

Income of origin: This will be controlled under the responsibility of the Commercial Department.

### III.3.2.2 Reinforcement of the sales activity

#### (1) Organization of sales and collection of sales information

Regarding the organization of sales, according to the block diagram for freight sales of recent date (Fig. III.3.1), it is considered that coordination has been established for structuring the cooperation with the train operation sectors, and the effects of the sales efforts are becoming apparent.

The collection of sales information is a basic element for development of commercial activities. It would be necessary henceforth to realize speedy collection and adequate transmission of information in further strengthening of the sales sector.

For example, in the form for sales information which is currently used for the Southern Railway (Fig. III.3.2), there are many parts which must be written and is constituting the cause which prevents the information from being detailed and active on account of the deficiencies of preparation and lack of clarity of the writing of each person responsible. Thereafter it would be desirable that the forms for the reports be modified so that they can be completed by simple methods using crosses and circles and filling with numerical data. In this case the data which would at least be necessary would be the following:

- 1) Regional trends
  - a) The present trends and future directions of the productive activities of the main industries (Production capacity, bases of production, flow of raw materials and manufactured products, etc.)

- b) Present conditions and the future plans of the roads and the port installations of the zone.
- 2) Production trends of the main enterprises (enterprises which must resort to railway transportation services)
- a) Production capacity for the main goods, bases of the production (present and future trends), the destinations and the amounts
  - b) Main raw materials (sources of the shipments, means of transportation, their volume, etc.)
  - c) Investment plans for installations, transfer plans, financial situation of the company, origin of the capital, etc.)
  - d) Volume of transportation according to the means used (quantity, main destinations, time, tariffs, etc.)
  - e) Policy of the enterprises (criteria regarding marketing, including transportation and storage aspects, etc.)
- 3) Method of approaching the enterprises (the persons who have decision-making powers in the transportation sector)

It is necessary to establish the standard for presentation of periodic reports with the necessary data duly annotated by the persons responsible for each zone, the files of which must be kept in the corresponding station, and in the commercial section of the Superintendent and in the commercial management.

By this system it will be possible to create collective consciousness on the part of the personnel in charge of sales. It is also estimated that the approaching to

enterprises, the contracting of freight transportation, the procedures for performance of the transportation, etc., could be conducted expeditiously.

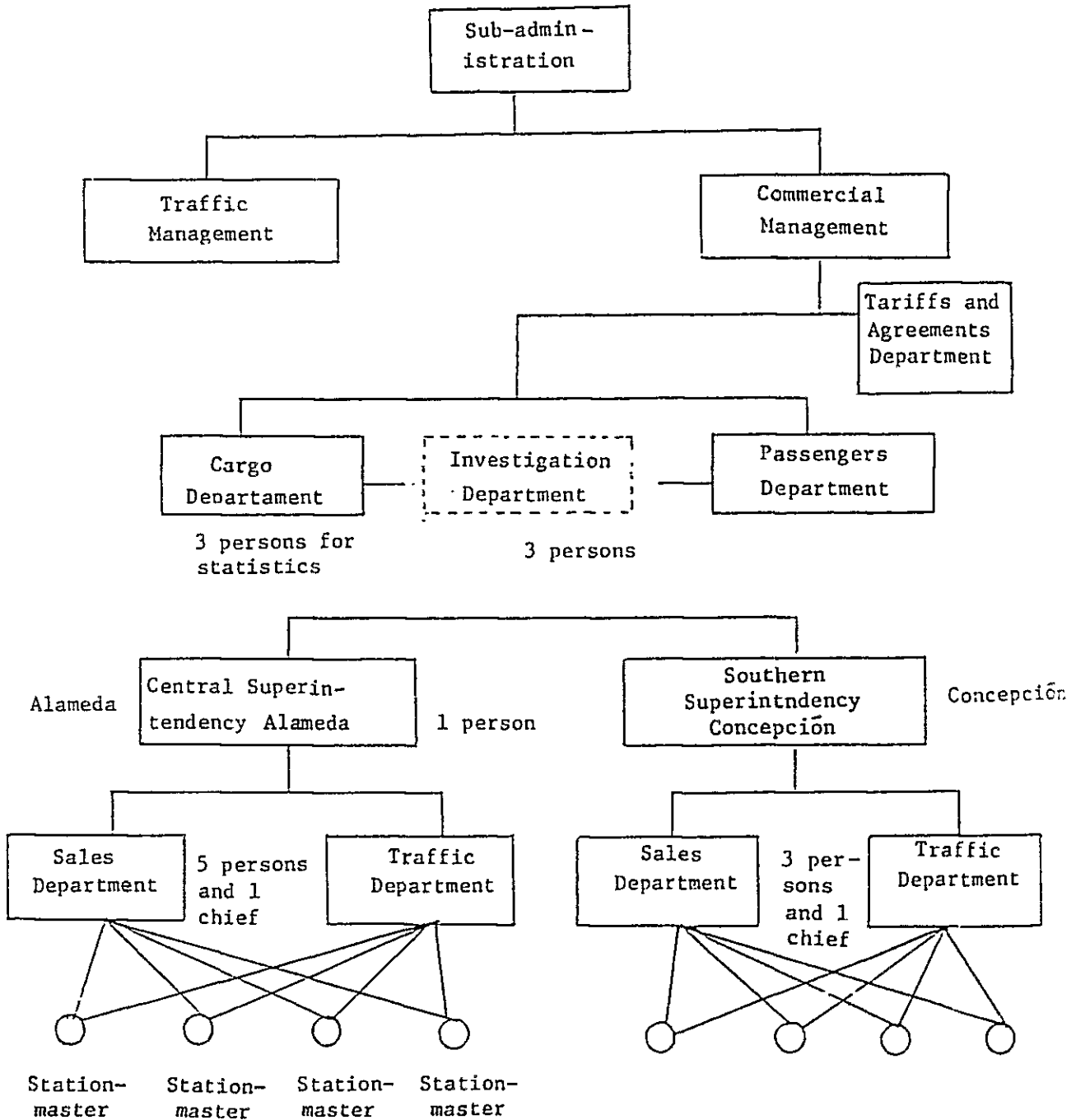


Fig. III.3.1 Block Diagram of the Freight Transportation Sales System

FORM FOR RELATIONS WITH CLIENTS

ENTERPRISE: \_\_\_\_\_

REPORT No. \_\_\_\_\_ DATE \_\_\_\_\_ PLACE \_\_\_\_\_

TYPE OF COMMUNICATION: \_\_\_\_\_

REPRESENTATIVE OF CLIENT COMPANY: \_\_\_\_\_

E.F.E. REPRESENTATIVE: \_\_\_\_\_

SPECIFIC: 1) \_\_\_\_\_

          2) \_\_\_\_\_

          3) \_\_\_\_\_

OBJECTIVE: \_\_\_\_\_

MATTERS DEALT WITH: \_\_\_\_\_

AGREEMENT: \_\_\_\_\_

PROBLEMS PRESENTED: \_\_\_\_\_

PERSONAL COMMENTS OF THE REPRESENTATIVE OF E.F.E. \_\_\_\_\_

\_\_\_\_\_

Fig. III.3.2 Report on the Sales Activities of the Southern Railway

(2) Clear definition of the duties on the sales activities

Within the existing structure, it seems that the contact with the individual clients is conducted separately by the different sections of the Sales Department of the Superintendence. However, thereafter it is necessary not only for the managerial sector but also the station to participate actively in the sales activities. For these purposes it would be necessary to define the duties on the sales activities which may correspond to for each zone and client.

Moreover, for the purpose of expediting the sales activities, the decision-making powers for establishment of the tariff discount rates in the contracting of the freight transportation should not be concentrated in the central

offices, and these powers must be delegated as far as possible to the zone administration departments. For example,

- 1) The central office has the decision-making power when the discount rates exceed a certain level. Within these limits, the power is delegated to the regional administrative section or department.

(In the case of the Japanese National Railways the Head Office makes the decision for discounts greater than 30%).

- 2) The Head Office has the powers on matters related to the transportation of basic materials which are important for EFE, such as wood, copper, petroleum, and wheat, and on matters concerning state-related enterprises, such as COPEC and CAP. In other cases, the powers are delegated to the regional administrative section or department.

(In the case of the Japanese National Railways the Head Office has the powers on the transportation of petroleum, cement, limestone, paper, and pulp).

The delegation of the powers to the lower levels must be determined taking into consideration the income plans, the measures for the increasing of incomes.

- (3) System of incentives for management, the station, and the personnel

When adopting the active promotion of the direct sales system to the personnel in charge of sales, it is considered necessary that the system of incentives which is detailed below is analyzed with the purpose of obtaining a fair evaluation of the effort made and at the same time to raise the spirit for achieving the goals for increasing of income on the part of the personnel.

- 1) Award of the General Manager of the Chilean State Railways, award of the Administrative Manager, award of the Superintendent.

The awarding is to be made to the administrative department or the stations, but their evaluation and the bases for the determination of the award must be analyzed so as to meet the actual situation of the Chilean State Railways.

- 2) Consideration to the customers

Granting to the consignors who have contributed to the increase of income.

In the selection of the object consignor and decision of the selection standard, it is desirable that the actual situation of the Chilean State Railways is taken into consideration.

- 3) Granting of an additional prize to the distinction

It is desired that the prize corresponding to the different types of awards are rendered to groups and organizations, in the form of commemorative objects or the awarding money.

- 4) The publication of the delivery of prizes through newspapers and domestic publications

It seems effective that the different prizes granted be widely publicized through periodicals or domestic journals.

(Reference) The awards for income for the transportation operation which are granted in the Japanese National Railways

(a) Award of the Head Office to the Railway Operating Division

The Railway Operating Division is selected which has shown good performance in conformity with the administrative standards of personnel established in April of 1964.

a) Award of the President of the Railways

Basically the awards are granted to the Railway Operating Divisions which have achieved the goals both in passenger and freight transportation.

b) Awards of the Directors of the Passenger and of Freight Departments

The two Departments, separately, select and award several Railway Operating Divisions per year, according to the income target attainment ratio, increase in income against the year before, etc.

(b) Award of the Railway Operating Division to the Stations

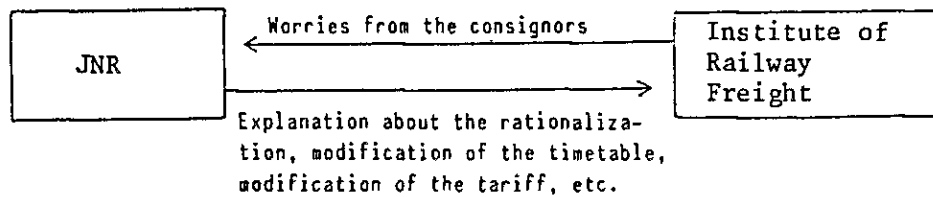
The stations are selected which have shown good performance according to the standards similar to those of the Head Office. (In this case the evaluations are made on the basis of the total income of passengers and freight.)

### III.3.3 Establishment of Railway Consignors Organizations

While the petitions of the consignors to the railway or the public relations of the railway to the consignors are conducted basically through individual contacts with customers, very different requirements may appear according to the activities of the consignors and differences of interests are frequently observed.

Consequently, it is necessary to participate in the different meetings of the organizations and associations of each activity in order to become familiar with the requirements of the freight owners. For the future it will be necessary to establish an organization of consignor users of the railway which allows direct contact with the customers for the purpose of precisely knowing the tendencies of the demands of the consignors.

(Reference) JNR and the Institute of Railway Freight Corporation



\* Institute of Railways Freight Corporation

Date of Establishment: October of 1950

Number of members : 8,466 (in June of 1982)

Organization                      Head Office: Establishment of 4 commissions formed by representatives of the consignors.

Commission tariffs,  
 Commission transportation,  
 Commission for the improvement of the freight operation system,  
 Commission for the promotion of the rationalization of freight operations.

Affiliates:                      30 affiliates in all the country



### III.4 PROPOSALS OF CONCRETE MEASURES FOR THE IMPROVEMENT OF FREIGHT OPERATION

#### III.4.1 Promotion of Individual Contracts

Taking into consideration the fact that the proportion of the income from individual contracts with bulk consignors currently exceeds 60%, it may be considered that the system is fairly widely in use.

It is desirable that this orientation be maintained for the future promotion of individual contracts. It is estimated that in this case better results may be obtained if the measures are taken by taking the following aspects into consideration.

(1) Prompt grasping of the results of the freight transportation

It is necessary to grasp the results of the freight transportation operations by customers after the individual contracts have been made and it may be desirable to put into practice the measures including the modifications of the discount tariffs based on the above results.

(2) Even if the consignors are large volume users, the freight characteristics may differ according to the following factors.

- Transport from one station to several stations
- Transport from one station to one station
- The existence or non-existence of sidings for exclusive use
- The existence or non-existence of freight cars for exclusive use

Consequently, it may be desirable to put into practice the measures which permit the differences in the costs to be reflected in the tariffs according to the different characteristics of the transportation.

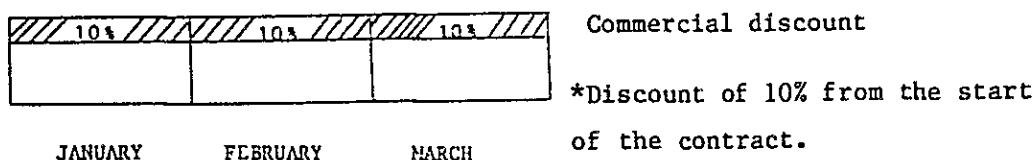
- (3) The customers of bulk load may be classified in two kinds, according to load types: bulk loads of fixed pattern and bulk but isolated loads.

For the customers of bulk loads of fixed pattern, it may be possible to apply the contracts which are currently in use. Nevertheless, for the consignors of bulk but isolated loads or for new customers, it is desirable to study the establishment of a system of "commercial discount with contracted freight tonnage" which applies the tariff discounts when they manage to reach the contraction of a determined volume.

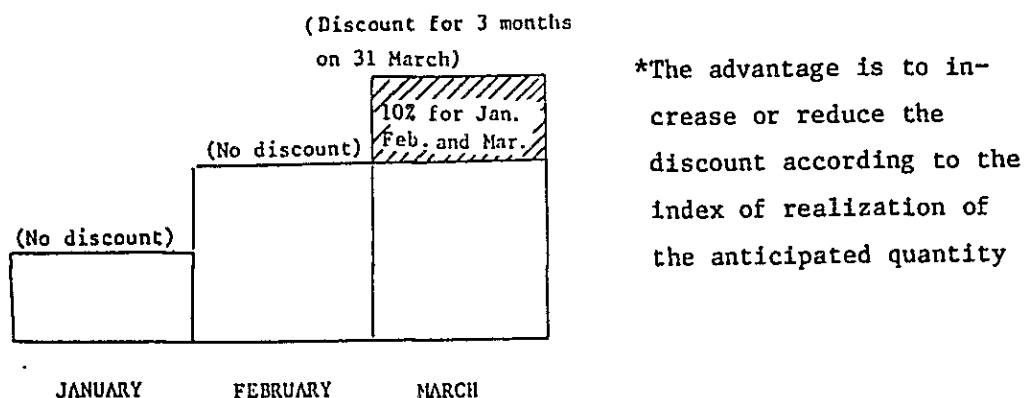
For the purposes of the application of this system, it is necessary to solve the problem of I.V.A. (Value Added Tax) as a premise for the refunds for the purpose of the commercial discounts which are made when the contracted volume manages to reach a determined level. Nevertheless, an adjustment may be possible by means of this system between the volume declared by the consignor and the commercial discount which may be applied.

(Reference) Commercial discount refund method

- Present method



- Commercial discount with contractual freight tonnage



### III.4.2 Promotion of Intermodal Transportation

Presently it is estimated that 80% of the loads are transported by trucks. Within a country narrow and long as Chile, it is logical that freight for long distance transportation is voluminous. According to the average distance of car-load transportation by commodities, as shown in Table III.4.1, essential materials for life, such as oats, beans, potatoes, wood, meat, cattle, and pigs are transported over long distances.

Table III.4.1 Commodities with Average Transportation  
Distance exceeding 500 km

Product	Medium distance	Product	Medium distance
Farming products	km	Livestock products	km
Barley	740	Meat	841
Peas, beans	537	Cattle	767
Potatoes	1151	Pigs	630
Other farming products	510	Other livestock products	590
Forestry products		Mineral products	
Sawn lumber	535	Gypsum	1258

(Chilean State Railways Statistical report)

As the products mentioned above are suitable for truck transportation, it is estimated that the conditions of competition are becoming more intense.

Consequently, if a system of integrated transportation is adopted, which consists of the combination of the characteristics of the railways in long distance bulk transportation with the merits of trucks for the dynamic transportation of short distances, many advantages may be obtained. For the railway, it will be the achievement of "the precise definition of the date of arrival", "the reduction of transportation time", "the service of direct transportation from door to door", etc., while for the trucks it

may mean "the reduction of costs by means of the efficient utilization of truck", "the saving of labor expenses", etc.

Nevertheless, in order to put this system into practice, it is firstly necessary to promote the use of marine containers and the piggy back system between the truck and the forwarding companies and at the same time to study the means for developing new demands by establishing tariffs which are favorable for the users.

(1) Strengthening of the marine container system.

The system of marine containers is currently being applied for the transportation per freight car unit in stretches as San Antonio and Santiago, in which both the time as well as the tariffs may sufficiently compete with trucks. In view of the increase in the use of marine containers, it is necessary that this service be expanded.

For these purposes, it is essential that the improvement in the following two points be made.

- (a) Marine container fixing element equipment on the flat cars
- (b) Adoption of the tariff system for each marine container unit

With respect to point (a), the current procedure is to fix each one of the containers on the freight cars with wire.

Nevertheless, it is necessary to consider the freight car equipment which has the fixing elements for the marine containers from the point of view of the reduction of expenses which may bear on the consignors, the reduction of handling time and the attainment of safety during transportation.

Also, according to the results of the questionnaires, strong demands for improvement exist on the part of the customers.

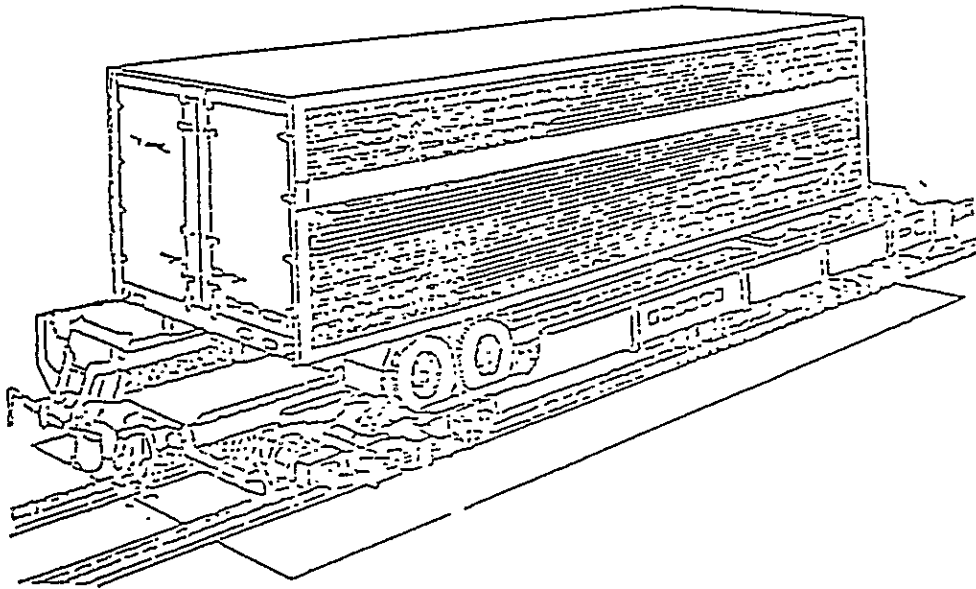
With respect to point (b), in the current system of car-load transportation, there occur cases in which a single container is loaded on one car, resulting in an unfavorable condition for both parties. Consequently, by means of adoption of tariffs per unit of containers, it would be possible to have the mixed load of containers of various customers and this may resolve the disadvantageous tariffing on both of the consumer and the railway.

(2) Analysis of the piggy-back system

There is a previous incident in which on one occasion the system of transportation of trucks on flat cars was resorted to on the Pua Lonquimay Line on the basis of T.E.21 when the overland route was not yet ready. Nevertheless, from the aspect of the orientation which from a position of competition must tend to the collaboration with truck transporters, it is necessary to seriously analyze the piggy-back method.

For the adoption of this system, it is necessary to analyze with care the sections of service, the timetables of the departures and arrivals and the speed of the trains. Also it is especially necessary that in those cases of electrified lines or the sections with tunnels in which there is the danger of exceeding the clearance limits, the modification of the wheels and the construction of the bogies are considered.

(Reference)



Loading of  
trailer car



Loading  
of truck



Fig. III.4.1 Piggy-back System Which is Envisaged  
for Development by JNR

### III.4.3 Promotion of Sales by Utilizing Forwarding Agents

As an example similar to the forwarding agents, there currently exists in the railways the provisions which are governed by T.E. 29.

The system consists in the promotion of the gathering of loads under the condition of granting a 3% margin for the case in which a collection of a minimum of 200 tons monthly is achieved by persons who have knowledge of the zone and contacts with the customers and who at the same time are familiar with the internal organization of the railways, usually retired people of railways.

This arrangement is considered important as a new intention for the gathering of loads, but regrettably under the current conditions, the sales are performed in a specific manner and on a small scale, and the effects achieved have not come to have importance due to the margin which was set at mere 3%, and due to the fact the provision T.E. 29 has taken as its main objective the loads in unattended stations, and because of impossibility of answering to collection of bulk loads due to the limitations of the transportation capacity.

For the future it would be necessary that the system at specific levels of small scale will be transformed into a system which permits the development and the intervention of forwarding agents of large volumes who have behind them an organization so that the collection of large quantities of freight is possible.

For the purposes indicated, the transportation must be analyzed according to the method of the trains of mixed freight as a means of attracting to the railways the loads which are transported by trucks in a proportion of 80% of the movement of goods of the country.

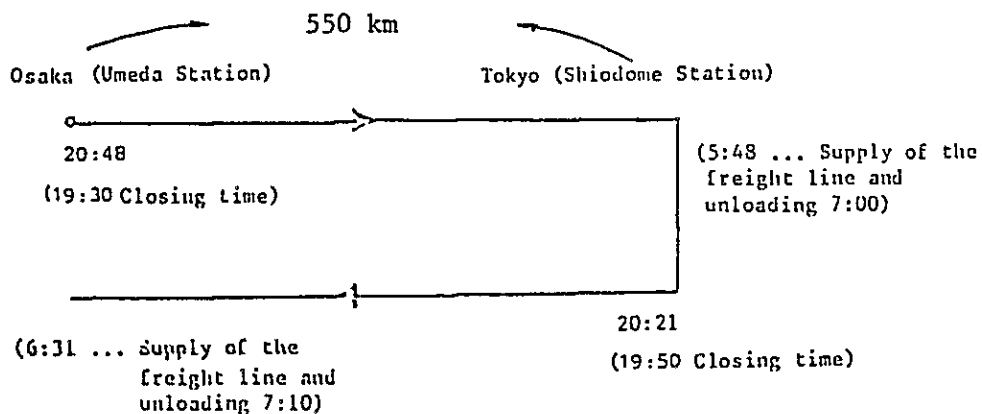
The system of trains of mixed freight consists of the method of transportation which is performed on the commitment of the units of various freight cars or of trains between the trucking com-

panies, maritime transportation companies (including those which perform the transportation of containers), the organizations of agricultural cooperatives and various organizations of companies which act as forwarding agents of the Chilean railways combining the loads of small lots which do not cover the capacity of a freight car and are forwarded under the name of the same forwarding agent.

An effective measure may result if this system is allowed the utilization of the capacity of the collection of loads of the truck transportation companies as a complement to the deficiency of the sales function of the railways.

In this case, a system would be necessary which takes into account the economic conditions, which involve establishment of more practical timetables and flexible tariffs within the relation which must exist between the forwarding agents and the railways. Therefore, it is desirable to carry out experiments after having carefully analyzed the sections of service, the transportation time and the setting of margins.

