

Report of the 63rd session
Electric Vehicles and the Environment Informal Working Group (EVE IWG)

Location: Virtual - Webex
Date: July 18-19, 2023
Time: 05:30 – 08:00 EDT

Chairs: Mr. Michael Olechiw (United States of America)
Ms. Panagiota Dilara (European Commission)

Vice-Chairs: Ms. Chen Chunmei (China)
Mr. Nobunori Okui (Japan)

Secretariat: Mr. Leeson Guay (Canada)

Day 1 – July 18, 2023, 05:30 EDT

1. Introduction, review of agenda, and meeting recap

Documentation

- EVE-62-10e
- EVE-63-01e

Context

The EVE IWG co-chairs addressed members and welcomed everyone to the virtual meeting. Time was taken to also acknowledge the leadership team and the new vice-chair from Japan, Mr. Nobunori Okui.

The co-chairs presented the meeting agenda to EVE IWG members, which can be seen below. The agenda was reviewed and adopted by the EVE IWG prior to beginning discussions.

Day 1 – July 18, 2023, 05:30 EDT

- Introduction, review of agenda, meeting recap
- HDV GTR – Update on HD UBE measurement
- HDV GTR – Energy consumption data from PTO applications and throughput method/measurement
- HDV GTR - Review of draft text and discussion of open items

Day 2 – July 19, 2023, 05:30 EDT

- Introduction, review of agenda
- HDV GTR - Review of draft text and discussion of open items
- HDV GTR – Planning and prioritization
- UN GTR 21 – Comment on test conditions
- UN GTR 21 – Proposal for system bench definitions
- UN GTR 21 – China proposal on K factors for highly integrated EV systems
- UN GTR 22 – Proposed text and comments on draft text
- UN GTR 22 – Comment on Annex 2, Annex 3 and Part A monitoring
- Action item review

The EVE IWG secretary briefly reviewed the *Report of the 62nd EVE IWG session*, highlighting action items and key decisions from the discussions, held in-person in Geneva, Switzerland on May 30, 2023.

Discussion

The co-chairs reminded members that the targeted timeline is to have a completed draft of the United Nations (UN) Global Technical Regulation (GTR) on battery performance and durability of electrified heavy-duty vehicles (eHDV) after the 65th session of the EVE IWG, which will take place in Ottawa, Canada on October 11-12, 2023. Recognizing this timeline, the primary goal for this EVE session, and subsequent sessions, will be to work through and resolve the outstanding items for the draft eHDV UN GTR.

Organisation Internationale des Constructeurs d'Automobiles (OICA) stated that they will provide an updated EVE-63-11e document prior to their presentation on day 2 of the proceedings of EVE 63, ensuring that their stance is more clearly stated.

Action Items

Decisions

2. HDV GTR – Update on HD UBE measurement

Documentation

- EVE-63-02e

Context

The Japanese delegation gave a presentation outlining their recommendations and path forward on their heavy-duty usable battery energy (UBE) testing. The document provided a recap of what was presented at previous EVE IWG sessions and addressed questions and comments from those sessions that were outstanding. Based on Japan's testing, they concluded that:

- Charge/Discharge test (e.g. bidirectional charger) is one of the solutions to determine eHDVs UBE, when considering its complexity during in-service testing.

- Conducting the charge/discharge test:
 - Constant output power discharge is recommended.
 - Appropriate C-rate range exists per its own unique BMS and so the C-rate should be specified by the vehicle manufacturer.
 - The specified C-rate should be used during type approval and in-service testing.

Japan stated that as part of their future action, they plan to propose concrete contents to be included into the UN GTR, including current/voltage measurement techniques, discharge patterns, C-rate ranges and other items.

Discussion

The drafting coordinator thanked the Japanese delegation for the presentation and indicated that they will start to implement these recommendations into the eHDV UN GTR draft text. It was also mentioned that the boundary conditions for the testing procedure are missing and having data to prove the suggested C-rate and use of controller area network (CAN) bus data is valuable and helps the discussion move forward.

The co-chairs asked what, if any, major issues exist from manufacturers declaring their own C-rate as part of their type approval? The drafting coordinator suggested that a C-rate of less than 5 was proposed but the rate for regular charging must be declared and not fast charging or the like. The Japanese delegation stated that the determination of C-rate is specific to the unique battery modelling systems (BMS) and is part of battery specifications and the vehicle integration. Japan does not feel that a C-rate can be appropriately set by regulators, and manufacturers should be able to make a declaration for in-service testing. The co-chairs clarified that the manufacturer would therefore be required to justify their selection of C-rate for each application.

