

Achievements of Motive Power Directorate

SI	Year	Description	Benefit	Status of implementation
1.	2014-15	Development of 3-coach BG Diesel-Hydraulic HS SPART (120 kmph) fitted with M/s SAN's power pack (Voith transmission) manufactured by ICF, Chennai	3-coach BG Diesel-Hydraulic HS SPART, in a single rake along with medical van & tool van, is capable to reach the accident site within the shortest possible time within the "Golden Hour" of accident.	Oscillation Trials has been carried out over PA-LNL section of CR in April'2014. Trial results are found satisfactory as contained in RDSO Report No. RDSO/2014/TG/MT-1338/F/Rev. 0.
2.	2014-15	Introduction of latest standards of tamping powder and glue used by carbon block manufacturers through revision of specification for procurement of carbon block and tamping powder as kit	Wastage of material will be reduced.	Revised specification no. MP.0.2400.60 Rev-04 issued to Railways.
3.	2014-15	Revision of MPMI NO. 153/92 for 'Resins & Varnishes for Traction Machines used on Diesel Electric Locomotives'	This will facilitate Railways in maintenance of traction machines during reminding/rehabilitation.	Revised MPMI NO. 153/92 (Rev.-04), September 2014 for Resins & Varnishes has been issued on 24.0914.
4.	2014-15	Instruction for checking Backlash and Teeth Wear of traction gears & pinions of HHP locos	This will help to increase reliability & life of traction motor of HHP locos.	Instruction Bulletin no. MP.IB.EM.01.04.14 dtd. 21.08.14 has been issued to Rlys.
5.	2014-15	100 hours type testing of M/s Caterpillar make 1600hp diesel engine model CAT 3512C (with ECM & EU) for application in 1600 HP AC-AC BG DEMU under manufacture at ICF	To establish the reliability & access the performance capability of engine for specified requirement and to avoid any future failure. It will help user railways & production unit to procure diesel engines with latest technology. Now M/s Caterpillar has been developed as alternate source of 1600hp dsl engine for DMUs, which will help to reduce the cost and improve the quality and encourage better maintenance support after sales.	Certificate of acceptance /clearance for M/s Caterpillar make 1600hp diesel engine model CAT 3512C (with ECM & EU) issued to ICF vide letter no. SD. DEV.R.8.3 (Vol.-13) dated 22.01.2015.
6.	2014-15	Development of specification for 2200 hp diesel engine for DMUs over Indian Railways	It will help user railways & production unit to procure high horse power diesel engines with latest technology.	The specifications no. MP-0.08.00.107 (Rev-00) Dec-2014 has been sent to ICF & Railway Board vide letter no. SD.MP.Enginw.1 dated 23.01.2015.
7.	2014-15	Revision of HTSC Fab-II drawings after reporting of fabricated bogie frame's crack cases by Zonal	Improved reliability of HTSC Fab-II bogie frames of HHP locomotives.	Drawings have been revised in Jan'2015. Since Nov'2015, HHP locomotives are being fitted

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		Railways.		with improved design fabricated HTSC Fab-II bogie frames by DLW.
8.	2014-15	Design and development of bogie with Tread Brake Unit (TBU) for HHP locomotives.	Better reliability of the brake system with less maintenance requirement. Compact Tread Brake Unit with less weight. Inbuilt Parking Brake with the unit. Auto slack adjustments with the wheel wear.	One WDG4 Locomotive No.-70012 fitted with M/s Knorr-Bremse's TBU commissioned at Kazipet diesel loco shed of South Central Railway in July'2014.
9.	2014-15	Nucars simulation of dynamic behaviour of RCRV vehicle procured by COFMOW from Windhoff Germany	To assess the speed potential for oscillation trial speed certificate.	Implemented by Railway
10.	2014-15	Modification of WDG3A under frame for the fitment of equalizer less bogie	Railways will be benefitted by utilizing modification related instructions for fitment of equaliser less bogie in existing with equalizer and compensating mechanism bogies to avoid SOD infringement issues, wherever applicable.	Modification Sheet No. MP.MOD.LD.01.01.14 (Rev.00) has been finalized and issued to Railways.
