

Multinational Andean Project

*Geoscience Investigations to Spur Economic and Social Development
in the border regions between Argentina, Bolivia, Chile and Perú*

Inception Report

Prepared by:

Geological Survey of Canada (GSC)
Dirección Nacional del Servicio Geológico de Argentina (DNSG)
Servicio Geológico de Bolivia (GEOBOL)
Servicio Nacional de Geología y Minería de Chile (SERNAGEOMIN)
Instituto Geológico Minero y Metalúrgico de Perú (INGEMMET)

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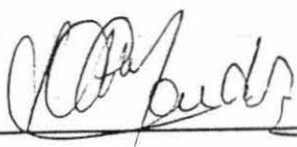
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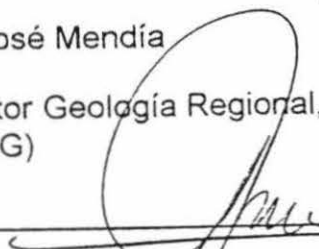
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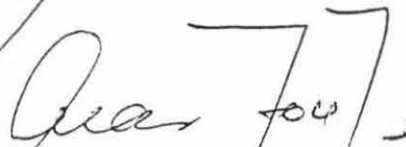
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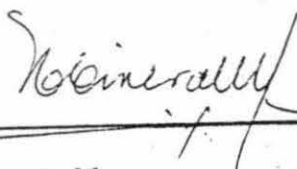
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EXECUTIVE SUMMARY

The countries of Argentina, Bolivia, Chile and Perú share common geography and borders. The mountain chain of the Andes, forming the spine of South America, links these countries creating a common geology, ecology and economic heritage bred of this link. However, the Andes also form a geographic barrier to travel east and west. This barrier was uplifted by geologic forces creating a hostile world, yet these forces endowed the region with immeasurable mineral riches. Mineral resources have already been discovered and others are certainly yet to be uncovered. It is toward these yet-to-be-found ore deposits, the mineral wealth they contain and the sharing of common purposes that can unite people and countries that this Project is directed. For the participating South American countries the ultimate goal is the economic and social development of depressed regions along their borders, mainly through mine and infrastructure development

This project seeks to strengthen the National Geoscience Surveys of Argentina, Bolivia, Chile and Perú, positioning them to undertake complex and demanding projects directed towards the needs of client groups shared by each country. An important client group, made up of mainly exploration and mining companies, many of whom are Canadian, still needs to be supplied with new and updated geoscience information. It is anticipated that new and enhanced data and updated information will supply the impetus for exploration in remote and little-explored regions of the four participating countries, mainly in their border regions. This exploration activity and the possibility it brings of new mining development may bring economic relief to some of the most impoverished parts of Argentina, Bolivia, Chile and Perú, and ultimately to Canada through Canadian private sector investment. The regions selected have little hope for other types of economic development besides the exploration impetus and possible mine development resulting from the work of the National Surveys. In addition, the new geoscience information supplied for these regions will assist in land use planning and general economic development.

In addition to supplying much needed basic geoscience data to client groups within each country, this information can be exchanged between the National Surveys to their mutual benefit. Joint investigations with common goals in regions of similar geology, and from differing positions of national strength and expertise, will build stronger national institutions within each country and stronger ties between the countries and Canada. This "Horizontal Integration" will bring the expertise that presently resides within the member countries to the forefront, benefiting all of the participating nations. The Geological Survey of Canada will provide scientific counsel, specialized expertise and enhance communications between the countries through the project. In addition to the direct benefit to the Canadian private sector through the sale of goods and services under the proposed project, the Geological Survey of Canada will benefit through expansion of its knowledge base in geological terrain relevant to both its national mandate and its international one of increasing the competitiveness of Canadian companies.

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1. CONTEXT

The mountains of the Andes form a geographic barrier between the countries of Argentina, Bolivia, Chile and Perú. Because of historic political concerns, difficult access, inhospitable environment and lack of infrastructure the region is largely underdeveloped. There is ample evidence that the area is well endowed with mineral riches. Mineral resources, notably precious metal deposits, have already been discovered and others are certainly yet to be discovered. It is towards the discovery of this mineral wealth, and the resulting economic and social development that will follow, that these geological investigations are directed.

