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No. G.275/WSSR – 671819 / 2019-20

WORK STUDY TO REVIEW THE STAFF STRENGTH AT FAB, RELAY SHOP, EMW AND DRAWING OFFICE OF S&T WORKSHOPS / PTJ

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SOUTHERN RAILWAY

PLANNING BRANCH

No. G.275/WSSR-671819/2019-20

WORK STUDY TO REVIEW THE STAFF STRENGTH FAB, RELAY SHOP, EMW AND DRAWING OFFICE OF S&T WORKSHOPS / PTJ

STUDIED BY

WORK STUDY TEAM OF PLANNING BRANCH

June – 2019

WSSR.

(i)

I N D E X

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ACKNOWLEDGEMENT

The study team is thankful to CWM, other Officers, APE/S&T/Work Shop/PTJ (Co-ordinating officer), Co-ordinating Supervisor, and other Supervisors and staff of Personnel branch & PCO of S&T workshops, Podanur, for their valuable guidance and co-operation extended to the study team for the successful completion of the study.

(ii)

AUTHORITY

Annual Programme of work studies for the year 2018-19.

(iii)

TERMS OF REFERENCE

To review the staff strength vis-à-vis workload at S&T workshop, Podanur.

(iv)

METHODOLOGY

1. Collection of data, Sanction & Actual strength of staff at S&T workshop/Podanur.
2. Collection of data regarding Out turn, Allowed Time and number of DWs, EIWs & IWs.
3. Application of Allowed Time Mhrs for 11 months as the prime factor (numerator) and average Man-hours/month/staff (267 Hrs) as per the Mechanical code for Workshops as the denominator to arrive at the requirement of the DWs for Incentive shops.
4. Provision of 12.5 % Leave reserve for DWs.
5. Though the Mechanical code for workshops provides 10 % to 15% on the requirement of DWs for arriving at the EIWs / IWs requirement, the study team has provided 15%.
6. For Non-incentive shops, the staff requirement is arrived on Need base.

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(v)

SUMMARY OF RECOMMENDATIONS

Recommendation No.1:

8 Posts of Tech. Gr-I in GP. Rs. 2800/- are found excess to the requirement in Fabrication shop and same to be credit to the vacancy bank. **(8 – Posts)**

Revised Recommendation No.2:

4 Posts of Tech. Gr-I in GP. Rs. 2800/- are found excess to the requirement in Relay Shop and same to be credit to the vacancy bank. **(4 – Posts)**

(Total – 12 Posts)

CHAPTER - I

1.0 INTRODUCTION

1.2 This Workshop is located at Podanur approximately 8 Km from heart of the city of Coimbatore. S&T Workshop was initially started as Repair Shop in the year 1958 for Mechanical Signalling items at Golden Rock, Tiruchirappalli, but was shifted to Podanur on 09.04.1958 with a staff strength of 60. Initially, this workshop was engaged in overhauling of Mechanical Signalling Equipment. Now it has grown up one of the leading manufacturing units for Modern signaling Equipments like Lever Frames, Reversers, Lever Locks, Circuit Controllers, etc,.

New developments:

- SSDAC – Single Section Digital Axle Counter has passed the RDSO functional tests, environmental tests are under progress.
- LED Signals.

Works programme 2019-20:

The following proposals have been sent to Railway Board.

- ✓ Construction of building and development and manufacturing of data logger and EI.
- ✓ Construction of 18 units toilet rooms with sewer line near the relay shop, EMA-II shop including toilets for disabled. Improvement to existing drainage lines. Renewal of existing corroded pipelines and proposal for new lines and repairs to the Existing BT road with signages.
- ✓ Construction of additional floor in PC shop and BTC and second floor on top of the Relay shop. Providing wall cladding for administration building and heavy duty flooring for the shop floor.
- ✓ Renewal of roof truss to the railing post, rain gutters and sheets. Painting of steel structures and buildings of entire workshop. Construction of RCC power head water tank.

The entire workshop has been provided with 100 % energy saving LED lights. This has resulted in energy saving of 7040 units/month, amounting to a saving of Rs. 5,36,400/- per annum.

The pride of the workshop lies in its capacity to produce sophisticated signaling products to high levels of quality. The workshop has got ISO 14001- 2004 and ISO 9001- 2015 and certificates.

This workshop is spread over in an area of 12.11 Acres and its built-in area is 2.6 Acres approximately.

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CHAPTER – II

2.0 PRESENT SCENARIO

2.1 Signal and Telecommunication Workshop, Podanur is mainly associated with manufacture and supply of safety signaling system for up-gradation works like panel interlocking, Route Relay Interlocking, Tokenless Block instruments, Colour Light Signaling, Automatic Block Signaling and for major projects like Gauge Conversion, Doubling and Electrification works on the Southern Railway as well as in other Zonal Railways.

2.2 The S&T Workshop, Podanur is the sole manufacturer of Q-series Relays, TLB instruments, Polarized Relays, Electronic Timers, IRS Point machines, DLB instruments, LB Gates, Panels, Track lead Junction Box, Terminal Boards, FTOT, Siemens Relay rack, Solid joints forge weld, Ground connection, SM's control, Lamp holders, Axle counters and Driver's desk.

2.3 In this work study is considered for Relay, Fabrication (Incentive shops), EMW (Non-incentive shop) and Drawing section only. The staff position provided by WPO/S&T/PTJ is placed in Annexure – I. The staff and existing working particulars are detailed in the following paras.

2.4 Shop & staff stength details:

2.4.1 Fabrication Shop (FAB-506):

This shop manufactures GRS apparatus cases, Siemens relay rakes, FTOT Boards, TLB cabinets, Lifting bearers, Control panel for stations, Driver's desk and switches etc.,

Category	Level	Sanction	Actual	Vacancy	Excess
Sr.Tech	6	30	27	3	0
Tech - I	5	79	19	60	0
Tech - II	4	6	18	0	12
Tech - III	2	1	11	0	10
Total		**116**	**75**	**63**	**22**
Over all vacancy – 41					

2.4.2 Man power requirement of FAB shop for the year-2018-19:

Description of Operation	Total Qty. Reqd.	Qty. to be produced ishop	Allowed time for 1 No.	Under incentive	Total time reqd. for shop Mfg.Qty.	No. of staff Reqd.	Total staff Reqd (incl.LR)	Staff on roll
GRS Apparatus Case - FULL	2000	2000	60	40	80000	36.04	58.60	44
GRS Apparatus Case - HALF	1000	1000	46.451	30.967	30967.33	13.95		
GRS Apparatus Case - FULL - CUTTING	2000	2000	10.552	7.035	14069.33	6.34		
GRS Apparatus Case - HALF - CUTTING	1000	1000	7.575	5.050	5050	2.27		
Emergency sliding boom	100	100	208.5	139	13900	6.26	44.46	22
Terminal board 50 way	350	350	2.376	1.584	554.4	0.25		
LC gate panel	48	48	60.73	40.487	1943.36	0.88		
LC gate	100	100	386.58	257.72	25772	11.61		
Signal post telephone	4	4	25	16.667	66.67	0.03		
Emergency key for LC gate	2500	2500	25.000	16.667	41666.67	18.77		
Aluminium boom	192	192	105.830	70.553	13546.24	6.10		
Control panel	1	1	1879.000	1252.667	1252.67	0.56		
					213989.7	96.3	103.0	66
Direct workers required for above M.Hrs @ 185 Hrs./Man/month							103.06	
Total Direct workers required including LR of 12.5%							115	
FAB shop sanction strength							100	
No. of DW available on roll as on 31.08.2018							66	
Addl.man power reqd to meet the production schedule							49	