11.	2014-15	FEA analysis of Cab structure of NDM5 Dual Cab Locomotive for Indian Railways	The design has been verified through FEA analysis for adequacy and strength.	FEA of Cab structure of NDM5 Dual Cab Locomotive has been completed successfully.
12.	2014-15	Modification of expansion tank in radiator compartment of WDM2 locomotives.	Indian Railways will be benefitted by reducing height of existing WDM2 & 3A locomotives within the MMD.	Modification Sheet No. MP.MOD.LD.01.02.15 (Rev.00) issued for implementation to DMW & Diesel locomotive workshops of Indian Railways.
13.	2015 -16	Design Improvement of ALCo Loco Cylinder Liners to improve reliability	Reduction in loco failure cases. Reduction in material & labour cost. Reduction in loco down time.	Modification/Improvement advised by RDSO were implemented by manufacturers.
14.	2015 -16	Provision of additional BP cut out cock with vent.	In case of any inadvertent or unauthorized closure of additional BP cut out cock in route, it will cause application of brake in trailing load.	Instruction for provision of additional BP cut out cock with vent has been issued to all Zonal Rly.'s and PU's.
15.	2015-16	Extending the overhauling periodicity of 3RV power assemblies of ALCo locomotives	Reduction in cost of maintenance	IB issued to ZR regarding extension of overhauling periodicity from M-24 to M-48 on basis of trial of 03yrs & 04 yrs at diesel shed AMV & GD.
16.	2015-16	Revised Load charts and Attacking Speed charts	The main objective of this guide is to assist Railways take note of the revised load chart and fix the permissible trailing loads	RDSO MP.GUIDE NO.-26 (Rev.00) AUGUST 2015 issued on 27.08.2015 to Railways.

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			accordingly taking the local conditions into account and not go only by the existing fair weather load tables. This will enable realistic trailing loads to be fixed with the likelihood of stalling more or less eliminated, at least on account of motive power inadequacy.	
17.	2015-16	Development of modified AC traction motor for WDG4D locomotive by BHEL.	Likely to arrest failures due to oil leakage through gear case leading to bearing seizure, Stator brazing joint opening cases. Cable joint. Phase imbalance.	BHEL has manufactured 6 traction motors of this type out of which one certain special tests as per IEC 60349-2 were carried out on prototype traction motor in September'15 at BHEL, Bhopal. The test results having found to be within acceptable limit.
18.	2015-16	Provision of standby inverter of fuel pump motor of HHP locomotives	Shall help to minimize the failures of Fuel Pump motors thereby maximize the life of these motors and reduce loco down time.	Modification Sheet no. MP.MOD.EM.02.08.15 (Rev-00), dated-27.11.15 has been issued to concerned Railways vide this office letter dated-27.11.15.
19.	2015-16	Modification in high speed cattle guard of Electric Locomotives.	After this modification there is no need to dismantle of cattle guard from under frame for changing of Draft Gear, Coupler body during CBC maintenance.	Modification has been finalized and drawing SKDL-4759 (Rev-01) has been sent to Electrical Directorate.
20.	2015-16	New design of fuel tank for EMD locomotive to avoid frequent failures	Indian railways shall be benefited by elimination of failure of locomotive on account of fuel tank leakage/failure.	3-D model submitted to DLW for their comments. Now WDG4D is equipped with this modified type of fuel tank.
21.	2016 -17	Development of 16 Cyl. ALCo Cast Engine Block	Superior Vibration Damping Characteristic. Economical (30 % cheaper) than Fabricated Engine Block. Can withstand higher Peak Firing Pressure. Capable of generating High Horse Power. Increased reliability of Engine Block.	More than 40 nos. of Fully Machined Cast Engine Blocks are in field service and no adverse report has been received from Zonal Railways till date.
