

# WEST CENTRAL RAILWAY



## WORK STUDY REPORT

ON

*“Review of staff strength of Artisan Category of  
Wagon ROH Depot/NKJ”*

### STUDY PERSONNELS

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## **SYNOPSIS**

Indian Railway is one of the biggest transportation organizations among all other transport organizations in the country. In fact, Railway is backbone of the country's transport systems. In the recent time, Railway is facing tremendous competition from road and air. In the time of competition transport system should not only be agile, prompt and amenable but also financially viable. In order to bring economy in expenditure the optimum utilization of man, machine and material will have to be ensured.

In Railways, the process of absorption of modernization has been started and still in progress in every sphere of the system. As a result of which certain activities have become fully redundant/ obsolete from existing system. These technological up gradations have shown the considerable improvement in the efficiency and manpower productivity in Railways.

Keeping in view, all these constraints, Work Study Cell is assigned to conduct work study of ***“Review of Staff Strength of Artisan staff of Wagon ROH Depot/NKJ”*** with a view to assess the staff requirement as per the existing workload after technological up gradation and outsourcing. To arrive at the actual requirement of staff, the team held discussions with officers and supervisors of this division.

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## **CHAPTER-I**

### **INTRODUCTION**

- 1.1** The work study on “Review of Staff Strength of Artisan staff of Wagon ROH Depot/NKJ” includes as a ‘Crash Study’ for the year 2019-20.
- 1.2** The Indian Railways are engaged in sale of transport, utilizing rolling stock i.e. engine, coaches and wagons. These rolling stocks are periodically overhauled at nominated workshops and examined at different nominated stations and junction points for trouble free service. To ensure trouble free movement of Goods trains, C&W depots have been set up at nominated places, NKJ is one of them.
- 1.3** Due to growing traffic and introduction of heavier track structure, faster and more efficient types of wagons are required to be used. In the changed socio-economic scenario, role of new types of wagons as pneumatic types of wagons have increased for high quality of performance of traffic.
- 1.4** Wagon ROH Depot/NKJ was established on March 25, 1995. Earlier ROH (Routine Over Hauling) was being done at present New sick line. In 2007 BOXN-HL Wagons were introduced in Indian Railway & NKJ C&W Depot had accepted the challenge of maintenance of BOXNHL, rake examination & ROH of BOXNHL Wagons.

NKJ ROH Shed is one of the biggest ROH sheds of Indian Railways. With covered accommodation of 140mx50m, ROH shed is presently turning out about more than 500 wagons per month. For 2017-18, target of ROH Shed/NKJ out turn is 700 wagons per month.

- 1.5** ROH is required for new wagons after 02 years first time, then every 24 months, as per Railway Board’s letter No. 2013/M(N)/951/24 dt 21.08.2015
- 1.6 ROH of Air Brake wagon:**
  - 1.6.1** BOXN wagons are to be given Routine Over Haul (ROH) after every 24 month at nominated sick line/wagon depot, where proper facilities are provided. The ROH schedule is as follows:
    1. Lift the body, keep it on trestles and run out bogies.
    2. Strip bogie component for examination and repair as below:

- Strip spring and spring suspension arrangement including snubbing device. Check springs for free height and other defects. Replace where required.
  - Examine Bogie frame, Check frame alignment as per instructions contained in RDSO Technical Pamphlet.
  - Examine pivot for welding defects/cracks/abnormal depth due to wear. Replace where necessary and lubricate with graphite flakes in dry condition.
3. Strip brake gear levers and rods for examination of worn out /damaged parts.
  4. The equipment shall be given attention in accordance with the maintenance manual issued by respective air brake equipment manufacturer:
    - Lubrication 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 of feed pipe
    - Draining 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:
      - a) Connect the BP coupling of single car test rig to the corresponding coupling of the wagon to be tested. The couplings of the other end of the wagon to be closed with dummy coupling heads. Fix pressure gauge on the brake cylinder.
      - b) The single car test device should now be coupled to the main line of a compressor through a pipe.
      - c) 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.
      - d) For passing the wagon, all the parameters shall be within specified limits.
  5. Clean horizontal lever, hand brake & gears and lubricate.
  6. Examine head sock for damage, bent/cracks.
  7. Refit brake gear levers and rods, lubricate pin and other equipment and apply graphite to horizontal levers of empty load box.
  8. Replace worn out brake blocks.

