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]

fobber rgybr	J			
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
1	Worker	3	15	Payment by Trip	7
٠		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	Dicopunt	Method of Payment	Fee for
71	(Month)	Rate(%)	· _	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. ~ Junc(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 Governmental 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)

	· ·	T .					Depot		Abbre-
1	No.	Loco	Date	Loco.	Total Run	Responsibility	in	Cours on Domortie	viation
L	<u></u>	No.		Age			Charge	Ry coil broken	RY
1		3003	30524	3	219 239	M D(Z)		Unknown defect, after OK	NDFT
2	2	3009	31221 30729	3 18	1133	D(Z)	- <u>k</u>	Engine sudden stop	ESTP
3	3 4	3020 3021	50106	18	2	Ma	$-\frac{\kappa}{BD}$	Air cct failure	BS
4 5	3	3022	40412	18	1166	DB	BD	Bad fixation of CP	FXBT
13	1	3025	40819	18	956	Āx	BD	Oil pipe to LR choked	OP
17	1 7	3032	40119	18	1249	F	BD	Water pipe gasket damage	WGT
8	8	3032	40424	18	1249	2.	BD	Piston head crack	EPST
9	1 9	3039	31101	17	1192	2	BD	CP connecting rod broken	RIXEP
10	10	3040	31220	17	1180	F	BD	PCS (pneumotic control switch) defect	BSSP
11	111	3041	40615	17	1229	Me	BD	Fan #2 defect CB for supercharger oil lubricating pump	FN
	1				1000	Sara	DIN	· -	OPM
12	12	3041	51024	17	1229	D(Me)	BD	motor open Oil leak from pipe	OP
13	13	3042	40522	17	1304 1395	F.	BD -	Injector plunger get out due to bad fixation	FXBT
11		3047 3048	31217 40302	-17	1331	Ax	BD	Axle box damage	BGAX
13		3052	31122	15	681	-	BD	Weak field resistor OH	2
17		3054		13	1371	F	BD	Wire disconnected to fuel pump motor	FXC
}	 ''	3024	1000	<u> </u>	 -	<u> </u>	 	Water leak due to cooling water gasket	1
18	18	3054	50205	15	1371	Ax	BD	damage	WGT
139		3056	1	13	1284	DB	BD	CP damaged	BSCP
20		3038		13	1424	A	BD	Battery low voltage	BILV
21	21	3061	40510	13	1533	F	BD	Main generator carbon consumed	BIIMG
22	22	3062	40807	13	1287	D(Z)	BIX	CB trips	CB
	1			Ī .		1		Water OH due to water shortage, even fan no	SFOW
23	23	3067	40611	15	1444	Z	BD	good condition TM cover drop out, but immediately after	
		T				١ .	BD	recovered	FXBT
24		3070		15	1408	A	BD	No speed	NSP
25				13	1489	Me .	-BD	No traction power	NSP
27				13	1432	F	BD	TM cable damage and earth	GD
28					1452		BD	TM cct earth due to cable damage	GD
29					1300	F	BD	Shaft between engine and CP broken	RDCE
30	1				1623	D(Me)	BD	Air pressure drop	BS
31				14	1693	٠	BD	Washer damage inside of load regulator	LR
37					1564	· DB	BD	1M main field cable cutted off	TM BSDR
. 33					1631	Me	F	Brake action delay due to air cock drain	HR
3					1631	F	F	Horn defect TM cover missing (one stone inside)	FXBT
3.					1631	Λ	F	TM cover missing (one stone miside)	TMGD
30					1631 1631		+ F	Air pressure drop	BS
3					1631		F	Crank shaft metal OH	ECR
38					20-15	F	 - F	Cable supporter damage	2
3	<u> </u>	308	40407	1	1 2077	- <u> </u>	† <u>-</u> -	CB open due to supercharger oil pump motor	
4	40	308	40616	14	2985	Me	F	over load	OPM
3					2985		F	Wheel slip registor cutted off	Z
-	+-'	-1		 		 	1	Aux. generator flange broken due to	
4:	2 42	308	51116	14	2985	DB	F	misfixation	FXBT
4					2985	DB	F	Aux, generator defect due to bad maintenance	ΛĞ
 		1	1	1				Wire terminal connected to voltage regulator	FXC
4					2029		F	damage	EEXII
4					2029		F	Exhaust valve damage Voltage regulator defect due to 160A fuse off	2
I					2029		F	Condenser damage	 2
- 1					2029		F	Voltage regulator wire short ect	Y
4	[2029 2029	•	F	Crank shaft crack	ECR
4					2161			Cable OH to alternator due to bad connection	FXC
3		•		4 4 4 4	1848		- - -	Cooling fan cable melt due to loose connection	
La	1)	1 303	7 7121	1	1,370		·		

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

22 32 3086 4012 33 1980 F F Module (VR) defect		No.	Loco No.	Date	Loco.	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre- viation
S3 33 3086 50116 31 1980 F	32	32	3086	40525	13	1980	F	Chaise	Module (VR) defect	MDL
State	33	53	3086	30116	13	1980	F	F		BICT
SS 55 3088 50819 13 2018 A,F F Module (RB13)) defect	34	34	3088	50715	13	2048	Me			EGPT
Section	33	33	3088	30819	13				Module (RB13) defect	MDL
57 37 3092 40313 13 2001 DXMo F Puel motor fives off	36	36			13					BSGf
Section	37	37			13					FLPM
159 30 30 30 30 30 30 30 3	58	58								LR
60 60 8091 80919 12 2007 A	39	39								ATC
61 60 60 60 60 12 2007 F	60	60	3091	40919	12			F		EPST
Covernor diving gear between engine and governor wear Covernor wear	हा	61	3091	30105	12		F	F	#7 cylinder test valve failure	ETV
62 62 3091 50118 12 2007 DB										1
63	62	62	3091	50118	12	2007	DB	F		GRGV
64 3091 30813 12 2007 F	63		3091		12					ETV
65 65 3091 50613 12 2007 DB	64	61	1		12		F			STM
Exhaust valve and piston damage due to lash adjuster damage Exhaust valve and piston damage due to lash adjuster damage 66 67 3093 50125 12 2079 F F Cooling fan (2) temperature switch failure 68 68 3093 51006 12 2079 A F Air magnet valve for air brake defect 70 70 3095 30113 10 1548 Ax F Air nature of the trior of air brake defect 70 70 3095 30113 10 1548 Ax F Air cut defect from begining 71 71 3095 50214 10 1548 F F Water Old due to elbow crack to cylinder 72 72 3095 50530 10 1548 F F Water Old due to elbow crack to cylinder 73 73 3095 50530 10 1548 F F Water Old due to elbow crack to cylinder 74 74 3095 51109 10 1548 Ax F Air choked at air cock due to air cock broken 75 75 3096 50105 10 1873 DlB F Cooling fan motor burn 76 76 3097 30626 10 1543 Ax F Short cit of controller sw. Internal high pressure due to exhaust valve broken 77 77 3097 50108 10 1543 Ax F Short cit of controller sw. Internal high pressure due to exhaust valve broken 78 78 3099 50401 10 1833 Me F No speed up 10 1835 Me No speed up 10 1835 DlB F No speed up 10 1835 DlB F No speed up 10 1835 DlB F Oli pump motor defect due to short brush 1 10 1362 F F Oli pump motor defect due to short brush 1 10 1362 F F Oli pump motor defect due to short brush 1 10 1362 F F F F F F F F F	65									FXC
66 65 3092 50314 12 2155 T F adjuster damage 67 67 3093 50125 12 2079 F F Cooling fan (2) temperature switch failure 68 68 3093 51006 12 2079 A F Air magnet valve for air brake defect 69 69 3093 40612 10 1548 Me F Piston head f7 crack 70 70 3095 50214 10 1548 Ax F Air cct defect from begining 71 71 3095 50214 10 1548 Ax F F EV Than damage and repaired 72 72 3095 50530 10 1548 F F Water OH due to elbow crack to cylinder 73 73 3095 50510 10 1548 F F Water OH due to elbow crack to cylinder 74 74 3095 51109 10 1548 F F Cooling fan motor burn 75 75 3096 50105 10 1873 DB F Cooling fan motor burn 76 76 3097 40626 10 1543 Ax F Short cit of controller sw. 77 77 3097 50128 10 1543 Ax F Short cit of controller sw. 78 78 3097 50401 10 1543 Ax F Short cit of controller sw. 79 79 3098 41016 10 1835 Me F No speed up 80 80 3098 50101 10 1835 Me F No speed up 81 81 3098 50301 10 1835 D(Me) F Wheel flat of both bogic 81 82 3098 50311 10 1835 D(Me) F Wheel flat of both bogic 82 83 33 3099 50023 10 1634 F F Oil pump motor defect due to short brush 84 83 3100 40404 10 1362 F F Oil pump motor defect due to short brush 85 85 3100 41213 10 1362 U F F Sovernor oil pipe cutted off 86 86 3100 50120 10 1362 F F Governor oil pipe cutted off 87 87 3100 5003 10 1362 F F F Governor oil pipe cutted off 88 88 3100 51003 10 1362 F F F Governor oil pipe cutted off 89 89 3100 51001 10 1362 F F F Governor oil pipe cutted off 80 80 3100 50120 10 1362 F F F Governor oil pipe cutted off 81 82 3100 5000 10 1362 F F F Governor oil pipe cutted off 82 83 3100 51011 10 1362 DB F C P P Baller Rabinal Short cet due to bod fix 85 85 3100 41216 10 1327 F F F Sutting cet failure 87 87 3100 5001 10 1362 F F F Governor oil pipe cutted off 88 88 3100 51001 10 1362 F F F Governor oil pipe cutted off 99 90 3102 51117 10 1815 DB F Contactor Oil fire alarm system defect 99 99 3100 41113 10 1486 DB F Temperature sw. of fire alarm system defect 99 99 3109 41113 10 1743 F F Sutting cet failure 90 90 3100 41113 10 1486 DB F Temperature sw. of fire alarm system defect 90 9	-									
67 67 3093 50125 12 2079 F F Cooling fan (2) temperature switch failure 68 68 3093 51006 12 2079 A F Air magnet valve for air brake defect 69 69 3095 40612 10 1548 Me F Piston head 47 crack 70 3095 40612 10 1548 As F Air cet defect from begining 71 71 3095 50214 10 1548 As F Air cet defect from begining 72 72 3095 50530 10 1548 F F Water Off due to elbow crack to cylinder 73 73 3095 50812 10 1548 F F Water Off due to elbow crack to cylinder 73 73 3095 50812 10 1548 F F Water Off due to elbow crack to cylinder 74 74 3095 51109 10 1548 Ax F Air choked at air cock due to air cock broken 75 75 3096 50105 10 1873 DB F Cooling fan motor burn 76 76 3097 40626 10 1343 Ax F Air choked at air cock due to air cock broken 77 77 3097 50128 10 1543 A F Broken 78 78 3097 50401 10 1543 Ax F Off collector reservoir cover loose fixation 79 79 3098 41016 10 1833 Ax F Off collector reservoir cover loose fixation 80 30 3098 50100 10 1833 DKP F No speed up 80 30 3098 50301 10 1833 DKP F Mirelak due to main air pipe bad fixation 81 81 3098 50301 10 1833 DKP F Mirelak due to main air pipe bad fixation 82 82 3098 50814 10 1833 DKP F Mirelak due to main air pipe bad fixation 83 83 3099 51023 10 1654 F F Oil pump motor defect due to short brush 84 84 3100 40404 10 1362 F F Oil pump motor defect due to short brush 85 85 3100 40404 10 1362 F F Oil pump motor defect due to short brush 86 86 3100 50126 10 1362 F F Poil cet tain lighting (reset impossible) 87 87 37 3100 50601 10 1362 F F Poil cet tain lighting (reset impossible) 88 88 3100 51011 10 1362 DB F Pranctor text due to bad fix 89 89 3103 41028 10 1486 DB F F Staffing cct failure 90 90 3102 51117 10 1813 DB F Contactor Oil 91 91 3104 40502 10 1743 F F Staffing cct failure 91 92 3109 41113 10 1486 F F Staffing cct failure 93 93 3109 41113 10 1486 F F Staffing cct failure 94 95 3109 40920 10 1743 F F Contactor Oil 95 96 3109 41113 10 1743 F F Staffing cct failure 97 97 3109 3109 41113 10 1743 F F Staffing cct failure 98 98 3109 40920 10 1743 F F Staffing cct failure 99 99 3109 41113 10	66	66	3092	50314	12	2155	т	F		ELAD
68	67									SSW
69 3095 30612 10 1548 Me			3093							BSBV
70										EPST
71	70							,		BS
72 72 3095 50530 10 1548 F F Water OH due to elbow crack to cylinder Oil leak from engine due to oil pressure valve defect 74 74 3095 51109 10 1548 Ax F Air choked at air cock due to air cock broken 75 75 3096 50105 10 1873 DB F Cooling fan motor burn 76 76 3097 40626 10 1543 Ax F Short et of controller sw. Internal high pressure due to exhaust valve Internal high pressure due to exhaust valve Internal high pressure due to exhaust valve 17 77 3097 50401 10 1543 Ax F Short et of controller sw. Internal high pressure due to exhaust valve 18 5087 50401 10 1835 Ax F Oil collector reservoir cover loose fixation 78 78 3097 50401 10 1835 DKP F Air leak due to main air pipe bad fixation 18 18 3098 50102 10 1835 DKP F Air leak due to main air pipe bad fixation 18 18 3098 50814 10 1835 DKP F Mheel flat of both bogie 18 18 3098 50814 10 1835 DKP F Oil pump motor defect due to short brush 18 18 3098 50814 10 1835 DKP F Governor oil pipe cutted off F F F F F F F F F										FN
73 73 3095 50812 10 1548 F F defect 74 74 3095 51109 10 1548 Ax F Air choked at air cock due to air cock breken 75 75 3096 50105 10 1873 DB F Cooling fan motor burn 76 76 3097 46626 10 1543 Ax F Short ctt of controller sw. 77 77 3097 50128 10 1543 Ax F Short ctt of controller sw. 78 78 3097 50401 10 1543 Ax F broken 79 79 3098 41016 10 1835 Me F No speed up 80 80 3098 50102 10 1835 D(Me) F No speed up 81 81 3098 50301 10 1835 D(Me) F Wheel flat of both bogie 81 81 3098 50301 10 1835 D(Me) F Wheel flat of both bogie 82 82 3098 50814 10 1835 D(Me) F Wheel flat of both bogie 83 83 3099 51023 10 1654 F F Oil pump motor defect due to short brush 1 84 84 3100 40404 10 1362 F F Governor oil pipe cutted off 85 85 3100 41213 10 1362 UI F governor 86 86 3100 30120 10 1382 T F Puel cct failure 87 87 5100 50601 10 1362 DB F CP flange fix bolt crack due to bad fix 1 88 88 3100 51003 10 1362 DB F CP flange fix bolt crack due to bad fix 1 89 89 3100 50111 10 1362 DB F Wheel flat 90 90 3102 51117 10 1815 DB F Wheel flat 91 91 91 3104 40502 10 1745 F F Wheel flat 92 92 3106 41206 10 1327 F F Wheel flat 93 3108 40502 10 1745 F F Wheel flat 94 94 3107 50613 10 1820 DB F Pan motor earth and burn 95 95 3109 40527 10 1743 T F Governor power 96 96 3108 50121 10 1486 DB F Temperature sw. of fire alarm system defect 99 99 3109 41113 10 1743 F F Stating cct failure 90 90 3109 41113 10 1743 F F Stating cct failure 91 91 91 3109 40527 10 1745 F F Stating cct failure 92 92 3106 41210 10 1745 F F Stating cct failure 93 98 3109 40520 10 1745 F F Stating cct failure 94 95 3109 40527 10 1743 T F Covernor power 95 96 96 3108 50121 10 1486 F F Stating cct failure 96 97 97 3109 40527 10 1743 T F Covernor power 97 99 3109 41113 10 1743 F F Stating cct failure 98 98 3109 40500 10 1745 F F Stating cct failure 98 98 3109 40500 10 1743 F F Stating cct failure 99 99 3109 41113 10 1743 F F Stating cct failure 90 90 3109 41113 10 1743 F F Stating cct failure 91 91 91 3104 40502 10 1744 F F Stating cct failure 92 92						and the second second				EP
73 73 3095 50812 10 1548										
74 74 3095 51109 10 1548 Ax	73	73	3095	50812	10	1548	F	F		EOPV
75 75 3096 50105 10 1873 DB										BSF
76 76 3097 46626 10 1543 Ax F Short cit of controller sw.										FN
Internal high pressure due to exhaust valve 177 77 3097 50128 10 1543 A F broken 1 1848 3097 50401 10 1343 Ax F Oil collector reservoir cover loose fixation 187 79 79 3098 41016 10 1835 Me F No speed up No sp										ssw
77 77 3097 50128 10 1543 A										2311
78	77	77	3097	50128	10	1543	Α	F		EEXH
79 79 3098 41016 10 1835 Me F No speed up	78	78			10		and the second s	F		FXBT
S0 S0 S098 S0102 10 1835 D(Me) F Air leak due to main air pipe bad fixation S1 S1 S098 S0301 10 1835 D(Me) F Wheel flat of both bogie S2 S2 3098 50814 10 1835 D(Me) F IM bearing locked I S3 S3 S099 S1023 10 1654 F F Oil pump motor defect due to short brush I S4 S100 40404 10 1362 F F Governor oil pipe cutted off Governor plunger trip due to oil leak from governor S5 S5 S100 S1020 I0 I362 T F F F F F F F F F	79	79	3098	41016	10			F		NSP
81 81 3098 50301 10 1835 D(Me) F Wheel flat of both bogie 82 82 3098 50814 10 1835 D/B F 1M bearing locked 1 183 83 3099 51023 10 1654 F F Oil pump motor defect due to short brush 1 84 84 3100 40404 10 1362 F F Governor oil pipe cutted off Governor plunger trip due to oil leak from governor 85 85 3100 41213 10 1362 UI F governor 1000	80	80	3098	30102	10	1835		F	Air leak due to main air pipe bad fixation	FXBT
82 82 3098 50814 10 1835 10 1654 F F TM bearing locked 183 83 3099 51023 10 1654 F F F Oil pump motor defect due to short brush 184 84 3100 40404 10 1362 F F Governor oil pipe cutted off Governor plunger trip due to oil leak from governor	81	81	3098	50301	10	1835				TFT
83 83 3099 51023 10 1654 F F Oil pump motor defect due to short brush 1 84 84 3100 40404 10 1362 F F Governor oil pipe cutted off Governor plunger trip due to oil leak from governor plunger trip due to governor plunger trip due to oil leak from governor plunger trip due to oil leak fro	82	82	3098	50814	10	1835		F		BGTM
84 84 3100 40404 10 1362 F F Governor oil pipe cutted off Governor plunger trip due to oil leak from governor	83	83	3099	31023	10	1657	F	F	Oil pump motor defect due to short brush	ВНОР
Section Sect	81	84	3100	40101	10	1362	F		Governor oil pipe cutted off	OP
86 86 3100 50120 10 1362 T F Puel cct failure 87 87 3100 50601 10 1362 A F CB defect for train lighting (reset impossible) 88 88 3100 51003 10 1362 DB F CP flange fix bolt crack due to bad fix 1 89 89 3100 51011 10 1362 DKMe) F Air drop, but loce good 1 90 90 3102 51117 10 1815 DB F Wheel flat 91 91 3104 40502 10 1745 F F Water leak at cylinder #9 92 92 3106 41206 10 1327 F F Water leak at cylinder #9 93 93 3106 41226 10 1327 F F weighing 1 94 94 3107 50613 10 1820 DB F <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-V</td> <td></td> <td></td> <td></td>							-V			
R6							UI	F	governor	EGV
87 87 3100 50601 10 1362 A F CB defect for train lighting (reset impossible) 88 88 3100 51003 10 1362 DB F CP flange fix bolt crack due to bad fix 1 89 89 3100 51011 10 1362 D(Me) F Air drop, but loco good 1 90 90 3102 51117 10 1815 DB F Wheel flat 91 91 3104 40502 10 1745 F F Water leak at cylinder #9 92 92 3106 41206 10 1327 F F begining 1 93 93 3106 41226 10 1327 F F begining 1 94 94 3107 30613 10 1820 DB F Fan motor earth and burn 95 95 3108 41028 10 1486 DB F Femperature sw. of fire alarm system defect 96 96 3108 50421 10 1486 F F Starting cct failure 97 97 3109 40527 10 1743 T F Governor no work 98 98 3109 40920 10 1743 DB F Contactor Olf 99 99 3109 41113 10 1743 F F Exhaust valve broken F Water leak from water pump due to gasket 90 91 92 3109 41113 10 1743 F F Exhaust valve broken F 91 92 93 3109 41113 10 1743 F F Exhaust valve broken	4 1						<u>T</u>	F	Fuel cct failure	FLCT
88 88 3100 51003 10 1362 DB F CP flange fix bolt crack due to bad fix 189 89 3100 51011 10 1362 D(Me) F Air drop, but loco good 7 7 7 7 7 7 7 7 7										CB
89 89 3100 51011 10 1362 12 12 12 13 14 15 15 15 15 15 15 15								F	CP flange fix bolt crack due to bad fix	FXBT
90 90 3102 51117 10 1815 D)3 F Wheel flat 91 91 3104 40502 10 1745 F F Water leak at cylinder #9 Supercharger oil filter gasket broken from begining 19 Coupler terminal short cet due to coupler cover broken by stone 19 94 3107 50613 10 1820 D)3 F Fan motor earth and burn 95 95 3108 41028 10 1486 D)3 F Fan motor earth and burn 96 96 3108 50421 10 1486 F F Starting cet failure 3 97 97 3109 40527 10 1743 T F Governor no work 98 98 3109 40920 10 1743 D)3 F Contactor Oil Smoke and flame from exhauster due to exhaust valve broken F Water leak from water pump due to gasket P							D(Me)	F	Air drop, but loco good	NDFT
91 91 3104 40502 10 1745 F F Water leak at cylinder #9 92 92 3106 41206 10 1327 F F Supercharger oil filter gasket broken from begining 19 93 93 3106 41226 10 1327 - F Coupler terminal short cet due to coupler cover broken by stone 194 94 3107 50613 10 1820 DB F Fan motor earth and burn 195 95 3108 41028 10 1486 DB F Temperature sw. of fire alarm system defect 196 96 3108 50421 10 1486 F F Starting cet failure 197 97 3109 40527 10 1743 T F Governor no work 198 98 3109 40920 10 1743 DB F Contactor Oil Smoke and flame from exhauster due to 199 99 3109 41113 10 1743 F F exhaust valve broken F Water leak from water pump due to gasket 190							DB		Wheel flat	TFT
Supercharger oil filter gasket broken from 192 92 3106 41206 10 1327 F F begining 193 93 3106 41226 10 1327 - F Coupler terminal short cet due to coupler 194 94 3107 50613 10 1820 DB F Fan motor earth and burn 195 95 3108 41028 10 1486 DB F Temperature sw. of fire alarm system defect 196 96 3108 50421 10 1486 F F Starting cet failure 197 97 3109 40527 10 1743 T F Governor no work 198 98 3109 40920 10 1743 DB F Contactor Oil Smoke and flame from exhauster due to 199 99 3109 41113 10 1743 F F exhaust valve broken F Water leak from water pump due to gasket 190 19	[91]	91	3104	40502	10	1745	F F	F		ECY
92 92 3106 41206 10 1327 F F begining F 93 93 3106 41226 10 1327 - F cover broken by stone 94 94 3107 50613 10 1820 DB F Fan motor earth and burn 95 95 3108 41028 10 1486 DB F Temperature sw. of fire alarm system defect 96 96 3108 50421 10 1486 F F Starting cct failure 3 97 97 3109 40527 10 1743 T F Governor no work T 98 98 3109 40920 10 1743 DB F Contactor OH Smoke and flame from exhauster due to 99 99 3109 41113 10 1743 F F exhaust valve broken F										
93 93 3106 41226 10 1327 - F cover broken by stone 94 94 3107 50613 10 1820 DB F Fan motor earth and burn 95 95 3108 41028 10 1486 DB F Temperature sw. of fire alarm system defect 96 96 3108 50421 10 1486 F F Starting cct failure 97 97 3109 40527 10 1743 T F Governor no work 98 98 3109 40920 10 1743 DB F Contactor OH 99 99 3109 41113 10 1743 F F exhaust valve broken 99 Water leak from water pump due to gasket	92	92	3106	41206	10	1327	F	r	begining	ESGT
93 93 3106 41226 10 1327 - F cover broken by stone 94 94 3107 50613 10 1820 DB F Fan motor earth and burn 95 95 3108 41028 10 1486 DB F Temperature sw. of fire alarm system defect 96 96 3108 50421 10 1486 F F Starting cct failure 3 97 97 3109 40527 10 1743 T F Governor no work T 98 98 3109 40920 10 1743 DB F Contactor Olf Smoke and flame from exhauster due to 99 99 3109 41113 10 1743 F F exhaust valve broken F									Coupler terminal short cet due to coupler	
94 94 3107 50613 10 1820 DB F Fan motor earth and burn 95 95 3108 41028 10 1486 DB F Temperature sw. of fire alarm system defect 96 96 3108 50421 10 1486 F F Starting cct failure 3 97 97 3109 40527 10 1743 T F Governor no work F 98 98 3109 40920 10 1743 DB F Contactor Olf Smoke and flame from exhauster due to 99 99 3109 41113 10 1743 F F exhaust valve broken F Water leak from water pump due to gasket Water leak from water pump due to gasket F F							-		cover broken by stone	X
96 96 3108 50421 10 1486 F F Starting cct failure 3 97 97 3109 40527 10 1743 T F Governor no work 98 98 3109 40920 10 1743 DB F Contactor OH 99 99 3109 41113 10 1743 F F exhaust valve broken F Water leak from water pump due to gasket Water leak from water pump due to gasket F F								F	Fan motor earth and burn	FN
96 96 3108 50421 10 1486 F F Starting cct failure 5 97 97 3109 40527 10 1743 T F Governor no work 98 98 3109 40920 10 1743 DB F Contactor OH 99 99 3109 41113 10 1743 F F exhaust valve broken F Water leak from water pump due to gasket									Temperature sw. of fire alarm system defect	FRS
97 97 3109 40527 10 1743 T F Governor no work 98 98 3109 40920 10 1743 DB F Contactor OH 99 99 3109 41113 10 1743 F F exhaust valve broken F Water leak from water pump due to gasket Water leak from water pump due to gasket F F									Starting cct failure	STET
98 98 3109 40920 10 1743 DB F Contactor OH 99 99 3109 41113 10 1743 F F exhaust valve broken F Water leak from water pump due to gasket Water leak from water pump due to gasket F F								F		EGV
99 99 3109 41113 10 1743 F F Smoke and flame from exhauster due to exhaust valve broken F Water leak from water pump due to gasket	98	98	3109	40920	10	1743	DB	F	Contactor OH	CIT
99 99 3109 41113 10 1743 F F exhaust valve broken F Water leak from water pump due to gasket				,						
Water leak from water pump due to gasket	99	99	3109	41113	10	1743	F			EEXH
									Water leak from water pump due to gasket	
[100] 100 [310 [40515] 10 [1888] AX [F [damage]]	100	100	3110	40513	10	1888	Ах	F	đamage	WOT

