

Draft report of 3rd meeting of the informal group on “Behaviour of M2 & M3 general construction in case of Fire Event (BMFE)”

Date: June 15th 2018

Venue: Verband Der Automobilindustrie (VDA)
Berlin

1. Welcome and Roll call

2. Adoption of the agenda (BMFE-03-01e)

The agenda was adopted with no change

3. Validation of the minutes of the last meeting (BMFE-02-11e)

The minutes were adopted with no change

4. Review of the term of references as adopted during GRSG 114th

The chair recalled the evolution of the draft terms of reference that resulted in the document BMFE-03-02.

The group reviewed the table set up at the 2nd meeting, for identifying the items the group should focus on for each of the regulations (UN R118 and R107).

The experts temporarily agreed that the luggage burning is still an item open for discussion to the group (yet see item 6.7 below).

Conclusion:

- The group will take into account the existing amendments that must still enter in application.
- Timeline: the chair expected the group to deliver an informal document at the 119th session of GRSG, such to permit an official document at the 120th session.

5. Regulation UNECE R118 : experts inputs, position, data sharing

5.1. Rails and naval applications for smokes toxicity and opacity: tests description, targets, results and human criticality levels...

The group reviewed the document BMFE-03-03.

Toxicity

D questioned the reference to ISO 3795 in R118 since the regulation itself provides the requirements

and is not necessarily aligned on the ISO standard.

CLEPA provided information on the ISO standard currently applicable in the naval and train Industry and explained that a sample of the smoke is extracted during the smoke density test, and then analysed according to ISO 19702. Test methods are as follows:

- Rail: horizontal floor burning rate per ISO 9239-1, then measurement of concentration of different gases per ISO 19702 (FTIR)
- Naval: vertical test for horizontal floor per ISO 5658-2, then measurement of concentration of different gases per ISO 19702 (FTIR)
- Road: UN R118 Annex 6 (horizontal) and Annex 8 (vertical), similar to ISO 3795

CLEPA explained the approaches of material testing for naval, train and road applications. For example, in the railway approach, the target is first to permit the evacuation, then limit the smoke toxicity. The material must hence first withstand fire propagation, then restrict its toxicity. The expert pointed out that fire produces the smoke, rather than the heat itself.

The chair found unnecessary to change the protocols for the coach application, rather favoured adapting the assessment calculation.

D recalled that the item of toxicity was already lengthy addressed at GRSG in the past and that the subject was almost exhausted.

The chair stressed that the road transport is not confronted to the same timing constraints as naval or air transport. He proposed an approach where the evacuation time is traded off with smoke toxicity (as an example, UN R118 assumes 2 minute evacuation time, while the Naval standard assumes a 10 minutes evacuation time).

While fires mostly declare in the engine or wheel compartments, the heat is transferred into the passenger compartment. For RISE, the vertical test can be kept in the regulation.

The chair proposed that a document can be prepared for next meeting with a comparison of the different approaches in terms of toxicity, test methods, values, and human criteria.

The group was informed that BAST / BAM (Bundesanstalt für Materialforschung und -prüfung as a senior scientific and technical Federal institute reporting to the Federal Ministry for Economic Affairs and Energy) conducted researches on smokes toxicity.

Conclusion:

- CLEPA, together with RISE, to establish synthesis of test protocols, timings, in naval, rails, air and road transports.
- Volvo busses might provide information on some materials as well.

Opacity

CLEPA informed that only opacity is measured; along two classes, in the field of building construction. The chair informed the group according to slide 3 of BMFE-03-03. D questioned whether there exists accidents with fatalities related to the smokes opacity. The chair informed that F has data recollection

from Puisseguin passengers and witnesses in this sense.

The chair showed a movie of a test conducted to assess the smoke invasion then smoke extraction in a bus with windows firstly present, then broken during the fire. After 40s, the bus is full of smoke, then after windows break, the smoke is totally evacuated after 15s. D pointed out that opening the windows might activate the fire due to oxygen supply, and that opening the window may hence make the situation worse when the smokes come from the exterior.

Exit automatic opening

Some experts had concern about exit automatic opening: this is taken as a signal that the exit is clear for egress. Such system should be able to discriminate the criteria for opening, e.g. vehicle on its side, vehicle speed, tunnel, impact, temperature, etc. The chair suggested that the automatic system only acts on the first step of the opening, to let the occupant decide whether undertaking the second step. The secretary pointed out that the regulation should only regulate existing systems, and refrain from making the regulation a development paper.

D had concern about the exit automatic opening approach and suggested further debates on this item. A solution could be that the automatic opening only addresses the existing service and emergency doors. The experts also agreed on the need to address the energy necessary to the automatic opening. The automatic opening could be for emergency exits, as well as for smoke extraction systems. A list of possible scenarii and the way to address each could be established.

Conclusion: OICA (Philippe Genest and Michael Becker) to work together on this item.

5.2. Transposition for road applications and tests already performed

Postponed to next meeting

6. Regulation UNECE R107 : experts inputs, position, data sharing

6.1. Outcomes of research on the time needed to break windows (RISE)

Postponed to next meeting

6.2. Smokes extraction systems : standard in application, existing systems, performance levels

Question: what is the state of play in naval, air transport with regard to these systems? The experts did not exchange any information. Some experts stressed that this is a technically tricky item: problems of the energy source, consequence the extraction system on the fire, automatic opening, etc.

