Appendix 4.2.6.1 Discount Rate of Seasonal Ticket of Bus Company

(1) Seasonal Ticket

The discount rates for students and workers for public bus company are 40% and 15% respectively. The details are as follows.

[Upper Egypt]

Type of Job	Validity Period (Month)	Dicopunt Rate(%)	Method of Payment	Fee for Issuance(LE)
Student	Sep. ~ June(10)	40	Advance Payment	5
Worker	3	15	Advance Payment	5
	6	15	Advance Payment	5
	9	15	Advance Payment	5
	12	15	Advance Payment	5

Note: 1.Ticket for workers is issued to workers whose salary per month less than 100LE.
2. Fee for issuance is refunded after expiring of the validity period.

[Middle Delta]

Type of Job	Validity Period (Month)	Dicopunt Rate(%)	Method of Payment	Fee for Issuance(LE)
Student	Sep. ~ June(10)	40	Payment by Trip	7
Worker	3	15	Payment by Trip	7
	6	15	Payment by Trip	7
	9	15	Payment by Trip	7
	12	15	Payment by Trip	7

[West Delta]

Type of Job	Validity Period (Month)	Dicopunt Rate(%)	Method of Payment	Fee for Issuance(LE)
Student	Sep. ~ June(10)	40	Payment by Trip	4~5
Worker	3	15	Payment by Trip	4~5
	6	15	Payment by Trip	4~5
	9	15	Payment by Trip	4~5
	12	15	Payment by Trip	4~5

[East Delta]

Type of Job	Validity Period (Month)	Dicopunt Rate(%)	Method of Payment	Fee for Issuance(LE)
Student	Sep. ~ June(10)	40	Payment by Trip	7
Worker	3	15	Payment by Trip	7
	6	15	Payment by Trip	7
	9	15	Payment by Trip	7
	12	15	Payment by Trip	7

(2) Other Types of Discount

The following is common to all bus companies.

1) Normal and Express

a. Free ticket for the Governmantal officials like policeman, police officials and veteran.
Maximum limit to ride per bus is 6 passengers.

b. Free ticket for the Governorate officials for each bus compny is issued.
Maximum limit to ride per bus is 6 passengers.

c. Free ticket is issued for employee of Cairo Transportation Authority(CTA).
Maximum limit to ride per bus is 2 passengers.

Maximum limit of all passengers with free tickets is 6 passenger.

10% is added to the number of passengers with normal tickets to include the the number of free tickets (about 6 tickets for each bus will be added to the total number tickets for a bus with 52 seats).

d. Discount rate for blind people his guide is 50% respectively.

e. Discunt rate for children less than 12 years old is 50%.

(Ref: One ticket without photo is issued for group of passenger for specified line with no discount)

2) Air Conditioned Bus

a. Discount rate for police officials is 50%.
Maximum limit to ride per bus is 2 passengers.

b. Free ticket is issued for employee of other bus company.
Maximum limit to ride per bus is 2 passengers. Passenger must show I/D card issued by the Holding Company.

c. Discount rate of press men and judges is 50%. Ticket is issued according to

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre-viation
1	1	3003	50524	3	219	M	F	Ry coil broken	RY
2	2	3009	51221	3	239	D(Z)	F	Unknown defect, after OK	NDFT
3	3	3020	50729	18	1133	D(A)	K	Engine sudden stop	ESTP
4	4	3021	50406	18	2	Ma	BD	Air cct failure	BS
5	5	3022	40412	18	1166	DB	BD	Bad fixation of CP	FXBT
6	6	3025	40819	18	956	Ax	BD	Oil pipe to LR choked	OP
7	7	3032	40419	18	1249	F	BD	Water pipe gasket damage	WGT
8	8	3032	40424	18	1249	Z	BD	Piston head crack	EPST
9	9	3039	51104	17	1192	Z	BD	CP connecting rod broken	RDCP
10	10	3040	51220	17	1180	F	BD	PCS (pneumotic control switch) defect	BSSP
11	11	3041	40615	17	1229	Me	BD	Fan #2 defect	FN
12	12	3041	51024	17	1229	D(Me)	BD	CB for supercharger oil lubricating pump motor open	OPM
13	13	3042	40522	17	1304	A	BD	Oil leak from pipe	OP
14	14	3047	51217	17	1395	F	BD	Injector plunger get out due to bad fixation	FXBT
15	15	3048	40502	17	1331	Ax	BD	Axle box damage	BGAX
16	16	3052	51122	15	681	-	BD	Weak field resistor OH	Z
17	17	3054	40505	15	1371	F	BD	Wire disconnected to fuel pump motor	FXC
18	18	3054	50205	15	1371	Ax	BD	Water leak due to cooling water gasket damage	WGT
19	19	3056	41019	15	1284	DB	BD	CP damaged	BSCP
20	20	3058	41210	15	1424	A	BD	Battery low voltage	BTLV
21	21	3061	40510	15	1533	F	BD	Main generator carbon consumed	BUMG
22	22	3062	40807	15	1287	D(Z)	BD	CB trips	CB
23	23	3067	40611	15	1444	Z	BD	Water OH due to water shortage, even fan no good condition	SFOW
24	24	3070	50505	15	1408	A	BD	TM cover drop out, but immediately after recovered	FXBT
25	25	3070	51104	15	1408	T	BD	No speed	NSP
26	26	3071	40504	15	1489	Me	BD	No traction power	NSP
27	27	3072	50805	15	1452	F	BD	TM cable damage and earth	GD
28	28	3072	50813	15	1452	-	BD	TM cct earth due to cable damage	GD
29	29	3073	41115	15	1300	F	BD	Shaft between engine and CP broken	RDCE
30	30	3074	50210	15	1623	D(Me)	BD	Air pressure drop	BS
31	31	3076	50510	14	1693	-	BD	Washer damage inside of load regulator	LR
32	32	3079	50916	14	1564	DB	BD	TM main field cable cutted off	TM
33	33	3080	40402	14	1631	Me	F	Brake action delay due to air cock drain	BSDR
34	34	3080	40809	14	1631	F	F	Horn defect	HR
35	35	3080	50507	14	1631	A	F	TM cover missing (one stone inside)	FXBT
36	36	3080	50902	14	1631	-	F	TM earth	TMGD
37	37	3080	50920	14	1631	A	F	Air pressure drop	BS
38	38	3080	51109	14	1631	DB	F	Crank shaft metal OH	ECR
39	39	3081	40407	14	2045	F	F	Cable supporter damage	Z
40	40	3082	40616	14	2985	Me	F	CB open due to supercharger oil pump motor over load	OPM
41	41	3082	50215	14	2985	-	F	Wheel slip registor cutted off	Z
42	42	3082	51116	14	2985	DB	F	Aux. generator flange broken due to misfixation	FXBT
43	43	3082	51225	14	2985	DB	F	Aux. generator defect due to bad maintenance	AG
44	44	3083	40421	14	2029	F	F	Wire terminal connected to voltage regulator damage	FXC
45	45	3083	40425	14	2029	D(Me)	F	Exhaust valve damage	EEXH
46	46	3083	50112	14	2029	-	F	Voltage regulator defect due to 160A fuse off	Z
47	47	3083	50116	14	2029	-	F	Condenser damage	Z
48	48	3083	50505	14	2029	F	F	Voltage regulator wire short cct	Y
49	49	3083	50825	14	2029	UI	F	Crank shaft crack	ECR
50	50	3084	40806	14	2161	F	F	Cable OH to alternator due to bad connection	FXC
51	51	3085	41217	13	1848	F	F	Cooling fan cable melt due to loose connection	FXC

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot In Charge	Cause or Remarks	Abbre-viation
52	52	3086	40525	13	1980	F	F	Module (VR) defect	MDL
53	53	3086	50116	13	1980	F	F	160A fuse off for battery charging cct	BTCT
54	54	3088	50715	13	2048	Me	F	Governor plunger get off	EGPT
55	55	3088	50819	13	2018	A,F	F	Module (RB13) defect	MDL
56	56	3090	40412	13	2001	A	F	CP gasket damage	BSGT
57	57	3090	40513	13	2001	D(Me)	F	Fuel motor fuse off	FUPM
58	58	3090	41108	13	2001	D(F)	F	Load regulator resistor broken from begining	LR
59	59	3090	51022	13	2001	D(Me)	F	ATC defect	ATC
60	60	3091	40919	12	2007	A	F	Oil leak due to piston crack	EPST
61	61	3091	50105	12	2007	F	F	#7 cylinder test valve failure	ETV
62	62	3091	50118	12	2007	DB	F	Governor driving gear between engine and governor wear	GRGV
63	63	3091	50125	12	2007	A	F	Test valve (8) damage	ETV
64	64	3091	50313	12	2007	F	F	Starter motor wire damage	STM
65	65	3091	50613	12	2007	DB	F	Alternator field cable disconnected	FXC
66	66	3092	50314	12	2155	T	F	Exhaust valve and piston damage due to lash adjuster damage	ELAD
67	67	3093	50125	12	2079	F	F	Cooling fan (2) temperature switch failure	SSW
68	68	3093	51006	12	2079	A	F	Air magnet valve for air brake defect	BSBV
69	69	3095	40612	10	1548	Me	F	Piston head #7 crack	EPST
70	70	3095	41113	10	1548	Ax	F	Air cct defect from begining	BS
71	71	3095	50214	10	1548	A,F	F	#2 Fan damage and repaired	FN
72	72	3095	50530	10	1548	F	F	Water OH due to elbow crack to cylinder	EP
73	73	3095	50812	10	1548	F	F	Oil leak from engine due to oil pressure valve defect	EOPV
74	74	3095	51109	10	1548	Ax	F	Air choked at air cock due to air cock broken	BSP
75	75	3096	50105	10	1873	DB	F	Cooling fan motor burn	FN
76	76	3097	40626	10	1543	Ax	F	Short ctt of controller sw.	SSW
77	77	3097	50128	10	1543	A	F	Internal high pressure due to exhaust valve broken	EBXH
78	78	3097	50401	10	1543	Ax	F	Oil collector reservoir cover loose fixation	FXBT
79	79	3098	41016	10	1835	Me	F	No speed up	NSP
80	80	3098	50102	10	1835	D(F)	F	Air leak due to main air pipe bad fixation	FXBT
81	81	3098	50301	10	1835	D(Me)	F	Wheel flat of both bogie	TFT
82	82	3098	50814	10	1835	DB	F	TM bearing locked	BGTM
83	83	3099	51023	10	1654	F	F	Oil pump motor defect due to short brush	BHOP
84	84	3100	40404	10	1362	F	F	Governor oil pipe cutted off	OP
85	85	3100	41213	10	1362	UI	F	Governor plunger trip due to oil leak from governor	EGV
86	86	3100	50120	10	1362	T	F	Fuel cct failure	FLCT
87	87	3100	50601	10	1362	A	F	CB defect for train lighting (reset impossible)	CB
88	88	3100	51003	10	1362	DB	F	CP flange fix bolt crack due to bad fix	FXBT
89	89	3100	51011	10	1362	D(Me)	F	Air drop, but loco good	NDFT
90	90	3102	51117	10	1815	DB	F	Wheel flat	TFT
91	91	3104	40502	10	1745	F	F	Water leak at cylinder #9	ECY
92	92	3106	41206	10	1327	F	F	Supercharger oil filter gasket broken from begining	ESGT
93	93	3106	41226	10	1327	-	F	Coupler terminal short cct due to coupler cover broken by stone	X
94	94	3107	50613	10	1820	DB	F	Fan motor earth and burn	FN
95	95	3108	41028	10	1486	DB	F	Temperature sw. of fire alarm system defect	FRS
96	96	3108	50421	10	1486	F	F	Starting cct failure	STCT
97	97	3109	40527	10	1743	T	F	Governor no work	EGV
98	98	3109	40920	10	1743	DB	F	Contactor OH	CTT
99	99	3109	41113	10	1743	F	F	Smoke and flame from exhauster due to exhaust valve broken	EBXH
100	100	3110	40513	10	1888	Ax	F	Water leak from water pump due to gasket damage	WGT

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre-viation
101	101	3110	41105	10	1888	UI	F	Oil leak due to defect of governor	EGV
102	102	3111	40906	10	1508	DB	F	LR defect	LR
103	103	3111	41210	10	1508	DB	F	Gear device wear between engine and starter	GRES
104	104	3112	50615	10	1876	A	F	Air cct defect	BS
105	105	3112	50809	10	1876	Ax	F	Supercharger shaft broken	ESRD
106	106	3113	40825	10	1759	Ax	F	CP valve (#2) broken	BSCP
107	107	3113	41224	10	1759	F	F	Engine test valve damage	ETV
108	108	3114	40820	10	1886	D(F)	F	Fire alarm defect	FRS
109	109	3114	40901	10	1886	F	F	TM earth	TMGD
110	110	3114	41101	10	1886	-	F	Air leak due to loose connection of air reservoir and pipe	FXBT
111	111	3114	41128	10	1886	UI	F	Load regulator defect	LR
112	112	3114	50320	10	1886	F	F	Fire from engine and main generator	FR
113	113	3114	50811	10	1886	DB	F	All traction cct earth	GD
114	114	3115	40405	10	1497	DB	F	Cooling fan cable OH	FN
115	115	3116	41103	7	1456	F	F	Cable melting to aux. generator due to bad connection	FXC
116	116	3116	50115	7	1456	F	F	Piston (10) damage due to internal high pressure	EHP
117	117	3117	41119	7	25	F	F	Fuel cct defect due to something in fuel tank	FLCT
118	118	3117	50604	7	25	F	F	Governor plunger get out due to water over heat	WOH
119	119	3118	41209	7	1734	Me	F	Supply fuel due to no fuel from begining	SFOW
120	120	3118	50807	7	1734	DB	F	TM bearing locked	BGTM
121	121	3123	40603	14	1771	F	BD	Aux. generator flange fix bolt cutted off	FXBT
122	122	3123	40919	14	1771	D(T)	BD	Engine no work due to FP-ES defect	FPES
123	123	3123	50804	14	1771	T	BD	Fuel shortage	SFOW
124	124	3127	40517	14	1650	-	BD	Ry open	RY
125	125	3127	40524	14	1650	F	BD	Horn defect	HR
126	126	3130	40410	14	1590	DB	BD	Oil pipe choked	OP
127	127	3133	51003	13	1790	F,Me	BD	Starter motor earth	STM
128	128	3136	50924	13	1855	F	BD	CP shaft broken	BSCP
129	129	3137	50608	13	1826	Ax	BD	Air reservoir drain remained	BSDR
130	130	3140	41007	13	1757	F	BD	Governor cable fire due to bad connection	FXC
131	131	3141	50114	13	1516	D(T)	BD	Fuel pump motor fuse off	FLPM
132	132	3141	50718	13	1516	F	BD	Head light resistor socket damage	HL
133	133	3144	41113	13	1715	M	BD	Water leak from cylinder liner due to screw bolt broken	ECYL
134	134	3144	50121	13	1715	F	BD	ATC failure due to dirty magnetic valve	MV
135	135	3144	50302	13	1715	Z,Ma	BD	CP gasket damage	BSGT
136	136	3146	41023	13	1797	A	BD	Loco no braking due to bad preparation	INSP
137	137	3149	41110	13	1828	F	BD	Main generator carbon wear due to bad surface condition of slip ring	MG
138	138	3150	41217	13	1813	-	BD	Governor socket defect	EGV
139	139	3151	50204	13	1584	-	F	CB no work for deadman device	CB
140	140	3151	50513	13	1584	-	F	CB open due to defect	CB
141	141	3151	50817	13	1584	F	F	TM cable earth	GD
142	142	3151	50908	13	1584	-	F	Fan defect	FN
143	143	3154	41115	13	1941	DB	F	Load regulator defect due to loose connected bolt	FXBT
144	144	3154	50315	13	1941	DB	F	Fan motor no rotate	FN
145	145	3154	50409	13	1941	DB	F	Injector disconnecting lever fixing pin get out due to bad fixation	FXBT
146	146	3154	50617	13	1941	F	F	Test valve internally damage	ETV
147	147	3154	50807	13	1941	A	F	Test valve damage	ETV
148	148	3156	40805	13	2032	DB	F	Fuel pump defect	FLPM
149	149	3156	41013	13	2032	D(F)	F	Bad fix of fire alarm socket	FXSK
150	150	3156	50107	13	2032	Ax	F	CP high pressure side gasket damage	BSGT

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre-viation
151	151	3156	50222	13	2032	D(Z)	F	Dirty air reservoir	BSDT
152	152	3156	50514	13	2032	F	F	Wire cutted off in ATC terminal	FXC
153	153	3157	40617	13	2022	F	F	Aux. generator 63A fuse off due to over load	AG
154	154	3157	50610	13	2022	Me	F	Wire to temperature switch of cooling fan burn due to bad fixation	FXC
155	155	3157	50611	13	2022	F	F	Starting cct contactor defect	CTT
156	156	3157	51011	13	2022	F	F	Test valve defect	ETV
157	157	3157	51013	13	2022	Ax	F	Air leak due to pipe crack near CP	BSP
158	158	3158	40407	13	1796	Z	F	Side glass of governor broken	EGV
159	159	3158	40626	13	1796	A	F	FPES damage	FPES
160	160	3158	40810	13	1796	T	F	Water OH	WOH
161	161	3158	50220	13	1796	D(Ax)	F	Governor oil shortage, but no defect	NDFT
162	162	3158	51015	13	1796	Tb	F	TM cct earth	GD
163	163	3158	51228	13	1796	Ax	F	Water leak from pipe gasket	WGT
164	164	3159	40419	13	1952	Ax	F	No defect	NDFT
165	165	3159	40524	13	1952	A	F	Governor oil plunger trips	EGPT
166	166	3159	41023	13	1952	F	F	CP head gasket broken	BSGT
167	167	3159	41106	13	1952	D(F)	F	Engine overspeed lever and low oil plunger trip (engine over speed)	EOS
168	168	3160	50521	13	1904	D(Me)	F	Air cct choked	BS
169	169	3160	51101	13	1904	D(Z)	F	Magnet valve defect	MV
170	170	3161	40519	13	1859	A	F	Water leak from water pump gasket	WGT
171	171	3161	50823	13	1859	DB	F	Supercharger shaft broken	ESRD
172	172	3162	50424	13	1629	Z	F	Test valve failure	ETV
173	173	3163	40508	13	1827	A	F	Main generator ground	MG
174	174	3163	50409	13	1827	T	F	Governor oil exchange	SFOW
175	175	3164	41005	13	1959	F	F	Main generator cable short cct	Y
176	176	3164	50702	13	1959	D(F)	F	Air hose bad fixation	FXRH
177	177	3165	50211	13	1429	-	F	CDR Ry damage	RY
178	178	3165	50521	13	1429	Z	F	Air reservoir inside dirty	BSDT
179	179	3165	50726	13	1429	A	F	Earth	GD
180	180	3167	50226	13	2217	UI	F	Rear bogie link damage due to bad connection	RDFX
181	181	3167	50907	13	2217	-	F	Ry coil open	RY
182	182	3168	40505	13	1831	-	F	Driving rod to aux generator cutted off	RDAG
183	183	3168	40527	13	1831	F	F	Fuel motor carbon spring lost	BHFM
184	184	3168	50603	13	1831	F	F	Fire detection device defect	FRS
185	185	3168	50711	13	1831	A	F	Air pipe connecting flange nut loose	FXBT
186	186	3168	51112	13	1831	F	F	Water OH due to fan motor cable defect	FN
187	187	3169	40419	13	1981	F	F	No defect	NDFT
188	188	3169	40421	13	1981	Me	F	FP-ES damage	FPES
189	189	3169	40611	13	1981	F	F	10A fuse bad fix	FXFU
190	190	3169	50304	13	1981	DB	F	Aux. generator failure due to binding wire broken	AGBW
191	191	3169	50416	13	1981	F	F	OH of connecting rod bearing to engine	BGRD
192	192	3169	51102	13	1981	DB	F	Cooling fan locked due to bearing crack	BGFN
193	193	3170	50720	13	2233	DB	F	Alternator cable fire due to bad connection	FXC
194	194	3172	41008	7	1647	D(A)	F	No speed up	NSP
195	195	3172	41122	7	1647	A	F	Water leak from water pump	WGT
196	196	3172	50310	7	1647	F	F	Piston head cover crack	EPST
197	197	3172	50517	7	1647	DB	F	Cylinder liner broken	ECYL
198	198	3172	50921	7	1647	UI	F	Governor plunger get out	EGPT
199	199	3172	51209	7	1647	DB	F	TM damage due to binding wire broken	TMBW
200	200	3174	41103	7	1733	A	F	Air leak from #2 cabin	BS
201	201	3174	50708	7	1733	A	F	Water leak from CP cooling pipe	BSP
202	202	3174	50721	7	1733	F	F	Oil leak due to CP rubber hose broken	BSRH
203	203	3175	40401	7	1620	A	F	Governor socket no good fixed	FXSK
204	204	3175	51206	7	1620	DB	F	Aux. generator brush holder spring get out	BHAG
205	205	3176	50721	7	1639	Ax	F	Governor oil leak	EGV
206	206	3176	50915	7	1639	A	F	Test valve crack	ETV

