

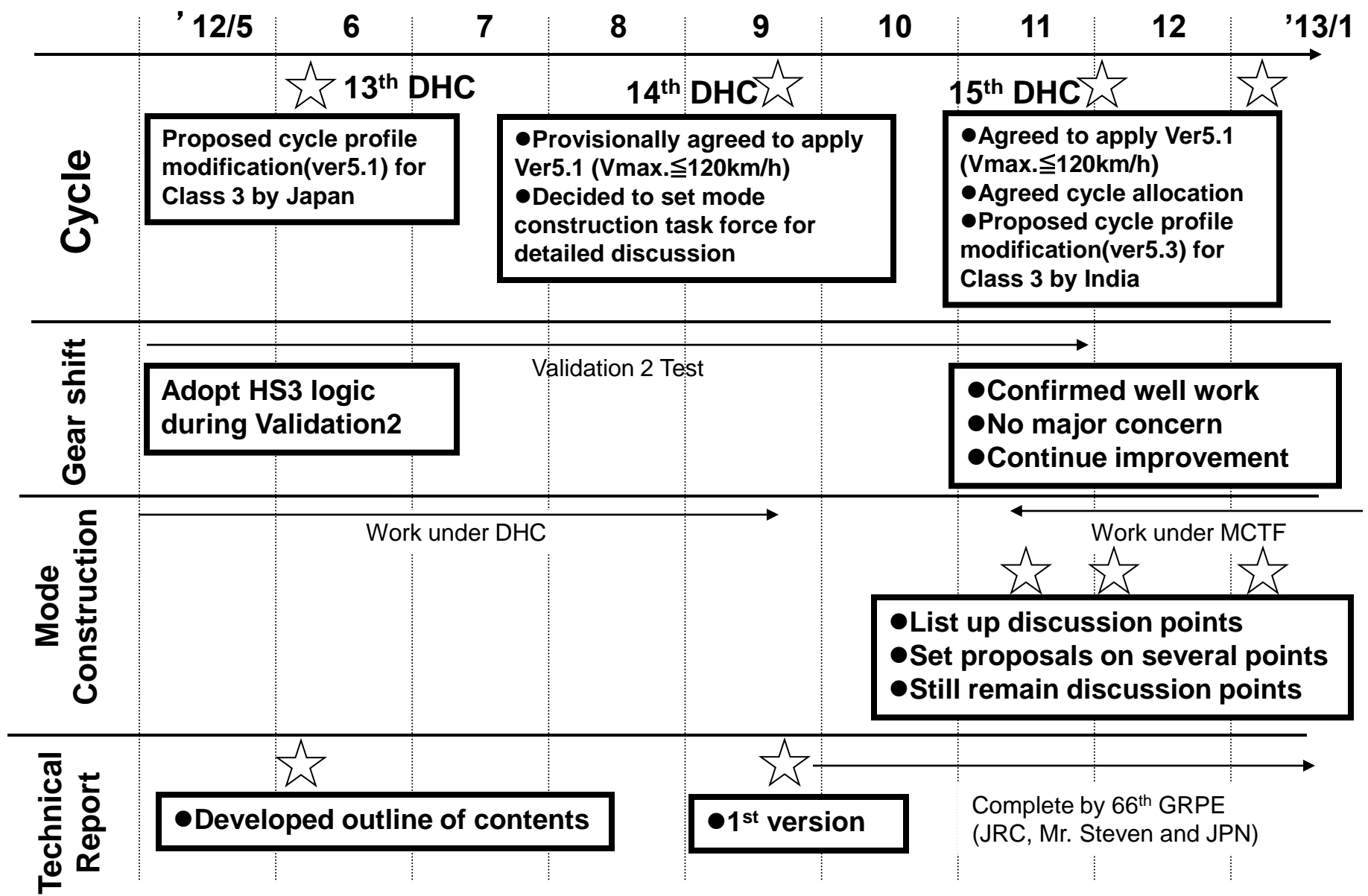
Progress Report of
World-wide Light-duty Test Cycle
and Mode Construction

Prepared by WLTP-DHC/MCTF
under GRPE/WLTP informal group

65th GRPE
17th/18th Jan. 2013
Palais des Nations, Geneva

1. Progress since 64th GRPE meeting
2. Finalized Cycle Profile
3. Cycle Allocation
4. Gear Shift Prescription
5. Open Issues Lists
6. Status of Mode construction
7. Technical Report
8. Next actions