9. Check wheel profile, turn the wheels as needed. UST of Axle to be carried out & turning of wheel to worn wheel profile during ROH.
10. All the wheels are to be checked ultrasonically and Axle box cap bolts are to be tightened up by torque wrench with proper torque and in no case old locking plates are to be reused.
11. CBC Knuckles are to be checked by contour gauge, anti creep/articulated rotary operation of locking arrangement to be checked.
12. Manual adjustment of brake gear to be done in accordance with wheel diameter.
13. Modification works are to be attended as issued by RDSO from time to time.

#### **1.6.2 Repair and Maintenance during ROH:**

In addition to all the work prescribed, the following work is also to be done in ROH:

- a. The bogie should be dismantled. Dismantling and assembly procedure as per norms.
- b. The bogie clearances and tolerances should be checked and rectified, if found necessary.
- c. Position the job for down hand welding and carry out the repairs. Ensure that suitable manipulators are used.
- d. After the repairs, the repaired surface should be checked with relevant gauge for correctness. Excess material, if any, should be removed by grinding or machining.
- e. All the wearing surfaces of bogie shall be brought to 'As New' condition.

#### **1.7 ROH Depot NKJ has an honour of being first ISO 50001:2011 Certified BOXN Repair & Maintenance Depot in Indian Railways.**

Wagon ROH Depot/NKJ also received (ISO 9001: 2008, ISO 14001: 2004 & OHSAS 18001: 2007) certification on 30.06.2017 under the scope of ROH and maintenance of BOXN/BOXNHL wagons.

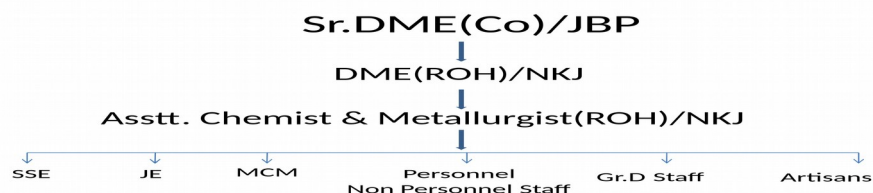
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## CHAPTER-II

### 2. Requirement of staffs at Wagon ROH Depot/NKJ

- 2.1 Mechanical department is functioning under the Chief mechanical Engineer assisted by Deputy Chief Engineer, XENs and AENs.

Wagon ROH Depot/NKJ is an activity of Carriage and Wagon department of WCR. This depot is functioning under the following set up:



### 2.2 Existing Staff:

- 2.2.1 Sanctioned strength, men on roll and vacancy position of C&W department, of NKJ is as under:

Categories	S/S	MOR	VAC
SSE(C&W) Safety Counsellor	59	48	11
SSE(Weigh bridge)	01	0	01
Lab Supdt.	02	01	01
COS(NP)	01	0	01
OS-1(NP)	04	04	0
Sr.Clerk (NP)	01	0	01
Jr. Clerk (NP)	01	02	+01
<b>Total</b>	<b>69</b>	<b>55</b>	<b>14</b>
JE(C&W)	22	27	+05
JE(C&W) Welding	02	01	01
COS(P)	0	01	0
OS(P)	04	01	03
Sr.Clerk (P)	02	03	+01
Jr. Clerk (P)	02	0	02
<b>Total</b>	<b>32</b>	<b>33</b>	<b>01</b>
Sr.Tech.Fitter	70	68	02
Tech. Fitter Gr.I	233	116	117
Tech. Fitter Gr.II	94	44	50
Tech. Fitter Gr.III	77	128	+51

Tech. Fitter Gr.III(Weigh Bridge)	04	01	03
Carpenter Gr.I	03	01	02
Carpenter Gr.II	01	0	01
Carpenter Gr.III	01	02	+01
Painter Gr.I	02	0	02
Painter Gr.II	01	0	01
Painter Gr.III	0	2	+02
MCM Blacksmith	02	03	+01
Blacksmith Gr.I	03	0	03
Blacksmith Gr.II	02	03	+01
Blacksmith Gr.III	01	01	0
MCM Turner	02	02	0
Turner Gr.I	05	05	0
Turner Gr.II	01	04	+03
Turner Gr.III	03	01	02
MCM Welder	16	10	06
Welder Gr.I	43	26	17
Welder Gr.II	21	04	17
Welder Gr.III	17	30	+13
MCM EOT Driver	02	01	01
EOT Driver Gr.I	06	03	03
EOT Driver Gr.II	02	04	+02
EOT Driver Gr.III	03	03	0
DSL Crane/Dr.	01	0	01
MCM Motor Driver	01	01	0
Motor Driver Gr.I	0	02	+02
Motor Driver Gr.II	02	0	02
Motor Driver Gr.III	02	01	01
MCM Ele. Fitter	01	0	01
Elec. Fitter Gr.I	01	0	01
Elec. Fitter Gr.II	01	0	01
Elec. Fitter Gr.III	0	0	0
<b>Total</b>	<b>624</b>	<b>466</b>	<b>158</b>
Office Peon	01	01	0
S/Wala	01	01	0
Helper	471	396	75
Store H/Gr.II	07	01	06
<b>Total</b>	<b>480</b>	<b>399</b>	<b>81</b>
<b>G.Total</b>	<b>1104</b>	<b>865</b>	<b>339</b>

