INCEPTION REPORT

PHASE I : SITE SELECTION

SUMMARY REPORT of

PREPARATORY HOME OFFICE STUDY

FEBRUARY 1978

FEASIBILITY STUDY

New Tegucigalpa Airport Development

REPUBLIC OF HONDURAS

Japan International Cooperation Agency

REPUBLIC OF HONDURAS

NEW TEGUCIGALPA AIRPORT DEVELOPMENT

FEASIBILITY STUDY

INCEPTION REPORT

FEBRUARY 1978

JAPAN INTERNATIONAL COOPERATION AGENCY

C O N T E N T S

1. GENERAL

1.1. Identification of Study

The present feasibility study is conducted in response to the request of the government of Honduras by the Japan International Cooperation Agency (JICA) as part of the technical cooperation program of the government of Japan.

Upon decision to undertake the study, the JICA sent a preliminary survey mission to Honduras in October 1977 with the view to conferring with the officials concerned of the Government of the Republic and thereby to ascertain the basic requirements of the development project. The actual implementation of the feasibility study is officially initiated with the site selection study commencing in December 1977.

1.2. Objective of Study

The ultimate objective of the present feasibility study is to make an overall evaluation of the new airport development project, preceded in steps by investigation of the present status of the existing Tegucigalpa-Toncontin Airport that serves the natio-

nal capital of Tegucigalpa, and a detailed study of the potential sites to help determine the optimum construction site, and finally by preparation of a basic plan for the new airport to be constructed on the site so selected.

1.3. Stages of Study

The study comprises the following two stages:

Phase I Site Selection Study

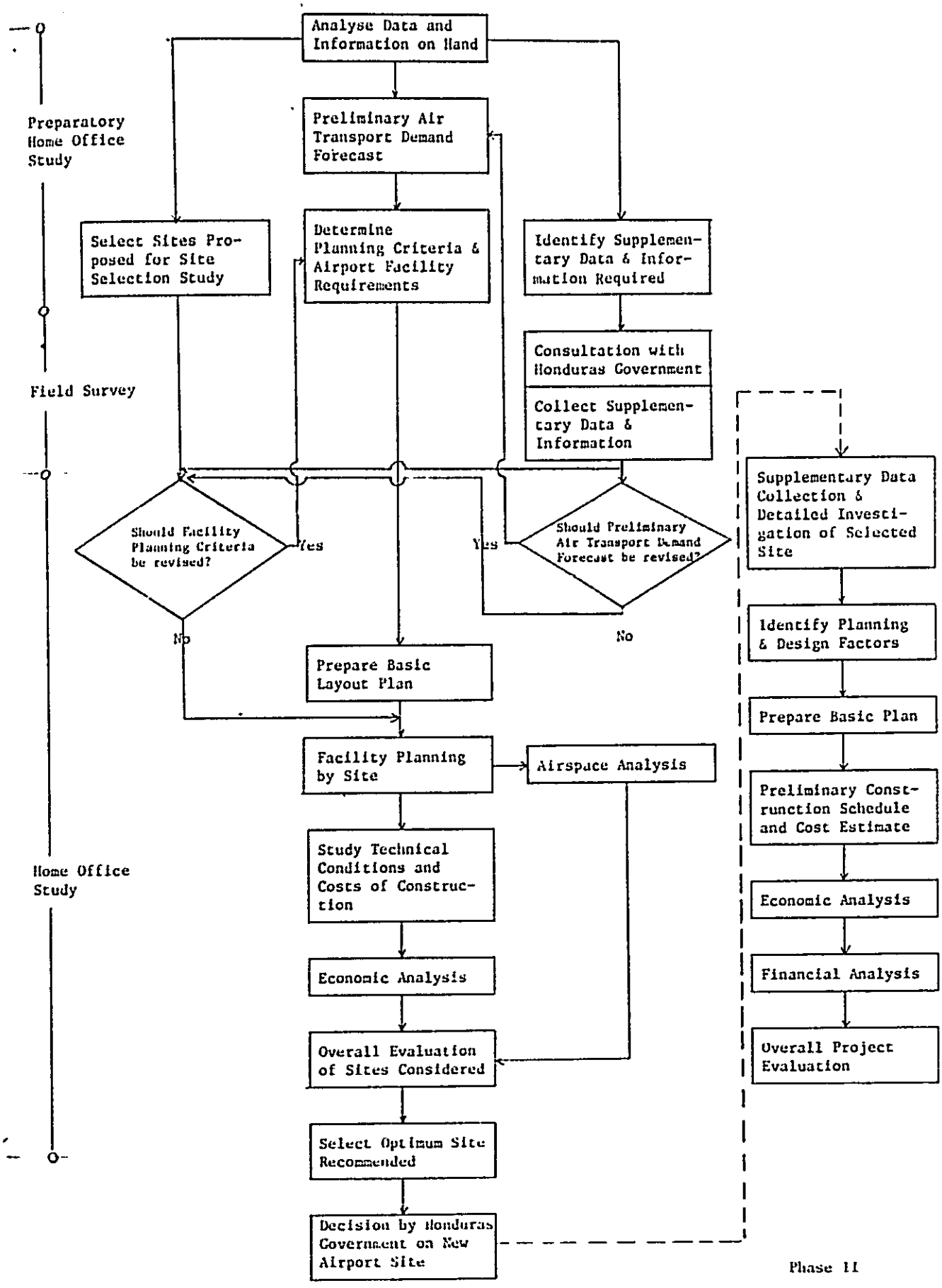
1) Field survey and investigation.

2) Analysis of survey results and overall evaluation of the potential sites

Phase II Preparation of Basic Plan and Overall Project Evaluation

1) Basic planning of the proposed new airport for construction at the site selected by the Government of Honduras after completion of Phase I of the present study.

2) Overall evaluation of the new airport development project through economic and financial analyses of the project's feasibility.



FLOWCHART OF STUDY SEQUENCE

2. PHASE I - SITE SELECTION STUDY

2.1. Preparatory Home Office Study

Prior to commencement of the site selection study, a preparatory home office study has been conducted in Tokyo in respect of the following study items.

1) Preliminary forecast of air transport demand.
2) Preliminary study of airport facility planning criteria and general facility requirements.
3) Selection of the potential sites proposed for consideration and investigation under the site selection study.

2.2. Field Survey

2.2.1. Consultation with the Government of Honduras

In initial meetings with the officials concerned of the Government of Honduras, the summary report

of the preparatory home office study is submitted and elaborated upon, and the decision on the part of the Government of Honduras is sought as to the sites to be investigated under the site selection study.

2.2.2. Flight Check of Airspace

On each of the proposed sites so selected, adequacy of airspace is examined by actual flights over the flight paths prescribed in accordance with the conceptual configuration of the proposed runway.

2.2.3. Collection and Analysis of Supplementary Meteorological Data

Additional data necessary for the comprehensive evaluation of the meteorological conditions of the proposed sites, in particular those of the Cerro de Hule site, are collected and analysed to supplement the findings of the preparatory office study made on the basis of the limited data then available.

2.2.4. Investigation of Existing Conditions of Toncontin Airport

A thorough investigation is made on the existing airport facilities, traffic conditions, maintenance and administrative systems, and existing obstacles, etc. Possibility of expansion of the airport is also investigated at the same time.

2.2.5. Survey of Major Local Airports

In addition to a general survey of the airport facilities, traffic conditions, maintenance and administrative systems, etc. of the major local airports, inquiries are made in respect of each such airport on any recent improvement work including the cost of investment involved, as well as on the existing plans and/or potentials of development of the surrounding area or of the region served by the airport.

2.2.6. Survey and Investigation of Proposed Sites

Each specialist of the site selection survey team conducts the field survey and investigation with

respect to each and all of the selected potential sites and their environs, including visits with authorities and other institutions, inquiries among surrounding communities, etc. Topographical maps in scale of 1:50000 as well as the topographical maps and/or the land survey maps (the latter two items to be prepared by the Honduras Government - see Attachment 2 & 3) are used during this activity.

The survey items include:

1) Land use of the surrounding areas
2) Obstacles and hazards, both existing and anticipated, that may restrict airport and airspace planning.
3) Hydrology
4) Topography, soil characteristics, vegetation
5) Availability of public utilities (Water, electric power, telephone, etc.)
6) Airport access
7) Confirmation of triangulation stations, bench marks, etc.

2.2.7. Geological Survey

In addition to the geological explorations of boring etc. to be carried out by the Honduras Government (see Attachment 3), geological survey is conducted by the survey team on all of the selected sites in order to obtain sufficient bases for making an overall judgement with respect to construction technicalities including the type of equipment required, as well as to identify possible problems in airport facility layout. Inspection of the source and quality of fill materials and aggregates is also made at this stage.

2.2.8. Local Procurement Conditions of Construction and Cost Factors

All conceivable cost factors necessary for the construction cost estimation for each division of the works that constitute the total airport construction at each site are thoroughly identified, and necessary information including the major commodity prices, availability and unit prices of each and all locally procured items, etc. are obtained along with the general knowledge

of local practices involving construction works and contracts, including, among other things, the following:

1) Availability and unit prices of construction materials such as cement, asphalt, steel products, dynamite, etc.

2) Availability in the vicinity of Tegucigalpa and unit prices of skilled and unskilled labor, including operators of heavy construction equipment.

3) Availability and rental of construction equipment.

4) Availability, accesibility, quality and cost of public utility and other consumable supplies such as water, power, fuel, etc.

5) Cost and conditions or problems of transportation for supplies and materials including heavy construction materials and equipment.

6) Reference records of the construction costs of other projects (airport, road, building, and

other large structures) recently completed or presently under implementation.

7) Land ownership, availability and cost of acquisition.

8) Governing laws, regulations and ordinances, pertinent to construction works, importation and exportation of materials and equipment, customs duties, taxes, insurances, etc.

9) Standard forms of construction contracts, specifications, criteria, etc.

10) Working systems and engagement practices, qualifications, cost, etc. of construction contractors, consultants, and professionals.

2.2.9. Collection of Supplementary Data and Information Necessary for the Detailed Forecast of Air Transport Demand as well as for the Economic Analysis of the Project.

Possible sources of additional data and information to those obtained during the preliminary survey required for the abovementioned purposes include:

Ministry of Communication, Public Works and Transportation, Ministry of Economy & Commerce, and other governmental agencies, Central Bank of Honduras, Central American Bank for Economic Integration,airlines and other transport-related organizations.

2.2.10. Counterpart Supports

Counterpart supports to be provided by the Honduras Government in accordance with the Clause V, Undertaking of the Government of the Republic of Honduras, of the Scope of Work (see Attachment 1) for the Site Selection Survey include:

1) Providing the survey team with the data and information necessary for the site selection study.

2) Geological explorations (see Attachment 2)

3) Preparation of topographical maps and provision of reproducible opaque copies (see Attachment 3)

4) Provision of information on source and quality of available water

5) Provision of aeroplanes with pilots for flight check

6) Appointing English-speaking counterparts in the following numbers and qualifications:

Coordinator	1
Economist	1
Senior Construction Engineer	1
Junior Construction Engineer	1
Architect	1
Meteorologist	1
Officer from Survey Department	1
Secretary	1

7) Provision of three (3) automobiles with drivers for use of the survey team members.

8) Provision of suitable office space with standard office equipment for use of the survey team.

9) Making arrangements for visits by the survey team members with various governmental departments and agencies, both central and local, and issuing appropriate certificates wherever required.

10) Issuing permits for entering the premises of the proposed airport sites for the site selection survey purposes.

11) Assisting the survey team in recruitment of ground assistants for the flight check.

12) Authorizing use of transceivers during the flight check and the site inspection.

13) Exempting duties and taxes on the equipment, materials and other personal effects brought in by the survey team.

14) Authorizing unrestricted shipment out of the country of the data and materials collected by the survey team.

2.3. Home Office Study

Following completion of the field survey in Honduras, analytical study under the following major items is made in the home office of the study team on the basis of the findings of the field survey, including results of discussions and consultations with the officials concerned of the Honduras Government,

topographical maps and geological exploration data and information provided as part of the counterpart supports.

2.3.1. Detailed Air Transport Demand Forecast

Preliminary air transport demand forecast made in the preparatory office study prior to the field survey is thoroughly reviewed and revised as necessary, and is further amplified by addition of the detailed projection of traffic by route, peak hour traffic, etc.

2.3.2. Airport Facility Requirements

Comprehensive facility requirements both on the airside and landside of the proposed new airport are determined on the basis of the detailed traffic projections.

2.3.3. Basic Conceptual Layout Plan of Airport Facilities

Cenceptual layout of the proposed airport facilities planned on the basis of the facility requirements determined as above is made with due consideration for the functional integrity and

operational efficiency of the airport systems as a whole. Such conceptual layout is intended to serve as a basic plan to be applied on the potential sites under study, by making necessary modifications according to their respective site conditions.

2.3.4. Airport Layout Plan on Individual Sites under Study

Layout plan of the airport facilities planned specifically on each individual site under study is prepared in accordance with the basic conceptual layout plan established as above, taking into consideration such factors peculiar to each site as topographic features, drainage conditions, geological characteristics, environmental conditions, road access and approach possibilities, etc.

2.3.5. Aircraft Operation Possibilities

Having determined the runway configuration for each site under study, landing minima are defined based on the findings of the field survey, and the runway usability is calculated by referring to the correlation chart of wind coverage, ceiling, and visibility.

2.3.6. Airport Facility Planning

Based on the planning criteria finalized after making modifications, if any, found necessary as a result of the field survey, facilities of the airport are planned individually for each one of the sites under study to suit their respective conditions in all aspects.

2.3.7. Study of Technical Conditions of Construction, Preliminary Specifications, Quantities, and Costs.

After identifying the various technical conditions of construction, preliminary specifications and rough estimate of quantities and costs are made on the basis of the facilities planned as above, in respect of each division of works comprising the total airport construction work.

2.3.8. Economic Evaluation

Economic evaluation of the sites under study is made through comparison of the internal rate of return calculated with the estimated costs and benefits of the airport assumed for construction at each site under study.

2.3.9. Selection of Optimum Site

Optimum site for the construction of the proposed New Tegucigalpa Airport is selected through overall evaluation, both from technical and economic aspects, of the sites under study based on the foregoing study results.

3. PHASE II - PREPARATION OF BASIC PLAN AND OVERALL PROJECT EVALUATION

3.1. Field Survey

After the final selection is made by the Government of Honduras as to the site for the construction of the New Tegucigalpa Airport, a field survey and detailed inspection of the selected site is conducted, and additional information or data is collected as necessary for the preparation of the basic plan.

3.2. Home Office Study

Based on the results of the field survey, basic plan of the proposed airport is made, followed by the overall evaluation of the economic and technical feasibility of the project.

4. SEQUENCE AND SCHEDULE OF STUDY AND REPORTS

The feasibility study is planned for implementation according to the time schedules as shown in Attachment 4, Feasibility Study Implementation Schedule, in the following study sequence and reporting schedule.

(Phase I)

1) Field survey for the site selection study is conducted according to the itinerary and time schedules as shown in Attachment 5, Phase I Field Survey Implementation Schedule. The JICA Site Selection Field Survey Team is scheduled to arrive in Tegucigalpa on February 18, 1978 and to stay in Honduras for 35 days until March 25, 1978.

2) The present inception report is submitted to and discussed with the Government of Honduras upon arrival of the Field Survey Team in Honduras.

3) A progress report is submitted at about mid March to the Honduras Government by the survey team containing the results of discussions and the understanding reached between the team and the government.

4) Upon completion of the site selection field survey, and after receipt of the topographic maps and geological exploration results from the Government of Honduras, home office study is conducted for an approximate period of 4 months, at the end of which an interim report containing the results of the site selection study is completed.

5) The interim report is submitted to the Government of Honduras and explained in Honduras.

(Phase II)

6) Within about 3.5 months after commencement of the Phase II study, draft final report of the feasibility study is submitted and explained to, and discussed with the Government of Honduras.

7) Final report of the feasibility study is planned for submission by the JICA to the Government of Honduras within about 1.5 months after an agreement is reached as to its contents through discussions with the Government of Honduras.

5. SUPERVISORY COMMITTEE

The Supervisory Committee established by JICA as an advisory body to the president of JICA for the implementation of the feasibility study comprises the following members:

CHAIRMAN:

Masao HIRAI,	Director of Construction Division, Aerodrome Department, Civil Aviation Bureau, Ministry of Transport

MEMBERS:

Akira OTAKE,	Deputy Director of International Affairs Div., Minister's Secretariat, Ministry of Transport
Takashi SAKATA,	Deputy Director of Regional Planning Division, Minister's Secretariat, Ministry of Transport
Yukihiko KOMADA,	Deputy Director of Planning Division, Aerodrome Department, Civil Aviation Bureau, Ministry of Transport
Tadamitsu ITO,	Deputy Director of Flight Standards Division, Engineering Department, Civil Aviation Bureau, Ministry of Transport
Sohachiro SHIMADA,	Deputy Director of Construction Division, Aerodrome Department, Civil Aviation Bureau, Ministry of Transport

6. REPORTS

The following reports are prepared in English language and submitted by JICA to the Government of Honduras in the number of copies indicated below.

1)	Inception Report	20 copies
2)	Progress Report	20 "
3)	Interim Report (Site Selection Study Report)	20 "
4)	Draft Final Report	20 "
5)	Final Report	20 "

ATTACHMENT 1

SCOPE OF WORK

THE FEASIBILITY STUDY

FOR

THE NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT

IN

TEGUCIGALPA, HONDURAS

I. INTRODUCTION

In response to the request of the Government of the Republic of Honduras, the Government of Japan has decided to conduct a feasibility study for the New International Airport in Tegucigalpa in accordance with laws and regulations in force in Japan, and the Japan International Cooperation Agency(JICA), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan, will carry out the study.