(Reference) Concrete example of JNR's train of mixed freight

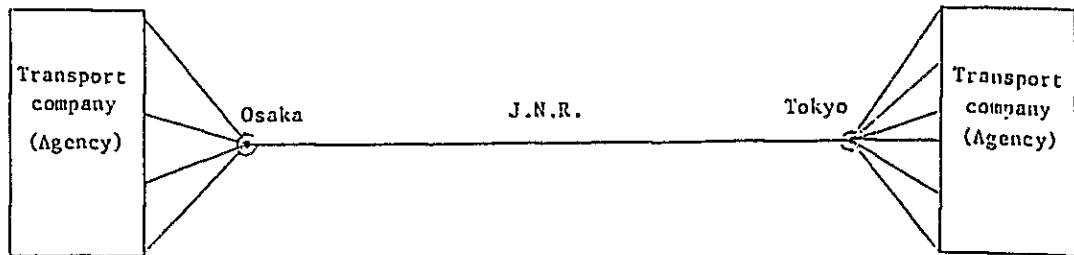


o Number of cars in train formation - depots of capacity of 30 tons (Volume of  $87.8 \text{ m}^3$ ) with 22 cars



o Contract system ... Sale of cars for the six transport companies of Tokyo - Osaka and four transport companies of Osaka - Tokyo (daily service)

o Cargo transported in 1980: 220,000 tons



#### III.4.4 Preparation of Freight Cars Suitable for Each Type of Commodity

As rolling stock appropriate for the different types of substances transported there are presently the long flat cars for transportation of wood, hopper cars for coal, hopper cars for wheat, tank cars for liquid fuels, refrigerator cars for transportation of meat, etc., which are to a certain extent adapted for their particular use.

However, according to the results of the inquiries which have been made by this Mission, opinions such as "defective cars are numerous and it is necessary for them to undergo sufficient maintenance and repairs", "it is desired that the cars be renovated", "there are excessive delays in the repair of cars", etc., are considerable.

To ensure prolonged and stable capacity of the consignors of bulk loads, it is necessary for the future to prepare the rolling stock as urgently as possible to adapt it to the needs of the users.

To achieve these aims it is necessary to consider the following measures:

- (1) Preferential distribution of the appropriate cars available for the railways

(2) Introduction of privately owned cars

Whilst it is certain that to satisfy point (1) above it is necessary to reform the cars which, in the available fleet of railway cars, can be adapted to the different needs, there are limitations with regard to the working capacity and the budgets for the purchase of the materials which are required for the modifications. For this reason it is necessary to analyze for the future the method of introduction of private capital as referred to in point (2) above.

In this case of introduction of privately owned cars it is necessary to study the possibilities of reduction of tariffs, reduction or exemption from the charges for the return of empty cars, reduction of the charges for purchase of cars (subsidies which would be equivalent to the exemptions allowed for the importation of big trucks), etc.

III.4.5 Review of the Tariff System

(1) Present situation

Within the present standards for the tariffs for freight of Chilean State Railways, the tariffs are classified into 4 categories, A to D, and for each category there is fixed the normal tariff (T.N.1), which constitutes the basic tariff.

In addition to the above-mentioned tariffs there are the Special Tariff and the Special Service Tariff. The structure of these tariffs depends on the class of freight and the class of car which is used, specific discounts or surcharges being applied. In addition, there are included the conditions necessary for establishment of the minimum weights and for calculation of the freight charges, the charges for use of handling equipments and use of cars, and the tariffs corresponding to marine containers.

The special tariff does not have the purpose of establishing a systematic classification which depends on the tariff and

the tariff classes, but of adopting the measures appropriate for correcting the tariffs at any time according to the variations of the market conditions, on the basis of tariff established according to the different categories.

(2) Orientation of the modifications

As explained previously, it is considered that the freight tariff system adopted by the Chilean State Railways has established differential tariffs which consider the capacity to absorb the freight charges, based on the weight and volume of the average load of a car according to the nature of the products transported.

Moreover, the other means of transportation have not adopted in their tariff systems classifications like those applied by the railways. Therefore the railway tariff system, which is based on the weight categories is not appropriate for the current conditions of severe competition.

Moreover, the railways of Chile are adopting the system of application of flexible tariffs by freight discounts according to the individual contracts made with the consignors, for the purpose of getting the bulk loads of fixed configuration, for which the characteristics of the railways are appropriate. However, they have in themselves limitations to meet the complex conditions of the market in the present tariff scheme.

On account of the above mentioned reasons, it is necessary that the modifications be directed, within the limits of the possibilities, toward simplification of the method of calculating the freight charges by abolition of the system of classifying the freight by categories and unifying the charges in a single basic tariff applicable to loads in general.

Moreover, it is necessary that the modifications be aimed at establishing a tariff system which permits the tariffs ap-

plicable to bulk loads of fixed configuration to be converted to the system of transportation of freight by a means which is efficient for the railways, and at the same time ensures that the transportation of bulk loads with fixed configuration will be beneficial to the clients.

Moreover, in case of adoption of the system of transportation between major key stations, which is proposed by the team of Project 1, it is necessary that the modifications be directed toward establishment of differential tariffs which are favorable to the users of the base stations in comparison with the users of other stations.

(3) Criteria for establishment of the tariffs

In case of establishment, in the future, of new tariff systems for the freight of Chilean State Railways on the basis of the guidelines of the above mentioned modifications, it is necessary to study the following aspects in particular:

1) Determination of the costs of transportation with distinction between passengers and freight

It will be necessary to establish the methods for itemized calculation of the costs of transporting passengers and freight and to determine the bases for establishment of tariffs which reflect as far as possible the transportation costs based on the characteristics of the transportation. (See Reference)

2) Determination of the individual costs

In case of introduction of a tariff system which permits adjustment to market conditions by means of individual contracts, it is necessary to fix the tariffs by analysis of the costs according to the individual conditions of each market. This means that even when the fixing of the tariffs is based on the costs, it is necessary to perform

thorough and precise analyses of the costs to ensure that the particular conditions of each case are taken into account, without recourse to a general determination based on averages.

(Reference) Calculation of itemized costs for passengers and freight of JNR

(a) Calculation of itemized costs for passengers and freight

The calculation of itemized costs for passengers and freight has the purpose of internal auditing by determination of income and expenditures within the limits of calculation possibilities under the premise that the passengers and freight are in equitable positions from the viewpoint of operation.

However, the following problems arise:

- a) In the costs of transporting passengers and freight on the same tracks there are aspects which can be itemized conceptually, as in the case of the costs related to the track installations. However, it is evident that there is a cost structure typical of railway operation in which the proportion of the common costs represents a substantial part and which effectively prevents an itemized determination of costs.
- b) Whilst the railway services may vary the structure of the timetables, the conditions of maintenance of the installations, the priorities of transportation in cases of disasters, which are factors affecting income and costs, for adoption of characteristics of the transportation system which conform with the actual conditions of changes of industrial structures, it is dif-

difficult to make an itemized evaluation of the above mentioned effects for passengers and freight.

When the calculations are made of the itemized costs for passengers and freight according to the method presently used, for itemization of the common costs of a) it concerns distribution on bases which permits evaluation according to the methods which are most rational, from the viewpoint of internal administration, taking into account the cost structure as mentioned, whilst for the aspect mentioned in b) it is not taken into account for the purposes of the calculation because of the difficulty for the evaluation.

The calculation method is as described hereunder. In this way it is possible to itemize approximately 95% of the income and approximately 50% of the costs.

(b) Method of calculation by passengers and freight

a) Cost

Items	Calculation Method					
Basic values	Taken as basis is the amount which results from the cost calculated by the itemized book balance, minus the items which do not constitute costs, such as the non-commercial costs and the depreciation.					
Calculation of the costs separated into passengers and freight	<p data-bbox="382 1525 1295 1659">Among the receipts issued by stations, etc., efforts are being made to determine the costs incurred directly for passengers or for freight.</p> <p data-bbox="382 1693 534 1727">(Example)</p> <table data-bbox="382 1738 1295 1962"> <tr> <td data-bbox="382 1738 805 1827">Costs corresponding to passengers:</td> <td data-bbox="805 1738 1295 1827">Costs corresponding to freight:</td> </tr> <tr> <td data-bbox="382 1827 805 1962">- Cost of the personnel for sales and control of tickets</td> <td data-bbox="805 1827 1295 1962">- Costs for the person responsible for the freight</td> </tr> </table>		Costs corresponding to passengers:	Costs corresponding to freight:	- Cost of the personnel for sales and control of tickets	- Costs for the person responsible for the freight
Costs corresponding to passengers:	Costs corresponding to freight:					
- Cost of the personnel for sales and control of tickets	- Costs for the person responsible for the freight					

Items	Calculation Method	
Calculation of the costs separated into passengers and freight	<ul style="list-style-type: none"> <li>- Costs of the switching of the passenger car</li> <li>- Costs of the crew of passenger train</li> <li>- Costs of the maintenance of the passenger cars</li> <li>- Costs of the buildings of the stations and the depots of train conductors and operation personnel administrative costs (Administrative personnel, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>- Costs of the switching of the freight cars</li> <li>- Costs of the crew of the freight trains</li> <li>- Costs of the maintenance of the freight cars</li> <li>- Costs of the buildings of the stations and the depots of the train conductors and operation personnel administrative costs (Administrative personnel, etc.)</li> </ul>
Calculation of the distribution of the common costs for passengers and freight	<p>For the costs of the common parts which cannot be separated into passengers and freight, the distribution is made on a rational basis corresponding to the causes of the costs incurred.</p> <p>(Example)</p> <p>Costs of maintenance of the tracks:            Running kilometres calculated for passenger cars and freight cars</p> <p>Costs of the maintenance of the contact wires:            Pantagraph kilometers divided into passengers and freight</p> <p>Costs of the investments in fixed installation required for the transportation:            Train kilometers according to passengers or freight</p>	

b) Income

Income, except for a part, is grasped by passengers and freight under the calculation system which is presently used in Japanese National Railways.

(c) Criteria concerning the individual costs of the freight

In recent years it can not be expected that the freight charge will cover all of the cost of transportation of freight because the freight traffic and the income have declined substantially in comparison with those for passenger transportation. Consequently, for improvement of operation, a policy has been established which fixes as target the possibility of covering in the total costs for the transportation of freight only the costs created by the functions specific to freight, i.e. the individual costs.

3) Establishment of the tariffs for handling and transportation of containers by units

Regarding the tariff for the transportation of marine containers, there is established by T.S.E.19 a special tariff which fixes the tariff for one or two containers per car. However, it is estimated that this tariff per container unit is applicable for the treatment given as freight for the complete cars. This means that the loading of two containers in one car is allowed when the stations of origin and destination and the consignor are the same, whilst in the case of different consignors the loading of 2 containers in a single car is not possible. It is considered that this is due to the fact that originally freight was handled on the basis of car units, i.e. on the basis of hiring of the car.



Consequently, in the case of loads of marine containers, which differ from other individual general car-loads presenting a hermetic unit of uniform configuration and easy to handle, with weights determined by the type of container it is necessary to establish a new system for treatment to analyze the application of tariffs by unit of containers.

4) Establishment of the freight tariffs for privately owned cars

The establishment of tariffs to be applied for privately owned cars, is regarded as an important problem which must be studied from the viewpoint of the measures which must be taken in future for special cars suitable for various types of commodities (III.4.4) together with incentives for introduction of privately owned cars.

As a method of repaying the costs of investment in privately owned cars there is the method of allowing discounts on the freight tariffs, and the recognition paid by the use of cars.

JNR uses the system of freight tariff discounts, the details of which are the following:

a) Discount for loaded cars. The discount is 15% on the normal rates

b) Exemption from application of minimum rates

c) Tariffs for the return of cars

80 km is deducted from the kilometerage for application of the freight rates (no charge up to 80 km)

d) Tonnage for calculation of the freight charges

Established according to the type and model of the freight cars

(4) Collection of the freight charge accounts

The volume of freight transported by the Chilean State Railways during the year 1980 amounted to 4,679 thousand tons, the income from which was 2,136,507 thousand Pesos including the value added tax (I.V.A.) (approximately 10,680 million Yen at the exchange rate of 5 Yen per Peso), of which 1,367,800 thousand Pesos, representing a 64% share of the freight income, i.e. more than half, is paid by deferred payment.

The procedures for collection of the freight deferred payment of the Chilean State Railways is performed by the accounting section, although these functions involve a large number of personnel, because of the investigation of the references and solvency of the clients prior to the granting of credit facilities for the tariffs, and the difficulties of the procedures in cases where collection delays occur.

Table III.4.2 Situation Produces Due to Delays in Payments  
(Deferred payments) for Service of Freight  
with Current Accounts

Year	Clients' Names	Amount of Pesos (\$ in debt	Procedure situation (situation of settlement)
1980	Export-Chile	405,463	Pending (Juridical)
1980	Madinsa	258,394	Compensation
1980	Pino-Export	533,608	Paid (fine)
1980	Soc.Mad.Agric.	316,065	Pending (Juridical)
1980	Traunfer	348,347	Pending (Juridical)

(Example)

It is considered that one of the methods which could be adopted is that of entrusting the collection process to banks. However, the bank guarantee costs are high and also to obtain the guarantees it is necessary to have the guaran-

tee of a third party or it is necessary that guarantees be given with collateral of considerable value, which necessarily could cause major problems or inconveniences. Therefore, for the future it is necessary to establish a structure formed by consignors and the group of banks which guarantees the deferred payments, for analysis of the possibility of delegating these functions by guarantee rates of low level.

Described hereunder for reference purposes is the system of payment of freight charges by deferred payment.

(Reference 1) System of payment of freight by deferred payment of JNR

In accordance with the general commercial procedures, the following system of payment by deferred payment is adopted for application to ordinary consignors.

- (a) On the request of the consignor, it is allowed when the monthly mean freight amount exceeds 100,000 Yen
- (b) The guarantee will be given in one of the following forms:
  - a) In cash or in negotiable stocks or bonds acceptable to the National Railways
  - b) Joint guarantee of banking institutions
- (c) In the case where payment by deferred payment is authorized, the amounts of the freight charges of one month will be able to be paid at the end of the following month.
- (d) In the case where the amount of the freight charges exceeds the amount of the guarantee or when payment within the agreed time is not possible, the system of payment by deferred payment is suspended.

(Note) Results of the year 1981.

Ordinary consignors	53,200 million Yen
Transportation enterprises	219,000 million Yen
Official institutions	1,800 million Yen
TOTAL	274,000 million Yen

The proportion of freight income received under the deferred payment system represents approximately 83% of the total. (The freight income during the year 1981 was 328,900 million Yen.)

(Reference 2) Association of Transport Guarantee (Guarantee of deferred payment)

- (a) Date of establishment      May 1956
- (b) Purpose of establishment      To guarantee payment of freight charges payable on deferred payment account to Japanese National Railways, to aid the finances of transportation companies and consignors.
- (c) Stockholders      Dai-Ichi Kangyo Bank and other banks, the transportation company Nihon Tsuun and other transportation companies
- (d) Amount of capital      300 million Yen at the end of October 1982

### III.5 ADVERTISING AND PUBLIC RELATIONS ACTIVITIES

#### (1) Advertising and public relations directed at consignors

The basic criterion concerning the present advertising consists of performing activities on the basis of an annual budget, the amount of which is small and does not permit performance of sufficient activity. The advertising concerning freight is limited to a restricted quantity of posters and advertisements in periodicals, concerning the discounts allowed for the transportation of livestock and the return of empty cars.

In the present situation the advertising expenditures for passengers and for freight are in the ratio of 60 and 40, the expenditure on passenger advertising thus being greater.

The causes lie in the fact that the advertising for passenger transportation is directed at a numerous and indeterminate public and must cover an extensive area, whilst the advertising for freight is aimed at specific points within a defined area.

For the future it is necessary to promote the obtaining of freight for introduction of mixed freight services, the piggy-back system, the transportation of containers, etc., by advertising directed at an indeterminate and large number as in the case of the advertising directed at passengers, in order to ensure full knowledge on the part of the numerous consignors, whose expenditure would be desirable to ensure for example by joint promotion with user clients.

At the same time as making visits to the consignors of bulk loads or potential new customers, it is considered necessary to supply brochures, calendars, note paper, timetables, etc.

Moreover, it is desirable that in the future on each occasion when "new tariffs", "new discount systems" and "new transportation methods" are adopted, the appropriate communications be issued, particularly so that there will be promotion directed at the big consignors who deserve some consideration.

- (2) Advertising directed at the state concerning the present situation of transportation of materials

As stated by the Chilean State Railways:

- 1) The construction and maintenance of the roads used by the trucks which compete with the railways are financed almost completely with funds provided by the State, whilst in the case of the railways, all of the construction and maintenance must be done with the Railways' own funds.
- 2) Regarding the use of roads, the degree of deterioration of the roads caused by heavy trucks is extremely high, as demonstrated by AASHO in the United States.
- 3) Moreover, for motor vehicles, cars, buses and trucks there are tax exemptions, and heavy trucks are exempted from payment of import duties, fuel taxes, motor vehicle insurance taxes, etc., and this represents an indirect subsidy of 4 to 30 million dollars.

If everything stated above is true, it is considered that advertising directed at the State would be a means of demonstrating the inequality which exists in the system of state subsidies, whilst the state is able to order the railways to transport materials free of charge on occasions when there are disasters, or of making public the demands for installation of weighbridges for checking overloads on the roads from the viewpoint of legitimate competition with motor vehicle transportation.

### III.6 RELATED ACTIVITIES

- (1) Use of the station yards

At the present time there is leasing of installations for the storage of freight and equipment, and of the sidings of the

stations for use by consignors under the control of the Property Administration Section. It can be considered that these operations are having some positive results. (These operations are performed in the stations of Concepción, Valparaíso, Puerto Montt, etc.).

However, the present method does not make any clear distinction between leasing to users of the railway and non-users.

In this regard it is considered necessary that the bases be clearly established for the future.

Consequently, as a leasing method which could be adopted in the future it is necessary to study the following measures:

- 1) Establishment of different tariff for railway consignors and for other consignors
- 2) Renewal of the contract with limitation of the leasing period and establishment of the conditions for deciding whether the contracts should or should not be renewed according to the degree of use of railway services

In this case it is necessary to establish a system which adequately reflects the orientation of the commercial sectors at the time of renewal of the contracts the "Property Administration Section".

(2) Promotion of related activities

As future activities it would be desirable to introduce private capital and technology in relation to the installations for the collection and handling of freight, for the intermodal transportation, to permit combined direct transportation of rolls of paper for newspapers, cement, petroleum, etc., for the purpose of ensuring stable transportation of freight by establishment of an operating organization which operates storage installations such as silos, transporting vehicles such as tank cars, installations and equipment for the handling of loads, etc.

(References)

Specific examples of the promotion of related activities by JNR  
(in relation to freight)

1) Nippon Oil Terminal Co., Ltd

(a) Purpose of the company:

a) Operation of installations for loading, unloading  
and handling of petroleum substances transported  
by railway

b) Transportation of petroleum substances

c) Activities related to or connected with the above

(b) Date of establishment:

October 1966

(c) Capital:

800 million Yen (with 50% contributed by JNR)

(d) Stockholders:

JNR, 12 oil companies and 2 oil transportation com-  
panies

(e) Amount transported by the railways (only that  
transported by cars during the year 1980):

3,926,000 tons

(f) Number of operating bases:

8 bases

2) K.K. Iidamachi Paper Center

(a) Purpose of the company:

a) Operation of stores



- b) Transportation operations
- c) Freight transportation by motor vehicle
- d) Activities related to and connected with the above

(b) Date of establishment:

April 1971

(c) Capital:

830 million Yen (with 48.2% contributed by JNR)

(d) Stockholders:

JNR, 8 paper companies and 2 transportation companies

(e) Amount transported by the railways (according to the records for the year 1980):

526,000 tons

(f) Number of operating bases:

1 base

3) Cement Terminal Co., Ltd.

(a) Purpose of the company:

a) Operation of installations for loading, unloading and handling of cement transported by Japanese National Railways

b) Cement transportation operations and transportation of freight by motor vehicle

c) Activities related to and connected with the above

(b) Date of establishment:

April 1972

(c) Capital:

500 million Yen (with 50% contributed by JNR)

(d) Stockholders:

JNR and 7 cement companies

(e) Amount transported by the railways (only that transported by freight cars, according to the records for the year 1980):

573,000 tons

(f) Operating bases:

5 bases

4) Nippon Freight Liner Co., Ltd

(a) Purpose of the company:

- a) Operation of installations for loading, unloading and handling of containers transported by the railways
- b) Transportation of containers between the container transportation bases and the depot of containers
- c) Transportation operations and overland transportation related to containers
- d) Development of technology related to handling equipments and elements for the transportation of containers.
- e) Research and development of data processing technology.
- f) Activity of the insurance agency for damage and insurance based on the law concerning compensation for motor vehicle damage.

- g) Activities related to and connected with the above.
  - (b) Date of establishment:  
April 1969
  - (c) Capital:  
100 million Yen (with 50% contributed by JNR)
  - (d) Stockholders:  
JNR, Nippon Express and Zenkoku Tsuun
  - (e) Volume handled (between October 1979 and September 1980):  
Units consigned: 165,000 units  
Units loaded and unloaded: 3,512,000 units  
Units transported: 33,400 units
  - (f) Sales offices:  
33 offices
- 5) K.K. Tokyo Liquid Chemical Center
- (a) Purpose of the company:
    - a) Operation of installations for loading, unloading and handling of liquid industrial chemical products transported by the railways
    - b) Transportation business of liquid type chemical industrial product
    - c) Operations of port transportation of liquid industrial chemical products
    - d) Activities related to the processing and sale of liquid industrial chemical products

- e) Activities related to and connected with the above
- (b) Date of establishment:  
August 1967
- (c) Capital:  
420 million Yen (with 50% contributed by JNR)
- (d) Stockholders:  
JNR and 22 companies which manufacture chemical products
- (e) Amount transported by the railways (according to the records for the year 1980):  
200,000 tons
- (f) Number of operating bases:  
2 bases



IV. PROJECT 2-2  
(MEASURES FOR THE COMMERCIAL POLICY  
OF THE PASSENGER TRANSPORT)



#### IV. PROJECT 2-2 (MEASURES FOR THE COMMERCIAL POLICY OF THE PASSENGER TRANSPORT)

##### IV.1 GENERAL ASPECT OF THE STUDY

###### IV.1.1 Objective of the Study

This study team has carried out investigations about the present situation of the "Ferrocarriles del Estado de Chile" (Chilean State Railways) in two stages, ranging between July and August and November and December 1982, in order to set concrete recommendations necessary for the following aspects:

- (1) The travelling tendencies of the Chilean population, the present situation of the operation and the opinions with regard to the Chilean State Railways
- (2) Legal restrictions toward the Chilean State Railways
- (3) Procedure of the Chilean State Railways with regard to the 2 points mentioned

###### IV.1.2 Methods of the Study

- (1) With regard to the investigations concerning the travelling tendencies of the Chilean population, the situation of the development and the opinions about the Chilean State Railways, investigations were made by means of questionnaire to gather public-opinion, by interrogating passengers, and through field investigations.

The investigations by questionnaire to know public-opinion were made from 3 to 6 August 1982, in 14 trains, asking questions to about 2,000 persons who used the train as means of transportation.

- (2) With regard to the investigations concerning the legal restrictions for the Chilean State Railways and the concrete measures of it with regard to the restrictions and the proce-



dures of the Railways, the team concentrated on compiling the verbal information obtained from the organizations that belonged to the counterpart of the part of the institution.

With regard to the motivations that could not be grasped through the said investigations, the team proceeded by interrogating experts and travel agencies.

The main aspects of the theme of the investigation were the following:

- 1) Basic criteria related to the passenger services
- 2) Organization concerning the passengers in the Southern Railway
- 3) Passenger fare systems and legal restrictions
- 4) Various measures to increase the income
- 5) Present situation of the system for reserved seats
- 6) Present situation of the transportation plans
- 7) Present situation of the related activities and commercial activities within the areas of the station
- 8) Present situation of the travel agencies
- 9) Present situation of the sections competing with other means of transportation
- 10) Present situation of the market research

#### IV.1.3 Results of the Study

According to the results of the study, there are no legal restrictions for the operation of the passenger services by the Southern Railway, being limited to developing maximum efforts within the major imposed conditions which consist in ensuring equilibrium of the operation, and it is considered that there are no grounds for

recommendations if we take as premise the system presently being adopted by the Chilean State Railways.

It is considered especially difficult to achieve better improvement or efficiency in relation to the method to establish passenger tariff rates, the method to establish the transportation capacity and the method for handling of the personnel assigned to the service.

(Note 1) With regard to the method to establish the passengers tariff rates, the said method is being handled in a flexible and meticulous way taking into consideration the equilibrium in relation to the bus fares and the transportation regulation.

(Note 2) To determine the transportation capacity, the railways are adopting the transportation system according to the movement flow. For example it is possible to add cars to the train up to one hour before the departure of train.

(Note 3) Days shift of the working staff is organized by a system of daily alternated work fitted to the actual situation.

However, if we look at the general aspects of the sales, the system, the method and means presently being adopted could not be considered as most advanced, and more efficient results should be obtained by improving these aspects.

In other words, it is believed that it would be difficult to execute the new sales measures without improving the aspects mentioned.

