MINUTES OF MEETING
BETWEEN THE JAPANESE PREPARATORY STUDY TEAM
AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT
OF THE ARGENTINE REPUBLIC
ON THE JAPANESE TECHNICAL COOPERATION FOR THE PROJECT ON
REGIONAL GEOLOGIC MAPPING WITH ADVANCED SATELLITE SENSORS
IN THE ARGENTINE REPUBLIC

The Japanese Preparatory Study Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") visited the Argentine Republic from June 20 to June 28, 2000 for the purpose of clarifying the background of the project proposal made by the authorities concerned of the Government of the Argentine Republic (hereinafter referred to as "the Argentine side"), discussing the concept and scope of the Japanese Project-Type Technical Cooperation for the Project on Regional Geologic Mapping with Advanced Satellite Sensors (hereinafter referred to as "the Project").

During its stay in the Argentine Republic, the Team exchanged views and had a series of meetings on the Project with the Argentine side.

As a result of the meetings, both sides reached common understandings concerning the matters referred to the documents attached hereto.

Buenos Aires, June 28, 2000

Mr. Yutaka Iwatani
Deputy Resident Representative
Argentine Office
Japan International Cooperation Agency
Japan

Mr. Roberto F. N. Page
President
Argentine Geological and Mining Survey
(SEGEMAR)
The Argentine Republic

ATTACHED DOCUMENT

1 Name of the Project

Both sides agreed to use "The Project on Regional Geologic Mapping with Advanced Satellite Sensors" as the name of the Project.

2 Implementing Agency of the Project

Argentine Geological and Mining Survey (Servicio Geologico Minero Argentino, hereinafter referred to as "SEGEMAR") under supervision of Secretariat of Industry, Commerce and Mining, Ministry of Economy, will bear overall responsibility for the implementation of the Project.

The Project will be implemented at Geology and Mineral Resources Institute (Instituto de Geologia y Recursos Minerales, hereinafter referred to as "IGRM").

The present organization chart of SEGEMAR and IGRM is shown in ANNEX 1.

3 Administration of the Project

President of SEGEMAR, as the Project Director, will bear overall responsibility for the coordination and implementation of the actions and proceedings in order to achieve the general goals of the Project.

Director of IGRM, as the Project Manager, will be responsible for the managerial and technical matters of the Project.

Director of Regional Geology Direction and the Acting Director of Remote Sensing and GIS Division, as the Coordinators, will assist the Project Manager for the managerial and technical matters of the Project.

The organization chart for the administration of the Project is as shown in ANNEX 2.

4 Duration of the Project

The duration of the technical cooperation for the Project by the Government of Japan will be four (4) 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 SEGEMAR.

5 Site of the Project

The Project will be implemented at IGRM. The present address is as follows:

Address:Av. Julio A. Roca 651, 1322, Buenos Aires

IGRM is scheduled to move to a new premise by the middle of 2001. The address of the premise

is as follows:

Address: Parque Tecnológico Miguelete-Av. Gral Paz y Albarellos, 1650, San Martin, Buenos Aires

The location map of the present premise and the new one is as shown in ANNEX 3.

6 Master Plan of the Project

(1) Overall Goal

Basic geologic information for mineral exploration, geologic hazards and environmental studies is compiled.

(2) Project Purpose

IGRM is able to produce quality thematic maps with advanced satellite data.

(3) Outputs

0. Technology transfer system is established.
1. Equipment necessary for technology transfer is operated and maintained appropriately.
2. Advanced remote sensing technology is acquired by counterparts.

7 Fields, Schedule, and Methodology of Technology Transfer

(1) Fields

Both sides agreed that technology transfer from the Japanese experts to the Argentine counterparts (hereinafter referred to as "C/P") would be made in the following fields.

1. Data handling and fundamental concept of earth resources satellite data
2. Digital image processing and thematic mapping of minerals and lithology by ASTER data
3. Application of ASTER data to geologic mapping and mineral exploration
4. Microwave analysis by PALSAR data
5. Application to environmental analysis
6. Application to hazardous area analysis
7. Introduction to hyperspectral data analysis

The details of the fields of technology transfer are described in ANNEX 4.

Regarding 5. and 6., the Team requested to the Argentine side to specify the objective before the meetings with the next preparatory study team.

(2) Schedule

The tentative schedule of technology transfer is as shown in ANNEX 5.

(3) Methodology

Both sides agreed that technology transfer from the Japanese experts to the C/P would be made in the methodology described in ANNEX 6.

8 Measures to be taken by the Japanese Side

The project will be carried out under the framework of Project-Type Technical Cooperation, which is the combination of the following three (3) components:

(1) Dispatch of Japanese Experts

(Long-term experts)

Both sides agreed that long-term experts would be dispatched in the following fields.

1. Chief Advisor
2. Coordinator
3. Digital Image Processing
4. Geologic Remote Sensing

(Short-term experts)

Both sides agreed that short-term experts would be dispatched in specific fields in relation to the fields of technology transfer as necessity arises.

At this moment, the experts in the following fields are expected to be dispatched:

1. PALSAR data analysis
2. Environmental analysis
3. Hazardous area analysis
4. Hyperspectral data analysis

The requesting form for dispatch of Japanese experts should be submitted in Form A1 to the Government of Japan by the Argentine side at least two (2) months prior to the scheduled arrival in the Argentine Republic.

(2) Training of C/P in Japan

The Team stated and the Argentine side understood that a certain number of C/P would be accepted for training in Japan during the cooperation period according to the following program:

1. Number : About two (2) or three (3) yearly
2. Term : About a couple of weeks to two (2) months, depending upon the fields as well as the C/P dispatched to Japan
3. Fields : Remote sensing

The Team, further, requested the Argentine side and the latter agreed that the C/P may apply to

other training courses conducted by JICA, however, sufficient consultation should be held between the Japanese experts and the C/P before the application to avoid impeding the smooth implementation of the Project.

The application form for the training program in Japan should be submitted in Form A2A3 to the Government of Japan by the Argentine side at least two (2) months prior to the scheduled arrival in Japan.

(3) Provision of Equipment

Both sides confirmed the machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for technology transfer in the Project as shown in ANNEX 7, which is divided into the three (3) categories.

Among these three categories, the Argentine side requested to the Japanese side the provision of the Equipment shown as Category A.

The Team agreed to convey the request of the Argentine side to the Japanese authorities concerned, stating that the actual provision will be subject to the budget appropriation of the Government of Japan.

The Team explained and the Argentine side agreed that the costs and responsibility necessary for domestic transport, installation, adjustment, maintenance and repair of the Equipment should be borne by the Argentine side.

