



TRACECA Programme  
Traffic and Feasibility  
Studies

## Progress Report 2

December 2000

## REPORT COVER PAGE

Project Title : **Traffic and Feasibility Studies**

Project Number : **TNREG 9803**

**Local Beneficiaries**

**EC Consultant**

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## 1.1 PROJECT SYNOPSIS for ALL MODULES

### Logical Framework

Project Title:	Traffic and Feasibility Studies
Project Number:	TNREG 9803
Country:	Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Mongolia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.
<b>Wider Objective:</b>	
To assist in identifying, prioritising and supporting transport investment projects at the satisfaction of the <u>International Financing Institutions (IFIs)</u> through the introduction and operation of a quantitative planning tool	
<b>Specific Project Objectives:</b>	
<ul style="list-style-type: none"> <li>◆ Setting up a simple and operational computer-based planning tool in the <u>11 TRACECA States</u> including: <ul style="list-style-type: none"> <li>- A common regional database of transport and trade flows, transport infrastructure and transport costs through an integrated communications network</li> <li>- A simple, transparent and consistent multi-modal traffic forecasting model to locally and regionally test economic development scenarios and for the Beneficiaries to identify transport investment projects for external financing.</li> </ul> </li> <li>◆ Application of the planning instrument to <ul style="list-style-type: none"> <li>- Create comprehensive multi-modal synoptics of existing and forecast future flows</li> <li>- Highlight transport bottlenecks of all types, especially connections with Europe</li> <li>- Perform specific feasibility/opportunity studies: <ul style="list-style-type: none"> <li>* Module A: Chardzev bridge,</li> <li>* Module C: Aktau ferry terminal,</li> <li>* Module D: Turkmenbashi Navigation Channel,</li> <li>* Module E: Dubendi Oil Port Terminal,</li> <li>* Module B: Caspian new shipping services</li> </ul> </li> </ul> </li> <li>◆ Institutionalise for permanent system operations <ul style="list-style-type: none"> <li>- Beneficiaries to introduce and support Investment Projects close to the IFIs</li> <li>- System operators to providing the beneficiaries with documentation</li> <li>- Information and data providers</li> </ul> </li> </ul>	
<b>Activities:</b>	
<ul style="list-style-type: none"> <li>◆ Inception and setting up the network of local Correspondents (month 2+3)</li> <li>◆ Phase 1: Data collection and database design. Progress Report 1 (month 2+8)</li> <li>◆ Phase 2: Development of forecasting models followed by training and Documentation Feasibility Studies. Progress Report 2 (month 2+14)</li> <li>◆ Phase 3: Active system dissemination. Draft Final Report (month 2+19)</li> <li>◆ Phase 4: Instrument Use. Final Report (month 2+22)</li> </ul>	
<b>Inputs:</b>	
<ul style="list-style-type: none"> <li>◆ Technical Assistance for database, population and maintenance, Training</li> <li>◆ Computers and software models</li> <li>◆ Internet network system and computer connections</li> </ul>	

## 1.2. Project synopsis: Module A

Project Title:	Traffic and Feasibility Studies
Project Number:	TNREG 9803
Country:	Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Mongolia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

Overall objective: Investment in the transport sector within the TRACECA states supported.

Specific objective: Transport data base and traffic forecasting model established and institutionalised in the eleven TRACECA countries.

Planned outputs:

- Local networks for data collection established, and staff identified and trained. In each TRACECA country at least one centre capable of providing national and regional forecasts;
- Equipment and software provided for the beneficiary states;
- A common transport data base and traffic forecasting model for the eleven TRACECA states designed and developed, in a single physical centre or as a virtual centre, and having links with each country;
- CDs of the data base issued at maximum three monthly intervals, and data available on the TRACECA Web site;
- Traffic forecasts prepared for the feasibility studies of the other modules of the project and for Chardzev bridge.

Activities

- A1 Setting up a network of local correspondents;
- A2 Training of local project experts on database and traffic forecasting tools;
- A3 Equipment supply;
- A4 Data base design, data collection and surveys;
- A5 Design forecasting methodology;
- A6 Documentation of database and forecasting methodology;
- A7 Specific traffic forecast for the other modules
- A8 Feasibility study of Chardzev bridge;
- A9 Synoptics and communications, brochures, conferences.
- A10 Overview of links to Europe and the TRACECA neighbouring states
- A11 Web site

Target groups:

- Ministries of Transport and Departments responsible for transport in the Cabinet of Ministers, of the eleven TRACECA countries;
- National rail, road, port and maritime companies;
- Ministries of Economy and Departments of Statistics, and Customs Authorities.

Project start date: 30 August 1999

Project duration: 24 Months



### 1.3 Project Synopsis for Module B

Project Title	: Traffic and Feasibility Studies
Module B Title	: New Caspian Sea Shipping Services
Project Number	: TNREG 9803
Module B Countries	: Azerbaijan, Kazakhstan, Turkmenistan, Georgia, Ukraine

#### Project objectives (Module B)

According to the terms of Reference the ultimate objective of Module B is to define conditions under which new shipping services or lines could be inaugurated on the Caspian Sea. If the analysis reveals that under present conditions or under conditions which can realistically be created within the Caspian region, a new shipping service or line is feasible, then a business plan will be prepared.

#### **Specific objectives:**

1. to assess the cargo potential for transports across the Caspian Sea;
2. to analyse the availability of current shipping capacity on the Caspian Sea;
3. to investigate the operating costs of vessels in the Caspian Sea;
4. to investigate technical constraints relative to navigating and operating vessels on the Caspian Sea;
5. to examine the availability of qualified human resources for the operation and management of a merchant fleet;
6. to develop a strategy for providing training needs for local mariners and shipping experts;
7. to investigate the legal and regulatory environment affecting shipping on and into the Caspian Sea;
8. to recommend a management structure for a new shipping service or line, provided the foregoing steps have indicated sufficient evidence for the feasibility and demand for such a service or line;
9. to establish a business or feasibility plan for possible new or extended shipping services on the Caspian Sea, provided that the foregoing steps have indicated sufficient evidence for the feasibility and demand for such a service or line;
10. to discuss the results of the business plan with interested parties.

#### **Planned outputs**

1. Reliable and robust information on the present and future development of transport across the Caspian Sea.
2. Analysis of the possible match or mismatch between available shipping capacity on the Caspian and forecasted transport demand.
3. Cost estimates for the operation of vessels on the Caspian Sea.
4. Report on the technical conditions of navigating on the Caspian Sea.
5. Investigation into existing facilities in the Caspian region capable of training mariners and shipping management staff.
6. Proposal for a strategy to develop human shipping resources in line with international standards. To familiarise the beneficiaries with the implications of this proposal a regional seminar will be held.
7. Report on legal and regulatory constraints affecting shipping on the Caspian Sea.

- 8. Proposal for the management structure of a new shipping service or line (if considered feasible).
- 9. Business or feasibility plan for a new shipping service or line operating on the Caspian Sea (if considered feasible), that should stand up to potential financing parties' scrutiny.

<b>Project starting date</b>	Main Contract signature	30 August 1999
	Actual start of project activities Module B	1 April 2000
<b>Project duration</b>	14 months for module B, counted from	1 April 2000



#### 1.4. Project synopsis for module D

Project Title	: Traceca Corridor - Traffic and Feasibility Studies
Module D Title	: Navigation Channel for Turkmenbashi Port
Project Number	: TNREG 9803
Module D Country	: Turkmenistan

##### **Module D overall objective**

The overall objective of this module is to ensure the continued accessibility of navigation to the Port of Turkmenbashi.

##### **Planned module D outputs**

The project should deliver a detailed periodic maintenance plan, using as far as possible the equipment owned by the port, under a reasonable maintenance budget taking into account the port's projected traffic and revenues. The plan should assure that maritime traffic calling on Turkmenbashi is subject to no unreasonable delay or danger due to the condition of the access channel. The results of the study should indicate clearly:

- the security of future revenues to the port from risks posed by any perceived present or future inadequacies of the navigation channel;
- the costs of dispositions for routine maintenance of the channel;
- investment recommendations, or explanation why no investment is required.

The module should also deliver an investment plan, detailing whatever large or small capital works or equipment procurements are necessary to assure the overall objectives.

##### **Module D activities**

###### **1. Determination of the existing situation and the environment**

- Review of previous consultants' reports and mission notes.
- Collection of existing charts and maps to describe the geography of the bay and the channel system.
- Collection of existing data to determine natural conditions (hydraulic, meteorological, geophysical).
- Spot checks and surveys to confirm and augment the preceding.
- Survey of channel markings.
- Interviews with vessel operators.
- Identification of current operational guidelines and practices, for vessel operations and for channel maintenance.
- Identification of port services and equipment for assisting vessels during passage of the channel (pilot service, pilot vessels, radio equipment,...).
- Appraisal of past and present dredging practices: available equipment, staff, contractual arrangements, management practice, budget, suitability of locations for disposal of dredged materials, etc.
- Identification of alternatives options for carrying out dredging operations.

- Past, present and forecast traffic and revenues for the port.
- Analysis of the possible impact of fluctuating Caspian sea water levels.
- Assessment of actual situation rates.
- Relevance of international standards in so far as they concern Turkmenbashi port access, including water depth parameters, lighting requirements, etc.

## **2. Maintenance and improvement recommendations**

- Review of the adequacy of the channel system, including layout, navigational aids, buoys, etc.
- Review of operational practices for channel navigation, including the ports services and equipment.
- Recommend and justify possible operational improvement measures with respect to safety and continuity of operations, costs, benefits, environmental aspects.
- Review the port's capacity to correctly maintain and dredge the access channel.
- Recommend and justify a maintenance policy and working maintenance plan, with justifications for any changes from the present situation. Provide budget estimates for such a plan and relate it to expected port revenues and expenditures.
- Recommend and justify any capital works or equipment procurement, if required, including costs, benefits, safety and environmental considerations.
- Provide outline specifications for any equipment procurement, if equipment is required.

**Project starting date** Main contract signature 30 August 1999  
Commencement of module D activities Mid-August 2000

**Project duration** The main contract is scheduled to end in August 2001  
Module D is to be completed in January 2001



## 1.5 Project synopsis for module E

Project Title	: Traceca Corridor - Traffic and Feasibility Studies
Module E Title	: Transport of crude oil and oil products on the Caspian Sea
Project Number	: TNREG 9803
Module E Countries	: Azerbaijan, Kazakhstan and Turkmenistan

### **Module E objectives**

Ultimate objective of module E is to ensure adequate and safe transport of crude oil and oil products on the Caspian Sea, in order to allow the countries bordering the Caspian Sea to fully exploit and export their natural resources without endangering the marine ecology.

### **Specific objectives of module E:**

- To forecast flows of crude oil and oil products on the Caspian Sea.
- To evaluate the condition of the existing oil transport infrastructure.
- To evaluate the investment merit of rehabilitating the Dubendi oil terminal, near Baku.
- ~~(To prepare the rehabilitation of the Dubendi berth n°3.)~~

### **Planned module E outputs**

- Evaluation of oil reserves in the Caspian Sea area (set of forecasts for the main oil fields).
- Forecasts of transport of crude oil and oil products on the Caspian Sea.
- Evaluation of the infrastructure (storage facilities, fleet of tanker vessels, filling and emptying equipment for vessels and for tanks).
- Technical and financial feasibility study for the rehabilitation of Dubendi oil terminal.
- ~~(Engineering design and tender documents for rehabilitation of Dubendi berth n°3.)~~
- ~~(Set of solicitation documents to help invest in Dubendi berth n°3 rehabilitation.)~~

### **Module E activities**

#### **1. Traffic forecasts**

- Inventory of oil fields, oil terminals, refineries and petrochemical plants.
- Inventory of inland oil transportation networks (pipelines, rail and road).
- Inventory of involved authorities (Ministries of Transport, Ministries of Energy) and of concerned players (multinational oil companies, traders, oil transshipment operators, etc.).
- Inventory of destinations of crude oil and oil products.
- Elaboration of traffic flow forecasts.

**2. Evaluation of infrastructure**

- Review of relevant documentation and data related to the regional oil infrastructure, including the vessel fleet.
- Performance of site visits, to interview operators and to complete the inventory (technical, organisational, operational and commercial features).
- Environmental assessments.

**3. Feasibility study for the Dubendi oil terminal rehabilitation**

- Technical feasibility of infrastructure rehabilitation: channel, turning basin, breakwater and piers.
- Technical feasibility of superstructure rehabilitation: loading/unloading equipment, pumps, pipes and tanks.
- Environmental assessment.
- Plans and cost estimates for short, medium and long terms.
- Computation of financial benefits.
- Conclusions.

**~~4. Engineering studies and tender documents for Dubendi berth n°3~~**

- ~~• Technical design of berth n°3 rehabilitation.~~
- ~~• Detailed cost estimate.~~
- ~~• Preparation of administrative contract documents.~~
- ~~• Elaboration of instructions to tenderers.~~

**~~5. Solicitation for investment in Dubendi berth n°3 rehabilitation~~**

- ~~• Selection of appropriate data to be presented to potential investors.~~
- ~~• Elaboration of a data package.~~
- ~~• Assistance to beneficiaries in promoting the project.~~

**~~6. Follow up activities for Dubendi berth n°3 rehabilitation~~**

- ~~• Assistance to the Azeri Government for launching the tender.~~
- ~~• Assistance to the Azeri Government for answering to tenderers' requests.~~
- ~~• Assistance to the Azeri Government for evaluating the offers.~~
- ~~• Assistance to the Azeri Government for negotiating the final contract.~~

<b>Project starting date</b>	Main contract signature	30 August 1999
	Main contract end	30 August 2001
	Commencement of module E activities	15 March 2000



## 2. SUMMARY of PROJECT PROGRESS SINCE the START

### 2.1 INTRODUCTION

This Progress Report 2 describes the implementation of project activities during the six-month period July-December 2000. It has been produced in accordance with the Tacis "Guidelines for Administrative Reporting on Projects financed from the EU Programme of TACIS".

### 2.2 PROJECT PROGRESS SINCE THE START

After a slow start, due to the medical situation of the Team Leader (TL) and the appointment of a temporary acting TL, the Project (that includes five modules) is at the end of the reporting period at about seventy percent of its contractual time and about same for the realisation of its expected outputs.

The Inception Report was delivered beginning February 2000. It was generally well accepted by the project Beneficiaries and the readers, especially as far the project analysis and approach regarding the main issues are concerned. These issues to be addressed are the creation, for transport planning purpose, of a traffic database supporting the design and operation of a forecasting model, simple, efficient and easy to use, and also the institutionalisation of its use among and within eleven Traceca member states.

After two workshops held in Kiev and Almaty in April, with the participation of selected local experts in charge -in a first phase- of collecting the transport data in their own country and, later on -in a second phase- to use and operate the planning instrument, the Project was on the right track. While the data were locally collected (including some site surveys), the Consultant, from the permanent Project Office in Baku, started in parallel the design and building up of all operations regarding the database, the modelling and its possible overall implementation on the Web. At the end of the present reporting period, it can be considered that main bulk of data was collected even though it took more time and energy than anticipated and the synchronisation between availability of data and the modelling design was not perfect, thus generating more work than necessary and a slight delay with the planning proposed in Progress Report N°1. Regarding forecasting, most of the elements are running but not yet assembled. It must be noticed, here, that to meet all specifics regarding transport in Traceca and to satisfy all requirements of the TOR, the Consultant and local expertise works are "hand made" in all components, that is to say, without calling for any use or inclusion of commercial products.

Regarding the other Modules:

The "Feasibility for rehabilitation of Aktau Port Ferry-Terminal" (Module C) was successfully completed during the first months of the year. The Contractors for works and for works supervision are already appointed.