The aspects subject to improvement are the three points detailed below:

(1) Conditioning of the basic structure to be able to develop the sales measures.

The number of passengers transported between 1972 and 1981 suddenly decreased as can be seen in Table IV.1.1.

It is considered that the reasons could be conditioning of the road network, increase of the number of cars, increase of the prices, etc., but among other causes, we can say that "In the Chilean State Railways there are no sales". Within the transportation activity, it is considered that the ideal relation between the transportation capacity and the selling capacity is as follows:

Selling Capacity  $\geq$  Transportation Capacity

Table IV.1.1 Evolution of the Passengers Transported of the Chilean State Railways

Year	Passengers Transported	Relation Compared with the Previous Year
1972	24,347,000	(%)
1973	27,575,000	13.3
1974	26,283,000	- 4.7
1975	20,107,000	-23.5
1976	21,631,000	7.6
1977	18,668,000	-13.7
1978	13,815,000	-26.0
1979	11,390,000	-17.6
1980	9,336,000	-18.0
1981	10,931,000	17.1

The "sales" were practically not developed within the present activities of the Chilean State Railways.

Evidently, the organization of the sales structure cannot be done in one day. Consequently, it is necessary to start the improvement of two sides; the hardware (i.e. improvement of seat reservation system, etc.) and software (regulations, goal control system, utilization of external enterprises, etc.)

(2) Improvement of the seat reservation system

In parallel to the improvements of the standards related to the sales and the system to control the income goals, it is

necessary to improve the seat reservation system, which is the means to achieve the above. The method presently being adopted by the Southern Railway for the reservation of seats is very accurate, but its disadvantage is that all the operations are manual and extremely rudimentary. Consequently if this system is not improved, it would be impossible to develop the selling measures which includes complementing the sales network, extending the period of reservations and increasing train frequencies.

Therefore, it would be necessary to speed up the process of improvements such as, for example, introduction of computers for processing of the works indicated.

(3) Improvement of the conditions of the rolling stock and tracks

Taking into consideration the output of the use of the means of transportation, the distance of the trips made by the passengers in the Chilean State Railways, the states of the roads in Chile and the distances between large cities, it is believed possible to increase the volume of passengers by improving the conditions of the rolling stocks and railway tracks.

Particularly the sections between Alameda - Chillán, Alameda - Concepcion, Alameda - Temuco, Alameda - Valdivia and Alameda - Osorno are of a length favourable for transportation by rail, and so it is estimated that penetration of the Chilean State Railways in the said sections can be increased in relation to the present levels if measures are taken to improve the conditions of the cars and the tracks, to reduce the travelling time, to make the services reliable, etc.

This aspect can be understood by the increase of the number of passengers transported in the section between Alameda and Chillán in 1981, as compared to 1980, and it can be interpreted accurately through the results of the investigations by

questionnaires carried out previously. It is evident that the conditions of the cars and tracks must be improved as soon as possible.

(Note) The theme for improvement of the cars is not dealt with in this report since this work requires great resources and time, and on the other hand, the requests formulated by EFE for this Study Mission were centered on measures that would give results with immediate effects.

## **IV.2 GENERAL DESCRIPTION OF THE PASSENGER SERVICE ON THE SOUTHERN RAILWAY**

### **IV.2.1 Characteristics of the Passenger Service**

The characteristics of the passenger service on the Southern Railway are indicated in Table IV.2.1.

Within the total length of 6,515 km of railway tracks of the Chilean State Railways, the Southern Railway Network represents 3,602 km, of which 2,400 km are the total distance of the network for passengers service. With regard to the central trunk line between Alameda and Puerto Montt, it has a length of approximately 1,080 km.

The passengers service of the Chilean State Railways is presently concentrated on the Southern Railway. Of the total of 10,984,000 persons transported by the Chilean State Railways, 99.5% represented by 10,931,000 persons correspond to the Southern Railway.

With regard to the comparisons between stations, the Station of Alameda shows the largest number of passengers using this means of transportation, occupying 14% of the total number of passengers in the Southern Railway, which in terms of total income, represents 35%.

#### IV.2.2 Importance of the Railways in the Zone of the Southern Railway

Table IV.2.2 shows the participation of the various means of transportation for passengers in the zone of the Southern Railway. The railways have a participation of 1/4 of the market, against approximately 3/4 for the buses. The high percentage for buses is explained by the fact that bus services are available in places where there is no railway service. But in any case, as shown by the geographic conditions of Chile, the main railway lines run in a direction nearly parallel to the main roads (Panamerican road), the main routes being the sectors in competition with the bus service. The participation of the railways in the transportation market, for the main sections, is indicated in Table IV.2.3 which shows that in the section between Santiago and Chillán, the participation of the railways as compared with that of the buses in terms of number of hours travelled is greater with a percentage of approximately 80%.

Likewise, in the sections between Santiago and Concepción and between Santiago and Temuco, the use of the train prevails over that of the buses, with a participation ranging between 50 and 60 %, while for the disadvantageous short distance section and time of travel, such as the section between Santiago and Rancagua, it is out of competition, with about 10%. With regard to the long distance section, such as between Santiago and Puerto Montt, the railways are exposed to strong competition by the buses and airplanes due to inappropriate rolling stock and time tables and to insufficient reliability of the service.

Although in Chile road transportation prevails over railway transportation, the distance covered by bus service could be limited to a maximum of 300 km, if we consider the present conditions of the roads. For example, transportation by bus over 400 to 500 km, requires 7 to 8 hours with an average speed of 60 km/h, which results in tremendous physical stress. On the other hand, it is considered sufficiently possible to compete with the buses by operating a railway service with a travelling time of 4 to 5 hours for this same distance, at an average speed of 100 km/h.

This example can be seen in the section between Santiago and Chillan (398 km), covered in 4 and a half hours by train and 6 and a half hours by bus. This way, railway service is in a condition to compete with the bus service, but there is a great disadvantage as compared to transportation by bus, in the way buses are more frequent, and this hinders the utility of the train service.

Table IV.2.1 Summary of the Passenger Services on the Southern Railway of the Chilean State Railways (in 1981)

Railway for passenger service	2,400 km (included: electrified stretch of 822 km, and double rail, stretch of 134 km)		
Number of stations with passenger service	308 stations (251 stations with personnel, 57 stations without personnel)		
Number of cars used according to class.	First	191 (cars)	
	Second	337	
	Salón	16	
	Sleeper	19	
	Electrical vehicles	136	
	Total	699	(17 dining cars are not included in these data)
Annual number of passengers and income according to class.  (Calculated 1 US dollar = 60 pesos)		Number of passenger	Income
	Super Salón	111 (in thousands of persons)	1,190 (in thousands US\$)
	Salón	536	5,425
	First	7,038	11,478
	Second	3,246	4,503
	Others	-	1,319
	Total	10,931	23,915
(Note) Other income is from bed and platform tariffs			
10 stations with greatest number of passengers and income.		Number of passengers	Income
	1	Alameda 1,498 (in thousands of persons)	Alameda 508,407 (in thousands of pesos)
	2	Viña del mar 617	Concepción 93,801
	3	Puerto 501	Talca 79,962
	4	Quilpué 447	Chillán 68,067
	5	Concepción 428	Temuco 59,187
	6	Talca 417	Linares 35,614
	7	Chillán 271	Valdivia 31,424
	8	Mapocho 258	Osorno 30,191
	9	Villa Alemana 235	Curicó 28,908
	10	Temuco 229	Rancagua 24,885

In the future, it is considered important to improve the services, in view of which it is necessary to emphasize the transportation operations between cities, the first measure consisting in increasing the speed in order to reduce the travelling time, increasing the frequency of trains and improving the rolling stock. With regard to the OD (Origin and Destination) Table of the main sections, please refer to ATTACHEMENT 7.



Table IV.2.2 Annual Transition of Passengers Transported by Train, Bus, and Airplane  
in the Commercial Zone of the Southern Railway

Means No. of Passengers Year	Train		Bus		Airplane		Total	
	No. of pas- sengers (in thousands of persons)	Differences with rela- tion to the preceding year (%)	No. of pas- sengers (in thousands of persons)	Differences with rela- tion to the preceding year (%)	No. of pas- sengers (in thousands of persons)	Differences with rela- tion to the preceding year (%)	No. of pas- sengers (in thousands of persons)	Differences with rela- tions to the preceding year (%)
1970	(36.83%) 20,583		(63.01%) 35,214		(0.16%) 86		(100.00%) 55,883	
1971	(34.36%) 20,185	-1.93	(65.46%) 38,461	9.22	(0.18%) 105	22.09	(100.00%) 58,751	5.13
1972	(38.63%) 24,327	20.52	(61.23%) 38,563	0.27	(0.14%) 87	-17.14	(100.00%) 62,977	7.19
1973	(43.30%) 27,533	13.18	(56.58%) 35,975	-6.71	(0.12%) 76	-12.64	(100.00%) 63,584	0.96
1974	(43.86%) 26,239	-4.70	(56.08%) 33,548	-6.75	(0.06%) 38	-50.00	(100.00%) 59,825	-5.91
1975	(37.06%) 20,072	-23.50	(62.90%) 34,063	1.54	(0.04%) 23	-39.47	(100.00%) 54,158	-9.47
1976	(18.64%) 21,599	7.61	(61.33%) 34,278	0.63	(0.03%) 18	-2.17	(100.00%) 55,895	3.21
1977	(33.03%) 18,762	13.13	(66.93%) 38,014	10.90	(0.04%) 24	33.33	(100.00%) 56,800	1.67
1978	(24.17%) 13,805	-26.42	(79.78%) 43,287	13.87	(0.05%) 31	29.16	(100.00%) 57,123	0.57

Table IV.2.3 Annual Transition of the Number of Passengers Transported by Train, Bus, and Airplane in the Main Sections (Going and Returning)

(Unit: Thousands of persons)

Section	Means of transportation	Years				HOURS	RATE	FREQUENCY for one day
		1977	1978	1979	1980			
Santiago   Rancagua	Train (Participation)	257 (13%)	225 (12%)	193 (11%)	133 (7%)	1:00	420 90	15
	Bus Total	1,743 2,000	1,710 1,935	1,583 1,776	1,800 1,933	1:30		
Santiago   Chillán	Train (Participation)	240 (76%)	242 (80%)	253 (79%)	211 (79%)	4:30	550 370	12
	Bus Total	76 316	61 303	69 322	56 267	6:30	400	17
Santiago   Concepción	Train (Participation)	295 (57%)	269 (60%)	238 (53%)	188 (55%)	7:30	630 460	5
	Bus Airplane Total	224 3 522	171 9 449	204 11 453	133 22 343	8:30 0:45	550 2,569	15 2
Santiago   Temuco	Train (Participation)	208 (68%)	205 (65%)	167 (58%)	134 (60%)	10:00	860 560	4
	Bus Airplane Total	99 0 307	112 - 317	120 1 288	85 5 224	11:00	600	17
Santiago   Puerto Montt	Train (Participation)	53 (46%)	48 (48%)	39 (37%)	28	18:00	1,290 650	2
	Bus Airplane Total	42 21 116	30 22 100	34 32 105	37	17:00 1:30	900 4,169	9 3

NOTE: Rates written on the first and second line correspond to Salón and First, respectively.

Rate for buses has been calculated as an average between minimum and maximum rates.

### IV.2.3 Description of the Main Sections of the Service

#### (1) Between Mapocho and Puerto

Presently, in the section between Quillota and Puerto, of the Mapocho - Puerto Line, there is a large number of users, represented by the workers of city of Valparaíso, with a crowedness reaching up to 200% of the seating capacity at peak hours.

It is considered that the reasons for this are as follows:

- 1) Railway service is superior to the other means of transportation in terms of speed and number of services, especially between Viña del Mar and Puerto, where travel by bus takes twice as long as travel by train due to heavy road traffic.
- 2) The fares in this section are cheaper than the bus fares.
- 3) This service only has 1st class cars which are clean and comfortable.

#### (2) Between Alameda and Puerto Montt

For the railway service in the section between Alameda and Puerto Montt, we can consider that there are sufficient prospects in the following 5 sections:

- (a) Between Alameda and Chillán
- (b) Between Alameda and Concepción
- (c) Between Alameda and Valdivia (including the section between Antilhue and Valdivia)
- (d) Between Alameda and Osorno
- (e) Between Concepción and Laja

Especially the line between Alameda and Chillán (398 km) is equipped with welded rails of 60 kg/m which enables travel at

a speed of 120 km/h. Furthermore, the rolling stock is comparatively superior and comfortable and it is a competitive section as compared to the other means of transportation. What is more, there is a great demand for train service around the Station of Chillán and many passengers who transfer from the train to the bus make this transfer in Chillán. For this reason, the combined bus/train service surely results in an increase of the income. On the other hand, in the section which is a prolongation of the above one between Alameda and Concepción (568 km), the state of the tracks has been deteriorating between Chillán and Concepcion thus resulting in a considerable increase of the travelling time. Due to this reason, the railway service is not competitive in relation to the other means of transportation in this section. However, if we consider the section between Alameda and Concepción, we can say that the competition is not so bad in relation to the bus, for the following reasons:

- (a) Transfers from train to bus are not practical due to the distance between the station and the bus terminal.
- (b) The scheme of the total railway service (equipment and staff) is superior to the combined train/bus service or bus service alone.
- (c) Transportation by train offers an advantage over transportation by road from the point of view of safety, due to the poor state of the roads.

Consequently, it is estimated that by improving the conditions of the tracks between Chillán and Concepción and by reducing the travelling time, the trains could reach a position more advantageous than transportation by bus, thus making it possible to have a greater demand.

The sections between Alameda and Valdivia and between Alameda and Osorno are considered the commercial lines most represen-

tative of transportation by train between the main cities. It is estimated that the advantages lying in shorter travelling time and better comfort could open the doors towards a promising future.

Furthermore, the local lines between Antilhue and Valdivia and between Concepción and Laja, that cannot necessarily be considered satisfactory could be transformed into profitable sections by becoming more competitive in relation to bus service in the future, making it similar to the transportation in the section between Quillota and Puerto of the Mapocho - Puerto line.

Even if the Chilean State Railways are submitted to very strong competition, this phenomenon is common in other countries of the world. But at the present time, one must not consider the other means as competitors, but one should find measures to raise the efficiency of all the means of transportation through efficient collaboration and cooperation of these means of transportation to unite organically the characteristics of the different means, and this would be the most important mission that could be entrusted to the Chilean State Railways.

(Reference 1)

The participation of the various means of transportation in Japan according to the number of passengers transported and travelling distances, can be seen in Fig. IV.2.1 which shows exactly the same characteristics as in the case of Chile with regard to the characteristics of the means of transportation in function of the distance, despite the differences in the conditions of the country such as difference in the development of the railway and road networks and difference in the total participation structure.

(Reference 2)

If we look at the transportation means according to the example of Japan, we can see in Table IV.2.4 the energy required to transport one passenger over 1 km; the index corresponding to buses would be 1.6 times and for cars and airplanes 7 times, the comparison being done on the basis of 1 for trains, which shows a clear advantage in favour of trains. Although these figures could not be adapted to the conditions of Chile, due to the difference in transportation coefficient (coefficient of use by the passengers) existing between Japan and Chile, they clearly show the advantageous position of trains from the point of view of energy consumption coefficient.

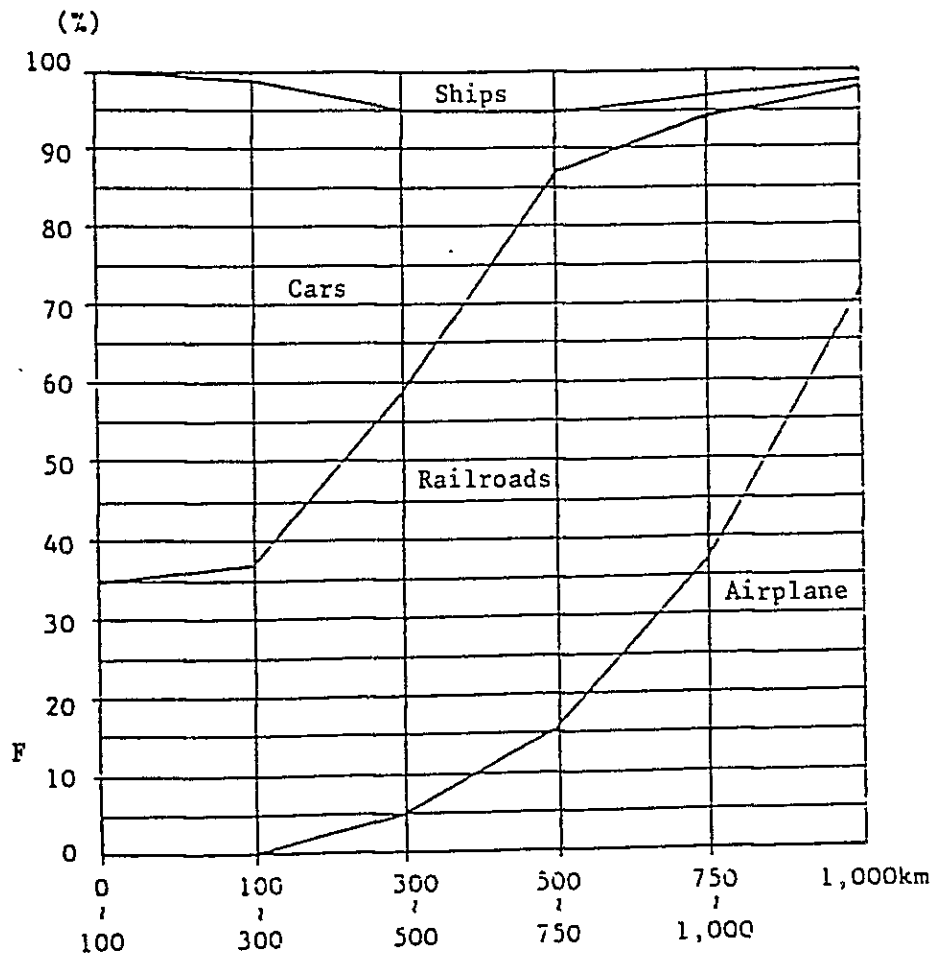


Fig. IV.2.1 Participation of the Each Means of Passenger Transport in Japan, in 1979

Table IV.2.4 Energy Consumption for the Different Means of Transport in Japan, in 1978

Means of transportation	Item	Volume of transportation (10 <sup>8</sup> passengers per km)	Consumption of energy (10 <sup>10</sup> kcal)	Units of energy consumption (kcal/passenger per km)	Indexes calculated at 1.0 for railroads
Railroads		3,111	3,191	103	1
Buses		1,070	1,503	140	1.4
Cars		2,960	22,136	748	7.3
Airplane (national flight)		269	1,851	688	6.7

#### IV.2.4 Passenger Fare System

##### IV.2.4.1 Basic fare system

The fares for passengers in the Southern Railway are set taking as reference the fare levels of buses and other means of transportation, on the basis of a market economy criterion.

The fare system of the Southern Railway is very complex, but thorough, in details.

Basically, the fares system is set in function of classes (Second, First and Sal6n) according to the distance covered, except for the Super Sal6n class which is set according to the kilometric sections. The formula for calculation of the main fares is indicated in Table IV.2.5.

With regard to the fare according to the distance covered in kilometers Fig. IV.2.2 shows the fare for the Sal6n Class which is slightly superior to the bus fare and the First Class fare, slightly lower than the bus fare. The Second Class fare is 30% less than the First Class fare.

Table IV.2.5 Formulas for the Calculation of Passenger Fares According to the Distance Covered (Km)

Class	Distances traveled	Formulas applied	Minimum distance for the calculation of rate
Second	Up to 380 km more than 380 km	$P = 0.6258 + (0.65625 \times d)$ $P = 52,0854 + 0.52083 \times d$	20 kms.
First	Up to 230 km more than 230 km	$P = 1.0222 \times d$ $P = 77.20 + (0.68656 \times d)$	20 kms. (In case of reserved seats, 100 kms.)
Salón	Applicable for all distances	$P = 92.50 + (1.08930 \times d)$	300 kms.

Note: P is rate in pesos, and d is distance in kilometers

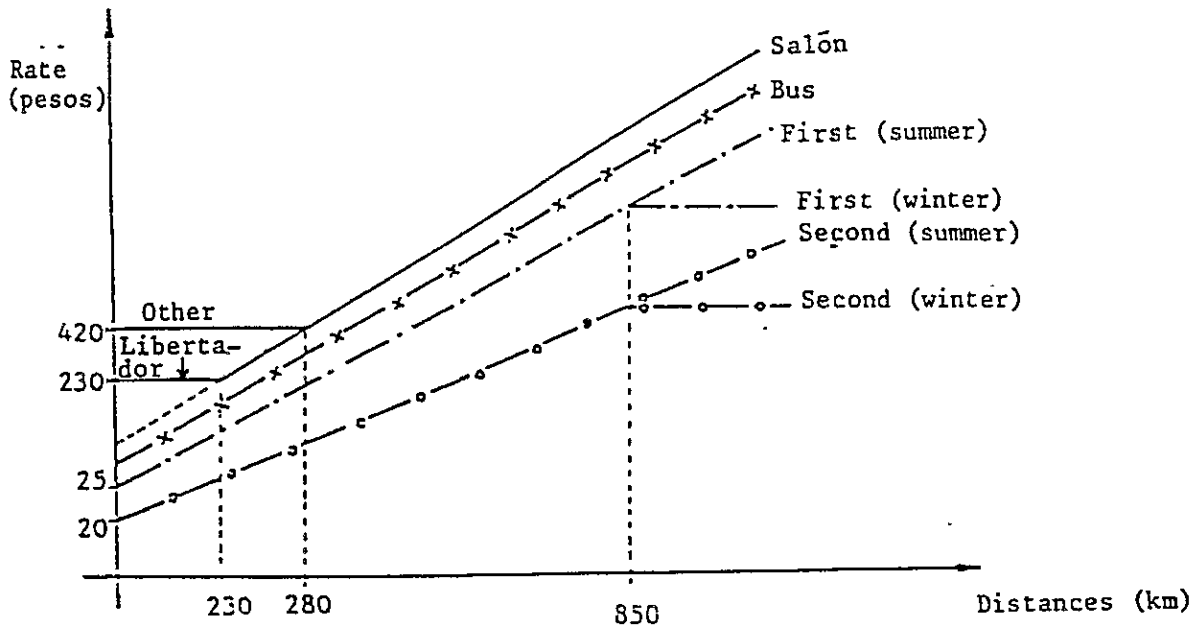


Fig. IV.2.2 Train and Bus Fares



On the basis of the fare system mentioned the following measures are presently being applied:

- (a) Fares are set high for the sections that are advantageous from the point of view of competition with the bus (especially for branch lines in an East-West direction).
- (b) With regard to the fares for Sal6n cars and Super Sal6n cars, the Southern Railway took into consideration the objective to implement the services of this class and minimum high fares are adopted so that passengers travelling over a short distance do not use them.
- (c) There are long distance reduced fares in winter as dumping policy to compete with buses.

As indicated previously, the train fares are not set with a purpose of compensating the operation costs of railway services, but considering the fare of the other competitive means of transportation, especially bus fares.

Consequently, exhaustive analyses of costs, divided according to cargo and passenger services or per section of the service sections, are not carried out.

(Note)

It is estimated that under the present circumstances it is impossible to set high train fares based on the costs system, considering the present conditions of railway's rolling stock.

#### IV.2.4.2 Fare discount system

The main fare discounts presently being applied by the Southern Railway are as follows:

- (a) Discount for students and teachers  
..... 30% discount, except in summer

- (b) Discount for students end of school trips
  - ..... 39% discount for groups of more than 30 persons using First and Second classes, except on Saturdays and Sundays in summer.
- (c) Discount for group round trips
  - ..... Discounts for more than 170 km total distance, return, except on Saturdays and Sundays in summer:
    - 15% discount for groups of up to 4 persons, valid 10 days
    - 15% discount for groups of 5 ~ 19 persons, valid 30 days
    - 20% discount for groups of more than 20 persons, valid 30 days
- (d) Discount for round trips
  - ..... 15% discount for round trips in First and Salón classes, except in summer
- (e) Discount for institutions who sign contracts
  - ..... 10% discount for one way trips and 25% discount for return trips in First and Second class (10% discount on Saturdays and Sundays in summer)
- (f) Discount for commuter-ticket holders
  - ..... on the basis of one trip per day in First and Second class
    - Weekly ticket .... 15% discount for 10 one way trips
    - Monthly ticket.... 20% discount for 44 one way trips

#### IV.3 PRECONDITIONS FOR THE ANALYSIS OF THE COMMERCIAL POLICY MEASURES

To analyze the Southern Railway's passenger services it is considered that the following two aspects constitute the premises for the commercial policy measures.