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot In Charge	Cause or Remarks	Abbre-viation
207	207	3177	40414	7	1666	D(Ax)	F	Bad connection of fire alarm socket	FXSK
208	208	3177	40807	7	1666	F	F	Exhaust valve broken, due to piston crack	EPST
209	209	3177	41115	7	1666	DB	F	Fuel pump motor defect	FLPM
210	210	3177	41201	7	1666	DB	F	Supercharger defect from begining	ES
211	211	3178	41001	7	1751	F	F	Brush bad fixation and earth	FXBH
212	212	3178	41102	7	1751	Me	F	Water leak from water pump due to gasket	WGT
213	213	3178	41201	7	1751	F	F	TM field excitation cable melt due to bad connection	FXC
214	214	3179	40801	7	1600	F	F	Water OH	WOH
215	215	3179	40813	7	1600	F	F	Smoke from upper deck 3 covers of engine	EFR
216	216	3179	40926	7	1600	F	F	Oil leak from oil tank	OP
217	217	3179	50119	7	1600	DB	F	Wheel locked due to bearing damage	BGAX
218	218	3179	50209	7	1600	A	F	Fuel pump motor brush wear	BHFM
219	219	3179	50316	7	1600	F	F	Fuel motor brush spring get out	BHFM
220	220	3179	50406	7	1600	F	F	Fuel pump motor carbon brush wear	BHFM
221	221	3180	50217	7	1518	D(F)	F	Train speed irregular but after inspection OK	NDFT
222	222	3180	50417	7	1518	DB	F	Fan burn due to fixing bolt broken	FXBT
223	223	3181	40911	7	1635	D(F)	F	Engine sudden stop	ESTP
224	224	3181	41004	7	1635	-	F	Ry (QR) coil open	RY
225	225	3181	41204	7	1635	F	F	Governor plunger often trip	EGPT
226	226	3181	50924	7	1635	UI	F	Water OH	WOH
227	227	3182	41104	7	1601	F	F	FP-ES spring damage	FPES
228	228	3182	50615	7	1601	D(A)	F	Braking cct defect	BS
229	229	3182	50817	7	1601	Ax	F	Link of brake shoe out of position, later	FXZ
230	230	3183	40804	5	1266	F	F	Loco no power	NSP
231	231	3184	41101	5	1224	DB	F	Crank shaft bearing OH	ECR
232	232	3184	50714	5	1224	D(Ax)	F	Engine OH	EOH
233	233	3185	40923	5	1301	F	F	No oil in driving gear box	TMGB
234	234	3188	50611	5	1304	D(F)	F	250A fuse off due to bad fuse	Z
235	235	3201	41104	12	2029	T	F	Starter motor defect	STM
236	236	3202	40818	12	2090	F	F	Bogie oil dumper damage	Z
237	237	3202	40914	12	2090	F	F	Deadman device MVopen and engine no power	DMS
238	238	3202	50711	12	2090	F	F	Fan motor base crack	FN
239	239	3204	41127	12	2156	A	F	CP defect	BSCP
240	240	3204	50727	12	2156	F	F	Governor plunger get out	EGPT
241	241	3205	41216	12	2164	D(F)	F	No speed from begining but no defect	NDFT
242	242	3205	51121	12	2164	F	F	False indication of fire	FRS
243	243	3206	40408	12	2114	D(Me)	F	Air leak sound in #2 cabin	BS
244	244	3206	51030	12	2114	UI	F	Alternator wiring break down due to bad fixation	FXC
245	245	3207	41204	12	2095	F	F	Air leak from driver's brake valve	BSBV
246	246	3207	50325	12	2095	F	F	Fuel pump motor brush spring get out	BHFM
247	247	3207	50612	12	2095	M	F	Crank bearing OH	BGCR
248	248	3208	50113	12	2038	F	F	Water OH indication	WOH
249	249	3208	50917	12	2038	F	F	Load regulator flange not fixed	FXBT
250	250	3208	51228	12	2038	-	F	FCS defect	BSSP
251	251	3209	40510	12	2218	F	F	Wire disconnected to fuel pump motor	FXC
252	252	3210	40405	12	1715	Ax	F	Air leak due to loose connection of valve	FXBV
253	253	3211	50413	12	2110	F	F	Cooling water elbow for cylinder liner holed	WP
254	254	3211	50528	12	2110	F	F	Lubricating oil filter gasket damage	OGT
255	255	3211	50706	12	2110	F	F	High voltage cable earth	GD
256	256	3211	50723	12	2110	DB	F	Wheel locked	BGAX
257	257	3212	40809	12	1949	DB	F	Governor driving gear defect	GRGV
258	258	3212	51014	12	1949	DB	F	CB for oil motor open due to wire short cct	Y
259	259	3213	40910	11	2025	F	F	Cable melt due to loose connection	FXC
260	260	3213	51203	11	2025	A,F	F	Battery pole melt	FXC
261	261	3215	41008	11	2161	F	F	Flange of aux. generator broken	FXBT
262	262	3216	41106	11	2036	Me	F	CP high pressure side air gasket broken	BSGT

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre-viation
263	263	3216	50520	11	2036	T	F	Exhaust valve damage due to lash adjuster	ELAD
264	264	3216	50703	11	2036	Ax	F	Oil leak due to no oil inlet cover	FXZ
265	265	3216	50921	11	2036	F	F	TM cable joint part spark	FXC
266	266	3217	40804	11	1984	D(Me)	F	Control cct box sw. defect	SSW
267	267	3217	40819	11	1984	A	F	FPES damage	FPES
268	268	3218	41216	11	1756	DB	F	Connecting rod and crank pin off due to cylinder liner and gear broken	ECYL
269	269	3218	51007	11	1756	DB	F	TM cct earth and Module (feed back) defect	GD
270	270	3219	40926	11	2004	F	F	Water Oil due to fan damage	FN
271	271	3219	41010	11	2004	F	F	CB arc chute bad fix	FXZ
272	272	3220	50612	11	1994	F	F	Battery pole melt	FXC
273	273	3220	51204	11	1994	F	F	Crank case pressure lower due to piston oil cooling pipe broken	EP
274	274	3221	40506	11	1911	A	F	ATC defect	ATC
275	275	3221	40622	11	1911	F	F	Fan motor fuse off	FN
276	276	3221	40921	11	1911	D(F)	F	Reason unknown	U
277	277	3221	40925	11	1911	D(Me)	F	Automatic brake valve defect	BSBV
278	278	3221	50123	11	1911	D(F)	F	10A fuse off for fuel pump motor	FLPM
279	279	3222	40824	11	1274	F	F	Starter motor no work due to shaft bending	STM
280	280	3222	50119	11	1274	F	F	Internal high pressure	EHP
281	281	3224	41023	11	1322	Ax	F	Earth and water leak due to bad inspection	INSP
282	282	3225	50624	11	1199	DB	F	No speed up	NSP
283	283	3225	50915	11	1199	-	F	Ry. coil open	RY
284	284	3226	50207	11	928	A	F	TM blower duct dropped on bogie due to bad fixation	FXBT
285	285	3226	50221	11	928	A	F	CP air pipe flange crack	BSP
286	286	3226	51012	11	928	-	F	Ry (ER) open	RY
287	287	3227	50119	11	1104	D(F)	F	#1 cab air pressure abnormal	BS
288	288	3227	50421	11	1104	M	F	Cylinder liner crack	ECYL
289	289	3227	50504	11	1104	A	F	Water leak from water pump due to gasket damage	WGT
290	290	3227	51224	11	1104	Ma	F	Oil shortage in CP	SFOW
291	291	3228	50108	11	1073	D(Ma)	F	Loco break down	NSP
292	292	3228	50202	11	1073	D(F)	F	Generator cable melt due to loose connection	FXC
293	293	3228	51208	11	1073	A	F	Oil leak from CP	BSCP
294	294	3232	50201	11	1020	DB	F	Fuel pump wedge wear	FLPM
295	295	3232	50605	11	1020	DB	F	TM roller bearing locked	BGTM
296	296	3232	51118	11	1020	F	F	Test valve defect	ETV
297	297	3233	40512	11	1169	Ax	F	Main reservoir side cover lost due to bad fixation	FXBT
298	298	3234	40614	11	899	Me	F	Battery charging 250A fuse off	BTCT
299	299	3234	50205	11	899	F,Z	F	CP bearing broken due to corrosion	BGCP
300	300	3236	40911	11	1065	Z	F	Oil pipe crack	OP
301	301	3236	50309	11	1065	D(T)	F	Air cct failure	BS
302	302	3237	41021	11	903	UI	F	Crank pin and bearing damage due to misalignment of CP and main generator	FXAM
303	303	3238	40922	11	1023	Me	F	Battery low voltage	BTLV
304	304	3238	50904	11	1023	Ma	F	Water shortage	SFOW
305	305	3239	40405	11	794	T	F	CB defect	CB
306	306	3240	50727	11	1222	UI	F	No speed up	NSP
307	307	3240	50906	11	1222	F	F	Fuel choked	FLCT
308	308	3242	50818	19	1430	Ax,Ma	F	Horn damage	HR
309	309	3244	50920	19	1509	UI	F	Loco no move for both direction	NSP
310	310	3245	50503	19	1515	Ax,Me	F	Temperature switch terminal spark due to bad connection	FXC
311	311	3246	40904	19	1306	D(Me)	F	Wheel flat	TFT
312	312	3252	41020	19	1680	DB	BD	Aux. generator shaft broken in both side	RDAG
313	313	3253	50308	19	1788	F	BD	Cylinder head stud broken	FXBT

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre-viation
314	314	3264	41204	18	1653	T,F	BD	Fuel injection defect	EIJ
315	315	3267	40416	18	1676	Z	BD	Oil leak from pipe	OP
316	316	3278	50305	16	759	F	Tb	Engine over speed lever no work due to abnormal injection	EIJ
317	317	3282	50405	16	725	Tb	Tb	Voltage reg. failure due to misconnection to engine governor	FXC
318	318	3285	51112	16	862	Tb	Tb	Loco smoke, but get it off by driver	FR
319	319	3445	50302	11	827	T	F	Air circuit failure	BS
320	320	3445	50510	11	827	Me	F	CP oil filter damage	BSFL
321	321	3447	40805	11	819	Me	F	Battery box crack	BTBX
322	322	3448	40607	11	1137	F	F	Battery liquid shortage	BTLS
323	323	3448	40611	11	1137	Z	F	Supply fuel and water due to no water and fuel	SFOW
324	324	3449	40905	11	1248	Ax	F	No speed up	NSP
325	325	3451	50219	11	1124	F	F	Water OH due to cylinder liner crack	ECYL
326	326	3451	50302	11	1124	-	F	Thermal resistor of Module damage	MDL
327	327	3451	50612	11	1124	F	F	Cooling fan socket bad fixed	FXSK
328	328	3451	51026	11	1124	Ma	F	Air leak from brake handle due to bad sealing	BSFX
329	329	3454	40905	11	1208	D(Me)	F	Supply cooling water due to water shortage	SFOW
330	330	3454	40914	11	1208	A	F	Water leak from water pump	WGT
331	331	3454	41119	11	1208	D(Me)	F	No traction power, but Loco OK after inspection	NDFT
332	332	3455	50310	11	1102	DB	F	Crank shaft gear fixing bolt broken	FXBT
333	333	3456	51128	11	1277	D(A)	F	Loco defect, but OK	NDFT
334	334	3457	50821	11	990	F	F	High voltage cct earth	GD
335	335	3458	40607	11	1246	Z	F	250 A fuse off	BTCT
336	336	3458	50610	11	1246	Ax	F	No fuel and CP lubricating oil shortage	SFOW
337	337	3459	40502	11	223	Ma	F	Brake handle bending by unknown cause	X
338	338	3459	41006	11	223	X	F	Heavy smoke from rear bogie due to axle box grease shortage	BGAX
339	339	3459	50410	11	223	-	F	Earth knife switch damage	Z
340	340	3459	50519	11	223	A	F	Flange fix bolt between CP and engine cutted off due to collision	X
341	341	3460	40817	10	1175	F	F	Battery spark due to bad connection	FXC
342	342	3460	51215	10	1175	F,T,Z	F	CB open	CB
343	343	3461	40609	10	930	Me	F	Cylinder liner crack	ECYL
344	344	3462	40508	10	726	Me	F	Fuel filter choked	FLCT
345	345	3464	40605	10	1083	F	F	Water leak from cylinder (11)	ECY
346	346	3464	40827	10	1083	F	F	CCS socket bad fixed	FXSK
347	347	3464	41003	10	1083	F	F	TM carbon wear	BHTM
348	348	3464	51026	10	1083	F	F	Carbon wear of main generator due to rough surface of slip ring	MG
349	349	3465	50203	10	1115	DB	F	TM (6) locked due to no grease in gear case	BGTM
350	350	3467	50530	10	1103	UI	F	Front bogie bearing OH	BGAX
351	352	3468	41008	10	1166	D(F)	F	Loco. signal section over running	ATC
352	351	3468	41008	10	1166	D(F)	F	Supply water due to water shortage	SFOW
353	353	3468	50114	10	1166	DB	F	Water pump gear damage	GRWP
354	354	3469	50915	10	808	DB	F	Water leak due to elbow crack	WP
355	355	3602	40904	13	3738	Ma	Ma	Water OH due to fan defect	FN
356	356	3604	50225	12	1381	UI	Ma	Alternator smoke	FRAL
357	357	3605	50218	12	1315	Ax	H	Control and fuel pump sw. defect	FPES
358	358	3605	51104	12	1315	Ax	H	Brake air lamp on due to air pressure	BS
359	359	3606	41017	12	961	Ax	F	Engine no start due to low battery voltage	BTLV
360	360	3609	50112	12	2868	Ma	Ma	Water leak due to water pump seal damage	WGT
361	361	3609	50724	12	2868	Ma	Ma	Long preparation work time	INSP
362	362	3609	51215	12	2868	Ma	Ma	Water OH due to fan motor contactor no work	CTT
363	363	3610	50313	12	2912	Ma	Ma	Emergency fuel cut off switch wire cutted off due to loose connection	FXC
364	364	3611	40422	12	1300	Ma	F	Air leak due to brake valve gasket damage	BSGT

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre-viation
365	365	3611	50222	12	1300	D(F)	F	Water OH due to fan motor fuse off	FN
366	366	3612	50309	12	1305	Ma	Ma	CP cooling water leak	BS
367	367	3612	50717	12	1305	Ma	Ma	High voltage cable earth to carbody	GD
368	368	3613	40415	12	1182	Ax	H	Governor oil plunger trips	EGPT
369	369	3613	40505	12	1182	Ax	H	Water leak from highest point of radiator	WR
370	370	3613	40525	12	1182	Ax	H	Battery voltage drop	BTLV
371	371	3613	40812	12	1182	Ax	H	Water OH due to hose choked	WH
372	372	3614	41116	12	1335	Z	Z	Governor gear wear	GRGV
373	373	3615	40615	12	1453	T	T	Fan motor fuse off	FN
374	374	3615	41018	12	1453	D(T)	T	800A fuse off of starter motor	STM
375	375	3615	50411	12	1453	T	T	Air cct failure	BS
376	376	3616	50503	12	1418	D(F)	Z	Loco no speed up	NSP
377	377	3616	51010	12	1418	DB	Z	Fan locked due to bearing damage	BGFN
378	378	3616	51016	12	1418	Z	Z	Wire disconnection for fuel pump motor	FXC
379	379	3617	50302	12	1681	D(T)	T	Water OH due to fan motor fuse off	FN
380	380	3619	40521	12	1181	T	F	Water OH	WOH
381	381	3620	41103	12	1842	T	T	Water OH due to fan motor fuse off	FN
382	382	3620	50213	12	1842	DB	T	Fan motor wire connection off	FXC
383	383	3620	50807	12	1842	T,Ax	T	Starter motor fuse off	STM
384	384	3621	50707	12	1249	Ax	H	Water leak from cylinder head	ECY
385	385	3622	40503	12	1307	Z	Z	Water leak from radiator pipe	WP
386	386	3622	41029	12	1307	Z	Z	Smoke under cooling fan	FR
387	387	3623	40403	12	1352	DB	Z	Auxiliary generator connection failure	FXC
388	388	3623	40804	12	1352	Z	Z	Air cct defect due to no drainage of air cock	BSDR
389	389	3623	50725	12	1352	Z	Z	Water over heat and fuel supply time for loco.	WOH
390	390	3623	50925	12	1352	Z	Z	Main generator defect due to oil scattering from cutted off oil pipe	OP
391	391	3625	40518	12	1376	DB	Z	Water leak from cracked piston 7	EPST
392	392	3625	40905	12	1376	Z	Z	Wheel slip due to TM (4) some defect	TM
393	393	3625	50318	12	1376	Z	Z	CP drain cock missed due to loose fitting	FXBT
394	394	3625	50327	12	1376	Z	Z	Fan defect	FN
395	395	3626	40402	12	1186	F	F	Loose connection of TM ampere meter	FXC
396	396	3626	50505	12	1186	X	F	Air pipe damage due to collision with private car	X
397	397	3629	51008	12	1470	T	T	Battery low voltage	BTLV
398	398	3630	40422	12	1200	Z	F	Fan fuse off	FN
399	399	3630	50505	12	1200	Z	F	No strainer in fuel supply inlet	FXZ
400	400	3631	50115	12	1195	Me	F	Water leak from engine protection device	EPRD
401	401	3631	50716	12	1195	T	F	CP pressure low	BSCP
402	402	3631	51011	12	1195	F	F	Pisotn crack	EPST
403	403	3633	41211	12	1175	F	F	Head light cct failure from begining	HL
404	404	3635	51014	12	1028	F	F	ATC defect	ATC
405	405	3636	40413	12	1171	D(Me)	Me	No speed up	NSP
406	406	3636	40618	12	1171	Me	Me	Fan connecting wire OH due to fan locked	FN
407	407	3636	40803	12	1171	Me	Me	Fuel motor wire cutted off due to loose connection	FXC
408	408	3636	40811	12	1171	Me	Me	CCS damaged	BSSC
409	409	3636	41120	12	1171	D(Me)	Me	Oil and water OH due to fan motor fuse off and battery low voltage	FN
410	410	3637	51007	12	1222	D(Ax)	K	Battery low voltage	BTLV
411	411	3641	50209	12	1193	X	F	Cow catcher broken due to cow	X
412	412	3641	50920	12	1193	F	F	Water OH due to fan motor fuse off	FN
413	413	3642	50504	12	877	Ax	F	Fuel pipe choked	FLCT
414	414	3643	41012	12	1168	Me	F	Water OH due to water shortage	SFOW
415	415	3645	50611	12	1369	-	Z	Engine over speed lever damage	EOSL
416	416	3649	40517	12	1004	D(F)	F	CP cover lost due to bad fixation	FXBT
417	417	3649	41112	12	1004	F	F	Earth on the way	GD
418	418	3649	50701	12	1004	Z	F	No power contactor arc chute	FXZ
419	419	3653	40908	12	802	D(Me)	F	Loco stop by unknown reason, after recover	NDFT

