

GRSP INFORMAL GROUP ON PEDESTRIAN SAFETY

10th meeting

Washington DC, 16-19 January 2006

Draft detailed meeting minutes:

Part 1: Government meeting (attendance: governments only)

Monday January 16, 9:00 – 12:30

Mr Mizuno opened the meeting and explained this government meeting was set up to clear some political issues. He went on to explain this morning's proposed agenda. The first item is to confirm the scope which relates to the vehicles and the vehicle weight. The second item is to reflect on the need to work with options / modules keeping in mind that a single unified proposal is the best. The third item relates to windscreen testing where the main question is whether to retain the test or not given the problems related to the braking of the windscreen and the sensor issue. Mr Mizuno said that of course other items can be discussed as well (the request for extra justification from NHTSA). Mr Mizuno explained that our proposal must be finalised and sent to GRSP in May as an official document. This is why the meeting is split in several parts and why there is a separate part dealing with the preamble only. At the same time OICA is having its own pre-meeting to prepare for the official meeting. Ms Fujita appreciates the government only meeting as it is a good way to advance the issues.

1. Confirmation of scope

Mr Mizuno explained there is an additional proposal from EC to exclude cars below 500 kg. Mr Saul said that nationally they have similar cars but these are limited by speed. Ms Fujita asked why the vehicles would need to be excluded. Mr Doyle said that the tests are related to passenger cars and not related to small light weight vehicles. Mr Van der Plas explained that under the 58 Agreement these are motorcycles (L6) and in this gtr they would suddenly be part of the passenger car category. The proposal was agreed basically but we will come back to it in the next part of the meeting.

2. Need for modules / options

See discussion under item 3.

3. Need for windscreen head testing

Mr Mizuno asked if windscreen head testing needs to be included or not.

Mr Saul asked in which regions windscreen testing is included. Mr Doyle explained that the EU Phase 2 does not include any windscreen testing. Mr Kubota explained that today the Japanese requirements do not include windscreen testing, only J-NCAP includes it. Japan will follow the gtr and is ready to include or exclude the windscreen testing. Mr Youn explained that Korea does not have any regulation yet. Mr Yoon explained Korea is still investigating and is also looking into windscreen testing. So far they have not experienced any problems with their windscreen testing, if there are problems experienced by others, they would like to know this. Mr Nishida explained that the reason not to include in current Japanese legislation is because the technology to reduce the impact is not yet established. Secondly the likelihood of pedestrian to windscreen impact is smaller than impacts to the bonnet. Mr Doyle added that in Europe it was concluded that the windscreen borders are very difficult to work with. It was kept in Phase 1 for monitoring but not in Phase 2. The Phase 1 test is just to collect info which maybe or maybe not will offer some possibilities in future. Mr Mizuno explained that the windscreen borders are very dangerous but very difficult to find countermeasures for whilst the rest of the windscreen is generally very safe. IHRA included windscreen testing but only on the basis of accident data. Mr Yoon asked if Japan experienced problems with measuring the accelerations. Mr Konosu said that with damped accelerometer there is no problem. Ms Fujita said that the current gtr text includes the windscreen but excludes the borders. She asked how big of the population hits the windscreen. Mr Césari said that a big part of the population does hit the windscreen but very few of them produce injuries. Ms Fujita asked by including the windscreen we are not excluding a large part of the fatalities. Mr Saul said this is correct, about 20% are related to windscreen and bonnet. In the US the windscreen was excluded because they do not see any countermeasures. This came down to 6% so about 15% of injuries was

related to windscreen impacts although these injuries may be low. Ms Fujita asked when the test is excluded what would be the basis? What is our position on the OICA claim that there is testing variability. Mr Konosu said that they did some comparison between JARI and manufacturer data and the results were the same. Maybe the problem lies in the quality of the windscreen. Ms Fujita said we do not have to agree there is variability. Mr Césari said the justification should be that for the areas that are problematic for pedestrians there are no countermeasures and for the areas which are no problem for pedestrians there is no need for a test. The justification should not be the test variability as the windscreens were not designed for this test. Mr Mizuno added that EURO-NCAP and J-NCAP include windscreen testing anyway, so this can be mentioned as well. He added that if a Contracting Party wants to include windscreen testing, they can do this nationally on top of the gtr. Mr Doyle said this is another discussion and the EC believes it is not as clear as that. Mr Doyle said, the feeling in this meeting seems to be not to include windscreen testing. He agrees to the justification as spelled out by Mr Césari. Additionally, the preamble can suggest looking at windscreen testing at a later stage. Mr Mizuno asked if everyone can agree with this: exclude windscreen testing from gtr, include in preamble the issues and the need to look further into this. Mr Saul said this is agreeable. Mr Yoon said close to the lower windscreen reference line, this is a very stiff area. He is concerned that the target population is decreased. Mr Doyle agreed that in the lower part of the windscreen there is a higher potential of impact. But that area is already largely excluded. Above that area, one is in the general area as well which is less of a concern. If some Contracting Parties do want to include the test, then the alternative is to include the test as an option to the gtr. This is acceptable for the EC as well. Mr Yoon said that accident data shows that head impact with the windshield is a severe problem in Korea hence the need to include it. Mr Lorenz said that German accident data shows a large amount of the injuries do relate to the bottom part of the windscreen. In EURO-NCAP there is a lot of data, and the variability is not seen with the 4,8 kg headform. Also there is no variability if there is a hard point behind the windscreen. Variability is only seen when testing in the middle of the windscreen. Windscreen testing will only make sense if we address the lower area, but as this is not included, the test itself does not make sense. Mr Saul said that if the gtr excludes the windscreen at this stage, how can it come back in the future: this would be by an amendment to the gtr through WP29. It is not his understanding that CP's can add extra requirements on top of the gtr. Mr Doyle said that if a CP wishes to impose extra testing on top of a gtr, this may result in WTO action. In order to overcome this, it needs to be included as an option. However, there are still questions on the use of options in a gtr. Mr Saul said if there are options in a gtr, they still have to meet the 98 Agreement on feasibility, practicability, ... do we have the data to make the case? What happens when there are options in a gtr when implementing the gtr into national legislation? All justification needs to be in the preamble also for the option. Mr Davis explained the draft Canadian position to be presented at next WP29 on what options / modules should be. The document explains that an option has different requirements for one provision. It may restrict your vehicle to not being a global vehicle. A module is a unique requirement (a whole set of requirements) which a CP may adopt or not. Canada will need a module for the lower leg testing. We do not see how pedestrian safety will get through without the use of modules, it may even be that the gtr is a set of 3 or 4 modules. Ms Fujita asked if a CP has to agree that all of these modules are technically sound before voting for the gtr. Mr Davis answered that the CP could vote in favour of the gtr but not apply the module nationally. He added that for example cost benefit ratios might differ between CP's and may be the reason to apply or not to apply a module. Ms Fujita asked what if a set of requirements is not agreeable for technical reasons for one CP, can that CP vote positively for the gtr? This is a serious issue and that is why the 98 Agreement requirements also has to apply to options / modules. Mr Saul added this brings us back to the windscreen testing: do we have countermeasures for the areas of concern? If we don't have them now, then we have to exclude it and we have to come back to it at a later time when there is a breakthrough in technology.

