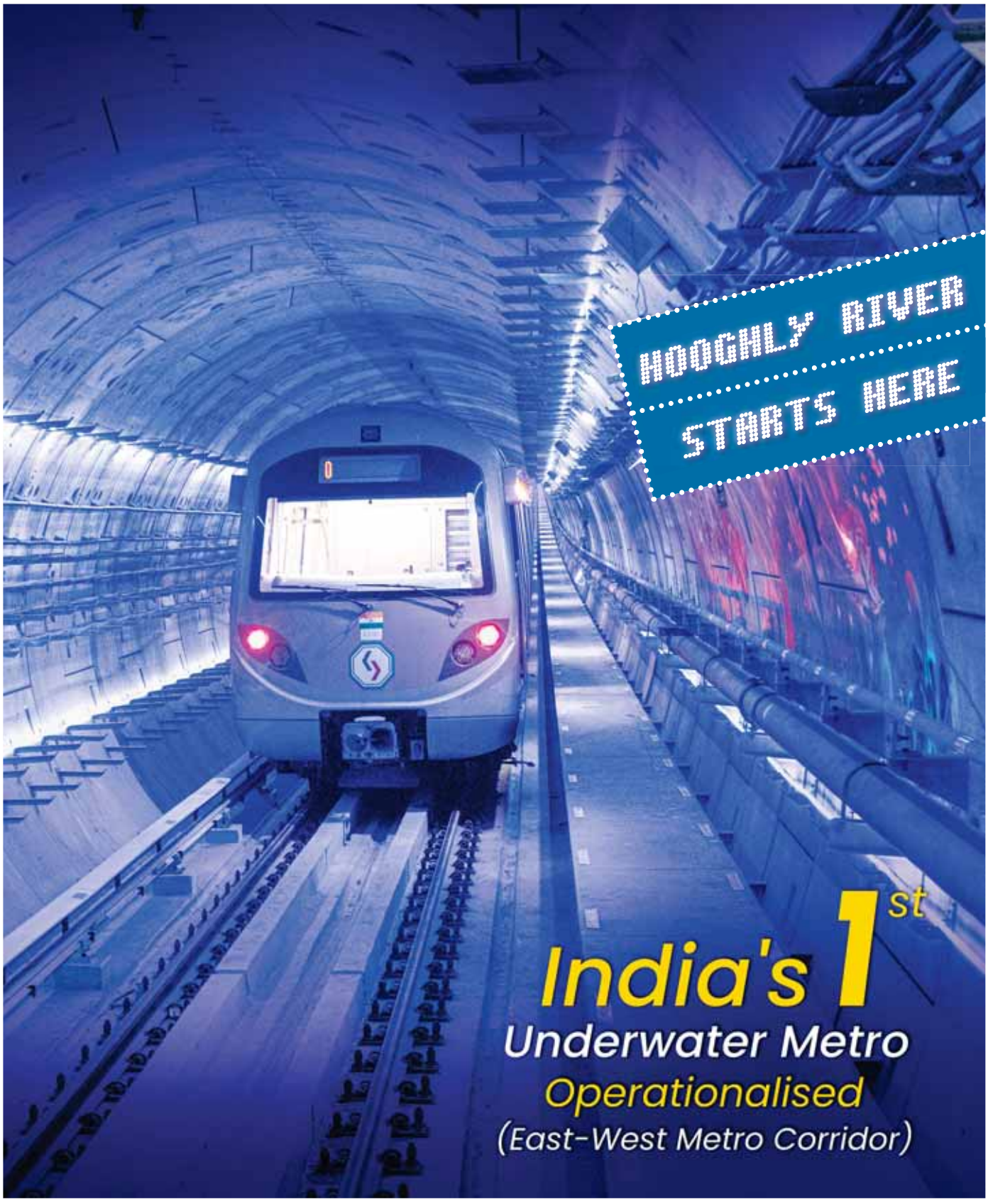
INDIAN RAILWAYS

APRIL 2024

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5 **Indian Railways Celebrated International Women's Day**

11 **RPF has the Highest Proportion of Female Personnel-9%** Compared to other Central Paramilitary Forces in India

12 **Railway Protection Force and National Commission for** Women Unite Against Human Trafficking

14 **Howrah Maidan–Esplanade Stretch of East-West Metro:** An Engineering Marvel

18 **Ministry of Railways created the Guinness** World Record on 26th February, 2024

19 **Member, Railway Board visited Rail Wheel Factory**

20 **WR's Jagjivan Ram Hospital Organized Indian** Railway Cardiology Conference

21 **IR's Record Best Ever Performance in Freight** Business, Total Revenue and Track laying in FY 2023-24

21 **SER Crossed the Milestone** for 200 MT of Freight Loading

22 **Indian Railways Achieved 1,434.03 MT** Freight Loading till February, 2024

23 **Wind Speed Monitoring System for** Mumbai – Ahmedabad High Speed Rail Corridor

24 **Railway Protection Force Reunited over 521 Children** under Operation 'Nanhe Faristey' in February 2024

26 **News of Zonal Railways and Production Units**

42 **Sports News**

43 **Photo Gallery**

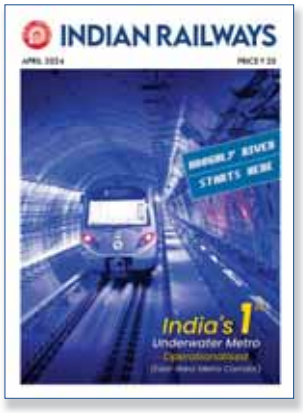
47 **Progress Report**

49 **Redevelopment of Stations**

52 **Automated FAT/SAT – Leveraging Technology for** Faster & Reliable Signalling System Installation
Shri Rajneesh Gupta, Shri Amit Misra and Shri Rajendra Dhambel

59 **From the Land of Majestic Tigers**
Shri Tushar Kanti Pan

62 **Life Power Food & Energy**
Shri Kamal Tejwani



Editorial

You see trains moving on the ground, below the ground, and above the ground. But now you will be able to experience the thrill of train travel even under the river or sea. Presenting another excellent example of the engineering field, Indian Railways has started operating metro trains by tunnelling under the Hooghly River. This underwater tunnel has been built in the Howrah Maidan-Esplanade extension section of the East-West Metro. It is the first of its kind metro transport tunnel constructed under any huge river in India.

A similar thrill will be experienced by the passengers of the Mumbai-Ahmedabad bullet train while travelling under the sea. Of the total 508.17 km rail track of the Mumbai-Ahmedabad high-speed corridor, the tunnel will be 21 km. Of this, the 7-km-long undersea tunnel in the Thane creek will be the first sea tunnel to be built in the country. The bullet train will run at a speed of 300 km per hour in this tunnel built under the sea.

In 2008, the 16.55 km long East-West Metro corridor of the Kolkata Metro was approved. As of February 2024, about Rs 8975 crore has been spent on this project. Its first trial was conducted in April 2023. This tunnel will prove to be a blessing in making the journey of Kolkata and Howrah, the most congested cities of West Bengal, easier. The length of the tunnel under the river of the East-West Metro corridor is 520, which is situated 13 meters below the river bed. Passengers will pass through this half-kilometer tunnel under water in less than 1 minute.

Presenting a unique engineering marvel, our engineers completed the under-river tunnel in just 66 days. This work was done with pin-point accuracy by meticulously planned and executed Earth Pressure Balancing Tunnel Boring Machines. The internal diameter of both the up-down tunnels is 5.55 meters and the distance between these tunnels from the center to the center is 16.1 meters.

Each concrete liner segment is fitted with an imported neoprene main gasket and hydrophilic auxiliary gasket. The hydrophilic gasket expands in contact with water and prevents the entry of water through segmental joints.

Our engineers faced many challenges in completing this project. Due to being near the tidal river and the sea, the condition of the soil changes from place to place, which needs to be thoroughly checked. Secondly, it is a very old city, there are old dilapidated buildings, it was a big challenge to build a tunnel safely under it.

A 15-storey shaft has been made at both ends to safely evacuate passengers at the time of untoward incidents like train breakdown and fire. This 44-meter deep shaft will also work as ventilation. It is the deepest shaft in metro transport in India. The Howrah metro station built in this section is also the deepest metro station in India. It is 33 meters below the surface.

Please let us know how you liked this edition.

Indian Railways Celebrated International Women's Day



International Women's Day was celebrated on 8th March, 2024 at Rail Bhawan. On this occasion a selfie was taken by Smt. Jaya Varma Sinha, Chairman & CEO, Railway Board. Also seen are Ms. Roopa Srinivasan, Member Finance, Ms. Seema Kumar, Member (O&BD), Ms. Aruna Nayar, Secretary, Railway Board, women officers and staff of Railway Board.



Smt. Jaya Varma Sinha, Chairman & CEO, Railway Board addressed the gathering on the occasion of International Women's Day held at Railway Board on 8th March, 2024

International Women's Day Celebrated in BLW



Various inspirational, educational and entertainment based programmes based on women empowerment were organized on the occasion of International Women's Day at the Technical Training Center on 15th March 2024. Smt. Neelima Panda, President of Women Welfare Organization honoured the BLW women employees who are retiring in the year 2024 by giving them corsets. In her address, Mrs. Panda said that in today's environment, women are making important contributions not only to the family but also to the society, country and the world.

Women are progressing in every field. On this occasion, the main speaker of the programme, Vision Society for Enteractive Operational Needs NGO Secretary and Member, BLW Sexual Harassment Committee, Smt. Jagruti Rahi, in her address, stressed on empowering the women of the country more and making them realize their potential. Senior Divisional Medical Officer of BLW, Dr. Madhulika Singh gave detailed information about the daily problems of women and their solutions as well as the lifestyle, eating habits of people etc.■

International Women's Day at Rail Wheel Factory

International Women's Day was celebrated at RWF on 7th March, 2024. Smt. Sushma Rajagopal, President RWF Women's Welfare Organisation was Chief Guest of the Function. Shri R. Rajagopal, General Manager, presided over the function. The Guest speaker, Smt. Anuradha T.K., distinguished scientist and Retd. Director, ISRO, spoke on abilities of women of multitasking and shared her experience as a Project Director at ISRO and her co-existence in a male dominated profession.

On the occasion, Smt. Sushma Rajagopal, Chief Guest, distributed prizes for winners of the competitions held for women employees of RWF. Cultural Programme was organized by the women employees of RWF. Shri. V. M. Bodele, PCE and



PCPO, PHODs, HODs, other senior officers and women employees of RWF in large numbers were present during the function.■

Northern Railway Declared Five Pink Stations

International Women's Day is celebrated every year on 8th March to mark and celebrate the social, economic, cultural and political achievements of women and raise awareness about women equality, accelerate gender parity. The day aims to highlight the achievements made by women in different areas.



As part of celebrations, five stations of Northern Railway i.e. Firozshah on Firozpur division, Mohali on Ambala division, Malhaur & Manak Nagar on Lucknow division and Delhi Safdarjung on Delhi division have been declared as Pink stations and trains are running by women staff on these stations. These stations are managed by lady staff and duties of Guard, Assistant Stations Master, Loco Pilot and RPF are performed by women.

Pink stations are the newest addition to the Railway. These stations are run by an all women staff and managed by them. This initiative is good way to empower women as it creates a safe space for women workers and passengers. This initiative is also a way to provide such people with a platform to get financially independent and makes supportive community.■

Metro Railway Celebrated International Women's Day



International Women's Day was observed in Metro Railway on 8th March, 2024. The objective of this programme was to highlight the steps taken by Metro Railway for empowerment of women. An interactive session was organised to mark the occasion. In this session, the participants shared their thoughts about the empowerment of women and the challenges they face every day.

Highlighting the theme of this year's International Women's Day, i.e. 'Invest in Women: Accelerate Progress', Smt. Ambika Jain, Principal Financial Advisor, and other lady officers, staff of all departments shared their thoughts about empowerment of women. A cultural programme and a quiz competition were also held in which a large number of lady employees participated. Gifts were distributed among all the participants. Around 125 lady officers, staff of Metro Railway participated in this programme.■

SER Celebrated International Women's Day



International Women's Day was celebrated by South Eastern Railway at its Headquarters, Garden Reach with great enthusiasm on 8th March, 2024. Shri Anil Kumar Mishra, General Manager, South Eastern Railway was the Chief Guest at the programme. Shri Anil Kumar Dubey, AGM, Principal Head of the departments and women employees of different departments were present on the occasion. 54 women employees of SER were felicitated for outstanding contribution in their respective jobs in the function.

Shri Anil Kumar Mishra appreciated the performance of nearly 8,000 women employees serving all over South Eastern Railway. He also praised the awardees for their dedication, sincerity and hard work. The General Manager mentioned about the International Women's Day 2024 Theme – 'Invest in Women: Accelerate Progress'. He also stated about the different initiatives taken by S E Railway for the benefit of its women employees. A beautiful cultural programme was staged by the cultural team of Headquarters on this occasion.■

SCR's Railway Protection Force Shakti Team Awarded



The 'Shakti Team' of South Central Railway Women Railway Protection Force in 'Women Protection Category' were awarded as part of International Women's Day Celebrations - 2024 held on 14th March, 2024 at Ravindra Bharathi, Hyderabad by the Department for Women, Children, Disabled & Senior Citizens, Government of Telangana.

Ms. Aroma Singh Thakur, IG cum Principal Chief Security Commissioner, South Central Railway was presented the Award consisting of ₹1 lakh and a Memento. Ms. Debashmita Chattopadhyay Banerjee, Senior Divisional Security Commissioner, Secunderabad Division, RPF women officials and Staff were present during the award ceremony. Shri Arun Kumar Jain, General Manager, South Central Railway congratulated Ms. Aroma Singh Thakur, Principal Chief Security Commissioner, and SCR RPF Women's team for ensuring women passengers security round the clock. He appreciated the bravery and alertness displayed by the team and stated that such action not only enhances the morale of our Railway Protection Force but also encourages other railway staff to undertake such efforts. He said that it is also a proud moment for the Zone as well that our team members have received this prestigious recognition and award.■

CLW Celebrated International Women's Day



International Women's Day 2024 was celebrated in Chittaranjan Locomotive Works on 8th March, 2024 with the theme - 'Inspire Inclusion,' reflects the vision of a world where everyone enjoys equal rights and respect.

The ceremony was inaugurated by Smt. Namita Malhotra, President/CLW Women Welfare Organization as Chief Guest and Shri Hitendra Malhotra, General Manager. Shri Amitabh Choudhary, Principal Chief Personnel Officer, heads of departments, senior officers, members of CLW Women Welfare Organization, women employees, and supervisors, graced the occasion. The programme features, vibrant cultural programme organized by the women employees of CLW. Subsequently, outstanding women employees were honoured by Shri Hitendra Malhotra/GM and Smt. Namita Malhotra, President of CLW WWO, for their remarkable performance and dedicated contributions in their workplace.■

RDSO Celebrated International Women's Day



A special programme on the occasion of International Women's Day was organised in RDSO on 7th March, 2024. Chief Guest, Shri Ajay Kumar Rana, Director General, RDSO inaugurated the programme by lighting the lamp. On this occasion, Shri Rana in his address highlighted the outstanding contribution of women in various aspects of life. He told that today women power is a role model not only for women in many fields but also for the entire society. Shri Rana said that the number of women employees and their role in Indian Railways is also increasing continuously. He also said that RDSO is determined to provide better working environment for women employees and improvements are also being made continuously in this direction.

Shri R. K Sinha, DG (Spl.) Vendor Development, Shri S. K Bansal, DG (Spl.) Engg., Shri Sharad Kumar Jain, ADG, RDSO, Shri B.P. Awasthi, PED Infra-II, all women officers and employees of RDSO were present in this programme. In this function, various cultural programmes, handicraft exhibition, lecture on health awareness, debate, antakshari were organised and awards were also distributed to the outstanding women employees of RDSO.■

WR Celebrated International Women's Day



Western Railway celebrated International Women's Day 2024 with great fervour and zeal and the celebrations concluded on 7th March, 2024 with the felicitation of several women employees from various departments of Western Railway for their continuous hardwork, dedication and contribution to the Railways.

The campaign theme of this year's International Women's Day 'Invest in Women: Accelerate Progress' focuses on gender-responsive budgeting by considering and analyzing the unique and diverse needs of every person, striving for a fair distribution of resources. On the eve of International Women's Day on 7th March, 2024, Shri Ashok Kumar Misra, GM, Western Railway inaugurated the First Track Machine operated by an all-women team over Western Railway. The all-women team of seven employees operated the Unimat Spilt Head MFI 57252 in Vadodara Division of Western Railway. This unique initiative uplifted and brought confidence among the women staff in a safe and conducive work environment as well as promote their equal partnership in building and maintaining robust tracks. Following this, a documentary on women employees of Western Railway and a demo on self-defence was shown.

Cultural programme was held and was attended by the principal head of departments, WRWWO committee members, lady officers of WR and women staff.■

International Women's Day in West Central Railway



On the occasion of International Women's Day, various programmes were organized in the direction of women empowerment in Jabalpur, Bhopal and Kota divisions of West Central Railway. A seminar was organized at Jabalpur HQ on the topic 'Prevention of Sexual Harassment at Workplace' on 7th March, 2024 in which Dr. Pratibha Kumar, Professor Mahakaushal College, Jabalpur and Shri Vipan B Kumar, Senior Advocate, Mumbai High Court presented their views in this regard before everyone. Besides, a quiz competition was also organized for women. In the programme, West Central Railway General Manager, Smt. Shobhana Bandopadhyaya rewarded all the winners and encouraged women to always move forward.

