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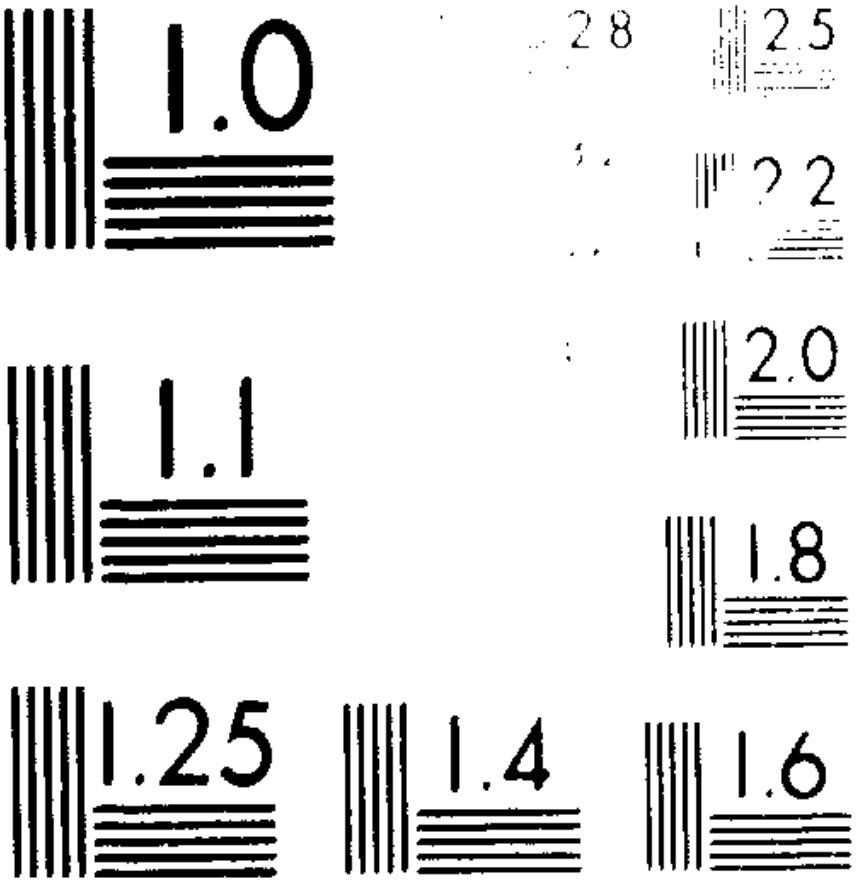
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DP/ID/SER.B/282
6 January 1981
English

ADVISER ON ENGINEERING-MAINTENANCE AND MANAGEMENT (CEYLON PLYWOODS CORPORATION).

DP/SRL/75/014

SRI LANKA

Terminal report*

Prepared for the Government of Sri Lanka by the
United Nations Industrial Development Organization
executing agency for the United Nations Development Programme

Based on the work of Adolf A. M. de Coene

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United Nations Industrial Development Organization
Vienna

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V.81-20053

TABLE OF CONTENTS

SUMMARY:

This report has been written in the spirit of a careful analysis of the facts, although sometimes critical, it is to build-up constructive guidelines for a management plan at top and middle management levels to face the challenge of bright prospects of the island's market, but restricted by its limited raw materials. Timber supply has had adverse effects on production. If shortages of suitable raw materials continue, part of the factory should be closed down or manufactured products or semi-manufactured should be imported. This must be looked at as a surgical operation in view to save the healthy part of the body. As both the top management (Chairman and General Manager) have been replaced at about the middle of the Adviser's stay in Sri Lanka,a need to develop the management structure of the whole Corporation was felt. Therefore, the following recommendations were made:

1. The need of supplying the necessary raw materials should be assured. Local timber should be the cheapest solution, but it probably is not available, so it must be imported.
2. Take immediate steps for constructing a second particle board plant for which local raw material is available.
3. Create a marketing strategy unit.
4. A research and development unit should be created. Its work is to be co-ordinated and given more strength.
5. A flow of information should be built up throughout the corporation and put at the disposal for those who need the data. This would give the top management an easier task to take the right decisions based on better information and less intuitive inspiration.
6. Fellowships should be granted to three CPC members to go to neighbouring countries and work at plywood plants using similar tropical hardwoods for four to six months each.
7. This should be followed up by technical assistance of a team of plywood manufacturers, specialists training at the Corporation plants.
8. Short-term re-cycling and upgrading previous UNIDO inputs in saw-doctoring and maintenance.

9. Logging training courses should be organized in view of Mahaweli project at the Udugama logging camp of the Ceylon Plywoods Corporation (C.P.C.).

10. Further management seminars and workshops at top and middle management level should initially be organized within the Corporation and subsequently conducted with staff members of other companies also participating.

11. Finally, after nine to twelve months, a short term (three to four months) overall management consultant to check implementation and practical results of the inputs and find out if further assistance is needed, worthwhile, and, if so, in which field.

INTRODUCTION:

In response to a request by the Government of Sri Lanka to the United Nations Development Programme (UNDP), Mr. A. de Coene, Belgium, expert in manufacturing operations and general management was sent on a one year mission to examine all aspects of manufacturing operations and general management in relation to the Ceylon Plywoods Corporation's objectives, and to advise the General Manager on changes necessary to optimize overall effectiveness of operations. His assignment began on 30 May 1979 and ended on 29 May 1980. The United Nations Industrial Development Organization (UNIDO) was the executing agency. The Goverrment agency co-ordinating the project was the Ministry of Industries and Scientific Affairs.

The chief objective of the mission was to identify the major shortcomings of the Corporation's plants at Kosgama and Gintota, and to suggest how they could be rectified. This technical report was prepared by the expert during his assignment with a view to help improve manufacturing operations and general management.

