WORK STUDY TO REVIEW THE STAFF STRENGTH AT SSE/WAGON/ TNPM MAS - DIVISION

SOUTHERN RAILWAY

PLANNING BRANCH

(No. G.275/WSSR – 631920 / 2019 – 20)

WORK STUDY TO REVIEW THE STAFF STRENGTH AT SSE/ WAGON/ TNPM – MAS DIVISION

STUDIED BY

WORK STUDY TEAM

OF

PLANNING BRANCH

MAY - 2020

I N D E X

SL. NO.	CONTENTS	PAGE NUMBER
(i)	ACKNOWLEDGEMENT	1
(ii)	AUTHORITY	
(iii)	TERMS OF REFERENCE	
(iv)	METHODOLOGY	
(v)	SUMMARY OF RECOMMENDATIONS	2
	CHAPTERS	
I	INTRODUCTION	3 - 7
II	PRESENT SCENARIO	8 - 38
III	CRITICAL ANALYSIS	39 - 69
IV	PLANNING BRANCH'S REMARKS ON CO - ORDINATING OFFICER'S VIEWS.	70 - 75
V	FINANCIAL SAVINGS	76
	ANNEXURES	
I	Consolidated 'S.A.V.E.' STATEMENT OF Sr.DPO/MAS & DME/TNPM	77 – 78
II	'S.A.V.E.' STATEMENT OF Sr.DPO/MAS	79
III	'S.A.V.E.' STATEMENT OF SSE/WAGON/TNPM	80

(i)
ACKNOWLEDGEMENT

The study team acknowledges the valuable guidance and co-operation rendered by Sr DME/MAS, DME/W/TNPM, SSE/Genl./TNPM and Supervisors & Staff of SSE/Genl./TNPM depot for completing the study in time.

(ii)
AUTHORITY

Annual Program of work studies for the year 2019-20.

(iii)
TERMS OF REFERENCE

To review the Mechanical staff strength at the SSE/Wagon/TNPM depot of MAS Division.

(iv)
METHODOLOGY

a) Collection of data.
b) Observation of the present system of working.
c) Interaction with Co-ordinating Officer and Supervisors of the concerned depot.
d) Analysis of the data collected and assessment of manpower requirement as per yardstick / need basis.

SUMMARY OF RECOMMENDATIONS

Revised Recommendation No.1:

5 SSE posts in GP Rs. 4600/-, 4 JE post in GP Rs. 4200/-, are found surplus to requirement and the same may be surrendered to the vacancy bank. **(Total posts – 09)**

Recommendation No.2:

2 posts of Ch. Os in GP Rs. 4600/-, 4 posts of OS in GP Rs. 4200/- are found surplus to requirement and the same may be surrendered to the vacancy bank. **(Total posts – 06)**

Revised Recommendation No.3:

The following ancillary posts are found surplus to the requirement and the same may be surrendered to the vacancy bank:

- Tech. Gr.I Painter in GP Rs.2800 - 2 posts
- Sr. Tech. (Black Smith) in GP Rs.4200 - 2 posts
- Tech. Gr.I (Riveter) in GP Rs.2800 - 3 posts
- Tech. Gr.II (Riveter) in GP Rs.2400 - 1 post
- Tech. Gr.III (Riveter) in GP Rs.1900 - 1 post

(Total- 09 posts)

(Grand Total - 24 Posts)

CHAPTER – I

1.0 INTRODUCTION

1.1 Mechanical department, the basic functions are

- The maintenance and operation of Locomotives and Rolling stock
- Standardization of designs of Rolling stock and its components through continuous absorption of latest technology in the fields of maintenance and operation.
- Production of locomotives and coaches within the Railways and wagons from the Railway related industry.
- Maintenance and operation of break down cranes and restoration of traffic in case accidents by removing the infringing rolling stock.
- Management of workshops dealing with overhaul and rehabilitation of rolling stock and their components.

1.2 Importance of Rolling stock as we all know, the basic purpose of Railway system is transportation which means planned movement of passenger and goods from one point to other.

1.3 Classification of Rolling stock-While numerous types of rolling stocks are in use railways, some of the important terms are as

Rolling stock what rolls on the permanent way is called Rolling stock or any vehicle capable of moving on railway track is called Rolling stock.

Locomotive the vehicle containing the source of power to pull the train is called locomotive. It is usually attached in front of the train.

Coaches vehicles designed for carrying passengers are called coaches. In addition, certain other vehicles attached to passenger trains are also covered under the ambit of coaches. These include postal vans, luggage vans, inspection carriages etc.

1.4 **Important systems and components of Rolling Stock** are

- Body,
- Running gear a) Bogies b) Wheels and c) Axle,
- Coupling system/draw gear,
- Braking system a) Brake block b) Brake cylinder c) Brake rigging and d) Train pipe/Brake pipe

1.5 **Objective of Rolling Stock**

- ✓ To provide appropriate maintenance inputs so that the availability of rolling stock is maximized to ensure that the traffic commitments are met.
- ✓ While maximizing the availability of rolling stock, it should be ensured that the reliability of the maintained rolling stock is not compromised and uninterrupted journey is performed by the rolling stock.
- ✓ Utmost priority is to be given to the safe operation of the rolling stock to avoid any damage to life, property or commodities.
- ✓ The inputs are needed to be optimized in such a manner that the above objectives are met at most economic costs in the area of maintenance, fuel consumption and manpower requirements.

1.6 **Examination of wagons in Yards:**

Examination of wagons yards is under taken by a team of mechanical staff working on both sides of the rake and under the supervision of SSE/JE, the team having specialist personnel for:-

- General examination
- CC/Premium/Intensive examination.
- Checking brake power, brake gear air brake cylinders.
- Roller bearings checking,
- NMG Coach examination
- En-route failure attention

- Tower wagon inspection and certification
- Indian Oil Corporation siding Tank wagons attention
- CONCOR siding
- Break down special duties
- Preparation and signing of the brake power certificates (which is then given to the train crew)

The examination is invariably undertaken on empty wagons, before loading at departure points and after unloading at arrival points. SSE/JE/Inspectors ensure that loading is secure and doors are closed. The focus of yard examination attention is on the under frame equipment, particularly the brake gear and suspension.

Further ROH, Sick line activities, BD-ART/140 T crane maintenance, Condemnation, Stores Maintenance and en-route train attention etc., are explained in the following chapters of this report.

1.7 There are 9 Wagon depots available in Southern Railway viz., TNPM, JTJ, HOM, SA, TPGY, MDU, MVN, PGT & TVC. Among the 9 wagon depots, TNPM is the biggest and situated at a distance of 8 Km from Chennai and it is the en-route station of Chennai Division in the Chennai – New Delhi route. It is the main heart of Wagon activity with wagon ROH depot situated here. AIPS, PTMS and VLK sidings also comes under the TNPM shed. Consequent on developments that have taken place in the field of technology such as introduction of roller bearings in lieu of plain bearings, conversion of vacuum brake wagons into air-brake wagons, introduction of composite brake blocks in place of cast iron brake blocks etc., it is felt that there is a need to review the requirement of staff strength in Wagon depot at TNPM. Hence, this study has been taken up to review the staff requirement as of now.

1.8 **SSE/WAGON/TNPM depot** carry out mostly ROH activity and maintaining of set of Goods Wagons in the yard and with sick line facility and issues BPCs to Goods trains.

This Wagon Depot/TNPM functions under the direct control of DME/TNPM and over all supervision by SSE incharge and other SSEs and JEs are supervising the allotted section. As per the Sr.DPO/MAS, SAVE statement the actual strength of this unit is 336 against the sanctioned strength of 445. The 109 vacant posts and 48 excess posts, so the net vacancy is 61.

1.9 The sanction, actual and vacancy position of the TNPM Wagon Depot are given below:

Sl. No.	Category	GP in Rs	Sanc.	Actual	Vac.	Excess
	Supervisors					
1	SSE	4600	26	20	6	0
2	SSE (CMS)	4600	0	2	0	2
3	JE	4200	15	3	12	0
Total-A			**41**	**25**	**18**	**2**
	Ministerial Staff					
1	Ch. OS	4600	3	1	2	0
2	OS	4200	6	1	5	0
3	Sr. Clerk	2800	2	2	0	0
4	Jr. Clerk	1900	3	4	0	1
Total-B			**14**	**8**	**7**	**1**
	Artizan Staff					
1	Sr. Tech	4200	51	43	8	0
2	Tech. Gr.I	2800	102	51	51	0
3	Tech. Gr.II	2400	15	17	0	2
4	Tech. Gr.III	1900	33	8	25	0
5	Helper	1800	100	130	0	30
Total-C			**301**	**249**	**84**	**32**

Ancillary Staff						
1	Sr. Tech	4200	23	17	6	0
2	Tech. Gr.I	2800	45	21	24	0
3	Tech. Gr.II	2400	6	11	0	5
4	Tech. Gr.III	1900	11	5	6	0
Total-D			**85**	**54**	**36**	**5**
Crane Driver						
1	Sr. Tech	4200	1	0	1	0
2	Tech. Gr.I	2800	2	0	2	0
3	Tech. Gr.II	2400	0	0	0	0
4	Tech. Gr.III	1900	1	0	1	0
Total-E			**4**	**0**	**4**	**0**
Grand Total (A+B+C+D+E)			**445**	**336**	**149**	**40**

In the Helper grade 130 actual staff available against the sanctioned strength of 100. The sanction and actual staff strength of this depot is given in **Annexure-I.**

1.10 An attempt has been made to study the present system of working and the requirement of man power. In the process, Railway board norms, with reference to the maintenance of manuals for wagon benchmarking, yardstick and need base were considered to arrive at the manpower requirement.

1.11 Discussions were held with DME/TNPM (Coordinating Officer and Unit Head) SSE/Genl/TNPM (Coordinating Supervisor) and other Supervisors & Staff. The observations / suggestions made by them have also been taken into consideration in drafting the report.

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CHAPTER – II

2.0 PRESENT SCENARIO

2.1 The actual staff strength of artisan and others of SSE/Wagon/ TNPM depot is given by Sr.DPO/MAS as on 01.06.2019 is **330** as against the sanctioned strength of **445**. But the actual staff position given by SSE/Genl./TNPM is **336** as against the sanctioned strength of **465**. But the study team has taken sanction from the Sr.DPO SAVE list and actual taken from the SSE/Genl./TNPM for entire man power calculation of this report. Both the statements are placed as **Annexure-I.**

2.2 The depot main activities are carrying the Heavier Repair of wagons, ROH of goods wagons and BTPN Oil Tank wagons inside the shed, CC/Premium/Intensive examination of Goods Wagons in the yard itself. The BPCs (Brake power certificate) are issued for premium, intensive and closed circuit wagons. Further, tower wagon inspection and certification, BRNA water tank formation certification also done by the TNPM shed. BD-ART activities also carried out in this depot with 140 T crane. There are some other activities like condemnation of rolling stock and maintenance of stores by the shed. If any major problems/repairs identified from wagons in the yard, the same to be released from formation and placed into sick lines for maintenance / repair/heavier repair activities. There is a separate shed is available for dedicated facilities to attend the major Wagon Body & floor repair and cleaning of BTPN Oil tankers. The sick wagons are completely attended to make it fit to run.

2.3 INFRASTRUCTURE FACILITIES
(For Freight yard and Sick line depots)

To achieve best performance of freight stock it is necessary that these stocks are maintained fine fettle. It is necessary to provide proper infrastructure and to give the best practices and trained manpower, proper maintenance, availability and reliability of assets can be achieved.

Accordingly, the Railway Board has laid great stress on review and improving availability of required infrastructural facilities for maintenance and vide their letter no. ERB – I/ 2006/ 26/ 46 dated 14.12.06 nominated an ED's committee for rationalization of train examination points, sick lines and ROH depots. The criteria for categorization of examination/repair facilities recommended by the ED's committee are as under (Ref: Bd's letter no. 96/ M(N)/204/ Vol -I / II dated 09.03.04, 02.11.04 and 05.08.04)

2.3.1 **A**. **Categorization of Examination / Repair facilities**

I. Intensive Examination Points	
Category	**Criteria for Categorization**
A	(i) Having proper pathways on more than 50% of the lines nominated for examination. (ii) Sufficient illumination facilities 150 lux. (iii) Sufficient material handling facilities. (iv) Sufficient welding facilities.
B	(i) Having proper pathways on more than 50% of the lines nominated for examination. (ii) Sufficient illumination facilities. (iii) Sufficient material handling facilities.
C	(i) Having proper pathways on more than 50% of the lines nominated for examination.

	(ii) Sufficient illumination facilities.
D	(i) Having proper pathways on more than 50% of the lines nominated for examination.
E	No proper pathway but some other facilities are available
F	No facilities available.

2.3.2 **B. Sicklines**

Category	**Criteria for Categorization**
A	(i)Berthing capacity under covered shed (ii) Heavy duty concrete flooring in working area. (iii) Availability of welding facility. (iv) Availability of Compressor/ Exhauster. (v) Availability of EOT crane
B	(i) Berthing capacity under covered shed. (ii) Heavy duty concrete flooring in working area. (iii) Availability of welding facility. (iv) Availability of Compressor/ Exhauster. (v) Synchronized whiting jacks.
C	(i) Berthing capacity under covered shed. (ii) Heavy duty concrete flooring in working area. (iii) Availability of welding facility. (iv) Hydraulic Jacks for lifting
D	(i) Berthing capacity under covered shed. (ii) Heavy duty concrete flooring in working area.
E	Berthing capacity under covered shed.
F	Without any Berthing capacity under covered shed.

