

November 2002

**D'APPOLONIA**

**REPORT OF THE**

# **EXTERNAL COMPLIANCE MONITORING GROUP (ECMG)**

**SIXTH SITE VISIT  
SEPTEMBER - OCTOBER 2002**



***Chad Export Project***

***Cameroon Petroleum Environment Capacity  
Enhancement Project***

***Chad Petroleum Sector Management Capacity  
Building Project***

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**SUBJECT: SIXTH VISIT OF THE D'APPOLONIA ECMG TO CHAD AND CAMEROON,  
SEPTEMBER - OCTOBER, 2002**

## **INTRODUCTION**

1. This report summarizes observations made during the sixth field visit (from September 22 to October 7, 2002) of the Environmental Management Plan (EMP)<sup>1</sup> External Compliance Monitoring Consultant for the Chad/Cameroon Oil Development and Transportation Project (referred to as the External Compliance Monitoring Group – ECMG)<sup>2</sup> related to both assignments of monitoring the Chad/Cameroon Oil Development and Transportation Project and of monitoring the two World Bank Technical Assistance/Capacity Building (WBTA) projects for Chad and Cameroon.

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<sup>1</sup> The list of acronyms is at the end of the text.

<sup>2</sup> Under contract by the International Finance Corporation (IFC), D'Appolonia S.p.A. (D'Appolonia) of Genoa, Italy, as the Environmental Management Plan (EMP) External Compliance Monitoring Consultant for the Chad/Cameroon Oil Development and Transportation Project (referred to as the External Compliance Monitoring Group – ECMG), is responsible for providing an independent assessment of the compliance of the development Consortium [Esso Exploration and Production Chad Inc. (EEPCI), Petronas Carigali (Chad EP) Inc., and Chevron Petroleum Chad Company Ltd.], the Tchad Oil Transportation Company S.A. (TOTCO) and the Cameroon Oil Transportation Company S.A. (COTCO) with obligations under the EMP and the relevant Environmental Commitments in the Finance Documents and the World Bank Project documents.. D'Appolonia is also responsible for monitoring performance on two World Bank Technical Assistance/Capacity Building (WBTA) projects. This monitoring is being conducted under a parallel agreement between the World Bank and D'Appolonia. Under this agreement D'Appolonia is monitoring the Petroleum Sector Management Capacity-Building Project for Chad and the Petroleum Environment Capacity Enhancement Project (CAPECE project) for Cameroon. The Lender Group and the World Bank will use the information provided by D'Appolonia, as well as other available relevant information, to determine, subject to provision of the Finance Documents and the World Bank Project Documents, whether it finds the Consortium, TOTCO and COTCO are in compliance with the EMP and the relevant the Environmental Commitments. The World Bank, subject to provisions of the World Bank Project Documents, will similarly determine if the capacity building programs are being implemented in a timely manner and, in particular, if the specific EMP obligations of the respective Governments are being met. D'Appolonia's engagement as the ECMG does not affect the continuation of the current practices of the World Bank Group and the Lender Group for consultation with Non-Governmental Organizations (NGOs), both local and international, universities, governmental agencies and other resources.

2. The Chad/Cameroon Oil Development and Transportation Project (referred to as the Chad Export Project) has ongoing activities associated with the placement of pipeline and the development of major support infrastructure at the Pressure Reducing Station (PRS) and Pump Stations 2 (PS-2) and 3 (PS-3) in Cameroon. In Chad, construction and production drilling are well underway in the Oil Field Development Area (OFDA) and the placement of pipeline started in the Komé area a few days before the arrival of the ECMG. The Consortium has indicated that the initial infrastructure development as related to transportation systems in both Cameroon and Chad is “fit for purpose” and has been turned over to the respective Governments as completed projects. Therefore, this sixth visit focused on a review of the completed infrastructure projects, in addition to ongoing evaluations of pipeline placement operations, drilling procedures and associated activities. Specific problem areas defined in previous missions received special attention during this trip, specifically the status of the spontaneous settlements in the OFDA and community and Project health. Cultural Resource Management (CRM) was reviewed in greater detail during this trip with the support of a senior archaeologist, Dr. Clark Dobbs, who joined the ECGM for this mission. The trip also evaluated the status of the capacity-building projects and the ecological offsets in Cameroon. Specific activities conducted during this sixth mission have included<sup>3</sup>:

- Visit Project and Oilfield Development work sites and associated infrastructure in Chad and Cameroon;
- Review the condition of new roads and road upgrades in Cameroon and Chad to determine their extent of completion;
- Review of ongoing exploration and production drilling activities;
- Visit placement of pipeline along Spreads 1 and 2 in Cameroon and Spread 1 just starting in Chad;
- Review the status of the CRM programs in Cameroon (from interviews with responsible Project archaeologists) and Chad (from both interviews and field visits);
- Meet with representative NGOs in Cameroon and Chad;
- Meet with representatives of the Chadian Government who have responsibility for the capacity-building project (Cameroonian Government representatives were not available for a direct meeting, but were able to provide information to the ECMG);
- Meet with Board representatives of the Foundation for Environment and Development in Cameroon (FEDEC) in Cameroon;
- Meet with parties responsible for EMP compliance monitoring and review relevant monitoring records;
- Two closeout meetings with EEP/CI/TOTCO and COTCO management and EMP personnel, Chadian Government officials, and Lender representatives from the International Finance Corporation, European Investment Bank and World Bank (representatives from both Cameroon and Chad), focusing on key findings, correction of any factual inaccuracies and possible corrective/upgrade actions. The first meeting summarized observations specific to the Chad Export Project and the second closeout meeting was held to focus on the two Capacity Building projects, FEDEC and contacts with NGOs.

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<sup>3</sup> See Appendix A for the detailed Daily Activity Summary

3. The closeout meetings were conducted in N'Djaména, Chad on October 7, 2002 and the information presented in that meeting has formed the basis for this report. The information and observations presented in this report are those of D'Appolonia and are independent of those of the development Consortium, EEPCI/TOTCO, COTCO, the institutional stakeholders of Chad and Cameroon, and the Lenders and World Bank Group.
  
4. Field activities with the greatest potential direct environmental impact at the time of this visit included the ongoing of pipeline construction and new infrastructure development, including construction activities for the pump stations (PS-2 and PS-3), the PRS, and the landfill at PS-3 in Cameroon, and particularly the construction activities and the ongoing drilling activities in the OFDA in Chad. The construction of a new airfield in Gadjibian, Chad represents a new Project footprint. Specific footprints corresponding to the extent of current construction activities are identified in Appendix B.

## **EMP OBSERVATIONS AND GENERAL CONCLUSIONS**

The Project has reached a significant level of development. Pipeline construction has started in Chad and is very advanced in Cameroon. Permanent facilities are under construction and several drilling rigs are operating at oil well sites in the OFDA. The ECMG has observed a strong commitment of the Project EMP management and team to fulfill the requirements of the EMP. The Project consistently implements EMP procedures and addresses the specific, individual construction-related issues identified through the EMP organization. Based on observations during the 6<sup>th</sup> mission, the ECMG team did not identify any individual non-compliance situation that should be classified as Level 3 according to EMP criteria.

As the Project evolves and moves towards the operation phase, the Project EMP management and the two Governments will need to focus on the issues that have the greatest potential for long-term impact, and on best practices to resolve, minimize and mitigate them. Such issues occur mainly in Chad, as once the pipeline has been installed in Cameroon, the potential for significant impacts is limited mainly to environmental issues related to permanent facilities and pipeline operations. The ECMG considers that there are specific points of concern that represent risk to the full achievement of EMP goals, as well as some areas where continued emphasis is needed from the Governments or Consortium; they are:

- The delay in the development of the Regional Development Plan (RDP) in Chad;
- The initial status and slow progress of the Capacity Building Project in Chad, which has not reached the level needed for an effective regulation of the impacts of the Project;
- The in-migration in the OFDA, particularly with regard to the deteriorating sanitary conditions at the spontaneous settlements in the Komé area;
- The monitoring of community health, especially in Chad;
- The monitoring of the water resources at all permanent facilities in Cameroon and Chad;
- The potential loss of cultural resources in Chad due to the lack of national expertise, resources and regulatory framework in the field and the intrinsic short duration of the right-of-way (ROW) construction;
- The necessary re-direction of focus during the Project's implementation phase from issues relevant to pipeline construction, to issues relevant to the OFDA development and finally the operation phase of the overall system. The EMP, developed during the planning phase of the Project, is a management tool designed to prevent potential impacts identified during the design phase and to address actual impacts observed during the Project implementation phase. It is crucial that all the Project stakeholders, including the Consortium, Governments and Lenders, consider the EMP as a tool to include and adopt best practices to monitor and mitigate potential impacts observed throughout the Project implementation. The EMP is also the means to achieve the goals of the Project's environmental policy through both construction and operation phases by ensuring: 1) compatibility with the balanced of community environmental and economic needs; and 2) compliance with applicable environmental laws and regulations or application of responsible standards where laws or regulations do not exist;

- The management of the EMP and Project design changes. Both EMP changes and Project design changes are reviewed and endorsed by the EMP organization. The ECMG recommends that the studies and analyses prepared to support change requests and approvals should be developed to the extent they prove that a proposed change does not “...*materially adversely affect the level of protection afforded by the EMP*”.

The specific observations and issues of concern are highlighted in the following sections.

## **Socioeconomic Issues**

### **5. *Inflation (Chad and Cameroon) and Food Situation in the Oilfield Region (Chad)***

#### *Project Strategy:*

According to the EMP<sup>4</sup>, responsibilities of both the Consortium and the Government with respect to inflation monitoring, containment and mitigation are as follows:

- The monitoring of local inflationary pressures in villages near the construction camps is a responsibility of the Consortium.
- The development of “appropriate policies” to attenuate inflation is a responsibility of the Government.

#### *ECMG previous recommendations:*

As a result of the ECMG fourth mission, the Consortium was advised to establish commissaries for workers in Komé. These commissaries would be aimed at mitigating observed inflation of staples on local markets.

#### *Observations:*

Tchad Cameroun Constructors (TCC), the Contractor with the highest employment in Komé, now has three commissaries operational, in Komé Base, Miandoum and Komé 5. Operation started in early July and workers have been using them extensively with monthly revenues of around 25 million FCFA. The favorite goods are rice and batteries, with sugar, oil, tomato paste and milk powder also available among others. According to TCC, some refinement of the operating rules may still be needed, but the operation is overall very successful. Preliminary data indicate that the impact on prices and speculation in Doba and Bébédjia could already be positive.

The monitoring of inflation by the Consortium has continued over the period since the last ECMG mission and results are now available in both Chad and Cameroon for the first two quarters of 2002. In Chad, information gathered by the Government and by the Project is difficult to interpret, as it is almost impossible to isolate the Project impact from other non-Project-related factors, like the usual seasonal variations or the speculation by merchants. Overall, the “standard” defined basket of products has increased by a cumulated 40% over the first two quarters of 2002.

Cereals for instance rose sharply in the first half of 2002, but this is normal at this time of the year and has been aggravated by the poor harvests in 2001. However, prices are lower than those of 1998 before the Project.

Rainfall has been insufficient during the 2002 period of cultivation in the Project area. As a result, grain shortages could be experienced in 2003 in both the OFDA and the Monts de Lam department.

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<sup>4</sup> EMP, Chad and Cameroon portions, Volume 1, Socio-economic topic #1

*Recommendations:*

- 5.1 Continue with inflation monitoring and quantify the impact of the commissaries (Consortium).
- 5.2 Keep commissaries in place up to end of construction (Consortium).

6. ***In-Migration in the OFDA and Spontaneous Settlements (Chad)****Project Strategy:*

The EMP contains provisions in Volume 1 (both countries) under “Socioeconomic Topic #1”. For Chad, more details are provided in Appendix H to Volume 4 (Regional Development Plan), which assesses the potential impact of migration to the project area and proposes mitigation measures.

The split of responsibilities between Governments and the Consortium is the following:

- a) Mitigation measures associated with direct Project employment are the responsibility of the Consortium; the strategy to minimize in-migration of job-seekers is based upon appropriate employment practices, and includes the following:
  - Local hiring of unskilled workers in the villages where work takes place;
  - Prohibition of hiring at the gate; semi-skilled or skilled workers have to apply through the national employment agencies (Chad) or at the hiring offices opened by the Contractors (Cameroon); preference is given to qualified locals;
  - Information campaigns<sup>5</sup> to publicize the kinds of jobs available and explain how hiring is done, to be organized together with the Government;
  - Monitoring of in-migration to project sites (population growth, inflation, change in land values, demands on infrastructure).
- b) Mitigating the impact of the spontaneous relocation of itinerants to the Project area in response to the perceived opportunity of finding employment is the responsibility of the Government:
  - In Chad, implementation of the Regional Development Plan, which includes measures targeting the towns of Doba and Bébédjia in the agricultural, commercial, housing and public infrastructure sectors;
  - In both countries, assist the sponsors and consult with local authorities as required.

*ECMG's previous recommendations:*

As a result of its fifth mission in April 2002, the ECMG made specific short-term recommendations to CTNSC and the Consortium to address the situation in spontaneous settlements of the OFDA, as follows:

- Implement three complementary projects, on the following aspects:
  - Development of a Land Use Plan for Komé Atan,
  - Water Management,
  - Solid Waste Collection and Disposal.
- Implement a development management scheme for the Komé 5 settlement, which may include its relocation, in order to control its development;

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<sup>5</sup> EMP, Chad portion, Volume 4, Appendix H, § 4.2

In the longer term, it was also recommended to develop a Land Use Plan applicable to the OFDA as a whole and to give priority in accessing to FACIL to the three cantons of the OFDA.

*Observations:*

Komé area (OFDA), Chad

Komé Atan, the spontaneous settlement opposite to the main gate of Komé Base, has not significantly expanded since the last ECMG visit<sup>6</sup>. A census and socio-economic survey were carried out by the CTNSC field team in September 2002, which provides useful data to follow-up on the Project's Komé Atan baseline conducted in February 2002. The population is now 1,780. TCC had initiated steps to collect the garbage with community involvement in early 2002. The overall sanitation situation raises health concerns for the inhabitants of Komé Atan and the working community. On the basis of the framework that was proposed by the ECMG during the fifth mission, the Consortium has developed and is prepared to implement a project with the following components:

- Drainage (creation of a 800-m long drain alongside the road in front of the village);
- Periodic fogging for mosquitoes;
- Construction of two water wells that have already been sited based on community consultation, while the existing water tap will be decommissioned once these new wells, fitted with foot pumps, are completed;
- Construction of a parking place for Project trucks and buses;
- Support of the garbage collection initiatives taken by the community, including giving incentives (school supplies) to the school children for collecting certain types of trash, and by the construction of a collection point next to the parking lot.

The community has already received assistance for the limited garbage collection initiative. Lighting that was planned for security purposes alongside the drillers' camp may also, to some extent, benefit the community.

CTNSC's socio-economic survey has also addressed the smaller spontaneous settlement that has developed at Komé 5. The population is about 400, and the settlement has now expanded on both sides of a drilling pad. The Project had conducted an original survey in Kome 5 in March 2002, with a follow-up survey conducted in July 2002.

At the Miandoum gathering station, the spontaneous settlement has only commercial activities. Nobody lives there and no permanent houses have been built.

Field implementation of the recommendations made by the ECMG as a result of its last mission has not started. The living conditions and the sanitary situation in the settlement of Komé Atan are not acceptable. As mentioned in the health section of this report, they pose serious health threats, not only to the population in the village, but also to the Komé Base population, where many of the inhabitants of Komé Atan work (at least 120 Project workers live there).

Komé Atan is an issue that the Government of Chad and the Project has to deal with in terms of both short- and long-term risks. Even if the TCC camp closes down after

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<sup>6</sup> A similar observation was made in October 2001. The rainy season is a period of limited migration.

construction is complete, the drillers' camp will remain for a number of years, depending on results of ongoing exploration.

A meeting held in Komé Base during the sixth mission of the ECMG and additional contacts in N'Djaména helped clarify the views and intentions of the main stakeholders involved:

- While relocation had been contemplated in the past, it was confirmed by the *Sous-Préfet's* representative and the CTNSC that they had no intention to relocate the whole settlement;
- The Consortium has confirmed their commitment to implement the above-mentioned actions (drainage, periodic fogging for mosquitoes, water wells, truck parking area, limited garbage collection);
- A process was agreed whereby CTNSC would develop, with World Bank assistance, a land use plan for Komé Atan, then implement it, and also work with the community to set up the management institutions required to take responsibility of the water points and the sanitation activities;
- To ensure consistency between this land use plan and the well locations, the Consortium was requested to postpone construction of the wells.

#### Gadjibian, Chad

The commencement of WSJV activities at Gadjibian has triggered the development of a spontaneous settlement next to the gates of the camp. Nevertheless, it is likely that this settlement, like several others that developed at pipeline construction camps in Cameroon, will disappear when the camp is demobilized.

#### *Recommendations:*

- 6.1 Put in place a Task Force with power to make decisions and enact them, including representatives of:
  - CTNSC Field Team,
  - The Consortium,
  - The *Sous-Préfet* of Bébédjia or the one to be named in Komé,
  - The Chef de Canton of Komé.
- 6.2 Consortium actions:
  - Proceed with proposed actions (drainage, periodic fogging for mosquitoes, etc...).
  - Assist CTNSC in preparing a topographic map of Komé Atan that may serve as a base for the land use plan.
- 6.3 CTNSC actions:
  - Prepare a Land Use Plan with assistance from “*Service du Cadastre - Moundou*” and a consultant either hired directly following a simplified procurement procedure, or through the “International Consulting Panel” hired by CTNSC under the technical assistance component of the Capacity Building Project. Please refer to Appendix C of this report, which provides technical guidance for this component. The Land Use Plan, which is to address only Komé Atan, should include the parking areas, streets to be created for proper access and fire safety, and garbage collection points.

- Consult with other involved parties (*Sous-Préfet, Chef de Canton, Community representatives*) on the proposed Land Use Plan, and amend as needed.
  - Finalize and implement the Land Use Plan, including relocation of those buildings located in any rights-of-ways to be created.
  - Prepare the community to manage facilities (Management Committee).
- 6.4 World Bank actions:
- Prepare simple funding arrangements and make funds available to the Task Force, for instance redirecting monies from Rapid Intervention Measures, and possibly other less urgent components of the Capacity Building project (e.g., Environmental Management Information System, EMIS).
  - Take the necessary steps to provide technical assistance to CTNSC for the development of the Land Use Plan through a directly-hired consultant or existing technical assistance contracts.
  - Treat this as an emergency project in terms of procedures, especially for procurement.
- 6.5 The above-mentioned Task Force must also address Komé 5. Their first task needs to be an agreement as to whether the settlement needs to be relocated or not. Once this decision is made, a Land Use Plan on the site that is finally selected needs to be developed with the provision of water and basic services.

## 7. *Employment*

### *Project Strategy:*

The objectives of the employment policy and the commitments of the parties involved, including those of the two Governments, are presented in the EMP.<sup>7</sup> Employment objectives include “ensuring equitable distribution of employment opportunities, ..., giving a priority to communities that are most affected by the work at the Canton and village levels” and “minimizing impact of work force housing on surrounding communities.”

Contractors may not hire at the gate of their work sites. They are expected to hire unskilled workers in the villages where construction takes place and rely on village chiefs to help implement this process and to give priority to locals for skilled and semi-skilled jobs. All Contractors have developed a Socio-Economic Action Plan and have a Socio-Economic Department to address these issues.

### *Observations:*

A few non-compliance situations keep being observed, although the EMP system seems to detect and treat most of them. In Chad, WSJV used non-compliant hiring practices when they started work in the Komé area. This was quickly noticed and stopped.

It was not possible for the ECMG to visit the Bébédjia gravel quarry as the road was not passable. However ECMG was informed of some problems (payment delays) of village laborers with intermediaries, to be verified through a recommended dedicated investigation by the Project.

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<sup>7</sup> EMP, both countries, Volume 1, Section 2, Socio-economic topic #3

*Recommendations (same as fifth mission):*

- 7.1 Continue the monitoring of employment procedures (Consortium);
- 7.2 Monitor fairness and safety of village labor mainly done for the Project, especially payment (Consortium).

8. ***Workers' Accommodation in the OFDA****Project Strategy:*

The EMP<sup>8</sup> provides that "National Project workers whose residence is more than a one-hour drive from a Project Work Site:

- May be housed in nearby communities,
- Be transported to and from the Work Site,
- Be provided with a lunch on workdays,
- Be provided a housing allowance, OR
- Be housed in single status Project work camps, and
- Be provided three meals per day."

Job Specification Coordination Procedure (JSCP) 29 "Socio-Economic Interactions"<sup>9</sup> states under section 5.19 that "In cases where Contractor's camp moves during a work season, Contractor shall house non-Local labor at its camp(s) and have the option of housing Local labor. In cases that Contractor's camp does not move during the work season, Contractor may choose to house workers in its camp(s) or shall work with the community, local entrepreneurs and the Project to ensure that adequate housing and facilities are available in the local community to accommodate workers without displacing or adversely affecting the existing population or environment, or overloading existing infrastructure."

*Observations:*

Adverse effects that were observed during previous missions by ECMG in Doba, Bébédjia, and Komé Atan have not been mitigated during the period since the last mission. According to information gathered by the Project, the prices of housing in Bébédjia and Doba have kept increasing during the 2<sup>nd</sup> quarter of 2002, as well as in several small towns of the Project area, while housing costs remained stable in the rest of the country.

However, TCC has taken the following actions since the ECMG's fifth mission:

- A model house has been built in Béro 1, a village next to Komé 5. Stabilized bricks have been used. TCC has encountered several technical problems, especially with the roof that needed to be repaired several times before it stopped leaking.
- Following a housing survey, it was proposed to workers that houses be rented in villages within the OFDA, but it appears that workers prefer to live in Bébédjia and Doba rather than in smaller villages.
- The development of lots that was expected in Bébédjia following the creation of an access road did not take place.