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

, <u>i</u>		 1			: [Depot		
1 1	No.	Loco	Date	Loco.	Total	Responsibility	in	Cause or Remarks	Abbre-
	110.	No.	DAIC	Age	Rún	responsioner	Charge		viation
101	101	3110	41103	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
101	104	3112	30615	10	1876	, A	F	Air cet defect	BS
105	105	3112	50809	10	1876	Ax	F	Supercharger shall broken	ESRD
103	106	3113	40825	10	1759	λ×	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	IM earth	TMGD
					:			Air leak due to loose connection of air	
110	110	3114	41101	10	1886	·	F	reservoir and pipe	FXBT
111	Ш	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 cet earth	GD
114	114	3113	40405	10	1497	DB	F	Cooling fan cable OH	FN
							1	Cable melting to aux. generator due to bad	
115	115	3116	41103	7	1456	F	F	connection	FXC
				:	l			Piston (10) damage due to internal high	l <u></u>
	116	3116	50115	7	1456	F	F	pressure	EHP
117	117	3117	41119	7	25	F	F	Fuel cct defect due to something in fuel tank	FLCT
							İ .	Governor plunger get out due to water over	
118		3117	50604	7.	25	F	F	heat	WOH
119	119	3118	41209	7	1734	Me	F	Supply fuel due to no fuel from begining	SFOW
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	30804	14	1771	T	BD	Fuel shortage	SFOW
124	124	3127	40517	14	1650	<u> </u>	BD	Ry open	HR
125	125	3127	40524	14	1650	F	BD	Horn defect	OP
126	126	3130	40410	14	1390	DB	BD	Oil pipe choked	SIM
127	127	3133	31003	13	1790	F,Me	BD	Starter motor earth	BSCP
128	128	3136	50924	13	1855	F	BD	CP shaft broken Air reservoir drain remained	BSDR
129	129	3137	50608	13	1826	Ax	BD	Governor cable fire due to bad connection	FXC
130	130	3140	41007	13	1757	F	BD BD	Fuel pump motor fuse off	FLPM
131	131	3141	50114	13	1516 1516	D(1)	BD	Head light resistor socket damage	III.
132	132	3141	30718	13	1310	r r		Water leak from cylinder liner due to screw	
1				l	1716	1	. 20	bolt broken	ECYL
			41113	13	1715 1715	M F	BD BD	ATC failure due to dirty magnetic valve	MV
	134 135	3144	50121 50302	13	1713	Z _a Ma	BD	CP gasket damage	BSGT
133	136	3144 3146	41023	$\frac{13}{13}$	1797	A A	BD	Loco no braking due to bad preparation	INSP
130	130	3140	41023	13	1/2/		1,,,,	Main generator carbon wear due to bad	<u> </u>
127	137	3149	41110	13	1828	F	BD	surface condition of slip ring	MG
	138	3149	41110		1813		130	Governor socket defect	EGV
139			30204		1584		F	CB no work for deadman device	CB
140			30313		1384	<u> </u>	F-	CB open due to defect	CB
140		3131	30817		1384	F	 -	TM cable carth	GD
1112		3131	30908	13	1384		r	Fan defect	FN
144	<u> 172</u> -	2171	20308	 	1.707		 	Load regulator defect due to loose connected	l
11.12	143	3154	41115	13	1941	DB	\mathbf{F}	bolt	FXBT
	144	3154	30313		1941	DB	P	Fan motor no rotate	FN
144	144	3134		1.,	1.77		 	Injector disconnecting lever fixing pin get out	<u> </u>
c ie	145	3154	50109	13	1941	DB	F	due to bad fixation	FXBT
145			30617	13	1941	F	r	Test valve internally damage	KTV
147			50807		1941	- Γ	F	fest valve damage	ETV
	147		40803	13	2032	DB	F	Fuel pump defect	FLPM
	148		41013		2032	D(F)		Bad fix of fire alarm socket	FXSK
	130				2032	Ax	 	CP high pressure side gasket damage	BSGT
130	مدر ا	2120	20101	<u> </u>	L 20,72	1		In a series of the series of t	J

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

131	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in	Cause or Remarks	Abbre- viation
	777	3136	30222	13	2032	10/25	Charge	Dirty air reservoir	BSDT
ı		3156	30314	13	2032	D(Z)	F	Wire cutted off in ATC terminal	FXC
132		3137	40617	13	2022	F	F	Aux generator 63A fuse off due to over load	AG
133	133	3137	40017		2022	r	r	Wire to temperature switch of cooling Ian	70
154	154	3157	50610	13 :	2022	Me	F	burn due to bad fixation	FXC
133		3137	30611	13	2022	F	F	Starting cel contactor defect	cii
156		3137	31011	13	2022	F	 -	Test valve defect	EIV
157	137	3137	31013	13	2022	Ax	- F	Air leak due to pipe crack near CP	BSP
138		3138	40107	13	1796	$\frac{\alpha}{z}$	-	Side glass of governor broken	EGV
139		3138	40626	13	1796		F	FPES damage	FPES
160		3158	40810	13	1796	<u>^</u>	- F	Water OH	won
161	161	3158	30220	13	1796	D(Ax)	F	Governor oil shortage, but no defect	NDFT
162		3138	31015	13	1796	15(AX)	F	TM cct caith	GD
163		3138	31228	13	1796	Ax	F	Water leak from pipe gasket	WGT
			40419	13	1952		F	No defect	
161		3139				Αx			NDFT
163		3139	40524	13	1952	A	F	Governor oil plunger trips	EGPT
166	166	3139	41023	13	1952	F	F	CP head gasket broken	BSGT
1		3.50	41.50		1050	D/PS	,,	Engine overspeed lever and low oil plunger	Foo
167		3159	41106	13	1952	D(F)	F	trip (engine over speed)	EOS
168		3160	50521	13	1904	D(Me)	F	Air ccl choked	BS
189		3160	31101	13	1904	D(Z)	F	Magnet valve defect	MV
170		3161	40519	13	1839	A	F	Water leak from water pump gasket	WGT
171	171	3161	50825	13	1859	DB	F	Supercharger shall broken	ESRD
177		3162	50424	13	1629	Z	F	Test valve failure	ETV
173		3163	40508	13	1827	A		Main generator ground	MG
171		3163	30409	13	1827	Ī	F	Governor oil exchange	SFOW
173		3164	41005	13	1939	F	F	Main generator cable short cct	Y
176		3164	50702	13	1959	D(F)	F	Air hose bad fixation	FXRH
177		3165	30211	13	1429	-	F	CDR Ry damage	RY
178		3165	30321	13	1429	Z	F	Air reservoir inside dirty	BSDT
173		3165	50726	13	1429	Λ	F	Earth	GD
180		3167	50226	13	2217	UI	F	Rear bogie link damage due to bad connection	RDFX
181		3167	50907	13	2217		F	Ry coil open	RY
182		3168	40505	13	1831	-	F	Driving rod to aux generator cutted off	RDAG
[183		3168	40527	13	1831	F	F	Fuel motor carbon spring lost	BIFM
[184		3168	50603	13	1831	F	F	Fire detection device defect	FRS
[18]		3168	30711	13	1831	A	F	Air pipe connecting flange nut loose	FXBT
136	186	3168	31112	13	1831	F	F	Water OH due to fan motor cable defect	IN
[187		3169	40419	13	1981	F	F	No defect	NDFT
	188				1981	Me		FP-ES damage	FPES
183	189	3169	40611	13	1981	F	F	IOA fuse bad fix	FXFU
			l		1	** *		Aux, generator failure due to binding wire	
190		3169	50304	13	1981	DB		broken	AGBW
191		3169		13	1981	F		OH of connecting rod bearing to engine	BGRD
192		3169	51102	13	1981	DB	F	Cooling fan locked due to bearing crack	BGFN
193			50720	13	2233	DB	F	Alternator cable fire due to bad connection	FXC
19:			41008	7	1647	D(A)	F	No speed up	NSP
13			41122	7	1647	A	F	Water leak from water pump	WGT
196			30310	7	1647	F	F	Piston head cover crack	EPST
197			50517	7	1647	DB	F	Cylinder liner broken	ECYL
198			50921	7	1647	UI .	F	Governor plunger get out	EGPT
	199		31209	7	1647	DB	F	TM damage due to binding wire broken	TMBW
200			41103	7	1733	A	F	Air leak from #2 cabin	BS
20		3174	50708	7	1733	A	F	Water leak from CP cooling pipe	BSP
202		3174	30721	7	1733	F	F	Oil leak due to CP rubber hose broken	BSRH
203			40401	7	1620	A	F	Governor socket no good fixed	FXSK
20			51206	7	1620	DB	F	Aux, generator brush holder spring get out	BHAG
20:	203		30721	7	1639	λί	F	Governor oil leak	EGV
200	206	3176	50915	7	1639	λ	F	Test valve crack	EIV

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

г	 -1						Depot		17
	No.	Loco	Date	Loco.	Total	Responsibility	in	Cause or Remarks	Abbre-
•	110.	No.	2210	Age	Run		Charge		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	41113	7	1666	DB	F	Fuel pump motor defect	FLPM
210	210	3177	41201	7	1666	DB	F	Supercharger defect from begining Brush bad fixation and earth	FXBII
211	211	3178	41001	7	1751	F Me	F	Water leak from water pump due to gasket	WGT
212	212	3178	41102	7	1751	Me	- r	TM field excitation cable melt due to bad	1 1101
1.5	212	2170	41201	7	1751	. F	F	connection	FXC
213 214	213 214	3178 3179	40801	-7	1600	F	F	Water OII	won
215	215	3179	40813		1600		P	Smoke from upper deck 3 covers of engine	EFR
216		3179	40926	7	1600	F	F	Oil leak from oil tank	OP
217	217	3179	30119	1-7	1600	DB	 	Wheel locked due to bearing damage	BGAX
218	218	3179	50209	7	1600		}	Fuel pump motor brush wear	BHFM
219	219	3179	50316	7 :	1600	F	F	Fuel motor brush spring get out	BRFM
220	2	3179	30406	7	1600	F	F	Fuel pump motor carbon brush wear	BHFM
221	221	3180	30217	7	1318	D(F)	F	Train speed irregular but after inspection OK	NDFT
222		3180	30417	7	1518	DB	F	Fan burn due to fixing bolt broken	FXBT
223		3181	40911	7	1635	D(F)	F	Engine sudden stop	ESTP
224	224	3181	41001	7	1635		F	Ry (QR) coil open	RY EGPT
215		3181	41204	7	1635	F	F	Governor plunger often trip Water OH	WOH
226		3181	50924	7	1635	UI	<u> </u>	FP-ES spring damage	FPES
227		3182	41104	7	1601	D(A)	 	Braking cet defect	BS
228		3182	50613 50817	7	1601 1601	Ax	 	Link of brake shoe out of position, later	FXZ
229 230		3182 3183	40804	$-\frac{7}{3}$	1266	F	 	Loco no power	NSP
231		3184	41101		1224	DB	 	Crank shaft bearing OH	ECR
232		3184	30714		1224	D(Ax)	F	Engine OH	EOH
233		3183	40923	3	1301	F		No oil in driving gear box	TMGB
23-		3188	30611	3	1304	D(F)	F	250A fuse off due to bad fuse	7
233	I	3201	41104	12	2029		F	Starter motor delect	SIM
236	236	3202	40818	12	2090	F	F	Bogie oil dumper damage	2
	1					,		Deadman device MVopen and engine no	5,40
237		3202	40914	12	2090	F	F	power	DMS IN
238		3202	30711	12	2090	P	7	Fan motor base crack	BSCP
239		3204	41127	12	2136	A F	F	CP defect Governor plunger get out	EGPT
240		3204	50727	12	2156	D(F)	F	No speed from begining but no defect	NDFT
241		3205	41216 31121	12	2164 2164	17(1)	 	False indication of fire	FRS
243	•		40408		2114	D(Me)	F	Air leak sound in #2 cabin	BS
243	243	3200	40409	12	2111	15(1410)	 	Alternator wiring break down due to bad	1
244	244	3206	51030	12	2114	UI .	F	fixation	FXC
233		3207	41203	12	2095	F	F	Air leak from driver's brake valve	BSBV
216			30325		2093	F	F	Fuel pump motor brush spring get out	BHFM
24		3207	30612	12	2095	М	F	Crank bearing OH	BGCR
248		3208	30113		2038	F	F	Water OH indication	won
	249	3208			2038	F	F	Load regulator flange not fixed	FXBT
250					2038		F	PCS defect	BSSP
251					2218	F	1 2	Wire disconnected to fuel pump motor	FXC
737					1713	Ax	F	Air leak due to loose connection of valve Cooling water elbow for cylinder liner holed	WP
23.			30113		2110	F	F	Lubricating oil filter gasket damage	ogi
25			30528	12	2110 2110	F	F	High voltage cable earth	GD
253			50706 50723		2110	DB	F	Wheel locked	BGAX
250 251					1949	DB	 	Governor driving gear defect	GRGV
258					1949	DB		CB for oil motor open due to wire short cet	Υ-
	259				2025		<u> </u>	Cable melt due to loose connection	FXC
260					2025		F	Battery pole melt	FXC
26					2161	F	F	Flange of aux, generator broken	FXBT
16					2036	Me	F	CP high pressure side air gasket broken	BSGT
L				<u></u>	1				

