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WorldSID 5th TEG: Status

Informal Dummy Working Group
Washington D.C.
Sept. 19, 2012

Dan Rhule
Bruce R. Donnelly, Ph.D. - Chair

History

- 1st meeting - November 10, 2011, Dearborn, MI.
- 2nd meeting - January 11, 2012, web only meeting
- 3rd meeting - March 16, 2012, London, UK
- 3rd meeting - April 23, 2012, Plymouth, MI
- 5th meeting - June 14, 2012, Plymouth, MI
- 6th meeting – July 26, 2012, Plymouth, MI
- 7th meeting - August 30, 2012, Plymouth, MI
- 8th meeting – September 28, 2012, Plymouth, MI
- 9th meeting – TBD – October, Savannah, GA?

Organization

- **Terms of Reference**
  - Submitted to parent group
- **E-mail list constructed**
  - 59 participants (approx. 1/4 are active)
- **Data archive**
  - UVa Colab site (data & presentations)
- **Collaboration with ISO WG6**
  - Injury criteria development (CEESAR-Petitjean/Troiselle)
- **Collaboration with ISO 50th Group**
  - Concurrent meetings

Dummy Population

APROSYS	4	Prototype, 1 refurb. TRL
Ford	1	SBL B, not updated
Transport Canada	1	SBL B, several crash tests
NHTSA/VRTC	3	SBL C, evaluation
GM	1	SBL C, evaluation
Unknown?	3	
on order	3	SBL C
Total	13 +3 on order	