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<sup>8</sup> EMP, Chad Section, Volume 1, Socio-Economic Topic #5 (Housing).

<sup>9</sup> JSCP: Job Specification Coordination Procedure; EMP, Cameroon and Chad, Volume 2.

Toilets and drinking water are now available to Doba Logistics drivers at the bonded storage yard in Komé 5.

*Recommendations:*

- 8.1 Enforce EMP requirements in Komé that the housing of construction workers should not impact the local communities (Consortium). ECMG proposes the following framework:
- Distinguish long-term (operation) and short-term (construction) housing needs;
  - Consult with workers, through their delegates, on what they want and do not want (principles for housing, housing allowance, location of housing);
  - Loans to workers, such that they can quickly build (or have somebody build for them) a simple house (*boukarou*, clay brick walls and thatch roof); such loans would be on the order of one hundred thousand Francs CFA with a reimbursement within three to six months; workers taking a loan would be still eligible to the housing allowance as they still have to support the cost of their housing;
  - Development of lots in both towns of Doba and Bébédjia (leveling, plot pattern and staking, construction of latrines);
  - Development of lots in the OFDA, for example in Komé Atan once the Land Use Planning study is available.
- 8.2 Continue with the “model house” approach and adapt it as needed for long-term operation workers (Consortium).

9. ***Temporary Facilities***

*Project Strategy:*

The EMP<sup>10</sup> provides that “as the infrastructure, logistics and pipeline Contractors move from areas where construction has been completed, the support facilities will be decommissioned if no further use is warranted.” Temporary bridges built in defined ecologically sensitive areas in Cameroon for the pipeline construction must be removed when works are complete, in accordance with the Induced Access Management Plan<sup>11</sup> and/or because their design as temporary structures does not, in principle, allow for long term reliability.

*Observations:*

In Cameroon, COTCO prepared detailed checklists on facilities to be decommissioned, with the description of the equipment that could be left in place and the status and results of the consultation with the Government of Cameroon and the local authorities and communities.

While the consultation exercise has already given results, especially for the camp sites, the issue of the removal of temporary bridges is still contentious, especially with respect

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<sup>10</sup> EMP, Supporting documents, Volume 1, Section 8

<sup>11</sup> EMP, Cameroon portion, Volume 1, Appendix D

to the bridge over the Lom River between the villages of Goyoum and Lom. The situation is the following:

- The bridge is immediately adjacent to an existing railway bridge that allows access to pedestrians, and was built in place of an old road bridge that was no longer passable by vehicles;
- The EMP states that the bridge needs to be dismantled once the works are constructed, as it would otherwise give access to the environmentally-sensitive area of the Deng-Deng forest;
- The local population is intent on keeping the bridge in place and is supported by the Cameroonian NGOs;
- The Government has requested the World Bank to accept that the bridge could be kept in place and the World Bank has indicated in response that the bridge is to be dismantled consistent with EMP requirements.

*Recommendations:*

- 9.1 Expedite resolution of the Lom River bridge issue.
- 9.2 Finalize a standardized procedure for all types of facilities to be decommissioned. This procedure should be developed in agreement with the Governments and applied consistently in both Cameroon and in Chad, providing standard close-out punch lists, including consideration of social aspects (Consortium).

10. ***Workers' Demobilization***

*Project Strategy:*

Under Socio-Economic topic #1 (Migration to the Project Area), the EMP states that “the Project will institute an on-going program of consultation with Republic of Chad officials and village leaders and elders to discuss issues related to .... impacts of Contractor demobilization in their communities”.

*Observations:*

In Cameroon, most demobilization has already taken place. The road works are complete, as is most of the pipeline construction. Demobilization of the majority of the local and national workers employed at the pumping stations will take place in early 2003.

In Chad, the peak of manpower requirements has been reached in the Komé area, and partial and progressive demobilization will start soon. The situation is different from that of Cameroon because many workers have been employed for significant durations (6 months or more).

To ECMG's knowledge, little has been done to date by either the Consortium, the EPC Contractors or the Government to address the future demobilization of workers in Chad. One possible action that needs to be explored could include financial support to projects developed by demobilized workers in the region, under such instruments as FACIL (micro-credit) or FINADEV, an IFC supported initiative to develop small businesses in Chad, which is soon due to open a branch in Moundou.

*Recommendations:*

- 10.1 Make future demobilized workers one of the groups eligible to the Small Business Development initiatives being developed in Chad, i.e. FACIL and FINADEV (CTNSC/FACIL, World Bank, IFC).
- 10.2 Provide information to future demobilized workers in Chad on these initiatives (Consortium, CTNSC).

**11. *Regional/Community Compensation****Project Strategy:*

This element of the compensation package is intended mainly to offset community losses such as natural resources and various inconveniences.

*Observations:**Cameroon:*

As it was observed at the time of ECMG's fifth mission, the first phase of the process has been completed. Village projects have undergone technical and cost review by COTCO. Where a Government approval was required (for instance schools, health centers and water projects), the associated descriptions have been filed to CPSP for review by the relevant authorities (Ministries of Education and Health). No feedback has been received yet from the Government by COTCO.

*Chad:*

GTZ, the International Development Agency of the German Government, has been charged by the Project to initiate the first phase of the process, including identification of the needs in all 82 concerned villages and preparation of a pilot project in four. GTZ mobilized their personnel in May/June 2002 and selected three local NGOs to undertake field work and trained their field teams. The needs identification is virtually completed, with all villages having gone through a participatory needs analysis. Interaction with other players in the area has taken place, including with FACIL. The current schedule is that the first phase, including both needs identification and pilot project implementation, is expected to be completed in March 2003.

*Recommendations:*

- 11.1 Expedite review of the projects requiring Government approval (CPSP/ Government of Cameroon).

**12. *Individual Compensation****Project Strategy:*

Detailed procedures have been developed in both Chad and Cameroon to identify stakeholders and provide them with an appropriate compensation for their losses associated with the Project. This compensation is paid in-kind and/or with cash. The Project has also developed grievance management processes consistent with applicable legal procedures.

*Observations:*

In Cameroon, compensation dossiers associated with temporary occupation and damaged crops resulting from the pipeline construction have continued to increase to the point where COTCO has not kept pace with the compensation process. Dissatisfaction with payment delays has resulted in demonstrations in the Yaoundé area, where numerous worksite blockages by angry villagers occurred in August. They were concerned that once the works are completed in their area, payment would not be made because the contractor was gone. The villagers' anger may have also been fueled by some Contractor workers who encouraged them to block the works, hoping that this would result in longer job contracts. Intervention by local authorities, additional explanations given by COTCO and some redeployment of the compensation personnel have helped expedite the process and reduce the tensions, but these were still visible when the ECMG visited the area in late September.

In Chad, some difficulties were encountered as some parts of the pipeline ROW have been encroached by crops although they were already compensated. This has happened in the Komé area where WSJV recently changed their schedule with little notice, following difficulties to access marshy areas in the vicinity of the M'Béré River. The Consortium has taken steps to refresh awareness regarding this matter, as it does not intend to pay additional compensation for these encroachments, which would be regarded as unfair.

In Chad, ploughs that were previously unavailable on the local market, resulting in delayed deliveries, have been purchased and are in the process of being delivered to the beneficiaries.

*Recommendations:*

- 12.1 Minimize additional land requirements and crop damages (especially associated with the pipeline construction) to reduce the number of supplemental compensation payments (Consortium).
- 12.2 Expedite the treatment of pending supplemental compensations (Consortium).

**13. *Grievance Mechanism and Social Closure****Project Strategy:*

The grievance mechanisms are described in the EMP's 3<sup>rd</sup> volumes for both countries. The mechanism is the following:

- Recording of any grievance should be through the Local Community Contact (LCC).
- Where a solution cannot be found immediately by interaction between the aggrieved person and the LCC, involvement of an EEPCI/TOTCO or COTCO technical representative is triggered and a settlement is proposed with final endorsement by EEPCI/TOTCO or COTCO management.

Following earlier ECMG recommendations, the Project in Cameroon developed a procedure to reach social closure on a village-by-village basis, including compensation at individual and community levels, local employment, rehabilitation of construction zones, and pending disputes. The proposed social closure process involves both the

Government and COTCO and is to be witnessed and facilitated by an independent party, expected to be one or several NGOs.

*Observations:*

As mentioned above, the large number of grievances related to damaged crops as a result of the pipeline construction has overwhelmed the COTCO compensation staff, which has resulted in payment delays and anger of the concerned people, especially in the Yaoundé area.

NGOs in Cameroon prepared a monitoring report<sup>12</sup> that was provided to the ECMG on September 25<sup>th</sup>. This document mentions a number of claims from villages associated with issues like sacred sites and graves, animals killed by vehicles, compensation for trees, community compensation, damages caused by hydrotesting, etc. The ECMG has followed up on some of these issues during the sixth mission. Several of the allegations made by the NGOs were found by the ECMG to be based on somebody in the concerned village really feeling aggrieved, which does not mean that these claims are valid. For instance, in the village of Goyoum, where the NGO report mentioned that a sacred site had been destroyed, the ECMG did observe that there were individuals making these claims, but they were very likely not valid. However, in several instances in Cameroon, the follow-up by COTCO on these claims was found not to be consistently ensured. LCCs report claims either to the EMP staff in the field (in particular the COTCO Senior EMP Monitor) if the issue is related to their activities, or to the Socioeconomic Supervisor for all other reasons. Their follow-up to issues may not always be consistent, especially if they consider the claim unjustified, while in fact it may represent a genuine factor of dissatisfaction and finally a risk to the Project. In several instances, the villagers also appear disoriented about the grievance management system. They have apparently made verbal grievances to the people they thought would have the authority to act (i.e., an EPC Contractor representative, a "Right-of-Way Assistant", a local authority representative, or the village chief), not all of whom are in a position to follow proper procedures afterwards.

As mentioned in the ECMG fifth report, the social closure process has been developed in Cameroon. A test first phase exercise has been conducted in the *Département du Littoral* (Kribi). Apparently, too many claims were found unsettled for the exercise to continue in the intended manner. It is COTCO's intention to involve an independent observer in the next phases of the process.

*Recommendations:*

13.1 Grievance mechanisms:

- Clarify the procedures that grievances must follow to both Project staff and concerned communities, and refresh information on these procedures as needed (Consortium).
- Follow-up on issues submitted by NGOs, with qualified personnel of an adequate level involved on COTCO's side (Consortium).

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<sup>12</sup> Independent Monitoring Report on the Pipeline Project in Cameroon (*Rapport de Monitoring Indépendant du Pipeline Tchad Cameroun*), Period from January to June 2002, by *Comité de Pilotage du Suivi Indépendant du Projet de Pipeline Tchad Cameroun* and Catholic Relief Services, Cameroon, September 2002.

## 13.2 Social closure:

- Re-evaluate the timing of the social closure for the exercise to take place only after all the grievances already known to COTCO have been settled (Consortium).
- Develop a similar process for Chad, based on Cameroon experience (Consortium).

14. ***Vulnerable Indigenous People****Project Strategy:*

An Indigenous Peoples Plan (IPP) is to be implemented through FEDEC<sup>13</sup> to provide assistance to Bagyeli/Bakola (Pygmy) communities in the Project area. COTCO has also prepared a supplemental program targeting the “Pygmies” within the Regional Compensation component. Under the CAPECE Project financed by the World Bank and led by the Government of Cameroon through CPSP, it is planned that a consultant contract be enacted to monitor the implementation of the IPP.

*Observations:*

The IPP has started in the field, with the following actions already undertaken:

- A first batch of identity cards was distributed to a Bagyeli/Bakola community in Koundou-Koundou; the ECMG attended the distribution, and confirms that receiving an identity card is a significant achievement to a member of the Bagyeli/Bakola community, both in practical and symbolic terms;
- The health component has started with involvement of the *Petites Sœurs de Jésus*, the nuns who run the hospital in Ngovayang near Lolodorf, and with the delivery of equipment and supplies to the health centers in Bandevouri and Nkouamboer;
- School supplies are to be distributed to both Pygmy and Bantu schoolchildren in about 10 schools of the area.

The IPP short-term objectives for 2002-2003 are now well identified (including an agriculture component due to start during the next agricultural season). The FEDEC staff in charge of the Project has worked with other institutions involved in support to the Bagyeli/Bakola community in the Kribi/Lolodorf area to ensure coordination, with good results to date. The issuance of identity cards has been facilitated by the local authorities in an efficient manner.

These are significant achievements, but FEDEC has not secured yet additional funds for the future expansion of the IPP, and still needs to develop a comprehensive action plan for longer-term actions within the IPP.

For the Regional Compensation actions targeting the Bagyeli/Bakola community, COTCO has developed a preliminary action plan that takes into consideration the consultation undertaken in 2001 in all concerned settlements and the components planned by FEDEC as a result of this consultation exercise. COTCO's plan is based on housing improvement actions, which appeared during the consultation as one of the most often mentioned issues, while it is not addressed by FEDEC's IPP.

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<sup>13</sup> EMP, Cameroon portion, Volume 4.

CPSP has awarded the monitoring services for the IPP. The contract is being finalized. FEDEC has indicated that it has not been involved in this procurement process. The extent of the project to monitor is still very limited. The present terms of reference include the preparation of a long-term action plan within the IPP, which in the ECMG's opinion would better belong as part of FEDEC's objectives.

*Recommendations:*

- 14.1 Develop a longer-term action plan for the future actions within the IPP (FEDEC).
- 14.2 Finalize the Regional Compensation component targeting the Bagyeli/Bakola community and detail the housing component including an implementation strategy (Consortium).
- 14.3 Postpone the commencement of the monitoring services for the IPP until the actions to monitor are significant. Involve FEDEC in the contracting process, including finalization of the scope, which should exclude the preparation of the IPP long-term action plan (CPSP/World Bank).

15. ***Archaeology and Cultural Properties***

*Project Strategy:*

The EMP defines a series of commitments for managing the cultural resources and patrimony of Chad and Cameroon. The EMP specifically cites *World Bank Technical 62* and *World Bank Policy Operational Policy 11.03* that provide policy and technical guidance for cultural resource studies. The EMP defines six steps for cultural resource management for Chad and Cameroon:

- Complete background research;
- Rapid Reconnaissance Survey;
- Additional Pre-Construction Survey and data collection;
- Development of importance criteria and mitigation-of-impact strategies;
- Implementation of mitigation measures; and
- Analysis and data reporting.

The Project focuses worker awareness on cultural property issues and archaeologists have conducted surveys in advance of current activities. A guideline entitled *Handbook on Archaeological Sites in the Chad Development Project Area* has been developed for use by the Project's EMP staff.

The Compensation Plan in Cameroon and the Compensation and Resettlement Plan in Chad (Volume 3 of the respective country's EMP) describe the types of modern sacred tribal sites expected to be encountered by the Project and the type of compensation for these sites. The Job Specification Coordination Procedure (JSCP), Section 29, Subsection 5.11, states that if sites of archaeological value are discovered during construction, the Contractors shall leave the archaeological findings undisturbed and shall immediately report the event to TOCTO/COTCO, who will instruct the Contractors as to how to proceed.

*Observations:*Cameroon

Over past visits, the ECMG has generally observed respect for cultural and sacred sites. Sites have been identified prior to construction and compensation paid as appropriate. Some pending disputes are associated with sites identified as “sacred” just before construction begins and where individuals want compensation. Also, during the ECMG visit in September, villagers from Mbong in northern Cameroon indicated that a grave was damaged during construction. At the time of the ECMG visit, the villagers were uncertain as to the means to file a grievance, an issue noted in Point 13. In this instance, the ECMG understands that the grave was not actually destroyed and that, since the time of the ECMG visit, the villagers have been appropriately compensated for the passage of construction equipment over the grave. The ECMG has observed that the pipeline has been generally rerouted to avoid graves and other sites of cultural significance, as needed.

During the mission, the ECMG reviewed Project’s archaeological documents and met the lead Cameroonian archaeologist and his field team leader to discuss archaeological findings and progress in Cameroon.

The Cameroonian team is conducting monitoring of the pipeline trench and grading along the entire pipeline route. A large number of new sites are being discovered during trench monitoring and the lead archaeologist estimates that at least half of the sites along the route have been found by this method.

The Cameroonian archaeologists employed by COTCO appear to be fully qualified professionals. Their training and development is the type of national capacity building envisioned by World Bank policy guidance.

In terms of the required EMP steps, the Cameroonian team is now working on the step four – *Development of importance criteria and mitigation-of-impact strategies* and step five - *Implementation of mitigation measures*, which are of critical importance, in terms of cultural resource evaluation and mitigation of the critical archaeological sites. Missing pieces of documentation are the site-specific mitigation plans, described in Chapter 7.0 of the *Management Plan for Cultural Resources* in the EMP, although the lead archaeologist indicated that he is following mitigation outlines.

Analysis and data reporting (including curation of materials) is the final step in the EMP process. A major milestone for this step was recently achieved with the development of a laboratory that is described as providing the basic facilities needed for data analysis and reporting. This step will require a considerable effort and will likely not be complete until after First Oil.

Although the cultural resource program is still under development, the ECMG considers that the sheer number of sites that have been discovered by the Project archaeological program, the varied site types (e.g. villages, iron furnaces, etc.) and the broad time depth that ranges over tens of thousands of years represent an extremely important contribution both to Cameroon and the international community.

### Chad

The basis for the ECMG observations in Chad are from interviews with responsible individuals, data and progress reports submitted to the Project management, a visit to the existing archaeological laboratory at the *Université de N'Djaména* and field observations from several previously-known and newly-discovered archaeological sites in the Komé area.

The chief archaeologist, a Full Professor and Dean of the College of Arts and Humanities at the *Université de N'Djaména*, and his students were found very committed to doing the best job that they can and care deeply about the archaeology of their country. However, due to his full-time teaching and administrative responsibilities at the University, the chief archaeologist's time is limited. Further, only one member of the archaeological team has a Masters Degree. In addition, the laboratory facility at the University is inadequate to support scientific archaeological investigations.

Initially during the ECMG field visit, only one archaeologist was present in the field and his responsibilities included monitoring pipeline construction, flagging newly-discovered cultural sites, and protecting or excavating these sites. Since construction was moving at about 3 to 5 km per day, this archaeologist clearly faced an impractical task. The ECMG made an immediate recommendation to develop a staffing plan, and the Consortium acted upon this during the ECMG visit. The field team did not have the supplies and equipment required to adequately conduct and document archaeological investigations.

Another concern of the ECMG is that the field procedures followed to excavate the identified archaeological sites may be inadequate to recover the important data the sites contain. The EMP states that "*Complete and accurate notes of field procedures and results will be maintained and excavations documented with photographs, maps, profiles, and plan drawings*". This was not taking place at the time of the ECMG visit. The EMP also states that "*Under various field conditions, alternate subsurface techniques are employed. In many cases, excavated soil is screened to separate cultural materials from the surrounding soil matrix*". The screening of excavation unit and feature fill typically starting with a 1/4" screen is a universally accepted part of archaeological 'good practice'. In many cases, all of the samples of feature fill are retained for very-fine-scale flotation through #60 or higher mesh to recover important classes of artifacts (seeds, small animal bones, micro-flakes and chips from tool production) that are completely lost otherwise. Based on ECMG observations, fill from features and excavation units was not being screened or saved for future fine-scale screening.

The apparent absence of site treatment plans and provisions for mitigation measures at High and/or Medium priority sites is also of concern. Although some excavation has taken place at known High Priority sites, there are other mitigation measures listed in the EMP that should also be employed. Moreover, it is unclear what, if any, plans are in place to deal with important sites that are discovered during the course of trench and grading monitoring.

*Recommendations:*Near-Term Cameroon

- 15.1 Investigate pending disputes and issues (such as the potential damage to a grave in Mbong), and provide evidence that they have been reviewed and closed in consultation with the affected communities or individuals.

Near-Term Chad

- 15.2 Continue implementation of ECMG-recommended staffing program with the Chadian chief archaeologist to ensure that an adequate staff of archaeologists (approximately four, including a field supervisor) are on the job at all times until pipeline construction is complete.
- 15.3 Immediately provide additional field equipment and support to the Chadian field team conducting grading and trench monitoring. This equipment should at minimum be on a par with that provided the Cameroonian team and should include a field camera, GPS unit, ladders, screens, and all other standard equipment.
- 15.4 Immediately recruit and put in place a senior level technical advisor to the Chadian team to be with the field crew on a full-time basis, assist in developing clearer reporting procedures and standards, and develop appropriate site treatment plans that define priority of sites, nature and extent of construction effect, and nature of mitigation (avoidance, excavation including percent of site excavated, etc.).
- 15.5 Develop and supply a baseline laboratory facility in Chad.
- 15.6 Even though some excavation has taken place at High Priority sites, implement additional mitigation measures as described in the EMP (e.g. Right-of-Way Reduction; Hand Clearing/No Brushing or Grading). Site limits should be reviewed, revised if needed, and clearly flagged or marked before construction reaches them. Since at least one Medium Priority site has turned out to be larger and more complex than suspected, implementing these procedures at Medium Priority sites should also be considered.
- 15.7 Develop plans to recover information from sites impacted by construction and/or restoration in lieu of mitigation (e.g., site identified as EPA-6 to the ECMG). This may include an appropriate level of investigation at these sites in undamaged surrounding areas *after* construction is completed.

Mid-Term Cameroon and Chad (first quarter 2003)

- 15.8 Have site treatment plans available. Plans should include key personnel, key tasks and approximate schedule for completion, anticipated specialist analyses, and a draft report outline including both data and interpretation. The Project should ensure that the principal archaeologists who have conducted the fieldwork are retained to conduct the data analysis and report preparation.
- 15.9 Complete final mapping, draft report preparation, and final report preparation to the level that the results could be submitted for international peer review.