PRESENT SITUATION AT THE CEYLON PLYWOODS CORPORATION:

Raw materials:

The Corporation is faced with a shortage of its basic raw material - timber - which affects production in the factories. In August 1977, a ban was imposed on the felling of timber in State forests. It was partially lifted for pealer logs, but re-imposed later on. The Corporation's principal source of timber supply is a 25,000 acre concession in Kanneliya. According to the responsible timber supply Officer in Charge of logging, this concession has a supply of suitable logs for only some two or three more years. The concession is located at a reasonable distance from the Gintota plywood plant and supplies most of the timber to that plant. To supplement it, local suppliers (also affected by the ban) have the alternative of using rubberwood. Private rubber estates are cutting old trees to replant new ones to perpetuate the rubber crop. According to information received from the Rubber Institute in September 1979, out of the total acreage of rubber trees in Sri Lanka (560,000 acres) 315,000 are already replaced and 210,000 acres are to be replaced at an annual estimated replantation rate of 20,000 acres. This programme can go on for another three to five years. Bearing in mind that only 15 percent of the logs are suitable for plywood, the average volumetric content of an acre of rubber trees suitable for plywood production is only 200 cubic feet. The State Timber Corporation is another alternative for timber supply. In the latter part of each year, during rainy season, logging becomes much more difficult and a shortage of logs affects production at both of the Corporation's plants, but it is more accentuated at the Kosgama complex. According to a master plan, it is estimated that 57,000 cubic feet (cu.ft.) of logs are needed monthly by each of the Corporation's two plants (at Kosgama and Gintota) to run that plant at minimum economical conditions.

At the end of 1979, the supply dropped to 35,000/32,000 cu.ft. in November. During dry season, January to April, logging is easier and the supply is sufficient.

In September 1979 it was already decided to import logs from abroad. Early February 1980, the Corporation's Chairman went on a special survey

trip to Malaysia and Indonesia to select the best area to purchase timber on a regular long-term basis at adapted world prices. The mix of imported peeler logs and sawn logs needed by the Corporation, in addition to the local supply, to fulfil the commitments as well as running the plants with a sufficient supply of timber all the year through was determined.

On his return he confirmed the adviser's opinion, given in November 1979 after the trip to Jakarta and Medan (Indonesia) in October 1979, that Sumatra (Indonesia) should be considered as the best area to supply Sri Lanka.

Shortage in supply will be felt heavily around June and hopefully imports will by then fill the gap. The Minister of Economic and Scientific Affairs agreed in principle to import timber on special conditions, based on a call for tenders among selected suppliers. The total amount foreseen for a year's imports is to be estimated at 50,000 cubic metres (m^3). This is composed of a mix of qualities and species and is a small amount for a country as Indonesia, which exports 20 million cubic metres annually. Indeed, the mix of qualities and species that the C.P.C. could consume in its own domestic market are not the same as those of other countries manufacturing plywood for re-export. (C.P.C. does not envisage exporting plywood). It calls for specialists to purchase the right timber mix.

In conclusion, purchase of timber is the Corporation's highest priority task.

Project management background:

The top management of C. P. C. has been replaced completely five months after the Adviser's arrival. The General Manager resigned, joining FAO as an Adviser, left the Corporation with one month's notice (1 November), his replacement was not well prepared and the designation of the previous Chief Accountant as acting Interim General Manager frustrated eventually other candidates who thought to be assigned, brought up top level tensions which were not solved at the time of writing this report, five months later.

One month later, the Chairman resigned and left the Corporation on 1 December 1979. The new Chairman assigned by Ministerial decision took up his new duties on 5 December 1979.

As the General Manager has only been nominated ad interim, the duration of his assignment is unknown as well as his exact power. It seems that the Chairman, whose functions normally are only those of a policy maker, seems involved in day-to-day action and decisions. The Chairman, coming from the Port Authorities and Airport Administration, does not have a solid timber technical background, adversely affecting the top level at the Head Office.

The Head Office is located in Colombo. The two main factories are:

(i) Timber Complex of Kosgama - one hour by car;

(ii) Plywood plant in Gintota - three and a half hours by car from the Head Office.

Several other smaller units are spread all over the country. This decentralization of units with a centralized head office results in a complex and often confused management.

Transfer of decision making from the Head Office to the production units is not easy due to several problems of which the smallest is not the feeling of frustration of the evicted candidate to the General Manager seat. The production Manager was informally notified of his impending appointment by the former General Manager but this decision was revoked one hour before the latter's departure. Other candidates having identical feelings reported this to the Adviser.

Once a month the Board of Directors meets at the Head Office, normally in the afternoon until late in the evening, with an enormous agenda dealing with all kinds of problems. A lack of discipline in the conduction of those meetings gives the impression of them being social gatherings instead of a controlling body of a State owned corporation. The ADviser attended only twice the Board of Directors' meetings to make special observations about imports of timber.

Profile of the production units:

a) Kósgama complex:

Total area: 100 acres.

Construction started in 1971, by Romanian and Czechoslovakian assistance.

The total cost of the project was Rs 175 million.

Man-power: 2,000 workers (total for C.P.C. is 3,900 persons).

Total capacity: monthly input of:

peeler logs: 210,000 cubic feet.

sawn logs: 125,000 cubic feet;

Total monthly input of logs: 335,000 cubic feet.

Annual total input of logs: 4 million cubic feet.

Monthly real timber supply: 20 percent of the plant's capacity.

Plywood plant capacity: .6 million square feet per month.

Actual production: 1.4 million square feet per month

Particle board plant's capacity: 660 m^3 per month.

Actual production: 400 m3 per month.

Furniture plant: Full range of office furniture, household furniture and joinery.

The production since 1 February 1980, was limited to doors only. The target was set at 12,000 doors per month, but this figure was never attained. The decision to produce exclusively doors was taken personally by the Chairman.