The Chinese delegation stated that the usable battery energy (UBE) measurements must reflect real operating conditions of vehicles. When accelerating, the C-rate is changing but for the testing procedures only one C-rate is specified, which is not reflective of real vehicle use. It has also been demonstrated that battery power will decrease with vehicle age. This shows, ultimately, that a single C-rate is not applicable and perhaps there should be several C-rates identified for the various scenarios. The Japanese delegation acknowledged that chassis dynamometer testing is very straightforward, however, it is not feasible to utilize chassis dynamometer testing for eHDV because of all the unique configurations, the extremely expensive testing and the lack of available testing sites. This is why Japan is thinking of an alternative method for eHDVs. The Chinese delegation expressed that a solution must be reasonable globally and the alternative method must provide accurate results, however, the proposed method of constant power is not capable of testing power distress of the battery, which cannot be ignored. The Chinese delegation recommended looking at cycle current and utilizing vehicle conditions to guide battery current conditions.

The co-chairs recapped the discussion, quickly communicating to the group that in the Japanese constant power-based proposal, it captures capacity fade but does not capture power fade and power aspects of the battery, and China would like a chassis dynamometer test which is capable of measuring everything. The co-chairs then went on to explain that both capacity and power fade are important and capacity fade has been the primary focus at this time. The drafting coordinator

supported this, stating that in previous meetings it was agreed to focus on capacity first and power fade second. OICA offered some insight into the discussions, expressing that globally there are a lot of differences in infrastructure between markets. In addition to this, vehicle power will be so large that power fade will never be experienced because the customer expects their products to work properly. OICA suggested that the focus remain on battery durability and capacity, and power fade later. The power requirement will vary by market depending on the vehicle and the use and there is no current data available.

The co-chairs requested clarification from the group on whether the chosen C-rate implicitly captures the power requirements. The American delegation communicated that it does recognize power indirectly, however, overall, the results of the charge-discharge test are inconsistent with real world testing. If it is possible to do cycle testing without being on a dynamometer, then power variation and impact on the UBE measurement could be captured. Power is an important parameter and although eHDVs will have large batteries, in some markets they may remain small and could lead to power problems. The Japanese delegation added that the consideration of instantaneous power versus constant power for a set period of time is important, and if conducting a test cycle using the variation method, instantaneous power may work but constant power becomes something completely different.

The American delegation commented that looking at the results of the Japanese testing, it appears that power does have an impact on UBE as the UBE value is changing with various C-rates. With that in mind, maybe there is a need for constraints on determining the C-rate and perhaps it can be determined around a cycle average aligned with something like the world harmonized test cycles. The objective is to obtain a realistic UBE result and this needs to be run on a transient test, which comes at the cost of repeatability. A constant power test seems to make sense, but the focus will need to be on determining an appropriate C-rate.

The Chinese delegation insisted that a chassis dynamometer should be included as part of the UN GTR and that the UN GTR needs to consider power fade. The Chinese delegation expressed that they are also open to a new measurement method.

The co-chairs recommended that for the time being, the group moves forward with the charge-discharge test method. At the 61st session of the EVE IWG, the possibility of developing a chassis dynamometer test method was discussed, however, given the current timelines it may not be possible to develop this alternative. The alternative testing method does seem reasonable if there is data available to support the development and there is a possibility it can be done later in time.

The drafting coordinator communicated to the group that they will be incorporating comments from the discussion, including guidance within the UN GTR ensuring that a C-rate is chosen properly, perhaps consideration for a range of values for various HDV classes.

OICA commented that a challenge exists for the different markets and that perhaps things should remain technology neutral and have a regulation that offers guidelines to go about determining the appropriate C-rate and basis for charging and discharging or to go about testing with a chassis dynamometer and leave it up to the manufacturers.

Action items

- Drafting coordinator to update the eHDV UN GTR draft text with input received during the discussions of the 63rd EVE IWG session.

