NHTSA

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Advanced Crash Test Dummies

NHTSA Safety Research Portfolio Public Meeting: Fall 2021

October 21, 2021

Panel Presentations

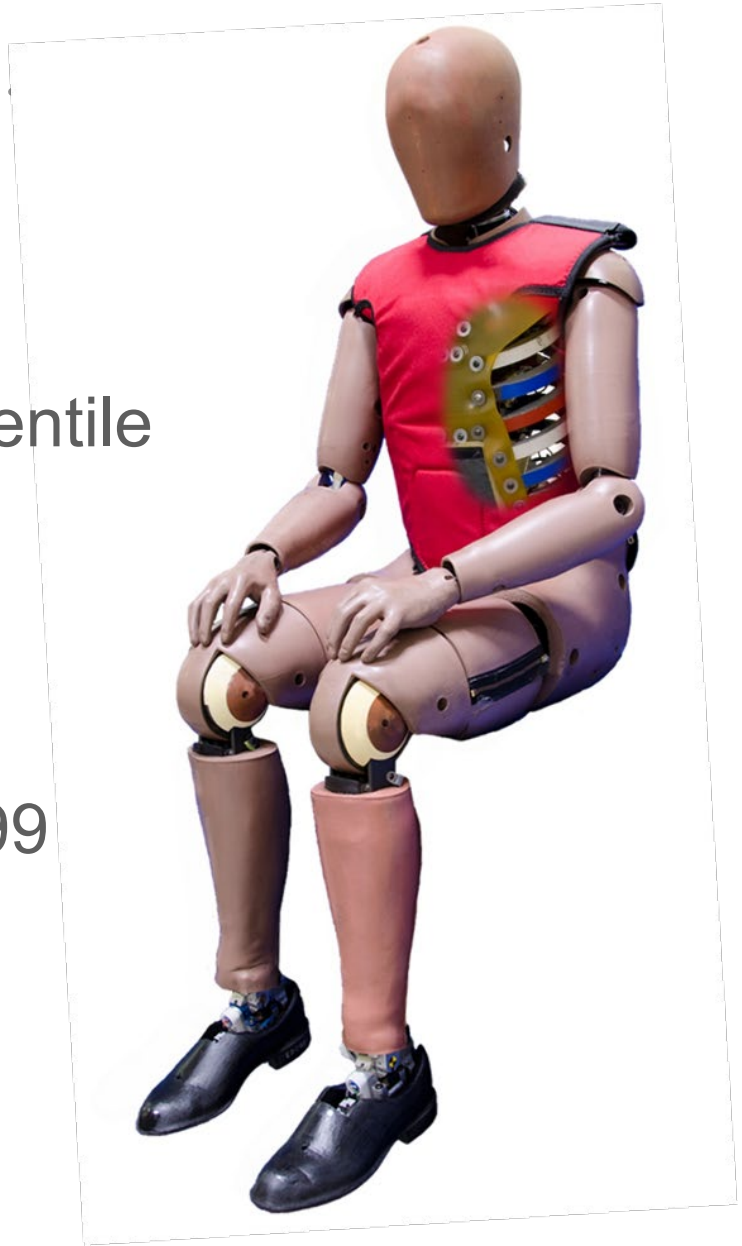
1. **THOR-50M Update –** Dan Parent
2. **LODC Update –** Jason Stammen
3. **WorldSID-50M Update –** Dan Rhule
4. **RibEye Evaluation in WorldSID-50M –** Heather Rhule

THOR-50M Update

Dan Parent

THOR-50M Overview

- THOR = Test Device for Human Occupant Restraint
  - Anthropomorphic Test Device (ATD)
  - 50th percentile male (“THOR-50M”)
- Provides improvements over the Hybrid III 50th percentile male ATD
  - More biofidelic (human-like)
  - Enhanced instrumentation
  - Increased injury prediction capability
- Used in NHTSA research projects dating back to 1999
  - >250 tests in Vehicle Database
  - >1,500 tests in Biomechanics Database
- Funded by NHTSA throughout development



THOR-50M Rulemakings

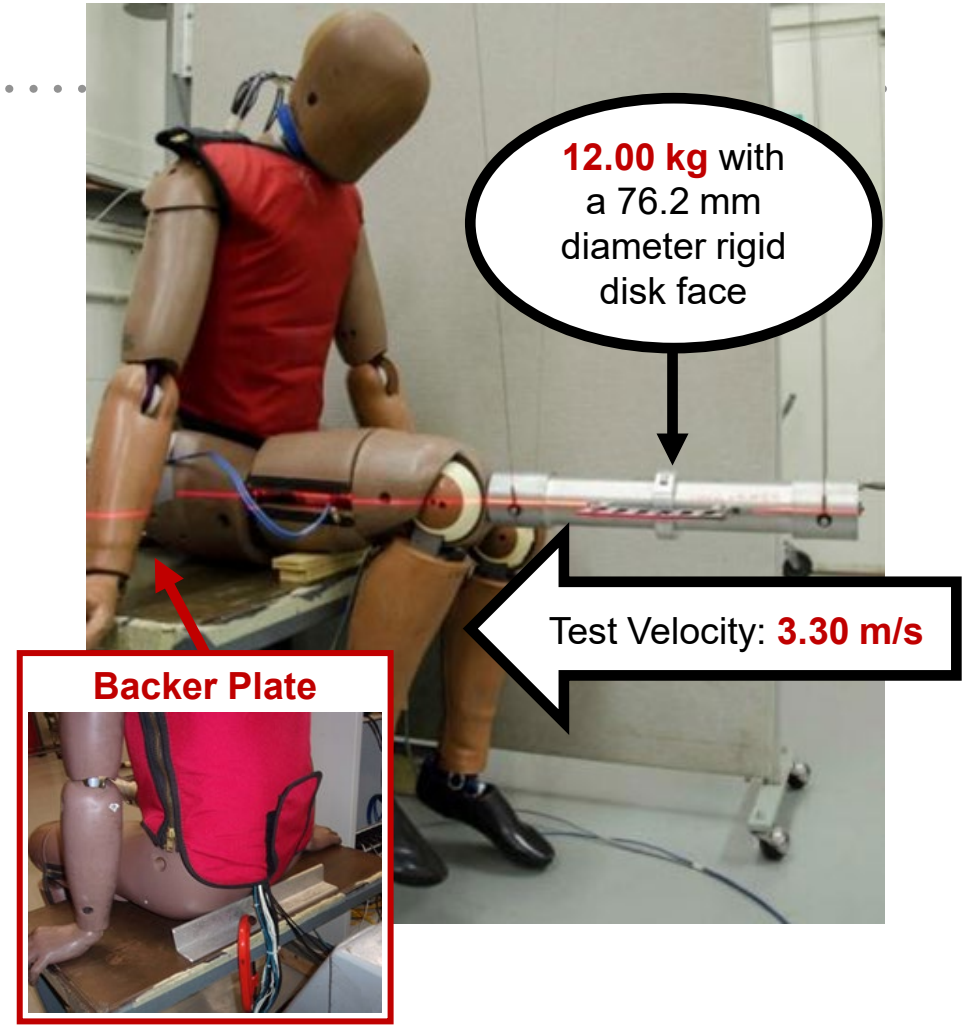
- Part 572 THOR-50M Crash Test Dummy
  - March 2022
  - RIN: 2127-AM20
- FMVSS No. 208 THOR-50M Compliance Option
  - March 2022
  - RIN: 2127-AM21

THOR-50M Documentation

Title	Description	Docket ID	Define ATD	Test Methods	Fitness
Drawing Package	Engineering drawings describing detailed design, 2D and 3D database	NHTSA-2019-0106-0002	√		
Qualification	Procedures and response specifications in component and full body impact tests	NHTSA-2019-0106-0001	√	√	
PADI	Describes procedures for assembly, disassembly, inspection; serves as user's manual for a dummy	NHTSA-2019-0106-0007	√	√	
Seating Procedure	Ensures repeatability in positioning the THOR in the driver or right front passenger seat for a crash test	NHTSA-2019-0106-0006		√	
Injury Criteria	Describes development of relationship between dummy measurements and likelihood of injury, used to determine requirements or ratings	NHTSA-2019-0106-0008		√	√
Biofidelity	Quantitative comparison of THOR (and Hybrid III) to human response corridors	NHTSA-2019-0106-0004			√
Durability	Elevated-energy qualification tests to evaluate durability in repeated use	NHTSA-2019-0106-0003			√
R&R, Qualification	5 of each qualification test on 3 different THORs, and 5 of each qualification test on 1 THOR at 3 different labs to evaluate repeatability and reproducibility	TBD			√
R&R, Oblique	3 Oblique crash tests of the same vehicle make and model at 3 different test labs to ensure repeatability and reproducibility of crash test results	NHTSA-2019-0106-0005			√

THOR-50M Qualification Updates

- Upper Leg Qualification Test
  - Limitations of September 2018 procedure
    - Comparatively high coefficient of variation
    - Acetabulum force below meaningful injury risk
  - Revisions
    - Increased velocity to 3.30 m/s
    - Increased mass to 12.0 kg (same as knee test)
    - Added backer plate to restrain pelvis
- Minor updates to clarify data processing instructions



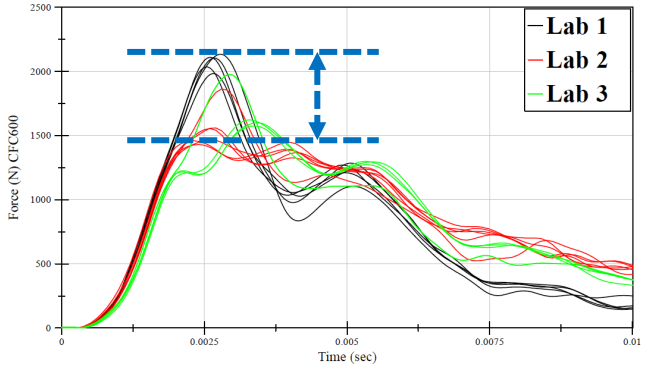
For more information, see Millis, W., "An Improvement to the THOR-50M Upper Leg Qualification Test Methodology" 2021 SAE Government-Industry Digital Summit

THOR-50M R&R (Qualification)

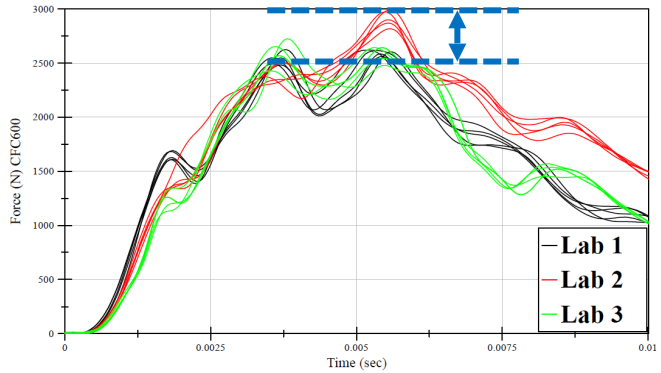
- Repeatability and Reproducibility testing/analysis updated to include revised Upper Leg qualification test
- Results
  - Improved qualitative and quantitative repeatability and reproducibility
    - Coefficients of variation all below 10%, many below 5%
  - Acetabulum forces more representative of crash test measurements

Test Matrix	Lab A	Lab B	Lab C
THOR-50M #1	5 L, 5 R		
THOR-50M #2	5 L, 5 R		
THOR-50M #3	5 L, 5 R	5 L, 5 R	5 L, 5 R

Sept 2018 Upper Leg Test



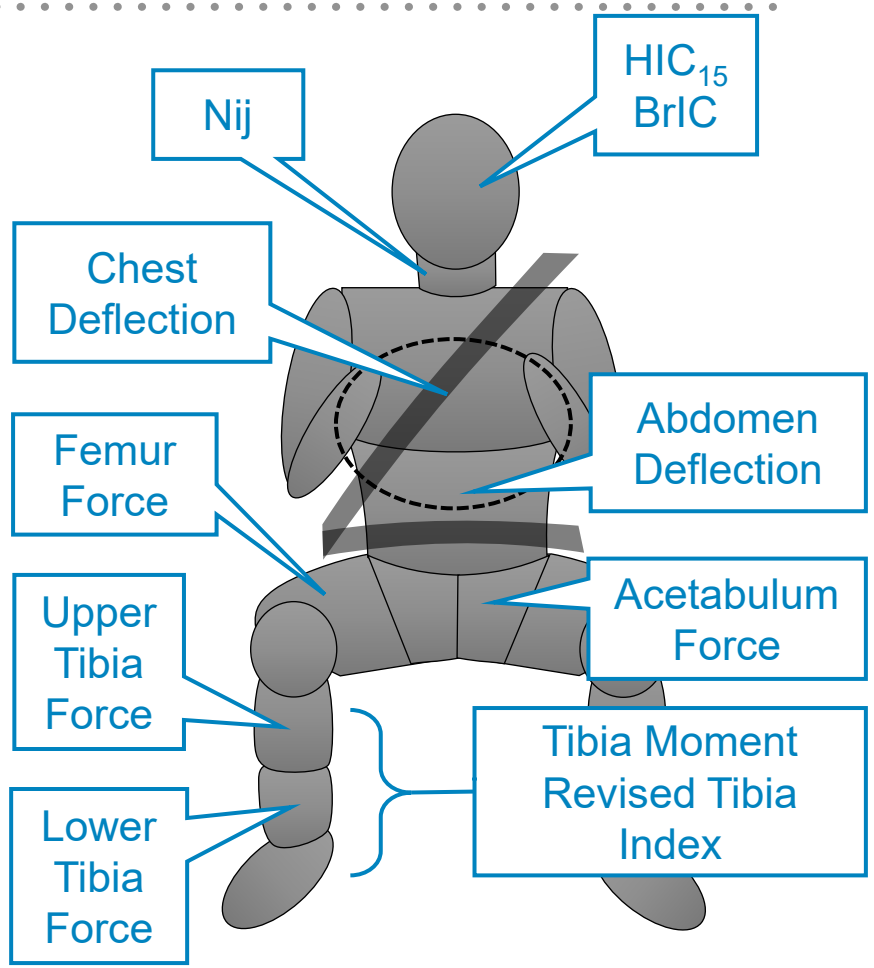
Revised Upper Leg Test



THOR-50M Injury Criteria

Document	Docket ID
Peer review charge	NHTSA-2020-0032-0001
Peer reviewers and credentials	NHTSA-2020-0032-0002
Draft submitted for peer review	NHTSA-2020-0032-0003
Peer review comments and NHTSA responses	NHTSA-2020-0032-0006
Revised THOR-50M Injury Criteria Report	NHTSA-2020-0032-0004

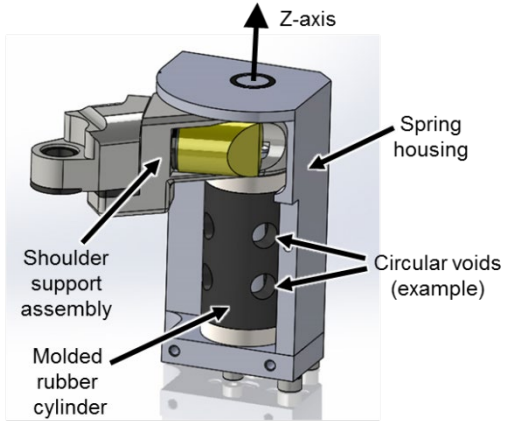
- Revisions based on peer review comments
  - Updated critical intercepts in Nij calculation
  - Removed independent neck tension criterion
  - Hip fracture risk calculated when femur is in compression
  - Restored Revised Tibia Index criterion
  - Minor updates to injury risk function form, coefficients



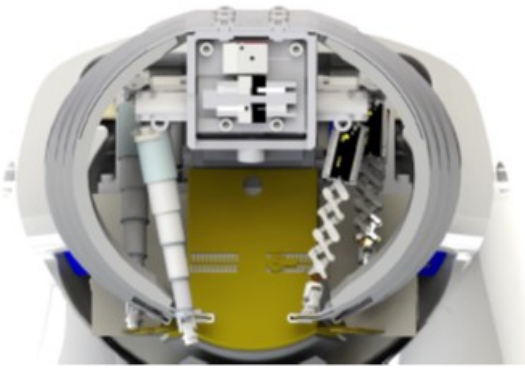
Docket ID **NHTSA-2020-0032** Injury Criteria for the THOR 50th Male ATD

THOR-50M Assessment of Alternate Designs

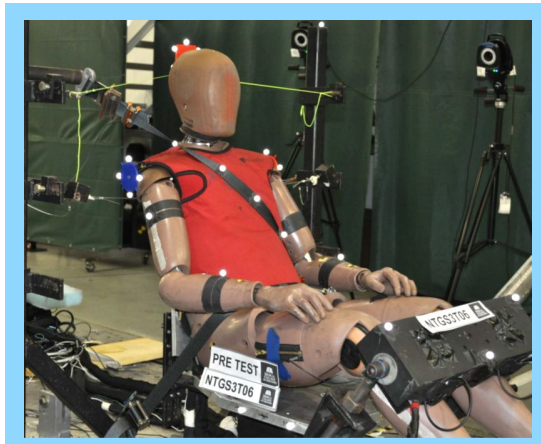
Alternate Shoulder



Alternate Deflection Measurement Devices



In-dummy Data Acquisition System



Gold Standard 1
40 km/h, 14g pulse, standard 3-pt belt
Gold Standard 2
30 km/h, 9g pulse, 3kN LL 3-pt belt

Flat seat
Knee bolster to limit pelvis motion
Wire seatback to allow spine tracking

Vehicle Buck
A) 20° Oblique, OMDB pulse from similar mass vehicle, right front passenger
B) 0°, FRB pulse, driver
C) 0°, FRB pulse, right front passenger

OEM interior, seats, restraint systems

Vehicle Crash Tests (next slide)

THOR-50M Crash Tests

	Test Condition	Speed (km/h)	# of Driver THORs	# of RFP THORs	Vehicle Database Reference
Belted	Sled with pass. car body	24, 32, 40	9	9	v10289-v10308
	OMDB	90	> 100	> 100	Test Type = RMDB … 15 DEGREE 35 PERCENT
	Frontal Rigid Barrier	56	15	0	Title = RESEARCH FRONTAL RIGID BARRIER
Unbelted	Sled with pass. car body	32, 40	6	6	v11083-v11094
	Full Frontal	40	2	2	Title = TO GENERATE 30° FRONTAL RIGID BARRIER IMPACT PERFORMANCE INFORMATION
	Left/Right Angled	40	4	4	
	Angled (Durability)	48	3	3	

THOR-50M Crash Tests

	Test Condition	Speed (km/h)	# of Driver THORs	# of RFP THORs
Belted	Sled with pass. car body	24, 32, 40	9	9
	OMDB	90	> 100	> 100
	Frontal Rigid Barrier	56	15	0
Unbelted	Sled with pass. car body	32, 40	6	6
	Full Frontal	40	2	2
	Left/Right Angled	40	4	4
	Angled (Durability)	48	3	3

FMVSS No. 208 Conditions

Followed THOR-50M Documentation (slide 3)

- THOR-50M ATDs according to drawing package, built per PADI
- All passing Qualification specs
- ATDs positioned per Seating Procedure
- Conducted tests per FMVSS No. 208
- Data post-processing per PADI

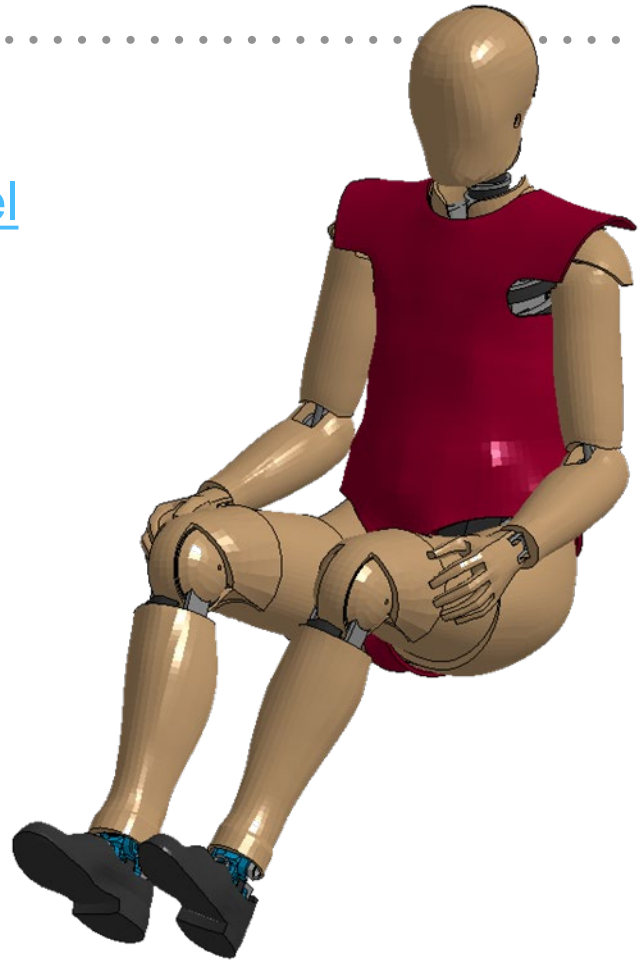
THOR-50M Crash Tests

	Test Condition	Speed (km/h)	# of Driver THORs	# of RFP THORs
Belted	Sled with pass. car body	24, 32, 40	9	9
	OMDB	90	> 100	> 100
	Frontal Rigid Barrier	56	15	0
Unbelted	Sled with pass. car body	32, 40	6	6
	Full Frontal	40	2	2
	Left/Right Angled	40	4	4
	Angled (Durability)	48	3	3