The location of Kosgama is inappropriate, it is far from forest areas, far from the harbour facilities, the road infrastructure throughout Sri Lanka admits only 5 ton lorries. The plant is over-staffed and over-crowded workers with nine different political unions. The fact that there exists a factory management plus a plant management for each plant makes it complex to administer.

It has a poor information system, a lack of co-ordination exists between the factory, plants and the Head Office. Training and merit rating of staff is non-existant eg. technical staff educated abroad for several years are idle and there are no communication links.

Political intervention in nominations at different levels is common.

b) Gintota complex:

This is an old plywood factory.

Manpower: 1,000 workers.

Equipment: 25 to 30 years old.

This plant has a good management: Good team spirit, better quality of products much less personnel and union problems than in Kosgama.

The plant is making regular profits, the supply in logs is better, due to the Corporation's logging operations in their area. The yield from log to finished product is remarkably better than in Kosgama.

c) Amparai:

Eastern province, ten to twelve hours by car from Head Office.
Furniture plant and joinery (sawmill plus impregnation plant).

The overall organization and flow of production seems to give satisfaction. The sawmill was not running at the time of the assignment due to the shortage of raw materials and maintenance work, the impregnation plant was out of order and, it was claimed, due for replacement. The plant is completely decentralized, it has poor communications and is difficult to control.

d) Kennelia (Udugama):

Logging operation.

Log extraction takes place all the year round and during the rainy season it falls below the values obtained in the dry season. This operation is making profit.

It is located two hours by car from Gintota and is the main supplier of raw material of this unit.

e) Others:

Velona: Furniture assembling unit; and Kandy: Furniture assembling unit: Both receive support from Kosgama complex, small, non-profit making units.

Kegallo, Batticaloa, Bandarawela and Jaffna: These are small non-profit making units and have not been visited by the Expert.

f) The Head Office is in Colombo. The local management is in good hands.

Working facilities:

Most of the facilities for the project were provided by the C.P.C. The Adviser's work was hampered by a lack of telephone - until just before his departure - his having to share the General Manager's secretary, and problems of local transportation, which affected the regularity of his visits to the plants. All this affected adversely his performance.

MANUFACTURING OPERATIONS:

Achievements:

Head Office:

At the start of the mission, the General Manager allocated a higher priority to manufacturing and development problems than management. After discussions, it was agreed to start with operational facts and along the line management problems will appear, so both functions of the job description were to be examined. To make himself acquainted with the project, the Adviser requested as much information as was available. Annual reports of the Corporation for 1975 and 1976 were issued but out of date as a different policy came with the new Government since July 1977. The yearly report for 1977 was released only in August 1979 and the report for 1978 has been released in February 1980. The most important technical data ever received by the Adviser is a: "Plan to achieve

viability of the C.P.C." written by a team of seven Managers and presented to the Chairman on 17 May 1979, a few days only before his arrival. Since then, no working programme or monthly results were submitted, seriously hampering the fulfilment of his assignment. Manufacturing and processing data kept at the Head Office does not always corroborate with the information available at the plants. Towards the end of his assignment improvements could be noticed

The Accounting Unit is centralized at the Head Office. Production Management for the entire corporation is also at the Head Office, on discussing and checking plant figures and centralized figures, differences appear, eg. yield on recovery from log to final production or consumption of glue differs greatly from one plant to another. The plant managers are not always aware of these differences and their comparison should result in an interesting discussion among them and their staff.
Such discussions would also improve production costs, avoid tensions between units and create a true team spirit, resulting possibly in some competitiveness. It will soon be realized that both plants are working for a similar final result - the success of C.P.S. and the social benefits.

Conclusion:

There is a need to build-up a flow of Information through the Corporation, centralized at the Head Office but at the disposal of those who need this data. This could be achieved through a "Monthly Informative Meeting" (see recommandation no. 4).

Kosgama timber complex:

The profile has been described in Chapter III.

Saw mill:

The lay-out is good. Shortage of logs slow down production. Saw doctoring and maintenance have to be upgraded. The main re-saw needs a repair to improve accuracy of production. The staff is good.

A saw doctoring workshop should be envisaged with the assistance of UNIDO all the necessary equipment to conduct such a workshop is available in Kosgama (see recommendation no. 9).

Plywood plant:

Storage and seasoning are good. At certain periods of the year supply is greater than consumption so that keeping fresh logs could be a problem, but this is not the case.

Equipment and lay-out are all right.

Raw material: If the logs are not supplied regularly and in sufficient volume, it is strongly recommended to close down part of the plant. Three peelers are presently performing in two shifts (sometimes in three shifts) what elsewhere could be produced on one single peeler in one or possibly two shifts. The logs (bolts) are not debarked, brushed or cleaned before peeling, shortening the life of the knives and dulling them faster than necessary. Actually only one single thickness (1.4 mm) is peeled. Green veneer cutting is poor with a very low recovery figure (yield about 32 percent). The supervisory staff has probably not been trained enough as managers to keep regular control. When operators are carefully watched, they are able to perform well and improve the yield. It would perhaps be better to install a multi-storey tray (three or four stories depending on the length of the tray) to let veneers run straight behind the peeler and be cut to size with a minimum waste. The tray could be built by the Corporation and only the electric fittings imported from a manufacturer abroad, who should provide the blue print to construct the tray. This point was discussed during the Asian Plywood Conference in Jakarta in October last, in the presence of the two C.P.C. staff members and American Plywood Association staff.

Veneer dryers: Four are installed. Only three are regularly in production. They operate at low feeding rates estimated at 45 to 50 percent of their capacity. Coffee breakes and changing shifts result in losing

time of such expensive machines to run as dryers, specially at present fuel prices.

Splicing: The machines are not up-to-date. Some are out of order, replacements are needed. It would be better to purchase small special sets for short veneers, specially to make up tea chests or assemble core veneer.