Beginning in 1990, Banco Interamericano de Desarrollo (BID) project (ATN/SF-3427-RE) (BID I) sought to increase the level of expertise of the Surveys of Bolivia, Perú and Chile. The three year project focused on professional training and resulted in an impressive number of workshops, seminars and technical papers. This new Project Proposal (Multinational Andean Project — CIDA) includes a fourth participant, Argentina. In October 1994 a team of nine Canadian specialists was assembled by the Geological Survey of Canada under contract to the Banco Interamericano de Desarrollo (BID). Funding for this stage of the proposed *Multinational Andean Project*, was provided to BID through the Canadian International Development Agency (CIDA). The nine specialists prepared documents for the Bank and assisted the countries (including the new fourth participant, Argentina) in formulating a new project proposal. This proposal was completed in February 1995.

The findings of the Canadian team verified the positive results of the original BID project including the strengthening and enhancement of the National Geoscience Surveys of Bolivia, Chile and Perú, positioning them to undertake more complex and demanding projects directed towards the needs of client groups shared by each country, among which are a significant number of Canadian private sector participants. This important client group, made up of mainly exploration and mining companies, needs to be supplied with a new and updated geoscience information base. New and enhanced data and updated information will supply the impetus for renewed exploration in remote and little-explored regions of the four participating countries. This exploration activity and the possibility it brings of new mining development may bring economic relief to some of the most impoverished parts of Argentina, Bolivia, Chile and Perú. The regions selected have little hope for other types of economic development besides the exploration impetus and possible mine development resulting from the work of the National Surveys.

Horizontal integration is an important component of this proposed Project. The shared goal and common purpose is the economic and social development in border regions of the participating nations that will flow from the use of the new geological information. The individual Projects of the nations, as parts of cooperative investigations, strive to increase the geoscience information data base in target regions of each country. The

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integration of these projects to create compatible, modern, state-of-the-art geoscience information that will attract exploration interest and create focused, cost-effective exploration is the objective. The end result will be the publication and release of information necessary to target exploration activity in the Project regions. A spin-off benefit, is the availability of the geoscience information for land use planning, regional development and environmental impact studies, all of long term value to the countries.

The Project will be directed by an Executive Council, made up of the Directors of the National Geoscience Surveys, the National Project Leaders or Coordinators, a Multinational Technical Advisor and the Project Manager from the Geological Survey of Canada. This organization will be responsible for the scientific direction of the Project and decisions concerning coordination, integration and joint funding.

2. PROJECT GOAL

Economic and social development of depressed regions along the borders of the four participant countries, mainly through mine and infrastructure development.

Although nature provides a meagre environment in the Andes, these areas are amply endowed with mineral resources. The large-scale earth forces responsible for uplifting the mountains have also created volcanoes. These volcanoes, active over millions of years, have created an environment where ore bearing fluids related to them and their underlying magma chambers have created rich mineral deposits. Exposed by erosion, the roots of these volcanoes provide ground for exploration following basic geoscience investigation; basic geoscience work that can be accomplished by the National Geoscience Surveys of the four participating nations: Argentina, Bolivia, Chile and Perú.

In addition to supplying much needed basic geoscience data to client groups within each country, this information can be exchanged between the National Surveys to their mutual benefit. Joint investigations with common goals in regions of similar geology, and from differing positions of national strength and expertise, will build stronger surveys within each country and stronger ties between the countries. This "Horizontal Integration" will bring the expertise that presently resides within the member countries (supported by the budgets of the four participating South American countries) to the forefront, benefiting all of the participating nations. National expertise will be used in conjunction with Canadian experts that will provide scientific counsel, specialized expertise and increased communications between the countries.

3. MULTINATIONAL PROJECT PURPOSES

3.1 Geological work leading to more compatible geoscience data within the four National Geoscience Surveys.

Strengthening of the institutions through training of personnel and upgrading of

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laboratory facilities to produce better maps and reports using an updated international standard of excellence.

3.2 Increased cooperation between National Geoscience institutions in all five countries (Horizontal Integration).

Compatible international geoscience information through the use of an updated technical language and a more integrated approach to data collection, interpretation and synthesis.

Information and technology transfer between countries through exchange of personnel, working together towards a common goal and interaction in field work, workshops, seminars, conferences and short courses.