THOR-50M Finite Element Model

Available through University of Virginia website

- https://engineering.virginia.edu/thor-50th-male-finite-element-model



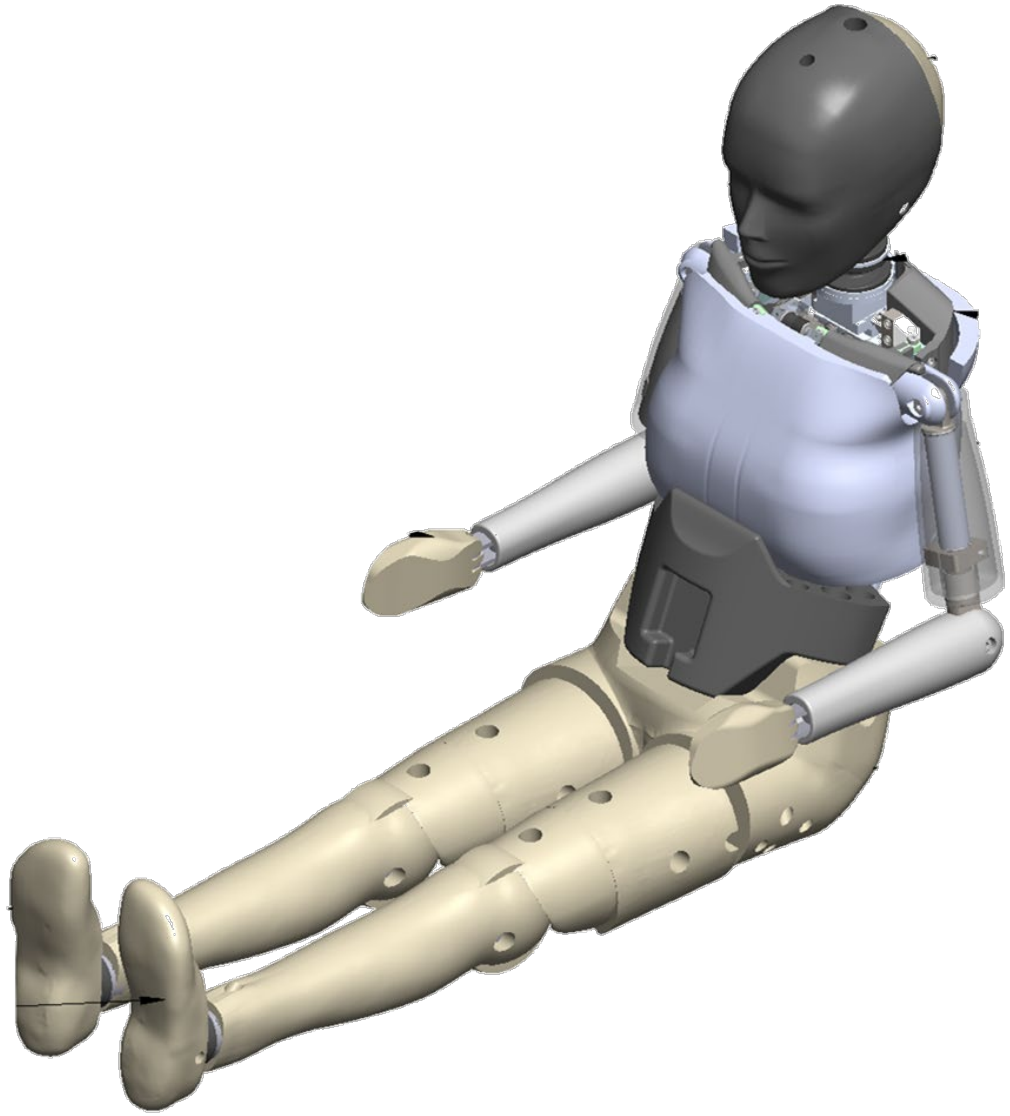
THOR-50M FE Model Version 2.7

LODC Update

Jason Stammen

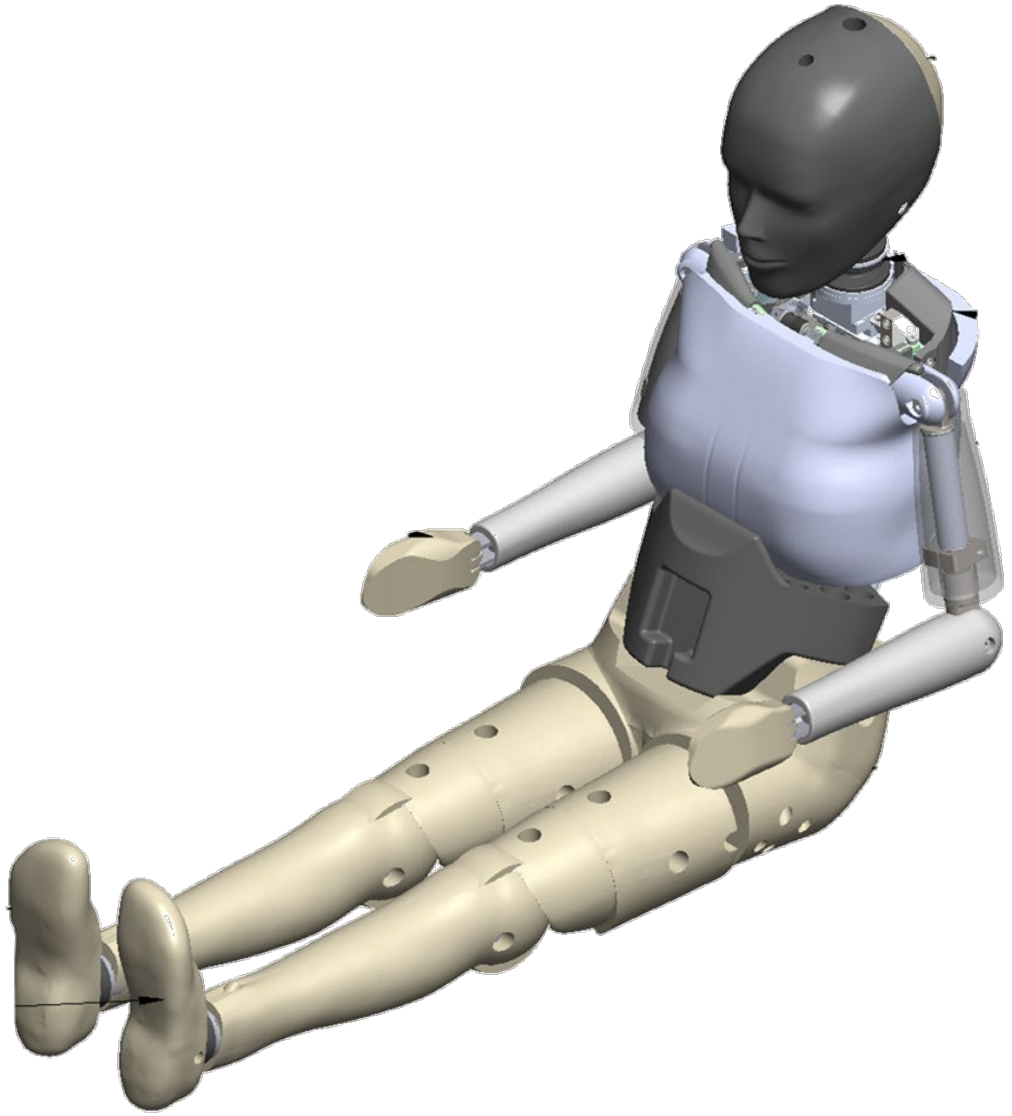
Large Omnidirectional Child (LODC)

- What is the LODC?
  - NHTSA-developed child ATD with improved biofidelity & measurement capability
- Why do we need it?
  - More comprehensive injury assessment than current child ATDs can provide
- What sets it apart from other child ATDs?
  - Flexible spine
  - Component responses matching pediatric data (not data scaled from adults)
  - Accurate anthropometry & anatomy



LODC Description

- Description of LODC and its features



Head has inertial/mass properties matching pediatric data

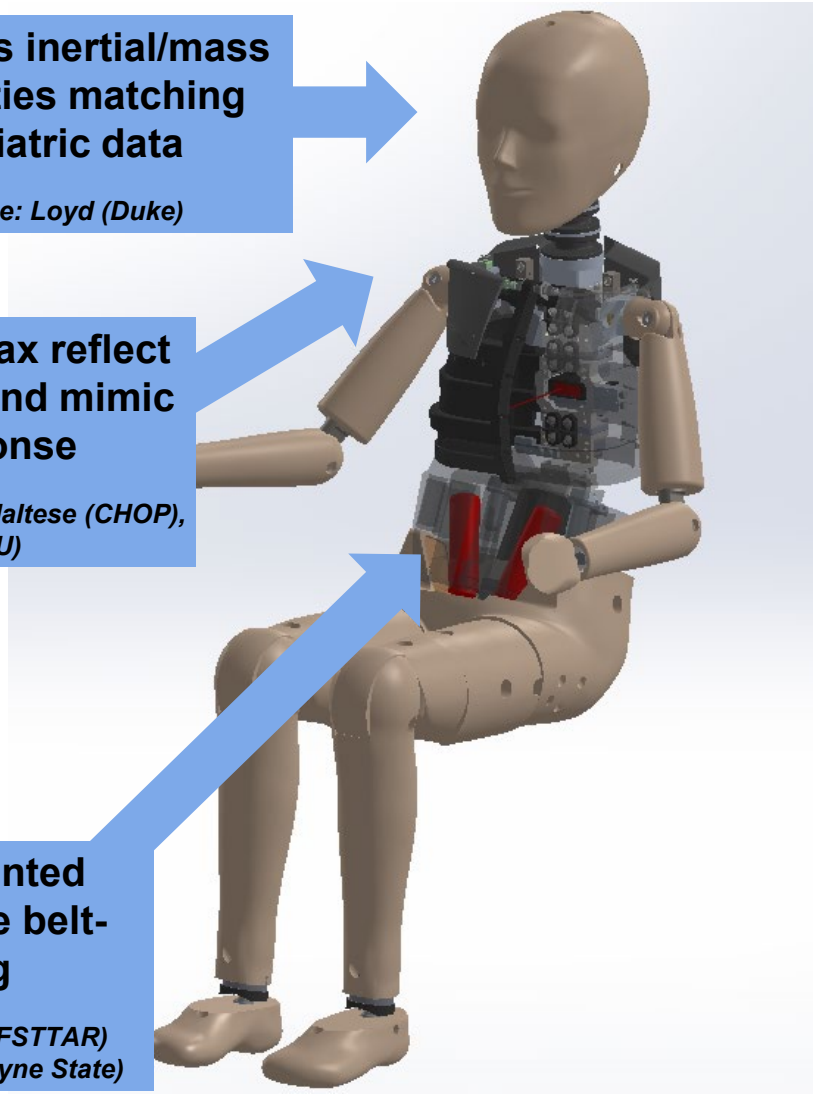
Source: Loyd (Duke)

Shoulders and thorax reflect pediatric anatomy and mimic pediatric response

Sources: Kent/Parent (UVA), Maltese (CHOP), Agnew/Bolte (OSU)

Biofidelic, instrumented abdomen to measure belt-induced loading

Sources: Kent (UVA), Beillas (IFSTTAR) Ramachandra (OSU), Hardy (Wayne State)

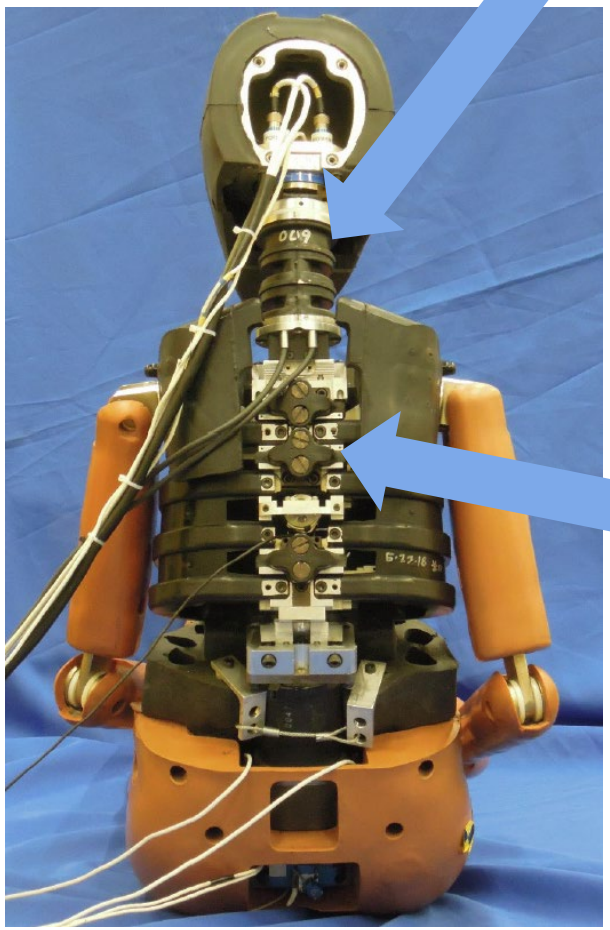


Anthropometry matches actual seated child data

Source: Reed (UMTRI)

Neck can elongate and allows for free Z axis rotation; response matching pediatric data

Sources: Dibb/Luck/Myers (Duke), Thunnissen 1995

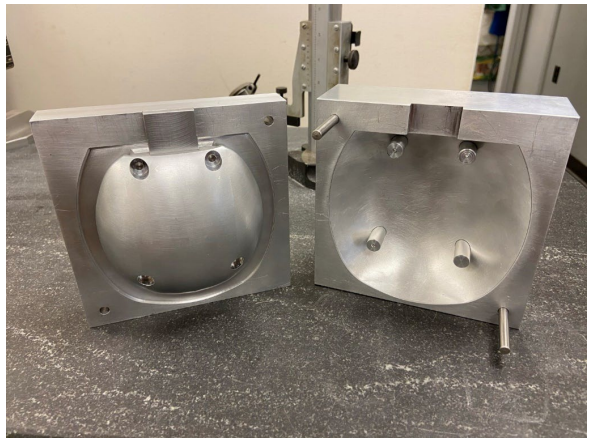


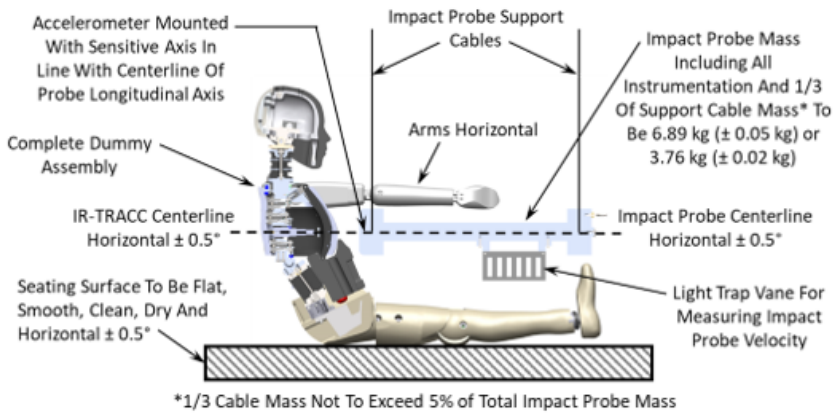
Flexible cervicothoracic & thoracic spine for more biofidelic head trajectory and neck loads

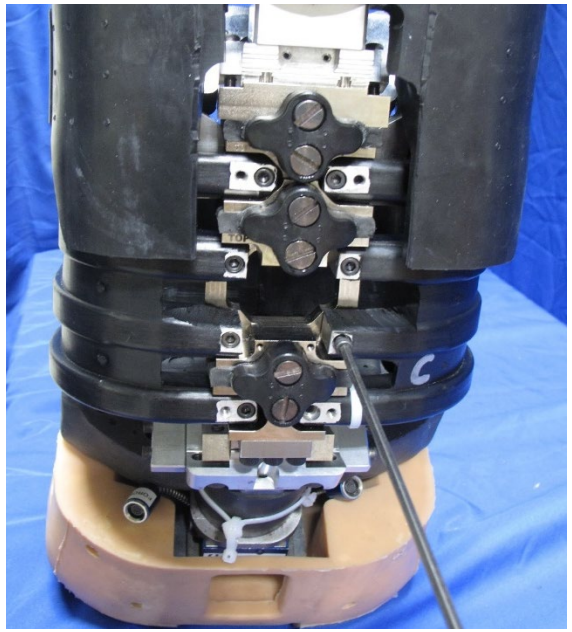
Sources: Kang (OSU), Lopez-Valdes/Ash (UVA), Arbogast (CHOP), Pintar/Yoganandan (MCW)

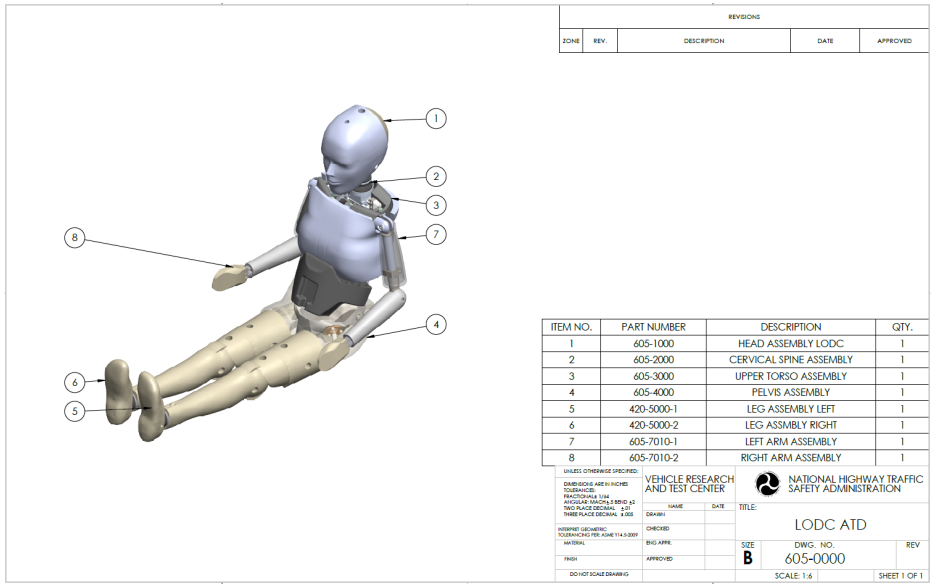
LODC Specifications

- ATD specifications (PADI, drawing package, qualification procedures, soft part tooling CAD, manufacturing guidance manual)
- Evaluation of draft specifications underway through an IDIQ contract to build a production-intent LODC
- Documentation to be posted