Mr Mizuno concluded that except for Korea everyone can agree not to include the windscreen test. Mr Yoon said that without windscreen testing, the cost / benefit will be completely different as well. Additionally in Korea there are many small cars, so if no windscreen testing is included, only child head testing remains. This means the justification is completely gone. Mr Césari said that a large part of fatalities are above the speed where we can do something on a car. One should look at the global saving rate of fatality and injuries. For example, almost no one is killed by leg injuries. However, we can reduce the severity of the injuries. Mr Yoon said he can agree but the regulation should be the best possible, and can not understand why to exclude the windscreen testing. Mr Kubota said that if we exclude the windscreen test, it should be included in the preamble and explained that some CP's may introduce it nationally. Mr Doyle said this was discussed in one of the first meetings in Tokyo. He added that if it is part of the gtr (as option or module), it should be based on feasibility. Mr Mizuno summarised that there are two possibilities: include or exclude windscreen testing. When included, it can be module or exclude and allow Korea to include it nationally. Mr Van der Plas said that if we exclude it from the gtr but want to allow Korea to introduce it nationally, then we can probably do this by specifically excluding the windscreen from the scope of the gtr.

4. Request for extra justification by US (mail of Mr Saul dd 3/1)

Mr Césari said that a regulation is always a compromise between the knowledge available, what is feasible for industry and how safety can be best approved. For many questions on the table now, there is no purely scientific justification. For example, the front or side impact dummy is completely identical to a human. The dummy has 3 or

4 ribs whilst the human has 12, so what is the justification? So many questions raised will not have a purely scientific justification. Ms Fujita understands and said that we need to find an answer that justifies the proposal, we need to define thresholds that show as of which threshold the benefits will sort effect. NHTSA needs to show that there is science behind it as the new requirements mean extra costs to manufacturers and customers.

Part 2: Official gtr meeting (attendance: all)

Monday January 16, 14:00 – 18:00

Tuesday January 17, 9:00 – 18:00

(Wednesday January 18, 9:00 - ?)

1. Welcome

The chairman, Mr Mizuno opened the meeting and welcomed everyone. He thanked the Alliance and NHTSA for all the arrangements and the setting up of the meeting room. He stressed that we have many tasks which we have yet to solve and we have to finalize our proposal for submission to GRSP. He expressed the hope, that the additional information and evidence will satisfy all Contracting Parties of the 1998 Agreement.

Mr Saul welcomed everyone to Washington and thanked the Alliance for hosting the meeting.

Mr Bilkhu welcomed everyone on behalf of the Alliance.

2. Adoption of the agenda INF GR / PS / 173

The agenda was adopted without amendments.

3. Review of the minutes of the 9th meeting INF GR / PS / 171

Mr Van der Plas explained that some small changes were forwarded by OICA. The minutes were adopted with these changes and will be distributed as 171 Rev 1.

4. Report of GRSP/38 discussion

Mr Mizuno reported on the latest developments during the meeting earlier this week. The intention is to have an official draft gtr ready in time before next GRSP in order to allow next GRSP to adopt the gtr. Mr Van der Plas briefed GRSP on the agreed action plan for the January meeting. The chair asked what kind of extra data is necessary and how this will be brought to the meeting. Mr Mizuno said that already many items have been finalised. The group is not requesting new research but is only trying to collect research. The chair requested the EU to submit another status report to the AC3 after the January meeting.

Informal document GRSP-38-16 of the US was tabled. This fully supports the pedestrian gtr as the pedestrian safety issue is becoming more and more important in the US because of the raise in consumer awareness. The US asked for baseline data on how the current fleet performs.

Informal document GRSP-38-12 of Japan explained the status of FLEXPLI TEG. The time schedule is still to finalise end 2007. Japan asked for confirmation of the FLEXPLI TEG status: is it under GRSP or under the informal group. The UNECE secretariat will check the mandate of the INF GR to see if it includes the FLEXPLI. This will be confirmed during May GRSP.

5. Review of action items of the 9th meeting INF GR / PS / 171

Mr Van der Plas, reminded the group of the documents distributed prior to the meeting and relating to the agenda:

INF GR/PS/161 Rev 1	EU proposed amendments to 143 Rev 1
INF GR/PS/173	Provisional agenda for the 10th meeting
INF GR/PS/174	Lower leg tests - EuroNCAP data - OICA presentation for Jan 06 meeting
INF GR/PS/175	Bumper Reference Lines - OICA presentation for Jan 06 meeting
INF GR/PS/176	Headform test results - OICA presentation for Jan 06 meeting
INF GR/PS/177	IHRA-PS Proposal for the Moment of Inertia of GTR Adult-Child Headform Impactors
INF GR/PS/178	Expected life-saving effect GTR Head Japan
INF GR/PS/179	Ongoing Researches on Pedestrian Leg Injuries Assessment

Mr Mizuno also referred to the letter from NHTSA (mail dd 3/1) requesting for more background data.

Mr Kinsky said that 174 and 175 are slightly amended and will be re-circulated as revised.

6. Review the draft gtr (INF GR / PS / 161 Rev 1)

Mr Césari said this is the last time we will come back to the gtr text so will have to finalise it completely within this meeting.

§1.1 Mr Saul asked if we need to review this in line with excluding the windscreen testing. Mr Saul said this should be done later in the text. Ms Fujita said the intent should be very clear. Mr Mizuno briefly explained the discussions of this morning: include windscreen test or not. The majority agreed to exclude the windscreen test because for the windscreen borders there are no countermeasures and for the windscreen centre there is no problem (low HIC levels

already). Additionally industry showed repeatability problems with the windscreen tests. However one Contracting Party (CP) wants to include the windscreen test as they see a lot of benefit. There were two possible solutions: either include as module or reduce the scope by excluding the windscreen so that CP's can introduce windscreen testing nationally. Mr Van der Straaten said that purpose and scope do not detail the parts of the vehicles. This is to be done later in the text. It is not necessary to define everything in these first general paragraphs. Mr Pichon suggested saying "front structure" as there is a definition on front structure which can exclude the windscreen. Mr Saul said it would be best to clarify it already as much as possible. Mr Davis suggested some small changes to avoid saying it addresses ""areas identified most frequently. Mr Doyle said that §3.14 clearly describes what a "front structure" is. This should include a sentence that specifically excludes the windscreen. Mr Césari said we first of all need to decide what to do with windscreen testing. Ms Fujita suggested coming back to this later. This was agreed. Mr Kinsky recalled the group of the OICA presentations during last meeting, concluding that there is no reason including windscreen testing. Mr Bilkhu said that the EC Regulation includes a definition of the front structure that excludes the windscreen.

Mr Césari summarised the possibilities: exclude the windscreen or have the windscreen testing as a separate module.

