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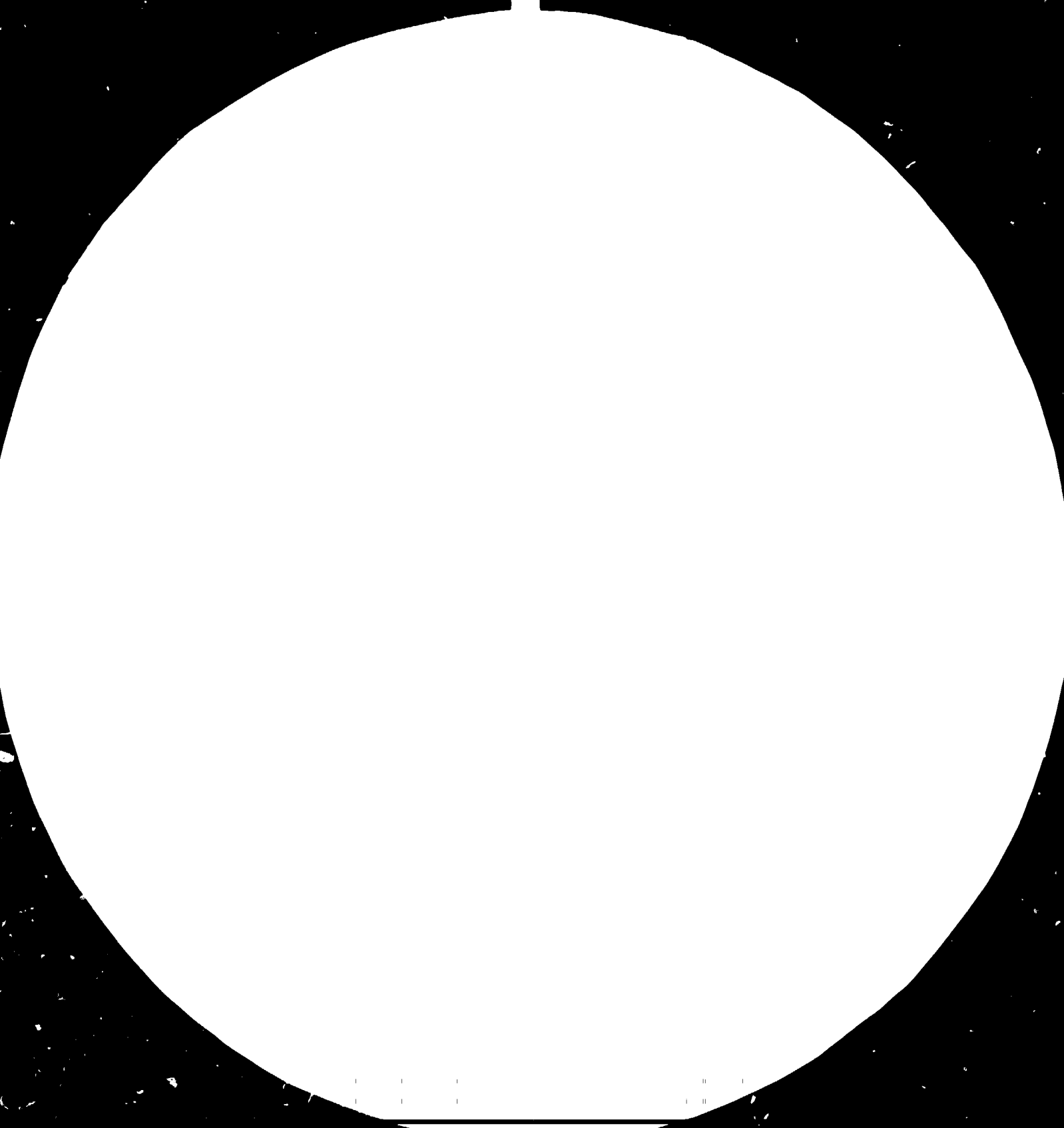

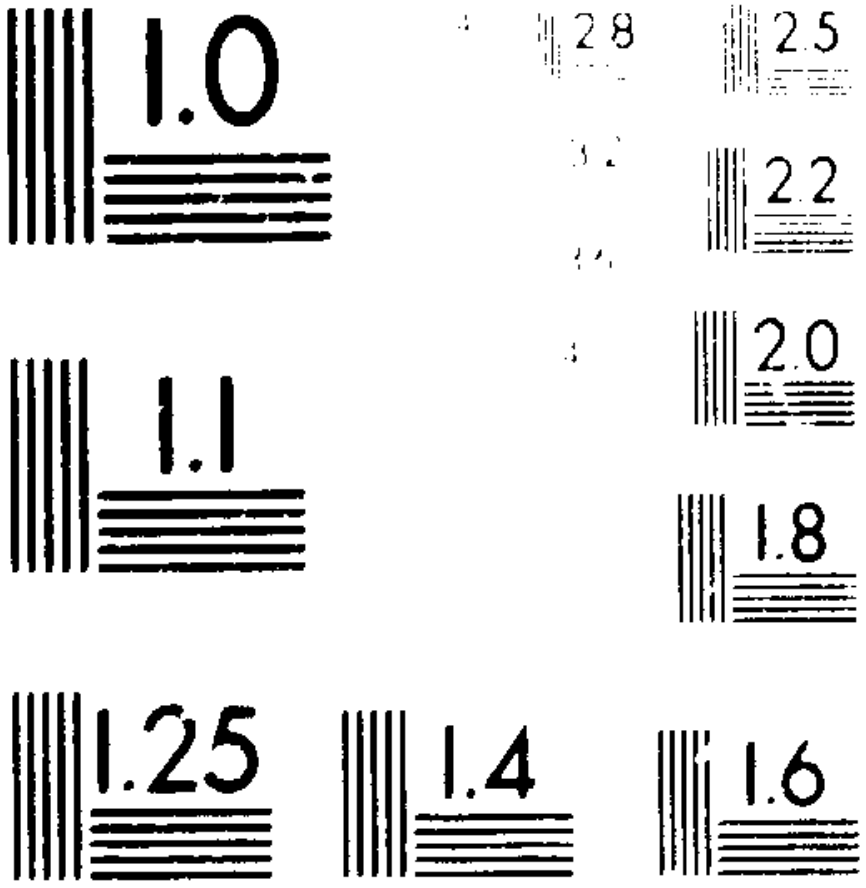

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31 December 1984
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Philippines.

FOOTWEAR AND LEATHERGOODS TRAINING AND DEMONSTRATION CENTRE
US/PHI/79/109
PHILIPPINES

Mission Terminal Report

Prepared for the Government of the Philippines
by the United Nations Industrial Development Organization
acting as executing agency for the United Nations Development Programme

Based on the work of Alfred Lesuisse
Leather Technologist

United Nations Industrial Development Organization
Vienna

This report has not been cleared with the United Nations Industrial Development Organization which does not, therefore, necessarily share the views presented.

ACKNOLEDGEMENTS

The Expert would like to take this opportunity to express his sincere thanks to the NMYC Directorate, to the Chief of Centre,FLTDC, to the Counterparts and to the colleagues UNIDO Experts, who at all times supported the Expert's work.

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1. INTRODUCTION

In order to help the Philippine Footwear and Leathergoods Industries, which are organized in small and medium size units, the establishment of a Footwear and Leathergoods Training and Demonstration Centre (FLTDC) seemed necessary to make footwear and leathergoods manufacturers familiarized with modern production techniques and adequate management tools.

On 1st November 1979, a project proposal was presented through the United Nations Industrial Development Organization (UNIDO) Programme Development and Evaluation Section for the approval of the Federal Republic of Germany (FRG), who had shown interest in the project.

The project was approved officially on 8th May 1980 by the Federal Republic of Germany and on 25th June 1980 by the United Nations Industrial Development Organization (UNIDO).

One of the objectives of the project was to improve the quality of the locally produced leather particularly by assisting the tanning industry in the production of suitable leather for quality footwear and leathergoods manufacturing.

Therefore the creation of a quality control laboratory was decided with the aim to give technical assistance via testing and evaluation of materials.

This was also one of the recommendations of a four months mission (February - June 1982) within the Bureau of Small and Medium Industries (BSMI)- UNIDO Quality Control and Productivity Improvement Project no. DP/PHI/77/007/11-03.

A Leather Technologist Expert was assigned to the project under post 11-08, his duties were defined in the Job Description (ANNEX 1).

The Expert assumed duties as from the 2nd April 1983, for an initial assignment of nine months, which was subsequently extended on two occasions by three and nine months, lengthening the assignment to a total of 21 months ending on the 31st December 1984.

A Prelimianry Report was delivered on 11 May 1983 and two intermediate reports respectively end of August 1983 and end of March 1984.

This Final Mission Report contains the expert's activities, findings and recommendations.

2. ACTIVITIES

2.1. The Laboratory

A quality control laboratory was constructed and equipped.

After selection of a place having a total floor area of 70 sq.m., a lay-out was prepared. The total area was broken down into the following:

- a physical testing room (36 sq.m.) which was insulated by double walling and ceiling, double doors and glass windows to keep and maintain an atmosphere of 20 $\pm$ 2°C and a relative humidity of 65 $\pm$ 2%, and provided with electric outlets.

- a chemical laboratory (34 sq.m.) with exhauster chimney in non-corrosive material, water pipes, faucets and sinks, with working tables with ceramic tops, with electric outlets.

Both rooms were provided with furniture, desks, tables, racks, cabinets, etc.

It was initially expected to expand the place to a complementary space for office and library, but this was not realized.

The UNIDO ordered equipment (ANNEX 2) were installed, two air conditioners were locally bought, cutting dies, specimen holders, grips and a shaking machine were locally contructed. Small equipments for fastness testing and for the chemical laboratory were home made.

After training of the counterparts, consultation work for the industry was started.

The quality control laboratory is now operational and can perform a wide range of tests on leather and other materials.

