ENVIRONMENTAL AND SOCIAL MONITORING REPORT

Camisea Natural Gas and Natural Gas Liquids Pipeline Project, Peru

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1.0 INTRODUCTION

The Inter-American Development Bank (IDB) and the Corporación Andina de Fomento (CAF) (collectively the Lead Arrangers or "MLAs") have been performing independent environmental and social monitoring (IESM) of the Camisea natural gas and natural gas liquids pipeline project ("Downstream Project") in Peru since September 2002. The MLAs are considering providing partial financing to Transportadora de Gas del Peru (TGP), the company sponsoring the downstream component of the Camisea Project. Because construction is already underway, further environmental and social monitoring of the project during this project review period is necessary.

The Camisea Project consists of three sub-projects:

1. The gas field in Lot 88 and the proposed Fractionation Plant and Export Terminal near Pisco ("Upstream Project"),
2. The natural gas and liquids transportation pipeline ("Downstream Project"), and
3. The natural gas distribution network in Lima and Callao ("Distribution Project").

The Downstream Project consists of a 33-year concession agreement with TGP to build, own, operate and transfer two major pipeline systems: a 697 kilometer (km) natural gas pipeline and a 575 km natural gas liquids (NGL) pipeline. The two pipelines will be laid in parallel trenches on a common right-of-way (ROW) extending from a gas processing plant at Las Malvinas, located in the Ucayali Basin 431 km east of Lima, to a proposed NGL processing and shipping facility near the port of Pisco, 200 km south of Lima). The natural gas pipeline will run north to the Lima City gate at Lurin from a point east of Pisco (Figure 1).

This is the first monthly IDB/CAF summary report of construction monitoring activities performed as part of the overall Environmental and Social Due Diligence review in considering financing for the Downstream Project. The monitoring activities conducted during September 2002 are covered in this report.

1.1 Monitoring Objectives

URS Corporation (URS), an international environmental and engineering consulting firm under contract with IDB/CAF, initiated the IESM of the project in September 2002. The MLAs' review primarily focuses on the Downstream Project, however both the Upstream and Distribution projects are being monitored by URS field personnel because of the overlapping and cumulative environmental and social sensitivity of the tropical rainforest location and impacts. The main objectives of the IESM are to provide the MLAs with reliable and unbiased information regarding the project's compliance with environmental and social management plans and procedures, as well as construction best management practices (BMPs).

The IESM team consists of full-time environmental and social monitors in the field who perform the following principal activities:

- Conducts daily field observations and documents environmental and social procedures and processes that are being implemented by TGP and its contractors;
- Reviews other construction monitoring activities that are being carried out by TGP and its contractors (Gulf Interstate, Domus, and Knight Piesold);
- Prepares daily reports to IDB/CAF regarding ongoing activities in the field;
- Provides immediate recommendations, as necessary and appropriate, to TGP, Pluspetrol, and their field representatives regarding ways to improve management practices.

The IESM does not include redundant sampling, testing, and other measures that are performed by Knight Piesold and Domus for TGP's environmental and social monitoring programs. For sampling and testing results, one can refer to Knight Piesold's monitoring reports. Likewise, INMAC performs monitoring on behalf of Pluspetrol for the Upstream Project.

These monthly summary reports are also being prepared to document the effectiveness of the project's environmental management plans and procedures (Plan de Manejo Ambinetal [PMA]) and the recommendations for improvement wherever applicable. The monthly monitoring reports are available to public through the Camisea Web page, www.camisea.com.pe.

1.2 Report Organization

This monthly monitoring report is a summary of the environmental and social daily and weekly reports and is organized into four major sections:

- Introduction
- Project status and construction activities completed during the current reporting period
- Environmental, health and safety monitoring completed along with observations and recommendations
- Social monitoring completed along with observations and recommendations.

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2.0 PROJECT STATUS AND CONSTRUCTION ACTIVITIES

The following is a summary of the project status and construction activities during September 2002. This information has been obtained from field observations and Pluspetrol and TGP monthly reports.

2.1 Upstream Project

2.1.1 3-D Seismic

The seismic exploration of Lot 88 started in early 2002. Drilling operations for seismic survey ended by mid-September 2002, and by the end of September, 100 percent of the topographic survey and drilling work had been completed. During September, 1,342 charge wells were completed, totaling 15,158 seismic wells, equivalent to 2,022 km of seismic lines. The actual seismic recording was 96 percent complete, and revegetation was 82 percent complete. No new helipads (HP) were cleared in September; however, three of them (HP 57, HP 65 and HP-66) were expanded beyond what was initially planned to evacuate workers in case of an emergency.

