# 付　属　資　料

協議議事録（ミニッツ）

協議議事録（ミニッツ）

# MINUTES OF DISCUSSIONS BETWEEN THE JAPANESE PRELIMINARY STUDY TEAM AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF CHILE ON THE JAPANESE TECHNICAL COOPERATION FOR THE PROJECT ON REMOTE SENSING FOR MINERAL EXPLORATION IN THE REPUBLIC OF CHILE

The Japanese Preliminary Study Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Toshinori Isogai, Deputy Director, Second Technical Cooperation Division, Mining and Industrial Development Cooperation Department, JICA, visited the Republic of Chile from August 24 to September 2, 1999 for the purpose of clarifying the outline, background, concept and scope of the project proposal as well as studying the feasibility of the Japanese Technical Cooperation for the Project on Remote Sensing for Mineral Exploration in the Republic of Chile (hereinafter referred to as "the Project").

During its stay in the Republic of Chile, the Team exchanged views and had a series of discussions on the Project with the authorities concerned of the Government of the Republic of Chile (hereinafter referred to as "the Chilean side"), and also made a survey to the proposed Project site and relevant institutes.

As a result of the discussions, both sides reached understandings concerning the matters referred to in the documents attached herewith.

Santiago, September 1, 1999

Toshinori Isogai
Leader
Preliminary Study Team
Japan International Cooperation Agency
Japan

Sergio Jimenez Moraga
Minister
Ministry of Mining
The Republic of Chile

Ivan Valenzuela Rabi
Executive Vice President of Exploration and Mining Associations
National Copper Corporation of Chile (CODELCO)
The Republic of Chile

witnessed by : Jacqueline Weinstein Levy
~~Executive~~ Director
International Cooperation Agency (AGCI)
The Republic of Chile

Victor Perez Vera
Dean
Faculty of Physical Science and Mathematics
University of Chile
The Republic of Chile

THE ATTACHED DOCUMENT

1. Name of the Project

The Project on Remote Sensing for Mineral Exploration in the Republic of Chile

2. Implementing Agency of the Project

The Japanese side proposed that National Copper Corporation of Chile (hereinafter referred to as "CODELCO") should bear overall responsibility for the implementation of the Project under supervision of Ministry of Mining.

The organization chart of CODELCO is shown in ANNEX 1.

3. Administration of the Project

Vice president of Exploration and Mining Associations of CODELCO, as the Project Director, will bear overall responsibility for the administration and management of the Project.

Exploration Manager of CODELCO and Director of the Department of Geology of University of Chile, as the Project Manager, will be responsible for the managerial and technical matters of the Project.

The Chilean side explained to the Team that the Project will be implemented as a part of the Center for Digital Processing of Images and Characterization of Geologic Materials (hereinafter referred to as "the Center"), which will be established in December 1999, and administered by a Foundation whose board will consist of members from CODELCO and University of Chile.

The provisional organization chart of the Project is shown in ANNEX 2.

4. Duration of the Project

The Chilean side requested that the duration of the technical cooperation for the Project by the Government of Japan should be five (5) years from the date agreed by both sides in the Record of Discussions (hereinafter referred to as "R/D") to be concluded between JICA and the Chilean side. The Japanese side answered that further consideration is needed.

5. Site of the Project

The Project will be implemented in the Center located in the Department of Geology, University of Chile.

The address is as follows:

Plaza Ercilla 803

Casilla 13518 Correo 21

Santiago

The location map of the building is shown in Annex 3.

6. Objective of the Project

(1) Overall Goal

Chilean mining industries develop sufficient ability to explore mineral deposits with latest technology.

(2) Project Purpose

The CODELCO Geologists are systematically fostered in exploration technology using remote sensing.

7. Outputs

0. The organization of the Project is institutionalized and operated efficiently with sufficient fund.
1. Machinery and equipment necessary for the Project are installed and maintained properly.
2. Exploration technology using remote sensing is acquired by the instructors.
3. The training program for geologists of CODELCO on exploration technology using remote sensing is implemented.

8. Contents of Technology Transfer

Both sides agreed that the appropriate technology transfer to Chilean counterparts will be made for the following fields:

(1) Digital Image Processing
(2) GIS technology for Mineral Exploration
(3) Application to Mineral Exploration
(4) Application to Environmental Monitoring and Impact Analysis

9. Measures to be taken by the Government of Japan

(1) Dispatch of Japanese Experts

(Long-term experts)

The following Japanese experts will be dispatched.

1) Chief Advisor
2) Coordinator
3) Digital Image Processing
4) Geologic Remote Sensing
5) Remote Sensing for Mineral Exploration

(Short-term experts)

Both sides agreed that short-term experts would be dispatched in accordance with necessity.

(2) Training of Chilean Counterpart Personnel in Japan

About one (1) to three (3) Chilean counterpart personnel will be accepted for training in Japan each year.

(3) Provision of Machinery and Equipment

The Chilean side stated that the machinery and equipment necessary for the Project is as shown in ANNEX 4, and requested the provision of the machinery and equipment by the Japanese side as shown in ANNEX 5.

However, the Team explained and the Chilean side understood that the Japanese side would examine the list of machinery and equipment requested by the Chilean side and provide

machinery and equipment necessary for the Project on the above mentioned contents of technology transfer based on priority of the Chilean side within the possible budgetary appropriation for the Project.

The Team explained and the Chilean side agreed that the necessary cost and responsibility for domestic transport, adjustment, maintenance and repair of the machinery and equipment should be borne by the Chilean side.

10. Measures to be taken by the Government of the Republic of Chile

(1) Budget Allocation

The Chilean side explained to the Team that the amount of budget necessary for implementation of the Project will be worked out in detail, and the responsibility for the allocation of the budget will be confirmed in the Agreement on implementation of the Project between CODELCO and University of Chile by December 1999.

(2) Buildings and Facilities for the Project

The buildings and facilities necessary for the implementation of the Project will be prepared and necessary renovation of the buildings and facilities for the Project will be completed by June 2000.

The office for the Japanese experts with adequate equipment will be prepared before the start of the Project.

The tentative floor plan of the building is shown in ANNEX 6.

(3) Machinery, Equipment and Materials

Machinery, equipment and materials necessary for the implementation of the Project other than those provided by the Government of Japan through JICA will be prepared by the Chilean side.

The list of the existing machinery and equipment currently available for the Projects is shown in ANNEX 7. The list of the machinery and equipment prepared by the Chilean side prior to the commencement of the Project will be prepared by December 1999.

