CHAPTER 5 MEASURES TO BE CONTINUED THROUGHOUT THE PERIOD

5.1 HUMAN RESOURCE POLICY

As human resource is one of the most important asset of the railway company, the development of staff capability is vital to improve competitiveness through various measures of the railway activity. On the other hand, the level of staff number has to be reduced in order to achieve higher productivity.

5.1.1 Productivity and Staff Number

As is suggested in a number of reports conducted by international consultants, the team shares the view that the company's staffing level is still too high by international standard, leading to an inferior productivity. This is still the case after a couple of years of efforts to restructure the company according to RRP and other proposals.

The team proposes that the company will have to continue the staff reduction efforts even after the RRP and FRP deadline of the end of 1998, though through not aggressive measures. The staff reductions appear vital particularly when keener competition materializes with the introduction of open access and development of national road network. On the other hand, the team has set the annual reduction targets within the natural decrease, by minimizing the replacement of the retired people.

The team advises that staff reduction until 2020 will create substantial impact on the company's financial improvement as the level of employees will be able to be reduced to some 23,000 people by 2020 through the said measures. If such magnitude of reduction is achieved, the level of productivity will improve substantially, and international productivity ranking will be raised from the existing near bottom to the middle level.

5.1.2 Personal Grading and Pay System

The company is also advised to change the existing personal policy. At this moment, the company has too many personal rankings and divergence within a rank appears too small. This means a virtual lack of personal assessment system, and the system does not serve to stimulate the staff.

This obsolete personal system does not work to modernize the railway organization under the new market economy system as the company is obliged to achieve higher productivity and better service simultaneously. As the new economic system requires a smaller number of employees performing higher level of obligation, the pay system has to be built in order to motivate the employees based upon more accurate and serious personal assessment system.

5.1.3 Training Program

Under the emerging situation, the company is advised to establish a system of professional training program throughout the business field. The training program should also cover the administrative functions, such as human resource, as the market economy regime requires much higher level of professionality in each department and section. This is a vital factor for the railway activity as the human resource is one of the most important production element of the service.

5.2 MARKETING

Another important factor for the company to perform business in a truly commercial manner is the development of marketing effort. This is particularly the case for the freight operation which has long enjoyed a virtual monopoly in transporting bulk material and products consumed and produced mainly by state owned enterprises under long term contracts. Under the centrally planned economy system, this artificial transport allocation system worked quite well and the company did not have to pay attention to attract customers.

However, the company has to rebuild the freight strategy now, as such allocation system will not be able to survive and the existing over charging to cross subsidize the passenger business will become more and more threatening the price competitiveness of the freight business. Once a competitor emerges who does not have to share the financial burden of the passenger transport, it is highly possible that the company's freight tariff levels are too high.

One more factor also has to be considered that the forthcoming pattern of industrialization will be led by the assembly type of manufacturers, rather than the

existing heavy and chemical industries. Thus the past bulk transport will have to give way to another type of transport method, which can be more efficiently conduct the transport business of various assembly parts and products. The team believes the requirement will be met by developing the seamless combined transport system which is still underdeveloped in the nation.

In the new transport era, the freight business has to contact more and more smaller customers who have different request to the transport modes. The freight business has to make frequent contacts with them and build a flexible approach to attract the potential customers. The customer promotion strategy may include more flexible pricing policy.

5.3 LOW TRAFFIC DENSITY LINES

As was mentioned earlier, the team believes that the forthcoming industrialization and accompanying economic development will bring stronger trend of urbanization than before. A combination of this trend and absolute decrease in population will create forces to more intense inter-city passenger traffic and much less traffic for the already less intensively used lines. Thus the financial situation of these lines are expected to worsen further when industrialization will start.

The team has become more and more skeptical about the importance of most of these lines to be regularly operated. It is understandable that the line treatment is so complicated that the problem can not be solved in a day, as the lines are mostly constructed by laws. However, the cost recovery ratio of such lines has been already been at as low as around 25%, a level which can not be justified for commercial operation. In the future, most of such lines are expected to create less revenue, and passenger operation for such lines appears to waste of important production resources.

The team proposes a reduction of train operations on such low traffic density lines for the short and medium term, but in the long run either full closure or full compensation by the authorities will have to be agreed.

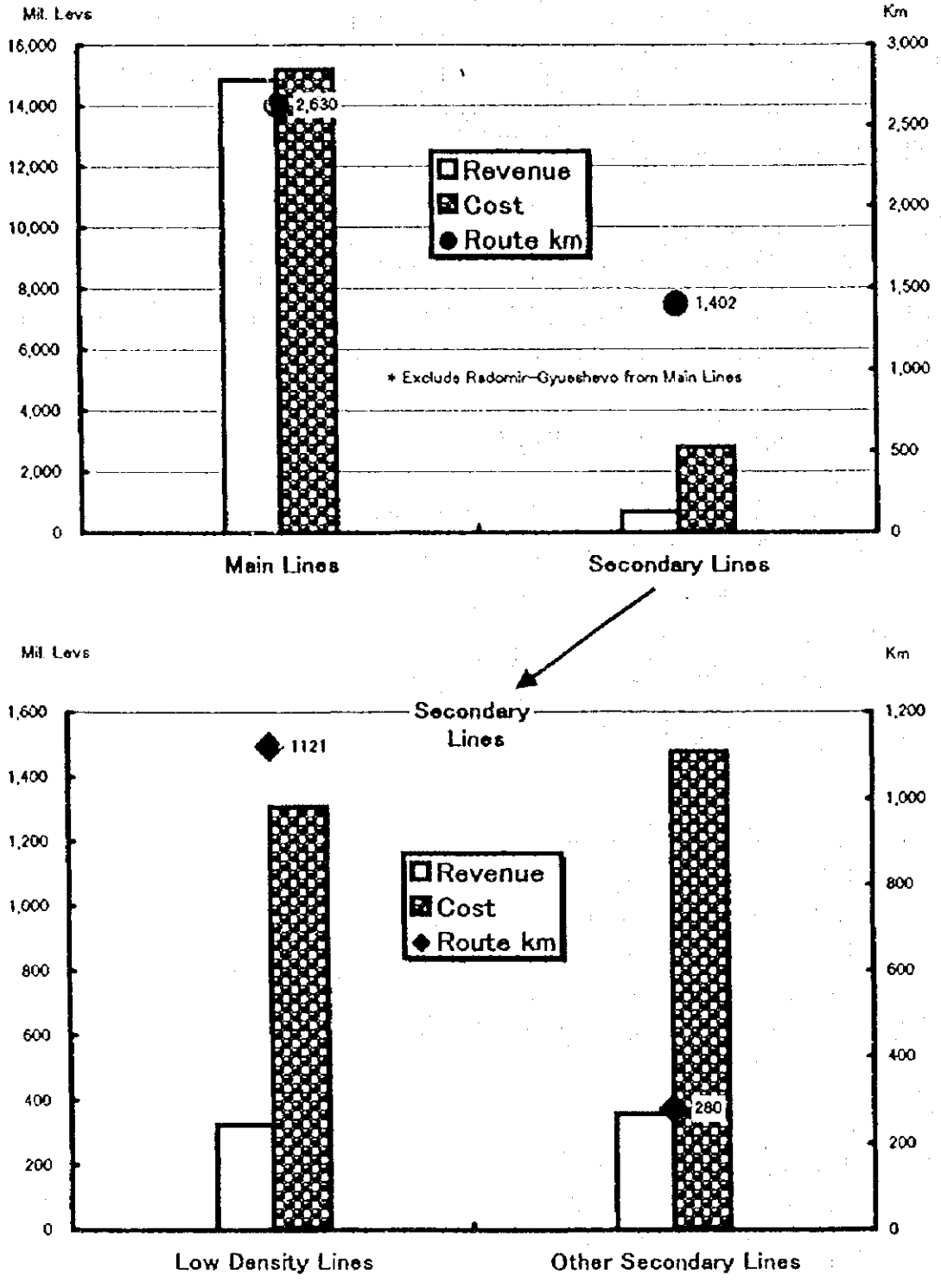


Figure 5.3-1 Positioning of Secondary and Low Density Lines (Reproduction from Figure 7.6-1 in Volume 2)

CHAPTER 6 FINANCIAL FORECAST

The company can not clearly survive if the cost increase factors in the near future are taken into consideration. The RRP investment project alone is expected to form cost increase pressure by around 44 billion Leva for depreciation, and more than 10 billion Leva for interest charge. Also some other cost items will have to increase due to the investment and construction activities.

On the other hand, the company's annual turnover will stand at around 300 billion Leva, and only the possible result is that the deficit will grow at a rapid pace if nothing is done. More importantly, the company will have to suffer from cash shortage in the near future when the planned repayment of the past debt to the National Insurance Institute (for suspended social security contribution) and loans extended by the international financial institutions. The result will be the further accumulation of external debts if possible, and eventually the shareholder's account will fall into deficit, a situation which will make the company virtually impossible to receive fresh loans from financial institutions.

Thus the team has conducted a financial forecast taking into account the financial improvement measures. The team assumes a flat rate of 1700 Leva /Dollar in foreign exchange, and the forecast result is presented in constant Leva. The RRP investment is assumed to complete as planned, and the repayment schedule will proceed with the financial plan established by the company. The base interest rate is assumed at 5.7% annually, and penalized rate is assumed to be base rate plus 10%.

Price forecast is presented by the team's expert, who proposed an immediate sharp increase in the freight tariff and gradual annual increases thereafter both in real terms. On the passenger fare side, it was proposed that the fare policy will be built on the cautious basis for some years to come, with only a few percent of annual increase. When the timing is ripe, however, rather aggressive fare policy will become possible. The team advises annual fare increase of 10% for consecutive 3years between 2003 and 2005. Again gradual increases are proposed in order not to erode competitiveness substantially. The demand forecast was also contributed by the team's expert taking into account the economic environment and price proposals. The demand forecast also took into consideration the keener competition beyond the year 2015.

