

DRAFT REPORT

4th meeting of GRRF/IG on Modular Vehicle Combinations MVC

Venue: Brynsengfaret 6A
0667 OSLO
Norway
Chairman: Anders Gunneriusson (SE)
Secretariat: Pierre Teyssier/Olivier Fontaine (OICA)
Dates: 30 June – 1 July 2015, starting at 10:00 am the 1st day, finishing at 4:00 pm the last day

1. Welcome and Introduction

2. Approval of the agenda

Volvo announced a presentation on their development
N informed having some results to present about their research on MVC
The agenda was adopted with the addition of the two above items

3. Approval of the minutes of last meeting

Document: MVC-03-08

FIN raised the concern that the centre of gravity (COG) of the vehicle is assumed to be measured while its position is actually not accurately measured.

CLEPA clarified that there is currently no way to measure the height of the COG, rather an assessment, estimation. This assessment provides a “rough” idea of the position of the COG. IRU informed that their understanding is that EVSC has improved with time, because there is no operator complaints anymore. CLEPA informed that the EVSC suppliers improved the compromises safety/drivability along the years.

The Secretary raised the decision of the group for the definition of a dolly. Volvo emphasized the dolly’s function of a link.

The Secretary recalled the decisions made under item 6 of the report:

- “Group to define the necessary messages/information that need to be transferred back and forward
- Addition of a requirement that a towing trailer must have the capability of transmitting the message/information defined above”.

Conclusion: the minutes were approved with no change

4. **Guidance received from GRRF-79** (February 2015)

The Chair informed about the guidance received from GRRF:

- Agreement to limit the scope of the working group to the rigid drawbar dollies.
- Recommendation to keep the definition within UN R13. If the dolly is considered as a special trailer, i.e. considered a new category of vehicle (e.g. O5), then the definition should be in RE3, if on the contrary it is considered a normal trailer, then the definition should be in the regulation.

5. **Review of situation in different countries**

5.1. **Australia:** Situation in Sweden after new regulation adopted by Government

The Chair informed about the situation in AUS (ARTSA conference in AUS), where the whole transport industry (trucks, operators, Insurance, etc.) was present with 45 presentations. The Chair was ready to provide the presentations to those interested experts

Issues of haul Industry:

1. Driver fatigue
2. Rollover accidents, where there is timber industry, and live stock (animals) transport with 2-deck vehicles. AUS really plan to rely on EVSC. IRU informed that their experience of introduction of EVSC in N showed interests in education of the driver (the driver noticed too high speed).
3. Trailers detaching from the towing vehicles. Proposals to solve that by secondary coupling

PBS system (Performance Based Standard) is an assessment by consulting companies (cornering, etc): approval to PBS provides access to the road network, subject to a decision of the local councils. There are currently 565 local councils in Australia.

OICA found interesting to investigate the AUS way of turning from the UN system (separate approval of the elements of a combination, that must be compatible to each other), to the PBS system where the full combination is approved.

This system exists in NZ, AUS, CND, some of USA, Latin America, etc.

The Chair concluded that the AUS model is

- Too complex for having a complete overview
- Yet it works quite well
- Some of their experience can be taken into account for the work of this informal group.

5.2. **Sweden**

The government did not follow the proposal from road administration/transport agency, and agreed to increase the weight to 64 tons, with increasing the length by 2m (27,25 m), as a 1st step. In addition, the government should look at the next step, 74 tons/30 m. The responsibility of the consequences are given to the road administration.

Mrs. Larsson presented the situation in Sweden:

Any vehicle is permitted up to 80 tons, but below 40 km/h. Hence there is a need for a change in the weight/length regulation, or in the speed regulation.

5.3. **Republic of Korea**

There is currently no regulation for such combinations. ROK is currently considering upgrading their regulations for application of MVCs.

6. **Items for discussion:**

6.1. Review of document MVC-02-03

Mr. Teyssier re-introduced the document MVC-02-03-Rev.1

Scope:

- There was a debate to keep some vehicles currently in use in the NL, similar to a Combination 5 from the ISO standard. Additional axles, rigidly attached to the rear of the semi-trailer
- Agreed to open the scope to other vehicles and combinations than those of ISO standards (see NL combinations above).