Decisions

- The EVE IWG will move forward with the charge-discharge test method, with the possibility of developing a chassis dynamometer or alternative test method at a later time.
3. HDV GTR – Energy consumption data from PTO applications and throughput method/measurement

Documentation

- EVE-63-03e

Context

OICA presented data from power take-off (PTO) use in eHDVs and its impact on testing and battery state of health. Based on the data and discussions offered, OICA proposed the following:

- Request the EVE IWG to rethink the virtual mileage proposal and to consider energy throughput as an additional lifetime requirement.
 - o It is not feasible to differentiate all different electric vehicle internal energy flows.
 - o It is preferred to apply the whole battery energy/capacity throughput for minimum performance requirements (MPR) instead of a mileage metric.

Discussion

The European Commission (EC) requested clarification on whether the proposal is looking to apply the MPR to energy at a battery pack level, instead of a vehicle level. OICA clarified that the proposal is suggesting normalizing by the battery capacity but not necessarily dropping to a pack level. The (EC) expressed that even if normalizing energy throughput by battery capacity and including PTO, how do you regulate battery durability through the energy throughput? If you have two identical vehicles and one has a higher battery capacity, the durability requirement becomes more severe, which is not the same in the light-duty vehicle (LDV) case, where the metric is mileage.

The Japanese delegation stated that UBE is not applicable to all vehicles and is used for LDVs, so why does OICA prefer usable battery capacity (UBC) for eHDVs? OICA explained that UBC has lower accuracy losses than when adding voltage to the measurement. OICA is looking to remain neutral and have a discharge procedure for UBE in the Asian markets and UBC for America and Europe. The energy and capacity will age in the same correlation and vehicle usage will be shaped by the capacity. For eHDVs it is seen that capacity is the value of primary focus. The Japanese delegation expressed confusion over why there is a need for two different procedures for the different markets.

The co-chairs stated that consumers are primarily focused on the UBE metric and what is being proposed indicates that the UBE and UBC will track each other over the course of their useful life. The drafting coordinator stated that if the data presented in the proposal considers battery aging,

then the aging between the two batteries will need to be verified. The drafting coordinator agreed that consumers are looking for an energy metric and not necessarily a capacity metric. The American delegation indicated that they would also agree with a UBE metric as it is more applicable than UBC and more relevant to the customer. Even though UBE and UBC may track similarly, there are many other factors at play including charging and discharging rates and other factors. If the EVE IWG decides to take another route, it will need to be studied further. The co-chairs mentioned that for LDV the regulations were not prescriptive about how manufacturers determine their state of health (SOH) metric. For eHDV, the development of a procedure so that manufacturers could utilize UBC to inform SOH may be a possibility if manufacturers are confident in that value. OICA stated that UBE is no issue, however, from a measurement perspective, UBC is more accurate and reproducible. Moreover, the ampere-hours can always be multiplied with the voltage to arrive at UBE, but the capacity is the distinguishing unit for the customer because it distinguishes the range.

The American delegation commented that in the presentation, the C-rate seems to decrease dramatically at some instances to 0.05C, what influence would that have on the battery UBE and UBC. OICA stated that it does impact the battery because once 90 % charge or discharge has been reached, charging, or discharging at high rates could damage the battery. Therefore, at the end of the cycle, the C-rate needs to be decreased. The American delegation questioned whether this decrease in C-rate would affect the vehicle power, performance, and its ability to complete a set mission profile since the vehicle power would drop off as a result and the customer would no longer properly access the usable vehicle energy. The American delegation added that if the C-rate was kept at a constant or representable level of the mission profile, the vehicle batteries may display different results. OICA mentioned that in vehicles today, once a certain capacity is reached, the power drop will be so low that the vehicle can no longer be used. The American delegation communicated that there is anticipation that the voltage of the system will degrade with the battery and the C-rate drop could occur at different capacities throughout the vehicles degradation life. In testing, there is a need to ensure both parameters are considered so this is why UBE would be necessary.

Action items

- EVE IWG members to prepare and discuss the technical elements of the eHDV UN GTR metrics at the next drafting group session to develop a recommendation.

Decisions

4. HDV GTR - Review of draft text and discussion of open items

Documentation

- EVE-63-04e
- EVE-63-05e

Context

The drafting coordinator presented the draft text of the eHDV UN GTR and went through the document, outlining new additions as well as comments from stakeholders. Text and comments were also added from the on-going discussions during EVE 63.