2.4.3 **FAB - A&B Statement summary for the month of November-2018:**

Sl.	Category	JE	Sr.Tech	Tech.	Tech.II	Tech.III	Kh.	Total

No.				**I**				
1	DW		26	19	12	6	0	63
2	EIW		2	0	3	5	0	10
3	IW		0	1	0	1	0	2
4	JE	1					0	1
	Total	**1**	**28**	**20**	**15**	**12**	**0**	**76**
SUPERVISORS = 1								
ARTISAN = 75								
TOTAL = 76								

2.4.4 **OT Details - 2018**

Sl. No.	**Month**	**Hours**
1	Jan-18	660
2	Mar-18	533
	Total	**1193**
3	Sept-18	806
		832
		793
		481
4	Nov-18	754
5	Dec-18	858
		754
6	Jan-19	1547
7	Feb-19	1430
Total hours for the year 2018		**8255**

2.4.5 **Fabrication Shop- Production details- 2018-19**

Sl. No	Description	Annual schedule	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Total
1	GRS Full	2000	100	35	85	130	90	222	36	112	132	153			1095
2	GRS Half	1000	-	-	100	-	10	40	50	-	36	-			236
3	GRS App case Spl.(RTU)	-	15	31	-	15	15	-	30	05	40	22			173
4	GRS App case Spl.(RTU with Power back-up)	-	-	55	-	05	15	-	05	10	10	-			100
5	GRS Full with dual wall air ventilation	-	-	-	-	-	-	15	2	18	-	5			40
6	LC Gate panel	48	-	-	15	23	13	08	08	09	08	20			104
7	ELB Gate	100	-	-	-	-	-	-	-	-	-	-			0
8	Emergency sliding book	100	-	05	15	25	-	-	05	06		-			56
9	Aluminium Boom 9.76 mts	192	-	-	-	-	-	-	-	-	-	-			0
10	Aluminium Boom 8.50 mts		-	06	06	-	-	-	-	06		-			18
11	ELB Gate (RDSO type)	10	-	-	-	-	-	-	-	-		-			0
12	Block counter table	4	-	-	-	-	-	-	-	-		-			0
13	VDU Table	1	-	-	-	-	-	-	-	-		-			0

14	Signal Post Telephone	4	-	-	-	-	-	-	-	-		-			0
15	Terminal Board	350	-	-	50	50	-	-	-	-		-			100

Fabrication Shop Production Details 2018-19

16	Emergency key for LC Gate	2500	-	-	-	-	-	-	-	-	-	-			0
17	Power panel for station	5	-	-	-	-	-	-	-	-		-			0
18	Control panel	1	-	-	-	-	-	-	-	1	1	-			2
19	Thumb switch 2 position	-	-	100	-	-	-	-	200	-		121			421
20	Thumb switch 3 position	-	-	-	-	-	-	-	-	-		-			0

21	Thumb switch 3 position (special)	-	-	-	-	-	-	-	-	-		-			0
22	Push switch for panel	-	226	-	-	-	-	200	177	-		21			624
23	FTOT	-	-	06	-	-	-	-	-	-		-			6
24	ELB Gate (SS type)	-	-	-	02	-	-	-	-	-		-			2
25	Rule / Yard Diagram Board	-	-	-	-	-	-	02	01	-		-			3
26	SM’s key switch / TLB	-	-	-	-	-	-	-	30	20		-			50
27	Cabinet for relay and cabinet for control panel	-	-	-	-	-	-	-	-	-	-	2			2
	Total	6315													3026

2.5 RELAY SHOP (505):

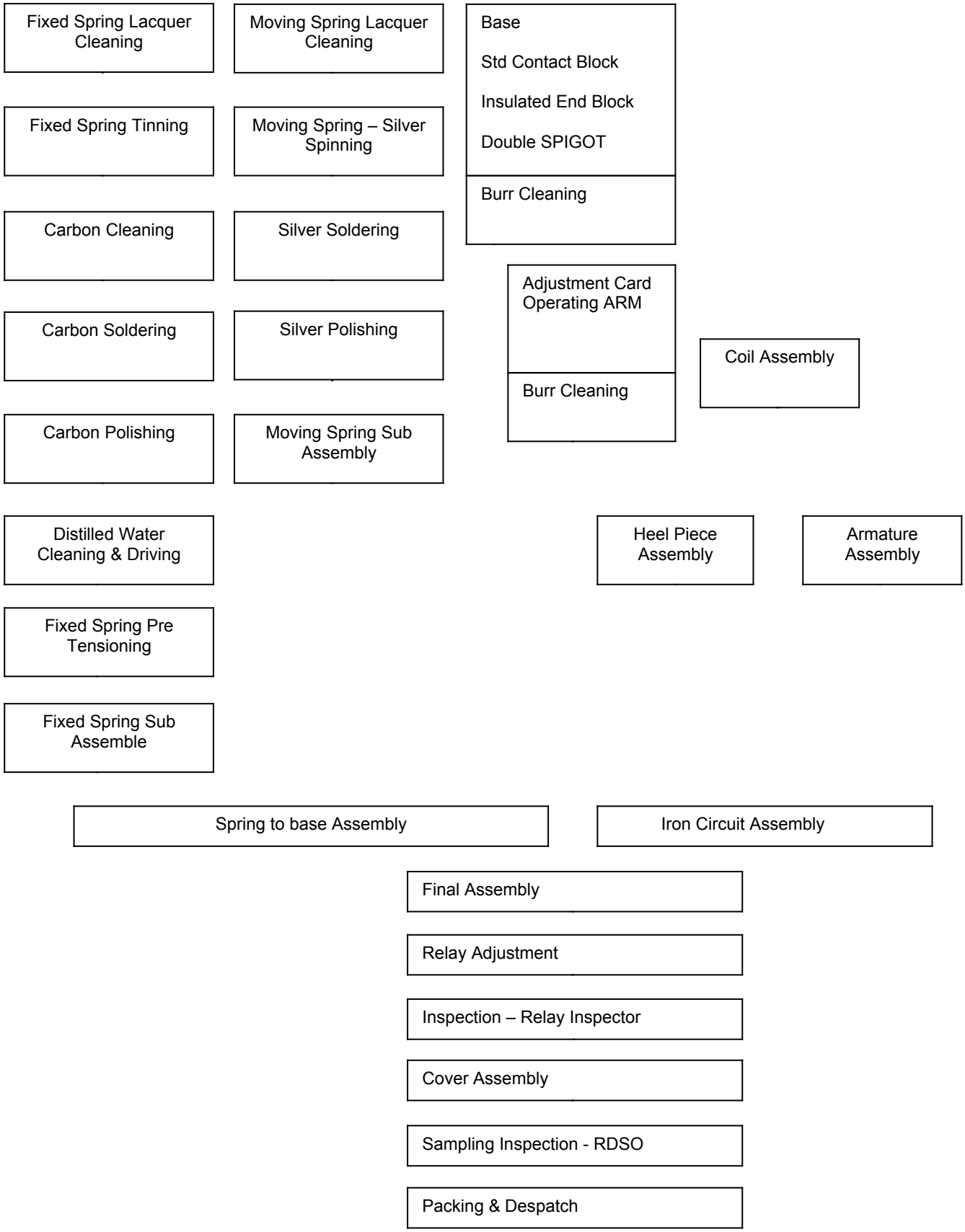
This shop manufactures various 'Q' series Relays, Polarized Relays, Electronic timers, Universal Axle counter, SM's Key switch, etc.