However, some equipment are still missing, mainly for testing elastomeres. Some equipment have to be replaced to be in accordance with international standards.

2.2. The Counterparts

Job Descriptions for Chief of Quality Control Laboratory, for Senior Laboratory Staff Member and for Laboratory Assistant were submitted (ANNEX 3).

Two counterparts were assigned and trained on:

- Hides and skins
- Tannery operations
- Chemical, physical and fastness testing of leather
- Leather evaluation and recommended guidelines values.
- Dynamometry, recording, computation and evaluation of graphs.

- Elastomeres: types, properties, testing
- Adhesives: types, properties, testing
- Fabrics, textiles, boards, coated fabrics, non-woven materials. (ANNEX 4).

Training was also given in the field during factory visits, contacts with chemical companies, government agencies and research institutions.

Both counterparts are well familiarized with testing of materials, they have acquired knowledge on selecting of tests and interpretation of results. Of course, they need more expertise, but this will come with time, experimentation and practice.

A three month fellowship is programmed for the senior counterpart at the Ducth Leather Institute TNO.

2.3. Consultation-Extension

At the end of the Expert's mission, more than two hundred consultations were given.

More than half of the consultations were for tanners, followed by shoefactories, government agencies, others and leathergoods.

ANNEX 4 gives, as per 5 December , the repartition of consultations per subject, per type of consultation and the list of clients.

Assistance in factories is the main activity followed by documentation/information.

As most of the consultations are consequences of factory assistance, it must be emphasized that the activity of the laboratory can only be maintained and developed by continuous contacts with the industry, hence, the importance of extension services and the need of periodical visits to the factories.

The documentation/information is also an important activity of the laboratory. There is a need to improve the sources of information through a well-established technical and market information library.

Some equipment and facilities are still missing to perform some important tests on materials other than leather, like flexing endurance and abrasion on rubber and elastomeres, viscosity of adhesives and testing of threads.

In the tanneries, the improvement of the quality of produced leathers requires often a fundamental change of the process technology, of the equipment or of the factory's lay-out to be efficient, this needs a long term assistance and a good cooperation with the tanner willing to invest and to take drastic measures. This is difficult to obtain and only in two occasions, it was possible to give assistance on a large scale for two snake skins tanneries as described in the following paragraph.

2.4. Assistance to Snake Skins Tanneries

2.4.1. Reynaldo Chua Tannery, Zamboanga City

The activities of this company were restricted to collecting and to some extent pickling of skins. In the area of Zamboanga, the availability of watersnakes is evaluated at 20,000 skins per week. Water and seasnake skins are a valuable raw material. The skins have flat scales with an attractive pattern. The supply of water snakes is constant, not like for other snakes were supply depends from hunting.

In August 1983, a two week assistance was given to start with chrome, vegetable/syntan tanning, dyeing and finishing of snake skins. Complementary equipment were bought and follow-up was given during the monthly visits of Mr. Chua to the Centre.

Mr. Chua is now the leading tanner of snake skins in the Philippines. Part of the production is exported in wet blue or crust to Italy and part is dyed and finished in a wide range of colours and effects for local consumption.

At the end of expert's mission, a ten days assistance is programmed to start with shark and fish skins tanning.

Assistance was also given to Mr. Chua in cooperation with the University of the Philippines for the production of water based latex. There are plantations of Heveas and production of dry latex in the island of Basilan, near Zamboanga.

2.4.2. Eurolinea Philippines

Eurolinea is a shoe factory located in the free zone of Mariveles,Bataan, working exclusively for export. They showed interest for a snake skins tannery. After a feasibility study, a list of equipment and chemicals, and a plant layout were suggested and approved.

Development work was done in cooperation with the Bureau of Animal Industry (BAI) and after preliminary trials a semi-industrial production was started at the Pilot Plant of BAI.

End of September, the Bataan factory was ready and since then, a production of 100 to 200 skins per day is going on.

The foremen and one laboratory assistant were trained at FLIDC and at BAI.

It is intended to increase the production upto 1,000 skins per day in the beginning of 1985.

2.5. Factory Visits

Since December 1983, weekly visits to tanneries on the area of Meycauayan and the Bulacan province were scheduled.

Some thirty tanneries were visited, most of them were provided with technical assistance.

Small scale tanners in the province of Ilocos Norte were also visited. They are concentrated in San Nicolas and are working with very primitive methods, producing one or two pieces sole or tooling leathers a week. All of them are over the fifties, their children are not interested in tannery business so that they may disappear in a next future.

In March 1984, on request of the Marikina Footwear Manufacturers Association, footwear factory visits were alternated with tannery visits.

It is evident, that the Centre has to go to the industry. The difficulties of communications (distance, absence of telephone, slow mail, interpretation and in some cases translation of reports) and the necessity for medium and small scale tanners to stay in their factory hinder them to come to the Centre.

Some visits were also paid to chemical companies, unfortunately, by lack of time, the establishment of links with the chemical industry was only partially achieved.

2.6. Training and Lectures

- A training course on leather science and technology and on quality control was given for four researchers of the Bureau of Animal Industry (BAI) from 13 to 14 February 1984.

- A training course on snake skins tanning dyeing and finishing was given for two foremen of a shoefactory (5 to 9 March 1984).

- A training course on tannery technology and leather was given for Manila Merchants Incorporated, Manels Shoe Factory and the Counterparts of FLTDC shoe section (30 April and 7 May 1984).

- A training course on leather was given in two sessions for 20 members of a department store Shoemart (July - August 1984).

- A 20 hours course on leather science and technology was given for staff members of National Institute for Science and Technology (NIST) (August - September 1984).

- A training on snake skins tanning, dyeing and finishing for tanners and consumers, 19 - 23 November 1984. Part of those training courses was given by the counterparts.

- A training course on adhesives is scheduled in the beginning of December for the FLTDC counterparts of shoe section.

- A lecture on Quality Control during the 1st Footwear Seminar in Marikina in August 1983, was given. That lecture was afterwards translated in Tagalog.

- One lecture on Materials during the Biñan Seminar (9 Sept. 1984) was given by one of the counterparts.

- One lecture for J.P. Coats on leather was given by one of the counterparts.(october 25, 1984).

2.7. Research and Development

With the restricted possiblities of the laboratory some developement work was done on:

2.7.1. Snake skin tanning

As already mentioned (2.4.) trials were made in preparation and combination with the assistance to tanners.

Fishing is an important activity in the archipelago of the Philippines, part is seafishing and part is culture and harvesting in fishponds. In both fishings there are significant harvest of snakes. As snake meat is not consummed the majority of snakes fetched by the fishermen are thrown away, unless there is a possiblity of collection and valorization.

Valorization of watersnake skins is interesting because:

- the supply is constant, not like for other snakes were supply depends from hunting.
- the investments for a tannery up to wet - blue or crust and even for dyeing and finishing are rather low.
- the consumption of chemicals compared with that for usual leather, is low.
- the processing of watersnakes is labour intensive because of their small size (50-60 cm. long and 4-10 cm width) but this is not a problem in low labour cost countries.

- utilization of snake skins allows a broad range of combinations in the production of shoes and leather-goods.

For these reasons development work was done on tanning and finishing in cooperation with BAI.

2.7.1. Extraction of vegetable tannin from local bark

Vegetable tannins have to be imported at high prices and with all the difficulties due to the economical situation of the country.

In the past, local tannins were used but the tanners switched over to imported powdered tannins because of the low yield of extraction, the bad smell and the mold growth. This was due to inadequate procedure.

A laboratory scale leaching of camachile bark was tested. It gave a yield of 20-25 percent dry residue. Part of the extract was stored during 5 months without fermentation and consequently without a smell or mold. An other part was dried and powdered. The dry extract is easy to store, non hygroscopic and odourless.

The Forest Products Research Institute (FORI) at University of the Philippines in Los Banos, has a pilot plant for extraction and production of powdered extract.

One topic of discussion during the third UNIDO Consultation on Leather and Leather Products Industry was:

" Measures to facilitate the production and acquisition of tanning chemicals".

In countries where there is no basic chemical industry, only converting indigenous raw materials into tannery chemicals is possilbe namely tannins and oils. For both, there is over production in the world, but the high duties on imported chemicals together with the high distribution costs are making those chemicals out of reach for small and even medium-scale tanners.

Production of vegetable tannin is not a high technological process and needs rather low investments. The downward trend in consumption is not so significant in developing countries where vegetable tannin is the only tanning material affordable for small tanners producing for local consumption sole, sandal or tooling leathers.

2.7.3. Local fibers materials

The mechanical resistance and color fastness of a woven material made from abaca fibres was studied in view of using it in the production of leathergoods. The material has a good resistance, some fibres are dyed with vegetable local dyes, other with synthetic dyestuffs, all of them are colorfast. The only defect of the material is the high inflamability.

The mechanical resistance of dried waterlilies (water hyacinth) and woven stems was studied. Dried stems of water lilies have a tensile strength between 100 and 150 newtons. When woven, the resistance increases over the 300 N. The weak points being the unitarian fibres are at both ends of the woven straps. Waterlily fibres are very sensitive to the growth of mold during drying as well as during storing. All attemps to overcome this with fungicides had secondary effects as discoloration or skin deseases by the wovers or factory workers. The only protection during storing and wear is by application of a nitrocellulose varnish.

2.7.4. Preservation and tanning of goatskins

The University of Life Home Study Programme provides ways to learn skills and to start a livelihood.

One of the courses offered is goat raising, it includes slaughtering and valorization of by-products, namely the skin.

On request of University of Life, the part of the course concerning skin preservation and tanning was prepared.

2.8. Documentation/Information

There is a need to organize a documentation/information service. This is output no. 10 of the project and was difficult to implement because of lack of library, technical literature and specialized personnel.

As the Quality Control Laboratory had many consultations requesting information (more than 40) a documentation service was started covering tannery, testing of materials and hide preservation.