22.	2016-17	Revision of Specification for NG Railcar (762 mm gauge) for KLK-SML section of Northern Railway.	Will help in purchasing of Rail Car for KLK-SML section.	Revised specification no. MP-0.08.00.24 (Rev-07) April – 2016 issued & sent to Railway Board.
23.	2016-17	Specification of upgraded safe load indicator system (SLI) for 140T diesel hydraulic Gottwald breakdown Crane	It will improve the reliability of the equipment.	The specification No. 0.08.00.62 (Rev-00) June'2016 for procurement of Upgraded Safe Load Indicator system for 140T diesel hydraulic Gottwald breakdown

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				Crane has been issued.
24.	2016-17	Modification on aluminum cover at PE side in traction motor of HHP locomotives to avoid failure of traction motor's bearing (PE) of HHP locomotives	Modification shall not only enable cleaning of oil path/tube inside the AI Cover in-situ condition by simply removing the gear case but will also save the time of loco holding required for un-mounting & mounting of traction motor.	RDSO issued Mod. Sheet no. MP.MOD.EM.01.05.16 (Rev.-0.00), August'2016 for providing oil drain plug on Aluminium cover at PE side in traction motor for cleaning of lubrication path.
25.	2016-17	Revised Specification for three phase ac-ac transmission system & associated control equipment for 1600 hp diesel electric multiple unit (DEMU)	For facilitating ICF in manufacturing of DEMUs.	Revised Specification no. MP.0.24.00.45 (Rev.-03), January 2017 issued on 24.01.17.
26.	2016-17	Instructions Bulletin for Motor Suspension Unit (MSU) of HHP locomotives to avoid bearings failures.	To improve the by workshops & arresting the failure cases of MSU tube & bearing.	Issued Instruction Bulletin no. MP.IB.EM.01.01.17 (Rev.00), January'2017 to avoid bearing failures.
27.	2016-17	Hauling capacity, balancing speed and Acceleration characteristics charts of passenger service of diesel electric locomotives	The main objective of this guide is to assist Railways in taking note of the load chart and fix the permissible trailing loads accordingly taking the local conditions into account and not go only by the existing fair weather load tables. This will also help Rlys. to get ready reknocker charts for balancing speed and acceleration characteristics.	Guidelines issued to Zonal Railways vide RDSO MP.GUIDE NO.-27 (Rev.00), March-2017 Dt. 30.03.2017 for use.
28.	2016-17	Provision of upgraded cables for Radiator cooling fan assembly of EMD locomotives	The objective of this modification sheet is to give proper guidelines to DLW and all other concerned Railway Units which home EMD locomotives with M/s DRESPL radiator cooling fan system to overcome the overheating/burning cases of cables.	MODIFICATON SHEET NO. MP.MOD.EM.07.39.09 (Rev.-01), dated 28-03-2017 issued.
29.	2016-17	Maintenance Instructions for CTRB Class 'F' and Class 'K' Bearing for HHP Locomotives. MP.MI.-35 (Rev. 00), Jan-2017	To improve the reliability of Bearing Adapter with Journal Bearing Assembly for HHP locomotives.	Maintenance Instruction has been prepared covering all the maintenance related issues, infrastructure required and parameters to be checked during overhauling of CTRBs for HHP locos and circulated to Zonal Railways.

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30.	2017-18	HHP- Micro processed based Governor	The development of Micro Processor based Governor for HHP diesel electric locomotives would benefit Railways in terms of Import substitution and indigenization of Governor. The provision of user settable parameters, fault logging for diagnostic and downloading facility are additional advantage of the indigenized governor.	RDSO has developed the Specification no. MP.0.1700.05, Rev.0. MPBG has been commissioned in HHP Locomotive and successfully completed field trials for 12 months.