2.5.1 Staff strength at Relay Shop:

Category	Level	Sanction	Actual	Vacancy	Excess
Sr.Tech	6	44	47	0	3
Tech – I	5	82	65	17	0
Tech – II	4	9	16	0	7
Tech – III	2	15	20	0	5
Khalasi Helper	1	0	7	0	7
Substitute		0	1	0	1
Trainee		0	3	0	3
Total		**150**	**159**	**17**	**26**
Over all excess = 9					

From the above table there are no sanctioned posts of Khalasi Helper, substitute and trainee, making a total of 11 posts. Hence, the study team has considered actual staff as 148.

2.9. Work Document No –WD /521 – Q Relay Flow Process Chart



2.5.2 CR Details of Relay Shop

Sl.No.	Month & Year	Mhrs.
1	Apr – 17	22.5
2	Jul – 17	102
3	Aug – 17	22.5
4	Oct – 17	365.5
5	Nov – 17	485.5
6	Jan – 18	44
7	Feb – 18	40
8	Mar – 18	306
Total		**1388**
1	Jun-18	304.5
2	Jul-18	15
3	Aug-18	49.5
4	Sep-18	121.5
5	Nov-18	31.5
6	Dec-18	151
Total		**673**

2.5.3 OT Details of Relay Shop

Sl.No.	Month & Year	Mhrs.
1	Nov – 17	1482
2	Dec – 17	4225
3	Feb – 18	2860
4	Mar – 18	1844.5
Total		**10411.5**
5	Sep-18	91
6	Oct – 18	39
7	Dec-18	2863.5
8	Jan & Feb. 19	2197
Total		**5190.5**

2.5.4 A&B Statement Summary Sheet of Bill Unit 50504 For The Period Of 2019

Supervisors : 9
Artisans : 113
Total : 122

Call Letter Details of Q Relay 2018-19 (Dec-18)

Sl.No	Types of Relay	Sch. 2018-19	Monthly Target	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Tot
1	QN1 8F/8B	15000	1250	1994	1496	1096	2392	1596	1792	496	998	1196	1096			14152
2	QN1 12F/4B	6000	500	596	600	1198	298	296	298	0	0	0	0			3286
3	QN1 8F/8B	15000	1250	1396	1698	1194	1000	494	1098	596	398	2998	2392			13264
4	QL1 8F/6B	0	0	0	0	0	0	0	0	0	48	50	24			122
5	QB3 4F/2B	500	42	0	0	0	74	100	148	98	80	0	0			500
6	QBAT 2F/2B	2400	200	0	0	398	348	146	148	248	148	296	0			1732
7	QT2 2F/2B	1100	92	0	0	175	298	196	146	150	46	73	0			1084
8	QTA2 2F/1B	4000	333	200	0	398	396	296	396	398	396	196	0			2676
9	QSPA1 8F/4B	2300	192	198	0	100	294	198	48	150	396	198	0			1582
10	QBA1 18F/4B	300	25	0	0	0	0	0	48	26	48	50	0			172
11	QECX 4F/4B	1000	83	0	0	0	0	0	46	48	0	0	50			144
12	QNN1 6F/2Bx2	1500	125	0	0	0	0	0	0	0	0	0	0			0
13	QNNI 16F/2Bx2	1000	83	0	0	0	0	0	0	0	0	0	0			0
14	QN1K	100	8	0	0	0	0	0	0	0	0	0	0			0
15	QNA1K	100	8	0	0	0	0	0	0	0	0	0	0			0
	Total	50300	4192	4384	3794	4559	5100	3322	4168	2210	2558	5057	3562			38714

2.5.5 Call Letter Details of Q Relay 2017-18

Types of Relay	Sch. 2017-18	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Tot
QN1 8F/8B	25000	500	800	0	2300	1500	100	1600	2000	3100	1500	3200	2200	18800
QN1 12F/4B	6000	1067	1150	0	550	100	50	0	500	400	1000	900	750	6467
QNA1 8F/8B	20000	500	400	0	1800	2500	200	50	1000	1650	1300	1800	1200	12400
QL1 8F/6B	1200	0	0	0	0	0	0	0	0	0	0	0	0	0
QB3 4F/2B	200	0	0	121	100	100	0	0	0	0	0	0	0	321
QBAT 2F/2B	3000	150	250	300	100	75	24	150	200	211	100	400	200	2160
QTA2 2F/1B	4000	100	100	25	0	0	0	0	400	350	100	125	200	1400
QT2 2F/2B	1000	150	0	25	0	75	24	100	200	216	200	0	25	1015
QSPA1 8F/ 4B	4000	280	50	150	200	100	0	100	200	150	200	230	450	2110
QBA1 8F/8B	100	25	0	0	0	0	0	0	80	0	0	0	0	105
QECX 4F/ 4B	2500	0	50	0	70	25	0	0	25	0	0	0	0	170
QNN1 6F/2Bx2	250	0	0	0	0	0	50	0	50	0	0	0	0	100
QN1K	100	0	0	0	0	0	0	0	0	0	0	0	0	0
QNA1K	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	67400	2772	2800	621	5120	4475	448	2000	4655	6077	4400	6655	5025	45048

2.5.6 Call letter details of Q relay from APR 2016-MAR 2017

Types of Relay	Sch. 2016-17	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Tot
QN1 8F/8B	27000	1870	950	1500	1300	1300	2100	1700	2000	600	900	200	700	15120
QN1 12F/4B	6000	350	100	500	1000	900	400	450	300	800	400	2350	2433	9983
QNA1 8F/8B	20000	2400	1600	2300	1800	1600	1800	1600	2000	2500	2000	1400	900	21900
QL1 8F/ 6B	1200	0	0	0	0	0	0	0	0	0	0	0	0	0
QB3 4F/ 2B	400	0	50	0	0	200	100	75	0	64	0	0	0	489
QBAT 2F/2B	3000	0	150	200	250	200	300	300	232	100	50	200	440	2422
QTA2 2F/1B	4000	0	0	0	0	300	300	413	550	900	600	650	300	4013
QT2 2F/ 2B	1000	0	100	200	100	50	0	0	138	200	100	200	260	1348
QSPA1	2000	0	50	150	100	50	100	0	50	75	0	50	200	825
QBA1	100	0	0	0	50	5	0	0	0	50	0	0	0	150
QECX	1000	0	100	0	0	0	50	0	0	0	0	0	0	150
QNN1	200	0	0	0	0	0	0	0	0	0	0	0	0	0
QN1K	100	0	0	0	0	0	0	0	0	0	0	0	0	0
QNA1K	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	66100	4620	3100	4850	4600	4650	5150	4538	5270	5289	4050	5050	5233	56400

2.6 EMW

Electrical Millwright Shop (EMW - 517):

The Electrical portions of Machinery and Plants of S&T Workshop are maintained here.

