### OUTAGE Of Diesel Locomotive

by Avinash Prakash, IRSME Professor (DT) IRIMEE Jamalpur

### Outage -Definition

- Two word widely used- Ineffective & Outage
- Railway Board decides the target of output of the shed in terms of outage of locomotives with conventionally accepted method (target outage)
- Key Performance parameter for Diesel Sheds
- The locomotives detained for maintenance cannot be provided for services, therefore, are called ineffective
- Shed Outage-the target of output of the shed in terms of outage of locomotives
- Territorial Outage- Outage is the average number of (goods) locos available for a calendar day of 24 hours
- Can be known for every instant
- Measures availability of goods locomotives

Target Shed Outage Calculation  Targets are normally calculated by Railway Board for the whole Zonal Railway & individual Diesel Shed for a calendar month

- Based on a formula
- Sheds have to meet an assigned target

Calculation Process

- Take all locomotives in a Shed, called Holding
- Net Holding=
  - {Holding + Commissioned Condemned (-/+) transfer}
- Effective Holding=
  - { Net Holding- Under Repair- for condemnation
    - (RE/BT/GRS/TRIALS/HIRE)- inferior services}
- Reduce
  - Heavy Repairs Allowance in terms of locomotive numbers from effective holding
  - Link locos from effective holding
  - Light Schedule Allowance from effective holding
- The balance is the **target goods outage**

#### Ineffective %

#### • Heavy repairs allowance:

- WDM2, WDM3A, WDG3A, WDM3D : 10% (consisting approx. of 5% for heavy schedules, 2% for POH and 3% for corrective maintenance, waiting for material etc)
- WDP4, WDG4 & its variants : 5% (consisting approx. of 3% for heavy schedules, 1% for POH and 1% for corrective maintenance, waiting for material etc.)
- WDP1 & WDP3A I 2.5%
- MG Loco- 10/12.5/15%
- Light schedule (minor repair) allowance
  - ALCOs loco & its variants : 10%
  - HHP Loco & its variants : 5%
  - MG Loco- 10%

## Sample calculation

- Total locos on line (Effective Holding)
   = N
- Major Ineffective percentage = 0.10N (0.05N for HHP locos)
- Locos in use = 0.90N (0.95N for HHP locos)
- Mail/Express/Passenger Link=L
- Spares for running maintenance = 10% of (0.90 N-L) (5% for HHP locos)
- Outage =0.81N (0.9025 N for HHP locos), if L=Zero,

#### Sample Calculation

On 01/06/2020, a diesel shed has 140 locomotives (40 WDM3A, 40 WDP4, 30 WDG3A, 20 WDG4, 6 WDS6R, 4 WDS4B). 1 WDP4 locomotive is awaiting repairs for a long time and 1 WDG3A loco was seriously damaged in a law & order incident and so have been accepted for temporary deletion. Find out the target goods outage for the Shed for the month of June 2020 if the Shed has a M/E/P link of 33 ALCOs and 20 WDP4s.

Answer to Sample Problem

- Total holding = net Holding=140
- Effective Holding = Less 12 inferior & deleted = 128
- For ALCO Locomotive
- total no. 69
- Less 6.9 for heavy sch allowance = 62.1
- Less 33 link locomotives =29.1
- Less 2.91 for light schedule allowance = 26.19

Answer to Sample Problem For HHP Locomotive

• total no. 59

- Less 2.95 for heavy sch allowance = 56.05
- Less 20 link locomotives =36.05
- Less 1.8025 for light schedule allowance = 34.248

So, effective total goods outage = 26.19 + 34.248 = 60.438 ( 60.44) Factors affecting Outage (beyond control of Diesel Shed)

### Running Overdue

- Can result into severe out of course repairs which worsens cycle time
- Can be made dead at any station in name sake of overdue
- Out of Control Factors- flood in sidings, bandh etc.
- Running Dead
  - The distance and zonal difference with shops/sheds matter a lot
- ineffective for investigation and repairs in shed and shops (due to POH, DLW, DMW)

Factors beyond control of Diesel Shed

- The time gap between forecast and actual start of train services
- factors like late running of trains, slackness in locomotive return, enormous idle to and fro movements, time consumed in super checks etc.
- Wrong Reporting-The power, which runs the train, is dealt as weakest link of the system- easy to blame
- Monitoring difficult
- Shed-in after working hours

How is outage earned?

