¡ðØððÜ A C K N O W L E D G E M E N T

The Central Planning organization takes this opportunity to express hearty thanks to the Officials and staff of Operating Department of Nanded Division for their valuable guidance and co-operation in compilation of the report.

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òãðòÏð M E T H O D O L O G Y

The Work Study department has applied the following techniques for completion of the Work Study.

1. Collection of the details of workload particulars.
2. Interaction with all the Staff and Officers on the Division.
3. Critical examination of the existing system of working and
4. Assessment of manpower requirement for existing workload.

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- Subject: Review of Staff Strength of Cabin man in Operating Department over NED Division.
- Authority: Railway Board's Annual Programme of Work studies 2018-19.
- Study No: WSSCR-37/2018-19
- Reference File No: G.276/2/WSSCR-37/2018-19.
- Area of Activity: Nanded Division.
- The Central Planning cell of South Central Railway has taken up the Work study on the Review of Staff Strength of Cabin man in Operating Department over NED Division in order to study the available manpower in comparison with the current IR Average and to thus identify if any excess staff is available, with a view to right size the manpower.
- In course of conducting the Work study, Study team consulted with Sr. DPO/NED, concerned Dealing Assistant under him and noted the details of staff position of Cabin man over NED Division.

S.NO.	CADRE	GP	SANCTIONED STRENGTH	MEN ON ROLL	VACANCY
1	CABIN MAN	2400	5	3	2

- Operating Department in Railways is responsible for managing the smooth running of trains. From crew booking, running of trains, managing of Station premises are controlled by Operating Department.

- Among them, the main objective of Operating Department is to operate smooth and safe running of trains. This is done through arrangement of signals, points and other appliances, operated through a panel or lever frame, and so inter-connected by Mechanical locking or Electrical locking or both of that their operation must take place in proper sequence to ensure safety. This process is known as Interlocking and is operated from Cabins situated at both ends of stations and various locations of points & crossings.

- In Interlocking, points, signals and other units are usually, operated by means of levers and panels. Interlocking between these levers is accomplished either by mechanical or by electrical or electro-mechanical or electronic means. In the former method, some mechanical contrivance variously designed, controls the relation between one lever and the other. At less important stations the point, signal and other levers are interlocked by means of keys which are used to lock or release the levers, either in the normal or in the reverse Position as required. At other stations the levers are interlocked by means of tappets inside a box of the lever frame, which is normally kept covered and sealed.

- With the advancement of technology, the system of Interlocking has changed drastically. Earlier Mechanical Interlocking was invoked in the system, but with time, phase-wise, Railway has adopted Panel Interlocking (PI) and Route Relay Interlocking (RRI) in large scale. With the introduction of new Interlocking systems of PI & RRI, the involvement of manpower reduced considerably and the operation of interlocking became smooth, safe and fast.

- In view of the above, south Central Railway has taken serious consideration to make the operating ratio within limit (i.e. below 100%) by decreasing the Working Expense and increasing the Earnings. Thus the subject work-study has been undertaken in this financial year 2018-19, to assess the need based requirement of manpower relating to Operating Department.

- The Railway authority has suggested conducting the subject study in order to provide need based requirement of Cabin man under Operating department in NED division consequent upon the changed scenario. In view of the above, an in-depth study on the subject matter has been conducted by the study team based on the data collected during field study.

- As such, the prerequisite of manpower has become less in comparison to earlier methodology of Railway operation. Therefore, the competent authority is reluctant to fill up the vacancies especially on non safety categories.

- The object of conducting the subject study is to see the cadre position where the posts are lying vacant since long. However, the study team has conducted the study concentrating on the Cabin man in NED division based on their utilization and deployment against existing workload.

- Thus, considering the present scenario, it is seen that 3 Cabin man On-Roll are deputed over NED Division without the nominated job of "Cabin man".

- In the light of above, study team recommends surrendering 5 sanctioned posts of Cabin man from the existing Sanctioned Strength.

- RECOMMENDATION: It is recommended by the study team that 5 posts of Cabin man to be surrendered from the existing Sanctioned Strength of 5 posts of Cabin man over NED Division under Operating Department.

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CHAPTER-I

1.0. INTRODUCTION:

IR is the single largest system of public transportation in India and it is the 4th largest Railway network in the world by size. The network has covered with 1, 19,630 Km. (74,334 miles) of total railway track and 92,081km. (57,216 mile) of running track over a 66,687 km (41,437 mile) route through high density urban areas as well as vast rural and forest areas at the end of 2015-16. On an average 13,313 passenger trains per day in 2015-16.

1.1. More than 45% of its route is electrified with 25kV AC electric traction. Its track is mostly B.G. with short stretches of Meter & Narrow Gauge track. 37% of its route is double or multi tracked.

