US Dynamic Testing of Active Head Restraints (Preliminary Results)

8th Head Restraint GTR Informal Working Group Meeting
December 2006
Test Summary

★ 4 Re-Active Systems tested

★ Test Set-up
  – Seats positioned according to FMVSS 202a
  – Seats tested on sled
  – Peak head-torso rotation measured within first 200 ms after sled impact.
  – Test dummy: Hybrid III
Seat 1
Rotations (preliminary results)
Seat 2
Rotations (Preliminary Results)

![Graph showing rotations over time with specific markers and values]

- Min = -4.11
- Min = -14.73
- Max = 13.50

Time (sec) vs Rotation (deg)
Seat 3
Rotations (Preliminary Results)

![Graph showing rotations over time with key points labeled A to E.]

- Min = -17.98
- Min = -25.42
- Max = 13.37
Seat 4
Rotations (Preliminary Results)
## Preliminary Results

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Backset (mm)</th>
<th>Initial Head Contact Time (msec)</th>
<th>Head-Torso Rotation at Initial Contact (deg)</th>
<th>Head-Torso Peak Rotation (deg)</th>
<th>IIHS Rating (Dynamic Test)</th>
<th>FMVSS 202a Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat 1</td>
<td>57</td>
<td>74</td>
<td>1.7</td>
<td>4.1</td>
<td>Good</td>
<td>Pass</td>
</tr>
<tr>
<td>Seat 2</td>
<td>78</td>
<td>69</td>
<td>0.5</td>
<td>4.1</td>
<td>Good</td>
<td>Pass</td>
</tr>
<tr>
<td>Seat 3</td>
<td>48</td>
<td>56</td>
<td>0.9</td>
<td>17.9</td>
<td>Acceptable</td>
<td>Fail</td>
</tr>
<tr>
<td>Seat 4</td>
<td>59</td>
<td>69</td>
<td>1.4</td>
<td>7.7</td>
<td>Good</td>
<td>Pass</td>
</tr>
</tbody>
</table>
Conclusions

- US Dynamic test provides relief to active systems when backset does not meet the static requirements.

- Seats can be designed to meet the US Dynamic Test Requirements with the Hybrid III and do well when tested with the BioRID II.