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## 1. 調査日程

### (1) コンタクトミッション調査日程

月 日	行 程	調 査 内 容
57年 1/10 日	東京→ロス→	移動(金窪、飯島、宮本、斉藤、木村)
11 月	→リマ着	日本大使館、JICA事務所訪問打合せ
12 火	リ マ	ペルー-国土地理院(IGN)訪問打合せ
13 水	#	IGNにてペルー側要請内容につき協議
14 木	リマ→サティボ	チャーター機によりアンデス越え、サンラモンにて1時休止の後サティボを中心とした空中査察の実施
15 金	サティボ→リマ	車両により一部地区(サンマルチンまで)の陸上踏査の後チャーター機によりリマに帰還
16 土	リ マ	資料整理及び調査団内部打合せ
17 日	#	休 務
18 月	#	IGNにてペルー側測量事情、双方の基本的便宜供与につき協議
19 火	#	IGNにて技術的討議の後国防省にてシスネロス陸軍大臣を表敬訪問
20 水	#	IGNにて議事録とりまとめにつき協議の後ペルー大統領官邸にてベラウンデ大統領を表敬訪問(野田大使同席)
21 木	#	日本大使館にて経過報告の後IGNにて金窪団長及びデルガドIGN院長が議事録に署名。午後ミッション主催昼食会に出席
22 金	リマ→ロス	移 動
23 土	ロ ス 発	#
24 日	東 京 着	帰 国

### (2) 事前調査団調査日程

月 日	行 程	調 査 内 容
2/24 水	東京→ロス→	移動(田島、高橋、間所、奥村、垣下、野田、木村)
25 木	→リマ着	日本大使館、JICA事務所訪問打合せ
26 金	リ マ	IGN訪問にて打合せ
27 土	#	調査団内部打合せ(S/W案内容について)

月 日	行 程	調 査 内 容
28 日	リ マ	休 務
3 / 1 月	リマ→サティボ	空路移動
2 火	サティボ	対象地区の空中査察（セスナ機）
3 水	#	設営関係調査
4 木	サティボ→リマ	空路移動
5 金	リ マ	I G N 及び S A N ( Servicio Aerofotografico Nacional ) 訪問協議
6 土	#	設営関係調査及び議事録草案とりまとめ
7 日	#	議事録草案とりまとめ
8 月	#	I G N にて議事録署名（田島団長及びデルガド院長）、 日本大使館に帰国報告の後調査団主催昼食会に出席
9 火	#	I G N にて現地調査日程打合せ（奥村、垣下、野田） 田島、高橋、間所、木村はリマ発ロス經由 3月11日帰国
10 水	リマ→サティボ	奥村、垣下はサティボに空路移動 （野田はS A N にて撮影につき打合せ）
11 木	サティボ	標石調査（サティボ、マリボサ） （野田はサティボに陸路移動）
12 金	#	標石調査（サティボ、マリボサ）
13 土	#	空中査察（サティボ、タンボ、アタラヤ、ブエルトブラド、 エネ地区）
14 日	#	標石調査（サンタアナ地区）
15 月	#	道路調査（サティボ→マサマリ→サンマルチン→キアトリ）
16 火	#	設営関係調査及び航空輸送会社（ALAS de ESPERANZA）調査
17 水	サティボ→サンラモン	陸路移動
18 木	サンラモン	LA MERCED の陸軍駐屯地にて空軍測候所調査
19 金	#	設営関係調査
20 土	#	標石調査（サンラモン、タルマ地区）
21 日	サンラモン→ワンカヨ	空中査察（サンラモン、ワンカヨ、サンフエルナンド地区） の後陸路移動
22 月	ワンカヨ	空中査察（ワンカヨ、コンセプション地区）

月 日	行 程	調 査 内 容
23 火	ワンカヨ	標石調査（ハウハ、ヤウリ地区）
24 水	"	空中査察（コンセプトン地区の追加調査）
25 木	ワンカヨ→サンラモン	陸路移動（途中道路事情調査）
26 金	サンラモン→リマ	空路移動（奥村、垣下、野田）
27 土	リマ	調査中間成果とりまとめ
28 日	"	休 務
29 月	"	I G N 及び S A N にて協議
30 火	"	S A N にて協議の後気象庁にて調査
31 水	"	I G N、I A G S にて協議
4 / 1 木	"	（田島、飯島、木村 リマに向け東京発） 日本大使館、JICA 事務所訪問打合せ （田島、飯島、木村 リマ着）
2 金	"	I G N 訪問 S / W 案につき協議の後 JICA 事務所にて協議
3 土	"	調査団内部にて S / W 案につき協議
4 日	"	休 務
5 月	"	I G N にて S / W 案協議
6 火	"	ペル - 電力公社（Electroperu）にて協議の後日本大使館主催昼食会に出席
7 水	"	I G N にて打合せの後 S A N にて協議 （飯島、奥村、垣下は空路サティボ行）
8 木	"	I G N にて S / W の最終的とりまとめの後田島団長とデルカド I G N 院長が署名、午後 I G N 主催昼食会に出席 （飯島、奥村、垣下はサティボ地区現地踏査）
9 金	"	調査団内部打合せ（撮影計画について） （飯島、奥村、垣下はリマに空路帰着）
10 土	"	三井金属にて撮影実績につき調査
11 日	"	休 務 （奥村、野田は撮影資料入手のためアメリカ・ミネアポリスに出発）
12 月	"	I G N にて S A N 幹部と撮影の協議及び議事録署名。 調査団主催昼食会出席の後日本大使館にて帰国報告

月 日	行 程	調 査 内 容
13 火	リマ → ロス	(奥村、野田はミネアポリスマークハード社にて資料収集) 移動(田島、飯島、垣下、木村) (奥村、野田はミネアポリスよりロスに移動)
14 水	ロス 発	移動(田島、飯島、奥村、垣下、野田、木村)
15 木	東京 着	帰 国

