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POTENTIAL AND PREREQUISITE FOR ESTABLISHING PARTICLE BOARD AND WAFER BOARD INDUSTRIES IN EL SALVADOR[1/]

by

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UNIDO Consultant

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The author, Charles M. A. Goethals, undertook a fourteen day mission (from 2 to 15 November 1976) to El Salvador at the request of the authorities in El Salvador.

His terms of reference were to:

- assist the local authorities compile the necessary data for the Industrial Project Information Form for a particle board project and other smaller woodworking projects for the Meeting to Promote Investment and Industrial Co-operation in Selected Wood-processing Industries at Montreal in May 1977.

- write a short report on the potential for the development of the wood-processing industries in El Salvador, identifying problems to be solved and suggesting possible assistance by UNIDO.

The day after his arrival, an "Industrial Project Information Form" partly completed for a "waferboard" plant with an annual capacity of 4650 m^3 was handed to the author by Mr. Gustavo Luna, UNIDO Expert in "Industrial Programming and Policies". But, during his stay in El Salvador, nobody could tell the author who has drafted that form, so that it could not be discussed in depth. The study prepared by Multiply Development Corporation was also not made available to him.

I. Analysis of the present market of wood-based panels in El Salvador

At the time of the mission no wood based panels were produced in El Salvador. The local market in plywood and particle board was supplied by imports from Guatemala, Nicaragua and Costa Rica. During the last years, the average consumption of all wood based panels is estimated to be around 4000 tons per annum (4500 to 6000 m^3) i.e. sufficient to cover the daily production of a plant which would have a capacity of only 13 tons (15 to 20 m^3 per day). This small consumption is more due to the low average purchasing power of the local population and to the relatively high selling price of the boards - than the potential market which could be promoted and developed to absorb a larger quantity of boards if their price and quality is appropriate.

In many cases, plywood boards are used where veneered particle board will be more suitable or appropriate.. According to a leading furniture manufacturer, this is due to the fact that wood veneer sheets are not available and also, perhaps, because there is no appropriate equipment in the country to veneer the panels with imported veneer.

Plywood suppliers are from Guatemala, Nicaragua (which is producing a very good quality cedar plywood), Costa Rica and Honduras - the latter being imported through Guatemala because of the closed border between the two countries.

Particle board suppliers are:

1. "TABLEX" S.A. - from Guatemala, which is producing a board of acceptable quality;
2. "Maderas Aglomeradas" from Costa Rica, producing, under the name of "TABLACEL" as a trade mark, a board with a better sanded surface.

The factory located at San Joaquin de Flores, Heredia, Costa Rica, has started production recently. The size of the boards are 175 cm x 305 cm. (175 cm is about two times a door width) and the thicknesses produced are from 8 to 40 mm. In 12 mm thickness, the density of the board is 700 kg/m^3 and the modulus of elasticity is 32,000 kg/cm^2. In 19 mm thickness, the density of the board is 660 kg/m^3 and the modulus of elasticity is of 30.000 kg/cm^2

A particle board plant using the "Mende" process (producing thin boards on a callender - i.e. continuous - line) is also due to start production in Costa Rica.

The selling prices of plywood and particle boards sold by various firms in El Salvador are shown in appendixes.

When the author went to El Salvador, the Costa Rican firm "Maderas Aglomeradas" was starting a sales promotion campaign to introduce "Tablacell" particle board on the Salvadorian market. From the above it is clear that although a small market does exist, competition is keen and there is practically no protection for local manufacturers. Furthermore, the possibilities of exporting to neighbouring countries are not encouraging. The same applies to the Carribean which is supplied from plants in Jamaica and Surinam.

For exports overseas a plant with a far larger capacity is needed. The average size of a particle board plant in Europe is 80.000 m3 per annum and only 18 % of the total number of plants has a capacity of less than 20.000 m3. The above relates to demand for standard particle board. There is no doubt that the market for standard particle boards in El Salvador is growing.

It must be pointed out that "Waferboard" which does not have all the end uses of particle board, is until now unknown in the country. Waferboard, which results from Canadian technology - and patent - has a slightly textured surface produced by the overlapping of thick flakes. Its major use is in building construction, in such applications as roof and wall sheathing, sub-flooring, cladding (exterior and interior), temporary and permanent fencing, soffits and carport ceilings. But the waferboard is not an appropriate material to be used in furniture and doors manufacture, which is presently the major end-use of wood based panels in El Salvador.

The main advantages of standard particle board over Waferboard is that it can be used both in building components (partitions, ceilings, doors, walls) and furniture production. The only market for waferboard is in housing; but at present, wooden houses are not common in El Salvador (nor for that matter in the rest of Central America).

Nevertheless, the "Fondo Social para la Vivienda", a governmental body, could be indirectly a colossal customer of the product if we take in account that during 1975 the "Fondo Social" has financed 1435 new houses, 59 already existing houses and granted 22 building-loans, for a total amount of 16.327.222,41 colones. The financing facilities foreseen and already adopted by the "Comisión de Adquisición de Inmuebles" of the "Fondo Social" is very large. The opportunity to use with success, more particle board (or waferboard) supposes an in depth, technical promotion campaign aimed at architects and the Fondo Social.

