

TRACECA Programme:
Regional Traffic Database and
Forecasting Model
Data Collection Report

May 1997

**European Union
Tacis Programme**

**TRACECA:
Regional Traffic Database and
Forecasting Model
(Project No. WS.93.05/05.01/B008)**

Data Collection Report

May 1997

WS Atkins International Ltd

Woodcote Grove, Ashley Road, Epsom, Surrey KT18 5BW
Tel: (01372) 726140 Fax: (01372) 740055

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Data Collection Report

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EC Consultant	: WS Atkins International Limited Woodcote Grove, Ashley Road, Epsom, Surrey KT18 5BW, UK Tel: +44 1372 726140 Fax: 44 1372 740055
Contact	: Andy Southern/Geoff Lawson

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Author of Report : WS Atkins International Limited

EC M & E Team	_____	_____	_____
	[name]	[signature]	[date]
EC Delegation	_____	_____	_____
	[name]	[signature]	[date]
TACIS Bureau [task manager]	_____	_____	_____
	[name]	[signature]	[date]

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1. INTRODUCTION

- 1.1 The TACIS project TRACECA Traffic Forecasting Model, Project No. WW93.05/05.01/B008 provides computer-based planning tools for use in the eight TRACECA states for analysing transport and trade flows and developing forecasts.
- 1.2 A multi-modal transport model will provide the facility for forecasting future strategic trade traffic movements in the TRACECA Region. The input data to this model necessary to provide an adequate representation of base year traffic and transport supply characteristics is facilitated by a database. The TRACECA database is stored in MS ACCESS.
- 1.3 In creating the database a series of MS EXCEL spreadsheets containing the data sets have been assembled for each country.
- 1.4 These spreadsheet tables provided an intermediate step in the database construction. New data will be able to be entered directly to the MS ACCESS database. However, these spreadsheets themselves provide a useful reference point for data sets obtained during the course of the study.
- 1.5 Section 2 of this manual therefore describes the scope of data obtained and the assembly of this data in spreadsheet tables.
- 1.6 The structure and contents of the ACCESS database including the conversion of the EXCEL spreadsheet datasets into database tables was discussed in the Database Manual (May 1997).

2. MS EXCEL SPREADSHEET DATA FILES

SCOPE OF DATA

2.1 The data contained within the database comprises six broad types of information:

(i) : Socio-economic indices and Import/Export Data

- area and population by country and administration area;
- GDP by country;
- tons transported by mode by country;
- tons imported/exported by commodity (and by mode where available);
- tons exported by commodity group and mode from oblasts (administrative areas) with Kazakhstan.

(ii) : Road Network Characteristics and Traffic

- length, width, pavement type and pavement condition by road section;
- vehicles and trucks per day by road section (when observed).

(iii) : Rail Network Characteristics and Traffic

- length, signalling and control systems, gradients and loading standard by rail section;

- tons transported between internal (to country) administration area and between internal oblast and junction points by commodity group;
- tons transported by commodity by rail section;
- number and weight of containers loaded and unloaded;
- rail transit times.

(iv) : Sea Port Characteristics and Traffic

- depth, area, length and capacity by port facility;
- port tariffs for different services;
- cargo handling (unloading/loading) activity tons exported/imported by commodity.
- sample of vessel movements by vessel type, imported/exported commodity type and weight and by part of origin/destination and unloading times.

(v) : Airport Characteristics and Traffic

- type of aircraft landed and based at airport;
- runway dimensions;
- availability of facilities for loading/unloading;
- goods despatched (tons) by internal, neighbouring country and international air route;
- turnover (billion ton kms);
- tariffs by type of route;

- unloading time;
- cargo (tons) by origin/destination airport;
- tariff distance.

(vi) : **Routeing Data**

- mode choice, transit time, transport time and distance by route section for given origin and destination for sample of freight movements;
- trucks per month across international borders for Turkmenistan and Kazakhstan.

