



ARGENTINE REPUBLIC

**2010 SCIENTIFIC, TECHNICAL AND  
SERVICES ANTARCTIC ANNUAL PLAN**

2009 – 2010 ANTARCTIC CAMPAIGN  
(PERIOD: NOV 1, 2009 - OCT 31, 2010)

MINISTRY OF FOREIGN AFFAIRS, INTERNATIONAL TRADE AND  
CULT

NATIONAL DIRECTION OF THE ANTARCTIC

**P A S S E D**

RESOLUTION No. ....

MINISTRY OF FOREIGN AFFAIRS, INTERNATIONAL TRADE AND CULT

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2010 SCIENTIFIC, TECHNICAL AND SERVICES  
ANTARCTIC ANNUAL PLAN

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**2010 SCIENTIFIC, TECHNICAL AND SERVICES**  
**ANTARCTIC ANNUAL PLAN**

**INDEX**

| <b>CONCEPT</b>   | <b>PAGE</b> |
|--|-------------|
| INTRODUCTION   | 3           |
| INFRASTRUCTURE, DEVELOPMENT AND MAINTENANCE OF STATIONS, SHELTERS AND LABORATORIES PROGRAM | 6           |
| LABORATORIES MANAGEMENT PROGRAM  | 27          |
| EARTH SCIENCES PROGRAM   | 32          |
| LIFE SCIENCES PROGRAM  | 53          |
| PHYSICAL-CHEMICAL SCIENCES PROGRAM   | 71          |
| ENVIRONMENTAL MANAGEMENT AND TOURISM PROGRAM   | 85          |
| MUSEUM PROGRAM   | 89          |
| INSTITUTIONAL RELATIONSHIPS AND COMMUNICATIONS PROGRAM                                     | 91          |
| LOGISTICS OPERATION PROGRAM  | 98          |
| NAVAL HYDROGRAPHIC SERVICE   | 102         |
| NATIONAL WEATHERFORECAST SERVICE   | 107         |
| ACRONYMS   | 112         |
| DISTRIBUTION   | 114         |

## **2010 SCIENTIFIC, TECHNICAL AND SERVICES** **ANTARCTIC ANNUAL PLAN**

### **INTRODUCTION**

This 2010 Antarctic Annual Plan comprises the scientific technological, logistics and service activities that will start on November 1 and will end on October 31, 2010.

The goal of this Annual Plan is to gather in one sole executive program all the Antarctic aspects and activities in a coherent and homogeneous manner, so that they comply with the rulings contained in the Antarctic National Policy (Decree No. 2316/90), within the framework of the Antarctic Law No. 18.513, and in line with the international commitments taken on by Argentina. It additionally turns into an analytical guide for the development of the activities of the Republic in Antarctica.

When devising this Antarctic Annual Plan it has been specially taken into account the development of the scientific-technical research development and the consequent application of the invaluable experience of previous campaigns, aspects that are both the core the Antarctic activities in line with legal and statutory regulations above mentioned contained in the “Guidelines of Science and Technique” duly complying with Decree No. 2316/90.

### **REFERENCES**

The Argentine scientific and technical action in the Antarctica dates back to the beginning of the 20th century, through the installation and operation of meteorological observatories, which have carried out such activity without interruption until present days with the development of research programs as those container in current Plan.

The implementation and development of this “2010 SCIENTIFIC TECHNICAL AND SERVICES ANTARCTIC ANNUAL PLAN” are Stationed on the following antecedents:

- Law 18.513.
- National Antarctic Policy (Decree No. 2316/90).
- Law 24.216.
- Law 25.263
- National Planning System.
- Previous Planning.
- Antarctic Campaigns carried out.

### **GENERAL OBJECTIVE**

To consolidate Argentine sovereignty rights in the Antarctica, going deeper in the scientific and technical activities aimed at attaining full knowledge of the Antarctic nature, specially the areas related to the country's priorities, promoting conservation and preservation of fishing and mineral resources, environmental protection, Latin-American integration in the Antarctic matters and rendering of services.

## **IMPACT ON THE ANTARCTIC ENVIRONMENT**

In line with the Antarctic Protocol on Environmental Protection, the Argentine Republic as a State Party has committed to the comprehensive protection of the Antarctic environment and the dependent and associated ecosystems considering Antarctica as an area dedicated to Peace and Science.

Taking into account the recommendations established in the Protocol on Environmental Protection to the Antarctic Treaty, passed by Law No. 24.216, assessments on the impact that the increasing human activity produced in the Antarctic environment have been carried out. The Argentine Republic in compliance with the obligations agreed upon has foreseen and fulfilled, among others, the following guidelines that, grouped by type of environmental degradation caused by the activities in the Antarctic Stations and Shelters, Field Camps, Naval and Air Operations, are the ones listed below:

- There are explicit instructions so that access by air has to be established in a manner that should not interfere with the normal life of the colonies.
- Limit to vehicle and people circulation to the circuits that do not disturb local environment.
- It has also been stated that waste disposal shall not interfere with the normal route that species in the colonies take to the sea or in search of food.
- Likewise, a frequent control over fuel tanks has been stated to prevent and avoid spillage and leaks, concentrating these deposits in areas far from the coast.
- Personnel training so that they shall not get into the Antarctic birds and mammals colonies, except for the scientists who study species and their behaviour in their settlements.

Notwithstanding what was stated above, it is worth mentioning that there are ongoing assessments about the impact on the Antarctic environment caused or that may be caused by the different activities carried out within the framework of Law No. 24.216, approving the Protocol on Environmental Protection to the Antarctic Treaty open for signature in Madrid.

## **METHODOLOGY**

For the elaboration of this Antarctic Annual Plan, the detailed instructions necessary for writing the reports about research and specific developments were

forwarded to the responsible people of the scientific disciplines and the Task Teams, as well, so that they are consistent, homogeneous and compatible before being included in the Plan.

The minimum and necessary guidelines were forwarded so that they are within the general framework of the respective contributing plans.

Likewise, scientific researchers and technicians responsible for the logistic support were consulted, thus consented criteria that integrate the development of this plan is attained.

**INFRASTRUCTURE, DEVELOPMENT AND  
MAINTENANCE OF STATIONS, SHELTERS  
AND LABORATORIES PROGRAM**

## **BELGRANO II STATION PROJECT**

**Type of Project:** LOG No. 01

**Starting Date:** 29 years ago

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Introduction:** Belgrano II Station is located at Nunatak Bertrab, Confín Coast, Weddell Sea. Its geographical location is 77° 52' S and 34° 37' W. It is at 1300 km. from the South Pole. Temperature ranges between 5° and 48° below zero. Research related to Physico-Chemical Sciences is carried out in this Station.

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tasks:** (1) To support and facilitate the development of the scientific and technical activities in line with the Antarctic Annual Plan. (2) To complete the construction details of the main house. (3) To keep, improve and adapt the station's infrastructure, installations and means to all current rulings concerning the protection of the Antarctic environment. (4) To carry out equipment and machines maintenance for a proper and safe operation. (5) To enlist and get ready the personnel for search and rescue in emergency situations in the area of influence. (6) To manage, control and protect materials, equipment, installations, means and personnel for a proper operation in the course of the year. (7) To carry out a periodic bromatology and sanitary control of all personnel. (8) To keep the 220 V and 380 V electric lines and networks in operation. (9) To supply the station with the necessary material for a 2-year operation period

- **Tasks Team:** BELGRANO II 2010 CREW

**Personnel allotted:** 15 (fifteen)

**Load:** Outbound trip: General Load 10 t – 29 m<sup>3</sup>  
Inbound trip: General Load 2 t – 6 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** Antarctic Campaign 2009/2010 (according to deployment and withdrawal to access to the place of operation)

**Place of Operation:** Belgrano II Station

**Housing:** Station

**Support Requirements:** ---

## **ESERANZA STATION PROJECT**

**Type of Project:** LOG No. 02

**Starting Date:** 57 years ago

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Introduction:** Esperanza Station is located at the North East of the Antarctic Peninsula at 64° 24' S and 57° 59' W. It is the northernmost station that our country maintains in the Argentine Antarctic Territory. Human Resources are annually integrated by scientists, school teachers and personnel from the Argentine Army with their respective families. School No. 38 "Presidente Julio A. Roca" and the Broadcast Station LRA 36 "Arcángel San Gabriel" are located there. Research carried out is related to Earth Sciences and Life Sciences.

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tasks:** (1) To support and facilitate the development of the scientific and technical programs in line with the Antarctic Annual Plan. (2) To perform maintenance tasks in the Satellite Ground Station to assure a proper operation of all the operative systems. (3) To carry out maintenance and operation of the LRA "Arcángel San Gabriel" Broadcast Station as the means to spread Antarctic activities and the Argentine presence in the area. (4) To maintain, redo, improve and adapt the station's present infrastructure, installations and means in compliance with current rulings to protect the Antarctic environment, maximizing its operation and providing personnel with safety and comfort. (5) To carry out maintenance and operation of the sewage treatment plant and the water treatment plant. (6) To carry out equipment and machines maintenance for a proper and safe operation. (7) To carry out the maintenance of the thermosiphons and retaining walls of the Boeckella lake to avoid a water level change. (8) To carry out the maintenance of satellite antennas, antenna towers and communications irradiants (9) To keep the 220 V and 380 V electric lines and networks in operation. (10) To enlist and get ready the personnel for search and rescue in emergency situations in the area of influence. (11) To develop educational activities for the primary and secondary school levels. To exchange information with United States educational institutions referred to meteorology by Globe system and with pupils of the Colegio Marín of Buenos Aires through the Pole to Pole project. (12) To manage, control and protect materials, equipment, installations, means and personnel for a proper operation in the course of the year. (13) To maintain and operate the videoconference system for educational and sanitary emergency purposes. (14) To carry out a periodic bromatology and a sanitary control of all personnel.

- **Tasks Team:** ESPERANZA 2010 CREW

**Personnel allotted:** 57 (fifty seven)

**Load:** Outbound trip: General Load 260 t – 760 m<sup>3</sup>  
Inbound trip: General Load 30 t – 140 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** Antarctic Campaign 2009/2010 (according to deployment and withdrawal to access to the place of operation)

**Place of Operation:** Esperanza Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To carry out maintenance of the Ground Satellite Station (2) To improve networks, and 220 and 380 v electric lines. (3) To reinforce the retaining walls of the Boeckella lake. (4) To perform a partial replacement of the water and sewage pipelines. (5) To carry out improvements in the laboratory.

- **Task Team:** ESPERANZA 2010 TEMPORARY CREW

**Personnel allotted:** 15 (fifteen)

**Load:** Outbound trip: General Load: included in the Crew Group  
Inbound trip: General Load: included in the Crew Group

**Duration:** 90/120 days

**Scheduled Date:** 2009/2010 Antarctic Summer Campaign

**Place of Operation:** Esperanza Station

**Housing:** Station

**Support Requirements:** ---

## JUBANY PROJECT

**Type of Project:** LOG No. 03

**Starting Date:** 26 years ago

**Executing Entity:** National Direction of the Antarctic-Argentine Antarctic Institute (DNA-IAA)

**Participating Entities:** Argentine Army

**Introduction:** Jubany Station is located at the 25 de Mayo Island, on the South of Potter Cove Coast, South Shetland Islands. Depending since 1982 from the National Direction of the Antarctic (DNA), at present is the Argentine scientific Station of excellence, allowing the development of numerous researches related to earth science, life science and physico-chemical sciences.

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tareas:** (1) To maintain and operate equipment, vehicles and machinery in general. (2) To perform a general maintenance of all the station's structures and instalations. (3) To collaborate with the station's planned infrastructure and development tasks. (4) To permform maintenance of the shelters depending from the station.

- **Task Team:** JUBANY 2010 CREW

**Personnel allotted:** 16 (sixteen)

**Load:**            Outbound trip:            General Load 230 t – 550 m<sup>3</sup>  
                                 Inbound trip:

**Duration:**        365 days

**Scheduled Date:** March 2010 – March 2011 (4 people leave in November 2009)

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

## **MARAMBIO STATION PROJECT**

**Type of Project:** LOG No. 04

**Starting Date:** 39 years ago

**Executing Entity:** Argentine Air Force

**Participating Entities:** ---

**Introduction:** Marambio Station is located at the Weddell Sea, at 64° S and 56° W, on a plain at 200 mts above sea level, and at 2800 km from the South Pole (along an imaginary straight line). The relevance of Marambio Station is Stationed on the fact that it is the Argentine supporting location through which it provides the national and international Antarctic community with the operational logistics support for the development of the scientific and technical programs of the Argentine Antarctic Program, movement of personnel and load, search and rescue, load airdrop and sanitary evacuation.

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tasks:** (1) To ensure logistics support to the scientific and technical activities and other activities related to the Antarctic matters. (2) To keep the airdrome of Marambio Station permanently operative. (3) To keep road maintenance machinery and automobiles operative. (4) To optimize the airport infrastructure. (5) To ensure rationalization and housing of the station's permanent and temporary personnel. (6) To perform maintenance inspections of the station's installations, equipment and machinery. (7) To ensure the operation of the Marambio Antarctic Meteorological Centre. (8) To execute the Clearing, Treatment and Waste Disposal Plan in line with what was agreed in the Protocol on Environmental Protection to the Antarctic Treaty (Environmental Protection and Preservation).

- **Tasks Team:** MARAMBIO 2010 CREW

**Personnel allotted:** 44 (forty four)

**Load:** Outbound trip: General Load (not reported)  
                                 Inbound trip:        General Load (not reported)

**Duration:** 365 days

**Scheduled Date:** Antarctic Campaign CA 2009/2010

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To support the logistics of current air traffic and to propose improvements to increase safety and efficiency. (2) To coordinate, through the Marambio Substation, the search and rescue tasks with other means that may be assigned according to demanding situation. (3) To be the support station for the Control Centre of Comodoro Rivadavia Area in its Flight Information Region (FIR CRV) from Parallel 60° South up to the Pole. (4) To comply with what agreed by the Argentine Republic within the framework of the COMNAP-RAPAL as regards the necessary support for air operations safety.

- **Tasks Team:** CONTROL OF AIR TRAFFIC

**Personnel allotted:** 6 (six, included within the Task Team of MARAMBIO 2010 CREW)

**Load:** Outbound trip: General Load (not informed)  
Inbound trip: General Load (not informed)

**Duration:** 365 days

**Scheduled Date:** ANTARCTIC CAMPAIGN 2009/2010

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To maintain and operate communications equipment. (2) To concentrate and spread meteorological information. (3) To check and calibrate terrestrial radiohelps requests. (4) To keep the antennas in operating conditions. (5) To give advice as regards the best use of all communications means. (6) To order the necessary spare parts and preventive maintenance parts for such. (7) To perform maintenance of the satellite antenna and digital equipment.

- **Tasks Team:** COMMUNICATIONS

**Personnel allotted:** 5 (five, included within the Task Team of Marambio 2010 Crew)

**Load:** Outbound trip: General Load (not reported)  
Inbound trip: General Load (not reported)

**Duration:** 365 days

**Scheduled Date:** October 2009 – October 2010

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To perform maintenance of the airport infrastructure. (2) To update essential services. (3) To perform maintenance of planes hangar building and gate. (4) To implement the necessary technologies and procedures to reduce environmental impact due to the Antarctic Acitivity. (5) To maintain the fire fighting network (6) To collect and dispose of historical wastes. (7) To complete the new artificial main lake.

- **Tasks Team:** MARAMBIO INFRASTRUCTURE

**Personnel allotted:** to be appointed by the Direction of Antarctic Matters

**Load:** Outbound trip: General Load (not reported)  
Inbound trip: General Load (not reported)

**Duration:** not reported

**Scheduled Date:** January 2010 – March 2010

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

## **ORCADAS STATION PROJECT**

**Type of Project:** LOG No. 05

**Starting Date:** 104 years ago

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tasks:** (1) To perform maintenance, repair and conservation tasks of existing installations. (2) To dispose of waste produced. (3) To perform maintenance of services, nursing, kitchen and dining room, bedrooms, radio and meteorology, corridors. (4) To improve the effluents treatment plant. (5) To adapt and recondition the dock for small ships. (6) To provide a system for fuel procurement management. (7) To adapt and recondition networks and electrical circuits to currenet needs.

- **Tasks Team:** ORCADAS CREW (same Task Team Orcadas Temporary Crew)

**Personnel allotted:** to be appointed

**Load:** Outbound trip: General Load: not reported

Inbound trip: General Load: not reported

**Duration:** 365 days

**Scheduled Date:** 2009/2010 ANTARCTIC SUMMER CAMPAIGN (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Orcadas Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To keep installations and means in proper operation conditions. (2) To manage and operate the Station in all aspects paying special attention to the ecological impact due to human presence in the region. (3) To provide the logistics support to the scientific and technical programs in line with the Antarctic Annual Plan. (4) To provide the meteorological, glaciological and communications support to the antarctic stations that may require it and to the ships sailing in the surrounding area. (5) To participate in search and rescue actions. (6) To support the actions carried out for a geographic reconnaissance of the station's surrounding area. (7) To provide operative and logistics support to planes and ships that operate in the area of influence. (8) To carry out the glaciological reconnaissance in its area and to report data to the Navy Hydrographic Service. (9) To keep and protect the existing historical sites in the station.

- **Task Team:** ORCADAS 2010 TEMPORARY CREW

**Personnel allotted:** to be appointed

**Load:** Outbound trip: General Load: not reported  
Inbound trip: General Load: not reported

**Duration:** Antarctic Summer Campaign

**Scheduled Date:** Antarctic Summer Campaign 2009/2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Orcadas Station

**Housing:** Station

**Support Requirements:** ---

## **SAN MARTIN STATION PROJECT**

**Type of Project:** LOG No. 06

**Starting Date:** 57 years ago

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Introduction:** San Martín Station is located in Marguerite Bay, on Barry Island, in the Bellinghousen Sea. The importance of its existence is that it is the first Argentine installation located below the Polar Circle, what allows the control of the central part of the Antarctic Peninsula, being the westernmost permanent Station of the Argentine Antarctic Territory.

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tasks:** (1) To support and facilitate the development of the scientific and technical programs in line with the Antarctic Annual Plan. (2) To maintain, improve and adapt the station's present infrastructure, installations and means in compliance with current rulings to protect the Antarctic environment, ensuring and maximizing its operation and providing personnel with safety and comfort. (3) To carry out maintenance and operation of the sewage treatment plant and the water treatment plant. (4) To carry out equipment and machines maintenance for a proper and safe operation. (5) To enlist and get ready the personnel for search and rescue in emergency situations in the area of influence. (6) To manage, control and protect materials, equipment, installations, means and personnel for a proper operation over the year (7) To carry out a periodic bromatology and a sanitary control of all personnel. (8) To keep the 220 V and 380 V electric lines and networks in operation.

- **Tasks Team:** SAN MARTIN 2010 CREW

**Personnel allotted:** 17 (seventeen)

**Load:** Outbound trip: General Load 72 t – 200 m<sup>3</sup>  
Inbound trip: General Load 16 t – 70 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** Antarctic Campaign 2009/2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** San Martín Station

**Housing:** Station

**Support Requirements:** ---

## **CAMARA STATION PROJECT**

**Type of Project:** LOG No. 07

**Starting Date:** 55 years ago

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic

Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tasks:** (1) To carry out maintenance, repair and conservation tasks on the existing installations in order to preserve the watertightness and habitability conditions. (2) To increase water storage capacity. (3) To eradicate waste produced. (4) To maintain the electric network. (5) To improve sewage effluents discharge.

- **Task Team:** CAMARA 2010 CREW

**Personnel allotted:** not reported

**Load:** Outbound trip: General Load: not reported  
Inbound trip: General Load: not reported

**Duration:** not reported

**Scheduled Date:** Antarctic Summer Campaign 2009/2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Cámara Station

**Housing:** Station

**Support Requirements:** ---

## DECEPTION STATION PROJECT

**Type of Project:** LOG No. 08

**Starting Date:** 60 years ago

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tasks:** (1) To carry out maintenance, repair and conservation tasks on the existing installations in order to preserve the watertightness and habitability conditions. (2) To continue the refurbishing house used for scientific activities. (3) To improve the electric circuit of the main house. (4) To redo the power house construction.

- **Tasks Team:** DECEPTION 2010 CREW

**Personnel allotted:** not reported

**Load:** Outbound trip: General Load: not reported  
Inbound trip: General Load: not reported

**Duration:** Antarctic Summer Campaign 2009/2010

**Scheduled Date:** Antarctic Summer Campaign 2009/2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Deception Station

**Housing:** Station

**Support Requirements:** ---

## **MELCHIOR STATION PROJECT**

**Type of Project:** LOG No. 09

**Starting Date:** 61 years ago

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tasks:** (1) To carry out maintenance, repair and conservation tasks on the existing installations in order to preserve the watertightness and habitability conditions. (2) To redo the supporting and fixing footing of the emergency house structure (EGA). (3) To redo the dock footing. (4) To install a lift for the movement of loads on the dock.

- **Tasks Team:** MELCHIOR 2010 CREW

**Personnel allotted:** not reported

**Load:** Outbound trip: General Load: not reported  
Inbound trip: General Load: not reported

**Duration:** not reported

**Scheduled Date:** Antarctic Summer Campaign 2009/2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Melchior Station

**Housing:** Station

**Support Requirements:** ---

## **PETREL STATION PROJECT**

**Type of Project:** LOG No. 10

**Starting Date:** 56 years ago

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tasks:** (1) To carry out maintenance, repair and conservation tasks on the existing installations in order to preserve the watertightness and habitability conditions. (2) To continue filling and fixing moraines around the main house and the Shop-Power House building. (3) To eradicate waste produced. (4) To repair the hangar roofs. (5) To rebuild the supporting footing and the wall on the eastern side of the main house. (6) To install a power generator. (7) To repair the metal gate of the food storage warehouse.

- **Task Team:** PETREL 2010 CREW

**Personnel allotted:** not reported

**Load:** Outbound trip: General Load: not reported  
Inbound trip: General Load: not reported

**Duration:** not reported

**Scheduled Date:** Antarctic Summer Campaign 2009/2010 according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Petrel Station

**Housing:** Station

**Support Requirements:** ---

## **PRIMAVERA STATION PROJECT**

**Type of Project:** LOG No. 11

**Starting Date:** 31 years ago

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Introduction:** Primavera Station is located in Cierva Cove, on the Danco Coast, in the northern acces of Gerlache Strait. It is a station of temporary characteristics as it is only occupied during the Summer Antarctic Campaign. It is a place where research related to life science is developed.

**Specific Goal:** To consolidate the Argentine sovereignty rights in the region. To ensure the station operation and to support all scientific and technical activities in line with the Antarctic

Annual Plan. To provide security and comfort to the personnel during the Antarctic Campaigns.