Financial Forecast BDZ as a unified company

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Net Sales	257,700	313,700	317,200	320,800	324,700	328,600	337,000	346,200	356,400	376,400	392,800	410,500
(Passenger)	39,800	49,300	51,700	54,200	56,800	59,600	66,700	74,700	83,700	81,200	78,900	76,600
(Freight)	188,000	234,900	236,000	237,100	238,200	239,300	240,500	241,600	242,700	264,900	283,500	303,300
Subsidy	35,000	43,000	43,000	43,000	43,800	44,500	45,300	46,100	47,000	43,300	44,900	46,500
(Passenger)	25,000	25,000	25,000	25,000	25,800	26,500	27,300	26,100	29,000	30,400	32,000	33,600
(Infra Structure)	10,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	12,900	12,900	12,900
Total Revenue	322,900	401,700	395,200	388,800	388,800	398,200	407,300	428,400	439,400	462,200	487,700	516,100
Operating Cost	322,200	397,800	401,200	392,300	391,300	391,900	389,200	393,000	392,000	410,700	429,900	461,800
(Labour Cost)	145,800	157,600	148,000	146,100	144,100	142,200	140,000	138,300	136,300	135,500	134,600	133,700
(Depreciation)	2,300	26,000	46,000	46,000	46,000	47,500	49,000	50,400	51,800	53,100	55,500	59,900
(Fuel, Electricity)	74,600	73,700	76,700	76,700	77,700	78,700	79,700	80,700	80,400	80,200	79,700	79,400
Operating Profit	700	3,900	-6,000	-3,500	-2,500	6,300	18,100	35,400	47,400	51,500	57,800	54,300
Financial Cost	1,100	9,700	17,300	19,900	20,500	21,400	22,300	22,700	22,000	20,600	20,500	20,200
Pre Tax Profit	-400	-5,800	-23,300	-23,400	-23,000	-15,100	-4,200	12,700	25,400	30,900	37,300	34,100

BDZ as a unified company

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net Sales	429,700	450,500	448,700	446,900	445,200	443,600	442,000	432,500	423,200	414,300	405,600	397,200
(Passenger)	74,400	72,200	73,700	75,200	76,700	78,200	79,800	80,100	80,500	80,900	81,300	81,700
(Freight)	324,500	347,300	343,800	340,400	336,900	333,600	330,200	320,300	310,700	301,400	292,400	283,600
Subsidy	48,100	49,900	74,000	76,000	78,000	80,200	82,400	84,800	87,200	89,900	92,600	95,500
(Passenger)	35,200	37,000	38,800	40,800	42,800	45,000	47,200	49,600	52,000	54,700	57,400	60,300
(Infra Structure)	12,900	12,900	35,200	35,200	35,200	35,200	35,200	35,200	35,200	35,200	35,200	35,200
Total Revenue	547,600	582,600	619,700	637,400	658,300	683,100	712,500	667,700	630,900	604,100	598,200	592,700
Operating Cost	493,600	531,400	574,100	623,100	680,300	746,900	823,400	723,300	643,500	571,800	568,300	564,600
(Labour Cost)	132,100	132,000	130,600	129,300	127,900	126,600	125,200	122,500	119,800	117,100	114,300	111,600
(Depreciation)	64,200	68,200	72,100	75,400	79,000	82,500	84,900	87,700	91,000	94,100	95,300	96,000
(Fuel, Electricity)	79,200	78,800	78,800	78,800	78,800	78,800	78,800	76,900	74,900	73,100	71,200	69,500
Operating Profit	54,000	51,200	45,600	14,300	-22,000	-63,800	-110,900	-55,600	-12,600	32,300	29,900	28,100
Financial Cost	19,800	19,500	19,700	20,300	19,400	24,300	36,800	51,700	67,200	78,300	86,000	95,300
Pre Tax Profit	34,200	31,700	25,900	-6,000	-41,400	-88,100	-147,700	-107,300	-79,800	-46,000	-56,100	-67,200

Financial Forecast (Passenger)												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Net Sales	39,800	49,300	51,700	54,200	56,800	59,600	66,700	74,700	83,700	81,300	78,900	76,600
Compensation	25,000	25,000	25,000	25,000	25,800	26,500	27,300	28,100	29,000	30,400	32,000	33,600
Total Revenue	67,400	77,300	79,700	82,200	85,600	89,100	97,000	105,900	115,700	114,700	113,900	113,000
Operating Cost	98,400	118,500	119,600	117,100	117,400	118,700	123,100	123,900	124,000	123,100	122,900	122,600
(Labour Cost)	45,000	48,900	45,900	45,300	44,700	44,100	43,400	42,800	41,400	41,200	40,900	40,600
(Depreciation)	500	5,300	9,400	9,400	9,400	10,400	11,400	12,300	13,200	14,000	15,500	16,900
(Fuel, Electricity)	23,700	27,200	27,700	28,200	28,700	29,300	29,800	30,300	30,900	29,400	28,000	26,600
(Other)	29,200	37,100	35,600	34,200	34,600	34,900	33,500	33,500	33,500	33,500	33,500	33,500
(Access Charge)	0	0	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000
Operating Profit	-31,000	-41,200	-38,900	-34,900	-31,800	-29,600	-26,100	-18,000	-8,300	-8,400	-9,000	-9,600
Financial Cost	1,600	4,300	7,700	8,800	9,100	9,500	9,800	10,000	9,700	9,100	8,600	8,700
Pre Tax Profit	-32,600	-45,500	-46,600	-43,700	-40,900	-39,100	-35,900	-28,000	-18,000	-17,500	-17,600	-18,300

(Freight)												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Net Sales	188,000	234,900	236,000	237,100	238,200	239,300	240,500	241,600	242,700	264,900	283,500	303,300
Compensation	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenue	191,900	238,800	239,900	241,000	242,100	243,200	244,400	245,500	246,600	268,800	287,400	307,200
Operating Cost	113,300	135,600	137,500	134,800	133,500	132,200	158,100	154,900	153,700	159,700	166,000	172,900
(Labour Cost)	49,200	54,300	53,600	52,900	52,200	51,500	50,900	50,200	49,600	49,300	49,000	48,700
(Depreciation)	600	6,300	11,100	11,100	11,100	11,100	11,100	11,100	11,100	11,100	11,500	11,900
(Fuel, Electricity)	34,600	38,400	37,800	37,300	36,700	36,100	35,600	35,100	34,500	37,000	39,600	42,300
(Other)	28,900	36,600	35,000	33,500	33,500	33,500	33,500	33,500	33,500	33,500	40,900	45,000
(Access Charge)							25,000	25,000	25,000	25,000	25,000	25,000
Operating Profit	78,600	103,200	102,400	106,200	108,600	111,000	88,300	90,600	92,900	109,100	121,400	134,300
Financial Cost	4,000	4,600	8,000	9,100	9,400	9,800	10,300	10,400	10,100	9,400	9,000	9,100
Pre Tax Profit	74,000	98,600	94,400	97,100	99,200	101,200	78,000	80,200	82,800	99,700	112,400	125,200

(Infra Structure)												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Access Charge	0	0	0	0	0	0	30,000	30,000	30,000	30,000	30,000	30,000
Compensation	10,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	12,900	12,900	12,900
Total Revenue	10,000	18,000	18,000	18,000	18,000	18,000	48,000	48,000	48,000	42,900	42,900	42,900
Operating Cost	62,400	81,000	86,800	85,500	85,600	85,700	85,800	85,900	86,000	84,300	90,000	96,000
(Labour Cost)	36,200	34,400	32,300	31,900	31,500	31,100	30,700	30,300	29,900	29,700	29,500	29,400
(Depreciation)	1,100	12,400	21,900	21,900	21,900	22,400	22,900	23,400	23,900	24,400	24,900	27,500
(Fuel, Electricity)	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
(Other)	23,300	32,400	30,800	29,900	30,400	30,400	30,400	30,400	30,400	28,400	33,800	37,300
Operating Profit	-52,400	-63,000	-68,800	-67,500	-67,600	-67,700	-37,800	-37,900	-38,000	-41,400	-47,100	-53,100
Financial Cost	0	0	0	0	0	0	0	0	0	0	0	0
Pre Tax Profit	-52,400	-63,000	-68,800	-67,500	-67,600	-67,700	-37,800	-37,900	-38,000	-41,400	-47,100	-53,100

Financial Forecast (Passenger)												
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net Sales	74,400	72,200	73,700	75,200	76,700	78,200	79,800	80,100	80,500	80,900	81,300	81,700
Compensation	35,200	37,000	38,800	40,800	42,800	45,000	47,200	49,600	52,000	54,700	57,400	60,300
Total Revenue	112,600	112,200	115,500	118,900	122,500	126,200	130,000	132,700	135,600	138,500	141,700	144,900
Operating Cost	122,300	123,300	125,600	127,000	128,400	129,800	132,000	132,300	133,200	133,900	132,600	131,400
(Labour Cost)	40,100	40,100	39,700	39,300	38,900	38,500	38,100	37,300	36,500	35,700	34,800	34,000
(Depreciation)	18,300	19,600	20,800	21,100	21,400	21,700	22,800	24,300	26,300	28,200	28,200	28,200
(Fuel, Electricity)	25,400	24,100	24,600	25,100	25,600	26,100	26,600	26,200	25,900	25,500	25,100	24,700
(Other)	33,500	34,500	35,500	36,500	37,500	38,500	39,500	39,500	39,500	39,500	39,500	39,500
(Access Charge)	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Operating Profit	-9,700	-11,100	-10,100	-8,100	-5,900	-3,600	-2,000	400	2,400	4,600	9,100	13,500
Financial Cost	8,800	9,100	9,400	10,200	11,000	11,400	13,300	14,400	16,800	19,500	22,700	26,300
Pre Tax Profit	-18,500	-20,200	-19,500	-18,300	-16,900	-15,000	-15,300	-14,000	-14,400	-14,900	-13,600	-12,800

(Freight)												
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Net Sales	324,500	347,300	340,800	340,400	336,900	333,600	330,200	320,300	310,700	301,400	292,400	283,600
Compensation	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenue	326,400	347,700	347,700	341,300	340,800	337,500	334,100	324,200	314,600	306,300	296,300	287,500
Operating Cost	180,300	188,500	190,800	193,400	196,200	198,800	201,800	175,000	173,300	171,600	170,000	168,400
(Labour Cost)	48,400	48,100	47,600	47,100	46,700	46,200	45,700	44,700	43,800	42,900	42,100	41,200
(Depreciation)	12,300	12,000	12,900	14,300	14,300	14,900	15,500	16,100	16,700	17,200	17,700	18,200
(Fuel, Electricity)	45,300	48,500	48,000	47,500	47,000	46,500	46,100	44,700	43,400	42,100	40,800	39,600
(Other)	49,000	54,300	57,300	59,500	63,200	66,200	69,500	44,500	44,400	44,400	44,400	44,400
(Access Charge)	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Operating Profit	146,100	159,200	156,900	150,900	144,600	138,700	132,300	149,200	141,300	133,700	126,300	119,100
Financial Cost	9,200	9,500	9,800	10,600	11,500	11,900	13,900	15,100	17,600	20,400	23,700	27,500
Pre Tax Profit	136,900	149,700	147,100	140,300	133,100	126,800	118,400	134,100	123,700	113,300	102,600	91,600

(Infra Structure)												
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Access Charge	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Compensation	12,900	12,900	35,200	35,200	35,200	35,200	35,200	35,200	35,200	35,200	35,200	35,200
Total Revenue	42,900	42,900	65,200	65,200	65,200	65,200	65,200	65,200	65,200	65,200	65,200	65,200
Operating Cost	102,200	108,800	132,600	135,100	137,400	137,900	138,300	138,400	138,500	138,600	138,200	137,700
(Labour Cost)	29,200	29,000	28,700	28,400	28,100	27,900	27,600	27,000	26,400	25,800	25,200	24,700
(Depreciation)	30,000	32,400	34,800	37,100	39,700	42,300	43,000	43,700	44,400	45,100	45,800	46,000
(Fuel, Electricity)	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
(Other)	41,200	45,600	67,500	67,800	67,800	65,900	65,900	65,900	65,900	65,900	65,400	65,200
Operating Profit	-59,300	-65,900	-67,500	-69,900	-72,200	-72,700	-73,100	-73,200	-73,300	-73,400	-73,000	-72,500
Financial Cost	0	0	0	0	0	0	0	0	0	0	0	0
Pre Tax Profit	-59,300	-65,900	-67,600	-69,900	-72,200	-72,700	-73,100	-73,200	-73,300	-73,400	-73,000	-72,500

The agreement with the government is assumed to be made that the passenger compensation will fluctuate according with the real economic growth rate, while the government financial commitment will be determined by the maintenance cost and investment before the institutional separation, and full cost (full cost less access charge) and investment.