2.2 In addition to these six groups of data, further information has been obtained from a variety of sources on transport tariffs. This information has been used as the basis for calculating costs for input to the transport model. Appendix A provides an explanation of the data sources and cost calculations.

2.3 The six types of datasets obtained for inclusion in the TRACECA database have been assembled in a series of tables as listed below and as shown in Figure 2.1.

List of MS EXCEL Tables

Table I.1	Social and economic indices
Table I.2	Transportation by types of vehicles
Table I.3	Cargo flows data through the border (export) for 1995
Table I.4	Cargo flows data through the border (import) for 1995
Table I.5	Origin destination matrices by commodity.
Table II.1	Road network - characteristics and condition of road sections' and pavements (1994-95)
Table II.2	Road Network - traffic intensity
Table III.1	Railway network technical-operating characteristics
Table III.2	Cargoes correspondence (in types) within railway network
Table III.3	Railway network density of goods movement through railway network sections

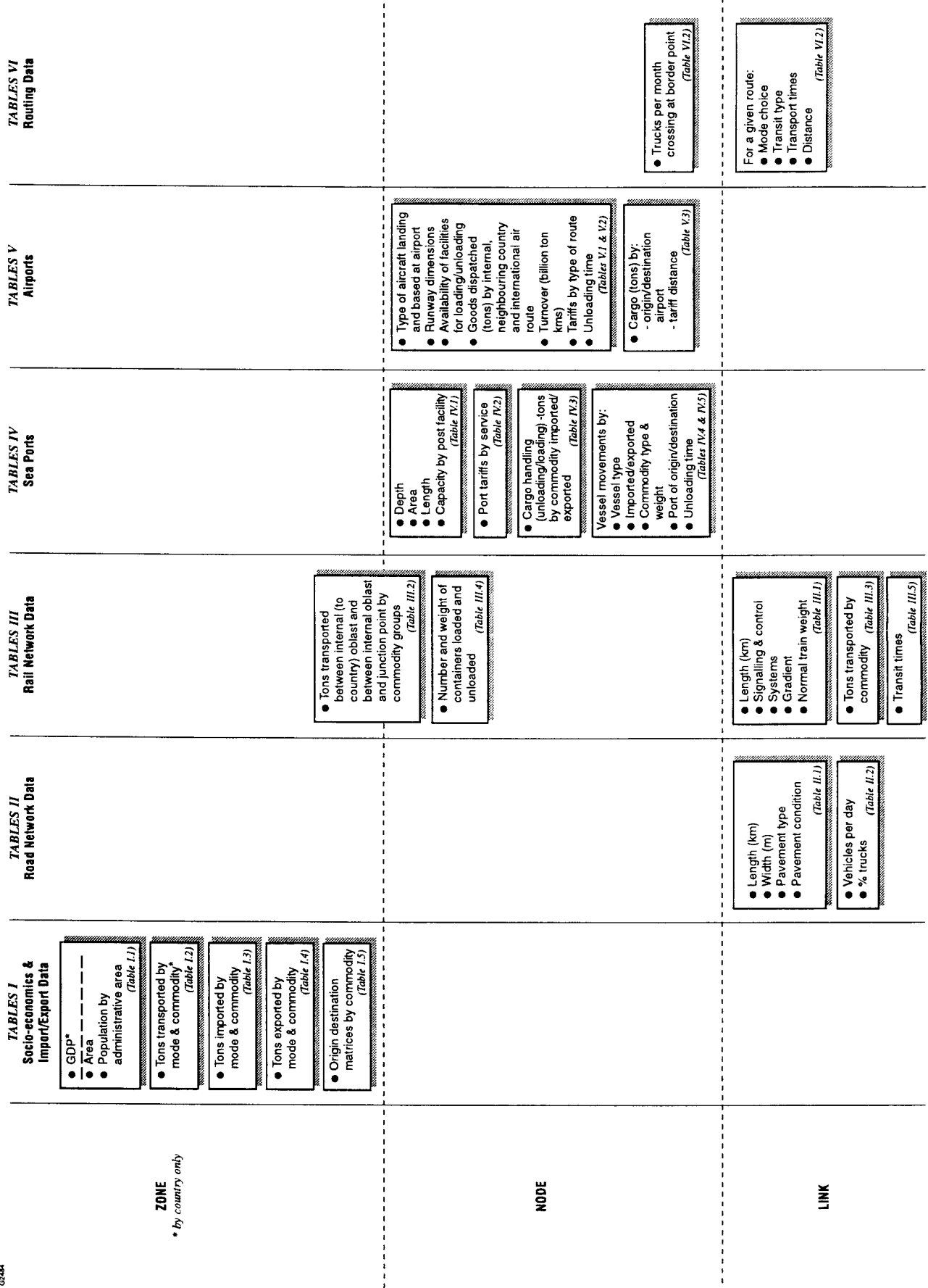


FIGURE 2.1

Table III.4	Railway network annual shipment of containers from railway network terminals
Table III.5	Railway network transit time of passage of a train on the route
Table IV.1	Sea port's technical-operating characteristics
Table IV.2	Ports dues for provision of the sea port services
Table IV.3	Sea port loading-unloading works for 1995
Table IV.4	List of vessels unloaded in III quarter of 1995
Table IV.5	List of vessels loaded in III quarter of 1995
Table V.1	Information about airports' carrying capacity
Table V.2	Airport's technical and economic data
Table V.3	Cargoflows direction from/to airport
Table VI.1	Investigation of route cargoes
