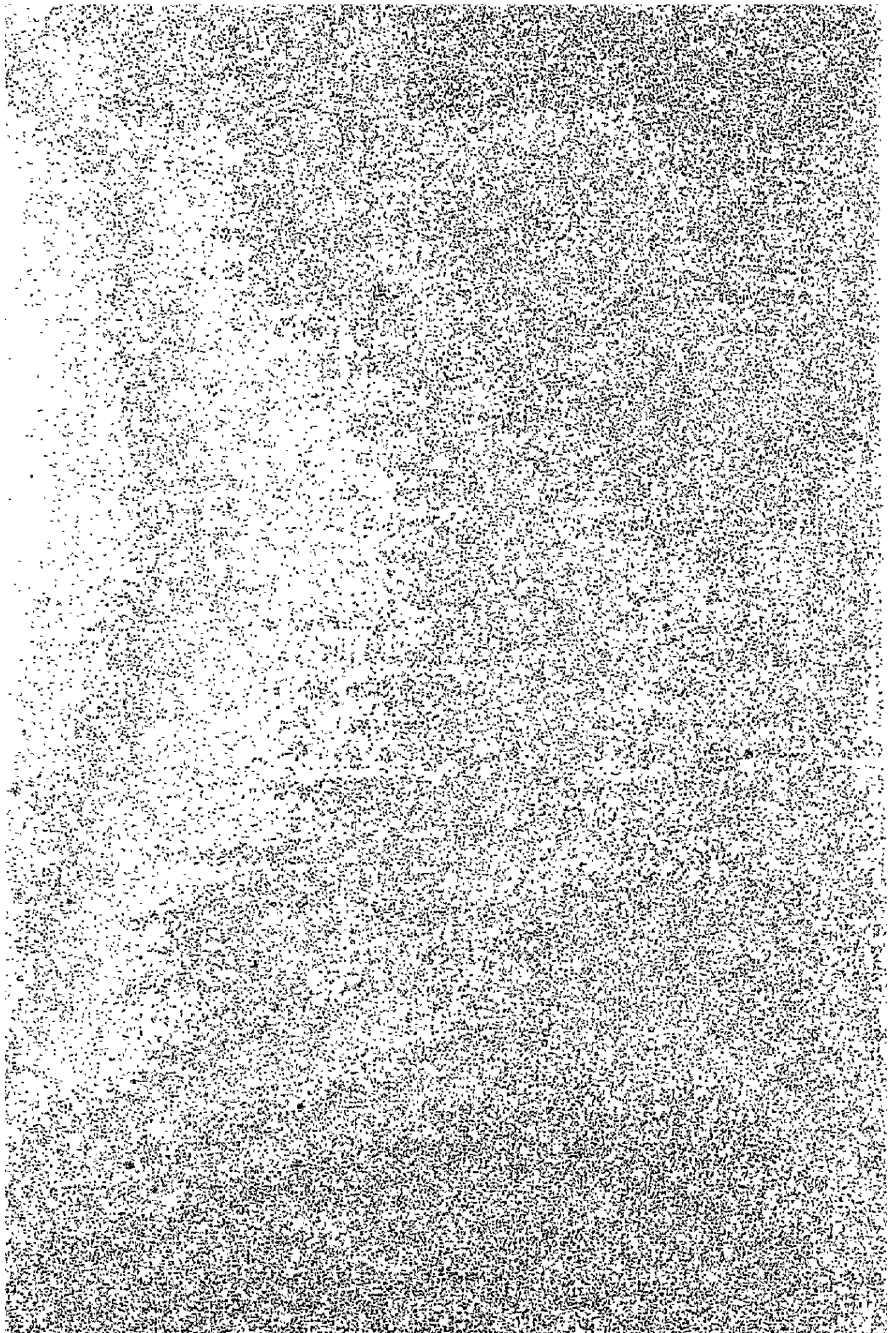


資料 V

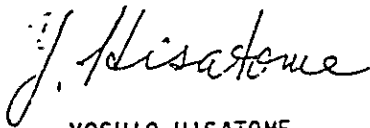
資料 V 59 年度年次計画

(1984 年 3 月 16 日署名)



In accordance with the Record of Discussions on the Technical Cooperation for the project on the small/medium scale Industry Development of Paraná State signed on October 2nd 1980 at Curitiba , the Japanese Consultation Team sent by Japan International Cooperation Agency (JICA) and Instituto de Tecnologia do Paraná (TECPAR) and Secretaria de Estado da Indústria e do Comércio (SEIC), State of Paraná, the government of the Federative Republic of Brazil mutually agreed upon the Annual Work Plan from January 1984 to September 1984 as attached hereto.

Curitiba, March 16, 1984.



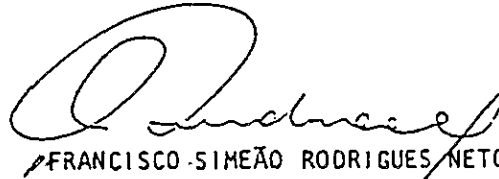
YOSHIO HISATOME

Leader

Japanese Consultation Team

Japan International Cooperation

Agency - Japan

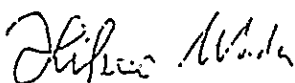
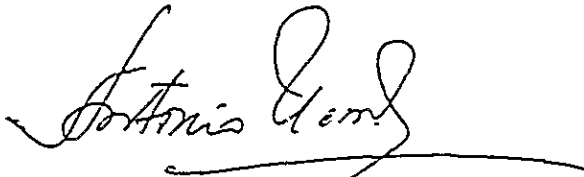


FRANCISCO SIMEÃO RODRIGUES NETO

Secretary of Industry and Commerce

State of Paraná

Brazil



ANNUAL WORK PLAN FROM JANUARY 1984 TO SEPTEMBER 1984
THE TECHNICAL COOPERATION FOR THE PROJECT ON THE SMALL AND
MEDIUM SCALE INDUSTRY DEVELOPMENT OF PARANÁ STATE IN THE
FEDERATIVE REPUBLIC OF BRAZIL

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
AND
INSTITUTO DE TECNOLOGIA DO PARANÁ AND
SECRETARIA DE ESTADO DA INDÚSTRIA E DO COMÉRCIO,
STATE OF PARANÁ

A handwritten signature in black ink, appearing to be 'J. H. S.', written over a horizontal line.A handwritten signature in black ink, appearing to be 'S. A. S.', written in a cursive style.

TECHNICAL COOPERATION PROGRAM FROM JANUARY 1984 TO SEPTEMBER 1984.

A. Target

1. Arrangement of testing and inspection equipment and staff
2. Mastering of operation technique of testing and inspection equipment
3. Mastering of basic testing and inspection technique and its application

B. Technical Fields

(1) Material Testing Section (Strength Testing, Nondestructive Testing)

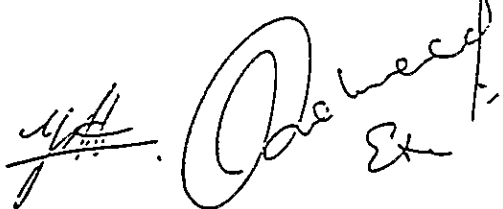
1. Mastering of testing technique of mechanical strength and hardness
2. Mastering of strength testing technique of parts
3. Mastering of test pieces making
4. Mastering of inspection technique with X-Ray and magnetic flaw

(2) Metallic Material Section (Analysis)

1. Mastering of technique with X-Ray analysis
2. Mastering of operation technique on electron microscope and its application
3. Mastering of basic knowledge on metallic structure

(3) Mechanical Measurement Section (Precise Measurement, Performance Testing)

1. Mastering of basic knowledge of precise measurement
2. Mastering of operation technique of precise measurement machine and instrument
3. Understanding of surface properties of parts and mastering its measurement technique

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(4) Production Process Section (Mechanical Process)

1. Mastering of machining and regrinding processes of tool
2. Production of test piece by machining and grinding processes

(5) Electrical Engineering & Electronics Section (Electrical Measurement, Applied Electronics)

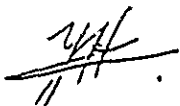
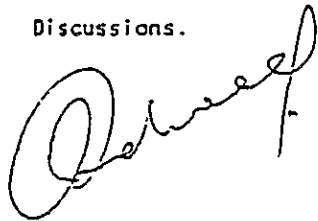
1. Mastering of measurement technique of electrical properties of electrical-electronics material
2. Mastering of measurement technique of electrical circuit constant
3. Mastering of theory of electronic measurement machine and instrument
4. Mastering of operation technique of microcomputer
5. Mastering of measurement technique of reliability of electronic parts

(6) Production Control Section (Quality Control, Information Service)

1. Investigation of production control employed in private sector
2. Understanding of basic knowledge of quality control
3. Mastering of quality control method and its application

NOTE: (1) This Program is subject to conditions that necessary budget will be acquired for the implementation of the Project.

