4-7 Budgetary Measures of Guyana Side

Proposed Budget for M.A.R.D.S. Rice Mill Project

Item	Cost (G$)
1) Dismantling and removal of existing machinery	G$ 500,000
2) Transportation, handling, checking, customs, storage of new machinery	1,750,000
3) Housing, furnishings, transportation, main services for supervising engineers	260,000
4) furnishings, site office, N.I.S. for counterpart	120,000
5) Tools, lifting, equipment, rental and hardware	750,000
6) Wages and salaries for site inspector and other counterpart staff	2,500,000
7) Construction/renovation of site office and lavatory facilities	250,000
8) Air travel, telex services, insurance, medical and associated expenses for supervising engineers and trainees	325,000
9) Concrete pits, columns etc.	1,320,000
10) Construction/election of trestle for transfer of conveyor	675,000
11) Renovation/modification of Rice Milling house	650,000
12) Contingencies and inflation	900,000
Total:	10,000,000 x 6.12 Yen = 61,200,000 Yen

CHAPTER 5

MAINTENANCE PLAN

CHAPTER 5 MAINTENANCE CONTROL PLAN

5-1 Maintenance control plan

In the MARDS rice mill, under the chief engineer, there is an assistant engineer and more than ten machanics. Together, they have a sufficient system for mechanical maintenance. For electric, architectural and carpentry work, each chief engineer has more than ten staff members. It is judged that there shall be no problems in handling the technical matters in maintaining the rice mill.

There is a central workshop in the MARDS in which rolling of steel plates, shaft repairs, rewinding of motor coil, welding works, etc. are possible. Also, about 100m away from the MARDS complex there is an Agricultural Machine Repair Centre built in cooperation with the government of the People's Republic of Korea. It is expected that a considerably wide range of work is possible.

As for the maintenance of the machinery, the top management of GRMMA as well as the and engineers and technicians at MARDS are well aware of its importance (influence on durability of machines, quality of rice, etc.). They are well aware of the steps and measures to take, such as routine daily inspection work as well as overall full scale inspection and maintenance work, etc.

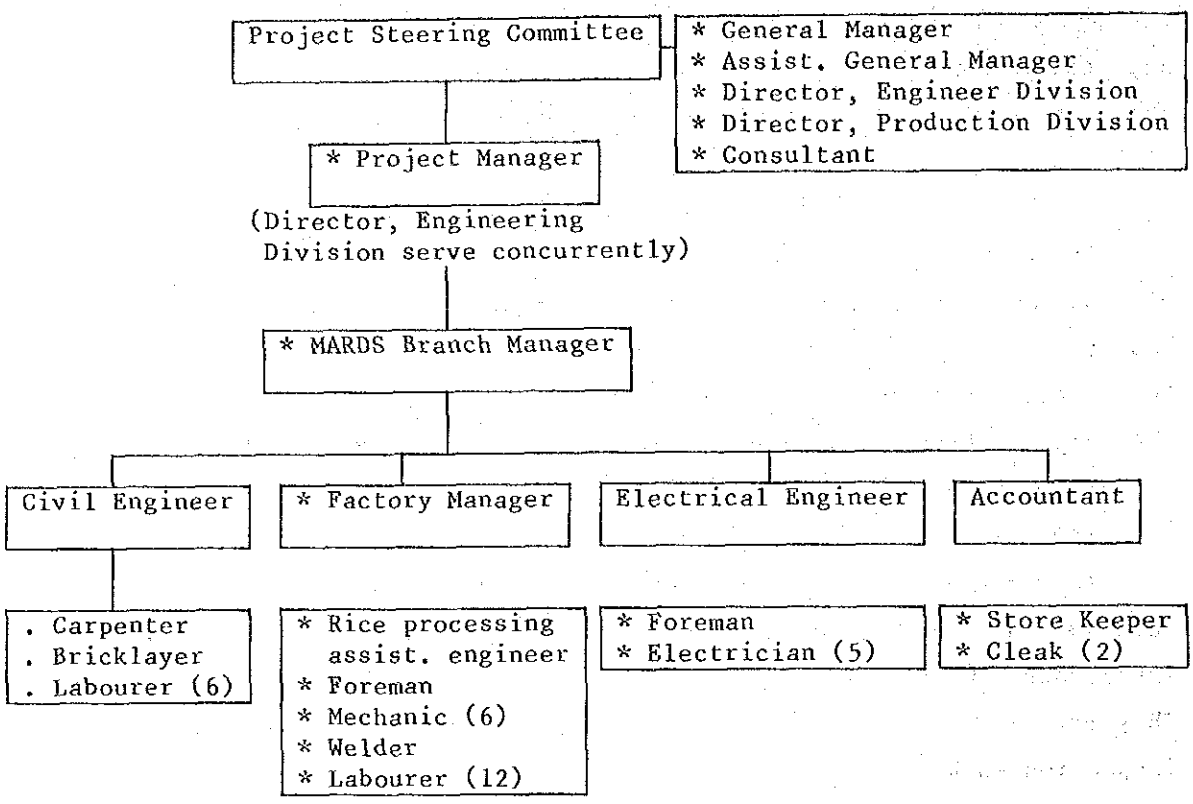
The MARDS facility has its own maintenance manual. However, because insufficient supply of spare parts has caused the deterioration of the mill in the past, they are determined to establish a new maintenance management plan after this project is completed, and to perform prudent maintenance work thereafter.

When the survey mission visited the MARDS complex, it was at the time of general maintenance work on the complex. Every year in February they stop the procurement of paddy completely for one month in order to inspect and repair the silo, conveyors and dryer, as well as performing maintenance work on the rice milling plant machinery for one week. during this time, they clean the inside and outside of the complex thoroughly.

According to the explanation of the GRMMA, since last year new regulations are applied in which the GRMMA shall reserve up to 15% of their operating profit, using some of this amount for maintenance work.

The maintenance management chart and the outline of the system of maintenance and inspection are shown in the figure on following page.

Maintenance System



Note: the figure in the parentheses are plural No. of personnel.

Maintenance System for the facilties

Daily Check ——— Daily maintenance:
Inspection of the machineries before and after operation, about 4 hrs. every day
Replacement of consumable parts and checking of oil, grease and belt-tension etc.

Weekly Check ——— Weekly maintenance:
The same as daily maintenance, in addition carefully check up function of each machinery and adjust to normal conditions.

Monthly Check ——— Monthly maintenance:
Checked up all the machineries, adjustment for its function, replacement of parts and repair requirement etc.

General Maintenance ——— General maintenance:
Check up all the facilties. 6 days in February every years.

5-2 Maintenance expense

As for the expense for maintenance of MARDS rice mill, it shall consist mainly of the reserve of materials, of maintenance, fuel, electricity and direct labour cost, etc., applied for the maintenance of machinery/equipment supplied from Japan after this project is completed. These costs will be outlined in the budget presented by GRMMA.

The main causes of deterioration in the past have been due to inappropriate procurement of worn parts and poor repair of parts.

The success of maintenance work depends on the budget and on technical measures, Considering past experienes, concerned authorities expressed the desire to perform the maintenance work in the facility under this project uisng a proper and adequate system.

Among the items of the budget for maintenance, the most important ones for maintenance and repair of the machinery are items for materials and maintenance. They are as shown below:

(Unit: 1,000 G$)

Year	Reserve for materials	Maintenance
1987	285	452
1988	285	452
1989	681	620
1990	1,238	1,123
1991*	1,834	1,663
1992*	1,834	1,663

Note: * = after this project is executed

At the time of execution of this project (1991), the reserve of materials will be increased considerably, to 6.4 times that of 1988, and maintenance expense will be 3.7 times greater. Further, there will be a door open for purchasing parts from the 15% of the operation profit reserved at GRMMA. It is judged that the maintenance of MARDS rice mill will be well managed in future.

When considering whether the total amount reserved for materials and maintenance costs is enough for the maintenance of newly built rice milling facility, one should consider that among the wearing parts and spare parts needed for the maintenance of the rice mill machinery, rubber rollers for paddy huskers need frequent replacements. Here the amount needed is large. Following the rubber rollers, screens and abrasive rollers for the rice whitening machines, screens for thickness grader, etc. are also main wearing parts. The rations in parts procurement cost taken by these parts is: rubber rollers about 60% and screens and abrasive rollers about 20%.

Note: see Appendix-14 for main wearing parts.

Calculation were made to see whether it would be possible to purchase rubber rollers within the budget of the reserve for materials and the maintenance costs.

Conditions for calculations;

(1) Yearly processing quantity (paddy): About 80,000 tons
- . Operation hours per day ..... 14 hours (2 shifts)
- . Operation hours per year ..... 288 days
- . Rice milling capacity ..... 20 tons/hour
- . 14 x 288 x 20 = 80,640

(2) Numbers of rubber rollers required in a year: About 1,600 pcs.
- . Durability of rubber rollers ..... 100 tons (paddy)/pair
- . 80,000 - 100 x 2 = 1,600

(3) Price per pc. of rubber roller: About 364.20 G$
- . 1,600 x 364.20 = 582,720 (CIF price Taiwan make)

G$582,720 is the annual amount required for purchasing rubber rollers. Even including the other wearing parts and spare parts, the budget for reserve for material and maintenance costs is sufficient enough to cover the cost of such replacement parts. It is judged that there shall be no problems in the maintenance of rice milling machinery to replace the existing one under this project.

