Informal document No. **WP.29-141-23**,
13-16 March 2007, agenda item II.2.5.6.

Head Restraint GTR Status to AC.3

141th Session of WP.29

March 2007

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Status of GTR
Two Major Issues

- ★Backset
- ★Active Head Restraints

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Status of GTR
Backset Limit

- Backset Measurement Method
  - Discussion originally on whether to use R-point or H-point for measurement
  - Draft GTR now allows for measurement from either R-point or H-point
- OICA is conducting testing to validate revised R-point test procedure proposed at Dec 2006 meeting.
  - Results are due before May 2007 GRSP meeting.
  - Data will compare backset measurement determined using the H-point method and the R-point method.
- US will calculate equivalent backset limits for the two methods.

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Expected Results

- Based on prior research, the US expects the R-point equivalent backset limit to be 10-15 mm less than the H-point backset.
  - Current OICA method is similar to their method proposed in Sept 2006
    - 10 seats measured and the average R-point backset was 15 mm less than the H-point backset.
  - In Sept 2006, Japan MLIT proposed a similar measurement method, which is very close to the current OICA measurement method.
    - 3 seats measured and the average R-point backset was approximately 15 mm less than the H-point backset.

Whiplash Injuries Benefits

- World-wide Whiplash Injuries in Rear Impact Crashes
  - USA: 272,464
  - Japan: 309,939
  - Korea: 260,000
  - EC15: ~340,000
- Number of whiplash injuries is similar among ’98 Agreement Contracting Parties, so expect the benefits gained to be similar.

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Benefit Studies

- US study found that benefits to front seat occupants result from smaller backset, and benefits to rear seat occupants result from higher head restraints
- US provided a benefit study that correlates the backset limit to whiplash injuries.
  - Benefits are based on improving the current situation in the U.S. fleet.
  - The current U.S. fleet average is 70 mm at the manufacturers seat back design angle.
  - A backset limit of 70 mm using the H-point will yield zero benefits in the US.

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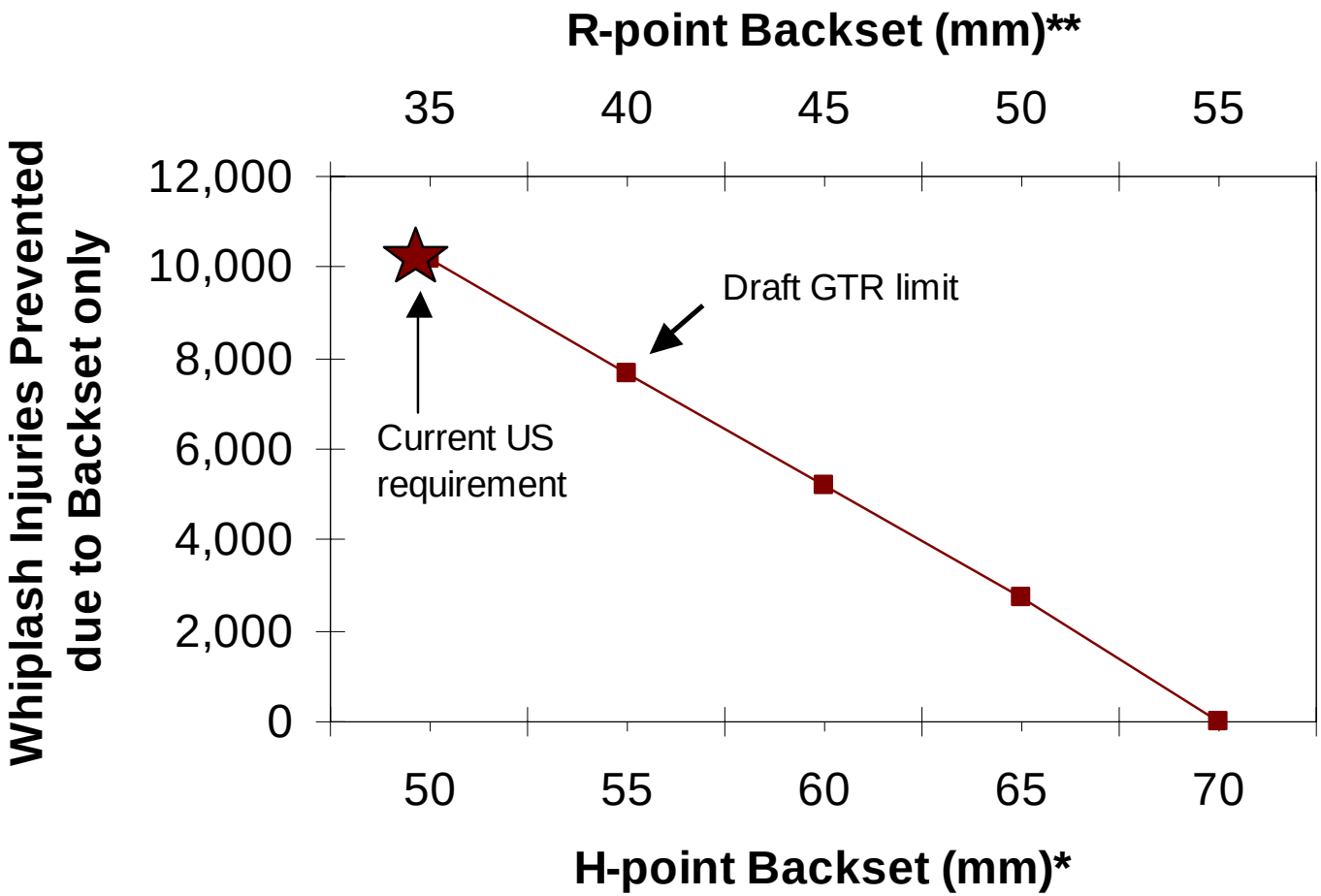
Backset Limit & Benefits



