ISO WorldSID 50$^{th}$ Task Group
Update to GTR Pole Side Impact

June 2012
Overview

- Ongoing review of WorldSID 50\textsuperscript{th} performance continues to be tracked by the ISO WorldSID task group.

- Design developments with the WorldSID 5\textsuperscript{th} are now being tracked by a WS5 TEG, chaired by VRTC.

- Both groups typically meet on the same day. Both groups recently held meetings on June 14\textsuperscript{th}, 2012.
Updates on WorldSID 50th

- Material Changes
- Pelvis / Rib Interface
- Laboratory Experiences
- Seating Procedure
- ISO Documents
- External Dimensions
- Generic DAS Requirements
- Modification to Corridors
- WorldSID Build Levels
Material Changes

• Several dummy families require material changes due to material availability (including Hybrid III, Q child, WorldSID, etc.)

• Upcoming changes to WorldSID include:
  • Iliac wings and skull (Ureol replacement has been identified and is in production at Humanetics.)
  • Pelvis flesh (Hyperlast foam will require replacement. This investigation is ongoing.)
  • All vinyl flesh (all dummy families will require vinyl changes in the next 2-4 years due to material availability.)

• It is anticipated that the proposed replacement materials will not affect dummy performance. The ISO WorldSID task group is coordinating a limited number of biofidelity tests to confirm.
Pelvis / Rib Interference

Both the WorldSID 5th and WorldSID 50th demonstrate contact between bottom rib and pelvis flesh in certain seating positions.
Pelvis / Rib Interference

• Pelvis flesh interference has been evaluated by several groups including EuroNCAP, TRL, Medical College of Wisconsin, and Daimler.

• Pendulum tests with the WorldSID 50th suggest less than 2 mm difference in rib deflection between tests with and without pelvis flesh interference.

• Sled tests on WorldSID 50th also suggest less than 3 mm difference in rib deflections with and without the pelvis interference. In addition, sled tests suggested there was no increase in repeatability with the no interference condition (pelvis cut away).

• The ISO task group recommends the pelvis not be changed, this issue does not adversely affect dummy performance.
Laboratory Experiences

• There are many WorldSID 50\textsuperscript{th} in use in the industry.
• Several organizations (TRL, Autoliv, Transport Canada, and several OEMs) have completed full vehicle crash tests using WorldSID 50\textsuperscript{th} and reported results to the ISO task group.
• User experience is driving reliability and usability improvements to the WorldSID such as:
  • Changes to jacket (completed)
  • Changes to ankle design (completed)
  • Pubic load cell connectors (completed)
  • Changes to lifting mechanism (completed)
  • Changes to IRTRACC mount and pot (design completed, however will not be included in Build Level F, awaiting durability experience)
• The WorldSID ISO task group has completed a WorldSID50th seating procedure.
• This procedure has been evaluated and used at workshops held at several labs (including EuroNCAP and VRTC.)
The following ISO documents have been completed:

- ISO 15830 part 1 (design specification rational and terminology)
- ISO 15830 part 2 (design specifications – mechanical)
- ISO 15830 part 3 (design specifications – instrumentation)
- ISO 15830 part 4 (user’s manual)
- WorldSID drawings

ISO 15830 parts 1 – 4 were balloted by ISO in 2011 and voters responded with suggested changes.

These changes have been addressed and ISO 15830 documents are currently being re-balloted (ballots close Aug. 16, 2012)
A draft procedure for measuring the WorldSID external dimensions has been created and is available for use.

This procedure is not included in the original ISO documents because it was anticipated that the procedure may change as the industry gains experience with measuring the WorldSID.

Humanetics is coordinating the collection of measurements from various labs.

Wording changes for clarification are being implemented.
Some regulators are unable to reference a DAS vendor when regulating an ATD.

A generic geometric requirement for the WorldSID DAS system is therefore required.

The ISO task group has defined the geometric zones (“grey zones”) that DAS systems may occupy.

Computer modeling to verify the WorldSID performance with alternate DAS systems in the grey zones is ongoing.

This modeling will define allowable mass requirements for the DAS system.
• Pelvis tests on newer dummies result in data near the edge of the corridor.
• The pelvis test corridors will be modified so that the population of dummies test near the nominal values.
• It is not unusual for the industry to modify verification corridors to match the population of dummies.
The current WorldSID build level is E.

The ISO task group has approved a collection of improvements to be included in build level F. These improvements include:

- Modified suit (enlarged arm openings and reinforced shoulder belt area)
- Replacement material for Ureol for iliac wings and skull
- Modified ankles (similar to WS5, allows retention of pre positioned ankle position)
- Corrected pelvis tilt sensor mount (correcting design error on early dummies)
- Changes to pubic load cell connectors
WorldSID Build Levels

• The following items will NOT be included in build level F at this time.
  • Hyperlast material replacement (this investigation is ongoing.)
  • 2D IRTRACC.
    • The original 2D IRTRACC pot has durability issues and also may generate erroneous data if the pot is loose.
    • A new 2D IRTRACC pot has been identified and the IRTRACC mounts have been modified. However, this new design needs durability evaluations to be completed.
  • 1D IRTRACC will be included in build level F.
Thank You

Questions?