Various programmes and competitions were organized in West Central Railway Headquarters and all three divisions from 4-7 March, 2024. Women's breast cancer screening camp was also organized on 4-5 March, 2024, in which about 285 women were screened. Various sports competitions and women wellness seminars were organized for women on 5 and 6 March.■

RPF has the Highest Proportion of Female Personnel-9%

Compared to other Central Paramilitary Forces in India



The Railway Protection Force (RPF) is a prime security and Law Enforcement Agency in the field of Railway Security in India. Established in 1957 for better protection and security of Railway property, the Force has evolved to include roles in passenger security and facilitation.

Recognizing women as symbols of love, care, strength, and eternity, the RPF currently boasts the largest share of women personnel (9%) among Central Paramilitary Forces in India. Specially trained to ensure safety and provide assistance to female passengers in distress, they create a secure environment for travellers. To promote women's empowerment and address the needs of women personnel while performing their duties, the RPF has taken various measures:

- Infrastructure Developments - Construction of standardized barracks, changing rooms, and other amenities designed for the special needs of women officers deployed for train escort duties.
- Nomination of Nodal Officers - Nomination of Female Nodal Officers at all Zones/Units for the redressal of grievances of female personnel, ensuring their voices are heard and needs addressed.

Key aspects of their role under different Operations – Addressing Concern of Women Security –

Meri Saheli initiative - Launched across the Indian Railways network, this initiative aims to provide safety and security to lady passengers travelling alone or with minors on long-distance trains. Presently, on an average, 230 teams are being deployed for this purpose covering more than 400 trains on an average daily across Indian Railways. These teams have been instrumental in apprehending individuals found inappropriately travelling in ladies' compartments, ensuring a safer environment for female passengers.

During the year 2023, 77,839 males found travelling in compartments reserved for ladies have been apprehended followed with legal course of action.

- Operation Matrishakti-RPF personnel, especially women officers, go beyond their call of duty to assist pregnant women who go into labour during their train journeys. In the year 2023 alone, lady personnel of RPF assisted in 206 childbirths.
- Operation AAHT (Against Human Trafficking) - Women and girl child are more vulnerable to Human trafficking. RPF has launched an operation against human trafficking. In 2023,

1048 persons were rescued from traffickers, with 257 traffickers.

- Operation Nanhe Farishtey - An intensive drive to rescue children in need of care and protection found in contact with Railways has been launched. During the year 2023, 3973 girl children were rescued by RPF.
- Operation Dignity - RPF lady personnel also play a crucial role in rescuing adults, including women, in need of care and protection. These individuals may be runaways, abandoned, drug addicts, destitute, or needing medical assistance. In 2023, approximately 3492 such persons were rescued.

Through these operations and initiatives, the RPF not only ensures the security of passengers but also demonstrates the invaluable contributions of women in creating a safer, more inclusive railway environment for all. Women in the RPF are not just symbols of empowerment; they are the embodiment of strength, compassion, and dedication, contributing significantly to the safety and well-being of railway passengers across India.



Railway Protection Force and National Commission for Women Unite Against Human Trafficking



In a significant step towards combating human trafficking, the National Commission for Women (NCW) on 19th March, 2024 signed a Memorandum of Understanding (MoU) with the Railway Protection Force (RPF). Through this collaborative effort, both organizations pledged to provide training and sensitize RPF officials to effectively address the problems of women trafficking within the Indian Railway network. The National Commission for Women and the Railway

Protection Force came together to announce a landmark Memorandum of Understanding (MoU) aimed at strengthening efforts to combat human trafficking across India. The MOU was signed by NCW Joint Secretary Ms. A Asholi Chalai and RPF Inspector General Shri Sarvapriya Mayank. It underscores the commitment of both organizations to tackle the grave issue of human trafficking, especially within the extensive network of Indian Railways.

The initiative comes as a response to the alarming statistics revealing that 70% of trafficked victims are women, highlighting the urgent need for concerted action to protect the most vulnerable in society. NCW, which established an Anti-Human Trafficking Cell on 2nd April, 2022, has already been working with the Central Industrial Security Force (CISF) to combat the trafficking of women.

'Women and young girls are particularly vulnerable to trafficking,' stated Smt. Rekha Sharma, Chairperson of NCW. 'The vast railway network of Indian Railways, spanning over 65,000 kilometers and 7,500 stations, unfortunately, serves as a conduit for traffickers. RPF personnel stationed at railway stations play a pivotal role in preventing human trafficking and can act as the eyes and ears of the commission in addressing crimes against women.'

The key objectives of the MOU encompass collaborative efforts to prevent human trafficking and rescue of trafficked women. This involves conducting sensitization workshops and training sessions for RPF personnel to enhance their awareness and prompt response to human trafficking incidents. Additionally, awareness campaigns will be launched targeting frontline railway staff and the general public to educate them about the signs of human trafficking and how to report such cases effectively.

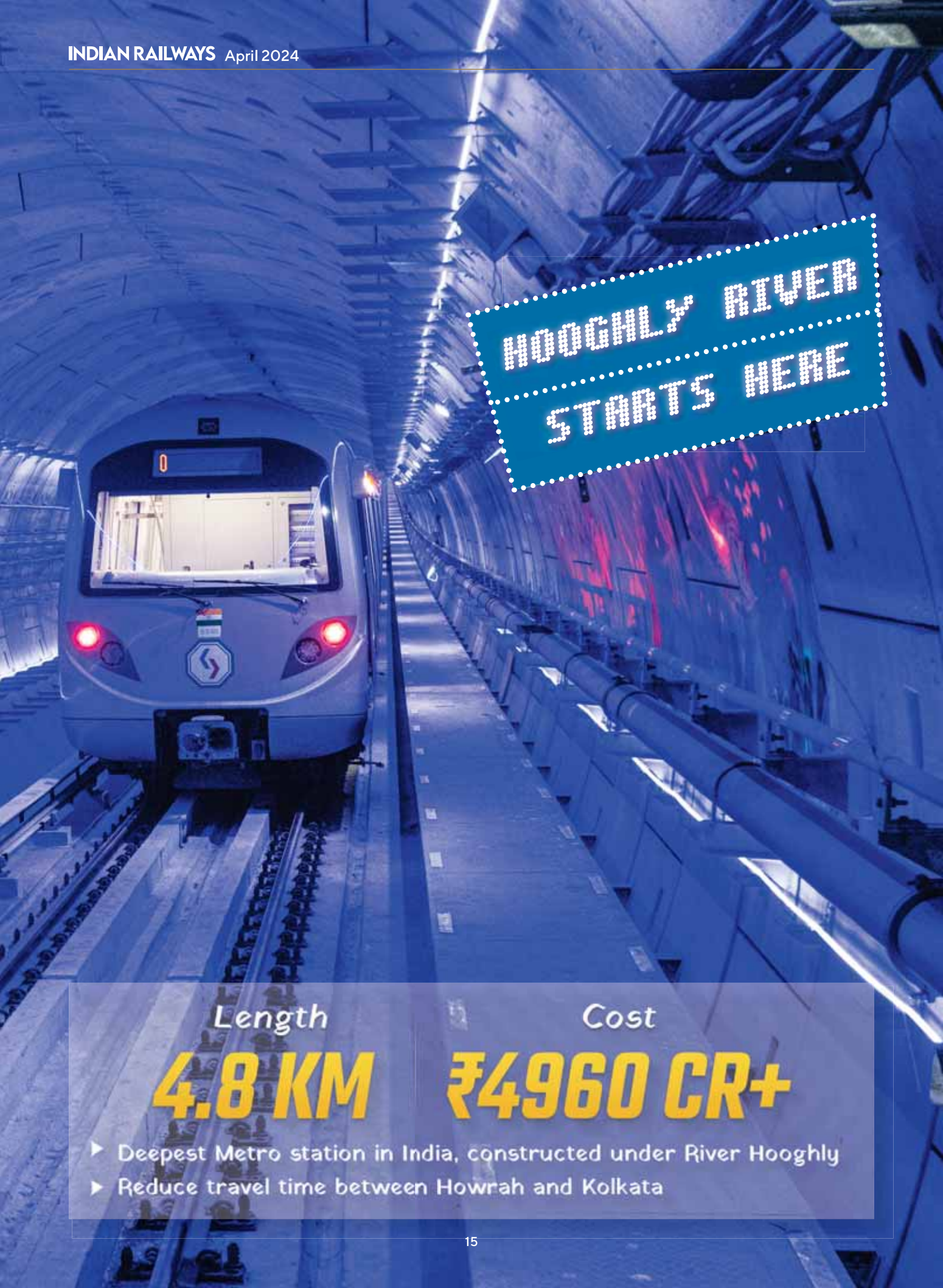
Under the MoU, RPF personnel will receive ongoing sensitization and training, empowering them to remain alert and vigilant in identifying and reporting suspicious activities. This collaboration aims to enhance the capabilities of RPF personnel, enabling them to serve as an additional layer of defense against human trafficking.■



For the first time in Vadodara Division of Western Railway, the track machine will be operated entirely by women. Ms. Bhagyashree Savarkar will lead the team of seven women

Howrah Maidan–Esplanade Stretch of East-West Metro: An Engineering Marvel




HOOGHLY RIVER
STARTS HERE
Length
4.8 KM
Cost
₹4960 CR+
Deepest Metro station in India, constructed under River Hooghly
Reduce travel time between Howrah and Kolkata

East - West Metro Corridor spanning 16.55 km was sanctioned in year 2008. An expenditure of ₹8975 cr. has been made on the project so far as on February, 2024.

The main objective of the project is to provide a cheap, hassle-free, fast journey to millions of passengers of Kolkata and suburbs areas and change the traffic scenario of Kolkata, Howrah and Salt Lake. The most interesting and unique feature of East-West Metro is the tunnel under the river Hooghly. It is the first of its kind Metro transportation tunnel under any mighty river in India.

Howrah and Kolkata are two centuries old cities of West Bengal. These two cities are now connected under the river Hooghly. It is an engineering marvel. The 4.8-km stretch of East-West Metro from Howrah Maidan to Esplanade has been built at a cost of ₹4,965 cr. and it has the deepest Metro station in India at Howrah (30 meter deep).

Entire East-West Corridor between Howrah Maidan to Salt Lake Sector-V is expected to be operational very soon, thus connecting Sealdah and Howrah Railway stations, which are the two busiest Railway stations in India and will provide interchange point at Esplanade with North-South Corridor and at Salt Lake Sector-V with Orange Line.

The stretch of the under the river tunnel of East-West Metro Corridor is 520 meter and it is situated 13 meter below the river bed. Starting in April 2017, tunnelling work under the river was completed in 66 days. This tunnelling work was done by Earth Pressure Balancing Tunnel Boring Machines with meticulous planning and pin-point accuracy. The internal diameter of the twin tunnels is 5.55 meter and the spacing between the twin tunnels is 16.1 meters center to center. Each concrete liner segment is fitted with imported neoprene main gasket and hydrophilic auxiliary gasket. The hydrophilic gasket expands when in contact with water and prevents any water ingress through segmental joints.

There are four stations namely Howrah Maidan, Howrah, Mahakaran and Esplanade dotting this 4.8 km stretch of East – West Metro (Green Line). All these air-conditioned stations are equipped with state of the art passenger amenities like lifts, escalators, AFC-PC gate, digital display boards etc having double discharge platforms at Howrah and Esplanade keeping in mind the expected passenger rush at this two stations. Like other East-West Metro stations, these four stations are also beautifully decorated with murals, paintings etc highlighting local tradition, culture and history.



All aboard the underwater Metro on 15th March, 2024. India's first underwater metro train begins its services from Howrah Maidan to Esplanade stations of Kolkata Metro with hundreds of passengers joyfully hopping onto their first ride.



Benefits of East – West Metro Corridor

- This corridor once fully commissioned will connect two major Railway terminus at Howrah and Sealdah and also connect existing North-South Metro and Joka-Esplanade Corridor at Esplanade station.
- It will also solve the perennial traffic congestion and improve air quality by reducing carbon footprint.
- People coming from distant places of Hooghly, Howrah, Midnapore as well as other states will be immensely benefitted by availing Metro services after getting down at Howrah station of Eastern Railway and South Eastern Railway.



Ministry of Railways created the Guinness World Record on 26th February, 2024



A programme of laying the foundation stone for redevelopment projects of 554 stations and inauguration of 1500 Road Over Bridges and Road Under Bridges was organized on 26th February, 2024. On this occasion, Ministry of Railways set a new record by uploading 683 photographs on a special platform in one hour, which is the highest till date. This accomplishment has been given a place in the 'Guinness Book of World Records'. Smt. Jaya Varma Sinha, Chairman & CEO, Railway Board received a certificate for this.



The 150th meeting of the Railway Board Rajbhasha Karyanvayan Samiti was held on 22nd March, 2024 at Rail Bhawan. Smt. Jaya Varma Sinha, Chairman & CEO, Railway Board awarded various Zonal Railways, Divisions, Production Units and Workshops for their excellent work done in promoting Hindi.

Member, Railway Board visited Rail Wheel Factory



Shri Satish Kumar, M (T&RS), visited RWF on 9th March, 2024. He inspected the wheel and axle lines at RWF and interacted with Shri R. Rajagopal, General Manager, and other senior officers of RWF. The inspection was largely focused on compliance to safety standards and quality of RWF products. M (T&RS) and other senior officials from Railway Board were pleased by the efforts of RWF in this direction.

RWF was also assured of necessary assistance in terms of funds allotment and address any possible bottleneck through pro-active action by Railway Board.■

Member (T&RS) Inspected Modern Rail Coach Factory

Member (Traction and Rolling Stock), Shri Satish Kumar visited the Modern Rail Coach Factory on 24th February, 2024. Shri Kumar, along with Shri Prashant Kumar Mishra, GM and senior officials closely inspected the quality of coach production and construction.

Shri Kumar gave suggestions for proper maintenance of materials related to coach production in shellshop, bogieshop, wheelshop, furnishing shop, etc., tested the working efficiency of the machines and spoke to the employees working on the machines. M (T&RS) visited the wheel factory premises and inspected the infrastructure and activities of the factory. Officials of the wheel factory gave detailed



information about all the stages of manufacturing of forged wheels from raw material to manufacturing.■

Member, Railway Board visited Rail Coach Factory



Shri Satish Kumar, M(T&RS), Railway Board, visited Rail Coach Factory, Kapurthala on 29th March, 2024. Shri Satish Kumar inspected the coach manufacturing processes in the workshop. He examined various types of coaches being made by RCF viz. LHB AC Coaches, MEMU with 3 Phase Electrics etc. He also inspected the Vande Metro coaches which are being being built by RCF, first time over Indian Railways. He held a meeting with General Manager and Senior officers on core issues. He also held meeting with members of various unions/associations of RCF.

Shri Satish Kumar appreciated RCF's contribution in making Indian Railways attuned to world standards. He applauded RCF for its technological developments in coach manufacturing.■

WR's Jagjivan Ram Hospital Organized Indian Railway Cardiology Conference

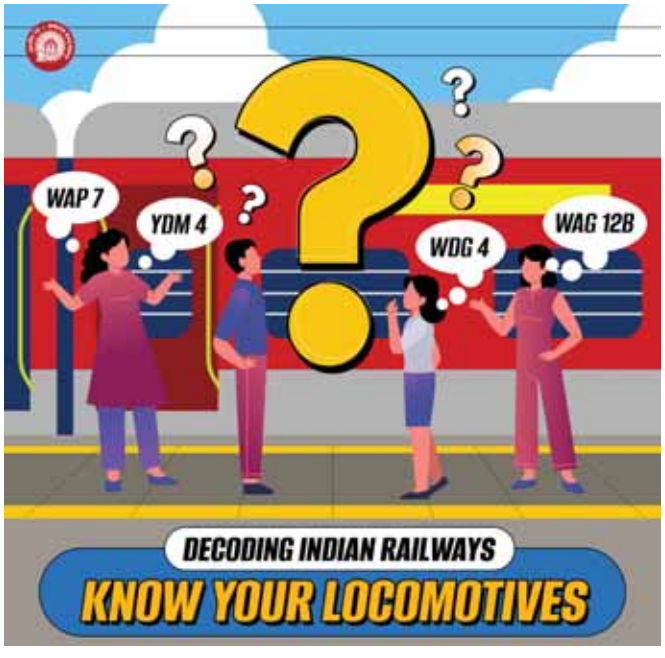
Western Railway's Jagjivan Ram Railway Hospital, Mumbai Central had organized the prestigious annual conference (JRHCON 2024). The conference was inaugurated by Dr. Sugandha Raha, Director General of Railway Health Services, Railway Board and Shri Ashok Kumar Misra, General Manager, Western Railway.

The annual conference was based on the theme 'Prevention to Intervention in Cardiology: A Way Forward' and was aptly planned looking at the present clinical situation of cardiovascular diseases in the society at large. Eminent speakers from different parts of the country shared their latest research, advancements, and insights on emerging trends of preventive aspect of cardiovascular illness along with recent advances which would be beneficial in the clinical practice of doctors.