(2) This Scope of Technical Cooperation is subject to change within the scope of the provisions given in the Record of Discussions.



ANNUAL WORK PLAN FROM JANUARY 1984 TO SEPTEMBER 1984

Japanese Fiscal Year	1983	1984	
Brazilian Fiscal Year	Jan	Apr.	
Scope of Technical Cooperation	4/4	1/4	2/4
1. Brazilian Side			
(1) Construction of the Center			
(2) Preparation for the Operation of equipment and machinery			
2. Japanese Side			
(1) Dispatch of Japanese Team	↔	↔	
(2) Dispatch of Japanese Experts			
I. Chief Advisor			
II. Material Testing			
III. Metallic Material			
IV. Production Process			
V. Mechanical Measurement			
VI. Electricity-Electronics			
VII. Installation of Equipment and Machinery			↔
(3) Training of Brazilian Counterpart personnel in Japan			↔
(4) Provision of equipment and machinery, (Necessary Equipments as listed in the Record of Discussions will be provided within the limit of budget to be appropriated in the Japanese fiscal year 1984)	↔		↔

NOTE: 1. This schedule is subject to conditions that necessary budget will be acquired for the implementation of the project.

2. This Scope of Technical Cooperation is subject to change within the scope of the provisions given in the Record of Discussions.

Handwritten signature and initials, possibly 'Y.H.' and 'O. ...', in black ink.

資料 V ジョイントエバリュエーションレポート

(1984年8月10日署名)



JOINT EVALUATION REPORT

BY THE

TECHNICAL GUIDANCE TEAM OF

THE JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

AND

INSTITUTO DE TECNOLOGIA DO PARANÁ (TECPAR)

ON THE

TECHNICAL COOPERATION FOR THE PROJECT ON THE

SMALL/MEDIUM SCALE INDUSTRY DEVELOPMENT OF PARANA STATE

AUGUST 10, 1984

JOINT EVALUATION REPORT

I. INTRODUCTION

1. Objectives

The Japanese Technical Guidance Team organized by the Japan International Cooperation Agency (JICA), (hereinafter referred to as "the Team"), headed by Mr. Taira Sunami, visited the Federative Republic of Brazil from August 7 to 14, 1984, for the purpose of identifying past achievements and future prospects of the Japan-Brazil Cooperation Project on the Small/medium Scale Industry Development of Parana State in the Federative Republic of Brazil, by virtue of the R/D* which took effect on October 2, 1980 and would cease to be effective on October 1, 1984.

The Team discussed and studied, with the Brazilian counterparts, TECPAR personnel and Japanese experts, a number of aspects with respect to the implementation of commitments, TECPAR's roles, constraints which hampered past activities or would restrain future activities.

After careful studies and discussions, the Team summarized findings and observations as described in the following chapters.

* Record of Discussions between the Japanese Implementation Survey Team of the Japan International Cooperation Agency and the Authorities Concerned of the Government of the Federative Republic of Brazil on the Technical Cooperation for the Project on the Small/Medium Scale Industry Development of Parana State in the Federative Republic of Brazil.

2. Background of the Project

In 1978, the Government of the Federative Republic of Brazil requested the Government of Japan to extend a Cooperation on the Technological Development of the Small/Medium Scale Industry of Parana State in the Federative Republic of Brazil.

Upon this request, the Government of Japan through JICA, sent the Preliminary Survey Team to Brazil from September 1 to 25, 1979.

The Preliminary Survey Team conducted survey, studies and discussions with the pertinent organizations of the Federative Republic of Brazil.

For conducting further survey and studies, four long term surveyors were dispatched from March 20 to April 21, 1980.

On the basis of reports and recommendations of the Preliminary Survey Team and the long term surveyors, the Japanese Implementation Survey Team organized by JICA visited Brazil from September 20 to October 7, 1980, for the purpose of working out the details of the Technical Cooperation Program for the Project on the Small/Medium Scale Industry Development of Parana State.

The Team discussed and studied with its Brazilian counterparts a number of points concerning the Project for its effective implementation and management.

After careful studies and discussions, both parties agreed to recommend to their respective governments the immediate implementation of the Project, as described in the R/D signed on October 2, 1980 between the Head of the Japanese Implementation Survey Team and the Secretary of Industry and Commerce of the State of Parana of the Federative Republic of Brazil.

This recommendation was accepted in principle by both governments and, as a result, the cooperation program was started.

3. Summary of the Project

The summarized record of implementation of the technical cooperation program is as listed below:

Chronological Review of the Project

Year	No.	Items
1978	1.	Request of the Project by the Federative Republic of Brazil
1979	1.	Dispatch of JICA Preliminary Survey Team
1980	1.	Dispatch of four long term surveyors
	2.	Dispatch of JICA Implementation Team
1981	1.	Dispatch of Chief Advisor
	2.	Acceptance of two trainees in Japan
	3.	Dispatch of two short-term experts for the preparation
1982	1.	Dispatch of JICA Consultation Team
	2.	Dispatch of three long-term experts on Production Process, Mechanical Measurement and Electrical Engineering/ Electronics sections.
	3.	Acceptance of three trainees in Japan
1983	1.	Dispatch of long-term experts on Material Testing and Metallic Material sections.
	2.	The 1st inauguration of the Industrial Technology Center (Centro de Tecnologia Industrial Brasil/Japão do Paraná)
	3.	Dispatch of a short term expert on installation of scanning electron microscope.
	4.	Acceptance of three trainees in Japan
	5.	Provision of first batch of equipment (CIF ¥89, 591, 774)
1984	1.	Provision of second batch of equipment (CIF ¥42, 299, 352)
	2.	Dispatch of JICA 1st Technical Guidance Team
	3.	Dispatch of JICA 2nd Technical Guidance Team for the Evaluation of the Project

II. METHODOLOGY OF EVALUATION

In order to evaluate past performance and achievement quantitatively, as well as qualitatively, the following materials are adopted as references;

- (i) The R/D
- (ii) The official request made by the Government of the Federative Republic of Brazil with respect to expert services, training of counterparts in Japan and provision of equipment by means of A-1, A-2, A-3, and A-4 Forms, respectively, and,
- (iii) The minutes of meetings and the annual work plans agreed or accepted in the course of implementation of the Project.

And the Team also conducted inspections on building, facilities, utilities in cooperation with the TECPAR staff, Japanese experts, and representatives from other government agencies concerned.

III - RESULT OF EVALUATION

1. Expedition of Implementation of Project

The Brazilian Authorities made clear to the Team they would take the necessary measures (including budgetary measures, further smoothing of communication with the Federative Government, earliest possible installation of equipment, further recruitment of necessary personnels, etc.) to assure the full attainment of all the objectives of the Project within the next two years.

2. Building and Facilities

Brazilian side prepared necessary land for building Industrial Technology Center (Centro de Tecnologia Industrial Brasil/Japão do Paraná) prior to the signing of the R/D. The construction of the Center was expected to be completed in 1981 according to the TSI. However, the inauguration of the former half of the Center was held in July, 1983.

The building includes office rooms for the experts, conference rooms and a library.

The construction of the remaining half of the building was completed in July, 1984, and equipment are expected to be installed in coming months.

COMMENTS

Some two year's delay was encountered in the construction of the building mainly due to budgetary shortage. The delay considerably affected the implementation of the project.

3. Staffing

At present there are eleven (11) technical staffs, four (4) skilled workers and some administration staffs (Refer to Annex B). TECPAR is going to recruit five (5) technical staffs, four (4) skilled workers and three (3) administration staffs this month, and two (2) skilled workers in September.

COMMENTS.

The number of the personnel is smaller than initially planned. Though it did not adversely affect the implementation so far, further recruitment of personnel to meet the progress of the Project is greatly required. In this respect, TECPAR's efforts for further recruitment is appreciated.

4. Management and Administration System

Management and administration organizations before and after the reorganization (which took place in July 1984) are depicted respectively in Fig. 1 and 2.

COMMENTS:

With the reorganization of management and administrative system, the Industrial Technology Center has expanded its competence, by taking up technical services in Chemical and Civil Engineering areas.

The expansion of the Center's activities is desirable for the further development of Small/Medium Scale Industry of Parana State. It was agreed, however, that in the light of the limitation of time, budgetary appropriations and staff, the scope of extended cooperation should be limited to the fields as was stipulated in the R/D signed in 1980.