Long-Term Cameroon and Chad (within the next year)

- 15.10 Develop a communication plan for the results, and consider preparation of both a 'book' publication and distribution of images, maps, and all interim and final reports via World Wide Web and electronic means. This serves to widely distribute data and also as a method to enhance 'curation' of information.
- 15.11 Schedule for the acceptance and funding of sufficient resources to be given to the archaeologists to complete and publish their studies.
- 15.12 Incorporate cultural resource information into operations and management system, including GIS (if any) and databases.
- 15.13 Develop O&M policies for managing High Priority cultural properties should O&M activities require that they be disturbed.
- 15.14 Obtain determination of what curatorial repository will be used for materials in Chad and Cameroon. Obtain letters of support from appropriate government officials and/or ministries.
- 15.15 Assist the Governments in developing plans for curation that includes creation of national site registration system (if appropriate), physical needs for curation facility, cataloging requirements (if not addressed during analysis portion of project), and building national technical capacity through training of in-country cultural resource specialists.

## **Health**

### **16. First Aid and Medical Evacuation**

#### *Project Strategy:*

The EMP General Project Specification GPS 010, title 8, Table 3, requires a basic course in first aid for all staff and one worker at each work crew is to receive training in advanced first aid. This training should give the worker the capability of performing cardio-pulmonary resuscitation and control external bleeding. In addition, Contractors must provide prompt transportation for the injured person to an infirmary or trauma area. EMP JSCP-23 also requires that 10% of the workforce be trained in first response level first aid, and each work area should have, at a minimum, one first aid trained worker. The Contractor's health care provider needs to ensure initial stabilization of accident victims and to provide later evacuation to hospitals. Medical evacuation alternatives should be location-specific and need to be defined in each Contractor's Health, Medical and Sanitation Plan. Drills are to be conducted to train managers on evacuation procedures.

#### *Previous Recommendations:*

- Provide easily visible identification for all workers trained in advanced first aid.
- Ensure that an adequately trained worker is assigned to each geographically isolated crew.
- Review content of the first aid boxes to make sure their contents are adequate for the accidents most likely to occur.
- Improve communication systems for doctors and nurses in remote sites.

#### *Observations*

- Most first aid responders are wearing an identification sign on their hard hats.
- The ECMG has observed that the number of trained first aid workers is generally adequate. However, their distribution at work sites continues to be non-optimal. For example, in pipeline construction operations, nurses and first aid responders were found to be well represented, but they were not present in the backfilling operations along both Spreads 1 and 2. First aid responders were not found at the concrete plant, storage yard and workshops in Batchenga, in most crews at the Miandoum construction site and some Kome 5 Central Treatment Facility (CTF) construction sites, nor were they in sufficient in quantity at the same CTF (Zones 11 and 12).
- Many first aid responders did not have their box readily available (Miandoum). Several first aid responders' boxes were not adequately equipped (MCC construction site). SOS has purchased new boxes for TCC first aid workers in Komé and they are ready for distribution to the field teams.
- Pride and Schlumberger are working to provide basic first aid training to all workers, as required in the GPS-010 and are close to achieving that goal. All teams have sufficiently trained personnel.
- TCC's target is to provide basic training for 10% of the work force and to provide advanced training to some of those. However, the ECMG found that interviewed construction workers do not know what to do if an accident should occur.
- Saint Joseph Hospital, a private religious institution in Bébédjia, has provided, as required, emergency care to Project workers and to community members involved in

Project-related accidents. As camp populations grow, the Hospital emergency services need improvements to provide better 24 hour immediate care.

- Several truck clusters (convoys) were observed in the OFDA carrying Project-related loads. Trucks are to be treated as work teams, and therefore, they have to count on someone trained in first aid.

*Recommendations:*

- 16.1 Ensure that at least one individual in every work crew receives an Advanced First Aid Course (EMP General Project Specification GPS 010, title 8, Table 3).
- 16.2 Include basic first aid in toolbox meetings, and perform practical drills to demonstrate adequate response in the most likely accident situations for each operation. Ensure that all workers know what they should NOT do to accident victims and who they have to call when help is needed.
- 16.3 Ensure that first aid boxes are adequate for the type of work-related risks and that they are readily available and periodically resupplied.
- 16.4 Establish a formal contract or operational and financial agreement with Saint Joseph Hospital to provide emergency care and nursing services and to ensure that investments are made for hospitalization, safe blood transfusion and sterilization services.
- 16.5 Ensure basic first aid training for all truck drivers carrying Project-related loads.

17. **General Medical Care**

*Project Strategy:*

The EMP requires that Contractors have a Health Care Provider (HCP) with competence in the field of preventive medicine, the ability to properly handle trauma and emergency cases and experience in working in remote areas. The Contractors have been required to prepare Health Plans based on the guidelines provided by the EMP. The EMP also states that it may be necessary to update the Health Plans to the actual requirements of workers as the Project advances. Health clinics at work sites and at the main camps are required to be able to provide good primary care and maintain and operate a sick bay. Laboratory and X-ray equipment are important elements for following the procedures established in the medical protocols and should be installed at the clinics or made easily available from other health institutions in its vicinity.

*Previous Recommendations:*

- The Health Plans for camps where populations have outgrown the initial projections needed to be updated.
- Laboratory and X-ray equipment need to be procured or installed in some clinics.

*Observations:*

- The Spie-Capag clinic in Batchenga and the Willbros clinic in Dompta meet EMP requirements.
- New clinics are under construction in PS-2 and the Drillers' camp, and a 12-bed hospital is to be opened in few months at the MCC. However, updated Health Plans have yet to be prepared and approved by the Project.
- Improvements have been observed in relation to health staff. The PS-2 clinic will have an additional nurse. Each oil rig construction site has field medical personnel

with full equipment, and a medic with a fully-equipped ambulance trains the field medical personnel and backs them in emergency cases.

- Laboratory equipment has been installed in the PS-2, TCC-Komé, and the Drillers' camp and the PS-3 laboratory is under construction. The Drillers' camp clinic has made a satisfactory arrangement with TCC for using their X-ray equipment.

*Recommendations:*

- 17.1 Prepare written updated Health Plans for the Drillers Camp, PS-2, and PS-3 and have them formally approved by the Project.
- 17.2 Ensure that staffing and equipment of these clinics are according to the new upgraded plans.

18. ***Hygiene of Catering Services***

*Project Strategy:*

The EMP requires that the Project provide employees and visitors with food, laundry, housekeeping and office cleaning services at the Camps. Provision of a large number of meals may pose a high risk for the mass transmission of food- and water-borne diseases, causing outbreaks that could jeopardize the camp population and oil production activities. The GPS-002 provides a comprehensive guidance for safe food handling, from raw material selection and storage to food preparation, transportation, and serving and cleaning the kitchen and dining rooms.

The temperature at which food is served at work sites needs to be consistent with good practice, such as U.S. Public Health Service (USPHS) requirements or other similar international standard. Foods need to be balanced incorporating recommendations from a nutritionist (GPS-002, 1.2.4). Principles of hygiene and safe food handling and serving are to be applied for dispensing meals at work sites. GPS-021, General Project Specifications for Survey Catering Services, requires that food served at work sites shall be of good quality and in appropriate quantities, and that coolers are to be provided, if necessary to ensure that lunches in the field do not spoil.

*Previous Recommendations:*

- Ensure that kitchen insect screens are correctly installed. Automatic closing mechanisms need to be installed in kitchen and garbage storage buildings.
- Review and improve the layout of some kitchens to avoid cross contamination of raw meat and cooked food.
- Install hand wash basins for food handlers inside all kitchens.
- Install hand wash basins outside the restaurant areas, close to the entrance.
- Review all relevant procedures and ensure frequent monitoring and supervision of entire food handling operation.
- Carry out frequent retraining of all food handlers, focused on areas epidemiologically most critical.

*Observations:*

Hygiene at Kitchens and Food Handling Facilities

- External hand washing basins have been installed at all camp dining rooms visited.
- The Drillers' camp kitchen has been expanded and a new food preparation area has been added to reduce risks of food contamination. This kitchen operation is well

managed and safe, although drainage in the vegetable and fruit preparation room is inadequate, and the second door at the unloading area is missing and flies were found entering through this entrance.

- Hygiene in the TCC-Komé kitchen continues to be extremely poor. All improvements observed in the fifth ECMG visit have reversed. The trained food handlers and cooks present during the fifth visit are no longer employed and the training for food hygiene or learning methodology and techniques are apparently not adequate for the new employees. Cleaning and inspection for rodents and insects at the food storage area beneath the pallets are impossible, due to container stacking on wooden double-decked pallets. The wastewater drains are small and subject to frequent clogging with stagnant water on the kitchen floor. Worn floor surfaces expose the base plywood, which is wet most of the time, creating conditions favorable for bacterial growth. Hand washing facilities inside the kitchen are insufficient. Flies were present during the inspection. As a consequence, cross contamination between raw and cooked food may easily occur. ECMG warns that there is a high risk of food-borne disease outbreak from this kitchen.
- The *Boukarou* kitchen at TCC Komé serves approximately 6,500 meals a day, with very limited resources. Two tables have wooden work surfaces that are not in compliance with EMP requirements. This kitchen presents no significant improvements and the same unsanitary conditions observed since the second ECMG visit. Food is transported in plastic bags and trays in vehicles at room temperature. The risk of food-borne disease outbreak is extremely high from this kitchen.
- The temporary garbage storage facility for refuse generated in the TCC kitchen is not screened and located immediately outside the kitchen. Unsanitary conditions and very poor management were observed.
- The Miandoum *Boukarou* kitchen serves approximately 1,600 hot lunches. Unsanitary conditions at this kitchen create a significant risk of cross contamination and outbreaks. However, food is consumed soon after it is cooked, reducing the risk of outbreaks for the most common gastroenteritis.
- The Miandoum Senior Dining kitchen and the old camp kitchen at PS-3 are relatively safe.
- The Willbros kitchen in Dompta has inadequate space to separate food processing functions, facilitating cross contamination between raw and cooked food, and inadequate insect screening and cooked food storage temperature.
- The new PS2 Red Sea camp kitchen is spacious, well-designed and its operation is adequate, although some improvements are still needed (i.e., sinks for washing hands between the areas for handling poultry and other raw materials and cooked food, second door in the unloading area, location for garbage cans, size and design of drainage boxes).
- Temporary kitchen garbage storage facilities outside the kitchens had insect screens, but their doors were found opened in most camps (PS-2, PS-3, WSJV-Dompta, and Komé 5).
- TCC kitchens are managed by CIS. This caterer hires kitchen personnel through a local agency which is the formal employer. International SOS is responsible for the sanitary control and trains the cooks for CIS, which in its turn depends on TCC for acquisition of equipment and improvements in the facility. Taylor, the caterer for the Drillers' camp, has a full-time food hygienist who has full support of the camp boss. Taylor controls and makes management decisions for the kitchen.

### Hygiene for Work Site Meal Services

- The ECMG visited some work sites in the OFDA when meals were served. Good practice was observed at the Pride/Schlumberger work sites, where portable electric stoves for food heating and ice boxes for transportation are in use to safely transport food for each of the work teams. Work site meal service of TCC was found to be unsafe and not in compliance with the EMP general requirements, posing high risk for an outbreak of food poisoning or more serious diseases, including cholera.

#### *Recommendations:*

- 18.1 Review structural and hygienic conditions and management of kitchens and *boukarous* at all camps to comply with the Project EMP requirements and to ensure hygienic conditions. Trained food handlers and hygienists should be involved.
  - 18.2 Review and improve training methodologies, particularly at TCC/CIS kitchens, to ensure that managers, chefs and food handlers clearly understand the circumstances under which food contamination occurs and change their work habits to minimize risks from food-borne disease outbreaks.
  - 18.3 Keep food to be transported and served at work sites at safe temperatures and provide fresh drinking water daily.
  - 18.4 Study the feasibility, at the OFDA construction sites, of the approach used by Willbros in the ROW in Cameroon, where safe food catering is achieved from the local population. The local caterers are trained and supervised by the medical team. Caterers bring food in individual portions, stacked in pans each containing one type of food. Plates and tableware are brought by the caterer. The Contractor should train the local providers and inspect the food preparation.
  - 18.5 Include vegetables and fruits in the food served at work sites.
  - 18.6 Ensure that food handling activities, both at camps and at work sites, are routinely and frequently monitored by Project supervisors with adequate experience.
19. ***Hygiene in Camps and Facilities***

#### *Project Strategy:*

Project strategy is to provide safe living quarters for Contractors' employees and visitors. The EMP GPS-001, which offers specifications for camps and facilities, requires that doors have unique locks (either keyed or automatic, punch-coded locks) and shall open from within (outwardly). The EMP establishes specifications for living quarters and offices. A minimum space of 9 m<sup>2</sup> is to be allocated for each individual in the office.

#### *Previous Recommendations:*

Review the layout of workers' housing in the camps (especially camps at fixed installation construction sites) to make sure that living conditions do not represent a significant, incremental health hazard. This recommendation was mainly referring to the Building O in the TCC-Komé camp, where there was an accommodation for 96 persons set in modules of two double-bed bunks on each side of the aisle.

#### *Observations:*

- A new Building P has been added at TCC-Komé camp. It is of the same type as Building O, both full occupation. Each have seven toilet bowls, ten hand-wash basins, three urinals, and seven showers all located at one end.

- There are ten 96-person living quarters at the MCC camp, all at full capacity. No doors are available between the bed modules and the aisle in the 96-person buildings, which is a non-compliance with the EMP. However, installing doors in these high-capacity buildings would further increase their overcrowding and the health risks they pose. Between these buildings there are two separate washroom units with access doors at both ends. Each of these washroom units has seven showers, ten hand-wash basins, three urinals, and six toilets.
- The number of showers and wash basins is highly deficient in relation to EMP requirements for the 96-person buildings as shown in the table below.

Type of Facility	Number for 10 buildings At Komé MCC Camp			Number for 2 buildings At TCC-Komé Base Camp		
	Observed	EMP	Deficit	Observed	EMP	Deficit
<b>Toilets</b>	60	64	4	14	13	1
<b>Urinals</b>	30	38	8	6	7	1
<b>Showers</b>	70	96	26	14	19	5
<b>Wash basins</b>	100	240	140	20	48	28

*Recommendations:*

- 19.1 Review the layout of the 96-person buildings to reduce the high risk of respiratory and gastrointestinal diseases. The high number of occupants in the 96-person buildings, their location next to each other, and the insufficient and defective washroom facilities, represent a significant risk of respiratory and oral-fecal borne disease transmission for the whole camp's population. Construct additional showers and wash basins for the 96-person building clusters to meet EMP requirements.

20. ***Vector-Borne Disease Control***

*Project Strategy:*

The GPS-001 establishes strict control of insects and rodents which may transmit diseases. Control measures require that "each living quarter be outfitted with screen doors and windows and all buildings be made as insect-proof as possible by sealing the gaps between units and any spaces between air conditioners and buildings. All window screens of a mesh size appropriate for insects of the area should be in place and checked for tears. Strips 4 cm wide, impregnated with insecticide (Permethrin), and should be hung in doorways to help mosquito/fly control in buildings". GPS-002 requires that "laundry facilities include procedures and provisions for permeation of clothing, barrier curtains, uniforms, mosquito nets, and other designated materials with Esso approved insect repellent solutions (generally Permethrin based)"...Contractor shall emphasize insect and rodent control as a major priority, daily ascertaining that garbage areas are clean and free of rodent signs...Cleaning will include the application of insecticides and disinfectants approved by Esso...Holes and depressions that could trap standing water shall be filled" GPS-010 requires the Health Care Provider to carry-out Public and Environmental Health Control Program, which shall include the establishment of procedures and routines for vector-control operations within the camps and direct

larviciding, spraying, and other environmental control measures to reduce vector populations. The EMP gives an example of a Malaria Control Program including personal protection, vector control, training, and diagnostic methods and treatment.

*Previous recommendations:*

- Install automatic closing mechanisms in the doors of the living quarters.
- Fix the leaking faucet at Komé Atan and periodically remove the garbage to avoid vector borne disease outbreaks to the camp population.

*Observations:*

- Automatic door closing mechanisms have been installed in living quarters.
- Malaria is a major cause of medical consultation among the general population and the workers. The Project has launched a proactive and very intensive Malaria Control Program (MCP) to achieve zero cases of the disease among non-immune personnel and zero serious cases (hospitalizations) in semi-immune personnel. As part of the MCP, the Project has recently developed and implemented a Malaria Chemoprophylaxis Compliance Program (MCCP) to ensure the proper use of effective (project-sanctioned) malaria preventative medication by non-immune Project personnel. This is done through unannounced, random, and periodic testing of urine specimens of the non-immune personnel. Any individuals who are unwilling or unable to agree to the MCCP will be considered unfit-for-work in Chad or Cameroon.
- Mosquito breeding is not a problem within the camps. Larvae and adult *Anopheles* mosquitoes were not observed in the camp or surrounding areas. However, residents at the TCC Komé camp indicate that mosquitoes are present around their living quarters during evening hours. Mosquito repellent is easily available to residents in all camps.
- The Vector Control Program at the camps includes periodic outdoor spraying, tank spray, physical larvae control, baseline surveying, indoor spraying, and impregnation of clothes, fogging, pest control, and team training.
- Insects and rodents may reach the camps in places where the spontaneous villages are nearby (i.e., Komé Atan and the new Komé-5 village). The ECMG was informed that numerous rats were trapped in the MCC kitchen and surrounding areas last September, showing that preventive measures have not been effective or timely. However, Komé Atan, where stagnant water can be observed at many locations, has been included in the Komé Base Vector Control Program for mosquitoes.
- The ROW construction crosses several rivers and creeks in environments favorable for the breeding of black flies, vectors of “river blindness” (Onchocerciasis), and tsetse flies, vectors of “sleeping disease” (African Trypanosomiasis). Several blind beggars were observed along the road in areas close to the M'Béré River. This observation suggests the possibility that river blindness is a significant hazard. Tsetse flies had been found last year in the Bam area, but were not found to be infested and as of yet no infected insects or cases of these diseases have been reported in the clinics.

*Recommendations:*

- 20.1 EMP monitors need to follow-up the rodent situation in the MCC camp.
- 20.2 Inspect and, if needed, take measures to reduce vector breeding in Kome 5 spontaneous village as it is currently done in Komé Atan.

- 20.3 Improve drainage of stagnant water in Komé Atan and promote increasing the availability, the quality, and use of latrines in order to reduce the fecal contamination of the ground.
- 20.4 Ensure monitoring of the presence of black and tsetse flies in the vicinity of rivers or creeks with tree stands.

## 21. *Community Health*

### *Project Strategy:*

Epidemiological surveillance of the community affected by the Project is considered a Government responsibility. However, the Project promotes and finances through the community health outreach program, CHOP, some selected educational activities and mosquito net distribution through non-governmental organizations. The community health education component of CHOP is targeted to Sexually Transmitted Diseases and AIDS prevention in the communities impacted by the Project. The World Bank Technical Assistance projects for Chad and Cameroon are intended to strengthen the governments' capacity to monitor the Project impact, including community health. CPSP in Cameroon and CTNSP in Chad both have missions to monitor the impact of the Project.

### *Previous Recommendations:*

- Since the second visit, the ECMG has emphasized the need to have the government actively monitoring the Project's potential impact on the public health.
- There is a need to collect baseline data on HIV prevalence to better follow-up the epidemiological trends.
- It would be useful to hire a senior epidemiologist to analyze the medical records of the Sogea Satom clinic.

### *Observations:*

- The Cameroonian Government has identified five focal point professionals, representing the five provinces crossed by the Project. They are to be in charge of following up epidemiological data on both the Project clinics and the Government's health centers. The Government has also established a health center in Bemboyo, staffed with a nurse (*infirmier breveté*) in a building temporarily rented and supplied by the Project. This health center is part of the governmental health care delivery network and will function under normal administrative procedures and technical supervision as the other public facilities. Renewal of the stock of medicines by the Government of Cameroon will be subject to availability of resources obtained from selling the drugs to the users.
- The Chadian Government has hired a physician and a safety and health officer, as part of the CTNSC, to monitor the Project activities. A Plan of Action for monitoring health indicators in the camp has been prepared.
- CHOP's health education actions carried out through NGOs are focused on STD/HIV and are now synchronized with the pipeline construction operations. Communities close to the ROW are receiving orientations on sexually transmitted diseases, especially on AIDS and HIV. The ECMG has received information that the Program also has developed activities in the villages which has been most impacted by the Project such as Douala, Ngoumou, Batchenga, Gbenboy, Nanga Eboko, Bemboyo,

Bélabo, N'Gaoundal. The ECMG had the opportunity to verify the preparation of a series of community activities at the Bemboyo village.

- The World Bank CAPECE supervision mission has visited Cameroon in June/July. Details of this activity are reported in this document in the CAPECE section. The mission has emphasized the need to accelerate the execution of the health activities, especially those related to a strategy to cope with STD/AIDS. The need to carry out a seroepidemiological and behavioral study, a sensitization program to put in place a participative process to fight STD/AIDS, and a program to promote the use of condoms has been emphasized. However, the Ministry of Health representative of the CPSP, who held discussions with the World Bank mission, informed ECMG that the seroepidemiological study will not take place.
- The Project to fight AIDS in the Oil Exploration Zone, financed by the World Bank in Chad, is being satisfactorily executed and is being regularly followed-up by a specialized consultant and the Bank's representation.
- The Project clinics are carrying out health education activities to its employees to control the risk of STD/HIV and are making condoms easily available to them at the camps and work sites.