- Any loco undergoing Shop repairs or Heavy Schedule (in Shop or Shed) does not earn outage
- Goods loco undergoing Minor Schedule does not earn outage
- Passenger loco undergoing minor schedule – no effect
- Any failed loco stops earning outage from the moment the failure is reported

How is outage earned? ...2

- Passenger link loco does not earn outage if it is working regular link
- Any loco working in a passenger link of another Shed / foreign link earns goods outage
- Failed locos, if not moved into a Shed for Repairs, should start earning outage after lapse of 24 hours

How is outage earned? ...3

- Link locos are utilized for goods during lie over period do not earn goods outage
  - dangerous as the loco is overworked and can lead to failure.
  - When such a loco fails, you loose outage
- Inferior locos do not earn outage even if someone runs mainline trains with them. This is patently unsafe and must not be allowed.
- Locos disabled in accidents do not loose outage till they reach Shed or are deleted

#### Outage Accountal

- Power controllers enter working times of locomotives working in their division in FOIS
- FOIS calculates outage
- Sheds normally also do manual calculation.
- Often FOIS figures are lower than manual figures – but FOIS only is acceptable
- Conflicting interest with Traffic.
  - Loco utilization statistics vs Outage

How Failures Affect Outage?

- Link loco fails: Outage lost from time of failure
- Goods loco fails: Outage lost from time of failure
- Inferior loco fails: No effect
- Failed loco does not reach Shed: Get outage after 24 hours – Traffic Trick in Foreign Rlys.

How Repairs Affect Outage?

- Locos do not get outage if they are under repair at Shed/Workshop
- Locos going to Shops for POH
- Claim outage for trial locomotives
- Keep repair time least possible by proper scheduling and availability of manpower, material etc.

How link locos affect outage?

- No goods outage earned for the number of locos in link
- Every link not fulfilled reduces outage by 1
- Every loco working in other shed's link gets you an outage of 1, even when it is a lie over link loco itself

How working conditions affect outage?

- Locos do not belong to the Railway where they may be working whereas crew does.
- It is easy to fail a loco and blame home shed – home shed does not know of the failure till much later
  - Pro active approach helps
  - Use REMMLOT
- Even cattle run over, accidents, crew mismanagement, one traction motor troubles may be reported as loco failures

Guard against these:

- Following may also be reported as loco failure leading to loss of outage specially in foreign divisions
  - Accidents
  - ➤Cattle run over
  - Crew mismanagement with zero loco fault
  - Controller mismanagement
  - ≻No fuelling, top up
  - ➢Bad sanding
  - Environmental conditions, oil on track, dead stop on steep gradient, Law and order issues
  - Over due schedule locos
  - Traction motor cut out
  - Missed link due to lie over use in goods
  - Double deduction of outage due to miss link multi, wrong calculation

How inferior locos affect outage:

- Use inferior locos for shunting etc
- Mainline locos used for shunting cause loss of fuel
- Inferior locos do not count for outage but they not fail too
- Do not allow inferior locos to be used for mainline service

#### Territorial Outage

- Loco Territorial Outage means the average number of locos available to traffic use in a day (24 hours).
- While the target is based on average, the actual requirement of Locos may fluctuate due to bunching of trains, increase in traffic or due to bottlenecks on account of operational reasons, equipment failure or after effect of interruption to traffic.

#### Utilization of Loco

- the utilization of diesel engine is worked out on hourly basis
- Traffic Use Hrs: -These hrs of engine when the engine comes out of loco shed till it returns to loco shed excluding
- hrs of regular shunting engines
- ineffective hrs in traffic yard or on run
- when engine is spare for 12 hrs or more at a stretch at nominated points/shed.

Statistical units of Loco Utilization The following are the two statistical units which indicate the use made of the engine.

1. Engine kms per day per engine in use
 > Higher the figure, the better is the mobility.

2. Engine kms per day per engine on line (engines on the line, including engines under or awaiting repair, good repair stored and spare daily)

 The closure of these two units means better the result as the difference between two units indicates the no. of engines which have not been used and as such no revenue is earned by them. Statistical units of Loco Utilization Engine Kilometers per Day per Engine in Use : This figure is compiled separately for passenger, mixed and goods train services as well as for all services refers to 'engines in use'.

This is affected by such factors as:

1. The average run of trains.

2. The average speed of trains.

3. The engine links

4. The location of engine shed with respects to the stations which they serve.

Statistical units of Loco Utilization Other statistical data related to loco utilization

• Engine kms per engine failure- Only the no. of engine failures will not give a correct indication of the maintenance of the engine unless the no. of engine failures are expressed in relation to the work done by the engines. The aim should be to get the figure of engine kms as high possible per engine failure. Steps to improve Loco Utilization Some of the measures for improving Engine Utilizations are as under:

(a) Running of the Goods Trains on proper path

(b) Proper co-ordination between Control and Line Staff.

