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**INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION**

**APPRAISAL OF
MAIQUETIA INTERNATIONAL AIRPORT PROJECT
VENEZUELA**

January 4, 1972

Transportation Projects Department

Fiscal Year = Calendar Year

Currency Equivalents

4.5 Bolivares (Bs) = US\$1.00
(rate up to December 23, 1971
and used in this report)
Current rate = 4.40

Units

Units are in the Metric System

Length

Kilometers (km) 1.0 = 0.6214 miles
Meters (m) 1.0 = 3.281 feet
Centimeters (cm) 1.0 = 0.3937 inches

Area

Hectare (ha) 1.0 = 2.471 acre
Square Meter (m²) 1.0 = 1.196 sq yd

Volume

Liter (lt) 1.0 = 0.21998 imperial gallons
1.0 = 0.26418 U.S. gallons

Weight

Kilogram (kg) 1.0 = 2.2046 pounds

Abbreviations

CONAHOTU - National Tourism Corporation
FAA - Federal Aviation Administration (U.S.)
IATA - International Air Transport Association
ICAO - International Civil Aviation Organization
ILS - Instrument Landing System
MOP - Ministry of Public Works
VASI - Visual Approach Slope Indicator
VOR - Very High Frequency Omni Directional
Radio Range

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SUMMARY AND CONCLUSIONS

- i. The Government of Venezuela is planning the reconstruction and expansion of the Maiquetia International Airport, which serves the capital city of Caracas, with a view to improving safety of aircraft operation and increasing capacity to serve existing and future traffic.
- ii. Air transport in Venezuela plays an important role for both international trade and domestic economic development. The Maiquetia International Airport is the focus of commercial aviation activity in Venezuela accounting for 94% of the country's international passenger traffic and nearly one-half of the total domestic passenger traffic.
- iii. The project is part of a master plan for the development of Maiquetia Airport prepared for the Government by its consultants. Because of the different status of engineering and economic work on its various elements, the construction work will be executed in two parts: the construction of a runway, taxiway and associated work (Part I) and the construction of a terminal building complex and related facilities (Part II).
- iv. The proposed loan of US\$17.0 million equivalent would cover 87% of the estimated US\$19.5 million foreign exchange costs of the project for runway development (Part I), the total cost of which is estimated at US\$54.5 million equivalent. The loan would be made to the Government, and the funds for the project will be controlled and disbursed by the Ministry of Public Works. There will be a separate Project Agreement between the Bank and the newly created airport authority. The Government would provide the local currency cost as well as that part of the foreign cost not covered by the Bank loan.
- v. The physical condition of the existing runway is satisfactory. However, the runway does not meet the safety standards for the operation of the current generation of jet aircraft, as it is not possible to install an instrument landing system (ILS) due to terrain obstructions. To eliminate this safety hazard, it is necessary to construct a new runway with a different orientation.
- vi. The proposed project includes the construction of a new 3,500 m runway and parallel taxiway, complete with lighting and an instrument landing system (ILS). In addition to its different orientation to avoid the terrain obstructions at the end of the existing runway, the new runway will be longer to permit departure of flights with longer stage lengths. The construction of the air terminal building complex (Part II), will require

further economic and technical studies before it can be adequately evaluated.

vii. The cost estimates for the project are based on preliminary engineering studies performed by consultants as part of the airport master plan development. Detailed engineering is now being undertaken by the Ministry of Public Works (MOP) with the help of consultants.

viii. The execution of the project will be the responsibility of MOP assisted by local consultants and with the advice of experienced airport consultants at all stages of planning, design and construction. About 85% of the contracts will be awarded on the basis of international competitive bidding.

ix. Some of the initial site preparation and provisional works (approximately US\$5 million equivalent with a foreign exchange component of US\$2.5 million) will not be financed from the loan. A large earth moving contract was awarded in August 1971. Work is progressing on this contract and it is recommended that the foreign exchange component of the work done prior to the signing of the loan, estimated at US\$1 million, be financed retroactively. It is also recommended that the foreign exchange costs of engineering incurred before the signing of the loan and subsequent to 1 January 1971, estimated at US\$600,000 be financed retroactively.

x. The Maiquetia Airport Authority was created by Congress in August 1971 as an autonomous agency to manage the operations of the expanded airport. Funds are provided in the project for the engagement of management and accounting consultants who will be required to assist the new authority in its initial operations.

xi. The financial responsibilities for the development of the Maiquetia Airport will be shared between the Government and the Authority. The Government will service the debt it incurs for the construction of Part I and Part II of the airport expansion program. The Authority will, however, account for the investments in the airport and all transactions relating to its operation. With the Government servicing directly the debt incurred for the airport, the Authority will generate cash in excess of its own requirements and will transfer such excess cash to the Government as a return on its investment.

xii. The airport's income is derived from user charges which produce a satisfactory rate of return for the present level of investment but would not, at their present level, adequately cover future costs. A decision on the level and structure of the various components of these charges is to be made when definitive plans for the proposed new terminal building complex are available. New user charges satisfactory to the Bank are to be established by March 31, 1974 on the basis of recommendations by consultants who will study the appropriate level and structure of user charges not only with reference to the financial needs of the airport but particularly taking into account the need to ensure that a sufficient proportion of total economic benefits resulting from the airport investments would be retained by the Venezuelan economy.

xiii. The project will produce benefits in the form of improved safety in handling the traffic at the airport, which is expected to increase substantially. It will enable the continuing unrestricted use by jet aircraft and avoid penalties in the form of passenger time loss and increased aircraft operating cost which would result from restrictions on jet aircraft operations. The benefits would result in an estimated economic return of 17% over the 20-year economic life of the project.

xiv. The project is suitable for a loan to the Government of US\$17.0 million equivalent. A term of 15 years including a grace period of 3-1/2 years corresponding to the disbursement period will be appropriate.

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I. INTRODUCTION

1.01 The Government of Venezuela has requested the Bank to assist in financing the development of the Maiquetia International Airport near Caracas. The cost of the project is estimated at US\$54.5 million; the proposed Bank loan would cover US\$17.0 million of the estimated foreign exchange component of US\$19.5 million.

1.02 The Government will be the borrower. The funds will be controlled and disbursed by the Ministry of Public Works. The airport will be operated by the Maiquetia International Airport Authority which was created in August 1971 by an act of the Venezuelan Congress as an autonomous institute attached to the Ministry of Communications. The Bank will enter into a Project Agreement with the Authority to secure adequate covenants concerning the management, operations and performance of the Authority.

1.03 In 1968, the Government of Venezuela commissioned a joint venture of the U.S. consultants, Tippetts-Abbett-McCarthy-Stratton (TAMS) and the Venezuelan consultants, Perez Guerra Ingenieros, to prepare a master plan for the future development of the Maiquetia International Airport. The consultant's report, completed in 1970, recommends a substantial development of the existing airport site to meet the requirements of future traffic. The principal proposals include the construction of a new runway together with new passenger terminal buildings for international and domestic traffic, air cargo buildings and various related works.

1.04 This master plan report was accepted by the Government and used as the basis for a loan application to the Bank. The recommended works are estimated to cost Bs 492 million (US\$109 million equivalent).

1.05 In the meantime the Government completed a provisional terminal building in January 1971 for arriving international passengers. The impact of this US\$5 million investment on the timing of the proposed new terminal buildings had not been adequately evaluated. At the time of appraisal of the project, more up-to-date traffic statistics had become available and the Bank suggested to the Government that, in order to ensure achieving the optimum size and composition of the project, some portions of the master plan would need to be reviewed and further economic and engineering studies done - particularly with respect to the forecasts of domestic traffic, the size and configuration of the proposed terminal buildings, and the timing of their construction.

1.06 Rather than delay the entire construction program while these studies were being done it was agreed with the Government to split the

program into two parts. Part I would be the construction of the new fully equipped runway, taxiway and associated works; Part II the terminal area development, including passenger terminal buildings, aircraft parking apron, cargo buildings and various related works.

1.07 This appraisal report is concerned with Part I, the runway construction project. Further economic and technical studies will be required before the air terminal building complex can be adequately evaluated.

1.08 Previous Bank lending in the Transportation sector has been limited to three loans (306 VE, 390 VE, 616 VE) totalling US\$95 million to help finance road construction. Disbursements have been slow owing to inclement weather and delays in acquiring right of way and in presenting claims for reimbursement. The possibility of financing a metropolitan rapid transit system for the city of Caracas is under active consideration by the Bank.

1.09 This report is based on the findings of an appraisal mission which visited Venezuela in December 1970. Mr. A. Douglas, aviation engineer of the Bank, headed the appraisal mission assisted by Bank retained consultants, Messrs. G. Grundig (economist) and T. Wellings (financial analyst), and Mr. P. Ragetly (Bank economist). The report was written by Messrs. Douglas, Bostrom and Singh (Bank economists) and Cheryan (Bank financial analyst).

2. BACKGROUND

A. General

2.01 The Republic of Venezuela, with an area of 912,000 km² is larger than Texas and twice the size of Spain. It has a coastline of nearly 3,000 km facing the Caribbean Sea. The country's population is about 10 million, which has been growing rapidly at an average rate of 3.4% p.a. over the last ten years. The rate of growth is expected to decline only marginally, perhaps to 3.2% p.a., over the next five years.

2.02 The petroleum industry is the mainstay of the Venezuelan economy. Its exports, over the last three decades, have been the main cause of the swift economic expansion that has taken place, giving Venezuela by 1969 a per capita GDP of some US\$1,100, the highest in Latin America.

2.03 The key region in the economic development of Venezuela has been the north central coast from Lake Maracaibo across the littoral to Cumana in the east. The main concentration has occurred within the core of this belt, in the area comprising the Capital district and the adjoining small states of Aragua, Carabobo and Miranda, where 75% of all industrial employment and a third of the total population is located.

B. The Transportation Sector

2.04 The concentration of population and economic activity in the north central region, where topography makes rail and water transport difficult and expensive, and uncommonly low gasoline retail prices, have led to roads providing the principal means of internal movement in Venezuela. The country now has a well-developed network of about 40,000 km of roads, some 18,000 km of which are paved, on which approximately 90% of Venezuela's passenger traffic and 70% of its freight traffic are carried. Whereas, during the last ten years, the road network has been extended by 40%, the length of paved roads has been more than doubled. About 750,000 vehicles, 70% of them passenger cars, use this network.