CHAPTER 6

EVALUATION OF THE RPOJECT

CHAPTER 6 EVALUATION OF THE PROJECT

Reinforcement of the MARDS rice mill under GRMMA contributed not only to the increase of rice export, but also activities related to MARDS as a local station, and the increase of rice production. It also contributes greatly to the increase of farmers' income and improvement of the surrounding rice milling industry.

6-1 Direct effects of the project

This project will bring about the following direct effects.

(1) Increase of MARDS operating profit.

(2) Supply of high quality rice to the people.

(3) Increase in exports

Estimate of Rough Income Increase by Increased Milled Rice Production

A. Improvement factors

Item	Existing rice mill	New rice mill	Quality Improvement and Estimated Profit Increase
Annual process q'ty	44,260 ton	80,000 ton	
Milled rice yield (to paddy)	56.6%	64%	Yield increase 7.4%
Head rice yield (to milled rice)	40.5%	60.0%	Yield increase 19.5%
(to paddy)	22.9%	38.4%	" 15.5%
Milled rice production	45,280 ton	51,200 ton	Production increase 5,920 ton
Head rice production	18,320 ton	30,720 ton	" 12,400 ton
Broken rice production	26,960 ton	20,480 ton	" 6,480 ton
Quality improvement of milled rice	Grade C	Grace B A	

B. Quality Standard of Milled Rice

Grade	Head rice yield % against milled rice	Broken rice	Remark
Extra A	74.5	8	
A	68.6	10	
B	57.0	15	
C	32.0	25	

C. Price of Milled Rice against Quality Standard

Grade	Price (G$/kg)	Price difference between grades(one class difference)			
		Extra A	A	B	C
Extra A	2.95	0.12	-	-	-
A	2.83	0.13	0.13	-	-
B	2.70	0.27	0.27	0.27	-
C	2.43	0	0	0	0
Broken rice	1.80	-	-	-	-

D. Net Income on Traial Balance

Grade	Item	Production		Amount of Production (G$)		
		Present Rice Mill	New Rice Mill	Present Rice Mill	New Rice Mill	The amount of income increased
	Production of Whole grains	10,140 ton	30,720 ton	-	-	-
	Production of Brokens	14,910 ton	20,480 ton	-	-	-
	Total	25,050 ton	51,200 ton	-	-	-
C	Quantity of Head Rice	10,140 ton	30,720 ton	-	-	-
	Quantity of Brokens	3,380 ton	10,240 ton	-	-	-
	Production of C Grage	13,520 ton	40,960 ton	G$32,853,600	G$99,532,800	G$66,679,200
	Balance of Small Brokens	11,530 ton	10,240 ton	G$20,754,000	G$18,432,000	G$ 2,322,000
	Total	-	-	G$53,607,600	G$117,964,800	G$64,357,200
B	Quantity of Head Rice	-	30,720 ton	-	-	-
	Quantity of Brokens	-	5,420 ton	-	-	-
	Production of B Grade	-	36,140 ton	-	G$97,578,000	G$64,724,400
	Balance of Small Brokens	-	15,060 ton	-	G$27,108,000	G$6,354,000
	Total	-	-	-	G$124,686,000	G$71,078,400
A	Quantity of Head Rice	-	30,720 ton	-	-	-
	Quantity of Brokens	-	3,410 ton	-	-	-
	Production of A Grade	-	34,130 ton	-	G$96,587,900	G$63,734,300
	Balance of Small Brokens	-	17,070 ton	-	G$30,726,000	G$9,972,000
	Total	-	-	-	G$127,313,900	G$73,706,300

E. Increase of earings

Suppose 50% of all milled rice is exported, the difference of export price of grade B:

G$3,300 - 2,700 = 600 600 x 25,600 = G$15,360,000

An income increase of G$15,360,000 is expected.

6-2 Indirect effect of project execution

The following effects are expected by the replacement of existing rice milling facilities under this project.

(1) Increase Production more than 50,000 tons annually by New Rice Mill.

(2) Increase of exportation by the quality improvement.

(3) Increase of income is expected by new facility. Consequently, maintenance work will be performed more willing and positively.

(4) Inprovement in health and sanitary conditions for workers

(5) Improvement of technical level is expected by the new functions of the machinery to be offered.

(6) The management will improve and marketing of rice will improve by the replacement of the facility.

(7) Increase of rice production and export will be realized and it will results in the welfare of surrounding farmers such as faster procurement procedures, stabilization and increase of paddy price, etc.

(8) It affects in the advancement of the private rice milling industry in Guyana.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

CHAPTER 7 Conclusions and Propositions

7-1 Conclusion

Guyana is making an effort in the development of agriculture in order to establish economic independence. To this end, rice development projects are especially promoted. However, actual conditions of the existing rice mills that process white rice-a representative of the actual production quantity-into final product are that many of them are worn out beyond the limit, both in private mills and government mills. The losses in quantity and quality of the milled rice in the process of milling are quite large. GRMMA had improved and rehabilitated four out of eight rice mills with the financial cooperation by the IDB. Japanese cooperation under this project in replacing the GRMMA's main rice milling facility, MARDS rice mill, would contribute greatly to the betterment of national economy of Guyana and to the welfare of its farmers. It is judged appropriate and most suitable for the project to be undertken by grant-aid cooperation of the government of Japan.

The purpose of this project, as mentioned before, is the increase of quantity and quality milled rice production. Hence, it will be possible to supply high quality rice to the people of Guyana and to increase export to earn foreign currency.

The government of Guyana aims at increasing rice exports to 100,000 tons in 1991. They also set a maximum target of 140,000 tons as a future possibility. This quantity cannot be a threat to other rice exporting countries. They usually export to coastal countries in Carribean sea and parts of South america and Europe, and would therefore not complete with other rice exporting countries. It is understood that the fact IDB is providing loans in the agricultural means that Guyana is placed as the stable food supplying country in Central and South American regions.

7-2 Recommendations

It is proposed that the Government of Guyana undertake following items so that the project of replacing rice milling facilities functions effectively.

(1) To understand the system of grant-aid cooperation of the Japanese government and carry out their share of the work in the execution of this project.

(2) To secure a financial source set forth in the operation budget concerning the execution of this project.

(3) To secure a financial source set forth in the project management budget plan.

(4) To observe and carry out the reinforced manpower disposition plan for MARDS rice mill.

(5) To complete the building of the rice mill, floor works and all other relative work about one month before rice milling machines/equipments arrive at the site of installation.

(6) To handle and dispose all the procedures and formalities (signing of E/D, contract for consultant and for the supply of machines/equipments) as soon as possible.

(7) To carry out efficiently the bank procedures, customs clearance and transportation procedures for the machines/equipments in order to promote this project.

(8) To select suitable persons for training on operation and maintenance of the rice milling facility and quality testing equipment.

(9) To make on effort to procure good quality material, paddy, in order to produce good quality product, milled rice.

(10) To carry out the inspection and maintenance for the rice milling facility effectively and surely after this project is completed.

(11) To prepare the budget and means of purchasing parts at an early date because the replacement parts for about 2 year operation are supplied under this project, but thereafter the parts must be purchased GRMMA.

APPENDICES

C O N T E N T S

Survey Schedule of the Basic Design Study Mission

Days	Date	Schedule	Study and Discussion
1	Jan. 22 (Sun)	Natira Caracas (JL006) (PA217)	Departure from Tokyo (Via New York)
2	23 (Mon)	Caracas	Visit to Embassy of Japan
3	24 (Tues)	Caracas Georgetown	Arrival in Georgetown (Via Port of Spain)
4	25 (Wed)	Georgetown	Visit to DIEC Visit to Ministry of Agriculture Visit to GRMMA & explanation of purpose & schedule of survey.
5	26 (Thur)	"	Visit to GRMMA meeting and collection of information
6	27 (Fri)	Burma	Visit to MARDS, site survey
7	28 (Sat)	Georgetown	Meeting with the officials of GRMMA collection of information
8	29 (Sun)	New Amsterdam	Visit to Black Bush Polder Rice Mill, surveyed Corriverton port.
9	30 (Mon)	Georgetown	Courtesy call to Minister of Agriculture preparation of M/D with Officials of GRMMA.
10	31 (Tues)	"	Visit to DIEC and signing of M/D
11	Feb. 1 (Wed)	"	Team leader's departure for Japan, collection of information at GRMMA.
12	2 (Thur)	"	Compilation of data and Meeting with the officials of GRMMA.
13	3 (Fri)	Burma	Site survey and discussion at MARDS.
14	4 (Sat)	Georgetown	Final meeting with the officials of GRMMA, greeting report DIEC.
15	5 (Sun)		Visit to private rice miller.
16	6 (Mon)	Georgetown	Arrival in New York (Via Port of Spain)
17	7 (Tues)	New York	Travelling
18	8 (Wed)	Narira	Return to Japan

MEMBER OF THE STUDY TEAM

Name:	In charge of:	Organization
Mr. Yukio Higuchi	Team Leader	Inspection Division. The Food Agency, Ministry of Agriculture, Forestry and Fisheries
Mr. Haruo Miyaishi	Expert of Postharvest Processing Technology	Overseas Merchandise Inspection Co., Ltd. (OMIC)
Mr. Akeshi Mori	Designer of Postharvest Processing Facilities	Overseas Merchandise Inspection Co., Ltd. (OMIC)

MINUTES OF DISCUSSIONS
ON
THE PROJECT
FOR
REPLACEMENT OF RICE MILLS
IN
THE COOPERATIVE REPUBLIC OF GUYANA

In response to the request of the Government of the Cooperative Republic of Guyana, the Government of Japan decided to conduct a basic design study on the Project for Replacement of Rice Mills of Guyana Rice Milling and Marketing Authority (hereinafter referred as "the Project"), and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Guyana the Basic Design Study Team headed by Mr. Yukio Higuchi, Senior Officer, Inspection Division, the Food Agency, Ministry of Agriculture, Forestry and Fisheries (hereinafter referred to as "the Team") from January 22 to February 8, 1909.

