



Transposition of GTR15 (WLTP) and GTR19 (Evap) into UN Regulations

Update from WLTP Transposition Task Force

April 2018



Background

Transpose GTR15 and GTR19 into a new 'UNR WLTP' regulation

- Level 2 to contain most stringent requirements from across all regions
 - Subject to full mutual recognition: TA shall be accepted by all CPs
- Regional levels (Level 1a, 1b etc.) to contain regional requirements
 - Optional acceptance by other CPs
 - EU and Japan are the two regions to register an interest so far – other CPs are invited to join
- New UNR WLTP to only include elements developed and agreed by WLTP IWG (i.e. would not include the EU ATCT test)
 - NB: can't include ATCT (for example) in only the EU Level 1a, as that would mean that Level 2 is not the most stringent level

Background

- UNR WLTP to be 'accompanied by' a UNR83 08 series that covers all the 'non-GTR15+Evap' requirements (e.g. OBD, Type VI test, ISC, RDE etc.)
 - The UNR83 08 series will not 'contain' the Type 1 or Type IV test (Evap), therefore in order to gain a UNR83 08 approval, ~~an approval to~~ **compliance with** Level 1a or Level 2 of UNR WLTP shall ~~also be required~~ **be demonstrated**
 - Introduce at same time as UNR WLTP
 - As and when GTR15 and UNR WLTP add new tests (e.g. Durability) 'UNR 83 08 series' will 'shrink' in content.
 - Would enable EU to remain as a Contracting Party to UNR No. 83
 - EU would be a CP to UNR No. 83 and UNR WLTP. Japan would be a CP to just UNR WLTP

Schematic of proposed transposition route

UNR 83 08 series

~~Type I test~~

Type II test – modified for
'WLTP world'*

Type III test – modified for
'WLTP world' *

~~Type IV test~~

Type V test – modified for
'WLTP world' *

Type VI test – modified for
'WLTP world' *

OB~~D~~*, ISC, ATCT, RDE

+

Shall **demonstrate compliance**
with Level 1a of UNR WLTP

UNR WLTP

Level 2 most stringent –
including **Type 1 and Type 4**
tests

Level 1a
(Europe) –
including
Type 1 and
Type 4 tests

Level 1b
(Japan) –
including
Type 1 and
Type 4 tests

* Where other tests refer to the Type I test (NEDC) it will be necessary to say (where appropriate) that this should be seen to be the WLTP Type 1 test (over a certain transition period in some cases)

Potential approaches to transposition

Principle of Transposition

Three different approaches to transposition have been considered by the Task Force (see WLTP-20-04e and IWVTA-25-11 for details)

- Approach 1: Traditional approach to avoid “options”. Faithful to the 1958 Agreement.
 - **UN R.00 covers regional level 1a; UN R.01 covers regional level 1b; UN R.02 covers top level**
 - Amendments to regional levels through either supplements or series of amendments
 - Pro: Fully in line with the new 1958 Agreement
 - Cons: Long lead in time (18 months) before all levels are in force + High administrative burden.
 - Solution(?): If Legal Office OLA were to accept simultaneous notification and entry into force
- Approach 2: ‘Untraditional approach’ - to speed up process
 - **UN R.00 covers all regional levels 1a, 1b; UN R.01 covers top level 2**
 - Amendments to regional levels through either supplements or series of amendments
 - Pro: Shorter lead in time and reduced administrative burden compare to Approach 1.
 - Con: Could become complicated (potentially unworkable?) after rounds of amendments are made; also, the base version UN R.00 would contain options at choice of CPs
- Approach 3: Untraditional approach using two sets of special provisions
 - **UN R.00 covers all levels (top level 2 as well as the regional levels 1a, 1b, ...)**
 - Pro: Shortest lead in time. Con: against the spirit of the 58 Agreement.

