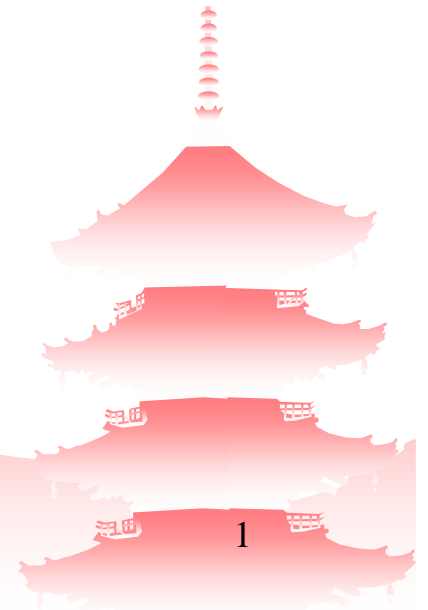


***gtr No.7 TOR difference between  
phase 1, dynamic backset, and  
Phase2 proposal***

**JASIC/Japan**

**May. 2009**



## Phase1 : for alternative requirement for Static backset

### Static

**H-point with Backset  $\leq 55\text{mm}$**



**Contracting Parties may allow manufacturers to choose**

**R-point with Backset  $\leq 45\text{mm}$**



### Dynamic Option

**Contracting Parties choice**

**HY-III**

**Head rotation  $\leq 12\text{ deg}$**

**HIC  $\leq 500$**



**OR\***

**OR**

**Some criteria with BioRID II**

**Until BioRID II requirements are included in this gtr or adopted in the national regulation of a Contracting Party, head restraints shall comply with any or all static requirements.**