3.3 Enhance institutional relationships with Private Sector (mineral exploration and mining companies)

Attraction of exploration interest as a result of/in response to new geological information for large areas by providing geoscience information to achieve focused, cost-effective exploration with higher probability of success.

To develop a communication strategy to increase involvement of private sector as a continuing source of support and encouragement for the National Geoscience Surveys.

3.4 INSTITUTIONAL STRENGTHENING

Through short-term training of personnel and upgrading of analytical capacity of the national geoscience surveys to increase quality of product and analytical capacity.

4. SCOPE OF PROJECT

Each nation will pursue geoscience objectives that are pertinent to their country, their level of expertise and funding ability, but which will satisfy the project purposes. As far as possible, regions chosen by each country will be along the borders of the respective nations to maximize the amount of integration and interaction between the countries. These areas have also been chosen because of their high potential for economically viable mineral deposits and lack of updated geoscience information. Joint products, seminars, attendance at conferences, workshops, field trips, technical courses (short courses) and exchange of personnel will facilitate the transfer of technology between countries and the integration and coordination of the Project.

To maximize the positive benefits of working toward a common goal and well defined purpose the Projects in each country should be integrated (Table 1).

The following types of integrative work are envisioned:

- ◆ short term exchange of geologists between countries

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- ◆ multinational and binational field trips in areas of mutual interest
- ◆ multinational and binational workshops, short course and seminars focused on problems of common concern
- ◆ attendance at multinational conferences in which results of national Projects will be presented
- ◆ production of joint products of a binational and multinational nature
- ◆ some specialized services and advice provided by or for other participants.

This approach will lead to the production of maps and reports of high international standards using related underlying professional principles and high data integrity.

4.2 Work Areas

The areas chosen by the countries are shown in Figures 1 and 2. These areas are along the boundaries of the nations participating in the Project. The regions were chosen because they represent areas that fulfill national objectives as well as the goal and purposes of this, the Multinational Andean Project.

4.3 Joint Activities

This Project proposes a number of activities from which joint products or outputs may result.

- ◆ Conference papers on the work of the Project participants will be submitted to relevant conference conveners. For the last meeting, a volume containing papers and/or abstracts will be published summarizing the accomplishments of the Project and to present final results and products of the Project.
- ◆ Seminar/workshop/short course notes: Information presented at the workshops and seminars will be of direct benefit to the participants to help them understand and solve problems in the Project areas. Course notes and information will be published from each workshop. The Canadian experts will be required to present lecture notes and prepared texts with extensive reference lists.
- ◆ Metallogenic maps of the border regions. The maps will include deposits classified according to commodities, size, age, characteristic rock associations and genetic type, e.g. mineralization in time and space.
- ◆ "Progress Reports" presenting the results of each country. These reports will be prepared by each country individually with a common format and cover. Administrative and technical reports (bi-annual) are to be prepared for CIDA and for wider distribution.
- ◆ National or multinational products such as geological maps along border areas

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and adjoining regions.

It is expected that individuals and groups of participants and affiliates will generate a long list of scientific publications that will be attributed to the Multinational Andean Project. These works will continue to flow long after the Project has terminated as will the collaboration between the five participating countries.

4.4 Joint Work Plan

The exchange of geologists, and both international and national experts among the participating countries will ensure that the expertise and knowledge that resides in an individual country will be transferred to the other participants. Table 1 gives a summary of these joint work plans.

4.5 Scope of GSC involvement

The Geological Survey of Canada will supply the Project Manager and Project Administrator (see project management section). These individuals will work with the Executive Council to ensure delivery of relevant geoscience expertise and services. The GSC will undertake the contracting and management of the overall project and will be responsible to CIDA for project delivery. The GSC will also supply Experts by secondment, organize and deliver workshops, short courses and field trips either through its own in-house expertise or through contracting to the private sector. Specialized analytical and Geoscience Services will be procured directly through the GSC or from private sector suppliers. All outside contracting, services and equipment supply will be through standard Public Works and Government Services Treasury Board guidelines for procurement. All per diems, travel related expenses etc. will be according to Treasury Board directives or those appropriate for living expenses for the country where the expertise is being supplied and according to the rules of the respective country.

