

HAZARD IDENTIFICATION CHECK LIST


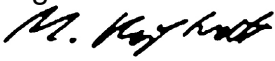
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November 2014

REFERENCE: MP HAZID 004

JOB No: MP/13/002	JOB TITLE: Class 37 RETB Installation
ECR No: N/A	REPORT No: MP HAZID 004

Created	Name: J.Brookling	Signed 	Date November 2014
Checked	Name: M.Hoptroff	Signed 	Date November 2014

Note:

This hazard identification checklist (HICL) and relevant hazard close out sheets (HCS) have been produced to identify and closeout hazards associated with the installation of a Next Generation RETB system to Direct Rail Services' and West Coast Railways Class 37 locomotives.

The full list of hazards was reviewed by all project stakeholders at the Detailed Design Review held at Kingmoor Depot on Wednesday 26th November.

For the purposes of this HICL and HCS the item number shown shall be used to identify the equipment and relevant hazards/close out information.

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1. Safety

1.1 DERAILMENT	HAZARD SHEET NUMBER
DYNAMIC INSTABILITY	N/A
FAILURE / MALFUNCTION OF WHEELSET COMPONENTS	N/A
FAILURE OF BOGIE COMPONENTS	N/A
WHEEL UNLOADING	N/A
INCORRECT GEOMETRY OF INTER-VEHICLE CONNECTIONS / DRAWGEAR	N/A
INCORRECT GEOMETRY OF BODY / BOGIE	N/A
EQUIPMENT FALLING FROM VEHICLES / BOGIES	001
INADEQUATE PERFORMANCE OF OBSTACLE DEFLECTORS AND / OR LIFEGUARDS	N/A
AERODYNAMIC OVERTURNING	N/A
INCREASED / REDISTRIBUTED / REDUCED MASS	N/A
VEHICLE STRUCTURAL FAILURE	001
DETACHED EQUIPMENT FALLING ONTO AXLE	N/A
SUSPENSION FOUL / BODY-BOGIE FOUL	N/A

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1.2 GAUGE INFRINGEMENT	HAZARD SHEET NUMBER
INCREASED VEHICLE ENVELOPE	002
DYNAMIC EFFECTS	003
FAILURE OF DOORS / DOORGEAR / DOOR CONTROLS	N/A
FAILURE OF HATCHES	N/A
EQUIPMENT PARTLY DETACHED	001
INCREASED / REDISTRIBUTED MASS	003
INCREASED PANTOGRAPH SWAY	N/A

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1.3 BRAKE FAILURE	HAZARD SHEET NUMBER
LOSS OF INTEGRITY OF BRAKING CONTROL	N/A
FAILURE OF BRAKING COMPONENTS	N/A
WRONGSIDE FAILURE OF D.S.D. / A.W.S. / A.T.P. / O.T.M.R. / TPWS??	N/A
BRAKE DRAG	N/A
LOSS OF PARKING BRAKE OVER TIME	N/A
INTERFERENCE WITH DRIVER'S SIGHTLINES	004
INCORRECT LINKAGE GEOMETRY	N/A
INCREASED MASS	003
INADEQUATE BRAKING PERFORMANCE	N/A

1.4 CONTROL SYSTEM FAILURE	HAZARD SHEET NUMBER
SAFETY SYSTEM ISOLATION WITHOUT INDICATION	N/A
ALLOW AUTOMATIC DOORS TO OPEN WITH TRAIN IN MOTION	N/A
ALLOW TRAIN TO LEAVE WITH AUTOMATIC DOORS OPEN	N/A
FAILURE OF A.T.P. / O.T.M.R. / D.S.D. / A.W.S./ PASS. COMMUNICATION	N/A
EFFECT ON OTHER SYSTEMS	005
ELECTROMAGNETIC INTERFERENCE WITH CONTROL SYSTEMS	005

1.5 FIRE	HAZARD SHEET NUMBER
CAUSE FIRE	006
CAUSE EXPLOSION	N/A
EMIT TOXIC FUMES / SMOKE AFTER IGNITION	006

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1.6. REDUCED VEHICLE SAFETY PERFORMANCE	HAZARD SHEET NUMBER
INADEQUATE LABELLING / IDENTIFICATION	007
REDUCED STRUCTURAL CRASH WORTHINESS	001
REDUCED INTERIOR CRASH WORTHINESS	008
REDUCED EQUIPMENT SECURITY	001
REDUCED FIRE PERFORMANCE	006
REDUCED EMERGENCY EGRESS	N/A
REDUCED EMERGENCY LIGHTING	N/A
REDUCED PERFORMANCE OF FIRE ALARM SYSTEMS	N/A
INADEQUATE PERFORMANCE OF FIRE EXTINGUISHING SYSTEMS	N/A
INADEQUATE PERFORMANCE OF FIRE DETECTION SYSTEMS	N/A
MISUSE OF EQUIPMENT AND SYSTEMS	009
INADEQUATE PROVISION OF EMERGENCY EQUIPMENT	N/A
INADEQUATE ELECTRICAL BONDING	010
INADEQUATE RADIO COMMUNICATION	011