1.2. At the end of 2015-16, IR‟s Rolling Stock consisted of 2,54,006 Nos. freight wagons, 70,241 Nos. passenger coaches and 11,122 locomotives (39 powered by steam, 5869 by diesel fuel and 5214 by electricity).

1.3. IR carried 8.26 Billion passengers (more than 22 million passengers per day), transported 1.16 billion Tonne of freight and had 8500 stations in the F.Y. 2017-18.

1.4. IR is the world's 8th largest employer; it had 1.33 million employees at the end of 2015-16. It had earnings of Rs. 1.874 Trillion in 2017-18, consisting of Rs. 1.175 Trillion in freight revenue and Rs. 501.25 Billion in passenger revenue.

1.5. It provides services to 2.2 crore passengers and operates 11, 842 passenger trains daily. , The object of modernization is to maintain safety, security and punctuality. In addition to that, with the advancement of technology, Railway has also upgraded the staff by giving training to acquaint with modern technology so that they can keep pace with the line.

1.6. Operating Department in Railways is responsible for managing the smooth running of trains. From crew booking, running of trains, managing of Station premises are controlled by Operating Department.

1.7. Among them, the main objective of Operating Department is to operate smooth and safe running of trains. This is done through arrangement of signals, points and other appliances, operated through a panel or lever frame, and so inter-connected by Mechanical locking or Electrical locking or both of that their operation must take place in proper sequence to ensure safety. This process is known as ***Interlocking*** and is operated from Cabins situated at both ends of stations and various locations of points & crossings.

1.8. In Interlocking, points, signals and other units are usually, operated by means of levers and panels. Interlocking between these levers is accomplished either by mechanical or by electrical or electro-mechanical or electronic means. In the former method, some mechanical contrivance variously designed, controls the relation between one lever and the other. At less important stations the point, signal and other levers are interlocked by means of keys which are used to lock or release the levers, either in the normal or in the reverse Position as required. At other stations the levers are interlocked by means of tappets inside a box of the lever frame, which is normally kept covered and sealed

1.9. With the advancement of technology, the system of Interlocking has changed drastically. Earlier Mechanical Interlocking was invoked in the system, but with time, phase-wise, Railway has adopted Panel Interlocking (PI) and Route Relay Interlocking (RRI) in large scale. With the introduction of new Interlocking systems of PI & RRI, the involvement of manpower reduced considerably and the operation of interlocking became smooth, safe and fast.

1.10. Types of Interlocking in Indian Railways:

- Mechanical Interlocking :

The era of interlocking started with mechanical frames. In mechanical signaling, since the functions are operated by levers, the relationship that should exist between the functions can be transferred to exist between the levers. To ensure that the signal can be taken „OFF" only after the point is correctly set, we can arrange the interlocking between the signal lever and point lever to be such that the signal lever can be reversed only after the point lever is in the correct position, viz. „Normal" or „Reverse", as the case may be. As the size of yards & train movements increased, size of lever frames also increased. These lever frames not only increased in size occupying more space but also required intensive maintenance.

- Electrical Interlocking:

Electrical equipment of some kinds may be used even in the mechanical interlocking systems described above (e.g., electrical relays that operate slotting). However, the basic operation there remains mechanical in nature. In electrical interlocking, the fundamental mechanisms use electric control extensively. Electrical interlocking often goes hand in hand with power signaling, although there are or were installations with electrical interlocking provided for semaphore signals.

- Panel Interlocking

With the advent of Electro-mechanical relays, lever frames gave way to relay interlocking based installations. This development resulted in relatively faster operation, failsafe operation and reduced size of buildings required for housing of interlocking installations. With further increase in traffic and expansion of railway network, panel Interlocking installations were commissioned.

- Route Relay Interlocking:

Route Relay interlocking is same as Panel Interlocking with Electro Mechanical Relays doing the Interlocking except that it can be employed for big yards. the interlocking is done between one route and another route. Another Important feature in terms of operating point of view is that the SM has to only press two buttons, Signal button & Route Button (entry-exit system). He doesn"t have to individually operate the points to the required position.

- Solid State Interlocking (SSI):

Computer based interlocking uses thousands of Electro-mechanical relays requiring complex wiring and Inter-connections. The wiring diagrams for such installations run into hundreds of sheets. Individual relays, wiring and interconnections along with thousands of shouldered joints are required to be physically examined and certified. This exercise requires traffic blocks of long durations and large manpower to manage the traffic during blocks.