The details of infrastructural facilities required for examination yards and sick lines are described in subsequent paragraphs.

2.4 INFRASTRUCTURE & FACILITIES REQUIRED IN THE YARD

i. Centre to centre distance between tracks for nominated lines for conducting intensive examination should be minimum 7.5 metres.

ii. Concrete pathways, material handling equipment, multi utility vehicle to facilitate movement of man and material smoothly from one end to other end.

iii. Proper illumination, specially covering bogies and brake gear locations so that the wagons needing attention can be easily detected.

iv. Welding grid on the entire length of train of nominated line with proper earthing arrangement so that welding can be carried out without marking the wagon sick.

v. Enough outlets for tapping air pressure for testing of the stock.

vi. Duty room for Section Engineer/Junior Engineer (C&W), staff room, air compressor room, store room for stocking material, tool room, welding machine room, battery charging room etc.

vii. VHF sets / CUG phones for close monitoring and communication between supervisors, staff and Sr. Section Engineer (In-charge).

viii. Portable LED type inspection lamps.

2.4.1 MACHINERY & PLANT ITEMS

The following machinery and plant are essential for train examination during yard maintenance:

- ✓ Diesel and Electrically driven Compressor
- ✓ Welding plants
- ✓ Wagon /Rake Test rig
- ✓ Hydraulic jacks of various capacities.
- ✓ Lister truck for carrying material such as brake blocks etc.
- ✓ DG set (Cap. 200 kva min.)

- ✓ Multi utility vehicle for transportation of Men, Materials and Tools from one end of rake to other.
- ✓ Gas/ Plasma cutting set.

2.4.2 **B. TOOLS**

Fitters should have the following tools.

- Tool Bag
- Hammer
- Chisel
- Punch (Flat & Round End)
- LED head lamp
- Spanners of various sizes
- Pipe wrench
- Wheel tyre defect gauge
- Measuring foot rule
- Measuring tape
- Non contact hot axle detector
- Cord for measuring spring camber
- Gauge for measuring "A" dimension
- Test plate
- "GO /NO GO" gauges

2.4.3 **To be made available in Section Engineer/Junior Engineer (C&W) office**

- All types of jacks
- Banner flag/Tail lamp
- CBC height gauge
- Air pressure gauge
- Chisel with wire handle
- Punch with wire handle
- Sledge hammer
- Scale – Steel rule 6"
- Measuring tape – 3 m

- Allen key (full set)
- Circlip plier (internal & external 19-60 mm)
- Hacksaw with blade 12”
- Set of non sparking tools (for yard handling tank wagon)
- LED head lamp
- Helmet
- Ladder with platform 10 ft. height

2.5 MINIMUM INFRASTRUCTURE REQUIRED FOR PREMIUM & CC EXAMINATION

The following infrastructural facilities are considered essential to carry out premium examination in less than 03 hrs.

- Dedicated two or more examination lines with pathways (depending upon number of rakes examined)
- Embedded track/ proper pathway of 02 m width as per layout
- Welding facilities and Portable welding set
- Adequate illumination
- Pallets for material storage/dispensing
- Road between office/store and examination yard
- Connectivity with FOIS
- Walkie Talkie sets
- Provision of MUV (e.g., Tata Ace truck) for transportation of staff and materials/equipments to examination point
- Rechargeable LED head lamp

2.6 YARD MAINTENANCE

According to the publication has issued by IRCAMTECH /GWL /MECH / WMM/1.0 December – 2015 of Maintenance manual for wagons, the yard maintenance has been explained and detailed in the chapter-III. The important activities are reproduced as below:

The efficient working of freight stock is closely linked to the standard of yard maintenance. Several factors are responsible for good and quality examination/repairs in the yard. The method of examination is described in the succeeding paragraphs.

2.7 **PATTERN OF FREIGHT TRAIN EXAMINATION:**

Comprehensive instructions regarding the pattern of freight train examination and issue of Brake Power Certificate have been issued by Railway Board in the form of Joint Procedure Order vide letter No.94/M(N)/951/57 dated 28.2.2000.

2.8 **NOTIFICATION OF EXAMINATION POINTS:**

A) All goods trains must invariably be given Intensive Examination for Repairs.

B) Railways should notify nodal points authorised to issue intensive brake power certificates for running of air brake trains on End-to-End basis, Premium Examination and in Close Circuits. These nodal points should have adequate facilities like cemented pathways, welding points, proper lighting etc., for proper examination of air brake trains.

C) Intensive BPC to be issued from nodal examination points only.

D) As a special case, a Safe-to-Run certificate/ GDR certificate may be issued from examination points other than the nodal points for empty journey of air brake stock after unloading, upto the first/nominated nodal point in the direction of movement as mentioned in Wagon Manual.

2.9 **FREQUENCY OF INTENSIVE EXAMINATION FOR DIFFERENT STOCK :**

A) All freight trains should be subjected to intensive examination in Empty condition at originating stations.

B) In exceptional cases the back loaded freight trains can be examined as per instructions mentioned in para 302 in the manual.

C) All freight trains shall be re-examined if stabled for more than 24 hours by SSE/JE (C&W) in yard and by guard and Loco Pilot in non C&W station up to next C&W point in the direction of movement for examination, as per Railway Board's Joint Procedure Order placed at para 2.17.

D) Air brake stock shall run on end-to-end pattern as mentioned in para 2.15. The intensive BPC shall remain valid provided:

i. The **destination is mentioned** on the BPC of the loaded train.

ii. The composition of the rake is not changed by **4 or more wagons.**

iii. The rake is **not stabled** for more than **24 hours in TXR point.**

E) Air brake stock shall run on nominated Close Circuit as mentioned in report.

2.10 **<u>The intensive BPC issued at the nodal point shall remain valid provided:</u>**

i. The kilometerage have been logged in correctly and continuously. (If not, BPC will be deemed to be valid for 15 days only from the date of issue of BPC.)

ii. The rake integrity is not changed and only the listed wagons are included.

iii. The rake is **not stabled** for more than **24 hours.**

iv. The rake is running in the predefined circuit as mentioned on the BPC. (Breaking the rake into parts and reforming the same parts, will not be deemed to have broken the rake integrity).

v. No intermediate examination of the Close Circuit rake is required. It would be the responsibility of the Driver and Guard to check the unloaded CC rake at the unloading point and ensure brake continuity before starting.

vi) All close circuit freight trains will be given intensive examination during day light hours.

vii) BPC issued after intensive examination in empty condition must be revalidated after loading. Revalidation includes conducting brake continuity test, ensuring completeness/securing of brake gears only and endorsing on intensive BPC. No detachments unless safety is affected.

2.11 **STEPS OF INTENSIVE EXAMINATION**

A) Rolling-in-examination including axle box feeling.

B) Intensive examination of originating trains including repairs, detachment of damaged/sick wagons, brake testing etc.

C) Issue of Intensive Brake Power Certificate after ensuring brake Continuity of the formed load.

2.12 **For loads requiring sorting and/or having different terminating and originating yards/locations, the steps for issuing intensive BPC will be as follows:**

i. Rolling-in-examination including axle box feeling.

ii. Terminating examination including detachment of damaged/sick wagons.

iii. Intensive examination of originating trains including repairs, brake testing etc.

iv. Issue of Intensive Brake Power Certificate after ensuring brake continuity of the formed load

2.13 **DETAILS OF INTENSIVE EXAMINATION:**

2.13.1 **ROLLING-IN-EXAMINATION INCLUDING AXLE BOX FEELING –**

All terminating trains should be given rolling in examination while entering a station/yard with a train examination depot. To carry out this examination the Train Examiner and his staff should take up positions on both sides of the lines short of the normal halting place on which the train is to be received. The following inspection should be carried out during the rolling in examination:

i. In motion inspection and observation of under gear of wagons for any loose or dangling components and flat places on wheels.

ii. Immediately after the train has come to a halt, all axle boxes should be felt/ temp. measurement taken with contact-less thermometers and those, which are found running at high temperature(More then 90^{o} C), should be marked sick for opening/checking at the time of examination and attention if necessary.

iii. Examination of any abnormal behavior of any of the vehicles or any other observation which may relate to unsafe working condition.

iv. The rolling in examination must be conducted to detect any skidded wheel. Defect in the brake system or faulty manipulation by the driver may cause skidding of wheels.

v. Incoming BPC should be collected by yard C&W staff.

2.13.2 **INTENSIVE EXAMINATION AND REPAIRS :–**

Once, the train has been offered for examination by Traffic Department, the rake should be protected at both the ends before undertaking the following examination and repair activities:

a. Inspection and repairs of running gear fittings.

b. Inspection and repairs of brake gear and spring gears.

c. Inspection and repairs of draw and buffing gear.

d. Checking and making good the deficiency of safety fittings, safety brackets, safety loops, etc.

e. Replacement of brake blocks:

- ✓ Brake blocks should be replaced on reaching condemning thickness.
- ✓ Cast iron brake blocks as per RDSO drawing No. WA/BG-6158 with latest alteration or composite brake blocks should be used.
- ✓ Worn out composite brake blocks should be replaced with new composite brake blocks.
- ✓ To ensure correct fitment of brake blocks, only spring steel key as per RDSO Drg. No. W/BG-6150 should only be used.
- ✓ After fitment of brake block and key on brake head fitment of split pin should be ensured.

f. Correct fitment of washers, bulb cotters and all brake gear pins to be ensured.

g. Correct functioning and positioning of empty load device.

h. CTRB stock found running at high temperature may be taken in sick lines for further attention.

i. Checking and proper securing of doors of covered wagons.

j. Look for abnormal and /or unequal buffer heights/CBC height, wear plate knuckle, etc. to the extent it is possible to detect by visual examination. In case of doubt, the buffer height/CBC height should be measured.

k. Meticulous check of brake cylinders, distributor valves, auxiliary reservoir control chambers and other pipe points should be carried out to ensure that these are in proper working order. Isolating cocks and angle cocks to be checked for proper position. Brake cylinder should be released and checked for piston stroke as per para 307 B (in the manual) for empty and loaded position.

l. After brakes are released, the wheel profile should be examined visually. If any defect is noticed, it should be checked with tyre defect gauge and wagon to be marked sick for wheel changing, if required. If bent axle is suspected, wheel gauging must be done.

m. The bogies, complete side frames and bolsters to be visually examined for cracks and missing parts. Bolster springs, snubbers, spigots, centre pivots fastening, side bearer and Elastomeric pads in case of CASNUB 22 bogie to be checked for defects, if any.

n. Examine brake rigging components with special attention to brake beam deformation and wear on integral brake shoe bracket. Check intactness of the pull and push rods with pins, washers, split pins and cotters, etc. Hand brakes must be checked for smooth and effective operation.

o. Visual examination of under frame members, body, door mechanism, CBC wear or deficiency of parts to be marked and their operation to be checked.

p. Brake power should be tested.

q. Examination of loaded stock should be done as per IRCA part-III.

r. Examination of tank wagons should be done as per IRCA Part-III.

s. **Where a rejectable defect can not be attended to on the train in the yard, the wagon shall be labeled for attention in the sick line.**

t. Brake adjustment shall be done as per wheel diameter by adjusting End Pull Rod hole position.

u. Visual examination of under frame members, body, door mechanism for any defects / damages. Attend, if necessary.

2.13.3 **ISSUE OF INTENSIVE BRAKE POWER CERTIFICATE :–**

i) All freight trains after being subjected to intensive examination will be given a Brake Power Certificate.

ii) The standard formats for Brake Power Certificate are issued by SSE/C&W.

iii) The brake power certificates of **air brake stock** will be **Green**. The colour of BPC for Premium and CC Rakes shall be light green and yellow respectively.

iv) The **minimum originating brake power** for air braked goods trains, running on end-to-end pattern of examination, shall be **90%** except wherever local instructions have specified higher level of brake power to meet specific requirement. Exception shall only be made after prior approval of Chief Rolling Stock Engineer has been obtained for each individual case. (Reference RB's letter No.94/M(N)/951/57 dated 29.9.95).

v) The **originating brake power** for air braked goods trains, running **in close circuits shall be 100 %** with adequate brake block thickness. The originating brake power for air braked Premium rakes shall be **95%**.

vi) As far as possible, the close circuit air brake rakes should be formed by off- ROH and off-POH wagons for better monitoring.

vii) No fresh Brake Power Certificate shall be issued during revalidation.

viii) No Safe-to-Run BPC shall be issued from nodal points.

ix) Brake pipe pressure required in the air braked train with locomotive should be as follows:

2.13.4 **Brake pipe pressure required in the train**

No. of wagons	**RTR Locomotive**	**Min. on last wagon**
Up to 56	5.0 Kg/Cm^2	4.8 Kg/Cm^2
Beyond 56	5.0 Kg/Cm^2	4.7 Kg/Cm^2

2.13.5 **Feed Pipe Pressure in Train**

No. of wagons	RTR Locomotive	Min. on last wagon
Up to 56 BOXN	6.0 Kg/Cm2	5.8 Kg/Cm2
Beyond 56 BOXN	6.0 Kg/Cm2	5.7 Kg/Cm2

2.14 **The following procedure should be followed to issue the BPC after attachment of the locomotive:**

- ✓ All BP hoses/ hose pipes on the train should be coupled up.
- ✓ The angle Cocks in case of air brake stock at both ends of the wagon in brake pipe should be open. The angle cock at the end of air brake van must be in closed position.
- ✓ Attach front wagon BP hose to BP hose of the locomotive.
- ✓ Ensure firmness and tightness of hoses with palm ends coupling and clips.
- ✓ Ensure that all the cut off angle cocks on brake pipes are in open position in case of air brake stock.
- ✓ Attend to all leaks by replacing MU washer, leaky hoses and angle cock assembly, if requisite BP pressure is not coming in the last vehicle.
- ✓ Inoperative or defective brake cylinders should be isolated by putting the isolating cock handle in close position.

