

HAZARD CLOSEOUT SHEET



NOVEMBER 2014

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Job No: MP/13/002	Assignment Title: Class 47 RETB Installation		
ECR No: N/A	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff		Date Raised: November 2014	Hazard No: 001
Description of Hazard: 1.1 Derailment <ul style="list-style-type: none"> • Equipment falling from vehicles • Vehicle structural failure 1.2 Gauge Infringement <ul style="list-style-type: none"> • Equipment partly detached 1.6 Reduced Vehicle Safety Performance <ul style="list-style-type: none"> • Reduced structural crashworthiness • Reduced equipment security 1.7 Safety – Hazards to crew <ul style="list-style-type: none"> • Impact by loose equipment • Structural failure of fixtures and fittings • Sharp edges of broken fixtures and fittings 1.9 Off-vehicle/Infrastructure hazards <ul style="list-style-type: none"> • Equipment detaching from vehicles 			

ACTION TO CLOSE OUT	REFERENCE DOCS.
All installations have been assessed against the requirements of DG8-CALC-00327 GM/RT 2100 Issue 5 and it has been demonstrated that the design fully complies with the standard.	

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ECR No: N/A	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 002	
Description of Hazard: 1.2 Gauge Infringement <ul style="list-style-type: none"> Increased vehicle envelope 			

ACTION TO CLOSE OUT	REFERENCE DOCS.
<p>The antenna is fitted at the forward-most section on the roof on the vehicle centreline such that the height of the top of the antenna above rail level is less than that of the vehicle roof. The antenna is not considered to cause a gauge infringement.</p>	

MP-C0-00048

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ECR No: N/A	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 003	
Description of Hazard: 1.2 Gauge Infringement <ul style="list-style-type: none"> • Dynamic effects • Increased/redistributed mass 1.3 Brake Failure <ul style="list-style-type: none"> • Increased mass 			

ACTION TO CLOSE OUT	REFERENCE DOCS.
<p>The mass change as a result of the modification is as follows:</p> <p>Antenna installation = 0.5kg CDR installation = 6.5kg Handset installation = 1.5kg Junction box installation = 3kg Speaker installation = 0.3kg Cabling = 3kg (Above masses are conservative)</p> <p>The total mass of the equipment to be installed on the Class 47 vehicles is approximately 15kg.</p> <p>The additional masses due to the modifications can be considered to have a negligible effect on the gauging of the vehicle.</p> <p>The additional mass is considered to have a negligible effect on vehicle braking.</p>	

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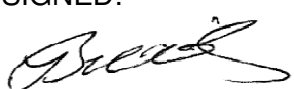

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ECR No: N/A	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 004	
1.3 Brake Failure <ul style="list-style-type: none">Interference with driver's sightlines			

ACTION TO CLOSE OUT	REFERENCE DOCS.
<p>The CDR unit is mounted at the position of the cab windscreen pillar, and is not considered to be within the driver's sightline.</p> <p>The handset and speaker are positioned next to the existing GSM-R radio and handset below. It is not within the driver's sightline.</p> <p>The junction box is installed in the roof area behind the cab and so is of no risk to the driver's sightlines.</p>	<p>MP-C0-00047 MP-C0-00054 MP-C0-00057</p>

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ECR No: N/A	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff		Date Raised: November 2014	Hazard No: 005
Description of Hazard: 1.4 Control System Failure <ul style="list-style-type: none"> • Effect on other systems • Electromagnetic interference with control systems 1.9 Off-Vehicle/Infrastructure Hazards <ul style="list-style-type: none"> • Interference with signalling • Electromagnetic compatibility (EMC) 			

ACTION TO CLOSE OUT	REFERENCE DOCS.
<p>All system equipment shall be tested against the requirements of EN50121-3-2:2006 as required for a vehicle installation. The installation design follows best principles regarding the positioning of equipment and routing of cables throughout the vehicle.</p> <p>The vehicle is a Diesel locomotive with electric transmission. There are known areas which present an EMC hazard. These are not local to the position of the RETB NG equipment.</p> <p>In the area selected there are no existing systems which give special concern regarding their own susceptibility. Equipment approved to the same standards is already operating satisfactorily in this area.</p> <p>It is noted that the units have been retro fitted with equipment since delivery which comply with EN 50155, EN 50121, and RIA 12 which have performed reliably.</p>	ICD-1051-01