Discussion

The drafting coordinator mentioned that there is still a need for a method of converting between energy throughput and mileage. If an MPR is set too high, small applications are punished, and doing the opposite will punish large applications. There needs to be a throughput metric that starts at a mileage value and does not unnecessarily penalize either scenario. The co-chair added that if the monitor remains the SOH monitor, then the SOH would indicate the percentage of battery energy retained, which is dependent on calendar, mileage, or battery throughput.

The American delegation raised a question related to the MPR, requesting clarification on how the categories of vehicles are defined. The United States (US) classes are not aligned with the categories of the European Union (EU), which may pose some additional challenges. The drafting coordinator mentioned that a comparison is underway between US and EU groupings of vehicles and it appears that the mission profiles are relatively consistent, however, the classifications vary, so perhaps we can work together to develop this further.

Action items

- The American and European delegations to work together on a document which cross-references HDV vehicle categories between the two jurisdictions.

Decisions

Day 2 – July 19, 2023, 05:30 EDT

1. Introduction, review of agenda

Documentation

- EVE-63-01e

Context

The co-chairs greeted members of the EVE IWG. The agenda was reviewed and adopted prior to beginning discussions for the session.

Discussion

Action items

Decisions

2. HDV GTR - Review of draft text and discussion of open items

Documentation

- EVE-63-04e
- EVE-63-05e

Context

The drafting coordinator continued to go through the draft text of the eHDV UN GTR and indicate to the EVE IWG the additions that were made and the comments that were added based on the discussions of the previous day.

Discussion

The co-chairs asked, when discussing the representative C-rate for testing, would it possible to handle this through the family definitions. The drafting coordinator stated that it is possible, and they have been trying to find a way to identify the C-rates in the family definitions. The American delegation commented that for the C-rate of different classifications and mission profiles, they were thinking to define representative power levels for vehicle categories and associated mission profiles within those categories. The battery power can change depending on the vehicle usage, so the idea was to incorporate a power value within a table in the UN GTR. The reasoning behind this is because there could be a vehicle with twice the battery capacity running a test at twice the power, which may not scale the same for C-rate.

The Japanese delegation expressed that they will need to take some time to review the proposals by the various groups before they will be able to offer comment.

The co-chairs requested clarification on whether the draft text contained language for energy measurement as well as a capacity measurement testing. The drafting coordinator clarified that there are no test procedures that contain capacity measurement, only comments for the moment, until we see how discussions develop.

The co-chairs requested clarification on the C-rate for the charge-discharge testing and the current value of C/5. The drafting coordinator clarified that at EVE 61, there was discussion to have a C-rate of C/5 or less, to enable battery testing and not take months to discharge the batteries. This value has also been taken from literature on long-haul trucking. The size of the batteries is a consideration, so when taking the battery capacity, a C-rate can be derived. This C/5 also represents slow charging to keep things under control and not approach the other standards such as ultra-fast charging.

The Chinese delegation expressed that they would like chassis dynamometer testing to be included in the draft text and asked if it has been reflected in the text. The drafting coordinator stated that this has not been included at this time because of the time constraints of the eHDV UN GTR development, however, this is something that can be done in the future and is a decision that needs to be taken by everyone. The Chinese delegation communicated that they are undergoing cycle and constant speed chassis dynamometer testing and would be interested in presenting the data and results at EVE 65 in Ottawa, Canada.

The co-chairs stated that decisions need to be made on the MPRs of the draft regulation, at this time annual aging and mileage make sense for some applications and energy throughput makes sense for other applications. Together it seems like energy throughput could also cover mileage if the energy

consumption for mileage is known. The American delegation indicated that they are in agreement with the co-chairs and that mileage seems like a metric to keep unless it appears to be redundant, but this depends heavily on the vehicle usage and application. The larger challenge here is setting a specific value for the throughput metric. The co-chairs expressed that they are having difficulty seeing how a throughput value can be set since it is dependent on the battery size of the vehicle. The value almost needs to be correlated to the battery size of the vehicle. If looking at kilo-watt-hours (kWh) maybe the equivalent full-cycles for energy throughput should be looked at instead of a set kWh value. The American delegation mentioned that by setting an arbitrary kWh value, it depends greatly on the size of the battery because the number of cycles will change dramatically depending on the battery size. The American delegation also stated that this same issue exists with the mileage metric, it is just less apparent. The Japanese delegation suggested that if OICA would like to incorporate an energy throughput metric, perhaps OICA should be proposing the appropriate metric because of the tight timelines that are currently in place.