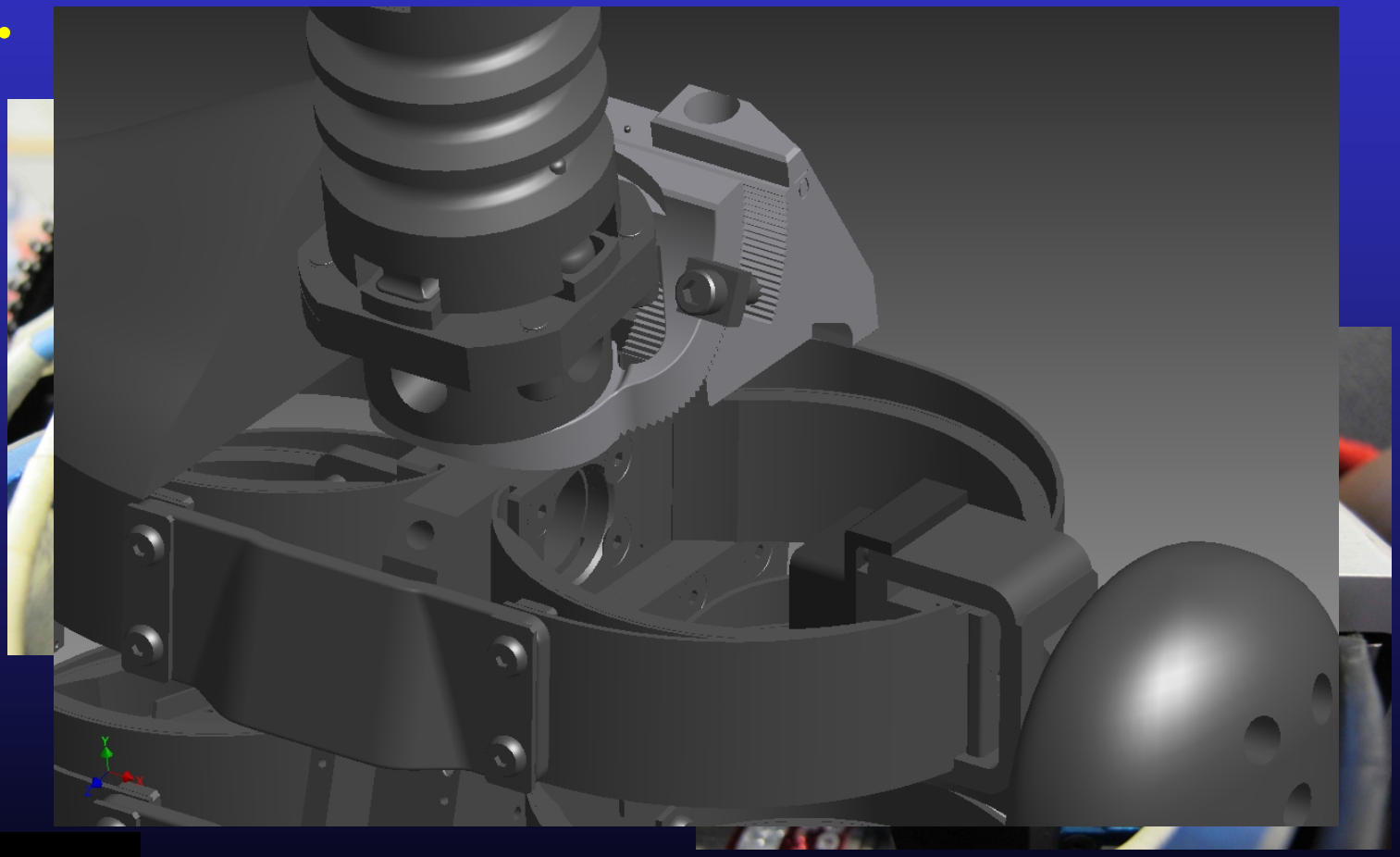
Testing

- **Humanetics**
  - certification testing
- **TC**
  - crash testing
- **NHTSA/VRTC**
  - Development of scaled biofidelity targets for 5th
  - biofidelity & certification pendulum testing
  - Trouble shooting pelvis contact
- **TRL (EC)**
  - pendulum & sled testing in support of ISO WG 6 injury criteria
  - biofidelity & trouble shooting (IRTRACC, shoulder, pelvis, abdom./flesh)
- **OSRP testing - planned**
  - Abdomen rib to pelvis flesh testing

WorldSID 5th Issues

- **Durability?**
  - Is 8.9 m/s reasonable?
    - Yes, like SID IIs, survival but no measurement
    - TRL testing indicates IR-Traccs reached max. thorax displacement at 6.3 m/s in rigid, flat wall sled tests
- **Non-reproducibility**
  - VRTC thorax certification responses among dummies
- **Material changes**
  - Head, pelvis – ureol, hyperlast (5th & 50th dummies)