He explained that when excluding the windscreen from the gtr CP's can introduce such testing nationally. Mr Lukaszewicz prefers to keep the windscreen test in the gtr as a module. CP's can refer to the module when they want, the module will set harmonised requirements. It could also serve as basis for a possible EU Phase 3. Mr Youn agrees with Germany. A module offers the possibility to have harmonised requirements. Ms Fujita explained there is no need for a module at this stage and it is not in line with harmonisation. Either the test is included in the gtr or not. Mr Van der Straaten supported the US. A module only makes sense when there is common agreement on the test when CP's do not see the need for it in their market. This proposal does not fit those requirements. The windscreen borders are a problem but there are no countermeasures. The centre of the windscreen is no problem so there is no need to test it. And there are big questions of repeatability in the test. So this test does not fulfil the requirements to be a module. Mr Doyle said that at the moment they would have problems excepting a windscreen test. They do not want to see the windscreen test in the gtr but if it needs to be in it should be as a module. Mr Nishida said they want to exclude the windscreen from the gtr. Mr Pichon also prefers not to have a module and delete the windscreen from the gtr. Mr Kinsky agreed with Mr Van der Straaten but suggested that the existing proposal could in some form be put on the UNECE website so that it could serve as basis for anyone who wants to look at it nationally. Mr Davis said that if it is included it needs to be in a module so that Canada can exclude it. However, it would be better not to include it at this time. Mr Césari summarised that 2 CP's favour a module. All others feel that today we are not ready to incorporate the test. Those CP's who want to do it nationally could use the work already done. He asked if it could be agreed to exclude the windscreen and clearly explain the reasons in the preamble. He added that when working with modules a lot of redrafting is necessary and this may not be possible within our timeframe. Mr Youn said the preamble should clearly explain the reasons and state that CP's can do this nationally. This was agreed. The text was agreed to read: "certain parts of the front of vehicles which have been identified...".

§2. Based on the discussion under §3.12. it was agreed to redraft the text as: " and of category 2 with a gross vehicle mass not exceeding 2.5 tonnes which forward of the A-pillars have the same general structure and shape as a pre-existing category 1-1 vehicle. All definitions ...". Ms Fujita requested to come back to this as they needed to think about the small vehicles (< 0.5 tonnes). Mr Saul supported and suggested to leave the complete § in square brackets as they need data to decide on the scope, as well the weight limit for category 1-1 and category 2 vehicles as the weight limit of the small vehicles as this may have an effect on the target population. Also it needs to be studied what a pre-existing vehicle means under a self certification procedure. Mr Davis explained that for Canada the pre-existing vehicle does not have any meaning. Ms Fujita agreed this is also the case in the US. Mr Kinsky said this means we have to restart the discussion from the beginning. Existing vehicles can not comply so we need to avoid that they have to comply. That is the background why derivatives of vehicles are protected. Mr Césari said that the tests are validated on passenger cars below 2.5 tonnes and there is no guarantee that the tests will work on larger vehicles. Mr Césari explained that the preamble already talks about these issues in details. The preamble also says that domestic regulation may be extended provided detailed justification regarding applicability and validation of the requirements is offered. Mr Saul said that the applicability needs to be transposed nationally so the gtr application should not be too specific to allow for national solutions that may be different from region to region. Mr Césari suggested to keep the wording as it is unless there is another proposal before the end of the meeting. Mr Saul explained that the gtr can apply to light trucks and vans. The weight limit of 2,5 t needs to be studied further. For the small vehicles below 500 kg, it is necessary to know how large the part of the fleet this represents and how many fatalities they represent. Mr Van der Plas explained that these vehicles are not passenger cars but motorcycles. The suddenly fall under this scope as Category 1-1 is defined as a four wheel vehicle. Hence the need to add a new definition to exclude them. Mr Saul said in the US these would be passenger cars. They are exempted through speed limitations. Mr Doyle said that having an upper and lower weight limit is no problem and Contracting Parties can extend above and beyond based on further test validation. Mr Van der Plas explained that SR1 does not include the

L6-L7 categories as it was impossible to find agreement on such definitions as some Contracting Parties did not have the L6 and L7 category nationally and could not adopt the SR1 when the L6-L7 category is included. Mr Saul suggested that to exclude passenger cars that do not have to meet occupant protection standards like front and side impact. Mr Mizuno concluded the brackets will be deleted and the 500 kg kept. Contracting Parties can extend the category if necessary and if the test is validated. Mr Van der Straaten suggested to rephrase the text accordingly so that the core of the vehicles that would fall under this gtr is clear. Mr Saul can provisionally agree but needs to check what it means for the US market fleet. It was agreed to keep the whole application issue in square brackets as it depends if CP's are allowed to expand or limit the scope upon implementation. This is a decision of AC3. He added that two fundamental questions need to be answered: can a scope be limited or expanded nationally and secondly if we keep the limit of 0,5 to 2,5 tonnes will this include vehicles which should not be and vice versa. Mr Van der Straaten reminded that the concept is already included in gtr 1. A certain scope was defined and the preamble explained that the scope can be restricted. This was already reviewed at AC3 and is acceptable. He is not in favour of keeping the scope in square brackets. The only new issue is the 0,5 tonnes which indeed may need further consideration before GRSP. Mr Saul asked if so, can we then not take any weight limitation out and explain in the preamble that the scope can be restricted? Mr Van der Straaten said this would bring us back to the old matrix which was luckily taken out. A core application is necessary otherwise there is no gtr. Ms Fujita asked how this is different to expanding the scope. Mr Van der Straaten said the difference is fundamental as without a core application everything is open: expanding and limiting. Mr Kinsky said the tests were never validated above 2,5 tonnes so we have no idea if the test results are relevant. The preamble also explains that when expanding the scope, the necessary validation needs to be performed. Mr Doyle quoted from the gtr 1 on the approach taken. The preamble is very specific on what can and can not be done. Mr Van der Straaten said that gtr 1 was harmonising existing standards world wide. The US had a larger scope so the tests were already validated. The 98 Agreement says that any requirement has to be based on sound science. As there is no proof the tests are validated above 2,5 tonnes, the scope should be limited. Mr Saul said they were validated and evidence was shown in INF GR / PS / 166. Mr Kinsky said the test was at a lower speed and was not a validation test but a vehicle test. He explained that EEVC went through a complete research phase based on accident research and PMHS in order to validate the test. The tests were developed only for passenger cars up to 2,5 tonnes. Mr Lukaszewicz confirmed that the test requirements are not validated for the L6-L7 categories of vehicles either. Mr Lorenz explained that some of the US vehicles would need a thorax test and not an upper leg test to bonnet leading edge test. This is not addressed in this gtr. If the scope needs to address pick-up trucks or larger SUV's then it will be very difficult to justify the tests for these cars. Mr Mizuno said that IHRA is investigating this issue and also looking at the US fleet. Unfortunately the US did not show any interest and did not send any expert to participate. Mr Doyle proposed to put the weights in square brackets and in addition say that CP's may decide to apply the requirements of this gtr to other vehicle categories. The square brackets need then to be clarified by GRSP and / or AC3. Mr Van der Straaten said that the preamble has to clearly state that the tests are only validated up to 2,5 tonnes and that there is no data above that weight limit.

§3. Mr Doyle said that this part is necessary also for the measurements included in the definitions. Today the text is only in §6 but that relates to the testing only and not to the measurements. Mr Van der Straaten said the text should be aligned with the revised text under §6.2.2 and 6.2.3. Mr Doyle said that the issue is different as under §6 one has to clearly state how to deal with the parts for testing. Mr Saul asked what a low applied load is. Mr Doyle said that the persons involved in the technicalities perfectly know what is meant. Mr Van der Straaten suggested to look at Reg 26 which specifies a load. Mr Van der Plas said Reg 26 in § 6.1.1 specifies 10 daN. It was agreed to include this in the text: "...a load of maximum 100 N, then this load shall be applied,...". Mr Van der Straaten understands the need for the first sentence. The second and third sentence is not necessary to be repeated in this §. Mr Yoon asked what "in consultation with the manufacturer" means. Who takes the responsibility? US and Korea have self certification whilst EU and Japan have type approval. Mr Van der Straaten said that no vehicle today has pop-up headlights, so maybe it can be deleted. Mr Davis said what about the washer position then. Mr Kinsky said that washer systems are no problem because with a small preload they retract and Mr Davis agreed that washer systems are no problem anyway. Mr Kinsky additionally said that the worst case is to do the measurements with the lights popped-up as it gives the biggest test area as it moves the front reference line forward. Mr Van der Straaten said this is only for marking the vehicle and needs to be tackled in a pragmatic way. He suggested just to say "in the stowed position" and delete the pop-up headlights example.