**Tasks:** (1) To open and supply the station. (2) To support and facilitate the development of the scientific and technical activities in line with the Antarctic Annual Plan. (3) To keep, improve and adapt the station's infrastructure, installations and means to all current rulings concerning the protection of the Antarctic environment. (4) To manage, control and protect materials, equipment, installations, means and personnel for a proper operation fit for the summer period. (5) To enlist and get ready the personnel for search and rescue in emergency situations in the area of influence. (6) To carry out a periodic bromatology and sanitary control of all personnel. (7) To recondition the station for its closure.

- **Task Team:** PRIMAVERA 2010 CREW

**Personnel allotted:** 8 (eight)

**Load:** Outbound trip: General Load 13 t – 40 m<sup>3</sup>  
Inbound trip: General Load 4 t – 10 m<sup>3</sup>

**Duration:** 150 days

**Scheduled Date:** November 2009 – March 2010

**Place of Operation:** Primavera Station

**Housing:** Station

**Support Requirements:** ---

## TEMPORARY STATIONS AND ANTARCTIC SHELTERS PROJECT

**Type of Project:** LOG No. 12

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Specific Goal:** To maintain and improve the temporary stations and shelters in order to make them the appropriate support centres to develop the scientific and technical programs in line with the Antarctic Annual Plan.

**Tasks:** (1) To inspect installations. (2) To carry out maintenance to ensure the proper conservation of the installations and the habitability conditions. (3) To reclaim materials that have no application.

- **Task Team:** ITINERANT INSPECTION OF STATIONS AND SHELTERS

**Personnel allotted:** Stations Crew

**Load:** Outbound trip: Load General: ---  
Inbound trip: Load General: ---

**Duration:** Antarctic Summer Campaign 2009/2010

**Scheduled Date:** Antarctic Summer Campaign 2009/2010 according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Operations Zone

**Housing:** Units of the Antarctic Naval Command.

**Support Requirements:** ---

## **MARAMBIO STATION DNA WAREHOUSE PROJECT**

**Type of Project:** LOG No. 13

**Starting Date:** 30 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** Due to the particularity implied by the deployment and withdrawal of the scientific activity developed under the “camps” modality, it is mandatory to have an Advanced Polar Warehouse that coordinates the movement of personnel and load, providing the necessary supplies for the optimum development of the tasks to be performed in the land.

**Specific Goal:** Effective performance of the logistics tasks inherent to the deployment and withdrawal of the camps from Marambio Station.

**Tasks:** (1) To coordinate the deployment and withdrawal of logistics and scientific materials and loads in transit of the National Direction of the Antarctic-Argentine Antarctic Institute (DNA-IAA). (2) To check the distribution and to ensure the correct deployment of the logistics and scientific loads and materials in the place of destination. (3) To keep the connection and collaborate with the station’s logistics personnel appointed for that purpose. (4) To collaborate in the coordination of personnel movement of the National Direction of the Antarctic-Argentine Antarctic Institute (DNA-IAA). (5) To carry out maintenance and keeping of campaign equipment (patrol, vehicles, power generators, etc.).

- **Task Team:** DNA MARAMBIO CREW

**Personnel allotted:** 2 (two, 1 in CA 2009/2010 with replacement every 3 months and 1 in ANTARCTIC SUMMER CAMPAIGN 2009/2010)

**Load:** Outbound trip: General Load 0.1 t – 1 m<sup>3</sup>  
Inbound trip: General Load: ---

**Duration:** 365 days

**Scheduled Date:** November 2009 – November 2010 (CA)  
November 2009 – March 2010 (ANTARCTIC SUMMER CAMPAIGN)

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

## **JUBANY STATION DEVELOPMENT PROJECT**

**Type of Project:** LOG No. 14

**Starting Date:** 26 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** DNA – IAA - Argentine Army

**Introduction:** Jubany Station is located on the 25 de Mayo Island (King George Island), on the southern coast of Potter Cove, among the South Shetland Islands. Since 1982 it has depended from the National Direction of the Antarctic (DNA), and at present it is the Argentine scientific station of excellence and it allows the development of numerous research related to earth science, life science and physical-chemical sciences.

**Specific Goal:** Development of Jubany Station infrastructure.

**Tasks:** (1) To complete the tasks of construction of the new main house and the new laboratory. (2) To perform a structural repair of the Dallmann Laboratory. (3) To clean sewage pipeline (inspection chamber and access inlet) (4) To build a concrete platform to place a container for the future emergency power house.

- **Task Team:** JUBANY ANTARCTIC SUMMER CAMPAIGN 2009/2010 DEVELOPMENT

**Personnel allotted:** 12 (twelve)

**Load:** Outbound trip: General Load: ---  
Inbound trip: General Load: ---

**Duration:** 120 days

**Scheduled Date:** November 2009 – End of March 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To clean the sewage effluents treatment plant. (2) To perform maintenance in the radiostation, the main house, the diving house, the meteorology house and the power house. (3) To carry out a general painting to be determined in situ. (4) To perform a survey and check of sanitary installations. (5) To perform maintenance tasks in the Elephant Shelter.

**Task Team:** JUBANY previous ANTARCTIC SUMMER CAMPAIGN 2010 DEVELOPMENT

**Personnel allotted:** 6 (six)

**Load:** Outbound trip: General Load 0.20 t – 30 m<sup>3</sup>  
Inbound trip: General Load ---

**Duration:** 60 days

**Scheduled Date:** September 2010 – November 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

## **BROWN STATION MAINTENANCE PROJECT**

**Type of Project:** LOG No. 16

**Starting Date:** 2 years ago

**Executing Entity:** National Direction of the Antarctic (DNA)

**Participating Entities:** DNA - IAA – Prefectura Naval Argentina (Argentine Coast Guard)

**Introduction:** Brown Station is located in the Sanavirón Peninsula at the Gerlache Strait. For its privileged geographical location it can be considered one of the completest natural laboratories in the Antartica.

In compliance with what was established by the National Antarctic Policy, and in order to consolidate the Argentine sovereignty rights in the region, the National Direction of the Antarctic (DNA) has the objective of refurbishing, putting in proper state and developing the station for its future use.

**Specific Goal:** Refurbishing of Brown Station for the development of scientific-technical work.

**Tasks:** (1) To perform a comprehensive maintenance in the emergency house (opportunity tasks). (2) To perform photographic surveys in the area of location of the station and its installations.

- **Task Team:** BROWN DEVELOPMENT

**Personnel allotted:** 7 (seven) (1 DNA – 6 PNA)

**Load:** Outbound trip: General Load 7 t – 20 m<sup>3</sup>  
Inbound trip: General Load ---

**Duration:** 90 days

**Scheduled Date:** December/2009 – March/2010

**Place of Operation:** Brown Station

**Housing:** Station

**Support Requirements:** Movement of load in vessels with a closed storage place for the transportation of wood, machinery, etc. It is mandatory to operate with helicopters to minimize the hard task of unloading materials and supplies on the coast due to the difficult access and further movement to the necessary or working area. Pneumatic boats with out-board motor.

## **GURRUCHAGA SHELTER PROJECT**

**Type of Project:** LOG No. 19

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Specific Goal:** To ensure the operativity of the Gurruchaga Shelter and to support the scientific-technical activities in line with the Antarctic Annual Plan.

**Tasks:** (1) To perform maintenance, repair and conservation tasks of existing installations in order to preserve the watertightness and habitability conditions to support the scientific-technical programs in line with the Antarctic Annual Plan.

- **Task Team:** GURRUCHAGA SHELTER

**Personnel allotted:** not reported

**Load:** Outbound trip: General Load: not reported  
Inbound trip: General Load: not reported

**Duration:** not reported

**Scheduled Date:** ANTARCTIC SUMMER CAMPAIGN 2009/2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Gurruchaga Shelter

**Housing:** Shelter

**Support Requirements:** ---

## **CAILLET BOIS SHELTER PROJECT**

**Type of Project:** LOG No. 20

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Specific Goal:** To ensure the operativity of the Caillet Bois scientific-technical activities in line with the Antarctic Annual Plan.

**Tasks:** (1) To perform maintenance, repair and conservation tasks of existing installations in order to preserve the watertightness and habitability conditions to support the scientific-technical programs in line with the Antarctic Annual Plan.

- **Task Team:** CAILLET BOIS SHELTER

**Personnel allotted:** not reported

**Load:** Outbound trip: General Load: not reported  
Inbound trip: General Load: not reported

**Duration:** not reported

**Scheduled Date:** Antarctic Summer Campaign 2009/2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Caillet Bois Shelter

**Housing:** Shelter

**Support Requirements:** ---

## **HYPERBARIC CHAMBER MAINTENANCE PROJECT**

**Type of Project:** LOG N° 21

**Starting Date:** Nuevo

**Executing Entity:** DNA-IAA

**Participating Entities:** DNA - IAA – Argentine Army

**Introduction:** From January 1st, 2004, the Scientific Jubany Station has a hyperbaric chamber for the treatment of diving diseases. It is a multiplace chamber (with chamber and antechamber), with a big purified air plant (of high and low pressure) and all the necessary equipment for the hyperbaric oxygen therapy. Though autonomous diving (only with air), by scientists and support personnel from this Scientific station is of the “non decompressive” type, the installation of the equipment described is fundamentally preventative, allowing the enhancement of safety in this activity. Such hyperbaric facility needs maintenance and periodic repair. This will be performed during the next summer campaign.

**Specific Goal:** Maintenance and repair of the hyperbaric facility of Jubany Station.

**Tasks:** (1) To repair and/or maintain the hyperbaric facility of Jubany Station

- **Task Team:** “HYPERBARIC TEAM”

**Personnel allotted:** 4 (1 DNA, 3 other)

**Load:** Outbound trip: General Load 2 t – 3 m3  
Inbound trip: General Load 2 t – 3 m3

**Duration:** 60 days

**Scheduled Date:** November 2009 – December 2009

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

## MARAMBIO VALLVERDU BOATS WAREHOUSE

**Type of Project:** LOG No. 22

**Starting Date:** New

**Executing Entity:** DNA -IAA

**Participating Entities:** ---

**Introduction:** To complete the tasks for the construction of a warehouse to keep and maintain boats and vehicles.

**Specific Goal:** To establish a logistics support centre for the DNA- IAA Project to be developed in the area (Methane Hydrate Project and Field Training and Antarctic River Navigation Project).

**Tarea:** (1) To build a warehouse to keep boats and vehicles (2) To perform maintenance of all-terrain vehicles, snow motorbikes, boats and power generators of the DNA deployed at the site (3) To complete refurbishing of the selter's interior.

- **Task Team:** VALLVERDU BOATS WAREHOUSE

**Personnel allotted:** 6 (six, 3 DNA and 3 CAE)

**Load:**

|                       |   |
|-----------------------|---|
| <u>Outbound trip:</u> | General Load: 5 t – 12 m <sup>3</sup>   |
| <u>Inbound trip:</u>  | General Load: 0.80 t – 1 m <sup>3</sup> |

**Duration:** 75 days

**Scheduled Date:** December 2009 – February 2010

**Place of Operation:** Marambio Island

**Housing:** Vallverdu Boats Warehouse

**Support Requirements:** Movement of personnel and load by air between Buenos Aires and Marambio Station. Movement of materials between Marambio Station and the Vallverdu Boats Warehouse located on the coast of López de Bertodano Bay. Support personnel and equipment of the Methane Hydrate team.

## ASSETS PROJECT

**Type of Project:** OTR 1-2009

**Executing Entity:** DNA

**Introduction:** Control over the existing assets in the Antarctic stations have to be performed, in compliance with Accounting Law, Resolution No. 47/97 of the Treasury and Resolution No. 830/77 of the Ministry of Foreign Affairs, International Trade and cult, in order to update the records of assests, deletions, additions and the state of them.

**Specific Goal:** To peform assets inspections of the Marambio and Jubany Antarctic Stations.

**Tasks:** (1) To carry out an assets survey of the stations, to identify assests filling in the description of inventories (2) To re-write the numbers of the existing inventories (3) To write a report on the requests of the necessary deletions and tasks to keep the assets to be deleted (4) To update data Stations and print inventories in situ, signed by the people responsible in the respective positions.

- **Task Team:** JUBANY ASSETS (same as Task Team Marambio Assets)

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load: ----  
Inbound trip: General Load: ----

**Duration:** 25 days

**Scheduled Date:** May / October

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

- **Task Team:** MARAMBIO ASSETS (same Task Team as Jubany Assets)

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load: ----  
Inbound trip: General Load: ----

**Duration:** 5 days

**Scheduled Date:** May / October

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

## ANTARCTIC MEDICINE PROJECT

**Type of Project:** OTR 2-2009

**Starting Date:** New

**Executing Entity:** DNA

**Participating Entities:** ---

**Introduction:** In order to fulfill the multiple requirements of this station in an efficient and effective manner, the goal is to develop a joint task between the doctor and the station, in order to prevent diverse pathologies and/or accidents.

**Specific Goal:** Tuning and operation control of the new odontological equipment. Assessment of the needs and control of the inventory of drugs, medicines and hospital supplies.

**Tasks:** (1) To control and check odontological equipment. (2) To evaluate the needs and to control the inventory of drugs, medicines and hospital supplies.

- **Task Team:** JUBANY MEDICAL AUDIT

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 0.05 t – 1 m<sup>3</sup>  
Inbound trip: General Load 0.05 t – 1 m<sup>3</sup>

**Duration:** 30 days

**Scheduled Date:** January

**Place of Operation:** Jubany Station

**Housing:** Jubany Station

**Support Requirements:** ---

**LABORATORIES MANAGEMENT  
PROGRAM**

## SCIENTIFIC COORDINATION OF ANTARCTIC LABORATORIES PROJECT

**Type of Project:** INST 01-2009

**Starting Date:** 3 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** International Cooperation (Germany, Spain, Italy)

**Introduction:** Since four years ago, all the Antarctic laboratories working in the different stations have become to depend from the Scientific Coordination of the Argentine Antarctic Institute (IAA). The function of this coordination is to be responsible for the adequate conditions to develop the projects proposed by the Institution, being the link between all researchers and the different institutions that have logistics responsibilities.

**Specific Goal:** Scientific coordination of the scientific-technical projects that are developed in the Antarctic laboratories. Maintenance of the scientific-technical equipment. Maintenance of the informatics and telecommunications infrastructure of all the Antarctic laboratories.

**Tasks:** (1) To carry out the Antarctic Geodesy, Magnetosphere, Ozone Measurements (Ozone concentration measurements/Ozone sounding) and Antarctic Seismology Network projects. (2) To maintain the scientific-technical equipment.

- **Task Team:** LABEL

**Personnel allotted:** 4 (four)

|   |              |                              |
|---|--------------|------------------------------|
| <b><u>Load:</u></b> <u>Outbound trip:</u> | General Load | 0.2 t – 0.840 m <sup>3</sup> |
| <u>Inbound trip:</u>                      | General Load | 0.2 t – 0.840 m <sup>3</sup> |

**Duration:** 365 days

**Scheduled Date:** February 2010 - February 2011 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Belgrano II Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To carry out the Antarctic Seismology Network project. (2) To maintain the scientific-technical equipment. (3) To develop alternative energy sources.

**Task Team:** LABES

**Personnel allotted:** 2 (one Antarctic Winter Campaign and only one for 4 months Antarctic Summer Campaign)

|   |              |                               |
|---|--------------|-------------------------------|
| <b><u>Load:</u></b> <u>Outbound trip:</u> | General Load | 0.12 t – 0.360 m <sup>3</sup> |
| <u>Inbound trip:</u>                      | General Load | 0.12 t – 0.360 m <sup>3</sup> |

**Duration:** one 365 days and another one for 4 months Antarctic Summer Campaign

**Scheduled Date:** January 2010 January 2011 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Esperanza Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To carry out the Antarctic Geodesy, Greenhouse Effect and Antarctic Seismology Network projects. (2) To maintain the scientific-technical equipment.

**Task Team :** LAJUB

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 0.12 t – 0.560 m<sup>3</sup>  
Inbound trip: General Load 0.12 t – 0.560 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** January 2010 – January 2011 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To coordinate during the Antarctic Summer Campaign the development of the Jubany Physiology, Jubany Fish and Jubany Macroalga projects.

• **Task Team:** DALLMAN

**Personnel allotted:** 1 (one)

**Load:** Outbound trip: General Load 0.06 t – 0.27 m<sup>3</sup>  
Inbound trip: General Load 0.06 t – 0.270 m<sup>3</sup>

**Duration:** 180 days

**Scheduled Date:** October 2009 – March 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To develop the Ozone Measurement project. (2) To maintain the scientific-technical equipment.

**Task Team:** LAMBI

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 0.12 t – 0.560 m<sup>3</sup>  
Inbound trip: General Load 0.12 t – 0.560 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** October 2009 – October 2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To develop the Antarctic Geodesy, Antarctic Seismology Network and the Ecosystem Monitoring projects. (2) To maintain the scientific-technical equipment.

**Task Team:** LABOR

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 0.12 t – 0.360 m<sup>3</sup>  
Inbound trip: General Load 0.12 t – 0.360 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** January 2010 – January 2011 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Orcadas Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To develop the Antarctic Geodesy, Magnetosphere, Ozone Measurement and Antarctic Seismology Network projects. (2) To maintain the scientific-technical equipment.

**Task Team:** LASAN

**Personnel allotted:** 3 (three)

**Load:** Outbound trip: General Load 0.12 t – 0.560 m<sup>3</sup>  
Inbound trip: General Load 0.12 t – 0.560 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** January 2010 – January 2011 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** San Martín Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To check scientific-technical equipment and the general conditions of the Antarctic laboratories installations.

- **Task Team :** ITINERANT INSTALLATIONS

**Personnel allotted:** 3 (three)

**Load:** Outbound trip: General Load 0.12 t – 0.540 m<sup>3</sup>  
Inbound trip: General Load 0.12 t – 0.540 m<sup>3</sup>

**Duration:** 90 days

**Scheduled Date:** December 2009 – March 2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Belgrano II Station, San Martín Station, Jubany Station and Marambio Station

**Housing:** Station and Ship

**Support Requirements:** ---

**Tasks:** (1) To collect information on informatics and telecommunications in the laboratories of the Antarctic stations

**Task Team :** LABORATORIES INFORMATICS

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 0.12 t – 0.540 m<sup>3</sup>  
Inbound trip: General Load 0.12 t – 0.540 m<sup>3</sup>

**Duration:** 60 days

**Scheduled Date:** January 2010 – March 2010

**Place of Operation:** Jubany Station, Marambio Station and Esperanza Station. San Martín Station and Orcadas Station (according to opportunity)

**Housing:** Station (minimum 1 week each) and Ship

**Support Requirements:** ---

# **EARTH SCIENCES PROGRAM**

## **VERTEBRATES OF THE CRETACEOUS-PALEOGENOUS OF JAMES ROSS BASIN, ANTARCTIC PENINSULA: EVOLUTION AND BIOGEOGRAPHY PROJECT**

**Type of Project:** PICTA-1-2008-2011

**Starting Date:** 1 year ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Museum of La Plata, Museum of Carmen Funes (Neuquén)

**Introduction:** The sedimentary sequences of James Ross basin contain a unique record of marine and land vertebrates that furnish documentary evidence of the last stages of Gondwana desmemberment. By means of the Cretaceous and the Paleogene parts of sedimentary rocks present at the James Ross basin, the objective of the exploration will be to establish the temporal and paleobiogeography extension of the land corridor between the Northern portion of the Antarctic Peninsula and the Southern portion of South America. The data obtained from these two neighbour basins allow connecting tectonic processes, climate changes and fauna and flora evolution in a critical period and a strategic area to understand the paleobiogeography of the South Hemisphere continents. These data will also allow knowing about land vertebrates migration and its evaluation.

**Specific Goal:** Recuperation of fossil evidence of marine and continental vertebrates in order to compare migrational behaviours in the continental and marine environments that took place in the Antarctic Peninsula area during the late Cretaceous - late Eocene period of time. Studies to establish fauna characteristics and migration events that took place in the Weddell province (late Cretaceous – late Eocene). A systematic and phylogenetic study of all the vertebrate groups that are reported in the James Ross Basin. Biostratigraphic studies of some groups of marine vertebrates (penguins) and land vertebrates (dinosaurs, ungulates and marsupials) and their correlation at global level.

**Tasks:** (1) To prospect superficially Cretaceous outcroppings in the James Ross Island (Santa Marta Cove). (2) To recuperate skeletons of plesiosaurs and mosasaurs found in previous campaigns. (3) To choose selectively the localities bearing continental vertebrates (dinosaurs and birds) of the area. (4) To perform picking of concentrate and classify remains. (5) To make profiles and develop the stratigraphy of the horizons bearing vertebrates.

- **Task Team:** PALEOVERTEBRATES

**Personnel allotted:** 4 (four)

|   |   |
|---|---|
| <b><u>Load:</u></b> <u>Outbound trip:</u> | General Load 0.12 t – 0.42 m <sup>3</sup> |
| <u>Inbound trip:</u>                      | General Load 0.32 t – 0.90 m <sup>3</sup> |

**Duration:** 45 days

**Scheduled Date:** January 2010 – March 2010

**Place of Operation:** Marambio and James Ross Islands

**Housing:** Camp

**Support Requirements:** ----

## HOLOCENE LANDSCAPE AND CLIMATE CHANGE ALONG THE PATAGONIA-ANTARCTIC PENINSULA (P-PA) TRANSECT PROJECT

**Type of Project:** PICTA-2-2008-2011

**Starting Date:** 1 year ago

**Executing Entity:** DNA-IAA

**Participating Entities:** National University of Córdoba (UNC, Córdoba), Institute of Low Temperature Science (University of Hokkaido, Japón)

**Introduction:** The general objectives of this Project are concentrated on the study of the environmental geomorphological and climate evolution from the Tardiglacial of geosystems present along the transect comprised by the Antarctic Peninsula and surrounding islands, the emerged territories of the Scotia Arc and the South American sector. Likewise, it has the goal of establishing morphoclimatic and ecological characteristics (fundamentally vegetables) along such transect and its response to the regional climate warming.

**Specific Goal:** Study of the related geoforms and stratigraphic profiles for later recreation of the general geoenvironmental and climate chart along the P-PA transect.

**Tasks:** (1) To map in detail the active, inactive and fossil geoforms, generated by the glacial, marine-litoral, eolic, glacifluvial, removal in mass and periglacial actions. (2) To make the stratigraphic and topographic profiles for the absolute recognition and the establishment of date of recent fluctuations in the glaciers and sea level. (3) To drill and make technical profiles in permafrost to detect recent climate changes. (4) To perform geophysical and vertical electrical sounding to determine permafrost inner structure and thickness. (5) To monitor some active geoforms of glacial and periglacial origin and the energetic balance of permafrost with the goal of clearing up its relationship with the climate changes that are taking place at present. (6) To study the vegetal ecosystem associated to permafrost and other known geoforms.