图 2 - 1 I G N 組織図

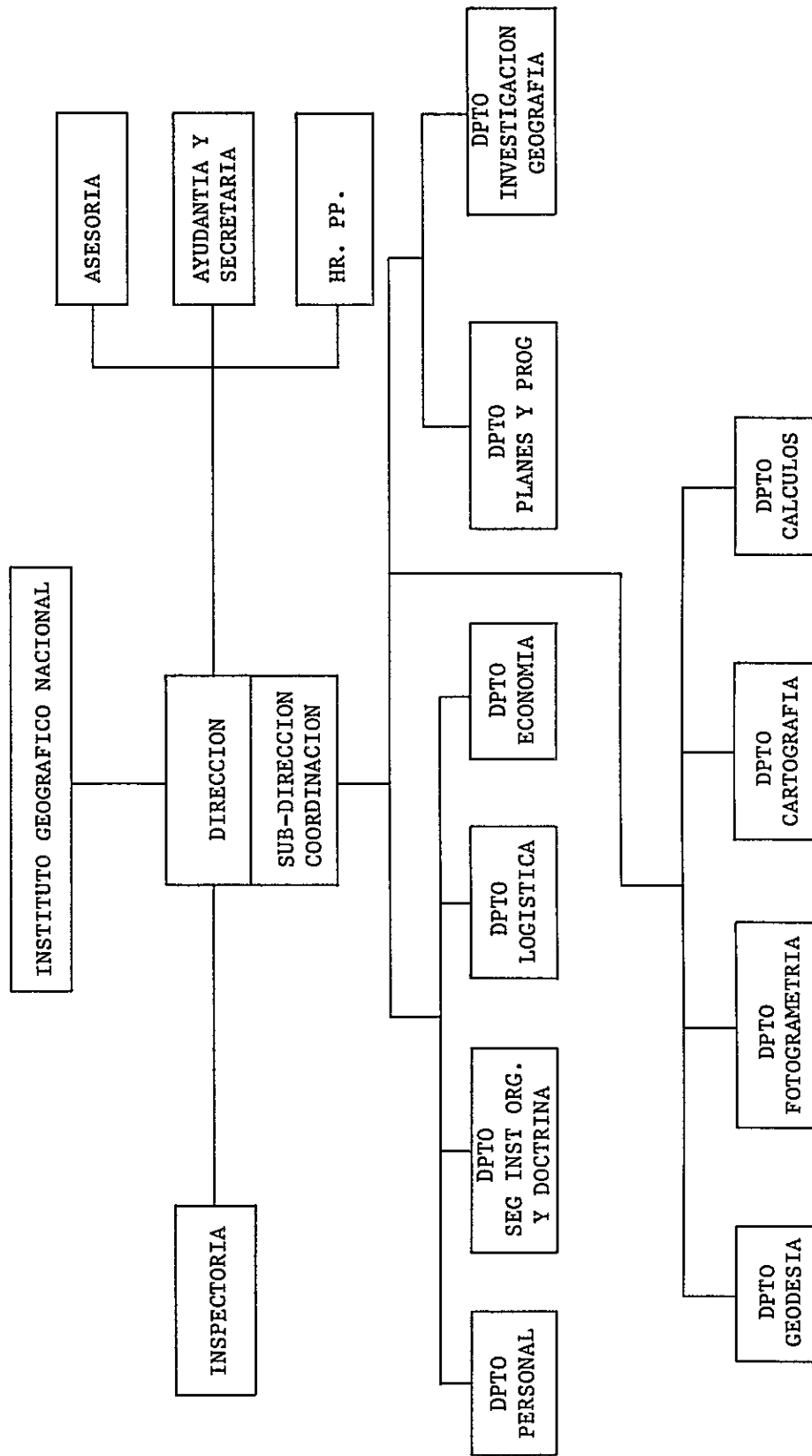


图 2-2 天文点配点图

ASTRONOMIA GEODESICA DE POSICION

GRAFICO No. 1

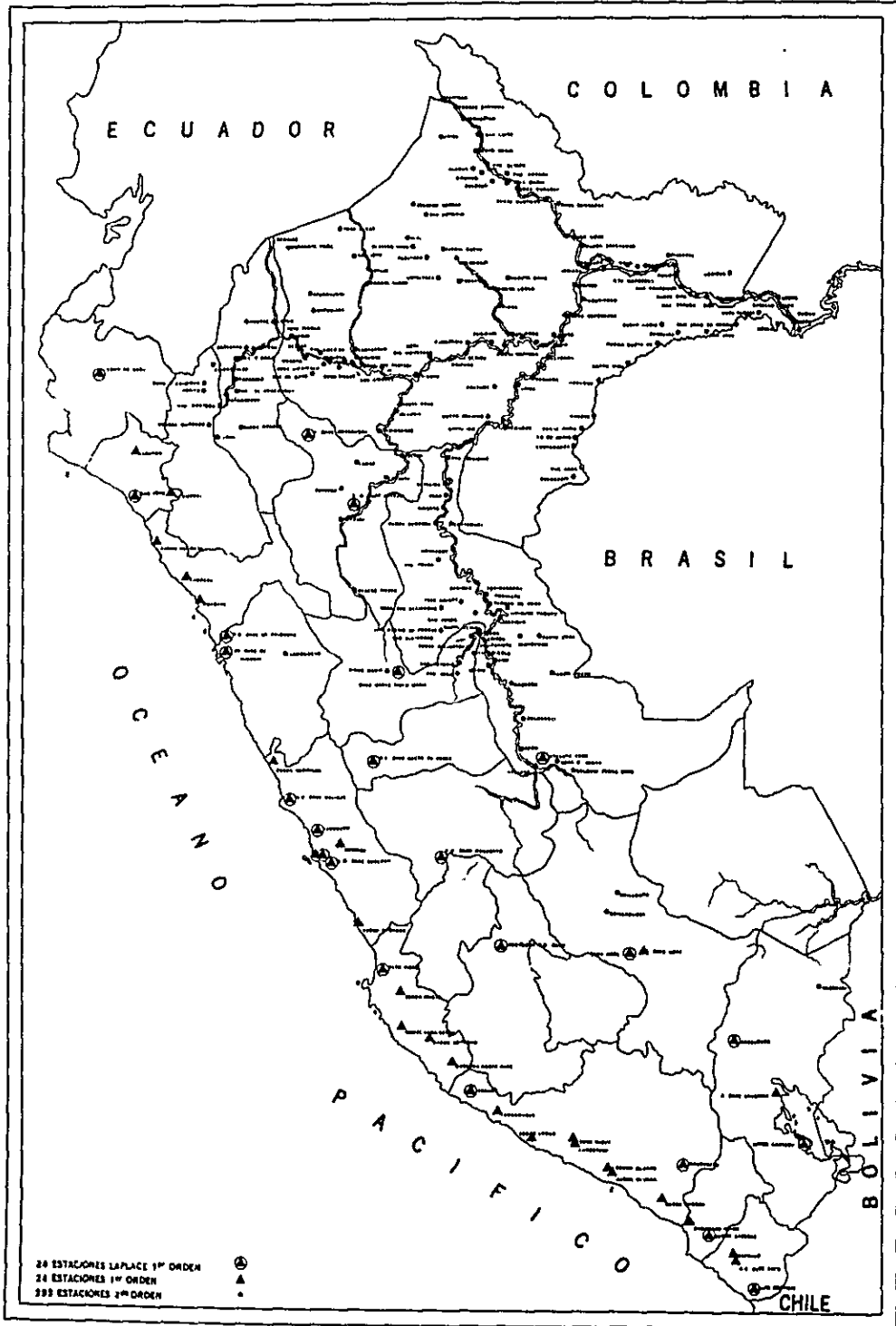




图 2 - 3 三角点网图

TRIANGULACION GEODESICA

GRAFICO No. 2

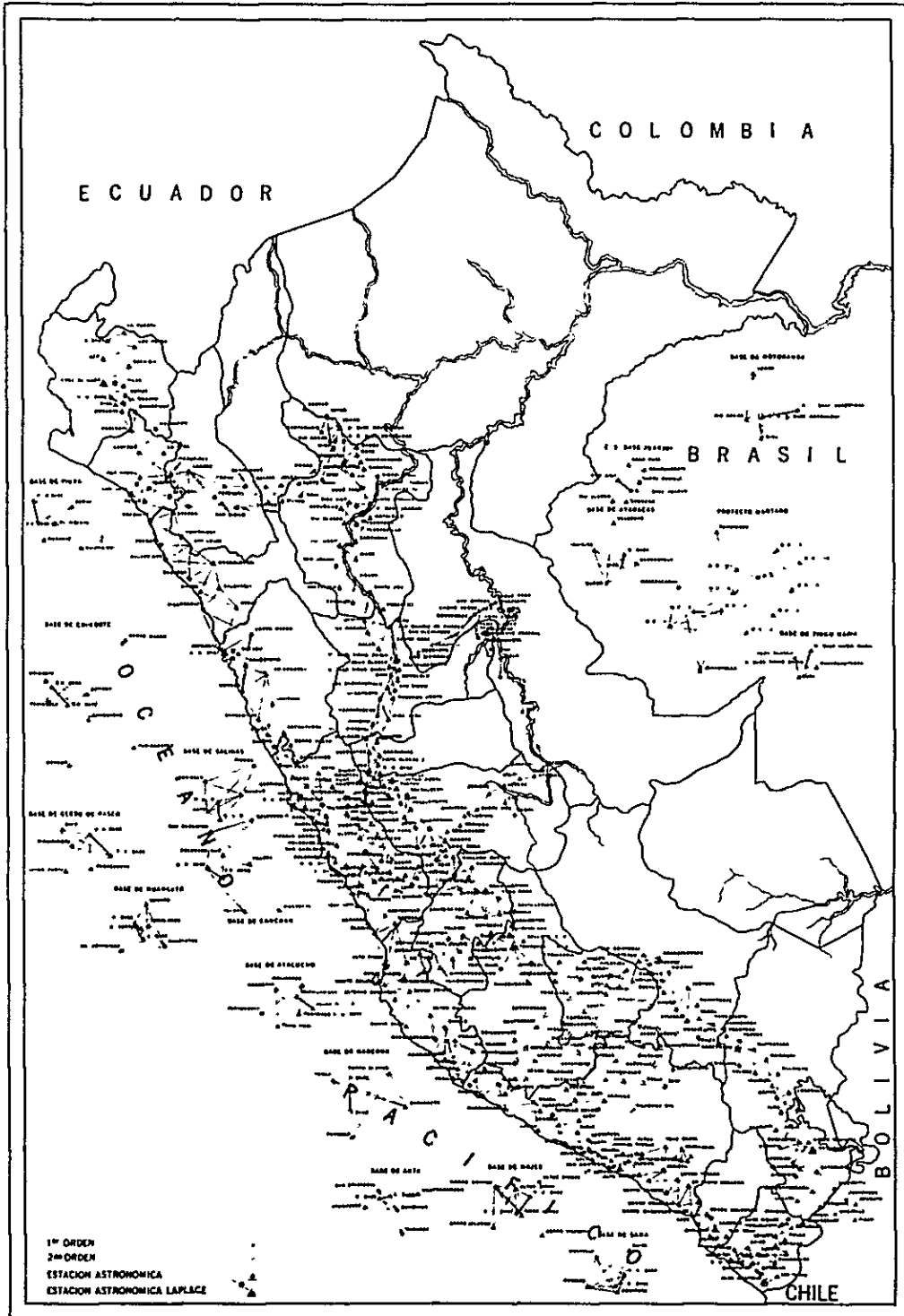


図 2-4 ドップラー観測点

