

2-2. Contrary, what are the topics which were not useful? Describe the reasons.

コメント	参加コース/年度
* <u>Alternate Current in overhead</u> , because our system is continuous current.	(電化' 92& ' 95)
* To be honest all of the topics were enough useful for me. The training course both gave us a general view of railways and detailed the main aspects of those.	(電化' 93)
* Really, I can't say that any topics not useful for me. All what I saw, professional or personal, it was very important for me.	(車両' 92)
* <u>ATC</u> , because of the fact that we just operate cargo trains and we have two engineers driving the locomotives per train.	(情報' 92)
* <u>Electronic Token Block System</u> . The system in S.Paulo have been improved from CTC to ATC,ATO or ATS.	(情報' 93)
None - 4	

2-3. Please comment on the purpose, contents, applicants, number of the participants, and duration of this training course from the ex-participants' point of view.

2-3-1 purpose

コメント	参加コース/年度
* The purpose was reached.	(電化' 92)
* The purpose is important in the reorganization of the company..	(経営' 92)
* I think that aspects such as planning, implementation, cost-effective operations, maintenance of equipments and management techniques to railway electrification were perfectly adequate to the purpose of the training course.	(電化' 93)
* In my opinion the purpose was reached.	(電化' 95)
* Adequated. More emphasis in the maintenance and construction works should be interesting, specially in terms of management of the services and organization of the teams.	(電化' 94)
* The purpose of course was reached because it provided the growing of the my knowledges about the new technologies applied for rolling stocks maintenance and modernization in Japan.	(車両' 92)
* The training course give me a wide range of knowledge about Japanese rolling stock maintenance, modernization technology, which is very useful in my job.	(車両' 93)
* According I wrote in my final report, I think it is very difficult for someone to feel capable to plan the installation of railway signal after three months of course. The systems are very complex and require a lot of experience in this field in order to plan complete system.	(情報' 92)
* The purpose of this course is well arranged for different levels of participants. We can feel the difference of technologies in all different countries(6).	(情報' 93)

### 2-3-2 applicants

コメント	参加年/年度
* All applicants worked in the electrification system.	(電化' 92)
* Adequated.	(経営' 92)
* The applicants were well-selected by each country.	(電化' 93)
* All technician worked in the electrification system.	(電化' 95)
* Some applicants are in defferent stages of railway electrification, but in general I thought this topic adequated.	(電化' 94)
* Over there the knowledge acquired in Japan, the contact with others participants, it provided the change of infomations about the railway situation in other countries.	(車両' 92)
* Compatible. All of them were engaged in rolling stock engineering with practical experience in the field of railway engineering.	(車両' 93)
* It is very good for the participants to know different people, from different countries, with different necessities and systms. I think that this is an unique opportunity.	(情報' 92)
* Good level, explaining with security and knowledge.	(情報' 93)

### 2-3-3 number of he participants

コメント	参加年/年度
* The number of the participants is excellent.	(電化' 92)
* Adequated.	(経営' 92)
* I think the small number of participants was very important for the purpose of the training course.	(電化' 93)
* Excellent, keeping the union among in the group.	(電化' 95)
* Adequated. (There were 7 participants.)	(電化' 94)
* Good, eight participants seems an ideal number for a good course progress.	(車両' 92)
* Adequated.	(車両' 93)
* It was very adequate.	(情報' 92)
* Good.	(情報' 93)

2-3-4 duration

コメント	参加コース/年度
* The duration was sufficient to the training course.	(電化' 92)
* Adequated.	(経営' 92)
* About right.	(電化' 93)
* Excellent, not too long.	(電化' 95)
* Adequated.	(電化' 94)
* The three months went by very quickly for me. Some subjects/visits seems had been dealt with not so much details, perhaps more time will be better.	(車両' 92)
* Adequated.	(車両' 93)
* In order to know all the systems and visit the manufacturers, I think the duration of course was adequate.	(情報' 92)
* I think that 2 months is good time for purpose in this course.	(情報' 93)

### 3. Applicability

3-1. Since you returned from the training, have you had any opportunities to introduce actively your acquired knowledges and skills in the training to the others?

コメント	参加コース/年度
* Yes, I had opportunities to introduce the knowledges and skills to the other engineers in my country.	(電化' 92)
* Yes.	(経営' 92)
* After returning to Brazil, I had the opportunity to present three lectures to our staff about my training course in Japan. More than 400 people from operational maintenance and administration sectors received lots of informations about railway technology in Japan and aspects of Japanese culture, education and way of life. The lectures included transparencies, slides and a film about JR East Company. From that time on, many technical and management procedures have been improved and the total quality program has been implanted.	(電化' 93)
* Yes. Sometimes I have opportunities to introduce my knowledges because I work with maintenance staff, so we have facilities to show something to them.	(電化' 95)
* Not yet. I didn't have time to train other people, since I returned. (3 months)	(電化' 94)
* Yes, I had the opportunity to show for our fellow-workers and managers what I saw in Japan. In the opportunity it was meet engineers to listen and to see what I brought from Japan. In one meeting, in Rio de Janeiro, there was engineers of all places for Brazil. When I stayed in Japan, I took several pictures and I made beautiful filming.	(車両' 92)
* Not yet, but I've prepared some equipment specifications considering some acquired technical informations from JICA's training course.	(車両' 93)
* Since we are installing the new systems in the organizations, I have been giving a lot of informations to my fellows about CTC, RBS, Block Systems.	(情報' 92)
* Yes. After 2 years I've been in Japan I've used the knowledges acquired everyday solutioning problems and creating situations to transfer this knowledge.	(情報' 93)

3-2. Do you think that the personnel changing policy adopts the system which considers the effect of the training in Japan? - A.

Are there any possibilities that ex-participants are transferred to the sectors unrelated to their field? - B.

コメント	参加コース/年度
* A - Yes. B - Yes.	(電化' 92)
* We thank that the personnel policy considers the effect of training in Japan. There is a possibility that ex-participants are transferred to sectors unrelated to the field as long as this represents a promotion.	(経営' 92)
* It is possible although not very likely.	(電化' 93)
* A - I couldn't understand. B - Yes, because when you work for the governmental organization the probability is very big.	(電化' 95)
* Yes. There are transference possibilities, but it's not a usual policy.	(電化' 94)
* Well, the training acquired in Japan has a important paper what the transfer to the sectors unrelated to our field isn't accepted.	(車輻' 92)
* A - No. The effect of the training in Japan is not considered for the personnel changing policy. B - No, it's not usual.	(車輻' 93)
* This training course is considered as an investment in the personnel policy, so there are few chances in transferring ex-participants to sectors unrelated to the object of the course.	(情報' 92)
* A - Yes. B - I don't think so. The knowledge acquired on this course we will never let or forget. We are needing technicians on this field, in my country and in my organization.	(情報' 93)

#### 4. Needs Survey

##### 4-1. What is the biggest problem in your field? What are the causes of it?

###### Problem

コメント	参加コース/年度
* Difficulty to realize the maintenance in overhead system.	(電化' 92)
* Passenger Safety, Overcrowded Trains.	(経営' 92)
* A surge of tension that comes from the rolling stock through the rail blows the substation's fuse installed between the negative bar and the ground bar.	(電化' 93)
* Materials, Human Resources and so on.	(電化' 95)
* The oldest networks of Rio De Janeiro and Sao Paulo present most of the existing maintenance problems due to the scarcity of spares needed for replacement.	(電化' 94)
* - Lack of Modern equipment. - Lack of Maintenance Spare Parts. - Old Technologies. - Lack of Training.	(車両' 92)
* Budgetary restrictions for maintenance and technical development of the railway systems.	(車両' 93)
* The biggest problem to improve new systems is the amount of money required.	(情報' 92)
* In the last 5 years we lost 30% of employees in my organization.	(情報' 93)

###### Causes

コメント	参加コース/年度
* The overhead system is very old (about 45 years old) and there are necessity of modernization this system.	(電化' 92)
* Lack of Security Personnel. Number of Rolling Stock and High Immobilization Index.	(経営' 92)
* The cause of the problem is a short-circuit that occurs in the motors of the trains. Meidensha and Shizuki Electric Co., Inc. sent us an estimate to supply discharge devices but we haven't had an opportunity to by them. Fortunately, this problem has decreased recently, due to some modifications carried out in the trains.	(電化' 93)
* The Government hasn't given necessary budget.	(電化' 95)
* Scarcity of spares needed for replacement in Riio e Sao Paulo Networks.	(電化' 94)
* - Lack of Resources. - Policy not priority of railway transportation.	(車両' 92)
* Governmental policy of reducing public costs.	(車両' 93)
* The company belongs to the Government and now is in process of privatization, and there is no priority for railways in Brazil.,	(情報' 92)
* Governmental decisions.	(情報' 93)

## 5. Understanding of Japan

5-1. Has your impression of Japan changed after visiting Japan? If the answer is Yes, how did it change?

コメント	参加コース/年度
* Yes, Japan is a country of high technology and the culture.	(電化' 92)
* Yes, Japan is a country of high technology and high living standards.	(経営' 92)
* Yes. In spite of the fact that I had read a lot of magazines about Japan, my impression after visiting Japan was much better than I thought.	(電化' 93)
* Yes, because Japan for me is very important in all aspect and besides is very organized.	(電化' 95)
* I became very interested in Japan, especially in terms of culture and social aspects.	(電化' 94)
* Yes, I didn't imagine the Japan was so development technology. All impressed me. The topics related with safety and quality were they more impressed me, organization, clean, productivity should be seem in all the places.	(車両' 92)
* No, it was a very interesting experience as I thought it'll be.	(車両' 93)
* Yes. Before I visited Japan, I read many articles about the Country, and I knew many things about the people, the organization of the Country. After visiting Japan, my knowledge about it was surpassed.	(情報' 92)
* My initial impression was that Japan is a big country where the people work hard to be in the top and I didn't change my mind after visiting Japan.	(情報' 93)

5-2. What impressed you most during your stay in Japan?

コメント	参加コース/年度
* The education and organization of Japanese people.	(電化' 92)
* The organization of railways.	(経営' 92)
* Japanese development, the level of its organization and the spirit of team work, among others.	(電化' 93)
* The education of people.	(電化' 95)
* The friendly behaviour of the people, a very good organization of the course, and specially the excellent accommodations at the training center.	(電化' 94)
* The Japanese people. Your culture, your hospitality, your capacity to carry out. The contract between the modern technology and the old temples.	(車両' 92)
* The capacity of preserving tradition and developing high technology in people who fight against geographics and climatic difficulties.	(車両' 93)
* The kindness of the people with foreigners, old customs living together with a hi-tech society.	(情報' 92)
* The Shinkansen System.	(情報' 93)

5-3. Would you like to come to Japan again as a participant, if there is a chance?

コメント	参加年次/年度
* Yes. -	(電化' 92、' 93、 経営' 92、 情報' 93)
* Yes, because in Japan you can stay quite, peaceful.	(電化' 95)
* Yes, specially in the following purposes, related to my activities. - Railway Management and Planning - Railway Signal, Telecommunication and Information System Engineering.	(電化' 94)
* Yes, of course. I remember when I yet there, our coordinator, Mr.Soba, ask me if I was anxious to return to my home or I would like to continue in Japan, and I answer that in spite of homesick, I will continue more time in Japan.	(車両' 92)
* Yes, I'd like to take part in the railway management and planning training course.	(車両' 93)
* Since the new course is related to my job, of course I will be very happy in enjoying this new opportunity.	(情報' 92)

6-1. JICA has been delivering magazines for participants and supporting ex-participants alumni associations as an aftercare service. Do you have any other request?