At the "VII Feria Internacional de El Salvador" held in San Salvador during November 1976, three foreign countries showed prototypes of prefabricated low cost houses using wood-based panels which raised considerable interest.

1. At the Colombian stand, Roberto Collins y Ca. Ltda., Bogota, exhibited a low cost house clad with a combination of metal sheets and compressed wood-based boards. The selling price (including the erection cost on site) of a standard family sized house is about US$2,500.-. After the last earthquake in Guatemala, Roberto Collins y Ca. Ltda. sold several thousands of houses to that country, and such type of housing could also find a ready market in El Salvador.

2. "Empresas Unidas Novena Region" from Chile was exhibiting a prefabricated house made with plain wood and wood-based panels. A house of 63 sq.m. costs 12,570 colones (8.820 for the prefab elements and 3.750 for cost of erection).

3. A house, produced by "Mayo Ltda.", Guatemala, was also exhibited at the fair. It is made of wood, particle- and fibreboard. A standard prefabricated house of 82 sq.m. costs, after erection, 18,500 colones. This last firm also provides special terms of credit to its customers.

The market for waferboard in Canada is, according to a recent study[1] as follows:

"For the first 15 years, the major waferboard product was a relatively thin board, mostly in 6 and 7 mm (1/4 and 5/16 inch) thickness. This board was widely used as interior and exterior cladding on buildings outside of cities - barns, granaries, cabins. After some years of this, it was evident that the board stood up very well to this exterior exposure, even if left unfinished, and it maintained a generally attractive appearance. The surface-roughening characteristic of particleboards exposed to the weather was no problem in these uses. The surface was textured to begin with, and the increase in texture on exposure did not represent a significant change in appearance. Moreover, the total amount of thickness swelling resulting from long term weather exposures was acceptably small, even at the edges (approximately 15 per cent).

In competition with softwood-plywood cladding, waferboard often came out the winner on a long term basis, particularly in maintenance of an attractive appearance after unprotected exposure to the weather. These qualities of attractiveness and retention of appearance cannot be assessed objectively, other than in terms of the enthusiasm with which the market accepted the product.

[1] Forest Products Journal, November 1976 - "Growth of Waferboard in Canada" by M. N. Carroll.

This enthusiasm was based on price as well as performance. In Canada, waferboard has traditionally been priced at 15 per cent below the same thickness of sheathing-grade plywood. In purely structural uses, such as roof sheathing, this price advantage is largely offset by the code requirement for using a greater thickness of waferboard. However, for that price, waferboard provides a surface free from the kind of imperfections found in sheathing-grade plywood - knot and open knotholes particularly. Hence, in uses for which its uniform surface appearance is an asset, waferboard is really competing with the paint grades and natural-finish grades of plywood, products which sell at two to three times the price of waferboard.

During the period from 1966 to 1972, the MacMillan Bloedel Ltd. plant marketed about 100 million square meters (10^9 ft.^{2}) of waferboard in Canada. A small amount of the board found its way into purely structural uses (sheathing) and the experience with the board in these applications has been enitrely satisfactory. Starting in about 1972, a combination of circumstances created tightness in the supply of exterior softwood plywood in eastern Canadian markets. This, in turn, created a favorable economic condition for the rapid expansion of waferboard into the building market as a supplement for sheathing grades of plywood. Since 1972, the first Canadian plant (MB Ltd. in Hudson's Bay, Saskatchewan) has augmented its capacity by a second line, and new plants have started in Timmins, Ontario; Slave Lake, Alberta; Longlac, Ontario; and two plants in Thunder Bay, Ontario.

By the end of 1974, the annual Canadian production capacity was more than 22 per cent of the Canadian production of softwood plywood. By 1978, with six plants in full production, the excess of annual capacity anticipated Canadian market demand could reach 30 million suqare meters (about 300 million ft.) with a total production capacity of about 50 million square metres (about 500 million ft.).

The shift in market emphasis oan be seen from the fact that, prior to 1972, the produotion of the sole manufacturer was some 95 per cent in thicknesses less than 9 mm (3/8 inoh). Today, with six plants in operation, the proportion of production less than 9 mm thick is oloser to 50 per cent, indicating that half of the produotion is now going into sheathing applications.

It would be inaccurate to leave the impression that this entry of waferboard into the marketplace just happened. Like any other wood product, waferboard has virtues and limitations peculiar to itself, and the broad market acceptance of waferboard in Canada was largely the result of the efforts of MacMillan Bloedel Ltd., which was the sole Canadian producer until 1972. During this time, the board was marketed with all the resources of a modern wood-products company having a national marketing organization, backed by skilled technical people, and with the capital resources to refine the product and the process to meet market needs.