**\*: Manufacture's choice**

# Head restraint gtr phase2 Proposal

Phase2 : for common single dynamic requirement

gtr Phase1

Static

H-point with Backset  $\leq 55\text{mm}$

R-point with Backset  $\leq 45\text{mm}$

OR\*

Dynamic Option

HY-III Head rotation  $\leq 12\text{ deg}$

BioRID II Dynamic backset



gtr Phase2

Dynamic test requirement

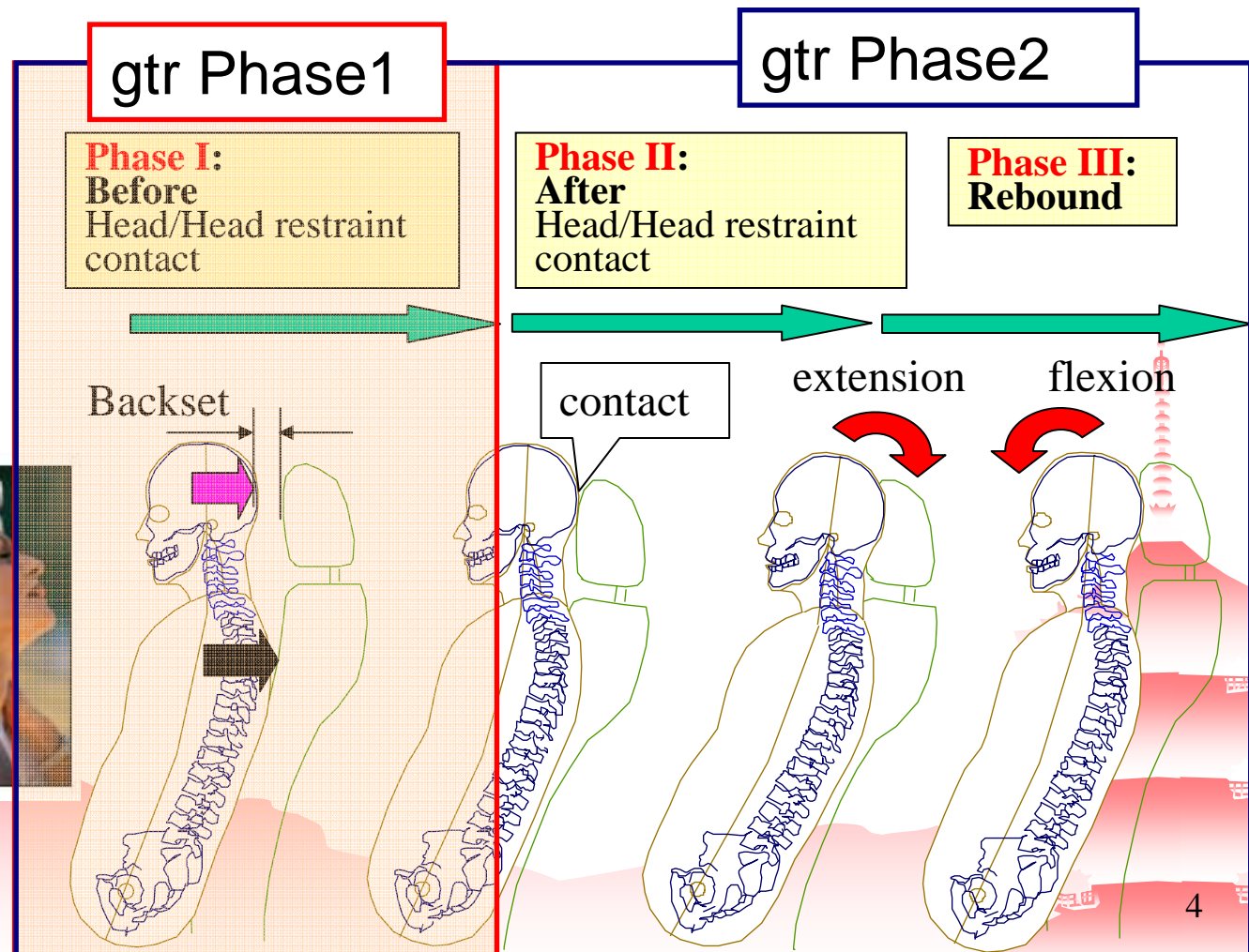
BioRID II injury evaluation parameters.



\*: **Manufacture's choice**

- Phase1:Represent mainly initial Hea/Neck/Toro's motion
- Phase2:Represent all minor neck injury phenomenon