The conference was attended by senior doctors of different zonal railways and was aimed to provide a professional platform for sharing knowledge, fostering collaborative discussions, and promoting advances in preventive and interventional cardiology. The conference provided a unique opportunity for collaboration, networking and learning in the ever-evolving field of cardiac health. A souvenir was also released by Dr. Raha and Shri Mishra on this occasion.



DG/RHS as well GM/WR both appreciated the outstanding performance of JRH and congratulated the committed medical team on becoming the first Railway Hospital in Indian Railways to have been awarded with 'NABH accreditation.'The NABH accreditation is a prestigious certification that proves that the hospital is dedicated to providing the best facilities for its patients' care and that the hospital is monitored and examined to ensure the highest levels of safety. DG/RHS praised the way the conference was organised and excellent academic knowledge shared in the conference.





IR's Record Best Ever Performance in Freight Business, Total Revenue and Track laying in FY 2023-24

Indian Railways is on its track to record the best ever performance in its recorded history in terms of the output from the freight business, total revenue, track laying in the Financial year 2023-24.

As per the preliminary data, IR has crossed an originating freight loading of 1500 MT on 15th March, 2024. Previously, IR had achieved the best ever freight loading of 1512 MT during FY 2022-23.

During this FY 2023-24, total revenue of Indian Railways stands at ₹2.40 lakh cr. as on date. Last year on 15th March, total revenue was ₹2.23 lakh cr., an increment of ₹17,000 cr. Total expenditure of Indian Railways stands at ₹2.26 lakh cr. in this FY 2023-24.

Total passengers travelled during FY 2023-24 stands at 648 cr., an increment of 52 cr. when compared to the figures of the same period of last year. Last year, the total number of passengers travelled was 596 cr.



In this financial year as on date, Indian Railways has laid 5,100 km of new tracks. In this FY, average daily track comes out to be more than 14 km per day.■

SER Crossed the Milestone for 200 MT of Freight Loading



South Eastern Railway has loaded total 200.001 MT of originating freight till 15th March, 2024 of the current financial year (2023-24). SER has registered a growth of 3.94% in comparison to the corresponding period of previous financial year.

During this period, the revenue generation from originating freight loading has also increased to ₹18,131.16 cr. as against ₹17,297.66 cr. in same period of the previous year. Therefore, the earnings from freight loading has also been enhanced by 4.82% for SER.■

Indian Railways Achieved 1,434.03 MT Freight Loading till February, 2024

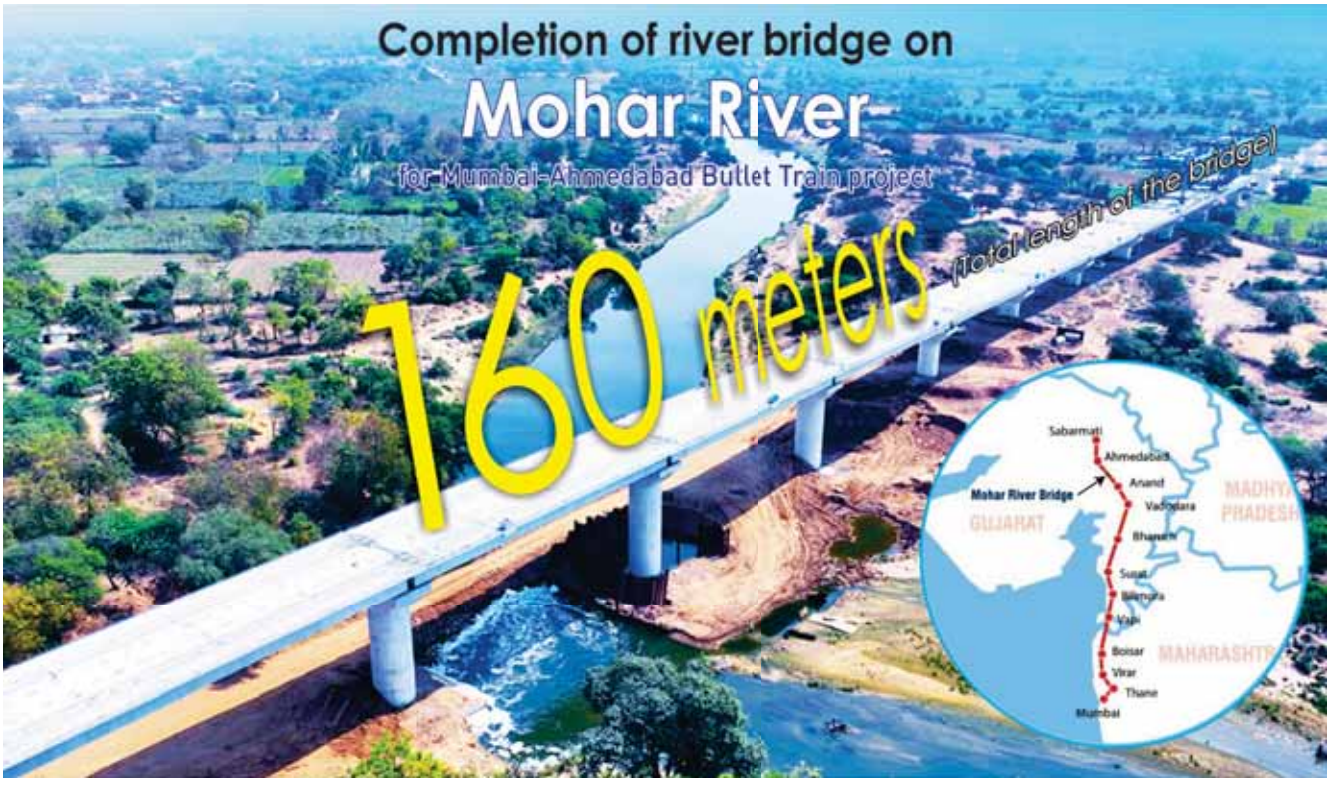


On cumulative basis from April 2023-February 2024, freight loading of 1,434.01 MT was achieved by Indian Railways against last year's loading of 1,367.5 MT, an improvement of approximate 66.51 MT over last year's loading for the same period. Railways has earned ₹1,55,557.1 cr. against ₹1,49,088.1 cr. over the last year which is an improvement of approx. ₹6,468.17 cr., as compared to the same period of the last year.

During the month of February 2024, originating freight loading of 136.60 MT has been achieved against loading of 124.03 MT in February 2023, which is an improvement of approx. 10.13% over the last year. Freight revenue of ₹14,931.89 cr. has been achieved in February 2024 against ₹13,700.75 cr. freight earnings in February 2023, thereby showing an improvement of about 8.98% over the last year.

IR achieved loading of 59.08 MT in Coal, 15.11 MT in Iron Ore, 5.69 MT in Pig Iron and Finished Steel, 7.59 MT in Cement (Excl. Clinker), 5.45 MT in Clinker, 5.10 MT in Food grains, 3.962 MT in Fertilizers, 4.06 MT in Mineral Oil, 7.00MT in Containers and 10.66MT in Balance other goods during February, 2024.

Following the Mantra, "Hungry For Cargo", IR has made sustained efforts to improve the ease of doing business as well as improve the service delivery at competitive prices. The customer centric approach and work of Business Development Units backed up by agile policy making helped Railways towards this significant achievement.■



Wind Speed Monitoring System for Mumbai – Ahmedabad High Speed Rail Corridor



The Mumbai – Ahmedabad High Speed Rail corridor will traverse through coastal regions in the western part of the country, where wind speeds are particularly concentrated in certain areas. These strong winds have the potential to impact train operations on the viaduct.

To address this concern, 14 locations (9 in Gujarat and 5 in Maharashtra) have been identified for the installation of Anemometers on the viaduct. These devices will specifically monitor wind speed, focusing on river bridges and areas prone to gusts (sudden & strong wind).

An Anemometer is a type of Disaster Prevention System designed to provide real-time wind speed data within the range of 0-252 kmph, spanning 0 to 360 degrees.

If wind speeds range from 72 kmph to 130 kmph, train speeds will be adjusted accordingly.

The Operation Control Centre (OCC) will monitor wind speeds through the Anemometers installed at various locations.

S. No	Location	State
1	Desai Khadi	Maharashtra
2	Ulhas River	Maharashtra
3	Bangala Pada	Maharashtra
4	Vaitarna River	Maharashtra
5	In Dahanu suburb	Maharashtra
6	Daman Ganga River	Gujarat
7	Par River	Gujarat
8	In Navsari suburb	Gujarat
9	Tapi River	Gujarat
10	Narmada River	Gujarat
11	In mid-section of Bharuch-Vadodara	Gujarat
12	Mahi River	Gujarat
13	Bareja	Gujarat
14	Sabarmati River	Gujarat



Railway Protection Force Reunited over 521 Children under Operation 'Nanhe Faristey' in February 2024



The Railway Protection Force (RPF) is unwavering in its commitment to safeguard railway property, passenger areas, and the well-being of travellers. In the month of February 2024, RPF continued to ensure the safety, security and comfort of passengers, while also assisting Indian Railways in delivering reliable freight transport services to its customers. Here are some highlights of RPF's extraordinary accomplishments during the month:

Operation 'Nanhe Faristey'- Rescuing Lost Children: Under the mission 'Nanhe Faristey,' RPF played a pivotal role in reuniting more than 521 children in need of care and protection with their families. These children were separated from their families for various reasons, and RPF worked tirelessly to ensure their safe return to home.

Operation 'Jeevan Raksha'- Saving Lives: The RPF's vigilant and swift action saved the lives of 205 passengers who had accidentally fallen while de-boarding or boarding moving trains narrowly avoiding being caught under the wheels, at platforms and railway tracks in the month of February 2024.

Empowering Women Passengers - 'Meri Saheli' Initiative: RPF takes the security of women passengers seriously under 'Meri Saheli' initiative. During the month of February 2024, 228 "Meri Saheli" teams attended 10,659 trains and provided security assurance to 2.73 lakh lady passengers. RPF also took legal action against 7357 persons who were found travelling in coaches reserved for the women passengers.

Cracking Down on Touts Operation 'Uplabdh': In the fight against touts, RPF arrested 413 individuals in the month of February 2024 and took legal action against them as per the law. Additionally, they seized future reserved railway tickets, valued at ₹39.50 lakhs.

Operation 'NARCOS' - Combating Drug Crimes: In a commendable effort, RPF arrested 86 individuals and seized narcotics, valued at ₹3.41 cr. during the month of February, 2024. These offenders were handed over to empowered Government agencies for further legal action.

Swift Response to Passengers' Concerns: RPF promptly addressed security-related passenger complaints received through Rail Madad Portal and the Helpline (No. 139 integrated with Emergency Response Support System No. 112). Over 20,059 complaints were received in the month of February 2024, with RPF taking necessary actions to resolve them.

Operation 'Yatri Suraksha' — Protecting Passengers: RPF supplements the efforts of police in preventing and detecting crime against railway passengers. In February 2024, RPF arrested 263 criminals involved in offenses against passengers, handing over them to the concerned GRP/Police for taking onward legal action.

Ensuring Safety through 'Operation Sanraksha': In a resolute effort to maintain passenger safety and protect railway services, RPF arrested 41 individuals involved in the perilous act of stone pelting on running trains in February 2024.

Assisting Those in Need Operation Seva: With a humanitarian approach, RPF provided assistance to 233 elderly, sick or injured passengers during their rail travels in the month of February 2024.

Curbing Illegal Goods Transport Operation Satark: Under 'Operation Satark,' in the month of February 2024, the Railway Protection Force (RPF) seized illegal tobacco products and illegal liquor worth ₹79.31 lakhs duly apprehending 86 individuals. These individuals were subsequently handed over to the relevant Government law enforcement agencies. Additionally, unaccounted cash amounting to ₹46.5 lakhs, gold worth ₹1.59 cr. were also recovered during the operation.

Rescue of adults in need of care and protection under Operation Dignity : Under this operation, rescue of adults including women in need of care and protection who come in contact with Railways like run away, abandoned, drug addict, destitute, abducted, left behind, missing, those needing medical assistance, fallen down, mentally disoriented is being done. During February 2024, 231 such persons were rescued.

Luggage Retrieval and hand over under Operation 'Amanat' : Many passengers forget to collect all their belongings in a rush to board the train or leave the train/station. Under this operation, RPF personnel help in securing such belongings and restore them to the rightful owner. Under this operation, RPF retrieved luggage approximately valued more than ₹5.69 cr.

Providing help to pregnant women in child birth under Operation Matrishakti : RPF personnel, especially ladies RPF personnel, go out of the way to help pregnant women who go into labour during their train journeys and render assistance in childbirth under operation Matrishakti. During February 2024, lady personnel of RPF assisted in 6 such child births.■

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News of Zonal Railways and Production Units

Shri Arvind Srivastava took Over as General Manager, South Western Railway

Shri Arvind Srivastava took over as General Manager, South Western Railway on 1st March, 2024. Shri Srivastava has done B. Tech (Mechanical Engineering) from Indian Institute of Technology (BHU), Varanasi.

He is an officer of Indian Railways Stores Services (IRSS) of 1987 batch and joined Railways on 6th March, 1989. He has an association with Indian Railways spanning over three and half decades and has served in Eastern Railway, Diesel Locomotive Works/Varanasi, Railway Board, Rail Wheel Factory and South Eastern Railway in different capacities. He has served as Chief Materials Manager at Rail Wheel Factory/Bengaluru, as Executive Director/ Vigilance/Stores in Railway Board/New Delhi, as Chief Vigilance Officer in Rail Wheel Factory/ Bengaluru and before joining as General Manager, South Western Railway, he was Principal Chief Materials Manager, South Eastern Railway/Kolkata. He has undergone trainings in Advanced Management Programme at INSEAD/Singapore &



ICLIF/Malaysia, in Anti-Corruption Measures at International Anti-Corruption Academy/Luxemburg/ Austria and in World Bank Procurement Matters at Administrative Staff College of India/Hyderabad. He has also attended Workshop on Strategic Management Issues at Indian School of Business/ Hyderabad.■

General Manager, SWR Conducted Window Trailing Inspection



Shri Arvind Srivastava, General Manager, South Western Railway conducted window trailing inspection between Hubballi and Kusugal section on 18th March, 2024.

He reviewed several key operational and safety aspects. He was accompanied by Shri Harsh Khare, Divisional Railway Manager, Hubballi, Principal Head of Departments and other senior officers of South Western Railway.

Further he inspected Gadag and Koppal Railway stations including the Station Master's panel room and relay room and interacted with staff. He reviewed the on-going railway infrastructure and station redevelopment works being implemented under the Amrit Bharat Station Scheme.

General Manager also inspected Hosapete Railway station, crew lobby, running room of crew and reviewed various safety parameters.

After inspection, General Manager visited Jindal Vijayanagar Steel Limited (JVSL), Torangallu plant.■

Remarkable Increase in Non-Fare Revenue Earnings of Metro Railway



Metro Railway in the current fiscal year i.e., 2023-24, showed remarkable increase in Non-Fare Revenue earnings. Metro Railway has adopted various innovative steps to increase its revenue which is in general totally dependent on passenger earnings.

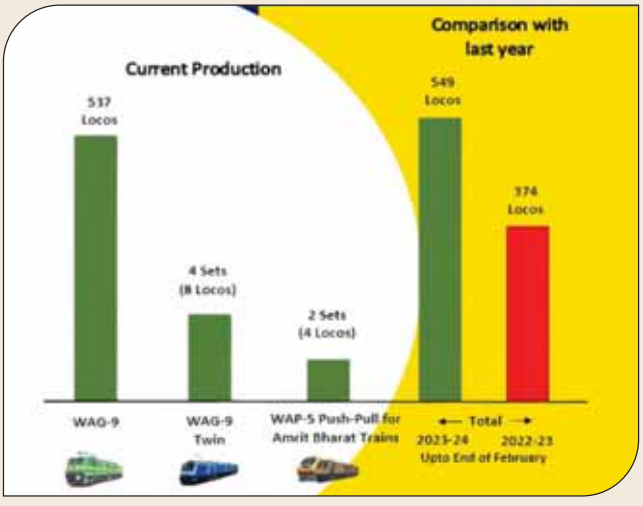
As part of that endeavour, Metro Railway has been focusing on generating revenues through branding of litter bins at stations, displaying advertisements inside and outside Metro rakes, displaying hoardings in open spaces and installing health check-up kiosks at different stations, handle chain branding etc.

Apart from this, Metro Railway has also implemented innovative ideas like Track Sidewalls Branding, Card Balance Checking Terminal (CBCT) Branding, Automatic Smart Card Recharge Machine (ASCRM) Branding, AFC-PC Gates and Flap Branding, installation of food kiosks, Smart Card and Token Branding, installing digital display screens inside rakes for providing infotainment to commuters etc. Such initiatives have helped to increase Metro Railway's Non-Fare Revenue to a great extent.