§3.1. It was agreed to delete all cross referencing throughout the text.

§3.3.-3.4. The small editorial changes were adopted. Additionally "with the vehicle positioned in its normal ride attitude" should be deleted as it is now in §3.

§3.5. Mr Ries explained PS 180 on the change of the definition of the bonnet leading edge reference line. He explained there is no need to change the current definitions and angles which are in line with the current EU and

Japanese requirements. Mr Doyle said that the definition affects two different tests. Mr Ries said that in EU Phase 1 the current angles are used. If the gtr specifies other limits all data collected under the EU Phase 1 becomes meaningless. He added that the majority of the vehicles are not affected by this definition as the head area starts from WAD1000. It is only meaningful for cars where the WAD and the bonnet leading edge are close to each other. Mr Doyle can accept to keep the old values at this point in time. It was agreed to keep the old values.

§3.6. The small editorial changes were adopted with the deletion of “[lower]”.

§3.7. It was agreed to delete “[bonnet]”.

§3.8. It was agreed to delete “with another vehicle”.

§3.9. The small editorial changes were adopted with the deletion of “is”.

§3.10. Reappears as §3.22.

§3.12. Mr Van der Plas explained that this was copied from §2 and put as a definition. Mr Césari asked what happens for category 2 vehicles designed first and category 1-1 derived from it. The category 2 does not have to comply but when designed the other way around, the category 2 does need to comply. Mr Doyle agreed this is a difficult question and will be looked at under the Directive review. Mr Van der Straaten explained this was agreed upon many months ago. Upon request of Mr Davis the paragraph was deleted and the text reinserted under §2 Application.

§3.14. Mr Van der Straaten suggested to use the EC directive wording as basis and say: “Front structure means all outer structures of the vehicle except the windscreen, the windscreen header, the A-pillars and structures rearwards of these. It therefore includes, but is not limited to, the bumper, the bonnet, wings, scuttle and the wiper spindles.

§3.15. The small editorial change was deleted (“flat”).

§3.16. It was agreed to use HIC (this change will be made throughout the document). Mr Saul agreed to delete the square brackets around 15 ms.

§3.18.-3.20. The small editorial changes were adopted.

§3.21. The second sentence was agreed to be deleted because of the deletion of §3.29.

§3.22. Was the former §3.10. The text was agreed.

§3.23. The small editorial changes were adopted. It was agreed to delete “A-pillars or roof” at the end as front structure will be defined.

§3.25.-3.26. Can be deleted as the gtr will not specify the number of tests.

§3.27. Was deleted as it is not used further in the text.

§3.28. It was agreed to accept the wording on identifiable and no identifiable bumpers.

§3.29. It was agreed to delete the definition as all reference to the windscreen needs to be deleted. As a result §3.21 was amended as well.

§3.30. The small editorial changes were adopted. Additionally it was agreed to say “outer surface of the vehicle front structure”.

§3.31. It was agreed to keep this definition for clarity.

§3.32. to 3.34. It was agreed to delete the definitions as all reference to the windscreen needs to be deleted.

General remark: for those definitions which were deleted, the corresponding drawings are deleted as well.

§4.1. Mr Doyle explained that the lower legform has a knee height of 500 mm. With a higher bumper, there are potential problems of getting a realistic output. So there was a provision to provide for 3 way approach based on the

recommendation in the feasibility study that above 500 mm the upper leg should be used. Additionally, somewhere between 400 and 500 mm an option needs to be given. However, as the upper legform test is easier to achieve, manufacturers might raise the bumper height which we do not want. Hence the double cut-off proposed. It was proposed to set the limit at 425 mm taking into account the shoe thickness, in the hope this will prevent bumpers to be raised and to be kept at a lower acceptable level. Mr Césari said the upper leg impactor does not really show the risk to the knee. However, we know the lower legform is not validated for impacts above the knee. Within IHRA there is a work program based on simulation to check the effect of amongst others the upper body mass. Results will not be available in time for this gtr, so the only possibility is to use the upper leg in the mean time. Mr Ries explained that OICA collected data in INF GR / PS / 175 Rev1. Data showed that only one vehicle was found with a lower bumper reference line of 500 mm, all others were below 500 mm. He added that regardless of the test (upper or lower leg), similar crush depth is needed. He also explained the equivalence between the upper and lower leg test. It shows that the shear displacement and acceleration can be met with a bumper that meets the upper leg requirements. Obviously the bending angle was not met due to the lack of support below the bumper. The majority of leg injuries are fractures and these are addressed by the acceleration which can be met as well with the upper as with the lower leg test. Mr Saul said the most important injury are knee injuries also for societal benefits and this is not addressed by the upper leg test which means there is no impact of this test on the societal benefit. Mr Césari understands the problems for car design but he feels that the proposal in effect agrees to have knee injuries. Mr Konosu explained that AIS3-6 also includes many lower leg injuries not related to knee injuries (INF GR / PS / 181). Mr Van der Straaten explained that the OICA presentations only answered the questions raised last meeting and do not intend to reopen the complete discussion. Mr Saul explained that raising the bumper a little may be an easier solution than trying to meet the lower legform test. Mr Van der Straaten said that for a classical passenger car there is no doubt. The bumper of an SUV is around the same height as on passenger cars but they have not the lower skirt as they need to have the clearance under the bumper. Mr Saul asked if INF GR / PS / 174 can be explained as that is important for this discussion as well. Mr Ries explained this is in reply to a request from last meeting. The data shows that from the 99 cars tested in EURO-NCAP in Phase 12 to 17, only 17% can comply with the proposed lower leg test. He added this does not mean that 17% will fulfill the gtr requirements as EURO-NCAP only tests the best seller which very often is not the worst case. Mr Lorenz added that Phase 1 started only in October 2005. So the first cars designed to meet the Directive are only now appearing in EURO-NCAP. Ms Fujita asked if there is a need for the upper leg test for SUVs. If a pedestrian is hit by these vehicles, they incur knee injury. So we will be only addressing relatively minor fractures. Is there a need to address this fracture? Mr Césari said that if the upper leg test is not included, there will be no test for high bumper vehicles as the lower leg is not validated for impacts above the knee. He added that the upper leg test will bring some benefits as the force will be limited. Mr Saul asked if EEVC ever did lower leg tests on high bumper vehicles. Mr Césari replied this is not the case. He explained that at the time of the development of the test the high bumper vehicles were no big concern yet as the market share 10 years ago was low. Mr Lorenz added that the EEVC report was published in 1998 and after that no further research was requested. Ms Fujita asked if in between 425 and 500 mm there is an equal chance of passing both tests. Mr Kinsky said the countermeasures are the same: the same thickness of energy absorption material is necessary. The only difference is when you have a skirt below the bumper or not. If you don't have it, the car is an SUV and you do the upper leg test. If you do have it, you do the lower leg test. Mr Lukaszewicz added that there are no countermeasures for the bending for high bumper vehicles as SUV's by definition need the ground clearance. Mr Van der Straaten said that the grey area between 400 and 500 mm, it really depends on the vehicle which test is most severe. Mr Césari said that in the future, this issue needs to be re-addressed when there is new technology or a new test procedure. Mr Lorenz said the intention is not to raise the bumper height as this will worsen the compatibility situation. Mr Saul wonders if the current proposal will prevent this from happening, neither prevents the upper leg test any knee injuries. He wondered if this policy issue should be dealt with in this group or at a higher level. Mr Kinsky explained that the OICA presentation showed that cars with high bumpers are SUVs and the average bumper heights are 440 mm. And also for SUVs the knee injuries are much lower than for passenger cars, and this was documented by NHTSA in IHRA. So allowing the grey zone does not have a big effect on the target population. Mr Saul wondered if the data shows a higher occurrence of pelvic injury. This was confirmed by Mr Kinsky but this is addressed by the upper leg test. Mr Lorenz warned not to mix up injuries as the pelvis is more than 500 mm above the ground. Mr Césari said today internationally there is nothing, so the proposal is a first step and it is a step forward knowing it is not an optimal solution meaning it needs to be looked at later. It was agreed to accept the proposal with some minor modifications: "at the choice of the manufacturer" and "...or equal to, 500 mm...". The preamble will have to reflect the above discussion.