ESTABLECIMIENTO DEL CONTROL BASICO POR EL SISTEMA DOPPLER

GRAFICO No. 3

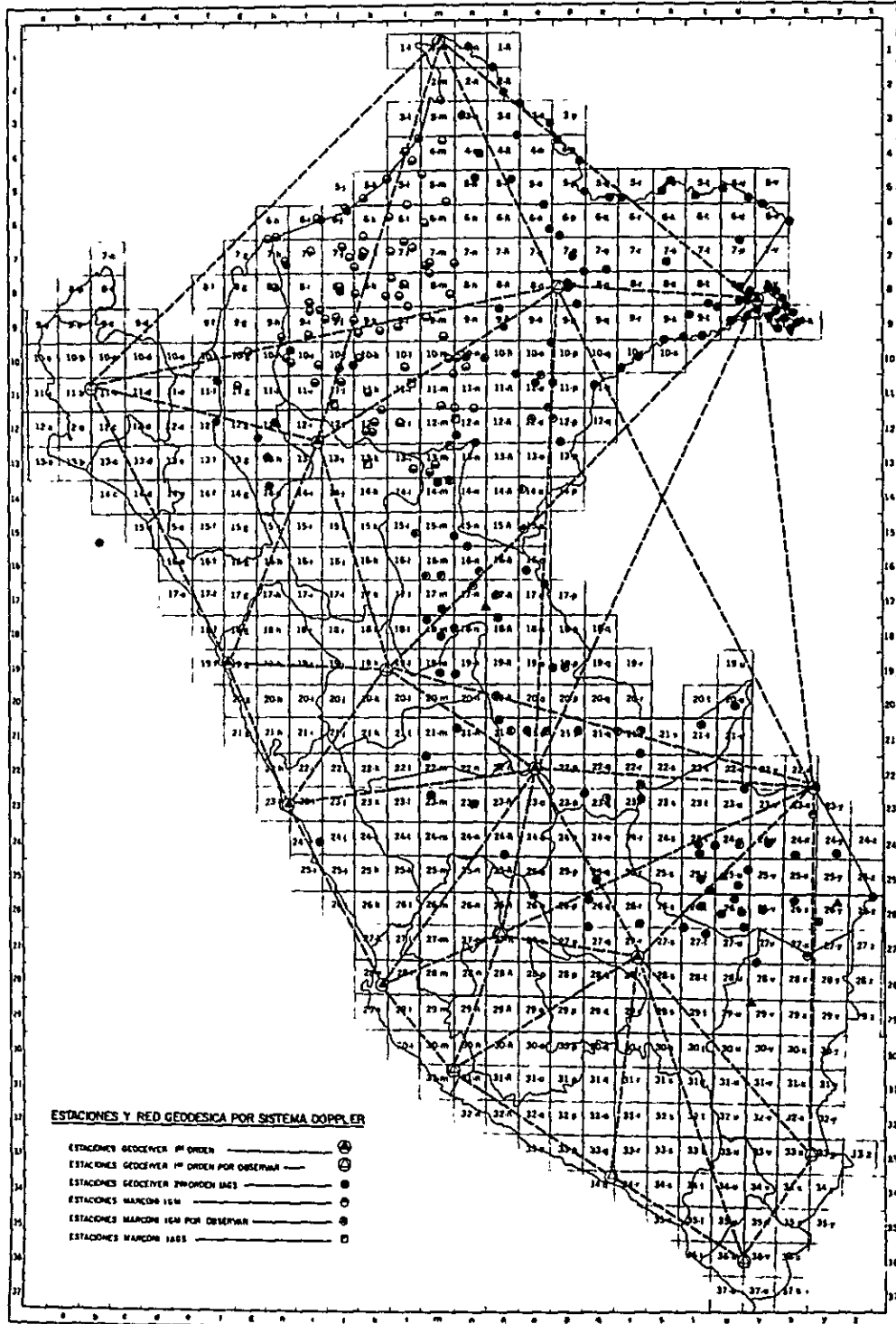


图 2-5 水準網图

NIVELACION DE PRECISION

GRAFICO No 4

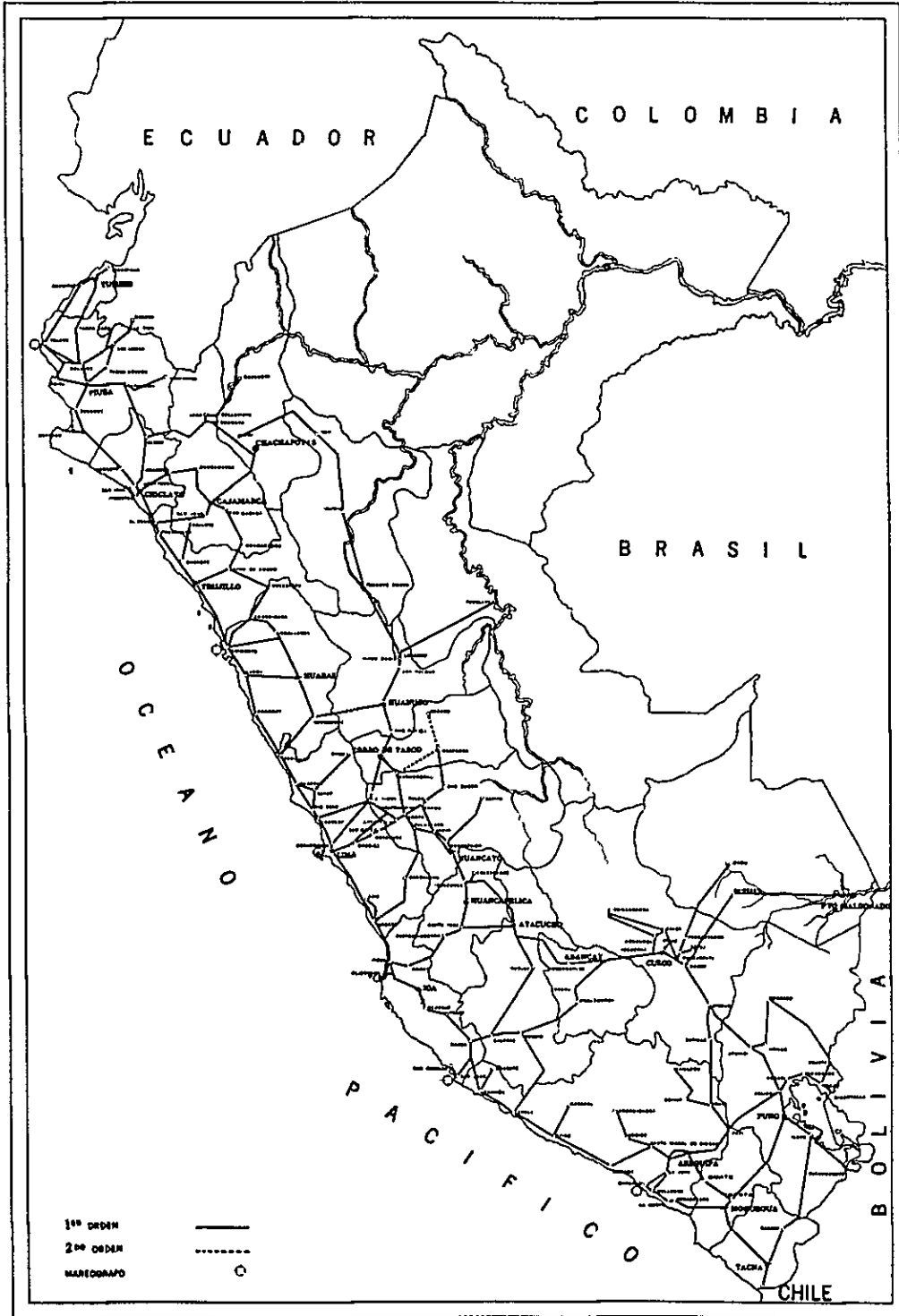


图 2 - 6 摄影实绩(1)

AEROFOTOGRAFIAS DE VUELO ALTO

GRAFICO No. 14

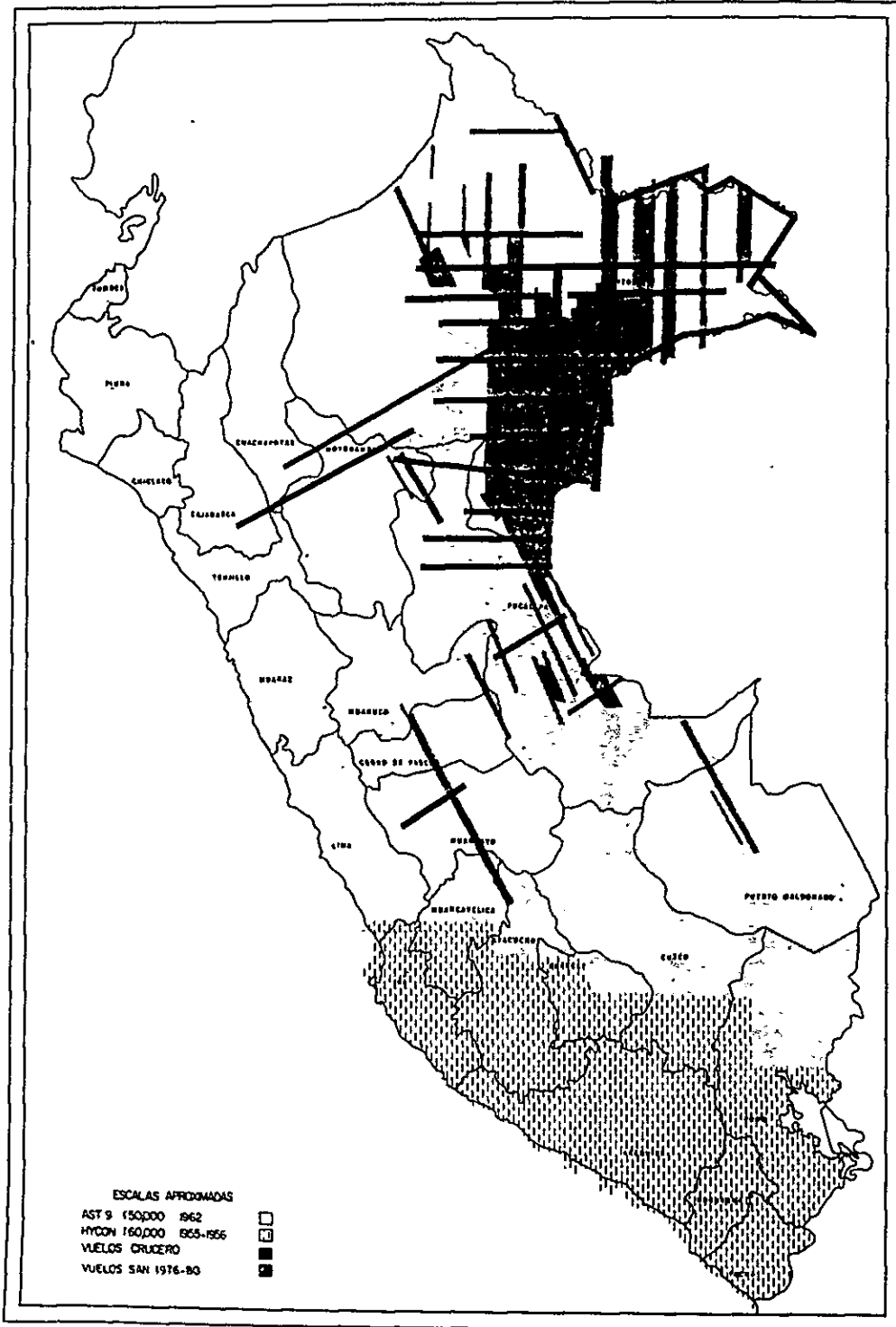


图 2 - 7 摄影实绩(2)