Category	Level	Sanction	Actual	Vacancy	Excess
Sr.Tech	6	3	5	0	2
Tech - I	5	5	2	3	0
Tech - II	4	3	0	3	0
Tech - III	2	1	2	0	1
Khalasi Helper	1	5	5	0	0
Total		**17**	**14**	**6**	**3**
Over all vacancy – 3					

2.6.1 Functions of Electrical Millwright Shop (EMW):

Description of Work being performed by EMW staff at S&T/WS/PTJ

- ✓ Ensuring uninterrupted power supply to various shops inside S&T/WS/ PTJ, Administrative office, Railway Canteen, RPF/O and Railway Institute
- ✓ Periodical maintenance (Daily, Monthly, Quarterly, Half-yearly & Yearly)of three nos. of 630KVA Transformers and its six pole structure available inside workshop premises.
- ✓ Manning of 22KV substation for 3 shifts /day, throughout year
- ✓ Periodical maintenance of ACBs, OCBs, LT Boards in substation and also the LT boards of each shop inside the workshop premises.
- ✓ Maintenance of HT & LT Earths
- ✓ Electrical Failure attention of 289 machineries inside Workshop to ensure smooth production activities
- ✓ Preventive maintenance of all machineries inside workshop as per ISO norms.

- ✓ Carrying out Energy conservation measures like replacement of FL lamps with LED lamps, fixing of BLDC fans etc.
- ✓ Breakdown attention of Air-Compressors, Industrial platform Trucks and portable equipment like Grinding machine, drilling machine etc.
- ✓ Day to day failure attention of lights, fans, street lights and other Electrical equipments inside workshop, Admin building and Railway Canteen
- ✓ Carrying out periodical Electrical safety drives to ensure safety.
- ✓ Carrying out Annual Maintenance works of M&P inside workshop every year during pongal holidays.

2.6.2 **Works being carried out through AMC**

- ✓ Maintenance of Air conditioners inside workshop and Administrative Office
- ✓ Maintenance of 500KV DG Sat inside substation.
- ✓ Maintenance of Water purifiers available inside workshop.

2.6.3 **OT Hours in EMW Section during year 2016-18**

OT on CR

Sl. No	Year	No of Staff Working	Total OT Hrs
1	2016	13	51
2	2017	7	25.5
3	2018	4	14.5

Pongal Time of OT work:

Sl.No	Year	No of Staff	Total Hours	Remarks
1	2016	18	34.5 hrs/Staff	OT work done in Annual Maintenance
2	2017	17	38.5 hrs/Staff	
3	2018	13	38.5 hrs/staff	

2.6.4 **Machines condemned during the year from 2016 to 2018:**

Sl. No	Description	M/c. ID	Ref.Lr.No./Dt
1	Bench drilling Machine	ESED BDL 01	SGW/F.103/M&P/cond. Vol.IV, Dt.20.07.2018
2	Double Acting Hammer	FS PH 06	SGW/F.103/M&P/cond. Vol.IV, Dt.06.11.2017
3	Air Compressor (CPT)	MMW AC 01	
4	Buff &Polish Machine	PC BPM 02	
5	Buff & Polish Machine	PC BPM 06	
6	Buff & Polish Machine	PC PBM 07	
7	Coil Winding Machine	TLB CW 16	SGW/F.103/M&P/cond. Vol.IV, Dt.24.03.2016
8	Bench drilling Machine	PWS BDL 02	SGW/F.103/M&P/cond. Vol.IV, Dt.24.01.2018
9	Bench drilling Machine	PWS BDL 05	
10	Cylindrical Grinding Machine	TR CGR 01	
11	Milling Machine	TR MIL 02	SGW/F.103/M&P/cond. Vol.IV, Dt.20.11.2017
12	Milling Machine	TR MIL 03	
13	Milling Machine	TR MIL 05	

2.7. **DRAWING OFFICE :**

Category	**Level**	**Sanction**	**Actual**	**Vacancy**	**Excess**
SSE	7	3	2	1	0

Men on Roll

Sl.No.	Designation	Sanction	Actual	Vacancy
1	SSE / Drg.	3	2	1
2	Ferro Printer	1	1	Nil

2.7.1 **Workload** :-

1.A	New product drawings (part and assembly) preparation such as SSDAC, SOLAR PANEL, CR TEST KIT, DC-PC CONVERTOR, DUAL TEST BAY FOR POINT MACHINE, 24-V EKT ROAD WARNING SIGNAL, USFSBI PANEL & CIRCUITS. Conversion of hand drawings to CAD drawings.
B	Revision drawings preparation based on ECR
C	All updated drawing converted to PDF format same sent to Planning section and stores etc
D	All updated drawing copies issue to consent shop floor, panning, inspection sections and stores for reference and record
E	Approved drawing copies (Ammonia print) issue to company's (vendor) for payment based
F	Maintenance of all drawings negatives along with related documents, total number of drawings Aprx. 3000 Nos.
G	Time to time drawing copies issue to shop floor, planning section and inspection for reference and record.
2.	Revision drawings completed within 2 days after received of ECR New drawings completed within 5 days after received requisition letter
3.	New drawings prepared by one SSE and Revision drawings prepared by one SSE. In the mean time officer will give any special work, it will take time for preparation of new drgs. Taking sketch from shop floor with samples and prepare drawings. After preparation drg sent to shop for verification and then finalized. So it will take time more than 5 days for consulted with shop SSEs. New drgs and revision drgs prepared based on ECR.

4.	New drgs 100 nos per year. Revision drgs 300 nos per year
5.	Xerox copy enclosed
6.	One SSE attended training on auto CAD to conducted for 6 days from 19.3.18 to 24.3.18 at STC/SBC
7.	Now working 2 SSE due to 1 SSE reiterated to last year

Outsourcing : Nil

2.7.2 **Other details:**

1. Working hours 9.30 to 13.00 & 13.30 to 17.15 hrs.
   Saturday 9.30 to 13.15 hours
   Sunday holiday
2. 7 SSE/JE working in drawing office on previous year end of 2001.
   But now 2 SSE only working in drawing office
   In mean time 6 JE posts vacant, that 6 JE posts transformed to all division office at year 2013.
   One SSE is also going to retire on next year (2019).
   In future only one SSE is available. So please consider for further post of SSE/JE (Now SSE -1 vacant) appoint to drawing office.

QUALITY OBJECTIVES

1. Prepare A New Drawing Within 5 working days from the receipt of request.
2. Carry out all alternations / amendments in a drawing within 2 working days and complete all changes requested within the period calculated according to number of drawings involved.
3. Reply to an “Audit query” within 10 working days, if the assistance of external agency is not involved, else replies within 4 weeks.

2.8 **Supervisor & Ministerial staff:**

There is no shop-wise sanction for Supervisors & Ministerial staff however the actual are appended below:

Sl. No.	Shop	Supervisors	Ministerial staff
1	FAB	4	1
2	Relay Shop	SSE - 4 JE Relay - 4 RI / I - 6 RI / II - 6	2
3	EMW	1	½ DAY 1-OS

2.9 **PRODUCTION CONTROL ORGANISATION**

- ✓ This section consists of Planning, Rate Fixing, Progress, Inspection and Marketing.