With such concerted efforts, Metro Railway has earned ₹40.12 cr. from 1st April, 2023 to 29th February, 2024 as Non-Fare Revenue (NFR). In 2022-23 Metro had earned ₹29.47 cr. as NFR during the same period (i.e. from April, 2022 to February, 2023). This is an increase of 36.15%. In February, 2024 itself Kolkata Metro has earned ₹2.57 cr. as NFR.■

CLW Surpassed the Target of FY 2023-24

For financial year 2023-24, Chittaranjan Locomotive Works was given production target of 540 locomotives. CLW has achieved it on 29th February, 2024, one month in advance. General Manager congratulated the team for achieving this milestone.



General Manager Reviewed the Performance of Northern Railway



Shri Shobhan Chaudhuri, General Manager Northern Railway on 12th March, 2024 held a review meeting with the departmental heads of Northern Railway and DRMs. Deliberations were held on keeping focus on mobility enhancement and other developmental infrastructure works and Freight loading. The GM emphasized on movement of goods trains and specially coal movement to thermal power stations to meet out the increased demand of coal for power generation during the peaks of summer.

Shri Chaudhuri said that whenever necessary and required the concerned staff should be counselled and trained. He said the monitoring of rail fractures and rail welds should be done extensively and no error should be left.

He emphasized upon minimizing the human failure in train operations. He also instructed the department heads and DRMs, to maintain the punctuality and keep pace for freight loading with safety as priority. The General Manager also took the stock of progress of important and critical projects.

Talking on freight Business Development, the GM instructed that BDUs should create an environment of trust, support and confidence amongst the customers. He added that the initiatives and concessions offered by the Railways should reach the clients. He also informed that, loading of food grains and other items have steadily increased with every passing month.■

Trichy Zonal Training Institute Conducted Inter-divisional Traffic Safety Quiz

The Multi-Disciplinary Zonal Training Institute, Tiruchchirappalli Jn. (MDZTI/TPJ) successfully hosted the Inter-Divisional Multi-Disciplinary Traffic Safety Quiz 2023-2024 on 15th March 2024. The event, chaired by Shri. Sreekumar IRTS, Principal Chief Operations Manager, Southern Railway, emphasized the paramount importance of safety in train operations.

The quiz, conducted by Shri Suresh, Senior Transportation Manager, saw the enthusiastic participation from five representatives each from Chennai, Tiruchchirappalli, Salem, Palakkad, Madurai, and Thiruvananthapuram divisions.

Chennai Division emerged victorious, clinching the Winner's trophy. Tiruchchirappalli Division secured the first runner-up position, followed by Salem Division as the second runner-up. Merit Certificates were distributed to all participants, recognizing their efforts and knowledge. Additionally, prizes were given to the audience for correct answers, engaging everyone present.■



CLW organized 58th Annual Flower and Vegetable Show-2024



The 58th Annual Flower and Vegetable Show 2024 is being organized from 17th and 18th February, 2024 at the Nursery (Horticulture) premises near Hill top in Chittaranjan Locomotive Works. Smt. Namita Malhotra, President of CLWWWO inaugurated the show, on 17th February, 2024. Shri Hitendra Malhotra, General Manager graced the show. Smt. Namita Malhotra, President/CLWWWO gave away prizes in (40) categories among 31 participants such as best maintained garden, plant in pots, cut flowers, Vegetables and overall champions etc. A colourful cultural programme was organized on the occasion. In his speech, Shri Hitendra Malhotra applauded the efforts of the Horticulture Department for the successful organization of this grand flower and vegetable show.■

SCR Registerd Massive Scrap Sale during the FY 2023-24

South Central Railway accomplished a significant achievement in the 'Mission Zero Scrap' by registering a whopping ₹411.39 cr. revenue through scrap sale during the current financial year 2023-24. The zone has surpassed the target set by Railway board for the financial year and has recorded an increase in revenue as compared to the previous financial year (2022-23) which was ₹391 cr. SCR has been spearheading in optimal utilization of resources by mobilising scrap sales and undertaking sales through e-auction conducted online through Indian Railways E-Procurement System (IREPS) portal.

The e-auction process has improved the transparency and competitive bidding amongst the Bidders across India and has ensured paperless transaction, as part of Digital India concept. This has further cut down the erstwhile middlemen who existed during the manual auctions. E-auctions have improved



participation and reduced grievances of purchasers drastically. The Materials Management Department of SCR has shouldered the Project, 'Mission Zero scrap' and has been ensuring that no scrap is accumulated for more than a month's time or a truck load quantity. Shri Arun Kumar Jain, General Manager, SCR complimented the team of the Materials Management Department for their commendable efforts in achieving this significant milestone.■

READERS
are requested to send their
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SCR Bagged 1st Prize at All India Loco Cab Competition

South Central Railway bagged the first prize in Loco Cab Competition held at Patiala Locomotive Works. The prize is jointly shared by Electric Loco shed, Lallaguda and Diesel Loco Shed, Vatava, Western Railway. 13 Locomotives from various Zonal Railways participated in the competition.

The Railway Board had advised the Zonal Railways to upgrade cabs of electric locos to reduce fatigue of crew and provide comfort in long working hours. It had been advised to cover overall ambience, noise isolation, waterless urinal, seat improvement, floor improvement, easy alright signal exchange, provision for keeping baggage, upcoming caution alert system, sun visor improvement, crew voice and Video Recording System & Driver advisory, etc.

Accordingly, a 10 year old WAG9HC locomotive of Electric Loco Shed, Lallaguda was chosen for up-gradation and successfully implemented the features with latest material and state of the art technologies have been used. By thermal insulation and noise isolation of cabs, a temperature reduction



of 12.4 °C and a noise reduction to the tune of 13db was achieved. An ergonomically designed FRP (Fibre Reinforced Polymer) based driver desk with rearranged switches to operate while crew seated and emergency brake valve relocated to make the job of Loco Pilots and ALP less strenuous. A repeater Driver display Unit, Digital Signalling Power Monitoring (SPM) repeater, Digital Trouble Shooting Directory are also provided in Assistant Loco Pilots panel for providing real time information to Assistant Loco Pilots as well as Loco Pilots.■

General Manager, SCR
Inspected Tirupati Railway Station



Shri Arun Kumar Jain, General Manager, South Central Railway undertook detailed inspection of Tirupati Railway station and reviewed the ongoing station up gradation works on 23rd March, 2024.

The GM inspected Tirupati Railway station, wherein he reviewed the progress of ongoing infrastructure developmental works with the officials. He conducted a detailed review of the progress of both the New Station building coming on the South Side as well as the modifications being carried out on the existing northern side of the station. He also inspected various passenger amenities like prepaid AC lounge, the recently started Jan Aushadi store (Pharmacy), Booking counters, ATVMs (Automatic Ticket Vending Machines), Waiting halls, Clock room and inspected the hygienic conditions is being maintained at Canteen kitchen and cleanliness of the toilet etc. He also inspected entire premises of the existing station building including circulating area etc.

Shri Arun Kumar Jain inspected combined crew booking lobby and interacted with Loco Pilots and Assistant Loco pilots on their grievances and instructed them to update their working knowledge time to time and avoid short cut methods in day to day working to ensure safe working in train operations. He inspected the features of fog safety device and other safety equipment at lobby. He also verified the various records/registers and inspected on the facilities available at lobby.■

Purchase of Unreserved Tickets across SCR Through ATVMs and UTS App Reaches 44%



South Central Railway is encouraging the purchase of unreserved tickets through ATVMs and UTS mobile APP. This has facilitated the rail users in a big way and now out of the total unreserved tickets purchased across the Zone, 44% of the tickets are being purchased through ATVMs and UTS App.

More than 300 ATVMs have been installed at 147 major and medium stations across the Zone. These machines consist of touch screen and can be accessed easily through menu driven process. Payments can be made through smart cards purchased at counters or through any UPI apps by scanning the QR code displayed on the screen. Facilitators are also available at most of the stations to guide the passengers. Shri Arun Kumar Jain, General Manager, SCR requested the esteemed rail users to utilize these options of ATVMs and UTS mobile App to purchase unreserved tickets without standing in the queue.■

GM, SCR held a Review Meeting on Safety of Train Operatons

Shri Arun Kumar Jain, General Manager, South Central Railway advised the staff and officials to strictly follow the safety procedures to ensure safety in train operations. A review meeting was held to discuss on the safety of train operations, punctuality and progress of various traffic facility works across the zone on 22nd March, 2024 at Rail Nilayam, Secunderabad. DRMs of all six Divisions i.e. Secunderabad, Hyderabad, Vijayawada, Guntakal, Guntur and Nanded joined the review meeting through video conference.

The GM instructed the officials to conduct frequent field inspections and counsel the safety related staff including the loco pilots, assistant loco pilots and guards etc., to strictly adhere to safety procedures to ensure the safe running of the trains. He reviewed the availability of fire prevention safety items like smoke detecting devices, fire extinguishers etc., over the zone. He advised officials to ensure adequate stocks to meet any exigency. He also stressed on provision of voice logger facilities at non-interlocking level crossing gates for the safety of road commuters.

Shri Arun Kumar Jain also reviewed the progress of



the traffic facility works such as provision of additional loop lines for loading and unloading of goods, conversion of halt stations to crossing stations and creation of long loop lines over the zone. He instructed the DRMs to expedite the works to be completed before the target time.

Later, GM discussed with the DRMs on the status of the ongoing development works related to passenger amenities and up gradation works of Amrit stations under Amrit Bharat Stations Scheme etc.■

9 Employees of Western Railway Felicitated with General Manager's Safety Award



Shri Ashok Kumar Misra - General Manager of Western Railway felicitated 9 employees at WR Headquarters, Mumbai for their outstanding work which resulted in safe train working. These employees were awarded in appreciation of their alertness in duty and contribution towards averting untoward incidents, during the month of December, 2023 and January, 2024 and thereby ensuring the safety of train operations. Out of the 9 employees, 2 each were from Mumbai Central, Vadodara, Rajkot and Ratlam Divisions and 1 employee is from Bhavnagar Division. The meeting was attended by Additional General Manager and Principal Head of Departments (PHODs) while the Divisional Railway Managers of the Divisions attended the meeting through video conferencing.

Shri Misra appreciated the alertness of the staff who were being awarded and mentioned that they are exemplary role models for everyone to emulate. The employees awarded showed their great zeal and commitment towards safe running of trains in various areas of safety such as detection of rail and track fracture, emergency brakes applied to save untoward incident, hot axles and detection of brake binding or dangling object in passing train etc.

Western Railway is proud of all the awardee employees who with their prompt action and alertness helped to avert the possibility of any untoward incidence.■

Western Railway Introduced A Novel Concept Named 'Batman'

WR's Mumbai Central Division has started an all night ticket checking squad named 'BATMAN' which aims to put a check on the nuisance of unauthorized ticket travelling during the night hours. This initiative will deter the commuters from travelling without ticket or travelling in higher class, especially, during night time.

WR's Mumbai Central Division introduced a novel concept named 'BATMAN' which is an acronym for Be Aware TTE Manning At Night. The 'BATMAN' squad is trained to operate during night hours. The role of these ticket checking staff is to inspect trains and to be vigilant for any signs of trouble or suspicious activity. These staff with their presence, deter unauthorized travel in train, contributing to the overall efficiency of the system. Through their interactions with passengers, they also educate for responsible travel practice. This drive has been well appreciated by the regular commuters. Interestingly, the name 'BATMAN' for the night time ticket checkers was conceptualized by a commuter.





The 'BATMAN' squad have apprehended more than 2300 ticketless travellers and detected other cases during the first two nights of the start of the initiative. Operating in the night at odd hours, the members of the 'BATMAN' Squad patrol the Mumbai suburban stations of the Western Railway with intense dedication and a mission to ensure that every passenger travels with a valid ticket.■

WR's Mumbai Central Division Introduced
'Utsav' Campaign to Promote UTS App





With a view to enhance efficiency in booking and purchasing unreserved tickets, reduce long queues at ticket counters and encourage users to shift to a digital booking experience, Mumbai Central Division of Western Railway has started a novel initiative titled UTSAV. This campaign has been launched across 10 stations of Western Railway, namely Churchgate, Dadar, Andheri, Malad, Kandivali, Borivali, Bhayander, Vasai Road, Nalasopara and Virar stations and aims to promote the UTS APP.

UTSAV is an acronym for Unreserved Ticketing System App Vapra (Marathi) and Unreserved Ticketing System App Vapro (Gujarati) which signifies a revolutionary approach to railway ticketing. This campaign started from 2nd March and conducted upto 7th March, 2024. As part of this initiative, a redesigned and user-friendly QR code has been introduced, incorporating the UTS App logo and station names for easy readability on smart phones, reflecting advanced technology in the railway system. The newly launched QR code enhances ticketing efficiency with a sleek, user-friendly design.

The UTS App is primarily designed to promote digital ticketing and self-ticketing mode, so that passengers can buy tickets without facing the ordeal of queues. It allows passengers to book unreserved train tickets through their smart phones, providing a more convenient and efficient way of securing tickets for short distance train journey. Western Railway appeals its esteemed customers to patronize the use of UTS App and to avail the enhanced benefits attached with their use.■

Western Railway Generated Ticket Checking
Revenue of more than ₹157 cr.

The ticket checking team under the supervision of senior commercial officers of Western Railway organized several ticket checking drives during the period from April 2023 to February 2024, thereby recovering an amount to the tune of ₹157.12 cr., which also includes ₹42.10 cr. from Mumbai Suburban section.

During the month of February 2024, an amount of ₹15.62 cr. was recovered through detection of 2.63 lakh ticketless/irregular passengers, including unbooked luggage cases. Also in the month of February, WR realized fines amounting to ₹4.55 cr. through detection of about 1.02 lakh cases over Mumbai Suburban section. To prevent unauthorized entry in AC local trains, frequent surprise Ticket Checking drives were carried out. As a result of these drives, almost 56400 unauthorized



passengers have been penalized during the period April, 2023 to February, 2024 and more than 1.88 crore were collected in fines, which is about 35% higher than the corresponding period of last year. Western Railway appeals to the general public to travel with proper and valid tickets.■

Another Milestone in the Sivok - Rangpo New Rail Link project Breakthrough of 2nd longest Tunnel No. T-01

In a major milestone the 2nd longest tunnel no. T-01 (4224 meters long) of the Sivok – Rangpo Rail Project (SRRP) achieved a breakthrough on 27th February, 2024.

The length of the Main Tunnel of T-01 is 4224 meters, along with an Evacuation Tunnel of length 855 meters situated near the Coronation Bridge in Darjeeling District, West Bengal. The Main Tunnel traverses through vulnerable and challenging geological and seismic conditions of the Younger Himalayas. Like all other tunnels in the SRRP, to counter vulnerability of the ground mass, latest and most sophisticated tunnelling technology, i.e. New Austrian Tunnelling Method (NATM) has been used here.

The Sivok – Rangpo new rail link project connecting Sivok (West Bengal) and Rangpo (Sikkim) is about 45 kms long and is characterized by 14 nos. tunnels,



13 major bridges, 9 minor bridges and 5 stations. The length of the longest tunnel (T-10) is 5.3 km and length of longest bridge (Br-17) is 425 meters. About 38.65 kms of the entire project alignment is passing through tunnels. 91.59% of the tunneling work has already been completed.■

NFR : Vishisht Rail Seva Puraskar-68th Railway Week Awards Ceremony



The Vishisht Rail Seva Puraskar 68th Railway Week was held at Luitgarh Railway Officers' Club in Maligaon on 21st February, 2024. Shri Chetan Kumar Shrivastava, General Manager, N. F. Railway gave away awards to achievers from various departments of the five divisions and headquarters of N. F. Railway. Altogether 56 Individual Awards, 25 Group Awards, 35 Efficiency Shields were distributed for outstanding performance during last year. Also, the Roll of Honour for 'National Railway Award', 2023 has been received by 6 individuals from various departments.

The Dibrugarh station received the Best Kept Station Shield for the year 2022-23. The Divisional Railway Hospital, Dibrugarh bagged the Best Kept Hospital award. Both New Bongaigaon and Dibrugarh workshop got the Best Kept Workshop Shield while Officers' Railway Colony of Rangapara won the Best Kept Railway Colony Shield.

Alipurduar and Lumding divisions jointly received the shields for Personnel department while Lumding division bagged it for Mechanical and Operating departments. Rangiya division won it for Engineering department. Tinsukia division won it for Commercial department while Katihar won the Efficiency Shields for Accounts, Security and Stores departments. Shield for Signal & Telecom and Safety departments were won by Alipurduar division. Lumding and Tinsukia Divisions of N. F. Railway jointly received the Overall Efficiency Shield for all-round performances during last financial year.■

Carriage and Wagon Workshops of N. F. Railway
Achieved Remarkable Performance

New Bongaigaon and Dibrugarh workshop have delivered higher quantity of maintenance outturn of coaches and wagons during the month of February, 2024.

During February, 2024, New Bongaigaon workshop has carried out Intermediate Overhauling (IOH) of 64 sets Linke Hofmann Busch (LHB) & ICF (Conventional Type) trolleys as against given target of 50 sets per month. Periodical Overhauling (POH) of 55 coaches (27 LHB & 28 ICF) including 02 power cars were also accomplished during the month. 206 wheel sets were out turned from wheel lathe and were supplied to divisions to reduce the detention of rolling stocks. Also, 154 wagons and 6 brake vans were out turned with conversion of 12 trolleys of 6 wagons into high-speed trolleys. Further, for effective and faster braking 46 wagons were converted to twin pipe air brake system from the conventional single pipe air brake system.