### 2.3 The C&W department/NKJ is responsible for:-

- 1 Departure Yard,

- 2 New Yard
- 3 ROH,
- 4 Old sick line,
- 5 Air Brake
- 6 Scrap
- 7 Ultrasonic Test
- 8 Break Down
- 9 Welding
- 10 Material
- 11 M&P
- 12 New Sick Line
- 13 Passenger Yard KTE
- 14 Passenger Yard KMZ
- 15 Wheel
- 16 Electric Overhead Traction etc.

**2.4 There is no separate scale check of Wagon ROH depot/NKJ. Working Staff of ROH depot has been taken from whole sanctioned strength of C&W Depot/NKJ. There are so many works of C&W department in addition to ROH Depot.**

**2.5 Point wise deployed staff position of C&W Depot/NKJ is as under:**

SN	Section	ON Roll staff
1	Admin office	06
2	Personnel office	07
3	<b>ROH Shed</b>	<b>346</b>
4	Old Sick Line	38
5	New Sick Line	36
6	Air Brake	21
7	Yard	242
8	Machine & Plant	25
9	Material Control & stores	14
10	KTE	90
11	KMZ	38
12	Break Down	56
13	Weigh Bridge	03
14	Control office	09
15	CWI	02
<b>Total</b>		<b>933</b>

**As per above para, only 346 staffs are deployed at Wagon ROH Depot/NKJ.**

**2.6 Workload:**



At ROH Depot/NKJ, following types of wagons have been worked carried out:

1. BOXN
2. BCN
3. BRN
4. BOBYN
5. BOBRN

**2.7** There are so many sections in Wagon ROH Depot/NKJ. Its description is being given in following way:

SN	Section	Description
1.	ROH (Body)	Deals with all kinds of repair work of BOXN. Recording, Lifting Gang (Wagon is being disassembled & assembled with help of EOTs (Electric Overhead Tractions)), Medium Repair (viz cutting, welding, under gear repairing etc.), Heavy Repair (for Centralized Buffer Coupler (CBC) checking and repairing), Rivit (Rivit Braking, Transportation, Locking & Buster Operator), Miscellaneous, Tool Room, Compressor, Painter, For Air brake Employee, Billing, Patch work.
2	ROH (Trolley)	Lifting (Assembling & Disassembling while lifting the trolley), Adaptor (Checking of old adapter & fitment of new adapter), Medium Repair (Three Gauges) (Mechanical Repair), CTRB (Cartridge Tapped Roller Bearing) (Bearing checking, opening of stud and their fitment), Fitment of Side Frame Key, Wheel Gauging, Wheel Recording, Trolley Gauging, Trolley Recording, Material handling, Wheel Dia & Populating, Spring, Turner, Shock Pulse Monitor (SPM), cleaning, other work
3	Air Brake	SWTR (Single Wagon Test Rig), Angle Cock Repair, Distributor Valve Repair (Slack Adjuster Barrel), AR/DC (Auxiliary Reservoir/ Dirt Collector), Old Sick Line, Special Work (Other works as per need of the hour), Recorder
4	M&P (Machine & Plant)	Deals with scheduled maintenance, Brake down maintenance and other types of all maintenance works. Daily Inspection, 15T EOT/10T EOT, New Sick Line Compressor work, Wheel Lathe, Old Sick Line, Fork Lifter, Boleno Driver, Driver (all transportation work like material handling), Wheel truck (Cartridge Tapped Roller Bearing Wheel transporting in C & W depot), electrical Breakdown, Mechanical Break Down, Vehicle Repair, Writer (letter correspondence, Machine & Plant Proposals, Asset & Dead stock register daily diary, PCDO (Periodical Confidential Demmy Official) etc., 16/24 for any Break Down Maintenance)