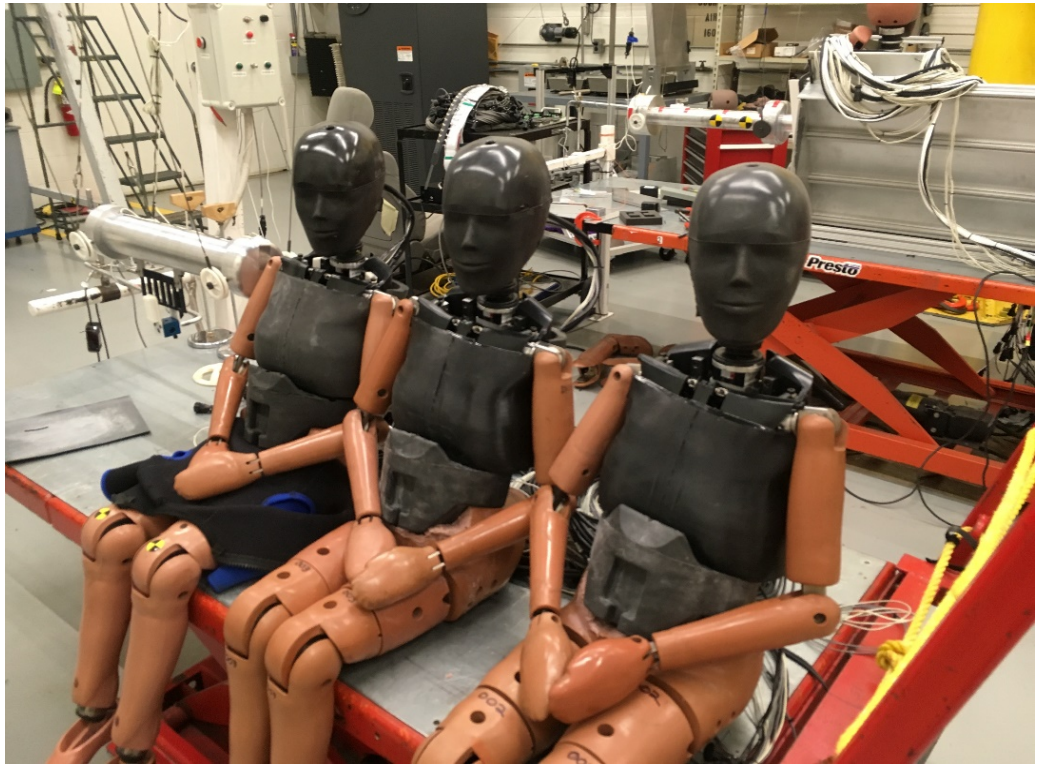






Durability and R&R

- Now that initial development is complete, evaluating durability, repeatability, and reproducibility
  - (1) Durability series just completed – no damage and response returned to baseline each time
  - (2) R&R is next – five repeat component tests on three LODC's
- Full scale R&R in sled/crash tests including externally-built LODCs expected to complete next year

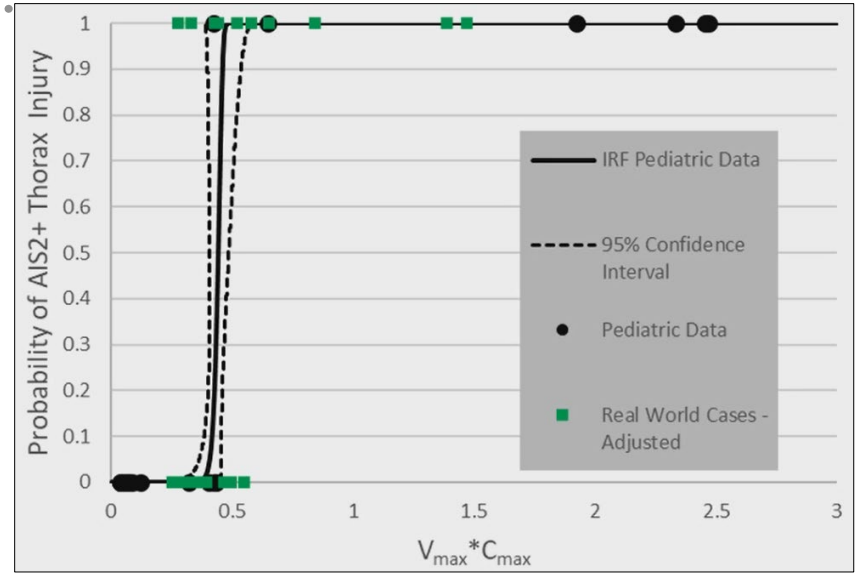


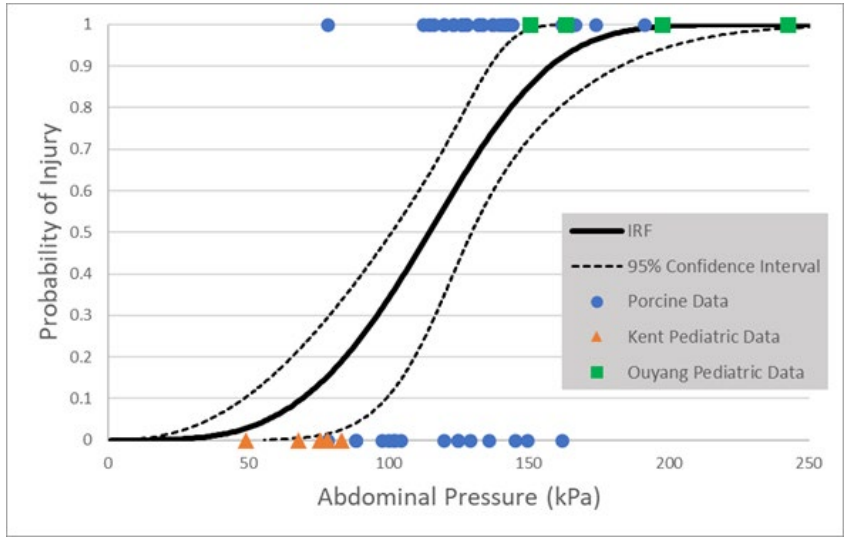
Abdomen & Thorax Injury Risk Functions

- Using a combination of pediatric biomechanical data, injury data, and ATD tests, we derived injury risk functions for use in evaluating restraint systems with LODC[1]

Risk Level	V_{max}*C_{max} (AIS 2+ Thorax Injury)	Pressure (AIS 3+ Abdomen Injury)
10%	0.42 m/s	69.3 kPa
25%	0.43 m/s	84.7 kPa
50%	0.45 m/s	114.5 kPa

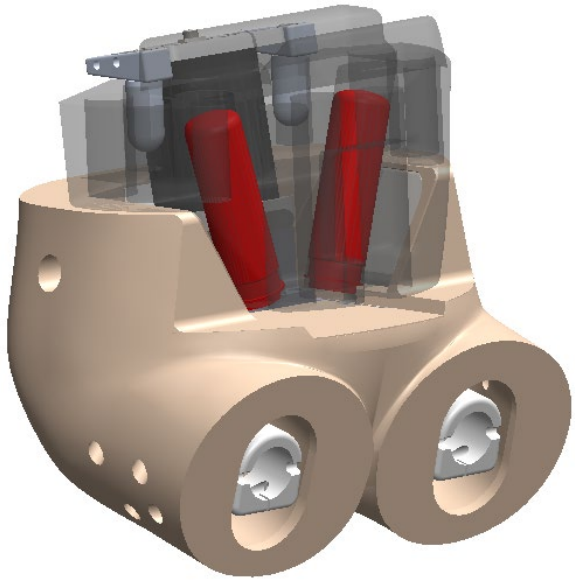
[1]Suntay et al. "Abdominal and Thoracic Injury Risk Functions for the Large Omni-directional Child (LODC) ATD" (IRCOBI 2021)





Injury Assessment: Abdomen

- Abdomen injuries due to lap belt intrusion common for older children
- LODC uses pressure sensors (left and right) to measure abdomen loading
- The sensors have been shown to distinguish between restraint conditions
    - - Booster seats result in pressures < 75 kPa
- No longer have to rely on indirect or qualitative measures to monitor submarining



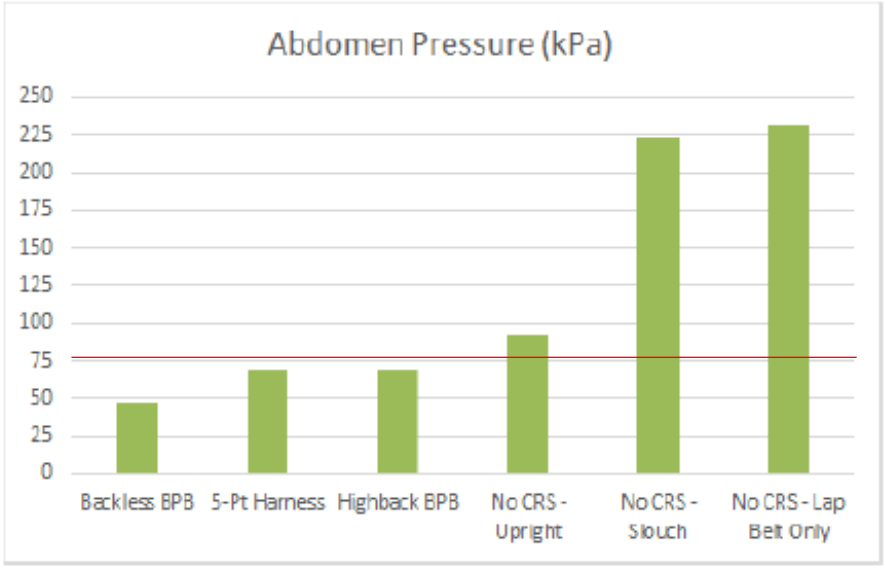
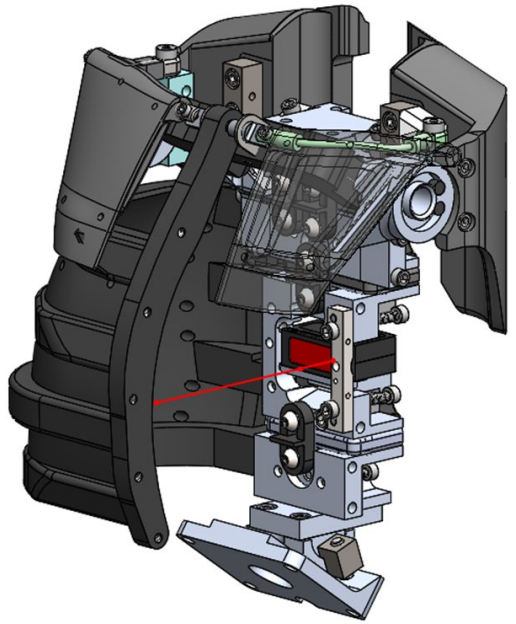
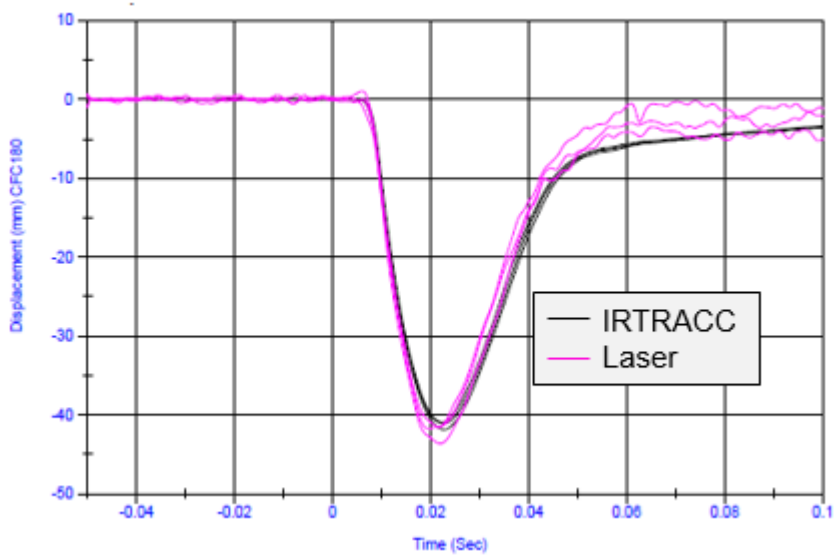


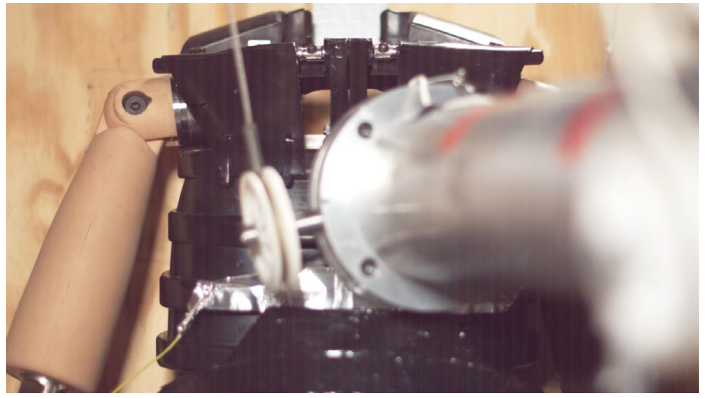
Fig. 3. LODC pressures measured in sled tests with different restraint conditions [19] (BPB – belt positioning booster)

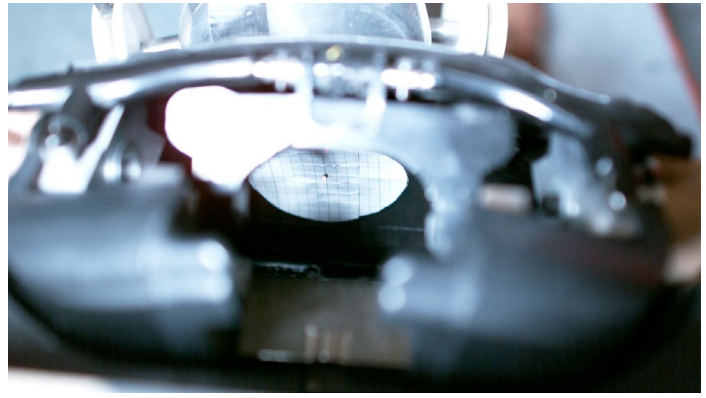
Injury Assessment: Thorax

- Thoracic organ injuries are often serious in children
- Continuing development of laser chest deflection system
- Confirmed accuracy of measurement and that laser location on sternum is maintained within 2 cm of initial position during 3-pt belt loading
- Evaluating durability of the laser module (some evidence of signal degradation over multiple impacts)





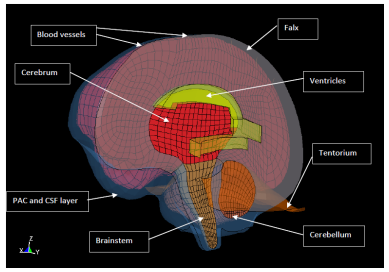




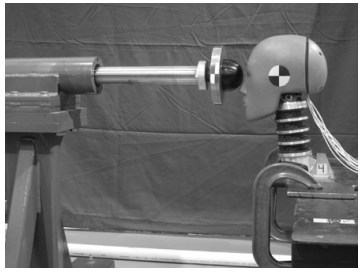
Injury Assessment: Head/Brain

- Traumatic brain & skull injuries are the most common serious injuries sustained by children in MVCs.[1]
- We do have pediatric HIC, but we don't have brain rotational injury criteria (BrIC).
- Similar to the development of adult BrIC, NHTSA is working on defining pediatric BrIC using FEM, animal models, ATD testing, and real-world crash data.
- Objective: Link pediatric head kinematics (LODC) to injury risk.
- LODC head impacts at a variety of speeds & directions scheduled for late 2021.

Finite Element Model

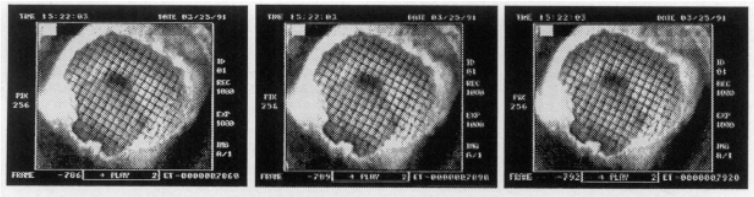


ATD Data

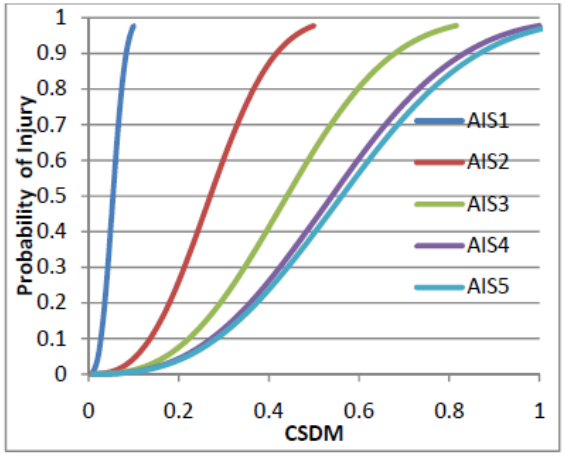


Injury Data From Animal Models

(rhesus monkeys, baboons, miniature pigs)



Injury Risk



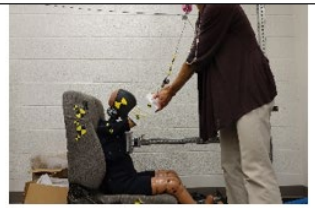
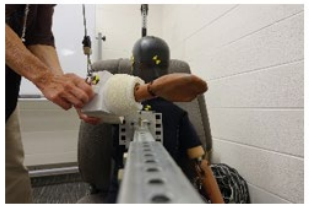
BrIC

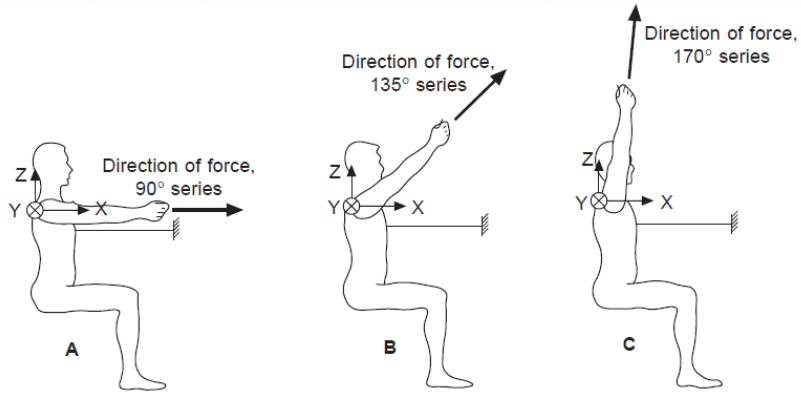
$$BrIC = \sqrt{\left(\frac{\omega_x}{\omega_{xC}}\right)^2 + \left(\frac{\omega_y}{\omega_{yC}}\right)^2 + \left(\frac{\omega_z}{\omega_{zC}}\right)^2}$$

1. Arbogast, K., et al. 2005. Predictors and Patterns of Pediatric Head Injury in Motor Vehicle Crashes. IRCOBI; Prague.

Pediatric Shoulder Biofidelity

- Adapting Tornvall et al. (2005)[1] test setup to pediatric volunteers
- Volunteer testing ongoing (about ½ way through – 12 of 24 completed)
- Biofidelity assessment of LODC shoulder
- Papers forthcoming

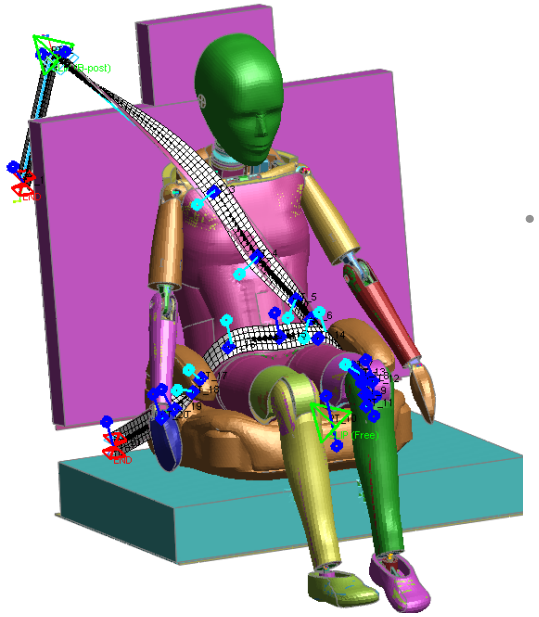
Camera View	90° Shoulder Flexion	135° Shoulder Flexion	170° Shoulder Flexion
SAGITTAL			
FRONTAL			
SUPERIOR			

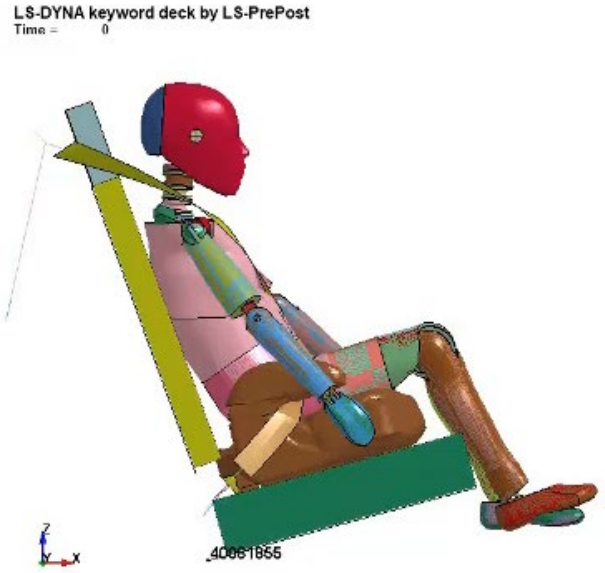


From: Tornvall, et al. (2005) "Comparison of shoulder range-of-motion and stiffness between volunteers, Hybrid III and THOR Alpha in static frontal impact loading" International Journal of Crashworthiness, 10:2, 151-160.