The requesting form for provision of equipment should be submitted in Form A4 to the Government of Japan by the Argentine side immediately after R/D has been signed.

9 Measures to be taken by the Government of the Argentine Republic

(1) Buildings and Facilities for the Project

The Argentine side will prepare the building and facilities necessary for the implementation of the Project.

Office space for the Japanese experts which are equipped properly with office equipment such as phones and a facsimile which have at least two (2) extension line for Japanese experts, one (1) international telephone line, electric wiring and desks, will be prepared before the start of the Project.

The layout of the present building and facilities and that of new building are as shown in ANNEX 8-1 and ANNEX 8-2.

(2) Long Term Assignment of C/P

For the successful implementation of the Project, the Argentine side will provide the full time and part time services of C/P who are listed in ANNEX 9 and the administrative personnel.

Should the allocation of C/P and the administrative personnel be changed for either the personnel or administrative reasons, the Argentine side will immediately take necessary measures to supplementary assign appropriate number of personnel for the Project.

(3) Machinery, Equipment and Materials

The Argentine side will supply at its own expenses machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than those provided by the Government of Japan through JICA.

The Equipment which is now existing at IGRM and is able to be utilized for the Project is shown as Category B in ANNEX 7.

The Equipment to be procured by the Argentine side is is shown as Category C in ANNEX 7.

(4) Local Costs

The necessary amount of local costs by the Argentine side will be indispensable for the successful implementation of the Project.

In this regard, both sides confirmed that the cost necessary for operation of the Project, which is listed below, will be borne by the Argentine side.

a. Expense for satellite data
b. Field allowance and transportation for ground truth
c. Expense for sample analysis
d. Allocation of temporary supportive staff for data processing, ground truth, etc.
e. Expense for workshops and seminars
f. Expense for consumable, electricity, etc.

The Team requested the Argentine side to prepare the budget for these costs before the meeting with the next preparatory study team.

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

In accordance with the provisions of article VI of the Agreement on Technical Cooperation between the Government of Japan and the Government of the Argentine Republic, signed in Tokyo on October 11, 1979, the Government of the Argentine Republic will grant in the Argentine Republic, privileges, exemptions and benefits to the Japanese experts and their families.

(6) Sustainability of the Project

The Argentine side will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of the Japanese technical cooperation, through the full and active involvement in the Project of all related authorities, beneficiary groups and institutions so that the technologies and knowledge acquired by the counterpart personnel through the Project should ultimately contribute to the economic and social development of the Argentine Republic.

10 Project Cycle Management

(1) Application of Project Cycle Management Method

Both sides confirmed that project planning, monitoring and evaluating method entitled Project Cycle Management (hereinafter referred to as "PCM") will be applied to the Project to monitor and evaluate the level of the achievement and enhance the communication for its smooth implementation.

(2) Project Design Matrix

The Team explained and the Argentine side agreed that the Project Design Matrix (hereinafter referred to as "PDM") ought to be designed at the planning stage of the Project, as a framework clarifying the multi-level chain of cause-to-effect such as input to output, output to project purpose, and project purpose to overall goal.

Then, both sides drew up the draft of PDM as shown in ANNEX 10 and confirmed the following:

a. After necessary revision, the first version of PDM will be finalized and attached to the Minutes of Discussions of Implementation Study Team.
b. The C/P and the Japanese experts should examine the indicators in the planning stage of the Project, which is scheduled in the first year of the cooperation period, so that indicators and/or targets for project purpose and outputs should be as objectively verifiable as possible.
c. PDM should continue to be reviewed and revised if necessary, with further discussion between both sides.

(3) Monitoring

The Team explained and the Argentine side agreed the following:

a. Based on PDM, regular monitoring on the achievement of the Project should be implemented primarily by C/P and the experts, in order to grasp the progress and the achievement of the Project and to modify the plan if necessary.
b. Within the first 6 months after the commencement of the Project, the monitoring system should be established by the C/P and the Japanese experts, and every 6 months thereafter, monitoring should be done and the result should be distributed to the organizations and/or personnel concerned with the Project.

(4) Evaluation

The Team explained and the Argentine side agreed the following:

a. Evaluation of the Project is to be conducted, based on the five basic evaluation components as shown in ANNEX 11.
b. The midterm evaluation will be conducted jointly by both sides in the middle of the cooperation period, in order to examine the achievement of the Project and modify the plan if necessary.
c. The final evaluation of the Project will be conducted jointly by both sides, approximately 6

months before the termination of the cooperation period, in order to examine the achievement of the Project.

11 Joint Coordinating Committee of the Project

For the effective and successful implementation of technical cooperation for the Project, a Joint Coordinating Committee will be established whose functions and composition are described in ANNEX 12.

12 Common Language

Both sides confirmed that the common language used in any activities of the Project should be English.