Jorgenson has reported on the market acceptance of waferboard in New Jersey during a period in 1972. That report indicated a general satisfaction with waferboard in sheathing applications.

The Future

Waferboard has proven itself in the Canadian marketplace as an acceptable product for the sheathing functions in a frame-built house and as a cladding material for many uses. Of course, the requirements for architectural variety will probably preclude a major takeover by waferboard in the cladding function in residential housing. In the latter function, the fibreboards now offer the greatest potential by virtue of the variety of effects which can be obtained by embossing the board during the hot-pressing operation to imitate any traditional sliding pattern.

However, there appear to be no technical or economic limitations on the market penetration of waferboard into the sheathing functions in frame-built housing and mobile homes. For these uses, the appearance of sheathing is of no consequence in a finished house. This could open the way to more sophisticated sheathing products evolved from waferboard by adding particle orientation to obtain a higher strength-to-weight ratio, giving up the characteristic appearance of today's waferboard. On the other hand, since the expected rate of growth in waferboard capacity forecasts a gross oversupply in the Canadian sheathing market (plywood plus waferboard), a search for broader markets seems inevitable. This could lead to product development to provide a greater variety in appearance, so as to expand the potential of the board in the cladding market in residential housing. However, any such new products would face the problem of proving themselves in actual use over a priod of time, to gain market acceptance. Waferboard already has market acceptance and has taken its place beside lumber and plywood in the Canadian scene as a commodity product.

The future of waferboard seems assured by two factors. One is the dwindling supply of logs suitable for efficient manufacture into plywood. The second is the pressure exerted at the government level to use a higher proportion of the standing timber, including trees that were formerly classed as unmerchantable. The fact that waferboard (rather than a phenolic particleboard) developed most rapidly in Canada is to a considerable extent attributable to the fact that Canada has vast reserves of poplar, a species at present of little interest to Canadian pulp, plywood, or lumber producers. Up to some 70 years of growth, Canadian poplar tends to be too small or too crooked for efficient conversion into plywood or lumber. Beyond this age, rot sets in. In an operation which slashes the logs into short bolts to be fed to the flaking machines, neither the small diameter, the crook, nor the rot represent any particular difficulties in conversion. Finally, there is a more than adequate supply of aspen in the provinces of Ontario or Quebec, close to the major urban building markets; whereas the major supplies of Canadian softwoods for plywood are in British Columbia. This gives eastern-made waferboard a shipping-cost advantage over softwood plywood brought from the West Coast.

Waferboard may not represent as efficient a use of the raw material as would an oriented board, but it has two particular virtues. It places a relatively low demand on the supply of phenolic resin and it presents a simple marketing situation - a single, all-purpose product suited to a wide range of both structural and decorative uses, by either the mass building or the do-it-yourselfer."

II Raw Material Situation

The author has sought the advise of Mr. T. M. Catterson, Forestry Advisor, Silviculture, on the raw material availability for the proposed particle board plant. The views are:

"El Salvador is a wood-deficit country which currently imports approximately 90 per cent of its industrial wood needs. This material comes from Guatemala, Nicaragua, Costa Rica and Honduras, this latter via Guatemala because of the lack of a trade agreement with El Salvador. The internal production of sawnwood is limited and usually of inferior quality due to the following reasons:

1. the poor condition of the resource base, its limited extension and the degraded stands
2. poor sawmill practices - very rudimentary principally pit-saws
3. small size timber

Forest area of El Salvador

Type of Forest	Area (Ha)
Conifer - Pine type	40,000
Mangroves	35,000
Broadleaf Hardwood	5,000
Plantations	3,000
Chapparal	30,000*
Coffee - shade plantations	180,000
Total:	365,000 Ha

*Estimated

The ourrent focus of the forest policy and its executive agenoy, the Forest Servioe, is two fold: a) to oonserve and improve the existing forest resources, and b) to oreate new forest resources through plantations which will also help to alleviate the problem of the degraded watersheds. In effect, the efforts of the Forestry Service and its FAO advisors has been strongly oentered on the implementation of a nationwide reforestation plan stipulated to provide more wood raw material, improve land-use practioes, stimulate the rural employement perspeotives and generally oontribute to the socio-eoonomic development of the country.

While the plantation program has not been as successful as antioipated, only about 3,000 ha. of plantations exist, this does not bespeak the burgeoning wave of interest in and ability to plant artificial forests. In short the past few years have, as might have been expected, proven to be a trial period for the plantation program a time which has allowed for the identifioation of problem areas and the adjustments for the future. The development of the forestry sector retains its importance and priority in the national development scheme.