LODC FE Model

- FE model: validate vs. experimental data
- Using the model to evaluate part performance & develop new qualification tests
- Built a model of the updated FMVSS No. 213 test bench to help with restraint evaluation
- Model will be publicly available

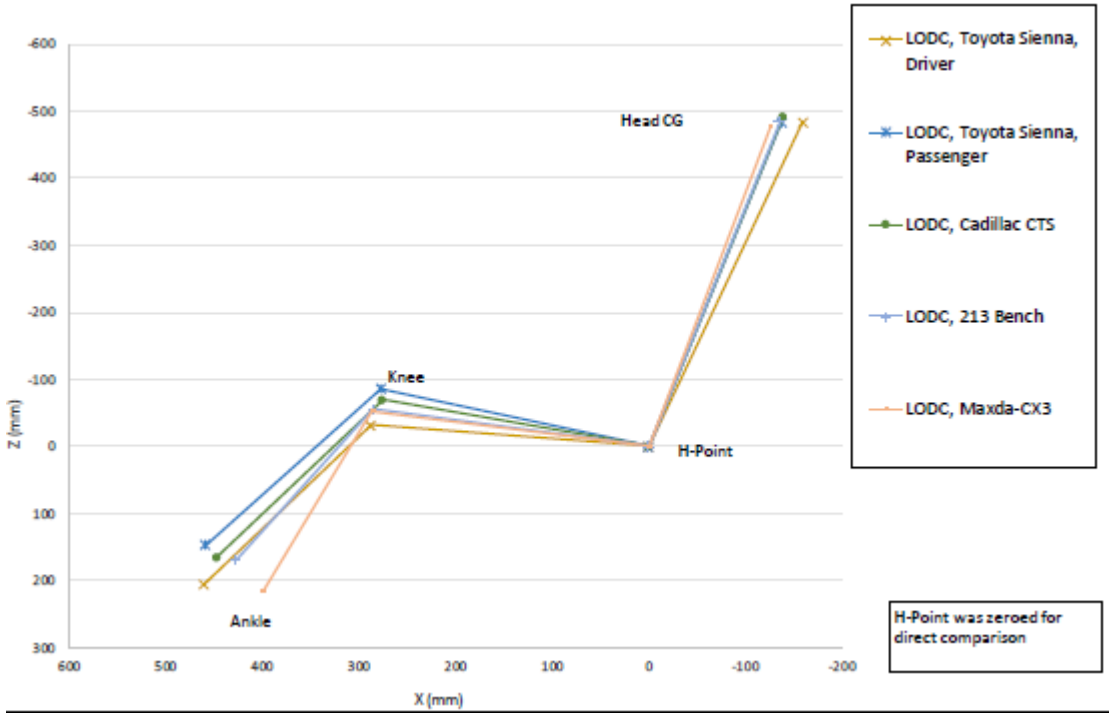




Seating Procedure

- We are developing a seating procedure with two goals: (1) realistic and (2) repeatable

T6=0.0°+/- 1.0° Head=0.0°+/- 2.0° Pelvis=32.0°+/- 2.0°



[1]Louden. “Large Omni-directional Child (LODC) Seating Evaluation” (SAE GI 2021)

Summary

- NHTSA developed LODC to address limitations with Hybrid III 10YO
- Current activities are focused on
  (1) Finalizing dummy specification documents
  (2) Evaluating the LODC's durability, repeatability, and reproducibility
  (3) Finalizing chest deflection system
  (4) Deriving injury risk functions
  (5) Generating shoulder biofidelity targets and evaluating the LODC shoulder
  (6) Building a computational model & using it to evaluate part performance
  (7) Developing a seating procedure

For more information, see Docket ID **NHTSA-2019-0110** NHTSA Crashworthiness Research – LODC Documentation

WorldSID-50M

Dan Rhule

WorldSID-50M Overview

- WorldSID → **World**wide harmonized **S**ide **I**mpact **D**ummy
  - Anthropomorphic Test Device (ATD)
  - 50th percentile male (WorldSID-50M)
- Provides improvements over the ES-2re
  - More biofidelic (human-like)
  - Enhanced instrumentation
  - Increased injury prediction capability
- Used in NHTSA research since 2005
  - 77 crash tests
  - >1,800 component-level tests

WorldSID-50M Rulemakings

- Part 572 WorldSID-50M Crash Test Dummy
  - Long-term action
  - RIN: 2127-AM22
- FMVSS No. 214 WorldSID-50M Compliance Option
  - Long-term action
  - RIN: 2127-AM23

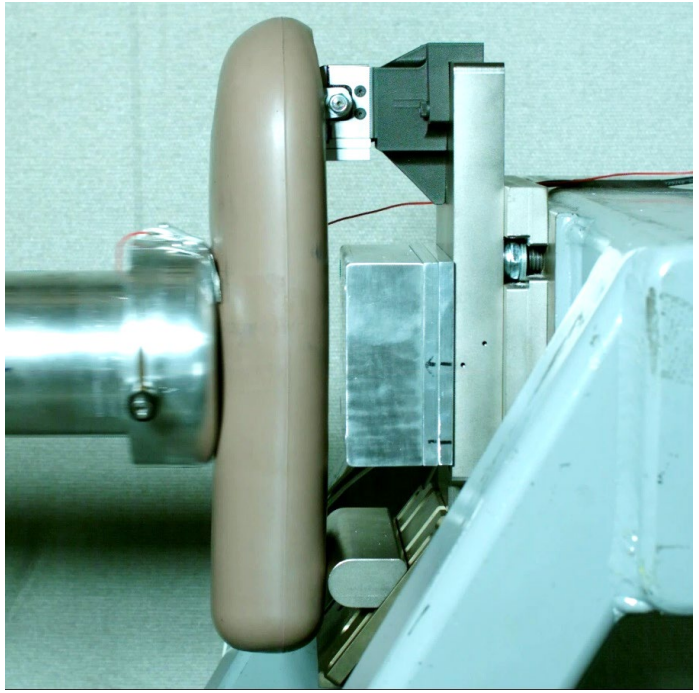
WorldSID-50M Documentation

Title	Description	Status	Define ATD	Test Methods	Fitness
Drawing Package	Engineering drawings describing detailed design	In process – finalizing RibEye details	√		
Qualification	Procedures and response specifications in component and full body impact tests	In process – may add single-arm impact	√	√	
PADI	Describes procedures for assembly, disassembly, inspection; serves as user's manual for a dummy	In process	√	√	
Seating Procedure	Ensures repeatability in positioning the WSID-50M in the driver or right front passenger seat for a crash test	NHTSA-2019-0108-0003		√	
Injury Criteria	Describes development of relationship between dummy measurements and likelihood of injury, used to determine requirements or ratings	In process		√	√
Biofidelity	Quantitative comparison of WSID-50M to human response corridors	NHTSA-2019-0108-0001			√
Durability	Elevated-energy qualification tests to evaluate durability in repeated use	Draft complete – in Agency circulation			√
R&R, Qualification[1]	VRTC: 5 repeats of each qualification test on 3+ different WSID-50Ms; Outside labs: 5 repeats of each qualification test on 1 WSID-50M at 3+ different labs to evaluate repeatability and reproducibility of results	Draft complete – in Agency circulation			√
R&R, Sled[1]	3 repeat tests of 2 WSID-50M dummies in 4 configurations	Draft complete – in Agency circulation			√

[1]Qualification and Sled R&R are combined in a single report

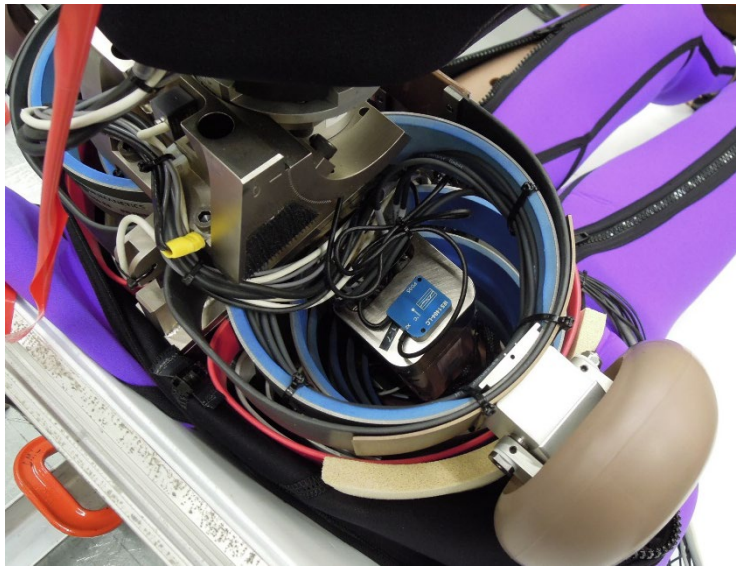
WorldSID-50M Single-Arm Impact Test

- Dummy's arm plays an important role in side impact response
- NHTSA is considering a qualification procedure for the dummy's arm, tested by itself, removed from the dummy
  - Full-body thorax with arm test doesn't differentiate between arm response and thorax response
- VRTC has developed a test procedure (available to interested parties)
- Limited lab-to-lab R&R series with Humanetics ATD
  - Established preliminary response corridors
- Need additional testing
  - More sample arms
  - More test labs



WorldSID-50M Temperature Sensitivity

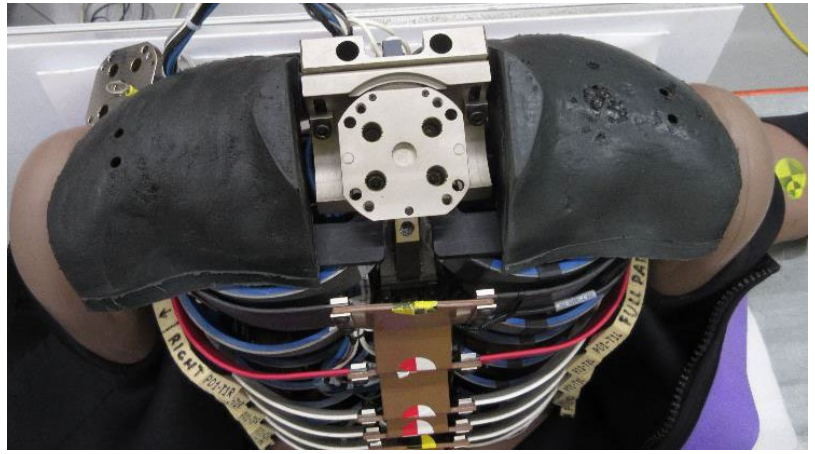
- Historically, NCAP and Reg. Tests require temperature range of 69-72º F
- Onboard DAS and RibEye controller generate heat which is trapped inside the dummy by its suit
- VRTC testing demonstrated that response variation associated with the dummy's internal temperature is much less than the range of responses observed in Lab-to-Lab R&R tests conducted at 69-75º F
- VRTC is recommending an allowable range of 69-75º F for qualification and vehicle crash tests
- Additionally, we have successfully used a vacuum system to help control the dummy's internal temperature during testing



WorldSID-50M Vehicle Crash Tests

- Crash tests with MY2019/2020 vehicles
  - FMVSS 214 Oblique pole (20 mph)
  - FMVSS 214 MDB (33.5 mph)

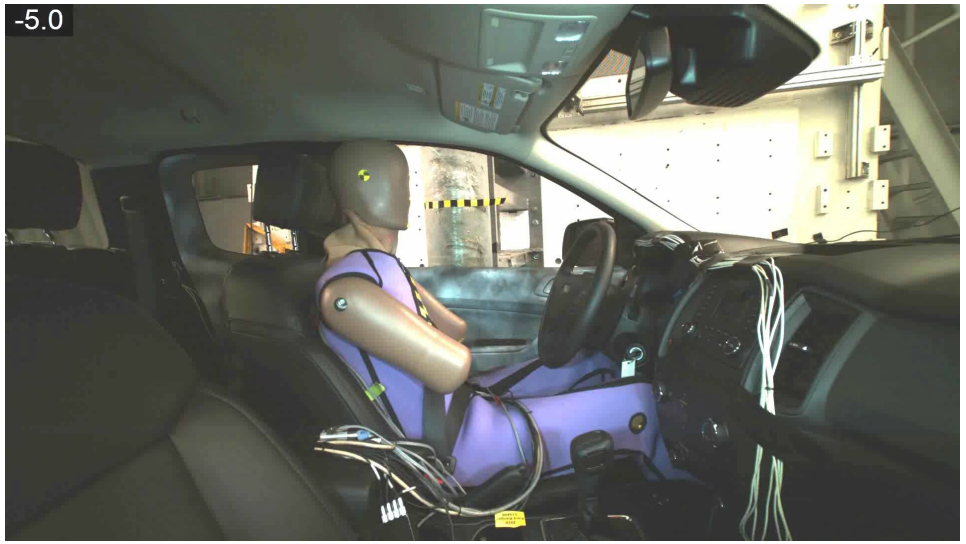
- WorldSID-50M used was a standard build level F with the following modifications
  - RibEye™ Multipoint Deflection Measurement System
  - Sleeveless suit
  - Split thorax pads
  - Modified shoulder pads



- In-Dummy DTS G5 Data Acquisition System

WorldSID-50M Vehicle Crash Tests

- 16 Total Crash Tests
  - All tests followed NHTSA seating procedures and FMVSS 214 test procedures
  - No significant issues with instrumentation responses
- WorldSID 50th male ATD was durable in the crash tests
  - No major damage seen on the dummy (broken ankle on one vehicle model)
  - No issues with RibEye LEDs or sensors
- 8 Total Qualifications- overall good data response
  - Majority of qualifications had no issue with test setup and meeting test response requirements

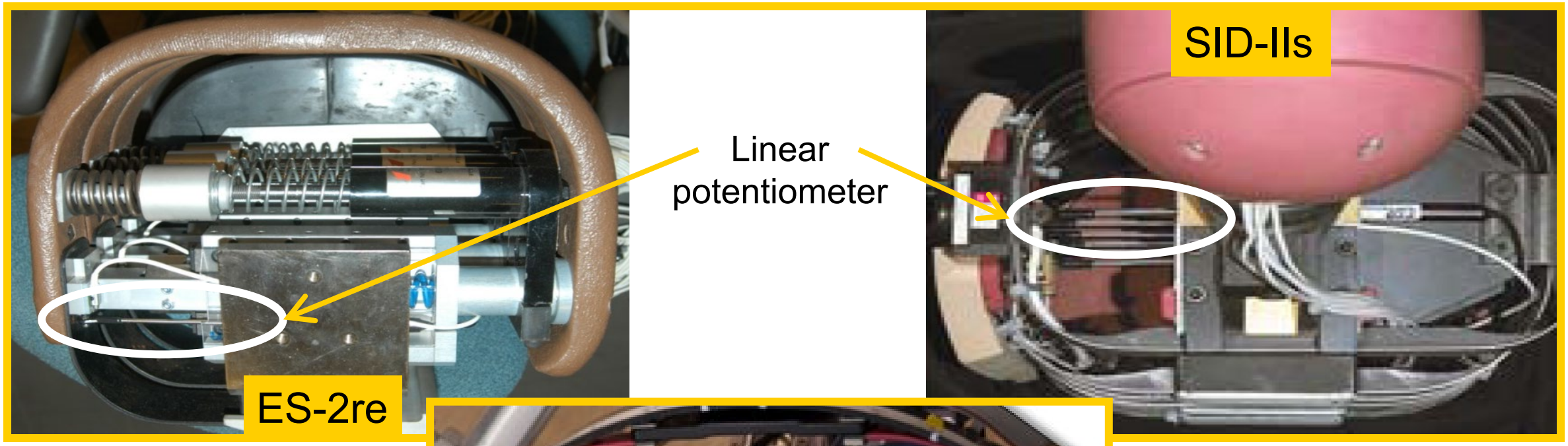


RibEye Evaluation in WorldSID-50M

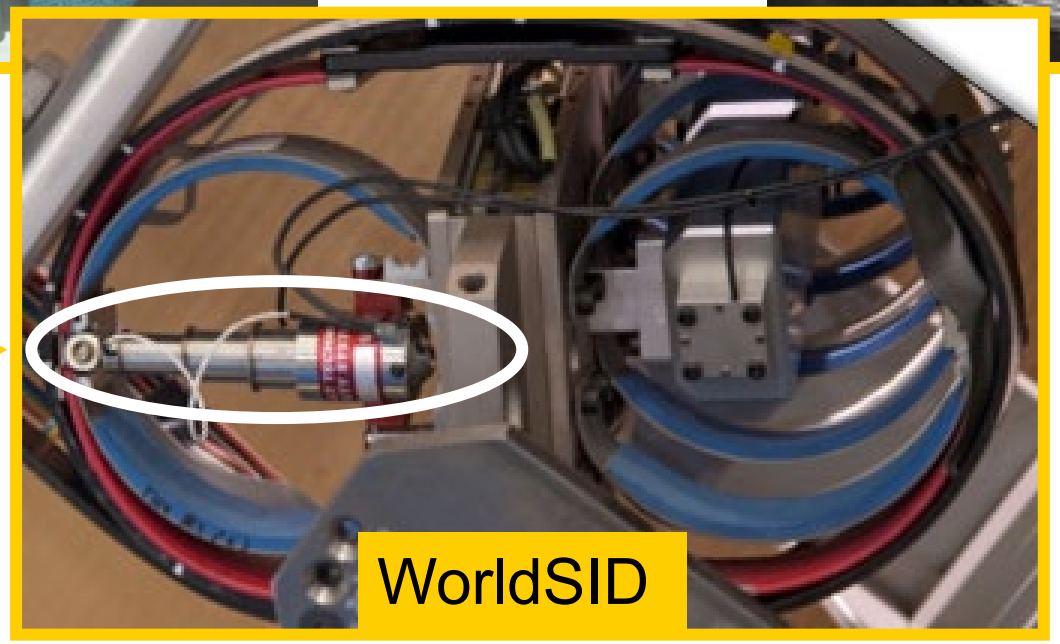
Heather Rhule

Single point chest deflection instrumentation

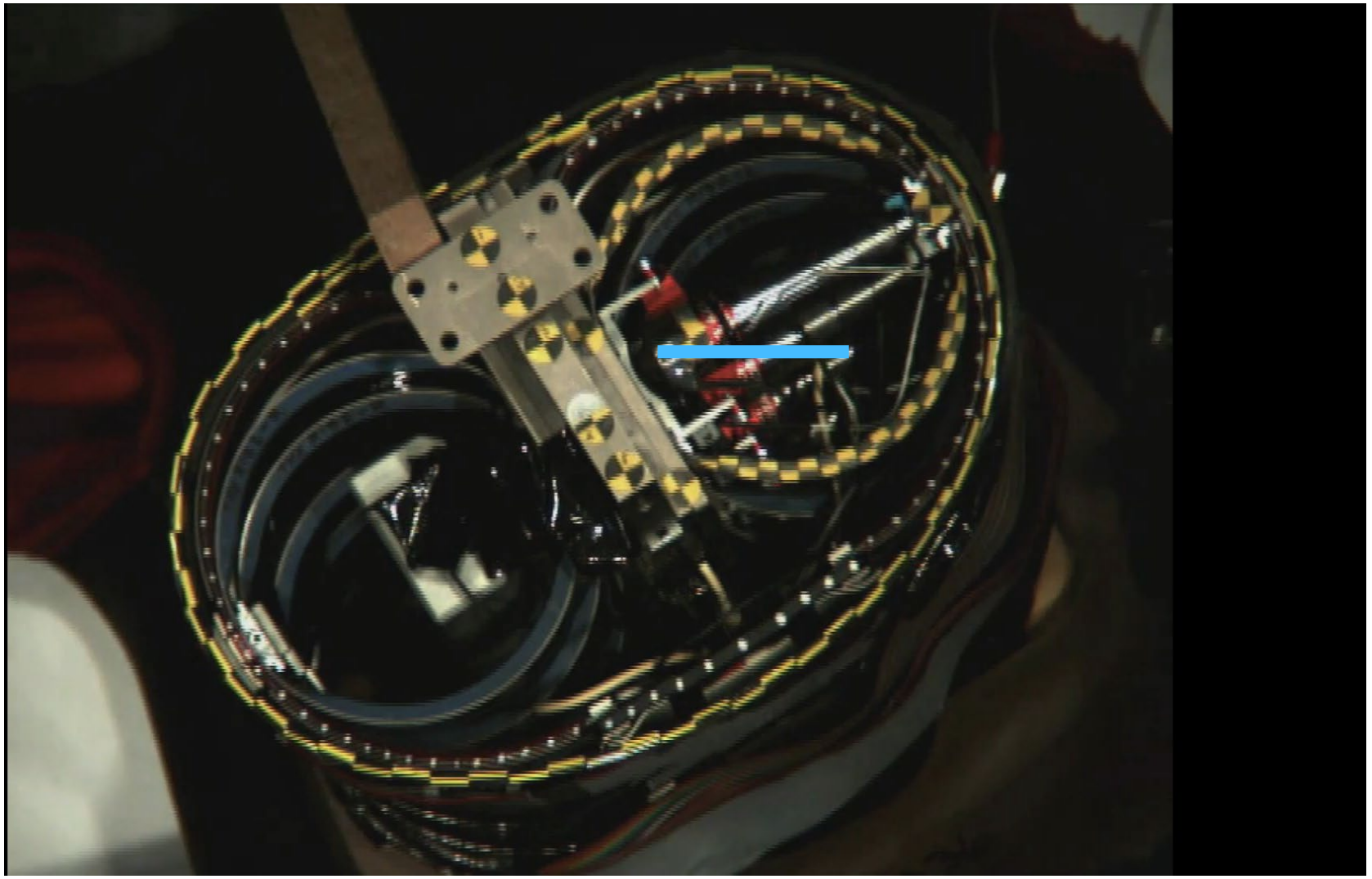
Single Point Chest Deflection Instrumentation