The "Feasibility for the navigation channel of Turkmenbashi Port" (Module D) started in August and various reports, especially one about the "technical description of the existing situation", have been issued and delivered to the Beneficiary state.

The study of "oil transport on the Caspian Sea" (Module E) is developing similarly. Inception and "Forecast, of oil flows" Reports have been delivered to the Beneficiary states and some



other reports are under preparation. However, as it became clear that the financing to rehabilitating pier #3 at Dubendi oil-terminal was not recorded in any EU and IFI budgets but mainly through possible local and private sources, the tasks related to the detailed engineering and tender documentation were cancelled at the EC request. During the present reporting period, they were replaced (from Module E resources) by the feasibility study and the tender documentation for procurement of Navigational Aids Equipment at the ports of Baku/Dubendi, Aktau and Turkmenbashi on the Caspian Sea. The relevant Tender Documentation was delivered on time by mid-December.

Less transparent is the work development about Module B "New Caspian Sea shipping services". After submission of the Inception Report in August, it became clear, that the three main beneficiaries Azerbaijan, Turkmenistan and Kazakhstan all had different ideas on how to interpret the main objectives of the Module and that these ideas not necessarily met with the content of the Inception Report. It was then decided to collect more under official written comments on the Inception Report. However, some of them are still under preparation. Since then, at the end of the reporting period, the Module is stand by.

### 2.3 KEY PERSONNEL RESOURCES

For the overall Project, the Personnel resources used are summarised in the following table:

<p>KEY PERSONNEL RESOURCES USED at 31 December 2000 SINCE START of PROJECT</p>
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Name	Position	working man.month (*)		
		EU	Traceca	Total
Ph. Delaporte	Acting Team Leader	1.55	10.73	12.28
P. Pezant	Economist-Regional Co-ordinator	0.07	6.18	6.25
J. Worthington	Economist-Regional Co-ordinator	0.18	0.68	0.86
J. Caceres	Transport Economist	0.91	1.73	2.64
P. Davidson	Model and Database Designer	1.47	3.16	4.64
C. Mills	Database Assistant	0.32	8.28	8.60
Y. Goulin	Modeler	0.68	0.75	1.43
T. Havelka	Pool of Experts	0.00	1.00	1.00
A. Merrien	TL Modules C-D-E Port Engineer	3.49	6.24	9.73
B. Francou	Port Economist	2.50	0.60	3.10
R. Gould	Environmental Expert	0.25	0.66	0.91
Y. Chaumaz	Mechanical Engineer	0.64	0.23	0.87
L-R. Lafond	Sediment Expert	0.45	0.23	0.69
X. Lefevre	Navigation Aids Expert	0.34	0.23	0.57
P. Durel	Petroleum/Port Economist	0.58	0.55	1.13
JM Bocognano	Marine Infrastructure Engineer	1.27	0.39	1.66
M. Perronet	Oil Port Terminal Expert	0.09	0.19	0.28
M. Immele	Port Terminal Expert	0.95	0.72	1.67
C. Montfort	Oil Traffic Analyst	0.68	1.08	1.75
M. Samès	TL Module B Transport Economist	1.05	2.67	3.71

N. Bellstedt	Senior Shipping Expert	0.27	0.67	0.94
J.G. Schmidt	Maritime and Nautical Expert	0.46	2.10	2.56
W. Artl	Pool of Experts (Module B)	0.23	0.47	0.69
H. Wagner	Human Resources	0.23	0.00	0.23

Total at End December 2000	18.66	49.54	68.20
Total Project	22.50	68.25	90.75
Percentage	82.9%	72.6%	75.2%

(\* based on 22 working days per month)

75 percent of EU key staff resources have been used, broken down roughly into 78 and 72 percent for Module A and all other Modules respectively. Based upon the Module shares proposed in the Terms of Reference, the overall project achievement, by the end of the reporting period, would be close to 70 percent of the final outputs.



### 3. SUMMARY of PROJECT PLANNING for the REMAINDER of the PROJECT

#### 3.1 MODULE A

The work for Module A was divided, from the very beginning, into two major phases. The first one concerned the design and creation of a planning instrument based on the setting up of a traffic database and the implementation of forecasting models. During the last two reporting periods, the Consultant concentrated on this task. During the next six-month period, that corresponds almost with the end of the Project, the Consultant will concentrate on the second phase of the work which was always planned for 2001. It is mainly oriented to the regional dissemination (within the Traceca Beneficiary states) of the instrument through adequate training of the future operators and the setting up of an internal network communication system via the Web.

First of all, during the first months of 2001, the various elements of the database and of the forecasting models will be assembled into one operating system. In parallel, the basic documentation will be developed and finalised for the future trainees. If the Project output is to be developed within the structure of the Traceca Intergovernmental Joint Commission and extended to the Member states neighbouring the Black Sea, the final technical task about the operating system will have to be achieved and completed before or beginning March. Then the regional dissemination of the planning instrument can physically take place in every country separately during the two-month period of April and May 2001. The dissemination phase will be also an opportunity to locally test and refine the product, especially through the acquisition of more reliable elements regarding the forecasting: macro-economic data, anticipated production and trade, etc.

Also, during the last four months of the Project, the database will be developed with the inclusion of data for the year 2000.

#### 3.2 OTHER MODULES: B-D-E

The Consultant proposes to proceed with Module B as outlined in the TOR with the Beneficiary states that have expressed their interest in further progress of this module. However, it should be stated that only one business or feasibility plan can be elaborated from the remaining resources. This means that it may happen, at the end of the Project, that only one beneficiary state only will fully profit from this module. In addition, the Consultant proposes to mainly concentrate on sea services along the Traceca route, but to also include some (general) proposals on trade opportunities on other sea-borne routes across the Caspian Sea.

The feasibility study regarding the navigation channel of Turkmenbashi port (Module D) should be completed and delivered to the Beneficiary in the early months of next year.

Since the initial scope of work of Module E was reduced, because some tasks were replaced with the study on Navigational Aids for the three Traceca ports of the Caspian Sea, the activities related to this Module should be completed on time beginning 2001 with the submission of the feasibility study of Dubendi oil-terminal.



## 4. PROJECT PROGRESS IN REPORTING PERIOD

### 4.1 SUMMARY TABLE OF ACTIVITIES DURING THE REPORTING PERIOD

The Table -next page- summarises the activities planned, in the former Progress Report N°1, to be carried out during the present reporting period and those actually performed during the same period.

### 4.2 DETAILS ABOUT MODULE A SUB-TASKS

#### 4.2.1 TP-Task A.1: Local Network for Data Collection

Reception of data at the project office in Baku, from the collection made by the local experts in every country, continued (and still continue at the time of this Report) all along the past six months. Records for both years: 1998 and 1999 were requested. The status of the data collected by the end of December 2000 is given in the Table page 17. Site Origin/Destination (O/D) surveys were also carried out:

- In five road stations in Kazakstan (in addition to the basic data of the 1998 Road O/D survey made available to the Consultant by NIIT)
- In one road station in Georgia (September 2000)
- On ferry boats between Baku and Turkmenbashi/Aktau
- On a limited scale at Chardzew road pontoon in Turkmenistan.

Considerable work was performed, but it is not exempted of remarks and comments. As a matter of fact, it was clear after the workshops attended by most of the experts that data collection would be a long and difficult process. The reason was that, at the preliminary stage of the project, two sets of data were required:

- the first one to populate and to feed the database, on a permanent basis, and,
- the second to make it possible the calibration of the forecasting model, which is by definition an intermediate and temporary step in the project.

In a steady state, data belonging to the second set may not be required anymore, and, the structure of the first set will be revised and simplified especially for the collection of data for the year 2000 and in the future. From the Consultant side, however, several facts need to be reported because outputs of the data collection phase had impacts on his work-programme:

- The nature of the data received, little by little over the period, country by country separately and independently, were not homogeneous enough to finalise definitively some parts of the work, on a step by step basis. For instance, the last international trade flows received from Uzbekistan by the 23<sup>rd</sup> November 2000<sup>1</sup>, made no possible to

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<sup>1</sup> Similar data from Mongolia were not yet received at the time of editing the present Report.

TASK	<u>Anticipated Activities for the Period from the Report 1</u> (July - December 2000)	<u>Actually Performed during the Period Under Review</u> (July - December 2000)
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## MODULE A

TP-A1	<ul style="list-style-type: none"> <li>▪ New approach in Turkmenistan and launching the data collection in this country</li> <li>▪ Consolidation of existing group of local experts</li> </ul>	<ul style="list-style-type: none"> <li>▪ Done with positive co-operation</li> <li>▪ Visit to Mongolia from 26 September to 3 October 2000</li> <li>▪ Groups of local experts to be reviewed in the light of the implementation of data collection task (A4)</li> </ul>
TP-A2	<ul style="list-style-type: none"> <li>▪ Follow-up of local expert activities and</li> <li>▪ Preparation of Training Programme for project outputs dissemination and operations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Permanent activity</li> <li>▪ Preparation (draft) of training materials</li> </ul>
TP-A3	<ul style="list-style-type: none"> <li>▪ Complete equipment delivery in relation with fixing the Web site</li> </ul>	<ul style="list-style-type: none"> <li>▪ Completed with Turkmenistan and Mongolia</li> <li>▪ Web site not yet fixed -only a temporary page on local Server</li> </ul>
TP-A4	<ul style="list-style-type: none"> <li>▪ Complete 1998-1999 data collection to feed the database</li> <li>▪ Complete site Survey undertakings: Chardzev bridge/Caucasus, etc.</li> <li>▪ Finalise design of the database structure and contents</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1999 data collection not yet completed everywhere</li> <li>▪ 1998 data used for model design and calibration</li> <li>▪ Surveys completed in Kazakstan, Azerbaijan, Georgia but limited in Turkmenistan</li> </ul>
TP-A5	<ul style="list-style-type: none"> <li>▪ Complete the modelling system</li> <li>▪ Validation Base Year Traffic flows</li> <li>▪ Preliminary and Final Traffic forecasts for International freight flows</li> </ul>	<ul style="list-style-type: none"> <li>▪ Still on going</li> <li>▪ Completed for 1998, still insufficient data for 1999. Preparation of a passenger matrix.</li> <li>▪ Pocerude tested. Preparation of macro-economic assumptions for 2012</li> </ul>
TP-A6	<ul style="list-style-type: none"> <li>▪ Starting preparation of basic documentation on database and forecasting models</li> </ul>	<ul style="list-style-type: none"> <li>▪ continuous</li> </ul>
TP-A7	<ul style="list-style-type: none"> <li>▪ Prepare specific traffic forecasts for feasibility studies of other Modules</li> </ul>	<ul style="list-style-type: none"> <li>▪ on going</li> </ul>
TP-A8	<ul style="list-style-type: none"> <li>▪ Launch activities related to the feasibility study for the construction of the Chardzev bridge</li> </ul>	<ul style="list-style-type: none"> <li>▪ Site visit in November</li> <li>▪ Collection of relevant documentation</li> </ul>



TP-A9	▪ No specific activities foreseen during the period	▪
TP-A10	▪ No specific activities foreseen during the period	▪
TP-A11	▪ Design of communications system and supply of the appropriate equipment for the Web network, as necessary	▪ Location of main server still to be decided

## MODULE B

TP-B1 TP-B2 TP-B3	▪ Completion of sub-tasks	▪ Inception Report delivered in August 2000 ▪ awaiting for reception of written comments from all three beneficiary states
TP-B4 TP-B5	▪ Launching and performing activities related to these sub-tasks	▪ Stand by

## MODULE D

TP-D1	▪ Determination of the current navigation channel conditions	▪ Technical Report delivered in November 2000
TP-D2	▪ completion of Module activities by the end of the year if no external delay occurs	▪ Set of actions and measures discussed with beneficiaries in December 2000

## MODULE E

TP-E1	▪ Completion of the Sub-task Phases 2 and 3	▪ Inception Report delivered in July 2000
TP-E2	▪ Completion of the Sub-task Phases 1 and 2	▪ Technical Report delivered in August: Oil flow forecasts
TP-E3	▪ Launching, performing and completing the Dubendi Rehabilitation Feasibility Study	▪ On going
TP-E4	▪ Performing the detailed design for Dubendi Rehabilitation	▪ Replaced by feasibility and Tender documentation for Navigation Aids in the three ports: Aktau, Baku and Turkmenbashi – Submitted in December.



complete in a final manner the Origin / Destination trade matrices before the end of November. Such a minor part of the Consultant work could have been completed long time before. And so on.

- For all countries (except Kazakstan) the number of errors -related to "typing mistakes"- was tremendous. Preliminary simple analyses before mailing, for example by totalling figures in lines or in columns, would have avoided additional work and time consuming to clean the information. This fact also demonstrates a lack of knowledge in data reliability.

From the side of Project sustainability, in most of the cases, the way this task was locally carried out is more worrying. As mentioned above, the information to be collected annually will be limited in volume -in comparison with what has been done- and the nature of the data selected for the database made more easily accessible. But these may not be sufficient since many components attached to the processing of the task seem not to have optimally operated. They are:

- Incentives from a financial point of view
- Availability of electronic calculation and communications equipment
- The positive results of the workshops which, may be, took place too early

#### 4.2.2 TP-Task A.2: Training and Regionalisation

From the Consultant side, a set of actions is proposed in the next Chapter regarding the implementation, during the second phase of the Project, of specific tasks expected to make possible the sustainability of the Project.

#### 4.2.3 TP-Task A.3: Equipment Supply

After visiting Turkmenistan and Mongolia in July and September respectively, as announced in the former Report, the data-providers and model-users have been equipped, in these two countries, with similar equipment than the one already delivered in the other countries. It can be considered that this task is completed now, even if some equipment remains to be purchased within the framework of Web site installation. But this activity is more specifically related to Task A11.

#### 4.2.4 TP-Task A.4: Database design, population and maintenance

The whole database has been designed to hold the 1998 data as well as the 1999 data. The user interface screens have been prepared and have been inserted into multi modal database software pd-Mmdb as the Database Viewer. Database tables and interface screens have been prepared to hold the intermediate and the results data and have also been inserted into the pd-Mmdb Database Viewer. The matrix viewer has been developed and is in the process of being inserted into pd-Mmdb. The whole pd-Mmdb Database Viewer is in-use to help display, check and validate the data.

The 1998 data has been received, checked and put into the 1998 database. The last data was received this month and it was necessary to rush the processing through, so as to incorporate it into the database at 1998.