The EC raised a point regarding the normalization of batteries and that the duplication of regulations should be avoided as a dedicated battery regulation already exists. OICA commented that the battery regulation is not application specific, whereas the UN GTR makes the necessary connection to the battery application. Both regulations have durability requirements, and the battery regulation makes reference to the LDV battery durability UN GTR. For eHDVs, there should be a reference to the eHDV UN GTR as well. The eHDV UN GTR is seen as welcome, as the battery regulation seems to get some things wrong.

Action items

- Chinese delegation to prepare data and results presentation of chassis dynamometer testing for the 65th EVE IWG session in Ottawa, Canada.

Decisions

3. HDV GTR – Planning and prioritization

Documentation

- EVE-63-04e
- EVE-63-05e

Context

This item was allocated to allow for discussion on future planning and prioritization of outstanding items with regard to the eHDV UN GTR, given the short timelines.

Discussion

The drafting coordinator mentioned that the target would be to resolve all outstanding items in advance of October.

The co-chairs stated that they feel a specific eHDV UN GTR drafting session should be held after the summer break and before the next EVE IWG session in September.

Action items

- The Secretariat will organize the next drafting group meeting for the eHDV UN GTR, which will take place the week before the 64th EVE IWG session.

Decisions

4. UN GTR 21 – Comment on test conditions

Documentation

- EVE-63-06e

Context

OICA offered a presentation with comment on UN GTR 21, focusing on the test conditions and instrumentation and its validity for applying charge-discharge testing and system bench testing.

Discussion

The drafting coordinator pointed out that with regard to the time parameter, it has already been taken into account in the draft text and will reflect 100 milliseconds based on previous discussions.

The drafting coordinator mentioned that the dynamometer speed was likely adopted from the International Organization for Standardization (ISO) procedures or some other procedure, so it is unclear why OICA had no issues with this parameter before but are raising it again now. OICA elaborated that the dynamometer speed accuracy of 0.2 km/hr seems irrelevant for the purposes of the testing. The engine speed is the parameter of evaluation, and the dynamometer speed maintains the engine speed which would be required for the highest power, so why is high accuracy required if it is not the specific value under consideration. The drafting coordinator expressed that he does not see why this would be an issue and would think that dynamometers can be used for several purposes and if this dynamometer speed parameter is achievable by most dynamometers, then there is no real value in relaxing the stringency. In relaxing the requirements, it would then require evaluation of other loopholes, so it is proposed that unless there is a firm stance and significant hardship on this dynamometer speed parameter, that it be left alone. OICA stated that they would prepare something short for the next meeting, including the reasoning for each of these proposed changes to the UN GTR 21 testing conditions and test instrumentation.

Action items

- OICA to prepare a presentation supplementing EVE-63-06e, to offer reasoning for suggested revisions to testing conditions and test instrumentation in UN GTR 21.

Decisions

5. UN GTR 21 – Proposal for system bench definitions

Documentation

- EVE-63-07e

Context

The Japanese delegation offered a presentation that outlined an alternative test procedure for UN GTR 21 regarding system bench testing. This proposal was brought forward previously and the Japanese delegation developed definitions to supplement the alternative system bench testing procedure.

In addition to the system bench proposal, the Japanese delegation also suggested to eliminate Annex 3, determination of method equivalency.

Discussion

The drafting coordinator requested clarification on where the suggested text for the system bench definitions came from, expressing that it is important that any system bench represent the entire vehicle and you would not want to gain an advantage for not testing peripheral devices. It should be ensured that not only the powertrain is on the system bench, but also other portions of the vehicle that might impact the powertrain, like the air conditioning. The drafting coordinator also mentioned that strong language should be used to ensure proper implementation. The Japanese delegation stated that some of the language used to develop the system bench definitions comes from similar language in UN GTR 21 section 3.2.

OICA asked whether the definitions added for the system bench could be expanded to include more prescriptions for the system, which could then be used for other purposes. The drafting coordinator cautioned that it is important that doors are not opened for other possibilities when developing the proposed definitions. If adopting a new definition, particular attention needs to be made on getting the definition right.

The drafting coordinator commented on the second part of the Japanese delegation's presentation, stating that it seems the proposal is to delete Annex 3 and not make any reference to method equivalency. The drafting coordinator then clarified that the current version of UN GTR 21 only states that it is reserved, so none of the revisions have yet been included in Annex 3. They are supportive of no longer considering the method equivalency but stated that it is not entirely their decision. It would need to be discussed by the group first. The co-chairs stated that this may need to be covered as an item for the next meeting, so EVE IWG members are asked to please review and come prepared to the next EVE IWG meeting where a final decision can be made on this proposal.