(4) Long-term Assignment of Full-time Counterpart

Project Manager and the appropriate number of full-time technical counterpart personnel will be assigned before the start of the Project. The allocation plan of full-time technical counterpart personnel and supporting staff will be prepared by December 1999.

Should the allocation of counterpart personnel be changed for either personal or administrative reasons, the Chilean side will immediately take necessary measures to supplementarily assign appropriate number of personnel as counterpart for the Project.

(5) Local Costs

Necessary amount of local costs by the Chilean side will be indispensable for the implementation of the Project. The allocation plan of the budget for the Project will be prepared by December 1999.

(6) Privileges, Exemptions and Benefits to the Japanese Experts

The Chilean side will grant in the Republic of Chile privileges, exemptions and benefits to the Japanese experts and their families in conformity with the Agreement on Technical Cooperation between the Government of Japan and the Government of the Republic of Chile, signed in July 1978, also the Chilean Government will take necessary measures to assure the security of all the Japanese experts and the members of the Japanese study team.

11. The Joint Coordinating Committee of the Project

The joint coordinating committee, composed of members appointed by both sides, will be established and held at least once a year for the following purposes:

1) reviewing the progress of the Project implementation as well as its achievement.
2) approving the Annual Plan of Operations (APO) of the Project in line with the Plan of Operations (PO) and the Tentative Schedule of Implementation (TSI) in the framework of R/D.
3) coordinating necessary actions to be taken by both sides
4) exchanging views on major issues arising from or in accordance with the technical cooperation program

Candidates for the members of the joint coordinating committee are as follows:

1) Ministry of Mining
2) Exploration Manager, CODELCO
3) R&D Director, CODELCO
4) Dean, the Faculty of Physical Science and Mathematics, University of Chile
5) Director, the Department of Geology, University of Chile
6) AGCI
7) JICA

12. Schedule of the Project

Both sides agreed with the Tentative Schedule of Implementation (TSI) as shown in ANNEX 8.

13. Joint Evaluation of the Project

Both sides agreed that evaluation of the Project would be conducted jointly by both Governments through JICA and Chilean authorities concerned, approximately in the third year and during the last six (6) months of the cooperation term, in order to examine the level of achievement of the Project.

Furthermore, both sides agreed to use the methodology of evaluation, especially, the Five (5) Basic Evaluation Components as shown in ANNEX 9.

14. Others

(1) Both sides agreed that common language used in any activities of the Project is English. The Japanese side requested for allocating Japanese-Spanish interpreters as occasion demands, and the Chilean side agreed.

(2) The Japanese side explained and the Chilean side understood the nature and system of the Project-Type Technical Cooperation by the Government of Japan.

(3) Both sides agreed that PCM ( Project Cycle Management ) will be used to formulate, monitor and evaluate the Project.

(4) List of attendance at the discussions is shown in ANNEX 10.

ANNEX LIST


ANNEX 1 Organization chart of CODELCO

ANNEX 2 Provisional organization chart of the Project

ANNEX 3 Location map of the site of the Project

ANNEX 4 List of equipment necessary for the Project

ANNEX 5 List of equipment requested by the Chilean side

ANNEX 6 Tentative floor plan of the building

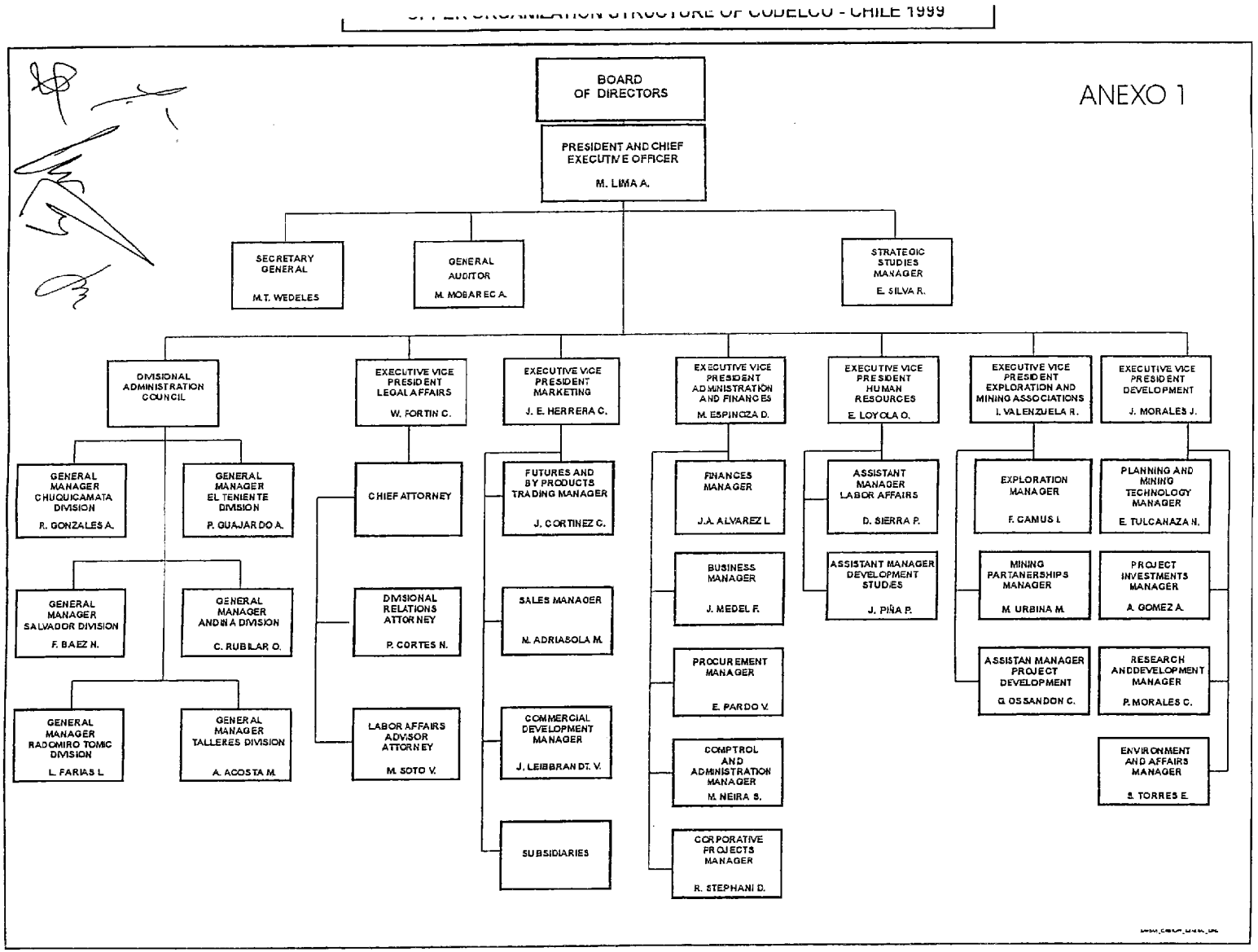
ANNEX 7 List of the machinery and equipment prepared by the Chilean side