1.11. Railway Board in March'1985 conveyed the decision to set up a new division on South Central Railway with Headquarters at Nanded. This Division covers mainly the geographical region of Marathwada of Maharashtra state, some parts of Adilabad district of Andhra Pradesh and Amaravati & East Nimad districts of Madhya Pradesh. The foundation stone for the Sub-Division office at Nanded was laid by Hon'ble

Minister of State for Railways on 20.07.1989. The Nanded Control Board was commissioned in the Administrative office building w.e.f. 4.12.1993 duly closing the Control office at Purna and it functioned as Sub-Division under Hyderabad Division up to 31.03.2003.

Nanded Division started functioning independently as a full-fledged Division from 01.04.2003 and Division was dedicated to nation by Hon'ble MOSR on 12.04.2003.

1.12. The division covers Marathwada, Adilabad (Telangana) & East Nimach (Madhya Pradesh). Total 985.795 route kilometres consisting of Manmad-Mudkhed (374.40), Parli-Parbhani (63.61), Mudkhed-Pimpalkutti (181.975), Purna-Akola (206.88) sections of Broad Gauge and Khandwa-Akola (175.93) section which is under Gauge Conversion.

1.13. The division has 103 Stations (5-A Category, 3-B category, 11-E Category, 53-E Category, 18-Halts).
48 pairs of express trains (11-daily & 37-Non daily) and 25 pairs of passenger trains runs over Nanded division.
Aurangabad, Daulatabad & Sahasrakund are the stations of tourist importance.
Nanded, Nagarsol, Rotegaon, Chondi, Mirkhel, Aurangabad & Kinwat are the stations of Pilgrimage importance. CONCORE siding is available at Daulatabad station.

1.14. Parbhani-Parli section of Nanded is part of an important route for carrying coal to the Parli Thermal Power Station. The division serves mainly the geographical region of almost the entire Marthwada, Amravati and parts of Vidharbha, Adilabad district and East Nimaj districts of Madhya Pradesh.

1.15. Due to modernization of signaling system by providing "Multi Aspects Colour Light Signaling" (MACL) and Panel Interlocking/RRI from orthodox Lever Frame system, the workload on Optg. Deptt. is decreasing drastically day by day.

1.16. Indian Railway is facing tremendous financial crunch after implementation of 7th Pay Commission. Operating ratio is gradually increasing. 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 1(ONE). The year-wise Performance Efficiency Index of E. Rly. As per the E. Rly. published corporate plan is tabulated below -

Operating Ratio	
2010-11	178.52 %
2011-12	179.79 %
2012-13	178.86%
2013-14	173.32%
2014-15	177.27%
2015-16	180.56%
2016-17	165.25%
2017-18	178.76% (Proposed)

1.17. In view of the above, South Central Railway has taken serious consideration to make the operating ratio within limit (i.e. below 100%) by **decreasing the Working Expense** and **increasing the Earnings**. Thus the subject work-study has been undertaken in this financial year 2018-19, to assess the need based requirement of manpower relating to Operating Department.

1.18. The Railway authority has suggested conducting the subject study in order to provide need based requirement of Cabin man under Operating department in NED division consequent upon the changed scenario. In view of the above, an in-depth study on the subject matter has been conducted by the study team based on the data collected during field study.

1.19. As such, the prerequisite of manpower has become less in comparison to earlier methodology of Railway operation. Therefore, the competent authority is reluctant to fill up the vacancies especially on non safety categories.

1.20. The object of conducting the subject study is to see the cadre position where the posts are lying vacant since long. However, the study team has conducted the study concentrating on the Cabin man in NED division based on their utilization and deployment against existing workload.

CHAPTER-II

2.0. EXISTING SCENARIO:

As already discussed in previous chapters that earlier Mechanical Interlocking system was invoked in Indian Railways, These Mechanical Interlocking systems were operated from End Cabins situated at both ends of the station.
The overall In-charge of the Cabin is Cabin Master who works with mutual co-ordination with Station Master. The other staffs who work in Cabin under direct supervision of Cabin Master are Cabin man, Points man, Lamp man, etc.
2.1. In course of conducting the Work study, Study team consulted with Sr. DPO/NED, concerned Dealing Assistant under him and noted the details of staff position of Cabin man over NED Division.