Upon these price proposals and demand forecast, and also the tentative financial forecast, the team's human resource expert created a personnel and payment plan. The proposal comprises two major elements, a continued reduction in staff number throughout the planned period, and a pay scheme that a part of productivity gain will be reflected in the pay level.

Also it was assumed that the infra structure and other asset maintenance and replacement will be conducted as proposed by the team's experts. In the third phase of the improvement plan, fresh investment projects are taken into consideration.

6.1 SHORT AND MEDIUM TERM FORECAST

Under the aforementioned frameworks, the unified railway company may be able to reach around break even point in as early as 2001 at the operational level. However, because of the sharp increase in the interest payment, the improvement at pre tax level will become only possible around 2004. The continued restructuring measures, coupled with the tariff/fare adjustments, particularly the immediate freight tariff rise and passenger fare rises between 2003 and 2005, are expected to contribute the financial improvement.

However, in the short run, the profitability will hardly be restored because of the rapid cost increase caused by the RRP investment projects. Aside from te continued effort of business restructuring, the company should carefully plan the cash flow situation during the period.

Another important factor appears the financial viability of the passenger sector. A vital factor for the unified company in terms of financial strength is the restoration of financial health of the passenger sector. The team's proposal of rather aggressive passenger fare policy is reflected in the overall financial situation after the year 2003.

Thus as long as the company takes the form of a one unified company, financial improvement of the passenger sector plays an important role.

Although the development of combined seamless transport system is proposed around the year 2003, the development project is assumed to be implemented jointly with foreign interests in the form of BOT (Build, Operate and Transfer) and no substantial cost increase is forecast from the implementation of the project.

Another important factor appears the financial viability of the passenger sector. A vital factor for the unified company in terms of financial strength is the restoration of financial health of the passenger sector. The team's proposal of rather aggressive passenger fare policy is reflected in the overall financial situation after the year 2003. Thus as long as the company takes the form of a one unified company, financial improvement of the passenger sector plays an important role.

The open access and access charging system are assumed to start from 2003. During the initial stage before institutional separation takes place, the system will virtually function as internal transfer. Here, the charge is assumed to be based upon SRAC of infra-structure cost, and flat rates of 25 billion Leva for freight and 5billion Leva for passenger are applied.

6.2 LONG TERM FORECAST

In the long run, however, the company may find it difficult to survive in the very competitive environment if the existing institutional framework continues. The financial forecast illustrates that another turnaround will be resulted in the profitability from the keener competition and increasing interest burden. This is also the case even if the restructuring measures have become effective. It may be possible in theory that maintenance and fresh investment projects will be suspended in order to restore financial viability, but these tightening measures appear dangerous as they may weaken the railway's competitiveness.

Thus the financial forecast suggests the necessity that institutional separation is implemented and rights and obligations of each business unit and the government are clearly established. Of particular importance in this regard is to establish the principle

of full financial commitment to the infra structure by the government for maintenance and development. It is proposed that the government will bear all the maintenance cost, investment and fresh development investment of railway infra structure. If the agreement is reached, the freight company will be able to maintain profitability, and passenger company is expected to restore profitability in the year 2016 at the operational level.

If such a situation emerges, the freight company will be able to utilize the cash flow for its business development, such as further business development projects like combined seamless transport and Freight Information System. The passenger company may still suffer from negative results at the final level. In this case, it is advisable to reduce the financial burden before the institutional separation by arranging repayment of the past debt other than the social security contribution.

6.3 GOVERNMENT COMMITMENT

The heavy commitment by the government has to be pursued in order to compensate for the much less commitment in the past. The prevailing under maintenance situation is of course attributable to the financial constraint of the railway business, but is to some extent a result of the under commitment by the government.

It has to be stressed that the most important railway strategy in the immediate future should be the maintenance activity which has far lagged behind during the past couple of years. The table shows the required amount of maintenance cost and investment. Intensive maintenance and replacement activities are advised by the team's experts right after the RRP investment project. This will enable the substantial decrease in investment after the tear 2011. On the other hand, the increased maintenance cost beyond 2011 is a result of the strategic investment starting from the beginning of the final stage.

Table6.3-1 Railway Infra Structure Maintenance

(Annual Average, Million Leva)

	2001-2005	2006-2010	2011-2015	2016-2020
Cost	18,020.0	12,920.0	35,190.0	35,190.0
Deficit Finance	0.0	56,300.0	71,100.0	73,100.0
Investment	39,551.7	39,551.7	9,121.7	9,121.7
Total	57,571.7	108,771.7	115,411.7	117,411.7

Note) Deficit Finance in 2006-2010 is the annual average of 2007-2010.

Table Railway Infra Structure Development Project

Table Railway Infra Structure Development Project

(Annual Average, Million Leva)

	2005	2006	2007	2008	2009	2010	2011
Double Track	72,420	72,420	72,420	72,420	72,420	72,420	72,420
Elevated crossing (Line-1)							3,060
Safety and others							
Elevated crossing						7,650	7,650
Electrification							
Total	72,420	72,420	72,420	72,420	72,420	80,070	83,130

	2012	2013	2014	2015	2016	2017	2018
Double Track							
Elevated crossing (Line-1)	3,060	3,060					
Safety and others	1,700	1,700	1,700	1,700	1,700		
Elevated crossing	7,650	7,650	7,650	7,650	7,650	7,650	7,650
Electrification	8,500	10,200	14,110	14,110	14,110		
Total	20,910	22,410	23,460	23,460	23,460	7,650	7,650

	2019	2020					
Double Track							
Elevated crossing (Line-1)							
Safety and others							
Elevated crossing	7,650	8160					
Electrification							
Total	7,650	8,160					

In addition to the maintenance cost, the government will be obliged to commit to the development finance of the railway infra structure. The team believes that still much has to be done in this regard to improve the quality of railway transport service. The more frequent railway traffic in the future will necessitate the railway transport to be carried out more efficiently, particularly along the main lines. Thus the relatively cheaper ways of achieving this target are advised, including the double track, the conversion of level crossings to elevated crossings and electrification of some sections of strategic lines.

In the initial stage until 2004, the intensive maintenance activity will require the

government to commit more heavily than in 1990s. The maintenance cost in this period is estimated at some 57billion Leva, compared with the total of infra structure maintenance subsidy and capital investment at 16 billion in 1997. Although the economy is expected to recover from the existing recession and some increase in tax revenue will become possible in this stage, the increased government affordability may not be enough to cover all the financial burden to maintain the asset quality of the railway infra structure. This is why the introduction of railway access charge is required to be implemented in the earlier stage.

The financial arrangement is also made in order to allocate a part of the newly introduced road user charge to the railway infra structure maintenance and development to compensate for the possible shortfall of the government financial commitment.

CHAPTER 7 PLANNING OF RAILWAY TRANSPORTATION

The railway revolution for new age is proceeding rapidly by the background of worldwide motorization. BDZ is in the middle way of struggling period of system change for constructing the superiority of railway itself to attract road transport and international rail transport.

The way of improving railway for next century is clear from many facts of world railways.

The path of each step should be supported by precise acknowledgement of actual facilities and all improving actions should be set on the most reasonable and effective way.

(Actual Situation of Railway Transportation)

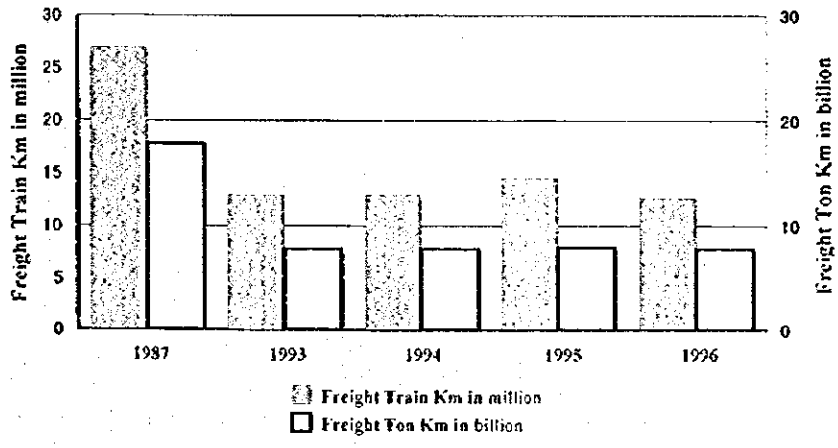
7.1 THE TRAFFIC VOLUME IN PAST 10 YEARS AND THE TRAIN OPERATION

7.1.1 Freight Traffic Volume and Freight Train Km

After changing the structure of COMECON system, the railway freight ton km has been decreased approximately to 50 % in 10 years and the railway freight traffic maintains almost same level in these years.

The freight train km has been reduced in proportion to the freight ton km and the freight train km, nowadays, keeps approximately 50 % to that of 10 years before.

Fig. 7.1- 1 Transition of freight train km and freight ton km

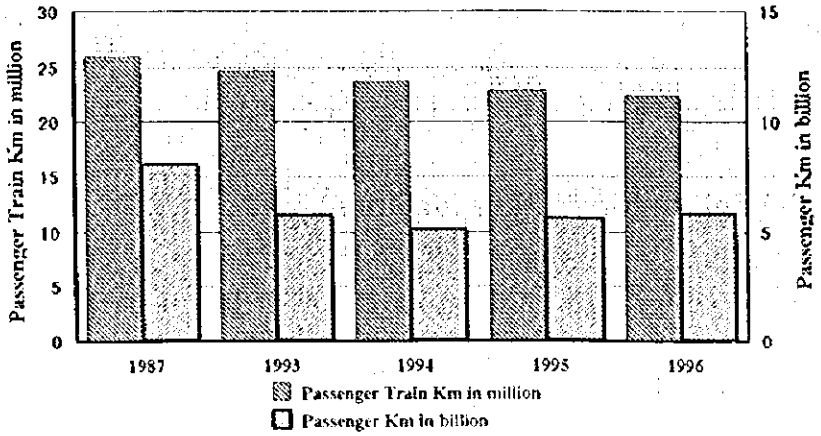


7.1.2 Passenger Traffic and Passenger Train Km

The passenger km in 1993 decreased to the 62 % level when compared to the year of 1987. The deviation of passenger train km from the rate of passenger km was admitted too abundant

at that period. The passenger km is being slightly recovered since 1994 but the endeavor of adjusting train km has been continued and the difference between passenger train km and passenger km is approaching to the reasonable zone as shown in the Fig. 7.1.2.

Fig. 7.1- 2 Transition of Passenger km and Passenger train km



7.2 TRANSPORTATION SYSTEM

7.2.1 Operation of Freight Train

The operation system of freight trains is mainly depending on the operation system to couple and disconnect wagons at intermediate yard. The freight train average travel speeds are slow and are of 30 – 39 km/h. The main cause of slow speed is arousing from the stopping chance at intermediate stations.

The severe competition with highway road transport considered, the average speed should be doubled by changing to the direct block train system, etc.