§4.1.1. – 4.3. The small editorial changes were adopted.

§5.1.1. – 5.1.2. Mr Doyle withdrew the proposal, and the §s were agreed.

§5.2.1. The last sentence was deleted as it referred to windscreen testing.

§5.2.2. The last sentence was deleted as it referred to windscreen testing. Additionally the text was reworded to say “the HIC shall comply with paragraph 5.2.3.”.

§5.2.3. Agreed with some clarifications. Ms Fujita asked if a vehicle only has a child headform area, what applies: 1/3-2/3 or half of the area? Mr Doyle replied that if the adult area is zero, the combined area is the child area and the 1/3-2/3 applies. Ms Fujita asked if this needs to be clarified in the text. It was agreed to add a sentence saying “In case there is only a child headform area, the HIC shall not exceed 1000 over 2/3 of the test area. For the remaining area, the HIC shall not exceed 1700.”. Mr Mizuno asked if there are still concerns over the 1700 value. Ms Fujita said they had requested more background data. Mr Ries introduced INF GR / PS / 176 Rev 1 providing the necessary background data for the headform testing. Even the best cars today would need the 1700 HIC exemption area. Also J-NCAP data showed the difficulties for existing vehicles. Mr Saul said the baseline is going to differ in each of the regions: in EU the baseline will be the EU Phase 1 requirements. Mr Doyle said we are not looking at it that way as Phase 1 has just entered into force. What we have is a regulation that is based on data that goes further back and any change is based on that data. Mr Saul agreed that in that case the EURO-NCAP data would be the best baseline. Mr Van der Straaten agreed and added that the NCAP data and the OICA head test data gives a good idea of the performance of the cars on the road today. Mr Saul asked if the cars used for the OICA head test data are volume cars. This was confirmed by Mr Van der Straaten. Mr Saul asked if the cars used only had child impact test area. Mr Kinsky confirmed because the cars are Phase 1 approved which only tests with the child impactor. Ms Fujita agreed the information presented is very helpful and now needs to be inserted in the preamble. Mr Youn confirmed that the text is agreeable for Korea. Mr Doyle suggested amending the text with further clarifications. This was adopted.

§5.2.4.-5.2.4.4. Was agreed. The figure was amended to say “Example of marking...”.

§5.2.5. The last sentence was deleted as it referred to windscreen testing.

§6.1.1. Mr Saul asked where the 2 hours comes from and is this not too wide for certain impactors. It was confirmed that humidity and temperature are important. Mr Lorenz said that they do not have data on how fast the foam changes. Mr Konosu said they have some data on how fast the foam changes with different humidity. He introduced INF GR / PS / 182 showing that the weight of the foam changes quickly but the change itself is very small. Mr Saul said this does not take into account the temperature so it is only a part of the answer. Mr Konosu concluded that 2 hours soaking time is sufficient, but the time after taking out of the storage area needs to be controlled. Mr Kinsky said that from the beginning we saw the test results have a large scatter, how big of this scatter is due to this issue? We know that at low humidity the test results are more reliable. Mr Césari said this is more important in the certification test as this is against a rigid element. In the car test the car is deformed as well so the deformation of the impactor is lower and thus the humidity becomes less important. He added that we need to avoid that the conditions in the storage room and in the test room are as close as possible; this is the case in this proposal. Also the set up time needs to be taken into account. Mr Saul said the paper also shows for the certification test a difference of 100 g which is 40% variance in response for a humidity of between 18 and 63%, so we may need to tighten the requirements. Mr Lorenz confirmed that the certification test uses a rigid element, testing was done at Bast with honeycombs and that gave better results. Mr Doyle explained that the proposal attempts to control the environment as good as possible. If this control needs to be tightened, can we have a proposal? Mr Saul said we need data for this and this data is not available. Mr Doyle said the 2 hours is a reasonable time for setting up the test and ensuring there is not too much time between taking the impactors outside the storage room and performing the test. Mr Kinsky said the proposal is workable for industry and for test houses. Mr Césari asked if we could tighten the humidity only for the storage conditions. Mr Mizuno suggested to keep the proposal as it is and ask at the experts at TRL if it is acceptable. Mr Saul said there needs to be some data to back it up in the preamble. Mr Van der Straaten suggested to keep the data in square brackets and to take them out at GRSP when data is provided. Mr Mizuno said that the information should be received by the end of this month. That way the data can be circulated, a decision taken and NHTSA can draft the necessary text for the preamble. Mr Césari will contact the necessary experts. The § was agreed as amended but the values are kept in square brackets.

§6.2.1.1.-6.2.1.2. The paragraph was agreed as amended.

§6.2.2. Mr Ries explained the procedure is used by both EURO-NCAP and also was already used once for the type approval of a car in Europe. The reason is to establish a procedure how to work with active devices that protect pedestrians. Mr Doyle wonders if there can be an example of how you do a test. Mr Van der Straaten explains that already in Reg 95 an example of a test is used. We have to make sure that everyone is clear on how to investigate a pop-up bonnet. Mr Doyle agrees but then it should not be an example but a proper annex. Mr Mizuno agreed with Mr Doyle that a requirement can not be an example. If we want it as an example, it can be referred to in the preamble. Mr Kinsky said the reason was to make it compatible with self certification. Mr Van der Straaten

suggested to say: “This may be verified by the test procedure provided in Annex 1.” Ms Fujita prefers to keep it out of the gr text but include it in the preamble. The US would insert a very specific procedure in their standard and the wording would give the necessary leeway to do this. Mr Kinsky showed INF GR / PS / 141 which is the content for Annex 1. Mr Césari concluded to leave it out of the gr text and the CP will write the relevant test procedure when transposing it into their national law with the necessary details. This was agreed and will be explained in the preamble. The § was agreed with a small amendment.

§6.2.3. The paragraph was agreed as amended.

§6.2.4. It was agreed to delete this requirement as the car should be tested as it is and the parts referred to will retract anyhow.