(c) Reduction in Terminal detention of Locos

(d) Judicious ordering of Trains and Right time starts of Goods Trains.

(e) Proper controlling, judicious crossings and preferences.

(f) Loop Lines on critical block sections should not be generally blocked.

Steps to improve Loco Utilization (g) Right powering

(h) Loco pilot should run at maximum permissible speed subject to restrictions.

(i) Light Engines can be coupled or attached to trains in order to save path and energy.

(j) Locomotives should be in good working order and staff should be well versed in Loco operations and trouble shooting.

(k) Signals must be taken off promptly at Stations. Distant/Warner Signals must always be taken off promptly.

(l) Trains should be run through Main Line (as far as possible) since looping results in extra time on run.

Steps to improve Loco Utilization (m) Regular foot plating by officers and staff involved in operations, motivates train crew and alerts the line staff.

(n) Effective control over traffic yards to reduce other engine hours, detention to locos at important loading/unloading points and industrial sidings.

(o) Engineering speed restrictions should be regularly reviewed and reduced by maximizing the output of the Engineering staff and machines.

## Loco failures classification

Classification of Loco Failures:

Loco is considered to have failed if the Loco is not able to complete its journey with the specified Loco in specified time.

Loco failure is classified as under:

Statistical Loco failure : If the Loco fails to work its booked train to destination or causes a delay in arrival at destination of 30 minutes or more for mail/express/passenger train and 60 minutes or more for freight trains due to the problems related with loco or enginemanship of crew, is categorized as Statistical Loco failure.

### Loco failures classification

2. Non Statistical Loco failure: Wherever the loco develops some problem during its course of journey but the loss of time is less than 30 minutes in case of mail/express/passenger trains and less than 60 minutes in case of goods train or the loco undergoing repair at the end of its trip and not being available for the return trip, the Loco failure is termed as Non Statistical Loco failure. Loco failures (Misc.) There are certain conditions where failure of a Loco is not to be counted as Statistical failure, even if the conditions mentioned for treating it as Statistical Failure are met. Such failures will be categorized as Non Statistical Loco failures.

These conditions are as under:

i. Failure of departmental service Loco.

ii. Failure of shunting service Loco.

iii. Failure of trial Loco (After heavy repair schedule, like Yearly, POH, Engine/Traction motor/Traction Alternator / Turbo Supercharger replacement).

iv. Failure of loco overdue for schedule by more than 24 hours.

Loco failures (Misc.) Apart from above, failures due to external reasons like: Cattle Run Over, Bad Weather, Bird hit, trailing load being more than permitted, noncompliance of stipulations by traffic department for train running, Stone Pelting, etc. will not be treated as Loco Failure (neither Statistical nor Non Statistical)

# THANKS

#### (भारत सरकार) GOVERNMENT OF INDIA (रेल मजालय) MINISTRY OF RAILWAYS (रेलवे कोई) RAILWAY BOARD

रांस्तग 2019/एमएल/466/3(801) No. 2019 M(1.):466/3(801) गई दिल्ली, दिनॉक 01.06.2020

प्रधान मुख्य विद्युत अभियंता, सभी भारतीय रेलें। Principal Chief Electrical Engineers, All Indian Railways.

विशय जून 2020 की डीजल इंजनों की उपलब्धता लक्ष्य विवरणिका। Sub Diesel loco availability targets for June 2020.

बडी लाइन एव छोटी लाइन के लिए जून 2020 की डीजल इंजनो की उपलब्धता लक्ष्य विवरणिका आपके सुचनार्थ एव आवश्यक कार्यवाही हेतु संलग्न है।

Please find enclosed the Diesel loco availability targets for BG and MG services for June 2020 as per sheets enclosed. These targets are the maximum outage. However, due to COVID-19 situation, ZRs to regulate outage on day to day basis to match the actual train running only.

संलग्न यथोका। DA: As above.

(मनीष जैन) कार्यकारी निदेशक यांत्रिक अभियंता (कर्षण) रेलवे बोर्ड

Copy to: COMs, All Indian Railways. AM(Traffic), Railway Board. Adv.TT(M), Railway Board. DTT(G), Railway Board.