AEROFOTOGRAFIAS DE VUELO BAJO DE CIUDADES Y COSTA DEL PERU

GRAFICO No. 19



图 2 - 8 国土基本图 ( 1/100,000 )

CARTA NACIONAL 1:100,000

GRAFICO No. 9

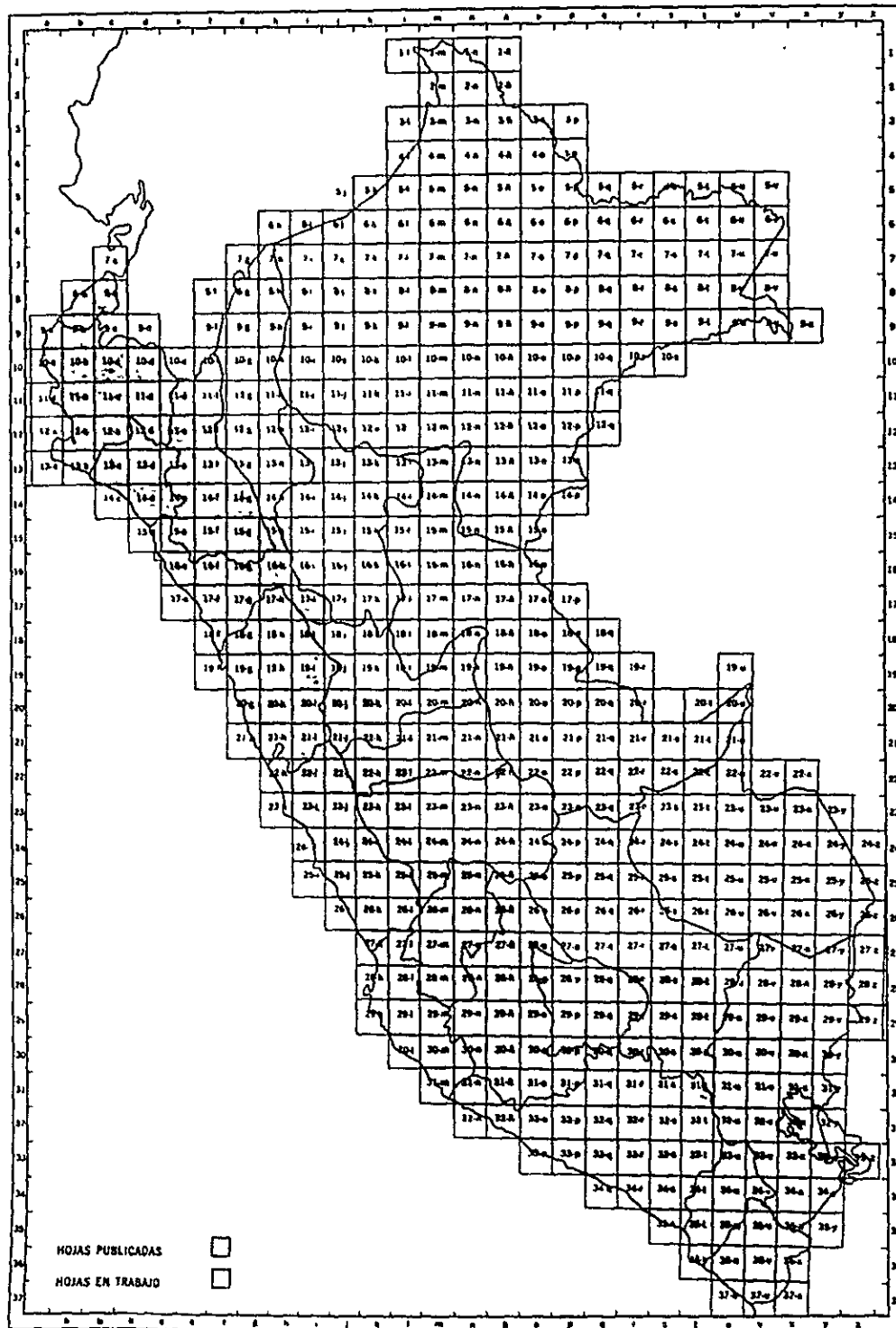


图 2-9 写真图 ( 1/50,000 )

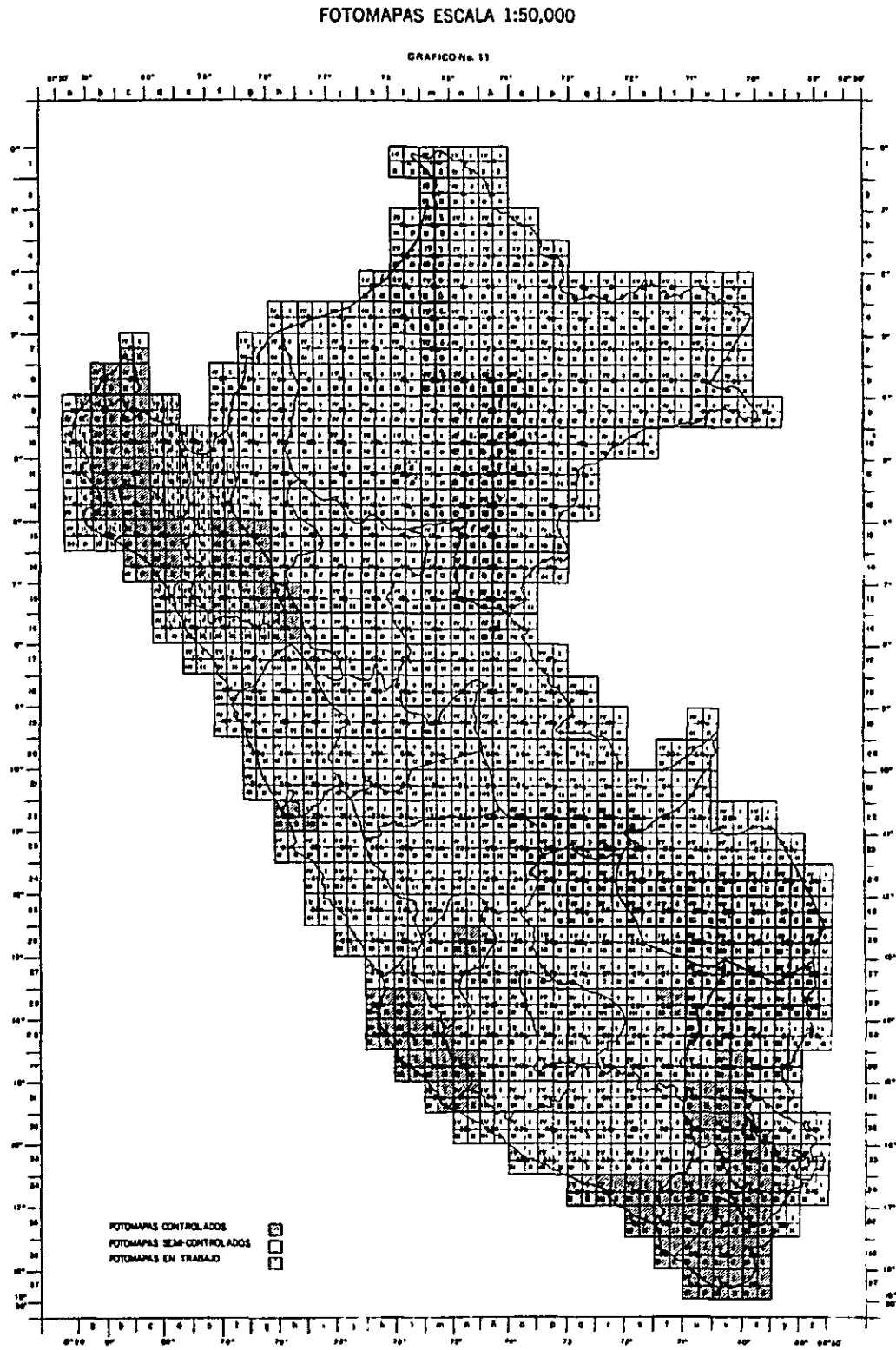
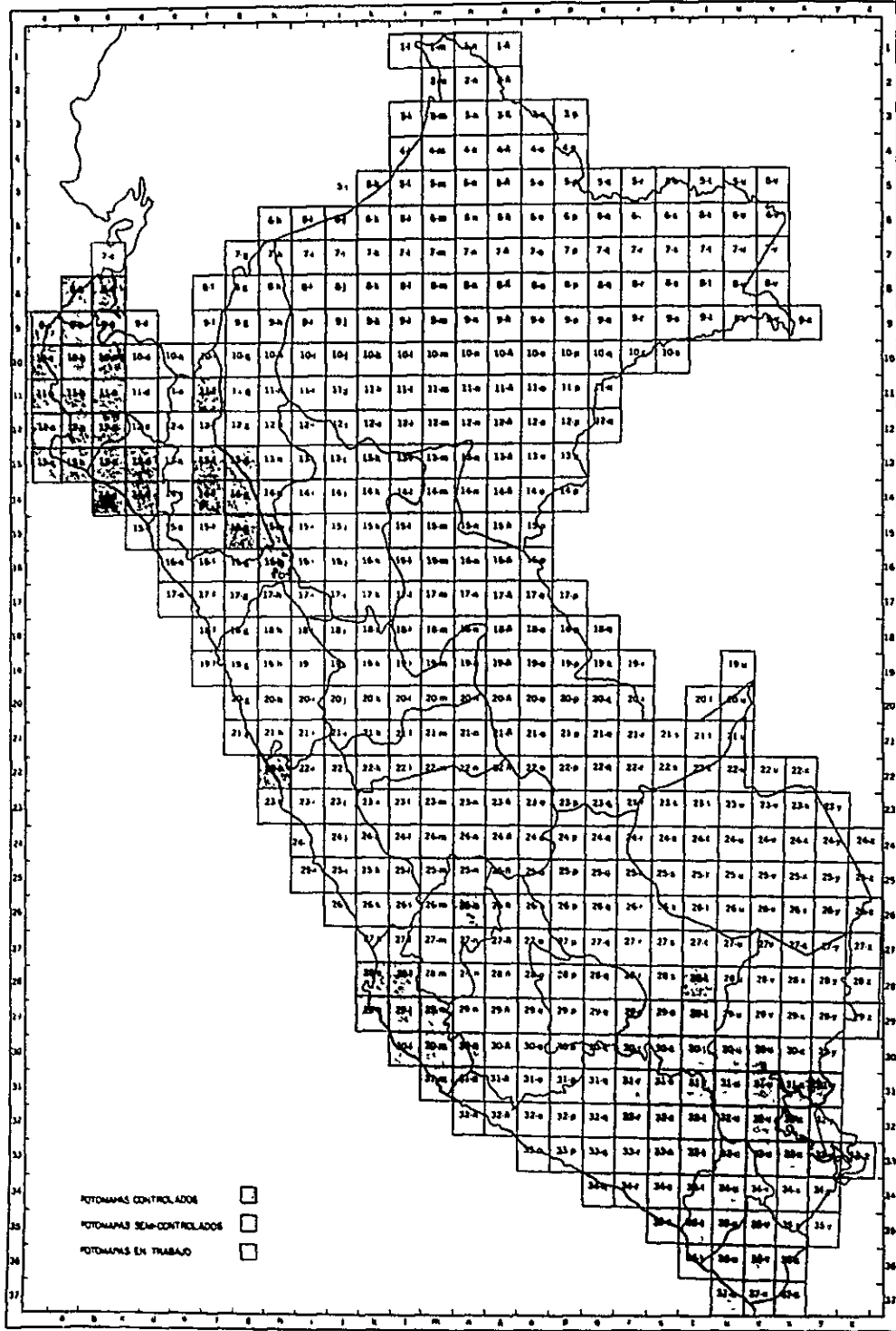