IR-TRACC
(Infrared Telescoping Rod for Assessment of Chest Compression)



Single Point Chest Deflection Instrumentation



Single-point deflection instrumentation will underestimate injury risk during oblique loading

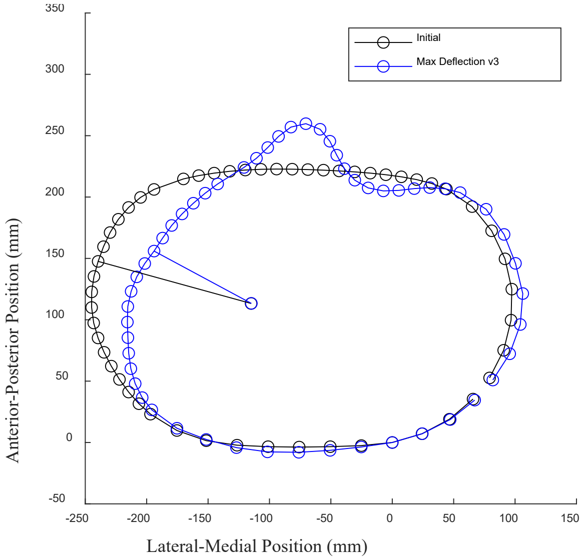
Oblique chest loading in crash tests

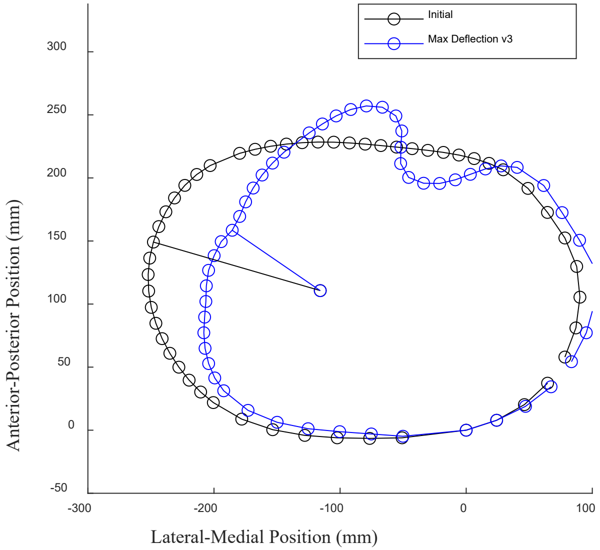
Oblique Chest Loading In Pole Crash Tests

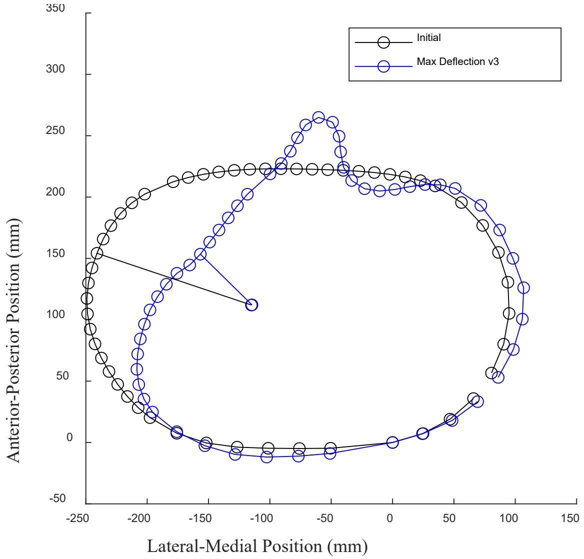
WorldSID-50M driver

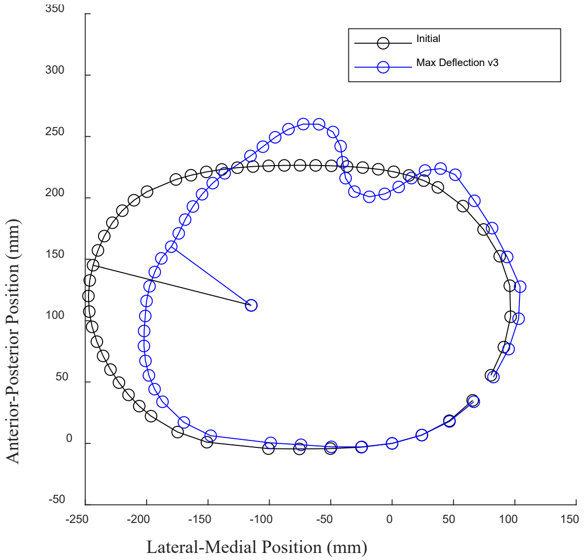
Initial position

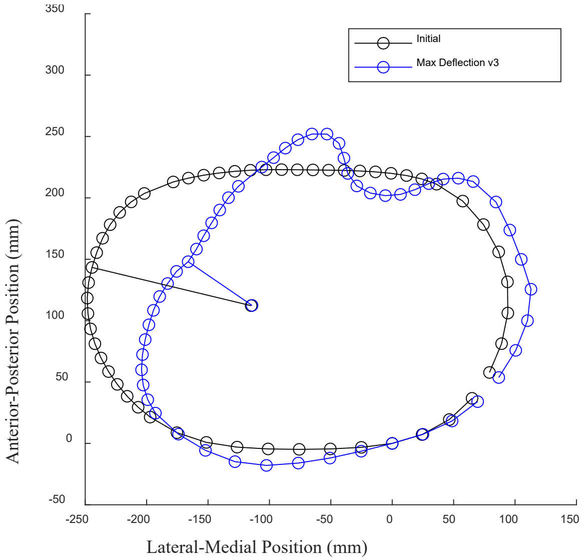
Max deflection









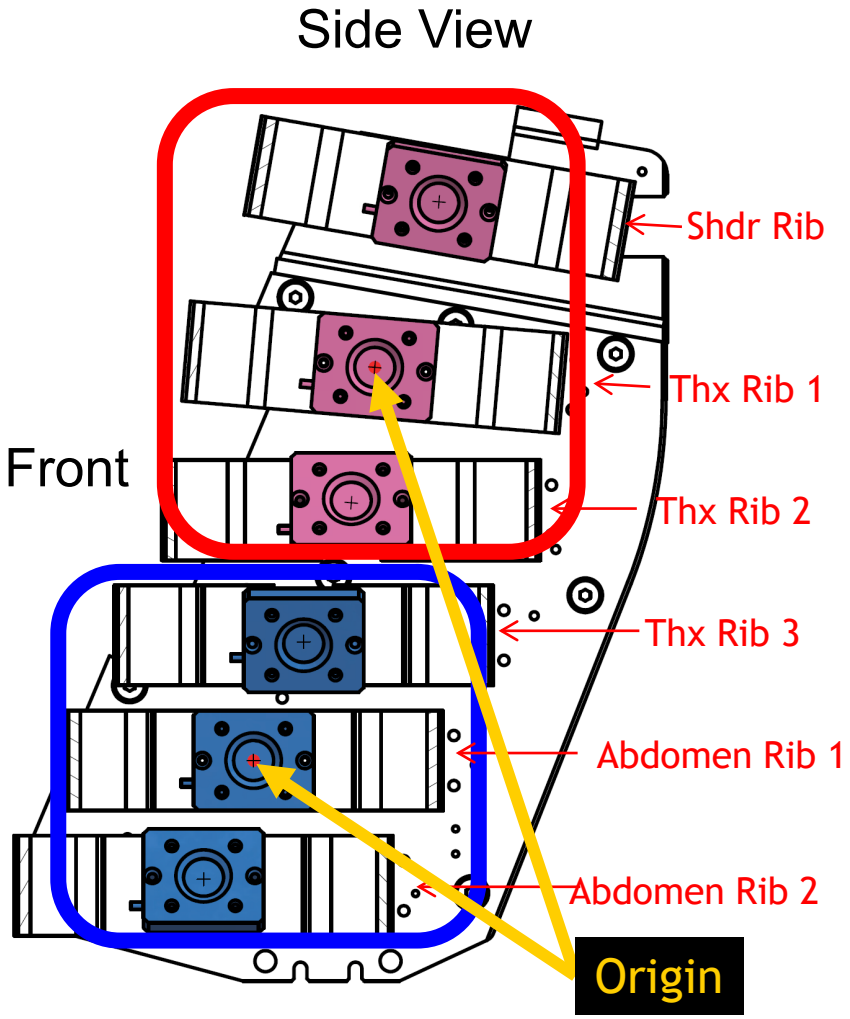


RibEye in WorldSID-50M

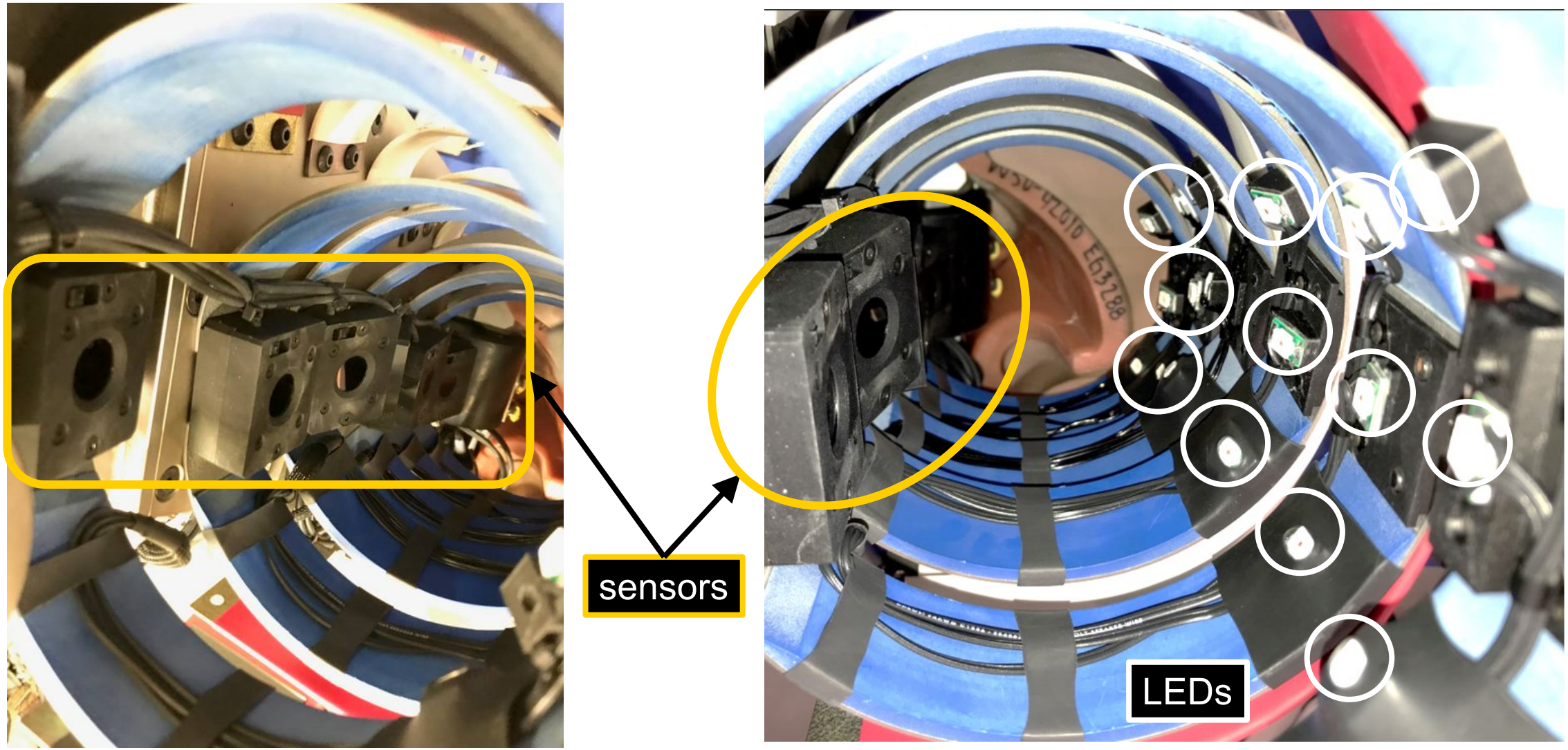
What is it?

RibEye Multi-point Optical Measurement System

- WorldSID-50M
  - X, Y, Z positions of 18 points
  - 2 sets of: [3 sensors & 9 LEDs]
    - Top set ~ red filters & red LEDs
    - Bottom set ~ blue filters & blue LEDs
    - Each set: Origin is at center of lens of middle sensor
  - 3 LEDs on each rib
  - All 3 sensors must sense light from an LED to measure its position



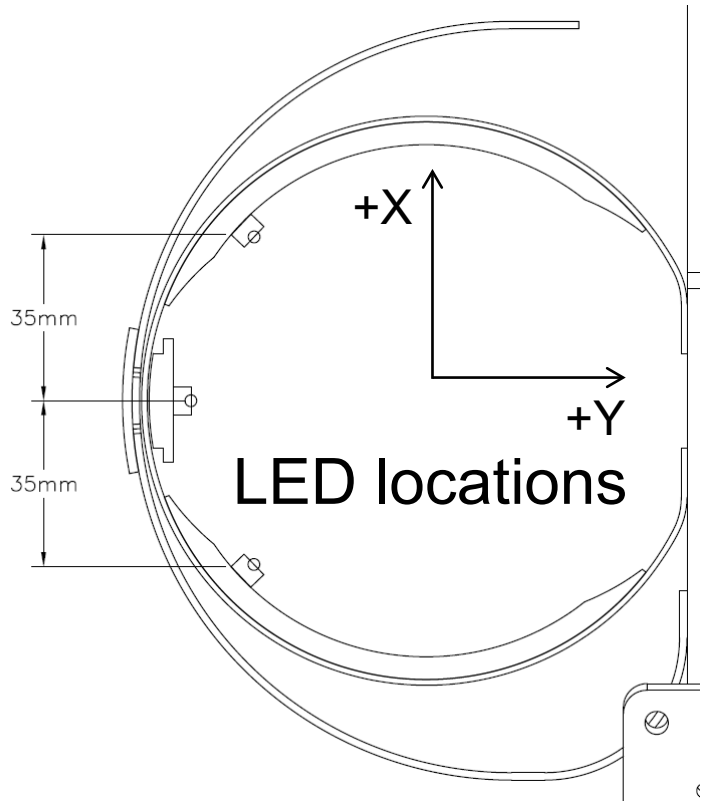
RibEye Multi-point Optical Measurement System



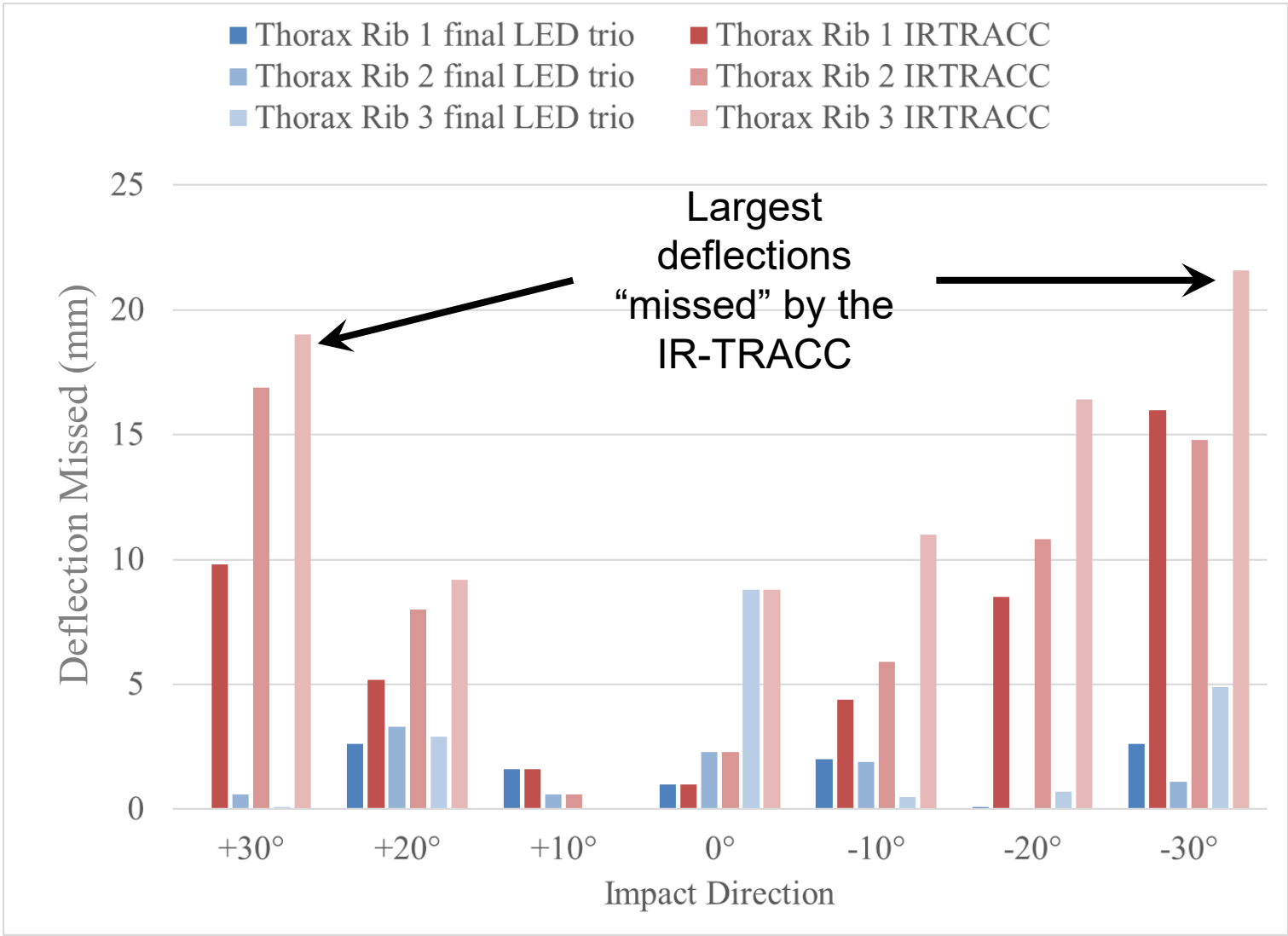
RibEye in WorldSID-50M

Optimal RibEye LED Trio

Optimal RibEye LED Trio



	Avg error (mm)	Max error (mm)
LED trio	1.1-1.4	9
Middle LED only	4.7	23



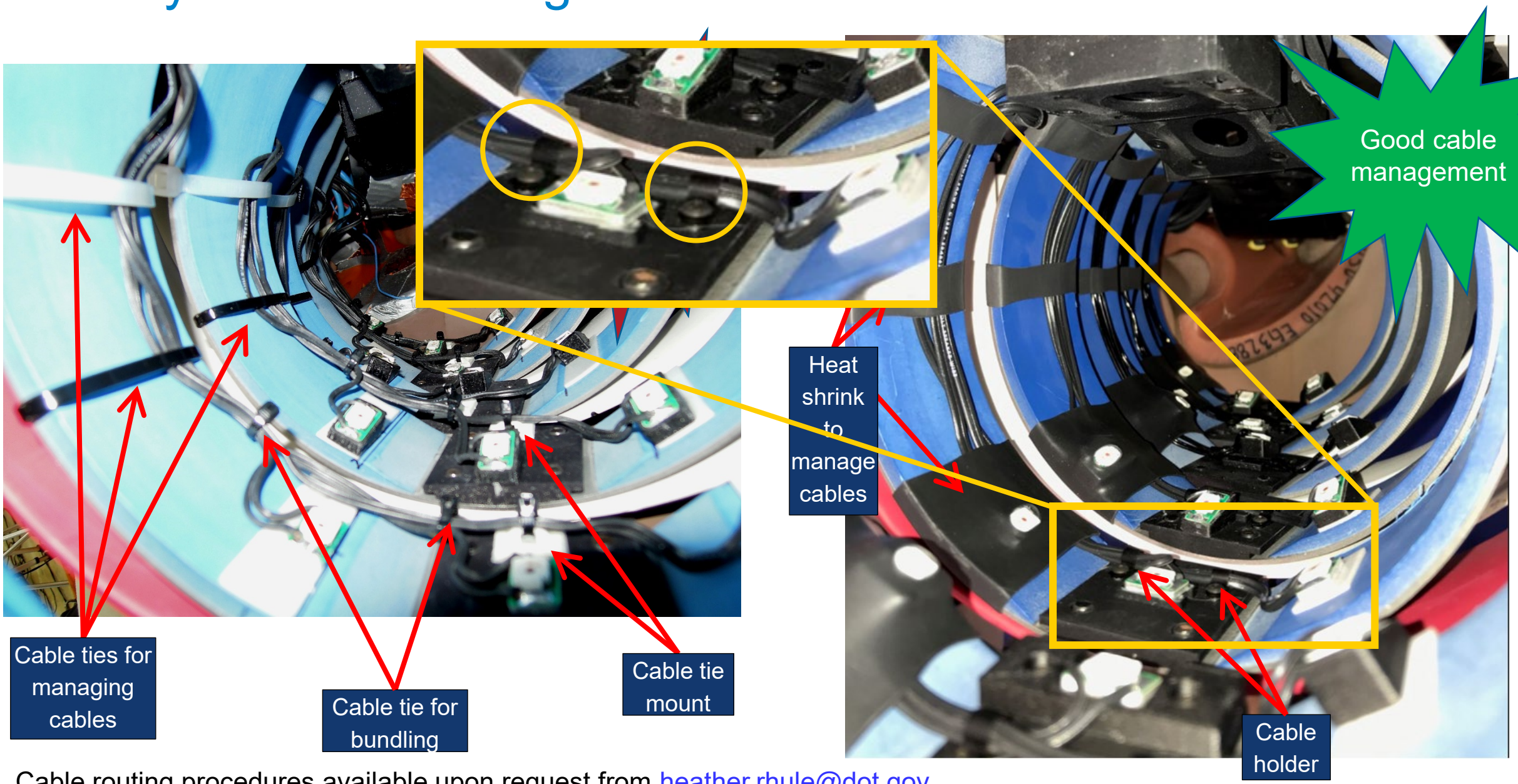
"Determination of Optimal RibEye LED Locations in The WorldSID 50th Percentile Male Dummy"