13 Others

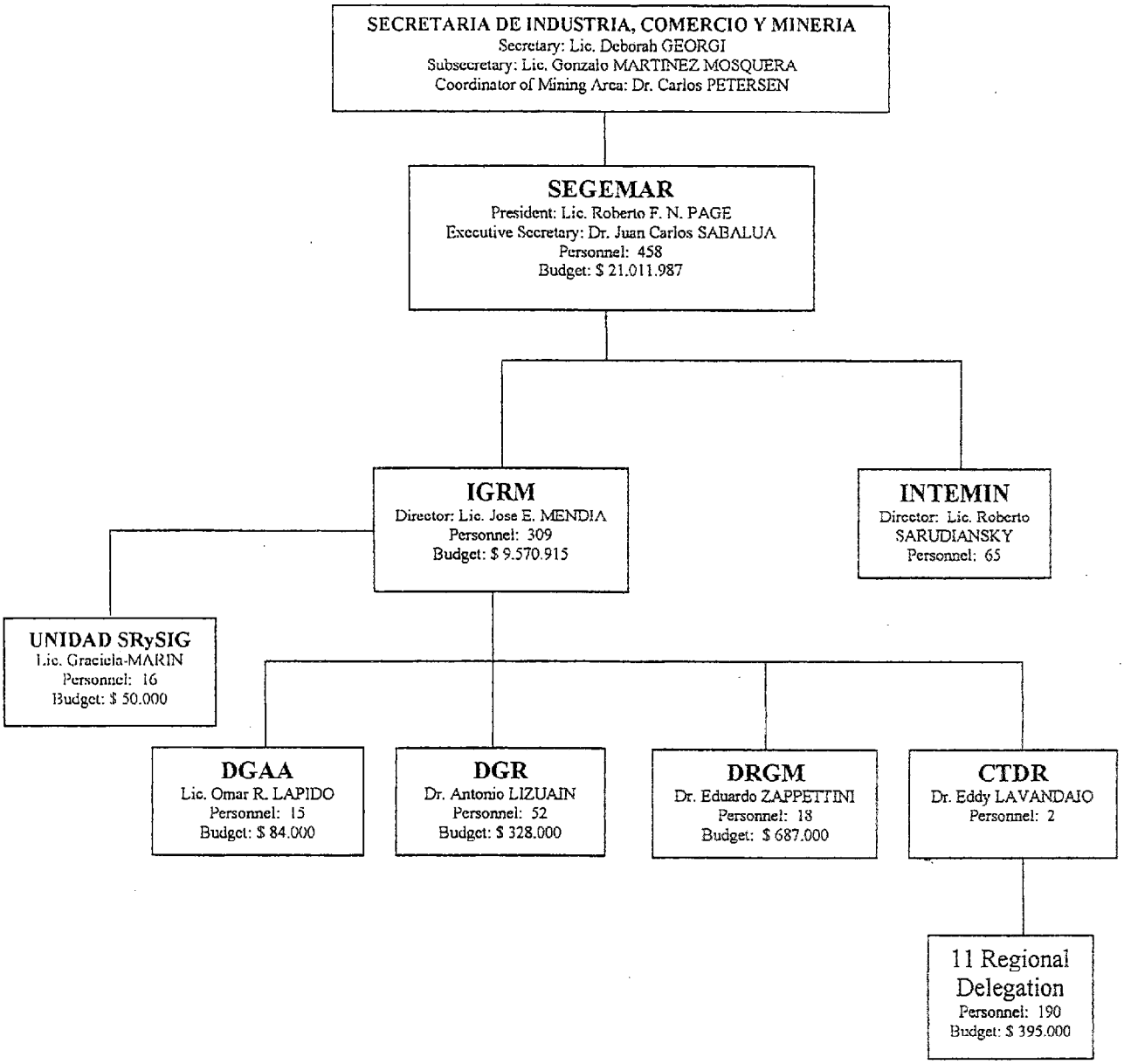
(1) Both sides agreed that the items mentioned above 1 to 12 are still provisional and will be discussed further with other necessary things to be finalized when the Implementation Study Team is dispatched.

(2) The list of attendants at the meetings is as shown in ANNEX 13.