コメント	参加年次/年度
* Yes, I'd like to receive magazines and books about the railways and the new railway technology.	(電化' 92)
* Technical information related to the field of study.	(経営' 92)
* I would be very interesting for us to receive technical magazines related to railway systems.	(電化' 93)
* Yes, I'd like to receive publication concerning to Railway, because our course was about Railway electrification and books.	(電化' 95)
* Yes. I would like to receive magazines and other technical publications about railway, specially in electrification, signalling and telecommunication subject, to keep in contact to the companies and manufactures I knew in my training course.	(電化' 94)
* Yes, I would like if possible to receive especially magazines of railway transport.	(車両' 92)
* Yes, if possible I'd like to receive periodicals and magazines about rolling stock developments and other informations from Japanese manufacturers.	(車両' 93)
* I understand that the magazines <u>Look Japan</u> is intended to continue giving information for all ex-participants, according their specialities. But, if there is any other magazine related to railways, I mean, signal and telecommunication system, for sure I would like to receive these publications.	(情報' 92)
* I think is good. But I'd like is most of ex-participants to have space in magazine to tell about our experience in Japan.	(情報' 93)



### 3.④ アルゼンティン研究員所属機関

#### (1) ニーズ調査

FEMESA(首都圏鉄道公社)からの回答

機関名： FEMESA (FERROCARRILES METROPOLITANOS SOCIEDAD ANONIMA)  
(首都圏鉄道公社)

事業内容：首都圏における旅客輸送サービス

#### 1-1 組織の現況

- ① 住所：Bartolome Mitre 2815-BUENOS AIRES
- ② 年間予算：US\$ 194,500,000
- ③ 従業員(ランク別)

	～30	31～40	41～50	51～	合計
PhD					
Master					
大学卒					
高校卒	13	76	59	38	186
中校卒	284	374	134	84	876
その他	919	2089	1634	1388	6030
合計	1216	2539	1827	1510	7092

- ④ 組織の主要目的：ブエノスアイレス首都圏の旅客輸送サービス
- ⑤ 組織の特性：政府政策(公社)
- ⑥ 日本の協力成果：良好
- ⑦ 今後5年間における訓練の対象人数：10名
- ⑧ 組織図について

#### 1-2

1990年の行政改革政策として、アルゼンティン国鉄(FA)と世銀との間において、当国の鉄道輸送に対する総合的な改革計画が協議され、その結果として、アルゼンティン国鉄から首都圏における旅客輸送サービス部分を分割し、独立した組織を設立することが決定された。

これに従って、1991年3月25日付の大統領令により、以下の項目を目的として首都圏鉄道公社が設立された。

- 首都圏における旅客サービスの改善
- 短期間で、鉄道経営圏の民間への委託

まず、組織体制作りからスタートし、組織図設定、人員削減、経費の効率的な割当及び情報、電気通信、安全等に関する計画が策定された。

組織的には次の部門が設立された。

- 総裁直属として
- 企画
  - 会計監査
  - 安全
  - 対外交渉

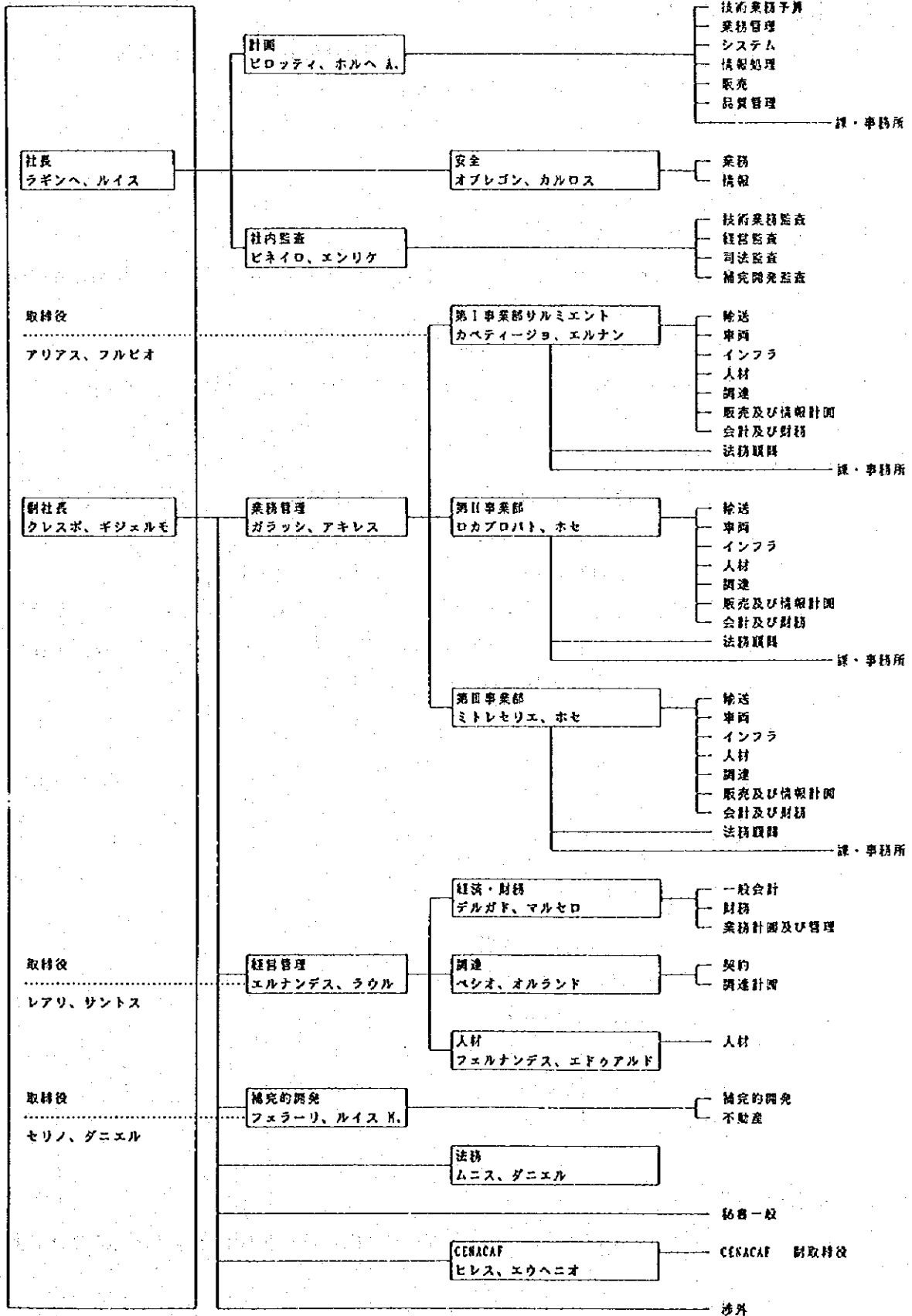
- 副総裁直属として
- 4つの管理局(各線区)
  - 事務局
  - 関連事業局
  - 法務関係

管理局を構成する各線区は軌道広軌、インフラ及び車両等の担当別に区別されている。

世銀との協議において、予定されていた従業員21,000人の内、FEMESAに約18,000人が入社し、1993年12月には、11,000人まで人員の削減を行ったが、旅客の輸送量に影響は生じなかった。

約7,000人の人員削減は徐々に行なった希望退職制度により実現したため、サービスには影響がなかった。

# FEMESA(首都鉄道公社)の組織図



## 2. 本分野における研修の重要性

会社のニーズに即した機能的な組織をもとにFEMESAの事業が推進されるべきであるため、あるセクターだけを優先的に扱うことは不可能である。

次に、主要問題及びその問題の解決のために取られた措置について説明する。

### 一 営業セクター(線区)

#### ・ 需要に応じた運転ダイヤ

新たに列車ダイヤを作成し、列車本数の減少が図られ、サービスの品質も確保された。

#### ・ 車両工場及び車両基地における車両の修理・改修

利用できる車両の数を確保するために、車両基地・工場において車両改修計画が実施された。

#### ・ 運転関係者の生産性向上

運転関係者の効率的な活用計画を作成し、運転手の運転時間を拡大し、非効率な時間を短縮した。また、工場における従業員の作業能率を改善し、生産性に応じた特別謝金制度(改修された車両数に基づく)を設定した。

営業権を民間委託するための入札に先立ち、営業状態の改善を目的とした政策が講じられた。この中の、再優先項目は、鉄道信号・通信、キップの販売・管理システム及び鉄道車両のメンテナンスである。

### 一 管理部門

#### ・ 実際のニーズに対応できる組織の形成

#### ・ 事務手続きの簡略化としては、

一 経費節約

一 購入手続きの簡略化

一 大規模契約の見直し、再交渉

一 支払い許可システムの変更

一 支払期間の短縮

一 総合情報システムの導入

一 消耗品管理システムの導入

一 鉄道車両の技術的評価

一 人員削減

## 3. 職員研修について

職員の訓練はFEMESAの直属しているCENACAF(国鉄中央研修センター)において実施されている。

FEMESAのメンテナンス関係技術者及び民間企業のテクニシャンに対する下記のコースが同センターにて実施されている。

- －変配電
- －通信
- －信号
- －電車線
- －電気駆動
- －ディーゼル駆動
- －情報処理
- －軌道土木

コースは分野別に行われておりその内容は次頁(P. 80のI. CENACAF研修コース)のとおり

現在、進行中の鉄道民営化計画では、4つの線区が民間企業に委託されており、又他の線区も、受託予定業者と契約交渉中であるため、FEMESAを対象としたコースが減少しているが、受託業者の要望に応じたコースが新たに開設されて来ている。

また、これまでにブエノスアイレス大学、コルドバカトリック大学及びヴェネズエラ国鉄との協定に基づいたコースと「ラ米鉄道電化」第三国研修(JICAの協力)が2回実施された。

同第三国研修に参加した研修員の帰国後の報告により、コスタリカ国鉄(INCOFER)及びブラジル国鉄(FEPASA)から、研修・技術協力の要請を受けている。

更にブエノスアイレス大学との協定に基づき、工学部の卒業者を対象とした鉄道関係専門コースを実施している。

中南米諸国に対する訓練としては、JICAの第三国研修制度により鉄道電化計画、鉄道車両等を中心とした集団研修が実施されている(P. 84のII. ブエノスアイレス大学研修コース参照)。

#### 4. 本邦研修への要望

今後、日本で毎年実施されている集団コース「鉄道車両整備計画」、「鉄道電化計画・管理」及び「鉄道経営計画」で、当国の研修員の受け入れが継続することを期待すると共に、「鉄道情報システム」コースの割り当てをお願いしたい。

## I. CENACAF研修コース

### 一 変電所

交流変電所

交流変電所設備

オイル式低電流遮断器

SF6自動遮断器

電流力計型継電器

電子継電器

機能的なスキーム

直流変電所

遠隔制御

操作室CCEBウルキサ

### 一 通信

電気の基本

測定機器

電話の基本

架線の故障部と接合箇所の特定

基本電子工学

操車電話通信

デジタル技術

電話操作

搬送波

列車位置指示計

Junexパネル

Junexコントローラ

電話交換機

— 信号

軌道回路と信号

切替え器、自動列車停止装置、バール  
リレー室の連動装置

— 架線

事故からの正常化

電気工

架線業務

メンテナンス

管理

— 電気駆動

— 力学的な基本

— 空気圧回路と装置I

— 空気圧回路と装置II

— バンタグラフ(実地作業)

— ドア装置メンテナンス(実地作業)

— 柔軟連結装置(実地作業)

— 自動連結装置の機能

— 電気の基本

— 電気装置と回路

— 制御回路と保護

— MP制御

— ユニットの検査とメンテナンス

— 列車自動停止装置

— リレーと接触器

— 主要制御装置(実地作業)

— 真空スイッチ(VCB)(実地作業)

