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Groupe de travail de la pollution et de l'énergie

Quatre-vingt-unième session

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Notes du Président sur la réunion tenue par le Groupe de travail de la pollution et de l'énergie en remplacement de sa quatre-vingt-unième session

Table des matières

	<i>Paragraphes</i>	<i>Page</i>
I. Participation.....	1	4
II. Adoption de l'ordre du jour (point 1 de l'ordre du jour)	2-5	4
III. Rapport de la dernière session du Forum mondial de l'harmonisation des Règlements concernant les véhicules (WP.29) (point 2 de l'ordre du jour).....	6	5
IV. Véhicules légers (point 3 de l'ordre du jour).....	7-22	5
A. Règlements ONU n ^{os} 68 (Mesure de la vitesse maximale des véhicules à moteur, y compris les véhicules électriques purs), 83 (Émissions polluantes des véhicules des catégories M1 et N1), 101 (Émissions de CO ₂ /consommation de carburant), 103 (Dispositifs antipollution de remplacement) et [154] (procédure d'essai mondiale harmonisée pour les voitures particulières et véhicules utilitaires légers – WLTP).....	7-11	5
B. Règlements techniques mondiaux ONU n ^{os} 15 (Procédure d'essai mondiale harmonisée pour les émissions des voitures particulières et véhicules utilitaires légers (WLTP)) et 19 (Procédure de mesure des émissions par évaporation dans le cadre de la procédure d'essai mondiale harmonisée pour les voitures particulières et les véhicules utilitaires légers (WLTP EVAP)).....	12-16	6
C. Procédure d'essai mondiale harmonisée en ce qui concerne les émissions en conditions réelles de conduite.....	17-22	7



V.	Véhicules utilitaires lourds (point 4 de l'ordre du jour).....	23-25	8
A.	Règlements ONU n ^{os} 49 (Émissions des moteurs à allumage par compression et des moteurs à allumage commandé (GPL et GNC)) et 132 (Dispositifs antipollution de mise à niveau (DAM)).....	23	8
B.	Règlements techniques mondiaux ONU n ^{os} 4 (Procédure mondiale harmonisée d'homologation des véhicules utilitaires lourds (WHDC)), 5 (Prescriptions mondiales harmonisées sur les systèmes d'autodiagnostic sur les véhicules utilitaires lourds (WWH-OBD)) et 10 (Émissions hors cycle (OCE)).....	24	8
C.	Prescriptions mondiales relatives à la consommation de carburant des véhicules utilitaires lourds.....	25	8
VI.	Règlements ONU n ^{os} 24 (Émissions de polluants visibles, mesure de la puissance des moteurs à allumage par compression (fumées des moteurs diesel)), 85 (Mesure de la puissance nette), 115 (Systèmes d'adaptation au GPL et au GNC), 133 (Aptitude au recyclage des véhicules automobiles) et 143 (Systèmes d'adaptation des moteurs de véhicules utilitaires lourds à la bicarburant) (point 5 de l'ordre du jour).....	26-33	8
VII.	Tracteurs agricoles et forestiers et engins mobiles non routiers (point 6 de l'ordre du jour).....	34-35	9
A.	Règlements ONU n ^{os} 96 (Émissions des moteurs diesel (tracteurs agricoles)) et 120 (Puissance nette des tracteurs et engins mobiles non routiers).....	34	9
B.	Règlement technique mondial ONU n ^o 11 (Engins mobiles non routiers).....	35	10
VIII.	Programme de mesure des particules (PMP) (point 7 de l'ordre du jour).....	36-41	10
IX.	Motocycles et cyclomoteurs (point 8 de l'ordre du jour).....	42-47	11
A.	Règlements ONU n ^{os} 40 (Émissions de gaz polluants des motocycles) et 47 (Émissions de gaz polluants des cyclomoteurs).....	42	11
B.	Règlements techniques mondiaux ONU n ^{os} 2 (Cycle d'essai mondial harmonisé de mesure des émissions des motocycles (WMTC)), 17 (Émissions de gaz de carter et émissions par évaporation des véhicules de la catégorie L) et 18 (Systèmes d'autodiagnostic (OBD) pour les véhicules de la catégorie L).....	43-44	11
C.	Prescriptions d'efficacité en matière d'environnement et de propulsion pour les véhicules de la catégorie L.....	45-47	11
X.	Véhicules électriques et environnement (EVE) (point 9 de l'ordre du jour).....	48-54	12
A.	RTM ONU relatif à la détermination de la puissance des véhicules électriques (DEVP).....	48-50	12
B.	Autres activités du groupe de travail informel EVE.....	51-54	13
XI.	Résolution mutuelle n ^o 2 (R.M.2) (point 10 de l'ordre du jour).....	55	13
XII.	Homologation de type internationale de l'ensemble du véhicule (IWVTA) (point 11 de l'ordre du jour).....	56	13
XIII.	Qualité de l'air à l'intérieur des véhicules (VIAQ) (point 12 de l'ordre du jour)....	57-60	13
XIV.	Conformité pendant la durée de vie (point 13 de l'ordre du jour).....	61	14
XV.	Thèmes prioritaires pour le Groupe de travail (point 14 de l'ordre du jour).....	62-65	14
XVI.	Élection du Bureau (point 15 de l'ordre du jour).....	66	15
XVII.	Questions diverses (point 16 de l'ordre du jour).....	67	15

XVIII.	Ordre du jour provisoire de la prochaine session.....	68-70	15
	A. Prochaîne session du GRPE.....	68	15
	B. Ordre du jour provisoire de la prochaine session du GRPE proprement dite..	69	15
	C. Réunions informelles prévues en marge de la prochaine session du GRPE....	70	17
Annexes			
I.	Liste des documents informels (GRPE-81 -) distribués sans cote avant et pendant la session.....		18
II.	Réunions informelles tenues en marge de la session du GRPE		20
III.	Liste des groupes de travail informels, équipes spéciales et sous-groupes du GRPE.....		21
IV.	Adopted amendments to ECE/TRANS/WP.29/GRPE/2020/10.....		22
V.	Technical Report to Amendment 6 to UN GTR No. 15		24
VI.	Adopted amendments to ECE/TRANS/WP.29/GRPE/2020/11.....		52
VII.	Technical report on the development of a new UN GTR on the Determination of Electrified Vehicle Power (DEVP).....		54
VIII.	Decisions adopted under silence procedure.....		57

I. Participation

1. Le Groupe de travail de la pollution et de l'énergie (GRPE) a tenu une réunion en ligne du 9 au 11 juin 2020, sans services d'interprétation (réunion informelle remplaçant sa quatre-vingt-unième session), sous la présidence de M. A. Rijnders (Pays-Bas) et la vice-présidence de M. Duncan Kay (Royaume-Uni de Grande-Bretagne et d'Irlande du Nord). Y ont participé, conformément à l'article 1 a) du Règlement intérieur du Forum mondial de l'harmonisation des Règlements concernant les véhicules (WP.29) (TRANS/WP.29/690, tel que modifié) des experts représentant les pays suivants : Afrique du Sud, Allemagne, Australie, Autriche, Canada, Chine, Espagne, États-Unis d'Amérique, Fédération de Russie, France, Hongrie, Inde, Israël, Italie, Japon, Norvège, Pays-Bas, Pologne, République de Corée, République tchèque, Roumanie, Royaume-Uni de Grande-Bretagne et d'Irlande du Nord, Saint-Marin, Suède, Suisse et Viet Nam. Des experts de la Commission européenne étaient aussi présents. En outre, des experts des organisations non gouvernementales ci-après ont participé à la session : American Automotive Policy Council (AAPC), Association européenne des fournisseurs de l'automobile (CLEPA/MEMA/JAPIA), Association internationale des constructeurs de motocycles (IMMA), Association internationale des véhicules fonctionnant au gaz naturel (NGV Global), Association pour la limitation des émissions par catalyseur (AECC), Comité international de l'inspection technique automobile (CITA), European Association of Internal Combustion Engine Manufacturers (EUROMOT), European Garage Equipment Association (EGEA), Fahrzeugsystemdaten GmbH (FSD), Fédération des fabricants européens de matériaux de friction, Fédération internationale de l'automobile (FIA), Organisation internationale des constructeurs d'automobiles (OICA), Union internationale des transports routiers (IRU) et Liquid Gas Europe.

II. Adoption de l'ordre du jour (point 1 de l'ordre du jour)

Document(s) : ECE/TRANS/WP.29/GRPE/2020/9
Documents informels GRPE-81-01, GRPE-81-02-Rev.3,
GRPE-81-03, GRPE-81-04, GRPE-81-05 et GRPE-81-25

2. M. Rijnders, Président du GRPE, a ouvert la réunion, qui se tenait en ligne à cause de la pandémie de COVID-19, puis souhaité la bienvenue aux participants. Le GRPE a adopté l'ordre du jour provisoire de sa quatre-vingt-unième session (ECE/TRANS/WP.29/GRPE/2020/9), dans la version actualisée et récapitulative figurant dans le document GRPE-81-02-Rev.3, et le document GRPE-81-03, en tant qu'ordre provisoire d'examen des divers points. Le GRPE a pris note du document GRPE-81-01 relatif à l'organisation des réunions de ses groupes de travail informels pendant les semaines qui ont précédé la présente réunion.

3. La liste des documents informels distribués avant et pendant la session du GRPE figure dans l'annexe I. On trouvera à l'annexe II la liste des réunions informelles tenues en marge de cette session. L'annexe III contient une liste des groupes de travail informels, des équipes spéciales et des sous-groupes du GRPE, ainsi que des informations sur leurs présidents et secrétaires et la date de fin de leurs mandats.

4. Le secrétariat a présenté les documents GRPE-81-04 et GRPE-81-05, qui portent sur les instructions relatives au déroulement de la présente session en ligne et la procédure régissant l'adoption de décisions pendant la session. En outre, le secrétariat du WP.29 a informé le GRPE qu'il n'y aurait pas de services d'interprétation pendant la réunion en ligne et que les Parties contractantes pourraient faire des observations sur les propositions, dans les trois langues, dans le cadre d'une procédure d'approbation tacite de dix jours (annexe VIII).

5. Le secrétariat a présenté le document GRPE-81-25, dans lequel il est indiqué que la prochaine session du GRPE se tiendra en principe du 12 au 15 janvier 2021 et rappelé que la date limite pour la soumission des documents officiels était fixée au 20 octobre 2020. Il a invité les présidents et secrétaires des groupes de travail informels à prendre contact avec

lui pour arrêter le calendrier des réunions que tiendraient ces groupes en marge de la session de janvier 2021 du GRPE. En outre, le secrétariat a demandé que les propositions de révision soient présentées à l'aide de la fonction de suivi des modifications.

III. Rapport de la dernière session du Forum mondial de l'harmonisation des Règlements concernant les véhicules (WP.29) (point 2 de l'ordre du jour)

Document(s) : ECE/TRANS/WP.29/1151
Documents informels GRPE-81-07-Rev.1

6. Le secrétariat a présenté le document GRPE-81-07-Rev.1 et indiqué quels points pertinents avaient été examinés à la 180^e session du Forum mondial de l'harmonisation des Règlements concernant les véhicules (WP.29) et à la quatre-vingt-deuxième session du Comité des transports intérieurs. Il a invité les participants à se référer au document ECE/TRANS/WP.29/1151 pour de plus amples informations.

IV. Véhicules légers (point 3 de l'ordre du jour)

A. Règlements ONU n^{os} 68 (Mesure de la vitesse maximale des véhicules à moteur, y compris les véhicules électriques purs), 83 (Émissions polluantes des véhicules des catégories M₁ et N₁), 101 (Émissions de CO₂/consommation de carburant), 103 (Dispositifs antipollution de remplacement) et [154] (procédure d'essai mondiale harmonisée pour les voitures particulières et véhicules utilitaires légers – WLTP)

Document(s) : ECE/TRANS/WP.29/GRPE/2020/10,
(ECE/TRANS/WP.29/2020/92),
(ECE/TRANS/WP.29/2020/93),
Documents informels GRPE-81-19, GRPE-81-21,
GRPE-81-29-Rev.1, GRPE-81-30, GRPE-81-35 et GRPE-81-36

7. Le représentant de l'OICA a présenté le document ECE/TRANS/WP.29/GRPE/2020/10, tel que modifié par le document informel GRPE-81-21, dans lequel il est proposé d'autoriser, dans le Règlement ONU n^o 83, l'utilisation des intervalles d'étalement et d'entretien du RTM ONU n^o 15 pour les installations d'essai capables de réaliser des essais conformément à ce RTM ONU. Le GRPE a adopté la proposition, qui tend à modifier les séries 05, 06 et 07 d'amendements au Règlement ONU n^o 83, telle que modifiée par l'annexe IV.

8. Le GRPE a prié le secrétariat de soumettre l'annexe IV au WP.29 et au Comité d'administration de l'Accord de 1958 (AC.1) pour examen et mise aux voix à leurs sessions de novembre 2020 en tant que projets de compléments 13, 15 et 12 respectivement aux séries 05, 06 et 07 d'amendements au Règlement ONU n^o 83.

9. Le Président a donné un aperçu des documents ECE/TRANS/WP.29/2020/92 et ECE/TRANS/WP.29/2020/93 soumis par l'Union européenne et le Japon au WP.29 à sa session de juin 2020 en tant qu'amendements au projet de nouveau Règlement ONU n^o [154] relatif à la procédure d'essai mondiale harmonisée pour les voitures particulières et les véhicules utilitaires légers (procédure d'essai WLTP), déjà adopté par le GRPE à sa session de janvier 2020. Ces deux documents contiennent des propositions visant à améliorer le texte de l'amendement 6 au RTM ONU n^o 15. Le GRPE a pris note de ces amendements et remercié le groupe de travail informel de la procédure d'essai mondiale harmonisée pour les voitures particulières et véhicules utilitaires légers (groupe de travail informel WLTP), ainsi que les Parties contractantes ayant participé à l'élaboration de ces documents.

10. Pendant la session, le représentant de l'OICA a présenté les documents informels GRPE-81-30 et GRPE-81-35, modifiés par le GRPE-81-29-Rev.1. Ces documents contenaient des éclaircissements sur le Règlement ONU n° [154] relatif à la procédure d'essai WLTP. Ainsi que cela avait été demandé à la précédente session du GRPE (ECE/TRANS/WP.29/GRPE/80, par. 15), ces documents ont été élaborés pour fournir des orientations aux futurs utilisateurs du Règlement ONU n° [154]. Le secrétariat a ensuite présenté le document GRPE-81-36, dans lequel sont énoncées différentes solutions visant à donner une visibilité aux documents contenant des éclaircissements ou des orientations. Le GRPE a décidé de créer sur le site Web du GRPE une nouvelle rubrique intitulée « Documents for reference only » (document uniquement communiqué à titre de référence), comme sur les pages Web du Groupe de travail de l'éclairage et de la signalisation lumineuse (GRE) et du Groupe de travail du bruit et des pneumatiques (GRBP), et d'y télécharger le document GRPE-81-29-Rev.1.

11. Le Président a demandé au GRPE de présenter le document GRPE-81-19 au titre du point 5 de l'ordre du jour étant donné que le document GRPE-81-18, dont l'examen était prévu au titre du même point, portait sur le même sujet.

B. Règlements techniques mondiaux ONU n°s 15 (Procédure d'essai mondiale harmonisée pour les émissions des voitures particulières et véhicules utilitaires légers (WLTP)) et 19 (Procédure de mesure des émissions par évaporation dans le cadre de la procédure d'essai mondiale harmonisée pour les voitures particulières et les véhicules utilitaires légers (WLTP EVAP))

Document(s) : ECE/TRANS/WP.29/GRPE/2020/14
Documents informels GRPE-81-10, GRPE-81-11, GRPE-81-14,
GRPE-81-15 et GRPE-81-20-Rev.1

12. Le représentant de la Commission européenne, coordonnateur de la rédaction dans le cadre des activités liées à la procédure WLTP, a présenté le document ECE/TRANS/WP.29/GRPE/2020/14, tel que modifié par le document GRPE-81-14, en tant que projet d'amendement 6 au RTM ONU n° 15, ainsi que le rapport technique correspondant (GRPE-81-15). Le Président du groupe de travail informel du Programme de mesure des particules (groupe PMP) a présenté le document GRPE-81-10, qui contient d'autres modifications à apporter au document ECE/TRANS/WP.29/GRPE/2020/14 au titre de l'amendement 6 au RTM ONU n° 15 relatif à une méthode complémentaire de mesure des particules de moins de 23 nm. En outre, il a présenté le document GRPE-81-11, qui contient une note explicative sur la partie de l'amendement 6 au RTM ONU n° 15 consacrée à la procédure de mesure des particules de moins de 23 nm. Il a aussi informé le GRPE que le document GRPE-81-11 avait été intégré au rapport technique sur l'amendement 6 au RTM ONU n° 15 (le GRPE-81-11 figure dans le GRPE-81-15).

13. Le GRPE a adopté les documents ECE/TRANS/WP.29/GRPE/2020/14, GRPE-81-14 et GRPE-81-10 tels que modifiés par l'additif 1 aux présentes notes du Président. Il a aussi adopté le rapport technique (GRPE-81-15) qui figure à l'annexe V. Le GRPE a prié le secrétariat de soumettre l'additif 1 et l'annexe V au WP.29 et au Comité exécutif de l'Accord de 1998 (AC.3) pour examen et mise aux voix à leurs sessions de novembre 2020 en tant que projet d'amendement 6 au RTM ONU n° 15.

14. Le Président du groupe de travail informel WLTP a présenté le document GRPE-81-20-Rev.1 dans lequel sont décrites les activités les plus récentes du groupe de travail informel. Il a conclu son intervention en rappelant que le mandat du groupe de travail informel expirait en juin 2020 et qu'aucune des Parties contractantes ne disposait des ressources lui permettant de devenir le chef de file et le soutien du groupe de travail informel. Le Président a proposé que les parties intéressées mènent ponctuellement les activités se rapportant à la procédure WLTP qui pourraient appeler un travail plus approfondi et soumettent au GRPE le fruit de leurs travaux. Les représentants de la Commission européenne, du Royaume-Uni et des États-Unis d'Amérique ont approuvé

cette manière de procéder et confirmé leur volonté de participer ponctuellement à des discussions, si nécessaire.

15. Le Président du GRPE a remercié le groupe de travail informel WLTP des résultats considérables qu'il avait accomplis ces quinze dernières années. Selon lui, le sigle « WLTP » était connu dans le monde entier, et pas seulement des experts participant aux travaux du WP.29. Le Président a dit regretter de ne pas pouvoir faire des adieux dignes de ce nom et de vive voix à la « famille » WLTP et proposé d'essayer dans la mesure du possible de le faire en présentiel à la prochaine session du GRPE, en janvier 2021. Le GRPE s'est associé aux félicitations adressées au groupe de travail informel, dont il a loué les réalisations.

16. Le GRPE a pris note de la demande de mise à disposition d'une salle de réunion pour le groupe spécial chargé d'étudier les questions liées à la procédure WLTP pendant une demi-journée au cours de la semaine de réunion du GRPE, en janvier 2021.

