

**Report of the 8th ad-hoc GRRF meeting on EVSC
Paris 29-31 March 2006.**

Chairman: Mr. Laszlo PALKOVICS

Secretary Mr. Peter Koleszar

Participants: see list of participants **EVSC06-10**.

Associated documents: *EVSC05-38 Rev2 (7th meeting document)*
EVSC06-06 Protocol of 7th (Munich) meeting
EVSC06-11 KB accident analysis
EVSC06-12 Agenda for 8th (Paris) meeting
*EVSC06-13 8th meeting working document with
simulation subgroup comments*
EVSC06-14 Russian proposal
EVSC06-16 Bosch ESP testing presentation
EVSC06-17 PSA Yaw-rate sensor measurements

Meeting start: 13:00, 29 March 2006

The meeting was opened by Mr. Paul Jennison. He apologized on behalf of Mr. Palkovics who could come only on 30. March, and during Mr. Palkovics absence it was agreed that Mr. Jennison would act as the Chairman.

The chairman reviewed the agenda to come to a more consistent program.

Delegates accepted the protocol of the Munich meeting without modification.

Mr. Jennison presented the results of an accident types analysis (document EVSC06-11) based primarily on German Government data. Although the current structure of accident categorization in the German Government data does not enable a definitive categorisation of the accidents regarding "ESP cases", it does provide an indication of ESP effectiveness and related costs. Due to the small number of accidents in certain categories the view was expressed that the % values given do not create plausible and representative statistics.

Mr. Ruijs summarized the results of the simulation subgroup meeting held on 2nd March in Delft. Because of the big difference between passenger cars and trucks a general approach for them was not generated. Regarding the dynamic demonstration: in some vehicles (mainly passenger cars) the EVSC function can not be turned OFF. Also disabling the function would create a high risk of accident/roll-over, while the installation of the outriggers on passenger cars would alter the dynamic behaviour of the vehicle substantially. So in some vehicles the dynamic demonstration should not include

manoeuvres executed with disabled EVSC function. The loading conditions for the different vehicles have to be defined; fixed load should be used even for the tank vehicles. Simulation and demonstration tests should be the same to favour the system/vehicle manufacturers. ISO references for the recommended tests should be handled with care: ISO tests may change while the regulation would use the “old” ISO test. Also every manufacturer has own tests that may differ from the ISO. The subgroup recommended some other changes that were dealt with in details during the text discussion of the amendment.

There was a discussion on the accuracy of the simulation. Representatives of Japanese government insisted to define figures for simulation accuracy.

Mr. Fenaux pointed out that definition of accuracy (5%, 10%, etc.) is not possible today. Tests differ, and it is hard to define a unique accuracy that covers all vehicle situations, not only linear but also nonlinear and transient behaviour. Sometimes e.g. 5% is small in one aspect and too large in another.

Proposed text is “values are comparable”.

Mr. Majewski, Mr. Fenaux, Mr. Gaupp and Mr. de Haes: it is easy to distinguish between good and poor simulation by comparing the results with a real vehicle test. The industry is very much interested in making the best possible simulation; there is no need to prove this. Still the working group has to be consistent and try to convince GRRF - make measurements, simulations as justification together with the proposal – that at the moment it is not possible to define specific tests and/or values for required accuracy.

Mr. Fenaux summarized the results of the measurements executed with the Yaw-rate sensors. Using a laboratory yaw-rate sensor as a reference, the serial ESP yaw-rate sensor (from Bosch) had a very good precision, with ISO error smaller than 1%, which is a very good result and is acceptable. It is hard, but some could find a complicated test method to evaluate yaw-rate sensors – requirement for testing - but that also mean defining measurement quality.

The indirect measurement of yaw-rate (with the help of two lateral acceleration sensors) resulted bigger errors (approx. twice as big), still the text of proposal does not exclude the estimation of the yaw-rate from measured sensor values. This is for softening the design specification that would mean direct measurement of the yaw-rate.

The summary of these measurements show that at this point there is no need of simulating the sensors in the vehicle simulation environment.

Mr. Bittner presented a few slides of a presentation originally made for another occasion. This contains the procedure of ESP testing at Bosch. The conclusion of these tests is that to have clear performance requirements is almost impossible at the moment, and the most important factor during the testing is the subjective assessment. These tests show what the system is capable of, and even with two different ESP setting the vehicle behaviour differs greatly while the vehicle still maintains its stability. Bosch is waiting for the first NHTSA test results.