1. Progress since 64th GRPE

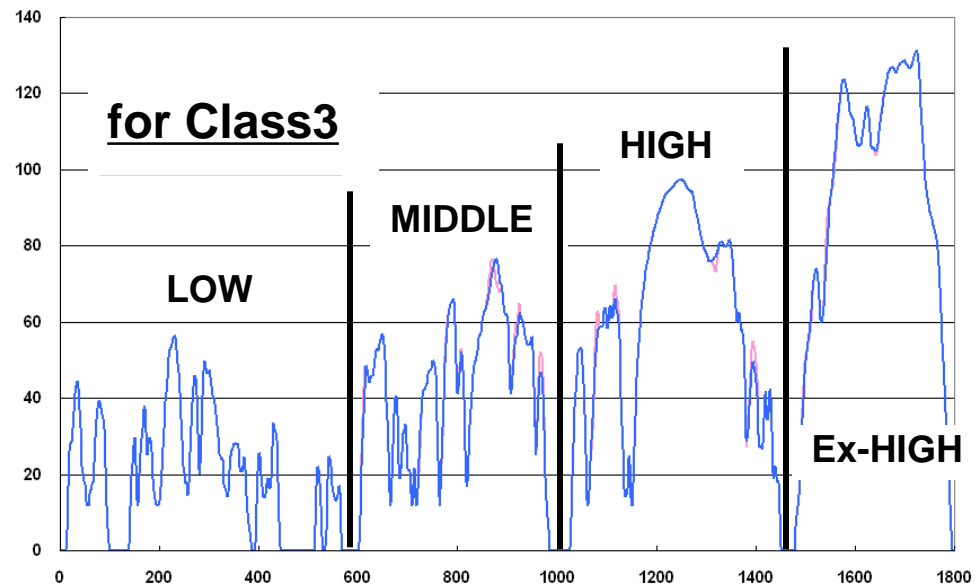
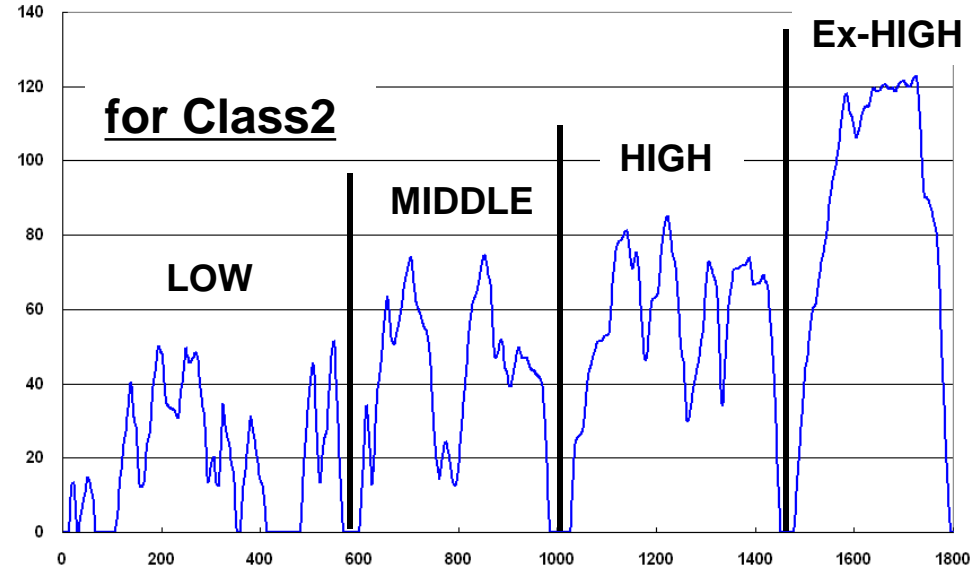
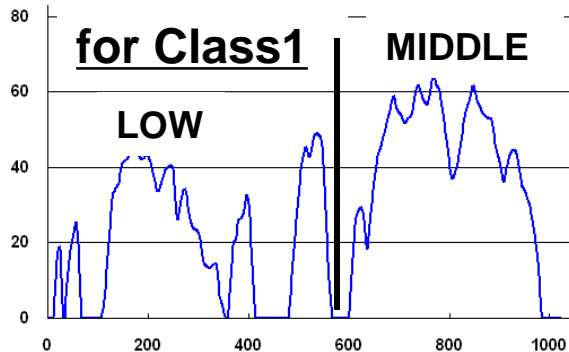


2. Finalized Cycle Profile

During 16th DHC meeting, it was agreed to modify the cycle profile (Ver5.3 proposed by India) for Class3.