Table VI.2	Investigation of vehicles' transportation on borders

2.4 Where appropriate datasets have been structured to enable cross referencing and consistent identification of information within the ACCESS database.

2.5 For this reason all data sets are allocated to one or a group of spatial units which corresponds to the transport model definition. Three spatial units are used:

- zones : representing the spatial units for representing freight movements between different parts of the TRACECA region.
- nodes : representing road junctions, rail termini, rail junctions and ports and points at which significant changes in the standard of the transport supply varies.
- links : representing the road, rail and sea strategic transport route network as a series of discrete section of transport infrastructure or service lines connecting nodes.

2.6 The definition of the TRACECA region in terms of the three types of spatial unit is described below:

ZONES

- 2.7 The zoning system comprises 33 zones internal to the TRACECA region and 23 external zones. Figure 2.2 shows the zoning system.
- 2.8 Internal zones comprise whole countries or groups of administrative areas (Oblasts) within a country. External zones represent geographic regions for the rest of the world taking account of trading routes.
- 2.9 Each zone has a unique referencing number as show in Tables 2.1 and 2.2.

Table 2.1 - TRACECA Internal Zoning System

Country	Country Id	Zone Name	Zone Id	Oblast Name (Administrative Area)	Oblast Id
ARMENIA	1	Armenia	22	Shirak	8
				Erevan	1
				Tavush	11
				Syunik	9
				Kotaik	7
				Lori	6
				Geharkunik	5
				Armavir	4
				Ararat	3
				Aragacotn	2
		Vaioedzor	10		
AZERBAIJAN	2	Azerbaijan	23	Sheki	20
				Ali-Bairamly	17
				Naftalan	21
				Lenkoran	19
				Evlah	18
				Sumgait	15
				Gyanja	14
				Nahichevanskaya A. R.	12



