APPENDICES

With the Advisory Review on the Compliance of Project Implementation with the Environmental Permit for the Baku-Tbilisi-Ceyhan Oil Pipeline and the South Caucasus Gas Pipeline in Georgia

(appendices 1 to 6)

APPENDIX 1

Letter from the Netherlands Ministry of Housing, Spatial Planning and the Environment (VROM) dated 5 September 2000 in which the Commission has been asked to submit an Advisory Review

Ministerie van Volkshuisvesting,
Ruimtelijke Ordening en Milieubeheer
Rijnstraat 8
2515 XP Den Haag
Interne postcode 660
Tel : 3394097
Fax: 3391302

Directoraat Generaal Milieubeheer
Directie Strategie en Bestuur
Afdeling Bestuur en Maatschappij

Aan de Voorzitter van de Commissie
voor de milieu-effectrapportage
dhr. Ketting
Postbus 2345
3500 GH Utrecht

Uw kenmerk	Uw brief	Kenmerk	Datum
		DGM/B/BMB/ 2000095803	- 5 SEP. 2000

Onderwerp

Advisering olieleiding Georgië

Geachte heer Ketting,

De Minister van Milieu van Georgië heeft Nederland om assistentie gevraagd bij de beoordeling van de milieugevolgen van de Bakoe-Ceyhan ruwe olieleiding (zie bijlage alsmede het separaat verzonden dossier).
Ik wil u verzoeken om de toetsing van de komende milieu-effectrapportage uit te voeren en daarbij ook bij te dragen aan de gewenste kennisoverdracht.
Gaarne verneem ik van U hoe deze toetsing opgezet zal worden alsmede de kosten (in de vorm van een begroting) die daaraan verbonden zullen zijn.
Deze begroting kunt U richten aan de directeur Internationale Milieuzaken, t.a.v. de heer H. van Meijenfeldt (IPC 670).

Hoogachtend,

De Minister van Volkshuisvesting,
Ruimtelijke Ordening en Milieubeheer,
voor deze,
De directeur Strategie en Bestuur,

mr. J.H. Enter

Bijlagen

APPENDIX 2

Project information

Proposed activity: To advise on the Environmental Impact Assessment of the Baku-Tbilisi-Ceyhan Main Export Oil Pipeline and the South Caucasus Gas Pipeline in Georgia

Categories: DAC/CRS code 71400

Project numbers: Ministerie van VROM: DGM.B/BMB/200095803
Netherlands Commission for EIA: 1120

Procedural information:
Request for Advice: 5 September 2000

Advisory Guidelines for the EIA (first phase) of the BTC project: 8 June 2001
Approved by the Environment Minister of Georgia: 16 May 2002

Advisory Review of draft ESIA report submitted: 19 July 2002

Advisory Review of final ESIA report submitted: 29 November 2002

Final Advisory Review report submitted: 15 October 2003

Advisory Review on monitoring of the environmental compliance for the BTC-project and the SC-project: 22 December 2004

Information on the project:

General: At the request of the Minister of Environment of Georgia, this advice has been prepared by the Netherlands Commission for Environmental Impact Assessment (EIA) (hereafter called "the Commission")[1].

This advice is the fifth consecutive advice prepared by the Commission, regarding the BTC-project and the SC-project[2]. On 2 December 2002 the Min-

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[1] The Netherlands Commission for Environmental Impact Assessment is an independent advisory body, has a legal basis and was established in 1985. For more information see the website: www.eia.nl

[2] The following advisory reports have been submitted previously. These advisory reports can be downloaded from the website of the Commission www.eia.nl :

- Advisory guidelines for environmental impact assessment (first phase) of the Baku-Tbilisi-Ceyhan Main Export oil pipeline project in Georgia prepared by the Netherlands Commission for EIA (8 June 2001) and approved by the Minister of Environment of Georgia (16 May 2002).
- Advisory Review of the draft Environmental and Social Impact Assessment Reports for the Baku – Tbilisi – Ceyhan Oil Pipeline project and the South Caucasus Gas Pipeline in Georgia (19 July 2002).
- Advisory Review of the Environmental and Social Impact Assessment Reports for the Baku Tbilisi-Ceyhan Oil Pipeline and the South Caucasus Gas Pipeline in Georgia (22 November 2002).
- Advisory Review of the Environmental and Social Impact Assessment Reports and Supplementary Information for the Baku-Tbilisi-Ceyhan Oil Pipeline and the South Caucasus Gas Pipeline in Georgia (15 October 2003).

ister of Environment signed the Environmental Permit for the BTC-project and the following document: "*Continuing Activities Under the Environmental Permit for the BTC ESIA*". This document listed 8conditions that have to be met by BTC Co, see appendix 4-A for these conditions. In December 2002 the Minister of Environment signed the Environmental permit for the SC-project and the following document: "*Continuing Activities under the Environmental Permit for the SCP ESIA*". This document listed 10 conditions that have to be met by BTC Co, see appendix 4-B for these conditions.

The aim of this review is to check whether, in real terms, the available information and the implementation meet the conditions as stated in these documents and whether they are in accordance with best international practice and standards. In this review the Commission focusses on conditions and issues that have been mentioned by the Minister.

Setting of the projects: The proponent for the oil pipeline project is a consortium of companies known as the Baku-Tbilisi-Ceyhan Pipeline Company (BTC Co) led by British Petroleum (BP). The other companies are the State Oil Company of the Azerbaijan Republic (SOCAR), Unocal, Statoil, TPAO, Itochu, Ramco, Delta Hess and ENI. The ESIA report is prepared by BP.

The proponent for the gas pipeline project is a consortium of companies led by British Petroleum. The other companies are Statoil, TPAO, Luk-Agip NV, TotalFinaElf, OIEC, and the State oil company of the Azerbaijan Republic (SOCAR).

Baku–Tbilisi-Ceyhan Oil pipeline: The Baku–Tbilisi–Ceyhan Main Export oil pipeline project (BTC-project) is intended to become a major system for transporting up to one million barrels per day (50 million tonnes per year) of crude oil from an expanded Sangachel terminal near Baku in Azerbaijan, through Georgia to a new marine terminal at Ceyhan in Turkey on the Mediterranean coast. Tankers will ship the oil to international markets. The total length of the pipeline is 1760 km. The length of pipeline running through Georgia as proposed in the ESIA report is 248 km.