The present document sets forth the scope of work in regard to the above mentioned study which is to be carried out in close cooperation with the Government of the Republic of Honduras and authorities concerned.

II. OBJECTIVE

The objective is to study technical and economic feasibility of the New International Airport construction project in Tegucigalpa so as to contribute to optimum planning.

III. OUTLINE OF THE STUDY

This feasibility study will be divided into two stages as shown below.

First Stage: New airport site selection

Second stage: New airport basic planning

The second stage study will be started after the New airport site is selected by the Government of Honduras.

First stage study consists of the following:

1) Narrow down of choice of airport potential sites
2) Aviation demand forecasts
3) Facility requirements & planning criteria
4) Tentative airport layout planning
5) Aeronautical & engineering analysis
6) Economic analysis
7) Evaluation & conclusion as to sites

Second stage study consists of the following:

1) Airport layout plan
2) Air Navigation planning
3) Schedule & cost estimates
4) Financial analysis

IV. REPORTS

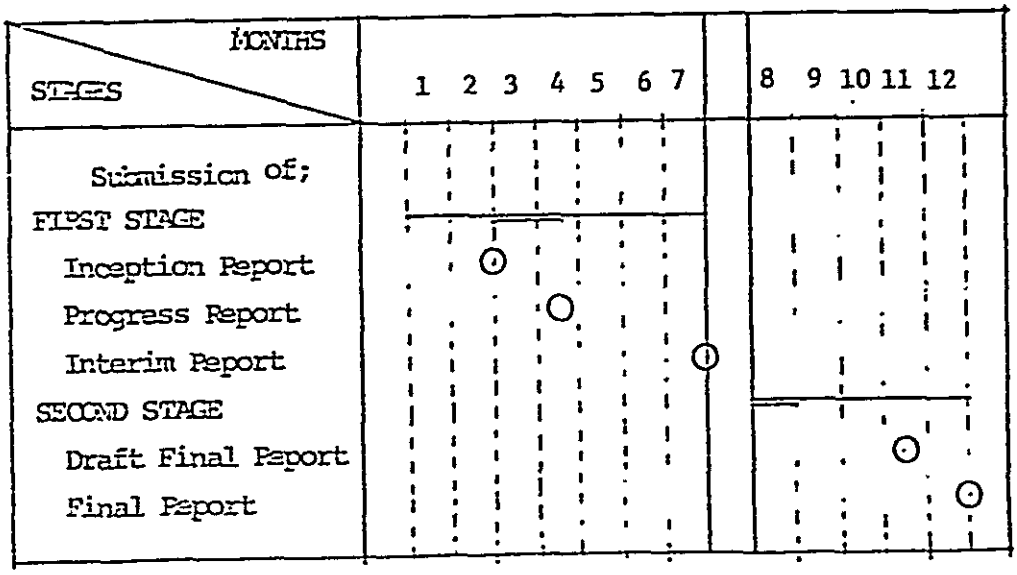
JICA will prepare and submit the following reports in course of the study. All documents are written in English and with Metric System.

1) Inception Report
2) Progress Report
3) Interim Report
4) Draft Final Report
5) Final Report

V. UNDERTAKING OF THE GOVERNMENT OF THE REPUBLIC OF HONDURAS

1) to provide the study team with data and information necessary for the study, including soil boring information and topographical maps as required scale.
2) to exempt the taxes and duties on the materials and personal effects which the study team will bring into the Republic of Honduras.
3) to assign the counterpart officials for the study team.
4) to provide suitable office spaces for the team.
5) to collaborate in collecting the necessary data and reference material, and also in ensuring that such documents are smoothly carried out of the country.
6) to make necessary arrangements for visiting the authorities and facilities concerned.
7) to provide the necessary means or equipments for the study team, for their business such as vehicles, airplane (use for evaluation flight), etc.

VI. TIME SCHEDULE



Notes: ○ indicates the submission of Report.
——— indicates Home work in Japan.
═══ indicates Field work in Honduras.

ATTACHMENT 2

REQUIREMENTS ON GEOLOGICAL EXPLORATION

1. General

The objective of the geological exploration is to obtain the general information on the geological conditions at the potential site of the proposed new airport for use in making the preliminary construction cost estimate.

It is required that all work is performed under the direction and the supervision of a responsible field engineer to be assigned to this work by your good government to ensure conformity to the specifications herein, and that daily report on all the technical findings of the exploration be kept by the engineer.

2. Sites to be Explored and Timing of the Work

i) Valle de Talanga
Immediate start of exploration work is requested so as to make its results available as soon as possible.

ii) Laguna del Pedregal
Immediate start of exploration work is desirable because of the same reason as stated above.

iii) Cerro de Hule
Necessity of exploration is to be finally decided by the Japanese study team upon arrival at Tegucigalpa. The field work may be supended until then. The attached drawing shows the proposed location of borehole and test pit, if explored.

3. Boring

(i) Drilling method : Rotary drilling with circulation water

(ii) Diameter : 70 - 75 mm

(iii) Sampling : Core shall be recovered by a double core tube and be kept in the scaled wooden box in the order of the depth sampled.

4. Test Pit

(i) Sectional area : $2^m \times 1.5^m = 3\ m^2$

(ii) Excavation : Method to be chosen at the discretion of the field engineer to suit the site condition.
The test pit excavated is not to be back-filled until so directed by the Japanese study team through the field engineer.

5. Location and Exploration Depth

The location of sites to be explored is shown on the attached drawings and specified in the terms of grid in the attached table.
Required depth of each borehole and test pit is also specified in the same table.

6. Purpose of Exploration by Site

(i) Valle de Talanga

Boring: To investigate the geological formations including litho-facies, fissures and hardness of lower middle cretaceous Metapan tuffs.

Test pit: To investigate the litho-facies, thickness and compactness of shallow alluvial deposits likely to be composed of sands, gravels, clay, etc.
To recognize the existance of shallow

ground-water and its surface level in the aquifer of sand.

(ii) Laguna del Pedregal

Test pit: To investigate the litho-facies, thickness and ripperability of weathered andesite.

(iii) Cerro de Hule

Boring: To investigate the geological formations including the litho-facies, fissures and hardness of lower tertiary volcanic rocks of andesite.

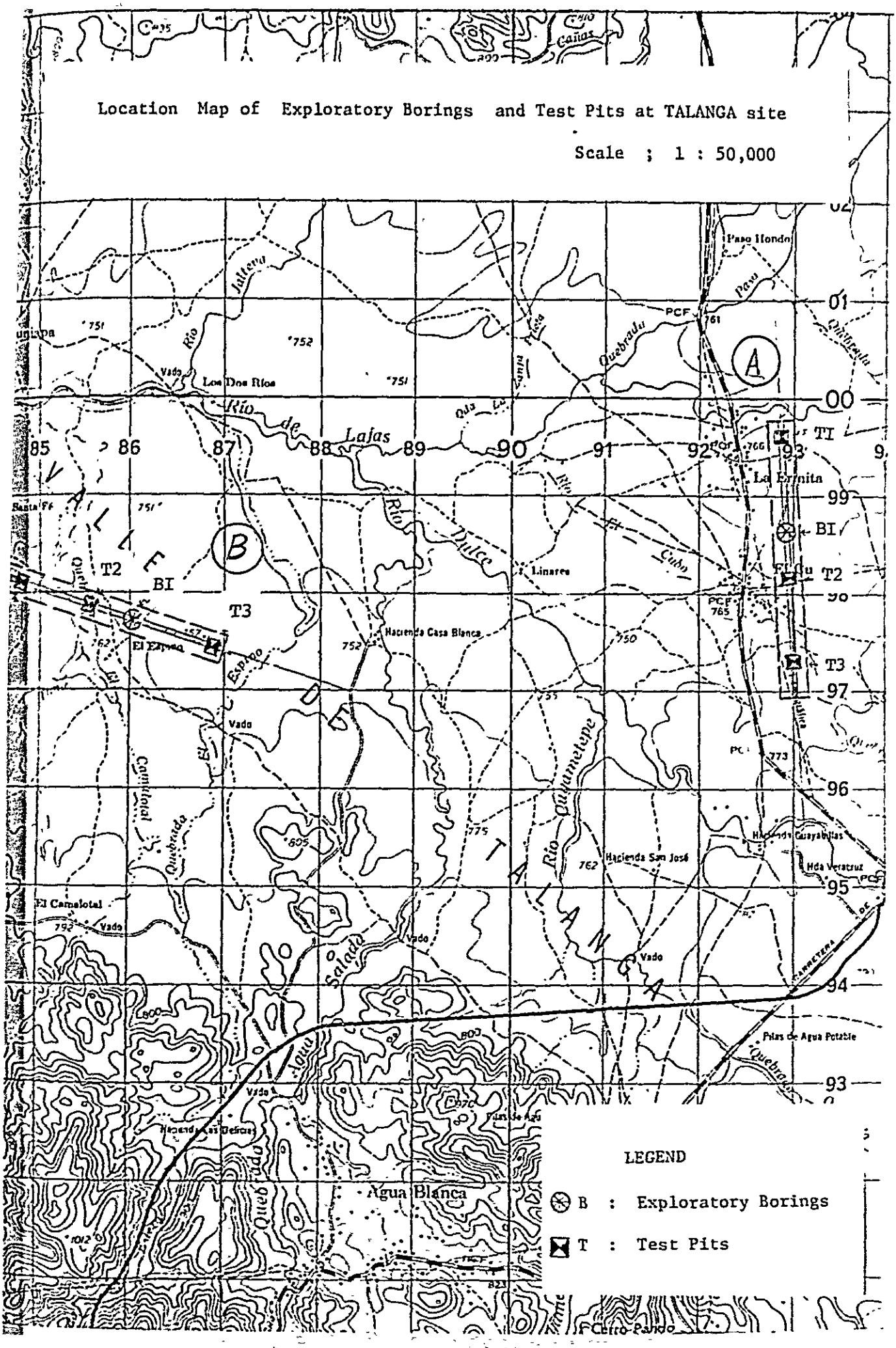
Test pit: To investigate the litho-facies, thickness and compactness of shallow tertiary sediments which are likely to be composed of clay, silt, and sand, etc. To recognize the existance of shallow ground-water and its water surface level.

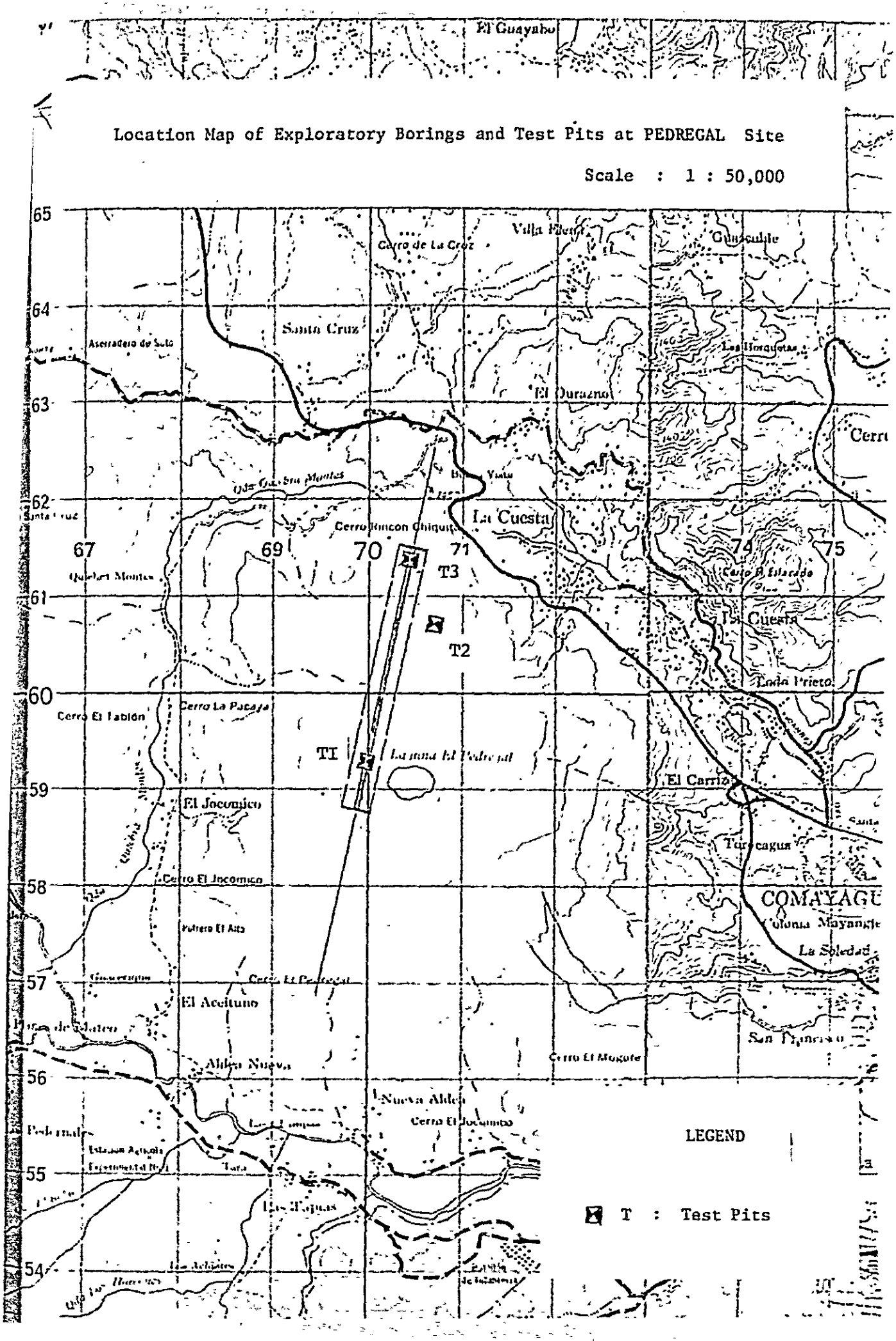
TABLE-1 LOCATION & EXPLORATION DEPTH

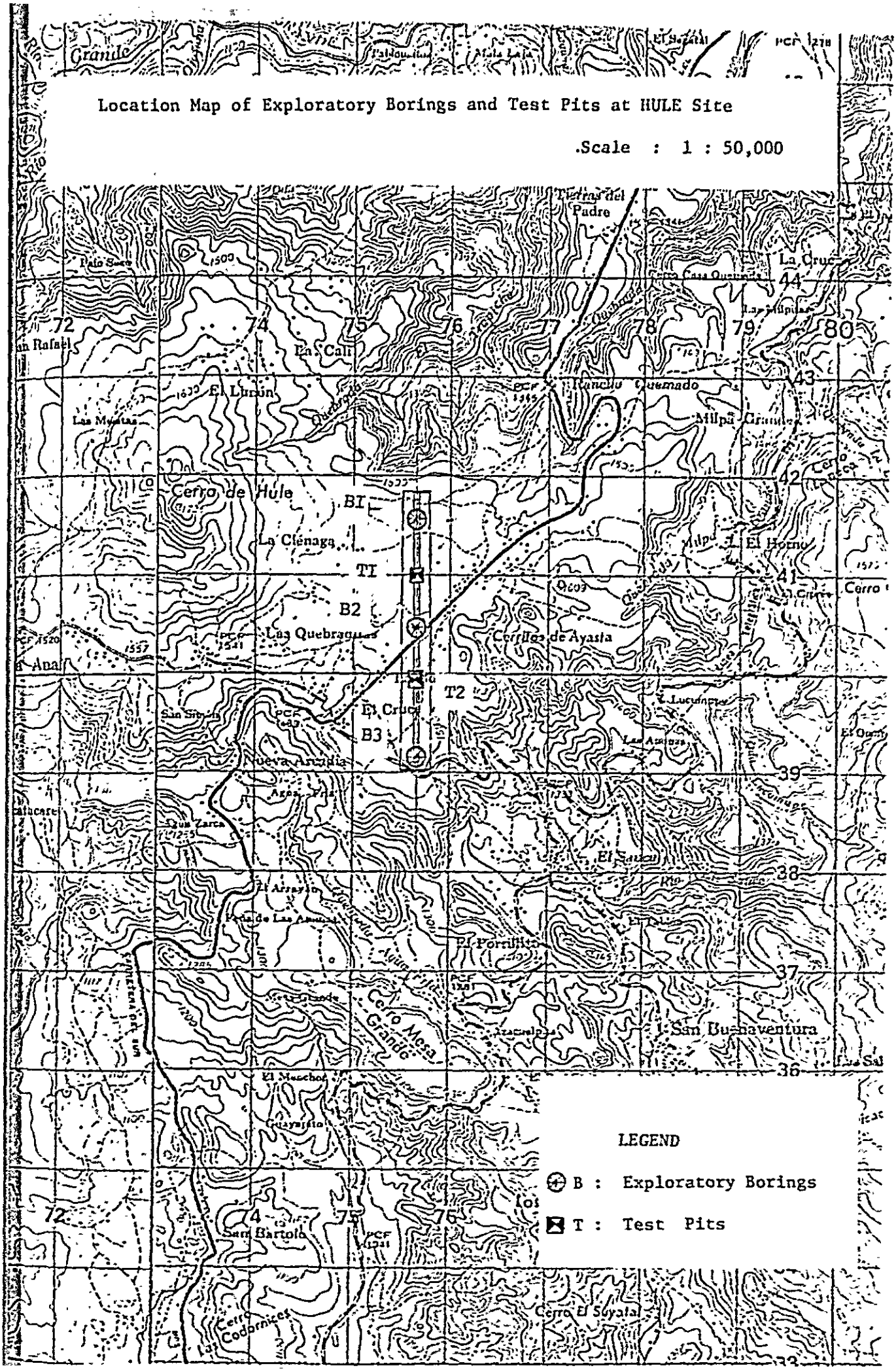
Location		Boring Depth (Meter)	Test Pit Depth (Meter)	Remarks
No.	Site (Based on Grid Map)			
Talanga (A)	Grid Meter			
B1	92 + 920 98 + 630	10	-----	
T1	92 + 850 99 + 600	-----	5	
T2	92 + 950 98 + 170	----	5	
T3	93 + 20 97 + 280	-----	5	
Sub Total		10	15	
Talanga (B)				
B1	86 + 000 97 + 700	10	-----	
T1	84 + 750 98 + 100	-----	5	
T2	85 + 560 97 + 850	-----	5	
T3	86 + 860 97 + 450	-----	5	
Sub Total		10	15	
Pedregal				
T1	70 + 000 59 + 250	-----	3	
T2	70 + 700 60 + 710	-----	3	
T3	70 + 450 61 + 380	-----	3	
Sub Total			9	
Hule				
B1	75 + 650 41 + 550	15	-----	
B2	75 + 650 40 + 450	20	-----	
B3	75 + 650 39 + 150	15	-----	
T1	75 + 650 41 + 000	-----	5	
T2	75 + 650 39 + 950	-----	5	
Sub Total		50	10	
Total		70	49	

Location Map of Exploratory Borings and Test Pits at TALANGA site

Scale ; 1 : 50,000




Location Map of Exploratory Borings and Test Pits at PEDREGAL Site
Scale : 1 : 50,000
El Guayabo
Villa Flores
Cerro de La Cruz
Guaycuiile
Santa Cruz
Aserradero de Soto
Las Hamaquetas
El Durazno
Cerro
Quebrada Montes
Cerro Rincon Chiquito
La Cuesta
67
69
70
71
74
75
T3
T2
T1
Cerro El Tablon
Cerro La Pacaya
La Laguna El Pedregal
El Jocomico
Cerro El Jocomico
Potrero El Alto
El Aceituno
Aldea Nueva
Nueva Aldea
Cerro El Mogote
Pedregal
Las Tejas
El Carrizal
Turicagua
COMAYAGU
Colonia Mayangle
La Soledad
San Francisco
LEGEND
T : Test Pits


Location Map of Exploratory Borings and Test Pits at HULE Site
.Scale : 1 : 50,000
Cerro de Hule
B1
La Ciénaga
T1
B2
Las Quebradas
T2
El Cruce
B3
Nueva Arcadia
Cerrillos de Ayasta
El Horno
Milpa Grande
Quebrada Honda
Cerro Mesa Grande
San Bartolo
Cerro Codornices
Cerro El Sayala
LEGEND
B : Exploratory Borings
T : Test Pits

ATTACHMENT 3

REQUIREMENTS ON TOPOGRAPHIC MAP

1. Mapping Scale

   Aerial photographic survey map is to be made in scale of 1 to 5,000 with 50 cm contour.