WorldSID 5th Issues

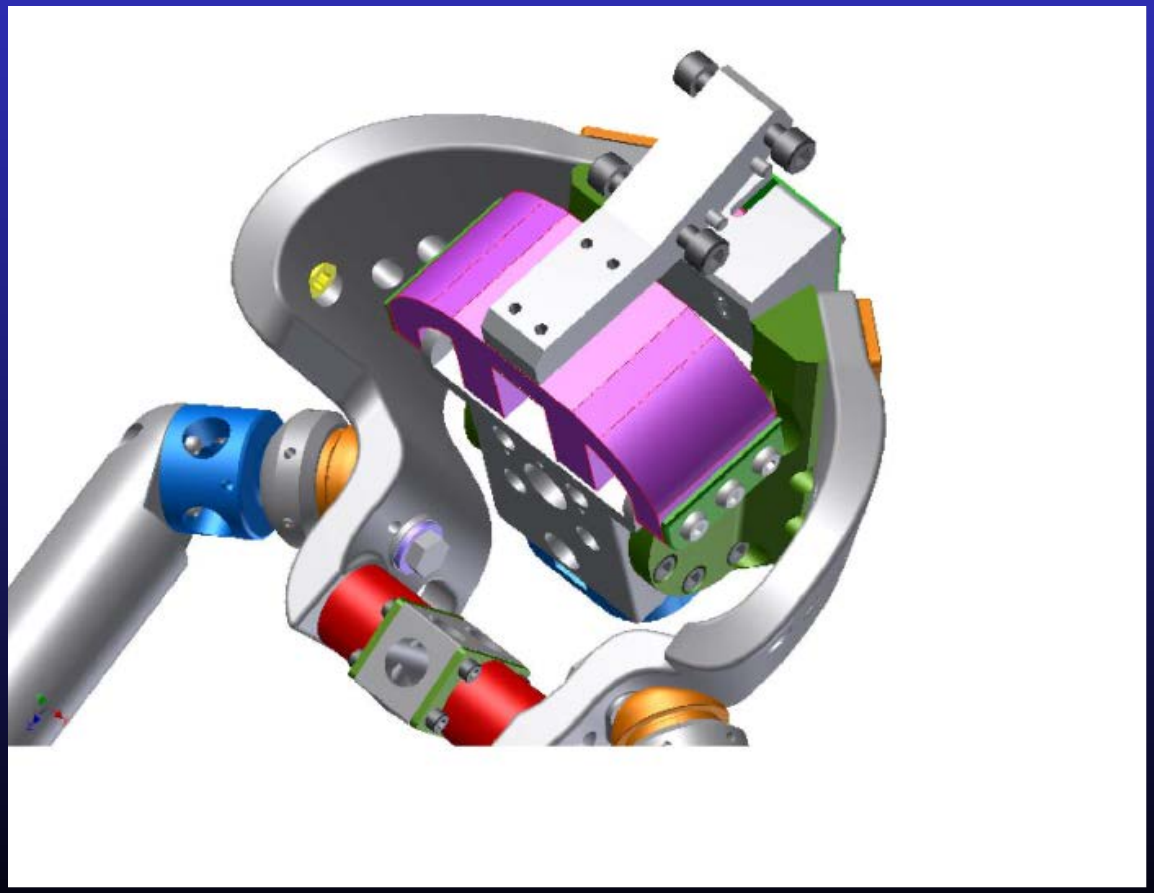
- **Shoulder contact with neck bracket**
  - 

WorldSID 5th Issues

- **Pelvis anterior flesh/abdomen rib #2 interaction**
  - Reduced rib stroke - A problem? OSRP/MCW sled testing planned

WorldSID 5th Issues

- **Iliac wing & S-I load cell contact**
  - Redesign necessary



Schedule

Most issues are manageable, except -

- **Pelvis redesign by HIS expected to take more than one year!**
  - Little substantive work can be done without pelvis
  - Sled testing, R&R, pelvis biofidelity & cert. spec. on hold
  - Injury criteria on hold
- **TEG is searching for a shorter/better solution**
  - VRTC modifying dummy and testing
  - Design revision necessary

Thank you

Questions?