**DATA COLLECTION STATUS**  
on DECEMBER 2000

	Table	Moldova		Ukraine		Armenia		Azerbaijan		Georgia		Kazakstan		Kyrgyzstan		Tadjikistan		Turkmenistan		Uzbekistan		Mongolia		
		'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	
<b>PHYSICAL CHARACTERISTICS</b>																								
Rail Link	2.1	x	x	x	x	x	x	x	x		x	x	x	ditto '98	x	x	x	x	x	ditto '98	No	No		
Road Link	2.2	x	x	x	x		x	x	x	x	x	x	x	ditto '98	x	x	x	x	x	ditto '98	x	x		
Port Link	2.4			Od-Ilich'	Od-Ilich'			Baku	Baku	Poti & Batumi	Aktau	Aktau					Turkmenbashi							
<b>ECONOMY</b>																								
Socio-economy	3.1 (1)	x	x	x	x	x	x	x	x	x	x	No	x	No	x	No	x	x		x	x	x	x	
Production	3.1 (2)	No	No	x	x	x	x	x	x	x	x	No	x	No	x	x	x	x	x	x	x	x	x	
<b>TRADE FLOWS at Country Level</b>																								
Export - All Modes	4.1(1)	x	x	No	x	x	x	x	x	x	x	No	x	No	x	x	x	x	x	x	x	No	No	
Export - Road	4.1(2)	x	x	No	x	No	No	x	x	x	x	No	x	No	x		x	x	x	x	x	No	No	
Export - Rail	4.1(3)	x	x	No	x	No	No	x	x	x	x	No	x	No	x		x	x	x	x	x	No	No	
Export - Pipeline	4.1(6)			No	x			x	x			x	No	x										
Import - All Modes	4.2(1)	x	x	No	x	x	x	x	x	x	x	No	x	No	x	x	x	x	x	x	x	No	No	
Import - Road	4.2(2)	x	x	No	x	No	No	x	x	x	x	No	x	No	x		x	x	x	x	x	No	No	
Import - Rail	4.2(3)	x	x	No	x	No	No	x	x	x	x	No	x	No	x		x	x	x	x	x	No	No	
Import - Pipeline	4.2(6)			No	x	No	No	x	x			x	No	x	No									
Transit - All Modes	4.3	x	x		x			x	x	x	x								x	x				
<b>O/D SURVEYS</b>																								
Freight	5.1							Ferry Turkm. '00	Road Caucasus	Road '98 & '00								Limited outputs						
Passengers	5.2							Passg. Not valid	No	No								Chardzew						
<b>TRAFFIC - Link</b>																								
Road-AADT	6.1	x	x	x	x	x	x	x	x	x		x		x	No	x	x	x	x	x	No	x	x	
Rail Load on Link	6.2	x	x	No	No	x	x	x	x		x	x + O/D		x	No	x	x	partial		x	No			
<b>TRAFFIC - Transshipment</b>																								
Port Export	7.1(1)			Od-Ilich'	Od-Ilich'			x	x	Poti & Batumi	x							x	x					
Port Transit OUT	7.1(2)			Od-Ilich'	Od-Ilich'					Poti & Batumi														
Port Import	7.1(3)			Od-Ilich'	Od-Ilich'			x	x	Poti & Batumi	x							x	x					
Transit IN	7.1(4)			Od-Ilich'	Od-Ilich'					Poti & Batumi														
Vessel Movements EXPORT	7.2(1)			Odesa	Odesa			x	x	Poti & Batumi	x							partial						
Vessel Movements IMPORT	7.2(2)			Odesa	Odesa			x	x	Poti & Batumi	x							partial						
Border Traffic Vehicles	7.3	x	x	x	x	limited	limited	x	x	x	x	x	No	No	x	x	x	x	x	x	No	No	Road	Road
Border Commodity Volume	7.4	x	x	No	No	x	x	x	x	x	x		x	No	No	No	No	x	x	No	No			



The 1998 matrices have been prepared for passengers at Country level and we are in the process of preparing them at Country-Oblast level. The various different estimates of the freight commodity flow movements have been reconciled and matrices built for firstly Country level then recently at Country-Oblast level, mainly for Kazakstan. Some of the 1999 data has been received and slots have been made for it in the Database Viewer ready for when it has been checked and cleaned.

A network building module has been written for the Database Viewer, which takes the country by country data tables and produces networks covering road, rail and sea for passengers and freight. These networks are checked, the links reversed and sorted and internal node/link arrays created with their internal cross referencing ready for path building and assignment.

A generalised cost methodology has been developed to include the tariff, resource cost and perceived cost of using the network links. This uses data fields (physical characteristics) in the database to compute the generalised cost on each rail and road link. A module has been written in the network building software to compute the generalised cost from the database and insert it into the internal network data arrays.

#### 4.2.5 TP-Task A.5: Design Forecasting Methodology

The software has been designed carefully so that there are different components to cover different elements of functionality, interconnected so that the components work together effectively. The components are constructed as ActiveX Controls so that they can either be compiled into a stand-alone program (like other programs run from the PC) or they can be directly inserted onto a web page for use on the web site. Although they have not yet been tested on our "[www.traffic.in-baku](http://www.traffic.in-baku)" web site, we have made in-house tests on web pages to check that the methodology works. During the next reporting period we hope to mount it on our final web site.

The software has been developed to build paths and assign the freight commodity and passenger matrices. The assignment process includes a module for reporting flows in transit across a country, so as to help development and reconciliation of the different estimates of freight commodity flows. The pathbuilding and assignment modules write the paths and the assigned flows back to the intermediate spreadsheets so that they can be viewed with the database viewer.

The pd-Mmdb software also includes a graphical network display and editor so that networks can be viewed using pan and zoom to view at the most appropriate scale. Names and labels can be switched on to identify locations on the networks and switched off to remove cluttering the display. The network can be edited interactively to move, modify, delete or create links and nodes in the networks. These changes are referenced to the underlying database network as modifications to it, so as to maintain the network integrity of the underlying reference database. These changes can be saved to a file and used to code future infrastructure schemes for forecasting in the model. The graphical display also displays shortest paths to provide a graphical validation of the pathbuilding algorithm.

We have accomplished more in the way of user friendliness than we had hoped at the last Progress Report with the graphical display and database viewer working together so that the user can view the network, select a link by pointing the mouse at the link and clicking to



display the data in the database viewer's view screen associated with that link. The user can browse the database with the database viewer from here and then return to the display.

The pd-Mmdb software is to be enhanced to include the display of maps using the Taegis software installed as an ActiveX Control so that it can be viewed using the web (agreement from the Commission has been received recently to use Taegis software for this purpose).

The demand forecasting methodology has been started but is not finished due to some delays in data collection. For passengers the matrix has been constructed with the help of a direct demand model involving variables of trip generation, attraction and the mode-weighted generalised cost of separation of the zone pair. The direct demand model was calibrated using passenger counts at borders and other locations and daily trip matrices have been synthesised for each mode (road and rail) at a country to country level. We are currently extending this to be at a Country-Oblast level.

Development of the international freight matrix forecasting methodology has also been started. The software is presently under design and writing (VisualBasic) since the methodology includes the possibility to modify macro-economic indicators at the country level for the reference year 2012. A similar but more simple approach will be developed for domestic freight matrix forecasting (Oblast to Oblast at the country level).

#### 4.2.6 Other Tasks (TP-A6 to A10)

These activities are the normal continuation of those related to the Database and traffic forecasting. No valuable specifics can be reported during the present reporting period. They will find their achievement at the beginning of next period.

#### 4.2.7 TP-Task A.11: Free Data Filling Station (Web site)

The original approach for the Web site was as follows: having a specific Project hardware comprising: a network server, a web server and firewall, which may be physically separate devices. They should provide the platform from which users can access the Project Web site, a data protection firewall to prevent unauthorised access and access for the software team to develop and maintain the web site. The hardware needs to be very reliable. It needs to be protected against failure, with for example hot-swap backup devices. The software system needs to be protected with the RAID<sup>2</sup> backup system to ensure that it is duplicated on backup hard disks with up-to-date information, which can be hot-swapped in. This technology is new in Azerbaijan and although advanced features may be available in other countries, we need to keep close to what is available in this country to ensure that the system can be maintained locally.

Connecting the Project Web server to the Internet can be done either by having the web server in the project office in Baku and providing an Internet connection via the telephone lines or by having the server hosted in the offices of the ISP. The decision depends upon the availability of a fast internet connection from the office web server to the ISP. Current connection speeds for dial-up are slow. There are plans to make available ISDN/ADSL in Azerbaijan but this is likely to be too late for our purposes. There may be the possibility of a fast leased-line connection at reasonable cost and we will monitor the situation.

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<sup>2</sup> Redundant Array of Inexpensive Disk



These unknowns make it difficult to fully specify the final system. It is suggested to adopt a strategy of building-up the hardware architecture in conjunction with the web site itself on a step-by-step basis: as features are needed, as the web site becomes more sophisticated, as faster connection speeds are needed and as we need additional hardware.

In outline the configuration steps are as follows:

#### Configuration 1.

Install a combined LAN<sup>3</sup>/web server with minimum firewall protection in the Project office. This will be used for developing the web site and for direct dial-in connection from the beneficiaries. We will also maintain our web site on our ISP. The dial-in would only be needed where the data was not on the web site on our ISP. The combined LAN/web server would have hot-swap hard disks (and power supply) with the RAID system.

#### Configuration 2.

Separate the functions of LAN server, web server and firewall. Convert the existing LAN/web server into the web server and mount the web site and database. Buy a new LAN server with web server capabilities for office use, to maintain the database and web site and as a web backup, install a substantial firewall either on the web server (less secure) or on another (smaller) machine (which is more secure but more expensive). This re-uses the LAN/web server from Configuration 1. above, and we must make sure that the original computer specification above allows for both uses. We may also wish to site the web server in a different place to the LAN/server eg at the ISP's offices (which would incur additional costs) or at the office of the "Intergovernmental Joint Commission" (IGC) which may change the connection costs.

### 4.3 DETAILS ABOUT OTHER MODULE (B-C-D-E) SUB-TASKS

#### 4.3.1 Module B: New Caspian Sea Shipping Services

The Inception Report for the present Module B has been submitted to the beneficiaries both in English and Russian by the beginning of August. This report was thoroughly reviewed and understood by the beneficiaries and discussed with the Tacis Monitor and the Traceca Coordinator.

It became quite clear, that the three main beneficiary states: Azerbaijan, Turkmenistan and Kazakhstan all had different ideas on how to interpret the main objectives of Module B and that these ideas not necessarily met with the content of the Inception Report. Consequently, the Monitoring Report on Module B provided by the beginning of October called on all involved parties for instant action. It was suggested to organise a joint meeting with representatives from Azerbaijan, Turkmenistan and Kazakhstan, which proved to be difficult due to political constraints.

Since the number of official written comments from the beneficiary states, on which a Consultants' proposal for further progress or even a reorientation of the Module could be based upon, remained shy. The Module B Manager Mr. Marcel Sames visited the Traceca region in November-December 2000 to hold separate meetings with representatives of the

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<sup>3</sup> Local Area Network



beneficiary states, during which the further orientation of the module was discussed. This procedure was highly welcomed by the majority of the beneficiaries. Furthermore, Mr. Sames tried to collect more official written comments on the Inception Report, some of which are still under preparation.

In the course of the discussion it was confirmed that the Inception Report correctly mirrors the current situation in the maritime sector of the Caspian Sea and contains a lot of valuable information, which should be further elaborated in the course of project work. Nevertheless, the responsibilities within the national maritime administrations and similar institutions were not always perfectly understood by the Consultants which led to some misunderstandings concerning the selection of interview partners.

The majority of the beneficiary states expressed their general interest in further progress of Module B as outlined in the current Terms of Reference. Nevertheless, all beneficiaries claimed that special attention should be paid to the maritime sector of their country. Furthermore, it was suggested not to narrowly focus on services along the Traceca route (i.e. services between the Traceca ports) but also to include services which affect only one Traceca port (e.g. between a Traceca port and a Russian or Iranian port).

Before the end of December, the Consultants will meet representatives from the EBRD in order to co-ordinate Tacis and EBRD approaches in the maritime sector of the Caspian region. The EBRD expressed their interest in the results of Module B helping them to further develop their regional (and country) strategies with respect to financing port infrastructure and vessels.

Unfortunately, until the middle of December 2000, still not all beneficiaries have provided official comments. Consequently, the Consultants' proposal for further progress is almost solely based on his own (unofficial) meeting minutes with representatives of the beneficiary states and of Tacis/Traceca, and may be subject to (minor) change, once these comments and the results of the talks with the EBRD have been analysed.

The Consultants propose to proceed with Module B as outlined in the ToR with all main beneficiary states which have expressed their interest in further progress of this module. This can be justified from the requirements of Module A, which is depending on quantitative and qualitative input from Module B. It should be restated though, that only one business or feasibility plan can be elaborated from the remaining resources. This effectively means it may occur that in the end only one main beneficiary state will fully profit from this module.

Furthermore, the Consultants propose to mainly concentrate on sea services along the Traceca route, but also include some (general) proposals on trade opportunities on other sea-borne routes across the Caspian.

The training part will be closely co-ordinated with the training included in Module A. The rationale behind this proposal lies in the importance of the maritime links for the Traceca forecasting model. A deeper understanding of how maritime transport works and its main parameters and determinants will enhance the capabilities of all later users (also of completely land-locked countries) to adjust the flexible Traceca model to their own needs. A thoroughly elaborated training schedule will be provided within the frame of the coming Module B Progress Report, which will be submitted in February 2000.



The Module B Manager Mr. Sames is scheduled to be back in the Caspian region by the end of January.

#### 4.3.2 Module C: Aktau Ferry Terminal Redevelopment

Although Module C activities within the Project were completed in May, it can be mentioned that the module TL was invited to take part to the Committee in charge to evaluating the Contractors' bids. The Committee met in Brussels in July and proposed to grant the Ferry Terminal Rehabilitation Contract to the Azeri Company "Azerkorpu". This proposal was later on approved by the European Commission, and the Works Contract was signed in September with Azerkorpu. Tractebel has been appointed to carry out the Works Supervision.

#### 4.3.3 Module D: Navigation Channel for Turkmenbashi Port

The Consultant started Module D activities in August and issued the Inception Report in September. A second Report, providing with a detailed description of the existing situation about the navigation channel, was produced in November and discussed in December with the Monitoring Team as well as with the Beneficiary: Turkmen Maritime Lines, based in Turkmenbashi. These discussions enabled to correct some mistakes, to complement the data and to help prepare the proposals for improvements to the navigation channel.

#### 4.3.4 Module E: Transport of Oil on the Caspian Sea

After issuance of the Module E Inception Report, at the end of June, the Consultant produced in August a Report covering the task E1: Forecasts of Oil Flows. A second Report covering the task E2: Evaluation of Existing Facilities, is currently under preparation, with the assistance of two Azeri sub-consultants. It should be completed and delivered in January 2001.

#### 4.3.5 Module E: Feasibility Study on the Rehabilitation and Modernisation of Navigational Aids Systems in Caspian Sea Ports.

This study has been added to the Main Agreement of TNREG 9803 on request of the Traceca Co-ordinator Mr. Marc Graille and Mr. Daniel Stroobants of DG Relex, responsible for the Transport Sector in Tacis and Traceca countries, without amendments to the overall project's budgetary constraints. The necessary partly reallocation of resources from Module E to the additional study was agreed to and confirmed by the EC Task Manager Mr. John Bradley and the EC Tacis Monitor Mr. Pieter Melissen during a meeting in Brussels on October 10<sup>th</sup>, 2000.

The main objective of the present study is to analyse the technical, financial and economic feasibility to rehabilitating and modernising the Aids to Navigation (AtoN) equipment and systems in the Caspian ports of Baku/Dubendi, Aktau and Turkmenbashi. If the results of the feasibility analysis justify the investment, then this study should form the base for the preparation of a tender dossier with detailed technical specifications.

The study was officially launched very shortly after a.m. meeting due to the very tight time schedule requested by the EC, which foresaw the preparation of the tender dossier towards the end of November 2000.

On October 14<sup>th</sup>, 2000 Mr. Jochen Schmidt, the consulting team's maritime and nautical engineer started his on-site visits to the three ports selected for investigation. His intention

was to verify information on existing navigational aids equipment gathered during previous visits and by desk-top research. Furthermore, Mr. Schmidt interviewed individuals responsible for safety in the named ports, i.a. harbour masters and chief engineers.

From October 23<sup>rd</sup>, 2000 the transport economist Mr. Marcel Sames visited the beneficiary countries to collect price and revenue data on the provision of vessel traffic services in Caspian ports and data supporting the assessment of social costs and benefits. In order to establish and profit from close contacts to experts from the beneficiary countries, all financial and economic modelling and calculations have been conducted on-site in the Traceca region.