FIGURE 2.2
Zone Plan

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Country	Country Id	Zone Name	Zone Id	Oblast Name (Administrative Area)	Oblast Id
				Baku	13
				Minchegaur	16
GEORGIA	3	Georgia	21	Racha-Letchumi	28
				Tbilisi	34
				Abchazeti	33
				Achara	32
				Svaneti	31
				Kaheti	22
				Samegrelo	29
				Imereti	27
				Samtche-Djavachetey	26
				Mtianeti	25
				Kvemo Kartley	24
				Shuda Kartley	23
				Guriya	30
KAZAKHSTAN	4	Zapadno-Kazakhstanskaya	151	Zapadno-Kazakhstanskaya	42
		Atyrauskaya	152	Atyrauskaya oblast	38
		Mangistauskaya	153	Mangistauskaya oblast	47
		Kustanaiskaya	161	Kustanaiskaya oblast	46
		Turgaiskaya	162	Turgaiskaya oblast	52
		Aktyubinskaya	163	Aktyubinskaya oblast	36
		Severo-Kazakhtanskaya	171	Severo-Kazakhtanskaya	49
		Kokchetavskaya	172	Kokchetavskaya oblast	45
		Pavlodarskaya	173	Pavlodarskaya oblast	48
		Akmolinskaya	181	Akmolinskaya oblast	35
		Karagandinskaya	182	Karagandinskaya oblast	43
		Djezkazganskaya	183	Djezkazganskaya oblast	41
		Semipalatinskaya	184	Semipalatinskaya oblast	50

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Country	Country Id	Zone Name	Zone Id	Oblast Name (Administrative Area)	Oblast Id
		Vostochno-Kazakhstanskaya	185	Vostochno-Kazakhstanskaya	39
		Taldy-Kurganskaya	191	Taldy-Kurganskaya oblast	51
		Almatinskaya	192	Almatinskaya oblast	37
		Kzyl-Ordinskaya	201	Kzyl-Ordinskaya oblast	44
		Yujno-Kazakhstanskaya	202	Yujno-Kazakhstanskaya	53
		Djambul'skaya	203	Djambul'skaya oblast	40
KYRGHYZSTAN	5	Kyrgyzstan	4	Djelal-Abadskaya oblast	54
				Issyk-Kul'skaya oblast	55
				Narynskaya oblast	56
				Oshskaya oblast	57
				Talasskaya oblast	58
				Chuiszkaya oblast	59
				Bishkek	60
TADJIKISTAN	6	Leninabadskaya and Districts of Republican Submission	1	Districts of republican submission and Dushanbe	61
				Leninabadskaya oblast	62
		Hatlonskaya	2	Hatlonskaya oblast	63
		Gorno-Badahshanskaia	3	Gorno-Badahshanskaia autonomous oblast	64
TURKMENISTAN	7	Chardjouskaya and Maryiskaya	12	Chardjouskaya oblast	65
				Maryiskaya oblast	66
		Tashanakaya and Ashgabadskaya	13	Tashanskaya oblast	67
				Ashgabadskaya oblast	68
		Krasnovodskaya	14	Krasnovodskaya oblast	69
UZBEKISTAN	8	Andijanskaya, Namanganskaya and Ferganskaya	7	Ferganskaya oblast	80
				Andijanskaya oblast	70
				Namanganskaya oblast	75
		Djizakskaya, Syrdarinskaya and	8	Tashkentskaya oblast	79

Country	Country Id	Zone Name	Zone Id	Oblast Name (Administrative Area)	Oblast Id
		Tashkentskaya			
				Djizakskaya oblast	72
				Syrdar'inskaya oblast	78
		Bucharskaya (part of), Chorezmskaya and Rep. of Karakalpakstan	9	Navoiiskaya oblast	74
				Republic of Karakalpakstan	82
				Chorezmskaya oblast	81
		Bucharskaya (part of) and Samarkandskaya	10	Samarkandskaya oblast	76
				Bucharskaya oblast	71
		Kashkadar'inskaya and Surchandar'inskaya	11	Kashkadar'inskaya oblast	73
				Surchandar'inskaya oblast	77

Table 2.2 - TRACECA External Zoning System

Country	Country Id	Zone Name	Zone Id
EXTERNAL	9	South Russia	24
		North Russia	26
		North Russia	27
		North Russia	28
		Ukraine	29
		China	30
		Indian Sub Cont.	31
		Iran, Gulf	32
		Turkey	33
		N-Western Europe	34
		Southern Europe	35
		Central Europe	36
		Baltic States	37