Definition of a dolly:

- Acknowledgement that the definitions must be in the particular regulations rather than in RE3.
- Debate on rigid/hinged/fixed dollies. Agreement to establish a task force for defining the different sub-types of dollies. Leader: Mr. B. Svensson (VGB). Task: proposing definitions for the sub-types of dollies. Main criteria: load transfer, coupling, steering. Interested experts to approach Mr. Svensson.

Truck intended for towing multiple trailers:

- Debate on the capacity of the 1st trailer to self-identify as such: if the truck is an EBS vehicle, then the 1st trailer can receive the message from the truck. If not, the 1st trailer must self-identify as 1st trailer.

Electric and pneumatic control lines: item of max length closed.

Communication between vehicles:

- Debate on the necessity to define a router (repeater). There is no real need to define the technical solution of the trailer. It is only important that the trailer properly transmit the signals rearward and forward, taking into account the loss of signals at each connection. This seems to be prescribed in ISO11992. Mr. Adam committed to check ISO11992 in this regard for the next meeting, in order to know whether and how it is necessary to define a router/repeater in UN R13, with the nature/type of messages to be transferred through the trailers. Agreement that the regulation does not address the technical solution, rather the functional performance from the truck to the last trailer.

Power supply dimensioning:

- Debate on air transmission:
 - o Air dryer can be necessary in very cold countries, but not defined in current text of UN R13.
 - o Debate on the transmission of pressure: need to ensure that the last trailer is filled with sufficient air pressure, and soon enough for the normal operation of the vehicle at the 1st start.
 - o Conclusion: Annex 7 sufficiently covers this point.
- Electric supply: max current and consumption at the time of ignition, when there is a self-check of all valves and components. This cannot occur in practice in normal driving conditions. It may happen that the electric management system limit the electric power supply at the time of ignition, because the power supply is the battery during the time before the engine is running. A message to the driver is foreseen for this case. CLEPA (Mr. Adam) committed to cross check in ISO7638 the number of trailers possible with regard to the current provisions concerning the cross section of the wires, for EBS and ABS vehicles (paragraph 5.2.2.17.2.).

Parking brake:

- Principle:
 - o 12% requirement for the combinations.
 - o Current CLEPA proposal proposes increasing the requirements to the case of slippery conditions (automatic application of the trailer brakes together with the towing vehicle parking brake. Need for the possibility of applying the trailer brakes separately for permitting the load sensor to function correctly. In addition, the timber vehicles may create small holes under their wheels when moving forward/backward. "Nordic" process:

permitting an actuation of the trailer parking brake separately. Current text permits the Nordic solution. Industry proposes adding a requirement such that MVCs are equipped with an additional control for actuating the additional trailers' service brakes separately. This control can only be operated if the parking brake is applied.

- NL: Industry proposal should not be restricted to the MVC. In addition, if it is already permitted today, why adding a provision?
- The experts had a debate about the above possible solution
- Conclusion: deletion of paragraph 5.2.1.34 from the Industry proposal (MVC-04-03). Yet concern that the vehicle may have to stay in a slope of 12%, and left unattended for exceptional reason (accident, queue, etc.)
- MVC-04-03:
 - Paragraph 2.3.2.: power-driven vehicle is understood as NOT being a power-driven dolly. The limitation to "one" trailer was deleted. Paragraph 2 of Annex 4 only applies to power-driven vehicles, hence the additional requirement does not apply to trailers.
 - Paragraph 2.3.2.1.: deleted.
 - Still to consider the possibility of mandating electric control line.
 - Debate on a general acceptance, or indication, of the possibility of attaching more than one trailer.

Warning to driver:

- General principle: only need to know that "one" trailer is intervening or failing.
- Debate: user demand to have the information about which trailer is in question. Yet even knowing the relevant trailer, there is no clue on the relevant wheel/axle.
- However there is no need for such details as a regulatory requirement.
- Conclusion: Principle confirmed. The option of identifying the trailer remains possible.