2.15 **AIR BRAKE TESTING:**

A rake consisting of air brake wagons should be tested with rake test rig. This rig may be used for testing the train in yard before attaching the engine. The rake test rig has compressed air supply and a mobile test rig. The mobile test rig has a cubical structure and is mounted on wheels.

i) Attach the locomotive/compressor through the test rig to the train & couple brake pipes. Ensure correct coupling with pipes so that there is no leakage of air from coupled joints

ii) The coupling should be done with angle cocks in closed position.

iii) Open the angle cocks of loco after coupling brake pipe.

iv) Open the angle cock of the brake pipe on all the wagons. Check for continuity of brake pipe by reducing and rebuilding brake pipe pressure. The verification should invariably be carried out through the pressure gauge provided in Guard's Brake Van.

v) After the brake pipe pressure has stabilised in the locomotive and rearmost vehicle, move the driver's automatic brake valve handle towards application position to reduce the brake pipe pressure from 5 kg/cm^2 to 4 kg/ cm^2

vi) After the brake pipe pressure has been stabilised, close the brake pipe isolating cocks provided between additional C2 relay valve and brake pipe of the locomotive.

vii) Wait for 60 seconds for temperature and gauge settlement. Then note the drop in pressure in the brake pipe gauge in the locomotive for five minutes.

viii) The drop in brake pipe pressure gauge shall not be more than 0.25 kg/cm^2 per minute.

ix) Examine for leaky components, malfunctioning of distributor valves, brake cylinders, control and auxiliary reservoirs, angle cocks, BP hoses.

x) If the leakage rate is more than the value indicated in para viii, check for excessive leakage on individual wagon as indicated below:

- ✓ A hissing sound would be audible at points where leakage is heavy.
- ✓ Once the hissing sound is heard from a particular area, pin point the location of leakage by applying soap water solution
- ✓ use of permitted material viz. Teflon tape for arresting the leakage at threaded joints.

xi) In case leakage is heavy and cannot be arrested, the wagon may have to be isolated / detached.

xii) In case where leakage can be arrested temporarily by tape and the nature of leakage is such that it requires attention at primary depot, clear marking on the wagon must be made to draw attention of primary depot for adequate attention.

xiii) In case the leakage is from the distributor valve and cannot be arrested, close the distributor valve isolating cock. In such a condition, clear marking should be provided on the wagon to indicate this defect to primary depot. Do not close brake pipe angle cocks under any circumstances either for isolation of wagons or for any other purpose whatsoever except for carrying out shunting operation after which the angle cocks should again be opened to ensure continuity of brake pipe.

2.16 Man-hours for examination of various types of stock in Yard.

Stock	Type of Examination		
	Terminating	Intensive	Originating
Air Brake (End-to-End running)	6	56	6
Air Brake (Premium)	6	75	10
Air Brake(Close Circuit)	6	100	10

2.17 PROCEDURE ORDER FOR RUNNING OF GOODS TRAINS

(Railway Board's letter No.94/M(N)/951/57 dated 28.2.2000)

At present, practices for the issue of BPC to freight trains vary considerably between various Zonal railways. The matter has been considered in the Railway Board and the following comprehensive instructions are issued.

2.17.1 ITEM 1: END TO END RUNNING OF UIC RAKES

Para has been deleted (Refer old version-2001 of maintenance manual)

2.17.2 ITEM 2: END TO END RUNNING OF AIR BRAKE STOCK

i) The rake should normally be intensively examined in empty condition except when back loading of rake has to be done at stations/sidings. After such intensive examination, the empty rake should be moved to the loading station as per the requirement of traffic.

ii) The BPC of empty rake may have no destination mentioned. But, after loading the empty rake, the operating staff (commercial staff, if not operating staff is posted at that station) will ensure that the destination of the loaded train is clearly mentioned on the BPC and the same BPC will then become valid upto such destination.

iii) No driver should move the loaded train from the loading point unless the destination is clearly mentioned on the BPC. BPC of the loaded train without destination will be considered as invalid.

iv) At the destination after unloading, the rake must be examined once again in the empty condition and the above cycle repeats. In the absence of freight train examination facilities at the unloading point, the empty rake/back loaded rake must be examined at the first freight train examination point in the direction of movement. The movement of empty rake/back loaded rake from the unloading point to the first freight train examination point will be permitted on Driver and Guard's certificate for which the following instructions should be followed:

a) Driver and Guard will ensure air pressure continuity before starting.

b) Guard and the Driver will ensure that there are no loose or missing fittings in the under gear (such as brake blocks, safety brackets, draw gear pins, brake gear pins etc.) which may endanger the safe running of the train.

c) Driver and Guard can then prepare the memo jointly on a plain sheet in triplicate and both Driver and Guard will sign it. One copy each will be retained by the Driver and Guard and third copy will be handed over to Station Master.

Condition (I) to (IV) mentioned above shall apply for end-to-end running of Air Brake stock. However, since these rakes are likely to run for extended periods on each loading cycle, the

examination should be through and intensive to take care of such long runs.

In case empty rakes are moving on Safe to run examination BPC, the rake will be dropped for intensive examination at nominated point before being taken for loading.

2.17.3 **ITEM 3: BACK LOADING OF TRAINS**

When back loading is done at a station where freight train examination facilities exist, the loaded rake should be examined at that station only and BPC issued. In cases where back loading is done at a non-TXR station, such trains can be:

a) Either checked by flying squad, if operationally feasible.
b) Or, if that is not possible, permitted to run on a driver & Guard's memo for which the instructions given above (iv) should be followed.

Running of trains on Driver and Guard's memo will be permitted only up to the first freight train examination point in the direction of train movement.

2.17.4 **ITEM 4: VALIDITY OF BRAKE POWER CERTFICATE FOR CLOSE CIRCUIT AIR BRAKE RAKES**

A per instructions issued vide Board's letter No. 2005/M(N)951/13 dt.08.02.2006, BPC of air brake stock running in close circuit shall remain valid for 7500 kms. In case it is seen that the record of the distance covered by the rake is discontinuous or not mentioned properly, the BPC will be deemed to be valid for only 15 days from the date of issue. It is the responsibility of the crew to check that entries regarding distance are clearly and continuously recorded.

2.18 **ITEM 5: STANDARDISATION OF BRAKE POWER CERTIFICATE FOR AIR BRAKE CLOSE CIRCUIT RAKES**

2.18.1 **PREMIUM EXAMINATION**

BPC of premium rakes have a validity of 12 days with 3 days additional grace period to facilitate examination in unloaded condition. The concept of premium rakes is applicable subject to compliance of certain conditions (vide Bd's letter no. 2005/ M(N)/951/13 dated 07/10. 04.2006) as follows-

1. Premium rakes will be formed out of air brake stock (BOXN, BOXNHA & BOXNHS, BCN, BCNHS).

2. Premium end to end rakes will be intensively examined in empty condition and certified by examination points nominated by PCME & PCOM. Such premium examination points should be 'A' category.

3. If any of the conditions i.e. examination in empty condition or examination at nominated points is not satisfied, rake will not be certified as premium rake and will operate as normal end to end rake.

4. Brake Power Certificate issued for such premium end to end rakes will be valid for 12 days from the date of issue. During this 12 day period, the rakes will be allowed multiple loading / unloading.

5. After each loading / unloading the rake will be examined by Guard and Driver before commencement of journey and observations will be recorded under the relevant columns of the Brake Power Certificate. In case of mechanized loading/ unloading examination by TXR is desirable.

6. Stipulation to form rakes out of off POH/ ROH wagons as is applicable for CC rakes will not apply in case of end to end rakes. However, the rakes will be turned out with minimum 95% Brake Power.

7. After the lapse of 12 days, the rakes should be offered for next intensive examination at the first examination point in the direction of movement. To avoid examination in loaded condition, a grace period of 3 days will be permitted. However, after expiry of the grace period i.e. after a lapse of 15 days after the date of issue of BPC, even a loaded premium rake shall be offered for examination at the first TXR point in the direction of movement. Further, in no case Premium end to end rake shall be offered for loading through bypass routes or through yards which are not nominated for examination. After examination the rake will be certified as premium rake subject to fulfillment of above mentioned conditions, otherwise as conventional end to end rake.

8. Movement of Premium end to end rakes will be monitored thorough FOIS by Traffic and Mechanical departments.

9. The format for Brake Power Certificate for Premium end to end rakes (to be printed on good quality green colour paper) is enclosed.

2.18.2 **CC RAKES**

Vide Board's letter no. 2005/M(N) 951/ 13 dated 08.02.06, CC rakes with validity of BPC for 7500 Kms or 30 days (whichever is earlier) were introduced, as a trial measure, in select base depots i.e. NKJ, MGS, BIA, BNDM, GY & TKD / Dadri (for CONRAJ Only).

It was decided to extend the above trial to additional 3 base depots i.e. BSL, NJP and VSKP (vide Board's letter no. 2005/ M (N) 951/13 dated 29/31 .01.2007). Also, it was decided to extend the validity of BPC of these rakes from 30 to 35 days).

However it was stipulated that the further trial of 6000/ 7500 Kms (or 30/ 35 days whichever is earlier) CC rakes shall be subject to the following conditions. –

i) CC rakes shall be maintained in the examination yards which have No line of OHE passing over the maintenance lines.

ii) CC rakes shall be monitored closely through FOIS by all Sr. DOMs to ensure that these rakes are worked to their respective base depots before completion of stipulated KMs/ days. Rakes with invalid BPC shall normally not to be permitted to run in service.

iii) All the cases of violation of this limit shall be analyzed by the concerned Division/ Zone where such rake gets detected, either on run or during subsequent examination, for adequate corrective and/ or punitive action (if necessary).

iv) In case 7500 Km / 35 days limit is breached due to lack of monitoring or otherwise, and the rake is in empty condition, it shall be pushed to nearest TXR point for safe to run (STR) examination and endorsement on BPC by TXR that the train is safe to run up to the base depot.

v) Such potentially unsafe rakes mentioned under (iii) above, when detected in loaded condition, shall be subjected to GDR check and pushed to destination .After unloading, the empty rake shall

be offered to the nearest TXR point for STR examination and endorsement on BPC that the rake is safe to run in empty condition up to its nominated base depot.

vi) The potentially unsafe rakes from the point of detection to the nearest TXR point will move on GDR check. Further, zonal railways shall maintain detailed record w.r.t. enroute detachments, brake power and detachments during examination of these rakes and give monthly feedback to board on their performance.

Vide Board's letter no. 2005/ M (N) 951/13 Vol. I dated 17/18.10.2007; it was decided to extend the trial of these rakes to 3 more CC points viz. BRWD (ECR), JTJ (SR) and RDM (SCR). Railway must ensure that Infrastructural facilities at all the above points are upgraded to 'A' category.

2.19 **BRAKE POWER CERTIFICATE FOR AIR BRAKE (GOODS) CLOSE CIRCUIT RAKES**

THIS CERTIFICATE IS VALID FOR 6000 / 7500 Kms.

I. Provided the kilometrage have been logged in correctly and continuously, if not, BPC will be deemed to be valid for 30/35 days only from the date of issue of BPC.

II. Provided the rake integrity as listed in the BPC is maintained and replacement of not more than 4 wagons has taken place during the entire run.

III. Provided the rake is not stabled for more than 24 hours in train examination yard.

IV. Provided the rake is running in pre-defined close circuit as mentioned above.

2.20 **INTENSIVE BRAKE POWER CERTIFICATE FOR AIR BRAKE (GOODS) (END TO END RUN)**

THIS CERTIFICATE IS VALID:

1. Provided the destination is mentioned on the BPC of the loaded train.

2. Provided the composition of the rake is not changed by 4 or More wagons.

3. Provided the rake is not stabled for more than 24 hours in train Examination yard.

2.21 **BRAKE POWER CERTIFICATE FOR PREMIUM AIR BRAKE RAKE -**

THIS CERTIFICATE IS VALID –

- ❖ Provided the period of 12 days from the date of issue of certificate has not expired.
- ❖ No loading should be done after the lapse of 12 days. 3 days additional grace period is given for the movement of the rakes in loaded / empty condition for the next train examination. In case, rake is not reaching to examination point after the lapse of 15 days, the loaded rake shall be offered at the first train examination point in the direction of movement for examination in loaded condition
- ❖ Provided the rake integrity is not disturbed by more than 4 wagons
- ❖ Provided the rake is not stabled for more than 24 hours in any train Examination yard.