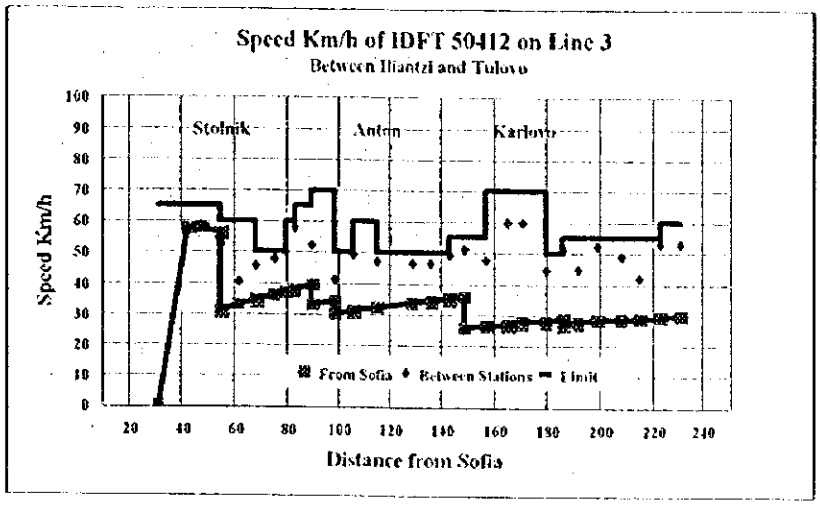
Already the heavy goods dispatched by major customers are being sent by way of direct access system without need of stopping at intermediate stations, although trains are stopped at many midway stations.

There remain many motives of hesitations for changing the transportation system because of the non mature of collecting and distributing freight goods at freight terminal stations and of the enormous capital investment to major yards in past years, etc.

The actual situation requires that the railway mass transportation system should be changed powerfully from conventional yard system to direct block train system that will pass intermediate stations.

For realizing the direct block train system, the construction of container terminals at major places, the preparation of gathering and distribution system to the terminal, etc are important. The former action of constructing terminal facilities is urgent and indispensable.

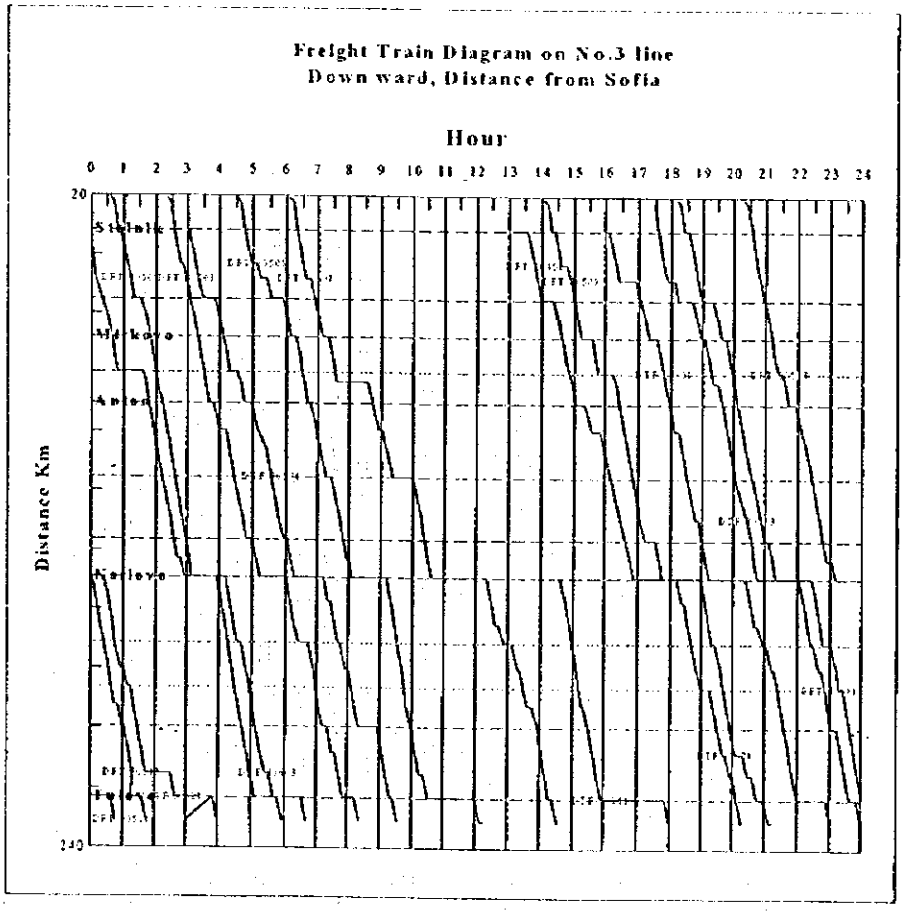
Fig. 7.2- 1 Example of freight train speed and speed limit



Note: Speed from Sofia means the average speed from Sofia.

Speed between stations means the speed between intermediate stations

Fig.7.2- 2 Example of freight train diagram prepared by computer (No.3 line)



7.2.2 Operation of Passenger Train

Passenger trains are composed of suburban trains, intercity fast trains and international trains. The average speed of passenger trains is generally between 55 km/h and 65 km/h.

The highway construction is proceeding on main routes. The road network among cities is better than that of railway lines and the road distance is generally shorter than that of railway. Furthermore, the automobile speed on trunk roads is higher than trains.

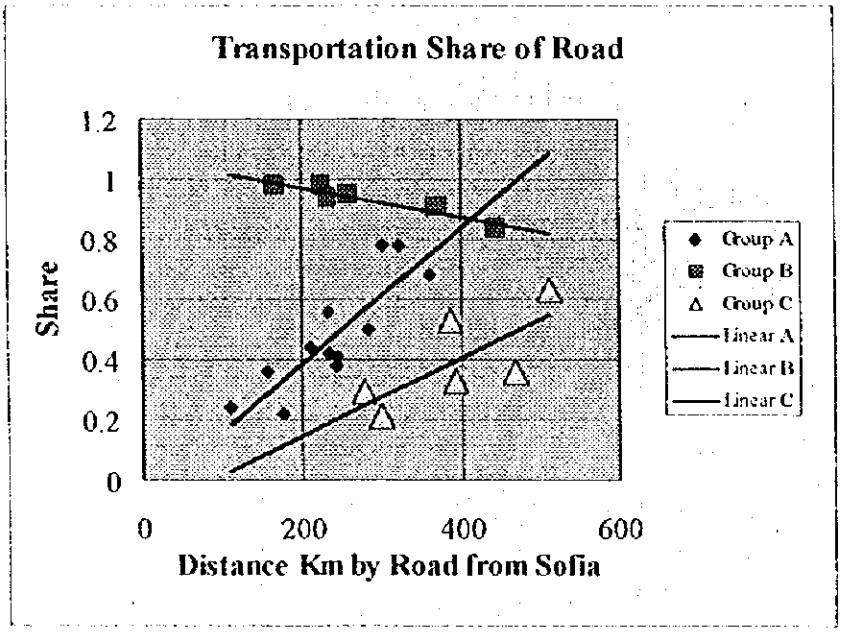
In Bulgaria, the passenger share of road is increasing in the sphere of longer distance in spite of the phenomena in foreign countries.

The railway shares among such cities with favorable train service are indicating relatively good shares but still the degree and its tendency is insufficient. The passenger share of trains should be improved by further endeavor.

The comparison of passenger fares shows that railway might be aiming to gather passenger by lower tariff than road transport.

The railway should aim the speed up of passenger trains that has the effect of gathering more passengers and of decreasing the operation cost of each train, by considering the strategy of each railway lines.

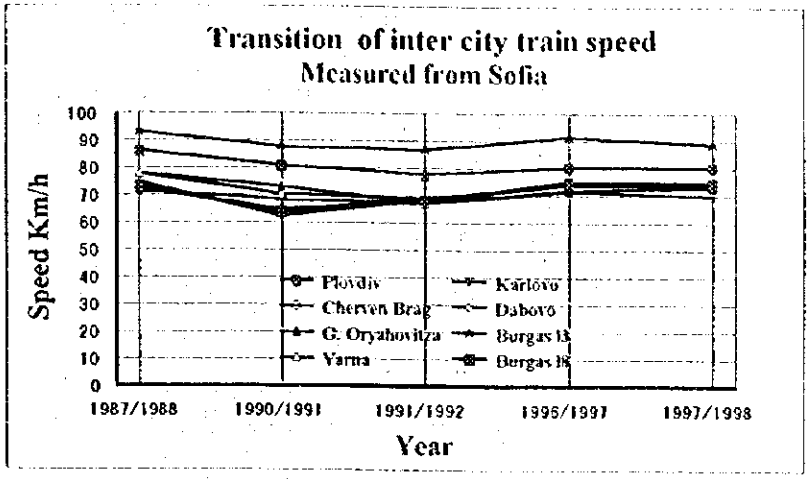
Fig. 7.2-3 Traffic Shares of Road by Convenience Groups of Railway



Note: Group A cities (marked with diamonds ♦) are equipped with normal railway service
Group B cities (marked with squares □) are equipped with inconvenient railway service
Group C cities (marked with triangle Δ) are equipped with relatively convenient railway service

In the past 10 years, the travel speed of intercity passenger trains has not been improved. The actual situation of railway finance might have allowed trains to maintain the same level speed but the transportation market of Bulgaria is suppressing BDZ by severe development of highway transport, etc.

Fig. 7.2- 4 Transition of Transition of intercity train speed of each important section



The average travel speed from starting station to terminal is decreasing remarkably by midway stops of intercity trains. The speed limits of switches at stations and the special speed limits by provisory track maintenance are slowing down notably the passing trains' travel speed.
The recovering or improving actions of actual track condition will bring forth a remarkable improvement of train travel speed too.