- **Task Team:** JUBANY CRYOLOGY

**Personnel allotted:** 7 (seven, 4 from Argentina + 3 Foreigners)

**Load:** Outbound trip: General Load 0.4 t – 0.40 m<sup>3</sup>  
Inbound trip: General Load 0.5 t – 0.50 m<sup>3</sup>

**Duration:** 20/25 days (Same Group as Ross Cryology)

**Scheduled Date:** January 2010 – February 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

- **Task Team:** ROSS CRYOLOGY

**Personnel allotted:** 7 (seven, 4 from Argentina + 3 Foreigners)

**Load:** Outbound trip: General Load 0.4 t – 0.4 m<sup>3</sup>  
Inbound trip: General Load 0.5 t – 0.5 m<sup>3</sup>

**Duration:** 20/25 days (after movement towards Jubany Station – GT Jubany Cryology)

**Scheduled Date:** January 2010 – February 2010

**Place of Operation:** Marambio, James Ross Islands

**Housing:** Camp.

**Support Requirements:** Use of a two-hour flight on a Twin Otter plane for photographic flights.

## **VOLCANISM IN THE TRINITY PENINSULA GROUP PROJECT**

**Type of Project:** PICTA-3-2008-2011

**Starting Date:** new

**Executing Entity:** DNA-IAA

**Participating Entities:** IAA

**Introduction:** The Peninsula Trinity Group (GTP) of the Permian-Triassic forms the mechanical Stationment of Larsen Basin, in the Northeastern portion of the Antarctic Peninsula. The GTP has practically no diagnostic paleontologic materials in the Tabarín and View Point peninsulas, where the project is proposed. At the Tabarín and View Point peninsulas, primary pyroclastic rocks, including ignimbrites, peperites and deposits from the drop of volcanic scoria, alternated with sediments from the GTP, were identified but no isotopic determinations of the age of these volcanic rocks were made. Stratigraphic studies and isotopic datation of the volcanites included in the GTP may provide an important tool to determine their age. The virtual absence of paleontologic elements determined that the previous correlations had to be made on lithologic Stations. Additionally, geochemical analysis to be made on these volcanic rocks may contribute to the reconstruction of the geotectonic history of the North of the Antarctic Peninsula, within the framework of the Gondwana development.

**Specific Goal:** Contribution to the reconstruction of the geologic history of the Early Paleozoic in the North portion of the Antarctic Peninsula.

**Tasks:** (1) To perform stratigraphic studies and to obtain samples of rocks to make isotopic datations of the volcanites intercalated in the Peninsula Trinity Group, in the Tabarín (63° 32' S; 57° 00' W) and View Point (63° 33' S; 57° 22' W) Peninsulas.

- **Task Team:** TABARIN GEOLOGY

**Personnel allotted:** 4 (four)

|                                    |              |                            |
|------------------------------------|--------------|----------------------------|
| <b><u>Load:</u></b> Outbound trip: | General Load | 1.2 t – 2 m <sup>3</sup>   |
| Inbound trip:                      | General Load | 0.7 t – 1.8 m <sup>3</sup> |

**Duration:** 90 days

**Scheduled Date:** Previous ANTARCTIC SUMMER CAMPAIGN 2010

**Place of Operation:** Esperanza Station (Tabarín Peninsula)

**Housing:** Camp (with support at Esperanza Station)

**Support Requirements:** Transport of personnel and load on a Twin Otter plane between Marambio and Esperanza Stations during the Previous ANTARCTIC SUMMER CAMPAIGN

**INTERNATIONAL POLAR YEAR IN THE ANTARCTIC PENINSULA – ICE AND CLIMATE (API-PA) - AND MAINTENANCE OF STATIONS AND METEOROLOGICAL DATA COLLECTION IN THE ANTARCTIC PENINSULA AND SOUTHER PATAGONIA PROJECT**

**Type of Project:** PICTA 5/2009

**Starting Date:** 7 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** The Antarctic Peninsula (PA) displays the most significant glacial-climate changes of the Antarctica. Due to the significant regional climate change in the last two decades vast sectors of the Larsen Ice Shelf collapsed with the subsequent impact on their tributary glaciers that started to contribute to the global increase in the sea level. It is the sole glacier in the Antarctica that forms part of the World Glacier Monitoring Service, sponsored by the UNESCO. Through these activities our country participates actively in the international scientific cooperation of the International Polar Year. Though the initiative comprises different scientific aspects, it is fundamentally concentrated on the ice-climate interaction and the glacier mass balance. The main objective is to investigate about climate change and to assess its impact on the ice masses of the NE sector of the peninsula and to forecast future changes, both in the peninsula and other parts of the Antarctica.

**Specific Goal:** Determination of the balance of annual mass of the Glaciar Bahía del Diablo in Vega Island. Monitoring of climate change in the Antarctic Peninsula to assess its impact on the ice masses of the region. Monitoring of the dynamic answer of the tributary glaciers in Prince Gustav, Larsen A and Larsen B Channel, caused by the removal of the respective sectors of the ice shelves.

**Tasks:** (1) To perform measurements of mass balance and dynamics of the Glaciar Bahía del Diablo (Vega Island). (2) To map glaciers faces and margins in selected sectors of the Vega Island. (3) To collect annual data and to perform maintenance of the meteorological stations in Vega Island and Matienzo Station. (4) To make glaciological and aerophotographic reconnaissance flights and GPS mapping of glaciers in Vega Island, James Ross and the NE sector of the Antarctic Peninsula (between 63.5° and 66° S).

- **Task Team:** VEGA-LARSEN GLACIOLOGY

**Personnel allotted:** 5 (five)

**Load:** Outbound trip: General Load 0.3 t – 1.0 m<sup>3</sup>  
Inbound trip: General Load 0.3 t – 1.0 m<sup>3</sup>

**Duration:** 30 days

**Scheduled Date:** February 2010 – March 2010

**Place of Operation:** Bahía del Diablo - Vega Island (63° 49' S; 57° 20' W), Matienzo Station (64° 58' S; 60° 08' W) and by air the NE coast of the Antarctic Peninsula (between 63.5° and 66° S).

**Housing:** Camp

**Support Requirements:** A seven-hour flight on a Twin Otter plane and a four-hour flight on helicopters for glaciological, aerophotographic flights and GPS mapping on the glaciers in the Islands of Vega, James Ross and the NE sector of the Antarctica Peninsula (between 63.5° and 66° S).

**Tasks:** (1) To perform measurements of the balance of mass and dynamics in the sector of remaining ice shelf in Nunataks Foca (2) To carry out data collection, repair, maintenance and tuning of meteorological instruments.

- **Task Team:** MATIENZO GLACIOLOGY, previous ANTARCTIC SUMMER CAMPAIGN

**Personnel allotted:** 3 (three)

|                                    |              |                            |
|------------------------------------|--------------|----------------------------|
| <b><u>Load:</u></b> Outbound trip: | General Load | 0.2 t – 0.5 m <sup>3</sup> |
| Inbound trip:                      | General Load | 0.2 t – 0.5 m <sup>3</sup> |

**Duration:** 30 days

**Scheduled Date:** October 10, 2010

**Place of Operation:** Matienzo Station and Larsen Ice Shelf in the Nunataks Foca sector.

**Housing:** 15 dyas in the DNA Shelter in Matienzo Station.

**Support Requirements:** 2-hour flight on a Twin Otter for glaciological reconnaissance flight on the remaining sector of Larsen B at 66° S.

## **STUDY AND FOLLOW UP OF ACTIVE VOLCANOES: DECEPTION ISLAND PROJECT**

**Type of Project:** PICTO 36051-2005

**Starting Date:** 3 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** University of Buenos Aires (UBA), University of Lisboa (Portugal)

**Introduction:** This project is intended to continue with the study and follow up of this active volcano, through the use of geophysical and geochemical techniques, in order to establish an early alert of volcanic eruptions protocols. This goal is Stationd on the analysis of field data obtained in different campaigns and the determination of the magmatic chamber presence and depth. In this sense, it is scheduled to perform magnetotelluric soundings in order to build models of the structure. This information altogether will allow designing the eruptive model and its dangerousness.

Also there will be an evaluation of the importance of materials contribution mainly salts and gases coming from the deep system, which are inserted in the environment and in the surface hydrological circuit, and to individualize the potentially toxic compounds assessing the environmental influence they may have. Thus, the project will contribute to establish a work method for the control of the pollution of the hydric resources and the surface environment of fluids emitted by the active volcanic systems.

**Specific Goal:** Seismologic follow-up and geochemistry of the Deception Island. Magnetotelluric study. Sampling of water bodies

**Tasks:** (1) To carry out geological studies making column profiles with special interest in flowerings of pyroclastic hydromagmatic post-caldera deposits –cones and seas-. (2) To carry out geophysical studies (studies on geoelectricity in the zone of Fumarolas Bay and magnetotelluric ones). (3) To carry out geochemical studies (sampling of acid, condensable and non-condensable gases through evacuated ampoules, sampling of water and data collection of pH, conductivity and temperature of different water bodies of the Island -craters, bays with upwellings of hot water, vapour condensations, etc.-). (4) To install seismic instrumental in the Island, to daily draw data and to analyse them by means of specific programs. (5) To control soil and water temperatures all over the Island to detect possible anomalies when compared to previous data. (6) To install data loggers to relate temperature changes against seismic activity.

- **Task Team:** DECEPTION VOLCANOLOGY (GESVA)

**Personnel allotted:** 6 (six, 4 Argentina + 2 Portugal)

|   |              |                             |
|---|--------------|-----------------------------|
| <b><u>Load:</u></b> <u>Outbound trip:</u> | General Load | 0.21 t – 0.5 m <sup>3</sup> |
| <u>Inbound trip:</u>                      | General Load | 0.21 t – 0.7 m <sup>3</sup> |

**Duration:** 30 days

**Scheduled Date:** December 2009/January 2010

**Place of Operation:** Deception Island

**Housing:** Station

**Support Requirements:** Pneumatic boats and four-wheelers.

## **PERMAFROST AND CLIMATE CHANGES IN THE ANTARCTICA PROJECT**

**Type of Project:** PICTO 36155-2005

**Starting Date:** 2 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** National Water Institute (Instituto Nacional del Agua)

**Introduction:** The open ice sectors of the Antarctic Peninsula are key places to study the conditions of permafrost formation, the cryogenic processes, the dynamics and the underground water regime. The contact made between the SCAR and the International Permafrost Association (IPA) highlighted the need to develop joint research in the field of the Antarctic permafrost with respect to the climate change studies.

Present permafrost is sensitive to environmental changes, such as regional warming associated to geomorphological and hydrogeological changes, which significantly affect the permafrost condition and morphology. This is shown through the diffusion and activity of all the cryogenic processes in the thermal regime of the active layer and the permafrost table as well as in the formation of the drainage network and underground waters regime.

The main consequences of environmental impact in connection to climate change in permafrost are: (1) relief modelling (erosion and accumulation processes, removal in mass, development of the cryoplanation and termokarst development), (2) change in structure and composition of clastic rocks, formation of cryoeluvium and its final product: cryogenic slime (thermal contraction, meteorization or cryoclastism) y (3) modification of the morphology and thermal regime of the active layer and permafrost table.

**Specific Goal:** Geocryologic monitoring in Tabarín Peninsula. Elaboration of geocrologic and hydrogeologic functioning models in different environments and geocryogenic conditions in Esperanza Station and Monolito Lake plateau sectors (James Ross Island). Collection of necessary information for the assessment of the influence of climate changes on the periglaciers and permafrost zones.

**Tasks:** (1) Drilling and studies of the active layer and permafrost table thermal regime. (2) Sampling of frozen soil and underground ice (3) 2D and 3 D geoelectric studies (geoelectric tomographies) of permafrost and cryogenic aquifers (4) Mapping of differential and topographical GPS of the edges and faces of rock glaciers and active cryogenic forms.

- **Task Team:** ROSS PERMAFROST

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.3 t – 1 m<sup>3</sup>  
Inbound trip: General Load 0.4 t – 1.2 m<sup>3</sup>

**Duration:** 60 days

**Scheduled Date:** December 2009 – February 2010

**Place of Operation:** Marambio Island and Lamb Cape –Vega Island.

**Housing:** Camp

**Support Requirements:** ---

**PALEOBIOGEOGRAPHIC STUDY OF THE MICROBIOTAS OF THE UPPER CRETACEOUS AND CENOZOIC OF THE ANTARCTIC PENINSULA AND ADJACENT REGIONS. MODIFICATIONS IN THEIR DISTRIBUTION IN CONNECTION TO CLIMATE CHANGES PROJECT.**

**Type of Project:** PICTO 36166-2005

**Starting Date:** New (starts in 2009/2010 Antarctic Campaign)

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** It is a multidisciplinary project that includes a micropaleontology of the Mesozoic and Cenozoic with other paleontologic disciplines and that has the main goal of performing the first high resolution biozonation with foraminiferous, ostracods, palynomorphs and calcareous nannofossils for the James Ross basin and the NW of the Antarctic Peninsula during the Mesozoic and the Neogene, using the information available from precedent studies and from the new localities of the James Ross and 25 de Mayo Islands group.

**Specific Goal:** Focalization of the micropaleontologic study in the SE zone of James Ross Island, collecting data from the Rabot Point zone and supplementing it with the review of the Lamb Cape, Vega Island profiles, in order to integrate the micropaleontologic information both of the Mesozoic and the Cenozoic diamictites of the basin.

**Tasks:** (1) To make detailed stratigraphic profiles in Cretaceous and Cenozoic flowerings located in the NW of James Ross Island (Col Cram and Sharp Valley), to carry out biostratigraphic and paleoclimatic studies. (2) To develop samplings for micropaleontologic and palinologic studies; also the associated megafauna will be collected.

- **Task Team:** ROSS MICROPALAEONTOLOGY

**Personnel allotted:** 5 (five)

**Load:** Outbound trip: General Load 0.3 t – 0.5 m<sup>3</sup>  
Inbound trip: General Load 0.6 t – 0.5 m<sup>3</sup>

**Duration:** 45 days

**Scheduled Date:** January 2010 – February 2010

**Place of Operation:** North of James Ross Island.

**Housing:** Camp

**Support Requirements:** Air transport to James Ross Island camp (Col Cram and Sharp Valley)

## **GEOPHYSICAL STUDY OF THE MAGMATIC ARC IN THE NORTHEAST OF THE ANTARCTIC PENINSULA AND ITS TECTONIC DEVELOPMENT PROJECT.**

**Type of Project:** PICTO 36177-2005

**Starting Date:** New

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** The project essentially comprises a thorough geophysical, structural, petrologic and geodesical study aimed at defining the geometries, lateral relationships and their tectonic development on the surface and in depth, of the different geological units of the old magmatic Mesozoic arc partially coming to the surface on the western border of the Antarctic Peninsula. The results obtained in this Antarctic sector will be correlated with the South American portion in the Tierra del Fuego sector that would have formed part of this magmatic arc during the Mesozoic. The elaboration of geophysical data (gravimetric, magnetometry, geoelectricity, seismic reflection), with the results of petrologic studies (of the volcanic, plutonic and

metamorphic rocks), paleomagnetic studies and Magnetic Susceptibility Anisotropic studies, specific on volcanic and intrusive bodies and on sedimentary rocks will allow drawing maps and geophysical-geological transects that synthesize the geodynamic evolution of the magmatic arc, integrating these results with the information of the South American sector. All data to be collected on the ground will be geo-referenced using DGPS (Differential Global Positioning System). The application of inversion models to geophysical data collection will fundamentally allow reconstructing the deep structural geometry of the western edge of the Antarctic Peninsula, while the structural data collection will be aimed at determining the deformative mechanisms both in the ductile and fragile regime, and will contribute to the reconstruction of the deformative history of the region.

**Specific Goal:** To perform paleogeographic reconstructions from the early Jurassic up to the upper Cenozoic and balanced profiles. To rebuild the pre-compression dimensions in order to estimate geometric and paleogeographic limits of the old basins of the retro and fore arc and the thicknesses of the sedimentary fillings affected by orogeny.

**Tasks:** (1) To carry out data collection at the glaciers area of the Primavera Station, surrounding Islands and Islets, including Lieja Island.

- **Task Team:** GIMAN 2

**Personnel allotted:** 3 (three)

**Load:** Outbound trip: General Load 0.7 t – 2 m<sup>3</sup>  
Inbound trip: General Load 1.5 t – 3 m<sup>3</sup>

**Duration:** 30 days

**Scheduled Date:** January/February 2010

**Place of Operation:** Primavera Station

**Housing:** Station and itinerant camps.

**Support Requirements:** If logistics conditions allow, this group will join the Gimán 1 group (on ship) in order to complete the tasks at San Martín Station.

**Tasks:** (1) To make the magnetometric, gravimetric transects, batimetry and GPS in emerged and submerged areas. (2) Magnetometric, geophysical data collection in the zone of the sea surrounding San Martín Station. (3) Paleomagnetic sampling of anisotropy and magnetometric and on boat survey, magnetic survey.

**Task Team:** GIMAN 1 (on ship)

**Personnel allotted:** 3 (three)

**Load:** Outbound trip: General Load 0.7 t – 2 m<sup>3</sup>  
Inbound trip: General Load 1.5 t – 3 m<sup>3</sup>

**Duration:** 30 days

**Scheduled Date:** January/February 2010

**Place of Operation:** 30 days on ship, including 7 days in San Martín Station (within logistic possibilities) and/or itinerant camps.

**Housing:** Station and Ship

**Support Requirements:** ---

**BIOSTRATIGRAPHY AND SEDIMENTOLOGY OF THE SANTONIAN-MAASTRICHTIAN OF THE JAMES ROSS BASIN, ANTARCTICA. PALEOBIOLOGICAL AND PALEOENVIRONMENTAL EVENTS PROJECT.**

**Type of Project:** PICTO 36315-2005

**Starting Date:** New (starting in 2009/2010 Antarctic campaign)

**Executing Entity:** DNA-IAA

**Participating Entities:** Centro Austral de Investigaciones Científicas (Southern Centre of Scientific Research) (CADIC, Ushuaia), California Institute of Technology (United States of America), University of Washington (United States of America)

**Introduction:** The objective is to study a set of geological, paleobiological and paleoclimatic events developed in high latitudes of the South Hemisphere, which knowledge is relevant to solve scientific problems with application on the exploration of natural resources that may require the use of high resolution chronological schemes.

The excellent sedimentary record of James Ross basin, with fossiliferous sections, relatively continuous for the Santonian-Danian and the Eocene, favour the study of global environmental changes that involve the transition between warm and mild conditions of the Cretacic and the several cold climate conditions of the Neogene. The research on the composition, geographical and stratigraphic distribution of fossils (mega and microfauna) of the Upper Cretacic should reflect the interaction of geological, climate and biological events related to the fragmentation of Gondwana and the climate and oceanographic changes that took place in high latitudes of the South Hemisphere.

The study of these interactions is hindered by the lack of a proper spatial and temporal arrangement of the events and the lack of more detailed knowledge on the associations of foraminifers and sedimentary paleoenvironmentals, especially in the transitions between the big sedimentary cycles of the Santonian-Danian and the Eocene defined in the basin. The obtention of an adequate chronological framework of reference, Stationd on the biostratigraphy of the amonites and the foraminifers and the knowledge about the geological, paleoecological of facies, and sedimentary paleoenvironments and the sequential stratigraphy of the Santonian-Maastrichtian interval, necessary to correctly deal with these interactions, is one of the fundamental objectives of current project.

Another general objective is to compare the Antarctic Upper Cretacic column with the sedimentary succession, recently established by the research group in the Isla Grande de Tierra del Fuego (Main Island of Tierra del Fuego) and with those determined in the sites of the ODP program (Ocean Drilling Project) in Antarctic regions. Given the closer geographical proximity of the Antarctic and Tierra del Fuego regions during the late Cretacic and the generalized contrast of their respective depositional environments (plataform in the James Ross and the deep marine basin in Tierra del Fuego) would allow evaluating a kind of comparative transect between deep platform and marine environments for the Upper Cretacic. For stratigraphic continuity reasons, also the comparison of part of the paleogene succession, in particular to the Eocene rocks, in both regions, will be made.

**Specific Goal:** Magnetostratigraphy, biostratigraphy and icnology of the Upper Cretacic of the Santa Marta Cove- Brandy Bay area and icnology of the Eocene of the Marambio Island.

**Tasks:** (1) To make the profiles and detailed sampling of the sectors with possible record of change of magnetic polarities in the proximity of the Santonian-Campanian and Early Campanian –Late Campanian limit. (2) To collect samples for foraminifers and fossils with biostratigraphic implications in the same profiles. (3) To perform an icnologic study in the representative profiles of the different members of La Meseta Formation (Marambio Island).

- **Task Team:** BIOSTRATIGRAPHY

**Personnel allotted:** 4 (four, 2 Argentina + 2 USA)

**Load:** Outbound trip: General Load 0.001 t – 0.4 m<sup>3</sup>  
Inbound trip: General Load 0.601 t – 1.05 m<sup>3</sup>

**Duration:** 30 days

**Scheduled Date:** January/February 2010

**Place of Operation:** James Ross Island, Santa Marta Cove, Brandy Bay and Marambio Island

**Housing:** Camp

**Support Requirements:** Transport of load and personnel on helicopters

## ANTACRTIC PENINSULA-PATAGONIA: KEYS FOR A LOST CONNECTION PROJECT

**Type of Project:** PICT 7-30785

**Starting Date:** 1 year ago

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** To study in detail the processes that lead to the generation of deposits of La Meseta Formation

**Specific Goal:** To make the detailed profiles in La Meseta Formation and lithologic and taxonomic observations.

**Tasks:** (1) To recognize the hydrodynamic processes that generated fossiliferous concentrations, (2) to recognize the presence of diacronic deposits, (3) to improve the realtive ages of the different accumulations, (4) to locate the concentrations within a sequential stratigraphic scheme, (5) to adjust the paleoenvironmental reconstructions, (6) to recognize the processes and the sequence of events that originated the accumulation of marine organisms and land vertebrates.

- **Task Team:** CORRELATION

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.1 t – 0.360 m<sup>3</sup>  
Inbound trip: General Load 0.1 t – 0.360 m<sup>3</sup>

**Duration:** 60 days

**Scheduled Date:** January 2010 – March 2010

**Place of Operation:** Marambio Island

**Housing:** Camp

**Support Requirements:** ---

## **METHANE HYDRATES PROJECT**

**Type of Project:** INST-04-2008

**Project with International Cooperation**

**Starting Date:** New (starting in 2009/2010 Antarctic Campaign)

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** Big amounts, approximately half the total Carbon on the Earth, would have been retained in the form of Methane Hydrates (CH<sub>4</sub>) inside the frozen substrate, comprising the subaerial permafrost and bottom of the sea, in both polar regions, Arctic and Antarctica. The purpose of this project is to investigate the relevance of the natural leaks of methane in superficial water close to Marambio and Vega Islands and its impact on the atmosphere within the context of global warming.