		1900							Avail	ability Tar	get for	June 20	020 (BG)						
RIV	SHED	Total	Lor	os temp de	leted	Effective	Locos	Locos	Locos	S LOCOS Availability Target Goods		t Goods							
I'vy	UNED	Loco	Repair	GRS, Hire,	inferior	Loco	ineff.	net	on	ineff.	neff. ALCO HHP Total		Total	LOCOS TEMPORARIET DELETED					
		Holding	Repair 8 Cond	RE,BT,RDSO	service	Holding	heavy rep.	available	M/E Link	minor rep.									
CR	PA	198	3	4	10	181	11.9	169.2	66	6.1	16.6	80.5	97.1	,11182, 70478(frep)1 loco(fcond)4 locos(RE)18754,737,748(condemned)					
-	KYN	103	0	10	0	93	7.7	85.3	45	2.9	16.3	21.0	37.4						
	CLA	12	0	0	4	8	0.8	7.2	0	0.7	6.5	0.0	6.5						
	TOTAL	313	3	14	14	282	20.4	261.7	111	9.7	39.4	101.6	140.9	For rep 2 for cond. 0 o/aged for cond 1 New com 0 Condemned 3					
ED	HWH	49	1	0	0	48	4.0	44.0	29	1.4	11.5	2.1	13.6	1 loco (o/a for cond)					
LK	RWN	70	20	0	0	50	5.0	45.0	24	2.1	18.9	0.0	18.9	20 locos (o/a for cond)					
100		132	4	0	0	128	10.4	117.6	10	8.6	57.6	41.4	99.0	4 locos (o/a for cond), 8 locos for elect conv					
	IMD	56	11	0	0	45	37	41.3	20	1.4	5.5	14.4	19.9	11 locos (o/a for cond)					
	TOTAL	307	36	0	0	271	23.1	247.9	83	13.4	93.5	58.0	151.5	For rep 0 for cond. 0 o/aged for cond 36 New com 0 Condemned 8					
ECD	DTDI	109	30	6	0	99	5.6	93.5	14	3.8	-2.9	78.5	75.6	12890, 897+1 loco(f rep) 6 locos (GRS)					
ECK	MGS	21	0	7	0	24	24	21.6	9	13	11.3	0.0	11.3	7 locos (GRS)					
	ED I	146	2	19	0	125	12.5	112.5	44	6.9	617	0.0	61.7	11272, 582, 13590 (for rep), 18 locos (GRS)					
	TOTAL	140	C C	24	0	249	20.5	227.6	67	11.9	70.1	78.5	148.6	For rep 6 for cond 0 o/aged for cond 0 New com 0 Condemned 0					
500	VEKD	200	0	31	0	240	20.3	246.3	15	17.4	105.6	108.3	213.9	70677 (for rep)					
ECO	TOTAL	297	-	29	U	207	20.7	240.5	15		100.0	100.0	210.0	For rep 1 for cond 0 o/aged for cond 0 New com 0 Condemned 0					
R	TUTAL	470	0	E7	0	110	70	102.0	76	15	28	22.6	25.4	57 locos (RDSO t RE)14018(fcond)20867 (for rep) 7 locos (o/a for cond)					
NR	IKD	1/6	9	57	0	140	12.0	125.0	01	3.6	25.0	14.4	40.4	70662 771 40257(frep)3 locos(RDSOt RE)26 loco (o/a for cond)16195(fcond)					
	LUH	193	30	15	0	140	13.0	130.0	90	3.0	7.9	17.9	55.6	3(PDS) + REM locos HHP/fren)15 locos(n/afrond)					
	LKO	1/2	18	3	0	151	12.0	101.0	00	0.0	1.0	101.0	101.0						
	Roza	202	0	0	0	202	10.1	191.9 EC9.9	247	0.0	36.5	276.7	313.2	For rep 7 for cond 44 o/aged for cond 6 New com 0 Condemned 0					
	TOTAL	743	5/	15	U	611	42.3	500.0	241	0.5	24.4	16.5	40.0	16350 11159(Rep)18873(fromt)/ locas(asford/10 locas(RE))6 locas(Inf)					
NCR	JHS	128	8	13	6	101	8.5	92.5	40	3.0	24.4	10.5	40.5	Ear ran 2 for cond 1 o/aged for cond 5 New com 0 Condemned					
					-			70.0	50	0.5	0.7	11.4	10.7	Portep 2 for cond. I braged for cond 5 new control of contesting a					
NE	GD	138	0	58	3	11	6.8	70.3	59	0.5	-0.7	24.4	24.2	70272 (for rop)					
	IZN	112	1	30	0	81	5.5	75.6	50	1.3	0.2	24.1	24.3	For rep 1 for cond 0 olared for cond 0 New com 0 Condemned					
	TOTAL	250	1	88	3	158	12.2	145.8	109	1.8	-0.5	35.5	35.0	THEFTE G12 G62 G77 G92 G94 G94 G99 1 loco(a/a for cond)					
NF	MLDT	85	9	0	2	74	7.5	66.5	66	0.1	2.2	-1.8	0.4	16373, 613, 602, 677, 663, 664, 694, 695, 11000(0/a 101 Cond)					
	NGC	121	5	0	4	112	9.2	102.8	. 29	5.9	40.3	27.0	67.9						