- ✓ Every work done by various shops is planned from the beginning till the completion, right from Raw material planning to marketing and dispatching the products manufactured and it includes quality control.

- ✓ The following activities of Production Control Organization have been computerized.
  - ➢ Work order releasing
  - ➢ Production control Documents
  - ➢ Estimation Annual Requirements for Stocked items
  - ➢ Bill of Materials for all manufacturing items
  - ➢ Rate Revision of manufacturing items
  - ➢ Inspection details – inspection of inward items
  - ➢ Vendor evaluation
  - ➢ Demand and despatch position details.

CHAPTER – III

3.0 CRITICAL ANALYSIS

3.1 The Allowed Time for various activities, shop wise and month wise were collected for month of April - 2018 to Jan - 2019. This prime factor is

divided by the average monthly man hours of 267 (which is the denominator) as prescribed in the Mechanical code for Workshops to arrive at the Direct workers (DWs) required. As per Mechanical code for workshops the Leave reserves for the DWs are worked out at the rate of 12.5%. For booking of EIWs it varies from 10 % to 15% of DWs, depending upon the nature of jobs. The study team considered higher rate of EIW/IWs as 15% on a flat rate for all shops.

Let Load discharged (Allowed Time) = AT

AT taken per month per staff for man power calculation as per **Mechanical code**. = } 200 Mhrs

Average monthly Man-hours with 33.33% bonus = 67 Mhrs

Total average AT with 33.33% bonus = 267 Mhrs

DWs required to complete the above AT $= \frac{AT}{267} =$ **X**

LR for DWs (12.5%) $= \frac{\mathbf{X} \times 12.5}{100} =$ **Y**

Therefore total DW required = **X + Y**

EIW & IW @ 15% $= \frac{(X + Y) \times 15}{100} = Z$

Total Artizans staff required = X + Y + Z

It has been observed by the work study team, the allowed time fixed for each activities are excessively given when compare to the time taken. Since, the direct workers are working under the incentive scheme for which the study team taken a lenient view and the allowed time given for each activity is taken as it is and the manpower requirement is worked as prescribed in the Mechanical Code for workshops to arrive the Direct Workers(EW), Essential Indirect(EIW) and Ideal workers(IW).

3.2 The manpower requirement calculation is based on allowed time/piece and actual out turn obtained from annual target. The required manpower assessed by the monthly average target is taken from the annual target or monthly average total allowed time. The annual target, allowed time and out turn particulars from the month of April-2018 to Dec-2018 (for 10 months) are tabulated below.

3.3 Fabrication Shop:

Table -1: Allowed time Vs Out-Turn details from April-18 to Jan–19

Sl. No	Work Description	Annual Target	AT/No	Total Allowed Time Req.	Actual Qty. obtained	AT for actual Qty Produced	Qty produced as per Target/total AT
1	GRS App. case – Full	2000	60.00	120000	1095	77252.25	1667/117606.85
2	GRS App. Case - full mark, cutting, etc.		10.55	21100			
3	GRS App. case - Half	1000	46.45	46450	236	12748.72	833/45016.67
4	GRS App. Case – Half mark, cutting, etc.		7.57	7570			
5	LC Gate panel	48	60.73	2915.04	104	6315.92	40/2429.20
6	ELB gate	100	386.58	38658	0	0	83/32215
7	Emergency sliding boom	100	206.00	20600	56	11536	83/17165.98
8	Aluminum boom 9.76	192	105.83	20319.36	18	1904.94	160/16932.80
9	Aluminum boom 8.50			0	0	0	
9	ELB Gate-RDSO Type	10	356.00	3560	0	0	8.3/2954.8
10	Block counter table	4	0	0	0	0	3/-
11	VDU Table	1	750.00	0	0	0	1/750

12	Signal post telephone	4	25.00	100.00	0	0	3/75
13	Terminal board 50 way	350	2.37	829.50	100	237.0	262.5/691.26
14	Emergency key for LC gate	2500	25.00	62500	0	0	2083/52083
15	Power panel for station	5	0	0	0	0	4/
16	Control panel	1	1879.0	1879.00	2	3758.0	1/1879
	Total-A	**6315**		**342920.9**	**1611**	**113752.83**	**5231.8/289799.6**
Out-turn produced other than target:							
1	GRS App Case Spl(RTU)	-	85.60	-	173	14808.8	-
2	GRS App Case (RTU with Power Back Up)	-	95.60	-	100	9560.00	-
3	GRS Full with Dual Wall Air Ventilation	-	110.55	-	40	4422.00	-
4	Thumb switch 2 position	-	6.57	-	421	2765.97	-
5	Push switch for panel	-	3.24	-	624	2021.76	-
6	SM's key switch / TLB	-	7.52	-	50	376.00	-
7	Cabinet for Relay and cabinet for Control panel UFSBI	-	447	-	2	894.00	-
8	FTOT	-	122.00	-	6	732.00	-
9	ELB Gate (SS Type)	-	142.00	-	2	284.00	-
10	Rule / Yard Diagram Board	-	60.00	-	2	120.00	-
	Total-B				**1420**	**35984.53**	**-**
	Total-(A+B)				**3031**	**149737.36**	

3.3.1 **Incentives and Job cards details:**

The details of Job cards issued from RF/PCO from the month of Apr-2018 to Jan-2019 and details of time taken, time saved & total allowed time obtained from Account section for Fabrication and Relay shops are tabulated separately as below.

Table-2: **Fabrication Shop:**

Month & Year	**Allowed Time(Job cards) issued by RF/ PCO**	**Allowed Time(Job completed) issued by Account section**	
		Allowed time	**Time taken**
Jan – 2018	-	459	308
Feb – 2018	-	549	370
Mar – 2018	-	1620	1096
Apr – 2018	27308.013	1059	716
May – 2018	10360.669	764	517
June - 2018	14894.665	670	452
July – 2018	52944.354	1772	1204
Aug – 2018	10180.781	2139	1464
Sept –	26360.574	2525	1708

2018			
Oct – 2018	5751.325	1570	1057
Nov – 2018	43661.748	1899	1286
Dec - 2018	8959.398	0	0
Jan – 2019	23128.507	0	0
Total	**223550.034**	**15026**	**10178**
Average/ Month	**22355.003**	**1366**	**925**

3.3.2 **Manpower requirement for Fabrication shop:**

From the above tables -1&2, the AT for actual out turn obtained is 149737.36 Man hours and average per month is 14973.73 Man hours. The actual job cards passed through account section is 15026 and average/month is 1366 Man hours. Moreover, in Fabrication shop the usage of job cards are non-linear between the targets, actual staff strength, job cards received from RF/PCO or job cards passed through account section. So, the required manpower calculation to be fixed is very complexity in nature for the following reasons by the study team.

- Actual staff strength in FAB shop - 76
- Target fixed in 2018-19 - 6315 Nos/pieces.
- AT required for target in 2018-19 - 342920.9 Mhrs.
- AT Job cards issued by RF/PCO (10 months) - 223550.03 Mhrs.
- Actual AT Utilization of job cards - 113752.83 Mhrs.