- DOT HS 812 758 https://rosap.ntl.bts.gov/view/dot/41937 https://www.regulations.gov/search?filter=NHTSA-2019-0108

RibEye in WorldSID-50M

Results of our testing

RibEye Cable Routing

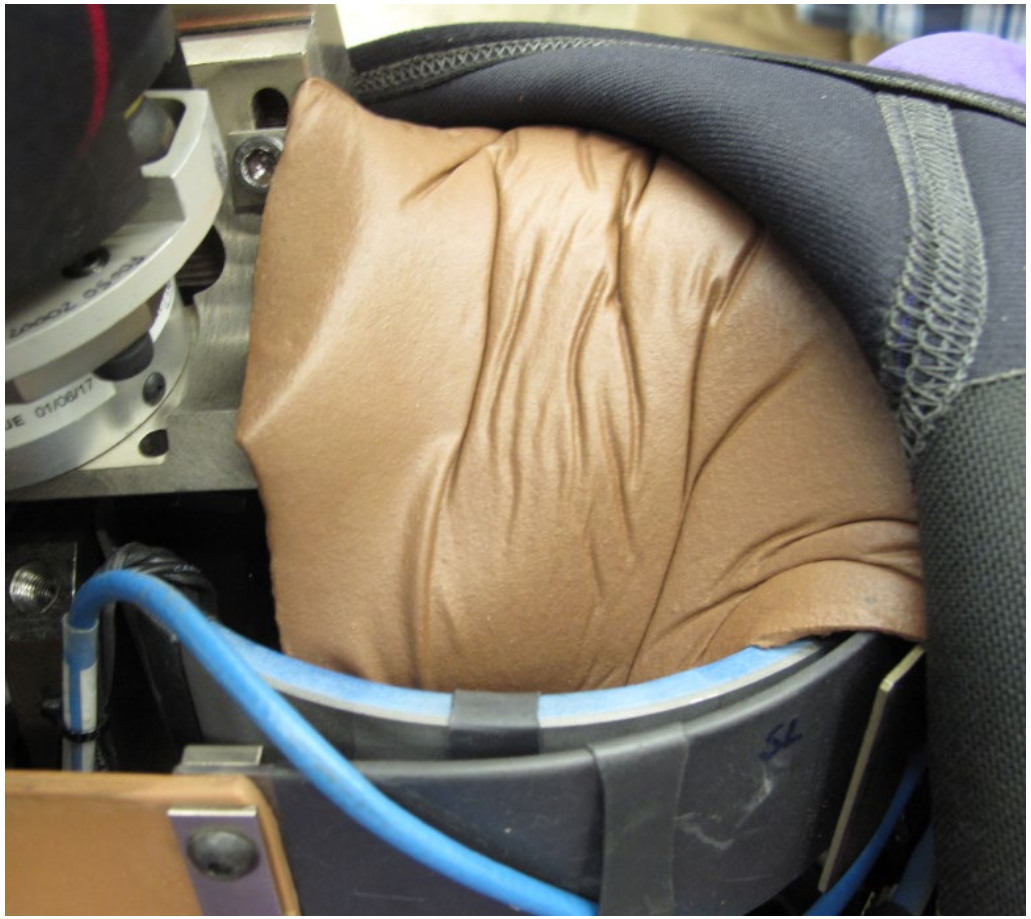


Cable routing procedures available upon request from heather.rhule@dot.gov

Shoulder Pad Design Change

Original shoulder pad

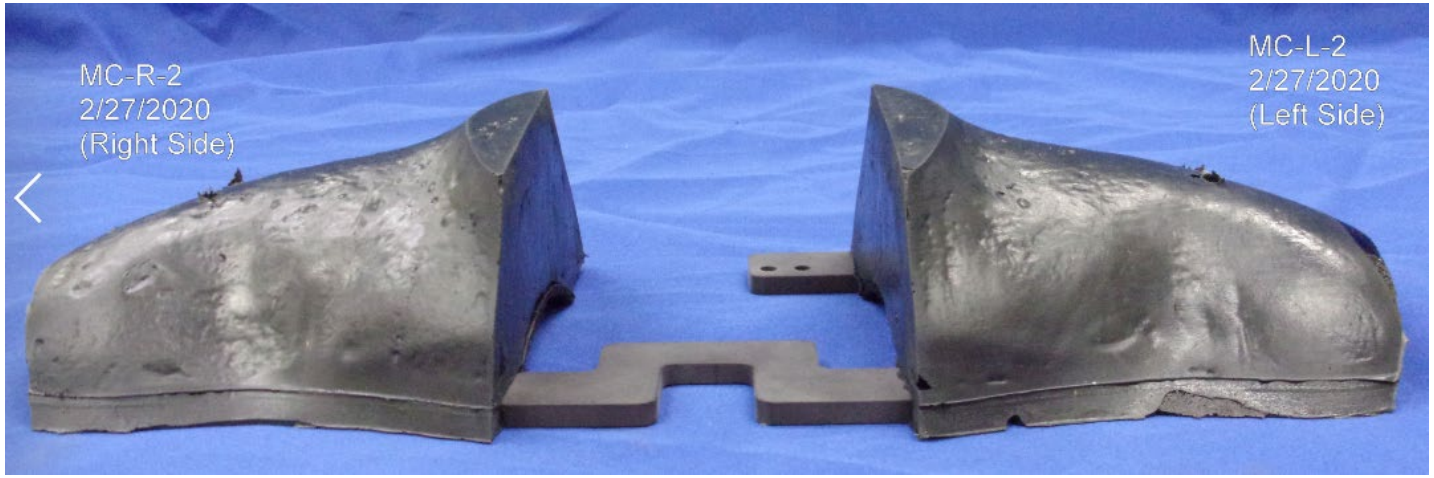
Post-crash – shoulder pad lodged in shoulder rib, blocking LED signals



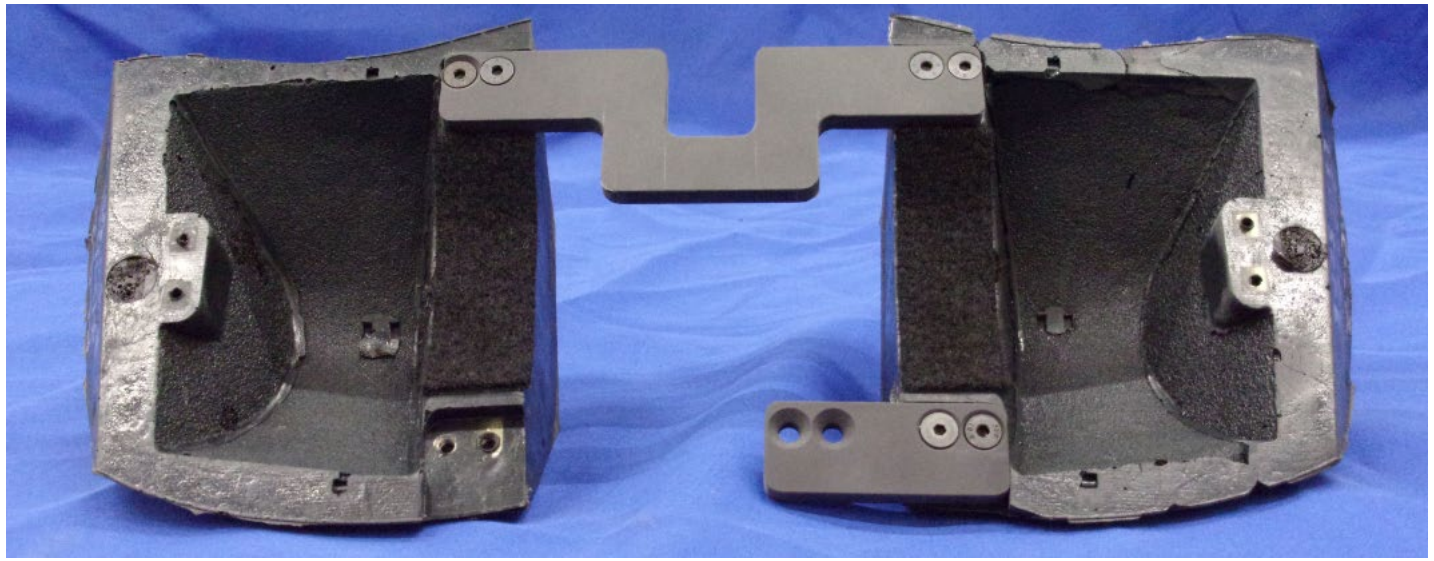
Shoulder Pad Design Change

Designed to prevent pad from lodging inside shoulder rib

New shoulder pad



Front view



Bottom view

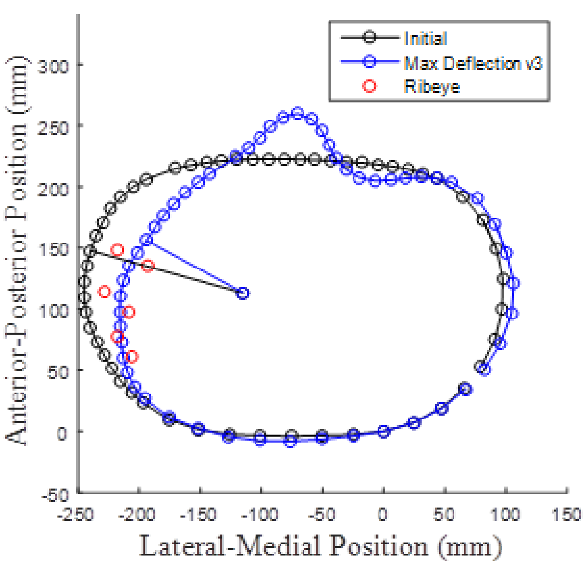
Shoulder pad drawings and CAD models: https://www.nhtsa.gov/file-downloads?p=nhtsa/downloads/WorldSID-50M/

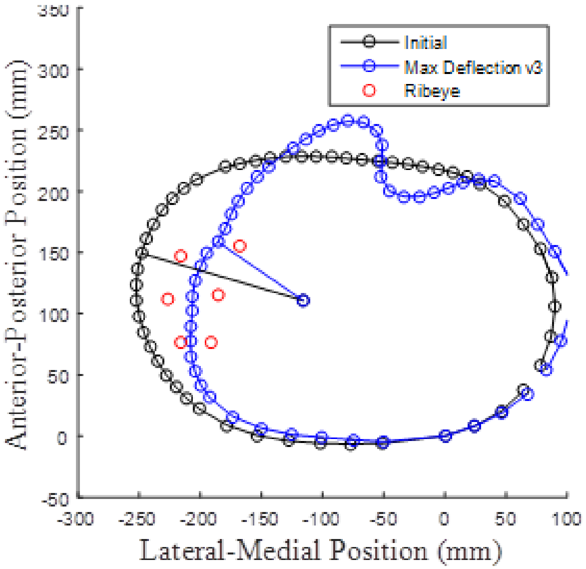
Oblique Chest Loading In Pole Crash Tests

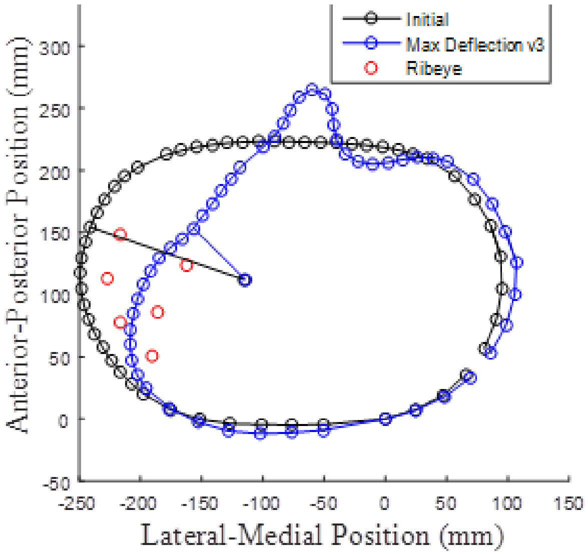
WorldSID-50M driver

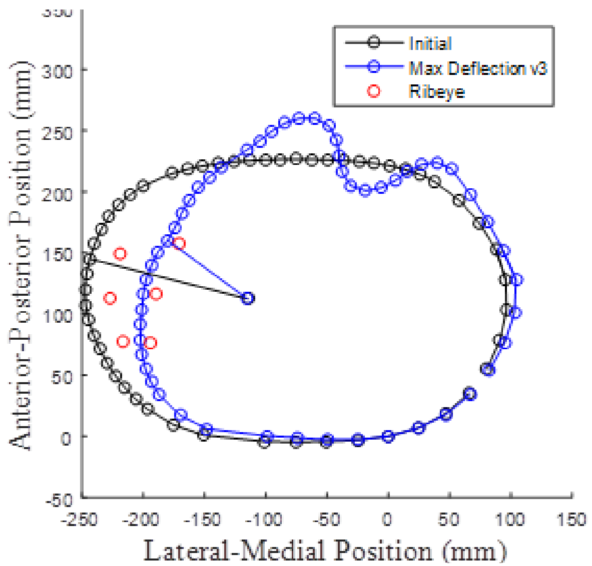
Initial position

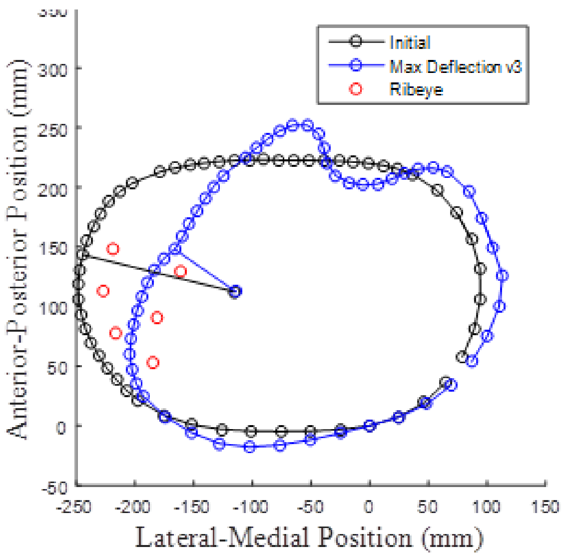
Max deflection









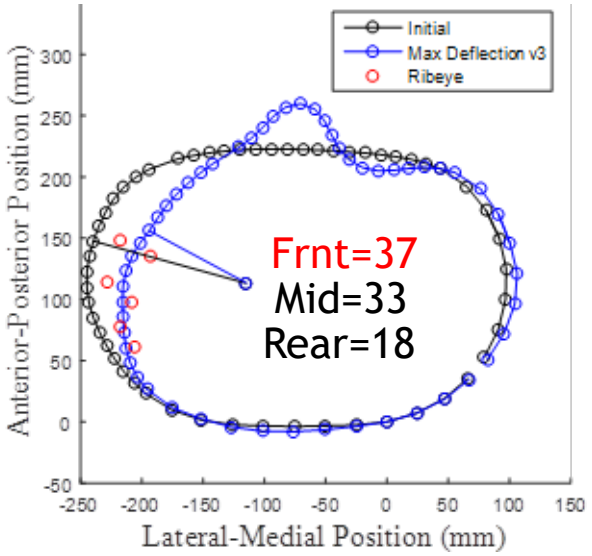


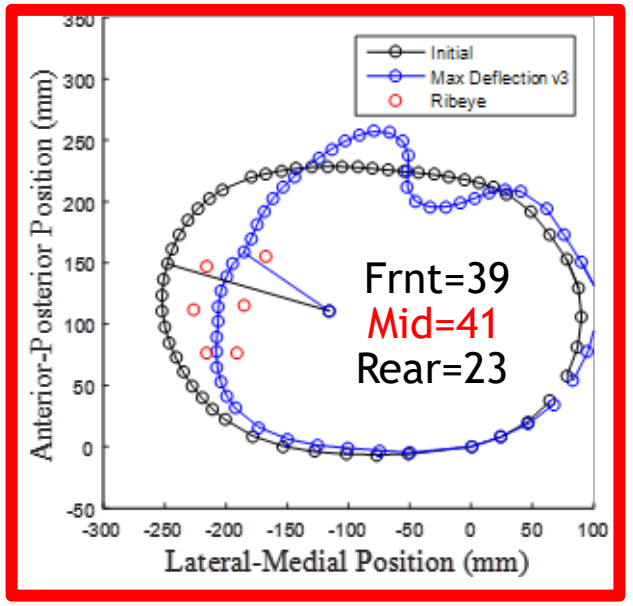
Oblique Chest Loading In Pole Crash Tests