2.22 **Activities of the SSE/C&W/TNPM:**

i) Yard activities of goods trains.

ii) CC/Premium/Intensive examination.

iii) ROH of wagons.

iv) Sick line activities of goods trains like Heavy Repair, ROH/IOH etc.,

v) Miscellaneous activities like maintenance of M&P, BD - ART 140 T/ARMV, Brake Power Certification of BT train, Breakdown Maintenance, RCD etc.

vi) IOCL and CONCOR siding wagons attention.

vii) Other activities like Condemnation of rolling stock, stores maintenance.

viii) AIPS, PTMS & VLK sidings also manned by the staff from TNPM Depot.

2.23 Yard activities

The main activities of C&W staff at TNPM yard are attended as per wagon maintenance manual in chapter – III, the some of the important items examined as follows:

i) Rolling in examination of through goods trains.

ii) Intensive examination of BPC exhausted rakes.

iii) Identification of defects/ROH due wagons.

iv) Segregation of light/heavy repair wagons.

v) Room completion and endorsement of Through BPC

vi) Air brake attention for goods trains in case of engine change if necessary.

vii) CC/Premium/Intensive examination.

viii) IOCL and CONCOR siding wagons attention.

ix) Other activities like Condemnation of rolling stock, stores maintenance.

x) AIPS, PTMS & VLK sidings also manned by the staff from TNPM Depot.

xi) Maintenance of BOXN CC rakes for Iron ore circuit.

xii) Sick attention- on rake welding repairs attended.

xiii) For All types of Wagons checking/maintenance is

- ✓ Under Gear Checking / attention.
- ✓ Brake Gear Checking / attention with air testing.
- ✓ Rolling Gear Checking / attention.
- ✓ Suspension Checking
- ✓ Couplers checking / attention.
- ✓ Leak test.
- ✓ RTR Testing (Rake Test Rig)

xiv) Management Information system

xv) Tool Room maintenance.

xvi) Issuing of PBC through ROAMS.

The last 3 years wagons attention/checking trend analysis are explained in Chapter – III in the work study report.

The staff deployed for yard activities in 3 shifts are 8 SSE's 1 JE, 32 Artizans and 32 Helpers.

2.24 ROH of wagons:

2.24.1 ROH of Air Brake wagon with CASNUB Bogie

BOXN wagons are to be given Routine Over – Haul after every 18 month at the nominated sick line / wagon depot, where proper facilities are provided. All-important undergear components like wheels, bogies, brake components are repaired/overhauled at ROH Shed. According to the Chapter -2 in wagon maintenance manual the ROH schedule of activities are as follows.

- ✓ Lift the body, keep it on trestles and run out bogies.
- ✓ Strip bogie component for examination and repair as below
  - ➢ Strip spring & spring suspension arrangement including snubbing device. Check spring for free height and other defects. Replace where required.
  - ➢ Examine Bogie frame. Check frame alignment as per instructions contained in RDSO Technical Pamphlet No. G-64.
  - ➢ Examine pivot for welding defects/cracks/abnormal depth due to wear. Replace where necessary and lubricate with graphite flakes to IS-495 in dry condition.
- ✓ Strip brake gear levers and rods for examination of worn out/damaged parts.
- ✓ The equipment shall be given attention in accordance with the maintenance manual issued by respective air brake equipment manufacturer and RDSO technical pamphlet no.G.97.
  - Cleaning of strainer discs(Reference 6 & 218 of the pamphlet SBA 795/258 of P4aG type Distributor valve)
  - Lubricator of brake cylinder/cleaning of its strainer

- Check for easy operation of isolating cock & anti – pilferage device of distributor valve cut-off angle cock, manual quick release valve & isolating cock.
- Draining of auxiliary reservoir.
- Checking of hose coupling for serviceability.
- Cleaning of strainer
- Dirt collector to be cleaned
- Leakage in pipes and joints to be checked.
- After carrying out above items of work the wagon shall be tested for proper function of air brake system with single car test device in accordance with the procedure indicated below.

1) Connect the BP coupling of single car test rig to the corresponding coupling of the wagon to be tested. The coupling of the other end of the wagon to be closed with dummy coupling heads. Fix pressure gauge on the brake cylinder.
2) The single car test device should now be coupled to the main line of a compressor through a pipe.
3) Carry out the preparation and testing in accordance with the procedure given in the manufacturers Maintenance Manual and record the reading in the test proforma.
4) For passing the wagon, all the parameters shall be within specified limits.

✓ Clean horizontal lever, hand brake & gears and lubricate
✓ Examine head stock for damage, bent/cracks
✓ Refit brake gear levers and rods, lubricate pins and other equipment and apply graphite to horizontal levers of empty load box
✓ Replace worn out brake blocks
✓ Check wheel profile, turn the wheels as needed, UST of Axle to be carried out & turning of wheel to worn wheel profile during ROH

- ✓ All the wheels are to be checked ultrasonically and Axle box cap bolts are to be tightened up by torque wrench with proper torque (40 Kg-M) and in no case old locking plates are to be reused.
- ✓ CBC knuckles are to be checked by contour gauge as per Technical Pamphlet No.G.76. Anti creep/articulated rotary operation of locking arrangement to be checked.
- ✓ Manual adjustment of brake gear to be done in accordance with wheel diameter. Setting of empty load device and A&E dimension of SAB shall also be done before SWTR test.
- ✓ Modification works are to be attended as issued by RDSO from time to time.
- ✓ CTRB of wheel should not be over due POH schedule.

2.24.2 **ROH Interval of Wagons in months:**

Sl. No.	Wagon Stock	First ROH	Subsequent ROH of First POH Cycle	ROH of Subsequent POH Cycle
1	BOXN, BOXNHS, BOXNHA, BOXNCR, BOXNR	18	18	18
2	BOXNHL	24	24	18
3	BOST, BOSTHS, BOSTHSM2	18	18	18
4	BLCAM/BLCBM, BLLA, BLLB, BLC-A/BLC-B	24	18	18
5	BKFN (Container)	18	18	18
6	BCN, BCNAHS, BCNA, BCNHL	24	24	24
7	BCCNR	24	24	24
8	BOXNLW	24	24	24
9	BRN, BRNA, BRNAHS, BRN22.9, BFNS, BRHNEHS	18	18	18
10	BOBR, BOBRN, BOBRNEL, BOBSNM1	24	24	24
11	BTPN, BTPH, BTALN, BTAL, BTFLN, BTOH, BTALNM	18	18	18
12	BTCS, BTPGLN	24	24	24

13	BOY	18	18	18
14	BOBYN	24	24	24
15	BOXNEL, BOYEL	12	12	12
16	BVZI, BVZC, BVCM Brake Van	12	12	12
17	BOMN, BRSTN, BWTB	24	24	24
18	BCACM, BCACBM	18	18	18
19	BCFC	18	18	18
20	BAFRDR	18	18	18

There are 3 lines available in the ROH shed. The staff deployed for ROH is 70 (including Three Supervisors) working in General.

2.25 **Sick line Activities**

At present there are four lines to attend the wagons reported sick and ROH/IOH/Modification activities are carried out in this shed. After intensive examination the defects are identified and segregated as light/heavy. All the light repairs are attended in the formation itself. If it is not possible to attend in the formation, the particular wagon is detached from the formation and kept in sick line and ROH shed.

The goods wagons which are marked sick from the rake for mechanical repairs are being rectified at sick line and ROH shed. All mechanical sick are attended like dashpot, spring under gear, couplers, brake gear, door repairs, wagons cover plates/ankles repairs, welding, leak test and RTR testing(Rake test Rig) etc. Average per day release for sick line: 1.10 wagons.

Staff deployed for sick line both HR and LR : One SSE as supervisor with 31 artisans and 27 Helpers are in general duty including LR and RG as per wagon maintenance manual.

2.26 **Stores:**

There are 151 imprest items and 60 Non-imprest items are maintained in TNPM Stores. The regular activities in store as

- Maintenance of required imprest and non-imprest items
- Reception and supply of imprest and non-imprest items
- Material collection from GSD/PER, CW/PER, LW/PER, GOC Shops etc.,
- Collection of materials from nominated stores, depots and other stations
- Transportation of defective wheels from Depot/Shops collection.
- House keeping of stores items
- Maintenance of RC items
- Maintenance of Trolley card, DBR & Records
- Data entry of all store items
- Maintenance of imprest cash
- Preparation of indents, work order, bills and indents

The staff deployed for store activities is 1 SSE, 9 Artizans, 5 Helpers & 1 Ministerial staff.

2.27 **BD - ART/140 T Crane Maintenance:**

140 T crane with formation is maintained at TNPM. The activities are as under:

- 140 T crane, HRE & HRD maintenance like daily, weekly, monthly, quarterly, half yearly and annually.
- Maintenance of Power Pack Diesel and Petrol.
- Maintenance of Plasma cutting machine, Oxy-acetylene, Aska light, cutting machine and drilling machine.
- ART coaches and wagons schedule maintenance.
- Handling of derailed coaches and wagons at accident site.
- Rolling stock readings which affected in accident.
- Conducting enquiry.
- Wheel changing at en-route.
- Loaded sick wagon attention in yard.

- Conducting of trail run of ART formation.
- Pit line examination of ART Coaches.
- Grounding of condemned coaches and wagons.
- Conducting of periodical Mock exercise using 140T crane, HRE & HRD.

The staff deployed for store activities is 2 SSE'S, 8 Artizans and 2 Helpers.

2.28 **M&P:**

Maintenance of M&P items and related activities are as under:

- General repairs of M&P items, Servicing of vehicles, Gauge Repairs, Material issue, Welding and Gas Cutting work.
- Fork Lift Repair, Air Compressor works and Pipeline works.
- Electrical Works and General repairs.
- Operation of Road Crane, JCB, Fork Lift.

The staff deployed for the said activities 1 SSE, 9 Artizans, & 6 Helpers and 1 Ministerial staff.

2.29 **Dedicated Facilities:**

Separate shed with 3 lines are available for the DF and the activities are as under:

- Attention of unloadable of B&C category.
- Pre-cleaning of BTPN barrel before ROH.
- Scrap disposal.
- Transportation of materials from stores to DF.
- Maintenance of sub-stores.
- Collection of reclaimed materials from condemnation yard.

The staff deployed for the said activities SSE-1, Artizans-21 & Helpers-5.

2.30 **Condemnation Yard:**

5 lines including one cutting line available for the Condemnation and the activities are as under:

- Survey of condemnation of rolling stock.
- Preparation of M268 (proposed for condemnation).
- Preparation of DS8 (condemnation of rolling stock).
- Placement of sold out wagons for handing over to purchaser after cutting activity done by the purchaser.

- Witness of whole activities.
- Collection and record maintenance of disposal of reclaimed items.
- Housekeeping of condemnation yard.

The staff deployed for the said activities SSE-1, 7 Artizans and Helpers.

2.31 **Activities involved in IMS cell:**

- ✓ Creating awareness among the all involved in the system
- ✓ Preparation of manuals viz. Apex manual and procedures
- ✓ Finalizing work instructions and formats
- ✓ Distribution of IMS documents to all the copy holders
- ✓ Collecting customer satisfaction/feedbacks/complaints
- ✓ Planning and conducting internal audits and external audits
- ✓ Analyzing the data
- ✓ Identification of environmental aspects
- ✓ Preparation of significant environmental aspects
- ✓ Preparation of aspects register
- ✓ Legal requirements to be stipulated
- ✓ Preparation of legal register
- ✓ Correspondence of TNPCB and other parties to be maintained
- ✓ Identified the parameters that are to be monitored and measured for EMS
- ✓ Finalizing the out sourcing
- ✓ Identification of hazards and risks
- ✓ Conducting hazard analysis /HIRA analysis
- ✓ Preparation of hazards register
- ✓ Safety performance to be measured and monitored
- ✓ Records and analysis of incidents
- ✓ Mock drill records
- ✓ Preparation of minutes for management review meetings.

One SSE is deployed for the above work.

2.32 **DAY/MIS and Time office:**

Dealing with the Staff matters, Attendance, Leave Statement, Passes, PTOs, Contract Management, Stores, Maintaining details of Wagons, like BPC, Sick wagons, Attending repairs, ROH/IOH activities, Preparing statement as then there requirements, actual working staff deployed.

SSE/General and Overall in-charge - 2

Helpers under SSE/General for Day to Day staff failure and Condemnation yard - 14

Ministerial Staff - 6

Artizans utilized for MIS/Time Office - 1

2.33 **Miscellaneous activities**

Apart from the regular work Siding Management of AIPS and PTMS/VLK are also manned by TNPM shed duly deputing 6 staff. En-route failure also attended by the staff deputed from TNPM shed at an average of 9 per month.

2.34 **Summary of present staff deployment:**

At present 336 staff are working against the sanctioned strength of 445. The staff distribution is on 01.06.2019 as follows:

Sl. No.	Nature of work	Supervisors	Artizans/ Ancillary	Helpers	Ministerial
1	ROH DPL Shed	3	39	28	0
2	Sick line/IOH/Modification	1	31	27	0
3	Yard activities of CC/Premium/Intensive & Yard/G	9	32	32	0
4	Stores	1	9	5	1
5	M&P	1	9	6	1
6	BD - ART/140 T Crane	2	8	2	0
7	Dedicated Facilities	1	21	5	0
8	Condemnation	1	0	0	0
9	SSE/Genl./Ministerial staff for Office work and Time Office	2	12	14	6

	Staff deputed for other areas				
10	PTMS/AIT Siding	0	5	1	0
11	IMS & Weigh Bridge	1	0	0	0
12	Contract	1	0	0	0
13	CMS	2	0	0	0
14	ORA	0	3	7	0
15	ETS	0	4	3	0
	Total	**25**	**173**	**130**	**8**
	Grand Total	**336**			

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CHAPTER - III

3 CRITICAL ANALYSIS:

3.1 **Indian Railway** is the biggest transportation Service Industry owned by the Government of India which operation ratio is yet to reach appreciable manner. To achieve the maximum "economy in operation'' and maximize the productivity rightsizing of man power is the prime tool since it itself took 43% of total earning.