ANNEX 8 Tentative Schedule of Implementation ( TSI )

ANNEX 9 Five Basic Evaluation Components

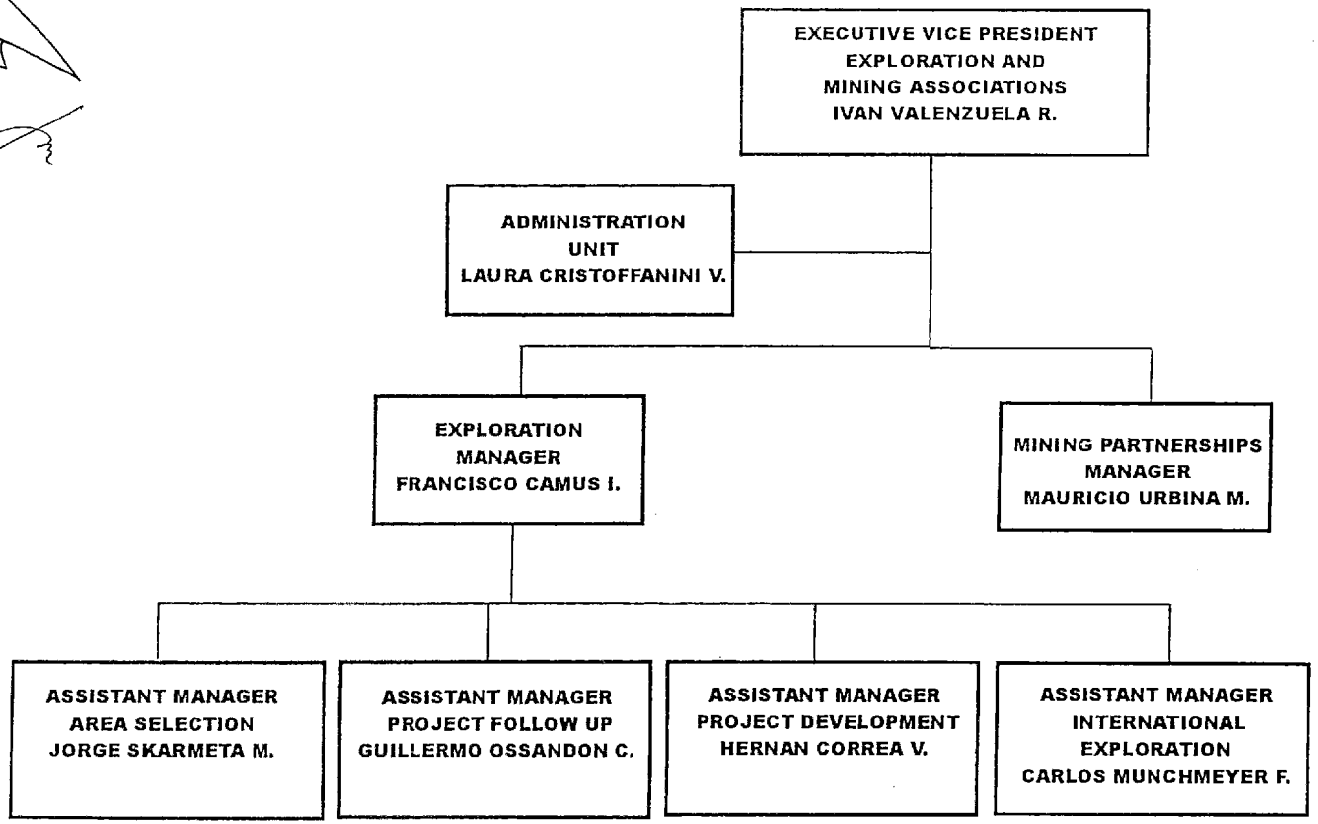
ANNEX 10 List of attendance


ANEXO 1


BOARD OF DIRECTORS
PRESIDENT AND CHIEF EXECUTIVE OFFICER
M. LIMA A.
SECRETARY GENERAL
M.T. WEDELES
GENERAL AUDITOR
M. MOBAREC A.
STRATEGIC STUDIES MANAGER
E. SILVA R.
DIVISIONAL ADMINISTRATION COUNCIL
EXECUTIVE VICE PRESIDENT LEGAL AFFAIRS
W. FORTIN C.
EXECUTIVE VICE PRESIDENT MARKETING
J. E. HERRERA C.
EXECUTIVE VICE PRESIDENT ADMINISTRATION AND FINANCES
M. ESPINOZA D.
EXECUTIVE VICE PRESIDENT HUMAN RESOURCES
E. LOYOLA O.
EXECUTIVE VICE PRESIDENT EXPLORATION AND MINING ASSOCIATIONS
I. VALENZUELA R.
EXECUTIVE VICE PRESIDENT DEVELOPMENT
J. MORALES J.
GENERAL MANAGER CHUQUICAMATA DIVISION
R. GONZALES A.
GENERAL MANAGER EL TENIENTE DIVISION
P. GUAJARDO A.
GENERAL MANAGER SALVADOR DIVISION
F. BAEZ N.
GENERAL MANAGER ANDINA DIVISION
C. RUBILAR O.
GENERAL MANAGER RADOMIRO TOMIC DIVISION
L. FARIAS L.
GENERAL MANAGER TALLERES DIVISION
A. ACOSTA M.
CHIEF ATTORNEY
DIVISIONAL RELATIONS ATTORNEY
P. CORTES N.
LABOR AFFAIRS ADVISOR ATTORNEY
M. SOTO V.
FUTURES AND BY PRODUCTS TRADING MANAGER
J. CORTINEZ C.
SALES MANAGER
N. ADRIASOLA M.
COMMERCIAL DEVELOPMENT MANAGER
J. LEIBBRANDT V.
SUBSIDIARIES
FINANCES MANAGER
J.A. ALVAREZ L.
BUSINESS MANAGER
J. MEDEL F.
PROCUREMENT MANAGER
E. PARDO V.
COMPTROL AND ADMINISTRATION MANAGER
M. NEIRA S.
CORPORATIVE PROJECTS MANAGER
R. STEPHANI D.
ASSISTANT MANAGER LABOR AFFAIRS
D. SIERRA P.
ASSISTANT MANAGER DEVELOPMENT STUDIES
J. PIÑA P.
EXPLORATION MANAGER
F. CAMUS I.
MINING PARTNERSHIPS MANAGER
M. URBINA M.
ASSISTAN MANAGER PROJECT DEVELOPMENT
G. OSSANDON C.
PLANNING AND MINING TECHNOLOGY MANAGER
E. TULCANAZA N.
PROJECT INVESTMENTS MANAGER
A. GOMEZ A.
RESEARCH ANDDEVELOPMENT MANAGER
P. MORALES C.
ENVIRONMENT AND AFFAIRS MANAGER
S. TORRES E.