The 42" diameter BTC pipeline in Azerbaijan converts to 46" diameter as it enters Georgia and reverts back to 42" diameter in Turkey. In addition to the 248 km pipeline itself, permanent facilities in Georgia include: two pump stations, a pig launcher/receiver station along with two further pigging facilities integrated within the pump stations; one metering station, a number of valve stations, a cathodic protection system, an optical fibre communication system and a computer-based integrated control and safety system. According to the planning the construction is scheduled to start in the spring of 2003. The pipeline will become operational early 2005.

An Inter-Governmental Agreement (IGA) between Georgia, the Azerbaijan Republic and the Republic of Turkey has been signed in which the transportation of petroleum via the territories of the Azerbaijan republic, Georgia and the Republic of Turkey through the Baku-Tbilisi-Ceyhan (BTC) Main Export pipeline has been agreed upon.

On 28th April 2000 Georgia, Azerbaijan and Turkey initiated the Georgian Host Government Agreement (HGA) on the BTC-project. This Agreement has been ratified by the Parliament of Georgia on May 31, 2000. The HGA defines

the environmental standards of this project. It has been stated that environmental standards of the Netherlands and Austria and the EC Directive 85/337/EEC will be applied.

This advice focuses on that part of the BTC-project that crosses the territory of Georgia.

South Caucasus Gas Pipeline: The South Caucasus pipeline project (SC-project) is intended to become a pipeline system to transport up to 7.3 billion cubic metres of gas per year from an expanded Sangachal terminal near Baku in Azerbaijan, through Georgia to the Georgian/Turkish border for onward distribution to Turkish domestic customers via the national gas network. In addition to the pipeline itself, permanent facilities in Georgia include: one pressure reduction and metering station, a number of block valve stations, a natural gas off-take site, a cathodic protection system, an optical fibre communication system and a computer-based integrated control and safety system. The 42" diameter SCP will have a total length of 690 km, 248 km running parallel to the preferred route of the BTC pipeline between the Sangachal Terminal and the Georgian / Turkish border near Akhaltsikhe. The 690 km pipeline is planned to be operational in late 2005.

The SC project is being implemented within the framework of Inter-Government Agreements between the two transit countries. Two Host Government Agreements (HGA) exist between the respective government of each transit country and the SC project owners. The HGA defines the environmental standards of this project. It has been stated that environmental standards of the Netherlands and Austria and the EC Directive 85/337/EEC will be applied.

This advice focuses on that part of the SC project that crosses the territory of Georgia.

Composition of the working group of the Commission for EIA:

Mr. B. Burgess
Mr. R. Goodland
Mrs. I. Kurtskhalia – Local expert
Mr. D. de Zeeuw – Chairman
Mr. R. Rijkers

Technical secretary:

Mr. A.J.Kolhoff

APPENDIX 3
Program of the site visit

Program: Review of the monitoring of the BTC-project
Visit of the Netherlands Commission for EIA to Georgia 10 – 17 November 2004

Wednesday 10 November

- 02.25: Arrival in Tbilisi of Mr de Zeeuw, Mr Burgess, Mr Rijkers and Mr Kolhoff
- 01.30: Arrival in Tbilisi of Mr Goodland
- 10.00: Working group meeting in Santa Fe Guesthouse
- 12.00: Monitoring group of the MoE – Mr Zurab (head of the team)
- 14.00: GIOC – Mr Tchelidze, Mr Vashakmadze

Thursday 11 November

- 10.30: Environmental Advisor, Mr C. Castellani
- 11.00: BP – Mr E.Johnson, Mr D.Morgan and Mrs M. Acrygg
- 13.00: CARE / Mercy corps, Mrs N. Topuridze responsible for execution of Community Investment Programme
- 15.00: NGOs , CENN and Green Alternative

Friday 12 November		
Mr Burgess, Mr Rijkers	Mr Goodland, Ms Kurtskhalia,	Mr Kolhoff, Mr de Zeeuw
- 10.00: GIOC Mr M. Tchelidze	- 09.00: Environm. Advisor	11.00: Strengthening of EIA and introduction of SEA

- 17.00: Minister of Environment

Saturday 13 and Sunday 14 November

Site visit to Borjomi-Bakuriayni area and the RoW Bakuriyani – Tsalka were constuction is on-going. Guidance by Ministry of Environment and BP on site.

Monday 15 November

- 08.00: Netherlands Ambassador, Mr H Molenaar
- 10.00: Environmental Advisor, Mr. C. Berlingieri
- 13.30: Technical Advisor Jacobs – Mr Scholfield, Mr. Mhach

Tuesday 16 November

- 09.00: BP, Mr E.Johnson
- 11.00: Community liason officer at BP
- 11.00: Security Council
- 13.00: EBRD; Mr N. Hadjiyski and Mrs C. Philippse
- 15.00: CARE
- 17.00: Minister of Environment

Wednesday 17 November

- 03.15: Departure of Mr. de Zeeuw, Mr Burgess, Mr Kolhoff and Mr Rijkers,
- 05.00: Departure Mr Goodland

APPENDIX 4-A

CONTINUING ACTIVITIES UNDER THE ENVIRONMENTAL PERMIT FOR THE BTC ESIA

1. Risk Assessment

a. BTC CO shall revise the ERA incorporating any additional data for those pipeline route sections that arc environmentally sensitive or are clearly exposed to risk; (in particular, geo-hazards, and third party intervention).

b. If required by the above study, BTC Co will elaborate additional risk mitigation measures.

c. BTC Co shall ensure that. the risk mitigation measures are feasible with respect to technical, technological, management, supervision and monitoring aspects of the project.

d. BTC Co shall submit arty new information pertaining to the risk assessment to the Ministry of Environment and Natural Resources Protection of Georgia at least four weeks prior to construction start-up.