5	Welding	Welding work in all sections (ROH & Sick line).
6	Statistics	Deals all kinds of data collection of all wagons of ROH, sick lines, Yard etc. Weigh Bridge, G+2 Building, Wheel Trolley, WARS (Wagon Application Repair System) Computer feeding of all data, PCDO/MCDO & other work, Neutral Control to note about the fitting of Neutral control, Work Noting Computer entry & Record Maintenance of ROH
7	Material	Deals with all kinds of materials, Material issue from AMM/Store & hand over, Material distribute to ROH Section, Material issuing to Old Sick Line, New Sick Line, Yards & different Section, Shearing Material Control operation, issue ticket preparation for material drawing from AMM, BOXN & to keep record of issue ticket, Material collecting from other depot on assistance basis, Gas cylinder Loading/Unloading, Warranty section
8	UST(Ultra Sonic Testing)	Deals with all kinds of welding works in all sections as Cleaning axle face, Taking axle particular & record feeding, Punching on disk hub, handling of machine & scanning, scanning & saving.
9	Miscellaneous Work	Writer, Compressor Sweeper (ROH shed, G+2 building, cycle stand), Gate Keeper, Neutral Dep., Sheet cutting & material Keeping (operating shearing machine and handling of material), Operator (fork Lifter Tractor), Collection of scrap (Lift the material with the help of fork and tractor kept to respective scrap lot), Emergency work
<b>Total</b>		
10	Administrative Building	Deals with staffs' personnel file, DAR (Discipline and Appeal Rules), all kinds of leave records, salary etc., assist the depot working, Miscellaneous work
11	Other than miscellaneous work	Weigh Bridge, Fire Extinguisher,

## 2.8 Present average ROH out turn: (16-17)

MONTH	ROH OF BOXN	ROH OF BOXNHL/MBS (Modified System) Brake	ROH OF OTHER THAN BOXN	TOTAL ROH
APRIL	85	514	01	600
MAY	83	428	04	515
JUNE	229	276	05	510
JULY	256	245	07	508
AUGUST	119	445	06	570

SEPTEMBER	50	524	06	580
OCTOBER	60	540	01	601
NOVEMBER	59	514	02	575
DECEMBER	40	569	01	610
JANUARY	74	495	07	576
FEBRUARY	31	506	03	540
MARCH	54	498	02	554
<b>TOTAL</b>	<b>1140</b>	<b>5554</b>	<b>45</b>	<b>6739</b>
<b>AVG/MONTH</b>	<b>95</b>	<b>463</b>	<b>04</b>	<b>562</b>

**2.09 Year wise performance data of ROH Shed NKJ is as under:**

Year	Target	Out turn	% target achieved
2013-14	525	546	104.00
2014-15	575	602	104.66
2015-16	640	609	95.14
2016-17	700	562	80.23
2017-18	700	547	78.14

As per above table, out turn of ROH per year has been decreased due to shortage of staff and less capacity of shed (the capacity of ROH/Depot is 16 trestles only, it should be 24 trestles to achieve target daily).

**2.10 Requirement of staff as per Yard Stick:** As per CAMTECH WAGON MAINTENANCE MANUAL's CORRECTION SLIP No.8 dt 10.08.2015. (Annexure-1)

156 men hours per ROH per day is required, i.e.  $156/8=19.5$  men  
 So, the target is 700 wagons per month i.e. 23.33 wagons per day.  
 $=23.33 \times 19.5 = 454.93$  men i.e 455 men  
 $=455-346=109$  men are required.

**But practically, it is not possible to deploy the employees with addition to existing staff because staff crisis problems at all points of C&W department there.**

**2.11 Outsourcing:**

**2.11.1 Advantages of Outsourcing Activities:**

- Monetary Saving compared to present system.
- Availability of physically fit person for the job.
- No detention of wagons due to absenteeism, absconding from duty, incapability of doing the job due to old age etc.
- Administrative convenience.

- e) Less / no union activities, therefore better work culture.
- f) Enforce conditions as per the requirement and benefits to Railways.
- g) Saving of valuable manpower.

#### 2.11.2 Following activities have been proposed for outsourcing:

1. Hiring of 08 welders for welding work of BOXN Wagon at ROH Shed/NKJ.
2. Hiring of 12 unskilled workers for housekeeping & Material handling work of ROH shed/NKJ.