LIST OF ANNEXES

ANNEX 1

ORGANIZATION, 1999 BUDGET AND STAFF

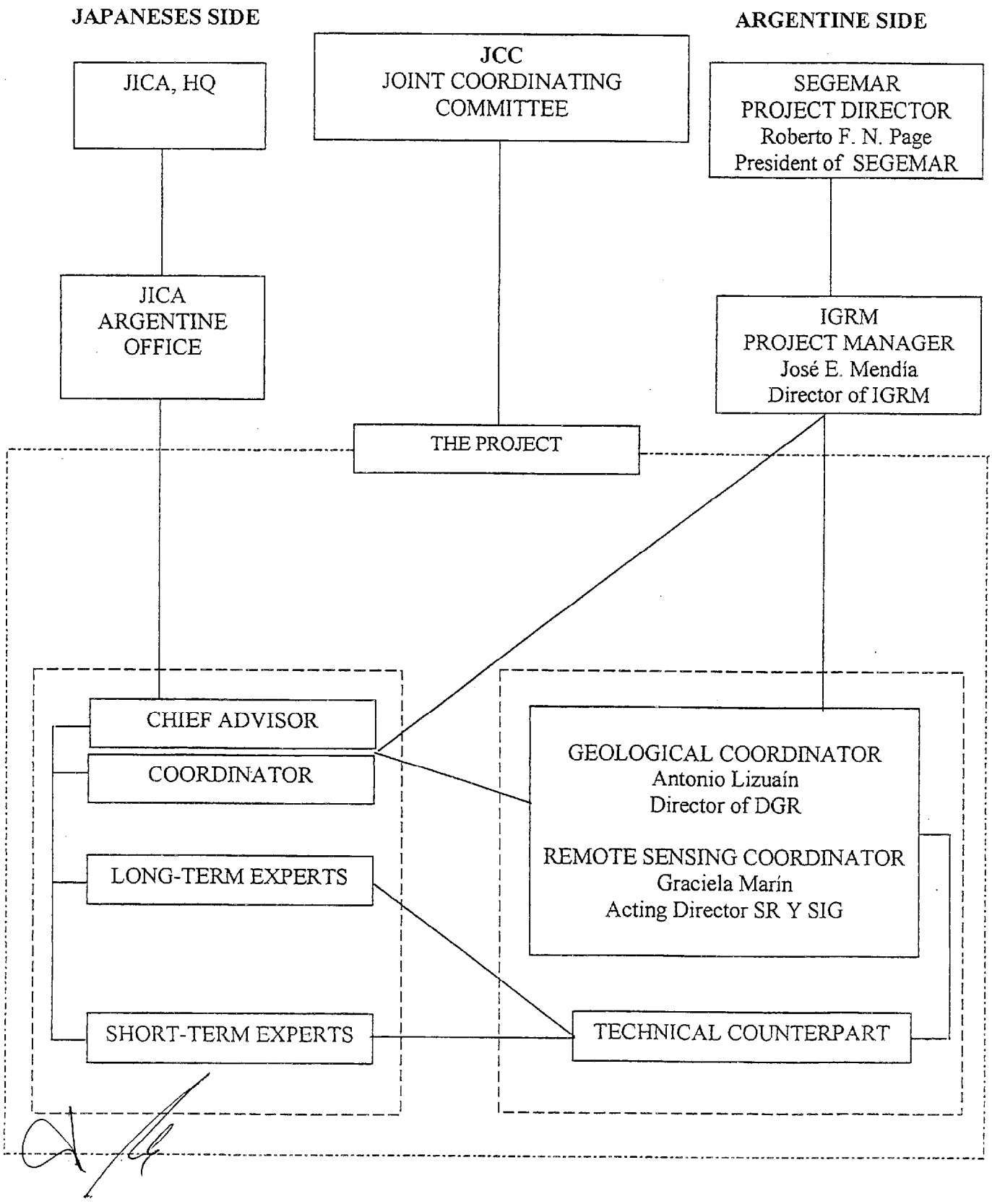


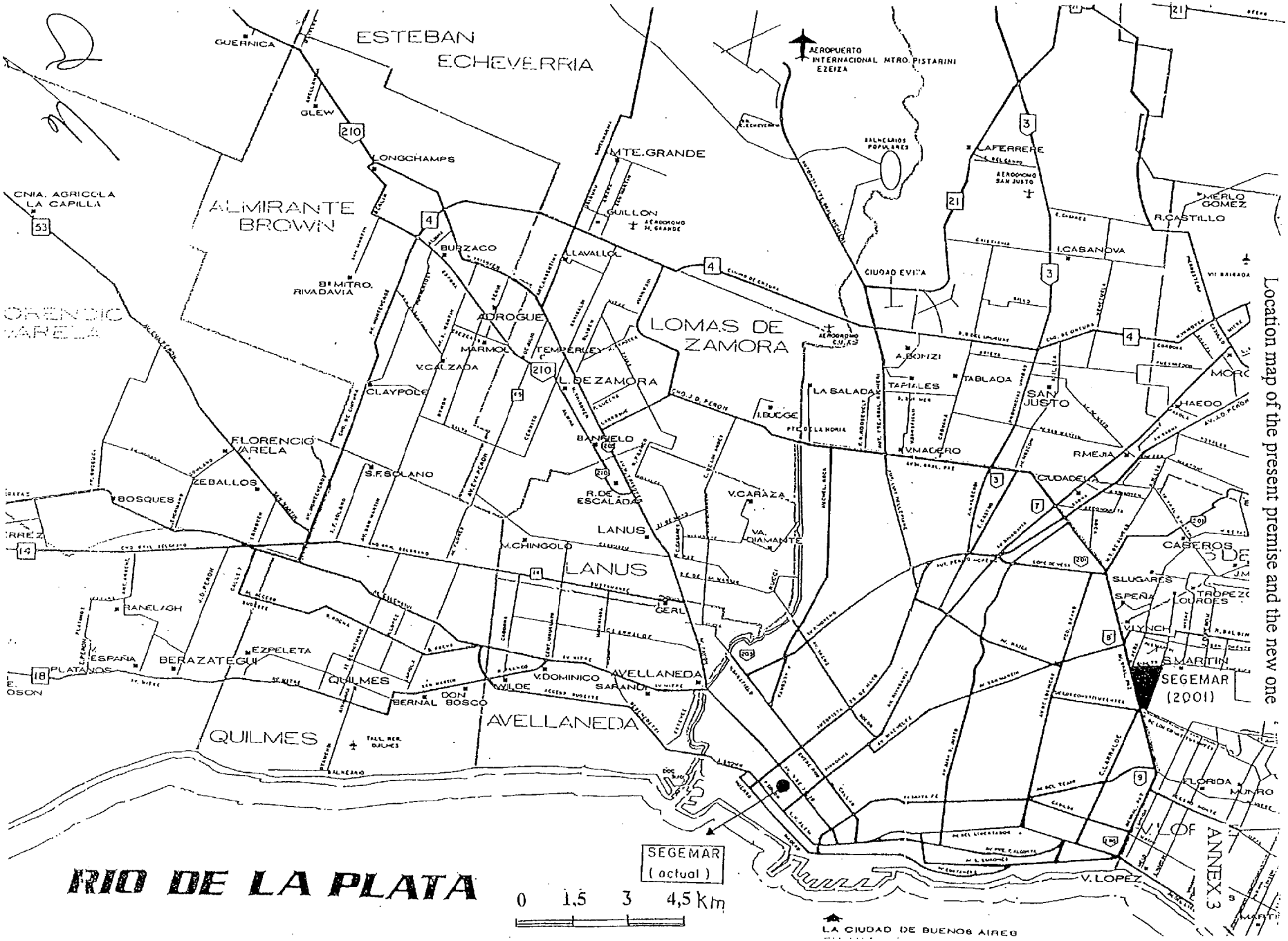
SEGEMAR – Servicio Geológico Minero Argentino (Argentine Geological and Mining Survey)
IGRM – Instituto de Geología y Recursos Minerales (Geology and Mineral Resources Institute)
INTEMIN – Instituto de Tecnología Minera (Mining Technology Institute)
DGAA – Dirección de Geología Ambiental y Aplicada (Environmental and Applied Geology Direction)
DGR – Dirección de Geología Regional (Regional Geology Direction)
DRGM – Dirección de Recursos Geológico-Mineros (Geological and Mining Resources Direction)
CTDR – Coordinación Técnica de Delegaciones Regionales (Coordination of Regional Delegations)
UNIDAD SRySIG – Unidad de Sensores Remotos y Sistemas de Información Geológica (Remote Sensing and Geographic Information Systems Division)

ANNEX 2

REGIONAL GEOLOGIC MAPPING WITH ADVANCED SATELLITE SENSORS

PROVISIONAL ORGANIZATION CHART OF THE PROJECT





Location map of the present premise and the new one

ANNEX 3

Details of the fields of technology transfer

I. Data handling and fundamental concept of earth resources satellite data

1. Familiarization training to new hardware and software installed
   a. hardware management
   b. software handling (remote sensing, GIS, others)
   c. data management (raw data, image products)
2. Remote sensing and its application to geological use
   a. visible and near-infrared (VNIR), and short-wave infrared (SWIR) sensing
   b. thermal infrared (TIR) sensing
   c. microwave sensing
   d. satellite platform, orbit, data acquisition
   e. case studies of geological mapping based on various remote sensor data
3. Effective use of ASTER data from pre-launch studies

II. Digital image processing and thematic mapping of minerals and lithology by ASTER data

1. pre-processing (data loading, line replacing, geometric correction, mosaicking)
2. image enhancement (stretching, filtering, statistical treatment, fast Fourie transform, others)
3. SWIR analysis
   a. methodology to obtain apparent reflectance
   b. construction and management of spectral library
   c. methodology of mapping alteration minerals (binary encoding, spectral angle mapping, matched filtering, spectral unmixing, others)
4. TIR analysis
   a. separation of emissivity from temperature
   b. silica contents estimation based on emissivity spectra

III. Application of ASTER data to geologic mapping and mineral exploration

1. Alteration mineral mapping based on SWIR data
   a. 3-dimensional interpretation of common hydrothermal systems
   b. geologic interpretation based on SWIR mapping results
   d. field verification for improving mapping quality
   e. operation of spectrometer and data acquisition of field reflectance spectra

2. Lithologic mapping with TIR data
   a. extraction of silica-introduced portion in hydrothermal systems
   b. lithologic interpretation based on emissivity spectra
   c. field verification for improving mapping quality
   d. operation of radiometer and data acquisition of field emissivity spectra

3. Comprehensive analysis of VNIR/SWIR/TIR mapping results for delineating potential mineralized area and resolving the other geologic problems