Stability:

- There was a debate on the general principle of the master/slave relation:
 - The possibility that the last trailer informs that the speed is too high could be a good idea. Yet this could be understood as a command to activate the truck brakes
 - There was a debate on the possibility to transfer the information of last trailer EVSC intervention to the front vehicles.
 - Conclusion: technical impact and feasibility on trailers to be documented. CLEPA to provide input
- EVSC directional control
 - No comment
- EVSC Mandatory or optional?
 - Debate on possible unstable situation created by a last trailer not equipped with stability system.
 - Pneumatic signal would anyway be transmitted to the last trailer.
 - Conclusion: Mr. Adam to confirm at next meeting
- EVSC for dollies?
 - Debate: the dolly should not be the 1st vehicle to activate the EVSC. The 1st action is to brake the following trailer. Then if not sufficient, the dolly can activate its EVSC.
 - All dollies currently have electric control line, hence EVSC is currently standard on the dollies.
 - Conclusion: EVSC is already prescribed, no need for further requirements.

6.2. Braking performance of Dolly

- 2 possible approaches:
 - Dolly is a "tractor-like" towing trailer, thus 50% for type 0, vs.

- Dolly+semi-trailer should brake as good as a full trailer (50%), thus dolly should brake ~55% since semi-trailer is only 45%
- Debate on Type 0 requirements (value of deceleration)
 - Need to address the dynamic load transfer
 - The increase of braking performance of the truck is taken into account in the compatibility provisions.
 - 95% of the braking actions are at low rate, hence mandating 55% on the dolly would jeopardise the braking capability in normal driving conditions, especially on low adhesion.
 - In case of semi-trailer, or dolly with semi-trailer, EBS does not take into account dynamic effects, it freezes the load information before it applies the brakes. In case of full trailer, there is input of the dynamic effects. Hence, a semi with a dolly cannot be assimilated to a full trailer.
 - Conclusion: CLEPA proposal requires 50% for Type 0 test. Take that approach as a base for the moment, subject to good argument against at the next meeting.
- Debate on compatibility bands for dollies
 - CLEPA proposal suggests using the compatibility band of a central axle trailer.
 - Volvo presented data about static load figures on usual combinations.
 - Conclusion: Take that approach as a base for the moment, subject to good argument against at the next meeting. OICA/CLEPA to be ready to further justify the CLEPA approach; all to verify the relevancy of the approach.

6.3. Studies conducted in Norway

Mr. Ove Gartrud (MoRek a.s.), as a supplier of axles for trailers, presented the Norwegian campaign together with Mr. Hjertvik (Norway). He explained the campaign currently conducted in Norway on the compatibility tractor/trailer. While the report is not yet finished, Norway hopes to finalize it by the end of the year 2105.

6.4. Studies conducted in Sweden

Volvo presented the document MVC-04-02-Rev.1

Presentation relevant for the debate on electric control line vs. pneumatic control line.

Mr. Adam informed that also for roll-over control, some electric control line on the dolly would be beneficial.

Conclusion: at least the dolly must be equipped with electric control line.

Another movie was shown with a 82 tons combination, with 5,9 m/s², stable braking.

6.5. Taking over coupling issues from GRRF-R55 informal group

The Chair recalled that coupling is currently addressed at the GRRF-R55 informal group. The Chair transmitted a request from the GRRF-R55 informal group to identify which problems are of concern to the MVC informal group such that they are in parallel addressed by the R55 informal group. Mr. Svensson was of the opinion that the coupling experts are responsible for coupling. This was confirmed by NL. OICA recalled the warm welcome to the results of the R55 informal group at the last GRRF last session. There was a consensus that the best solution is to let the R55 informal group continue to address the items related to MVC.

Conclusion:

- Chair to communicate the output to R55 informal group Chair together with Mr. Klöckner (D)

7. Review of document MVC-01-06e (GRRF-66-08 – Amended)

This document was not reviewed in details.

8. Other business

9. Date and place of next meetings

The experts agreed to aim for an informal document for the February 2016 GRRF session (GRRF-81), for taking note of the comments collected at GRRF, then producing an official document for the September 2016 GRRF session (GRRF-82).

Conclusion: MVC-05 to be organized on 26 October (starting at 11:00 am) - 27 October in Brussels possibly at the CLEPA offices