Country	Country Id	Zone Name	Zone Id
		N-Central Europe	38
		Northern Europe	39
		Middle East	40
		East Africa	41
		West Africa	42
		East Asia Developing	43
		East Asia Industrial	44
		East Coast America	45
		West Coast America & Pacific	46

NODES AND LINKS

- 2.10 The road, rail and maritime networks in the TRACECA region and represented as a series of nodes connected by links representing the main modal routes.
- 2.11 These nodes and links provide the means to store attributes describing the transport supply and the volume of traffic using different parts of the network.
- 2.12 Each node has a unique reference number and map co-ordinates in order to reference its precise geographical location. Links are defined as a connection between two nodes (a node, b node). Nodes stored in a file within the spreadsheets, the database and the traffic forecast model software SATURN.

COMMODITIES

- 2.13 For certain data sets trade and transport flows are given by commodity groups. The import/export trade data is provided for 21 categories of commodity. Rail flows are sub-divided into 9 different categories. Appendix B contains a table of the main commodity groups used in the zone based import and export data and shows their relationship to the sub-commodities.

MODES

- 2.14 In certain tables transport modes are given classification numbers. A list of these is provided in Appendix C.

MS EXCEL SPREADSHEET DATA TABLES

- 2.15 The data received in response to the questionnaires is presented separately for each of the eight TRACECA countries in Appendices D1 to D8.

APPENDIX A

Calculation of Transport Tariffs

A. CALCULATION OF TRANSPORT TARIFFS

A.1 In order to validate the model it is necessary to be able to compare the costs of transporting different categories of commodities over different routes by different modes of transport. The decision of a transporter on the mode of transport for sending his consignment will depend on many factors but can be generalised as a cost function usually made up of three elements:

- unit cost to cover elements independent of the distance transported (loading, unloading, transfers between modes or railway gauges, customs and other duties and taxes levied by authorities on each assignment) -expressed as cost per ton
- costs directly related to the distance travelled on each mode of transport (to cover fuel, staff wages, maintenance etc.) expressed as cost per ton.km
- perceived cost of time taken to deliver goods to their destination, to reflect the transport's preference for modes that reduce the time spent in transit

A.2 Since freight rates are not quoted in this format, it is necessary to deduce the parameters necessary for the model from any available data. It is frequently difficult to obtain detailed or accurate freight rates for reasons of commercial sensitivity, but figures have been obtained from freight forwarders, railway companies and transporters. These have been analysed to develop estimated parameters for the transport factors above.

SOURCES

A.3 Three main sources of data have been used:

- Russian railway rates for containers travelling from the European borders to the capitals of the TRACECA countries

- Sample rates obtained for imports and exports to Kazakstan, mainly for rail but with some road consignments, together with individual rates quoted as examples in interviews with officials etc.
- figures quoted in other TACIS reports:
 - (i) “Forwarding - Multi-modal transport systems” (Ref. 1)
 - (ii) “Transportation of Uzbekistan cotton” (Ref. 2)

A.4 The results of the analysis of this data is presented below. It should be emphasised that:

- the data sample was rather limited and only covered one or two commodities within a specific grouping
- rates were quoted on both an individual consignment basis (e.g. 15 ton load) and on a period contract basis (e.g. 15000 -20000 ton annual contracts)
- rates are a mixture of direct market rates and indicative reference tariffs. Extra discounts or surcharges may be applied depending on prevailing commercial circumstances.

A.5 The results by mode are given below - all rates are expressed in US dollars.

ROAD

A.6 For transport within the TRACECA region, the relatively few rates obtained give freight tariffs in the range

$$\text{\$ per ton} = 10 + 0.06 \text{ per km}$$

A.7 For transport trips which the borders into Russia, the rates are higher suggesting the imposition of border and customs charges amounting to an extra \$20 per ton, giving

$$\text{\$ per ton} = 30 + 0.06 \text{ per km.}$$

A.8 All traffic using the southern route to the port of Bandar Abbas will use road. In view of the cheaper fuel costs in Iran, the variable cost element will be lower, but border charges will add an extra \$10 per ton to give:

\$ per ton = 20 + 0.035 per km.