C. Procédure d'essai mondiale harmonisée en ce qui concerne les émissions en conditions réelles de conduite

Document(s): ECE/TRANS/WP.29/GRPE/2020/15
Documents informels GRPE-81-16, GRPE-81-17 et GRPE-81-26

17. La Présidente du groupe de travail informel des émissions en conditions réelles de conduite a présenté le rapport d'étape du groupe de travail informel (GRPE-81-17) en mettant principalement l'accent sur l'élaboration du projet de nouveau Règlement ONU sur les émissions en conditions réelles de conduite soumis au GRPE dans le document ECE/TRANS/WP.29/2020/15 tel que modifié par le document informel GRPE-81-16. Elle a aussi présenté le document GRPE-81-26, qui vient compléter le texte du projet de Règlement ONU avec un modèle de fichier de données permettant de rassembler les données collectées pendant l'essai et de vérifier certaines des conditions de validité des trajets effectués et conçu spécifiquement pour les essais sur les émissions en conditions réelles de conduite qui sont prévus dans le projet de nouveau Règlement ONU. Enfin, la Présidente a informé le GRPE que certains éléments restaient entre crochets car le processus de réglementation en cours au niveau européen pourrait avoir une incidence sur le texte proposé et entraîner le report de la prochaine session du WP.29 si l'Union européenne n'achevait pas ce processus d'ici-là. Le GRPE a pris note de ces informations.

18. Le représentant de l'OICA a demandé des précisions sur la mise à jour du Règlement ONU n° 83, devenue nécessaire en raison de l'élaboration de nouveaux Règlements ONU sur la procédure WLTP et sur les émissions en conditions réelles de conduite. L'experte de la Commission européenne a déclaré qu'il fallait continuer d'évaluer les modifications à apporter au Règlement ONU n° 83 tout en tenant compte du cadre juridique de l'Union européenne. L'évaluation devrait se terminer avant la prochaine session du GRPE, en janvier 2021, en particulier en ce qui concerne les dispositions relatives à la conformité en service. Le représentant du Japon a lui aussi considéré que l'ajout de dispositions sur la conformité en service au texte du Règlement ONU n° 83 devrait faire l'objet d'une réflexion approfondie car cet élément pouvait aussi figurer dans les dispositions relatives à la procédure WLTP.

19. Le Président a félicité le groupe de travail informel des émissions en conditions réelles de conduite d'avoir réalisé de telles avancées en si peu de temps et obtenu un consensus allant dans le sens de la pleine harmonisation des Règlements ONU.

20. Le GRPE a adopté les documents ECE/TRANS/WP.29/GRPE/2020/15 et GRPE-81-16 tels que modifiés par l'additif 2 aux présentes notes du Président et complétés par le document GRPE-81-26, qui sera téléchargé sur la page Web consacrée aux Règlements ONU dès qu'il sera disponible. Il a prié le secrétariat de soumettre l'additif 2 au WP.29 et à l'AC.1 pour examen et mise aux voix à leurs sessions de novembre 2020 en tant que projet de nouveau Règlement ONU n° [XXX] sur les émissions en conditions réelles de conduite. La représentante de la Commission européenne a indiqué que certains éléments resteraient entre crochets en attendant le résultat de discussions menées dans la région, à l'échelle

locale. Les crochets seraient supprimés avant l'adoption de ce texte par le Comité d'administration (WP.29/AC.1).

21. Enfin, la Présidente a informé le GRPE des faits les plus récents et des activités prévues dans le cadre de l'élaboration du projet de nouveau RTMONU sur les émissions en conditions réelles de conduite, au sujet duquel le débat se poursuivait avec un groupe plus important de parties prenantes.

22. Le GRPE a pris note de la demande de mise à disposition d'une salle de réunion pendant une demi-journée au cours de sa semaine de réunion en janvier 2021.

V. Véhicules utilitaires lourds (point 4 de l'ordre du jour)

A. Règlements ONU n^{os} 49 (Émissions des moteurs à allumage par compression et des moteurs à allumage commandé (GPL et GNC)) et 132 (Dispositifs antipollution de mise à niveau (DAM))

23. Compte tenu des circonstances et du temps limité disponible pour la réunion virtuelle, le GRPE n'a pas examiné ce point de l'ordre du jour.

B. Règlements techniques mondiaux ONU n^{os} 4 (Procédure mondiale harmonisée d'homologation des véhicules utilitaires lourds (WHDC)), 5 (Prescriptions mondiales harmonisées sur les systèmes d'autodiagnostic sur les véhicules utilitaires lourds (WWH-OBD)) et 10 (Émissions hors cycle (OCE))

24. Compte tenu des circonstances et du temps limité disponible pour la réunion virtuelle, le GRPE n'a pas examiné ce point de l'ordre du jour.

C. Prescriptions mondiales relatives à la consommation de carburant des véhicules utilitaires lourds

25. Compte tenu des circonstances et du temps limité disponible pour la réunion virtuelle, le GRPE n'a pas examiné ce point de l'ordre du jour.

VI. Règlements ONU n^{os} 24 (Émissions de polluants visibles, mesure de la puissance des moteurs à allumage par compression (fumées des moteurs diesel)), 85 (Mesure de la puissance nette), 115 (Systèmes d'adaptation au GPL et au GNC), 133 (Aptitude au recyclage des véhicules automobiles) et 143 (Systèmes d'adaptation des moteurs de véhicules utilitaires lourds à la bicarburant) (point 5 de l'ordre du jour)

Document(s) : ECE/TRANS/WP.29/GRPE/2020/11,
ECE/TRANS/WP.29/GRPE/2020/13,
Documents informels GRPE-81-18, GRPE-81-28 et GRPE-81-37

26. L'expert de l'OICA a informé le GRPE que cette organisation ne souhaitait plus soumettre le document ECE/TRANS/WP.29/GRPE/2020/13 au GRPE à son examen. Il a expliqué que des éléments récents pourraient permettre d'élargir le champ d'application et de présenter un document plus complet aux prochaines sessions du GRPE. Le Groupe de travail a pris note de la décision de l'OICA.

27. L'expert de Liquid Gas Europe a présenté le document ECE/TRANS/WP.29/GRPE/2020/11, tel que modifié par le document informel GRPE-81-37. Le représentant de l'Italie a approuvé la proposition qui figure dans ce document. Le représentant du Royaume-Uni a demandé des éclaircissements au sujet des « dispositions spéciales » dans le contexte du Règlement ONU n° 115. L'expert de Liquid Gas Europe s'est engagé à améliorer la clarté des prochaines propositions d'amendements et à faciliter le traitement dans le cas des technologies automobiles particulières pour les autorités d'homologation de type.

28. Le GRPE a adopté les documents ECE/TRANS/WP.29/GRPE/2020/11 et GRPE-81-37, tels que modifiés par l'annexe VI et prié le secrétariat de soumettre l'annexe VI au WP.29 et à l'AC.1 pour examen et mise aux voix à leurs sessions de novembre 2020 en tant que projet de complément 9 au Règlement ONU n° 115 (systèmes d'adaptation au GPL et au GNC).

29. Le représentant du CITA a présenté les documents GRPE-81-18 et GRPE-81-19 dans lesquels il est proposé de définir une valeur de référence pour la mesure du nombre de particules dans les Règlements ONU n° 24 et 83, ce qui pourrait notamment être utile dans le cadre du contrôle technique pendant la durée de vie du véhicule. Il a expliqué que cette première présentation visait principalement à inciter le GRPE à se pencher sur cette question.

30. Le représentant de l'OICA a regretté que, ces deux documents informels aient été présentés peu de temps avant la réunion du GRPE, ce qui a réduit le temps disponible pour un examen approfondi des propositions qu'ils contenaient. Il a souligné que le GRPE-81-19 n'était pas cohérent avec le GRPE-81-28, qu'il avait soumis l'OICA (par. 0). Enfin, il a dit qu'il se demandait si les propositions de l'OICA auraient des incidences sur le coût du contrôle technique périodique.

31. La représentante de la Commission européenne a regretté le caractère prématuré de cette proposition compte tenu de l'importance de la question visée dans l'évaluation de la détérioration des filtres à particules diesel. La Commission européenne serait disposée à redéfinir l'essai prévu dans les Règlements ONU n° 24 et 83 pour qu'il comprenne le nombre de particules. Le représentant des Pays-Bas, dont le pays va probablement procéder à des essais de mesure du nombre de particules pendant les contrôles techniques périodiques à partir de 2021, a déclaré qu'il était disposé à étudier une proposition plus aboutie. Lui aussi favorable à cette initiative, le représentant de l'Allemagne a dit qu'il serait heureux d'y participer.

32. Le représentant de l'OICA a donné un aperçu du document GRPE-81-28, dans lequel il est proposé que le Règlement ONU n° 24 soit retiré du champ d'application du Règlement ONU n° 49. La représentante de la Commission européenne a souligné qu'aucune proposition en ce sens n'avait jusqu'alors été présentée.

33. Le Président a proposé que le GRPE examine l'ensemble des éléments pendant sa prochaine session, en janvier 2021, y compris le point de vue des parties prenantes ayant souhaité travailler sur ce sujet.

VII. Tracteurs agricoles et forestiers et engins mobiles non routiers (point 6 de l'ordre du jour)

A. Règlements ONU n° 96 (Émissions des moteurs diesel (tracteurs agricoles)) et 120 (Puissance nette des tracteurs et engins mobiles non routiers)

34. Compte tenu des circonstances et du temps limité disponible pour la réunion virtuelle, le GRPE n'a pas examiné ce point de l'ordre du jour.

B. Règlement technique mondial ONU n° 11 (Engins mobiles non routiers)

35. Compte tenu des circonstances et du temps limité disponible pour la réunion virtuelle, le GRPE n'a pas examiné ce point de l'ordre du jour.

VIII. Programme de mesure des particules (PMP) (point 7 de l'ordre du jour)

Document(s) : Documents informels GRPE-81-12, GRPE-81-13 et GRPE-81-31

36. Le représentant de la Commission européenne, Président du groupe de travail informel du Programme de mesure des particules (PMP), a présenté le document GRPE-81-31, dans lequel il est fait état de l'avancement des activités du groupe de travail informel depuis la précédente session du GRPE. Le groupe de travail informel a fait beaucoup de progrès tant sur les émissions de particules provenant de l'échappement que sur celles provenant d'autres sources et cela a notamment abouti à l'incorporation de la méthode de mesure des particules de moins de 23 nm dans l'annexe 6 au Règlement ONU n° 15 (par. 0). Le représentant a aussi décrit les activités les plus récentes se rapportant aux émissions de particules ne provenant pas de l'échappement et demandé au GRPE de tenir un atelier d'une journée sur les émissions dues aux freins en marge de la prochaine session du Groupe de travail, en janvier 2021.

37. Les représentants du Royaume-Uni et de la Commission européenne ont dit qu'ils souhaiteraient que l'étape suivante soit d'incorporer les prescriptions relatives aux particules de moins de 23 nm dans le RTM ONU n° 4 relatif aux émissions des véhicules utilitaires lourds. En outre, le représentant de la Commission européenne a dit qu'il sera possible d'accueillir l'atelier sur les émissions dues aux freins dans ses locaux à Genève. Le représentant de l'OICA a demandé des éclaircissements sur l'inclusion des particules de moins de 23 nm dans le RTM ONU n° 4 et sur la manière dont les différences entre les voitures particulières et utilitaires légers et les véhicules utilitaires lourds pourraient être prises en compte dans la conception d'une procédure applicable aux véhicules utilitaires lourds. Le Président du groupe de travail informel du PMP a dit que, dans un premier temps, l'échantillonnage direct de gaz d'échappement bruts avait été envisagé dans le cas des véhicules utilitaires lourds. Il n'a pas exprimé de préférence quant à la manière dont ces dispositions seraient intégrées dans la législation relative aux véhicules utilitaires lourds. Le représentant de la Commission européenne a ajouté que les modalités et la date de cette intégration n'avaient pas encore été arrêtées par les parties intéressées.

38. L'expert de la Commission européenne, Président des groupes de travail sur les émissions dues aux freins, a présenté le document GRPE-81-12, qui contient un rapport d'étape sur les activités relatives à ce type d'émissions. Il a exposé en détail les résultats obtenus, notamment l'utilisation de la base de données WLTP pour définir des cycles d'essai des émissions dues aux freins, au titre des activités du groupe de travail 1. La définition, en cours, d'une procédure (groupe de travail 2) permettant de mesurer les émissions de poussière au freinage avait été ralentie par la crise de la COVID-19 et la difficulté que présentait la réalisation d'essais en laboratoire et d'autres sortes d'essais physiques.

39. Le représentant du Royaume-Uni a souligné que les émissions de particules ne provenant pas de l'échappement devenaient une priorité pour certaines Parties contractantes. Il a donné comme exemple la pollution aux microplastiques dont les pneus étaient une source importante. L'expert de la Commission européenne a dit que l'usure des pneus était effectivement un sujet très intéressant et qu'un projet de recherche devrait être lancé très prochainement à l'échelle européenne pour étudier ce problème en détail. Le GRPE s'est félicité de l'excellente qualité des retours sur les activités relatives aux émissions dues aux freins et a encouragé les participants à lui rendre compte régulièrement de l'état d'avancement des activités sur ce point, qui est inscrit sur la liste des priorités du GRPE (chap. XIV).

40. Le Président du groupe de travail informel du Programme de mesure des particules (PMP) a présenté le document GRPE-81-13, où figure une proposition de révision du mandat du groupe de travail informel visant à y intégrer les définitions des procédures d'essais sur route dont l'élaboration est prévue pour application aux véhicules utilitaires légers et lourds en ce qui concerne les émissions de particules de moins de 23 nm. Le GRPE a décidé de réviser le mandat du groupe de travail informel du PMP, comme proposé dans le document GRPE-81-13.

41. Le GRPE a pris note de la demande de mise à disposition d'une salle de réunion pendant une journée au cours de sa semaine de réunion en janvier 2021 afin d'y tenir l'atelier sur les émissions dues aux freins.

IX. Motocycles et cyclomoteurs (point 8 de l'ordre du jour)

A. Règlements ONU n^{os} 40 (Émissions de gaz polluants des motocycles) et 47 (Émissions de gaz polluants des cyclomoteurs)

42. Le GRPE n'a reçu aucune nouvelle proposition de modification des Règlements ONU n^{os} 40 et 47.

B. Règlements techniques mondiaux ONU n^{os} 2 (Cycle d'essai mondial harmonisé de mesure des émissions des motocycles (WMTC)), 17 (Émissions de gaz de carter et émissions par évaporation des véhicules de la catégorie L) et 18 (Systèmes d'autodiagnostic (OBD) pour les véhicules de la catégorie L)

Document(s): ECE/TRANS/WP.29/GRPE/2020/17,
Document informel GRPE-81-24-Rev.2

43. Le Président du groupe de travail informel des prescriptions d'efficacité en matière d'environnement et de propulsion applicables aux véhicules de la catégorie L (groupe EPPR-L) a présenté le document ECE/TRANS/WP.29/GRPE/2020/17, tel que modifié par le document informel GRPE-81-24-Rev.2, qui contient une proposition d'amendement 1 au RTM ONU n^o 18. Il a ajouté que le rapport technique accompagnant le projet d'amendement 1 au RTM ONU n^o 18 sera soumis ultérieurement par certaines des Parties contractantes participant à l'élaboration du nouvel amendement. Il a remercié toutes les parties de leurs contributions.

44. Le GRPE a adopté les documents ECE/TRANS/WP.29/GRPE/2020/17 et GRPE-81-24-Rev.2 tels que modifiés par l'additif 3 aux présentes notes du Président. Il a constaté que le rapport technique avait été soumis tardivement. Le GRPE a prié le secrétariat de soumettre l'additif 3 au WP.29 et au Comité exécutif de l'Accord de 1998 (AC.3) pour examen et mise aux voix à leurs sessions de novembre 2020 en tant que projet d'amendement 1 au RTM ONU n^o 18.

C. Prescriptions d'efficacité en matière d'environnement et de propulsion pour les véhicules de la catégorie L

Document(s): Documents informels GRPE-81-22 et GRPE-81-23-Rev.1

45. Le Président du groupe EPPR-L a présenté un compte rendu de l'état d'avancement de ses travaux (GRPE-81-22). Il a présenté au GRPE des informations actualisées sur les progrès accomplis par le groupe et présenté le document GRPE-81-23-Rev.1 contenant la proposition de modification du mandat du groupe. Cette proposition énonçait les activités futures du groupe et comportait un projet de nouveau calendrier allant jusqu'en 2025. Le Président du GRPE a souhaité que le projet de mandat prévoie aussi la présentation d'un rapport d'étape à la fin du premier semestre de 2022 afin que le GRPE soit tenu informé des

avancées réalisées et des activités récemment menées par ce groupe pendant toute la durée de son mandat. Le Président du groupe EPPR-L a donné son accord de principe.

46. Le GRPE a décidé de modifier le mandat du groupe EPPR-L au cours de la session, conformément aux propositions figurant dans le document GRPE-81-23-Rev.1.

47. Le GRPE a pris acte de l'état d'avancement des travaux du groupe EPPR-L et pris note de la demande de mise à disposition d'une salle de réunion pendant une journée au cours de la semaine de session du GRPE en janvier 2021.

X. Véhicules électriques et environnement (EVE) (point 9 de l'ordre du jour)

A. RTM ONU relatif à la détermination de la puissance des véhicules électriques (DEVP)

Document(s): ECE/TRANS/WP.29/GRPE/2020/12,
Documents informels GRPE-81-27 et GRPE-81-33

48. Le représentant des États-Unis, chargé de coordonner la rédaction du projet de nouveau RTM ONU, a présenté le document informel GRPE-81-33 en guise de brève introduction au document ECE/TRANS/WP.29/GRPE/2020/12, tel que modifié par le document informel GRPE-81-27, qui concerne une proposition de nouveau RTM ONU sur la détermination de la puissance des véhicules électriques. Le représentant des Pays-Bas a demandé quelles données prouvaient que la procédure d'essai 1 (PE1) et la procédure d'essai 2 (PE2) donnaient des résultats équivalents, comme indiqué dans la proposition. Le représentant chargé de coordonner la rédaction de la proposition a indiqué que des essais avaient été réalisés sur des véhicules au Centre commun de recherche de la Commission européenne, où il était possible de conduire aussi bien la PE1 que la PE2. Les résultats des essais étaient proches. Dans la majorité des architectures des véhicules hybrides, une seule de ces procédures d'essai peut être conduite, qui est déterminée en fonction des configurations logicielles et matérielles.

49. Le représentant de l'OICA a demandé comment le concept de famille était envisagé dans la proposition s'agissant en particulier de déterminer le type et le nombre de véhicules à soumettre à des essais dans les échanges avec l'autorité d'homologation de type. Le représentant qui coordonne la rédaction a déclaré que ce problème avait été soulevé et que les solutions définitives étaient encore en cours d'examen. Il a demandé s'il serait possible d'utiliser des concepts de famille différents issus d'autres textes législatifs (par exemple des concepts de la famille WLTP) dans le cadre de l'application des prescriptions du projet de RTM ONU si cela permettait de répondre à d'autres besoins en matière de réglementation. Le Président du GRPE a rappelé au Groupe de travail que les Règlements techniques mondiaux ONU n'étaient liés ni à l'homologation de type ni aux dispositions administratives correspondantes et qu'il faudrait quand même transposer le projet de RTM ONU sur la détermination de la puissance des véhicules électriques dans l'Accord de 1958, par exemple en tant que partie du Règlement ONU n° [154] sur la procédure WLTP ou du Règlement ONU n° 85. Il a proposé que ces questions soient examinées aux prochaines sessions du GRPE.