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

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:	No.	Loco No.	Date	Loco. Age	Total Run	Responsibility	Depot in Charge	Cause or Remarks	Abbre- viation
263	263	3216	30520	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	30921	11	2036	F	F	IM 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	<u> </u>	F	FPES damage	FPES
							<u>-</u>	Connecting rod and crank pin off due to	
268	268	3218	41216	11	1756	DB	F	cylinder liner and gear broken	ECYL
269	269	3218	51007	- ii -	1736	DB DB	<u>;</u>	TM cct earth and Module (feed back) defect	GD
270	270	3219			2004	F	F	Water Oll due to fan damage	FN
271	271	3219	41010		2001	F		CB are chute bad fix	FXZ
	272	3220	30612	11	1994	F F	-		FXC
414	212	3220	30012	11	1994	r	F	Battery pole melt	FXC
أدما		,,,,	*1001		1004	• .		Crank case pressure lower due to piston oil	
273	273	3220	51204	11	1994	F	F	cooling pipe broken	EP
274	274	3221	40506	11	1911	Λ	F	ATC defect	ATC
275	275	3221	40622	11	1911	F	F	Fan motor fuse off	FN
276	276	3221	40921	13	1911	D(F)	F	Reason unknown	U
277	277	3221	40925	11	1911	D(Me)	F	Automatic brake valve defect	BSBV
278	278	3221	30123	13	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 shall bending	STM
280	280	3222	30119	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	50913	11	1199		F	Ry. coil open	RY
1								TM blower duct dropped on bogie due to bad	
284	284	3226	50207	13	928	A	F	fixation	FXBT
285	285	3226	30221	11	928	<u> </u>	F	CP air pipe flange crack	BSP
286	286	3226	31012	-11	928		F	Ry (ER) open	RY
287	287	3227	30119	- ii	1104	D(F)	F	#1 cab air pressure abnormal	BS
288	288	3227	30121	-11	1104	M	F	Cylinder liner crack	ECYL
1200	200		JU121		1104			Water leak from water pump due to gasket	ECIL
289	289	3227	50504	11	1104		F	damage	I SUCT
290	290	3227	31224	11	1104	A Ma		Oil shortage in CP	WGT
291	291	3228	30108	11	1073		F	Loco break down	SFOW
292	292	3228	50202	11	1073	D(Ma)	F		NSP
293	293	3228	51208	4.		D(F)		Generator cable melt due to loose connection	FXC
,	293 294			11	1073	A	F	Oil leak from CP	BSCP
293		3232	50201	11	1020	DB	F	Fuel pump wedge wear	FLPM
295	295	3232	30605	I	1020	DB	F	TM roller bearing locked	BG1M
296	296	3232	31118	11	1020	ľ	F	Test valve defect	ETV
								Main reservoir side cover lost due to bad	
297		3233	40512	11	1169	Ax	F	fixation	FXBT
298		3234		11	899	Me	F	Battery charging 250A fuse off	BICI
299		3234	30203	11	899	F,Z	F	CP bearing broken due to corrosion	BGCP
300	300	3236	40911	<u>li</u>	1065	Z	F	Oil pipe crack	OP
301	301	3236	50309	TI T	1065	D(T)	F	Air cet failure	BS
						:		Crank pin and bearing damage due to	TI
302	302	3237	41021	11	903	บเ	F	misallignment of CP and main generator	FXAM
303	303	3238	40922	11	1023	Me	F	Battery low voltage	BILV
301	304	3238	50904	11	1023	Ma	F	Water shortage	SFOW
305	303	3239	40405	11	794.	T	F	CB defect	СВ
306	306	3240	50727	The second	1222	וט	F	No speed up	NSP
307	307	3240		11	1222	F	F	Fuel choked	FICT
308	308	3242	30818	19	1430	Ax,Ma		Horn damage	TIR
309	309	3244	50920	19	1309	บ้า	F	Loco no move for both direction	NSP
								Temperature switch terminal spark due to bad	1,101
310	310	3245	50503	19	1515	Ax,Me	· F	connection	FXC
311	311	3246	40901	19	306	D(Me)	F	Wheel flat	7FT
	312	3232	41020	19	1680	DB	BD	Aux. generator shall broken in both side	RDAG
	313		30308	19	1788	F		Cylinder head stud broken	
1010		2000	20200		1/00	,	עט	Suract treat stan cloyett	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	Cause or Remarks	Abbre- viation
314	314	3261	41204	18	1653	T,F	Charge BD	Fuel injection defect	EIT
315		3267	40416	18	1676	<u>ż</u>	BD	Oil leak from pipe	OP-
313	313	3401	40410		1070	23		Engine over speed lever no work due to	
316	316	3278	50305	16	759	F	Тъ	abnormal injection	EIJ
317	317	3282	50105	16	725	Тb	Тъ	Voltage reg. failure due to misconnection to engine governor	FXC
318	318	3285	31112	16	862	1Ъ	1Ъ	Loco smoke, but get it off by driver	FR
319	319	3445	30302	11	827	T	F	Air circuit failure	BS
320	320	3445	30310	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	BILS
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	3431	30219	11	1124	F	F	Water OH due to cylinder liner crack	ECYL
326	326	3451	50302	1	1124		F	Thermal resistor of Module damage	MDL
327	327	3451	30612	- 11 -	1124	F	F	Cooling fan socket bad fived	FXSK
328	328	3451	31026		1124	Ma	F	Air leak from brake handle due to bad sealing	BSFX
329	329	3454	40905	 	1208	D(Me)	F	Supply cooling water due to water shortage	SFOW
330	330	3454	40914		1208	Λ	 	Water leak from water pump	WGT
220	330	3434	40714		1200	···	1	No traction power, but Loco OK after	:
331	331	3454	41119	31	1208	D(Me)	F	inspection	NDFT
332	332	3455	30310	П	1102	DB	ī	Crank shaft gear fixing bolt broken	FXBT
333	333	3456	51128	. 11	1277	D(A)	F	Loco defect, but OK	NDFT
333	334	3457	50821	П	990	F	F	High voltage cct earth	GD
335	335	3458	40607	111	1246	2	F	250 A fuse off	BICT
336	336	3458	30610	111	1246	Ax	F	No fuel and CP lubricating oil shortage	SFOW
337	337	3439	40502	11	223	Ma	F	Brake handle bending by unknown cause	X
-					· · · · · · · · · · · · · · · · · · ·			Heavy smoke from rear bogie due to axle box	
338	338	3459	41006	111	223	x	F	grease shortage	BGAX
339	339	3459	30110	111	223		F	Earth knife switch damage	2
-					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			Flange fix bolt between CP and engine cutted	
340	340	3459	50519	11	223	Ι Λ	r	off due to collision	X
341	341	3460	40817	10	1173	F	F	Battery spark due to bad connection	FXC
342	342	3460	31215	70	1175	F,T,Z	F	CB open	CB.
343	343	3461	40609	10	930	Me	F	Cylinder liner crack	ECYL
377	344	3462	40308	10	726	Me	F	Fuel filter choked	FLCT
343	343		40605	10	1083		F	Water leak from cylinder (11)	ECY
			40827	10	1083	F	F	CCS socket bad fixed	TXSK
347		3464	41003		1083	F	F	TM carbon wear	витм
-						 		Carbon wear of main generator due to rough	
318	348	3464	51026	10	1083	F	F	surface of slip ring	MG
319		3465	30203	10	1115	DB	F	TM (6) locked due to no grease in gear case	BGTM
350			30330		1103	UI	F	Front bogic bearing OH	BGAX
331		3468	41008	10	1166	1)(F)	F	Loco, signal section over running	ATC
352		3468	41008	10	1166	D(F)	F	Supply water due to water shortage	SFOW
	333		30114	10	1166	DB	F	Water pump gear damage	GRWP
351	354	3169	30913	10	808	DB.	<u>}</u>	Water leak due to elbow crack	WP
333			40904	13	3738	Ma	Ma	Water OH due to fan defect	FN
356			30223	12	1381	Ui	Ma	Alternator smoke	TRAL
357	357	3605	50218	12	1313	Ax	111	Control and fuel pump sw. defect	FPES
358			31104	12	1313	Ax		Brake air lamp on due to air pressure	BS
339	359		41017	12	961	Ax	F	Engine no start due to low battery voltage	BILV
		3609	30112	12	2868	Ma	Ma	Water leak due to water pump seal damage	wer
360		3609	50724	12	2868	Ma	Ma	Long preparation work time	INSP
361	361		31213		2868	Ma	Ma	Water OH due to fan motor contactor no work	cir
362	362	3609	31213	12	2005	IVIA	1914	Emergency fuel cut off switch wire cutted off	- <u>`</u>
343	363	3610	50313	12	2912	Ma	Ma	due to loose connection	FXC
361		3611	40122		1300	Ma		Air leak due to brake valve gasket damage	BSGT
304	204	T 2011	10422	<u> </u>	1	J		I mi tant and to attend the Paris and Sa	L

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

		T	1	T				Depot		.
		No.	Loco No.	Date	Loco. Age	Total Run	Résponsibility	In	Cause or Remarks	Abbre- viation
1	63	365	3611	30222	12	1300	D(F)	Charge.	Water OH due to fan motor fuse off	IN
	22	366	3612	30309	12	1305	Ma Ma	Ma	CP cooling water leak	BS
1.		367	3612	30717	12	1305	Ma	Ma	High voltage cable earth to carbody	GD
1	<u>8</u>	368	3613	40115	12	1182	Ax	H	Governor oil plunger trips	EGPT
1 -	33	369	3613	40503	12	1182	Ax	H	Water leak from highest point of radiator	WR
		370	3613	40525	12	1182	Ax	H	Battery voltage drop	BTLV
	71	371	3613	40812	12	1182	Ax	H	Water OH due to hose choked	WII
3	72	372	3614	41116	12	1335	2	Z	Governor gear wear	GRGV
3	73	373	3613	40613	12	1453	T	T	Fan motor fuse off	FN
	73	374	3613	41018	12	1453	D(T)	T	800A fuse off of starter motor	STM
	75	375	3615	50411	12	1453	T	T	Air cet failure	BS
	76	376	3616	50503	12	1418	D(F)	Z	Loco no speed up	NSP
	77	377	3616	31010	12	1418	DB	7	Fan locked due to bearing damage	BGFN FXC
	78	378	3616	31016	12	1418	Z	7	Wire disconnection for fuel pump motor Water OH due to fan motor fuse off	FN
	79	379	3617	50302 40521	12	1681	D(T)	F	Water OH due to fait motor tuse on	WOH
	80	380	3619 3620		12	1181 1842	<u> </u>	T	Water OH due to fan motor fuse off	FN
	81 82	381 382	3620	41103 50213	12	1842	DB	' -	Fan motor wire connection off	FXC
	83	383	3620	30807	12	1842		 -	Starter motor fuse off	SIM
	81	384	3621	50707	12	1249	Ax	- ii -	Water leak from cylinder head	ECY
	85	385	3622	40503	12	1307	<u> </u>	Z	Water leak from radiator pipe	WP
	86	386	3622	41029	12	1307	\overline{z}	Z	Smoke under cooling fan	FR
	87	387	3623	40403	-12	1352	DB	. 2	Auxiliary generator connection failure	FXC
	88	388	3623	40804	12	1352	2	Z	Air cct defect due to no drainage of air cock	BSDR
þ	189	389	3623	30723	12	1352	7	7	Water over heat and fuel supply time for loco.	WOH
r							· · · · · · · · · · · · · · · · · · ·	1	Main generator defect due to oil scattering	
	390	390	3623	50925	12	1352	Z	Z	from cuited off oil pipe	OP
	391	391	3625	40518	12	1376	DB	7.	Water leak from cracked piston 7	EFST
	92	392	3623	40905	12	1376	Z	Z	Wheel slip due to TM (4) some defect	1M
	393	393	3625	50318	12	1376	2	7	CP drain cock missed due to loose fitting	FXBT
1	93	394	3623	30327	12	1376	2	Z	Fan defect	FN FXC
:	395	395	3626	40402	12	1186	F	F	Loose connection of TM ampere meter Air pipe damage due to collision with private	r XC
1.	396	206	3626	50505	- 12	1186	X	F	car	х
	390 397	396 397	3629	31008	12	1470	├──Ŷ ──	1	Battery low voltage	DÎCV
	398	398	3630	40422	12	1200	2	F	Fan fuse off	FN
	399	399	3630	30303	12	1200	- z	F-	No strainer in fuel supply inlet	FXZ
		400		30113		1193	Me		Water leak from engine protection device	EPRD
		401	3631	30716		1195	1 7	F	CP pressure low	BSCP
	102		3631	31011	12	1395		F	Pisotn crack	EPST
	103	403	3633		12	1173	FF	F	Head light cct failure from begining	HL
	101	404	3635	31014	12	1028	F	F	ATC defect	ATC
ŀ	105	405		40413	12	1171	D(Me)	Me	No speed up	NSP
ŀ	106	406	3636	40618	12	1171	Me	Ме	Fan connecting wire OH due to fan locked	FN
1		[T	1				Fuel motor wire cutted off due to loose	
	107	407	3636	40803	12	1171	Me	Me	connection	FXC
[:	108	408	3636	40811	12	1171	Me	Me	CCS damaged	BSSC
. [Oil and water OII due to fan motor fuse off	
	109		3636	41120	12	1171	D(Me)	Me	and battery low voltage	FN
	410		3637	51007	12	1222	D(Ax)	X	Battery low voltage	BILV
	111	411	3641	30209	12	1193	X	F	Cow catcher broken due to cow	X
	112		3641	50920		1193	F	F	Water Olf due to fan motor fuse off	FN
		433	3642 3643	30504 41012		877	Ax Me	F	Fuel pipe choked Water OH due to water shortage	SFOW
	414 112	414		50611		1168	Me	r Z	Engine over speed lever damage	EOSL
	412 412	415	3649	40517	12	1004	D(F)	F	CP cover lost due to bad fixation	FXBT
	410 417					1001	 	 	Earth on the way	GD
	118			30701	12	1004	 z	<u> </u>	No power contactor are chute	TXZ
			3653			802	D(Me)	l i	Loco stop by unknown reason, after recover	NDFT

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

		Loco		Loco.	Total		Depot		Abbre-
	No.	No.	Date	Age	Ron	Responsibility	in	Cause or Remarks	viation
420	420	3655	40424	12	1079		Charge Me	Short cet	- Y-
121	421	3633	41019	12	1079	Me	Me	Loco fire, but driver put it off	FR
122	422	3655	41123	12	1079	D(Me)	Me	Battery low voltage	BILV
123	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
								No power due to PCS (Phneumatic Control	
425	425	3656	41205	12	1357	Z	Z	Switch) defect	BSSP
426	426	3656	50411	12	1357	2	Z	Cylinder liner broken due to OH	ECYL
427	427	3656	50701	12	1337	Z	Z	Wheel axle bearing broken	BGAX
428	428	3656	50907	12	1337	2	Z	Water OH due to water shortage	SFOW
429	429	3657	40605	12	1188	F	F	Water OH due to fan damage	FN FXC
130	430	3657	30807	12	1188	F	F	Battely pole loose connection Main generator field coil open	MG
-131	431	3658	40506	12	1378 1378	DB	Z	Governoer gear defect	GRGV
432 433	432 433	3658 3660	51009 40811	12	1012	Ax	$\frac{2}{F}$	Battery low voltage	BILV
		3661	50129	12	1359	EC	 	Module WS11 (Wheel Slip) defect	MDL
131 135	434	3661	30419	12	1339	X	$\frac{\tilde{z}}{z}$	Water Oll due to 3 pipes of radiator broken	WP
436	436	3661	31117	12	1339	D(F)	2	Loco earth	GD
437	437	3802	41124	18	2437	i i	 	PCR cable bad connection	FXC
138	438	3802	30816	18	2437	<u> </u>	T	TM earth	TMGD
139	439	3803	50911	18	2170	T,Ma,F	T	Brake air lamp on	BS
140	440	3804	30423	18	2298	r	T	TM short cct due to carbon brush broken	внтм
131	441	3806	30105	18	2326	Ť	T	Fuel pump motor brush wire bad fixation	FXC
142	E	3806	50324	18	2326	T	Ī	Engine governor valve damage	EGV
433		3806	50821	18	2326		Î	Piston crack	EPST FPES
111	•	3807	40104	18	2250	Ma T	T	FP-ES spring damage Ground	GD
115		3808	40423 30129	18 18	2287 2287	 	 	Battery wire damage due to loose connection	FXC
446		3808 3810	40401	18	2083	$\frac{1}{D(T)}$	 	Battery discharge	BILV
348	I	3811	40105	18	2225	 '``\' '	├- ;	Water OH	WOH
119		3814	50828	18	2369	M	1 1	Air leak from brake handle	BS
150		3816	30414	18	2416	 	r	Aux generator resistor wire disconnection	FXC
131	431	3817	40919	18	2470	r	1	One wire not connected	FXC
352	452	3817	30121	18	2470	D(T)	r	Starter motor fuse off	SIM
453	453	3819	41107	18	2180	D(1)	r	Battery low voltage	BILV
454		3819	30727	18	2180	Me	T	Battery liquid shortage	BILS
433		3821	40504	18	2379	T	T T	Water OH due to air chamber shutter closed	WOH
	456			18	2379	D(T)	1	Control and fuel pump sw. unmovable Wheel roller bearing broken	BGAX
157		3823			2245 2245	T	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Oil leak from governer	EGV
438		3823	31113 41206	18	2380	D(T)	-	Air pressure down due to CP no work	BSCP
160		3825			1263	Ax	 ir-	Air drop indication	BS
181		3826		187	2280	T	 	Supply fuel	SFOW
-	+		1	 	1		†	Engine over speed lever trip, Driver no	
462	462	3829	51228	18	1219	D(Ax)	H	knowledge how to reset	EOSL
163		3830	30807	18	1194	Ax	11	Fan flange bolt damage	FXBT
161		3840		13	1487	Ax	I	Water leak from connecting part of CP cooling	FXBT
765	465	3843	30317	13	1222	Ma	Ma	Governor flange gear wear	GRGV
166		3843	31018		1222	Ma	Ma	Fuel cct choked	FLCT
467					914	D(F)	KL	Battery discharge	BILV
468			30301		914	F	KL	Load regulator failure	I.R IN
169				13	870	F	KL.	Water OH due to fan motor fuse off	WOH
	470				948	DB	F	Water OH Cooling fan darnage	FN
171		3850	30325		663 930	DB F	XL	Fuel oil leak from oil charging pipe	FLCT
472 473			50824 40606		2012	r T	I AL	Cylinder liner (#7) crack	ECYL
474			40511	13	910	D(F)	KL	Load current suddenly down	NSP
173			50802	 3 -	910	F	KL	Water leak from elbow to cylinder	EP
1413	476		51003	13	910		KL	Air leak due to air pipe broken	BSP

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

Γ			r				F 75	<u> </u>	
	No.	Loco		Loco.	Total	Data state	Depot		Abbre-
	140.	No.	Date	Age	Run	Responsibility	in	Cause or Remarks	viation
477	477	3857	31111	15	910		Charge KL	Cooling water shortage	STOW
178	478	3859	40904	13	955		KI,	Baltery cable damage	BICI
479	479	3859	31221	13	955	- <u>r</u>	KI,	Earth indication	GD
480	480	3862	50925	13	1034	F F	KL,		2
381	481	3861	41128	13	1740	<u>г</u> М	VT	Fuel level side glass broken	
382	482	3864	50320	15	1740	M M	1	Battery box crack and low voltage	BIBX
183	483	3865	40821	15	1287		Î	Battery box crack	BTBX
484	484	3866	40601	15		A DB	A	Battery liquid shortage	BILS
485	485	3866		13	1870	DB.	T	Fan motor lead wire short cct	FXC
			40808		1870		1	Piston broken	EPST
186	486	3866	30219	13	1870	T	T	Operating sw. failure	SSW
187	487	3868	40607	15	1469	T	1	Coupler off between loco and coach	Z
488	488	3868	30506	15	1469	T	T	Automatic brake handle no properly work	BS
489	489	3871	41104	15	1590	D(Ax)	Н	Brake air lamp always on	BS
490	490	3871	41207	15	1590	Ax	П	Water leak due to CP cooling water pipe crack	WP
191	491	3874	41020	15	1379	Ax	11	Water leak due to rubber hose broken	WH
492	492	3874	41115	13	1379	Ax	Н	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	13	1358	M	F	Contactor tip melt due to bad contact	CIT
495	495	3883	40915	13	1417	Ma		Battery low voltage	BTLV
496	496	3883	31217	13	1417	М	F	Battery box crack	BIBX
497	497	3885	40924	15	1496	Ax		Cylinder bloc fix bolt not fixed	FXBT
398		3889	50615	15	1262	Me	F	Water OH due to fan motor fuse off	FN
199	499	3892	40806	13	1495	Ax	F	Fuel shortage	SFOW
500	500	3893	40802	13	1383	DB		Cooling fan just start to burn	FN
301	301	3894	50420	13	104	Ax		Governor socket not fixed	FXSK
302	302	3894	30811	13	104	F		Aux, alternator fire	FRAL
303	303	3896	41017	15	1412	F	F	CP air pipe broken	BSP
504	504	3896	50125	13	1412	F	F	Air drop due to worn air pipe	BSP
								Load regulator bad working due to dust from	
505	505	3896	50530	15	1412	F	F	broken small side glass	LR
308	306	3896	50701	13	1412	F	F	Water pipe gasket damage	WCT
307	507	3899	31219	14	1049	DB	F	Fan motor bearing locked	BGFN
								TM field pole fix bolt fall out due to bad	
508	508	3901	40902	14	1331	F		connection	FXBT
509	309	3905	40505	14	1277	•		EQP open	RY
310	510	3905	40824	14	1277	DB	F	Fuel motor cable earth	FXC
[311	311	3905	40823	14	1277	Z	F	Fuel pump motor cable earth	FXC
312	512	3907	40922	14	1432	•	F	Water leak from radiator	WR
313		3908	30901	14	902	D(Ax)		Battery discharge	BTLV
	514	3908	50919	14	902	D(Ax)		Battery discharge due to several times starting	STCT
515		3909	40613	14	1431	Me		Water leak due to pump gasket damage	WGT
	316	3909	40620	14	1431	7		One controller no work (One cabin type loco)	-z
517		3909	51010	14	1431	Ax	F	Battery pole melt due to bad fix	FXC
318		3911	30611	14	1346	Ax	F	Oil cooling pipe cutted off	OP.
519		3911	30807	14	1346	F	F	Load regulator wedge get out and repair	LR
520		3915	50714	14	612	· Ax	K	No fuel	srow
521	321	3916	40413	14	842	Me	Me	Water leak due to elbow damage	WP
								Cooling pipe for CP damaged due to bad	
522	522	3916	50610	14	842	Me :	1	fixation	FXBT
	523	3918	30617	13	1566	Ma		lead lamp no light due to resistor damage	HL
524			40621	13	1373	F		Air rubber hose choked	BSRII
	525		30121	13	1373			Head light go out due to overload	HL.
526		3921	40618	13	1278			Battery pole melt	FXC
	327	3921	41018	13	1278	2,1		Water leak from water pump	WGT
528		3922	40614	13	1607	$-\frac{7}{2}$		Air leak due to CP gasket damage	BSGT
529		3922	40627	13	1607	$-\ddot{z}$		Battery	BT
330		3922	30108	13	1607	2		Test valve broken	EIV
331		3922	30611	13	1607	i i		Air cet irregular	BS
332	332	3922	50925	13	1607			Fuel pump motor defect	FLPM
								promp motor octors	LC IVI

Appendix 4,2,8.1.1 Locomotive Break Down Table (Young Number Order)