S.NO.	CADRE	GP	SANCTIONED STRENGTH	MEN ON ROLL	VACANCY
1	CABIN MAN	2400	5	3	2

2.2 The schedule of working i.e. Duty List of cabinman is given below:

- He must ensure that normal position of every fixed signal is „ON" at all times except when taken off for a train and night back lights of signals are burning.
- Before permitting indoor ASM on duty under exchange of private numbers for granting line clear for train to station in rear, he must ensure that conditions for granting line clear as laid down in rules are fulfilled.
- He must ensure that the reception or departure path is clear and free from obstrction; route is correctly set, facing points locked and
- He is responsible to ensure that the reception line is clear up to the adequate distance required under the rules before lowering signals or releasing a slot for the reception of a train.
- The cabin man will watch the safe passage of all trains leaving or arriving at the station. Should he notice any abnormality he shall inform the indoor ASM on duty at once.
- He shall not alert route under moving wheels.
- He will maintain register and will record all messages under exchange of private number with indoor ASM and gateman on duty to connection with train passing shunting closing of level crossing etc.
- The concept of train operational system like „Route Relay Interlocking" i.e. RRI and Panel Inter Locking i.e. PI" has already been introduced in different stations over Indian Railway to provide punctual, safe and hazardless service of train movement. The said operational method based on modernized technology obviously control the movement of trains more effectively in comparison to previous system of working. Aiming at the target of smooth, easy, safe and effective movement of train, the PI/RRI system of working has phase wise been introduced in different stations over MLDT division.
- After introduction of PI the function of Cabin man in end cabins has become nil and the cabin mans are utilized to work as Porter, Operating Deptt. Controlled Gateman in Rly. Station approaching Traffic gates only (if exists).

2.3. In course of conducting the study over NED Division, it is noticed that Panel Interlocking (PI) System commissioned/ installed in all stations.

2.4. After commissioning of the PI System, the deployment of Cabin man has been reviewed and altered suitably.

2.5. Thus, it is seen from the above paras, that even after commissioning of Panel Interlocking system over NED Division, Cabin man posts are still functioning over NED Division.

CHAPTER-III

3.0. CRITICAL ANALYSIS:

3.1. On being scrutinized all aspects, it is revealed that the operational time for setting points as well as giving signals for safe running of trains by means of panel interlocking system of working has become easy due to single point operation of both signals and points by operating switches of the panel board as per requirement. Instead of multipoint operational system of working as previously done by operating lever frame after getting consents from cabins and station master, the revised process is more acceptable. The present system of working based on PI type of operation would not leave any scope of continuing the previous process of lever frame operation which justifies the withdrawal of cabin man from cabins. In view of above, the study team does not feel any necessity to retain the posts of cabin man as there is little scope of utilization of cabin man in NED division, while PI system has already been introduced in all of the stations in NED division.

3.2. Instead of previous system of working, one central panel cabin has been commissioned for operating PI system by means of switches to be used for giving signals and points setting. The workload of cabin man has reasonable been reduced resulting in surplus of cabin man.

3.3. In case there is any need of commissioning end panel cabins in both ends of any station applying PI system of working, cabin master may be provided to operate panels in both cases.

3.4. To match with the modern slogan of modern management, "Much outturn with less manpower", this division is always performing its best to minimize its workforce in various fields of activities introducing modern equipment or by changing its mode of operation.

3.5. Thorough field observation and discussion with TIs /NED, ADB, J, AWB, HNL, WHM and respective Station Masters it is learnt that these cabin man on-roll are mainly utilized for other misc. Gr.- D work at stations under supervision of respective Station Masters.

3.6. There is almost all area of Train operation over NED Division where Lever Frame operation work does not exists due to implementation of modernized system and so no need of deployment of cabin man.

3.7. Considering the present scenario, it is concluded by the study team that the five sanctioned posts of Cabin man are not required to operate.

3.8. In the light of above discussion, the present cadre position of "**Cabin man"** over NED Division is tabulated below:

S.NO.	CADRE	GP	SANCTIONED STRENGTH	MEN ON ROLL	VACANCY
1	CABIN MAN	2400	5	3	2

3.9. Thus, considering the present scenario, it is seen that 3 Cabin man On-Roll are deputed over NED Division without the nominated job of "Cabin man".

3.10. In the light of above, study team recommends surrendering 5 sanctioned posts of Cabin man from the existing Sanctioned Strength.

3.11. RECOMMENDATION:

It is recommended by the study team that 5 posts of Cabin man to be surrendered from the existing Sanctioned Strength over NED Division under Operating Department.

CHAPTER-IV

4.0. FINANCIAL APPRAISAL:

4.1. As per recommendation made in Para 3.11, 5 posts of Cabin man under Operating Department of NED Division to be declared as surplus and financial savings thus achieved will be as under :

Sl. No	Category	scale From-To	GP	No. of posts	*Mean Pay	DA@ 9%	Emoluments P.M (in Rs.)	Total Emoluments P.A (in Rs.)
1	Cabin man	25500-81100	2400	5	(25500+81100)/2=53300	4797	58097x5=290485	290485X 12=3485820= 34.86 lakh

4.2. Thus, consequent upon implementation of recommendation, the annual savings for surrendering of 5 posts of Cabin man would be Rs. 34.86lakh.

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C H A P T E R – 5

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R E C O M M E N D A T I O N	Para No.
It is recommended to surrender **5** posts of cabin man from book of sanctions.	**3.11**

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