*Recommendations:*

- 21.1 The Government of Cameroon should carry out the seroepidemiological and behavioral study as planned.
- 21.2 Improve the basic sanitation at Komé Atan and Komé 5 settlements and carefully monitor the incidence of communicable diseases, as well as health actions to prevent them.
- 21.3 Design and implement systematic communication mechanisms on selected diseases between the camp clinics and the health authorities in order to expedite emergency interventions when disease outbreaks occur, either in the villages or in the camps.
- 21.4 Request the Sogea-Satom clinic medical records and keep them for future analyses if necessary.

22. ***Drinking Water Quality Control***

*Project Strategy:*

The EMP requires the provision of sufficient potable water to all site personnel, including Contractor and Project employees and authorized visitors. Drinking water is to be tested for organic and inorganic pollutants initially and at the completion of its operations at a given site, at a minimum, and testing for microbiological pollutants weekly. Testing for pollutants is to be carried out using methods in Standard Methods for the Examination of Water and Wastewater (APHA, 1995). General project specification for potable water treatment, and storage, and distribution is detailed in GPS-003.

*Previous recommendations:*

- Standardize drinking water laboratory tests, and keep records of the results.
- Strengthen the supervision of Contractors' drinking water testing and record keeping.
- Efforts should be made to maintain pH between 6.5 and 8.5 at all camps to ensure efficient chlorination and sufficient free chlorine to Project treated water from recontamination.

- Ensure that written standards for drinking water sampling, analysis, interpretation, corrective measures, and record keeping are available on site to all contractors, and distribute results to all persons involved in drinking water quality control.

*Observations:*

- Drinking water quality analysis is being carried out in compliance with the EMP requirements in all visited camp laboratories (WSJV in Batchenga, PS-2, and TCC-Komé).
- TCC Komé camp has acquired a pH adjusting module which had not been installed yet at the time of the ECMG visit. Records show that its pH is (naturally) constantly around 5.5.
- The Project prepared a standard drinking water analysis protocol. However the protocol was found by the ECMG to be not available to all the Contractors (e.g., TCC-Komé drinking water control team).

*Recommendations:*

- 22.1 Install the pH adjusting module at the TCC-Komé water treatment plant.
- 22.2 Ensure that all the Contractors and, specifically, their EMP and water control teams receive the standard protocol for drinking water analysis prepared by the Project.

## **Safety**

### **23. Operational and Worker Safety – Construction Phase**

#### *Project Strategy:*

The Project places considerable emphasis on the issue of safety. A sustainable Safety Management System is in place including dedicated safety personnel and safety procedures. Construction activities are evaluated through a Job Safety Analysis (JSA) process and results are intended to be shared by Project employees at different levels according to different responsibilities. Operations are evaluated, not just from the standpoint of worker safety, but also environmental protection, third party safety and protection of goods. Specifically with respect to worker safety, the Project is committed to provide a safe working environment with appropriate Personal Protective Equipment (PPE) at all levels, including Contractors and their subcontractors.

#### *Observations:*

ECMG's observations during this visit are essentially similar to those identified from the past two trips. Several additional JSAs have been developed during the construction development, but the ECMG has still observed field practices which are not compliant with defined job procedures.

Progress has been made in translating JSAs for workers who are not fluent in English or French, primarily for the Latin American workers who speak Spanish. Nevertheless, the process of translation is still not complete and some communication difficulties were still observed in the field.

The differences in safety statistics performances between the two pipeline installation spreads are confirmed. Even if the Total Recordable Incidence Rate (TRIR) and the Lost Time Incidence Rate (LTIR) are satisfactory compared to other Oil&Gas project developments and other industry sectors, the comparison between the performances of the two spreads confirms the significant difference reflected in the safety statistics as noted during the previous ECMG visits.

The unavoidable conclusion from these repeated observations is that management and workers with pipeline construction Spread 1 have not yet reached the same safety attitude and consciousness as those with Spread 2. It is recognized that the safety management team of Spread 1 has been changed and progress in this area is anticipated by the Project.

The use of PPE is widespread and generally appropriate. However, as noted during previous visits, examples where the PPE was not appropriate to the task at hand have been observed during the mission.

#### *Recommendations:*

- 23.1 Improve communications to workers and place greater emphasis on the performance of field safety advisors to ensure that results and recommendations from the JSAs are adopted in the field.
- 23.2 Continue the translation of the JSAs into languages spoken by the workers.

- 23.3 In reviewing work procedures and safety ethics of the different work forces, place emphasis on the activities of Spread 1. Monitor the performance of the newly appointed safety management team;
- 23.4 Safety supervisors in the field need to ensure that appropriate PPE is used for the different operations.

## 24. **Road Safety**

### *Project Strategy:*

The Project is placing a considerable emphasis on the issue of road safety. Significant progress regarding safety has been made along the roads upgraded by the Project. As highlighted in previous ECMG reports, in both Cameroon and Chad, road design is consistent with respective government standards and the design details have been approved by the respective governments.

### *Observations:*

The ECMG notes that the infrastructure, awareness programs, and safety procedures associated with the Project along the roads either constructed or repaired by the Project have been generally well implemented. Safety management issues were raised by the ECMG where Project traffic has been forced to use non-Project roads, but at this point in time, most of these issues are closed, due to the discontinued use of non-Project roads.

High road safety standards have been achieved along Project roads particularly in Cameroon where the adoption of DBST (double bitumen surface treatment) has demonstrated its efficiency during the rainy season, as well as the capacity to prevent unsafe driving conditions during the dry season because of dust.

The efficiency of the road by-passes in Chad has been observed by the ECMG. However the effects of dust on safety along the roads are apparent. The ECMG has observed the absence of DBST or equivalent measures to mitigate these effects, which are particularly significant in the OFDA region, where the high traffic conditions and the soil environment, even at the end of the rainy season, have caused dust to become problematic. Immediate actions should be taken by the Project.

Tangible progress has been achieved in the OFDA road network, where side walkways are now available to the locals. In spite of this positive Project action, ECMG has observed many locals using the main road.

An observation of the ECMG since the first mission has been that the driving practices of some of the expatriates in both Chad and Cameroon are not consistent with the safety standards of the Project. The ECMG has noticed on several occasions examples of speeding and driving without safety belts and in most cases the individuals associated with these practices are the expatriates.

Several truck clusters were observed along Project roads and in the OFDA, in their return trip after having unloaded their Project-related loads. As they were not organized in convoys, they did not have an escort car and they were speeding.

Finally, the use of flagmen is impressive particularly in the OFDA, but in many cases this practice has been observed to be ineffective and redundant.

*Recommendations:*

- 24.1 Implement a safety awareness and educational program in the OFDA region through a socio-economic team in the field to educate the locals to the new busy traffic conditions along roads and to stimulate the use of side walkways.
- 24.2 Adopt DBST or equivalent solution to reduce the risk during driving due to dusty condition in Chad and particularly in the OFDA region.
- 24.3 Monitor the behavior of the returning trucks and the formation of *de facto* return convoys, and develop measures to mitigate their impact on road safety, as needed.
- 24.4 Continue monitoring of motor vehicle operation and enforce tough sanctions, especially with the expatriate workers.

25. ***Access Control and Fencing***

*Project Strategy:*

The Project is placing a considerable emphasis on the issue of induced access control. Safety and security measures have been adopted to avoid and/or minimize the interference of Project activities with third parties.

*Observations:*

Some improvements have been noted in isolating the camps and workplaces along the pipeline route from third party intrusion. However in several cases (e.g. Batchenga, Komé batch plant, etc.) significant operations are still taking place outside fenced areas even if within compensated areas. The presence of fencing may represent a significant deterrent to unauthorized voluntary intrusion and its absence, particularly for long term installations, could lead to accidents or criminal activity. Finally, fencing is an EMP requirement.

*Recommendations:*

- 25.1 Review or adopt fencing of temporary Project facilities (e.g. camps, bases, and yards) and long-term construction workplaces.
- 25.2 Continue to provide security personnel (access control) at workplaces (Spread 1 and Spread 2) along the pipeline route, when and where construction activities are executed, to monitor induced access, avoid unauthorized intrusion and minimize the risk for third parties.

26. ***Diesel Fuel Safety and Management***

*Project Strategy:*

The management of the supply of diesel fuel for Project is the responsibility of EEP/CI/TOTCO/COTCO.

*Observations:*

The fuel supply contract with Mobil has been finalized and very recently put in operation. A specific Fuel Safety and Management Plan has been developed and forwarded to Contractors. The ECMG, however, has observed very basic violations of safety rules in the field. Some fuel trucks have been observed to be speeding and in some occasions

equipped with empty or unqualified and unlabeled extinguishers. Oil spill kits were missing as well in some trucks (see Section 31) in non-compliance with EMP requirements.

*Recommendations:*

- 26.1 Implement the Fuel Safety and Management Plan, consistent with the recommendation presented in the previous ECMG reports.
- 26.2 Ensure that all EMP required equipment, including basic fire-safety equipment is available to drivers in the fuel-trucks.

27. ***Fire Safety***

*Project Strategy:*

The Project places considerable emphasis on the issue of fire safety. Internationally recognized rules and recommendations are adopted to minimize the risk of fire at workplaces during the construction activities.

*Observations:*

ECMG noted that significant improvements have been made with respect to fire preparedness since the last mission. In particular, the ECMG noted that fire fighting equipment (e.g. extinguishers, water hoses) are well located and managed to a much better degree than noted in the past.

28. ***Safety Management System and Organization***

*Project Strategy:*

A dedicated Safety Management System is in place, including dedicated safety personnel and safety procedures (e.g. working procedures, JSAs, safety statistics, etc.). Specific safety responsibilities and duties are defined according to Project organization systems developed by EEPCI/TOTCO/COCTO, Contractors and subcontractors.

*Observations:*

Some improvements in the safety management systems have been observed, especially with respect to the availability of safety statistics and safety feedback to the personnel responsible for safety in the field.

ECMG has reviewed raw data used for safety statistics. ECMG's perception is that the Project's use of OSHA guidelines for external reporting tends to narrow evaluation criteria for processing safety data. Furthermore the ECMG has noted a significant difference in the attitude of the different working teams to take advantage from the interpretation and processing of safety statistics data. While specialized drilling contractors demonstrate their effort to "learn" from "errors" and to use the available safety statistics data, construction contractors, particularly at in the Komé area, have not demonstrated that these data are used and if the necessary feedback is ensured.

*Recommendation:*

- 28.1 Ensure that all Contractors have dedicated sufficient effort to keep focused on safety improvements through the analysis of safety statistics. Be sure that safety statistics are used to “learn” from “errors” and to tune future operations, instead of simply recording the actual status.

## **Biophysical Environment and Environmental Management**

### **29. Water Resource Protection**

#### *Project Strategy:*

The EMP contains requirements for groundwater resource protection that include the installation of monitoring wells around the waste management facilities, as well as the monitoring of community water wells to be assured that Project water supply wells do not adversely affect local water quantity or quality. The EMP also has a requirement for limiting withdrawals of surface water to no more than 10% of a surface water body's flow or volume. If Project water consumption has been found to adversely impact a community water supply, the impacted inhabitants are entitled to receive an alternative water supply.

The Project has developed a Water Monitoring Program which has eight components that includes:

- 1 Surveying of local surface water and groundwater usage practices prior to the commencement of Project-related surface water and/or groundwater withdrawals;
- 2 Monitoring of local surface water and groundwater resources while Project-related construction phase water withdrawals are occurring;
- 3 Monitoring of water obtained from Project-installed groundwater source wells/boreholes;
- 4 Regional groundwater monitoring program in the OFDA;
- 5 Monitoring of local groundwater and surface water resources in the immediate vicinities of the Project's permanent facilities in the Republic of Cameroon;
- 6 Groundwater monitoring at the Project's engineered solid waste landfill sites;
- 7 Monitoring of liquid effluents discharged directly to onshore surface water bodies;
- 8 Monitoring of liquid effluents discharged directly from the Floating Storage and Offloading (FSO) Vessel.

#### *Observations:*

Observations on the status of the water monitoring program for the Project follow:

- 1 Components Nos. 1 through 3 and Nos. 5 through 7 are consistently conducted. Flow meters to measure water consumption from water withdrawal points are still to be installed in the OFDA;
- 2 Regarding the Component No. 4 on regional groundwater monitoring program in the OFDA, directed mainly at monitoring water quality, dedicated monitoring wells are still to be installed. Groundwater depth data have been collected for the past seven months from local community wells. Groundwater quality data are also collected from village wells located within one kilometer of the Project sites.
- 3 The Project plans to detail the Component No. 8 for the monitoring of liquid effluents discharged directly from the FSO vessel at least six months prior to First Oil.

ECMG observed that record-keeping of water usage and groundwater depth in the OFDA is maintained and analyzed by the Project. Based on recorded water consumption and on water depth measurements at the community wells, no significant impact on local community wells in the OFDA due to groundwater pumping has been determined by the Project. According to the Project, future groundwater withdrawal rates should not be

greater than the past and current rates; therefore, a more noticeable impact on the resource than the one observed to date is not expected.

As expected, due to poor construction and poor maintenance typical of the village wells, the results of the chemical testing conducted on groundwater samples collected from the selected wells at the OFDA show low quality conditions in many instances with several parameters non-compliant with World Health Organization (WHO) guidelines for drinking water. However, the Project indicated that these conditions were documented during the Environmental Assessment process, prior to the commencement of Project construction activities. In particular, the water in many community wells contains levels of fecal coliform bacteria that exceed WHO guidelines. Water in the OFDA also has a naturally low pH (i.e., 5-6).

The Project took actions to identify and focus monitoring on existing and potential “hot spots” in terms of water resource protection, water use and discharge, taking into consideration hydrogeologic and hydraulic watersheds, specifically at the OFDA, rather than delineate users within a one kilometer radius of a Project well consistent with the monitoring program. The community water supply (a spring) at Ebaka I, although farther than one kilometer from the PS-3 location at Bélabo, has also been tested to obtain baseline data during construction activities.

Although data are being consistently gathered from local community wells and the Project is improving its general understanding of the local aquifer characteristics at the OFDA, the ECMG considers that water level and quality data collected from those points are not fully reliable, as it is likely that water levels fluctuate during the day as a function of usage, as well as due to characteristics of the wells in terms of construction and maintenance. Although the measurements from the community wells collected over the past seven months are indicative that it is unlikely that the Project is having an adverse effect to community water supplies, full closure of this issue can result only from the construction of dedicated monitoring wells that will provide accurate water level data and being able to demonstrate that the extracted quantities of water are insignificant based on simple water balance measurements.

An issue of concern for ECMG is that environmental staff at the field level have often showed a poor understanding of local aquifer characteristics. This may impact field decisions and advice, both for contingency actions (e.g., in case of spills) and for locations of temporary facilities.

Although some incidents related to the short-duration impact of village water supplies with turbid water at pipeline construction sites in Cameroon have been reported and non-compliances opened by the Project EMP monitors, the extraction of water from the surface water regime and the discharge of hydrotesting water and trench water have been properly addressed by the Project EMP organization. Relevant operations appear to be conducted consistent with Project EMP requirements, including minimization of discharges to surface water bodies, mitigation of soil erosion, stream/river bottom scour and the suspension of sediments, and turbidity monitoring.

*Recommendations:*

- 29.1 Revise, through the use of the Change Management Process, the Component No. 5 of the Water Monitoring Program to include the installation of dedicated groundwater monitoring wells at selected locations in the vicinity of the two Pumping Stations and the Pressure Reducing Station in Cameroon.
- 29.2 As soon as practical, finalize the design of the monitoring well program under Component No. 4 such that the regional characteristics of groundwater flow will be well defined. Expedite the installation of the monitoring wells at the OFDA. A phased installation strategy is strongly recommended to make sure that a statistically significant amount of data in potentially critical areas and at oil well sites already drilled are obtained in a timely manner prior to First Oil. Consider installing nested wells at different levels within the unconfined and semi-confined aquifers near pumping wells to quantify the influence of water withdrawals on different aquifer systems with pumping tests.
- 29.3 Continue the data collection and develop basic hydrogeologic tools, such as groundwater flow and vulnerability maps, to assess groundwater conditions in terms of water extraction and quality and to provide evidence that impacts are not significant, especially in the OFDA.
- 29.4 Provide training and information material to field staff with the aim at a full understanding of groundwater protection concept.

**30. Waste Management***Project Strategy:*

Waste management as defined in the EMP includes a comprehensive list of activities: education and training; recycling; transport, treatment, storage, disposal, and monitoring of non-hazardous and hazardous waste; groundwater monitoring at engineered solid waste landfills; sewage collection, treatment and effluent monitoring. The Project plans to construct two engineered solid waste landfills to dispose of hazardous waste and non-hazardous waste, and a hazardous waste incinerator in Komé. A second third-party incinerator has been identified in Douala. Some innocuous solid wastes are disposed of in dedicated pits at properly designated locations, which are surveyed by the Project.

Engineering, Procurement and Construction (EPC) Contractors involved in construction tasks have developed their Waste Management Plans consistently with EMP requirements. Contractor Plans have been approved by Project EMP management. EPC Contractors need to provide domestic waste water collection and treatment systems for the work camps. They have to manage, segregate, and dispose of their innocuous wastes, and deliver their non-recyclable hazardous wastes to the Project facilities for temporary storage and/or disposal, which are located in the OFDA in Chad, as well as at the pump station locations in Cameroon.

*Observations:*Solid and Hazardous Waste Storage, Treatment and Disposal Facilities

Since the permanent waste management facilities in Cameroon and Chad are still to be made available by the Project, an increasing pressure on the waste management organizations of the EPC Contractors has been observed. The delay in making available the permanent waste management facilities poses some risk in terms of environmental and health protection.

The ECMG has observed significant effort by the Contractors to guarantee the safe storage of hazardous waste, despite that the newly constructed temporary storage facilities at PS locations are still not available for use, and to perform efficient incineration of burnable non-hazardous, non-toxic waste, and burial of innocuous waste. This is particularly evident at the Komé Base TCC Camp, where daily waste influx, including some waste streams generated at Pride-Schlumberger Camp, poses a significant burden on the currently available storage and incineration facilities. At Komé TCC, the practice is still to continue to burn kitchen waste and other wood/paper fuel in open air due to the municipal waste incinerator's inability to keep up with demand and due to the recent decision to burn non-sharps medical waste at the incinerator, after a modification to the EMP Waste Management Plan, in accordance with the Project's documented Change Management Process.

In order to manage the significant amount of waste generated at Komé and ensure compliance with the EMP requirements, a Komé Waste Management Team has recently been established, led by a senior TCC manager. New equipment, including a new domestic trash incinerating unit, has arrived on site. Site preparation for the Komé Waste Management Facility has also begun and a rotary kiln incinerator is being reportedly shipped to Chad. The Project also confirmed that the engineered landfill at PS-3 in Bélabo, Cameroon, under construction and specifically designed to accept hazardous solid waste, may also be used to dispose of limited quantities of non-hazardous solid waste.

The Project is still working on the contractual and technical issues with a third-party offering hazardous waste incineration services, BOCOM, Douala, to be able to meet applicable Project EMP requirements. These include hazardous waste management procedures and operation of the hazardous waste incinerator, which is planned to be used for disposal of Project waste generated in Cameroon as well as wastes from other generators. Spent oil in Cameroon is collected and sent to a third-party facility (BOCAM, Douala) for processing prior to being sent to a cement kiln to be used as fuel. However, the preferred, appropriate disposal solution for this waste stream generated in Chad is still to be identified by the Project, and therefore spent oil is stored at construction sites.

Although the ECMG has encountered generally compliant waste handling procedures at construction camps, some problems were still observed in sanitizing the manual segregation of domestic waste and food refuse streams (e.g., at TCC Komé Base camp) and to manage the innocuous waste dump sites (e.g., at TCC PS-2 camp) in compliance with the EMP requirements.

Bioremediation procedures for treating fuel-contaminated soils are just being issued by the Project. The procedure states that the Project will use the Total Petroleum Hydrocarbon (TPH) criterion in monitoring the effectiveness of the bioremediation process at individual sites, and in determining when the treatment process should be stopped at each site (that is, the treatment "end point"). The Project will discontinue bioremediation when TPH content ceases to appreciably decline, but in all cases at a level where there is no threat to local populations or the environment. ECMG notes that, in absence of an applicable national regulatory framework, the Project has committed to

adopt treatment end points which will be site-specific, taking into account potential risks to closest human and environmental receptors.

#### Sewage Management

Sewage treatment plants are operational at the camps and being upgraded at Komé to meet growing population needs. Additional treatment plants are available at TCC Komé and will be installed as needed. The Project routinely discharges treated wastewater effluents to land surfaces, and not to water bodies.

The ECMG has noted that sewage treatment is generally provided in compliance with EMP requirements, although during the mission at least one case of deficient design and unsuitable location for a sewage discharge pipe was found (i.e., leach field for the Red Sea camp at PS-2).

Monitoring of the camp effluent is being routinely conducted and documented by the Contractors. Though monitoring is in compliance with the EMP, the ECMG noted that it is not conducted in a consistent way by the Contractors, who test the effluents for different parameters and with different frequencies.

#### Industrial Wastewater Management

Other wastewater discharges generated during the construction phase include *inter alia* water discharges from pipeline hydrotesting, storm water discharges collected from potentially polluted surfaces and treated through oil/water separators (OWSs), construction plants (e.g., batch plants at permanent facility construction areas).

Hydrotesting of the installed pipe has taken place along both Spreads and, as noted in the previous mission, the water discharges were reported to be within acceptable limits. Hydrotesting of other installed lines, including trunkline and flowlines in the OFDA and permanent facility lines, has also started.