Approach 1 timing issue - example

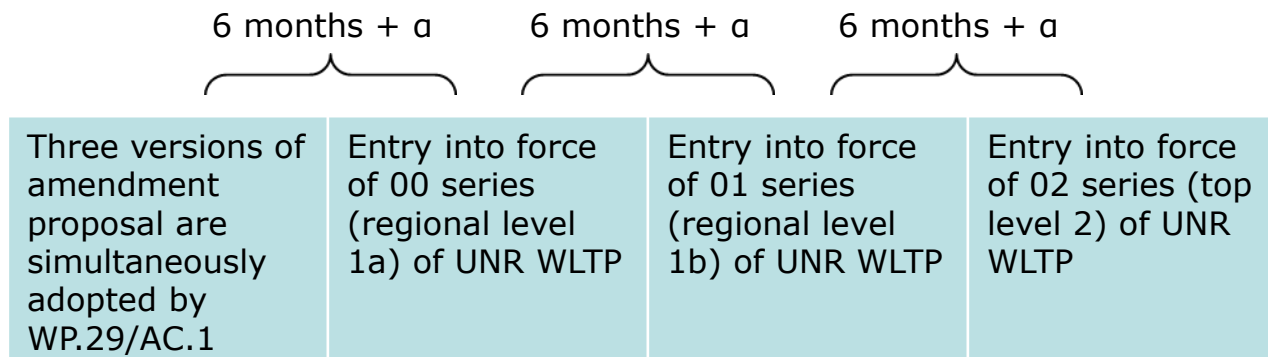
Where:

UN R "WLTP" 00 series (regional level 1a for EU)

UN R "WLTP" 01 series (regional level 1b for Japan)

UN R "WLTP" 02 series (top level 2)

In the case that requirements for both regional levels 1a and 1b are strengthened, it will take 18 months + 3a* to amend UN R "WLTP" consisting of three consecutive versions.



* "a" represents an administrative period of time before the 6 month period - which may be shorter under Rev.3 of the 1958 Agreement than under Rev.2.

Way Forward

The three approaches were presented to IWVTA #25 (November 2017) to seek guidance on the best approach to take (IWVTA-25-11).

- It was made clear that the Transposition Task Force did not consider Approach 3 to be an acceptable approach to take further. IWVTA #25 agreed with this conclusion
- The UNECE secretariat were doubtful that OLA would agree to a shortening of the timescales – needed to overcome the 18 month lead in time issue for Approach 1.
- Given the longer timescales and additional administrative burden of App.1 compared to App.2, the UNECE secretariat recommended that App.2 should be followed initially (with appropriate Introductory Provisions) – with the option to switch to App.1 should App.2 become too complex/difficult from an administrative point of view.

Issue discussed further at 76th GRPE (January 2018) (GRPE-76-24 Appendix)

- GRPE decided to request the secretariat to consult the Office of Legal Affairs (OLA).
- Request to OLA prepared by the Task Force and the UNECE Secretariat.
 - Discussed at IWVTA #26, March 2018 (see IWVTA-27-01, Agenda item 10)
- Request was discussed at WP.29 in March 2018 and to be sent to OLA in April 2018.



**Potential structures
for
Regulation WLTP (all levels)
and
Regulation 83 08 series**

Generic Regulation WLTP: Main Body & Appendices

Regulation WLTP

Table of Contents

1. Scope – incl. Type 1 (excl. Type 1a) and Type 4
2. Definitions
3. Application for approval
4. Approval
5. Specifications and tests – incl. family definitions
6. Modifications of the vehicle type
7. Extensions to type approvals
8. Conformity of production (COP) – Type 1 and 4
9. ~~In-service conformity~~
9. Penalties for non-conformity of production
10. Production definitively discontinued
11. Transitional provisions – incl. introductory provisions?
12. Names and addresses of Technical Services responsible for conducting approval tests, and of Type Approval Authorities

Appendix 1 – Verification of conformity of production for Type 1 test

Appendix 2: Calculations for Conformity of Production for EVs

To be discussed at IWG COP Task Force when it convenes

The information and requirements from the main body of the WLTP GTR and the EVAP GTR will be copied into the Main Body of the new UNR WLTP – where relevant.