IV. Microwave analysis by PALSAR data

1. basic data handling and image processing (data loading, noise mitigation, correction of distortion, mosaicking, others)
2. land use analysis with radar polarimetry
3. topographic analysis with radar interferometry

V. Application to environmental analysis

VI. Application to hazardous area analysis

VII. Introduction to hyperspectral data analysis

ANNEX 5

Tentative schedule of technical transfer

	Calendar Year / Technical Field/Item	2001	2002	2003	2004	2005
Expert A (digital image processing)	I. (1) Hardware/software installation and training					
	II. Digital image processing and thematic mapping					
	V. (1,2) Environmental analysis					
Expert B (geologic remote sensing)	I. (2,3) RS for geological use, ASTER pre-launch studies					
	III. Application of ASTER data to geologic mapping and exploration					
	V. (1,2) Environmental analysis					
Short-term experts	IV. Microwave analysis					
	V. Application to environmental analysis					
	VI. application to hazardous area analysis					
	XII. Introduction to hyperspectral data analysis					

Methodology of technology transfer

Following three methods will be applied to transfer the Japanese technology.

Workshop:
One-week intensive workshop will be held at the SEGEMAR BA office once a half year to provide a proper perspective for an effective use of satellite remote sensing. The workshop basically consists of following three items: a lecture about fundamental concept of remote sensing, image processing by participants themselves, and a discussion to solve actual geologic problems by satellite data. As proceeding the Project stage, topics how to interpret the thematic maps will be added to the above. This workshop is open to all the SEGEMAR staff.

Seminar:
As publishing thematic maps in the Project, one- or two-day seminar will be held at the SEGEMAR provincial office to provide tips for an effective use of the products. In addition, a lecture about fundamental concept of remote sensing and/or complimentary field excursions will be added depending on the needs. Participants of the seminar are both SEGEMAR provincial staff and possible map users.

OJT (on-job training)
The GIS and remote sensing division staff, responsible for producing thematic map, are major counterparts who will be transferred satellite remote sensing technology. Whole the technical items listed in ANNEX 4 will be transferred from Japanese experts through the OJT and complimentary lectures, etc. The groundtruth supporting staff, such as DGR and/or CTDR geologists, are also candidates to be transferred by the OJT in field and office.

Category A

R/S Processing system

Hardware		Platform
EWS #1	SUN ULTRA 80	EWS
PC-(Desktop) #1-#3	Pentium_3/800MHZ	NT/PC
PC-(Laptop) #1-#3	Pentium_3/500MHZ	NT/PC
PLOTTER	EPSON-PM9000C	
Printer	FUJI/Pictrography-4000	
SCANNER(A3)	EPSON	
BACKUP UNIT	8mm,DDS3	
CD-Writer		
DVD-Writer		
DISK-ARRAY	(File-server)	
Uninterruptable power supply (UPS)		
Network parts		
*Set-up		

Software		
Image Processing	ENVI/3.2	NT/PC
	ERDAS/8.4 (SAR module)	NT/PC
	Atlantis (for InSAR)	EWS
GIS	ARCVIEW3.0	NT/PC
	TNT-MIPS	NT/PC
Graphic editor	PHOTOSHOP 5.5	NT/PC
	ILLUSTRATOR 7.0	NT/PC
X-Emulator		EWS-PC

Others

Spectrometer	POSAM	
Radiometer	CIMEL/TIR CE-312	
GPS	Trimble	
Vehicle		

Category B

See the next page.

Category C

Equipments for Ground truth	1 set / person	
(rock hammer, portable-GPS etc.)		
Equipment for Workshops and Seminars		
(copy machine, LCD projector etc.)		

Category B

REMOTE SENSING AREA

Quantity	Description
2	PENTIUM COMPUTER DELL OptiPlex Pentium II 64 mb RAM, 4 Gb SCSI HD Image Processing Platform with Arc/Info NT. PCI, ERDAS, ER-Mapper 5.2

GIS AREA

1. Digitizing and Edition Component

Quantity	Description
1	PENTIUM COMPUTER ACER 5200 Pentium 200 64 mb 2Gb SCSI HD Windows NT 4 p3. ArcView 3.1. Microstation. X Windows Server Digitizer platform with Arc-Info EWS and Microstation. Attched scanning system (A0 Scanner connected)
2	PENTIUM COMPUTER DELL OptiPlex Pentium 200 32 mb RAM, 1Gb SCSI HD Digitizing platform with Arc/Info NT
1	PENTIUM COMPUTER DELL OptiPlex Pentium 200 32 mb RAM, 1Gb SCSI HD X Windows Digitizing platform width LINUX RED HAT 6.1
3	DIGITIZER TABLE SUMAGRAPHICS IV

2. Server System

Quantity	Description
1	SUN Sparcstation 20, 128 mb RAM, 8mb HD MAIN ARC/INFO Aplication and Development System. Arc/Info Map Production Server. Arc/Info Digitizing Server. 3 Arc/Info Licenses Internal HTTP Server GIS Data Server
1	ACER ALTOS 9000 COMPUTER Pentium PRO 256 mb RAM, LINUX RED HAT OS 6.1, 4 Gb SCSI HD. MAIN FILE SERVER
1	PLOTTER A0 HP 755CM