— 主要整流装置

— 回転機械

— バルブ

— 電気式ディーゼル駆動

- GM GT 22電気式
- GM GT 22機械式
- GM GT 22空気圧式
- GM G 22電気式
- GM G 22機械式
- GM G 22空気圧式
- GM GR 12電気式
- GM GR 12機械式
- GM GR 12空気圧式
- GM G 12電気式
- GM G 12機械式
- GM G 12空気圧式
- ALCO電気式
- ALCO機械式
- ALCO空気圧式
- GE U12電気式
- GE U12機械式
- GE U12 FIAT機械式
- GE U12空気圧式
- GE U13電気式
- GE U13空気圧式
- GE U13連動機械式
- GE U13 FIAT機械式
- GE U18電気式
- GE U18連動機械式
- GE U18 FIAT機械式
- GE U18空気圧式
- FIAT軽量エンジン車両— エンジン車両FIAT
- 燃料噴射装置のメンテナンスと校正
- 対車輪の幾何学(NEFA規格)
- WOODWARDレギュレータI(機能)
- WOODWARDレギュレータII(メンテナンスと校正)



— 情報処理

- オペレーションシステム
- ワードプログラム5.5
- Qpro.プログラム
- DベースプログラムIIIベーシックプラス
- DベースプログラムIIIアドバンストプラス
- テレプロセッシングとテレプロセッシングネット

— 輸送

- 自動遮断／信号手対象
- 自動遮断／チーフ及び補助員対象
- 列車の運行と安全
- 自動遮断／地区制御オペレータ対象
- 列車スタッフの中央管理

— 線路と工事

- 線路の保全方法(RI— FRI)
- 線路の機械による保全
- 高温アルミ溶接
- 線路検査員
- 線路管理チームの責任者
- 溶接長レールによる線路の保全

## II. ブエノスアイレス大学研修コース

### FEMESAとブエノスアイレス大学との協約によるエンジニアのための専門コース

#### 1. ディーゼル駆動に関するコース

##### ー 機械における熱力学の原理

##### ー ディーゼルエンジン研究のための基本知識

##### ー ディーゼルエンジン

- ・ 各構成部
- ・ 燃料供給が過剰な場合のエンジンサイクル。チャート
- ・ 潤滑システムと冷却

##### ー ディーゼル機関車

- ・ 機械的伝動
- ・ クラッチのメカニズム、変速機、反転
- ・ 流体力学的伝動、連結、対転化器
- ・ 鉄道に使用される駆動システム

##### ー 電気式ディーゼル機関車

- ・ 電気伝動：各構成部
- ・ 発電機と直流モータ：接続
- ・ 交流発電機と直流モータ：接続、測度調整
- ・ 電気式ディーゼル機関車の特徴的な曲線
- ・ 電気式ディーゼル機関車の補助システム：制御回路、バッテリー、警報と安全装置

##### ー 電気式ディーゼル機関車の特徴曲線を駆動に実際に利用する法

## 2. 電気駆動に関するコース

- － 電気駆動の推移
- － 駆動エンジン
- － 直流による電化システム
  - ・ 駆動用変電所へのエネルギー補充
  - ・ 駆動用変電所の設備
  - ・ 架線
- － 直流の場合の車両
  - ・ 直流による駆動エンジン
  - ・ 駆動装置
  - ・ 補助装置
- － 交流の場合の車両
  - ・ 交流による駆動エンジン
  - ・ 補助装置
  - ・ 新しい駆動技術

## 3. 信号に関するコース

- － 列車の運行と安全
  - ・ 遮断システム
  - ・ 信号システム
  - ・ 被覆

一 機械的な信号

- ・ 種類と特徴
- ・ 連動装置
- ・ 連動装置と遮断機

一 電気力学及び電気による信号

- ・ 軌道回路
- ・ 切替え操作と信号

一 自動信号

- ・ 自動化
- ・ 信号間の距離
- ・ 特徴的な装置
- ・ 遠隔制御(CTC)
- ・ 電化軌道における信号
- ・ 自動列車停止装置(ATS)

4. 通信に関するコース

一 外部パネル

- ・ 航空路線及び地下鉄路線
- ・ 技術的特徴
- ・ 電話回路伝送の各要素

一 電算システム

- ・ 手動制御
- ・ システムの運転
- ・ 共用電話

ー 搬送波システム

- ・ 基本と特徴
- ・ 特徴的な装置

ー 電化軌道における通信障害

5. 技術開発に関するコース

ー 駆動の動力学

- 動きに対する強度
- 軌道の高度による強度
- 粘着性について
- ブレーキの力学的な働きについて
- 列車の動きに関する力学

ー ディーゼル駆動

- ディーゼルエンジン
- 動力学的伝動システム
- 電気ディーゼル伝動システム
- 主要発電機と駆動エンジン
- 電気ディーゼル機関車の補助システム

ー 電気駆動

- 電気駆動の推移
- 直流エンジン
- 直流駆動及び交流駆動への直流エンジンの取り付け
- 制御システムと出力
- 電気駆動における交流エンジン
- 電気駆動のためのエネルギー補充システム

## 一 信号

信号システムの分類

被覆と連動

電気力学的信号

軌道回路：電化地区と非電化地区

自動化信号

列車集中制御(CTC)

自動化システム：自動列車停止装置(ATS)、自動列車制御(ATC)、ATP、  
自動列車運転(ATO)

## 一 通信

航空路線及び地下鉄路線

搬送波装置

スイッチングシステム

選択呼び出し方式

通信障害

## 一 開発

標準運行の計算の基本

基本技術、限界修正、測量帯

引っ張り応力、運転時強度

ブレーキ曲線

標準運行測量

## 一 線路と工事

測量の基礎

線路の基礎

一 図面 構成、砂利、枕木、レール、取り付け

一 線路装置、走行曲線、線路の保全

一 守備

一 摩耗、検査

一 路面ならしとアライメント管理

### 3.④(2) 評価・アフターケア

#### 1 研修コースの評価

- ① 貴機関では帰国研修員の研修成果の評価：  
非常に良い。
- ② 当該研修コースは貴機関の人材育成に有効であったか：有効であった。
- ③ 貴機関開発計画のなかで、今後も当該研修コースは引き続き研修員を送る必要があるか：ある。
- ④ 研修コースの目的、内容、定員及び期間について
  - 目的：適切
  - 内容：適切
  - 定員：適切
  - 期間：2ヵ月が妥当である。

#### 2 研修員の選考

- ① 貴機関では、どのように候補者の選考を行っているか：  
コースの応募資格条件を満たし、帰国後習得した、知識・技術等を他の職員に伝達できるような候補者を人選している。

#### 3 研修成果の活用

- ① 帰国研修員による研修成果の活用：研修期間中に習得した鉄道技術に関する方針及び方法を活用し、職場における作業改善を図っている。また、首都圏における旅客サービスの民営化に伴い、一部の帰国研修員は受託業者に転職している。
- ② 貴期間では帰国研修員の研修成果活用促進のための特別な方策を講じているか：特別な方策は講じていないが、研修後5年間経過した帰国研修員に対し、再研修制度の検討をお願いしたい。

#### 4 アフターケアについての要望

JICAでは研修員のアフターケアとして、研修員誌の送付、同窓会支援等を実施しているが、他に何か要望があるか：

特に、要望はないが、今後も帰国研修員フォローアップが派遣されて、公開セミナーが開催されることを期待している。

3.⑤ アルゼンティン研修員一評価・アフターケア調査

(QUESTIONS)

1. Present Occupation

1-1. Please describe your responsibility in detail.

コメント	参加コース/年度
* Under the authority of the Director of the National Railway Training Center, I take part in setting objectives, making operational planning and control the training activities in the specialities of rolling stock, track, substations, catenary, telecommunications, signalling, train operation and computing.	(経営'92)
* My responsibilities are: ・ Preventive and corrective maintenance on - overhead line - third rail ・ Emergency group for accidents (during the service)	(電化'91)
* My responsibility at the time is the electric and mechanical maintenance (preventive and corrective), planning and management on the traction substations of Urquiza Railway.	(電化'93)
* 1.Workout the realization of handbooks and dictation of courses within the area. 2.Prepare information for the LATIN AMERICAN COURSES about Railway electrification. 3.Coordinate the jobs of planning and carry out of the different agreements with the University of Bs. As.; the Catholic University of Cordoba and the Free Institutue of Venezuela's Railways. 4.Relief in his charge to the subdirector of CENACAF.	(車両'92)
* The key components of this job responsibility were understanding and transmitting about procedures and enterprise policy, determing functions and monitoring directions. Developing new operational facilities it were necessary.	(車両'93)
* My present position and responsibility is instructor in rolling stock area and my duty is to the investigate, prepare and develop courses of inspection and maintenance in rolling stock.	(車両'94)



1-2. Please describe your career path from the time of returning home up to now.

コメント	参加コース/年度
<p>* From my return, I have been performing the post of subdirector of National Railway Training Center. However, in despite of no changes in my career path, there have been significant changes in the subject of training in the following aspects:</p> <ul style="list-style-type: none"> <li>- Training for technical personnel of private railway enterprises, with the resulting improvements in timing and objectives.</li> <li>- Developing of practices in specialization courses for graduate engineers, by an agreement with the University of Buenos Aires.</li> </ul>	(経営 '92)
<ul style="list-style-type: none"> <li>* - Catenary Instructor (CENACAF)</li> <li>- Catenary area chief (CENACAF)</li> <li>- Overhead Line chief (Metrovias - 1994)</li> <li>- Contact Line chief (Metrovias)</li> </ul>	(電化 '91)
<p>* Before to leave Japan I was substation area chief in the CENACAF(National Railway Training Center). After my returning home, changed my job from the CENACAF to METROVIAS S.A., as substation maintenance chief in Urquiza Railway.</p>	(電化 '93)
<p>* Since my returning to my work in CENCAF, I've made different works all linked with the capacitation about electric cars, as for example;</p> <ul style="list-style-type: none"> <li>- Developed computation simulators for electric and pneumatic circuits.</li> <li>- Planning and dictating of the CENCAF's Latin American Courses about Railway Electrification.</li> <li>- Give technical counsel to the private railways enterprises established in my country, about electric cars problems.</li> <li>- Give technical counsel about maintenance and organization systems in depots and railways workshops.</li> </ul>	(車両 '92)
<p>* - I am to conducting the depot, since my return home up to now.</p>	(車両 '93)
<p>* - After return, my career path, no variety before my training course in Japan.</p>	(車両 '94)

## 2. Evaluation of this training course

2-1. After returning home, was the course useful for your present job? List the topic which you thought were useful.

コメント	参加コース/年度
* The most useful topics were those related to systematic and efficient management.	(経営 '92)
* Yes, was very useful. - knowledge about electrification systems - knowledge of areas nearest to the mine.	(電化 '91)
* Yes, the course was very useful for my present job. - General knowledge about railway electrification - Planning and management of electric equipment maintenance - Know-how about the human resources - Technical trends in railway electrification.	(電化 '93)
* - Electric rolling stock introduction Maintenance outlines, failures and their solutions, work systems, quality control inspection and general repairing of the railways cars equipment. Safety and industrial hygiene, prevention of accidents. - New technology High speed, lineal motor, magnetic levitation, new material to factory - Factory of the rolling stock material and all its equipment New technology of factory.	(車両 '92)
* 1. Organization 2. Training 3. Quality control 4. Protection of our environment 5. Safety	(車両 '93)
* Yes, the course in railway modernization was useful in my job. Theory of rolling stock, rolling stock maintenance modernization in conventional lines and Shinkansen cars (Training courses classes 1,2,3,4,5)	(車両 '94)

2-2. Contrary, what are the topics which were not useful? Describe the reasons.