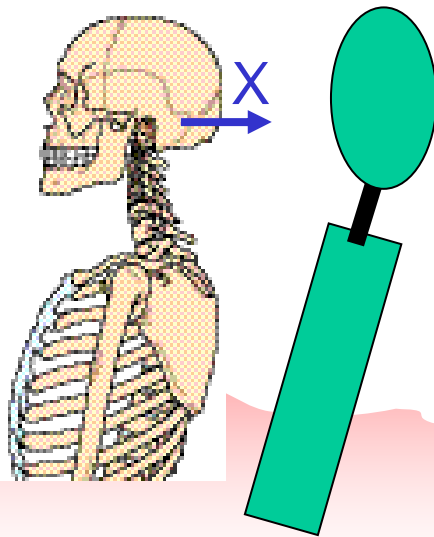
## Minor neck injury Phenomenon



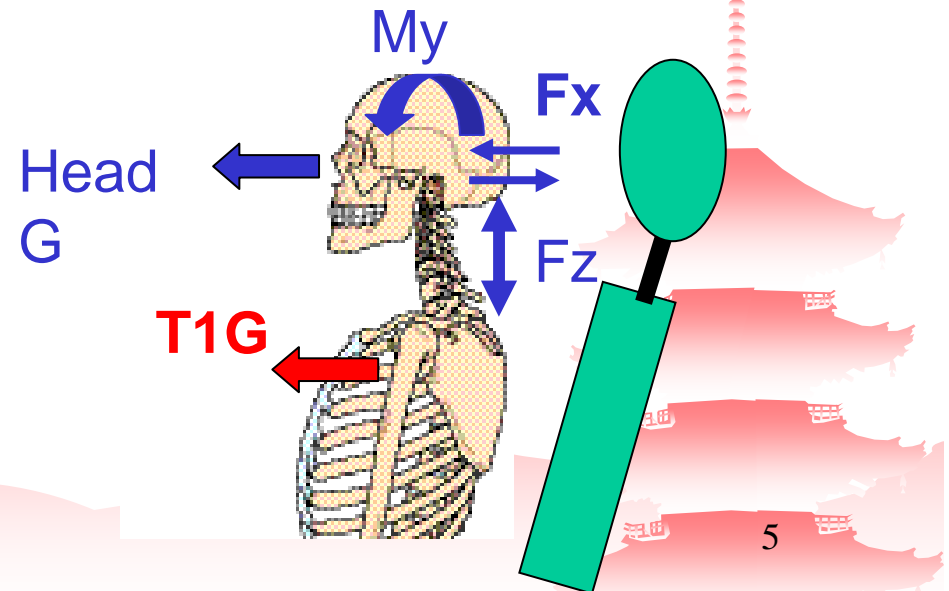
# Condition of Dynamic Test for gtr phase 1 & phase2

- Phase1 : Geometric indicator using BioRID II dummy body.
- Phase2 : Injury evaluation parameters using Bio RID II dummy loads and accelerations measurement.

Phase1  
Geometric indicator



Phase2  
NIC, Nkm, Nij, LNL, NDC....

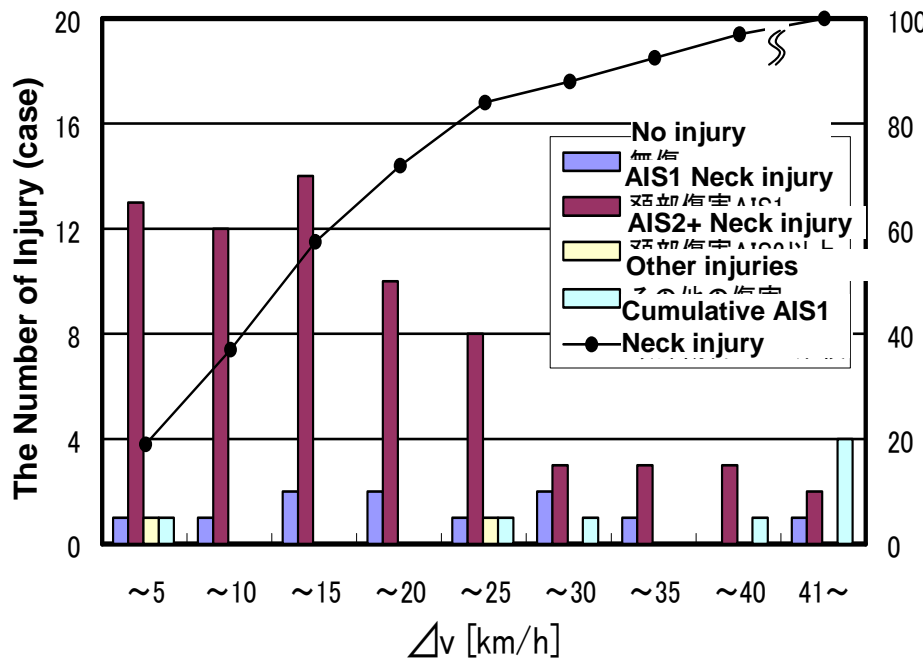


# Target accident for gtr phase 1 & phase2

- Head restraint GTR Phase 1 : Reduce all minor neck injury
- Head restraint GTR Phase 2 : Reduce minor neck injuries of WAD grade 2 or less, especially long-term injuries.