5. EXPECTED RESULTS

5.1 Argentina, Bolivia, Chile and Perú

The result expected from this Project is increased investment in mineral exploration and development in the target regions. This will be through providing the Private Sector with increased geoscience information in the target regions. This information will be delivered by the countries in one or more of the following ways:

- A. Regional geological and thematic maps, drawn to a scale of 1:250,000 with an optional accompanying explanatory report. This product can include all available data such as basic mineral deposits distribution maps with a standardized format, geophysics, geochemistry, isotopic dating, structural interpretations, cross sections, detailed legends and marginal notes. Metallogenic maps will include deposits classified according to commodities, size, form, characteristic host rock

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assemblages, genetic type and, where possible, age. There should be a concluding summary of regional metallogenesis and an indication of favourable areas for certain types of elements, commodities, and deposits.

- B. Regional geological and thematic maps, drawn to a scale of 1:100,000 and an optional accompanying explanatory report. This product will include all available data such as basic mineral deposits distribution maps, geophysics, geochemistry, isotopic dating, structural interpretations, cross sections, detailed legends and marginal notes. Mineral deposit maps can include descriptions of mining districts or 'camps' with individual, significant or typical deposits classified according to commodities, size, age, characteristic rock associations, structural controls, style of alteration, weathering characteristics and genetic type.
- C. District scale geological maps, drawn to an appropriate scale (1:50,000 or smaller). Included will be descriptions of host lithologies, structural controls, mineralogy, economic parameters (tonnage, grade, assay results) and hydrothermal alteration. A record of mine production and exploration history should be outlined. Geochemical and geophysical data should be shown on maps, if available. An itemized list with locations shown on geological maps and other easily obtained information from prospects, drawn to a scale of 1:2,500 and/or 1:1,000 should be included in district scale discussions where practical and significant.
- D. Technical reports and maps on detailed studies relevant to the Project in addition to "Progress Reports." (Table 1)

The Project will continue for four years with the major focus of the final year being write-up of the National, Binational and Multinational products from the Projects. These products will be presented at various meetings and/or published. Where possible, these products will be produced in digital format and be publicized and promoted by such means as publications, workshop-seminars, discussion forums, etc. as part of the horizontal integration.

A strong effort will be made to keep the participating member nations and interested public aware of the Project by use of a Project information letter. This non-technical review, an annual requirement of CIDA, can be used to promote widespread awareness of the Project and be used as an effective tool for advertising the various products of the participating nations.

5.2 Canada

The expected results for Canada will be the increased cooperation between the participating countries and the Canadian Geoscience industry (both Public and Private). It is expected that the Canadian private sector will benefit, both through supply of goods and services during the project and by increased access to information upon which to base exploration strategy in the target regions. By providing input into the public institutions of the participating countries, it is anticipated that the political

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climate for mineral exploration will be enhanced. The enhancement of the stature of the National Geoscience Institutions will also impact on environmental issues as baseline geoscience information is incorporated into landuse planning at all levels of government and appropriate government departments.

6. VERIFICATION OF RESULTS

Achievement of the Project Goal will be verifiable by the increase in investment in mineral exploration and development in the target regions. Specific Project Purposes will be verifiable by specific Project products and activities. Joint products such as papers, field trip guidebooks, workshop notes, etc., will be the tangible legacy of the project arising out of the Project Activities.

7. GENERAL RISKS

The overall risk to lack of achievement of the stated goal will revolve around the political environment at the time of mineral exploration. This environment must be favourable for industry investment. Other risks are associated with the availability of qualified personnel to administer the development of mineral resources. In addition the mineral discoveries made by the private sector must be economically viable for mine and infrastructure development. Risks to achieving the project purposes are mainly centred around the availability of Trainees and resources to accomplish the stated objectives.

Risk Management

The specialized training that will be available to participating countries over the next four years will be an incentive for staff to remain with their respective institutions in order to be eligible for training. Access to this training is seen as a significant benefit to staff. Ensuring that training is relevant and effective will be an important criteria for delivery of workshops, short courses, and other activities. The possibility to travel to Canada and to neighbouring countries is also viewed in a positive light by staff of the institutions.