图 2-10 写真图 (1/100,000)

FOTOMAPAS ESCALA 1:100,000

GRAFICO No 12





3. IGNとの協議議事録

3-1 コンタクトミッション議事録

TOPOGRAPHIC MAPPING PROJECT BETWEEN THE GOVERNMENT OF PERU  
AND THE JAPAN INTERNATIONAL COOPERATION AGENCY

PROCEEDING OF THE MEETING BETWEEN THE INSTITUTO  
GEOGRAFICO NACIONAL AND THE JAPAN  
INTERNATIONAL COOPERATION AGENCY

In Lima, capital city of the Republic of Peru, the meeting was held, on 12th through 21st January nineteen eighty two, between the Japan International Cooperation Agency (to be referred to as JICA) and the Instituto Geográfico Nacional (to be referred to as IGN), to set up the guidelines for the cooperation which the Government of Japan will provide to the Government of Peru for the Topographic Mapping in the Province of Satipo, Department of Junín, requested by the Government of Peru through the Japan Embassy, on 12th February 1981.

7.K.  
Delegations were as follows:

For Japan, Mr. Toshitomo Kanakubo, Director, Planning Dpt., Geographical Survey Institute (GSI), Ministry of Construction; Mr. Tadashi Iijima, Overseas Cooperation Officer, International Affairs Div., Planning Bureau, Ministry of Construction; Mr. Kazutami Miyamoto, Head of the 3rd Geodetic Div., Geodetic Dpt. GSI; Mr. Sho Saito, Head of Planning Div., Topographic Dept, GSI; Mr. Hiroshi Kimura, Senior - Staff, the 1st. Development Survey Div., Social Development Cooperation Dpt., JICA; and Takehisa Hirabayashi, Resident Representative of JICA in Peru.

For Peru, Brigadier General Alberto Delgado Velasco, Director, Instituto Geográfico Nacional, as Chairman; Colonel Engineer José Tasaico del Solar, Deputy Director, IGN; Lt. Colonel (Retired) Pastor Zambrano Zumaita, Head of Planing

ning Div., IGN; Lt. Colonel Engineer Victor Montoya Astulle, Head of Calculus Dept.; Major Engineer Victor Roggero Alejos, Head of Photogrammetry Dept.; and Major Engineer Gerardo Perez del Aguila, Head of the Geodesy Dept.

Both delegations, after a sincere and frank interchange of points of view resolve the following proceeding, to set up the guidelines for the project of the topographic mapping in the area of the Province of Satipo to be accomplished by the cooperation of the Government of Japan. The mutual understanding taken in this meeting, will provide the base to formulate recommendations to their respective governments.

The mutual understandings are as follows:

1. The area of the Project lay in the Selva Central of Peru, between  $73^{\circ} 30'$  to  $75^{\circ} 30'$  W and  $10^{\circ} 30'$  to  $12^{\circ} 00'$  S. The area is approximately 12,500 km<sup>2</sup> in the Province of Satipo, Department of Junin, as shown on the attached map of the Department of Junin, which is a part of this proceeding.
2. The aerial survey will comprise an area of 10 quadrangles (10 sheets of Carta Nacional, serie 1:100,000), in black and white photography at scale 1:60,000, being understood, that the Contact Mission of JICA, has accepted that a contract for aerial photography will be carried out with the Servicio Aerofotográfico Nacional, to take place during the period May - August 1982. In case the Servicio Aerofotográfico Nacional couldn't carry out such contract, an authorization to fly by a foreign cartographic company will be arranged through the Peruvian Authorities.
3. Final products will be 64 sheets of Carta Nacional at scale 1:25,000, printed in 5 colors, as well as the delivery

of all negatives, the printing originals that were used as base for the printing of these sheets, and all the cartographic data of the project.

4. The contribution of both parties, was established by means of the following responsibilities:

a. By Japan: JICA will cover the entire cost of the work, such as the use of instruments, technical personnel, transportation and any necessary materials for the project, also the cost of per diem and transportation to and from Japan for Peruvian technicians accorded scholarships, for the transfer of cartographic technology.

b. By Peru :

(1) Request to the Peruvian authorities the authorization for the temporary internment into the country, by the Japanese Mission, of instruments, materials, personal effects, subsistances and other elements necessary for the execution of this project.

(2) Request the authorization to issue identification cards, in order to facilitate the execution of their activities and to guarantee their personal - security.

(3) Request the permission, so that the Japanese technicians, if necessary, shall enter private and restricted areas (such as National Parks) in which they should do clearing work and felling of trees.

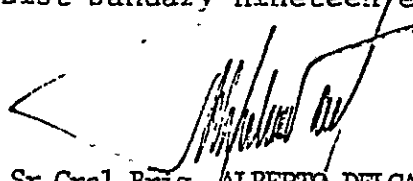
(4) Coordinate with the respective authorities for the security of personnel, materials, equipments, instruments and other elements of the project.



- (5) To arrange for hiring of labourers as needed.
- (6) To arrange for the availability of medical facilities when needed, in Lima as well as in the survey area.
- (7) To arrange for hiring of transportation means, as helicopters, airplanes, boats, as well as other transportation means as needed.
- (8) Coordinate with the Immigration and Customs authorities to permit the entry into the country of successive missions.
- (9) To arrange for renting of spaces (encampment) in the project area, thus, permitting storage facilities, garages, suitable living and office spaces for the project personnel.
- (10) To secure permission for the use of communication facilities, which the field parties should use among themselves.

As no other points for discussion were available, the meeting was adjourned, and the present proceeding was drafted, having read and found in good order, was signed by the heads of both delegations, on 21st January nineteen eighty two.

*Toshitomo Kanakubo*  
Mr. TOSHITOMO KANAKUBO  
Head of the Contact Mission  
for Topographic Mapping Project of JICA


  
Sr. Gral. Brig. ALBERTO DELGADO V.  
Director General del Instituto Geográfico Nacional.

TOPOGRAPHIC MAPPING PROJECT BETWEEN THE GOVERNMENT OF PERU  
AND THE JAPAN INTERNATIONAL COOPERATION AGENCY

PROCEEDING OF THE MEETING BETWEEN THE INSTITUTO  
GEOGRAFICO NACIONAL AND THE JAPAN  
INTERNATIONAL COOPERATION AGENCY

In Lima, capital city of the Republic of Peru, a meeting was held from 26 February through 8 March nineteen eighty two, in the offices of Instituto Geografico Nacional (to be referred to as "IGN") between the Preliminary Survey Mission sent by the Japan International Cooperation Agency (to be referred to as "JICA Mission") and the IGN, to set up the guidelines that will be utilized as a base to formulate the definite document setting forth "Scope of Work for the Topographic Mapping Project of the Satipo area, Department of Junin of the Republic of Peru", requested by the Government of Peru through the Japanese Embassy, on February 12, 1981.