コメント	参加コース/年度
* If we could separate the context of the course the less useful topics, perhaps the time allowed for new railway systems, nevertheless illustrative about the possibilities of up-to-date technology, was spent showing things that are entirely inapplicable in our countries. So the visits to small railway enterprises of local interest were more useful.	(経営 '92)
* Some visits to factories of electrical equipment had been so fast, and didn't let view details of such equipment. The project of a rough plan for an electric traction system was very precarious.	(電化 '93)
* - Railway privatization process - Freight transport - Rolling stock with diesel motors - Diesel electric locomotive - Rehabilitation of Myanmar Diesel Locomotives.	(車両 '92)
* The topics which were more less useful was following; Outline of JR group 1 - because it is not useful in my job, only information of history of JNR privatization and employee retirement discharge, etc. Outline of JR group 2 - present state of freight transportation in Japan.	(車両 '94)

2-3. Please comment on the purpose, contents, applicants, number of the participants, and duration this training course from the ex-participants' point of view.

2-3-1 purpose

コメント	参加コース/年度
* See No.4.	(経営 '92)
* Good.	(電化 '91)
* I think that is correct.	(電化 '93)
* It was achieved successfully.	(車両 '92)
* The purpose is to cultivate future leaders who will work to national development through railway transport.	(車両 '93)
* I think respect of purpose was correct and acceptable	(車両 '94)

2-3-2 applicants

コメント	参加コース/年度
* Adequate.	(経営 '92)
* It's OK.	(電化 '91)
* It's OK.	(電化 '93)
* The applicants were correct because every body have been experience in rolling stock.	(車両 '92)
* Argentina, Bangladesh, Brazil, Egypt, Indonesia, Pakistan, Romania.	(車両 '93)
* The applicants were correct because every body have been experience in rolling stock. Particularly I do not share in point 2 (under 40 years of age)	(車両 '94)

### 2-3-3 number of the participants

コメント	参加年次/年度
* Adequate	(経営 '92)
* Just perfect.	(電化 '91)
* It's OK.	(電化 '93)
* It's enough.	(車両 '92)
* 8	(車両 '93)
* No more than 7 or 8 participants. Because it is impossible to understand when we go to the different observation.	(車両 '94)

### 2-3-4 duration

コメント	参加年次/年度
* Too short. The time allowed for technical visits might be of two weeks, instead of one.	(経営 '92)
* Fine.	(電化 '91)
* It's OK.	(電化 '93)
* It's enough.	(車両 '92)
* From July 13, 1993 to October 3, 1993.	(車両 '93)
* The duration approximate three months is acceptable, no more.	(車両 '94)

## 3. Applicability

3-1. Since you returned from the training, have you had any opportunities to introduce actively your acquired knowledges and skills in the training to the others?

コメント	参加年次/年度
* After the running into business of Ferrocarriles Metropolitanos S.A. this enterprise began a training programme for improvement of the management staff. In this course, I could explain the JNR privatization process, funds and subsidies policies and the Railway Business Enterprises Law.	(経営 '92)
* No actively.	(電化 '91)
* Sometimes I collaborate with other areas such as engineering project.	(電化 '93)
* I have many opportunities to apply the knowledges acquired in the training in Japan, specially during the CENACAF courses.	(車両 '92)
* Pneumatics-electro pneumatics-machanics. Also as a technical drawing interpreter and staff manager.	(車両 '93)
* Yes, I have, because in this moment I have a training course for drivers in new lines in Argentina. Tren de la Costa (the coast train), the technology incorporated to these cars turns them to be the first ones of that kind in the country.	(車両 '94)

3-2. Do you think that the personnel changing policy adopts the system which considers the effect of the training in Japan?

Are there any possibilities that ex-participants are transferred to the sectors unrelated to their field?

コメント	参加コース/年度
* Due to the process of privatization, it is difficult to talk about policies of development of human resources.	(経営 '92)
* Yes, I think that there are possibilities.	(電化 '91)
* Yes, there are possibilities.	(電化 '93)
* Ex-participants are very well considered in the changing policy.	(車両 '92)
* 1-I don't think so. 2-I don't know.	(車両 '93)
* I think will haven't changing policy in my position. There aren't any possibilities that ex-participant are transferred.	(車両 '94)

#### 4. Needs Survey

4-1. What is the biggest problem in your field?

What are the causes of it?

コメント	参加コース/年度
* Actually, almost all railway lines in our country are under private management. We can see that the objectives of training, formerly aiming to technological matter, must change in order to secure an economic operation of railway transportation. The concessionaire that pays for courses is interested in the amount of saving he is making by improving management knowledge (and leadership, as consequence) of his personnel. So the objectives of this kind of training must secure that the participants get the criterion for economical analysis of all matters that perform railway transportation 注: problem と cause をわけていません。	(経営 '92)

#### problem

コメント	参加コース/年度
* investment and training.	(電化 '91)
* The biggest problem is the needs of investment and training.	(電化 '93)
* - Insufficient information of new railway technology - Update railway information.	(車両 '94)

#### causes

コメント	参加コース/年度
* I don't know.	(電化 '91)
* I don't know.	(電化 '93)
* - Books too expensive. - The fault of capacitation courses.	(車両 '92)
* Education.	(車両 '93)
* I don't have training courses for actualization.	(車両 '94)

## 5. Understanding of Japan

5-1. Has your impression of Japan changed after visiting Japan? If the answer is Yes, how did it change?

コメント	参加年入/年度
* Yes, in a favorable way.	(経営 '92)
* Not so much, because before going to Japan I worked with Japanese people for a long time and I had a knowledge about Japan.	(電化 '91)
* Yes, I found with a country very organized, and technologically developed.	(電化 '93)
* I think Japan is changing constantly because of its high technological level and economic possibilities.	(車両 '92)
* I wasn't in Japan, ohters year.	(車両 '93)
* Japan is changed constantly because of its high technologicl level and economic possibilities.	(車両 '94)

5-2. What impressed you most during your stay in Japan?

コメント	参加年入/年度
* I could appreciate a people that makes everything with the best efforts no matter if it is a single action in the daily life or the most important duty.	(経営 '92)
* The new technology and the Japanese people that is very kind.	(電化 '91)
* The excellent railway transport system, the exact in their trains and the Japanese way of life, the Japanese people very warm and pleasing.	(電化 '93)
* I was impressed for the organization of all its activities.	(車両 '92)
* Education - planning - discipline and solidarity in thier daily life.	(車両 '93)
* My impression in Japan was the organization of the each and every poeple in your activities.	(車両 '94)

5-3. Would you like to come to Japan again as a participant if there is a chance?

コメント	参加年入/年度
* Yes.	(経営 '92)
* Yes, maybe. If the training is more specific and short ( I mean no for long time) according to the theme.	(電化 '91)
* Yes, of course, because always there are many thing in my field for learn.	(電化 '93)
* Yes, of course.	(車両 '92)
* Yes, I would like to come to Japan.	(車両 '93)
* Yes, I would.	(車両 '94)

6-1. JICA has been delivering magazines for participants and supporting ex-participants alumni associations as an aftercare service. Do you have any other request?

コメント	参加コ-入/年度
* Would be fine seminars and information specific.	(電化 '91)
* Yes, would be interesting that JICA send some specific information in the field of railway electrification and organization of seminars or conferences in his fields.	(電化 '93)
* To take contact with Japan technology adance again	(車両 '92)
* No.	(車両 '93)
* I don't have other request.	(車両 '94)

#### 4. 持ち帰り資料一覧

##### 1. ブラジリアにて

○事務所概要

○連邦府交通局METRO資料

##### 2. サン・パウロにて

○CPTM路線図

○METRO路線図

○パラナ州パンフレット (研修員より)

○RFFSAクリチバ支社パンフレット (研修員より)

##### 3. アルゼンティンにて

○FEMESA業務概要 (アンケートに対する添付物として)

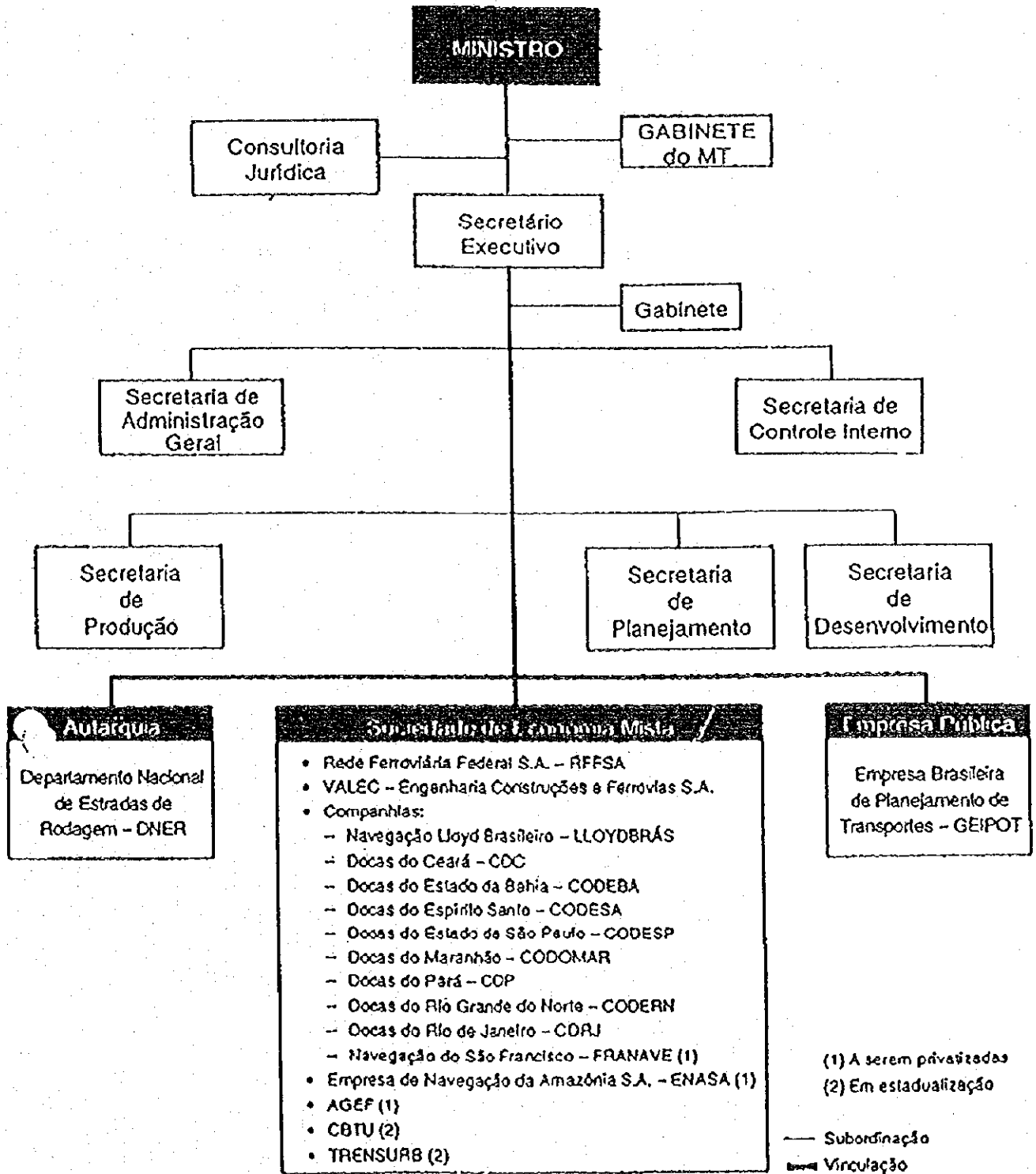
○CENACAF業務概要



5. ① ブラジル運輸省組織図(ポルトガル語)

(ブラジル)

