, and shall at all times be open to inspection by members of the Council.

Inspection of Accounts and books of the Association

73. The Council may from time to time determine whether and to what extent and at what times and places and under what conditions or regulations the accounts and books of the Association or any of them shall be open to inspection by Members.

Accounts to be laid before the Association in General Meeting

74. The Council shall from time to time in accordance with Sections 150 and 157 of the Act and Sections 1, 6 and 7 of the Companies Act 1976 cause to be prepared and to be laid before the Association in general meeting such income and expenditure accounts, balance sheets, group accounts (if any) and reports as are referred to in those Sections. Any balance sheet shall be signed on behalf of the Council by two Members of the Council of the Association. The Auditors' report shall be open to inspection and shall be read before the Association in general meeting in accordance with Section 14 of the Companies Act 1967.

Copy documents to be sent to Members

75. A copy of every balance sheet (including every document required by law to be annexed thereto) which is to be laid before the Association in general meeting, together with a copy of the Auditors' Report and the Report of the Council, shall not less than twenty-one clear days before the date of the meeting be sent to every Member, and every holder of debentures of the Association, and to the Auditors. Provided that this Article shall not require a copy of these documents to be sent to any person of whose address the Association is not aware or to more than one of the joint holders of any debentures.

AUDIT

Auditors

76. Auditors shall be appointed and their duties regulated in accordance with Section 161 of the Act, Section 14 of the Companies Act 1967 and Sections 13 to 18 of the Companies Act 1976.

NOTICES

Service of Notices on Members

77. A notice may be given by the Association to any Member either personally or by sending it by post to him at his registered address, or (if he has no registered address within the United Kingdom) at the address, if any, within the United Kingdom supplied by him to the Association for the giving of notices to him. Where a notice is sent by post, service of the notice shall be deemed to be effected by properly addressing, prepaying and posting a letter containing the notice and to have been effected at the expiration of 48 hours after the letter is put into the post as a pre-paid letter. The signature to any notice to be given by the Association may be written or printed.

Address registered address not in the United Kingdom

78. Each Member who has not a registered address within the United Kingdom shall from time to time notify in writing to the Association an address in the United Kingdom which shall be deemed his registered place of address within the meaning of the last preceding clause. If he shall not have named such an address he shall not be entitled to any notices.

Where notice to be advertised

79. Any notice required to be given by the Association to the Members or any of them and not expressly provided for by these Articles shall be sufficiently given if advertised once in one London morning newspaper.

80. Notice of every General Meeting shall be given [illegible] hereinbefore authorised to the Auditors and to every Member [illegible] Member who are disentitled under these Articles to [illegible] of General Meetings from the Association.

81. Every [illegible] except where otherwise [illegible] provided [illegible] be signed by the person or persons [illegible] Secretary or be left at the Office [illegible] forwarded to him at such Office by post [illegible] such notice or application shall be [illegible] Secretary of the [illegible]

[illegible]

82. Every member of the Council, Manager, Secretary [illegible] servant of the Association shall be [illegible] by the [illegible] shall be the duty of the members of the Council [illegible] of the funds of the Association to pay all costs, losses and expenses including travelling expenses which any such officer or servant may incur or be [illegible] entered into or act or thing done by him [illegible] discharge of his duties. But this Article shall only [illegible] are not avoided by Section 201 of the Act.

ARBITRATION

83. If and whenever any difference shall arise between the Association and any of the Members or their executors, administrators [illegible] of any of the Articles herein contained or any act, matter or thing made or done or to be made or done or omitted or in regard to the rights and liabilities arising hereunder or arising out of the relation existing between the parties by reason of these Articles or of the Act or any of them, such difference shall be forthwith referred to two arbitrators, one to be appointed by each party in difference, or to an umpire to be chosen by the arbitrators before entering on the consideration of the matters referred to them, and every such reference shall be conducted in accordance with the provisions of the Arbitration Act, 1940 [illegible]

WINDING UP

84. The provisions of paragraph [illegible] of the Memorandum of Association relating to the winding up and dissolution of the Association shall [illegible] and have effect as if the same were repeated in these Articles.

RUBBER AND PLASTICS RESEARCH ASSOCIATION OF GREAT BRITAIN

The Rules

I. ORGANISATION

1 The affairs of the Association are managed by the Council which may exercise all such powers and do all such acts and things as may be exercised or done by the Association and are not by these Rules required to be exercised or done by the Association in general meeting.