Out-turn and AT for other than Target details:

- Out-turn quantity for 10 months - 1420
- AT utilization of job cards - 35984.53 Mhrs.
- Total AT utilization of job cards (Both) - 149737.36 Mhrs.
- AT Job cards passed to account section - 15026 Mhrs

3.3.3 **Man power requirement :**

Normally, the man power calculation is worked out by monthly average allowed time issued by the account section, but in this case monthly average allowed time is very low as 1366 for the year Jan-2018 to Nov-2018. The total actual AT job cards utilization is 149737.36 for the period of April-2018 to Jan-2019 and average allowed time per month is 12478, it is also a low value. Therefore the study team is not able to take this value for manpower requirement calculation.

Moreover the job cards are issued by RF/PCO to Fabrication shop on monthly basis as 223550.03 Man hours for 10 months and average allowed time per month is 22355 Mhrs, it is a reasonable value. The

difference between the AT issued by RF/PCO and average AT utilized per month is 22355 – 12478 = 9877 Mhrs. This AT is available on hand to utilize the given work, for various reasons like shortage of raw materials, power failure, machines failure, suspension of job cards, rain etc.

Hence the work study team has considered the above problems and future requirement also, the required manpower calculation is based on the monthly average of allowed time issued by RF/PCO for particularly Fabrication shop.

3.3.4 Calculation of Men required for Fabrication shop

Average DW required 22355/267	=	83.72
LR for DW @ 12.5 %	=	10.50
Total DWs staff	**=**	**94.22** Say **94**
EIW & IW @ 15%	=	14.1 Say 14
Total staff required for Fabrication Shop	**=**	**108**

Apart from the above, **8255 Mhrs are utilized in Over Time** working for meet the emergency, to achieve annual target etc. The work study team has not surrender of any post in this account. And also **110 Mhrs of job cards are suspended** and kept on hand for non availability of raw materials.

3.3.5 Sanction Vs Requirement:

Shop	Sanction	Actual	Required	Surplus
Fabrication	116	75	108	8

3.3.6 Recommendation No.1:

8 posts of Tech. Gr-I in GP. Rs. 2800/- are found excess to the requirement in Fabrication shop and same to be credit to the vacancy bank. **(8 – posts)**

3.4 Relay Shop:

3.4.1 Table-3: Allowed time Vs Out-Turn details from April-18 to Jan -19

Sl. No	Work Description	Annual Target	AT/ No	Total Allowed Time Req.	Actual Qty. obtained	AT for actual Qty Produced	Qty produced as per Target/total AT
1	QNI 8F/8B	15000	4.72	70800	14152	66797.44	12500/59000

2	QNI 12F/4B	6000	4.72	28320	3286	15509.92	5000/23600
3	QNAI 8F/8B	15000	4.72	70800	13264	62606.08	12500/59000
4	QB3 4F/2B	500	5.42	2710	500	2710	416.67/2258.33
5	QBAT 2F/2B	2400	4.06	9744	1732	7031.92	2000/8120
6	QT2 2F/2B	1100	4.12	4532	1084	4466.08	916.67/3776.67
7	QTA2 2F/1B	4000	4.02	16080	2676	10757.52	3333/13400
8	QSPAI 8F/4B	2300	5.21	11983	1582	8242.22	1916.67/9985.83
9	QBA18F/8B	300	5.61	1683	172	964.92	250/1402.50
10	QECX4F/4B	1000	6.05	6050	144	871.2	833.33/5041.67
11	QNNI6F/2Bx2	1500	6.72	10080	0	0	1250/8400
12	QNNAI6F/2Bx2	1000	6.72	6720	0	0	833.33/5600
13	QNIK	100	6.05	605	0	0	83.33/504.17
14	QNAIK	100	6.05	605	0	0	83.33/504.17
15	QLI 8F/6B	0	-	-	122	-	-
	Total	**50300**		**240712**	**38714**	**164050.78**	**41916/200593**

3.4.2 Table-4: **Relay Shop:**

Month & Year	**Allowed Time(Job cards) issued by RF/ PCO**	**Allowed Time(Job completed) issued by Account section**	
		Allowed time	**Time taken**
Jan – 2018	-	26015	17938
Feb – 2018	-	22419	15537
Mar - 2018	-	26416	18316
Apr - 2018	38636.55	27416	18992
May - 2018	55105.57	24496	16969
June - 2018	14160.94	25827	17928
July - 2018	38983.56	24727	17170
Aug - 2018	40810.59	29380	20415
Sept - 2018	33227.71	24516	17117
Oct - 2018	11190.84	24464	16924
Nov - 2018	16179.68	22664	15706
Dec - 2018	30968.18	0	0
Jan - 2019	3259.03	0	0
Total	**282522.65**	**278340**	**193012**
Average/ Month	**28252.27**	**27834**	**19301**

3.4.3 **Calculation of Men required for Relay shop**

Average DW required 27834 ÷267	=	104.20
LR for DW @ 12.5 %	=	13.03
Total DWs staff	**=**	**117.23**
EIW & IW @ 15%	=	17.58
Total staff required for Relay shop	**=**	**134.81** say **135**

Apart from the above, **5863.5 Mhrs are utilized in Over Time** working for meet the emergency, to achieve/increase annual target etc. The

work study team has not surrender of any post in this account. And also **1350 Mhrs of job cards are suspended** and kept on hand due to the non availability of raw materials.

3.4.4 **Sanction Vs Requirement:**

Shop	Sanction	Actual	Required	Surplus
Relay	150	159	135	15

3.4.5 **Recommendation No.2:**

15 posts of Tech. Gr-I in GP. Rs. 2800/- are found excess to the requirement in Relay Shop and same to be credit to the vacancy bank. **(15 – posts)**

3.5 **Requirement of Supervisors:**

As per Mechanical code for workshops the norms for supervisor verses supervised staff ratio is **1 : 18 for incentive shops and 1 : 11 for non incentive shops.** The real calculation to be made for this purpose as follows:

Incentive shops:

	Sanction	Actual
Fabrication Shop	116	75
Relay Shop	150	159

The above data shows that the staff strength of sanction FAB shop is 116 and actual is 75. Since, the supervisor Vs supervised staff is (18:116) 6.5 for sanctioned strength and 4.2 for actual staff strength.

In Relay shop, the Supervisor Vs Supervised staff is (18:150) 8.3 for sanctioned strength and 8.8 for actual staff strength.

The CWM administrative office is maintaining the supervisor and ministerial cadres in centralized not in shop wise. So, the administration is to decide and allot the supervisory staff.

3.6 Electrical Mill Wright (EMW) (517)

EMW is responsible for:

- Ensuring power supply to various shops, administrative office, canteen etc.
- Periodical maintenance of 630 KVA transformers – 3 Nos.
- Manning of 22 KV Sub station for 3 shifts/day
- Maintenance of ACBs, OCBs, LT boards in Sub station.
- Maintenance of HT & LT Earths.
- Electrical failure attention of 289 machines.
- Preventive maintenance of all machines inside workshop as per ISO norms.
- Replacement of FL lamps with LED lamps fitting of BLDC fans etc.
- Break down attention of Air compressors, Industrial platform trucks and portable equipment like grinding machines, drilling machines etc.
- Day to day maintenance of lights, fans street lights etc, inside workshop, administration offices and canteen.
- To ensure electrical safety drives.
- Carrying out annual maintenance works of M & P inside workshop every year during pongal holidays.
- Installation of new machines

3.6.1 Works being carried out through by AMC:

- ✓ Maintenance of Air – Conditioners inside workshop and administrative office.
- ✓ Maintenance of 500 KVA DG – set inside Sub station

- ✓ Maintenance of water purifiers available inside workshop.