During their missions the Consultants met several government officials, representatives of public and private institutions and companies and other transport experts from the beneficiary countries, as well as representatives from the Tacis and Traceca Programmes. The information collected during the on-site discussions, in combination with additional information available to the Consultants constituted the basis for the Feasibility Study for the Rehabilitation and Modernisation of Navigational Aids Systems in Caspian Sea Ports.

Based on the results of the study indicating that the projected investment is both technically feasible and economically viable, the procurement expert Mr. Hans-Otto Bistram elaborated the tender dossier for the procurement of the navigational aids equipment identified by the team. The Tender Documentation was submitted to EC Brussels during the first half of December. The feasibility study<sup>4</sup> is now completed and ready for its translation in Russian.

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<sup>4</sup> See in Appendix II, a summary of this specific study



## 5. PROJECT PLANNING FOR NEXT REPORTING PERIOD

This section gives more detailed information about the work intended to be done during the next reporting period, from January to end of June 2001, that is to say two months before the contractual end of the Project (30 August 2001). Sub-tasks in the various Modules still in progress are analysed one after the other.

### 5.1 SUB-TASKS of MODULE A

The following paragraph that deals with the Project institutionalisation and sustainability covers the activities of both together Tasks A1 and A2 regarding the "local network for data collection" and "training and regionalisation" respectively

#### 5.1.1 Institutionalisation and Sustainability

Regarding the project institutionalisation and its sustainability after completion (end August 2001), a satisfactory solution to this issue relies upon the implementation and the successful achievement of tasks in three main directions. They are:

1. An appropriate Training to the project users: decision makers and operators
2. A relevant Organisation and Structure for future Project operations
3. A potentiality for the development of the Projects outputs.

#### **1 Training and Regionalisation**

It is proposed to disseminate the Project outputs at two different levels:

1. The beneficiaries who are policy and decision makers in the transport sector and in infrastructure development: Ministers or Vice-Ministers, General Directors of Ministry's Departments;
2. The data providers, and the operators-users of the traffic database and forecasting model.

Unfortunately, there is not enough budget left to organise a unique conference with all eleven beneficiaries, including their senior Staff, in order to promote the Project product. This introduction, therefore, will be performed locally in every country. However, this situation may be revised if opportunities arise to develop the outputs of the Project (see Proposition 3 below).

#### Level 1 Presentation to Beneficiaries

Presentation Sessions are for decision-makers and beneficiaries. They will focus on the broader issues of the work giving simple explanations of what was done and how this work can be of use for transport planning. The materials prepared for these presentation sessions will be easy to understand and will not go into too much technical details. A slide show with accompanying summary booklet will be the main supports for the sessions. The software will be also presented, on a laptop to give simple demonstrations.

At the beneficiary level, the content of the presentation is summarised hereafter. The presentation, also, cannot last too long, but few hours

- General introduction to the project with delivery of a descriptive booklet. This includes  
Traffic data incorporated in the database

Traffic forecasting model and reliability of the results, at the country level and the Traceca level

- Interest of the Project for investment planning purposes in transport infrastructures at decision-maker level.

Basic Principles

IFI regulations and expectations for financing

- Demonstration of software capabilities

Visualisation of results

Case study for the country under review

Impacts at Traceca level

At the end of every session, agreement should be reached for traffic data disposal on the web (with obviously the necessary confidentiality constraints of access).

#### Level 2 Training Sessions to Operators-Users

At the operational staff level, a comprehensive and professional training course will be prepared. This training programme will also take place locally, country after country, and mainly on "on-the-job-training" basis. For this purpose, the project equipment already installed will be used. In case of travel problems (or limited time), the training programme will be delivered for two countries at the same time. This will be the case for Tadjikistan and Kyrgyzstan in Bishkek, and Uzbekistan and Turkmenistan in Ashgabat. It is anticipated that the training and project demonstration including its practical use will last several days. The remaining balance budget for "workshop and training" will be used for the purpose to accommodate the trainees not on the spot.

Specific training sessions will take place for the technical staff who have more technical knowledge and practice of transport planning and modelling, and who will be using the database and software tool in the future. The slide show and booklets will be on hand to give a short overview but these training sessions will focus more on the detail of using the database and software. The data manual will be presented giving an explanation of the data in the database. Then the detailed software demonstration with accompanying manual will give trainees a thorough explanation of how to use the tool, how it links with the database, how it links to the Web Site. In addition, an introduction to the following topics will be provided:

- Basic transport economics principles,
- The IFIs requisites
- Investment decision methodology,
- The role of the data base and traffic forecasting as a management tool, with reference to regional realities (e.g. of local motives for utilisation of different transit routes)
- The standard approaches to forecasting (e.g. O/D matrices, econometric algorithms, step models,)
- Basic computer and data management skills



- Survey techniques

Training materials to accompany and complement presentations and talks given at the training session will consist of a slide show, booklets to be handed out and software demonstrations on computers. A list of materials to be used follows:

- Slide Show - will present relevant parts of the project in simple diagrams, e.g. Database, Software, Web-Site;
- Slide Booklet – booklet of the slides with explanation for future reference;
- Data Manual – a manual describing in detail all data collected and used in the database/software and what future data is needed;
- Software Demonstration – two demonstrations of the software will be available. The first to be used as a presentation tool showing its capabilities and applications. The second a more detailed training tool showing all its features and giving examples for future users to complete and learn how it works;
- Software User Manual – a user-friendly manual giving detailed explanations of the software and its application as a transport planning tool. Explanations will include such topics as installation of the software, the software's links to the internet, the database, changing the database or network, running the model, mapping and results presentation.

The following table provides a preliminary attempt of the time-schedule for the training sessions. For Mongolia, the session can take place either in one of them or through a special session in Ulaan-Baatar to be determined later. The training sessions will be delivered by Key members of the project assisted by the system analyst in charge of all computer operations.

Period in year 2001	Traceca- States	Location
April 2 - 5	Azerbaijan	MOE -Baku
April 9 - 12	Georgia	MOTC - Tbilisi
April 16 - 19	Armenia	MOTC - Yerevan
April 24 - 27	Moldova	MOTC - Chisinau
May 2 - 4	Ukraine	MOT - Kiev
May 7 - 10	Kazakstan	MOT-Astana & NIIT Almaty
May 14 - 17	Kyrgyzstan/Tadjikistan	MOT - Bishkek
May 22 - 24	Turkmenistan/Uzbekistan	COM & NISI - Ashgabat

Subject to revision and/or updating the list of Beneficiaries and local experts invited to the sessions is given in Appendix.

## 2 Project Organisation and Operational Structure

Due to the amount of data and system complexity, the traffic database and forecasting software require an efficient functional and organisational structure to enable proper processing and management. This section proposes an overall framework and the conditions under which the whole system will properly operate.

The system involve several users profiles (each having access to particular data), an operating mechanism and some funding principles as follows:

- *The Regional Administrator* has the maximum rights: that is to say to create, update and delete. He is also in charge of managing the other users: declaration of users, access rights and possibilities given to each users, of carrying safeguard operation, of updating reference tables and of intervening in case of failure to reinitialise the system (restoration, reorganisation, supervision of the system).

The Administration will be functioning at a Regional Level, within the frame of the new contemplated Traceca project: "Traceca Co-ordination Team". This project, planned to start next year has the general objective to increase the exchange of information and data between contractors and to develop cohesion between activities of current project and the Traceca Permanent Secretariat and National Commission. It also contemplates the establishment of Traceca Regional Co-ordination Offices in Odessa, Tashkent and Tbilissi.

Among other, these Regional Offices will be in charge of maintaining the existing Traceca Website and the future one regarding the Traffic Database. As there are three different Offices, it is recommended that the Administrator be located in Baku (Headquarters of the Traceca Inter-Governmental Joint Commission). He will define the working links and procedures to be applied with each of the three geographical areas: Eastern Europe, Caucasian countries, Central Asia.

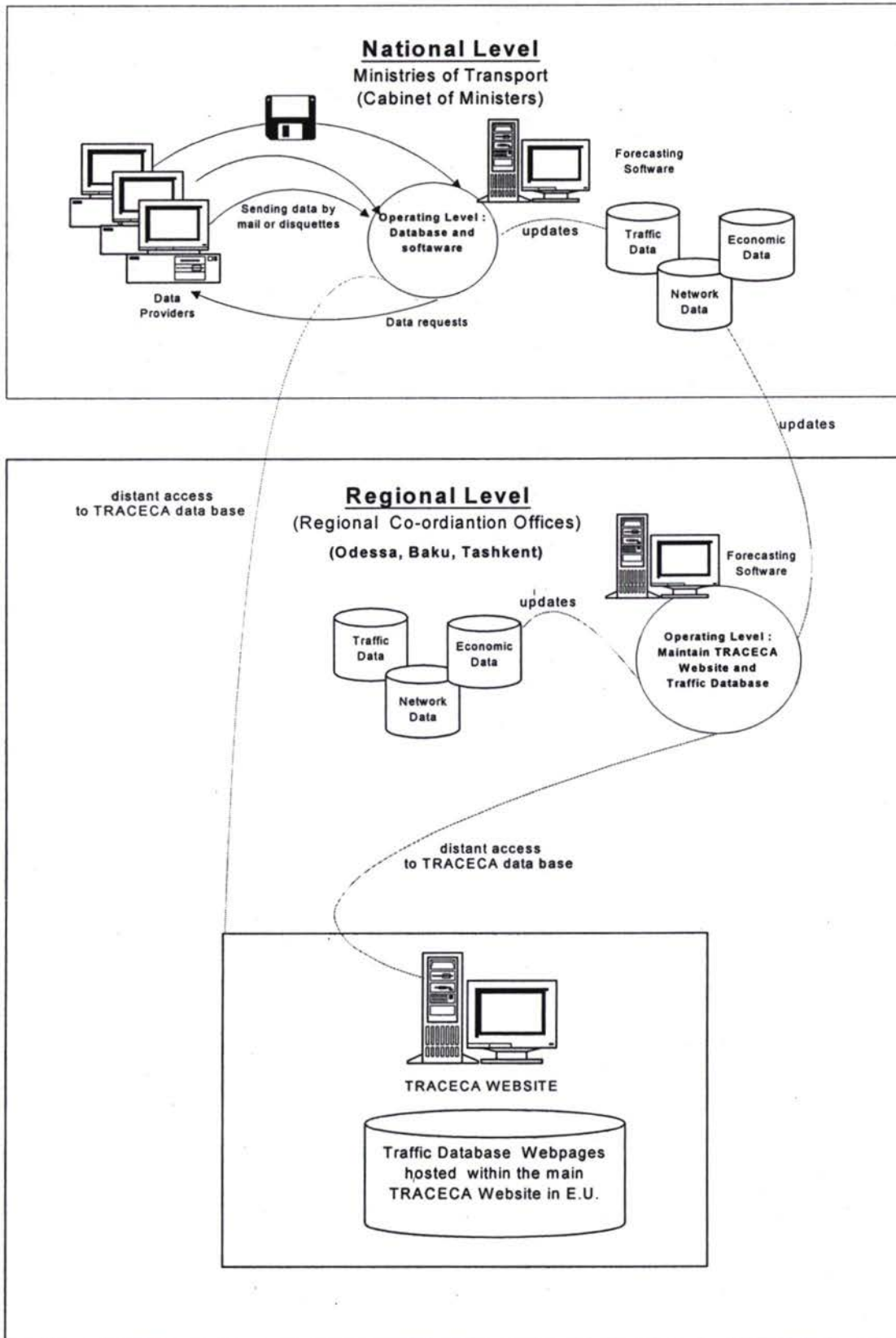
- *Local Managers* will operate at the national level. They can access the local database and the main database. The main database will be accessible only in consultation mode, because update and creation mode require better communication conditions. The local database will be accessible in update mode.

Local Managers and equipment will be located at the Beneficiary premises where, generally speaking, the equipent already delivered has been fixed. They will work directly for local policy and decision-makers. The local operational staff should be composed of 1 (or 2) experts in charge of collecting specified data from data providers (Customs, Statistical Institutions, Transport Agencies. Etc.) and of proceeding to update the tables of reference, as well as of sending data to Regional Co-ordination Offices. The data collection campaign should take place once in a year. It is recommended to make the system operating under a co-financed (Traceca and local beneficiaries), at least during the two first years.

- *Users*, such as staff from the Transport Association, Customs, Universities may be granted access in consultation mode.

The following scheme summarised the operating functioning of the system:





### 3 Project Development

It has always been clear (since the Inception Report and, before it, in the TOR) that the administrative, legal and operational organisational structure that should finally welcome the Project outputs was the Traceca Inter-Governmental Joint Commission (IGC). A short introduction to the Project was made at the IGC meeting of the Traceca National Secretaries held in Baku in July 2000. The greater and greater involvement of the concerned Traceca IGC National Secretaries in the Project process (and progress) clearly illustrates the fact and the direction in which the Project sustainability and development are oriented.

For the time being, populating and maintaining the database is supported by the Consultant through a specific budget made available for this purpose. In the near future, the annual data collection will be -for sustainability reasons- a temporary but regular activity that will lay down, at the local level, under the responsibility of the Beneficiaries. Even very limited expenditures may reveal to be difficult to perform. But the issue needs to be addressed. And the easiest and more efficient way to do so is through an agreement and decision about this problem within IGC bodies.

Even though the greatest care was brought in the design, capability and operability of the traffic database and forecast modelling, especially through innovative approaches in computer and web processing, the project technical outputs remain structurally limited to the Traceca countries of Central Asia and Caucasus mainly. As a matter of fact, one can easily understand that traffic forecasts are technically limited on the Caspian Sea through only two liaisons, because of the limited approaches and investigations with the non-Traceca countries. The same assessment can be made for the forecasts on and around the Black Sea, where, for instance for Moldova and Ukraine, "*traffic connecting with the contiguous Traceca region is to be the principal concern*"<sup>1</sup>. The traffic study is technically limited through the Black Sea to the liaisons between Odessa/Illichev'k and Poti/Batumi.

A complementary action is to extend the Project (database and forecasting utilities) to the Black Sea countries: Romania, Bulgaria and Turkey which are already members of the Traceca IGC.

The first result is that there would be no more difference, within IGC, between countries having and those not having the opportunity to use their own transport database and traffic forecasting models. A second result is that such a development will ensure not only the Project process for one more year but also better foundations for a permanent process. Third, this will allow to refine and to adapt better the Project product to the real needs and to cover the whole Black Sea of which shipping traffic is complementary to the one on the Caspian Sea.

#### 5.1.2 TP-Task A.4: Database design, population and maintenance

At the beginning of the next period, the 1999 data should have been received, checked, cleaned and inserted into the database viewer. The year 2000 data will be collected in April-May approximately during the training period. The 1999 network would be the same as the 1998 network so it is not planned to produce a different (1999) network.

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<sup>1</sup> TOR 4.1.1



### 5.1.3 TP-Task A.5: Design Forecasting Methodology

The software tool (multi-modal database - pd-Mmdb) will be implemented together with 1998 and 1999 database, database viewer, mapping, graphical display and network editing, network building, path building and assignment, matrix viewing and forecasting for both passengers and freight. The software tool should be reasonably user friendly.

The multi modal database software tool should be in-use to forecast matrices, produce a 2012 scheme forecast network from user specified modifications to the base network, build paths and assignment to produce link flows of passengers and freight commodity flows.