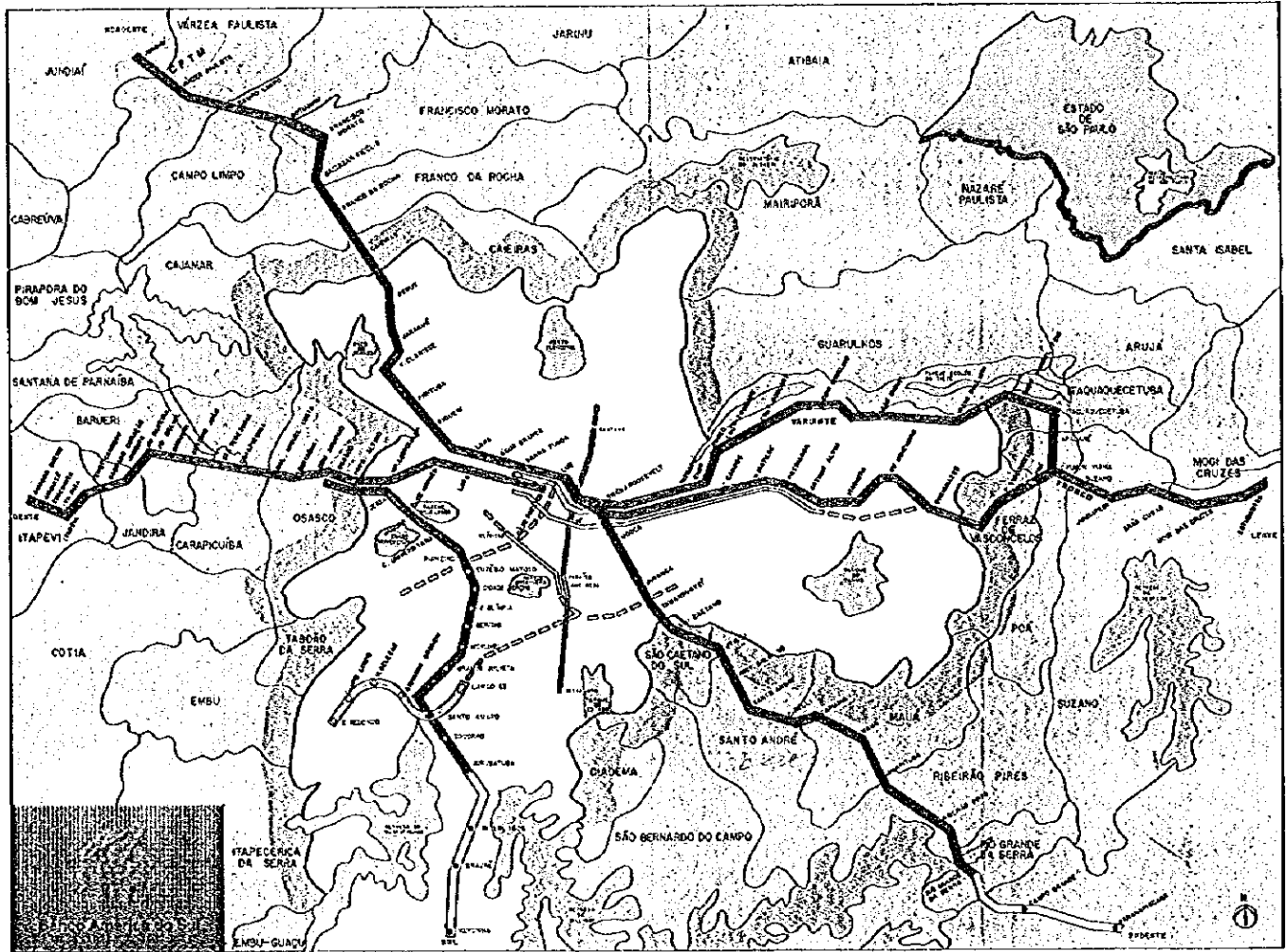
# MINISTÉRIO DOS TRANSPORTES ORGANOGRAMA



5. ② ブラジル各鉄道会社路線図 CPTM

# CPTM

## COMPANHIA PAULISTA DE TRENS METROPOLITANOS



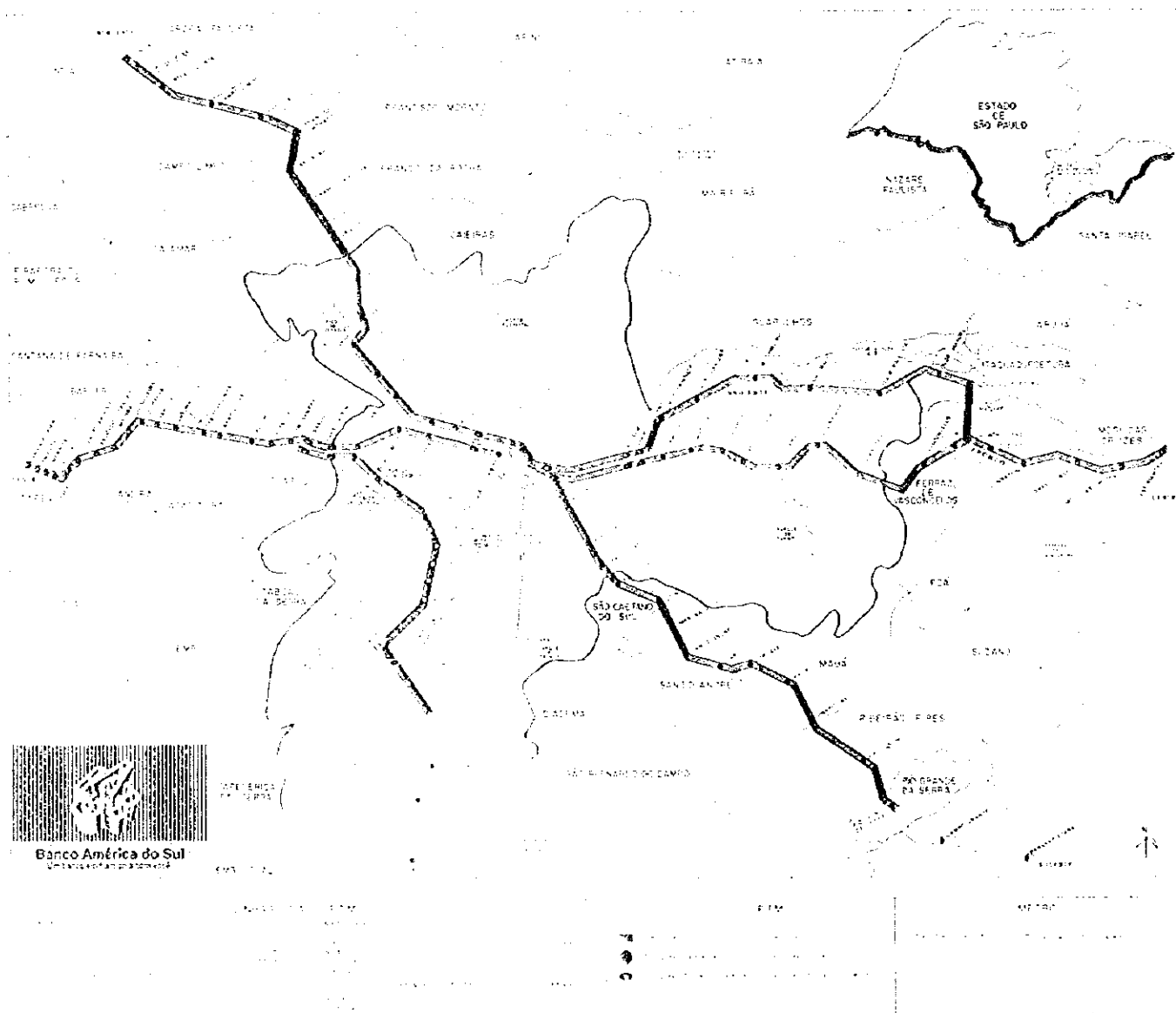
LINHAS DA CPTM	
LINEA LESTE	34
ESTACOES	42
EXTENSÃO	108 km
LINEA NORDESTE / SUDESTE	32
ESTACOES	42
EXTENSÃO	109 km
LINEA OESTE	34
ESTACOES	42
EXTENSÃO	108 km
LINEA SUL	34
ESTACOES	42
EXTENSÃO	108 km
EXTENSÃO TOTAL	352 km
VAZAOES ATENDIDAS	88
ESTACOES	88

CPTM	
Em Operação	Em Implantação
Estações Existentes	Estações Planejadas
Estações Transitórias Existentes	Estações Transitórias Planejadas

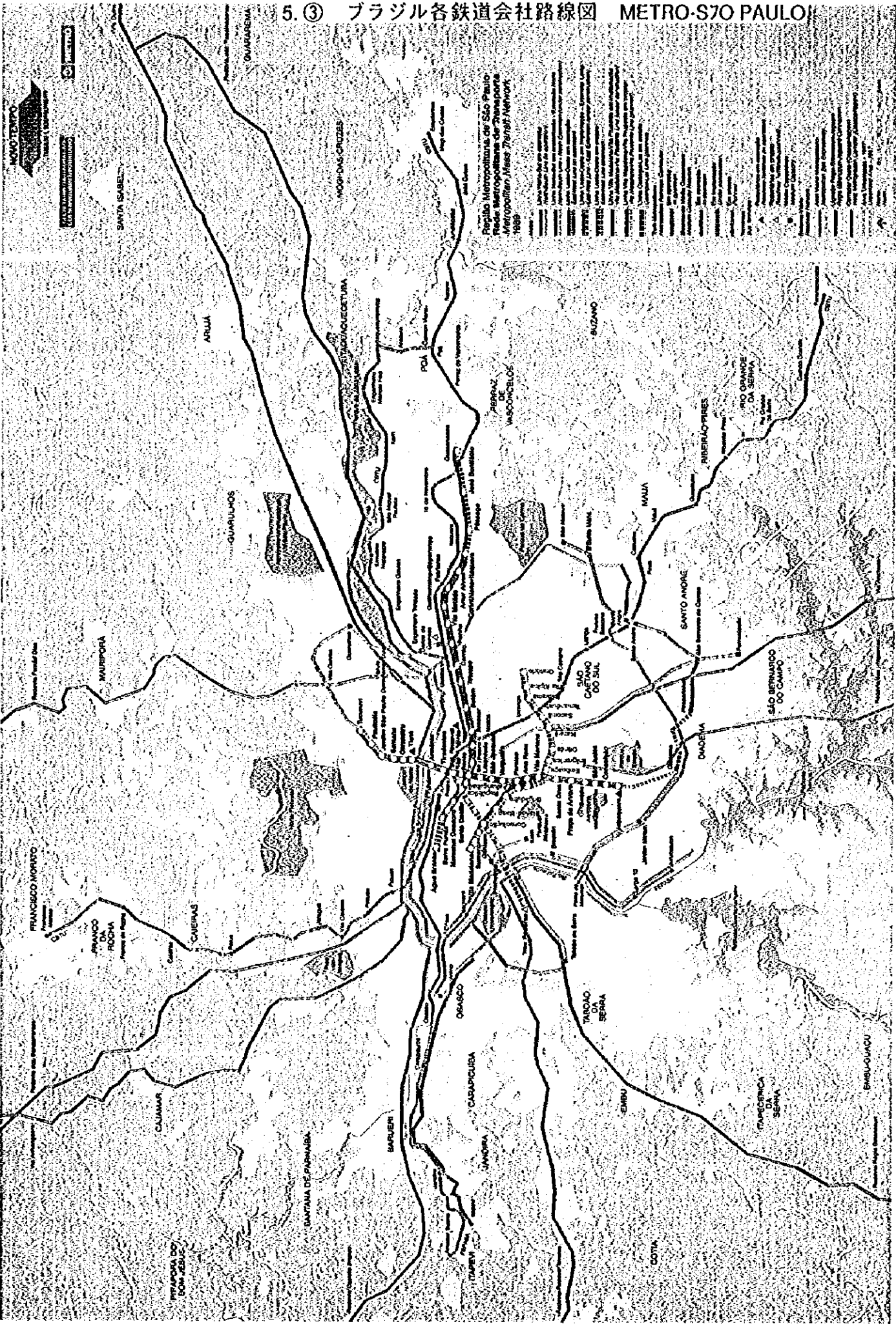
METRÔ	
Em Operação	Em Implantação

# CPTM

COMPANHIA PAULISTA DE TRENS METROPOLITANOS



5. ③ ブラジル各鉄道会社路線図 METRO-S70 PAULO



Região Metropolitana de São Paulo  
Rede Metro-S70 (Sistema de Transporte  
Metropolitano) - 1989