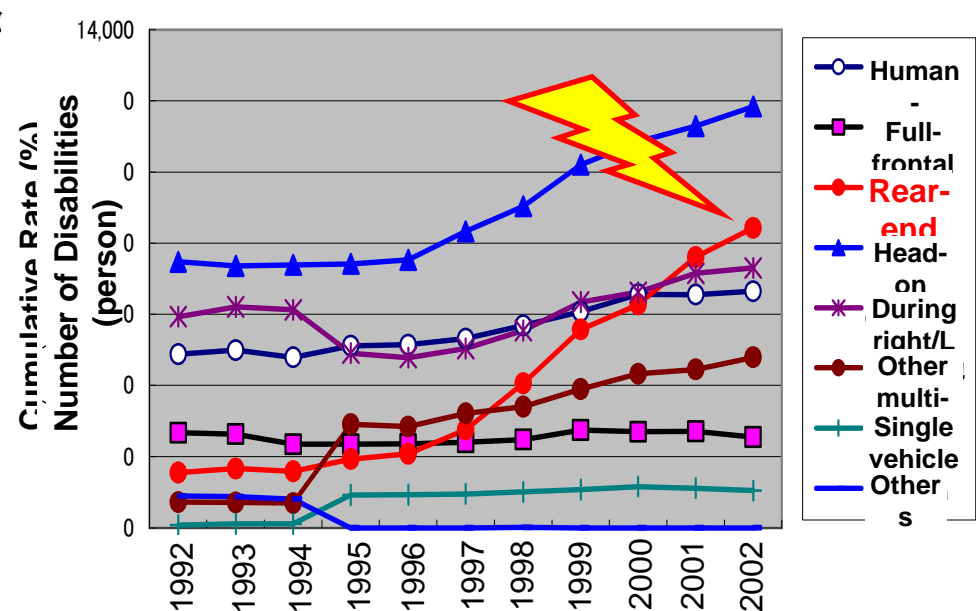
## gtr Phase1

All rear impact injuries Disabilities by delta Velocity in Japan (calculated: 89 cases)



## gtr Phase2

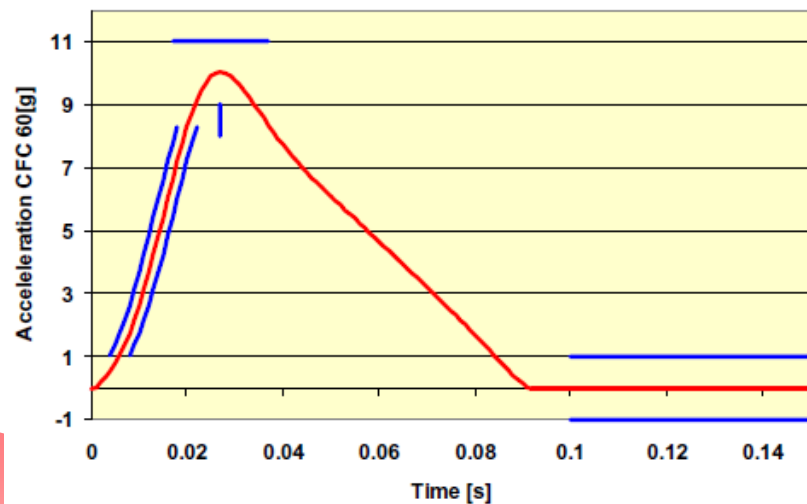
Yearly Change in the Number of permanent Disabilities by Accident Type in Japan (Total Disabilities in 1992-2002)



## Target crash pulse for gtr phase 1 & phase2

- Head restraint GTR Phase 1 : 16km/h delta V
- Head restraint GTR Phase 2 : [delta- $v$  of 20 km/hr and mean acceleration of 5 to 6 g ]