Action items

- EVE IWG members to review the Japanese proposal regarding system bench testing and Annex 3 method equivalency, to discuss and generate a final decision at the 64th EVE IWG session.

Decisions

6. UN GTR 21 – China proposal on K factors for highly integrated EV systems

Documentation

- EVE-63-08e

Context

The Chinese delegation presented a proposal, following up the discussion from the previous EVE IWG session regarding power determination in highly integrated electric vehicle systems. The Chinese delegation proposed specific wording and a detailed figure, in addition to what they had recommended at the previous EVE IWG session,

On board data [may] be used to obtain [the] K1 value for highly integrated electric drive system[s] when it is difficult to appl[y] external [instrumentation] (for example a dedicated fixture needed to separate the motor and transmission in order to implement measurement devices) [when] [v]erification of [onboard] data is needed[.] Alternatively, the reference point can be shifted to the outlet of [the] transmission in order to obtain K1[, as] shown in Figure xxx. In the case of [an] oil cooled highly integrated electric drive system where it is impossible to obtain K1 through external measurements, the reference point needs to move p[a]st the transmission.

The Chinese delegation indicated that given current timeline, they would like to have the proposal included as part of the UN GTR 21 amendments for the Working Party on Pollution and Energy (GRPE) session in January 2024.

Discussion

The drafting coordinator stated that it seems reasonable to include this proposal and have more specifics for highly integrated drive systems. In relation to the reference point, changing this reference point could be problematic because it exists to identify a comparable to testing a vehicle with an engine. If changing it to what the Chinese delegation has proposed, then it may not be as comparable to the output shaft of a vehicle with an engine. OICA agreed with the statements made by the drafting coordinator and mentioned that they will need to discuss this internally.

The co-chairs stated that this will be taken as an action item for review and decision at the next EVE IWG session.

The Chinese delegation clarified that in their proposal, they are only looking to have this procedure for already approved vehicles and the procedure could be offered as an exceptional case or alternative method. The drafting coordinator suggested that perhaps instead of moving the reference point, there can be an assumed energy correction factor for the gear reducer. The Chinese delegation expressed agreement with this suggestion.

Action items

- EVE IWG members to review the Chinese proposal on highly integrated EV systems, for a decision at the next EVE IWG session.

Decisions

7. UN GTR 22 – Proposed text and comments on draft text

Documentation

- EVE-63-09e
- EVE-63-10e

Context

The Japanese delegation presented a document outlining comments on the draft text of UN GTR 22 amendment text, specifying potential modifications that may need to be made.

In addition, the Japanese delegation also offered a proposal and concrete text for the verification method of on-board virtual mileage (V2X) and PTO. The proposed text can be found in EVE-63-10e.

Discussion

OICA was supportive of the beginning of the Japanese proposal, which contained comments on the draft text revisions of UN GTR 22.

The EC stated that they will take this back to review and discuss internally.

Action items

- EVE IWG members to review the Japanese proposal and discuss internally for the next meeting.

Decisions

8. UN GTR 22 – Comment on Annex 2, Annex 3 and Part A monitoring

Documentation

- EVE-63-11e

Context

OICA presented comments on UN GTR 22 Annex 2, proposing a revised structure for the values to enable a clear distinction on values to be read, including mandatory, virtual mileage and optional parameters.

OICA offered a text modification proposal for dividing SOCE and SOCR for Part A monitoring.

OICA presented a potential error in the average energy equation for UBE correction in addition to an alternative method for determining the certified UBE value using the measured UBE and an adjustment factor.

Discussion

The drafting coordinator mentioned that the error in the equation has been previously amended. They also request OICA provide the text so that it may be integrated into the draft amendments.

The co-chairs indicated that this item can be thought about for the time being and can be revisited at the next meeting, after careful review.

Action items

- EVE IWG members to review the proposals from OICA regarding UN GTR 22 for the next meeting.

Decisions

9. Action item review

Documentation

Context

This item is set aside to review the recorded action items and for members of the EVE IWG to communicate whether other action items may be necessary or have been missed.

This item was skipped due to time limitations.

Discussion

Action items

Decisions