- 1 LINHA 1 (Linha Amarela)
- 2 LINHA 2 (Linha Verde)
- 3 LINHA 3 (Linha Vermelha)
- 4 LINHA 4 (Linha Azul)
- 5 LINHA 5 (Linha Roxa)
- 6 LINHA 6 (Linha Rosa)
- 7 LINHA 7 (Linha Laranja)
- 8 LINHA 8 (Linha Cinza)
- 9 LINHA 9 (Linha Preta)
- 10 LINHA 10 (Linha Branca)
- 11 LINHA 11 (Linha Azul-Clara)
- 12 LINHA 12 (Linha Verde-Clara)
- 13 LINHA 13 (Linha Vermelha-Clara)

5. 3 ブラジル各鉄道会社路線図 METRO-S/O PAULO

NOVO TEMPO

CARTA-GARNE

REAR-OF-YOUR-RESUL







**MINISTÉRIO DOS TRANSPORTES**

**EMPRESA BRASILEIRA DE PLANEJAMENTO DE TRANSPORTES - GEIPOP**

**DISTRIBUIÇÃO MODAL DOS TRANSPORTES**

1992

TRANSPORTE DE PASSAGEIROS

• Rodoviário .....	96,0%
• Aéreo .....	1,8%
• Ferroviário .....	1,6%
• Metroviário .....	0,6%
<b>TOTAL .....</b>	<b>100,0%</b>

TRANSPORTE DE CARGA

• Rodoviário .....	58,7%
• Ferroviário .....	20,6%
• Hidroviário .....	17,2%
• Dutoviário .....	3,2%
• Aéreo.....	0,3%
<b>TOTAL .....</b>	<b>100,0%</b>



# MINISTÉRIO DOS TRANSPORTES

EMPRESA BRASILEIRA DE PLANEJAMENTO DE TRANSPORTES - GEIPOP

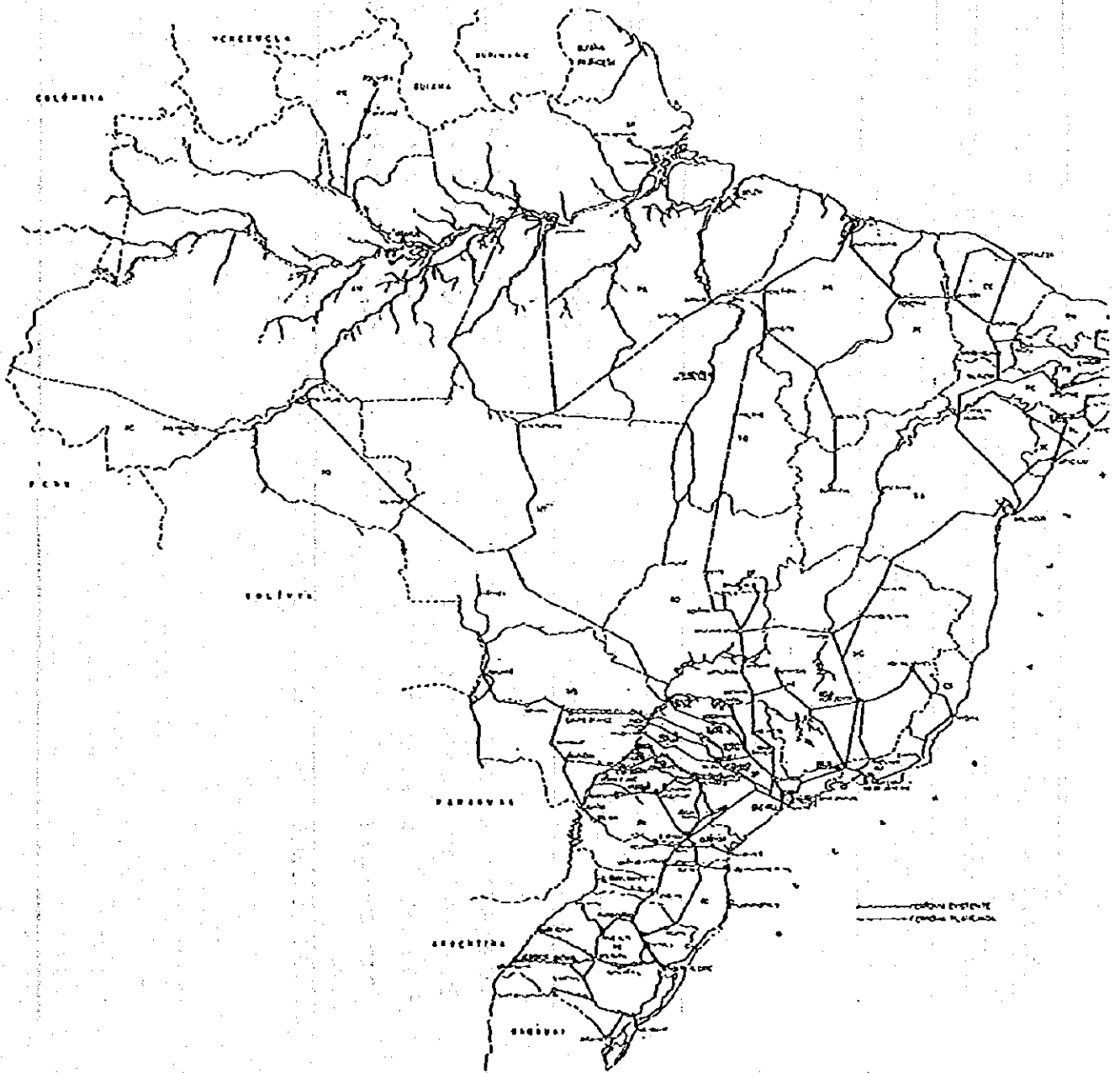
## EXTENSÃO DAS LINHAS PRINCIPAIS E RAMAIS EM TRÁFEGO REDE FERROVIÁRIA BRASILEIRA

FERROVIA	TIPO DE BITOLA (m)					TOTAL
	0,600	0,760	1,000	1,435	1,600	
RFFSA	-	13	20.241	-	1.739	21.993
FEPASA	-	-	3.008	-	1.907	4.915
EFVM	-	-	898	-	-	898
EFC	-	-	-	-	1.076	1.076
AMAPÁ	-	-	-	194	-	194
JARI	-	-	-	-	66	66
CAMPOS DO JORDÃO	-	-	47	-	-	47
RIO DO NORTE	-	-	35	-	-	35
PERUS-PIRAPORA	33	-	-	-	-	33
VOTORANTIM	-	-	20	-	-	20
CBTU	-	-	407	-	403	810
TRENSURB	-	-	-	-	27	27
METRÔ-SÃO PAULO	-	-	-	-	44	44
METRÔ-RJ	-	-	-	-	23	23
E.F. CORCOVADO	-	-	4	-	-	4
<b>TOTAL</b>	<b>33</b>	<b>13</b>	<b>24.660</b>	<b>194</b>	<b>5.285</b>	<b>30.185</b>

FONTE: GEIPOP - Anuário Estatístico dos Transportes - 1992/1993.

# BRASIL SISTEMA FERROVIÁRIO NACIONAL

---



**MINISTÉRIO DOS TRANSPORTES****EMPRESA BRASILEIRA DE PLANEJAMENTO DE TRANSPORTES - GEIPOP****TRANSPORTE FERROVIÁRIO DE CARGA****CARGA TRANSPORTADA POR EMPRESA**

EMPRESA	TU x 10 <sup>3</sup>		TKU x 10 <sup>6</sup>	
	1991	1992	1991	1992
Rede Ferroviária Federal S.A	80.566	80.855	36.397	37.009
Estrada de Ferro Vitória-Minas - EFVM	93.939	84.555	47.940	42.706
Estrada de Ferro Carajás - EFC	35.194	34.670	30.276	29.865
Ferrovía Paulista S.A - FEPASA	18.515	18.208	6.346	6.522

FONTE: GEIPOP - Anuário Estatístico dos Transportes - 1992/93.

**MINISTERIO DOS TRANSPORTES**

EMPRESA BRASILEIRA DE PLANEJAMENTO DE TRANSPORTES - GEIPOP

REDE FERROVIARIA FEDERAL S/A

PRODUÇÃO DE TRANSPORTE POR MERCADORIA

1992

DISCRIMINAÇÃO	TONELADAS ÚTEIS 10 <sup>3</sup>	TONELADAS x QUILÔMETRO ÚTEIS 10 <sup>3</sup>
Minério de ferro	32.322	16.149.809
Derivados de petróleo	8.196	4.632.100
Cimento	4.586	2.850.575
Produtos siderúrgicos	7.424	2.365.883
Forragens	4.274	2.133.421
Soja	2.654	1.619.371
Alcool	1.817	1.436.916
Calcário	3.979	925.983
Aubos	2.171	855.354
Carvão mineral	3.851	439.677
Trigo	1.095	429.431
Outras	8.486	3.170.918
<b>TOTAL</b>	<b>80.855</b>	<b>37.009.433</b>

FONTE: GEIPOP - Anuário Estatístico dos Transportes - (1992/1993).

**MINISTÉRIO DOS TRANSPORTES**

EMPRESA BRASILEIRA DE PLANEJAMENTO DE TRANSPORTES - GEIPOP

**REDEFERROVIÁRIA FEDERAL S.A. RFFSA**  
**DISPONIBILIDADE DE VAGÕES**

ANO	VAGÕES EXISTENTES	VAGÕES EM TRÁFEGO	VAGÕES DISPONÍVEIS (%)
1988	43.867	38.478	88
1989	42.984	36.577	85
1990	41.930	36.001	86
1991	41.837	36.335	87
1992	41.492	35.743	86

FONTE: GEIPOP - Anuário Estatístico dos Transportes - 1992/93.