2.1.2 Flow Lines

Gas extraction, gas injection, and diesel lines were installed between Las Malvinas and the production well cluster at San Martin – 1. Activities performed along the flow lines included initial topographic survey, clearing ROW, trenching, stringing and bending, welding and coating, lower-in and backfill, special crossings, and installing soil erosion measures and other reclamation work.

By the end of September, starting at Las Malvinas, stringing of the 20-inch pipe reached kilometer post (KP) 22+062, the 16-inch pipe reached KP 19+562, and the 10-inch pipe reached KP 20+000. Welding operations reached KP 19+991 for the 20-inch pipe, KP 19+432 for the 16-inch pipe, and KP 20+000 for the 10-inch pipe (see Figure 2 for the flow line markers).

Also by the end of September, the flow line ROW was being opened at about 26.8 km and backfill operation around 13.8 km.

At KP 10+500 and 20+000, satellite camps were set up to accommodate up to 100 workers. A temporary bridge was also completed in September across the Camisea River to support construction activities along the flow line.

2.1.3 Gas Plant and Air Strip at Las Malvinas

Gas plant construction at Las Malvinas was 40 percent complete and the airfield was more than 72 percent complete by the end of September. The cryogenic plant foundation was finished at the beginning of the month. Three separate camps for workers exist at Las Malvinas as well, and two loading docks were constructed along the banks of the Urubamba River in Las Malvinas.

2.1.4 San Martin – 1 Well Pad

By the end of September, the gas wells reached a length of 3,002 meters for a total vertical depth of 2,368 meters. A 9-$^{5}/_{8}$-inch casing was installed, and samples were taken to evaluate the quality of the grouting. Supplies to the well pad were provided via helicopters.

2.2 Downstream Project

2.2.1 Right-of-Way

During the month of September, the pipeline ROW survey, clearing, trenching, stringing and bending, welding and coating, lower-in and backfill, and regrading continued along the downstream ROW (see Figure 3 for pipeline ROW markers). A total of 99.6 km of pipe segments were transported to the different staging areas, and at the Selva I sector, 20 km of the 14-inch NGL pipe was installed.

In the Selva II sector, the trenching, stringing, and backfilling activities were slower than expected due to heavy rains. In the Sierra sector, especially at the Rumichaca Front, clearing,

grading, and trenching advanced faster than scheduled, however installation of the 24-inch pipe was delayed due to delivery delays of the optic fiber lines needed for the computerized data acquisition system.

The Pacobamba – San Antonio access roads were improved during the month of September. These access roads will be ready for survey, clearing, and grading of the ROW reroute once it is approved.

The following is a summary of the pipeline ROW status to the end of September:

Natural Gas

Approximately 43 percent of the natural gas pipeline ROW was cleared, 41 percent graded, 10 percent trenched, 6 percent pipe stringing, 4.5 percent welded, and 2.2 percent lowered-in.

Natural Gas Liquids

Approximately 56 percent of the NGL pipeline ROW was cleared, 53 percent graded, 26 percent trenched, 25 percent pipe stringing, 23 percent welded, 19 percent lowered-in, and 18 percent backfilled.

The river crossing at the Cumpirushiato River was completed by mid-September. The pipe was installed using the open-cut trench method. During the installation, soil erosion measures were installed to minimize impacts to the water quality downstream and to protect the riverbanks.

2.2.2 Construction Camps

Sixteen base and satellite camps were active at the end of September. Ten were located within the Selva I and II sectors (Malvinas, Chocoriari, Paratori, Mantalo, Mangoriari, Chimparina, Alto Shimaa, Alto Itariato, Kepashiato and Segakiato), and five were located in the Sierra sector (San Antonio, Pacobamba, Vinchos, Rumichaca, and Huaytara). Original camp schedules and capacities were extended due to the construction delays and the need to hire more workers in order to expedite the construction schedule.

2.2.3 Other Downstream Project Activities

Construction of the Pumping Station No. 1 foundation was completed in September. Foundations were also constructed for the maintenance, storage, pig traps, and generator facilities during September.

3.0 ENVIRONMENTAL, HEALTH AND SAFETY MONITORING

3.1 Introduction

URS provided independent monitoring of the effectiveness of environmental, health and safety measures during construction. The monitoring was conducted by visiting active construction sites to observe Techint's construction means and implementation of measures contained in the PMA, TGP's Health and Safety (H&S) Plans, and construction specifications. Specific works observed included project camp sites, worker accommodations and sanitary conditions, infrastructure facilities (such as potable water intake, treatment, and distribution and collection, treatment, and disposal of sanitary and storm water), installation of erosion and sediment control measures and revegetation, and clearing the ROW and helipads. Monitoring observations also covered implementation of health and safety control.