# VICE PRESIDENCY EXPLORATION AND MINING ASSOCIATIONS ORGANIZATION

ANEXO 1A

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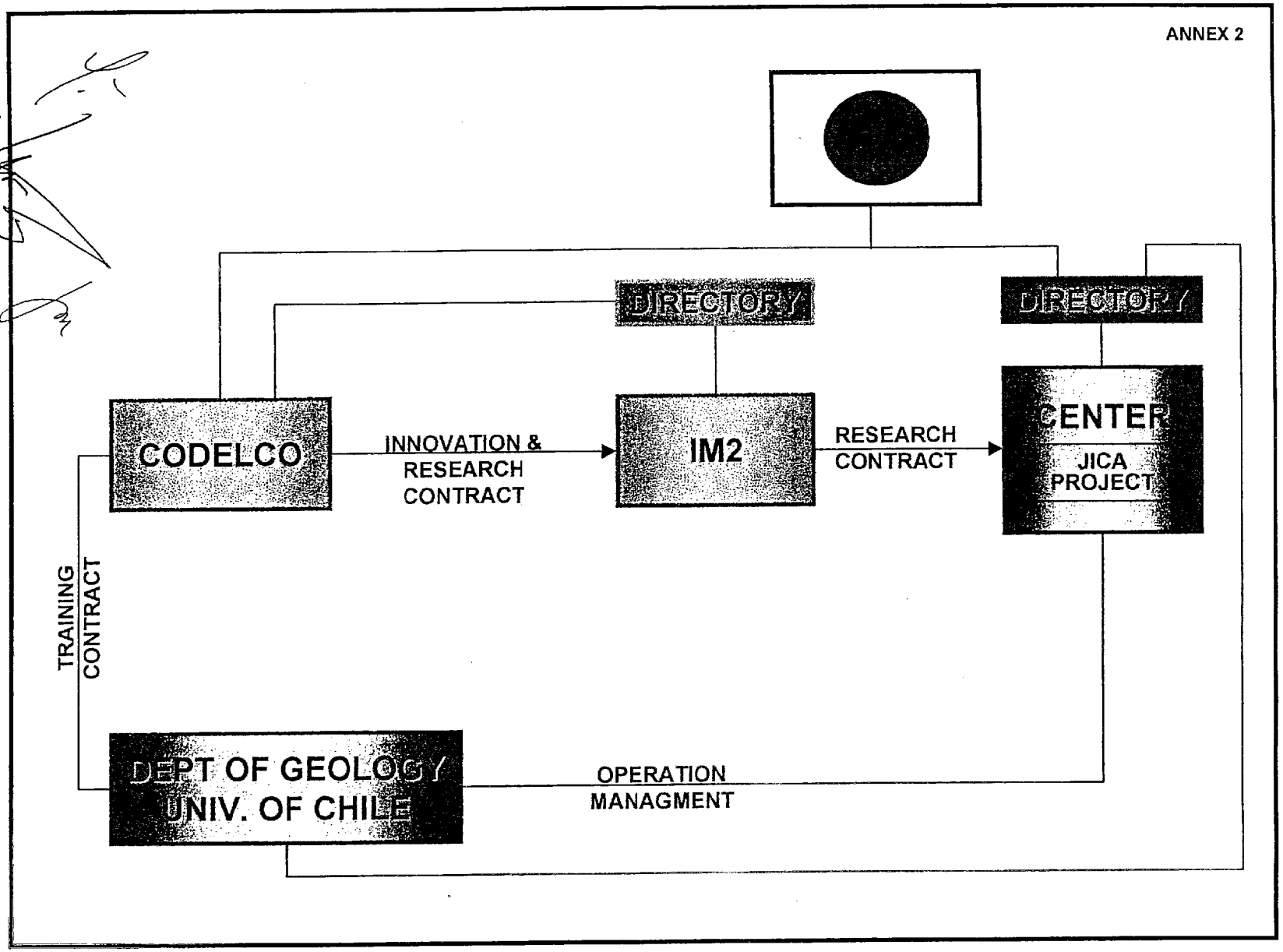
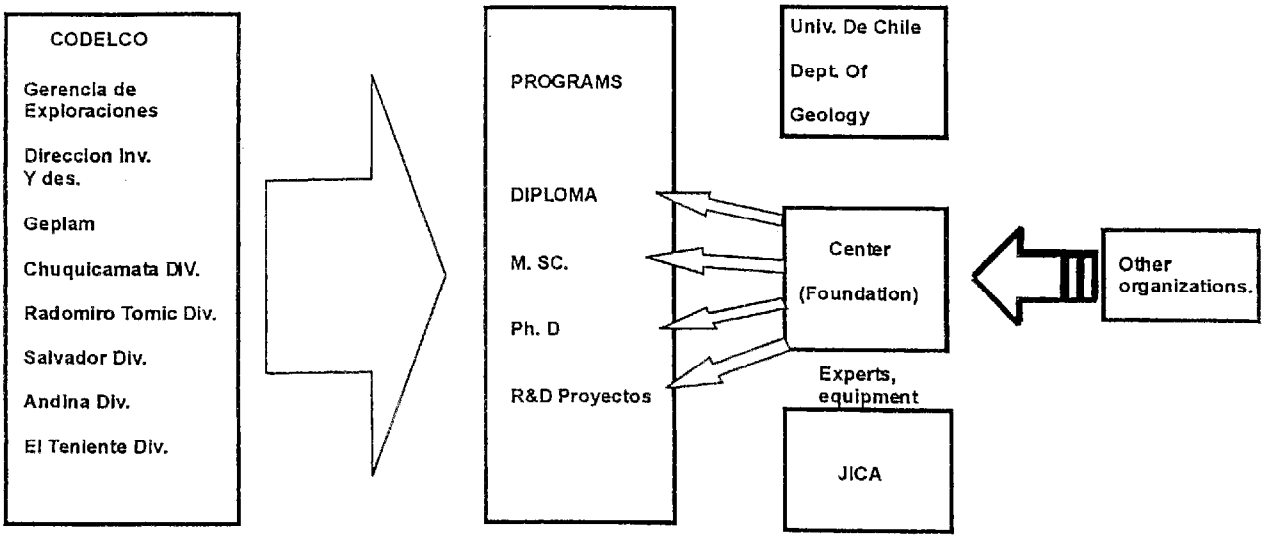
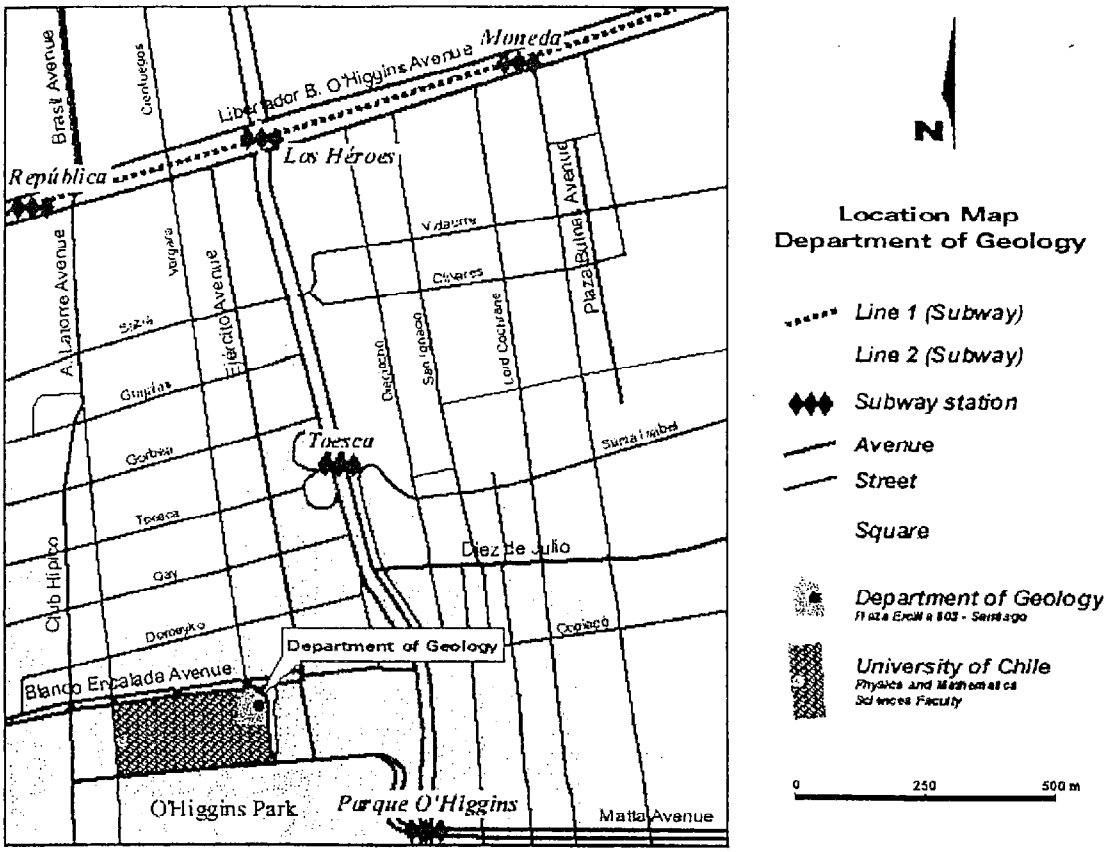