Some important leather technical and scientifical publications are available in Metro-Manila. The Journal of the American Leather Chemists Society (JALCA) is in the Institute for Ceramics (sic). The British Journals, JSLTC and "Leather" are in the Library of the Ministry of Agriculture. The transcription on index cards started with the issues of January 1983.

A list of key-words for the classification of information on shoes and shoemanufacture was prepared (ANNEX 6).

2.9. Standards

Guideline values for:

- upper, lining, insole and outsole leathers.
- rubber solings.
- coated fabrics.
- adhesive bonds.

were prepared. (ANNEX 7)

Standards for "Definition of Leather" and "area measurement" were submitted. (ANNEXURES 8 and 9).

A standard for lining leather was drafted for the Philippine Standardization Association (PHILSA) discussed during meetings of the leather sectional committee and is now circulating for eliciting comments.

3. THE PHILIPPINE TANNING INDUSTRY

After nearly two years contacts with tanners, some informations were collected allowing to give an overall survey on the structure, the problems and difficulties, and also on the future of the tanning industry.

3.1. Structure

There are seven industrial tanneries with a production capacity over 10 metric tons a day. They are grouped in the Tanners' Association of the Philippines and are working at less than 40% of their capacity.

- Unileather, Guiguinto
- Eastern Tannery, Meycauayan
- Valenzuela Tannery, Meycauayan
- Philippine Leather, Navotas
- Philippine Integrated, Guiguinto
- Conching Hermoso, Meycauayan
- Hermoso Hermanos, Meycauayan.

They occupy spacious buildings and workshops, have a complete equipment and machinery including pilot plant, however, only a few with recent machines.

They have a technical staff, periodical visits and assistance from the chemical companies.

All of them give service work and sell chemicals to the small scale tanners.

The Phil. Integrated Inc., works in joint venture with a Japanese tannery, produces high grade pigskins' lining for export and is the only tannery with recent equipment.

Hermoso Hermanos has a glue factory in activity, also the equipment for producing syntans and fatliquors, but for the time being, those equipment are idle.

Conching Hermoso and Philippine Integrated have shoe factories as sister companies.

There are around six (6) medium scale tanneries with a production capacity between 5 and 10 metric tons per day, working also at less than 40% of their capacity.

- Rosales Tannery, Meycauayan
- R. Carlos, Meycauayan
- ABC and D, Libtong
- Milan, Libtong
- Philippine Tannery, Malabon (only soleleather)
- Catajan, Meycauayan

Those tanneries have complete equipment and machines, rather obsolete and in poor working conditions, they have small experimental drums and technical staff.

They also give service to small sclae tanners.

The other tanneries are small scale, not only on behalf of production capacity but rather because they only have part of the machinery so that they are bound to rent service.

The small scale tanners may be splitted up in two categories:

- the traditional tanners producing cheap and low quality leathers and
- those willing to improve their production.

The later are mostly young they try hard to go out the small scale status and are receptive for technical assistance.

There is also an exchange of service work among the small scale tanners, generally splitting, hiring of drums and drying.

Some small scale tanners are highly specialized and produce only one type of leather in one or two colors. They are under exclusive contract with a shoe factory.

Service facilities are available: one governmental at the Bureau of Animal Industry, Marulas, where only the drums are operational, the others private in Meycauayan with recent and good equipment.

All the tanneries are located in the province of Bulacan with a high concentration in Meycauayan. The exception are one snake skins tannery in Zamboanga, one tannery in the free zone of Cebu and a cluster of small scale tanners in San Nicolas, Ilocos Norte. A few rabit skins tanners in Baguio working part time and occasionally may not be considered as tanners.

Historically, one family is at the origin of the tanning industry in Bulacan. Like in many countries, it gave raise to small tanneries: foremens or workers from the big tanneries starting to tan in their backyards.

3.2. Problems of the tanning industry

The low rentability of the Philippine tanning industry has created a climate of inertia resulting in a decrease of the production.

According to a recent report of the Development Bank the average capacity utilization of the industrial tanneries dropped from 49.2% in 1980 to 35.1% in 1982 and the leather production decreased from 22.8 million square foot in 1978 to 17.7 million in 1982.

The return on stockholders' equity of 35% in 1980 dropped to only 6% in 1982, this explains the absence of investments during the last years.

During the last months, the economic difficulties of the country have worsen that situation, short term prospects of the industry do not appear bright.

The problems of the industry are essentially shortage and poor quality of the raw material, high cost of imported chemicals, marketing and distribution. For some tanneries lack of operating capital.

3.2.1. Raw hides and skins

The supply of raw hides based on the slaugtherings declined annually during the last years as well as for cattle and for goats (ANNEX 10).

The slaughtering of hogs increased during the same period but since pork is usually sold with the skin, only a few skins are made available for the tannery. In addition, hogs are mostly of small sized, sold in half carcasses and dehaired by scalding, all these are making the skins unsuited for leather.

The meat consumption is very low in the Philippines. The Marketing Division of the National Meat Inspection Commission estimates the consumption per capita at 7.7 kg pork per year and that of beef at only 3.2 kg. As shown in the diagram (ANNEX 10), due to the high prices of beef meat the regression in the consumption is still going on.

The "carabao" is a typical breed of buffalos. There are 2.9 million carabaos in the Philippines, 99 per cent of which are maintained in units of about one to two animals each. Together they account for about 50 per cent of the country's total beef production. In addition to serving as a beast of burden and as a transport vehicle for the farmers, the carabao is also a source of meat and milk. In the past, little attention has been given to the improvement of carabaos with the result that the present day breed is deficient, especially in weight and size.

The reason for the carabaos declining is the common practice among farmers to castrate their best bulls. This leaves the weaker bulls with the task of propagating their own species which naturally results to gradually reduced size and weight.

In addition to this, slaughtering was made without discrimination. It was assessed that 20 percent of the slaughtered female animals were pregnant. To rescue the carabao from extinction steps were taken to improve and protect the breed, namely the ban on slaughtering which had adverse results for the tanner in as much as it reduces the availability of hides and restricts it to hides of old or sick animals.

The livestock population of other cattle is below 2 million of heads and with exception of a few ranches in Mindanao, dispersed all over the country. As there is no meat or dairy industry in the country, the yield of the animals is low, and defects due to insects and parasites are important.

There are several goat breeds, both local and imported. The native goat is small and stocky (20-30 kg). The imported breeds are mostly Anglo-Nubian (50 to 80 kg) and Indian. All of them have a very good skin with a flat grain and little natural defects. Unfortunately only 10 per cent of the goats are slaughtered in abattoirs, an important part of the skin production is transformed in food "Chicharon" or lost.

With exception for some big abattoirs, the ripping is unequal and asymetric. The flaying is done on the floor without nanging the animal. All the cattles are knifed by a big cut in the throat and as much as two square foot near the tail are cutted out of the butts to be sold as food "Kare-Kare".

Beside cuts and holes made by the butchers (usually parallel to the backbone), there are many cuts and holes made by people recovering meat, flesh and fat from the hides. It is indeed a common practice in the small abattoirs to allow poor people to do this and the hides are nearly fleshed when they leave the slaughterhouse.

Furthermore, there is no organized and specialized hides and skins trade so that part of the production is lost or collected in very poor conditions of preservation and grading.

3.2.2. Chemicals

With exception for salt and lime, all the chemicals used in the transformation of hides into leather are imported.

The present economic difficulties of the country make it difficult, in some cases impossible, to obtain letter of credit.

In addition to the usual taxes and duties levied on imports, the peso devaluations contributed to the high cost of chemicals. Freight, bankcosts, taxes and duties bring the prices of chemical at a level nearly twice that of the producing countries.

Import is only possible in big quantities so that medium and small scale tanners have to go over wholesalers.

Because of the technical services and assistance given by European Companies, the Philippine tanners are strongly linked with the German and Swiss chemical industries.

The majority of the technicians were trained in Europe and are very reluctant with chemicals coming from other parts of the world, further they don't trust the locally made products even if they are under a known brand name.

One American Company produces finish binders and resins of high quality in the Philippines, however, the monomeres representing the big part of the cost price have to be imported. One German company produces a good fat liquor.

Up to now, the Philippines have not yet developed a chemical and petrochemical industry.

There are possibilities to develop medium scale chemical industries transforming local materials as vegetable tannins, oils and some organic acids.

Transfer of technology can be given by Government Research Institutes but there is no response or interest from the private sector.

3.2.3. Service Work

Small scale tanners are depending from service work because they do not have equipment and machine.

Service work is delivered by:

- specialized companies doing nothing else,
- big or small scale tanners,
- small scale tanners among themself,
- the pilot plant of BAÍ.

The service possibilities range from splitting to ironing/embossing and cover all the tannery operations including hiring of drums.

Small scale tanners should not exist if there were no service facilities, as such it may be considered as a help.

In fact, service hampers the improvement of the quality of the produced leathers.

To save some costs, the tanners are inclined to shorten operation time and to omit or cancel some operations.

On the other hand, untanned or freshly tanned leather sustains hardly transport and storage.

Some operations are paid by piece without assessment or control of quality of work.

To give some examples:

- loose grain due to storing limed hides during too long time before splitting.
- tanning folds, tannin and dirt stains caused by bad piling during transport or storage.
- poor dehairing and/or liming due to short druming time.
- only one final ironing instead of three (base coat, pigment and top coat).
- no rinsing after bating giving dirty dark grain,
- lost of area due to the absence of setting out,
- cuts and holes by shaving due to the absence of stretching by the shaver.

3.2.4. Marketing and distribution

The industrialized tanneries are selling straight to the shoe factories if good grades are requested. Delivery problems, arising from the poor quality of the raw material,

are important. It is quite impossible to deliver constant quantities in the range of 2 to 5.000 square foot per day of grain side leather.

In corrected grain, soft leather is rather difficult to obtain because of the tendency for loose grain. An important part of side leather must be embossed with sand plate.