The following sites were visited during the September reporting period (detailed review of the Upstream Project components were not done during September, but will be contained in future monthly reports):

- San Martin – 1 Well Pad
- La Peruanita Camp and the 3-D Seismic Operations area
- Flow line construction from the San Martin – 1 Well Pad to Las Malvinas
- Nuevo Mundo, Las Malvinas, Kepashiato, Vinchos Huaytara, and Rumichaca camps
- Downstream pipeline construction activities along the major active construction spreads: Selva I (KP 0 to 84),Selva II (KP 84 to 130), and Sierra (KP 130 to 454)

Pertinent sections of the PMA and H&S Plan that were the focus of monitoring included:

- Prevention, Correction and/or Mitigation Plan
- Waste Management Plan
- Environmental Training Plan
- Contingency Plan
- TGP's/Pluspetrol's H&S plans

3.2 Environmental, Health and Safety Observations

In general, measures specified in the PMA have been implemented for most locations monitored. Vegetation clearing of the ROW has generally been consistent with the needs for constructing dual pipelines, overcoming terrain obstacles, and providing primary construction access. TGP has documented the locations where additional ROW width was required to stockpile excess overburden. Topsoil is also being preserved during ROW grading where specified by TGP.

The following activities highlight areas where the PMA is being implemented in an effective manner:

- In the section between Malvinas (KP 0+000) and Paratori (KP 35+000), the lateral fill embankment slopes are being stabilized using measures such as retaining walls, runoff collection and diversion trenches, and other structures.
- Techint properly cleaned up a small diesel spill that occurred on the access road to a pipe storage area near Vinchos Camp.

In the camps, the majority of waste management and control measures are being implemented properly. At Kepashiato and Vinchos camps, it was noted that although the sanitary wastewater treatment systems are properly functioning, they have been overburdened due to a greater number of workers than was anticipated for the original design capacity.

Erosion and sediment control and other measures to protect water resources have been implemented, where required, at most locations along the ROW. However some inconsistencies in application have been observed and certain sites were noted to be in need of new installation or maintenance work on existing installations. In many cases, the erosion and sediment control installation crews have not kept pace with new ROW opening, despite the large number of workers that are assigned to these tasks.

Even though inconsistencies and deficiencies in implementing the PMA and the H&S Plan were noted during September, there were no significant long-term, irreparable construction-related

impacts. Impacts resulting from deficient implementation of mitigation measures could be ameliorated with proper application or corrective action.

3.2.1 Deficiencies

The implementation of the PMA is inconsistent, as indicated by repeated observations of the same deficiencies at various locations throughout the project. The following discussion focuses on general issues rather than specific occurrences or deficiencies. Specific locations and concerns and recommendations were discussed with TGP/Pluspetrol in the field.

The primary concerns with the Downstream Project during the month of September 2002 could be grouped into four general categories:

1. Soil/slope stabilization and erosion and sediment control (BMPs)
2. Waste management
3. Spill prevention and containment
4. Site safety

Best Management Practices

Most of the deficiencies observed reflect the inability of erosion control crews to keep up with advancing work, rather than negligence or disregard for environmental practices. Although Techint has assigned a large number of workers to install erosion and sediment control measures for the downstream pipelines, they are unable to keep up with the ROW clearing and grading operations. It should be emphasized that BMPs are being installed in most locations (greater than 80 percent) where needed along the ROW. However, because of the anticipated rainy season, the ROW clearing and grading is advancing faster than desired.

Most likely causes for the lag in BMP installation and maintenance include:

- Extremely difficult logistics that delay delivery of materials and labor to remote locations
- Use of unskilled labor combined with insufficient supervision
- To a lesser extent, insufficient contract and inspection enforcement by TGP

Recommendations to improve performance on this issue include:

- Increase the number of workers dedicated to erosion control and provide better on-site supervision.
- TGP should prioritize areas for stabilization work and BMP installation.
- TGP should take a stronger contractual position to compel Techint to prioritize erosion and sediment control measures to keep pace with ROW opening progress.

Waste Management

In most instances, acceptable waste management practices are being followed. Similar to the deficiencies observed for erosion control, comprehensive implementation of proper waste management practices has lagged or has been inconsistently applied (mostly in the work camps).

