EASTERN RAILWAY

WORK STUDY REPORT

ON
REVIEW OF STAFF STRENGTH VIS-À-VIS WORKLOAD OF ARTISAN STAFF AT PCO IN LILUAAH WORKSHOP UNDER MECHANICAL DEPARTMENT

(STUDY NO.WSER-15/19-20)
(Submitted on: 31.12.2019)

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The study team is also very thankful to Senior Section Engineer, Junior Engineer and other staff of PCO for providing necessary information in connection with the subject study.

METHODOLOGY ADOPTED

The following methodology has been adopted in carrying out the study:

- Collection of data
- Discussion with concerned officers and SSEs of PCO
- Study of existing workload
- Critical analysis on deployed man power against existing workload

TERMS OF REFERENCE

The subject work study has been undertaken by the GM's Efficiency Cell of Eastern Railway in the financial year 2019-20 under the following terms of reference:-

(i) Evaluate the quantum of existing workload.

(ii) Examine the deployment of Staff against workload.

(iii) To identify saving achievable in terms of manpower.

SUMMARY OF RECOMMENDATION

Sl. No.	***Recommendation***	***Para reference***
1	As per analysis made in the study report, it is recommended that the total actual requirement of Artisan staff at PCO wing duly revised will be 165 against a total sanctioned strength of 195 posts which will result in surrender of 30 posts from the PCO/LLH wing under Mechanical Department.	*3.11*

EXECUTIVE SUMMARY

Study Name & No.:	"REVIEW OF STAFF STRENGTH VIS-A-VIS WORKLOAD OF ARTISAN STAFF AT PCO SECTION IN LILUAH WORKSHOP UNDER MECHANICAL DEPARTMENT. ***(STUDY NO.WSER-15/19-20)***
Year of study:	**2019-20**
Terms of reference:	(i) Evaluate the quantum of existing workload. (ii) Examine the deployment of Staff against workload. (iii) To identify saving achievable in terms of manpower.
Methodology:	• Collection of data • Discussion with concerned officers and SSE of PCO • Study of existing workload • Critical analysis of workload and manpower.
Existing Sanctioned Strength	195
Existing Men on Roll	71
Vacant post	124
Revised Requirement	165
Proposed Surrender	30

CHAPTER-I

1.0 INTRODUCTION:

Indian Railways is the life-line of nation for providing Transportation facility over the length and breadth of the country. Its vision is to provide efficient, affordable, customer-focused, environmentally sustainable integrated transportation solutions and to be the vehicle of inclusive growth, connecting regions, communities, ports and centers of industry, commerce, tourism and pilgrimage across the country.

1.1 Indian Railways manufactures much of its rolling stock and heavy engineering components at its six manufacturing plants, called Production Units, which are managed directly by the Ministry. Popular rolling stock builders such as CLW and DLW for electric and diesel locomotives; ICF and RCF for passenger coaches are Production Units of Indian Railways. Over the years, Indian Railways has not only achieved self-sufficiency in production of rolling stock in the country but also exports rolling stock to other countries.

1.2 Besides the above, in Indian Railways, various Railway Workshops play a vital Role in connection with POH/ROH/IOH/NPOH of different kinds of Wagons, coaches *(both AC & Non-AC)* and Locomotives *(both Diesel & Electric)*.

1.3 To cope up with the above changing scenario, Infrastructural development is required in the area of manufacturing & periodical overhauling of various types of passenger coaches, goods wagons and Diesel/Electric Locomotives.

1.4 For any kind of development, money is the most important part in an organization like Indian Railways. If good financial discipline can be practiced and expenditure due to man, machine & materials can be optimally used then the organization can be survived and flourished.

1.5 At this juncture, the role of Railway Efficiency & Research Directorate is also very important in connection with 'Benchmarking', 'Rationalizing of Man-Power', etc.