Part of the project will focus on involvement of the Private sector. This involvement should lead to strong advocacy positions among the private sector in support of the work of the National Geoscience Institutions. In imparting Canadian "best practices" it is anticipated that stronger institutions will emerge. This strengthening should extend to departments responsible for development - making them aware of the positive impact of mineral exploration and mining on the economy, thus producing a favourable climate for investment.

8. PROJECT MANAGEMENT

The Project will be directed by an *Executive Council* made up of the Directors of the National Geoscience Surveys, a Technical Advisor, the National Project Leaders or

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Coordinators, and the Project Manager from the Geological Survey of Canada. This organization will be responsible for the scientific direction of the Project and decisions concerning coordination, integration and joint funding. The council will have an Executive Secretary who will be elected from among the Directors of Argentina, Bolivia, Chile and Perú. Each country will have one vote (excepting Canada) on the Executive Council and that vote is carried by the Director of the Geoscience Survey of the Country (or their designate) and the National Project Leader/Coordinator (or designate). The Project Manager will be responsible for disbursement of funds according to Canadian Treasury Board rules and CIDA guidelines.

The Executive Council will be formed by:

- ◆ Directors of the Geoscience Surveys of Argentina, Bolivia, Chile and Perú
- ◆ The Technical Advisor (non-voting)
- ◆ National Project Leaders/Coordinators of the participating nations.
- ◆ Project Manager, Geological Survey of Canada, as a non-voting member.
- ◆ Upon invitation of the Executive Council, as observers without voting rights, CIDA representatives and other functionaries.
- ◆ Project Administrator as a non-voting attendee.

8.1 Responsibilities of the Executive Council

1. To elect an Executive Secretary and define the functions, activities and responsibilities of this position.
2. To select and appoint the Technical Advisor.
3. To empower the Project Manager to hire a Project Administrator, upon approval of the council.
4. To initiate, plan and promote the activities of the Project and to approve joint funding (to be implemented and dispersed by the Project Manager).
5. Review and approve the detailed work plans which will be formulated during the pre-project consultatory stage by the National Project Leaders or Coordinators, the GSC and CIDA Advisors.
6. The Executive Council should suggest and approve adjustments to the Project such as changes in the sequence of events and activities to facilitate Project integration and joint activities. These changes will be implemented by the Project Manager. All other changes will be the responsibility of the Project Leader/Coordinator when they do not involve GSC deliverables.
7. Establish a coordination unit headed by the Project Manager, with the assistance of the Project Administrator, for contracting and administrating consulting services according to the norms of the Geological Survey of Canada, the Canadian International Development Agency and the Canadian Treasury Board.

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8. Review and evaluate the execution and progress of the Multinational Andean Project.
9. Review the budget for the Project and apply the iterative management approach. Major changes or adjustment in the CIDA funded portion of the budget must be approved by the Executive Council and CIDA project manager. Individual country Project budgets are proprietary to the respective nations.
10. Review and approve the reports and activities of the Canadian Experts.
11. Determine the format of the Project progress and interim reports and the final written reports of the Project.
12. Review and approve the final product(s) of the Projects and obtain verifiable indicators as per agreement with CIDA.
13. The Executive Secretary, in consultation with the National Project Leader or Coordinator of the country where the Council's meeting will take place, will have the Project Administrator prepare an agenda and program for each Executive Council meeting.

8.2 Functions of the Executive Secretary

This individual will be a Director of one of the Geoscience Surveys (Argentina, Bolivia, Chile and Perú) and will be selected by vote by the Executive Council. The functions of the Executive Secretary are to:

1. Assist in formulating and coordinating a work plan and the initiation of the Project which will be based on the needs and national goals of the participating countries.
2. Coordinate the horizontal integration of the countries and facilitate the progress of the Multinational Andean Project.
3. Establish and maintain communications with the Project Manager regarding jointly funded activities on behalf of the entire Project with the assistance of the Project Administrator.
4. Ensure that the decisions of the Executive Council are carried out.

8.3 Functions of the Project Manager

1. S/he will attend bi-annual meetings and others as required by the Executive Council as a non-voting executive member.
2. S/he will participate in directing the Multi Andean Programme by approving and dispersing funds from CIDA as requested by the Executive Council.
3. S/he will direct the provision and contracting of specialized and consulting services according to the norms of the GSC, CIDA and Canadian Treasury Board.
4. S/he will maintain communication with the Executive Secretary regarding progress

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of the Project.

