

**NEW EQUIPMENT & SYSTEM APPROVAL PROFORMA**

Ref: 14/34831

Note: the prompts given below are only a guide to the information required for approval. Dependent on the type of equipment or system that requires approval delete any section that is not applicable or include additional information if necessary. **Mandatory** fields are marked with an asterisk (\*).

1 **Equipment or System to be approved \***  
**PROTECTOR® IV Trackside Friction Control Systems for Gauge Face Lubrication and Top of Rail Lubricator applications**

2 **Originator \***  
Name: Sajith Mohan Company: ARTC

3 **Introduction \***  
The PROTECTOR® IV Trackside Friction Control System (comprising Portec top of rail distribution unit) and Keltrack friction modifier (product no. 506-TFI-19000) has been approved under type approval number 08-08-11-118 since February 2009 for use on top of rail applications. This type approval supersedes 08-08-11-118 and allows for using this system for gauge face lubrication, as well as for top of rail.

4 **Determination of Need \***  
The need for this type of system for top of rail application was determined by Rail Services Australia (now RailCorp) in about 1999, mainly from a noise suppression point of view. Subsequent studies revealed that not only did they reduce noise but also the lateral forces applied to the track. A couple of Interphase Hydraulics units were installed in the Scholey Street Junction area.  
These however proved to be very unreliable in their operation and were very maintenance intensive. They were subsequently removed from track. The Protector IV Top of Rail units replaced these. Further work identified the need for this type of system for complex geometry, namely, tight radius (<200m radius) curves and turnouts.  
The gauge face lubrication units based on this technology will enhance the equipment reliability and performance of the units. The electronic delivery of the lubricant provides precise control which reduces wastage and contamination of track and would also have economic benefits. The enhanced performance of these units would provide reduced rail wear and noise, and hence reducing the rerailing costs.  
There are some minor differences in the hardware of the units used for the gauge face and top of rail applications.  
Protector IV Grease Lubricator:

- Tank – manufactured from carbon steel (Protector IV TOR is stainless steel)
- Gear Pump – manufactured from carbon steel (Protector IV TOR is stainless steel)
- Blade – MC4 or MC4XL GDU (Grease Distribution Unit) attached to flange side of rail
- Clamps – Minor clamp size change with attachment to flange side of rail
- Manifold – Ball valves fitted to manifold (Protector IV TOR fitted with check valves)
- Hoses – Minor change in grease hose pliability and specification
- All other components, including internal controls, tank size and other parts are the same.

The differences are in the material used for the storage tank and pump as well as in the design of the applicator blades and these changes are required to cater for the different type and properties of lubricants used for the two applications.

5 **Significant Change or Not (as determined by the Manager Standards) \***  
This change in equipment or system is assessed as minor (supersedes type approval 08-08-11-118).

6 **Review Panel (as determined by the Manager Standards) \***

- John Furness - Manager Standards
- David Ogucha – Track & Civil Standards Engineer
- Denis Snowden – Work Health and Safety Advisor
- Sajith Mohan - Rail Maintenance Engineer
- Wayne Olsen – Engineering Performance Manager
- Nick Petticrew – Rail Performance Manager

7 **Safety**  
There are no changes to the existing method of working, maintenance procedures or environmental conditions, so safety of maintenance personnel will not change.  
Numerous studies on this type of system have found no effect on braking and signalling, and a decrease in derailment potential.

8 **Performance and Suitability**  
There have been numerous documents and presentations done world-wide on the benefits of this type of system. These units are proven to be reliable, and are suitable for our need of reducing costs for component replacements, i.e. rails (in plain track and turnouts), pads, clips, and sleepers, as well as noise complaints.