1.6 Indian Railway is facing tremendous financial crunch after implementation of the 7th pay commission. Operating ratio is gradually increasing in Railways. Though Indian Railway is not a business organization but to survive, it is always essential to make the organization in profit i.e. operating ratio should be less than 100.In Performance Efficiency Index shown in the corporate plan booklet published by the Eastern Railway, the "Operating Ratios" from 2015-16 to 2018-19 are as given below –

Year	Operating Ratio
2016-2017	165.25
2017-2018	181.15
2018-2019	185.98
2019-2020	159.65 (Proposed)

In view of the above, Eastern Railway has taken serious consideration to make the operating ratio within limit (below 100%) by decreasing the Working Expense and increasing the earnings. For this purpose, Rly Board issued nos. of circulars, orders etc to minimize Expenses and increase Earnings. The Zonal Railway also implements various measures for financial discipline.

1.7 Considering the above, the railway authority has suggested conducting the subject study in order to provide **need based requirement of artisan staff at PCO in LLH workshop** consequent upon the changed scenario. The subject work-study has been undertaken by GM's Efficiency Cell/E.Rly during the current financial year 2019-2020 to improve the productivity index of the railway. As per terms of reference, the study team has thoroughly observed the activities and deployment of Artisan staff at different units and critically analyzed the involvement of staff to ascertain their optimum utilization and to find out the need based requirement.

CHAPTER-II

2.0 **Existing Scenario:**

There are three major Workshops in Eastern Railway for POH/ROH/IOH/NPOH repair of different kinds of Wagons, coaches *(both AC & Non-AC)* and Locomotives *(both Diesel & Electric)*. These Workshops are as follows-

i) Liluah Carriage & Wagon Workshop/Liluah/E.Rly.

ii) Kanchrapara Carriage & Wagon Workshop & Kanchrapara Locomotive Workshop/ Kanchrapara/E.Rly.

iii) Jamalpur Locomotive Workshop/Jamalpur/E.Rly.

2.1 Liluah Carriage & Wagon Workshop (An ISO-9001:2008 & ISO-14001-2004 Certified Organization) is one of the IR's oldest & biggest Railway Carriage Repair Workshop of India. The Workshop is engaged in periodical overhauling of all kinds of coaches & wagons. It also facilitates repair and overhauling of components. The above mentioned activities are performed in different shops.

2.2. Different shops or work points along with their respective activities are as under:

Sl.No.	***Shops***	***Activities catered by the shops***
1	M	Coaching Repair Shops
2	CR	
3	MR	
4	N	Paint Shop
5	T	Trimming Shop
6	L	Wagon Repair Shop
7	J	Sheet metal works, shearing, bending, drilling, punching, pressing work, etc
8	A	Blacksmith
9	C	Tin smith
10	E	Spring shop
11	G	Machine shop
12	HT	Heat treatment
13	K	Wheel shop
14	TR	Tool room
15	H	Mill Wright

2.3 The need to improve productivity in Railway workshops for ensuring better utilisation of man-power, machinery & Plant, and covered area was being felt even prior to Independence. Piece work bonus system was in existence in certain workshops of India Railways like Jamalpur, Kanchrapara and Perambur prior to Independence. The bonus system adopted in each workshop however varied from workshop to workshop. The Railway Board took a decision in 1949 to introduce some form of incentive scheme in railway workshops to afford direct financial incentive to workers who exceeded a minimum level of performance. The first formal incentive scheme was introduced in Chittaranjan Locomotive Works in December 1954. Time was the basis of this scheme and the time standards used were predetermined after systematic work measurement. The scheme was a considerable success and it was extended to Integral Coach Factory in 1960. Review of productivity in Railway Repair Workshops revealed low standards of efficiency which could best be improved by the introduction of incentive scheme which would provide better control of activity, more systematic flow of work and more effort by individual worker. The decision to introduce the incentive scheme in Railway Repair Workshops on Chittaranjan pattern was taken in 1958. The actual introduction was effected in 1960 after setting up the **"Production Control Organization**" (PCO) in individual railway workshops. Originally this scheme was introduced in the railway Repair Workshops of the Mechanical Department and the same extended to Signal & Telecommunication workshops, Civil Engineering Workshops and the Electrical Sections attached to the Mechanical Workshops. This incentive scheme is also known as "the system of payment by results."

2.4 **PRODUCTION CONTROL ORGANISATION (PCO)**

PURPOSE: To obtain a most economic combination of resources i.e. the best use of man, machine and materials.

Best use of Men, Machine & Materials:

(i) Best use of Men - Assign appropriate person to a location in appropriate number.