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	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre-viation
420	420	3655	40424	12	1079	-	Me	Short cct	Y
421	421	3655	41019	12	1079	Me	Me	Loco fire, but driver put it off	FR
422	422	3655	41123	12	1079	D(Me)	Me	Battery low voltage	BTLV
423	423	3655	41126	12	1079	Me	Me	Ry(FC-1) damage	RY
424	424	3655	50120	12	1079	Me	Me	Engine break down due to collision	X
425	425	3656	41205	12	1357	Z	Z	No power due to PCS (Pneumatic Control Switch) defect	BSSP
426	426	3656	50411	12	1357	Z	Z	Cylinder liner broken due to OH	ECYL
427	427	3656	50704	12	1357	Z	Z	Wheel axle bearing broken	BGAX
428	428	3656	50907	12	1357	Z	Z	Water OH due to water shortage	SFOW
429	429	3657	40605	12	1188	F	F	Water OH due to fan damage	FN
430	430	3657	50807	12	1188	F	F	Battely pole loose connection	FXC
431	431	3658	40506	12	1378	DB	Z	Main generator field coil open	MG
432	432	3658	51009	12	1378	-	Z	Governoer gear defect	GRGV
433	433	3660	40811	12	1012	Ax	F	Battery low voltage	BTLV
434	434	3661	50129	12	1359	EC	Z	Module WSTI (Wheel Slip) defect	MDL
435	435	3661	50419	12	1359	X	Z	Water OH due to 3 pipes of radiator broken	WP
436	436	3661	51117	12	1359	D(F)	Z	Loco earth	GD
437	437	3802	41124	18	2437	T	T	PCR cable bad connection	FXC
438	438	3802	50816	18	2437	T	T	TM earth	TMGD
439	439	3803	50911	18	2170	T,Ma,F	T	Brake air lamp on	BS
440	440	3804	50423	18	2298	T	T	TM short cct due to carbon brush broken	BHTM
441	441	3806	50105	18	2326	T	T	Fuel pump motor brush wire bad fixation	FXC
442	442	3806	50324	18	2326	T	T	Engine governor valve damage	EGV
443	443	3806	50821	18	2326	-	T	Piston crack	EPST
444	444	3807	40404	18	2250	Ma	T	FP-ES spring damage	FPES
445	445	3808	40423	18	2287	T	T	Ground	GD
446	446	3808	50129	18	2287	T	T	Battery wire damage due to loose connection	FXC
447	447	3810	40401	18	2083	D(T)	T	Battery discharge	BTLV
448	448	3811	40405	18	2225	T	T	Water OH	WOH
449	449	3814	50828	18	2369	M	T	Air leak from brake handle	BS
450	450	3816	50414	18	2416	T	T	Aux. generator resistor wire disconnection	FXC
451	451	3817	40919	18	2470	T	T	One wire not connected	FXC
452	452	3817	50121	18	2470	D(T)	T	Starter motor fuse off	STM
453	453	3819	41107	18	2180	D(T)	T	Battery low voltage	BTLV
454	454	3819	50727	18	2180	Me	T	Battery liquid shortage	BTLS
455	455	3821	40504	18	2379	T	T	Water OH due to air chamber shutter closed	WOH
456	456	3821	50526	18	2379	D(T)	T	Control and fuel pump sw. unmovable	FPES
457	457	3823	50415	18	2245	T	T	Wheel roller bearing broken	BGAX
458	458	3823	51113	18	2245	T	T	Oil leak from governer	EGV
459	459	3824	41206	18	2380	D(T)	T	Air pressure down due to CP no work	BSCP
460	460	3825	50115	18	1263	Ax	H	Air drop indication	BS
461	461	3826	50802	18	2280	T	T	Supply fuel	SFOW
462	462	3829	51228	18	1219	D(Ax)	H	Engine over speed lever trip, Driver no knowledge how to reset	EOSL
463	463	3830	50807	18	1194	Ax	H	Fan flange bolt damage	FXBT
464	464	3840	41026	15	1487	Ax	H	Water leak from connecting part of CP cooling	FXBT
465	465	3843	50317	15	1222	Ma	Ma	Governor flange gear wear	GRGV
466	466	3843	51018	15	1222	Ma	Ma	Fuel cct choked	FLCT
467	467	3844	40523	15	914	D(F)	KL	Battery discharge	BTLV
468	468	3844	50301	15	914	F	KL	Load regulator failure	LR
469	469	3845	51222	15	870	F	KL	Water OH due to fan motor fuse off	FN
470	470	3849	40915	15	948	DB	F	Water OH	WOH
471	471	3850	50325	15	665	DB	F	Cooling fan damage	FN
472	472	3851	50824	15	930	F	KL	Fuel oil leak from oil charging pipe	FLCT
473	473	3853	40606	15	2012	T	T	Cylinder liner (#7) crack	ECYL
474	474	3857	40511	15	910	D(F)	KL	Load current suddenly down	NSP
475	475	3857	50802	15	910	F	KL	Water leak from elbow to cylinder	EP
476	476	3857	51003	15	910	-	KL	Air leak due to air pipe broken	BSP

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	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre-viation
477	477	3857	51111	15	910	F	KL	Cooling water shortage	SFOW
478	478	3859	40904	15	955	F	KL	Battery cable damage	BTCT
479	479	3859	51221	15	955	Z	KL	Earth indication	GD
480	480	3862	50925	15	1034	F	KL	Fuel level side glass broken	Z
481	481	3864	41128	15	1740	M	T	Battery box crack and low voltage	BTBX
482	482	3864	50420	15	1740	M	T	Battery box crack	BTBX
483	483	3865	40821	15	1287	A	A	Battery liquid shortage	BTLS
484	484	3866	40601	15	1870	DB	T	Fan motor lead wire short cct	FXC
485	485	3866	40808	15	1870	T	T	Piston broken	EPST
486	486	3866	50219	15	1870	T	T	Operating sw. failure	SSW
487	487	3868	40607	15	1469	T	T	Coupler off between loco and coach	Z
488	488	3868	50506	15	1469	T	T	Automatic brake handle no properly work	BS
489	489	3871	41104	15	1590	D(Ax)	H	Brake air lamp always on	BS
490	490	3871	41207	15	1590	Ax	H	Water leak due to CP cooling water pipe crack	WP
491	491	3874	41020	15	1379	Ax	H	Water leak due to rubber hose broken	WH
492	492	3874	41115	15	1379	Ax	H	Unknown reason, recovered by technician	U
493	493	3879	41224	15	1052	F	KL	Starter motor no work from begining	STM
494	494	3880	40918	15	1358	M	F	Contactor tip melt due to bad contact	CTT
495	495	3883	40915	15	1417	Ma	F	Battery low voltage	BTLV
496	496	3883	51217	15	1417	M	F	Battery box crack	BTBX
497	497	3885	40924	15	1496	Ax	F	Cylinder bloc fix bolt not fixed	FXBT
498	498	3889	50615	15	1262	Me	F	Water Off due to fan motor fuse off	FN
499	499	3892	40806	15	1495	Ax	F	Fuel shortage	SFOW
500	500	3893	40802	15	1383	DB	F	Cooling fan just start to burn	FN
501	501	3894	50420	15	104	Ax	KL	Governor socket not fixed	FXSK
502	502	3894	50811	15	104	F	KL	Aux. alternator fire	FRAL
503	503	3896	41017	15	1412	F	F	CP air pipe broken	BSP
504	504	3896	50425	15	1412	F	F	Air drop due to worn air pipe	BSP
505	505	3896	50530	15	1412	F	F	Load regulator bad working due to dust from broken small side glass	LR
506	506	3896	50701	15	1412	F	F	Water pipe gasket damage	WGT
507	507	3899	51219	14	1049	DB	F	Fan motor bearing locked	BGFN
508	508	3901	40902	14	1331	F	F	TM field pole fix bolt fall out due to bad connection	FXBT
509	509	3905	40505	14	1277	-	F	EQP open	RY
510	510	3905	40824	14	1277	DB	F	Fuel motor cable earth	FXC
511	511	3905	40825	14	1277	Z	F	Fuel pump motor cable earth	FXC
512	512	3907	40922	14	1432	-	F	Water leak from radiator	WR
513	513	3908	50901	14	902	D(Ax)	K	Battery discharge	BTLV
514	514	3908	50919	14	902	D(Ax)	K	Battery discharge due to several times starting	STCT
515	515	3909	40615	14	1431	Me	F	Water leak due to pump gasket damage	WGT
516	516	3909	40620	14	1431	T	F	One controller no work (One cabin type loco)	Z
517	517	3909	51010	14	1431	Ax	F	Battery pole melt due to bad fix	FXC
518	518	3911	50611	14	1346	Ax	F	Oil cooling pipe cutted off	OP
519	519	3911	50807	14	1346	F	F	Load regulator wedge get out and repair	LR
520	520	3915	50714	14	612	Ax	K	No fuel	SFOW
521	521	3916	40413	14	842	Me	Me	Water leak due to elbow damage	WP
522	522	3916	50610	14	842	Me	Me	Cooling pipe for CP damaged due to bad fixation	FXBT
523	523	3918	50617	13	1566	Ma	Ma	Head lamp no light due to resistor damage	HL
524	524	3920	40621	13	1373	F	F	Air rubber hose choked	BSRH
525	525	3920	50121	13	1373	F	F	Head light go out due to overload	HL
526	526	3921	40618	13	1278	F	F	Battery pole melt	FXC
527	527	3921	41018	13	1278	Z,T	F	Water leak from water pump	WGT
528	528	3922	40614	13	1607	Z	Z	Air leak due to CP gasket damage	BSGT
529	529	3922	40627	13	1607	Z	Z	Battery	BT
530	530	3922	50408	13	1607	Z	Z	Test valve broken	ETV
531	531	3922	50611	13	1607	T	Z	Air cct irregular	BS
532	532	3922	50925	13	1607	-	Z	Fuel pump motor defect	FLPM

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre-viation
533	533	3923	40622	13	795	Ax	K	Water leak due to pipe crack to radiator	WP
534	534	3924	41111	13	1289	D(T)	F	Loco no power from bigining	NSP
535	535	3925	50406	13	1352	Z	F	Air inlet shutter operating MV no work	MV
536	536	3925	50511	13	1352	D(F)	F	CB for aux. generator defect	CB
537	537	3926	50705	13	1512	Ma	Ma	Water pipe damage to water pump	WP
538	538	3926	51003	13	1512	Ma	Ma	Ry (GFX) open	RY
539	539	3928	40806	13	1292	Ax	F	Cable earth indication	GD
540	540	3928	41022	13	1292	D(T)	F	Oil leak from CP	BSCP
541	541	3928	50119	13	1292	-	F	TM interpole short cct	TM
542	542	3929	41007	13	1290	D(T)	F	Horn defect	HR
543	543	3929	50705	13	1290	T	F	Oil filter broken due to oil pipe crack	OP
544	544	3932	40405	13	1446	Z	Z	Fuel cct choked	FLCT
545	545	3932	40602	13	1446	Z	Z	Fuel cct choked due to dirty filter	FLCT
546	546	3932	50620	13	1446	F,Z	Z	TM cover loose fix	FXBT
547	547	3932	50901	13	1446	Z	Z	Starter motor cable OH	STM
548	548	3933	40623	13	1283	F	F	Water OH due to fan motor fuse off	FN
549	549	3933	51213	13	1283	D(Ax)	F	High voltage earth	GD
550	550	3936	40526	13	1256	F	F	Ry. GFX open from beginning	RY
551	551	3936	40913	13	1256	Me	F	Air pipe cock closed and driver manually open	X
552	552	3936	50405	13	1256	D(Ax)	F	Water OH due to fan motor fuse off	FN
553	553	3940	40623	13	1043	A	A	Main shaft drive gear wear	GRRD
554	554	3941	50903	13	995	AZ	A	Water OH due to fan damage	FN
555	555	3942	40806	13	1023	A	A	CP low oil pressure sw. defect due to diaphram damage	COLP
556	556	3942	50125	13	1023	D(A)	A	Air pressure drop	BS
557	557	3943	40913	13	1533	Z	Z	TM smoke due to inner friction	TM
558	558	3943	50613	13	1533	Z	Z	Air leak from brake valve	BSBV
559	559	3944	50828	13	1103	UI	A	Fan locked due to bearing	BGFN
560	560	3944	51101	13	1103	A	A	Air cct defect	BS
561	561	3944	51126	13	1103	A	A	Contactor tip damage	CTT
562	562	3944	51215	13	1103	A	A	Water leak from radiator	WR
563	563	3944	51218	13	1103	DB	A	Water OH due to fan case crack	FN
564	564	3947	50504	13	1338	Me	Me	Water leak from pipe connected to radiator	WP
565	565	3948	41021	13	1209	Ax	H	Water leak from CP cooling pipe due to gasket	BSGT
566	566	3953	40408	13	1171	Ax	H	Governor misoperation	EGV
567	567	3954	40608	13	1037	Ax	H	Drain pipe to engine crack	EP
568	568	3954	40901	13	1037	Ax	H	Fuel pump motor defect	FLPM
569	569	3954	50325	13	1037	Ax	H	Fuel filter choked	FLCT
570	570	3955	40625	13	1020	Ax	H	Wire cutted off to earth relay due to wire fix error	FXC
571	571	3956	50203	13	1506	Ma	Ma	TM (1) short cct due to battery liquid leak	BTLS
572	572	3956	51015	13	1506	Ma	Ma	Oil leak from oil pipe of blower	OP
573	573	3957	50304	13	1330	Ma	Ma	CP cooling pipe broken	BSP
574	574	3957	50914	13	1330	-	Ma	CDR Ry coil open	RY
575	575	3959	40908	13	1321	-	F	Module defect	MDL
576	576	3959	50611	13	1321	D(F)	F	Cooling fan fuse off	FN
577	577	3960	41213	13	953	-	F	Resistor melt in Module (RC11) due to bad connection	FXC
578	578	3960	51001	13	953	D(Ax)	F	Battery low voltage	BTLV
579	579	3960	51109	13	953	Z	F	Battery discharge	BTLV
580	580	3960	51111	13	953	F	F	Battery discharge	BTLV
581	581	3962	51108	13	1543	Z	Z	TM gear damage due to no grease	TMGB
582	582	3973	50312	13	1541	Z	Z	Pump motor no work, after inspection OK	NDFT
583	583	3973	50501	13	1541	-	Z	Piston crack	EPST
584	584	3974	50309	13	1360	DB	Z	Horn damage	HR
585	585	3974	51113	13	1360	Z	Z	Loco earth	GD
586	586	3975	40604	13	1461	A	Me	Abnormal noise of fan, but no defect	NDFT
587	587	3975	50305	13	1461	Me	Me	Fuel cct chocked	FLCT
588	588	3975	51212	13	1461	D(Me)	Me	Fuel pump damage	FLPM

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre-viation
589	589	3977	40518	13	1403	Me	Me	Water leak from water pump gasket	WGT
590	590	3977	50810	13	1403	Me	Me	Engine heavy smoke due to injector	EFR
591	591	3977	51210	13	1403	Me	Me	Crank shaft bearing move due to loose fix	FXBG
592	592	3978	40816	13	1388	Me	Me	TM cable earth	TMGD
593	593	3978	50320	13	1388	-	Me	Short cct	Y
594	594	3978	50402	13	1388	D(Me)	Me	Fuel pump motor damage	FLPM
595	595	3979	41207	13	1415	-	Me	CR30 failure on the way	Z
596	596	3979	50819	13	1415	D(Me)	Me	Battery low voltage	BTLV
597	597	3980	41001	13	1443	D(F)	Z	Fan motor fuse off	FN
598	598	3980	41015	13	1443	Z	Z	Operating sw. spring broken	SSW
599	599	3981	50410	13	1034	DB	A	Water OH due to fan failure	FN
600	600	3981	51011	13	1034	A	A	Battery pole melt due to loose connection	FXC
601	601	3982	40525	13	844	A	A	CP gasket damage	BSGT
602	602	3982	50921	13	844	A	A	Engine stop	ESTP
603	603	3983	40807	13	972	A	A	Water OH due to radiator choked	WR
604	604	3983	40903	13	972	A	A	Water OH	WOH
605	605	3983	50205	13	972	DB	A	Governer flange and drive gear wear	GRGV
606	606	3983	50717	13	972	A	A	Piston ring no properly work due to manufacturing mistake	EPST
607	607	3984	40602	13	1129	A	A	TM earth	TMGD
608	608	3984	41020	13	1129	A	A	CP low oil pressure sw socket broken	COLP
609	609	3984	41114	13	1129	A	A	Water OH due to water leak	WOH
610	610	3984	50719	13	1129	A	A	TM damage due to carbon brush broken	BHTM
611	611	3985	50201	13	1244	Ma	Ma	Starter motor failure	STM
612	612	3986	50914	13	900	A	A	Air leak from brake valve due to bad fixation	FXBV
613	613	3987	50413	13	850	A	A	Cooling water elbow for CP crack	BSP
614	614	3988	50216	13	1454	X	Me	Train lighting no work due to external effect	X
615	615	3988	50815	13	1454	Me	Me	Module for battery charging from aux. generator	MDL
616	616	3989	50619	13	1459	Me	Me	Piston broken	EPST
617	617	3990	51221	13	1378	Z	Z	Air leak due to rubber hose defect	BSRH
618	618	3991	41007	13	1718	Z	Z	Fuel motor defect due to cable bad fix	FXC
619	619	3991	41023	13	1718	Z	Z	Piston movement bad	EPST
620	620	3991	50214	13	1718	Z	Z	Fuel filter choked due to dirty filter	FLCT
621	621	3991	50324	13	1718	Z	Z	Brake cylinder gasket damage	BSGT
622	622	3993	40816	13	1536	DB	Z	CP gasket damage	BSGT
623	623	3993	50507	13	1536	Z	Z	TM roller bearing locked	BGTM
624	624	3994	50625	13	1580	Z	Z	Deadman device no work	DMS
625	625	3995	40603	13	1544	M	Z	Main generator stator OH	MG
626	626	3995	50215	13	1544	Z	Z	Fan Ry short cct	RY
627	627	3995	50503	13	1544	DB	Z	Connecting rod bad fixation	RDFX
628	628	3996	41219	13	1329	D(Me)	Me	Wheel flat	TFT
629	629	3998	40513	13	1402	D(F)	F	Battery charger no work	BTCT
630	630	3998	40810	13	1402	Ax	F	Water OH	WOH
631	631	3998	50604	13	1402	D(Ax)	F	TM cover missing due to external effect	X
632	632	3998	51211	13	1402	-	F	Ry defect due to inside wire cutted off	RY

[Remarks]

As of Dec. 31, 1995

Depot responsible :

A-Aswan, Ax-Alex, BD-Bulak Dakroor, AZ-Abuzabal, D-Driver, DB-Diesel Bulak, EC-Electronic Center, F-Farz, H-Hadra, K-Kabary, KL-Kopri Lamon, M-Maker, Ma-Mansura, Me-Menya, T-Tanta, Tb-Tebien, UI-Under Investigation, X-External, Z-Zagazig

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
1	43	3082	51225	14	2985	DB	F	Aux. generator defect due to bad maintenance	AG
2	153	3157	40617	13	2022	F	F	Aux. generator 63A fuse off due to over load	AG
3	190	3169	50304	13	1981	DB	F	Aux. generator failure due to binding wire broken	AGBW
4	59	3090	51022	13	2001	D(Me)	F	ATC defect	ATC
5	274	3221	40506	11	1911	A	F	ATC defect	ATC
6	352	3468	41008	10	1166	D(F)	F	Loco. signal section over running	ATC
7	404	3635	51014	12	1028	F	F	ATC defect	ATC
8	15	3048	40502	17	1331	Ax	BD	Axle box damage	BGAX
9	217	3179	50119	7	1600	DB	F	Wheel locked due to bearing damage	BGAX
10	256	3211	50723	12	2110	DB	F	Wheel locked	BGAX
11	338	3459	41006	11	223	X	F	Heavy smoke from rear bogie due to axle box grease shortage	BGAX
12	350	3467	50530	10	1103	UI	F	Front bogie bearing OH	BGAX
13	427	3656	50704	12	1357	Z	Z	Wheel axle bearing broken	BGAX
14	457	3823	50415	18	2245	T	T	Wheel roller bearing broken	BGAX
15	299	3234	50205	11	899	F,Z	F	CP bearing broken due to corrosion	BGCP
16	247	3207	50612	12	2095	M	F	Crank bearing OH	BGCR
17	192	3169	51102	13	1981	DB	F	Cooling fan locked due to bearing crack	BGFN
18	377	3616	51010	12	1418	DB	Z	Fan locked due to bearing damage	BGFN
19	507	3899	51219	14	1049	DB	F	Fan motor bearing locked	BGFN
20	559	3944	50828	13	1103	UI	A	Fan locked due to bearing	BGFN
21	191	3169	50416	13	1981	F	F	OH of connecting rod bearing to engine	BGRD
22	82	3098	50814	10	1835	DB	F	TM bearing locked	BGTM
23	120	3118	50807	7	1734	DB	F	TM bearing locked	BGTM
24	295	3232	50605	11	1020	DB	F	TM roller bearing locked	BGTM
25	349	3465	50203	10	1115	DB	F	TM (6) locked due to no grease in gear case	BGTM
26	623	3993	50507	13	1536	Z	Z	TM roller bearing locked	BGTM
27	204	3175	51206	7	1620	DB	F	Aux. generator brush holder spring get out	BHAG
28	183	3168	40527	13	1831	F	F	Fuel motor carbon spring lost	BHFM
29	218	3179	50209	7	1600	A	F	Fuel pump motor brush wear	BHFM
30	219	3179	50316	7	1600	F	F	Fuel motor brush spring get out	BHFM
31	220	3179	50406	7	1600	F	F	Fuel pump motor carbon brush wear	BHFM
32	246	3207	50325	12	2095	F	F	Fuel pump motor brush spring get out	BHFM
33	21	3061	40510	15	1533	F	BD	Main generator carbon consumed	BHMG
34	83	3099	51023	10	1654	F	F	Oil pump motor defect due to short brush	BHOP
35	347	3464	41003	10	1083	F	F	TM carbon wear	BHTM
36	440	3804	50423	18	2298	T	T	TM short cct due to carbon brush broken	BHTM
37	610	3984	50719	13	1129	A	A	TM damage due to carbon brush broken	BHTM
38	4	3021	50406	18	2	Ma	BD	Air cct failure	BS
39	30	3074	50210	15	1623	D(Me)	BD	Air pressure drop	BS
40	37	3080	50920	14	1631	A	F	Air pressure drop	BS
41	70	3095	41113	10	1548	Ax	F	Air cct defect from begining	BS
42	104	3112	50615	10	1876	A	F	Air cct defect	BS
43	168	3160	50521	13	1904	D(Me)	F	Air cct choked	BS
44	200	3174	41103	7	1733	A	F	Air leak from #2 cabin	BS
45	228	3182	50615	7	1601	D(A)	F	Braking cct defect	BS
46	243	3206	40408	12	2114	D(Me)	F	Air leak sound in #2 cabin	BS
47	287	3227	50119	11	1104	D(F)	F	#1 cab air pressure abnormal	BS
48	301	3236	50309	11	1065	D(T)	F	Air cct failure	BS
49	319	3445	50302	11	827	T	F	Air circuit failure	BS
50	358	3605	51104	12	1315	Ax	H	Brake air lamp on due to air pressure	BS