Gluing, assembling: The veneers are over-sized and so consume too much glue and are difficult to lay out, due to oversize and non-squared. An over-size of 1 inch at each end is internationally accepted. 98 inches to produce final 96 inches of dimension and, in width, 50 inches for 48 inches final dimension.

Press: It is slow loading and operated at too high a temperature. Press time could be shortened. The actual press cycle parameters should be decided by the Production Manager and his laboratory staff as glues have to be adapted to local conditions, temperatures and humidity, as well as storage conditions. Thickness of outer ply and speed of loading the press, the number of openings of the press and the training of the operators, all affect this decision.

Trimming: As veneers are over-sized, there is too much waste.

Conclusion: If production of plywood goes on in full scale, staff members should be trained in a neighbouring country using similar tropical hardwoods. A team of three: a peeler operator, a gluer lay-out operator and a press operator should be sent for six months' training. They should be selected for their leadership and ability to train their colleagues upon their return. These fellowships should be implemented immediately, and followed-up by a team of UNIDO plywood specialists who should train staff at the Kosgama plywood plant for a period of at least six months. They would also recommend and introduce better methods of production for commercial plywood. Starting from shortening logs, to bolts peel different thicknesses of veneer, core and face according to the needs of the working programme, the suitable logs species and reduce over-size to

avoid waste. Improving drying, splicing, and a reduction in glue consumption, shortening press time and better trimming are also possible. Workers and staff can improve their performance if management follows their performance more closely.

A team of three to four CPC staff members should go to a neighbouring country in a plywood plant as soon as possible, during the "low season" months (August to December), work with their hands, themselves, one at the peelers, one at the veneer dryers and splicers, one at the gluing-assembling-press-unit.

After one month, the jobs should be changed so that in a period of three to four months the three or four men would have gained experience in the full production line. This training is to be followed as soon as possible, during the "high season" months (January until May/June) by a team of well trained experts in plywood production, if possible from the same plant where the CPC staff were trained. The foreign team should "conduct" the production during a period of 2 months and assist during another two months the CPC supervisors. The full exercise should take place within a total period of seven to eight months.

Measurement exercise: A measurement exercise was elaborated in September 1979 in agreement with top management, to check:

(a) the volume of logs delivered to the plywood plant representing the real value purchased from suppliers,
(b) the exact volume of bolts peeled,
(c) the shrinkage of veneer by specie at veneer dryer (it is interesting to note that rubberwood veneer 1.4 mm thick shrinks less than 5 percent on drying from "green" to about 10 percent moisture content),
(d) the total glue consumption per day (the net weight of all glue plus chemicals consumed and not the theoretical glue spread per square foot, as is normally done),

(e) the daily plywood production in full size not trimmed,

(f) the daily "delivery to store" of panels.

Each month was divided into the 10 days' periods and the exercise was extended to October and November. It was foreseen to make up a check list to allow a faster continuous production control of the results of these figures (totalling nine readings, each for a 10 day period). This should simplify the control of the yield, show the productivity of the workers and help to make an incentive scheme easily controlled by unions and staff.

A project officer was designated, the figures were promising, unfortunately the product officer had been moved to another plant before final results were calculated. He had not been replaced and the results of the exercise were never concluded. The target was to reach the yield of 50 percent which is an internationally accepted level for normal quality peeler logs. This yield can range from maximum 60 to 62 percent to as low as 48 to 50 percent, but for calculations of economic results of the plant, 50 percent was taken as a base. In case local timber is of peeling quality, the same yield is expected. This figure was often reached by the Gintotta plant, but this was never the case for the Kosgama plant, where the overall yield remained around 33 to 35 percent, the maximum being 38 percent, irrespective of the quality of the logs. It is admitted that for small trees, such as rubberwood trees, the yield should be of the order of 32 to 33 percent. It is most important that this yield be continuously controlled both at the plant and head office levels, specially where imported logs are used. In the past, figures between the plant and the Head Office were difficult to compare and often in discord.

Furniture Plant: Until January, a range of furniture products as office furniture, school furniture, some household furniture (some designed by a UNIDO expert) were produced. Doors of different sizes and qualities were also produced in various quantities from 2,000 to 5,000 monthly. In January 1980, the Chairman decided to push production of doors to 12,000 pieces, in February, stopping production

of all furniture items. There is nothing to blame on the decision itself, on the contrary, but what should be improved is the way the decision was taken. After investigating with different staff members, the order mentioning the quantity, size, type of glue, duration of production, customer, delivery schedule and development of product were not given in writing. Consequently, as a complex scheme of incentives rules the whole factory, which is different for each plant this sudden change in the production of doors gave satisfaction to the furniture plant: it is a profit making item and results in full employment in Kosgama, but this is not the case for the other plants. It is realized that a general scheme of incentives for such different products in such diversified plants where real production often represents only 25 percent of the capacity, is extremely difficult. The unions try to perform to give satisfaction to their members and claim identical incentives, choosing the highest throughout the whole factory. For the plywood plant to supply door skins for 12,000 doors monthly ~~represents~~ less than 50 percent of its normal output is required. but ~~required~~ a full attention to supply these quantities on schedule to the furniture plant. On the other hand, the normal mix of plywood products is disturbed and upsets other customers. This proves the need of the assistance of a marketing unit investigating the various phases of a problem, to study alternatives (even eventual import of door skins) with the assistance of the Research and Development staff to develop a better solution, a cheaper construction, the use of thinner plywood skins, and to reduce the size of timber in the frame. Based on this information it should be easy for the Chairman to take the right decision.

