

Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

Sub-Committee of Experts on the Transport of Dangerous Goods

14 June 2016

Forty-ninth session

Geneva, 27 June – 6 July 2016

Item 4 (d) of the provisional agenda

Electric storage systems: miscellaneous

CTUs equipped with container tracking devices containing Lithium Batteries

Submitted by the expert of Germany

Introduction

1. The Container Tracking Device (CTD) at the lowest level provides a container ID and when communicated with a reader provides a location associated with that reader. Higher level CTDs can have sensors and may provide location en route. A higher Tier CTD can be programmed to report on a fixed or event-driven schedule or alternatively can be directed to report only when interrogated. Some CTDs will be capable of reporting via multiple media types and can be programmed to access media in a prioritized order. A Tier 1 or Tier 2 CTD may have the ability, if monitoring door openings or any other sensor, to clear events. CTDs may have a local power sources e.g. lithium batteries
2. When an active CTD is equipped with a lithium battery, the CTD has to be considered as UN 3091 LITHIUM ION BATTERY CONTAINED IN EQUIPMENT or UN 3481 LITHIUM METAL BATTERY CONTAINED IN EQUIPMENT as appropriate.
3. Packing provision P 903 addresses this issue and requires in (4) that CTD which are not capable of generating a dangerous evolution of heat may be transported when intentionally active in strong outer packagings. However, an CTD affixed to the exterior of a CTU, will not be packed in a strong package, it will be affixed unpacked. Furthermore, when attached to a container, exceeding the exterior dimensions of the container frame, the tag and the battery inside might be damaged during handling operations, thus generating all hazards usually emanating from damaged lithium batteries.
4. When the CTU is a road vehicle engaged in road transport, a CTD affixed to that vehicle is part of the means of transport. Thus the tag will be part of the vehicle's equipment so that the dangerous goods regulations do not apply. The vehicle driver will be responsible for safe operation of the vehicle including its equipment. However when the CTU is a semi-trailer loaded onto a railway wagon or a container loaded onto a ship, the CTU is to be considered as cargo transported by rail or by ship respectively. In such case, the CTU will neither become part of the railway equipment nor part of the ship's equipment. It is the forwarder or shipper of the CTU who has to ensure that the device itself is in a safe condition and is safely affixed to the CTU. Furthermore, the forwarder or shipper is responsible to inform

the carrier about the fact that a tag containing a lithium battery is affixed to the CTU. For transport in accordance with ADR/RID the exemption of 1.1.3.7 applies.

5 Problematic as well is the fact that a CTU with a CTD affixed might be loaded on board a ship in a cargo hold where other CTUs containing flammable liquids or flammable gases are stowed and where the electrical installation of the cargo space needs to be intrinsically safe (explosion-proof). It would be unacceptable to load a CTU with a CTD not being intrinsically safe into a cargo space which requires all electrical equipment contained therein to be safe for use in a potentially flammable atmosphere.

Proposal

6. As the safety issues described above are related to the condition of the CTU rather than to the cargo loaded inside the CTU, the issue could be dealt with similar to the safety provisions for fumigated CTUs or CTUs containing substances presenting a risk of asphyxiation. Chapter 5.5 of the Model Regulations contains the relevant provisions for such CTUs. Therefore, it is proposed to extend this chapter and to include here provisions for CTD equipped with lithium batteries. As section 5.5.1 is presently reserved, it is proposed to use this section for those provisions to be established.

7. Related to the use of CTDs containing Lithium Batteries, the following hazards should be addressed and mitigated by appropriate safety provisions:

- Damage of a lithium battery due to an unsuitable containment
- Damage of a lithium battery in the course of physical handling of the CTUs
- Generation of a source of ignition in a flammable atmosphere.

8. To address these hazards it is proposed to include a new section 5.5.1 reading as follows:

“5.5.1 Special provisions applicable to cargo transport units equipped with Container Tracking Device (CTD) containing lithium ion batteries or lithium metal batteries.

5.5.1.1 CTDs containing lithium ion batteries, lithium ion cells, lithium metal batteries or lithium metal cells are not subject to any provision of these regulations other than those of this section

5.5.1.2. CTDs attached to the exterior of a cargo transport unit have to comply with the following conditions:

1. Each battery and cell shall comply with the requirements of 2.9.4,
2. The CTD shall be securely attached to the cargo transport unit and shall be of a certified safe type
3. The batteries and cells shall be protected by the casing of the tag by a method providing the same level of safety as required in packing provision P 903 (4),
4. When attached to a freight container, the tag shall not protrude the exterior dimensions of the container frame.

Note: For certified safe type see Recommendations published by the International Electrotechnical Commission, in particular, publication IEC 60079”