#### 2.12 Some of the activities of ROH/NKJ are required to be outsourced. List of area of outsourcing and nos. of man power is given below:

S N	Activity	No. of staff deployed in present	No. of staff required from outsourced	Staff to be surplus
1	<b><u>Material Activity</u></b> (No. of items drawn from AMM/BOXN/Store and distributed to various working points on daily basis)	04	06	03
2	<b><u>Scrap activity</u></b> Un-used material, cutting of metals, condemned items etc. Pick up from NSL, OSL, D/Yd, N/Yd & ROH shed to deposit in scrap yard.	06	10	04
3	<b><u>Door repair activity</u></b> Defective door collected from NSL, OSL & ROH shed and bent doors has straitening & repaired	06	06	03
<b>TOTAL</b>		<b>16</b>	<b>22</b>	<b>10</b>

#### 2.13 Comparative figures of different ROH depots of Indian Railways:

Railway	Depot	Area in Sq. metres	Out turn Target	Deployed staff	Out turn per month	Benchmark	Outsourcing done
WCR	NKJ	7000	8400	346	690	0.50	At present no outsourcing at Depot, proposed for outsourcing of housekeeping and handling of materials and welding activity
SECR	BIA	8550	7786	434	636	0.68	Non core activities (cleaning, scrap collection etc.), Welding activity, C-type repairing.

SER	BNDM	7200	3600	172	300	0.57	Welding activity, C-type repairing.
WCR	KOTA	1000	1200	45	100	0.45	Welding activity completely.

## 2.14 Critical Analysis:

ROH (Routine Over Hauling) work can be done only at ROH Depot. There is no separate sanctioned strength of ROH Depot. Due to such peculiar reason, it is wholly dependent on C&W department NKJ for fulfillment of staff.

As per RB letter no. E(MPP)2016/1/59 dtd 10.01.2017, Multi-skilling can be planned from the initial stage itself in new activities in Depot. The new activities even in the older establishments can be encouraged by calling for suggestion from employees and employee Unions. This will lead to huge reduction in costs and increased productivity. Multi skilling should be encouraged for artisans' category. To avoid delays for want of other skilled man, it is necessary that multi skilling for Artisans should be introduced.

As per para-2.13, the work-study team observed NKJ, Bhilai, BNDM and Kota ROH Depots activities and found that all noncore activities, Welding and C-type repairing activities at Bhilai & BNDM depot are outsourced which save a lot of man power, time and money. No activity in ROH Depot/NKJ is outsourced. ROH Depot/NKJ has also proposed for outsourcing of housekeeping & handling of materials and welding work activities.

On the similar lines in Kota/ROH depot there is no welding staff. All the works related to welding activities are being done by private labours on minimum wages act. This is the only reason for lifting best benchmarking position on IR of Kota/ROH Depot which is below 0.5.

The qualities of service of private labours are much better than government's labour as welders.

In light of above facts, the work of welders can be outsourced and achieve the outturn targets easily. The posts involved can be surrendered.

**Financial Implications on outsourcing of 30 posts of artisan staffs are as under:**

Particular	Amount in Rs.
Mean of grade	37,450

Transportation Allowances	1800
Salary Per Month	39,250
X 12 = Per annum	4,71,000
X No. of posts (30)	1,41,30,000
<b>One Day Expenditure on A/C of Salary</b>	<b>38712</b>
Per day rate of labour as per minimum wages act	469.25
<b>One Day Expenditure for contract labour (30)</b>	<b>14,077.5</b>
	<b>38,712-14,077</b>
<b>Net savings per day if outsourced</b>	<b>=10,558</b>
<b>Net savings per annum</b>	<b>38,53,670</b>

These calculations are excluding PLB, Night Allowance and other allowances, Pass/PTO facilities, Medical and other welfare facilities.

Hence, the utility of staff in that section will become nil after commencing same working as on WCR (Kota/ROH), SECR (BIA/ROH) and SER (BNDM/ROH) Depot .

#### 2.15 Conclusion:

Modification of ROH depot is required as like as Bhilai/ROH depot of South East Central Railway. 30 posts of Artisan related work should be declared surplus and surrendered immediately on the same lines of WCR (Kota/ROH), SECR (BIA/ROH) and SER (BNDM/ROH) Depot. Scope of outsourcing is also available in the field of noncore activities.

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### CHAPTER-III

#### 4. FINANCIAL IMPLICATION

##### 4.1 The financial implications involved in surrender of 30 artisan staffs of NKJ/ROH Depot, identified as surplus are as follows:-

<b>Particular</b>	<b>Amount in Rs.</b>
Mean of grade	37,450
Transportation Allowances	1800
Salary Per Month	39,250
X 12 = Per annum	4,71,000
X No. of posts (30)	1,41,30,000

<b>One Day Expenditure on A/C of Salary</b>	<b>38712</b>
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<b>Net savings per annum</b>	<b>38,53,670</b>

**So, Net savings = 38.54 Lakh per annum.**

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