Since Electrical Mill Wright shop is a non-incentive and maintenance & service shop, the manpower requirement is arrived on need base.

In EMW shop is functioning in two ways, first one is operating and maintaining the power station such 22 KV Sub station and accessories with DG-set and another is periodical and preventive maintenance of machines and plants in S&T/Workshop. The study team has arrived the man power requirement separately such as Power side based on energy consumption per month and Machinery & plants based on the number of available machineries.

3.6.2 Annual Energy Consumption:

The annual energy consumption details from Jan-2018 to Jan-2019 are tabulated in S&T/Workshop.

Month &Year	**TNEB Units**	**DG - Units**	**Total (Units)**
Jan 18	38920	450	39370
Feb 18	55560	425	55985
Mar 18	55200	625	55825
April 18	58680	450	59130
May 18	51920	1525	53445
June 18	52280	1975	54255
July 18	48560	1825	50385
Aug 18	41080	725	41805
Sept. 18	53040	1825	54865
Oct 18	39760	2325	42085
Nov 18	41320	675	41905
Dec 18	50760	4650	55410
Jan 19	38008	2350	40358
Total	625088	19825	644823
Average/month			**49602**

From the above table, the energy consumption is taken on the monthly average i.e., **49602 units** and this amount of electrical energy consumption of the SSE/EMW/PTJ is utilised for inside workshop, administrative buildings, accounts, store section etc. The manpower requirement is arrived by using the current bench mark value of the Salem division.

3.6.3 **Man Power Ratio (Bench marking) of Electrical power:**

Man power ratio of electrical power has been classified as two Groups viz. divisions having energy consumption of more than 23,00,000 units per month and divisions having less than 23,00,000 units per month.

The manpower required for power side maintenance is arrived based on the MPR (benchmark) provided by the Efficiency Research Directorate of Railway Board vides Benchmarking Report – December - 2018.

3.6.4 As per the report, SA division is consuming less than 23 lakh units/month. The bench marking of electrical power for the month of December – 2018 is described below.

Current IR average	-	0.22 Men / 000 units
Current bench marking	-	0.08 BKN div. in NWR

In Southern Railway the average is best at

SA division	-	0.14 Men / 000 units
PGT division	-	0.14 Men / 000 units

3.6.5 Efficiency of an organisation is assessed based on the Bench marking concept so as to adopt the same in other similar units to improve the same in future.

3.6.6**. In order to achieve the Targeted Operating Ratio, it is very essential to keep the staff cost to the minimum. This can be done only by adopting the bench marking i.e Man Power Ratio methodology.**

In the power maintenance, there are lot of areas such as Sub stations, transformers & switch gears, UPS, Pumps, solar heaters if available, Street/road lights, meter readings, water coolers, operation of DG-sets etc.

Even though the operation and maintenance of motor pumps for water, UPS connection, operation of DG sets can be outsourced for maintenance and repair to minimize the staff strength.

3.6.7 The work study team proposes to adopt the bench marking as the methodology to arrive the man power requirement. According to the bench marking of December-2018, as per the above details, 0.14 men/000 units achieved by PGT and SA divisions. Hence, the total requirement based on this methodology is as follows.

Average energy consumption/month	=	49602 units
Bench marking is 0.14 staff per 000 units based on PGT & SA divisions.	=	49602/1000 x 0.14
Requirement of man power is This includes LR/RG and one supervisor JE/SSE.	=	**6.9** say **7 staff.**

These 7 staff are exclusively used for power side such as 22 KV Sub station, transformers, switch gears, HT & LT connections, DG – set etc., for periodical and break down maintenance.

3.6.8 **Machinery & Plants maintenance Vs Staff strength:**

At present 289 machines/plants are available in S&T workshop of which these machines require electrical maintenance from EMW shop along with MMW staff. The sanctioned strength of 17 staff is being utilized for electrical maintenance of machines & plants but in actual is 14 and sanction & actual of one Supervisor. Out of 14 staff, 3 staff is deputed for 22 KV Sub station for round the clock. One staff is used for office/Store and the remaining 10 staff is utilizing for machine maintenance and other related accessories.

After deducting power side staff, 11 staff only (17-6, one staff is considered as supervisory) available for machines maintenance. These 11 staff are not sufficient to manage the 289 machineries and plants in various shops & administrative office, etc inside the S&T work shop.

Moreover, there is no standard allowed time for their working in any machine or any activity, the requirement can be worked out only by physical observation of the engagement of the activities of this staff. From the observation at different times in various shops, it is found that EMW staff is engaged in sustained attention only for about 60 to 70 % of their

duty hours, but it is more sensitive nature, and also the use of OT is due to proper planning of works and less idling during regular hours. No data was given from the various shops regarding machine failure hours.

It is also learnt that the hours lost an account of machine failures including power failure is not tailored into the calculation of incentive at S&T workshop.

However, the work study team has considered and enhanced the staff strength of 11 to 13 for effective and uninterruptive machine maintenance and this lead to increase the production of S&T workshop. So the urgent need is to create the 2 posts to EMW section. Therefore, 6 staff and a supervisory staff of JE/SSE has to be deputed for power side (total requirement is 7). 13 staff and a supervisory staff has to be deputed for machineries and plants and making a total of 21 staff including 2 supervisors for this EMW section.

3.6.9 **Suggestion:-**

If the EMW staff are put into two roster ie., 07.00 hours to 16.30 hours and 08.30 hours to 18.00 hours, the incidence of Over Time Allowance (OTA) can be reduced considerably and this will benefit of the lady employees and staff coming far away from different places. This can increase the efficiency of attendance also by calling for or by rotation. So this can be settled for both EMW & MMW shops.

Therefore, the study team has considered 21 staff including 2 Supervisor against the existing strength of 17 staff and a supervisor.

3.6.10 **Sanction Vs Requirement:**

Category	Sanction	Actual	Required	Shortage
SSE/JE	1	1	2	1
Technicians	17	14	19	2
Total	**18**	**15**	**21**	**3**

Hence, the Administration may create 2 posts of technicians and a supervisor of JE/SSE. (Total – 3 posts)

3.7 **Drawing Section:**

At present, 3 SSE posts are available in the sanction list, but actual is 2. One Ferro printer is available. The working pattern of drawing section is drawing for new product (part and assembly) preparation, conversion of hand drawing to CAD, updated drawings converted to PDF format and copies sent to consent shop floor, planning, inspection and stores.

Approved drawings copies (Ammonia print) issue to company's for payment based, maintain of all drawings negatives, time to time inspection for reference and record etc.

The study team has considered and allowed to continue working as existing sanction strength as such on need base.

