Trans-Caucasian-Logistic-Express

A. Characteristics of the System

B. MEASURES OF INTRODUCING THE SYSTEM

Accorded between
the Azerbaijani State Railways,
the Georgian Railways
and the Traceca Project Team
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Contents

Page

A Characteristics of the System

1	Fundamentals of the system	3
2	Stages of implementation	8
3	Customers	10
3	Goods potential	12
5	Dispatch and reception stations	15
6	Technical service	22
7	Commercial conditions	31
8	Staff accompaniment and security	32
9	Logistic information system	33

B MEASURES OF INTRODUCING THE SYSTEM

1	Tasks for providing staff	42
2	Tasks for securing technical service	44
3	Tasks concerning engines	45
4	Commercial tasks	45
5	Tasks for installing the logistic information system	46
6	Further tasks	47

Tables

Tab. 1: Components of the Trans-Caucasian-Logistic-Express' goods potential, Poti - Baku and back

Tab. 2: Travelling and stopping times of the Trans-Caucasian-Logistic-Express, direction Baku to Poti

Tab. 3: Travelling and stopping times of the Trans-Caucasian-Logistic-Express, direction Poti to Baku

Tab. 4: Guaranteed provision and loading deadlines at the terminal and intermediate nodes for the first stage of implementation

Tab. 5: Logistic information system/terminal-micro locations

Figures

Fig. 1: Logistic information system
Functional chart for the first and second stages

Fig. 2: Logistic information system
Terminal configuration and price calculation

Fig. 3: Logistic Information system
Transmission paths in the AGZB and GRZB telephone networks

Appendices

Appendix 1: Important forwarding companies the Georgian Railways cooperate with

Appendix 2: List of important goods dispatchers in Georgia

Appendix 3: List of important goods recipients in Georgia

Appendix 4: "Trans-Caucasian-Logistic-Express" customer letter

Appendix 5: Rationale of the logistic information system

A. Characteristics of the System

1 Fundamentals of the System

Both Azerbaijan and Georgia were important transit countries for railway traffic up to the start of the 90s. Some 37 million tons of transit constituted more than a third of the entire transport volume of the Azerbaijani Railways in 1989. However, the volume of transit railway goods transports through Azerbaijan was down to a mere 0.2 million tons in 1995.

There are three main railway transit corridors from Western Europe to Asia:

A	Britain France Switzerland Austria Benelux	→	Poland	→	Belarus (Brest)	→	Russia	→	Kazakhstan China

B	Britain France Switzerland Austria Benelux	→	Czech & Slovak Re- publics Hungary Romania Bulgaria	→	Black Sea	→	Georgia (Poti, Ba- tumi)	→	Azerbaijan (Baku) →
	→ Caspian Sea	→	Turkme- nistan Uzbekistan Kazakhstan	→	China India				

C	Britain France Switzerland Austria Benelux	→	Czech & Slovak Re- publics Hungary Romania Bulgaria	→	Turkey	→	Iran	→	Pakistan →
	→ India	→	China						

The three railway transport corridors are competing with one another.

It is possible to develop railway corridor B into the fastest and cheapest transport link between Western Europe and Asia.
The section between the Black Sea and the Caspian Sea, i.e. from Poti/Batumi in Georgia to Baku in Azerbaijan, plays a key role.
This section is of extraordinary significance both for the railways as well as the overall economic development, on the backdrop of the current political situation in the two countries.

Some 90 per cent of Azerbaijani railways' transport services related to the line section between Baku and the border of Georgia in 1995. About 75 per cent of the export goods transported by rail and approx. 55 per cent of the imports were channelled through this corridor.

The above mentioned corridor is more or less the only access of the Georgian Railways to the international network, at the moment. And some 75 per cent of transport services of the Georgian Railways in 1995 related to the line section between Tbilisi and Batumi/Poti.

Transports via Tbilisi - Batumi/Poti are the only possibility of railway transports from and to Armenia at present.

The main goods flows, especially of high-quality industrial goods and industrial plant are on the road, at the moment. In view of the economic development to be expected in the region of the Caucasus and Central Asia, the volume of road transport will continue to rise unproportionally, if one does not manage to offer the customer a competitive railway link.

Apart from Azerbaijan and Georgia, it is especially the Central Asian countries of Uzbekistan and Turkmenistan who have a strong interest in developing the transit corridor from the Caspian to the Black Sea. Multi-lateral inter-state treaties between these countries as well as Azerbaijan and Georgia on economic cooperation and in the area of railways only serve to emphasise the significance of this railway link.

Train traffic on the entire line between Baku and Poti/Batumi is characterised by disruptions with considerable time losses as compared to the timetable. The main causes of disruption are signal faults and a delayed provision of engines. On the section between Kishli (Baku) to the Georgian border (Beyuk-Kyassik) freight trains have an average delay of 7 hours.

The objective of the system called "Trans-Caucasian-Logistic-Express" is that of participating more than before in the growing volume of transport of high-value goods, especially in container transport.

The task of the Trans-Caucasian-Logistic-Express system is to establish a

- stable
- regular
- reliable
- safe
- fast and
- inexpensive

rail link between Poti/Batumi and Baku and make it competitive as compared to the goods transport on road.

The main features of the system are:

1. During the first stage of implementation, a train is to be offered

   - from Poti/Batumi to Kishli (Baku) and
   - from Kishli (Baku) to Poti/Batumi

   at a fixed time and day, once a week.

2. The transport time between the two terminal points is regarded as guaranteed transport period, which shall be adhered to at least.

3. During the first stage of implementation, the train shall run as a container block train only, with a minimum number of 20 container wagons and a maximum number of 30 container wagons. Other goods wagons shall not be used during the first steps of implementation.

4. The consignments from and to Batumi will be added or taken off at Tbilisi as a group of wagons, according to the requirements. Thus the train has the nature of a feeder train for the relation from and to Poti and Batumi.

5. The train will run with a high security standard. It will be protected by an armed escort of the transport police. This escort will influence the planned and proper treatment of the transport at stations and at the border, and they will protect the train against criminal assaults.

6. The introduction of the train will be supported by a broad-based marketing campaign in the countries of Azerbaijan, Georgia, Uzbekistan and Turkmenistan.

7. The conditions of the goods transfer and the subsequent overseas shipment in Baku and Poti/Batumi will be harmonised with the departure and arrival times of the train.

8. The customers as well as all the institutions involved in implementing the train will be provided with a system of transport advance and transport accompanying logistic information.

2 Stages of implementation

The system of the Trans-Caucasian-Logistic-Express will be built up and completed step by step over several stages of implementation:

1. The service offered to the transport customer will be introduced with a basic offer at first (container consignments, weekly departure, three operational locations), which is to be extended step by step.

2. The local railway authorities of the two countries need an introductory phase for treating the train according to the quality requirements.