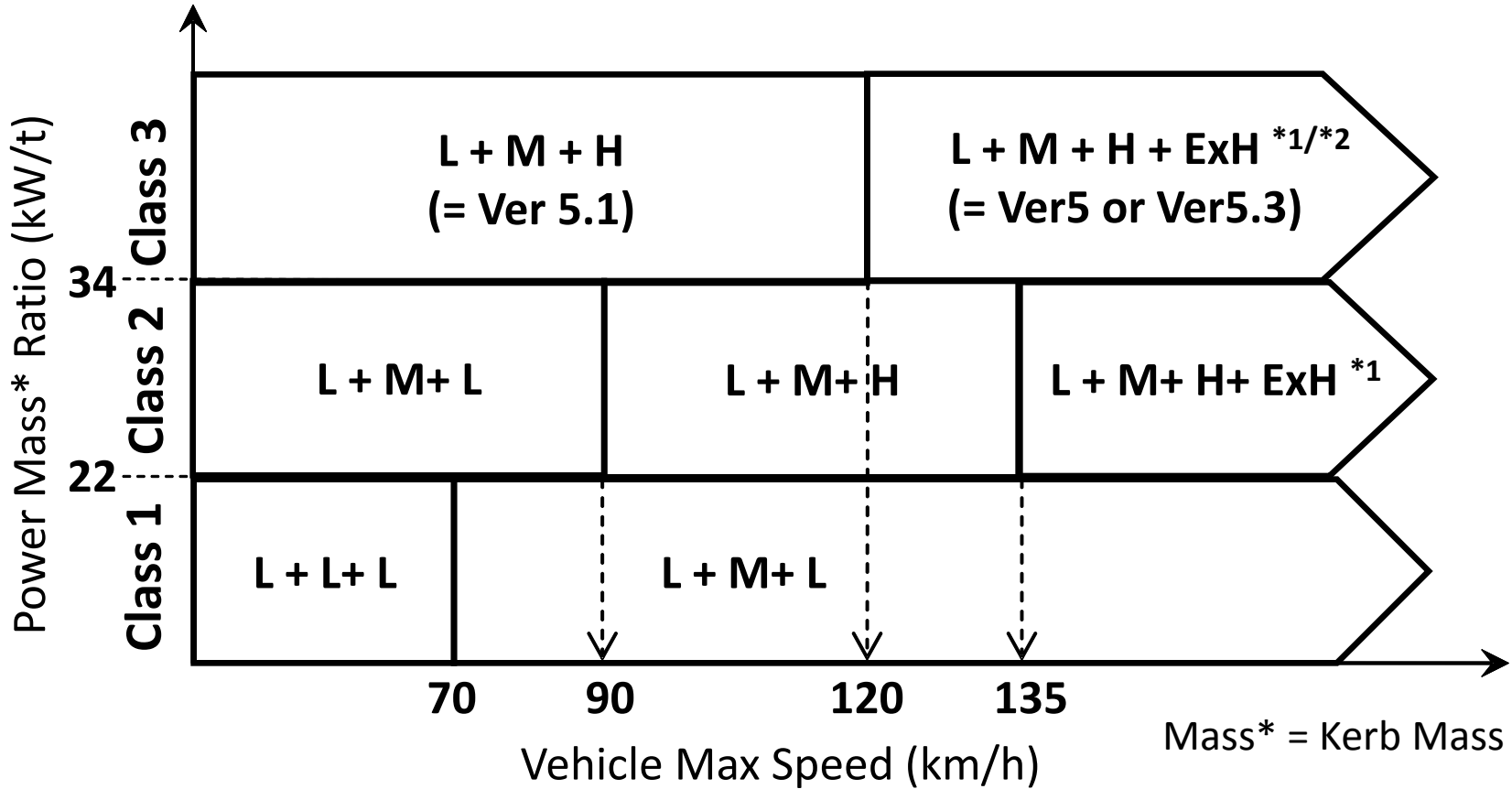
→DHC has successfully developed the harmonized test cycles.