During February, 2024, periodical maintenance of 33 LHB coaches & 34 ICF coaches were done by Dibrugarh workshop. The POH outturn for conventional coaches in Dibrugarh workshop went



to 67 against the given target of 50 during the month. 614 wheel sets (355 LHB & 259 ICF) were overhauled from the workshop. In a bid to resist fire in trains, 19 nos. of LHB AC coaches were fitted with Fire Detection System in the workshop and also in user depots. Modification in Air Brake System with standardized fittings were carried out in 15 coaches. Scrap disposal by Dibrugarh workshop in February, 2024 went upto 322.70 MT which is almost 160% higher than January, 2024.■

Double line between
Bamunigaon–Chhaygaon Stations gets Commissioned



The Commissioner of Railway Safety (CRS)/ NF circle Shri Brijesh Kumar Mishra has completed the statutory inspection of the newly laid double line between Bamunigaon and Chhaygaon stations on 28th February, 2024. Consequent upon the inspection, he has permitted operations of trains through the newly laid portion at a maximum speed of 90 kmph. This newly laid second line will be helpful for carrying more freights and passenger traffic through this route.

The Bamunigaon- Chhaygaon section is a part of the New Bongaigaon – Kamakhya via Goalpara 176 km double line project. Works are being done section wise and commissioned part by part. The stretch between Bamunigaon to Chhaygaon is of 8.782 km.

On completion of this entire section of New Bongaigaon – Kamakhya via Goalpara, the northeast connectivity will get a significant boost towards transportation of both man and materials with rest of the nation. Far-flung areas of Meghalaya will also be highly benefited with the completion of this double line project between New Bongaigaon and Kamakhya via Goalpara.■

INDIAN

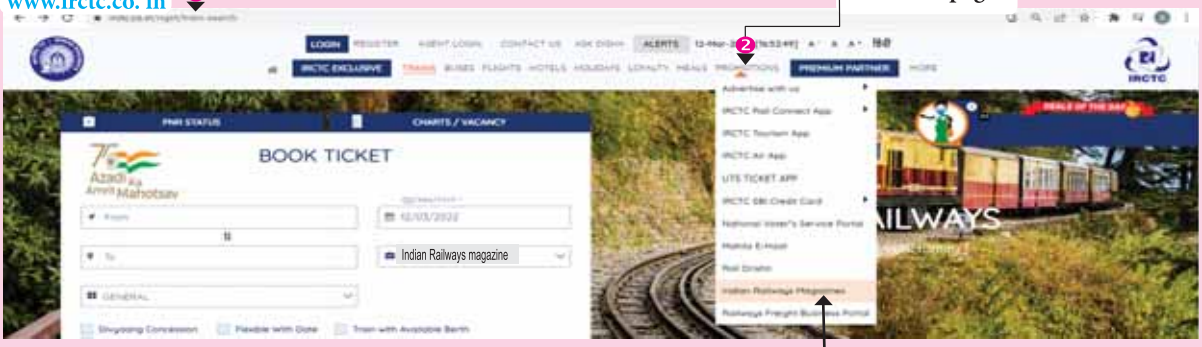
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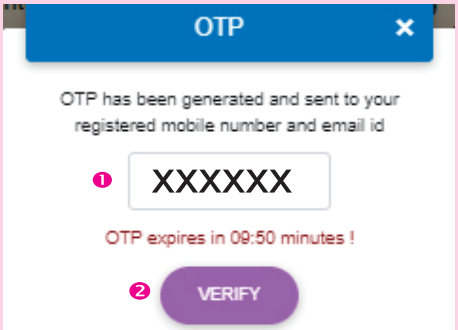


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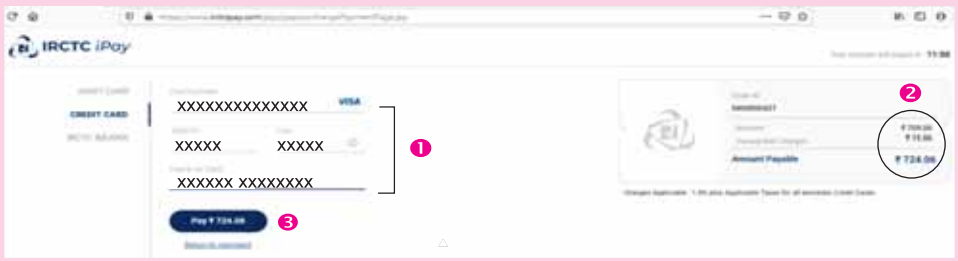
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Camp Organized by the Personnel Department in BLW to Resolve the Grievances of the Employees

Under the guidance of General Manager, Shri Basudev Panda in Banaras Locomotive Works, an employee grievance redressal camp was organized by the Personnel Department to resolve the problems related to the employees working in the workshop. In the camp, about 50 employees raised problems related to salary fixation, incentive allowance, night allowance, amendment in family name, loan deduction, which were listened to seriously and directed to the Chief Office Superintendent of the concerned section present in the camp for quick resolution of the problems to be done.



Liver Clinic and Fibro Scan Test Camp Concluded at BLW Hospital



On 28th February 2024, a liver clinic and fibro scan test camp was organized in the Central Hospital, BLW Auditorium. While inaugurating the check-up camp, Dr. Devesh Kumar, Principal Chief Medical Officer, BLW, said that nowadays, due to faulty eating habits and lifestyle and liver diseases, a large number of reports of enlarged liver have started coming in ultrasound tests, due to which patients are facing mental stress. By measuring the elasticity of the liver, fibro scan test helps in detecting the actual condition of alcohol related disease, bile disease, hepatitis and fatty liver disease and taking appropriate treatment at the right time and its side effects like swelling in the liver, fibrosis, tumor and congestion can be prevented.

Surya Sarovar Cleaned by Civil Defense Members of Banaras Locomotive Works, Varanasi

On 21st February 2024, under the direction of BLW Civil Defense Controller and Senior Deputy General Manager cum Chief Public Relations Officer Shri Vijay, about 70 members participated in the massive cleanliness work at Surya Sarovar located on the campus by BLW Civil Defense Organization. All of them participated enthusiastically.



Various Programmes Organized under 53rd National Safety Week in BLW



Various programmes were organized in the week-long programme of 53rd National Safety Week-2024 which was celebrated from 4th to 10th March at Banaras Locomotive Works, Varanasi. On this occasion, for the first time a seminar was organized at the Technical Training Center on 4th March, 2024. General Manager Shri Basudev Panda, in his lecture on the topic of safety, emphasized on giving priority to safety and security and ensuring 100 percent compliance of safety standards at the workplace. Safety oath was administered to the people present in the programme by the chief guest.

On this occasion, 6 assistant employees of Civil Department, who rescued two labourers trapped during a fire accident in a house in BLW complex on 29th February, 2024 and brought them out of the house, Shri Amit Singh, Shri Shiv Shankar, Shri Madan, Shri Sanjay Shukla, Shri Ratnesh Pathak and Shri Sandeep Gupta was honoured and rewarded by GM.

On 5th March, 2024, safety awareness 'Prabhat Pheri' was organized near Kundan Loco located in the local Central Market. For safety awareness among the employees of Store Division and Civil Division located in the factory premises, training on fire and personal protective equipment, safety oath, safety quiz and prize distribution programme were organized, in which the factory employees participated with great enthusiasm. For safety awareness among the lab and tool room employees, training on fire and personal protective equipment, safety oath, safety quiz and prize distribution programme were organized. On 9th March, 2024, fire and personal protective equipment training, safety oath, safety quiz and prize distribution programme were organized for safety awareness among the employees of the Block Division in the factory premises. Along with this, a suggestion competition was organized on the topic 'Safety at Workplace' for safety awareness among BLW employees.■

Annual Health Check-up Camp at BLW Hospital

Annual health check-up camp was organized at BLW Officers Club on 3rd March, 2024. While inaugurating the check-up camp, Shri Basudev Panda, General Manager said that a provision has been made for health check-up of every railway employee every year so that the diseases can be detected early and treated quickly. Now-a-days, due to faulty eating habits, stress and lifestyle, diseases are increasing, for whose prevention and treatment there is a need to do regular health checkups. Healthy workers increase the production capacity and quality of the factory and maintain industrial sensitivity. Everyone's blood pressure were measured, ECG and necessary blood tests were done to detect diseases in their initial stages as well as monitoring of pre-existing diseases.■



BLW Pavilion and Loco Model became the Centre of Attraction in Technex in BHU



The 85th edition of Tech Fest 'Technex' at Banaras Hindu University, IIT was organized from 15th to 17th March, 2024 at Swatantrata Bhawan, BHU. The attractive pavilion of Banaras Locomotive Works in which loco running and static models were displayed became the centre of attraction among the students in the technical festival Technex-2024 in IIT BHU. Students showed special interest in various facilities like hot plate, voice and video capturing facility for pilot, bio-toilet, speed of railway engine, brake system, running of railway engine at high speed with weight and many other technologies. Public Relations Officer, Shri Rajesh Kumar along with the team of engineers and instructor staff of BLW who are experts in technical subjects provided detailed information to the students on the major and minor aspects of the railway engine.■

Annual Festival of Chetna Vidyalaya run by BLWWWO Organised

On 2nd March 2024, a cultural programme was organized in the annual festival of Chetna Vidyalaya, run by the Women Welfare Organization of Banaras Locomotive Works for the disabled. Smt. Neelima Panda, President of BLWWWO inaugurated the programme. Dr. Poonam Singh, a member of the organization and a professor of Kashi Hindu University, said that education is very important for overall development and in this direction, there is a need for the quality of teachers. Special B.Ed course is run so that education with special skills can be provided to these disabled children. Disabled children presented colourful and interesting cultural programmes.■



General Manager, WCR Inspected CRWS, Bhopal



On 22nd February, 2024 a inspection of the Coach Rehabilitation Workshop, Bhopal was conducted by Smt. Shobhana Bandopadhyaya, GM of WCR. During the inspection, the General Manager conducted a thorough inspection of the coach conversion activities for transportation of automobile vehicles. The Workshop Management was appreciated by the GM for timely completion of the set targets of the Workshop by highly skilled employees through deployment of high quality welding process.■

ICF Created a New Record

ICF has created a new record by turning out the 1000th Distributed Power System (DPRS) coach in the financial year (2023-24) which is the highest number of DPRS coaches produced in a production year by Indian Railways.

DPRS type of coaches include coaches for Vande Bharat train sets, Electric Multiple Units (EMU), Mainline Electric Multiple Units (MEMU), Self Propelled Inspection Cars (SPIC), Self Propelled Accident Relief Trains (SPART), etc.











Sports News

Metroman Claims Nine Wickets in an Innings in Ranji Trophy



Shri Akash Pandey, a Metroman, played for Railways in the Ranji Trophy tournament and made history by claiming nine wickets in an innings against Goa. This Elite-C Group stage match was played at Lalbhai Contractor Stadium, Surat from 9th to 12th February, 2024.

Akash, a staff of Fire Department of Metro Railway hailing from Howrah, is a left arm spinner and previously represented Bengal in U-19 and U-23 tournaments. He achieved this rare feat by just conceding 71 runs in 26.2 overs in Goa's second innings and helped his side Railways to post a 63-run win against Goa in the crucial Elite Group Stage match. In the first innings, Akash scalped four wickets in 23 overs by just conceding 62 runs. He also scored 26 runs in the first innings as a batsman. By virtue of this sterling performance, Akash has won the Player of the Match award also. Shri P Uday Kumar Reddy, General Manager, Metro Railway has congratulated Akash, who has been working in Kolkata Metro since 2019, for this brilliant performance and wished him all the best for all his future matches.■

A New World Standard Synthetic Basketball Court Inaugurated



A new world standard synthetic basketball court was inaugurated for the basketball players of Metro Railway at Dum Dum Metro Railway Staff Quarter Complex on 13th February, 2024. Ms. Aparna Ghosh, Dy. Secy (Sports and General) inaugurated this world standard basketball court in the august presence of Shri P Uday Kumar Reddy, General Manager, Metro Railway, Kolkata and other high officials of Metro Railway. Shri Reddy basketed a ball in this newly inaugurated court to mark the occasion.

Encouraging all sports persons of Metro Railway, Shri Reddy expressed his hope that the basketball team of Metro Railway will be immensely benefitted with the inauguration of this court as it will provide ample opportunity to practise. At the end, an exhibition match was played between Burrabazar Yubak Sangha and Metro Railway's basketball team.

Shri P Uday Kumar Reddy, General Manager, Metro Railway also conducted an inspection from Motorman's cab on Park Street to Dum Dum stretch of North-South Metro.■