	74 mb RAM Postscript printer Network supported

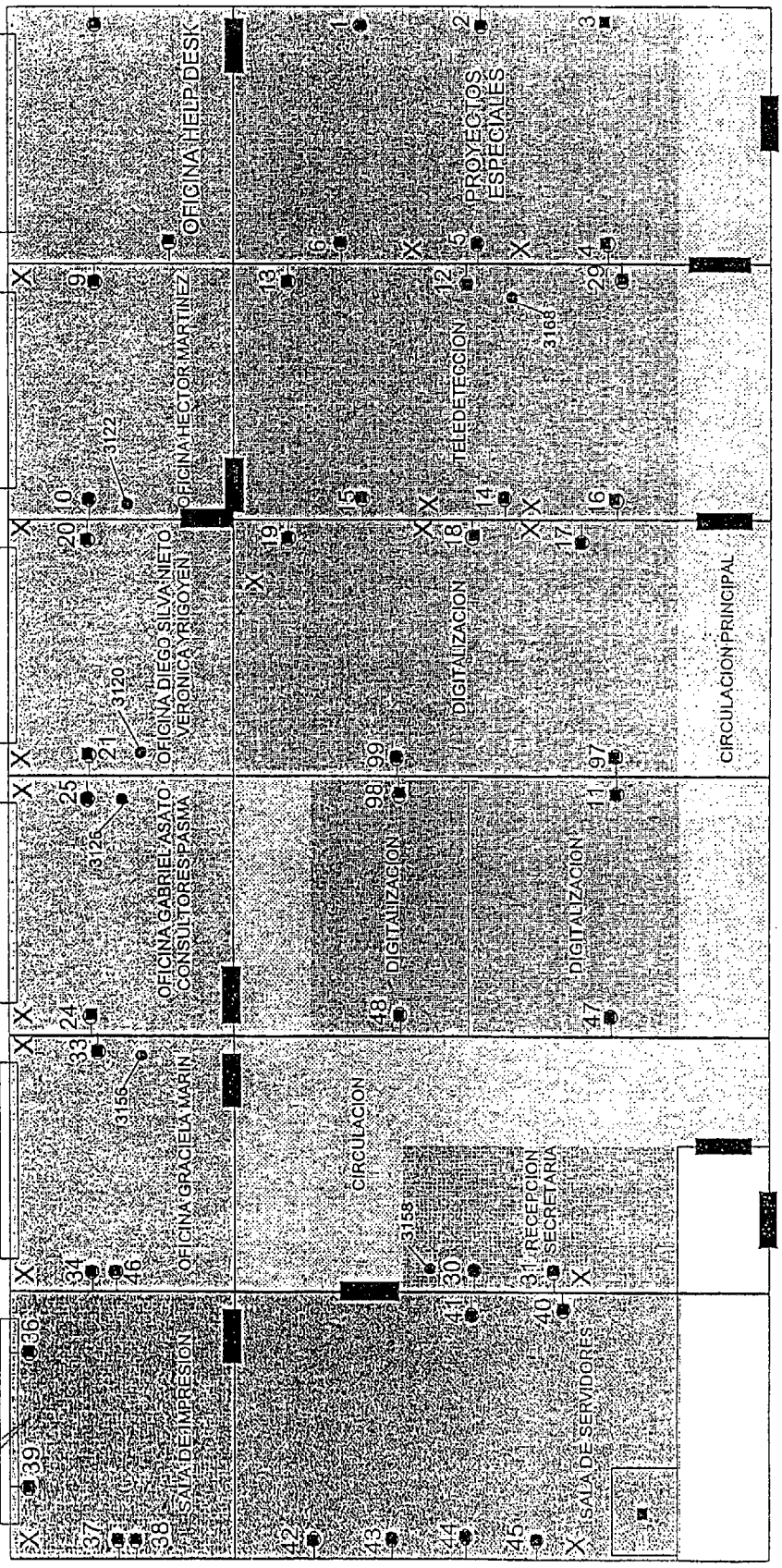
3. Others

Quantity	Description
1	COMPUTADORA PENTIUM DELL OptiPlex Pentium 200 64 mb RAM, 1Gb SCSI HD Development and Data Administration platform with Arc/Info EWS, X Windows emulator, Arc/View 3.2.
1	PENTIUM COMPUTER DELL OptiPlex Pentium 200, 32 mb, 1Gb SCSI HD. Administrative Computer. Windows NT 4 p3. Arc-View 3.1 (Graciela Marín computer)

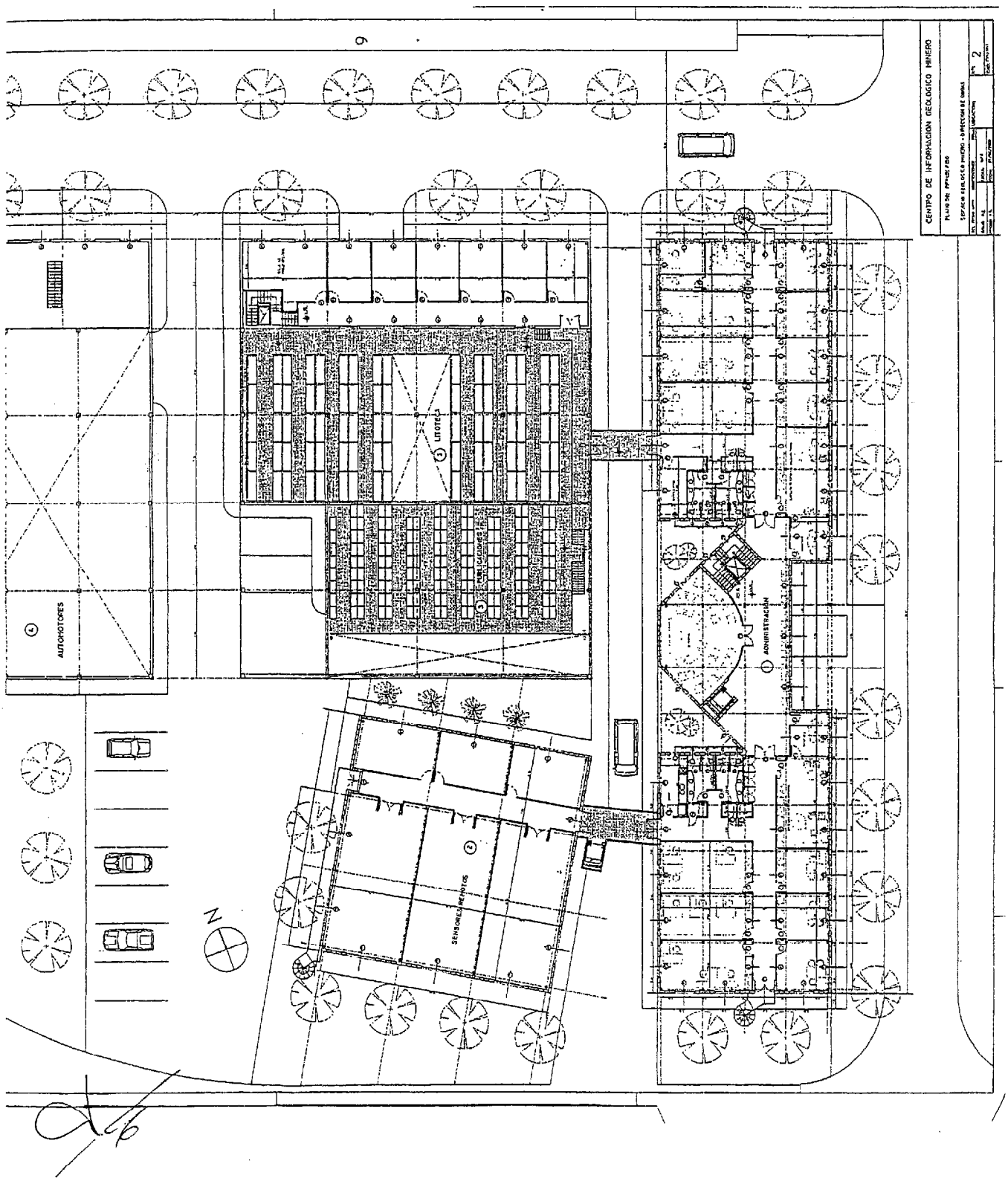
Shareable Equipment

Quantity	Description
1	PLOTTER A0 HP 755CM 74 mb RAM Postscript printer Network supported
1	LASER PRINTER HP 5M 8 mb RAM Postscript printer Network supported
1	A0 SCSI Scanner B/W 800 dpi max.
1	PENTIUM COMPUTER ACER ALTOS 300 Pentium 200, 32 mb, 1Gb SCSI HD. LINUX RED HAT 6.1 OS UNIX Aplication Development Server FGDC Metadata Server Internal HTTP Server
1	Five 2x CDROM SCSI Tower, width HP 4x CD ROM recorder
1	HEXABYTE 870 LT (under UNIX)