**Specific Goal:** ANTARCTIC SUMMER CAMPAIGN 2008/2009: identification through the application of diverse geophysical methods, of the sites where the marine substrate will be drilled to obtain frozen samples of the methane hydrates, in the Bouchard Strait between Marambio, Cerro Nevado and James Ross Islands. Pre-ANTARCTIC SUMMER CAMPAIGN 2009: To carry out georadar studies in the work area.

**Tasks:** (1) To carry out a detailed survey of the seabed with lateral sonar and marine substrate profile.

- **Task Team:** METHANE HYDRATES ANTARCTIC SUMMER CAMPAIGN 2009/2010

**Personnel allotted:** 8 (eight)

**Load:** Outbound trip: General Load 5 t – 15 m<sup>3</sup>  
Inbound trip: General Load 0.8 t – 1 m<sup>3</sup>

**Duration:** 60 days

**Scheduled Date:** December 2010 – February 2010

**Place of Operation:** Marambio Island (Vallverdu Boat Warehouse)

**Housing:** Shelter and Camp

**Support Requirements:** Air transport of personnel and load.

**Tasks:** (1) To complete geophysical surveys with georadar.

- **Task Team:** METHANE HYDRATES Pre-ANTARCTIC SUMMER CAMPAIGN 2010

**Personnel allotted:** 6 (six)

**Load:** Outbound trip: General Load 2 t – 3 m<sup>3</sup>  
Inbound trip: General Load 0.80 t – 0.6 m<sup>3</sup>

**Duration:** 75 days

**Scheduled Date:** August 2010 – November 2010

**Place of Operation:** Marambio Island (Vallverdu Boat Warehouse)

**Housing:** Shelter and Camp

**Support Requirements:** Air transport of personnel and load.

## MAPPING OF THE NW OF JAMES ROSS ISLAND PROJECT

**Type of Project:** INST-04-2009

**Project with International Cooperation**  
With the Czech Republic

**Starting Date:** 1 year ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Czech Geological Service

**Introduction:** It is a joint Project between the Argentine Republic and the Czech Republic to make a mapping of the NW sector of James Ross Island.

**Specific Goal:** Mapping of the different flowering geological units in the NW sector of James Ross Island. Lithological characterization of the formations involved, lithofacial analysis paleontological content, age and paleoenvironments.

**Tasks:** (1) Mapping of different geological flowering cretacic units, geological contacts and construction of the stratigraphic column, in the NW of the James Ross Island.

- **Task Team:** ROSS MAP

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load1. 5 t – 2 m<sup>3</sup>  
Inbound trip: General Load2. 5 t – 3 m<sup>3</sup>

**Duration:** 45 days

**Scheduled Date:** January 2010/March 2010

**Place of Operation:** NW of James Ross Island (Lachman Cape)

**Housing:** Camp and Mendel Station (Czech)

**Support Requirements:** Transport of personnel from the Task Team from Marambio Station to camps (Sharp Valley and Col Crame) by helicopter. In the middle of the campaign from Sharp Valley to Col Crame.

## **TOPOGRAPHICAL GEOLOGICAL AND GEOPHYSICAL SURVEY PROJECT**

**Type of Project:** INST-04-2009

**Project with International Cooperation**  
With Spain

**Starting Date:** 3 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Geological and Mining Institute of Spain (Instituto Geológico y Minero de España - IGME, Spain)

**Introduction:** The objective of this Project is to elaborate a new “Series of Geoscientific Cartography in the Antarctica” produced by the IGME and the DNA-IAA.

**Specific Goal:** Geological mapping of Marambio Island making control profiles and taking samples of rocks.

**Tasks:** (1) To identify the hydrodynamic processes that generated fossiliferous concentrations (2) To identify the presence of diacronic deposits (3) To improve the relative ages of the different accumulations (4) To locate concentrations within a sequential stratigraphic scheme (5) To adjust the paleo environmental reconstructions (6) To identify the processes and the sequence of events that originates the accumulation of marine organisms and land vertebrate.

- **Task Team:** GEOMARAMBIO

**Personnel allotted:** 5 (five, 2 DNA, 3 Foreigners)

**Load:** Outbound trip: General Load 0.12 t – 0.420 m<sup>3</sup>  
Inbound trip: General Load 0.12 t – 0.420 m<sup>3</sup>

**Duration:** 60 days

**Scheduled Date:** January 2010 – March 2010

**Place of Operation:** Marambio Island

**Housing:** Camp

**Support Requirements:** ---

## **ANTARCTICA GEODESY PROJECT**

**Type of Project:** INST-04-2009

**Project with International Cooperation**  
With Germany, Italy and USA

**Starting Date:** 14 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Institut Fur Planetare Geodasie (Germany), Technische Universitat Dresden (Germany), Alfred Wegener Institut (AWI, Germany), University of Memphis (United States of America), Centre Nacional de la Recherche Scientifique (France)

**Introduction:** “Antarctic Geodesy for Geosciences and the Study of Global Processes” is an institutional project of the DNA-IAA within the framework of the international activities of the GIANT Program (Geodesic Infrastructure for the Antarctica) of the Scientific Group of Geosciences of the Scientific Committee on Antarctic Research (SCAR).

**Specific Goal:** To establish, maintain and improve a Geodesic Network, connected to the International Terrestrial Reference System (ITRF), to provide with a unified 4D geographical framework to all the Antarctic sciences and operations. To contribute with global geodesy in the study of physical processes of the Earth such as Geodynamics and Terrestrial Tides. To supply with information for the horizontal and vertical movement of the Antarctic continent. To generate a precise altimetry reference system necessary to study the change processes detectable in a relatively short time.

**Tasks:** (1) To recuperate data, to carry out maintenance tasks, replacement and/or installation of new instruments in the Geodesic Observatories at the Belgrano II, Jubany, Orcadas and San Martín Stations.

- **Task Team:** ITINERANT GEODESY

**Personnel allotted:** 2 (two, 1 DNA, 1 foreigner from Germany)

**Load:** Outbound trip: General Load 0.5 t – 1 m<sup>3</sup>  
Inbound trip: General Load 0.3 t – 0.7 m<sup>3</sup>

**Duration:** according to deployment and withdrawal to access to the place where it has to be done

**Scheduled Date:** ANTARCTIC SUMMER CAMPAIGN 2009/2010 (according to deployment and withdrawal to access to the place where it has to be done)

**Place of Operation:** Belgrano II, Orcadas, Jubany and San Martín Stations

**Housing:** Ship

**Support Requirements:** If possible, and in order to protect the sensitive geodesic instruments as much as possible, transportation by helicopter has to be considered. In the case of Belgrano II, a metallic box of 50 Kg with electronic items and a special battery has to be transported.

## ANTARCTIC SEISMOLOGIC NETWORK PROJECT

**Type of Project:** INST-04-2009

**Project with International Cooperation**  
With Italy

**Starting Date:** 16 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Experimental Observatory of Trieste (Observatorio Sperimentale de Trieste - OGS, Italy)

**Introduction:** The goal of this project is to study the seismologic activity between the 20° y 80° W meridians and to the South, the 50° S parallel. Within this sector the Antarctic zones of the Scotia Arc, Drake Passage, Bransfield Strait and the Island of Tierra del Fuego, constitute a group of areas seismically active that are within the area of study, of Southamerican-Antarctic influence, as structural units related in their geological evolution. From the point of view of the tectonic plates, the escenario is formed by a smaller plate, the Scotia plate, between two big plates, Southamerica and Antarctica. Eighty percent of the seismic energy released in the Antarctica is produced in this zone.

Within the Argentine-Italian collaboration project, five broadband seismic stations have been installed at Esperanza Station (1992), Ushuaia (1996-2003), Orcadas Station (1997), Jubany Station (2001) and San Martín Station (2007). The four Antarctic stations report data on the Internet, through the ASAIN net (Antarctic Seismographic Argentine Italian Net), in real time around the clock, to the International Centre ORFEUS.

**Specific Goal:** Maintenance, control and training of operators in the seismological stations of the Esperanza, Orcadas, Jubany and San Martín Stations. Installation of a new seismological station at Belgrano Station.

**Tasks:** (1) To perform maintenance and control of the seismological station at Esperanza Station. (2) To train operators for the Antarctic Winter Campaign at Esperanza Station.

- **Task Team:** ESPERANZA SEISMOLOGY

**Personnel allotted:** 2 (two, 1 Argentina + 1 Italy)

**Load:** Outbound trip: General Load 0.1 t – 0.5 m<sup>3</sup>  
Inbound trip: General Load 0.06 t – 0.1 m<sup>3</sup>

**Duration:** 7 days

**Scheduled Date:** From January to April 2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Esperanza Station

**Housing:** Ship and Station

**Support Requirements:** Transport of personnel and load to the Station

**Tasks:** (1) To perform maintenance and control of the seismological station at Jubany Station. (2) To train operators for the Antarctic Winter Campaign in Jubany Station.

- **Task Team :** JUBANY SEISMOLOGY

**Personnel allotted:** 2 (two, 1 Argentina + 1 Italy)

**Load:** Outbound trip: General Load 0.1 t – 0.5 m<sup>3</sup>  
Inbound trip: General Load 0.06 t – 0.1 m<sup>3</sup>

**Duration:** 7 days

**Scheduled Date:** From January to April 2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Jubany Station

**Housing:** Ship and Station

**Support Requirements:** Transport of personnel and load to the Station

**Tasks:** (1) To perform maintenance and control of the seismological station at Orcadas Station. (2) To train operators for the Antarctic Winter Campaign in Orcadas Station.

**Task Team:** ORCADAS SEISMOLOGY

**Personnel allotted:** 2 (two, 1 Argentina + 1 Italy)

**Load:** Outbound trip: General Load 0.1 t – 0.5 m<sup>3</sup>  
Inbound trip: General Load 0.06 t – 0.10 m<sup>3</sup>

**Duration:** 7 days

**Scheduled Date:** From January to April 2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Orcadas Station

**Housing:** Ship and Station

**Support Requirements:** Transport of personnel and load to the Station

**Tasks:** (1) To perform maintenance and control of the seismological station at San Martín Station. (2) To train operators for the Antarctic Winter Campaign in San Martín Station.

• **Task Team :** SAN MARTIN SEISMOLOGY

**Personnel allotted:** 2 (two, 1 Argentina + 1 Italy)

**Load:** Outbound trip: General Load 0.1 t – 0.5 m<sup>3</sup>  
Inbound trip: General Load 0.06 t – 0.10 m<sup>3</sup>

**Duration:** 7 days

**Scheduled Date:** From January to April 2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** San Martín Station

**Housing:** Ship and Station

**Support Requirements:** Transport of personnel and load to the Station

**Tasks:** (1) To perform maintenance and control of the seismological station at Belgrano Station. (2) To train operators for the CAI in Belgrano Station.

- **Task Team:** BELGRANO II SEISMOLOGY

**Personnel allotted:** 2 (two, 1 Argentina + 1 Italy)

**Load:** Outbound trip: General Load 0.1 t – 0.5 m<sup>3</sup>  
Inbound trip: General Load 0.06 t – 0.1 m<sup>3</sup>

**Duration:** 7 days

**Scheduled Date:** From January to April 2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Belgrano II Station

**Housing:** Ship and Station

**Support Requirements:** Transport of peronnel and load to the Station

## **LARSEN ICE SHELF SYSTEM PROJECT (LARISSA)**

**Type of Project:** INST-04-2009

**Project with International Cooperation**  
With USA and Belgium

**Starting Date:** new

**Executing Entity:** DNA-IAA

**Participating Entities:** NSF

**Introduction:** International interdisciplinary program to characterize the Climate Change on the Larsen Ice Shelf and all its associated system. This project will provide data to understand the processes, changes, causes and their consequences on the Antarctic region and rapid transformation. It will be combined with glaciological, geological, oceanographical and of marine biology studies to know the present, past and future of this region dominated by the presence of ice shelves.

**Specific Goal:** Characterization of the physical processes that governs the Larsen Ice Shelf and the relationship between the latter and the biological, oceanographical and climate systems. To analyze the ice shelves stability with respect to Climate Change.

**Tasks:** (1) Mapping of the seabed, (2) Drilling of ice core samples, (3) Seismic profiles, (4) Biological sampling both of the water column and the benthic front and under the Larsen Ice Shelf, (5) Monitoring of oceanographical parameters.

- **Task Team:** LARISSA (Larsen Ice Shelf System)

**Personnel allotted:** 3 o 4 (three or four)

**Load:** Outbound trip: General Load 1 t – 3 m<sup>3</sup>  
Inbound trip: General Load 1 t – 3 m<sup>3</sup>

**Duration:** 45 days

**Scheduled Date:** January 2010/February 2010

**Place of Operation:** Eastern border of the Antarctic Peninsula (from Frames Cape to the south up to Longing Cape to the north)

**Housing:** Marambio Station, Matienzo Station, N. Palmer Ship (USA) and camps

**Support Requirements:** One (1) flight on a C-130 and flights on helicopters to transport passengers from Buenos Aires-Marambio-Matienzo- Palmer Ship on a date to be coordinated with the course of the Nathaniel B. Palmer ship and the project's scientific program. Marambio-Matienzo air transport for 1 person with minimum scientific load. If Matienzo Station is not available 2 people will be transported with a 1-ton load. Communications support from Marambio Station.

## **GEOTECNIC RESEARCH IN MARAMBIO STATION ON THE FEASIBILITY OF THE INSTALLATION OF EOLIC WINDMILLS PROJECT**

**Type of Project:** INST 14- 2009

**Starting Date:** New

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** This project, of an exploratory development type, is the first stage of a bigger project that from the geological point of view will identify the appropriate areas to install eolic power generators, close to Marambio Station in the Anarctica.

This project will contribute to determine the geotechnical properties of the materials that form the frozen substrate, called "permafrost", which is segmented by interstitial ice, is highly heterogenous as it is formed by rock fragments of variable sizes between gravels and huge rock blocks next to ice masses. It will be imperative to carry out a Georadar sounding (GPR: Ground Penetrating Radar) to estimate the heterogeneity conditions of the substrate in order to assure the absence of big erratic blocks and ice mass in the underground. This project will be part of a bigger project, to substitute the use of fossil fuels in the Antarctica, which apart from being of lesser logistic efforts, will contribute to environmental preservation.

**Specific Goal:** To determine the heterogeneity conditions of the substrate adjacent to Marambio Station, by means of georadar soundings.

**Tasks:** (1) To carry out detailed surveys of the seabed with lateral sonar and marine substrate profiles.

- **Task Team:** MARAMBIO GEORADAR PREANTARCTIC SUMMER CAMPAIGN 2010 (same as GT Methane Hydrates)

**Personnel allotted:** 6 (six) (Same GT as Methane Hydrates Pre-ANTARCTIC SUMMER CAMPAIGN)

**Load:** Outbound trip: Load General: –  
Inbound trip: Load General: –

**Duration:** 75 days

**Scheduled Date:** August 2010 – November 2010

**Place of Operation:** Marambio Island

**Housing:** Shelter and Camps

**Support Requirements:** ---

## **LIFE SCIENCES PROGRAM**

**ICTIOLOGY PROJECT: MONITORING AND GENERAL ECOLOGY OF ANTARCTIC FISH OF THE SCOTIA ARC APPLIED TO RESOURCES CONSERVATION PROJECT.**

**Type of Project:** PICTA-4-2008-2011

**Starting Date:** New (starting in 2009/2010 Antarctic Campaign)

**Executing Entity:** DNA-IAA

**Participating Entities:** UBA, CONICET

**Introduction:** The present Project is the continuation of the long term PICTA N° 9 project. In current proposal, following the guidelines of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), greater emphasis has been put on the goal of conservation of Antarctic fishing resources through the rational exploitation of them. Likewise, within the general framework of the Antarctic fish ecology, the development of specific research subjects has been proposed, some of them related to the species population dynamics and therefore connected to the above-mentioned objective, and others that will contribute to know about their ecological role in the Antarctic marine ecosystem. The impact on the commercial fishery at the end of the 1970's in relation to fish at the South of the Scotia Arc (South Shetland Islands and Western Antarctic Peninsula) is studied through the coastal monitoring of abundance and structure of notothenid species. It is evaluated if they are recuperating or if they are still at over-exploitation levels, in order to submit sound arguments before the CCAMLR to avoid that the area be reopened to commercial fishery, after being closed in 1990. Other subjects include ecological aspects related to populations dynamics (age and growth) and to the ecological role of fish (trophic position, reproduction, interaction with predators) all of them applicable to the final goal of conservation.

**Specific Goal:** Monitoring of *N. rossii* and *G. gibberifrons* commercial species in relation to the ecologically similar *N. coriiceps* specie. Determining if the slight increase in the abundance of *N. rossii* and the low population condition of *G. gibberifrons*, observed in the 2000-2006 period in the localities of the South Shetland Islands is kept in 2009. Analysis of the variations in the structure of mentioned species as a consequence of the over-exploitation that took place in the 1970's in that area. Study of age and dietary habits, feed composition of the *Notothenia rossii* specie in its early juvenile phase in Potter Cove. Study of the ontogenetic changes of the morphometric diagnostic characters in the *Trematomus newnesi* specie. Performance of specie marcation experiments of *N. rossii*, *Trematomus newnesi* and *Lepidonotothen nudifrons* species in order to have captures in the coming years.

**Tasks:** (1) To capture fish with drift nets, fish traps and fishing lines operated from pneumatic boats. To mark and set free exemplaries, to take morphometric characters and fish scales. (2) To capture juvenile fish with pelagic drag nets. (3) To identify fish with ictiological keys, to take meristic characters, extraction of toliths, analysis of gonads and stomachs. (4) To collect regurgitated cormorants for predator-prey studies between these animals and fish.

**Task Team:** JUBANY FISH ANTARCTIC SUMMER CAMPAIGN

**Personnel allotted:** 3 (three)

|                     |                              |  |
|---------------------|------------------------------|--|
| <b><u>Load:</u></b> | <b><u>Outbound trip:</u></b> | General Load 0.08 t – 0.6 m <sup>3</sup> |
|                     | <b><u>Inbound trip:</u></b>  | General Load 0.1 t – 0.75 m <sup>3</sup> |

**Duration:** 90 days

**Scheduled Date:** November 2009 – March 2010

**Place of Operation:** Potter Cove and adjacent waters

**Housing:** Station

**Support Requirements:** Pneumatic Boats. Divers.

- **Task Team:** JUBANY FISH previous ANTARCTIC SUMMER CAMPAIGN  
**Personnel allotted:** 2 (two)

**Load:** Outbound trip: Load General: ---  
Inbound trip: Load General: ---

**Duration:** 90 days

**Scheduled Date:** September 2010 – November 2010

**Place of Operation:** Potter Cover and adjacent waters

**Housing:** Station

**Support Requirements:** Pneumatic boats. Divers.

**STUDY OF THE REPRODUCTIVE AND DIETARY ASPECTS OF THE ANTARCTIC CORMORANT *PHALACROCORAX BRANSFIELDENSIS*: IDENTIFICATION OF PARAMETERS INDICATING ENVIRONMENTAL CHANGES IN THE ANTARCTIC LITORAL SYSTEMS PROJECT**

**Type of Project:** PICTA-6-2008-2011

**Starting Date:** 1 year ago

**Executing Entity:** DNA-IAA

**Participating Entities:** IAA

**Introduction:** Through the development of this project the goal is to continue a line of work started 17 years ago. The objective of such line of work is to jointly study reproductive and dietary aspects of fish and birds and ichthyophaga mammals and thus identify parameters useful to in turn identify change processes in the ecotystem. At the beginning of this line of work different aspects of the interactive relationship between cormorants and fish were studied. As a result of this first progress we were able to develop a methodology to monitor the state of the litoral fish populations through the study of their diet and some reproductive paramenters of the Antarctic cormorant. This provides data for the participation of Argentina in the discussions about the management of Antarctic living marine resources. After those first steps the objectives were enlarged and at present the project also considers the study of the interaction between fish and the Antarctic fur seal, the Weddell seal and the Antarctic seagull.

**Specific Goal:** Monitoring of the Antarctic Cormorant population trends in the area of the South Shetland Island, particularly the Harmony Point and Duthoit Point colonies in the Nelson Island. Study of the reproductive biology, diet composition, strategies of pasture and diving patterns of the Antarctic Cormorant in different colonies of the South Shetland Islands, particularly those of Harmony Point and Duthoit Point. (3) Research in relation with the

composition of the ichthyofaunal and food supply in the areas where cormorants eat, under study in the South Shetland Islands. (4) Joint analysis of the information to be able to identify reliable parameters that detect early changes (natural or of anthropic origin) in the ecosystem.

**Tasks:** (1) To survey and to ring cormorants in Harmony Point and Duthoit Point. (2) To determine the number of eggs and young cormorants in every nest as well as the dates of eggs laying and loss, young cormorants birth and death dates, taking eggs weigh and size at the moment they are laid and the young cormorants when they are born and every five days from birth date of the first cormorant of the colony. (3) To study the Antarctic Cormorant diet through the analysis of regurgitated pellets and stomach contents. (4) To permanently check during 24-hour periods the pasture of couples and duration and number of times they go out for food. (5) To analyze the cormorants diving depth at Harmony Point. (6) To analyze the composition and structure of the coastal ichthyofauna in the work areas through periodic sampling and to identify them at a specific level, weighing them and freeing them alive to the sea.

- **Task Team:** GURRUCHAGA INTERACTIONS

**Personnel allotted:** 3 (three)

**Load:** Outbound trip: General Load 1.2 t – 6.5 m<sup>3</sup>  
Inbound trip: General Load 1.7 t – 8 m<sup>3</sup>

**Duration:** 105 days

**Scheduled Date:** Previous Antarctic Summer Campaign 2009 –February 15, 2010

**Place of Operation:** Harmony Point, Nelson Island, South Shetland Islands

**Housing:** Shelter

**Support Requirements:** Air transport to arrive at the shelter. Food for the Antarctic Summer Campaign 09/10 and PRE- Antarctic Summer Campaign 2010 shall be transported in the Antarctic Summer Campaign 09/10.

- **Task Team:** GURRUCHAGA PRE-ANTARCTIC SUMMER CAMPAIGN INTERACTIONS

**Personnel allotted:** 3 (three)

**Load:** Outbound trip: General Load 0.5 t – 1.5 m<sup>3</sup>  
Inbound trip: General Load : ----

**Duration:** 15 days

**Scheduled Date:** October 2010 – Antarctic Summer Campaign 2010/2011

**Place of Operation:** Harmony Point, Nelson Island, South Shetland Islands

**Housing:** Shelter

**Support Requirements:** Air transport to arrive at the shelter. Food for Antarctic Summer Campaign 09/10 and Pre-Antarctic Summer Campaign 2010 shall be transported in the Antarctic Summer Campaign 09/10.