The Team held a series of discussions on the Project with the appropriate officials of the Government of Guyana headed by Dr. Cecil Rajana, Head, Department of International Economic Cooperation and including Mr. Charles P. Kennard, General Manager, Guyana Rice Milling and Marketing Authority, and conducted a field survey in the relevant areas of the Project.

As a result of the study, both parties agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

Cecil Rajana

Dr. C. Rajana
Head, Department of International
Economic Cooperation.

樋口征夫

Mr. Yukio Higuchi
Team Leader
Basic Design Study Team
Japan International
Cooperation Agency

Charles P. Kennard

Mr. C. Kennard
General Manager
Guyana Rice Milling & Marketing
Authority.

January 31, 1989

1. The objective of the Project is to replace rice milling plants existing in M.A.R.D.S. with new ones which have appropriate milling capacity and equipment.

2. The site of the Project is located in land belonging to the GRMMA, within the premises of the M.A.R.D.S. Rice Processing Complex at Burma, East Coast Demerara, Region V. The site map is attached as ANNEX 1.

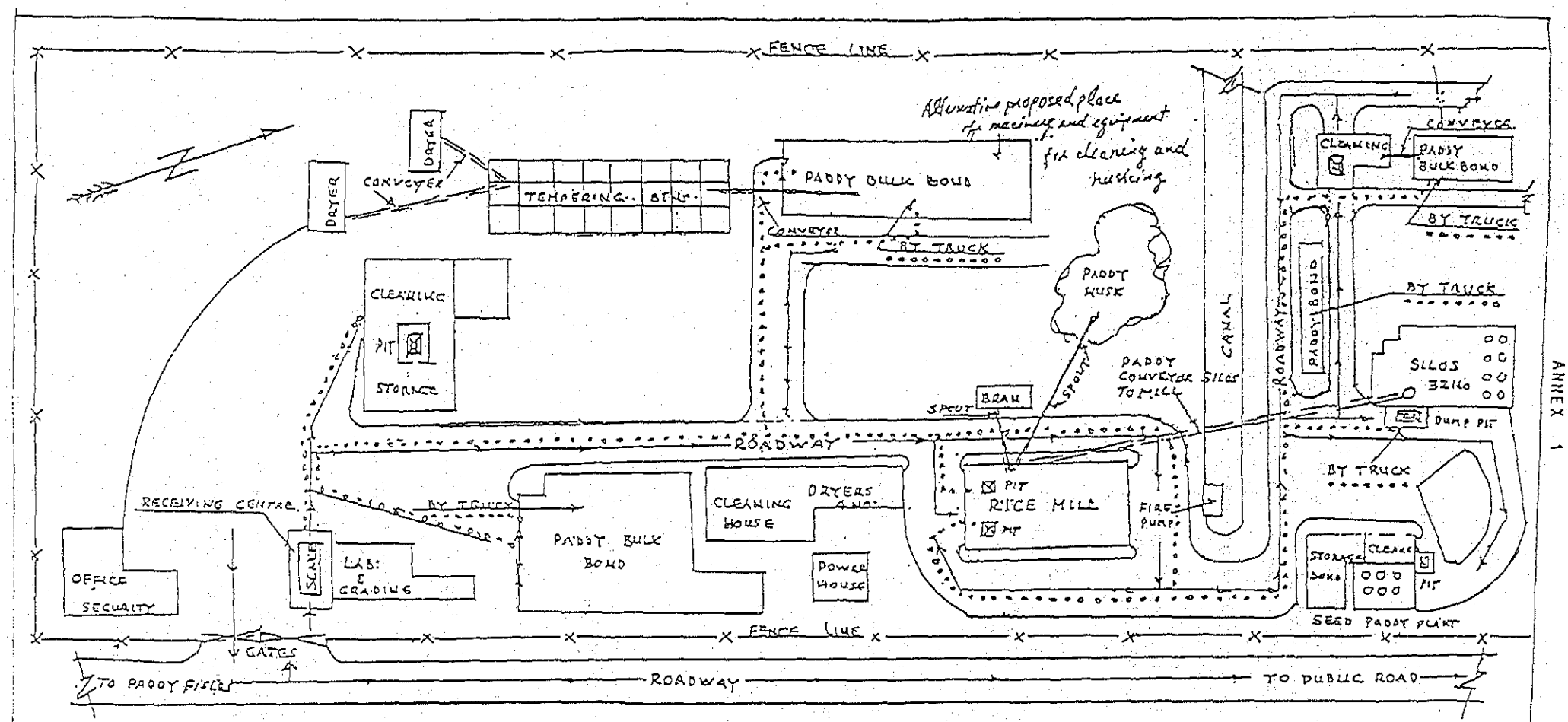
3. The GRMMA, Ministry of Agriculture, is responsible for the administration and execution of the Project.

4. The Japanese Study Team will convey to the Government of Japan the desire of the Government of Guyana that the former takes necessary measures to cooperate by providing the machinery and equipment listed in Annex II within the scope of Japanese economic cooperation programme in Grant Aid form.

5. The Guyana side has understood Japan's Grant Aid System explained by the Team.

6. The Government of Guyana will take the neoessary measures listed in Annex III on the condition that the Grant Aid would be extended to the Project.

7. Final Basic Design Report will be submitted to the Government of Guyana by the end of April, 1989.



LEGEND

1. PADDY BY CONVEYORS TO MILL - - - - - -
2. PADDY BY TRUCK TO MILL

PLOT PLAN

M.A.R.D.S RICE COMPLEX

E.C.D GUYANA.

G.R.M.M.A.

ENGINEERING DIVISION

PLAN SHOWING MOVEMENTS OF PADDY FROM RECEIVING CENTER

JANUARY 1989

ANNEX 1

ANNEX II

The content of scope by the Japanese Grant Aid Cooperation will be decided at completion of the Basic Design Study and will be recommended to the Japanese Government for it's approval.

The machinery and equipment requested to be provided by the Government of Japan are the following:

Rice Milling Plant (Capacity 10 MT/H) — 2 sets

Main Components

A. Receiving Section
   1) Paddy Cleaner
   2) De-stoner
   3) Paddy Scale

B. Paddy Husking Section
   1) Paddy Husker
   2) Paddy Separator
   3) Thickness Grader

C. Rice Whitening Section
   1) Rice Whitening Machine (Abrasive Type)
   2) Rotary Sifter
   3) Rice Polishing Machine

D. Grading, Blending and Packaging Section
   1) Rotary Sifter
   2) Rice Grader
   3) Rice Blending System
   4) Color Sorter
   5) Scale Shutter
   6) Bag Closing Machine
   7) Packer

E. Bran, Dust and Husk Collecting Section
   1) Suction Fan
   2) Blowing Fan
   3) Cyclone

F. Others
   1) Control Panel
   2) Compressor
   3) Ducts, Piping Materials, Machine Bases, Conveyors, Elevator and Tools.
   4) Spare Parts and Consumables

ANNEX III

Required arrangements to be undertaken by the Government of the Cooperative Republic of Guyana.

1. To arrange necessary improvement of the existing building.

2. To remove the existing rice mill plants.

3. To undertake necessary improvement work of the floor including machinery foundation and pit work.

4. To provide facilities for distribution of electricity, water supply and other incidental facilities;

   i) Electricity distributing line to the operation pannels, including necessary meter and safety device,

   ii) Pure water distribution to the rice polishing machines,

   iii) General furniture,

   iv) Other incidental facilities.

5. To undertake installation work of the machinery and equipment obtained under the Grant Aid.

6. To undertake piping, wiring and ducting work from, to and between the machinery and equipment obtained under the Grant Aid.

7. To provide the space for temporary storage and working areas during installation work.

8. To ensure prompt unloading, tax exemption and customs clearance at ports of disembarkation in Guyana and proper internal transportation therein of the machinery and equipment obtained under the Grant Aid.

9. To bear advising and payment commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement.

10. To accord without delay Japanese nationals whose services may be required in connection with the supply of products and services under the verified contract such facilities as may be necessary for their entry into Guyana and stay therein for the performance of their work.

11. To assign the necessary staff for the proposed activities of the M.A.R.D.S. Rice Mill upon the execution of the Project.