The question of the establishment of wood industries has been tied to the consideration of the raw material supply. Because of the exoellent market oonditions for sawnwood, there has been little preooupation regarding the destiny of the plantation products. Several people have, however, mentioned the need to find the most suitable use for the intermediate products of the relatively short rotation plantations - a wood partiole board plant has reoeived muoh attention in this respeot. Initial interest in the possibilities of the production of partioleboard stem from local assessments of a primary wood raw-material source - the wood that is extraoted in the form of prunings of the ooffee shade trees. Of the approximately 200,000 ha of ooffee plantations throughout the oountry, the great majority (90 per oent)

currently employs the shade-tree techniques although there has been some introduction of an open-grown, densely planted, miniature coffee variety called "Pacas". The excellent international market for coffee has stimulated the expansion and intensification of coffee practices to improve yield per hectare. The elimination of shade trees and the introduction of this smaller, denser variety is the most profound change in coffee management in many decades. It must be kept in mind that such a change in techniques requires more fertilization -- a practice whose costs are likely to rise with the increment in world petroleum prices. A fluctuating coffee market and increasing fertilizer costs will put the efficiency of this new practice in doubt. It is therfore necessary to consider whether or not the elimination of the coffee shade and in consequence, the raw material will diminish as has been speculated.

It is the opinion of this author that the current changes are of a transitory nature, one that reflects a short-term view of the world market conditions for coffee. Both Brasil and Angola, large coffee producers are likely within the next five years to recover their productive capacity which has been curtailed due to frost and internal strife respectively. In short, it would seem that the coffee plantations would continue to provide raw material in the form of prunings.

It would be useful to consider the current use that this wood received, and to try to quantify it on a national scale. In a study prepared by the local Forest Service, a preliminary assessment of the wood production from coffee shade prunings indicated an average of 4.5 m3 of cordwood per hectare per year. This estimation was made to quantify the fuelwood production of the coffee plantations - the only and actual destination of this wood.

Fuelwood is an important consumer item in El Salvador as it constitutes the principal combustible used, not only in kitchens, but also in bakeries, brickyards, limestone kilns and salt making. Estimated production figrues for firewood and charcoal, based on consumption projections, available from the local Forest Service were:

Fuelwood Production*

1974	coniferous	16,000 m3
	non-coniferous	2,280,000 m3
	Total	2,296,000 m3
1975	coniferous	770,000 m3
	non-coniferous	3,080,000 m3
	Total	3,850,000 m3

*These figures are based on projections of average per capita yearly consumption and population.

The principal sources of fuelwood, aside from the coffee-shade material are:

- the mangrove forests
- the oak (Quercus spp.) and chapparal (Curatela americana)
- the natural vegetation that grows up in the agricultural lands in fallow.

In considering the production - consumption figures or in calculating the availability of this material for other uses, it must be kept in mind that these figures are cordwood figures and that much of the material is very small dimension stock. While the estimates of wood-production in the coffee areas per hectare per year have been caloulated at 4.5 m3, this figure would be considerably reduced if there is a minimum size involved, probably to as little as 1 m3. Much of the firwood that the coffee shade and the mangroves produce is in the form of branchwood of small diameter. If this figure is further reduced to solid wood, the production is even less.

An estimated price scheme for local firewood, sold in measures known locally as "pantes" (1.0 m x 1.0 m x 4 m) would be as follows:

small wood-sticks	C 10 pante
medium size branchwood	C 16 pante
larger trunk or branchwood	C 18 pante

At C 16 average price per "pante" of cordwood, 1 m3 of cordwood would be valued at C 4 (US$1.60).

Among the woods likely to be available as raw material for a particle-board plant in El Salvador are:

Common Name	Scientific Name	Specific Gravity	Observations
Pepeto	Inga spp	0.60	Principal coffee-shade species
Madrecacao	Gliricidia sepium	0.93	Coffee-shade species very adaptable to poor sites - may be coppiced
Chaparro	Curatella americana	N.A.	Very abundant fire-type species found in mountain foothill pastures where burnt.
Roble	Quercus spp	1.03	Also found on highlands in combination with pine
Pino	Pinus ocoarpa	0.72	Most abundant pine species basis for sawnwood industry
Laurel	Cordia alliodora	0.45	Local species retained as valuable timber

Other species that receive little use and are relatively abundant in the area we classify as humid subtropical forest (the coffee areas) include:

Conacaste -- Enterolobium cyclocarpum - 0.36

Ceiba - Ceiba Pentandra - 0.23

Jiote - Bursera Simaruba - N.A.

The most important reforestration species in the country, in the order of their importance are:

Common Name	Scientific Name	Specific Gravity	Observations
Pino Caribe	Pinus caribaea Var hondurensis	N.A.	Will probably prove to be the most important reforestation species
Teca	Tectona grandis	0.52 - 0.62	Valuable wood - extensively planted - fast growth
Eucalipto	Eucalyptus deglupta	0.51 - 0.63	Fastest growing exotic species - somewhat site demanding.
Laurel	Cordia alliodora	0.45 - 0.50	Wide range of sites - relatively slow growth but excellent wood.
Pino	Pinus oocarpa	0.72	Will be less planted as management shifts to natural regenreration
Cipfes	Cuprassus lusitanica	N.A.	Found above coffee and as wind break among it - valuable wood - site demanding.