8.3 Functions of the Technical Advisor

This individual will be appointed by the Directors from Argentina, Bolivia, Chile and Peru, to assist in overseeing the scientific objectives of the projects. The functions of the Technical Advisor are to:

1. S/he will act as a scientific advisor to the Executive Council.
2. S/he will coordinate the scientific programmes and summarize the scientific achievements of the programme.

[Any remuneration for the Technical Advisor will be the responsibility of the Executive Council, not the Geological Survey of Canada or CIDA.]

8.4 Functions of the Canadian Project Administrator

The Project Administrator has the following responsibilities. S/he is primarily to provide administrative support for the Project Manager and Executive Secretary and to facilitate communications between the multinational participants in the Project and coordinate multinational activities.

1. To participate in the meetings of the Executive Council of the Project as a non-voting member of the Council.
2. Under the direction of the Project Leader or Coordinator for each country assist in identifying the resource needs of each country and propose a coordinated plan for the development and implementation of the Project, based on the individual needs of the participating countries.
3. To keep the Project Manager, Executive Secretary and Technical Advisor informed about the activities and progress of work in each country and for the Project as a whole.
4. To coordinate the activities within the Project of the Canadian technical experts as designated by the Executive Council under the direction of the Project Manager.
5. To assist in the organization, coordination and setting up of seminars, meetings and other mutual activities in the participating countries.
6. To assist in the administration of the multinational budget under the direction of the Executive Secretary and Project Manager.
7. To prepare and present to the Executive Secretary, Technical Advisor and Project Manager all information about Project activities in each country. This information is to be made ready for inclusion in the annual reports, including details about the purchased items and other budget details.
8. To coordinate Project publications and final Project summary reports.

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9. - To inform the Executive Secretary, Technical Advisor and Project Manager about the utilization and activities of technical experts in the various Projects, including details for each participating country about what expertise was requested and how the requests were met.

8.5 Functions of the National Project Leaders and Coordinators

The National Project Leaders/Coordinators have the following responsibilities:

1. Participate in the meetings of the Executive Council as members of this body.
2. Organize, direct and control the activities of the Project in his/her own country. This will be done according to the approved work plan.
3. The Leader/Coordinator will be the head of the geologists involved in the Project within the country during the country's participation in the Project.
4. Propose the personnel who will carry out the investigations of the Project, the ones who will receive specialized training, and who will participate in the workshops, short courses, seminars and other activities related to the Project.
5. Organize, direct and participate in the geologic investigations.
6. Coordinate the workshops, short courses, seminars and other related activities that will be held in their respective countries.
7. Acquire/order, through the appropriate mechanisms, equipment and supplies as budgeted within the Project.
8. Manage the budget and track expenses during the country's Project.
9. Prepare the requirements of the disbursements and submit them for consideration to their own authorities and then to the Project Manager and Executive Secretary. A detailed itemised budget of the Project acquisitions will also be included.
10. Prepare information related to the activities of the country, and send the corresponding information to the Executive Secretary & Project Manager. This information will be included in the annual reports to CIDA and distributed among the participants of the Project.
11. Coordinate the editing and publishing, for their respective country, all technical reports prepared for the Project.

9. PROJECT BUDGET

Specialized Geoscience Services: The Specialized geoscience services (analytical, geophysical, etc.) will be supplied (to the largest extent possible) by the GSC or the Canadian private sector under the administration and technical supervision of the GSC. GSC staff will serve as the Scientific Authority on contracts to the private sector.

Specialized Geoscience Expertise: Specialized expertise will be supplied through

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the Geological Survey of Canada, either from its own staff or by contract with the private sector. This expertise will be supplied based on the needs of the National Geoscience Surveys as identified by each and subject to the endorsement of the Executive Council. The countries receiving the Specialized Expertise will be responsible, as far as possible, for appropriate living expenses in the country where the expertise is being supplied and according to the rules of the respective country. For workshops, short courses, conferences, etc., held in Canada, Multinational Project funding will cover all expenses of participants upon landing in Canada. Countries will be responsible, as far as possible, for travel costs to Canada.

Equipment: Specialized equipment must be purchased from Canadian sources through Canadian Government procurement procedures and be of direct benefit to the project and lead to a long term increase in the abilities of the National Geoscience Survey requesting the equipment.