Particle-board plant:

This unit is making a profit by reaching production targets. The production is sold easily and a shortage is constant on the market. Raw material is easily available in the country for a second plant producing 60 m^3 a day (3/4 inches basis) in three shifts. The local staff has the know-how and the quality control laboratory is doing an excellent job in research by mixing on a wood based panel, 20 percent

of paddy husk is added to the wood raw material. Being light, it appears on the surface of the board, giving an adequate aspect for the board's main utilization. (Ceiling boards 1/4 inch thick).
The balance of the production, 3/4 inch thick is used for partitioning and furniture.

Conclusion:

The second plant is strongly recommended (recommendation no. 5). At the request of the Board of Directors, the Adviser, assisted by a CPC staff member compared the offers of eleven particle board equipment suppliers and handed to the Board his findings on 15 September. Since that date, nothing happened. According to the Government, regulations, a new call for tenders will be elaborated on a revised production base of 60 m^3 per day and 3/4 inch basis and not 35 m^3 per day. A new comparative chart will be needed for further studies, details on technical, administrative or financial aspects. Finally, bargaining with the selected supplier or suppliers will take a very long time and the plant will probably not be operational before 1983. This approach is prudent but slow and will delay the supply to the market of panels needed for housing, improvement and maintenance of buildings and furniture. In the meantime, the Management should select the best suitable location, according to raw material areas, land, technical and man-power availability. A quick implementation saves time and money, results in less disappointed suppliers, will make a faster contribution to the national economy, create a faster increase in employment and last but not least, result in a faster recuperation of waste material to manufacture products for the social profit of the whole country (recommendation no. 5.).

Gintota:

Plywood factory - located at three and a half hours by car from the Head Office.

The first impression is that this plant has a much better organization compared to the Kosgama complex. It is probably much easier to do so as only plywood is produced with man-power of 1,100 and the workers are since a long time used to work at the plywood factory, resulting in less staff and less problems with unions. Buildings and equipment are rather old but production is moving fast. The equipment is 25 to 30 years old but carefully maintained. A 9 foot long slicer produces good quality veneers. Production costs are lower and timber supply is easier. The plant manager was selected as a member of the team that visited the Asean Plywood Manufacturers' Conference in Jakarta, in October 1979. During that trip, he visited plywood plants in Indonesia and as immediate results, the Manager decided on his return to start debarking the logs before peeling. This was being done by the log supplier at an additional cost of only a few rupees. Also comparative figures of yield from log to veneers and veneers to final products were favourably compared with the plants visited. These achievements only proved the utility and the need to bring the correct staff visiting comparable plants abroad and confirm the need for fellowships in plywood plants of the neighbouring countries.

Block boards:

The adviser taught how to manufacture blocks from recuperated planks and other waste sawn timber, glued together to fix measurements to get a constructive block of a fixed length, fixed width and fixed height to staff of both the Kosgama and Gintota plants. Re-sawn at the precise thickness, they become the core of a block board. The core is veneered on both sides with cross veneers and finally face veneers in teak or satin wood. The papproach of the problem was completely different in both plants. It took more time in Gintota to produce the first blocks but the problems were given to staff members who studied the various ways of assembling and who finally found their own way. It is always better for implementation when the findings are done by the own staff and not dictated from outsiders.

Now, production goes on regularly and produces sewing machine tops at a cheaper price, having a better quality and the full satisfaction of the customers.

Doors are also produced at Gintota, using another construction resulting in lower cost price, yet having the same quality. There is no need to change a winning team. since the plant at Gintota is making profit there is no reason for introducing changes. It is recommended that the second particleboard plant should be located in Gintota. Land is available, the plant has a good management, power and steam are already available. Raw materials from logging operations will always be available in sufficient quantity to supply a 60 m^3 per day plant.

Amparai:

The short-fall in timber supplies affected production of this plant as in all units. The plant is 12 hours by car from the Head Office. The sawmill was not operating due to shortage of logs and maintenance work, the impregnation plant out of order because the small boiler needs to be renewed. The impregnation plant is profitable and should be renewed to treat timber for electric poles, railway sleepers and constructional timber for housing against fungus and termite attack. Amparai is basically a furniture and joinery plant. During the Adviser's visit, the assembling lines were fully occupied, they were not over-staffed and a good relation existed between management and workers. According to the manager's report the plant is run satisfactorily. Later management had to be replaced because of financial mis-management. It is recommended to renew as soon as possible the impregnation plant by purchasing a cylinder 40 feet long and 8 feet in diameter, to treat the timber. It is also necessary to renew the small boiler.

Timber extraction at Kenneliya - Udugama:

This logging operation is located at about 2 hours from Gintota. A 25,000 acre concession is operated by CPC. It supplies most of the

timber needed for Gintota and some of that used by the Salawa complex. The management of this unit is at the Head Office and the Deputy Manager rules the logging operations on the spot. Modern equipment allows mechanical extraction by skidders and crawlers, and scrapers are used to maintain forest roads. Felling is done by chain saw. Also a few elephants are working at this extraction site. The Deputy Manager achieved a good job and he was selected as the second member of the team attending the Asian Plywood Manufacturers' Conference in October last, were he participated in the discussions of the special group on raw materials. Here also his contacts and exchanges of information with the colleagues gave excellent results.

Conclusion:

If the Government of Sri Lanka is requesting assistance from the FAO in view of training logging courses for the Mahaweli project, it is recommended that Kenneliya should be a training centre as all equipment is available. Practical exercices could start immediately and operators trained on existing vehicles (reocmmendation no. 10.)

Others:

The Adviser visited small furniture assembling plants at Kandy and Velona. The parts are supplied from the Kosgama complex. These operations are of a small scale nature, with a low productivity. The Corporation is studying the possibility of closing down these units one by one. The other units have not been visited by the Adviser but according to the central planning department, top management is seeking to close down these units.