12. To maintain and use properly and effectively the machinery and equipment obtained under the Grant Aid.

13. To bear all expenses other than those to be borne by the Grant Aid.

List of the Officials Contacted

- Embassy of Japan in Venezuela

First Secretary	MR. Junichi Hatano
Attache	Mr. Naomasa Hiraishi

- Department of International Economic Co-operation

Head	Dr. Cecil Rajana
Deputy Head	Dr. Patric Kendall
Desk Officer	Mr. Eeenan Elliot

- Ministry of Agriculture

Senior Minister	Dr. P.L. McKenzie
Junior Minister	Mr. Vibert V. Parvatan

- Guyana Rice Milling and Marketing Authority (GRMMA)

General Manager	Mr. Charles P. Kennard
Deputy General Manager	Mr. Leroy Small
Finance Controller	Mr. J.D. Simmons
Engineering Manager	Mr. C.R. Jones
Mills Engineer	Mr. Neville Fypher
Maintainance Engineer	Mr. Lennox Rutherford
Civil Engineer	Mr. R.A. Clarke
Manager	Mr. Rudolph Ross
Consultant	Mr. Keith Lewis

- M A R D S

Branch Manager	Mr. Sydney Jackman
Factory Manager	Mr. Michael Rowe
Production Superviser	Mr. Ronald Johnson
Asst. Mill Engineer	Mr. Joseph Burke
Asst. Resident Engineer	Mr. Watterton Simpson
Workshop Foreman	Mr. Lennox Wilson
Electrical Foreman	Mr. Kenrick Mingo
Quality Control Technician	Mr. Earl Stephens
Branch Accountant	Mr. Dave Henry
Asst. Accountant	Mr. Simon Charles

■ Black Bush Polder

Branch Manager	Mr. Neville Rutherford
Branch Accountant	Mr. Carlos Leitch
Maintainance Engineer	Mr. Rawle Hunte
Co-ordinator	Mr. Addison James
Quality Control	Mr. Author Williams
Asst. Engineer	Mr. Philbert DeCosta

■ National Paddy and Rice Grading Centre

General Manager	Mr. K. Croal
Expert	Mr. Peter S.Tyler
	Mr. Storage Department, Overseas
	Mr. Development Natural Resources
	Mr. Institute(ODNRI), London,
	Mr. dispatched by British Government

■ Georgetown Botanic Garden

Chief Hydromet Officer	Mr. Chander Persaud
Meteorologist	Mr. Sudama Raghunardan
〃	Mr. Sheik. M. Khau
Meteorological Technician	Mr. Bajandyal Sigh

■ Others

Councillor of Mayor (Honorary Consul of Japan)		Mr. Hansel W. Barrow
Economic Adviser to His Excellency the President, Chairman of Guyana Rice Group		Ms. Darlene Harris
A Hakh & Sons	Director	Mr. Nazir Hakh
	〃	Mr. Hasan Hakh
Nisshin Suisan K.K	Senior Managing Director	Mr. Yoshiji Mizutani
	Executive General Manager	Mr. Kojiro Yoshioka
		Mr. Keiichi Kanai

APPENDIX-1 Economic Index of the Guyana

In millions of U.S. dollars unless noted

	1984	1985	1986	1987(予想)
Domestic Economy				
Population(Year-end, thousands)	781.8	788.1	793.6	N/A
Population growth (%) a	0.8	0.7	N/A	N/A
GDP in current dollars	444.3	459.4	513.7	342.5
Per capita GDP, current dollars	568.1	583.0	647.0	N/A
GNP in current dollars	396.8	402.1	448.1	290.3
Per capita GNP, current dollars	506.6	510.3	564.4	N/A
GDP in millions of Guy dollars	1,700	1,984	2,219	3,425
GNP in millions of Guy-dollars	1,518	1,719	1,936	2,903
% change in GDP in Guy dollars	16.8	15.5	13.0	54.3
Consumer price index % change	25.2	15.1	N/A	N/A
Production and Employment				
Labor force(thousands)	N/A	284	N/A	N/A
Public sector employment(thousands)	78.1	74.9	77.8	N/A
Industrial production as % of GDP at current factor cost	17.6	12.9	16.7	23.5
Public sector current surplus/ deficit	-197.3	-55.2	-16.2	106.4
Public sector overall deficit	-275.7	-158.4	-374.8	-1.8
Public sector overall deficit as % of GDP	62.1	34.5	73.0	0.5
Balance of Payments				
Exports (F.O.B.) b/	246.3	243.7	252.8	292.3
Imports (C.I.F) b/	284.7	346.9	374.5	384.3
Current account balance	-38.4	-103.2	-121.7	-92.0
Trade balance	2.7	-10.8	-29.8	-17.9
Direct Investment	4.5	1.8	N/A	N/A
MLT public external debt	690.3	753.7	797.9	N/A
Arrears on public external debt	480.8	664.4	837.0	N/A
Private commercial arrears	69.2	73.7	78.0 c/	N/A
Debt service paid	38.4	25.1	N/A	N/A
Debt service paid as % of exports	15.6	10.3	N/A	N/A
Scheduled debt service as % of exports	N/A	71.2	72.1	68.6
Foreign exchange reserves (year-end)	5.9	6.5	9.0	N/A
Average official exchange rate (G - US $1.00)	3.8	4.3	4.3	10.0

a/ Net natural increase (births minus deaths) less net migration.
b/ Includes goods and services.
c/ June 1986 figure.

Sources: Government of Guyana Statistical Bureau. IMF and World Bank.

APPENDIX-2 Data of Natural Conditions in Guyana

Natural Conditions Region 2

Weather data (late 10 year's average ... monthly-wise)

Item / Month	Max. Temperature (°C)	Min. Temperature (°C)	Max. Relative Humidity (%)	Min. Relative Humidity (%)	Rain Fall (mm)	Wind Direction and Speed (m/sec.)	No. of sunshiny hr/day
January	29.5	27.3	83	69	205.7		6.2
February	29.5	27.8	81	65	106.7		6.5
March	29.7	24.3	80	64	106.2		7.3
April	29.7	24.5	80	68	133.1		7.2
May	29.7	24.3	84	73	285.2		6.0
June	29.5	24.4	86	76	314.4		6.1
July	29.6	23.9	87	70	256.0		7.2
August	30.3	24.1	82	66	168.9		7.6
September	30.6	24.6	80	64	77.5		8.4
October	30.5	24.6	79	65	93.7		7.7
November	30.2	24.1	80	63	174.2		6.5
December	29.7	23.8	81	70	306.8		5.5
Total					2,228.4		
Annual Average	29.9	24.8	81.9	67.8	185.7		6.9

Source: Hydrometerological Department, Guyana

Natural Conditions Region 3

Weather data (late 10 year's average ... monthly-wise)

Item / Month	Max. Temperature (°C)	Min. Temperature (°C)	Max. Relative Humidity (%)	Min. Relative Humidity (%)	Rain Fall (mm)	Wind Direction and Speed (m/sec.)	No. of sunshiny hr/day
January	29.5	23.3	82	73	241.0		7.0
February	29.8	23.3	80	72	139.2		7.1
March	29.8	23.6	81	73	135.4		6.9
April	30.4	23.5	85	76	159.0		6.5
May	30.5	23.3	86	75	309.4		7.2
June	30.4	24.1	87	75	335.0		8.1
July	31.0	23.8	85	77	286.3		8.2
August	31.2	24.2	86	72	166.6		7.9
September	31.3	24.4	83	71	78.2		6.8
October	31.2	24.2	79	70	83.3		6.5
November	30.8	24.0	80	75	156.0		5.7
December	29.7	23.6	82	76	301.5		5.6
Total					2,390.9		
Annual Average	30.5	23.8	83.0	73.8	199.2		7.0

Source: Hydrometrological Department, Guyana

Natural Conditions Region 4

Weather data (late 10 year's average ... monthly-wise)

Item / Month	Max. Temperature (°C)	Min. Temperature (°C)	Max. Relative Humidity (%)	Min. Relative Humidity (%)	Rain Fall (mm)	Wind Direction and Speed (m/sec.)	No. of sunshiny hr/day
January	29.4	23.1	84	72	127.9		6.7
February	29.9	23.3	80	69	50.0		7.3
March	30.3	23.3	79	69	94.7		6.8
April	30.3	23.6	80	69	187.8		6.4
May	30.3	23.6	85	74	250.2		6.1
June	30.2	23.2	87	75	253.5		6.7
July	30.3	23.1	87	73	202.1		6.8
August	30.8	23.3	83	69	161.4		8.0
September	31.4	23.6	81	66	64.1		8.5
October	31.6	23.7	80	65	60.6		7.9
November	31.3	23.7	80	66	77.9		7.5
December	30.3	23.3	82	71	184.6		6.7
Total					1,714.8		
Annual Average	30.5	23.4	82	70	142.9		7.1

Source: Hydrometerological Department, Guyana

Natural Conditions Region 5

Weather data (late 10 year's average ... monthly-wise)