*H-point value adjusted for seat back angle measured at manufacturers design angle

**Offset between R-point and H-point assumed to be 15 mm.

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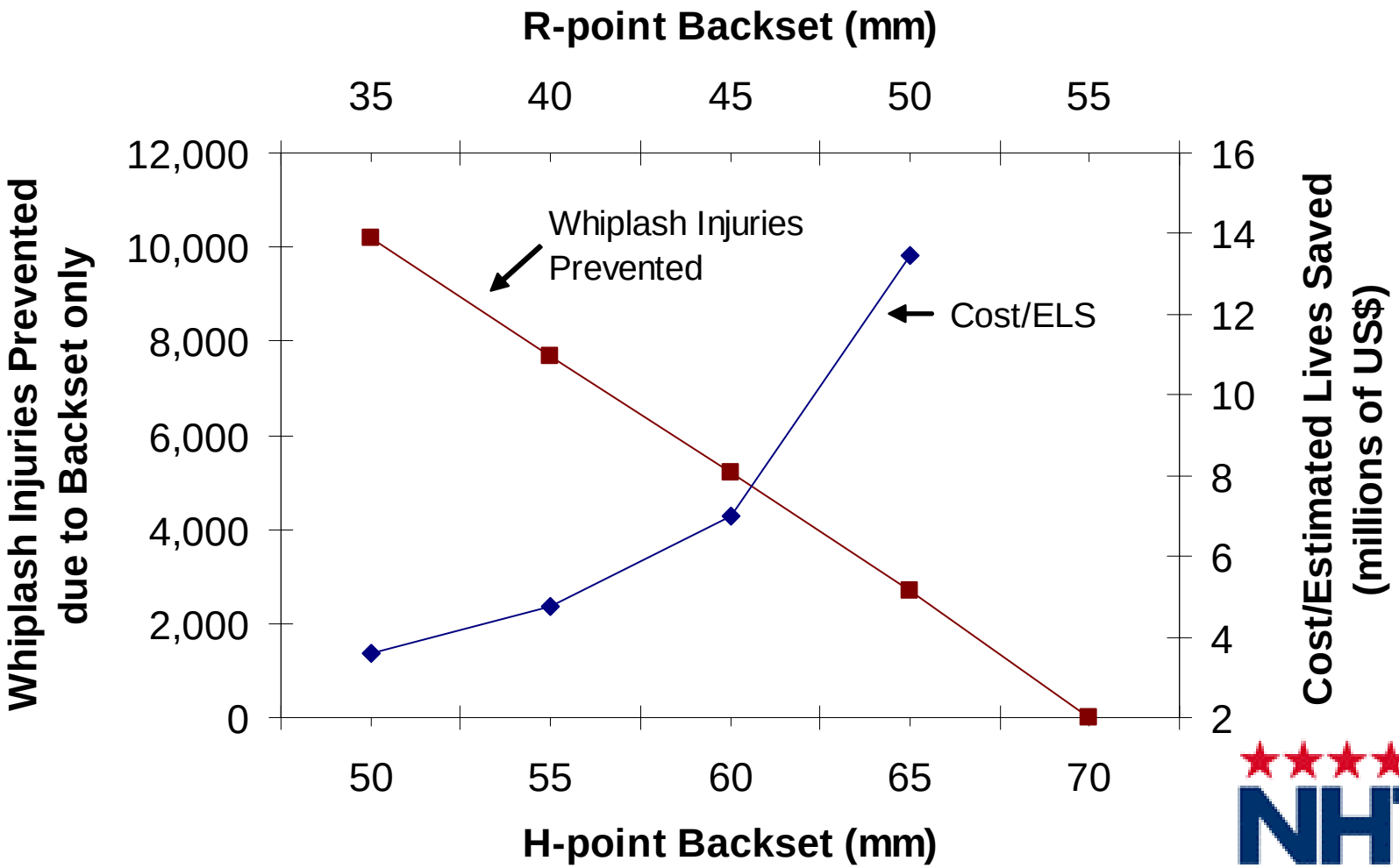
Cost of Increasing Backset Limit