(ii) Best use of Machines-

- Machines should be optimally utilized with no idle time
- Machines should be maintained as per the schedule
- Machines should be in good working conditions
- Machines should deliver products in minimum time with minimum wastage with accuracy

(iii) Best use of Materials-

- Materials should be selected as per required specifications
- Materials should have well past record of performance

We should select a best method of doing a work so that a product can be finished in minimum time in minimum cost with desired quality.

2.4.1 Production Engineer

The Head of the Workshop, Chief Workshop Manager (CWM) is assisted by the Production Engineer (PE) who is responsible for efficient planning and functioning of the Production Control Organization (PCO). The broad function of this department is the function of the following Offices/Sections:-

a) Progress Office (PPS)

b) Planning Office (PNS)

(i) Drawing Office

ii) Rate fixing (RF)

c) Inspection

2.4.2 A) **Progress Office (PPS)**: Main Function of Progress Office is-

- Assign work order number to a work.
- Arrange for printing of documents as required (IS-1 to IS-34)
- Release all documents to Shops
- Specify date of completion (PDC)
- Draw raw materials from Stores against each requisition
- Coordinate progress of manufacture of components
- Preparation of monthly report of production and their deliveries
- Inter-section and inter-shop movement of components

B) **Planning Office:**

(i) **Planning Section** (**PNS):**

- Study of drawing and specifications
- Estimation of billed-off materials for a job
- Taking makes or buys decision
- Preparation of Scroll process Sheet (IS-1) indicating sequence of operations
- Section or load centre where the operation is to be carried out

•Study the layout of shops where a particular component is to be manufactured

•Select suitable machines

•Deciding requirement of special tools, Jigs and Fixers

•Ensuring availability of handling facilities

(ii) **Rate Fixing Section (RF)** :

•Responsible for fixing allowed time for various operations involved in the process sheet

•Maintenance of synthetic data for fixing rates (time) for individual operation

• Indicating allowed time in the process sheet for each operation involved

• To scrutinize all the completed piece work cards

• Issue of excess time cards

(iii) Drawing Office: Main Functions are-

•Custodian of all drawings.

•Preparation of part drawing to facilitate manufacturing operations.

•Designing/drawing various Jigs and Fixers, template, gauges, etc. for economical manufacture of components

C) **Inspection:** Important functions are-

•Inspection of components, assemblies etc. on completion of each operation to ensure the production as per the drawings and specifications.

•Bringing to the notice of the concerned authority of deviations from Drawings and Specifications for rectification and rejection.

•Certification on job cards and route cards regarding quantities passed or rejected.

2.4.3 The category-wise Sanctioned strength vis-à-vis On-roll position of Artisan staff in PCO as on 29.08.19 is tabulated as under (Annexure-A):

Category	Trade	S/S	MOR	Vacancy
Tech-I	Fitter	48	16	32
	B/Sm	0	0	0
	Machinist	3	5	-2
	Riv	5	0	5
	Carpenter	15	8	7

	Turner	0	1	-1
	Welder	31	14	17
	S/Writer	2	0	2
	FMI	1	0	1
	Grinder	1	0	1
	Gunner	1	0	1
	T/SM	1	0	1
	Sp. Maker	1	0	1
	Painter	0	1	-1
	Lifter	0	1	-1
	Rigger	0	1	-1
	Total	**109**	**47**	**62**
Tech-II	Machinist	2	0	2
	Fitter	22	8	14
	Gunner	1	1	0
	Welder	12	2	10
	Carpenter	3	1	2
	Painter	2	0	2
	Trimmer	1	0	1
	Total	**43**	**12**	**31**
Tech-III	Carpenter	6	0	6
	Lifter	18	0	18
	Machinist	2	0	2
	Welder	13	8	5
	Riv	2	0	2
	Fitter	0	5	-5
	Turner	2	0	2
	Total	**43**	**13**	**30**
GRAND TOTAL		**195**	**72**	**123**

2.4.3.1 Category wise vis-à-vis Section wise deployment of Artisan staff as on 14.11.2019 is tabulated below (Annexure-A1):

