Issue 5

May 2002

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WorldSID Newsletter

Overview of Progress

Work on the development of the WorldSID advanced side impact dummy has been continuing over the last few months despite a number of challenges.

The last meeting of the WorldSID Task Group was held in March 2002. The two previous meetings had been cancelled due to travel restrictions imposed in the light of the events of the 11th September, 2001. In the absence of Task Group meetings, the Tri-Chair Committee and Design Team together ensured that work continued in accordance with decisions made previously by the Task Group and through a series of telephone conferences.

The biofidelity of the first prototype dummy has been evaluated and, based on the results, the dummy has been improved. A second round of biofidelity tests is currently under way.

The task of continuing work on the project during 2001 was difficult since the Project Manager's contract had expired and there were delays in appointing a PM for the second phase of the project. A new project management team from DRI (see p4) began work in March this year.

Despite the difficulties of recent months, the final dummy is still expected to be released, "regulation ready", into the public domain on schedule in 2004.

WorldSID prototype with jacket removed

Prototype Biofidelity

The prototype dummy has been subjected to biofidelity testing, according to ISO TR9790. These tests showed that this first version of the dummy already rates "Good" overall on the ISO TR9790 rating scale.

No existing side impact dummy has better biofidelity and the WorldSID score is expected to improve after modification. The table below shows WorldSID biofidelity compared to two other dummies. [continued on p2]

ISO Biofidelity Rating of the WorldSID Prototype Dummy

Segment	Score WorldSID	Rating WorldSID	Score ES-1	Score Biosid
Head	10	Excellent	5.0	6.7
(Head frontal)	(5)	(Fair)	-	-
Neck	3.6	Fair	7.8	6.5
Shoulder	5.8	Fair	7.3	7.3
Thorax	6.9	Good	5.4	6.8
Abdomen	6.5	Good	0.9	5.6
Pelvis	5.4	Fair	1.5	5.0
Full Dummy	**6.5**	**Good**	4.4	6.2

Excellent Biofidelity: 8,6 >= B <10,0
Good Biofidelity: 6,5 >= B < 8,6
Fair Biofidelity: 4,4 >= B < 6,5

[continued from p1] The initial biofidelity evaluation was carried out at Transport Canada and at the Medical College of Wisconsin, (sponsored by the NHTSA) in the USA. The objective of the project is to achieve ISO biofidelity ratings of "good" to "excellent" for all segments. Future IHRA requirements will also be taken into account once these become available.

Prototype Modifications

The prototype dummy is currently being upgraded in order to meet the biofidelity objectives. The three areas for improvement identified are the shoulder, the neck and the pelvis.

The shoulder displacement response needs to be improved because the shoulder appears to be too compliant. A number of pendulum tests, as specified in the ISO TR9790 dummy response requirements report, were performed on the shoulder of the full dummy. These tests allowed the evaluation of several alternative solutions. The retained modifications are:

additional shoulder rib damping material,

a stiffer shoulder plug,

and a revised half-arm thickness.

Initial testing has shown positive results.

Pendulum tests were also performed on the pelvis which appears to be too stiff in some biofidelity tests. Further testing has allowed evaluation of the effects of reducing the stiffness of the pelvis and redistributing flesh mass. Work on the pelvis is still under way.

Modification of the neck segment has been postponed. The biofidelity of the neck must be re-evaluated after the shoulder modifications are completed, as the shoulder response influences the response of the neck.

Further Prototype Testing

The updated prototype dummy is now in Europe and will undergo further biofidelity testing within the EC sponsored SIBER project. Testing is being performed by the following organisations participating in the SIBER project:

INRETS, France (biofidelity testing)

FTSS Europe, The Netherlands (certification)

MIRA, United Kingdom (sensitivity testing)

TRL, United Kingdom (biofidelity testing)

Following the SIBER testing, which is scheduled to last until July 2002, the dummy will be shipped to Canada for more testing and then to Japan for the second Japanese instrumentation users meeting and for display at the JSAE Congress exhibition.

The effect of the first round of prototype modifications will be evaluated by repeat testing under ISO TR9790 conditions in Europe and at Transport Canada. These tests will allow comparison of the modified and non-modified versions of the dummy.

The prototype will be made available to the NHTSA for further testing in the USA during the summer of 2002.

Pre-Production Dummy

Knowledge of the prototype gained during the above activities will be exploited during the development of the pre-production version, of which around ten units will be delivered to customers in North America, Europe and Japan.

The sale of these dummies will provide funds to support the continued development of WorldSID to production level. Pre-Production Dummy delivery is expected to begin at the end of 2002.

Following delivery, a comprehensive evaluation of the pre-production dummy will be undertaken around the world. Regulatory bodies, OEM's, suppliers and research institutes around the world will participate in this evaluation.

Pre-production dummies ordered:-

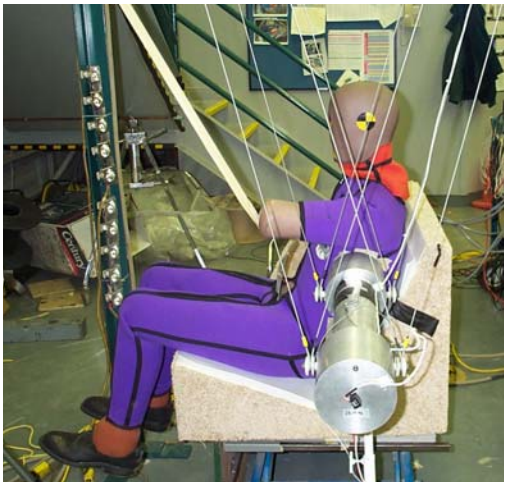
3 in Asia-Pacific region

2 (probably 3) in European region

4 in Americas region

Selected instrumentation and in-dummy data acquisition systems will be supplied with these dummies.