The M1 requirement document (EVSC06-09) was not approved to be included in the text. M1/N1 vehicles are not the scope of the group.

The group will focus on the heavy vehicles if possible, trying to bring the passenger cars in line with it. The amendment of R13H has to be done anyway in the future.

Mr. Bocharov presented the proposal from the Russian Federation. The proposal was to include in the text: EVSC function should not affect negatively the vehicle behaviour. Specialists from Russian Federation tested vehicles with EVSC enabled and disabled, and claim that under certain tests the EVSC function has negative effect on the vehicle behaviour.

Group members rejected this proposal, since the definition of EVSC says: “EVSC improves dynamic stability of the vehicle” and if there was no improvement then it could not be called an EVSC system.

Mr. Bocharov and experts from Russian Federation were asked if they could provide details tests methods and results where the negative impact of the EVSC was seen.

Mr. Palkovics summarised his discussion with Mr. Lesage. The French specialists think the optimal solution would be the performance criteria. They understand, that the working group suggests the best solution available at the moment: have the current proposal – without performance criteria – now and continuously think about the possible requirements and the metrics, and change the EVSC document in the future according to the new results. Mr. Lesage thinks the EVSC proposal is not so urgent, so he would rather wait for the performance criteria. He would like to see defined vehicle configuration(s) in the text, and also he questioned the R111 – or R13 Annex 21 issue (where to put the EVSC proposal) and whether Annex 18 was not more appropriate.

The delegates discussed the Annex 18 – 21 – R111 issue. Everybody agreed on making the EVSC proposal as Annex 21.

Then the group reviewed the full text of the EVSC proposal (8th meeting document EVSC06-13 that contains the document EVSC05-38 Rev2 (the result of the Munich meeting) with the subsequent comments and proposals from the simulation subgroup meeting and EVSC06-14 document with the proposal of Russian Federation. With the help of this document each of the modifications were discussed.

Some major changes: Annex 21 “when mandated” was deleted from the text, manufacturers can approve their EVSC systems also on those vehicles where the EVSC function is not mandatory.

As indication that the text will be changed as soon as unified test methods and/or performance criteria is available (proposal of the Japanese delegates), added text “until unified test procedures are agreed” to some paragraphs.

The simulation part has been split to three appendices: Appendix 1 describes the use of the simulation, Appendix 2 describes the simulation tool and its validation and Appendix 3 deals with the test report of the simulation. The simulation must not be a general dynamic simulator; it can be also validated only for one or more specific manoeuvres. The validation is performed by the developers or EVSC manufacturers, Technical Services will only check the test results.

Mr. Brett's proposal that manufacturers should submit to Technical Services a summary of the executed tests with detailed description was rejected, since that would not give more needed information and the test data will be supplied anyway.

Mr. Adam: he does not agree to have only one axle braked during roll-over situation – this would mean only one wheel on the ground, since the wheel on the other side is in the air. Thus the one available wheel on the ground has to brake the whole combination. He would like to have at least two axles in the proposal.

This proposal was rejected by the group. Justification: the described proposal contains no performance criteria at the moment, and the group has to stick to minimal design requirement. Starting now with low-end description, the text may be changed later if the future performance criteria can not be fulfilled with this configuration.

Some other minor changes and wording proposals have been discussed, some accepted some rejected.

Mr. Jennison will revise the text of the proposal and it will be circulated for further comment. If there is no comment then there will not be a further meeting and the document will be sent - correctly formatted - 'as is' to Geneva for the next GRRF meeting.

The chairman then closed the meeting thanking all participants for the contributions and their positive attitude.

The next working group meeting – if necessary - will be in Frankfurt (VDA) on 22.05.2006 from 10:00 to 17:00.

Enclosed documents and presentations:

EVSC05-38 Rev3 Proposed amendments to ECE Reg 13

EVSC06-10 List of participants

EVSC06-12 Rev1 Final agenda Paris

EVSC06-16 Bosch ESP testing presentation

EVSC06-17 PSA Yaw-rate sensor measurements

Peter Koleszar
Secretary EVSC ad hoc working group