- Conditioning of the basic sales system
- Improvement of the rolling stock

#### IV.3.1 Conditioning of the Basic System for Sales

The ideal relationship between the transportation capacity and the selling capacity within the transportation activity should be:

Selling Capacity  $\geq$  Transportation Capacity

If the selling capacity is superior to the transportation capacity and if the transportation capacity is set in function of this superior selling capacity, it is possible to increase the production to create a tendency toward development of the operation.

If, on the contrary, the selling capacity are low to the transportation capacity comparatively, it is necessary to set the transportation capacity according to the transport demand and thus the tendency would be towards contraction. There is no doubt that in order to increase the selling capacity it is necessary to create concrete arguments for the sale and to arrange the organization of the selling network in such a way as to promote commercialization. However, the most important factor in these premises is to seek the way that enables to develop the functions of the staff and the actual structures and the creation of mechanisms that make the above possible.

Presently, the Southern Railway does not have systemized structures related to the aspects mentioned. That is to say that not only the sales goals are not clear within the various administrations of the railways authority, divided into zones, track sections and stations, but also there is no system to check fulfillment. In view of these conditions, it would not be possible to create hopes for positive results even if concrete measures are taken to promote the sales and get passengers. Furthermore, one of the impediments to the implementation of concrete measures to promote sales and attract passengers is the system used for the reservation of passenger seats. That is to say that the system presently being

used is extremely rudimentary and it would be nearly impossible to develop a smooth system unless substantial improvements are made to the system.

Consequently, it would be necessary to give priority to the conditioning of the bases of the sales organization within the set of measures to be adopted.

#### IV.3.2 Improvement of the Rolling Stock

In general, when choosing the means of transportation, the passenger takes the following six factors into consideration:

- (a) Fare
- (b) Travelling time
- (c) Frequency of services
- (d) Safety
- (e) Comfort of the cars
- (f) Punctuality of the services

Among these factors, (e) and (f) are closely related to the state of the rolling stock.

By studying the Southern Railway's rolling stock, even if the reasons are due to restrictions in investments of the past time for railway equipment, one can see that the equipment is too old to permit competition as compared to the equipment of the buses, which would eventually be the No. 1 competitor.

It is considered that the improvement of the rolling stock would be a measure much more efficient than any other to increase the income if we take into consideration the opinions of the passengers and of the travel agencies and if we look at the coefficient of use in the present state of the trains.

(Note)

The theme for improvement of the passenger cars is not dealt with in this report since this work requires great resources and time

and, on the other hand, due to the fact that the Chilean State Railway's requests for this Study Mission were centered on the measures that would give immediate results.

Although we discuss later on the concrete measures to increase sales, these measures have as premise the conditioning of the basic system to promote sales and the improvement of the rolling stock, since if these measures are not taken, it is considered that no other measure taken would have real effects.

#### IV.4 MEASURES TO INCREASE THE INCOME

##### IV.4.1 Present Situation of the Measures to Increase the Income

To consider the measures to increase the income in general it is necessary to "set up a good service" which would be the basic element, and to create the "organization to promote the sale of these services".

Looking at the Southern Railway's present situation, in these two aspects in particular, it is not possible to evaluate measures that are relevant within the creation of good services and the organization of the structure to promote the sale of these services, apart from the fare reductions outside peak hours and the contracts for fare reductions between the "Asociación de Scouts de Chile, Asociación de Pensionados" and other groups, that are being carried out on a small scale through the contract and tariff department of commercial administration (Gerencia Commercial). This organization was particularly forced to weaken its structure as a result of the effects of staff rationalization, and also there is no mechanism that permits activation of the said organizations.

That is to say, the Departments for local control and the stations do not receive the income objectives and the lower levels are not informed as to the methods to achieve the income estimates drawn up by the Authority and the actual organizations are submitted to a regime that lacks efficiency.

In actual fact, the income objective is something that is achieved if all the staff unites for a coordinated function, including the "Gerencia Commercial, the Superintendencia, the Servicio de Explotación" and the stations, For this, the organization must function efficiently and in order that it can function efficiently, it will have to be provided with the goals that must be spread to the various departments in details. Having set up a goal and having created the atmosphere to reach the goal, it would be possible to expect creativeness, effort and ingenuity to develop new services, to promote the sales, attract passengers and improve the services offered to the passengers. There cannot be positive results in the promotion of sales and attracting passengers without an organized structure.

Therefore, it is necessary to set up the structures for the control of the goals, as premise to put into effect the measures to increase the income.

#### IV.4.2 Introduction of the Control of the Income Goals

##### IV.4.2.1 Organization and functions

Goals of income will have to be established and controls of the fulfillment will have to be carried out in accordance with the following organization and functions.

In addition, the functions assigned to the various sectors shall continue being fulfilled as they were until now.

##### (1) Organization for the control of the income

The organization for control of the income shall have the structure indicated in Fig. IV.4.1.

##### (2) Distribution of the functions

The distribution of the authority functions shall be organized as shown in Table IV.4.1.

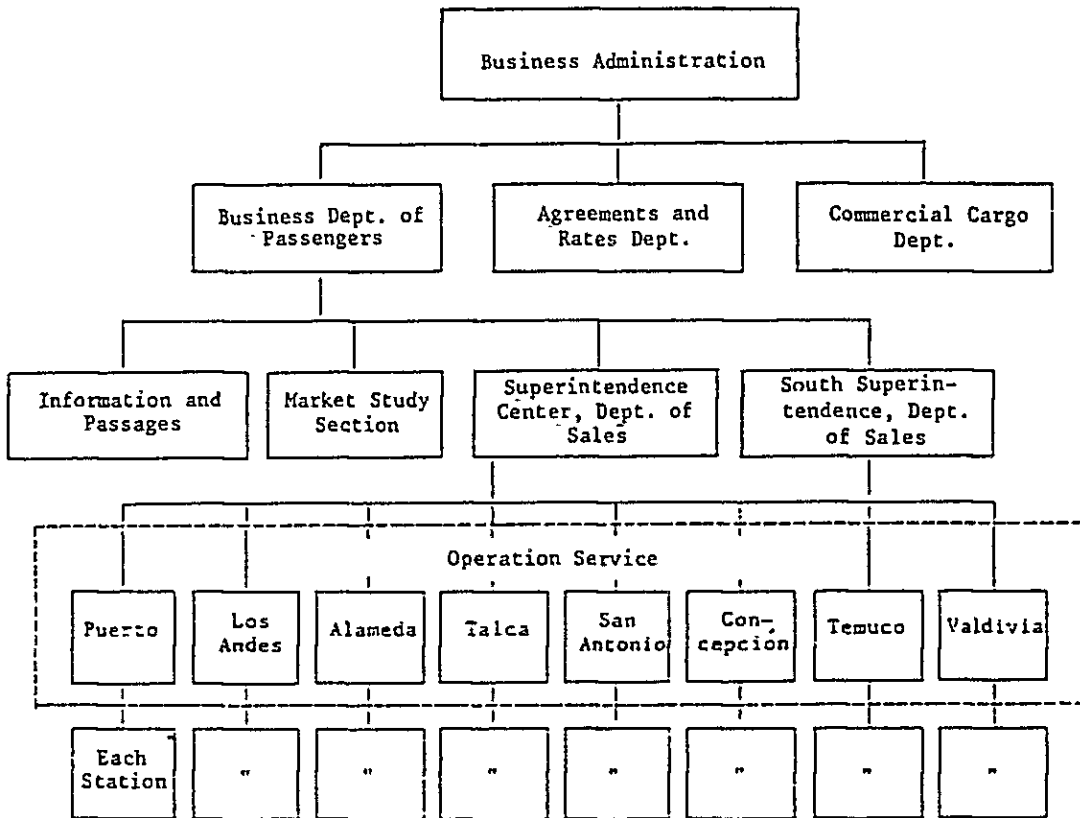


Fig. IV.4.1 The Future Organization for the Control of Income within the Passenger Service Scheme

Table IV.4.1 Distribution of the Functions for the Control of Income, within the Passenger Service Scheme

Department	Function
Business Administration	<ul style="list-style-type: none"> <li>- Preparation of monthly and anual income goals by passenger and cargo.</li> <li>- Control of activities to carry out goals mentioned above.</li> </ul>
Business Dept. of Passenger	<ul style="list-style-type: none"> <li>- Monthly income goal preparation for passenger commerce for each type of service of each sales Dept. of Central Superintendence, and South Superintendence, and for each office of information and passages.</li> <li>- Control and orientation of activities to carry out the goals indicated.</li> <li>- Investigation of market, formation of new services.</li> </ul>
Sales Dept. of the Central and South Superintendence	<ul style="list-style-type: none"> <li>- Income goals preparation distributed in each operation service for each month and each service.</li> <li>- Control of activities to carry out the goals above.</li> <li>- Orientation of sales for each Operation Services.</li> <li>- Investigation of market, formation of new services.</li> </ul>
Operation Service	<ul style="list-style-type: none"> <li>- Formation of monthly income goals according to service for each station.</li> <li>- Control of activities to carry out the goals above.</li> <li>- Orientation of sales for each station.</li> </ul>
Each station	<ul style="list-style-type: none"> <li>- Preparation of goals for daily and monthly income and control of the situation to carry out goals in stations.</li> <li>- Preparation of specific measures to carry out the goals above.</li> </ul>



#### IV.4.2.2 Method to establish the amount of the income goals

- (1) To set the amounts of the income goals, it will be necessary to take into consideration the history of the sales in the past and the evolution of the passengers trends according to the various types of services (per type of train and class of car), the type of passenger (groups, individuals, or commuter ticket holders) and per period (monthly, weekly or daily) and the special conditions prevailing in the respective track sections and stations.
- (2) To establish the amounts of the income goals, it is necessary to have a coordination with the subordinate organs.
- (3) The control of the evolution of the results obtained to reach the goal will have to be done through classification per month and per type of service, introducing incentives for the sections that reached the goals.

In addition, once the goals control system has been set up, it would be necessary to adopt, separately, the measures to back up the superior charges to the administrative departments to create a hierarchy in the positions of the officials if the staff is concretely dedicated to the sales.

#### IV.4.3 Various Measures to Increase the Income

##### IV.4.3.1 Criteria to determine the measures to increase the income

There are three methods to increase the income:

- (a) Raise the unit prices - Fare increase method
- (b) Raise the volume of sales - Passengers increase method
- (c) Sale of other services - Method consisting of obtaining income apart from the fares for travel.

Among the methods indicated above, the increase of fares indicated in point (a) is handled by the Southern Railway in accordance with guidelines that are determined within the comparisons

of the advantages offered to the passenger on the basis of market economy criterion taking into consideration of the fares of the competitive transportations and particularly the bus fares.

One could think of correcting the method to establish the fares on the basis of costs, but it is estimated that in this case it would be necessary to raise the fares.

However, according to the Southern Railway's situation, it is supposed that the simple increase of fares would result in a reduction of the number of passengers, and therefore no income increase would be possible. Consequently in this case the adoption of the following measures is considered advisable:

- (1) To increase the income by increasing the number of passengers, corresponding to point (b) above.
  - a) Attract the regular users
  - b) Consolidation of the relations with external companies
  - c) Active use of travel agencies
- (2) To increase the income apart from the travel fares
  - d) Efficient operation of the railway installations
- (3) Other measures
  - e) Preventing passengers from stealing rides (travel without purchasing a ticket)

#### IV.4.3.2 To attract regular users

The present fare discount system to promote the demand through flexible handling of the fares was explained in clause IV.2.4.2. However, this measure applies to a large number of sporadic passengers that could be classified as a measure lacking dynamism to promote the demand. Therefore, it would be necessary to take measures to produce greater effects establishing as a target of the attraction of passengers of a certain class who would become regular users.

As can be understood from the results of the investigations carried out by public-opinion polls, 52% of the users on working days, are working class passenger and it is considered that what is essential within the measures to be adopted for the future, is to focus on the basis of the passengers who work in function of the work obligations.

On the basis of the comments formulated, it is necessary to analyze as method to be adopted in the future, the expansion of contracts with associations, promotion of school study trips for students, and expansion of the discount measures for the passive class.

(Note)

Although it is possible to contemplate the sale of multiple journey tickets as service to the regular passengers who travel in function of their work obligations, this theme is not dealt with, because it could create inconvenients according to the present passengers control system of the Railways.

(1) Expansion of contracts with Associations

Presently there are agreements between the Railways and nine associations, namely the Scouts of Chile, the Association of Pensioners, the Chamber of Commerce and Industry, the Automobile Club of Chile, the Committee of CORMA of Valdivia, the University of Santiago, the Society of Surgeons of Chile, part of the Ecclesiastic Associations and the Holiday Inn.

There must be a greater diffusion of these agreements through active promotion with the various associations and organizations of Chile, such as Public Institutions, Economic Associations, Professional Associations, Trade Union Organizations, Consumers Association, Artistic and Cultural Associations, Local Associations, etc., to develop the number of passengers and attract them in an efficient way.

Among the agreements that are presently valid, the one corresponding to the Holiday Inn has adopted a system to attract the clients by means of mutual compensation which consists in the discount of train fares for the clients of the hotel and discount of the hotel fees for the users of the train. This system must be adopted in a more active way since the results of the agreements with companies whose clients have a similar characteristics, are considered very efficient.

Apart from the hotels, there could be agreements with other means of transportation (airplane, buses, boats, etc) tourism agencies in touristic centres, large scale restaurant chains and large stores.

(2) Promotion of school study trips for students

One of the measures to promote increase of the passengers travelling in group, is the fare discount system as indicated in clause IV.2.4.2, for students making school study trips.

The school study trips of the students constitute a stable market and this is an area that can be increased in the future proportionately to the increase in school attendance.

In addition, it is possible to plan the transportation, since the trips are planned with sufficient anticipation and since they usually take place on week days, this being a scholastic activity. Consequently, active promotions should be carried out as measures to increase the number of passengers in off-season periods when there are seats available in the trains. For this purpose, not only is it necessary to attract passengers through travel agencies, which shall be discussed further on, but it is also necessary that the said Railways contact the schools and distribute leaflets directly.

### (3) Others

According to the investigations through questionnaire, there is a high percentage of users who were sick.

As compared with the buses, the trains are subject to less vibrations and there is no sudden braking, which means comfortable quiet means of transportation for passengers who are sick.

Although at the present time there is no system that enables to offer discounts for the handicapped, it would be necessary to analyze a discount rate for trips to the hospital or persons who have to be transported to other places for treatment as a measure to increase the number of passengers outside peak hours.

#### IV.4.3.3 Consolidation of the relationships with external enterprises

Reliability of the means of transportation and accommodation are the most important aspects for the passenger and especially for tourists. Therefore this is one of the first tasks carried out to plan a trip. For instance, one will seek the means of transportation to reach one's destination, the travelling time will be checked, accommodation possibility to secure accommodation, the existence of a good system for transfers if it is necessary to change the means of transportation, the passenger will also check whether it is possible to book hotel rooms at the destination, etc.

Some people who consider all these formalities troublesome just give up travelling.

Everything would be very easy if it was possible to reserve seats on the trains, if there was a good system, involving reduced time loss, to transfer to buses or boats, and if it was possible to book hotel rooms at the destination, in advance.

. In addition to this, the trip would be even more enjoyable if all the tickets and vouchers for seats could be reserved and purchased by ways of a "package". The package tours, which are very fashionable nowadays are a proof that it is a very practical solution.

That is to say that one tries to offer a service that is not restricted to train journeys, but a complete service which comprises a set of factors adapted to the travelling reality for tourists.

(1) Method to establish relationships

- 1) Combination with the other means of transportation
- 2) Combination with hotels
- 3) Combination with entrance tickets (utilization) to the various recreation facilities.

(2) The effects of establishing relationships

The setting up of combined services through relations with external companies could bring the following effects of mutual benefit:

1) For the passenger

- In the planning stage, it is possible to know the total expense for the trip
- It is possible to reserve seats and hotel rooms in advance
- Travelling becomes easy even for people who are not used to it

2) For the external companies

- It is possible to know the number of passengers in advance

- When making the publicity together with the Railways, the publicity effects are greater
- The fact of having agreements (contracts) with the Railways contributes to increase trust

3) For the Railways

- By offering a package service not limited only to travelling by train, but including in the "package" what is necessary to travel and to use installations, there is an increase in the added value of trips and a creation of a feeling of relative saving.
- The execution of publicity campaigns jointly with the centres of tourism will be feasible and it will be possible to obtain publicity results with relative saving.
- By developing new demands, it is possible to achieve increase of the number of passengers.
- By knowing the tendencies in the requests of passengers, it would be possible to develop new services that would result efficient.
- By being able to know the number of passengers in advance, it is easy to plan the transportation services (increase of the train services or cars).

(3) Aspects that must be taken into consideration when setting up the services

- 1) In order to improve the conditions of transfers from one mean of transportation to the other, it is necessary to request collaboration of the other transportation companies in order to be able to reduce as much as possible the waiting time, through measures such as improvement

of the installations in the transit stations and reduction of the distance one has to walk.

- 2) To create new demands, it is necessary to constantly investigate the trends of the centres of tourism, the change in the preferences according to the type of tourists and efforts must be made toward the development of new services by improving the services (better services, revision of the fares, etc.) in order not to fall in a "routine".
- 3) When the new services are put on sale, it is necessary to carry out an efficient publicity campaign to create a travel atmosphere by ways of periodical publicity after launching of the services in order to increase the public's knowledge.

Despite the fact that the above refers to measures concerning tourists, it is necessary to concentrate the efforts toward reducing the travelling time and toward the advantages of the convenience based on the rational use of the characteristics that are combined through close relationships with the bus companies with the objective of offering benefits to the passengers who have to travel for their work.

(Reference)

Example of collaboration between companies, in the case of Japan.

In Japan, the National Railway and the private railway companies dedicated to transportation, which, including regional autonomous companies, amount to 94, have established various types of services to attract passengers. Practical examples are described further on (See Fig. IV.4.2).



- Name of the service

Hakone Free Ticket

- Object of the service

The object of this service is to attract the passengers who use the circuit leaving from the station of Shinjuku which is one of Tokyo's terminals and who go through Hakone over a distance of approximately 100 km in the area belonging to the National Parks which are a touristic attraction, and where there are thermal sources and lakes.

- Contents of the service

There is a ticket valid for 4 days in the contract with the following companies:

- (a) Private Railways "A" connecting the centre of the city to the entrance to the touristic zone.
- (b) Private Railways "B" that offers service of mountain trains, local buses and cable cars in the touristic area.
- (c) Company "C" which runs ropeway railway service in the touristic area.
- (d) Company "D" which runs boat service in the touristic area.

- Fare

Approximately US\$ 15

- Advantages

- (a) It is relatively cheap since the return trip by day using the shortest route costs approximately US\$ 17.
- (b) Within the validity period it is possible to use transportation means (b), (c), and (d) as much as desired, which turns out to be even more economical.

(c) A discount voucher is added to use the touristic installations, game centres, art museums and others, amounting to 14 installations within the touristic area.

- Annual sales

133,000 tickets including the ones sold by the travel agencies

In addition, we must mention that the travel agency "E", related in terms of capital, to company "A" mentioned above, has developed a new service for tourists from abroad, taking this service as reference.

The road which, in Fig. IV.4.2. connects points a ~ g was replaced by fixed route bus that run on the highways and the routes from g are continued by boat, h by bus and i (meal in hotel or overnight stay) (taxi) f (funicular railway) e (Cable car) d (mountain train) c (express train with reserved seats) up to a.

The price was set at approximately US\$ 48 for day trip with meal included, approximately US\$ 40 for children under the age of 12, approximately US\$ 108 for one night stay including breakfast, one dinner and one supper and approximately US\$ 80 for the same service for children under the age of 12. In the case of one person, the price for overnight stay would be approximately US\$ 132 due to the fact that the above price is calculated on the basis of twin room.

The passengers who use this service wear an identification badge so that even if they can not speak Japanese, they can be assisted by the persons in charge.

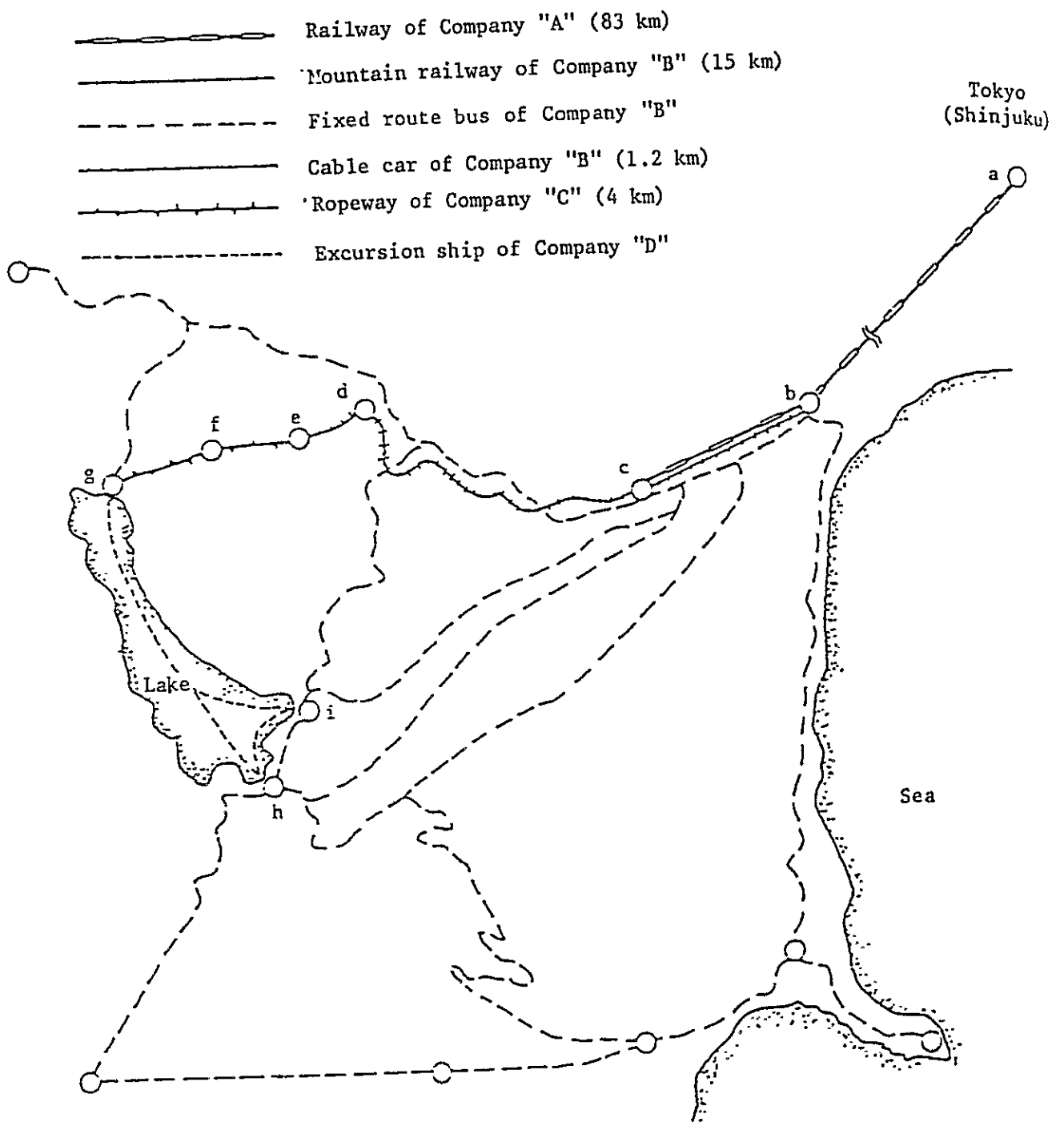


Fig. IV.4.2 Map of the Circuit for the Hakone Free Ticket

#### IV.4.3.4 Use of travel agencies

##### (1) Need to use travel agencies

Presently the train tickets in Chile can only be purchased from the respective stations and in the ticket offices of Santiago, Chillan, Concepcion, Temuco, Valdivia, and Osorno making a total of 7 places and travel agencies are not used for lack of trust.

However, on the travel agencies side, some have shown interest in the possibility to meet the demands of reserved seats and, on the other hand, there are agencies authorized by the IATA (International Air Transportation Association) who have no problems from the point of view of capital and trust and who have great sales capacity.

Likewise, it is necessary to be competitive with the bus companies analyzing the active use of the sales network, the means to plan the services and the capacity to attract passengers, possessed by the travel agencies taking into account the fact that the bus companies, the No. 1 competitor of the railways, are using travel agencies to sell tickets.

##### 1) Use of the travel agencies' selling system

Due to the characteristics of the travel agencies, they are usually located in commercial centres much used by the public, so their use as agents to sell train tickets is considered very efficient.