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot in Charge	Cause or Remarks	Abbre-viation
51	366	3612	50309	12	1305	Ma	Ma	CP cooling water leak	BS
52	375	3615	50411	12	1453	T	T	Air cct failure	BS
53	439	3803	50911	18	2170	T,Ma,F	T	Brake air lamp on	BS
54	449	3814	50828	18	2369	M	T	Air leak from brake handle	BS
55	460	3825	50115	18	1263	Ax	H	Air drop indication	BS
56	488	3868	50506	15	1469	T	T	Automatic brake handle no properly work	BS
57	489	3871	41104	15	1590	D(Ax)	H	Brake air lamp always on	BS
58	531	3922	50611	13	1607	T	Z	Air cct irregular	BS
59	556	3942	50125	13	1023	D(A)	A	Air pressure drop	BS
60	560	3944	51101	13	1103	A	A	Air cct defect	BS
61	68	3093	51006	12	2079	A	F	Air magnet valve for air brake defect	BSBV
62	245	3207	41204	12	2095	F	F	Air leak from driver's brake valve	BSBV
63	277	3221	40925	11	1911	D(Me)	F	Automatic brake valve defect	BSBV
64	558	3943	50613	13	1533	Z	Z	Air leak from brake valve	BSBV
65	19	3056	41019	15	1284	DB	BD	CP damaged	BSCP
66	106	3113	40825	10	1759	Ax	F	CP valve (#2) broken	BSCP
67	128	3136	50924	13	1855	F	BD	CP shaft broken	BSCP
68	239	3204	41127	12	2156	A	F	CP defect	BSCP
69	293	3228	51208	11	1073	A	F	Oil leak from CP	BSCP
70	401	3631	50716	12	1195	T	F	CP pressure low	BSCP
71	459	3824	41206	18	2380	D(T)	T	Air pressure down due to CP no work	BSCP
72	540	3928	41022	13	1292	D(T)	F	Oil leak from CP	BSCP
73	33	3080	40402	14	1631	Me	F	Brake action delay due to air cock drain	BSDR
74	129	3137	50608	13	1826	Ax	BD	Air reservoir drain remained	BSDR
75	388	3623	40804	12	1352	Z	Z	Air cct defect due to no drainage of air cock	BSDR
76	151	3156	50222	13	2032	D(Z)	F	Dirty air reservoir	BSDT
77	178	3165	50521	13	1429	Z	F	Air reservoir inside dirty	BSDT
78	320	3445	50510	11	827	Me	F	CP oil filter damage	BSFL
79	328	3451	51026	11	1124	Ma	F	Air leak from brake handle due to bad sealing	BSFX
80	56	3090	40412	13	2001	A	F	CP gasket damage	BSGT
81	135	3144	50302	13	1715	Z,Ma	BD	CP gasket damage	BSGT
82	150	3156	50107	13	2032	Ax	F	CP high pressure side gasket damage	BSGT
83	166	3159	41023	13	1952	F	F	CP head gasket broken	BSGT
84	262	3216	41106	11	2036	Me	F	CP high pressure side air gasket broken	BSGT
85	364	3611	40422	12	1300	Ma	F	Air leak due to brake valve gasket damage	BSGT
86	528	3922	40614	13	1607	Z	Z	Air leak due to CP gasket damage	BSGT
87	565	3948	41021	13	1209	Ax	H	Water leak from CP cooling pipe due to gasket	BSGT
88	601	3982	40525	13	844	A	A	CP gasket damage	BSGT
89	621	3991	50324	13	1718	Z	Z	Brake cylinder gasket damage	BSGT
90	622	3993	40816	13	1536	DB	Z	CP gasket damage	BSGT
91	74	3095	51109	10	1548	Ax	F	Air choked at air cock due to air cock broken	BSP
92	157	3157	51013	13	2022	Ax	F	Air leak due to pipe crack near CP	BSP
93	201	3174	50708	7	1733	A	F	Water leak from CP cooling pipe	BSP
94	285	3226	50221	11	928	A	F	CP air pipe flange crack	BSP
95	476	3857	51003	15	910	-	KL	Air leak due to air pipe broken	BSP
96	503	3896	41017	15	1412	F	F	CP air pipe broken	BSP
97	504	3896	50425	15	1412	F	F	Air drop due to worn air pipe	BSP
98	573	3957	50304	13	1330	Ma	Ma	CP cooling pipe broken	BSP
99	613	3987	50413	13	850	A	A	Cooling water elbow for CP crack	BSP
100	202	3174	50721	7	1733	F	F	Oil leak due to CP rubber hose broken	BSRH
101	524	3920	40621	13	1373	F	F	Air rubber hose choked	BSRH

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot in Charge	Cause or Remarks	Abbre-viation
102	617	3990	51221	13	1378	Z	Z	Air leak due to rubber hose defect	BSRH
103	408	3636	40811	12	1171	Me	Me	CCS damaged	BSSC
104	10	3040	51220	17	1180	F	BD	PCS (pneumotic control switch) defect	BSSP
105	250	3208	51228	12	2038	-	F	PCS defect	BSSP
106	425	3656	41205	12	1357	Z	Z	No power due to PCS (Pneumatic Control Switch) defect	BSSP
107	529	3922	40627	13	1607	Z	Z	Battery	BT
108	321	3447	40805	11	819	Me	F	Battery box crack	BTBX
109	481	3864	41128	15	1740	M	T	Battery box crack and low voltage	BTBX
110	482	3864	50420	15	1740	M	T	Battery box crack	BTBX
111	496	3883	51217	15	1417	M	F	Battery box crack	BTBX
112	53	3086	50116	13	1980	F	F	160A fuse off for battery charging cct	BTCT
113	298	3234	40614	11	899	Me	F	Battery charging 250A fuse off	BTCT
114	335	3458	40607	11	1246	Z	F	250 A fuse off	BTCT
115	478	3859	40904	15	955	F	KL	Battery cable damage	BTCT
116	629	3998	40513	13	1402	D(F)	F	Battery charger no work	BTCT
117	322	3448	40607	11	1137	F	F	Battery liquid shortage	BTLS
118	454	3819	50727	18	2180	Me	T	Battery liquid shortage	BTLS
119	483	3865	40821	15	1287	A	A	Battery liquid shortage	BTLS
120	571	3956	50203	13	1506	Ma	Ma	TM (1) short cct due to battery liquid leak	BTLS
121	20	3058	41210	15	1424	A	BD	Battery low voltage	BTLV
122	303	3238	40922	11	1023	Me	F	Battery low voltage	BTLV
123	359	3606	41017	12	961	Ax	F	Engine no start due to low battery voltage	BTLV
124	370	3613	40525	12	1182	Ax	H	Battery voltage drop	BTLV
125	397	3629	51008	12	1470	T	T	Battery low voltage	BTLV
126	410	3637	51007	12	1222	D(Ax)	K	Battery low voltage	BTLV
127	422	3655	41123	12	1079	D(Me)	Me	Battery low voltage	BTLV
128	433	3669	40811	12	1012	Ax	F	Battery low voltage	BTLV
129	447	3810	40401	18	2083	D(T)	T	Battery discharge	BTLV
130	453	3819	41107	18	2180	D(T)	T	Battery low voltage	BTLV
131	467	3844	40523	15	914	D(F)	KL	Battery discharge	BTLV
132	495	3883	40915	15	1417	Ma	F	Battery low voltage	BTLV
133	513	3908	50901	14	902	D(Ax)	K	Battery discharge	BTLV
134	578	3960	51001	13	953	D(Ax)	F	Battery low voltage	BTLV
135	579	3960	51109	13	953	Z	F	Battery discharge	BTLV
136	580	3960	51111	13	953	F	F	Battery discharge	BTLV
137	596	3979	50819	13	1415	D(Me)	Me	Battery low voltage	BTLV
138	22	3062	40807	15	1287	D(Z)	BD	CB trips	CB
139	87	3100	50601	10	1362	A	F	CB defect for train lighting (reset impossible)	CB
140	139	3151	50204	13	1584	-	F	CB no work for deadman device	CB
141	140	3151	50513	13	1584	-	F	CB open due to defect	CB
142	305	3239	40405	11	794	T	F	CB defect	CB
143	342	3460	51215	10	1175	F,T,Z	F	CB open	CB
144	536	3925	50511	13	1352	D(F)	F	CB for aux. generator defect	CB
145	555	3942	40806	13	1023	A	A	CP low oil pressure sw. defect due to diaphram damage	COLP
146	608	3984	41020	13	1129	A	A	CP low oil pressure sw socket broken	COLP
147	98	3109	40920	10	1743	DB	F	Contactor OH	CTT
148	155	3157	50611	13	2022	F	F	Starting cct contactor defect	CTT
149	362	3609	51215	12	2868	Ma	Ma	Water OH due to fan motor contactor no work	CTT
150	494	3880	40918	15	1358	M	F	Contactor tip melt due to bad contact	CTT
151	561	3944	51126	13	1103	A	A	Contactor tip damage	CTT

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
152	237	3202	40914	12	2090	F	F	Deadman device MVopen and engine no power	DMS
153	624	3994	50625	13	1580	Z	Z	Deadman device no work	DMS
154	38	3080	51109	14	1631	DB	F	Crank shaft metal OH	ECR
155	49	3083	50825	14	2029	UI	F	Crank shaft crack	ECR
156	231	3184	41101	5	1224	DB	F	Crank shaft bearing OH	ECR
157	91	3104	40502	10	1745	F	F	Water leak at cylinder #9	ECY
158	345	3464	40605	10	1083	F	F	Water leak from cylinder (11)	ECY
159	384	3621	50707	12	1249	Ax	H	Water leak from cylinder head	ECY
160	133	3144	41113	13	1715	M	BD	Water leak from cylinder liner due to screw bolt broken	ECYL
161	197	3172	50517	7	1647	DB	F	Cylinder liner broken	ECYL
162	268	3218	41216	11	1756	DB	F	Connecting rod and crank pin off due to cylinder liner and gear broken	ECYL
163	288	3227	50421	11	1104	M	F	Cylinder liner crack	ECYL
164	325	3451	50219	11	1124	F	F	Water OH due to cylinder liner crack	ECYL
165	343	3461	40609	10	930	Me	F	Cylinder liner crack	ECYL
166	426	3656	50411	12	1357	Z	Z	Cylinder liner broken due to OH	ECYL
167	473	3853	40606	15	2012	T	T	Cylinder liner (#7) crack	ECYL
168	45	3083	40425	14	2029	D(Me)	F	Exhaust valve damage	EEXH
169	77	3097	50128	10	1543	A	F	Internal high pressure due to exhaust valve broken	EEXH
170	99	3109	41113	10	1743	F	F	Smoke and flame from exhauster due to exhaust valve broken	EEXH
171	215	3179	40813	7	1600	F	F	Smoke from upper deck 3 covers of engine	EFR
172	590	3977	50810	13	1403	Me	Me	Engine heavy smoke due to injector	EFR
173	54	3088	50715	13	2048	Me	F	Governor plunger get off	EGPT
174	165	3159	40524	13	1952	A	F	Governor oil plunger trips	EGPT
175	198	3172	50921	7	1647	UI	F	Governor plunger get out	EGPT
176	225	3181	41204	7	1635	F	F	Governor plunger often trip	EGPT
177	240	3204	50727	12	2156	F	F	Governor plunger get out	EGPT
178	368	3613	40415	12	1182	Ax	H	Governor oil plunger trips	EGPT
179	85	3100	41213	10	1362	UI	F	Governor plunger trip due to oil leak from governor	EGV
180	97	3109	40527	10	1743	T	F	Governor no work	EGV
181	101	3110	41105	10	1888	UI	F	Oil leak due to defect of governor	EGV
182	138	3150	41217	13	1813	-	BD	Governor socket defect	EGV
183	158	3158	40407	13	1796	Z	F	Side glass of governor broken	EGV
184	205	3176	50721	7	1639	Ax	F	Governor oil leak	EGV
185	442	3806	50324	18	2326	T	T	Engine governor valve damage	EGV
186	458	3823	51113	18	2245	T	T	Oil leak from governer	EGV
187	566	3953	40408	13	1171	Ax	H	Governor misoperation	EGV
188	116	3116	50115	7	1456	F	F	Piston (10) damage due to internal high pressure	EHP
189	280	3222	50119	11	1274	F	F	Internal high pressure	EHP
190	314	3264	41204	18	1653	T,F	BD	Fuel injection defect	EIJ
191	316	3278	50305	16	759	F	Tb	Engine over speed lever no work due to abnormal injection	EIJ
192	66	3092	50314	12	2155	T	F	Exhaust valve and piston damage due to lash adjuster damage	ELAD
193	263	3216	50520	11	2036	T	F	Exhaust valve damage due to lash adjuster	ELAD
194	232	3184	50714	5	1224	D(Ax)	F	Engine OH	EOH
195	73	3095	50812	10	1548	F	F	Oil leak from engine due to oil pressure valve defect	EOPV
196	167	3159	41106	13	1952	D(F)	F	Engine overspeed lever and low oil plunger trip (engine over speed)	EOS

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
197	415	3645	50611	12	1369	-	Z	Engine over speed lever damage	EOSL
198	462	3829	51228	18	1219	D(Ax)	H	Engine over speed lever trip, Driver no knowledge how to reset	EOSL
199	72	3095	50530	10	1548	F	F	Water Oil due to elbow crack to cylinder	EP
200	273	3220	51204	11	1994	F	F	Crank case pressure lower due to piston oil cooling pipe broken	EP
201	475	3857	50802	15	910	F	KL	Water leak from elbow to cylinder	EP
202	567	3954	40608	13	1037	Ax	H	Drain pipe to engine crack	EP
203	400	3631	50115	12	1195	Me	F	Water leak from engine protection device	EPRD
204	8	3032	40424	18	1249	Z	BD	Piston head crack	EPST
205	60	3091	40919	12	2007	A	F	Oil leak due to piston crack	EPST
206	69	3095	40612	10	1548	Me	F	Piston head #7 crack	EPST
207	196	3172	50310	7	1647	F	F	Piston head cover crack	EPST
208	208	3177	40807	7	1666	F	F	Exhaust valve broken, due to piston crack	EPST
209	391	3625	40518	12	1376	DB	Z	Water leak from cracked piston 7	EPST
210	402	3631	51011	12	1195	F	F	Pisotn crack	EPST
211	443	3806	50821	18	2326	-	T	Piston crack	EPST
212	485	3866	40808	15	1870	T	T	Piston broken	EPST
213	583	3973	50501	13	1541	-	Z	Piston crack	EPST
214	606	3983	50717	13	972	A	A	Piston ring no properly work due to manufacturing mistake	EPST
215	616	3989	50619	13	1459	Me	Me	Piston broken	EPST
216	619	3991	41023	13	1718	Z	Z	Piston movement bad	EPST
217	210	3177	41201	7	1666	DB	F	Supercharger defect from begining	ES
218	92	3106	41206	10	1327	F	F	Supercharger oil filter gasket broken from begining	ESGT
219	105	3112	50809	10	1876	Ax	F	Supercharger shaft broken	ESRD
220	171	3161	50825	13	1859	DB	F	Supercharger shaft broken	ESRD
221	3	3020	50729	18	1133	D(A)	K	Engine sudden stop	ESTP
222	223	3181	40911	7	1635	D(F)	F	Engine sudden stop	ESTP
223	602	3982	50921	13	844	A	A	Engine stop	ESTP
224	61	3091	50105	12	2007	F	F	#7 cylinder test valve failure	ETV
225	63	3091	50125	12	2007	A	F	Test valve (8) damage	ETV
226	107	3113	41224	10	1759	F	F	Engine test valve damage	ETV
227	146	3154	50617	13	1941	F	F	Test valve internally damage	ETV
228	147	3154	50807	13	1941	A	F	Test valve damage	ETV
229	156	3157	51011	13	2022	F	F	Test valve defect	ETV
230	172	3162	50424	13	1629	Z	F	Test valve failure	ETV
231	206	3176	50915	7	1639	A	F	Test valve crack	ETV
232	296	3232	51118	11	1020	F	F	Test valve defect	ETV
233	530	3922	50408	13	1607	Z	Z	Test valve broken	ETV
234	86	3100	50120	10	1362	T	F	Fuel cct failure	FLCT
235	117	3117	41119	7	25	F	F	tank	FLCT
236	307	3240	50906	11	1222	F	F	Fuel choked	FLCT
237	344	3462	40508	10	726	Me	F	Fuel filter choked	FLCT
238	413	3642	50504	12	877	Ax	F	Fuel pipe choked	FLCT
239	466	3843	51018	15	1222	Ma	Ma	Fuel cct choked	FLCT
240	472	3851	50824	15	930	F	KL	Fuel oil leak from oil charging pipe	FLCT
241	544	3932	40405	13	1446	Z	Z	Fuel cct choked	FLCT
242	545	3932	40602	13	1446	Z	Z	Fuel cct choked due to dirty filter	FLCT
243	569	3954	50325	13	1037	Ax	H	Fuel filter choked	FLCT
244	587	3975	50305	13	1461	Me	Me	Fuel cct chocked	FLCT
245	620	3991	50214	13	1718	Z	Z	Fuel filter choked due to dirty filter	FLCT
246	57	3090	40513	13	2001	D(Me)	F	Fuel motor fuse off	FLPM
247	131	3141	50114	13	1516	D(T)	BD	Fuel pump motor fuse off	FLPM

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
248	148	3156	40805	13	2032	DB	F	Fuel pump defect	FLPM
249	209	3177	41115	7	1666	DB	F	Fuel pump motor defect	FLPM
250	278	3221	50123	11	1911	D(F)	F	10A fuse off for fuel pump motor	FLPM
251	294	3232	50201	11	1020	DB	F	Fuel pump wedge wear	FLPM
252	532	3922	50925	13	1607	-	Z	Fuel pump motor defect	FLPM
253	568	3954	40901	13	1037	Ax	H	Fuel pump motor defect	FLPM
254	588	3975	51212	13	1461	D(Me)	Me	Fuel pump damage	FLPM
255	594	3978	50402	13	1388	D(Me)	Me	Fuel pump motor damage	FLPM
256	11	3041	40615	17	1229	Me	BD	Fan #2 defect	FN
257	71	3095	50214	10	1548	A,F	F	#2 Fan damage and repaired	FN
258	75	3096	50105	10	1873	DB	F	Cooling fan motor burn	FN
259	94	3107	50613	10	1820	DB	F	Fan motor earth and burn	FN
260	114	3115	40405	10	1497	DB	F	Cooling fan cable OH	FN
261	142	3151	50908	13	1584	-	F	Fan defect	FN
262	144	3154	50315	13	1941	DB	F	Fan motor no rotate	FN
263	186	3168	51112	13	1831	F	F	Water OH due to fan motor cable defect	FN
264	238	3202	50711	12	2090	F	F	Fan motor base crack	FN
265	270	3219	40926	11	2004	F	F	Water OH due to fan damage	FN
266	275	3221	40622	11	1911	F	F	Fan motor fuse off	FN
267	355	3602	40904	13	3738	Ma	Ma	Water OH due to fan defect	FN
268	365	3611	50222	12	1300	D(F)	F	Water OH due to fan motor fuse off	FN
269	373	3615	40615	12	1453	T	T	Fan motor fuse off	FN
270	379	3617	50302	12	1681	D(T)	T	Water OH due to fan motor fuse off	FN
271	381	3620	41103	12	1842	T	T	Water OH due to fan motor fuse off	FN
272	394	3625	50327	12	1376	Z	Z	Fan defect	FN
273	398	3630	40422	12	1200	Z	F	Fan fuse off	FN
274	406	3636	40618	12	1171	Me	Me	Fan connecting wire OH due to fan locked	FN
275	409	3636	41120	12	1171	D(Me)	Me	Oil and water OH due to fan motor fuse off and battery low voltage	FN
276	412	3641	50920	12	1193	F	F	Water OH due to fan motor fuse off	FN
277	429	3657	40605	12	1188	F	F	Water OH due to fan damage	FN
278	469	3845	51222	15	870	F	KL	Water OH due to fan motor fuse off	FN
279	471	3850	50325	15	665	DB	F	Cooling fan damage	FN
280	498	3889	50615	15	1262	Me	F	Water OH due to fan motor fuse off	FN
281	500	3893	40802	15	1383	DB	F	Cooling fan just start to burn	FN
282	548	3933	40623	13	1283	F	F	Water OH due to fan motor fuse off	FN
283	552	3936	50405	13	1256	D(Ax)	F	Water OH due to fan motor fuse off	FN
284	554	3941	50903	13	995	AZ	A	Water OH due to fan damage	FN
285	563	3944	51218	13	1103	DB	A	Water OH due to fan case crack	FN
286	576	3959	50611	13	1321	D(F)	F	Cooling fan fuse off	FN
287	597	3980	41001	13	1443	D(F)	Z	Fan motor fuse off	FN
288	599	3981	50410	13	1034	DB	A	Water OH due to fan failure	FN
289	122	3123	40919	14	1771	D(T)	BD	Engine no work due to FP-ES defect	FPES
290	159	3158	40626	13	1796	A	F	FPES damage	FPES
291	188	3169	40421	13	1981	Me	F	FP-ES damage	FPES
292	227	3182	41104	7	1601	F	F	FP-ES spring damage	FPES
293	267	3217	40819	11	1984	A	F	FPES damage	FPES
294	357	3605	50218	12	1315	Ax	H	Control and fuel pump sw. defect	FPES
295	444	3807	40404	18	2250	Ma	T	FP-ES spring damage	FPES
296	456	3821	50526	18	2379	D(T)	T	Control and fuel pump sw. unmovable	FPES
297	112	3114	50320	10	1886	F	F	Fire from engine and main generator	FR
298	318	3285	51112	16	862	Tb	Tb	Loco smoke, but get it off by driver	FR
299	386	3622	41029	12	1307	Z	Z	Smoke under cooling fan	FR
300	421	3655	41019	12	1079	Me	Me	Loco fire, but driver put it off	FR