31.	2017-18	Fog Vision system.	Fog Vision System shall be capable of assisting the locomotive pilot by enhancing visibility under dense fog conditions to maintain the punctuality of trains and avoid train accidents.	RDSO placed purchase order to M/s Tata Power and M/s BEL (2 loco sets each) in Dec'2017. The field testing of fog vision system conducted during the period 17.01.2019 to 19.02.2019, however, testing in extreme dense fog is yet to be done due to unavailability of extreme dense fog in this winter season..
32.	2017-18	Fitment of APU	1. Fuel savings and hence reduced foreign exchange on HSD Oil. 2.Reduction of wear and tear of diesel engine and also small motors 3.Protecting environment ,earning carbon credit	All the diesel locomotives(HHP) turning out from DLW is to be fitted with APUs as per Railway Board guidelines.
33.	2017-18	Condition Based Monitoring System	Condition Monitoring is the process of monitoring a parameter of condition (temperature, pressure, vibration, current, etc) in machinery in order to identify a significant change which is indicative of a developing fault. Thus condition monitoring system may become an important tool for improving the reliability and availability of Diesel loco.	RDSO formulated the functional requirement specification no. MP.0.0402.07, Rev. 0, July 17 for condition based monitoring system for HHP and ALCo loco. DLW and DMW were advised to procure CBMS as per RDSO specification for 10 nos. CBMS each for HHP and ALCO loco respectively as per Railway Board directive.
34.	2017-18	Development of Light weight Spill-proof dry break type fuelling arrangement for Diesel-Electric locomotives in Indian Railways.	Wastage of fuel reduction and beneficial with time saving and cost effective.	Based on trial & performance of prototype coupling, RDSO has developed a final specification no. MP-0.4100.10(Rev.00) of August' 2017 and uploaded on RDSO website I and it is decided to provide spill proof arrangement as per specification in all zonal

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				railways.
35.	2017-18	'S' shape conventional loco wheel finish drawing	To improve the wheel life of conventional loco.	Issued to concerned Railways.
36.	2017-18	Permissible difference in diameter of wheel on same axle in WDG and WDP class of HHP locomotives fitted with HTSC & HTSC B1 bogies	To prevent frequent tyre turning due to diameter difference of wheel on same axle in WDG and WDP class of HHP locomotives fitted with HTSC & HTSC B1 bogies.	IB No. MP.IB.LD.01.07.17 (Rev.00) dated 13.09.2017 issued.
37.	2017-18	Investigation Report on failure of CTRB Class-F bearing on HHP locomotives	To improve the reliability of Bearing Adapter with Journal Bearing Assembly for HHP locomotives.	Investigation Report No. MP. INV – 60, (Rev. 00) prepared and issued covering all the analysis of failures received from Railways since year 2013 and recommendations.
38.	2017-18	Failure of broad gauge locomotive wheels due to widening of wheel gauge	To prevent premature failure of wheel set due to wheel gauge widening of BG locomotives	RDSO report no. MP.Misc.330, Rev.00, November-2017 issued to Railways.
39.	2017-18	Schedule of Standard Examination of 1600 HP AC-AC BG DEMU	<ul style="list-style-type: none"> It will provide updated maintenance guidelines to all user Railways. Due to longer change interval of oil & filters, the cost of maintenance has come down. Better attention on individual equipment. 	Finalised Schedule of Standard Examination of 1600 HP AC-AC BG DEMU Report No. MP.MISC.328 (Rev.-00), Feb'18 issued.
40.	2017-18	Maintenance Schedule of 20T Diesel Hydraulic Crane	<ul style="list-style-type: none"> It will provide updated maintenance guidelines to all user Railways. It will maximize useful lifetime of cranes and minimize maintenance cost by avoiding unscheduled breakdowns. 	Finalised Maintenance Schedule of 20T Diesel Hydraulic Crane (1676 mm Gauge) Report No. MP.MI.-36 (Rev.-00), Feb '18 issued vide RDSO's letter No. SL/CR/20T/D, dated: 19.02.2018.