## **DEVELOPMENT AND OPTIMIZATION OF BIOREMEDIATION TECHNOLOGIES FOR THE RECUPERATION OF SOILS EXPOSED TO CONTAMINATION WITH HYDROCARBONS IN THE ANTARCTIC ZONES PROJECT**

**Type of Project:** PICTO 35778-2005

**Starting Date:** New (starting in 2009/2010 Antarctic Campaign)

**Executing Entity:** DNA-IAA

**Participating Entities:** University of Rovira i Virgili (España)

**Introduction:** The general objective of this project is to develop an international work net in order to define the best technologies to apply in the near future to restore and protect polar soils and marine ecosystems close to contamination by fossil fuels and HAPs. At present such work net is being carried out partially by some institutions as the ISMER (Université du Québec a Rimouski, Canadá), and the IPEV (Instituto Paul – Émile Victor, Francia) and the IAA. The project will consist of bioremediation tests during one year in various different sites. Technologies developed in the participating countries will be used and the key factors that control the success or failure of such technologies will be determined. The final stage of this project will be the transference of successful technologies to the countries that may need it. This project is carried out jointly with the chemistry group of the IAA.

**Specific Goal:** During this Antarctic Campaign the specific goal will be to continue the analysis of hydrocarbons contamination at Esperanza Station. For this purpose, a new sampling will be made in order to analyze temporal changes in contaminants distribution and concentration. The feasibility of making in situ bioremediation tests will be evaluated from these studies.

**Tasks:** (1) To perform a hydrocarbons bioremediation test using the soils seriously contaminated with diesel. In the biopile systems the effect of inoculum immobilization on the disappearance of contaminants will be studied. Two different bacterial consortia will be studied (2) To evaluate the efficiency of the different nutrients sources in the process. (3) To isolate the total DNA of the microbial community present in the different systems above mentioned for the molecular studies of the composition of the hydrocarbon-degrading bacteria community (RFLP, DGGE). (4) To take samples at 16 different sites of Jubany Station to evaluate the the zone contamination status.

- **Task Team:** JUBANY MICROBIOLOGY (same Task Team as White Genoma (Genoma blanco))

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.7 t – 1 m<sup>3</sup>  
Inbound trip: General Load 0.8 t – 1 m<sup>3</sup>

**Duration:** 90 days

**Scheduled Date:** December 15, 2009 – March 15, 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To make transect sampling and to take samples from the soil in different zones of Esperanza Station. It comprises the zones affected by the presence of hydrocarbons of anthropic origin and control spots far from human activity. (2) Analysis of the basic characteristic of the sampled soils and conditioning for further delivery to Buenos Aires. (3) Isolation of autoctonous strains and consortiums capable of using aliphatic and aromatic hydrocarbons as the sole Carbon source. (4) Preliminary in situ bioremediation test in a microcosms model in order to analyze the answer of the autoctonous flora to hydrocarbon presence.

- **Task Team:** ESPERANZA MICROBIOLOGY

**Personnel allotted:** 1 (one)

**Load:** Outbound trip: General Load 0.2 t – 0.3 m3  
Inbound trip: General Load 0.2 t – 0.3 m3

**Duration:** 45 days

**Scheduled Date:** December 15, 2009 – January 30, 2010

**Place of Operation:** Esperanza Station

**Housing:** Station

**Support Requirements:** ---

## MARINE MAMMALS PROJECT

**Type of Project:** PICTO 36054-2005

**Starting Date:** 1 year ago

**Executing Entity:** DNA-IAA

**Participating Entities:** CONICET, Museum of Natural Sciences “Bernardino Rivadavia”, Evolution and Ecology Research Centre (Australia)

**Introduction:** It is fundamental to know about the diet and feeding strategy to understand the ecology of the pinnipeds and, in particular, to determine the role played in the Antarctic ecosystem. Different species will occupy different trophic niches more or less undercovered that, a priori, will be determined by the diving physiological capacities of the species under study. Due to the existing relationship between abundance and distribution of preys and predators, feeding strategies developed and their associated energetic costs, in this project the goal is to study such aspects in a joint manner and embracing an important area that goes from the North of Orcadas Islands to the North of the Antarctic Peninsula. The study of such area is of fundamental relevance, since it is there where there is increasing evidence that global warming is already affecting species abundance and distribution.

**Specific Goal:** Study of the reproductive performance (production of offsprings, weight at weaning, maternal investment) in the Weddell seal and the sea elephant. Study of diet composition, its geographical, seasonal and interannual variation in Antarctic pinnipeds. Qualitative and quantitative analysis of food resources partition and the intra and inter specific competition for them. Study of the possible feeding strategies used by individuals of

the same species relating the information from the diet with those coming from the diving patterns. Estimation of food and energy requirements for the species under the area of study relating precedent information with population censuses.

**Tasks:** (1) In the marine leopard: (a) to place 10 satellite transmitters in males and females of the species, (b) to immobilize and mark 40 animals to take blood, fat and moustaches samples.

- **Task Team:** PRIMAVERA MAMMALS

**Personnel allotted:** 6 (six, 2 Argentina + 4 Australia)

**Load:** Outbound trip: General Load 2.1 t – 5.1 m<sup>3</sup>  
Inbound trip: General Load 2.1 t – 5.1 m<sup>3</sup>  
Frozen Load (-20°C) 0.12 t – 0.35 m<sup>3</sup>

**Duration:** 45 days

**Scheduled Date:** January 2010 – February 2010

**Place of Operation:** Primavera Station

**Housing:** Station

**Support Requirements:** 2 (two) Pneumatic botes and 3 (three) motors.

**Tasks:** (1) Southern sea elephant: (a) to immobilize adult males, young males and females for a stomach wash out, (b) to immobilize, weigh and inject with heavy water 20 females at the end of lactation to recapture them after their feeding trip, (c) to carry out surveys in Stranger Point, (d) to observe males and females of the species during the reproductive period, (e) to determine possible reproductive strategies displayed by the southern elephant seal males. (2) In the sea wolf and Weddell seal: to collect 30 samples of monthly feces.

- **Task Team:** JUBANY MAMMALS ANTARCTIC SUMMER CAMPAIGN

**Personnel allotted:** 6 (six)

**Load:** Outbound trip: Load General: ----  
Inbound trip: General Load 0.4 t – 0.7 m<sup>3</sup>  
Frozen Load (-20°C) 0.3 t – 0.35 m<sup>3</sup>

**Duration:** 150 days (1 person) 90 days (5 persons)

**Scheduled Date:** Previous Antarctic Summer Campaign 2009 – 20 February 2010 (1 person that continues from Previous Antarctic Summer Campaign)

Previous Antarctic Summer Campaign 2009 – 20 December 2009 (4 persons that continue from Previous Antarctic Summer Campaign)

20 November 2009 – 20 February 2010 (1 person)

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** Minimum conditioning of the Elephant Shelter located at 5 Km. from the Station.

- **Task Team:** JUBANY MAMMALS previous ANTARCTIC SUMMER CAMPAIGN

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.6 t – 1.05 m<sup>3</sup>  
Inbound trip: Load General: ----

**Duration:** 150 days (1 person) 90 days (3 persons)

**Scheduled Date:** 20 Septiembre 2010 – continues in ANTARCTIC SUMMER CAMPAIGN 2010/2011 (1 person)  
 20 Septiembre 2010 – 20 December 2010 (3 persons)

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** Minimum conditioning in the Elephant Shelter located at 5 Km. from the Station.

## **PREDATOR-PRAY INTERACTION MODELS BETWEEN ANTARCTIC BIRDS AND FISH-CRUSTACEOUS IN THE ANTARCTIC PENINSULA AND SCOTIA ARC PROJECT**

**Type of Project:** PICTO 36256-2005

**Starting Date:** 3 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** CONICET; APN

**Introduction:** The general objective of this project is to analyse the diverse predator-pray interaction systems between birds and fish-crustaceans distributed in the Scotia Arc archipelago and the Western Antarctic Peninsula. Through this study we intend to understand the variations in different population or individual parameters of second or third level predators in relation to their interrelations, the availability of main preys and the most important environmental factors (oceanic circulation, ice coverage, availability of nidification sites, wind and visibility conditions).

**Specific Goal:** Monitoring of the population sizes of the birds colonies selected, determining events or key reproductive states that would potentially respond to food variability. Determination of pasture intensity around the different reproductive colonies of Antarctic marine birds in the regions of the South Shetland and South Orcadas Islands. Study of the composition and variability of seasonal, interannual and sexual diet and evolution of the diet amplitude or specialization degree in different reproductive birds in the 25 de Mayo Island, Laurie Island and Western Antarctic Peninsula. Study of feeding behaviour during the reproduction season particularly in penguins and petrels. Localization of the feeding areas and determination of the route/path taken. Estimation of the amount of marine resources required by these populations during the reproductive season and assessment of the individual energy requirements of them, specially during reproduction.

**Tasks:** (1) To carry out exhaustive censuses during the incubation of the selected species in order to know the population size of their colonies. (2) To determine the reproductive chronology and the reproductive success of species in two selected areas with 30 to 35 nests identified in different sectors of the colonies. (3) To ring adult and young birds close to the emancipation of giant petrels and skuas in order to continue with the marking and following-up program for these birds. (4) To obtain in vivo dietary samples by means of usual methodologic techniques. (5) To place time-depth recorders (TDR) for diving birds in order to know feeding patterns.

- **Task Team:** JUBANY BIRDS

**Personnel allotted:** 2 ( two)

**Load:** Outbound trip: General Load 0.12 t – 0.210 m<sup>3</sup>  
Inbound trip: Frozen Load (-20°C) 0.18 t – 0.350 m<sup>3</sup>

**Duration:** 60 days

**Scheduled Date:** 15 December 2009 – 15 February 2010

**Place of Operation:** Potter Peninsula

**Housing:** Station

**Support Requirements:** Transport to Barton Peninsula on rubber boats from Jubany Station

**Tasks:** (1) To carry out exhaustive censuses during the incubation periods of selected species in order to know the colonies population size. (2) To determine the reproductive chronology and the reproductive success of species in two selected areas with 30 to 35 nests identified in different sectors of the colonies. (3) To ring adult and young birds close to the emancipation of giant petrels. (4) To obtain in vivo dietary samples by means of usual methodologic techniques.

- **Task Team:** ORCADAS BIRDS

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 0.05 t – 0.140 m<sup>3</sup>  
Inbound trip: Frozen Load (-20°C) 0.18 t – 0.350 m<sup>3</sup>

**Duration:** 60 days

**Scheduled Date:** 15 December 2009 – 15 February 2010

**Place of Operation:** Mossman Peninsula and Geddes Cape

**Housing:** Station

**Support Requirements:** Transport to Geddes Cape on rubber boats from Orcadas Station (support from winter personnel)

**Tasks:** (1) To carry out exhaustive censuses during the incubation periods of selected species in order to know the colonies population size. (2) To determine the reproductive chronology and the reproductive success of species in two selected areas with 30 to 35 nests identified in different sectors of the colonies. (3) To ring adult and young birds close to the emancipation of skuas in order to follow with the marking and following-up program for these birds. (4) To obtain in vivo dietary samples by means of usual methodologic techniques.

- **Task Team:** PRIMAVERA BIRDS

**Personnel allotted:** 1 (one)

**Load:** Outbound trip: General Load 0.09 t – 0.140 m<sup>3</sup>  
Inbound trip: Frozen Load (-20°C) 0.12 t – 0.280 m<sup>3</sup>

**Duration:** 45 days

**Scheduled Date:** 15 January 2010 – 28 February 2010

**Place of Operation:** Danco Coast

**Housing:** Station

**Support Requirements:** ---

**Tasks.** (1) Censuses of marine birds from the Ship bridge and under sun light. Each census lasts for 10 minutes followed by an interval of another 10 minutes. Three censuses are taken for every observation hour.

- **Task Team:** PORT DESEADO BIRDS

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: Load General: ----  
Inbound trip: Load General: ----

**Duration:** 60 days

**Scheduled Date:** 15 December through 15 February 2010

**Place of Operation:** Ship course in the Antarctic regions.

**Housing:** Ship

**Support Requirements:** ---

## **DETERMINATION OF THE ANTIOXIDANT STATUS IN ANTARCTIC MARINE ORGANISMS. IMPACT OF XENOBIOTICS ON KEY SPECIES OF TROPHIC CHAINS PROJECT.**

**Type of Project:** PICTO 36331-2005

**Starting Date:** New (starting in 2009/2010 Antarctic Campaign)

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** In the Antarctic marine environment, the presence of contaminants is menacing live resources stability, as many persistent toxic substances (PTSs) are bioaccumulated in the tissues of diverse organisms. Polar organisms have developed a few strategies to offset the effect of foreign substances. The assessment of the levels and the potential toxicity of such substances, in key species of the Antarctic ecosystem, is of high relevance to understand and elucidate the biological impact on upper organisms of the trophic net, which detoxificant system has not been already wholly deciphered. The Antarctic trophic nets are relatively simple: the phytoplankton is consumed by the zooplankton, which in turn constitutes the main food source of other animals as birds, seals and whales.

**Specific Goal:** Determination and characterization of the organisms sensitive to the Antarctic environment perturbation and effective biological means to detect them. Development of experimental work with organisms of the coastal zones and open sea to go deeper into the knowledge about the Antarctic marine ecosystem interactions. Determination of effective preventive mechanisms necessary to preserve the Antarctic biodiversity.

**Tasks:** (1) Work on benthic, plankton and nekton communities through diving in Potter Cove. (2) To carry out contamination experiences in invertebrates under controlled conditions. (3) To take blood samples from birds and marine mammals, both adult and young ones.

• **Task Team:** JUBANY ANTARCTIC SUMMER CAMPAIGN 2009/2010 PHYSIOLOGY

**Personnel allotted:** 2 (two)

|   |   |
|---|---|
| <b><u>Load:</u></b> <u>Outbound trip:</u> | General Load 0.300 t – 3 m <sup>3</sup>         |
| <u>Inbound trip:</u>                      | General Load 0.400 t – 4 m <sup>3</sup>         |
|   | Frozen Load (-20°C) 0.05 t – 0.5 m <sup>3</sup> |

**Duration:** 60 days

**Scheduled Date:** January 2010 – March 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** Pneumatic botes. Divers. Room in Laboratory and Aquarium under controlled temperature.

• **Task Team:** JUBANY PHYSIOLOGY PRE-ANTARCTIC SUMMER CAMPAIGN 2010

**Personnel allotted:** 2 (two)

|   |   |
|---|---|
| <b><u>Load:</u></b> <u>Outbound trip:</u> | General Load 0.300 t – 3 m <sup>3</sup>         |
| <u>Inbound trip:</u>                      | General Load 0.400 t – 3 m <sup>3</sup>         |
|   | Frozen Load (-20°C) 0.05 t – 0.5 m <sup>3</sup> |

**Duration:** 60 days

**Scheduled Date:** October 2010 – December 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** Pneumatic boats. Divers. Room in Laboratory and Aquarium under controlled temperature.

**HOST-PARASITE INTERACTION AND IMMUNE RESPONSE IN THREE SPECIES OF ANTARCTIC PENGUINS: EFFECTS OF GLOBAL CHANGE (PINGUCLIM II) PROJECT**

**Type of Project:** INST-04-2009

**Project with International Cooperation  
With Spain**

**Starting Date:** New (starting in 2009/2010 Antarctic Campaign)

**Executing Entity:** DNA-IAA

**Participating Entities:** Ministry of Education and Science in Spain

**Introduction:** The objective of this project is to determine the proximal mechanisms of the host-parasite interaction and its effects on the biological efficacy in selected penguin species. This project will take place in two locations: Deception Island (Chinstrap Penguin) and 25 de Mayo Island (Adélie Penguin).

In the Pinguclim I project (Spanish project), in an experiment with anti-parasite, a bigger growth of the young penguins treated was obtained. At present this project's goal is to see the effect that parasites may have in adult penguins through a similar experiment. It has been experimentally demonstrated how the decrease in pathogenic bacteria positively affects growth in penguin species. It is also known that bacteria are the other organisms susceptible of affecting biological efficacy in the Antarctic ecosystem, so it is foreseen that it will affect it in a bigger or lesser degree. The present project aims at determining bacteria effect on biological efficacy of adults in terms of offspring quantity (amount of young penguins) and quality.

**Specific Goal:** Determination of the effects of intestinal parasites load on biological efficacy in adults. Determination of the effects of intestine pathogenic bacteria load in the biological efficacy in adults. Knowledge on variability in the immune answer in line with different physiological status (reproduction versus shedding) in Adélie Penguin.

**Tasks:** (1) To use 40 nests with young penguins with equal eclosion date to give antiparasites to a group of 20 nests and placebo to a second group of 20 nests in order to estimate the reproductive success in the number of live young penguins becoming independent. (2) To use other 40 nests with young penguins of same eclosion date to give them a broad-spectrum antibiotic to both, male and female. The second group of 20 nests will be given a placebo in order to estimate the reproductive success in the number of young alive becoming independent.

- **Task Team:** JUBANY PINGUCLIM II

**Personnel allotted:** 4 (four, 2 Argentina + 2 Spain)

**Load:** Outbound trip: General Load 0.12 t – 0.21 m<sup>3</sup>  
Inbound trip: General Load 0.18 t – 0.35 m<sup>3</sup>

**Duration:** 60 days

**Scheduled Date:** November 2009 – 15 February 2010

**Place of Operation:** Potter Peninsula

**Housing:** Jubany Station

**Support Requirements:** ---

## **CERRO NEVADO EMPEROR PENGUIN PROJECT**

**Type of Project:** INST 4 -09

**Project with International Cooperation  
With Australia**

**Starting Date:** New

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** The available information about the emperor penguin at the south Cerro Nevada Island is scarce and of little relevance. The objective of this project is to analyze the population status of the colony and all the aspects related to reproductive biology. On the other hand, the goal is to know about all the aspects connected to those species' trophic ecology, from information about their diet up to the aspects related to their feeding rhythms as well as their post-reproductive movements, through satellite technology.

**Specific Goal:** Monitoring the emperor colony population size of the Cerro Nevada Island, determining the events or key reproductive status that would potentially be related to food variability. To determine the pasture intensity of this species in the geographical area of Eastern Antarctic Peninsula. To know the post-reproductive movement of adult reproducers.

**Tasks:** (1) Taking aerial photographs at 1500 meters high of the penguin colony at Cerro Nevada and adjacent islands (2) To take dietary samples. (3) To place satellite equipment in adult reproducers.

• **Task Team:** CERRO NEVADO EMPEROR PRE-ANTARCTIC SUMMER CAMPAIGN

**Personnel allotted:** 7 (seven, 6 DNA and 1 foreign)

**Load:** Outbound trip: to be confirmed  
Inbound trip: to be confirmed

**Duration:** 20 days in June-July (2 DNA) and 20 days in September (4 DNA, 1 foreign)

**Scheduled Date:** June/July and September

**Place of Operation:** South of Cerro Nevada Island

**Housing:** Marambio Station, and camps in the zone of Suecia Shelter and Bahía López de Bertodano Shelter.

**Support Requirements:** to be confirmed after the agreement is signed with the Australian Antarctic Division.

- **Task Team:** CERRO NEVADO EMPEROR ANTARCTIC SUMMER CAMPAIGN

**Personnel allotted:** 6 (six, 5 DNA and 1 foreign)

**Load:** Outbound trip: to be confirmed  
Inbound trip: to be confirmed

**Duration:** 20 days

**Scheduled Date:** December

**Place of Operation:** South of Cerro Nevado Island

**Housing:** Marambio Station, and camps in the zone of Suecia Shelter and Bahía López de Bertodano Shelter.

**Support Requirements:** to be confirmed after the agreement is signed with the Australian Antarctic Division.

## **ECOSYSTEM MONITORING PROJECT**

**Type of Project:** INST 05-2009

**Starting Date:** 15 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** UBA, CONICET, APN, Australian Antarctic Division (Australia)

**Introduction:** In order to arrange commercial exploitation of Antarctic live marine resources, the CCRVMA set up the Ecosystem Monitoring Program (CEMP), which main objective is to control the key parameters of the life cycle of dependent selected species (indicator species) that will probably respond to the changes in the availability of exploited species. The CCRVMA has elaborated standard methods of CEMP and has established the sites of study. Thus, Argentina participates in this program and takes the Population Parameters of Antarctic Penguin in three areas annually: (1) 25 de Mayo Island, Potter Peninsula, (2) Esperanza Bay, Antarctic Peninsula, and (3) Mossman Peninsula, Laurie Island.

**Specific Goal:** In the Adélie penguin: determination of the arrival weight at the arrival of the adults to the colony (areas 2 and 3), determination of the reproductive success (areas 1, 2 and 3), determination of the reproductive population size (areas 1, 2 and 3), determination of the young penguin weigh at feathering (areas 2 and 3) and obtention of information about the species diet (areas 1, 2 and 3). In the Chinstrap Penguin: obtention of information about the species diet (area 3). In the Emperor penguin: obtention of information about chronology and population size of the Cerro Nevado colony.