2 The Council may appoint such Committees as it thinks fit and may delegate to any such Committee any of the powers exercisable by the Council. All acts and proceedings of any such Committee shall be reported to the Council as soon as practicable.

3 Those Committees which are the present standing Committees are:

(a) Technical Co-ordinating Committee

(b) Exploitation of Developments Committee

(c) Finance Committee

(d) Establishments Committee

4 The general direction and supervision of the work and staff of the Association is the responsibility of the Director and Chief Executive ("the Director") who shall report to the Council and shall exercise such powers and perform such duties as may be delegated to him by the Council and as are set out in these Rules or in the Standing Orders made from time to time by the Council.

5 (1) The Council may appoint an advisory board ("the Board") whose function shall be to advise the Director on matters connected with the work of the Association and to perform the duties assigned to it from time to time by the Council. The Board shall not have any powers of a Committee of the Council.

(2) If and for so long as such an advisory board shall not be in being all references in these Rules to the Board or to any committee thereof or to any resolution of the Board or thereof by the Secretary shall be deemed to be a reference to the Director.

6 The composition of each Committee and of the Council and the appointment and retirement of members thereof shall be determined by the Council.

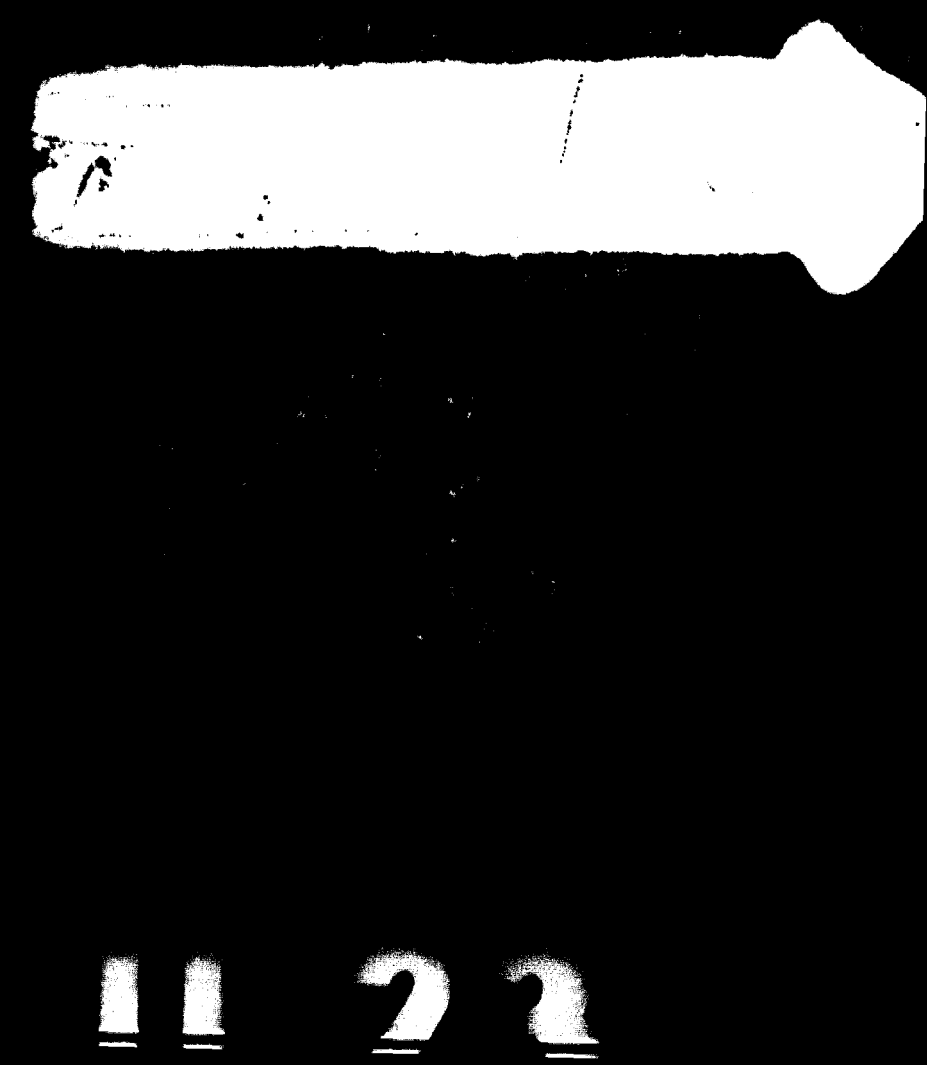
II. MEMBERSHIP

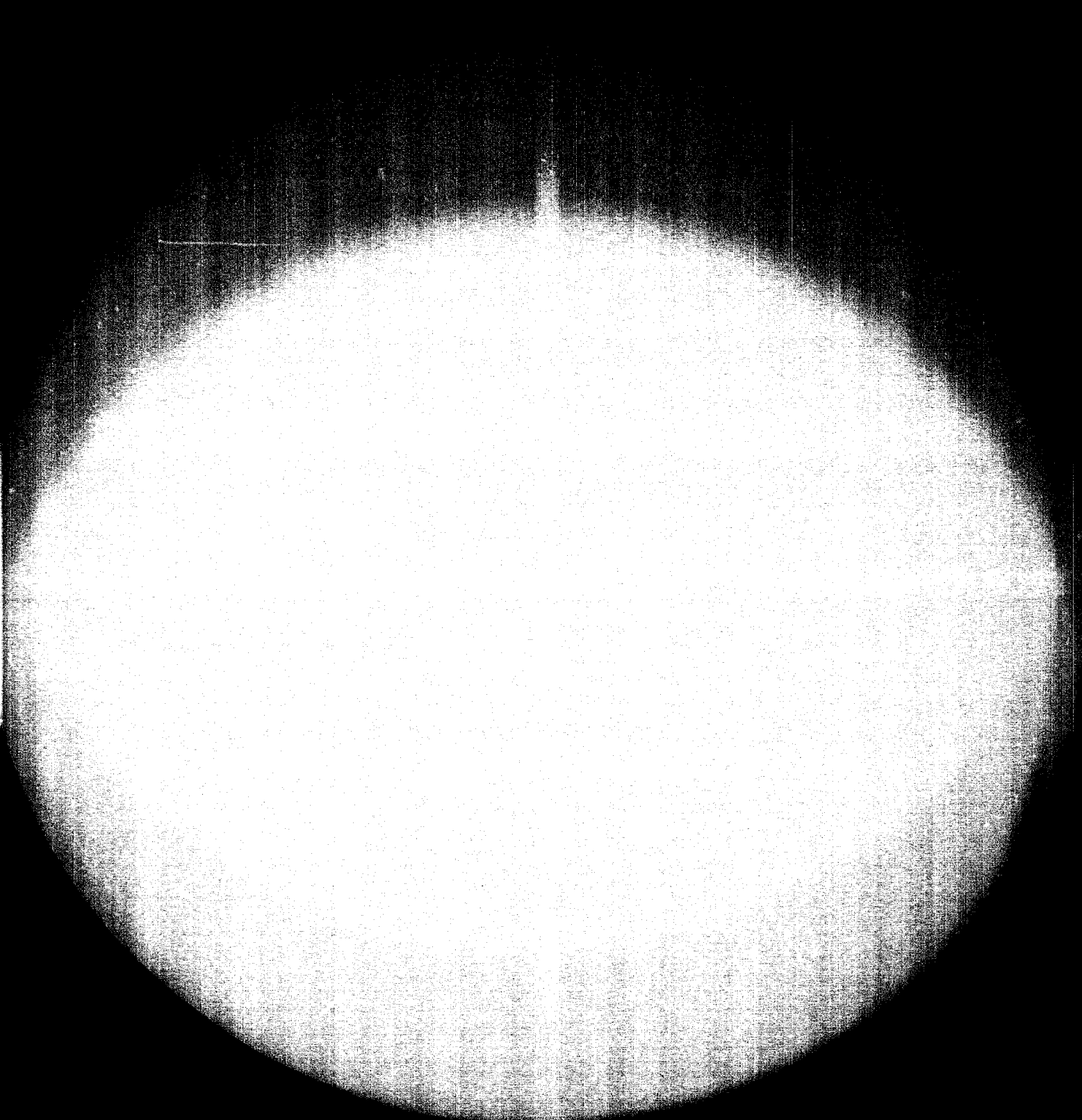
7 No individual or corporation shall be admitted to membership unless an application for membership in such form as the Council may from time to time prescribe shall have been signed by him or on his behalf setting out any particulars required by the Rules or by the Council and given together with such further particulars as the Council may from time to time prescribe and the Council may in any particular case require satisfactory evidence.