	SGUJ	213	0	0	0	213	10.7	202.4	82	6.0	0.0	114.3	114.3	Forward 1 for cond 0 closed for cond 13 New com 0 Condemned 0					
	TOTAL	419	14	0	6	399	27.4	371.7	177	12.1	42.5	140.1	182.6	For rep 1 for cond. U loraged for cond 15 New com 0 condenned U					
NWR	BGKT	172	22	0	0	150	7.5	142.5	70	3.6	0.0	68.9	68.9	22 HHP locos(lor rep)					
	ABR	136	5	14	2	115	9.0	106.1	61	2.3	1.4	41.3	42.7	13 locos(RE)2(Int)4 HHP, 1 ALCO locos(Irep)					
	TOTAL	308	27	14	2	265	16.5	248.6	131	6.0	1.4	110.2	111.6	Porrep 27 for cond. U o/aged for cond U New com U Condemned U					
SR	ED	91	0	23	2	66	5.3	60.8	51	0.5	0.1	9.2	9.3	16169 (nire)					
	ERS	68	0	11	8	49	4.3	44.7	44	0.0	0.3	0.4	0.6						
	GOC	116	0	14	5	97	7.2	89.9	64	1.3	0.4	24.2	24.5	10004 (him) 10707 (ala far aand)					
	TNP	29	1	4	8	16	1.6	14.4	14	0.0	0.4	0.0	0.4	16884 (hire), 18787 (o/a for cond)					
	TOTAL	304	1	52	23	228	18.3	209.7	173	1.9	1.1	33.7	34.8	For rep U tor cond. U oraged for cond T New com U Condemned U					
SC	KZJ	173	19	0	0	154	10.6	143.4	33	6.5	17.3	86.6	103.9	17 locos (o/arcond)) 70114, 14617 (lor rep)					
	GY	198	4	0	0	194	11.4	182.6	44	8.2	22.1	108.3	130.4	4 locos (o/arcond) 11287 (For rep)					
	GTL	129	6	0	0	123	12.3	110.7	52	5.9	52.8	0.0	52.8						
	MLY	55	3	0	0	52	5.2	46.8	29	1.8	16.0	0.0	16.0	3 locos (o/atcond)					
	BZA	16	0	2	0	14	1.8	12.2	12	0.0	0.0	0.0	0.0	2 locos GRS					
	TOTAL	571	32	2	0	537	40.9	496.1	170	22.3	108.3	194.9	303.2	For rep 3 for cond. U o/aged for cond 29 New com U Condemned U					
SE	KGP	106	12	53	0	41	4.1	36.9	13	2.4	21.5	0.0	21.5	13127 (for rep), 12 locos for cond					
1	BNDM	134	19	5	0	110	6.3	103.8	3	5.6	9.5	85.7	95.2						
	BKSC	43	9	15	0	19	1.9	17.1	6	1.1	10.0	0.0	10.0	9 locos for cond					
	TOTAL	283	40	73	0	170	12.3	157.8	22	9.1	41.0	85.7	126.7	For rep 2 for cond. 0 o/aged for cond 38 New com 0 Condemned 0					
SEC	R	191	6	0	10	175	11.3	163.8	9	9.9	38.7	106.2	144.9	6 locos (o/a for cond)					
R							1000							For rep 0 for cond. 0 o/aged for cond 6 New com 0 Condemned 0					
SWR	KJM	189	9	15	0	165	10.6	154.4	121	2.7	18.3	12.4	30.7	2 ALCO, 7 HHP (for rep)					
	HUBLI	195	10	2	0	183	9.2	173.9	47	6.2	-2.7	123.4	120.7	10 HHP (for rep)					
	TOTAL	384	19	15	0	348	19.8	328.3	168	8.9	15.6	135.8	151.4	For rep 19 for cond. 0 o/aged for cond 0 New com 0 Condemned 0					
WR	R RTM 89 3		3	39	8	39	3.9	35.1	36	-0.1	-0.8	0.0	-0.8	3 locos(RE work) 1 locos(for cond) 1 loco (for rep)1 loco condemned					
	VTA	108	2	28	15	63	6.3	56.7	58	-0.1	-1.2	0.0	-1.2	14 locos(RE work) 3 locos (for cond) 5 locos condemned					
	SBT	204	6	0	0	198	9.9	188.1	26	8.1	0.0	154.0	154.0	50002, 50005, 12673 (for rep)					
	TOTAL	401	11	67	23	300	20.1	279.9	120	7.9	-2.0	154.0	152.0	For rep 5 for cond. 0 o/aged for cond 6 New com 0 Condemned 6					
WCF	ET	149	4	56	0	89	6.6	82.4	50	3.0	24.9	4.5	29.4	4 locos(f rep)56 locos(GRS), 3locos condemned					
	NKJ	242	2	129	0	111	7.7	103.3	11	6.0	24.9	61.4	86.3	2 locos (o/a f cond), 129 locos (GRS), 2 locos condemned					
1.00	TOTAL	391	6	185	0	200	14.3	185.7	61	9.0	49.9	65.8	115.7	For rep 4 for cond. 0 o/aged for cond 2 New com 0 Condemned 5					
IR	TOTAL	5575	268	658	87	4560	141.0	2549.1	1711	153.4	665.7	1701.5	2367.2	For rep 80 for cond. 45 o/aged for cond 143 New com 0 Condemned 22					