3. Experience has to be gathered over a certain period of time for the trouble-free cooperation between the two railways, especially at the border crossing, this is to take place during the first stage of implementation, in particular.

1st Stage of implementation ⇨ ***October 1996***

The train will operate between the three transport nodes of Poti - Tbilisi - Baku and vice versa. All three nodes are equipped with container terminals for the handling of 20' containers. The train will be run as a container train with 20 container wagons, i.e. 60 spaces for 20' containers. Its maximum capacity is to be 30 container wagons, i.e. 90 spaces for 20' containers.
Container wagons with containers from Batumi in the direction of Baku will be added to the train in Tbilisi, and on the other hand, container wagons from Baku in the direction of Batumi will be taken off in Tbilisi and put onto a directly linking train from Tbilisi to Batumi.

2nd Stage of implementation ⇨ April 1997

The train will operate between Poti - Samtredia - Tbilisi - Gyandsha - Baku and vice versa. All five transport nodes are equipped with a container terminal, the prerequisite being that the container terminals at Samtredia and Gyandsha are put back into operating condition by April 1997.
The train will run as a container train like in the first stage.
Container wagons with containers from or to Batumi will be added to or taken off the train at Samtredia.

3rd Stage of Implementation ⇨ October 1997

Just as during the 2nd stage, the train will operate between Poti - Samtredia - Tbilisi - Gyandsha - Baku and vice versa.
The train will operate with a constant number of container wagons as during the 1st and 2nd stages and, in addition, with a variable number of loaded covered goods wagons, according to the concrete volume of goods at the transport nodes.

3 Customers

The scope of customers for the Trans-Caucasian-Logistic-Express system comprises

- forwarding companies
- trade firms
- production companies of the
  - ♦ light industry (electrical engineering, foodstuffs, etc.)
  - ♦ investment goods industry (mechanical engineering, terotechnology etc.)

The service offer of the Trans-Caucasian-Logistic-Express is aimed at the domestic market as well as the import and export market of the countries of Georgia and Azerbaijan as well as at logistic companies for the transit from Europe via the Poti - Baku railway line to Central Asia and the opposite direction.
Container customers represent a special target of acquisition. The container consignments arriving at the harbour of Poti have increased considerably in 1996 as compared to 1995. The number of containers handled rose from a monthly average of 200 TEU in 1995 to some 500 TEU per month in 1996.

The acquisition for the Trans-Caucasian-Logistic-Express demands the employment of effective marketing methods.

1. Use of brochures and print media
   - ♦ a multi-language prospectus with graphic images of the service offer for the domestic markets of Georgia and Azerbaijan
   - ♦ advertisements in the high-circulation newspapers of Georgia and Azerbaijan as well as the countries of Central Asia

- advertisements and specialised articles in the largest European transport magazines such as
  - ⇨ Deutsche Verkehrszeitung (German Transport Magazine)
  - ⇨ Internationale Transportzeitschrift (International Transport Magazine)

2. Workshops including press conferences with large forwarding companies and the trade and industry chambers of Germany (Berlin and Cologne).

3. Meetings with customers on location in Georgia and Azerbaijan. A list of important transport customers of the Georgian and Azerbaijani railways is included in Appendix 1. A list of important forwarding companies in Georgia and Azerbaijan is contained in Appendix 2.

4. The Task Force formed by experts of the EU shall support the marketing work for winning additional potentials for the Trans-Caucasian-Logistic-Express.

4 Goods potential

The goods volume to be acquired will decide on the degree of utilisation of the Trans-Caucasian-Logistic-Express.
One has to assume that there is a direct connection between the high logistic quality and stability of the Trans-Caucasian-Logistic-Express and a growing demand for its utilisation.

For assessing the goods potential of the Trans-Caucasian-Logistic-Express, it is assumed that the current actual potential is formed by adding

- a substitution potential of road transport and
-
- a growth potential on the basis of the economic development

to form a total potential.

Table 1 contains an assessment as to the goods potential to be expected.

Based on the estimated initial goods potential per month of 212 TEU in both directions, one train per week to Tbilisi would be utilised to approx. 90 % (53 TEU) and to Baku to approx. 60 % (35 TEU).

The estimated total potential per month, at the end of 1997, would already permit to run two trains per week twice a month and that at an average 75 % utilisation (44 TEU) to Tbilisi and 50 % (29 TEU) to Baku.

Table 1 Components of the Trans-Caucasian-Logistic-Express`goods potential in the relations Poti - Baku and Baku - Poti[1)]

state of destination / state of sender	real volume for the first 6 month in 1996 railways (TEU / month)	substitution potential road transport (TEU / month)	growth potential (01.07.1996 - 31.12.1997) (TEU / month)	total potential (31.12.1997) (TEU / month)
1	2	3	4	5
Georgia	14	45 [(2)]	16	75
Azerbaijan	28	34 [(2)]	15	77
Russia	6	7 [(2)]	3	16
Central Asia	2	2 [(2)]	1	5
Armenia	42	32 [(3)]	14	88
total	**92**	**120**	**49**	**261**

1) The numbers show the potential in one direction. They are provided by the both railways on the basis of the number of transported containers and sended containers in the port of Poti. For the Baku-Poti-direction was taken the the same potential of empty containers.

2) The assumtion is that road traffic will rise by 15% and the substitution share will increase to 65%.

3) The assumtion is a 15% growth

The following two examples emphasise the prospects of success in securing the necessary goods potential for the Trans-Caucasian-Logistic-Express.

First example: Azerbaijan International Operating Company (AIOC)

According to statements by the logistics manager, there is a pressing need to use a reliable and quality rail link from Poti to Baku for equipment and supplies, in the form of the Trans-Caucasian-Logistic-Express.
At the moment, these goods are driven to Baku from Turkish harbours on road by various forwarding companies.
The potential quoted by the customer from today's point of view would be 250,000 tons per year.

Second example: Container-terminal at the harbour of Baku

The container-terminal is being set up with a high priority in the reconstruction of the harbour.
HPTI estimate that as of 19xx, the handling of xx containers is to be expected per day.
A certain scope of these containers, both in the transport to as well as from the harbour, constitute a potential for the Trans-Caucasian-Logistic-Express.

5 Dispatch and Reception Stations

The train is to service the main transport nodes between Poti and Baku. The terminal nodes are

- Poti Station
- Batumi Station
- Kishli (Baku) Station.

Following refurbishment work on the container station of Chyrdalan (Baku), Kishli (Baku) Station will be replaced as a terminal node by Chyrdalan (Baku) Station.

The following are intermediate nodes

- Samtredia Station (as of 2nd implementation stage)
- Tbilisi Station
- Gyandsha Station (as of 2nd implementation stage).

There are the following border stations

Gardabani Station in Georgia and
Beyuk-Kyassik Station in Azerbaijan.

The joint border check is carried out at Beyuk-Kyassik Station. The Georgian customs clearance is conducted at Gardabani and the Azerbaijani customs clearance at Beyuk-Kyassik.
The terminal nodes and intermediate nodes bear the function of dispatch and reception stations.