2.05 Venezuela has only one short railway line in operation, which runs from Barquisimeto to Puerto Cabello, carrying mainly bulk chemicals, and there are currently no plans to extend the railway system. The three major Venezuelan seaports have adequate capacity to meet anticipated demands for some years ahead, except for Puerto Cabello where the required expansion is now being undertaken. The Orinoco and its tributaries provide Venezuela with 26,000 km of navigable rivers, and deep-draft shipping channels are maintained in the lower Orinoco River for iron ore and other bulk carriers engaged in international trade and in Lake Maracaibo for oil tankers. Only a small volume, however, of domestic traffic is carried by coastal and inland shipping. The predominance of highways in the internal surface transport system and the minor role of railways, coastal shipping and inland waterways have spared Venezuela from any serious problems of intermodal transport coordination.

2.06 Venezuela has had the advantages of a reasonably well-developed air transport system. Of its 64 airports, Maiquetia, which handles 94% of the country's international and nearly half of the domestic passenger traffic, is by far the most important. International air services are provided by VIASA, the Venezuelan carrier, and about a dozen foreign airlines. Venezuela has two domestic airlines which jointly operate an unduplicated internal route network of 11,700 km.

C. The Role of Air Transport in Venezuelan Development

2.07 Although the contribution that the presence of a reasonably well developed and efficient air transport system has made to Venezuelan development cannot be measured in quantitative terms, its role in providing for the swift passage of people and goods, both internally and internationally, has unquestionably been an important factor in the country's economic growth. Its major impact so far has been on business travel. In 1969, the Venezuelan air transport system ranked fourth in South America in terms of the number of passenger movements.

2.08 A survey of air passengers on domestic routes in 1970 revealed that over 58% of internal air trips were made for business or official reasons, that 67% of passengers travelled alone and that 63% of passengers had incomes of more than US\$6,660. Very nearly 63% of the passengers surveyed claimed to make at least one air trip per month within Venezuela. These figures collectively do indicate the substantial extent to which business travellers within Venezuela rely upon air transport. The Venezuelan air transport system also carries some 40,000 tons of freight, much of which is beef from the southern part of the country.

2.09 Turning to international travel, except for excursionists, most of whom are cruise passengers spending a few hours in Caracas, and for a small flow of visitors arriving by road from neighbouring Colombia, the great majority of foreign visitors to Venezuela arrive by air. The number of foreign visitors spending more than 48 hours in Venezuela increased at an annual average rate of 22.5% between 1961 and 1969. Provisional figures for 1970 show a rise of nearly 38% with the total of such visitors now standing at just under 150,000. This remarkable growth over the last decade was due mainly to an increasing number of business visitors who, with visitors making trips for family reasons, account for an estimated 75% of total foreign visitors. In 1969, more than half of these foreign visitors came from the USA, just over 21% from Europe and 14% from Latin America, with the bulk of the European visitors coming from Germany, the Netherlands and the United Kingdom, which are also the most important European countries in terms of trade and investment in Venezuela.

2.10 Business travel by air is increasingly becoming an almost essential prerequisite of all major flows of international trade in goods and services, and it is generally recognized that an efficient air transport system acts as an important lubricant to international trade. The Venezuelan economy, with commodity exports amounting to a quarter of its GDP and with nearly half

of its imports in capital goods, is very largely dependent upon international trade. Its total exports and imports are expected to grow by an average 3% and 4.4% respectively over the next five years. Venezuela has attracted a substantial number of large international firms which play an increasingly important role in economic growth. These firms depend heavily on air transport for their operations.

D. Tourism

2.11 The slow growth of the petroleum sector in the late sixties and the view that, even on favorable assumptions, the rate of increase in petroleum production is unlikely to exceed 2 to 3% annually over the next five years have led the Venezuelan authorities to seek alternative sources of growth and of foreign exchange earnings. Some further diversification of the economy will be required to maintain a GDP growth rate of at least 5% annually. Alternative sources of growth in Venezuela are, however, restricted. The rising manufacturing sector has so far concentrated on import substitution and the domestic market, and industrial exports now account for less than 1% of export earnings. The most immediate prospects for the expansion of exports center on steel and petro-chemicals but both of these are highly capital intensive.

2.12 In contrast to these, Venezuela's tourism potential, which is largely untapped, offers a promising line of development as a source of income, foreign exchange earnings and employment. The Venezuelan authorities have recognised this and have established a new public institution, the Corporacion Nacional de Turismo (CONAHOTU), to be responsible for developing tourism. It is in the course of producing an integrated tourist development program as an important part of the national development plan.

2.13 Venezuela can offer tourists a variety of attractions including a favorable climate, outstanding beaches, exotic vegetation and a sophisticated metropolis in Caracas. Geographic and economic considerations, and market trends, suggest that the United States will be the primary market for holiday tourism in Venezuela. There are indications that the Caribbean Islands such as the Bahamas, Bermuda and Puerto Rico are approaching saturation and in these circumstances Venezuela could well increase its share of the US 'sun and sands' holiday market.

2.14 This, briefly, is the rationale behind the proposed tourist development of the 93 km Los Caracas - Higueroite coastal area which combines unspoiled beaches with proximity to Caracas and the Maiquetia Airport, and which is the subject of a UNDP study to be commenced shortly. Venezuelans at present spend some US\$134 million abroad whereas only US\$46 million is spent by foreign visitors in Venezuela, and of these only about a quarter are part of the holiday market. The exploitation of Venezuela's tourist potential could reverse this imbalance. It will, however, require investments in facilities such as beach hotels and complementary services, and investments in infrastructure of which the proposed expansion of the Maiquetia Airport would be an important part.

3. MAIQUETIA INTERNATIONAL AIRPORT

A. Existing Site

3.01 The Maiquetia Airport is on the Caribbean coast about 25 km from Caracas, the major city it serves. The existing 3,000 m runway was built in stages and is in relatively good condition. It has an east-west orientation and wind conditions are such that this orientation is satisfactory at all times without the necessity of a cross wind runway.

3.02 Approaches to the airport are constrained by the coastal mountains. There are hills on the western approach to the runway which prevent a straight-in approach and make it impossible to install an instrument landing system (ILS). It is necessary to construct a new runway on a slightly different orientation to permit the installation of ILS and meet the internationally accepted technical operating and safety standards for large jet aircraft. The proposed project provides for this new fully equipped runway.

3.03 On weekends there is some congestion of the Caracas-Maiquetia limited access toll highway due to high volume recreation traffic to and from the coast. Apart from these weekend peaks, it is expected that the capacity of this highway would be adequate until some time between 1980 and 1985. Additional highway capacity between Caracas and the coast will then be required and means for providing it are under study by the Government. During negotiations, the Government confirmed that the necessary planning measures would be taken.

B. Operating Standards

3.04 The existing runway does not have the required visual and electronic landing aids required to meet international safety standards. While, due to the prevailing wind direction, about 90% of the landings are made from the west, these safety aids cannot be installed on the runway for landings from that direction because of the terrain obstructions in its approach path.

3.05 It has long been the policy of many airports serving large air carrier aircraft to provide visual and electronic aids to establish lateral and vertical guidance, thus minimizing the probability of undershoot or overshoot during landings. Before jet aircraft were introduced, the lack of such aids generally did not pose a major problem because aircraft response times after application of power were short, and aircraft speeds were relatively low. Thus the aircraft could make close-in turns and adjust their position with comparative ease. This is not true of faster aircraft requiring longer glidepath approaches to runways.

3.06 For this reason the necessity for an instrument landing system (ILS) and visual approach slope indicators (VASI) has been recognized and

recommended by the International Civil Aviation Organization (ICAO) and the United States Federal Aviation Agency (FAA). 1/

C. Organization

3.07 The airport is managed by the Civil Aeronautics Board of the Ministry of Communications which is responsible for operating airports in Venezuela (see Chart I). Coordination between the various divisions of the Ministry at the airport, with their Headquarters units and with the other Ministries which provide services at the airport has been ineffective. Because of diffused responsibilities and lack of a strong management, the level of service at the airport as well as planning and financial management have been deficient.

3.08 The Government has recognized the difficulty of making a major investment in the airport under these circumstances and has created the Maiquetia Airport Authority (the Authority) as a means of improving the organization and strengthening the management of the airport.

3.09 A law creating this airport authority was enacted in August 1971. The Government has established a transition period until 31 December 1971, during which period the new Authority will be organized and staffed and assume its new responsibilities. During this transition period the functions now being performed by various Ministries and agencies will be taken over by the Authority.

1/ The existing ICAO criteria call for VASI for visual vertical guidance, and for ILS for electronic lateral and vertical guidance when "... the climatic and traffic conditions and the type of aircraft using the runway are such that safe, regular, efficient and economic operation would be affected by their absence". In addition, the International Air Transport Association (IATA) has recently drafted a new policy which states in part: "ILS shall be installed and maintained in operation on all runways regularly used by international air services", i.e. irrespective of climatic and traffic conditions. For turbine powered aircraft, ILS is considered to be the required aid in order to provide lateral and vertical alignment with the runway in use. This situation would become even more important in the future as the average aircraft size grows and frequency of operations increases. This has been recognized by the U.S. FAA which recently changed its criteria to specifically exclude the climatic condition from the required justifying criteria. In its National Aviation System policy it states, "Precise vertical and lateral guidance is required at all airports served by air carrier turbojet aircraft to minimize the probability of undershoot and overshoot." It goes on to state that all air carrier jet airports will be equipped with ILS.

3.10 The airport authority named "Aeropuerto Internacional de Maiquetia" (Maiquetia International Airport) will be attached to the Ministry of Communications as an "Autonomous Institute". It will be managed and administered by an Administrative Council as its highest authority. The Chairman of the Administrative Council will be the Director General, who will be appointed by the President of the Republic. In addition, there will be a deputy Director General and three others, of which two are to be appointed by the President of the Republic.

3.11 The Administrative Council will have powers to a) establish general policy and plans for operations and development, b) fix user charges, c) decide public credit arrangements and d) perform other functions as stipulated in the By-laws, which are still to be developed. The first three of these items are subject to the approval of the Minister of Communications. Agreement was reached during negotiations that the By-laws would be submitted to the Bank for review and comment prior to their enactment, and that they would be in force by 30 June 1972.

3.12 The Director General will have the responsibility and authority to administer the operations and business of the Authority, to hire and fire staff subject to the approval of the Administrative Council, to supervise and coordinate the work of the various Government agencies and departments operating at the airport and to supervise and control air safety services.

3.13 Little financial information is available on the operation of the Maiquetia International Airport, and such information as is available is unreliable and insufficient to assess the financial status of the airports' operations. It was therefore necessary to use broad assumptions on the values of existing assets and liabilities and the financial results of the operations for the years 1968 through 1971 to reconstruct the accounts and establish a basis for financial projections. (See income statement and balance sheets in Table 7 and 9).