#### BG DIESEL LOCO AVAILABILITY TARGETS FOR June 2020

_	T	-			FART		NOD	NED	NED	NIMP	SP	SCR	SER	SECR	SWR	WR	WCR	Total
		CR	ER	ECR	ECOR	NR	NCR	NER	MER	209	304	571	283	191	384	407	396	5578
1	Holding as on 1.5.2020	316	315	285	297	124	128	250	419	500	0	0	0	0	0	0	0	19
2	Commissioned May 2020	0	0	0	0	19	0	0	0	0	0		0	0	ő	0	0	19
2.1	Cumulative upto May 2020	0	0	0	0	19	0	0	0	0	0	0	0	0	0	6	5	22
3	Condemned May 2020	3	8	0	0	0	0	0	0	0	0	0	0	0	2	7	5	33
3.1	Cumulative upto May 2020	16	8	0	0	0	0	0	0	0	0	0	0	0	-3		0	0
4	Transfers May 2020	0	0	0	0	0	0	0	0	0	0	0	0	0	204	401	201	5575
5	Net Holding as on	313	307	285	297	743	128	250	419	308	304	571	283	191	384	401	391	5575
	12020 (1+2-3+4)								1.2.3						40	-	4	80
6a	Under repair	2	0	6	1	7	2	1	1	27	0	3	2	0	19	5	4	199
6b	For condemnation	1	36	0	0	50	6	0	13	0	1	29	38	6	0	0	405	100
6c	RE/BT/GRS/TRIALS/HIRE	14	0	31	29	75	13	88	0	14	52	2	73	0	15	67	105	030
6d	Locos in inferior services	14	0	0	0	0	6	3	6	2	23	0	0	10	0	23	0	8/
7	EFFECTIVE ON LINE (5-6)	282	271	248	267	611	101	158	399	265	228	537	170	175	348	300	200	4560
8	Ineffective %age			ł	HHP locos	- 5%, W	DP1 &	NDP3A -	12.5%,	All other lo	cos - 10%	(Heavy rep	air & Mi	nor repair	both same	e)		
8a	Locos ineffective	20.4	23.1	20.5	20.7	42.3	8.5	12.2	27.4	16.5	18.3	40.9	12.3	11.3	19.8	20.1	14.3	328.2
9	Locos available (7-8)	261.7	247.9	227.6	246.3	568.8	92.5	145.8	371.7	248.6	209.7	496.1	157.8	163.8	328.3	279.9	185.7	4231.8
10	Passenger Link	111.0	83.0	67.0	15.0	247.0	48.0	109.0	177.0	131.0	173.0	170.2	22.0	9.0	168.0	120.0	61	1711
11	Available for freight (9-10)	150.7	164.9	160.6	231.3	321.8	44.5	36.8	194.7	117.6	36.7	325.9	135.8	154.8	160.3	159.9	124.7	2520.6
12	For minor repair (5/10%)	9.7	13.4	11.9	17.4	8.5	3.6	1.8	12.1	6.0	1.9	22.3	9.1	9.9	8.9	7.9	9.0	153.4
13	FREIGHT TARGET	140.9	151.5	148.6	213.9	313.2	40.9	35.0	182.6	111.6	34.8	303.6	126.7	144.9	151.4	152.0	115.7	2367.2
14	Allotment May 2020	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	19
14a	Cum. allotment May 2020	0	0	0	0	19	0	0	0	0	0	0	U	0	0	-		10
15	Allotment of locos to Rlys													1.1				0
	WDM3A/C/D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	WDG4G					0			1.0									0
	WDP4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-	Total	0	0	0	0	0	0	0	0	0	0	0	0		-	-		
16	Under Commissioning				12-3													
	by Rlys.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	WDM3AC/D WDG4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	WDG3A	0	0	0	0	0	0	0	0	0	0	0	0	0		0		0
	WDP4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-	Total	0	0	0	0	0	0	0	0	-	-		-	-				
17	Under repair locos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	WDG4		0	2	1	4	0	1	0	21	0	2	0	0	13	3	0	48
	WDP4	0	0	0	0	3	0	0	0	4	0	0	0	0	4	2		0
	WDG3A	0	0	0	0	0	0	0	0	0	0	0						0
	WDP1	0	0	0	0	0	0	0	0	0			0	0	0	0	0	1
	WDP3A	0	0				2			2	0	1	2	0	2	0	2	16
	WDM3A/C/D		0	6	1	7	2	1	1	27	0	3	2	0	19	5	4	80
18	Under condemnation	1	1													0		17
1.0	WDM2	0 12	0	0	0	0	1	0	10	0	0	0	2	2	0	2		8
	WDG34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	WDP	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
	WDP4		36	0	0	50	5	0	3	0	1	29	28	4	0	4	2	163
-	Tota	1 1	36	0	0	50	6	0	13	0	1	29	38	6	0	6	2	188
	1018	Lease commissioned in 2020-21 // Into last month)											Sent fo	or conve	ersion t	o Electri		
	A STATE OF A	Lo	cos co	mmisio	oned in 1	2020-2	T (Upto	NPC				TOTAL	1		-	(Upto I	ast month	)
1		-	N	10G4G	1	VVI	JW4G	NRC	VVL	1113010	1014	19	1			S. S. S.	27	
1	Locos comissioned		-	19		-		-					1		1200	2, 12003	, 12004,	12006 -
/	(upto last month)											1.000			1201	10, 12012	019 120	10, 12015,
1	V														12002,	0,0,10,12	30	