41.	2017-18	Introduction of Advance Technology Diesel Locomotive (WDG4G)	GE locomotive manufactured at DLF, Marhowra are designed for freight stock. Through Commissioning of WDG6G Indian railways will be benefitted by its first 6000 HP diesel-electric locomotive with increased throughout of sections.	Approx. ninety 4500 HP GE locomotive are running successfully on IR track. 6000 HP GE locomotive are under trials on IR track.
42.	2017-18	Development of WDS6G (1600 HP) fuel efficient Multi Genset Loco shunting locomotive	Indian Railway will be benefitted with Fuel efficient, Low maintenance and Environmental friendly locomotive.	General arrangement, visibility diagram and details of loco super structure submitted by M/s Medha provisionally approved for manufacturing of 1600 HP WDS6G Multi Genset locomotive at DMW/Patiala.
43.	2018-19	Design & Development of Standard Gauge Bogie for	Enhancement of export capability of difference gauge	All bogie drawings have been prepared & issued to DLW.

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		Export Locomotive for speed potential of 120kmph	locomotives resulting in earning of foreign exchange for the country.	
44.	2018-19	Finite Element Analysis of Fabricated Bogie frame of WDG3A Locomotive with 21.5 T Axle Load for use in WAGC3 Locomotive	Increased axle load of existing converted Elect. Loco.	FEA Report no. MP.Misc-333 published.
45.	2018-19	Dynamic simulation and enhancement of axle load in converted WAGC3 locomotive.	Locomotive can be used for heavy haul operation.	A consolidate report of dynamic simulation (Report No. MP.Misc-342 Rev.00 Oct.2018) with enhanced axle load of 21.5t prepared.
46.	2018-19	Finite Element Analysis of WAG9 Loco Wheel for 25T Axle Load requirements	For enhancement of axle load.	FEA report no. MP.MSC – 343 (Rev. -00), October-2018 for analytic evaluation of WAG9 loco wheel with increased axle load up to 25.0t issued.
47.	2018-19	Revision of Technical specification no MP. 0.4900.12 (Rev 03) July-16 of Hot Coiled Helical Springs used in locomotives.	Improvement in quality, reliability and removal of the ambiguity from the specifications of Hot Coiled Helical Springs used in locomotives.	Revised Technical specification no MP. 0.4900.12 (Revision 04), Jan'2019 of Hot Coiled Helical Springs used in locomotives issued.
48.	2018-19	Development of 9 TBN oils.	<ul style="list-style-type: none"> Indian Railways decided to move toward crankcase oil having lower TBN. Since the sulphur levels in HSD have come down, the lower TBN oils will have adequate alkaline reserve to take care of the acids produced during the combustion. 9TBN Crankcase oils would lead to lower ash content thus improving the engine efficiency 	<ul style="list-style-type: none"> Limited field trial of 9 TBN crankcase oil in ALCo and HHP locomotives completed. Wider trial planned.
49.	2018-19	Development of Common boron free coolant "HP Power Kool RR" of M/s HPC for ALCo and HHP diesel locomotives.	<ul style="list-style-type: none"> No need to maintain two different inventories for ALCo & HHP coolants. Urgent need to pollution norms of SPCB & CPCB. 	Approved on the basis of satisfactory performance of HP Power Kool RR during field trials.
50.	2018-19	Maintenance Schedule of 140t Diesel Hydraulic Gottwald & Cowans Sheldon Breakdown Cranes	It will provide updated maintenance guidelines to all user railways. It will maximise useful lifetime of cranes and minimise maintenance cost by avoiding unscheduled breakdowns	Finalised Maintenance Schedule of 140t Diesel Hydraulic Gottwald & Cowans Sheldon Breakdown Cranes No. MP. MI-37 (Revision 00) June'2018 issued vide RDSO's letter no SD.CRMG dated 04.07.2018
51.	2018-19	Prevention of failures related to Slip Rings &	The suggested modification is more rational w.r.t. reliability,	Mod. Sheet no. MP.MOD.EM.01.03.18, Rev.-

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		Carbon-Brushes at companion Alternator side of Traction Alternators for HHP Locomotives.	redundancy and design aspect (current rating). This will also reduce the inventory/stock-item to be maintained by shed.	00, July-2018 issued.