Conclusion:

These production units are spread all over the island, have decentralized management and supply of timber differs from plant to plant. Communications with the Head Office or between units are difficult both by road and by telephone. Due to lack of co-ordination and

co-operation; operational decisions are sometimes difficult; shortages of raw materials differ from plant to plant; conditions change also, for each plant, at different periods of the year. The research and development department is doing a good job in the different plants in laboratory work and quality control but there is no co-ordination between units and a poor link with the Head Office Data are kept in both big units but figures are not analysed, criticized and re-issued from the Head Office to the plants, In view to improve production, a marketing unit, which is presently non-existant, is urgently needed. This unit should prepare studies for the top management covering both technical and commercial aspects and make detailed proposals for various alternative solutions, leaving it to the top management to make the decisions.

It is recommended that:

(a) raw materials be imported;

(b) a marketing strategy unit be created;

(c) a research and development work be co-ordinated;

(d) "information meetings" be held on a regular basis to create a flow of information for the management based on correct information through the whole line at the disposal of all those who need information upwards, downwards and horizontally (between plants);

(e) a second particle board plant should be constructed as soon as possible,

(f) the impregnation plant should be renovated;

(g) three six months' fellowships for a team of plywood production technicians should be granted;

(h) technical assistance by plywood technicians should be provided to the CPC;

(i) short refresher courses should be organized in the saw doctoring field;

(j) logging courses should be held at Kenneliya;

(k) management seminars and workshops should be organized for top and middle management levels. One topic should be given each week, for a period of two months, on the general theme "management principles on target decisions" aimed at top level management.

Later, over a period of six weeks, the same topics should be covered at greater depth for the middle management level.

GENERAL MANAGEMENT:

Achievements:

(i) Corporate Management Planning:

The achievements and proposals in general management are the results of an analysis of actual management planning. There is no doubt, the Chairman as well as the General Manager are working hard, probably much too hard as they have to overcome short-falls and the task is more than what one single man can absorb. In principle, the Chairman should be a policy maker. It is not expected that the Chairman be involved in day-to-day decisions and check through his executives how orders are given and implemented. Separating manufacturing operations from management is difficult as both actions are so inter-related. When analysing the fundamental task of a Manager, at any level, as well at the Head Office as in production units, the Manager has to:

(a) fix the objectives;
(b) determine how to reach these objectives;
(c) stimulate his staff to keep the organization motivated to perform accordingly;
(d) inform correctly, at all levels;
(e) train and merit rate his staff.

The process of fixing the objectives is the same as making a decision, therefore the manager needs to:

(a) identify the exact problem,
(b) analyse carefully the problem;
(c) compare alternative solutions to the problem;
(d) select the best solution;
(e) implement the decision in practical terms and follow it up.

In order to clarify the difference between policy makers and executives the two tasks should be analysed. The specific duties

of managers or executives or supervisors should be described but each duty must be carefully analysed to determine its level. It is essential that each task has its own job description. In fact, too often intuitive feeling is the basic elements of judgement for decision making instead of factual and rational support of informations. To improve management, considerable effort will be devoted to assembling all the relevant information and rational explanations given before the decisions are taken.

Some creative ideas are excellent and necessary to feed the immagination nevertheless these ideas before being considered as decisions, should be tested against factual and rational analysis. Consequently, the executive who is making the decision must rely upon other people in the organization to provide him an appropriate synthesis of data which should be mixed objectively. The decision maker analyses this synthesis, consults all the people who will be involved in the decision before concluding and announcing it. This long procedure is surely needed for determining plant policy on the working programme. This way of judgement gives confidence in the executive anf to the executive himself. He, himself, feels a strong backing of his staff due to each ones co-operation, each one recognizing his own information. It is considered as a matter of personal integrity to give precise and accurate data. Before a decision is announced, if someone does not agree, he should be free to say so to the executive, even if he hurts someone else and is in a difficult position to express himself. The executive should listen and judge for himself how to avoid internal tersions and reward objectiveness of opinion. Down the line of the production staff, there is more space for ambition and the quality of middle management depends on their eagerness for responsibility, sharing decisions, based on day-to-day performance to reach targets. This provides the executive with a merit rating task which is probably most important for the continuity of good management in the whole corporation. Nothing in the business organization is exempt from re-examination. It has often been said that the major problem at middle management level is

maintaining discipline. Although orders and directives to labour have been given, in many cases, they are only carried out for limited periods of time and then it becomes necessary to repeat the orders or directives. It should be clearly said to the middle management staff that their job consists of repeating and following-up any action. If this were not the case, these posts would not be necessary. The best way to select higher level managers comes out of these daily achievements, and personal merit push upwards the best or drop the others. Open access to higher level management gives a chance to everyone be he school educated, university educated or even self educated. Middle management should rotate personnel within job levels in order to give more opportunities to build up a continuity in management. In case of someone's poor performance (especially executives), the cost to the enterprise is far greater than a man's salary. His poor performance complicates tasks of others. A man is not entitled to remain in a position where he complicates effective performances. Of course, his removal is painful for him and correct managemnet must assist him to voercome his pain. Sometimes some staff members have a second job during free time. This should not be blamed as long as the second job does not take priority or involves "business decisions". It is difficult to serve two masters well.

Conclusion:

General management covers the whole business from floor to top. It is understood that cultural practices and beliefs can be so different that "good management" is expected to adapt to lacal circumstances. How to explain to people why the normal routine of life should be twisted and urged to fit a schedule? why work hard? Respect of commitments out of their own knowledge, and "time" are vital components in the management of a plant, influencing their own life and building

up a so-called "better-life". Nevertheless, within these constraints, the assumption is that managers could determine to a certain degree confidence in the future. To achieve better management appoint the best man available for the specific job is "the" basic aim. Each job needs a careful description based on the duties of each job and the best adapted to the man's possibilities. A main duty of an executive is merit rating "post" and "man" and it has to be realistic. It could be slightly adapted to the availability of persons, bearing in mind that the profit of the enterprise goes first and the flexibility to a job is to promote the interest of the entire enterprise not as a concession, to personnel indulgence, profit results from equal sharing among all workers. To improve further the management planning, the process will be long and co-operation of the whole management should be expected. Each person's level should be assured.