There will be further intermediate stops of the train for operational reasons such as switching engines or the crew.
The terminal and intermediate nodes are fitted with the following goods transport equipment, serving to handle the Trans-Caucasian-Logistic-Express:

1. Poti Station:

- sidings for the formation and splitting-up of trains
- sidings for storage of goods wagons
- sidings with a weighbridge
- sidings for washing goods wagons

Furthermore there are extensive rail installations at the Harbour of Poti. The inter-change point between the station and the harbour is some 200 metres away from the station.
The following goods transport installations at Poti Harbour are of significance for the Trans-Caucasian-Logistic-Express:

- container-terminal with rail installations, including 15 positions for container wagons
- gantry cranes (40 tons) at the container terminal for loading and unloading the container wagons
- storage areas in the container terminal for the interim-storage of the containers
- ramps for the interim storage and handling of high-value goods
- storage sheds with unloading side ramps for interim storage of goods requiring protection from the weather

The container terminal run by the company CAUCASTRANS FORWARDER LTD (KAWTREX), situated near Poti Harbour is also of significance.
The short-term plan of the Georgian Railways is to build a container terminal with two tracks of some 250 metres length and crane installations with 40 t load-carrying capacity at Poti Station. Irrespective of the time of completion for this terminal, all the necessary operations for handling the goods of the Trans-Caucasian-Logistic-Express may be carried out at Poti Harbour.

2. *Batumi Station*

- sidings for the formation and splitting-up of trains
- storage sidings goods wagons
- loading sidings for handling high-value goods

- The containers are handled at Batumi Harbour.

3. *Samtredia Station*

- sidings for the formation and splitting-up of trains
- sidings for the storage of goods wagons
- 2 tracks of some 200 metres length for handling containers
- crane installation for handling 20' containers
- handling and storage area for containers of some 2 500 m²
- loading sidings for handling high-value goods
- storage shed with head ramp and side ramp for handling high-value goods

The crane has not been in operation since 1992 due to destruction (crane driver's cabin, dismantling of cables) and one track has been taken up. The repair of the crane installation is recommended urgently to the Georgian Railway Administration.

4. *Tbilisi Station (Towarni)*

- sidings for the formation and splitting-up of trains
- sidings for the storage of goods wagons
- loading sidings for handling high-value goods
- 2 tracks of some 200 metres length for handling 20' containers
- crane installation in operation for the handling of 20' containers
- handling and storage area for 20' containers of some 2,500 m^2
- storage shed with side ramps for the handling of high-value goods

5. *Gardabani Station*

- 2 main tracks
- 4 passing sidings
- 3 storage sidings

6. *Beyuk-Kyassik Station*

- 2 arrival and departure tracks
- 2 sidings for handling the goods

7. *Gyandsha Station*

- 15 arrival and departure tracks
- 3 shunting sidings
- 2 storage sidings for passenger trains
- 2 storage sidings for freight trains
- 2 sidings for train formation
- 1 siding for unloading cement

8. *Kishli (Baku) Station*

- 15 arrival and shunting sidings
- 7 shunting sidings
- 19 sidings for handling goods
- 4 train formation sidings
- 2 storage sidings

8. *Chyrdalan Station*

- 4 dispatch and reception sidings
- 5 shunting sidings
- 2 safety sidings
- 1 siding for repairing tank wagons
- 1 train formation siding

Container wagons with 20' containers and 40' containers as well as covered wagons can be fed from Kishli (Baku) Station for transit via the ferry harbour or to the Harbour of Baku for overseas shipment.
Goods wagons (container wagons and covered wagons) for the transit to Russia can also be transferred from Kishli (Baku) Station to the shunting yard of Baladshary.
The Trans-Caucasian-Logistic-Express is be completed to attain its standard capacity of 20 to 30 container wagons at Kishli (Baku) Station for the container wagons to be transported further in the transit relations. A permanent container wagon reserve will be kept at the station for this purpose.

The same shall apply to the container wagons to be transported further from Tbilisi to Armenia.

The Azerbaijani and Georgian railways do not have handling installations for 40' containers at their disposal at present. However, such containers can be handled at other terminals (e.g. Poti Harbour and Baku Harbour).

6 Technical service

The technical service side of the Trans-Caucasian-Logistic-Express is characterised by five complexes of tasks:

1. Rigid timetable
2. Engine switch or crew switch
3. Formation and splitting-up of trains
4. Provision and loading deadlines
5. Provision and exchange of container wagons

All technical service tasks will be conducted in line with the traffic instructions of the Georgian and Azerbaijani railways.

1: Rigid timetable

The consistent adherence to a rigid timetable is a significant quality feature of the Trans-Caucasian-Logistic-Express. The customer expects absolute reliability in the departure and arrival times. The timetable includes certain time reserves for this end.
In designing the timetable, adherence to arrival and departure times takes priority over the exhaustion of technically possible running and operating reserves.
The travelling and stopping times of the train in the direction of Baku - Poti and Poti - Baku are contained in tables 2 and 3.

The proposal is to arrange the departure and arrival times for the introduction stage of the Trans-Caucasian-Logistic-Express as follows:
Table 2

Tab. 2: Travelling and Stopping Times of the Trans-Caucasian-Logistic-Express, Direction from Baku to Poti

No	Line / Station	Distance [km]	Time[1)] [h,min]
1	Kishli-Baku - Baladshary	4	35'
2	Baladshary - Kasi-Magomed	110	2h 10'
3	Kasi-Magomed (engine & crew switch)	-	50'
4	Kasi-Magomed - Udshary	122	2h 35'
5	Udshary (crew switch)	-	35'
6	Udshary - Gyandsha	112	2h 30'
7	Gyandsha (engine & crew switch)	-	50'
8	Gyandsha - Akstafa	95	1h 45'
9	Akstafa - Beyuk-Kyassik	43	55'
10	Beyuk-Kyassik (border check)	-	2h 00'
	AGZD line section	**486**	**14h 45'**
11	Beyuk-Kyassik - Gardabani	12	15`
12	Gardabani (border check)	-	40`
13	Gardabani - Tbilisi	28	51`
14	Tbilisi (container waggon switch)	-	40`
15	Tbilisi - Khashuri	123	4h 08`
16	Khashuri (engine & crew switch)	-	20`
17	Khashuri - Zestafoni	61	2h 07`
18	Zestafoni (crew switch)	-	20`
19	Zestafoni - Samtredia	58	2h 19`
20	Samtredia (crew switch)	-	20`
21	Samtredia - Poti	65	2h 33`
	GRZD line section	**347**	**14h 33`**
	Total distance	**833**	**29h 18`**

1) In the future the stations of engine and crew switches in Azerbaijan will be changed. The partners will be informed by AGZD.