Summary and recommendations

The prospects for a wood-based particle board plant are excellent especially if consideration is given to excellent internal wood products market. The new plant being established to produce particle-board from bagasse is starting to propagandize its new product; it had a small stand in the recent International Fair. They intend, as per the propaganda they were displaying, to makret an elaborated product, i.e. the particle board with certain surface treatments such as wood laminate, plastic laminate, plastic coating and painted. The displays at the fair also suggested that they would be using wood as a raw material as well as bagasse.

The location of any particle-board industry will be an important decision in the feasibility analysis. Initially it would be best to find a location near the coffee growing areas, such as Santa Ana, but also with access to lands that might be planted to production forests in order to assure a sustained flow of raw material. The site visited to the North of Santa Ana would seem ideal since there is also a great deal of land in the area available for plantation forestry. The degraded sloping hill sites would be ideal for providing the raw material for a

particle board plant because these sites will not be capable of producing short rotation sawtimber but will be able to provide smaller stock as thinnings during a longer rotation. Furthermore, these sites are of little economic benefit to the country in their current condition - that of very extensive low quality livestock range. This area could be planted to both Pinus caribaea and Gliricidia sepium the latter in very intensive coppice type plantations.

As Mr. Goethals pointed out in his preliminary visit to El Salvador, the actual establishment of a particle-board plant would require a more detailed feasibility study. It remains, however, the opinion of this author, that El Salvador must make intensive use of its land resources - a purpose for which a particle board plant would be well adapted in that it would permit the establishment of local industry derived from under-utilized resources, both of wood in the form of coffee shade prunings and of land in the form of now unproductive sites."

III. Description of the projects submitted by El Salvador to be negotiated at the Montreal Meeting

Two projects have been presented to UNIDO:

1. By "Instituto Salvadoreño de Fomento Industrial" - INSAFI.
   This project is based on the utilization of odd branches of the shade trees, Pepeto or Inga paterno, in the coffee plantations as raw material for the manufacture of waferboards. Due to the absence, at the present time, of a suffioient local market for this special type of board, the project cannot be based on the local demand and it is unlikely to retain the attention of investors at the Montreal meeting. The only remaining potential markets is in North Amerioa (USA and/or Canada).

   It seems that INSAFI authorities have received, from the supplier of the equipment, "Multiply Development Corporation Ltd.", Burnaby, British Columbia, Canada, some assurance for the commercialisation of the total production of the factory on the Canadian market.

If the INSAFI waferboard project is to produce exclusively Canadian market, real guarantees must be received and in that case the project would be a typical export-processing enterprise. But the author has recently heard that some propositions have been made in several other neighbouring countries, namely Panama and Costa Rica. For El Salvador to compete with these on the Canadian market, the cost of raw material and freight rates to Canada must be competitive. Until such time as a formal marketing agreement has not been made, the author cannot consider the project as viable. He believes that, at the present stage, there is no interest for INSAFI's representative to spend time and money to attend the Montreal Meeting in May 1977 for this project since negotiations would be only with the sellers of equipment and know-how.

2. By "FORESTALES" S.A. de C.V.

At the time of the author's arrival in San Salvador, the Forestales company has not been informed of the Montreal Meeting. At the occasion of a visit paid by the author to Mr. Roberto Figueroa Diaz, General Manager, to obtain information on cost of raw materials for the waferboard project, the information needed to prepare the second project was given to him. Therefore, the project was prepared by Mr. Figueroa during the last days of the author's stay in El Salvador. For this reason, the project has not been prepared in the required depth, nevertheless, it has been considered to be positive by the author because of the potential market for particle board, and the knowledge of "Forestales" in the field of the re-forestation and the wood industry in the country. Forestales has also his own marketing channels for the import and sale of plywood and particle board, and this would help the new plant.

By pure coincidence, just a few hours before his scheduled departure from the country (15 November at 5 p.m. and his flight was scheduled for the 16 November at 9.30 a.m.), the author received from private sources information about a new particle board plant, just completed, and which is likely to make the "Forestales" project unviable. This is a new and modern particle board factory recently erected, belonging to San Francisco Sugar Factory under the name of "Productos Agro Industriales" using bagasse as raw material. The equipment of the new factory, supplied by "Pawert--SPM AG", Basel, Switzerland, can produce boards of thicknesses from 3/16 to 1 1/2 inch. The nominal daily capacity is of 1500 sheets of 3/8" thickness, produced during one shift of eight hours. This

capacity production could be estimated at about 36 tons/day. The factory machinery which is of up-to-date technology, includes a veneering section and a laminating plant. In addition to the production of particle board, the factory will also produce 50 tons per day of animal feed, made from bagasse fibres and molasses. The new particle board factory is erected at the San Francisco Estate and is adjacent to the sugar factory at Aguilares, about 25 km north of San Salvador.

This is already a very advantageous point, considering the supply of raw material and power (steam-generating-station, steam-heating, etc.).