3.14 When the Authority starts functioning in 1972, it will maintain complete accounting records to reflect the investments in the airport and all transactions relating to its operation on an accrual basis under a commercial accounting system. Agreement on this point was reached during negotiations. The Authority will also maintain a cost accounting system that will relate user charges to cost/profit centers and enable it to take pricing decisions with the full knowledge of costs. It will be necessary, therefore, for the Authority to employ management and accounting consultants to recommend and implement the most suitable organization, financial policies, commercial and cost accounting and management information systems. General agreement on draft terms of reference embodying the objectives and scope of work of the above consultancy services, and agreement on the appointment of management and accounting consultants acceptable to the Bank by June 30, 1972 were reached during negotiations.

3.15 Although the Ministry of Finance would designate a Financial Commissioner of the Authority under the articles of its constitution, it would be essential to obtain an independent analysis and verification of the Authority's accounts by a professional firm of public accountants as external auditors, particularly in view of the introduction of commercial and cost accounting principles and systems. Agreement that external auditors acceptable to the Bank would be appointed by March 31, 1972, was reached during negotiations.

3.16 Agreement was reached during negotiations that an inventory and valuation of all existing properties and facilities at the airport would be prepared and submitted to the Bank by April 30, 1972, and that the existing properties and facilities would be transferred to the Authority by June 30, 1972. Agreement was also reached during negotiations that the Government would take measures satisfactory to the Bank to ensure that the properties and facilities constructed and installed at the airport under the proposed project would be transferred to the Authority not later than three months after completion of the project.

D. Present Airport Traffic

3.17 The Maiquetia International Airport has historically been the focus of commercial aviation activity in Venezuela. It now handles about 94% of the country's international passenger traffic and nearly one half of the total domestic passenger traffic. During the past six years, international and domestic passenger traffic has increased at an average annual rate of 15% and 8% respectively, although during the past few years lower rates were registered. In 1970, total passenger traffic at Maiquetia amounted to some 1,400,000 passengers. Out of this, 620,000 passengers were international while the remaining 780,000 were domestic passengers. (See Table 1.)

3.18 In 1969, there were 50,291 scheduled and nonscheduled aircraft operations at the airport, 18,946 of which were classified as international while the remaining 31,345 were domestic. Of the international operations, 71% or 13,465 were scheduled and 29% or 5,481 nonscheduled operations. (See Table 2.) While the number of aircraft operations at Maiquetia increased at an average rate of 4.2% annually during the period 1963-69, the number for 1969 was actually below that of the previous year. This decrease reflects both a cutback in domestic operations and an increase in the average size of the aircraft.

3.19 The Maiquetia Airport is served by some 12 international airlines, with direct flights to about 40 foreign cities. Its importance in the region may be seen by comparing its annual volumes of traffic of 50,000 aircraft movements and 1.4 million passengers to the about 18,000 movements and 429,000 passengers at Barbados, the 17,800 movements and 407,000 passengers at Curacao, and the 127,000 movements and 4.5 million passengers at San Juan, Puerto Rico.

E. Passenger and Cargo Forecasts

3.20 The forecast for international passenger traffic is based on past air traffic trends, forecasts prepared by various international air carriers and projected growth in air traffic demand in Venezuela and its major passenger-generating countries. The generally favorable prospects for economic growth in Venezuela, and the continuous growth of foreign visitor arrivals, particularly tourists from the United States, were also taken into consideration.

3.21 For domestic passenger traffic projections, an approach involving identification of the traffic growth factors developed in a domestic passenger demand model and application of the estimate of growth of Venezuela's GDP to the model was used. Domestic air passenger volume is not expected to develop as rapidly as international passenger volume, partly because of recent extensive investments in new and improved highways between principal population centers. A recent downturn in the petroleum industry has had a similar impact on domestic passenger volume, but this situation is expected to improve in the near future.

3.22 The number of international passengers is projected to grow by 9% p.a. between 1975-85 and by 12% between 1985-95, and the number of domestic passengers by 4% p.a. in the 20 year period 1975-95. The main features of the growth of passenger traffic are given below. Further details are given in Table 3.

	<u>1975</u>	<u>1985</u>	<u>1995</u>
International Passengers	935,000	2,365,000	7,300,000
Domestic Passengers	937,500	1,370,000	2,125,000
Transit Passengers (international)	153,500	390,000	1,200,000
<hr/> Total Passengers	<hr/> 2,026,000	<hr/> 4,125,000	<hr/> 10,625,000
<hr/> Passenger Movements in Peak Hours	<hr/> 995	<hr/> 2,195	<hr/> 6,295

3.23 International air cargo, which amounted to some 33,400 m-ton in 1969, has been increasing at an average annual rate of 13% since 1963. Traffic with North American markets, which accounted for some 80% of total shipments, has been growing at a rate of 12 to 13% annually. The remainder was about evenly distributed between other countries in South America, Central America, the Caribbean Islands and Europe. The commodity shipments by air

on the South American and European routes have grown at 22-25% annually, as a result of the opening of new air cargo routes and services, increased consumer and industrial demand and marketing efforts by major international carriers.

3.24 By 1975, the annual volume of air freight for Maiquetia is projected at 67,800 m-tons, of which 57,900 will be international and the remaining 9,900 domestic. By 1995, total annual air cargo is expected to be 625,400 m-tons, of which 610,000 will be international and 15,400 domestic. (See Table 3).

F. Aircraft Operations

3.25 The total projection for all types of aircraft operations for 1975 is 62,660, increasing to 86,100 in 1985 and 125,900 in 1995. (See Table below.) Peak hour aircraft operations are expected to increase from 18 in 1975 to 24 in 1985 and 35 in 1995.

Projected Aircraft Operations, Maiquetia Airport 1975-1995

	<u>1975</u>	<u>1985</u>	<u>1995</u>
Passenger Operations			
International	17,000	31,450	55,500
Domestic	26,800	27,100	32,200
All Cargo Operations			
International	2,240	4,280	5,840
Domestic	1,520	1,080	860
General Aviation	7,680	10,140	11,900
Private Aircraft	<u>7,420</u>	<u>12,050</u>	<u>19,600</u>
Total	62,660	86,100	125,900

4. THE PROJECT

A. The Investment Program

4.01 The investment program of the airport authority for 1971 through 1975 consists of the reconstruction and expansion of the existing Maiquetia Airport at a cost of US\$109 million. It includes the construction of a new runway and taxiway and related works (Part I) which are to be carried out under this project and are estimated to cost US\$54.5 million. The construction of the air terminal complex including international and domestic passenger buildings, cargo buildings and administration building (Part II) will be carried out under a proposed second project. The phasing of this investment program by years is given in Table 4.

B. Description of the Project

4.02 The project consists of the construction at Maiquetia International Airport of (a) a new paved runway 3,500 m x 45 m with parallel and connecting taxiways complete with lighting, (b) runway approach lighting, (c) Nav aids including an instrument landing system (ILS), (d) road, utility and drainage diversion works and (e) provisional freight terminal and improvements to existing terminal building. In addition, the project includes the detailed design of the air terminal complex to be built as Part II and the services of management consultants to assist in setting up the new authority.

4.03 The runway will be paved mostly with asphaltic concrete while the ends of the runway and most of the taxiway will be paved with cement concrete. The new runway will be at a slight angle to the existing runway and located to the north and west of it. The existing runway would be used for aircraft take-offs and the proposed new runway would be used for both landings and take-offs. The taxiway system will provide for aircraft circulation between the new runway, the existing terminal area and the proposed new terminal area to be constructed.

4.04 The master plan for the ultimate development of the site provides for the construction of a second new runway parallel to the proposed new runway. In this configuration the existing runway would be eliminated and the area occupied by it would be used for aircraft maintenance operations, air cargo and some general aviation activities.

4.05 A new control tower is required for the operation of the project as the location of the existing tower would not be suitable for the visual control of aircraft on the west end of the new runway. The location of the tower between the existing and proposed runways was confirmed by the Government during negotiations. It is a condition of loan effectiveness that the Government complete a technical feasibility study satisfactory to the Bank relating to the siting and operation of the control tower and the method of assuring adequate control of the airport ground traffic.

4.06 A very substantial volume of earthworks (about 14 million m³) is necessary for the construction of the runway and taxiway, and additional property needs to be acquired. The removal and relocation of the existing radar, non directional beacon (NDB) and very high frequency omnidirectional radio range (VOR) installations will also be necessary.

4.07 The construction of the new runway and the introduction of an instrument landing system (ILS) will require the revision of aircraft operating procedures in the vicinity of the airport. It will be necessary for the Government to obtain technical assistance from a competent and experienced civil aviation agency to develop and implement such procedures. Agreement on this point was reached during negotiations.

C. Design and Engineering

4.08 The Government has assigned the responsibility for management of project execution to the Ministry of Public Works (MOP). MOP has retained the U.S. consulting firm TAMS to assist in the planning and design of the project. It was agreed during negotiations that a similar arrangement will be negotiated for the supervision of the construction work. The arrangements provide for maximum participation by local consultants and MOP staff in the development of the project, while still ensuring that the necessary expert advice in the planning, design and management of the project is obtained from experienced airport consultants.

4.09 The taxiway layout, which was discussed during negotiations, will be subject to further study and will be confirmed during the design process.

4.10 Airport design will be in accordance with internationally accepted standards and practices.

D. Environment

4.11 Detailed studies of the impact of the runway construction on the airport environment have been made by the consultants to assist the authorities in the future planning of residential and commercial areas around the airport and in particular to minimize noise problems. The project will require the relocation of approximately 1,000 homes, a large proportion of which belong to squatters. The Government proposes to compensate the persons affected so that they can provide their own alternative accommodation. In addition 300 low cost homes will be built and made available on a rental basis. Assurances were obtained during negotiations that adequate compensation would be given and that suitable areas for housing for the squatters would be made available so that the hardship relating to location, jobs and transportation is minimized.

4.12 Assurances were obtained during negotiations that the Government would take measures satisfactory to the Bank to ensure that there will be enacted and enter into effect (i) not later than July 31, 1972, a zoning

ordinance, satisfactory to the Bank, to control the development of obstructions in the vicinity of the airport and (ii) not later than July 31, 1973 land use planning controls satisfactory to the Bank, to ensure that property development in the vicinity of the airport would be compatible with the long range use of the airport.

4.13 Assurances were also obtained during negotiations that the Government would take measures satisfactory to the Bank to ensure that the current freeze on property development in the area adjacent to the airport would not be lifted before the zoning ordinance and land use planning controls are in effect.