Specific time table of each cycle profile can be seen in WLTP-DHC-16-06 (UN web site)



3-1. Cycle Allocation

During 15th DHC meeting (Dec 2012), the following cycle allocation was agreed. Threshold for electrified vehicles is under the discussion among DTP-Elab subgroup.



*1) exempted as per CPs need

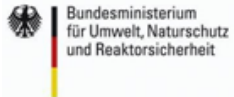
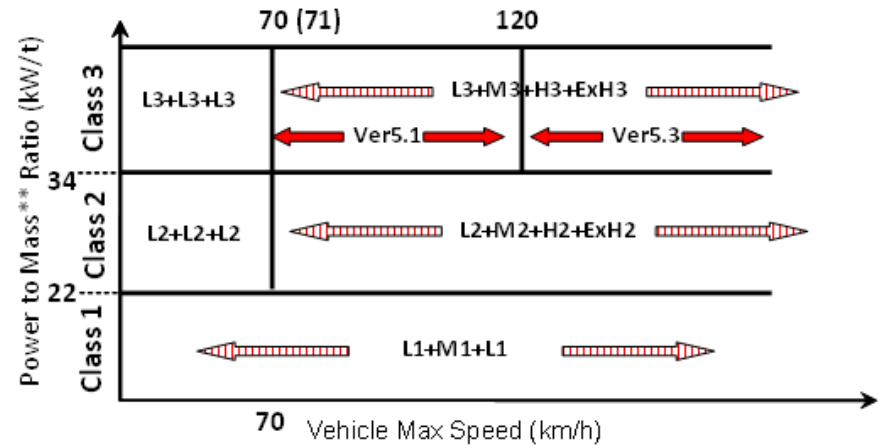
*2) capped speed according to vehicle maximum speed

3-2. Alternative Cycle Allocations

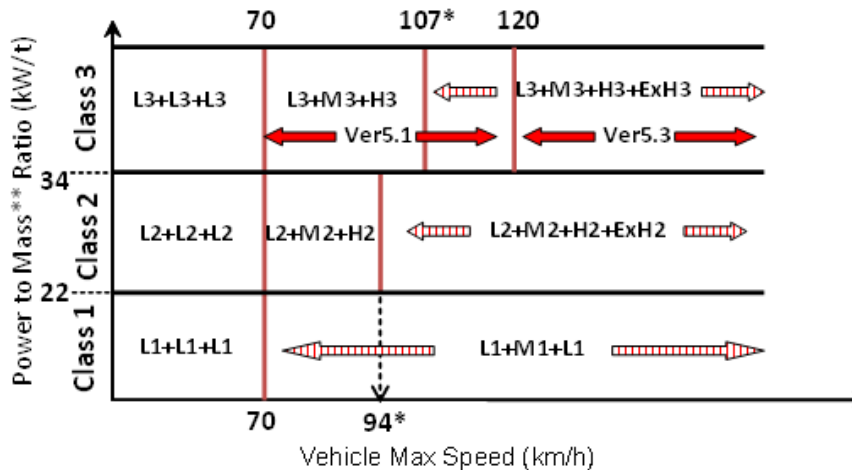
During 16th DHC meeting, the following cycle allocations were proposed by Germany for alternative to avoid special design for cycle allocation (refer WLTP-DHC-16-04).



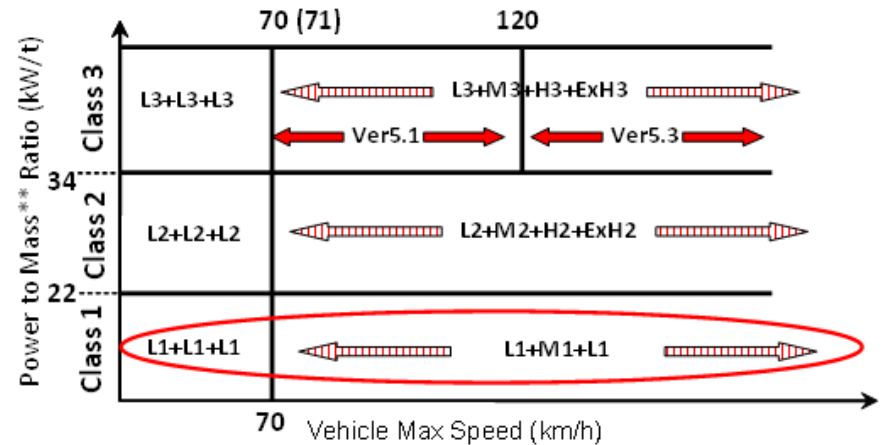
Possible alternative 2a



Possible alternative 1



Possible alternative 2



note) Ex-H phase can be exempted as per CPs need

During 16th DHC meeting, India has proposed to set margin for capped cycle speed by 15% (refer WLTP-DHC-16-05).