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
301	356	3604	50225	12	1381	UI	Ma	Alternator smoke	FRAL
302	502	3894	50811	15	104	F	KL	Aux. alternator fire	FRAL
303	95	3108	41028	10	1486	DB	F	Temperature sw. of fire alarm system defect	FRS
304	108	3114	40820	10	1886	D(F)	F	Fire alarm defect	FRS
305	184	3168	50603	13	1831	F	F	Fire detection device defect	FRS
306	242	3205	51121	12	2164	F	F	False indication of fire	FRS
307	302	3237	41021	11	903	UI	F	Crank pin and bearing damage due to misallignment of CP and main generator	FXAM
308	591	3977	51210	13	1403	Me	Me	Crank shaft bearing move due to loose fix	FXBG
309	211	3178	41001	7	1751	F	F	Brush bad fixation and earth	FXBH
310	5	3022	40412	18	1166	DB	BD	Bad fixation of CP	FXBT
311	14	3047	51217	17	1395	F	BD	Injector plunger get out due to bad fixation	FXBT
312	24	3070	50505	15	1408	A	BD	TM cover drop out, but immediately after recovered	FXBT
313	35	3080	50507	14	1631	A	F	TM cover missing (one stone inside)	FXBT
314	42	3082	51116	14	2985	DB	F	Aux. generator flange broken due to misfixation	FXBT
315	78	3097	50401	10	1543	Ax	F	Oil collector reservoir cover loose fixation	FXBT
316	80	3098	50102	10	1835	D(F)	F	Air leak due to main air pipe bad fixation	FXBT
317	88	3100	51003	10	1362	DB	F	CP flange fix bolt crack due to bad fix	FXBT
318	110	3114	41101	10	1886	-	F	Air leak due to loose connection of air reservoir and pipe	FXBT
319	121	3123	40603	14	1771	F	BD	Aux. generator flange fix bolt cutted off	FXBT
320	143	3154	41115	13	1941	DB	F	Load regulator defect due to loose connected bolt	FXBT
321	145	3154	50409	13	1941	DB	F	Injector disconnecting lever fixing pin get out due to bad fixation	FXBT
322	185	3168	50711	13	1831	A	F	Air pipe connecting flange nut loose connection	FXBT
323	222	3180	50417	7	1518	DB	F	Fan burn due to fixing bolt broken	FXBT
324	249	3208	50917	12	2038	F	F	Load regulator flange not fixed	FXBT
325	261	3215	41008	11	2161	F	F	Flange of aux. generator broken	FXBT
326	284	3226	50207	11	928	A	F	TM blower duct dropped on bogie due to bad fixation	FXBT
327	297	3233	40512	11	1169	Ax	F	Main reservoir side cover lost due to bad fixation	FXBT
328	313	3253	50308	19	1788	F	BD	Cylinder head stud broken	FXBT
329	332	3455	50310	11	1102	DB	F	Crank shaft gear fixing bolt broken	FXBT
330	393	3625	50318	12	1376	Z	Z	CP drain cock missed due to loose fitting	FXBT
331	416	3649	40517	12	1004	D(F)	F	CP cover lost due to bad fixation	FXBT
332	463	3830	50807	18	1194	Ax	H	Fan flange bolt damage	FXBT
333	464	3840	41026	15	1487	Ax	H	Water leak from connecting part of CP cooling	FXBT
334	497	3885	40924	15	1496	Ax	F	Cylinder bloc fix bolt not fixed	FXBT
335	508	3901	40902	14	1331	F	F	TM field pole fix bolt fall out due to bad connection	FXBT
336	522	3916	50610	14	842	Me	Me	Cooling pipe for CP damaged due to bad fixation	FXBT
337	546	3932	50620	13	1446	F,Z	Z	TM cover loose fix	FXBT
338	252	3210	40405	12	1715	Ax	F	Air leak due to loose connection of valve	FXBV
339	612	3986	50914	13	900	A	A	Air leak from brake valve due to bad fixation	FXBV
340	17	3054	40505	15	1371	F	BD	Wire disconnected to fuel pump motor	FXC
341	44	3083	40421	14	2029	F	F	Wire terminal connected to voltage regulator damage	FXC

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
342	50	3084	40806	14	2161	F	F	Cable Off to alternator due to bad connection	FXC
343	51	3085	41217	13	1848	F	F	Cooling fan cable melt due to loose connection	FXC
344	65	3091	50613	12	2007	DB	F	Alternator field cable disconnected	FXC
345	115	3116	41103	7	1456	F	F	Cable melting to aux. generator due to bad connection	FXC
346	130	3140	41007	13	1757	F	BD	Governor cable fire due to bad connection	FXC
347	152	3156	50514	13	2032	F	F	Wire cutted off in ATC terminal	FXC
348	154	3157	50610	13	2022	Me	F	Wire to temperature switch of cooling fan burn due to bad fixation	FXC
349	193	3170	50720	13	2233	DB	F	Alternator cable fire due to bad connection	FXC
350	213	3178	41201	7	1751	F	F	TM field excitation cable melt due to bad connection	FXC
351	244	3206	51030	12	2114	UI	F	Alternator wiring break down due to bad fixation	FXC
352	251	3209	40510	12	2218	F	F	Wire disconnected to fuel pump motor	FXC
353	259	3213	40910	11	2025	F	F	Cable melt due to loose connection	FXC
354	260	3213	51203	11	2025	A,F	F	Battery pole melt	FXC
355	265	3216	50921	11	2036	F	F	TM cable joint part spark	FXC
356	272	3220	50612	11	1994	F	F	Battery pole melt	FXC
357	292	3228	50202	11	1073	D(F)	F	Generator cable melt due to loose connection	FXC
358	310	3245	50503	19	1515	Ax,Me	F	Temperature switch terminal spark due to bad connection	FXC
359	317	3282	50405	16	725	Tb	Tb	Voltage reg. failure due to misconnection to engine governor	FXC
360	341	3460	40817	10	1175	F	F	Battery spark due to bad connection	FXC
361	363	3610	50313	12	2912	Ma	Ma	Emergency fuel cut off switch wire cutted off due to loose connection	FXC
362	378	3616	51016	12	1418	Z	Z	Wire disconnection for fuel pump motor	FXC
363	382	3620	50213	12	1842	DB	T	Fan motor wire connection off	FXC
364	387	3623	40403	12	1352	DB	Z	Auxiliary generator connection failure	FXC
365	395	3626	40402	12	1186	F	F	Loose connection of TM ampere meter	FXC
366	407	3636	40803	12	1171	Me	Me	Fuel motor wire cutted off due to loose connection	FXC
367	430	3657	50807	12	1188	F	F	Battely pole loose connection	FXC
368	437	3802	41124	18	2437	T	T	PCR cable bad connection	FXC
369	441	3805	50105	18	2326	T	T	Fuel pump motor brush wire bad fixation	FXC
370	446	3808	50129	18	2287	T	T	Battery wire damage due to loose connection	FXC
371	450	3816	50414	18	2416	T	T	Aux. generator resistor wire disconnection	FXC
372	451	3817	40919	18	2470	T	T	One wire not connected	FXC
373	484	3866	40601	15	1870	DB	T	Fan motor lead wire short cct	FXC
374	510	3905	40824	14	1277	DB	F	Fuel motor cable earth	FXC
375	511	3905	40825	14	1277	Z	F	Fuel pump motor cable earth	FXC
376	517	3909	51010	14	1431	Ax	F	Battery pole melt due to bad fix	FXC
377	526	3921	40618	13	1278	F	F	Battery pole melt	FXC
378	570	3955	40625	13	1020	Ax	H	Wire cutted off to earth relay due to wire fix error	FXC
379	577	3960	41213	13	953	-	F	Resistor melt in Module (RCTT) due to bad connection	FXC
380	600	3981	51011	13	1034	A	A	Battery pole melt due to loose connection	FXC
381	618	3991	41007	13	1718	Z	Z	Fuel motor defect due to cable bad fix	FXC
382	189	3169	40611	13	1981	F	F	10A fuse bad fix	FXFU
383	176	3161	50702	13	1959	D(F)	F	Air hose bad fixation	FXRH

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot in Charge	Cause or Remarks	Abbre-viation
384	149	3156	41013	13	2032	D(F)	F	Bad fix of fire alarm socket	FXSK
385	203	3175	40401	7	1620	A	F	Governor socket no good fixed	FXSK
386	207	3177	40414	7	1666	D(Ax)	F	Bad connection of fire alarm socket	FXSK
387	327	3451	50612	11	1124	F	F	Cooling fan socket bad fixed	FXSK
388	346	3464	40827	10	1083	F	F	CCS socket bad fixed	FXSK
389	501	3894	50420	15	104	Ax	KL	Governor socket not fixed	FXSK
390	229	3182	50817	7	1601	Ax	F	Link of brake shoe out of position, later recover	FXZ
391	264	3216	50703	11	2036	Ax	F	Oil leak due to no oil inlet cover	FXZ
392	271	3219	41010	11	2004	F	F	CB arc chute bad fix	FXZ
393	399	3630	50505	12	1200	Z	F	No strainer in fuel supply inlet	FXZ
394	418	3649	50701	12	1004	Z	F	No power contactor arc chute	FXZ
395	27	3072	50805	15	1452	F	BD	TM cable damage and earth	GD
396	28	3072	50813	15	1452	-	BD	TM cct earth due to cable damage	GD
397	113	3114	50811	10	1886	DB	F	All traction cct earth	GD
398	141	3151	50817	13	1584	F	F	TM cable earth	GD
399	162	3158	51015	13	1796	Tb	F	TM cct earth	GD
400	179	3165	50726	13	1429	A	F	Earth	GD
401	255	3211	50706	12	2110	F	F	High voltage cable earth	GD
402	269	3218	51007	11	1756	DB	F	TM cct earth and Module (feed back) defect	GD
403	334	3457	50821	11	990	F	F	High voltage cct earth	GD
404	367	3612	50717	12	1305	Ma	Ma	High voltage cable earth to carbody	GD
405	417	3649	41112	12	1004	F	F	Earth on the way	GD
406	436	3661	51117	12	1359	D(F)	Z	Loco earth	GD
407	445	3808	40423	18	2287	T	T	Ground	GD
408	479	3859	51221	15	955	Z	KL	Earth indication	GD
409	539	3928	40806	13	1292	Ax	F	Cable earth indication	GD
410	549	3933	51213	13	1283	D(Ax)	F	High voltage earth	GD
411	585	3974	51113	13	1360	Z	Z	Loco earth	GD
412	103	3111	41210	10	1508	DB	F	Gear device wear between engine and starter	GRES
413	62	3091	50118	12	2007	DB	F	Governor driving gear between engine and governor wear	GRGV
414	257	3212	40809	12	1949	DB	F	Governor driving gear defect	GRGV
415	372	3614	41116	12	1335	Z	Z	Governor gear wear	GRGV
416	432	3658	51009	12	1378	-	Z	Governoer gear defect	GRGV
417	465	3843	50317	15	1222	Ma	Ma	Governor flange gear wear	GRGV
418	605	3983	50205	13	972	DB	A	Governer flange and drive gear wear	GRGV
419	553	3940	40623	13	1043	A	A	Main shaft drive gear wear	GRRD
420	353	3468	50114	10	1166	DB	F	Water pump gear damage	GRWP
421	132	3141	50718	13	1516	F	BD	Head light resistor socket damage	HL
422	403	3633	41211	12	1175	F	F	Head light cct failure from begining	HL
423	523	3918	50617	13	1566	Ma	Ma	Head lamp no light due to resistor damage	HL
424	525	3920	50121	13	1373	F	F	Head light go out due to overload	HL
425	34	3080	40809	14	1631	F	F	Horn defect	HR
426	125	3127	40524	14	1650	F	BD	Horn defect	HR
427	308	3242	50818	19	1430	Ax,Ma	F	Horn damage	HR
428	542	3929	41007	13	1290	D(T)	F	Horn defect	HR
429	584	3974	50309	13	1360	DB	Z	Horn damage	HR
430	136	3146	41023	13	1797	A	BD	Loco no braking due to bad preparation	INSP
431	281	3224	41023	11	1322	Ax	F	Earth and water leak due to bad inspection	INSP
432	361	3609	50724	12	2868	Ma	Ma	Long preparation work time	INSP
433	31	3076	50510	14	1693	-	BD	Washer damage inside of load regulator	LR

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
434	58	3090	41108	13	2001	D(F)	F	Load regulator resistor broken from begining	LR
435	102	3111	40906	10	1508	DB	F	LR defect	LR
436	111	3114	41128	10	1886	UI	F	Load regulator defect	LR
437	468	3844	50301	15	914	F	KL	Load regulator failure	LR
438	505	3896	50530	15	1412	F	F	Load regulator bad working due to dust from broken small side glass	LR
439	519	3911	50807	14	1346	F	F	Load regulator wedge get out and repair	LR
440	52	3086	40525	13	1980	F	F	Module (VR) defect	MDL
441	55	3088	50819	13	2048	A,F	F	Module (RB13) defect	MDL
442	326	3451	50302	11	1124	-	F	Thermal resistor of Module damage	MDL
443	434	3661	50129	12	1359	EC	Z	Module WS11 (Wheel Slip) defect	MDL
444	575	3959	40908	13	1321	-	F	Module defect	MDL
445	615	3988	50815	13	1454	Me	Me	Module for battery charging from aux. generator	MDL
446	137	3149	41110	13	1828	F	BD	Main generator carbon wear due to bad surface condition of slip ring	MG
447	173	3163	40508	13	1827	A	F	Main generator ground	MG
448	348	3464	51026	10	1083	F	F	Carbon wear of main generator due to rough surface of slip ring	MG
449	431	3658	40506	12	1378	DB	Z	Main generator field coil open	MG
450	625	3995	40603	13	1544	M	Z	Main generator stator OH	MG
451	134	3144	50121	13	1715	F	BD	ATC failure due to dirty magnetic valve	MV
452	169	3160	51101	13	1904	D(Z)	F	Magnet valve defect	MV
453	535	3925	50406	13	1352	Z	F	Air inlet shutter operating MV no work	MV
454	2	3009	51221	3	239	D(Z)	F	Unknown defect, after OK	NDFT
455	89	3100	51011	10	1362	D(Me)	F	Air drop, but loco good	NDFT
456	161	3158	50220	13	1796	D(Ax)	F	Governor oil shortage, but no defect	NDFT
457	164	3159	40419	13	1952	Ax	F	No defect	NDFT
458	187	3169	40419	13	1981	F	F	No defect	NDFT
459	221	3180	50217	7	1518	D(F)	F	Train speed irregular but after inspection OK	NDFT
460	241	3205	41216	12	2164	D(F)	F	No speed from begining but no defect	NDFT
461	331	3454	41119	11	1208	D(Me)	F	No traction power, but Loco OK after inspection	NDFT
462	333	3456	51128	11	1277	D(A)	F	Loco defect, but OK	NDFT
463	419	3653	40908	12	802	D(Me)	F	Loco stop by unknown reason, after recover	NDFT
464	582	3973	50312	13	1541	Z	Z	Pump motor no work, after inspection OK	NDFT
465	586	3975	40604	13	1461	A	Me	Abnormal noise of fan, but no defect	NDFT
466	25	3070	51104	15	1408	T	BD	No speed	NSP
467	26	3071	40504	15	1489	Me	BD	No traction power	NSP
468	79	3098	41016	10	1835	Me	F	No speed up	NSP
469	194	3172	41008	7	1647	D(A)	F	No speed up	NSP
470	230	3183	40804	5	1266	F	F	Loco no power	NSP
471	282	3225	50624	11	1199	DB	F	No speed up	NSP
472	291	3228	50108	11	1073	D(Ma)	F	Loco break down	NSP
473	306	3240	50727	11	1222	UI	F	No speed up	NSP
474	309	3244	50920	19	1509	UI	F	Loco no move for both direction	NSP
475	324	3449	40905	11	1248	Ax	F	No speed up	NSP
476	376	3616	50503	12	1418	D(F)	Z	Loco no speed up	NSP
477	405	3636	40413	12	1171	D(Me)	Me	No speed up	NSP
478	474	3857	40511	15	910	D(F)	KL	Load current suddenly down	NSP
479	534	3924	41111	13	1289	D(T)	F	Loco no power from bigining	NSP
480	254	3211	50528	12	2110	F	F	Lubricating oil filter gasket damage	OOT
481	6	3025	40819	18	956	Ax	BD	Oil pipe to LR choked	OP

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
482	13	3042	40522	17	1304	A	BD	Oil leak from pipe	OP
483	84	3100	40404	10	1362	F	F	Governor oil pipe cutted off	OP
484	126	3130	40410	14	1590	DB	BD	Oil pipe choked	OP
485	216	3179	40926	7	1600	F	F	Oil leak from oil tank	OP
486	300	3236	40911	11	1065	Z	F	Oil pipe crack	OP
487	315	3267	40416	18	1676	Z	BD	Oil leak from pipe	OP
488	390	3623	50925	12	1352	Z	Z	Main generator defect due to oil scattering from cutted off oil pipe	OP
489	518	3911	50611	14	1346	Ax	F	Oil cooling pipe cutted off	OP
490	543	3929	50705	13	1290	T	F	Oil filter broken due to oil pipe crack	OP
491	572	3956	51015	13	1506	Ma	Ma	Oil leak from oil pipe of blower	OP
492	12	3041	51024	17	1229	D(Me)	BD	CB for supercharger oil lubricating pump motor open	OPM
493	40	3082	40616	14	2985	Me	F	CB open due to supercharger oil pump motor over load	OPM
494	182	3168	40505	13	1831	-	F	Driving rod to aux generator cutted off	RDAG
495	312	3252	41020	19	1680	DB	BD	Aux. generator shaft broken in both side	RDAG
496	29	3073	41115	15	1300	F	BD	Shaft between engine and CP broken	RDCE
497	9	3039	51104	17	1192	Z	BD	CP connecting rod broken	RDCP
498	180	3167	50226	13	2217	UI	F	Rear bogie link damage due to bad connection	RDFX
499	627	3995	50503	13	1544	DB	Z	Connecting rod bad fixation	RDFX
500	1	3003	50524	3	219	M	F	Ry coil broken	RY
501	124	3127	40517	14	1650	-	BD	Ry open	RY
502	177	3165	50211	13	1429	-	F	CDR Ry damage	RY
503	181	3167	50907	13	2217	-	F	Ry coil open	RY
504	224	3181	41004	7	1635	-	F	Ry (QR) coil open	RY
505	283	3225	50915	11	1199	-	F	Ry. coil open	RY
506	286	3226	51012	11	928	-	F	Ry (ER) open	RY
507	423	3655	41126	12	1079	Me	Me	Ry(FC-1) damage	RY
508	509	3905	40505	14	1277	-	F	EQP open	RY
509	538	3926	51003	13	1512	Ma	Ma	Ry (GFX) open	RY
510	550	3936	40526	13	1256	F	F	Ry. GFX open from beginning	RY
511	574	3957	50914	13	1330	-	Ma	CDR Ry coil open	RY
512	626	3995	50215	13	1544	Z	Z	Fan Ry short cct	RY
513	632	3998	51211	13	1402	-	F	Ry defect due to inside wire cutted off	RY
514	23	3067	40611	15	1444	Z	BD	Water OH due to water shortage, even fan no good condition	SFOW
515	119	3118	41209	7	1734	Me	F	Supply fuel due to no fuel from begining	SFOW
516	123	3123	50804	14	1771	T	BD	Fuel shortage	SFOW
517	174	3163	50409	13	1827	T	F	Governor oil exchange	SFOW
518	290	3227	51224	11	1104	Ma	F	Oil shortage in CP	SFOW
519	304	3238	50904	11	1023	Ma	F	Water shortage	SFOW
520	323	3448	40611	11	1137	Z	F	Supply fuel and water due to no water and fuel	SFOW
521	329	3454	40905	11	1208	D(Me)	F	Supply cooling water due to water shortage	SFOW
522	336	3458	50610	11	1246	Ax	F	No fuel and CP lubricating oil shortage	SFOW
523	351	3468	41008	10	1166	D(F)	F	Supply water due to water shortage	SFOW
524	414	3643	41012	12	1168	Me	F	Water OH due to water shortage	SFOW
525	428	3656	50907	12	1357	Z	Z	Water OH due to water shortage	SFOW
526	461	3826	50802	18	2280	T	T	Supply fuel	SFOW
527	477	3857	51111	15	910	F	KL	Cooling water shortage	SFOW
528	499	3892	40806	15	1495	Ax	F	Fuel shortage	SFOW
529	520	3915	50714	14	612	Ax	K	No fuel	SFOW
530	67	3093	50125	12	2079	F	F	Cooling fan (2) temperature switch failure	SSW