2. Sites to be Surveyed and Timing of Work

   i) Valle de Talanga

   It is expected that the field work has been carried out already as requested by the JICA Preliminary Survey Mission. If not, the immediate start of work is strongly desired. The map is of urgent necessity for the prospective site selection study.

   ii) Laguna del Pedregal

   On this site, two maps have been available, namely those used by American report and by Spanish report. However, the corresponding contour lines of these two maps are inconsistent. Check levelling is needed for confirmation of actual elevation of the site. Immediate start of the work is desirable.

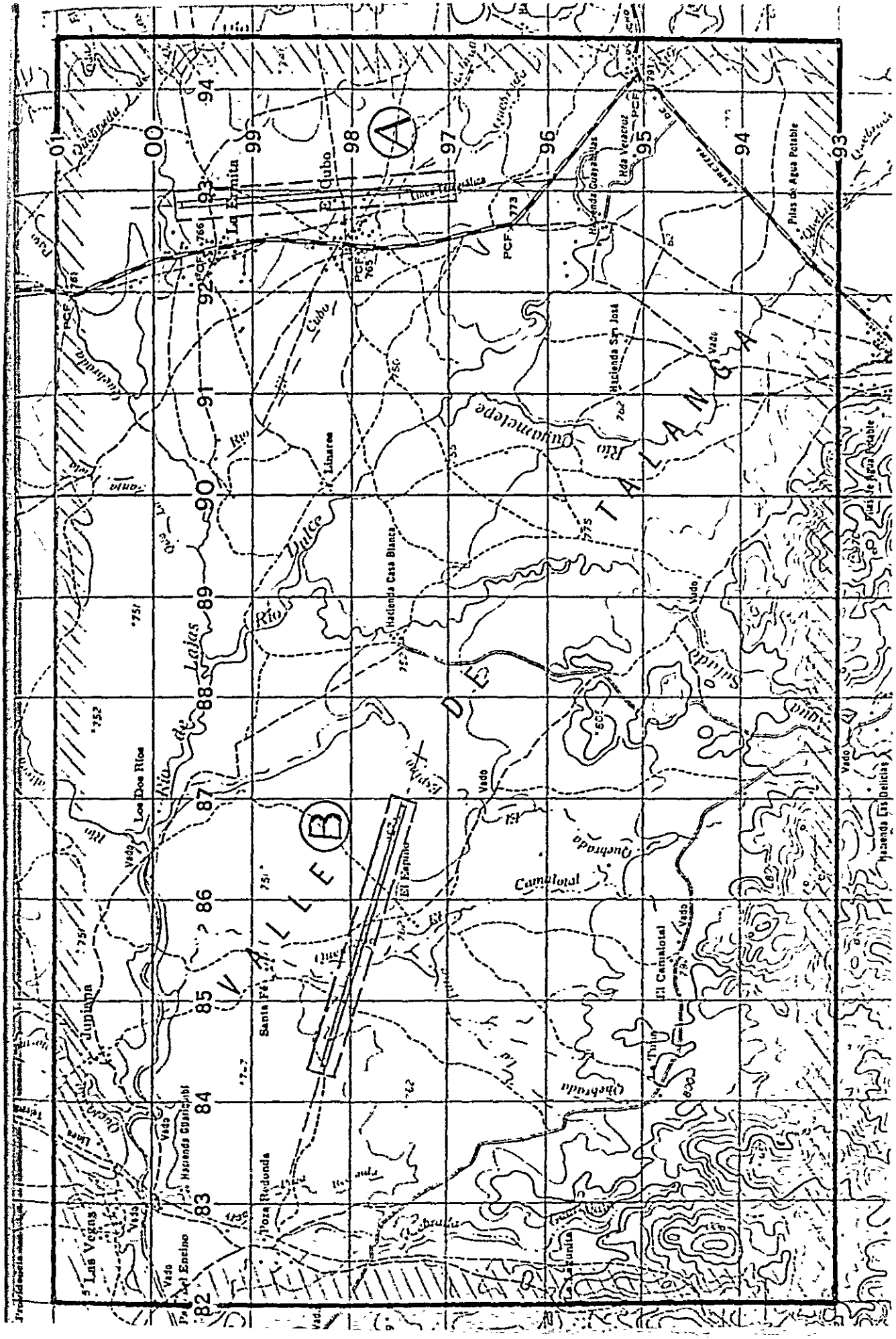
   iii) Cerro de Hule

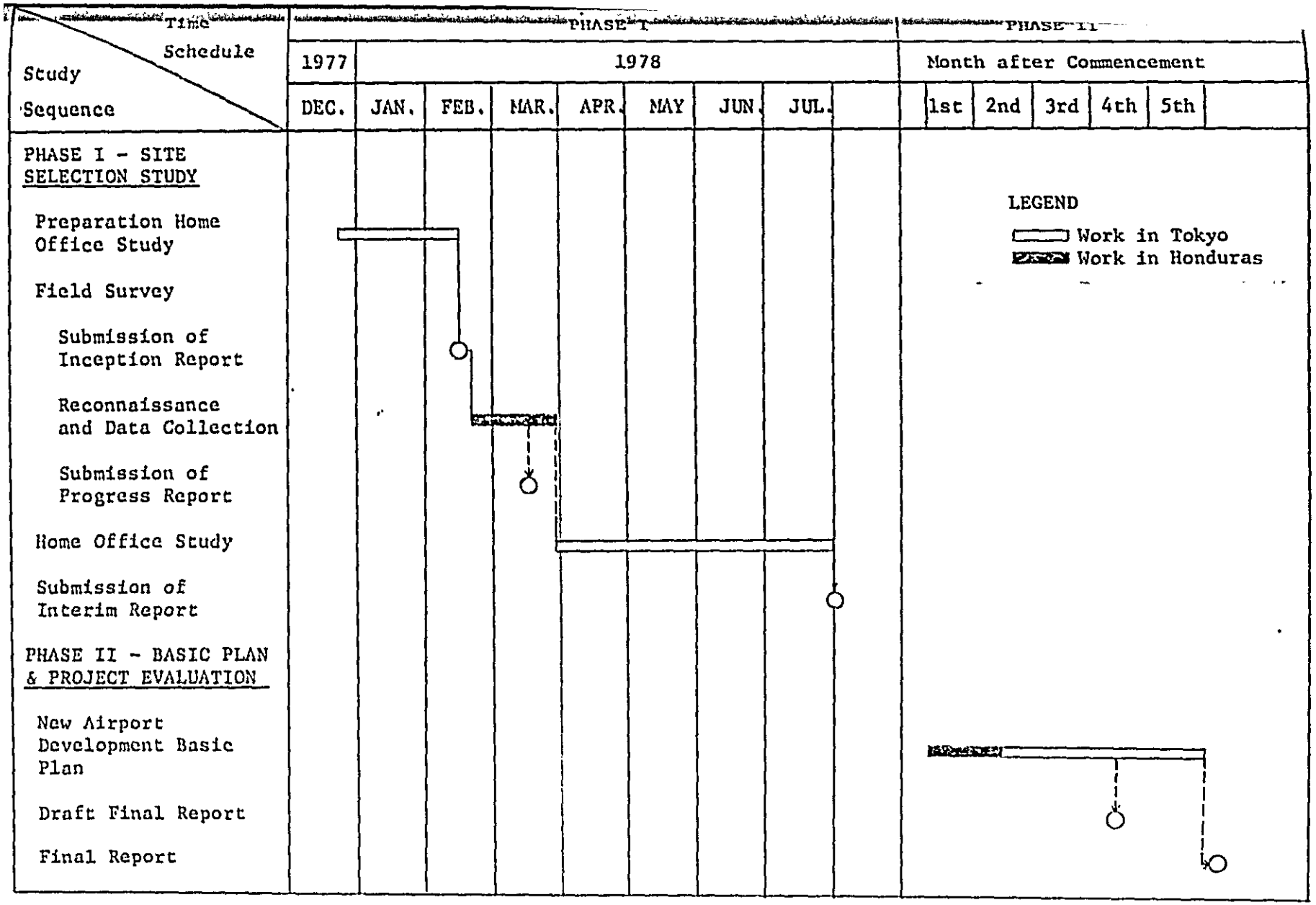
   Necessity of mapping of this site is to be finally decided by the JICA Site Selection Field Survey Team upon arrival in Honduras. The field work may be suspended until that time.

Topo - survey Area — TALANGA

Scale ; 1 : 50,000

Boundary





ATTACHMENT 4 FEASIBILITY STUDY IMPLEMENTATION SCHEDULE

ATTACHMENT 4 FEASIBILITY STUDY IMPLEMENTATION SCHEDULE

ATTACHMENT 5 FIELD SURVEY SCHEDULE (PHASE I)

ASSIGNMENT	NAME	FEBRUARY 1978	MARCH 1978
		20	10 20
PROJECT MANAGEMENT	A. YOSHIOKA	17	18
AIRPORT PLANNING	M. MAEDA	17	28
ECONOMY	M. OHTA		9 28
(Airport/Transport)	H. KAKIZAKI	17	28
AIRCRAFT OPERATION	Y. HONGYO	17	8
	S. YAMAKAWA	17	28
FACILITY PLANNING	K. FURUKAWA	17	28
	N. YOSHIDA	17	28
CONSTRUCTION	K. KISHIDA	17	28
ENGINEERING	M. MURAKAMI	17	28

ATTACHMENT 5

REPUBLIC OF HONDURAS

NEW TEGUCIGALPA AIRPORT DEVELOPMENT

FEASIBILITY STUDY

PHASE I - SITE SELECTION

PREPARATORY HOME OFFICE STUDY

SUMMARY REPORT

FEBRUARY 1978

JAPAN INTERNATIONAL COOPERATION AGENCY

C O N T E N T S

1. INTRODUCTION

The present summary report outlines the findings of the preparatory office study of the proposed feasibility study for the New Tegucigalpa Airport Development in Honduras,which is to be carried out by the Japan International Cooperation Agency (JICA).

The purpose of the preparatory home office study is to identify the following basic matters of site selection in order to facilitate effective implementation of the feasibility study:

1) How much of the air transport demand is to be expected at the airport in question?

2) How large an area of land will be required for the airport premises?

3) What possible sites are to be investigated?

Selection of the possible sites proposed for consideration under the prospective site selection study has been made from the view points of meteorological conditions, physical site conditions, and of airspace. As a result 6 sites including that of the existing Toncontin Airport have been selected as the sites proposed for the detailed investigation to follow, subject to final decision by the government of Honduras.

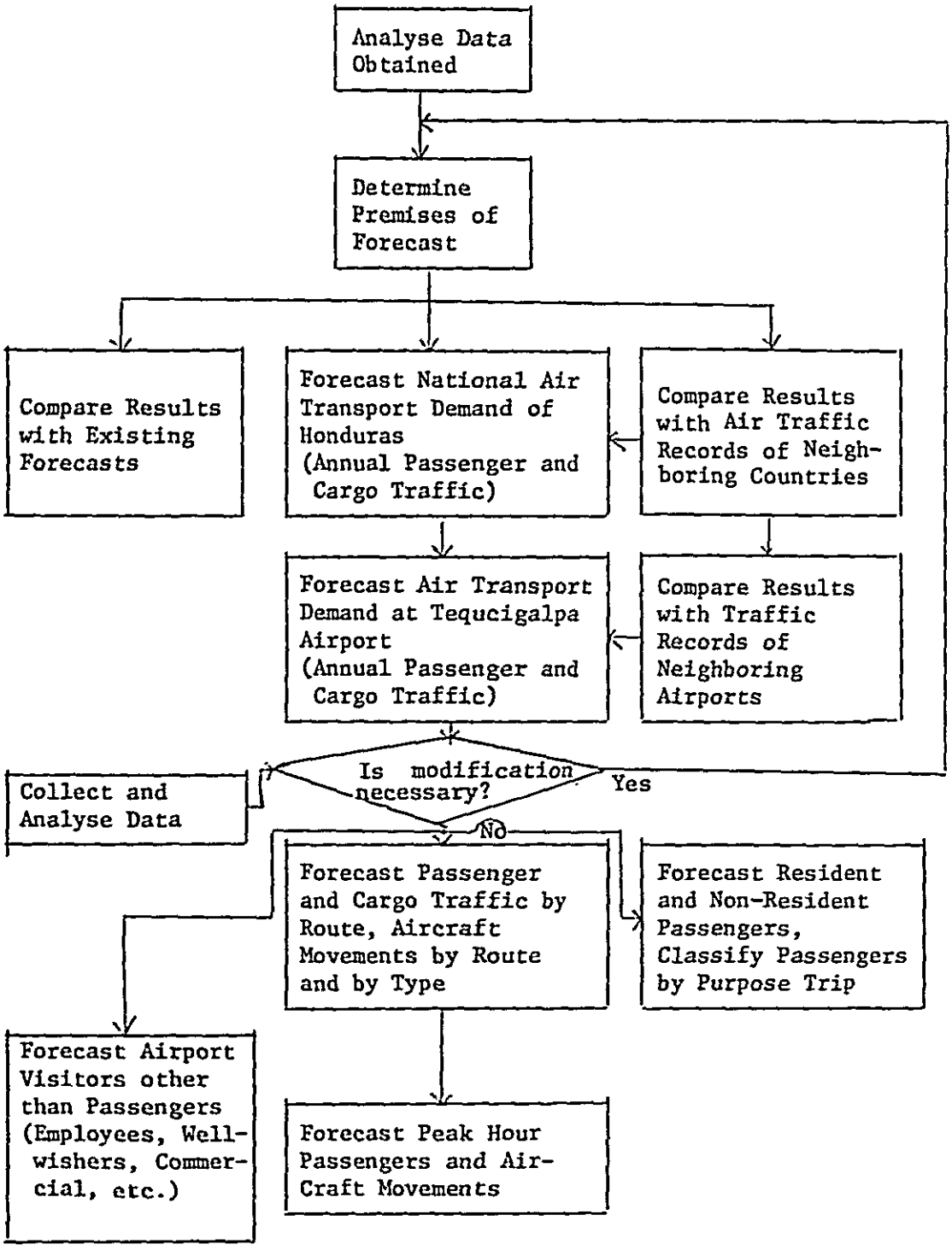
2. PRELIMINARY AIR TRANSPORT DEMAND FORECAST

2.1. Basic Approach

The present preliminary forecast of air transport demand is intended to serve solely as the basis for determining the preliminary facility requirements of the proposed new airport for the purpose of selecting the potential sites to be considered and investigated under the proposed site selection study. Having been based on the limited statistical data and other information which have been made available to date before the full scale data collection is conducted under the study, the present forecast is not in sufficient details and is subject to modification as additional necessary information becomes available in due course.

The sequence of the projection procedures adopted herein is shown in the form of a flowchart in Fig. 2-1. In this preliminary forecast, projection is made of the annual traffic of air passengers and air cargo at the Tegucigalpa Airport in the milestone years of projection set up by the study team. In order that the projected traffic at the Tegucigalpa Airport may be duly consistent with the expected total national demand of the Republic, the share attributable to the airport is calculated by means of a distribution model considered to be appropriate for the present purpose.

Fig. 2-1 Sequence of Air Transport Demand Forecast Procedures



2.2. Premises of Projection

2.2.1. Years of Projection

The milestone years of the projection period under the present study are set for 1990 and 2000.