KIND ATTENTION

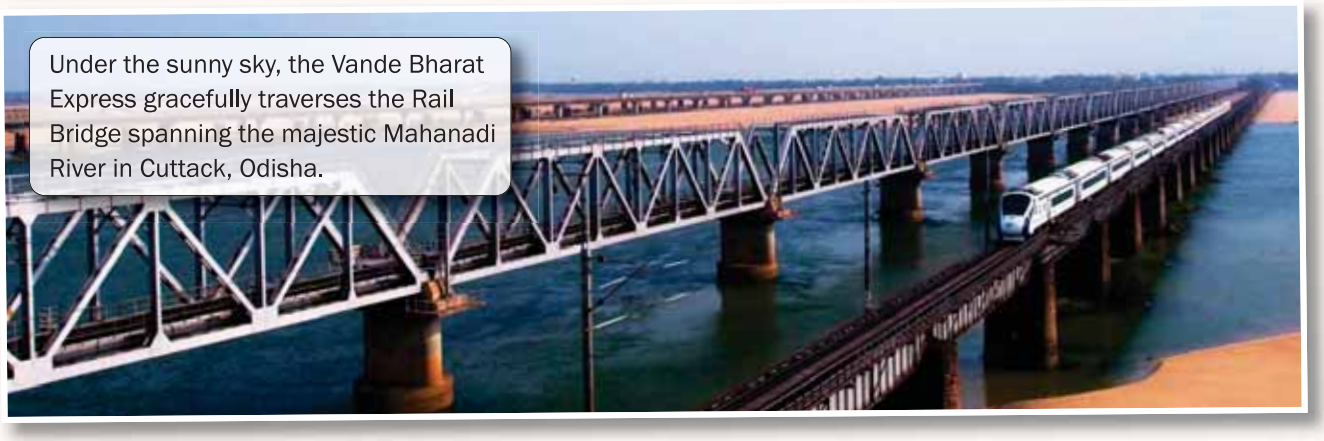
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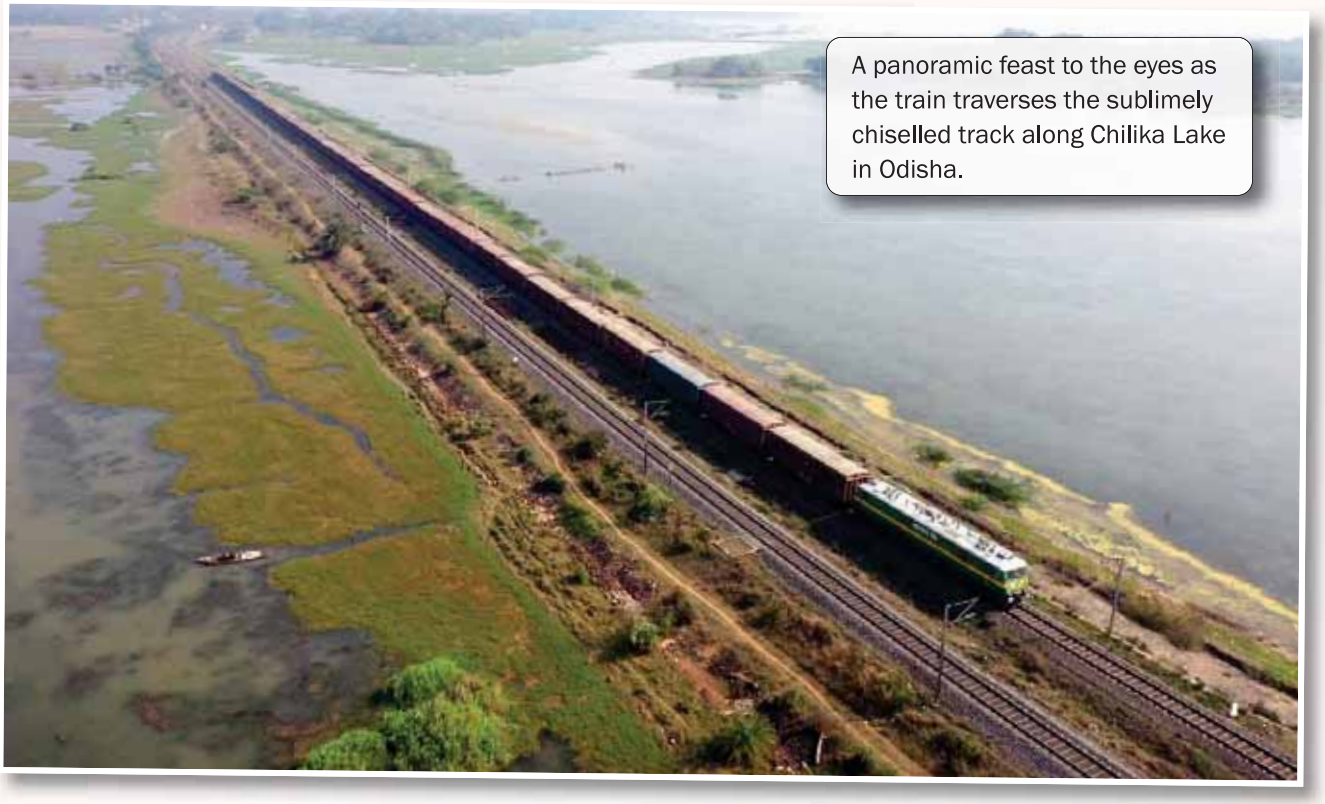
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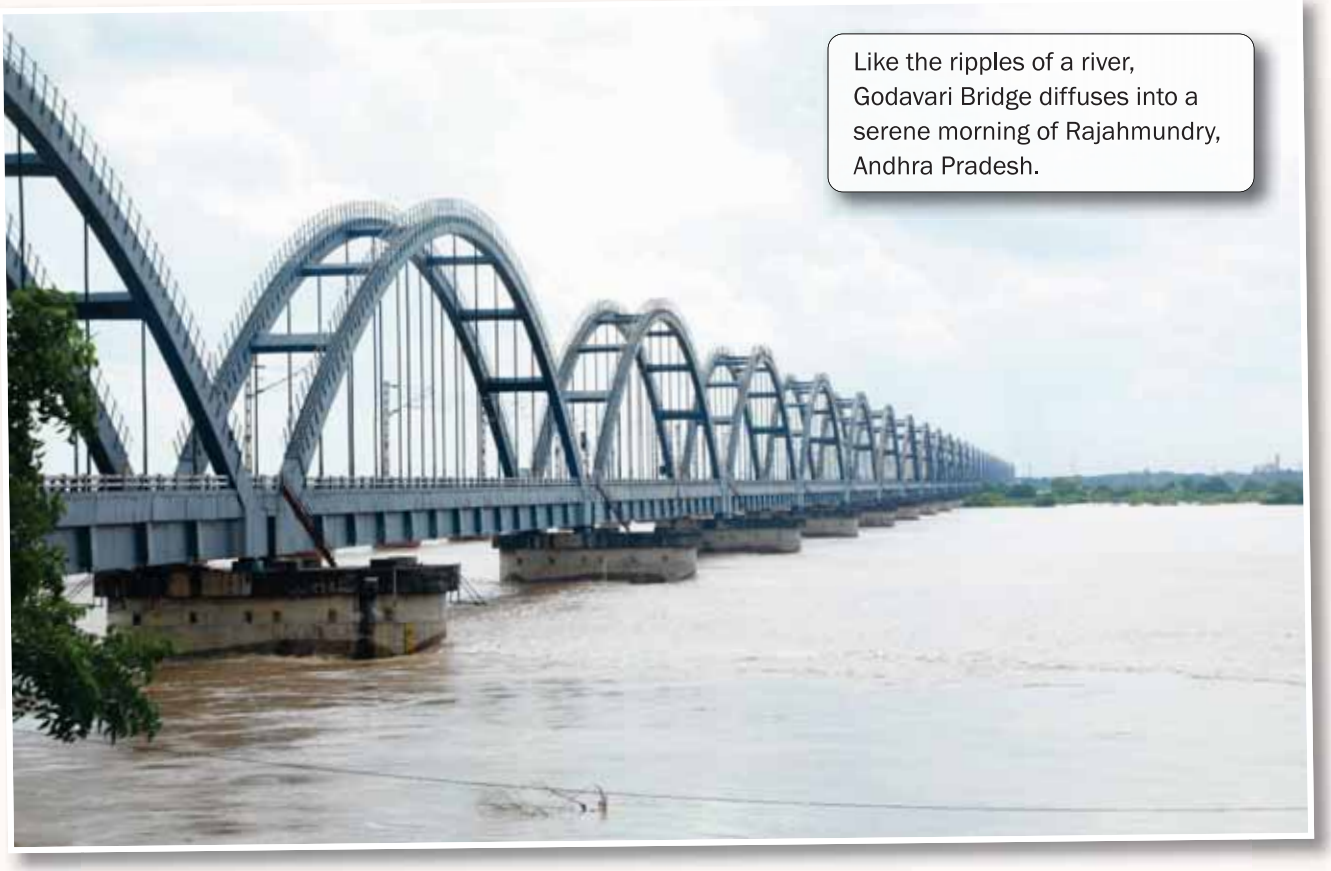
An enchanting view of a train gracefully passing through a breathtaking green landscape and tranquil waters. Kundapura, Karnataka



Under the sunny sky, the Vande Bharat Express gracefully traverses the Rail Bridge spanning the majestic Mahanadi River in Cuttack, Odisha.

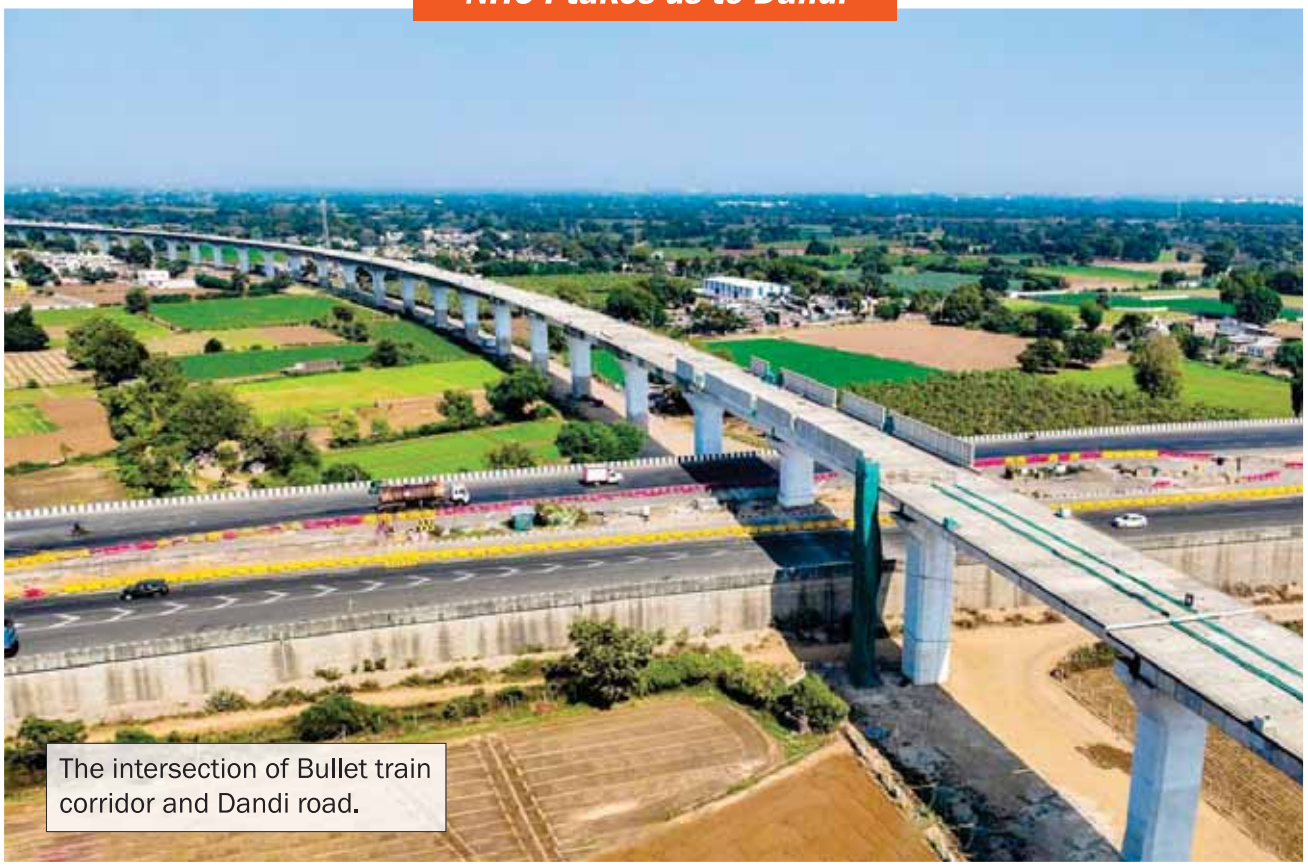


A panoramic feast to the eyes as the train traverses the sublimely chiselled track along Chilika Lake in Odisha.



Like the ripples of a river, Godavari Bridge diffuses into a serene morning of Rajahmundry, Andhra Pradesh.

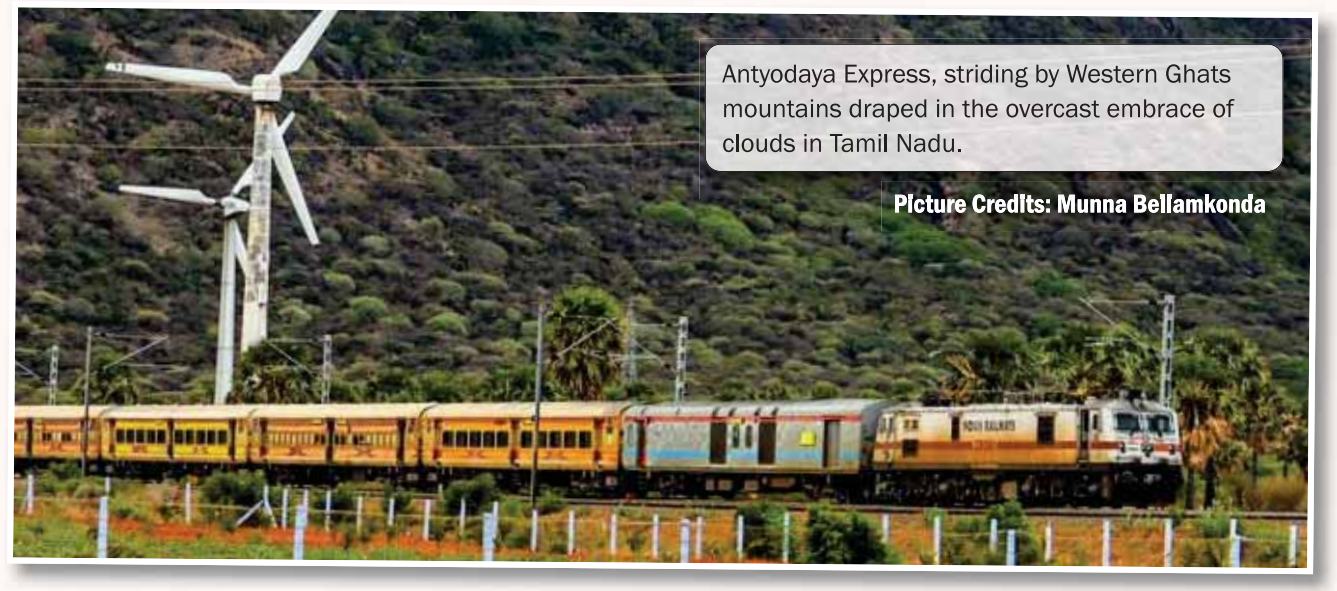
NH64 takes us to Dandi



The intersection of Bullet train corridor and Dandi road.



Greeting adieu to Azure and Hillock behind, a train accelerates near Chilika Lake, Odisha.

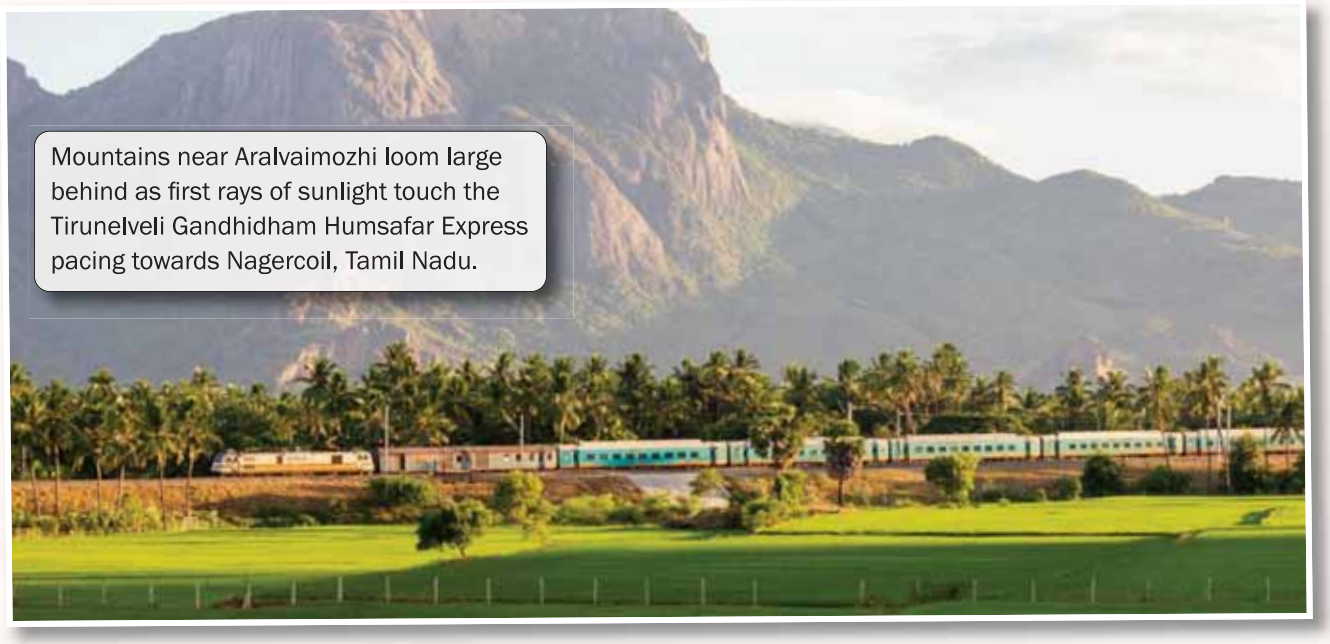


Antyodaya Express, striding by Western Ghats mountains draped in the overcast embrace of clouds in Tamil Nadu.

Picture Credits: Munna Bellamkonda



Feast your eyes on the breath taking view of the Vande Bharat Express passing near Achirne Railway Station in Maharashtra.



Mountains near Aralvaimozhi loom large behind as first rays of sunlight touch the Tirunelveli Gandhidham Humsafar Express pacing towards Nagercoil, Tamil Nadu.



A postcard-worthy shot of the MEMU train spanning the Konkan Journey, verdant from end to end, near Bhatkal Railway Station, Karnataka.



A train idling over the Naini bridge in Uttar Pradesh.

Progress Report

Vande Bharat Express stands primed to embark on its maiden journey at Kalburagi station



Basking in the sun, the new Kalburagi-Bengaluru (Sir M. Visvesvaraya Terminal) Vande Bharat Express stands primed to embark on its maiden journey at Kalburagi station, Karnataka.

12th March, 2024

Passengers are all smiles as they take a selfie



People at the Ranchi Junction, Jharkhand are all smiles as they take a selfie with the Ranchi-Varanasi Vande Bharat Express before it was flagged off.

Rail Coach Restaurant at Guwahati Railway Station



Delight in the ambience and flavours of Rail Coach Restaurant.
Guwahati Railway Station, Assam

Explore the world of ornamented Bidri Handicrafts at the One Station One Product stall



Explore the world of ornamented Bidri Handicrafts at the One station One Product stall, Bidar Railway Station in Karnataka, empowering local artisans and traders by vouching for regional handicrafts and products.

Redevelopment of Stations





Redevelopment of Assam's Udalguri station is progressing rapidly. Passengers will enjoy enhanced comfort & convenience with modern amenities, upon completion.





Progress Update of Imphal Station Building and Station Yard Part of Jiribam-Imphal New Rail Project, Manipur. Work in Progress - 90% Structural work, 85% Brick work. Upon completion, the station will boast a heritage outlook equipped with modern facilities.





Redevelopment of Muzaffarnagar Junction, Bihar





Banka Jn. Railway Station in Bihar undergoes a transformative upgrade, ensuring enhanced amenities for passengers under Amrit Stations.





Assam's Rangapara North Station is getting a facelift with a new station building under construction. Upon completion, passengers will enjoy a modernised travel experience with amenities like lifts, escalators, waiting halls and many more.





Pokhrayan Railway station in Uttar Pradesh is undergoing a complete makeover under Amrit Stations Scheme.





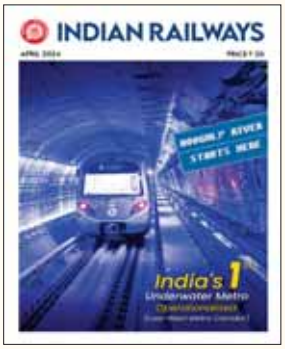
Accelerated progress towards completion of redevelopment
Singaraya Konda Railway Station Andhra Pradesh





Redevelopment work for Prayagraj Junction, Uttar Pradesh, is making swift strides, with construction underway on the civil lines side. Upon completion, the station will be equipped with state-of-the-art facilities in an enthralling facelift.