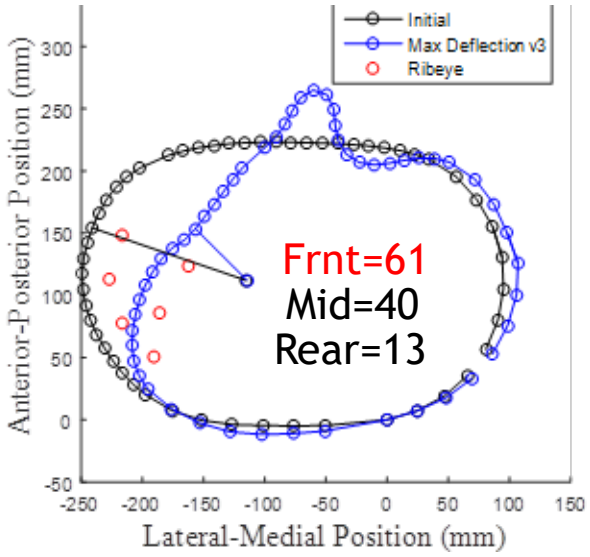
WorldSID-50M driver

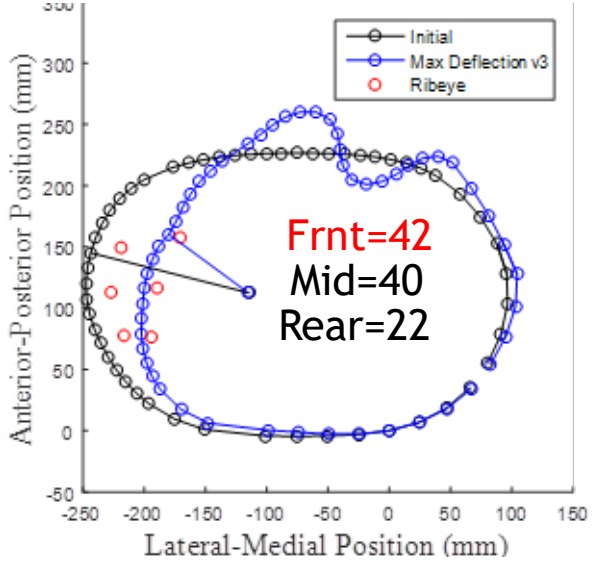
Initial position

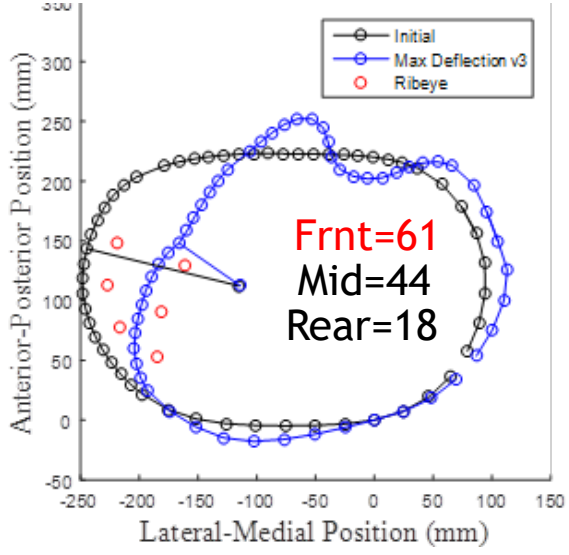
Max deflection









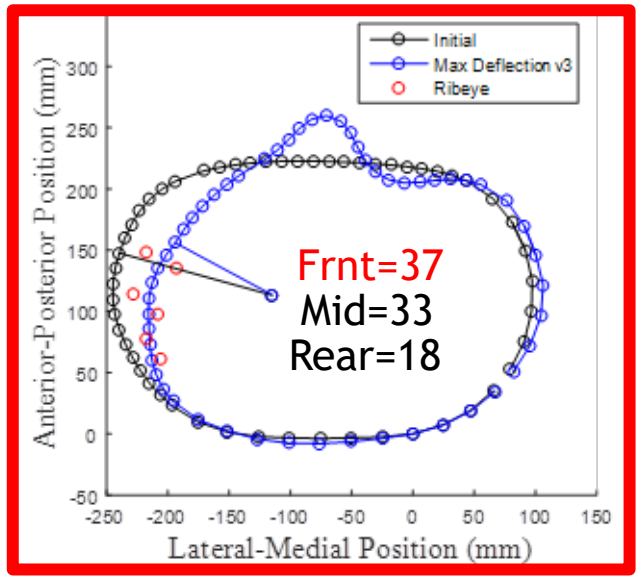


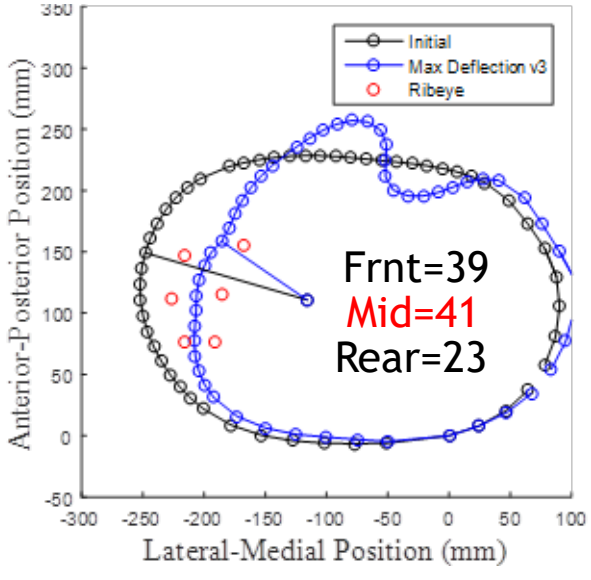
Oblique Chest Loading In Pole Crash Tests

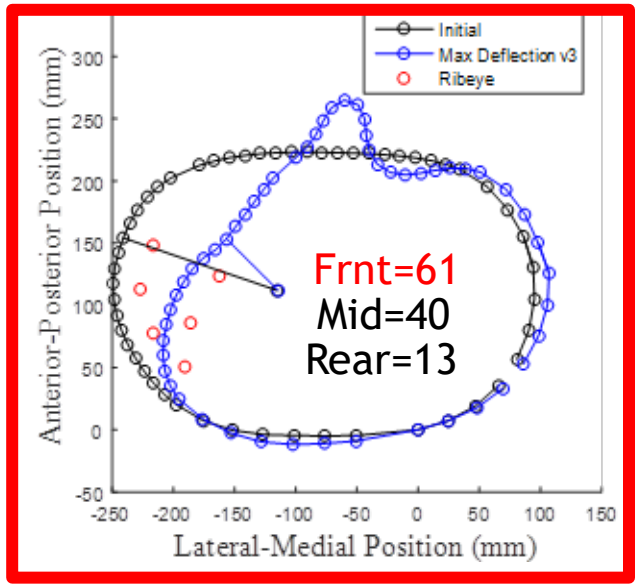
WorldSID-50M driver

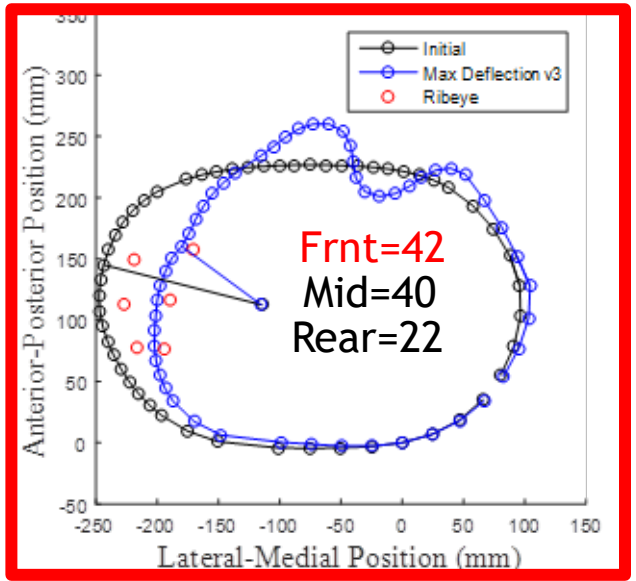
Initial position

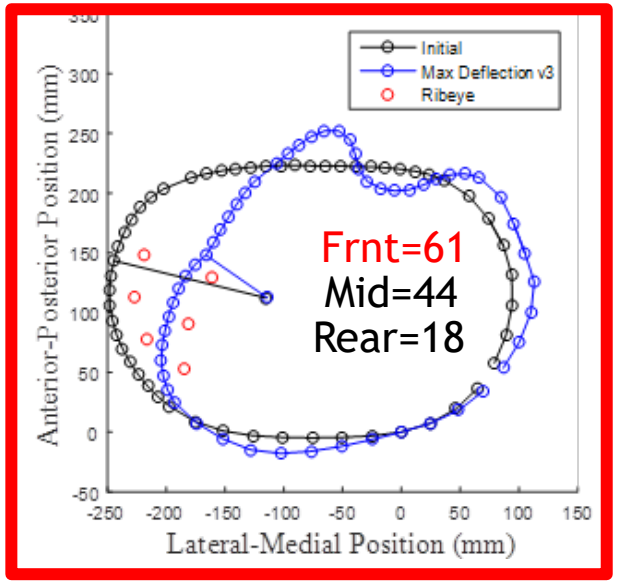
Max deflection









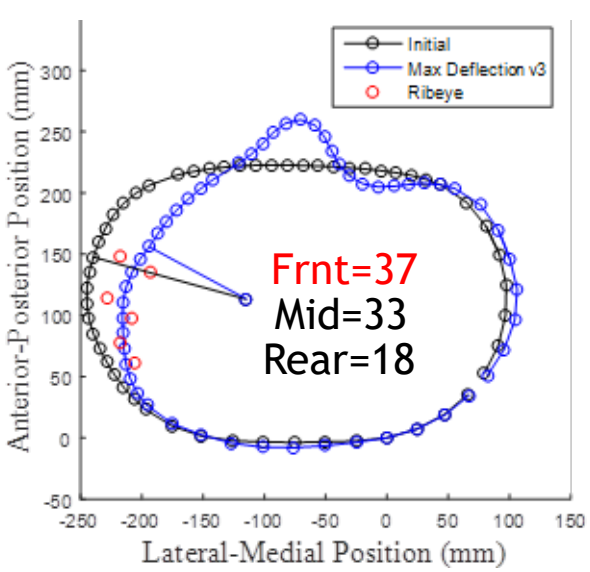


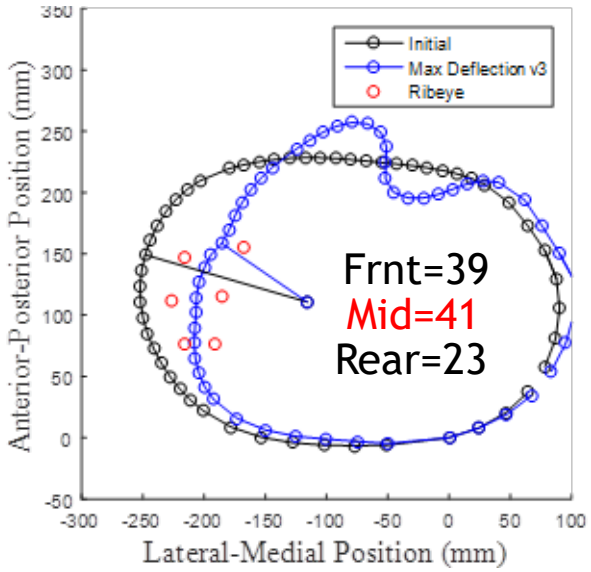
Oblique Chest Loading In Pole Crash Tests