On the view of optimum utilization of man power the study team apply Railway Board's "Bench marking norms for maintenance staff provision for wagons and coaching maintenance" (Railway Board letter no. 2000/m©/143/5, dt. 24/12/2001) for the core work like ROH, yard maintenance, repair attention in sick line, platform activities etc and apply need base requirement for the other areas after making field study and scrutinize activities.

3.2 The staff strength list is given by Sr.DPO/MAS, the actual staff strength of SSE/Wagon/TNPM depot is 330 against the sanctioned strength of 445 and SSE/Wagon/TNPM has given the actual staff strength is 336 against the sanctioned strength of 465 and both lists are in **Annexure-I.** The study team considered the sanctioned post of Sr. DPO/MAS list and actual is taken from the SSE/Wagon/TNPM/MAS for entire manpower calculation.

3.3 The depot is carrying out mainly in Yard examination/maintenance and despatch activities of Wagons and wagon repairs are carried out in sick line.

The other important activities carried out at this Depot are ROH/IOH, DF, BD - ART/140 T Crane, Machinery and Plants maintenance, Stores, USFD is done by CMS, Condemnation and IMS cell.

3.4 **Supervisors:**

The actual posts of the Technicians and Helpers are 336 against the sanctioned strength of 445 including SSEs / JEs, Ministerial staff and Ancillary staff. At present 23 Supervisors are available for 313 employees.

Apart from the above the other areas also considered and allowing on need basis, the manpower requirement of Supervisors at SSE/Wagon/TNPM is as under:

Yard Maintenance	(2 x 3)	=	6
RG at 16.66%		=	1
Sub Total		**=**	**7**
Over all in-charge, SSE		=	1
SSE/Genl.		=	1
Yard/G		=	1
ROH - SSE/JE		=	4
Sick line Supervision, SSE/JE		=	2
BD - ART/140 T Crane, SSE		=	2
M&P maintenance & Supervision, SSE		=	1
Stores		=	1
IMS Monitoring and Weigh Bridge work, SSE		=	1
Dedicated facilities, SSE		=	1
Condemnation yard		=	1
Contract		=	1
ORA		=	1
Siding and Tower Wagon		=	1
Sub Total		**=**	**26**
LR at 16.66 % (4.33 say as 5)		=	5
Total		**=**	**31**

3.4.1 **Sanction Vs Requirement :**

Category	Sanction	Actual	Requirement	Surplus
SSE	26	20	20	6
JE	15	3	11	4
Total	**41**	**23**	**31**	**10**

3.4.2 **Recommendation No.1 :**

Therefore, 6 SSE posts in GP Rs. 4600/-, 4 JE post in GP Rs. 4200/-, are found surplus to requirement and the same may be surrendered to the vacancy bank.

(Total posts – 10)

3.5 **Ministerial Staff :**

Ministerial staff are entrusted the work such as staff matters, Attendance, Leave statement, Passes, PTOs, Contract management, Stores, Maintaining details of Wagons, like BPC, Sick wagons, attending repairs, ROH activities, Preparing statement as then there requirements, actual working staff deployed etc.,

At present 8 Ministerial staff is available against the sanction of 14, in various grades in following areas:

Ch.OS	:	1
Stores	:	1
M&P	:	1
Day & MIS	:	2
Time Office	:	3

Hence, the work study team has recommended for surrender of 6 Ministerial vacant posts in various grades.

3.5.1 **Sanction Vs Requirement:**

Category	Sanction	Actual	Requirement	Surplus
Ch. OS	3	1	1	2
OS	6	1	2	4
Sr. Clerk	2	2	2	0
Jr. Clerk	3	4	3	0
Total	**14**	**8**	**8**	**6**

3.5.2 **Recommendation No.2:**

2 posts of Ch. Os in GP Rs. 4600/-, 4 posts of OS in GP Rs. 4200/- are found surplus to requirement and the same may be surrendered to the vacancy bank.

(Total posts – 6)

3.6 YARD MAINTENANCE:

3.6.1 **Maintenance of register at SSE /Wagon/TNPM:**

Some of the registers maintained in TNPM depot in a unified, printed manner which makes the data recording into easy and convergent and perfect one as given below:

- RS 1 - Sick marking / Release details
- RS 5 - Remarks for incoming train from Loco pilots
- RS 16 - Sick memo
- RS 17 - Register for Fit memo
- Water filling register - Certification for contractor
- TXR's hand book
- TXR's diary
- Log book for department vehicles
- Log book for Generators
- Details of reception, BPC issuing, Despatch – Diary

- PFTR – trains maintenance, under gear / Interior register
- Interior cleaning – PFTR certification for contractors
- Watering register – certification for contractor
- Brake Power certificate

In general the SSE/Wagon is carrying out the maintenance/repair works of passenger coaches and wagons like

- ✓ Pit line rake maintenance
  - ➢ Primary maintenance
  - ➢ Secondary maintenance
- ✓ Sick attention for wagons
- ✓ Goods train attention in yard

But in the SSE/Wagon/TNPM, the main activities are wagons attention/checking, ROH and repair of sick wagons attended in sick line/ROH shed and attention given to ART/140 T crane etc.

3.6.2 **Working hours at SSE/Wagon/TNPM:**

Sick Line and ROH Day Duty : 08.00 to 16.30 Hrs. from Monday to Saturday

3.6.3 **YARD Shift Schedule :**

Morning shift	: 07.00 to 13.00
Evening shift	: 13.00 to 21.00
Night shift	: 21.00 to 07.00

3.7 **Maintenance of wagons:**

The study is mainly based on the report of the Manpower Productivity committee published in the year-1986 and Maintenance of Wagon manual. Now it is 2019, over the period of 30 years, the technological advancement has undergone sea change like introduction of air brake system, CBC couplings, Roller bearing, helical spring etc reduced the physical fatigues and maintenance considerably. In this juncture, the man power arrived based on the over aged Yardstick will lead to increase the staff cost in to considerable level. Hence, an

analysis is required to induct right man power according to the present technological changes and the current work load are detailed further.

3.7.1 **No. of Rakes Holding in TNPM Shed:**

Month	2016-17	2017-18	2018-19
April	603	690	774
May	555	594	732
June	551	528	678
July	552	598	762
August	591	701	652
September	655	807	690
October	644	863	643
November	728	763	621
December	643	499	713
January	563	625	684
February	554	715	704
March	567	666	680
TOTAL	**7206**	**8049**	**8333**

3.8 **Yard Activities**

3.8.1 **Total trains despatched from 2016-17 to 2018-19:**

Month & Year	No. of Trains Despatched				No. of Wagons Checked			
	CC	PRE	EE	Total	CC	PRE	EE	Total
April-2016	30	28	55	113	1695	1340	2108	5143
May-2016	28	30	67	125	1492	1473	2536	5501
June-2016	25	17	71	113	1333	797	2857	4987
July-2016	27	25	76	128	1478	1353	3116	5947
Aug-2016	27	27	70	124	1562	1485	2911	5958
Sept-2016	27	26	76	129	1545	1334	2955	5834
Oct-2016	27	29	67	123	1517	1468	2768	5753
Nov-2016	24	27	71	122	1404	1381	2926	5711
Dec-2016	23	24	68	115	1195	1151	2854	5200

Jan-2017	23	33	63	119	1414	1603	2474	5491
Feb-2017	24	19	64	107	1277	925	2648	4850
Mar-2017	31	26	70	127	1961	1316	3191	6368
Total	**316**	**311**	**818**	**1445**	**17873**	**15626**	**33344**	**66743**
April-2017	24	21	83	128	1382	1030	3704	6116
May-2017	20	21	69	110	1096	1044	3132	5272
June-2017	17	21	69	107	920	969	3121	5010
July-2017	23	29	73	125	1340	1524	3056	5920
Aug-2017	16	29	85	130	808	1499	3734	6041
Sept-2017	20	18	69	107	1175	887	3304	5366
Oct-2017	22	18	86	126	1423	908	4000	6331
Nov-2017	13	12	71	96	806	670	3436	4912
Dec-2017	13	14	62	89	775	695	2609	4079
Jan-2018	16	17	55	88	912	889	2464	4265
Feb-2018	13	11	58	82	762	536	2595	3895
Mar-2018	15	15	64	94	854	910	2930	4694
Total	**212**	**226**	**844**	**1282**	**12253**	**11561**	**38085**	**61901**
Apr-2018	14	13	71	98	934	674	3571	5179
May-2018	9	25	66	100	531	1281	3244	5056
Jun-2018	15	23	60	98	794	1267	2636	4697
July-2018	12	19	79	110	691	3632	3632	7955
Aug-2018	9	13	90	112	501	779	4025	5305
Sep-2018	13	18	51	82	725	1203	2220	4148
Oct-2018	12	17	58	87	709	1089	2377	4175
Nov-2018	12	21	64	97	655	1244	2886	4785
Dec-2018	11	17	48	76	690	1013	2223	3926
Jan-2019	12	14	57	83	672	717	2446	3835
Feb-2019	12	13	55	80	634	774	2258	3666
Mar-2019	10	22	57	89	554	1203	2630	4387
Total	**141**	**215**	**756**	**1112**	**8090**	**14876**	**34148**	**57114**

3.8.2 The yardstick prescribed Man Hours for the activities carried out in the yard are as follows:

Stock	Type of Examination		
	Terminating	Intensive	Originating
Air Brake (End-to-End running)	6	56	6
Air Brake (Premium)	6	75	10
Air Brake(Close Circuit)	6	100	10

3.8.3 Based on the yardstick as mentioned above, the average for the last 36 months, the manpower requirement of yard maintenance is worked out as follows:

For CC rakes maintenance:

For the year 2016-17	-	316
For the year 2017-18	-	212
For the year 2018-19	-	141
Total	**-**	**669**
No of CC rakes for 36 months	-	669
No of rakes per month (669/36)	-	18.6
No of rakes per day (18.6/30)	-	0.61

For Premium rakes maintenance:

For the year 2016-17	-	311
For the year 2017-18	-	226
For the year 2018-19	-	215
Total	**-**	**752**
No of Premium rakes for 36 months	-	752
No of rakes per month (752/36)	-	20.9
No of rakes per day (20.9/30)	-	0.7

For Intensive rakes maintenance:

For the year 2016-17	-	818
For the year 2017-18	-	844
For the year 2018-19	-	756

Total	**-**	**2418**
No of Intensive rakes for 36 months	-	2418
No of rakes per month (2418/36)	-	67.2
No of rakes per day (67.2/30)	-	2.2

Therefore the total number of rakes per day is 0.61 + 0.7 + 2.2 = 3.52 says as **4 rakes**. If an average despatch is considered 4 rakes per day the same no. of rakes is termination in a day and the same no of rakes examined in various pattern in a day.