**Tasks:** (1) To capture and weigh adult reproducers at arrival in the colonies. (2) To make an exhaustive census -when 70-90% of the adults are incubating – of incubating birds in order to get information about the reproductive population size. (3) To make an exhaustive census – when 70% of the young penguins have entered in nursery - of young penguins in order to obtain information on the reproductive success. (4) To make exhaustive census through a transect that traverses across 100 nests from the beginning of the first egg laid up to the beginning of the young penguins nursery. (5) To weigh young penguins during the feathering

period up to their emancipation. (6) To obtain data of stomach contents of adult reproducers in order to have information about the young diet composition

- **Task Team:** ESPERANZA ANTARCTIC SUMMER CAMPAIGN MONITORING

**Personnel allotted:** 3 (three) (Previous Antarctic Summer Campaign personnel continues)

**Load:** Outbound trip: General Load 0.120 t – 0.210 m<sup>3</sup>  
Inbound trip: Frozen Load (-20°C) 0.20 t – 0.350 m<sup>3</sup>

**Duration:** 45 days

**Scheduled Date:** Previous ANTARCTIC SUMMER CAMPAIGN 2009 – 15 February 2010

**Place of Operation:** Esperanza Bay Coasts

**Housing:** Station

**Support Requirements:** ---

- **Task Team:** ESPERANZA previous ANTARCTIC SUMMER CAMPAIGN MONITORING

**Personnel allotted:** 3 (three)

**Load:** Outbound trip: General Load 0.120 t – 0.210 m<sup>3</sup>  
Inbound trip: Frozen Load (-20°C) 0.20 t – 0.350 m<sup>3</sup>

**Duration:** 45 days

**Scheduled Date:** 15 September 2010 – ANTARCTIC SUMMER CAMPAIGN 2010/2011 (personnel of the ANTARCTIC SUMMER CAMPAIGN continues)

**Place of Operation:** Esperanza Bay Coasts

**Housing:** Station

**Support Requirements:** ---

- **Task Team:** JUBANY ANTARCTIC SUMMER CAMPAIGN MONITORING

**Personnel allotted:** 4 (four) (personnel of the Pre- Antarctic Summer Campaign continues)

**Load:** Outbound trip: General Load 0.120 t – 0.210 m<sup>3</sup>  
Inbound trip: Frozen Load (-20°C) 0.20 t – 0.350 m<sup>3</sup>

**Duration:** 150 days

**Scheduled Date:** Pre- Antarctic Summer Campaign 2009 – 15 February 2010

**Place of Operation:** Potter Peninsula

**Housing:** Station

**Support Requirements:** ---

- **Task Team:** JUBANY PRE-ANTARCTIC SUMMER CAMPAIGN MONITORING

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.120 t – 0.210 m<sup>3</sup>  
Inbound trip: Frozen Load (-20°C) 0.20 t – 0.350 m<sup>3</sup>

**Duration:** 150 days

**Scheduled Date:** 15 September 2010 – Antarctic Summer Campaign 2010/2011 (same personnel as in the Antarctic Summer Campaign continues)

**Place of Operation:** Potter Peninsula

**Housing:** Station

**Support Requirements:** ---

- **Task Team:** ORCADAS MONITORING (same Task Team Labor)

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 0.120 t – 0.350 m<sup>3</sup>  
Inbound trip: Frozen Load (-20°C) 0.180 t – 0.350 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** December/09 to February/11 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Mossman Peninsula and Geddes Cape

**Housing:** Station

**Support Requirements:** ---

**GENOMA BLANCO (WHITE GENOMA) PROJECT**

**Type of Project:** INST 10-2009

**Starting Date:** 3 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** UBA, BioSidus, University of Rovira i Virgili (Spain)

**Introduction:** The objective of the Genoma Blanco Project, at first instance, was the complete sequenciation of an Antarctic bacterium. This stage involved screening, isolation, selection and

characterization of Antarctic psychrotrophic bacteria and the typification of new a species, after which it proceeded to the second stage: sequenciation. The knowledge about the complete sequence of the genoma gave way to the following stage, that is the genoma analysis (bioinformatics), i.e., to understand how many and what types of genes this genoma carries. Afterwards, there followed a work on the structure of some of the genic products codified in that genoma and the cellular functions related to the expression of each of those genes. Once the first two stages were completed (description of a new bacterial species and complete sequenciation of the *Bizona argentinensis* genoma), the project also includes a bioprospection task tending to search for new products coming from isolated psychrophilic microorganisms and the analysis of its potencial application in biotechnological processes.

**Specific Goal:** To continue psychrophilic bacteria sreening and bioprospection tasks for further studying their relationship with the production of compounds of biotechnologic interest.

**Tasks:** (1) To take samples of different biotops and to isolate psychrophilic bacteria in different culture media. (2) To purify isolated strains and to perform the laboratory basic biochemical characterization. (3) To isolate total DNA of the isolations. (4) To peform the (PCR) amplification of the ARNr 16S gen and the purification of the amplification products. (5) To conserve isolations by liofilization and cryopreservation for transfer and further analysis in Buenos Aires.

- **Task Team:** GENOMA BLANCO (same Task Team as Jubany Microbiology)

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: Load General: ---  
Inbound trip: Load General: ---

**Duration:** 90 days

**Scheduled Date:** 15 December 2009 – 15 March 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** Pneumatic boats.

## **PSICOANTAR PROJECT**

**Type of Project:** INST 20

**Starting Date:** 1 year ago

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** Through the investigation and permanant assistance with respect to the Antarctic groups, the aim is the optimization of the emocional and bonding level, bringing about a better quality of life and with it, better scientific, technical and logistics production for the benefits of all individuals.

**Specific Goal:** (1) To gather necessary information for the psychological evaluation of the personnel participating in the Antarctic Campaigns through questionnaires, tests and psychological scales.

**Tasks:** (1) To take an in situ test and questionnaire as well as open psychological interviews.

- **Task Team:** SHIP PSYCHOLOGY

**Personnel allotted:** 1 (one)

**Load:** Outbound trip: General Load 0.03 t – 1 m<sup>3</sup>  
Inbound trip: General Load 0.03 t – 1 m<sup>3</sup>

**Duration:** 90 days

**Scheduled Date:** Antarctic Summer Campaign 2009 2010

**Place of Operation:** Ship (and occasional disembarkments in stations of interest)

**Housing:** Ship

**Support Requirements:** room in the logistics Ship to take the test, questionnaire and interviews and disembarkment to station for such purposes.

**PHYSICAL-CHEMICAL SCIENCES  
PROGRAM**

**IMPACT OF GLACIAL RETREAT INDUCED BY GLOBAL WARMING ON THE DISTRIBUTION OF THE BENTHIC ALGAE ON AN ANTARCTIC COASTAL ECOSYSTEM (POTTER COVE, 25 DE MAYO ISLAND, SOUTH SHETLAND ISLAND) PROJECT.**

**Type of Project:** PICTA-7-2008-2011

**Starting Date:** under evaluation

**Executing Entity:** DNA-IAA

**Introduction:** A direct effect of glacial retreat along the Antarctic Peninsula is the opening of areas free from ice for the colonization by benthic organisms, both in the inter-tidal area as in the subtidal area. Moreover it is expected that the degree of light penetration in the water column will diminish due to the increase in dissolved particulate material of ground origin that gets into the marine system, with consequences for the vertical distribution of the primary benthic producers that can affect the coastal trophic nets.

The main objective of the project is to analyze the colonization patterns of the primary producers in the new areas free from ice and to estimate the possible changes in their vertical distribution due to the increase in the amount of sediments in water and salinity variations. This project forms part of the CLICOPEN-JUBANY.

**Specific Goal:** Monitoring of the distribution, specific composition and diversity of the benthonic marine macroalgae in different sites of Potter Cove with different degrees of maturity and disturbance. Comparison of present distribution of macroalgae against the studies carried out in Potter Cove since 1994. Analysis of vertical distribution of macroalgae in relation with the degree of light penetration and the load of sediment in the water column. Knowledge on the colonization of the benthic micro and macroalgae in the new areas free from ice along three years. Study of the relationships between species of benthic macroalgae and its epibionts in the different sites of study, analyzing the diversity, the spatial distribution, the orientation and the abundance of invertebrates alone or in colonies in line with the substrate morphological complexity.

**Tasks:** (1) To collect macroalgae and invertebrates in different sites within Potter Cove. (2) To carry out colonization experiments on the land. (3) To carry out experiments in aquariums.

- **Task Team:** JUBANY MACROALGAE (former UV Jubany Benthic communities group)

**Personnel allotted:** 4 (four)

|   |   |
|---|---|
| <b><u>Load:</u></b> <u>Outbound trip:</u> | General Load 0.2 t – 7.2 m <sup>3</sup>   |
| <u>Inbound trip:</u>                      | General Load 0.22 t – 10.8 m <sup>3</sup> |

**Duration:** 150 days

**Scheduled Date:** November 2009 – March 2010 (2 persons)  
December 2009 – March 2010 (2 persons)

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** Pneumatic Boats, Divers.

## **CLICOPEN-PLANKTON PROJECT**

**Type of Project:** PICTO 35562-2005

**Starting Date:** 1 year ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Alfred Wegener Institute for Polar and Marine Research (AWI, Germany), Institut des Sciences de la Mer de Rimouski (ISMER, Canada)

**Introduction:** The objective of the CLICOPEN project is to study the effects of glacial thawing on the planktonic systems at the Western Antarctic Peninsula. The development of current project is associated to the ECOS-JUBANY one.

**Specific Goal:** Study of the effect of glacial thawing on the dynamics of planktonic systems. Study of temporal variation in the composition of planktonic communities. Study of the particles dynamics (alive and not alive) and of the physical-chemical characteristics (salinity, temperature, nutrients, irradiance, etc.) during the thawing season in the water column of Potter Cove.

**Tasks:** (1) To take samples of the water column for the study of the planktonic community along the salinity gradients between the glacial face and open waters. (2) To measure physical and chemical parameters of the water column (salinity, temperature, pH, nutrients) by means of oceanographic stations. (3) To measure light penetration in the water column by means of oceanographic stations. (4) To perform a continuous temperature measurement in the water column at fixed depth. (5) To collect samples for its analysis through flow cytometry and microscopy. (6) To analyze and process samples in laboratory. (7) To carry out samplings of zooplankton with nets and pasture experiments.

- **Task Team:** CLICOPEN JUBANY SUMMER (same personnel as Pre-Antarctic Summer Campaign)

**Personnel allotted:** 3 (2 DNA and 1 Foreign)

**Load:** Outbound trip: ----  
Inbound trip: General Load 0.08 t – 2.5 m<sup>3</sup>  
Load en Chamber (4°C) 0.2 t – 1 m<sup>3</sup>  
Frozen Load (-20°C) 0.2 t – 2 m<sup>3</sup>

**Duration:** 90 days

**Scheduled Date:** December 2009 – March 2010 (same personnel that continue from the Pre-Antarctic Summer Campaign)

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** Pneumatic boats. Divers.

- **Task Team:** CLICOPEN JUBANY PRE-ANTARCTIC SUMMER CAMPAIGN (same personnel that continue in Antarctic Summer Campaign)

**Personnel allotted:** 3 (2 DNA and 1 foreign)

**Load:** Outbound trip: General Load 0.05 t – 2 m<sup>3</sup>  
Inbound trip: ----

**Duration:** 90 days

**Scheduled Date:** September 2010 – November 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** Pneumatic boats. Divers.

## **ANTARCTIC BENTHIC COMMUNITIES: AN INTERDISCIPLINARY APPROACH TO ANALYZE THE POSSIBLE IMPACT OF GLOBAL WARMING.**

**Type of Project:** PICTO 36326-2005

**Starting Date:** 10 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** National University of Córdoba (UNC, Córdoba), Alfred Wegener Institute for Polar and Marine Research (AWI, Alemania).

**Introduction:** With the objective of studying the structural patterns of the benthic communities and the influence of the physical and biological processes it is scheduled to go on with the study of the benthic communities of Potter Cove (Jubany Station) and analyze the impact of global warming over the system. Through photographic transects the diversity, distribution and abundance patterns will be analyzed, which coupled with succession experiments will devise a comprehensive panorama at spatial and temporal scale of the communities of Antarctic coastal environments. Through the analysis of the reproductive cycles and feeding strategies of dominant benthic species, there will be more information about their adaptation to the particular conditions of the Antarctic environment, what will contribute to explain the patterns observed and to hypothesize about the possible consequences of global warming impact. The genetic structure of the widespread ascidian population in the South Ocean will allow inferring about the effectivity of the Polar Front as a barrier to the dispersion of these organisms and about their value in the conformation of the Antarctic biota in evolutionary terms.

**Specific Goal:** Analysis of the benthic communities' structure at Potter Cove and its short, medium and long term dynamics, especially in relation to the global warming processes. Analysis of the colonization and succession processes and their relationship with recruitment events. Evaluation of physiological responses (growth, reproduction, energetic reserves) of benthic organisms with respect to food availability, both in quantity and quality. Determination of available resources along the annual cycle and the possible interannual variation. Knowledge about the energy supply mechanisms to the benthic communities (resuspension, drop of particles, advection of alloctonus material). Estimation of the importance of suspensivorous (given their abundante and high particles filtering capacity) in the coupling between the pelagic and benthic systems.

- **Task Team:** JUBANY SUMMER BENTHIC COMMUNITIES

**Tasks:** (1) Collection of marine invertebrates samples by diving in Potter Cove. (2) Experiments of benthic communities succession (3) Experiment in aquariums.

**Personnel allotted:** 3 (three)

**Load:** Outbound trip: General Load 0.5 t – 7.2 m<sup>3</sup>  
Inbound trip: General Load 0.5 t – 7.2 m<sup>3</sup>  
Frozen Load (-20°C) 0.1 t – 0.6 m<sup>3</sup>

**Duration:** 100 days

**Scheduled Date:** January 2010 – April 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** Pneumatic Boats. Divers. Room in Laboratory (humid and dry) and Aquarium.

## **JUBANY ECOS PROJECT**

**Type of Project:** INST-01-2009

**Starting Date:** 3 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Alfred Wegener Institute for Polar and Marine Research (AWI, Germany), Physics Institute of Rosario (National University of Rosario – CONICET)

**Introduction:** ECOS-JUBANY has been developed as a DNA-IAA institutional project since 2005. The main objectives of this project are the procurement and primary processing of long-term oceanographic information necessary for the study of the processes related to global climate change in Potter Cove. The development of current project is associated with the CLICOPEN-PLANKTON.

**Specific Goal:** To study the dynamics of particles (alive and not alive) and of the long term physico-chemical characteristics (salinity, temperature, nutrients, irradiance, etc.) in the water column of Potter Cove. To study the effect of glacier thawing on the dynamics of the planktonic systems (coordinated with the CLICOPEN project). To study the effects of glacier retreat on the colonization of new spaces by the benthic microalgae.

**Tasks:** (1) To measure chlorophyll and particulate material in suspension in the water column through oceanographic stations. (2) To measure physical and chemical parameters of the water column (salinity, temperature, pH, nutrients) through the oceanographic stations. (3) To measure the incidental photosynthetically available radiation and its penetration in the water column through oceanographic stations and continuous records. (4) To perform ongoing temperature measurements in the water column at set depth. (5) To analyze and process samples at the laboratory. (6) To measure submarine and atmospheric ultraviolet radiance (UVR) along the year. (7) To carry out samplings of zooplankton with nets and pasture experiments.

- **Task Team:** ECOS JUBANY

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 1.5 t – 1 m<sup>3</sup>  
Inbound trip: General Load 1.5 t – 1 m<sup>3</sup>  
Load in Chamber (4°C) 0.1 t – 0.2 m<sup>3</sup>  
Frozen Load (-20°C) 0.03 t – 0.05 m<sup>3</sup>

**Duration:** 355 days

**Scheduled Date:** May/June 2010 – May/June 2011 (1 person)  
January/2010 – January/2011 (1 person)

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** Pneumatic boats. Divers.

## MAGNETOSPHERE PROJECT

**Type of Project:** INST-04-2009

**Project with Internacional Cooperation  
With Spain**

**Starting Date:** 44 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** National University of San Juan (UNSJ, San Juan), National University of Tucumán (UNTUC, Tucumán), National University of La Plata.

**Introduction:** The lines of the terrestrial magnetic field attract particles of the “solar wind” and its “flares” or sun stains. When that flow gets massively into the altitude zones (Belgrano and San Martín Stations) it brings about strong perturbations in the ionospheric layers and in the terrestrial magnetic field.

**Specific Goal:** To have better knowledge about the energy transference from the interplanetary space to the terrestrial atmosphere and the determination of the strong perturbances observed in the Antarctic Stations.

**Tasks:** (1) To carry out ongoing records of the variations of the magnetic field components. (2) To take records of the magnetic pulses in the PC2, PC3, PC4 y PC5 ranges. (3) To perform ionospheric soundings of vertical incidence by the pulsed method. (4) To measure the ionospheric absorption of cosmic sounds. (5) To make periodical observations of the absolute magnetic field.

- **Task Team:** BELGRANO II MAGNETOSPHERE (same Task Team as LABEL)

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.5 t – 1 m<sup>3</sup>  
Inbound trip: General Load 0.2 t – 0.51 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** Antarctic Campaign 2009/2010 (according to deployment and withdrawal to access to the place of operation)

**Place of Operation:** Belgrano II Station

**Housing:** Station

**Support Requirements:** ---

- **Task Team:** SAN MARTIN MAGNETOSPHERE (same Task Team as LASAN)

**Personnel allotted:** 3 (three)

**Load:** Outbound trip: General Load 5 t – 1 m<sup>3</sup>  
Inbound trip: General Load 2 t – 0.51 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** February 2010 – March 2011 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** San Martín Station

**Housing:** Station

**Support Requirements:** ---

## **OZONE SOUNDING PROJECT**

**Type of Project:** INST-04-2009

**Project with Internacional Cooperation  
With Spain**

**Starting Date:** 15 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** National Weatherforecast Service, Institute of Atmospheric Physics of Rome (IAFR, Italy), National Institute of Aeroespacial Technique of Spain (INTA, Spain), National Meteorological Institute of Spain (INM, Spain), Finnish Meteorological Institute (FMI, Finland), World Meteorological Organization (WMO).

**Introduction:** The annual depletion of the ozone layer in polar regions has turned into a serious concern at planetary level. Through its study and the prediction that would be inferred from it, it is expected that an enough planetary awareness be built as to implement serious actions to hinder or involution this phenomenon.

**Specific Goal:** To enlarge knowledge about the ozone layer dynamics, relating it with the polar vortex, the polar stratospheric clouds, and the presence of aerosols. To study the influence of cyclical and aleatory phenomena and the actions produced by men.

**Tasks:** (1) To take measurements of ozone abundance in the Belgrano II Stations. (2) To determine the vertical distribution of the ozone column through UMKHER analysis and balloon ozone soundings. (3) To take measurements of the UV-B radiation with Brewer spectrophotomer and UV 501 biometer. (4) To take measurements of broad spectrum UV radiation with NILU-UV radiometers. (5) To take measurements of SO<sub>2</sub> y NO<sub>2</sub> variation. (6) To perform calibration and constrast of Brewer spectrophotometers. (7) To perform the calibration and the constrast of NILUS UV radiometers in Belgrano Station. (8) To determine

different polar stratospheric clouds (PSCs) parameters through the LIDAR installed in the 2009 campaign (9) To process data acquired and forward them to the National Weatherforecast Service, Institute of Atmospheric Physics of Rome (IAFR, Italy), National Institute of Aeroespacial Technique of Spain (INTA, Spain), National Meteorological Institute of Spain (NMI, Spain) and the Finnish Meteorological Institute Finlandés (FMI, Finland), for further forwarding to the World Ozone Data Centre of the World Meteorological Organization (WMO). (10) To instal two NEVA spectrographs in Belgrano Laboratory. (11) To take measurements of halogenated organic compounds (OCIO, BrO) present in the Antarctic stratosphere through the NEVA spectrograph in the Belgrano II Stations Laboratories (12) To continue the tests with TECO equipment in Belgrano II Station in order to take measurements of tropospheric ozone.

- **Task Team:** BELGRANO II OZONE (same GT LABEL)

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 5.3 t – 12.83 m<sup>3</sup> (1)  
Inbound trip: General Load 2.625 t – 5.025 m<sup>3</sup> (2)

(1) Conformed by Helium Tubes (2.9 t – 4.6 m<sup>3</sup>) + 5 Nitrogen Tubes (0.4 t – 0.725 m<sup>3</sup>) + General supplies (1 t – 1.5 m<sup>3</sup>) + 20 Boxes of supplies for Ozonesounding and New Neva Equipment (1 t – 6 m<sup>3</sup>) + Fuel tank - 200 ltrs.

(2) Conformed by 28 Helium Tubes (2.125 t – 4.025 m<sup>3</sup>) + General Load (0.5 t – 1 m<sup>3</sup>).

**Duration:** 365 days

**Scheduled Date:** January 2010 February 2011 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Belgrano Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To take measurements of ozone abundance at Marambio Stations. (2) To take measurements of broad spectrum UV radiation with NILU-UV radiometers. (3) To take measurements of SO<sub>2</sub> y NO<sub>2</sub> variations. (4) To perform the calibration and the constrast of NILUS UV radiometers. (5) To process data acquired and forward them to the National Weatherforecast Service, Institute of Atmospheric Physics of Rome (IFAR, Italy), National Institute of Aeroespacial Technique of Spain (INTA, Spain), National Meteorological Institute of Spain (NMI, Spain) and the Finnish Meteorological Institute Finlandés (FMI, Finland), for further forwarding to the World Ozone Data Centre of the World Meteorological Organization (WMO). (6) To take measurements of halogenated organic compounds (OCIO, BrO) present in the Antarctic stratosphere through the NEVA spectrograph.

- **Task Team:** MARAMBIO OZONE (same Task Team as LAMBI)

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 0.7 t – 1 m<sup>3</sup>  
Inbound trip: General Load 0.2 t – 0.5 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** October 2009 – December 2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To take measurements of ozone abundance at San Martín Station. (2) To determine the vertical distribution of the ozone column through UMKHER analysis. (3) To take measurements of UV-B radiations with Brewer spectrophotometer and UV 501 biometer.

- **Task Team:** SAN MARTIN OZONE (same Task Team as LASAN)

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 1 t – 0.5 m<sup>3</sup>  
Inbound trip: General Load 0.5 t – 0.3 m<sup>3</sup>

**Duration:** 365 days

**Scheduled Date:** Feb 2010 March 2011 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** San Martín Station

**Housing:** Station

**Support Requirements:** ---

## **GREENHOUSE EFFECT PROJECT**

**Type of Project:** INST-04-2009

**Project with Internacional Cooperation  
With Spain**

**Starting Date:** 14 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Institute of Atmospheric Physics of Rome (IAFR, Italy)

**Introduction:** The investigation of the variation of atmospheric CO<sub>2</sub> concentration will allow making quantitative evaluations related to the influence of the atmospheric circulation and the anthropogenic actions.

**Specific Goal:** Better knowledge respect to the gradual increase of the greenhouse effect. Monitoring of CO<sub>2</sub> variation in Jubany Station in order to fulfill the objectives that the World Meteorological Organization (WMO) demands to the stations that comprise the Global Atmosphere Watch Net.

**Tasks:** (1) To take measurements of the CO<sub>2</sub> concentration in atmosphere along the year. (2) To make the primary processing of the information acquired and forward it to the Institute of Atmospheric Physics of Rome (Italy) and the World Data Center of Gases of the Greenhouse Effect of the World Meteorological Organization (WMO). (3) To make the controls and

contrasts of the pattern tubes of the station with the national pattern cylinders deposited in Rome. **(4)** To carry out the checks and calibrations of the measurement systems and CO<sub>2</sub> analyzers **(5)** To update the data base and draw the graphs of CO<sub>2</sub> progress **(6)** To perform the operation and maintenance of satellite Internet access equipment at Jubany Station.

- **Task Team:** JUBANY WINTER GREENHOUSE (same Task Team as LAJUB)

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 2 t – 2.5 m<sup>3</sup> (includes 14 CO<sub>2</sub> tubes)  
Inbound trip: General Load 2 t – 2.5 m<sup>3</sup> (includes 14 CO<sub>2</sub> tubes)

**Duration:** 365 days

**Scheduled Date:** Antarctic Campaign 2009/2010 (according to deployment and withdrawal to access to the Place of Operation)

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

- **Task Team:** JUBANY SUMMER GREENHOUSE

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 0.1 t – 0.2 m<sup>3</sup>  
Inbound trip: General Load 0.1 t – 0.2 m<sup>3</sup>

**Duration:** 60 days

**Scheduled Date:** January 2010 – March 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

## **ANTARCTIC CROSSROAD OF SLOPE STREAMS PROJECT (ACROSS)**

**Type of Project:** INST-04-2009

**Project with internacional Cooperation**  
With USA and Spain

**Starting Date:** 1 year ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Texas A&M University (TAMU, United States of America), National Science Foundation (NSF, United States of America), Institute Mediterrani D'Estudis Avancats (IMEDEA, University of Balears Islands, Spain).