2.2.2. Estimation of Major Economic Indices.

(1) Gross Domestic Product

The average annual growth rates in real terms of the Gross Domestic Product of the Republic of Honduras for the period of projection are assumed as shown in Table 2-1. Table 2-2 shows the estimated Gross Domestic Product calculated on the basis of the growth rates as shown in Table 2-1.

(2) Population

The average annual growth rate of the Republic's population for the 1975 - 1990 period is assumed to be 3.4%, a rate adopted from the corresponding figure found in the Estudio Centroamericano de Transporte (Central American Transport Study), and that for the 1990 - 2000 period is presumed at 2.7% in accordance with the official records of the Republic's population for the 1960 - 1975 period. On the basis of the

growth rates assumed as above, the population of Honduras is estimated to be 4,536,000 in 1990 and 5,921,000 in 2000.

(3) Gross Domestic Product Per Capita

Table 2-3 shows the estimated Gross Domestic Product Per Capita calculated on the basis of the figures obtained in paragraphs (1) and (2) above.

2.3. National Air Passenger Transport Demand Forecast

2.3.1. International Air Passenger Traffic

International air passenger traffic* in the Republic of Honduras has grown steadily during the last 15 years.

Regression analysis of the nationwide international air passenger traffic made with the Gross Domestic Product as the dependent variable has resulted in a high correlation coefficient, and, therefore, the international air passenger traffic* of Honduras has been projected through this analysis with the results as shown in Table 2-4.

---

* Includes arrivals and departures of scheduled international service at all international airports of Honduras, not including transit passengers.

Table 2-1 Assumed Average Annual Growth Rates in Real Terms of Gross Domestic Products of the Republic of Honduras

(In per cent)

Period	Low*	Intermediate**	High***
1975 - 1990	4.0	5.0	6.0
1990 - 2000	4.0	4.0	5.0

Notes: * Based on 1960 - 1975 records

** Based on ECAT report

*** Based on Plan Nacional de Desarrollo (National Development Plan)

Table 2-2 Estimated Gross Domestic Products of the Republic of Honduras

(In million Lempira, 1966 prices)

Year	Low	Intermediate	High
1990	2,617	3,021	3,482
2000	3,874	4,472	5,672

Table 2-3 Estimated Gross Domestic Products Per Capita of the Republic of Honduras

(In Lempira, 1966 prices)

Year	Low	Intermediate	High
1990	577	666	768
2000	654	755	958

2.3.2. Domestic Air Passenger Traffic

Domestic air passenger traffic* in the Republic of Honduras registered a sharp growth trend during the 1960 - 1970 period, but during the ensuing 5-year period the trend reversed, registering a decrease each consecutive year due mainly to the opening to traffic in January 1971 of the paved road connecting the three major cities of Tegucigalpa, San Pedro Sula and La Ceiba. Between the years 1975 - 1976, however, the traffic showed a sign of recovery, and, in view of the positive factors expected in future, such as increase in personal income, development of aviation infrastructure, and improvement of air transport service level, the future domestic air transport demand of Honduras may well be expected to trace a gradual upward trend.

The domestic air passenger traffic* of Honduras, projected by means of a regression analysis with the Gross Domestic Product and the nationwide aggregate of paved road lengths as the dependent variables, is as shown in Table 2-4. The said paved road lengths have been estimated as shown in Table 2-5, based on the assumption that the roads of the country will be developed commensurate with the increase in the Gross Domestic Product.

---

* Includes arrivals and departures of scheduled domestic service at all airports of Honduras, not including transit passengers.

Table 2-4 Preliminary Forecast of Air Passenger Traffic* in the Republic of Honduras

(In persons)

	1990			2000		
	Low	Intermediate	High	Low	Intermediate	High
International** Passengers	506,100	670,100	886,400	1,092,700	1,448,400	2,309,300
Domestic *** Passengers	238,000	457,500	703,700	317,500	544,500	999,100
Total	244,100	1,127,600	1,590,100	1,410,200	1,992,900	3,308,400

Notes: * Arrivals and departures of scheduled services only, not including transit passengers.

** Projection Formula: $\log Y = -2.31008 + 1.9625 \log X$

Where, Y: International Air Passenger* of Honduras

X: Gross Domestic Product of Honduras

Correlation Coefficient: 0.979

*** Projection Formula: $Y = -1,147,404 + 2,965.2 X_1 - 134.007 X_2$

Where, Y: Domestic Air Passengers* of Honduras

X_1: Gross Domestic Product Per Capita

X_2: Nationwide aggregate of paved road lengths

Correlation Coefficient: 0.800

Table 2-5 Estimated* Aggretate Length of Paved Roads in Honduras

(In kilo meters)

Year	Low	Intermediate	High
1970	2,390	2,760	3,180
2000	3,540	4,080	5,180

Note: Estimates are based on the rates of increase identical to the low, intermediate and high growth rates respectively of the Gross Domestic Products of Honduras assumed as shown in Table 2-1 above.

2.4. Projection of Passenger Traffic at Tegucigalpa Airport

2.4.1. International Air Passenger Traffic

International Air passenger traffic* at Tegucigalpa Airport has grown quite steadily, but its share in the total national traffic of international passengers has been slightly on a decline. Table 2-6 shows the projected share of international air passengers* at Tegucigalpa Airport calculated by distributing the total national demand projected in 2.3.1 above by means of a regression analysis with the total international air passenger traffic of Honduras as the dependent variable. Fig. 2-2 shows a comparative graphic presentation of this projection with other projections of existing studies.

* Arrivals and departures of scheduled international service, not including transit passengers.

2.4.2. Domestic Paggenger Traffic

Domestic air passenger traffic* at Tegucigalpa Airport has shown an almost identical pattern of changes to that of the national total traffic of domestic air passengers in the past. Table 2-6 shows the projected share of domestic air passengers* at Tegucigalpa Airport calculated by distributing the total national demand projected in 2.3.2. above by means of a regression analysis with the total domestic air passenger traffic in Honduras as the dependent variable. Fig. 2-3 shows a comparative graphic presentation of this projection with other projections of the existing studies.

---

* Arrivals and departures of scheduled domestic service, not including transit passengers.

Table 2-6 Preliminary Forecast of Air Passenger Traffic* at Tegucigalpa Airport

(In persons)

	1990			2000		
	Low	Inter-mediate	High	Low	Inter-mediate	High
International Passengers**	249,500	326,500	427,300	523,800	690,100	1,077,000
Domestic Passengers***	66,200	125,100	191,100	87,500	148,400	270,300
Total	315,700	451,600	618,400	611,300	838,500	1,347,300

Notes: * Arrivals and departures of scheduled services only, not including transit passengers.

** Distribution Formula: $Y = 12,876 + 0.46756\ X$

Where, Y: International Air Passengers* at Tegucigalpa Airport

X: International Air Passengers* in Honduras

Correlation Coefficient: 0.984

*** Distribution Formula: $Y = 2,395 + 0.26812\ X$

Where, Y: Domestic Air Passengers* at Teguchigalpa Airport

X: Domestic Air Passengers* in Honduras

Correlation Coefficient: 0.934

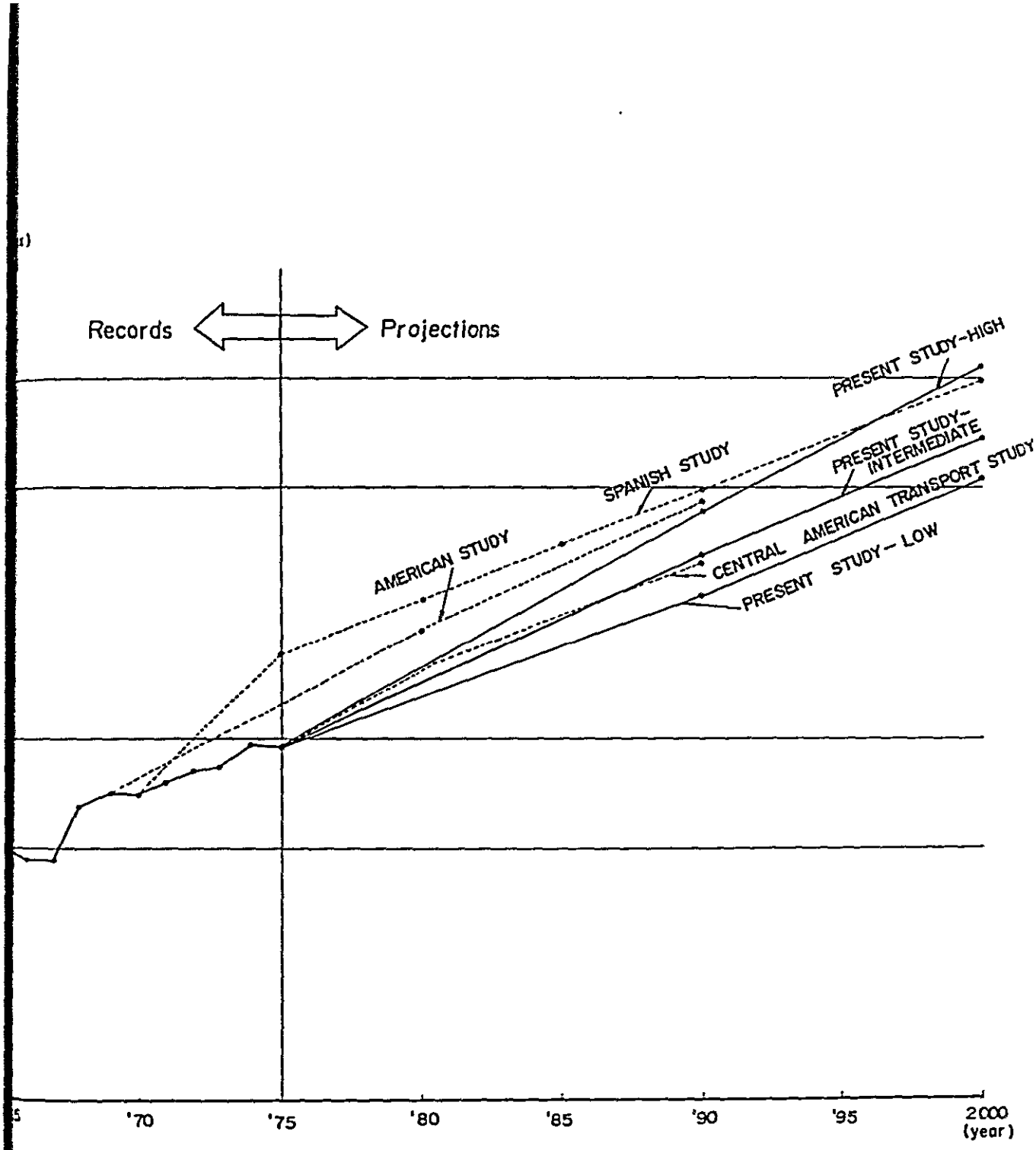


FIG. 2-2 RECORDS AND PROJECTIONS OF INTERNATIONAL AIR PASSENGER TRAFFIC AT TEGUCIGALPA AIRPORT

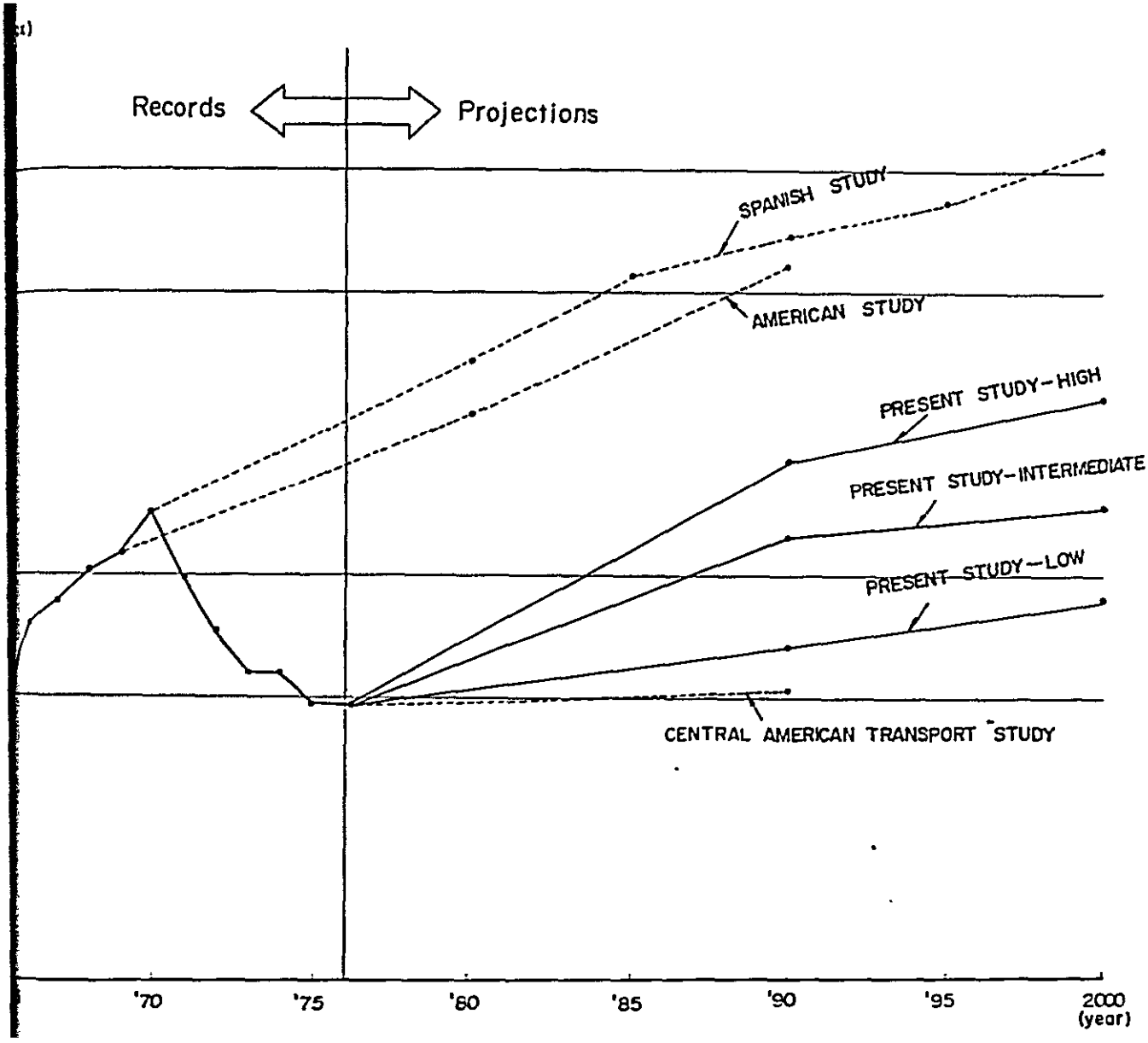


FIG. 2-3 RECORDS AND PROJECTIONS OF DOMESTIC AIR PASSENGER TRAFFIC AT TEGUCIGALPA AIRPORT

2.5. National Air Cargo Transport Demand Forecast

2.5.1. International Air Cargo Traffic

International air cargo traffic in the Republic of Honduras registered annual growth at an average rate of 5.5% during the 1966 - 1975 period, but has shown a stagnant trend since 1970.

To make an intelligent forecast of future traffic trend with a necessary degree of accuracy, a detailed analysis will have to be made of the demand factors by identifying the past trend of cargo traffic by commodity item of air cargo transported. In this preliminary forecast, international air cargo traffic of Honduras has been projected by means of a regression analysis with the Gross Domestic Product of Honduras as the dependent variable, based on the judgement that, in a long term projection as is envisaged under the present study, the national air cargo traffic may well be expected to grow commensurate with the future growth in the Gross Domestic Product of the country. The results of this preliminary projection are shown in Table 2-7.

2.5.2. Domestic Air Cargo Traffic

Domestic air cargo traffic in the Republic of Honduras has shown a sharp declining tendency since 1969, which is considered to be largely attributable to the fact that

substantial part of potential air cargo has been switched to surface transport as a result of road improvements accomplished recently in the Republic of Honduras. As mentioned in the case of international cargo, further detailed analysis has to be made of the demand factors before finalizing the projections. For the purpose of this preliminary forecast, domestic air cargo traffic of Honduras has been projected by means of a regression analysis with the Gross Domestic Product and the number of registered automobiles in Honduras as the dependent variables, with the results as shown in Table 2-7. The number of automobiles expected to be registered in future has been estimated as shown in Table 2-8.

Table 2-7 Preliminary Forecast of Air Cargo Traffic in the Republic of Honduras

(In tons)

	1990			2000		
	Low	Inter-mediate	High	Low	Inter-mediate	High
International Cargo *	17,200	21,300	26,400	31,100	38,600	55,300
Domestic Cargo **	7,500	7,900	8,400	8,800	9,700	11,500
Total	24,700	39,300	34,800	39,900	48,300	66,800

Notes: * Projection Formula: $\text{Log } Y = -2.14511 + 1.51163 \text{ Log } X$

Where, Y: International Air Cargo of Honduras

X: Gross Domestic Product of Honduras

Correlation Coefficient: 0.700

** Projection Formula:

$\text{Log } Y = 10.6939 + 4.1399 \text{ Log } X_1 - 3.02081 \text{ Log } X_2$

Where, Y: Domestic Air Cargo of Honduras

X_1: Gross Domestic Product of Honduras

X_2: Number of Registered Automobiles in Honduras

Correlation Coefficient: 0.517

Table 2-8 Projection* of Registered Automobiles in the Republic of Honduras

	Low	Inter-mediate	High
1990	86,800	104,100	123,900
2000	140,700	166,400	217,800

Note: * Projection Formula: $Y = -25{,}415 + 42.8823\ X$

Where, Y: Number of Registered Automobiles in Honduras

X: Gross Domestic Product of Honduras

Correlation Coefficient: 0.976

2.6. Projection of Air Cargo Traffic at Tegucigalpa Airport

2.6.1. International Air Cargo Traffic

Statistics show that the international air cargo traffic at the Tegucigalpa Airport occupies an approximately 45% share of the total volume of air cargo handled in the entire country, and its pattern of evolution has more or less followed that of the national air cargo traffic in the past. Table 2-9 shows the projected share of international air cargo traffic at Tegucigalpa Airport calculated by distributing the total national demand projected in 2.5.1. above by means of a regression analysis with the total international air cargo traffic of Honduras as the

dependent variable. Fig. 2-4 shows the traffic of this preliminary projection in a graphic form.