E.g. definitions from the GTRs will be added to Section 2 of the Main Body; and definitions of families (from Section 5 of GTR15 and Section 5 of GTR EVAP) will be added to Section 5 of the Main Body

Generic Regulation WLTP: Annexes

Annexes Part A

Annex 1: Engine and vehicle characteristics and information concerning the conduct of tests

Appendix 1 - Information on test conditions

Appendix 2 - WLTP Test Report*

Appendix 3 - WLTP Road Load Test Report*

Appendix 4 - WLTP Test Sheet*

Appendix 5 - Evap Test Report*

Annex 2: Communication

Addendum to type approval communication No ... concerning the type approval of a vehicle with regard to exhaust emissions pursuant to Regulation WLTP, xxx series of amendments

Annex 3: Arrangements of the approval mark

* Principle as in EU-WLTP. Harmonised versions to be developed.

Could call the Evap section Part E to allow room for future inclusion of Type 2 & 3 tests, i.e.
Annex Part C - Reserved [for Type 2]
Annex Part D - Reserved [for Type 3]
Annex Part E - Type 4 test (Evap)

Will depend on whether extra tests are included in UNR WLTP or separate UNRs.

Annexes Part B – Type 1 test (WLTP)¹

Annex 1: WLTC

Annex 2: Gear selection and shift point determination for vehicles equipped with manual transmissions

Annex 3: Reference fuels

Annex 4: Road load and dynamometer setting

Annex 5: Test equipment and calibrations

Annex 6: Type 1 test procedures and test conditions

Annex 7: Calculations

Annex 8: Pure electric, hybrid electric and compressed hydrogen fuel cell hybrid vehicles

Annex 9: Determination of method equivalency

¹ The information and requirements from the main body of the GTR (i.e. Sections 1 – 6 inclusive) will be moved into the Main Body of UNR WLTP – where relevant

Annexes Part C – Type 4 test (Evap)²

Annex 1: Type 4 test procedures and test conditions

Annex 2: Reference fuel

² Information and requirements from the main body will be moved into the Main Body of UNR WLTP – where relevant

Regulation 83 08 series: Main Body & Appendices

Table of Contents

1. Scope
2. Definitions
3. Application for approval
4. Approval
5. Specifications and tests **incl. ref to ATCT + incl. family definitions, e.g. ATCT & PEMS families**
6. Modifications of the vehicle type
7. Extensions to type approvals
8. Conformity of production (COP) – **Type 2,3,5,6 & OBD**
9. In-service conformity – **incl. Type 1 test as it is not included in UNR WLTP**
10. Penalties for non-conformity of production
11. Production definitively discontinued
12. Transitional provisions
13. Names and addresses of Technical Services responsible for conducting approval tests, and of Type Approval Authorities

Need to confirm where we say that to gain a UNR83 08 approval an approval to Level 1a or Level 2 of UNR WLTP shall also be required.

For discussion with UNECE secretariat.

Appendix 1 – **Reserved**

Appendix 2 – **Reserved**

NB: this means no CoP appendices. The appendices in EU-WLTP relate to Type 1 test only.

Appendix 3 - In-service conformity check

Appendix 4 - Statistical procedure for tailpipe emissions in-service conformity testing

Appendix 5 - Responsibilities for in-service conformity

NB: Appendices 3-5 relate to Type 1 test only but are needed in UNR 83 08 as they cannot be included in UNR WLTP

Appendix 6 - Requirements for vehicles that use a reagent for the exhaust after-treatment system

The information and requirements from the main body of the RDE Annex will be copied into the Main Body of the R83 08 – where relevant.

Now need to consider implications of the potential new GTR for RDE.

Need to decide how to link the different series of amendments to UNR 83 08 and UNR WLTP – as tests move across to UNR WLTP. **Scope of UNR83 would need to be changed (?)**.

For discussion with UNECE secretariat.