Sanctioned Strength & MOR of Technician			
Category	S/S	MOR	Vacancy
Tech-I	109	50	55
Tech-II	43	15	29
Tech-III	43	6	29
Total	**195**	**71**	**124**

Section wise Deployment of Artisan Staff				
Section	Tech-I	Tech-II	Tech-III	**Total**
PNS				
PPS				
RF	7	1	1	**9**
Inspection	43	14	5	**62**
TOTAL	**50**	**15**	**6**	**71**

2.4.4 The work load of LLH workshop in terms of outturn is tabulated below:--

COACHING OUTTURN IN VU FROM THE MONTH OF SEPT'18 TO AUG'19													
			Dec'18	Jan'19	Feb'19	Mar'19	Apr'19	May'19	Jun'19	Jul'19	Aug'19	Sep'19	Oct'19	Nov'19
POH	LHB	Non AC	6	22	10	18	13	18	16	19	20	20	15	17
		AC	21	29	22	24	25	26	24	22	26	22	23	32
	Other than LHB	Non AC	146	141	134	127	130	127	119	140	126	123	118	119
		AC	35	36	36	40	44	42	34	46	42	33	29	36
TOTAL POH IN VU			208	228	202	209	212	213	193	227	214	198	204	204

			Dec'18	Jan'19	Feb'19	Mar'19	Apr'19	May'19	Jun'19	Jul'19	Aug'19	Sep'19	Oct'19	Nov'19
IOH	LHB	Non AC	3	10	6	4	9	7	6	8	7	1	0	0
		AC	3	7	8	6	3	3	2	3	1	1	1	1
	Other than LHB	Non AC	1	1	4	10	1	0	0	0	0	0	0	0
		AC	4	2	4	5	3	0	1	1	0	1	0	1
TOTAL IOH IN VU			11	20	22	25	16	10	9	12	8	3	1	2

WAGON OUTTURN IN VU FROM THE MONTH OF SEPT'18 TO AUG'19											
Sept'18	Oct'18	Nov'18	Dec'18	Jan'19	Feb'19	Mar'19	Apr'19	May'19	Jun'19	Jul'19	Aug'19
122	112	122	125	124	125	125	130	131	131	131	140

2.4.5 The details of deployment of Artisan staff i.e. floor wise deployment of artisan staff at different sections under PCO/LLH is given below.

2.4.5.1 Deployment of Supervisors & artisan staff at RF section:

Deployment of Supervisors & Artisans at Rate Fixing Section under PCO/LLH (Mech.)				
Sl. No.	Shop /Section	SSE	Artisan	Remarks
1	Wagon (L) -shop, CBC / Draft Gear, Air Brake (L) -Shop	1	01 (Retiring on Nov'19)	SSE / JE Retiring on Aug'20
2	Sheet Metal (J) -shop	01	01	……..
3	Coach corrosion (M, CR & MR /SCR - shop)	01	01	……..
4	Coach Furnishing (MR/ Repair Bay, M-shop, AC & Raj, CDTS, Finishing I & II, Cabinet)	1	01	SSE / JE Retiring on Jan'20
5	Paint (N) -Shop	1	01	SSE / JE Retiring on May'20
6	Trimming (T) -shop	1	Nil	SSE / JE Retiring on Feb'20
7	Lifting Bay (Coach Bogie) - Shop	01	01	……..
8	Finishing (Tank, Alarm Signal, Pipe & Masson) - Shop	01	Nil	……..
9	Machine (G) & Tool Room (TR) -Shop	01	01	……..
10	Mill Wright (H) & Tin smith (C) - Shop	01	01	……..
11	Spring (E) ,Black Smith (A) & Heat Treatment (HT) -Shop	01	Nil	……..
12	Welding (W) -Shop	01	01	……..
13	Wheel (K) -Shop	01	Nil	……..
14	SSE (MPP Cell)	01	…….	
Total		**14**	**9**	