To achieve this improvement in management, we recommend:

(a) the creation of a marketing unit;
(b) co-ordination of research and development;
(c) monthly information meetings;
(d) seminars for top and middle management.

Recommendations:

Raw material supplies:

The Corporation is faced with a shortage of its basic specific raw material, timber, which affects production in the factories and further operational viability. A ban was imposed since August 1977, on the felling of timber all over Sri Lanka. The Corporation has only one concession of 25,000 acres of which most have already been exploited and within three ot four years no suitable timber for plywood will be left. If production is to remain at the same level, i.e. if the local market is to receive the same volume to cover its needs; the following two options appear to exist: either to improt plywood logs or peeled veneer, or to enter in a joint venture with a foreign partner who would assure CPC a supply of logs which would be manufactured into plywood both for the local and export markets, and the profits shared between

the joint venture partners. This eventuality needs further investigation. It was discussed with the former General Manager both the old and new Chairman, and the Ambassador of Sri Lanka in Indonesia.

First alternative: import of veneer:

The import of veneers is a divvicult sellers' market as producing countries give preference to export semi-manufactured products such as plywood.

To import veneers CPC should have to make up a detained specification of cores and faces in sizes and thicknesses needed for its planned working programme according to manufacturing facilities. In fact, the only available international veneer market is based on rough veneer sheets of 4 feet by 8 feet and 8 feet by 4 feet. In full sheets, half sheets, one third and quarter sheets. All sheets are delivered in fixed thicknesses. The CPC facilities are not adapted to these measures and requirements.

Second alternative: import of logs:

A yearly quantity of 50,000 m^3 of logs in a mix of both peeler and saw grades in a proportion of 65 to 75 percent peeler 25 to 35 percent sawn logs is required. This mix is an advantage for CPC as they could absorb the so-called "lesser known" species - at better commercial conditions than if only specific species of peeler logs are purchased. By far the best solution would be starting with one or two trail orders of 5,000 to 6,000 m^3 each of this mix and determining the species giving the optimum result for the specific needs of Sri Lanka's plywood and sawn timber market. It is really a specialist's job to check and grade the logs before shipping, specially if trading is in lesser known

species, as probably the comme.cial names of these lesser known species differ from region to region, and they would have to be identified by their botanical names. This is not common commercial practice. This specialist should be empowered to check at the suppliers whether the specie is suitable for its purpose or not. This solution is extremely difficult to corroborate with the Government's policy of calls for tenders. It is nearly impossible to finalize the description so as to make the requirements clear to the eventual supplier. International timber trade relies to a large extent on mutual confidence, technical knowledge and commercial reliability. Timber purchasing officers of the CPC would be able to perform this job, could go along with confidence to purchase a trial order, for the first order with the assistance of an international trader or adviser having experience in tropical hardwood logs of the region, Shipping, plywood and sawn wood production.

It must be realized that Indonesia is exporting annually 20 million m^3 of logs, mainly to countries in Asia and the Pacific. All these transactions are direct dealings between exporters and importers without any tender. When trial orders will have given the anticipated good results, long term contracts for the supply of timber could be finalized with fluctuating prices for each shipment, based on world market conditions. The specification with respect to length and diameter of logs must be carefully studied by the CPC production staff according to the working programme and the machinery's characteristics. For example, if doors would represent the majority of production, the size of the logs needed and the size of the plywood sheets are not the same as when producing conventional "commercial boards". The task of the purchasers should be co-ordinated between marketing, production, research and development and also depend on the local timber supply.

Marketing Strategy Unit:

The marketing unit should be centralized at the Head Office and should analyse each product as there is no general marketing policy possible for so diversified a product range due to the evolution of the raw material, equipment and market situations. Marketing stra-

tegy as part of management cannot be avoided. The need for marketing research and development has been proven in this report by analyzing the decision concerning the production of doors.

Research and Development:

In both the Kosgama and Gintota factories, research and development is carried out at plant level. A centralized research and development department at the Head Office should be created with direct links with both plants. Final proposals on development of products should be sent to the head office for final decision. The monthly information meeting would be the forum where claims and proposals are discussed. The research and development units must inform and be informed about new equipment, methods and products.

The tasks of co-ordinating efforts among production units, laboratories, marketing units, accounting service and between factories should be entrusted to the timber technicians, who have been educated abroad, could easily fulfil the centralized job without hurting existing lines of responsibility and at the same time giving satisfaction and promotion to valuable staff.

Flow of information:

Staff have to work for the top management and present to the chairman or general manager, as first-executives, final proposals for their decision based on all available information. Top executives need to be provided with answers and not questions. Proposals should be only approved or disapproved. It is not the top executive's job to change proposals. It is the full responsibility of the staff. Therefore, transmittal of information is based on correct informations all along the line to inform as well as to be informed correctly. An improvement in flow of information results in improved management. A monthly meeting at the Head Office at a fixed date and fixed hour is recommended to ensure this flow of information. Meetings should

not exceed one to one and a half hours. The list of staff invited to attend should be carefully prepared. Such meetings are most fruitful if only five to nine persons attend. If more persons are invited to be present, to assist a manager, they should have no right to participate in the discussions, but only answer direct questions. The agenda must be finalized and handed over to the participants at least 24 hours in advance. The chairman of the meeting must limit discussions to points on the agenda. These meetings will result in a better understanding, an improved team spirit, internal tensions can be solved and result in better decisions being made.