50. Le GRPE a adopté les documents ECE/TRANS/WP.29/GRPE/2020/12 et GRPE-81-27 tels que modifiés par le l'additif 4 aux présentes notes du Président, en tant que projet de nouveau Règlement ONU n° [XX] sur la détermination de la puissance des véhicules électriques, en même temps que l'annexe VII constituant son rapport technique, à extraire des documents adoptés, conformément à la proposition du secrétariat. Le GRPE a prié ce dernier de soumettre l'additif 4 et l'annexe VII au WP.29 et à l'AC.3 pour examen et mise aux voix à leurs sessions de novembre 2020 en tant que projet de nouveau RTM ONU n° [XX] sur la détermination de la puissance des véhicules électriques.

B. Autres activités du groupe de travail informel EVE

Document(s) : Document informel GRPE-81-32

51. Le Président du groupe de travail informel EVE a présenté le rapport d'étape qui contient une description des activités les plus récentes du groupe (GRPE-81-32). Il a décrit les activités les plus récentes se rapportant à la durabilité des batteries des véhicules. Il a rappelé au GRPE que le WP.29/AC.3 autoriserait en principe l'élaboration d'un nouveau RTM ONU sur la durabilité des batteries à ses sessions de juin 2020.

52. Le Président du groupe de travail informel EVE a souligné qu'un calendrier ambitieux avait été adopté pour l'élaboration de ce nouveau RTM ONU. Compte tenu de l'actualité et de la nécessité de tenir des réunions en ligne pour avancer, le groupe de travail informel a décidé de se réunir une fois par mois au moins jusqu'à fin 2020. En outre, le Président a souligné que différentes parties prenantes avaient été très attentives aux activités menées et invité toutes les parties intéressées à participer à l'élaboration de ce projet de règlement.

53. Enfin, le Président du groupe de travail informel EVE a brièvement informé le GRPE des travaux effectués sur les méthodes de déclaration de la consommation d'énergie, ainsi que de la collaboration avec la Division de l'énergie durable de la CEE et son Groupe d'experts de l'efficacité énergétique.

54. Le GRPE a pris note des avancées du groupe de travail informel EVE, et de sa demande de mise à disposition d'une salle de réunion pendant une demi-journée au cours de la semaine de session du GRPE en janvier 2021.

XI. Résolution mutuelle n° 2 (R.M.2) (point 10 de l'ordre du jour)

55. Compte tenu des circonstances et du temps limité disponible pour la réunion virtuelle, le GRPE n'a pas examiné ce point de l'ordre du jour.

XII. Homologation de type internationale de l'ensemble du véhicule (IWVTA) (point 11 de l'ordre du jour)

56. Compte tenu des circonstances et du temps limité disponible pour la réunion virtuelle, le GRPE n'a pas examiné ce point de l'ordre du jour.

XIII. Qualité de l'air à l'intérieur des véhicules (VIAQ) (point 12 de l'ordre du jour)

Document(s) : ECE/TRANS/WP.29/GRPE/2020/16,
Documents informels GRPE-81-08 et GRPE-81-09-Rev.1

57. Le Président du groupe de travail informel de la qualité de l'air à l'intérieur des véhicules (VIAQ) a présenté un rapport sur l'état d'avancement des activités du groupe (GRPE-81-08). Il a examiné en détail la proposition d'amendement à la Résolution mutuelle n° 3 (R.M.3), telle qu'elle figure dans le document ECE/TRANS/WP.29/GRPE/2020/16, qui comporte de nouvelles dispositions relatives à la détermination de la qualité de l'air à l'intérieur des véhicules, notamment la description d'une procédure d'essai pour la mesure des émissions s'infiltrant dans l'habitacle avec les gaz d'échappement.

58. Le GRPE a adopté le document ECE/TRANS/WP.29/GRPE/2020/16 et prié le secrétariat de le soumettre au WP.29 et à l'AC.3 pour examen et mise aux voix à leurs sessions de novembre 2020 en tant que proposition d'amendement 1 à la R.M.3.

59. Le Président du groupe de travail informel VIAQ a aussi présenté le document GRPE-81-09-Rev.1 relatif à la prorogation du mandat du groupe de travail informel. Il a expliqué que les activités nouvelles et à venir devraient rendre nécessaire une prorogation jusqu'en novembre 2025. Le Président du GRPE a demandé au groupe de travail informel de décrire, à mi-chemin de la durée du mandat proposé, l'état d'avancement de ses travaux et les résultats obtenus pour que le GRPE soit dûment tenu informé des activités du groupe de travail informel et de leur évolution.

60. Le GRPE a décidé de réviser le mandat du groupe de travail informel VIAQ pendant la session, comme proposé dans le document GRPE-81-09-Rev.1, constaté les progrès réalisés par ce groupe de travail informel et pris note de la demande de mise à disposition d'une salle de réunion pendant une demi-journée au cours de la semaine de session du GRPE, en janvier 2021.

XIV. Conformité pendant la durée de vie (point 13 de l'ordre du jour)

61. Compte tenu des circonstances et du temps limité disponible pour la réunion virtuelle, le GRPE n'a pas examiné ce point de l'ordre du jour.

XV. Thèmes prioritaires pour le Groupe de travail (point 14 de l'ordre du jour)

Document(s): Documents informels GRPE-81-06-Rev.1 et GRPE-81-34

62. Le Président a présenté le document GRPE-81-06, liste des priorités du GRPE révisée conformément aux consignes les plus récentes du Comité de gestion pour la coordination des travaux (AC.2). La représentante de la Commission européenne a présenté le document GRPE-81-34 sur la proposition d'amendements au GRPE-81-06 visant à supprimer l'échéancier des émissions liées à l'usure des pneumatiques. Le représentant du Royaume-Uni a souligné que ces émissions constituaient une grande priorité pour certains pays, dont le sien. La représentante de la Commission européenne a estimé que les connaissances et les travaux de recherche existants sur les émissions liées à l'usure des pneumatiques n'étaient pas suffisamment étoffés pour permettre l'élaboration de textes réglementaires. En outre, à court terme, très peu d'activités pouvant être utiles dans le cadre de l'élaboration d'une procédure d'essai solide étaient prévues. Le représentant du Royaume-Uni a fait valoir qu'une question pouvait être considérée comme prioritaire, sans que des activités soient nécessairement menées ou prévues dans ce domaine, et qu'il était possible d'affecter les ressources en fonction des priorités définies pour accélérer l'acquisition de connaissances aux fins de l'élaboration de règlements.

63. Le représentant de l'OICA a demandé des précisions sur les mesures de particules de moins de 23 nm et sur leur portée. Le Président du groupe de travail informel du Programme de mesure des particules (PMP) a souligné que la mesure de particules de moins de 23 nm visait aussi bien les véhicules utilitaires lourds que les véhicules utilitaires légers, en laboratoire et sur route. Il a ajouté que le projet d'amendements 6 au Règlement ONU n° 15 approuvé par le GRPE (par. XX) ne portait que sur les essais en laboratoire pour les véhicules utilitaires légers, et que ni les applications routières pour ces deux types de véhicules, ni les procédures d'essai en laboratoire pour les véhicules utilitaires lourds n'avaient encore été élaborées.

64. Le représentant de l'Australie a souligné qu'il convenait de faire une priorité de la transposition du règlement européen le plus récent sur les véhicules utilitaires lourds (norme Euro VI étape E) dans le Règlement ONU n° 49.

65. Au cours de sa session, le GRPE a approuvé ces propositions et apporté des modifications au document GRPE-81-06, qui est paru tel que modifié sous la cote GRPE-81-06-Rev.1. En outre, il a prié le secrétariat d'envoyer le document GRPE-81-06-Rev.1 au secrétariat du WP.29 en perspective d'un examen approfondi par le WP.29/AC.2.

XVI. Élection du Bureau (point 15 de l'ordre du jour)

66. Conformément à l'article 37 du Règlement intérieur (TRANS/WP.29/690, tel que modifié) le GRPE a procédé à l'élection du Bureau pour les sessions de 2021. Il a élu à l'unanimité M. André Rijnders (Pays-Bas) au poste de Président du Groupe de travail et M. Duncan Kay (Royaume-Uni de Grande-Bretagne et d'Irlande du Nord) au poste de Vice-Président.

XVII. Questions diverses (point 16 de l'ordre du jour)

67. Le GRPE n'a pas reçu de nouvelle proposition pour examen au titre de ce point de l'ordre du jour.

XVIII. Ordre du jour provisoire de la prochaine session

A. Prochaine session du GRPE

68. La prochaine session du GRPE, y compris les réunions des groupes de travail informels, doit se dérouler au Palais des Nations, à Genève, du lundi 11 janvier 2021 à 9 h 30 au vendredi 15 janvier 2021 à 12 h 30, sous réserve de la confirmation du secrétariat (voir le document GRPE-82-01). Des services d'interprétation seront assurés du 12 janvier (14 h 30) au 15 janvier (12 h 30) 2021.

B. Ordre du jour provisoire de la prochaine session du GRPE proprement dite

69. Le GRPE a convenu de l'ordre du jour provisoire suivant pour sa prochaine session :

1. Adoption de l'ordre du jour.
2. Rapport sur les dernières sessions du Forum mondial de l'harmonisation des Règlements concernant les véhicules (WP.29).
3. Véhicules légers :
 - a) Règlements ONU n^{os} 68 (Mesure de la vitesse maximale, y compris des véhicules électriques purs), 83 (Émissions des véhicules des catégories M₁ et N₁), 101 (Émissions de CO₂/consommation de carburant), 103 (Dispositifs antipollution de remplacement) et [154] (procédure d'essai WLTP) ;
 - b) Règlements techniques mondiaux ONU n^{os} 15 (Procédure d'essai mondiale harmonisée pour les émissions des voitures particulières et véhicules utilitaires légers (WLTP)) et 19 (Procédure de mesure des émissions par évaporation dans le cadre de la procédure d'essai mondiale harmonisée pour les voitures particulières et les véhicules utilitaires légers (WLTP EVAP)) ;
 - c) Procédure d'essai mondiale harmonisée en ce qui concerne les émissions en conditions réelles de conduite.
4. Véhicules utilitaires lourds :
 - a) Règlements ONU n^{os} 49 (Émissions des moteurs à allumage par compression et des moteurs à allumage commandé (GPL et GNC)) et 132 (Dispositifs antipollution de mise à niveau (DAM)) ;
 - b) Règlements techniques mondiaux ONU n^{os} 4 (Procédure mondiale harmonisée d'homologation des véhicules utilitaires lourds (WHDC)), 5 (Prescriptions mondiales harmonisées sur les systèmes

- d'autodiagnostic sur les véhicules utilitaires lourds (WWH-OBD)) et 10 (Émissions hors cycle (OCE));
- c) Prescriptions mondiales relatives à la consommation de carburant des véhicules utilitaires lourds.
5. Règlements ONU n^{os} 24 (Émissions de polluants visibles, mesure de la puissance des moteurs à allumage par compression (fumées des moteurs diesel)), 85 (Mesure de la puissance nette), 115 (Systèmes d'adaptation au GPL et au GNC), 133 (Aptitude au recyclage des véhicules automobiles) et 143 (Systèmes d'adaptation des moteurs de véhicules utilitaires lourds à la bicarburation).
6. Tracteurs agricoles et forestiers et engins mobiles non routiers :
- a) Règlements ONU n^{os} 96 (Émissions des moteurs diesel (tracteurs agricoles)) et 120 (Puissance nette des tracteurs et engins mobiles non routiers);
- b) Règlement technique mondial ONU n^o 11 (Engins mobiles non routiers).
7. Programme de mesure des particules (PMP).
8. Motocycles et cyclomoteurs :
- a) Règlements ONU n^{os} 40 (Émissions de gaz polluants des motocycles) et 47 (Émissions de gaz polluants des cyclomoteurs);
- b) Règlements techniques mondiaux ONU n^{os} 2 (Cycle d'essai mondial harmonisé de mesure des émissions des motocycles) (WMTC)), 17 (carter du vilebrequin et émissions par évaporation pour les véhicules de la catégorie L) et 18 (Systèmes d'autodiagnostic pour les véhicules de la catégorie L);
- c) Prescriptions d'efficacité en matière d'environnement et de propulsion pour les véhicules de la catégorie L.
9. Véhicules électriques et environnement (EVE) :
- a) RTM ONU relatif à la détermination de la puissance des véhicules électriques (DEVP);
- b) Autres activités du groupe de travail informel EVE.
10. Résolution mutuelle n^o 2 (R.M.2).
11. Homologation de type internationale de l'ensemble du véhicule (IWVTA).
12. Qualité de l'air à l'intérieur des véhicules (VIAQ).
13. Conformité pendant la durée de vie.
14. Thèmes prioritaires pour le Groupe de travail.
15. Questions diverses.

C. Réunions informelles prévues en marge de la prochaine session du GRPE

70. Programme des réunions informelles, sous réserve de confirmation :

<i>Date</i>	<i>Groupe</i>	<i>Acronyme</i>	<i>Horaire</i>
Lundi 11 janvier 2021	Groupe spécial informel d'experts de la WLTP		9 h 30 – 12 h 30
	Véhicules électriques et environnement	EVE	14 h 30 – 17 h 30
Mardi 12 janvier 2021	Atelier sur les émissions dues aux freins	PMP	9 h 30 – 12 h 30 14 h 30 – 17 h 30
	Prescriptions d'efficacité en matière d'environnement et de propulsion applicables aux véhicules de la catégorie L	EPPR	9 h 30 – 12 h 30 14 h 30 – 17 h 30
Mercredi 13 janvier 2021	Émissions en conditions réelles de conduite à l'échelle mondiale	RDE	9 h 30 – 12 h 30
	Qualité de l'air à l'intérieur des véhicules	VIAQ	9 h 30 – 12 h 30

71. Les ordres du jour de ces réunions seront établis par les secrétaires techniques respectifs et communiqués aux membres de chaque groupe avant chaque réunion.

Annexe I

Liste des documents informels (GRPE-81-) distribués sans cote avant et pendant la session

N°	(Auteur) Titre	Suivi
1	(Secrétariat) Informal meetings in conjunction with the GRPE (proper) session: schedule and links to virtual meetings	A
2r3	(Secrétariat) Provisional annotated agenda	A
3	(Secrétariat) Draft running order	A
4	(Secrétariat) Guidelines for virtual meeting participation	A
5	(Président) Proceedings of the 81st GRPE session	A
6r1	(Président) GRPE priority list using la test AC.2 template	B
7r1	(Secrétariat) Highlights of the WP.29 Sessions of March 2020	A
8	(VIAQ) IWG on VIAQ status report	A
9r1	(VIAQ) Terms of reference and rules of procedure for IWG on VIAQ for the 3rd stage	B
10	(PMP) Revisions to ECE/TRANS/WP.29/GRPE/2020/14: sub 23nm PN measurements	B
11	(PMP) Explanatory note for GRPE-81-10 (included in GRPE-81-15)	A
12	(PMP) Brake emissions protocol - part 1	A
13	(PMP) Amendments to the terms of reference and rules of procedure for IWG on PMP	B
14	(WLTP) Revisions to ECE/TRANS/WP.29/GRPE/2020/14: improvements to Amendment 6 to UN GTR No. 15	B
15	(WLTP) Technical report for Amendment 6 to UN GTR No. 15	B
16	(RDE) Revisions to ECE/TRANS/WP.29/GRPE/2020/15	B
17	(RDE) IWG on RDE status report	A
18	(CITA) Proposed amendments to UN Regulation No. 24: reference values for PN emissions	C
19	(CITA) Proposed amendments to UN Regulation No. 83: reference values for PN emissions	C
20r1	(WLTP) IWG on WLTP status report	A
21	(OICA) Revisions to ECE/TRANS/WP.29/GRPE/2020/10	B
22	(EPPR) IWG on EPPR status report	A
23r1	(EPPR) Amendments to the terms of reference and rules of procedure for IWG on EPPR	B

<i>N°</i>	<i>(Auteur) Titre</i>	<i>Suivi</i>
24r2	(EPPR) Revisions to ECE/TRANS/WP.29/GRPE/2020/17	B
25	(Secrétariat) General information, 82nd session of GRPE	A
26	(RDE) Template for UN Regulation on RDE reporting file	B
27	(EVE) Revisions to ECE/TRANS/WP.29/GRPE/2020/12	B
28	(OICA) Proposal for UN Regulation No. 24	C
29rl	(WLTP) Clarification of points regarding “UN Regulation WLTP”	B
30	(OICA) Additions to GRPE-81-29: clarification of points regarding “UN Regulation WLTP”	A
31	(PMP) IWG on PMP status report	A
32	(EVE) IWG on EVE status report	A
33	(EVE) Introduction to new UN GTR on DEVP	A
34	(CE) EC Comments to GRPE-81-06	A
35	(OICA) Proposal to amend GRPE-81-29	A
36	(Secrétariat) Options for clarifications/guidelines documents	A
37	(Italie) Revisions to ECE/TRANS/WP.29/GRPE/2020/11	B

Notes :

- A Document dont l'examen est achevé ou qui doit être remplacé.
- B Adopté.
- C Document devant faire l'objet d'un examen plus approfondi sur la base d'une proposition révisée.
- D À distribuer à la session de janvier 2021 sous une cote officielle.

Annexe II

Réunions informelles tenues en marge de la session du GRPE

Dans les semaines qui ont précédé la session du GRPE, des réunions en ligne ont été organisées dans des créneaux convenant pour différents fuseaux horaires.