2.4.5.2 Deployment of Supervisors & artisan staff at Inspection section:

Deployment of Supervisors & Technicians at Inspection cell under PCO/LLH (Mech.)								
Sl. No.	Section	Deployment						
		SSE/JEE	Sr. Tech (On Lean)	Tech-I	Tech-II	Tech-III	Total	
							SSE/JEE	Tech.(I+II+III)
1	Wheel Insp.(K)	8	9	7	4	1	8	12
2	Spring Insp.(E)	1	0	1	1	0	1	2
3	T-Shop Insp.	1	2	2	0	0	1	2
4	J-shop Insp.	1	0	3	0	0	1	3
5	L/Airbrake Insp.	1	2	1	0	0	1	1
6	TR-Shop Insp.	1	1	0	0	0	1	0
7	Lifting Bay Insp.(MR)	3	3	6	0	0	3	6
8	N-Shop Insp.	1	2	3	0	0	1	3
9	C-Shop & H-Shop Insp.	1	1	0	0	0	1	0
10	A-Shop Insp.	1	1	2	3	0	1	5
11	Welding shop Insp.(L)	1	1	0	0	1	1	1
12	Wagon Insp.(L)	2	0	1	1	2	2	4
13	MR/Air Brake Insp.	1	0	1	0	0	1	1
14	M & MR shop (Furnishing)	3	1	5	1	0	3	6
15	Corrosion Insp.	6	5	6	3	2	6	11
16	G Shop	2	0	0	0	4	2	4
17	Comp. Sec.	0	0	0	0	1	0	1
	TOTAL	**34**	**28**	**38**	**13**	**11**	**34**	**62**

2.4.5.3 The work load catered by RF section is tabulated below.

Sl. No.	Shop / Section	Avg. No. of Pages of inspection Sheet handled avg. per month	No of Summary Sheet & Squad Card (IS-11) handled avg. Per month	No of Time study from Sept'2018 to Aug'2019
1	SSE/RF Wagon (L - Shop, L/ Air BK, CBC/ Draft Gear Section)	Computer Sheet -424 nos	10	8
2	SSE/RF Coaching, MR-Shop, (Furnishing-Section)	Manual Sheet -4874 , Job card (IS - 9 & 11)-24 nos	23	2
3	SSE/RF Manufacturing, Tin Smith (C) & Mill Wright (H)- Shop	AT allotted of Job Card (IS-9 & IS 11) -- 248 nos. Generation of Job card -83	0	2
4	SSE/RF Coaching, MR-Shop (Alarm Signal, Pipe, Water Tank & Epoxy Section)	Manual Sheet -3619 nos	10	2
5	SSE/RF Manufacturing, Tool Room (TR) & Machine (G) Shop.	Manual Sheet (IS- 34 sheet & Insp Sheet) -51 nos. AT alloted of Job Card (IS-9 & IS 11) - 152 nos. Generation of Job card - 139	No of Squard Summary Card (IS-11) - 32	29
6	SSE/RF Coaching, Trimming (T)-Shop	Manual Sheet -302 nos	18	2
7	SSE/RF Coaching, Paint Shop (N)	Manual Sheet -1200 nos	22	2
8	SSE/RF Manufacturing, Heat Treatment (HT), Smithy (A) & Spring (E) Shop.	AT allotted of Job Card (IS-11 & IS-9)-83 no s , Manual Sheet - 17.	No of Squard Summary Card (IS-11)-10	26
9	SSE/RF Coaching, M, MR & CR Corr. Shop	Manual Sheet -2100 nos	84	Assistance being provided to all the time studies
10	SSE/RF Manufacturing, Welding (W) Shop.	Job Card (IS-9 & IS 11) -- 75 nos. Generation of Job card - 38 nos.	0	14
11	SSE/RF Coaching, MR-Shop/ Lifting Bay Section.	Manual Sheet -500 nos Computer Sheet - 1680 nos	24	2
12	SSE/RF Manufacturing, J- Shop	Manual Sheet (IS-34) - 23.	8	29
13	SSE/RF Manufacturing, K- shop. (Wheel shop)	Manual Sheet -34, SWO - 5 Nos. , Job Card- IS - (9 & 11) - 68	10	1

2.4.5.4 Deployment of Supervisors & artisan staff at Planning (PNS) and Progress (PPS) section is given below.

Section	Supervisor			Artisan Staff
	SSE	JE	Total	
Planning (PNS)	1	1	2	0
Progress (PPS)	6	0	6	0