Tab. 3: Travelling and Stopping times of the Trans-Caucasian-Logistic-Express, Direction from Poti to Baku

No	Line / Station	Distance [km]	Time[1)] [h,min]
1	Poti - Samtredia	65	2h 41`
2	Samtredia (crew switch)	-	20`
3	Samtredia - Zestafoni	58	1h 46`
4	Zestafoni (crew switch)	-	20`
5	Zestafoni - Khashuri	61	1h 53`
6	Khashuri (engine & crew switch)	-	20`
7	Khashuri - Tbilisi	123	3h 28`
8	Tbilisi (container waggons switch)	-	40`
9	Tbilisi - Gardabani	48	46`
10	Gardabani (border check)	-	40`
11	Gardabani - Beyuk-Kyassik	12	16`
	GZD line section	**347**	**13h 10`**
11	Beyuk-Kyassik (border check)	-	2h 00'
12	Beyuk-Kyassik - Akstafa	43	46'
13	Akstafa - Gyandsha	95	1h 55'
14	Gyandsha (engine & crew switch)	-	50'
15	Gyandsha - Udshary	112	2h 10'
16	Udshary (crew switch)	-	40'
17	Udshary - Kasi-Magomed	122	2h 10'
18	Kasi-Magomed (engine & crew switch)	-	50'
19	Kasi-Magomed - Baladshary	110	2h 30'
20	Baladshary - Baku-Kishli	4	40'
	AZD line section	**486**	**14h 31'**
	Total distance	**833**	**27h 41`**

1) In the future the stations of engine and crew switches in Azerbaijan will be changed. The partners will be informed by AGZD.

- Direction from Baku to Poti

  - Departure from Kishli (Baku) Station: Monday, 20.00 hours
  - Arrival at Poti Station: Wednesday, 02.00 hours

- Direction from Poti to Baku

  - Departure from Poti Station: Thursday, 20.00 hours
  - Arrival at Kishli (Baku) Station: Saturday, 02.00 hours

Thus, one train unit is required for the circulation Poti - Baku - Poti during the introductory stage.
If the capacity of one train is exceeded, due to an increased demand, a second train should be employed, so that there is a departure on Thursdays and Mondays each, both from Poti Station and as well as from Kishli (Baku) Station.

Should there be a reduction in the volume of goods to be transported, the railways can cancel the train, with the consent of the partners. The two railways shall agree on a minimum utilisation of the train.

2: Engine switch or crew switch

The engine switch or crew switch should be reduced to a minimum, determined only by technical service and staffing matters.
The technology of the Trans-Caucasian-Logistic-Express provides for opportunities in

- Samtredia
- Zestafoni
- Khachuri
- Tbilisi
- Beyuk-Kyassik
- Gyandsha
- Udshary and
- Kasi-Magomed.

3: Formation of trains and splitting-up of trains

Due to the line profile (gradients and descending gradients) in the Georgian section of the line between Zestafoni and Khachuri, the train load is limited to 2,500 t. Thus the train may be formed by a maximum of 30 goods wagons.
Due to the still unstable situation in the provision of electricity for railway operations on the Georgian side, the employment of diesel traction is necessary. Two diesel engines have to be used on the section between Zestafoni and Khachuri because of the gradients.

The train formation and splitting-up tasks will be determined locally at the terminal and intermediate stations. At the intermediate nodes, the container wagons with the destination containers will be shunted and made available separately at the container terminal, during the first and second implementation stages. And on the other hand, the container wagons with the source containers will be shunted to the train formation sidings for forming the train at the intermediate nodes. This arrangement allows for short stoppage times of the trains at the intermediate nodes.

At the terminal nodes of Poti and Batumi, the container wagons will be made available for handling the containers at the harbour terminal.
At the terminal node of Baku, the container wagons with transit containers in the direction of Russia will be transferred to Baladshary and be included in the next train formation. The container wagons with transit containers to Central Asia, via the ferry to Turkmenistan, are transferred to the ferry port of Baku in the same manner. The container consignments to be made ready for overseas shipment are treated accordingly at Baku Harbour.

In the case of replacements of container wagons from the determined stock, due to transit transports to Central Asia, Russia and Armenia, the numbers of the newly provided container wagons shall be communicated to the other side.

4: Provision and loading deadlines

The customer is guaranteed binding provision and loading deadlines at the terminal and intermediate nodes in the system of the Trans-Caucasian-Logistic-Express. The individual times are laid out in Table 4 (1st stage of implementation).

Tab. 4: Guaranteed Provision and Loading Dead-lines at the Terminal and Intermediate Nodes for the 1st Stage of Implementation

Train arrival	End of Loading	Provision		Train arrival	End of Loading	Provision
			Poti			
			Tbilisi			
			Baku			

5: *Provision and exchange of container wagons*

The express shall run with a fixed number of container wagons.
The loaded wagons will be exchanged for empty wagons at the stations (Poti, Tbilisi, Baku). There shall be a small stock of container wagons at every station. Furthermore, there will be a repair reserve stock at the stations of Kishli (Baku) and Poti.

Circulation:	one train unit with		20 container wagons
	wagon stock in	- Poti	20 container wagons
		- Tbilisi	10 container wagons
		- Baku	20 container wagons
	working stock		70 container wagons
	repair reserve stock		10 container wagons (Kishli/Baku)
			10 container wagons (Poti)
	total stock		**90 container wagons**

45 container wagons each shall be provided by the Azerbaijani and the Georgian railways for the container wagon stock. It shall be used as a closed stock.
Wagons which arrive in Tbilisi with loaded containers from Batumi for further transportation with the Trans-Caucasian-Logistic-Express in the direction of Baku, shall be included in the system against the exchange of empty container wagons, just as with the local stock.
The same procedure applies to container wagons arriving in Baku off the ferry from Turkmenistan for further transportation with the Trans-Caucasian-Logistic-Express.

The exchange in Tbilisi shall be between empty and loaded wagons of the Georgian Railways

The container wagons included in the closed stock, have to be in a technically adequate condition, according to the respectively valid technical stipulations.
This regulation of providing and exchanging container wagons secures

- a high degree of reliability in providing the container wagons
- satisfaction of peak demand
- a high bonus of trust among the West European partners.

By exchanging the empty and loaded container wagons, a special empty wagon regulation is rendered unnecessary.

7 Commercial conditions

(Point 7 shall be supplemented following the conclusion of bilateral negotiations between the Azerbaijani State Railways and the Georgian Railways)

8 Staff Accompaniment and Security

The train will be accompanied at all times between the terminal nodes of Poti and Baku, in both directions. The staff will have the following two tasks:

1. to influence the elimination of disturbances, which endanger the planned implementation of the train journey and the stops;

2. to render armed protection of the train against criminal assaults throughout the journey as well as during the scheduled and unscheduled stops.