Annexe III

Liste des groupes de travail informels, équipes spéciales et sous-groupes du GRPE

<i>Nom (sigle) (type d'entité)</i>	<i>Président ou Coprésidents</i>	<i>Secrétaires</i>	<i>Fin de mandat</i>
Prescriptions d'efficacité en matière d'environnement et de propulsion des véhicules de la catégorie L (EPPR) (groupe)	Adolfo Perujo, Adolfo.PERUJO@ec.europa.eu M. H. Suzuki suzuki@ntsel.go.jp	Daniela Leveratto, d.leveratto@immamotorcycles.org	Décembre 2025
Véhicules électriques et environnement (EVE) (groupe)	Michael Olechiw, Olechiw.Michael@epamail.epa.gov Chen Chunmei (Vice-Président), chencm@miit.gov.cn Hajime Ishii (Vice-Président), ishii@ntsel.go.jp	Andrew Giallonardo, Andrew.Giallonardo@canada.ca	Juin 2021
Programme de mesure des particules (PMP) (groupe)	Giorgio Martini, giorgio.martini@ec.europa.eu	Rainer Vogt rvogt@ford.com	Juin 2021
Qualité de l'air à l'intérieur des véhicules (VIAQ)	Andrey Kozlov, a.kozlov@nami.ru Jong Soon Lim (Vice-Président), jongsoon@ts2020.kr	Andreas Wehrmeier Andreas.Wehrmeier@bmw.de	Novembre 2025
Procédure d'essai mondiale harmonisée pour les voitures particulières et les véhicules utilitaires légers (WLTP) – Phase 2 (groupe)	Robertus Cuelenaere, rob.cuelenaere@tno.nl Daisuke Kawano (Vice-Président), kawano@ntsel.go.jp	Noriyuki Ichikawa (Secrétaire technique adjoint), noriyuki_ichikawa@mail.toyota.co.jp Markus Bergmann (Secrétaire technique adjoint), markus.bergmann@audi.de	Juin 2020
Émissions en conduite réelle au niveau mondial (RDE) (groupe)	Panagiota Dilara, Panagiota.DILARA@ec.europa.eu M. Yamamura (Vice-Président), yamamura-s2zh@mlit.go.jp Junhong Park (Vice-Président) pjhy98@korea.kr	Noriyuki Ichikawa (Secrétaire technique adjoint), noriyuki_ichikawa@mail.toyota.co.jp Giustino Manzo (Secrétaire technique adjoint), giustino.manzo@cnhind.com	Janvier 2021

Annex IV

[Anglais seulement]

Adopted amendments to ECE/TRANS/WP.29/GRPE/2020/10

Adopted on the basis of GRPE-81-21 (see para. 0)

A new Supplement to the 05, 06 and 07 series of amendments to UN Regulation No. 83

I. Proposal

In the 05, 06 and 07 series of amendments, Annex 4A, Appendix 3, Paragraph 2., a mend to read:

- "2. Calibration procedures
- For test and measurement equipment that is compliant with the technical requirements of UN GTR No. 15, the maintenance and calibration requirements described in that UN GTR may be followed, in all other cases the following requirements shall apply:"**

In the 07 series of amendments, Annex 11, Paragraph 4.4. a mend to read:

- "4.4. Prior to or at the time of type approval, no deficiency shall be granted in respect of the requirements of paragraph 6.5., except paragraph ~~6.5.3.4.~~ **6.5.3.5.**, of Appendix 1 to this annex."

II. Justification

1. UN GTR No. 15 has brought all maintenance and calibration requirements up to date reflecting the capabilities of state-of-the-art equipment.
2. Most laboratories have been or will be updated to be capable of testing to UN GTR No. 15 but will still be used for testing to NEDC for the foreseeable future.
3. In order to remove the risk that equipment has to be calibrated more often than necessary, UN Regulation No. 83 should be updated to recognise the equipment in WLTP capable laboratories.
4. **In the 07 series of amendments (with amendment 1), paragraphs were renumbered because of a newly inserted paragraph. So the reference above should read now 6.5.3.5.**

- "6.5.3.4. Basic diagnostic data, (as specified in paragraph 6.5.1.) and bi-directional control information shall be provided using the format and units described in the standard listed in paragraph 6.5.3.2.(a) of this appendix and must be available using a diagnostic tool meeting the requirements of the standard listed in paragraph 6.5.3.2.(b) of this appendix.

The vehicle manufacturer shall provide to a national standardisation body the details of any emission-related diagnostic data, e.g. PID's, OBD monitor Id's, Test ID's not specified in the standard listed in paragraph 6.5.3.2.(a) of this Regulation but related to this Regulation.

- 6.5.3.5.** When a fault is registered, the manufacturer shall identify the fault using an appropriate ISO/SAE controlled fault code specified in one of the standards listed in paragraph 6.5.3.2.(d) of this appendix relating to "emission related system diagnostic trouble codes". If such identification is not possible, the

manufacturer may use manufacturer controlled diagnostic trouble codes according to the same standard. The fault codes shall be fully accessible by standardised diagnostic equipment complying with the provisions of paragraph 6.5.3.3. of this appendix."

Annex V

[Anglais seulement]

Technical Report to Amendment 6 to UN GTR No. 15

Adopted on the basis of GRPE-81-15 (see para. 0)

Technical report on the development of Amendment 6 to UN GTR No. 15 on the Worldwide harmonized Light vehicles Test Procedure (WLTP)

I. Mandate

1. Amendment 6 to global technical regulation (GTR) No. 15 was developed by the Informal Working Group (IWG) on Worldwide harmonized Light vehicles Test Procedures (WLTP) in the framework of Phase 2 of the development of UN GTR No. 15. The Executive Committee (AC.3) of the 1998 Agreement adopted the authorisation to develop Phase 2 of GTR No. 15 at its June 2016 session (ECE/TRANS/WP.29/AC.3/44).

II. Objectives

2. New definitions added for "Engine capacity" and "Engine displacement".
3. New definitions added to accompany the introduction of dual-axis dynamometer requirements in paragraph 2.4.2.4. of Annex 6.
4. New definition added for "Coasting" in association with an amendment to paragraph 2.4.2. of Annex 6.
5. New definitions added for NOVC-FCHVs and OVC-FCHVs to accompany the introduction of requirements for OVC-FCHVs which add to the requirements for NOVC-FCHVs which were already included in UN GTR No. 15.
6. Introduction of definitions for flex-fuel and mono-fuel vehicles to align with the UN Regulation on WLTP and amendments included in UN GTR No. 19 Amendment 3.
7. Update to the definition for "defeat device", accompanied by new text in paragraph 5.5.5. of the GTR, to align with the definition and supporting paragraph included in UN Regulation on WLTP.
8. Introduction of a new definition for "Configurable start mode" to support amendments to the requirements of the GTR in paragraph 2.6.6. of Annex 6.
9. Introduction of new definitions on the topic of On-Board Diagnostics (OBD) to support the new annex for OBD (Annex 11).
10. Introduction of new family definitions to cover the amendments and additions introduced in UN GTR No. 15 Amendment 6, covering OVC-FCHV and NOVC-FCHV interpolation families; Gas Fuelled Vehicles (GFV) family; Exhaust after-treatment system using reagent (ER) family; OBD family; Durability family; Low temperature family; and K_{CO_2} correction factor family for OVC-HEVs and NOVC-HEVs.
11. The annexes concerning the WLTC (Annex 1), and gear selection and shift point determination for vehicles equipped with manual transmissions (Annex 2) were updated to resolve issues which were encountered through the implementation of regional WLTP legislation and to introduce machine code versions of the calculation tool, which will be available on the UNECE website.
12. Annex 3 was updated to introduce new reference fuel specifications for the new Type 6 Low Temperature test that was added to UN GTR No. 15 in a new optional Annex

13. These were introduced in Part II of Annex 3, with a new Part I having been created for the Type 1 test reference fuels.

In addition to the new reference fuels for the Type 6 test, a new Type 1 test reference fuel was introduced to align with the harmonised diesel (B5H) reference fuel which were included in Level 2 of UN Regulation on WLTP (the most stringent level). Relevant sections of Annex 6 and Annex 7 were also updated to introduce this new fuel.

13. To align with UN Regulation on WLTP new requirements were added in relation to the testing of 4WD vehicles, which are required to be tested on a dual-axis dynamometer. These requirements were introduced in a new paragraph 2.4.2.4. of Annex 6 (Allocation of dynamometer type to test vehicle), with other related amendments being made in paragraph 3. (definitions), and Annex 4 (paragraph 2.5.3. and 7.3.3.), Annex 5 (paragraph 2.3.) and Annex 6 (paragraphs 2.4.2.4. and 2.6.3.2.).

As a result of the discussions in the Dual-Axis Dyno Task Force and the main Informal Working Group the requirements of paragraph 7.3.3. of Annex 4 relating to the placement of the vehicle on the dynamometer were updated in relation to vehicle restraint during testing, to ensure that there can be no vertical force applied.

The provisions of paragraph 2.4.2.4. of Annex 6 require 4WD vehicles to be tested on a dual-axis dyno unless equivalency between a dynamometer in 2WD operation and a dynamometer in 4WD operation can be demonstrated to the responsible authority – based on a set of conditions specified in paragraph 2.4.2.5.1. of Annex 6.

14. Interpolation method and minimum deltas - paragraph 4.2.1.1.2. of Annex 4.

The interpolation method contains a minimum delta of 5 mg/km CO₂ in order to avoid perverse effects due to test to test variability but it has been noticed that similar effects can occur when the individual coefficients f_0 , f_1 and f_2 lie too close together and are then extrapolated. New rules have been developed to eliminate this effect.

15. Clarification that for vehicles supplied with an additional set of snow tyres (with or without wheels) these shall not be considered as optional equipment when determining the cycle energy demand. This clarification has been provided in paragraph 4.2.1.1.2. of Annex 4 and also in several paragraphs of Annex 7.

16. Amendments were made to the provisions in Annex 4 for flat belt measurement (paragraph 6.5.2. of Annex 4) to introduce an option for cases where the air drag coefficient of a vehicle is not constant over speed.

17. A new paragraph 2.3.2. of Annex 5 was added to provide the requirements relating to the vehicle restraint system for single roller chassis dynamometers.

18. The requirements for measuring Particle Number (PN) have been updated by the work of the PMP Informal Working Group, introducing new test equipment requirements for a solid particle number measurement procedure with a cut-off size of approximately 10 nm (SPN10) and also updating the existing requirements for measurement with a cut-off size of 23nm (SPN23), in particular allowing the use of a catalyzed evaporation device in volatile particle remover (VPR). These amendments, along with the technical rationale are provided in Appendix 1 to this Technical Report.

19. Additional provisions relating to Type 1 testing of vehicles fuelled with LPG or NG/biomethane have been introduced in paragraph 1.1.2. of Annex 6. These reflect the requirements introduced in UN Regulation on WLTP, which were themselves based on the provisions of Annex 12 of UN Regulation No 83.

20. GTR No. 15 has been updated in multiple locations to align with UN Regulation on WLTP in relation to the addition of a Contracting Party option for the calculation and declaration of 'fuel efficiency' (km/l) as an alternative to fuel consumption (l/100km) and CO₂. In many areas of the GTR, the first instance being paragraph 1.2.3.3. of Annex 6, two options for the requirements are provided. Option A relates to the 4-phase WLTP, as required by Level 1A of UN Regulation on WLTP, whilst Option B covers the results after the first 3 phases of a WLTP test, as required by Level 1B of UN Regulation on WLTP.

The introduction of the fuel efficiency metric has resulted in updates throughout Annex 6, Annex 7 and Annex 8, as well as in the new Annex 14 covering Conformity of Production.

21. The introduction of optional requirements relating to OVC-FCHV, in Level 1 A of UN Regulation on WLTP, has also resulted in multiple changes in the GTR. Whilst the majority of these are included in Annex 8 and its appendices, there are other areas of the GTR where requirements relating to OVC-FCHV are included, e.g. an additional element in Table A6/2.

The procedure described and defined for OVC-FCHV is following the procedure from OVC-HEVs, but adjusting it to the requirements from OVC-FCHVs (e.g. replacing fuel consumption by hydrogen consumption). Besides the procedure for OVC-FCHVs, the interpolation approach for those vehicles has been introduced (along with a family definition). Interpolation approach was also added for NOVC-FCHVs.

22. Paragraph 2.3.2.4. of Annex 6 and paragraph 4.5.1.1.5. of paragraph 8. have been updated to clarify how to verify the linearity of CO₂ mass emissions for vehicle M, both for a 4-phase calculation and a 3-phase calculation.

23. Paragraph 2.4.2. of Annex 6 has been updated to provide a Contracting Party option relating to vehicles fitted with a coasting functionality. This option requires that the functionality shall be deactivated during chassis dynamometer testing. The introduction of this modification was supported by the introduction of a new definition for "coasting" in paragraph 3 of the GTR.

24. Paragraph 2.6.6. of Annex 6 (Driver selectable modes) has been updated to provide clarification. This update introduces the new term "configurable start mode" which has been introduced as a new definition in paragraph 3 of the GTR. This covers the situation where some modes are retained after a "key off" but others default back to a mode similar to a predominant concept.

25. Paragraph 2.6.8.3. of Annex 6 (Speed trace tolerances) has been updated and restructured to include requirements for IWR and RMSSE which were previously included in paragraph 7. of Annex 7.

Amendments throughout paragraph 7. of Annex 7 have been made in order to align with the changes made in paragraph 2.6.8.3. of Annex 6.

26. Paragraph 3. of Appendix 2 to Annex 6 (REESS energy change -based correction procedure) has been updated. Paragraphs 3.4.2., 3.4.3. and 3.4.4. have been replaced by a new paragraph 3.4.2. This aligns the requirements for conventional (ICE) vehicles more closely with those for electrified vehicles and simplifies the text considerably by eliminating the need to calculate the coefficient 'c'.

In addition Table A6.App2/1 Energy content of fuel has been updated to introduce heat values for LPG and CNG, as well as to introduce the B5H harmonised diesel reference fuel.

27. The post-processing tables in Annex 7 and Annex 8 have been updated to align with the tables finalised for UN Regulation on WLTP, with some additional modifications and corrections to those UN Regulation tables, and new tables have been added to cover the introduction of requirements for OVC-FCHVs into the GTR (Tables A8/9a and A8/9b).

In addition, underneath the table captions clarification is provided to explain that in order to calculate the results for 3-phases and 4-phases the tables must be worked through twice, once for the 3-phase and once for 4-phase.

28. In relation to Table A7/1 (Procedure for calculating final test results), at the 30th WLTP IWG a discussion was held on the provisions for the calculation of phase specific fuel consumption.

The calculation of the phase specific fuel consumption in the WLTP is based on the phase specific CO₂ result, while for CO and HC the total test results are used. It was explained

that the reason for this is that when having a regenerating exhaust aftertreatment system the K_i factors will be applied. K_i factors are only available for the whole test results. Therefore in order to avoid too much test burden it was accepted as a technical compromise. The effect might be only a few tenths of a percent.

29. Paragraph 3.2.1.1.4. of Annex 7 (Flow-weighted arithmetic average concentration calculation) was updated to correct an anomaly which had been uncovered in the GTR which is confusing and can also adversely affect the accuracy of the mass calculations for continuous dilute measurements from the constant volume sampler (CVS).

30. Through the work of the CFD Task Force the requirements of paragraph 3.2.3.2.2.3.2. of Annex 7 (Alternative method for determination of aerodynamic influence of optional equipment) was updated. This includes CFD simulation as a Contracting Party option.

The method allows the use of CFD simulation software to determine the $\Delta C_{d,A_f}$ of aerodynamic optional equipment instead of using the wind tunnel method. There are restrictions specified with respect to the scope (in terms of applicable vehicles and type of optional equipment), the accuracy of the simulation software and the maximum allowed $\Delta C_{d,A_f}$. Before the CFD simulation software may be used, the manufacturer shall demonstrate the equivalency of the method by a validation test programme in a wind tunnel for at least two types of optional equipment, and may then only be applied for those types of optional equipment (e.g. wheels, cooling air control systems, spoilers, etc.).

31. Annex 8 of the GTR has been amended in multiple locations to introduce the requirements for fuel efficiency (see paragraph 20 of this Technical Report) and OVC-FCHVs (see paragraph 21).

32. Topics related to the Annex 8 vehicles (covered by Annex 8 of the GTR) have been amended in multiple locations as follows:

Interpolation family criteria of OVC-HEVs and PEVs (Main Body of GTR) for all levels: Updated regarding charge electric energy converter, type of traction REESS.

Added CO₂ correction factor family (Main Body of GTR) for UN Regulation on WLTP Level 1A equivalent: Required for application of CO₂ correction factor family.

Exempt humidity requirements for PEVs and FCHVs (paragraph 3.1.3.) for all levels: Not necessary for PEVs and FCHVs.

Calculation schemes in Annex 8, Chapter 4 for all levels: Change of input parameters for calculation schemes of $M_{CO_2,weighted}$, $FC_{weighted}$, $EC_{AC,weighted}$, EAER from measured values (partially) to declared values (completely). Further clarification and adjustments were identified.

Post Processing Tables in Annex 8, Chapter 4 for all levels: Error correction of errors identified by lessons learned.

Option to decrease EAER and EAER_p as a manufacturer's option (Annex 8, Chapter 4): Manufacturer is allowed to decrease the range values of EAER and EAER_p.

33. CO₂ correction (Annex 8, Appendix 2):

- Clarification of its application in paragraph 1. for all levels
- CO₂ correction factor family application in paragraph 2.1. for level 1A: The correction factor determined for one interpolation family can be applied to other interpolation families when meeting the requirements of the CO₂ correction factor family.

- Generic approach application in paragraph 4. for all levels: A new paragraph 4 has been added to Appendix 2 to Annex 8 which introduces a manufacturer's option for an alternative test procedure for rechargeable electric energy storage system monitoring.

34. Paragraph 3. of Appendix 3 to Annex 8 ("REESS voltage application") for all levels: Paragraph 3 was reworked due to the nominal voltage application.

35. Charging of OVC-HEVs and PEVs in Annex 8, Appendix 4 for all levels: In paragraph 3.1.2., information was added regarding the soaking and application of the normal charge.

36. In Appendix 6 to Annex 8, the concept of configurable start mode has been added for all vehicle types described in Annex 8 and for all levels.

37. In addition, a new Appendix 8 has been added to Annex 8 relating to the calculation of additional values required for checking the Conformity of Production of electric energy consumption of PEVs and OVC-HEVs. This has been moved from the calculation part in the context of CoP to this annex as the calculation of these specific value already need to be performed during type approval for vehicle high and vehicle low. Furthermore, the interpolation of these CoP values is described in Appendix 8.

38. Amendment 6 of UN GTR No. 15 introduces a new Annex 10 covering the requirements for vehicles that use a reagent for the exhaust after-treatment system.

These requirements have been copied from UN Regulation on WLTP, which in turn had been copied from Appendix 6 to UN Regulation No 83.

For UN GTR No. 15 the requirement in paragraph 8.3.4. of Annex 10, relating to a 'performance restriction' approach to restrict the speed of the vehicle after the inducement system activates has been made a Contracting Party option to align with Level 1B of UN Regulation on WLTP.

39. Amendment 6 of UN GTR No. 15 introduces a new Annex 11 covering provisions relating to On-Board Diagnostics (OBD).

The OBD procedure from Annex 11 of UN Regulation No. 83 07 series was updated for inclusion in the new UN Regulation on WLTP, introducing the WLTC in place of NEDC and also incorporating Japan's OBD provisions (for example the use of a 3-phase versus 4-phase WLTC). There was also some clarification of provisions including additional definitions.

For UN GTR No. 15 Amendment 6 the text describing the OBD procedure in UN Regulation on WLTP has been further refined by some restructuring of the provisions and the inclusion of some additional definitions to those in UN Regulation on WLTP.

40. Amendment 6 of UN GTR No. 15 introduces a new optional Annex 12 covering provisions relating to the Type 5 test (Description of the endurance test for verifying the durability of pollution control devices).

Annex 12 introduces the new provisions around the UN Regulation No. 83 07 series Type 5 test requiring emissions testing on WLTC which were developed for inclusion in UN Regulation on WLTP and including the specific regional requirements of the EU and Japan as Contracting Party options.

Option A is based on the EU provisions in terms of useful life (160,000 km), assigned DFs and acceptable mileage accumulation procedures, allowing the use of component bench ageing.

Option B is based on the Japan provisions in terms of useful life (80,000 or 60,000 km), assigned DFs and a acceptable mileage accumulation procedures, but excluding the use of component bench ageing.