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Automated FAT/SAT – Leveraging Technology for Faster & Reliable Signalling System Installation

Shri Rajneesh Gupta
ED/Signal
RDSO

Shri Amit Misra
ED/Signal- I
RDSO

Shri Rajendra Dhambel
Ex. PED/ Signal
RDSO

The unveiling of "Mission Gatishakti" marks a pivotal moment in India's transformation, with Indian Railways as the "engine of growth" to unlock the country's hidden potential. Therefore, it is imperative that swift and high-quality infrastructure projects, in which signalling systems play a vital role, are executed with utmost precision to realize the nation's aspirations. The interlocking principles of signalling systems ensure the safe and seamless movement of trains. As a result, System Integrity Testing (SIT) is considered the most critical and indispensable component of system installation. This ensures that all interlocking principles are appropriately embedded and that their specific correspondence with external gears is meticulously followed. The SIT of electronic interlocking (EI) systems is guaranteed by both the factory acceptance test (FAT) and site acceptance test (SAT). The use of cutting-edge technology enables us to leverage process-based automation tools that eliminate human errors and enhance the quality of installation. This study aims to review the challenges posed by the conventional method of SIT and examines the latest automation SIT tools for both FAT and SAT. Furthermore, it offers a compelling course of action to capitalize on these technological tools to improve the quality and integrity of installation while simultaneously expediting project execution. By embracing these best practices, the Indian Railways can join this revolutionary transformation.

Introduction

The System Integrity Test [SIT] of the signalling system is conducted to ensure compliance with functional and safety requirements by simulating various states of signalling elements before bringing the signalling system into service. The present process of system integrity test is based on the certification of the testing personnel, which are error-prone due to human factors. For verification purposes, reliable pieces of evidence for the future reference are not preserved. More importantly, deficiencies observed at the later stage of commissioning and subsequent modification in application logic leave a possibility of incomplete SIT or delays in project execution. SIT is a time-consuming process (approx 10-12 routes/day) and forms a critical bottleneck in project execution. Commissioning is frequently delayed due to a lack of sufficient block/non-interlocking time. This problem is exacerbated further during minor yard modifications when it is impractical to conduct a complete SIT due to lack of block as it severely affects train operation. Which, may seriously raise doubts over the integrity of electronic interlocking systems resulting in undesired or even unsafe signalling movements. Since the Indian Railways forms a critical part of “Mission Gatishakti”, these delays distance us from realizing the dream quickly, safely and reliably.

SIT is the most critical activity in the commissioning of a signalling system. It consists of two components: Factory Acceptance Testing (FAT) and System Acceptance Testing (SAT). SAT can largely be defined as FAT + correspondence test. FAT is largely defined by the testing of system integrity in accordance with all of its interlocking principles. It ensures the safe working of station interlocking through complete testing which includes Control table testing, Cross table testing, Negative testing etc. SAT ensures the integration of outdoor gears with interlocking logic and principles. The process guarantees that all instructions, whether given or received, are communicated by the rightful authority, thereby ensuring effective communication and compliance with established protocols. SAT testing at the site prolong the non-interlocking period, which has the following repercussion:

a) Block-working, free home and starter signal has to be provided for the station, which requires additional wiring and work.

b) The points must be clamped and pad-locked during the yard's non-interlocking period for train movement. And for each test, the clamp and padlock must be removed, which takes considerable time. Further, each train movement restricts yard testing. Thereby, even for a smaller yard, at least one day's NI is required for SAT even for minor alteration work of gate interlocking or signal aspect changes etc.

SEM 19.8.8 mandates that SIT be performed on all new installations and modifications, as well as every five years on existing installations. Para 19.8.8.d-e mandates, testing of TOC after all functions are connected to EI during a non-interlocked period. Para 21.5.2 provides detailed guidelines for SIT of EI. With gained experience, SEM has included provision for alteration of the yard, which provides scope for only essential testing for the portions which are affected in modification with due precautions and care from field officials.

In the traditional relay-based interlocking system, the interlocking principles are hardwired through relays at the site, making on-site testing necessary. However, electronic interlocking (EI) technology has allowed for the pre-configuration of interlocking software, making off-site testing with the help of simulators feasible. By validating the system software integrity before installation, a comprehensive FAT can shorten the on-site SIT duration and enhance the installation's quality and integrity. With the gained confidence and adherence to necessary precautions and detailed procedures, the need for the selection table test may eventually be eliminated, requiring only on-site correspondence and functional testing. This could significantly reduce critical commissioning time and non-interlocked periods, particularly during minor yard modifications, without jeopardizing the system's integrity.

Currently, the process of conducting FAT and SAT testing is quite time-consuming, especially for higher routes (Figure 1).

Automated SIT offers a significant reduction in testing time compared to the current manual testing process. In particular, for stations with 50 to 500 routes, the time required to complete all tests for a single route after bypassing the two-minute time delay associated with route cancellation from a single simulation application is between 20 and 45 minutes. By running multiple parallel operations,

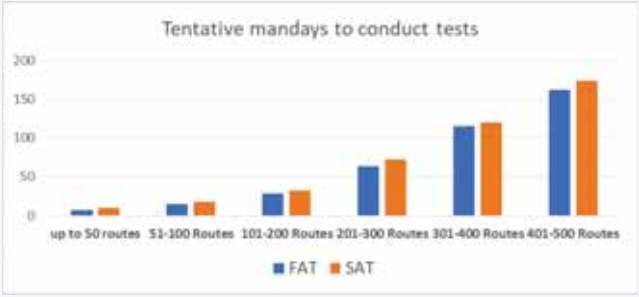
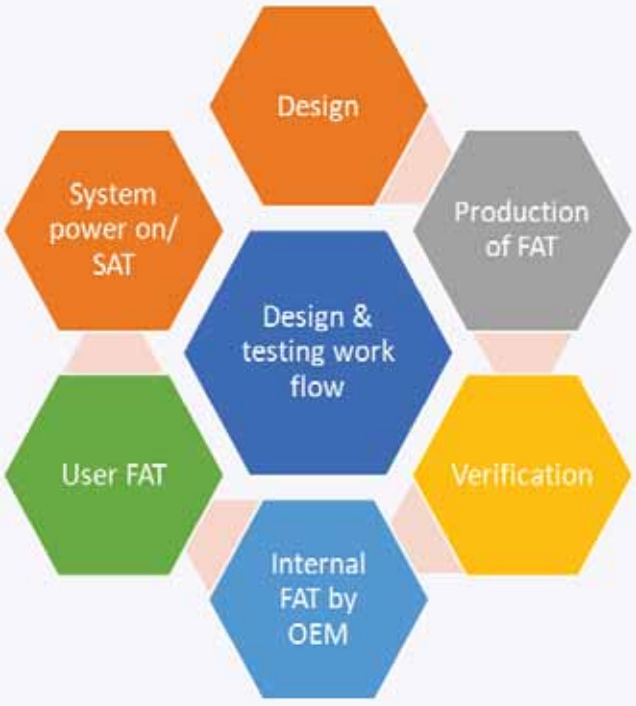


Fig. 1

further time savings can be achieved, allowing thorough SIT to be completed in a single day even for very large, complex yards.

A process-based technologically assisted SIT for EI systems, which creates evidence of testing and eliminates human errors is a need of the hour on Indian Railways. Several firms such as M/s Kyosan India Pvt ltd, M/s Efftronic India Pvt & M/s Sensedge have successfully demonstrated proof of concept in India, which has the potential to transform conventional manual SIT processes. Successful tests at Santragachi, Ghevra, Kanalus, Walaja Road, Jolarpetty, among others, have demonstrated the efficacy of these tools as a substitute for manual simulation. Moreover, it is feasible to develop a SIL2/SIL4 device with proper verification and validation processes.



Present process of signalling system design, wiring and testing on Indian Railways and limitations (Fig. 2)

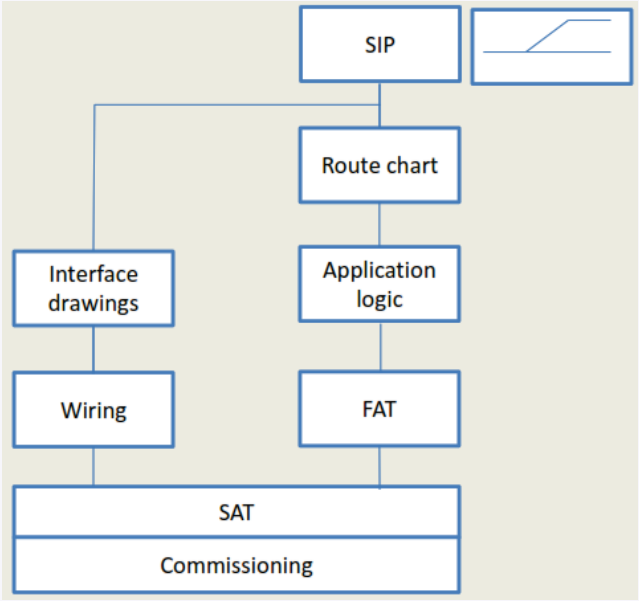


Fig. 2a

Challenges of Present Methods of Testing

i. Manual testing is time-consuming resulting in project delays.

ii. Frequent changes in field requirements result in repeated FAT/SAT testing, delaying commissioning.

iii. No process-based comprehensive pre-test plan is prepared.

iv. Test procedure lacks uniqueness, except for common types such as negative tests.

v. No preservation of real-time test evidence makes it impossible to verify the completeness of the test later.

vi. Testing relies on the tester's skill, prone to human errors without a proper test plan.

vii. Lapses in manual testing may result in future operational/unsafe after triggering a specific scenario.

New Practice of Automated Computerised System Integrity Test

SIT assists in identifying errors in circuit design and circuit wiring. Signalling systems are amenable to automated computerized testing as the sequence of activities is precise and repetitive; results are predictable.

Stages of Development of Automated Computerized System Integrity Testing (Fig. 3)

Stage 1: Defining the tests in minute activities in sequence

Stage 2: Development of software which enables:

i. Driving a specially made processor-based hardware for operations on the operating panel and changing states of signalling elements.

ii. Creating TEST PLAN with expected results.

iii. Retrieving simulator test results in the form of bit status for the signalling system's response.

iv. Comparing and validating test results to determine success or failure.

Stage 3: Development of hardware controlled by software from Step 2 to control VDU and signalling element states.

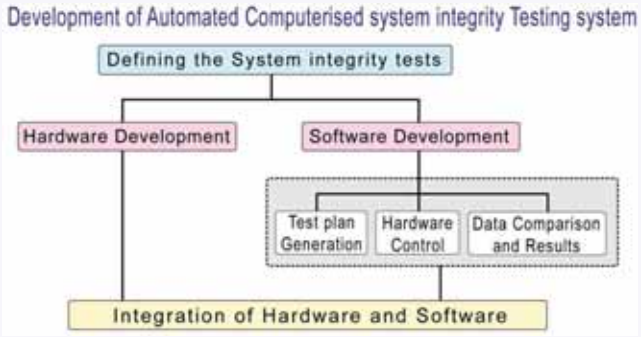


Fig. 3

Defining the Tests:

System integrity test consists of the following tests to ensure compliance of the signalling system to various safety conditions mentioned in the manuals, codes, and rules and regulations issued by the railway administration.

S.N	Test Type	Description
1	Negative test	The status of signal-controlling functions in ST/LT, such as track, point, LX gate, slot, and crank handle, will be changed and the signal status change will be monitored.
2	One signal one train test	Upon clearing the signal, the first control track circuit is dropped and then picked up. Although the first control track circuit is picked up, the signal must remain in the danger state and display red.

3	Route release test for light engine movement	Upon clearing the signal, tracks are dropped to simulate light engine movement. The operation of route release relays at each stage is verified as per the specifications mentioned in ST/LT.
4	Route release test for long train movement	Upon clearing the signal, tracks are dropped to replicate long train movement, and the operation of route release relays at each stage is verified as per the specifications mentioned in ST/LT.
5	Route holding test	All route-releasing conditions are fulfilled except the picking up of the route holding track. Then, route locking is observed.
6	Approach locking test	If the approach track is unoccupied, the route release will occur without any delay after route cancellation. However, if the approach track is occupied, route cancellation will occur with a time delay.
7	Red lamp protection	When a signal is cleared, an ahead signal red lamp proving relay is dropped. The previous signal shall change to danger.
8	Signal lamp cascading	After signal clearance, each OFF aspect supply is cut off. The signal shall change to a more restrictive OFF aspect.
9	Signal aspect sequence control test	After clearing all signals for a line, each aspect of a signal starting from the advanced starter is brought down to the next restrictive aspect. Changes in the aspect of signals in the rear are observed for their correct change as per STLT/aspect control chart.
10	Track locking test for points	Each controlling track is dropped and an attempt is made for operating the point. It shall not operate. However, emergency point operation shall be possible.
11	Crank handle locking test	An attempt is made to transfer the control of each crank handle locked by the signal when the signal is cleared. It is expected that the CH Control is not transferred.
12	LC gate locking test	An attempt is made to transfer the control of each LC gate locked by the signal when the signal is cleared. It is expected that the Gate Control is not transferred.
13	Route locking test	An attempt is made to operate each point which is locked by the signal, after clearing the signal. It is expected that point does not operate. Attempt is made to operate each point which is not locked. It is expected that the point shall operate.
14	SM Key lock Test	Each Operation is tested for SM key effectiveness.
15	Point Operation through route test	For route setting type panels, controlling points are initially set opposite to the required condition. Then, the route is activated and the operation of points is checked to ensure they are set to the required position and locked.
16	Timers test	Once a route is set, cancellation is applied and the time taken for the route to be released is observed. Each timer is tested separately.
17	Square sheet test	A main route is set and every test route is attempted to check whether it is locked/free. This is repeated for all the routes. This test is done based on the Master Square Sheet provided by Railways.
18	Route checking test	After a route is set, in addition to stage-wise checking for UCR and ASR, all non-control functions (tracks, points, crank handles, gates indications) are checked. It is expected that the signal status remains intact.

Process of testing

Generation of test plan

a. Identify input/output bits based on TOC and test procedure, and create a generic software/ simulator.

b. Identify signalling elements and their states to be changed for tests according to TOC and square sheet.

c. Identify buttons and switches required for tests based on VDU configuration.

d. Entering hardware details into the software for controlling panels and signalling elements.

e. Generate a test plan and manually verify the correctness of one test case for each test.

f. Obtaining approval for test plan from Railways.

Sample of a SAT procedure for tests with a simulator (numbering denotes sequence of operation)

S.No.	Test	Operation	Simulator sequence of operation	Output from simulator
1	Negative test	3 Clear signal for selected route	1 Select route 2 Select negative test	4 Implement test by checking status of points, tracks etc. 5 Test result displayed
2	Square sheet test	3 Clear signal for selected route 6 Tester attempts the route suggested	1 Select the route 2 Select square sheet test 5 Tester PC prompts tester the next route to be attempted 8 Tester PC prompts tester the next route 1 to be attempted	4 Tester PC declares test result 7 Tester PC declares test result
3	Route release for light engine	3 Clear signal for selected route	1 Select route 2 Select route release for light engine	4 Implements the test by changing the statuses of tracks 5 Test result displayed
4	Route release for long train	3 Clear signal for selected route	1 Select route 2 Select route release for long train	4 Implements test by changing status of tracks 5 Test result displayed
5	Route holding test	3 Clear signal for selected route	1 Select route 2 Select route holding test	4 Implements test by changing statuses of tracks 5 Test result displayed
6	Approach locking test	3 Clear signal for selected route and cancel it 5 Again clear signal 7 Cancel route	1 Select route 2 Select Approach locking test	4 Test result displayed 6 Drops approach track 8 Test result displayed
7	Signal lamp cascading test	3 Clear signal for selected route	1 Select route 2 Select signal lamp cascading test	4 Implements test by changing status of signal lamps of signal 5 Test result displayed

Sample of Test results

Format of test result is given below

Test name	Operation	Expected Result	Actual Result	Success
1 A-A route Point negative test attempted	52 Point indication drop initiated: 52 NWKR Down 01/04/2011 09:28:51:0	52 NWKR Down 1A UCR Down 1A HR Down	52 NWKR Down 01/04/2011 09:28:51:312 1A UCR Up 01/04/2011 09:28:50:766 1A HR Down 01/04/2011 09:28:51:344	No

Explanation to the table contents:

Test name: Name of the test

Operation: Command given by test software to the test system

Expected result: Signalling system's relay status change response as per the test plan

Actual result: Signal system's relay status change response obtained from the data logger.

Success: Test results are evaluated by comparing expected and observed outcomes. A 'yes' result is obtained if there is no deviation, while a 'no' result is declared if there is a discrepancy.

Typical deviations observed in sample testing:

1. Omissions in circuit design: not implementing required condition.
2. Commissions in circuit design: implementing additional [wrong] conditions.
3. Wrong wiring: resulting in omission or commission of conditions or not meeting functional requirements.
4. TOC corrections: certain conditions required to be provided in TOC but missed, still provided in the circuit design.