Fig. 7.2- 5 Example of intercity passenger train speeds and speed limit

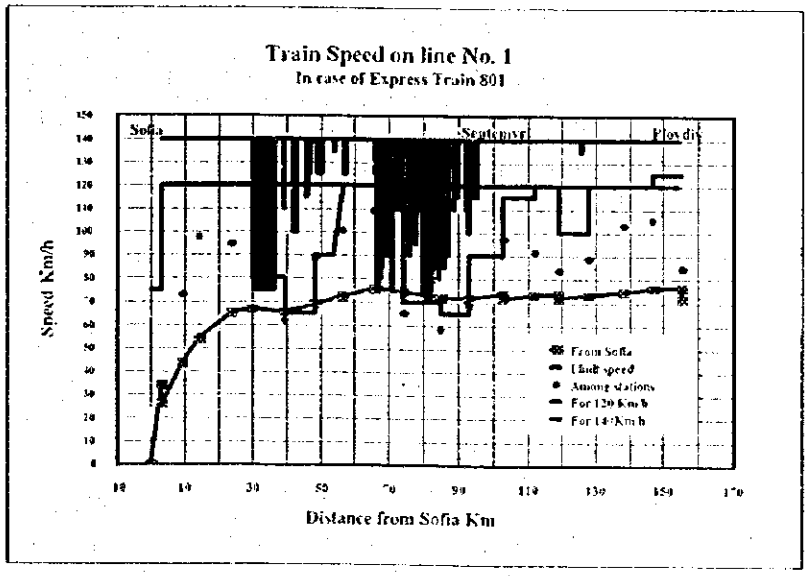
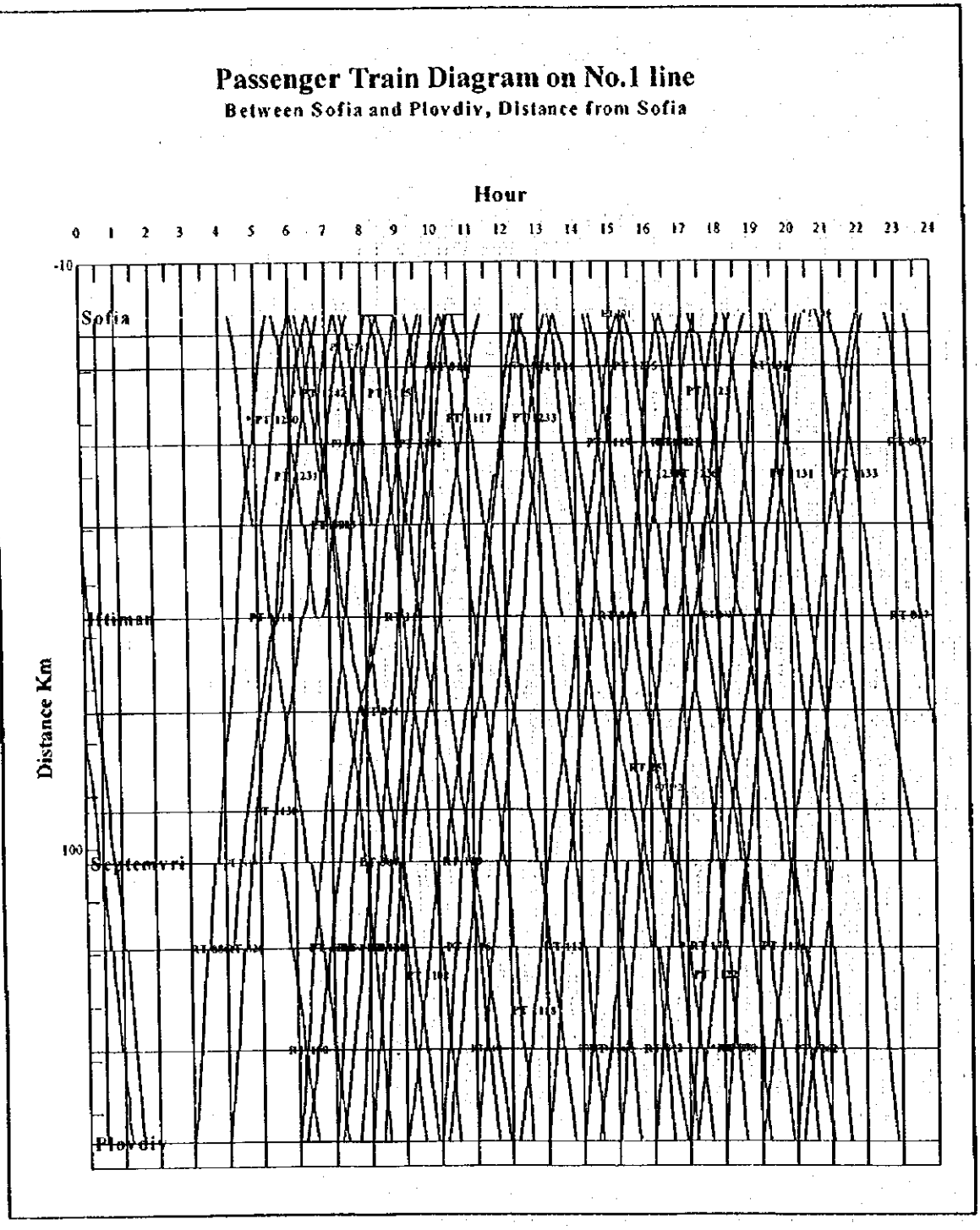


Fig. 7.2- 6 Example of passenger train diagram prepared by computer (No. 1 line)



Difference of travel time among ordinary trains, rapid trains and express trains is relatively little. The strategy of speed-up fast trains should be introduced resolutely for improving the impression of railway transportation.

7.3 TRACK FACILITIES OF RAILWAY LINES

Railway structures, facilities and fleet of BDZ are shown below.

Table 7.3-1 Actual facilities of BDZ railway lines and operating system

(1995)

Items		Current Status	Remarks
Rolling Stock	Electric Loco. (EL)	319 units	Availability 66%
	Diesel Loco. (DL)	193 units	Availability 65%
		35 units for 760mm	
	Shunter	325 units	
	E M U	83 sets	2M2T／set
	D M U	6 sets	
	Passenger Coach	1,768 units	
	Freight Wagon	29,178 units	
Structures, Facilities & Equipment	Gradient (Max.)	28‰	
	Min. radius of curvature	300m (extra 150m)	
	Axle weight (design)	22.5 ton	
	Ballast thickness	330mm	Standard
	Rail	49 kg/m	Concrete sleeper 30%
	Tunnel	183 places	Aggregated lengths 47.2 km
	Bridge	982 places	Aggregated lengths 16km
	Railway crossing	955 places	
	Electrification	AC 50Hz, 25 kV	Direct feeding、Simple catenary
	Traction substation	47 places	Attended
	Train blocking	Automatic 347 km	
		Semi-auto. 3,190 km	
	A T P	164 km	Loco. : 103 units
	C T C	329 km	
	Interlocking of signals	290 stations (Regular interlocking)	
		111 stations (Key interlocking)	
	Train radio	1,595 km	
	M I S	X25	The project is now on-going
	Telephone exchange	112 st.s (25,700 CHs)	Digital, Step by Step, Crossbar
	Transmission of information	Buried cable	Analogue、FDM multiplex

The main lines of BDZ are electrified, excluding some single sections. The No.1 line between Sofia and Plovdiv and the No. 2 line between Sofia and Varna are double tracked. No.8 line between Plovdiv and Burgas is partially double tracked.

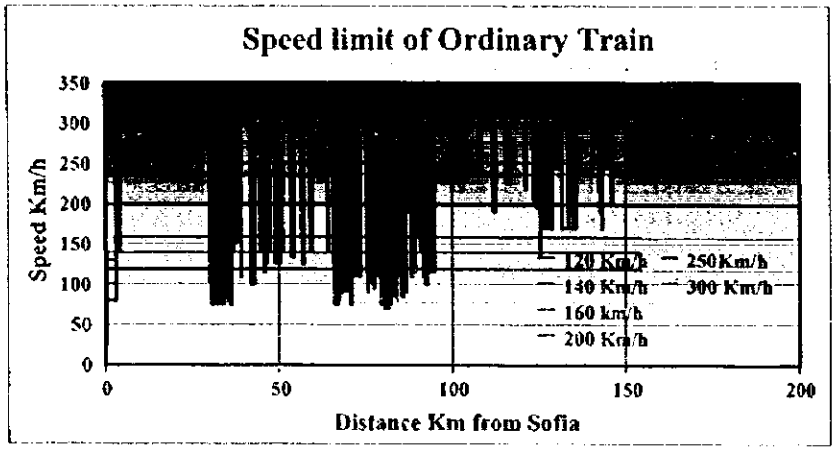
Generally they are constructed with many steep curves and gradients on mountainous sites and the train speeds are restricted severely there.

The track figures on flat areas are favorable for higher speed operation. On level areas, there exist many of medium and tiny size cities. This causes the stop chances of fast trains on the favorable sections for high-speed train operation.

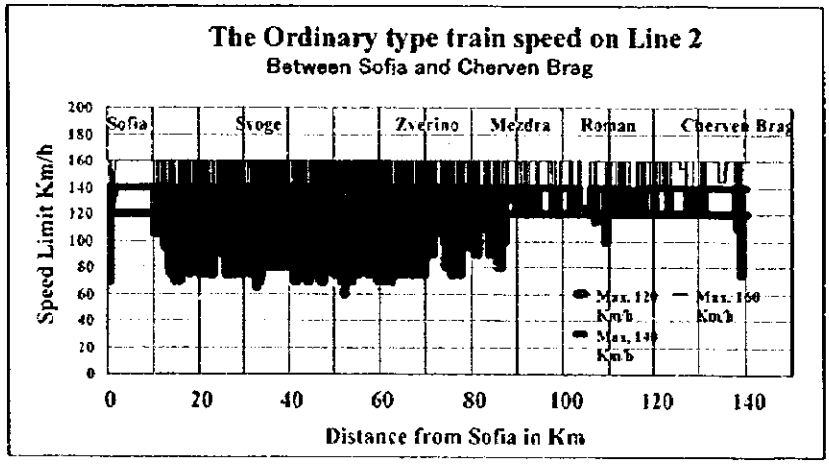
For increasing train speed, strategic consideration on the planning of train diagram is required to select stopping stations by type of fast trains.

Fig. 7.3- 1 Speed limits by curves on No.1 and No.2 lines

Speed limits by curves on No.1 in case of conventional type train



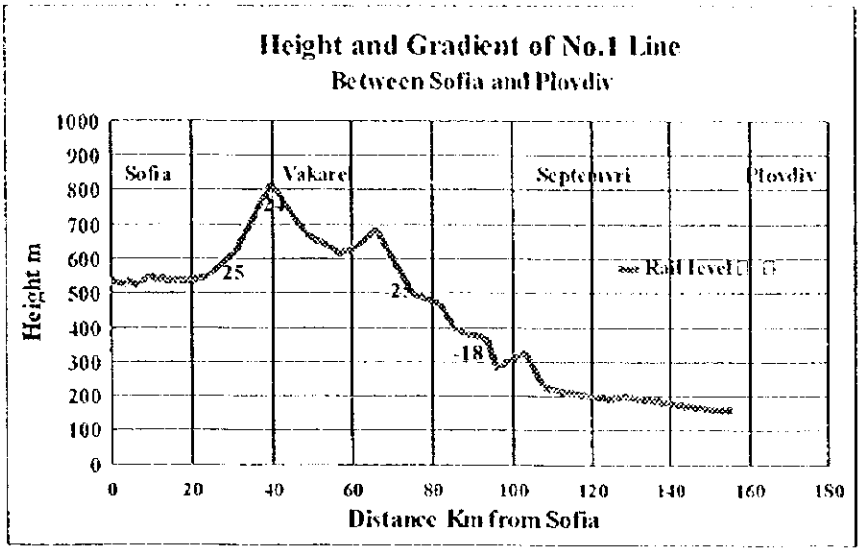
Speed limits by curves on No.2 in case of conventional type train



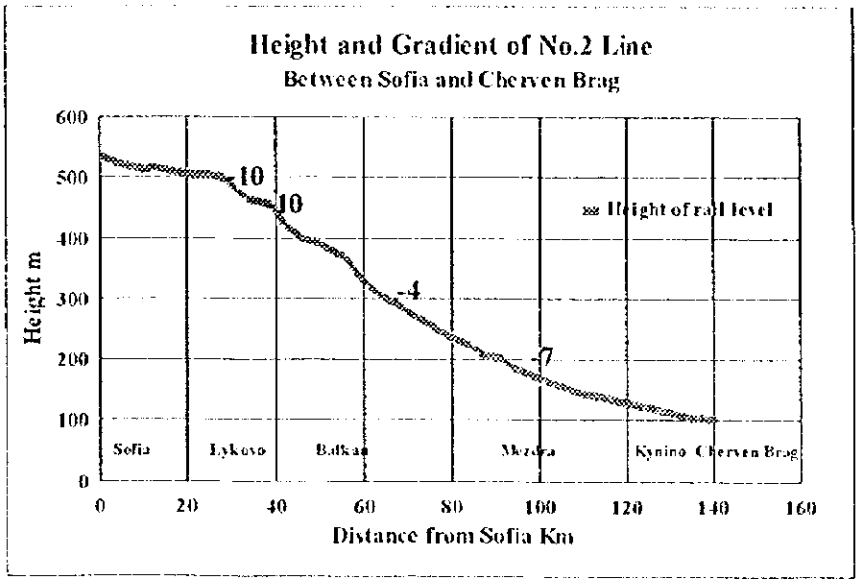
The characteristic of track gradients, which will give a fatal influence on traction capacity of train, is variable by each line. The strategy of management, including tariff system, will be required to consider the merit of each line segment. The railway management system might be aimed at the line wise supervision from the actual regional control.