On the other hands, EU and Korea have expressed their concerns stating that margin should be minimized as much as possible.

[Request to all CPs]

Each CP is requested to provide their written comments regarding both alternative cycle allocation and threshold speed

by no later than 1st Feb. 2013 to DHC chairman and secretary.

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Mr. Steven has presented latest status of gear shift prescription (refer WLTP-DHC-16-03).

→ Validation 2 test indicated that this gear shift logic works well and no major concern was observed. Based on comments provided from participant laboratories, continue to work for improvement, then provide final version before starting confirmation testing.

5.1. Open Issues -1

	Issues	Discussion points	Status
1	Deadline for submission of driving data CLOSED	a) India and China requested deadline be extended to May	Decided to start development of new cycle after 8 th DHC meeting. Later data submission is still open for analysis.
2	Regional Weighting when developing the WLTC CLOSED	a) traffic volume b) same weighting c) compromised weighting	It was agreed to adopt the traffic volume ratio during the 8 th DHC meeting
3	Threshold Speed for L/M/H under the discussion	a) according to DHC-06-03 b) CP's requirement	Fixed for conventional vehicles. Working on for electrified vehicles under the DTP-Elab subgroup.
4	High Phase Cycle Construction (US&EU versus other regions) CLOSED	a) only ONE unified cycle b) possess TWO types of High phase cycle	It was agreed to possess two (2) types of HIGH phase cycle during 7 th meeting.
5	Mode Construction under the discussion	a) cold start test only b) cold start & hot soak start	Established Mode Construction Task Force (MCTF) for further discussion.

5.2. Open Issues -2

	Issues	Discussion points	Status
6	Weighting Factor for L/M/H/Ex-H Phase under the discussion	a) harmonized weighting factors b) permit regional weighting factors	No further discussion was made since last GRPE (Jun 2012)
7	Gear Shift Points under the development	a) fixed points b) based on vehicle specification c) others	Vehicle specific shift points (b) was provided for Validation 2. Still working on for improvement.
8	How to treat the vehicles which are not able to follow the prescribed cycle under the discussion	a) continue to drive with wide-open-throttle b) exempt the Ex-H (or M&H) phase (s) c) others	Established Mode Construction Task Force (MCTF) for further discussion.
9	Check the driving profile based on the vehicle characteristic CLOSED		Analyze the in-use data based on vehicle characteristic (i.e. power to mass ratio)

6.1. Mode Construction -1

Summary of discussion points

Ol L#	class	phase (s)	Points	how to close ?	Proposal by MCTF
1	all	-	Power to Mass ratio threshold of classification kerb mass or test mass ?	will be discussed during 15th DHC meeting based on Mr. Steven/Japan further study	apply kerb mass basis
2	all	-	definition of battery power and BEV maximum speed	JPN proposal : 30 minutes maximum power for Battery / 30 minutes maximum speed for BEV	under the discussion by DTP-Elab subgroup
3	all	-	need "HOT" start test or not no clear position from CP	technical aspect : what kinds of criteria need to be established political : need input form CPs	not apply "HOT" start test
4	all	-	in case "HOT" start test is required, need COLD/HOT weighting factor	US/JP : already possess EU/IN/KR : conduct survey	na
5	all	-	in case "HOT" start test is required, need to define intermediate soak time.	US : 10 min. JPN : completely hot condition others : NA	na
6	all	L and/or M	in case "HOT" start test is required, which phase(s) need to be driven for HOT test ?	Vali1 : L, M (no need for H and Ex-H) confirm based on vali.2 results	na
7	1	all	vehicle speed threshold of cycle allocation ->Equivalency of pollutants and CO2 value	need input mainly from India colleagues	refer documents DHC-16-02
8	2	all	vehicle speed threshold of cycle allocation ->Equivalency of pollutants and CO2 value	need input mainly from India colleagues	refer documents DHC-16-02
9	3	all	vehicle speed threshold of cycle allocation ->less than 120kph : provisionally accepted ->ex-H phase driving : 135 or 145 or other ideas	will be discussed during 16 th DHC meeting	Agreed during 16 th DHC meeting (refer documents DHC-16-02)

