CSA M424.4 Battery Handling Working Group

Working Group			
MDEC 2022			
		CSA M424.4:22 National Standard of Canada	
Cheryl Allen October 5, 2022		6	
		Self-propelled, electrically driven, non- rail-bound mobile machines for use in non-gassy underground mines	
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Annex DB (informative) Battery handling, replacement, and fire suppression		
Note: This Annex is not a mandatory part of this Standard.		
DB.1 General		
The end user (mine operator/mine contractor), in conjunction with the equipment supplier (manufacturer), should complete a joint task-based technical risk assessment to include, but not be limited to .the following:		
a) transportation and storage of new, used, and damaged batteries;		
b) requirements for fire suppression/mitigation for the safe operation of the mobile equipment through its life cycle: and		
c) emergency protocol(s) in the event of imminent or complete battery failure.		
In addition to completing a task-based technical risk assessment on the topics above, the equipment supplier (manufacturer) should provide documentation/training related to those topics limited to the operation and maintenance of the intended use of the machine.		
DB.2 Example of key elements to consider in the execution of the joint		
Table DB.1 provides an example of a risk register and key elements to consider in the execution of a joint task-based risk assessment(s).		
Table DB.1 is provided for guidance purposes only. The example provided is battery electric vehicle (BEV)-oriented.		



05 Risk Assessment Key elements assessed - Example **Risk Assessment** BEV Engineered Specs/Stds BEV R&D, Maintenance, operations mgmt plans Access & handling batteries (incl disposal) Task- Based Technical Risk Assessment Transportation of batteries (to,within,from site) Operation manual as a guide Storage, maintenance by area for stability control Life Cycle of machine Commissioning prescribed varifications Documentation – operation and maintenance of machines "intended Inspection – trades/OEM use" Routine servicing, Trouble shooting Mine specific risks Repairing - shop repairs/ field repairs Training Authorized personnel - maint, operations Operating - pre op, breakdown Emergency Response VALE



	BE	BEV General Information Form		
05 Rick Assassment	Mining company name	Date (yyyy/mm/dd)		
	Mine site	Emergency Phone #		
	OEM name	Emergency Phone #		
	Make	Model		
	Machine type	Manufacturing Date (yyyy/mm/dd)		
	OEM unit #	Mine site unit #		
Form with Critical	Manufacturing serial number #	Hour		
	Auxiliary battery (v)	Master switch location		
Information	Tr	Traction battery information		
inormation	Package quantity	Location(s)		
	Power capacity (kWh)	Max. voltage (V)		
Exercise DEV Or a secolar formation Exercise	Chemistry	Cell type		
Example: BEV General Information Form	Overall dimension [W/H/L] (m)	Weight (kg)		
	Manufacture	MSDS #		
	Transport class	Chemical Emergency #		
	Emergency disconnect location(s)	High voltage cable colour (s)		
Diesel equipment has a diesel notification	Fire suppressions type	Fire extinguisher size (kg)		
form	Extinguishing media	Special PPE		
IOIIII	Regenerative brake (Y/N)	Coolant system type		
	Battery charger information			
BEV should also have a general information	ON/OFF-board	Charge capacity (kWh)		
form that contains BEV powertrain general	Charger location(s)	Electrical plug location		
enocifications such as hattory size	Traction electric motor			
specifications such as battery size,	Motor quantity	Location(s)		
chemistry, voltage	Peak power (kW)	Peak torque (Nm)		
	Explos	sive material/fluids information		
Benefit for battery maintenance,	Explosive material on-board (Y/N)	Product Manufacturer		
transportation and fire rescue	Туре	Container quantity (L)		
transportation, and me rescue	Hydraulic fluid type	Hydraulic fluid quantity (L)		
	Other fluid type	Other fluid quantity (L)		
	Air ventilation required (m ³ /s)	2/4 wheel-drive		
	Vehicle net weight (kg)	Gross weight (kg)		
	Vehicle dimension [W/H/L] (m)	Max. operating grade (%)		
	Service brake:			
	Emergency brake & release pressure:	Emergency brake & release pressure:		
0	Parking brake & release pressure:	Parking brake & release pressure:		
Source: GMG BEV undergound version	7 3 Towing procedure:			
	Company representative	Title		



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07 Summary

Summary

- Risk gap recognized and closed
- Last piece of the Standards development
- Specific to the BEV section CSA M424.4
- Informative located in M424.0 section 4 referencing Annex DB
- Leverage Glencore/Vale/Suppliers work
- Operators and Suppliers working together for safe operation