5. Equipment

a) From 1983 to July, 1984, Japanese equipment (CIF ¥ 153,317,972 worth) were received by TECPAR,. Cost break down is shown in Annex A.

b) TECPAR also purchased counterpart equipment (CR\$ 49.883.401,00 worth, equivalent to US\$ 43.619) in the same period. Cost break down is shown in ANNEX A'

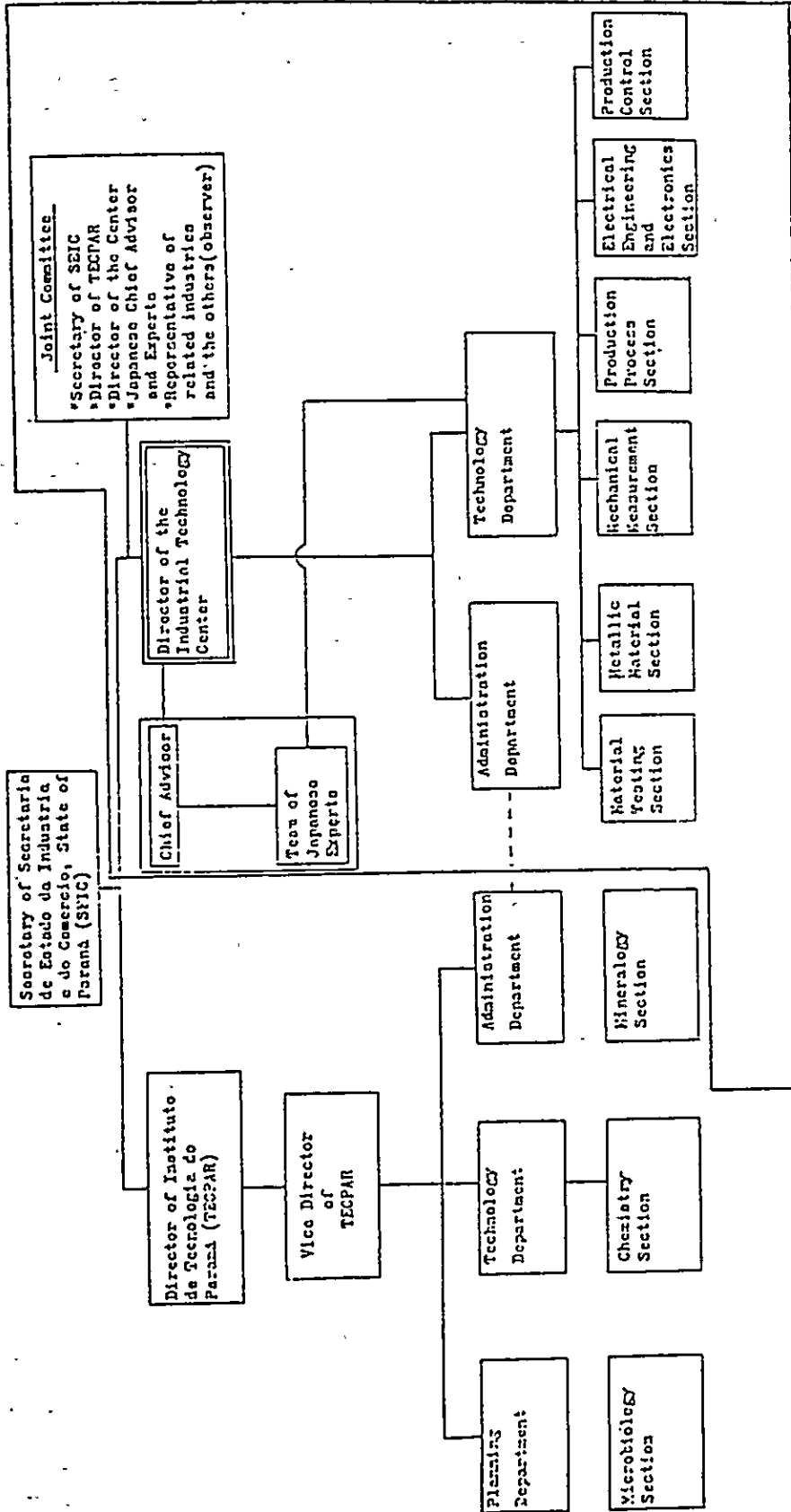
COMMENTS:

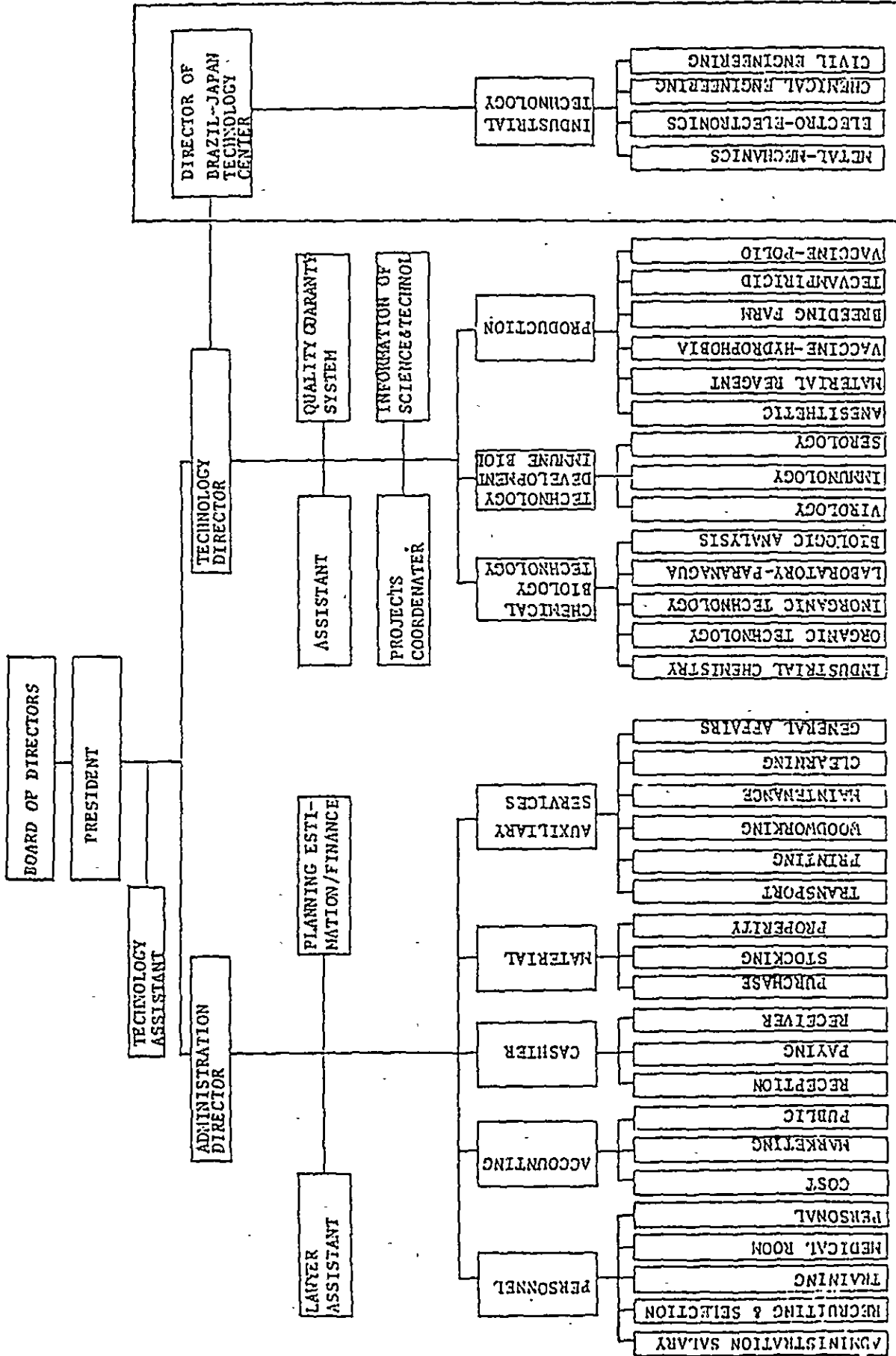
Proper control, maintenance, and repair of equipment are being carried out at the Center by counterpart personnel with the cooperation of Japanese experts.

Incomplete fulfillment of the construction schedule obliged the reconsideration of the equipment provision plan, having resulted in considerable delay of the installation of machinery.

Import ban of the domestically available equipment and financial difficulty in purchasing such equipment hampered the implementation in certain sections.