(i) **Use in other rail networks**  
PTA of WA has about 14 units, QR has 6 units, and there are many more world-wide. Type approved for Network Rail in

the UK.				
(ii)	<b>Use in the ARTC network</b>	Under the original type approval 08-08-11-118, 7 top of rail units were fitted to sharp curves on the ARTC Hunter Coal Network.		
(iii)	<b>Issues arising from usage of the equipment/system</b>	The only issue we can envisage is that drivers will see the units and apply sanding when this should be discouraged. A Safe Notice would be required.		
(iv)	<b>Changes required to infrastructure or systems for use of the equipment</b>	There will be a need to update the equipment registers and update the TMP's. Compliance with Configuration change procedure will be required including preparation of NAN process. Signal maintainers to inspect and test power supplies as part of regular maintenance.		
9	<b>Reliability</b>			
	<u>Power Supply</u>	Top of rail units are powered from signalling location supply by isolating transformer complying with ARTC specification SPS23, also incorporated VAP anti-lightning panel. Therefore no significant change to existing signalling equipment reliability. Signal maintainers will inspect and test the wiring up to and including the disconnection box in conjunction with the regular maintenance tasks. Both the civil and signal maintainers will inspect the cabling between the disconnect box and rail lubricator. If damage to the cabling is detected or suspected then the rail lubricator will be immediately disconnected at the disconnect box, remaining disconnected until the damaged cable is replaced.		
10	<b>Maintainability</b>			
	<u>Power Supply</u>	Provide an external disconnect box attached on signal location, which will be the maintenance boundary point. Signalling maintenance team will undertake the electrical integrity of the power supply fully compliant with ARTC procedures and specifications. So no significant changes to existing maintainability conditions are anticipated. Security will be maintained by a special restricted security pad lock on both the disconnect box and Rail lubricator case. The special security pad lock will provide access to both the civil and signal maintainers to the disconnect box and rail lubricator. Restricted Keys will be issued to the civil maintainer and local signal maintainers only.		
	<u>Lubricator Units</u>	Portec offers assistance and advice on installation and maintenance where needed.		
11	<b>Approval *</b>	The PROTECTOR® IV Trackside Friction Management Systems for Gauge Face Lubrication and Top of Rail Lubricator Applications are approved for use on the ARTC network.		
12	<b>Is the supplier accredited to ISO 9001 specifically for this product? *</b>	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
	LBFoster Rail Technologies UK Ltd is certified to ISO 9001:2008 by Lloyd's Register Quality Assurance – Certificate No. LRQ 4004940			
13	<b>Conditions of Approval *</b>	<ol style="list-style-type: none"> <li>1. Installation and maintenance are to be in accordance with manufacturer's instructions as provided in the operation and maintenance manual for both the gauge face and top of rail applications.</li> <li>2. Work Method Statement to be carried out prior to use and appropriate PPE utilised.</li> <li>3. Friction coefficient is to be measured using a calibrated tribometer and assessed after the installation of units. Coefficient of friction to be within the range of 0.35 +/- 0.05 (for top of rail application) and 0.25 +/- .05 (for gauge face application).</li> <li>4. Only ARTC type approved lubricants are to be used in these units, noting there are specific lubricants for gauge face and top of rail applications.</li> </ol>		
14	<b>Does the Originator accept the additional Conditions of Approval as set by the Review Panel:</b>	Yes	<input checked="" type="checkbox"/>	No <input type="checkbox"/>
		N/A	<input type="checkbox"/>	
15	<b>Sign off</b>	<i>ARTC office use only</i>		
	<b>Review Panel:</b>			
	John Furness <u>On File</u>	Date:	<u>20/10/2014</u>	
	David Ogucha <u>On File</u>	Date:	<u>20/10/2014</u>	
	Denis Snowden <u>On File</u>	Date:	<u>16/10/2014</u>	
	Sajith Mohan <u>On File</u>	Date:	<u>16/10/2014</u>	
	Wayne Olsen <u>On File</u>	Date:	<u>16/10/2014</u>	
	Nick Petticrew <u>On File</u>	Date:	<u>20/10/2014</u>	