The accompanying and security staff will be provided both for the Georgian and the Azerbaijani section of the line respectively. A written report shall be produced for each journey, including any special events. The proper hand-over of the trains at the border will be documented by the signature of both the Azerbaijani and Georgian staff. This also applies to the hand-over of the trains by the accompanying staff at the terminal nodes of Poti and Kishli (Baku).

9 Logistic Information System

The logistic information system is an important quality feature of the Trans-Caucasian-Logistic-Express.

Thus, the customers (dispatchers or recipients), who use the train, are offered a special service. At any time, they may enquire and receive complete data about the current location of their consignment. And the logistic information also secures

- transport advance and
- transport accompanying

messages on the current status.
Figure 1 shows the functional chart of the logistic information system.

During the first stage, there will be the following information terminals

- Poti Station
- Tbilisi Station
- Gardabani Border Station
- Beyuk-Kyassik Border Station
- Kishli (Baku) Station
- AGZD Management
- GRZD Management

Fig. 1

During the 2nd stage, information terminals will also be installed at

- Samtredia Station and
- Gyandsha Station

Figure 2 shows the configuration of the hardware at the information terminals

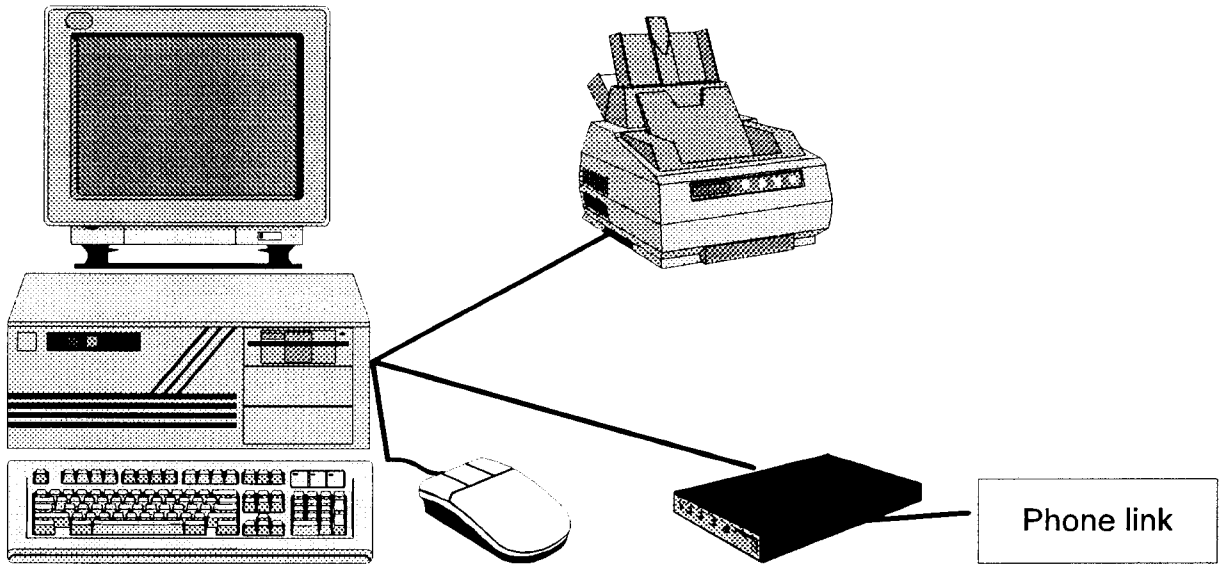
It consists of

- 1 Pentium computer
- 1 colour monitor
- 1 keyboard
- 1 laser printer
- 1 modem.

The telephone networks of the Azerbaijani and Georgian railways shall be used as a means of transmission.
Figure 3 shows an overview of the transmission paths with the existing telephone lines.
The terminals in the lines of the Azerbaijani and Georgian railways have the function of transmission nodes, which secure the information chain between all terminals included in the system.

The description of the micro locations for the information terminals is contained in Table 5.

Fig. 2: Logistic Information System Terminal Configuration and Price Calculation



Component	Number	approx. price in DM
Computer 120 MHz Hard disk 800 MB RAM 16 MB incl. software	} 1	4,000.-
Keyboard	1	200.-
Mouse	1	100.-
Colour monitor 17 inch	1	1,500.-
Laser printer	1	200.-
Modem 28,800 Baud incl. software	1	200.-
Programme for entering the data of the train	1	1,000.-
	Sum	8,500.-

Fig 3

Tab. 5: Logistic Information System Terminal - Micro Locations

No	Macro Location	Micro Location Street, Number, Building, Room	Name of person in charge and of operator	Extension
1	Poti Station			
2	Tbilisi Station			
3	Gardabani Station			
4	Beyuk-Kyassik Station			
5	Kishli - Baku Station			
6	AGZD Management			
7	GRZD Management			

The information fund of the system consists of four messages on the location and time of the consignment:

◻ *Status information*

The consignment, i.e. the container, is registered for the first time by the system in this message. It is drawn up at the three stations. Every consignment thus acquires an information status. This message remains at the location of the dispatch station.

◻ *Departure information*

On the train's departure, the status information is extended to become the departure information. It contains the train number and the departure time as well as the number of the container wagon, in addition. The departure information is transmitted to all information terminals.

◻ *Arrival information*

On the train's arrival at the next station, an arrival message is drawn up. It is the continuation of the information available on the consignment in the system prior to that time. The arrival time of the train and, in the case of a delivery to a recipient, the time of the written hand-over confirmation form the contents of this continuation. Should the consignment be passed on from Baku via the ferry or via Baladshary to the Russian border as a transit consignment, the hand-over time (departure from Kishli (Baku) Station) is registered in the arrival message. And in Poti, the hand-over time at the Harbour of Poti is also registered in the arrival message. The arrival information is then transmitted to all other information terminals, too.

◻ *Exception information*

Should there be disturbances and deviations from the scheduled transport, an exception information is drawn up. It contains place, nature and time of the irregularity as well as the probable time of the elimination of this disturbance. This information is then also passed on to all information terminals.

The principle of dispatch responsibility is applied to any enquiries by customer about the status of his consignment. That is to say, for consignments dispatched in the area of the Azerbaijani Railways or which have been taken over in cross-border transport, the information terminal of the AGZD Management is responsible and vice versa, the information terminal of the GRZD Management is responsible for any consignments dispatched in the area of the Georgian Railways.

The Rationale (Appendix 5) shows details of the information system.

B. MEASURES OF INTRODUCING THE SYSTEM

The introduction of the train is planned as of October 1996.
The first train from Poti will run

on 14th October 1996 from Kishli (Baku) to Poti and
on 17th October 1996 from Poti to Kishli (Baku).

In order to secure these dates, the following tasks have to be carried out in joint responsibility by the Azerbaijani and Georgian railways.