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ECR No: N/A	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff		Date Raised: November 2014	Hazard No: 006
Description of Hazard: 1.5 Fire <ul style="list-style-type: none">• Cause fire• Emit toxic fumes/smoke after ignition 1.6 Reduced vehicle safety performance <ul style="list-style-type: none">• Reduced fire performance			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The RETB NG installation meets the fire performance requirements of GM/RT 2130 Issue 4 and therefore poses minimal risk with regard to fire performance of the vehicle.	MP INV 001

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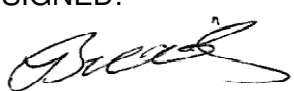

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ECR No: N/A	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff		Date Raised: November 2014	Hazard No: 007
Description of Hazard: 1.6 Reduced Vehicle Safety Performance <ul style="list-style-type: none">• Inadequate labelling/identification			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The equipment is powered from a replacement power supply and all new circuits are only 13.8V, therefore, additional safety labels are not required.	

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ECR No: N/A	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 008	
Description of Hazard: 1.6 Reduced Vehicle Safety Performance <ul style="list-style-type: none">• Reduced interior crashworthiness			

ACTION TO CLOSE OUT	REFERENCE DOCS.
All installations have been assessed against the requirements of DG8-CALC-00327 GM/RT 2100 Issue 5 and it has been demonstrated that the design fully complies with the standard.	

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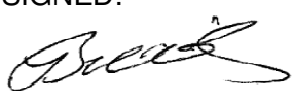

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 009	
Description of Hazard: 1.6 Reduced Vehicle Safety Performance <ul style="list-style-type: none"> • Misuse of equipment and systems 			

ACTION TO CLOSE OUT	REFERENCE DOCS.
<p>All staff required to operate the equipment should be fully trained on the safe use of the systems being fitted to the vehicle.</p> <p>Operational procedures, including PTS and depot inductions, will reduce the risks during operation.</p>	

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ECR No: N/A	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 010	
Description of Hazard: 1.6 Reduced Vehicle Safety Performance <ul style="list-style-type: none"> Inadequate electrical bonding 			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The bond resistance is tested following installation to ensure a result of less than 10mΩ is achieved.	MP-C0-00057 MP-C0-00048
An earth connection between the junction box earth stud and a local vehicle earth stud in the vehicle cab is provided.	Modification Procedure document VMP-RETB-005
An earth strap is to be installed between the antenna ground plane and the steel structure of the vehicle to provide a bond between the antenna and the vehicle. This is applicable for both the whip and GPS antenna.	

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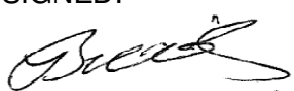

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 011	
Description of Hazard: 1.6 Reduced Vehicle Safety Performance <ul style="list-style-type: none">• Inadequate radio communication			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The installation design has been produced in accordance with ICD-1051-01 the system suppliers Interface Control Document.	

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 012	
Description of Hazard: 1.7 Safety – Hazards to Crew <ul style="list-style-type: none">• Sharp edges and protrusions			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The design of the cab and antenna equipment has been developed to minimise sharp corners and edges on brackets.	MP-C0-00054 MP-C0-00057

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 013	
Description of Hazard: 1.7 Safety – Hazards to Crew <ul style="list-style-type: none"> • Limb/finger trapping 			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The designs have been developed so that the risk of trapping is minimal. The risk of trapping is considered to be negligible.	
	MP-C0-00048 MP-C0-00054 MP-C0-00055 MP-C0-00056 MP-C0-00057

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 014	
Description of Hazard: 1.7 Safety – Hazards to Crew <ul style="list-style-type: none">• Radiation (microwave, ultraviolet etc)• Excessive magnetic fields			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The installation design has been produced in accordance with ICD-1051-01 the system suppliers Interface Control Document.	