All tanners complain about the difficulties to obtain payment.

The medium scale tanners and some small scale are selling over middlemen who control the distribution. They are completely bounded by the middlemen and cannot subsist without them.

The low prices obtained by the tanners are compensated by quick payment and the possibility to get rid of the low grades. It is indeed a practice of the wholesalers to sell bundels of 6 sides formed by one good grade four medium and one reject. The middleman are opposed to the trimming and impose the area measurement, some 11 x 11 inches, some 10 x 10 inches for one square foot. This is not always done to cheat and is declared as undersized. It is difficult to find an explanation for that practice.

Some small scale tanners are under contract with a shoe factory, they produce on order blue or red side leather in natural grain. To select a constant quality of hides, they work in cooperation with other small scale tanners who get the rejects when they grade in green, limed or wet blue state. This is only possible because they obtain a good price and cash payment. Further the production is limited by the necessity of buying a great amount of hides for the selection. Such a highly specialized production is very dangerous for it depends on the fashion, actually a mens casual sport shoe. If that type of shoe is no more in demand, all the system will colapse.

Many small scale tanners have their own shoe, leather goods or glove factory and work in closed circuit.

Most of them have limited technical know-how, old and obsolete machines and equipment, bad layout of workshops and low productivity.

3.2.5. Financial aspects

Although an important part of the operating capital is frozen in buying, shipping and storing of chemicals, it doesnt seems that there is a lack of running capital in the industrial tanneries. All of them have a big stock of raw and semi-processed material.

The absence of investments during the last years, owing to the low rentability, will raise an important financial problem in the future.

To survive, the industry must modernize the equipment and investments are needed.

The advantages of low labour cost are temporary for the time being, there are no labour problems in the tannery but labour cost will follow the ongoing evolution. Higher labour cost can only be compensated by higher productivity and this depends from work organization but most of all from equipment.

The protection of environment will also request more investments.

The question is to know if the industry is willing to invest in low rentability business? Incentives are strongly needed.

The influence of devaluation have cut off the operating capital of the small scale tanners, many of them will not survive. An important part of the earnings of the others goes to the payment of service work and interest on borrowed money.

There are also incentives and help that are needed.

3.3. Technical Malpractices in Leather Making

It is frequently observed that some ways of working become generalized in a country.

Here are a few examples of technical errors commited in most of the Philippine Tanneries.

3.3.1. Fleshing

As the hides are roughly prefleshed, most of the tanners do not flesh. Fleshing is replaced by presplitting.

3.3.2. Splitting

The hides are splitted two or three times. The first splitting replaces fleshing. This is harmful for the splitting machines.

The other splittings are of low accuracy and often too deep in the corium.

3.3.3. Storing of limed hides

During, before and after the successive splittings the limed hides remain too long in contact with the air, resulting in lime blast and loose grain.

3.3.4. Setting out

Only a few tanners are making setting out after tanning or before drying. Setting out has an important influence on area yield. Sammying is replaced by air drying.

3.3.5. Piling

In between operations, tanned leather is seldom horsed or flat piled, resulting in tanning fold and stains. Leather is thrown without care on the floor.

3.3.6. Drying

Most of the leathers are dried in toggled state, dried upper leather is not reconditioned before staking. Toggling is done with the help of nails without protection. The toggling frames are dirty and sometimes the leathers are toggled on the wooden floor of the workshops.

3.3.7. Trimming

Trimming is roughly, the sides are delivered with long head and long legs.

3.3.8. Sole leathers

With exception for one tannery, sole leather is produced in sides which is to the prejudice of flatness, shape and color.

4. RECOMMENDATIONS

4.1. The Counterparts' Needs

- The counterparts need further staff development and training,
- A fellowship for the senior coutnerpart is programmed at the Dutch Leather and Shoe Institute TNO.

  As the counterparts are well trained on leather testing, the fellowships training should be more orientated to testing of elastomeres, adhesives and finished shoes.

- There is an urgent need for a third laboratory staff member,
- The upgrading of expertise of laboratory staff members should be carried on by:

  - Factory visits
  - Contacts and cooperation with:
    i. Technical Staff of the big tanneries,
    ii. Technical staff of the chemical industries,
    iii. Bureau of Animal Industries,
    iv. National Institute of Science and Technology,
    v. Industrial Research Foundation,
    vi. Forest Products Institute.
  - Research and development work on adhesives rubber and finish products, (Workprogramme Annex 11).
  - Study of technical literature.

4.2. Equipment

- Complementary equipment needs to be bought. ANNEX 12 gives a list of priorities.
- Chemicals and glassware should be progressively bought to set up a comprehensive stock,
- Provision should be made for a new dynamometer's cell. Usually, an electronic cell must be amortized in three years,
- Maintenance of the apparatuses must be secured by:
    - Laboratory staff members,
    - FLTDC mechanician,
    - Company technicians of Mettler (balance) and J.J. Instruments (dynamomity)

4.3. Contacts with the industry

Weekly visits on a pre-scheduled day should be maintained to the tanneries, the chemical companies, the Shoe and Leathergoods Factories.

4.4. Contacts with other Government Agencies

The research activities in other Government Institutes should be kept on and eventually assistance or cooperation should be given. The testing facilities of the laboratory should be made available, namely:

- Testing of the leathers produced by BAI,
- Dichromate valorization and recyclying of chromium at NIST,

- Latex and starch adhesives at Forest Products Institute,
- Vegetable tannin production at NIST and Forest Products.
- Glazing machine at MIRDC.

4.5. Documentation Information

As an important part of the documentation which is scientific or technical implications, it is recommended to involve the laboratory staff in theconstitution of a library and Documentation/Information Service.

The library should be located near the laboratory.

Reference books and periodicals should be made available.

4.6. Training

It is recommended to conduct training courses or part of the FLTDC training courses on: Material knowledge and Technology and on quality control and testing. This should cover other materials than leathers, such as adhesives, elastomeres, coated fabrics, etc.

4.7. Standards

Cooperation with and participation in the technical committees of Philippine Standards Association and Products Standards Division should be maintained.

ANNEX 1

UNITED NATIONS

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION (UNIDO)

16 December 1982

PROJECT IN THE PHILIPPINES

JOB DESCRIPTION

US/PHI/79/109/11-08/31.7.D

Post Title	:	Leather Technologist
Duration	:	Nine months, with possiblity of extension
Date required	:	As soon as possible
Duty Station	:	Manila, with possibility of travel within the country.
Purpose of project	:	To install and set up a footwear and leather goods training and demonstration centre, to train and demonstrate to management, supervisors and workers the modern techniques in footwear and leathergoods manufacturing. The project will aim at upgrading the country's footwear and leather goods industry, particularly by improving its competitiveness on the large potential export markets and by assiting the tanning industry in the production of suitable leather for quality footwear and leathergoods manufacturing.
Duties	:	The expert will be attached to the Ministry of Industry, Commission on Small and Medium Industries of which the National Manpower and Youth Council (NMYC) is the implementing agency, and will be under the supervision of the Chief Technical Adviser and work in close co-operation with his national counterparts. Specifically he will be expected to:

1. Assist in organizing and starting up a quality control laboratory capable of testing leather components and finished products for the footwear and leather goods trade,

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Applications and communications regarding this Job Description should be sent to:

Project Personnel Recruitment Section,
Industrial Operations Division,
UNIDO Vienna International Centre, P.O.Box 300, Vienna, Austria

V.81-33106

2. Train local counterpart personnel in all aspects of running the quality control laboratory,

3. Prepare a syllabus for training footwear and leather goods technology students in material testing procedures methods and standards.

4. Participate in lecturing on material science and testing.

5. Assist in organizing extension services for testing of materials for the leather, footwear and leather goods industries.

The expert will also be expected to prepare a technical report setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

Qualifications : The expert should have several years of experience in the leather industry, specifically in a quality control function. He must be well acquainted with international testing methods, procedures and standards. Previous experience in leather and allied industries testing institute or laboratory is required.

Language : English.

ANNEX 2.

EQUIPMENTS

1. UNIDO

- Tensile tester machine J.J.
- Digital display unit recorder
- Excentric roller grips
- Specimen holders for tear strength
- Specimen holders for stitch tear
- Upright type tickness gauge adapted to IUP 3
- Moenus-Turner leather thickness gauge
- Set of 11 cutting dies
- Analytical balance
- Flexometer type Bally 6 stations
- Maeser waterproofness tester
- Dome plasticity apparatus Satra
- Lastometer
- Finish rub fastness tester Satra
- Finish adhesion tester Satra
- One set Fedders Flexaire 900 kcal airconditioner
- One unit Air master airconditioner
- Muffel furnace thermolyne
- Drying oven Memmert
- ph meter Broadly James
- Shaking machine

2. NMYC/FLTDC

- One soxhlet apparatus
- Hood with exhaust fan
- Glasswares
- Chemicals
- One frame for light fastness
- Two 50 kg. gas cylinders

ANNEX 3

FOOTWEAR AND LEATHERGOODS TRAINING AND DEMONSTRATION CENTRE

JOB DESCRIPTION

Post title : Chief of the Quality Control Laboratory

Date Required : As soon as possible if fellowship, if not September 1983.

Duty Station : National Manpower and Youth Council, FLTDC, Taguig, Metro-Manila

Duties : To work under supervision of the national Chief of the Centre and in close cooperation with assigned international UNIDO Experts.

- To coordinate and supervise the work and activities of the testing laboratory.
- To assist, evaluate and give information on testing or analysis results on leather and other materials used in shoe and leather goods factories, and on shoes or leathergoods.
- To conduct research in quality control:
  i. selection of methods, measurements,
  ii. properties and behaviour of materials,
  iii. compatability and performance of materials.
- To examine complaints and factory accidents.
- To standardize methods and to give guidelines for quality requirements.
- To conduct studies on new materials.
- To establish safety precaution in the use of some materials.
- To advise and introduce quality control in the industry.