Item / Month	Max. Temperature (°C)	Min. Temperature (°C)	Max. Relative Humidity (%)	Min. Relative Humidity (%)	Rain Fall (mm)	Wind Direction and Speed (m/sec.)	No. of sunshiny hr/day
January	28.7	23.8	81	73	112.6		5.8
February	28.7	23.9	79	73	53.1		6.3
March	29.0	24.1	78	72	127.9		5.7
April	29.5	24.4	79	73	151.7		5.5
May	29.5	24.4	84	76	254.5		5.1
June	29.4	24.2	86	77	194.2		5.6
July	29.5	23.9	86	74	225.5		6.5
August	30.1	24.3	84	72	173.1		7.6
September	30.8	24.5	79	69	81.3		8.0
October	30.7	24.4	78	69	98.4		7.3
November	30.4	24.6	79	70	125.1		7.0
December	29.1	24.1	83	75	189.7		5.3
Total					1,787.1		
Annual Average	29.6	24.2	81	72.8	148.9		6.3

Source: Hydrometerological Department, Guyana

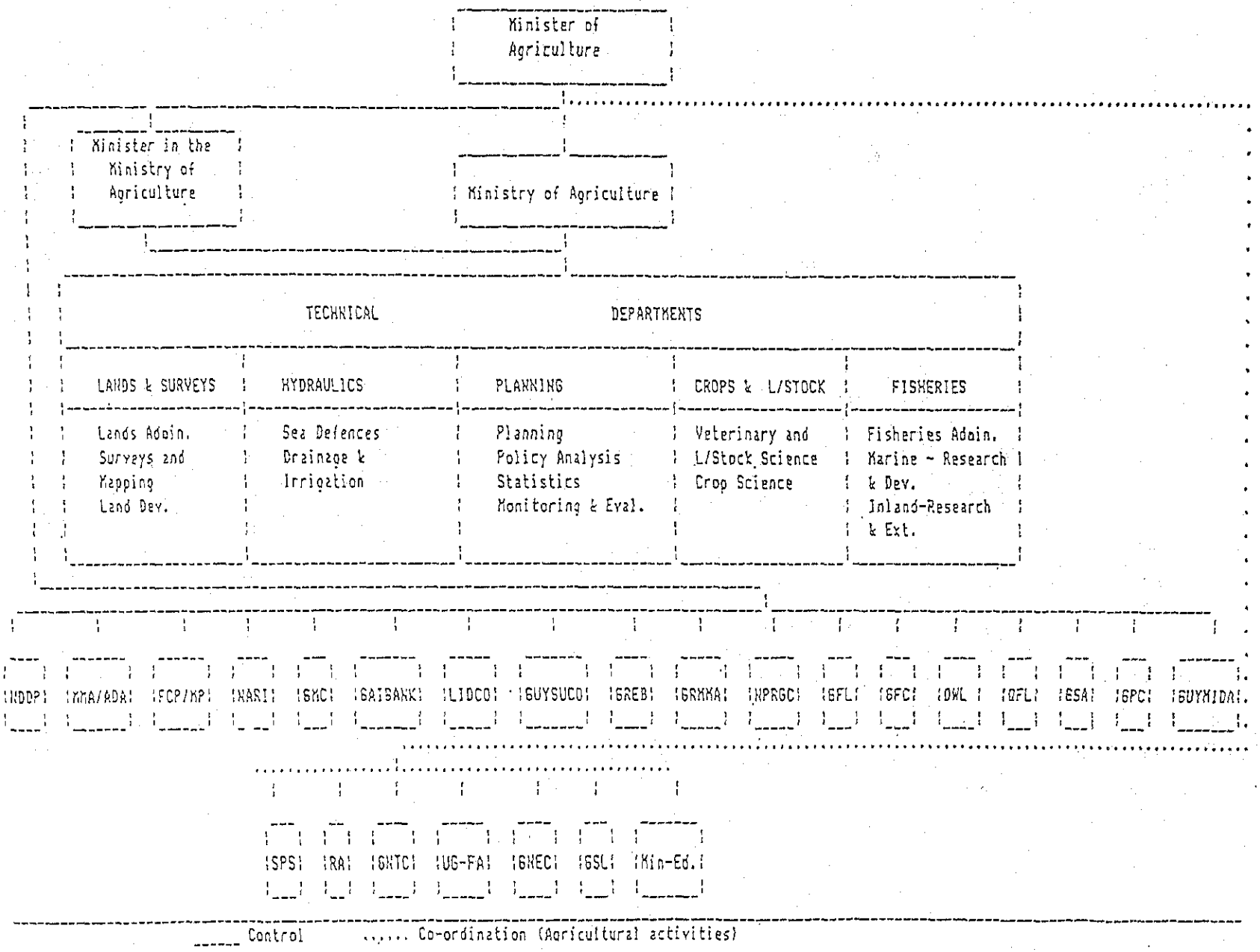
Natural Conditions Region 6

Weather data (late 10 year's average ... monthly-wise)

Item / Month	Max. Temperature (°C)	Min. Temperature (°C)	Max. Relative Humidity (%)	Min. Relative Humidity (%)	Rain Fall (mm)	Wind Direction and Speed (m/sec.)	No. of sunshiny hy/day
January	29.2	23.7	81	75	224.8		6.8
February	29.4	24.0	79	72	130.3		7.0
March	29.6	24.2	70	73	134.6		7.1
April	30.1	24.6	82	76	160.0		6.6
May	29.9	24.2	85	77	297.4		6.4
June	29.3	23.9	88	78	325.6		6.7
July	30.1	23.6	87	75	269.5		6.9
August	30.6	24.0	86	72	180.3		8.2
September	31.3	24.5	81	70	85.6		8.6
October	31.1	24.5	79	71	80.2		7.8
November	30.8	24.3	81	72	151.6		6.7
December	29.7	23.8	84	76	298.2		6.6
Total					2,338.1		
Annual Average	30.1	24.1	81.9	73.9	194.8		7.1