2.6.2. Domestic Air Cargo Traffic

Since 1969 domestic air cargo traffic at the Tegucigalpa Airport has shown a declining tendency similar to that of the total national traffic of domestic air cargo. Table 2-9 shows the projected share of domestic air cargo traffic at Tegucigalpa Airport calculated by distributing the total national demand projected in 2.5.2. above by means of a regression analysis with the total domestic air cargo traffic of Honduras as the dependent variable. Fig. 2-5 presents the traffic of this preliminary projection in a graphic form. In the existing studies, no separate projections have been made on the domestic air cargo traffic at the Tegucigalpa Airport. Fig. 2-6 shows a comparative graphic presentation of the total air cargo traffic of this preliminary projection with those of other projections of the existing studies.

Table 2-9 Preliminary Forecast of Air Cargo Traffic at Tegucigalpa Airport

(In tons)

	1990			2000		
	Low	Inter-mediate	High	Low	Inter-mediate	High
International Cargo*	7,500	9,100	11,200	13,200	16,200	23,100
Domestic Cargo**	2,000	2,100	2,200	2,300	2,600	3,100
Total	9,500	11,200	13,400	15,500	18,800	26,200

Notes: * Distribution Formula: $Y = 398.009 + 0.410609\ X$

Where, Y: International Air Cargo at Tegucigalpa Airport

X: International Air Cargo in Honduras

Correlation Coefficient: 0.920

** Distribution Formula: $Y = -2.03989 + 1.07869 \log X$

Where, Y: Domestic Air Cargo at Tegucigalpa Airport

X: Domestic Air Cargo in Honduras

Correlation Coefficient: 0.890

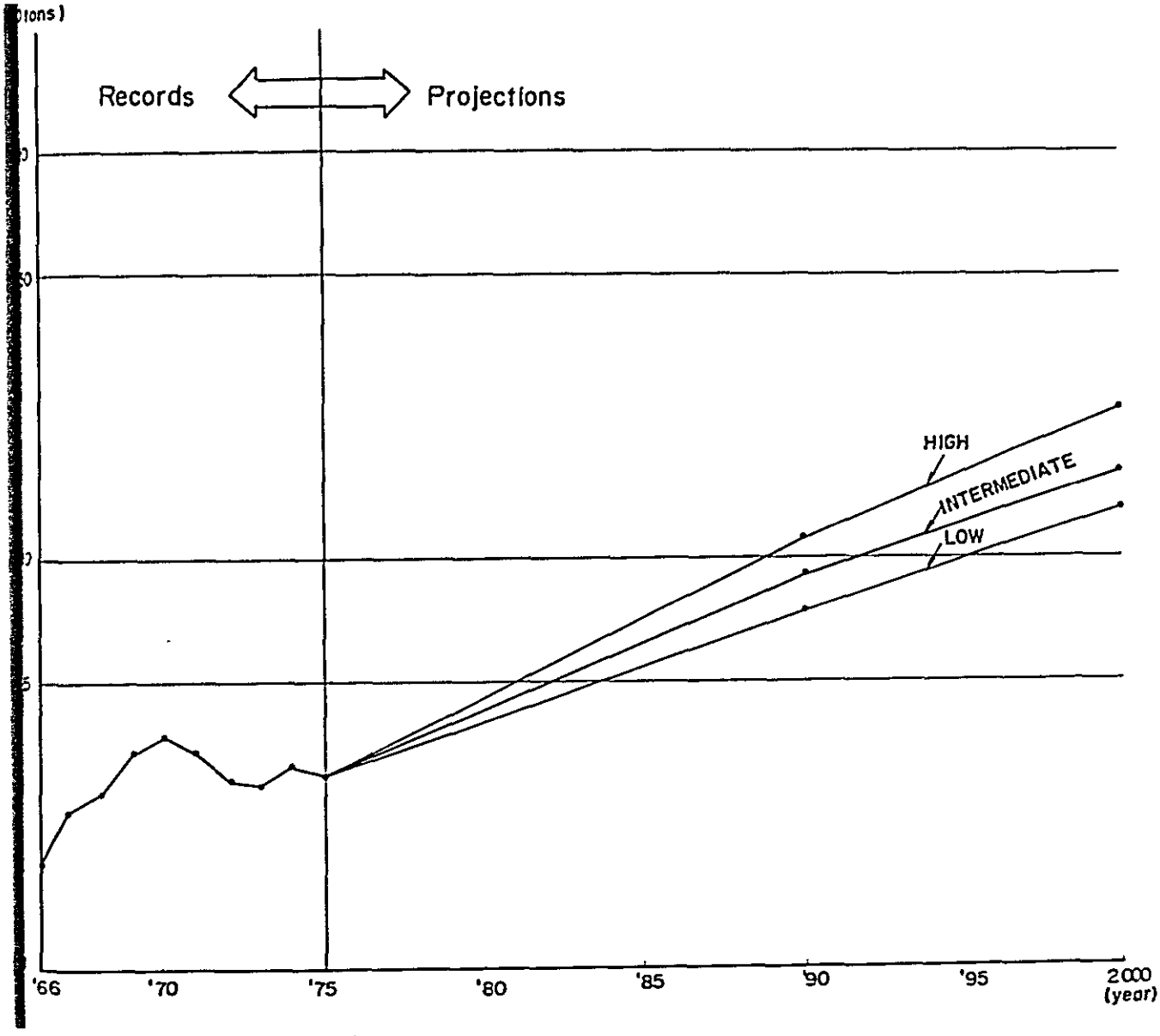


FIG. 2-4 RECORDS AND PROJECTIONS OF INTERNATIONAL AIR CARGO TRAFFIC AT TEGUCIGALPA AIRPORT

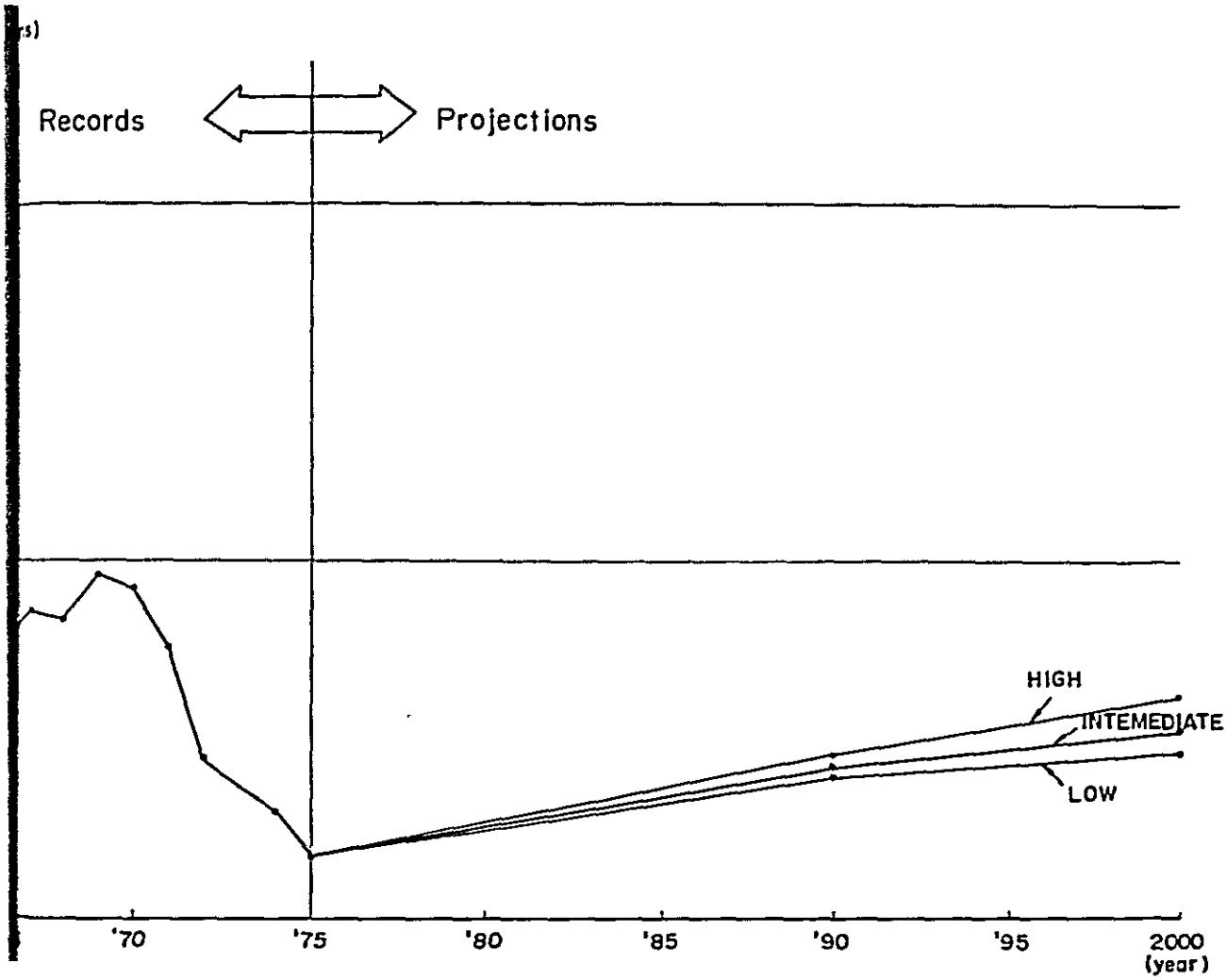


FIG. 2-5 RECORDS AND PROJECTIONS OF DOMESTIC AIR CARGO TRAFFIC AT TEGUCIGALPA AIRPORT

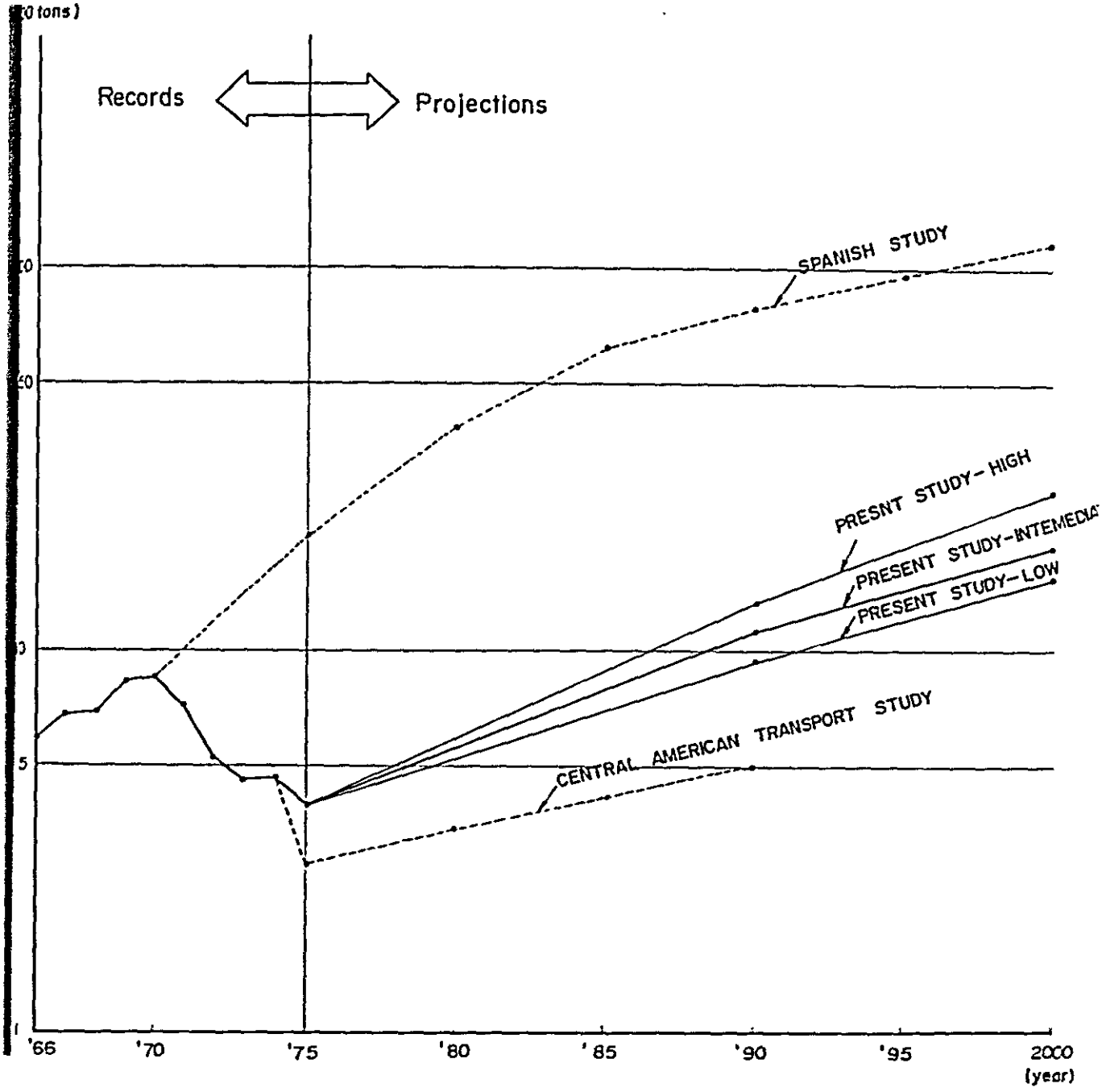


FIG. 2-6 RECORDS AND PROJECTIONS OF INTERNATIONAL AND DOMESTIC AIR CARGO AT TEGUCIGALPA AIRPORT

3. AIRPORT FACILITY PLANNING CRITERIA

Through a closest possible analyses of the information and data on hand, the following planning criteria are established in conformity with the ICAO standards and the FAA regulations. On the basis of the said criteria a preliminary study is made of the general facility requirements of the proposed new airport, on which is based the preliminary analyses of the sites as discussed in Chapter 4 hereunder. These criteria, as well as the resultant facility requirements are, however, subject to change and revision in accordance with the updated findings of the prospective field survey.

3.1. Runway Strip

Width: 300 m

Length: Runway length plus 60 m at each end.

3.2. Runway

Width: 45 m

Length: The length shall be 2,600 m to 2,900m in order to permit extension of the longest flight stage to to about 1,300 miles (Tegucigalpa - New Orleans) and to minimize the operational restrictions. (See Table 3.1.)

Table 3.1 PRELIMINARY RUNWAY LENGTH CALCULATION

CONDITIONS

1. Effective Runway Grandient: 0%
2. Length of Haul
   - 300 Statute miles for B737-200C (Tegucigalpa —— Belize)
   - 1,300 Statute miles for the others (Tegucigalpa —— New Orleans)
3. Reserve Fuel: For 1.25 hours
4. Desired Payload: Full Passenger Load
5. Runway Length for Landing: For Max. Landing weight

	Proposed Runway Length(M)	Runway Length Required per Aircraft Type (M)									
		B747-200B		DC-10-10		L-1011-385-1		B707-300C		B737-200C	
		LANDING	TAKE OFF	LANDING	TAKE OFF	LANDING	TAKE OFF	LANDING	TAKE OFF	LANDING	TAKE OFF
COMAYAGUA Temp. 32°C (90°F) Elev. 600m (1800FT)	2,600	2,610	1,640	2,390	2,070	2,090	2,100	2,270	2,070	2,050	2,520
TALANGA Temp 31°C (88°F) Elev. 800m (2600FT)	2,700	2,660	1,700	2,440	2,110	2,130	2,210	2,310	2,180	2,090	2,650
TONCONTIN Temp 29.8°C(85°F) Elev.1000m (3300FT)	2,800	2,700	1,760	2,480	2,130	2,170	2,260	2,350	2,220	2,130	2,740
PEDREGAL Temp.24.7°C(76.5°F) Elev.1500m (5000FT)	2,900	2,810	1,890	2,590	2,430	2,250	2,370	2,440	2,530	2,220	* 2,860
HULE Temp. 26°C (78.8°F) Elev.1500m (5000FT)	2,900	2,810	1,900	2,590	2,430	2,250	2,370	2,440	2,530	2,220	* 2,860

NOTE: * Payload is restricted to 90% of full Pax. Load

3.3. Taxiway

Width: 23 m

Length: Total extension of the taxiway lengths shall include that of a parallel taxiway.

3.4. Passenger Loading Apron

The number of parking positions required for the year 2000 is estimated as follows on the basis of the preliminary air transport demand forecast and the current flight schedules (as of Jan. 1978) of SAHSA and TAN.

3 parking positions for B707 class aircraft

5 parking positions for B737 class aircraft

The parking system shall be of self-manoeuvering. The depth of the apron shall be sufficient for the nose-in/push-out operation of B747 class aircraft expected to be in service in future.

3.5. Cargo Loading Apron

One parking position for B707 class aircraft shall be provided for the year 2000. The parking system shall be of self-manoeuvering.

3.6. Passenger Terminal Building

The building shall be so planned as to facilitate the segregation of the domestic and international passengers.

3.7. Cargo Terminal Building

The building shall be so planned as to facilitate the segregation of the domestic and international cargos.

3.8. Navigational Aid Facilities

Both visual and radio navigational aid facilities shall be satisfactory for precision approach runway Category I.