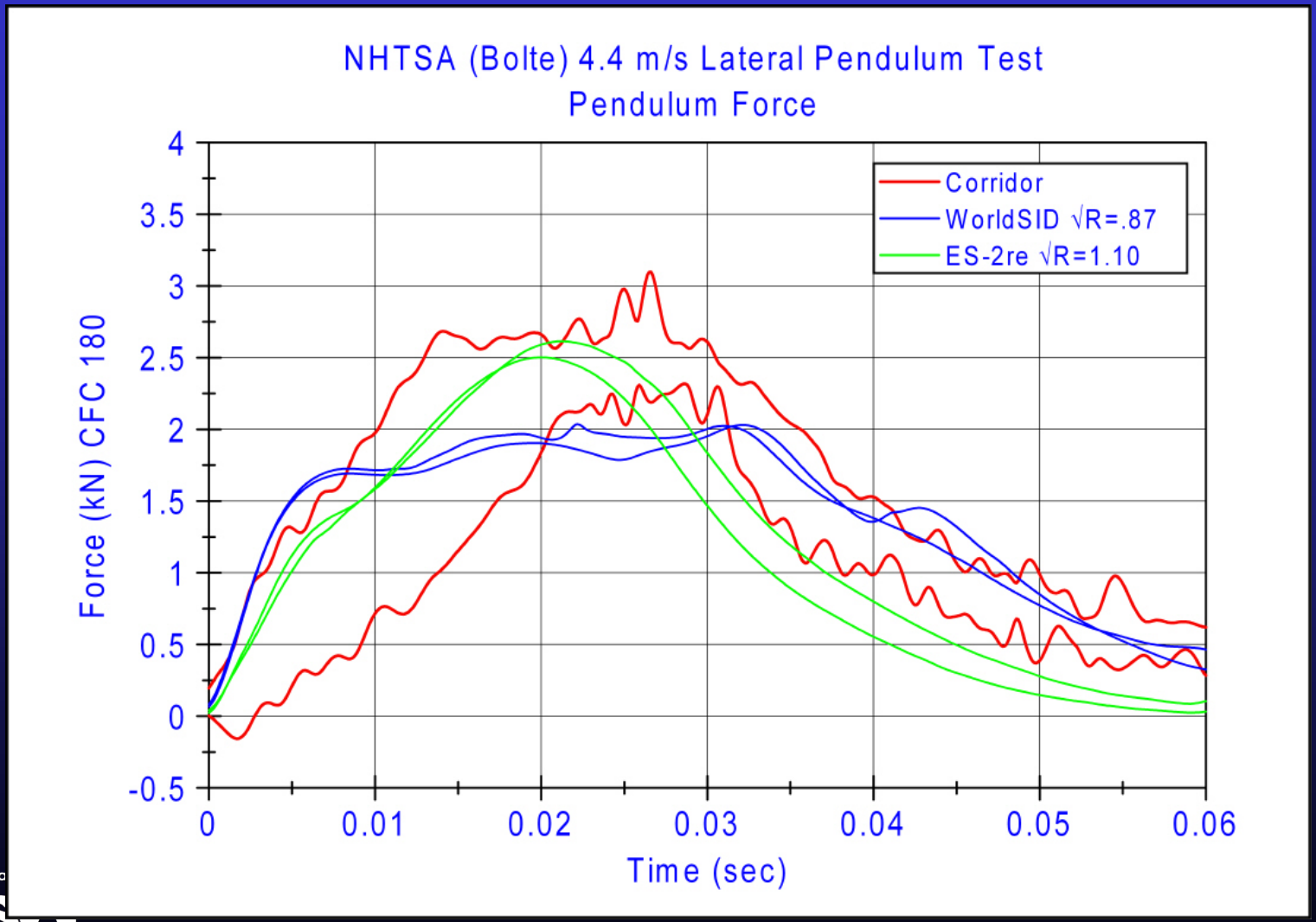
Hip Pocket Slides

WorldSID 50th Male Shoulder Biofidelity

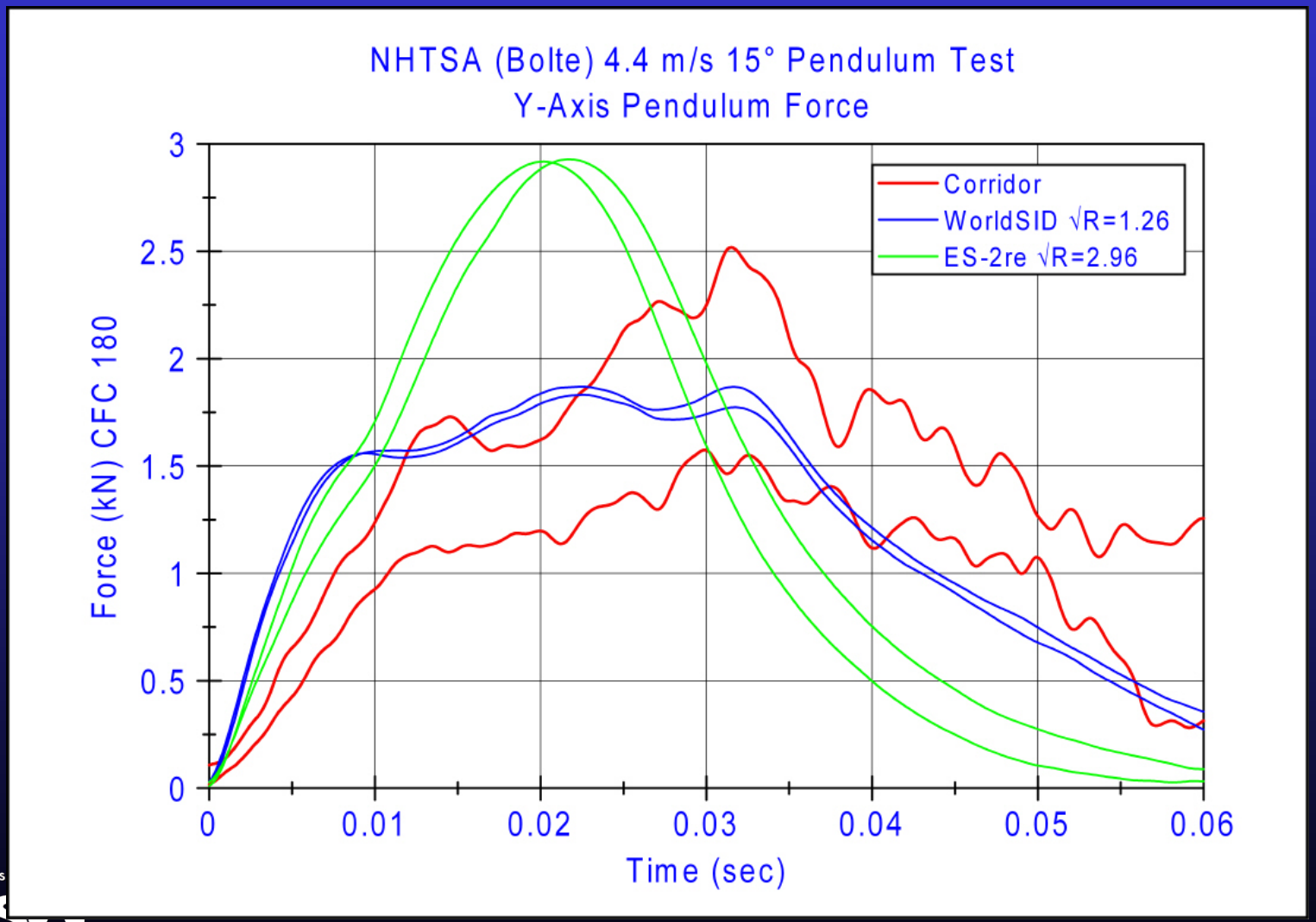
Shoulder Response Summary

Shoulder External Response Summary			
Test Condition	Measurement	Response Comparison (√R)	
		WorldSID	ES-2re
NHTSA (Bolte) 4.4 m/s Lateral Pendulum Impact	Pendulum Force (kN)	0.87	1.10
NHTSA (Bolte) 4.4 m/s 15º Pendulum Impact	Pendulum Y-axis Force (kN)	1.26	2.96
	Pendulum X-axis Force (kN)	0.84	1.96
NHTSA (Bolte) 4.4 m/s 30º Pendulum Impact	Pendulum Y-axis Force (kN)	0.54	3.44
	Pendulum X-axis Force (kN)	1.59	1.83