### 5.1.4 TP-Task A7-A8

These two tasks concern the provision of traffic forecasts as inputs in some specific feasibility studies: Chardzew bridge. Their implementations rely directly on the availability of the required data for the database, the successful design, test and operations of the traffic forecasting models, and the making of appropriate and relevant assumptions in building up the transport demand forecasts. According to planning, these tasks will be carried out during the first quarter of 2001.

## 5.2 SUB-TASKS,of OTHER MODULES: B-D-E

### 5.2.1 Module B

The Consultants propose to proceed with Module B as outlined in the TOR with the beneficiaries which have expressed their interest in further progress of this module. It should be restated though, that only one business or feasibility plan can be elaborated from the remaining resources. This effectively means it may occur that in the end only one main beneficiary country will fully profit from this module.

The training part will be closely co-ordinated with the training included in Module A. The rationale behind this proposal lies in the importance of the maritime links for the Traceca forecasting model. A deeper understanding of how maritime transport works and its main parameters and determinants will enhance the capabilities of all later users (also of completely land-locked countries) to adjust the flexible Traceca model to their own needs. A thoroughly elaborated training schedule will be provided within the frame of the coming Module B Progress Report, which will be submitted in February 2000.

### 5.2.2 Module D

The Report to deal with the technical proposals to improving navigation in Turkmenbashi channel will be completed by the end of January, at the latest by mid-February. It will cover:

- physical improvements to the excavated channel;
- recommendations regarding the port dredging equipment;
- upgrading of navigation aids;
- forecasts of maintenance dredging needs;
- an evaluation of environmental constraints and required preliminary procedures;
- an assessment of the financial sustainability of the project.

### 5.2.3 Module E

On the basis of the outputs from Tasks E1 and E2, the Consultant will prepare the feasibility study for task E3: Feasibility Study for Dubendi Oil Terminal. This study will consist in estimating the financial requirements to upgrading the Oil-Terminal at several stages (short term, medium term and long term) and to assessing the profitability of the project. Task E3 is planned to be completed in February-March.

The European Commission has asked the Consultant not to carry out the tasks of Module E related to Dubendi Oil Terminal: Detailed Design and Tender Documents.



## PLANNING TABLES

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TABLE 1

## OVERALL PLAN OF OPERATIONS

Project Title: Traffic and Feasibility Studies - TNREG9803				Contract Nb: 99.0130						Countries: 11 TRACECA States			
Planning Period: September 1999 - August 2001				Prepared: January 2000 - Revised December 2000 (Tasks harmonised with Synopsis)						EU Lead Consultant: BCEOM			
Project Objectives: Design and institutionalisation of a transport planning tool for the 11 TRACECA States													
No	MAIN ACTIVITIES	TIME FRAME									INPUTS		
		1999		2000				2001			PERSONNEL (weeks)		PERDIEM
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	EU Experts Weeks	Local Experts Weeks	days
		SS	OOONDD	JJFFMM	AAMMJJ	JJAASS	OOONDD	JJFFMM	AAMMJJ	JJAA			
Module A													
A0	Inception		NDD	JJ							9	0	54
A1	Local Network of Correspondents		NDD	FFMMA							11	0	77
A2	Training on database and traffic forecasting tools			A	-----	-----		JJFFMM	AAMMJJ	JJ	34	104	207
A3	Equipment Supply				JJ	J	S	O			9	0	45
A4	Database design, Data Collection and surveys			-MM	A	MMJJ	JJAASS	OOONDD		AAMMJJ	22	290	110
A5	Design forecasting methodology				MMJJ	JJAASS	OOONDD	JJ			33	40	220
A6	Database Development and documentation				J		SS	OOONDD	JJFF		11	5	65
A7	Specific traffic forecasts							OOON	JJ		10	10	65
A9	Synoptics and communications, brochures, conferences							DD	JJFFMM		12	8	60
A10	Overview of Links with Europe							OOON		AA	8	8	50
A11	Web site					SS	OO		FM	MA	9	10	54
A8	Chardzev Bridge Feasibility						OOON		FMM		8	10	51
	TOTAL										176	485	1,058
Module B													
B12	Appraisal for New Caspian Sea Shipping Services				AAMMJJ	JJAASS	OO				19	18	110
B13	Management Structure and Business Plan						OOONDD	JJFF			24	15	92
	TOTAL										43	33	202
Module C													
C14	Aktau Ferry Terminal - Tender Documents		S	OOONDD	JJFFMM	A					24	16	120
C15	Feasibility Study and Recommendations			DD	JJFFMM	AAM					11	2	30
	TOTAL										35	18	150
Module D													
D16	Turkmenbashi Navigation Channel						ASS	OOONDD	JJFF		21	12	105
Module E													
E17	Oil supply/demand Appraisal				FFM	AAMMJJ	JJ				31	0	100
E18	Dubendi berth 3 Feasibility Tender Doc. Follow-up							OOONDD	JJFFMM	AAMMJJ	0	0	0
E18 b	Dubendi Feasibility Study							OOONDD	JJFFMM	AA	46	25	120
E18 c	Navigation Aids Equipment-Aktau, Baku, Turkmenbashi							NNDD			11	15	65
	TOTAL										88	40	285
Σ	OVERALL TOTAL										363	588	1,800



TABLE 3

## PLAN OF OPERATIONS FOR THE NEXT PERIOD

Project Title: Traffic and Feasibility Studies - TNREG9803		Contract Nb: 99.0130						Countries: 11 TRACECA States		
Planning Period: January 2001 - June 2001		Prepared: December 2000						EU Lead Consultant: BCEOM		
Project Objectives: Design and institutionalisation of a transport planning tool for the 11 TRACECA States										
No	MAIN ACTIVITIES	TIME FRAME						INPUTS		
		2001						PERSONNEL (weeks)		PERDIEM
		JAN	FEB	MAR	APR	MAY	JUN	EU Experts	Local Experts	
		1234	1234	1234	1234	1234	1234	Weeks	Weeks	days
Module A										
A0	Inception									
A1	Local Network of Correspondents	234	1234					7	7	49
A2	Training on database and traffic forecasting tools			4	1234	1234		20	40	90
A3	Equipment Supply									
A4	Database design, Data Collection and surveys	1234	12		1234	1234	1234	10	90	60
A5	Design forecasting methodology	1234	12					10	20	55
A6	Database Development and documentation	1234	1234					6	4	35
A7	Specific traffic forecasts	1234						4	5	24
A9	Synoptics and communications, brochures, conferences			1234				6	4	35
A10	Overview of Links with Europe				1234			4	5	24
A11	Web site		34	12		34	12	6	12	40
A8	Chardzev Bridge Feasibility		34	1234				7	10	48
TOTAL								80	197	460
Module B										
B12	Appraisal for New Caspian Sea Shipping Services									
B13	Management Structure and Business Plan									
TOTAL								0	0	0
Module C										
TOTAL										
Module D										
D16	Turkmenbashi Navigation Channel	1234	1234					15	15	90
Module E										
E17	Oil supply/demand Appraisal									
E18	Dubendi - Feasibility Study	1234	1234	1234	1234			20	20	120
TOTAL								20	20	120
∞	OVERALL TOTAL							100	217	580

TRACECA: TRAFFIC and FEASIBILITY STUDIES  
 LIST of PROJECT BENEFICIARIES  
 and LOCAL EXPERTS

COUNTRY- BENEFICIARY & LOCAL EXPERTS	FUNCTION	ORGANISATION
<b>ARMENIA</b>		
Gargik GRIGORYAN	<i>Beneficiary</i> : Head of Inretnational Affairs IGC Traceca National Secretary	Ministry of Transport and Communication
Khachatur MANUKYAN	Project Co-ordinator	Road Department
Armen SIMONYAN		Railways Department
Ashot MELIKYAN	Head of Project Implementation Unit	Customs Department
Murad MANDVELYAN		National Service of Statistics
Torosian GEORGE	Head of Transport and Communication Dpt	
<b>AZERBAIJAN</b>		
Ikram SADIKOV	<i>Beneficiary</i> : Head of Transport Department	Ministry of Economy
Nazim ISMAYLOV	Economy and Statistics	Ministry of Economy
Alakbarov NAZAMI	Head of Department	Azerautonaglyyyat State Concern
Ilgar MUSTAFAYEV	Head of Calculation Centre	Azerbaijan State Railways
Raya GASIMOVA	Head of Economic Dpt	Baku International Sea Trade Port
Nazim MAMEDOV	TRACECA Co-ordinator	Azerbaijan State Caspian Shipping Company
Farasat MURSALOV	Dpty Head of Statistics and Analyses Dpt	Azerbaijan State Customs Committee
<b>GEORGIA</b>		
Vakhtang LOMADZE	<i>Beneficiary</i> : Deputy Minister	Ministry of Transport and Communications
Vadim TURDZELAZE	IGC Traceca National Secretary	Ministry of Transport and Communications
Paata TSAGAREISHVILI	Head of Dpt of Interbranch Co-ordination	Ministry of Transport and Communications
Otar KIRTSKHAIA	Head of Computer Center	Computer Centre - MOTC
Zviad CHKARTISHVILI	Head of Commercial Dpt - Marketing Manager	Port of Poti
Raul PATLADZE	Head of Commercial Dpt - Marketing Manager	Port of Batumi
Nugzar GASVIANI	Dpty Head of Road exploitation Dpt	State Department of Roads- Traffic
Tamaz TSIKELASHVILI	Dpty Head of Division of Transport Movements	Georgian Railways Ltd
Nadar KAKRIASHVILI		Department of Customs
<b>KAZAKSTAN</b>		
Khairat S. KARYBZANOV	<i>Beneficiary</i> : First Deputy Minister	Ministry of Transport and Communications
Murat BEKMAGAMBETOV	Director	PJSC "NIIT" Transport Research Institute
Alexander BOGDANCHIKOV	Head of Department	PJSC "NIIT" Transport Research Institute
Yelena GRIGORIADI	Head of Department	PJSC "NIIT" Transport Research Institute
Svetlana SMIRNOVA	Chief Expert	PJSC "NIIT" Transport Research Institute
Pavel KAVALENKO	Chief Expert - Water transport	PJSC "NIIT" Transport Research Institute
Oleg KRASIKOV	Deputy Director	JSC "KazDorNII"
Nail YUSUPOV	Head of Department	JSC "KazDorNII"
Zanina ROMANOVNA	Head of Transport Department	RK Statistics Agency
Asiya RUSTEMOVNA	Chief Expert	RK Statistics Agency
Tatyana MELSITOVA	Chief Expert RK Informational Technologies	Ministry of State Income (Customs Department)
<b>KYRGYZSTAN</b>		
Sulaiman S. ZAKIROV	<i>Beneficiary</i> : Deputy Minister	Ministry of Transport
Levan ALIBEGOSHVILI	Director	KyrgyzDorTransProyect
Sergey LUBIANIHK	Sector Manager	KyrgyzDorTransProyect
Natalya POLKHLEB	Chief Economist	National Committee for Statistics



TRACECA: TRAFFIC and FEASIBILITY STUDIES  
 LIST of PROJECT BENEFICIARIES  
 and LOCAL EXPERTS

COUNTRY- BENEFICIARY & LOCAL EXPERTS	FUNCTION	ORGANISATION
<b>MOLDOVA</b>		
<i>Boris GHERASIM</i>	<i>Beneficiary : Vice Minister former IGC Traceca National Secretary</i>	<i>Ministry of Transport and Communications</i>
Alina DIACENCO	Head of Development Division	Main Directorate of Railway Transport MOTC
Diana RUSU	Main Specialist Dpt Systematisation & Prognosis	General Economy Directorate - MOTC
Yuriy Teodor DADECHIN	Main Specialist of Cargo Section	Customs Department
Nicolae CIOBANU	Director	Department of Roads - MOTC
Anna RUSU	Project Co-ordinator	
Eugen DATCO	Vice Director Main Direction of Auto Transport	MOTC
Iurie TONU	Administrator - Local Software Network	MOTC
<b>MONGOLIA</b>		
<i>Rentsen BUD</i>	<i>Director General - Ministry of Infrastructure</i>	<i>Road, Transport, Information Policy &amp; Co-ord. Dpt</i>
Rentsen BUD	Director General - Department of Roads	Mongolian Govern. Implementing Agency - MOI
L. GOMBO	Head of Planning and Research Division	Dpt of Roads - MG Implementing Agency - MOI
G. NARANTUYA	Officer - Traffic Engineering	Dpt of Roads - MG Implementing Agency - MOI
<b>TADJIKISTAN</b>		
<i>Abduralim ASHUROV</i>	<i>Beneficiary: Deputy Minister</i>	<i>Ministry of Transport and Roads</i>
Timur MIRZOEV	Director	TajikGiproTransStroy
Yuriy YULDASHEV	Chief Engineer	TajikGiproTransStroy
Makhbuba ABDULAEVA	Chief Planning Division	TajikGiproTransStroy
Tatyana NOVIKOVA	Chief Expert	TadzhikGiproTransStroy
Sitora YAKHYAYEVA	Engineer	TadzhikGiproTransStroy
<b>TURKMENISTAN</b>		
<i>Hudaykuli HALIKOV</i>	<i>Beneficiary: Deputy Chairman</i>	<i>Cabinet of Ministers</i>
Juma BAIRAMOV	Director	National Institute on Statistics and Information
Najia BADYKOVA	Head of Foreign Economic Relations Department	National Institute on Statistics and Information
<b>UKRAINE</b>		
<i>G. LEGENKY</i>	<i>Beneficiary : Head of Transport Policy Department</i>	<i>Ministry of Transport</i>
Yuriy TERTYSHNIK	<i>IGC Traceca National Secretary</i>	Consultant to Transport Policy Department - MOT
Helena MEDMEDEVA	Chief of Division	Ministry of Transport-Transport Policy Department
Helena Gandziy	Head of Department	Ministry of Transport-Transport Policy Department
Nikolay Rachok	Head of Department	Ministry of Transport-Transport Policy Department
Valera NETREBA	Database and Modelling - Co-ordinator	Consultant to Computer Centre of MOT
Yakov NEBOZHATKO		UkrinteravtoService
<b>UZBEKISTAN</b>		
<i>Valeri I. ATAEV</i>	<i>Beneficiary: Deputy Chairman</i>	<i>Cabinet of Ministers</i>
SADINAZAROV		Uzavtotrans Corporation
ZAHIDOV		Uzbekistan Temir Yullary
MATCHANOV		International Forwarding Association
Kamal ULDZHABAYEV	TRACECA Co-ordinator	Chairman JSC "UzInformTransSistema"
Yuriy KOCHETKOV	Head of Department	JSC "UzInformTransSistema"
Shukurali TURSUNOV	Deputy Head of Economic Service	"UzbekistoTemirYullari"

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APPENDIX I

TRANSPORT COSTS and TARIFFS

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## APPENDIX I

### Elements about Transport Costs and Tariffs

#### General Approach

This Appendix deals with comparative transport charges and delays applied to the basic rail and road Traceca transport networks, and provides a review of port and shipping costs and rates charged as well. All elements directly affect the choice of routes and modes made by freight owners.

Transport freight charges have been identified in all eleven countries involved in the Project. The development of transport costs is to be used as quantitative inputs to the traffic assignment: dividing the transport demand into traffic flows by mode and by route.