Fig. 7.3- 2 Track gradient of No.1 and No.2 line sections

Track gradient of No.1 line section



Track gradient of No.2 line section



Note: The number attached to the rail level show the track gradient (1/1000)

7.4 TRAIN TIME TABLE AND TRAIN DIAGRAM

Train time table and train diagrams of BDZ are well prepared and are used by field organs. They are being prepared precisely by manual work, but the enormous procedure and the plenty of working hours are preventing quick response to the rapid change of social requirements for transport organs.

"Rapid and precise treatment by computerized working method" is being required and the BDZ laboratory is developing the computerized train operation planning system already.

The completion of this system will realize not only the rapid and precise response but also it will contribute to the more precise evaluation of countermeasure actions.

The fundamental designs of computerized train operation planning are already prepared and its developing staffs are existing enough in BDZ.

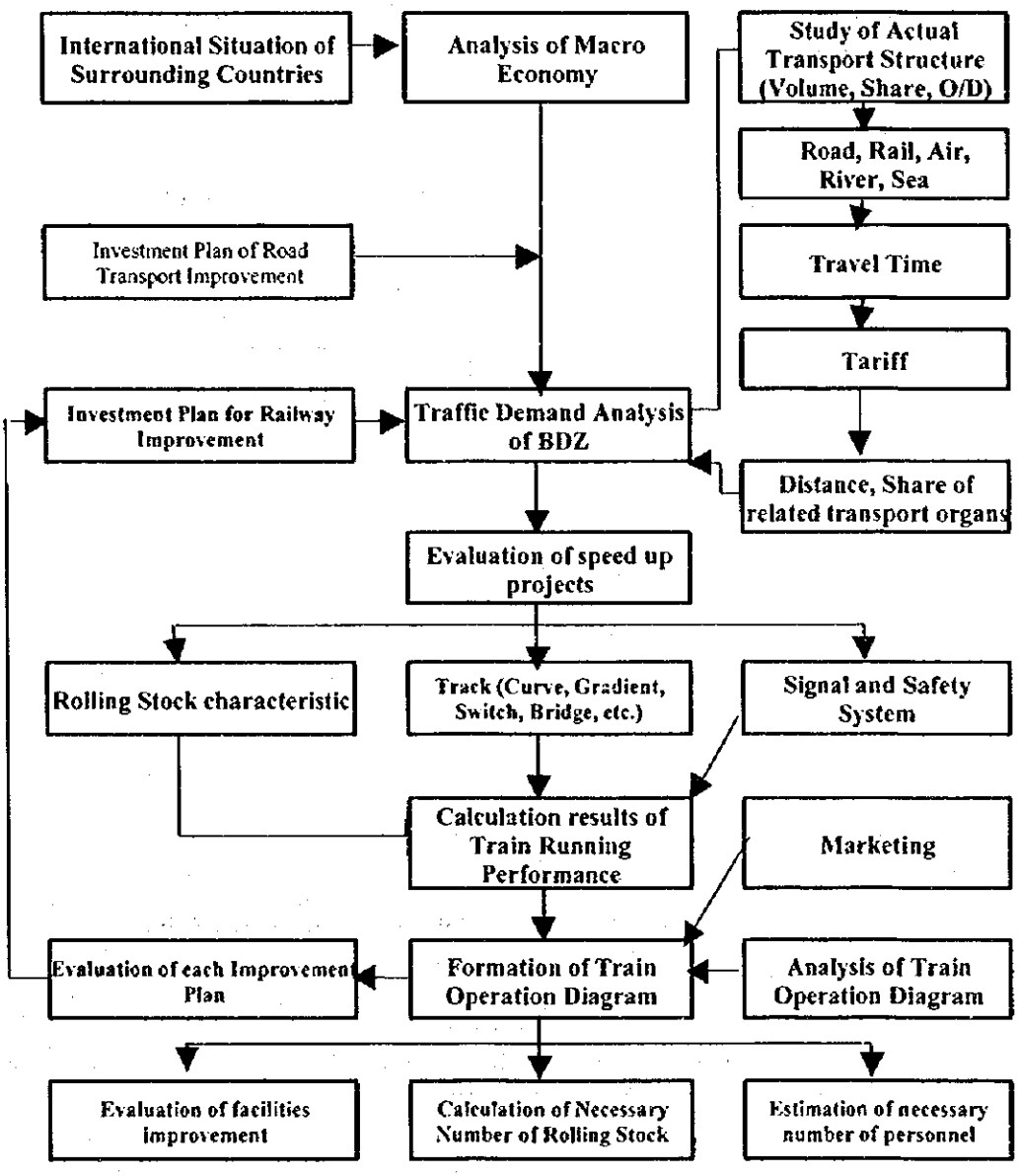
The support for the above new wave will be appreciated for its sooner realization, by way of supplying new hardware of computer with enough capacity, etc.

(Future Plan of Railway Transportation System)

7.5 DEMAND FORECAST AND TRAIN KM

For coming new age of BDZ, the train planning process should be revised because of its importance of quick response to prepare suitable and improved commodity like other industry. The following flow chart shows the working process of connecting train planning with the demand forecast, marketing, facilities, rolling stock, personnel, etc.

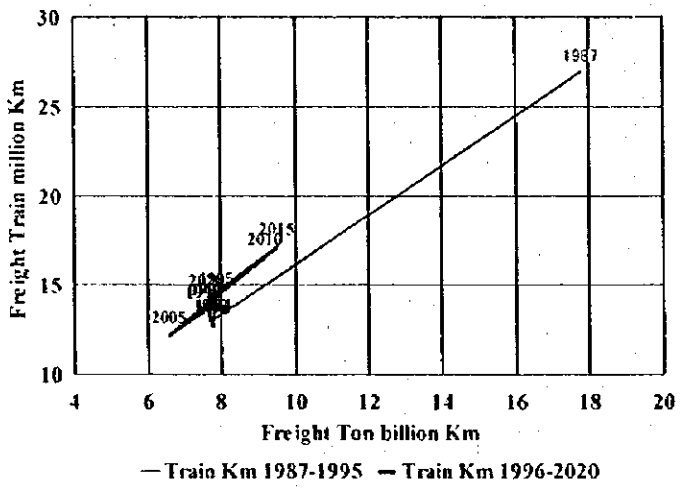
Fig. 7.5- 1 Work Flowchart of Train Operation Planning



7.5.1 Freight Traffic Demand Forecast and Freight Train Km

The relation between freight traffic demand forecast and future freight train km is shown in the following figure 7.5-2, prepared by the working process of the flowchart.
The transition in past time is shown by thin line and the future inclination is expressed by thick line.
The thick line is drawn at higher position than the thin line. This means that the hauling load of direct freight train will be decreased than the case of ordinary train system, but the efficiency increase and the cost decrease of block train will realize lower cost than that of the former system.
In case of direct block train, the running time will be decreased remarkably and the rotation of rolling stock and operational personnel will be improved entirely. This time reduction will cause the contraction of each train operation cost and the yard pass train operation save the enormous cost of marshalling yard.

Fig. 7.5- 2 Freight Demand Forecast and Freight Train Km

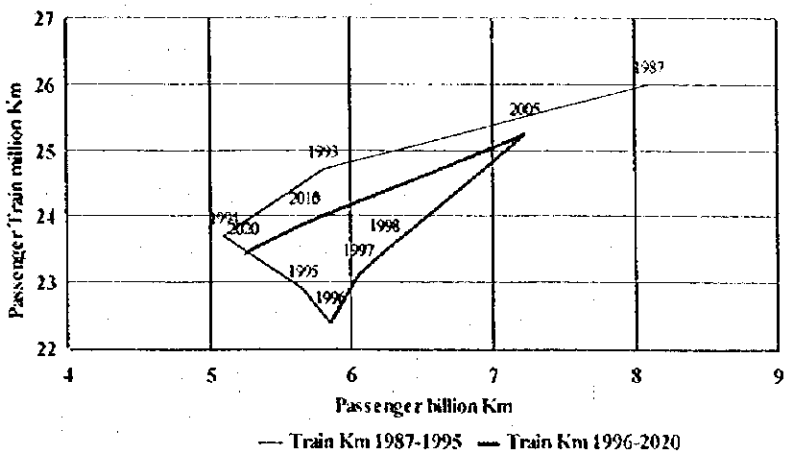


7.5.2 Passenger Traffic Demand Forecast and Passenger Train Km

The passenger train km can not be adjusted smoothly in case of demand decrease because of the intimate relation between the social activity and the train diagram, although the capacity of a passenger train can be adjusted by decreasing the number of coaches of train set.
For estimating passenger train km, the intermediate value is adopted in period of the recession of traffic demand by considering the difficulty of its adjustment.
The passenger traffic demand will be variable by the process of economy, tariff, the highway construction, etc. but the future train km might be kept inside of the past time range as shown

in the fig. 7.5-3 according to the JICA demand forecast work.

Fig. 7.5- 3 Passenger Demand Forecast and Passenger Train Km



(1) Multiple regression analysis and the traffic share of road and railway

The train speed improvement efforts have resulted in the recovery of intercity passengers in various countries. Actual experience tell that, if the speed increases by 5 %, the passenger volume might increase also approximately 5 %.

Although there are many factors to induce passenger volume and share, tariff and speed are two main independent factors for passengers to use transport modes.

The multiple regression analysis is applied to the share data of BDZ depending on distance, speed and tariff of road and rail.

The acquired formulas by multiple regression analysis are shown in the following formula.

$$S_{road} = -\ 0.61130966 \times P_{road/rail} - 0.88016712 \times T_{road/rail} + 1.989338369$$

$$S_{rail} = +\ 0.61130966 \times P_{road/rail} + 0.88016712 \times T_{road/rail} - 0.989338369$$

$$(S_{road} + S_{rail} = 1)$$

Sroad: Share of road vehicle passengers

Srail: Share of railway passengers

Proad/rail: Price rate of Road by Rail = Proad/Prail

Troad/rail: Travel time rate of Road by Rail = Troad/Trail

(2) Share and volume by speed up

Table 7.5-1 shows the results of the calculation of applying the formula for the four cases of increase of travel speed of intercity trains by +5%, +10%, +15% and +20%.

The travel time of road, the price of road and the price of rail are kept same in this calculation. This result of calculation coincides with the actual experience and with the mathematics model.

In general, when railway will realize increase of train speed, competitors will also shorten the travel time or decrease the price rate. The data in the actual transportation market is showing approximately 1% increase of passengers in case of 1% train speed up.

Table 7.5- 1 Increase of railway passenger volume by speed up

	Decrease of travel time	Increase of Share %	Increase of Passenger %
In Case of Total	95%	3.74%	6.55%
	90%	7.90%	13.83%
	85%	12.55%	21.96%
	80 %	17.78%	31.11%

7.5.3 Track capacity for international trains

The percentage of actual train km operated to the train km programmed on train diagram is 52% in case of freight trains and 70% in case of passenger trains.