This is equivalent to the installation of ticket sales agencies in the most privileged place of the city using other capitals than the Chilean State Railways's.

##### 2) Use of the travel agencies' capacity to plan the services and attract passengers

The travel agencies see to the needs of various types of tourists who make both domestic trips and international trips and they have the capacity to plan services and to attract the passengers as shown by the organization of trips abroad.

Consequently, if the travel agencies are allowed to sell train tickets, it is estimated that the travel agencies will do their utmost to plan attractive services that include trips by train, that appeal to the passengers.

(2) Present situation of the travel agencies

In Chile, there are about 300 travel agencies including the agencies that have just registered and that do not have a phone due to the fact that a capital of 2,000,000 pesos is required.

It is estimated that there are about 150 agencies presently doing business, 120 of which are located in the City of Santiago.

The agencies that are considered relatively large are the 9 following ones:

Viajes Val  
Andina del Sud  
Atras Viajes  
Exprinter  
La Tour  
Sports Tour Turismo Ltda. Sudamerica Turismo Chile  
Turismo Cocha  
Wagon-Lits Turismo

The main activities of the travel agencies consist in the sale of air tickets and hotel vouchers and planning and organization of groups of tourists.

The groups of tourism are not limited to trips within Chile, but extend to nearby countries such as Argentina and Brasil and there are also groups travelling to Europe.

The rate of commissions received by the agencies is 5 ~ 10 % for buses, 9 ~ 10% for air and 8 ~ 15% for hotels.

(3) Opinions and intensions of the travel agencies

To summarize the opinions and pretensions of the travel agencies with regard to the Chilean State Railways, the following points can be stated:

- a) The commissions are not known even when the tickets are sold.
- b) The fact that cheques cannot be used is very impractical. Only cash is accepted.
- c) Formalities are troublesome since the tickets have to be purchased from the same offices as the ones used by the individual passengers.
- d) Planning of the services is difficult due to the short anticipated sale term.
- e) Fares are frequently modified and it is difficult to prepare travelling budgets.
- f) Active promotion not possible due to the bad state of the rolling stock.
- g) Inconvenient due to frequent delays and lack of reliability.

Among the aspects mentioned, there are many complaints, especially about point a) concerning commissions and point f) concerning the rolling stock.

(Note 1)

With regard to the use of travel agencies, there are basically for following two practical methods:

- (a) Sales by allotment of tickets (by allotting tickets before-hand to the travel agency and liquidating the amounts of the tickets sold during a specified period).
- (b) Sales by contract  
(Method that consists in having the travel agencies purchase a specified number of cars or seats).

However, it is considered that method (b) would be the most adequate in view of the Southern Railway's low concept about the travel agencies.

Besides the method consisting in selling cars or seats to the travel agencies there is the possibility to entrust to them the passengers who travel in groups setting up a specific period which could be up to one month prior to the departure date of the train.

(Note 2)

With regard to the commissions for the travel agency, it is necessary to analyze the possibility of it being more appealing within the limits of the fare reductions granted to the passengers and by method to pay the tickets.

(Reference)

(a) Table IV.4.2 Rate of Commissions for  
the Travel Agencies in Japan

Type of Ticket	Commission (individual passenger)
National Railway tickets	5%
Private Railway tickets	5 ~ 7%
Air tickets	5%
Boat tickets	5 ~ 18%
Hotel tickets	10 ~ 13%
Sight seeing tickets	5 ~ 20%



(b) Table IV.4.3 Rate of Commissions for the Travel Agencies in Various Countries

Classification	Total number of means with agreements	Means of transportation by region	Rate of commission
Airplane	All companies affiliated with IATA and other main companies not affiliated	<ul style="list-style-type: none"> <li>o 20 affiliate companies of IATA (*1)</li> <li>o 9 non-affiliate companies that extend service in Japan</li> </ul>	9% and 5% for the charter tariff
Maritime transportation	41	o Affiliate companies of the Trans-pacific line passengers Alliance	7.5%
		o Other	5.5 - 10%
Railroad	30	o Affiliate rail companies of AMTRAK (*2) North America	15%
		o State railroads of 23 Western European Countries Company of Wagon Lit sleeper-car Company of sleeper-car of Germany	13%
		o State railroads of Switzerland	13%
		o State railroads of England	12.5%
		o State railroads of Italy	15%
		o State railroads of Germany	13%
		o State railroads of USSR	6.5% (original bill) 3% (Ticket)
		o State railroads of Australia	15%
Bus	4	o 2 companies in North America	15%
		o 1 company in England	15%
		o European buses	12.5%
Hotel	Many in the world	o In the entire world	Normally 10%. However, for groups, the special rate of more than 10% is applied.
Travel Agencies	Many in the world	o "In-Tourist" (National travel agency of USSR)	12.5% of the price of trip contracted
		o Other (Including the five companies from communist countries)	10% or more
Accident Insurance	3	o AIU, "Tokyo Marine & Fire Insurance", "Sumitomo Marine & Fire Insurance"	22% of the insurance
Passengers Check	4	o Bank of America, American Express, Thomas Cook, Bank of Tokyo	2/3 - 3/3 of the commission (1% of the transmitting value)

Note: \*1 IATA = International Association of Aerial Transport

\*2 AMTRAK = American Company for Transportation of Passengers

(c) Table IV.4.4 Annual Evolution of the Volume of Sales by the Travel Agencies of the Japanese National Railways

(in millions of US\$)

Year	1975	1978	1979	1980	1981
Income in the market of JNR passengers (A) (compared with that of the preceding year)	4,928	7,412	8,239 (111)	8,591 (104)	9,255 (108)
Volume of sales by travel agencies (B) (B/A)	1,075 (21.8)	1,433 (19.3)	1,548 (18.8)	1,646 (19.2)	1,824 (19.7)

Note: US\$1 = ¥250

#### IV.4.3.5 Efficient use of the railway installations

##### (1) Basic criteria

The "station" is one of the first places seen by tourists. The "station" represents the door and face of a city. Consequently, in the future the stations must not simply be a place to board and leave trains, but they must be developed in such a way as to become an organic link for the different means of transportation, a place for the activities of the city connected to the life of its inhabitants, through related activities and it must also be a place for the communication of information.

This way the station will gather people around it, raising its coefficient of use so as to indirectly permit increase of the demand from the passengers and the development of new activities that shall result in an increase of the income.

Fortunately, the installations of the stations of the Chilean State Railways are large and some sectors are idle, so that it is considered that there is sufficient possibi-

lity to utilize them usefully according to the characteristics of each station.

(2) Concrete measures

1) Installation of tourism centres

Reservations and sales of train tickets and tickets for other means of transportation, hotel rooms, tourism and recreation installation and touristic information service.

2) Integration of the services related to travel

The services necessary for the travel, such as waiting rooms, telephones, newspaper stands, restaurants, luggage cloak-room to leave luggage during determined periods of time, etc. must be grouped in places easy to reach.

3) Connection with the bus terminals

In order to facilitate connections with the buses covering service of a determined zone as complementary means and as means to promote the train services, the bus terminals will have to be located near the station and if possible in places directly connected to the station, making use of the unoccupied spaces for the cargo or part of the buildings of the stations.

4) Installation for parking of cars

Complete the car parks for use by the people who come to the station, which is not necessarily limited to passengers.

5) Installation of commercial centres

Stations are places that have appropriate conditions from the commercial point of view. In addition to the actual transportation functions, it would be possible to add other functions to make the installations attractive giving life to the station through the rental of stands placed in parallel to the stations so that not only the passengers but also the population can make their shopping.

6) Active adoption of the publicity activities

For the same reason as indicated in 5), the stations are places that give great publicity results. In this sense, the publicity activity could be developed by placing announcements and renting the spaces available on the walls in the lit installations of the station or in the information offices.

IV.4.3.6 Preventing passengers from stealing rides (Travel without purchasing a ticket)

Although this item somewhat differs in relation to the various means to increase the income, it is considered that prevention of steal rides (by not purchasing tickets) might be efficient to increase the income.

In the case of Japan, the control to check whether the passengers have the correct ticket is done in the station before the passengers board the train and when they leave the train, with an additional control inside the trains for long-distance trips, while in Chile, the only control is done inside the trains. Due to this reason, in sections such as Puerto - Peña Blanca, where the distances between stations are short, and therefore passengers only stay a short time on board, it is estimated that the passengers who travel without a ticket at peak hours in the morning and in the afternoon reach 15 to 20 percent of the passengers travelling.

However, renouncing to take measures in this sense not only results in reducing the income but it also destroys any stimulation of the passengers to pay the normal fares that correspond to the services offered, which produces a negative effect for the operation of the railway service.

Consequently, measures must be taken to establish controls of the tickets in the main stations to prevent people from travelling without having purchased a ticket.

(Reference)

Tentative calculation of the reduction in the income due to stolen rides and of the expenses to prevent people from stealing rides.

- Tentative calculation of the decrease of income

- . Number of passengers transported at the peak hour in the morning (per day)

Capacity of sitting passengers		Number of trains from 8 to 9 in the morning		Coefficient of user of the trains		
162	x	5	x	200		= 1,620 (Persons)

- . Number of passengers without a ticket during the same period (per day)

Passengers transported in 1 hour, during peak hour		Coefficient of passengers without a ticket persons		
1,620	x	15 - 20		= 243 ~ 324 (Persons)

- . Reduction of the income due to rides stolen during the same period of time

Passengers without a ticket during 1 hour at peak time		Average fare per person (*)		
243 ~ 324	x	29.53 Pesos		= 7,176 ~ 9,568 Pesos

(\*) The value of the average fare per person is the accumulative average of the product between the number of passengers transported in both directions between Puerto and Pena Blanca in 1981 and the present fare.

According to the calculation indicated, it is estimated that every day there are between 250 and 300 persons who travel without a ticket, estimating a reduction in the income of about 7,000 to 9,000 pesos. If we suppose that these stolen rides occur on working days from Monday to Friday during one year, the result of the calculation would be as follows:

Passengers without a ticket

.....250 ~ 300 persons × 260 days  
=65,000 ~ 78,000 passengers

Decrease in the income

.....7,000 ~ 9,000 persons × 260 days  
= 1,820,000 ~ 2,340,000 pesos

These figures are for one hour during peak time in the morning but it is estimated that in the reality these values are considerably higher since stolen rides also occur at peak time at noon and in the afternoon.

- Expenses to prevent stolen rides

Due to the fact that the control of the tickets in the trains during peak hours on week days is practically impossible due to the coefficient of use that exceeds 200 %, it has been contemplated to create ticket control systems in the 4 stations with most passengers which are Puerto, Viña del Mar, Quilpue and Villa Alemana.

In this case, the staff required for the control would be 2 persons per station in addition to the 2 persons working in the stations, which means 8 persons for one hour between 8 and 9 in the morning.

If we suppose that the salary for one hour per person is 100 pesos, adding the surcharge for overtime of 50%, the cost would be 150 pesos per hour per person making a total of 1,200 pesos per day for the 8 persons. According to this result, the cost required for the control staff of 1,200 pesos represents 13 ~ 17% of the decrease in the daily income calculated at 7,000 ~ 9,000 pesos, so the conclusion is that by catching 20% of the passengers not holding tickets, the expenses necessary for the control staff are covered.

#### IV.5 IMPROVEMENT OF THE PASSENGER RESERVATION SYSTEM

##### IV.5.1 Existing Seat Reservation System

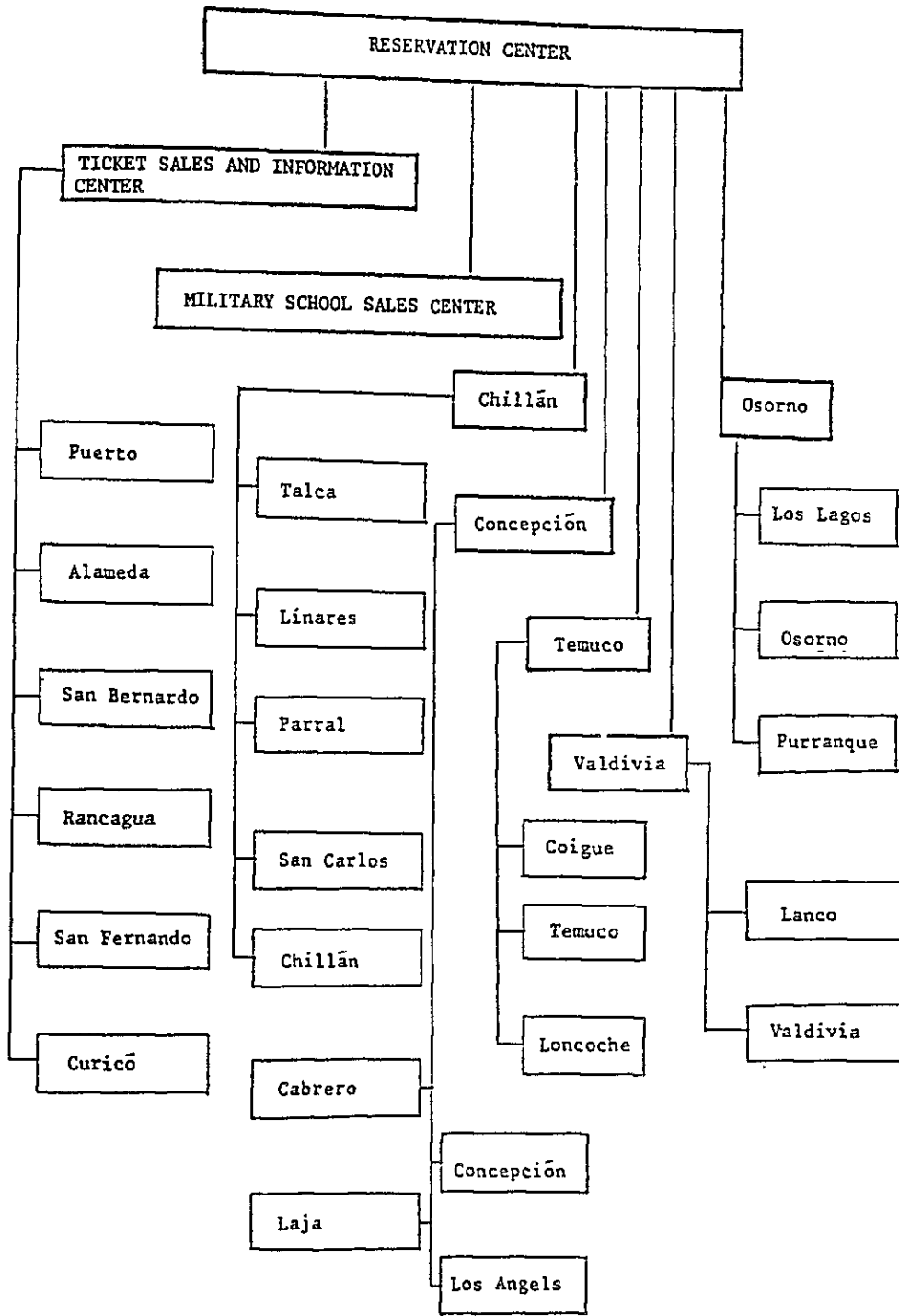
###### IV.5.1.1 Sales organization of reserved seats

As an organization for assignment of reserved seat, there is at present the Reservation Center, which controls all reservation sales and assignment of the reserved seats to the various sales points, and compiles various statistical data.

This organization includes reserved seat sales subcenters, which are: the Ticket Sales and Information Center and the Military School Sales Center, in Santiago, as well as the Information Centers in Chillan, Concepcion, Temuco, Valdivia and Osorno, which amount to a total of 7 points. In addition, these 7 centers distribute the reserved seats to rural stations. (See Fig. IV.5.1).

Moreover, in stations where there is no assignement, the reservation center is queried by telex or telephone through the subcenter covering the availability of prior assignment.

If the passenger get off at intermediate station, the seats for the continuing portion are not handled in the subcenters, but sold by the conductor on the train.



▭ Reservation Centre and Subcenter

▭ Stations Assigned of Reserved Seats

Fig. IV.5.1 Sales Organization of Reserved Seats



#### IV.5.1.2 Method of selling reserved seats

##### (1) Date of sale and waiting timetable

Reservations are sold 30 days in advance of the date of departure of the train, but during the summer they are sold 60 days in advance of departure of the train.

The operating times of the 7 subcenters is from 9:00 to 18:00 Monday to Friday, and from 9:00 to 13:00 Saturday, and they are closed on Sunday. Only the Military School Sales Center operates from 8:00 to 19:00 Monday to Friday and from 8:00 to 13:00 Saturday.

The stations with assignment of reserved seats conform to the timetable of the trains. (Alameda station 6:45 - 23:00, Concepcion station 7:00 - 23:00, and Valdivia 9:00 - 20:00, etc.)

##### (2) Sale of reserved seats

The sale of reserved seats is planned and drawn up at the Reservation Center and put into practice by means of the reserved seat diagram. (Fig. IV.5.2).

		Diagram of first class coach with 96 seats					
		No. of train...Coach...From...To... Date...					
Left						Right	
48	47	48	47	1	4	1	2
See following figure		From.....	From.....	From.....	From.....		
		To.....	To.....	To.....	To.....		
		Ticket.....	Ticket.....	Ticket.....	Ticket.....		
		46	45	3	4	3	4

LEFT WINDOW SIDE		LEFT CORRIDOR SIDE	
Coach	Seat 48	Coach	Seat 47
Date.....		Date.....	
Departure.....		Departure.....	

Fig. IV.5.2 Diagram for Seats Assignment

The seat diagram for reserved seats is drawn up for each train and for each car and consists in the passenger ticket and the stub for recording the data, to prevent accidental double sales and facilitate the task of checking tickets on the trains. When the ticket is returned, the data is noted on the ticket of the passenger who obtained the seat to be changed as replacement for the issue of reserved seats.

The flow the tasks related to the Reservation Center is shown in Fig. IV.5.3.

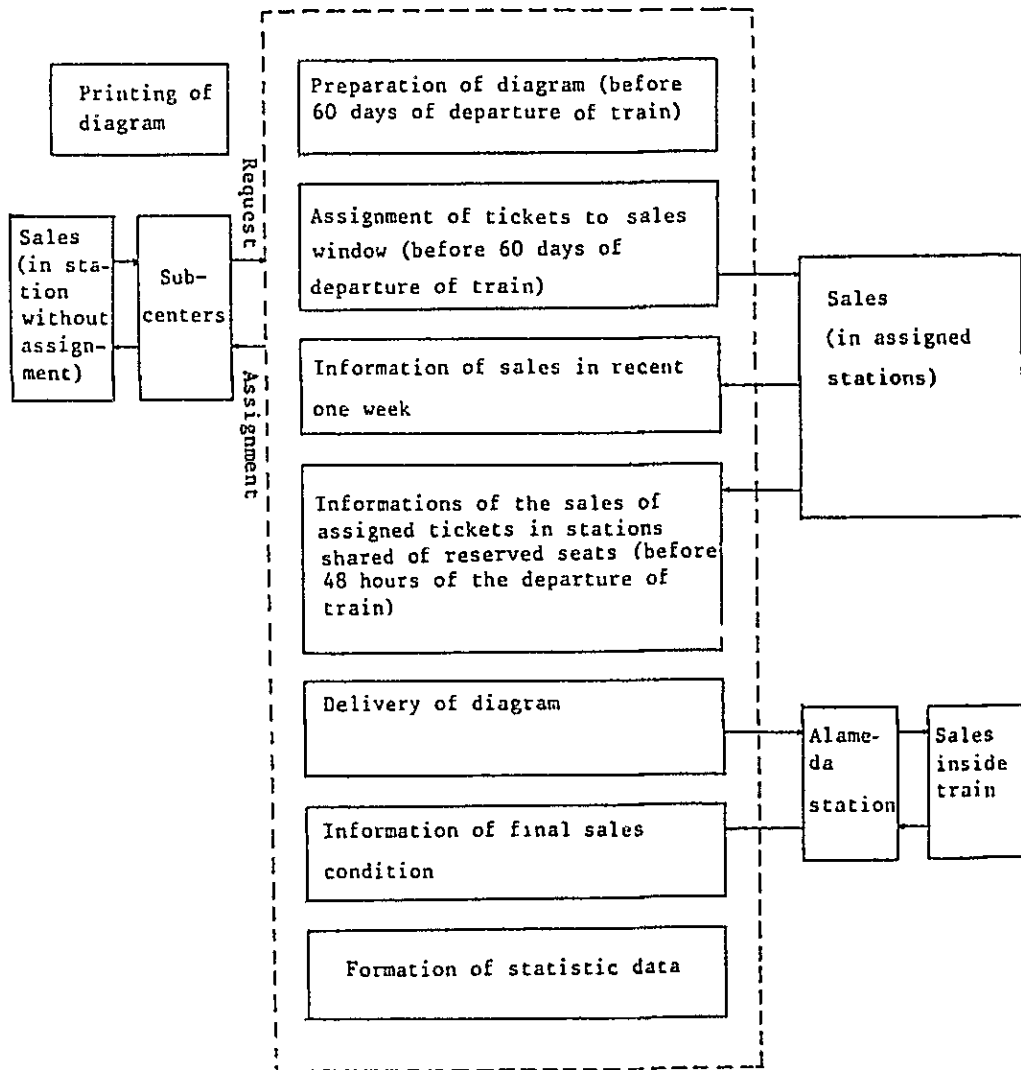


Fig. IV.5.3 Flow of Tasks Related to the Diagram of Assignment of Reserved Seats

(3) Trains with reserved seats and the quantity of seats

The number of trains which require reservations amount to 16 services, including up and down trains with a total of 3560 seats, as shown in Table IV.5.1.

Table IV.5.1 Trains with Reserved Seats and Quantity of Seats

Trains	Type	Section	Number of coaches and number of seats			
			First	Salón	Super salón	Sleeper
T 1023 / 1024	Rapid	Alameda - Puerto Montt	2 (4) 192 (384)	2 (3) 160 (240)		2 (3) 40 (60)
T 9 / 10	Express	Alameda - Puerto Montt		1 80		2 40
T 7 / 8	Express	Alameda - Concepción				1 20
A 1005 / 1006	Rapid	Alameda - Concepción		2 152	2 100	
A 1007 / 1008	Rapid	Alameda - Concepción		2 152	2 100	
A 1009 / 1010	Rapid	Alameda - Concepción		2 152	2 100	
A 1005 / 1004	Rapid	Alameda - Chillán		3 200		
A 1025 / 1026	Rapid	Alameda - Temuco	1 92		4 200	

Note 1: T = Locomotive-hauled train A = Electric-car train

Note 2: Upper column = Number of coaches  
 Lower column = Number of seats  
 Number in parentheses is in summer.

(4) Assignment of reserved seats

The allotment of reserved seats is distributed among the 7 subcenters. In addition, small quantity distribution is carried out to some rural stations.

Concerning the assignment of reserved seats of downward trains (trains with uneven number), seats are sold at four subcenters and nine surrounding stations; the ratio of subcenters is 79% and that of surrounding stations 21% (Table IV.5.2). The seat reservations of upward trains (trains with even number) are sold at seven subcenters (64%) and 15 surrounding stations (36%), more than for the downward trains (Table IV.5.3).

The assignment of seat reservations is shown in the following figures for each train (Tables IV.5.4, IV.5.5, IV.5.6, IV.5.7, IV.5.8, IV.5.9, IV.5.10, and IV.5.11).

(5) Problem of existing system

As explained above, at present the Southern Railway uses a seat reservation system for 16 trains with a capacity of 3,560 reserved seats, for which different classes of reserved seats are sold in advance through the seven subcenters and the corresponding rural stations.

At present, sales of reserved seats are carried out completely by hand using diagram for seats assignment.

When dealing with a very basic seat reservation system, this is an adequate method for the current transport volume. However, it would be difficult to extend the period of the sale and increase the number of sales points in order to increase the frequency and development of an active commercial policy while continuing to employ the present system.

At the same time, it is necessary to consider the excellent trained personnel which form the basis of railway operations in Chile and who will be retiring for reasons of age, and this makes necessary the renewal of personnel. In this sense it is necessary to begin now to introduce computer systems in order to proceed with organization of the structures which permit simple handling of the tasks and which do not require highly specialized personnel.

(6) Advantages of introducing the computer

Introduction of the computer will yield simplification and improvement of the tasks of selling reserved seats, and the introduction of automatic ticket printing and issuing machines in the ticket offices of the station would permit simplification of the tasks at the ticket-window and their later office processing with the consequent reduction of the time devoted to these tasks.

Furthermore, control of development of reservation sales by computer eliminates any communication on the progress of the sale of ticket reservations. And exact information of the current sales situation would make it possible to take advantage of the increase in frequencies of the trains or increase in cars according to the movement of the passenger demand with sufficient speed to significantly improve the services to passengers.