5	SHEDW	ISE /	ITPEVVI	SE L	JESEL	LUCU	HOLD				
RLY	SHED	WDM2	WDG3A	WDP1	WDP3A	WDM3A	WDM3D	WDG4G	WDG4	WDP4	TOTAL
R	PA	0	20			16	36		90	36	198
	KYN	0	35		10	0	21		23	14	103
	CLA	0	8			4	0		0		12
	Total	0	63	0	10	20	57	0	113	50	313
R	HWH	0	0			10	23			16	49
	BWN	0	0			70					70
4.1.3	UDL	0	72			12			46	2	132
	JMP	1				39			16	0	56
	Total	1	72	0	0 0	131	23	0	62	18	307
CR	PTRU	0	2			17			89	0 0	108
	MGS	2	11			18			0	0 0	31
	SP.I	0	71			32	43	3	0	0 0	146
	Total	2	84		) (	67	43	3 (	89	0 0	285
COR	VSKP	0	126			36	14	1 (	121	1	297
IR	TKD			4	1 20	34		)	15	63	176
			1			105		)	23	3 16	193
					(	25	59	9	60	5 5	172
	LKU	- u	20	,				20	2		202
	Roza	-	7		4 20	164	5	20	2 9	8 84	743
ICP	Total			4	4 20	31	20	9	0 1	8 14	128
NED	JHS		3	2	-	00		0	2	2 7	138
NER	GD	(	) 10			9:	2.	7	4	7 28	112
	IZN	(	)		0		3	7	- -	9 35	250
	Total	-	1	0	0	0 9:		5	0 0	0	85
NFR	MLDT	1	8 .	4	-	50	5 1	5	2	0 10	121
	NGC	-	4 5	1	-	1:	5 1	1	10	0 10	213
	SGUJ							-	13	2 01	410
	Total	1	2 5	5	0	0 7	3 2	6	0 16	2 91	413
NWR	BGKT				_	-			9	/ /5	1/2
	ABR		3 1	0		6	8		4	8 1	130
	Total		3 1	0	0	0 6	8	0	0 14	5 82	308
SR	ED		0	9	_	-	4 5	51		8 19	9 91
	ERS		0 2	2		3	4			12	2 68
	GOC		3 4	2		9 1	1	0	2	27 24	1 116
	TNP		4	5		2	0		_		29
	Total		7 7	8	0	9 6	9 5	51	0 3	35 5	5 304
SCR	KZJ		0 4	9	0	2	.8			96 0	17:
	GY		0	5		1	1 2	22	12	20 4	198
	GTL		0 7	1		2	28 3	30	_		129
	MLY		0 3	34		2	21				5
	BZA		0		16		0				1
	Total		0 1	59	16	0 8	38 .	52	0 2	16 4	0 57
SER	KGP			75		3	31				10
	BNDM		0	0		1	24	15		95	0 13
1916	BKSC		0	19		1	24				4
	Total		0	94	0	0	79	15	0	95	0 28
SEC	RP		2	34			30	0	0 1	18	7 19
SWR	KIM		-	38			22	4		14 11	1 18
	NJWI	-		00	-				1	47 4	8 19
	Tatal		0	38	0	0	22	4	0 1	61 15	9 38
WR	Total		0	40	-	-	30	19			0 8
1	RIM	-	0	28			48	32			0 10
	VIA	-		20			0		1	75 3	29 20
	SBT		-			0	78	51	0 1	75	29 40
-	Total		0	68	U	0	56	13		3	17 14
WCH	ET						47	0		68	24
	NKJ	-	1 1	18			4/	6	0	71	17 20
1	Total		1 1	18	0	0 1	03	51	0		