2. Geohazards

a. BTC Co shall undertake additional studies of the landslide hazard areas, specifically the Tskhratskaro, Tsikhisjvari, Kodiana, Tkcmlana and Minadze sections. Independent international experts, Georgian experts and BTC Co. representatives shall meet and review technical assessment of potential landslide areas which may warrant further study. This group shall aim to identify appropriate methodologies and BTC Co. shall implement any such methodology changes if such are necessitated by (lie findings of such study/investigation.

b. BTC CO. shall study landsliding events and model the slope stability to be undertaken in light of natural, techogenic and seismic factors.

c. BTC Co. shall specially focus on the areas where the pipeline route crosses dry gullies and areas exposed to the risk of the debris flow events.

d. The results of those areas that were previously agreed will be provided three weeks in advance of construction of the relevant pipeline section.

3. Biodiversity

a. BTC Co. shall give more extensive consideration to biodiversity protection measures, with special focus to be placed on the specific issues concerning management of the protected and highly sensitivity areas, including Bedeni Plateau, Santa, Mt Tavkvetili, Narianis Veli.

b. BTC Co. shall specify information on the Red Data Book species and the full list of the protected species and shall place same on a map with a scale of 1:50 000 or larger.

c. BTC Co. shall identify wildlife assessment parameters, indicators and scope of study.

d. BTC shall identify supervision methods. BTC shall identify specific issues of forest reinstatement by forest functional categories (water -protective, anti-erosive, reinstatement).

e. BTC Co. shall render assistance to the relevant state authorities of Georgia in the preparation of the management plans for the protected and/or potentially protected areas and/or the pipeline construction corridor.

f. BTC Co. shall identify biodiversity monitoring measures and include in the Monitoring Plan and shall make periodic submissions of the additional information pertaining to this issue to the Ministry of Environment and Natural Resources Protection of Georgia (at least once in a year).

g. BTC Co. shall place special focus on sensitive and protected species of the biodiversity and shall carry out its activities in a way as to rule out any disturbance, damage to the habitats and feeding grounds to the maximum extent, in any phase of the project,

4. River and Gully Crossings

Review by an independent international engineering consultant (mutually agreed on, and directed by, BTC Co., GIOC and the MoE) of the designs for water course crossings and, if necessary, modification. of the design to provide an adequate safety level.

5. Protection of groundwater deposits

a. In the case of crossing of ground water deposits by the pipeline, BTC Co. shall apply approaches and principles intended to minimise the possibility of ground water contamination.

b. In the case of crossing of ground water deposits by the pipeline, BTC Co. shall apply all efforts to locate the pipeline route outside zones I, II and III for water sanitation protection

c. If crossing of the mentioned zones is justified, BTC Co. shall design and implement special measures for pipeline protection, leakage prevention and immediate response to leakage, which measures shall he separately reflected in management, monitoring and the oil spill response plan.

d. Mitigations measures for Borjorni, Tsalka and Ktsia-Tabatskuri sections arc formulated separately herein.

6. Facilities for leakage prevention

- QA/QC system during construction in accordance with international standards

- Hydro testing of the pipeline in accordance with international standards
- State of the art leak detection system throughout
- Regular patrolling of the route
- Corrosion protection measures, including:
  - Cathodic protection surveys
  - Pipeline protective coating
- Pigging surveys
- Monitoring crude quality
- Pipeline design to international standards
- Community awareness programmes aimed at prevention of third party intervention

7. Response to failure situations (oil leakage)

The Oil Spill Response Plan shall include, but not be limited to:

(i) environmental mapping off habitats vulnerable to potential petroleum spills in the entire BTC pipeline;

(ii) situational scenarios of potential spillages and responses, taking into consideration local circumstances;

(iii) plans for the provision of relevant petroleum spill clean up equipment, materials and services;

(iv) plans for the deployment of relevant equipment and emergency response notification details of the organisation required to handle petroleum spill response; and

(v) plans for the treatment and disposal of resulting contaminated materials.

8. Management and monitoring plans

The mitigation measures that are contained in the ESIA shall be implemented by means of management plans. These management plans shall he provided to GIOC in accordance with World Bank rules and guidelines.

BTC Co. shall provide a Monitoring Programme which contains, inter alia:

- Parameters to be measured;
- Methods for monitoring;
- Sampling locations;
- Detection limits, indicating relevant legislation and standards;
- Government responsibilities within the monitoring programme;
- Allocation of responsibilities;
- Frequency and timing;
- Progress and reporting of results.

BTC shall identify the responsibilities and arrangements and monitoring (BTC Co., contractor, third party and government provide these details to MOE and GIOC).

BTC shall provide the results of its Monitoring Programme to MDE and GIOC on a routine basis during construction and at appropriate frequency thereafter.

9. Borjomi zone

a. Tskhralskaro-Bakuriani-Kodiana, Tsalka and Ktsia-Tabatskuri sections of the proposed pipeline route cross the areas of environmental, economic and historical significance for Georgia. Especially significant is area of Borjomi gorge (which at the same time involves geologically hazardous high risk sections).

b. BTC Co. shall, prior to the completion of the design of this section of the route, provide at least the following alternatives in the revised Route Report, both of which cross the Akhalkalaki district:

   i. the Central Corridor;

   ii. the eastern section of the Karakaia route in combination with western section of Central Corridor.

c. BTC shall consider socio-economic factors regarding the Borjomi Area in the Route Report.

d. BTC Co. shall provide before commencement of studies, configuration of the selected route, together with cartographic (at least at a 1:10,000 scale) and air photograph materials.

e. BTC Co. shall submit results of the studies of alternative routes to the Ministry of Environment and Natural Resources, at least 6 weeks before commencement of construction works at this section (from KP 1.75 to KP 191.5)

f. If as a result of above studies it is indicated that Tskhratskaro-Tsikhisjvari-Kodiana (Borjomi Gorge) section has no alternatives, BTC Co. shall apply Best Available Technology, Best Practices and multiple lines of protection and redundancy in design, construction and operation to achieve as close to "zero risk" as possible.

g. In the case of crossing of ground water deposits by the pipeline, BTC Co. shall apply all efforts to locate the pipeline route outside zones 1, 11 and III for water sanitation protection.

h. BTC Co. shall perform preliminary studies of alternative water supply sources for the population of the Borjomi Area to be utilised in the event of drinking water contamination resulting from an oil spill.