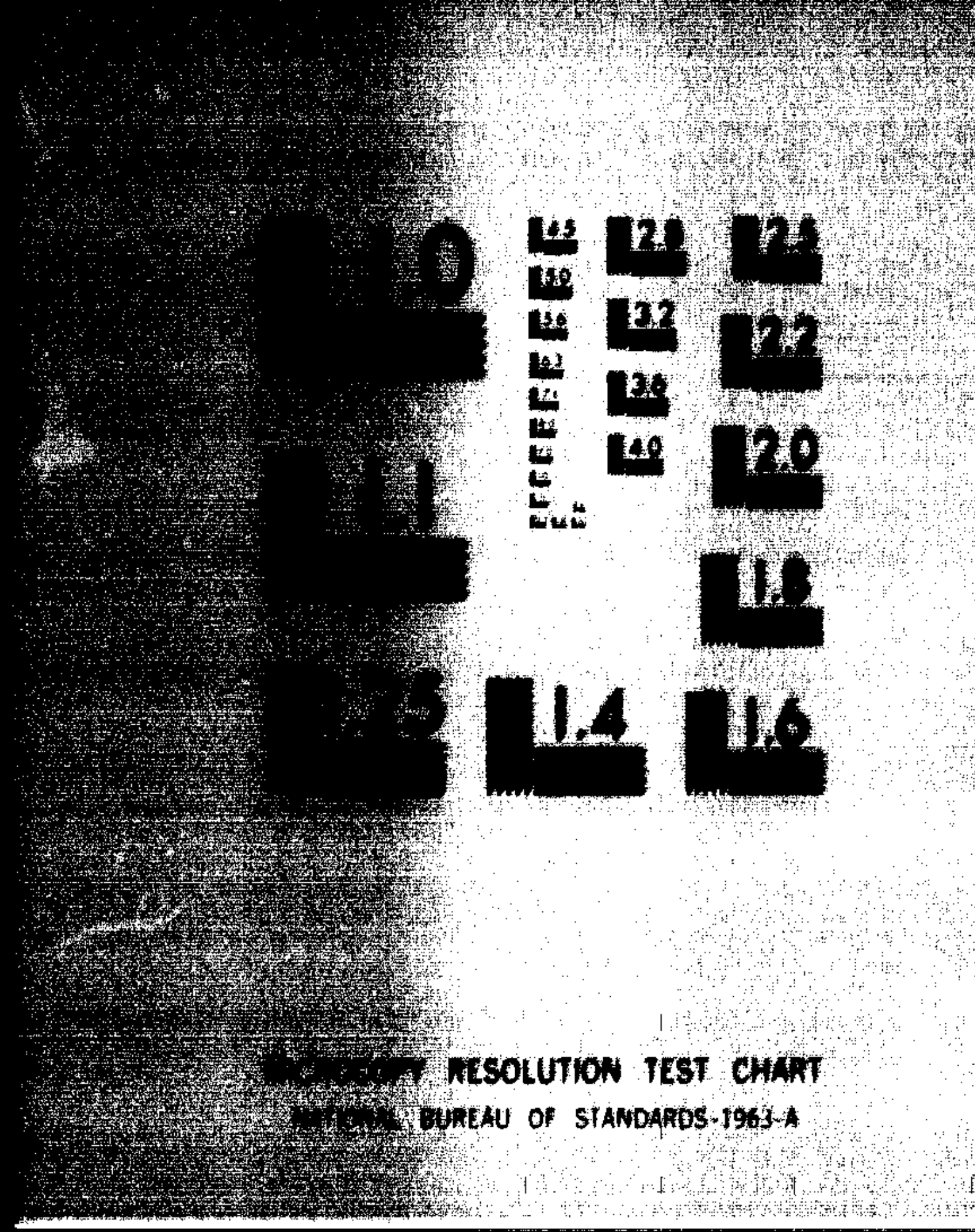
8 Entrance fee (if any) and subscriptions for the various classes of membership of the Association shall be fixed from time to time by the Council.

9 Every Member of the Association shall

(a) Pay to the Association the entrance fee (if any) and annual subscription fixed by the Council. All payments shall be due within one month of the Council's acceptance of an application



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for membership or revising the rate of subscription and annually on each 1st January thereafter. The first subscription may be reported out to the period of the calendar year unexpired, but no less than one year's subscription shall be paid on joining, and proportional credit held against the second year's subscription.