41. Amendment 6 of UN GTR No. 15 introduces a new optional Annex 13 covering provisions relating to the Type 6 test (Low temperature test)

Unlike the other new annexes introduced in UN GTR No. 15 Amendment 6 the Type 6 test is not included in UN Regulation on WLTP.

The WLTP based Type 6 test included in Annex 13 differs in many areas from the NEDC based Type VI test included in Annex 8 of UN Regulation No. 83 07 series of amendments, including the scope of vehicles covered and the test requirements. Appendix 2 of this Technical Report provides a detailed explanation.

42. Amendment 6 of UN GTR No. 15 introduces a new optional Annex 14 covering provisions relating to Conformity of Production (CoP).

The CoP provisions were developed by the Conformity of Production Task Force for inclusion in UN Regulation on WLTP and have now been copied into the GTR, as appropriate. These integrate the EU and Japan CoP provisions, with Contracting Party options providing the alternative provisions.

Appendix 3 to this Technical Report provides details of the CoP provisions.

III. Meetings held by Task Forces

23. The proposed changes in Amendment 6 to UN GTR No. 15 listed in section II above were discussed at length and agreed upon by all participants during the following Informal Working Group (IWG) meetings:

- (a) 26th IWG, April 2019 (Zagreb);
- (b) 27th IWG, May 2019 (Geneva);
- (c) 28th IWG, September 2019 (Bern);
- (d) 29th IWG, January 2020 (Geneva);
- (e) Intermediate IWG, February 2020 (Brussels);
- (f) 30th IWG, April 2020 (Remote WebEx).

Numerous face-to-face or audio/web meetings of the following task forces were held: EV (electric vehicle); Gearshift; CFD (Computational Fluid Dynamics); Drive Trace Indices; Dual Axis Dyno; Low Temperature; Drafting Subgroup; Durability; Conformity of Production; and OBD.

Appendix 1 – Technical Report from PMP IWG

24. This informal document is submitted by the Informal Working Group (IWG) Particle Measurement Programme (PMP) to inform and update the GRPE of the work of the IWG on the amendment of UN GTR No. 15 Annexes 5, 6 and 7 to:

- Modify the existing solid PN measurement methodology having a 50% cut-off size at 23 nm (SPN23) in order to allow the use of catalyzed evaporation device in volatile particle remover (VPR) and introduce minor improvements
- Include as a second alternative option a solid PN measurement methodology with a 65% cut-off size at 10 nm (SPN10).

25. This is an explanatory note accompanying the consolidated document addressing the changes to the current methodology and the proposed changes for the second alternative option to extend the particle size detection range to 10 nm particles.

Purpose and summary of the modifications

26. This proposed amendment to UN GTR No. 15 aims mainly at introducing as an alternative option a solid particle number measurement procedure with a cut-off size of approximately 10 nm (SPN10) differing in this from the existing procedure which has a 50% cut-off size at 23 nm (SPN23).

27. This amendment stems from the evidence that specific technologies like PFI and CNG engines may exhibit, in some cases, particle emissions close to the existing emission limit and at the same time a significantly high fraction of sub-23 nm particles. In view of a possible extension of the particle number limit to all combustion engines, the European Commission and other Contracting Parties had expressed the interest in a test procedure with a lower cut-off size in order to improve the control of particle emissions whatever the average size of the particles emitted. The PMPIWG concluded that it would be extremely challenging to develop a reliable particle counting methodology with a d_{50} below 10 nm while a 65% cut-off size at 10 nm would be achievable by properly adapting the existing methodology.

28. For this reason the PMPIWG has worked to identify the necessary changes which would allow an increase to the size range of the particles counted, whilst maintaining an appropriate level of repeatability/reproducibility, and at the same time trying to reduce as much as possible the impact on the testing burden and the measuring equipment required. The new proposed procedure has been assessed by means of an inter-laboratory exercise that has involved several laboratories located in Europe and Asia. This exercise has shown that the variability level of SPN10 results is at the same level as the SPN23 values.

29. Since a few Contracting Parties have asked to maintain the existing methodology with the 50% cut-off size at 23 nm in the UN GTR No. 15, in agreement with the GRPE Secretariat, it is proposed to keep the existing methodology with some modifications and introduce the new procedure with the cut-off size at about 10 nm as an additional option. Both the changes to the existing methodology and the changes to extend the particle size detection range to 10 nm are summarized and explained in the table 1.

30. One of the more debated points in the PMPIWG concerned the volatile particle remover and more specifically whether for SPN10 this should be based on a catalytic stripper or whether also the usual evaporation tube should be allowed. The results of the validation exercise have not provided clear evidence that one solution is definitely better than the other, but there is large consensus among the experts that the catalytic stripper minimizes the risk of artefacts due to too low dilution ratios. Moreover, losses are more critical for particles below 23 nm and if not properly measured and modelled, allowing both systems could result in an increased variability among instruments based on different sample treatment approaches. For these reasons it has been decided to allow only the use of the catalytic stripper for SPN10. However, in order to maintain the possibility of using sampling systems designed for SPN10 also for SPN23 measurement, the IWG proposes to

modify also the existing procedure by removing the restriction that the sampling system parts shall not react with the exhaust gas components. In this way a sampling system with a catalytic stripper fitted with a condensation particle counter with the proper calibration can be used for the SPN23 measurement. As supported by several experimental data, the different losses between catalytic stripper and evaporation tube become important only below 23 nm and therefore, allowing the use of both devices for SPN23, should not result in an increased variability of the measurements.

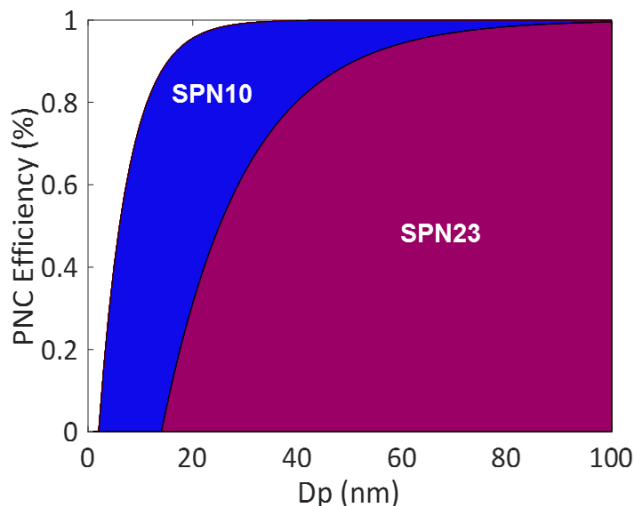
Table 1

Main changes to SPN23 and changes/additions for SPN10

<i>Subject</i>	<i>UN GTR No. 15, Annex 5 – Original requirements</i>	<i>Proposed changes for SPN23</i>	<i>Proposed changes for SPN10</i>	<i>Reasoning</i>
PNC efficiency	50±12 % @ 23 nm, >90% @ 41 nm	None	65±15 % @ 10 nm, >90% @ 15 nm	Typical PNC-efficiency, well tested in the field.
Maximum VPR-loss requirement	@ 30 nm 30% and @ 50 nm 20% higher than @ 100 nm	None	Addition @ 15 nm 100% higher than at 100 nm	No additional requirement below 15 nm since generation of particles < 15 nm challenging, uncertainties high
Polydisperse validation of VPR	a polydisperse 50 nm aerosol may be used for validation	None	Removed	Uncertainties @ 15 nm or below high → test serves no purpose
VPR validation	> 99.0 % vaporization of 30 nm tetracontane particles, with an inlet concentration of ≥ 10,000 per cm ³ (Monodisperse)	None	> 99.9 % removal efficiency of tetracontane particles with count median diameter > 50 nm and mass > 1 mg/m ³ . (Polydisperse)	Secure the functioning of VPR also for PNC with 65±15 % @ 10 nm, >90% @ 15 nm
Volatile Particle Remover (VPR)	All parts (of SPN-system) -- shall not react with exhaust gas components	-- VPR may be catalyzed (both heated evaporation tube and catalytic stripper allowed)	- the VPR shall be catalyzed (use of catalytic stripper only)	Minimize the risk of artefacts for SPN10. Comparability of PNC10 and PNC23 and possibility of using new sampling systems with CS also for SPN23 by fitting a PNC with a D50 @ 23 nm.

31. A specific technical issue stemmed from the concern that to certify a vehicle for two different regions applying different PN limits (i.e. PN10 and PN23) either two different instruments or double testing might be required. This would lead in any case to increased testing costs and burden. Both those situations might be avoided if a test performed using the SPN 10 measurement procedure could also cover the SPN23 nm test.

32. In principle measuring SPN10 should result in higher PN values and therefore if the PN23 limit is met it can be concluded that the same limit would be more easily met when using the SPN23 procedure (see picture below). The PMP IWG believes that this option is acceptable if any party would like to implement it.



33. As explained above, the proposed amendment does not just contain a second option for SPN10 measurement, but also includes a number of corrections/improvements to the existing and the proposed methodology. The following table describes in detail only the changes to the existing, SPN23 methodology. When in the “New text” column the marking “SPN23” does not appear, the changes also apply to the SPN10 procedure.

Annex 5	Original text	New text	Justification
4.3. PN measurement equipment (if applicable)	None	<p>This Regulation allows for two optional settings for the measurement of PN, differentiated by the particle electrical mobility diameter at which the PNC’s detection efficiency is stated. The two values included are 23 nm and 10 nm.</p> <p>While most of the paragraphs and sub-paragraphs are common to the two different settings and have to be applied for both 23 nm and 10 nm PN measurement, some contain two different options starting respectively with the markings “SPN23” and “SPN10”.</p> <p>Where such options exist, a Contracting Party wishing to apply the 23 nm value should select the requirements starting with the</p>	<p>The text explains how to read the annex in the context of having common text, SPN10 specific text and SP23 specific text- as introduced by the new and the amended test procedure.</p>

Annex 5	Original text	New text	Justification
		marking "SPN23" whereas a Contracting Party wishing to apply the 10 nm value should select the requirements starting with the marking "SPN10".	
4.3.1.2.3.	All parts of the dilution system and the sampling system from the exhaust pipe up to the PNC, which are in contact with raw and diluted exhaust gas, shall be designed to minimize deposition of the particles. All parts shall be made of electrically conductive materials that do not react with exhaust gas components, and shall be electrically grounded to prevent electrostatic effects.	All parts of the dilution system and the sampling system from the exhaust pipe up to the PNC, which are in contact with raw and diluted exhaust gas, shall be made of electrically conductive materials, shall be electrically grounded to prevent electrostatic effects and designed to minimize deposition of the particles.	This change allows the use of a catalytic stripper in the sampling system used for SPN23 measurement
4.3.1.3.3.	The sample preconditioning unit shall: (a) Be capable of diluting the sample in one or more stages to achieve a particle number concentration below the upper threshold of the single particle count mode of the PNC and a gas temperature below 35 °C at the inlet to the PNC;	The sample preconditioning unit shall: (a) Be capable of diluting the sample in one or more stages to achieve a particle number concentration below the upper threshold of the single particle count mode of the PNC; (b) Have a gas temperature at the inlet to the PNC below the maximum allowed inlet temperature specified by the PNC manufacturer;	Permits the use of systems that can control the inlet temperature
4.3.1.3.3.	The sample preconditioning unit shall: (e) Be designed to achieve a solid particle penetration efficiency of at least 70 per cent for particles of 100 nm electrical mobility diameter;	The sample preconditioning unit shall: (f) Achieve a solid particle penetration efficiency of at least 70 per cent for particles of 100 nm electrical mobility diameter;	Only editorial change
4.3.1.3.3.	The sample preconditioning unit shall: (h) Also achieve more than 99.0 per cent vaporization of 30 nm tetracontane (CH ₃ (CH ₂) ₃₈ CH ₃) particles, with an inlet concentration of ≥ 10,000 per cm ³ , by means of heating and reduction of partial pressures of the tetracontane.	The sample preconditioning unit shall: (h) SPN23: Achieve more than 99.0 per cent vaporization of 30 nm tetracontane (CH ₃ (CH ₂) ₃₈ CH ₃) particles, with an inlet concentration of ≥ 10,000 per cm ³ , by means of heating and reduction of partial pressures of the tetracontane.	Only editorial change
New 4.3.1.3.3.1.	None	The solid particle penetration $P_r(d_i)$ at a particle size, d_i , shall be calculated using the following equation:	Definition of penetration. It was not defined

Annex 5	Original text	New text	Justification
		$P_r(d_i) = DF \cdot N_{out}(d_i) / N_{in}(d_i)$ Where $N_{in}(d_i)$ is the upstream particle number concentration for particles of diameter d_i ; $N_{out}(d_i)$ is the downstream particle number concentration for particles of diameter d_i ; d_i is the particle electrical mobility diameter DF is the dilution factor between measurement positions of $N_{in}(d_i)$ and $N_{out}(d_i)$ determined either with trace gases, or flow measurements.	
4.3.1.3.4.	The PNC shall: (d) Have a linear response to particle number concentrations over the full measurement range in single particle count mode;	The PNC shall: (d) Operate under single counting mode only and have a linear response to particle number concentrations within the instrument's specified measurement range;	Clarification of the already existing requirement of single counting mode
4.3.1.3.4.	The PNC shall: (g) Incorporate a coincidence correction function up to a maximum 10 per cent correction, and may make use of an internal calibration factor as determined in paragraph 5.7.1.3. of this annex but shall not make use of any other algorithm to correct for or define the counting efficiency;	The PNC shall: (g) Introduce a correction with an internal calibration factor as determined in paragraph 5.7.1.3.	The coincidence correction is outdated. New counters have more sophisticated algorithms
4.3.1.3.4.	None	The PNC shall: (i) SPN23: The PNC calibration factor from the linearity calibration against a traceable reference shall be applied to determine PNC counting efficiency. The counting efficiency shall be reported including the calibration factor from the linearity calibration against a traceable reference.	Clarification that the calibration factor has to be applied when checking the efficiencies at the cut-off curve sizes
4.3.1.3.4.	None	The PNC shall: (j) If the PNC applies some other working liquid besides n-butyl alcohol or isopropyl alcohol, the counting efficiency of the PNC shall be demonstrated with 4cSt polyalphaolefin and soot-like particles.	To confirm that PNC working fluid does not behave differently with soot particles, i.e. soot is somewhat hydrophobic and PNCs applying water as working fluid should be avoided

Annex 5	Original text	New text	Justification
Table A5/2a PNC counting efficiency	23±1 41±1	23 41	Reference to “nominal” particle size
4.3.1.3.6.	Where not held at a known constant level at the point at which PNC flow rate is controlled, the pressure and/or temperature at the PNC inlet shall be measured for the purposes of correcting particle number concentration measurements to standard conditions	Where not held at a known constant level at the point at which PNC flow rate is controlled, the pressure and/or temperature at the PNC inlet shall be measured for the purposes of correcting particle number concentration measurements to standard conditions. The standard conditions are 101.325 kPa pressure and 0°C temperature.	Standard conditions defined to avoid ambiguity.
4.3.1.4.1.3.	The sampling probe or sampling point for the test gas flow shall be arranged within the dilution tunnel so that a representative sample gas flow is taken from a homogeneous diluent/exhaust mixture.	Becomes 4.3.1.4.1.4 and a new provision is inserted in 4.3.1.4.1.3.	Change on indexing
New 4.3.1.4.1.3.	None	SPN23: The evaporation tube, ET, may be catalytically active.	Clarification that catalytically active evaporation tube is permitted
5.7.1.1.	The responsible authority shall ensure the existence of a calibration certificate for the PNC demonstrating compliance with a traceable standard within a 13-month period prior to the emissions test. Between calibrations either the counting efficiency of the PNC shall be monitored for deterioration or the PNC wick shall be routinely changed every 6. See Figures A5/16 and A5/17. PNC counting efficiency may be monitored against a reference PNC or against at least two other measurement PNCs. If the PNC reports particle number concentrations within ±10 per cent of the arithmetic average of the concentrations from the reference PNC, or a group of two or more PNCs, the PNC shall subsequently be considered stable, otherwise maintenance of the PNC is required. Where the PNC is	The responsible authority shall ensure the existence of a calibration certificate for the PNC demonstrating compliance with a traceable standard within a 13-month period prior to the emissions test. Between calibrations either the counting efficiency of the PNC shall be monitored for deterioration or the PNC wick shall be routinely changed every 6 months if recommended by the instrument manufacturer. See Figures A5/16 and A5/17. PNC counting efficiency may be monitored against a reference PNC or against at least two other measurement PNCs. If the PNC reports particle number concentrations within ±10 per cent of the arithmetic average of the concentrations from the reference PNC, or a group of two or more PNCs, the PNC shall subsequently be considered stable, otherwise maintenance of the PNC is required. Where the PNC is monitored against two or more other measurement PNCs, it is permitted to use a reference vehicle running sequentially in	This is obsolete for some instrument on the market as they have an integrated quality check option (e.g. pulse-height determination)

Annex 5	Original text	New text	Justification
	monitored against two or more other measurement PNCs, it is permitted to use a reference vehicle running sequentially in different test cells	different test cells	
5.7.1.3.	Calibration shall be traceable to a national or international standard calibration method by comparing the response of the PNC under calibration with that of:	Calibration shall be undertaken according to ISO 27891:2015 and traceable to a national or international standard by comparing the response of the PNC under calibration with that of:	Requirement that PNC calibration should follow the recently released ISO 27891:2015.
5.7.1.3.	(b) A second PNC that has been directly calibrated by the method described above.	(b) SPN23: A second full flow PNC with counting efficiency above 90 per cent for 23 nm equivalent electrical mobility diameter particles that has been calibrated by the method described above. The second PNC counting efficiency shall be taken into account in the calibration.	Requirement that facilitates the PNC calibration with a reference PNC different to that required in ISO 27891:2015.
5.7.1.3.1.	For the requirements of paragraph 5.7.1.3.(a), calibration shall be undertaken using at least six standard concentrations spaced as uniformly as possible across the PNC's measurement range.	For the requirements of paragraphs 5.7.1.3.(a) and 5.7.1.3.(b), calibration shall be undertaken using at least six standard concentrations across the PNC's measurement range. These standard concentrations shall be as uniformly spaced as possible between the standard concentration of 2,000 particles per cm ³ or below and the maximum of the PNC's range in single particle count mode.	Paragraphs 5.7.1.3.1. and 5.7.1.3.2. combined together and clarified
5.7.1.3.2.	For the requirements of paragraph 5.7.1.3.(b), calibration shall be undertaken using at least six standard concentrations across the PNC's measurement range. At least 3 points shall be at concentrations below 1,000 per cm ³ , the remaining concentrations shall be linearly spaced between 1,000 per cm ³ and the maximum of the PNC's range in single particle count mode.	Deleted	Paragraphs 5.7.1.3.1. and 5.7.1.3.2. combined together and clarified
Old 5.7.1.3.3. becomes new 5.7.1.3.2.	For the requirements of paragraphs 5.7.1.3.(a) and 5.7.1.3.(b), the selected points shall include a nominal zero concentration point produced by attaching	For the requirements of paragraphs 5.7.1.3.(a) and 5.7.1.3.(b), the selected points shall include a nominal zero concentration point produced by attaching HEPA filters of at least Class H13 of EN	Stricter requirement for the linearity (instead of +/-10%, reduced to +/-5%) from the slope. Additionally, linearity