Camp's hydrocarbon storage tanks and filling stations are equipped with oil/water separators (OWSs). As a result of the previous mission, ECMG recommended starting a review and maintenance program of the OWSs to address issues, such as poor maintenance, lack of personnel training, and questionable treatment capacity, particularly at permanent facilities. Since then, no significant actions have been taken to improve management of the OWS, despite some minor structural enhancements that were observed and some upgrades that have been recently proposed (e.g., Environmental Compliance Initiative from WSJV to improve Batchenga X-Doba OWS). However, the Project has confirmed that this program is starting. ECMG inspected several OWSs, and oily water was observed at most of the locations checked. The case of greatest concern is the Mobil filling station in Komé Base. Also, the curbs at the PS-3 filling station are broken and are not capable of containing a spill.

The ECMG has also inspected the secondary containment of several fuel tanks at the camps and construction sites for permanent facilities, and found several cases which are not in full compliance with EMP requirements, in terms of containment integrity and/or OWS availability.

Wash water from cement batch plants at main construction sites is a significant waste stream. Monitoring of the cement wash water disposal at the main construction areas for permanent facilities is not consistently implemented by the Project.

#### Management of Drilling Fluids

The Project has designed its management, decommissioning, and reclamation of drilling reserve pits consistent with procedures developed by the oil industry and sanctioned by regulatory agencies in several developed countries. Reserve pit samples from five OFDA wells were analyzed in May 2002 by the Project for hydrocarbons and metals, using the internationally recognized US Environmental Protection Agency (USEPA) Toxic Characteristic Leaching Procedure (TCLP) in order to check their non-hazardous nature. The results confirmed the non-hazardous nature of tested muds. Based on these results, a Change Management Process was activated by Project CPMT and has been closed out by the EMP organization in September 2002 to allow for use of unlined reserve pits. Meanwhile, in July 2002 a fluid disposal and reserve pit closure procedure for lined pits has been finalized by the Project.

#### *Recommendations:*

- 30.1 Expedite construction of the permanent waste treatment and disposal facilities in the OFDA and provide a firm schedule for their availability.
- 30.2 Verify and ensure that the municipal waste incinerators have sufficient treatment capacity at all the main camps, and specifically at the TCC Komé Base Camp.
- 30.3 Verify and ensure that the handling of waste when undergoing manual segregation is conducted by the Contractors in a sanitary manner throughout all the camps, implementing segregation at the source, frequent spraying to reduce flies and other insects, and/or conducting the segregation in a properly screened area.
- 30.4 Verify and ensure that all the innocuous waste dumps are properly located taking into account environmental conditions and site layout, and managed according to the EMP requirements.
- 30.5 Ensure third party (BOCOM) hazardous waste incinerator facilities and operations meet necessary standards in terms of environmental and health protection and safety prior to Project use, applying at least the same level of environmental scrutiny and safeguards, as it was planned for the Project-specific incinerator in Belabo.
- 30.6 Ensure that hazardous waste is properly stored and transported from the Project sites to adequate temporary storage facilities, compliant with EMP requirements.
- 30.7 Expedite a design/maintenance review and upgrade program for the OWSs at permanent and long-term facilities. Enhance the design and implement measures to reduce the potential for significant amount of influent, for example considering placing operations under a roof at the Komé filling station. Ensure frequent inspections of OWSs and implement periodic monitoring of effluents. Assess and clean up, if needed, dry wells or leach fields which may be potential sources of groundwater pollution.
- 30.8 Upgrade secondary containments of above-ground storage tanks as needed to make them compliant as soon as practical and implement regular inspection and maintenance of all their discharge points.

- 30.9 All types of hydrotesting water (including pipeline, flowlines and the OFDA trunkline) need to be consistently tested to provide evidence of their non-toxic characteristics.
- 30.10 Ensure proper monitoring (quantity and quality) of water discharges at construction areas for permanent facilities, including *inter alia* periodic inspections of washout pits and batch plant operations.
- 30.11 Complete the assessment of the reserve pit closure procedures to be adopted to ensure and document that the selected drilling waste disposal options do not represent a risk to human and environmental receptors, and incorporate the results in the Change Management close-out procedure to allow the use on unlined reserve pits. Consider developing a fate and transport model for typical OFDA well sites and collecting environmental samples from dedicated monitoring wells, taking into consideration potential human and environmental receptors.. Revise the reserve pit closure procedure taking into consideration the results of the drilling pit fluid disposal assessment.

### 31. ***Leak Detection and Oil Spill Prevention and Response***

#### *Project Strategy:*

The pipeline leak detection capability of the future operating pipeline is achieved by:

- Ensuring pipeline integrity (corrosion resistant coating, QA/QC on welds, hydrotesting, burial depth, pipe wall thickness increased at sensitive sections, concrete coating in wetlands and river/stream crossings);
- Conducting routine systematic and regular inspections of the entire ROW via aerial surveillance and field maintenance teams;
- Periodically performing internal inspection using “intelligent pipeline pigs”;
- Continuous pipeline integrity monitoring by adoption of a Supervisory Control and Data Acquisition (SCADA) system utilizing a fiber optic communications network;
- Continuous analyzing of field data from SCADA by a dedicated Leak Detection System (named ATMOS PIPE);
- Operating the Central Pipeline Control Center (OTCC – Oil Traffic Control Center) located at Komé , with an additional (back-up) control center at PS-2.

The EMP contains requirements for responding to fuel spills and mitigating the environmental impact of such spills. A General Oil Spill Response Plan (GOSRP) has been developed by the Project. Spill Response Plans have also been implemented by each EPC Contractor. The GOSRP serves as a framework for Area-Specific Oil Spill Response Plans (ASOSRPs) required for each defined project area and response sub-organization to be located in Chad and Cameroon.

Project sites, fuel tank trucks and convoys need to be equipped with kits for responding to spills of hydrocarbons, acids, caustics, and other types of dangerous/hazardous/toxic substances.

#### *Observations:*

The ECMG understands that the engineering aspects related to the Real Time Leak Detection System adopted by the Project stays with the QA/QC management for the project. The information made available to ECMG, provided by the Project at the time of this visit, was limited according to the current status of the project development. The

ECMG, however, intends to review during future visits, and prior to First Oil, those aspects of the Leak Detection System that have potential implications and interactions with EMP overall goals and criteria. In particular the following aspects will be monitored to evaluate the interaction and the impact on ASOSRPs and GOSRP, with respect to the overall EMP requirements:

- Quantitative reliability and availability of the overall Leak Detection System and its sub-systems, including the fiber optic communication network;
- Expected spilled oil quantities along the pipeline depending on pipeline failure (e.g. 2 % - minor, 20 % - medium, 100 % equivalent diameter holes), location (along the entire pipeline route, depending on pipeline profile and according to location of interception valve) and assuming correct intervention of the leak detection and interception systems.

The ECMG was informed that the six ASOSRPs (two for Chad and four for Cameroon) underwent joint review among ExxonMobil, EEPCL, COTCO, TOTCO and representatives of the Governments of Chad and Cameroon, with conclusive items of the review witnessed by representatives of the World Bank Group. A qualified Independent Reviewer has been hired to conduct third-party review of the plans. A Public Consultation/Disclosure Plan for the four Cameroonian plans has been provided to ECMG. The Project has agreed to amend the area specific plans as necessary when the two National Oil Spill Response Plans will come into force to ensure that the plans are compatible and consistent with the National Plans.

The ECMG was provided with the Spill Response Plan developed by Mobil Oil Cameroon that recently signed a contract as fuel/lubricant supplier for COTCO. During the mission, the ECMG checked several fuel trucks that were serving Project locations and found most of them without adequate spill response kits compliant with the EMP requirements.

*Recommendations:*

- 31.1 Ensure that the fuel trucks of both EPC Contractors and third-parties, serving Project locations and Contractors equipment, as well as the escort vehicles in the convoys, have spill kits available in compliance with the EMP requirements.

32. ***Land Resource Protection***

*Project Strategy:*

The Project is implementing design features that preferentially utilize lands already impacted by human activities, as far as the location of Project infrastructure and oil production facilities are concerned. Project requirements have been generated to limit soil-related impacts, including requirements to limit the land easement widths, use of additional land for construction camps and staging, and land clearing, to control and mitigate erosion, and to reclaim lands disturbed by the Project construction along the pipeline ROW and at temporary facilities.

*Observations:*Site Reclamation and Closure

Observations relevant to decommissioning and closure of temporary facilities are also discussed in Section 9 above. Close-out Punch-Lists for camps and storage yards have been developed and are available. The decommissioning process for these Project temporary facilities includes both technical and social closure aspects and appears to be properly managed by the Project EMP organization, which is in charge of providing appropriate closure verification and documentation.

The ECMG was provided with analytical data supporting site closure and soil remediation at a land farming site where hydrocarbon-impacted soils were treated, and which was located outside the Project boundaries, close to Bam.

Tank clean-up was performed at the former filling station of the Komé Base. Site remediation has yet to be started.

Construction Material Extraction Sites

Due to high water at the Bébédjia gravel pit site, it was not possible for the ECMG to visit the area of extraction. A Work Plan for the closure of the gravel pit was developed by the Project EMP organization in July 2002, as well as a new site selection study for supplying gravel to the OFDA, supplementing the previous study conducted by TCC. The ECMG was informed that gravel is being purchased in Moundou by local suppliers, but the exploitation of Bébédjia gravel extraction sites, through gravel purchasing from villagers, is expected to resume during the dry season.

Reclamation of the borrow pits used for the upgraded road sections in Cameroon and Chad is discussed below (see Section 31, Infrastructure).

The Project is implementing the same approach used along the upgraded road sections for all borrow pits exploited throughout the Project construction sites, including the ones related to access roads, ROW, permanent and temporary facilities.

ROW Reclamation

As highlighted in previous ECMG reports, erosion issues are generally managed by the Contractor along the ROW in compliance with EMP requirements. Top soil preservation, intensive use of silt fences, sediment barriers and other control measures, particularly at wetland crossings, consistent maintenance of stream flow were observed at locations visited along the ROW and found to be generally effective. Rough clean-up operations appear to be well conducted and effective along both Spreads.

The Project has developed specific EMP Post-Construction Checklists for temporary additional land closures and ROW reclamation. The issue relevant to additional land along the two Spreads is being addressed by the Project which is closely monitoring the incremental land requests and crop damages. The percentage of incremental land required by WSJV along Spread 1 is still significantly higher than the percentage along Spread 2, but it is expected to drop in Chad, where Spread 1 is now operating.

*Recommendations:*

- 32.1 Develop sufficient closure records and provide evidence that the same approach for closure used for borrow pits exploited for upgraded roads, is used for all borrow pits exploited throughout the Project construction sites, including the ones related to access roads, ROW, OFDA well sites, and permanent and temporary facilities.
- 32.2 Conduct and report on a re-evaluation of all the critical sections along the ROW after the rainy season to document reclamation results, presence of suitable physical barriers at induced access areas and at river and road crossings.
- 32.3 Assess surface and subsurface soil impacts and implement site remedial actions at the former fuel station site in Komé Base, as needed.
- 32.4 Ensure that TCC reclaims the exploited parcels at the Bébédjia gravel extraction area, according to the developed closure plan, and closely monitor future extraction activities in terms of health, safety and environmental compliance with EMP requirements, wherever they are mainly conducted for the Project either directly or by third parties (Bébédjia, Moundou-Koubao, etc.).

**33. Oil Well Clean-up and Well Testing***Project Strategy:*

The Project has developed a program for managing produced fluids from well clean-up and well testing activities during the construction phase. Fourteen alternatives were evaluated and three optimal alternatives identified:

1. Upper Cretaceous (UK) development and near field exploration wells: collect fluids in surface tanks and re-inject into a deep zone;
2. Lower Cretaceous (LK) wells: flare fluids on location using a state-of-the-art (EverGreen) burner developed by Schlumberger;
3. Remote exploration wells: flare fluids on location using EverGreen burner.

The Project implements public consultation sessions in communities located in the immediate vicinities of well sites where flaring is planned.

*Observations:*

The ECMG was informed that the June 2002 flaring of a remote exploration well (Moundouli) is the only one that has taken place so far. Eight public consultation sessions on well testing and burning of fluids were conducted in May-August, including a follow up session in Moundouli after well testing.

Seven UK and two near field exploration wells have been tested/cleaned up using fluid storage and re-injection. Approximately seven LK wells (a combination of wells to be cleaned up and wells to be tested) are planned to be flared prior to First Oil to ensure gas availability for commissioning and start up of production facilities. The Project reported that the duration of on-site flaring of LK wells being cleaned up should be limited to 24-36 hours per location, shorter than the planned 48-96 hours for LK wells being tested.

Based on information gathered from CTNSC and confirmed by EMP officers, the Moundouli well testing was not as successful as expected in terms of minimizing emissions and hydrocarbon fall-out, with some localized impact observed on non-

compensated land immediately adjacent to the flare pit. As a consequence, additional land was compensated around the flare pit; and the area to be compensated for future testing at other locations is being expanded. At the Moundouli site, the Project EMP organization did not perform any systematic monitoring to demonstrate minimal environmental impact.

*Recommendations:*

- 33.1 Monitor well sites which are tested by flaring, in terms of fall-out during testing.
- 33.2 Reclaim flare pits and adjacent compensated land, taking into consideration observed fall-out and remediating any significant environmental damage that may occur.

34. ***Infrastructure Development***

*Project Strategy:*

The Project is completing significant infrastructure development to support the construction of the Operation Center in Komé field and the pipeline. Work has included the construction of temporary and subsequently permanent work camps, road upgrades, the M'Béré River bridge and other stream crossing structures, pump stations, well pads, and pipeline storage yards. In Chad, DT is the main EPC Contractor for the transportation system upgrades, while TCC is responsible for infrastructure development at the oil fields and Komé base. In Cameroon the EPC Contractor for the transportation system upgrades is Sogea-Satom, while TCC is responsible for construction of the pump stations. Sogea-Satom has also been involved with some infrastructure work in the OFDA. EMP procedures have required that each Contractor submit its own EMP specific to its infrastructure development activities. These plans have been approved by the Project.

*Observations:*

A new footprint of the Project is the airstrip completed at Gadjibian and to be used by WSJV. This footprint was not included in the original plan and has been included recently.

M'Béré River Bridge

The M'Béré River bridge is complete and being used by the Project, as well as public traffic and pedestrians. A final erosion study for the bridge has been prepared. Based on this study, erosion is expected to be limited. A monitoring plan is still to be developed by the Project. As highlighted in the previous ECMG report, the monitoring plan should be aimed at the evaluation of the development of possible erosion phenomena (bed and banks) and to monitor the possible effects of the upstream water level increase during severe water flow conditions. The Project has reported that gauges to measure river height upstream and downstream the bridge have been purchased and are going to be installed in a few weeks.

Upgraded Road Sections - Cameroon

The road infrastructure from N'Gaoundal, Cameroon to the new bridge on the M'Béré River has been upgraded to the fit-for-purpose status and one-year maintenance by the Project is on going. The Project EMP management provided documentation that:

- The relevant works were done in compliance with respect to the EMP and the Environmental Commitments developed and applicable for the Chad Development Project;
- The borrow pits and quarries, opened to upgrade the road, have been reclaimed in compliance with respect to the same EMP and the Environmental Commitments, and have been closed in agreement with the concerned communities. Exceptions have been properly identified and are known and managed by the Project;
- The non-compliances related to the above activities have been closed out by the Project EMP Monitoring Team and neither damage has been observed to a specifically protected sensitive resource, nor an impending damage can reasonably be expected.

Based on the observations during inspection of road section and borrow pit sites performed during the mission, the ECMG neither found any opened non-compliance, nor any significant, expectable damage or impending damage to a specifically protected sensitive resource. Therefore the ECMG considers that the works to upgrade the road sections in Cameroon have been conducted by the Project in compliance with the EMP provisions.

#### Upgraded Road Sections - Chad

Although the Project confirmed that the Chadian sections of the upgraded road were defined fit-for-purpose, a significant list of exceptions related to finishing works for ditches, culverts, bridges, and some borrow pits has been submitted by the Project to David Terrassement (DT), the EPC Contractor, at the time of Project acceptance of the fit-for-purpose status (July 2002). DT is expected to address the listed exceptions by November 2002. However, the one-year maintenance period started in July 2002.

Based on road section and borrow pit site inspections performed during the mission, the ECMG found that the amount and level of work still to be done is significant along the entire upgraded sections. Erosion control measures need to be completed in places and/or has not performed entirely as designed during the rainy season. Although the ECMG understands that unfavorable morphological features and community consultation may result in the implementation of different rehabilitation schemes for the borrow pits in Chad than the ones used successfully in Cameroon, most of the rehabilitated borrow pits visited by the ECMG contained significant standing water, which is not compliant with Project EMP provisions in terms of minimization of standing water accumulation.

#### Dust Control

The Project adopted effective measures for dust control at village crossings along the upgraded road sections in Cameroon and Chad, placing double bitumen surface treatment (DBST) or implementing frequent watering during convoy transits, respectively. DBST has proven to be very effective and has not significantly deteriorated during the rainy season. Dust generated from heavy traffic and infrastructure development at the OFDA and along the regional roads strongly impacted by Project transportation (e.g., Bébédjia and Doba areas) is a significant issue and is a concern in terms of road safety, working environment and community impact. The ECMG has observed that dust is again an issue in Chad, even though the rainy season is not entirely over and the impact was expected to be low. The Project has confirmed that a decision has been taken to apply DBST for

some sections of the OFDA roads, but details were not available at the time of the mission, and no actions have yet been taken in the field.

*Recommendations:*

- 34.1 Expedite the definition of a specific monitoring plan to gather quantitative data and periodic observations on the potential physical, environmental modifications to baseline conditions that could be caused by changes to the hydraulic behavior of the M'Béré River due to the presence of the new permanent bridge.
- 34.2 Review and implement effective erosion protection measures where necessary along the upgraded roads in Chad.
- 34.3 Review and implement borrow pit reclamation in Chad to limit standing water and maximize drainage as much as possible.
- 34.4 Implement DBST or equivalent as appropriate along the roads in Chad based on a comprehensive assessment of road safety (i.e., visibility, intersections), Project traffic loads, as well as community impact (i.e., village crossings, dwelling proximity, crops).

35. ***Biophysical Environment and Environmental Management – General Observations***

*Cameroon*

- 35.1 The biophysical impacts of the ROW and infrastructure construction in Cameroon appear to be generally well managed and mitigated by the Project in compliance with EMP and Environmental Commitments.
- 35.2 Project EMP organization for the ROW and infrastructure was found to be effective and in satisfactory control of the activities under way (i.e., reclamation and facility decommissioning).
- 35.3 At the time of the mission, there were no Project EMP Monitors dedicated at PS locations. At the completion of the pipeline construction, fixed facilities will be the main, active Project sites in Cameroon, where construction activities will still continue at a significant pace. The ECMG recommends that the EMP organization strengthen its focus on compliance monitoring at all fixed facility sites.

*Chad*

- 35.4 Due to the intensive construction and drilling activities in the OFDA, there are numerous simultaneously contributing impact factors on the environment (dust, noise, water consumption, discharges onto land, land consumption) that are persistent with time. The Project EMP organization in Chad is involved in an increasing number of different issues of concern, as the Project activities increase and intensify approaching First Oil and the operation phase.
- 35.5 The environmental management of the OFDA is an issue of increasing concern that requires strengthening of the Project EMP organization in Chad as soon as practical and an increasingly proactive approach, using the significant amount of monitoring data collected in the OFDA to enhance the level of environmental monitoring and planning.

## **CHAD CAPACITY-BUILDING PROJECT**

### **36. Project Objectives and Requirements:**

The World Bank (WB) project for capacity-building of the petroleum sector of the government of Chad has three specific goals:

- *Manage the development of its petroleum resources in an environmentally and socially sound manner, beginning with the Doba Petroleum Project in southern Chad;*
- *Minimize and mitigate the potential negative environmental and social impacts of the Doba Petroleum Project on the producing region, strengthen local capacity in the region, and provide opportunities for the region's residents to improve their living conditions; and*
- *Establish an effective framework for further sound private sector investment in the petroleum sector, and engage effectively with such investors.*

Among the key indicators of the effectiveness of the Capacity-Building Project are the following:

- Effective Government monitoring of implementation of the Doba Petroleum Project;
- Effective implementation of the Doba Petroleum Project's Environmental Management Plan; and
- Social infrastructure improvements and employment generation in the producing region<sup>14</sup> (this indicator includes implicitly the implementation of the FACIL project and the Rapid Intervention Measures, as well as the preparation of the Regional Development Plan, RDP).

In the short term, starting with the construction phase, anticipated efforts include the mitigation of the impact of in-migration at the Project work sites in the form of social investments in health facilities, water supply, management of wood fuel resources, and STD/AIDS prevention.

### **37. Observations:**

During this sixth visit to Chad, the ECMG team collected the relevant information which is presented below. Based on the accomplishments and situations described below through the current status of its various components, the basic observation of the ECMG is that the Chad Capacity-Building Project has made little progress since the last mission, and the Chadian Government made some, but insufficient, progress over the last four months in its capacity to monitor the Project and to debate with the Consortium on environmental and social issues. This capacity is particularly important at this stage of the construction phase. CTNSC has started meetings with the Consortium EMP team to address issues. However, the exchange of information is still inadequate (for example, at the time of the ECMG visit the CTNSC team reported that they were waiting for a set of documents requested in writing on April, as well as monitoring and analytical reports related to water resources, drilling mud, waste, as well as compensation reports). The

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<sup>14</sup> Project Appraisal Document (PAD) March 2000, page 2

Table of Issues prepared on July by the CTNSC Team and reviewed by the Project has the potential for developing into a useful means of communication between both parties.

The World Bank has had a Manager for oil-related projects in Chad since mid-April, who is supported by a staff including a micro-economist, a financial specialist and an IFC specialist in small enterprise promotion.