§6.2.5. Mr Fujita asked what exactly is meant. Mr Césari said that for parts which are believed not to influence the requirements also should be there. Mr Saul said that if a vehicle comes equipped with bull bars, the bull bars should be fitted. It would also prohibit the aftermarket big bull bars as these would not comply with the standard. Ms Fujita explained that standard in US means the vehicle as sold no matter if the part is installed by the manufacturer or the dealer. Mr Van der Straaten clarified that the US regulates the vehicle as sold by the dealer. How is this controlled? Ms Fujita said the dealer would be subject to penalties which prevents dealers to put on equipment that would make the vehicle non compliant. It was agreed to amend the sentence to read: “Any original equipment which is available from the original vehicle manufacturer and can be normally fitted to the front of the vehicle shall be installed for the test.” Mr Césari said that this equipment will change the geometry measurements of the car as well so maybe this needs to be reflected under §3 as well. Mr Doyle suggested to delete this sentence and to leave it up to the Contracting Party how they deal with optional original equipment installed later-on. Mr Van der Straaten agreed it can be deleted. For Type Approval it will be judged through the worst case selection or the vehicle type. In a self certification system one regulates the vehicle as sold, if the dealer installs a bull-bar it is tested with, otherwise it is tested without. Ms Fujita agreed to delete the paragraph. It was agreed to delete this sentence.

§6.3.1.1.8.2. Agreed to delete it as it is already in §6.3.1.1.8.3.

§6.3.1.2.3. Mr Doyle explained that it was used primarily for the upper leg to bonnet leading edge. So it may be less relevant in this gr. Mr Saul said that generally we leave it more open how it is guided. Mr Doyle suggested to amend the paragraph to delete any reference to the guidance system. This was agreed.

§6.3.1.2.4. Mr Césari explained this needs to be modified in line with the previous paragraph. Mr Doyle suggested to say: “... front member is vertical at the time of impact, with a tolerance...”. This was agreed.

§6.3.1.2.7. The paragraph was agreed as amended. Mr Yoon asked if there are material properties for CF-45. Mr Mizuno said there is none. Mr Césari said the material characteristics are not necessary what is important is the response in the certification tests. Mr Yoon requested to look at this again in the future.

§6.3.2.1. Mr Konosu explained INF GR / PS / 177 and the proposal for the moment of inertia for both the child and adult head impactors. He proposed the new moments of inertia. Current headforms can meet the proposal. Mr Saul said that as the moment of inertia does not affect the testing so maybe it is better to round the numbers. This was agreed (0,008 – 0,01).

§6.3.2.2. Given the discussion in §6.3.2.1. it was agreed to write 0,01-0,013. Mr Pichon asked to put this value and the one in §6.3.2.2. in brackets to check the values with the impactor manufacturers. Mr Konosu said one FTSS headform was included in the IHRA study. In total 25 child headforms and 17 adult headforms were checked. Mr Pichon and Mr Lorenz agreed to look into this by the end of the month and report back if there any problems. Mr Lorenz added that the moment of inertia in the EU Directive is not identical to the proposal.

§7. Mr Césari said that each tool comes with a handbook on how to use this. It was agreed to delete the annex 2 and the reference to it. Mr Saul suggested it may be necessary to explain it in the preamble.

§7.1.1.1. Mr Van der Plas explained it was put in brackets as all reference to the number of tests was deleted from the text. Mr Doyle felt there is still a need to specify the distance in between impact points. Ms Fujita said that under self certification they want to test any point also if they are close together. Mr Kinsky explained that the original idea is that there is a limited number of tests. For the manufacturers it makes no difference as the complete bumper must comply anyway. As we don't have the number of tests, this requirement can be deleted as well. Mr Césari said there are 2 possibilities: either say “on the vehicle” or delete the text. Mr Pichon said that it is more important to specify that the bumper needs to be replaced after every test. Mr Van der Straaten said it is in everyone's interest to

keep the number of tests limited. This requirement de facto means a limited number of tests. He suggested to say “on the same vehicle”. Mr Lorenz said this is not possible as the bumper needs to be replaced after every test. It was agreed to delete the last sentence and the text was brought in line with §7.3.2. (deletion of all reference to distance between impact points).

§7.1.2.1. The paragraph was agreed as amended and brought in line with §7.3.2. (deletion of all reference to distance between impact points).

§7.1.2.2. The paragraph was agreed as amended.

§7.2.2. Mr Saul asked if the ISO numbers were checked. Mr Lee confirmed the number is correct.

§7.2.4. It was agreed to delete as this was placed in §5.2.4.

§7.3.2. It was proposed to bring this in line with previous paragraphs by saying “for tests on a single vehicle”. Mr Van der Plas recalled the decisions taken 2 meetings ago: “... if we leave it open to the Contracting Parties how many tests will be done we could also leave it open where these impact points should be tested and the spacing of 165 mm between these impact points.” This approach was reconfirmed moreover as this is already explained in the preamble and all reference to distance between impact points was agreed to be deleted.

Mr Ries explained that the proposed 82,5 mm rearwards of the bonnet leading edge reference line is not acceptable as there are parts in the bonnet leading area that will make this exemption area unfeasible. Mr Doyle said that the bonnet leading reference line is defined by an angle and the change to that angle would bring the line forward. The old 165 mm was there because the child headform could otherwise be impacted in an area close to the bonnet leading edge that needed to comply with the upper leg. As we do not have the upper leg test, there is no need to apply the same exemption here and a change back to 165 mm can not be accepted. Mr Césari agreed with this explanation. Mr Ries introduced INF GR / PS / 183 explaining it is unfeasible to meet the requirements with a small exemption zone of 82,5 mm as it effects the cars under development today. Mr Doyle asked what is meant with “the worldwide harmonized value of 165 mm”. Mr Ries said the value is identical in the EU Directive and in the Japanese regulation. Mr Doyle said that in Phase 1 it is 130 mm. Mr Césari asked what the CP representatives prefer. Mr Doyle said the reference to the existing situation is because there is an upper legform test. He confirmed that he wants to keep the 82,5 mm. He added that as the vehicle becomes bigger, the intention can not be to protect the child less. Mr Saul said the concern is shrinking the test area which effects the target population. So any further reduction should be avoided and he supports the 82,5 mm value. Mr Nishida explained the current Japanese regulation is 165 mm and can agree to this but prefers 82,5 mm. Mr Pichon said any change to the existing legislation needs to be investigated. Mr Lukaszewicz agreed with the EU position. Mr Youn supported the view of Mr Saul. Mr Massaia prefers to keep the 165 mm value. Mr Césari concluded there is a large majority for the 82,5 mm and the value was agreed upon. Mr Saul asked what the reason is for the first sentence dealing with a glancing blow. Mr Kinsky explained that when the rear of the bonnet is tested it could hit the cowl area as a second impact. The same is true for tests close to the border lines and secondary impacts against the A-pillar and windscreen. Mr Saul said if the secondary impact would be in a tested area with a strange shape, this should not be eliminated. Mr Ries said the section should prevent acceleration pulses resulting from impacts outside the test area. In order to clarify this it was suggested to say “when the second impact outside the test area.” The text was further clarified based on a proposal from Mr Doyle. The last section was agreed to be deleted as it deals with windscreen testing.

§7.3.2.2. The text was deleted as it refers to a test report.

§7.3.5. The text in square brackets was deleted as it relates to the windscreen and the text was further clarified.

§7.4.2. In line with §7.3.2. the distance between impact points and all reference to windscreen testing was deleted.

§7.4.3.2. The text was deleted as it refers to a test report.

§7.4.6. Was brought in line with §7.3.5.

§8. The text was agreed as amended.