(b) Observe the provisions of the Memorandum of Association, Articles of Association and Bye-Laws and any rules or regulations of the Association or its Divisions or Committees for the time being in force, and any amendments thereto.

10. A corporation desiring to be a Member shall nominate on the appropriate form an individual to act as its Representative. A corporation may from time to time revoke the nomination of such Representative and nominate another in his place. All nominations and revocations of nominations by a corporation shall be in writing duly signed and shall not take effect until communicated to the Association. Upon receipt by the Secretary of any revocation of the nomination of a Representative such Representative shall cease to act or be recognised as a Representative of such Member.

III. RIGHTS OF MEMBERSHIP

11. Every Member will on request be supplied with a copy of the Memorandum of Association, Articles of Association and Bye-Laws and a copy will be provided to every new Member.

12. If any Member has any proposal to make or any matter to bring before the Council he shall give written notice thereof to the Secretary not less than six weeks prior to the next scheduled meeting of the Council.

13. (1) A Member or one or more of his staff is entitled by prior arrangement to visit the laboratories and/or library of the Association for discussion of particular problems with the Director or members of the Staff of the Association delegated by the Director.

(2) Subject to the exigencies of the Association's work and by prior arrangement a Member may send one or more of his staff for a short period of instruction in the laboratories and/or library of the Association, for which the Association may make a charge.

(3) A Member or one or more of his staff may by appointment visit the library of the Association to make literature searches; special books can be obtained, as well as photocopies of documents, upon payment of any charges incurred. Any rules of the library must be strictly observed.

(4) A Member in Great Britain may request a special visit by one or more of the Association's staff to his works or other mutually convenient place for advice on or discussion of a particular problem, for which service the Association may make a charge.

14. (1) The Association may with the prior written consent of the Board under the hand of any member of the Board undertake work, whether of an investigatory or consultative nature or of any other nature whatsoever (any such work being referred to in this Bye-Law 14 as "requested work") on behalf of any Member and furnish such Member with reports thereon. Requested work may be undertaken upon such terms and conditions, if any, as the Council may from time to time prescribe.

(2) Where the parties to any actual or anticipated dispute, litigation or arbitration include any one or more Members of the Association, the Association is not as a matter of policy willing, unless so compelled by law, to lend any assistance to any person (whether or not a Member of the Association) as against any Member, to undertake any requested work commissioned for use against any Member, or to permit any requested work or any report thereof to be used by any person against any Member.

(3) Requested work is undertaken only on the express basis, hereby accepted by the Member or Members on whose behalf it is undertaken, that, so far as it is lawfully possible to avoid such liability, no liability of any nature either to such Member or Members or to any third party and whether founding in contract or in tort or otherwise shall attach to the Association or to any of its staff arising out of or in connection with the undertaking thereof or the preparation or furnishing of reports thereon.

(4) Requested work will normally be undertaken at a charge to be determined by the Board. The Board may submit to the Member an estimate of the charge for undertaking such work in which event, no such work need be commenced by the Association until receipt by the Association of the written acceptance by the Member of such estimate. The Association may at any time revise any such estimate.

(b) the number of foreign representatives nominated together with the number of foreign representatives on the Council not retiring at the meeting not exceeding five,

a resolution that the election of all nominated persons shall be put in one motion has been agreed to by the Meeting without any vote being given against it. Where the number of nominated persons is less than the number of vacancies to be filled additional members may be proposed and elected at the Meeting. Ballot papers shall be checked and counted by scrutineers who will be appointed by the Chairman. The scrutineers so appointed will declare the results at the Annual General Meeting.

22. (1) Should any such ballot result in the presumptive election to the Council of more foreign representatives than the number of vacancies for foreign representatives, there shall be deemed to have been elected to the Council the foreign representatives, equal in number to the vacancies for foreign representatives, for whom the highest numbers of votes shall have been cast in the ballot. The remainder of the foreign representatives nominated shall be deemed not to have been so elected; and the result of the ballot shall then be calculated as if such remainder had not been candidates.

(2) In the case of an equality of votes in respect of candidates for a vacancy the person to be elected shall be determined by lot.

23. Any doubt or dispute as to the meaning or application of the procedure set out in Bye-Laws 21 and 22 hereof shall be determined by the Chairman of the Meeting, whose determination thereof shall be conclusive and binding.