**Introduction:** The Antarctic Crossroad Of Slope Streams Project (ACROSS) is a U.S. contribution to the IPY “SASSI” program (IPY Activity #9) (Synoptic Antarctic Shelf-Slope Interactions). ACROSS seeks to better understand the physical processes from the Weddell Sea across the western South Scotia Ridge, that contribute to the meridional global circulation, governing northward outflow of ventilated slope waters cooling and freshening the Antarctic Circumpolar Current. The redistribution of large-scale oceanic heat by the Meridional Circulation is connected to global climate. Thus, the processes of advective and turbulent mixture that drive the lower layer of the meridional cell of the Austral Ocean are research topics relevant to climate with global implication

The program will receive long-term funding of this critical interface region between the Weddell Sea and the Global Ocean. It will also include the first small-scale CTD (Conductivity-Temperature-Depth) measurements through the slope to the regional hydrographic data station.

**Specific Goal:** Characterization and quantification of the physical processes that govern the northward outflow of ventilated slope in the Weddell Sea through the Scotia Arc. It comprises five specific objectives: (a) to determine the physical and chemical properties of the northflow associated to the Antarctic slope, (b) to better understand the trajectory, extension and deepening of the ventilated slope towards the Scotia Sea, (c) to study the transport of new deep waters towards the North between the Elephant and South Orcadas Islands, (d) to evaluate the processes that cause the local production of the slope waters that can refresh the Antarctic Circumpolar Current through isopycnic circulation through the Scotia Arc, (e) to determine the distribution of the diapycnic mixing through the dorsal and Sub Antarctic Front, including its relationship with tide and intrusions.

**Tasks:** (1) To take hydrographic measurements with CTD equipment (temperature, salinity and pressure) and ADCP (Acoustic Doppler Current Profilers) in the Western portion of the Scotia dorsal in transects through the slope with stations at 2 to 10 km between each other (2) To profile microstructures of the water column.

- **Task Team:** ACROSS

**Personnel allotted:** 18 (eighteen, 6 Argentina + 12 Foreign)

|   |                            |
|---|----------------------------|
| <b><u>Load:</u></b> <u>Outbound trip:</u> | Load General: not reported |
| <u>Inbound trip:</u>                      | Load General: not reported |

**Duration:** 30 days

**Scheduled Date:** February 2010/March 2010

**Place of Operation:** Philip Passage (between Elephant and South Orcadas Islands)

**Housing:** Ship

**Support Requirements:** Transport of personnel and load on Puerto Deseado Ship, use of oceanographic winch, performance of the zone barimetry, supporting data (depth, position, meteorological data, etc). Use of laboratories, Ship support personnel (winch personnel, manoeuvring personnel), safety equipment on board (life jackets, harness,), food for night guards. Reception of loads from abroad.

## ENVIRONMENTAL MONITORING OF CHEMICAL CONTAMINANTS PROJECT

**Type of Project:** INST 06-2009

**Starting Date:** 4 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Institute of Sea Sciences of Rimouski (ISMER, Canada)

**Introduction:** The Antarctica is considered as one of the last pristine regions of the planet and there is world consensus with respect to the need to preserve its resources and natural environment. For this reason scientific and consultation institutions related to the Antarctic Treaty have highlighted the importance of establishing monitoring and surveillance programs for environmental contamination in the Antarctica.

In agreement with these recommendations, jointly with several national and international institutions, the Instituto Antártico Argentino has developed studies about trace elements (Cd, Cu, Hg, Pb, Zn) since the mid-90's and has recently incorporated measurements of persistent organic contaminants (HAPs, BPCs, metallic organic compounds).

Likewise, at present there is concern with respect to the possible mobilization of these contaminants as a consequence of global warming notably observed in the Antarctic Peninsula. It is also critical to evaluate the global transport of these persistent toxic substances to the Antarctica through the atmosphere and marine currents.

**Specific Goal:** The Project pursues two main objectives: (1) Management Objectives: which will provide information for decision making such as: evaluation of contaminant levels in impacted sites, warning mechanisms for environmental degradation, and identification of activities responsible for environmental degradation. (2) Scientific Objectives: which will contribute to a better knowledge about the coastal contamination processes, such as: establishing basal levels of trace elements and persistent toxic substances in the Antarctic marine environment, to identify biomonitors, to evaluate if there are processes of bioaccumulation and biomagnification of contaminants, to contribute to the knowledge of the biogeochemical cycles of trace elements, to contribute to the knowledge of contaminants transports to high latitudes and to evaluate the possible mobilization of contaminants associated to climate change.

**Tasks:** (1) To take samples and pretreatments of abiotic matrices (water, particulate, sediment, soils) for further analysis of trace elements and persistent toxic substances content. (2) To take samples and pretreatment of biotic matrices (invertebrates and algae) for its further analysis of the trace elements and persistent toxic substances content. (3) To take samples of surface water in the area of the Explorer ship sinking.

- **Task Team:** ESPERANZA CONTAMINATION (same Task Team as Microbiology Esperanza)

**Personnel allotted:** 1 (one)

**Load:** Outbound trip: General Load –  
Inbound trip: General Load –  
Frozen Load –

**Duration:** 45 days

**Scheduled Date:** December 2009 – January 2010

**Place of Operation:** Esperanza Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To take samples of coastal surface marine sediments in Guardia Nacional Bay from Stranger Peak to Duthoit Peak (2) To take samples of surface water in the area of the Explorer ship sinking.

**Task Team:** JUBANY CONTAMINATION

**Personnel allotted:** 2 (two, 1 foreign and 1 DNA)

**Load:** Outbound trip: General Load 0.5 t – 1 m<sup>3</sup>  
Inbound trip: General Load 1 t – 1 m<sup>3</sup>

**Duration:** 45 days

**Scheduled Date:** January 2009 – February 2010

**Place of Operation:** Jubany Station

**Housing:** Station (1) and Ship (2)

**Support Requirements:** (1) At least 96 hours on a boat are required to navigate in Guardia Nacional Bay. Use of terrestrial vehicles to transport scientific materials. Supply of communications equipment connected to the Station. Antiexposure suits. (2) Transport from Jubany Station to the area of the Explorer ship sinking. Logistics support, antiexposure suits and boats are necessary.

## **DEVELOPMENT OF ALTERNATIVE ENERGY PROJECT**

**Type of Project:** INST 12-2009

**Starting Date:** New

**Executing Entity:** DNA/IAA

**Participating Entities:** ---

**Introduction:** Studies on the application of alternative energy and its applicaiton.

**Specific Goal:** To reduce fossil fuel consumption in 50% in a 15-year period.

**Tasks:** (1) Trials and development of eolic, biogas, photovoltaic energy

**Task Team:** ALTERNATIVE ENERGY

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: General Load 0.15 t – 0.77 m<sup>3</sup>  
Inbound trip: General Load 0.05 t – 0.308 m<sup>3</sup>

**Duration:** 120 days

**Scheduled Date:** November 2009 – March 2010

**Place of Operation:** Esperanza Station

**Housing:** Station

**Support Requirements:** ---

**ENVIRONMENTAL MANAGEMENT AND  
TOURISM PROGRAM**

## MANAGEMENT OF HISTORICAL SITES AND MONUMENTS PROJECT

**Type of Project:** GAT N° 01

**Starting Date:** 1 year ago

**Executing Entity:** DNA-IAA

**Participating Entities:** Department of Prehistorical and Archeological Research of the Multidisciplinary Institute of History and Human Sciences (DIPA-IMHICIHU), University of Groningen (The Netherlands).

**Introduction:** The main objective of the project is to guarantee an appropriate management of Historical Sites and Monuments proposed by Argentina, particularly with respect to questions related to those issues connected to its conservation and tourism visits, in line with the provisions described in the Annex V of the Protocol of Madrid as well as the resolutions of the Antarctic Treaty associated to the visitors handling.

**Specific Goal:** To supervise the fulfillment of the above-mentioned rules as well as to evaluate, design and implement additional management activities in order to attain a more effective compliance of such rules.

**Tasks:** (1) To report on the general state of the shelter and other associated installations. (2) To update the inventory of the items in exhibition at Snow Hill shelter and their conservation. (3) To implement conservation measures in the Historical Sites and Monuments SMH 38. (4) To supervise the fulfillment of the provisions of Resolution 1 (2007) by visitors. (5) To distribute and install graphical material referring to the site handling. (6) Design proposals for the implementation of additional management measures in the site.

**Task Team:** SNOW HILL MANAGEMENT

**Personnel allotted:** 5 (five, 3 Argentina, 2 Foreign)

**Load:**

|                       |  |
|-----------------------|--|
| <u>Outbound trip:</u> | General Load 0.1 t – 0.6 m <sup>3</sup>  |
| <u>Inbound trip:</u>  | General Load 0.05 t – 0.3 m <sup>3</sup> |

**Duration:** 30-60 days

**Scheduled Date:** December 2010 – February 2010

**Place of Operation:** Cerro Nevado Shelter (Cerro Nevado Island)

**Housing:** Camp

**Support Requirements:** ---

## MARAMBIO ENVIRONMENTAL MONITORING PROJECT

**Type of Project:** GAT N° 03

**Starting Date:** New (starting in 2009/2010 Antarctic Campaign)

**Executing Entity:** DNA-IAA

**Participating Entities:** Argentine Air Force

**Introduction:** The main objective of this project is to start and keep an environmental monitoring scheme in the surroundings of Marambio Station and design bioremediation strategies in line with the biological, chemical and physical characteristics of the environment affected by human activity.

**Specific Goal:** To identify, quantify and eventually remediate the possible environment impacts, fundamentally associated to hydric and edaphical contamination, resulting from the activities carried out in Marambio Station, in order to comply with provisions of the Protocol of Madrid and the ISO 4001 environment certification awarded to Marambio Station.

**Tasks:** (1) To design an environmental monitoring net. (2) To take water and soil samples. (3) To process data relative to samples taken. (4) To evaluate data obtained. (5) To isolate autoctonous microorganisms capable to metabolize contaminants (aliphatic, aromatic hydrocarbons, etc.). (6) To identify sources responsible for possible contamination events. (7) To implement remediation programs.

**Task Team:** MARAMBIO ENVIRONMENTAL MONITORING

**Personnel allotted:** 2 (two)

**Load:**  
Outbound trip: 0.08 t – 0.30 m<sup>3</sup>  
Inbound trip: 0.08 t – 0.30 m<sup>3</sup>  
Load in Pre-Chamber (4°) 0.025 t – 0.070 m<sup>3</sup>  
Frozen Load (-20°) 0.025 t – 0.070 m<sup>3</sup>

**Duration:** 30 days

**Scheduled Date:** January 2010 – February 2010

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

## ANTARCTIC STATIONS MANAGEMENT PROJECT

**Type of Project:** GAT 4-2009

**Starting Date:** New

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** The main objective of the project is to keep an ongoing scheme for the supervision of the development of environmental management and tourism in the Argentine Antarctic Stations.

**Specific Goal:** To guarantee that all the Argentine activities in the Antarctic Stations are fulfilling current regulations referred to environment and tourism management, both at national and the Antarctic Treaty System levels

**Tasks:** (1) To supervise the degree of compliance with current regulations associated to environment and tourism in Antarctic Stations (2) To propose amendments to procedures, practices and necessary supplies associated to such management (3) To gather information relevant for the development and updating of the environment and tourism management activities.

**Task Team:** STATIONS MANAGEMENT (same Task Team as G. Stations in Brown)

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: Load General: ----  
Inbound trip: Load General: ----

**Duration:** 20 days

**Scheduled Date:** December 2009 to February 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

**Task Team:** STATIONS MANAGEMENT (same Task Team G. Stations in Brown)

**Personnel allotted:** 2 (two)

**Load:** Outbound trip: Load General: ----  
Inbound trip: Load General: ----

**Duration:** 20 days

**Scheduled Date:** December 2009 to February 2010

**Place of Operation:** Brown Station

**Housing:** Station

**Support Requirements:** ---

# MUSEUM PROGRAM

## CONSERVATION OF HISTORICAL SHELTERS PROJECT

**Type of Project:** Institutional 07-2009

**Starting Date:** over 10 years ago

**Executing Entity:** DNA-IAA

**Introduction:** The objective of this project is the conservation of the shelter used by Dr. Otto Nordenskjöld in his expedition, in compliance with the recommendations on restoration and conservation of the historical constructions of the Antarctic Treaty, endorsed by Argentina.

**Specific Goal:** Conservation of the shelter used by Dr. Otto Nordenskjöld in his expedition to Cerro Nevado Island.

**Tasks:** (1) To do an internal repair of the house rooms (replacement of floor wood and walls and installation of waterproof materials between external and inner walls, etc.).

**Task Team:** CERRO NEVADO MUSEUM

**Personnel allotted:** 5 (five)

|                     |                              |  |
|---------------------|------------------------------|--|
| <b><u>Load:</u></b> | <b><u>Outbound trip:</u></b> | General Load 0.09 t – 0.270 m <sup>3</sup> |
|                     | <b><u>Inbound trip:</u></b>  | General Load 0.09 t – 0.270 m <sup>3</sup> |

**Duration:** 60 days

**Scheduled Date:** January 2010 – March 2010

**Place of Operation:** Cerro Nevado Island

**Housing:** Camp

**Support Requirements:** ---

**INSTITUTIONAL RELATIONSHIPS AND  
COMMUNICATIONS PROGRAM**

## **ANTARCTIC EDUCATION PROJECT**

**Type of Project:** RRII N° 01

**Starting Date:** 4 years

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** The Education, Culture and Communications projects state the firm intention of the National Direction of the Antarctic to foster society awareness with respect to the importance of this continent in the world context and the scientific work being developed there. The educational projects contribute specifically to have children and youngsters taking contact with this nonexplored world and that they get interested in the sustainable development of the natural resources of our planet. We focus the formation of future generations committed to their environment and to foster their interest in scientific research in issues related to environmental protection and the Antarctic ecosystem.

**Specific Goal:** Awareness on the environmental issues, the effect of human activities over nature, the need to take care of the resources that the Antarctica provides and the conservation of this region in a pure state.

**Tasks:** (1) To carry out educational experiences in the Marambio and Esperanza Stations.

**Task Team:** ESPERANZA EDUCATION

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load---  
Inbound trip: General Load---

**Duration:** 10 days

**Scheduled Date:** January 2010

**Place of Operation:** Esperanza Station

**Housing:** Station

**Support Requirements:** ---

**Task Team:** MARAMBIO EDUCATION

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load---  
Inbound trip: General Load---

**Duration:** 7 days

**Scheduled Date:** September 2010

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

## **ANTARCTIC CULTURE PROJECT**

**Type of Project:** RRII N° 02

**Starting Date:** 4 years

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** The Education, Culture and Communications projects state the firm intention of the National Direction of the Antarctic to foster society awareness with respect to the importance of this continent in the world context and the scientific work being developed there. The projects on artistic, audiovisual and documental diffusion address the understanding and valoration of the main scientific, aesthetic, and wild life values of the Antarctica. They are a fundamental possibility to consider the issues installed in society with respect to environmental conservation.

**Specific Goal:** Participation of artists from different disciplines in order to develop creative proposals to transmit the main values of the Antarctica to strengthen the popular knowledge with respect to this region.

**Tasks:** (1) To carry out artistic experiences in the Marambio, Esperanza and Jubany Stations.

- **Task Team:** ESPERANZA CULTURE

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>  
Inbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>

**Duration:** 15 days

**Scheduled Date:** January 2010

**Place of Operation:** Esperanza Station

**Housing:** Station

**Support Requirements:** ---

**Task Team:** MARAMBIO CULTURE

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>  
Inbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>

**Duration:** 15 days

**Scheduled Date:** August 2010

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

- **Task Team:** JUBANY CULTURE

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>  
Inbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>

**Duration:** 15 days

**Scheduled Date:** November 2010

**Place of Operation:** Station Jubany

**Housing:** Station

**Support Requirements:** ---

## **ANTARCTIC COMMUNICATIONS PROJECT**

**Type of Project:** RRII N° 03

**Starting Date:** 4 years

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** The Education, Culture and Communications projects state the firm intention of the National Direction of the Antarctic to foster society awareness with respect to the importance of this continent in the world context and the scientific work being developed there. The communications projects are consolidated through the participation of diverse communication media, both national and international, that make all society get closer to the Antarctic continent and to increase citizenship awareness on the global importance of the white continent.

**Specific Goal:** Diffusion of Antarctic issues in national and international media.

**Tasks:** (1) To carry out journalistic research covering the activities developed in the Marambio, Esperanza, Jubany Stations and camps. (2) To display a journalistic coverage on the Argentine Antarctic Program.

**Task Team:** ESPERANZA COMMUNICATIONS

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>  
Inbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>

**Duration:** 15 days

**Scheduled Date:** February 2010

**Place of Operation:** Esperanza Station

**Housing:** Station

**Support Requirements:** ---

**Task Team:** JUBANY COMMUNICATIONS

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>  
Inbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>

**Duration:** 15 days

**Scheduled Date:** October 2010

**Place of Operation:** Jubany Station

**Housing:** Station

**Support Requirements:** ---

**Task Team:** MARAMBIO COMMUNICATIONS

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>  
Inbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>

**Duration:** 15 days

**Scheduled Date:** January 2010

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

• **Task Team:** CAMPS COMMUNICATIONS

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>

Inbound trip: General Load 0.24 t – 0.18 m<sup>3</sup>

**Duration:** 15 days

**Scheduled Date:** January 2010

**Place of Operation:** Opportunity Camps

**Housing:** Camp

**Support Requirements:** ---

## **FIELD TRAINING COURSE AND ANTARCTIC NAVIGATION PROJECT**

**Type of Project:** RRII N° 04

**Starting Date:** New

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** This course is aimed at training the personnel who have to drive the boats and/or perform field work in the Antarctic environment. The course content will pay special attention to safety and the proper use and conservation of the material and equipment provided.

**Specific Goal:** To transmit the experience of the National Direction of the Antarctic – Argentine Antarctic Institute, to the personnel who have to carry out tasks in the Antarctica.

**Tasks:** (1) Training of personnel who will steer the semi-rigid Zodiac Urricane 733OB boats and/or MK5, MK4 y MK3 pneumatic boats.

- **Task Team:** ANTARCTIC SUMMER CAMPAIGN TRAINING GROUP

**Personnel allotted:** 12 (twelve) (it includes 4 people belonging to H. Methane group)

**Load:** Outbound trip: General Load 0.80 t – 1 m<sup>3</sup>  
Inbound trip: General Load 0.80 t – 1 m<sup>3</sup>

**Duration:** 15 days

**Scheduled Date:** December 2009 – January 2010

**Place of Operation:** Bouchard Strait

**Housing:** Vallverdu Boats Warehouse

**Support Requirements:** Use of equipment and facilities in Vallverdu Boats Warehouse

**Task Team:** Previous ANTARCTIC SUMMER CAMPAIGN TRAINING GROUP

**Personnel allotted:** 14 (fourteen) (it includes 4 persons belonging to H. Methane Group)

**Load:** Outbound trip: General Load 1 t – 1 m<sup>3</sup>  
Inbound trip: General Load 1 t – 1 m<sup>3</sup>

**Duration:** 15 days

**Scheduled Date:** August – October 2010

**Place of Operation:** Marambio Station

**Housing:** Camp and Vallverdu Boats Warehouse

**Support Requirements:** ----

# **LOGISTICS OPERATION PROGRAM**

## **CONTROL OF SHIP DISEMBARKATION PROJECT**

**Type of Project:** OPL N° 01

**Starting Date:** 37 years ago

**Executing Entity:** DNA-IAA

**Participating Entities:** ---

**Introduction:** Due to the particularity of the logistics and scientific loads, it is mandatory to have Logistics Personnel Embarked to coordinate deployment and withdrawal, in order to facilitate the operative development of manouvers.

**Specific Goal:** Effective performance of logistics tasks that require naval and aeronaval transport.

**Tasks:** (1) To coordinate the deployment and withdrawal of logistics and scientific loads in transit from DNA-IAA. (2) To control de distribution and assure the correct unloading of logistics and scientific material at the final destination. (3) To assist the Campaign Coordinator and the Embarked Scientific Chief with respect to load logistics deployment and withdrawal movements. (4) To keep the connection and collaborate with logistic personnel from the ship appointed for such purpose.

**Task Team:** CONTROL OF DISEMBARKATION OF DNA LOGISTIC POLAR SHIP

**Personnel allotted:** 2 (two)

**Load:** according to the needs of logistic activity

**Duration:** Antarctic Summer Campaign 2009/2010

**Scheduled Date:** according to ship itinerary

**Place of Operation:** Logistics Polar Ship

**Housing:** Ship

**Support Requirements:** Ship cabin for 2 persons. Work room with PC connection, Internet service and internal/external telephone communications. It is required that the load be transported on ship operating with helicopters to minimize unloading of supplies in the place of operation.

- **Task Team:** ANTARCTIC CAMPAING DNA PLANNING CONTROL

**Personnel allotted:** 1 (one)

**Load:** Outbound trip: Load General: ---  
Inbound trip: Load General: ---

**Duration:** ANTARCTIC SUMMER CAMPAIGN

**Scheduled Date:** according to ship itinerary

**Place of Operation:** Ship

**Housing:** Ship

**Support Requirements:** Ship cabin for 1 person. Work room with PC connection, Internet service and internal/external telephone communications.

## **AERIAL OPERATIONS PROJECT**

**Type of Project:** OPL N° 02

**Starting Date:** 39 years

**Executing Entity:** Argentine Air Force

**Participating Entities:** ---

**Introduction:** To ensure the Antarctic logistics support and communication between continental Argentina and Marambio Station, as well as between these and the other Antarctic Stations, all the year round.

**Specific Goal:** To provide logistics support during the 2009/2010 Antarctic Campaign to scientific and technical research, supplying Stations, camps, transporting personnel and other services related to the Antarctic activities.

**Tasks:** (1) To make air operations contributing to the support of the scientific and technical programs in line with the Antarctic Annual Plan. (2) To make flights to relief and re-distribute personnel and load from Marambio Station to other Argentine Antarctic Stations and eventually foreign stations. (3) To make flights for sanitary evacuation that might be required. (4) To make required search and salvage flights through the Marambio Subcenter of Search and Salvage. (5) To make reconnaissance flights to support scientific and technical programs in line with the Antarctic Annual Plan. (6) To make support flights for foreign countries with agreements signed with the Argentine Antarctic Program.