OLD MANAGEMENT AND ADMINISTRATION SYSTEM





6. Japanese Experts

Japan has sent six (6) long-term experts and three (3) short-term experts. In addition, four (4) long-term surveyors and four (4) teams were also dispatched in connection with the Project (Refer to Annex E).

COMMENTS:

- a) In general, all the experts worked very closely with counterparts in all lines of activities.
- b) Despite initial difficulty in linguistic communication, Japanese experts interacted satisfactorily with the counterparts and other TECPAR personnels.
- c) It has been noted that all assigned experts showed genuine interest and exerted all efforts for the selfreliant operation of the Center.

7. Training in Japan

Since 1982, eight (8) personnels have been invited to Japan. These include five engineers and three administration officials.

The breakdown is shown in Annex C.

COMMENTS

One out of eight personnels trained in Japan left the organization. The Team expressed a concern that such drain of acquired technologies would hamper the sufficient attainment of objectives of the Project, In this connection, the Team further solicited the TECPAR to pay consideration to the full use of such personnels.

8. Budget

- a) A summary of the budgetary appropriation and expenditures on the part of Brazilian Authorities contributed to the implementation of the Project is shown in Annex F.

b) Japanese budgetary appropriation and expenditures for the provision of equipment and the dispatch of experts are tabulated respectively in Annexes A and E.

9. Work Plans and Accomplishment

- 1) The Project accomplishment based on the Annual Work Plan is shown in Annex G. The targets are indicated by white lines, actual accomplishment by black lines.
- 2) The accomplishment of the technology transfer in each field is evaluated by four ranks; A, B, C, and D (see Annex H). Each rank indicates the following state; A, almost 100% accomplished; B, over 50%; C, less than 50%; D, almost 0%.
- 3) Accomplishments by Technical Field are enumerated below.

(i) Material Testing Section

- A. Investigation of industrial standards on metallic material has been carried out.
- B. Technology transfer concerning following items is still under way;
 - a. Mastering of testing technique of mechanical strength, hardness and impact
 - b. Mastering of strength testing technique of parts and its application
 - c. Mastering of test pieces making
 - d. Mastering of inspection technique with X-Ray, magnetic flaw and ultra-sonic reflection, and its application
- C. Conducted on-the-job trainings through performing the requested research works

(ii) Metallic Material Section

- A. Operation technique on electron microscope and its application have been mastered.
- B. Technology transfer concerning following items is still under way;
 - a. Mastering of technique with X-Ray analysis and the other analytical methods, and its application
 - b. Mastering of basic knowledge on metallic structure
- C. Technology transfer concerning following items is not performed yet.
 - a. Mastering of welding technique and its testing
 - b. Mastering of heat treatment technique and its application
 - c. Mastering of plating technique and its testing

D. On-the-job training has been carried out through conducting requested research work.

(iii) Mechanical Measurement Section

- A. Technology transfer concerning following items is under way;
- a. Mastering of basic knowledge of precise measurement
 - b. Mastering of operation technique of precise measurement machine and instrument
 - c. Understanding of surface properties of parts and mastering of its measurement technique
- B. Technology transfer concerning following items is not performed yet;
- a. Mastering of basic knowledge of dynamic measurement technique
 - b. Mastering of measurement technique of dynamic strain, dynamic balancing, vibration and noise, and its application
- C. On-the-job training has been carried through conducting requested research works

(iv) Production Process Section

- A. Technology transfer of the following items is being performed through requested research works by use of the equipment in universities and so forth.
- a. Mastering of machining and regrinding process of tool
 - b. Production of test pieces by machining and grinding process
 - c. Mastering of grinding process
- B. Following items are left undone because of the lackness of the necessary equipment
- a. Understanding of basic knowledge of electric discharge machining and its technique
 - b. Understanding of basic knowledge of dice process and its trial production

(v) Electrical Engineering & Electronics Section

- A. Investigation of industrial standard and mastering of measurement technique of electrical properties of electrical-electronics material are almost completely performed.
- B. Technology transfer concerning following items is still under way;
 - a. Mastering of measurement technique of electrical circuit constant
 - b. Mastering of theory of electronic measurement machine and instrument and its application
 - c. Mastering of measurement technique of reliability of electronics parts
 - d. Mastering of operation technique of microcomputer and its application
- C. Requested measurement, research works, and technical advisory services were conducted.

(vi) Production Control Section

- A. The transfer of technology in this section was not done independently. As the production control technology relates to various technical fields, the transfer was carried out in abovementioned technical sections respectively.
- B. Investigation of production control employed in private sector was carried out, and the level of the technology was evaluated by Japanese Experts.
- C. Technology transfer concerning following items is under way;
 - a. Understanding of basic knowledge of quality control
 - b. Mastering of quality control method and its application
- D. Some technical advisory and extension services on production control, seminars and information services have been carried out as well.

COMMENTS:

Prior to the inauguration of the Industrial Technology Center, Japanese Experts performed some investigation works, lectured counterparts and gave technical advice to the private sector. However, unexpected delay of the

construction schedule hampered the smooth implementation of the project. After the first inauguration of the Center, notwithstanding the shortage of equipment and time, Japanese experts exerted their utmost effort to fulfill the technical services of the Center through on-the-job training of the counterparts. The counterparts, on their part, though the available time for the basic training was short, showed remarkable ability to master the required technology for rendering technical services. Since the opening in July, 1983, the Center already has conducted all but 400 requested technical services. See ANNEX I.

CONCLUSION AND RECOMMENDATION

CONCLUSION

As the result of above evaluation, it became apparent that most of the activities are behind schedule. They are mainly due to the following factors;

- a. Delay in construction
- b. Lack of manpower
- c. Delay in arrival of Japanese equipment
- d. Import ban of domestically available equipment
- e. Delay in purchasing Brazilian equipment
- f. Lack of parts, small gauge and tools
- g. Underfulfillment of responsibilities to attain objectives of the Project on the part of the Previous State Administration

It can be concluded at this juncture the Project in general still is in Phase I (Preparation and Basic Establishment). Some activities planned for the Phase I have not been touched upon. However, some activities envisaged for the Phase II (Development) have been already started.

In accordance with the above observations, it is deemed necessary that cooperation between both countries continued for another two (2) years in order to attain the objectives and targets of the cooperation program.

However, to ensure implementation of the Project notwithstanding limitation of time, budget and manpower, it should be indispensable to give a certain priority order to targets of the Project provided in the R/D.

From this view point the Team has examined the reports submitted by the Japanese experts and previous missions in reference to the consultative or advisory services the Center is expected to render for the industries in Parana State as a public industrial technology organization. Through the import ban of domestically available products, Brazilian makers are required to use home-made materials or parts for their production. However, since the quality of those home-made materials and parts is widely divergent, Brazilian producers can hardly ensure stable quality of their final products.

To overcome such problem, Brazilian producers should be able to screen good materials from bad ones or, otherwise, it is desirable that a public entity gives advise or consultation in that respect.

Taking into account the said observation, the Team reached the conclusion that the Center should give higher priority to further fostering its ability to test and inspect the quality of materials and parts.

2. FRAMEWORK FOR FURTHER TECHNICAL COOPERATION

Basically the framework should be the same as provided in the R/D on October 2, 1980. However, it is recommendable that inspecting and testing services be given priority to production technology field, in the light of limitation of time, personnel and budgetary conditions.

FIELD

- 1) Scope of Technical Cooperation should be limited to Metal-Mechanical, Chemical and Electric-Electronics sections.
- 2) Metal-Mechanical section should include a. Material-Testing, b. Metallic Material, c. Mechanical Measurement and d. Production Process divisions; Electric-Electronics Section should include Electrical Engineering and Electronics division. Production Control division should be understood as common division to above sections.

EXPERT

A long-term expert should be dispatched to each of above divisions except for production Control Division. A Chief Advisor should also be dispatched as a long-term expert. Welding, heat treatment and plating fields should be covered by Metallic Material Expert. However, Analysis should be given first priority in the technical implementation of the division. The implementation in welding, heat treatment and plating fields are subject to the limitation within the installed equipments and expert's ability.

Short-term experts on Electricity-Electronics and Micro Computer System may be dispatched to facilitate the technology transfer in Electric-Electronics Section. Short-Term experts on Installation or Maintenance of Equipments may be dispatched as necessary.

EQUIPMENT

Equipments which have already been provided in ANNEX A should be deleted from the list of A4 Form.

Friction welder, heat treatment furnace, electric plating equipment and machining center should be deleted from the list of provision of equipment in the said A4 Form.

Addiction of some equipments for industrial standards may be considered. However, the Team's understanding is that industrial standards should be established nationwide by Federative Government, and technical cooperation to Parana State in this field should be limited to some practical level standards only.