Annex 5	Original text	New text	Justification
	<p>HEPA filters of at least Class H13 of EN 1822:2008, or equivalent performance, to the inlet of each instrument. With no calibration factor applied to the PNC under calibration, measured concentrations shall be within ± 10 per cent of the standard concentration for each concentration, with the exception of the zero point, otherwise the PNC under calibration shall be rejected. The gradient from a linear least squares regression of the two data sets shall be calculated and recorded. A calibration factor equal to the reciprocal of the gradient shall be applied to the PNC under calibration. Linearity of response is calculated as the square of the Pearson product moment correlation coefficient (r) of the two data sets and shall be equal to or greater than 0.97. In calculating both the gradient and r^2, the linear regression shall be forced through the origin (zero concentration on both instruments).</p>	<p>1822:2008, or equivalent performance, to the inlet of each instrument. The gradient from a linear least squares regression of the two data sets shall be calculated and recorded. A calibration factor equal to the reciprocal of the gradient shall be applied to the PNC under calibration. Linearity of response is calculated as the square of the Pearson product moment correlation coefficient (r) of the two data sets and shall be equal to or greater than 0.97. In calculating both the gradient and r^2, the linear regression shall be forced through the origin (zero concentration on both instruments). The calibration factor shall be between 0.9 and 1.1 or otherwise the PNC shall be rejected. Each concentration measured with the PNC under calibration, shall be within ± 5 per cent of the measured reference concentrations multiplied with the gradient, with the exception of the zero point, otherwise the PNC under calibration shall be rejected.</p>	<p>is no more compared on absolute, measured reference concentrations, but on forecasted reference concentration.</p>
5.7.2.1.	<p>Calibration of the VPR's particle concentration reduction factors across its full range of dilution settings, at the instrument's fixed nominal operating temperatures, shall be required when the unit is new and following any major maintenance. The periodic validation requirement for the VPR's particle concentration reduction factor is limited to a check at a single setting, typical of that used for measurement on particulate filter-equipped vehicles. The responsible authority shall ensure the existence of a calibration or validation certificate for the VPR within a 6-month period prior to the emissions test. If</p>	<p>Calibration of the VPR's particle concentration reduction factors across its full range of dilution settings, at the instrument's fixed nominal operating temperatures, shall be required when the unit is new and following any major maintenance. The periodic validation requirement for the VPR's particle concentration reduction factor is limited to a check at a single setting, typical of that used for measurement on particulate filter-equipped vehicles. The responsible authority shall ensure the existence of a calibration or validation certificate for the VPR within a 6-month period prior to the emissions test. If the VPR incorporates temperature monitoring alarms, a 13-month validation interval is permitted. It is recommended that the VPR is</p>	<p>"Primary calibration" replaced "with latest complete calibration". Primary is ambiguous and unrealistic if interpreted as the first calibration of the instrument.</p>

Annex 5	Original text	New text	Justification
	<p>the VPR incorporates temperature monitoring alarms, a 13-month validation interval is permitted. It is recommended that the VPR is calibrated and validated as a complete unit. The VPR shall be characterised for particle concentration reduction factor with solid particles of 30, 50 and 100 nm electrical mobility diameter. Particle concentration reduction factors $f_r(d)$ for particles of 30 nm and 50 nm electrical mobility diameters shall be no more than 30 per cent and 20 per cent higher respectively, and no more than 5 per cent lower than that for particles of 100 nm electrical mobility diameter. For the purposes of validation, the arithmetic average of the particle concentration reduction factor shall be within ± 10 per cent of the arithmetic average particle concentration reduction factor \bar{f}_r determined during the primary calibration of the VPR.</p>	<p>calibrated and validated as a complete unit. The VPR shall be characterised for particle concentration reduction factor with solid particles of 30, 50 and 100 nm electrical mobility diameter. Particle concentration reduction factors $f_r(d)$ for particles of 30 nm and 50 nm electrical mobility diameters shall be no more than 30 per cent and 20 per cent higher respectively, and no more than 5 per cent lower than that for particles of 100 nm electrical mobility diameter. For the purposes of validation, the arithmetic average of the particle concentration reduction factor calculated for particles of 30 nm, 50 nm and 100 nm electrical mobility diameters shall be within ± 10 per cent of the arithmetic average particle concentration reduction factor \bar{f}_r determined during the latest complete primary calibration of the VPR.</p>	
New 5.7.2.4.	None	<p>The instrument manufacturer must provide the maintenance or replacement interval that ensures that the removal efficiency of the VPR does not drop below the technical requirements. If such information is not provided, the volatile removal efficiency has to be checked yearly for each instrument.</p>	<p>Require the instrument manufacturer to recommend the maintenance interval to ensure proper functioning of the VPR</p>
New 5.7.2.5.	None	<p>The instrument manufacturer shall prove the solid particle penetration $P_r(d_i)$ by testing one unit for each PN-system model. A PN-system model here covers all PN-systems with the same hardware, i.e. same geometry, conduit materials, flows and temperature profiles in the aerosol path. The solid particle penetration $P_r(d_i)$ at a particle size, d_i, shall be calculated using</p>	<p>Definition of penetration. It was not defined.</p>

Annex 5	Original text	New text	Justification
		<p>the following equation: $P_r(d_i) = DF \cdot N_{out}(d_i) / N_{in}(d_i)$ Where $N_{in}(d_i)$ is the upstream particle number concentration for particles of diameter d_i; $N_{out}(d_i)$ is the downstream particle number concentration for particles of diameter d_i; d_i is the particle electrical mobility diameter DF is the dilution factor between measurement positions of $N_{in}(d_i)$ and $N_{out}(d_i)$ determined either with trace gases, or flow measurements.</p>	
5.7.3. PN measurement system check procedures	On a monthly basis, the flow into the PNC shall have a measured value within 5 per cent of the PNC nominal flow rate when checked with a calibrated flow meter.	On a monthly basis, the flow into the PNC shall have a measured value within 5 per cent of the PNC nominal flow rate when checked with a calibrated flow meter. Here the term 'nominal flow rate' refers to the flow rate stated in the most recent calibration for the PNC by the instrument manufacturer.	Clarification of what nominal flow rate means.
Annex 6			
2.1.1.1.2.2.	Each day, a zero check on the PNC, using a filter of appropriate performance at the PNC inlet, shall report a concentration of ≤ 0.2 particles per cm^3 . Upon removal of the filter, the PNC shall show an increase in measured concentration to at least 100 particles per cm^3 when sampling ambient air and a return to ≤ 0.2 particles per cm^3 on replacement of the filter.	Each day, a zero check on the PNC, using a filter of appropriate performance at the PNC inlet, shall report a concentration of ≤ 0.2 particles per cm^3 . Upon removal of the filter, the PNC shall show an increase in measured concentration and a return to ≤ 0.2 particles per cm^3 on replacement of the filter. The PNC shall not report any error.	The 100 particles/ cm^3 was removed because it was a random number that does not confirm the proper operation of the PNC and sometime too restrictive for low-ambient backgrounds
Annex 7			
4. Determination of PN (if applicable)	C_b is either the dilution air or the dilution tunnel background particle number concentration, as permitted by the responsible authority, in particles per cubic centimetre, corrected for coincidence and to standard conditions (273.15 K (0 °C) and 101.325 kPa);	C_b is either the dilution air or the dilution tunnel background particle number concentration, as permitted by the responsible authority, in particles per cubic centimetre, corrected to standard conditions (273.15 K (0 °C) and 101.325 kPa);	Coincidence correction eliminated
	C_i is a discrete measurement of particle number concentration in the diluted gas exhaust from the PNC; particles per cm^3 and corrected for coincidence;	C_i is a discrete measurement of particle number concentration in the diluted gas exhaust from the PNC; particles per cm^3 ;	Coincidence correction eliminated

Appendix 2 – Technical Report on the development of a new procedure at low temperature, during WLTP phase 2 and a new optional annex, WLTP Low Temperature Type 6 test in the global technical regulation (GTR No. 15 Amendment 6) for the Worldwide harmonized Light vehicles Test Procedure (WLTP Low Temp)

Preface

34. The WLTP 16th session in The Hague Oct 2016 took place right after the conclusion of WLTP phase 1. It was then launched a new task force aiming to develop a new procedure at low temperature, during WLTP phase 2.^[1] During that meeting, it was also decided that the Low and Realistic winter temperature Task Force (hereinafter Low T TF) should be chaired by the European Commission and open to all experts, stakeholders and CP representatives that have an interest in WLTP.

35. Soon after, it was described in the “Mandate and Terms of Reference” that “The purpose of the low temperature test is to check the level of specific pollutant emissions, CO₂, and range of vehicles in conditions that may easily be encountered during the winter season”. 2020^[2]

36. Having asked the Contracting Parties (CPs) about the “the need to improve the current regulation” they expressed a number of needs that have been considered in the process of preparation of the informal document amending the working document for GTR No. 15 Amendment#6 which is presented here. Main concerns mentioned at the time were the effects on air quality, the environment, health, customer information and protection. Some of them are considered critical whereas others should be referred for information. According to the consultation to CPs, the GTR No. 15 should be used, as a basis for the work of this task force. The items which were specifically mentioned for discussion the low / realistic winter temperature, the cycle, the vehicle category to be included and parameters to be measured.

Background

37. Europe introduced in 1998 a type-approval test that allows to measure emissions at low temperatures from vehicles with positive-ignition engines. The Directive 98/69/EC of the European Parliament and of the Council^[3] was a measure against air pollution by emissions from motor vehicles. This test was carried out on vehicles with petrol engines (M₁ and N₁ Class I) on a chassis dynamometer at -7 ± 3 °C only over the Urban Driving Cycle (first part of the New European Driving Cycle, NEDC). The diluted exhaust gases should be analysed for CO and HC. Road-load can be either determined at -7 °C or adjusting the driving resistance for a 10% decrease of the coast-down time at 20°C. Regulation (EC) 715/2007^[4] and its amendment EC 692/2008^[5] brought some modifications, including the eligibility of vehicles with positive ignition engines (namely petrol hybrids, bi-fuel and flex-fuel), for the test, which is known as the Type 6 test from that moment. Most of the content found in this last regulation (EC 692/2008) regarding

¹ Reference Document WLTP-14-14e; ToR of the task force Low and Realistic Winter temperature; Meeting 9th January 2017 – Geneva. Consolidated version on the 25th of January 2017.

² All documents mentioned in this summary can be found at CIRCA BC under: [EUROPA > European Commission > CIRCABC > GROW > wltp > P > Low and realistic winter temperature TF, as well as in the UNECE Wiki page: https://wiki.unece.org/pages/viewpage.action?pageId=85295115](#)

³ Directive 98/69/EC of the European Parliament and of the Council of 13 October 1998, “Relating to measures to be taken against air pollution by emissions from motor 59 vehicles and amending Council Directive 70/220/EEC”. Off. J. Eur. Un., L0069, pp1 -65.

⁴ Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and 61 commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information. Off. J. Eur. Communities L171/1; 2007.

⁵ Commission regulation (EC) No 692/2008 of 18 July 2008 implementing and amending regulation (EC) No 715/2007 of the European Parliament and of the Council on type- approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information. Off. J. Eur. Communities L199/1; 2008.

Type 6 test is identical to what is present in the UNECE Regulation No. 83 07 series, where this test is referred as Type VI.^[6]

38. Regulation EC 692/2008^[5] includes the obligation of the manufacturers to present the type-approval authority with information showing that the NOx after-treatment device on diesel vehicles reaches a sufficiently high temperature for efficient operation within 400 seconds after a cold start at -7 °C and strategy of EGR systems used in diesel vehicles at low temperature. Similar procedures to the Type 6 test are applied in the USA (CFR 1066 Subpart H) where the test is also performed at -7 °C (± 1.7 °C) and the determination of the road-load is done in the same way determined at -7 °C or adjusting the driving resistance for a 10% decrease of the coast-down time), there are important differences as well. In the USA the entire FTP testing procedure is used, while only the UDC is used in EU. The CFR 1066 procedure foresees the use of the vehicle's heater and defroster during the test, while the Type 6 test specifies that these auxiliaries should not be used.^[7] Moreover, in the USA otto-cycle and diesel vehicles must be tested at low temperature.

Introduction

39. After the establishment in the Global Registry as GTR No. 15 in March 2014, ECE/TRANS/WP.29/AC.3/39 on the authorization to further develop the work on Phase 1b was adopted to solve the remaining issues of WLTP Phase 1a. WLTP Phase 1b activities were completed and amendments to UN GTR No. 15 were submitted in October 2015 to be considered at the GRPE January 2016 session.

40. An extension of the mandate for the WLTP IWG, sponsored by the European Union and Japan was granted to tackle the development of the remaining issues. Phase 2 activities started immediately after the endorsement of this authorization by WP.29 and AC.3 at their November 2015 sessions.

41. The scope of work in Phase 2 covered, among other issues, the effect of Low ambient temperature on emissions and range.

42. With this premises and since January 2017, the LowT TF has been working regularly on a new Type 6 test to replace the Type VI test in UN Regulation No. 83. The work has been supported by a group of approximately 25 persons, including representatives from CP and stakeholders, which have been actively and regularly participating in the meetings and web-conferences. Along these years, the TF has hold forty-three encounters, either face-to-face meetings (usually twice per year) or via telco/ web conference. During the last year, the TF hold nineteen encounters, including a face-to-face meeting during the 28th WLTP meeting in Bern in September and the intermediate WLTP in February 2020. The work was also complemented by intense collaboration with SGEV, where from fall 2019 until mid-2020 alone, about twenty-two encounters, including web conference, face-to-face and drafting meetings were hold and specifications for the low temperature test procedure for electrified vehicles, amongst others, were developed.

43. Early discussions in the preparation of the Terms of Reference (ToR) resolved that, as far as conventional vehicles are concerned, the test procedure was meant to assess the impact of low temperature on the efficiency of after-treatment devices or other emission control technologies.

44. In order to properly reflect the conditions that are encountered in real world winter conditions, the road load should be representative of the increased resistance to progress at low temperatures due to the higher air density and other factors (viscosity of transmission lubricant,...). A proper procedure to define the road load and consequently the dyno settings was developed.

⁶ <https://www.unece.org/fileadmin/DAM/trans/doc/2018/wp29grpe/GRPE-76-24e.pdf>

⁷ US. EPA; <http://www.ecfr.gov/cgi-bin/text-idx?SID=ba447754d6f766672ab21e5aa4146283&mc=true&node=pt40.33.1066&rgn=div5#sp40.37.1066.h>

45. Another element to be addressed was whether the emissions should be predominantly measured during the cold start and immediately after or during the whole WLTC cycle.

46. Moreover, low temperatures largely affect the range of electrified vehicles as a consequence of a reduced efficiency of the battery, and also due to the additional energy consumption from auxiliaries (i.e. heating system). This aspect does not fall within the typical scope of the low temperature tests, especially due to the absence of exhaust emissions in the case of battery electric vehicles. However, this is an important element of the so-called 'range anxiety' which exists among potential EV consumers.

47. The mandate of the Low and realistic winter temperature TF

48. According to the ToR.^[8] The low and realistic winter temperature Task Force was preordained to:

- Be open to all experts, stakeholders and CP representatives that have an interest in WLTP;
- Be chaired by the European Commission;
- Develop a harmonised low and realistic winter temperature test procedure (Type 6 test) for the assessment of the emissions (including CO₂), vehicle fuel consumption and electric range, at low and/or realistic winter temperature;
- Propose a harmonised procedure to assess the impact of low temperatures on the range of electric vehicles for proper information of the consumers;
- Act as a platform for the exchange of information and contributions of stakeholders, to be discussed and agreed during the development process;
- Report to the WLTP-IWG on the progress;
- Deliver technical advice and make recommendations to the WLTP IWG on the document strategy, i.e. a new GTR or an annex of the GTR No. 15. Provide a draft text and contribute to the drafting process;
- Focus only on the technical issues regarding the procedure to be developed, while decisions are made at the WLTP IWG level;
- Develop a proposal for the handling of families for low temperature requirements;
- Promote interaction and exchange of information with other IWG Groups, sub-group and task forces, in particular with WLTP Sub-Group-EV and PMPIWG.

49. The Task Force worked intensively to define the temperature for the procedure in order to be representative of low and/or realistic winter temperatures.

- Define the driving cycle to be used for the procedure at low and/or realistic winter temperature and more specifically whether the whole WLTC cycle should be used or a reduced part of it.
- Define the procedure for the adjustment of the road load and consequently of the dyno settings.

50. The work needed specific studies or requests from the experts in the task force, specifically regarding a/ the procedure for assessing the pollutant emissions in conventional and electrified vehicles (LowTemp-Emissions); b/ the procedure for assessing the impact of the low temperature test on the range of electrified vehicles (LowTemp-Range):

LowTemp-Emissions

51. The scope was to develop a procedure to check specific emissions including CO₂. The specific objectives were the following:

- Define the procedure to measure the distance specific emissions of the following compounds: total HC, CH₄ and NMHC, CO, NO_x, CO₂ as well as PM and Particle

⁸ Reference Document WLTP-14-14e-; ToR of the task force Low and Realistic Winter temperature; Meeting 9th January 2017 – Geneva. Consolidated version on the 25th of January 2017

Number, paying attention to the measurement procedures for those compounds not currently regulated at low temperatures.

- Define specific provisions for the low temperature procedure for diesel and hybrid vehicles where necessary.

LowTemp-Range

52. The scope was set to develop a procedure to determine the impact on the range of electrified vehicles at low temperature. The specific objectives were the following:

- Assess whether the shortened procedure for PEV and OVC-HEV range measurement was appropriate at low temperatures or otherwise agree on a new procedure for range determination;
- Develop a procedure to assess the impact of auxiliary systems (e.g. thermal comfort systems,...) on the energy consumption and the range of electrified vehicles.

53. To reach the scope of the task force which can be adapted to the specific purpose of each deliverable.

- Start with an analysis of the existing normative and literature on the method;
- Prepare a comparative analysis amongst the different regional procedures;
- Propose a way forward for the development of a harmonized procedure, including considerations on whether there is need for experimental activities and to what extent;
- Develop the harmonized method;
- Validate the method.

54. Under proposal of the LowT TF, to the WLTP, it was agreed to produce an optional annex to GTR No. 15.^[9] Concerning the title of the GTR optional annex, it was agreed to name it "WLTP Low Temp",^[10] The members of the Low T TF also agreed that the name of the test should be "Type 6"^[11]

55. The scope of the text and the application should be the same as the GTR No. 15; it should be applicable to all vehicle although it was agreed to exempt FCHV for the first version of the optional annex.^[12]

56. Key changes to the UN Regulation No. 83 Type VI test include:

- Drafting an **optional annex** to GTR No. 15 for low and realistic winter temperature
- Applicable **to all type of vehicles and fuels** (exempt FCHV for the first version of the optional annex)
- Purpose is to check compliance of pollutant emissions (THC, CH₄, NMHC, CO, NOx, PM, PN) and provide information for CO₂, FC, EC and range.

57. Considerations on family concept and the possibility of including simulation methods were the centre of intense and prolific discussions and were to be included in the optional annex. Nevertheless, a simulation method is currently not included.