RAIL

A.9 The central source of rail freight rates for Russia and the TRACECA countries is the Transrail organisation in Switzerland that represents the railways in Europe. they have supplied the following rates for a 20 foot container travelling from Europe through either Brest or Chop to each of the TRACECA capitals (Yerevan can not be served due to political troubles). Rates are originally quoted in Swiss Francs and have been converted into \$ at the rate \$ 1 = 1.25 Swiss Francs.

Transit point	Brest		Chop	
	distance(km)	\$	distance(km)	\$
Baku	3130	1330	3120	1390
Tblisi	2830	1665	2680	1900
Almaty	4910	1755	5350	2170
Bishke	4640	2230	5080	2490
Tashkent	4240	1830	4690	2084
Dushambe	4860	2740	5170	2970
Ashgabad	4610	2740	4920	2876

A.10 Rates for 40 foot containers are in general 75% higher on all routes.

A.11 Analysis of these rates identifies a reasonably constant variable cost per km, but significant differences in the fixed cost element. We assume that an important component in the differences is the additional costs in the form of customs duties and taxes as traffic crosses the various national borders. There are also slight differences in the level of rates between traffic through Brest and Chop.

A.12 We therefore postulate that a general formula to describe the freight rates as follows:

$$\$/\text{ton} = a + b.\text{km} + c + d$$

where,

a = basic cost associated with container transport

b = cost per km travelled on the network

c = fixed handling /transit cost associated with the origin points (Brest, Chop)

d = cost per border crossing (cumulative)

A.13 On the basis of an average load per 20' container of 10 tons, we calculate the following parameters;

a = \$ 25 per ton

b = \$0.03 per ton.km

c = \$5 for Brest, \$15 for Chop (per ton)

d = \$0 per ton for crossing	Russia - Kazakstan
= \$5	Russia - Azerbaijan
= \$60	Russia - Georgia
= \$25	Kazakstan - Uzbekistan
= \$55	Kazakstan - Kyrgystan
= \$75	Uzbekistan - Tadjikistan
= \$75	Uzbekistan - Turkmenistan

A.14 It should be noted that containers are not much used in the TRACECA corridor (Ref 1). For certain commodities that are imported from America their use is more frequent with routing usually via the Baltic ports.

A.15 TransRail have also been very helpful in supplying rates for specific commodities - grain, cotton and chemicals. The most complete set of rates are available for the imports of grain through 3 entry points - Brest, Chop and the Baltic port of Klaipeda. The rates per ton in US\$ (calculated from rates quoted in Swiss Francs using the conversion rate \$1 = 1.25 Swiss Francs) for grain are:

Destination	via Brest	via Chop	via Klaipeda
Baku	66	67	60
Tblisi	78	80	71
Almaty	76	94	70
Bishkek	85	95	80
Tashkent	77	86	72
Dushanbe	108	118	102
Ashgabad	102	108	96

A.16 Using a similar general formula to that developed for containers , we obtain the following values of the parameters:

a = \$10 per ton

b = \$0 012 per ton. km

c = \$0 for the port of Klaipeda, \$5 per ton for traffic through Brest and \$10 through Chop

d = \$ 4 per ton for crossing Russia - Kazakstan
 = \$10 Russia - Azerbaijan
 = \$27 Russia - Georgia
 = \$6 Kazakstan - Uzbekistan
 = \$9 Kazakstan - Kyrgystan
 = \$22 Uzbekistan - Tadjikistan
 = \$20 Uzbekistan - Turkmenistan

A.17 Cotton. TransRail were able to supply freight rates in \$ per ton for exports of cotton from Tashkent to the key exit points as follows:

Tashkent - Brest \$84 per ton

Tashkent - Klaipeda \$82 per ton

Tashkent - Odessa \$90 per ton

- A.18 These rates are higher than those for grain over the same routes (e.g. Klaipeda-Tashkent \$72 cf. \$82 per ton). This is possibly due to the commodity based variations in the rates charged by Russian railways. Retaining the same value as above for parameters a, c, and d, we find that increasing parameter b to \$0.014 per km. gives a good representation of the freight rates. For the port of Odessa, a value of c = \$ 12 per ton is taken.
- A.19 Figures available from Kazakstan cover a wide range of commodities, but often only in small consignments. we have concentrated on commodities with significant volumes and where several rates are quoted.