3.8.4 **For Terminating & Originating trains:**

The details of through trains Terminating and Originating are tabulated below:

Month	2016-17	2017-18	2018-19
APR	95	68	99
MAY	91	87	87
JUN	81	87	94
JUL	70	67	90
AUG	90	83	104
SEP	85	89	120
OCT	84	81	115
NOV	83	74	115
DEC	89	93	107
JAN	117	106	112
FEB	98	95	05
MAR	84	103	114
TOTAL	**1067**	**1033**	**1262**

For the year 2016-17	-	1067
For the year 2017-18	-	1033
For the year 2018-19	-	1262
Total for 36 months	-	3362
Total is equal to double	-	6724

Total number of Terminating & Originating - 6724

No of rakes per month (6724/36) - 187

No of rakes per day (187/30) - 6.23 say 7

That means for 3.5 Terminating and 3.5 Originating

trains = 7 rakes/day

3.8.5 **Tower Wagon Certificate from April 2016 to March 2019:**

Month	2016-17	2017-18	2018-19
April	3	2	2
May	2	2	1
June	2	2	2
July	2	3	2
August	2	2	2
September	2	2	3
October	2	2	2
November	2	2	2
December	2	1	2
January	2	2	2
February	2	2	3
March	2	2	3
TOTAL	**25**	**24**	**26**

For the year 2016-17 : 25

For the year 2017-18 : 24

For the year 2018-19 : 26

TOTAL : 75

Average **per month** (75/36) : 2.08 **say as 2.**

3.8.6 **ICF Newly Manufactured Coaches Survey from Apr 2018 to Mar 2019:**

Month	2018-19
April – 2018	75
May – 2018	16

June - 2018	79
July – 2018	34
August – 2018	16
September – 2018	0
October – 2018	16
November – 2018	0
December – 2018	0
January – 2019	0
February – 2019	0
March – 2019	0
TOTAL	236
Average **per month**	**20**

3.8.7 **En-route Failure from Apr 2018 to Mar 2019:**

Month	**2018-19**
April – 2018	9
May – 2018	9
June - 2018	5
July – 2018	9
August – 2018	5
September – 2018	3
October – 2018	9
November – 2018	13
December – 2018	18
January – 2019	19
February – 2019	6
March – 2019	6
TOTAL	111
Average **per month**	**9.25**

3.8.8 **Incoming Pilot Trains in TNPM Shed from 2016-17 to 2018-19:**

Month	2016-17		2017-18		2018-19	
	Total Trains	No. of Wagons	Total Trains	No. of Wagons	Total Trains	No. of Wagons
APR	158	5890	192	6081	214	7467
MAY	252	6635	211	6405	200	6761
JUN	226	6540	223	6830	218	7615
JUL	235	6322	175	5312	243	7853
AUG	230	6980	219	6820	279	9224
SEP	162	5220	173	5550	279	8767
OCT	210	6345	157	5347	236	7865
NOV	150	5106	176	5847	234	6884
DEC	229	6679	192	5729	245	7695
JAN	216	6425	201	5885	225	7286
FEB	258	6582	218	6562	229	7118
MAR	232	6456	246	7778	262	8130
TOTAL	**2558**	**75180**	**2383**	**74146**	**2864**	**92665**

Incoming pilot trains:

For the year 2016-17 : 2558

For the year 2017-18 : 2383

For the year 2018-19 : 2864

TOTAL : 7805

Average per month (7805/36) : **217**

Average per day (217/30) : 7.23 say as 7

3.8.9 **Outgoing Pilot Trains in TNPM Shed from 2016-17 to 2018-19:**

Month	2016-17		2017-18		2018-19	
	Total Trains	No. of Wagons	Total Trains	No. of Wagons	Total Trains	No. of Wagons
APR	146	5120	159	5277	180	6212
MAY	186	5869	167	5130	170	6159
JUN	152	5264	159	5163	179	6133
JUL	168	5342	150	5027	201	6857
AUG	141	4425	190	5825	250	8401
SEP	132	4655	137	4556	210	7267
OCT	161	5676	164	5702	202	6710
NOV	136	4320	151	5283	177	5697
DEC	158	5428	154	4543	206	6690
JAN	166	5532	156	5001	184	6148
FEB	172	5468	179	5240	175	5707
MAR	184	5247	190	6124	211	7064
TOTAL	**1902**	**62346**	**1956**	**62871**	**2345**	**79045**

Outgoing pilot trains:

For the year 2016-17 : 1902

For the year 2017-18 : 1956

For the year 2018-19 : 2345

TOTAL : 6203

Average per month (6203/36) : 172

Average per day (172/30) : 5.73 say as 6

3.8.10 **ORA (On Rack Attention) for Light Repair wagon :**

Light Repair Wagons (Refer: 3.10.1) for the past three years from April 2016 to March 2019 is as under:

For the year 2016-17 : 3893

For the year 2017-18 : 4863

For the year 2018-19	:	4155
Total	:	12911
Average per month (12911/36)	:	359
Average per day (359/30)	**:**	**12**

3.8.11 **Summary of Man Power Requirement at Yard/TNPM:**

Sl. No.	Type of Examination	No. of Trains per day	Yardstick MHrs per rack	Total MHrs	Staff Req. (Total MHrs/8)
1	CC Rake	0.61	100	61	7.62
2	Premium Rake	0.7	75	52.5	6.56
3	End to End Rake	2.2	56	123.2	15.4
4	Terminating and Originating trains	7.0	6	42	5.24
5	BTPN Oil Tank post loading	0.35	-	-	10 staff on need basis
6	BLC/BLL post loading	0.46	-	-	
7	BFKN post loading	0.24	-	-	
8	Through train attention	3.0	-	-	
9	Incoming pilots	7.12	-	-	
10	Outgoing pilot	6	-	-	
11	ORA (On rake attention) for Light Repair Wagons	11.77	-	-	To be attended by yard maintenance staff along with ancillary staff
Sub Total					44.82
RG at 16.66% (7.46 say 8)					8
Rounded off Total (A)					**53**

Other Activities: (As need base)

Sl. No.	Activity	Men/ Shift	Men/ day	Staff Req. by TNPM Depot	Staff allowed by Work study
1	Re-checking of the formation after top-up and air pressure testing	1	3	3	To be attended by yard maintenance staff

2	Rolling out examination of outgoing trains	2	3	6	6
3	Indian Oil Corporation siding Tank wagons attention	1	3	3	3
4	Container Corporation (CONCOR) siding	1	3	3	3
5	Issuing of BPC through ROAMS	1	3	3	3
6	Area control assistance for documentation	1	3	3	
7	Monitoring of Automatic Hot Box detector commissioned at Naidupeta	2	3	6	3 (1x3)
8	Tool Room maintenance/operator	1	3	3	3
Sub Total					21
RG at 16.66% (3.50 say 4)					4
Total (B)					**25**
9	**Special Batch**	28 Men/shift on need basis round the clock.			6
A	Unmanned sidings				
B	Tower Wagon inspection & certification				
C	En-route failure attention				
D	En-route BPC revalidation attention				
E	BT Stock certification at way side loading station				
F	ICF newly manufactured coaches survey				2
G	Break down special duties				To be Attended by BD staff
H	Special Drives				2
Total (C)					**10**
Total (A+B+C)					**88**
LR at 12.5%(11)					**11**
GRAND TOTAL					**99**

3.9 **BD - ART/140 T crane :**

Movement details of ART/140 T crane for the past three years from April 2016 to March 2019 is tabulated as under:

Year	Details of Derailments at Yard and Outstation				En-route wheel changing	Trial Run
	Inside Yard	Outside yard	Out station	Total		
2016-17	10	7	17	34	9	5
2017-18	11	13	6	30	15	5
2018-19	6	5	9	20	5	6
Total	27	25	32	84	29	16

For ART/140 T crane activity there are 2 SSE's, 10 Technicians & 3 Helpers are there. From the Breakdown special duties and other miscellaneous activity 28 men are drafted at the time of occurrence of derailment of coaches and wagons at accident site by HRE, Rolling stock readings, crane, HRE & HRD.

The Work study team has **allowed 13** staff based on Accident Manual.

3.10 **Sickline Activities:**

In sick line, the wagons detached from formation were attended to various mechanical repairs like lifting for side bearers repairs, under gear repairs, brake gear repairs, suspension, couplers, doors, etc. Necessary welding works also carried out, as required and air testing also conducted with single Rake test rig. Sick line staff is working in general shift only in all the days except Sunday.

3.10.1 **Sick trend from Apr-2016 to Mar-2019:**

Month & Year	LR	HR	Total
April-2016	331	116	447
May-2016	292	88	380
June-2016	308	88	396

July-2016	283	114	397
Aug-2016	351	221	572
Sept-2016	320	196	516
Oct-2016	391	204	595
Nov-2016	355	169	524
Dec-2016	275	113	388
Jan-2017	347	160	507
Feb-2017	237	92	329
Mar-2017	403	169	572
April-2017	375	173	548
May-2017	400	197	597
June-2017	351	97	448
July-2017	483	170	653
Aug-2017	426	130	556
Sept-2017	498	130	628
Oct-2017	402	203	605
Nov-2017	303	142	445
Dec-2017	382	133	515
Jan-2018	396	132	528
Feb-2018	324	102	426
Mar-2018	523	163	686
Apr-2018	461	156	617
May-2018	519	156	675
Jun-2018	504	154	658
July-2018	506	147	653
Aug-2018	539	148	687
Sep-2018	610	215	825
Oct-2018	440	190	630
Nov-2018	576	162	738
Dec-2018	568	212	780

Jan-2019	529	158	687
Feb-2019	502	122	624
Mar-2019	582	117	699
TOTAL	**12911**	**5439**	**18350**

3.10.2 From the above table, the number of wagons attended in LR is ORA activity which will not move to sick line, the sick line activities of Heavy Repair (HR) have been accounted from April 2016 to March 2019 i.e., 36 months. The nature of Heavy Repair works are Body Lifting/Lowering and Rolling out/Rolling in of bogies Body/Door Repairs, Bogie Repair, Air Brake testing, CBC and Draft gear attention, Wheel/CTRB attention & Gauging etc.,

Total number of wagons attended at sick line	=	5439
No. of wagons attended / month (5439/36)	=	151.08
No. of wagons attended / day (151 /30)	**=**	**5.03**

The yardstick for a depot holding 1000 rakes, the sick arising is 10 wagons which require 40 men **including RG and LR**. TNPM depot rakes holding is less than 1000. But the average sick wagons/day is arising about 5.03 only. **Therefore, manpower required for 5.03 wagons per day is (5 X 40)/10 = 20 staff including both RG and LR.**

Sick line activities	=	20.00
Documentation, ROAMS-FMM Console of HR	=	1.00
Total	=	**21.00**

Therefore, the work study team allowed for **21 staff instead of 11staff working at present** to maintain for Sick Line/Modification/Special Work.

3.11 **R.O.H of Wagons:**

Out turn trend of ROH wagons and Wagon wheels from Apr – 2016 to Mar 2019:

Month & Year	ROH	IOH	Total
April-2016	122	0	122
May-2016	135	0	135
June-2016	144	8	152
July-2016	149	1	150
Aug-2016	120	0	120
Sept-2016	150	0	150
Oct-2016	140	7	147
Nov-2016	138	11	149
Dec-2016	74	13	87
Jan-2017	147	7	154
Feb-2017	146	4	150
Mar-2017	170	3	173
April-2017	133	0	133
May-2017	148	13	161
June-2017	150	8	158
July-2017	167	8	175
Aug-2017	150	8	158
Sept-2017	148	0	148
Oct-2017	146	5	151
Nov-2017	148	9	157
Dec-2017	140	22	162
Jan-2018	138	21	159
Feb-2018	133	17	150
Mar-2018	136	16	152
Apr-2018	139	22	161

May-2018	150	25	175
Jun-2018	162	14	176
July-2018	160	10	170
Aug-2018	159	3	162
Sep-2018	160	0	160
Oct-2018	158	5	163
Nov-2018	146	9	155
Dec-2018	151	16	167
Jan-2019	147	12	159
Feb-2019	142	19	161
Mar-2019	159	12	171
TOTAL	**5205**	**328**	**5533**

3.11.1 The yardstick prescribed for 140.5 man hours per wagon including ancillary staff, RG & LR. Therefore, the manpower calculation is based on the above monthly average out turn for ROH Wagon activities are as follows:

No of wagons from April 2016 to March 2019 = 5533

No of wagons per month (5533/36) = 154

No of wagons per day (154/26) = 5.9 say **6 wagons**

For the last year 2018-19 = 1980

No of wagons per month (1980/12) = 165

No of wagons per day (165/26) = 6.3 say **6 wagons**

For the last three years average and the year 2018-19 the calculated value both are same. But TNPM depot is dealing with both ROH and IOH activities. The study team has taken the yardstick of 140.5 man hours per wagon including RG & LR for both ROH and IOH. The man power requirement for ROH and IOH activities is calculated as under:

No. of wagons dealt per day is 6.

As per yardstick dealt per day (140.5 x 6) = 843 man hrs

Staff Required for ROH/IOH (843/8) = 105.37 say as 105

Total (A) = 105

3.11.2 **Other Activities at ROH:**

Sl. No.	Activity	Demand from TNPM Depot Men/Shift	Staff allowed by Work study	Remarks
1	Machine Shop	2	2	-
2	Scrap Disposal	4	4	To be worked by collectively.
3	Housekeeping of service building & shed	4		
4	Transportation of materials from stores to DPL/NSL Sheds ROH	2		
5	Collecting of reclaimed materials from condemnation yard	2	2	-
6	Maintenance of sub-stores	1	3	-
7	Ensuring of placement	2		-
8	Documentation & ROH History book maintenance	2		-
9	ROAMS-FMM console for ROH	2		-
Total (B)			**11**	
Total (A&B)			**116**	

116 staff is sufficient to manage ROH/IOH activities.

3.12 **Dedicated Facilities:**

It is a separate shed with 3 lines are available, the details dealt by DF is for the past one year as under:

Month	'B' Category	'C' Category	Total
Apr-18	102	15	117
May-18	107	15	122
Jun-18	91	17	108

Jul-18	95	18	113
Aug-18	108	14	122
Sep-18	144	29	173
Oct-18	143	10	153
Nov-18	100	10	110
Dec-18	155	11	166
Jan-19	98	4	102
Feb-19	67	17	84
Mar-19	70	15	85
Total	**1280**	**175**	**1455**

The dedicated facilities area previously A & B class repairs only attended the C – class wagons was sent to work shops. The present RB instructions states given the C-class repairs attended in open line. The 12 months details furnished by division is applied under

For 'B' category	=	1280
Average per month (1280/12)	=	106.66
Average per day (107/26)	=	**4.11**
For 'C' category	=	175
Average per month (175/12)	=	14.58
Average per day (14.58/26)	=	**0.56**
For Both 'B' & 'C' category	**=**	**4.67 say as 5**

The above activities are only body repair works. So the study team has applied the yardstick of sick line for DF also. The yardstick for a depot holding 1000 wagons, the sick arising is 10 wagons which require 40 men including RG and LR. TNPM depot wagon holding is less than 1000. Hence, the work study team has applied the above yardstick for Dedicated Facilities also, such that the average DF wagons/day is arising about 5 only. Therefore, manpower required for 5 wagons per day is (5 X 40)/10 = 20 staff including both RG and LR. Moreover DF is working in General Shift only.

