No.2012/M(N)/951/24

New Delhi, dated 22.11.2013

The Chief Mechanical Engineers
All Indian Railways except WCR

Sub: Innovations and system improvements in Indian Railways

CME/WCR through his PCDO for the month of September, 2013 has informed about the following innovations/system improvements carried out by WCR on the freight side:

• Development of a system to test safety valve of BTPGLN wagon (WRS/KTT).

The same is enclosed for your kind information.

(Gaurav Puri)
Deputy Director, M(N)

Encl: 3 pages

Copy to: EDS(W)/RDSO
V. Pressure Gauges - 02 Nos.
VI. Safety Release Valve - 02 Nos.
VII. Pneumatic pipes - 05 metres

The safety valve is designed to blow at between 12.25 to 12.75 Kg/Cm² pressure. The safety valve is fitted on the test bench & pressure is applied and safety valve is checked to blow in the given range.

After the test of blow, pressure is lowered coming seating of safety valve. Pressure is reduced to 12.10 Kg/Cm² and at this pressure leakage test with soap solution is done.

Benefits: This innovation is very useful because.
(i) It helps in counter checking leakage of safety valves after overhauling before fitment.
(ii) Saves manpower as explained above.

Cost: Approximate cost is Rs 960/-. 

Name of the Innovation: Modified stretcher for ART & ARMV (JBP Div.)

With the existing design of stretcher used during disaster relief work we are unable to take out injured passenger on stretcher from the door or emergency window as there is insufficient space to manoeuvre the stretcher. To overcome this WCR has developed a modified stretcher in consultation with Medical Department. It is useful for taking out injured railway passenger from coach during train accident.

No pipes are used in this stretcher and a 12 MM compreg ply piece is placed between the cloth of stretcher to give it strength. The injured passenger is not required to be lifted from berth but is gently shifted on this modified stretcher which is useful in all types of injury including injury in back bone, collar bone scull etc.

It has been tested successfully in sleeper, AC III and AC II coaches.
INNOVATIONS & SYSTEM IMPROVEMENT –

2.1 Name of the Innovation:- IGBT Test Kit.

There have been number of line failure cases of locos due to failure of IGBT used in Fuel Pump Motor inverter and Crank Case Exhauster Motor inverter.

ET shed has developed a test kit to test the IGBT performance so that failure of inverter due to IGBT failure can be minimized and availability can be improved.

2.2 Name of the Innovation:- Development of a system to test safety valve of BTPGLN wagon (WRS/ KTT)
Title: Test Bench for Safety Valve of BTPGLN wagons.

Background: The barrel of LPG wagon is designed to withstand 15.85 kg/cm² pressure. Being a pressure vessel, a safety valve is provided on the dome assembly of LPG wagon barrel. To ensure that the safety valve is fully operational and no leakage present before mounting, no system or method was available to check overhauled valves. Thus many times, the overhauled safety valves fail during pneumatic test which results in wastage of man power to reopen the safety valve and refit another valve.

A test bench has been developed in-house with unserviceable materials to test the safety valve before its fitment of the barrel.

Construction details: The construction is very simple and using following items.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Compressor released from locomotive</td>
<td>01 No.</td>
</tr>
<tr>
<td>II.</td>
<td>Reservoir</td>
<td>01 No.</td>
</tr>
<tr>
<td>III.</td>
<td>Test bench</td>
<td>01 No.</td>
</tr>
<tr>
<td>IV.</td>
<td>Isolating/ Exhaust ports</td>
<td>02 Nos.</td>
</tr>
</tbody>
</table>