VI. FINANCIAL YEAR

24. The Financial Year of the Association is from 1st January to 31st December.

VII. INTERPRETATION

25. Nothing contained in these Bye-Laws shall be construed in any way inconsistently with the provisions of the Association's Memorandum or Articles of Association; and words and expressions therein defined shall where used in these Bye-Laws and unless the context otherwise requires bear the same meanings.

(5) All rights of copyright of, in or arising out of any requested work or any report thereof shall be and at all times remain vested in the Association unless and except to the extent that they may be assigned with the written consent of the Board under the hand of the Secretary. No Member may reproduce or abstract for advertising or otherwise any report of any requested work without the prior written consent of the Board under the hand of the Secretary.

(6) If any requested work undertaken for any Member or Members is thought by the Association to be likely to be of interest to the general body of Members, an agreed part of the cost of such work may, with the prior written consent of the Member or Members on whose behalf such work is to be or has been undertaken, be borne by the Association. In such event, the Association reserves the right to publish the results of such work to all Members of the Association after such period subsequent to the issue of the report thereof to the Member or Members initiating such work as may be agreed between such Member or Members and the Association or, in default of such agreement, a period of six months thereafter.

(7) The Association shall be entitled to publish at any time the results of any requested work which has been carried out without charge to any Member.

15. The statutory non-financial books of the Association together with a copy of each of the annual audited accounts for the preceding three complete years may be inspected by any Member by prior arrangement on any working day between 10 a.m. and 4 p.m. (not more than two such inspections may be made on any one day). These books and accounts may not be inspected during the fourteen days immediately preceding the Annual General Meeting or the seven days immediately preceding any other General Meeting except as authorised by any statutory provision.

IV. CONFIDENTIALITY

16. Every Member of the Association shall treat as wholly private and confidential all information and documents received from the Association and shall not disclose or transmit the same to any person not a Member of the Association without the prior written authorisation of the Board. The restriction in this Bye-Law shall not apply to any such information or documents which by reason of publication or otherwise shall lawfully have become publicly available.

17. The Association shall treat as wholly private and confidential all information and documents received from any Member and shall not disclose or transmit the same to any person (not being an officer of the Association), whether or not a Member of the Association, without the prior written authorisation of the Member concerned. The restriction in this Bye-Law shall not apply to any such information or documents which by reason of publication or otherwise shall lawfully have become publicly available.

V. ELECTION OF OFFICERS AND MEMBERS OF THE COUNCIL

18. Not less than forty-two days before the Annual General Meeting the Secretary shall send to every Ordinary Member of the Association a list of those members of Council due to retire under the Articles together with a list of their attendances at all meetings of Council and Committees, and shall invite Ordinary Members to submit nominations to fill the vacancies created by the retirements.

19. Nominations to the Council together with the written consent of the nominee must reach the Secretary not less than thirty-five days before the Annual General Meeting. They must be signed by or on behalf of the Ordinary Member making the nomination; no person who is not an Ordinary Member or the registered Representative of an Ordinary Member may be nominated.

20. With the notice convening the Annual General Meeting the Secretary shall send a list of nominations duly made.

21. The Election to the Council of nominated persons shall, subject to Bye-Law 22 hereof, be by ballot at the Annual General Meeting unless:—

(a) the number of nominations received being not greater than the number of vacancies to be filled, and

APPENDIX 14

SCHEDULE OF ACTIVITIES

VENUE: PHILIPPINE PLASTIC INDUSTRIAL ASSOCIATION, INC.
Rear Block, 2nd Floor, Consolidated Bank Bldg.
No. 317 Rizal Avenue Extension, Caloocan City
Tel. Nos. 35-98-55; 34-30-12

DAY 1
December 3, 1980 (Wenesday)