Man power required for Both 'B' and 'C' category	**=**	**20 staff.**
Pre cleaning of BTPN wagon before ROH	=	1.51
Yardstick for Man hours per wagon	=	24
Man hours required for pre cleaning (1.51 x 24)	=	36.96
Staff required for pre cleaning (36.96/8)	**=**	**4.62 say as 5**
Total staff required for DF	**=**	**25**

3.12.1 **Other Activities at DF:**

Sl. No.	Activity	Demand by TNPM Depot	Staff allowed by Work study	Remarks
1	Scrap Disposal	2	4	To be worked by collectively.
2	Transportation of materials from stores to DF/Collecting of reclaimed materials from condemnation yard	3		
3	Maintenance of sub-stores	1	2	To be worked by collectively.
4	Ensuring of placement	1		
5	Documentation	1		
Total			**6**	

Hence, 25 staff for DF and 6 staff for other activities of DF and making a total of 31 staff are allowed by the Work Study team instead of 26.

3.13 **Condemnation Yard:**

5 lines including one cutting line available for the Condemnation and the activities are as under:

Sl. No.	Activity	Staff allowed by Work study
1	Survey of condemnation of rolling stock	**8 staff**
2	Preparation of M268 (proposed for condemnation)	
3	Preparation of DS8 (condemnation of rolling stock)	
4	Placement of sold out wagons for handing over	

	to purchaser	
5	Cutting and delivery of sold out wagons	
6	Cutting and delivery of sold wagons to be witness	
7	Collection and disposal of reclaimed items	
8	Record maintenance of reclaimed items	
9	Housekeeping of condemnation yard	
10	The above same process is initiated in AJJ also	

Note: 14 Helpers are available on account of SSE/G, for deputing emergency works like staff not turned up duty suddenly on personal reasons, further these staffs are especially used at Condemnation yard for day to day maintenance.

3.14 **Stores:**

The required materials are collected from General stores depot and other divisions / Railway according to the requirement and disposal of condemnation with relevant records are maintained at stores section. There are 151 imprest items and 60 Non-imprest items are maintained in TNPM Stores. The staff deployed for store activities is 1 SSE, 9 Artizans and 5 Helpers.

Sl. No.	Activity	Staff allowed by Work study
1	Maintenance required imprest and non-imprest items	2
2	Reception supply of imprest and non-imprest irems	
3	Maintenance of Imprest cash	
4	Collection of materials of outstation Depots/Workshops	6
5	Transportation of defective wheels from Depot/Shops collection	
6	Housekeeping of stores items	
7	Maintenance of Tally card	1
8	Maintenance of DBR & Records	
9	Data entry of all store items	2

10	Preparation of Indents	
11	Preparation of Work order	
12	Preparation of Bills	
	Total	**11**

3.15 **M&P:**

Maintenance of M&P items and related activities the staff deployed for the said activities SSE-1, Artizans-8 & Helpers-4.

Sl. No.	Activity	Staff allowed by Work study
1	Maintenance of General Repairs of M&P items	4
2	All compressor maintenance and repairs	
3	Servicing of M&P items	
4	Servicing of Vehicles and forklifts	
5	Maintenance and issue of welding cables and cutting equipments	1
6	Maintenance of DBR & Records	2
7	Preparation of Indents and follow up	
8	Data entry of all M&P items and T&P items	
9	Maintenance of all DS 8 (Condemn) items with records	
10	Preparation of Work Order	
11	Compressor Operator	1
12	JCB, Road Crane Operator	2
	Total	**10**

Staff allotted by Work Study Team for Condemnation -8, Store – 11 and M&P- 10 total of 29 staff may be deployed for the activities/emergency work on day to day basis on interchangeable basis.

3.16 **Siding Management:**

Staff working in two sidings namely, AIPS siding and PTMS/VLK Siding. In siding attending the staff for terminating train examination, End to End examination, Despatching of pilots, En-route attention on complaint basis and Despatching of trains ensuring continuity test etc.,

The study team has allowed the manpower as need basis.

AIPS Siding	:	7
PTMS/VLK Siding	:	5
Total	**:**	**12**

3.17 **DAY/MIS/Time Office:**

Dealt with the staff matters, Attendance, Leave statement, Passes, PTOs, Contract management, Stores, Maintaining details of Wagons, like BPC, Sick wagons, attending repairs, ROH activities, Preparing statement as then there requirements, actual working staff deployed etc.,

6 Artizans/Helpers are utilized for the above works along with 8 Ministerial staff.

DAY/MIS/Time Office 6 staffs are allowed.

3.18 **Summary of Artizan Staff for various Activities as under:**

Sl. No.	Nature of Work	Staff Requirement
1	Yard Maintenance	99
2	BD-ART/140 T Crane	13
3	Sick line	21
4	ROH/IOH	116

5	Dedicated Facilities	31
6	Condemnation	8
7	Stores	11
8	M&P	10
9	Siding Management	12
10	Day/Office/MIS	6
	Total	**327**

3.19 **Sanction Vs. Requirement of Artizans for Yard, ROH/IOH, Sick line, DF, Condemnation, Stores, M&P, DAY/MIS/Time Office etc.**

Category	Grade Pay (Rs.)	Sanction	Actual	Requirement	Shortage
Artisans staff					
Sr. Tech/Fitter	4200	51	43	51	0
Tech. Gr. I/Fitter	2800	102	51	102	0
Tech. Gr. II/Fitter	2400	15	17	15	0
Tech. Gr. III/Fitter	1900	33	8	33	0
Helpers	1800	100	130	126	26
	Total	**301**	**249**	**327**	**26**

3.20 **Ancillary Staff Requirement at TNPM Depot:**

Ancillary staff like Welder/Gas Cutter, Painter, Black Smithy and Riveter are utilized for yard maintenance, Sick line, ROH/IOH, DF and Condemnation etc., In these category staff are mostly utilized for Welder category and other categories are working in normal nature. Hence, the study team has given importance to Welder Category and for other categories the actual staff are allowed in existence:

Welder for Yard Maintenance (2 x 3)	:	6
RG at 16.66%	:	1
Sub Total	**:**	**7**
Welder for Sick line activities (2 x 2 batches)	:	4

Welder for ROH/IOC (2 x 2 batches)	:	4
Welder for DF (2 x 2 batches)	:	4
Welder for Miscellaneous (6 x 1)	:	6
Sub Total	**:**	**25**
LR at 12.5%	:	3
Sub total	**:**	**28**
Painter for Painting Works including reserve	:	3
Black Smith including reserve	:	6
Riveter including reserve	:	6
Crane Drivers including reserve	:	4
Machinist	:	1
Total	**:**	**48**

3.20.1 **Sanction Vs. Requirement for Ancillary Staff:**

SAVE' STATEMENT OF SSE/Wagon/TNPM/MAS by Sr. DPO/MAS AS ON 01.06.2019					
Category	**Grade Pay (Rs.)**	**Sanction**	**Actual**	**Requirement**	**Surplus**
Tech.Gr.I/Painter	2800	3	1	1	2
Tech.Gr.II/Painter	2400	1	0	1	0
Tech.Gr.III/Painter	1900	1	1	1	0
Sub total (A)		**5**	**2**	**3**	**2**
Sr.Tech/B. Smith	4200	4	3	2	2
Tech.Gr.I/B. Smith	2800	8	0	2	6
Tech.Gr.II/B.Smith	2400	1	2	1	0
Tech.Gr.III/B.Smith	1900	1	1	1	0
Sub total (B)		**14**	**6**	**6**	**8**
Sr.Tech/Welder	4200	14	12	12	2
Tech.Gr.I/Welder	2800	27	15	8	19
Tech.Gr.II/Welder	2400	3	9	3	0

Tech.Gr.III/Welder	1900	8	3	5	3
Sub total (C)		**52**	**39**	**28**	**24**
Sr.Tech/Riveter	4200	4	1	2	2
Tech.Gr.I/Riveter	2800	7	4	4	3
Tech.Gr.II/Riveter	2400	1	0	0	1
Tech.Gr.III/Riveter	1900	1	0	0	1
Sub total (D)		**13**	**5**	**6**	**7**
Sr.Tech/Machinist	4200	1	0	1	0
Tech Gr.I/Machinist	2800	0	1	0	0
Sub Total (E)		**1**	**1**	**1**	**0**
Sr.Tech./Crane Driver	4200	1	0	1	0
Tech.Gr.I/Crane Driver	2800	2	0	2	0
Tech.Gr.III/Crane Driver	1900	1	0	1	0
Sr.Tech (Auto Driver)	4200	0	1	0	0
Sub total (F)		**4**	**1**	**4**	**0**
Net total (A+B+C+D+E+F)		**89**	**54**	**48**	**41**

The above table is shown that 41 posts are surplus in various grade and categories. The latest Railway board circular is adopted for multi skilling, out of 41 surplus posts, 26 posts are to be adjusted for wagon maintenance Technician shortfall (Para No.3.18). Hence, the remaining 15 posts (41 surplus in ancillary category minus 26 shortfall in Fitters) in ancillary categories are recommended for surrender.

3.20.2 **Recommendation No.3:**

The following ancillary posts are found surplus to the requirement and the same may be surrendered to the vacancy bank:

- Tech. Gr.I Painter in GP Rs.2800 - 2 posts
- Sr. Tech. (Black Smith) in GP Rs.4200 - 2 posts
- Tech. Gr. I (Black Smith) in GP Rs. 2800 - 2 posts

- Sr. Tech. (Riveter) in GP Rs.4200 - 2 posts
- Tech. Gr.I (Riveter) in GP Rs.2800 - 3 posts
- Tech. Gr.II (Riveter) in GP Rs.2400 - 1 post
- Tech. Gr.III (Riveter) in GP Rs.1900 - 1 post
- Tech. Gr.III (Welder) in GP Rs.1900 - 2 posts

Total - 15 posts

(Total posts – 15)

3.21 **Consolidated statement of Sanction Vs Requirement :**

Category	Grade Pay (Rs.)	Sanction	Actual	Requirement	Surplus/ Shortage
SSE	4600	26	20	20	6
SSS/CMS	4600	0	2	0	2*
JE	4200	15	3	11	4
Total - I		**41**	**23**	**31**	**10**
Ch. OS	4600	3	1	1	2
OS	4200	6	1	2	4
Sr. Clerk	2800	2	2	2	0
Jr. Clerk	1900	3	4	3	0
Total - II		**14**	**8**	**8**	**6**
Sr. Tech/Fitter	4200	51	43	51	0
Tech. Gr. I/Fitter	2800	102	51	102	0
Tech. Gr. II/Fitter	2400	15	17	15	0
Tech. Gr. III/Fitter	1900	33	8	33	0
Helpers	1800	100	130	126	26
Total - III		**301**	**249**	**327**	**(-26)****
Tech.Gr.I/Painter	2800	3	1	1	2
Tech.Gr.II/Painter	2400	1	0	1	0
Tech.Gr.III/Painter	1900	1	1	1	0
Sub total (A)		**5**	**2**	**3**	**2**
Sr.Tech/B. Smith	4200	4	3	2	2
Tech.Gr.I/B. Smith	2800	8	0	2	6
Tech.Gr.II/B.Smith	2400	1	2	1	0

Tech.Gr.III/B.Smith	1900	1	1	1	0
Sub total (B)		**14**	**6**	**6**	**8**
Sr.Tech/Welder	4200	14	12	12	2
Tech.Gr.I/Welder	2800	27	15	8	19
Tech.Gr.II/Welder	2400	3	9	3	0
Tech.Gr.III/Welder	1900	8	3	5	3
Sub total (C)		**52**	**39**	**28**	**24**
Sr.Tech/Riveter	4200	4	1	2	2
Tech.Gr.I/Riveter	2800	7	4	4	3
Tech.Gr.II/Riveter	2400	1	0	0	1
Tech.Gr.III/Riveter	1900	1	0	0	1
Sub total (D)		**13**	**5**	**6**	**7**
Sr.Tech/Machinist	4200	1	0	1	0
Tech Gr.I/Machinist	2800	0	1	0	0
Sub Total (E)		**1**	**1**	**1**	**0**
Sr.Tech./Crane Driver	4200	1	0	1	0
Tech.Gr.I/Crane Driver	2800	2	0	2	0
Tech.Gr.III/Crane Driver	1900	1	0	1	0
Sr.Tech (Auto Driver)	4200	0	1	0	0
Sub total (F)		**4**	**1**	**4**	**0**
Total – IV (A+B+C+D+E+F)		**89**	**54**	**48**	**41**
Grand Total (I+II+III+IV)		**445**	**334**	**414**	**31**

**** (-) 2 SSE/CMS is available in the Depot without sanction.***

***** The shortage of 26 posts of Artizans is adjusted against the excess 41 posts in Ancillary category. Out of 41 excess in Ancillary after adjusting the 26 shortage of Artizans, the remaining 15 posts are identified for surrender.***

Note: Outsourced activities were done in TNPM/MAS for Gas cutting and Panel Patch Welding in Unloadable wagons for the cost of Rs.81,28,474/-. Further, the Outsourcing proposals were sent to Sr.DFM/MAS for their concurrence for the activities of Scrubbing, cleaning and painting of ROH wagons and Scrap Collection work and shop heavy duty floor much removal, sweeping and cleaning at NSL, DPL shed, DF shed and 140 T crane shed.