A number of improvements to the instrumentation and in-dummy DAS are planned for the pre-production version of the dummy. This is a result of feedback from a series of WorldSID instrumentation users meetings held around the world.



ISO TR9790 pendulum test on WorldSID

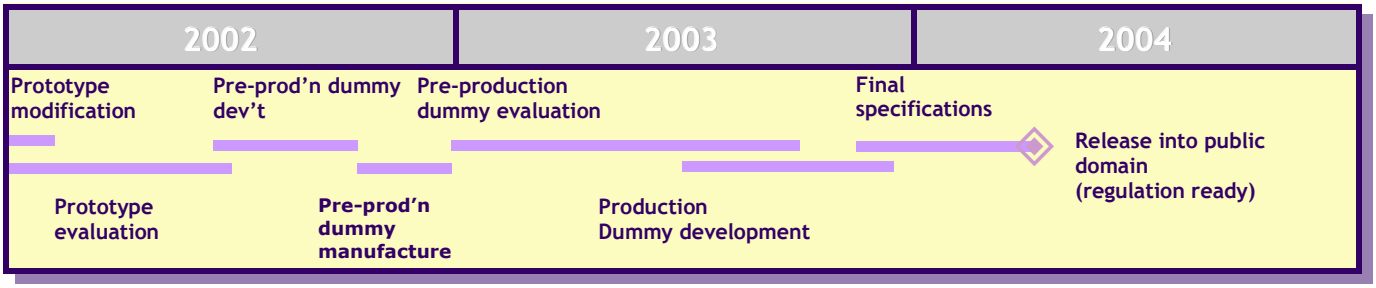
New Asia-Pacific Chairman

As of 1 April, 2002, Mr Akihiko Akiyama of Honda R&D is the new chairman of the WorldSID Asia-Pacific Regional Advisory Group. He takes over from Mr Takahashi who had been chairman since May 2001.

Mr Akiyama is Assistant Chief Engineer of Engineering Department 11 at the Honda Tochigi R&D Centre.

We thank Mr Takahashi for his contribution to the project and we welcome Mr Akiyama.

Project Timing



The simplified Gantt chart, above, shows the schedule for the remainder of the project, culminating in release of the dummy and related materials into the public domain in 2004.

March 2002 revision

WorldSID Related Publications

Moss, S. et al, Anthropometry for WorldSID—A World-Harmonised Midsize Male Side Impact Crash Dummy, SAE paper 2000-01-2202, Washington D.C., 2000

Page, M. et al, WorldSID—A Harmonised Advanced Side Impact Dummy, IRCOBI Conference, Montpellier, 2000

WorldSID Design Team, Task 4.1: WorldSID-alpha Design Brief, SID 2000 Report, Brite-Euram Project—CT98 0621, 2000

Cesari, D. et al, WorldSID Prototype Dummy Biomechanical Responses, 45th Stapp Car Crash Conference, 2001

Connelly, T., Accelerometers for a Side Impact Crash Test Dummy, 2001

Hautmann, E., WorldSID, An International Project For The Harmonisation and Improvement of Side Impact Dummies, TÜV CrashTech Conference, 2001

Page, M. et al, Performance of the Prototype WorldSID Dummy in Side Impact Crash Tests, 17th ESV Conference, Amsterdam, 2001

Scherer, R. et al, Design and Evaluation of the WorldSID Prototype Dummy, 17th ESV Conference, Amsterdam, 2001

Seyer, K. et al, A Comparison of Side Impact Dummy Responses Based on Heidelberg Sled Results, Icrash Conference, Melbourne, 2002

Meet the WorldSID Project Manager

A new Project Management team has recently been appointed to help co-ordinate the work of the project and to oversee the continuing development and evaluation of the dummy. The contract has been awarded to Dynamic Research Inc. of Torrance, California. The PM will be Ken Wiley, Principal Engineer at DRI. He will be assisted by John Zellner, Technical Director, Sherilyn Lee, Staff Engineer, and other engineers.

DRI is a private, independent research and development firm, founded in 1979, which specializes in applied research, development, project management and consulting in the areas of vehicle dynamics and control, simulator technology, biomechanics, structural mechanics, human factors and vehicle systems. The majority of DRI's R&D activities are accomplished on behalf of the motor vehicle industry in North America, Japan and Europe. Work is also accomplished for agencies of the US government, and for aircraft and spacecraft applications.

Amongst DRI's past projects is the management of the development and worldwide standardization of the ISO Motorcycle Anthropometric Test Dummy (MATD).

We welcome the DRI team to the project.

For further information on DRI: www.dynres.com

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MIRA
NHTSA
Nissan
OSRP
PSA
Porsche
Renault
SIBER (EC sponsored)
Transport Canada
TNO
TRL
Volvo

WorldSID Design Team Organisations

Denton ATD Inc,
Diversified Technical Systems Inc,
Endevco Corporation Inc,
First Technology Safety Systems Inc,
R. A. Denton Inc
SIBER (EC sponsored project)

Meeting Schedule

Next Task Group Meetings:

18th, 19th July 2002
Yokahama Royal Park Hotel, Yokahama, Japan

23rd, 24th September 2002
Hotel Europa, Munich, Germany

FIND OUT MORE ON THE WEB:-
http://www.worldsid.org

WorldSID