Source: Hydrometerological Department, Guyana

AGRICULTURAL INSTITUTIONAL FRAMEWORK - ADMINISTRATIVE CHART

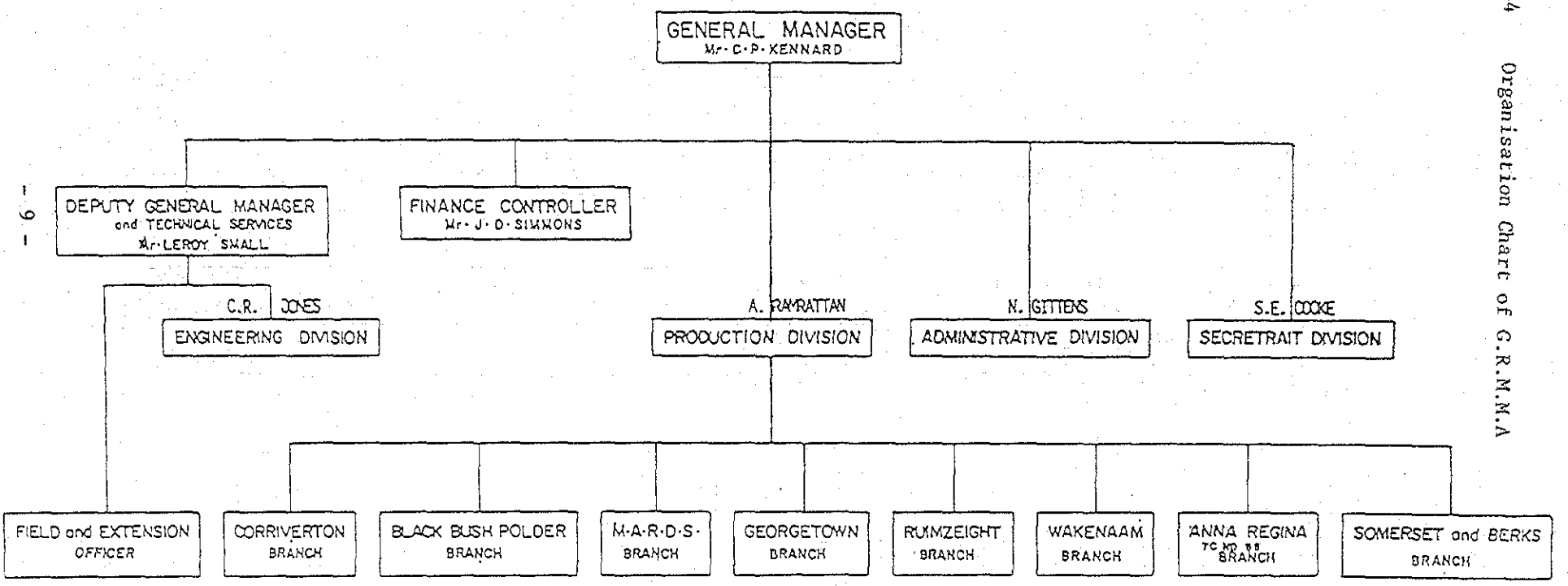


EXPLANATIONS OF ABBREVIATIONS FOUND IN AGRICULTURAL INSTITUTIONAL FRAMEWORK - ADMINISTRATION CHART ATTACHED

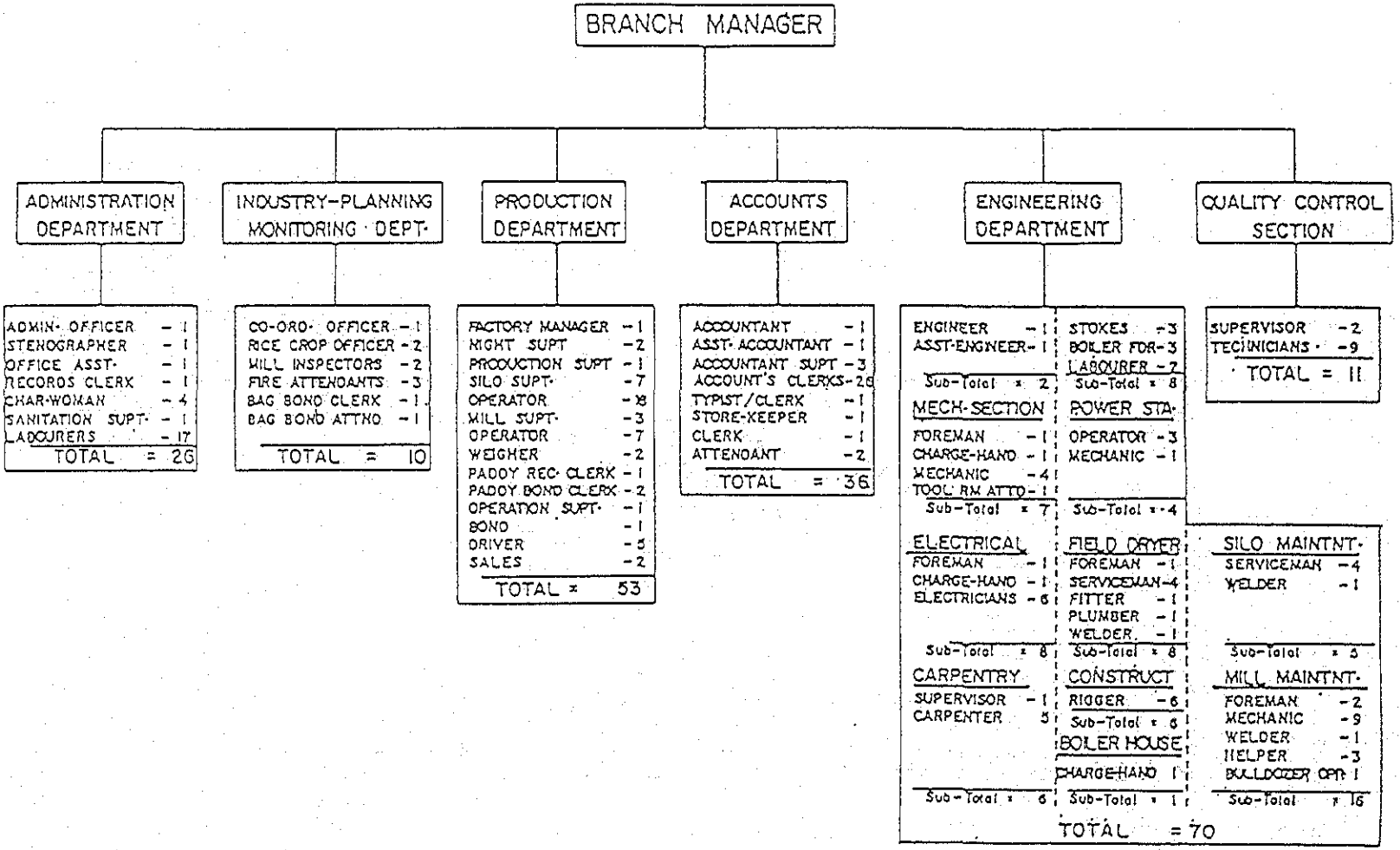
1. N.D.D.P.	National Dairy Development Programe
2. M.M.A/A.D.A.	Mahaica Mahaicony Abary / Agricultural Development Authority
3. F.C.P./M.P.	Food Crops and Marketing Programme
4. N.A.R.I.	National Agricultural Research Institute
5. G.M.C.	Guyana Marketing Corporation
6. GAIBANK	Guyana Co-operative Agricultural Development Bank
7. L.I.D.C.O.	Livestock Development Company
8. GUYSUCO	Guyana Sugar Corporation
9. G.R.E.B.	Guyana Rice Export Board
10. G.R.M.M.A	Guyana Rice Milling and Marketing Authority
11. N.P.R.G.C.	National Paddy and Rice Grading Centre
12. G.F.L.	Guyana FishFeries Limired
13. G.F.C.	Guyana Forestry Commissin
14. D.W.L.	Demerara Woods Limited
15. Q.F.L.	Quality Foods Limited
16. G.S.A.	Guyana School of Agriculture
17. G.P.C.	Guyana Phamaceutical Corporation
18. GUYMIDA	Guyana Manufacturing and Industrial Agency
19. S.P.S.	State Planning Secretariat
20. R.A.	Regional Administration
21. G.N.T.C.	Guyana National Trading Corporation
22. U.G.- F.A.	University of Guyana - Faculty of Agricuture
23. G.N.E.C.	Guyana National Engineering Corporation
24. G.S.L.	Guyana Store Limited
25. Min-Ed.	Ministry of Education

APPENDIX-4 Organisation Chart of G.R.M.M.A

GUYANA RICE MILLING and MARKETING AUTHORITY
ORGANISATION CHART
GENERAL



GUYANA RICE MILLING and MARKETING AUTHORITY
ORGANISATION CHART
M·A·R·D·S· — BRANCH



APPENCIX-6 Maintenance System in M.A.R.D.S.

DAILY MAINTENANCE FOR MILLING MACHINES

PADDY CLEANERS PH80

Portion Checked	Point of Checking	Content of Service
Main body Section	Drive Belt Tension	Adjust tension pulley if stret
Oscillating Box Section	Screen	Remove straws strips & foreign matter
Driving Section	Excessive vibration	Reset and tighten bolts and nuts

PADDY HUSKERS HJ1C-PC

Main Body Section	Belt tension	Adjust tension pulley if stretch
Moveable Shaft Section	Grease Cup	Give grease cup two turns
Tightener Section	Oil Cup	Add Lub Oil

HUSK ASPIRATORS

	Check through inspection window	To remove any foreign matter

PADDY SEPARATORS PS120B

Main Body Section	Loose Bolt and Nuts	Tighten same if necessary
Distributor Section	Distribution Box	Remove foreign matters

PADDY SEPARATORS PS60E

Separating Tray Section	Distributor	Check and remove any foreign matter

RICE WHITENING MACHINES M-20A

Abrasive Rolls	Condition of Abrasive Rolls	Dressed if necessary
Perforated Steel Cylinder	Condition of Perforated Steel Cylinder	Check for ware, leaks and replace if necessary
Resistence Pieces	Check for worn pieces	Replace if resistence pieces are worn and adjust degree of milling

ROTARY SIFTERS

Screens	Condition of screens	For leaks and rice blocking screens
Rubber Balls	Condition of balls	For ware and replace if necessary
Belts	Tension	To prevent slippage and wear

LENGTH GRADERS

Bearings	Condition of seal	For wear and replace if necessary
Catch Trough	Condition of conveyor	Grease bearing if required

AIR COMPRESSORS

	Check lub oil level	Add lub oil if necessary

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ELEVATORS

Portion Checked	Point of Checking	Content of Service
Belt Section	For correct alignment Missing buckets	Adjust Booth pulling Replace missing buckets
	SCREW CONVEYORS	
	Wooden bearings	Add grease or lub oil

WEEKLY MAINTENANCE FOR MILLING MACHINES

Paddy Cleaners PH 80

Portion Checked	Point of Checking	Content of Service
Driving Section	Crank and crank shaft	Apply grease
Blower section	Bearings	Apply grease
Blower section	V Belts	Tighten if stretch
Oscilating Box Section	Chain	Apply grease
Oscilating Box Section	Flange unit	Lubricate
	leaks	Weld

Paddy Huskers HU 10 MPC

Pneumatic control box Sect.	Pneumatic control set	Add oil is oil level low
Pneumatic control box Sect.	Pneumatic control set	Release condense water
Main body section	V and BB belts	Tighten if stretch
Main body section	Main body	Clean air cooling out let
	Leaks	Weld
	Grooved Pulleys	Tighten set bolts if necessary

Husk Aspirators HA 10 Mb

Main Body Section	Perforated steel plate	Open and clean inside machine
Husk Conveyor Section	B and BB Belts.	Tighten if stretch
	Grooved pulleys	Tighten set bolts if necessary
	Leaks	Weld
Rotary discharge section	Chain	Lubricate

Paddy Separators PS 120C

	Bolts	Tighten loosening bolts
Main shaft section	V Belts	Tighten if stretch
	Leaks	Weld

Paddy Separators PS 60E

	Bolts	Tighten loosening bolts
Counter shaft section	V Belts	Tighten if stretch
	Leaks	Weld

Rice Whitening Machines RM 30A

Abrassive roller section	V Belts	Tighten if stretch
Casing section	Screens, 107	Clean if blocked
Casing section	Screens, 107	Change if damage
	Bolts	Tighten loosening bolts
Casing section	Resistance pieces	Reset if necessary