		 1	i				Depot	And the state of t	Abbre-
10	No.	Loco	Date	Loco.	Total	Responsibility	in	Cause or Remarks	viation
		No.		Age	Run		Charge		
333	333	3923	40622	13	793	Ax	K	Water leak due to pipe crack to radiator	WP
334	334	3924	41111	13	1289	D(T)	F	Loco no power from bigining	NSP
335	535	3925	50406	13	1352	2	F	Air inlet shutter operating MV no work	MV
536	336	3925	50511	13	1352	IXF)	F	CB for aux, generator defect	CB
337	337	3926	30703	13	1312	Ma	Ma	Water pipe damage to water pump	WP
338	538	3926	31003	13	1312	Ma	Ma	Ry (GFX) open	RY
339	539	3928	40806	13	1292	Λx	T,	Cable carth indication	GD
540	540	3928	41022	13	1292	D(T)	F	Oil leak from CP	BSCP
311	341	3928	30119	13	1292	- 1	F	TM interpole short cct	ĩМ
312	312	3929	41007	13.	1290	D(T)	F	Horn defect	HR
513	343	3929	50703	13	1290	T	F	Oil filter broken due to oil pipe crack	OP
344	344	3932	40403	13	1446	Z	Z	Fuel cct choked	FLCT
543	545	3932	40602	13	1446	Z	Z	Fuel cct choked due to dirty filter	FLCT
516	346	3932	50620	13	1446	F,Z	Z	TM cover loose fix	FXBT
347	547	3932	30901	13.	1446	Z	: Z	Starter motor cable OH	SIM
318	548	3933	40623	. 13	1283	F	F	Water OH due to fan motor fuse off	FN
319	549	3933	31213	13	1283	D(Ax)	F	High voltage earth	GD
330	550	3936	40526	13	1256	F	F	Ry. GFX open from beginning	RY
551	351	3936	40913	13	1256	Me	F	Air pipe cock closed and driver manually open	X FN
332	352	3936	30403	13	1256	D(Ax)	F	Water OH due to fan motor fuse off	
333	333	3940	40623	13	1043	Λ	A	Main shaft drive gear wear	GRRD
351	331	3941	50903	13	995	ΛZ	A	Water OH due to fan damage	FN
				I		•		CP low oil pressure sw. defect due to	COLP
555		3942	40806	13	1023	Α	Λ	diaphram damage	BS
556	356	3942	30123	13	1023	D(A)	Λ	Air pressure drop	IM
357		3943	40913	13	1533	Z	7.	TM smoke due to inner friction	BSBV
338		3913	50613	13	1333	2	7.	Air leak from brake valve	BGFN
[339		3944	50828	13	1103	UI	A	Fan locked due to bearing	BS
560		3944	31101	13	1103	A	A	Air cct defect	CTT
561	361	3944	31126	13	1103	Λ	Λ	Contactor tip damage Water leak from radiator	WR
562		3944	31213	13	1103	, A	Λ	Water Oll due to Ian case crack	FN
563	363	3944	51218	13	1103	DB	A Me	Water leak from pipe connected to radiator	WP
364		3947	30504	13	1338	Me		Water leak from CP cooling pipe due to gasket	
565	565	3948	41021	13	1209.	Ax	11	Governor misoperation	EGV
566		3953	40408	13	1171	Ax Ax	"	Drain pipe to engine crack	EP
367		3954	40608	13	1037		 	Fuel pump motor defect	FLPM
368		3934	40901	13	1037	Ax Ax	 	Fuel filter choked	FLCT
369	369	3954	50325	13	1037			Wire culted off to earth relay due to wire fix	1
		3000	40404	l	1020	A	H	ł	FXC
	570			13	1020 1506	Ax Ma	Ma	[error] TM(1) short cet due to battery liquid leak	BILS
571		3956			1506	Ma Ma	Ma	Oil leak from oil pipe of blower	OP
	372		30304		1330	Ma Ma	Ma	CP cooling pipe broken	BSP
	573 574		50914		1330	1/10	Ma	CDR Ry coil open	RY
373			40908		1330	 	F	Module defect	MDI.
376				13	1321	lx(F)	- <u>'</u> F	Cooling fan fuse off	IN
3/6	1 2 10	3739	30011	1	+	}	╁╌╌	Resistor melt in Module (RCII) due to bad	
677	577	3960	41213	13	953		F	connection	FXC
5778 578					953	D(As)	-r-	Battery low voltage	BILV
379					933	Z	 - -	Battery discharge	BILV
38					953	F	 - j-	Battery discharge	BILV
58		3962			1343	$\frac{1}{z}$	2	IM gear damage due to no grease	IMGB
\$82					1341	Z	Z	Pump motor no work, after inspection OK	NDFT
38.					1341		 2 -	Piston crack	EPST
38					1360	DB	⊢ž-	Horn damage	TIR
38					1360	Z	$\frac{z}{z}$	Loco earth	GD
38					1461	1 - Z	Me	Abnormal noise of fan, but no defect	NOFT
38					1461	Me	Me	Fuel cet chocked	FLCT
	388				1461	D(Me)	Ме	Fuel pump damage	FLPM
200	1 700	1,,,,	1 11212					1	

Appendix 4.2.8.1.1 Locomotive Break Down Table (Young Number Order)

				<u></u>	an		Depot		1
	No.	Loco No.	Date	Loco.	Total Run	Responsibility	in	Cause or Remarks	Abbre- viation
				Age			Charge Me	and the state of t	
589	389	3977	40518	13	1403	Me	/		WGT
390	590	3977	50810	13	1403	Me	Me	Engine heavy smoke due to injector	EFR
591	391	3977	31210	13	1403	Me	Me	Crank shaft bearing move due to loose fix	FXBG
392	592	3978	40816	13	1388	Me	Ме	1M cable earth	TMGD
393	393	3978	30320	13	1388		Me	Short cct	Y
394	394	3978	50102	13	1388	D(Me)	Ме	Fuel pump motor damage	FLPM
393	395	3979	41207	13	1415	-	Me	CR30 failure on the way	Z
596	596	3979	50819	13	1415	D(Me)	Me	Battery low voltage	BTLV
397	397	3980	41001	13	1443	D(F)	Z	Fan motor fuse off	FN
598	598	3980	41013	13	1443	Z	7	Operating sw. spring broken	SSW
399	599	3981	30410	13	1034	DB	Λ	Water OH due to fan failure	FN
600	600	3981	31011	13	1034	A	Λ	Battery pole melt due to loose connection	FXC
601	601	3982	40525	13	844	Α	Α	CP gasket damage	BSGT
602	602	3982	30921	13	844	Α	A	Engine stop	ESTP
603	603	3983	40807	13	972	A	A	Water OH due to radiator choked	WR
604	304	3983	40903	13	972	A	A	Water Oll	WOH
605	605	3983	30205	13	972	DB	Λ	Governer flange and drive gear wear	GRGV
								Piston ring no properly work due to	
606	606	3983	50717	13	972	A	Α	manufacturing mistake	EPST
607	607	3984	40602	13	1129	Α	Λ	TM earth	IMGD
608	608	3984	41020	13	1129	٨	Α	CP low oil pressure sw socket broken	COLP
609	609	3984	41114	13	1129	Ä	A	Water OH due to water leak	WOII
610	610	3984	30719	13	1129	A	A	1M damage due to carbon brush broken	внім
611	611	3985	50201	13	1244	Ma	Ma	Starter motor failure	SIM
612	612	3986	30914	13	900	A	A	Air leak from brake valve due to bad fixation	FXBV
613	613	3987	30413	13	850	Λ	A	Cooling water elbow for CP crack	BSP
613	614	3988	50216	13	1454	X	Me	Train lighting no work due to external effect	Х
	ا د د							Module for battery charging from aux.	
615	615	3988	50815	13	1454	Me	Me	generator	MDL
616	616	3989	30619	13	1439	Me	Me	Piston broken	EPST
[617	617	3990	31221	13	1378	2	2	Air leak due to rubber hose defect	BSRH
618	618	3991	41007	13	1718	2	Z	Fuel motor defect due to cable bad fix	TXC
619	619	3991	41023	13	1718 1718	2	2	Piston movement bad	EPST
620	620	3991	50214	13		Z Z	2	Fuel filter choked due to dirty filter	FLCT
621 622	621 622	3991 3993	50324 40816	13	1718 1536	DB V	2	Brake cylinder gasket damage	BSGT
622			50507	ľ		2	Z Z	CP gasket damage	BSGT
623	623 624	3993 3994	50623	13	1536 1580	Z	$-\frac{\zeta}{Z}$	TM roller bearing locked	BGTM
	625			13	1544	M A	ļ	Deadman device no work	DMS
	626				1544	Z	<u>''</u>	Main generator stator OH Fan Ry short cct	MG
	627	3993			1344	DB	$\frac{L}{Z}$	Connecting rod bad fixation	RY RDFX
	628		41219		1329	D(Me)	Me	Wheel flat	TFT
	629		40513		1402	D(F)	F	Battery charger no work	BICT
	630		40313		1402	Ax	F	Water OH	WOIL
	631	3998	30604		1402	D(Ax)	F	TM cover missing due to external effect	X
	632				1402	17(1)	F	Ry defect due to inside wire cutted off	RY
032	L.,,	3778	7,211	L	1702	L	L	ary detect and to mistae wife fatted off	

(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)

					1000	Talall	Respon-	Depot in		Abbre-
1	_ i	N/_	Loco No.	Date	Loco.	Total Run	sibility	Charge	Cause or Remarks	viation
		No.	NO.	Date	Age	Kun	31011113	Charge	Aux. generator defect due to bod	
	ı	43	3082	51225	14	2985	DB	F	inaintenance	ΛG
			3002						Aux. generator 63A fuse off due to over	
	2	153	3157	40617	13	2022	F	F	load	AG
┝		-100							Aux, generator failure due to binding wire	
	3	190	3169	50304	13	1981	DB	F	broken	AGBW
	7	59	3090	51022	13	2001	D(Me)	F	ATC defect	ATC
	5	274	3221	40506	11	1911	À	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
Ŀ		230	3211	30723		2110		i- - -	Heavy smoke from rear bogie due to axle	
ı	11:	338	3459	41006	l ii-l	223	х	l - F	box grease shortage	BGAX
L.	12	350	3467	50530	10	1103	UI	F	Front bogie bearing OH	BGAX
L_	13	427	3656	50701	12	1357	7.	Z	Wheel axle bearing broken	BGAX
	14	457	3823	50415	18	2245	T	 	Wheel roller bearing broken	BGAX
L	15	299	3234	50205	11	899	F,Z	F	CP bearing broken due to corrosion	BGCP
1-	16	247	3234	50612	12	2095	M	F	Crank bearing OH	BGCR
L_	17	192	3169	51102	13	1981	DB	F	Cooling fan locked due to bearing crack	BGFN
_		377	3616	51010	I	1418	DB	$\frac{1}{z}$	Fan locked due to bearing damage	BGFN
L	18		3899	51219	1	1049	DB	F	Fan motor bearing locked	BGFN
	19	507	3944	50828		1103	UI	- A	Fan locked due to bearing	BGFN
L	20	559				L	F	F	OH of connecting rod bearing to engine	BGRD
L	21	191	3169	50416	!	1981	L	$\frac{\mathbf{r}}{\mathbf{F}}$	TM bearing locked	BGTM
L_	22	82	3098	50814		1835	DB	F	TM bearing locked	BGTM
_	23	120	3118	50807		1734	DB	F F	TM roller bearing locked	BGTM
L	24	295	3232	50605	11	1020	DB	- r	TM (6) locked due to no grease in gear	DOTTO
	25	349	3465	50203	10	1115	DB	F	case	BGTM
-	$\frac{23}{26}$	623	3993	50507		1536	$\frac{DB}{Z}$	 	TM roller bearing locked	BGTM
-		L	3175	51206	L	1620	DB	F	Aux generator brush holder spring get out	BHAG
ļ	27	204		40527	13	1831	F	F	Fuel motor carbon spring lost	BHFM
	28	183	3168	50209	1	1600	`	F	Fuel pump motor brush wear	BHFM
-	29	218	3179		1	1600	F	F	Fuel motor brush spring get out	BHFM
-	30	219	3179	50316			F	F	Fuel pump motor carbon brush wear	BHFM
-	31	220	3179	50406		1600	F	F	Fuel pump motor brush spring get out	BHFM
L	32	246	3207	50325		2095	L		Main generator carbon consumed	BIIMG
L	33	21	3061	40510		1533 1654	F F	BD F	Oil pump motor defect due to short brush	BHOP
ļ.	34	83	3099	51023					1M carbon wear	BITTM
L	35	347	3464	41003		1083	F	F T	IM short cct due to carbon brush broken	BHTM
L	36	440	3804	50423		2298	T	T	TM damage due to carbon brush broken	BHTM
	37	610	3984	50719		1129	A A	A		BS
L	38	4	3021	50106		2	Ma	BD	Air cct failure	BS
L	39	30	3074	50210		1623	D(Me)	BD	Air pressure drop	BS
	40	37	3080	50920		1631	A	F	Air pressure drop	<u> </u>
L	41	70	3095	41113		1548	Ax	F	Air cet defect from begining	BS
	42	104	3112	50615		1876	٨	F	Air cet defect	BS
	43	168	3160	50521		1904	D(Me)	F	Air cct choked	BS
	44	200	3174	41103		1733	Λ	F	Air leak from #2 cabin	BS
Γ	45	228	3182	50615		1601	D(A)	F	Braking cet defect	BS
	46	243	3206	40408	12	2114	D(Me)	P	Air leak sound in #2 cabin	BS
	47	287	3227	50119		1104	D(F)	F	#1 cab air pressure abnormal	BS
1-	48	301	3236	50309	11	1065	D(T)	F	Air cct failure	BS
1			1	1 - 1 - 1		827	1 T	F	Air circuit failure	BS
-	49	319	3445	50302	11	041	1 4]r	Brake air lamp on due to air pressure	BS

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

ſ	+	r 1	Loco	<u> </u>	Loco.	Total	Respon-	Depot in		Abbre-
L		No.	No.	Date	Age	Run	sibility	Charge	Cause or Remarks	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	Ť	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	Т	T	Automatic brake handle no properly work	BS
Ī	57	489	3871	41104	15	1590	D(Ax)	П	Brake air lamp always on	BS
ľ	58	531	3922	50611	13	1607	T	Z	Air cct irregular	BS
Ī	59	556	3942	50125	13	1023	D(A)	A	Air pressure drop	BS
	60	560	3944	51101	13	1103	À	Λ	Air cct defect	BS
	61	68	3093	51006	12	2079	А	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
r	63	277	3221	40925	11	1911	D(Me)	F	Automatic brake valve defect	BSBV
r	64	558	3943	50613	13	1533	Z	7	Air leak from brake valve	BSBV
 -	65	19	3056	41019	15	1284	DB	BD	CP damaged	BSCP
卜	66	106	3113	40825	10	1759	Λx	F	CP valve (#2) broken	BSCP
卜	67	128	3136	50924	13	1855	F	BD	CP shaft broken	BSCP
H	68	239	3204	41127	12	2156	Ā	F	CP defect	BSCP
	69	293	3228	51208	11	1073	A	F	Oil leak from CP	BSCP
1	70	401	3631	50716	12	1195	T	F	CP pressure low	BSCP
L _	71	459	3824	41206	18	2380	D(T)	T	Air pressure down due to CP no work	BSCP
E	72	540	3928	41022	13	1292	D(T)	F	Oil leak from CP	BSCP
L_	73	33	3080	40402	14	1631	Me	F	Brake action delay due to air cock drain	BSDR
1-	74	129	3137	50608	13	1826	Ax	BD	Air reservoir drain remained	BSDR
H									Air cct defect due to no drainage of air	DODA
1	75	388	3623	40804	12	1352	· Z	Z	cock	BSDR
Γ	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
卜	78	320	3445	50510	11	827	Me	F	CP oil filter damage	BSFL
									Air leak from brake handle due to bad	
L	79	328	3451	51026	11	1124	Ma	F	scaling	BSFX
	80	56	3090	40412	13	2001	Λ	F	CP gasket damage	BSGT
C	81	135	3144	50302	13	1715	Z,Ma	BD	CP gasket damage	BSGT
٠	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		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
					1				Water leak from CP cooling pipe due to	
L	87	565	3948	41021	13	1209	Ax		gasket	BSGT
-i-	88	601	3982	40525	13	844	Λ		CP gasket damage	BSGT
J	89	621	3991	50324	13	1718	Z		Brake cylinder gasket damage	BSGT
[_	90	622	3993	40816	13	1536	DB		CP gasket damage	BSGT
1	ا پر]	2022						Air choked at air cock due to air cock	
J	91	74	3095	51109	10	1548	Ax		broken	BŠP
L	92	157	3157	51013	13	2022	Ax		Air leak due to pipe crack near CP	BSP
L	93	201	3174	50708	7	1733			Water leak from CP cooling pipe	BSP
_	94	285	3226	50221	11	928			CP air pipe flange crack	BSP
	95	476	3857	51003	15	910	•		Air leak due to air pipe broken	BSP
L.	96	503	3896	41017	15	1412	F		CP air pipe broken	BSP
h	97	504	3896	50425	15	1412	r		Air drop due to worn air pipe	BSP
L	98	573	3957	50304	13	1330	Ma		CP cooling pipe broken	BSP
_	99	613	3987	50413	13	850	Λ		Cooling water elbow for CP crack	BSP
1.3	100	202	3174	50721	7	1733	F		Oil leak due to CP rubber hose broken	BSRH
-	101	524	3920	40621	13	1373	F	F	Air rubber hose choked	BSRII