The management of the new plant is under the aegis of the sugar factory which can also provide financial support to the new enterprise during its running in and entry of the production on the local market. Until such time as the production of this plant is fully absorbed by the local market, it is economically unsound to risk the investment already made through investing in yet another plant which will compete directly on the small but growing local market.

The possibilities of finding investors in Montreal would not be promising, and, if the plant is well created, the loan which INSAFI made to the San Francisco plant will be jeopardized.

The author cannot explain why "INSAFI" which he was told is the most important financier of the new plant, has never been able to give him economic and technical information about the equipment and the production of that new factory. The author requested many times, to the INSAFI staff, precisions about that factory. Not only he did received no information, but the INSAFI staff was not in a position to arrange for the author, the visit to the factory. Consequently, all the information he obtained about that plant was from contacts with individuals not directly related to his mission.

Acknowledgements

The author wishes to thank Mr. T. M. Catersson, Mr. R. Figueroa Dias and Mr. Luis Gomez for their invaluable assistance without which it would have been impossible to complete the task successfully.

APPENDIX I

APPENDIX II

FORESTALES, S. A. DE C. V.

San Salvador, Abril 14, 1975.

COMUNICADO DIRIGIDO A LOS ALMACENES DISTRIBUIDORES DE MATERIALES DE CONSTRUCCION, TALES COMO VENTAS DE MADERA Y FERRETERIAS.

De común acuerdo con la Fábrica TABLEX, S.A., de Guatemala, nosotros en calidad de REPRESENTANTES DE ELLA, venderemos el producto TABLEX en toda la República de El Salvador, a precios de fábrica. A continuación detallamos estos precios que constituyen el COSTO del almacén comprador, así como también los precios a los cuales sugerimos que se venda al público consumidor, que son exactamente iguales a como se vende en la Rep. de Guatemala.

MEDIDAS	COSTO DISTRIBUIDOR	VENTA AL CONSUMIDOR
4' x 8' x 4mm.	¢ 8.10	¢ 9.00
4' x 8' x 1/4"	" 9.60	" 11.15
4' x 8' x 3/8"	" 14.60	" 16.90
4' x 8' x 1/2"	" 17.10	" 19.75
4' x 8' x 5/8"	" 19.15	" 22.15
4' x 8' x 3/4"	" 23.25	" 26.90
4' x 8' x 1"	" 31.75	" 36.70
4' x 8' x 1 1/2"	" 46.55	" 53.80

Los precios de costo del Distribuidor son absolutamente NETOS. No hay descuentos.

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RECUERDE UD. QUE: TABLEX es Clase A/A (ambas caras) para carburante, acústico y curado contra termitas y polillas, etc. Se recomienda que se use únicamente para interiores en la Industria de la Construcción y muebles en general.

LISTA DE PRECIOS QUE RIGE A PARTIR DE HOY, NOVIEMBRE 20/75 RELATIVA A "PLYWOOD DE CAOBILLA", PLYWOOD DE "CEDRO MACHO" Y PLYWOOD "NICA - PLY", en la clase "B" que así la recibimos de la Fábrica, pero que nosotros la comercializamos como de Clase "C".

CAOBILLA, CEDRO MACHO Y NICAPLY:	CLASE "C" A DISTRIBUIDORES	CLASE "C" AL PUBLICO
3' x 7' x 3/16"	¢ 7.85	¢ 9.25
3' x 7' x 1/4"	¢ 9.45	¢ 11.25
4' x 8' x 3/16"	¢ 10.40	¢ 12.35
4' x 8' x 1/4"	¢ 12.80	¢ 15.00
4' x 8' x 3/8"	¢ 19.35	¢ 22.50
4' x 8' x 1/2"	¢ 24.75	¢ 29.00
4' x 8' x 3/4"	¢ 35.00	¢ 41.00

PLYWOOD DE PINO CURADO	CLASE "C"	
3' x 7' x 3/16"	¢ 6.80	¢ 8.10

PLYWOOD DE CEDRO REAL	CLASE "C"	
3' x 7' x 3/16"	¢ 10.40	¢ 12.25

POLITICA DE VENTAS A LOS DISTRIBUIDORES EXCLUSIVAMENTE:

Compras Normales de montos menores: a 30 días plazo; por compras, cada vez, de ¢2,500.00 AL CONTADO, se les otorgará el DOS POR CIENTO de descuento;

Por compras de TRAILER COMPLETO al crédito, SIN DESCUENTO a CINCO MESES de plazo, con Letra de Cambio sin intereses;

Por compras de TRAILER COMPLETO al crédito, se otorgará el DOS POR CIENTO de descuento y a CUATRO MESES plazo con Letra de Cambio, sin intereses;

Por compras de TRAILER COMPLETO al crédito, se otorgará el CUATRO POR CIENTO de descuento y a TRES MESES plazo con Letra de Cambio, sin intereses;

Por compras de TRAILER COMPLETO AL CONTADO, se otorgará el OCHO POR - CIENTO de descuento.

Las escogencias en Plywood Clase "C" no son permitidas.

