Current Status of the Euro NCAP Whiplash Subgroup

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Euro NCAP - Consortium

European New Car Assessment Programme

- ADAC (Allgemeiner Deutscher Automobil Club)
- BMVBW vertreten durch die BASf
- DfT (Department for Transport, UK)
- Dutch Ministry of Transport (NL)
- European Commission (no member!)
- FIA Foundation (Federation International de L’automobile)
- Generalitat de Catalunya (ES)
- ICRT (International Consumer Research and Testing)
- Ministère de l’Equipement (F)
- SNRA (Swedish National Road Administration)
- Thatcham
Structure of Euro NCAP:

- Board of Directors
- Secretary
- Assembly

Technical Working Group:
- Primary Safety TWG (P)
- Secondary Safety TWG (S)

ad-hoc Groups:
- Euro NCAP TWG (P) / Industry Liaison Meeting
- Euro NCAP TWG (S) / Industry Liaison Meeting

Sub Groups:
- Interlab
- Knee Mapping
- Whiplash
- Empirical Accident Data

- Braking & Handling
- Visibility & Lighting
- Egonomics & Driver Information

Industry Participation
Whiplash sub group members

- Wilfried Klanner (ADAC) Chairman
- Bob Moran (UK DfT)
- Anders Lie (SRA)
- Bernd Lorenz (BASt)
- Mat Philippens (TNO)
- Matthew Avery (Thatcham)
- Ricardo Satué (IDIADA)
- Francois Minne (UTAC)
- Peter Gloyns (ICRT/VSC)
- Raimondo Sferco & Celine Adalian (ACEA)
- Adrian Lund (IIWPG)
Choices for basic approach

• Protocol based on good understanding of injury mechanisms – Rejected as sufficient information will not be available in the medium term
• Protocol acknowledging lack of information about injury mechanisms, but encouraging seat design towards current best practice – Recommended on basis of extensive work by SRA, ADAC, IIWPG and ACEA
Concepts that are encouraged

- Early head restraint contact
- Low neck forces
- Energy absorption within system
Selected approach

• Protocol based on encouraging best practice.
  – Pros
    • Builds on extensive field experience of protective performance of different designs
    • Concepts validated and developed using seats with known real world performance and dedicated crash testing with whole vehicles. (Saab, Volvo, Toyota, Ford)
    • Uses unique data gathered from Folksam’s crash recorders
    • Builds on extensive test experience using range of pulses and multiple measures of seat performance.
Selected approach

- Protocol based on encouraging best practice.
  - Pros
    - Industry already familiar with many aspects of this type of testing
    - Provides design guidelines appropriate for industrial use
    - Provides clear consumer information to activate market forces, capable of integration into main Euro NCAP vehicle scoring system
Selected approach

• Protocol based on encouraging best practice.
  – Pros
    • Capable of implementation in near future within Euro NCAP
    • Formulated by whiplash group drawing on extensive experience within group of consumer seat rating tests
**Selected approach**

- Protocol based on encouraging best practice.
  - Cons
    - Detailed understanding of injury mechanism not available
      (No early prospect of this being solved, but group monitoring any progress in this area. All international activities being considered)

**REMARK**

- Future possible benefits or disbenefits of design changes not fully known – Potential new load paths need careful monitoring i.e. lumbar spine loading
Basic choice

• Either
  Implement recommended concept, based on encouraging best practice, drawing on established consumer test programmes

• Or
  Do nothing in short term, await further developments in understanding injury mechanisms. No predictable time for this at present
Outline Recommendations of sub-group

• Dynamic sled testing for whiplash prevention
• Multiple pulses to avoid sub optimisation and address a range of relevant accident severities for whiplash
• Additional control of seat deflection in higher energy rear impacts to prevent ejection and interaction with rear seat occupants
• Multiple measures of seat performance combined to provide a rating system
Strong tendency towards:

• BioRID dummy
• Three potential whiplash pulses
• One seat stability pulse
• Seven measures of seat performance
• Additional criteria for geometry, locking etc.
Available now

- BioRID dummy
- Test set up
- Pulses at low, medium and high severities
- Seven equally weighted measures of seat performance, all based on sliding scales
Work in short term

- Check durability and repeatability of dummy at high severity pulse for final adoption of high severity test
- Document reproducibility of protocol
- Confirmation of pulse mix in light of above
- Check sliding scale limits against experience with all seat testing so far
- Further develop protocol documentation
Work within coming year

• Explore relationship between seat stability testing and accident experience to ensure test is at appropriate level of severity
• Check use of Hybrid III 95%ile dummy in this context
Next sub group meeting – 29th April 2005
Thank You for Your Attention!