DIRECTORY
DIRECTORY
CODELCO
INNOVATION &
RESEARCH
CONTRACT
IM2
RESEARCH
CONTRACT
CENTER
JICA
PROJECT
TRAINING
CONTRACT
DEPT OF GEOLOGY
UNIV. OF CHILE
OPERATION
MANAGMENT

# ANEXO 2


CODELCO
Gerencia de Exploraciones
Direccion Inv. Y des.
Geplam
Chuquicamata DIV.
Radomiro Tomic Div.
Salvador Div.
Andina Div.
El Teniente Div.
PROGRAMS
DIPLOMA
M. SC.
Ph. D
R&D Proyectos
Univ. De Chile
Dept. Of
Geology
Center
(Foundation)
Other organizations.
Experts, equipment
JICA




ANNEX 4 List of equipment necessary for the Project

a) Chemistry Laboratory
- . ICP-AES

b) Processing data Laboratory
- . 5 Pc
- . 2 Digitalizing tables
- . 1 Plotter

c) Fluid inclusions Laboratory
- . 2 Heating-freezing stages

d) Mineralogy Laboratory
- . 20 Microscopes

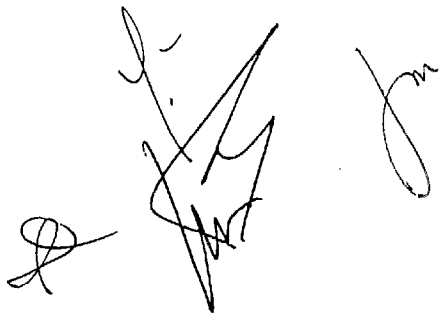
e) Laboratory of sample preparations
- . 2 Rock cutting saw

# ANNEX 4

1. Equipment for digital processing of satellite data.

2. Equipment for caracterization of geologic materials

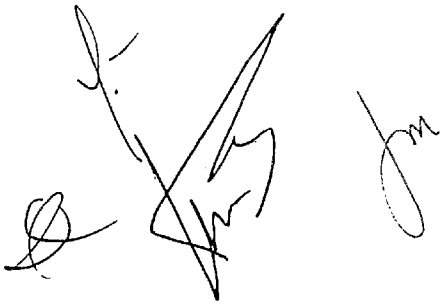
   - Electron-beam microprobe
   - X-ray diffractometer
   - Research polarizing microscopes