8:30 A.M. - 9:30 A.M.		Registration
9:30 A.M. - 10:00 A.M.		Opening Ceremonies
	Guest Speaker :	Mr. Quintin G. Tan Acting Director, BSMI
10:00 A.M. - 10:15 A.M.		B R E A K
10:15 A.M. - 12:00 P.M.		Dr. K.E. Andrews, MSc.,Phd., Chem.,FPRI UNIDO Consultant
	Resource Speaker:	Plastic Technology
12:00 P.M. - 1:00 P.M.		L U N C H
1:00 P.M. - 2.00 P.M.		Board of Investments Forum
	Resource Person	Atty. Jaime Descaya Head, Legal Department
2:00 P.M. - 3:00 P.M.		Mr. Ignacio G. Salcedo,Jr. Director
	Resource Person:	Organic Chemical Industries Dept.
3:00 P.M. - 3:15 P.M.		B R E A K
3:15 P.M. - 5:00 P.M.		Ministry of Trade
	Resource Persons:	Mr. Cesar D. Cueto Officer-in-charge Product/Commodity Analysis Div.
		Mr. Francisco Valoda Officer-In-Charge Bureau of Internal Trade Relations

DAY 2
December 4, 1980 (Thursday)

8:30 A.M. -	10:00 A.M.	Bureau of Customs Forum
		Resource Speaker: Atty. Edmardo Dayot Chairman-Liaison Group Bureau of Customs
		Resource Persons: Mrs. Virginia Flores Head, Bonded Warehouse Branch
		Atty. Hermogenes Alvance Chief, Formal Entry Division Port of Manila
10:30 A.M. -	10:45 A.M.	B R E A K
10:45 A.M. -	12:00 P.M.	Development Bank of the Phils. Forum
		Resource Person: Ms. Yolanda dela Cruz Manager, IPD II, DBP
12:00 P.M. -	1:00 P.M.	L U N C H
1:00 P.M. -	3:00 P.M.	Phil. Investment Systems Orgn. Forum
		Resource Person: Mr. Glicerio Sicat Senior Vice-President
3:00 P.M. -	3:15 P.M.	B R E A K
3:15 P.M. -	4:15 P.M.	Small Business Advisory Center Assistance Program
		Resource Person: Mr. Renato B. Viray SEAC IV Conculant Bur. of Small and Medium Industries Ministry of Industry
4:15 P.M. -	5:00 P.M.	Closing Ceremonies
		Guest Speaker: Mr. Ivan Pluhar Senior Industrial Development Field Advisor U.N.I.D.O.

Appendix 15

PROJECT IN THE PHILIPPINES

INTERNAL

JOB DESCRIPTION

DP/PHI/77/004/11-01/A/31.3.D

Post title	Expert in Technical Assistance to Small and Medium Scale Plastics Industries
Dution	Three months, with possibility of extension
Date required	As soon as possible
Duty station	Manila, with travel within the country
Duties	The expert will be attached to the Commission on Small and Medium Industries (CSMI) of the Ministry of Industry. He will report to the Project Director of a project team composed of representatives of seven CSMI member agencies and will specifically be expected to:

1. Assist in the implementation of Phase I of the Project which is essentially an assessment of the needs related to quality and productivity improvement of the small and medium industries sector of which one target sector is the plastics industry.

2. Together with local experts in this industry, travel extensively throughout the country conducting plant visits to assess the needs (consultancy, skills, design, equipment, facilities, etc.) of the industry as well as provide on the spot consultancy to the owners of these enterprises.

3. Conduct industry conferences workshops, to be participated in by entrepreneurs in the industry to fully assess the needs of the industry. After the survey, he will share his views with the local counterpart organization on the type of developmental programmes needed by the industry considering the needs identified.

The expert will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

QUALIFICATIONS: Chemical engineer. Extensive experience in a supervisory position in plastics production. Extensive knowledge of mold design and process control for plastic consumenr product and packaging materials required.

LANGUAGE: English

BACKGROUND UNIDO is placing strong emphasis on the development of small and medium scale industries (SMIs) in developing countries with a view to strengthening their capabilities and thus contribute to the acceleration of the industrialization processes in these countries.

In the country, where the Government is exerting strong efforts to develop the SMI sector, there is a felt need to view the quality and productivity improvement concern in a broad perspective to determine how an integrated approach may be used to provide assistance on quality and productivity improvement to the resource limited SMIs.

This project will be implemented in two phases by the Commission on Small and Medium Industries, the Government body which is in charge of co-ordinating efforts of all Government institutions geared toward the development of the SMI sector. Phase I will be a survey of the needs of the SMI sector related to quality and productivity improvement. Phase II will be the implementation of response programmes considering the needs identified in Phase I. It will end with the design of a Master Plan toward the attainment of an appropriate Quality Control and Productivity Improvement System. The Master Plan will define the nature of the programmes needed by the industry and will also define the infrastructure support needed to carry out the programmes.