Informatics: As with equipment, informatics (computers, software, etc.) requests must be of direct benefit to the project and lead to a long term increase in the abilities of the National Geoscience Survey requesting the informatics. Informatics must be purchased from Canadian sources through Canadian Government procurement procedures

General Support Expenditures: Participation in Canadian geoscience activities (for example Geological Association of Canada Annual General Meeting or the Prospectors and Developers Association of Canada (PDAC) Meeting) will be supported through the project. Joint publications, such as those associated with conferences, will be supported by the project.

Miscellaneous Supplies: Specific supplies necessary to the advancement of the project.

Project Administration: The expenses of the Project Manager and Project Administrator will be covered by the project, including secretarial support and other expenses necessary for the efficient management of the project.

See Table 2 for a budget summary and Appendix A for details of the budget requests.

10. LOGICAL FRAMEWORK ANALYSIS

See Table 3.

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Table 1: Joint Work Plan — Horizontal Integration

	YEAR 1 1996/97		YEAR 2 1997/98			YEAR 3 1998/99			YEAR 4 ¹ 1999/2000
Argentina	Field Work ³	Write up of interim products	Progress Report ²	Field Work ³	Write up of interim products	Progress Report ²	Field Work ³	Write up of interim products	Write up of joint and individual products
Bolivia	Field Work ⁴	Write up of interim products	Progress Report ²	Field Work ⁴	Write up of interim products	Progress Report ²	Field Work ⁴	Write up of interim products	Write up of joint and individual products
Chile	Field Work ⁵	Write up of interim products	Progress Report ²	Field Work ⁵	Write up of interim products	Progress Report ²	Field Work ⁵	Write up of interim products	Write up of joint and individual products
Perú	Field Work ⁶	Write up of interim products	Progress Report ²	Field Work ⁶	Write up of interim products	Progress Report ²	Field Work ⁶	Write up of interim products	Write up of joint and individual products

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Joint	<p>Sept: Inception Meeting (Salvador Bahia, Brazil, Sept.1-6, 1996</p> <p>Participation in PDAC^a, March 1997 Toronto</p> <p>Exchange of selected staff</p> <p>Joint work with Canadian Experts</p> <p>Seminars etc. by Canadian Experts</p> <p>Meetings of Executive Council</p>	<p>Jan. 1998: B.C. Roundup/SEG</p> <p>April 1998: Field Trip/Workshop</p> <p>Exchange of selected staff</p> <p>Joint work with Canadian Experts</p> <p>Seminars etc. by Canadian Experts</p> <p>Meetings of Executive Council</p>	<p>Oct. 1998: Meeting, Buenos Aires, Argentina</p> <p>Exchange of selected staff</p> <p>Joint work with Canadian Experts</p> <p>Seminars etc. by Canadian Experts</p> <p>Meetings of Executive Council</p>	<p>PDAC, Toronto, Ontario, March</p> <p>Joint work with Canadian Experts</p> <p>Meetings of the Executive Council</p>
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¹A final meeting to display products and highlight the activities of the Project will be held in 2000 in La Paz, Bolivia (year 5), the date of this meeting will be determined by the publication schedule of the products of the nations.

²A "Progress Report" This will be a product prepared by each country giving the details of the field work for that year. A common cover and format will be used by all the countries to identify the product as a Multinational Andean Project, produced with support from CIDA.

³ In Project area of Argentina, field work generally takes place from October-December and March-April.

⁴ In Project area of Bolivia, field work generally takes place from April-October.

⁵ In Project areas of Chile, field work generally takes place in Arica area (CH-1) from October-November and March-April and in the Copiapó area (CH-2) from November-April.

⁶ In Project area of Perú, field work generally takes place from April-November.

⁷ Executive Council will meet twice a year, one meeting will be in conjunction with the meeting/field trip to be held that year.