i. BTC Co. shall immediately notify the Ministry and local authorities about leakage of any volume.

j. BTC Co. shall provide additional design and operational measures to secure the integrity of the pipeline in event of third party intervention in a manner which will allow sufficient time for information to reach project operations staff and State security services and enable access to Borjomi Area. Based upon risks which art; foreseeable under the prevailing conditions, including risks associated with attempts to tap the pipeline, acts of vandalism, and attempts to disrupt the project by small organised groups, BTC Co. shall institute a programme, including but not confined to the following:

- installation of a fibre optic or similar sensor system to detect earth movements, illegal excavation, or third party intrusion;
- utilisation of marker tape with electronic alarm to detect breakage/interference;
- employment by BTC Co. of year round, permanent local, national, unarmed security presence equipped with all terrain vehicles, as appropriate, and communication systems, all suited to the requirements for the terrain and circumstances;
- construction and maintenance of all-weather access roads for monitoring of pipeline operations and ROW maintenance, emergency response (consistent with ERA predicted detection and intervention time) and State security services.

BTC Co. shall provide additional mitigation measures for the specified section including:

- Extra sensitive leak detection system(s), other that visual inspection, capable of detecting and responding to small subsurface leaks.
- Installation in total of 2 block valves and 2 check valves between KP 176 and 194.

- External catchment areas aimed at surface water protection that meet or exceed the requirements of any spill risk employed as a second line of defence.

- Employ local, internationally trained oil spill response personnel with equipment to he permanently stationed locally

- provide a modelling of oil spill pollution for each kilometre

- reconditioning and maintenance of existing access roads and access tracks, and construction and maintenance of new access roads all to achieve all weather and all year round access to the pipeline ROW for monitoring, maintenance, security and emergency response

- undertaking year round ground water monitoring along the pipeline ROW (distance between two monitoring locations to be not more than 1000 m and as determined by additional studies

- Monitor drinking water supplies and Rorjotnula river water at places to he agreed with the Ministry of Environment, and develop alternate water supply plan(s) for all drinking and mineral water supplies to be implemented in the case of contamination due to an oil spill from the BTC pipeline.

10. Tsalka and Ktsia-Tabatskuri Zone

The route passes through surface and ground Fresh and mineral waters formation and transit territories, in Tsalka and Ktsia-Tabatskuri district and thus are high risk zones.

With respect to the Tsalka section:

a. BTC Co. shall undertake a risk assessment for oil spill and shall elaborate such approach for the prevention of oil spills (as the highest priority), which will minimise the risk of oil spills and the resulting possibility of underground water contamination. BTC Co. shall separately elaborate a preventive approach to oil spills for this particular section; this approach shall be in accordance with the standards set forth in the HGA.

b. The detection system for spilling and pipeline security shall be intensified. New technologies, as well as experience of the company in other countries (including Europe and USA) and in other projects shall be taken into consideration.

c. The oil spill response plan, to be approved in accordance with the II GA, shall include a specific section covering the Tsalka and Ktsia-'Tabatskuri sections of the pipeline.

d. BTC Co. shall provide a special plan describing mitigation measures applicable for the construction phase to be carried out for the Ktsia-'Tabatskuri section.

e. BTC shall propose a minor re-route in this section to further minimise the risk to Lake Tsalka in accordance with international standards.

11. During the construction BTC Co. shall:

- Elaborate local projects regarding laying of temporary access roads to the pipeline corridor; these projects shall be submitted to the MoE for approval;

- Agree issues related to water supply and discharge of waste water during operation of camps working during the pipeline construction period with MoE for each particular case;

- Before carrying out works for pipeline crossings on rivers, which have significance from the fish farming point of view, assess expected damage to ichtiofauna and the need of compensation for rehabilitation of ichtiofauna species.

12. Additional Study of the Existing Environment

For the purposes of additional study (assessment) of the potential environmental impacts off the pipeline and its infrastructure on the highly sensitive areas, BTC Co. shall prepare an environmental monitoring program and its phased implementation plan. BTC Co. shall gather detailed data which would promote refinement of the potential oil spill risk assessment and shall elaborate measures as an integral part of the program and the plan. BTC Co. shall prepare the environmental monitoring program and plan for both short-term (construction phase) and long-term (operational phase) monitoring. The foregoing program and plan shall be provided to the Ministry of Environment and Natural Resources Protection of Georgia.

To regularly control the pipeline sections that cross the geohazard areas and are exposed to the increased risks, BTC Co. shall prepare a long-term erosion (landslide) control plan prior to the pipeline operation with a view to put in place required measures to prevent the pipeline disintegration in a timely manner. This plan shall be provided to, and discussed with, the Ministry of Environment and Natural Resources Protection of Georgia pursuant to the Protocol.

BTC Co. shall produce an optimal strategy, program and plan for waste management, which will provide for treatment and/or disposal of pipeline related waste, produced during the construction period, as well as the operations stage. The waste management strategy shall be based on the principle of minimisation of produced waste and shall provide maximal utilisation and application of the class, which could further be processes and recycled. Waste management strategy, program and plan shall be provided to, and discussed with, the MoE.

BTC Co. shall elaborate a comprehensive program of environmental management and a relevant plan therefor. The above plan shall be provided to, and discussed with, the MoE. The information on complying with the issues provided by the plan shall be regularly submitted to the MoE.

13. Host Government Agreement Matters

In accordance with the HGA, BTC Co. shall diligently implement the agreed activities set forth above. The results shall be published in reports available to the public and submitted to the MoE and BTC Co. shall meet on a routine basis with the MOE to discuss the progress and completion of the obligations set forth above. Should

BTC Co. fail to fulfil its obligations set forth herein, the MoE may take action in accordance with the HGA to ensure BTC Co.'s compliance with such obligations.

Notwithstanding anything to the contrary herein, and in strict accords - with HG Article 12.3 which states in part, that BTC Co. shall be obligated, regardless of fault or causation, to take all action necessary to remedy the harm and to restore the land and other harmed matter(s) to the maximum practicable extent to their prior condition and use, all in accordance with and as required by the standards and practices set forth in Article 12 and Appendix 3, and incur all expenses necessary to so remedy the harm, it being further agreed that if and to the extent that any harm cannot be so fully remedied, BTC Co. shall pay full, adequate and fair compensation in respect of any such unremedied harm.