58. During the definition of the scope of the Type 6 test, Contracting Parties indicated that the focus of this test was on criteria emissions for vehicles using internal combustion engines and energy consumption and range from electrified vehicles. Hence, for vehicles equipped with internal combustion engines the family was defined using the same criteria implemented in the PEMS family of the European and Global RDE. A series of adjustments were included to assure that the vehicle selected for the Type 6 test was previously tested over the Type 1 procedure. For pure electric vehicles new provisions that

⁹ See comments in sheet 2019-05-16 and 2019-09-09:

<https://wiki.unece.org/pages/viewpage.action?pageId=85295115>

¹⁰ <https://wiki.unece.org/pages/viewpage.action?pageId=85295115> (See comment in 2019-09-09)

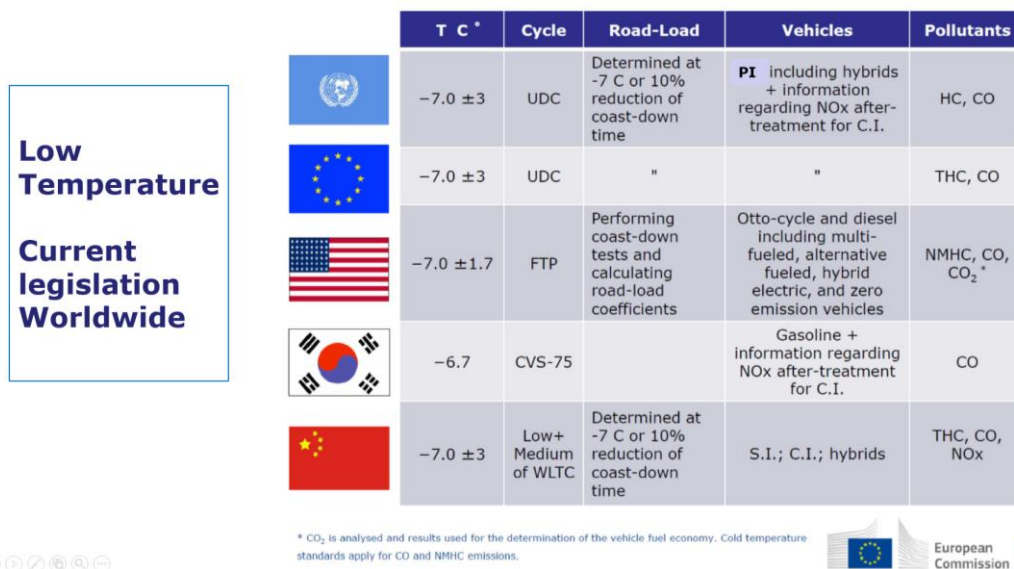
¹¹ <https://wiki.unece.org/pages/viewpage.action?pageId=85295115> (See comments in 2019-04-17)

¹² <https://wiki.unece.org/pages/viewpage.action?pageId=85295115> (See comments in 2019-09-09)

cover the main elements related to the impact of the temperature on energy consumption and range were defined.

Analysis of the existing normative

59. To reach the scope of the task force, there was an initial analysis of the existing normative and literature on the method and it was prepared a comparative analysis among the different regional procedures (See figure below).



60. The work in the LowT TF needed also some specific studies from the experts in the group, specifically regarding the procedure for assessing the pollutant emissions in conventional and electrified vehicles as well as the procedure for assessing the impact of the low temperature test on the range of electrified vehicles. Experts in the LowT TF have also worked in the assessment of the impact of auxiliary systems (e.g. thermal comfort systems) on the energy consumption and the range of electrified vehicles. Besides, the TF has been working in the development of a proposal for the handling of families for low temperature requirements. Therefore, the TF has been acting as a platform for the exchange of information and contributions of stakeholders to be discussed and agreed during the development process.

61. Moreover, from the Chair of the TF, there has been an intense work of promotion of interaction and exchange of information with other IWG Groups, sub-groups and task forces, in particular with WLTP Sub-Group EV. The Chair has also been reporting regularly to the WLTP-IWG on the progress and decisions. On this respect, the TF has focused only on the technical issues regarding the procedure to be developed and delivered technical advice and made recommendations to the WLTP IWG on the document strategy (an optional annex of the UN GTR No. 15) while decisions were made at the WLTP-IWG level. Finally, the Task Force was deeply committed to provide a draft text and contributed to the drafting process.

The Outcome: an “optional annex” for a new Type 6 test.

62. The outcome of the work of the LowT TF is a document, which provides test procedures to test conventional and electrified vehicles at cold ambient temperatures to be added as a new optional Low Temperature (Type 6) test to GTR No. 15.¹³

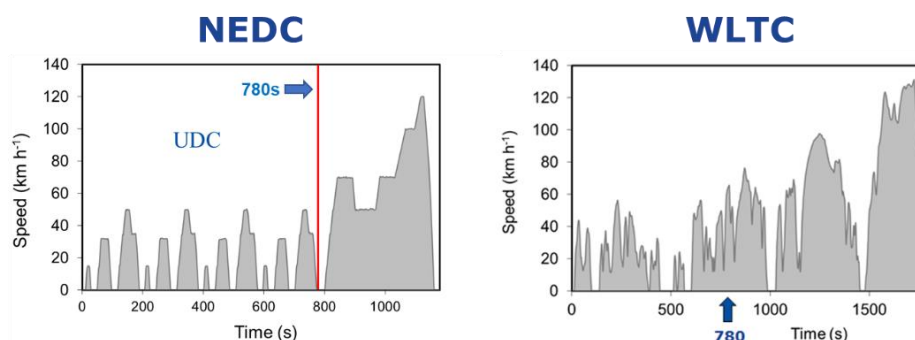
63. During the work and drafting of that document, the LowT TF has confirmed the set point temperature for the procedure (-7°C) and the requirements that the new procedure of the Type 6 test would have in a new optional annex. The procedure follows UN GTR No.

¹³ The document is based on the text of UN GTR No. 15 Amendment 5 as submitted for vote at the June 2019 session of WP.29.

15 and the Type 1 test, therefore, the new test is performed following the WLTC, replacing the NEDC (shorter and less realistic).

Figure 1

Left panel: old test cycle for type approval in (NEDC) – Right panel: new test cycle (WLTC) for type approval



64. The optional annex was presented as “a working document” for its consideration, and previously to the delivery of the Working Document, due on 20 March 2020 (200110 - Low Temp Annex based on ECE/TRANS/WP.29/2019/62)¹⁴.

65. The approach has been to leave the Type 1 test paragraphs of Annexes 1 - 8 unaltered and to indicate in the optional annex where the Type 6 test would alter those requirements. However, there were some Type 6 related elements, which were expected to be incorporated into the current UN GTR No.15 sections. These included a definition of a Low Temperature Family in Section 5 of the GTR and specifications for Type 6 reference fuels in Annex 3.

66. The WLTP Low Temperature Type 6 test optional Annex 13 describes the procedure for undertaking the Type 6 test defined in paragraph 6.2.4. of the UN GTR No. 15 Amendment 6. At the option of the Contracting Party this annex may be omitted. Fuel cell hybrid vehicles are currently exempted from the Type 6 test.

67. Type 6 test requirements state that the Type 6 should be undertaken according to the definitions, requirements and tests set out in paragraphs 3. to 7. of the UN GTR No. 15. Application and amendments to the requirements of Annexes 1 to 8 inclusive of the UN GTR No. 15 are now specified in paragraphs 2.1. to 2.7. of the optional Annex 13.

68. Other premises in UN GTR No. 15 were identified to apply to the optional annex too, namely:

69. Worldwide light-duty test cycles (WLTC): The requirements of Annex 1 also apply for the purposes of the optional annex.

70. Gear selection and shift point determination for vehicles equipped with manual transmissions: The shifting procedures described in Annex 2 also apply with the following specific provision for Type 6 testing: It is allowed to set n_{min_drive} and ASM values which are different than those used for Type 1 testing.

71. Reference Fuels: The reference fuels to be used for the Type 6 test are those specified in Part II of Annex 3, or Part I if a reference fuel is not provided in Part II (e.g., reference diesel). At the option of the manufacturer and approval of the responsible authority a reference fuel as specified in Part I of Annex 3 may be used.

72. Road load and dynamometer setting: For the vehicle to be tested, the chassis dynamometer load setting determined according to paragraph 8.1.4. or paragraph 8.2.3.3. of Annex 4 is to be applied.

¹⁴ On 6 January 2020, Standard UN GTR No. 15 text was deleted to just leave the Type 6 test relevant sections. Document loaded in: <https://wiki.unece.org/display/trans/Optional+annex+Low+T++Drafting>

73. The original idea was to take a similar approach as in UN Regulation No. 83, to either determine the road load at a temperature of -7°C or increase the road load by 10%. In both cases, the road load would be applied as a target chassis dynamometer setting for the Type 6 test. During the discussions it was recognized that the method already included in the European Euro 6 legislation for the determination of the ATCT correction might also prove useful for the Type 6 test, refer to Regulation (EC) 2017/1151 and 2018/1832. In this approach the same chassis dynamometer setting is applied as for the Type 1 test, except for a correction to the f_2 road-load coefficient which is corrected upwards to compensate for the increased air density at the lower temperature. In the case of the low temperature test, that compensation on f_2 is 10%. Even though the same f_0 road-load coefficient is used for the chassis dynamometer setting, the vehicle will experience a higher rolling resistance because of the lower tyre temperature during the test. The advantage of this method is that the chassis dynamometer setting procedure in the low temperature test cell can be eliminated. However, this is only allowed if the manufacturer has demonstrated equivalency between the chassis dynamometers of the Type 1 and the Type 6 test, and if the parasitic losses have been taken into account.

Main topics of the optional annex

N°	Discussion point	Conclusion
1	Test temperature	-7°C
2	Number of phases of the WLTC	EU 4 phases, Japan 3 phases.
3	Reference fuels	Specific provisions for gasoline, LPG and ethanol were added. In order to satisfy the specific requirements of bifuels testing and the switch from petrol to gas and the maximum allowed energy consumed by operation on petrol, it was indicated by OICA, and supported by Japan and EC to include these two elements using data provided after validation of the type 6 procedure, and including this point in the technical report.
4	Family definition	Based on PEMS family and Type 1 test. Focussed on pollutant emissions and electric range.
5	Use of auxiliary devices	<p>Currently introduce the use of thermal comfort systems, Passing-beam (dipped-beam) headlamps and electrical system(s) to defrost. Other systems such as radiant panels and heating seats will be addressed at a second stage.</p> <p>The work was divided in three steps:</p> <ol style="list-style-type: none"> 1. Assessment of auxiliaries to be included (Heating system for cabin, De-frosting/icing/fogging system, Thermal storage system, Battery Thermal Management system, Additional burners, Lighting, Infotainment equipment) 2. Identify conditions to apply to a selected auxiliary in Assessment Matrix (preconditioning, soak, test) 3. Procedure description for selected auxiliaries <p>Initial orientations from Low Temp TF about the Test Procedure to include auxiliaries previewed:</p> <ol style="list-style-type: none"> A. Auxiliary devices Test Procedure had to be as simple as possible to a void test burden; B. Auxiliary devices should use the same procedure for different powertrains when/if possible; C. USA's procedure for auxiliary devices could be used as bases.
6	Equipment	Make sure to a void water condensation.
7	Soak	<ol style="list-style-type: none"> 1. A soak period prior to preconditioning was included. It was agreed to indicate that the soak before preconditioning may be omitted if the manufacturer can justify to the approval of the responsible authority that this soak will have negligible effects on the criteria emissions. 2. A 12-36h soak period prior to test was agreed.

	Soak before pre-conditioning	At the request of the manufacturer, and with the approval of the responsible authority, the soak before preconditioning may be omitted if the manufacturer can justify that this soak will have negligible effects on the criteria emissions. As an example, the effects on the criteria emissions may be non-negligible in the case that the vehicle has an aftertreatment system that uses a reagent. Japan supports new EC proposal as long as this option shall not be applied for PEV and CD test of OVC-HEV.
8	Road-load	Follow the approach of the Ambient Temperature Correction Test as used in the Euro 6 legislation.
9	Preconditioning	At -7°C.
10	Procedure for OVC-HEV	CD and CS testing was requested for OVC-HEV.
11	Calculation	Do not apply humidity correction.
12	Criteria for number of tests	Based on criteria emissions for vehicles with ICE, and on declared electric energy consumption and PER for PEVs.
13	HV battery charge	Starting within 1 hour after preconditioning.
14	Possible test sequence options for OVC-HEV testing	1. CD / 2. CS / 3. CD + CS / 4. CS + CD / 5. CS + CS / 6. CD + CD
15	Cycle for PEV	The PEV Type 6 test procedure consists of one dynamic segment (DS), followed by one constant speed segment (CSS), whereas the DS consists of (3) applicable WLTP test cycles (WLTC) in accordance with paragraph 1.4.2.1. of Annex 8 (Type 1).

74. During the development of a test procedure for PEV, applying the approach from Type 1 adapted for Type 6 conditions consecutive cycle test procedure/shorten test procedure (CCP/STP) was considered the best solution given the time constraints at this stage. The idea of a shortened or alternative STP was considered to be too premature for the implementation into a first working document. Furthermore, a shortened/alternative STP was recognized to have promising aspects to be discussed at a later stage, ideally for both, Type 1 and Type 6, in order to have the same procedure to be performed at both conditions.

75. Later in the development process and after scrutiny of test data by several stakeholders raising possible concerns with the original approach (see e.g. document WLTP-ITM-03e), guidance from WLTP IWG in the meeting on 20 February 2020 for SG EV was to focus on the development of an “alternative/shortened STP” (i.e. a specific PEV Type 6 test procedure).

76. Therefore, the PEV Type 6 test procedure was developed accordingly and now consists of one dynamic segment (DS), followed by one constant speed segment (CSS), whereas the DS consists of (3) applicable WLTP test cycles (WLTC) in accordance with paragraph 1.4.2.1. of Annex 8 (Type 1) of UN GTR No. 15.

Traceability of the informal document and decision-making process

77. The informal document for an optional annex on low temperature has been built-up following a dedicated file containing all open-closed issues discussed in the TF. The evolution and construction of the informal document for the new technical annex of the Type 6 test can be followed by considering the excel file where all changes have been registered and appear with the date of the modification/agreement.

WLTP_Low_Temp_TF_Status_list_v2020-xx-xx.xlsx^[15] ^[16]

¹⁵ This serial number was continued and updated by the chair of the TF. In order to track the evolution of the discussions and decisions inside the Low T TF, all excel files detailing the **Low T TF status list**

<https://wiki.unece.org/display/trans/Optional+annex+Low+T+--+Drafting>

78. All main changes done in the text during the drafting of the informal document were indicated with margin notes and the latest are dated on the week previous to the delivery of the informal document to the secretariat of the GRPE in January 2020. Comments were provided at the relevant points of Annexes 1-8 which have been identified as being areas of UN GTR No. 15 which may need to be amended via the Optional Annex.

79. The informal document of the Low Temp optional annex was presented as a Working Document by the WLTP IWG to the Secretariat of the GRPE on 20 March 2020. From that moment, the work in the Task Force continued to solve the remaining issues in open square brackets and the document updated regularly was named:

200xyy_Status Square bracket topics_Amd_6 WD

80. The new files following the discussions could be found in the same wiki page, <https://wiki.unece.org/display/trans/Optional+annex+Low+T+--+Drafting>

Final sessions (teleconference) for the drafting of the optional annex took place on 2-3 June and the new and latest version of the “200528_Status Square bracket topics_Amd_6 WD_20200604_V4” was loaded in the folder: LowT TF final drafting sessions (teleconference).

81. The very final version of the WLTP Low Temperature Type 6 test (optional annex) was uploaded to the UN Wiki for latest version of the GTR No. 15 Amendment 6 text, along with the documents Sub-Annex 1 (Pure electric and hybrid electric vehicles) to Annex 13, the Appendix 1 (REESS state of charge profile) and the Appendix 2 (Vehicle preparation, preconditioning and soaking procedure for Type 6 testing of OVC-HEVs, NOVC-HEVs and PEVs): <https://wiki.unece.org/display/trans/GTR15+Amnd+6+Drafting>

Further improvements in Annex 13 of the UN GTR No. 15

82. In the development process of the WLTP Low Temperature Type 6 test (optional annex 13), several critical decisions had to be taken in order to deliver the final text of the test procedure to be integrated into UN GTR No. 15 Amendment 6 on time. It also appeared to the experts involved, that there is room for improvement of the current text. Therefore, a possible update of the WLTP Low Temperature Type 6 test procedure for pure ICE and electrified vehicles based on a validation exercise could further improve Annex 13, as well as Annex 13 Sub-Annex 1 of UN GTR No. 15 Amendment 6.

were saved and made available in CIRCAC-BC and in UNECE Wiki page dedicated the LowT TF (<https://wiki.unece.org/pages/viewpage.action?pageId=85295115>)

¹⁶ This document was periodically updated by the drafting coordinator or by any of the Chairs for the LowT TF or the SG EV and always following the discussions in the lowT TF, the SG EV and corresponding drafting sub-groups. In order to track the evolution of the discussions and decisions, the files detailing the **progress in the drafting of the optional annex for lowT** were saved in a dedicated folder in UNECE Wiki page Low TF domain, created *ad-hoc* for this drafting process: <https://wiki.unece.org/display/trans/Optional+annex+Low+T+--+Drafting>

Appendix 3 – Conformity of Production for Type 1 test and OBD

Context

83. This technical report on the CoP provides a brief overview of the test procedure and the evaluation methods for OBD and Type 1 testing for CoP. The complete CoP procedure with all the details can be found in Annex 14. For this Technical Report the main focus is laid on the parts of the procedure that were added as new elements to the CoP procedures already in place in existing UN Regulations and regional legislation.

84. The CoP Taskforce took as a basis the existing CoP procedures in UN R83, UN R101, the European CoP procedure specified in Regulation (EU) 2017/1151 and the procedure which was under development at the time in Japan by the MLIT and JAMA. Where considered appropriate and necessary, these procedures were amended and improved in trying to achieve a harmonised approach for UN GTR 15.

85. During the process of developing the CoP test procedure by the CoP Taskforce, it proved difficult to satisfy the needs of the different Contracting Parties (CPs). It was impossible to reach consensus on a fully harmonised approach. With that conclusion in mind, the focus of the taskforce shifted towards establishing at least a harmonised test procedure for CoP, and allow the evaluation of the CoP test as a CP option. This approach enables to perform one and the same CoP test, but an evaluation according to the different needs of the CPs, thereby reducing the testing burden for manufacturers producing vehicles for different regions.

CoP test for OBD

86. The CoP test procedure on OBD is largely based on the text in UN R83. A CoP test is triggered when the responsible authority finds that the quality of production is unsatisfactory. The CoP test itself is a repetition of the OBD test procedure as described in Appendix 1 to Annex 11, without any further amendments. If the tested vehicle does not fulfil the requirements, another vehicle is added to the sample, up to a maximum of 4 vehicles. At least 3 vehicles shall meet the requirements described in Appendix 1 to Annex 11. The OBD family for CoP is the same as the CoP family for Type 1 CoP tests.

CoP test for Type 1 test

Applicability

87. The applicable Type-1 CoP requirements for the different types of vehicles are listed in Table A14/1. It was decided that NOVC-FCHV and OVC-FCHV are currently exempted from CoP testing.