Los Precios están sujetos a cambios sin previo aviso, y se aplicarán los precios que rijan a la fecha de embarque ó entrega. Los pedidos por Trailers están sujetos a las existencias y aprobación de la Fábrica.

LISTA DE PRECIOS DE MADERA

		VARA
RIOSTRA PINO	0.25 - 0.40	¢ 0.50 — 0.40 — .35
RIOSTRA CONACASTE	0.50	" 0.70
RIOSTRA CEDRO	0.75	" 1.00 — 0.90 — .65 .70
RIOSTRA NOGAL	—	" 1.00 — —
COSTANERA PINO	0.65 - 0.70	¢ 0.65 — 0.75 — .75
COSTANERA CEDRO	1.25 - 1.50	" 1.75 — 1.75
COSTANERA CONACASTE	1.25 - 1.50	" 1.75 — 1.50 1.50
REGLON CEDRO	2.25 - 2.50	¢ 3.75 — 3.50 — 3.50
CUARTON CONACASTE	2.50	" 3.50 — 3.50 — 3.50
CUARTON PINO	1.40	" 1.35 — 1.50 — 1.50
TABLA PINO 1 x 16"		¢ 2.50 — 2.25 —
TABLA PINO 1 x 10"	1.40	¢ 1.40 — 1.50 — 1.60
TABLA CONACASTE 1 x 18"	1.50	¢ 5.00
TABLA CEDRO 1 x 18"		¢ 6.50
TABLA NOGAL 1 x 16"		¢ 6.00
TABLONCILLO PINO	2.25	¢ 2.50 — 2.25 —
TABLONCILLO CONACASTE	3.50	" 5.00
TABLONCILLO CEDRO	4.75 - 5.00	" 5.50
REGLA PACHA PINO	0.60	¢ 0.50 — 0.45 — 60
REGLA PACHA CEDRO	1.25	" 1.50
REGLA PACHA CONACASTE	1.25	" 1.50 — 1.25

NUEVA LISTA DE PRECIOS QUE RIGE A PARTIR DE HOY, NOVIEMBRE 20, 1975, RELATIVA A PLYWOOD PRODUCIDO POR "PLYWOOD DE NICARAGUA, S. A."

PLYWOOD DE PINO CURADO:	A DISTRIBUIDORES	AL PUBLICO
3' x 7' x 3/16" (4mm.)	C$ 7.60	C$ 9.00
3' x 7' x 1/4" (6mm.)	" 9.75	" 11.50
4' x 8' x 3/16" (4mm.)	" 10.25	" 12.50
4' x 8' x 1/4" (6mm.)	" 13.20	" 15.50
4' x 8' x 3/8" (9mm.)	" 20.35	" 23.80
4' x 8' x 1/2" (12mm.)	" 25.65	" 30.00
4' x 8' x 3/4" (18mm.)	" 36.00	" 42.00
PLYWOOD CAOBILLA CURADO:		
3' x 7' x 3/16"	C$ 8.75	C$ 10.25
3' x 7' x 1/4"	" 10.50	" 12.50
4' x 8' x 3/16"	" 11.55	" 13.75
4' x 8' x 1/4"	" 14.25	" 16.75
4' x 8' x 3/8"	" 21.50	" 25.00
4' x 8' x 1/2"	" 27.50	" 32.25
4' x 8' x 3/4"	" 39.00	" 46.50
PLYWOOD DE CEDRO REAL:		
3' x 7' x 3/16"	C$ 11.60	C$ 13.65
3' x 7' x 1/4"	" 13.20	" 15.75
4' x 8' x 3/16"	" 15.75	" 18.50
4' x 8' x 1/4"	" 18.15	" 21.50
4' x 8' x 3/8"	" 26.40	" 31.00
4' x 8' x 1/2"	" 33.00	" 38.75
4' x 8' x 3/4"	" 46.50	" 54.75
PLYWOOD DE CENICERO DECORATIVO:		
3' x 7' x 3/16"	C$ 15.40	C$ 18.00
3' x 7' x 1/4"	" 16.80	" 19.75
4' x 8' x 3/16"	" 22.00	" 26.00
4' x 8' x 1/4"	" 24.00	" 28.50
PLYWOOD CEDRO, CALIDAD "MARINO":		
4' x 8' x 1/4"	C$ 26.50	C$ 31.00
4' x 8' x 3/8"	" 35.00	" 40.00
4' x 8' x 1/2"	" 42.00	" 49.50
4' x 8' x 3/4"	" 58.00	" 69.00
PUERTAS "PLYNIC" SECADAS AL HORNO:		
Medidas Standard, de 2.10 alto por 0.70, 0.80 y 0.90 anchos:		
FORRO DE PLYWOOD DE PINO CURADO	C$ 33.00	C$ 38.50
FORRO DE PLYW. DE CAOBILLA CURADO	36.50	" 42.50

Cont. Nueva lista de precios....