Rice Whitening Machines BS 30A

Portion Checked	Point of Checking	Content of Service
Milling roller section	Screens	Clean if blocked
Milling roller section	Screens	Change if damage
Milling roller section	Screen adjusting plates	Change if worn
Milling roller section	V Belts	Tighten if stretch
	Bolts	Tighten loosening bolts
	Rotary sifters	
	V Belts	Tighten if stretch
	Bolts and nuts	Tighten loosening bolts and nuts
	Bearing	Grease
	Length Graders	
	Bolts	Tighten loosening bolts
Driving section	Chain	Tighten if stretch
Driving Section	Chain	Grease
Machine Stand Section	Indented Cylinder	Clean if blocked
	Air Compressors	
	V Belts	Tighten if stretch
	Bolts	Tighten loosening bolts
	Air tank	Release condense water
	Air filter	Clean
	Elevators	
Structural steel head Section	Bearings	Grease
Transmission for Motor drive	Bearings	Grease
Transmission for motor Drive	V Belts	Tighten if stretch
" "	Grooved pulleys	Tighten set bolts loosening
" "	Chain	Grease
Lower structural steel casing sect.	Bearings	Grease
Middle structural steel casing sect.	Buckets	Replace missing buckets
	Leaks	WEld
	Carrier belts	Tighten and adjust if stretch
	Scales	
	Scales	Clean and balance if necessary
	Screw conveyors	
	Drive units	Add lub. oil if necessary
	Belt conveyors	
	Belt	Tighten and adjustif stretch

MONTHLY MAINTENANCE

Portion Checked	Point of Checking	Content of Services
Elevators	Belting, Buckets, Bolts Bearing	Check and replace if necessary Remove and check conditions of Bearii replace, if necessary
Paddy Cleaners	Rotary Screen	Check for wear, replace if necessary
	Air Fan	Check Blades for worn parts and repl same if need arise
	Screw Conveyor	Check bearings and screw, replace worn screws and bearings if need aris
Paddy Huskers	Movable Arm Shaft	Check shaft and bearing for worn, replace or build shaft if need arise
	Air Cylinders	Check for worn seals, replace if necessary
	Mixed Rice Conveyor	Check on shaft, blades and bearings build and machine shaft, if necessary replace bearing if need arise.
Paddy Separators	Trays, Bearings, shaft Distributors	Remove trays, check bearings, and shafts for worn parts, rebuild and machine where need arise, replace bearing, if necessary
Rice Whiteners R4-30	Abrasive Rolls, Resistence Pieces Perforated steel Cylinder	Check and replace Abrasive Rolls if needed or dress same if need arise
	Bearings, shaft	Check condition of resistence pieces for worn parts replace if necessary Check condition of perforated steel clylinders, weld or replace if need arise.
Rice Polishers B.S.-30	Milling Roller	Check Rollers for wear, replace worn parts if necessary
	Frictional Screens	Check for leaks or worn parts, possib weld leaks or replace same if need arise
	Bearings	Check condition of bearings, grease if need arise
Rotary Sifters	Screens	Check screens for holes and replace or patched holes if needed.
	Rubber Balls	Check condition of rubber balls and replace if necessary.
	Bearings	Check bearings if seals are broken, wash bearings thoroughly and servic same if needed

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Portion checked	Point of checking	Content of services
L.R.G. Rice Graders	Indented Cylinders	Clean indents with wire brush to ens indents are free from Rice Bran
	Catch Trough	Check on bearings to ensure same in good condition or replace if possibl
	Rollers	Check on condition of rollers for possible replacements
	Gears	Check on gears for possible worn par and replace if necessary
	Chain	Check on condition of chain for worn links and replace if necessary
Sewing Machine (Newling)	Feed Dog	Check on worn parts and replace if necessary
	Looper	Check wear on looper and replace if need arise
	Looper Assembly	Check moving parts for any worn and replace if needed
	Needles	Check condition of needles and repla if needed
Belt	Bag Conveyor	Check on bearing on conveyor and service same if need arise. Replace bearings.

GRNNA/HARDS

Annual General Maintenance for Rice Milling Machine (out of crop)

PADDY CLEANERS PH80

Portion Checked	Point of Checking	Content of Service
Lower Main Body Section	Complete dismantling	Service and change worn parts is neces ary
Feed Roller Section	" "	" " " " " "
Blower Section	" "	" " " " " "
Upper Main body section	" "	" " " " " "
Main Body Section	" "	
Oscilation Box Section	" "	" " " " " "
Driving section	" "	" " " " " "

PADDY HUSKERS HU10PC

Portion checked	Point of checking	Content of Service
Main Body Section	Complete dismantling	Service and change worn parts
Intake Hopper Section	" "	" " " " "
Moveable shaft section	" "	" " " " "
Tightener section	" "	" " " " "
Feed Roller Section	" "	" " " " "
Air piping section	" "	" " " " "
Pneuatic Control Section	" "	" " " " "

AIR ASPIRATORS HA 10M6

Main Body Section	Complete dismantling	" " " " "
Immature Grain Conveyor	" "	" " " " "
Mixed Grain Conveyor Section	" "	" " " " "
Husk Conveyor section	" "	" " " " "
Fan section	" "	" " " " "
Cover Tightener Section	" "	" " " " "
Rotary discharge section	" "	" " " " "

PADDY SEPARATORS PS120B

Main Body Section	Complete dismantling	" " " " "
Main Shaft Section	" "	" " " "
Oscilating Section	" "	" " " " "

PADDY SEPARATORS PS60E

Main Body Section	Complete dismantling	" " " " "
Main Body section	" "	" " " " "
Cainter Shaft section	" "	" " " " "
Inclimation Adjusting section	" "	" " " " "
Balance Weight Section	" "	" " " " "
Shaft section	" "	" " " " "

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cont'd

	PADDY SEPARATORS PS60E	
Oscilating Arm Section	Complete dismantling	Service and change worn parts
Diving Plate Section	-do-	-do-
Separating Tray section	-do-	-do-
Discharge Conduit 1 section	-do-	-do-
	RICE WHITENING MACHINES RM30A	
Abrasive Roller section	Complete dismantling	Service and change worn parts
Casing Section	-do-	-do-
	RICE WHITENING MACHINES BS30A	
Casing Section	Complete dismantling	Service and change worn parts
Milling Roller section	-do-	-do-
	ROTARY SIFTERS	
	Complete dismantling	Service and change worn parts
	LENGTH GRADERS	
Indented Cylinder Receiver Sect	Complete dismantling	Service and change worn parts
Inclination Adjusting section	-do-	-do-
Window section	-do-	-do-
Driving section	-do-	-do-
Flow Control Shute Pipe section	-do-	-do-
Shute Pipe	-do-	-do-
Body Cover section	-do-	-do-
	AIR COMPRESSORS	
	Complete dismantling	-do-
	ELEVATORS	
Structural Steel Head Section	Complete dismantling	-do-
Transmission section	-do-	-do-
Structural Steel Casing Section	-do-	Repairs damaged parts
Lower structural steel section	-do-	Service and change worn parts
Belting section	-do-	-do-
	Screw Conveyors	
	Complete dismantling	-do-
	Belt Conveyors	
	Complete dismantling	-do-
	Sewing Heads	
	Complete dismantling	-do-

APPENDIX-7 Electricity Tariffs of Guyana Electricity Corporation

GUYANA ELECTRICITY CORPORATION - ELECTRICITY TARIFFS

The following Tariffs are effective for electricity meters read or estimated on or after July 1, 1987 and for Street Lighting accounts due on or after July 1, 1987. Charges will be made for electricity supplied during each month.

TARIFF "A"

Applicable to all residential premises used exclusively as a single private dwelling. This Tariff is not applicable to premises at which business activities and residence are combined.

ALL CONSUMERS

Fixed charges per month	G$2.30
Charge per KWH	0.45
Consumer of more than 50 KWH per month	
Fixed charge per month	2.50
Charges per KWH for first 50 KWH per month	0.45
Charge per KWH for each additional KWH per month	1.00

TARIFF"B"

Applicable to all non-residential premises with electricity supplied at a voltage not exceeding 1000 volts at the Consumer's terminals.

Fixed charge per month	4.14
Charge per KWH	1.96

TARIFF "C"

Applicable to all non-residential premises with electricity at a voltage not exceeding 1000 volts at the terminals.

Demand charge per month KVA of maximum demand	32.30
Minimum demand charge per month	1,615.00
Charge per KWH for first 200 KWH per KVA of maximum demand per month	1.73
Charge per KWH for each additional KWH per month	1.49

cont'd

TARIFF "D"

Applicable to all premises with electricity supplied at a voltage exceeding 1000 volts at the Consumer's terminals.

Demand charge per month per KVA of maximum demand	G$30.22
Minimum demand charge per month	3,022.00
Charge per KWH for first 200 KWH per KVA of maximum demand per month	1.82
Charge per KWH for each additional KWH per month	1.51

TARIFF "E"

Applicable to Street Lamps

Fixed Charges per lamp per month	4.14
Charge per KWH	0.90

APPENDIX-8 Scale of M.A.R.D.S. Workshop

Scale of Workshop

(1) The size of building and floor

The M.A.R.D.S. workshop is housed in a one flat building measuring 250 feet by 350 feet.

