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**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****Fiftieth session**

Geneva, 28 November – 6 December 2016

Item 2 (d) of the provisional agenda

**Recommendations made by the Sub-Committee on its forty-seventh,  
forty-eighth and forty-ninth sessions and pending issues: electric storage systems****CTUs equipped with container tracking devices containing  
Lithium Batteries****Submitted by the expert of Germany<sup>1</sup>****Introduction**

1. At the forty-ninth session, Germany presented informal document INF. 30 seeking for clarification how to deal with cargo transport units (CTUs) equipped with container tracking devices containing lithium batteries.
2. 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
3. A CTD equipped with a lithium battery has to be considered as UN 3091 LITHIUM ION BATTERY CONTAINED IN EQUIPMENT or UN 3481 LITHIUM METAL BATTERY CONTAINED IN EQUIPMENT as appropriate. The question arose which

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<sup>1</sup> In accordance with the programme of work of the Sub-Committee for 2015–2016 approved by the Committee at its seventh session (see ST/SG/AC.10/C.3/92, paragraph 95 and ST/SG/AC.10/42, para. 15).

requirements have to be met when such a CTD is affixed to a CTU for transport, irrespective if the cargo inside the CTU is dangerous goods or other cargo.

3. At the forty-ninth session some experts expressed their view that CTDs equipped with lithium batteries are not subject to the regulation according to 1.1.1.2 (a). 1.1.21.2 (a) states that the UN Model Regulations do not apply to dangerous good that are required for the propulsion of the means of transport or the operation of its specialized equipment during transport (e.g. refrigeration units) or that are required in accordance with the operating regulations (e.g. fire extinguishers).

4. Such an interpretation leads to the following safety concerns:

- The lithium batteries must not meet the requirements of 2.9.4.
- It is not ensured that the CTDs provide sufficient protection from damage, this might in particular relevant for transport operations where several CTUs are loaded together in one cargo hold and might be damaged during loading.
- The CTD affixed to the CTU might be loaded on board a ship in a cargo hold where other CTUs containing flammable liquids or flammable gases are stowed. The electrical installation of the cargo space needs to be intrinsically safe (explosion-proof) while there is no requirement for the CTD attached to a container containing non dangerous goods. The IMDG Code requires tracking and monitoring equipment to be of a certified safe type, but this requirement applies only to CTUs loaded with dangerous goods.

5. Though parts of these concerns are in particular relevant for sea transport, the requirement to use lithium batteries of a tested type only seems appropriate for all modes of transport. SP 312 and SP 240 have been amended in the nineteenth edition of the UN Model Regulations so that lithium batteries installed in vehicles shall meet the requirements of 2.9.4 although vehicles are subject to the regulations only when transported by air or by sea.

6. It is therefore proposed to amend the Model Regulations in such a way that lithium batteries installed in CTDs affixed to CTUs are not subject to the regulations under the condition that some basic safety requirements are met. These requirements should refer to the UN 38.3 test and the protection of the batteries against damage due to an unsuitable containment or in the course of physical handling of the CTUs and the CTD should be safe for use in a potentially flammable atmosphere.

7. 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.

## **Proposal**

8. It is proposed to include a new section 5.5.1 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 Cargo transport units equipped with Container Tracking Device (CTD) 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 a cargo transport unit have to comply with the following conditions:

- (a) Each battery and cell shall comply with the requirements of 2.9.4,
- (b) The CTD shall be securely attached to the cargo transport unit and shall be of a certified safe type
- (c) The batteries and cells shall be protected by a strong outer casing of adequate strength and design to prevent damage under normal conditions of transport,
- (d) 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”.

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