The current status of various components of the Capacity Building Project is discussed below.

- The office space for the National Coordination and CTNSC headquarters in N'Djaména has been rehabilitated and is operational. Construction of annexes to the CTNSC headquarters is ongoing. Office furniture and equipment are now available. Laboratory equipment, mobile telecommunications equipment (radio) and cameras are still under procurement and far behind schedule. Vehicles are available to the headquarters staff, as well as to the CTNSC field team based in Komé.
- CTNSC executive secretariat personnel and Government field monitors have been almost entirely recruited. Six staff members, including the Executive Secretary, are posted at the N'Djaména headquarters; an additional four are under recruitment, including the chief administrator-accountant. A new building for the CTNSC headquarters is under construction.
- At the field level in Komé, a staff of fourteen is in place, including the CTNSC Site Supervisor and six key monitors (biophysics, socio-economic and health). This represents significant progress made since the fifth ECMG mission. The CTNSC field offices are still being evaluated, but will eventually be constructed in Komé village.
- A major concern in the field is the lack of adequate space for the field team, due to delays in construction of permanent offices in Kome Village. Although Project commitments were met, and included offices only during the period from April 1, 2001 through March 30, 2002, only 10 square meters of office space at Komé base have currently been made available by the Project to all fourteen members of the field team (see also Section 20 presenting observations on hygiene in camps and facilities). In addition to the problem of space at Komé Base, the ITRAD building in Bébédjia, rented since January 2002 is not yet usable (no office furniture, no equipment, no electricity).
- Recruitment of the international Technical Assistant for CTNSC headquarters has failed, as the individual identified six months ago resigned in early October. The temporary solution for short-term technical assistance, which was being considered in May, is not yet in place.
- The CTNSC Field Supervisor has been supported by an expatriate Technical Assistant since November 2001. His contract will expire in November.
- Services of the International Advisory Panel are now available to the CTNSC. A contract with an external firm was signed in early October, comprising technical services of seventeen person-months over a period of two years.
- Significant training of CTNSC personnel is still needed, as training has been limited to the courses (e.g., hazardous waste management, oil spill response, air quality monitoring, archaeology) provided by the Project. The training program within the Capacity Building Project has yet to be implemented by an external specialized consulting firm, which is still to be selected. As stated in ECMG's previous report,

this delay is a concern, as most of these training activities were scheduled to be implemented during 2001.

- A firm has been selected to prepare the National Oil Spill Response Plan after receiving the World Bank non-objection, but the scope of the study is being revised to fit with the available budget and negotiations with the firm have not been finalized.
- A contract was just signed in October for preparation of the Environmental Management Information System (EMIS), to start soon.
- The Communication Plan has not progressed significantly over the past four months. The National Coordination and CTNSC are preparing a “*Caravanne d’Information*”. This initiative is starting with interviews and films made in the Project zone involving NGOs and other stakeholders and showing the activities being implemented (Rapid Intervention Measure projects in Doba and Bébédjia, FACIL, compensation processes).
- A local consultation framework [a tool to share information and discuss issues or conflicts through periodic meetings including representatives from civil society and the Government], called *Cadre de Concertation Local, CACOL*, was created in July 2002. Its objective is to exchange information on project implementation and to deal with employment, labor disputes, and public health issues. Local NGOs are formally involved in this framework, through CPPL. Employment and strike issues have been discussed within CACOL. As a result, two contractors (TCC and Pride-Forasol) have drafted agreements with workers’ unions on work conditions until completion of the construction phase.
- The component “*Rapid Intervention Measures*”, which was assessed to be at least a year behind schedule, did not take advantage of the effort carried out over the second quarter and little progress has been achieved since the previous ECMG mission in May. Although some limited progress was achieved, most activities are still in the planning stage and even where actual construction has taken place, the situation is complicated by lengthy procedures, the lack of funds on the FACIL account, and other factors:
  - 1) The final version of the study report on urban planning for Bébédjia, Moundou and Doba was made available in July. Urban sanitation activities focusing on waste management, called “*Operation ville propre*”, were carried out in Doba and Bébédjia with the support of local NGOs. Two trucks for waste transportation are still under procurement. The project for the construction of city houses in Doba and Bébédjia is under study.
  - 2) The feasibility studies for public markets, slaughterhouses and a cattle market in Doba and Bébédjia have started with the identification of construction sites. A site selected in Bébédjia requires the relocation of about six families.
  - 3) Construction of the first phase of sanitation works in Doba and Bébédjia was satisfactorily carried out, including drainage canals, waste collection points and latrines. Unfortunately contractors have not been paid yet, because no funds are available on the FACIL account. The second phase of construction, including a water tower and three waste disposal sites in Bébédjia, is still in the bidding phase.
  - 4) A contract for the construction of 30 rural wells and for the enhancement of the Doba water supply was signed.
  - 5) Concerning the health sector, some limited activities have been put in place, including an information campaign in the Project zone in June; training sessions for health personnel since July; actual procurement of pharmaceuticals to the Doba

- zone. Health services by the medical consultant have continued in collaboration with CTNSC health specialist as part of the STD/AIDS prevention campaign PNLS. However this effort remains modest and is not sufficient with respect to the needs (see Section 22 above).
- 6) The project component promoting sustainable use of natural (forest) resources, made very limited progress during the quarter despite an Action Plan signed in October 2001 and a contract for implementing a pilot project in five villages.
- The status of component *Local Initiatives Fund - FACIL* is as follows:
    - 1) The office in Bébédjia is now fully equipped and operational. The entire FACIL team is almost in place, led by a director based in Bébédjia and includes three technical assistants from the German Cooperation DED. The Procedures Manual was revised in September to accelerate and simplify procedures for accessing the Fund. Information on how villages can access FACIL grants and micro-credit conditions has been disseminated with the support of specialized NGOs.
    - 2) The project has received about 600 applications for the two types of financial support: loans for village infrastructure, for which the contribution from villagers must reach 20% of total costs; and agricultural credits to individuals. Analysis of applications is done by the FACIL technical team. Many applications received are irrelevant, as potential beneficiaries do not fully understand the conditions for loans and credit, nor the application mechanism. Procedures for application are perceived to be lengthy and complicated.
    - 3) To-date the selected portfolio includes grants for community projects: five schools and six small hydraulic infrastructures for a total cost of 240 M CFA. Offices for savings and loans have to be established in nine cantons. Agreements for micro-credits have yet to be made with agents. Although applications were received six months ago, no construction has started yet.
    - 4) The Steering Committee "*Comité de Pilotage*" has not been performing adequately (often due to insufficient quorum, and also because the FACIL technical team is not part of the decision process). An additional problem at the time of the ECMG visit was the lack of available cash to fund the local initiatives, reported to have occurred because withdrawal requests were not prepared in a timely manner.
    - 5) The increasing delays in implementing FACIL and the various operational problems encountered have so far prevented the implementing of any project or credit action. This is now a serious issue that is being addressed by the World Bank.
  - The Capacity Building project component "***Regional Development Plan, RDP***" is not as far advanced as it was during the last ECMG visit in May. At that time, the "*Regional Development Framework*" as well as the Terms of Reference were finalized and approved by the various stakeholders including the Government of Chad, NGOs and the World Bank. However, the firm expected to prepare the RDP study has recently withdrawn its offer. In addition, Terms of Reference are being revised by the World Bank to integrate the Inspection Panel recommendations related to implement a Regional Environmental Assessment (REA), and therefore to include the REA preparation in the Terms of Reference. At the present time, a short list of six firms is available, but final bidding documents have not been issued. As a result,

it is likely that RDP study preparation will not be completed and approved before First Oil in July 2003.

As a general observation, the Chad Capacity Building Project has made little progress over the past four months in terms of implementing concrete measures and projects. This represents a significant risk to the overall success of the development project. FACIL is basically not operational; few projects have started under the program of "Rapid Intervention Measures;" and preparation of the Regional Development Plan has not started. Nevertheless, the Government capacity required to fulfill its obligations in terms of Project monitoring has made some limited progress, mainly in the field where a CTNSC team is in place in Komé Base, as well as a permanent monitor from the newly created Ministry of Oil. Also the ECMG observed a stronger involvement of the World Bank through the Oil Project management team now based in N'Djaména, which may be conducive of more significant achievements in the near term.

*Note on NGOs in Chad* - A meeting was held in Moundou on September 30 with the Commission Permanente Pétrole Locale (CPPL), a local committee of NGOs. This meeting was attended also by a representative of the Catholic Relief Service, and also by CTNSC and IFC. The CPPL Coordinator indicated (and confirmed later in writing) that they are no longer willing to participate in meetings with the ECMG, as they consider the meetings useless. This same position was made with the International Advisory Group (IAG) in June, as well as with the World Bank.

During the meeting, the ECMG pointed out the constructive relations developed with Cameroonian NGOs. Also, the ECMG made clear that the team is prepared, as ever, to listen to comments and concerns from all the NGOs, including CPPL, and that it will continue to have contacts with NGOs active in the Project zone.

**38. Recommendations:**

Given the limited progress in all components of the Capacity-Building project, there is a need for urgent action from all involved Parties. It is crucial for the Project stakeholders (Consortium, Government, World Bank) that local population and authorities can see tangible results implemented in the coming months. The following actions are strongly recommended and they may require immediate mobilization of an external task force to support CTNSC with a specific mandate on enhancing implementation of FACIL, Rapid Intervention Measures, and technical assistance components.

- 38.1 Hire a senior Technical Assistant (TA) to support the CTNSC Executive Secretary as soon as practical. Due to the failure over a period of one year to recruit this TA, the World Bank should consider using emergency procedures for the immediate hiring a senior TA.
- 38.2 Provide suitable office facilities for the CTNSC field team. The ITRAD building in Bébédjia should be fully operational before the end of this year – the World Bank team needs to take the necessary measures as another matter of urgency. Meanwhile, it is recommended that sufficient office space at Komé Base be made available by the Project.
- 38.3 Take advantage of the expertise of the International Advisory Panel to support urgent activities, including - but not limited to – (1) preparation of the land use plan for the OFDA, as set forth below under section 38.6; (2) technical support for

- the preparation of the specific land use plan for Komé Atan (refer to Section 6 above); (3) technical support for updating the training plan and then its initial implementation.
- 38.4 Improve communications and interactions between the Consortium and CTNSC, discussing and developing standard, agreed procedures for their periodic meetings and information flow among Consortium, CTNSC and National Coordination.
  - 38.5 Minimize risks of additional delays by decoupling the Regional Environmental Assessment (REA) from the RDP core of well-defined projects, which it is likely will not be completed and approved by First Oil.
  - 38.6 Prepare a Land Use Plan for the OFDA as soon as possible, following the framework proposed by ECMG during its fifth visit. To support this effort, the Consortium should provide CTNSC with detailed information on the anticipated evolution of the Project work force during construction and operational phases.
  - 38.7 The social, environmental and health problems associated with the OFDA spontaneous settlements (Komé Atan and Komé 5) discussed in many parts of this report need to be urgently addressed through a joint effort from the Consortium, CTNSC, World Bank and local authorities. Funds should be dedicated to resolve the main issues (water supply, sanitation and waste management, roads and footpaths, resettlement of Komé 5).
  - 38.8 CTNSC and World Bank should take all practical decisions to ensure the implementation of the Rapid Intervention Measures (urban planning, construction of public infrastructure and services).
  - 38.9 Focus health monitoring actions on selected diseases in camps and villages which are directly impacted by the Project, improving exchange of data on those diseases between camps and health districts..
  - 38.10 Expedite implementation of the eleven approved applications under FACIL and put in place all required means to implement these projects, in particular signing agreements with agents for accessing micro-credit.
  - 38.11 Improve implementation of FACIL, acting on the Steering Committee efficiency, coordinating with the community compensation program conducted by GTZ, coordinating micro-credits with other facilities available in the area, such as FINADEV, strengthening monitoring at both operational and financial levels.
  - 38.12 Communication efforts by the National Coordination and CTNSC should be strengthened and re-oriented. Field personnel should be involved in the preparation of communications support (radio, TV, press releases) and focus the campaigns on what is being done for the benefit of local populations and regional development (i.e., Rapid Intervention Measures, FACIL loans and micro-credits, actions for Komé Atan and Komé 5 settlements).
  - 38.13 Expedite the contracting and the implementation of services for the preparation of the National Oil Spill Response Plan, and ensure consistency with the General and Area-Specific Oil Spill Response Plans prepared by the Consortium.

**CAMEROON CAPACITY-BUILDING PROJECT (CAPECE)****39. Project Objectives and Requirements:**

The World Bank Cameroon Petroleum Environment Capacity Enhancement Project (CAPECE) is to develop and establish a national capacity in Cameroon for the environmental management and monitoring of the Chad Export Project. CAPECE anticipates that the following will take place:

- *National environmental standards and norms in the petroleum sector are established,*
- *The Petroleum Development Pipeline Project meets environmental standards and norms,*
- *The Government of Cameroon develops its capacity to monitor and mitigate the environmental impacts of large infrastructure/energy projects, a condition for continued sound foreign investment in the country, and*
- *Information on the environmental and social safeguards implementation is disseminated to all relevant stakeholders.*

The Government of Cameroon established, by Decree 97-116 of July 7, 1997, *the Comité de Pilotage et de Suivi du Pipeline* (CPSP) under the trusteeship of the *Société Nationale des Hydrocarbures* (SNH), the national oil company. The CPSP is an interministerial body mandated to oversee and monitor all environmental and social aspects of pipeline construction and operation. The CPSP has two branches, the *Comité de Suivi* (CS) which is the steering, monitoring and administrative arm and the *Secretariat Permanent* (SP), which is the operational arm of the CPSP.

In addition to monitoring the construction of the pipeline, with the associated requirements for protecting the public and the environment, the Cameroon Government also has responsibility for developing a National Oil Spill Response Plan. It is also responsible for the monitoring of an Indigenous Peoples Plan (IPP) for the forest dwelling peoples living in the area crossed by the Atlantic Forest part of the pipeline route and the implementation and monitoring of two Offsite Environmental Enhancement Projects (OEEP) established to compensate for generalized biodiversity loss in the Atlantic Coastal Forest and the semi-deciduous forest zones, respectively in Campo-Ma'an and in Mbam and Djérem National Parks.

**40. Observations:**

During the sixth visit in Cameroon there was no ECMG meeting held with the CPSP, due to the Oil and Gas Symposium being held in Yaoundé at the time of our visit. Nevertheless, the CPSP did provide the ECMG with detailed information regarding the current status of CAPECE. A meeting was held in Yaoundé with the World Bank officer in charge of CAPECE. The ECMG has two basic observations on the status of the Cameroon Capacity-Building Project in late September 2002:

- The CAPECE project made limited progress during the last quarter, especially in terms of contracting for services. This situation contrasts strongly with the progress of pipeline construction, where approximately 75% of the pipe in Cameroon has been placed in the ground.
- The Government field monitoring capacity is reported to be in place for the pipeline construction, as well as at pumping stations PS-2 and PS-3 in the environmental, bio-

physical and socioeconomic sectors, although the monitors were not met by the ECMG. The monitoring capacity in the health sector remains essentially non-existent.

More specifically, the following findings are reported:

- 1) Very limited progress was made by CPSP during the quarter in contracting for consulting services. Nevertheless, some accomplishments were observed including the signing of the services contract for preparation of a regulatory framework and services contracts are ready for signature for training in legal matters, the study of environmentally sensitive areas, and monitoring of cultural patrimony.
- 2) Implementation has not yet started for the CAPECE training plan for CPSP staff and civil servants in Ministries and this project activity is now more than one year behind schedule.
- 3) CPSP is about to initiate a services contract to monitor the implementation of the Indigenous Peoples Plan (IPP). However, the ECMG notes that at this point in time there is very little activity within the IPP to monitor, as its implementation has only recently started.
- 4) The National Oil Spill Response Plan is still at the contracting phase. An external firm has been selected pending a World Bank non-objection. The contract was expected to be signed in October.
- 5) The Environmental Management Information System (EMIS) and the Management, Monitoring and Evaluation System (MIS) are both still in the contracting phase. The CPSP has proposed the cancellation of the MIS component to the World Bank (given that most of the Project is already constructed), as well as canceling the services of an International Advisory Panel (IAP). The World Bank plans to address these two issues as part of their mid-term evaluation of CAPECE planned before the end of this year.
- 6) Discussions for decision-making on the fate of the Project temporary facilities are ongoing, but CPSP has yet to prepare well-documented files for each site and procedures are still to be standardized.
- 7) Communication activities have been carried out by CPSP during the quarter, including meetings with local authorities and discussions with local populations on individual and regional compensation.

In summary, several issues still remain to be solved, among which the health sector is of greatest concern as stated in the previous ECMG report. No significant health monitoring is taking place in the field. Some limited progress has been made in that a medical clinic has been established in Bemboyo with support from COTCO, but the long-term sustainability of this clinic is uncertain, given that the resupply of drugs is dependent on payments received from Bemboyo residents. While the Government strategy for control of STDs and HIV/AIDS in the pipeline corridor was adopted in coordination with the PNLIS (*Plan National de Lutte contre le SIDA*), and discussed with the World Bank, implementation is not in place at the field level. The anticipated seroepidemiological survey has not taken place (further information is provided in Section 21 on Community Health).

**Note on NGOs in Cameroon**

- 1) The ECMG has continued to improve communications with local NGOs over the course of the six missions and had again the opportunity to meet with the NGO coordination group (GCA) in the headquarters of a member, *Service Oecuménique pour la Paix*.
- 2) A detailed report “*Monitoring of the Pipeline over the Period January- June 2002*”, dated September 2002, prepared by a steering committee of four NGOs with a support of Catholic Relief Service, was presented to ECMG and discussed. This committee includes the following four members:
  - FOCARFE, *Fondation Camerounaise pour une Action rationalisée des Femmes sur l'Environnement*,
  - CED, *Centre pour l'Environnement et le Développement*,
  - ERA, *Environnement Recherche Action*
  - SeP, *Service Œcuménique pour la Paix*
- 3) The main concerns raised by the NGO report and discussed during the meeting with the ECMG included:
  - Complaints related to compensation
  - Temporary bridges
  - Pygmées and the IPP program
  - Health and security
  - Improvement of communications and collaboration with the Project through a framework for periodic meetings that could include COTCO, the World Bank, the Government of Cameroon and the civil society (same recommendation as one made last May).
- 4) ECMG takes into consideration the concrete issues raised by NGOs and several were reviewed in the field during this mission.
- 5) ECMG has also observed that communications between NGOs and COTCO have improved.

**41. Recommendations:**

- 41.1 CAPECE and the Ministry of Health of Cameroon should initiate the community health activities consistent with EMP commitments (see recommendations under Section 22 Community Health).
- 41.2 If the services of an International Advisory Panel (IAP) are cancelled, the CPSP should consider transferring the cost savings to the field of public health, as the CAPECE component “Health Management” (cost estimate US\$ 0.9 million) does not appear to be sufficient. In general, if there is a reduction in the scope of any of the other CAPECE components, the reallocation of funds towards public health is recommended.
- 41.3 Start as soon as practical implementation of the CAPECE Training Plan, carefully updated to take into account the delays for its starting.
- 41.4 CPSP needs to accelerate contracting for the preparation of the National Oil Spill Response Plan, which should be available by First Oil in July 2003.
- 41.5 Complete the review of Regional Compensation by relevant Government ministries, under CPSP supervision. Communication on this matter as well as on

- individual compensation, at the local level and with NGOs, should be done by both CPSP and COTCO.
- 41.6 The services contract for monitoring the IPP (contract under preparation) should be reconsidered by CPSP and either cancelled or postponed. If the contract is eventually implemented, the terms of reference should be reviewed and amended, as needed, in close collaboration with FEDEC and the Consortium. CPSP should provide support to FEDEC for the implementation of the four short-term projects, ongoing under the leadership of FEDEC.
- 41.7 Discussions between the Project and the Government are on going for the transfer of Project temporary facilities to the Government of Cameroon, but CPSP should properly document their future use and associated social and environmental impact, which will facilitate their review under EMP requirements. Government field monitors should provide support and advice, especially on locally sensitive issues.
- 41.8 CPSP should improve communications towards local authorities along the pipeline route and at specific Project locations (Dompta, Bélabo, PRS Kribi), as well as towards NGOs.

**ENVIRONMENTAL FOUNDATION****42. Objectives and Responsibilities:**

The creation of the Foundation for Environment and Development in Cameroon (FEDEC) was proposed by the World Bank in order to ensure that the Project will meet the Bank's Operational Policies related to Natural Habitats (OP 4.04) for the two new National Parks of Campo Ma'an and of Mbam and Djérem, and related to Indigenous Peoples (OP 4.20) for the community of Bagyeli/Bakola Pygmies. The EMP for Cameroon provides in Volume 4 details on FEDEC's role, responsibilities and operation procedures, as well as COTCO's capital contribution of US\$ 3.5 Million. FEDEC has the goal of providing long-term financial support to the two newly established National Parks and to the Bagyeli/Bakola Community through the Indigenous Peoples Plan (IPP).

**43. Observations:**

As of late September 2002, the status of FEDEC and progress in performing its mandate is as follows:

- *Foundation:* After experiencing operational difficulties during the first part of the third quarter due to administrative problems related to accessing funds, the funds became accessible to FEDEC in August, and the Foundation is now able to implement its Work Plan. The permanent staff of three members is now operational: the Foundation Administrator (FA), the Community Development Facilitator (CDF), and Administrative Assistant. Board meetings are regularly held.
- *IPP program:* Three out of the four approved short-term projects pertaining to the Indigenous Peoples Program (IPP) have been started by FEDEC: (1) the issuance of about 200 identity cards for the Bakola and Bagyeli communities (ECMG attended the first delivery of draft ID cards - *récépissés* - to adults of Koundou-Koundou village close to Kribi); (2) medical diagnosis and health care to about one thousand persons of the Pygmy population, through a local NGO; (3) provision of school supplies to about two hundred Bakola and Bagyeli children as well as to their Bantu neighbors. The fourth project relates to agriculture production (procurement of seeds and plants) and will start with the next crop season. On this issue, see also Section 14, *Vulnerable Indigenous People*.
- *Mbam and Djérem National Park*  
In June the *Conservateur*, appointed last year by the Ministry of Environment and Forest (MINEF) for the Mbam and Djérem National Park, resigned and has yet to be replaced.