RIy S ECR Na	HED	Total Loco Holding	Locos	Locos	1			Contraction of the second s								
		Holding		under	inferior	Effective Loco	Locos ineff.	Locos net	Locos	Locos available for	Locos ineff.	Availability Target				
			Deleted	GRS	service	Holding	heavy rep.	available	M/E Link	Goods	minor rep.	Goods	LOCOS TEMPORARILY DELETED			
NE C	arkatiaguni	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0				
NE C	arkatlagunj	-								19.19.10	*					
NE L.	<u>N</u>	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0				
		24	1	8	0	15	1.5	13.5	11	2.5	0.3	2.3				
		24	1	8	0	15	1.5	13.5	11	2.5	0.3	2.3				
	UTAL					1 1 1 1 1 1 1 1										
	CUL	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0				
NF J	MG	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0				
		0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0				
	OTTL															
NW F	FL	8	0	5	0	3	0.5	2.55	2.55	0	0	0				
							0.5	4.5	1	0.5	0.1	0.5				
SR G	GOC	5	0	0	0	5	0.5	4.5		0.5	0.1					
	201	10	1	5	0	6	0.6	5.4	5	0.4	0.0	0.4				
WR S	SBI	12	1	3	0	4	0.6	3.4	3.4	0.0	0.0	0.0				
N	NHW	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0				
G	GIM	20	2	0	0	10	1	8.8	8	0.4	0	0.4				
T	lotal	20	2	0	0	10	· · · ·	510								
	TOTAL	57	3	21	0	33.0	3.7	29.4	26	3.4	0.3	3.1				

	MG DIESEL LOCO	AVAILA	BILITY 1	ARGET	S FOR J	UNE 20	020	
	MG DIEGEE 2000	FCD	NER	NFR	NWR	SR	WR	Total
		ECR	NER	0	8	5	20	57
1	Holding as on 1.5.2020	0	24	0	0	0	0	0
2	Commissioned May 2020	0	0	0	0	0	0	0
21	Cumulative upto May 2020	0	0	0	0	0	0	0
3	Condemned May 2020	0	0	0	0	0	1	1
31	Cumulative upto May 2020	0	0	0	0	0	0	0
1	Transfers May 2020	0	0	0	0	5	20	57
5	Net Holding as on	0	24	U	0			
3	1 2020 (1+2-3+4)			-	0	0	2	3
62	Accident damaged (u/r)	0	1	0	0		0	0
Gh	Formal condemnation	0	0	0	0	0	0	0
60	Locos in inferior services	0	0	0	5		8	21
00	MISC/ RDSO TRIALS/GRS	0	8	0	3	5	10	33
7	EFFECTIVE ON LINE (5-6)	0	15	0	3	10	10/15	10/12.5/15
1	Ineffective %age (target)	10	12.5	10/12.5	15	0.5	1.2	3.7
0	Lesos ineffective	0.0	1.5	0.0	0.5	1.5	8.8	29.4
loa	Locos available (7-8)	0.0	13.5	0.0	2.0	4.5	84	25.95
9	Deconger Link	0.0	11.0	0.0	2.6	4.0	0.4	3.4
10	Augilable for freight (9-10)	0.0	2.5	0.0	0.0	0.5	0.4	0.3
11	Available for minor repair (10 %)	0.0	0.3	0.0	0.0	0.1	0.0	31
12	Locos for million repair (10 10)	0.0	2.3	0.0	0.0	0.5	0.4	0
13	Net freight TARGET	0	0	0	0	0	0	0
14	Miscellaneous/RDSO/That	0	0	0	0	0	0	0
15	Loco under GRS	0						