TRAINEE

Japan will accept three or four Brazilian counterparts for training in Japanese Fiscal Years 1985 and 1986 respectively on the following areas:

1. Material Testing
2. Metallic Material
3. Mechanical Measurement
4. Production Process
5. Electrical Engineering and Electronics
6. Production Control

ANNEX A

LIST OF MAIN EQUIPMENT PROVIDED BY JAPAN
1983

No. Item	Price (in Yen)
1. Micro Hardness Tester	1,060,000
2. Scanning Electron Microscope ASH-ST	38,000,000
3. Grinder	1,026,000
4. Rockwell Hardness Tester	1,440,000
5. Grinding Machine	1,079,800
6. Surface Roughness Measuring Instrument	2,720,000
7. Low-Temperature & Humidity Chamber	4,120,000
8. Profile Projector	2,290,000
9. Portable X-ray Unit	2,600,000
10. Multi-Frequency LCR Meter.	5,600,000
11. Inverted Metallurgical Microscope	1,190,000
12. Oscilloscope Probe	1,184,000
13. Curve Tracer	3,530,000
14. Digital Spectrum Analyzer TR-7305	4,300,000
15. DC Current Source TAKEDA TR-6150	1,100,000
16. Yoke-type Magnetic Flaw Detector	5,497,000
17. Digital AC Power Meter	1,321,000
SUB TOTAL	78,057,800
18. Other Equipment, Shipping Charge etc.	11,533,974
 TOTAL	 89,591,774

1984

1. Universal Testing Machine SHIMADZU UHM-50	6,417,000
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2. Carbon and Sulfur-in-Metal Analyzer	13,762,265
3. Radio Frequency Spectrum Analyzer	2,463,000
4. Standard Resistor	6,251,400
5. A.C. Power Supply	1,055,460
SUB TOTAL	29,949,125
Other Equipment, Shipping Charge etc.	12,350,227
 TOTAL	 42,299,352
 Equipment delivered by experts ('81 JFY=)	 2,995,770
ditto ('82 JFY=)	5,085,526
ditto ('83 JFY=)	3,263,620
 Audio-Visual Software (Production of Original Educational Video Tapes)	 10,082,000
 GROUND TOTAL OF THE PROVISIONAL EQUIPMENT	 ¥153,317,972

* JFY: Japanese Fiscal Year

LIST OF EQUIPMENTS AND MACHINERY INSTALLED BY BRAZILIAN SIDE

	CR\$ 1.000
1. SPECTROMETER	6.058
2. CHAMBER AND DRAUGHT	3.705
3. GAS INSTALLATION	1.500
4. GAS CYLINDER	1.957
5. FURNACE	5.000
6. WET CHEMICAL ANALYSIS APPARATUS	1.308
7. CHEMICAL REAGENT	1.776
8. WELDER	400
9. LATHE *	12.990
10. DRILLING MACHINE *	1.975
11. CUT-OFF MACHINE *	1.380
12. TOOL GRINDER *	6.900
13. SHAPING MACHINE *	9.102
14. BLOCK GAGE*	8.437
15. MILLING MACHINE *	28.241
 TOTAL	 90.729

* Yet to be delivered

(CALENDER YEAR)

COUNTERPART STAFFING LIST

TECHNICAL FIELDS	1981	1982	1983	1984
MATERIAL TESTING SECTION	(0)	Cláudio Rubens Busatto (1)	Cláudio Rubens Busatto Osny Augusto Junior (2)	Cláudio Rubens Busatto Osny Augusto Junior Paulo Afonso Schmidt Adalberto Arima (4)
METALLIC MATERIAL SECTION	(0)			Rosemari Prix Rogerio Umberto de Andrade Reinaldo Maronde de Lima Silvia de Fátima Martins (4)
MECHANICAL MEASUREMENT SECTION	(0)	Mauro Katsushi Nagashima (0)	Mauro Katsushi Nagashima (1)	Mauro Katsushi Nagashima Roberto Tossio Kunitake (2)
PRODUCTION PROCESS SECTION	(0)		José Carlos Laurindo (1)	José Carlos Laurindo Luiz Osório Trentini Edemir Rossi (3)
ELECTRICAL ENGINEERING & ELECTRONICS SECTION	(0)	Nelson Tadashi Okuyama Luiz Fernando da Silva Diogenes Caldas Neto (3)	Nelson Tadashi Okuyama Luiz Fernando da Silva Diogenes Caldas Neto (3)	Nelson Tadashi Okuyama Luiz Fernando da Silva Diogenes Caldas Neto Eduardo Sutil Gabriel (4)

Administration & Technical Counterparts Trained in Japan

YEAR	DURATION		NAME	FIELD
1981	Nov. 16	Dec. 4	Dinor O. Voss	Administration
	ditto	ditto	Dorei Brandao	ditto
1982	Oct. 1	Dec. 22	Claudio R. Bussato	Material Testing
	ditto	ditto	Nelson T. Okuyama	E. & Electronics
	ditto	ditto	Diogenes C. Neto	ditto
1983	Sep. 16	Dec. 12	Jose C. Laurindo	Production Process
	Oct. 27	Dec. 24	Hauro K. Nagashima	Mech. Measurement
	Oct. 12	Oct. 30	Edmundo Reichmann	Administration

JICA MISSIONS DISPATCHED FOR THE PROJECT

- | | | |
|----|-------------------------|---------------------------------|
| 1. | Preliminary Survey Team | Sep. 7 - Sep. 25, 1979 |
| | Youichi TAKEBAYASHI | Team Leader |
| | Masatami EMI | Industrial Technology |
| | Waichiro KISHINOTO | Metal-Mechanic Technology |
| | Shoichi HIYASHIRO | Electric-Electronics Technology |
| | Kaoru MIKAMI | Coordination |
| | | |
| 2. | Implementation Team | Sep. 20 - Oct. 7, 1980 |
| | Hideo OTAKA | Team Leader |
| | Waichiro KISHINOTO | Metal-Mechanic Technology |
| | Masao HAKINO | Measuring Technology |
| | Kouzo OKIYA | Electric-Electronics Technology |
| | Kaoru MIKAMI | Coordination |
| | | |
| 3. | Consultation Team | Mar. 15 - Mar. 28, 1982 |
| | Eisuke OKAFUJI | Team Leader |
| | Waichiro KISHINOTO | Machinery |
| | Masaharu ENOKI | Electric-Electronics Technology |
| | Naoki KOUNO | Coordination |

4. 1st Technical Guidance Team Mar. 10 - Mar. 21, 1984
Yoshio HISATOME Team Leader
Taro KASHIHARA Metal-Mechanic Technology
Teruya ABE Electric-Electronics Technology
Yutaka YAMAZAKI Coordination
5. 2nd Technical Guidance Team Aug. 6 - Aug. 16, 1984
Taira SUNAMI Team Leader
Kagefumi UENO Technical Cooperation Planning
Yutaka YAMAZAKI Coordination

JICA Long-term Surveyors and Experts Dispatched for the Project

YEAR	DURATION	NAME	ASSIGNMENT
1980	Mar. 20 1980 -	Waichiro KISHIMOTO	Mechanical Technology
	Apr. 20 1980		Long-term Surveyor
	ditto	Akira KUBOTA	Metallic Technology
			Long-term Surveyor
	ditto	Kiyomichi OKUKA	Construction Technology
			Long-term Surveyor
	ditto	Kiyoshi YAMAZAKI	Electric-Electronics
			Long-term Surveyor
1981	Feb. 13 1981 -	Hideo OTAKA	Preparation
	Mar. 21 1981		Short-term Expert
	Jul. 1 1981 -	Hideo OTAKA	Chief Advisor
	Oct. 5 1984		Long-term Expert
	Mar. 3 1981 -	Waichiro KISHIMOTO	Preparation
	Mar. 21 1981		Short-term Expert
1982	Nov. 21 1982 -	Nasaharu ENOKI	Electric & Electronics Eng.
	Oct. 8 1984		Long-term Expert
	Nov. 21 1982 -	Yoshihiro HIGASHIMURA	Mechanical Measurement
	Oct. 8 1984		Long-term Expert
	Nov. 21 1982 -	Waichiro KISHIMOTO	Production Process
	Oct. 5 1984		Long-term Expert

1983	Jan. 16 1983 -	Yoriharu OKAHOTO	Material Testing
	Oct. 8 1983		Long-term Expert
	Jan. 17 1983 -	Minoru KOUNO	Metallic Material
	Oct. 8 1983		Long-term Expert
	Sep. 12 1983 -	Isao SAITO	Installation
	Oct. 14 1983		Short-term Expert