1. Tasks for providing staff

1.1 The overall responsibility for inaugurating the system lies with

- *for the Azerbaijani Railways*
  Mr Nariman Nagiev, Chief Engineer for Technical Service
  Telephone: 99 44 34
  Fax:

- *for the Georgian Railways*
  Mr Kinkadse Mamuli
  Telephone: 99 45 00
  Fax: 95 27 47

1.2 A joint working group will be set up for the following tasks. The persons listed are responsible for the respective tasks, on behalf of the railways:

No	Tasks	AGZD	GRZD
1.2.1	Operational tasks	Nagiev, N.	Kinkadse, M.
1.2.2	Commercial tasks	Askerov, V.	Berishelili
1.2.3	Engine service	Aslanov, K.	Popov, M.
1.2.4	Wagon service	Gasanov, K.	
1.2.5	Information system and communication	Kasumov, P. Karayev, V.	Davitaya Arveladse
1.2.6	Accompaniment & security	Tagiyev, A.	Tabatadse
1.2.7	Marketing	Achudnov	Tatshivili

2. Tasks for securing technical service

2.1 A timetable graph shall be drawn up for both directions of the train, on the basis of the following departure times:

- Thursday, 20.00 hours from Poti and
- Monday, 20.00 hours from Kishli (Baku)

R.: AGZD
GRZD

D.: 25th August 1996

2.2 Station operating plans are to be drawn up on the basis of the timetable graph for the stations of

- Kishli (Baku)
- Poti
- Tbilisi

R.: AGZD
GRZD

D.: 30th August 1996

2.3 A technical service instruction is to be issued for all stations along the line from Poti to Kishli (Baku) and for the coordinators on the priority of the train before all passenger and goods trains.

R.: AGZD
GRZD

D.: 30th August 1996

3. Tasks concerning engines

3.1 Plans on the use of engines are to be drawn up for those engines to run on the Georgian and Azerbaijani parts of the line. Beyuk-Kyassik is the station of interchange.

R.: AGZD
GRZD

D.: 20th August 1996

4. Commercial tasks

4.1 The guaranteed transport times as well as the provision and loading deadlines at the stations of

- Kishli (Baku)
- Tbilisi and
- Poti

are to be coordinated and published through public notices and suitable publications.

R.: AGZD
GRZD

D.: 15th September 1996

4.2 The conditions for insuring the goods for the respective transports are to be determined

R.: AGZD
GRZD

D.: 15th September 1996

5. Tasks for installing the logistic information system

5.1 The hardware configuration to be used shall be harmonised with regard to the types and makes. One supplier is to be commissioned for the equipment of all information terminals.

R.: AGZD
GRZD

D.: 25th August 1996

5.2 The software for entering, processing, output and storage the logistic information is to be drawn up and tested.

R.: AGZD
GRZD

D.: 15th September 1996

5.3 The micro locations for installing the connections of the information terminals are to be established.

R.: AGZD
GRZD

D.: 30th August 1996

5.4 The installation of the hard- and software is to be carried out on location. The operators have to be briefed. The communication links between the information terminals have to be established.

R.: AGZD
GRZD

D.: 15th September 1996

5.5 Test files are to be prepared and the entire system is to be tested.

R.: AGZD
GRZD

D.: 30th September 1996

6. Further Tasks

6.1 A joint marketing campaign is to be organised for Georgia and Azerbaijan.

- marketing-prospectus
- advertisements in newspapers
- talks with customers

R.: AGZD
GRZD
project team

D.: 15th September 1996

Appendix 1

List of important forwarding companies the Georgian Railways cooperate with

No	Name	Address	Contact	Telephone
1	Gruzzeldorexpeditzia	380012 Tbilisi, Zaritza Tamara, prospect, 15.		
2	Kavtransterminal	380012 Tbilisi, Zaritza Tamara, prospect, 15.		
3	Karavan XX	380012 Tbilisi, Zaritza Tamara, prospect, 15.		
4	Vector-Line	Tbilisi, David Agmashenebeli, 154		
5	Karlo	Tbilisi, ul. Nitzkevitsh, 29 a		
6	Kontrans	380060 Tbilisi, Kazbegi prospect, 19 a		
7	"George" joint Georgian - Ukrainian venture	Rustavi, ul. Mira, 8		
8	"Tero" Maritime Agency	Batumi, ul. Gogebashvili, 32, Kv. 12		
9	Transfer-Izekavshiri Forwarding Company	380007, Tbilisi, pl. Svobody, 7, Komnata 421		

Appendix 2

List of important goods dispatchers in Georgia

No	Name	Address	Contact	Telephone
1	Poti-Harbour	Poti		
2	Batumi Oil Refinery	Batumi, ul. Mayakovski, 4.		
3	Batumi			
4	Samtredia			
5	Kutaisi Car Plant	Kutaisi, ul. Avtostroitelya, 88		6-96-40
6	Kutaisi Bread Factory	Kutaisi, ul. Shevtshenko, I per, 18.		
7	Zestafoni Iron Alloy Plant	Zestafoni, ul. Sakartvelo, 9		5-34-69
8	Hashuri Oil Base	Surami, Imeretinskoye Shosse, 15		
9	Hashuri Quartz Sand Quarry	Marpeuli, post box 383+36		
10	Kaspi "Kaspizement" Production Association	Kaspi, post box 3883440		
11	O.O.O. Koka-Kola Kavkasioni	Tbilisi, prospect Tzereteli		
12	Tbilisi Machine Tool Plant	Tbilisi, ul. Magnitogorskaya, 1		
13	Tbilisi "Mercurij-92" Cold Storage	Tbilisi, ul. Tevdora Mgdveli, 23		
14	"Agot" Production Association, Rustavi	Rustavi ul. Mira, 2		
15	Rustavi Metal Combine	Rustavi Gagarin St. 12		192-010
16	Rustavi Cement Works	Rustavi ul. Stroiteley		192-410

Appendix 3

List of important goods recipients in Georgia

No	Name	Address	Contact	Telephone
1	Poti-Harbour	Poti		
2	Batumi Oil Refinery	Batumi, ul. Mayakovski, 4.		
3	Batumi			
4	Samtredia			
5	Kutaisi Car Plant	Kutaisi, ul. Avtostroitelya, 88		6-96-40
6	Kutaisi Bread Factory	Kutaisi, ul. Shevtshenko, I per, 18.		
7	Zestafoni Iron Alloy Plant	Zestafoni, ul. Sakartvelo, 9		5-34-69
8	Hashuri Oil Base	Surami, Imeretinskoye Shosse, 15		
9	Hashuri Quartz Sand Quarry	Marpeuli, post box 383+36		
10	Kaspi "Kaspizement" Production Association	Kaspi, post box 3883440		
11	O.O.O. Koka-Kola Kavkasioni	Tbilisi, prospect Tzereteli		
12	Tbilisi Machine Tool Plant	Tbilisi, ul. Magnitogorskaya, 1		
13	Tbilisi "Mercurij-92" Cold Storage	Tbilisi, ul. Tevdora Mgdveli, 23		
14	Tbilisi Bread Factory	Tbilisi, Moskovski pr. 15		
15	Tbilisi Furniture Factory	Tbilisi, ul. Dzavahis....21		
16	Tbilisi Aero Association	Tbilisi, post box, a -1186		
17	Tbilisi Bed Furniture Company	Tbilisi, ul. Kindzmaraulskaya, 7		
18	Rustavi "Azot" Production Association	Rustavi, ul. Mira, 2		
19	Rustavi Smelting Plant	Rustavi, ul. Gagarina, 12		19-20-10
20	Rustavi Cement Plant	Rustavi, ul. Stroitelei, 70		19-24-10
21	Georgian Heating Plant	Gardabani, post bos 383010		

Appendix 4

Customer letter

on the

Trans-Caucasian-Logistic-Express

1. Advantages of the train

2. Questionnaire

3. Contacts at AGZD and GRZD

1. Advantages of the train

The Azerbaijani State railways (AGZD) and the Georgian Railways (GRZD) are offering their customers a new transport product.

