Risk Assessment - Fitting, removal, storing and recharging of Carriage Batteries

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Department: Carriage and Wagon
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Moving and transporting batteries

Type	Hazard Cause	Persons Affected	Control Measures	L S T Overall	Additional Control Measures	L S T Overall	Owner/Action
Health and Safety	Musco-skeletal injury Failure to adopt correct Manual Handling process	Volunteers & Staff	1) CRITICAL - Administrative: Training given in Manual Handling Techniques - Effective 2) CRITICAL - Administrative: Be aware of your own limitations. - Effective	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	None	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a
Health and Safety	Crush injury to hands or feet Dropping battery (weight approx.46-48kg) on to hand/foot	Volunteers & Staff	1) CRITICAL - Engineering: Batteries always to be lifted by two persons - Effective 2) CRITICAL - PPE: Mandatory to wear safety footwear, overalls and gloves. - Effective	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	None	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a

Fitting and removal of batteries from rail carriage

Type	Hazard Cause	Persons Affected	Control Measures	L S T Overall	Additional Control Measures	L S T Overall	Owner/Action
Health and Safety	Musco-skeletal injury Failure to adopt correct manual handling techniques	Volunteers & Staff	1) CRITICAL - Administrative: Manual handling training given - Effective 2) CRITICAL - Administrative: Be aware of your own limitations. - Effective	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	None	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a

Gloucestershire Warwickshire Steam Railway Plc
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Type	Hazard Cause	Persons Affected	Control Measures	L S T Overall	Additional Control Measures	L S T Overall	Owner/Action
Health and Safety	Crush injury to hands or feet Batteries have to be manouvered into battery box	Volunteers & Staff	1) CRITICAL - Engineering: Two persons to lift the batteries at all times. - Effective 2) CRITICAL - PPE: Safety footwear, overalls and gloves to be worn. - Effective	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	None	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a
Health and Safety	Electric shock Shorting of terminals or incorrect fitting	Volunteers & Staff	1) CRITICAL - Engineering: Batteries used are either 6v or 12v. Connected in series max. 24v - below 120v required for electrical shock - Effective 2) CRITICAL - Engineering: Terminals of batteries are shielded from each other during fitting and removal - Effective	1 x 1 = 1 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	1) Engineering: Consider the use of tools that are plastic coated to avoid shorting on terminals. - Effective 2) Administrative: Be aware of the risk of wearing jewellery that could short out terminals. - Effective	1 x 1 = 1 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a

Score and Control Measure Notes.
Low risk due to the nature of the task.
Risk remains low.

Health and Safety	Chemical Burn Accidental release of (sulphuric) battery acid due to leakage from the casing or unsecured filler caps	Volunteers & Staff	1) CRITICAL - Administrative: Eye Wash kit available - saline solution to irrigate eyes/wash off skin - Effective	1 x 2 = 2 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	1) PPE: Consider wearing safety eyewear. - Effective	1 x 2 = 2 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a
Environmental	Chemical Release causing ground contamination Leakage from battery casing or spillage during topping up	Volunteers & Staff	1) CRITICAL - Engineering: Do not store cells on unmade ground. - Effective 2) CRITICAL - Administrative: Chemical 'Spill Kit' available - Effective	1 x 1 = 1 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	None	1 x 1 = 1 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a

Storage and Recharging of Carriage Batteries

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Type	Hazard Cause	Persons Affected	Control Measures	L S T Overall	Additional Control Measures	L S T Overall	Owner/Action
Health and Safety	Chemical burn Acid splash	Volunteers & Staff	1) CRITICAL - Engineering: All carriage batteries not mounted on rail vehicles to be moved to the secure battery store container - Effective 2) CRITICAL - Administrative: Eye wash readily available - Effective 3) CRITICAL - PPE: Coveralls, safety glasses and gloves worn - Effective	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	None	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a
Health and Safety	Slips/Trips/Falls Battery blocking/obstruction walkway	Volunteers & Staff	1) CRITICAL - Engineering: All carriage batteries not mounted on rail vehicles to be moved to the secure battery store container - Effective 2) Administrative: Battery recharging undertaken out of main walkway route - Effective	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	None	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a
Health and Safety	Explosion causing personal injury Explosive gases are produced during the recharging process.	Volunteers & Staff	1) CRITICAL - Elimination: All battery charging undertaken in well ventilated area - Effective 2) Elimination: Use of Smart Chargers controls the charging cycle to significantly reduce likelihood of hydrogen gas release - Effective 3) CRITICAL - Engineering: All carriage batteries not mounted on rail vehicles to be moved to the secure battery store container - Effective	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	None	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a
Health and Safety	Electric shock Incorrect fitting of battery, shorting of exposed terminals	Volunteers & Staff	1) CRITICAL - Engineering: When laid up (storage) battery terminals are protected with insulated caps - Effective 2) CRITICAL - Engineering: All carriage batteries not mounted on rail vehicles to be moved to the secure battery store container - Effective	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	None	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a
Environmental	Land or ground water contamination Leakage of battery acids	Public	1) Engineering: Transitioning to use of Gel batteries - Effective 2) CRITICAL - Engineering: All carriage batteries not mounted on rail vehicles to be moved to the secure battery store container - Effective 3) Administrative: Maintenance of wet (lead/acid) batteries undertaken by two persons to reduce risk of acid spill - Effective 4) Administrative: Redundant batteries are stored in isolation and disposed off through a licensed waste disposal contractor - Effective	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	None	2 x 2 = 4 Low - Risk to be monitored to ensure it remains adequately controlled to an acceptable level.	n/a

COSHH Assessments

There are no COSHH assessments associated with this risk assessment.

Reference Documents

- Victron Battery MSDS -
- Exide Battery - MSDS -
- MSDS Trojan Battery -

Ends