Second particle board plant:

It is recommended to start immediately discussions with selected equipment suppliers for the supply of a unit of 60 m^3 per day, based on three shifts (based on 3/4 inch thickness). Raw material is available in the country. Local staff has the necessary know-how, and the market is eager to purchase more particleboard. Marketing study should determine the board's size, thickness range, quality and the presumed final use to determine the optimum specifications of the final product. It is in the national economy's interest to have the plant operational as soon as possible. UNIDO coule provide assistance both to the government and the corporation in selecting the technology and appraising the offers received.

Impregnation plant:

In Amparai, (Eastern Province) there is a need for an impregnation plant to treat timber against fungus and termite attacks for use as electrical poles, railway sleepers and constructional timber. The vacuum cylinder should be 40 feet long and 6 to 8 feet in diameter. A small boiler should complete this unit.

Fellowships in plywood production:

Three technicians from the plywood plant should be trained in a plant of a neighbouring country using similar tropical hardwoods.

These should comprise a peeler lathe operator, a veneer-layer-cum-assembling operator and a press or trimming saw operator. The fellowship should be of four to six months' duration. The selection of the members must be based on their leadership skills and ability to train their colleagues when back at the plant. During their training they should move from one operation to another.

Technical assistance by a team of plywood production experts at CPC:

During the same period, or preferably after the fellowships have been completed, a team of three plywood producers experts should be provided to CPC to implement the recommendations and to improve the quality of plywood products. The process should begin with bolting the logs and end in the final product. This includes: peeling the logs at different thicknesses (according to specie), establishing a work programme to reduce the over-size of veneers, improving the yield and the veneer clipping, as well as the layout of veneers, reducing the glue consumption as well as reducing the processing time and trimming waste. The team should stay for a period of six months, to train operators ans supervisors in their day-to-day work.

Refresher courses for saw doctors:

The quality of saw doctoring at the Salawa sawmill was deteriorating. Refresher courses are the normal way to improve the job. Saw doctoring is a basic duty at a sawmill. A shortterm (three months) consultancy could probably be sufficient to run the refresher courses. On the other hand, if the Government insists on training saw doctors from other sawmills involved in the Mahaweli project, Kosgama could be an excellent training centre as all equipment is available on the spot and ready for practical exercise. In that case, the services of the expatriate experts should be extended for a longer period of time.

Logging courses:

If the government requests assistance of a UN agency (FAO) in

training courses in logging for staff attached to the Mahaweli project, Kenneliya should be an excellent training centre as modern equipment is readily available for mechanical logging. Felling by chain saw, opening up and maintenance for forest roads, extraction by appropriate modern equipment and training of operators on vehicles could be carried out on their site. Extraction by elephants could also be envisaged. At the same time, it would serve as an excellent training for the corporation's own teams operating from that site. The local staff could easily assist in giving courses.

Top and middle management courses:

To improve all levels of management in a corporation as decentralized as CPC, it is absolutely normal to conduct seminars, workshops, discussions, etc... on a more or less continuing basis. A course for top management - for six to eight persons (chairman, general manager, factory managers, marketing, chief accountant, timber purchaser) - and another course with a much larger attendance at middle management level within the CPC should be organized. Courses or discussions should be conducted by discussion leaders from business schools or administrative agencies specialized in such training courses. For top management as well as middle management lecturers should initially come from within the plywood corporation and then staff of other corporations or private companies could be invited. EAch level should be well separated. Top management should have five or six courses at one week intervals, while middle management should have ten to twelve meetings at two weeks interval, spread over one year. This proceeding is not only needed at CPC but it is a well recognized procedure to adapt continuously the managers of large corporations to world requirements.

Short term general management consultancy:

After a period of nine to twelve months, a short term "overall management" consultant (for a duration of three to four months) is

to check the implementation of the recommendations made in this report. He will also determine if further assistance is necessary and, if so, its field and duration.

ANNEX I

JOB DESCRIPTION

DP/SRL/75/014/11-02/31.7.A

Post title:	Adivser in Manufacturing Operations and General management.
Duration:	One year.
Date required:	As soon as possible
Duty Station:	Colombo, with travel to Kosgama and to Gintota.
Purpose of Project:	To examine all aspects of manufacturing operations and general management in relation to Corporation objectives, and to advise the General Manager on changes necessary to optimize overall effectiveness of operations.
Duties:	The adviser will be assigned to the Ceylon Plywood Corporation and will specifically be expected to:

1. Review recent, and assess potential, Corporation performance taking into account markets, available manufacturing facilities, organizational framework and key personnel, raw material supply industrial relations and prior UN inputs.

2. Advise on and assist with the implementation of corporate planning procedures possibly with a planning dimension of 5 years.
   It is envisaged the plan will take into account inter alia, market projections, raw material sources management development manpower needs expansion of existing manufacturing facilities and/or new plant requirements.

3. Advise on appropriate organizational framework and systems for optimum performance in relation to (2) above), probably introducing management by objectives (MBO) and associated accountancy systems and procedures.

The expert will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government of Sri Lanka on further actions which might be taken.

Qualifications: Considerable experience in manufacturing operations/ general management in large scale process industry eg. woodworking and processing, pulp and paper, food processing, building materials.

Language: English

Background information: The Head Office of the Ceylon Plywood Corporation is situated in Colombo, this being the location of general management and administrative personnel. Two major manufacturing units are operated, one at Kosgama and the other at Gintota.

At Kosgama (26 miles from Colombo) the Corporation operates a woodworking complex. This comprises a sawmill, a plywood plant, a particle board plant and a furniture factory. The workforce at the complex is approximately 1700 and there are plans to increase this number to 2500 in 1979.

At Gintota (80 miles from Colombo) the Corporation operates a sawmill and plywood plant, with an associated logging operation. The workforce at Gintota is approximately 1200.

The manufacturing technology for all existing products is well established and practised, both plants having been in operation for several years.

UNIDO has previously provided technical assistance in saw doctoring, particleboard manufacture (production, quality maintenance and management procedures) and in the design and manufacture of furniture.