Action plan for automatic FAT/SAT

FAT

a) The primary focus of the drawing office should be the preparation of the two critical inputs, SIP and RCC, in consultation with field officials.

b) The drawing office shall conduct automatic FAT using OEM's simulator and promptly correct any discrepancies encountered by the designer.

c) Conducting automatic FAT using OEM's simulator and making all necessary corrections is critical before considering FAT complete. The final automatic FAT result should be included in Technical System Application Approval (TSAA).

d) Conduct manual FAT at the factory premises with a simulation tool and a field setup. Define EI with Ports in advance and avoid any alteration during the FAT. Ensure all required interfaces are taken care of, including those for block working and data loggers. Provide spare ports for future modification work. This will ensure indoor works related to installation and alteration can be carried out independently of FAT.

SAT

Since the allocation of existing ports is not altered and is duly verified, and the interlocking provided by application logic has already been tested and certified by the drawing office as well as field officials, the integrity of the interlocking provided by application logic is verified. Additionally, the following functional and correspondence tests must be performed to ensure that EI systems communicate properly with field gears.

a) Correspondence of ports with the hardware ports as defined in the application logic.

b) Correspondence and functions of the gears introduced like signal, points, tracks, crank handle, LC gate etc.

c) Relay room wiring including cascading of signal aspect.

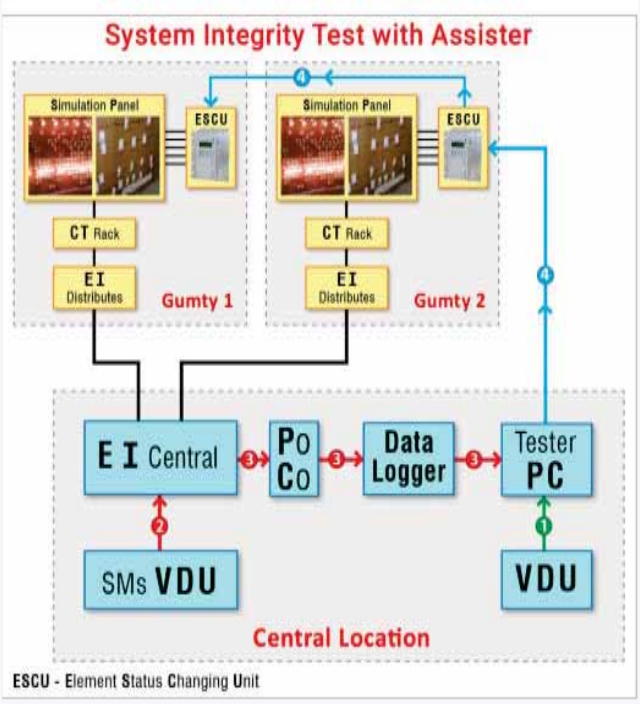
d) Block instrument hardware interfacing circuit with EI.

e) Wrong feed test (for newly added outputs).

f) Data logger interface.

Semi-automated SAT

Despite the need for manual procedures in ensuring the legitimacy of tools, successful semi-automated solutions to manual SAT have been tested at various locations, including Jolarpetti station, and have



proven effective in determining system integrity by the concerned railways. This solution involves software with a station-specific test plan and evaluation tool, as well as an element station changing unit (ESCU) composed of miniature relays. The ESCU unit is responsible for controlling the I/O bits, such as track, points, signals, L-sing, etc. It automatically assigns functions to a simulated train operation that is approaching a station, with the software being run with the intervention of a single person. The software displays the progress of the test and delivers the results in the desired format, along with the timing of each individual function operation,

Advantage over conventional testing process

a) Reduces time of testing by at least 50%.

b) Reduces effort -one person can conduct the test instead of multiple persons. Furthermore, testing official can see the status of remote cabins gears, which is not feasible in conventional system and requires human intervention.

c) Provides evidence for each test.

d) Test result is evaluated automatically with improved correctness of testing.

e) Completeness of testing monitored by Railway official itself.

f) Testing becomes simpler, especially for stations with distributed interlocking, as the status of signalling elements at gumties can be modified without human intervention at remote location.

g) The use of ESCU in the semi-automated solution eliminates the need for q-series relays, resulting in reduced wiring and relays. This simplifies testing and debugging, particularly in complex yards, and decreases the chances of errors in the simulation panel.

h) Modular reconfigurable setup, which can be reused for commissioning of multiple stations.

Challenges and Limitations to automation

Despite the potential benefits of automating manual testing of SIT through software or hardware solutions in the Indian Railways signalling system, there are several disadvantages and challenges to consider. The primary challenge that arises is the requirement for a significant upfront investment in the development of hardware and software. This investment may prove to be costly for smaller EI vendors, and it could also raise concerns among users regarding safety, potentially leading to the non-acceptance of the solution. Additionally, there may be a lack of technical expertise among staff to operate and maintain the automated systems, leading to potential delays and errors in testing. Another challenge is the need to ensure that the automated testing solutions are accurate and reliable, as any errors in the testing process could result in serious safety risks. Finally, there may be resistance to change from staff who are accustomed to manual testing procedures, and there may be a need for training and education to facilitate the adoption of new testing technologies.

Conclusion

Indian Railways is at a crossroads in terms of implementing “Mission Gatishakti”, where both speed and quality of execution are critical. Railways signalling ensures the safety of train movement. Achieving both can be a challenging task, but with the help of cutting-edge technology, it is possible. However, conventional manual signalling design and drawing processes, particularly during site testing, can cause significant bottlenecks. Fortunately, a proposed process-based system testing using advanced technological tools can drastically reduce testing time while simultaneously enhancing the quality and integrity of the installation. This frees up valuable time for railway officials to focus on preparing the correct input and improving the design of the interlocking system. With this approach, Indian Railways can make full use of the capabilities provided by electronic interlocking and ensure safe and speedy train movements.

We welcome articles from our readers about their first-hand experience while travelling by Indian Railways.

Email : editorindianrailways@gmail.com

From the Land of Majestic Tigers

Bandhavgarh National Tiger Reserve

Shri Tushar Kanti Pan
Traveller and Photographer



Summer begins in this epic forest in April and continues till July. The hot summer's months are excellent for wildlife photography and animal sightings. In the mid of May, during the day time the temperature would be around 40°C to 46°C. Since my childhood I'm drawn to the charm and enigma of the Jungles and is passionately in love with the wild life. With this wild love for the wilds and wilderness, I visited Bandavagarh National Tiger Reserve braving the scorching heat. Best part of the visit as usual is that Jungle always enriches my dream memories.

Bandhavgarh National Park was formerly a royal hunting reserve of the princely state of Rewe, where the first white tiger was found in the wild. It has the highest known density of Royal Bengal Tigers in India.

Although spotting a tiger in the wild is undoubtedly the park's key attraction. According to the recent tiger census-2023 released in April 2023, Bandhavgarh is home to 220 tigers including male, female and cubs. Its habitants also consist of more than 22 species of mammals. Out of these I witnessed many Royal Bengal Tiger (Panthera Tigris Tigris), the Indian Leopard (Panthera pardus fusca), many more species of mammals, such as Chital or Spotted Deer (Cervus axis), Sambar (Cervus unicolor), Chinkara or Indian gazelle (Gazella Bennettii), Chowsingha or four-horned antelope (Tetracerus Quadricornis), wild Boar (Sus Scrofa Cristatus), and Dhole or wild dogs (Cuon Alpinu), gray langurs, Rhesus Macaques or red-butt monkeys (Semnopithecus Entellus), wild Rabbit (Lepus nigricollis) etc.

Bandhavgarh has an abundance of birdlife of more than 275 species. Out of these I have witnessed more than 20 species. Of these few birds are Red Listed like Indian Paradise Flycatcher, Hornbills, Orioles, Parakeets, Peacocks, Eagles, Owls, and Nightjars. In the night safari snakes, rabbits, foxes are seen too.

I am sharing a few shots which I took during my wild life safaris which I took in the morning, afternoon and at night time at Bandhavgarh.

Dream shot – Three-year-old daughter of Tigress Dotty!

Location – Magadhi – Core Zone - at Bandavagarh National Tiger Reserve, from the land of Madhya Pradesh, India.

Gears – Canon

DOP – May 2023



Dream shot – I have witnessed this gigantic 7-year-old male Tiger named Pujari.

Captured in - Khitauli - Core Zone - at Bandavagarh National Tiger Reserve, from the Land of Madhya Pradesh, India.

Gears – Canon

DOP – May 2023



Also, I am blessed to have witnessed a few Red Listed birds like, The Indian Paradise Flycatcher (Terpsiphone paradise), female which is a medium-sized passerine bird native to Asia, where it is widely distributed. As the global population is considered stable, it has been listed as Least Concern on the IUCN Red List since 2004. It is native to the Indian subcontinent, Central Asia and Myanmar.

Captured in - Khitauli - Core Zone - at Bandavagarh National Tiger Reserve, from the land of Madhya Pradesh, India.

Gears – Canon

DOP – May 2023



The Lesser Adjutant (Leptoptilos javanicus) female is a large wading bird in the stork family Ciconiidae. Like other members of its genus, it has a bare neck and head. It is however more closely associated with wetland habitats where it is solitary and is less likely to scavenge than the related greater adjutant.

Captured in - Khitauli - Core Zone - at Bandavagarh National Tiger Reserve, from the land of Madhya Pradesh, India.

Gears – Canon

DOP – May 2023



An Overview

Location: Entry Gate Tala, Bandhavgarh Tiger Reserve, Madhya Pradesh, India

How to reach: Bandhavgarh is six hours by road from Kanha or Khajaraho, and by train Shalimar/Howrah to Udaipur via Bilaspur, Sahadol Station which lies two hours away by road (transfer times depend on road conditions). Also, there are overnight trains from Delhi/Agra to Umaria Station which lies one and half hour away by road (transfer times depends on road conditions).

The park is closed during the breeding season, which coincides with the monsoon (July – mid October).

Where to Stay: There are abundance of good resorts and hotels near the Bandhavgarh National Park with provide comfortable stay and quality food. Leopards and bears can be spotted in some of these resorts at night time as most of them lie very close to the reserve forest.

Best time for sighting tigers: Summer. The tigers often come down during scorching heat to water bodies to drink and cool themselves.

When are safaris closed: During heavy monsoons.

Ideal for Viewing: Chital, Barking Deer, Sambar, Leopard, Sloth Bear, Tiger, White-breasted Kingfisher, Red-Butt Monkey, Grey Langurs etc.

Safari Time: Morning Safari: 5am to 11am

Afternoon Safari: 4pm to 7pm

Night Safari: 7.30pm -10.30pm

Best sighting Safari Zones: Madhadhi and Khitauli as far as my experience is concerned.°



Life Power Food & Energy

Shri Kamal Tejwani



Life Power activates every cell and tissue within the body. This Life Power is also known as Vital Power, Prana Shakti or Jeevan Shakti. It cannot be produced or obtained either from within or outside the body from any activity. It is super-physical and super-chemical. The Life Power is endowed on the infant at the time of his birth and is kept as a reserve somewhere within the organism. This vital power is enough to last for 70, 80 or 90 years and more if it is used conservatively and its use is economized. Where this reserve is kept will ever be unknown to man. A Yogi or a realized Saint can visualize this Life Power but to the ordinary individual it shall always remains a mystery. Like software in the computer, it cannot be seen and touched upon but can only be experienced and made use of for carrying out day-to-day functions. However, we need not worry over the place of its reserve. It will be enough for us if we could follow the rules and regulations, expounded by wise men governing the effective expression of this energy in our day-to-day life.

To enable this body, mind, etc. to carry on its internal and external functions day-after-day, a small quantum of power is released from the reserve. Such release takes place while one is asleep at night. There can be no action – physical or mental, external or internal, without a corresponding expenditure of power, the power so spent on every activity is that of Jeevan Shakti.

The prevalent notion mistakenly taken as scientific that food is the source of energy is the reason why numerous persons are eating without hunger and much more than required and wrong type of food, which cannot be fully digested by them.

The intake of food by a person may create a psychological feeling that he has supplied energy to the body though no physiological benefit is derived by the eater. It is perhaps the psychological feeling that makes him temporarily feel better. Food eaten by a person is to be digested. Food cannot digest itself. Digestion of food is a vital action necessitating the corresponding expenditure of Jeevan Shakti.

Elimination is also a vital action. It should be remembered that there cannot be an action without a corresponding expenditure of power. It is unscientific to hold that an activity which involves expenditure of power, supplies energy to the body. It has been practically proved and even Medicos also agree that food is a tax on vitality. Therefore, common sense decrees that there should be minimum tax imposed on vitality just to the extent needed and not more. In other words, a person should eat that much which is absolutely necessary for him and not more so that the Vital Power is not wasted in digestion of food eaten more than the required quantity and its elimination.

Where food eaten is natural and where it is digested properly, the body gets therefrom the requisite blood sugar, amino acids, fatty acids, different types of vitamins and mineral salts, enzymes, trace elements, waterand the cellulose or the roughage required for keeping the body chemistry in order. All these things are just 'matter' and not 'energy' i.e. food is supplying nutrition to the body and not energy.

When all required nutrition is supplied by the food, the body is able to keep the structure integrity and functional efficiency of the different organs. Structural integrity implies that organs are of the optimum shape and size and the functional efficiency implies that organs discharge their functions for which they are designed, neither more nor less than required. Organs of the body support each other like columns and beams in a house. If one organ improves, other organs also get benefitted. Other organ's benefit will be shared by some other organ which starts chain reaction and vice-versa. When all organs work at nearly full capacity, then life becomes a bliss (Phir Zindagi Gulzaar Ho Jati Hai) and when they don't work, life becomes a hell (Zindagi Bezaar Ho Jati Hai). In that ideal condition, the Vital Power or Jeevan Shakti can manifest itself through the different organs every easily i.e. with the least expenditure of Jeevan Shakti. Where the wrong type of food is supplied and in quantity more than what is required, the digestion, as also the elimination of food is hampered with the result the required nutrition is not available for different organs due to which the structure integrity and functional efficiency of the organs is adversely affected. The organs become weak and this weakness reflects upon the person.

Thus food is not a source of energy; it is a medium



through which energy is expressed. Over-eating is a curse. Man overeats only under the impression that he is getting energy from the food. Let him remember the verdict of Manu, the ancient Law giver:

अनारोग्यं अनायुष्यं अस्वग्र्यँ चातिभोजनम्।

अपुण्यं लोकविद्विष्टं तस्मात्तत्परिवर्जयेत् ।।

It means, overeating leads to progressive deterioration of health, it reduces the span of life, it is heaven-closing, it is vice-oriented. The over-eater is disliked by all the people around. Hence, give up the habit of overeating.

All the scriptures of the world ordain that for maintaining and improving health, one should be moderate in eating habits.

Many persons remain tired and exhausted because they eat more and eat without hunger. All the energy is utilized in dealing with the huge quantity of food ingested into the system and, therefore, very little energy is left for other activities. This is the reason for their tiredness and exhaustion. If they reduce the quantity of the food and reform their diet by eating natural and positive food, then their condition would improve. 'Eat less and live healthier and longer' is a motto worth following scrupulously.

Further, who eat far in excess of their physiological needs, do another great dis-service. They reduce the food-supply of the world and deprive others of their share of food. Overeater is a danger to the food supply of the world. Not capable of keeping himself healthy, he will also be a burden on earth.■

Test Your Knowledge

1 India's first underwater transport system is built under which river?

(a)	(b)	(c)	(d)
Ganga	Hoogly	Sabarmati	Narmada

2 Which two major railway stations have been recently connected by the East-West Metro Corridor?

(a)	(b)	(c)	(d)
Howrah and Kolkata	Kolkata and Sealdah	Howrah and Sealdah	Howrah and Hooghly

3 In which city India's deepest metro station has been built?

(a)	(b)	(c)	(d)
Chennai	Hooghly	Howrah	Mumbai

4 How many Vande Bharat trains are currently in service?

(a)	(b)	(c)	(d)
170	150	120	102

5 The headquarters building of which railway has completed 125 years recently?

(a)	(b)	(c)	(d)
Northern Railway	Western Railway	Central Railway	North Central Railway

6 Indian Railways has set a target of net zero carbon emissions by which year?

(a)	(b)	(c)	(d)
2030	2047	2035	2040

7 Which organization of Indian Railways is responsible for high speed rail?

(a)	(b)	(c)	(d)
CRIS	IRCTC	NHSRCL	RVNL

8 Which operation is being conducted by RPF to control black marketeers of tickets?

(a)	(b)	(c)	(d)
Operation Narcos Drug	Operation Passenger Safety	Operation Jeevan Raksha	Operation Uplabdh

9 Which railway station of Delhi division has been declared as pink station?

(a)	(b)	(c)	(d)
Delhi Safdarjung Railway Station	Anand Vihar Terminal	Delhi Cantt Railway Station	New Delhi Railway Station

10 How many digits are there in the PNR of a railway ticket?

(a)	(b)	(c)	(d)
8	10	12	4

Right Answers

1- (b)	2- (a)	3- (c)	4- (d)	5- (b)
6- (a)	7- (c)	8- (d)	9- (a)	10- (b)



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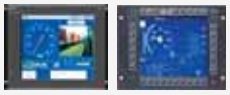


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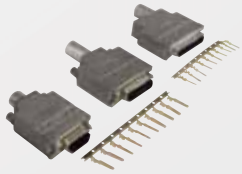


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