A conceptual layout of the airport facilities planned in accordance with the criteria mentioned above is shown in Fig. 3.1.

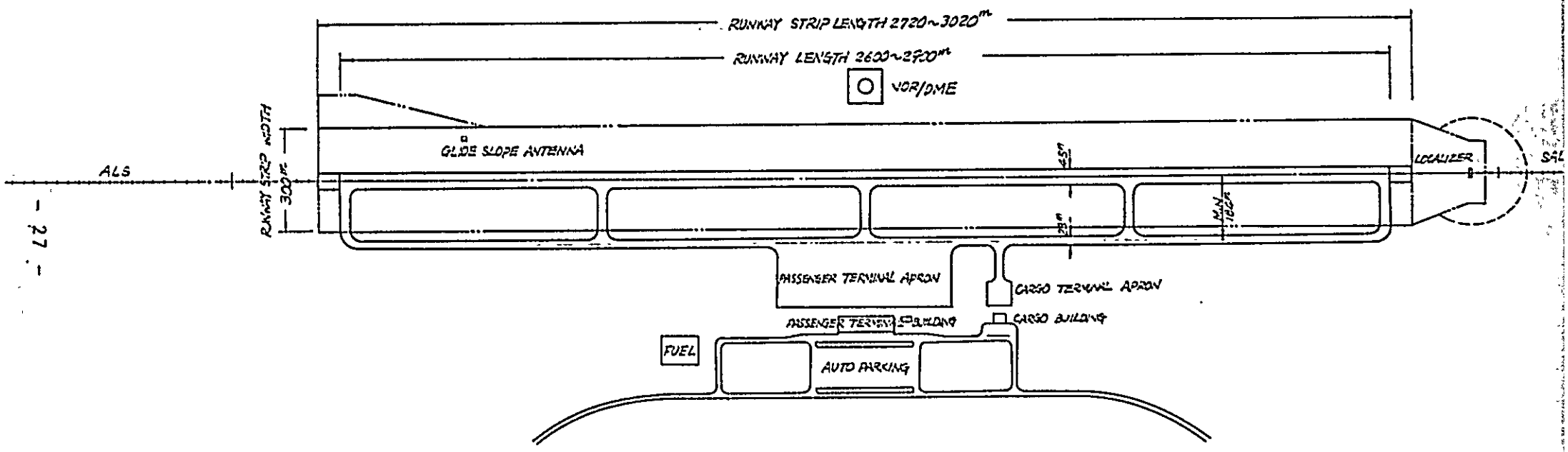


FIG. 3.1 CONCEPTUAL LAYOUT PLAN

4. SCREENING OF SITES PROPOSED FOR SITE SELECTION STUDY

4.1. General

Preliminary screening of sites proposed for consideration under the site selection study is made through analyses of the conditions of aircraft operation and construction based on the topographical maps (1:50000) and meteorological data obtained by the preliminary survey mission of JICA.

The procedure of this work is shown in Fig. 4.1

4.2. Aeronautical Meteorological Analysis

4.2.1. Observation Data

1) Source

Dirección General de Aeronautica Civil, Servicio Meteorologico Nacional.

2) Observation Points, Period, Time and Interruption

i) Toncontin (Existing Airport Site)

January to December, 1976 (12 months)
Hourly observation (24 times a day)
No interruption of observation

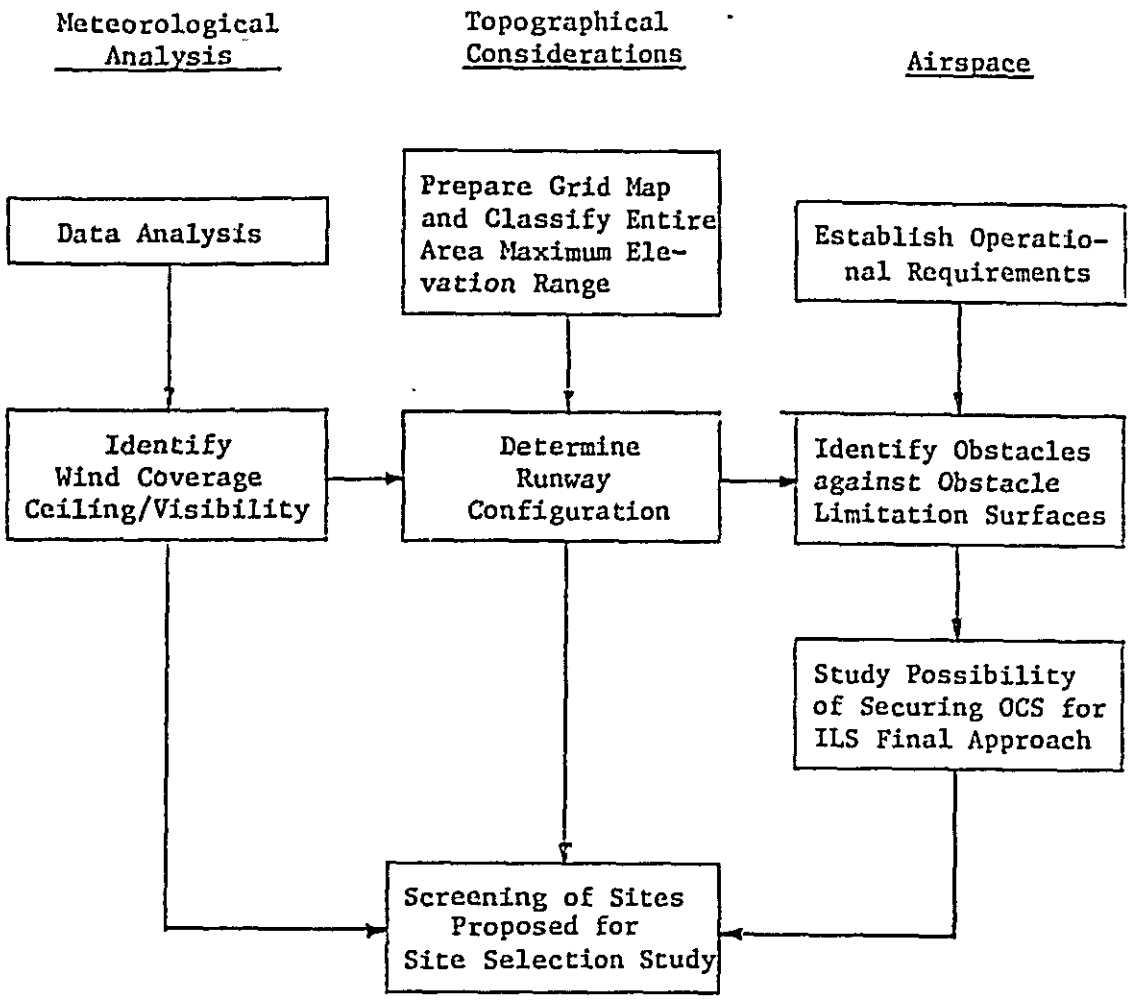


FIG. 4.1. SEQUENCE OF SCREENING OF SITES PROPOSED FOR SITE SELECTION STUDY (PREPARATORY HOME OFFICE STUDY)

ii) El Pedregal

January to December, 1976 (12 months)

Hourly observation (24 times a day)

Interruption 23%

iii) Cerro de Hule

17 March to December, 1971 (9.5 months)

06:00 - 18:00 (13 times a day)

Interruption 24%

4.2.2. Results of Data Analysis

1) Toncontin

i) Wind Coverage (for the existing runway);

99.6% and 94.6% under the maximum cross-wind component of 15 kts and 10 kts respectively.

ii) Prevailing Wind Direction : N to NNE

iii) Ceiling/Visibility

	200'-800m	Below 1200' - 2800m (Operating minima for the existing runway)
Frequency of occurence	0.7%	19.4%

2) El Pedregal

i) Wind Coverage

Not less than 99% for any direction under the maximum cross-wind component of 15 kts.

ii) Prevailing Wind Direction : N to NNE

iii) Ceiling/Visibility

Frequency of occurence of ceiling/visibility below 200' - 800m : 4.4%

3) Cerro de Hule

i) Wind Coverage

	Max. Cross-Wind Component	
	15 kts	10 kts
N60°W	80.5%	60.0%
N30°W	96.2	76.4
N00°	99.2	93.6
N30°E	99.4	87.9
N60°E	85.0	70.7
N90°E	78.7	59.6

ii) Prevailing Wind Direction : N

iii) Ceiling/Visibility

Frequency of occurence of ceiling/visibility below 200' - 800m : 13.6%

4) Prevailing Wind Direction in and around Tegucigalpa

Based on the analysis of the data on hand, the prevailing wind direction in and around Tegucigalpa is presumed to be north.

5) Prevailing Wind Direction in Valle de Talanga

Wind data of this area have not been available and observation has recently been started. Generally, however, the wind is presumed to be relatively calm.

6) Prevailing Wind Direction in Comayagua

Wind data have not been available. Judging from the topographical features, the wind is presumed to be mostly in the NW or SE direction.

4.3. Analysis of Airspace

Airspace has been analyzed on the basis of the operational requirements of Instrument Approach by commercial jet aircraft.

4.3.1. Obstacles

Examination is made, on the maps on hand (1:50000), of the

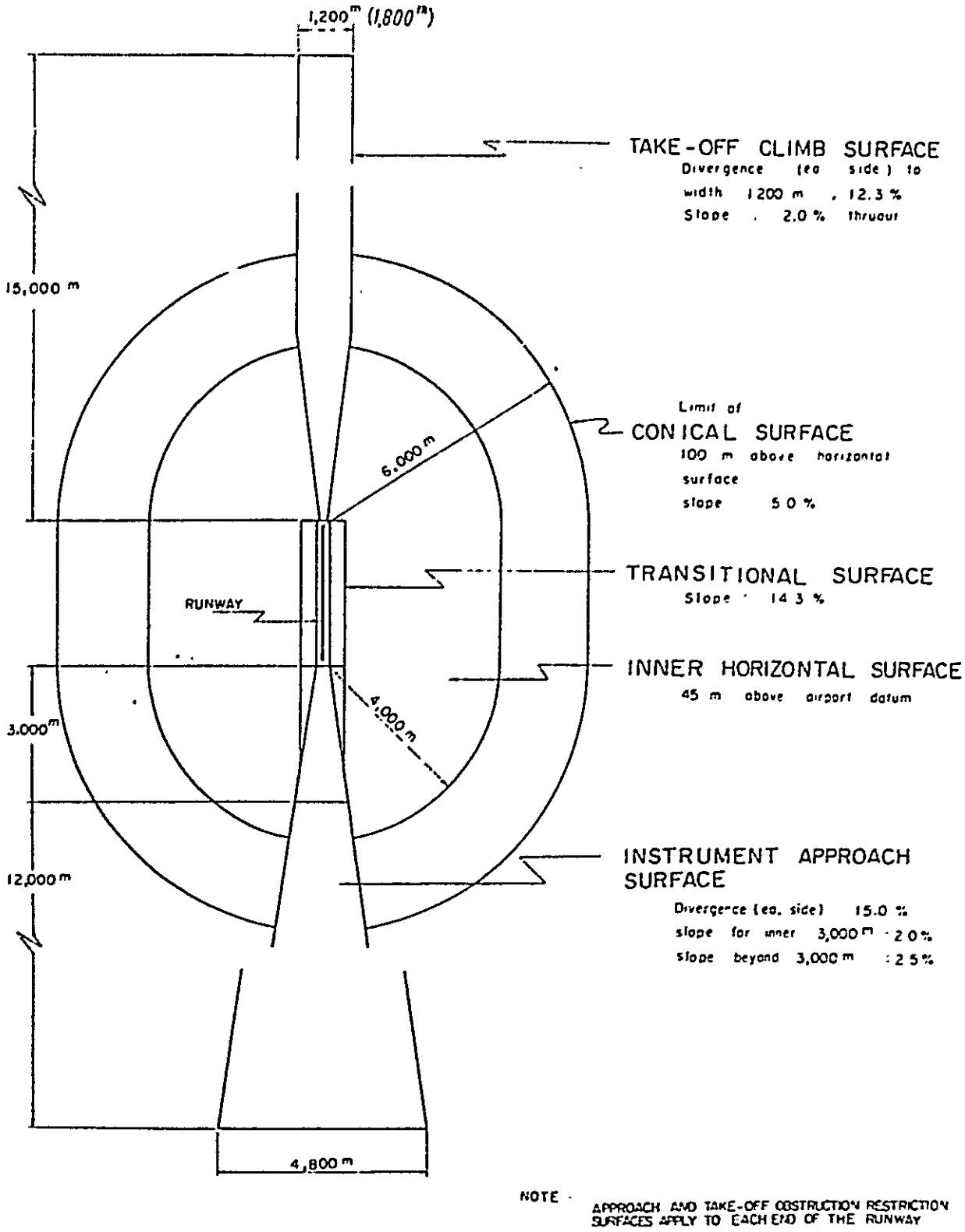


FIG. 4.2. I.C.A.O. OBSTACLE LIMITATION SURFACES

existance and characteristics of objects which constitute obstruction within the airspace defined by the obstacle limitation surfaces (see Fig. 4.2) required of an instrument approach runway or a precision approach runway Category I. (see Annex 14 to Convention on International Civil Aviation, Chapter 4, ICAO and Airport Service Manual - Doc. 9137-AN/8981 - Part 6, ICAO)

4.3.2. Operational Limitations

Having identified possible obstacles within the said airspace, further study is made on the possibilities and limitations in establishing the intended operational procedures primarily through ascertaining the possibility of establishing the obstacle clearance surface in the ILS final approach area. (see Procedures for Air Navigation Services - Doc. 8168-OPS/611/2)

4.4. Topographical Considerations

4.4.1. General

Based on the topographic map (1:50000) of Tegucigalpa and its surrounding areas, comparison of the potential sites is made primarily in terms of the amount of earthwork involved, taking into consideration at the same time such fundamental factors as apparent interference with the existing communities or rivers, etc.

4.4.2. Amount of Earthwork

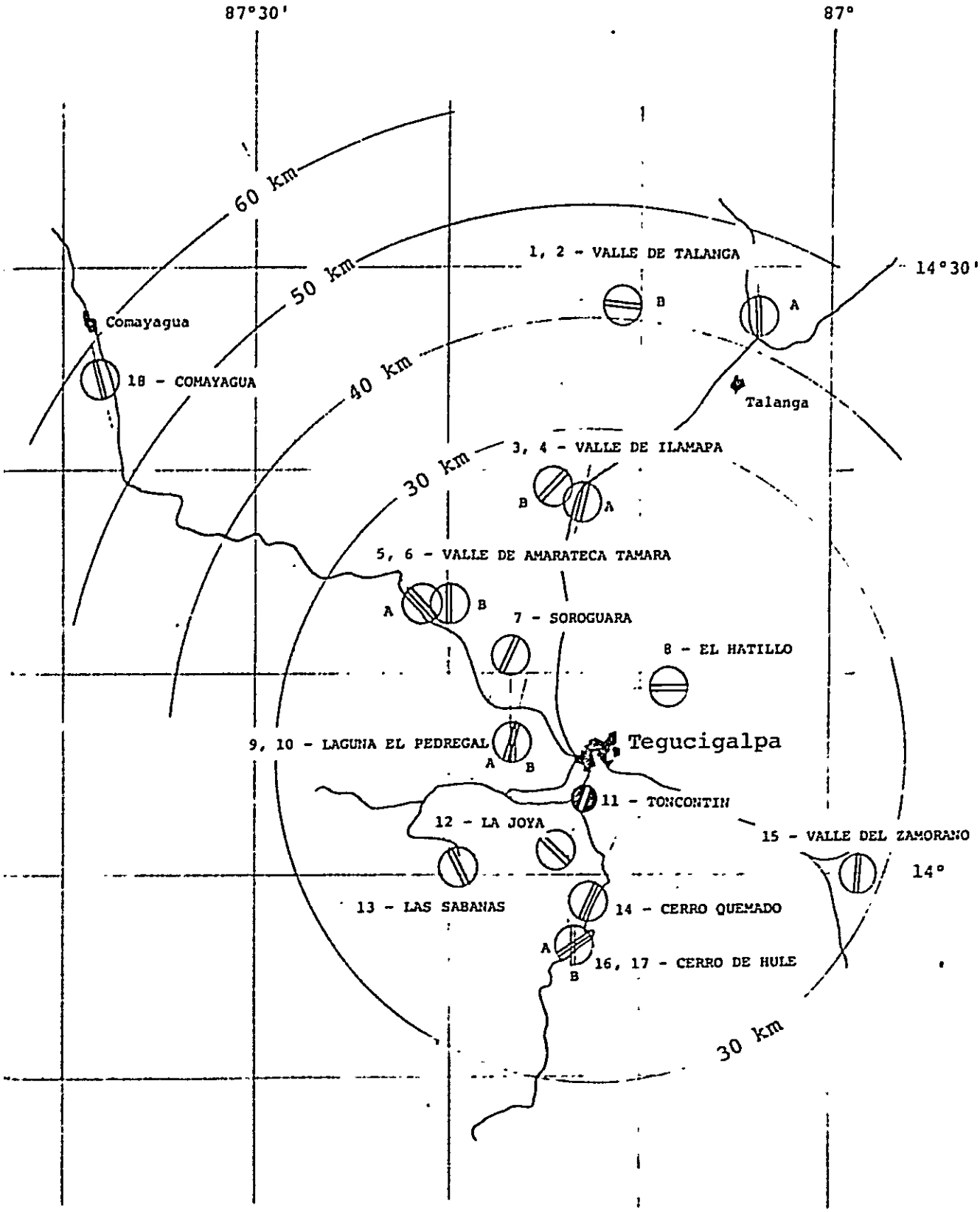
In order to obtain a rough, general idea of the amount of earthwork involved in the grading work of the potential sites, grid lines at 1 km intervals are drawn on the topographic map in scale of 1:50000, each grid unit showing the two figures, one denoting the elevation of the highest point existing within the area represented thereby, and the other denoting the elevation range between the highest and the lowest points. Grid units are then classified according to the maximum elevation range into the following three categories considered to be indicative of the degree of practicability of earthwork. (see attached grid map)

Maximum Elevation Range	Earthwork Practicability
0^m - 60^m	No problem
60^m - 120^m	Difficult
120^m and over	Not practical

4.5. Sites Proposed for Site Selection Study

Through comparative evaluation of the potential sites based on the foregoing study results as summarized in Table 4.1, the following 6 sites are selected and proposed for investigation under the prospective site selection study.