# ANNEX 5

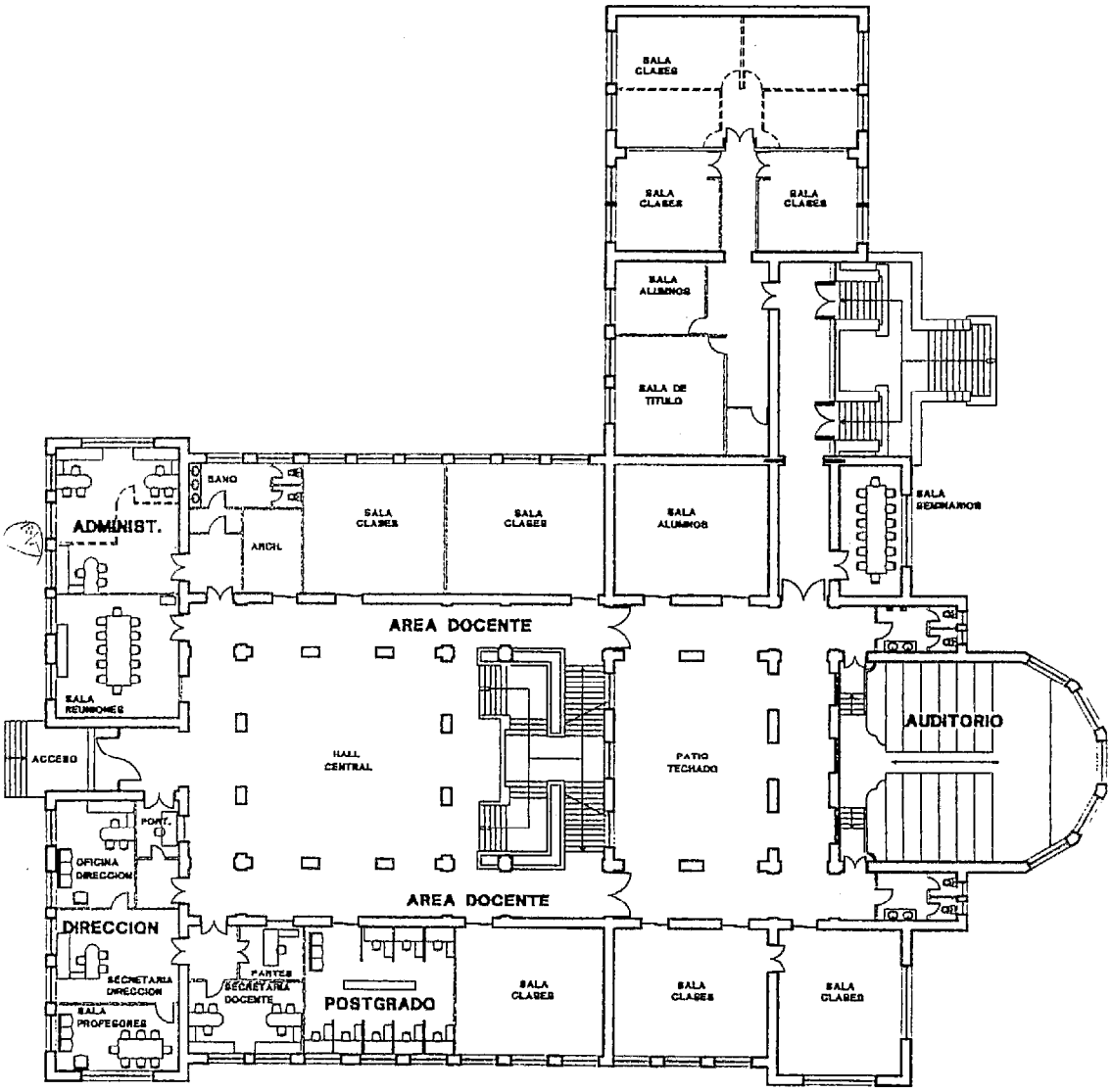
1. Equipment for digital processing of satellite data.

2. Equipment for caracterization of geologic materials
   - Electron-beam microprobe
   - X-ray diffractometer
   - Research polarizing microscope



# PROPOSICION GENERAL

## PRIMER PISO




PROYECTO PLAN MAESTRO
DEPARTAMENTO DE GEOLOGIA

ESCALA 1:330 AGOSTO 1999

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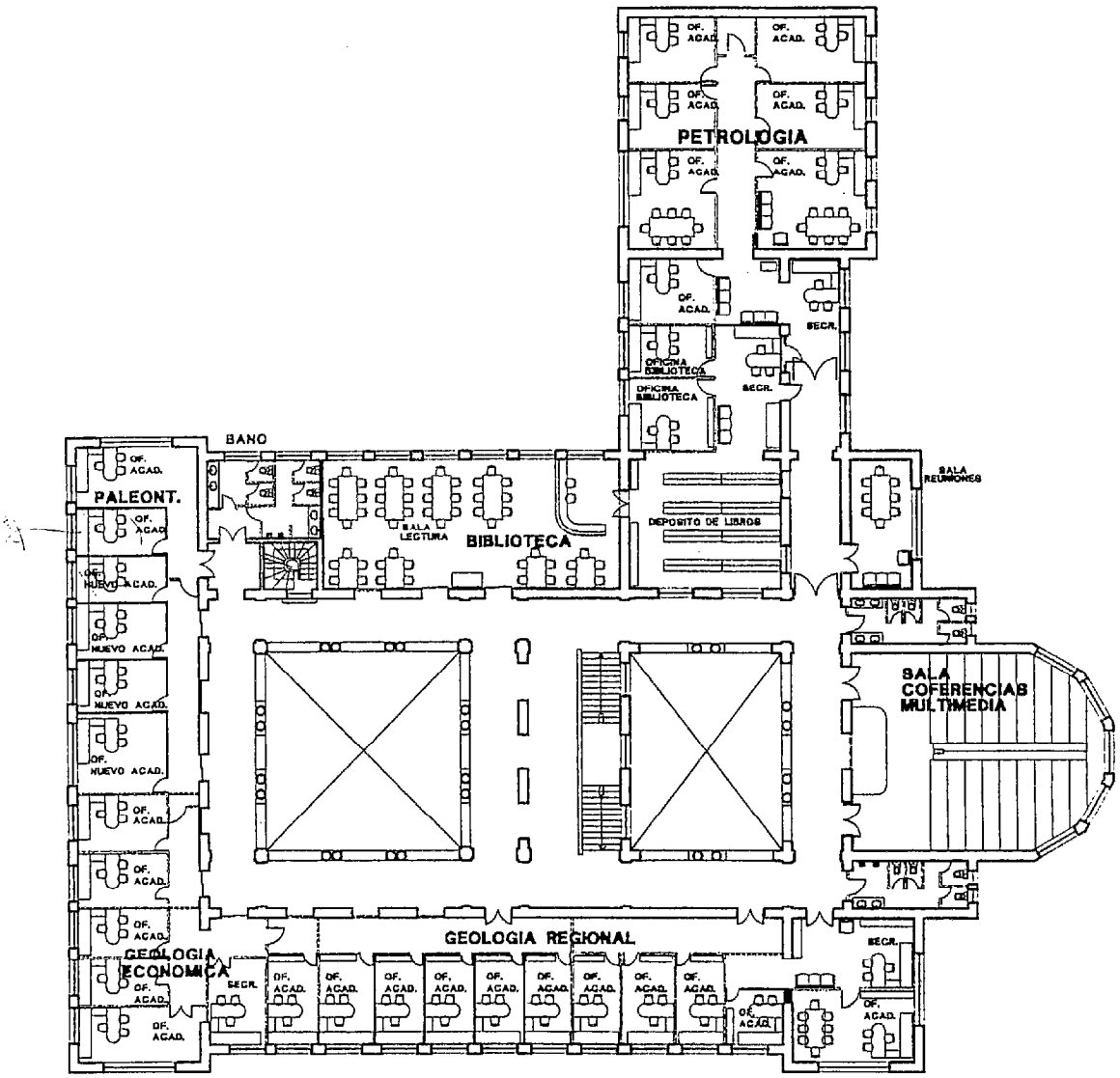
# PROPOSICION GENERAL
## SEGUNDO PISO