FEDEC has recently selected the Wildlife Conservation Society (WCS) as the Implementing Organization (IO) for the Mbam and Djérem National Park, pending an approval by MINEF..

- *Campo-Ma'an National Park*  
FEDEC has selected the World Wildlife Fund (WWF), as Implementing Organization (IO) for the Campo-Ma'an National Park, again pending approval by MINEF.

As noted in the last ECMG report, a Development Plan for the Campo-Ma'an *Unité Technique Opérationnelle* (UTO), which includes the National Park as well as several *Unités Forestières d'Amenagement* (UFA), protected forest areas and palm-groves, was prepared last May by the "Management and Bio-Diversity Conservation Project Campo-Ma'an", based in Kribi. This Plan was then endorsed by a workshop organized in Kribi by the Campo-Ma'an Project. However, MINEF requested that a new five-year Action Plan for the UTO be prepared, as the Development Plan did not address certain specific activities. The requested action plan will propose a strategy to involve the surrounding population in the implementation of the Development Plan, in poaching control and mitigation measures for Bio-Diversity Conservation. It will focus on sustainable management of the entire UTO (*Programmation Participative de l'UTO*). The consulting services for preparation of this Action Plan will be provided by the Dutch agency SNV. Discussions with the population surrounding the Park and their inputs through village meetings, called community consultation, will be financed by the World Bank. This effort is scheduled for the fourth quarter 2002.

- During this visit to Douala and Kribi, the ECMG was able to discuss the UTO Development Plan with the *Conservateur*, as well as to meet with the manager of the logging company "La Forestière de Campo, HFC" entitled with logging concessions on several forest units (called *Unité Forestière d'Amenagement*, UFA), among which the UFA 024 was obtained in early 2002.

HFC again expressed its willingness to thoroughly implement all specifications of the *Cahier des Charges* for UFA 024 signed on April 10, 2002, establishing protection measures to be implemented by HFC to minimize potential impacts and mitigate the residual impacts on the Park due to logging at UFA 024 and log transportation activities.

During the last meeting of the Steering Committee (a body set forth in the *Cahier des Charges*) held in July, HFC was found to be in compliance with the specifications of the *Cahier des Charges*, except that the radios for the guards have been ordered, but are not yet in place.

Based on information provided by HFC and the Campo-Ma'an *Conservateur*, the following is observed:

- (1) Restoration of the 4.7 kilometers of new road constructed by HFC east of the Park has not yet taken place, as the restoration plan proposed by HFC in April received World Bank non-objection but was rejected by MINEF;
- (2) As requested in the *Cahier des Charges*, an external Environmental Auditor has been identified and is expected to be contracted shortly, pending MINEF approval;
- (3) HFC has set up a partnership with WWF to develop standards for certification of sustainable forest management in Cameroon, following the FSC (Forest Standards Certification) system;
- (4) The bamboo bridges linking forest canopies on the road crossing the Park, installed by HFC, have been taken out at the request of MINEF.

#### 44. **Recommendations:**

##### 44.1 *IPP Program:*

- 1) FEDEC, CPSP and MINEF should have regular meetings to share information and coordinate actions related to the two National Parks and the IPP.
- 2) FEDEC should prepare a mid-term IPP action plan, after completion of and based on lessons learned from the four short-term projects, as well as COTCO's Regional Compensation Program. This action should be conducted with an active role of the CDF, and with contributions from organizations and groups working with Pygmies, and specific support from COTCO and CPSP.

##### 44.2 *Mbam and Djérem National Park:*

- 1) FEDEC, in close cooperation with MINEF, should sign a formal Agreement with the Implementing Organization WCS, as soon as practical. A Work Plan will then have to be prepared by WCS in collaboration with MINEF/DFAP (*Direction de la Faune et des Aires Protégées*).
- 2) MINEF should expedite the appointment of a new *Conservateur* and then provide the necessary financial, administrative and logistical support to that person.

##### 44.3 *Campo-Ma'an National Park:*

- 1) FEDEC, in close cooperation with MINEF, should sign a formal Agreement with the Implementing Organization WWF, as soon as practical.
- 2) MINEF should provide support for rapid finalization and approval of the "Campo-Ma'an UTO Development Plan" and the "UTO Action Plan" to be developed soon.
- 3) MINEF should fulfill its obligations by providing support to poaching control (recruitment of additional guards and equipping the guard posts, especially in the northern part of the UTO Campo-Ma'an) as soon as practical.

**List of Acronyms and Abbreviations**

Area-Specific Oil Spill Response Plan (ASOSRP)  
Cameroon Oil Transportation Company S.A. (COTCO)  
Cameroon Petroleum Environment Capacity Enhancement Project (CAPECE project)  
Chad Pipeline Management Team (CPMT)  
Chad/Cameroon Oil Development and Transportation Project (Chad Export Project)  
*Comité de Suivi* (CS, Inter-ministerial Committee, under CPSP, Cameroon)  
*Comité Permanent de Pilotage et de Suivi du Pipeline* (CPSP)  
*Commission Permanente Pétrole Locale* (CPPL)  
*Comité Technique National pour le Suivi et le Contrôle* (CTNSC)  
Community Health Outreach Program (CHOP)  
David Terrassement (DT)  
Double Bitumen Surface Treatment (DBST)  
Engineering, Procurement and Construction (EPC)  
Environmental Impact Assessment (EIA)  
Environmental Management Information System (EMIS)  
Environmental Management Plan (EMP)  
Esso Exploration and Production Chad Inc. (EEPCI)  
External Compliance Monitoring Group (ECMG)  
Floating Storage and Offloading (FSO)  
*Fonds d'Actions Concertées d'Initiative Locale* (FACIL)  
Foundation for Environment and Development in Cameroon (FEDEC)  
General Oil Spill Response Plan (GOSRP)  
General Project Specification (GPS)  
Implementation Organization (IO)  
Indigenous Peoples Plan (IPP)  
International Finance Corporation (IFC)  
Job Safety Analysis (JSA)  
Job Specification Coordination Procedure (JSCP)  
*Ministère de l'Environnement et des Forêts* (MINEF)  
*Ministère des Mines, de l'Eau et de l'Energie* (MINMEE)  
*Ministère des Travaux Publics* (MINTP)  
Non-Governmental Organization (NGO)  
Offsite Environmental Enhancement Projects (OEEP)  
Oil Field Development Area (OFDA)  
Oil/Water Separator (OWS)  
Personal Protective Equipment (PPE)  
*Plan National de Lutte contre le SIDA* (PNLS)  
Pressure Reducing Station (PRS)  
*Programme Prioritaire de Lutte contre le SIDA* (PPLS)  
Pump Station No. 2 (PS-2)  
Pump Station No. 3 (PS-3)  
Regional Development Plan (RDP)  
Regional Environmental Assessment (REA)  
Right-of-Way (ROW)  
*Secretariat Permanent* (SP)  
Sexually Transmitted Disease (STD)

*Société Nationale des Hydrocarbures (SNH)*  
Tchad Cameroun Constructors (TCC)  
Tchad Oil Transportation Company S.A. (TOTCO)  
Technical Assistance (TA)  
*Unité Forestière d'Aménagement (UFA)*  
*Unité Technique Opérationnelle (UTO)*  
Wildlife Conservation Society (WCS)  
Willbros Spie Capag Joint Venture (WSJV)  
World Bank (WB)  
World Bank Technical Assistance/Capacity Building (WBTA)  
World Health Organization (WHO)  
World Wildlife Fund (WWF)

**Table 1**  
**Follow-up Issues**

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
<b>EMP ISSUES</b>						
1	1	Mar 01	Oct 02	Demonstrate improved system for community/regional compensation: revise the "catalogue" concept	<b>Closed</b>	The first stage (consultations) is completed in Cameroon. Community projects are still under technical review for final clearance by CPSP. In Chad, GTZ, the implementation organization selected by the Consortium, has also successfully implemented a first phase of consultations, with various types of community projects eligible.
2	1	Mar 01	Jun 01	Demonstrate that damaged houses occupied by resettlers have been repaired	<b>Closed</b>	
3	1	Mar 01	Oct 02	Demonstrate development and implementation of mitigation and safety measures, particularly where roads pass through villages	<b>Closed</b>	Mitigation and safety measures have been properly implemented along the upgraded Project roads both in Cameroon and Chad.  Safety awareness campaigns have never been implemented along the Northern route, which is not used any more as the M'Béré bridge is functional, therefore the issue was not solved and is not longer applicable.
4	1	Mar 01		Bakola Pygmies: include land management in the CDF's priorities	<b>Pending</b>	This issue has been moved to the section relevant to FEDEC.
5	1	Mar 01		Social closure: develop and test mechanism	<b>Pending</b>	An adequate framework has been developed for Cameroon. It needs to be expanded to Chad. Test implementation has started in Cameroon, but the timing needs to be revisited due the relatively high number of pending grievances that tend to make the process ineffective.
6	1	Mar 01		Mitigate the effects of in-migration to Project sites  (this issue was opened in March 2001 under a different wording)	<b>Pending</b>	<ul style="list-style-type: none"> <li>- In-migration has been monitored where it is taking place, in compliance with EMP requirements.</li> <li>- The hiring policies intended at limiting in-migration are enforced by the Consortium. Appropriate monitoring allows non-compliances to be identified and fixed in both countries.</li> <li>- In-migration to the OFDA is still insufficiently mitigated, following the delays in the implementation of the Regional Development Plan by the Government. The sanitary situation in Komé Atan, the spontaneous settlement near to Komé Base, poses health risks to the community and the camp population. Another settlement at Komé 5 has developed, although less populated than Komé Atan. The Consortium has proposed to participate in addressing this situation by the implementation of initiatives including drainage, periodic fogging for mosquitoes,</li> </ul>

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
						limited collection of some trash items, amongst others. A land use planning is needed and proposals are made in the report to address urgently the situation of Komé Atan and Komé 5.
7	1	Mar 01	Jun 01	Expand the sample of households surveyed for socioeconomic indicators to non-compensated households	<b>Closed</b>	
8	1	Mar 01	Jun 01	Registration of land rights: resolve issue of villagers having access to the land they formerly occupied before construction	<b>Closed</b>	
9	1	Mar 01	Oct 02	Demonstrate that road safety during construction phase is improved	<b>Closed</b>	Road safety measures are properly implemented and road safety is generally improved.
10	1	Mar 01		Develop and implement a Fuel Safety and Management Plan	<b>Pending</b>	A Fuel safety plan has recently been developed, however almost all the trucks checked during the sixth mission were found to be not in compliance
11	1	Mar 01	Oct 01	Provide fencing at storage facilities	<b>Closed</b>	
12	1	Mar 01	Jun 01	Provide documentation that minimal quantities of road construction materials are used	<b>Closed</b>	
13	1	Mar 01		Provide documentation that M'Béré River crossing construction activities will not have an adverse environmental impact	<b>Pending</b>	A monitoring program based on bio-physical baselines should be developed and implemented as soon as practical.
14	1	Mar 01	Jun 01	Provide documentation that road design is appropriate for final usage	<b>Closed</b>	
15	1	Mar 01	Jun 01	Demonstrate development and implementation of borrow pit siting plan	<b>Closed</b>	
16	1	Mar 01	Jun 01	Demonstrate improvements to dust control, especially when passing through villages	<b>Closed</b>	
17	1	Mar 01	Jun 01	Demonstrate that local village labor has appropriate PPE	<b>Closed</b>	

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
18	1	Mar 01	Jun 01	Demonstrate that EMP monitoring system is fully staffed and functional, especially with respect to Chad	Closed	
1	2	Jun 01	Jan 02	Evaluate the need of possible house relocation to ensure safety along upgraded roads at village crossings	Closed	
2	2	Jun 01	Jan 02	Implement appropriate medical protocols at the Contractor medical facilities	Closed	
3	2	Jun 01	Oct 01	TCC in Dompla does not comply with EMP requirements: qualifications of staff, physical space, equipment, and medical supplies.	Closed	
4	2	Jun 01	May 02	Medical services are not yet in a situation to provide first aid and emergency services in the field within the 20 minutes required by the EMP	Closed	
5	2	Jun 01	Oct 01	Storage of old drilling-related materials at the Komé camp does not meet EMP requirements	Closed	
1	3	Oct 01	Oct 02	Monitor the population evolutions in mid-size towns in Cameroon and Chad	Closed	Monitoring is done, and results are available. It needs to be continued.
2	3	Oct 01	May 02	Provide documentation that the archaeological field procedures currently employed will provide a representative inventory of the cultural materials that are actually within the pipeline easement	Closed	
3	3	Oct 01	Oct 02	Drinking water testing has not been adequate at some camps. The overall testing program should be reviewed in terms of compliance with the EMP and corrected as appropriate.	Closed	The water testing methods are currently uniform and acceptable. However, not all camp laboratories have received the protocol prepared by EMP on this subject.
4	3	Oct 01		Improve waste management procedures, especially for hazardous waste.	Pending	Waste management still needs significant improvements, particularly at Komé, although actions have been recently taken. Construction of permanent disposal facilities should be expedited in Chad and Cameroon.

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
5	3	Oct 01		Review borrow pit closures.	<b>Pending</b>	In Cameroon road borrow pit closure is generally satisfactory. The same approach needs to be used for all borrow pits exploited by the Project. In Chad road borrow pit closure needs to be reviewed to limit standing water.
6	3	Oct 01	Jan 02	Complete closure operations associated with the diesel fuel spill at M'Baïbokoum.	<b>Closed</b>	
1	4	Jan 02	Oct 02	Develop commissaries ( <i>economats</i> ) to mitigate inflation currently observed in southwestern Chad and purchase grain for these <i>economats</i> well outside the project area.	<b>Closed</b>	Commissaries are operational and successful in the OFDA.
3	4	Jan 02	May 02	Strengthen monitoring of hiring procedures	<b>Closed</b>	
4	4	Jan 02		Monitor village labor done for the Project	<b>Pending</b>	Contractors sometimes use village laborers for works such as the collection of stones or gravel. This creates employment opportunities, but it is necessary to verify that these workers are treated fairly (safety, effective payment, etc.). TCC has not demonstrated that they are adequately monitoring third-party activities mainly operating for them.
5	4	Jan 02		Enforce the EMP clauses on workers' accommodation in Komé	<b>Pending</b>	The workers' massive presence in Doba and Bébédjia has significantly affected the local housing markets, with notable inflation detrimental to locals. This impact remains unmitigated by the Project as no appropriate housing policy has been implemented by TCC, the main Contractor in terms of employment, contrary to the EMP requirements that the impacts of "national non local" workers' housing on neighboring communities must be minimized and mitigated. Proposals are made in the report to address quickly this situation.
6	4	Jan 02	Oct 02	Provide basic accommodation to Doba Logistics drivers in Komé	<b>Closed</b>	Doba Logistics drivers have now drinking water and toilets provided by the Project. Accommodation is not provided, but drivers prefer to sleep under their trailers as they usually do.
7	4	Jan 02		Verify that additional land beyond the area where compensation has been provided is not being impacted by construction activity	<b>Pending</b>	Additional land requirements and crop damages are not always be kept minimal, especially for the pipeline construction Spread 1. Compensation teams have difficulties in keeping pace with the works as crop damages result in lots of dossiers that overwhelm the staff. This also has impacts on payment delays.
8	4	Jan 02		Prepare EIAs for temporary bridges prior to any decision is made to leave them in place	<b>Pending</b>	According to the EMP, five bridges in Cameroon are to be removed after construction, one (over the Lom River) to prevent induced access to environmentally sensitive areas. Requests to leave these bridges in place are being made. Any change to the initially agreed removal would need to be assessed by the Government within the context of an environmental and socio-economic impact study. Lenders are to be involved in the final decision in case any changes be contemplated regarding the fate and destination of any

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
						of the bridges that could represent a major change to the initial provision.
9	4	Jan 02		Develop a process for the decommissioning of temporary facilities	<b>Pending</b>	Process is being developed in Cameroon. Initial consultation has taken place in Cameroon at the initiative of CPSP and COTCO. A schedule and case-by-case work plan is being developed for either decommissioning or transfer of temporary facilities. Potentially impacted areas are being investigated and cleaned up as needed. The same process needs to be developed in Chad as soon as practical. Full documentation of facility decommissioning and transfer is to be prepared by the Project and the Government.
10	4	Jan 02	Oct 02	Improve the delivery of in-kind compensation in Chad	<b>Closed</b>	Items now purchased by the Consortium, pending immediate delivery.
11	4	Jan 02		Improve the hygiene of camp kitchens to EMP standards	<b>Pending</b>	Unsafe conditions, with high risk of food-borne disease outbreak, exist in the Senior and Junior kitchens as well as in the <i>boukarou</i> at the TCC-Komé camp. Miandoum kitchen hygiene should be improved as well. Training of food handlers should be focused on controlling the risks of food contamination and bacterial growth. All kitchen doors are to be kept closed and presence of insects is to be eliminated from the food storage, processing, and cooking areas.
12	4	Jan 02	Oct 02	Equip health facilities to be consistent with Contractors' Health Plans	<b>Closed</b>	Contractors have equipped their health facilities consistent with their Plans.
13	4	Jan 02	May 02	Control third party access to workplaces	<b>Closed</b>	
14	4	Jan 02	May 02	Improve safety from bush fires	<b>Closed</b>	
15	4	Jan 02		Improve wastewater treatment systems	<b>Pending</b>	Improvements of the systems at camps have been observed. Wastewater monitoring of camp plants is being performed, but it is not standardized among Contractors. Oil/water separators at some facilities are insufficient and an upgrade program is still to be implemented. Monitoring of batch plant discharges is to be ensured.
16	4	Jan 02		Demonstrate that water resources are being protected	<b>Pending</b>	At the OFDA, groundwater usage for construction is tracked by the Contractors and water depth is measured by the Project at several village wells. Although the measurements from the community wells are indicative that it is unlikely that the Project is having an adverse effect to community water supplies, closure of this issue can result only from the construction of dedicated monitoring wells that will provide accurate water level data and being able to demonstrate that the extracted quantities of water are insignificant based on simple water balance measurements In Cameroon, hydrotesting water is generally discharged in a compliant manner. Water

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
						testing is performed at facilities. However, it is recommended that dedicated monitoring wells should be installed at the two Pumping Stations and at the Pressure Reducing Station. Field EMP staff at fixed facilities in Chad and Cameroon should be trained to understand groundwater settings at their locations. .
17	4	Jan 02	Oct 02	Assess alternative options for dust control at OFDA construction areas	<b>Closed</b>	The assessment has been completed and a decision has been taken to adopt DBST for some sections of the OFDA roads.
1	5	May 02		Provide adequately trained first aid responders at each geographically isolated work unit including convoys	<b>Pending</b>	Improvements have been observed in First Aid training. It is adequate for stringing, welding, and lowering operations for pipeline construction, as well as for drilling operations. However, it is insufficient for backfilling operation along ROW and for CTF and well pad construction sites in the OFDA. Training for all staff in basic first aid is required by the EMP.
2	5	May 02		Update Health Plans and upgrade staff/equip the clinics at camps as needed	<b>Pending</b>	Updated Health Plans have not been produced yet. However, additional equipment has been bought for PS-2, PS-3, and Drillers' Camps and new facilities are under construction in PS-3 and Driller's Camps. Staffing for camp and work sites is generally satisfactory.
3	5	May 02		Review the safety performance and work procedures of the different workforces	<b>Pending</b>	Several JSAs have been developed during the construction development, but field practices were still observed, which were not compliant with defined job procedures. Progress has been made in translating JSAs for workers who are not fluent in English or French, primarily for the Latin American workers that speak Spanish. Nevertheless, the process of translation is still not complete and some communication difficulties were still observed in the field.  The differences in safety statistics performances between the two pipeline installation spreads are confirmed.
4	5	May 02		Ensure that EMP provisions are applied at third parties involved in waste management, particularly hazardous waste	<b>Pending</b>	The Project has identified and is working with a third-party incinerator company in Douala for hazardous waste disposal. Spent oil is being processed by a third party prior to being sent to a cement kiln to be recycled as fuel in Cameroon. Spent oil reuse and/or final disposal in Chad is still to be addressed. EMP provisions in terms of environmental, health and safety safeguards should be considered at all the third party operations for waste handling and disposal.
5	5	May 02		Finalize and implement a reserve pit closure procedure	<b>Pending</b>	The reserve pit muds have been tested to assess their characteristics. The pits are lined and fenced for safety and environmental protection. A procedure has been developed to reclaim and close the lined reserve pits. A Change Management Process was activated and has been closed out to allow for use of unlined reserve pits. However, it is recommended to supplement the technical review done with an assessment of direct impact of the proposed procedures.