Regulation 83 08 series: Annexes

Annexes Part A

Annex 1: Engine and vehicle characteristics and information concerning the conduct of tests – **should this exclude all the Type 1 and Type 4 info that is currently in UNR 83 07 series?**

Appendix 1 - Information on test conditions

Appendix 2 – ATCT test report &/or test sheet

Annex 2: Communication

Addendum to type approval communication No ... concerning the type approval of a vehicle with regard to exhaust emissions pursuant to Regulation 83 08 series of amendments

Appendix 1 - OBD – Related information

Appendix 2 - Manufacturer's certificate of compliance with the OBD in-use performance requirements

Annex 3: Arrangements of the approval mark

Annex 4: **Type 1 test - Ambient Temperature Correction Test (ATCT)**

Annex 5: Type 2 test (Carbon monoxide emission test at idling speed)

Annex 6: Type 3 test (Verifying emissions of crankcase gases)

Annexes Part A continued

Annex 7: **Reference Fuels for Low Temperature test**

Annex 8: Type 5 test (Verifying the durability of pollution control devices)

Annex 9: Type 6 test (Verifying the average emissions at low ambient temperatures)

Annex 10: **Empty Annex**

Annex 11: On-Board Diagnostics (OBD) for motor vehicles

Annexes Part B – RDE¹

Based on Appendices 1 – 9 inc. of EU-WLTP Annex 3a

Test sheet/report? – To be discussed

¹The information and requirements from the main body of RDE Annex will be moved into the Main Body of R83 08 – where relevant

Stringency – issues/factors for consideration

- Principles to be agreed. Two different ‘types’ of principle to be considered, as follows:
 1. Principle of accepting an approval that includes an element not required by the accepting CP and for which acceptance would have no implications for their particular regional requirements (e.g. if India were to accept an approval that includes the low temperature test*, or Japan accepting an approval that has included Particle Number)
 - * NB: this example would not be relevant if the Type 6 test is included in a separate UNR instead of UNR WLTP.
 2. When it can’t be demonstrated which ‘option’ is the most stringent then it will need to be agreed between the CPs as to what ‘option’ is included in Level 2
 - E.g. one reference fuel could be the most stringent for NO_x but not for particulates whilst a second could be the opposite. It would need to be agreed amongst the parties as to which is the most critical factor and therefore which of the fuels would go in Level 2.

Stringency – issues/factors for consideration

- Reference fuels
 - Study of diesel reference fuels - Draft reference fuel specification circulated by ACEA in December 2017.
 - Study of petrol reference fuels - Japan to undertake study in 2018
- Number of phases v emissions limits
 - If 4 phases, the limits to comply with Level 1a (Europe);
 - If 3 phases the limits to comply with Level 1b (Japan).
- Number of tests - TBD
- Particle number – follows principle 1
- CoP requirements – harmonised CoP to be developed in Task Force
- See 'WLTP-22-03e_Appendix01' for an analysis of regional options
- Consider whether there are other options to add → to agree and finalise

Open issue

- Use of dual-axis dynamometer

Regulation 101

- Revision 3 of the 1958 Agreement permits Contracting Parties to require a previous series of amendments to a Regulation. In this case they must accept approvals to the latest series of amendments.
- Although for criteria emissions, WLTC/P may be considered to be sufficiently severe when compared to NEDC, for fuel consumption the values are just different.
- Do we need transitional provisions to prevent this being a concern?

Summary / Next steps

- Confirm approach for transposition (i.e. Approach 1 or 2) following the response from OLA
- Finalise structures for UNR WLTP (Level 1 & Level 2) and UNR 83 08 series
- Finalise the analysis of options
- Agree details for stringency levels (e.g. ref. fuels, etc.)
- Develop detailed regulatory texts – process initiated, very early work in progress to be circulated before next task force meeting
- Determine approach to be taken for UNR101 (raise at GRPE)
- Plan is to have an Informal UNR WLTP for 78th GRPE January 2019 and a Working Document for 79th GRPE June 2019.



Contact information

Rob Gardner, TRL Ltd on behalf of the European Commission
(Task Force Leader)

rgardner@trl.co.uk

Alessandro Marotta, European Commission

Alessandro.Marotta@ec.europa.eu