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
531	76	3097	40626	10	1543	Ax	F	Short ctt of controller sw.	SSW
532	266	3217	40804	11	1984	D(Me)	F	Control cct box sw. defect	SSW
533	486	3866	50219	15	1870	T	T	Operating sw. failure	SSW
534	598	3980	41015	13	1443	Z	Z	Operating sw. spring broken	SSW
535	96	3108	50421	10	1486	F	F	Starting cct failure	STCT
536	514	3908	50919	14	902	D(Ax)	K	Battery discharge due to several times starting	STCT
537	64	3091	50313	12	2007	F	F	Starter motor wire damage	STM
538	127	3133	51003	13	1790	F,Me	BD	Starter motor earth	STM
539	235	3201	41104	12	2029	T	F	Starter motor defect	STM
540	279	3222	40824	11	1274	F	F	Starter motor no work due to shaft bending	STM
541	374	3615	41018	12	1453	D(T)	T	800A fuse off of starter motor	STM
542	383	3620	50807	12	1842	T,Ax	T	Starter motor fuse off	STM
543	452	3817	50121	18	2470	D(T)	T	Starter motor fuse off	STM
544	493	3879	41224	15	1052	F	KL	Starter motor no work from begining	STM
545	547	3932	50901	13	1446	Z	Z	Starter motor cable OH	STM
546	611	3985	50201	13	1244	Ma	Ma	Starter motor failure	STM
547	81	3098	50301	10	1835	D(Me)	F	Wheel flat of both bogie	TFT
548	90	3102	51117	10	1815	DB	F	Wheel flat	TFT
549	311	3246	40904	19	1306	D(Me)	F	Wheel flat	TFT
550	628	3996	41219	13	1329	D(Me)	Me	Wheel flat	TFT
551	32	3079	50916	14	1564	DB	BD	TM main field cable cutted off	TM
552	392	3625	40905	12	1376	Z	Z	Wheel slip due to TM (4) some defect	TM
553	541	3928	50119	13	1292	-	F	TM interpole short cct	TM
554	557	3943	40913	13	1533	Z	Z	TM smoke due to inner friction	TM
555	199	3172	51209	7	1647	DB	F	TM damage due to binding wire broken	TMBW
556	233	3185	40923	5	1301	F	F	No oil in driving gear box	TMGB
557	581	3962	51108	13	1543	Z	Z	TM gear damage due to no grease	TMGB
558	36	3080	50902	14	1631	-	F	TM earth	TMGD
559	109	3114	40901	10	1886	F	F	TM earth	TMGD
560	438	3802	50816	18	2437	T	T	TM earth	TMGD
561	592	3978	40816	13	1388	Me	Me	TM cable earth	TMGD
562	607	3984	40602	13	1129	A	A	TM earth	TMGD
563	276	3221	40921	11	1911	D(F)	F	Reason unknown	U
564	492	3874	41115	15	1379	Ax	H	Unknown reason, recovered by technician	U
565	7	3032	40419	18	1249	F	BD	Water pipe gasket damage	WGT
566	18	3054	50205	15	1371	Ax	BD	Water leak due to cooling water gasket damage	WGT
567	100	3110	40513	10	1888	Ax	F	Water leak from water pump due to gasket damage	WGT
568	163	3158	51228	13	1796	Ax	F	Water leak from pipe gasket	WGT
569	170	3161	40519	13	1859	A	F	Water leak from water pump gasket	WGT
570	195	3172	41122	7	1647	A	F	Water leak from water pump	WGT
571	212	3178	41102	7	1751	Me	F	Water leak from water pump due to gasket	WGT
572	289	3227	50504	11	1104	A	F	Water leak from water pump due to gasket damage	WGT
573	330	3454	40914	11	1208	A	F	Water leak from water pump	WGT
574	360	3609	50112	12	2868	Ma	Ma	Water leak due to water pump seal damage	WGT
575	506	3896	50701	15	1412	F	F	Water pipe gasket damage	WGT
576	515	3909	40615	14	1431	Me	F	Water leak due to pump gasket damage	WGT
577	527	3921	41018	13	1278	Z,T	F	Water leak from water pump	WGT
578	589	3977	40518	13	1403	Me	Me	Water leak from water pump gasket	WGT
579	371	3613	40812	12	1182	Ax	H	Water OH due to hose choked	WH
580	491	3874	41020	15	1379	Ax	H	Water leak due to rubber hose broken	WH

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
581	118	3117	50604	7	25	F	F	Governor plunger get out due to water over heat	WOH
582	160	3158	40810	13	1796	T	F	Water OH	WOH
583	214	3179	40801	7	1600	F	F	Water OH	WOH
584	226	3181	50924	7	1635	UI	F	Water OH	WOH
585	248	3208	50113	12	2038	F	F	Water OH indication	WOH
586	380	3619	40521	12	1181	T	F	Water OH	WOH
587	389	3623	50725	12	1352	Z	Z	Water over heat and fuel supply time for loco.	WOH
588	448	3811	40405	18	2225	T	T	Water OH	WOH
589	455	3821	40504	18	2379	T	T	Water OH due to air chamber shutter closed	WOH
590	470	3849	40915	15	948	DB	F	Water OH	WOH
591	604	3983	40903	13	972	A	A	Water OH	WOH
592	609	3984	41114	13	1129	A	A	Water OH due to water leak	WOH
593	630	3998	40810	13	1402	Ax	F	Water OH	WOH
594	253	3211	50413	12	2110	F	F	holed	WP
595	354	3469	50915	10	808	DB	F	Water leak due to elbow crack	WP
596	385	3622	40503	12	1307	Z	Z	Water leak from radiator pipe	WP
597	435	3661	50419	12	1359	X	Z	Water OH due to 3 pipes of radiator broken	WP
598	490	3871	41207	15	1590	Ax	H	Water leak due to CP cooling water pipe crack	WP
599	521	3916	40413	14	842	Me	Me	Water leak due to elbow damage	WP
600	533	3923	40622	13	795	Ax	K	Water leak due to pipe crack to radiator	WP
601	537	3926	50705	13	1512	Ma	Ma	Water pipe damage to water pump	WP
602	564	3947	50504	13	1338	Me	Me	Water leak from pipe connected to radiator	WP
603	369	3613	40505	12	1182	Ax	H	Water leak from highest point of radiator	WR
604	512	3907	40922	14	1432	-	F	Water leak from radiator	WR
605	562	3944	51215	13	1103	A	A	Water leak from radiator	WR
606	603	3983	40807	13	972	A	A	Water OH due to radiator choked	WR
607	93	3106	41226	10	1327	-	F	Coupler terminal short cct due to coupler cover broken by stone	X
608	337	3459	40502	11	223	Ma	F	Brake handle bending by unknown cause	X
609	340	3459	50519	11	223	A	F	Flange fix bolt between CP and engine cutted off due to collision	X
610	396	3626	50505	12	1186	X	F	Air pipe damage due to collision with private car	X
611	411	3641	50209	12	1193	X	F	Cow catcher broken due to cow	X
612	424	3655	50120	12	1079	Me	Me	Engine break down due to collision	X
613	551	3936	40913	13	1256	Me	F	Air pipe cock closed and driver manually open	X
614	614	3988	50216	13	1454	X	Me	effect	X
615	631	3998	50604	13	1402	D(Ax)	F	TM cover missing due to external effect	X
616	48	3083	50505	14	2029	F	F	Voltage regulator wire short cct	Y
617	175	3164	41005	13	1959	F	F	Main generator cable short cct	Y
618	258	3212	51014	12	1949	DB	F	CB for oil motor open due to wire short cct	Y
619	420	3655	40424	12	1079	-	Me	Short cct	Y
620	593	3978	50320	13	1388	-	Me	Short cct	Y
621	16	3052	51122	15	681	-	BD	Weak field resistor OH	Z
622	39	3081	40407	14	2045	F	F	Cable supporter damage	Z
623	41	3082	50215	14	2985	-	F	Wheel slip registor cutted off	Z
624	46	3083	50112	14	2029	-	F	Voltage regulator defect due to 160A fuse off	Z
625	47	3083	50116	14	2029	-	F	Condenser damage	Z
626	234	3188	50611	5	1304	D(F)	F	250A fuse off due to bad fuse	Z

Appendix 4.2.8.1.2 Locomotive Break Down Table (Alphabetic Order of Cause)

	No.	Loco No.	Date	Loco. Age	Total Run	Respon-sibility	Depot In Charge	Cause or Remarks	Abbre-viation
627	236	3202	40818	12	2090	F	F	Bogie oil dumper damage	Z
628	339	3459	50410	11	223	-	F	Earth knife switch damage	Z
629	480	3862	50925	15	1034	F	KL	Fuel level side glass broken	Z
630	487	3868	40607	15	1469	T	T	Coupler off between loco and coach	Z
631	516	3909	40620	14	1431	T	F	One controller no work (One cabin type loco)	Z
632	595	3979	41207	13	1415	-	Me	CR30 failure on the way	Z

[Remarks]

As of Dec. 31, 1995

Depot responsible :

A-Aswan, Ax-Alex, BD-Bulak Dakroor, AZ-Abuzabal, D-Driver, DB-Diesel Bulak, EC-Electronic Center, F-Farz, H-Hadra, K-Kabary, KL-Kopri Lamon, M-Maker, Ma-Mansura, Me-Menya, T-Tanta, Tb-Tebien, UI-Under Investigation, X-External, Z-Zagazig

Appendix 4.2.10-1 (1) Cost Estimation of Passenger (Rail and Bus)
Basic Index for estimation

Condition of Line — Length — 9.8 km
Number of station — 3 including Faqus Stn.

Railway

Items	Contents	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Number of Train (day both d.)		12	12	22	22	38	38
Train formation	1 Loco + ? coach	3	5	5	8	5	8
Number of loco		1	1	1	1	2	2
No. of Psg in peak	Number of train	1	1	2	2	4	4
Number of Psg.	80 x 2.5 x coach	600	1,000	2,000	3,200	4,000	6,400
		600	1,000	2,000	3,200	4,000	6,400
Number of Psg. Off peak	No. of train	10	10	18	18	30	30
	No.of psg. per coach =60	1,800	3,000	5,400	8,640	9,000	14,400
Total Number of Psg. (day)		3,000	5,000	9,400	15,040	17,000	27,200
Psg. -km per day	x 9.8	29,400	49,000	92,120	147,392	166,600	266,560
Average section Volume	/9.8 km	1,596	2,940	5,460	8,736	9,940	15,904
Psg.-km (year, 1000)		10,731	17,885	33,624	53,798	60,809	97,294
Train kilometer	No. of train x 9.8	118	118	216	216	372	372
	year	42,924	42,924	78,694	78,694	135,926	135,926
Staffs							
Station Faqus	Faqus	10	10	10	10	10	10
Sammana	Sammana	5	5	5	5	5	5
Oshkor	Oshkor	3	3	3	3	8	8
Sum		18	18	18	18	23	23
Track	Track	5	5	5	5	5	5
	Level crossing	12	12	12	12	12	12
Sum		17	17	17	17	17	17
Train running time		9	9	17	17	29	29
Crew Loco. 2 driver		3.9	3.9	7.2	7.2	12.4	12.4
Conductor 2 - 3 con.	1 Con. 3 coach	1.7	3.3	6.1	9.2	10.6	15.9
sum		5.6	7.2	13.3	16.3	22.9	28.2
	Round	5.6	7.2	13.3	16.3	22.9	28.2

Bus

Items	Contents	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Necessary no. of bus	2 hour, 3 round trips, capacity of bus 70 persons						
		2.86	4.76	9.52	15.24	19.05	30.48
	Round	3	5	10	16	19	31
Bus trips	Peak	18	30	60	96	114	186
	Other (1 coach=1bus)	30	50	90	144	150	240
	Total	48	80	150	240	264	426
Running kilometer	x 10.5 x bus trips	504.0	840.0	1,575.0	2,520.0	2,772.0	4,473.0
	year	183,960	306,600	574,875	919,800	1,011,780	1,632,645

Appendix 4.2.10-1 (2)
COST ESTIMATION FOR RAILWAY

Category	Case 1 : Peak 600			Case 2 : peak 1000			Case 3 : peak 2000			Case 4 : peak 3200		
	U. Price	Volume	Cost	U. Price	Volume	Cost	U. Price	Volume	Cost	U. Price	Volume	Cost
Personeel Cost												
Station	4,200	18	75,600	4,200	18	75,600	4,200	18	75,600	4,200	23	96,600
Track Maintenance	4,200	17	71,400	4,200	17	71,400	4,200	17	71,400	4,200	17	71,400
Train Crews	4,800	5.6	26,880	4,800	7.2	34,560	4,800	13.3	63,840	4,800	16.3	78,240
Service & Material Cost												
Station	320	18	5,760	320	18	5,760	320	18	5,760	320	23	7,360
Fuel	1.24	42,924	53,226	1.24	42,924	53,226	1.24	78,694	97,581	1.24	78,694	97,581
Capital cost of Rolling stock												
Locomotive	539,900	1	539,900	539,900	1	539,900	539,900	1	539,900	539,900	1.5	809,850
Coach	42,200	3	126,600	42,200	5	211,000	42,200	8	337,600	42,200	10	422,000
Rolling stock Maintenance												
Locomotive	73,800	1	73,800	73,800	1	73,800	73,800	1	73,800	73,800	1.5	110,700
Coach	11,000	3	33,000	11,000	5	55,000	11,000	8	88,000	11,000	10	110,000
Track Maintenance	3,200	9.8	31,360	3,200	9.8	31,360	3,200	9.8	31,360	4,160	9.8	40,768
Signalling Mainte.	850	9.8	8,330	850	9.8	8,330	850	9.8	8,330	1,105	9.8	10,829
Total			1,037,526			1,151,606			1,384,841			1,844,499
Overhead	371,026	0.40	148,410	400,706	0.40	160,282	507,341	0.40	202,936	612,649	0.40	245,059
Grand Total			1,185,936			1,311,888			1,587,777			2,089,558
Cost per 100 psg.			197,656		1,200	131,189			79,389			65,299
Cost per Psg.-km (1000)			110.51			73.35			47.22			38.84
Passen. section Volume (day)			1,596			2,940			5,460			10,528

Capital Cost	Interesr	0.05	Average Investment cost Ratio	0.070950	(25 years)	
Locomotive	Price		7,610 thousand LE	539,930		
Coach	Interesr	0.05	Average Investment cost Ratio	0.060243		
	Price		700 thousand LE	42,170	(36 years)	
Ration of Capital Cost of Rolling stock			0.56200	0.57238	0.55266	0.58953
						0.0229

Category	Case 5 : peak 4000			Case 6 : peak 6400		
	U. Price	Volume	Cost	U. Price	Volume	Cost
Personeel Cost						
Station	4,200	23	96,600	4,200	23	96,600
Track Maintenance	4,200	17	71,400	4,200	17	71,400
Train Crews	4,800	22.9	109,920	4,800	28.2	135,360
Service & Material Cost						
Station	320	23	7,360	320	23	7,360
Fuel	1.24	135,926	168,548	1.24	135,926	168,548
Capital cost of Rolling stock						
Locomotive	539,900	1.5	809,850	539,900	1.5	809,850
Coach	42,200	16	675,200	42,200	16	675,200
Rolling stock Maintenance						
Locomotive	73,800	1.5	110,700	73,800	1.5	110,700
Coach	11,000	16	176,000	11,000	16	176,000
Track Maintenance	4,160	9.8	40,768	5,408	9.8	52,998
Signalling Mainte.	1,105	9.8	10,829	1,437	9.8	14,078
Total			2,266,346			2,304,017
Overhead	781,296	0.40	312,518	818,967	0.40	327,587
Grand Total			2,578,865			2,631,603
Cost per 100 psg.			64,472			41,119
Cost per Psg.-km (1000)			42.41			27.05
Passen. section Volume (day)			11,900			19,040

Ration of Capital Cost of Rolling stock 0.57585 0.56431

0.0153

Appendix 4.2.10-1 (3)
COST ESTIMATION FOR BUS

Explanatory

	Case 1		Case 2		Case 3		Case 4	
Passenger Volume	Peak	600	Peak	1,000	Peak	2,000	Peak	3,200
Number of Bus		3		5		10		16
Running km		183,960		306,600		574,875		919,800
Driver	20/6x3x1.3		20/6x5x1.3		20/6x10x1.3		20/6x16x1.3	
	13		22		43		69	
	13		22		43		69	
Conductor	20/7x3x1.3		20/7x5x1.3		20/7x10x1.3		20/7x16x1.3	
	11.143		18.571		37.143		59.429	
	11		19		37		59	

COST ESTIMATION FOR BUS

Road maintenance cost	17,000	10.5	178,500	17,000	10.5	178,500	17,000	10.5	178,500	17,000	10.5	178,500
Capital Cost	31,100	3	93,300	31,100	5	155,500	31,100	10	311,000	31,100	16	497,600
Crew cost												
Driver	9,600	13	124,800	9,600	22	211,200	9,600	43	412,800	9,600	69	662,400
Conductor	7,200	11	79,200	7,200	19	136,800	7,200	37	266,400	7,200	59	424,800
Running Cost (LE/1000 KM)												
Fuel	94	184.0	17,292	94	306.6	28,820	94	574.9	54,038	94	919.8	86,461
Oil	32	184.0	5,889	32	306.6	9,814	32	574.9	18,402	32	919.8	29,443
Tyres	129	184.0	23,773	129	306.6	39,622	129	574.9	74,291	129	919.8	118,866
Maintenance parts	3	184.0	486	3	306.6	809	3	574.9	1,518	3	919.8	2,428
Maint. workers	38	184.0	6,899	38	306.6	11,498	38	574.9	21,558	38	919.8	34,493
Total			351,638			594,064			1,160,007			1,856,491
Over head cost	351,638	0.20	70,328	594,064	0.20	118,813	1,160,007	0.20	232,001	1,856,491	0.20	371,298
Grand Total			600,466			891,376			1,570,508			2,406,289
Cost per 100 psg			100,078			89,138			78,525			75,197
Cost per psg.-km (1000)			55.96			49.84			46.71			44.73
Capital Cost	Interesr	0.050	Average Investment cost Ratio			0.129500	(10 years)					
Bus	Price		240,000			31,080						

Case 5			Case 6		
Peak	4,000		Peak		6,400
		19			31
		1,011,780			1,632,645
20/6x19x1.3			20/6x31x1.3		
82			134		
82			134		
20/7x19x1.3			20/7x31x1.3		
70.571			115.143		
71			115		

17,000	10.5	178,500	17,000	10.5	178,500
31,100	19	590,900	31,100	31	964,100
9,600	82	787,200	9,600	134	1,286,400
7,200	71	511,200	7,200	115	828,000
94	1,011.8	95,107	94	1,632.6	153,469
32	1,011.8	32,387	32	1,632.6	52,261
129	1,011.8	130,752	129	1,632.6	210,987
3	1,011.8	2,671	3	1,632.6	4,310
38	1,011.8	37,942	38	1,632.6	61,224
		2,188,160			3,560,751
2,188,160	0.20	437,632	3,560,751	0.20	712,150
		2,804,291			4,451,401
		70,107			69,553
		46.12			45.75

Appendix 4.2.10-2 12 Lines Survey Descriptions and Recommendation

LINE 14 El Fayum - Abu Kesah

Recommendations
Don't close this line for the following reasons :

- The train is more profitable than the average ENR line, with a revenue/cost ratio of 80%.
- The train is heavily used, and is very crowded during rush hours. When the Study Team's surveyor visited, there were even people hanging on the doors because there was no place to stand inside the train. The train left 5 minutes early, possibly because it was so full that it couldn't take any more passengers.
- The train is cheaper and more comfortable than alternate transport.
- The train is the only direct link between El Fayum & Abu Kesah.

Alternative Recommendation
Raise the ticket price. The train ticket costs 0.30 LE, the bus costs 0.75 LE, and the pickup trucks cost 1.00 LE.

The Line
The city of El Fayum is South-West of Cairo. El Fayum is one of Egypt's governorates and can be considered a main city. The population of this governorate in 1995 was 2,174,035. This line goes further West of El Fayum, to reach Abu Kesah, which is a town in the Western Desert with 164,040 inhabitants. The line is 24 Km long. There are 5 stations in between El Fayum and Abu Kesah.

NOTE: The data below is for the line El Wasta - El Fayum - Abu Kesah.
The survey described in this section is only for the section El Fayum - Abu Kesah.