^a PDAC = Prospectors and Developers Association of Canada

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PRELIMINARY FOUR YEAR SUMMARY OF THE TOTAL BUDGET FOR THE MULTINATIONAL ANDEAN PROJECT BETWEEN ARGENTINA, BOLIVIA, CHILE, PERU and CANADA. (In thousands of CDN dollars)											
Purpose of Expense	CANADIAN INTERNATIONAL DEVELOPMENT AGENCY					COUNTERPART CONTRIBUTIONS OF COUNTRIES					TOTALS
	ARG.	BOL.	CHILE	PERU	Multinational	ARG.	BOL.	CHILE	PERU	CANADA	
Specialized technical expertise, Workshops, fieldtrips, seminars, etc					2220						
Specialized Geoscience Services	390	240	240	240							
Equipment	70	120	120	120							
Informatics [infrastructure]	40	100	100	100							
General Support Services					200						
Misc. Supplies					100						
Project Administration					440						
TOTAL CIDA					4,800						
Salary and expenses							1351	1500	2461		
Institutional Infrastructure (20%)							111	402	493		
Logistics							555	301	2206		
Analyses and Services							28	208	257		
10% Contingency							205	241	542		

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TOTAL COUNTRIES							2260	2652	5959		
TOTAL PROJECT	500	460	460	460	2,960	(0)	2,260	2,652	5,959	(0)	15,711

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Table 3: Logical Framework Analysis

Project Goals & Activities	Expected Results	Verifiable Indicators	Means of verification:	Risks:
Economic and social development of depressed regions along the borders of the four participating countries, mainly through mine and infrastructure development.	Increased investment in mineral exploration and development in target regions.	Amount of money invested in mineral exploration in the target regions. Number of companies operating in mineral exploration	Reports from agencies responsible for compiling information on mineral investment and activities.	Political environment favourable for industry investment Qualified personnel to administer the development of mineral resource. Mineral occurrences must be economically attractive for mine development.
Project Purposes:	Outcomes	Verifiable Indicators	Means of verification:	Project Risks:
Geological work leading to more compatible geoscience data within the four National Geoscience Surveys.	Maps and reports using updated standards.	Maps and reports prepared by the participating countries.	Maps and reports prepared by the participating countries.	Availability of resources Access to project areas
Increased cooperation between geoscience institutions in all five countries (Horizontal Integration).	Exchanges of technical data and expertise	Joint papers, meetings, field trips, workshops	Reports, field trip guide books etc...	Availability of resources and reporting mechanisms. Political will to continue cooperation.
Enhance institutional relationships with Private Sector (mineral exploration and mining companies).	Increased number of requests for information from the private sector. Communication strategy for involvement of private sector.	Increased requests, usage and sales of data by institutions.	Sales and distribution information supplied by National Geoscience Surveys.	Availability of resources to reproduce information.
institutional strengthening	Increased product quality and analytical capacity	New, more detailed maps Positive user response	Maps & reports produced User interviews	Lack of resources Logistical difficulties Insufficient analytical capacities
Project Activities	Outputs	Verifiable Indicator	Means of Verification	Risks
Scientific data & analyses of rock and mineral samples and some related training	Analytical data of high quality	Analytical results consistent over time	Statistical data collected by Laboratory	Resources for analytical services Lack of availability of laboratory services

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Seminars, workshops, field conferences and short courses to be given by Canadian experts in areas to be agreed upon in consultation with Canada and National Geoscience surveys.	Trained personnel using updated standards to produce maps and reports.	Trainees produce maps and reports to an updated standard.	Maps and reports produced	Insufficient trainees Lack of support to reproduce maps and reports Lack of resources for moving personnel.
Produce Metallogenic Map of the border regions	Trained personnel in preparation of metallogenic maps.	Trainees produce maps.	Metallogenic maps.	Lack of trainees Lack of resources
Attendance at conferences to highlight work of project.	Conference attendance(s).	Abstracts and short papers highlighting work of project. Conference attendance.	Conference reports	Lack of favourable geology in target regions. Resources to attend conference.
Project Inputs:	Use of resources		Means of Verification: Methods used	Project Risks:
CANADIAN CONTRIBUTION Specialized technical expertise Specialized geoscience services Equipment Informatics [Infrastructure] General Support Services Misc. supplies Project Administration			- Quarterly financial and progress reports - Biannual project monitoring reports - Minutes from executive council meeting - Final project report - Field visits to project areas and institutions	- availability of resources
NATIONAL CONTRIBUTION Salary & expenses Institutional Infrastructure Logistics Analyses & services Contingency			Reports as appropriate to the specific national geoscience surveys.	Lack of resources for project implementation.