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

No. No. No. No. No. Sale Run sibility Charge Cause or Remarks		r	Loco	· · ·	Loco.	Total	Respon-	Depot in		Abbre-
103 408 3536 40811 12 1171 Mc		No.		Date	1					viation
103 408 3636 40811 12 1171 Me Me CCS damaged 104 10 3040 51220 17 1180 F BD FCS (pneumotic control switch) defect 105 250 3028 3128 12 2038 F FCS defect No power due to FCS (Phneumatic Control Switch) defect 107 529 3922 40627 13 1607 Z Z Battery Switch) defect 107 529 3922 40627 13 1607 Z Z Battery Switch) defect 108 313 3447 40905 11 819 Me F Battery box crack Switch) defect 108 3848 41128 15 1740 M T Battery box crack 108 3848 34102 15 1740 M T Battery box crack 110 482 3864 50420 15 1740 M T Battery box crack 111 396 3883 51217 15 1417 M F Battery box crack 113 293 3234 40641 11 899 Me F Battery box crack 114 335 3158 40607 11 1246 Z F 250 A fuse off for battery charging cct 114 335 3158 40607 11 1246 Z F 250 A fuse off 115 478 3859 40904 15 955 F KIL Battery charging 250A fuse off 116 629 3998 40513 13 1402 D(F) F Battery charge no work 117 322 3448 40607 11 1137 F F Battery charge no work 119 483 3865 40821 15 1287 A A Battery liquid shortage 119 483 3865 60821 15 1287 A A Battery liquid shortage 120 3038 41011 15 424 A BiD Battery low voltage 121 203 3238 40922 11 1023 Me F Battery low voltage 122 303 3384 40922 11 1023 Me F Battery low voltage 124 370 3613 3052 12 182 Ax H Battery low voltage 124 370 3613 3052 12 182 Ax H Battery volved ge 124 370 3613 3052 12 182 Ax H Battery volved ge 124 370 3893 40921 1 1023 Me F Battery low voltage 129 447 3810 40601 18 2083 D(T) T Battery low voltage 133 513 596 5001 13 953 D(Ax) F Battery low voltage 134 578 3960 51001 13 953 D(Ax) F Battery low voltage 134 579 3	<u>72</u>									BSRH
104 10 3040 51220 17 1180 F BD PCS (pneumotic control switch) defect 105 250 3208 51228 12 2038 F PCS defect No power due to PCS (Phneumatic Control Switch) defect 107 529 3922 40627 13 1607 Z Z Battery 108 321 3447 40905 11 819 Me F Battery box crack 110 482 3861 50120 15 1740 M T Battery box crack 110 482 3861 50120 15 1740 M T Battery box crack 111 496 3883 1517 15 1417 M F Battery box crack 112 53 3086 50116 13 1980 F F 160A fuse off for battery charging cct 113 298 3234 40614 11 899 Me F Battery box crack 114 335 3458 40667 11 1246 Z F 250 A fuse off 1114 4315 3483 3857 40614 11 899 Me F Battery charging 250A fuse off 116 429 3598 40513 13 1402 D(F) F Battery charging 250A fuse off 116 429 3598 40513 13 1402 D(F) F Battery charging 250A fuse off 116 429 3598 40513 13 1402 D(F) F Battery charging 250A fuse off 118 454 3819 50727 18 2180 Me T Battery liquid shortage 119 483 3855 40821 15 1287 A A Battery liquid shortage 110 33 3384 40922 11 1023 Me F Battery liquid shortage 120 571 3956 50203 33 13606 Ma Ma Ma Ma Ma Ma Ma M							Me	Me	CCS damaged	BSSC
F								l	l	BSSP
106	1							L		BSSP
106		230	1200	71720		2036				
107 529 3922 40627 13 1607 Z Z Battery		425	3656	41205	12	1357	Z	l z		BSSP
108 321 3447 40805 11 819 Me F Battery box crack 109 481 3864 41128 15 1740 M T Battery box crack and low voltage 110 482 3864 50420 15 1740 M T Battery box crack 111 496 3883 51217 15 1417 M F Battery box crack 111 496 3883 51217 15 1417 M F Battery box crack 111 3293 3234 40614 11 899 Me F Battery box crack 113 298 3234 40614 11 899 Me F Battery charging 250A fuse off 111 433 3458 40607 11 1246 Z F 250 A fuse off 11 134 14 14 14 1315 14 14 14 14 1315 14 14 14 14 14 1315 14 14 14 14 14 14 14										BT
109 481 3864 41128 15 1740 M									1	BTBX
The color of the										BIBX
111 496 3883 51217 15 1417 M								L		BIBX
112 53 3086 50116 13 1980 F F 160 \(\) fuse off for battery charging cct 113 298 3234 40614 11 899 Me F Battery charging 250 \(\) fuse off 114 335 3458 40607 11 1246 Z F 250 \(\) fuse off 115 478 3859 40904 15 955 F KL Battery cable damage 116 629 3998 40513 13 1402 D(F) F Battery charger no work 117 322 3448 40607 11 1137 F F Battery liquid shortage 118 454 3819 50727 18 2180 Me T Battery liquid shortage 119 443 3865 40821 15 1287 A A Battery liquid shortage 120 571 3956 50203 13 1506 Ma Ma IM (1) short cct due to battery liquid leaf 121 20 3038 40221 11 1023 Me F Battery low voltage 122 303 3238 40922 11 1023 Me F Battery low voltage 124 370 3613 40525 12 1182 Ax H Battery voltage drop 126 410 3637 51007 12 1222 D(Ax) K Battery low voltage 127 422 3655 41123 12 1079 D(Me) Me Battery low voltage 128 433 3669 40811 12 1012 Ax F Battery low voltage 129 447 3810 40401 18 2033 D(T) T Battery low voltage 130 453 3819 41107 18 2180 D(T) T Battery low voltage 131 467 3844 40523 15 914 D(F) KL Battery low voltage 133 513 3908 50901 14 902 D(Ax) K Battery low voltage 134 578 3960 51101 3 953 F Battery low voltage 134 578 3960 51101 3 953 F F Battery low voltage 134 578 3960 51101 3 953 F F Battery low voltage 134 578 3960 51001 13 953 F F Battery low voltage 134 578 3960 51001 13 953 F F Battery low voltage 134 578 3960 51001 13 953 F F Battery low voltage 134 578 3960 51001 13 953 F F Battery low voltage 135 579 3960 51011 13 953 F F Battery low voltage 136 580 3960 51111 13 953 F F Battery low voltage 136 580 3960								L		BIBX
The color of the								l		BTCT
114 335 3458 40607 11 1246 Z F 250 A fuse off 115 478 3859 40904 15 955 F KL Battery cabbe damage 116 629 3998 40513 13 1402 D(F) F Battery fusibe damage 117 322 3448 40607 11 1137 F F Battery fusive shortage 118 454 3819 50727 18 2180 Me T Battery liquid shortage 119 483 3865 40821 15 1287 A A Battery liquid shortage 120 577 3956 50203 13 1506 Ma Ma IM (1) short cet due to battery liquid leaf 121 20 3058 41210 15 1424 A BD Battery low voltage 122 303 3238 40922 11 1023 Me F Battery liquid shortage 123 359 3606 41077 12 961 Ax F Engine no start due to low battery voltage 124 370 3613 40525 12 1182 Ax H Battery voltage 125 397 3629 51008 12 1470 T T Battery low voltage 126 410 3637 51007 12 1222 D(Ax) K Battery low voltage 127 422 3655 41123 12 1079 D(Me) Me Battery low voltage 128 433 3660 40811 12 1012 Ax F Battery low voltage 129 447 3810 40401 18 2083 D(T) T Battery discharge 130 453 3819 41107 18 2180 D(T) T Battery discharge 131 467 3844 40523 15 914 D(F) KL Battery discharge 133 513 3908 50901 14 902 D(Ax) K Battery discharge 134 578 3960 51109 13 953 Z F Battery discharge 135 579 3960 51109 13 953 Z F Battery discharge 136 473 3819 40405 11 1942 Ax F Battery discharge 137 596 3979 50819 13 1415 D(Me) Me Battery low voltage 138 22 3062 40807 15 1287 D(Z) BD CB trips 136 580 3360 51101 13 553 F F Battery discharge 137 596 3979 50819 13 1415 D(Me) Me Battery low voltage 138 82 3062 40807 15 1287 D(Z) BD CB trips CB defect for train lighting (reset 141 140 3151 50513 3				1	L			<u></u>		BICT
115 478 3859 40904 15 955 F KL Battery cable damage 116 629 3598 40513 13 1402 D(F) F Battery charger no work 117 322 3448 40607 11 1137 F F Battery liquid shortage 118 454 3819 50727 18 2180 Me T Battery liquid shortage 119 483 3865 40821 15 1287 A A Battery liquid shortage 120 571 3956 50203 13 1506 Ma Ma IM (1) short cet due to battery liquid leaf 121 20 3058 41210 15 1424 A BD Battery low voltage 122 303 3238 40922 11 1023 Me F Battery low voltage 123 359 3606 41077 12 961 Ax F Engine no start due to low battery voltage 124 370 3613 40525 12 1182 Ax H Battery voltage drop 125 397 3629 51008 12 1470 T T Battery low voltage 126 410 3637 51007 12 1222 D(Ax) K Battery low voltage 127 422 3655 41123 12 1079 D(Me) Me Battery low voltage 128 433 3669 40811 12 1012 Ax F Battery low voltage 129 447 3810 40401 18 2083 D(T) T Battery low voltage 130 453 3819 41107 18 2180 D(T) T Battery low voltage 131 467 3844 40523 15 914 D(F) KL Battery low voltage 131 467 3844 40523 15 914 D(F) KL Battery low voltage 133 513 3908 50901 14 902 D(Ax) K Battery low voltage 133 579 3860 51001 13 953 D(Ax) F Battery low voltage 136 580 3960 51109 13 953 D(Ax) F Battery low voltage 136 580 3960 51109 13 953 D(Ax) F Battery low voltage 136 580 3960 51109 13 953 D(Ax) F Battery low voltage 137 596 3979 50819 31 1415 D(Me) Me Battery low voltage 138 22 3062 40807 15 1287 D(Z) BD CB trips CB defect for train lighting (reset 141 140 3151 50513 13 1584 - F CB defect CF Bovo of pressure sw. defect due to CF Bovo of pressure sw. defect due to CF Bovo of pressure sw. defect due to								L		BTCT
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142 305 3239 40405 11 794 T F CB defect 143 342 3460 51215 10 1175 F,T,Z F CB open 144 536 3925 50511 13 1352 D(F) F CB for aux, generator defect CP low oil pressure sw. defect due to diaphram damage CP low oil pressure sw. defect due to diaphram damage 146 608 3984 41020 13 1129 A A CP low oil pressure sw socket broken 147 98 3109 40920 10 1743 DB F Contactor OH 148 155 3157 50611 13 2022 F F Starting cct contactor defect	-			50513	13	1584		F	CB open due to defect	CB
143 342 3460 51215 10 1175 F,T,Z F CB open 144 536 3925 50511 13 1352 D(F) F CB for aux, generator defect 145 555 3942 40806 13 1023 Λ Λ A diaphram damage 146 608 3984 41020 13 1129 Λ Λ CP low oil pressure sw socket broken 147 98 3109 40920 10 1743 DB F Contactor Ol1 148 155 3157 50611 13 2022 F F Starting cct contactor defect				<u> </u>		794	T	F	CB defect	CB
144 536 3925 50511 13 1352 D(F) F CB for aux, generator defect 145 555 3942 40806 13 1023 Λ Λ A diaphram damage 146 608 3984 41020 13 1129 Λ Λ CP low oil pressure sw socket broken 147 98 3109 40920 10 1743 DB F Contactor Oll 148 155 3157 50611 13 2022 F F Starting cct contactor defect				·		I –	F,T,Z	F	CB open	СВ
145 555 3942 40806 13 1023 Λ Λ A diaphram damage 146 608 3984 41020 13 1129 Λ Λ CP low oil pressure sw socket broken 147 98 3109 40920 10 1743 DB F Contactor Oll 148 155 3157 50611 13 2022 F F Starting cct contactor defect		41						1		CB
146 608 3984 41020 13 1129 A A CP low oil pressure sw socket broken 147 98 3109 40920 10 1743 DB F Contactor Oll 148 155 3157 50611 13 2022 F F Starting cct contactor defect		1	 	1	1	 	 	 	CP low oil pressure sw. defect due to	1
146 608 3984 41020 13 1129 A A CP low oil pressure sw socket broken 147 98 3109 40920 10 1743 DB F Contactor Oll 148 155 3157 50611 13 2022 F F Starting cct contactor defect	45	555	3942	40806	13	1023	Λ .	A	diaphram damage	COLP
147 98 3109 40920 10 1743 DB F Contactor Ol1 148 155 3157 50611 13 2022 F F Starting cct contactor defect							A		CP low oil pressure sw socket broken	COLP
148 155 3157 50611 13 2022 F F Starting cet contactor defect						<u> </u>	l	F	Contactor OH	CTT
					L				Starting cet contactor defect	CIT
			 	 	<u> </u>	†	†	T		
149 362 3609 51215 12 2868 Ma Ma work	149	362	3609	51215	12	2868	Ma	Ma		СТТ
150 494 3880 40918 15 1358 M F Confactor tip melt due to bad contact		·		40918	15	1358	M	F	Contactor tip melt due to bad contact	CIT
151 561 3944 51126 13 1103 A A Contactor tip damage							Λ	Λ	Contactor tip damage	CTT

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

	r	Loco	·	Loco.	Total	Respon-	Depot in		Abbre-
[.]	No.	No.	Date	Age	Run	sibility	Charge	Cause or Remarks	viation
								Deadman device MVopen and engine no	
152	237	3202	40914	12	2090	F	F	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 Oll	ECR
155	49	3033	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	Н	Water leak from cylinder head	ECY
100		3144	(1112	13	1716	M	BD	Water leak from cylinder liner due to screw bolt broken	ECYL
160 161	133 197	3144 3172	41113 50517	7	1715 1647	DB	F	Cylinder liner broken	ECYL
101	197	3112	30317		1047	DD		Connecting rod and crank pin off due to	130 115
162	268	3218	41216	11	1756	DB	F	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	7	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
						:		Internal high pressure due to exhaust valve	
169	77	3097	50128	10	1543	À	F	broken	EEXH
						_		Smoke and flame from exhauster due to	DOM
170	99	3109	41113	10	1743	F	F	exhaust valve broken	EEXH
171	215	3179	40813	7	1600	F	F	Smoke from upper deck 3 covers of engine	EFR
172	590 54	3977	50810	13	1403	Me	Me F	Engine heavy smoke due to injector Governor plunger get off	EFR EGPT
1		3088 3159	50715 40524	13	2048 1952	Me	F	Governor plunger get on Governor oil plunger trips	EGPT
174	165 198	3172	50921	7	1647	- A UI	F	Governor plunger get out	EGPT
176	225	3172	41204		1635		F	Governor plunger often trip	EGPT
177	240	3204	50727	12	2156	F	F	Governor plunger get out	EGPT
178	368	3613	40115		1182	Ax	11	Governor oil plunger trips	EGPT
1		3013	10.113				 	Governor plunger trip due to oil leak from	
179	85	3100	41213	- 10	1362	បរ	F	governor	EGV
180	97	3109	40527	10	1743	T	F	Governor no work	EGV
181	101	3110	41105		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		1796	Z	F	Side glass of governor broken	EGV
184	205	3176	50721	7	1639	Λx	F	Governor oil leak	EGV
185	442	3806	50324	I	2326	T	T	Engine governor valve damage	EGV
186	458	3823	51113	1	2245	T	Т	Oil leak from governer	EGV
187	566	3953	40408	13	1171	Ax	Н	Governor misoperation	EGV
100	112	2512	50115	,	1456	F.	F	Piston (10) damage due to internal high	EHP
188	116 280	3116	50115		1274	F	F	pressure Internal high pressure	EHP
190	314	3264	41204		1653	T,F	BD	Fuel injection defect	EIJ
170	714	9204	11204	10	1003	1,1	- SD	Engine over speed lever no work due to	EI
191	316	3278	50305	16	759	F	Ть	abnormal injection	EIJ
<u> </u>	 	- 	<u>-</u>	<u> </u>	l		 	Exhaust valve and piston damage due to	
192	66	3092	50314		2155	Т	F	lash adjuster damage	ELAD
193	263	3216	50520		2036	T	F	Exhaust valve damage due to lash adjuster	ELAD
194	232	3184	50714	5	1224	D(Ax)	F	Engine OH	ЕОН
								Oil leak from engine due to oil pressure	
195	73	3095	50812	10	1548	F	F	valve defect	EOPV
196	167	3159	41106	13	1952	IVEN	F	Engine overspeed lever and low oil plunger trip (engine over speed)	EOS
130	1.07	7139	141100	L.;3	1774	D(F)	L	nub (cuguic over speca)	1,03

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

		Loco		Loco.	Total	Respon-	Depot in		Abbre-
	No.	No.	Date	Age	Run	sibility	Charge	Cause or Remarks	viation
197	415	3645	50611	12	1369		Z	Engine over speed lever damage	EOSL
								Engine over speed lever trip, Driver no	
198	462	3829	51228	18	1219	D(Ax)	Н	knowledge how to reset	EOSL
199	72	3095	50530	10	1548	F	F	Water OH due to elbow crack to cylinder	EP
		:						Crank case pressure lower due to piston oil	ren.
200	273	3220	\$1204	-11	1994	F	F	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	Ме	F	Water leak from engine protection device	EPRD
204	8	3032	40424	18	1249	Z	BD	Piston head crack	EPST EPST
205	60	3091	40919	12	2007	<u>, v</u>	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 Water leak from cracked piston 7	EPST
209	391	3625	40518	12	1376	DB	Z		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 Piston crack	EPST
213	583	3973	50501	13	1541	ļ	Z	Piston ring no properly work due to	Lisi
214	606	3983	50717	13	972	Λ.	l A	manufacturing mistake	EPST
215	616	3989	50619	13	1459	Me	Me	Piston broken	EPST
216	619	3991	41023	13	1718	Z	2	Piston movement bad	EPST
217	210	3177	41201	7	1666	DB	F	Supercharger defect from begining	ES
	210	7177	11201	 	1000			Supercharger oil filter gasket broken from	
218	92	3106	41206	10	1327	F	F	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	Α	Engine stop	ESTP
224	61	3091	50105	12	2007	F	F	#7 cylinder test valve failure	ETV
225	63	3091	50125	12	2007	Α	F	Test valve (8) damage	ETV
226	107	3113	41224	1	1759	F	F	Engine test valve damage	ETV
227	146	3154	50617		1941	F	F	Test valve internally damage	ETV
228	147	3154	50807		1941	Α	F	Test valve damage	ETV
229	156	3157	51011		2022	F	F	Test valve defect	ETV
230	172	3162	50424	L	1629	Z	F	Test valve failure	ETV
231	206	3176	50915		1639	Α	F	Test valve crack	ETV
232	296	3232	51118		1020	F	F	Test valve defect	EIA
233	530	3922	50408		1607	Z	Z	Test valve broken	EIA
234		3100	50120	2	1362	T	F	Fuel cct failure	FLCT
235		3117	41119		25	F	F	tank	FLCT
236		3240	50906		1222	F	F	Fuel choked	FLCT
237	1	3462	40508		726	Me	F	Fuel filter choked	FLCT
238		3642	50504	4	877	Ax	F	Fuel pipe choked	FLCT
239		3843	51018		1222	Ma	Ma	Fuel cet choked	FLCT
240		3851	50824		930	F	KL	Fuel oil leak from oil charging pipe	FLCT FLCT
241	544	3932	40405		1446	Z	Z	Fuel cet choked	FLCT
242		3932	40602	1	1446	Z	Z	Fuel cct choked due to dirty filter	FLCT
243		3954	50325	1	1037	Ax	H	Fuel filter choked	FLCT
244		3975	50305		1461	Me	Me	Fuel cet cheeked Fuel filter choked due to dirty filter	FLCT
245		3991	50214		1718	Z	Z F	Fuel motor fuse off	FLPM
246	2.7	3090	40513		2001	D(Me)	BD	Fuel pump motor fuse off	FLPM
247	131	3141	50114	13	1516	D(T)	I BO	It act bamb moot rase on	

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

		Loco	<u> </u>	Loco.	Total	Respon-	Depot in		l Abbre-
	No.	No.	Date	Age	Run	sibility	Charge		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
259	278	3221	50123	11	1911	D(F)	F	10A fuse off for fuel pump motor	FLPM
251	291	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	Н	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	IN
261	142	3151	50908	13	1584	•	F	Fan defect	FN
262	144	3154	50315	13	1941	DB	F	Fan motor no rolate	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 Oll 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	400	1626	اممدتها		ا ,,,,, أ	75/3/4/5		Oil and water OH due to fan motor fuse off	
276	409	3636 3641	41120	12	1171	D(Me)	Me	and battery low voltage	FN
277	412	3657	50920 40605	12	1193	F	F	Water OH due to fan motor fuse off	FN
278	469	3845	51222	15	1188 870	F	KL	Water OH due to fan damage	FN
279	471	3850	50325	15	665	DB	F	Water OH due to fan motor fuse off 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		Water OH due to fan motor fuse off	IN
283	552	3936	50405	13	1256	D(Ax)		Water OH due to fan motor fuse off	FN
284	554	3941	50903	13	995	AZ	 A	Water OH due to fan motor fuse off	FN
285	563	3944	51218		1103	DB		Water OH due to Jan damage Water OH due to Jan case crack	FN FN
286	576	3959	50611	13	1321	D(F)		Cooling fan fuse off	FN
287	597	3980	41001	13	1443	D(F).		Fan motor fuse off	IN
288	599	3981	50410	13	1034	DB		Water OH due to fan failure	-IN
289	122	3123	40919	14	1771	D(T)		Engine no work due to FP-ES defect	FPES
290	159	3158	40626	13	1796	- X		FPES damage	FPES
291	188	3169	40421	13	1981	Me		FP-ES damage	FPES
292	227	3182	41104	7	1601	F		FP-ES spring damage	FPES
293	267	3217	40819	11	1984	- A		FPES damage	FPES
294	357	3605	50218	12	1315	Ax		Control and fuel pump sw. defect	
295	444	3807	40101	18	2250	Ma		FP-ES spring damage	FPES FPES
296	456	3821	50526	18	2379	D(T)		Control and fuel pump sw. unmovable	FPES
297	112	3114	50320	10	1886	F		Fire from engine and main generator	FR
298	318	3285	51112	16	862	7ь		Loco smoke, but get it off by driver	FR
299	386	3622	41029	12	1307	7.		Smoke under cooling fan	FR
300	421	3655	41019	12	1079	Me	Me	Loco fire, but driver put it off	FR FR
7,0	لتنا	2023			1977	1710	1416	ioo ine, out office put it off	ΓK

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

	 1	Loco	Γ	.oco.	Total	Respon-	Depot in		Abbre-
	No.	No.	Date	Age	Run	sibility	Charge	Cause or Remarks	viation
301	356	3604	50225	12	1381	UI UI	Ma	Alternator smoke	FRAL
302	502	3894	50811	15	104	F	KL	Aux. alternator fire	FRAL
								Temperature sw. of fire alarm system	
303	95	3108	41028	10.	1486	DB -	F	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
3.0								Crank pin and bearing damage due to	
307	302	3237	41021	11.	903	UI:	: E	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
								TM cover drop out, but immediately after	
312	24	3070	50505	15	1408	×Λ	BD	recovered	FXBT
313	35	3080	50507	14	1631	A	F	TM cover missing (one stone inside)	FXBT
		-						Aux. generator flange broken due to	
314	42	3082	51116	14	2985	: DB	F	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
								Air leak due to loose connection of air	
318	110	3114	41101	10	1886	-	F	reservoir and pipe	FXBT
319	121	3123	40603	14	1771	F	BD	Aux. generator flange fix bolt cutted off	FXBT
								Load regulator defect due to loose	
320	143	3154	41115	13	1941	DB ·	F	connected bolt	FXBT
								Injector disconnecting lever fixing pin get	
321	145	3154	50409	13	1941	DB	F	out due to bad fixation	FXBT
	` .							Air pipe connecting flange nut loose	CVDT
322	185	3168	50711	-13	1831	A	F	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
	ایما	222			220		F	TM blower duct dropped on bogie due to bad fixation	FXBT
326	284	3226	50207	11	928	Λ	Г	Main reservoir side cover lost due to bad	LADI
327	297	2122	40512	11	1169	Ax	F	fixation	FXBT
.			50308		1788	F	BD	Cylinder head stud broken	FXBT
328 329	313	3253 3455	50310		1102	DB	F	Crank shaft gear fixing bolt broken	FXBT
			50318		1376	<u>Z</u>	$\frac{1}{z}$	CP drain cock missed due to loose fitting	FXBT
330	393	3625	•				F	CP cover lost due to bad fixation	FXBT
331	416	3649	40517	l	1004	D(F)	<u>г</u> Н	Fan flange bolt damage	FXBT
332	463	3830	50807	18	1194	Ax		Water leak from connecting part of CP	LVDI
333	164	3840	41026	15	1487	Ax	Н	cooling	FXBT
	464		40924		1496		F	Cylinder bloc fix bolt not fixed	FXBT
334	497	3885	40924	15	1490	Ax	<u>r</u>	TM field pole fix bolt fall out due to bad	INDI
335	508	3901	40902	14	1331	F	F :	connection	FXBT
	200	7701	1-0702		1,551			Cooling pipe for CP damaged due to bad	
336	522	3916	50610	14	842	Me	Me	fixation	FXBT
337	546	3932	50620		1446	F,Z	Z	TM cover loose fix	FXBT
338	252	3210	40405		1715	Δx	F	Air leak due to loose connection of valve	FXBV
		-210	10703				-	Air leak from brake valve due to bad	<u> </u>
339	612	3986	50914	13	900.	A	. А	fixation	FXBV
340	17	3054	40505		1371	F	BD	Wire disconnected to fuel pump motor	FXC
		~	 		 -			Wire terminal connected to voltage	
7									

