Transmitted by the expert from
the United Kingdom

Informal document No. **GRPE-56-12**
(56th GRPE, 5-6 June 2008,
agenda items 6(c) and 6(d))

PROPOSAL AMENDING DOCUMENTS:
ECE/TRANS/WP.29/GRPE/2008/5 and
ECE/TRANS/WP.29/GRPE/2008/7

A. PROPOSAL

ECE/TRANS/WP.29/GRPE/2008/5 (Regulation No. 83)

Annex 14, paragraph 3.1.2.5.2.2., amend to read

"3.1.2.5.2.2. …….

The battery minimum state of charge is considered to have been reached in combined cycle N if the electricity balance measured during combined cycle N+1 is not more than a 3 per cent discharge, expressed as a percentage of the nominal capacity of the battery (in Ah) in its ~~minimum~~ **maximum** state of charge, as declared by the manufacturer. At the manufacturer's request additional test cycles may be run and their results included in the calculations in paragraphs 3.1.2.5.5 and 3.1.4.2 provided that the electricity balance for each additional test cycle shows less discharge of the battery than over the previous cycle.
…… "

Annex 14, paragraph 3.2.2.6.2.2., amend to read

"3.2.2.6.2.2. …….

The battery minimum state of charge is considered to have been reached in combined cycle N if the electricity balance measured during combined cycle N+1 is not more than a 3 per cent discharge, expressed as a percentage of the nominal capacity of the battery (in Ah) in its ~~minimum~~ **maximum** state of charge, as declared by the manufacturer. At the manufacturer's request additional test cycles may be run and their results included in the calculations in paragraphs 3.2.2.7. and 3.2.4.3 provided that the electricity balance for each additional test cycle shows less discharge of the battery than over the previous cycle.

…….. "

ECE/TRANS/WP.29/GRPE/2008/7 (Regulation No. 101)

Annex 8, paragraph 3.2.3.2.2., amend to read

"3.2.3.2.2. ……

The battery minimum state of charge is considered to have been reached in combined cycle N if the electricity balance measured during combined cycle N+1 is not more than a 3 per cent discharge, expressed as a percentage of the nominal capacity of the battery (in Ah) in its ~~minimum~~ **maximum** state of charge, as declared by the manufacturer. At the manufacturer's request additional test cycles may be run and their results included in the calculations in paragraphs 3.2.3.5 and 3.4.1 provided that the electricity balance for each additional test cycle shows less discharge of the battery than over the previous cycle.

……. "

Annex 8, paragraph 4.2.4.2.2., amend to read

"4.2.4.2.2. …….

The battery minimum state of charge is considered to have been reached in combined cycle N if the electricity balance measured during combined cycle N+1 is not more than a 3 per cent discharge, expressed as a percentage of the nominal capacity of the battery (in Ah) in its ~~minimum~~ **maximum** state of charge, as declared by the manufacturer. At the manufacturer's request additional test cycles may be run and their results included in the calculations in paragraphs 4.2.4.5. and 4.4.1 provided that the electricity balance for each additional test cycle shows less discharge of the battery than over the previous cycle.

…….. "

B. JUSTIFICATION

GRPE/2008/5 and GRPE/2008/7 specify a tolerance of 3% of the battery capacity in its minimum state of charge for determining when, on repeat test cycles, the minimum state of charge has been reached. This is an error, the tolerance should be 3% of battery capacity in its maximum state of charge. A tolerance of 3% of minimum state of charge is not realistic considering the stability of battery charge in a hybrid vehicle over the test cycle. The following graphs show battery state of charge over two repeat test cycles for a Toyota Plug In Hybrid. The final graph shows the state of charge in the second test cycle both as a percentage of minimum and as a percentage of maximum battery capacity. The battery has reached its stabilised minimum state in the second test cycle, with battery discharge averaged across the cycle of less than 3% of the maximum capacity of the battery. However, expressed as a percentage of the minimum capacity of the battery, the average discharge across the cycle is well in excess of 3%.