The

Trans-Caucasian-Logistic-Express

runs once a week

from Poti Station to Kishli-Baku

and

from Kishli-Baku to Poti Station

as a container train.

The quality features of the train are:

Stability:	The Express runs regardless of the respective utilisation.
Regularity:	The Express runs once every week ♦ on Thursday, 20.00 hours from Poti Station ♦ on Monday, 20.00 hours from Kishli-Baku.
Speed:	The Express has a transportation time of 30 hours for each direction.
Security:	The Express is accompanied by armed security staff and protected against assaults at all times.
Reliability:	The Express has guaranteed travelling times as well as fixed departure and arrival times at the stations.
Competitiveness:	The Express transports the containers at a tariff which is about 20 % under the comparable price for road transportation. Customers with a high transport volume will benefit from discounts.

During the 1st stage, as of October 1996, the Express will run between Poti and Baku and back again with an en-route stop in Tbilisi (loading and unloading) and in Beyuk-Kyassik (customs clearance).

During the 2nd stage, as of mid 1997, it is planned for the Express to have two more en-route stops, which are Zamtredia (Georgia) and Gyandsha (Azerbaijan).

During the 3rd stage, as of the end of 1997, it is planned to offer the Express also for the transportation of high-value goods, which are not delivered in containers.

2. Questionnaire

Name of company (stamp):
Address:
Contact:
Telephone:

		yes	no
2.1	Are you interested in using the Express in principle?	☐	☐

		yes	no
2.2	Are regular container transports being conducted?		
	per year	☐	☐
	per month	☐	☐
	per week	☐	☐

2.3 The own container volume for the Express will be

- ♦ ≤ 10 containers/month ☐
- ♦ > 10 ≤ 50 containers/month ☐
- ♦ > 50 ≤ 100 containers/month ☐
- ♦ > 100 containers/month ☐

2.4 The main relations of the container transports are

- ♦ Poti - Tbilisi ☐ %
- ♦ Poti - Baku (Azerb.) ☐ %
- ♦ Poti - Baku (transit to Russia) ☐ %
- ♦ Poti - Baku (transit to Central Asia) ☐ %
- ♦ Baku (Azerb.) - Tbilisi ☐ %
- ♦ Baku (Azerb.) - Poti ☐ %
- ♦ Baku (transit from Russia) - Poti ☐ %
- ♦ Baku (transit from Central Asia) - Poti ☐ %

We would like to ask you to send back the completed questionnaire to the following contacts at the railways.

3. Contacts

3.1 **Azerbaijan State Railways**
AZRAILWAYEXPEDITION
attn. Mr Sadigov

ul. Alieva 230
370000 Baku
Azerbaijan Republic

phone: **+994 12 - 93 96 13**
fax: **+994 12 - 93 34 97**

3.1 **Georgian Railways**
Management Tbilisi
Tarifno-Expluatazionnoe Predprijatie
attn. Mr Chigogidze

Tamar Mepe Ave. 15
380012 Tbilisi
Georgian Republic

phone: **+995 32 - 95 02 25**
+995 32 - 95 19 21
fax: **+995 32 - 95 02 25**
+995 32 - 95 36 63
+995 32 - 94 21 55

Appendix 5

Rationale

of the

Logistic Information System

Contents:

1 Information requirement

2 Structure of the data stock
2.1 Container data
2.2 Train data

3 Structure of the messages
3.1 Container supply message
3.2 Train departure message
3.3 Train arrival message
3.4 Container delivery message
3.5 Train disruption message
3.6 Container disruption message
3.7 List of the types of messages

4 Hardware

5 Software

6 Organisation
6.1 Data provision
6.2 Operation and maintenance of the data bank
6.3 Communication with the customer

1. Information requirement

The information system provides

- transport accompanying and
- transport advance

information.

There is the following structure of requirement:

Requirement source	Requirement contents	Requirement period
Transport customer	Location of the container in the logistic chain	During the time of the container's handling by AGZD or GRZD
	Regularity of container transport	During and 30 days after the container's handling by AGZD or GRZD
	In case of irregularity - nature of disruption	During and 30 days after the container's handling by AGZD or GRZD
Stations	Number of containers on the train	During the time of the container's handling by AGZD or GRZD
	Destination station of the containers	Before the arrival of the train
	Irregularity of the train	On irregularities occurring
Management of - AGZD and - GRZD	Information on the status of the containers and trains in the logistic chain	Time of issuing the message
	Irregularity of trains and containers	Time of irregularity occurring

2 Structure of the data stock

The central stock of data constitutes the core of the information system, which consists, on the one hand, of messages on containers, trains and disruptions and, on the other hand, secures the ability of the railways to provide the customers with information.

2.1 Container data

BDAT1[1]

This file is the basis for any information regarding the container and disruptions.

Container number[2]	key to identification	
Acceptance station		
Destination Station		=Target station
Destination country		
Case history (take-over from whom)		
Dispatcher		
Recipient		
Contents		
Status		
Time of acceptance	date/time	
Loading	train number	
Loading time	date/time	
Departure time	date/time	
Passage station	station name	These two fields are over-
Time of message	date/time	written per passage station
Destination station	name of station	
Arrival time	date/time	
Unloading time	date/time	
Delivery	take-over	
Delivery time	date time	
Container disruption		
Type of disruption	This data segment	
Reporting station	may occur repeatedly.	
Reporting time	Differentiation by reporting station and reporting time	

[1] BDAT = Stock file
[2] The data printed in italics and bold are the identifying keys (primary indices)

2.2 Train data BDAT2

This file constitutes the basis for information relating to the trains (and the added containers) including any disruptions of the train.