§8.1.2.2. Mr Doyle said it is unclear where the 10-70% humidity came from as in their feasibility study it was a much tighter range: $35 \pm 10\%$ for certification. Mr Pichon said we have to be consistent in what we do with dummies as they are calibrated in the same room. If we tighten the requirements for these tools, it means important and expensive changes to the installation of the test laboratories. Mr Konosu said there is no problem for the headform. Mr Doyle said as it has no effect for the headform impactors it can be made easier by specifying 2

conditions instead of 4. Mr Ries said also to take into account the total time of testing, the longer the storage time, the more time the type approval procedure will take. Mr Doyle said that test houses would have multiple impactors. Mr Lorenz confirmed that only the Confor foam is problematic for humidity. Mr Doyle said that the humidity for testing is accepted to be 10-70%. For storage, the headform impactors are of no consideration. The legform is sensitive to humidity, hence the storage area needs to be together controlled for humidity. When removing from the storage area, the tool is to be used within a certain time. The soaking time of 4 hours is a commonly agreed time also used for dummies. The $35 \pm 10\%$ and 4 hours was accepted and the paragraph was rephrased for clarification. In order to clarify the storage conditions before testing, the testing conditions, the storage conditions before calibration and the calibration testing following paragraphs were revised: §6.1.1.; 6.3.1.1.7.; 6.3.1.1.8.; 6.3.1.2.7.; 6.3.1.2.8.; 7.1.1.; 8.1.2.2.; 8.2.1.1. Mr Mizuno asked if there is still a need to specify a maximum 2 hour time for doing the test in §7.1.1. Mr Konosu said in IHRA 10 minutes was proposed. Mr Lorenz explained that 10 minutes is impossible to set up the test. Mr Youn explained a number is needed for self certification. Mr Kinsky said that until now there is no issue with humidity, in the complete scatter of the results, humidity plays only a small roll. He added that for Type Approval also time is needed to allow the inspectors to verify the set up. Mr Saul said the question is also the recovery time between tests for the foam itself. Mr Kinsky said this depends on the foam. The Confor foam needs replacement after every test, foam from another supplier may not need replacement after every test. Mr Van der Plas explained that it was already concluded under §7 to delete handling guidelines from the gtr text as all necessary information how to work with impactors will be explained in the handbook. The same would apply in this case. We have to be careful not to over-specify in the gtr. Mr Saul agreed to not address all issues in the gtr text if there is a document that explains the handling guidelines. Mr Lorenz explained that the concern is the calibration test and not the actual test itself. He offered to get the guidelines from EEVC WG17. All paragraphs were agreed upon but the time in §7.1.1. and §8.1.2.2.3. and §8.2.2.3; was kept in square brackets.

7. Agree on content of preamble: check for need of extra info

Mr Konosu explained INF GR / PS / 178 on the expected life saving rate for the gtr. It concluded that annually 111 persons, of which 10 are children, can be saved?

Mr Saul went through INF GR / PS / 185:

- background data for head testing was answered by the OICA presentation INF GR / PS / 176
- benefit analysis was explained by INF GR / PS / 178
- conflicts with other standards in particular the North American bumper standards
- conflicts with other standards also included in INF GR / PS / 91 which identified also the conflicts with existing EU standards

Ms Fujita suggested to go through the documents and to judge what was agreed and can be referenced. Mr Kinsky explained that all documents were presented and discussed. Mr Saul questioned if there is enough detail on the regulatory impact. Mr Van der Straaten explained that in the preamble all information would be included but in concise form. Already the preamble explains the regulatory impact and economic effectiveness and refers to the necessary documents. Ms Fujita said that for every document referred to it needs to be looked at if we agree with the conclusions of these documents or not. Mr Kinsky said that was the ongoing work of the group and in between the meetings. Mr Saul said that it would be sufficient to reference also the latest documents explaining that the cars tested in NCAP and used in the latest presented data do not conflict with other standards and that with the necessary changes to the cars it can in addition meet the gtr. Mr Van der Straaten suggested to look what is already in the preamble today and what needs to be added based on this meeting's discussion. A lot of information is already in the preamble and maybe a couple of extra sentences may be sufficient. He added that this group had most information, test data, accident data, studies, research compared to other previous groups. Additionally some of the information presented was Type Approval data. It is the first time ever this was submitted in any discussion. It is the most transparent that one can ever be. Ms Fujita agreed that the data received during this meeting was indeed excellent and will help the gtr a long way. Mr Van der Straaten suggested to go through the preamble text and to define what still needs to be added and for each of these assign tasks and a deadline. Mr Saul offered its help and explained that Ms Fujita already worked on the preamble. Mr Mizuno agreed but stressed that everything should be prepared within a certain time limit.

8. Action plan for providing GRSP with a final draft gtr as an official document

1. **Mr Césari** to contact experts on Confor foam and humidity. Data to be provided to the group by end of January. NHTSA to write the necessary text for the preamble. Complete process to be finalised by February 3.
2. **Mr Pichon and Mr Lorenz** to check the new proposal for child and adult headform moment of inertia by the end of the month.
3. **Mr Lorenz** to check with EEVC WG17 the 2 hour time for performing the calibration test, the actual test and the guidelines on the impactor handling.

4. **US and EU** to verify the 0,5 tonnes limit in §2 (by February 3).

All information to be sent to Mr Van der Plas for further circulation.

9. Close of meeting

Mr Mizuno thanked everyone for his attendance and thanked everyone for their continuous support and participation. Mr Van der Straaten thanked Mr Mizuno for his excellent leadership. Mr Doyle supported these words, and thanked the chairman for all his work and devotion.

List of new documents:

INF GR/PS/180	OICA position on the change of the definition of the ble reference line
INF GR/PS/181	Comparison lower leg injuries for different AIS levels
INF GR/PS/182	Foam memory for changing humidity
INF GR/PS/183	OICA position on bonnet leading edge 165 mm exemption zone
INF GR/PS/184	Final draft gtr (without preamble)
INF GR/PS/185	Mr Saul letter dd 3/1/06
INF GR/PS/186	NHTSA revision of preamble PS/160
INF GR/PS/187	EEVC WG17 report
INF GR/PS/188	Draft meeting minutes of the 10th meeting
INF GR/PS/189	Attendance list 10th meeting

Part 3: Preamble meeting (attendance: all interested parties but at least US, EU, J, OICA)

Wednesday January 18, ? – 18:00

Thursday January 19, 9:00 – 17:00

Finalise preamble text

Mr Van der Plas reminded the group what needs to be inserted in the preamble resulting from this meeting's discussion:

- justification why windscreen testing was excluded from the gtr (no countermeasures for border, no problem for centre, repeatability problems with test)
- 425 – 500 mm high bumper discussion under §4.1. and INF GR / PS / 175 Rev 1
- INF GR / PS / 174 background data on lower leg test (§4.1.)
- INF GR / PS / 176 Rev 1 related to §5.2.3. and the justification for the exemption area and HIC level
- 2 hour time for testing and the humidity §6.1.1.
- move of Annex on active bonnets to preamble §6.2.2.
- deletion of Annex 2 because tools come with handbook §7.
- §2 application: the L6-L7 discussion; how to expand the scope; the necessity for adequate validation of the test procedures for expansion of the scope above the agreed weight limit of 2,5 tonnes.
- INF GR / PS / 178 conclusions on the Japanese expected life saving rate.

Ms Fujita went through the preamble highlighting what needs to be further improved (INF GR / PS / 186).