Qualifications : The candidate should have the broadest possible experience in the leather industry (tannery, shoes, leathergoods), engineer with good knowledge of macromolecular chemistry, bio-chemistry, physics and mechanic.

FOOTWEAR AND LEATHERGOODS TRAINING AND DEMONSTRATION CENTRE

JOB DESCRIPTION

Post Title : Senior Laboratory Staff Member

Date Required : As soon as possible

Duty Station : National Manpower and Youth Council,FLTDC, Taguig, Metro-Manila

Duties : To work under the supervision of the national Chief of the Centre and of the Chief of the Quality Control Laboratory in close cooperation with the assigned international UNIDO Experts.

- To be trained in specific leather analysis, physical testing and fastness tests (before fellowship).
- To organize the quality control laboratory.
- To analyze and test materials used in the shoe and leathergoods industries.
- To examine and test shoes and leathergoods.
- To train laboratory assistants.

Qualifications : Technical Engineer with good knowledge in Chemistry, Bio-Chemistry, Macromolecular Chemistry, good experience in chemical analysis.

FOOTWEAR AND LEATHERGOODS TRAINING AND DEMONSTRATION CENTRE

JOB DESCRIPTION

Post Title	:	Laboratory Assitant
Date required	:	July 1983
Duty Station	:	National Manpower and Youth Council,FLTDC, Taguig, Metro-Manila
Duties	:	To work under the supervision of the national Chief of the Centre, of the Chief and Senior Staff member of the Quality Control Laboratory in close cooperation with the assigned international UNIDO Experts. - To assist in testing and analysis of leather and other materials used in the shoe and leathergoods industry. - To assume maintenance of the laboratories and equipment.
Qualifications	:	Technician with good knowledge in chemical analysis.

ANNEX 4

TRAINING PROGRAMME FOR COUNTERPARTS QUALITY CONTROL LABORATORY

Course Content: Hides and Skins

1. Chemical composition of the hide
   Proteines - collagen
   Importance of water
   Problems arising from the chemical composition of the hide: waste and pollution
2. Physical composition of the hide
   Shape of the amino acid molecule,
   Fibres, fibrebundels, fibre structure
   Cross section of the hide - the three layers: epidermis, dermis, hypodermis,
   Cross Section of leather - the three layers: grain, corium, flesh.
   Reproduction of cells.
3. Definition of tanning
4. Isoelectric point and pH
5. Hides and skins: origins, defects, flaying, conservation, trade classifications, grading.
6. Tannery beamhouse operations
7. Tanning: vegetable tanning
   chrome tanning
   other tanning materials
8. Tannery wet finishing operations: retanning , dyeing, fatliquoring.
9. Drying of leather
10. Dry finishing of leather

Leather Testing

1. Standardized methods
2. Chemical analysis
3. Physical Testing
4. Fastness testing
5. Dynamometry
6. Interpretation and computation of curves
7. Guideline values

Elastomeres

1. Origin and production
2. Chemical and physical composition
3. Polymerisation - vulcanization
4. Testing of elastomeres
5. Guideline values

Adhesives

1. Families of adhesives
2. Origin and production
3. Viscosity and dry residue
4. Testing of adhesives
5. Utilization and application
6. Guideline values

Textiles, poromerics and coated fabrics

1. Types, origin and production
2. Warp and weft
3. Testing
4. Guideline values

ANNEX 5

REPARTITION OF CONSULTATIONS PER SUBJECT

Physical Testing	20
Chemical analysis	18
Fastness testing	12
Assistance in factories	51
Documentatiop/Information	43
Standards and methods	7
Revision and calibration of apparatus	7
Assistance to Students	4
Area measurement	14
Adhesive testing	16
Others	8
	200

	Number of Coms.	
ABC & D Leather Industry Libtong, Meycauayan	2	Tannery
Aldeguer Shoes,Cebu City	1	Shoe
American Shoe Factory,Marikina	3	Shoe
Bacolod Shoe Emporium Bacolod City	2	Shoe
Belgian Embassy	1	Others
BCM Tannery, Meycauayan	2	Tannery
Bureau of Animal Industry,Marulas	9	Government Agency
Calupitan, Meycauayan	1	Others
Carlos Leather Industry	2	Tannery
Carmelletes shoes,Marikina	1	Shoe
Central Bank, Manila	1	Government Agency
Chibum Shoe Factory,Marikina	3	Shoe

Del Rosario Natividad	1	Tannery
Demet Shoes,Marikina	1	Shoe
D'Rossa,Manila	1	Shoe
Duran Tannery, Meycauayan	2	Tannery
Eastern Tanning, Meycauayan	1	Tannery
Esquerra Tannery	1	Tannery
Eurolinea, Phils, Manila	28	Tannery + Shoe
FORPRIDECOME,UP at Los Banos	2	Government Agency
FOUR-D Overseas, Manila	3	Gloves
GROSBY K.P. Footwear,Taguig,Manila	5	Shoes
HERMOSO Conching Tannery	3	Tannery
HERMOSO HERMANOS INC.,Meycauayan	10	Tannery
KIDDIESHOE Corp.,Carmona,Cavite	16	Shoe
LEATHERGOODS, FLTDC	3	Government Agency
Llanillo Tannery,Meycauayan	8	Tannery
Lydianette's Shoes, Marikina	1	Shoes
MARVEL Leather Merchancize,Meycauayan	5	Tannery
MARTINIQUE Enterprises, Quezon City	1	Leathergoods
MILAN Tannery,Meycauayan	2	Tannery

Ministry of Trade and Industry,Manila	1	Government Agency
Mondial Orient Ltd.,Manil	3	Others
National Development Co., Manila	2	Government Agency
Non-Woven Fabrics Phils. Q.C.	1	Others
PACSON Leather Industry,Meycauayan	2	Tannery
Philippine Council for Industry and Energy Research, Manila	3	Government Agency
Philippine Journal	1	Others
Philippine Tanners Association,Manila	1	Tannery
Philippine Tannery, Malabon	5	Government Agency
Philippine Standards Ass.,Manila	1	Shoes
PRIMAR Tannery, Guiguinto	1	Tannery
PRODON Tannery,Meycauayan	1	Tannery
ROHM and HAAS Phil.,.Las Pinas	4	Others
ROMAN RIVERO Tannery, Meycauayan	10	Tannery
SACRED Heart Quezon City	6	Shoes
SALDANA House of Reptiles,Valenzuela	1	Tannery
Sandez Tannery, Meycauayan	1	Tannery
San Mateo Shoes	1	Shoes
San Nicolas Tannery	1	Tannery
Shoe Mart,Manila	4	Others

Soriano Arthur Tannery Meycauayan	1	Tannery
Soriano Boy Tannery,Meycauayan	1	Tannery
Tabacalera, Manila	1	Leathergoods
University of the Phil. College of Hcme Economics	1	Government Agency
University of the Philippines at Los Banos	1	Government Agency
Valenzuela Tannery,Meycauayan	1	Tannery
VIVA Shoes, San Pedro,Laguna	1	Shoes
VULCAN Chemical Corp.,Manila	1	Others
Zamboanga Basilan Sulu Merchantile Zamboanga City	14	Tannery
Students	4	Tannery

ANNEX 6

KEY WORDS FOR CLASSIFICATION

(Shoe and Leathergoods)

Abrasive paper
Abrasives
Accelerator
Activation
Adhesives
Arch Support

Belt (transmission)
Binder
Board cellulose
Board leather
Boarding tapes
Bottom filler
Bottom finishes
Box
Brush
Buckle
Buffing (see abrasiv·s)
Button

Canvas
Cap
Cement (see Adhesives)
Cleaning agents
Clicking knives
Clips
Cloth

Coated fabrics
Containers
Cord
Cork
Cotton
Counter
Crepe
Cutting (see knives)

Dressings
Dyestuff

Elastics
Elastomeres
Embossing foils
Emery (see abrasives)
Exhauster
Eyelets

Fabrics
Fasterners
Felts
Fillers
Finishes
Fittings
Foam
Furs

Gem materials
Glues (see adhesives)
Granulates
Greese
Grindery
Grindstone (see abrasives)
Gussets (see elastics)

Heels
High frequency
Hot melt (see adhesives)
Humidifiers
Hydraulic

Infra red
Injection compounds
Inks (see finishes)
Insole materials
Interlacing

Journals

Knife
Knitted (see fabrics)

Label
Lace
Lacquer (see finishes)
Last
Latex (see adhesives)
Leather

Linen (see fabrics or threads)
Lining
Lubricants

Machine
Moulds
Mould release agents

Nails (see grindery)
Needle
Neoprene (see adhesives)
Non-Woven (see poromerics)
Oil (see lubricants or hydraulics)

Piints (see finishes)
Passepoil
Perforating (see knifes)
Pin (see Grindery)
Pincers (see tools)
Pitch
Plastic
Pneumatic
Polish (see finishes)
Polyurethane (see elastomeres)
Poromerics
Printing Foils
Periodics (see Journals)
Pump
Punch
PVC (see adhesives, finishes or elastomeres)

Racks
Reinforcing materials
Ribbon (see tapes)
Rivets (see Grindery)
Rubber (see also elastomeres)

Safety
Seasoning (see finishes)
Shanks
Silk (see fabrics)
Solings
Solvent
Spikes (see grindery)
Spray (see finishes)
Stiffeners

Tacks (see Grindery)
Tapes
Textile (see fabrics)
Threads
Toe caps
Tools

Ventilation
Vulcanizing (see also elastomers)