Iron Pellets/Bricks:

low value bulk commodities in general transported over short distances and with no special handling required

\$ per ton = 4 + 0.008 per km

Chemicals:

examples were quoted for exports from Kazakstan to Russia and also beyond to Europe. The latter destinations have a higher unit rate which is assumed to reflect the transfers required at the change of gauge at the Euro- Russian borders and general customs charges. Rates are in the range:

\$ per ton = 10 + 0.012 per km for Traceca and Russia

\$ per ton = 50 + 0.012 per km for Europe

- A.20 The higher rates for Europe are assumed to reflect/include a charge of about \$25 per ton for the change of gauge between Russian and European railways that is effected at either Brest or Chop.
- A.21 TransRail have also supplied rates for chemical exports from Almaty to the key exit points, giving rates as follows:

Almaty- Brest \$77 per ton

Almaty- St. Petersburg \$71 per ton

Almaty- Nachodka(Pacific) \$100 per ton

Almaty- Odessa \$88 per ton

A.22 These are in line with the rates obtained from Kazakstan and with the loading charges of \$5 per ton taken for Brest traffic above (parameter c). On that basis the charges for the other ports are:

\$0 for St. Petersburg, \$ 15 - \$ 20 for Odessa and Nachodka.

Other Cargo:

A.23 Little specific data was available for other commodities. It was noted that the Russian rail tariffs have graded rates for different commodities ranging from a base rate for general cargo to a 50% surcharge for engineering spares, drinks, etc. We shall assume that other commodities are charged at this top rate. The handling charges for transport within Traceca is likely to be between the low rate for bulk and the specialized rate for chemicals. The assumed rates are therefore:

\$ per ton = 10 + 0.012 per km

CASPIAN SEA

A.24 Three items of data only are available for this important transit route. We anticipate that it will be possible to use better information when other TACIS reports become available.

A.25 For bulk goods we were quoted (per crossing)

wheat . \$5 per ton

salt \$.2.5 per ton

A.26 Ref 1 quotes the rate for a rail wagon (which can transport either 50 tons of cargo or 2 * 20 foot containers) as \$564. This gives

general cargo \$12 per ton

containerised cargo \$28 per ton

MARITIME

A.27 Ref 1 quotes three values for maritime transport for containers on the following routes (rates per 20 foot container and per ton assuming a container load of 10 tons)

Riga : Rotterdam \$850 \$85 per ton

Bandar Abbas: Italy \$1800 \$180

Poti : Italy \$2650 \$265

A.28 The rates for Bandar Abbas : Italy are in line with current container liner rates of \$1400 to \$1600 per 20 foot container.

A.29 From our study we were only able to obtain rates from Kazakstan that covered both the rail and maritime trips combined. After making assumptions about the cost of the rail component, the picture of maritime rates that emerges is

Baltic : Europe \$40 to \$80

Nachodka : Asia \$50 to \$90

Black Sea (Odessa): Europe \$110 to \$130

A.30 This confirms the much higher rates that apply to goods travelling from the Black Sea

SUMMARY

Mode	Route/Area/Commodity	Rate \$ Per Ton
Road	Traceca	10 + 0.06 per km
	Russia	30 + 0.06 per km
	Bandar Abbas	20 + 0.035 per km
Caspian	salt	2.5
	wheat	5
	general cargo	12
	container goods	28
Sea	Baltic : Europe	40 to 85
	Asia	50 to 90
	Bandar Abbas	150 to 200
	Black Sea	120 to 250