Train number		key to identification
Departure day	date	
Station 1		=starting station of train
Departure	date/time	per train and wagon
Wagon and container on departure		
Wagon marking (WKZ)		max. 3 containers per wagon
Container number		
Station 2		
Arrival	date/time	
Departure	date/time	
Wagon and container at arrival		
Wagon marking (WKZ)		
Container number and marking for unloading		
Wagon and container at departure		
Wagon marking (WKZ)		
Container number and marking for loading		
Station 3.....station 6	as station 2	=en-route stations of train
Station 7		= terminal station of train
Arrival	date/time	
Wagon and container at arrival		
Wagon marking (WKZ)		
Container number		

Train disruption

Type of disruption		This data segment
Reporting station	name of station	may occur repeatedly.
Reporting time	date/time	Differentiation by reporting station and reporting time

3 Structure of the messages

The stations involved are the registration points of the information system. They send the data to the central points and the other stations in the form of messages.

3.1 Container supply message MART1[3]

This message is to be issued per container on its acceptance.
From the data preparation point of view, this message is the first registration.

Reporting station	name of station
(=Acceptance station	name of station)
Reporting time	date/time

Container number

Acceptance time date/time

Case history (take-over from whom)

Destination station
Destination country

Dispatcher	name, address, telephone, telefax
Recipient	name, address, telephone, telefax

gross weight

[3] MART = Type of message

3.2 Train departure message MART2

This message is to be issued per train.
It contains all containers on the train at the departure of the train. The containers loaded additionally receive a special marking.
The departure message of the previous station serves as an aid for the registration of all containers on the train.

Reporting station	name of station	(=acceptance station)
Reporting time	date/time	
Train loading	**train number**	
Loading time	date/time	
Departure time	date/time	

Wagon and container list — per train and wagon
Wagon marking (WKZ) — max. 3 containers per wagon
Container number + marking for additional loading + destination station

3.3 Train arrival message MART3

This message is to be issued per train.
It contains all containers on the train at the arrival of the train. The containers unloaded receive a special marking in the message.
The departure message of the previous station serves as an aid for the registration of all containers on the train.

Reporting station	name of station	(=passage or terminal station)
Reporting time	date/time	
Train number	**train number**	
Arrival time	date/time	
Departure time	date/time	

Wagon and container list
Wagon marking (WKZ)
Container number + marking for unloading

3.4 Container delivery message MART4

This message is issued per container on its delivery.

Reporting station	name of station
Reporting time	date/time
Container number	
Hand-over	hand-over to company and person
Time of hand-over	date/time

3.5 Train disruption message MART5

This message is issued in case of irregularities per train.

Reporting station	name of station
Reporting time	date/time
Train	**train number**
Departure day	date/time
Nature of disruption	

3.6 Container disruption message MART6

This message is to be drawn up per container in the case of irregularities.

Reporting station	name of station
Reporting time	date/time
Container number	
Nature of disruption	

3.7 List of the types of messages

MART	Contents	Issuer	Time	Use for file
1	Container supply message	Acceptance station	3 times daily, at train departure at the latest	Container file BDAT1
2	Train departure message	Station with train departure	until 30 mins after train departure	Container file BDAT1 and train file BDAT2
3	Train arrival message	Station with train arrival	until 30 mins after train arrival	Container file BDAT1 and train file BDAT2
4	Container delivery message	Unloading station (destination station)	daily	Container file BDAT1
5	Train disruption message	Reporting station	on identifying an irregularity	Train file BDAT2
6	Container disruption message	Reporting station	on identifying an irregularity	Container file BDAT1

4 Hardware

Only such hard- and software components were considered which allow for a simple and speedily realisable solution, heeding the conditions on location.

PC stand-alone (no network), with modem via telephone dialling line.

5 Software

Operating system for PC	Windows 95 or Windows 3.11
Communication software	Data transmission (File transfer of messages) via modem with freely selectable terminal-software under Windows, e.g. pcANYWHERE from SYMANTEC or ProkommPlus from Datastorm
Data bank operating system	Proposal is ACCESS 2.0 from Microsoft[4] as uniform standard software for the central points and the stations, for data administration and development of application programs
Application programs	Drawn up with ACCESS as well as using the communication software, for the central points and the stations with the following functions:

Functions	**Stations**	**for management of AGZD, GRZD**
Prepare messages	Messages 1-6. For messages 2 and 3 by taking over and updating Message 2 from previous station	---
Send off messages	Messages 1-6	---
Receive messages	Messages 2 and 5	Messages 1-6
Include messages in data stock	Use message 2 for drawing up messages 2 and 3	Messages 1-6
Queries	---	about containers, trains and disruptions

4 ACCESS is available in a Russian version. Price is approx. DM 1,000.-, delivery time in Germany is about 3-6 weeks.

Later version of extension:

PC of the managements (AGZD, GRZD) are equipped to function as WINDOWS-NT-servers.
Stations use the RAS component (Remote-Access-Service) from Windows 95 or Windows 3.11 for dialling into the server and entering their data directly into the central point's stock of data.

6 Organisation

The organisational rules serve to secure

- a proper availability of data,
- a reliable operation of the information system and thus
- the ability of the system to provide information for customers and the railways.

These are the main points of the organisational regulations:

6.1 Data provision

Duties of the station for registration
- message about all trains and containers
- completeness of the messages
- adherence to the time schedule for sending off the messages

Stipulations for emergency versions
In cases when the registration or data transmission is disrupted, the data shall be passed on to the central points by telephone, where they shall be entered into the system.

6.2 Operation and maintenance of the data bank

The duties of the AGZD and GRZD managements as well as at the stations have to be supplemented and staffed in such a way that the following tasks can be solved in a stable manner:

- global tasks for the information system, i.e. looking after and maintaining the system,

- central tasks of the central points, consist mainly in
  readiness for receiving the messages and
  readiness for providing information

- decentralised tasks at the stations, consist mainly in
  readiness for receiving the messages,
  readiness for registering data and
  sending off the messages

6.3 Communication with the customer

Customers of the railways are able to enquire at the AGZD and GRZD managements by telephone or telefax and receive the requested information.

Multi-language forms for standard enquiries of international customers can be prepared and provided. The customer enquiry (entered in the form) is then sent to the AGZD and GRZD managements by telefax.

The answer to the enquiry is communicated back to the customer either over the telephone or by telefax.

Freight Rates

Trans-Caucasian-Logistic-Express

(considering a 50 % discount on the presently valid rates)

Connection	Distance (in km)	Freight Rate 20-feet loaded Container (in US-$)	Freight Rate 20-feet empty Container (in US-$)	Freight Rate 40-feet loaded Container (in US-$)	Freight Rate 40-feet empty Container (in US-$)
Poti - Tbilisi (or Tbilisi - Poti, resp.)	315	111.99	56.00	201.59	100.79
Tbilisi - Baku (or Baku - Tbilisi, resp.)	548	193.91	97.00	349.03	174.51
Poti - Baku (or Baku - Poti, resp.)	863	307.72	153.86	553.9	276.95

source:
Minutes of the TRACECA project group meeting with representatives of the Azerbaijan and Georgian Railways in Tbilisi and Poti, held between 14 and 17 Oct, 1996 .