(2) Main Machine Tools (MARDS Owned)

SEE ATTACHED

(3) No. of Mechanic and Engineer

Occupation	No. of Personnel
. Engineer	1
. Electrical Foreman	1
. Workshop Foreman	1
. Mechanic	11
. Assistant	2 Electrical Helpers
. Others	
Machinists	2
Electricians	8
. Welder	1
Tyreman	1

Main Machine Tools (MARDS Owned)

Machine Shop	1	Bridgeport milling machine
	1	Elliot drilling machine complete with motors
	1	Roku Rokh drilling machine with motor
	1	Grinding machine complete with motor
	1	Inviga shaping machine
	1	Schramm lichner lathe
	1	Eansigu lathe
	1	Grinding machine
	1	Butler machine
	1	Lancing "G" lathe
	1	Sigmund 8" hose water gear pump
	1	All purpose generating plant
Vulcanizing Section	1	Igeasol Rand compressor complete with motor
	1	Stenoriser patching machine
Carpenters' Shop	1	Delta rockwell power saw with motor
	1	Electric plane with motor
	1	Junior white head electric saw
Electrical Shop	1	Avo Meter
	1	Mega Meter
	1	Battery Charger
	1	Honeywell multimeter
	1	Soldering Iron (220 Volts)

APPENDIX 9 Hire Rate of Construction Machinery

BASIC PLANT HIRE RATES FOR CONSTRUCTION INDUSTRY

1	CONCRETE MIXERS	STANDARD	HOURLY	G$120.00 - $250.00
2	DRAGLINE	STANDARD	HOURLY	350.00
3	CONCRETE DUMPERS	STANDARD	HOURLY	95.00 - $75.00
4	CONCRETE VIBRATORS	STANDARD	HOURLY	65.00 - $40.00
5	COMPRESSORS	STANDARD	HOURLY	160.00 - $210.00
6	WELDING PLANT	STANDARD	HOURLY	185.00 - $220.00

APPENDIX – 10 Prices of Construction Materials

Possibility of Procurement of the Construction Materials and the Prices in Guyana.

DESCRIPTION	C L A S S	U N I T	R A T E
CONCRETE WORK			
Cement	Portland	Sack	G$75.00 - 165.00 (F)
Stone - crushed	Granite	Ton	G$750.00 - 815.00 (L)
Sand	White	Cu: yd	G$80.00 - 95.00 (L)
REINFORCING RODS			
Reinforcing Rods ¼" - 1"	Mild Steel	lb	G$21.00(F)
B.R.C. Frabic #65 & 610	Mild Steel	Roll	G$3,865.00 (F)
Tying Wire #18	Galvanise	lb	G$18.00(F)
CONSTRUCTION			
Angles (varied)	Mild Steel	Lin. ft	G$45.00(F)
Flats Bar (varied)	Mild Steel	Lin. ft	G$85.00(F)
Flats Plates (varied) 4' x 8'	Mild Steel	each	G$4,380.00 (F)
Tubing (pipes)	Mild Steel	Lin. ft	G$110.00 (F)
Bolts & Nuts (varied)	Mild Steel	lb	G$20.00 (F)
Washers (varied)	Mild Steel	lb	G$18.00 (F)
Nails (mixed)	Wire	lb	G$18.00 (F)
Wood Screws (varied)	Steel	Dozen	G$135.00 (F)
Metal Screws (varied)	Steel	Dozen	G$145.00 (F)
Expanded metal	Mild steel	Sheets	G$1,876.00(F)
ROOF AND SIDE CLADDING			
Corrugated Sheeting 26G	Galvanise	Lin. ft	G$85.00(F)
Corrugated Sheeting 22G	Aluminum	Lin. ft	G$143.00 (F)
Plain Sheeting 22G	Aluminum	Lin. ft	G$135.00 (F)
Plain Sheeting 26G	Galvanise	Lin. ft	G$75.00(F)
Perspex Sheeting Clear	Translucent	Lin. ft	G$230.00 (F)

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備考：（L）＝国産品

（F）＝輸入品

APPENDIX-11 Wages of Laborer for Construction and Installation Works

DESIGNATION OF EMPLOYEES	WAGES/SALARIES	(8hrs./day)
Site Engineers	$3,200.00 - $3,800.00	Monthly
Site Surveyors	2,400.00 - 3,150.00	-do-
Site Technicians	1,500.00 - 1,800.00	-do-
Construction Foreman	1,400.00 - 1,500.00	-do-
Construction Leading Man	1,100.00 - 1,300.00	-do-
Carpenters - A Class	52.00 - -	Daily
Carpenters - B Class	42.00 - -	-do-
Carpenters - C Class	34.00 - -	-do-
Masons - A Class	52.00 - -	-do-
Masons - B Class	45.00 - -	-do-
Plumbers - A Class	48.00 - -	-do-
Plumbers - B Class	42.00 - -	-do-
Guttersmith - A Class	45.00 - -	-do-
Guttersmith - B Class	40.00 - -	-do-
Electricians - A Class	48.00 - -	-do-
Electricians - B Class	42.00 - -	-do-
Painters - A Class	48.00 - -	-do-
Painters - B Class	42.00 - -	-do-
Welders - A Class	45.00 - -	-do-
Welders - B Class	38.00 - -	-do-
Riggers - A Class	45.00 - -	-do-
Riggers - B Class	38.00 - -	-do-
Steel Benders - A Class	40.00 - -	-do-
Steel Benders - B Class	35.00 - -	-do-
Fabricators - A Class	40.00 - -	-do-
Fabricators - B Class	35.00 - -	-do-
Pipe/Bender/Fitter - A Class	35.00 - -	-do-
Pipe/Bender/Fitter - B Class	32.00 - -	-do-
Equipment Operators - A Class	45.00 - -	-do-
Equipment Serviceman - B Class	35.00 - -	-do-
Mechanic - A Class	45.00 - -	-do-
Mechanic - B Class	38.00 - -	-do-
TimeKeeper	32.00 - 40.00	-do-
StoreKeeper	32.00 - 40.00	-do-
Security Guard	35.00 - 40.00	-do-

APPENDIX-12 Prices of Spare Parts and Consumable Articles

(1) Spare Parts

Article (Example)	Price (G$)	Description	Means of Procurement
Rubber Roll	364.20	10"x10"	Foreign
V-Belt	350.00 380.00	A-66 A-82	Local
Ball-Bearing	82.00 48.35	6317 DDU 6314 DDU	Foreign "
Separating Tray	7,940.00	655036	Foreign
Screen	1,319.00 1,195.00	Perforated cylinder (RM) Frictional (BS)	Foreign
Abrasive Roller	3,740.00	RM-30A 02630211	Foreign
Others	24.50 24.80	BB-123 BB-124	Foreign
Inner frame	5,817.00		Foreign
Ball-Bearing	26.35	6214 DDU	Foreign
V-Belt	400.00	A-98	Local
Hexagonal belt	19.10	BB-94	Foreign

(2) Consumable Articles

Article (Example)	Price (G$)	Description	Means of Procurement
Petrol (l)	13.17 per gln.		Local
Diesel oil (l)	11.45 per gln.		"
Kerosene (l)	8.00 per gln.		"
Lube oil (l)	69.57	#30	"
Gear oil (l)	80.43	#90	"
Propane Gas (kg)	227.30 141.18	100 lbs cylinder 60 " "	" "
Nail (kg)	10.95	per lb.	"

APPENDIX-13 List of Major Consumable Spare Parts

Name of machine	Spare Parts	Standard durability (hr)/ No. of day (*1)
Precleaner	Screen	10,000 Hr/500
	Bellbearing	10,000 Hr/500
	V-belt	5,000 Hr/250
	Brush	2,500 Hr/125
Husker	Rubber roll	100 Ton/2 (*2)
	Ball bearing	10,000 Hr/500
	V-belt	5,000 Hr/250
Paddy Separator	Knife edge bearing	10,000 Hr/500
	Separation tray	20,000 Hr/1,000
	Connecting rod	20,000 Hr/1,000
	Ball bearing	10,000 Hr/500
	V-belt	5,000 Hr/250
	Cam	20,000 Hr/1,000
Whitening Machine (Abrasive)	Screw roll	5,000 Hr/250
	Resistance pieces	2,000 Hr/100
	Screen	5,000 Hr/250
	Abrasive roll	4,000 Hr/200
	Ball bearing	10,000 Hr/500
	V-belt	5,000 Hr/250
Rice Polishing Machine	Screw roll	5,000 Hr/250
	Mixing roll	5,000 Hr/250
	Screen	5,000 Hr/250
	Ball bearing	10,000 Hr/500
	V-belt	10,000 Hr/500
Rotary Sifter	Screen	2,400 Hr/120
	Supporting rod	7,200 Hr/360
	Oil seal	7,200 Hr/360
	Brush	2,400 Hr/120
	Ball bearing	10,000 Hr/500
	V-belt	5,000 Hr/250
Thickness Grader (for Cargo rice)	Screen	1,000 Hr/50
	Bearing case	1,000 Hr/50
	Ball bearing	10,000 Hr/500
	V-belt	5,000 Hr/250
Color Sorter	Fluorescent light	1,200 Hr/60
	Air filter	5,000 Hr/250
	Ejector	10,000 Hr/500

Note: 1 (*1) Calculated 20 hrs operation per day

2 (*2) Rubber rolls required 4 pair for 1 line rice mill (10T/Hr) in every 2 days.

3 The parts which is rapidly wears and comparatively costly.

4 In case of 14 hrs/day operation then durability will change to 1.43 times of above figure.