The agreed activities herein are being undertaken in furtherance of the ESIA under the HCA and nothing contained herein shall act to alter, amend or otherwise modify the terms and conditions of the HGA and any dispute hereunder shall be subject to the provisions of Article 17 thereof.

APPENDIX 4-B

CONTINUING ACTIVITIES UNDER THE ENVIRONMENTAL PERMIT FOR THE SCP ESIA

1. Risk Assessment

1. BP Exploration (Shah Deniz) LTD shall revise the ERA incorporating any additional data for those pipeline route sections that are environmentally sensitive or are clearly exposed to risks (geo-hazards, third party intervention), where the gas pipeline comes considerably near the oil pipeline and the problems arisen on the gas pipeline may jeopardize safety of the oil pipeline. The risk model shall consider the effect of the gas pipeline upon the oil pipeline.

2. If the additional risk study demonstrates increased risk, BP Exploration (Shah Deniz) LTD will elaborate additional risk mitigation measures if required.

3. BP Exploration (Shah Deniz) LTD shall ensure that the additional risk mitigation measures are implemented with respect to technical, technological, management, supervision and monitoring aspects of the project.

4. BP Exploration (Shah Deniz) LTD shall submit any new information pertaining to the risk assessment to the Ministry of Environment and Natural Resources Protection of Georgia no later than four weeks prior to construction start-up.

2. Geohazards

1. BP Exploration (Shah Deniz) LTD shall undertake additional studies of the landslide hazard areas, specifically the Tskhratskaro, Kodiana, Tkemlana, Sakuneti and Minadze sections. Independent international experts, Georgian experts and BP Exploration (Shah Deniz) LTD representatives shall meet and review technical assessment of potential landslide areas, which may warrant further study. This group shall aim to identify appropriate methodologies and BP Exploration (Shah Deniz) LTD shall implement any such methodology changes if such are necessitated by the findings of such study/investigation.

2. BP Exploration (Shah Deniz) LTD shall study landsliding events and model the slope stability to be undertaken in light of natural, technogenic and seismic factors.

3. BP Exploration (Shah Deniz) LTD shall specially focus on the areas where the pipeline route crosses dry gullies and areas exposed to the risk of the debris flow events.

4. The results of those areas that were previously agreed will be provided three weeks in advance of construction of the relevant pipeline section.

3. Biodiversity

1. BP Exploration (Shah Deniz) LTD shall give more extensive: cor sideratio to biodiversity protection measures, with special focus .to be placed on t specific issues concerning management of the protected and highly sensitive areas, including Bedeni, Santa, Mt Tavkvetili, Narianis Veli.

2. BP Exploration (Shah Deniz) LTD shall specify information on the Red Data Book species and the- full list of the protected species and shall place same on a map with a scale of 1:50 000 or larger.

3. BP Exploration (Shah Deniz) LTD shall identify wildlife assessment parameters, indicators and scope of study.

4. BP Exploration (Shah Deniz) LTD shall identify supervision methods.

5. BP Exploration (Shah Deniz) LTD shall additionally identify specific issues of forest protection and reinstatement by forest functional categories (water protective, anti-erosive, reinstatement).

6. BP Exploration (Shah Deniz) LTD shall render assistance to the relevant state authorities of Georgia in the preparation of the management plans for the protected and/or potentially protected areas along the pipeline construction corridor.

7. BP Exploration (Shah Deniz) LTD shall identify biodiversity monitoring measures and include in the Monitoring Plan and shall make periodic submissions of the additional information pertaining to this issue to the Ministry of Environment and Natural Resources Protection of Georgia (at least once in a year).

8. BP Exploration (Shah Deniz) LTD shall place special focus on sensitive and protected species of the biodiversity and shall carry out its activities in a way as to rule out any disturbance, damage to the habitats and feeding grounds of fauna to the maximum extent, in any phase of the project.

4. River and Gully Crossings

An independent international engineering consultant mutually agreed on by BP Exploration (Shah Deniz) LTD, GIOC and the MoE shall review the designs for water course crossings and, if necessary, modify the design to provide an adequate safety level.

5. Facilities for leakage prevention

Ensure QA/QC system during construction and operation in accordance with international standards, specifically:

- Testing of the pipeline in accordance with international standards;

- Using best practice leak detection systems

- Regular patrolling and control of the route throughout the entire-length; For Tskratskaro-Kodiana section employment of year round, permanent local, national, unarmed security presence equipped with all terrain vehicles, as appropriate, and communication systems, all suited to the requirements for the terrain and circumstances;

- For Tskratskaro-Kodiana section construction and maintenance of all-, eather access roads for monitoring of pipeline operations and ROW maintenance, emergency response (consistent with ERA predicted detection' and intervention time) and State security services.

- Corrosion protection measures, including cathodic protection and pipeline protective coating;

- Development and implementation of community awareness programmes aimed at community safety and prevention of third party intervention.

6. Response to failure situations (gas leakage)

The Emergency Response Plan shall include, but not be limited to:

- Environmental mapping of habitats vulnerable to potential gas leakage in the entire SCP pipeline;
- Situational scenarios of potential leakages and responses, taking into consideration local circumstances;
- Plans for the provision of relevant response equipment, materials and services;
- Plans for the deployment of relevant equipment and emergency response notification details of the organisation required to respond to gas leakage.

7. Management and Monitoring Plans

The mitigation measures that are contained in the ESIA shall be implemented by means of management plans. These management plans shall be provided to GIOC in accordance with World Bank rules and guidelines. BP Exploration (Shah Deniz) LTD shall provide a Monitoring Progamme, which contains, inter alia:

- Parameters to be measured;
- Methods for monitoring;
- Sampling locations;
- Detection limits, indicating relevant legislation and standards;
- Government responsibilities within the monitoring programme;
- Allocation of responsibilities;
- Frequency and timing;
- Progress and reporting of results.