However, the work study team has not consider for any surrender on account of outsourcing activities and also re-engagement staff.

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CHAPTER - IV

4.0 PLANNING BRANCH'S REMARKS ON CO-ORDINATING OFFICER'S VIEWS:

Co-ordinating Officer's Views:

1) Rolling in – Rolling out examination at TVT (4 Staff/shift x 3 shifts).

Planning Branch Remarks:

2 staff per shift i.e., 2 x 3 = 6 is allowed for Rolling in and Rolling out examination at TVT.

Sanction Vs. Requirement of Artizans for Yard, ROH/IOH, Sick line, DF, Condemnation, Stores, M&P, DAY/MIS/Time Office etc.

Category	Grade Pay (Rs.)	Sanction	Actual	Requirement	Shortage
Artisans staff					
Sr. Tech/Fitter	4200	51	43	51	0
Tech. Gr. I/Fitter	2800	102	51	102	0
Tech. Gr. II/Fitter	2400	15	17	15	0
Tech. Gr. III/Fitter	1900	33	8	33	0
Helpers	1800	100	130	132	32
Total		**301**	**249**	**333**	**32**

The above table is shown that 41 posts are surplus in various grade and categories. The latest Railway board circular is adopted for multi skilling, out of 41 surplus posts. The requirement of staff has increased from 327 to 333 duly considering Co-ordinating Officers views and hence the shortage is increased from 26 to 32 posts. These 32 posts are to be adjusted for wagon maintenance Technician shortfall as stated above. Hence, the remaining 9 posts (41 surplus in ancillary category minus 32 shortfall in Fitters) in ancillary categories are recommended for surrender

Revised Recommendation No.3:

The following ancillary posts are found surplus to the requirement and the same may be surrendered to the vacancy bank:

- Tech. Gr.I Painter in GP Rs.2800 - 2 posts
- Sr. Tech. (Black Smith) in GP Rs.4200 - 2 posts

- Tech. Gr.I (Riveter) in GP Rs.2800 - 3 posts
- Tech. Gr.II (Riveter) in GP Rs.2400 - 1 post
- Tech. Gr.III (Riveter) in GP Rs.1900 - 1 post

Total - 9 posts

(Total posts – 9)

Co-ordinating Officer's Views:

2) Staff requirement for ART not calculated for "A" class category.

Planning Branch Remarks:

As required 13 staffs are allowed on permanent basis and rest of the 28 staff may be drafted from yard when such occurrence of BD activities.

As per Chapter 3 - para 3.1 (7) of Maintenance and Operation manual for140T cranes, ARTs & ARMEs (IRCAMTECH/GWL/MECH/ART/1.0 – December 2015) "Only 13 staff for the purpose of maintenance of breakdown and ART equipment in "A" class ART has been identified. When not required for break down duties, then other 31 staff out of Total 44 would carry on their normal work at ROH, IOH, Diesel Trip Shed and Diesel Shed etc.,"

In view of the above additional requirement if any may also be drafted from yard as mentioned above, at the time of occurrence of derailment of coaches and wagons at accident site by Rolling stock readings, crane, HRE & HRD.

Co-ordinating Officer's Views:

3) Examination and certification of Water tank special at VLK.

Planning Branch Remarks:

12 staffs were allowed for siding management at AIPS and PTMS/VLK siding. Since the activity is not a regular one and required only during the water scarcity, the staff already allowed may be utilized for this activity also.

Co-ordinating Officer's Views:

4) OEA of coaching stock at LR 1 to 10.

Planning Branch Remarks:

The details of said activity not given during the course of work study. Further, the details of activity and no. of coaches attended in the past not furnished even in the CO's remarks**.** OEA activity is purely a Coaching maintenance activity, which is not coming under the purview of this wagon depot work study. As per the present practice exist in Southern Railway, the coaching stocks stabling in other areas are maintained by the staff of the concerned coaching depot or the contract alive in the coaching depot. Hence, the man power demanded by the Division is not justifiable.

Co-ordinating Officer's Views:

5) En route train detention.

Planning Branch Remarks:

Staff were allowed for the said activity in para 3.8.11, Sl.No. 9 (C &D).

Co-ordinating Officer's Views:

6) Daily monitoring of Electronic in-motion weigh bridges.

Planning Branch Remarks:

The details of staff required for the said activity not given during the course of work study. However, it is learned that the said activity is very limited when there is a need for maintenance. Further, study team has already allowed the following staff for other activities as:

1.	Yard Maintenance other activities	:	35 staff
2.	ROH other activities	:	11 staff
3.	DF other activities	:	06 staff
	Total	**:**	**52 staff**

Whenever staff required for the monitoring/maintenance of Electronic in-motion weigh bridge the staff may be drafted from the above 52 staff allowed for other activities.

However, one Supervisor is allowed for the monitoring of Electronic in-motion weigh bridges.

Revised Sanction Vs Requirement:

Category	Sanction	Actual	Requirement	Surplus
SSE	26	20	21	5
JE	15	3	11	4
Total	**41**	**23**	**32**	**9**

Revised Recommendation No.1 :

Therefore, 5 SSE posts in GP Rs. 4600/-, 4 JE post in GP Rs. 4200/-, are found surplus to requirement and the same may be surrendered to the vacancy bank.

(Total posts – 9)

Co-ordinating Officer's Views:

7) Staff requirement calculated in para 3.8.11 – 9 special batch is not adequate.

Planning Branch Remarks:

Not agreed because Tower Wagon Certification average 2 per month, ICF Newly Manufactured coaches survey average 20 per month and En-route failure attention is average of 9.25 per month etc. Therefore, the 10 staffs have been already allowed and the same is adequately sufficient.

4.1 Revised Consolidated statement of Sanction Vs Requirement :

Category	Grade Pay (Rs.)	Sanction	Actual	Requirement	Surplus/ Shortage
Supervisors					
SSE	4600	26	20	21	5
SSS/CMS	4600	0	2	0	2*****

JE	4200	15	3	11	4
Total - I		**41**	**25**	**32**	**9**
Ministerial Staff					
Ch. OS	4600	3	1	1	2
OS	4200	6	1	2	4
Sr. Clerk	2800	2	2	2	0
Jr. Clerk	1900	3	4	3	0
Total - II		**14**	**8**	**8**	**6**
Artizan Fitters					
Sr. Tech/Fitter	4200	51	43	51	0
Tech. Gr. I/Fitter	2800	102	51	102	0
Tech. Gr. II/Fitter	2400	15	17	15	0
Tech. Gr. III/Fitter	1900	33	8	33	0
Helpers	1800	100	130	132	32
Total - III		**301**	**249**	**333**	**(-32)****
Ancillary Artizans					
Tech.Gr.I/Painter	2800	3	1	1	2
Tech.Gr.II/Painter	2400	1	0	1	0
Tech.Gr.III/Painter	1900	1	1	1	0
Sub total (A)		**5**	**2**	**3**	**2**
Sr.Tech/B. Smith	4200	4	3	2	2
Tech.Gr.I/B. Smith	2800	8	0	2	6
Tech.Gr.II/B.Smith	2400	1	2	1	0
Tech.Gr.III/B.Smith	1900	1	1	1	0
Sub total (B)		**14**	**6**	**6**	**8**
Sr.Tech/Welder	4200	14	12	12	2
Tech.Gr.I/Welder	2800	27	15	8	19
Tech.Gr.II/Welder	2400	3	9	3	0
Tech.Gr.III/Welder	1900	8	3	5	3
Sub total (C)		**52**	**39**	**28**	**24**
Sr.Tech/Riveter	4200	4	1	2	2
Tech.Gr.I/Riveter	2800	7	4	4	3
Tech.Gr.II/Riveter	2400	1	0	0	1

Tech.Gr.III/Riveter	1900	1	0	0	1
Sub total (D)		**13**	**5**	**6**	**7**
Sr.Tech/Machinist	4200	1	0	1	0
Tech Gr.I/Machinist	2800	0	1	0	0
Sub Total (E)		**1**	**1**	**1**	**0**
Sr.Tech./Crane Driver	4200	1	0	1	0
Tech.Gr.I/Crane Driver	2800	2	0	2	0
Tech.Gr.III/Crane Driver	1900	1	0	1	0
Sr.Tech (Auto Driver)	4200	0	1	0	0
Sub total (F)		**4**	**1**	**4**	**0**
Total – IV (A+B+C+D+E+F)		**89**	**54**	**48**	**41**
Grand Total (I+II+III+IV)		**445**	**334**	**421**	**24**

**** (-) 2 SSE/CMS is available in the Depot without sanction.***

***** The shortage of 32 posts of Artizans is adjusted against the excess 41 posts in Ancillary category. Out of 41 excess in Ancillary after adjusting the 32 shortage of Artizans, the remaining 9 posts are identified for surrender.***

Note: Outsourced activities were done in TNPM/MAS for Gas cutting and Panel Patch Welding in Unloadable wagons for the cost of Rs.81,28,474/-. Further, the Outsourcing proposals were sent to Sr.DFM/MAS for their concurrence for the activities of Scrubbing, cleaning and painting of ROH wagons and Scrap Collection work and shop heavy duty floor much removal, sweeping and cleaning at NSL, DPL shed, DF shed and 140 T crane shed.

However, the work study team has not considered for any surrender on account of outsourcing activities and also re-engagement staff.

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CHAPTER - V

5.0 FINANCIAL SAVINGS (Revised) :-

If the recommendations of the study report are implemented, the annual recurring financial savings will be as under :-

Sl. No.	Category	Grade pay (Rs.)	No. of posts	Money Value (Rs.)	Annual Financial savings (Rs.)
1	SSE	4600	5	1,04,888	62,93,280
2	JE	4200	4	82,768	39,72,864
3	Ch. OS	4600	2	1,04,888	25,17,312
4	OS	4200	4	82,768	39,72,864
5	Tech.Gr.I /Painter	2800	2	68,040	16,32,960
6	Sr. Tech./Black Smith	4200	2	82,768	19,86,432
7	Tech.I/ Riveter	2800	3	68,040	24,49,440
8	Tech.II/Riveter	2400	1	59,696	7,16,352
9	Tech.III/Riveter	1900	1	46,536	5,58,432
Total			**24**		**2,40,99,936**

ANNEXURE – I

SAVE' STATEMENT OF SSE/Wagon/TNPM/MAS by Sr. DPO/MAS & DME/W/TNPM AS ON 01.06.2018					
Category	**Grade Pay (Rs.)**	**Sanction**	**Actual**	**Vacancy**	**Excess**
Supervisory staff					
SSE	4600	26	20	6	0
SSE/CMS	4600	0	2	0	2
JE	4200	15	3	12	0
Sub total (A)		**41**	**25**	**18**	**2**
Ministerial staff					
Ch.OS	4600	3	1	2	0
OS	4200	6	1	5	0
Sr.Clerk	2800	2	2	0	0
Jr.Clerk	1900	3	4	0	1
Sub total (B)		**14**	**8**	**7**	**1**
Artisans staff					
Sr. Tech/Fitter	4200	51	43	8	0
Tech. Gr. I/Fitter	2800	102	51	51	0
Tech. Gr. II/Fitter	2400	15	17	0	2
Tech. Gr. III/Fitter	1900	33	8	25	0
Sub total (C)		**201**	**119**	**84**	**2**
Ancillary Staff					
Tech.Gr.I/Painter	2800	3	1	2	0
Tech.Gr.II/Painter	2400	1	0	1	0
Tech.Gr.III/Painter	1900	1	1	0	0
Sub total (D)		**5**	**2**	**3**	**0**
Sr.Tech/B.Smith	4200	4	3	1	0
Tech.Gr.I/B.Smith	2800	8	0	8	0
Tech.Gr.II/B.Smith	2400	1	2	0	1
Tech.Gr.III/B.Smith	1900	1	1	0	0

Sub total (E)		**14**	**6**	**9**	**1**
Sr.Tech/Welder	4200	14	12	2	0
Tech.Gr.I/Welder	2800	27	15	12	0
Tech.Gr.II/Welder	2400	3	9	0	6
Tech.Gr.III/Welder	1900	8	3	5	0
Sub total (F)		**52**	**39**	**19**	**6**
Sr.Tech/Riveter	4200	4	1	3	0
Tech.Gr.I/Riveter	2800	7	4	3	0
Tech.Gr.II/Riveter	2400	1	0	1	0
Tech.Gr.III/Riveter	1900	1	0	1	0
Sub total (G)		**13**	**5**	**8**	**0**
Sr.Tech/Machinist	4200	1	1	0	0
Sub total (H)		**1**	**1**	**0**	**0**
Sr. Tech./CraneDriver	4200	1	0	0	0
Tech Gr.I/Crane Driver	2800	2	0	2	0
Tech Gr.II/CraneDriver	2400	0	0	0	0
Tech Gr.III/CraneDriver	1900	1	0	1	0
Sr. Tech./Auto Driver	4200	0	1	0	1
Sub total (I)		**4**	**1**	**3**	**1**
Help[ers/C&W	1800	100	130	0	30
Sub total		**100**	**130**	**0**	**30**
Net total (A+B+C+D+E+F+G+H+I)		**445**	**336**	**151**	**43***

**** 2 SSE/CMS is also available in the Depot without sanction.***

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