The freight train diagram has enough elasticity for replying the demand of customers and the passenger train diagram has a enough capacity for absorbing seasonal international passenger trains.

The operation of international trains is important for BDZ but the macro data shows that the track capacity and train diagram of BDZ will have an enough possibility.

The problem in the future strategy is requiring the endeavor of improving quality of trains which will attract the new demand to the BDZ train service from the view point of international competitiveness in the transportation market.

7.6 FUTURE TRAIN SYSTEM

7.6.1 System Change of Freight Train

A large amount of bulky freights is being transported by automobiles on roads. It shows that the latent demand for international freight transport through BDZ might be plenty. For absorbing that, the lack of satisfactory container terminals in Bulgaria is fatal.

The construction of CT (Seamless combined transportation system) is essential to Bulgaria where concentrate many international transportation routes.

The demonstration by constructing the CT junctions, like container terminals in nuclear cities,

might be indispensable for the international propaganda to show the will and capability of doing international transportation in Bulgaria.

7.6.2 Speed up of Passenger Trains

(1) Shortening of travel time and share increase

(Pilot project and test track)

Train speed up will be realized by line wise, by execution of test and by enough investment and time.

The step wise process will help the ascertain of the effect by speed-up projects and this will result in smooth execution of investment on shortening travel time of other line sections too.

The line section between Sofia and Plovdiv is selected as a pilot project of shortening the travelling time. For the beginning pilot project, it's necessary to place test track on the section between Sofia and Plovdiv.

The purpose of the test track will be the accumulation of technologies of related departments; signal, power supply, rolling stock, track etc. The accumulated technologies will enlarge the portion of domestic production of Bulgaria.

(Step of speed up)

The steps of speed-up projects until 2020 year might be classified as follows;

First step will be "shortening travel time by recovering the track condition", second step will be "improving the limitation of passing speed on switch from 100 km/h to 130 km/h" and third step will be "operation of 160 km/h pendulum train with light weight construction".

Above improvements should be executed step by step without ineffective investments.

The introducing period of 160 km/h should be selected at the appropriate period of changing deteriorated rolling stock by age.

(Way of switch improvement)

The switch improvement for realizing 130 km/h on the main line switches should be prepared 130 km/h for heavy weight locomotive trains and 160 km/h for light-weight pendulum trains. These faculties should be ascertained on a test track section by enough tests that are not only for the design of switch but also for the design of new pendulum train.

(Simulation and travelling time)

The effect estimation of each project of speed up should be done by simulating train running performance of the each project.

The travel time used for train time table is assumed by adding 5% to the calculated time for the sake of the necessary allowance of track maintenance, for diagramming of trains and for the elasticity of train control by drivers.

The travelling time is calculated for each project by simulating each performance of train

running. The calculated rates of passenger share increase are introduced in the following Table 7.6-1.

(Share and passenger volume)

The share estimation work is based on the travelling time that will be used for train diagram. The share calculation is concerning only on the share changing by travel time and by tariff rates of road and railway. The actual cases with more effective speed up should be evaluated by using "gravity model" or by more precise investigation data concerning the traffic volume. At the cases of super high-speed train operation, the augmentation of traffic volume might realize very big effect of two or three times passengers to the former operation.

Table 7.6- 1 Assumed Travel Time of New Express on Sofia-Plovdiv Section

Improvement of share of railway

	Improvement	Improvement	Improvement	Speed	Speed	1 stop	1 stop	1 stop
Project name	Coach	Track	Signal	Maximum	At switch	Railway speed up rate %	*Railway share	*Railway share up rate
Actual	Normal			130-120	100.00	1.00	0.71	100.00%
A	Normal	Improved		130	100.00	1.08	0.78	109.35%
B	Normal	*Partial		130	130.00	1.22	0.88	123.16%
C	Pendulum	*Partial	ATC	130	130.00	1.27	0.91	128.57%
D	Pendulum	*Partial	ATC	160	130.00	1.39	0.99	139.29%
E	Pendulum	*Partial	ATC	160	160.00	1.46	1.00	140.62%
F	Bullet light weight coach	*Partial	ATC	300	300.00	1.52	1.00	140.62%
G	Bullet light weight coach	Sofia-Septemvri	ATC	300	300.00	2.39	1.00	140.62%
H	Bullet light weight coach	All	ATC	300	300.00	2.60	1.00	140.62%

Shortening of travel time

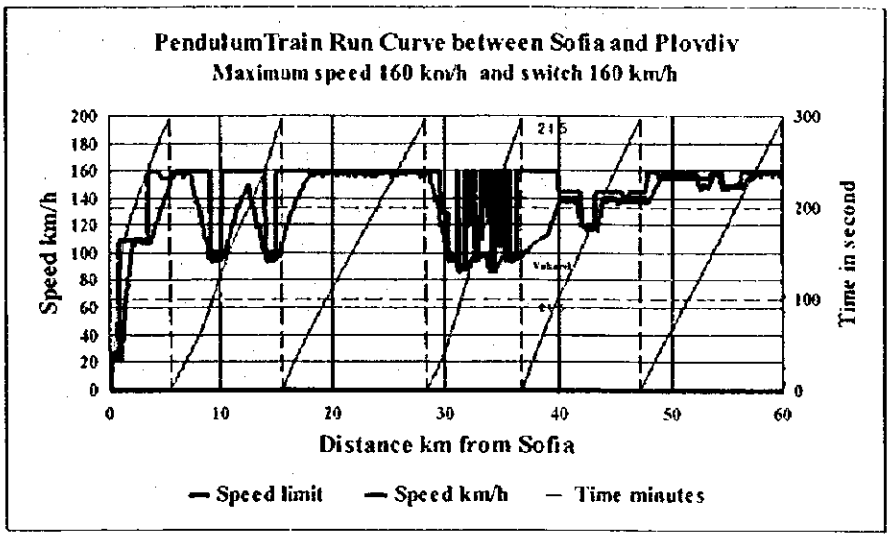
	Non stop		1 stop	2 stop
Case	Calculated travel time	*Travel time on train diagram	*Reduction rate of time	*Reduction rate of time
Actual	-	-	1(1hr57min.)	1(2 hr 0 min)
Case A	1 hour 39 min	1 hour 44 min	0.91	0.92
Case B	1 hour 28 min	1 hour 32 min	0.81	0.82
Case C	1 hour 24 min	1 hour 28 min	0.78	0.78
Case D	1 hour 16 min	1 hour 20 min	0.72	0.73
Case E	1 hour 13 min	1 hour 16 min	0.68	0.70
Case F	1 hour 6 min	1 hour 10 min	0.63	0.66
Case G	0 hour 39 min	0 hour 41 min	0.40	0.44
Case H	0 hour 36 min	0 hour 37 min	0.37	0.41

Note: Travel time on train diagram is calculated by adding 5% to simulated running time.
Note: Stopping time at intermediate station by project is assumed to be 1 minute 30 seconds.

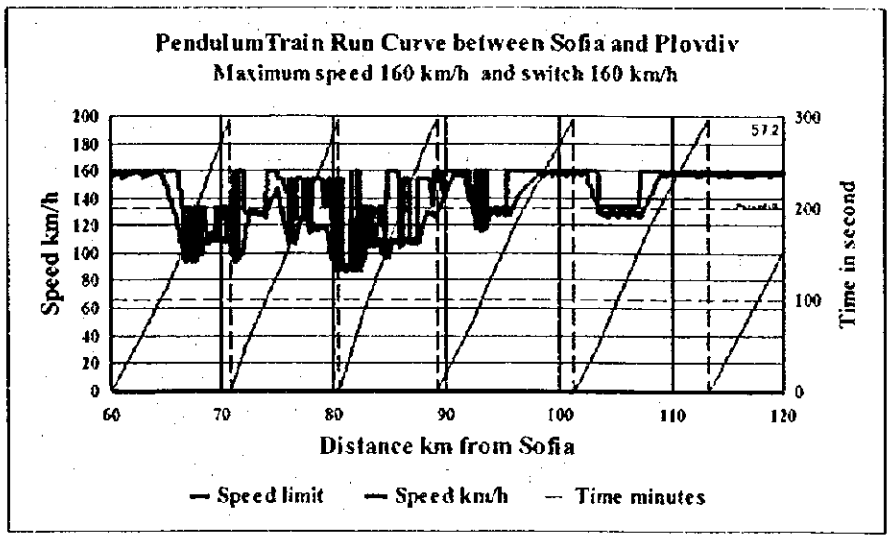
(2) **Running simulation of 160 km/h Pendulum train with switch of 160 km/h**

The project of 160 km/h pendulum train operation between Sofia and Plovdiv is selected in case of introducing 160 km/h high-speed turnouts at entrance and departure of main tracks.
Another big problem is the special speed restriction at 9-10 km and at 14-15 km sections. These two sections should be improved to be "without speed limitation", because the track curves are relatively good enough in these line sections.
The data in the figures of running simulation show the calculated minutes and the travel time used in the train diagram is assumed by adding 5% to the calculated time.

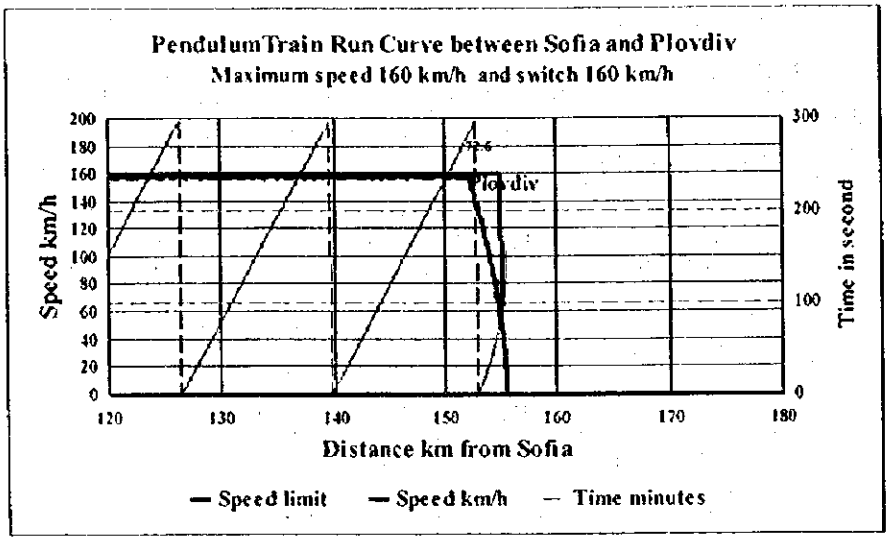
Fig. 7.6- 1 Running simulation of 160 km/h pendulum train
0 Km – 60 Km section



60 Km – 120 Km section



120 Km – 160 Km section



7.7 TRACK FACILITIES AND TRAIN OPERATION PLAN

Generally speaking, all track sections of BDZ lines might be enough as for the quantity, excluding No.8 line.