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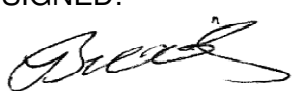

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 015	
Description of Hazard: 1.7 Safety – Hazards to Crew <ul style="list-style-type: none"> • Electrocution 			

ACTION TO CLOSE OUT	REFERENCE DOCS.
<p>The bond resistance is tested following installation to ensure a result of less than 10mΩ is achieved.</p> <p>An earth connection between the junction box earth stud and a local vehicle earth stud in the vehicle cab is provided.</p> <p>An earth strap is to be installed between the antenna ground plane and the steel structure of the vehicle to provide a bond between the antenna and the vehicle. This is applicable for both the whip and GPS antenna.</p>	<p>Modification Procedure document VMP-RETB-005</p> <p>MP-C0-00057</p>

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 016	
Description of Hazard: 1.8 Occupational Health & Safety of WCR Staff, Sub-contractors' Staff, Overhaulers' or Maintainers' Staff or Operational Staff			

ACTION TO CLOSE OUT	REFERENCE DOCS.
<p>All hazards highlighted in this section are mitigated using the following documents / qualified staff / tools:</p> <ul style="list-style-type: none"> Modification Procedure Installation drawings <p>Use qualified / competent suppliers with safety critical cards and correct health & safety policies.</p>	<p>Installation Drawings: MP-C0-00048 MP-C0-00054 MP-C0-00057</p> <p>Modification Procedure: VMP-RETB-005</p>

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Job No: MP/13/002	Assignment Title: Class 47 RETB Installation		
ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff		Date Raised: November 2014	Hazard No: 017
Description of Hazard: 2.1 Vehicle Performance <ul style="list-style-type: none">• Train reliability• Vehicle reliability• Component reliability• System reliability• Control system performance			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The installation design has been produced in accordance with the system suppliers Interface Control Document.	
ICD-1051-01	

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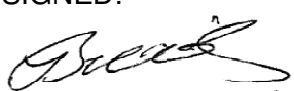

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 018	
Description of Hazard: 2.1 Vehicle Performance <ul style="list-style-type: none">• Maintenance periodicity			

ACTION TO CLOSE OUT	REFERENCE DOCS.
New maintenance tasks will be required to cover the new equipment. Following supply of generic information from the system supplier this information shall be supplied to West Coast Railways for inclusion into the fleet VMI.	

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 019	
Description of Hazard: 2.1 Vehicle Performance <ul style="list-style-type: none">• Acoustic environment			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The tones made by the equipment are currently under Human Factors review and are yet to be confirmed. These will be developed during user trials.	

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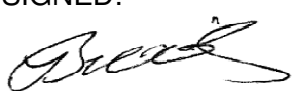

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 020	
Description of Hazard: 2.1 Vehicle Performance <ul style="list-style-type: none">• Visual environment			

ACTION TO CLOSE OUT	REFERENCE DOCS.
<p>The cab installations either replace existing items in current positions, or are positioned in areas occupied by similar equipment.</p> <p>The junction box is being fitted in the roof area behind the driver's cab and presents no risk to the performance of the vehicle.</p> <p>The antennas are fitted externally to the front section of the roof and present no risk to the performance of the vehicle.</p>	<p>MP-C0-00047 MP-C0-00048 MP-C0-00054 MP-C0-00057</p>

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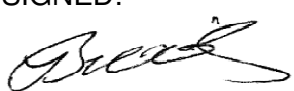

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 021	
Description of Hazard: 2.1 Vehicle Performance <ul style="list-style-type: none">Ergonomic needs			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The CDR has been assessed against Human Factors criteria.	MP-C0-00054
The handset has been assessed against Human Factors criteria.	Survey Report: MP TECHREP 014 Ergonomic Evaluation Drawings: MP-C0-00019 MP-C0-00020 MP-C0-00021

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ECR No:	HICL No: MP HAZ ID 005		
Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 022	
Description of Hazard: 2.1 Vehicle Performance <ul style="list-style-type: none"> Heating/cooling performance 			

ACTION TO CLOSE OUT	REFERENCE DOCS.
<p>Due to the low voltage supply, the equipment installations are considered to have a negligible effect on the heating and cooling performance of the vehicle.</p> <p style="text-align: right;">ICD-1051-01</p> <p>The mounting positions for the new equipment have been selected as optimum locations to minimise environmental influences including temperature.</p> <p>The RETB installations have been undertaken in accordance with the Interface Control Document</p>	

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Raised by: M. Hoptroff	Date Raised: November 2014	Hazard No: 023	
Description of Hazard: 1.9 Off vehicle/ Infrastructure Hazards <ul style="list-style-type: none">• Hearing Damage			

ACTION TO CLOSE OUT	REFERENCE DOCS.
The speaker type has been used for the GSM-R installation and the system has been specified to provide performance consistent with the NRN system. The risk of hearing damage is therefore not considered to be a risk.	

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