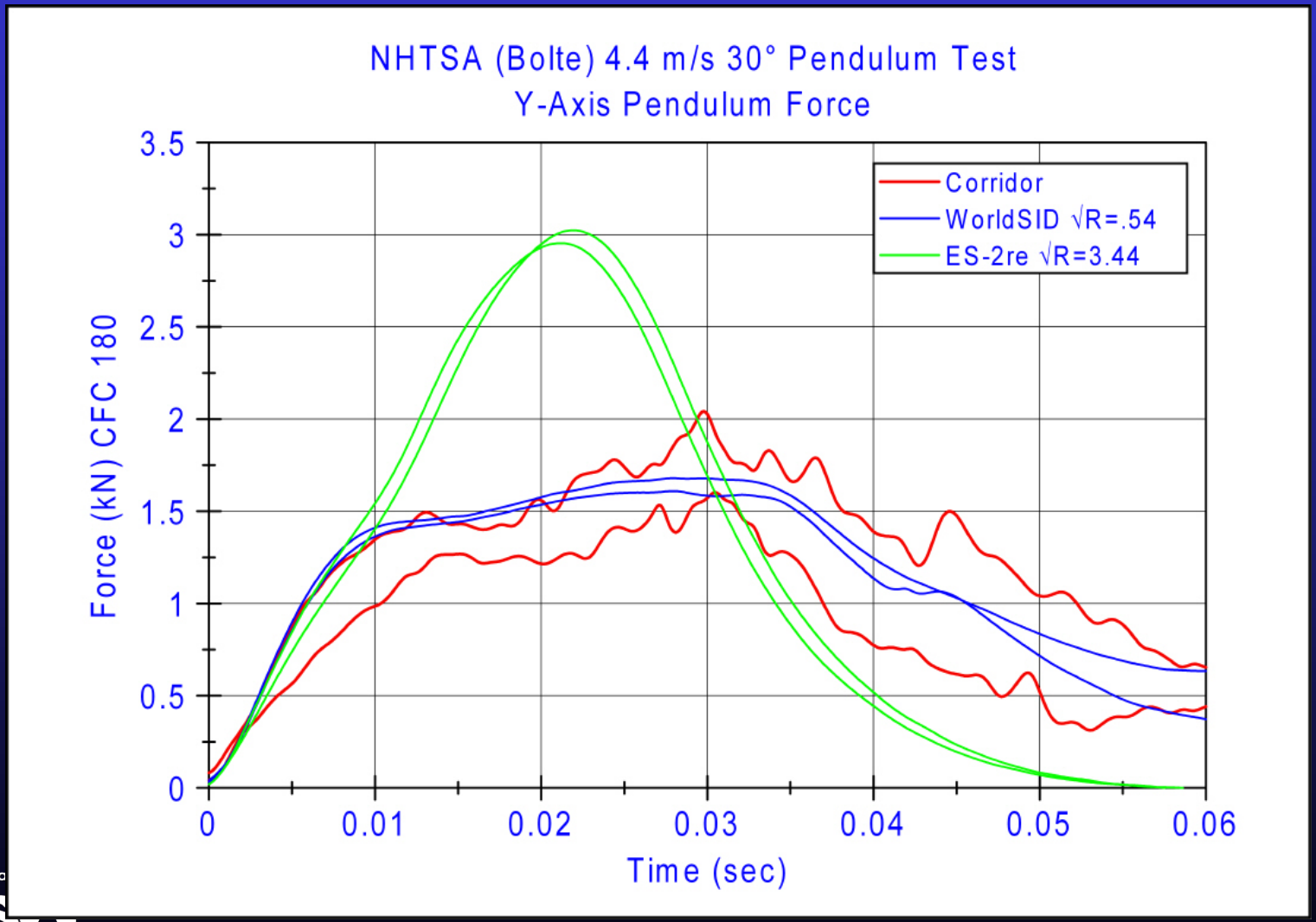
Shoulder Response Summary



Shoulder Response Summary



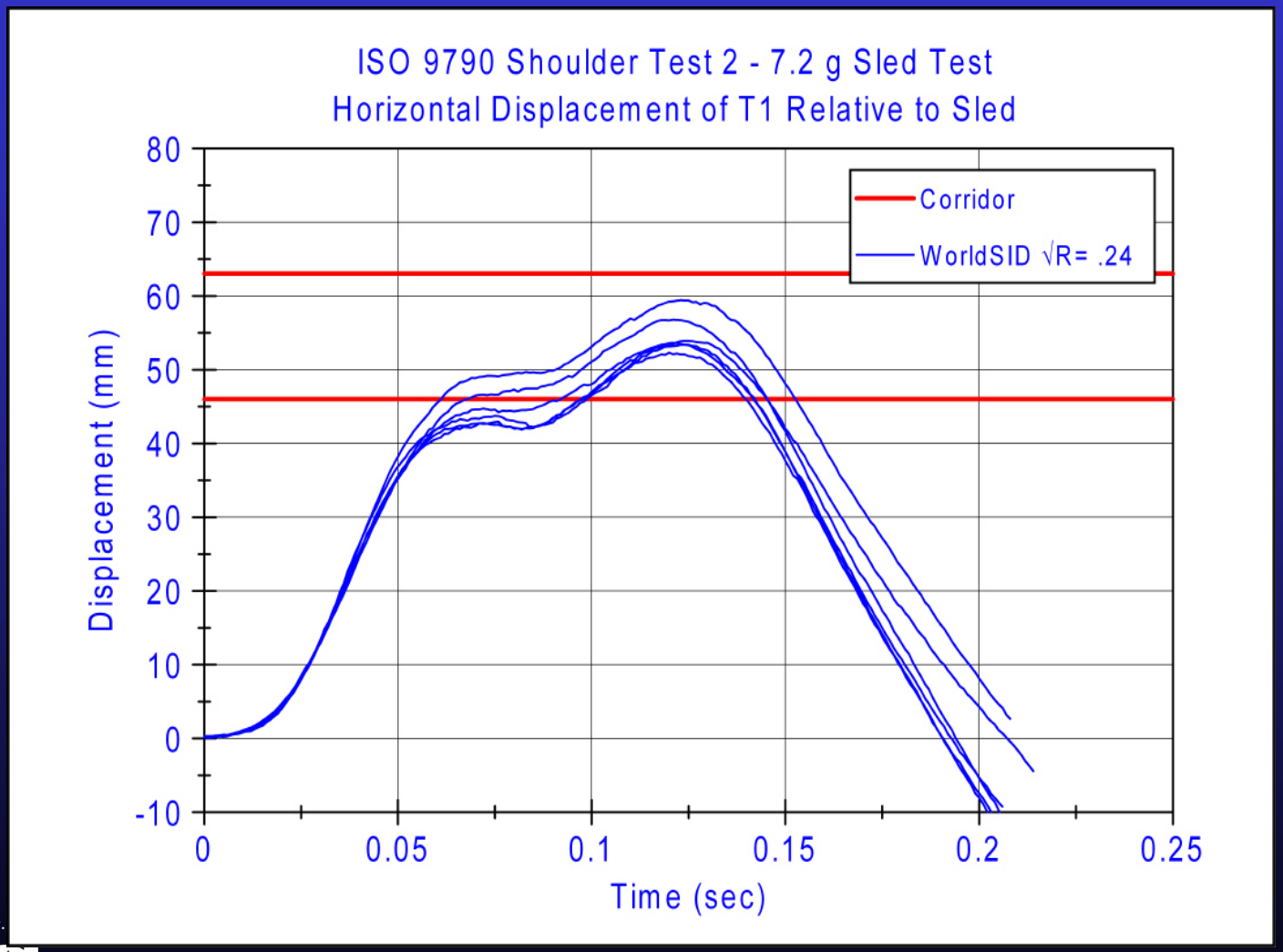
Shoulder Response Summary



Shoulder Response Summary

Shoulder Internal Response Summary			
Test Condition	Measurement	Response Comparison (√R)	
		WorldSID	ES-2re
ISO 9790 Shoulder Test 2 7.2 g Sled Test	Peak Horizontal Displacement of T1 Relative to Sled (mm)	0.24	1.47
NHTSA (Bolte) 4.4 m/s Lateral Pendulum Impact	Shoulder Y-axis Displacement (mm)	1.55	1.11

Shoulder Response Summary



Shoulder Response Summary