**DISPONIBILIDADE DE LOCOMOTIVAS**

ANO	LOCOS EXISTENTES	LOCOS EM TRÁFEGO	LOCOS DISPONÍVEIS (%)
1988	1.561	1.274	82
1989	1.545	1.247	81
1990	1.516	1.177	78
1991	1.474	1.116	76
1992	1.437	1.102	77

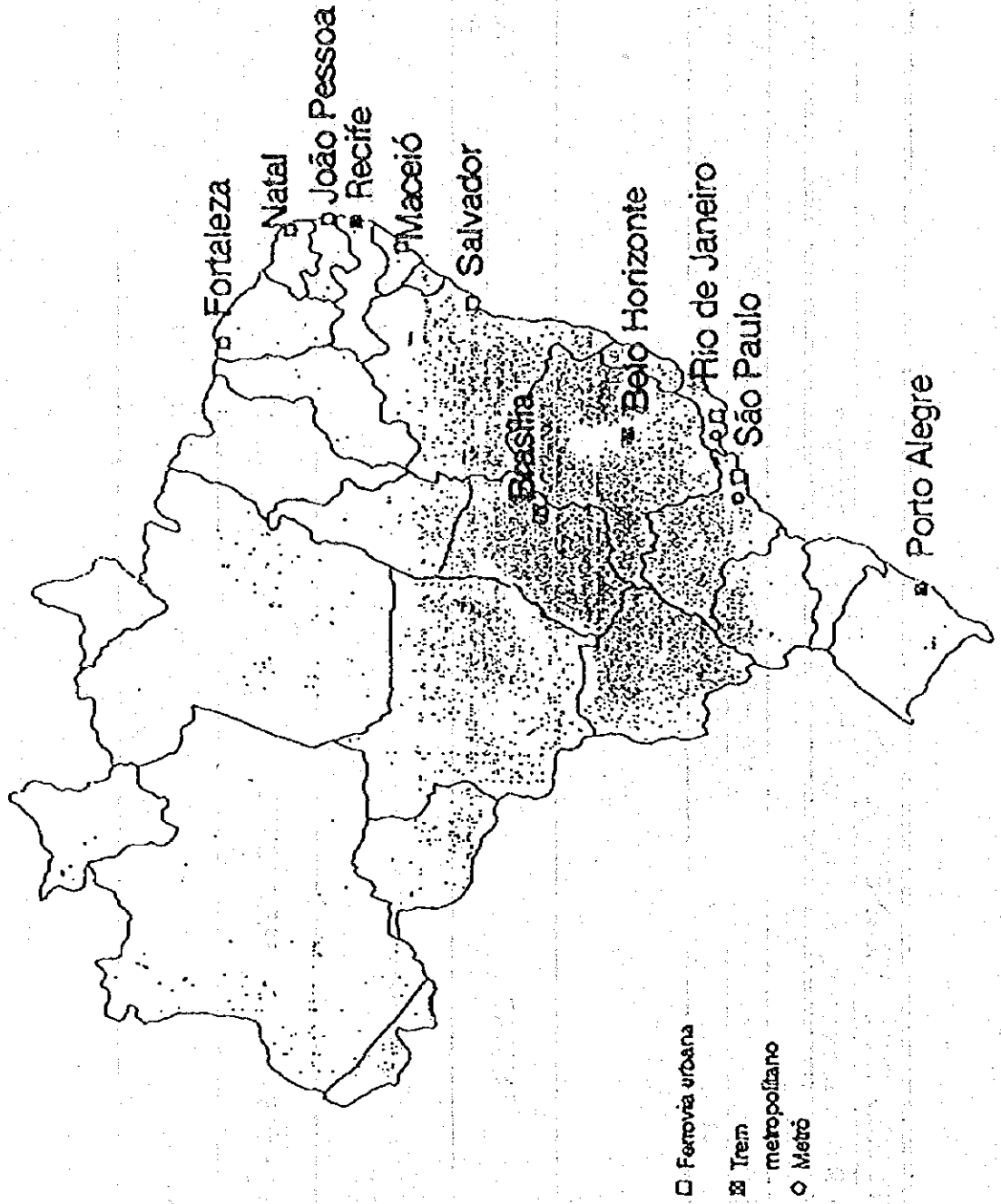
FONTE: GEIPOP - Anuário Estatístico dos Transportes - 1992/93.

**MINISTÉRIO DOS TRANSPORTES****EMPRESA BRASILEIRA DE PLANEJAMENTO DE TRANSPORTES - GEIPOP****MALHA FERROVIÁRIA  
SEGMENTOS NOVOS**

ESTRADA	EXTENSÃO (Km)		BITOLA (m)	
	Em Obras	Planejada		Total
Estrada de Ferro Paraná-Oeste S.A. - FERROESTE	272	147	419	1,00
Ferrovias Norte Brasil S.A. - FERRONORTE	311	1.720	2.031	1,60
Metrô de Brasília	39 (1)		39	1,60

(1) 28 km em estágio avançado.

ANEXO UNIDADES DE TRANSPORTES PÚBLICOS



TABE13.XLS

TRANSPORTE COLETIVO URBANO  
REPARTIÇÃO MODAL  
1993

(Em %)

ÁREA URBANA	ÔNIBUS	TREM / METRÔ
<b>A - Regiões Metropolitanas</b>		
Fortaleza	97,3	2,7
Recife	92,4	7,6
Salvador	99,6	0,4
Rio de Janeiro	89,3	10,7
Belo Horizonte	98,0	2,0
São Paulo	71,4	28,6
Porto Alegre	93,6	6,4
<b>B - Capitais</b>		
Natal	98,6	1,4
João Pessoa	97,8	2,2
Maceió	98,3	1,7

Fonte: CBTU e ANTP.



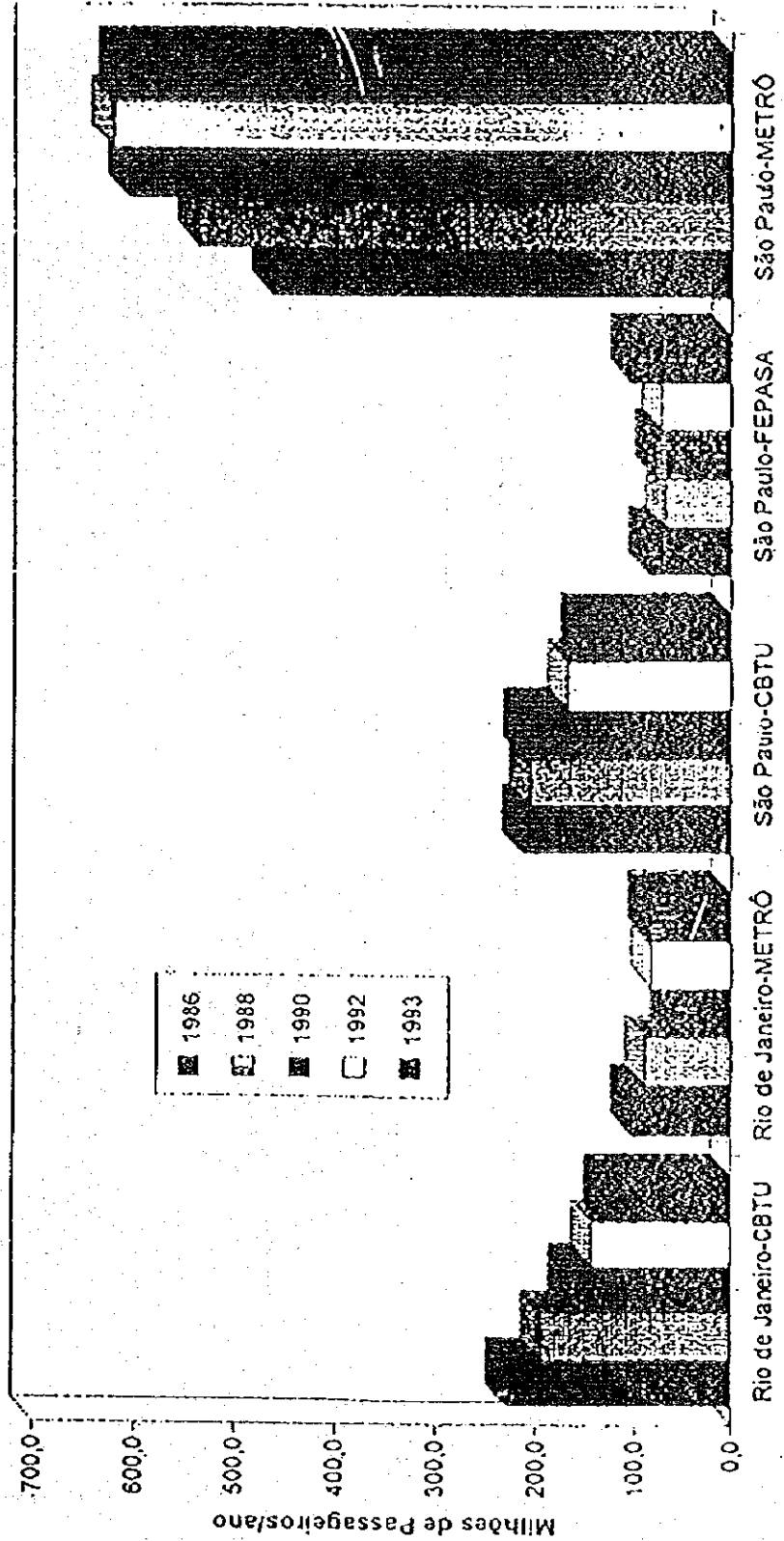
## TRENS URBANOS - PASSAGEIROS TRANSPORTADOS POR OPERADOR - 1993

Área Urbana	Passageiros Transportados em Milhões/Ano					
	CBTU	CPTM	TRENSURB	Total Ferrovia	METRO	Total Metro-Fer.
A - Regiões Metropolitanas	349,6	106,2	33,1	487,9	704,5	1.192,4
Fortaleza	9,2			9,2		9,2
Recife	39,5			39,5		39,5
Salvador	2,4			2,4		2,4
Rio de Janeiro	131,7			131,7	86,9	218,6
Belo Horizonte	11,9			11,9		11,9
São Paulo	154,9	105,2		260,1	617,6	877,7
Porto Alegre			33,1	33,1		33,1
B - Capitais	6,3			6,3		6,3
Natal	1,8			1,8		1,8
João Pessoa	2,4			2,4		2,4
Maceió	2,1			2,1		2,1
Total	355,9	105,2	33,1	494,2	704,5	1.198,7

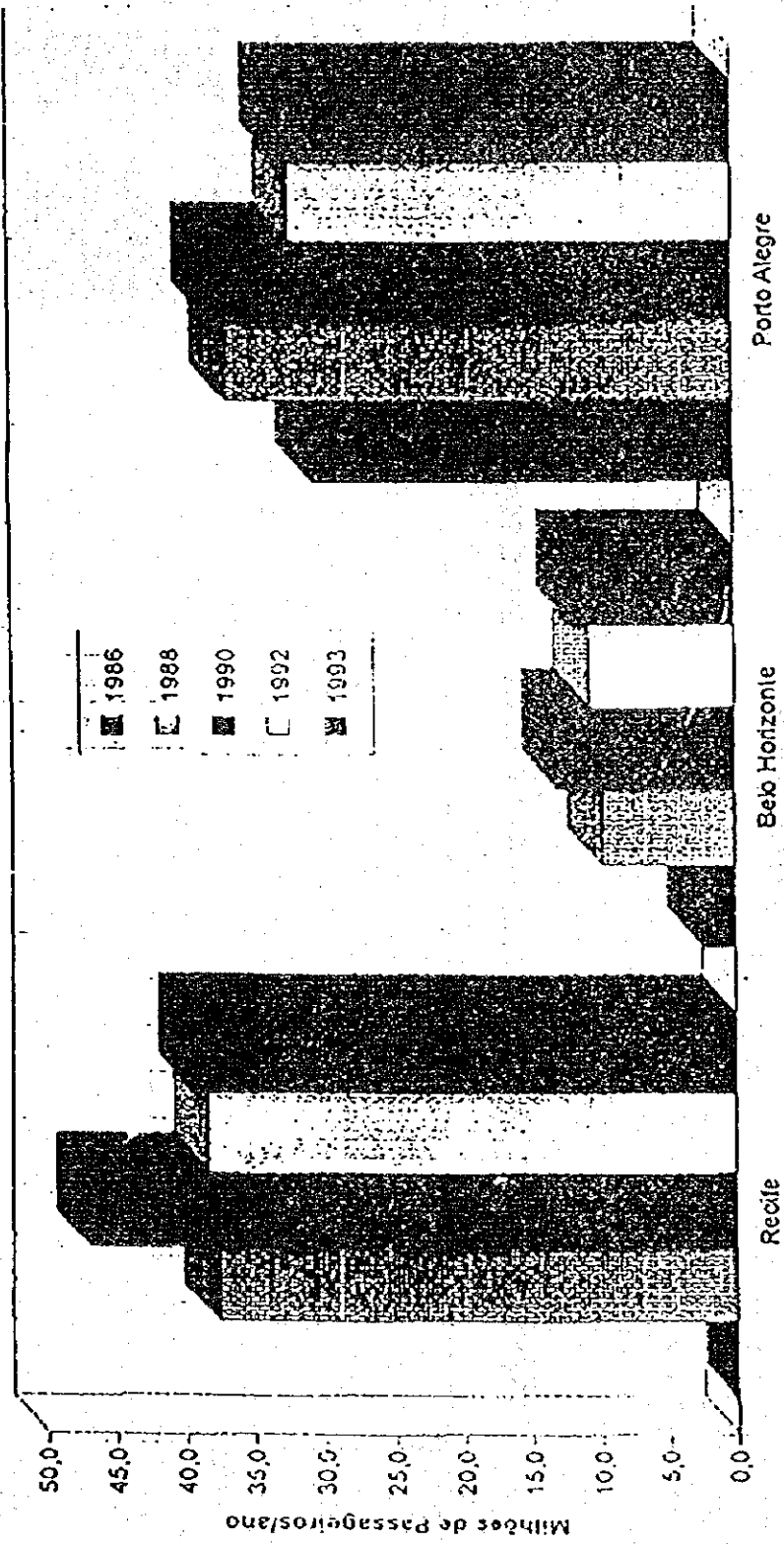
Fonte: CBTU e ANTP.