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

,		1				1			
		Loco		Loco.	Total	Respon-	Depot In		Abbre-
	No.	No.	Date	Age	Run	sibility	Charge	Cause or Remarks	viation
								Cable OH to alternator due to bad	
342	50	3084	40806	14	2161	F	F	connection	FXC
								Cooling fan cable melt due to loose	
343	51	3085	41217	13	1848	F	F	connection	FXC
344	65	3091	50613	12	2007	DB	F	Alternator field cable disconnected	FXC
	,							Cable melting to aux. generator due to bad	
345	115	3116	41103	7.	1456	F	F	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
:								Wire to temperature switch of cooling fan	
348	154	3157	50610	13	2022	Me	F	burn due to bad fixation	FXC
349	193	3170	50720	13	2233	DB	F	Alternator cable fire due to bad connection	FXC
								IM field excitation cable melt due to bad	
350	213	3178	41201	7	1751	F	F	connection	FXC
								Alternator wiring break down due to bad	
351	244	3206	51030	12	2114	UI	F	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
200	- 212	3220	30012		1994			Generator cable melt due to loose	170
357	292	3228	50202	11	1073	D(F)	F	connection	FXC
		3220	JOZOZ		1075			Temperature switch terminal spark due to	
358	310	3245	50503	19	1515	Ax,Me	F	bad connection	FXC
	3.0	32.13	30303			711,1110	_ -	Voltage reg. failure due to misconnection	170
359	317	3282	50405	16	725	Ть	Tb	to engine governor	FXC
360	341	3460	40817	10	1175	F	F	Battery spark due to bad connection	FXC
-		3100	10017					Emergency fuel cut off switch wire cutted	170
361	363	3610	50313	12	2912	Ma	Ma	off due to loose connection	FXC
362	378	3616	51016	12	1418	Z	\overline{z}	Wire disconnection for fuel pump motor	FXC
363	382	3620	50213	12	1842	D13	T	Fan motor wire connection off	FXC
364	387	3623	40403	12	1352	DB	$\frac{1}{2}$	Auxiliary generator connection failure	FXC
365	395	3626	40402	12	1186	F	F	Loose connection of TM ampere meter	FXC
303	393	3020	40402	- 12	1100	1	1	Fuel motor wire cutted off due to loose	FAC
366	407	3636	40803	12	1171	Me	Me	connection	FXC
367	430	3657	50807	12	1188	F	F	Battely pole loose connection	FXC
368	437	3802	41124		2437	T	T	PCR cable bad connection	
369	441	3805	50105	18		T T	T		FXC FXC
309	441	3500	30103	18	2326	<u>-</u>	<u> </u>	Fuel pump motor brush wire bad fixation Battery wire damage due to loose	FAC
370	446	3808	50129	18	2287	T	Τ.	connection	FXC
371	450	3816	50414		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	7.	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
						,		Wire cutted off to earth relay due to wire	
378	570	3955	40625	13	1020	Ax	H	fix error	FXC
								Resistor melt in Module (RC11) due to bad	
379	577	3960	41213		953	+	F	connection	FXC
380	600	3981	51011	13	1034	Α	Λ	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
381	189	3169	40611	13	1981	F	F	10A fuse bad fix	FXFU
	176	3161	50702	13	1959	D(F)	F	Air hose bad fixation	FXRII

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

P	·		Loco	 1	Loco.	Total	Respon-	Depot in		Abbre-
	ı	No.	No.	Date	Age	Rún	sibility	Charge	Cause or Remarks	viation
1	5 1	149	3156	41013	13	2032	D(F)	F	Bad fix of fire alarm socket	FXSK
		203	3175	40401	7	1620	À	F	Governor socket no good fixed	FXSK
	86	207	3177	40414	7	1666	D(Ax)	F	Bad connection of fire alarm socket	FXSK
	87	327	3451	50612	11	1124	F	F	Cooling fan socket bad fixed	FXSK
	88	346	3464	40827	10	1083	F	F	CCS socket bad fixed	FXSK
L	89	501	3894	50420	15	104	Ax	KL	Governor socket not fixed	FXSK
			3074	30420					Link of brake shoe out of position, later	
13	90	229	3182	50817	7	1601	Ax	F	recover	FXZ
·	91	264	3216	50703	11	2036	Ax	F	Oil leak due to no oil inlet cover	FXZ
1	92	271	3219	41010	11	2004	F	F	CB are chute bad fix	FXZ
	93	399	3630	50505	12	1200	Z	F	No strainer in fuel supply inlet	FXZ
	94	418	3649	50701	12	1004	\overline{z}	F	No power contactor are chute	FXZ
1	95	27	3072	50805	15	1452	F	BD	TM cable damage and earth	GD
L_	96	28	3072	50813	15	1452		BD	TM cct earth due to cable damage	GD
	97	113	3114	50811	10	1886	DB	F	All traction cct earth	GD
L	98	141	3151	50817	13	1584	F	F	TM cable carth	GD
	99	162	3158	51015	13	1796	Tb	F	TM cct carth	GD
L	100	179	3165	50726		1429	$\overline{\Lambda}$	F	Earth	GD
	101	255	3211	50706	1	2110	F	F	High voltage cable earth	GD
}_		233	3211	30100					TM cet earth and Module (feed back)	
	102	269	3218	51007	11	1756	DB	r E	defect	GD
L	103	334	3457	50821	11	990	F	F	High voltage cct earth	GD
_	104	367	3612	50717		1305	Ma	Ma	High voltage cable earth to carbody	GD
L	105	417	3649	41112	1	1004	F	F	Earth on the way	GD
<u>_</u>	106	436	3661	51117		1359	D(F)	Z	Loco earth	GD
L.,	107	445	3808	40423	18	2287	T	T	Ground	GD
1	108	479	3859	51221	15	955	. Z	KI.	Earth indication	GD
	109	539	3928	40806	13	1292	Ax	F	Cable earth indication	GD
· L.	410	549	3933	51213	13	1283	D(Ax)	F	High voltage earth	GD
- L-	411	585	3974	51113		1360	Z	Z	Loco earth	GD
<u> </u> -					1				Gear device wear between engine and	anna
.	412	103	3111	41210	10	1508	DB	F	starter	GRES
					T		I		Governor driving gear between engine and	GRGV
L	413	62	3091	50118		2007	DB	F	governor wear	GRGV
	414	257	3212	40809		1949	DB	F	Governor driving gear defect	GRGV
	415	372	3614	41116		1335	Z	Z	Governor gear wear	
	416	432	3658	51009		1378	1	Z	Governoer gear defect	GRGV
	417	465	3843	50317		1222		Ma	Governor flange gear wear	GRGV
1	418	605	3983	50205		972	DB	^	Governer flange and drive gear wear	GRRD
L	419	553	3940	4062		1043		A	Main shaft drive gear wear	GRWP
ι.	420	353	3468	50114		1166		F	Water pump gear damage	HL
	421	132	3141	50718		1516		BD	Head light resistor socket damage	IIL
1	422	403	3633	4121		1175		F	Head light cct failure from begining Head lamp no light due to resistor damage	IIL
· L.	423	523	3918	5061		1566		Ma		IIL
	424	525	3920			1373		F	Head light go out due to overload	HR
	425	34	3080			1631		F	Horn defect	HR
1.	426	125	3127			1650		BD	Horn defect	HR
	427	308	3242			1430			Horn damage	JIR
	428	542	3929			1290		F	Horn defect	4
	429	584	3974			1360		Z	Horn damage	HR INSP
1.	430	136	3146			1797		BD	Loco no braking due to bad preparation	
L.	431	281	3224			1322		F	Earth and water leak due to bad inspection	INSP
	432	361	3609			2868		Ma	Long preparation work time	INSP
Ì	433	31	3076	5051	0 14	1693	<u> </u>	BD	Washer damage inside of load regulator	LR

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

No. No. Date Age Run Sibility C	harge Cause or Remarks Load regulator resistor broken from begining F LR defect F Load regulator defect KL Load regulator failure Load regulator bad working due to dust from broken small side glass F Load regulator wedge get out and repair F Module (VR) defect F Module (RB13) defect F Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	LR L
435 102 3111 40906 10 1508 DB 436 111 3114 41128 10 1886 UI 437 468 3844 50301 15 914 F 438 505 3896 50530 15 1412 F 439 519 3911 50807 14 1346 F 440 52 3086 40525 13 1980 F 441 55 3088 50819 13 2048 A,F 442 326 3451 50302 11 1124 - 443 434 3661 50129 12 1359 EC	F begining F LR defect F Load regulator defect KL Load regulator failure Load regulator bad working due to dust from broken small side glass F Load regulator wedge get out and repair F Module (VR) defect F Module (RB13) defect F Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	LR LR LR LR LR LR MDL MDL MDL
435 102 3111 40906 10 1508 DB 436 111 3114 41128 10 1886 UI 437 468 3844 50301 15 914 F 438 505 3896 50530 15 1412 F 439 519 3911 50807 14 1346 F 440 52 3086 40525 13 1980 F 441 55 3088 50819 13 2048 A,F 442 326 3451 50302 11 1124 - 443 434 3661 50129 12 1359 EC	F LR defect F Load regulator defect KL Load regulator failure Load regulator bad working due to dust from broken small side glass F Load regulator wedge get out and repair F Module (VR) defect F Module (RB13) defect F Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	LR LR LR LR LR LR MDL MDL MDL
436 111 3114 41128 10 1886 UI 437 468 3844 50301 15 914 F 438 505 3896 50530 15 1412 F 439 519 3911 50807 14 1346 F 440 52 3086 40525 13 1980 F 441 55 3088 50819 13 2048 A,F 442 326 3451 50302 11 1124 - 443 434 3661 50129 12 1359 EC	F Load regulator defect KL Load regulator failure Load regulator bad working due to dust from broken small side glass F Load regulator wedge get out and repair F Module (VR) defect F Medule (RB13) defect F Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	LR LR LR LR MDL MDL MDL
437 468 3844 50301 15 914 F 438 505 3896 50530 15 1412 F 439 519 3911 50807 14 1346 F 440 52 3086 40525 13 1980 F 441 55 3088 50819 13 2048 A,F 442 326 3451 50302 11 1124 - 443 434 3661 50129 12 1359 EC	KL Load regulator failure Load regulator bad working due to dust from broken small side glass F Load regulator wedge get out and repair F Module (VR) defect F Module (RB13) defect F Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	LR LR LR MDL MDL MDL
438 505 3896 50530 15 1412 F 439 519 3911 50807 14 1346 F 440 52 3086 40525 13 1980 F 441 55 3088 50819 13 2048 A,F 442 326 3451 50302 11 1124 - 443 434 3661 50129 12 1359 EC	Load regulator bad working due to dust from broken small side glass F Load regulator wedge get out and repair F Module (VR) defect F Module (RB13) defect Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	LR LR MDL MDL MDL
439 519 3911 50807 14 1346 F 440 52 3086 40525 13 1980 F 441 55 3088 50819 13 2048 A,F 442 326 3451 50302 11 1124 - 443 434 3661 50129 12 1359 EC	F from broken small side glass F Load regulator wedge get out and repair F Module (VR) defect F Module (RB13) defect F Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	LR MDL MDL MDL
439 519 3911 50807 14 1346 F 440 52 3086 40525 13 1980 F 441 55 3088 50819 13 2048 A,F 442 326 3451 50302 11 1124 - 443 434 3661 50129 12 1359 EC	F Load regulator wedge get out and repair F Module (VR) defect F Module (RB13) defect F Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	LR MDL MDL MDL
440 52 3086 40525 13 1980 F 441 55 3088 50819 13 2048 A,F 442 326 3451 50302 11 1124 - 443 434 3661 50129 12 1359 EC	F Module (VR) defect F Medule (RB13) defect F Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	MDL MDL MDL
441 55 3088 50819 13 2048 A,F 442 326 3451 50302 11 1124 - 443 434 3661 50129 12 1359 EC	F Module (RB13) defect F Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	MDL MDL
442 326 3451 50302 11 1124 - 443 434 3661 50129 12 1359 EC	F Thermal resistor of Module damage Z Module WS11 (Wheel Slip) defect F Module defect	MDL
443 434 3661 50129 12 1359 EC	Z Module WS11 (Wheel Slip) defect F Module defect	
	F Module defect	
444 575 3959 40908 13 1321 -		- MDL
}		MDL
	Module for battery charging from aux.	1
445 615 3988 50815 13 1454 Me	Me generator	MDL
	Main generator carbon wear due to bad	
<u> </u>	BD surface condition of slip ring	MG
447 173 3163 40508 13 1827 A	F Main generator ground	MG
	Carbon wear of main generator due to	
448 348 3464 51026 10 1083 F	F 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
}	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
	Train speed irregular but after inspection	
459 221 3180 50217 7 1518 D(F)	F OK	NDFT
460 241 3205 41216 12 2164 D(F)	F No speed from begining but no defect	NDFT
466 221 2464 41110 21 2000 7006	No traction power, but Loco OK after	
461 331 3454 41119 11 1208 D(Me)	F 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 recov	
464 582 3973 50312 13 1541 Z	Z. Pump motor no work, after inspection Ok	
	Me Abnormal noise of fan, but no defect	NDFT
harmon and the second control of the second	BD No speed	NSP
	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 LX(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
	Me No speed up	NSP
	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. No. No. Date Age Run stibility Charge Cause or Remarks si			Loco		Loço.	Total	Respon-	Depot in		Abbre-
481 33 3012 40522 17 304 A BD Oil leak from pipe 483 34 3100 40404 10 1362 F F Governor oil pipe cutled off 484 126 3179 40926 7 1600 F F Oil leak from oil tank 485 216 3179 40926 7 1600 F F Oil leak from oil tank 486 300 3236 40911 11 1065 Z F Oil leak from oil tank 487 315 3267 40416 18 1676 Z BD Oil leak from pipe 488 390 3623 50925 12 1352 Z Z Tom cutted off oil pipe 489 518 3911 50611 14 1346 Ax F Oil cooling pipe cutled off 490 543 3929 50705 13 1290 T F Oil filter broken due to oil scattering 490 543 3929 50705 13 1290 T F Oil filter broken due to oil pipe crack 491 572 3956 51015 13 1506 Ma Ma Oil leak from oil pipe of blower 492 12 3041 51024 17 1229 D(Me) BD Motor over load 495 4		No.		Date						viation
483 84 3100 40404 10 1362 F	182								Oil leak from pipe	OP
184 126 3130 40410 14 1590 Di3 BD Oil pipe choked 185 216 3179 40926 7 1600 F F Oil leak from oil tank 186 300 3236 40911 11 1065 Z F Oil pipe crack 187 315 3267 40416 18 1676 Z BD Oil leak from pipe crack 188 390 3623 50925 12 1352 Z Z Z Z Z Main generator defect due to oil scattering from cutted off oil pipe crack 488 390 3623 50925 12 1352 Z Z Z Z Z Z Z Z Z	183	84	3100	40404	10	1362	F	F	Governor oil pipe cutted off	OP
485 216 3179 40926 7 1600 F F Oil leak from oil tank 486 300 3236 40911 11 1065 Z F Oil pipe crack 487 315 3267 40416 18 1676 Z BD Oil leak from pipe Main generator defect due to oil scattering from cutted off oil pipe 488 399 3623 50925 12 1352 Z Z Z from cutted off oil pipe 489 518 3911 50611 14 1346 Ax F Oil cooling pipe cutted off 490 543 3929 50705 13 1290 T F Oil filter broken due to oil pipe crack 491 572 3956 51015 13 1506 Ma Ma Oil leak from oil pipe of blower CB for supercharger oil lubricating pump 493 40 3082 40616 14 2985 Me F CB for supercharger oil lubricating pump 493 40 3082 40616 14 2985 Me F CB open due to supercharger oil pump 494 182 3168 40505 13 1331 F Divining rod to aux generator cutted off R 495 312 3252 41020 19 1680 DB BD Aux generator shaft broken in both side R 497 9 3039 51104 17 1192 Z BD CP counceting rod broken R 498 497 9 3039 51104 17 1192 Z BD CP counceting rod broken R 498 80 3167 50926 13 2217 UI F F CDR Ry damage 40 3003 50524 3 219 M F R Coil broken R 603 13 15144 DB Z Connection CC 604 605 6					14		DB	BD		OP
486 300 3236 40911 11 1065 Z F Oil pipe crack	185				7	1600	F	F	Oil leak from oil tank	OP
487 315 3267 40416 18 1676 Z BD Oil leak from pipe Main generator defect due to oil scattering from cutted off oil pipe from cutted off from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe from cutted oil pipe crack from oil pipe oil pipe crack from oil pipe oil pipe crack from oil pipe oil pipe from oil pipe oil pi					11		Z	F	Oil pipe crack	OP
Main generator defect due to oil scattering Fastering Faster								BD		OP
489 518 3911 50611 14 1346 Ax F Oil cooling pipe cutted off 490 543 3929 59705 13 1290 T F Oil filter broken due to oil pipe crack 491 572 3956 51015 13 1506 Ma Ma Oil leak from oil pipe of blower CB for supercharger oil Tubricating pump motor open CB for supercharger oil Tubricating pump motor open CB for supercharger oil pump motor open CB for supercharger oil pump motor open CB for supercharger oil pump May 182 3168 40505 13 1831 - F Driving rod to aux generator cutted off R 495 312 3252 41020 19 1680 DB BD Aux generator shaft broken in both side R 496 29 3073 41115 15 1300 F BD Shaft between engine and CP broken R 497 9 3039 51104 17 1192 Z BD CP connecting rod broken R 498 180 3167 50226 13 2217 UI F Earby Earby Earby 5050 3033 55033 31 1544 DB Z Connecting rod boad Connection R 499 627 3995 59503 13 1544 DB Z Connecting rod boad Connection R 499 627 3995 59503 13 1344 DB Z Connecting rod boad Connection R 500 1 3003 50524 3 219 M F Ry coil broken F Ry coil open 505 283 3225 50915 11 1199 F F Ry coil open 506 286 3226 51012 11 928 F Ry (CR) coil open 507 423 3655 41126 12 1079 Mc Me Ry (GFX) open 509 538 3926 51003 13 1512 Ma Ma Ry (GFX) open 510 550 3936 40505 14 1277 F F EQP open 510 550 3936 40505 14 1277 F F Ry GFX open 511 574 3957 50914 13 1330 F Ry coil open 512 626 3995 50215 13 1544 Z Z Fan Ry short cet 513 632 3998 51211 13 1402 F Ry defect due to inside wire cutted off 514 23 3067 40611 15 1444 Z BD Da good condition S1 516			·							
490 543 3929 50705 13 1290 T F Oil filter broken due to oil pipe crack 491 572 3956 51015 13 1506 Ma Ma Oil leak from oil pipe of blower CB for supercharger oil lubricating pump motor open CB open due to supercharger oil lubricating pump motor over lead 493 40 3082 40616 14 2985 Me F motor over lead CB open due to supercharger oil pump CB open due to bad care shotage, even fan CB open due to supercharger oil pump CB	188	390	3623	50925	12	1352	Z	-Z	from cutted off oil pipe	OP
491 572 3956 51015 13 1506 Ma	189	518	3911	50611	14	1346	Λx	F	Oil cooling pipe cutted off	OP
12 3041 51024 17 1229 D(Me) BD motor open CB for supercharger oil lubricating pump motor open CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor open CB open due to supercharger oil pump motor open CB open due to supercharger oil pump motor open CB open due to supercharger oil pump motor open CB open due to supercharger oil pump motor open CB open due to supercharger oil pump motor open CB open due to supercharger oil pump motor open CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor open due to supercharger oil pump motor over lead CB open due to supercharger oil pump motor over lead CB open due to supercharger oil pump due to bad care to supercharger oil pump due to motor oil exchange SB open due to supercharger oil pump due to supercharger oil pump due to due to supercharger oil pump due to due to supercharger oil pump due to due to supercharger	90	543	3929	50705	13	1290	T	F	Oil filter broken due to oil pipe crack	: OP
492 12 3041 51024 17 1229 D(Me) BD motor open CB open due to supercharger oil pump CB open due to bad due to bad on the supercharger oil pump CB open due to bad on the supercharger oil pump CB open due to bad out of the supercharger oil pump CB open due to bad out of the supercharger oil pump CB open due to bad out of the supercharger oil pump CB open due to bad out of the supercharger oil pump CB open due to bad out of the supercharger oil pump CB open due to bad out of the supercharger oil pump CB open due to bad out of such and of the supercharger oil pump CB open due to supercharger oil pump CB open due to no fuel from begining CB open due to no fuel from begining CB open due to supercharger oil pump	191	572	3956	51015	13	1506	Ma	Ma	Oil leak from oil pipe of blower	OP
493 40 3082 40616 14 2985 Me F motor over load C				T 1 1 1					CB for supercharger oil lubricating pump	
493 40 3082 40616 14 2985 Me F motor over load C 494 182 3168 40505 13 1831 - F Driving rod to aux generator cutted off R 495 312 3252 41020 19 1680 DB BD Aux, generator shaft broken in both side R 496 29 3073 41115 15 1300 F BD Shaft between engine and CP broken R 497 9 3039 51104 17 1192 Z BD CP connecting rod broken R 498 180 3167 50226 13 2217 UI F connection R 499 627 3995 50503 13 1544 DB Z Connecting rod bad fixation R 500 1 3003 50524 3 219 M F Ry coil broken 501 124 3127	192	12	3041	51024	17	1229	D(Me)	BD		OPM
494 is2 3168 40505 is3 is3i - F Driving rod to aux generator cutted off R										
495 312 3252 41020 19 1680 DB BD Aux. generator shaft broken in both side R 496 29 3073 41115 15 1300 F BD Shaft between engine and CP broken R 497 9 3039 51104 17 1192 Z BD CP connecting rod broken R 498 180 3167 50226 13 2217 UI F Connecting rod bod fixation R 499 627 3995 50503 13 1544 DB Z Connecting rod bod fixation R 500 1 3003 50524 3 219 M F Ry coil broken 501 124 3127 40517 14 1650 - BD Ry open 502 177 3165 50211 13 1429 - F CDR Ry damage 503 181 3167 50907 13 221				1			Me		In the second of the second	ОРМ
496 29 3073 41115 15 1300 F BD Shaft between engine and CP broken R				1						RDAG
497 9 3039 51104 17 1192 Z BD CP connecting rod broken R 498 180 3167 50226 13 2217 UI F Rear bogic link damage due to bad connection R 499 627 3995 50503 13 1544 DB Z Connecting rod bad fixation R 500 1 3003 50524 3 219 M F Ry coil broken 501 124 3127 40517 14 1650 - BD Ry open 502 177 3165 50211 13 1429 - F CDR Ry damage 503 181 3167 50907 13 2217 - F Ry coil open 504 224 3181 41004 7 1635 - F Ry (QR) coil open 505 283 3225 50915 11 1199 - F Ry (ER) open	k									RDAG
498 180 3167 50226 13 2217 UI										RDCE
498 180 3167 50226 13 2217 UI F connection R 499 627 3995 50503 13 1544 DB Z Connecting red bad fixation R 500 1 3003 50524 3 219 M F Ry coil broken 501 124 3127 40517 14 1650 - BD Ry open 502 177 3165 50211 13 1429 - F CDR Ry damage 503 181 3167 50907 13 2217 - F Ry coil open 504 224 3181 41004 7 1635 - F Ry (QR) coil open 505 283 3225 50915 11 1199 - F Ry (ER) open 506 286 3226 51012 11 928 - F Ry (ER) open 507 423 <td>197</td> <td>9</td> <td>3039</td> <td>51104</td> <td>17</td> <td>1192</td> <td>Z</td> <td>BD.</td> <td>CP connecting rod broken</td> <td>RDCP</td>	197	9	3039	51104	17	1192	Z	BD.	CP connecting rod broken	RDCP
499 627 3995 50503 13 1544 DB Z Connecting rod bad fixation R 500 1 3003 50524 3 219 M F Ry coil broken 501 124 3127 40517 14 1650 - BD Ry open 502 177 3165 50211 13 1429 - F CDR Ry damage 503 181 3167 50907 13 2217 - F Ry coil open 504 224 3181 41004 7 1635 - F Ry (QR) coil open 505 283 3225 50915 11 1199 - F Ry (ER) open 506 286 3226 51012 11 928 - F Ry (ER) open 507 423 3655 41126 12 1079 Me Me Ry(FC-1) damage 508 509 <td< td=""><td></td><td>100</td><td>33.45</td><td>5000</td><td>,,</td><td>2217</td><td>111</td><td>12</td><td></td><td>nnev</td></td<>		100	33.45	5000	,,	2217	111	12		nnev
500 1 3003 50524 3 219 M F Ry coil broken 501 124 3127 40517 14 1650 - BD Ry open 502 177 3165 50211 13 1429 - F CDR Ry damage 503 181 3167 50907 13 2217 - F Ry coil open 504 224 3181 41004 7 1635 - F Ry (QR) coil open 505 283 3225 50915 11 1199 - F Ry (coil open 506 286 3226 51012 11 928 - F Ry (ER) open 507 423 3655 41126 12 1079 Me Me Ry (FC-1) damage 508 509 3905 40505 14 1277 - F EQP open 510 550 3936 40526									•	RDFX
501 124 3127 40517 14 1650 - BD Ry open 502 177 3165 50211 13 1429 - F CDR Ry damage 503 181 3167 50907 13 2217 - F Ry coil open 504 224 3181 41004 7 1635 - F Ry (QR) coil open 505 283 3225 50915 11 1199 - F Ry (CR) coil open 506 286 3226 51012 11 928 - F Ry (ER) open 507 423 3655 41126 12 1079 Me Me Ry(FC-1) damage 508 509 3905 40505 14 1277 - F EQP open 510 550 3936 40526 13 1256 F F Ry. GFX open from beginning 511 574 3957										RDFX RY
502 177 3165 50211 13 1429 - F CDR Ry damage 503 181 3167 50907 13 2217 - F Ry coil open 504 224 3181 41004 7 1635 - F Ry (QR) coil open 505 283 3225 50915 11 1199 - F Ry coil open 506 286 3226 51012 11 928 - F Ry (ER) open 507 423 3655 41126 12 1079 Me Me Ry(FC-1) damage 508 509 3905 40505 14 1277 - F EQP open 509 538 3926 51003 13 1512 Ma Ma Ry (GFX) open from beginning 511 574 3957 50914 13 1330 - Ma CDR Ry coil open 512 626 3995				·			M		I . ·	RY
503 181 3167 50907 13 2217 - F Ry coil open 504 224 3181 41004 7 1635 - F Ry (QR) coil open 505 283 3225 50915 11 1199 - F Ry coil open 506 286 3226 51012 11 928 - F Ry (ER) open 507 423 3655 41126 12 1079 Me Me Ry (FC-1) damage 508 509 3905 40505 14 1277 - F EQP open 509 538 3926 51003 13 1512 Ma Ma Ry (GFX) open 510 550 3936 40526 13 1256 F F Ry. GFX open from beginning 511 574 3957 50914 13 1330 - Ma CDR Ry coil open 512 626 3995				2			-			RY
504 224 3181 41004 7 1635 - F Ry (QR) coil open 505 283 3225 50915 11 1199 - F Ry. coil open 506 286 3226 51012 11 928 - F Ry (ER) epen 507 423 3655 41126 12 1079 Me Me Ry (FC-1) damage 508 509 3905 40505 14 1277 - F EQP open 509 538 3926 51003 13 1512 Ma Ma Ry (GFX) open 510 550 3936 40526 13 1256 F F Ry. GFX open from beginning 511 574 3957 50914 13 1330 - Ma CDR Ry coil open 512 626 3995 50215 13 1544 Z Z Fan Ry short cet 513 632 3998										RY
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506 286 3226 51012 11 928 - F Ry (ER) open 507 423 3655 41126 12 1079 Me Me Ry(FC-1) damage 508 509 3905 40505 14 1277 - F EQP open 509 538 3926 51003 13 1512 Ma Ma Ry (GFX) open 510 550 3936 40526 13 1256 F F Ry. GFX open from beginning 511 574 3957 50914 13 1330 - Ma CDR Ry coil open 512 626 3995 50215 13 1544 Z Z Fan Ry short cct 513 632 3998 51211 13 1402 - F Ry defect due to inside wire cutted off Water OII due to water shortage, even Ian no good condition SI 514 23 3067 40611 15 14					. 1. 1					RY
507 423 3655 41126 12 1079 Me Me Ry(FC-1) damage 508 509 3905 40505 14 1277 - F EQP open 509 538 3926 51003 13 1512 Ma Ma Ry (GFX) open 510 550 3936 40526 13 1256 F F Ry GFX open from beginning 511 574 3957 50914 13 1330 - Ma CDR Ry coil open 512 626 3995 50215 13 1544 Z Z Fan Ry short cct 513 632 3998 51211 13 1402 - F Ry defect due to inside wire cutted off Water Olf due to water shortage, even fan no good condition SI 514 23 3067 40611 15 1444 Z BD no good condition SI 515 119 3118 41269										RY
508 509 3905 40505 14 1277 - F EQP open 509 538 3926 51003 13 1512 Ma Ma Ry (GFX) open 510 550 3936 40526 13 1256 F F Ry. GFX open from beginning 511 574 3957 50914 13 1330 - Ma CDR Ry coil open 512 626 3995 50215 13 1544 Z Z Fan Ry short cct 513 632 3998 51211 13 1402 - F Ry defect due to inside wire cutted off Water OH due to water shortage, even fan No good condition SI 515 119 3118 41209 7 1734 Me F Supply fuel due to no fuel from begining SI 516 123 3123 50804 14 1771 T BD Fuel shortage SI 517 174 3							1/0			RY
509 538 3926 51003 13 1512 Ma Ma Ry (GFX) open 510 550 3936 40526 13 1256 F F Ry. GFX open from beginning 511 574 3957 50914 13 1330 - Ma CDR Ry coil open 512 626 3995 50215 13 1544 Z Z Fan Ry short cct 513 632 3998 51211 13 1402 - F Ry defect due to inside wire cutted off Water OII due to water shortage, even fan Na SI							IMC			RY
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511 574 3957 50914 13 1330 - Ma CDR Ry coil open 512 626 3995 50215 13 1544 Z Z Fan Ry short cct 513 632 3998 51211 13 1402 - F Ry defect due to inside wire cutted off 4 23 3067 40611 15 1444 Z BD no good condition SI 515 119 3118 41209 7 1734 Me F Supply fuel due to no fuel from begining SI 516 123 3123 50804 14 1771 T BD Fuel shortage SI 517 174 3163 50409 13 1827 T F Governor oil exchange SI 518 290 3227 51224 11 1104 Ma F Water shortage SI 519 304 3238 50904 11 1023 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>RY</td>										RY
512 626 3995 50215 13 1544 Z Z Fan Ry short cct 513 632 3998 51211 13 1402 - FRy defect due to inside wire cutted off 514 23 3067 40611 15 1444 Z BD Ry defect due to inside wire cutted off 515 119 3118 41209 7 1734 Me F Supply fuel due to water shortage, even fan no good condition SI 516 123 3123 50804 14 1771 T BD Fuel shortage SI 517 174 3163 50409 13 1827 T F Governor oil exchange SI 518 290 3227 51224 11 1104 Ma F Oil shortage in CP SI 519 304 3238 50904 11 1023 Ma F Water shortage SI							<u> </u>			RY
513 632 3998 51211 13 1402 - F Ry defect due to inside wire cutted off 514 23 3067 40611 15 1444 Z BD no good condition SI 515 119 3118 41209 7 1734 Me F Supply fuel due to no fuel from begining SI 516 123 3123 50804 14 1771 T BD Puel shortage SI 517 174 3163 50409 13 1827 T F Governor oil exchange SI 518 290 3227 51224 11 1104 Ma F Oil shortage in CP SI 519 304 3238 50904 11 1023 Ma F Water shortage SI							7			RY
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515 119 3118 41209 7 1734 Me F Supply fuel due to no fuel from begining SI 516 123 3123 50804 14 1771 T BD Fuel shortage SI 517 174 3163 50409 13 1827 T F Governor oil exchange SI 518 290 3227 51224 11 1104 Ma F Oil shortage in CP SI 519 304 3238 50904 11 1023 Ma F Water shortage SI	514	23	3067	40611	15	1444	Z	BD :	•	SFOW
516 123 3123 50804 14 1771 T BD Fuel shortage SI 517 174 3163 50409 13 1827 T F Governor oil exchange SI 518 290 3227 51224 11 1104 Ma F Oil shortage in CP SI 519 304 3238 50904 11 1023 Ma F Water shortage SI										SFOW
517 174 3163 50409 13 1827 T F Governor oil exchange SI 518 290 3227 51224 11 1104 Ma F Oil shortage in CP SI 519 304 3238 50904 11 1023 Ma F Water shortage SI							~			SFOW
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519 304 3238 50904 11 1023 Ma F Water shortage S1								نمذحد حصصما		SFOW
									Water shortage	SFOW
									Supply fuel and water due to no water and	
	520	323	3448	40611	11	1137	Z			SFOW
	521	329	3454	40905	11	1208	D(Me)			SFOW
	\$22	336	3458	50610	11	1246	Λx	F		SFOW
	523	351	3468	41008	10	1166	D(F)			SFOW
	524	414	3643	41012	12	1168		_		SFOW
	525	428	3656	50907	12	1357				SFOW
1	526	461	3826	50802	18	2280	1			SFOW
	\$27	477	3857	51111	15	910	F		Cooling water shortage	SFOW
	528	499	3892	40806	15	1495	Αx			SFOW
7 T	529	520	3915	50714	14			K		SFOW
530 67 3093 50125 12 2079 F F Cooling fan (2) temperature switch failure S	30	67	3093	50125	12	2079	F	P	Cooling fan (2) temperature switch failure	SSW