3.7.1 **Sanction Vs Requirement:**

Category	Sanction	Actual	Required	Shortage
SSE/JE	3	2	3	0

3.8 Summary of Sanction, Actual, Requirement and Surplus of the FAB,Relay, EMW shops and Drawing section:

Category	Sanction	Actual	Requirement	Surplus
Fabrication Shop				
Sr.Tech	30	27	30	0
Tech.- I	79	19	71	8
Tech – II	6	18	6	0
Tech – III	1	11	1	0
Total-A	**116**	**75**	**108**	**8**
Relay shop				
Sr.Tech	44	47	44	0
Tech.- I	82	65	67	15
Tech – II	9	16	9	0
Tech – III	15	20	15	0
Total-B	**150**	**148**	**135**	**15**
EMW Shop				
Sr.Tech	3	5	3	0
Tech.- I	5	2	5	0
Tech – II	3	0	3	0
Tech – III	1	2	1	0
Khalasi Helper	5	5	7	-2

Total-C	**17**	**14**	**19**	**(-2)**
Drawing Section				
SSE	3	2	3	0

Hence, the study team has recommended surrendering of 8 posts from Fabrication shop and 15 posts from Relay shop.

During the discussion of Co-ordinating officer, he has mentioned about allowed time per month/staff is less than 200 Mhrs. But the study team has calculated the manpower requirement as 200 Mhrs/Month/Staff as per Mechanical code to apply for all workshop studies. The co-ordinating officer also mentioned the allowed time details for all operation, job cards suspension particulars and OT details with surrendering of job cards. All the above points are considered in the report.

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CHAPTER – IV

4.0 REMARKS ON CO-ORDINATING OFFICER'S VIEWS

The draft work study report was sent through dispatch on 01.03.2019. The Co-ordinating Officer views received on 23.05.2019, vide letter No. No. G.275/WSSR-671819/2018-19 dated 21.05.2019 and remarks of Planning Branch are appended below:

Co-ordinating Officer's Views:

Relay Shop:

As per the work study team's report, the sanctioned strength is 150 and the actual is 148. However based on the information communicated vide ref(2) above, the actual are mentioned as 159. This is due to the reason that the staff of BIS(7) & ESED(4) are also added in the Relay Shop account since as per Book of Sanction these units are treated under one Bill Unit (505).

As per work study report, the total number of DW required for relay shop is 117, EIW/IW is 18, but the actual available at Relay Shop is DW only 95, and EIW/IW 15 staff. It is evident from the work study that there is a shortage of 25 staff for the production schedule of 2018-19.

The shortage of manpower is adjusted by deploying staff from other shops and also by providing additional OT and CR in order to achieve the production target and achieved the out-turn of Rs.106.58 crores for the financial year 2018-19.

Planning Branch Remarks:

Partially Agreed to. The Co-ordinating officer mentioned that the staff has been distributed to BIS as 7 and ESED as 4 respectively and making total of 11 staff were treated under one bill unit against the sanctioned strength of 150. Hence the sanction of Relay shop will be 139 after deducted from above two shop/sections and the man power calculation is already worked out by monthly average allowed time consumption by the account section, mentioned in the report. Hence the remaining 4 staff is recommended for surrender in place of 15 staff based on the Co-ordinating officer views.

Revised Sanction Vs Recommendation:

Sanction	Actual	Requirement	Surplus
139	110	135	4

Co-ordinating officer's Views:

Fabrication Shop :

The following is the observation after perusing the work study report submitted by planning branch/HQ/MAS

Clause No.3.3.5 of report - Sanction Vs Requirement

Table – 1

Shop	Sanction	Actual	Requirement	Surplus
FAB	116	75	108	8

The total no.of men required for FAB section is based on the under mentioned calculation:

B. CALCULATION OF MEN REQUIREMENT MADEBY SSE/FAB :-

I. Based on Job Card drawn & consumed for the period April 2018 – March 2019

a	Allowed time consumed for the job card issued to men	197909 man hours
b	Allowed time for which job card available with men JE/FAB not consumed due to shortage of man power	82227 man hours
C	Total man hours	280136 man hours
D	Monthly average man hours	280136/12= 23344.66 man hours
E	No. of men requirement	280136/267 = 87.43
F	Add 12.5% as LR	98.36
G	15% EIW &IW for DWs	98.36 x15/100 = 14.75
H	Total no. of men required	113.11 say 113 men

II. Men requirement based on Production Plan 2018-19

a	Man hours required	354382 man hours
b	Average man hours per month	354382 / 12 = 29532 man hours
C	Men required	29532 / 267 = 111

F	Add 12.5% as LR	111 x 1.125 = 124.87 say 125
G	15% EIW &IW for DWs	124.87 x15/100 = 18.73
H	Total no. of men required	143.60 say 144 men

The man power requirement calculated based on the job card drawn from SSE/ Rate fixing / PCO and consumed for the production for the year 2018-19 as per the production plan for the year 2018-19 are shown in the table given below:

FAB Shop	**Sanction**	**Actual**	**Required**	**Shortage with respect to actual strength**
As per jobcard drawn from SSE/RF/PCO (No. of men)	116	71	113	42
As per the requirement for production plan 2018-19 (No. of men)	116	71	144	73

Conclusion:

It is to note that the production as per production plan 2018-19 could not be achieved due to the acute shortage of man power ie., the production can be achieved only by posting necessary artisan staff to FAB shop. In this context, it is requested to post 73 men to achieve the production to the tune of production plan 2018-19 (as shown in table – 2)

Planning Branch Remarks:

Not agreed to. The actual Allowed time consumption of job cards is 113752.83 Man hours only (for 10 months) and an average /month is 11375.28 man hours and out turn issued other than target is 35984.53 (for 10 months), making a total of 149737.36 man hours and an average/month is 14973.73 man hours. The man power calculation is worked out as below.

Average DW required (14973.73/267)	-	56.08
LR for DW @ 12.5%	-	7.01
Total	-	63.09
EIW & IW @ 15%	-	9.45

Total staff requirement for FAB shop - 72.54 say 73

But the study team has already allotted 108 staff for the future requirement for extra load.

Moreover, the job cards of 223550 man hours have been issued to FAB shop by RF/PCO disproportionately to the actual staff availability. The requirement of target increased/decreased depends upon the various factors like infrastructure, machineries and plants, space, plant and layout, raw materials etc, not only to increase the man power. Hence the study team has already considered the above factors and increased the man power requirement of 108 staff against the 223550 man hours in place of current actual staff of 71 on account of the future increasing work load.

Co-ordinating officer's views:

EMW Shop:

The following is the observation after perusing he work study submitted by planning branch/HQ/MAS.

It is learnt as suggested in the report that excess staff strength is required for apt maintenance of machineries and plants which has also been insisted upon by this section. Hence, as suggested in the report, increase the staff strength is very much essential for carrying out maintenance activities which will aid the production activities.

Planning branch remarks:

Noted.

Co-ordinating officer's views:

SSE/Drawing Office

The following is the observation after perusing he work study submitted by planning branch/HQ/MAS.

It is learnt as suggested in the report that one additional staff is required for the preparation of Drawings for the new products, maintenance of the negatives of all drawings along with related documents and for issuing of copies of drawings to Shop floors, planning section and inspection for record. Hence, as suggested

in the report, increasing the staff strength is very much essential for carrying out smooth running of day-today-operations.

Planning branch remarks:

Agreed. The workShop may create a new post.

CHAPTER – V

5.0 FINANCIAL SAVINGS

If the recommendations of the study report are implemented, the Annual Financial Recurring Savings will be as follows.

Sl. No	Designation	Grade Pay (Rs.)	No. of posts	Mean Pay (Rs.)	Annual Financial Savings (Rs.)
1.	Technician Gr.I	2800	12	68040	9797760
	Total		**12**		**9797760**