LOS MATERIALES CORRESPONDIENTES SEÑALADOS EN ESTA LISTA DE PRECIOS SON DE CLASE "A" EN EL ANVERSO Y "B" EN EL REVERSO, ES DECIR: "CLASE A/B".

TODOS LOS PRECIOS ESTAN SUJETOS A CAMBIO SIN PREVIO AVISO; Y SIEMPRE SE APLICARAN LOS PRECIOS QUE RIJAN AL MOMENTO DEL EMBARQUE.

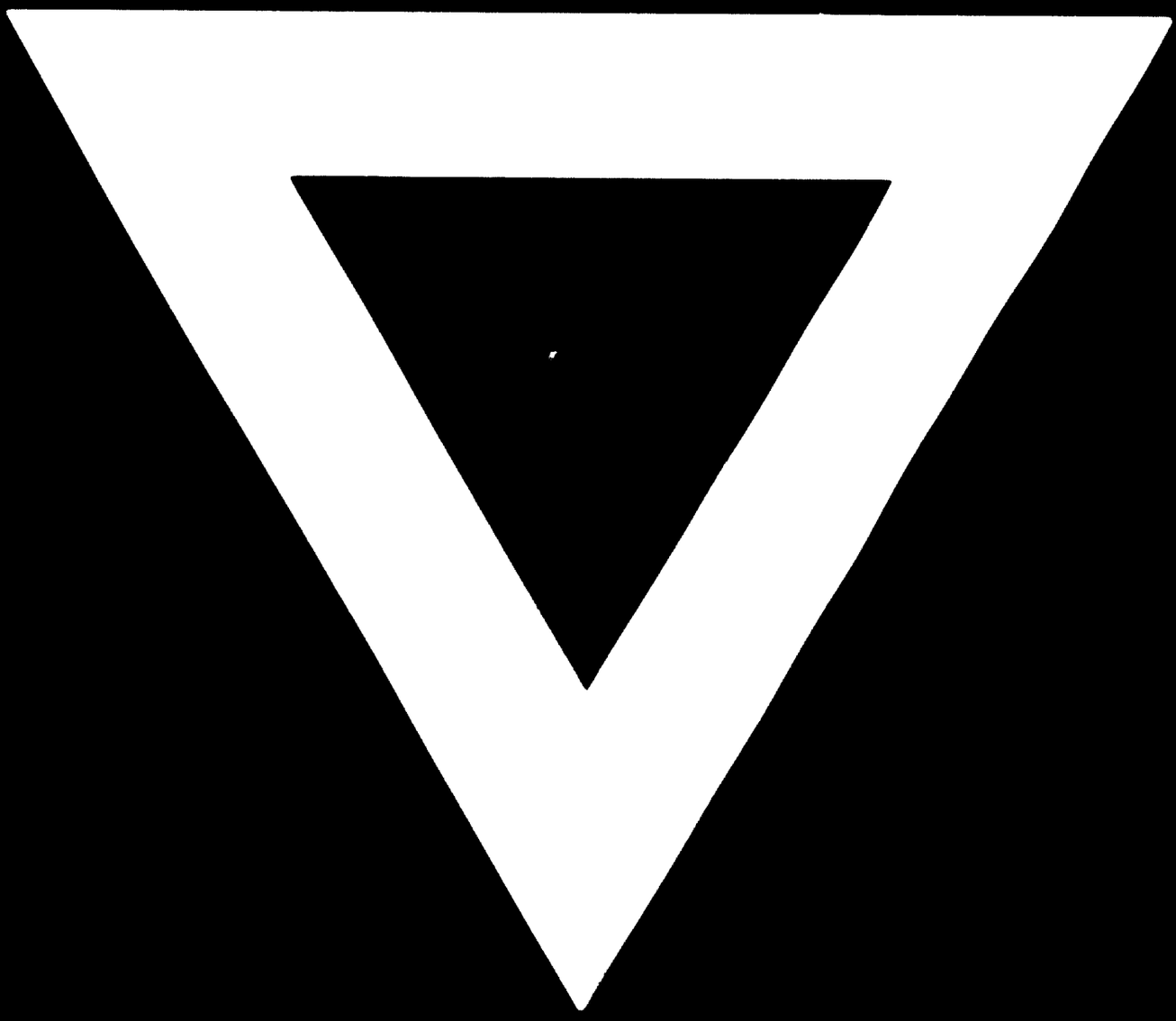
POLITICA DE VENTAS DIRIGIDA A LOS "DISTRIBUIDORES" UNICAMENTE:

Por compras AL CONTADO cada vez, de ₡2,500.oo se les otorgará un DOS POR CIENTO DE DESCUENTO;

Por compras de TRAILER COMPLETO y estrictamente AL CONTADO se les - otorgará un OCHO POR CIENTO de descuento;

Por compras de TRAILER COMPLETO a crédito se otorgará CUATRO POR CIENTO DE DESCUENTO y Letra de Cambio a 90 días plazo ó bien SIN DESCUENTO a 120 días plazo con Letra sin interés.

G-332



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