2.4.5.5 The work load catered by PNS (Planning) & PMS (Progress) section as well as RF section is tabulated below:

SPS COMPLIED FROM THE MONTH OF SEPT'2018 TO AUG'2019												
Type	Sept'18	Oct'18	Nov'18	Dec'18	Jan'19	Feb'19	Mar'19	April'19	May'19	June'19	July'19	Aug'19
IS order (New)	4	7	7	5	6	1	5	10	12	1	1	10
IS order (Old)	30	18	42	31	35	14	40	53	47	4	47	11
SWO (RPL)	90	102	87	89	73	88	87	68	72	72	97	74
SWO (Non RPL)	21	18	25	29	14	24	27	25	26	15	29	29
Total	145	145	161	154	128	127	159	156	157	92	174	124
OM	**TOTAL SPS FOR OM JOB COMPLIED FOR THE YEAR OF 2018 --2019 = 15 nos**											

IS Order	Inter shop manufacturing order
SWO	Shop on shop manufacturing order
RPL	Repair part list
OM	Outstation manufacturing order

CHAPTER-III

3.0 CRITICAL ANALYSIS:

3.1 The decision to introduce the incentive scheme which is also known as "the system of payment by results" is implemented to increase the efficiency of individual worker and thus to increase the production of a unit in Railway Workshop. The scheme is based on the concept that an average worker while working under non-incentive conditions is assumed to be working at a rating of 60 units. The same worker while working under incentive conditions would be expected to improve his rating to 80 units i.e. 33-1/3% more. It is expected that an average worker would complete an operation in 3/4 of the allowed time. The time saved/lost on the time allowed in each operation is calculated separately for each worker and the gain/ loss cannot be carried over to the next month. Results of Incentive working will be determined on the total quantity "passed" in respect of each operation as recorded on the job-card. The 'passed" out-turn should be recorded by the inspector concerned on job cards under his dated initials. The inspector who should examine the out-turn both in regard to quality and quantity should not be under the influence of any of those participating in the incentive bonus scheme. The actual introduction was effected in 1960 after setting up the **"Production Control Organization"** in individual railway workshops.

3.2 **Planning and Production Control.—**

The efficiency of a Railway Workshop or a Production Unit is largely dependent on an efficient planning and production control organisation. The broad functions of this department comprise of: —

(i) Pre-planning activities: These comprise of study of drawings and specifications, preparation of cost and details Books for each component; drawing up of lists of raw material or component requirements for ensuring its availability; maintenance of data for un stalled capacity; booked load; spare capacity, etc. for each machine group etc.

(ii) Drawing office activities: These comprise of scrutiny of drawings received; preparation of part drawings to facilitate manufacturing operations, designing various jigs and fixtures, tan-plates, drop stamping dies, flanging blocks, gauges, etc. for economical manufacture of components; maintenance of drawings for standard cutting tools etc., placing manufacturing orders on Tool Room, when required, etc.

(iii) Planning activities: These comprises of planning the various activities connected with production in manner which would ensure fullest use of the plant and other agents of production and making all arrangements work as smoothly and efficiently as possible. The functions of this office are broadly divided as under:

(a) Processing: The functions include preparation of scroll process sheets indicating sequence of operation, quantity of material to be used.

(b) Rate fixing: The functions include maintenance of synthetic data for fixing rates (time) for individual operation, indicating allowed time in the process sheet for each of the operation involved; to scrutinise all completed piece work cards, issue of excess time cards etc.

(c) Efficiency: This section deals with matters of general efficiency of the shops. Its activities comprise of review of existing practices, suggest improvement, keeping constant watch on off cuts and rejected materials lying on the shop floor or stores scrap yard in order to suggest suitable usage of that materials etc.

(iv) Production control activities: These comprise of release of work orders for components assemblies etc. well in advance of the schedule of production; preparation of production schedule and distribution thereof in advance to all concerned for their guidance, arranging with stores departments for reservation of required material before actual release of work orders etc.

(v) Progress office activities: These comprise of keeping constant watch of Production of components, assemblies, errection etc. as per schedules laid down, preparation of monthly report of production and their deliveries, keeping liaison with shops and stores departments in the drawal of raw material and finished parts. Intersection and intershop movement of components; maintenance of records for number of orders received, orders completed etc. for each batch etc.