 Delegations were as follows:

 For Japan, Dr. Minoru Tajima, Deputy Director-General, Geographical Survey Institute (GSI), Ministry of Construction; Mr. Hidenao Takahashi, Deputy Director of Chubu Regional Survey Dept., GSI; Mr. Keiichiro Madokoro, Deputy Director of the 3rd. Geodetic Div., Geodetic Dept., GSI; Mr. Kozo Okumura, Deputy Director of Planning Div., Topographic Dept., GSI; Mr. Seizo Kakishita, Technical Councillor, Association of Precise Survey and applied technology (APA); Mr. Iehiro Noda, Technical Councillor, APA; and Mr. Hiroshi Kimura, Senior Staff, the 1st. Development Survey Div., Social Development Cooperation Dept., JICA.

For Perú, Brigadier General Alberto Delgado Velasco , Director, Instituto Geografico Nacional, as chairman; Colonel Engineer Jose Tasaico del Solar, Deputy Director, IGN ; Colonel Engineer Juan Bazan Vivar, Inspector, IGN; Lt. Colonel (r) Pastor Zambrano Zumaita, Head of Planning Div., IGN; Lt. Colonel Victor Montoya Astulle, Head of Phonogrammetry Dept. IGN; Major Victor Roggero Alejos, Head of Calculus Dept., IGN; and Major Gerardo Perez del Aguila, Head of the Geodesy Dept. IGN.

1. The JICA Mission and the IGN conducted the following activities:

- February 26'82 (Friday): Coordination at the IGN
- March 01'82 (Monday) : Trip of the JICA Mission from Lima to Satipo by air.
- March 02'82 (Tuesday) and 03'82 (Wednesday) : Field survey including air reconnaissance of the Satipo area.
- March 04'82 (Thursday) : Trip of the JICA Mission from Satipo to Lima by air.
- March 05'82 (Friday) : Visit to the Servicio Aerofotografico Nacional (SAN) installations and coordination between the JICA Mission and the IGN.
- March 08'82 (Monday) : Reporting the Japanese Embassy and signing the minutes of meeting at the IGN.

*CMJ*



2. During the meeting, the JICA Mission reported the following members would return to Japan on March 09, 1982.

- Dr. Minoru TAJIMA
- Mr. Hidenao TAKAHASHI
- Mr. Keiichiro MADOKORO; and,
- Mr. Hiroshi KIMURA

And that the following members would remain in Peru to carry out the detailed reconnaissance and studies.

-Mr. Kozo OKUMURA

-Mr. Seizo KAKISHITA; and.

-Mr. Iehiro NODA

3. During the air reconnaissance of the Satipo area, information were obtained related to available methods of establishing ground control points, topographical features and meteorological conditions.
4. The visit to SAN was made for the purpose of knowing its installations, aeroplanes, work experiences and technical capabilities of its staffs. The JICA Mission was much impressed by this visit.
5. Related to the Draft Scope of Work for the Topographic Mapping Project of the Satipo area, Department of Junin, the Republic of Peru, proposed by the JICA Mission (hereinafter to be referred to as "the Scope of Work"), the JICA Mission and the IGN discussed and understood as follows:
  - a. As requested by the JICA Mission, the following paragraph will be included in the Scope of Work:  
"The entire work of the Project will be conducted under the Basic Agreement on Technical Cooperation between the Government of Japan and the Government of the Republic of Peru signed on August 20, 1979 in Lima, Peru".
  - b. The items a), b) and c) of the paragraph "B. Peruvian Contribution" of the Scope of Work will be coordinated by the IGN with its Government authorities concerned.

*MJ*  


c. Administrative boundaries are not shown on the 1:25,000 National Base Map of Peru.

d. Annex 1 (Draft scope of work), must be considered as a part of the present Proceeding.

As no other points for discussion were available, the meeting was adjourned, and the present proceeding was drafted, having read and found in good order, was signed by the heads of both delegations, on 8th March nineteen eighty two.

*Minoru Tajima*

Dr. MINORU TAJIMA  
Leader of the Preliminary  
Survey Mission, the Japan  
International Cooperation  
Agency

Sr. Gral Brig ALBERTO DELGADO V  
Director del Instituto Geográfico  
Nacional



TOPOGRAPHIC MAPPING PROJECT BETWEEN THE GOVERNMENT OF PERU  
AND THE JAPAN INTERNATIONAL COOPERATION AGENCY

PROCEEDING OF THE MEETING BETWEEN THE  
INSTITUTO GEOGRAFICO NACIONAL ON THE  
JAPAN INTERNATIONAL COOPERATION AGENCY

In Lima, capital city of the Republic of Peru, a meeting was held, from April 2th through April 8th, 1982 in the offices of the Instituto Geografico Nacional (to be referred to as "the IGN") Between the JICA Preliminary Survey Mission (to be referred to as "the JICA Mission") and the IGN, to finalize a document setting forth the Scope of Work for the Topographic Mapping Project of the Satipo area, Department of Junin of the Republic of Peru (to be referred to as "the Scope of Work"), which was signed on April 8th, 1982 by the both parties.

Delegations were as follows :

For Japan, Dr.Minoru Tajima, Deputy Director-General, Geographical Survey Institute (GSI), Ministry of Construction; Mr. Kozo Okumura, Deputy Director of Planning Div., Topographic Dpt., GSI; Mr. Seizo Kakishita, Technical Councillor, Association of Precise Survey and applied technology (APA); Mr. Iehiro Noda, Technical Councillor, APA; Mr. Tadashi Iijima, Overseas Cooperation Officer, International Affairs Div., Planning Bureau, Ministry of Construction; and Mr. Hiroshi Kimura, Senior Staff, the 1st. Development Survey Div., Social Development Cooperation Dept., JICA.

For Perú, Brigadier General Alberto Delgado Velasco , Director, Instituto Geografico Nacional, as Chairman; Colonel Engineer Jose Tasaico del Solar, Deputy Director IGN ; Lt. Colonel (r) Pastor Zambrano Zumaita, Head of Planning Div., IGN; Lt, Colonel Engineer Victor Montoya Astulle, Head of Photogrammetry Dept.; Mayor Engineer Victor Roggero Alejos, Head Calculus Dept. and Mayor Engineer Gerardo Perez del Aguila, Head of the Geodesy Dept.

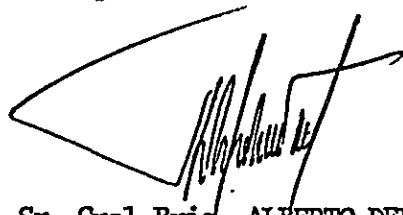
1. The JICA Mission and the IGN conducted the following activities:
  - a. Field survey group (Okumura, Kakishita and Noda) remained in Peru since March 10th, 1982, conducted field survey and data collection in the areas for Satipo, San Ramon and Huancayo and returned to Lima on March 26th, 1982.
  - b. Another group (Iijima, Okumura and Kakishita) carried out final aerial reconnaissance over the Project area from April 7th through April 9th, 1982.
  - c. The JICA Mission visited ELECTROPERU on April 6th and SAN on April 7th, 1982 for collection of data concerning aerial photography.
2. During the meeting, the JICA Mission reported as follows:
  - a. For collection of information related to aerial photography from a foreign cartographic company, 2 members (Okumura and Noda) will leave on April 11th, 1982.
  - b. Other members (Tajima, Iijima, Kakishita and Kimura ) will leave Lima for Japan on April 13th, 1982.

3. Recognizing a vital importance of aerial photography in the course of implementation of the mapping project, the IGN promised to take every possible measure for success of the aerial photography to be carried out during the period of May and August 1982.
4. Both parties agreed that the aerial photography should be made at appropriate scale (1:60,000 a 1:40,000) taking into account the characteristic conditions of topography and meteorology in the Project area.
5. At the meeting for signing the Scope of Work on April 8<sup>th</sup>, 1982, the JICA Mission expressed deep appreciation to the IGN for its close Cooperation given during the preliminary survey.

As no other points for discussion were available, the meeting was adjourned, and the present proceeding was drafted, having read and found in good order, was signed by the heads of both delegations, on April 12<sup>th</sup> nineteen eighty two.

*Minoru Tajima*

Dr. MINORU TAJIMA  
Leader of the Preliminary  
Survey Mission, the Japan  
International Cooperation  
Agency.




Sr. Gral Brig. ALBERTO DELGADO V.  
Director del Instituto Geografico  
Nacional.

PROCEEDING OF THE MEETING BETWEEN THE JICA MISSION, IGN AND SAN, FOR THE AERIAL PHOTOGRAPHY OF THE TOPOGRAPHIC MAPPING PROJECT IN SATIPO AREA.

The topographic mapping Project of the Satipo area, Department of Junin, Peru, which was requested in February 1981 by the Government of the Republic of Peru as one of the technical cooperation programs of Japan, is prerequisite for various development projects in the area, and expected to provide considerable benefits to Peru and its people.

For realization of the project, it is absolutely necessary to make close and overall cooperation between Japan and Peru to overcome many difficulties that may encounter in the course of implementation of the Project.

It was established that the last phrase of paragraph VI. A.b. of the Scope of Work will apply in the cases that SAN<sub>y</sub> can not comply with the contracts for photographic flight for any other reasons not included in the bad weather conditions for such flights.