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1.7. SAFETY - HAZARDS TO CREW	HAZARD SHEET NUMBER
IMPACT BY LOOSE EQUIPMENT	001
STRUCTURAL FAILURE OF FIXTURES AND FITTINGS	001
SHARP EDGES AND PROTRUSIONS	012
SHARP EDGES OF BROKEN FIXTURES AND FITTINGS	001
LIMB / FINGER TRAPPING	013
TRIPPING AND SLIPPING	N/A
INADEQUATE GRAB RAILS / HANDRAILS	N/A
UNSUITABLE STEPPING DISTANCES	N/A
LACK OF EMERGENCY VENTILATION	N/A
HEARING DAMAGE	N/A
EYE DAMAGE	N/A
RADIATION (MICROWAVE, ULTRAVIOLET, ETC.)	014
MISSILE PENETRATION	N/A
TRAIN PARTING	N/A
ELECTROCUTION	015
USE OF TOXIC MATERIALS	N/A
INADEQUATE FOOD HYGIENE	N/A
LACK OF FOOD REFRIGERATION	N/A
CONTAMINATION OF WATER SUPPLIES	N/A
EXCESSIVE MAGNETIC FIELDS	014

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1.8 OCCUPATIONAL HEALTH & SAFETY OF DIRECT RAIL SERVICES AND WEST COAST RAILWAYS STAFF, SUB-CONTRACTORS' STAFF, OVERHAULERS' OR MAINTAINERS' STAFF OR OPERATIONAL STAFF	HAZARD SHEET NUMBER
<p>HAZARDS INCLUDING :</p> <ul style="list-style-type: none">CRUSHINGLIMB / FINGER TRAPPINGMANUAL HANDLINGEYE DAMAGEHEARING DAMAGEELECTROCUTIONCOSHH MATERIALS <p>ARISING FROM :</p> <ul style="list-style-type: none">LACK OF DESIGN INFORMATION / INSTALLATION PROCEDURESLACK OF MAINTENANCE OR OVERHAUL DOCUMENTATIONLACK OF ADEQUATE TOOLS / EQUIPMENTFAILURE TO USE PERSONAL PROTECTIVE EQUIPMENTLACK OF / INADEQUATE TRAININGWORKING INADEQUATELY SUPERVISED OR ALONELACK OF MANDATORY PERSONAL CERTIFICATION, INCLUDING PERSONAL TRACK SAFETY, SAFETY CRITICAL WORKMISUSE OF DRUGS / ALCOHOL	016

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1.9 OFF-VEHICLE/ INFRASTRUCTURE HAZARDS	HAZARD SHEET NUMBER
INTERFERENCE WITH SIGNALLING	005
ELECTROMAGNETIC COMPATIBILITY (EMC)	005
EQUIPMENT DETACHING FROM VEHICLES	001
HEARING DAMAGE	023
EYE DAMAGE	N/A
DISCHARGE OF HOT GASSES / LIQUIDS	N/A
DISCHARGE OF EFFLUENT	N/A
INADEQUATE VISIBILITY OF TRAIN	N/A
INADEQUATE AUDIBILITY OF TRAIN	N/A
TRACK DAMAGE	N/A
REMOVAL OF EQUIPMENT FROM TRACK	N/A

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2. RISK

2.1 VEHICLE PERFORMANCE	HAZARD SHEET NUMBER
TRAIN RELIABILITY	017
VEHICLE RELIABILITY	017
COMPONENT RELIABILITY	017
SYSTEM RELIABILITY	017
MAINTENANCE PERIODICITY	018
CREW INFORMATION SYSTEM PERFORMANCE	N/A
CONTROL SYSTEM PERFORMANCE	017
RIDE PERFORMANCE	N/A
ACOUSTIC ENVIRONMENT	019
VISUAL ENVIRONMENT	020
ERGONOMIC NEEDS	021
HEATING / COOLING PERFORMANCE	022
VENTILATION PERFORMANCE	N/A
WINTERISATION	N/A
EMC MANAGEMENT	005
MAINTENANCE OF EMC PERFORMANCE	005

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2.2 PROJECT	HAZARD SHEET NUMBER
TECHNICAL PERFORMANCE NOT ACHIEVED	N/A
FAILURE OF TESTING	N/A
INCREASED COSTS	N/A
SAVING NOT ACHIEVED	N/A
REVENUE BENEFITS NOT REALISED	N/A
INDUSTRIAL RELATIONS PROBLEMS	N/A
IMPACT OF LEGISLATION	N/A
REVISED STANDARDS	N/A
POLITICAL CHANGE	N/A
PRESSURE GROUP ACTIVITIES	N/A
OBSOLESCENCE	N/A
REJECTION BY HEALTH AND SAFETY EXECUTIVE	N/A
DELAY	N/A
COSTS OF RE-WORK / RE-VISIT TO SITES	N/A
WARRANTY	N/A
COST/ TIME FOR EMC COMPLIANCE	N/A