Wax

Zip fasteners

ANNEX 7

GUIDELINES

FOR

SHOE UPPER LEATHERS

RECOMMENDED GUIDELINE VALUES FOR SHOE UPPER LEATHER

TEST	GUIDELINE VALUE	NUMBER OF SAMPLES	COMMENTS
FLEX RESISTANCE IUP/20 Patent leather	Minimum number of Flexes		Examine the slightly stretched leather with 6 x magnification.
dry wet	15,000 15,000	2 dry 2 wet	First assessment after 5,000 flexes, no damage.
Other leather			After 15,000 flexes, only slight cracks without leather visible, those should not get worse during further flexing.
dry wet	50,000 20,000	2 dry 2 wet	
ADHESION OF FINISH IUP/470	Newton/cm		
side leather,full grain			Wet adhesion is only carried out if the flex resistance is poor
dry wet	3 2	3 lengthwise 3 perpendicular	
side leather,corrected grain			
dry wet	5 3	3 lengthwise 3 perpendicular	
Box calf, glace kid			
dry	2.5	3 lengthwise 3 perpendicular	
Patent leather			
dry wet	4 2	3 lengthwise 3 perpendicular	

TEST	GUIDELINE VALUE	NUMBER OF SAMPLES	COMMENTS
RUB FASTNESS IUF/450	cycles		
General Footwear			In reporting results on grain leathers, include damage to finish film, colour change.
felt dry,leather dry	50	2	
felt wet,leather dry	50	2	Objectionable is damage which cannot be repolished.
Unlined Footwear inner side			
felt dry, leather dry	50	2	Suede leathers should not give a stain worse than contrast 2 on the Grey Scale after 20 cycles.
felt wet, leather dry	50	2	Unlined footwear: the stain on the pad shall not exceed Grey Scale 3.
			For fashion shoes, fastness to polishes is more important.
HEAT RESISTANCE IUF/458			
	smearing below 80°C poor above 140°C ironing ironing possible	2	If result is under 140°C, hot air blast is recommended to remove small pleats and creases rather than ironing.
	no colour change		
slit test on patent leather	slit shall not extend	2	Damage finish with small slit (3 mm). Stretch to 7 mm on lastometer and subject to 100°C with hot blast for 3 min.

TEST	GUIDELINE VALUE	NUMBER OF SAMPLES	COMMENTS
LASTOMETER IUP/9	extension minimum 7 mm	3	As variability is large, care must be taken in interpretation of only a small number of tests. Check the humidity content of the leather.
TEAR RESISTANCE IUP/8 normal lined unlined	 35 N absolute 50 N absolute	 2 lengthwise 2 perpendicular	Under 35N leather should be reinforced particularly in areas of stress. Results expressed in N/mm are of interest in comparing leathers of different thickness. Values are means of two samples with the direction of tear mutually at right angles.
TENSILE STRENGTH AND EXTENSION IUP/6	breaking load min 150 N/ 10 mm width minimum extension at grain crack 35% minimum extension at break 40%	2 parallel to backbone	Values useful only for special purposes. Maybe done on request and calculated as N/mm^2.

TEST	GUIDELINE VALUE	NUMBER OF SAMPLES	COMMENTS
SOLVENT EXTRACTABLES IUC/4	up to 9% up to 12% between 14 and 18% vulcanized soles max 7%		For one component adhesives. For two components adhesives. Special PU adhesives possibie. on distribution and degree of sampling.
MIGRATION OF DYE STUFF Filter paper test	no migration		
FOLLOWING TESTS ARE CARRIED OUT ON REQUEST ONLY RUB FASTNESS TO CLEANING MATERIALS IUF/450 Solvent paste polishes Solvent emulsions Water based polishes	minimum 20 cycles		Use relevant polishes. No standard formulation recommeded.

TEST	GUIDELINES VALUE	NUMBER OF SAMPLES	COMMENTS
WATER RESISTANCE IUP/10			
For speciality leather only			Not applicable to fashion shoes.
Upper-general purpose	penetration time min.20	2	Do not abrade prior to testing but preflex
water resistant leather	water penetration time min. 120 minutes water uptake max 25%	2	
WATER VAPOUR PERMEABILITY IUP/15	min. 10 g/h/m^2 or min. 1 mg/h/cm^2	2	Without surface abrasion of finish. Does not apply to patent leather.
RESISTANCE TO WATER SPOTTING IUF/420	no damage no colour change after drying	1	For aniline leather test also from the flesh side.
LIGHT FASTNESS IUF/401 or 402	grade 3 or better	1	
AGEING IN THE DARK EEC - F1	no yellowing	1	White and light colours can yellow in shoe boxes.

TEST	GUIDELINES VALUE	NUMBER OF SAMPLES	COMMENTS
pH OF AQUEOUS EXTRACT IUC 11	not less than pH 3.5 difference figure max 0.7	1	
SULFATED ASH OF WATER SOLUBLES SAWS IUC 6	not over 1.5% on dry leather for aniline leather max 0.5%	1	Often responsible for spues, can often be seen in wet flex samples on drying out.

GUIDELINES

FOR

LINING LEATHER

RECOMMENDED GUIDELINE VALUES FOR LINING LEATHER

TEST	GUIDELINE VALUE	NUMBER OF SAMPLES	COMMENTS
RUB FASTNESS IUF 450 dry pad wet pad leather wet perspiration	 min. 100 cycles min. 50 cycles min. 50 cycles min. 50 cycles	 2 2 2 2	Transfer to pad is important, shall not be worse than Grade 4.
FASTNESS TO WATER IUF 421	not worse than 3	2	
FASTNESS TO PERSPIRATION IUF 426	not worse than 3	2	
EXTENSION AT BREAK IUP 6	minimum 30%	2 parallel 2 perpendicular	
WATER VAPOUR PERMEABILITY IUP 15	min. 10g/h/m^2	2	20 g/h/m^2 for closed type footwear.
WATER VAPOUR UPTAKE	min. 10%	2	
FAT IUC 4	max 10% woolskins max 8%	1	

TEST	GUIDELINE VALUE	NUMBER OF SAMPLES	COMMENTS
SULFATED ASHED WATER SOLUBLES SAWS IUC 6	max 1.5%	1	
pH IUC 11	not less than 3.5. difference figure max 0.7	1	
MIGRATION FASTNESS IUF 422	Transfer not worse than 3		Strip test can also be used.

Cont. ANNEX 7

GUIDELINES

FOR

INSOLE LEATHER

RECOMMENDED GUIDELINE VALUES FOR INSOLE LEATHER

TEST	GUIDELINE VALUE	NUMBER OF SAMPLES	COMMENTS
TOTAL WATER SOLUBLES IUC 4	max 15% on dry leather		
SULFATED ASHED WATER SOLUBLES SAWS IUC 6	max 1.5 on dry leather		
pH IUC 11	not less than 3.5. difference figure max 0.7		
WATER UPTAKE IUF 7	min. 35% after 2 hours	2	
DIMENSIONAL STABILITY	max 3% in any direction	2	
TEAR RESISTANCE IUP 8	min. 80 N/mm		

Cont.ANNEX 7

GUIDELINES

FOR

SOLE LEATHER

RECOMMENDED GUIDELINE VALUES FOR SOLE LEATHER

TEST	GUIDELINE VALUE	NUMBER OF SAMPLES	COMMENTS
TOTAL WATER SOLUBLES IUC 6	max 20% on dry leather		
SAWS IUC 6	max 3%		
MAGNESIUM SULFATE $MgSO4\ 7\ H_2O$ IUC 9	max 3%		
WATER UPTAKE IUP 7	max 30% after 30 min. max 35% after 2 h max 45% after 24h	2	
pH IUC 11	not less than 3.5 difference figure max 0.7.		

Cont.ANNEX 7

FLTDC QUALITY CONTROL LABORATORY

Recommended values for RUBBER

Compact (*)	Heavy Shoes	Casual Shoes
Density	max. 1.3.	max. 1.15
Shore A hardness	85	75-80
Tensile strength N/cm^2	min. 1500	min. 1500
Elongation at break %	min. 200	min. 300
Flexing endurance De Mattia		
without cut	min.200,000	min.175,000
with cut	min.100,000	min.100,000
Abrasion resistance DIN 53.515 mm^3	max. 200	max.200
Tear resistance N/cm	min. 150	min. 100
Needle resistance N/cm	min. 450	min. 400
Fatcontent %	max. 12.5.	max. 12.5

(*)not for transparent or crepe

FLTDC Quality Control Laboratory

Recommended values for RUBBER

Microcellular

Density	Max. 0.75
Shore A hardness	
- before ageing	70 ± 5
- after ageing (4 days/70°C)	not more than 5 units difference
Flexing endurance De-Mattia	
without cut	min. 100,000
with cut	min. 25,000
Abrasion resistance DIN 53.516 mm^3	max 700
Needle resistance N/cm	min. 135
Linear stability after 4 h at 70°C %	max.3

TESTING OF NON-LEATHER INSOLES

		GUIDELINE
1. Tear resistance	kg/mm	min 1.2
2. Stitch tear resistance	kg/mm	min 5
3. delamination (slit tear)	kg/2cm	min 1
4. flexing resistance		min 5,000
5. wet scuff resistance	1 mm wear	min 30,000
6. dimensional stability	65 to 10% RH	max - 1%
	65 to 90% RH	max + 1%
7. Absorption-desorption		
absorption	after 30 min	min 50%
	8 h	min 100%
desorption	8 h	min 90%

TESTING BURR-TAPE FASTENERS (VELCRO)

Burr-tape fasterners are in two parts:

1. the hooked tape and
2. the looped or base tape.

There are two types of hooked tapes:

a. one in which the connecting elements are hook-shaped.
b. one in which the connecting elements are in the form of mushroom heads.

The first one are generally in polyamide while the mushroom heads are made from polyprophylene.

The looped tape can be roughed or woved in the original thread structure.

To evaluate the durability of fasteners the following tests are performed:

1. the shear test
2. the peeling test

For shear strength a minimum value of $5N/cm^2$ is required for shce fasteners and at least 50% of this ($2.5N/cm^2$) should still be obtainable after opening and closing 10,000 times.

For peel strength a minimum of 1.3N/cm width can be regarded as good initial value, and again after 10,000 openings and closings 50% of the initial value should still be obtainable.