To fulfil these objectives the following activities have been carried out:

- Determine the general structure of road freight transport cost in each country. This is estimating a general operating cost for international trucks in each country to take into account of discrepancies existing on the cost of factors (labour cost, fuel prices, etc.).
- Determine the specific cost applied to each link of the road network. On one hand, this requires a recalculation of vehicle operating cost (VOC) for individual links in order to take into account the road conditions (roughness) and the technical characteristics of the different road sections (number of lanes, width, etc.) which have an impact on vehicle operating cost. On the other hand, the value of time, mainly cargo delay cost, is to be considered. As a result, a generalised cost is calculated to each link of the whole network.
- Determine the general structure of rail freight transport cost in each country. This is to estimating a general cost for railway transportation in each of the eleven countries.
- Determine the specific operating cost applied to each section of the rail network: taking into account the operating conditions (diesel, electrified line, etc)) and other characteristics of different rail sections (number of tracks, etc) and their impact on the operating cost.
- Determine additional charges applied on port and shipping links of the network: transshipment, port and customs fees, shipping freight rates, etc.

The data collection process involved interviews with trucking companies and forwarders as well as quotations from forwarders and the use of published tariffs (Caspian Shipping Company, MTT tariff, Ukrferry). In addition, considerable use was made of other consultant's reports. For instance, Reference has been made to studies which incorporate cost and tariff analysis in their findings, in particular:

- *Intermodal Transport Services: Calculation of transport costs carried out by Polzug - Axis - Hpti Consortium in December 1999,*
- *Tariff and Timetable Structure Project: Special annex on "Assessment of Traceca Route Competitiveness" carried out by Sisie in August 1997*
- *Trade Facilitation (cotton extension): Report on "Cost-benefit analysis on transportation of Uzbek Cotton carried out by Bceom in July 1997 (as subcontractor of Scott-Wilson-Kirkpatrick)*
- *Calculation of transport costs carried out by Bceom in December 1997, within the Forwarding Multimodal Transport project.*



- Study of the cost and financing of road usage (carried out by Kocks Consultants in June 1997, within the project "Implementation of a Pavement Management System".
- Technical Assistance to the Ministry of Transport, Ukraine: Support to the Development of "TEN" Corridors, Bceom, 1998.

## 1 Road Transport Costs

### 1.1 Structure of road freight transport cost in each country

To determine the general structure of road freight transport cost in each country, basic data has been collected from carriers, through interviews and using VOC data from the previous mentioned studies.

For calculating operating cost, a specific calculation model has been developed (detailed description will be provided in Appendix in the draft Final Report) leading to the usual breakdown of costs between variable and fixed costs for a selected vehicle (40 tons articulated truck) in each country. Nevertheless, although this method is potentially attractive permitting comparison with numeric results elaborated by carriers associations, some limitations have to be underlined:

- Data are not always available and reliable,
- When available the national data are often the result of average calculations for the country as a whole, and not for a specific type of transport, vehicle, itinerary, etc.
- The comparison of domestic transport costs between countries is not relevant for international transport (since a number of items can be purchased abroad, at better prices). However, average cost calculations on a national basis is useful for calibrating the traffic assignment model which requires to apply a cost to every road section (link) in order to reflect cost variations due to specific road conditions and characteristics.

Whatever the country, there is a serious lack of technical and economic data for road transport. This may be due to insufficient existing statistic means and organisations, but also to the above mentioned specificity of the road transport sector that is characterised by a large predominance of craftsmen suffering from a lack of skill to implement and follow-up the accounts of their activity with accuracy.

The calculations were carried out for a 40-ton articulated truck used for international transport on the basis of the assumptions described above (synthetic results):

Table 1 : Synthetic results of vehicle operating costs

#### Azerbaijan:

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.17 US\$/km	45 US\$/day	VEHICLE	0.37 US\$/km
DRIVER	0.16 US\$/km	44 US\$/day	DRIVER	0.35 US\$/km
ENTERPRISE	US\$/km	13 US\$/day	ENTERPRISE	0.06 US\$/km
TOTAL	0.33 US\$/km	102 US\$/day	TOTAL	0.78 US\$/km

#### Georgia:

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.22 US\$/km	41 US\$/day	VEHICLE	0.43 US\$/km
DRIVER	0.15 US\$/km	23 US\$/day	DRIVER	0.26 US\$/km
ENTERPRISE	US\$/km	11 US\$/day	ENTERPRISE	0.06 US\$/km



TOTAL	0.37 US\$/km	75 US\$/day	TOTAL	0.75 US\$/km
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Armenia

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.30 US\$/km	46 US\$/day	VEHICLE	0.53 US\$/km
DRIVER	0.18 US\$/km	58 US\$/day	DRIVER	0.47 US\$/km
ENTERPRISE	US\$/km	16 US\$/day	ENTERPRISE	0.08 US\$/km
TOTAL	0.47 US\$/km	120 US\$/day	TOTAL	1.07 US\$/km

Mongolia

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.23 US\$/km	46 US\$/day	VEHICLE	0.43 US\$/km
DRIVER	0.16 US\$/km	42 US\$/day	DRIVER	0.34 US\$/km
ENTERPRISE	US\$/km	14 US\$/day	ENTERPRISE	0.06 US\$/km
TOTAL	0.38 US\$/km	102 US\$/day	TOTAL	0.84 US\$/km

Kazakstan

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.19 US\$/km	46 US\$/day	VEHICLE	0.40 US\$/km
DRIVER	0.16 US\$/km	49 US\$/day	DRIVER	0.37 US\$/km
ENTERPRISE	US\$/km	14 US\$/day	ENTERPRISE	0.06 US\$/km
TOTAL	0.35 US\$/km	109 US\$/day	TOTAL	0.83 US\$/km

Kyrgyzstan

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.22 US\$/km	46 US\$/day	VEHICLE	0.43 US\$/km
DRIVER	0.16 US\$/km	42 US\$/day	DRIVER	0.34 US\$/km
ENTERPRISE	US\$/km	14 US\$/day	ENTERPRISE	0.06 US\$/km
TOTAL	0.38 US\$/km	102 US\$/day	TOTAL	0.83 US\$/km

Tadjikistan

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.34 US\$/km	50 US\$/day	VEHICLE	0.59 US\$/km
DRIVER	0.15 US\$/km	42 US\$/day	DRIVER	0.36 US\$/km
ENTERPRISE	US\$/km	15 US\$/day	ENTERPRISE	0.08 US\$/km
TOTAL	0.49 US\$/km	108 US\$/day	TOTAL	1.03 US\$/km

Uzbekistan

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.25 US\$/km	49 US\$/day	VEHICLE	0.46 US\$/km
DRIVER	0.13 US\$/km	42 US\$/day	DRIVER	0.32 US\$/km
ENTERPRISE	US\$/km	14 US\$/day	ENTERPRISE	0.06 US\$/km
TOTAL	0.38 US\$/km	105 US\$/day	TOTAL	0.85 US\$/km

## Turkmenistan

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.15 US\$/km	47 US\$/day	VEHICLE	0.36 US\$/km
DRIVER	0.13 US\$/km	42 US\$/day	DRIVER	0.32 US\$/km
ENTERPRISE	US\$/km	12 US\$/day	ENTERPRISE	0.05 US\$/km
<b>TOTAL</b>	<b>0.28 US\$/km</b>	<b>101 US\$/day</b>	<b>TOTAL</b>	<b>0.73 US\$/km</b>

## Ukraine

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.19 US\$/km	46 US\$/day	VEHICLE	0.39 US\$/km
DRIVER	0.15 US\$/km	58 US\$/day	DRIVER	0.40 US\$/km
ENTERPRISE	US\$/km	15 US\$/day	ENTERPRISE	0.06 US\$/km
<b>TOTAL</b>	<b>0.34 US\$/km</b>	<b>119 US\$/day</b>	<b>TOTAL</b>	<b>0.85 US\$/km</b>

## Moldova

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	TOTAL COST (US\$/km)	
VEHICLE	0.19 US\$/km	46 US\$/day	VEHICLE	0.39 US\$/km
DRIVER	0.15 US\$/km	55 US\$/day	DRIVER	0.39 US\$/km
ENTERPRISE	US\$/km	14 US\$/day	ENTERPRISE	0.06 US\$/km
<b>TOTAL</b>	<b>0.34 US\$/km</b>	<b>115 US\$/day</b>	<b>TOTAL</b>	<b>0.83 US\$/km</b>

Table 2 : Summary Table of VOC by country

Country	US \$ / km
Armenia	1.07
Azerbaijan	0.78
Georgia	0.75
Kazakhstan	0.83
Kyrgyz Rep.	0.83
Tadjikistan	1.03
Turkmenistan	0.73
Uzbekistan	0.85
Mongolia	0.84
Moldova	0.83
Ukraine	0.85

1.2 Generalised Costs by road link

The above average costs by country to operating 40-ton articulated truck do not reflect, at the road link level, the specifics related to technical characteristics of every road-link. However, it is possible to calibrate a formula that reflects these specifics incorporated in the database.

The VOC is calculated for each specific link of the road network through the variations of both: (a) the road roughness expressed by the IRI and (b) the vehicle speed. The formula, derived from the HDM – 3 World Bank Model, has the following pattern:

$$\text{VOC} = A + B \times \text{IRI} + C \times \text{IRI} \times S + D \times S + E \times S^2 + F \times S^3$$



With: VOC in US dollars for an articulated truck and for 1,000 kilometres  
IRI = International Roughness Index in mm/m (range: 2 to 12)  
S = Speed in km/h (range: 10 to 80)  
A to F = parameters reflecting the vehicle characteristics (weight load, vehicle price, etc)

To calibrate the formula (parameters A to F), the average figures provided by the carriers have been used in order to calculate realistic VOC to each link of a given itinerary. In all cases, a correlation coefficient  $R^2$  above 0.98 has been obtained. The value of parameters A to F was calculated for both: standard and dual carriageway roads separately.

The value of time (VOT) was calculated by using the link length and vehicle speed, and by applying the relevant values of time. The significance of the value of time for goods, compared with vehicle operating cost, was made by comparison with previous Traceca studies<sup>1</sup> in Azerbaijan and Kyrgyzstan. The hourly cargo delay cost was estimated at US\$ 0.01 per tonne of truck capacity, equivalent to US\$ 0.2 per hour for a more than 3-axle truck.

## 2 Rail Transport Cost

### 2.1 General costs for rail wagon operation

The description of a detailed breakdown of the actual cost factors affecting rail wagons operation in the TRACECA countries requires a large number of parameters, technical and economic data as well as complex calculations which railways do not use to provide. Furthermore data on operating costs is considered commercially sensitive and for that reason rather confidential. The question of basing the study on published tariff has also been avoided, as the tariff system in use do not reflect the market prices.

Indeed, the tariff system stipulates maximum rates (approved by the C.I.S council every year), fixed according to distance travelled, wagon loading percentage, (tonnage conveyed/carrying capacity), nature of commodities and the type of wagon to be used (refrigerated wagons, cisterns and other freights which can use classical covered rail wagons). The problem is that on that basis each railway administration is allowed to define and apply "special regulations", which means different rates for a given freight over a given route (transit freights, export / import and domestic traffic), according to a list of "specific" factors (special regulations).

In spite of the existing general agreement, similar links are applied different transport prices according to the country. On the other hand, the "special regulations", too flexible and based on unclear rules, furthermore subject to change or cancellation without proper advance notice or clearly established reasons. Besides, "special regulations" apply only to organisations and forwarding companies that have signed transport agreements with railways. Otherwise forwarders can not benefit from rebates granted on the basis of volume to be transported and other discounts and rebates. Furthermore, these can ranges from 10 to 50%. In such conditions, it happens that similar customers in similar situation, even within the same country, end up with very different transport prices. Consequently, using the Transit Tariff Policy (M.T.T.) and E.T.T for the purpose of this study would lead to consider a too complicated and large number of cases (by distance, by commodity, by type of wagon, by type of traffic and by country).

As a result, a different approach has been adopted. It consisted in collecting general data on revenue from freight transport activity to allow a calculation of average revenue per ton-km. Average values have been estimated on the basis of data provided by some countries

<sup>1</sup> Traceca Project: Implementation of Pavement Management System. Kocks. June 1997.



(Turkmenistan, Ukraine, Azerbaijan). On the other hand, use has been made of estimates carried out under the TRACECA Project "Railways Inter-State Tariff and Time Table Structure".

From yearly figures provided on rail companies activity (freight turnover in million of t-km, and the corresponding revenue), it has been possible to deduce a average revenue for ton-kilometre carried. In Ukraine, the average revenue is equivalent to 0.011 US\$/ per ton-km. In Turkmenistan, similar figure is 0.007 US\$/ per ton-km.

These orders of magnitude were found consistent with figures produced by the Tariff TRACECA project. For the year 1996 and for the Central Asian Corridor, revenue per ton - km were comprised between \$ 0.0074 and 0.010 per tonne Kilometre. The same study estimates that for the Caucasian corridor rail the same figures were much higher comprised between \$ 0.020 and 0.032 per tonne Kilometre (or US\$ 0.026 per tonne Kilometre in average). To compare, average current revenues experienced in a country like France for instance is around \$ 0.038 EUR per t - km.

These figures are also consistent with more recent figures produced for different alternatives routes by the project Intermodal services :

<i>Routes</i>	<i>Total distance (km)</i>	<i>Total Costs (USD)</i>	<i>US\$/ton</i>	<i>US\$/t km</i>	<i>Duration in days</i>	<i>Km/day</i>
<b>Poti - Tashkent</b>	3043	1209	93	0.031	16	190
Novorossisk - Tashkent	3710	825	63	0.017	13	285
<b>Brest - Tashkent</b>	4369	924	71	0.016	15	291
Kaliningrad - Tashkent	4559	1000	77	0.017	16	285
<b>Banderabas - Tashkent</b>	3617	1028	79	0.022	18	201
Riga Tashkent	4606	984	76	0.016	16	288
<b>Vladivostok Tashkent</b>	8548	1277	98	0.011	29	295

This tariff is applied to all general cargo. 20' container (13 tons), three 20' per wagon

For non-ferrous metals and dangerous goods the coefficient is 2

For cargo in tank Containers the coefficient is 1,4

For cargo in reefer Containers the coefficient is 1,35

## 2 Generalised Costs by rail link

The traffic assignment model require to provide a cost for each individual link that reflects both the cost of making long distance trips and the costs incurred from the physical and technical characteristics of each rail link. The average transport cost is used as a reference to calibrate the costs derived on each individual link and assign realistic cost figures: the sum of the cost of many links along a given itinerary should equal the total estimated cost of a long distance trip using those links.

## **3 Transportation cost for ports and maritime links**

### 3.1 General Approach

The breakdown of charges related to the various services provided on maritime links includes the following:

- Sea freight (from/to named port),
- Transshipment charges,
- Custom fees and other charges (documentation fee, demurrage, and storage).



- Custom fees and other charges (documentation fee, demurrage, and storage).

Three transshipment configurations have been identified to estimating the corresponding charges:

- Trucks (RoRo transshipment into a RoRo ferry, port and customs fees and ferry transportation),
- Rail wagons (RoRo transshipment of wagons into a ferry wagon, port and customs fees and ferry wagon transportation),
- Cargo in Transit (cargo shipped by railway or truck to a port, with transshipment at this port via storage areas, port and customs fees, sea transportation).

The following ports were considered:

- Caspian Sea : Baku, Turkmenbashi and Aktau
- Black Sea : Poti, Batumi and Illichevsk

The data collection involved interviews with ports and shipping lines representatives, published tariffs (Caspian Shipping Line, MTT tariff, Ukr ferry), as well as quotations from forwarders. Project Reports, especially from Module B, were also extensively used.

### 3.2 Cost Applied to the links of the Maritime Facet of the network

As mentioned, rates are applied from node to node of the network, to a given link and for each configuration. The general scheme is summarised as follows:

<i>Departure Port</i>	<i>Arrival Port</i>
<i>Transshipment → Port and Customs fees → Sea freight → Port and Customs fees → Transshipment</i>	

Transshipment involves

- for ferries: a truck or a wagon (ferry wagon and RoRo vessels)
- for cargo by vessels: port yards and storage area.