TOTAL: 4 Long-term Survivors
 3 Short-term Experts
 6 Long-term Experts

Cost for Dispatching Experts (1980 - 1983 Japanese Fiscal Year)

J.F.Y.	COST
1980	¥ 5,113,495
1981	¥14,753,463
1982	¥38,366,041
1983	¥82,197,244
TOTAL	¥140,430,243

EXPENDITURE OF THE PROJECT IN I E C P A R

YEAR	CURRENCY	PERSONNEL	CONSUMABLE GOODS	SERVICES	EQUIPMENTS	CONSTRUCTIONS	TOTAL
1980	CR\$	-0-	-0-	-0-	-0-	4.980.000,00	4.980.000,00
	US\$	-0-	-0-	-0-	-0-	115.297,73	115.297,73
1981	CR\$	-0-	-0-	-0-	-0-	56.605.183,85	56.605.183,85
	US\$	-0-	-0-	-0-	-0-	470.671,13	470.671,13
1982	CR\$	-0-	-0-	-0-	-0-	111.663.882,84	111.663.882,84
	US\$	-0-	-0-	-0-	-0-	692.167,57	692.167,57
1983	CR\$	78.312.315,80	1.949.855,34	5.603.324,90	12.199.401,00	282.781.481,48	380.846.378,52
	US\$	101.633,40	2.112,99	7.087,03	19.989,66	846.967,95	977.791,03
1984 (Jan. - June)	CR\$	135.808.000,00	10.252.000,00	24.955.000,00	37.684.000,00	210.177.000,00	418.876.000,00
	US\$	99.198,45	7.425,81	18.272,58	23.629,48	138.257,88	286.784,20
TOTAL	CR\$	214.120.315,80	12.201.855,34	30.558.324,90	49.883.401,00	666.214.548,17	972.971.445,21
	US\$	200.831,85	9.538,80	25.359,61	43.619,14	2.263.362,26	2.542.711,66

ANEX. 7

Items	Phase	Preparation and Base Establishment					Development		Remarks
		1979	1980	1981	1982	1983	1984		
Dispatch of Survey Team	Japanese Fiscal Year								□ Plan in Tentative Schedule of Implementation ▬ Actual Implementation
	Preliminary Survey Team Implementation Survey Team Consultation Team Technical Guidance Team Evaluation Team	□	□	□	□	□	□		
Japanese Responsibilities	Expert for Long-Term Survey	□							One line represents one expert. (One person may cover other fields concurrently, if possible.)
	Chief Advisor Material Testing Analysis Production Process Mechanical Measurement Electricity-Electronics Production Control Welding & Heat Treatment Plating								
Brazilian Responsibilities	Automation Preparation of Establishment of the Center Architecture Installation of Equipment and Machinery								Two or three persons a year when necessity arises Four or five persons a year
	Training of Brazilian Counterpart Personnel in Japan Provision of Equipment and Machinery								
Brazilian Responsibilities	Buildings Equipment and Machinery								Δ Arrival of batch of equipment ▲ First inauguration

ANNEX H

PHASE	PREPARATION AND BASIC ESTABLISHMENT	STATE	DEVELOPMENT	STATE
ITEMS				
A. Targets	<ul style="list-style-type: none"> Arrangement of testing and inspection equipment and staff Mastering of operation technique of testing and inspection equipment Mastering of basic testing and inspection technique and its application Investigation of industrial standards Fact-finding survey of the existing industries 	B B C A A	<ul style="list-style-type: none"> Improvement of testing and inspection technique with various methods Conducting of technical research and development Conducting of requested research work, technical advisory, extension and information services Training of manpower 	○ ○ ⊗ ○
B. Technical fields				
(1) Material Testing Section (Strength Testing, Non-destructive Testing)	<ul style="list-style-type: none"> Investigation of industrial standard on metallic material Mastering of testing technique of mechanical strength, hardness and impact Mastering of strength testing technique of parts and its application Mastering of test piece making Mastering of inspection technique with X-ray, magnetic flux and ultra-sonic reflection, and its application. 	A C C C C	<ul style="list-style-type: none"> Improvement of testing and inspection technique with various methods Conducting of requested research work Data collection of machine designing 	○ ⊗ ○
(2) Metallic Material Section (Analysis, Welding, Heat Treatment, Plating)	<ul style="list-style-type: none"> Mastering of technique with X-ray analysis and the other analytical methods, and its application Mastering of welding technique and its testing Mastering of heat treatment technique and its application Mastering of plating technique and its testing Mastering of operation technique on electron microscope and its application Mastering of basic knowledge on metallic structure 	C D D A B	<ul style="list-style-type: none"> Improvement of testing and inspection technique with various methods Conducting of requested analytical work Conducting of requested research work Technical advisory and extension services in the fields of welding, heat treatment and plating Training of manpower 	○ ⊗ ⊗ ○ ○
(3) Mechanical Measurement Section (Precise Measurement, Performance Testing)	<ul style="list-style-type: none"> Mastering of basic knowledge of precise measurement Mastering of operation technique of precise measurement machine and instrument, and its application Understanding of surface properties of parts and mastering of its measurement technique Mastering of basic knowledge of dynamic measurement technique Mastering of measurement technique of dynamic strain, dynamic balancing, vibration and noise, and its application 	B C E D D	<ul style="list-style-type: none"> Conducting of requested research work Technical advisory and extension services on improvement of production accuracy of parts by precise measurement technique Data collection of machine designing on dynamic measurement Training of manpower 	⊗ ⊗ ○ ○
(4) Production Process Section (Mechanical Process, Special Process Automation)	<ul style="list-style-type: none"> Mastering of machining and regrinding processes of tool Mastering of grinding process Production of test pieces by machining and grinding process Understanding of basic knowledge of electric discharge machining and its technique Understanding of basic knowledge of dice process and its trial production 	D D C D D	<ul style="list-style-type: none"> Establishment of standard of machining work Utilization of high-performance tool Conducting of technical research and development Technical advisory and extension services on high-level machining, dice process and automation techniques Conducting of requested machining work Training of manpower 	○ ○ ○ ⊗ ○ ○
(5) Electrical Engineering & Electronics Section (Electrical Measurement, Applied Electronics)	<ul style="list-style-type: none"> Investigation of industrial standard Mastering of measurement technique of electrical properties of electrical/electronics material Mastering of measurement technique of electrical circuit constant Mastering of theory of electronic measurement machine and instrument and its application Mastering of measurement technique of reliability of electronics parts Mastering of operation technique of microcomputer and its application 	A A B C B B	<ul style="list-style-type: none"> Conducting of requested research work Improvement of design technique of electronic circuit and theoretical circuit Technical advisory and extension services of applied operation technique of microcomputer Conducting of requested measurement Training of manpower 	⊗ ⊗ ○ ⊗ ○
(6) Production Control Section (Quality Control, Information Service)	<ul style="list-style-type: none"> Investigation of production control employed in private sector Understanding of basic knowledge of quality control Mastering of quality control method and its application 	B C C	<ul style="list-style-type: none"> Technical advisory and extension services on production control Seminars Practical guidance for model enterprises Training of manpower Information service 	⊗ ⊗ ○ ○ ○ ⊗

⊗ on progress ○ left undone

TECNICAL GUIDANCE ACTIVITIES OF THE CENTER

COMPANIES CONCERNED	FREQUENCY OF GUIDANCE
1. Companhia Paranaense de Energia Elétrica - COPEL	6
2. Companhia de Saneamento do Paraná - SANEPAR	3
3. Telecomunicações do Paraná - TELEPAR	3
4. Alps do Brasil - Indústria e Comércio Ltda.	17
5. Placas do Paraná S.A.	14
6. Laboratório de Eletrônica Digital	2
7. Lorenzetti Porcelana Industrial S.A.	6
8. Equitel S.A.	9
9. Chaves Indústria e Comércio de Aquecedores Ltda.	8
10. Phidelis Indústria e Comércio de Produtos Eletrônicos Ltda.	1
11. Pro Eletro Indústria e Comércio de Materiais Elétricos Ltda.	1
12. IBM do Brasil Ltda.	1
13. Super Antena Indústria Metalurgica Ltda.	1
14. Indústria e Construções Inepar S.A.	4
15. Climaterm: Ltda.	1
16. Maringã Soldas Ltda.	17
17. Cel Indústria de Elevadores Ltda.	1
18. Yok Equipamentos Ltda.	8
19. Centro Federal de Educação Tecnológica	2
20. Sony Videobrás	3
21. Nippondenso Compressores Ltda.	28
22. Petrobrás S.A.	4
23. Produções Cinematográfica Guaira S.A.	8
24. Universidade Católica do Paraná	1
25. Palácio do Governo do Estado do Paraná	4
26. Secretaria de Estado da Indústria e do Comércio	7
27. Banestado- Banco do Estado do Paraná	40
28. Fundação Cultural de Curitiba	1
29. Governo do Estado de Santa Catarina	1
30. Bolsa de Negócios do Paraná	1