E. Cost Estimates

4.14 The project is estimated to cost the equivalent of US\$54.5 million. The proposed loan of US\$17.0 million would cover 87% of the estimated foreign exchange costs of about US\$19.5 million. A summary of the costs is given below and detailed cost estimates are shown in Table 5.

	Bolivares (000)			US\$ (000)			% of Total
	Local	Foreign	Total	Local	Foreign	Total	
Land	50,000	-	50,000	11,111	-	11,111	20.4
Runway and taxiway construction including lighting, navigation aids and associated works	72,000	63,000	135,000	16,000	14,000	30,000	55.0
Design	16,050	4,950	21,000	3,567	1,100	4,667	8.6
Supervision	<u>5,600</u>	<u>2,400</u>	<u>8,000</u>	<u>1,244</u>	<u>534</u>	<u>1,778</u>	<u>3.2</u>
Subtotal	143,650	70,350	214,000	31,922	15,634	47,556	87.2
Contingencies							
Physical	10,800	9,400	20,200	2,400	2,089	4,489	8.2
Price	2,400	6,600	9,000	533	1,467	2,000	3.7
Management consultant fees	<u>675</u>	<u>1,575</u>	<u>2,250</u>	<u>150</u>	<u>350</u>	<u>500</u>	<u>0.9</u>
Total	157,525	87,925	245,450	35,005	19,540	54,545	100.0

4.15 The cost of the road and utility diversions, improvements to the existing terminal building and a provisional freight terminal will not be financed from the loan. The elimination of these items reduces the loan

requirements to US\$17.0 million. The Government would provide the local currency costs as well as that part of the foreign cost not covered by the loan.

4.16 The above figures are based on the consultant's (TAMS) master plan estimates, recently updated and pro-rated to cover the runway portion of the master plan. They are considered reasonable. The estimated cost for land includes funds for the expropriation of land and for compensation to squatters. Land in the littoral is generally scarce and thus the value is fairly high. The unusually high cost of the earthworks for the runway and taxiway, estimated at about \$11 million, is due to the rough terrain which necessitates large cuts and fills. A physical contingency of 15% has been used for the runway construction and is considered adequate. Escalation of construction costs has been estimated at 2% p.a. for the local component and 6% p.a. for the foreign component during the construction period. This is based on a fairly stable local construction cost index and on the assumption that imported materials and equipment would be from countries with a higher rate of inflation.

F. Procurement

4.17 Construction and procurement contracts will be awarded under international competitive bidding following the Bank's "Guidelines for Procurement" with the exception of certain site preparation and provisional works (see para. 4.15) which will not be financed by the proposed loan. It is expected that the project will attract the keen interest of both international and local contractors.

4.18 An earthmoving contract has already been let. It is the intention of the Government to have separate contracts for (a) paving, and (b) lighting and navalds.

G. Disbursement

4.19 Disbursement of loan funds will be made to finance the foreign exchange elements of construction and consultant's services. These disbursements are expected to take place over a three and a half year period from April 1972 to June 1975. Disbursements will be made on the following basis:

- a. 45% of expenditures for civil works contracts which represents the estimated foreign exchange component thereof;
- b. 100% of the CIF landed cost of imported equipment exclusive of any customs duties;
- c. 100% of the foreign expenditures for consultant services.

4.20 The estimated schedule of disbursements is shown in Table 6. It is recommended that the foreign exchange costs of engineering design services, performed after 1 January 1971 and before the signing of the loan should be financed retroactively. These costs are estimated to be less than US\$600,000.

4.21 The Government has awarded an earthmoving contract in August 1971, on the basis of international competitive bidding, and some payments on this contract will probably be made before the signing of the loan. This could involve a foreign exchange element of up to US\$1 million. It is recommended that foreign exchange costs up to that amount incurred before the signing of the loan be financed retroactively.

5. ECONOMIC EVALUATION

5.01 Geographic and economic factors make air transport the main form of passenger travel between Venezuela on the one hand and its principal trading partners and tourist generating areas on the other. The project would make an important contribution to the development of Venezuela by improving the main gateway to Venezuela for most international passengers. The bulk of these are at present business travellers whose activities help make Venezuela the important international trading nation that it is.

5.02 Maiquetia Airport not only serves the growing metropolis of Caracas, which is the focus of economic activity in the country, but it is also the only international airport in the small core region surrounding Caracas which contains three quarters of Venezuela's industrial employment. Maiquetia is, moreover, the nucleus of a reasonably well developed domestic network of air routes connecting the principal population centers and the remote parts of the country to their capital city and to each other. The development of Maiquetia will support moves towards a more diversified economy by providing an important element of the framework required for the expansion of the tourist industry in Venezuela.

5.03 The project is considered urgent, not because of any very immediate lack of capacity on the existing runway but because, without it, internationally recognized safety standards for airports serving turbo-jet aircraft cannot be met. The technical reasons for this were provided in Chapter 3. Amongst the major airports of the world, Maiquetia is almost unique in not meeting these standards. ^{1/} The new runway is thus required to comply with safety standards, and the primary economic question to be considered is whether the increase in safety warrants the considerable expenditure involved.

5.04 One possible approach to this question might have been to compare the project cost with the cost of the accidents likely to occur if the airport was used without complying with the recommended safety standards. Such an approach is impractical in the field of aviation because of the impossibility of establishing, on a statistical basis, the relationship between the probability of serious accidents and specific types of safety improvements, particularly for an individual airport. Aircraft accidents occur so rarely, even under adverse operating conditions as those found in Maiquetia, that they do not provide a basis for an adequate causal analysis of the multitude of possible factors contributing to them. During the period 1959-68

^{1/} Of all international airports in the world handling over half a million passengers a year only six are not equipped with an ILS system. However, four of these six airports are supported by an alternate, equipped with ILS, which serves the same area. (Buenos Aires, San Paulo, Santiago and Palma de Mallorca). Wellington, New Zealand and Maiquetia, Venezuela are the only major single airport systems without ILS.

the worldwide serious accident rate ^{1/} for passenger jet aircraft for public transport operations was 1.2 per million take-offs and landings. The fatality rate for the same period was about 1 per million passengers. Given such low accident rates, irrespective of the speculative nature of accident valuation, it is not possible to evaluate a project reliably on the basis of accident prevention. There is, thus, no objective basis for challenging the judgement of international aviation agencies on the requirement for the recommended standards. These safety standards were therefore accepted.

5.05 It is, however, also important to determine whether the proposed project is the least cost means by which Venezuela could meet these accepted safety standards. The two basic means, other than the proposed project, of achieving them are (a) the construction of a new safe international airport in the vicinity of Caracas or (b) the restriction of Maiquetia to the types of aircraft that can safely use it, i.e. propeller aircraft, to link Caracas and its neighboring area with other existing international airports which meet the safety standards. Alternative (a) has been ruled out as being considerably more costly than the proposed project. In order to assess alternative (b) an examination of the existing international airports in the Caribbean region and the pattern of air routes in this region was undertaken. This examination revealed that if Maiquetia were closed to jet aircraft, the most efficient manner of serving the international air transport needs of the Caracas region would be by providing shuttle propeller aircraft services at Maiquetia to connect it with the international jet air transport network at Willemstad, Curacao, at San Juan, Puerto Rico, and at Port of Spain, Trinidad. An existing international airport in Venezuela which it might be possible to use as a jet connection point, Maracaibo, is some 512 km west of Caracas and traffic on the western segment of air routes coming from or going to Caracas could clearly more advantageously use Curacao which is 280 km away. It would, thus, be technically possible to use other existing international airports to serve the Caracas region. Such a solution however would clearly be commercially unacceptable. Moreover, it would impose a cost on the Venezuelan economy. In the first instance this cost consists of the additional operating costs of providing the propeller aircraft services to connect Maiquetia with the international jet air transport network and the corresponding additional time it would take people to travel to and from Maiquetia. More fundamentally, such a pattern of travel would reduce the growth of traffic, with adverse consequences on the development of Venezuela in general and in particular the key region of Caracas. It has not been possible to estimate this reduction in traffic. But the loss in terms of additional aircraft operating costs and additional passenger time costs valued as described in Annex 2, would in themselves, in comparison with the proposed project costs, show a rate of return of about 17%. This rate of

^{1/} The term 'serious accidents' is used in aviation statistics to describe potentially fatal accidents whether or not a fatality actually occurred.

return calculation ignores the losses to Venezuela arising from the suppression of traffic which is likely to take place without the project. It therefore probably underestimates the benefits arising from choosing the new runway at Maiquetia solution rather than any other alternative.

6. FINANCIAL EVALUATION

A. Introduction

6.01 As proposed by the Government, the financial responsibilities for the development and operation of the Maiquetia Airport would be shared between the Government and the Authority as follows:

(a) Government

1. Borrowing and servicing of all debt associated with the construction of the expansion program viz. Part I (runway complex) the subject of the proposed loan and Part II (the planned terminal building complex). The construction funds would be disbursed and controlled by the Ministry of Public Works.
2. Collection of the departure tax of Bs 83.00 (US\$18.44) per head. This tax is levied and collected at present for the National Treasury from each person leaving the country by air and sea, except those who have entered the country on a tourist visa. (In effect it is paid almost exclusively by Venezuelan residents who form about half of the departing passengers at Maiquetia, and in its present form cannot be considered as a user charge.)

(b) Authority

1. Collection of all revenues (other than departure tax) and payment of all operating expenses.
2. Payment of routine capital expenditures, if any, other than Part I and Part II of the expansion program.

6.02 With the Government servicing directly the debt incurred for the airport, the Authority itself would generate cash in excess of its own requirements and it has been agreed during negotiations that such surplus cash would revert to the Government. On the other hand, the Government would provide the necessary funds to finance future expansion.

6.03 Although it would have been desirable in principle to have the Authority fully responsible for the financial management of both the expansion program and operations of the airport, the Government proposal is acceptable. As mentioned in Chapter 3, the Authority will take over and centralize functions now being performed by various Ministries and agencies. It will be responsible for establishing general policy and plans for operations and development, firing and hiring staff, supervising and coordinating

the work of the various government agencies and departments operating at the airport, and for managing and operating the airport in an efficient and cost conscious manner. In short, the organizational structure proposed by the Government is consistent with the objective (normally associated with autonomous agencies) of financial discipline and close control over costs. The proposed division of financial responsibilities does, however, make it somewhat more difficult than in the case of full financial autonomy, to establish clearly defined financial objectives for the Authority and precise criteria for setting the level and structure of user charges.