BP Exploration (Shah Deniz) LTD shall identify the responsibilities and arrangements for mitigation and monitoring (BP Exploration (Shah Deniz) LTD, contractor, third party and government authorities), and provide these details to MOE and GIOC.

BP Exploration (Shah Deniz) LTD shall provide the results of its Monitoring Programme to MOE and GIOC on a routine basis during c on and at appropriate frequency thereafter.

8. During the construction SP Exploration (Shah Deniz) LTD shall:

- Elaborate, local projects regarding laying of temporary access roads to the pipeline corridor; these projects shall be submitted to the MoE for approval;

- Agree issues related to water supply and discharge of waste water during operation of camps working during the pipeline construction period with MoE for each particular case;

- Before carrying out works for pipeline crossings on rivers, which have significance from the fish farming point of view, assess expected damage to . ichtiofauna and the need of compensation for rehabilitation of ichtiofauna species.

9. Additional Study of the Existing Environment

1. For the purposes of additional study (assessment) of the potential environmental impacts of the pipeline and its infrastructure on the highly sensitive areas, BP Exploration (Shah Deniz) LTD shall prepare an environmental monitoring program and its phased implementation plait BP Exploration (Shah Deniz) LTD shall gather detailed data, which would promote refinement of the potential gas leakage risk assessment and shall elaborate measures as an integral part of the program and the plan. BP Exploration (Shah Deniz) LTD shall prepare the environmental monitoring program and plan for both short-term (construction phase) and long-term (operational phase) monitoring. The foregoing program and plan shall be provided to the Ministry of Environment and Natural Resources Protection of Georgia.

2. To regularly control the pipeline sections that cross the geohazard areas and are exposed to the increased risks, BP Exploration (Shah Deniz) LTD shall prepare a long-term erosion (landslide) control plan prior to the pipeline operation with a view to put in place required measures to prevent the pipeline disintegration in a timely manner. This plan shall be provided to, and discussed with, the Ministry of Environment and Natural Resources Protection of Georgia pursuant to the Protocol.

3. BP Exploration (Shah Deniz) LTD shall produce an optimal strategy, program and plan for waste management, which will provide for treatment and/or disposal of pipeline related waste, produced during the construction period, as well as the operations stage. The waste management strategy shall be based on the principle of minimization of produced waste and shall provide maximal utilization and application of the class, which could further be processes and recycled. Waste management strategy, program and plan shall be provided to, and discussed with, the MoE.

4. BP Exploration (Shah Deniz) LTD shall elaborate a comprehensive program of environmental management and a relevant plan therefor. The above plan shall be provided to, and discussed with, the MoE. The information on complying with the issues provided by the plan shall be submitted to the MoE.

10. Host Government Agreement Matters

1. In accordance with the HGA, BP Exploration (Shah Deniz) LTD shall diligently implement the agreed activities set forth above. The results shall be pub'l'ished in reports available to the public and submitted to the MoE and BP Exploration (Shah Deniz) LTD shall meet on a routine basis with the WE to discuss the progress and completion of the obligations set forth above.

2. Notwithstanding anything to the contrary herein, and in strict accordance with HGA Article 12.3 which states in· part, that BP l xploration (Shah Deniz) LTD shall be obligated, regardless of fault or causation, to take all action necessary to remedy the harm and to restore the land and other harmed matter(s) to the maximum practicable extent to their prior condition and use, all in accordance with and as required by the standards and practices set forth in Article 12 and Appendix 4, and incur all expenses necessary to so remedy the harm, it being further agreed that if and to the extent that any harm cannot be so fully remedied, BP Exploration (Shah Deniz) LTD shall pay full, adequate and fair compensation in respect of any such unremedied harm.

3. The agreed activities herein are being undertaken in furtherance of the ESIA under the HGA and nothing contained herein shall act to alter, amend or otherwise modify the terms and conditions of the HGA and any dispute hereunder shall be subject to the provisions of Article 17 thereof

4. Should BP Exploration (Shah Deniz) LTD fail to fulfill its obligations set forth herein, the MoE may take action in accordance with the HGA to ensure BP Exploration (Shah Deniz) LTD's compliance with such obligations.

APPENDIX 5

Geohazards

Landslides and Earthquakes

Geohazards can potentially endanger the integrity of the BTC pipeline in the area of Borjomi. The following questions should be answered in order to be able to assess if the design and measures applied in the Borjomi area at present are sufficient to meet the standard for this sensitive area "as-close-to-zero risk as possible".

1) What is the accepted level of risk of landslides and earthquakes?
2) What are the specific site conditions and what is the dynamic earthquake effect?
3) What is the structural design for mitigation?
4) Are the mitigating geotechnical measures effective?

The Borjomi Area

Landslides have been identified at specific locations in the Borjomi area and could be triggered in periods of high rainfall and/or during an earthquake. In the long term erosion and deforestation on hill slopes could increase the chances of landslides.

The Borjomi area is part of an active seismic zone, south of the Caucasus where earthquakes occur up to a magnitude of 7.5 on the Richter scale for earthquakes with a return period of 474 years. Landslides can occur catastrophically or at slow speed (creep). The identified landslides have shallow slip failures at shallow depth of less than 10 m. Failure surfaces of landslides have not been identified within unweathered rock at larger depth than 10 m.

Landslides have been mapped during site investigations of the BTC project and frequently occur in the Kodiana and Sakire area, directly near or even under the Right of Way. In routing the BTC oil pipeline BP has avoided crossing landslides as much as possible. At the location of Sakire the pipeline does cross a shallow 'dormant' landslide.

Furthermore, it has been recognized that certain geological formations at the surface near the Right of Way in the Borjomi are vulnerable to natural weathering and erosion, partly due to uncontrolled deforestation.

Methodology Used

In the design and construction period, BP has followed the commonly used international standards and techniques to perform 'best professional practice' in assessing landslides and effects of earthquakes. In assessing the risk of earthquakes (earthquake-triggered landslides, deformation of pipeline and liquefaction) in geotechnical design an internationally accepted approach was followed.

For the risk analysis of 'damage to the BTC oil pipeline due to landslides' a qualitative approach of landslides was used in the geotechnical design and the implementation of stabilisation measures. For the risk of 'damage to the BTC oil pipeline due to earthquakes' a probabilistic approach was used in the definition of a design earthquake and peak ground acceleration (pga).