Probable causes include:

- Higher numbers of workers than originally anticipated (exceeding designed capacity). This situation is likely to be temporary until construction is back on schedule.
- Inadequate leadership and training for crews responsible for the proper implementation of waste management.

Recommendations to improve performance on this issue include:

- Provide refresher training to all workers regarding proper waste management practices.
- TGP should take a stronger contractual position to compel Techint to maintain acceptable waste management practices in full compliance with the PMA.

Spill Prevention and Containment

Most deficiencies in the deployment of spill contingency and prevention measures were observed at the work camps. Specific locations include warehouse areas for bulk fuel/lubricant storage and storage of other potential chemicals used for construction. No reportable incidents occurred as a result of these deficiencies.

Probable causes include:

- Insufficient due diligence by operations and logistics personnel
- Inadequate leadership and training to crews responsible for the proper implementation of spill prevention

Recommendations to improve performance on this issue include:

- Provide better on-site supervision to ensure proper implementation of spill prevention and containment practices for bulk storage areas
- Diligent on-site enforcement by TGP

Site Safety

Worker safety is a concern given the difficult terrain along the ROW. The ROW width is limited because of the ecological and socio-cultural sensitivity of the Selva sector. The limited workspace results in steep slopes along the ROW and increased construction traffic. Also, it appears that the H&S training is not in a format that is easily understood and followed by the workers. Also, because of the logistical considerations, the clearing and grading is advancing faster than regrading and reclamation of the ROW, and the increased attention to erosion control measures has resulted in more workers at camp sites. This appears to be partially the result of the need to house additional workers in the camps than originally anticipated, which is a result of reduced construction progress due to various causes.

Probable causes include:

- Inadequate supervision, leadership, and safety training at the supervisory, crew and camp operations levels

Recommendations to improve performance on this issue include:

- Provide better on-site supervision and safety training. The training should include visual communication means (photographs, figures, cartoons, etc.) and using local dialects and language.
- Diligent on-site enforcement by TGP and Techint.

4.0 SOCIAL MONITORING

4.1 Introduction

URS also monitored the effectiveness of TGP's Community Relations Plan (CRP). The purpose of this plan is to identify, understand, and manage key social aspects of the project that impact the communities within the project's area of influence. TGP has implemented a Community Relations Office to implement the different programs included in the CRP. The Community Relations Office is composed of a community relations manager, a community relations supervisor, and a team of community relations coordinators who will be responsible for the fieldwork.

The monitoring was conducted by visiting active construction camps, communities, and settlements. The following sites were visited during September 2002:

- Nuevo Mundo, Las Malvinas, Chocoriari, Kepashiato, and Vinchos camps
- San Martin – 1 Well Pad
- Communities of Chocoriari and Shimaa and the city of Quillabamba

Specific monitoring of the following programs was conducted:

- Community Relations Training Program
- Communications and Consultation Program
- Local Development Program
- Temporary local hiring programs

In general, the programs specified in TGP's and Pluspetrol's CRP are underway. The following is a summary of the observations and recommendations for the reporting period.

4.1.1 Observations

Community Relations Training Program

The TGP Community Relations Training Program is designed to prevent, minimize, and manage negative social impacts within the area of influence. Under this program, TGP conducted the following activities:

- Techint conducted a workshop for the Community Monitoring Committee members within the Selva II sector on September 21, 2002 at the Kepashiato Camp. The workshop included issues such as water supply, wastewater treatment plants, and waste management (collection, storage, and disposal) practices. A second workshop for Kepashiato was scheduled for October 12, 2002.
- A workshop for the Community Monitoring Committee members of the Selva I sector was conducted from September 27 through September 30, 2002 at the Nuevo Mundo community. Community Relations co-ordinators from Pluspetrol, TGP, and personnel from Pro-Naturaleza, the Government of Peru (GTCI and Ombudsman's Office), attended the workshop. Community representatives from Camisea, Tupac

Amaru, Nueva Vida, Miaria, Ticumpinia, Nuevo Mundo, Timpia, Segakiato, Kiriguetti, Camana, Cashiriari, and Shivankoreni attended the workshop. The objective of the workshop was to provide information and train the Community Monitoring Committee members on the different CRP programs.

Communication and Consultation Program

A public presentation regarding the need to revert to the original ROW in the vicinity of the city of Ayacucho was conducted in Ayacucho on September 19, 2002. TGP's Public Relations Manager and Environmental Manager conducted the presentation. It was explained that along the proposed alternate route that is closer to Ayacucho, 45 archaeological sites were discovered, which makes this alternative infeasible.