6.2. Mode Construction -2

Summary of discussion points

OI L#	class	phase (s)	Points	how to close ?	Proposal by MCTF
10	2&3	Ex-High	Per CPs need, Ex-High phase driving is exempted. ->Equivalency of pollutants and CO2 value ->PM sampling ->Ki Factor (regeneration system)	JPN proposal : standalone test for Ex-High phase	under the discussion by MCTF
11	2&3	Ex-High	Does low ambient temperature test require Ex-High phase driving or not ?	so far, no discussion is done	Will discuss during Phase II
12	all	all	how to treat the vehicles whose maximum speed is less than phase maximum speed ?	[10]% margin constant speed, scale down profile, wide open throttle operation, exemption, ,,,,	Apply cap speed (margin is under the discussion)
13	sampling strategy	all	PM : 1 filter sampling, however, need to consider OIL#7~10 other pollutants : reach phase sampling		under the discussion by DTP-PNPM subgroup
14	BEV	all	separate each phase test for range measurement is a burden for laboratories	confirm shorten method(proposed by JPN) works or not (->during confirmation test or E-Lab. unique program ?) if not, conduct each phase test separately	under the discussion by DTP-Elab subgroup
15	OVC-HEV	all	separate each phase test for measurement is a huge burden for laboratories	if no concrete counter-proposal is available, conduct each phase test separately	under the discussion by DTP-Elab subgroup

7. Technical Report

Contents of Technical Report are described in right side(→).

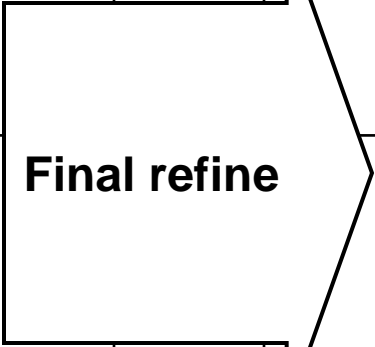
JRC, Mr. Steven and Japan work together and will provide the 1st version during next GRPE (June 2013).

CONTENTS

1. Introduction
2. Objective
3. Structure of the project
4. Cycle development
 - 4.1. Approach
 - 4.2. In-use driving behavior data
 - 4.3. The reference database
 - 4.4. Methodology of cycle development
 - 4.5. Modifications of the draft test cycle
 - 4.6. Vehicle classification and applicable test cycle
5. Test cycle construction and weighting factors for cold/hot start test (shall be omitted when cold/hot waiting factors are not adopted)
6. Gearshift procedure development
 - 6.1. Approach
 - 6.2. Gearshift criteria, additional requirements
 - 6.3. Gearshift prescriptions
 - 6.3.1. Step 1 – Calculation of shifts speeds
 - 6.3.2. Step 2 – Gear choice for each cycle sample
 - 6.3.3. Step 3 – Corrections according to additional requirements
 - 6.4. Calculation example
7. Drivability tests (Validation1 results)
9. Emissions validation tests (Validation2)
 - 9.1. General information (focus on DHC issues only)
 - 9.2. Results of the emissions validation programme (focus on DHC issues only)
10. Round robin test (focus on DHC issues only)
11. Summary and conclusions (focus on DHC issues only)
14. Literature (list of related documents, mainly presented during DHC meeting)
15. Annex A - Description of the modification work on the WLTC cycle
16. Annex B – Final cycle time table (Class 1/2/3)

8. Next Actions

		2013									
		Jan	Feb.	Mar.	Apr	May	Jun.	Jul	Aug	~	Nov
Meetings		★ 16 th DHC 65 th GRPE	★ Web	★	★ 17 th DHC 21&22 in Tokyo		★ 18 th DHC 66 th GRPE		★ 21	→	★ Ad-hoc GRPE
Cycle allocation		→									
Threshold speed		Provide written comments									
Finalize gear shift		→									
Develop Technical Report		→									
Mode Construction Task Force		→									
Confirmation / Round-Robin test		→									
Related DTP activities		★ 12 DTP		★ 13 th DTP			★ 14 th DTP				



Finalize formal documents