The seismic hazard of fault displacement during earthquakes is mitigated by 'shallow-angle' fault crossing (at the Vale and Rustava faults). Furthermore dynamic stability analysis of several slopes has been carried out. Field inspection have not been undertaken because these fault crossings are located outside the Borjomi area.

The construction goal to position the oil pipeline always in the top of unweathered rock below known failure surfaces has not been reached for the entire length of the oil pipeline in the Borjomi area. Furthermore, by November 2004, it had not been proven that the maximum values of water pressures are within the range of the chosen soil conditions in the geotechnical design. Due to the methodology of the 'observational method' and as a result collecting geotechnical data in a very late design phase (i.e. groundwater pressure and depth of weathering), the chosen safe slope design should be re-evaluated and that has been recommended in section 2.1 of the advisory report.

APPENDIX 6

Reinstatement and biodiversity compensation

Reinstatement

BTC's Right of Way (RoW) is about 249 km long by 44m wide over varied terrain and altitudes. The mandate to restore the RoW, borrow pits and de-roaded areas to their original conditions is very strict, very expensive to comply with in practice, and scientifically questionable. After the gas pipeline is installed parallel to BTC's oil pipeline there will be two ridges of stock-piled topsoil on each edge of the 44m-wide RoW. But these two ridges will be difficult to access because of two wide 2m-high berms of rocks just inside the topsoil stockpiles. Between these four ridges will be two 10-m-wide maintenance corridors over the two pipelines. Between the two maintenance corridors will be a central 15 m-wide corridor which can be re-vegetated. Some of the two RoWs will be maintained for inspection and maintenance purposes, hence with little or no vegetation. The Reinstatement Management Plan (21/11/03) is flexible and pragmatic. It is essential to re-contour the RoW in some manner, and to restore the RoW with the fastest-growing vegetation possible. Grazing is hard to manage so it may be difficult to reduce grazing pressure on some re-vegetated areas.

Re-contouring is expected to be executed in accordance with the plans. The contractor is experienced and has the equipment already on site and man skilled in precise earth moving. If re-contouring could be replaced by erosion control on erosion-prone soils and already identified erosion-prone slopes, this would be an almost cost-free method of reducing erosion risk. The goal of re-contouring in erosion-prone sites should primarily be erosion-proofing, rather than restoration of the original contours as specified in the contract. Slope management, benches, berms, terraces and geo-textiles and slash would reduce erosion risk to acceptability. It may be possible to reduce the volume of excess rock by using it for gabions, especially for vulnerable slopes. However, the requirement to restore the RoW to its original conditions is very expensive because much of the original flora will not grow on disturbed and compacted RoW soils for many years. The important part is getting some vegetation to grow, and as fast as possible, not necessarily the original vegetation. RoW re-vegetation has to tolerate serious overgrazing and burning. In addition, the pipelines have reduced the area available for grazing, thus intensifying grazing pressure on undisturbed range. The best way to re-vegetate is a combination of (a) hydroseeding, (b) covering with locally obtained hay which contains native seed species, (c) planting some protected, grazing-resistant seedlings and saplings, fertilized on planting. All this is well laid out in BTC's Method Statement: Biorestoration of 12/09/2004.

Reinstatement comes when the contractor is at the end of its pipeline construction responsibilities. The change in government after the BP/SPIE contract was signed, and the many changes BP demanded of the contractor above contractual obligations, have led to multiple claims by the contractor against BP. This may result in the less than adequate re-vegetation. Most, if not all, of the contractors lump sum contract will already have been spent. The agreement to reinstate the original vegetation would be very difficult even with excellent topsoil and no grazing pressure. In the case of much of the two pipelines, especially at high elevations it would be extremely expensive and time-consuming. The ESIA and other agreements provide for allocation of exceptionally detailed and expensive methods to check how like the original is ROW re-vegetation, with sample plots, comparison plots etc. Reinstatement gets far more attention and resources than eco-compensation.

Eco-Compensation

We understand BTC's term "Forest Eco-Compensation" (FCP) to mean offsite (not on the RoW) conservation of habitat, forest restoration and reforestation to compensate for impacts accruing from the pipelines. The contrast is stark between the detailed provisions for reinstatement, compared with far less attention so far allocated to Forest Eco-Compensation.

The Commission appreciates the concept compensation by offsite conservation. From the biodiversity point of view, offsite conservation can be lower cost and more effective than most other types of mitigation, and certainly more than reinstatement of the ROW to its original floristic composition. The Commission urges the Ministry to seek the most cost effective means of conserving Georgia's. More attention to eco-compensation, and possibly less to reinstatement to the original ROW flora would greatly improve efficiency. BTC's draft MOU (12 Nov 04) between BTC and Ministry of Environment is a good first step. This MOU provides that FCP will be directed by a committee from MOE, GIOC, and GoG Environmental Adviser. It will select potential areas for FCP, and will include management plans and audit procedures. The MOU continues that following agreement on which sites are to be treated and how, BTC will contract with forest contractors to implement the agreed restoration and maintenance work. BTC's forest consultant, in agreement with MoE's FCP committee, will agree on the size of the areas and the numbers, species and age of trees to be planted. BTC remains responsible for maintenance of FCP sites until handing them over to MoE (Article No. 6(7). BTC proposes to finance an international Forest Certification Agency which will assess compliance with agreed indicators and objectives. When the Forest Certification certifies that agreements have been met, BTC's responsibilities end. As mentioned, this is a good start. The MoE may want to negotiate this draft MOU before it is finalized, in the following aspects:

- Separate treatment of the RoW from FCP. RoW treatment should prioritise erosion control and acceleration of re-vegetation of the fastest and most resilient vegetative cover, and not necessarily of the original floristic composition. ROW treatment need have little concern for biodiversity conservation. Rare plants of concern should be compensated for by conservation of rare plant habitat elsewhere, in sites that can be effectively protected from grazing, fire etc. ROW treatment probably will emphasise covering with local hay, hydroseeding, possibly some protected sapling planting if they can withstand grazing pressure.