(vi) Inspection activities: These comprise of inspection of components, assemblies etc. on completion of each operation to ensure the production as per drawings and specification, bringing to the notice of concerned authorities of deviation from drawings; and specifications for rectification and rejection; certification on the job card, and Route cards regarding quantities passed or rejected in respect of each operation etc.

3.3 The study team has collected the data regarding out turn of coaches from 2016-17 to 2019 - 20 (Up to August'19) to find out any increase or decrease of work load at LLH work shop.

Sl No	Month	2016-2017	2017-2018	2018-2019	2019-2020 (uptoAug'19)
1	April	219	212	200	228
2	May	241	233	208	223
3	June	238	208	218	202
4	July	222	217	212	239
5	August	238	223	245	222
6	Sept	211	182	216	
7	Oct	191	187	193	
8	Nov	221	199	207	
9	Dec	234	206	219	
10	Jan	215	206	248	
11	Feb	211	184	224	
12	March	230	209	234	
13	Total	2671	2466	2624	1114
14	Avg./Month	222.6	205.5	218.7	222.8

The above figure indicates more or less uniform monthly average out turn at LLH work shop.

3.4 During field observations, the study team has come to know that various outsourcing activities are going on at LLH workshop. Some of the activities are annexed in Annexure- B, C, D and E. Due to outsourcing, the activities of departmental worker has come down as well as the activities of PCO is also reduced.

3.4.1 In view of outsourcing, for proper monitoring of outsourced work, requirement of supervisors on Shop floor is increasing. Supervisory posts to that extent as decided by administration may be redeployed in Shops from PCO.

3.5 During physical observation, the study team has visited every sections of PCO office and noted their existing workload and various activities.

The study team also discussed concerned supervisors of each section regarding their deployment according to their work load. The study team observed an irregular deployment in some sections. The study team feels that there should be a rearrangement of staff for uniform distribution of work load.

Consequent upon the changed scenario of working, it is felt justified by the study team without any bias that, there is a clear scope of surplus of posts from the present staff strength due to proportionate reduction of workload. It is obvious, that the impact of outsourcing of different activities have created a scope of surplus of posts from PCO office at LLH Workshop.

3.6 To assess the actual requirement of staff, the study team critically analyzed the various statistical data of current year/months available. The various activities and work load of Planning (PNS), Progress (PPS), Rate Fixing (RF) and Inspection section is discussed in previous chapter. The details of working of Inspection section at Wheel shop, Lifting Bay, A- shop, M & MR shop and Corrosion Inspection shop where the maximum artisan staff are deployed and their corresponding work load is annexed at Annexure- F, G, H, I, J. The overall activities of RF section is tabulated below-

1. Overall Supervision of incentive procedure of various shops and section.
2. Compliance of incentive earning of each shop and section by providing necessary allowed time against each activity in inspection and computation sheet.
3. Generation of job cards.
4. Provision of allowed time against each activity in job cards and calculation of total allowed time.
5. Allotment of allowed time for various modification works and any new activity as and when required through suitable time study.
6. Review of allowed time of old activity through time study in case of installment of any new machinery and plant and improvement of working procedure.
7. Provision of allowed time for activities in SPS generated by PNS for IS orders and SWO for repair work carried out in manufacturing shop.
8. Maintaining different records in registers.
9. Provision of allowed time of activities in estimates being prepared by coaching office and wagon office.
10. Preparing different statements / positions for onward submission to head quarter as desired by competent authority.

3.7 Based on the existing work load and opinion given by the concerned official the study team has proposed the following section wise additional deployment of artisan staff at Inspection Section.