TAB8.XLS Gráfico 4

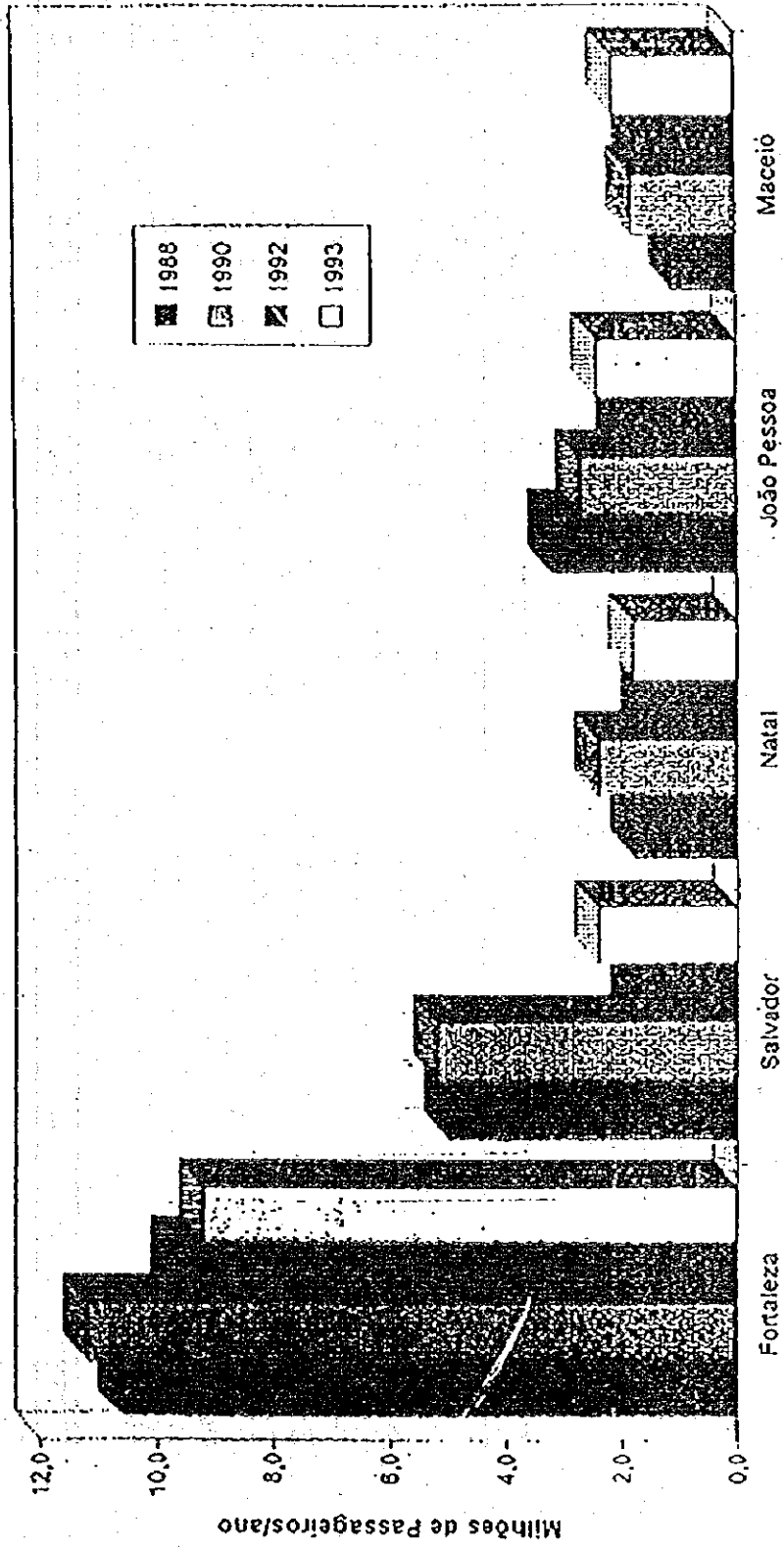
TRENS URBANOS - EVOLUÇÃO DA DEMANDA NOS SISTEMAS CONSOLIDADOS - 1986/93



TRENS URBANOS - EVOLUÇÃO DA DEMANDA NOS NOVOS SISTEMAS - 1986/93



TRENS URBANOS - EVOLUÇÃO DA DEMANDA NOS SISTEMAS EM IMPLANTTAÇÃO - 1988/93

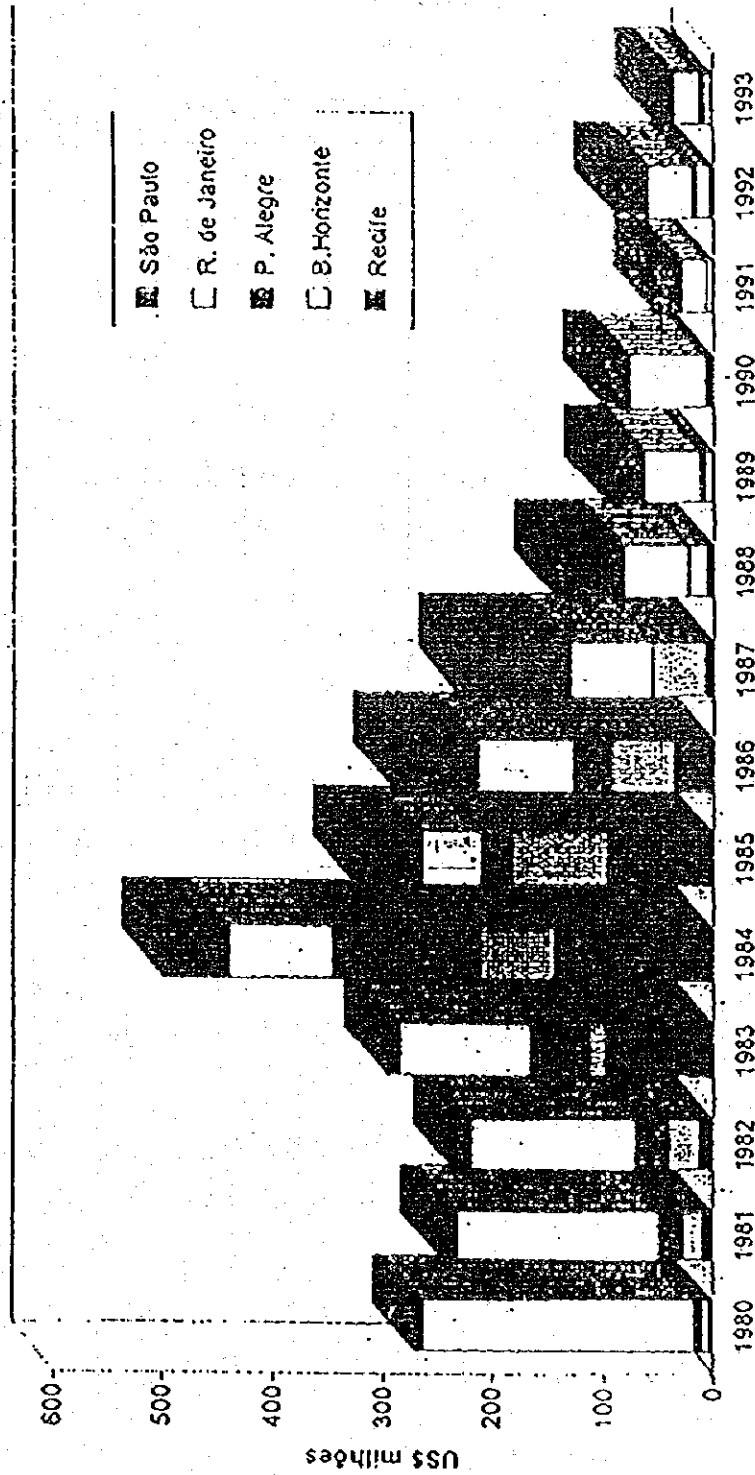


## TRENS URBANOS - EVOLUÇÃO DA DEMANDA 1986/93

Sistema/Área Urbana	Passageiros Transportados em Milhões/Ano		
	1986	1988	1992
A - CBTU	445,2	469,0	462,7
Fortaleza	-	10,6	11,2
Recife	-	37,7	46,9
Salvador	-	5,0	5,2
Rio de Janeiro	229,1	194,3	167,4
Belo Horizonte	2,6	9,8	13,1
São Paulo	213,5	205,5	212,0
Natal	-	1,8	2,4
João Pessoa	-	3,2	2,7
Maceió	-	1,1	1,8
B - TRENURB/Porto Alegre	30,7	36,9	38,1
C - FEPASA/São Paulo	86,9	68,9	80,1
D - METRÔ	570,4	630,9	675,4
Rio de Janeiro	104,9	90,0	66,0
São Paulo	465,5	540,9	609,4
TOTAL	1.133,2	1.205,7	1.256,3
			1.190,1
			1.198,7

Fonte: GEIPOP, CBTU e ANTP.

TRENS URBANOS - INVESTIMENTOS POR SISTEMA - 1980/93



TAB\_02A.XLS Gráfico 12

7. 交通（陸）分野 集団・特設研修のGIの送付方法について

	ブラジル	アルゼンティン
GI送付部数	45部 内訳 ブラジル事務所 35部 サン・パウロ事務所 5部 ベレーン支所 5部	10部
送付形式	JICAブラジル事務所よりDFTRに送付した上、DFTRが関係機関に送付する。	JICAアルゼンティン事務所が関係機関に直接送付し、アルゼンティン外務省に送付先を報告する。
送付する関係機関	1.連邦運輸・通信省 2.各州の交通団体 3.（分野によっては）市の関係団体 4.RFFSA 他（DFTRとしては鉄道関係団体に可能な限り送付し、そこから小規模団体へも送付するよう依頼しているとのこと。）	1.外務省 1部 2.運輸庁 3.FA（アルゼンティン国鉄） 4.FEMESA（首都圏鉄道公社） （注：運輸庁とFEMESAを通して、CENACAFにGIは送付される。）
備考		民営化された鉄道会社には現時点でGIは送付していない。

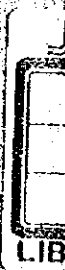








JICA



LIB