52.	2018-19	Prevention of failures related to flashover in BHEL Design Rectifiers used in BHEL make Traction Alternators for HHP Locomotives.	Reliability of HHP locomotives fitted with BHEL design rectifiers will get improved as its failure count will get reduced.	Mod. Sheet no. MP.MOD.EM.02.04.18, Rev.-00, July- 2018 issued.
53.	2018-19	Modification for Retro-fitting of On Demand Cooling System (ODCS) in ZDM3 Locomotives operating in Kalka-Shimla Section (762mm Gauge) of N. Railway.	<ul style="list-style-type: none"> • Better cooling due to independent radiator fan speed. • Lesser hydraulic oil consumption results in cost saving. • Smaller size of hydraulic oil reservoir fitted in engine room results in more space inside radiator room. • Short piping required thereby lesser chances of leakages. • Easy maintenance. 	Modification Sheet no. MP.MOD.HYD.01.05.18 (Rev.00) dated 25.09.2018 issued to C. Rly. Loco Workshop, Parel
54.	2018-19	Instruction Bulletin to provide guidelines for observing critical limits of contamination in gear lubricant synthetic oil in traction motor gear case of HHP locos through Spectrograph analysis	To avoid failure of traction motor (PE side) bearing due to high contamination in gear case oil of HHP locos	Instruction Bulletin No. MP.IB.EM.01.08.18 (REV-0.0), Oct-2018 issued on 26.10.2018.
55.	2018-19	Revision of Specification for procurement of carbon block, glue and tamping powder as kit	The service life of carbon brush is enhanced by improving the MV drop resulting in decrease of heating effect and thus reliability of flexible connection is enhanced	Revised specification No. MP.0.2400.60 (Rev-05), Nov'18 issued.
56.	2018-19	Specification for 3-Coach Diesel Electric High Speed Self-Propelled Accident Relief Train (HS SPART) with 160 kmph.	New SPART in a single rake along with medical van & tool van shall be capable to reach the accident site within the shortest possible time and also within the "Golden Hour" of accident.	Specification no. MP-0.24.00.84 (Rev.00) Jan-19 issued.
57.	2018-19	Conversion of WDG3A (ALCo) locomotive to Electric locomotive	Diesel locomotives, which are inactive due to problems in diesel Engine & its ancillary items, may be converted in Electrical locomotives with higher horse power	Two WDG3A locomotives have been successfully converted into one WAGC3 Electric Locomotive.
58.	2018-19	Conversion of HHP (WDG4) Diesel Locomotive to 3-Phase Electric WAG11	The benefits are - <ul style="list-style-type: none"> • Reduction of Diesel Oil consumption 	The equipment layout of WAG11 loco was finalized by DLW in co-ordination with Motive Power & Electrical

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		Locomotive	<ul style="list-style-type: none"> Getting higher horsepower 	Directorate of RDSO. DLW has manufactured prototype converted loco.
59.	2018-19	Up-gradation of speed of WAP7 locomotive upto 160kmph making it light weight	Check the strength of underframe and carbody structure designed by CLW and modified accordingly	DLW has manufactured prototype modified loco.