Requirement of Artisan staff at Inspection cell under PCO/LLH (Mech.)				
	Section	Artisan staff i.e.Tech (I+II+III)		
		Existing	Add.req.	Total
1	Wheel Insp.(K)	12	8	20
2	Spring Insp.(E)	2	14*	16
3	T-Shop Insp.(T)	2	2	4
4	J-shop Insp.(J)	3	2	5
5	L/Airbrake Insp.	1	0	1
6	Lifting Bay Insp.	6	6	12
7	N-Shop Insp.	3	3	6
8	C-Shop & H-Shop Insp.	0	2	2
9	A-Shop Insp.	5	0	5
10	Welding shop Insp.(Wld)	1	2	3
11	Wagon Insp.(L)	4	0	4
12	MR/Air Brake Insp.	1	3	4
13	M & MR shop (Furnishing)	6	6	12
14	Corrosion Ins.	11	5	16
15	G Shop	4	0	4
16	Computer Sec.	1	0	1
	TOTAL	**62**	**53**	**115**

* Since Spring Shop does not undertake any repair works but only has 3 stage inspections and it is not possible for 2 staff to inspect all springs, it is proposed to increase the staff of Spring Shop Inspection in place of Shop floor staff.

Out of 53 additional staff, the study team observed during field study that 28 technicians from other shops are deployed to cater the existing work load at Inspection section.

3.8 Similarly, the required deployment at RF section is tabulated below-

Requirement of Artisan staff at RF section under PCO/LLH (Mech.)				
Sl. No.	Shop /Section	Artisan staff i.e.Tech (I+II+III)		
		Existing	Add. Req.	Total Requirement
1	Wagon (L) -shop, CBC / Draft Gear, Air Brake (L) -Shop	1	01	2
2	Sheet Metal (J) -shop	1	01	2
3	Coach corrosion (M, CR & MR /SCR - shop)	1	02	3
4	Coach Furnishing (MR/ Repair Bay, M-shop, AC & Raj, CDTS, Finishing I & II, Cabinet)	1	02	3
5	Paint (N) -Shop	1	02	3
6	Trimming (T) -shop	Nil	01	1
7	Lifting Bay (Coach Bogie) - Shop	1	01	2
8	Finishing (Tank, Alarm Signal, Pipe & Masson) - Shop	Nil	01	1
9	Machine (G) & Tool Room (TR) - Shop	1	01	2
10	Mill Wright (H) & Tin smith (C) - Shop	1	01	2
11	Spring (E) ,Black Smith (A) & Heat Treatment (HT) -Shop	Nil	01	1
12	Welding (W) -Shop	1	01	2
13	Wheel (K) -Shop	Nil	01	1
14	SSE (MPP Cell)	…….	……..	0
Total		**9**	**16**	25

3.9 Similarly, the required deployment at Planning (PNS) and Progress (PPS) section is tabulated below-

Section	Artisan Staff			Remarks
	Existing	Add. requirement	Total Requirement	
Planning (PNS)	0	10	10	Artisan staffs of different Shops are utilized in different activities of Tenders, Estimates and Vetting etc. which are parts of Planning.
Progress (PPS)	0	15	15	

3.10 Summarizing the above requirement at PPS, PNS, RF and Inspection section, the actual total requirement of Artisan staff at PCO/LLH is tabulated below.

Requirement of Artisans against Present Work Load at PCO				
Section	Artisan staff			
	Sanctioned Strength	Men on roll	Vacancy	Actual requirement as per present workload
Rate Fixing (RF)	195	9	124	25
Inspection		62		115
Planning (PNS)		0		10
Progress (PPS)		0		15
TOTAL	195	71	124	165

3.11 **RECOMMENDATION:**

1. **As per analysis made in the study report, it is recommended that the total actual requirement of Artisan staff at PCO wing duly revised will be 165 against a total sanctioned strength of 195 posts which will result in surrender of 30 posts from the PCO/LLH wing under Mechanical Department.**

2. Suggestion: It is suggested that with reduction in staff, suitable numbers of supervisors may also be redeployed in Shops to monitor outsourced works which administration may decide.

CHAPTER-IV

4.0 **FINANCIAL APPRAISAL:**

4.1 According to recommendation made in para- 3.11, the financial savings thus achieved on account of surrendering of 30 posts of Technicians is tabulated below. For easier calculation, the bottom most GP on lower Grade pay is considered.

LEVEL	G.P	PAY	MEAN PAY	D.A	NO OF POSTS	MONEY VALUE	
				17%		MONTHLY	ANNUAL
2	1900	19900-63200	41550	5817	30	1421010.00	17052120.00

Thus, consequent upon implementation of recommendation, **the annual savings will be Rs 1,70,521,20/- ≈ Rs.1.70 Cores.**