Applied rates are derived from tariffs provided by shipping lines. They are expressed in USD per link.

#### Caspian Sea Ports

##### Rates applied on Baku - Turkmenbaschi ferry lines

Tariffs published by the Caspian Shipping Company (applied during the first half of 2000 for carrying wagons and containers from Turkmenbaschi railhead to the Baku railhead, including the ferry crossing of the Caspian Sea) are as follows:

<i>In US dollars</i>	Loading or unloading (Turkmenbaschi)	Crossing (1)	Loading or unloading (Baku)	Total Cost per Single journey
Twenty-foot-containers	40	450	36	526
Forty-foot-containers	60	450	36	546
Empty or loaded Wagons:				
- 15 metre wagon	60	450	36	546
- 18 metre wagon	60	540	36	636
- 20 metre wagon	60	600	36	696

(1) The crossing is charged per linear meter at the rate of 30 USD/metre (June 2000).

This table shows that an 18-metre wagon is charged 636 USD, or 1272 USD when taking account of the cost wagon empty return. On the basis of an average carrying capacity of 50 tons, the cost per ton is 1272 USD/ 50 tons = 25.44 USD/ton. Expressed in ton-kilometre, for the distance of 310 km between Turkmenbaschi and Baku, the average price is equal to \$0.082 per tonne kilometre

It must be noticed that prices are negotiable and discounts possible, depending on the type of commodity.

*Rates applied from/to the port of Aktau (Kazakstan) and Baku*

There is no ferry connection yet (the rail terminal is under rehabilitation. It is expected that ferry operations will resume to/from Aktau by the middle of the year 2001).

At present, cargo vessels operating on Aktau - Baku are applying a sea freight rate of 380 US\$ for a 40' container (loaded with 20 tons). Handling charges are equivalent to those applied in Turkmenbaschi : 60 US\$.

<b>Black Sea Ports</b>
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Sea shipping Rates applied on Illichevsk – Batumi/Poti, Varna – Batumi/Poti ferry lines.

For Rail wagons, rates applied by Ukr Ferry are as follows:

<i>Total number of rail wagons carried under Contract</i>	<i>Freight rates USD per wagon</i>
Up to 100 units	1,300
More than 100	1,250
More than 200	1,200
More than 300	1,150
More than 400	1,100
More than 500	1,050
Bunker Adjustment Factor (BAF) - 50 USD per wagon	

The average rate applied between Illichevsk and Poti/Batumi by Ukrferry to a wagon carried under a 250 wagon negotiated contract is USD 1,175, plus BAF of USD 50 leads to a total of USD 1,225 (equivalent to near 36 dollars/ton (35 tons/wagons).

Containers carried on railway wagons, roll trailers or platforms are charged:

20' containers:	400 US dollars per units laden (200 US empty)
44' containers:	800 US dollars per unit laden (400 US empty)

Refrigerator units, half-trailers or containers are charged an additional 20% increment to declared tariffs. As for dangerous cargoes (falling under the I Class of IMO) they are carried at the double freight rate. Condensed gas is transported at the rate of 900 USD per rail-tank, the return of the empty tank included. As for palleted cargoes, transport rate applied is ed at the rate of USD 50 per one cubic meter.

Terminal cost (transshipment cost) varies according to configuration. Cargo handling at Illichevsk port constitutes 0,60 USD per ton of cargo (charged together with marine freight for cargoes carried at rolling stock). For containers, terminal cost is USD 55 per 20' container and 85 per 40' container. In Poti, terminal costs are more expensive: USD 270 per platform. The rate applied to container (two 20' containers) is USD 135 per container.



Rates applied on Illichevsk – Batumi/Poti, Varna – Batumi/Poti ferry lines, to trucks and cars

For trucks on Illichevsk – Batumi / Poti, Batumi / Poti – Illichevsk, Varna – Batumi / Poti, Batumi / Poti – Varna rates applied depends on the Gross weight and the length of the vehicle: up to 36 tons, height 4,20 m, breadth 2,50 m, and length 18 m, rates in USD per lane meter are as follows:

<i>One way transport</i>	<i>round transport</i>
laden 50.00	laden/empty 60.00
empty 40.00	laden/laden 85.00
BAF - 30 USD per truck for one way trip.	

A typical articulated truck (18 m long) in one way transport loaded with 20 tons is paying 930 Us Dollars (equivalent to 46.5 US dollars). Palleted cargo, trucks and wagons must all have all the necessary documents enabling them to pass the customs formalities.

**OPERATING COST CALCULATION MODEL**

The model is implemented through two steps: (i) data collection and (ii) cost calculation.

FIRST STEP: DATA COLLECTION: this consists in assembling basic data through the following table (currency units are given here for Azerbaijan but the structure of the table is the same for each country):

**TRUCK or TRACTOR**

Base year	1999
Purchase value (without tyres)	50 000 US\$
Residual value (percentage of the purchase value)	10.0 %
Usual interest rate	10.0 %
increasing of fuel consumption with time	%
Specific fuel consumption	35.0 Litres/100 Km
Fuel price	0.14 US\$/Litre
Number of tyres	6 Tyres
Tyre price	250 US\$
Average tyre life (km)	150 000 Km
Maintenance cost for the first year (% of the purchase value)	6.0 %
Increasing rate of maintenance cost by year	%
Usefull load carried (in case of single truck)	0 Tons
Working days by year	300 Days/year
Average vehicle service life	900 000 Km
Average vehicle annual utilisation	67 500 Km
Truck annual insurance cost	900 US\$/year
Insurance of the payload (in case of single truck)	0 US\$/year
Annual indirect taxes	600 US\$/year
Tolls	50 US\$/month
Vehicle life in years	13.3 Years
Average daily utilisation in kilometers	225.0 Km/day
Monthly utilisation in working days	25.0 Days/month

**TRAILER or SEMI TRAILER**

Purchase value (without tyres)	38 000 US\$
Residual value (percentage of the purchase value)	10 %
Number of tyres	12 Tyres
Average tyre duration	150 000 Km
Maintenance for the first year (% of the purchase value)	7.0 %
Usefull load carried	24.0 Tons
Average semi-trailer service life	1 000 000 Km
Average semi-trailer annual utilisation	60 000 Km
Semitrailer annual insurance cost	0 US\$/year
Insurance of the payload	770 US\$/year
Annual indirect taxes	US\$/year
Vehicle life in years	16.7 Years

**DRIVER**

Monthly salary	675 US\$/month
Incentives	0 US\$/month
Annual salary increasing	- %
Per diem	35 US\$/day
Social security contribution	35.00 %
Number of drivers by truck	1.2000 Drivers

**OVERHEAD**

General costs / operation costs	8.0 %
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**SECOND STEP : CALCULATION**

The **second step** of the model aims to calculate the value of all the items on the basis of data collected and to produce to the following final result table:



**Vehicle operating cost for Azerbaijan**

VARIABLE COSTS (US\$/km)		FIXED COSTS (US\$/day)	
<b>TRUCK / TRACTOR</b>			
Fuel	0.05 US\$/km	Insurance vehicle	3 US\$/day
Tyres	0.01 US\$/km	Insurance payload	3 US\$/day
Maintenance	0.04 US\$/km	Taxes	2 US\$/day
Tolls	0.01 US\$/km	Financing cost	10 US\$/day
		Renewal cost	11 US\$/day
Sub total	0.11 US\$/km		28 US\$/day
<b>TRAILER / SEMI</b>			
Tyres	0.02 US\$/km	Insurance vehicle	0 US\$/day
Maintenance	0.04 US\$/km	Insurance payload	3 US\$/day
		Taxes	0 US\$/day
		Financing cost	7 US\$/day
		Renewal cost	7 US\$/day
Sub total	0.06 US\$/km		17 US\$/day
<b>TOTAL VEHICLE</b>	<b>0.17 US\$/km</b>		<b>45 US\$/day</b>
<b>DRIVER</b>			
Incentives	0.00 US\$/km	Salary	32 US\$/day
Per diem	0.16 US\$/km	Social contribution	11 US\$/day
<b>TOTAL DRIVER</b>	<b>0.16 US\$/km</b>		<b>44 US\$/day</b>
<b>ENTERPRISE</b>			
<b>TOTAL ENTERPRISE</b>		General costs	13 US\$/day
<b>TOTAL</b>	<b>0.33 US\$/km</b>		<b>102 US\$/day</b>

**Comments:**

- Costs are shared between variable costs that are only considered when the vehicle is running and fixed costs that are considered whether the vehicle is running or not. For these reasons, variable costs are expressed with monetary units by kilometre (the most representative production basic unit for road transport) and fixed costs with monetary units by day (the most representative time unit for road transport).
- Costs are also shared between the vehicle (shared itself between truck or tractor and trailer or semi-trailer, considering all the possible schemes), the driver and overheads. This option permits to check the origin of possible overcosts (fleet, driver and overheads).

**Description of calculations****1. Variable costs (expressed in currency units by kilometre)****1.1. Vehicle costs**

- Fuel

$$\text{Kilometric fuel cost} = \frac{(\text{number of litres for 100 km} \times \text{price of a litre})}{100}$$

- Tyres

$$\text{Kilometric tyre cost} = \frac{(\text{number of tyres} \times \text{price of a tyre})}{\text{tyre mileage}}$$

- Maintenance

$$\text{Kilometric maintenance cost} = \frac{\text{annual maintenance cost}}{\text{annual mileage}}$$

or

$$\frac{\text{purchase value of the vehicle} \times \text{maintenance percentage}}{\text{annual mileage}}$$

## 1.2. Driver

- Per diem

$$\text{Kilometric extra cost} = \frac{\text{daily allowance}}{\text{daily mileage}}$$

## 2. Fixed costs

### 2.1. Vehicle

- Insurance (vehicle & payload)

$$\text{Daily insurance cost} = \frac{\text{annual insurance cost}}{\text{number of working days by year}}$$

- Taxes

$$\text{Daily tax cost} = \frac{\text{annual taxes}}{\text{number of working days by year}}$$

- Renewal cost and financing cost

These costs are calculated on the basis of the actualised purchase value of the vehicle (without VAT and tyres and deducing the residual value) using the local interest banking rate. This "economic writing off method", increases annual instalments, but takes into account inflation compared to the usual accounting writing off method.

Thus, annual instalments are calculated with the following financial formula (easily accessible within spreadsheets):

$$\text{Annual instalment} = \text{value to depreciate} \times \frac{i}{1 - (1+i)^{-n}}$$

where "i" is the interest rate and "n" the duration life in years.

Moreover, the duration considered is the whole duration of the vehicle to get a more realistic vision of operating conditions.

The following example, considering a purchase value of 1000 (without VAT), permits to understand the calculation process:

Purchase value	1 000
Tyres	50
Price without tyres	<u>950</u>
Residual value (20%)	190
Value to depreciate	<u>760</u>
Annual instalment (6years / 10%)	155
of which	



	Renewal cost (760/6)	127
Finally	Financial cost	28

$$\text{Daily renewal cost} = \frac{\text{value to depreciate}}{\text{duration of the vehicle in years} \times \text{workin days by year}}$$

and

$$\text{Daily financing cost} = \text{daily instalment} - \text{daily renewal cost}$$

## 2.2. Driver

- Salary cost

$$\text{Salary cost} = \frac{\text{gross monthly salary / driver} \times \text{average number of drivers / vehicle}}{\text{number of working days by month}}$$

- Social contribution

$$\text{Daily social cost} = \text{daily salary cost} \times \text{contribution percenatge}$$

## 2.3. Overheads

- Daily overheads

$$\text{Daily overheads} = \left( \sum \text{var iable cost} \times \text{kilometres by day} + \sum \text{daily costs} \right) \times \text{overhead \%}$$

APPENDIX II  
AIDS TO NAVIGATION  
STUDY SUMMARY



## **APPENDIX II**

### **Feasibility Study on the Rehabilitation and Modernisation of Navigational Aids Systems in Caspian Sea Ports.**

#### **Summary**

The expected increases in cargo volumes transported across the Caspian Sea (especially in oil trade but also in ferry related cargoes) go hand in hand with an increase in vessel traffic density since the growth of vessel size will be moderate due to existing nautical restrictions on the Caspian Sea and in Caspian ports.

In the light of the future traffic volumes, the technical review of the existing AtoN systems has revealed that there is an urgent need for action in at least two of the analysed ports. Baku/Dubendi and Turkmenbashi ports lack basic equipment for guaranteeing navigational safety in the port approach area and the harbour basin. While Aktau port has just recently taken measures to partly update their AtoN equipment to western European standards, it still lack some facilities for efficient coverage and surveillance of the port and sea-side access area.

The institutional analysis has pointed out that there may be efficiency gains from a reorganisation-centralisation of the AtoN system in Baku/Dubendi.

The financial analysis has demonstrated, that the investment into AtoN equipment in Baku/Dubendi and Turkmenbashi ports can under the present conditions not be financed with private sector participation since the calculated financial rates of return (FIRR) are far from being satisfactory from a private investors point of view. In Aktau, the calculated FIRR reached a level, which casts doubts, whether the collected lighthouse dues are solely dedicated to the cost-recovery of AtoN services. Since until today, the ports under review within the present study do not use a service-based accounting system, the setting of tariffs still appears to have some arbitrary traits. Furthermore, the Port of Aktau is limited in their capacities for any new investment, since it is bound by restrictions imposed by the recently granted high-volume EBRD loan for terminal rehabilitation.

Nevertheless, the economic evaluation comes to the conclusion, that the social net benefits to be expected from the proposed measures will positive at a level, which raises the economic rate of return up to the level usually required by International Financial Institutions for the funding of public infrastructure investments.

Consequently, it can be stated that the proposed rehabilitation of the Aids to Navigation systems in Baku/Dubendi, Aktau and Turkmenbashi ports is not only technically feasible but also highly recommended to be executed in the very near future given the present condition. The investment should be financed from public funds, since the financial viability could not be demonstrated, but nevertheless, the economic evaluation provided enough evidence to suggest the economic viability of the measure.

APPENDIX III

MODULE B

COMMENTS TO INCEPTION REPORT



## **APPENDIX III**

### **MODULE B**

#### **Comments from Kazakstan**

##### **Ministry of Transport and Communications - Water Transport Department Astana**

The Water Transport Department has studied the presented material concerning Module B. The new services on the Caspian Sea under TRACECA: Traffic flows and feasibility studies, and we would like to inform you about the following:

In general, the presented material corresponds to the stated targets. However, while analysing it, we faced some difficulties as Module B is closely related to Module A (not submitted so far), which should contain both the transport-related database and traffic forecasts, according to the Terms of Reference.

Moreover, emphasis is given to the transportation of hydrocarbon materials and to Dubendi oil terminal (without information concerning the Port of Baku).

In Chapter 2.5.1.3. the exact number of dry cargo carriers owned by the Caspian Shipping Company is not indicated.

The approximate vessel operating calculations have not been produced.

Therefore, we would like you to present for us to study both Module E and Module A

Using this opportunity, the Kazakh side would like to confirm its interest in the continuation of the TRACECA study and its readiness for co-operation.