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

_ _		r	Toca		Loco.	Take 1	Dosnon	Depot in		Abbre-
ı	Ì	No.	Loco No.	Date	Age	Run	sibility	Charge	Cause or Remarks	viation
}-	31	76	3097	40626	10	1543	Ax	F	Short ctt of controller sw.	SSW
<u> </u>	32	266	3217	40804	11	1984	D(Me)	F	Control cct box sw. defect	SSW
1	33			50219	15	1870	T	T	Operating sw. failure	SSW
	1	486	3866		$-\frac{13}{13}$		$\frac{1}{Z}$	$\frac{1}{Z}$	Operating sw. spring broken	SSW
	34	598	3980	41015		1443	F		Starting cet failure	STCT
Ŀ	35	96	3108	50421	10	1486	<u> </u>	F	Battery discharge due to several times	3101
١.		ا بربر	****	50010		000	TV(A.A	.	starting	STCT
L	36	514	3908	50919	14	902	D(Ax)	K		
1_1	37	64	3091	50313	12	2007	: F ;	F	Starter motor wire damage	SIM
	38	127	3133	51003	13:	1790	F,Me	BD	Starter motor earth	STM
	39	235	3201	41104	12	2029	T	F	Starter motor defect	STM
L	40	279	3222	40824	11	1274	F	F	Starter motor no work due to shaft bending	STM
Ŀ	541	374	3615	41018	12	1453	D(T)	T	800A fuse off of starter motor	STM
Ŀ	542	383	3620	50807	12	1842	T,Ax	Т	Starter motor fuse off	STM
[543	452	3817	50121	18	2470	D(T)	Т	Starter motor fuse off	STM
	544	493	3879	41224	15	1052	F	KL	Starter motor no work from begining	SIM
	515	547	3932	50901	13	1446	Z	2	Starter motor cable OH	STM
T	546	611	3985	50201	13	1244	Ma	Ma	Starter motor failure	STM
1	547	81	3098	50301	10	1835	D(Me)	F	Wheel flat of both bogie	TFT
17	548	90	3102	51117	10	1815	DB	F	Wheel flat	TFT
1	549	311	3246	40904	19	1306	D(Me)	F	Wheel flat	TFT
L	550	628	3996	41219	13	1329	D(Me)	Me	Wheel flat	TFT
١	551	32	3079	50916		1564	DB	BD	TM main field cable cutted off	TM
	552	392	3625	40905		1376	Z	Z	Wheel slip due to TM (4) some defect	TM
L.	553	541	3928	50119		1292		F	TM interpole short cet	TM
L	554	557	3943	40913		1533	Z	Z	TM smoke due to inner friction	TM
L.	555	199	3172	51209		1647	DB	F	TM damage due to binding wire broken	TMBW
L.,	556	233	3185	40923		1301	F	F	No oil in driving gear box	TMGB
<u> </u>	557	581	3962	51108	13	1543	Z	Z	IM 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
<u> </u>	560	438	3802	50816		2437	T	T	TM earth	TMGD
<u> </u>	561	592	3978	40816		1388	Me	Me	1M cable earth	TMGD
L	562	607	3984	40602		1129	A	A	TM earth	TMGD
_	563	276	3221	40921	1	1911	D(F)	F	Reason unknown	U
L.		492	3874	41115	9	1379			Unknown reason, recovered by technician	บ
	564	7		40419		1249	Ax F	L		WGT
-	565		3032	40419	18	1249	ľ	BD	Water pipe gasket damage Water leak due to cooling water gasket	WOI
	566	18	3054	50205	15	1371	Ax	BD	damage	WGT
┢	300	10	3034	30203		1371			Water leak from water pump due to gasket	
1	567	100	3110	40513	10	1888	Ax	F	damage	WGT
· 1-	568	163	3158	51228		1796	Ax	F	Water leak from pipe gasket	WGT
-	569	170	3161	40519	1	1859	A	F	Water leak from water pump gasket	WOT
	570	195	3172	41122		1647	- A	F	Water leak from water pump	WOT
	571	212	3172	41102	1	1751	Me	F	Water leak from water pump due to gasket	WGT
-	3/1	212	31/8	41102	 '	1/21	ivie	 -	Water leak from water pump due to gasket	11.01
1	572	289	3227	50504	11	1104	A .	F	damage	WGT
L	573	330	3454	40914	ļ	1208	$\frac{\Lambda}{\Lambda}$	F	Water leak from water pump	WOT
		360	3609	50112		2868	Ma	Ma	Water leak due to water pump seal damage	WGT
	574	L							Water pipe gasket damage	WGT
L.	575	506	3896	50701	·	1412	F	F	1	
L	576	515	3909	40615	<u> </u>	1431	Me	F	Water leak due to pump gasket damage	WGT
	577	527	3921	41018	1	1278	Z,T	F	Water leak from water pump	WGT
-	578	589	3977	40518		1403	Me	Me	Water leak from water pump gasket	WGT
-	579	371	3613	40812		1182	Ax	11	Water Oll due to hose choked	WH
	580	491	3874	41020	15	1379	Ax	11	Water leak due to rubber hose broken	WH

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

r. – 1	<u> </u>	Loco	г Т	Loco.	Total	Respon-	Depot in		Abbre-
1:	No.	No.	Date	Age	Run	sibility	Charge	Cause or Remarks	viation
								Governor plunger get out due to water over	
581	118	3117	50604	7	25	F	F	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 Ol1	WOH
585	248	3208	50113	12	2038	F	F	Water OH indication	WOH
586	380	3619	40521	12	1181	T	F	Water OH	WOH
								Water over heat and fuel supply time for	11/01/
587	389	3623	50725	12	1352	Z	Z	leço.	WOH WOH
588	448	3811	40405	18	2225	T	T	Water OH due to air chamber shutter	WON
	45.5	2023	40504	18	2379	Т	Т	closed	WOH
589	455	3821 3849	40915	15	948	DB	F	Water OH	WOH
590	470	3983	40903	13	972	: V	<u> </u>	Water OH	WOH
591	604	3984	41114	13	1129	A	1 A	Water OH due to water leak	WOH
592			40810	13	1402	$\frac{\lambda}{\Delta x}$	F	Water OH	WOH
593	630	3998		12		F	F	holed	WP
594	253	3211 3469	50413 50915	10	2110 808	DB	F	Water leak due to elbow crack	WP
595	354		40503	12	1307	$\frac{DB}{Z}$	$\frac{r}{z}$	Water leak from radiator pipe	WP
596	385	3622		12	1359	$-\frac{z}{x}$	$\frac{z}{z}$	Water OH due to 3 pipes of radiator broken	WP
597	435	3661	50419	12	1339			Water leak due to CP cooling water pipe	
598	490	3871	41207	15	1590	Ax	1 H	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	11	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		<u> </u>	Water leak from radiator	WR
606	603	3983	40807	13	972	A	A	Water OH due to radiator choked	WR
	000		1			<u> </u>	<u> </u>	Coupler terminal short cct due to coupler	
607	93	3106	41226	10	1327	-	F	cover broken by stone	X
608	337	3459	40502	11	223	Ma	F	Brake handle bending by unknown cause	X
			1					Flange fix bolt between CP and engine	
609	340	3459	50519	11	223	Λ	F	cutted off due to collision	X
			 	١.,		١.,.		Air pipe damage due to collision with	x
610	396	3626	50505		1186	X	F	private car Cow catcher broken due to cow	
611	411	3641	50209		1193	X	F	Engine break down due to collision	X
612	424	3655	50120	12	1079	Me	Me	Air pipe cock closed and driver manually	├^- -
613	551	3936	40913	13	1256	Me	F	open	x
614	614	3988	50216		1454	X	Me	effect	X
615	631	3998	50604		1402	D(Ax)	F	TM cover missing due to external effect	X
616	48	3083	50505	L	2029	F	F	Voltage regulator wire short cet	Y
617	175	3164	41005	k	1959	F	F	Main generator cable short cct	Y
618	258	3212	51014		1949	DB	F	CB for oil motor open due to wire short cet	Y
619	420	3655	40424	B	1079	-	Me	Short cct	Y
620	593	3978	50320		1388		Me	Short cct	Y
621	16	3052	51122		681		BD	Weak field resistor OH	\overline{z}
622	39	3032	40407	1	2045	F	F	Cable supporter damage	$\frac{z}{z}$
623	41	3082	50215		2985		F	Wheel slip registor cutted off	Z
023	1-"	3002	70213	 	1 2705		 	Voltage regulator defect due to 160A fuse	
624	46	3083	50112	14	2029	۱.	F	off	z
625	47	3083	50116		2029		F	Condenser damage	Z
626	234	3188	50611		1304	D(F)	F	250A fuse off due to bad fuse	Z
			1			L		<u> </u>	·

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

		Loco		Loco.	Total	Respon-	Depot in		Abbre-
	No.	No.	Date	Age	Run	sibility	Charge	Cause or Remarks	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
								One controller no work (One cabin type	†
631	516	3909	40620	14,	1431	T ·	F	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 Number of station

Length

9.8 km 3 including Faqus Stn.