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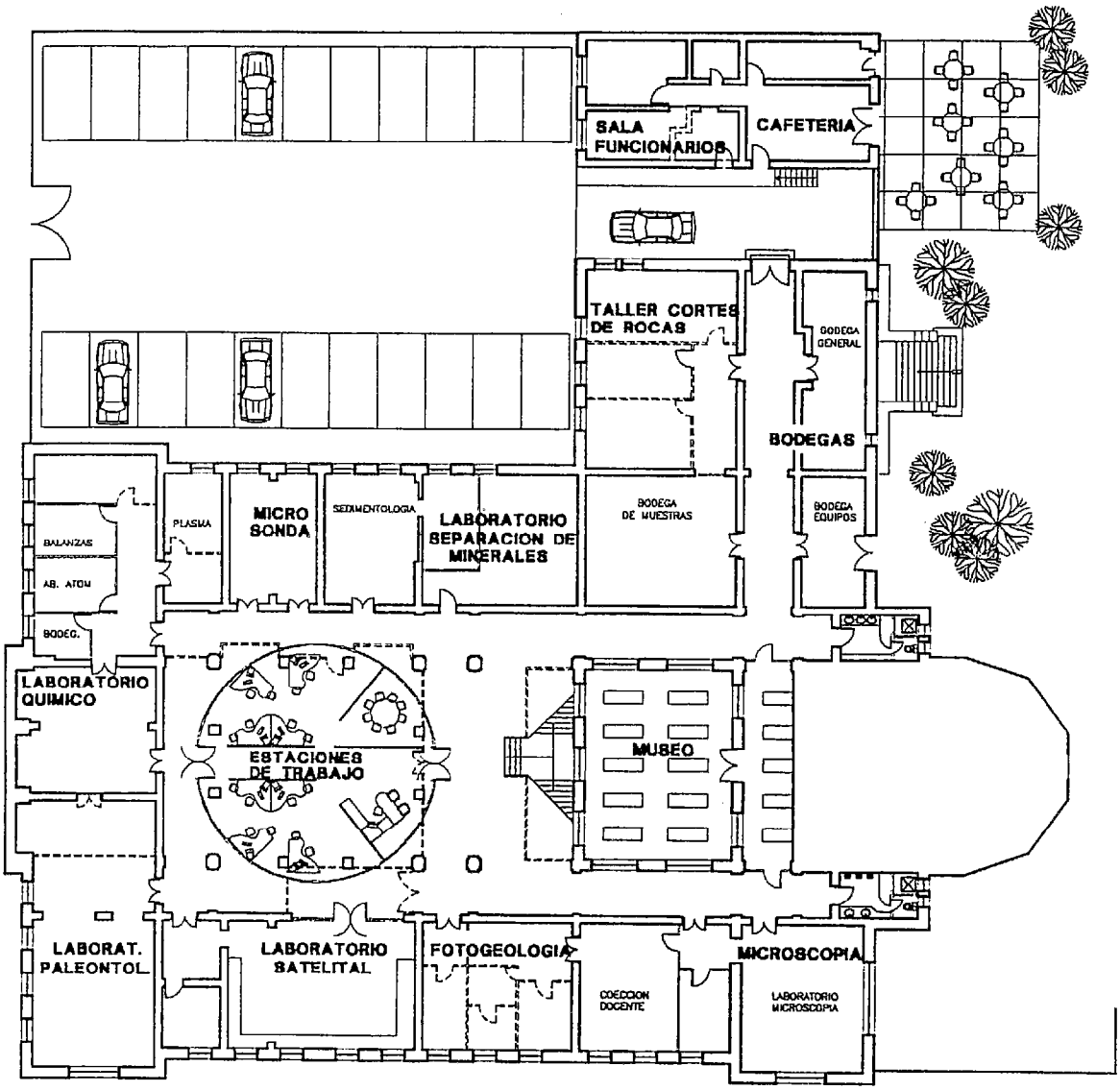
# PROPOSICION GENERAL