Conclusion: group to have a look on the building case existing systems. Some experts informed that the smoke extraction system problems were one at the origin of the concerns at the Berlin Schönefeld airport that provoked delays: the technology is new and its application in buildings is not mature.

Conclusion:

France and D to evaluate whether adaptation of following systems to coaches is reasonable:

- Buildings
- Smoking areas
- Houses
- Aircrafts

6.3. Additional rear exit : feedbacks from SDWEE

The experts concluded that this subject is out of scope of the informal group according to the outcomes of last meeting.

Conclusion: item removed from the agenda

6.4. Definition of minimum level for fire detection systems : standard in application, private system performance

Possibility to combine the fire detection and fire suppression warnings to the driver. Informal group to evaluate the feasibility.

Conclusion:

- Sweden commits to provide a draft text proposal with regard to possibility to combine the fire detection and fire suppression warnings to the driver for next session.
- OICA to provide an overview of current state of play with regard to the sensor technology (smoke and/or temperature detection), according to vehicle implementation (manufacturer strategy)

6.5. Optimization of luminous trajectories and functionalities : feedbacks from SDWEE

Check paragraph 8.3 of UN R107

The chair identified that the current regulation contains provisions for the case of emergency or special events. Yet he was keen that provisions be added for regular functioning, e.g. warning to the occupant, or information provided to the passengers.

Spain proposed increasing the level of lighting and reducing the mandatory time as the current time of 15 minutes is not consistent with time of resistance to fire. D pointed out that the SDWEE requirements are even not yet on the market, hence it could be premature to already amend the provisions in this regard.

The chair proposed that some information to the passengers should address the origin and nature of the concern. D recalled that all debates conducted at GRSG on this matter ended with the conclusion that this is an operator issue.

There was a debate on the possibility to mandate location for passenger information

Evacuation way:

1. Provisions for evacuation way lighting
 - Limited to the use of existing lighting system (no need to mandate additional lamps, provisions can be limited to the existing mandatory lamps)
 - Lighting should indicate the exit location and the path to the emergency exits.
2. Conclusion: all to investigate the possible approach like flashing during 10s after engine switch-on, etc. based on existing systems.

6.6. Safety instructions: similar approach as specified in § 7.5.4.

Possible information to be delivered to the passengers:

- List of what information of interest to the passenger
- Example: IRU information card
- Russia committed to be the pilot for this item (overview of the instructions proposed in other applications)

Example of a possible wording:

“Space shall be provided for the fitting of safety instructions, visible from each passenger seat (*as for the safety belt*). In vehicles of Class A or B the space for each instruction shall be not less than [TBD] and for vehicles of Class I, II or III not less than [TBD].”

Wording to be improved at a later stage

Conclusion: RUS committed to be pilot on this item

6.7. Baggage burning (extinguishing/wall insulation system need) : test setup to evaluate propagation factor

The group had no accidentology related to this. Studies in rail application underline the impact of the luggage in fire propagations, yet the luggage lies in the passenger compartment in trains. Seems this item is not relevant in case of coaches.

6.8. Location of the fuel tank : implementation (UN R107) versus strength (UN R34)

This item was addressed at the beginning of the meeting. The group investigated the location of the tank, recognized the amount of effort this could bring to the manufacturers and concluded that the group should focus on performance requirements with regard to fuel tank safety (location, capacity, impact protection, proximity to the electric system, etc.).

7. Next steps

List of action items for next meeting:

1. Toxicity: CLEPA, together with RISE, to establish synthesis of test protocols, timings, in naval, rails, air and road transports. Volvo busses might provide information on some materials as well.

2. Evacuation time: RISE to present the outcomes of their researches.
3. Opacity: Linked to toxicity, see document BMFE-03-03, slide 3
4. Automatic exit opening: A list of possible scenarii and the way to address each could be established. OICA (Philippe Genest and Michael Becker) to work together on this item
5. Smokes extraction systems : F and D to evaluate whether adaptation of following systems to coaches is reasonable:
 - o Buildings
 - o Smoking areas
 - o Houses
 - o Aircrafts
6. Definition of minimum performance level for fire detection systems:
 - o Sweden commits to provide a draft text proposal with regard to possibility to combine the fire detection and fire suppression warnings to the driver for next session.
 - o OICA to provide information on overview of current state of play with regard to the sensor technology (smoke and/or temperature detection), according to vehicle implementation (manufacturer strategy)
7. Optimization of luminous trajectories and functionalities: all to investigate the possible approaches like e.g. flashing during 10s after engine switch-on, etc. based on existing systems.
8. Safety instructions: Russia to be the pilot for this item (overview of the instructions proposed in other applications)

8. Next meetings

- 8.1. 4th meeting : Paris, OICA offices, 10-11 September, starting at 1:00 pm the 1st day and finishing at 4:00 pm the last day

9. A.O.B.

The chair requested to collect accidentology and statistics (at least those available to date) such to best base the decisions of the group.