Even though present service conditions allow relatively easy to obtain reserved seats for departing trains, there is some difficulty in obtaining reserved seats for return trains, which would be solved with the abovementioned measures, thus providing better service.

Moreover, in connection with printing of the tickets, it is considered possible to reduce the capacity of the printing shops or eliminate them, by introducing the computer system for retailing the reserved seats and the parallel adoption of the automatic ticket printers and issuing machines.

Table IV.5.2 Assignment of Reserved Seats (For downward trains)

Sales place	Section Class	Alameda → Pto. Montt			Alameda → Valdivia			Alameda → Concepción			Alameda → Temuco			Total						
		Com- part- ment	Sleep er	Salón	First	Com- part- ment	Sleep er	Salón	Super Salón	Com- part- ment	Sleep er	Salón	Super Salón		First					
1	Centro	4	0	50	47	4	10	56	96	2	6	220	166	68	12	20	100	62	26	1.165
2	Derección	2	2	4		2				2		12			2	2				20
3	Aire Acondición			2				2												4
4	Militar	2	2	10	4	2	2	6		2	2	24	20	12	2	2	24	8	8	140
5	Puerto			5	9						4	6								24
6	Alameda				20			10			30	46	84				40	10	34	274
7	San Bernardo													4						4
8	Rancagua													8						8
9	San Fernando													4						4
10	Curico													4						4
11	Talca			5	6									4			8		8	31
12	Est. Talca													4						4
13	Linares													4			8		8	20
14	Chillán			4	10			6						4					8	44
15	Concepción									2	4	10	10				12			26
	Total	8	12	80	96	8	12	80	96	0	12	300	456	200	16	24	200	80	92	1.780

Table IV.5.3 Assignment of Reserved Seats (For upward trains)

Sales place	Section		Pto. Montt			Valdivia			Concepción			Chillán			Temuco			Total		
	Class	Com-part-ment	Alameda		Com-part-ment	Alameda		Com-part-ment	Alameda		Com-part-ment	Alameda		Com-part-ment	Alameda					
			Sleep-er	Salón		Sleep-er	Salón		Sleep-er	Salón		Sleep-er	Salón		Sleep-er	Salón	Sleep-er		Salón	
1	Centro	2	2'	10		4	10		2	2		8		2			42			
2	Militar											2					2			
3	Alameda											10	10				22			
4	Curicó											22	31	60			20			
5	Talca											11	24	36			113			
6	Linares											7	9	12			71			
7	Parral											12	12				28			
8	San Carlos											56	82	48			24			
9	Chillán											12	20				186			
10	Cabrero											4	10				32			
11	Laja											6	10				8			
12	Los Angeles,											178	250				14			
13	Concepción											6	10				444			
14	Renaico														6		16			
15	Victoria														32		44			
16	Lautaro														16		26			
17	Temuco														14	20	222			
18	Est. Temuco			2											2	2	110			
19	Valdivia																150			
20	Est. Valdivia			4													54			
21	Osorno		4	48	40												100			
22	Pto. Montt		2	16	32												52			
	Total	8	12	80	96	8	12	80	96	8	12	300	456	200	16	24	200	80	92	1.700



Table IV.5.4 Assignment for Each Type of Reserved Seats for 1023 and 1024 Fast Trains

T 1023: P (200 persons) Z (160 persons) X (40 persons)

Place of Sales	Section Class	Alameda → Pto. Montt					Alameda → Valdivia					Total
		C	S	Z	P	Total	C	S	Z	P	Total	
Centro		4	8	50	47	109	4	10	56	96	166	275
Militar		2	2	10	4	18	2	2	6		10	28
Dirección		2	2	4		8	2				2	10
Alameda					20	20			10		10	30
Puerto				5	9	14						14
Talca				5	6	11						11
Chillán				4	10	14			6		6	20
Aire				2		2			2		2	4
<b>Total</b>		<b>8</b>	<b>12</b>	<b>80</b>	<b>96</b>	<b>196</b>	<b>8</b>	<b>12</b>	<b>80</b>	<b>96</b>	<b>196</b>	<b>392</b>

T 1024: P (200 persons) Z (160 persons) X (40 persons)

Place of Sales	Section Class	Pto. Montt → Alameda					Valdivia → Alameda					Total
		C	S	Z	P	Total	C	S	Z	P	Total	
Pto. Montt		2	2	16	32	52						52
Osorno		4	8	48	40	100						100
Valdivia					8	8	6	6	48	82	142	150
Est Valdivia				4	8	12	2	2	14	14	32	44
Temuco					8	8			8		8	16
Est. Temuco				2		2						2
Stgo. Centro		2	2	10		14		4	10		14	28
<b>Total</b>		<b>8</b>	<b>12</b>	<b>80</b>	<b>96</b>	<b>196</b>	<b>8</b>	<b>12</b>	<b>80</b>	<b>96</b>	<b>196</b>	<b>392</b>

P = First class

Z = Salón

C = Compartment with bed

S = Sleeper

Table IV.5.5 Assignment for Each Type of Reserved Seats for 9 and 10 Express Trains

T 9: Z (40 persons) X (80 persons)

Place of sales	Section Class	Alameda → Temuco			Total
		C	S	Z	
Stgo. Centro		12	20	62	94
Militar		2	2	8	12
Alameda				10	10
Dirección		2	2		4
<b>Total</b>		<b>16</b>	<b>24</b>	<b>80</b>	<b>120</b>

T 10: Z (40 persons) X (80 persons)

Place of sales	Section Class	Temuco → Alameda			Total
		C	S	Z	
Temuco		14	20	42	76
Est. Temuco		2	2	28	32
Stgo. Centro			2		2
Alameda				10	10
<b>Total</b>		<b>16</b>	<b>24</b>	<b>80</b>	<b>120</b>

C = Compartment with bed

S = Sleeper

Z = Salón

Table IV.5.6 Assignment for Each Type of Reserved Seats for 7 and 8  
Express Trains

T 7: X (20 persons)

Place of Sales	Section Class	Alameda		Total
		→	Concepción	
		C	S	
Stgo. Centro		2	6	8
Militar		2	2	4
Dirección		2		2
Concepción		2	4	6
<b>Total</b>		<b>8</b>	<b>12</b>	<b>20</b>

T 8: X (20 perosns)

Place of sales	Section Class	Concepción		Total
		→	Alameda	
		C	S	
Concepción		6	10	16
Stgo. Centro		2	2	4
<b>Total</b>		<b>8</b>	<b>12</b>	<b>20</b>

C = Compartment with bed

S = Sleeper

Table IV.5.7 Assignment for Each Type of Reserved Seats for 1005 and 1006 Fast Trains

A 1005: Z (152 persons) Sup. (100 persons)

	Alameda → Concepción		Total
	Sup	Z	
Stgo. Centro	74	125	199
Militar	10	10	20
Alameda	10	15	25
Dirección	4		4
Puerto	2	2	4
<b>Total</b>	<b>100</b>	<b>152</b>	<b>252</b>

A 1006: Z (152 persons) Sup. (100 persons)

	Concepción → Alameda		Total
	Sup	Z	
Concepción	62	66	128
Los Angeles	4	10	14
Laja		8	8
Cabrero	4	6	10
Chillán	14	26	40
San Carlos		4	4
Parral	2	4	6
Linares	4	10	14
Talca	10	18	28
<b>Total</b>	<b>100</b>	<b>152</b>	<b>252</b>

Z = Salón      Sup. = Super Salón

Table IV.5.8 Assignment for Each Type of Reserved Seats for 1007 and 1008 Fast Trains

A 1007: Z (152 persons) Sup. (100 persons)

	Alameda → Concepción		Total
	Sup.	Z	
Stgo. Centro	74	119	193
Militar	10	14	24
Alameda	10	15	25
Puerto	2	4	6
Dirección	4		4
<b>Total</b>	<b>100</b>	<b>152</b>	<b>252</b>

A 1008: Z (152 persons) Sup. (100 persons)

	Concepción → Alameda		Total
	Sup.	Z	
Concepción	42	62	104
Cabrero	4	10	14
San Carlos		8	8
Chillán	30	40	70
Parral	5	5	10
Linares	7	14	21
Talca	12	13	25
<b>Total</b>	<b>100</b>	<b>152</b>	<b>252</b>

Z = Salón      Sup. = Super Salón

Table IV.5.9 Assignemnt for Each Type of Reserved Seats for 1009 and 1010 Fast Trains

A 1009: Z (152 persons) Sup. (100 persons)

	Alameda → Concepción		Total
	Sup.	Z	
Stgo. Centro	72	122	194
Militar	4	4	8
Alameda	10	16	26
Concepción	10	10	20
Dirección	4		4
<b>Total</b>	<b>100</b>	<b>152</b>	<b>252</b>

A 1010: Z (152 persons) Sup. (100 persons)

	Concepción → Alameda		Total
	Sup.	Z	
Alameda	10	10	20
Concepción	74	122	196
Cabrero	4	4	8
Chillán	12	16	28
<b>Total</b>	<b>100</b>	<b>152</b>	<b>252</b>

Z = Salón      Sup. = Super Salón

Table IV.5.10 Assignment for Each Type of Reserved Seats for 1003 and 1004 Fast Trains

T 1003: Z (200 persons)

	Alameda → Chillán
	Z
Stgo. Centro	68
Militar	12
Alameda	84
San Bernardo	4
Rancagua	8
San Fernando	4
Curicó	4
Talca	4
Est. Talca	4
Linares	4
Chillán	4
<b>Total</b>	<b>200</b>

T 1004: Z (200 persons)

	Chillán → Alameda
	Z
Chillán	48
San Carlos	12
Parral	12
Linares	36
Talca	60
Curicó	20
Stgo. Centro	8
Militar	2
Alameda	2
<b>Total</b>	<b>200</b>

Z = Salón

Table IV.5.11 Assignment for Each Type of Reserved Seats for 1025 and 1026 Fast Trains

A 1025: Sup. (200 persons) P (92 persons)

	Alameda → Temuco		Total
	Sup.	P	
Stgo. Centro	108	26	134
Militar	24	8	32
Alameda	40	34	74
Talca	8	8	16
Linares	8	8	16
Chillán	12	8	20
<b>Total</b>	<b>200</b>	<b>92</b>	<b>292</b>

A 1026 = Sup. (200 persons) P (92 persons)

	Temuco → Alameda		Total
	Sup.	P	
Temuco	114	16	130
Est. Temuco	32	44	76
Lautaro	16	10	26
Victoria	32	12	44
Renaico	6	10	16
<b>Total</b>	<b>200</b>	<b>92</b>	<b>292</b>

P = First      Sup. = Super Salón



## IV.5.2 Development of the New System

### IV.5.2.1 Assumption for the system design

(1) Advance period for the sale of reserved seats

One month in advance (Except for summer, when the advance period will be two months)

(2) Sales schedule

From 6:30 to 23:00 at maximum

(3) Classification of reserved seats

First class, Salon, Super Salon, Sleeper (upper and lower) and Compartment

(4) Type of trains with reserved seats

T.1023/1024, T.9/10, T.7/8, A.1005/1006, A.1007/1008, A.1009/1010, A.1003/1004 and A.1025/1026, with a total of 16 upward and downward trains

(5) Quantity of reserved seats (For one direction of travel)

(The numbers in parentheses are for summer.)

First class	284	(476)
Salon	896	(976)
Super Salon	500	(500)
Sleeper	80	( 96)
Compartment	20	( 24)
-----		
Total	1780	(2072)

(6) Number of stations to be stopped

Maximum of 30 stations

(7) Days for return of train

Two days maximum

#### IV.5.2.2 Planning the new system

In case that computers are introduced for the reserved seats sales system, it is necessary to consider the present situation of the Southern Railway if it is to be economical and appropriate for the introduction.

As a result, it has been decided to analyze the following three alternatives, taking into account the factors indicated above.

##### (1) First alternative

###### 1) Make-up of the system

This alternative provides for installation of a micro-computer in the Reservation Center, consisting of the method to control sales of reservation of reserved seats on 16 trains. In this case the equipment would consist of the following:

###### Reservation Center:

CPU (central processing unit) (2,000 KB)

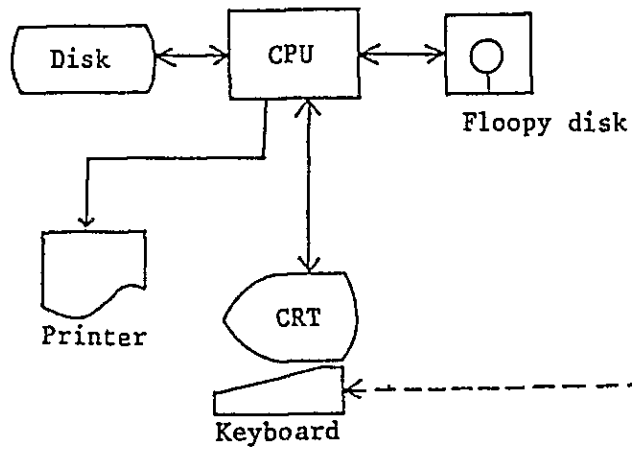
Disk equipment (3 units)

Floppy disk (2 units)

Printer (3 units)

Terminal equipment (CRT/Keyboard)(5 units)

(Note) For subcenters and the respective stations, computers will not be installed, and the diagram-assignment systems used up to now will be adopted.



(Subcenters and stations with assignment)  
 Diagram of assignment of reserved tickets for sales

LEFT				RIGHT			
48	47	47	48	1	2	1	2

Fig. IV.5.4 Composition of the System in the First Alternative

2) Functions of the system in the first alternative

Functions	Description
Function of producing the sales diagram of reserved seats	Printing the reserved seats sales diagrams used in each subcenter and in each station, with assignment
Function of entering the reserved seats sales information	Entering the data on the state of sales of reserved seats by means of telephone communication from each subcenter and each station, with assignment
Function of input the state of sales of reserved seats	Output of information on the state of sales of reserved seats of each subcenter and each station, with assignment
Function of computing the sales of reserved seats	Computation of the sales data (quantity of reserved seats and the amount of the sale) at each subcenter and each station, with assignment
Functions of drawing up the diagrams for sale on trains	Printing the diagrams for sales on the trains
Function of maintaining files	Creating and maintaining files on the numbered accommodation sales data
System support function	Function of producing, maintaining and organized developemnt of the daily file and table functions which are not part of the reserved seats sales data file
Statistical processing function	Computation of reserved seats sales data from the subcenters and the respective stations (daily part and monthly part) and the passenger movement tables (daily part and monthly part) based on the sales data file of reserved seats assignment

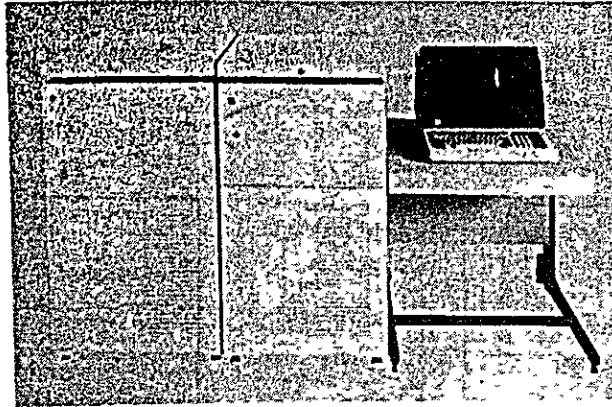
### 3) Operating method

#### Reservation Center

- a) The computer creates (outputs) and distributes the reserved seats sales diagram to be used in the subcenters and stations, with assignment of reserved seats in advance.
- b) Information on sales of reserved seats is received by telephone or telex from the subcenters and stations with previously assigned, so that it may be entered on terminal (keyboard) equipment and recorded and ordered.

This allows rapid and precise response to enquiries made at the proper time.

- c) When the train leaves, the computer outputs the list for sale of reserved diagrams on the corresponding train, to be delivered to conductor of the train.
- d) The terminal (keyboard) equipment is used to input the data of the on-board sales diagram, produced either by sales or by modification, so that the computer records may be updated and stored.
- e) The computer outputs the stored data required for drawing up the required statistical information.



Microcomputer  
CPU  
Disk

CRT/Keyboard

Printer

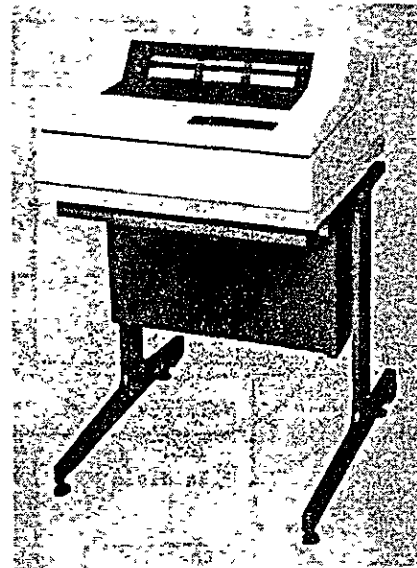
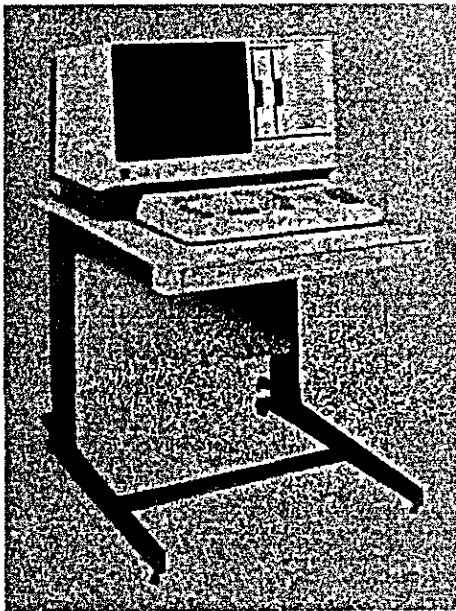


Fig. IV.5.5 Model of Microcomputer for Reservation Center in the First Alternative

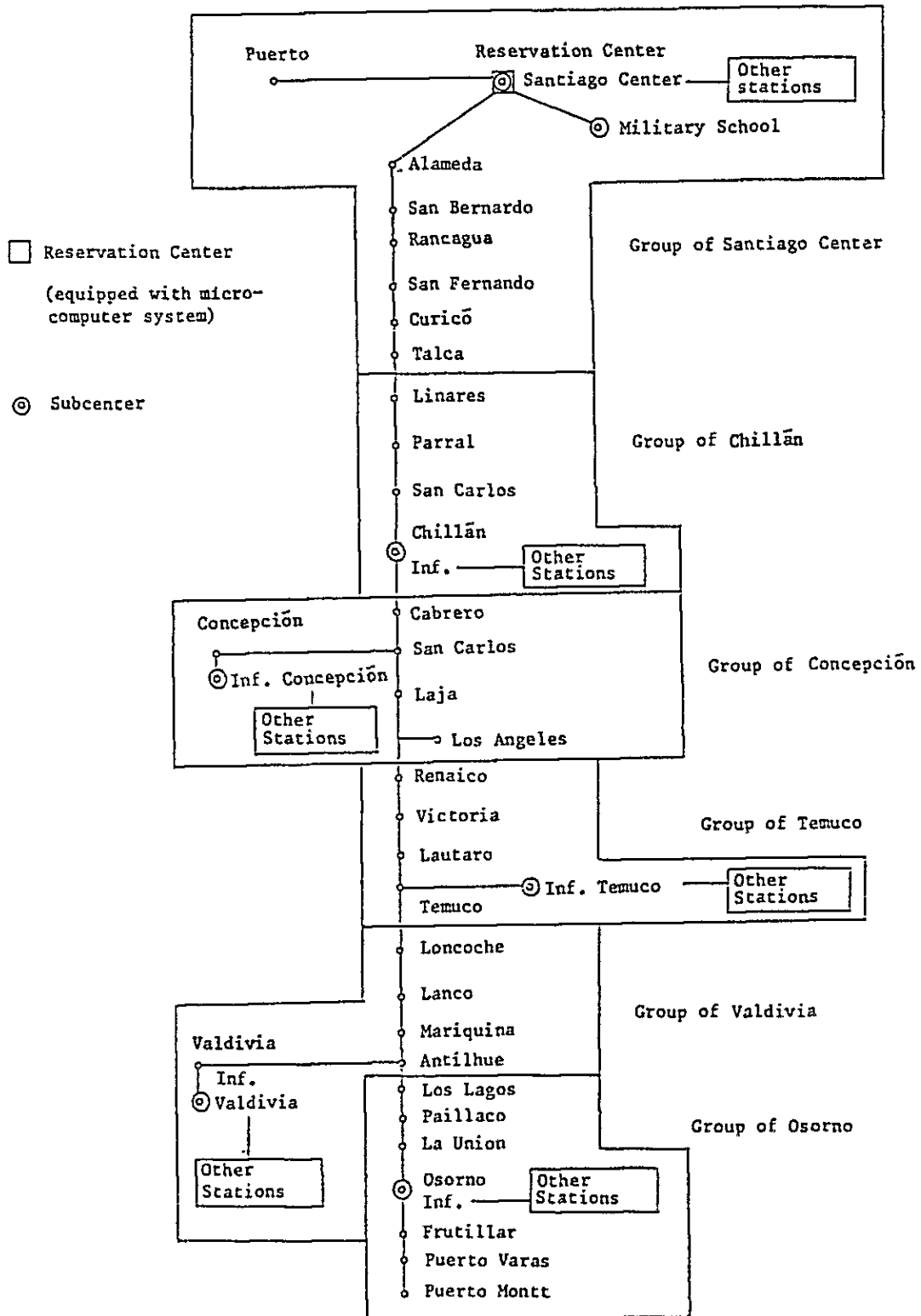


Fig. IV.5.6 System Plan for Reservation Center, Subcenters and Stations with Assignment in the First Alternative

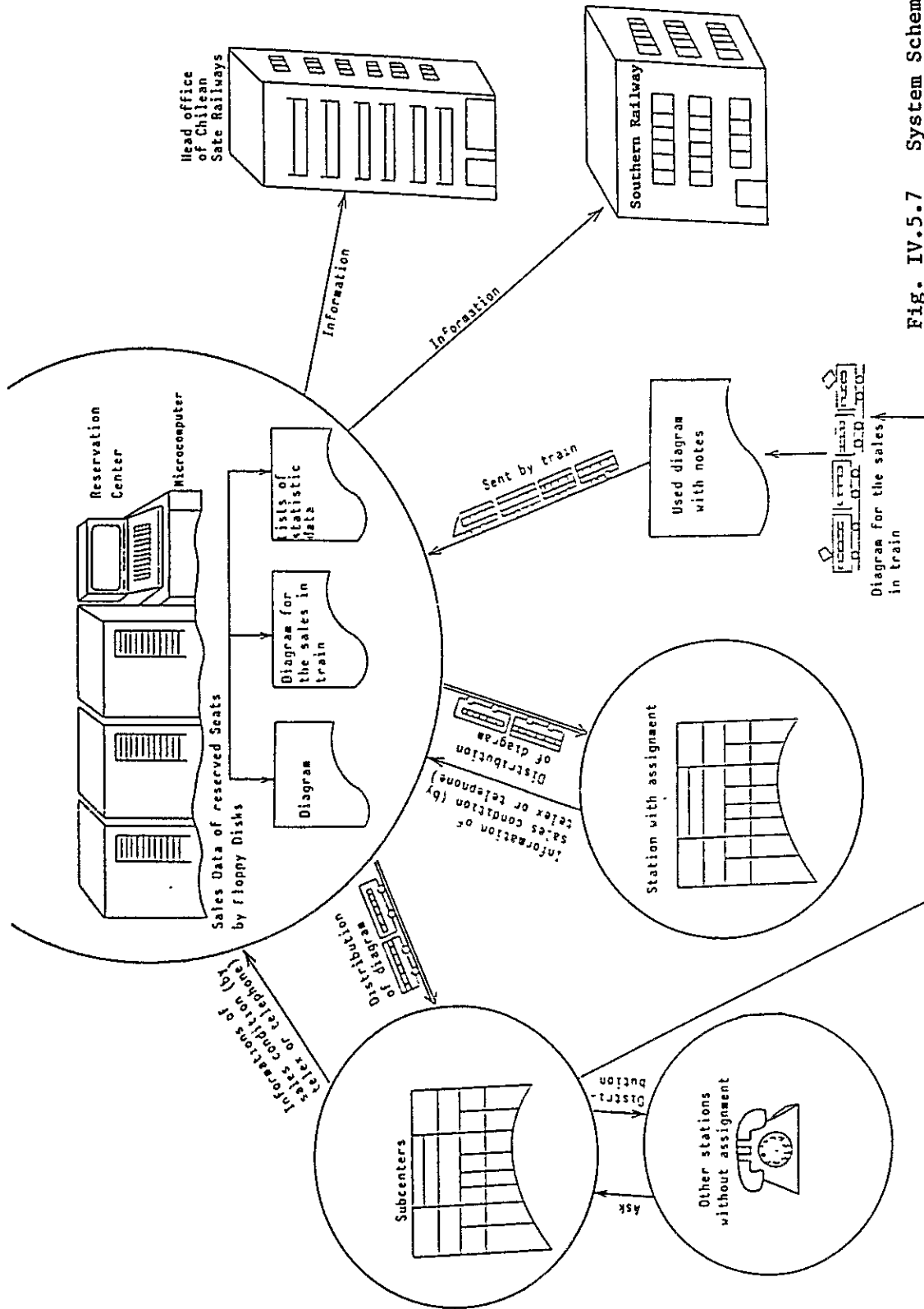


Fig. IV.5.7 System Schematic of the First Alternative



(2) Second alternative

1) Composition of the system

This alternative provides for installation of a micro-computer with disk system in the Reservation Center to incorporate the data from the 16 trains and carry out integrated control of the sales of reserved seats, installation of terminal equipment in the Ticket Sales and Information Center and office computers in the six subcenters, which are: the Military School Sales Center, Chillan, Concepcion, Temuco, Osorno and Valdivia, and one unit in the Alameda Station, which will operate according to the control method for the reserved seats sales by means of floppy disks (memory disks).

a) Reservation Center

CPU (central processing unit) (2,000 KB)

Disk equipment (4 units)

Floppy disk (2 units)

Printer (5 units)

Terminal equipment (5 units)

b) Subcenters and Alameda station

CPU (central processing unit) (128 KB)

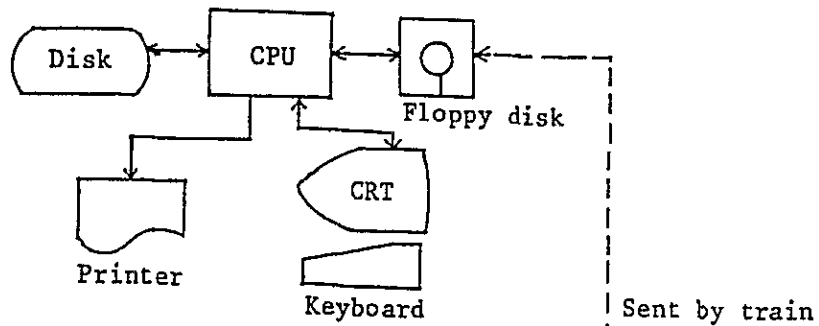
Disk equipment (CRT/Keybooard) (1 ~ 2 units)

Floppy disk (1 ~ 2 units)

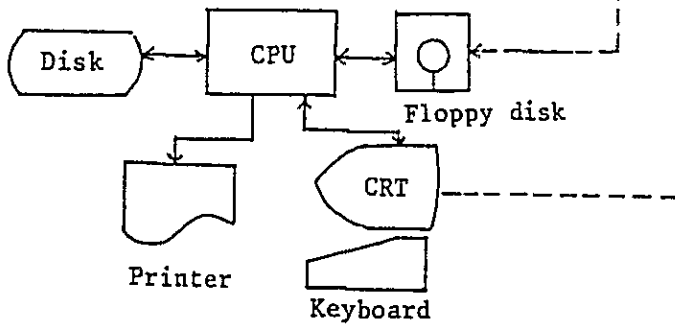
Printer (1 ~ 2 units)

Terminal equipment (CRT/Keyboard)(1 ~ 2 units)

(Reservation Center)



(Subcenter or Alameda Station)



(Stations with Assignment of Reserved Seats)

Not equipped with computer system.  
Diagram of reserved seat sales.