## PISO ZOCALO

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DEPARTAMENTO DE GEOLOGIA

ESCALA 1:333 AGOSTO 1999

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# ANNEX 7

Equipment for caracterization of geologic materials

- Research polarizing microscopes

# Tentative Schedule of Implementation (TSI)

ANNEX 8

| Calendar Year | 1999 | 2000 | | | | | | 2001 | | | | 2002 | | | | 2003 | | | | 2004 | | | | 2005 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Japanese Fiscal Year | 1999 | | | 2000 | | | | 2001 | | | | 2002 | | | | 2003 | | | | 2004 | | | | 2005 | | | |
| | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III | IV | I | II | III |
| Term of Technical Cooperation | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Japanese Side | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Dispatch of Study Team | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1)Preliminary Study Team | — | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2)Supplementary Study Team | | | — | | | | | | | | | | | | | | | | | | | | | | | | |
| 3)Implementation Study Team | | | | | — | | | | | | | | | | | | | | | | | | | | | | |
| 4)Consultation Team | | | | | | | | | | — | | | | | | | | | | | | | | | | | |
| 5)(Advisory Team) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6)(Consultation Team) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7)Evaluation Team | | | | | | | | | | | | | | | | | | | | | — | | | | | | |
| 2. Dispatch of Experts | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1)Long Term Experts | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chief Advisor | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinator | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Digital Imagr Processing | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Geologic Remote Sensing | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Remote Sensing for Mineral Exploration | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2)Short Term Experts | | | | | | | | (Short-term experts on specific fields will be dispatched, if necessary) | | | | | | | | | | | | | | | | | | | |
| 3. Training of C/P in Japan | | | | | | | | (A certain number of C/P will be accepted in Japan | | | | | | | | | | | | | | | | | | | |
| 4. Provision of Equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chilean Side | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Space and Facilities | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Buildings and Land | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. Equipment and Machinery | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. Budgetary Allocation | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. Allocation of C/P & Other Staffs | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Note 1. Japanese fiscal year starts in April and end in March.

2. This schedule is subject to change in according with the progress of the Project.

3. Experts may take turns during the cooperation period.

## ANNEX 9 FIVE (5) BASIC EVALUATION COMPONENTS

### 1 Five (5) Basic Evaluation Components

The five (5) basic components defined by JICA as mentioned below are in line with those used for the evaluation works by DAC and other international assistance organization. Introduction of these components has enabled a consistent, well-balanced evaluation, which minimizes evaluator bias. Further, it allows us to share the results, knowledge and lessons with other aid organizations, since we are using common components and can discuss with them from the same viewpoints.

(1) Efficiency

Evaluate the method, procedure, term and cost of the project with a view to productivity.

(2) Effectiveness

Evaluate the results in comparison with the goals (or revised ones) defined at the initial or intermediate stage, and evaluate the attributes (factors and conditions) of the results.

(3) Impact

Evaluate the positive and negative effects of the project, extent of the effect and beneficiaries.

(4) Relevance

Preliminary evaluate whether the needs in the country have been correctly identified, and whether the design is consistent with the national and/or master plan.

(5) Sustainability

Evaluate the autonomy and sustainability of the project after the termination of cooperation, from the perspectives of operation, management, economy, finance and technology.

### 2 Relation between Five Basic Components and PDM

The following five components are used for the evaluation and a selection of a project.

(1) Efficiency

(2) Effectiveness

(3) Impact

(4) Relevance

(5) Sustainability

These components are directly connected to the elements of PDM as shown in the Figure in the following page.

The component "Efficiency" is a measure to qualitatively and quantitatively compare all resource (input) to the results (output) of the project in order to evaluate the economic efficiency o conversion from input to output.

The parameter "Effectiveness" us a measure to evaluate whether the purpose has been achieved or not, or to evaluate how much the outputs contributed to the achievement of the purpose, or to evaluate whether or not the characteristics of the outputs were as expected.

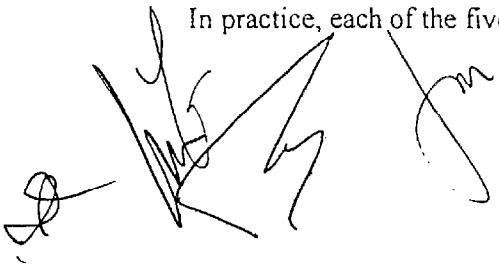
The parameter "Impact" is a foreseeable or unforeseeable, and a favorable or adverse effect of the project upon society. The evaluate impact, both the goal and project purpose should be referred to in the beginning of the evaluation. Evaluation with this components could lead to more than the confirmation as whether or not the goals have been obtained. Evaluation with this component requires comprehensive surveys in many cases.

The parameter "Relevance" is to comprehensively evaluate whether or not the project meets the overall goals, politics of both the donor and recipient, local needs and given priority levels, in order to decide whether the project should be continued, reformulated or terminated.

The component "Sustainability" is to comprehensively evaluate how long the favorable effect as a result of the project can continue after the project has been terminated. Evaluation with this component is required to decide how much the local resources should continue to be used for the project, and to evaluate how much the country receiving the assistance has been considering important. According to OECD (1989), "Sustainability" is a component to be used for the final test of the success of a development project.

All five components are essential for any of the projects or programs. The five components give necessary information to the decision maker so that he/she can decide how to approach the next step. Since each of the five components build on the intervention strategy, they also lay the foundation for standardization in monitoring and information handling within and among organizations and agencies.

In practice, each of the five parameters should also contain project-specific information.



ANNEX 10

# LIST OF ATTENDANCE

## CHILEAN SIDE

Ministry of Mining

| | |
|---|---|
| Mr. Thomas Astorga | Senior Adviser |

National Copper Corporation of Chile (CODELCO)

| | |
|---|---|
| Mr. Francisco Camus I. | Exploration Manager |
| Mr. Pedro Moralez Cerda | R&D Director |
| Mr. Pedro Carrasco Castelli | Consultant Geologist |
| Mr. Guillermo Ossandon | Assistant Exploration Manager |
| Mr. Enrique A. Tidy | Senior Geologist, Exploration Division |

University of Chile

| | |
|---|---|
| Mr. Carlos Palacious | Director, Department of Geology |
| Mr. Miguel Parada | Professor, Department of Geology |

International Cooperation Agency (AGCI)

| | |
|---|---|
| Mr. Arturo Vergara Moreno | Program Coordinator, Asia-Pacific Region |
| Mr. Carlos Ortiz Henriquez | Coordinator, Education, Science, and Technology |
| Mr. Mitsuo Oba | Project Formulation Adviser, JICA |

## JAPANESE SIDE

Preliminary Study Team, JICA

| | |
|---|---|
| Mr. Toshinori Isogai | Leader |
| Mr. Tsunekazu Ajiki | Member |
| Mr. Toshihiko Hayashi | Member |
| Ms. Yukari Saito | Member |
| Mr. Kaneyasu Ida | Member |

Embassy of Japan

| | |
|---|---|
| Mr. Sakae Yoshida | First Secretary |

JICA Chile Office

| | |
|---|---|
| Mr. Hideyuki Yoshida | Assistant Resident Representative, JICA Chile Office |
| Ms. Tazuko Ishinohe | Assistant Resident Representative, JICA Chile Office |