Layout of the present building and facilities



Layout of the new building



ANNEX 9

List of full-time and part-time counterpart

1. RS and GIS Division Staff

	Present Activity	Project Activity
Graciela Marín – Geologist (1979) specialized in RS (1986) and GIS.	Acting Director of the RS&GIS Division	Remote Sensing Coordinator, Director of the RS&GIS Division.
Carlos Gabriel Asato - Geologist, specialized in RS and GIS (1991).	Corporate GIS administrator, GIS and integration data projects developer.	GIS Administrator, GIS developer, RS process participation.
RS Project Staff – Full Time (provisional)		
Inés Di Tommaso – Geologist (1979) and GIS operator (1996).	GIS digitizer.	RS process and interpretation.
Silvia Castro Godoy – Geologist (1993) and GIS operator (1996).	GIS digitizer.	RS process and interpretation.
Diego Azcurra – Geologist (2000) specialized in RS (1997).	RS processing.	RS process and interpretation.
Cintia Marquetti – Geologist 2000).	RS processing.	RS process and interpretation.
RS Project Staff – Part Time		
Guillermo Adrian Molina – Electronic Technician (1993).	RS&GIS network administrator	RS&GIS network administrator.
Nestor Alsina – Mathematician (1977), specialized in RS and GIS.	RS processing.	RS process participation.
Damian Bonnano – Technician (1998) in RS (1999).	RS processing.	RS process participation.
GIS Staff		
Jorge Romano – Geologist (1992) specialized in computer systems.	Arc/Info programming. Digital map production administrator.	
Silvia Chávez – Geologist (2000) and GIS operator (1996).	GIS digitizer.	
Veronica Molina – Math-Topographic Technician (1992) and GIS operator (1996).	GIS digitizer.	
Norberto Gabriel Candaosa - Math-Topographic Technician (1997) and GIS operator (1997).	GIS digitizer.	
María Liliana Gambandé Alvarez – Geographer (1994) and GIS operator (1998).	GIS digitizer.	
Ana Felisa Tavitian Serrano - Math-Topographic Technician (1994) and GIS operator (1996).	GIS digitizer.	
María Isabel Olmos – Geographer (1990) and GIS operator.	GIS digitizer.	

2. Part-time counterpart from other sections

Sections	staff	Participation
Regional Geology Direction (DGR)	2~4 persons per area	Support of Field Verification
	Open to all the staff	Workshops
Regional Delegations under CTDR	2~4 persons / area	Support of Field Verification
	Open to all the staff	Workshops, Seminars
Geological and Mining Resources Direction (DRGM)	Open to all the staff	Workshops
Environmental and Applied Geology Direction (DGAA)	Open to all the staff	Workshops

ANNEX 10

DRAFT OF PROJECT DESIGN MATRIX 0

Project title: Regional Geologic Mapping with Advanced Satellite Sensors

Implementation period:

Target area:

Target group:

Prepared by: Japanese Preparatory Study Team

Date of preparation: June 28, 2000

Narrative summary	Objectively verifiable indicators	Means of verification	Important assumptions
Overall goal Basic geologic information for mineral exploration, geologic hazards and environmental studies, is compiled.			
Project purpose IGRM is able to produce quality thematic maps with advanced satellite data.	Quality of the thematic maps* reaches the expected level**. *The kinds of thematic maps is as follows: a. Alteration mineral map : Classify alteration minerals (alunite kaolinite etc.) which provides information of mineralization. b. Lithologic map : Classify lithologies based upon silica contents c. Environmental map d. Hazardous area map The detail of the content of c. and d will be discussed between Japanese experts and C/P in the beginning stage of the Project. **The expected level should be determined by discussions between Japanese experts and C/P in the beginning stage of the Project.		
Output 0. Technology transfer system is established. 1. Equipment necessary for technology transfer is operated and maintained appropriately. 2. Advanced remote sensing technology is acquired by counterparts.	0-1. C/P of appropriate number and field are allocated. 0-2. Experts of appropriate number and field are allocated. 1-1. Operation and maintemance plan for equipment is made.. 1-2. Enough budget for operation and maintenance of equipment is allocated. 1-3. C/P have enoufh knowledge on operation and maintenance of equipment. 1-4. All equipment is operated without problem. 2. C/P have acquired the items* described in the fields of technology transfer. *The scope of the items to be acquired is depending upon frequency of participation to the Project (full-time / part-time) and should be determined by discussions between Japanese experts and C/P in the beginning stage of the Project.		
Activities	Input		
	Japan Experts: Equipment: Counterpart Training:	Argentine Republic Counterparts: Buildings and Facilities Equipment: Local cost:	Precondition

Five (5) Basic Evaluation Components

1 Five (5) Basic Evaluation Components

The five 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 or 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.