COMPANIES CONCERNED

FREQUENCY OF GUIDANCE

31. Concitec- Conselho de Ciência e Tecnologia	1
32. Acarpa	49
33. Furukawa	5
34. Eletrônica Yamazaki Ltda,	1
35. Ciacultron Indústria Eletrônica	1
36. Lacombe Indústria e Comércio de Tubos Ltda.	3
37. Harold Antena Ltda.	4
38. Brasholanda Ltda.	3
39. Mela - Metalúrgica Lampe Ltda.	3
40. Coamo	2
41. Lacticínios Campo Mourão Ltda.	2
42. Camargo Correa Brown Boveri S.A.	9
43. Farmácia Sorriso Ltda.	1
44. Banco do Brasil S.A.	1
45. Radiadores Marechal Ltda.	1
46. Indústria Nutrimental S.A.	1
47. Moller Indústria Metalúrgica Ltda.	1
48. Metalúrgica Líder Ltda.	1
49. Metalúrgica Melo Ltda,	2
50. Sperry New Holland	1
51. Suzuki Aço	2
52. D.C. Representações Comerciais Ltda.	2
53. Hnss do Brasil	1
54. Siderúrgica Guaira S/A	3
55. Aventino do Carmo	1
56. Meson	1
57. Empresa Gráfica Universal	1
58. Serralheria Maringã	1
59. União Transportes	1
60. Bosch do Brasil	3
61. R.F.F.S.A.	2
62. Volvo do Brasil - Motores e Veículos S.A.	1
63. Plastipar	1

COMPANIES CONCERNED

FREQUENCY OF GUIDANCE

64. Kamyx do Brasil	3
65. Haras	1
66. Universidade Federal do Parana	1
67. Promepar	2
68. Giben do Brasil	1
69. Wap	1
70. Técnica Nacional	1
71. Mueller Irmão	1
72. Castelo Construções Metálicas	3
73. Ika Irmãos Knopfholz S.A.	1
74. Kurashiki	1
75. Imapa	1
76. Votorantin - Companhia Portland de Cimento	1
77. F.L.Schmidt	1
78. Iguaçú Papel	1
79. Metalpar	1
80. Oxford S.A.	3

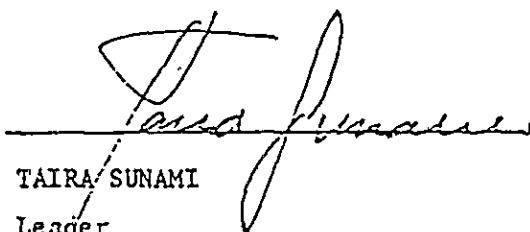
TOTAL

339

MUTUALLY ATTESTED AND SUBMITTED

TO ALL CONCERNED

August 10, 1984



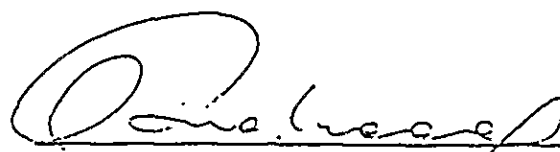
TAIRA SUNAMI

Leader

Japanese Technical Guidance Team

Japan International Cooperation

Agency - Japan



FRANCISCO SIMEÃO RODRIGUES NETO

Secretary of Industry and Commerce

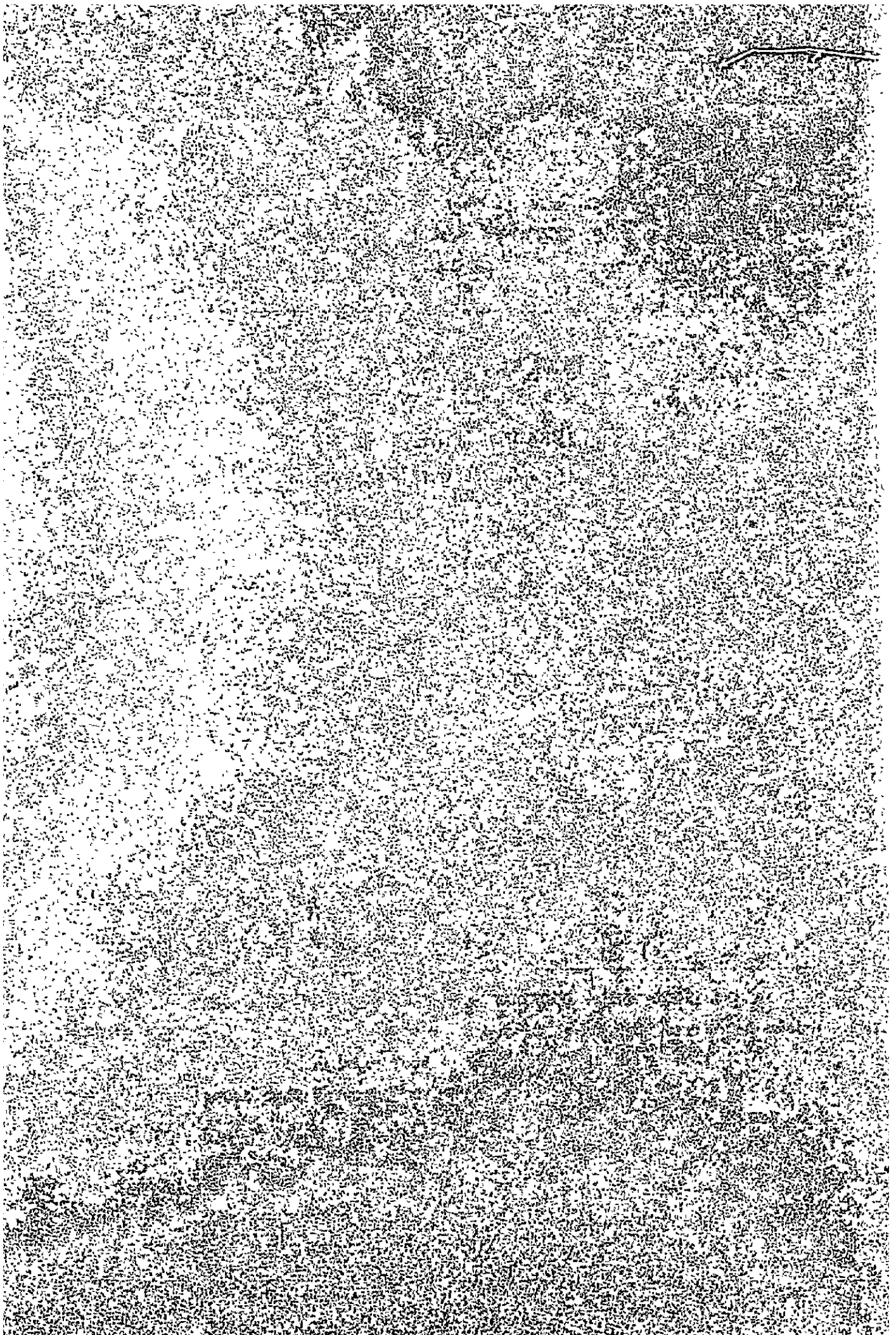
State of Parana

Brazil

資料Ⅶ 延長 R/D

1984年8月10日仮署名

1984年10月1日正式署名



THE RECORD OF DISCUSSIONS ON EXTENSION OF THE PERIOD OF THE TECHNICAL COOPERATION FOR THE PROJECT ON THE SMALL/MEDIUM SCALE INDUSTRY DEVELOPMENT OF PARANA STATE IN THE FEDERATIVE REPUBLIC OF BRAZIL

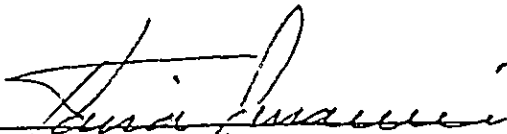
The Japanese Technical Guidance Team (hereinafter referred to as the "Team") organized by the Japan International Cooperation Agency (hereinafter referred to as the "JICA"), and headed by Mr. Taira Sunami, visited the Federative Republic of Brazil from August 7 to 14, 1984, for the purpose of identifying past achievements and future prospects of the Japan-Brazil Technical Cooperation Project on the Small/Medium Scale Industry Development of Parana State (hereinafter referred to as the "Project"), based on the Record of Discussions signed on October 2, 1980 between the Japanese Implementation Survey Team and the Authorities concerned of the Government of the Federative Republic of Brazil.