B. User Charges and Financial Objectives

6.04 Large investments in infrastructure are often required to serve the expanding aviation industry. The direct beneficiaries of these investments are airlines and their passengers who generally belong to the upper income groups. Furthermore, many of these beneficiaries are foreigners. It is important to ensure that the country making the infrastructure investment obtains sufficient economic benefits from it. The most direct way of obtaining such benefits is through charges to the users and, because of the low elasticity of demand of airport services to user charges, this is usually feasible. The Bank has therefore proposed to the Government that all users should pay for the services received at the airport. The Government is opposed to imposing a departure tax on tourists on the grounds that it would be detrimental to its policy of encouraging the development of the tourist sector. No evidence has been put forward by the Government to support its contention that such a charge would dampen demand and the experience of other airports suggests that a departure tax, at a reasonable level, would not be a deterrent to the growth of tourism. A decision on the level and structure of user charges can, however, best be made when the definitive plans regarding the size, timing and cost of the terminal building complex are available, which is expected before the end of 1972. It has therefore been agreed during negotiations that the consultants referred to in para. 3.14 will, by September 30, 1973, make recommendations on the level and structure of user charges taking into account the desirability of ensuring that:

- (i) charges paid by all users, whether collected by the Borrower or the Authority, will be sufficient to cover the cost of providing the airport services, the service of all debt incurred for the airport and an appropriate contribution to the cost of further expansion of the airport; and
- (ii) a sufficient proportion of total economic benefits resulting from the airport investments are retained in the Venezuelan economy.

Upon completion of this study, the consultants' recommendations would be reviewed by the Government, the Authority and the Bank and a user charges

system for the airport satisfactory to the Bank would be established before March 31, 1974, i.e. before the new runway and the new terminal building complex are in operation.

C. Financing Plan

6.05 Table 8 shows a forecast of the funds required and the sources of such funds for Part I and Part II of the expansion program, based on very tentative cost estimates for Part II and tentative assumptions on its financing. The proposed project (Part I) itself is estimated to cost about Bs 245.5 million (US\$54.5 million equivalent); debt service during the period in which disbursements take place (1971-75) would bring the total financial requirements for Part I to Bs 301.2 million, to be financed as follows:

	<u>Bs million</u>	<u>US\$ million</u> (equivalent)	<u>%</u>
Government contributions:			
Proposed project (Part I)	119.0	26.4	40
Debt service (Part I)	<u>55.7</u>	<u>12.4</u>	<u>18</u>
	<u>174.7</u>	<u>38.8</u>	<u>58</u>
Borrowings:			
Proposed IBRD loan	76.5	17.0	25
Local	<u>50.0</u>	<u>11.1</u>	<u>17</u>
	<u>126.5</u>	<u>28.1</u>	<u>42</u>
Total sources	<u>301.2</u>	<u>66.9</u>	<u>100</u>

6.06 Law No. 29316 of September 11, 1970 authorizes the Government to spend a total of Bs 345.8 million for both Part I and Part II of the expansion program; this falls short of the current cost estimate of Bs 492.4 million for the whole program, and therefore further Congressional appropriation will be required to enable the Government to complete Part II. With regard to the proposed project, confirmation was obtained during negotiations that the law as it now stands does not preclude the Government from appropriating an amount corresponding to the present project cost estimates, and agreement was reached during negotiations that in any event the Government would provide funds as needed to complete the project. The Government contribution of Bs 174.7 million shown in the above table is a gross amount; it is estimated, however, that during the 1971-75 period the Government would receive from the Authority itself cash surpluses amounting to about Bs 26 million, and would collect directly from passengers subject to the departure tax a total of about Bs 82 million.

6.07 Law No. 2029 of August 12, 1970 restricts the borrowing powers of the Government to finance Part I and Part II of the program to an aggregate amount of Bs 187 million, of which up to Bs 137 million (US\$30.4 million)

may be borrowed from international lenders, and up to Bs 50 million may be raised by the issue of bonds locally. The financing plan for the proposed project is compatible with the provisions of the law (which, however, on the basis of present cost estimates, would not give the Government sufficient borrowing powers to finance Part II). Bonds have already been issued; they bear interest at 7% and are repayable over 9 years. The proposed Bank loan for the project would be repayable over 15 years, including a 3-1/2 year grace period.

D. Financial Projections of the Authority

6.08 Projected income statements for the Authority up to 1976 are shown in Table 7, which allocates revenues and expenses between the landing and terminal areas. Details of the financial assumptions are given in Annex 3.

6.09 Operating revenues are based on the forecast traffic growth, the planned expansion of the terminal building, and the user charges listed in Annex 4. Pending the results of the review of the user charges system, no major changes are envisaged at this stage, except for the introduction in mid-1974 of a fuel fee of Bs 0.025 per gallon. The existing landing fee of Bs 12.00 per ton for international flights will not be increased because it is already high in comparison to other airports in the region; the domestic landing fee of Bs 1.60 per ton is on the other hand very low, but it is not envisaged at this stage to change it either, in view of the Government's desire to promote domestic aviation.

6.10 The projected operating and maintenance costs of the landing area have been prepared by the Bank staff on the basis of past costs for the existing runway. Salaries and wages included in the terminal area costs are based on the estimates of the Government's consultants. An increase in staff is assumed to take place in stages in the years 1972 through 1975. Agreement was reached during negotiations that the Authority would consult with the Bank on its projected staffing level, with the understanding that the management and accounting consultants referred to in para. 3.14 would undertake a study of the staffing requirements and that their findings would form the basis for future decisions.

6.11 The projections show that the Authority will operate at a profit in 1972 and 1973, with a rate of return on average net fixed assets in service of 8%. Starting in 1974 the Authority will incur losses due to the heavy impact of depreciation, particularly for the planned new terminal building, and may not be able to break even until the early 80's when the design capacity will be fully utilized. Actually, to the extent that the projections are an adequate forecast of allocation of revenues and expenses between the landing and terminal areas, it is clear that the Authority's deficit is attributable solely to the terminal area; the estimated operating revenues for the terminal area are certainly not commensurate with the size of the investment planned for the terminal building. Income from space

rentals and concessions in the new terminal building, which is assumed to become operational in early 1975, are based on the recommendations of the Government's consultants; and as discussed earlier in para. 6.04, the level and structure of user charges would be reviewed and an appropriate user charges system established early in 1974. In view of the fact that the planned investment in the terminal building complex and/or any other development will have an impact on the Authority's profitability, agreement was obtained during negotiations that before undertaking or executing any project or development for the expansion or improvement of the airport (including Part II), the Government would consult with the Bank. Agreement was also obtained during negotiations that the Authority would not incur any capital expenditures in excess of Bs 1 million per annum during the construction period of the project without the prior approval of the Bank.

6.12 In view of the uncertainties regarding the investment for the terminal building and of the user charges system, the projections do not provide a good basis for formulating a rate covenant with which the Authority should comply in all future years. However, the forecasts for 1972 and 1973 indicate that the Authority could achieve a return of 8% on average net fixed assets in service, provided that it exercises proper control over its costs. During negotiations, agreement was obtained that the Authority and the Government would take all necessary steps, including adjustments in charges, to enable the Authority to earn a return of at least 6% in 1972, and 8% in 1973, as an interim measure. The rate will be reviewed and new rates satisfactory to the Bank would be established for 1974 and thereafter on the basis of the results of the study of user charges referred to in para. 6.04. These rates would be expected to increase progressively, but the Bank would not require that they exceed 8%.

6.13 Balance sheet forecasts are given in Table 9. As mentioned in para. 6.02, the Authority will generate cash in excess of its own requirements even with the existing level of user charges and during negotiations agreement was reached that the Authority would pay over to the Government at the end of each year, by way of a return on the Government's investment, all of its cash resources exceeding an amount sufficient to cover its budgeted cash expenditures for the ensuing half-year.

6.14 With the financial arrangements as proposed by the Government, the Authority itself would not have any long-term debt and would obviously have no problems in remaining financially viable. However, this would not necessarily be the case if the Authority were to incur substantial debt in the future. During negotiations, agreement was obtained that the Authority would not, without prior approval of the Bank, incur long term debt if its net cash generation is less than 1.5 times its maximum future debt service requirements.

7. AGREEMENTS REACHED AND RECOMMENDATION

7.01 During negotiations agreements were reached on the following principal points.

- a. Review and comment by the Bank on the Airport Authority's By-laws before their enactment by 30 June 1972 (para. 3.11).
- b. Maintenance by the Authority of complete accounting records to reflect all transactions affecting airport operations under a commercial accounting system (para. 3.14).
- c. Hiring of management and accounting consultants by the Authority by 30 June 1972 on the basis of agreed terms of reference (para. 3.14).
- d. Appointment of external auditors by 31 March 1972 (para. 3.15).
- e. Provision of technical assistance in the development of new aircraft operating procedures for the airport (para. 4.07).
- f. Compensating displaced people adequately (para. 4.11).
- g. Taking of measures by the Government to ensure enactment of a) an obstruction zoning ordinance by July 31, 1972 and b) land use planning controls by July 31, 1973 (para. 4.12).
- h. Establishment of a user charges system, satisfactory to the Bank, by March 31, 1974 which would take into account the desirability of ensuring that (a) charges paid by all users, whether collected by the Borrower or the Authority, will be sufficient to cover the cost of providing the airport services, the service of all debt incurred for the airport and an appropriate contribution to the cost of further expansion of the airport; and (b) a sufficient proportion of total economic benefits resulting from the airport investments are retained in the Venezuelan economy (para. 6.04).
- i. Prior consultation by the Government with the Bank before proceeding with any expansion program at the airport other than the proposed project (para. 6.11).
- j. Limitation of the Authority's capital expenditures during the project period to one million Bolivares per annum (para. 6.11).

- k. Implementation by the Authority of all measures including adjustment of user charges to achieve (a) an annual rate of return of at least 6% in 1972 and 8% in 1973 and (b) in 1974 and thereafter progressively increasing annual rates of return satisfactory to the Bank but which shall not be required to exceed 8% (para. 6.12).
- l. Handing over by the Authority to the Government at the end of each year, all its cash resources exceeding an amount to cover its budgeted cash expenditures for the ensuing half-year (para. 6.13).
- m. Observance by the Authority of a debt limitation test (para. 6.14).

7.02 It will be a condition of effectiveness of the loan that the Government will furnish to the Bank a technical feasibility report satisfactory to the Bank relating to (a) the siting and operation of the control tower included in the project and (b) the method of assuring adequate control of the airport ground traffic (para. 4.05).