Stations	Track Km.	Passenger Train Km. (average daily)	Freight Train Km. (average daily)
13	61	1,113	20

(Units: 1,000 LE)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
4,571	122	1,040	5,733	7,189	-1,456	80%

Note: Includes El Wasta - Fayum-Abu Kesah

The Train
Two trains operate on the line. Both are unified class, with 4 coaches and a locomotive. The 2 trains leave both El Fayum and Abu Kesah at the same time, 5 times a day, and pass each other midway. The departure times are: 7:30, 10:30, 12:15, 14:10, 16:00.
For some strange reason, just before the train arrives at or leaves Abu Kesah, children shower the train with rocks. The train riders are used to this, and they let down the wooden shutters to protect themselves.

Alternative Transport

Pickup trucks are the main alternative transport. They have taxi license plates and operate as share taxis. The backs of the pick-up trucks have small cabins for passengers. One pick-up truck carries up to 15 persons. There are no microbus taxis along the line. There are a few buses which are very old and dirty. The buses are also very crowded with passengers.

Neither pickup trucks nor buses go directly between Fayum and Abu Kesah. Passengers making the entire trip must get off in Ibshawai and transfer to another vehicle to continue.

	Fayum	←→	Ibshawai	←→	Abu Kesah	Total Cost	Total Time
Train						.30LE (Some 6 month tickets only 12 LE)	45 min
Pickup truck		0.75 LE 20 min	transfer	0.25 LE 10 min		1.00 LE	30 min + transfer
Bus		0.50 LE 35 min	transfer	0.25 LE 10 min		0.75 LE	45 min + transfer

The Passengers

More than 75% of the riders are students from 12 - 17 yeas old. The second most common passengers are government employees. There are equal numbers of males and females, mostly students, but also many housewives.

Passenger Survey Results

Reason Use the Train	Cost: 44%. Comfort: 19%
Alternate transport	Share taxi: 89%, Bus: 10%
Alternate transport price	10 times the train price, on average (because most passengers have season tickets)
Average income	80-350 LE / month

LINE 20 Abu Kebir - Faqus - El Salhia

Recommendations

1) Don't close this line for the following reasons :

- The train is much preferred to alternative transport. The train is much cheaper, more comfortable, and the only direct transport from Abu Kebir to El Salhia.
- There is very high demand for the train. The train is very crowded and is obviously needed in the region.
- El Salhia has 2 military bases.

2) Recommendation to raise ticket prices.

This line lost 3,336,000 LE in 1994/95, according to the Study Team's calculations. Most of the train tickets sold are very cheap student discount tickets. Even regular train tickets

cost only 0.50 LE, much less than the 1.25 LE for share taxis. Passengers prefer the train so much that they will be willing to pay more for the tickets.

The Line

Abu Kebir is a town located South of the governorate of El Mansoura. This line goes in horizontal route Eastwards to pass through Faqus then further east to reach El Salhia. The 33 Km single track is only operated by 31 passenger trains. The population of Abu Kebir in 1995 was 85,571 while the population of Faqus was 60,401 people, and Salhia is the smallest with 18,386 people only.

The train originally comes 30 Km. from Zagazig, then turns eastwards passing through the Abu Kebir - Faqus - El Salhia line. The three towns on this line are all agricultural areas inhabited by farmers.

Abu Kebir is a fairly large town that is of large agricultural importance. It is a poor farming town. Faqus is another large, densely populated, poor rural town. Salhia is a very small town which has some military importance. There are two military camps, one of which is in the heart of the town. The three towns belong to Sharqiyah governorate.
There are 9 stations in between Abu Kebir and Salhia. Many passengers get off and get on at each station. This shows that each station along the line has its importance and the train is important at all points on the line. The train is crowded throughout its journey.

Stations	Track Km.	Passenger Train Km. (average daily)	Freight Train Km. (average daily)
10	34	820	0

(Units: 1,000 LE)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
627	0	753	1,381	4,716	- 3,335	29%

The Train

The train is a third class train with 5 coaches. Each coach seats 80 passengers. The train is cheap and fast, and people ride it mainly for these reasons.

Alternative Transport

Alternative transport are share taxis and buses. Share taxis are either pickups with cabins in the back, or cars. The cars are either Peugeot (seats 7), or 1960 Mercedes diesels (seats 5). There is no direct transport from Salhia to Abu Kebir. To get to Abu Kebir, one must take a share taxi to Faqus, and from there a bus or other share taxi to Abu Kebir.

The share taxis are very uncomfortable. Sometimes, a car which seats 5 passengers is packed with up to 11 passengers (this happened to the Study Team's surveyor). This can be extremely uncomfortable. One woman was practically sitting on the surveyor, and complained that the train is much, much better. From Faqus to Abu Kebir, passengers must transfer to a another share taxi or a bus. The bus belongs to the East Delta Bus Company. The buses are

a bit old, but are more comfortable than share taxis (if a seat is available). The bus passes through Abu Kebir on its way to Zagazig.

	El Salhia	←→	Faqus	←→	Abu Kebir	TOTAL
Train		30 min		15 min		0.50 LE
Share taxi		0.75 LE 20 min	transfer	0.50 LE 10 min		1.25 LE
Bus		no bus	transfer to/from taxi	0.50 LE 15 min		1.25 LE (taxi + bus)

The Passengers

The train is very useful to students aged 12-18 years, who may be 90% of the passengers. This is because the train is available from the very early morning at 7:30 am, when the schools will start.

Passenger Survey Results

Destination	School or work: 99%
Reason Use the Train	Cost: 49%, Comfort: 28%
Alternate transport	Share taxi: 67%, Bus: 33%
Alternate transport price	13.7 times train price, on average (because most passengers have very cheap season tickets)
Average Income	80-350 LE / month

LINE 21 Benha - Zefta

Recommendations

1) Do not close this line. The line is heavily used.

Alternate Recommendations

- Eliminate service when the train is empty early morning and late evening.

The train is empty leaving Benha at 4:10 and 23:10, and leaving Zefta at 4:35 and 22:50. This will save approximately 5% of the line expenses. 5% of 4,815,000 LE = 240,750 LE saved.

The Line

The line passes through the following stations :

Benha - (Werwera) - Demlo - (Mit El Hawafiyn) - **Mit Bora** - **Shobra Bakhom** - **Tafahna El Azab** - **Saad Basha Zaghloul** - **Ismail Basha Sedqui** - **Mansour Basha** - **Zefta**

NOTE: Main stations in **bold**, (platforms in parentheses)

Stations	Line Km.	Passenger Train Km. (average daily)	Freight Train Km. (average daily)
11	34	849	10

(Units: 1,000 LE / YEAR)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
898	61	789	1,748	4,815	-3,067	36%

The Train

The train consists of 1 locomotive and 5 coaches. Each coach has 240 seats.

Train schedule:

NOTE:	**Empty Train** about 80 passengers	**Medium Full train** 80 - 1,200 passengers	**Full Train** about 1,200 passengers

Benha-Zefta:

4:10 6:45 7:45 8:50 11:05 12:35 14:20 15:25 17:20 19:15 21:20 23:10

Zefta-Benha:

4:35 6:10 7:20 9:21 10:42 13:05 14:45 15:58 17:50 19:40 21:45 22:50

Alternative Transport

Share taxis are faster and have a better schedule than the train. But share taxis are more expensive, especially for students and government workers using discount tickets.

	Benha ←→ Zefta	Season tickets
Train	0.50 LE	Student: 12 LE / 9 months Government: 29 LE / 9 months Others: 64 LE / 9 months Kilometer: 1 LE / kilometer
Share taxi	1.50 LE	

The Passengers

50%	STUDENTS going to schools at Benha or Zefta, or to Benha University. Students use cheap 9-month tickets.
30%	Government workers, using cheap season tickets.
20%	Mostly farmers and traders, using normal tickets. Farmers use the train mostly to go to markets.

LINE 22 Faqus - El Semaina

Recommendations
Close this line for the following reasons :

1) The Study Team's surveyor arrived in Faqus and asked a person when the train leaves. He said :

   "Don't bother waiting, the train rarely shows up, and when it does, it stays here for a long time. Taking a taxi to Semaina is much better."

   This shows that people do not consider the train useful. It is not worth waiting for, because taxis are always available.

2) This line lost 1,063,000 LE in 1994/95, according to the Study Team's calculations.

3) Alternative transport is cheaper and much faster. There is only a minor difference in costs between the pick-ups and the train (0.05 LE). This is negligible to the riders because most of them have membership anyway and to those who don't, 0.05 LE is nothing to them. Most passengers will never wait for the train. They prefer to take the available pickups. If the train is leaving, they may take it. This shows there is no real need for the train.

4) Only a few students ride the train. By the time the train reached El Semaina, there were only ten people who were riding the train. They only ride the train because they have special cheap tickets.

IF NOT CLOSED :
The number of coaches should be reduced to 3 coaches from the current 5. The passengers can sit comfortably in 3 coaches. Also, reduce the schedule from 11 round trips per day to 6 round trips. Most passengers ride the morning trains from Faqus and Semaina, and the afternoon train from Faqus. On most trains there are few riders. There are often no passengers on the last 2 round trip trains.
These actions will save about 30% of costs, reducing expenses to 904,000 LE from 1,292,000 LE per year. Revenues are so small, the effect on them is not important.

The Line
This line goes from Faqus, straight North to the town of El Semaina. It is a short 10 km line with only 3 stations in between. The train only stops a few seconds at each station. The population of El Semaina in 1995 was only 579. It is a very small rural village in the governorate of Sharqiyah. The train is on single track and travels the distance in only 25 minutes.

Faqus is a poor, densely populated rural town, with a lot of pick-ups and large trucks which collect the agricultural harvests. There are very few private cars. El Semaina is a very small village with no cars or proper roads. There is only one main road which leads to Faqus. Then the road becomes gravel and enters the village. Both Abu Kebir and Faqus belong to Sharqiyah governorate.

Line Km.	Track Km.	Passenger Train Km. (average daily)	Freight Train Km. (average daily)
9.8	10	216	0

(Units: 1,000 LE)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
31	0	198	229	1,292	- 1,063	18%

The Train

The passenger trains have 1 locomotive and 5 coaches. 22 passenger trains and 2 freight trains use this 3rd class line.

11 passenger trains run round trip each day.

Alternative Transport

Alternative transport from El Semaina to Faqus is only the pick-up trucks that are not licensed. These are very dirty and have no cabins on the back. Passengers are all packed in the back. There were 28 people on the back of the truck with the Study Team's surveyor. People were squeezed in and some people had to stand up as there was no place to sit. These people suffered from the freezing air that was blowing from the speed of the truck. At one point, it began raining and they all got soaked with rain. In general, the pick-ups are very uncomfortable, but are the only alternative transports available.

Even considering the above, most passengers prefer the share taxis to the train, because of the frequent schedule which the train cannot provide. Besides, the train also has open windows and doors and a leaking roof, so it also has little protection from weather.

	Faqus ←→ El Semaina	Student tickets
Train	0.30 LE 25 minutes	6 months: 9 LE 12 months: 19 LE
Share taxi	0.25 LE 15 minutes	

Provide Bus Service

If ENR closes its train service and provides buses instead, it can provide equal service at much lower cost.

(LE / Year)

Train	Bus	Savings of Bus
1,292,000	800,000	492,000

Source: JICA Study Team

The Passengers

Most passengers ride the morning trains from Faqus and Semaina, and the afternoon train from Faqus.

About 75% of train passengers are students from 12-18 years old, mostly male. There are also some housewives accompanied by their farmer husbands. The students were almost three quarters of the total train riders (I estimate). The ages of the riders lie in the range from 12-18 years old.

The train appears to operate with few passengers. The train had 400 seats, but after the first station (Ashkor), only 1/3 of the seats were occupied when the Study Team's surveyor rode it. After the second station, it was almost totally empty, and only 10 passengers got off at the last stop.

Passenger Survey Results

Passengers	Students & government officials : 83%
Destination	School : 77%
Reason Use the Train	Comfort: 48%
Alternate transport	Share taxi: 100%
Alternate transport price	25.6 times the train price, on average (because most passengers have very cheap season tickets)

LINE 24 El Santa - Mahalet Rouh

Recommendation

Do not close this line. There is no alternative transport.

The Line

This line passes through the following stations:

El Santa - Balkiem - Shandalat - Gemmieza - Meniat El Bandara - Qurasheya - Mahallet Rouh

Stations	Line Km.	Passenger Train Km. (average daily)	Freight Train Km. (average daily)
7	19	449	10

(Units: 1,000 LE / YEAR)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷costs = (D/E)
472	61	421	954	2,638	- 1,684	36%

The Train
The train is made up of 1 locomotive and 5 coaches.

NOTE: Full Train = about 240 passengers/coach

El Santa - Mahallet Rouh:
1:45 | 5:15 | 6:45 | 8:55 | 10:40 | 12:15 | 14:10 | 16:50 | 18.40 | 20:00 | 21.40 | 23:45

Mahallet Rouh - El Santa:
0:30 | 5:30 | 7:30 | 8:15 | 9:55 | 11:25 | 13:30 | 16:05 | 18:00 | 19:20 | 20:55 | 22:55

Ticket Prices (LE)

Normal	Kilo	Season Tickets		
		Government	Student	Other
0.40	3.50 / 100km	28 LE / 12 months	6 LE / 9 months	100 LE / 12 months

Alternative Transport
There is no road along the line. Using alternative transport requires a long journey on roads in other directions.

The Passengers
Our interview with the conductor shows there are about 8,000 passengers on this line per day.
38% Students
38% Workers (commuting to Ghazle El Mahalla Textile Factory at El Mahalla Kobra)
19% Farmers (going to weekly markets at Tanta, Mahalla Kobra, & Qurasheya)
5% Others

LINE 29 Bouselli - Qassabi
Recommendation
Do not close this line. It is the only link between Bouselli and Qassabi.

The Line
This line has the following stations (platforms):

Bouselli - El Hammad - El Amier - Edfina Intersection - Edfina El Gedida - Motobus - (El Khaireia) - (El Saada) - (El Zawaied) - Abu Gheniema - El Qassabi

Stations	Line Km.	Passenger Train Km. (average daily)	Freight Train Km. (average daily)
11	29	478	10

(Units: 1,000 LE / YEAR)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
253	61	448	762	3,227	- 2,465	24%

The Train
1 locomotive and 5 coaches.

Train	Bouselli	Motobus	Qassabi
1	4:00	4:18	4:50
2		5:40	6:12
3	9:00	9:33	10:05
4	12:00	12:33	13:05
5	15:45	16:13	16:45
6		17:40	18:10

Train	Qassabi	Motobus	Bouselli
1	5:10	5:32	
2	6:25	6:57	7:25
3	10:20	10:52	11:45
4	13:40	14:11	14:40
5	16:55	17:27	
6	18:45	19:17	19:55

NOTE: **Full Train** - about 1,000 passengers/train (5 coaches)
Empty Train - about 100 to 200 passengers

Alternative Transport
None. This train is the only transport link between Bouselli and El Qassabi.

The Passengers
65% students, 20% government employees, and 15% other passengers.

LINE 30 El Fayum - Sinnuris

Recommendation
-Do not close this line.
The line is very unprofitable, and there is good alternative transport. But many students use this line, so it would be politically difficult to close.

Alternate Recommendation
If there is the political will, ENR should close the line and provide school buses to carry students who ride the train. This will be more efficient than operating the train, which is often empty. Expenses will fall to 864,000 from 1,389,000 LE per year (save 550,000 LE / year).

Reason :
1) LIGHTLY USED
The train is lightly used, mostly by students. On the way from Sinnuris to Fayum, the train first stops at Behmo station where most students get off and the train becomes empty. After the train leaves Behmo, there are few passengers, and the number of passengers steadily falls until only a few passengers get off at Fayum.

2) FINANCIAL LOSS
This line lost 806,000 LE in 1995/95, according to the Study Team's calculations.

3) STUDENT NEED
At the Sinnuris station, there were crowds of students awaiting the train from 12:30 p.m. while the train is scheduled for 1:30 p.m. Their long wait shows their need for the train, because they can easily take the pick-ups which are available at all times. If ENR provides a school bus service, this will fulfill the student needs at much lower cost to ENR.

If the line is not closed, the Study Team recommends:
- Reduce train to 5 coaches from the current 7. The train is too empty now, wasting assets.
- Reschedule the 13:30 train to 12:45. Most passengers are students, and they leave school by 12:30.

The Line

Sinnuris is a fairly large town of 563,094, North of the city of El Fayum. The city of El Fayum is South-West of Cairo. El Fayum is one of Egypt's governorates and can be considered a main city. The population of this governorate in 1995 was 2,174,035.

The line is a single track line, and there is only one train that operates on it.
The 5 stations on this line are:
Fayum -- El Fayum El Gideeda -- Menshat Abdallah -- Behmo - Sinnuris

Stations	Line Km.	Track Km.	Passenger Train Km. (average daily)	Passengers/day	Freight Train Km. (average daily)
4	11.5	11	229	12,747	0

(Units: 1,000 LE)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
373	0	210	583	1,389	- 806	42%

The Train

The train consists of 1 locomotive and 7 coaches of unified 3rd class. The train runs 10 round trips each day.

Alternative Transport

Pick-up trucks acting as share taxis are the main alternative transport available. The backs of the pick-ups have small cabins where the riders sit and these cabins are fairly comfortable. The cabin takes 12 persons in addition to 2 passengers next to the driver. Sometimes extra passengers will hang from the cabin door. There are also buses which are very old and dirty. The buses are also very crowded with riders. Passengers get in a pickup, which waits until it is full and then leaves. The passenger only has to wait 5 minutes or less. The pickup costs 0.40 LE, but drivers rarely have 0.10 change, so the passenger often must pay 0.50 LE.

The train is cheaper and more comfortable than the pickups, but there is no wait for the pickups.

There are buses, which cost 0.50 LE from Fayum to Sinnuris or vice versa. The buses are very old and very crowded. This is because it goes to so many areas in between and stops at every single station, in every region in between Fayum and Sinnuris. This makes the bus take the journey in a long time (45 min).

Fayum ←→Sinnuris

	Cost	Time	Comfort	Availability
Train	0.30 LE	30 minutes	Comfortable	Infrequent
Pick-ups	0.40-0.50 LE	15 minutes	Comfortable	Frequent
Bus	0.50 LE	45 minutes	Less Comfort	Frequent

Provide Bus Service

If ENR closes its train service and provides buses instead, it can provide equal service at much lower cost.

(LE / Year)

Train	Bus	Savings of Bus
1,389,000	864,000	525,000

Source: JICA Study Team

The Passengers

Train passengers are mostly students of 12-20 years age, with some government workers. Almost all passengers have cheap season tickets.

Passenger Survey Results

Reason Use the Train	Mostly cost
Alternate transport	School & work: 87%
Alternate transport price	24.5 times train price, on average (because most passengers have season tickets)
Average income	80-350 LE / month

LINE 31 Desouk - Motobus

Recommendations

1) Do not close this line. It is heavily used.
2) Cancel service when the train is mostly empty:
   DESOUK-MOTOBUS: 4:20am, 10:00am, 19:20pm, 20:45pm
   MOTOBUS-DESOUK: 5:37am, 11:02am, 19:23am, 21:50am
   This will save approximately 30% of expenses, saving 820,000 LE.
3) Open ticket offices on some of the platforms (Mahallet Malek, Sallmeia, Qabriet, Sidi Maarof, Shamshira)
   This will raise revenues, most likely by more than the lost revenues from the reduced schedule.

The Line

The train takes 60 minutes to travel the 27 kilometers from Desouq to Motobus.
The track is in very bad condition, slowing the train, making rolling stock maintenance costly,

and making the ride uncomfortable.

The line has these stations (platforms):
Desouq - (Mahallet Malek)-(Sallmeia)-(Qabriet) - Fowwa - (Sidi Maarof)-(Shamshira) - Motobus

Platforms have no ticket windows, so passengers buy tickets from the conductor without paying a fine. Some platforms are very busy; at rush hour (morning and afternoon), the train is too crowded for the 2 conductors to move. Even if the conductors make great efforts to collect tickets in the crowded train, the conductors get no bonus, because there is no fine. 75% of passengers from these platforms do not pay during rush hour. It is difficult for passengers to pay even if they want to, because the train is so crowded. ENR must build ticket offices here if it wants to sell tickets.

Stations	Line Km.	Passenger Train Km. (average daily)	Freight Train Km. (average daily)
8	27	373	10

(Units: 1,000 LE / YEAR)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
1,085	61	352	1,498	2,736	-1,238	55%

The Train
1 locomotive and 5 coaches.

Desouq-Motobus	4:20	7:10	10:00	14:10	16:30	19:20	20:45
Motobus-Desouq	5:37	7:12	11:02	14:15	17:35	19:23	21:50

NOTE: **Full Train** - about 200 passengers/coach (5 coaches = 1,000 per train)
Empty Train - about 10 passengers/coach (5 coaches = 50 per train)

Alternative Transport
Share taxis are available all day, and are more comfortable, but too expensive.

	Desouk ←→ Motobus
Train	0.40 LE 60 minutes
Share taxi	1.00 LE 45 minutes

The Passengers
50% Students
30% Government employees
20% Other (mostly farmers, traders, and private sector employees)

LINE 37 Beni Suef - Gawiesh - El Lahun

Recommendations
Close this line for the following reasons :

1) This line lost 1,991,000 LE in 1994/95, according to the Study Team's calculations.