Having a common recognition that the aerial photography should, in particular, be a key factor of the Project, the JICA Mission, IGN and SAN confirm to cooperate closely and make their utmost efforts as follows:

1. SAN shall give the first priority on the aerial photography of the Satipo area among its contracts of this year.
2. SAN shall distribute weather watchmen at appropriate locations in order to establish perfect weather observation system in the Satipo area.

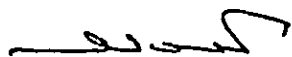
3. In order to supplement the above system, Japanese surveyors shall be located in the area.
4. At a favourable contact from peruvians weather observers, SAN will execute the flight.

If the japanese weather observers request for flying even the SAN's observers reports for bad weather conditions, this flight will be executed by SAN.

In the case the aerial photography not succeeded due to the bad weather, this flight will be payed additionally at the contract. Japanese experts shall make an accompanying flight whenever necessary.

5. IGN shall proceed to make effective coordination between the Japanese team and SAN for a success of the aerial photography.
6. Japan shall provide the Peruvian enginners of IGN and SAN who have contributed to the work of this year with a chance to join in the technical study in Japan.

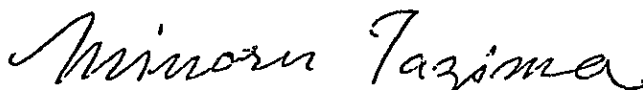
As no other points for discussion were available, the meeting adjourned, and the present proceeding was drafted, having read and found in good order, was signed by the heads of the JICA Mission, IGN and SAN, on April 12th 1982.



Mayor General FAP  
PABLO VARELA NOVELA  
General Director of  
Aerial Photography



Brigadier General EP  
ALBERTO DELGADO VELASCO  
Director of the National  
Geographic Institute



Dr. MINORU TAJIMA  
Leader of the Preliminary  
Survey Mission, the Japan  
International Cooperation  
Agency (JICA).

4. Scope of Work (署名済)

SCOPE OF WORK FOR  
TOPOGRAPHIC MAPPING PROJECT OF  
SATIO AREA, DEPARTMENT OF JUNIN  
THE REPUBLIC OF PERU

C O N T E N T S

I.	Introduction
II.	Outline of the Project
III.	Working Plan
IV.	Time Schedule
V.	Reports and Final Products
VI.	Contribution to the Mapping Project
VII.	Settlement of Disputes
VIII.	Modification of the Scope of Work
XI.	Signature

April 1962

JAPAN INTERNATIONAL COOPERATION AGENCY  
INSTITUTO GEOGRAFICO NACIONAL

## I. Introduction

In response to the request by the Government of the Republic of Peru, the Government of Japan expressed its intention to cooperate in preparing topographic maps of Satipo area, department of Junin of the Republic of Peru, which are prerequisite for the planning of various development projects in this area.

The Japan International Cooperation Agency (hereinafter referred to as "the JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, dispatched a contact mission in January and a preliminary survey mission in February 1982, to Peru for the preliminary study of the topographic mapping project of Satipo area, department of Junin of the Republic of Peru (hereinafter referred to as "THE PROJECT").

The Preliminary survey mission made from February to April discussions with the staffs of the National Geographical Institute (Instituto Geografico Nacional, hereinafter referred to as "the IGN"), Ministry of Military of the Republic of Peru and carried out field reconnaissance including aerial inspection, and collection of data and information necessary for the implementation of the Project.

The present document sets forth the scope of work for the Project which is to be implemented in close collaboration between the JICA and the IGN, the counterpart organization for the Government of the Republic of Peru.

The entire work of the Project will be conducted under the Basic Agreement on Technical Cooperation between the Government of Japan and the Government of the Republic of Peru signed on August 20, 1979 in Lima, Peru.

## II. Outline of the Project :

The Project will be composed of the following works :  
Aerial photography (1/60,000) covering an area of approximately 31,250 Km<sup>2</sup> and Topographic mapping (1/25,000 contoured 25 mts. intervals) covering an area of approximately 12,500 Km<sup>2</sup>.

The location of the Project area is shown in Appendix I.

### III. Working Plan :

The entire work shall be carried out under a four year program starting from the fiscal year of 1982 and shall consist of the following phases :

- Phase 1. Aerial Photography
- Phase 2. Ground Control Survey (Satellite Geodesy, Triangulation and Traversing), Leveling and Classification.
- Phase 3. Aerial Triangulation, Stereo-Plotting and Field Completion.
- Phase 4. Color Separation Drafting and Printing.

#### A: Phase 1. Aerial Photography

##### 1-1 Aerial Photography

1-1-1 Aerial photographs shall be taken at the scale of approximately 1/60,000 including the mapping area with a wide angle precision camera.

#### B: Phase 2. Ground Control Survey (Satellite Geodesy,

- Triangulation and Traversing), Leveling and Classification.
- 2-1 Ground Control Survey (Satellite Geodesy, Triangulation and Traversing).
- 2-1-1 Although existing ground control stations will be used for photographic control and mapping, establishment of new ground control stations will be carried out when necessary.
- 2-1-2 Satellite Geodesy
- Geodetic controls by means of the artificial satellite Doppler System shall be carried out in order to establish basic geodetic control stations.
- 2-1-3 Triangulation and Traversing
- Supplementary map control stations necessary for aerial triangulation and mapping work shall be established by triangulation or traversing.
- 2-2 Leveling
- 2-2-1 Minor order leveling (including barometric leveling if necessary) shall be carried out to obtain vertical controls necessary for aerial triangulation and mapping work starting from the existing 1st or 2nd order bench marks or triangulation stations.
- 2-3 Classification
- 2-3-1 The topographic information related to land classification, vegetation, etc. on the aerial photographs shall be verified in the field.
- Triangulation and Traversing), Leveling and Classification.
- 2-1 Ground Control Survey (Satellite Geodesy, Triangulation and Traversing).
- 2-1-1 Although existing ground control stations will be used for photographic control and mapping, establishment of new ground control stations will be carried out when necessary.
- 2-1-2 Satellite Geodesy
- Geodetic controls by means of the artificial satellite Doppler System shall be carried out in order to establish basic geodetic control stations.
- 2-1-3 Triangulation and Traversing
- Supplementary map control stations necessary for aerial triangulation and mapping work shall be established by triangulation or traversing.
- 2-2 Leveling
- 2-2-1 Minor order leveling (including barometric leveling if necessary) shall be carried out to obtain vertical controls necessary for aerial triangulation and mapping work starting from the existing 1st or 2nd order bench marks or triangulation stations.
- 2-3 Classification
- 2-3-1 The topographic information related to land classification, vegetation, etc. on the aerial photographs shall be verified in the field.
- Style sheet and symbols shall be those adopted by the IGN.
- Geographical names shall be surveyed by the IGN with the collaboration of the JICA survey team and the IGN shall take full responsibility to confirm them.
- C. Phase 3.
- 3-1 Aerial Triangulation
- 3-1-1 Aerial triangulation shall be carried out by an analytical method using stereocomparators and electronic computer. Adjustment shall be carried out by a block adjustment method.
- 3-2 Stereo-Plotting
- 3-2-1 The plotting shall be carried out using stereo-plotting instruments at the scale of 1/25,000 with 25 letter contour intervals.
- The sheet line shall be 7.5 in longitude and 7.5 in latitude. The map evaluation criterion shall be by the IGN standard specifications for the scale 1/25,000.
- 3-3 Field Completion
- 3-3-1 Topographic features, vegetation, etc., which cannot be plotted shall be supplemented on the compiled sheet in the field.
- Geographical names shall be verified and supplemented, if necessary, on the paper copy of the compiled sheet by the IGN.
- D. Phase 4.
- 4-1 Color Separation Drafting
- Color Separation Drafting and Printing



4-1-1 base on the compiled sheet, scribbling shall be carried out on a stable polyester base for each color separation plate.  
Style sheet and symbols shall be those adopted by the IGN.

4-2 Color Proof Prints

4-2-1 Color proof prints shall be inspected and approved by the IGN prior to the final printing.

4-3 Printing

4-3-1 Plate making shall be carried out using 1/25,000 scribed negatives, and printing shall be carried out by the offset method in five colors adopted by the IGN.

IV. Time Schedule :

The whole work will be conducted in accordance with the time schedule as shown in Appendix II. In case the aerial photography not completed in 1982, the both parties shall settle the further programmes of the project.

The detailed work plan and the schedule of each phase will be settled by both parties before commencement of the work for each phase.

V. Reports and Final Products :

The reports will be presented to the Government of the Republic of Peru by the JICA at the end of each phase.

The materials mentioned in Appendix III will be presented to the Government of the Republic of Peru by the JICA after having completed the whole work.