The Team discussed and studied, with the Brazilian counterparts and the Japanese experts dispatched for the Project a number of aspects with respect to the implementation of the Project, the role of the Brazilian authorities concerned, constraints which hampered past activities or would restrain future activities.

The Team further made a Joint Evaluation Report on the Project (hereinafter referred to as the "Report") with the Brazilian counterparts, and both sides signed the Report in Curitiba on August 10, 1984.

As a result of careful studies on the Report, the JICA and the Brazilian Authorities finally agreed to recommend to their respective Governments that the period of the technical cooperation as stipulated in the Record of Discussions of October 2, 1980 be extended until October 1, 1986 and that the technical cooperation be carried out in accordance with the attached Agreed Framework on Further Technical Cooperation Program (Annex I) and Tentative Schedule of Implementation (Annex II) in order to fully attain the objectives in the said Record of Discussions.

October 1, 1984


TAIRA SUNAMI
Director General Mining and Industrial
Development Cooperation Department, JICA

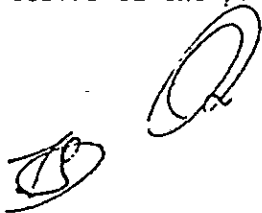

FRANCISCO SINEAO RODRIGUES NETO
Secretary of Industry and
Commerce, State of Parana

AGREED FRAMEWORK ON FURTHER TECHNICAL COOPERATION PROGRAM

October 2, 1984 to October 1, 1986

- 1 - Based on the findings in the Joint Evaluation Report, the provisions of the Cooperation Program described in the succeeding pages are deemed adequate to attain the objectives of R/D on the Technical Cooperation for the Project on the Small/Medium Scale Industry Development of Parana State.

- 2 - It is understood that the implementation of this program is subject to availability of funds, manpower and other necessary resources. Both parties, however, agreed to take the best endeavour to attain the objectives of the Project.



COOPERATION TO BE PROVIDED BY JAPANESE SIDE

- Dispatch of Japanese Experts

The number and fields of specialization of long-term experts should be as follows:


1. Chief Advisor (1)
2. Material Testing (1)
3. Metallic Material (1)
4. Mechanical Measurement (1)
5. Production Process (1)
6. Electrical Engineering and Electronics (1)

In addition, short-term experts should be assigned particularly for guidance and training in the following areas:

1. Installation (some, as necessary)
2. Maintenance and repair (some, as necessary)
3. In specific fields and other aspects to be identified from time to time (some, as necessary)

2 - Japan's Provision of Equipment

Equipment and machinery necessary for the implementation of the Project



3 - Training of Brazilian Counterparts in Japan

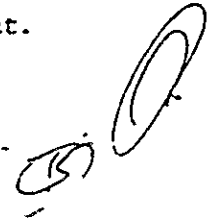
Japan will accept TECPAR counterparts for training in Japan in the following areas;

1. Material Testing
2. Metallic Material
3. Mechanical Measurement
4. Production Process
5. Electrical Engineering and Electronics
6. Production Control



COOPERATION TO BE PROVIDED BY BRAZILIAN SIDE

- 1 - Budget appropriation for the full and stable operation of the Industrial Technology Center.
- 2 - Staff recruitment and development to insure full and sustained operation of the Industrial Technology Center.
- 3 - Earliest possible installation of Brazilian Equipment necessary for the Project.

Handwritten signature or initials, possibly "S. P.", written in dark ink.

Tentative Schedule of Implementation

ANNEX 11

Japanese Fiscal Year	1984			1985			1986		
	OCT	JAN	APR	JUL	OCT	JAN	APR	JUL	
Scope of Technical Cooperation									
A. Brazilian side									
1. Equipment and Machinery									
2. Staff recruitment									
B. Japanese side									
1. Dispatch of survey team									
1) Technical Guidance Team									
2) Evaluation Team									
2. Dispatch of Japanese Experts									
1) Long Term Experts									
a. Chief Advisor									
b. Material Testing									
c. Analysis									
d. Production Process									
e. Mechanical Measurement									
f. Electricity-Electronics									
2) Short Term Experts									
a. Micro Computer System									
b. Electricity-Electronics									
c. Installation of Equipment and Machinery									
d. Maintenance									
3. Training of Brazilian personnel in Japan									
4. Provision of Equipment and Machinery									

Note: (1) The work plan is subject to conditions that necessary budget will be

acquired for the implementation of the Project,

(2) The scope of technical cooperation is subject to change within the

scope of the provisions given in the Record of Discussions.

TECHNICAL FIELDS	CALENDAR YEAR	JAPANESE FISCAL YEAR	1984			1985			1986		
			OCT	JAN	APR	JUL	OCT	JAN	APR	JUL	
(1) Physical Testing Section (Strength testing, Fatigue testing, Fracture testing)	<ul style="list-style-type: none"> Mastering of testing technique of mechanical strength, hard-ness and impact Mastering of strength testing technique of parts and its application Mastering of test pieces making Mastering of inspection technique with γ-ray, magnetic flux and ultrasonic reflection, and its application. 										
(2) Metallic Material Section (Analysis, Welding, Heat Treatment, Plating)	<ul style="list-style-type: none"> Mastering of technique with γ-ray analysis and the other analytical methods, and its application Mastering of welding technique and its testing Mastering of heat treatment technique and its application its application Mastering of basic knowledge on metallic structure 										
(3) Mechanical Measurement Section (Precise Measurement, Performance Testing)	<ul style="list-style-type: none"> Mastering of basic knowledge of precise measurement Mastering of operation technique of precise measurement machine and instrument, and its application Understanding of surface properties of parts and mastering of its measurement technique Mastering of basic knowledge of dynamic measurement technique Mastering of measurement technique of dynamic strain, vibration and its application 										
(4) Production Process Section (Mechanical Process, Special Process Automation)	<ul style="list-style-type: none"> Mastering of machining and regrinding processes of tool Mastering of grinding process Production of test pieces by machining and grinding processes Understanding of basic knowledge of electric discharge machining and its technique 										

CALENDAR YEAR JAPANESE FISCAL YEAR		1984			1985			1986		
		OCT	JAN	APR	JUL	OCT	JAN	APR	JUL	
TECHNICAL FIELD	OBJECT									
	(5) Electrical Engineering & Electronics Section (Electrical Measure and Applied Electronics)									
	(6) Production Control Section (Quality Control, Information Service)									

Following targets for Development Phase will also be carried out simultaneously with the above targets for Preparation and Basic Establishment Phase:

- Improvement of testing and inspection technique with various methods
- Conducting of technical research and development
- Conducting of requested research work, technical advisory, extension and information services
- Training of manpower

Note: (1) The work plan is subject to conditions that necessary budget will be acquired for the implementation of the Project.

(2) The scope of technical cooperation is subject to change within the scope of the provisions given in the Record of Discussions.

THE RECORD OF DISCUSSIONS ON
THE TECHNICAL COOPERATION FOR THE
PROJECT ON THE SMALL/MEDIUM SCALE
INDUSTRY DEVELOPMENT OF PARANA STATE
IN THE FEDERATIVE REPUBLIC OF BRAZIL

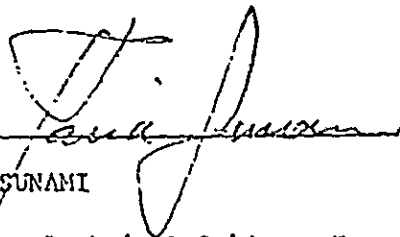
仮署名した延長
R/Dの本文

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The Team discussed and studied, with the Brazilian counterparts and the Japanese experts, a number of aspects with respect to the implementation of commitments, the role of the Brazilian authorities concerned, constraints which hampered past activities or would restrain future activities.

As a result of studies and discussions, both sides agreed to recommend to their respective Governments that the period of the technical cooperation as stipulated in the Record of Discussions of October 2, 1980 be extended until October 1, 1986 and that the technical cooperation be carried out in accordance with the attached Agreed Framework on Further Technical Cooperation Program (Annex I) and Tentative Schedule of Implementation (Annex II) in order to fully attain the objectives in the said Record of Discussions.

Curitiba, August 10, 1984.



TAIRA SUNAMI
Leader
Japanese Technical Guidance Team
Japan International Cooperation
Agency - Japan



FRANCISCO SIMEÃO RODRIGUES NETO
Secretary of Industry and Commerce
State of Parana
Brazil