7.03 It is recommended that the foreign exchange costs of design and engineering services incurred after January 1, 1971 not exceeding US\$600,000 should be financed retroactively. It is also recommended that the foreign exchange costs of the initial earth moving contract incurred after September 1, 1971 not exceeding US\$1,000,000 should be financed retroactively (paras. 4.20 and 4.21).

7.04 The proposed project constitutes a suitable basis for a Bank loan of US\$17.0 million for a term of 15 years including a 3-1/2 year grace period.

January 4, 1972

VENEZUELAAPPRAISAL OF MAIQUETIA INTERNATIONAL AIRPORT PROJECTDefinitions and Descriptions of Navigational AidsInstrument Landing System - ILS

The ILS is an electronic system which defines the approach path to a runway by means of radio transmissions to receivers in the aircraft. The system is composed of a localizer, glide slope and marker beacons. The localizer provides lateral guidance along the extended runway centerline. The glide slope provides vertical guidance for a descending flight path at angles normally between 2.0° and 3.0° with the horizontal. Marker beacons provide a signal to indicate passage of an aircraft over designated points along the flight path.

The outer marker location indicates the point at which the initial approach altitude (level flight) intercepts the glide slope signal. The middle marker is located at a distance corresponding to the 60 m (200-ft) altitude on the glide slope. Such a system meets the requirements of a Category I installation. For Category II installations an inner marker is provided to indicate the 30 m (100-ft) altitude on the glide slope and there are additional requirements for runway lighting and pilot training to enable landing to be made in even lower weather minima.

Very High Frequency Omnidirectional Radio Range - VOR

The VOR is an electronic system which provides continuous bearing information with coverage limited only by line of sight. It consists of a radio transmitter installation transmitting a coded and directional signal which identifies the station and provides azimuth information to the aircraft. It can be used as an enroute aid to navigation between airports or as a terminal landing aid at an airport.

Distance Measuring Equipment - DME

This is an electronic system which tells the pilot the distance the aircraft is to or from a point, usually a VOR station. Combining this with the VOR bearing information gives the pilot a means of accurate navigation on or off the airways.

Visual Approach Slope Indicator - VASI

A visual approach slope indicator system is comprised of a number of light units sited so as to appear to the pilot of an approaching aircraft to be symmetrically disposed about the runway centerline in the form of two

pairs of runway wing bars; one pair, nearest the threshold, being designated as the downwind bars and the other pair, away from the threshold, as the upwind bars. The light units in each bar project a beam of light having a white color in its upper part and a red color in its lower part. The units are so arranged that the pilot of an approaching aircraft will see all the wing bars as red when his aircraft is below the approach slope; as white when the aircraft is above the approach slope; and the downwind bars as white and the upwind bars as red when the aircraft is on the correct glide slope.

VENEZUELAAPPRAISAL OF MAIQUETIA INTERNATIONAL AIRPORT PROJECTBasis for Economic Evaluation

1. In order to provide a quantitative economic assessment of the project, a comparison was made with the next best way of meeting the accepted jet airport safety standards. The second best alternative, which involves closing Maiquetia to jets and using propeller aircraft to link it with the international jet air transport network, is admittedly not a realistic substitute for the proposed project. However, such a comparison helps indicate in quantitative terms how much more costly it is to achieve the safety standards by means other than the project. Three types of benefits have been separately estimated: these are savings in aircraft flying time, savings in passenger time and reductions in ground delays.
2. Two alternative estimates have been made of these quantifiable benefits of the project. The first assumes that the benefits of the project will increase with the growth of traffic over the twenty year life of the project. The second assumes that benefits would increase only during the first five years, after which they would remain constant for the remaining 15 years. This second extremely conservative estimate of the benefits was made to allow for the effects of conceivable changes in aviation technology during the economic life of the project leading to new types of aircraft, to the adoption of V/STOL systems or to more efficient air traffic control procedures.

Savings in Aircraft Flying Time

3. The types of aircraft that could safely operate from Maiquetia in the absence of the project were identified and their operating characteristics were examined. On the basis of this examination it was assumed that the most probable aircraft fleet that could serve Maiquetia without the project would consist of four engine piston and turbo-prop aircraft for all international flights and the most recent types of twin-engine propeller and turbo-prop aircraft for domestic flights initially, replaced by four engine aircraft in later years.
4. A comparison was then made between using the normal jet fleet and the assumed propeller fleet to connect Maiquetia to the jet air route network at three points, Willemstad in Curacao, Port-of-Spain in Trinidad and San Juan in Puerto Rico. This revealed that the assumed propeller aircraft fleet would require 12 additional minutes flying time on the 280 km flight to Curacao, 26 additional minutes on the 608 km flight to Trinidad and 38 minutes more on the 872 km flight to Puerto Rico. It was assumed that all the traffic originating and terminating in the Caribbean region or in the west coast of South America and 50% of the U.S. traffic would

be routed through Curacao. The other half of the U.S. traffic was assumed to travel via Puerto Rico. The North, Central and South Atlantic regional traffic was assumed to be routed through Trinidad. A separate assessment was made of using propeller aircraft on those domestic routes currently served by jet aircraft. On the assumption that the distribution of the forecast traffic would follow the existing distribution, it was estimated that the overall time penalty of using the assumed propeller fleet would amount to a weighted average of 20 minutes per flight.

5. Assuming an annual average aircraft load factor of about 60%, there would be 50 passengers per international flight. For domestic traffic, it is assumed that an average aircraft capacity is 60 seats in 1975, increasing to 80 seats by 1995 and the average annual load factor is assumed to be 60%. On this basis, the total number of turbo-prop aircraft operations to handle the international passenger traffic between 1975 and 1995 is estimated to range from 18,700 passenger operations in 1975 to 146,000 in 1995. The number of domestic turbo-prop operations to replace turbo-jets would be 5,650 operations in 1975 and 10,500 operations in 1995. Operating costs per hour per passenger are usually lower for jet aircraft than propeller aircraft. To be conservative, this factor has not been taken into account in computing benefits of the project.

6. Aircraft operating costs are estimated on the basis of data assembled by the United States Civil Aeronautics Board (August 1970). The direct operating cost of flying operations per aircraft block hour in the United States in 1969 range from some US\$85-137 for twin-engine turbo-prop and piston aircraft to US\$195-225 for four engine aircraft. For the purpose of this analysis an average cost per hour of US\$130 for twin-engine and US\$200 for four-engine aircraft has been assumed as most representative. After making an adjustment for the increased size of domestic aircraft throughout the forecast period, the weighted average cost per hour for an all-propeller aircraft fleet for Maiquetia International Airport was computed. For 1975 the average hourly cost is estimated at US\$186, and by the year 1995 it would rise to US\$200. The weighted average cost of 20 minutes of additional flying time by propeller aircraft is therefore estimated at around US\$62 for the year 1975 increasing to around US\$67 in 1995. On these bases an additional cost of aircraft operations due to the restriction to be placed against jet aircraft at the Maiquetia Airport is estimated to be US\$1.8 million in 1975, rising to around US\$10.9 million in 1995.

Savings in Passenger Time

7. The average value of air traveler's time has been estimated for international and domestic passengers on the basis of assumed average income levels for different classes of travelers. The hourly rate has been estimated at US\$5.47 for international air travelers and US\$4.70 for domestic passengers, or an overall average of about US\$5 for all passengers. This has been applied to the average 20 minutes additional flying time for all

passengers presently on jets. An average of an additional 40 minutes of connecting time which is required for all international flights was applied to those passengers (about 2/3 of the total) who will connect to another flight at Curacao, Port-of-Spain or San Juan. The same hourly value has also been applied for time loss by passengers because of aircraft delays or due to increased taxiing distance on the ground at Maiquetia.

Reductions in Ground Delays

8. The practical capacity of the airport with one runway is estimated to be some 40 aircraft operations per hour with the projected fleet mix of turbo-jet and propeller aircraft. With an all-propeller type aircraft fleet, the practical capacity with one runway would be around 50 hourly operations. With the proposed new runway the practical hourly capacity would be some 63 operations. With two runways, delay costs are minimal throughout the forecast period, but without the second runway, delay costs, although small initially, increase rapidly as a function of traffic growth reaching some US\$1.6 million by 1995. This saving in aircraft ground delays has to be set against an increase in taxiing time as the new runway is further away from the terminal building complex. The net effect of the delay savings for passengers and aircraft and the additional cost of taxiing will be a net annual cost of the project of US\$0.3 million in 1975. This will change to net benefits by 1990, reaching the level of US\$2.8 million by 1995.

Economic Costs of the Project

9. Part of the land costs, the design costs and the management consultants fees relate to Part II of the Maiquetia investment program and these costs as well as the price contingencies have been deducted from the project cost leaving an economic capital cost of US\$45 million to be weighed against the project benefits. In addition to this, the project will give rise to some social and environmental costs which are not included in the project cost estimate. These costs arise because the project will necessitate the relocation of some existing land uses and because the new runway will inflict aircraft noise on some developed areas.

10. Relocation Costs The implementations of the project will necessitate the relocation of a leper colony, a pipe factory and a reformatory school which are located on the proposed airfield. The Ministry of Public Works (MOP) has estimated that these three establishments could be relocated at estimated costs of Bs 10 million, Bs 3 million and Bs 0.5 million respectively, giving rise to total relocation costs of US\$3 million.

11. Noise Costs The new realigned runway would introduce aircraft noise into areas which were previously free from it. Two small residential areas (parts of "Urbanization Playa Grande" and "Urbanization Atlantica") will be severely affected by noise. It has conservatively been assumed that

the noise would merely inhibit increases in land values in these areas for the first 10 years of the project period. Assuming that land prices, in the absence of the project, would rise at 8% per annum, the losses in land values attributable to the noise are estimated at a discounted 1975 value of Bs 12.2 million (US\$2.7 million).

12. Aircraft noise would also necessitate the insulation of some residential and other property. The MOP has estimated that 600 residential houses (200 of which are low cost homes), three schools and three hospitals would require insulation against noise. The cost of such insulation has been assessed at Bs 9 million (US\$2 million).