Signed by Zh.Kasymbek, Director

APPENDIX IV

CD - ROM



## APPENDIX IV

### MODULE A

#### CD-ROM

The CD-ROM, if any attached to this Report, contains several types of data, under Excel table format, to be included in the 1998 traffic database (1999 data are not yet collected from everywhere):

- 1 Original data regarding the road and rail link physical characteristics for the whole network -by country.
- 2 Traffic data on rail, road and at border links
- 3 If any, Port traffic including vessel movements
- 4 Some socio-economic data, including official statistics from CIS-Statistical Committee.
- 5 International Trade flows by country and by commodity (details and summary). Trade flows are revised for the exchanges between Traceca countries.
- 6 Preliminary assignments of international freight flows on Traceca road and rail networks. Preliminary, since trade flows are not disaggregated by oblasts (except Kazakstan which includes also the domestic freight traffic oblast to oblast)

The purpose of issuing a CD-ROM, at this stage of the Project, is for the data-providers to check the reliability and accuracy of the data and to justify final changes for errors, as necessary. After one month, no arguments will be accepted by the Consultant.

The CD-ROM contains also a software allowing to visualise the search of various itineraries/routes within the internal network of 10 Traceca countries. The Consultant welcomes, for further remedy, justified comments about the discovery of inconsistent paths.

<b>DATABASE CONTENTS</b>
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**1. Basic Data 1998**

	Table	Address on CD ROM
<b>Armenia</b>		
Physical Data For Rail Link	2.1	CD:\Source\SourceFinal\1998\English\Armenia
Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Armenia
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Armenia
Border Crossing	2.6	CD:\Source\SourceFinal\1998\English\Armenia
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Armenia
Road Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Armenia
Rail Traffic	6.2	CD:\Source\SourceFinal\1998\English\Armenia
<b>Azerbaijan</b>		
Physical Data For Rail Link	2.1	CD:\Source\SourceFinal\1998\English\Azerbaijan
Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Azerbaijan
Physical Data for Shipping Links	2.3	CD:\Source\SourceFinal\1998\English\Azerbaijan
Physical Data for Port Links	2.4	CD:\Source\SourceFinal\1998\English\Azerbaijan
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Azerbaijan
Border Crossing	2.6	CD:\Source\SourceFinal\1998\English\Azerbaijan
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Azerbaijan
Road Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Azerbaijan
Rail Traffic	6.2	CD:\Source\SourceFinal\1998\English\Azerbaijan
Port Traffic	7.1	CD:\Source\SourceFinal\1998\English\Azerbaijan
Vessel Movements	7.2	CD:\Source\SourceFinal\1998\English\Azerbaijan
Border Crossing Traffic - Vehicles	7.3	CD:\Source\SourceFinal\1998\English\Azerbaijan
Border Crossing Traffic - Commodity	7.4	CD:\Source\SourceFinal\1998\English\Azerbaijan
<b>Georgia</b>		
Physical Data For Rail Link	2.1	CD:\Source\SourceFinal\1998\English\Georgia
Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Georgia
Physical Data for Shipping Links	2.3	CD:\Source\SourceFinal\1998\English\Georgia
Physical Data for Port Links	2.4	CD:\Source\SourceFinal\1998\English\Georgia
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Georgia
Border Crossing	2.6	CD:\Source\SourceFinal\1998\English\Georgia
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Georgia
Road Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Georgia
Port Traffic	7.1	CD:\Source\SourceFinal\1998\English\Georgia
Vessel Movements	7.2	CD:\Source\SourceFinal\1998\English\Georgia
Border Crossing Traffic - Vehicles	7.3	CD:\Source\SourceFinal\1998\English\Georgia
<b>Kazakhstan</b>		
Physical Data For Rail Link	2.1	CD:\Source\SourceFinal\1998\English\Kazakhstan
Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Kazakhstan
Physical Data for Shipping Links	2.3	CD:\Source\SourceFinal\1998\English\Kazakhstan
Physical Data for Port Links	2.4	CD:\Source\SourceFinal\1998\English\Kazakhstan
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Kazakhstan
Border Crossing	2.6	CD:\Source\SourceFinal\1998\English\Kazakhstan
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Kazakhstan
Road Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Kazakhstan
Rail Traffic	6.2	CD:\Source\SourceFinal\1998\English\Kazakhstan
Port Traffic	7.1	CD:\Source\SourceFinal\1998\English\Kazakhstan
Vessel Movements	7.2	CD:\Source\SourceFinal\1998\English\Kazakhstan
Border Crossing Traffic - Vehicles	7.3	CD:\Source\SourceFinal\1998\English\Kazakhstan
Border Crossing Traffic - Commodity	7.4	CD:\Source\SourceFinal\1998\English\Kazakhstan
<b>Kyrgyzstan</b>		
Physical Data For Rail Link	2.1	CD:\Source\SourceFinal\1998\English\Kyrgyzstan
Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Kyrgyzstan
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Kyrgyzstan
Border Crossing	2.6	CD:\Source\SourceFinal\1998\English\Kyrgyzstan
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Kyrgyzstan
Road Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Kyrgyzstan
Rail Traffic	6.2	CD:\Source\SourceFinal\1998\English\Kyrgyzstan
Border Crossing Traffic - Commodity	7.4	CD:\Source\SourceFinal\1998\English\Kyrgyzstan



<b>DATABASE CONTENTS</b>
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Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Moldova
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Moldova
Border Crossing	2.6	CD:\Source\SourceFinal\1998\English\Moldova
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Moldova
Road Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Moldova
Rail Traffic	6.2	CD:\Source\SourceFinal\1998\English\Moldova
Border Crossing Traffic - Vehicles	7.3	CD:\Source\SourceFinal\1998\English\Moldova
Border Crossing Traffic - Commodity	7.4	CD:\Source\SourceFinal\1998\English\Moldova

**Mongolia**

Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Mongolia
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Mongolia
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Mongolia
Border Crossing Traffic - Vehicles	7.3	CD:\Source\SourceFinal\1998\English\Mongolia

**Tajikistan**

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Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Tajikistan
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Tajikistan
Border Crossing	2.6	CD:\Source\SourceFinal\1998\English\Tajikistan
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Tajikistan
Road Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Tajikistan
Rail Traffic	6.2	CD:\Source\SourceFinal\1998\English\Tajikistan
Border Crossing Traffic - Vehicles	7.3	CD:\Source\SourceFinal\1998\English\Tajikistan

**Turkmenistan**

Physical Data For Rail Link	2.1	CD:\Source\SourceFinal\1998\English\Turkmenistan
Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Turkmenistan
Physical Data for Shipping Links	2.3	CD:\Source\SourceFinal\1998\English\Turkmenistan
Physical Data for Port Links	2.4	CD:\Source\SourceFinal\1998\English\Turkmenistan
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Turkmenistan
Border Crossing	2.6	CD:\Source\SourceFinal\1998\English\Turkmenistan
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Turkmenistan
Road Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Turkmenistan
Rail Traffic	6.2	CD:\Source\SourceFinal\1998\English\Turkmenistan
Port Traffic	7.1	CD:\Source\SourceFinal\1998\English\Turkmenistan
Vessel Movements	7.2	CD:\Source\SourceFinal\1998\English\Turkmenistan
Border Crossing Traffic - Vehicles	7.3	CD:\Source\SourceFinal\1998\English\Turkmenistan
Border Crossing Traffic - Commodity	7.4	CD:\Source\SourceFinal\1998\English\Turkmenistan

**Ukraine**

Physical Data For Rail Link	2.1	CD:\Source\SourceFinal\1998\English\Ukraine
Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Ukraine
Physical Data for Shipping Links	2.3	CD:\Source\SourceFinal\1998\English\Ukraine
Physical Data for Port Links	2.4	CD:\Source\SourceFinal\1998\English\Ukraine
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Ukraine
Border Crossing	2.6	CD:\Source\SourceFinal\1998\English\Ukraine
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Ukraine
Road Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Ukraine
Port Traffic	7.1	CD:\Source\SourceFinal\1998\English\Ukraine
Vessel Movements	7.2	CD:\Source\SourceFinal\1998\English\Ukraine
Border Crossing Traffic - Vehicles	7.3	CD:\Source\SourceFinal\1998\English\Ukraine

**Uzbekistan**

Physical Data For Rail Link	2.1	CD:\Source\SourceFinal\1998\English\Uzbekistan
Physical Data For Road Link	2.2	CD:\Source\SourceFinal\1998\English\Uzbekistan
Physical Data for Rail-Road Transshipment	2.5	CD:\Source\SourceFinal\1998\English\Uzbekistan
Border Crossing	2.6	CD:\Source\SourceFinal\1998\English\Uzbekistan
Socio Economic Data at Oblast Level	3.1	CD:\Source\SourceFinal\1998\English\Uzbekistan
Road Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Uzbekistan
Rail Traffic	6.2	CD:\Source\SourceFinal\1998\English\Uzbekistan
Border Crossing Traffic - Vehicles	7.3	CD:\Source\SourceFinal\1998\English\Uzbekistan

<b>DATABASE CONTENTS</b>
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**2. Other Data 1998****Armenia**

International Trade Flows Export (Revised )	4.1	CD:\Source\SourceFinal\1998\English\Armenia
International Trade Flows Import (Revised)	4.2	CD:\Source\SourceFinal\1998\English\Armenia
Export Road		CD:\Source\SourceFinal\1998\English\Armenia
Export Rail		CD:\Source\SourceFinal\1998\English\Armenia
Import Road		CD:\Source\SourceFinal\1998\English\Armenia
Import Rail		CD:\Source\SourceFinal\1998\English\Armenia

**Azerbaijan**

International Trade Flows Export (Revised )	4.1	CD:\Source\SourceFinal\1998\English\Azerbaijan
International Trade Flows Import (Revised)	4.2	CD:\Source\SourceFinal\1998\English\Azerbaijan
Vessel Movements	7.2	CD:\Source\SourceFinal\1998\English\Azerbaijan
Traffic Counts	6.1	CD:\Source\SourceFinal\1998\English\Azerbaijan

**Georgia**

International Trade Flows Export (Revised )	4.1	CD:\Source\SourceFinal\1998\English\Georgia
International Trade Flows Import (Revised)	4.2	CD:\Source\SourceFinal\1998\English\Georgia
Port Traffic	7.1	CD:\Source\SourceFinal\1998\English\Georgia
Vessel Movements	7.2	CD:\Source\SourceFinal\1998\English\Georgia

**Kazakhstan**

International Trade Flows Export (Revised )	4.1	CD:\Source\SourceFinal\1998\English\Kazakhstan
International Trade Flows Import (Revised)	4.2	CD:\Source\SourceFinal\1998\English\Kazakhstan

**Kyrgyzstan**

International Trade Flows Export (Revised )	4.1	CD:\Source\SourceFinal\1998\English\Kyrgyzstan
International Trade Flows Import (Revised)	4.2	CD:\Source\SourceFinal\1998\English\Kyrgyzstan

**Moldova**

International Trade Flows Export (Revised )	4.1	CD:\Source\SourceFinal\1998\English\Moldova
International Trade Flows Import (Revised)	4.2	CD:\Source\SourceFinal\1998\English\Moldova

**Tajikistan**

International Trade Flows Export (Revised )	4.1	CD:\Source\SourceFinal\1998\English\Tajikistan
International Trade Flows Import (Revised)	4.2	CD:\Source\SourceFinal\1998\English\Tajikistan

**Turkmenistan**

International Trade Flows Export (Revised )	4.1	CD:\Source\SourceFinal\1998\English\Turkmenistan
International Trade Flows Import (Revised)	4.2	CD:\Source\SourceFinal\1998\English\Turkmenistan

**Ukraine**

International Trade Flows Export (Revised )	4.1	CD:\Source\SourceFinal\1998\English\Ukraine
International Trade Flows Import (Revised)	4.2	CD:\Source\SourceFinal\1998\English\Ukraine
Port Traffic	7.1	CD:\Source\SourceFinal\1998\English\Ukraine
Vessel Movements	7.2	CD:\Source\SourceFinal\1998\English\Ukraine

**Uzbekistan**

International Trade Flows Export (Revised )	4.1	CD:\Source\SourceFinal\1998\English\Uzbekistan
International Trade Flows Import (Revised)	4.2	CD:\Source\SourceFinal\1998\English\Uzbekistan

CIS Statistics

CD:\Source\SourceFinal\1998\English

SUMMARY of trade flows 98

CD:\1998Trade Flow by Countries Import-Export

1998 Country to country trade flows

CD:\1998Trade Flow by Countries Import-Export

**3. Preliminary Traffic Assignment in Transport Network 1998**

Assignment 1998 International Trade Flows by Road

CD:\Network Assignment of international trade flows 1998

Assignment 1998 International Trade Flows by Rail

CD:\Network Assignment of international trade flows 1998



APPENDIX V  
CHARDZEW ROAD PONTOON





APPENDIX VI

RECIPIENTS of the PROGRESS REPORT N°2

RECIPIENTS of PROGRESS REPORT N°2

				English		Russian		English + Russian
				Bound	Loose-leaf	Bound	Loose-leaf	CD-ROM
	TOTAL			29	27	100	27	29
DHL	TACIS BRUSSELS		J. Bradley	2		1		1
Hand-Baku	TRACECA IGC	Baku	M. Graille	1	1	1	1	1
DHL	TACIS Monitoring	Tbilisi	H. Maters	1	1	1	1	1
DHL	TACIS Monitoring	Tashkent	P. Melissen	1	1	1	1	1
DHL	TACIS Monitoring	Kiev	D. Armstrong	1	1	1	1	1
TACIS National CU								
DHL	Armenia		P. Tibbs	1	1	2	1	
Hand-Baku	Azerbaijan		B. Smolin	1	1	2	1	
DHL	Georgia		J. Lynn	1	1	2	1	
DHL	Kazakstan		E. Valli	1	1	2	1	
DHL	Kyrgyzstan		J. Hambly	1	1	2	1	
DHL	Moldova		L. Becquer	1	1	2	1	
DHL	Mongolia		D. Hepburn	1	1	2	1	
DHL	Tadjikistan							
DHL	Turkmenistan		M. Wilson	1	1	2	1	
DHL	Ukraine		O. Rozhkov	1	1	2	1	
DHL	Uzbekistan		P. Reddish	1	1	2	1	
TRACECA Intergovernmental Joint Commission								
			National Secretary					
Hand-Baku	TRACECA Office-Baku		Z. Kvatchantiradze	1	1	1	1	1
DHL	Armenia		G. Grigoryan	1	1	1	1	1
Hand-Baku	Azerbaijan		R. Zeynalov	1	1	1	1	1
DHL	Bulgaria		R. Atanasov	1	1	1	1	1
DHL	Georgia		V. TurdzelaZe	1	1	1	1	1
DHL	Kazakstan		Y. Suleymenov	1	1	1	1	1
DHL	Kyrgyzstan		S. Zakirov	1	1	1	1	1
DHL	Moldova		B. Gherasim	1	1	1	1	1
DHL	Romania		D. Capatina	1	1	1	1	1
DHL	Tadjikistan		S. Muminov	1	1	1	1	1
DHL	Turkey		A. Balci	1	1	1	1	1
DHL	Ukraine		Y. Tertshnik	1	1	1	1	1
DHL	Uzbekistan		S.Y. Abdurakhmanov	1	1	1	1	1
COUNTERPARTS: Beneficiary/Correspondent								
DHL	Armenia	MOTC	G. Grigoryan			6		1
Hand	Azerbaijan	MOE	I. Sadikov			7		1
DHL	Georgia	MOT	V. Lomadze			8		1
Hand	Kazakstan	NIIT	M. Bekmagambetov			5		1
DHL	Kyrgyzstan	KDTP	L. Alibegashvili			5		1
DHL	Moldova	MOTC	B. Gherasim			6		1
DHL	Mongolia	MID	R. Bud			4		1
DHL	Tadjikistan	TGPTT	T. Mirzoev			5		1
DHL	Turkmenistan	NISF	J. Bairamov			5		1
DHL	Ukraine	MOT	G. Legengy			6		1
DHL	Uzbekistan	UFTT	K. Uljabaev			5		1



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