Usually, the mushroom head tapes have higher initial value, these decrease after a few openings and closings. On the other hand, polypropylene mushroom head tapes are very sensitive to heat and water.

In the case of hooked tapes, the initial values are somewhat lower but after some thousand openings and closings at least 50% of the initial value can still be attained.

Fig. 3 gives a type of machine for opening and closing.

Testing should also be pergormed after heating, wetting and eventually soiling (e.g. with sand).

ANNEX 8

LEATHER (Definition agreed by International Council of Tanners, Buenos Aires, 1978)

Leather - F. Cuir (def. generique); G. Leder; I. Cuoio, Pellame, Pelle (conciata); S. Piel o cuero curtido

A general term for hide or skin with its original fibrous structure more or less intact, tanned to be imputrescible. The hair or wool may or may not have been removed. Leather is also made from a hide or skin which has been split into layers or segmented either before or after tanning, but if the tanned hide or skin is disintegrated mechanically and/or chemically into fibrous particles, small pieces or powders and then, with or without the combination of a binding agent, is made into sheets or other forms, such sheets or forms are not leather. If the leather has a surface coating, this surface layer, however applied, must not be thicker than 0.15mm. (Buenos Aires, 1978).

Leather	- Surface coating less than 0.15 mm on average.
Coated Leather	- Surface coating greater than 0.15mm and less than 1/3 of total thickness.
Laminated Leather	- Non leather component greater than 1/3 total thickness. Other component to be identified, i.e.: PU,PVC and one in greatest proportion of total thickness to be given first.

ANNEX 9

TENTATIVE STANDARD
MEASUREMENT OF AREA OF LEATHER

1. SCOPE

1.1. This standard specifies the method intended for use in measuring the area of units of all type of finished and unfinished leather, except sole leather and other leather which is traditionally sold by weight, as well as provide for the labelling of leather for commercial purposes. It specifies the information to be provided and indicates the terms in which this shall be expressed and the means by which it shall be conveyed.

1.2. This standard specifies also the method intended for use in measuring the area of pickled and wet blue hides and skins.

2. DEFENITIONS

For the purpose of this standard, the following definitions shall apply:

2.1. Leather (see Tentative Standard no.)

A general term for hide or skin with its original fibrous structure more or less intact, tanned to be imputrescible. Leather is also made from a hide or skin which has been split into layers or segmented either before or after tanning.

2.2. Pickled hides or skins.

Hides or skins conditioned in strong acid and salt for conservation.

2.3. Wet blue.

Chromium tanned hides or skins in wet state.

2.4. Crust

Undyed and unfinished but fat liquored and toggled hides or skins.

2.5. Area

The total surface measured in square units.

2.6. Standard test piece or templet.

A piece of flexible and non-stretchable material the size which remains unchanged under ordinary conditions.

3. APPARATUS

3.1. Graduated Sheet

Sheet of transparent flexible material, ruled in square decimeters. The sheet shall be large enough to cover the leather piece completely.

3.2. Mesuring Frame

A frame ruled in square decimetres and large enough to cover the leather peice completely.

3.3. Measuring machine

A pin-wheel type of leather measuring machine or an electronic type.

3.4. Calibrated planimeter.

4. PROCEDURE

4.1. Calibration and storage of templets

New templets shall be verified by the Bureau for Metrology which can accurately determine the size of a templet. Used templets shall be re-submitted for testing every 12 months.

Each machine shall be provided with templets appropriate to the size of the leather measured.

Templets shall be kept flat and at room temperature away from light.

4.2. Calibration of machine with templet.

Regular calibration of the machine with templets is a necessary and convenient safeguard of accuracy.

The machine must be calibrated with the templet of approximately the same area as the leather to be measured. The templet shall be passed through the machine a suuficient number of time and in such a way that all pinwheels are tested. It is good practice to calibrate the machine at least at the start of each work period, i.e. twice a day. Additional random tests are also recommended.

4.3. Conditioning of leather

Leather for check measurement shall be exposed to an atmosphere of 50 to 70% relative humidity at 16 to 21°C (60 to 70°F) in such a way that each skin has free access to the surrounding air for at least 48 hours.

If the foregoing is found difficult to achieve in practice then it should be ensured that the leather has a moisture content of 14 to 18% since the moisture content materially affects the measurement.

4.4. Conditioning of pickled hides and skins.

Pickled hides and skins shall be conditioned to 40-60% moisture content and placed in an atmosphere of not less than 15°C for sufficient time to soften the fat.

4.5. Conditioning of wet-blue leather

The hides or skins shall be soaked back for a minimum of two hours, sammed to a moisture content of 45%.

4.6. Measurement with graduated sheet (3.1.) or measuring frame 3.2.

Spread the hide or skin on a flat surface fully extended but not stretched.

Spread the graduated sheet or measuring frame smoothly over and contact with it. Determine the area by counting the number of square decimetres required to cover the leather piece. Estimate the area of the parts not completly covered by any square unit.

4.7. Measurement with the pinwheel machine.

4.7.1. The dial-pointer must be allowed to return to zero before each measurement. This can be ensured either by careful work and supervision of operators or by intallation of the damper which slows up the return of the pedal to its starting position until after the pointer has returned to zero.

4.7.2. Machines shall not be run at any speed other than that recommended by the manufacturer.

4.7.3. It is good practice for the area of a piece of leather to be marked or recorded by the operator who reads the dial measurement. Where "straight through" operation is used, careful supervision is needed to avoid "calling-out" errors or preferably the machine should be fitted with dials.

4.7.4. To avoid errors due to parallax, the operator shall face the dial squarely and the distance between the pointer and the dial face shall be the minimum.

4.7.5. It is good practice for supervisory staff to carry out or supervise re-measurements at random on samples of measured leather.

4.7.6. The leather shall be fed into the machine with the higher friction surface coming into contact with the pinwheels. It shall be absolutely flat and without creases at the moment when it passes between the pinwheels and the top of the transport roller. In the case of soft leather this may involve pulling the leather from belly to belly or from edge to edge with sufficient force to prevent the pins pushing the leather into the trasport feed roller slots, the leather being held in such a manner that it remains flat as it passes through the machine. Any area gained in pulling the leather in this way will be lost in the direction at right angles to it, as, provided the machine is zeroed correctly, it cannot overmeasure.

5. TOLERANCES

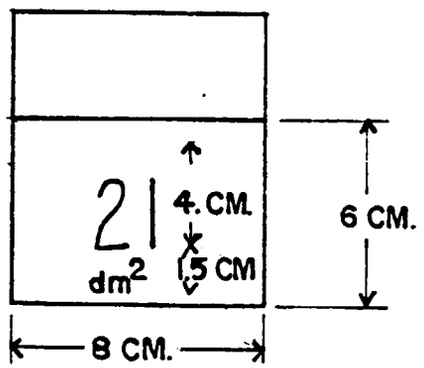
5.1. For dry finished or unfinished leather	± 2%
5.2. For picked hides and skins	± 4%
5.3. For wet blue leather	± 3%

6. LABELLING

6.1. Each piece of dry leather shall be permanently and legibly labelled on the flesh side with the following:

- trade mark or company name
- the work "Philippines" or "Made in PHI"
- the area

The area shall be expressed in square decimetres and placed directly below the label boxed within a rectangle with dimensions of at least 6 cm x 8 cm. The letters and numbers expressing the area shall have a height of at least 1.5 cm and 4 cm respectively. (see illustration)



The marking shall not cause any disfiguration to the leather or migrate itself to the grain surface of the leather, coming in contact with it.

The label on each piece of leather shall be placed not less than 10 cm from the butt portion except in small pieces where this is not possible.

6.2. Each piece of ewet leather shall be permanently and legibly labelled on the fleshside.

The marking shall not migrate into the leather or transfer on other pieces.

7. PACKING

Each bundle shall have the following information:

7.1. Label
7.2. The type of leather comprising the bundle.
7.3. The thickness of the leather.
7.4. The total area of leather composing the bundle.
7.5. The total number of pieces in the bundle.
7.6. The area of each piece of leather in the bundle, indicated by a piece of paper taped to the bundle. The tape shall be placed strategically to avoid tampering.

8. REFERENCES

8.1. Philippine Bureau of Standards
Standards Administrative Order no. 324 (1978)

8.2. International Council of Tanners
Code of practice for the area measurement of leather.

8.3. International Hides & Skin Contract no. 1.
drawn up by the International Council of Hide and Skin Sellers' Associations and the International Council of Tanners.

MINIMUM QUANTITY FOR CHECK-MEASUREMENTS

For check control measurements, the minimum quantity of leather shall be 3% of the all batch.

The sampling shall be made in presence and with agreement of the involved parties.

CONDITIONING OF WET-BLUE

In a drum with 200% of water on wet-blue weight drum during 5 minutes, rest one hour, drum during 5 min. and rest one hour.

Sammy on sammying machine with feltrols, not on a setting out machine.

CONDITIONING OF PICKLED HIDES

In a drum with 200% water containing NaCl to obtain 6 beaume and 1% sulfuric acid calculated on pickles wheight.

sammy on sammying machine (see wet-blue).

