A Dynamic Safety Rating Program for Child Restraint Systems and Review of Comments

May 15, 2002
Government-Industry Meeting
What Did Congress Say?

- Section 14(b)(9) “whether to include child restraint in each vehicle crash tested under the New Car Assessment Program.”

- Section 14(g) “No later than 12 months after the date this law is passed, (which was November 1, 2000) . . . issue a notice of proposed rulemaking [sic] to establish a child restraint safety rating consumer information program . . . .”
Public comments suggested NHTSA develop a CRS rating system based on one of the following options:

- FMVSS No. 213 compliance tests
- Higher-speed sled tests
- Full-scale, in-vehicle testing with CRS
FMVSS No. 213 Sled Testing (30 mph)

- Data examined:
  - Nine CRSs tested according to FMVSS No. 213 testing procedure except:
    - Hybrid-III dummy used instead of Hybrid-II
    - All seats tested w/ lap, shoulder, and tether belts
    - One seat tested w/ LATCH
“213” Test Using Hybrid III with Scaled NCAP Curves

213 - 29 MPH

Chest G

HIC (15ms)

1 Star
2 Stars
3 Stars
4 Stars
5 Stars

0 10 20 30 40 50 60 70 80

0 200 400 600 800 1000 1200

10%
20%
35%
45%
What we showed:

- Nine sled tests using Hybrid-III dummy show clustered data indicating all child restraints perform similarly at 30 mph.
- All CRSs pass the 208 head and chest injury criterion with large margin.
- NCAP 5-star rating system scaled for the 3-year-old dummy. All CRSs we tested received 5 stars.
Higher-Speed Sled Testing (35 mph)

- Data examined:
  - Results of sled tests - The same 9 CRSs that were tested at 30 mph (as in a 213 sled test) were also tested at 35 mph. The same testing procedure was used.
Higher-Speed Sled and Hybrid III with Scaled NCAP Curves
Higher-Speed Sled Testing Cont.

- What we showed:
  - The 9 sled tests at 35 mph showed similar clustering (spread) of data as those at 30 mph.
  - All CRSs still pass the 208 head and chest injury criterion.
  - NCAP 5-star rating system scaled for the 3-year-old dummy. Based on these nine tests, we believe most CRSs would still receive 5 stars, but a few would receive 4 stars, indicating a slight increase in risk of serious injury as the speed is increased from 30 mph to 35 mph.
Data examined:

- Results of in-vehicle testing of child restraints
  - Six different five-point harness, forward-facing CRSs were placed into the rear seat of 20 MY 2001 vehicles.
  - We tested thirty-four child seats.
  - Tests were performed at 35 mph using the Hybrid-III dummy to assess injury.
  - A top tether was used to restrain all child restraints whether secured w/ lap/shoulder belt or LATCH.
In-Vehicle Testing Using Hybrid III with Scaled NCAP Curves

NCAP CRS Tests

- 1 Star
- 2 Stars
- 3 Stars
- 4 Stars
- 5 Stars

HIC (15ms) vs. Chest G

- 10%
- 20%
- 35%
- 45%
In-Vehicle Testing of Child Restraints Cont.

- What we showed:
  - The 20 CRS in-vehicle tests at 35 mph produced much more scattered data than the sled tests conducted at 30 mph or 35 mph.
  - In the vehicle crashes, not all CRSs pass the 208 injury criteria.
  - NCAP 5-star rating system scaled for the 3-year-old dummy. Vehicles displayed a CRS performance ranging from 5 stars to 2 stars.
Review of Comments to the Notice for Dynamic CRS Safety Rating
Generally Support 30 mph Sled Testing

- Half of the responses were in favor of having rating system based on upgraded FMVSS No. 213. – Evenflo, Ford, GM, Honda, AAM, CU, National Safe Kids Campaign, JPMA, Advocates for Highway and Auto Safety

- Suggested Upgrade included: new bench, realistic sled pulse, H-III child dummy
Support 35 mph Sled Test

- Rating for 35 mph sled testing should be done with dummies and bench of the revised 213. - DJG, Honda, CU
Opposed to 35 mph Sled Test

- Responses not favoring high speed sled tests - Evenflo, Children’s Hospital of Philadelphia, IIHS, AAM, National Safe Kids Campaign, Toyota

- Current 213 is already severe test. 5 mph faster will not provide additional information. Majority of real-world crashes occur at much less than 35 mph. - Evenflo, JPMA, Children’s Hospital of Philadelphia, AAM
Support NCAP Test

- Few suggested to do vehicle child protection rating - Evenflo, Advocates for Highway and Auto Safety
Voiced Strong Opinions to NCAP Vehicle Testing

- No response favored rating CRS based on vehicle testing
- CRS performance is strongly influenced by vehicle, and one CRS can’t be compared to CRS in another vehicle—Evenflo, Safe Ride News Publication, JPMA, Children’s Hospital of Philadelphia, IIHS, AAM, CU, National Safe Kids Campaign
- With all the different vehicle and CRS models, it is not feasible to test every vehicle/CRS combination—DJG, NADA
- TREAD 14 (g) stated to evaluate CRS, not vehicle—GM, IIHS, Honda, AAM, JPMA
The agency is studying dynamic performance of rear-facing CRS performance in dynamic sled and in-vehicle testing.

Final Notice is expected to be published by November 1, 2002.