Telex or Telephone

LEFT						RIGHT	
48	47	48	47	1	2	1	2

Fig. IV.5.8 Composition of the System in the Second Alternative

2) Functioning of the system of the second alternative

(a) Functions of the Reservation System

Functions	Description
Function of selling and canceling reservations for reserved seats	Processing of sales and cancellation of reservation of reserved seats at the Ticket Sales and Information Center by means of terminal equipment
Function of issuing data on sale of reservations of reserved seats	Output to floppy disk the data from sales at the Alameda Station and subcenters equipped with computer
Function of inputting data on sale of reservations for reserved seats	Control based on reading data on the state of sales of reserved seats from the Alameda Station and the subcenters equipped with computer
Function of inquire the state of sales of reservation for the reserved seats	Issue of state of sales of reservations for reserved seats from the Reservation Center, Alameda Station, the subcenters and stations with prior assignment of reserved seats
Function of computing sales of reservations for reserved seats	Computation of sales data (quantity of reserved seats and amount of the sale) from the Reservation Center, Alameda Station, the subcenters with prior assignment of the reserved seats
File maintenance function	Creates and maintains the file of the sales data for reserved seats
System support function	Function for creating, maintaining and organized development of the daily file and table functions which are not in the reserved seats sales data file
Statistical processing function	Carrying out computation of the reserved seats sales data of the subcenters and the respective stations (daily part and monthly part) and the passenger movement table (daily part and monthly part) based on the data of the sales of reserved seats

(b) Functions of computers installed in subcenters and the Alameda Station

Functions	Description
Function of selling and canceling reservations for reserved seats	Processing of sales and cancellation of reservations of reserved seats of stations which are not the center itself and stations dependent on it with prior assignment of reserved seats
Function of issuing data on sale of reservations of reserved seats	Drawing up and distributing the sales diagrams of the reserved seats assignment for dependent stations with prior assignment, based on the data (floppy disk) for the sale of reserved seats sent from the Reservation Center
Function of inputting data on sale of reservations for reserved seats	Input data on the state of sales of reserved seats by means of terminal equipment based on telephone information received from stations dependent on prior assignment
Function of outputting the state of sales of reservations for the reserved seats	Outputs state of sales of reservations for reserved seats from their own center and the dependent stations with prior assignment of floppy disk to be sent to the Reservation Center
Function of quoting the state of sales of reservations for reserved seats	Outputs the state of sales of reserved seats during the control process
System support function	Function for creating, maintaining and organized development of the daily functions of the file and tables of reserved seats
Function for issue of lists for sale on trains	Carries out printing of the on-board ticket sales diagrams

3) Operating method

(a) Reservation Center

- a) The sale of accommodation allocations at the Ticket Sales and Information Center will be carried out by means of the terminal equipment directly connected to the computer.
- b) The data for sale of reserved seats sold at the Alameda Station and subcenters equipped with computer will be output on floppy disks for distribution.
- c) The computer will be provided with the state of sales of reserved seats, which is sent by floppy disks from the Alameda Station and the subcenters equipped with computer.
- d) Input will be made from the terminal (keyboard) equipment on sales and changes made on board the train in connection with the recording of sales on the train.
- e) Using the computer, the various statistics necessary will be drawn up based on the data recorded.

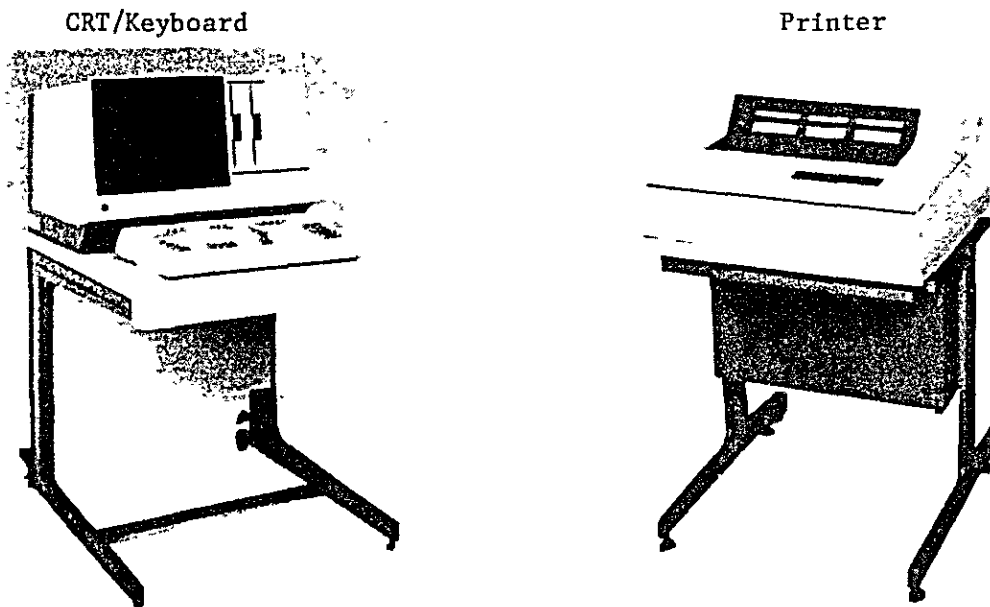
(b) Subcenters and the Alameda Station equipped with computer

- a) Using the terminal equipment connected directly to the computer, sales and assignments of reserved seats will be made to the subcenter itself and the dependent stations which do not have prior assignment.
- b) Using the computer, diagram for sales and assignment of reserved seats will be issued and distributed to the dependent stations which have prior allotment.

- c) The state of sales of reserved seats under control to be memorized on the floppy disk and sent to the Reservation Center.
- d) When the train leaves, the computer will output the diagram of on-board sales for the train departing from the station located in the section under control, for delivery to conductor on the train.

(c) On the train

Sales and modification made on the train shall be noted on the list of on-board sales and sent to the Reservation Center.



Subcenters and Alameda Station

Fig. IV.5.9 Model of Installation for Reservation Center in the Second Alternative

The model of microcomputer for Reservation Center is the same as for the first alternative. (See Fig. IV.5.5)

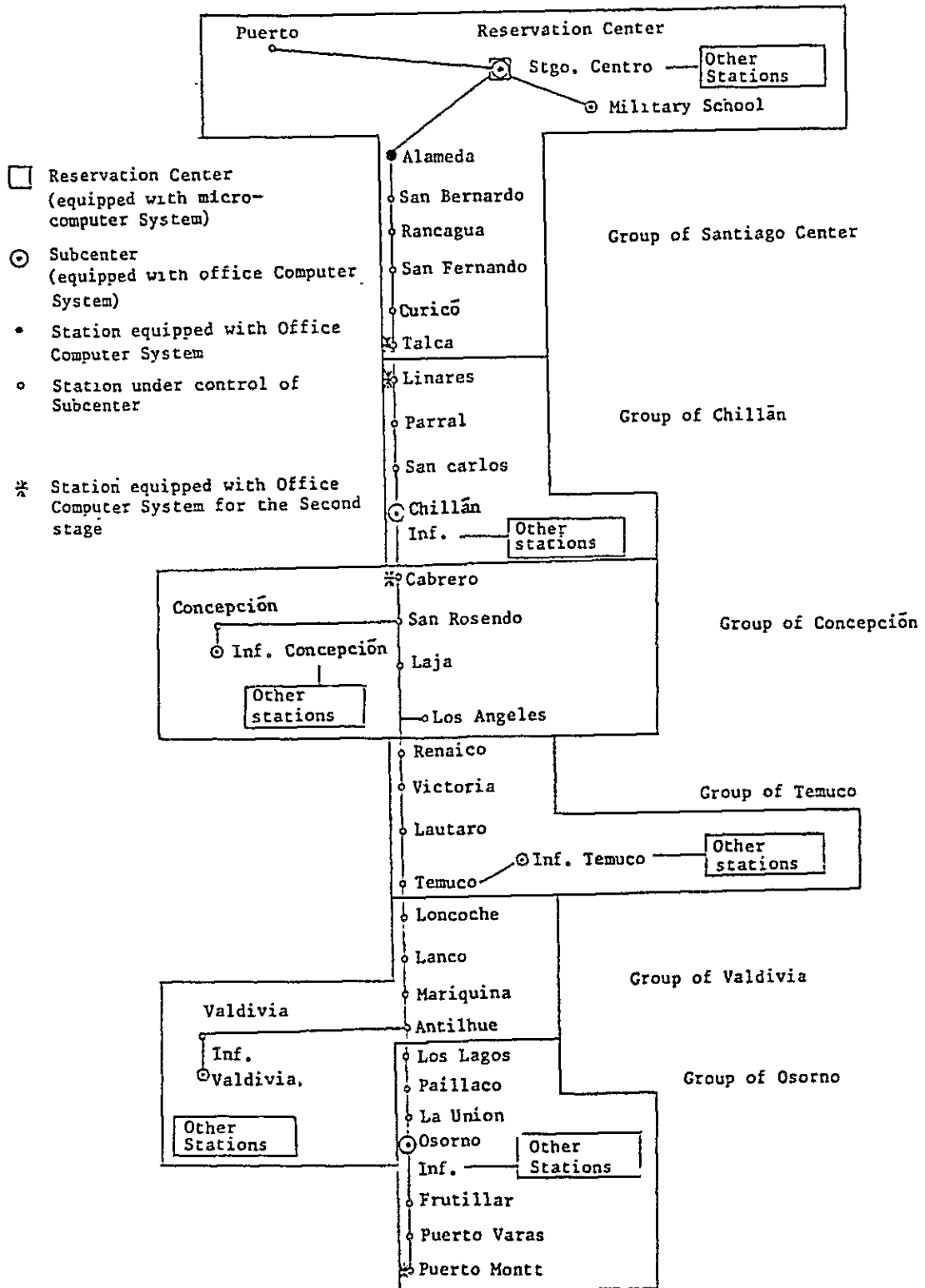


Fig. IV.5.10 System Plan for Reservation Center, Subcenters and Stations in Each Region in the Second Alternative

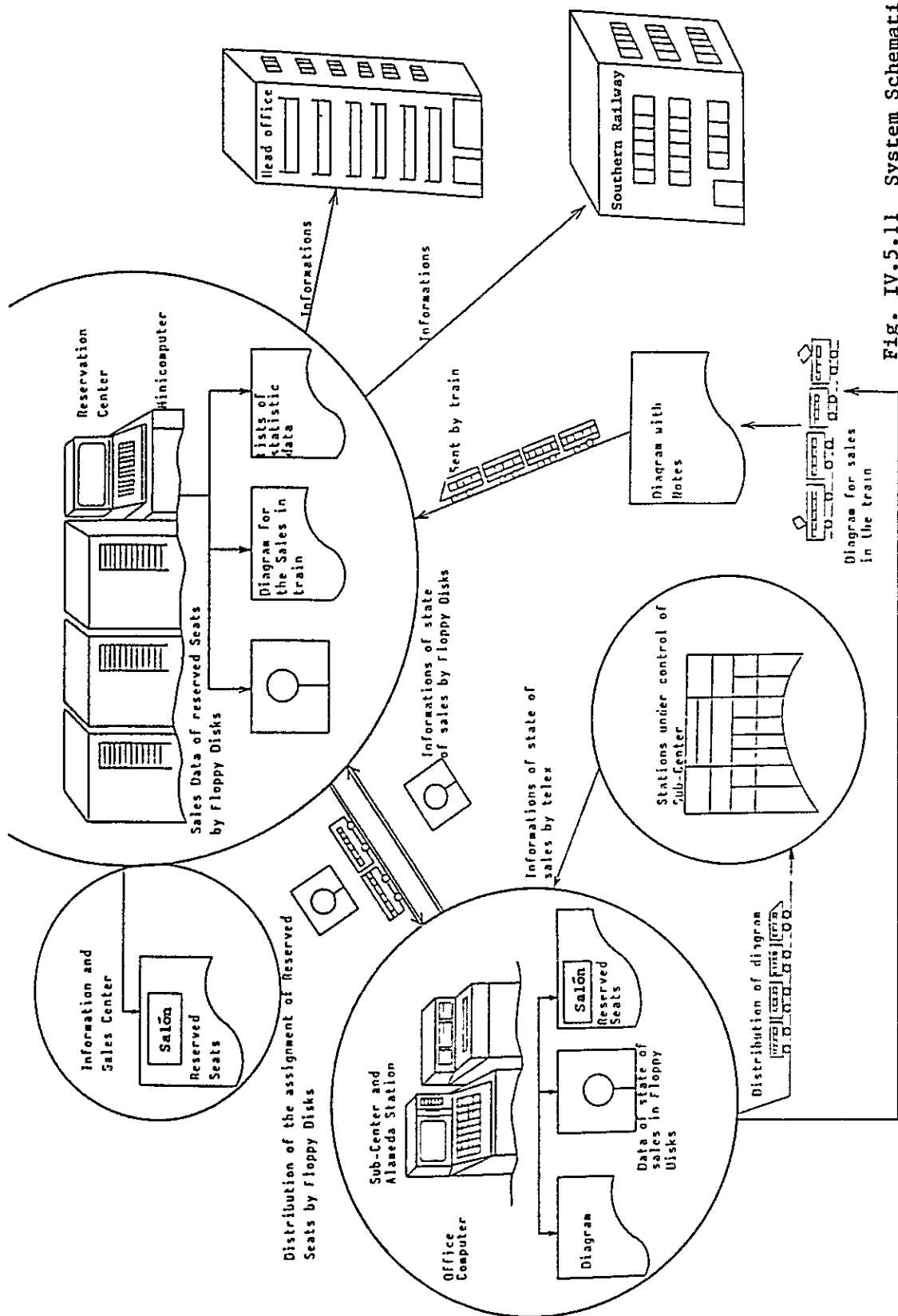


Fig. IV.5.11 System Schematic of the Second Alternative



(3) Third alternative

1) Composition of the system

A computer will be installed with disk equipment in the Reservation Center to input all the data in order to exercise centralized control of sales of reservations for reserved seats.

In subcenters and stations with prior assignment, terminal equipment will be installed connected directly to the computer of the Reservation Center in order to carry out the functions of sales, cancelation and inquiry regarding reservations for reserved seats.

(a) Reservation Center

CPU (central processing unit) (4,000 KB)  
Disk equipment (4 units)  
Floppy disk (2 unit)  
Printer (3 units)  
Terminal equipment (CRT/Keyboard)(3 units)  
Circuit control equipment (3 units)

(b) Subcenters and station with prior assignment

Terminal equipment (1 ~ 2 units)  
Printer (1 ~ 2 units)  
Circuit control equipment (1 ~ 2 units)

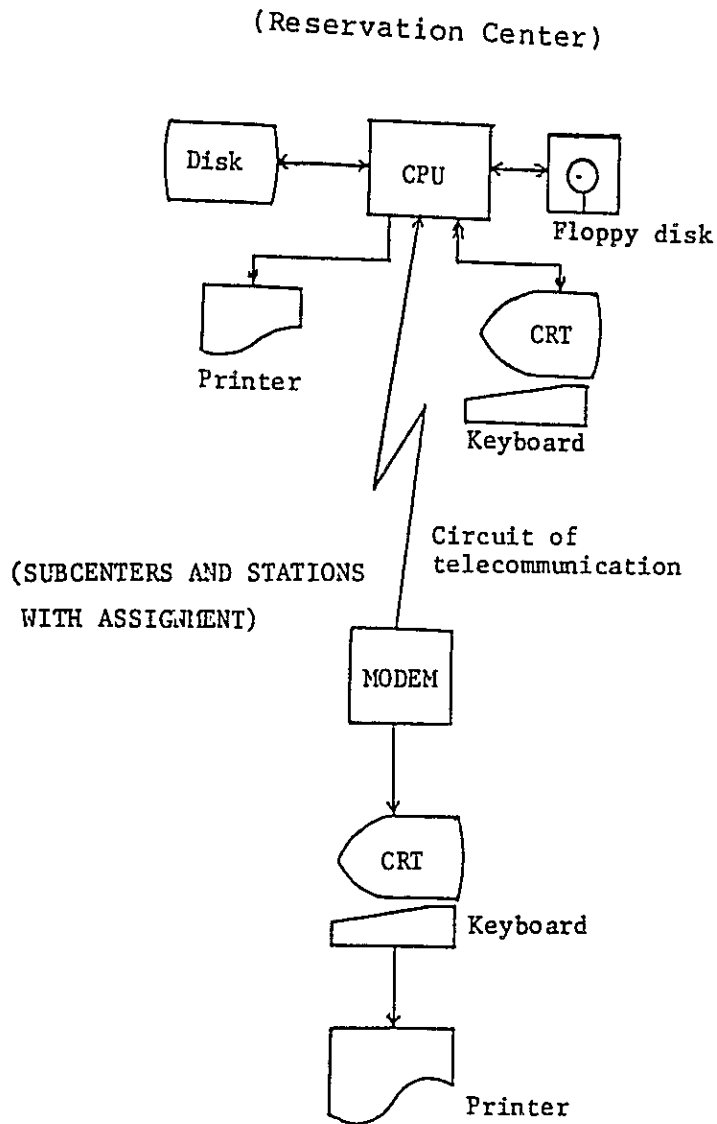


Fig. IV.5.12 Composition of the System in the Third Alternative

2) Functions of the system

a) Functions of the system related to the line equipment

Functions	Description
Function for sale by allocation of the reserved seats and printing of tickets	<ul style="list-style-type: none"> <li>- Printing of reserved seats and tickets</li> <li>- Calculation of rates and price of booking</li> </ul>
Inquiry function	Outputs state of sales of reserved seats
Cancelation function	Cancel reserved seats which have already been sold
Computation function	Carries out computation of sales data (quantity of seats sold and amount of the sale) corresponding to each terminal unit
Function of maintenance and testing terminal equipment	Has function of testing circuits and connections with the central equipment after repair to damage produced in the terminal equipment after installation

b) Functions related to line equipment

Functions	Description
File maintenance function	Carries out creation and maintenance of files on sales of reserved seats
System support function	Function of production, maintenance and organized development of the daily functions of the file and tables which are not in the reserved seats sales data file
Computation function	Carries out computation of sales data according to the terminal equipment (daily part, monthly part) and the passenger movement tables (daily part, monthly part)

3) Operating method

(a) Reservation Center

- a) Integrated central control is carried out for sales information on sales of the reserved seats.
- b) Carries out processing related to the enquiries corresponding to reserved seats and bookings from terminal equipment installed in the sub-centers and stations.
- c) The terminal equipment is operated separately for sales on board the trains so that part of the remaining seats are reserved and delivered to the train conductor.
- d) The various statistical information required is developed based on the recorded data.

(b) Subcenters and stations

- a) The terminal equipment will be installed and directly connected to the computer, and from this terminal enquiries and modifications in the sale and cancelation of reservations for reserved seats and the state of reservations will be carried out.
- b) With regard to sales on board the trains, the terminal equipment will be operated separately so that part of the remaining seats are reserved and delivered to the conductor on the train.

i

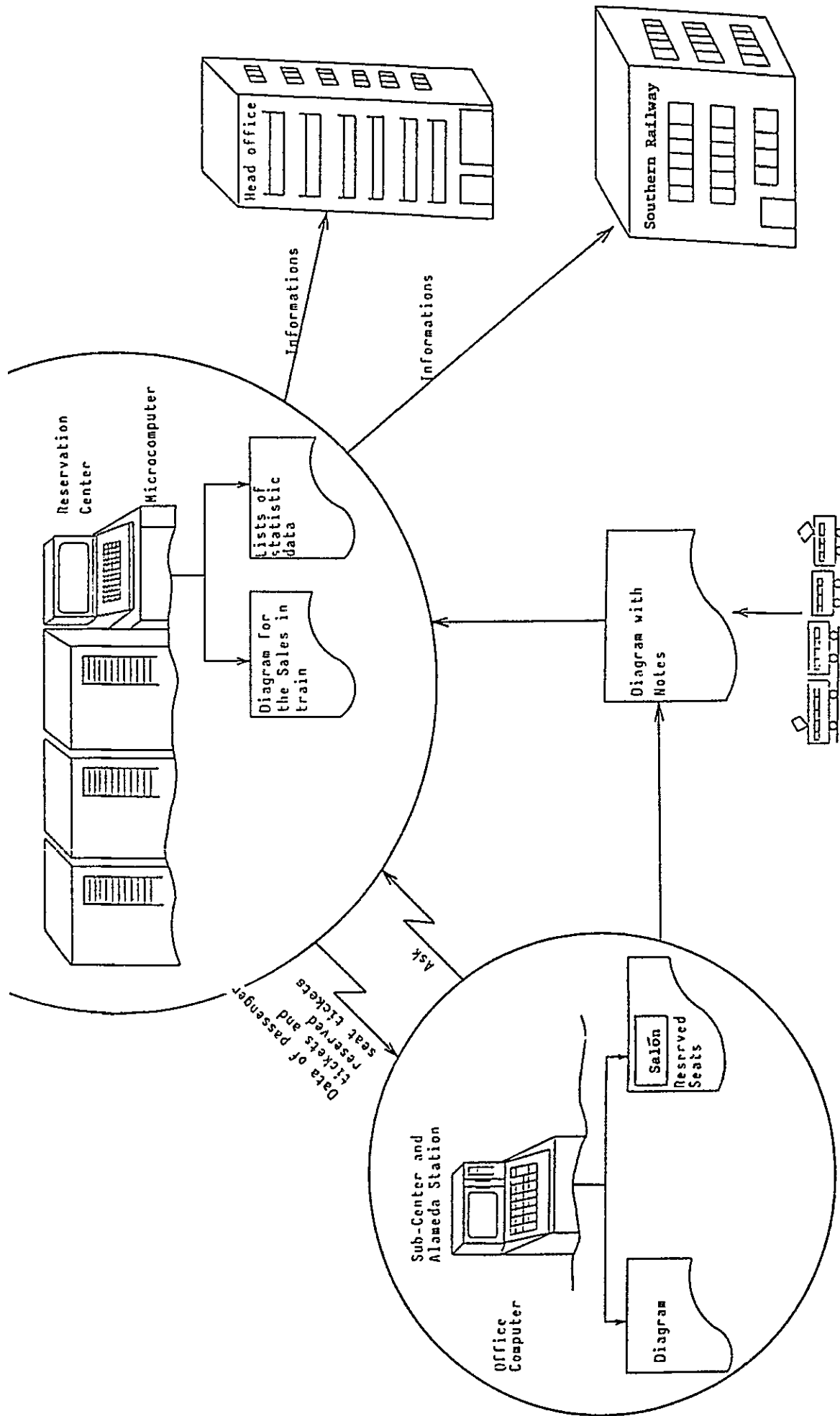


Fig. IV.5.13 System Schematic of the Third Alternative

### IV.5.2.3 Recommendation

The third plan might be an ideal and effective system for long-term planning.