						•	
	Contents	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Number of Train (day both d.)	and the second s	12	12	22	22	38	38
	1 Loco + 7 coach	m	υ Ω	S	ဆ	5	8
		-	÷	-	1	2	2
	Number of train	-		2	2	4	4
	80 x 2.5 x coach	009	1,000	2,000	3,200	4,000	6,400
		900	1,000	2,000	3,200	4,000	6,400
Number of Psg. Off peak	No. of train	10	10	40	18	30	90
	No.of psg. per coach =60	1,800	3,000	5,400	8,640	000.6	14,400
Total Number of Psg. (day)		3,000	5,000	9,400	15,040	17,000	27,200
	8.0°×	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
Psqkm (vear, 1000)		10,731	17,885	33,624	53,798	608'09	97,294
	No. of train x 9.8	118	178	216	216	372	372
	1	42,924	42,924	78,694	78,694	135,926	135,926
					:		
	Fagus	9	2	10	10	5	10
	Sammana	9	S	S	5	5	5
	Oshkor	8	3	3	8	ထ	ω.
		8	18	18	18	23	23
	Track	ഗ	5	5	\$	5	5
	Level crossing	12	12	12	12	12	12
		11	17	41	11	17	17
		Ø	6	17	17	58	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
		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	bus 70 persons	5				
		2.86	4.76	9.52	15.24	19.05	30.48
	Round	n	S	0	5	19	34
Bus trips	Peak	18	30	-09	96	114	186
	Other (1 coach=1bus)	30	20	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	Ö	Case 1 : Peak 600	009 ×	Cas	Case 2 : peak 1000	1000	Cas	Case 3 : peak 2000	2000	Cas	Case 4: peak 3200	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	35	75,600	4,200	18	75,600	4,200	23	96,600
Track Maintenance	4,200	47	71,400	4,200	14	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	ន	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	•	539,900	539,900		006'685	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	-	73,800	73,800	•	73,800	73,800	-	73,800	73,800	1.5	110,700
Coach	11 000	က	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	8.6	31,360	3,200	9.8	31,360	4,160	8.6	40,768
Signalling Mainte.	850	9.6	8,330	850	9.6	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 Psqkm (1000)			110.51			73.35			47.22			38.84
Passen, section Volume (day)			1,596			2,940			5,460			10,528
	:						. :					
Capital Cost	Interest	0.05	0.05 Average Investment cost Ratio	estment co	st Ratio	0.070950	(25 years)					
Locomotive	Price		7,610	7,610 thousand LE	"	539,930						
Coach	interesr	0.05 Ave	Average Inv	rage Investment cost Ratio	st Ratio	0.060243						
	Price		700	thousand LE	Щ	42,170	(36 years)		٠			
Ration of Capital Cost of Rolling stock	g stock		0.56200			0.57238			0.55266			0.58953
					•							0.0229

Station U. Price Volume Cost U. Price Volume Cost Station 4,200 17 71,400 4,200 17 71,400 Track Maintenance 4,200 17 71,400 4,200 17 71,400 Service & Material Cost 320 22.9 109,920 4,800 28,2 135,360 Service & Material Cost 320 22.9 109,920 4,800 28,2 135,360 Station 320 23 7,360 4,200 15 809,850 135,360 Capital cost of Rolling stock 1,24 135,926 168,548 1,24 136,548 168,548 Locomotive 4,200 1,5 809,850 539,900 1,6 675,200 Locomotive 4,200 1,5 809,850 1,1 10,000 1,1 10,000 Locomotive 4,100 1,5 1,10,00 1,1 1,10,00 1,2 1,10,700 Locomotive 1,100 1,2	Category	Case 5 : peak 4000	eak 4000		Case 6 : peak 6400	seak 6400	
1,200 23 96,600 4,200 23 96 1,200 17 71,400 4,200 17 71 1,800 22.9 109,920 4,800 28.2 135 320 23 7,360 320 23 168 320 1.24 136,926 168,548 1.24 136,926 168 320 1.5 168,548 1.24 136,926 168 300 1.5 110,700 73,800 16 675 300 1.6 675,200 42,200 16 675 300 1.6 675,200 1,380 17 675 300 1.6 675,200 1,437 9.8 14 4.00 1.0 1.437 9.8 14 2.0 2.66,346 1,437 9.8 14 2.4 2.7 1.437 9.8 14 2.4 2.7 1.437 9.8 1.43		U. Price	Volume	Cost	U. Price	Volume	Cost
1,200 23 96,600 4,200 23 96 1,200 17 71,400 4,200 17 71 1,800 22.9 109,920 4,800 28.2 135 320 23 7,360 320 23 7 1,24 135,926 168,548 1,24 135,926 168 900 1,5 168,548 1,24 135,926 168 900 1,6 675,200 42,200 1 675 1,00 1,6 675,200 42,200 1 675 1,00 1,6 675,200 1,6 675 1 1,00 1,6 1,0 1,0 1 1 1 1,00 1,6 1,0 1,0 1	Personeel Cost						
1,200 17 71,400 4,200 17 71 1,800 22.9 109,920 4,800 28.2 135 320 23 7,360 320 23 7 1,24 135,926 168,548 1,24 135,926 168 1,24 136,926 168,548 1,24 136,926 168 1,200 1,6 176,200 42,200 16 675 1,500 1,6 176,000 1,6 176 176 1,000 1,6 176,000 1,437 9,8 14 1,000 1,6 1,437 9,8 14 1,000 1,437 9,8 14 2,578,865 1,437 9,8 14 2,578,865 1,437 9,8 14 4,472 2,578,865 2,534 2,534 11,900 11,900 1,9 1,9	Station	4,200	23	96,600	4,200	23	009'96
1,800 22.9 109,920 4,800 28.2 135 320 23 7,360 320 23 7 1,24 135,926 168,548 1,24 135,926 168 900 1,5 809,850 539,900 1,6 809 1,200 1,6 675,200 42,200 1,6 675 1,000 1,6 1,0 1,0 1,0 1,0 1,0 1,000 1,6 1,0 <	Track Maintenance	4,200	17	71,400	4,200	17	71,400
320 23 7,360 320 23 7 1.24 135,926 168,548 1.24 135,926 168,548 900 1.5 809,850 539,900 1.5 809 1,200 16 675,200 42,200 16 675 1,200 1,5 110,700 73,800 16 17 1,000 16 176 9.8 14 17 1,000 16 176 9.8 14 17 1,000 16 10,829 1,437 9.8 14 1,000 1,437 9.8 14 14 1,000 1,437 9.8 14 14 1,000 1,437 9.8 14 14 1,000 312,518 818,967 0.40 2,631 1,1,900 11,900 19 19 19 1,1,900 1,1,900 1,900 1,900 1,900 1,900	Train Crews	4,800	22.9	109,920	4,800	28.2	135,360
320 23 7,360 320 23 7 1.24 135,926 168,548 1.24 135,926 168 900 1.5 809,850 539,900 1.5 809 1,200 16 675,200 42,200 16 675 1,000 16 176 000 17 170 1,000 16 176 000 16 176 1,000 16 176 176 176 176 1,000 16 176 176 176 176 1,000 16 10,802 1,437 9,8 14 1,000 312,518 818,967 0,40 327 2,000 2,578,865 2,578,865 2,531 41 11,900 11,900 19 19	Service & Material Cost						
1.24 135,926 168,548 1.24 135,926 7 1.200 1.5 809,850 539,900 1.5 8 1.200 1.6 675,200 42,200 1.6 6 1.200 1.5 110,700 73,800 1.5 1 1.200 1.6 1.76,000 1.6 1.6 1 1.105 9.8 40,768 5,408 9.8 1.105 9.8 1,437 9.8 2 1.256 312,518 818,967 0.40 2 1.437 9.8 2,578,865 2 2 1.1,900 11,900 11,900 2	Station	320	23	7,360	320	23	7,360
300	Fuel	1.24	_	168,548	1.24	L_	168,548
1,500 1,5 809,850 539,900 1,6 6 1,200 16 675,200 42,200 16 6 1,000 1,6 176,000 11,000 16 1 1,000 16 176,000 11,000 16 1 1,100 1,437 9,8 1,100 1,437 9,8 2,266,346 1,437 9,8 2,578,865 2,578,865 2,41 2,678,865 11,900 11,900	Capital cost of Rolling stock						
100 16 675,200 42,200 16 6 6 6 6 6 6 6 6	Locomotive	006'689	1.5	809,850	539,900	1.5	809,850
(800) 1.5 110,700 73,800 1.5 1 (900) 16 176,000 11,000 16 1 (105) 9.8 40,768 5,408 9.8 8 (105) 9.8 10,829 1,437 9.8 2,2 (206) 3.12,518 818,967 0,40 2,6 2,6 (24,472) 64,472 2,6 42,41 11,900 11,900 0,57585 0	Coach	42,200	16	675,200	42.200	16	675,200
1.800 1.5 110,700 73,800 1.5 1 1.000 16 176,000 11,000 16 1 1.105 9.8 40,768 5,408 9.8 8 1.05 9.8 10,829 1,437 9.8 2,2 2.266,346 1,437 9.8 2,2 2,2 2.96 0,40 312,518 818,967 0,40 2 64,472 64,472 2,6 42.41 11,900 11,900 0,57585	Rolling stock Maintenance						
,000 16 176,000 11,000 16 1 ,160 9.8 40,768 5,408 9.8 1,05 1,437 9.8 1,430 9.8 1,437	Locomotive	73,800	1.5	110,700	73 800	1.5	110,700
160 9.8 40,768 5,408 9.8 105 9.8 10,829 1,437 9.8 12566,346 1,437 9.8 2,23 296 0,40 312,518 818,967 0,40 3 64,472 64,472 64,472 2,64,472 11,900 2,67,585 0,57,585 0	Coach	11,000	16	176,000	11,000	16	176,000
,105 9.8 10,829 1,437 9.8 2.266,346 2.266,346 2.578,865 818,967 0.40 3.2 64,472 2.6 64,472 11,900 0.57585 0.57585 0.57585	Track Maintenance	4,160	8.6 8.6	40,768	5,408	9.6	52,998
2.266,346 2,267,312,518 818,967 0,40 3,23 2.578,865 2,647 3,	Signalling Mainte.	1 105	9.6	10,829	1,437	8.6	14,078
,296 0.40 312,518 818,967 0.40 3 2,578,865 2,6 64,472 2,6 11,900 0.57585 0	Total			2,266,346			2,304,017
2,578,865 2,6 64,472 2,6 42,41 11,900 0,57585 0	Overhead	781,296	0.40	312,518	818,967	0.40	327 587
64,472 42,41 11,900 0,57585 0	Grand Total			2,578,865			2,631,603
17,900 17,900 0.57585 C	Cost per 100 psg.			64 472			41 119
11,900 1 0.57585 0.57585	Cost per Psgkm (1000)			42.41		-	27.05
0.57585	Passen, section Volume (day)			11,900			19,040
	Ration of Capital Cost of Rolling	stock		0.57585	1		0.56431
							?

A-170

Appendix 4.2.10-1 (3) COST ESTIMATION FOR BUS

enger Volume Peak 600 Peak 1,000 Peak 2,000 Peak bing from carred Buss 1,000 Peak 1,000 Peak 2,000 Peak Peak 2,000 Peak 2,000 Peak 2,000 Peak 2,000 Peak 2,000 Peak Peak Peak Peak Peak Peak Peak Peak Peak Peak <th></th> <th></th> <th>Case 1</th> <th></th> <th></th> <th>Case 2</th> <th></th> <th></th> <th>Case 3</th> <th></th> <th></th> <th>Case 4</th> <th></th>			Case 1			Case 2			Case 3			Case 4	
FBUS	Passenger Volume	Peak		909			1,000	Peak		2,000	Peak		3,200
13 183 960 2006-65r1 3 306,600 2008-70x1 3 574,875 2008-70x1 3 13 22 22 43 2007-70x1 3 13 14 3 3 3 3 3 3 3 3 3	Number of Bus		:	ო	:		10			9			16
2006A3K1.3 2006A5K1.3 2006A5K1.3 2006A5K1.3 2006A5K1.3 2006A3K1.3 2006A3K1.3 2006A3K1.3 2007A15K1.3 2007A15K	Running km			183,960			306,600			574,875	•		919,800
13 22 43 43 43 69 69 43 43 69 69 43 11.43 11.43 18.574 3 18.57	Driver	20/6x3x1.3			20/6x5x1.3						20/6x16x1.3		-
1.143 2077x3x1.3 2077x3x1.3 2077x10x1.3 2077x10x		5			8			43			69		
11,143		5			8		•	43			8		
11,143 18,571 19,571 19,71 1	Conductor	20/7×3×1.3			20/7x5x1.3			20/7×10×1.3			20/7×16×1.3		
AATHON FOR BUS. 19 37 59 AATHON FOR BUS. AATHON FOR BUS. 10.5 17,8500 17,000 10.5 178,500 17,000 10.5 178,500 17,000		11.143			18.571			37.143			58.429		
AATION FOR BUS 17,000 10.5 178,500 17,000 10.5 178,500 17,0		÷.	÷		19			37			99		
namoe 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 17,000 10.5 178,500 17,000 17	COST ESTIMATION FOR	₹ BUS							,				
ST,100 S	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
ST,100 S											:		
TY 200	Capital Cost	31,100	3	93,300	31,100	5	155,500	31,100	10	311,000	31,100	16	497,600
tor 7,200 H3 124,800 9,600 13 124,800 9,600 43 412,800 9,600 7,200 11 79,200 7,200 19,600 7,200 37 266,400 7,200 7,200 11 79,200 7,200 19,600 7,200 37 266,400 7,200 7,200 11 1,200 11													
total 9,600 13 124,800 9,600 17,200	Crew cost									;			
7,200 11 79,200 7,200 19 136,800 7,200 37 266,400 7,200 94 184.0 17,292 94 306.6 28,820 94 574.9 54,038 94 32 184.0 5,889 32 306.6 9,814 32 574.9 18,402 32 129 184.0 23,773 129 306.6 39,622 128 574.9 14,291 32 3 184.0 23,773 129 306.6 39,622 128 574.9 1,518 32 3 184.0 23,773 129 306.6 39,622 128 574.9 1,518 32 3 184.0 23,773 129 306.6 30,622 128 574.9 1,518 38 3 184.0 38 306.6 11,498 38 574.9 1,510 38 351,638 0.20 70,328 594.064 0.20 118,8	Driver	009'6	13	124,800	009'6	22	211,200	009'6	43	412,800	9,600	69	662,400
94 184.0 17,292 94 306.6 28,820 94 574.9 54,038 94 32 184.0 5,889 32 306.6 9,814 32 574.9 18,402 32 129 184.0 23,773 129 306.6 39,622 129 574.9 74,291 129 3 184.0 23,773 129 306.6 809 3 574.9 74,291 129 3 184.0 23,773 306.6 806 3 574.9 1,518 38 3 184.0 6,899 38 306.6 11,498 38 574.9 1,518 38 351,638 0.20 70,328 594,064 0.20 118,813 1,160,007 0.20 1,856,491 40,007 0.20 18,813 1,160,007 0.20 1,570,508 1,570,508 55,96 0.050 Average Investment cost Ratio 0.129500 (10 years)	Conductor	7,200	11	79,200	7,200	19	136,800	7,200	37	266,400	7,200	59	424,800
94 184.0 17,292 94 306.6 28,820 94 574.9 54,038 94 32 184.0 5,889 32 306.6 9,814 32 574.9 18,402 32 129 32 306.6 39,814 32 574.9 18,402 32 3 184.0 23,773 129 306.6 39,814 32 574.9 18,402 32 3 184.0 23,773 129 306.6 39,812 129 74,291 129 3 184.0 6,899 38 306.6 11,438 38 574.9 1,518 38 361,638 36 38 306.6 11,438 38 574.9 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007 1,160,007													
94 184.0 17,292 94 306.6 28,820 94 574.9 54,038 94 32 184.0 5,889 32 306.6 9814 32 574.9 18,402 32 129 184.0 23,773 129 306.6 39,622 129 574.9 74,291 129 3 184.0 23,773 129 306.6 39,622 129 574.9 74,291 129 3 184.0 486 3 306.6 11,498 38 574.9 1,518 38 351,638 0.20 70,328 594,064 0.20 118,813 1,160,007 0.20 222,001 1,856,491 351,638 0.20 70,328 594,064 0.20 232,007 1,856,491 1,570,508 351,638 0.20 46,74 0.20 222,007 1,570,508 1,570,508 35,94,064 0.20 46,74 0.20 78,525 1,570,508 1,570,508 <td>Running Cost (LE/1000 K</td> <td>(W)</td> <td></td> <td></td> <td>- 1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Running Cost (LE/1000 K	(W)			- 1								
arts 32 184.0 5.889 32 306.6 39.814 32 574.9 18,402 32 32 32 32 32 32 32 32 32 32 32 32 32	Fuel		184.0	17,292	94	306.6	28,820	94	574.9	54,038	94	919.8	86,461
arts 129 129 306.6 39,622 129 74,291 129 129 arts 3 184.0 486 3 306.6 809 3 674.9 74,291 129 3 arts 3 184.0 486 3 306.6 11,498 3 574.9 1,518 3 arts 3 184.0 6,899 38 306.6 11,498 38 574.9 21,558 38 arts 351,638 0.20 71,8813 1,160,007 0.20 232,001 1,856,491 38 arts	ö	32	184.0	5,889	32	306.6	9,814	32	574.9	18,402	32	919.8	29,443
ants 3 184.0 486 3 306.6 809 3 574.9 1,518 3 3 184.0 6,899 38 306.6 11,498 38 574.9 1,518 38 351,638 0.20 11,498 0.20 1,160,007 1,160,007 1,160,007 1,856,491 1,856,491 100,078 0.00,058 100,078 0.020 118,813 1,160,007 0.20 1,570,508 1,856,491 1,856,49	Tyres	129	184.0	23,773		306.6	39,622	129	574.9	74,291	129	919.8	118,866
11	Maintenance parts	က	184.0	486		306.6	808	3	574.9	1,518	3	919.8	2,428
351,638 0.20 70,328 594,064 0.20 118,813 1,160,007 0.20 222,001 (1000)	Maint, workers	88	184.0	6889		306.6	11,498	38	574.9	21,558		919.8	34,493
351,638 0.20 70,328 594,064 0.20 118,813 1,160,007 0.20 232,001 0.20 232,001 0.20 232,001 0.20 232,001 0.20 232,001 0.20 232,001 0.20 0.20 232,001 0.20	Total			351,638			594,064			1,160,007			1,856,491
(1000) 600,466 891,376 1100,078 89,138 1100 11000) 89,138 110000 11000 11000 11000 11000 11000 11000 11000 11000 11000 11000 110000 11000 11000 11000 11000 11000 11000 11000 11000 11000 110000	Over head cost	351,638	0.20	70,328		0.20	118,813	1,160,007	0.20	232,001		0.20	371,298
(1000)	Grand Total			600,466			891,376			1,570,508			2,406,289
(1000) 55.96 55.96 10 49.84 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Cost per 100 psc			100,078			89,138			78,525			75,197
Interest 0.050 Average Investment cost Ratio 0.129500 Price 240.000 31,080	Cost per psgkm (1000)		## 	55.96			49.84			46.71			44.73
Price 31,080	Capital Cost	Interesr	0.050	Average In	vestment cos	it Ratio	0.129500	(10 years)				-	:
	Bus	Price		240,000			31,080						

A-171

	Case 5		Case 6	9
Peak	4,000		Peak	6,400
		တ္		31
	1,011,780	780		1,632,645
20/6x19x1.3	-		20/6x31x1.3	
82			134	
82			134	
20/7×19×1.3			20/7x31x1.3	
70.571	•		115.143	
7		<u>-</u>	115	

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.	Freight Train Km.		
•	a	(average daily)	(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	(includes depreciation)	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 - Fagus - 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 - Fagus - 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 Zesta 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	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 passenge	Medium Full train Poll Train 80 - 1,200 passengers given 1,200 passengers
Benha-Zefta: 4:10 \$4\$ 7:45 8:50	11.05 12:35 11.20 16 25 17:20 19 15 21:20 23:10
Zefta-Benha: 4:35 6:10 7:20 9:21	10:42 13:05 [4:45 13:58 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 ←→ Zesta	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

THEF	assengers
50%	
	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
٠.	to go to markets.

LINE 22 Fagus - 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)
į	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)

(1212) I vary		
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 - Genunieza - Meniat El Bandara - Qurasheya - Mahallet Rouh

Stations	Line Km.	Passenger Train Km.	Freight Train Km.
		(average daily)	(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 passengulationsh

El Santa - Mahallet Rouh:

| 145 | 613 | 6.45 | 8.55 | 10.40 | 12.15 | 14/10 | 16:50 | 18:40 | 79:00 | 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)

A 3 C L L L L L L L L L L L L L L L L L L	· \				
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
355	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 4,000 passenpers train (5 coaches

Empty Train - about 100 to 200 passengers

Alternative Transport

This train is the only transport link between Bouselli and El Oassabi. None.

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	ons 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 LB 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)	, <u></u>
Average income	80-350 LE / month	<u></u>
Average mount	60-330 EB7 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 Desoug 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):

Desoug - (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	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

I locomotive and 5 coaches.

Desouq-Motobus	4:20	7.10	10:00	14 10 1 16:30	19:20	20:45
Motobus-Desouq	5:37	7.12	11:02	14.15 17.15	19:23	21:50

NOTE: For

Full Train - about 274 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 I 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)

(2021 - 2011)		
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 appropriate 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.

Mowasiet 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.

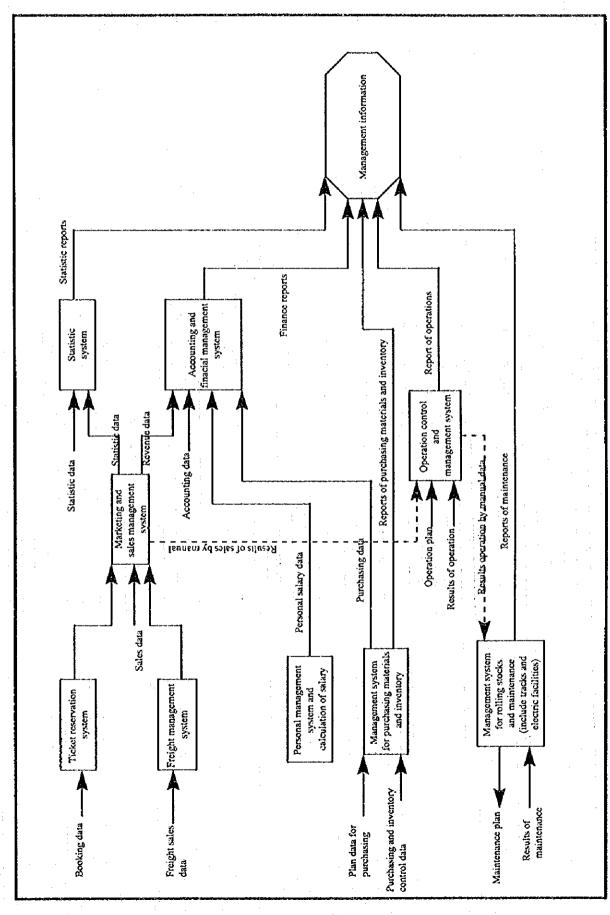


Fig. 4.2.12.1 Relation Chart of Subsystems

Appendix 4.2.13 Comparizon between Blectronic 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	② 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.
Maintenabi- lity	 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 perfor- mance 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. 	<pre>② Control unit is additionally required for the items on the left column. ③ditto</pre>
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 multiwire cable.

Floor space	(Configuration example)	(Configuration example)	
	* Logical racks ②1 Relay racks for output and input of signals	 Relay racks Recorder of relay operation Repeating relay device Public guidance control unit	
	Note: 9 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	<pre>9 Initial investment * Erection costNo remarkable difference has been found so far.</pre>		
	* Equipments costRelay 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 chargeElectronic unit/Relay unit = approx. 50~80%, depending on the scale * Maintenance feeNo 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.	
Standardiza- tion	 Hardware to be standardized in terms of module & wiring. Software to be standardized for interlock program except for data for locking sheet. 	@ Design and construction are conducted on the basis of individual station.	
	Therefore, modification is allowed by software change.	Modification of interlocking is carried by on-site wiring.	