Project Return

13. For the calculation of the project return, as compared with the next best alternative the social and environmental costs amounting to US\$7.7 million have been added to the economic capital costs of the project. On the basis of these total costs and the benefits discussed above, the return of the project is 17% if the benefits are assumed to increase over the full projected life of the investment. If the benefits of the project are assumed to remain constant after 1980 for the reasons described in para. 2 above, the return is 13%. The first year return is 12% if only the direct capital costs are considered, but is 11% if the social and environmental costs are also included. Most of the benefits of this project would be received directly by the Venezuelan economy. It is estimated that 30% of the total quantified benefits would accrue directly to Venezuelan residents in the form of time savings to them, and that a further 10% of the total benefits would accrue directly to Venezuelan airlines. Moreover, Venezuela would obtain additional revenue from foreign airlines at the airport amounting to 20% of the estimated project benefits. The rest of the benefits would accrue initially to the international community but one would expect this in the long term to lead to Venezuela obtaining benefits of a similar order of magnitude in the form of increased trade, additional spending by foreigners in Venezuela and more foreign investment in Venezuela. In the more immediate future, however, the level of user charges at the airport will be studied by consultants as pointed out in para. 3.14. Their recommendations could lead to changes in the user charges and perhaps to an increase in the proportion of the economic benefits that would directly accrue to Venezuela.

Sensitivity Tests

14. Using the increasing benefit stream, a 15% increase in the estimated construction cost of the project, and a delaying of all benefits by one year would reduce the economic return from 17% to 15%. If benefits are decreased by 25%, either by a 25% lower traffic forecast or by a 25% reduction in the unit benefits, the economic return is 14%. If the value of benefits is increased by 25%, the economic return is 19%. Alternatively, using the stream in which benefits are assumed constant after 1980, the above three tests show rates of return of 11%, 10% and 16%, respectively.

VENEZUELA

APPRAISAL OF MAIQUETIA INTERNATIONAL AIRPORT PROJECT

Assumptions Used in Financial Projections

1. The period during which disbursements take place is assumed to be 1971 through 1975 for Part I project with the new runway facilities becoming operational in mid-1974. The projected construction period for Part II is assumed to be 1973 through 1975 with the new terminal building complex becoming operational early in 1975.

2. Interest and commitment charges during the construction period and interest thereafter are treated as current non-operating expenses and included in the income statement.

3. The proposed Bank loan for Part I would bear interest at 7-1/4% p.a. and would be repayable over 15 years, including a 3-1/2 year grace period. The projected borrowing for Part II is on the same terms as for Part I. The local bond issue bears interest at 7% and is repayable over 9 years.

4. The Government's contribution to the construction costs of Part I and Part II are treated as equity in the Authority's accounts.

5. Annual depreciation of fixed assets is calculated on the straight line basis, and the following rates apply:

Land	None
Buildings	5%
Runways	5%
Equipment	10%

6. The cost of management and accounting consultants' services is assumed to be Bs 2,300,000. This is treated as a deferred charge and written off in ten equal installments starting in 1975.

7. Annual salary increases are calculated at 5% of prior year's payroll costs.

8. The average annual increases of other expenses are as follows:

Runway operating and maintenance costs	5%
Supplies	10%
Service contracts	5%
Utilities	10%

9. The accounts receivable are calculated on the basis that one month's operating revenues for a given year would be outstanding as at the end of the year.

10. The accounts payable and accruals are calculated on the basis that one month's cash operating expenses excluding salaries and wages for a given year would remain unsettled as at the end of the year.

11. Other income shown under the terminal area in the amount of Bs 2.18 million p.a. from 1975 onwards include Bs 1.25 million p.a. generated by the existing terminal buildings being used as a cargo facility and/or for aviation oriented purposes, and Bs 930,000 p.a. from general aviation activities and land leases.

12. The Authority will retain cash balances at year end at a level of half of the following year's cash operating expenses, with any excess cash generation reverting to the Government.

VENEZUELA

APPRAISAL OF MAIQUETIA INTERNATIONAL AIRPORT PROJECT

Schedule of User Charges

<u>Source of Revenue</u>	<u>Existing Fee</u>	<u>Fee Suggested By Consultant</u>	<u>Fees Forming Basis of Financial Projections</u>
Landing Fee:			
International			
Pax Cargo	Bs 10/MT(D)/Bs 12/MT(N)	Bs 12/MT	Bs 12/MT
Private Tourism	-	Bs 120/Opn.	Bs 120/Opn.
National			
Pax Cargo	Bs 1.30MT(D)/Bs 1.60MT(N)	Bs 3/MT	Bs 1.60/MT
Private Tourism	-		
Fuel Fees	-	Bs .01/Gal.	Bs 0.025/Gal.
Pax Terminal Facilities			
Gate Positions	-	^{1/} Bs 735/LM/year	Bs 735/LM/year
Departure Tax	Bs 83/Dep.non-tourist Pax	Bs 10/Dep. Pax	
Airline Prime Space	Bs 125/SM/year	Bs 240/SM/year	Bs 240/SM/year
Baggage Storage Rooms	Bs 125/SM/year	Bs 100/SM/year	Bs 120/SM/year
Concession & Rental Space	Bs 125/SM/year	Bs 240/SM/year	Bs 240/SM/year
		+ % gross revenues	+ % gross revenues
Government Agencies	-	Bs 50/SM/year	-
Car Rental	-	10% gross revenues	10% gross revenues
Public Parking	Bs 40/SM/year	90% gross revenues	Bs 8/day/car parking space

Legend:

MT = Metric Ton
Opn. = Operation
Gal. = Gallon
LM = Linear Meter

Dep. non-tourist Pax = Departing Passenger not holding tourist visa
SM = Square Meter
D = Day
N = Night

^{1/} Goes to the Government, excludes tourists

VENEZUELAAPPRAISAL OF MAIQUETIA INTERNATIONAL AIRPORT PROJECTTABLE 1

HISTORIC PASSENGER DATA
 Maiquetia International Airport
 1963 - 1970 (thousands)

<u>Year</u>	<u>International</u>	<u>Domestic</u>
1963	235	443
1964	290	506
1965	337	576
1966	398	655
1967	464	713
1968	551	735
1969	573	745
1970	620	785

TABLE 2

HISTORIC AIRCRAFT OPERATIONS DATA
 Maiquetia International Airport
 1963 - 1969

<u>Year</u>	<u>International</u>		<u>Domestic</u>	<u>Total</u>
	<u>Scheduled</u>	<u>Non-scheduled</u>		
1963	9046	1827	28,341	39,214
1964	9370	2321	29,104	40,795
1965	9968	2970	31,805	44,743
1966	10,741	3524	34,531	48,726
1967	11,923	4131	32,387	48,441
1968	12,783	5507	32,242	50,532
1969	13,465	5481	31,345	50,291

August 27, 1971

VENEZUELA
APPRAISAL OF MAIQUETIA INTERNATIONAL AIRPORT PROJECT

AIR TRAFFIC PROJECTIONS

Maiquetia International Airport

	1975-1995				
	1975	1980	1985	1990	1995
1. Annual Passengers ^a	1,872,000	2,600,000	3,735,000	5,900,000	9,425,000
International	935,000	1,465,000	2,365,000	4,200,000	7,300,000
Domestic	937,000	1,135,000	1,370,000	1,700,000	2,125,000
Transit ^b (international)	153,500	242,500	390,000	695,000	1,200,000
2. Annual Aircraft Operations	62,660	72,380	86,100	108,060	125,900
Air Carrier					
International Passenger	17,000	23,500	31,450	44,700	55,500
Domestic Passenger	26,800	26,200	27,100	30,900	32,200
International Freight	2,240	3,130	4,280	5,010	5,840
Domestic Freight	1,520	1,180	1,080	900	860
General Aviation ^c	7,680	8,900	10,140	11,200	11,900
Turismo ^d	7,420	9,470	12,050	15,350	19,600
3. Average Number of Passengers per Flight	43.7	52.3	63.8	78.0	107.5
4. Peak-Hour Passenger Movements ^e	955	1,430	2,195	3,733	6,295
International	750	1,175	1,895	3,360	5,830
Domestic	342	414	500	621	776
5. Peak-Hour Scheduled Air Carrier Operations					
International	8	11	15	21	26
Domestic	9	9	10	11	11
6. Peak-Hour Total Aircraft Operations	18	20	24	30	35
7. Annual Air Freight (metric tons)	67,800	124,900	246,500	388,300	625,400
International	57,900	115,000	235,000	375,000	610,000
Domestic	9,900	9,900	11,500	13,300	15,400

a. Totals exclude transit passengers.

b. Transit passengers averaged approximately 25% of total international passenger movements. Each transit passenger accounts for one deplanement and one enplanement (two movements).

c. Includes official government aviation, agricultural aviation, and search and rescue activity. d. Turismo includes all private aviation. e. Totals do not add, because domestic and international peak hours do not coincide.

f. Each transit passenger counted twice. g. mutual use.

TABLE 3

TABLE 5

VENEZUELA

APPRAISAL OF MATIQUETIA INTERNATIONAL AIRPORT PROJECT

	<u>Detailed Cost Estimate</u>					
	<u>Bolivares (000)</u>			<u>US\$ (000)</u>		
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
<u>LAND</u>	<u>50,000</u>	-	<u>50,000</u>	<u>11,111</u>	-	<u>11,111</u>
<u>CONSTRUCTION WORKS</u>						
Rerouting of Las Pailas Canal	6,200	2,700	8,900	1,378	600	1,978
Clearing, Major Earthworks, Fencing	24,500	25,500	50,000	5,445	5,666	11,111
Grading, Paving, Drainage	17,700	12,500	30,200	3,933	2,778	6,711
Lighting Electrical Distribution	3,000	5,200	8,200	667	1,156	1,823
Provisional Freight Terminal	3,100	2,100	5,200	689	467	1,156
Naváids, Communications	2,100	4,800	6,900	467	1,066	1,533
Terminal Complex Improvements	2,000	600	2,600	444	133	577
Relocation of Utilities	4,100	2,300	6,400	911	511	1,422
Relocation Catia La Mar Highway	6,400	4,800	11,200	1,422	1,067	2,489
Access Road to Playa Grande	900	700	1,600	200	156	356
Control Tower	<u>2,000</u>	<u>1,800</u>	<u>3,800</u>	<u>444</u>	<u>400</u>	<u>844</u>
	<u>72,000</u>	<u>63,000</u>	<u>135,000</u>	<u>16,000</u>	<u>14,000</u>	<u>30,000</u>
<u>DESIGN</u> (including runway and terminal complex)	16,050	4,950	21,000	3,567	1,100	4,667
<u>SUPERVISION</u>	5,600	2,400	8,000	1,244	534	1,778
<u>CONTINGENCIES</u>						
Physical	10,800	9,400	20,200	2,400	2,089	4,489
Price	2,400	6,600	9,000	533	1,467	2,000
<u>MANAGEMENT CONSULTANT FEES</u>	<u>675</u>	<u>1,575</u>	<u>2,250</u>	<u>150</u>	<u>350</u>	<u>500</u>
TOTAL	157,525	87,925	245,450	35,005	19,540	54,545