She made three big changes: she reorganised the text; she provided more background information that would give the unlearned reader a better idea; she inserted questions and indicated areas where more information is needed. Mr Van der Straaten thanked Ms Fujita for the work.

The group went through the INF GR / PS / 186 identified which parts need amending, assigned tasks and set deadlines.

Page 2:

- b. crash speeds: Mr Mizuno clarified the IHRA report refers to all injuries. **Ms Fujita** will amend the text.
- c. target population: Need to exclude windscreen area and reference the correct document. **Ms Fujita** will amend the text.

Page 3: Amend the text excluding the windscreen. **Ms Fujita** will do this.

Page 6: Scope: Windscreen explanation: why was it excluded? **Ms Fujita** will do this.

Page 7: Applicability: need to include the L6-L7 issue. **Mr Doyle** will provide the text.

Page 9:

- Lower legform impactor. It was clarified that GRSP was asked to set up the TEG. **Mr Konosu** will amend the text and refer to the TEG Terms of Reference.

- Upper legform: Mr Mizuno clarified that GRSP requested IHRA to do further research. **Ms Fujita** will clarify the text.
- Upper legform to ble: Mr Mizuno clarified that GRSP requested IHRA to do further research. **Ms Fujita** will clarify the text.

Page 10:

- Why 1000, 1700 and 2100 mm? Mr Mizuno explained this is the result from IHRA accident study. **Ms Fujita** will look into this.
- Windscreen area: **Ms Fujita** will delete this.

Page 11: HPC to be changed to HIC. **Ms Fujita** will do this.

Page 12:

- HIC1700 and exclusion zone. **Mr Ries** will provide the necessary explanation.
- Windscreen area: **Ms Fujita** will delete.
- Bonnet top relaxation zone: **Ms Fujita** will clarify this.

Page 13:

- Windscreen area: **Ms Fujita** will delete.
- Headform: The weight needs correction. **Ms Fujita** will amend this.
- Head form diameter: Mr Mizuno explained this comes from IHRA. **Mr Konosu** will propose the wording and refer to the IHRA report.

Page 14:

- Headform moment of inertia: **Mr Konosu** will amend the text.
- Headform test speed: **Mr Saul** will rephrase this slightly.

Page 16:

- Other issues will be moved outside the head protection into a general section.
- Pop-up headlamps: The last sentence will be amended to reflect the fixed position. **Mr Kinsky** will amend the text.
- Active devices to protect pedestrians. **Mr Kinsky** will amend the text.

Page 17:

- How many vehicles are affected? **Ms Fujita** will amend the text.
- Impactor: **Mr Césari** will provide the necessary text. **Mr Lorenz** will check an IRCOBI paper on repeatability and reproducibility.
- Injury criteria: **Mr Konosu** will revise the first sentence slightly. 2nd paragraph needs to refer to the work quoted. **Mr Césari** to check this.

Page 18:

- Knee shearing: Needs to be made stronger. **Mr Saul** will revise the text and refer to the EEVC WG17 report.
- Acceleration: Needs to be clarified where 170 g comes from. Mr Mizuno said this comes from EEVC and can be referred to in the EEVC WG17 report. **Ms Fujita** will amend the text and mention it is also consistent with the EU proposal for amending Phase 2.
- Exclusion area: Needs to be explained what criteria it is for and what it tries to cover. Mr Doyle explained it is twice the width of the legform to take into account the symmetry of the bumper and take into account the load bearing members behind the bumper. This is also discussed in the TRL report. **Ms Fujita** will include some wording.
- Upper legform impactor: Mr Saul said a general discussion needs to be inserted acknowledging that it does not knee injuries but it will address fractures. **Mr Ries** agreed to summarise the information. **Mr Lorenz** will check for EEVC info.
- Injury criteria: **Mr Lorenz** info for the previous point will also be used in this part and he will check the injury risk curves as well.

Page 19:

- The paragraph on exclusion zones will be deleted. **Ms Fujita** will do this.
- Section 3.3.3.4 ... refers to the bonnet leading edge test which is not used in the gtr. The injury risk limits can remain but the concern should be deleted as it refers to the bonnet leading edge test and not to the bumper test. **Ms Fujita** will do this.
- **Ms Fujita** will consolidate the complete section of the upper leg injury criteria.

Page 19:

- The other issues section will be included here (moved from page 16). **Ms Fujita** will do this.
- This section will also need to include the legform handling procedure including the humidity and the time for testing and reference as example to the handling guideline for the lower legform. **Mr Lorenz** will provide an IRCOBI paper as reference for the repeatability issue. **Ms Fujita** will write the necessary text.
- Cost/benefit: Mr Saul explained that it needs to include some projection as benefits as well. He showed an overview table of the benefit estimates. The numbers need to be readjusted given the latest decisions taken.

The initial estimates of the effectiveness should be included in the text. **Mr Youn** will provide the necessary information for Korea. Updated figures were also requested to **Japan and EU** if necessary. Mr Mizuno added that next to a reduction into fatalities there is also a reduction in severe injuries. Mr Kinsky explained that the numbers are close to what industry expects to see. He referred to the effectiveness study of OICA (INF GR / PS / 92) which gives similar numbers. However, the tests that serve as basis for the US calculation are not useable as the tests are not in line with the gtr test. Mr Saul agreed this has to be reassessed. He added that very little data is available meeting the conditions of the current gtr proposal. **Mr Saul** will update the text accordingly. For the leg effectiveness, it is very difficult to find how many fatalities are related to leg injuries. Mr Kinsky added that the leg was included because almost all pedestrians are injured at the leg and this represents a high cost to society. Mr Saul asked how we will show that by meeting the requirements we the injuries are improved. Mr Kinsky said that INF GR / PS / 92 also includes a study on the lower leg effectiveness. Mr Van der Straaten explained that more then 10 years ago already studies were performed to find the target population. **Mr Konosu** will check if he can provide some wording for Japan including the target population. Mr Saul suggested to also look at the IHRA estimates. Mr Konosu explained a table is available in INF GR / PS / 03 but there is no breakdown for AIS injuries only a general table for AIS2-6 injuries. Mr Mizuno suggested to get input from Mr Konosu, Mr Doyle and Mr Youn on the need to have a lower leg test, including any data they have. Mr Saul suggested to use the basic data in the INF GR / PS / 89 report that refers to injury probabilities. If the injury curves referred to could be made available, one could then use the INF GR / PS / 174 Rev 1 data as basis and estimate the possible benefit. **Mr Saul** will do this exercise and suggest some wording. Mr Van der Straaten suggested using the currently available data as recorded in INF GR / PS / 92. **Mr Van der Straaten** to propose wording based on this data. For the cost, Mr Kinsky confirmed that the results of the TRL studies (INF GR / PS / 89 and 120) are in the correct range. **Mr Doyle** will extract the necessary data from the TRL study and inform to Mr Saul.

Following time schedule was agreed:

February 3:

- All assigned tasks to be completed and sent to **Mr Van der Plas** with copy to **Ms Fujita**.
- **Mr Van der Plas** to circulate the final gtr to the group for final editorial comments.

February 10:

- Consolidated preamble to be sent by **Ms Fujita** to **Mr Van der Plas** and forwarded by **Mr Van der Plas** to the group for final editorial comments.

February 17:

- Deadline for final editorial comments on gtr text and on preamble. All comments to be sent to **Mr Van der Plas**.

February 23:

- Complete document (preamble and gtr) to be sent to GRSP secretariat by **Mr Van der Plas**.