*Seat back angle set at manufacturers design angle

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Discussion
Backset

- Increasing the backset limit from 55 to 65 mm produces
  - 75% drop in benefits and
  - 80% increase in cost per equivalent life saved.
- The US is the only country that currently has a regulation on backset, which takes effect in September 2008.
- The issue is whether the GTR will also have a backset limit
- If so, will that backset limit be set at a level that produces benefits by reducing whiplash injuries?

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Status of GTR
Active Head Restraints

- While active head restraints may accomplish the same level of whiplash protection, they may not meet the static requirements
- Many active head restraints are being installed in vehicles
- U.S. has an optional dynamic test to continue to encourage the introduction of these advanced systems while ensuring comparable whiplash protection
- Many participants have expressed concerns about the dynamic option primarily the test dummy
  - More long term research needs to be done to assess alternative test dummies
  - Option under discussion is requiring less stringent backset requirements for active restraints

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Discussion
Active Head Restraints

- US approach tests active head restraints in a simulated crash – no backset is needed to ensure benefits, since dynamic test checks performance
- Until a better dummy is developed, this assures that occupants of seats with active head restraints are protected.
- Approach of providing less stringent backset for active head restraints assumes occupant protection, without actually checking the protection provided
- Less stringent backset means much less protection if the active head restraint does not actually work

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Decisions to be Made by AC.3

- GRSP to forward draft regulation with brackets around non-agreed requirements for the June WP.29 2007 meeting.
- AC.3 to Decide in June
  - Backset limits: GTR allows either R-point measurement method or H-point measurement method. However, there is no consensus on backset limit
    - U.S. position: H-point backset limit at 55 mm; equivalent R-point at 40-45 mm
    - Other positions: H-point backset limit at 70 mm; equivalent R-point is 55 mm
  - Active head restraints:
    - U.S position: Use the U.S. dynamic test as an interim measure and work toward a better dynamic test and dummy
    - Other positions: allow less stringent requirements until better dynamic test and dummy are available
- If AC.3 cannot reach consensus in June, terminate current GTR efforts for static whiplash related requirements.

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