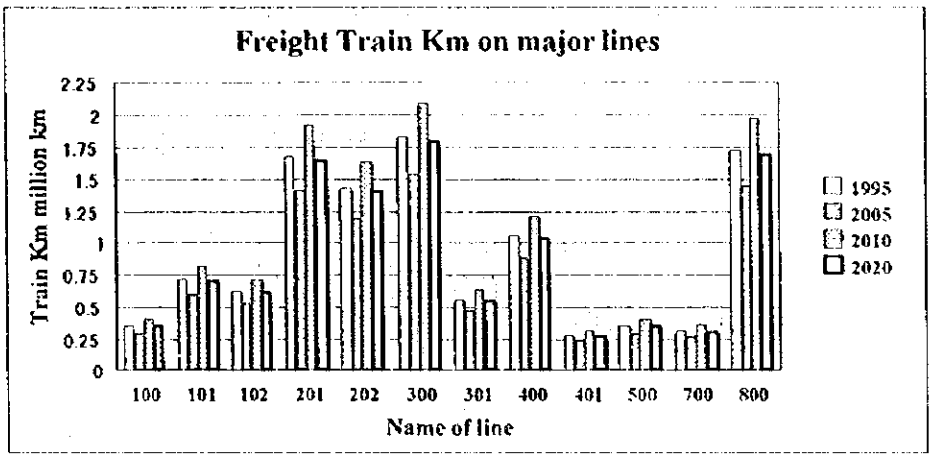
For increasing the quality of competitiveness of trains, the single-track sections of No. 1 line should be double-tracked. In future, the partial double track, and the electrification of international connection line sections will become important actions.

The improvement of signal system might become necessary on all sections considering the strategy of line improvement. Anyhow it is important to avoid the ineffective investment by checking all improvement projects.

7.7.1 Train Operation Program on Major Lines

In the fig. 7.7-1, the future train km on major lines is calculated by the results of the demand forecast of freight traffic and passenger traffic volume on each main line.

Forecast of freight train km



Forecast of passenger train km

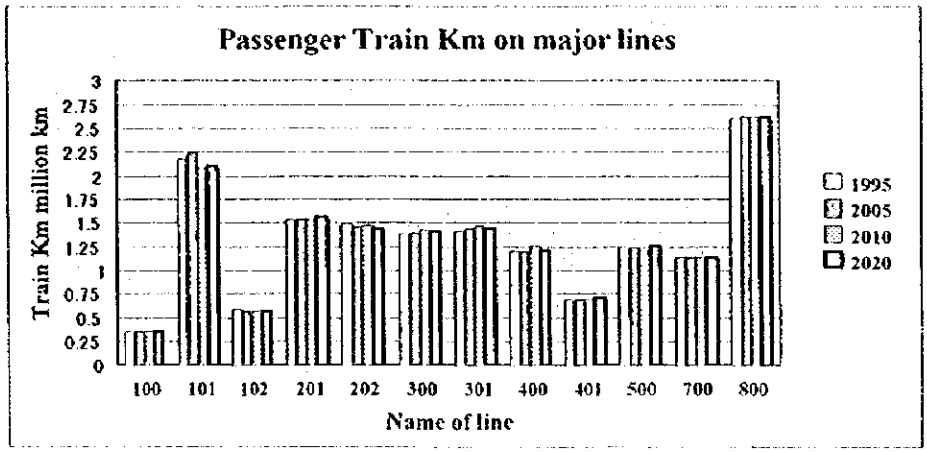


Fig. 7.7- 1 Transition of the train km of each major line

7.7.2 Necessity of completing double-tracking of No.8 line

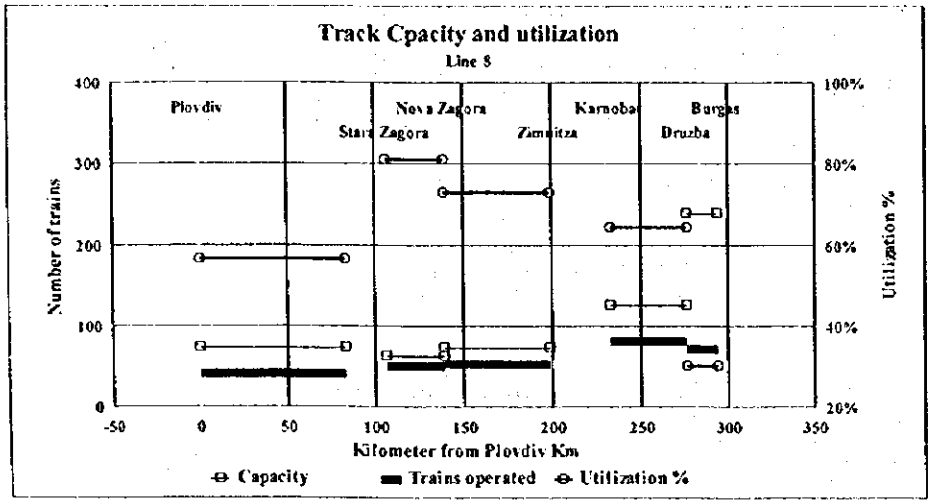
The importance of No.8 line, which connects internal cities of Sofia, Plovdiv, etc. to the important international port area at Black Sea, can be easily admitted in the Fig.7.7-1.

The No.8 line will keep its roll in future too.

The track capacity of No.8, partially single and double tracked, is saturated already. When the track capacity reaches more than 75%, the flexibility of train diagramming will be lost. The single-track sections of No.8 line reach 80% and 75% approximately.

For improving train quality, the speed up of passenger trains or introduction of direct block trains, this will require the entire double tracking the single section of No.8 line. This action will solve completely the bottleneck of related lines of No.1, No.3 and will lessen somehow the difficulty of train operation program on No.2 line too.

Fig. 7.7- 2 The sectional wise track capacity of No.8 line and the number of trains



This figure shows the saturation of track capacity at single tracked sections. The double track action will solve the total capacity of this line. The effect of improving the partial single-track sections might be highly appreciated in comparison with the inducing effect.

7.8 MAINTENANCE AND DEVELOPMENT OF FACILITIES AND ROLLING STOCK

7.8.1 Reinstatement of deferred maintenance

Proper maintenance of facilities and equipment is vital for the efficient management of railway industry. Otherwise, it is feared that it should invite disorder of train traffic as well as serious accidents, resulting in the loss of reliability of general public to the railway.

Investment for upkeep of facilities and rolling stock has been insufficient for the last decade, lagging behind the adequate timing of their renewal or replacement.

Reduced maintenance costs for the last decade are most likely to affect the regular train operation in future, which have been proved in other developing countries.

In the past, BDZ had offered comparatively good quality of train operation in terms of safety and on-time performance, and the good heritage should be maintained for future.

Therefore, the Study Team recommends that **the priority should be given to the reinstatement of deferred maintenance including strengthening or renewal of facilities in consideration of prospective lines' nature.**

This policy should be stressed also in view of the necessity to prepare for the efficient integration of the BDZ system into European railway system and for enhancement of technological levels required for it.

The Team took the liberty of picking up the following lines/sections for concentrating the investment for maintenance which account for 68% of BDZ network.

Line 1, Line 2, Line 3, Line 4, Line 5, Line 6 (excluding the section of Radomir to Gyushevo), Line 7, Line 8, Line 9, Line 82 (the section of Plovdiv to Karlovo), and Line 83.

7.8.2 Research and Development

The technical level of BDZ' staff is regarded as high and regulations are well observed.

The development and research activities have been undertaken so far despite the difficulties.

Features taken for example are " compensated chain catenary" on catenary system, testing software on rolling stock and so forth and they are proved and applied at site.

Their development-oriented mind should be kept in view of the prospective introduction of energy-saving and software-oriented equipment and facilities, especially for future high speed attempts.

RECOMMENDATIONS TO BDZ

For BDZ to comply with the Government policy intending to acquire a full membership in EU in due course, It is recommended in this concern that:

—BDZ would perform the **Accounting Separation** as soon as possible, preferably with the MIS getting ready for practical use (presumably in 2000), and shift to the **Organisational Separation** (at the latest by 2005), not only for the improved management of the railway activities (by which to proceed to the **Institutional Separation**), but also for finalising the disputes on the **Access Charge** by solid estimation of infrastructure cost of each activity of freight and passenger service. The amount of Access Charge can be decisive for the financial balance of the Railways.

—It is recommended to accelerate the implementation of the standard plan on a step by step basis, when the social/political conditions and economic growth, as well as the improvement of BDZ financial balance, evolve more favourably than planned.

BDZ should improve its financial position, not only to survive into future, but also to smoothly shift into the Institutional Separation before 2007.
It is recommended in this concern that:

1) As to **the revenue improvements,** stress should be placed on:
—Pricing:
As to the freight, rather aggressive tariff raises in earlier years before the Open Access and competition getting harder.
As to the passenger, positive fare raises in later years, according to the increase in GDP per capita;
—Increasing of Traffic:
As to the freight, strengthening of Seamless Combined Transport, while the Marketing/Sales organisation being renovated as soon as FIS is ready for practical use.
As to the passenger, shortening "end-to-end journey time" with effective use of current resources, while technical preparation for the future high speed intercity operation being made. It is advised that a pilot project put under Feasibility Study, selecting an appropriate section of a Main Line.

2) As to **the cost reduction**, stress should be placed on:
— Continued staff reduction targeting to achieve 23000 in 2020 from current 51000;

--- Improvement of the incentive system and training programs;
--- Efforts to reduce/abolish services on certain light density traffic lines.

3) **The financial independence of passenger service** should be achieved by all means, promoting profitable activities and abandoning the deficitary ones.

APPEAL TO THE GOVERNMENT

The Government is already drafting the legislation for adapting the Bulgarian transport policies to those of EU, the Open Access, to begin with.
BDZ will undergo structural changes to implement these policies, the Separation of Infrastructure and Operation to begin with.
The steps to be taken in this regard should be closely coordinated and synchronised, so that the shift of this country into the European market economy might be successful.
The timing of Bulgarian membership in EU was provisionally assumed to be in 2007, based on the discussion in Steering Committee held 24/9/97.
The EU policy to revitalise the railway mode costs expensive for the member governments, but without it, the total transport would cost the more expensive for the societies considering the external costs. This is the underlying notion of the EU policy.
The Government should clearly take this into account and implement the financial measures to activate this transport system change. It is appealed to the Government in this concern that:

1) The Government should, in the said legislation, to clearly stipulate:
— The financial responsibility of the Government, from the moment of Open Access, as to the entire maintenance and development costs of the railway infrastructure, in the same manner as it has been responsible as to the road, sea/air ports.
— The long term investment plan which should be formulated in cooperation with Railway Infrastructure Manager. The plan should include, amongst all, the reinstatement of the normal level of railway maintenance which has been suppressed during the past decade. The plan should also include governmental investments to keep the competitivity among the modes, so that the characteristics of each mode would contribute to the total efficiency of the national transport.
— The concept of the railway Access Charge to be imposed on the licensees.

2) The Government should clarify and implement the notion of the Road User Charge. The road users should be imposed this new charge to equilibrate the burdens between the two modes. The Government would evaluate the external cost of each mode and reflect the result in determining the both charges,

3) The Government should pay all the efforts to make the BDZ' passenger service financially independent. The structure where the freight service cross-subsidises the passenger service, cannot be long maintained under the new regime.
Supporting the BDZ' efforts to increase the passenger revenue, the Government should:
— Fully compensate the passenger PSO;

-- Take initiative in reducing, abolishing the services of light density traffic lines;
-- Shelve a part of the debt of the Passenger Unit/Company to the Government, prior to the Institutional Separation, and rearrange the terms and conditions of the repayment of the said debt, so that it might be less heavy for this weak Unit.

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