The Chief Mechanical Engineers
All Indian Railways except SECR

Sub: Innovations and system improvements in Indian Railways

CME/SECR through his MCDO for the month of December, 2012 has informed about the following innovations/system improvements carried out by SECR on the freight side:

- Fixture for bending of Air brake pipe
- Gadget for Checking of Leakage from welded Joint of pipe

The same is enclosed for your kind information.

Encl: 3 pages

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(Gaurav Puri)
Deputy Director, M(N)
<table>
<thead>
<tr>
<th>Activity</th>
<th>2012-13</th>
<th>2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For Dec'12</td>
<td>Up to Dec'12</td>
</tr>
<tr>
<td>BG Coach POH</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>NG Coach POH</td>
<td>14</td>
<td>129</td>
</tr>
<tr>
<td>NG Diesel Loco POH</td>
<td>1.00</td>
<td>7.50</td>
</tr>
<tr>
<td>NG Wagon POH</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Tower wagon POH</td>
<td>1</td>
<td>5.75</td>
</tr>
<tr>
<td>IOH of BG Bogie</td>
<td>93</td>
<td>772</td>
</tr>
</tbody>
</table>

SECR is now self-sufficient in IOH of bogie of BG coaching stock.

B. System Improvement

1. Fixture for bending of Air brake pipe

Air brake pipes need to be replaced during POH repair of wagons. Seamless pipes of size 32mm or 20 mm dia. are required to be bent at given shape as per drawing for proper fitment.

Previously bending process was done in a fixture followed by heating the pipe with Oxy-acetylene flame. In this process there was a chance of damage and change of its metallurgical property and leakage near bent locations and also more time consuming.

To overshoot this trouble Air Brake section of Wagon Repair shop, Raipur has designed and manufactured a new fixture for bending of Air Brake pipe in cold condition to desired shape and length by using pneumatic pressure.

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This fixture consists of an Air Brake Cylinder and different die locations to cope up with different shapes and sizes with proper arrangement of safety to prevent any hazardous during bending operation. With this fixture, we can take up 4 types of Air Brake pipes of 32 mm & 10 types of Air Brake pipes of 20 mm dia., thus making it a highly versatile fixture and cover the whole range of Air Brake pipes used in wagon stock.

Salient Advantage:-

a. It is less time consuming.
b. Operation is smooth and of optimum quality.
c. Operation is safer due to adoption of pneumatic pressure instead of Oxy-acetylene heating.
d. It is more economical.

2. Gadget for Checking of Leakage from Welded Joint of Pipe

Brake pipe having diameter of 32 mm is in three parts and all are jointed together in length with flange joint and welding.

One end of Air Brake pipe is welded with a flange and another end with a small piece of threaded pipe to suit angle cock.

Previously there was no system to check the leakage at joints before fitment of Brake pipe, which needs to be replaced, resulting leakage was detected during SWTR and rework for welding of pipe was needed at fitted position, consequently desired welding quality was not achieved.

To overcome this problem, Air Brake section of Wagon Repair shop, Raipur has developed a gadget to check leakage of weld joints.

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This gadget has a simple arrangement of Angle Cock and a Pressure gauge. Flange end of the pipe is connected with a flexible pipe arrangement of the gadget and threaded end is made dummy. Compressed air is regulated by angle cock and welded joint is checked for any leakage with the help of soap solution. This testing gadget is advantageous and the leakages of joints are totally eliminated.

Salient Advantage:-

a. Better quality of work achieved.
b. Failure during SWTR totally eliminated.
c. Rework of pipe welding minimised.

3. The following preventive safety measures have been incorporated to arrest the train parting of EUR rakes in loaded condition in Exchange Yard/Bhilai.

<table>
<thead>
<tr>
<th>Bearing piece &amp; operating handle and lock lifter &amp; toggle of concern wagon are secured with steel wire of 05 mm.</th>
<th>Securing of Lock lifter &amp; Toggle</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Bearing piece &amp; operating handle and lock lifter &amp; toggle of concern wagon are secured with steel wire of 05 mm.</td>
<td>b. Utilization of nose wear gauge during intensive examination of the EUR rake to detect condition of nose wear for maintaining the condition and identifying excessive wear beyond 10 mm of nose wear.</td>
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</tbody>
</table>

All the coaches turned out from ICF and RCF are now fitted with mounting brackets (J- Brackets) for mounting of bio-digester tank in open line/workshops. Hence, there is a possibility of mis-alignment of mounting bracket holes fitted on coaches and holes on the suspension bracket of Bio-Digester tank. In order to avoid mis-alignment and to ensure correct pitching of suspension bracket holes with that of J- brackets, a fixture has been developed according to the dimensions given in the RCF drawing for retrofitment of bio-digester tanks. All tanks manufactured in Motibagh workshop are now tested on this fixture which will ensure correct pitching of suspension bracket holes with that of J-brackets. Thus bio-digester tanks can be readily fitted on J- brackets of coaches in workshop/open line.

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