1. Valle de Talanga A-Site
2. Valle de Talanga B-Site
3. Laguna el Pedregal (Previously Selected Site)
4. Cerro de Hule
5. Comayagua
6. Toncontin (Existing Airport Site)

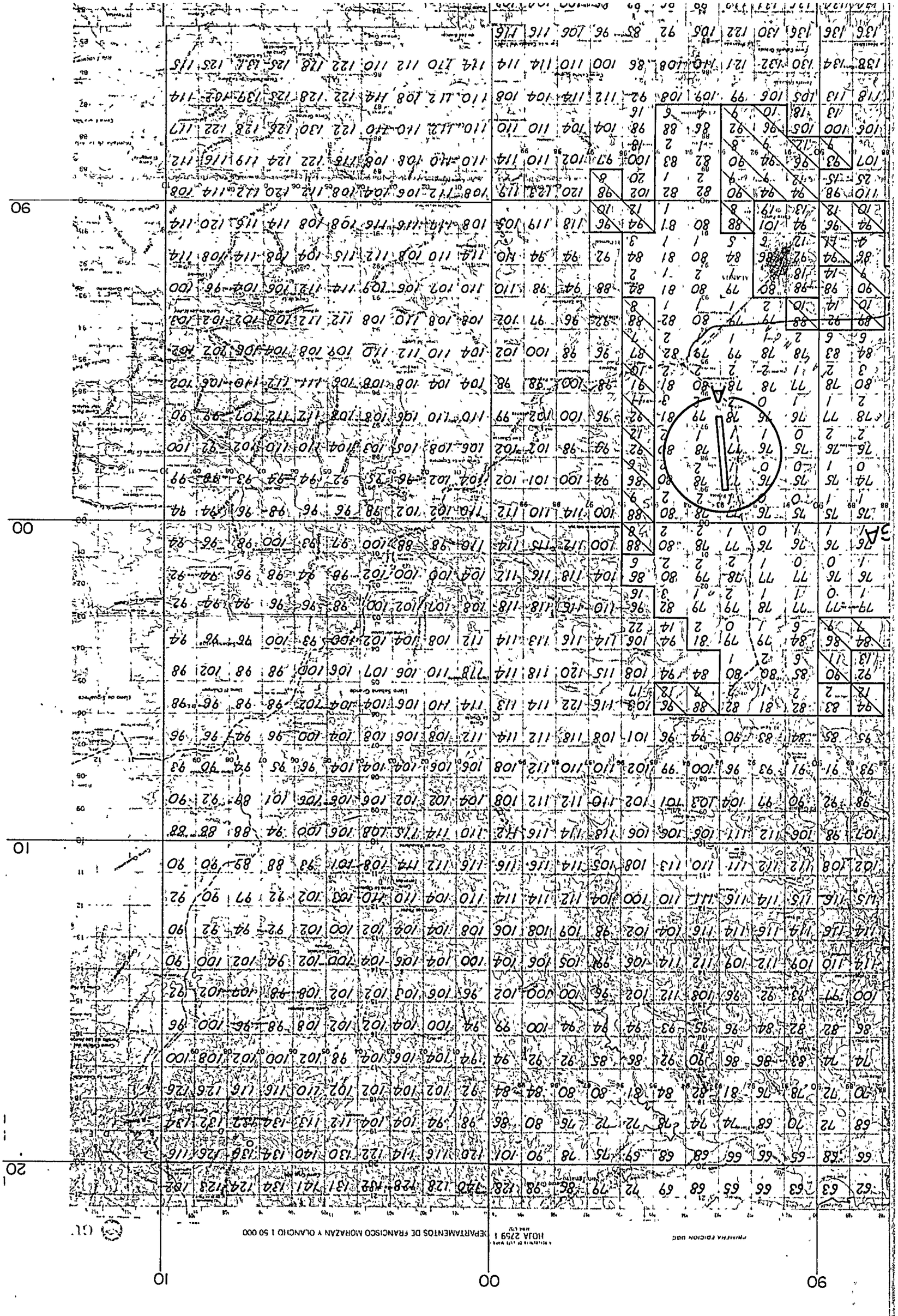


SITE LOCATION

EVALUATION CRITERIA / POTENTIAL SITES		LOCATION	ACCESSIBILITY	RUNWAY		TERRAIN CONDITIONS				OBSTACLES		METEOROLOGICAL CONDITIONS
		From Tegucigalpa	Road Distance And Travel Time From Tegucigalpa	Orientation	Elevation	Topographical Conditions	Maximum Elevation Range	Geological Conditions	Present Conditions Of Land Use	Obstacle Limitation Surfaces Projected into By Mountains	Objects Projecting into Obstacle Clearance Surface For ILS Final Approach	
VALLE DE TALANGA	A	42km to NNE	60km 60 minutes	N04W	760m	Flat	10m or less	Alluvium	Cultivated fields	Approach surface (N,S) Horizontal surface (E) Conical surface (E,SW)	1100m high mountain 11km to south 1100m high mountain 10km to north	No data available, Under observation
	B			N73W	750m	Flat	10m or less		Wild land	Horizontal surface (S) Conical surface (S)		
VALLE DE ILAMAPA	A	25km to N	35km 40 minutes	N20E	910m	Hilly	50m to 60m	Gravel Terrace	Wild land	Approach surface (N) ▲		No data available
	B			N55E	950m	Hilly	40m to 60m		Wild land	Approach surface (N) ▲		
VALLE DE AMARATECA	A	20km to NE	30km 35mminutes	N45W	950m	Hilly	10m to 70m	Alluvial sandy loam	Cultivated land, Wild land	Approach surface (NW) ▲		No data available
	B			N00	1070m	Hilly	50m to 120m ▲			Approach surface (N,S) ▲		
SOROGUARA		15km to NE	25km	N45E	1360m	Mountainous	120m to 180m ▲	Andesite, Volcanic rock	Forests, Wild land	Approach surface (SW) ▲		No data available
EL HATILLO		6km to NE	10km 15 minutes	N90E	1450m	Mountainous	180m to 230m ▲	Tuff		Approach surface (E,W) ▲		No data available
LAGUNA EL PEDREGAL	A	8km to W	16km 30 minutes	N28E	1500m	Isolated mountain partially with flat area	110m to 130m ▲	Andesite	Stock farms	Horizontal surface (E,W)	1776m high mountain 8km to south	Wind coverage; 99 %
	B			N12E	1500m		110m to 130m ▲					
TONCONTIN		4km to S	7km 15 minutes	N20E	1000m	Tableland	0m to 80m	Hard clay, Tuff	Existing airport	Approach surface E,W, ▲ Horizontal surface S,N Conical surface	ILS is not applicable ▲	Wind coverage; 99.6 %
LA JOYA		7km to S	15km	N45W	1150m	Mountainous	80m to 170m ▲	Tuff	Forests, Wild land	Approach surface (SE,NW) ▲ Horizontal surface (N,W)		Prevailing wind; N
LAS SABANAS		17km to SW		N35W	1550m	Mountainous	70m to 190m ▲	Tuff, Andesite	Forests, Wild land	Approach surface (N) ▲ Horizontal surface (N,S)		No data available
CERRO QUEMADO		13km to S	18km 30 minutes	N20E	1300m	Mountainous	100m to 200m ▲	Andesite	Forests	Approach surface (S) ▲ Horizontal surface (S)		Prevailing wind; N
VALLE DE ZAMORANO		26km to SE	37km 45 minutes	N00	750m	Flat	40m or less		Farms ▲	Approach surface (S) ▲ Horizontal surface (W)		No data available
CERRO DE HULE	A	18km to S	27km 40 minutes	N45E	1540m	Tableland	30m to 80m	Andesite	Cultivated fields, Wild land, Residential area,	Horizontal surface (W)		Data insufficient ▲ Strong north wind, (approx.90%)
	B			N00	1500m	Tableland	30m to 80m			Horizontal surface (E,W)		Data insufficient Strong north wind, (approx.99%)
COMAYAGUA		58km to NE	90km 90 minutes	N17W	620m	Flat	10m or less	Alluvial terrace	Wild land, Military airport	Horizontal surface (E)		No data available

▲ Indicates the impracticability of the site in terms of the particular evaluation criterion.

TABLE 4.1. SUMMARY OF SITE EVALUATION FACTORS
(PREPARATORY HOME OFFICE STUDY)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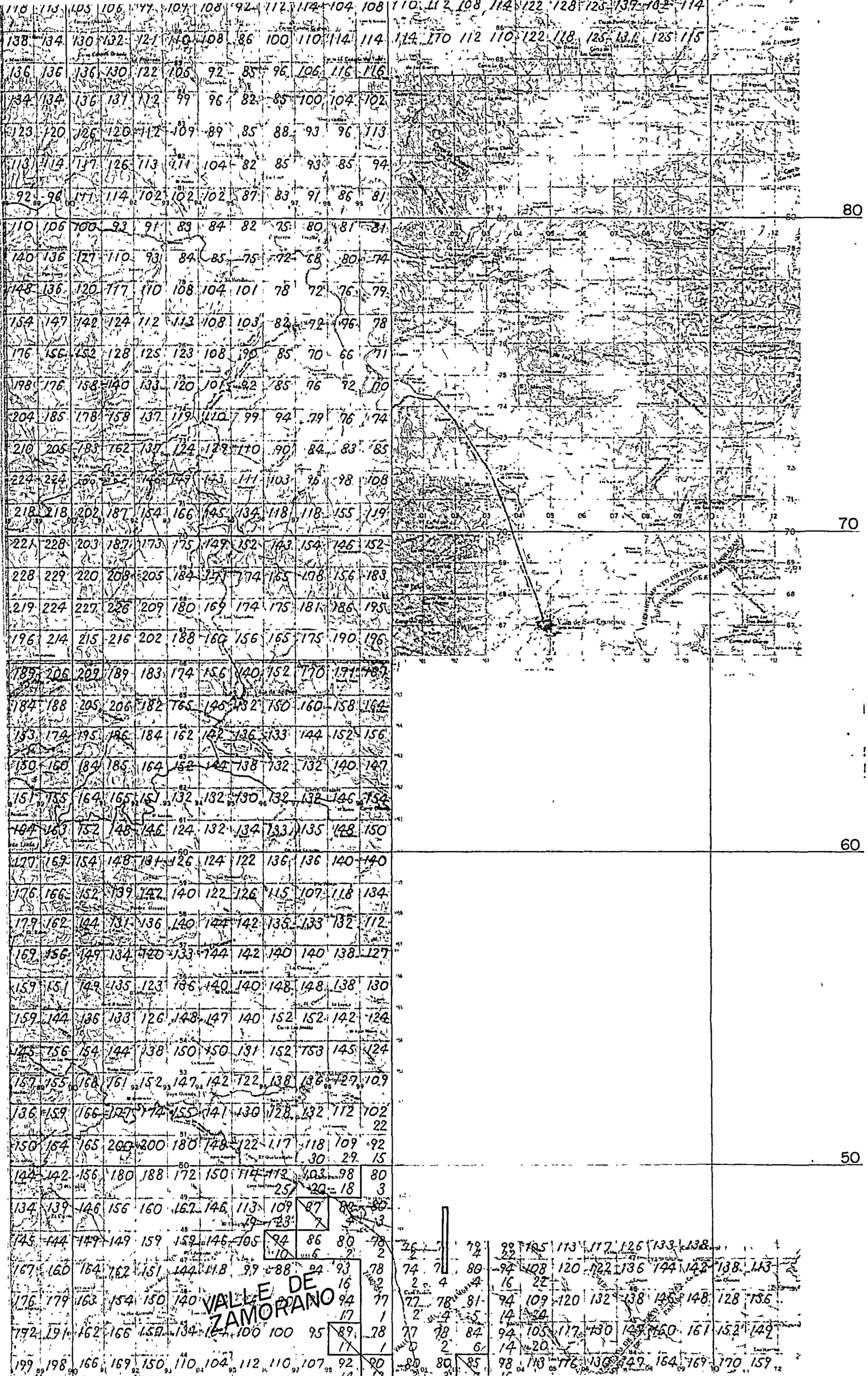
DEPARTAMENTOS DE FRANCISCO MORAZAN Y OLANCHO 1 50 000
HOJA 2759 I


80
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60
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VALLE DE ZAMORANO

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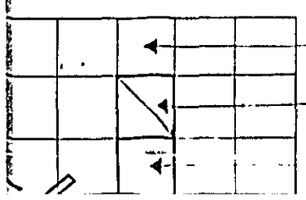
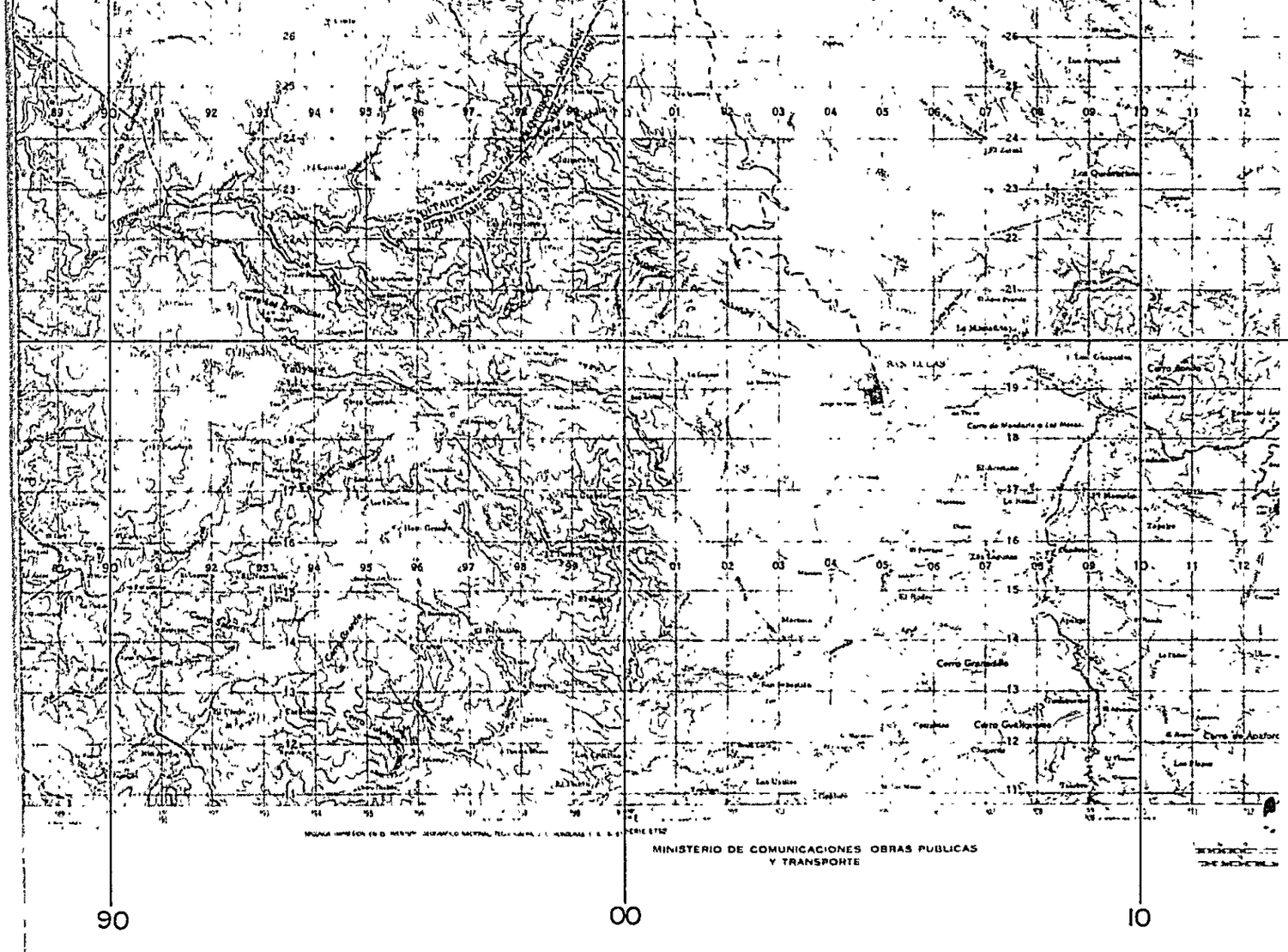
)0 m x 1,000 m



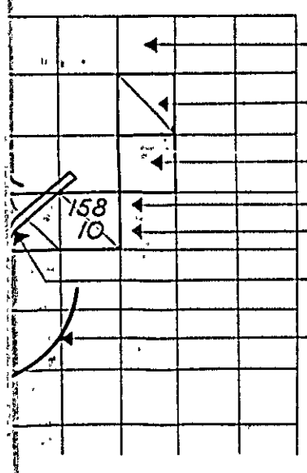
MAX. ELEVATION RANGE IN GRID 120 m AND OVER

MAX. ELEVATION RANGE IN GRID 60 m – 120 m

MAX. ELEVATION RANGE IN GRID 0 m – 60 m



)0 m x 1,000 m



MAX. ELEVATION RANGE IN GRID 120 m AND OVER

MAX. ELEVATION RANGE IN GRID 60 m – 120 m

MAX. ELEVATION RANGE IN GRID 0 m – 60 m

HEIGHEST ELEVATION IN GRID 158 (x 10) = 1580 m

MAX. ELEVATION RANGE IN GRID 10 (x 10) = 100 m

RUNWAY LOCATION ON PREVIOUS AIRPORT STUDY REPORT

SITE & RUNWAY PROPOSED FOR SITE SELECTION STUDY

GUA - SITE IS NOT SHOWN

)ÖO

PROPOSED FOR SITE SELECTION STUDY

EW TEGUCIGALPA AIRPORT DEVELOPMENT

HONDURAS, C.A.