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
6	5	May 02		Develop and implement a reclamation procedure for land resources exploited during the construction phase	<b>Pending</b>	TCC has to reclaim the dedicated third party-exploited parcels at the Bébédjia gravel extraction area, according to the developed closure plan. Future extraction activities should be in compliance with EMP health, safety and environmental requirements, wherever they are significant and conducted for the Project either directly or by third parties, mainly operating for the Project. The site of the decommissioned filling station at Komé Base is to be cleaned up. Potentially impacted sites, such as the dry wells or leach fields of decommissioned facilities should be investigated and cleaned up, as needed. Flare pits and adjacent compensated land should be reclaimed, based on site-specific conditions after flaring.
1	6	Oct 02		Follow-up on grievances must be clarified and improved	<b>New</b>	Follow-up by the ECMG on claims conveyed by Cameroonian NGOs indicates that the grievance treatment system is not always well understood by the villagers. The responsibilities in the grievance system should be internally clarified by COTCO, and then awareness of the grievance system should be refreshed through the LCCs.
2	6	Oct 02		Assist demobilized workers	<b>New</b>	Consultation with the Republic of Chad officials and village leaders and elders are on going to discuss issues related to Contractor demobilization. Demobilized workers in Chad should be assisted, for instance through micro-credit for business development that could be provided by FACIL or FINADEV. This would need the workers who would want to settle in the region to be made eligible to these financial instruments.
3	6	Oct 02		Provide adequate archaeological field equipment, laboratory, staffing, for Chad trench and grading monitoring	<b>New</b>	
4	6	Oct 02		Provide documentation consistent with the EMP for archaeological work conducted during Chad trench and grading monitoring.	<b>New</b>	Ensure that field methods are appropriate and consistent with the EMP, particularly photographic documentation, field maps and sketches, and screening of feature and excavation unit fill.
5	6	Oct 02		Provide site treatment plans for High Priority archaeological sites in Chad and Cameroon.	<b>New</b>	For all sites discovered during initial surveys and trench/grading monitoring, describe site limits and estimated site area (square meters), amount of site within the area affected by the pipeline and facilities, brief statement of why the site is high or medium priority, and the mitigation measures that have been or will be employed. Specifically address Site EPA-6 in Chad.
6	6	Oct 02		Implement dust mitigation measures along the Project road from M'Béré to Komé in Chad.	<b>New</b>	Significant dust has been observed at specific locations along Project roads with impacts on road safety (i.e., visibility, intersections), and community impact (i.e., village crossings, dwelling proximity, crops). The assessment should be based on traffic loads generated by the Project.
7	6	Oct 02		Improve erosion measures along the Project road from M'Béré to Komé in Chad	<b>New</b>	The amount and level of work still to be done is significant along the entire upgraded sections. Erosion control measures are not complete in places and/or have performed poorly during the rainy season.

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
8	6	Oct 02		Implement measures to mitigate risks due to driving practices inconsistent with Project safety standards.	New	Driving practices, particularly of some of the expatriates in both Chad and Cameroon, are not consistent with the safety standards of the Project.  A significant number of <i>de facto</i> returning convoys, speeding along Project roads, was observed.
9	6	Oct 02		Review or adopt fencing of temporary Project facilities and long-term construction workplaces.	New	In several cases (e.g. Batchenga, Komé batch plant, etc.) significant operations are still taking place outside fenced areas even if within compensated areas. The presence of fencing may represent a significant deterrent to unauthorized voluntary intrusion and its absence, particularly for long term installations, could lead to accidents or criminal activity.
10	6	Oct 02		Re-size restrooms and ablution blocks next to buildings O and P at TCC-Komé camp and S to Z and AA and BB at MCC Komé 5 camp.	New	The dimensioning of the 96-person living quarters are within the EMP requirements. However, overcrowding and clustering of the same of type buildings increases the risk of communicable disease outbreaks, specially of those directly transmitted from person to person, such as respiratory illnesses and gastrointestinal infections. Additionally, their restrooms and ablution blocks are under-sized according to the EMP requirements and they also need better maintenance.
11	6	Oct 02		Improve hygiene of food distribution at well pad construction sites and other construction sites in the OFDA.	New	Unsafe practices were observed for food distribution and storage at the construction sites visited in the OFDA.
<b><i>CAPACITY-BUILDING CHAD</i></b>						
19	1	Mar 01	Jun 01	Complete initial project funding (Government of Chad funds)	Closed	
20	1	Mar 01	Jun 01	Complete Implementation Manual	Closed	
21	1	Mar 01	Oct 02	Appoint government field monitors	Closed	Recruitment and appointment of field monitors is complete. CTNSC field staff is based in Komé and Bébédjia.
22	1	Mar 01		Train government field monitors	Pending	No significant training carried out as of October 2002. Training activities yet to be implemented through consulting firms and experts (for CTNSC staff and Directorate of Petroleum). Selection of such Consultants yet to be completed.
23	1	Mar 01	May 02	Start effective government field monitoring	Closed	
7	3	Oct 01		The selection and recruitment of two Technical Assistants for the CTNSC and consulting services for the Directorate of Petroleum are needed	Pending	Field TA is in Komé. TA for CTNSC headquarters urgently needed to support Executive Secretary, but his recruitment still has not progressed. The Directorate of Petroleum has a permanent monitor based in Komé.

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
2	4	Jan 02		Include in the Regional Development Plan a component targeting small peasant agriculture.	<b>Pending</b>	The Regional Development Plan is not in place yet.
7	5	May 02	Oct 02	The selection and recruitment of International Advisory Panel for the CTNSC is needed	<b>Closed</b>	The selection and recruitment of an International Advisory Panel was done in early October.
8	5	May 02	Oct 02	Establish work planning for field monitoring and communication with Project EMP staff	<b>Closed</b>	CTNSC field team uses a work plan since July. Meetings are held between CTNSC and EMP staff.
9	5	May 02		Finalize and start the contract for the preparation of the Regional Development Plan	<b>Pending</b>	The Regional Development Plan has not progressed at all since the last mission. Scope is being revised to integrate the Inspection Panel recommendation on Regional Environmental Assessment.
10	5	May 02	Oct 02	Expedite selection and recruitment of additional field support staff and technical assistant for FACIL	<b>Closed</b>	FACIL field staff is in place in Bébédjia including 3 technical assistants from German DED.
11	5	May 02		Accelerate implementation of FACIL approved applications and of the Rapid Intervention Measures	<b>Pending</b>	No significant progress made in terms of implementation of approved applications (loans and micro-credits). The Steering Committee is not performing efficiently.
12	5	May 02		Accelerate contracting for services for preparation of National Oil Spill Response Plan and Environmental Management Information System	<b>Pending</b>	Firm selected for the National Oil Spill Response Plan. Contract is pending revision of scope to fit with budget. Firm selected and contract for the EMIS preparation to be signed.
12	6	Oct 02		Prepare and implement a Land Use Plan for Kome Atan	<b>New</b>	A Land Use Plan (zonation of areas attributed to different uses) needs to be developed urgently by the Government (CTNSC, local authorities), then implemented.
13	6	Oct 02		Prepare and implement a Land Use Plan for Kome 5	<b>New</b>	A Land Use Plan (resettlement, zonation of areas attributed to different uses) needs to be developed urgently by the Government (CTNSC, local authorities, Directorate of Petroleum), then implemented.
14	6	Oct 02		Prepare a Land Use Plan for the OFDA as a whole	<b>New</b>	A Land Use Plan (zonation of areas attributed to different uses) needs to be developed by the Government (CTNSC), then implemented.
<b><i>CAPACITY-BUILDING CAMEROON</i></b>						
24	1	Mar 01	Jun 01	Start CAPECE project as defined in WB project appraisal document	<b>Closed</b>	
25	1	Mar 01	Jun 01	Complete Implementation Manual	<b>Closed</b>	

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
26	1	Mar 01	Jun 01	Appoint government field monitors	<b>Closed</b>	
27	1	Mar 01		Train government field monitors and start effective government field monitoring	<b>Pending</b>	Contract for training services ready to sign. Training plan (one year behind schedule) must be updated to take into consideration delays and current status of the Project. Government field monitoring in place except in the health sector, which remains a major concern.
18	4	Jan 02		Improve communication towards Project local population, local authorities and NGOs.	<b>Pending</b>	The implementation of the Communication Plan is ongoing. However, communication with the civil society, NGOs and local authorities has still to be improved on specific sites and aspects, such as regional compensation and temporary facilities.
13	5	May 02		Accelerate contracting for services for preparation of National Oil Spill Response Plan and Environmental Management Information System	<b>Pending</b>	Contract should be signed soon. Coordination with the Consortium Oil Spill Response Plan is key. EMIS is still at the contracting phase.
14	5	May 02		The selection and recruitment of International Advisory Panel is needed	<b>Pending</b>	CPSP has proposed to cancel this component. ECMG recommends to consider keeping services in health sector.
15	5	May 02		Demonstrate that the follow-up and feedback processes with the field monitors are in place	<b>Pending</b>	Limited feedback from CPSP to field personnel has been observed.
15	6	Oct 02		Expedite review of regional compensation projects submitted by COTCO to Government	<b>New</b>	Government Ministries should expedite review under CPSP supervision, in order to start implementation in October-November 2002
<b><i>ENVIRONMENTAL FOUNDATION AND MINEF</i></b>						
4	1	Mar 01		Bakola Pygmies: include land management in the CDF's priorities	<b>Pending</b>	The proposed IPP four actions have started being implemented by FEDEC. A mid-term action plan is now needed, that should address, amongst others, land issues.
28	1	Mar 01	Jan 02	Have Foundation registered and operations started	<b>Closed</b>	
29	1	Mar 01		Protect the National Park within Campo Ma'an UTO from poaching and illegal logging	<b>Pending</b>	MINEF has yet to provide adequate support to the UTO in terms of staff and equipment. MINEF needs to finalize Development Plan and prepare a five-year action plan for Campo-Ma'an UTO.
30	1	Mar 01	Oct 02	Expedite implementation of IPP (Indigenous People Plan)	<b>Closed</b>	The proposed IPP short-term actions have started being implemented by FEDEC.
31	1	Mar 01	Oct 02	Review EIA study for unit UFA 024 such that WB safeguard policies are met and stringent controls established	<b>Closed</b>	MINEF, through a Steering Committee is monitoring HFC compliance with the <i>Cahier des Charges</i> signed on April 10, 2002.

N°	Mission	Opening Date	Closing Date	Description	Status	Comments
19	4	Jan 02		Expedite the selection of the Implementing Organizations for the two National Parks	<b>Pending</b>	Selection of IOs has been done by FEDEC (WCS for M'bam-Djerem; WWF for Campo-Ma'an), yet to be approved by MINEF. Finalization of contracts is needed to implement the programs and monitor current and potential disturbances on the two Parks.
16	5	May 02		Provide support to the <i>Conservateur</i> of the Mbam-Djérem National Park	<b>Pending</b>	MINEF to appoint a new <i>Conservateur</i> and provide support with sufficient resources to carry out his mandate.

**APPENDIX A**  
**DAILY ACTIVITY SUMMARY**

Between September 22 and October 7, 2002, the D'Appolonia ECMG conducted the sixth mission to monitor the Chad Export Project in Chad and Cameroon and the capacity building programs in Chad and Cameroon. Specific activities were:

- *September 22* — ECMG arrived in Douala, Cameroon.
- *September 23* — security and medical briefings, review of logistics, project and EMP issues overview were conducted at COTCO offices in Douala, meeting with the Project EMP management staff; two members of the ECMG traveled to Kribi for discussions with representatives of FEDEC.
- *September 24* — the portion of the group in Douala flew to Yaoundé and toured pipeline operations along Spread 2 in the area of Yaoundé, including the Batchenga WSJV Camp. The portion of the group in Kribi held additional discussions with FEDEC representatives, accompanied them to a Pygmy village, reviewed processes regional and individual compensation and social closure and then drove to Yaoundé.
- *September 25* — in the morning a portion of the team toured villages in the Yaoundé area where there had been some civil unrest due the issue of supplemental compensation. Discussions were held with the village chief in Leboudi, and sites along the pipeline from KP850 to KP 825 that required supplemental compensation were visited. The rest of the group attended a meeting with the World Bank in Yaoundé. In the afternoon, the entire group attended a meeting with NGOs. Prior to the end of that meeting a portion of the left to attend a meeting at the Ministry of Health. The group reconvened in the evening and attended a meeting at FEDEC offices in Yaoundé.
- *September 26* — in the morning the entire group flew from Yaoundé to Bélabo, where half of the team departed and the remainder of the team traveled to Dompta. A portion of the Bélabo team toured the TCC Camp and surrounding villages and visited the PS-3 yard and adjacent landfill site. The remainder of the Bélabo team toured villages north of Bélabo to review socio-economic issues. The Dompta portion of the team reviewed Spread 1 pipeline operations in the Dompta area.
- *September 27* — in the morning the one member of Bélabo portion of the team toured the immediate area of Bélabo and held interviews with TCC socio-economic staff members, while the remaining members of the group in Bélabo held a meeting at the TCC Health Clinic and then visited the old WSJV Camp/Storage Yard. The team in Bélabo then reunited and flew to Dompta. Two of the ECMG in Dompta continued touring activities along Spread 1 while the other team member toured TCC and WSJV facilities at Dompta from the standpoint of medical services and health. The entire team reunited in the middle of the day the TCC Dompta Camp. In the afternoon one team member toured compensation sites in the villages of Bakari and Koman Gbaya and at the end of the day attended a meeting at TCC's hiring office in Bemboyo. The rest of the group toured PS-2. Two team members left early to visit the newly donated clinic and a location of traditional health services in Bemboyo.
- *September 28* — The entire group left Dompta in vehicles and traveled to Komé. The travel was conducted basically as two independent groups, one to review the status of road infrastructure and the remainder to visit villages to review cultural resource and compensation issues.

- *September 29* — the entire team attended a briefing by Pride Schlumberger. After the briefing, the group split to review compensation sites, the activities of government monitors, and to tour drilling sites. The entire group met at mid-day at the Komé Camp. In the afternoon the group again split to review the status of health facilities and camp sanitation, attend a meeting with the CTNSC field team, conduct an additional review of road infrastructure west of Komé, tour the TCC Camp and attend a presentation made by TCC of the waste management procedures they are currently following. Two team members separated from the rest of the team and traveled to Moundou.
- *September 30* — Three members of the group in Komé spent the day being briefed by CPMT staff and then toured the initiation of the Spread 1 pipeline activities in Chad and the ongoing construction efforts at Komé 5 and the Miandoum Gathering Station. The remaining member of the ECMG in Komé visited the Driller's Camp, the TCC Camp, the Miandoum Field facilities and the MCC work site from the standpoints of health and sanitation. The team members in Moundou attended a meeting with NGOs, visited the GTZ office, attended a meeting with the Préfet of Logone Occidental and another meeting with staff of Africare, before rejoining the rest of the group in Komé.
- *October 1* — the entire team split to review a variety of activities. One of the members of the team spent the entire day visiting Doba and Bébédjia with the head of the CTNSC field team, including attendance to a meeting with the FACIL organization in Bébédjia. Other team members attended briefings from CPMT staff, toured the TCC and Driller's Camps and then spent the afternoon touring the area of the Bébédjia gravel quarry and visiting the Saint Joseph Hospital. One team member met with representatives of the EEPIC compensation team, interviewed the TA to the CTNSC field team, and rejoined other group members for the visit to the Bébédjia gravel quarry, before ending the day visiting villagers in the Miandoum area. The senior archaeologist supporting ECMG arrived in Komé in the afternoon and joined with a team member to visit archaeological sites near Komé with the available members of the Project archaeological team.
- *October 2* — during the morning, the group pursued diverse interests. One portion of the team visited archaeological sites along the pipeline with the head of the Project archaeological team in Chad. Other team members participated in a meeting between CTNSC, Direction du Pétrole, the Project and the *Sous-Préfet* of Bébédjia about Komé Atan and Komé 5 spontaneous settlements and then had an interview with the head of the TCC socio-economic team. Other team members reviewed information on the initial flaring test and then toured construction areas at Komé 5. One team member completed the review of food handling procedures at the Komé Base camps and reviewed vector control measures being taken to prevent the spread of diseases. The entire group met at the Komé International Airport and flew to N'Djaména.
- *October 3* — A portion of the ECMG team visited the offices of the Project chief archaeologist in Chad at the University of N'Djaména and the existing archaeological laboratory. This group also visited the National Museum and in the afternoon met with the two senior archaeologists conducting Project tasks in Cameroon. The remainder of the group attended a meeting with the National Coordinator and the CTNSC Executive Secretary and their staff in the morning and in the afternoon met with the World Bank officers.
- *October 4* — the entire group attended briefings on the subjects of malaria prophylaxis, the pipeline leak detection system, groundwater use and protection, the ASOSRP, and Project logistics in the EEPIC offices in N'Djaména. The senior

archaeologist of ECMG returned to Komé to observe archaeological field procedures at the site of recent discoveries along the pipeline route near Komé.

- *October 5* — the entire group conducted a meeting with Project EMP management and Lender representatives from the International Finance Corporation, European Investment Bank and the World Bank to review the status of the “Follow-Up Issues” from the fifth ECMG mission. The senior archaeologist of ECMG continued his field work and then returned to N’Djaména from Komé in the afternoon.
- *October 6* — The entire day was spent by the ECMG team in preparing for the close-out meeting.
- *October 7* — The closeout meeting related to the Chad Development Project was held at the World Bank offices in N’Djaména with Chad Government officials, representatives from the International Finance Corporation, European Investment Bank and the World Bank (both Chad and Cameroon), EEPCI/TOTCO and COTCO EMP management. A second close-out meeting was held in the afternoon with representation from the same organizations that attended the morning meeting to present the ECMG review of the status of the two capacity-building projects, FEDEC, and contacts with NGO groups in Chad and Cameroon. In the evening, the entire group departed N’Djaména.

## APPENDIX B PROJECT FOOTPRINTS

The footprints associated with the development of new infrastructure in both Chad and Cameroon were essentially established by the time of this visit. The major road construction projects have been implemented. All of the storage yards are complete and either contain pipe or have already been emptied of pipe. The extent of the footprints associated with the fixed facilities (pump stations PS-2 and PS-3, the pressure reducing station PRS, and the landfill at PS-3, as well as the facilities in the OFDA) is defined and construction is ongoing. A new infrastructure with a significant footprint in the field and constructed since the fifth ECMG visit is the new air strip in Gadjibian. Field activities with the greatest potential direct environmental impact at the time of this visit included the ongoing of pipeline construction and the ongoing activities associated with production well drilling, including well pads, trunk and feeder line construction, as well as the associated access roads for the drilling equipment. Specific footprints corresponding to the extent of current construction activities are identified as follows.

### *Chad*

- The Gadjibian storage yard is now filled with pipe and the filling of this storage yard represents the completion of the pipe distribution from Douala, Cameroon.
- The new air strip at Gadjibian is constructed.
- Infrastructure construction in the OFDA has continued. The ECMG team was not provided details on the status of the construction of individual components.
- Production wells have been completed at 22 locations and well pad construction continues in advance of drilling.
- Trunk and feeder lines are beginning to be constructed to network the individual production wells. New access roads are being constructed to the new well pads. These activities represent the greatest ongoing activities affecting the physical footprint of the Project in the OFDA.
- During the past rainy season, extraction of gravel and sand from sites previously exploited near Doba and Bébédjia were halted in favor of purchasing these materials in Moundou. Exploitation of these Project sources is expected to resume during the coming dry season.
- Road upgrades between Komé and the M'Béré River have been completed to a "fit for purpose" level.
- Due to heavy rains in northern Cameroon, Spread 1 pipeline operations were shifted to the Komé area. These activities had just started at the time of the visit and progress is not reported.

### *Cameroon*

- Pipeline construction by WSJV is ongoing along Spreads 1 and 2 with the following total progress within the 891 km length of pipeline in Cameroon: 735 km graded (82.5%); 687 km (77%) trenched and field welded; 676 km (76%) pipe in ground and backfilled; 555 km (62.5%) rough restoration; and 266 km (30%) with final restoration. The completion for the overall pipeline system (pipe, valves, restoration, etc.) for both Cameroon and Chad together is reported to be 54%.
- TCC is continuing construction at PS-2 (Dompta) and the reported completion of construction is 43%. PS-3 (Bélabo) also has ongoing construction although the progress is slightly behind that of PS-2; and the PRS (Kribi) is now 55% completed. The construction of the landfill at PS-3 has not made significant progress.

## Appendix C

### *Land Use Planning in Komé Atan – Proposed Framework*

#### *Objectives:*

- Develop a land use zonation, where areas dedicated for housing, commerce, community facilities, streets, parking places, etc. are delineated.
- Improve fire safety and ensure that sanitation, drainage, solid waste collection, and vehicular access wherever needed are made possible.
- Reach a consensus between parties on the proposed zonation and formalize this consensus.
- Implement the restructuring actions that may result from the agreed zonation, focusing on the minimization of relocations that may result from this restructuring.

#### *Actions:*

- Develop the Land Use Planning in consultation with:
  - *Sous-Préfet* of Bébédjia, and later that of Komé (to be named),
  - *Chef de Canton* Komé,
  - Consortium,
  - Community representatives.
- General methodology and program of activities:
  - Initial consultation with *Sous-Préfet* and *Chef de Canton* and development of a detailed Work Plan,
  - General meeting of the whole community in the settlement with the *Sous-Préfet* and *Chef de Canton*, with the objective of creating a Land Use Committee,
  - Development of a baseline topographic map,
  - Preparation of a first draft Land Use Planning document (interim zonation map), either directly by the CTNSC Field Team or by a consultant hired by the CTNSC Field Team, in close coordination with the local Committee,
  - Development of specific procedures for community enforcement,
  - Consultation with *Sous-Préfet* and *Chef de Canton*, then with Komé Atan Land Use Committee, and related amendments,
  - Assessment of the impact of the Land Use Planning on existing houses, revisions to minimize relocation requirements, preparation of detailed procedures for relocation of households to be relocated and associated assistance for reconstruction,
  - General meeting of presentation of the final Land Use Planning,
  - Implementation of the restructuring actions (relocation).

The interim deliverable will be a zonation of areas dedicated to each use. The final deliverable will include the finalized zonation together with relevant agreements with parties involved.