gtr Phase1

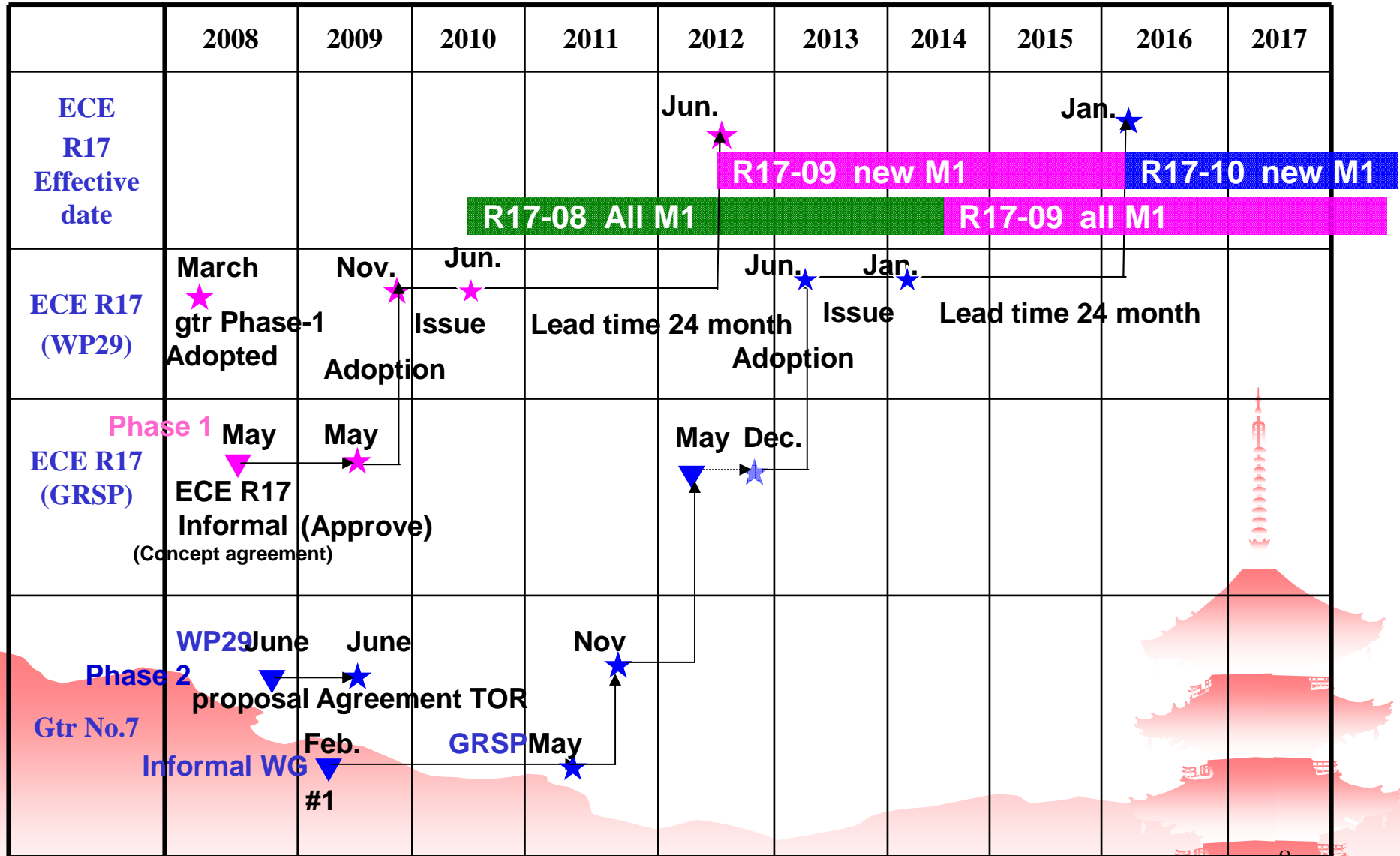


gtr Phase2

### EEVC Recommendation

- To target long-term injuries, delta- $v$  of 20 km.hr-1 and mean acceleration of 5 to 6 g recommended
- 20 km.hr-1 is approximately the mean delta- $v$  indicated in the literature for long-term injuries, with a typical range of 16 to 25 km.hr-1

# Schedule plan Head restraint gtr Phase 1 & Phase 2





**Thank You for your attention**