Some members of the public were concerned that the decision to return to the original route will prevent Ayacucho to have a secondary gas pipeline to promote the development of an industrial park. TGP's Environmental Manager indicated that, in support of Ayacucho's desire for gas distribution to the city, TGP would sponsor a feasibility study.

Local Development Program

As part of TGP's social policies, TGP's community relations coordinators from Las Malvinas Camp attended the 25th anniversary celebration of the Chocoriari community. Attendance by TGP's community relations coordinators was greeted by the community and perceived as a positive and very important step in maintaining good relations with the community. The culminating point of the celebration was a soccer game between TGP and the community, and TGP provided shirts for the game.

Temporary Local Hiring Programs

TGP and Pluspetrol are providing job opportunities to local people, according to the Local Labor Hiring Program. During the reporting period, Pluspetrol hired local unskilled laborers under this program. This plan contemplates the hiring of approximately 500 unskilled laborers from the communities located within the areas of influence of the Upstream Project, and hiring will continue throughout the construction activities of the project. Details of TGP's local hiring program were not monitored in September.

Camp Conditions

The construction camps in general provide adequate accommodations for the workers; however, minor observations to improve the camp conditions are included in Section 3.2.1.

Other Issues

A labor strike started on September 26, 2002 at the Kepashiato Camp. Laborers were requesting wage increases on par with oil and gas industry standards, payment of benefits according to the labor laws, better camp conditions (food, dorms, etc.), compliance with the rotation schedules, and other issues.

4.1.2 Recommendations

Community Relations Training Program

There are high expectations for the future work of the ESC members. To support their effective communication of project data to their community members, TGP must provide them with suitable presentation materials that could be used in subsequent local workshops.

Communication and Consultation Program

TGP management should support the communication program so that accurate project information is communicated to the communities and to avoid misunderstandings. It is perceived that local people are not getting accurate information about the project. For example, the public is concerned that the ROW may be used as access points by transients, or that the gas pipeline may explode and therefore, it may not be safe for nearby residents.

Community Liaison Officers (CLOs) should have ready-made materials before community meetings. These presentation materials should be focused in their content and should be easily understandable by community members. TGP should also provide its CLOs with the necessary communication tools (digital and video cameras) to perform routine work adequately and transportation so CLOs can visit communities in the project's area of influence. Some of those communities claim they are not being adequately attended.

TGP should also relocate houses that are too close to the camp, pipe yards, staging areas, and/or the ROW for public safety reasons.

Local Product Acquisition Program

TGP's Local Product Acquisition Program (LPAP) contemplates maximizing the opportunities to purchase products at a regional level and minimizing local expectations, particularly in the rainforest sector due to the potential negative impact associated unreal and unsustainable dependency of local producers, given the relative short construction period.

TGP should present some flexibility for its Local Goods Supply Program. Some communities feel that TGP's program is too rigid and affects their interests. They suggest local products such as oranges or yucca (cassava) could be supplied directly by the local producers to Sodexho, the catering subcontractor for the camps. This issue is generating some discontent among local people because they argue that their products are purchased by middlemen, taken out of the zone, and then sold back to Sodexho at higher prices.

Temporary Local Hiring Program

In some of the communities, labor demand for jobs is so high that TGP has implemented a procedure to hire workers for only two-month periods. After this period is over, they are rotated and changed by new workers from the same community. TGP should explain these procedures as well as the objectives of the program to institutions such as COMARU, which represents Machiguenga communities.

Construction Camps

TGP should take safety measures (precaution signs, bumpers, security personnel, etc.) in the camps and working areas where third parties not directly related to the project were observed. Camps such as Vinchos and Rumichaca are located so close to local communities that some of the normal camp operations (equipment transportation, chopper flights, noise) are impacting the local populations.

TGP should provide ready information to people who are gathering outside the camps looking for jobs. Radio announcements, signs, and other means could be implemented in order to inform people about the real requirements for work. At Vincho Camp, it was observed that some people seeking work from different places in Peru gathered next to the camp and were not provided with specific information. Some of them were waiting for several days without assistance.

To improve labor relations, TGP should provide more attention to small issues aimed at improving laborers' morale. Soccer balls, movie videos, and other materials could be provided to promote night and weekend recreational activities. TGP should also improve the quality of worker conditions along the ROW (e.g., frequent laundry).

5.0 FOLLOW-UP ACTIONS

The observations and recommendations discussed above have been discussed with TGP on-site inspection staff and will be tracked for compliance during subsequent monitoring.