FIGURE 5.4
POPULATION OF LIVESTOCK AND POULTRY ON FARM
BY KIND: 1976 to 1981
(Refer to Table 5.10)

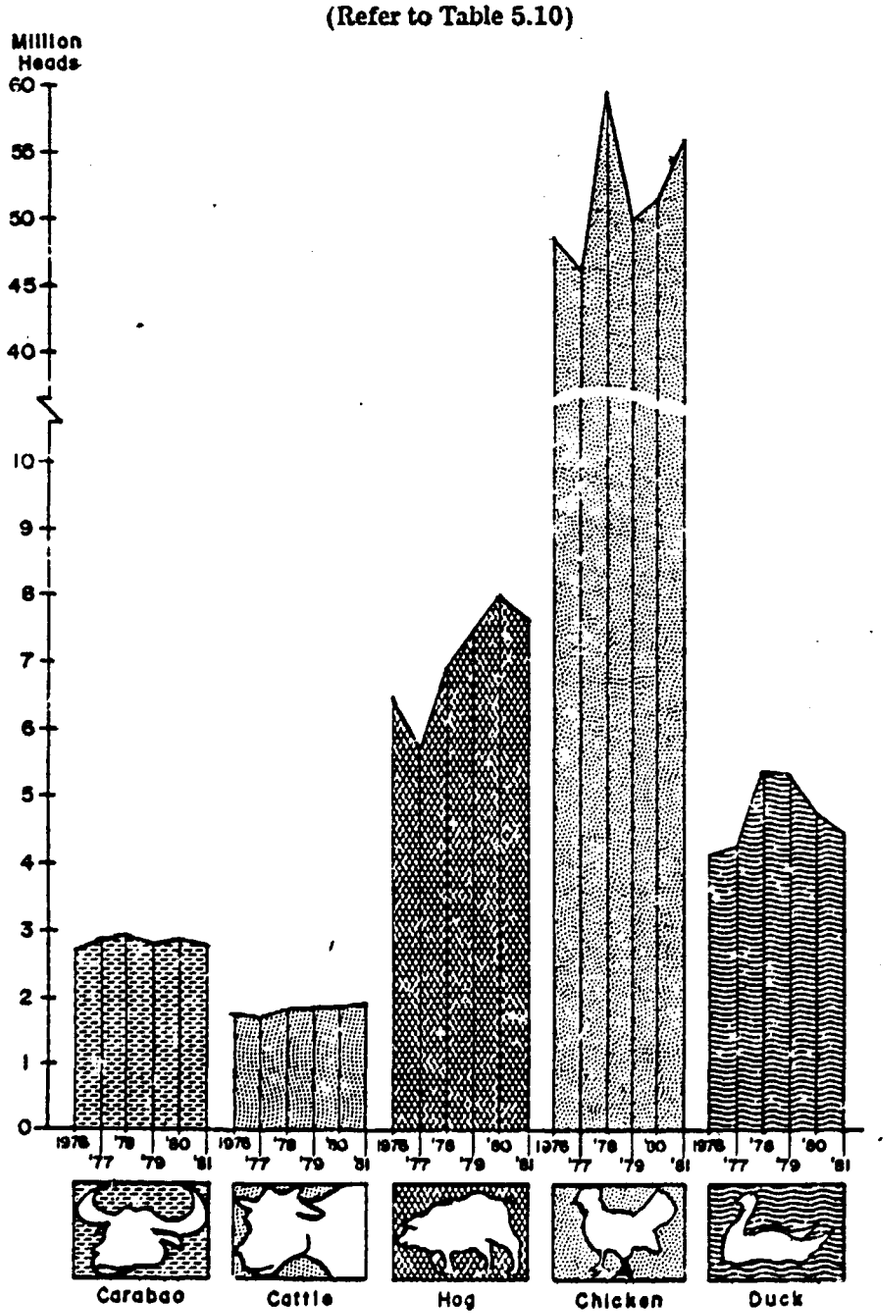
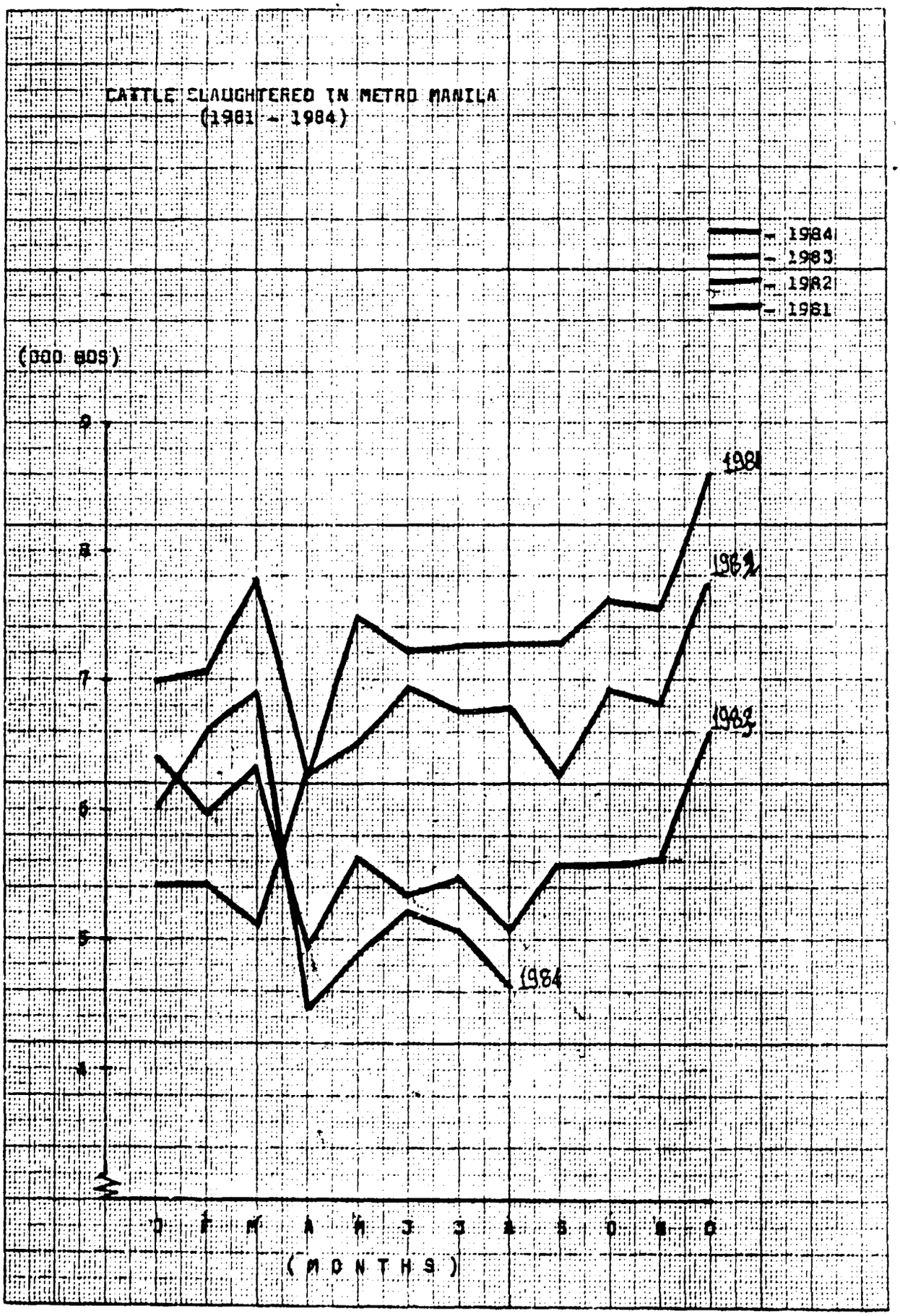


Table 5.11 — NUMBER OF ANIMALS SLAUGHTERED BY KIND: 1955 TO 1981
(In thousand heads)

Year	Carabao	Cattle	Hog	Horse	Goat	Chicken
1955	37	340	3,740	...	134	24,263
1960	103	247	4,808	...	155	26,779
1965	117	319	6,700	...	174	28,882
1970	118	366	5,489	...	293	30,229
1971	154	381	4,818	...	325	31,318
1972	173	291	1,871	...	112	...
1973	272	342	2,665	11	75	11,758
1974	310	312	2,717	12	78	20,315
1975	212	300	3,062	9	60	10,589
1976	200	258	2,525	4	145	16,513
1977	175	181	1,919	7	115	12,928
1978	161	200	2,036	6	68	9,982
1979	148	198	1,564	4	68	18,049
1980	133	205	2,449	3	51	8,021
1981	66	160	3,036	4	56	10,313
1982	119	139	2,195		50	

Note: Data from 1973 to the present include only animals slaughtered in slaughter houses and inspected by the National Meat Inspection Commission.

Sources: Bureau of Agricultural Economics and Bureau of Animal Industry from 1955 to 1972; Bureau of Animal Industry from 1973 to the present.


CATTLE SLAUGHTERED IN METRO MANILA
(1981 - 1984)
1984
1983
1982
1981
(000 HDS)
9
8
7
6
5
4
1981
1982
1983
1984
J F M A M J J A S O N D
(MONTHS)

ANNEX 11

WORKPROGRAMME FOR 1985

Beside consultations, factory visits and assistance:

1. Inventory of adhesives per family:
   - polyvynil acetate adhesives,
   - dextrine adhesives,
   - natural rubber adhesives,
   - chloroprene adhesives,
   - polyurethane adhesives,
   - solid adhesives.

   with for each adhesive: brand name
   solvent
   dry residue
   viscosity
   drying time
   application

2. Testing of adhesives:
   - dry residue,
   - film sample on mercury.

   Adhesion test: Leather/leather
   Leather/rubber
   Coated fabric/rubber

3. Testing of latex adhesives in water medium.
   leather/leather
   coated fabrics
   paper board

4. Inventory of finish products and top coats for shoes, leathergoods, snake skins and local fibres. Preparation of top coats from caseine, egg albumin and nitrocellulose.

ANNEX 12

EQUIPMENT REQUIREMENT
LABORATORY

1. One cell for tensile machine.
2. One pair grips for rubber testing.
3. One pair grips for thread testing.
4. One rubfastness tester IUF 450.
5. One Flexometer de Mattia.
6. One Abrasion Tester DIN 53516.
7. One Stereomicroscope.
8. One U.V. Lamp.
9. One waterbath.
10. One hot plate.
11. One hydrometer 0-10 Baumi.
12. One Shore - A - Tester.
13. One Ultra-Violet Lamp.
14. One Exhaust Fan.
15. One Manometer/Vacuum Gauge with Dessicator.

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