- **Task Team:** C-130, DHC-6 AND BELL 212 SQUADRONS

**Personnel allotted:** Squadrons crew

**Load:** Outbound trip: Load General: as per requirement  
Inbound trip: Load General: as per requirement

**Duration:** 365 days (except for Bell 212 that performs activities only during the Antarctic Summer Campaign)

**Scheduled Date:** Antarctic Campaign 2009/2010

**Place of Operation:** Air connection between Antarctic Stations and the Argentine Continental Territory

**Housing:** ---

**Support Requirements:** ---

## NAVAL OPERATIONS PROJECT

**Tipo de Actividad:** OPL N° 03

**Starting Date:** 104 years ago

**Executing Entity:** Argentine Army

**Participating Entities:** ---

**Specific Goal:** Operational logistics support through naval and air-naval means to the scientific-technical programs and to the Antarctic stations, shelters and camps.

**Tasks:** (1) To transport personnel to be added or be relieved in the crews at Belgrano II, San Martín, Esperanza, Orcadas, Marambio and Jubany Stations as well as the temporary stations and shelters affected by the 2009/2010 Antarctic Summer Campaign requirements. (2) To deploy and withdraw scientific-technical personnel. (3) To transport general and scientific loads to the Antarctic Stations, among them, and to the National Territory. (4) To participate in the search and rescue tasks (SAR) according to the Coordination Centre instructions.

- **Task Team:** SHIPS UNDER THE ANTARCTIC SUMMER CAMPAIGN 2009/2010

**Personnel allotted:** Ships crews

**Load:** Outbound trip: General Load---  
Inbound trip: General Load---

**Duration:** 90 days

**Scheduled Date:** Antarctic Summer Campaign 2009/2010

**Place of Operation:** Area of Operation

**Housing:** Ships

**Support Requirements:** ---

**NAVAL HYDROGRAPHIC SERVICE**

## **COURSE UPDATING PART V (ANTARCTICA) PROJECT**

**Type of Project:** SIHN N° 01

**Executing Entity:** Naval Hydrographic Service

**Participating Entities:** Argentine Army

**Introduction:** This activity allows the annual update of the information on Course Part V (Antarctica) and to use it as a necessary element for all the ships that sail in Antarctic water.

**Specific Goal:** To check and update items to confirm data obtained in other campaigns.

**Tasks:** (1) To fulfill the requested checks at any favourable opportunity.

- **Task Team:** SHIPS UNDER ANTARCTIC SUMMER CAMPAIGN 2009/2010

**Personnel allotted:** Shipmaster and ship crew

**Load:** ---

**Duration:** Antarctic Summer Campaign 2009/2010

**Scheduled Date:** according to ships itineray

**Place of Operation:** According to affected ship

**Housing:** ---

**Support Requirements:** ---

## **JOINT MARIGRAPH NOAA-SIHN STATION AT ESPERANZA STATION PROJECT**

**Type of Project:** SIHN N° 02

**Starting Date:** 15 years ago

**Executing Entity:** National Hydrographic Service

**Participating Entities:** National Oceanic and Atmospheric Administration (NOAA, United States of America), Argentine Army.

**Introduction:** As of 1989, the National Oceanic and Atmospheric Administration (NOAA) of the United States of America, through its Department of Oceanic Services (NOS), contacted the Naval Hydrographic Service in order to see the possibility of installing mareographic stations with cutting-edge technology in our country.

Sharing the common objective of a long-term monitoring of sea level at global scale, in order to contribute to the understanding of the oceanic circulation and its role in world climate, particularly in connection to global warming or greenhouse effect, allows the intervention in programs to study climate changes, apart from the considerable improvement and updating of our observation systems. The first installation in Ushuaia, gave way to others in different parts of the Argentine litoral and within this framework, a station was set up in Esperanza Station in 1993. It has four sensors that demand an annual maintenance by the Naval Hydrographic

Service that, when this maintenance is completed, the personnel from the Argentine Army is trained in order to go on with monitoring activities.

This cooperation project is of high interest for its technical, economic and political aspects. The data obtained are useful for Argentine ships that perform logistics tasks in the above mentioned Station as well as for foreign ships that sail in that area. In this sense, the data obtained allow tide prediction in the area, this being extremely useful for scientific research related to this phenomenon, enlarging the possibilities of having in situ information about the area.

**Specific Goal:** To obtain tide observations at global level (NOAA) as well as those referred to the medium level established for our country.

**Tasks:** (1) To perform repair and maintenance of internal and external components in the cabin. (2) To perform inspection and subaquatic maintenance. (3) To perform topographic activities. (4) To train personnel from the Argentine Army. (5) To analyze the possibility of setting up a radar sensor to replace the acoustic sensor. (6) Check marigraph measurements.

- **Task Team:** ESPERANZA MARIGRAPH STATION

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 1.5 t – 8 m<sup>3</sup>  
Inbound trip: General Load 1.5 t – 8 m<sup>3</sup>

**Duration:** 90/120 days

**Scheduled Date:** November 2009 – March 2010

**Place of Operation:** Esperanza Station (Moro Harbour)

**Housing:** Station

**Support Requirements:** ---

## TIDES AND CURRENTS MEASUREMENTS IN MARGARITA BAY PROJECT

**Type of Project:** SIHN N° 03

**Starting Date:** New (starts in 2009/2010 Antarctic Campaign)

**Executing Entity:** Naval Hydrographic Service

**Participating Entities:** DNA-IAA

**Introduction:** In the 1990's the Argentine Antarctic Institute (IIA) and the Naval Hydrographic Service jointly planned the DINOCEANTAR project (Antarctic Oceanic Dynamics 1990-1998) with the goal of studying current and tide dynamics along the coasts of the Antarctic Peninsula. In the course of this project, data of sea levels and currents in coastal regions of the Antarctic Peninsula were measured and analyzed bringing about on the one hand, a better understanding of the circulation due to the tide in the Antarctic coastal zone (applied to biological and geological research) and, on the other hand, information on the Station used to render safety and support to navigation. During the execution of this project, the need to take measurements of tides and currents in some places where, year after year, the logistics ships perform deployment and withdrawal tasks, was clearly stated. Some of these sites are: Margarita Bay, Esperanza Bay and Deception Island, among others.

The data to be obtained will be very useful for the Argentine ships that perform logistics tasks in the above mentioned station as well as for the foreign ships that sail in that zone. In this sense, the data to be obtained will allow the station to predict the tide in the area, and to determine circulation in the sites where currents are measured, this being extremely useful for scientific research, contributing to a better knowledge about tide circulation in the Western sector of the Antarctic Peninsula.

**Specific Goal:** To get simultaneous measurements of sea levels and currents in Margarita Bay (proximity to San Martín Station).

**Tasks:** (1) To install the marigraph in a place close to San Martín Station facilities. (2) To measure currents preferably in the Powell Channel or a site to be determined by the assigned personnel.

- **Task Team:** DICOANTAR (Antarctic Coastal Dynamics)

**Personnel allotted:** 4 (four)

**Load:** Outbound trip: General Load 1.5 t – 7 m<sup>3</sup>  
Inbound trip: General Load 1.5 t – 7 m<sup>3</sup>

**Duration:** 40 days

**Scheduled Date:** November 2009

**Place of Operation:** Anchorage sites located between Milleran and Neny Islands, Powell Channel and Margarita Bay.

**Housing:** Station

**Support Requirements:** ---

## **VISUAL ILL-IISS GLACEOLOGICAL OBSERVATIONS PROJECT**

**Type of Project:** SIHN N° 04

**Starting Date:** 26 years ago

**Executing Entity:** Naval Hydrographical Service

**Participating Entities:** National Weatherforecast Service, Argentine Army, Antarctic Naval Force, National Ice Centre (NIC), National Snow and Ice Data Center (NSIDC), Arctic and Antarctic Research Institute (AARI).

**Introduction:** The Visual Observations Program is accomplished from the Antarctic coastal stations and from ships within the voluntary and corporate participation framework between the National Weatherforecast Service, the Argentine Army, the Antarctic Naval Force and the Naval Hydrography Service and, from the United States of America, the National Ice Center (NIC), the National Snow and Ice Data Center (NSIDC) and the Arctic and Antarctic Research Institute (AARI).

In this program observations of marine ice and icebergs have to be taken: (1) every six hours from the Naval Units that participate in the 2008/2009 Antarctic Summer Campaign, (2) bymonthly along the year from Belgrano II, Esperanza, Jubany, Orcadas, Marambio and San Martín Stations, and in summer from the Deception, Petrel, Cámara and Melchior Stations.

**Specific Goal:** To continue with the Visual Observations Program.

**Tasks:** (1) To make visual observations and to process it with an in situ quality control software. The Permanent Stations, for having this software installed, will have to record information and generate the corresponding codified message. The Temporary Stations will make observations, taking into account that as they do not have the mentioned software, they will have to be extremely careful with the procedures, observation and record measures, in order to get correct information that can be entered into the distribution system. (2) To transmit data in real time. (3) To use data in real time for glaciological advising. (4) To transmit data in deferred time to the international centers gathering ice information.

- **Task Team:** GLACIOLOGICAL OBSERVATIONS

**Personnel allotted:** Shipmaster and Ships and Stations Crews

**Load:** ---

**Duration:** 365 days

**Scheduled Date:** 2009/2010 Antarctic Summer Campaign

**Place of Operation:** ---

**Housing:** ---

**Support Requirements:** ---

**NATIONAL WEATHERFORECAST  
SERVICE**

## **OPERATIONAL SUPPORT OF THE NATIONAL WEATHERFORECAST SERVICE ACTIVITY**

**Type of Project:** SMN N° 01

**Executing Entity:** DNA-IAA-SMN

**Participating Entities:** ---

**Specific Goal:** To provide operational support during the 2009/2010 Antarctic Campaign, to scientific-technical research and other services corresponding to the Antarctic activities carried out by the National Direction of the Antarctic (DNA).

**Tasks:** (1) To perform hourly meteorological observations of following parameters: Pressure, Temperature, Humidity, Wind (Direction and Intensity), Clouds (Quantity, Type and Height), Visibility, Soil Condition, present and past Time, Snow height, Rainfall, Hydrometeors, Heliophany, Observation of special phenomena (Noctilucent clouds, auroras, optical phenomena), soil temperature measurement, marine ice. (2) To perform height observations. (Radiosounding, Radiowind). To take dialy observations of temperature, pressure, humidity, wind in altitude. (3) To observe Sun Radiation. To daily check Global Sun Radiation and Ultraviolet Sun Radiation. (4) To make observations of Atmospheric Ozone, total Ozone, Dobson Spectrophotometer. Vertical profile: Ozone-soundings, two per week, June-December, the rest of the year two per year. (5) To observe and measure contaminants and atmospheric aerosoles. (6) To make and supply Weather Forecasts. (7) To provide support Services to aviation, marine navigation and the public. (8) To prepare daily weather forecasts and announcements of heavy storms for the Argentine Antarctic Sector. (9) To make and issue reports to be broadcasted.

- **Task Team:** MARAMBIO ANTARCTIC METEROLOGIC CENTER

**Personnel allotted:** Meteorological Personnel appointed.

**Load:** Outbound trip: General Load: ---  
Inbound trip: General Load: ---

**Duration:** Antarctic Campaign 2009/2010

**Scheduled Date:** Antarctic Campaign

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

**Tasks:** (1) To perform meteorological observations every three hours for the following parameters: Pressure, Temperature, Humidity, Wind (Direction and Intensity), Clouds (Quantity, Type and height), Visibility, Soil Condition, present and past time. Snow height, Rainfall, Hydrometeros, Heliophany, Observation of special phenomena (Noctilucent clouds, auroras, optical phenomena), soil temperature measurement, marine ice. To perform Glaciological and Geomagnetic observations. (2) To develop a normal photographic record of the D, H and Z components, with absolute observations. Scale value. To determine the Neutral Line. Magnetograms, hourly, daily or monthly average value.

- **Task Team:** ORCADAS DEL SUR GEOMAGNETIC AND METEOROLOGICAL OBSERVATORY

**Personnel allotted:** Meteorological personnel appointed.

**Load:** Outbound trip: General Load: ---  
Inbound trip: General Load: ---

**Duration:** Antarctic Campaign 2009/2010

**Scheduled Date:** Antarctic Campaign 2009/2010

**Place of Operation:** Orcadas Station

**Housing:** ---

**Support Requirements:** ---

**Tasks:** (1) To perform meteorological observations every three hours for the following parameters: Pressure, Temperature, Humidity, Wind (Direction and Intensity), Clouds (Quantity, Type and height), Visibility, Soil Condition, present and past time. Snow height, Rainfall, Hydrometers. Observation of special phenomena (Noctilucent clouds, auroras, optical phenomena), soil temperature measurement, marine ice. To perform Glaciological observations.

- **Task Team:** SAN MARTIN STATION METEOROLOGY

**Personnel allotted:** Meteorological personnel appointed.

**Load:** Outbound trip: General Load: ---  
Inbound trip: General Load: ---

**Duration:** CA 2009/2010

**Scheduled Date:** Antarctic Campaign 2009/2010

**Place of Operation:** San Martín Station

**Housing:** Station

**Support Requirements:** ---

- **Task Team:** JUBANY STATION METEOROLOGY

**Personnel allotted:** Meteorological personnel appointed.

**Load:** Outbound trip: General Load: ---  
Inbound trip: General Load: ---

**Duration:** Antarctic Campaign 2009/2010

**Scheduled Date:** Antarctic Campaign 2009/2010

**Place of Operation:** Jubany Station

**Housing:** ---

**Support Requirements:** ---

- **Task Team:** ESPERANZA STATION METEOROLOGY

**Personnel allotted:** Meteorological personnel appointed.

**Load:** Outbound trip: General Load: ---  
Inbound trip: General Load: ---

**Duration:** Antarctic Campaign 2009/2010

**Scheduled Date:** Antarctic Campaign 2009/2010

**Place of Operation:** Esperanza Station

**Housing:** Station

**Support Requirements:** ---

## **RADIO SOUNDING AND RADIOWIND IN MARAMBIO METEOROLOGICAL CENTER**

**Type of Project:** SMN N° 02

**Executing Entity:** DNA-IAA-SMN

**Participating Entities:** ---

**Specific Goal:** To carry out a daily observation of radiosounding and radio wind in the Marambio Antarctic Meteorological Center

**Tasks:** (1) Related to the Specific Goal

- **Task Team:** MARAMBIO RADIO SOUNDING

**Personnel allotted:** Meteorological personnel appointed.

**Load:** Outbound trip: General Load: ---  
Inbound trip: General Load: ---

**Duration:** Antarctic Campaign 2009/2010

**Scheduled Date:** Antarctic Campaign

**Place of Operation:** Marambio Station

**Housing:** Station

**Support Requirements:** ---

# **EXHIBITS**

## 2010 SCIENTIFIC, TECHNICAL AND SERVICES ANNUAL PLAN

### - A C R O N Y M S -

|                 |  |
|-----------------|--|
| A W I           | INSTITUTO ALFRED WEGENER DE ALEMANIA                                     |
| B A S           | BRITISH ANTARTIC SURVEY  |
| B P R C - USA   | CENTRO DE INVESTIGACIONES POLARES "BYRD" (OHIO-USA)                      |
| B U C V         | BRITISH UNIVERSITY COLUMBIA DE VANCOUVER                                 |
| C A D I C       | CENTRO AUSTRAL DE INVESTIGACIONES CIENTIFICAS                            |
| C C R V M A     | COMISION CIENTIFICA DE LOS RECURSOS VIVOS MARINOS ANTARTICOS             |
| Cdo Ant. de Ej. | COMANDO ANTARTICO DE EJERCITO  |
| COAT            | COMANDO DE OPERACIONES ANTARTICAS  |
| Cdo Op A        | COMANDO DE OPERACIONES AEREAS  |
| Cdo Rg A.       | COMANDO DE REGIONES AEREAS   |
| CRICYT - ME     | CENTRO REGIONAL DE INVESTIGACIONES CIENTIFICAS Y TECNOLOGICAS DE MENDOZA |
| D. COM.         | DIRECCION COMUNICACIONES   |
| D G S M N       | DIRECCION GENERAL DEL SERVICIO METEOROLOGICO NACIONAL                    |
| D T A           | DIRECCION DE TRANSITO AEREO  |
| ENCOTESA        | EMPRESA NACIONAL DE CORREOS Y TELEGRAFOS S.A.                            |
| E N E A         | ENTE PER LE NUOVE TECNOLOGIE, L'ENERGIA E L' AMBIENTE                    |
| FCEN - UBA      | FACULTAD DE CIENCIAS EXACTAS Y NATURALES - UNIVERSIDAD DE BUENOS AIRES   |
| F M L P         | FACULTAD DE MEDICINA DE LA PLATA   |
| F A A           | FUERZA AEREA ARGENTINA   |
| GI - JAP        | INSTITUTO GEOFISICO DE HOKKAIDO (JAPON)                                  |
| I A A G M       | INSTITUT FUR ALLGEMEINE UND ANGEWANDTE GEOLOGIE DE MUNICH (ALEMANIA)     |
| I E - P A N     | INSTITUTO DE ECOLOGIA-ACADEMIA POLAR DE CIENCIAS                         |
| I F A R         | INSTITUTO DE FISICA ATMOSFERICA DE ROMA (ITALIA)                         |
| I F E I         | INSTITUTO DE FISICA DEL ESPACIO INTERPLANETARIO DE ITALIA                |
| I L T S - J A P | INSTITUTO DE BAJAS TEMPERATURAS DE HOKKAIDO (JAPON)                      |
| I N G E I S     | INSTITUTO NACIONAL DE GEOCRONOLOGIA Y GEOLOGIA ISOTOPICA                 |
| I.N.M.          | INSTITUTO NACIONAL DE METEOROLOGIA DE ESPAÑA                             |
| I N I D E P     | INSTITUTO NACIONAL DE INVESTIGACIONES PESQUERAS                          |
| I N T A         | INSTITUTO NACIONAL DE TECNOLOGIA AEROESPACIAL DE ESPAÑA                  |
| Mdad L. P.      | MUNICIPALIDAD DE LA PLATA  |
| M L P           | MUSEO DE LA PLATA  |
| OGS-TRIESTE     | OBSERVATORIO GEOFISICO EXPERIMENTAL, TRIESTE (ITALIA)                    |
| O.M.M.          | ORGANIZACIÓN METEOROLOGICA MUNDIAL                                       |
| P.N.            | PARQUES NACIONALES   |
| P I O T         | PROGRAMA INTERNACIONAL DE OBSERVACIONES DE TEMPANOS                      |
| S H N           | SERVICIO DE HIDROGRAFIA NAVAL  |
| SMN             | SERVICIO METEOROLOGICO NACIONAL  |
| STARTEL         | RADIO PACHECO  |
| U. Cba.         | UNIVERSIDAD DE CORDOBA   |
| UE - GER        | UNIVERSIDAD DE ERLANGEN (ALEMANIA)                                       |
| U.F.            | UNIVERSIDAD DE FRIBURGO  |
| U N L P         | UNIVERSIDAD NACIONAL DE LA PLATA   |

U N M P  
CIC y E S de E

U.Q.R.  
U.P.M.C.

UNIVERSIDAD NACIONAL DE MAR DEL PLATA  
CENTRO DE INVESTIGACION CIENTIFICA Y DE  
EDUCACION SUPERIOR DE ENSENADA (MEJICO)  
UNIVERSITE DU QUEBEC A RIMOUSKI (CANADA)  
UNIVERSITE PIERRE - MARIE CURIE (FRANCIA)

**2010 SCIENTIFIC, TECHNICAL AND SERVICES ANNUAL PLAN**

- D I S T R I B U T I O N -

| <u>ADDRESSEE</u>  | <u>EXEMPLARY No.</u> |
|---|----------------------|
| <b><u>PRESIDENCIA DE LA NACION.</u></b>   |                      |
| Presidente de la Nación   | 1                    |
| Jefe de Gabinete  | 2                    |
| Secretaría de Ambiente y Desarrollo Sustentable                                   | 3                    |
| <b><u>MINISTERIO DE RELACIONES EXTERIORES, COMERCIO INTERNACIONAL Y CULTO</u></b> |                      |
| Ministro de Relaciones Exteriores, Comercio Internacional y Culto                 | 4                    |
| Secretario de Relaciones Exteriores   | 5-6                  |
| Director General de Antártida   | 7                    |
| <b><u>MINISTERIO DE DEFENSA</u></b>   |                      |
| Ministro de Defensa   | 8                    |
| Secretario de Asuntos Militares   | 9                    |
| Jefe del Estado Mayor Conjunto de las FF AA                                       | 10                   |
| Comandante de Operaciones Aéreas  | 11                   |
| Comandante Antártico de Ejército  | 12                   |
| Comandante Naval Antártico de la Armada   | 13                   |
| Servicio de Hidrografía Naval   | 14                   |
| Servicio Meteorológico Nacional   | 15                   |
| <b><u>MINISTERIO DE CIENCIA, TECNOLOGIA E INNOVACION PRODUCTIVA.</u></b>          |                      |
| Ministro de Ciencia, Tecnología e Innovación Productiva                           | 16                   |

**PLAN ANUAL ANTARTICO 2010**  
**CIENTIFICO TECNICO Y DE SERVICIOS**

- D I S T R I B U I D O R -

DESTINATARIO EJEMPLAR N°

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**MINISTERIO DEL INTERIOR**

Ministro del Interior 17

Prefectura Naval Argentina 18

**PROVINCIA DE TIERRA DEL FUEGO, ANTÁRTIDA E ISLAS DEL ATLANTICO SUR**

Gobernador de la Provincia de la Tierra del Fuego, Antártida e Islas del Atlántico Sur 19

**DIRECCION NACIONAL DEL ANTARTICO**

Director Nacional del Antártico 20

Director del Instituto Antártico Argentino 21

Coordinación de Planeamiento y Administración de Recursos 22-23

Departamento Política 24

Gestión Ambiental 25

Coordinación, Presupuestaria, Financiera y Contable 26

Coordinación de Desarrollo Tecnológico y Logístico 27

Archivo General 28

Coordinación Científica 29

Coordinación Ciencias de la Tierra 30-31

Coordinación Ciencias de la Vida 32-33

Coordinación Ciencias Físico-Químicas 34-35

Biblioteca 36

**PLAN ANUAL ANTARTICO 2010**  
**CIENTIFICO TECNICO Y DE SERVICIOS**

- D I S T R I B U I D O R -

| <u>DESTINATARIO</u>                     | <u>EJEMPLAR N°</u> |
|---|--------------------|
| Jefe de Station Orcadas                 | 37                 |
| Jefe de Station Jubany                  | 38                 |
| Jefe de Station Esperanza               | 39                 |
| Jefe de Station Marambio                | 40                 |
| Jefe de Station San Martín              | 41                 |
| Jefe de Station Belgrano II             | 42                 |
| Comandante del Buque ARA Puerto Deseado | 43                 |
| Comandante del Buque Canal de Beagle    | 44                 |