- FCP should focus on conservation of biodiversity in compensation for the impacts of the pipelines. The most cost-effective conservation is natural regeneration. Fostering natural regeneration means lowering the pressures preventing regeneration, especially grazing, fires, illegal logging, poaching etc. This means the emphasis should be on protectability, which is a long-term activity. Preparation of the Management Plans will clarify the relative allocation of resources to protection for regeneration (e.g.: fencing, patrolling, fire control), as compared with planting of seedlings and saplings. MoE's FCP committee may decide that it is preferable to conserve a few larger existing sites (e.g.: Tetriskaro Forest), rather than many smaller, newer separated sites. The balance probably should be more on the longer term protection to foster regeneration, rather than on planting saplings.

- MoE may want to clarify when BTC's responsibility ends and if MoE really wants to inherit some protected areas. BTC's responsibility should end when the agreed FCP areas have (a) completed management plans, (b) that are being implemented (c) by adequately trained personnel, (d) supported by self-sustaining financing to ensure long-term protection. Endowment funds with escrow accounts and independent boards will be necessary for criterion (d).

Tetriskaro Forest: Priorities for eco-compensation need to be agreed on by MOE, both size (hectares) and sites. The top priority in biodiversity terms may well be the Tetriskaro Forest now bisected by the pipeline. This protected nature reserve of oak-walnut forest with wolves is classified under the World Bank Group's "Natural Habitat Policy" as critical natural habitat – the most important of the WBG's habitat categories. As BTC claim the follow World Bank policies, this error has been compounded, from selection of a route not unambiguously optimal. Commendably, a minor deviation avoided the primary forest centre, but still bisects the surrounding forest itself. Although under the WBG policy, the Tetriskaro Forest should have been avoided by the pipeline, now that this critical habitat has already been significantly impacted, it becomes all the more important to mitigate the impacts by conserving the remainder. At present there is little or no conservation presence. The Forest Department lacks effective capacity. Illegal logging and cattle grazing in the forest is widespread. Fortunately fires are not yet common although may increase because of the pipelines. The Tetriskaro MOU has been promised but has not yet been agreed upon. The relationship with the 6,822 ha Algetis Nature Reserve (founded 1965) needs to be optimized.

Borjomi National Park: The buffer zone of the Borjomi-Kharagauli National Park is about 4 km from the Park itself. In total the size of the National Park is 100,000 ha, with a 450,000 ha official National Park Buffer Zone impacted by the pipelines. It is Georgia's main National Park to have a Management Plan developed in 1995. The MOU being developed by BTC and MoE should address the corridors connecting the National Park with the adjacent 11,200 ha Nedzvisi Reserve, and the 22,000 ha Ktsia-Tabatskuri Reserve. The feasibility of linking these three conservation units with the Nedsvi National Reserve also needs to be assessed.

Narianis Veli: This natural wetland habitat just north of Ktsia-Tabaskhuri Lake National Reserve, created in 1995 by the Council of Ministers, is a priority in biodiversity terms. The Narianis Veli wetland is IUCN's category 4 in view of its endemism, bird breeding sites and migratory fly-way resting sites. Despite re-routing, BTC's RoW bisects this protected area for 21.2 kms. The 3m-deep pipeline trench also impacts the water table of the protected wetland. BTC's 16 July 2004 letter to MoE states that the BTC pipeline crosses the Ktsia-Tabatskuri Managed Reserve. Anthropic impacts (sheep grazing and hay harvesting) are damaging this site.

BTC's promised Memorandum of Understanding has gone through successive drafts (the most recent is October 2003), and has not yet been finalized. The draft MOU states that the agreement will be finalized by 1st. January 2004, so is already a year late. This note repeats that BTC Co is responsible only for "the preparation of management plans for protected or potentially protected areas along the pipeline construction corridor" This is not correct because BTC is supposed to comply with World Bank environmental and social policies. If so, BTC should compensate for any impacts from the pipeline on protected or potentially protected areas, and such compensation in no way is limited to preparation of management plans.

Biodiversity Compensation Decisions

Compensation Ratios: Offsite compensation should follow the Minister's condition of approval of the Environmental Assessment. Specifically, the Commission recommends area (hectares) is used in calculating the dimensions of compensatory activities, and not ratios based on numbers of trees.

The area ratios agreed in the Environmental and Social Impact Assessment report, namely 1:3 hectares represent a minimalist standard. The Commission understands that BTC wants to follow best practice. If so, then a ratio above 1:3 hectares will be applied. If the ratio 1:3 is adopted, BTC would conserve a mere 300 ha. Where the compensatory reserve will be placed is critical. A 300 ha tract is far too small to be a viable and sustainable reserve. Expanding a sustainable existing tract by adding the compensation area to it would be much more effective.

Reforestation versus Restoration: The balance between reforestation in non-forest areas, versus restoration of degraded forest needs to be addressed in this regard. International experience shows that enrichment and conservation of degraded forest often is lower cost and more effective than tree plantations in other areas. The number of trees destroyed is less relevant than the area of natural habitat either destroyed or exposed to intensified risk. The impact of a 44-m-wide RoW through a forest greatly exceeds 44 m. The RoW acts as an entrance for illegal loggers, livestock grazing and poachers, as well as increasing the risk of forest fires. Improved access from RoWs can create orders of magnitude impacts outside the 44m ROW. Therefore the width of the RoW and the number of trees removed by the ROW are not related to the severity of impacts.

Exit Strategy: BP is understandably reluctant to remain responsible for offsite compensatory areas for half a century, but this is not necessary. The normal practice is for the proponent, in this case BP, to start-up the offsite compensation program (regularising land titles, completing management plans, any necessary planting, agreeing on grazing and hay harvest regimes, extraction of non-timber forest products, control of illegal logging, grazing, poaching, possibly an alternate fuels component or adding a buffer of fuelwood plantations between the conserved area and villages) for the first couple of years, and then devolve responsibility to permanent Georgian stakeholders. These will differ depending on the nature of the compensatory tract. All stakeholders need to participate, such as the Forest Department, Environmental NGOs, and especially user groups; all should play a role. International NGOs can often help, especially with Management Plans, and can attract additional financing.