CoP family

88. A CoP family is essentially the same as the interpolation family. Since the CoP is connected to the vehicle production, it was chosen to split the CoP family for different production facilities. As a consequence, one interpolation family can be present in different CoP families. Under the conditions specified in paragraph 1.3. and 1.3.1.2 of Annex 14, CoP families can be merged. The manufacturer also has the option to create smaller CoP families.

Test frequency

89. The test frequency is set at a minimum of one verification for each CoP family per 12 months. The manufacturer shall specify the planned production for each CoP family, and inform the responsible authority in case there are significant changes. For a planned production exceeding 7,500 vehicles per 12 months, at least one verification per 5,000 vehicles needs to take place (rounded to the nearest integer). As a CP option, the frequency is increased to one verification per 3 months for productions exceeding 17,500 vehicles per 12 months, respectively one verification per month for productions exceeding 5,000 vehicles per month.

Type-1 CoP verification

90. For a CoP verification, the Type 1 test is carried out on a minimum of three randomly selected vehicles from the production, selected across the interpolation families in the CoP family and/or different production facilities, if applicable. The verification process is shown in the Flowchart of Figure A14/1. The outcome is a 'pass' or a 'fail' decision. However, if a decision was not reached another test vehicle is added to the sample up to a maximum of 16 vehicles or, as an alternative CP option, a maximum of 32 vehicles for criteria emissions and 11 for fuel efficiency and electric energy consumption.

91. The fuel used during the CoP test is at the option of the CP, either a reference fuel in accordance with Annex 3, or a commercial fuel, with an alternative manufacturer option to use a reference fuel in accordance with Annex 3.

Type-1 CoP verification for OVC-HEVs in Charge Depleting mode and PEVs

92. For the evaluation of the CoP for PEVs and for OVC-HEVs in charge-depleting mode an alternative CoP evaluation procedure was developed. The electric energy consumption (EC) is only measured during the first applicable WLTP test cycle. This EC value is then evaluated against the charge-depleting EC of the first cycle at type-approval, corrected by an adjustment factor to observe the difference between the declared and measured EC. In this way, the significant test burden for the manufacturer for CoP testing can be reduced considerably, while it is still an effective method to check the CoP on EC. The determination of the EC values for CoP evaluation is described in Appendix 8 to Annex 8.

Run-in factors

93. Vehicles which are tested for CoP are relatively new, while a type approval vehicle has already been run in. This may potentially have an effect on the CO₂ emissions/fuel efficiency and criteria emissions. To take the difference of emission performance into account, run-in factors may be derived for the CoP verification. Depending on the CP they are applied for:

- (a) Criteria emissions, CO₂ emissions and/or electric energy consumption;
- (b) Fuel efficiency (FE) and/or electric energy consumption.

94. During the development of the run-in test procedure, the existing procedures were considered inadequate, particularly on the fact that they assume a linear evolution of the CO₂ emissions and fuel efficiency, and the actual odometer setting of the tested vehicles is not taken into consideration.

95. The newly developed run-in procedure fits the measured CO₂ emissions respectively FE and the corresponding odometer settings of the tested run-in vehicles to a natural logarithmic curve by a least square regression analysis and, as a CP option, corrects this downwards by the standard deviation of the difference between the measured and fitted CO₂ emissions. The run-in factor to be applied to the tested CoP vehicle will then be determined as a function of its actual odometer setting.

96. At the option of the CP the run-in factors may also be applied for criteria pollutants. In this case, the results are plotted on a linear regression line as a function of the actual odometer setting.

97. Another new element is that the mileage accumulation on the run-in vehicles may not exceed that of the type-approval vehicle to avoid any overcorrection.

98. As an alternative to the measured run-in factors, a default run-in factor may be applied of 0.98 for the CO₂ emissions respectively 1.02 for the fuel efficiency, depending on the CP option. There are no default run-in factors for criteria emissions and electric energy consumption.

Statistical evaluation method

99. Two separate evaluation procedures have been developed in parallel, both are included as a CP option. One is for the CoP evaluation of CO₂ emissions, electric energy

consumption and criteria emissions, and the other for the CoP evaluation of fuel efficiency electric energy consumption and criteria emissions.

100. Evaluation of criteria emissions depends on the CP option, but in general the procedure is largely the same as in UN Regulation No. 83, respectively the CoP evaluation procedure in (EU) 2017/1151. In both cases an evaluation criterion is derived on the measured values of the sample, the limit value of the criteria emission component, the sample size and the variance in the measured results. The outcome of the evaluation can result in a 'pass', 'fail' or 'test another vehicle'.

101. For the evaluation of CO₂ respectively Fuel Efficiency, the Contracting Parties have developed their own individual evaluation procedures. The details can be found in Appendix 2 to Annex 14.

Annex VI

[Anglais seulement]

Adopted amendments to ECE/TRANS/WP.29/GRPE/2020/11

Adopted on the basis of GRPE-81-37 (see para. 0.)

A new Supplement to UN Regulation No. 115

I. Proposal

Add new paragraph 2.5.1.6.:

“2.5.1.6. The family relation shall be considered valid for Hybrid Electric Vehicles (HEVs), as defined in paragraph 2.21.2. of UN Regulation No. 83, with the following conditions:

- (a) If at least one Off-vehicle charging (OVC) vehicles is tested as parent vehicle according to this Regulation, the family relation can be considered valid for all OVC-HEV vehicles complying with paragraph 2.5.1.1. to paragraph 2.5.1.5. above.**
- (b) If at least one Not-off-vehicle charging (NOVC) vehicles is tested as parent vehicle according to this Regulation, the family relation can be considered valid for all NOVC-HEV vehicles complying with paragraph 2.5.1.1. to paragraph 2.5.1.5. above.”**

Add new paragraph 6.1.2.4.1.6.4.:

“6.1.2.4.1.6.4. Special provisions for Hybrid Electric Vehicles (HEVs)

In case of Hybrid Electric Vehicles, as defined in paragraph 2.21.2. of UN Regulation No. 83, the procedure described in UN Regulation No. 83 Annex 14 shall be applied during type I test.”

Paragraph 6.1.2.4.3.1., amend to read:

“6.1.2.4.3.1. The emissions of CO₂ are calculated according to UN Regulation No. 101 or to UN GTR No. 15 as applicable, for each parent vehicle, if applicable.

In case of HEVs, special provisions of Annex 8 to UN Regulation No. 101 or calculation of Annex 8 to UN GTR No. 15, as applicable, shall be applied.

The mean of CO₂ emissions shall be calculated as follows:

....”

Add new paragraph 6.2.2.4.1.6.4.:

“6.2.2.4.1.6.4. Special provisions for Hybrid Electric Vehicles (HEVs)

In case of Hybrid Electric Vehicles, as defined in paragraph 2.21.2. of UN Regulation No. 83, the procedure described in UN Regulation No. 83 Annex 14 or in Annex 8 to UN GTR No. 15, as applicable, shall be applied during type I test.”

Paragraph 6.2.2.4.3.1., amend to read:

“6.2.2.4.3.1. The emissions of CO₂ are calculated according to UN Regulation No. 101 or to UN GTR No. 15 as applicable, for each parent vehicle, if applicable.

In case of HEVs, special provisions of Annex 8 to UN Regulation No. 101 or calculation of Annex 8 to UN GTR No. 15, as applicable, shall be applied.

The mean of CO₂ emissions shall be calculated as follows:

....”

II. Justification

1. Provisions for Hybrid Electric Vehicles (HEVs) are implicitly included in UN Regulation No. 115. Indeed, type I test refers to UN Regulation No. 83 which in turns defines special provisions for HEVs. This amendment clarifies that, for HEVs, the correct procedure for type I test shall take into account Annex 14 to UN Regulation No. 83.

2. In addition, regarding CO₂ measurement, Regulation No. 115 already refers to UN Regulation No. 101 or to UN GTR No. 15, as applicable. This amendment clarifies that for HEVs, the correct procedure shall take into account Annex 8 to UN Regulation No. 101 or Annex XX to UN GTR No. 15, as applicable.

3. Working document ECE/TRANS/WP.29/GRPE/2020/11 clarifies provisions applicable to LPG retrofit kits and hybrid vehicles (OVC and NOVC). The same provisions can be applied to CNG retrofit systems too.

4. In addition, new paragraph 6.1.2.4.1.6.3. introduced by ECE/TRANS/WP.29/GRPE/2020/11 is renumbered as 6.1.2.4.1.6.4.

Annex VII

[Anglais seulement]

Technical report on the development of a new UN GTR on the Determination of Electrified Vehicle Power (DEVP)

Adopted on the basis of GRPE-81-27 (see para .0)

A. Introduction

1. Passenger vehicles are commonly assigned a vehicle power rating, which is useful for comparing the performance of different vehicles. Vehicle power rating has also been used for other purposes such as vehicle classification, customer information, insurance, and taxation.
2. Historically, almost every passenger vehicle produced for the consumer market has been powered exclusively by an internal combustion engine (ICE). The vehicle power rating assigned to these conventional vehicles has customarily been the same as the rated power of the engine, as determined by an engine bench test. This is a convenient way to assign a power rating to a vehicle, because the engine power rating may then be applied to any vehicle that uses the same engine.
3. As a measure of real-world vehicle performance, this traditional measure is imperfect, since it does not account for the power lost in the drivetrain between the engine and the road. However, it has become well established and is generally accepted as a useful metric, in part because conventional vehicles have only one engine, and its full rated power is typically available for propulsion.
4. Today, electrified vehicles such as hybrid electric vehicles (HEVs) and pure electric vehicles (PEVs) with multiple drive motors represent an increasing share of the market. A vehicle power rating is not as easy to assign to these vehicles because they combine more than one propulsion source, such as an engine and an electric machine, or multiple electric machines.
5. For these vehicles, the available power depends on how the control system combines the power of each propulsion source when the driver demands maximum power. While it may seem that this would simply be the sum of the rated power of each component, this is not necessarily valid in practice. It will result in an overestimate if, for example, the electric machine is limited by the available battery power, or if the control system limits or reassigns some of the nominal capacity, such as to maintain traction or charge the battery.
6. Owing to the pressing need to reduce emissions of greenhouse gases (GHG) and other air pollutants, the market share of electrified vehicles is expected to grow in the future. This intensifies the need for a standard method for assigning a vehicle power rating to electrified vehicles.
7. Electrified vehicles and conventional vehicles are likely to coexist in the market for some time. Many existing regulations and procedures, such as WLTP, apply to both conventional and electrified vehicles, and require a power rating as an input. In order to be used equitably for such purposes, a power rating for electrified vehicles should be qualitatively and quantitatively comparable with the traditional engine-based power ratings of conventional vehicles.

B. Procedural background

8. The IWG on EVE was set up in June 2012 following the approval by WP.29 of ECE/TRANS/WP.29/AC.3/32. This document established two distinct IWGs to examine

environmental and safety issues related to EVs: the IWG on EVE, reporting to the Working Party on Pollution and Energy (GRPE), and the IWG on Electric Vehicle Safety (EVS), reporting to the Working Party on Passive Safety (GRSP). The proposal was supported by the European Commission, Directorate General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW), the National Highway Traffic Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) of the United States of America, the Ministry of Industry and Information Technology (MIIT) of China, and Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT).

9. A second mandate for the IWG on EVE, divided into Parts A and B was approved in November 2014 by AC.3 to conduct additional research to address several recommendations that grew out of the first mandate, and develop GTR(s), if appropriate. The second mandate was separate from the IWG on EVS.

10. The IWG on WLTP had stated a clear demand for an improved procedure for determining a power rating for electrified vehicles. The WLTP test procedure requires a vehicle power rating for the purpose of classifying vehicles into distinct Power-to-Mass ratio classes, and for application of the so-called "downscaling method" that enables the test reference cycles to be adapted for low-powered vehicles.

11. For purposes of rating the motive power of light vehicles, the UNECE currently provides a regulation under the 1958 Agreement, known as UN Regulation No. 85, that can be used for approval of ICEs and electric machines for M and N category vehicles. In many cases it is sufficient to fulfil the needs of WLTP.

12. However, UN Regulation No. 85 merely determines the bench power rating for either an ICE or a single electric machine. The regulation does not establish a method to determine the total vehicle power of a hybrid vehicle, nor for a pure electric vehicle propelled by more than one electric machine. This would call for a vehicle-level test that is able to determine the maximum power output of the system as a whole.

13. Accordingly, Part B of the second EVE mandate included a subtask to develop an amendment to Global Technical Regulation No. 15 to establish a procedure for determining the powertrain performance of electrified vehicles for use with the WLTP test procedure.

14. The EVE IWG therefore established the subgroup "Determination of electrified vehicle power" (DEVP). The goal was to clarify how an improved technical procedure for the determination of the system power of hybrid powertrains could be realized in an efficient and simple way.

15. The scope of the work covered light duty vehicles (passenger cars -M₁ and light duty vehicles -N₁) and aimed to develop a recommendation or regulation for determination of hybrid vehicle system power. It was agreed that the procedure should cover all types of HEV (ordinary HEVs and plug-in HEVs) as well as PEVs with more than one electric machine for propulsion (for example, all-wheel drive configurations driven by an electric machine on each axle, or by wheel hub motors).

16. The EVE IWG recognized that several organizations, including the Society of Automotive Engineers (SAE), the International Organization for Standardization (ISO), and the Korea Automobile Testing & Research Institute (KATRI), were also studying the issue of hybrid system power determination. The EVE IWG was therefore able to consider several possible paths forward for which considerable research had already occurred. The IWG received presentations from experts with these organizations and discussed the merits and drawbacks of the methods proposed by each.

17. At the 22nd meeting of the IWG on EVE, the Contracting Parties reached consensus that the ISO approach presented the best option as a basis to fulfil the needs of the mandate. A drafting group was then formed to draft the amendment to UN GTR No. 15.

18. The drafting group initially focused on converting the draft ISO standard, which was nearing finalization, into an Annex to UN GTR No. 15. The group made substantial progress on converting the document into the proper format and harmonizing its technical details with UN GTR No. 15 where necessary. The IWG also initiated and completed a first

phase of validation testing to further evaluate the harmonized procedure as it was developed.

19. During this effort, a clear demand emerged on the part of several Contracting Parties that the procedure should be developed as a standalone GTR, in part so that it could be more easily utilized for purposes outside of the specific context of WLTP. In 2019, the mandate was therefore modified to specify development of a standalone GTR rather than an Annex to UN GTR No. 15.

20. Recognizing the need for a reasonable test burden, as well as the increasing diversity of electrified powertrain architectures, the EVE IWG originally considered the possibility of developing both a “reference” method and a “candidate” method. The reference method would determine system power by means of a vehicle-level test procedure, while the candidate method would derive system power from the results of component-level tests. Initial priority was placed on the reference method over the candidate method.

21. At this time, the test procedure described herein provides for a reference method but not a candidate method. Development of a candidate method remains a possibility for future attention of the EVE IWG.

C. Principle for developing the global technical regulation

22. Discussions among the members of the EVE IWG identified a number of requirements for a hybrid system power rating:

- (a) The system power rating should be comparable to the traditional engine-based power rating of conventional vehicles;
- (b) Third-party verification of the power ratings developed by the method, and of any manufacturer-provided inputs to the procedure, should be readily possible;
- (c) The test burden imposed by the procedure should be reasonable, so that the cost and the amount of work necessary to certify the power of an electrified vehicle should not be prohibitive;
- (d) The procedure should be consistent and repeatable with little variation, to minimize the need for repeated tests and prevent opportunities for selective reporting (or “cherry picking”);
- (e) The procedure should be sufficiently robust to evaluate all architectures fairly, including those that currently exist in the market, and those that may reasonably be anticipated to emerge in the future.

23. Additional discussion as to how the EVE IWG considered these requirements in development of the UN GTR, and discussion of all of the technical approaches considered, can be found in the Technical Background section of this UN GTR.

Annex VIII

[Anglais seulement]

Decisions adopted under silence procedure

Remote informal meeting of the Working Party for Pollution and Energy (GRPE), 9-11 June 2020

The list of decisions had been circulated to Contracting Parties for a 10 days silence procedure on 12 June 2020. As silence had not been broken, the decisions were considered adopted on 22 June 2020.

Documentation referenced in the below draft decisions is available under:

<http://www.unece.org/index.php?id=53539>

Decision No.	Agenda Item	Decision
1	3(a)	GRPE adopted ECE/TRANS/WP.29/GRPE/2020/10 as amended by GRPE-81-21 on amendments to UN Regulation No. 83 and agreed to submit it for consideration and vote at the November 2020 session of WP.29/AC.1
2	3(b)	GRPE adopted ECE/TRANS/WP.29/GRPE/2020/14 as amended by GRPE-81-10 and GRPE-81-14 on Amendment 6 to UN GTR No. 15 and agreed to submit it for consideration and vote at the November 2020 session of WP.29/AC.3
3	3(b)	GRPE adopted GRPE-81-15 on a technical report to Amendment 6 to UN GTR No. 15 and agreed to submit it for consideration and vote at the November 2020 session of WP.29/AC.3
4	3(c)	GRPE adopted ECE/TRANS/WP.29/GRPE/2020/15 as amended by GRPE-81-16 and supplemented by GRPE-81-26 on a new UN Regulation on Global Real Driving Emissions (RDE) and agreed to submit it for consideration and vote at the November 2020 session of WP.29/AC.1
5	7	GRPE adopted GRPE-81-13 on amendments to the terms of reference and rules of procedure for Informal Working Group (IWG) on Particulate Measurement Protocol (PMP) and agreed to submit it for endorsement at the November 2020 session of WP.29
6	8(b)	GRPE adopted ECE/TRANS/WP.29/GRPE/2020/17 as amended by GRPE-81-24-Rev.2 on Amendment 1 to UN GTR No. 18 and agreed to submit it for consideration and vote at the November 2020 session of WP.29/AC.3
7	8(c)	GRPE adopted GRPE-81-23-Rev.1 on amendments to the terms of reference and rules of procedure for IWG on Environmental and Propulsion Performance Requirements (EPPR) and agreed to submit it for endorsement at the November 2020 session of WP.29
8	9(a)	GRPE adopted ECE/TRANS/WP.29/GRPE/2020/12 as amended by GRPE-81-27 on a new UN GTR on the Determination of Electrified Vehicle Power (DEV P) and its technical report and agreed to submit them for consideration and vote at the November 2020 session of WP.29/AC.3
9	12	GRPE adopted ECE/TRANS/WP.29/GRPE/2020/16 on a revision to Mutual Resolution No. 3 and agreed to submit it for vote at the November 2020 sessions of WP.29/AC.1/AC.3
10	12	GRPE adopted GRPE-81-09-Rev.1 on amendments to the terms of reference and rules of procedure for IWG on Vehicles Interior Air Quality (VIAQ) and agreed to submit it for endorsement at the November 2020 session of WP.29
11	5	GRPE adopted ECE/TRANS/WP.29/GRPE/2020/11 as amended by GRPE-81-37 on amendments to UN Regulation No. 115 and agreed to submit it for consideration and vote at the November 2020 session of WP.29/AC.1
12	15	GRPE elected by consensus Mr. André Rijnders, from the Netherlands, as Chair, and M. Duncan Kay, from the United Kingdom of Great Britain and Northern Ireland, as Vice-Chair for the year 2021.