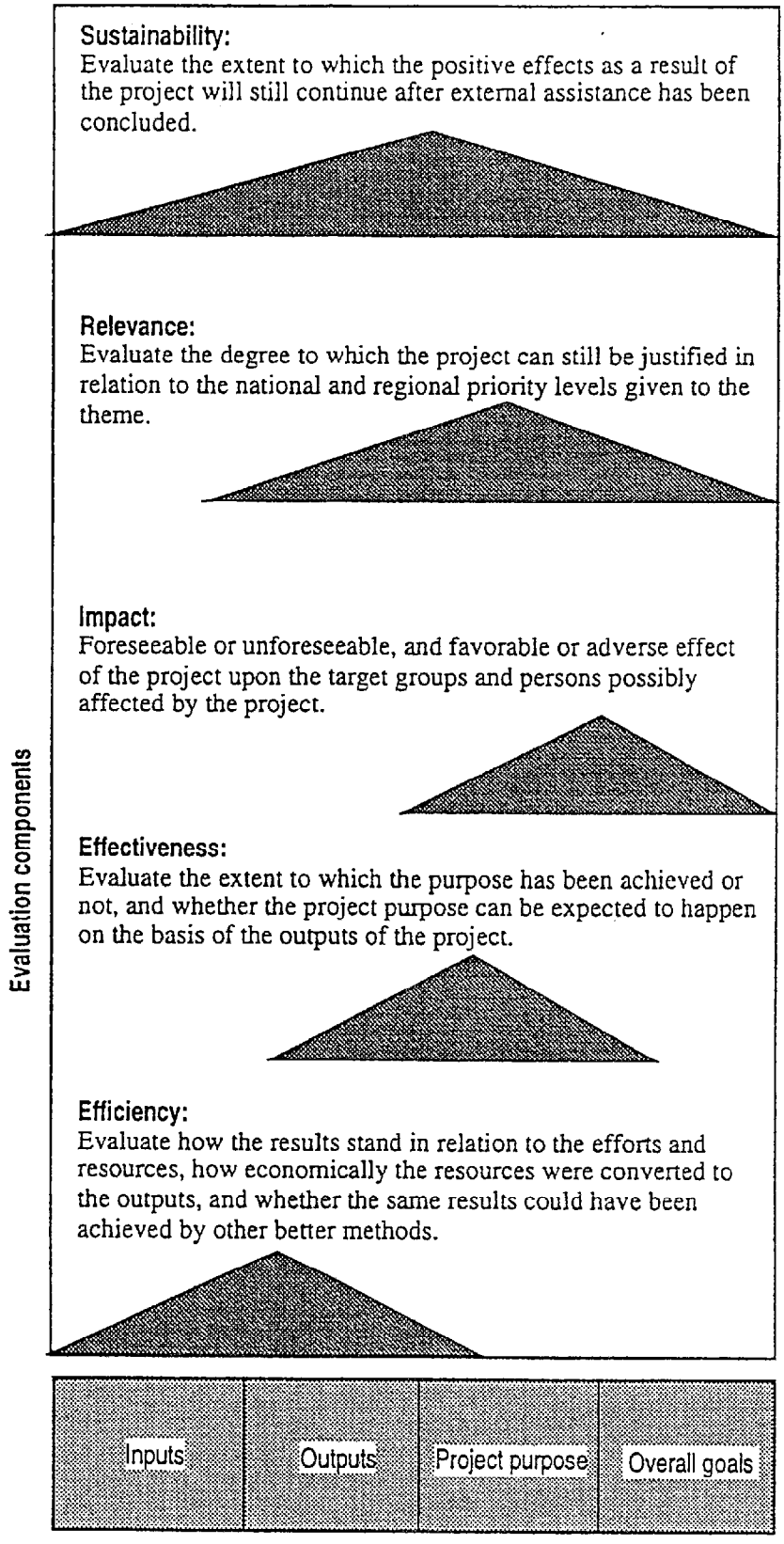
The parameter "Impact" is a foreseeable or unforeseeable, and a favorable or adverse effect of the project upon society. The evaluate impact, both the goal and project purpose should be referred to in the beginning of the evaluation. Evaluation with this components could lead to more than the confirmation 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.



Five Components vs. Goal Hierarchy

ANNEX 12

Functions and Composition of Joint Coordinating Committee

1 Functions

The Joint Coordinating Committee will be held at least once a year and whenever necessity arises. Its functions are as follows:

(1) To settle on the Annual Plan of Operations (APO) of the Project in line with the Tentative Schedule of Implementation (TSI) and the Technical Cooperation Program (TCP) formulated under the framework of the Record of Discussions;
(2) To coordinate necessary actions to be taken by both sides;
(3) To review the overall progress of the TCP as well as the achievement of the APO
(4) To exchange views on major issues arising from or in connection with the TCP.

2 Composition

(1) Chairperson

President of SEGEMAR

(2) Members

(Argentine side)

(a) Director of IGRM
(b) Director of Regional Geology Direction (Dirección de Geología Regional: DGR)
(c) Coordinator of Coordination of Regional Delegation (Coordinación Técnica de Delegaciones Regionales: CTDR)
(d) Director of Environmental and Applied Geology Direction (Dirección de Geología Ambiental y Aplicada: DGAA)
(e) Director of Geological and Mining Resources Direction (Dirección de Recursos Geológico-Mineros:DRGM)
(f) Acting Director of Remote Sensing and GIS Division (Unidad de Sensores Remotos y Sistemas de Información Geografica: UNIDAD SRySIG)
(g) Other personnel concerned with the Project decided by the Argentine Republic side, if necessary

(Japanese side)

(a) Chief Advisor
(b) Coordinator
(c) Other Japanese Experts designated by the Chief Advisor
(d) Representative(s) of JICA Office in the Argentine Republic
(e) Other personnel concerned to be decided and dispatched by JICA, if necessary

Note : Official(s) of the Embassy of Japan may attend the Joint Coordinating Committee meeting as observer(s).

List of Attendance of the meetings

Argentine Side

(1)Secretariat of Industry, Commerce and Mining

Mr. Carlos A. Petersen	General Coordinator of Mining

(2)SEGEMAR

Mr. Roberto F. N. Page	President
Mr. José E. Mendía	Director of IGRM
Mr. Antonio Lizuain	Director of Regional Geology Direction (Dirección de Geología Regional : DGR), IGRM
Mr. Eddy Lavandaio	Coordinator of Regional Delegation (Coordinación Técnica de Delegaciones Regionales : CTDR), IGRM
Mr. Omar R. Lapido	Director of Environmental and Applied Geology Direction (Dirección de Geología Ambiental y Aplicada : DGAA), IGRM
Ms. Garciela Marín	Acting Director of Remote Sensing and GIS Division (Unidad de Sensores Remotos y Sistemas de Información Geografica : Unidad SR y SIG), IGRM
Mr. Carlos Gabriel Asato	Staff of Remote Sensing and GIS Division (Unidad SR y SIG), IGRM

Japanese side

(1)Preparatory Study Team

Shinya Koike	Technical Cooperation Planning
Hideyuki Ueda	Technical Transfer Planning
Shuichi Miyatake	Mineral Exploration
Kazuyo Hirose	Remote Sensing Technology
Yukari Saito	Project Cooperation Planning
Takeshi Saito	Project Design

(2)Secretariat of Industry, Commerce and Mining

Kyoichi Koyama:	Expert of JICA

(3)JICA Argentine Office

Yutaka Iwatani	Deputy Resident Representative
Juan Carlos Yamamoto	Staff