December 22, 1971

TABLE 6VENEZUELAAppraisal of Maiquetia International Airport ProjectEstimated Schedule of Disbursements

<u>IBRD Fiscal Years Quarter</u>	<u>Cumulative Disbursements at end of Quarter (US\$ 000)</u>
<u>1971/72</u>	
June 30, 1972	4,000
<u>1972/73</u>	
September 30, 1972	5,500
December 31, 1972	7,000
March 31, 1973	8,500
June 30, 1973	10,000
<u>1973/74</u>	
September 30, 1973	11,500
December 31, 1973	13,000
March 31, 1974	14,500
June 30, 1974	15,400
<u>1974/75</u>	
September 30, 1974	15,800
December 31, 1974	16,200
March 31, 1975	16,600
June 30, 1975	17,000
December 22, 1971	

VENEZUELA

APPRAISAL OF MAIQUETIA INTERNATIONAL AIRPORT PROJECT

Comparative Income Statement of the Maiquetia Airport Authority
Expressed in Thousands of Bolivares (Bs)

Exchange rate: Bs 1.00 = US\$0.22
US\$1.00 = Bs 4.50

For Year Ended or
Ending December 31,

	Reconstructed				Forecast				
	1968	1969	1970	1971	1972	1973	1974	1975	1976
LANDING AREA									
<u>Operating Revenues</u>									
Landing fees - international	8,258	9,380	10,440	11,520	12,600	13,920	15,240	16,800	17,640
- domestic	258	277	318	370	429	498	578	670	672
- private tourism	-	-	-	-	-	-	-	282	295
Fuel fee	-	-	-	-	-	-	1,000	2,500	3,000
Total	8,516	9,657	10,758	11,890	13,029	14,418	16,818	20,252	21,607
<u>Operating Expenses</u>									
O&M costs - existing runway	1,385	1,600	1,680	1,764	1,852	1,945	2,042	2,144	2,251
- new runway	-	-	-	-	-	-	1,000	2,100	2,205
Depreciation	1,400	1,400	1,400	1,400	1,400	1,400	6,440	11,480	11,480
Total	2,785	3,000	3,080	3,164	3,252	3,345	9,482	15,724	15,936
Net income	5,731	6,657	7,678	8,726	9,777	11,073	7,336	4,528	5,671
TERMINAL AREA									
<u>Operating Revenues</u> ^{1/}									
Space rentals - gate positions								660	700
- airline prime								1,400	1,600
- baggage handling								600	660
- concessions								1,800	2,000
Car rental concessions								560	600
Public parking								3,200	3,500
Other								2,180	2,180
Total	1,326	1,381	1,500	3,100	3,300	3,500	3,700	10,400	11,240
<u>Operating Expenses</u>									
Salaries and wages	1,636	1,521	1,600	1,650	3,500	5,000	7,000	9,000	9,450
Supplies	100	110	121	133	146	161	177	225	248
Service contracts	297	297	300	800	840	880	920	1,000	1,050
Utilities	1,063	1,255	1,300	1,700	1,800	1,900	2,000	2,500	2,750
Consultancy fees	-	2,925	2,925	-	-	-	-	230	230
Depreciation	875	875	875	2,000	2,000	2,000	2,000	17,835	17,835
Total	3,971	6,983	7,121	6,283	8,286	9,941	12,097	30,790	31,563
Net income	(2,645)	(5,602)	(5,621)	(3,183)	(4,986)	(6,441)	(8,397)	(20,390)	(20,323)
TOTAL NET INCOME	3,086	1,055	2,057	5,543	4,791	4,632	(1,061)	(15,862)	(14,652)
INTERNALLY GENERATED FUNDS	5,361	3,330	4,332	8,943	8,191	8,032	7,379	13,683	14,893
LESS: INCREASE IN WORKING CAPITAL - EXCLUDING CASH	630	70	90	190	970	110	170	740	140
	4,731	3,260	4,242	8,753	7,221	7,922	7,209	12,943	14,753
SURPLUS CASH TO GOVERNMENT	4,731	3,260	4,242	8,753	2,221	5,922	6,209	11,943	13,753
CASH POSITION					5,000	7,000	8,000	9,000	10,000

1/ Details for years 1968-1974 not available.

December 24, 1971

TABLE 7

VENEZUELA

APPRAISAL OF MAIQUETIA INTERNATIONAL AIRPORT PROJECT

Projected Cash Flow - Part I and Part II
Expressed in Thousands of Bolivares (Bs)

Exchange rate: Bs 1.00 = US\$0.22
US\$1.00 = Bs 4.50

For Year Ending
December 31.

SOURCES OF FUNDS

Borrowings:

Part I project:
Local bond issue
Proposed IBRD loan

	1971	1972	1973	1974	1975	1976
Local bond issue	50,000					
Proposed IBRD loan	-	31,500	27,000	14,400	3,600	-

Part II project:
Projected borrowing

Projected borrowing	-	-	21,150	38,250	900	-
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Total borrowings

Total borrowings	50,000	31,500	48,150	52,650	4,500	-
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Government Contributions:

Part I project

Part I project	24,000	41,000	43,700	5,700	4,600	-
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Part II project

Part II project	-	-	69,050	114,050	3,500	-
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Debt service

Debt service	3,546	6,054	14,098	18,544	22,073	27,038
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Total Government contributions

Total Government contributions	27,546	47,054	126,848	138,294	30,173	27,038
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TOTAL SOURCES

TOTAL SOURCES	77,546	78,554	174,998	190,944	34,673	27,038
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APPLICATION OF FUNDS

Capital Expenditures:

Part I project

Part I project	74,000	72,500	70,700	20,100	8,200	-
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Part II project

Part II project	-	-	90,200	152,300	4,400	-
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Total capital expenditures

Total capital expenditures	74,000	72,500	160,900	172,400	12,600	-
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Debt Service:

Part I project:

Repayment of local bonds - principal
Interest on local bonds
Repayment of IBRD loan - principal
Interest on IBRD loan
Subtotal

Repayment of local bonds - principal	937	1,250	6,234	7,896	7,896	7,896
Interest on local bonds	2,609	3,402	3,226	2,703	2,150	1,599
Repayment of IBRD loan - principal	-	-	-	-	2,183	4,613
Interest on IBRD loan	-	1,402	3,499	4,844	5,488	5,306
Subtotal	3,546	6,054	12,959	15,443	17,717	19,414

Part II project:

Repayment of projected borrowing - principal
Interest on projected borrowing
Subtotal

Repayment of projected borrowing - principal	-	-	-	-	-	3,308
Interest on projected borrowing	-	-	1,139	3,101	4,356	4,316
Subtotal	-	-	1,139	3,101	4,356	7,624

Total debt service

Total debt service	3,546	6,054	14,098	18,544	22,073	27,038
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TOTAL APPLICATION

TOTAL APPLICATION	77,546	78,554	174,998	190,944	34,673	27,038
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SURPLUS CASH FROM AIRPORT/AUTHORITY

SURPLUS CASH FROM AIRPORT/AUTHORITY	8,753	2,221	5,922	6,209	11,943	13,753
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DEPARTURE TAX INCOME - Bs 83/- per
passenger

DEPARTURE TAX INCOME - Bs 83/- per passenger	13,944	14,525	16,434	17,596	19,339	21,165
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December 24, 1971

TABLE 8

V E N E Z U E L A

APPRAISAL OF MAIQUETIA INTERNATIONAL AIRPORT PROJECT

Comparative Balance Sheet of the Maiquetia Airport Authority

Expressed in thousands of Bolivares (Bs)

Exchange rate: Bs 1.00 = US\$0.22
US\$1.00 = Bs 4.50

As at December 31,	Reconstructed				Forecast				
	1968	1969	1970	1971	1972	1973	1974	1975	1976
<u>ASSETS</u>									
<u>CURRENT ASSETS</u>									
Cash					5,000	7,000	8,000	9,000	10,000
Accounts receivable	820	920	1,020	1,250	1,360	1,490	1,710	2,550	2,740
Inventory-stores	50	50	50	100	100	100	150	200	200
Sub-total	870	970	1,070	1,350	6,460	8,590	9,860	11,750	12,940
<u>FIXED ASSETS</u>									
Land	9,000	9,000	9,000	9,000	9,000	9,000	59,000	59,000	59,000
Runways	12,000	12,000	12,000	12,000	12,000	12,000	172,000	172,000	172,000
Buildings	13,500	13,500	13,500	13,500	13,500	13,500	36,000	36,000	228,900
Equipment	10,000	10,000	10,000	10,000	10,000	10,000	30,800	92,700	92,700
Sub-total	44,500	44,500	44,500	67,000	67,000	67,000	297,800	552,600	552,600
Less: Accumulated Depreciation:									
Runways	600	1,200	1,800	2,400	3,000	3,600	8,200	16,800	25,400
Buildings	675	1,350	2,025	3,825	5,625	7,425	9,225	16,170	27,615
Equipment	1,000	2,000	3,000	4,000	5,000	6,000	8,040	17,310	26,580
Sub-total	2,275	4,550	6,825	10,225	13,625	17,025	25,465	50,280	79,595
Net fixed assets	42,225	39,950	37,675	56,775	53,375	49,975	272,335	502,320	473,005
<u>DEFERRED CHARGES</u>									
Management & accounting consultancy	-	-	-	-	-	-	2,300	2,070	1,840
TOTAL ASSETS	43,095	40,920	38,745	58,125	59,835	58,565	284,495	516,140	487,785
<u>LIABILITIES AND EQUITY</u>									
<u>CURRENT LIABILITIES</u>									
Accounts payable and accruals	240	270	280	370	390	410	510	660	710
<u>GOVERNMENT'S EQUITY</u>									
Investment	44,500	44,500	44,500	67,000	56,875	56,875	289,975	549,275	549,275
Earned Surplus/(deficit)	3,086	4,141	6,198	11,741	4,791	9,423	8,362	(7,500)	(22,152)
Sub-total	47,586	48,641	50,698	78,741	61,666	66,298	298,337	541,775	527,123
Less: Surplus cash to Government	4,731	7,991	12,233	20,986	2,221	8,143	14,352	26,295	40,048
Sub-total	42,855	40,650	38,465	57,755	59,445	58,155	283,985	515,480	487,075
TOTAL LIABILITIES AND EQUITY	43,095	40,920	38,745	58,125	59,835	58,565	284,495	516,140	487,785

December 24, 1971

VENEZUELA
 APPRAISAL OF MAIQUETIA INTERNATIONAL AIRPORT PROJECT

Organization Chart
 Civil Aeronautics Board
 (Direccion de Aeronautica Civil - DAC)