60.	2018-19	Noise reduction in HHP locomotives	Reduction in locomotive cab noise and increase in crew comfort level.	Based on trials at Kharagpur workshop, final report has been submitted by IIT/KGP. Some additional details have been sought from IIT/KGP
61.	2018-19	Development of Specification of 'TRI-NETRA' - Terrain Imaging for locomotive dRivers - INfra-red, Enhanced opTical & Rangefinder Assisted	Tri-Netra shall be capable to enable the Loco Driver to visualize and warn about infringing objects from a reasonable far away distance so as to enable him/her to apply brakes sufficiently in advance to stop the train well short of the infringement in all-weather condition including day and night.	Specification no. MP.0.0400.17, Rev.-0 prepared and sent to Railway Board for approval in Feb-19.
62.	2018-19	Development of Specification for 295 HP New Generation Diesel Engine for application in 140T Breakdown Cranes	<p>The salient features of revised specification are as follows:</p> <ul style="list-style-type: none"> New generation dsl. engine with continuous rating of 295hp. Engine provided with Electronic Fuel Injection (EFI) system. Engine meets Euro-III or equivalent emission standards. Allow more OEMs, who have supplied diesel engines for application in defence propulsion system / fire-fighting/ marine / earth moving equipment, to supply of their engines. This will increase vendor base for engine and may reduce the cost also. 	Revised specification no. MP-0.08.00.103 (Rev.-01), April'2018 has been issued in Apr-18.
63.	2019-20	Design & Development of Bogie for AC-AC Cape Gauge Locomotive for export to Mozambique Railways	For enhancing export potential and earn foreign exchange.	Complete set of bogie drawings prepared and provided to DLW
64.	2019-20	Revision of Instruction Bulletin No-MP.IB.EN.02.06.09 (Rev.02 dt. 26-04-2019) regarding recommendation	Instruction Bulletin has been revised to prepare consolidated list by incorporating the three lubricants. It will help user railways & Production unit to	Instruction Bulletin No-MP.IB.EN.02.06.09 (Rev.02 dt. 26-04-2019) issued.

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		for anti-seize paste, anti-friction coatings, specialty greases, mounting paste, RTV sealants/compounds for use on equipment/components of diesel-electric locomotives (ALCo & EMD).	procure.	
65.	2019-20 (upto June'19)	Schedule of Standard Examination of Dual Cab ZDM3 NG Diesel-Hydraulic loco equipped with Cummins Engine VTA-28L.	<ul style="list-style-type: none"> • Will provide updated maintenance guidelines to user railways. • Better attention on individual equipments resulting in decreasing downtime and reduction in the number of major repairs. • Increased life expectancy of loco, thereby eliminating premature replacement of equipment. 	Finalised Schedule of Standard Examination of Dual Cab ZDM3 NG; Report no. MP-MISC-345 (Rev-00) May'2019, issued to NR & C.Rly., Loco Workshop Parel vide RDSO's letter no.SD.ZDM3.1 dated 14.05.2019.
66.	2019-20 (upto June'19)	Schedule & Particular specification for AC- AC 3000 HP Cape Gauge Diesel Electric locomotive for Export	Will help in earning of foreign exchange.	Specification issued to RITES and DLW for manufacture at DLW
67.	2019-20 (upto June'19)	Approval of Revised General Arrangement Drawing for NDM1(HP) locos fitted with CIL engine model NTA-855L3 for Neral - Matheran section / CR to Central Railway Loco Workshop / Parel	NDM1 working in Neral - Matheran of C. Railway (Matheran Light Railway) is playing important role in tourism. Revised drawing will help Parel to manufacture the loco with upgraded design & increased maintenance friendliness.	Revised General Arrangement Drawing approved and communicated to Parel Workshop vide RDSO's letter no. SD.Dev.L.39 dated 12.06.2019.
68.	2019-20 (upto June'19)	Revision of Technical specification No. MP.0.2800.19 (Rev-01) June'2019 for Traction Gear & Pinion of WAG9, WAP7 & WAP5 ABB Electric locomotive	Will facilitate in manufacture of gear & pinion for Electric locomotives.	Specification given to Electrical Dte-19. for circulation and implementation to Rlys. and Vendors.