APPENDIX B

Commodity and Sub-Commodity Relationships

B. COMMODITY AND SUB-COMMODITY RELATIONSHIPS

COMMODITY NO	COMMODITY NAME	SUB COMMODITY NO	SUB COMMODITY NAME
1	CATTLE AND PRODUCTS OF ANIMAL ORIGIN	-	-
2	PRODUCTS OF VEGETABLE ORIGIN	780	VEGETABLE OIL
		850	BARLEY
		860	BORIT
		880	CIGARETTES
		940	GRAIN
		950	LAUREL LEAF
		1090	TOBACCO
3	FAT AND OIL OF ANIMAL OR VEGETABLE ORIGIN	-	-
4	FINISHED FOOD STUFFS	190	CEREALS AND GRAIN
		500	ALCOHOLIC DRINKS
		630	FLOUR
		640	FOOD-STUFF
		960	MIN. WATER
		1000	PACKING FLOUR
		1070	SUGAR
		1080	TEA, MIN. WATER
5	MINERAL PRODUCTS	110	COAL
		120	COKE
		130	OIL
		140	ORE
		690	OIL PRODUCTS
		910	DIESEL FUEL
		920	GASOLINE
		1010	PETROLEUM
		1020	PETROLEUM PROD.
		1040	SALT
		1120	WATER
6	PRODUCTS OF CHEMICAL INDUSTRY	180	CHEMICAL FERTILIZER
		550	CATHODE CU
		560	CHEMICAL
		580	CR OXIDE
		600	ELECTROLYTE

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		620	EXPLOSIVE
		670	LIQUID CL
		720	SHAMPOO
		790	VINEGAR ACID
		820	YELLOW P
		830	ZINC
		840	ZINC OXIDE
7	PLASTICS AND RUBBER, AND THEIR WARES	760	TYRES
8	WOOD AND ITS WARES	-	-
9	WOOD AND ITS WARES	160	TIMBER
10	PAPER AND ITS WARES	800	WALL-PAPER
11	TEXTILE AND ITS WARES	220	COTTON
		530	CARPET-COVER
		540	CARPETS
		660	KNITTED WEAR
		710	SACKS
12	SHOES, HEAD DRESSES, UMBRELLAS, WALKING STICKS - ETC	-	-
13	WARES FROM STONE, GYPSUM AND CEMENT	200	CEMENT
		510	ASBESTOS
		520	BRICKS
		590	DISHES
		970	MINING BULK
14	PRECIOUS AND SEMI-PRECIOUS STONES AND METALS, AND THEIR WARES	740	TITANIUM (POROUS?)
		750	TITANIUM SLAG
15	NON-PRECIOUS METAL AND ITS WARES	150	METAL
		650	IRON-ORE PELLETS
		680	METAL
		1030	ROAD - METAL
16	MACHINERY, EQUIPMENT AND MECHANISMS	900	CONTAINERS
		1050	SCRAP-METAL
		1060	SPARE PARTS
17	ROAD, RAIL AND WATER VEHICLES	990	MOTOR EQUIP.
		1100	VEHICLES
18	DEVICES (APPARATUS) AND APPLIANCES	610	EQUIPMENT FOR CHEMICAL LABS
		730	STILL
		810	WATER-HEATER
19	ARMS AND AMMUNITION, THEIR SPARE PARTS AND ACCESSORIES	870	CARS, TANKS
20	DIFFERENT MANUFACTURED GOODS	170	CONSTRUCTION
		210	OTHER
		700	PIPES
		770	UNKNOWN

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		930	GENERAL CARGO
		980	MISCELLANEOUS
		1110	VESSELS
21	ART PRODUCTS	-	-

APPENDIX C

Mode Classification

C. MODE CLASSIFICATION

MODE ID	MODE NAME
10	SEA
20	RAIL
30	ROAD
35	PUBLIC TRANSPORT (used in TRANSPORT table only)
40	AIR
45	OTHER