However, considering the economical situation of the Southern Railway and present condition of the communication lines in Chile, etc., the second plan might be the most appropriate, because the second plan can be constructed successively and can be carried out with little consideration of the condition of the communication lines. Furthermore, if printing and vending machines of passenger tickets can be introduced for use in parallel with a second computer system, ticket windows, and passenger ticket printing can be reduced or abolished.

(Note) Further detailed investigation into such matters as economic effectiveness are necessary for the introduction of computers.

## IV.6 MARKETING RESEARCH

### IV.6.1 Organization of Structure for the Marketing Research

#### IV.6.1.1 Need for organization of the structure

Transport activity is based on the flow of people and cargo derived from the complex combination of economic, social and cultural activities. However, within the field of passenger operations it is necessary to develop activities adequately and at the proper time, incorporating not only the changes occurring in the flow of people, but also taking into account the flow of cargos.

For these purposes it is necessary to precisely incorporate all economic movements, trends in other means of transport, and permanent compilation of information from tourist centers, in order to provide transport services which respond to the requirements of passengers and to organize the structure which permits deve-

lopment of new services and makes possible an active campaign of attracting passengers.

#### IV.6.1.2 Definition of the organization in charge

At present there is no office which undertakes this type of activity on the Southern Railway, with these tasks being performed sporadically when the need arises in the service, planning and marketing section of the Passenger Business Department corresponding to the passenger service area. As a result, there is a lack of information and there is no permanent or systematic organization. The data of different types used to marketing research should be collected continuously and systematically and under conditions where it is possible to have it at any time. Moreover, it is necessary to maintain close contact with other means of transport and related official organizations to make possible obtainal of the necessary information and clarify at all times the organization responsible for the necessary information being available at all times.

On the Southern Railway, it is considered appropriate to create the Marketing Research Section as a separate suboffice of the Passenger Business Department in order to take charge of all matters related to passenger operation in its function of a commissioned organization.

#### IV.6.2 Data to be Prepared

In addition to internal data, the following general data is required for the market study:

- (1) Population
- (2) Statistics on income of the inhabitants
- (3) Labor statistics
- (4) Consumer Price Index
- (5) Mineral and industrial production
- (6) Family incomes
- (7) Level of consumption

- (8) Nation social-economic development plan
- (9) Number of students
- (10) Population trends with respect to free time
- (11) Statistical information related to resort centers
- (12) Tariffs of different means of transport
- (13) Transport capacities of various means of transport
- (14) Level of service of the various means of transport
- (15) Degree of utilization for various purposes of passenger travel
- (16) Trends in other businesses related to passenger transport and the tourist
- (17) Results of investigations periodic and specific topics

#### IV.7 INVESTIGATION THROUGH QUESTIONNAIRES

##### IV.7.1 Purpose of the Investigations

These investigations through questionnaire have been carried out with the aim of obtaining basic information to define a policy for measures which would increase the incomings of the Southern Railway.

That is to say, an attempt has been made to investigate the physiognomy of utilization and state of competence in which the Chilean State Railways find themselves, so as to be able to pinpoint the problems and effectively compile the necessary information which will help to determine the policy of the measures for bringing in greater revenue.

By dividing the objective of the investigation into two aspects, it is possible to define the following points : -

##### (1) Analysis of the Present Situation

Through determining the physiognomy of utilization and the state of competence of the Railway, an attempt is being made to define the characteristics of the Railway as they stand in



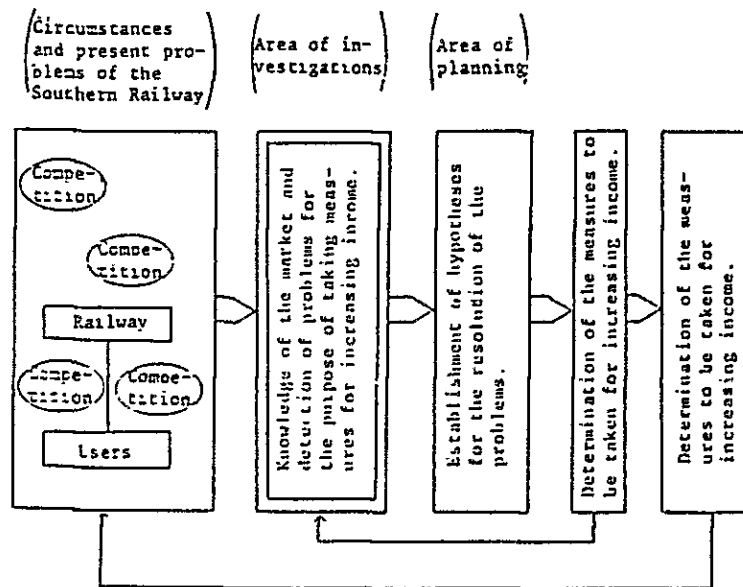
the market, so as to clarify what expectations there may be, and assess passenger complaints about the Railway.

(2) Revision of Publicity Activity

This consists of determining the problems which must be overcome in future so that all publicity and propaganda activities should be organically bound up with promoting the use of railway. Furthermore, on the basis of these investigations, the following three aspects will be studied.

- 1) Those problems which must be overcome so as to lead to the planning of such measures as will bring in higher revenue in the future.
- 2) The achievements and shortcomings of the publicity & propaganda activities within the market.
- 3) The direction which future publicity and propaganda activities must take, not only with regard to their objectives, but also the ways they will be carried on.

Task Periods for defining the measures to bring about increased revenue for the Southern Railway.



#### IV.7.2 Content of the Investigations

The following aspects will be studied in order to define the actual state of the utilization of the each means of transport, and the position of the Railway within this market.

- (1) Actual state of the utilization of the each means of transport
  - 1) Categories of users of different means of transport, according to age, profession, etc.
  - 2) The causes, objectives and the section utilized (distances) of the means of transport
  - 3) Utilization frequency of the different means of transport
- (2) Actual state of the use of Railway
  - 1) Categories of users according to age, profession, etc.
  - 2) The reasons, objectives, and section utilized (distances)
  - 3) Utilization frequency
- (3) Opinions about the Railway
  - 1) Substance of the users' opinions
  - 2) Users' wishes
  - 3) Complaints from users

Furthermore, it is important that, in order to carry out such studies of the aspects of the investigation, emphasis should be placed on the comparison of the Chilean State Railways with other means of transport.

#### IV.7.3 Matters to be Taken into Consideration during Study of the Results of the Investigations

It is first necessary that the results of the investigations be analyzed and then to determine the way in which the policies, as

they have been worked out based on the results, can be applied to those strategies aimed at substantial commercial promotion and, after that, to determine if such measures can be applied immediately by the Southern Railway.

The aspects which must be taken into consideration for the analysis of the results are as follows : -

- (1) Volume of future demand for the Southern Railway
- (2) Determination of a class of potential users, and the directions to be followed to gain such users
  - 1) Finding out what class of the public is not aware of the merits of using railway services, and to discover what are the reasons they do not know
  - 2) The way in which measures should be applied to reach the potential users
    - (a) Information which must be supplied
    - (b) Image which should be projected
- (3) Present state of the transportation network
- (4) Problems at present affecting in the Chilean State Railways
- (5) Features of the image of the railway services which must be created, and reinforced, and the time when such image build-up should be initiated
- (6) Goals for promoting better understanding of the railway services

#### IV.7.4 Execution of the Survey

##### IV.7.4.1 Dates of the survey and trains surveyed

Survey was executed on the following 14 trains which departed from stations between 3 August (Tuesday) and 6 August (Friday) in 1982.

- (1) 3 August T 1023 Alameda - Puerto Montt
- (2) 4 August T 1024 Puerto Montt - Alameda
- (3) 3 August T 9 Alameda - Puerto Montt
- (4) 5 August T 10 Puerto Montt - Alameda
- (5) 5 August T 7 Alameda - Concepción
- (6) 6 August T 8 Concepción - Alameda
- (7) 3 August A 1007 Alameda - Concepción
- (8) 4 August A 1008 Concepción - Alameda
- (9) 5 August A 1001 Alameda - Concepción
- (10) 6 August A 1002 Concepción - Alameda
- (11) 4 August T 5 Alameda - Chillán
- (12) 5 August T 6 Chillán - Alameda
- (13) 3 August A 503 Alameda - Talca
- (14) 3 August A 504 Talca - Alameda

Note: T = Locomotive-hauled train  
 A = Electric-car train

#### IV.7.4.2 Passengers surveyed

Survey was executed with all the passengers travelling on the abovementioned trains, after which the number of questionnaires handed in was 1,941, which was in fact almost 100% of the passengers surveyed. The numbers of passengers surveyed, according to train, and to class, are shown in detail in Table IV.7.1.

Table IV.7.1 Passengers Surveyed According to Train and Class

Class Train	Second	First	Salón	Super Salón	Sleeper	Total
T1023/1024		140	105		37	282
T 9/10	208	191	49		31	479
A1001/1002		185				185
A1007/1008			126	134		260
T 7/8	87	114			16	217
T 5/6		261				261
A503/504		257				257
Total	295	1,148	280	134	84	1,941

#### IV.7.4.3 Method of survey

The survey was executed to all the persons travelling the whole journey of the train, at which time the questionnaires were handed out at a time, so that said questionnaires could be collected again as soon as they were filled out.

#### IV.7.4.4 Contents of the questionnaire

- (1) Originating station
- (2) Destination station
- (3) Objective of the trip
  - 1) Sightseeing
  - 2) Business
  - 3) Honeymoon
  - 4) Study
  - 5) Other Reasons
- (4) Number of persons travelling in one group:
  - 1) Alone
  - 2) Over 2 persons (concretely)
- (5) Reasons for choosing to travel by the railway:
  - 1) Convenient timetable
  - 2) Reliability
  - 3) Comfort
  - 4) Speed
  - 5) Reasonable price
  - 6) Punctuality
  - 7) Other reasons
- (6) Length of journey :
  - 1) Round trip in one day
  - 2) 2 ~ 7 days
  - 3) 8 ~ 14 days
  - 4) Over 15 days
- (7) Time of planning of the journey :
  - 1) The day of departure
  - 2) The day before
  - 3) 2 ~ 7 days in advance
  - 4) 8 ~ 14 days in advance
  - 5) 15 ~ 30 days in advance
  - 6) More than 30 days in advance.
- (8) Time when the reservation was made:
  - 1) On the day
  - 2) One day before
  - 3) 2 ~ 7 days before
  - 4) 8 ~ 14 days before
  - 5) 15 ~ 30 days before

- (9) Means of transport to be used for return trip, or used for the outward trip:
- 1) Railway      2) Bus              3) Airplane
  - 4) Automobile   5) Ship              6) Not yet decided
- (10) Impression of the exterior appearance of trains:
- 1) Elegant      2) Normal      3) Bad
  - 4) Very bad    5) Not interested
- (11) Inside appearance of trains:
- 1) Excellent    2) Good      3) Regular
  - 4) Bad          5) Not interested
- (12) Service in the Train:
- 1) Good          2) Regular    3) Bad
  - 4) Not availed
  - 5) Other ways in which service should be offered
- (13) Number of journeys made in one year.
- (14) Credit cards:
- 1) Possessed    2) Not possessed
  - 3) Name of Credit Firm
- (15) Sex of person surveyed
- (16) Occupation/profession:
- 1) Professional   2) Public employee   3) Private employee
  - 4) Trader          5) Farmer            6) Industrialist
  - 7) Student        8) Housewife        9) Pensioner
  - 10) Unemployed   11) Other Categories
- (17) Age
- (18) Address (Name of city or town)
- (19) Free Opinions

IV.7.4.5 Questionnaire

The questionnaire form is as shown in ATTACHMENT 5.

IV.7.4.6 General description of the results of the survey

(1) Composition of the passengers surveyed

The composition of the passengers surveyed, according to sex, age, occupations per age, addresses per age, can be seen in Tables IV.7.2, IV.7.3 and IV.7.4.

With respect to the age of the persons surveyed, a great number of passengers registered were between 20 and 29, which means 1/3 of all passengers.

Table IV.7.2 Number of Passengers Surveyed According to Sex and Age

Year \ Sex	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	Unknown	Total
Male	97	374	233	173	121	60	24	2	10	1,094 (57)
Female	88	261	164	115	88	38	18	2	26	800 (41)
Unknown	2	9	5	5	1	1	0	1	23	47 (2)
Total	187 (10)	644 (33)	402 (21)	293 (15)	210 (11)	99 (5)	42 (2)	5 (0)	59 (3)	1,941 (100)

Note: The figures in parenthesis are percentages.

The youngest and oldest passengers surveyed were 13 and 87 years old, respectively.

The average age of the surveyed passengers were 35 years old.

In regard to occupation, the larger portion fell within the professional, followed according to numerical superiority by house-wives and students. The number of retired persons which included unemployed represented 10%. By comparing residential origins, 30% came from the metropolitan region, followed by Region VII which contain the towns of Talca and Curicó and Region VIII which contain the towns of Chillán and Concepción, represented 18% respectively.

Table IV.7.3 Number of Passengers Surveyed According to Age and Occupation (Replies in multiple answers)

Age Occupation	Age									Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	Unknown	
Professional	3	123	114	72	44	22	3	1	5	387 (20)
Public Employee	5	43	31	19	8	4			4	114 (6)
Private Employee	4	71	53	34	9	6	3	1	2	183 (9)
Trader	7	67	67	52	35	8	3		3	242 (12)
Farmer	8	34	22	21	25	13	9	1	6	139 (7)
Industrialist	1	5	8	8	6	2	2		1	33 (2)
Student	126	197	5	2	1				1	332 (17)
Housewife	18	72	75	62	56	22	11	2	17	335 (17)
Other	1	27	16	13	7	3				67 (3)
Pensioner	14	43	26	32	36	29	19		6	205 (11)
Unknown	4	6	2	3		2	2		20	39 (2)
<b>Total</b>	<b>187</b>	<b>644</b>	<b>402</b>	<b>293</b>	<b>210</b>	<b>99</b>	<b>42</b>	<b>5</b>	<b>59</b>	<b>1,941 (100)</b>

Note: Within the category of 'Retired persons' the number of Unemployed is also included together with Pensioners.

The figures in parentheses indicate the percentage of the total of 1,941 persons questioned.

From the 1,941 persons surveyed, 2,076 replies were received.



Table IV.7.4 Number of Passengers Surveyed According to Age and Their Place of Residence

Age Region	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	Unknown	Total
Metropolitan	43	200	118	94	59	46	13	1	12	586 (30)
Region I & II		3	3							6 (0)
Region III & IV		8	1							9 (0)
Region V	5	11	1	8	3		1			29 (1)
Region VI	16	48	21	23	13	5	5		2	133 (7)
Region VII	31	125	76	47	35	15	7	2	3	341 (18)
Region VIII	38	109	83	48	43	12	6		4	343 (18)
Region IX	17	57	40	19	22	11	2	1	7	176 (9)
Region X	34	69	53	46	28	9	8	1	3	251 (13)
Region XI & XII	2	3	1	1						7 (0)
Foreignes	1	6	3	3	3					16 (1)
Unknown		5	2	4	4	1			28	44 (2)
Total	187	644	402	293	210	99	42	5	59	1,941 (100)

Note: The figures in parentheses are percentage.

(2) Passengers' travelling distance

As can be seen in Fig. IV.7.1, the distances covered by the greater number of passengers surveyed lie between 200 and 400 kms. Average travelling distance is 360 kms.

The sectors with the highest flow of passengers was seen between Santiago and Talca, followed by the sectors: Santiago - Concepción and Santiago - Temuco, in that order.

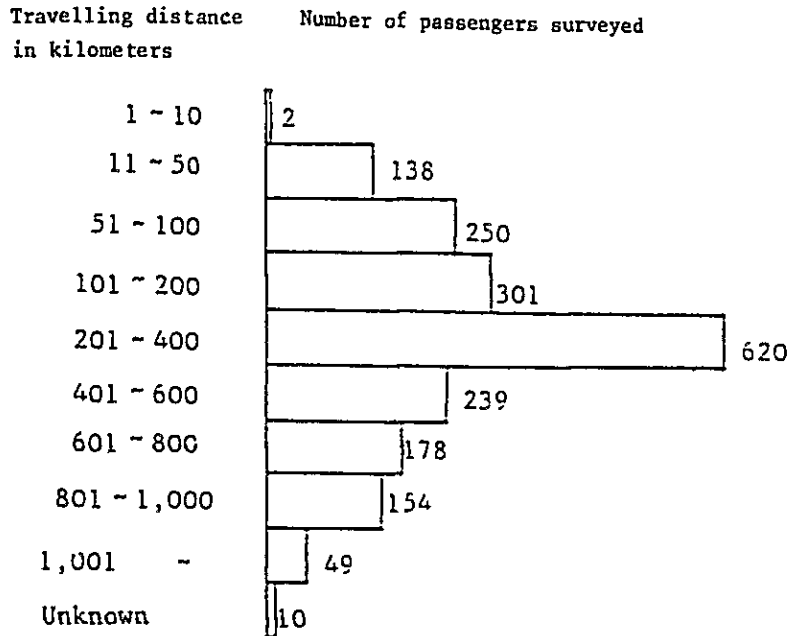


Fig. IV.7.1 Travelling Distance of the Passengers Surveyed

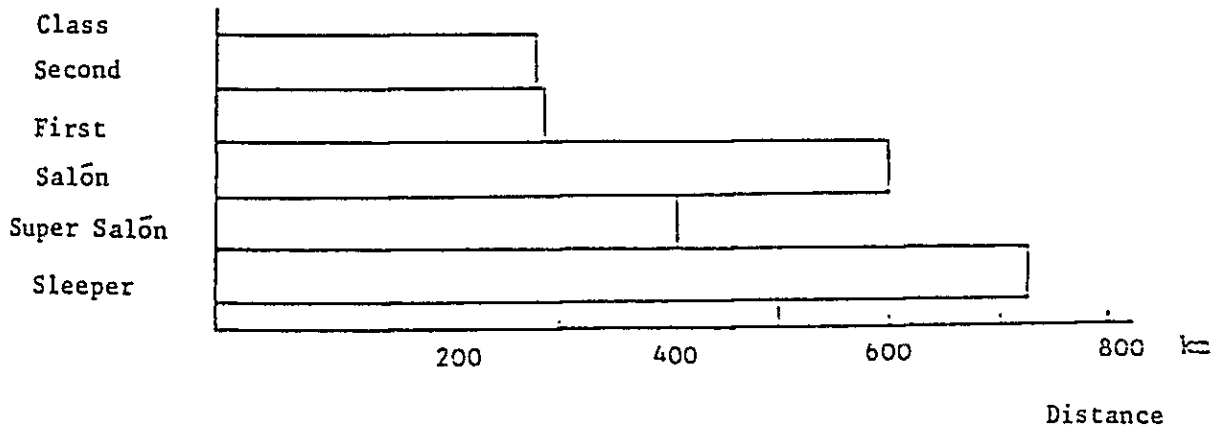


Fig. IV.7.2 Average Travelling Distance According to Class of Coach

With regard to journey distance according to class of coach, this is as per Fig. IV.7.2, and the order of superiority is: Sleepers, Salón and Super Salón.

Travelling distances according to objective of trip are indicated in Table IV.7.5; by which it can be noted that there are no significant differences when comparing the various objectives.

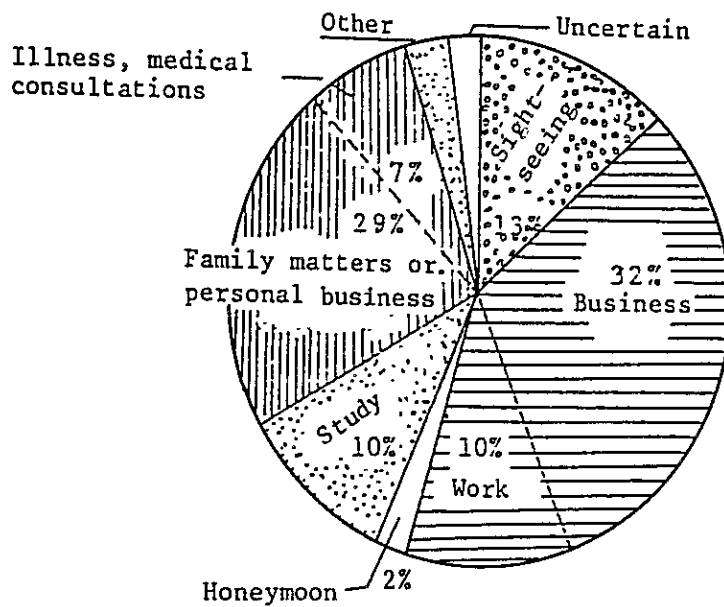
Table IV.7.5 Travel Distances According to Objective of Travel  
(The figures are percentages)

Objective of trip	Kilometers of trip							
	1-50 Km	51-100 Km	101-200 Km	201-400 Km	401-600 Km	601-800 Km	801-1000 Km	1001-Km
Sightseeing	4	8	15	27	18	15	9	4
Business	10	16	14	29	10	8	9	2
Honeymoon	5	8		34	21	21	5	3
Studies	5	14	25	36	9	3	5	1
Family matters	5	11	16	37	13	10	7	2
Personal business								
Total	7	13	16	33	13	9	8	3

Note: The replies was done in multiple answers.

### (3) Objective of trip

Objectives for making the trip can be studied in Fig. IV.7.3, when it can be seen that, compared with references given for the case of Japan, journeys for the purpose of sightseeing are very much fewer. Although the fact that such an insignificant result could be attributed to the fact that the survey was conducted on weekdays, even more fundamental reasons for this could lie in the fact that it is not yet a practice among the Chilean populace to go on sightseeing tours, and as yet the stimulus to indulge in such a form of recreation has not been developed.



Reference to Japan's Situation

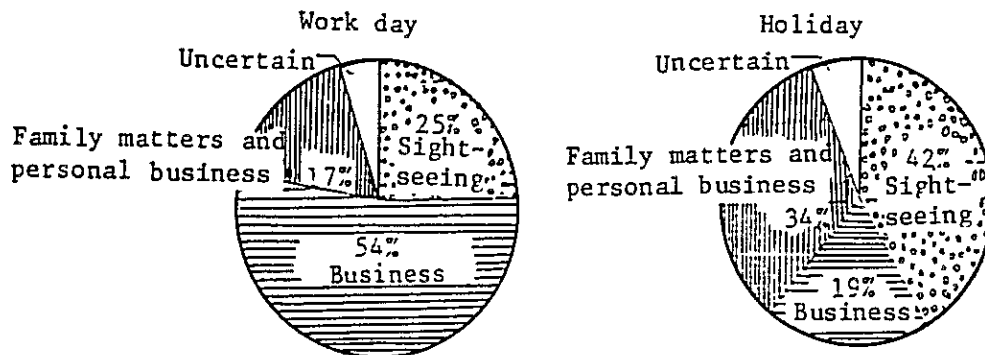


Fig. IV.7.3 Objective of Trip of the Passengers Surveyed

The percentages of passengers by objectives of trip according to sex, age and occupation, are given in Table IV.7.6

According to this table, in the case of sightseeing, the large percentages are represented by women, the young of both sexes between the age of 10 and 19, students and housewives.