ATTACHMENT

70 80 90

PRIMERA EDICION DGC

HOJA 2759 IV DEPARTAMENTO DE FRANCISCO MORAZAN 1 50 000

CEDROS

VALLE DE LAMANGA

VALLE DE LAMARA

A

B

AMARATECA

TAMARA

SOROGUARA

LAGUNA DEL PEDREGAL

TONCONTIN

LA JOYA

CERRO QUEMADO

EL HATILLO

B

A

CERRO QUEMADO

CERRO DE HULE

B

A

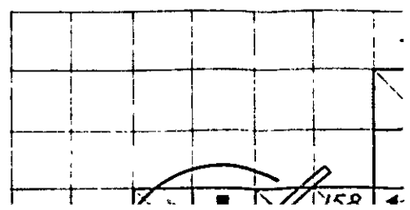
70

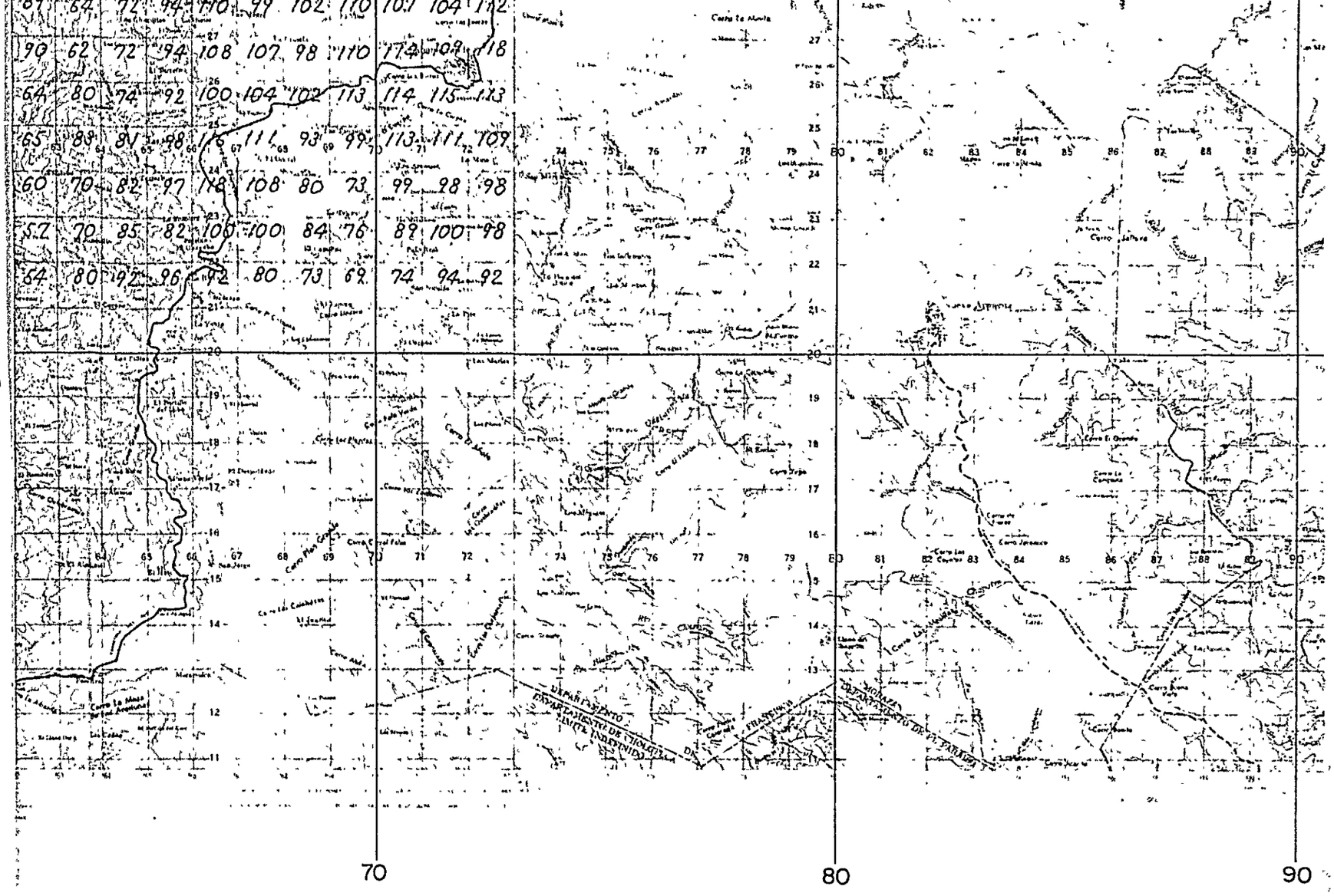
80

90

LEGEND :

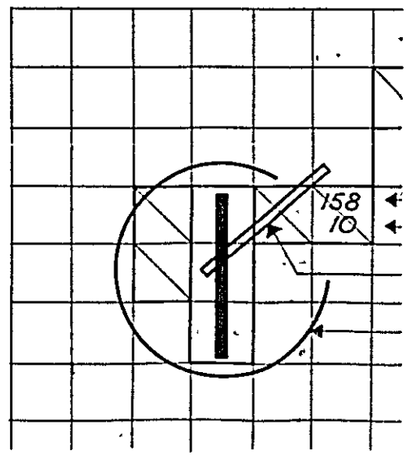
GRID : 1,000 m x





LEGEND :

GRID : 1,000 m x



NOTE : COMAYAGUA - SIT

SCALE : 1 : 100,000

SITES PR

NEW

DEPARTAMENTOS DE COMAYAGUA Y FRANCISCO MORAZAN 1 50 000

VALLECILLO

50

60

90

00

10

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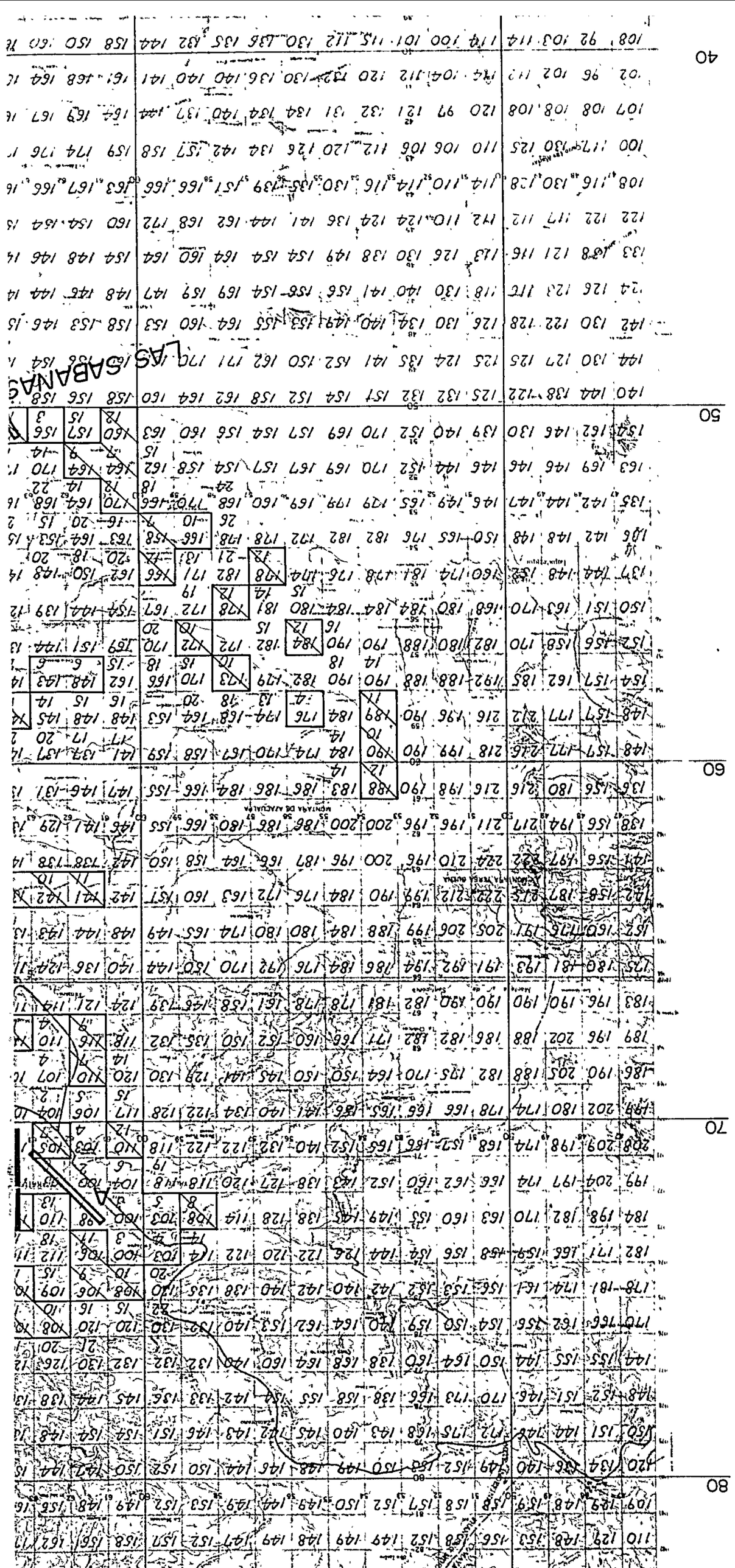
LAS SABANAS
MONTAÑA DE AZAHUALPA
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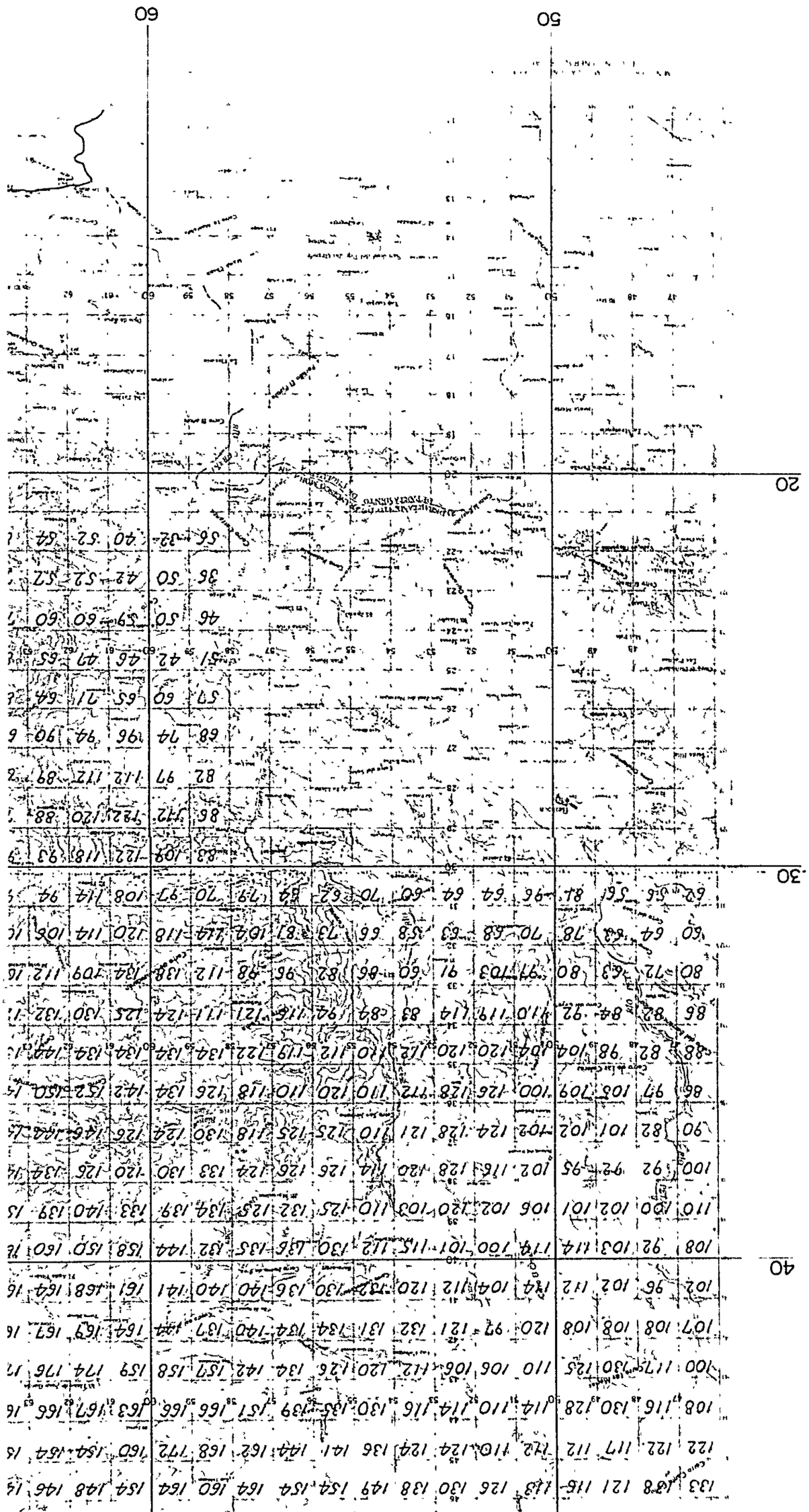
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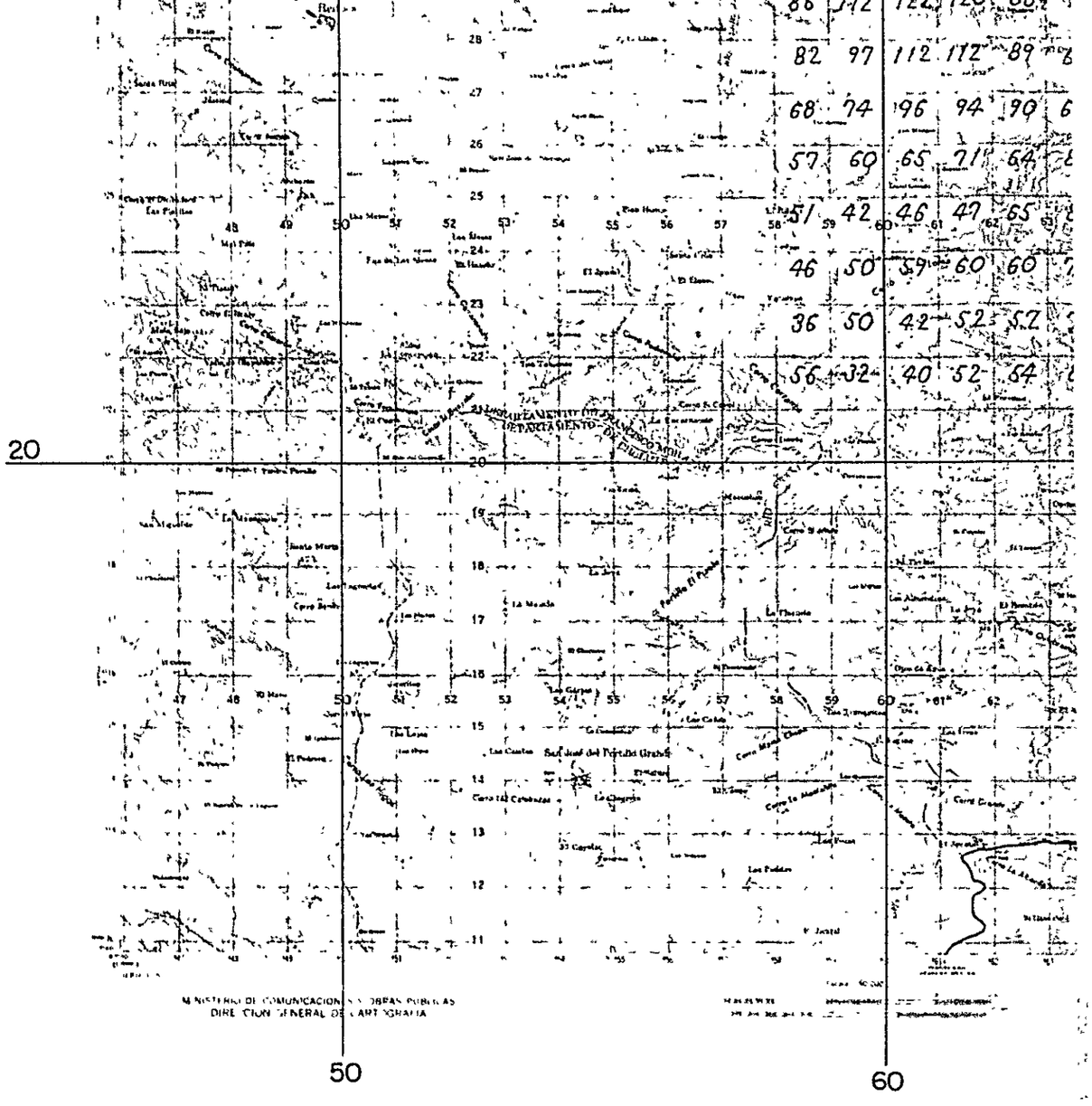
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82 97 112 112 89
68 74 96 94 99
57 60 65 71 64
51 42 46 47 65
46 50 57 60 60
36 50 42 52 57
56 32 40 52 64
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DIRECCION GENERAL DE CARTOGRAFIA

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