2) Most passengers prefer the alternate transport. Alternate transport costs only 0.10 LE more, but is faster and has a more frequent schedule.

3) Demand for this line is extremely low. During the Study Team's survey, there were only 27 passengers at Beni Suef. Half the passengers got off at the next station, shrinking to only 2 passengers by the time the train reached El Lahun. The 3 coaches were mostly empty.

4) Almost no one actually sits and waits for the train to ride it. If the train is leaving, a passenger may ride it. But if forced to wait, there are plenty of share taxis around.

Alternative Recommendation
If this line is not closed, ENR should reduce the number of coaches to 1 from the current 3 coaches. All the passengers can comfortably sit in 1 coach. Also, the schedule should be cut from 9 round trips per day to 5 round trips per day. These actions will save about 30% of expenses, or 744,000 LE per year. Even if revenues fall by 30%, this will reduce revenues by only 53,00 LE. The net result is 691,000 gain for ENR.

The Line
Beni Suef lies North of El Minya with its line extending West to Gawiesh, and from there North to El Lahun. The line from Beni Suef to El Lahun is a single track which is 25 Km long. There are 18 passenger trains and 2 freight trains that use this line. The line is classified as a 3rd class line. The number of passengers recorded that use this line were about 69,588 in 1995. The populations in 1995 were: Beni Suef (190,442), Gawiesh (6,654) and El Lahun (11,774).

Beni Suef is a main governorate and has a large population, crowded streets, and the usual characteristics of the urban life. As for Gawiesh, it is a very small town, with very few people living in it. The whole area around the town is farmlands, and farmers working on the land. El Lahun is the same, and is a small rural town consisting of farmlands and small houses made from wood or red bricks.

There are 7 stations in between Beni Suef and El Lahun, namely : El Kay, Beni Bikhet, Mahgoub, Gawiesh, El Maasara, Beni Effan, and Manshiyet El Ahraar.

Stations	Track Km.	Passenger Train Km. (average daily)	Passengers/day	Freight Train Km. (average daily)
10	25	341	2,287	0

(Units: 1,000 LE)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
178	0	313	491	2,482	- 1,991	20%

The Train

There are 2 trains, each with 1 locomotive and 2 coaches.

1) Beni Suef - Gaweish : 4 round trips per day
2) Beni Suef - Gaweish - El Lahun : 5 round trips per day

Alternative Transport

Most passengers prefer the alternate transport. Alternate transport costs only 0.10 LE more, but is faster and has a more frequent schedule.

The main alternative transport is pickups and micro-buses which operate as share taxis. The pickup seated capacity is 14 persons, but often the females sit and more males stand or hang on the outside. The micro-buses seat up to 14 persons and have no room to stand. Share taxis (both pick-ups and micro-buses) are much faster than the train, and cost 0.50 LE from Beni Suef to El Lahun. They are available much more frequently than the train. There were no buses on this route.

	Beni Suef	←→	El Lahun
Train		0.40 LE 45 minutes	
Share taxi		0.50 LE 20 minutes	

Provide Bus Service

If ENR closes its train service and provides buses instead, it can provide equal service at much lower cost.

(LE / Year)

Train	Bus	Savings of Bus
2,482,000	1,300,000	1,182,000

Source: JICA Study Team

The Passengers

The majority of the riders are students. They all seem to use season tickets. Some government employees with cheap season tickets also use this train.

Passenger Survey Results

Reason Use the Train	Comfort: 48%, Cost: 22%
Alternate transport	Share taxi: 97%
Alternate transport price	7.6 times train price, on average (because most passengers have season tickets)
Average income	80-350 LE / month, 81% Less than 80 LE month, 18%

LINE 38 Gawiesh - Menshat Abu El Sammad

Recommendations
Close this line, because:

1) This line lost 758,000 LE in 1994/95, according to the Study Team's calculations.

2) Demand for this line is very low. By the time it reached Menshat Abdel Sammad there was absolutely no one on the whole train. The train is neglected and hardly used by anyone. Stations in between Gawiesh and Menshat Abu El Sammad are empty.

3) Cheap, faster alternative transport is available. The difference in costs between the pickups and the train is only 0.10 LE.

Alternative Recommendation
Reduce the train to 1 coach from the current 2. The few passengers can comfortably sit in 1 coach. Also, reduce the schedule to 2 round trips per day, from the current 4 round trips per day. These actions will save about 30% of costs, reducing expenses to 648,000 from 926,000 (save ENR 278,000 LE). Passenger revenues are small, so the effect on ENR revenues will be small.

The Line
Gawiesh is a very small town that's about 15 Km west of the governorate of Beni Suef. It is an urban town, and is mainly green farmlands, with a bunch of small mud houses and a few brick ones. The population of Gawiesh does not exceed 6,654 people. Menshat Abdel Sammad is a town that is almost the same as Gawiesh, only even smaller with a population of 4,622.

The line passes through these stations :
Gawiesh -- Nuwiera -- Ihnasia -- Wish El Bakia -- Menshat Abdel Sammad

Gawiesh Station
The is only a 20m long platform that takes 1 coach. There is no building or facilities. There are small mud farmer houses nearby.

Menshat Abdel Sammad Station

This is a 50m platform which only takes 1 coach. There is a small wooden booth on the platform. The booth was closed and there was no one in the whole neighborhood except the Study Team's surveyor, the driver, and a few children playing in the fields. The road which alternative transport uses is a short distance away.

Stations	Track Km.	Passenger Train Km. (average daily)	Freight Train Km. (average daily)
4	12	93	0

(Units: 1,000 LE)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
83	0	85	168	926	- 758	18%

The Train

The train consists of two 3rd class coaches and a locomotive. It takes 4 round trips per day.

Alternative Transport

The main alternative transport is the pick-ups. Some have cabins in back, and carry up to 14 passengers. Others have no cabin and sometimes carry more. The Study Team's surveyor rode in a pickup truck which was very dirty from transporting animals. The road is mostly gravel. There is no direct transport from Gawiesh to Menshat Abdel Sammad. Passengers must transfer to another pickup. Even so, most passengers prefer the convenience of pickups to the train.

	Gawiesh	←→	Ihnasia	←→	Menshat Abu El Sammad	TOTAL
Train	0.40 LE 35 min.					0.40 LE
Share taxi		0.25 LE 5 min.	transfer	0.25 LE 5 min.		0.50 LE

Provide Bus Service

If ENR closes its train service and provides buses instead, it can provide equal service at much lower cost.

(LE / Year)

Train	Bus	Savings of Bus
926,000	480,000	446,000

Source: JICA Study Team

The Passengers

The Study Team surveyor rode during "rush hour". The train left Gawiesh with 37 passengers, mostly students. At the second station, 23 passengers got off. By Ihnasia, the train was completely empty, except for the surveyor and the driver. The train continued empty until

Menshat Abdel Sammad.

Passenger Survey Results

Reason Use the Train	Cost: 45%, Comfort: 22%
Alternate transport	School & work: 75%
Alternate transport price	12.7 times train price, on average (because most passengers have season tickets)

LINE 40 Kafr Saad - Kafr Suleiman

Recommendations

Close this line.

- This line lost 181,000 LE in 1994/95.
- The train operates almost empty. Even during rush hour, 2 coaches with 160 seats carried 5 passengers. There are so few passengers that nobody even bothers to check tickets.
- Passengers prefer alternative transport, which is cheaper and faster, and more reliable than the train.

Alternative Recommendations

Reduce the train to 1 coach from the current 2. The few passengers can comfortably sit in 1 coach. Create a minimum schedule, with the train running only a 2 round trips per day. This will save about 30% of expenses, reducing expenses to 135,000 LE from 193,000 LE per year (save 58,000 LE/year)

The Line

Kafr Saad is a small town, that is 15 km south of the governorate of Domiat. Kafr Suleiman El Bahary lies about 10 km East of Kafr Saad. The region is agricultural. The population of Kafr Saad was 25,076 in 1995, and the population of Kafr Suleiman El Bahary was 13,830 in 1995. Both towns are in the governorate of Domiat.

Stations	Track Km.	Passenger Train Km. (average daily)	Freight Train Km. (average daily)
2	3	13	0

(Units: 1,000 LE)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
0	0	12	12	193	- 181	6%

The Train

The train consists of 2 coaches and a locomotive. The train has no schedule. It just goes back and forth between Kafr Saad & Kafr Suleiman.

Alternative Transport

Excellent alternative transport is provided by many microbuses and a few pickups. Both seat 14 people. There is a good 2 lane road and a new bridge across the Nile, which makes the trip fast and comfortable. The trip is only 10 km, so many farmers take the trip by donkeys, cart horses, and bicycles. Students usually travel by share taxi.

	Kafr Saad ←→ Kafr Suleiman
Train	0.35 LE / 20 minutes
Share taxi	0.15 LE / 10 minutes

Provide Bus Service

If ENR closes its train service and provides buses instead, it can provide equal service at much lower cost.

(LE / Year)

Train	Bus	Savings of Bus
193,000	83,000	110,000

Source: JICA Study Team

The Passengers

There were only 5 passengers when the Study Team surveyor visited. They were males, mostly aged 30 - 40 years of age. Nobody got on or off at the only station the train stops at.

LINE Mowaslet El Roda - El Roda

This line is not included in Railway Network mentioned in Chapter 3.2 and also in Cost Recovery Ratio mentioned in Chapter 3.9.6, because of no appropiate data. The team has only goten the site survey data as follows.

Recommendation

Close this line.

- The train operates almost empty. The train carried only 2 passengers when the team visited. This should be a busy time for the train.
- The railway gauge is different from the rest of ENR, so most ENR rolling stock cannot use this line.

Alternative Recommendation

If this line cannot be closed, costs can be reduced by changing the schedule to only 2 trips per day (now 4 trips per day). This will save about 30% of expenses, reducing expenses to 84,000 LE from 120,000 LE per year (save 36,000 LE per year). It will also reduce demand for rail service on this line, making it easier to close in the future.

The Line

Mowaslet El Roda is a few kilometers south of El Minya. The population along this line is small - approximately 21,700.

Stations	Line Km.	Passenger Train Km. (average daily)	Freight Train Km. (average daily)
2	2	8	0

(Units: 1,000 LE)

Passenger revenue (A)	Freight revenue (B)	Other revenue (C)	Total revenue (D)=A+B+C	Expenses (includes depreciation) (E)	Profit (loss) (F)=D-E	Revenues ÷ costs = (D/E)
0	0	7	7	120	- 113	6%

The Train

The train consists of 1 locomotive and 1 coach. The schedule is as follows:

8:00 am	Mowaslet El Roda	-	El Roda
12:00 pm	El Roda	-	Mowaslet El Roda
4:00 pm	Mowaslet El Roda	-	El Roda
8:00 pm	El Roda	-	Mowaslet El Roda

Alternative Transport

Alternative transport is provided mostly by pickups (up to 18 passengers), and also by some microbuses (up to 14 passengers). There is a good 2 lane road and a new bridge across the Nile, which makes the trip fast and comfortable. The trip is only 10 km, so many farmers take the trip by donkeys, cart horses, and bicycles. Students usually travel by share taxi.

Mowaslet El Roda ←→ El Roda

	Travel time	Price
Train	5 minutes	Official price = 0.30 LE But actually free because tickets are not checked
Share taxi	5 minutes	0.25 LE
Other	15-30 minutes	Many local people ride animals or bicycles

Provide Bus Service

If ENR closes its train service and provides buses instead, it can provide equal service at much lower cost.

(LE / Year)

Train	Bus	Savings of Bus
120,000	40,000	80,000

Source: JICA Study Team

The Passengers

There are very few passengers, but the local population is almost entirely poor farmers.

APPENDIX 4.2.12 Ideal Concept of Railway System

(1) Ticket reservation system

All trains which have reserved seats or beds should be booked by this subsystem. Also tickets are issued by this subsystem. Main stations should have a reservation desk and customers can also get tickets at main travel agencies.

Sales data should be automatically linked to the sales management system.

(2) Freight management system

Based on sales data of freight, plan of transport of freight is made and managed. This system requires on-line terminal for main stations which is the same as the ticket reservation system.

This sales data is also automatically linked to the sales management system.

(3) Marketing and sales management system

Sales data of ticket reservation system and freight management system and all sales data which is input by manual are combined together. Each regional head office can catch the regional sales volume statistically.

This combined data divide into data for the accounting system and the statistic system. These data systems are automatically linked to the accounting system and the statistic system.

(4) Management system for purchasing materials and inventory

The yearly plan of purchasing materials by each workshops should be input to the computer. Based on this plan each workshops will buy materials, and then actual purchasing data is input to the computer. The comparison between the plan and actual purchasing is reported to the manager by month and year.

The data of actual purchasing materials is automatically linked to the accounting system as expense.

Inventories are also managed by this system. inventories of each workshops are also reported by month and year.

(5) Personal management system and calculation of salary

Personal management system has all personal data of ENR managers and employees, and arrangement for location, promotion, retirement and etc. are managed. This system also manages training and qualifications.

By using the basic data of the personal management system, the salary of each employee is calculated automatically. Bonus and retiring allowances are also calculated by this system. Each payment is automatically linked to the accounting system as personal expense.

Regarding the personal management system, data of each person should be confidential. Therefore the computer for this system should be isolated from other system.

(6) Accounting and financial management system

All revenues and expenses are managed by each regional office and department. Each regional office can access their finance situation.

For financial analysis purpose, balance sheet, income statement, cash flow statement, detailed revenue statement, detailed expense statement and detailed fixed asset statement are reported timely and also reported whenever requested.

(7) Management system for rolling stocks and maintenance

The history of ENR rolling stock is managed. Based on this historical data, the maintenance plan is made. Instructions for maintenance are delivered to each workshop. By using these instructions each workshop maintain rolling stock, and the results of maintenance are input to the computer. Also maintenance of tracks and electric facilities are managed the same as rolling stock. These plans and results are reported to the manager monthly.

(8) Operation control and management system

The basic operation plan is automatically made by input parameters. (Such as demand of transport, situation of railway, Capacity of locomotive etc.) This system allows input to the operation plan manually to make an actual operation plan.

The operation plan is delivered at each regional operation center to control the train operation. At regional operation center the results of operation are input to the computer. The comparison between plans and results are reported to the manager daily.

(9) Statistics system

The statistical information which is required by each department is reported. Too many requirements are expected. Therefore the database which is just for statistics is prepared, and the end-user proceeds this data for his own use.

(10) Cost calculation system for using computer

To share the expense of information systems by users, the cost calculation system should be introduced. This cost will be calculated by the quantity of use the files and the quantity of transactions.

This system will be useful, if the information systems department becomes an independent company.

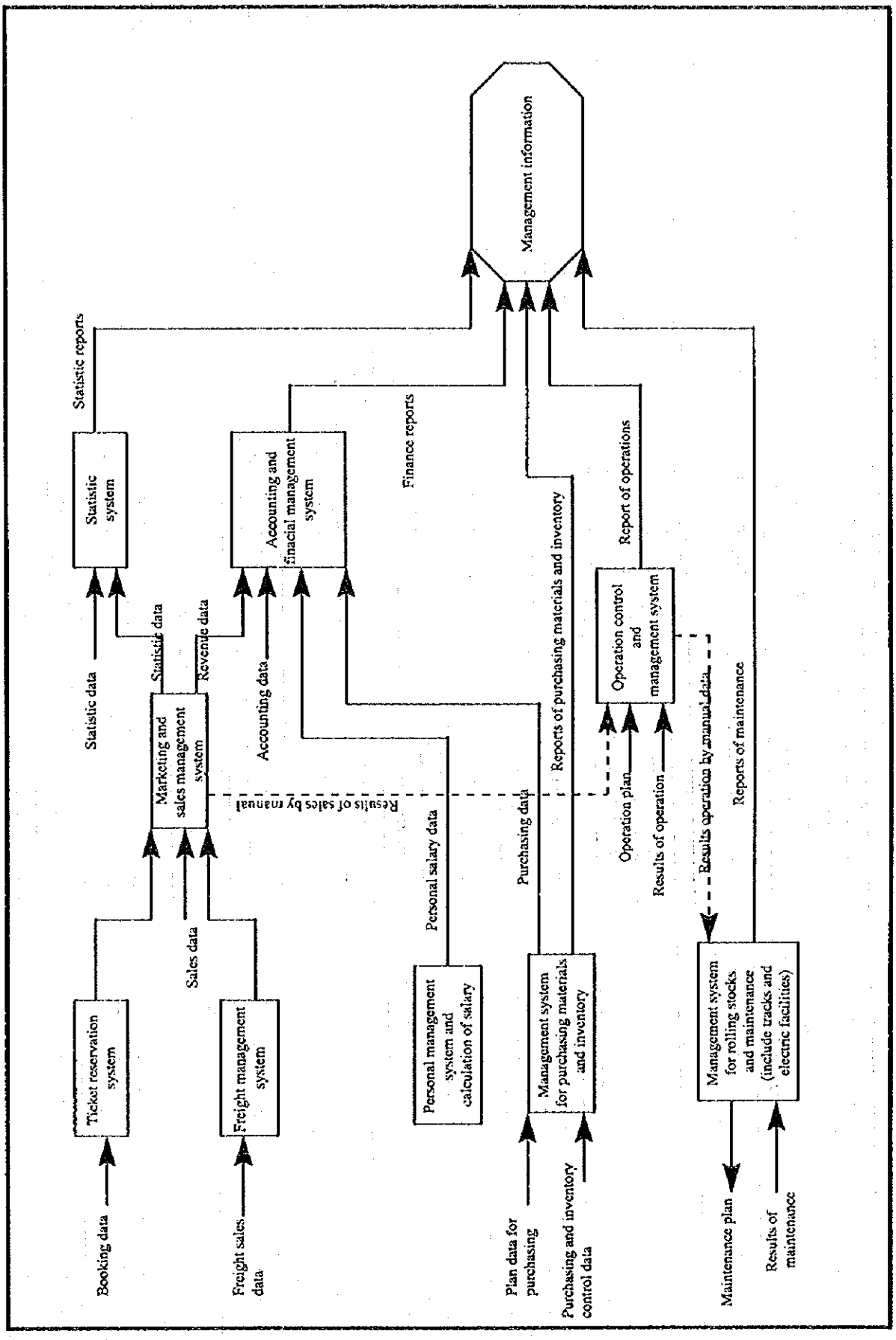

Fig. 4.2.12.1 Relation Chart of Subsystems

Appendix 4.2.13 Comparizon between Electronic Interlocking and Relay Interlocking

Items	Electoronic Interlocking	Relay Interlocking
Safety	@ Built-in a multiple micro-processors and a fail-safe function with comparizon circuit. @ Tracking by software enables security to enhance when route-locking is released. @ Built-in a self-diagnosis function	@ Composed of relays with fail-safe function by themselves @ Time lag relay compensates fluctuation of track current
Reliability	@ Easy to be redundant. It enables system function to maintain on failure of a single device.	@ Difficult to be redundant. Check and restoration required on failure. Parts are mostly seen normal except for failure parts.
Maintenability	@ Electronic parts having long life, the replacements are hardly seen. On failure, a package/block replacement is advisable before the scrutiny conducted by the maker.	@ Periodical replacement of relays is required. @ On-site search for the cause of failure
Performance record	@ Built-in a performance record function.	@ Recording device for relays performance is required.
Expandability	@ Capable of automatic point machine control as follows; * Check control at start of operation. * Re-start when switch is not activated. * Sequence control of power supply. @ Direct control of public adress system and train departure indicator. @ Addition of a programmed route control as well as a stored route setting.	@ Control unit is additionally required for the items on the left column. @ -----ditto------
Connection to other systems	@ Capable of direct data link with other system which is already electronized, such system as CTC transmission, traffic operation, public adress, train departure indicator. @ Serial transmission by optic fibre cable easily allowed.	@ Connection by the contacts of relays is required @ Reperting relays are needed as the case may be. @ Parallel connection by means of multi-wire cable.

Floor space	(Configuration example) * Logical racks @1 Relay racks for output and input of signals	(Configuraion example) @2 Relay racks * Recorder of relay operation * Repeating relay device * Public guidance control unit
	Note: @ denotes that number of racks is changeable according to number of routes. Approximate ratio of rack for output and input and relay rack is 0.3 : 1.0.	
Cost-effectiveness	@ Initial investment * Erection cost---No remarkable difference has been found so far. * Equipments cost---Relay interlocking requires more relays in proportion to its scale while electronic interlocking requires more input & output circuits except for logical circuits. Accordingy, the relay system is seen advantageous for a small scale, and the electronic ones advantageous for a large scale to some extent. @ Running expenditure * Electric power charge---Electronic unit/Relay unit = approx. 50~80%, depending on the scale * Maintenance fee---No periodical replacement is needed for electronic interlocking devices.	
Adaptability	@ For medium & large scale station. @ For system complex. @ For station yard remodelling planned.	@ For smale scale station. @ For non-system complex.
Standardization	@ Hardware to be standardized in terms of module & wiring. @ Software to be standardized for interlock program except for data for locking sheet. Therefore, modification is allowed by software change.	@ Design and construction are conducted on the basis of individual station. Modification of interlocking is carried by on-site wiring.