VI. Contribution to the Mapping Project :

A. Japanese Contribution

The JICA will contribute to the Project by providing the IGN at its cost and expenses with the followings:

- a) Dispatch and return of the Japanese Technical Mission, and its equipment listed on the appendix IV, including expenses for lodging, maintenance, local transportation and other related expenses while staying in Peru.
  - b) The aerial photography which will be carried out with the Servicio Aerofotografico Nacional, to take place during the period May - August 1982.  
In case the Servicio Aerofotografico Nacional couldn't carry out such contract, an authorization to fly by a foreign cartographic company will be arranged through the Peruvian Authorities.
  - c) Submission of a detailed list of all materials, vehicles and equipment to be used on the Project to the Government of the Republic of Peru for its consideration and approval before shipment ( to be referred to the Appendix IV).
  - d) Training of Peruvian technicians in Japan at each phase of Appendix II for the transfer of cartographic technology. Expenses for transportation to and from Japan, lodging, maintenance, local transportation and sundry expenses will be borne by the JICA according to its regulations on traveling allowance.
  - e) On-the-job training of the counterparts in Peru during the execution of the Project.
- B. Peruvian Contribution
- The IGN will contribute to the Project by providing the Japanese Technical Mission, including the aerial photography enterprise and its employees contracted with the JICA, with the following conveniences, fa-

ilities and services for the smooth and effective implementation of work :

- a) To secure exemption from all direct taxes on the income and any other emoluments received from the JICA for the execution of the Project.
- b) To secure exemption from custom duties, taxes and government charges of any kind other than normal custom clearance expenses, with respect to the equipment, vehicles, machineries, materials. The same exemption will be applied to personal effects and medical supplies.
- c) To arrange for no restrictions on funds introduced into Peru from external sources by the members of the survey team for the purpose of the Project. Bank account opened in Peru by the survey team members shall remain at their exclusive disposal, and balance on such accounts shall be freely transferable into Japan in any other convertible currency.
- d) To supply available data and information related to the Project.
- e) To arrange for smooth transfer of data and materials including the rolls of negatives of aerial photography from Peru to Japan and vice versa for the execution of the Project.
- f) To arrange for hiring of vehicles, boats, helicopters, air planes and other transportation facilities when necessary.
- g) To arrange for hiring of convenient office and appurtenant facilities, garage and space for storage in the Project area.
- h) To secure permission of flight for aerial photogra-

phy and use of airports related to the Project area.

- i) To secure permission for the use of communication facilities including transceiver with allocated frequency and electronic distance measuring instruments.
- j) To secure permission of entry into private properties and restricted areas and of felling of trees in the Project area when necessary.
- k) To secure necessary arrangements for the safety of the Japanese Technical Mission.
- l) To arrange for the hiring of laborers as needed.
- m) To arrange for medical care when needed.
- n) To provide, at the cost and expenses of the IGM, assigned Peruvian counterparts consisting of a project coordinator and technicians.
- o) To provide identification card to the members of the Japanese Technical Mission for the execution of their activities.

#### VII. Settlement of Disputes :

Both parties shall strive to settle any disputes arising in connection with the interpretation or application of this Scope of Work through mutual negotiation.

#### VIII. Modification of the Scope of Work :

During the execution of the Project, changes considered useful by both parties for facilitating the implementation of the Project can be made in the text of this Scope of Work by mutual agreement.

#### IX. Signature

The undersigned confirm that the foregoing is understanding of the JICA and the IGM. The two originals, texts of

the present Scope of Work one each in English and Spanish languages, are equally authentic.

Lima City, April 8th,

1962

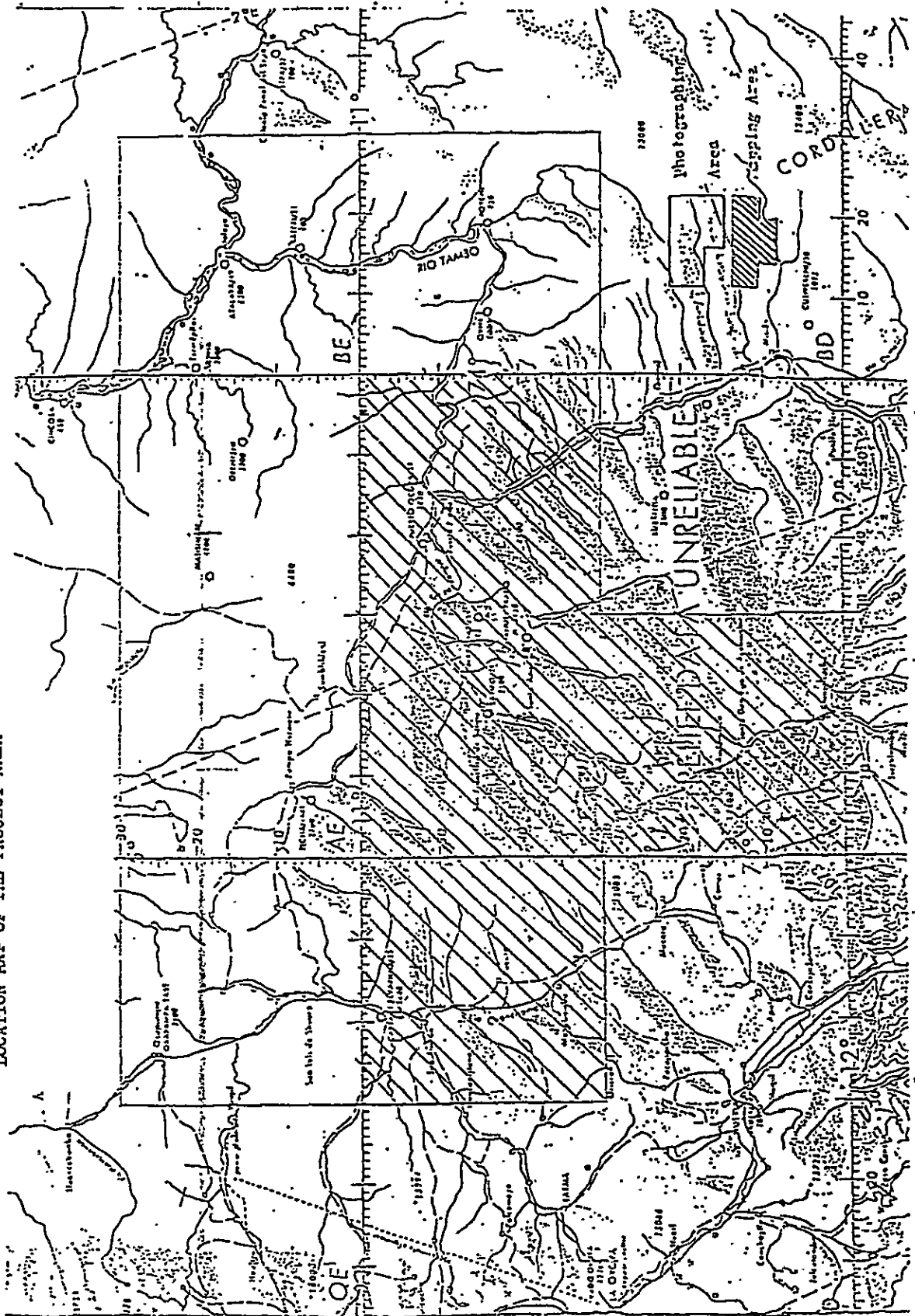
*Misuru Tajima*

Dr. MISURU TAJIMA  
Leader of the Preliminary  
Survey Mission, the Japan  
International Cooperation  
Agency



Sr. Gral Brig ALBERTO DELGADO V.  
Director del Instituto Geo-  
gráfico Nacional

APPENDIX I  
LOCATION MAP OF THE PROJECT AREA



APPENDIX II

TIME SCHEDULE

ITEM	Phase I (Apr. 1982-Mar 1983)	Phase 2 (Apr. 1983-Mar 1984)	Phase 3 (Apr. 1984-Mar 1985)	Phase 4 (Apr. 1985-Mar 1986)
AERIAL PHOTOGRAPHY	_____			
GROUND CONTROL SURVEY		_____		
LEVELING		_____		
CLASSIFICATION		_____		
AERIAL TRIANGULATION			_____	
STEREO PLOTTING & EDITING			_____	
FIELD COMPLETION			_____	
DRAFTING AND PRINTING				_____

Time schedule mentioned above is tentative and subject to change

APPENDIX III.

FINAL PRODUCTS

- I. Aerial Photography
  - 1. Original negatives
  - 2. Contact paper prints (one each)
  - 3. Photo index sheets
- II. Geodetic Control Survey
  - 1. Horizontal control results
  - 2. Vertical control results
  - 3. Computation sheets
  - 4. Field notes
  - 5. Description of points
- III. Topographic mapping
  - 1. Priced photos and identified photos
  - 2. Original manuscripts
  - 3. Diapositives
  - 4. Aerial triangulation Data
  - 5. Color separation scribed sheets
  - 6. 1/25,000 topographic maps ( 64 sheets x  
1,000 copies )

APPENDIX IV.

LIST OF EQUIPMENT TO BE USED FOR  
FIELD SURVEY BY THE JAPANESE TECHNICAL MISSION

- 1. Theodolites
- 2. Electronic distance measuring equipment
- 3. Short wave transmitter receivers
- 4. Transceivers
- 5. Heliotropes
- 6. Signal lamps
- 7. Doppler observation system
- 8. Leveling instruments
- 9. Electronic calculators
- 10. Vehicles including trucks
- 11. Camping materials
- 12. Materials and components of observation towers
- 13. Generators
- 14. Small instruments, office equipment and consumables
- 15. Boats with engine

Note : Above list is tentative and subject to alteration

## 5. 入手関連資料リスト

1. 接合図  $\frac{1}{25,000}$  (陽画) 18枚  
 $\frac{1}{100,000}$  (地形図) 6枚
2. 隣接の地形図  $\frac{1}{450,000}$  8枚
3. ベル-国 I G N図式  
(Manual Tecnico de Conuenclones Topograficas)
4. I G Nの仕様書  
(Classification Standards of Accuracy, and General Specifications of Geodetic Control Surveys)
5. I G N Style Sheet サンプル
6. ベル-国経済統計表 2部  
(Informe Estadistico 1980、1981)
7. 電波法  
(Reglamento de la Ley General de Telecomunicaciones)
8. 地域内の三角点、水準点の成果表及び点の記
9. S A N関係の資料 5部
10. M A R K H U R D社資料 1部

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