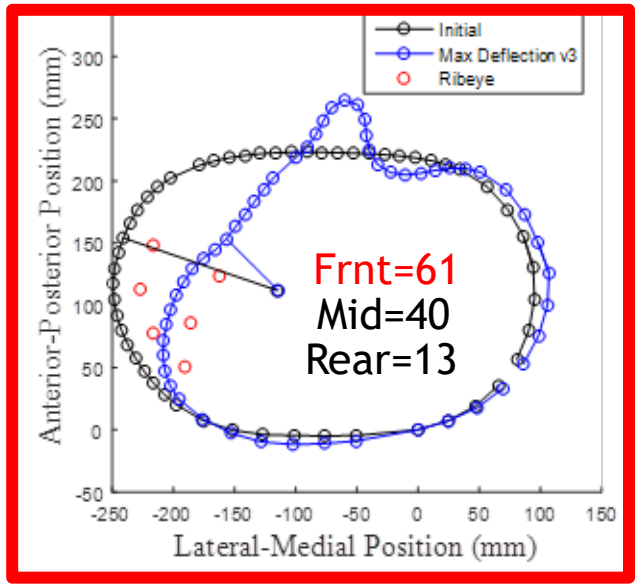
WorldSID-50M driver

Initial position

Max deflection

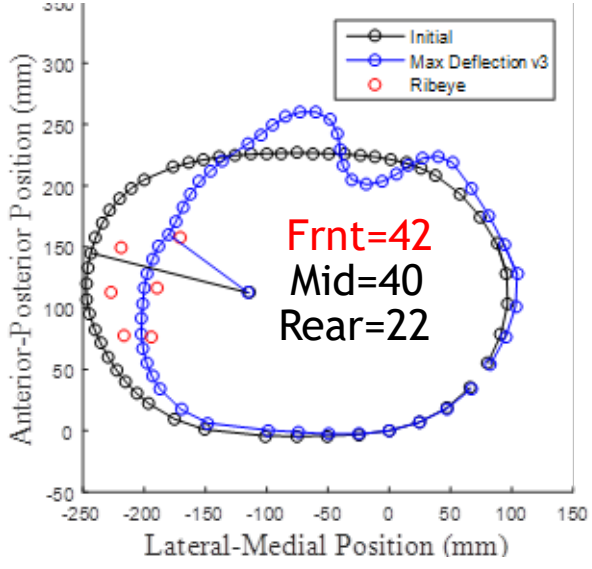


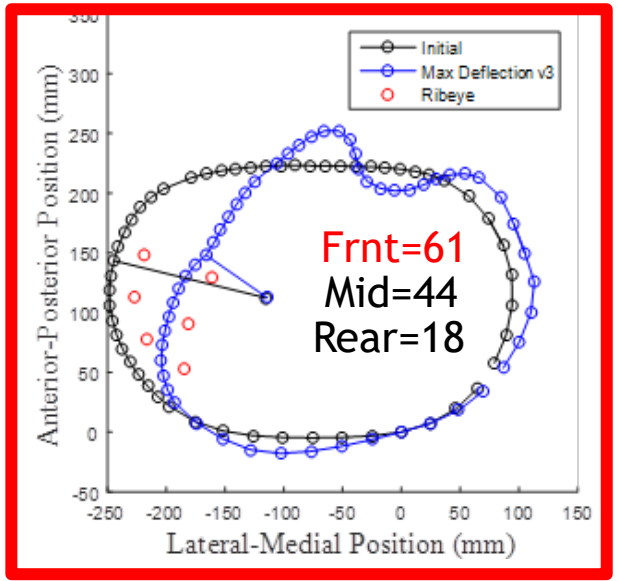




Front LED, 61 mm:
Risk AIS 3+ = 64%

Middle LED, 40-44 mm:
Risk AIS 3+ = 8%



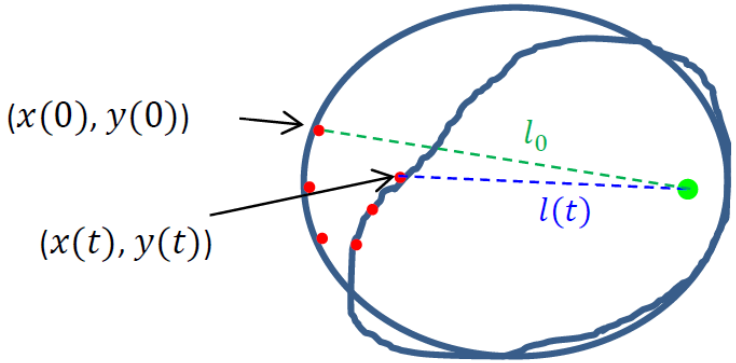


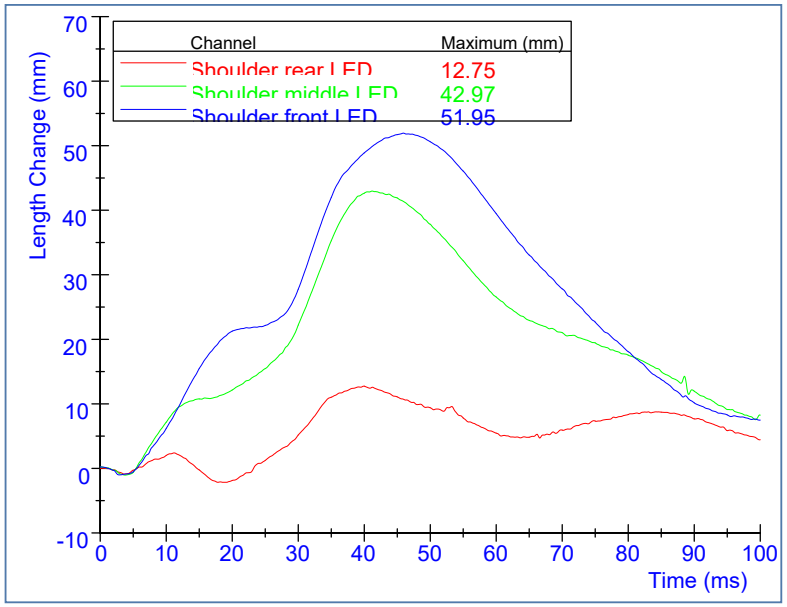
RibEye in WorldSID-50M

RibEye data plots

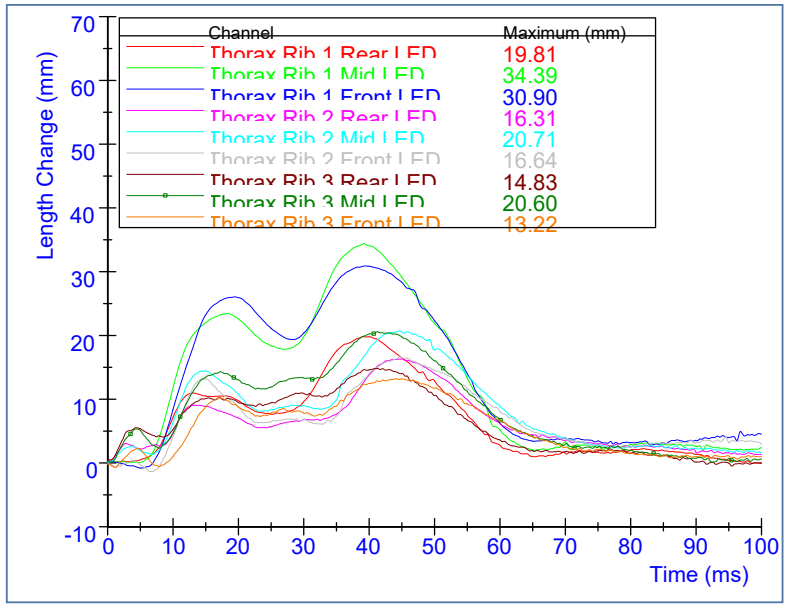
RibEye Data Plots – Length Change

210114 Pole test

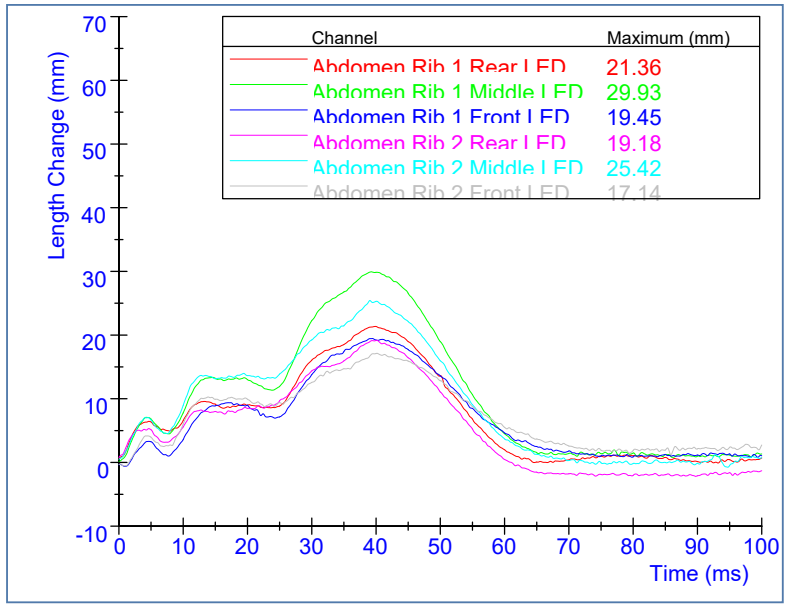




Shoulder



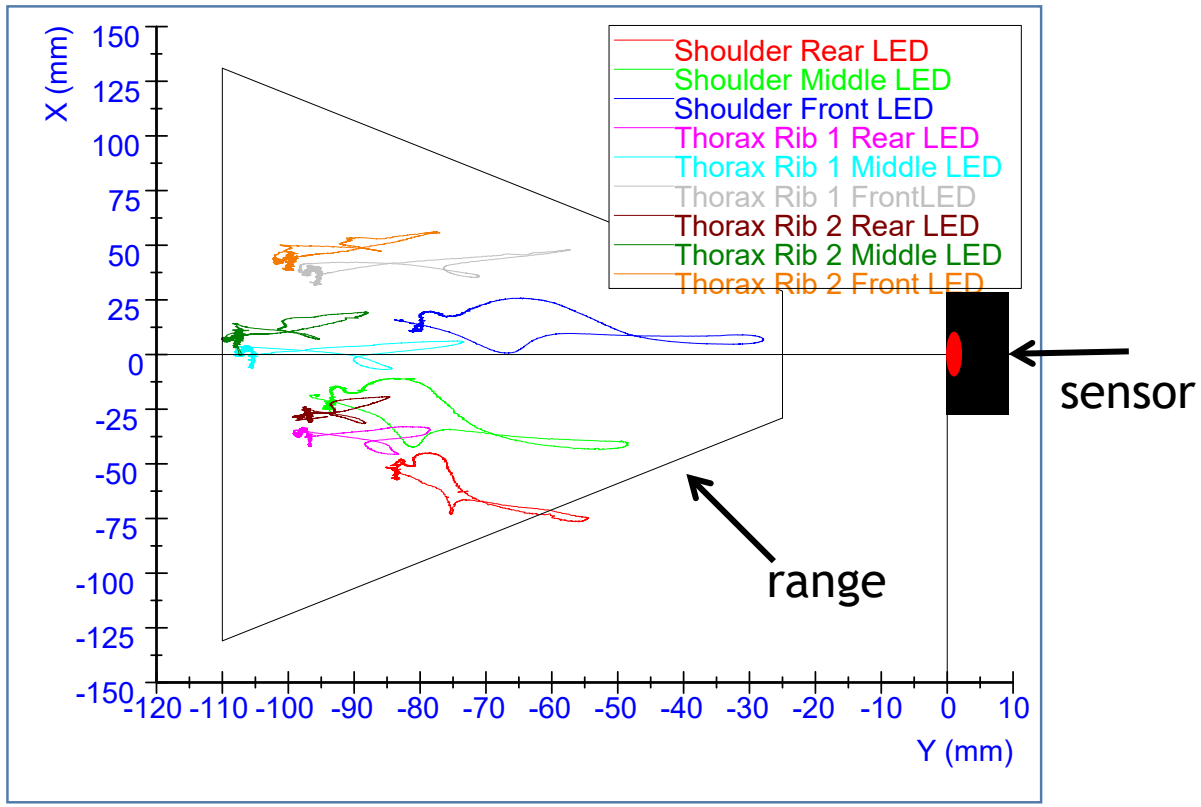
Thorax



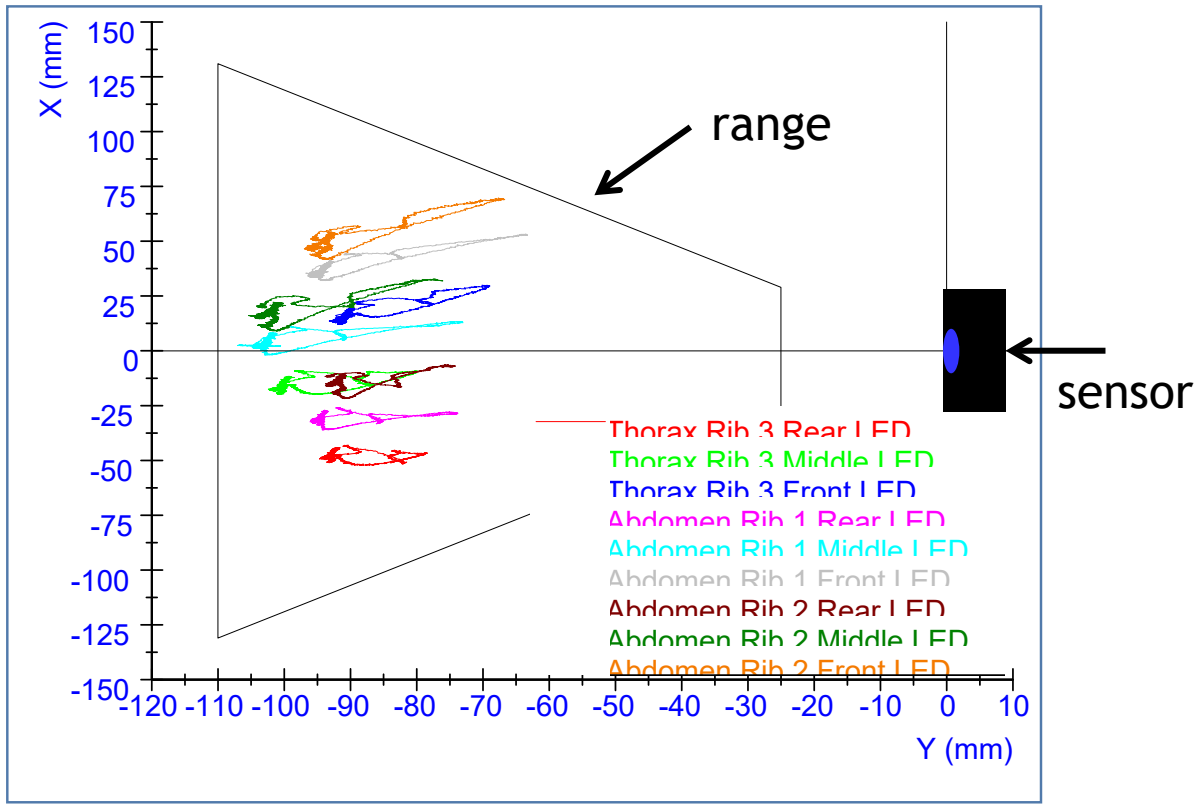
Abdomen

RibEye Data Plots – X vs. Y Position

210114 Pole test



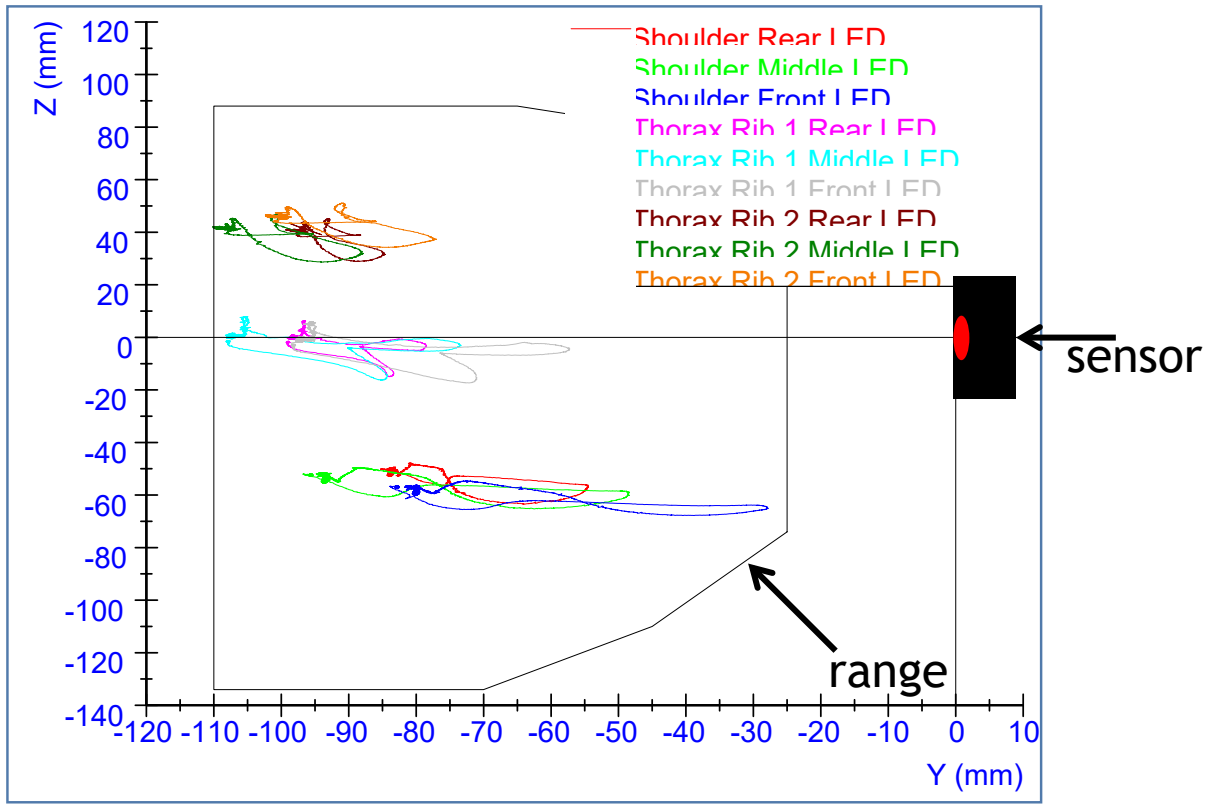
Upper group



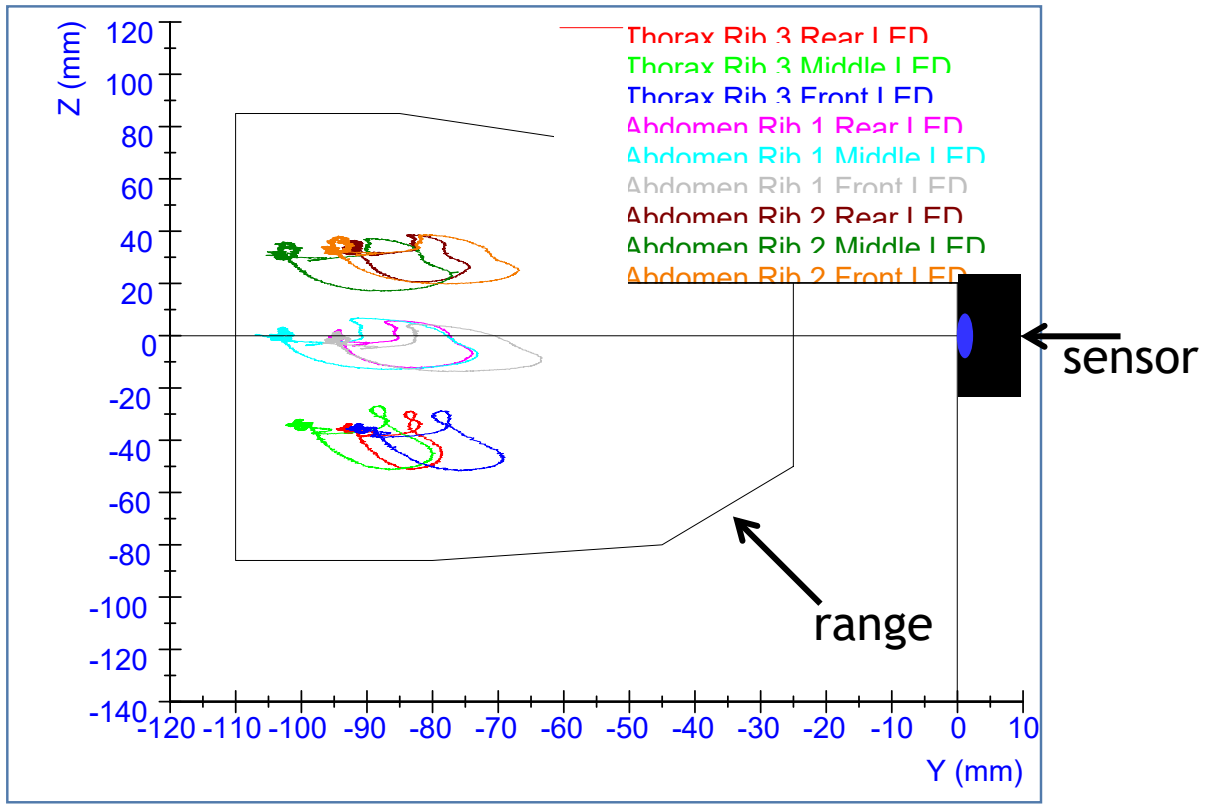
Lower group

RibEye Data Plots – Y vs. Z Position

210114 Pole test



Upper group



Lower group

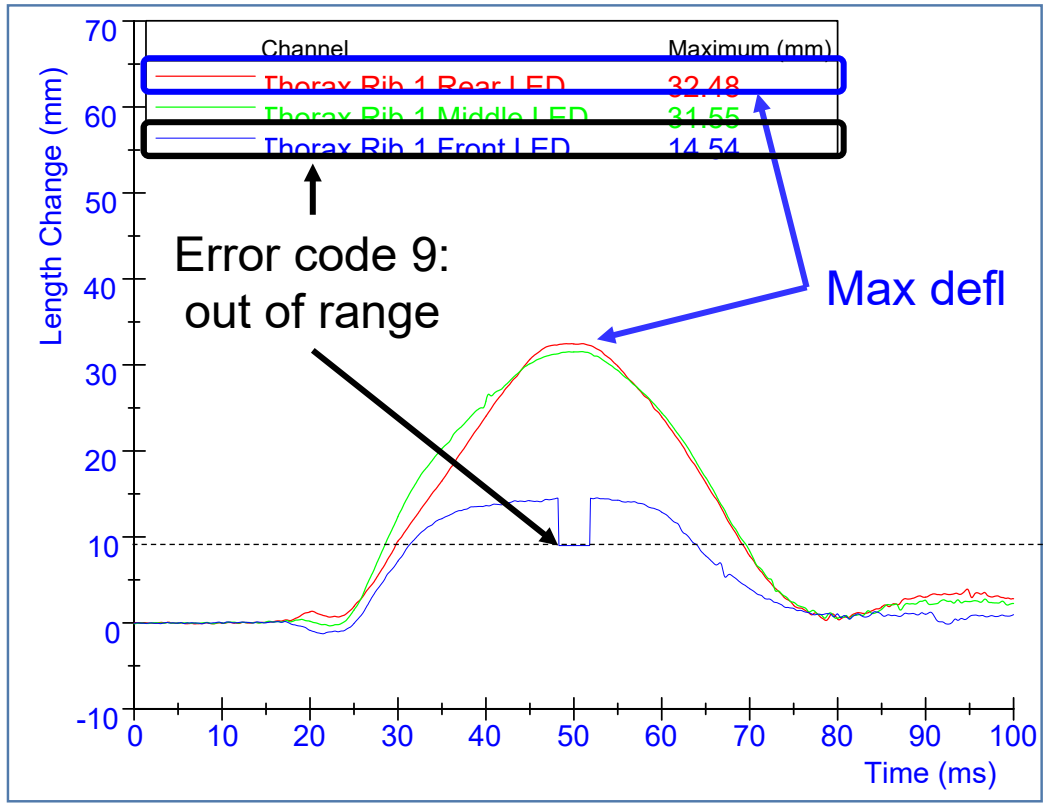
RibEye in WorldSID-50M

Examples of error codes

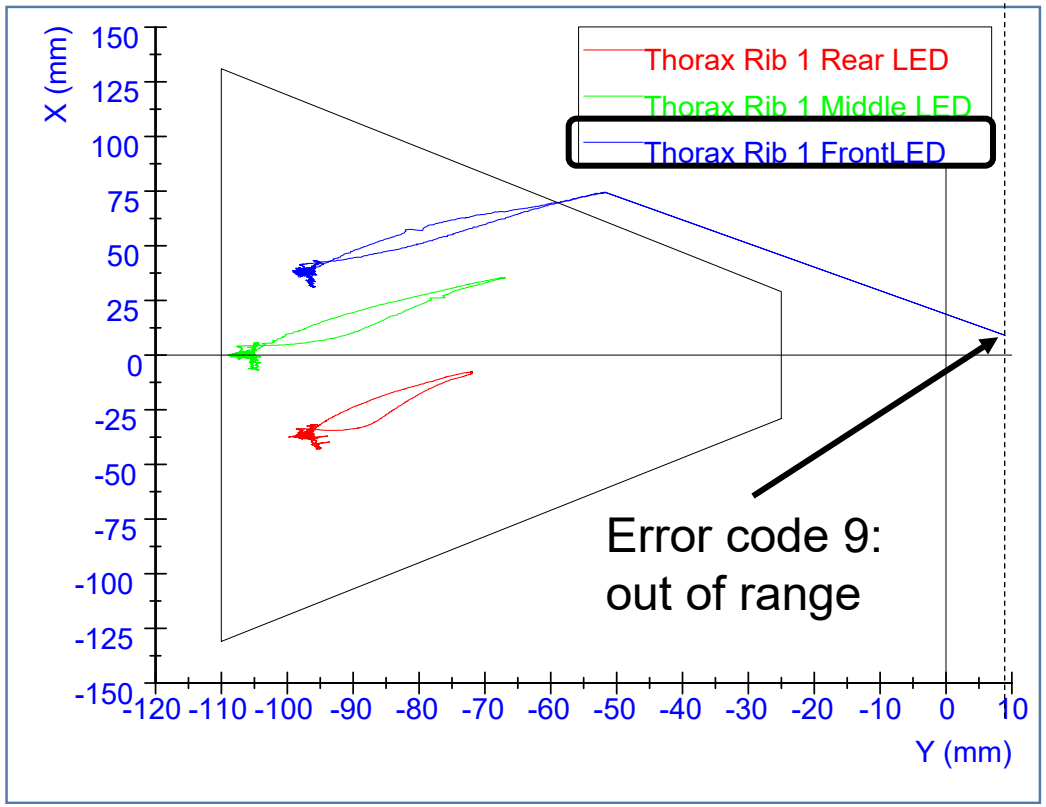
Example 1: Data out of range

201022 Pole test – Thorax rib 1

Length Change

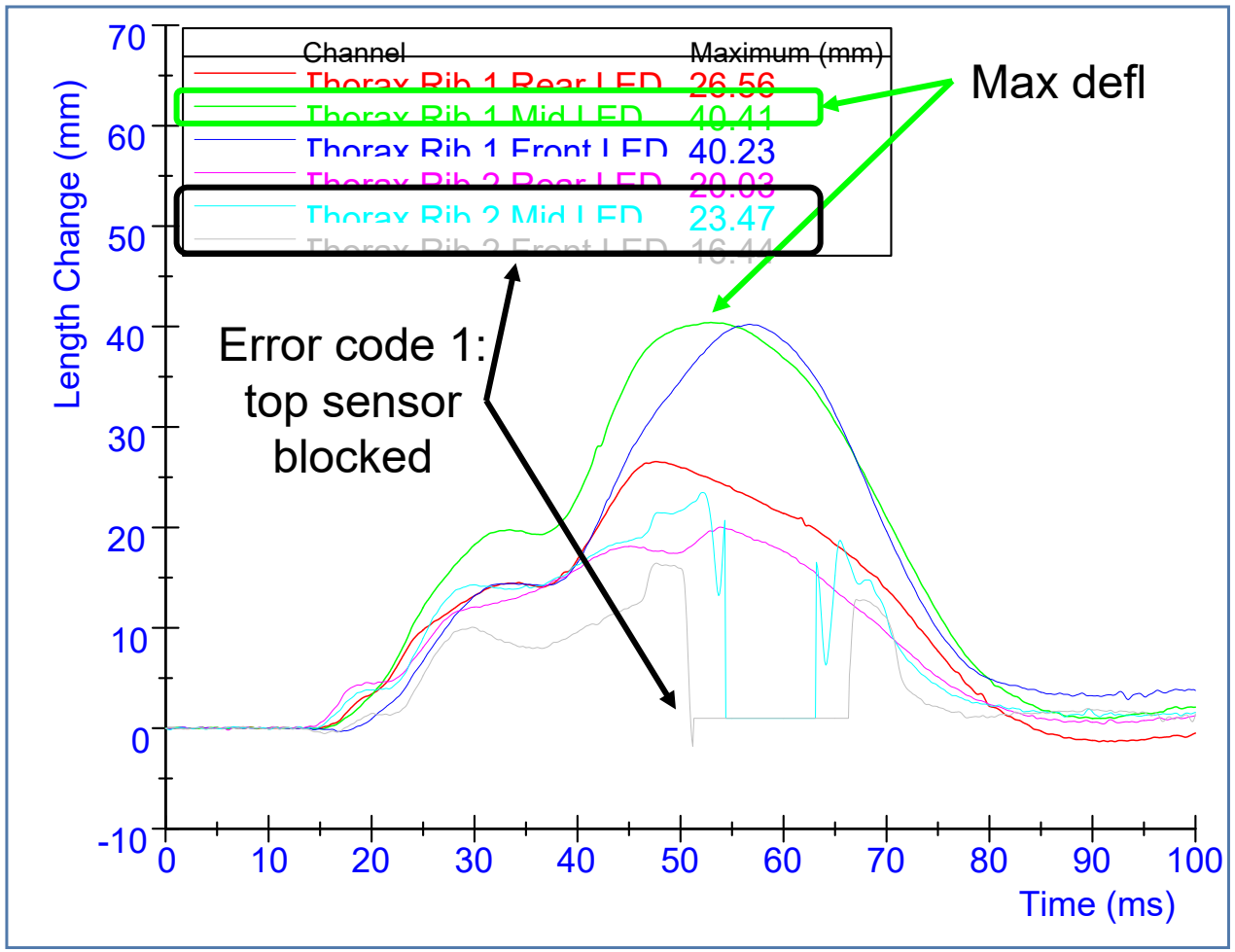


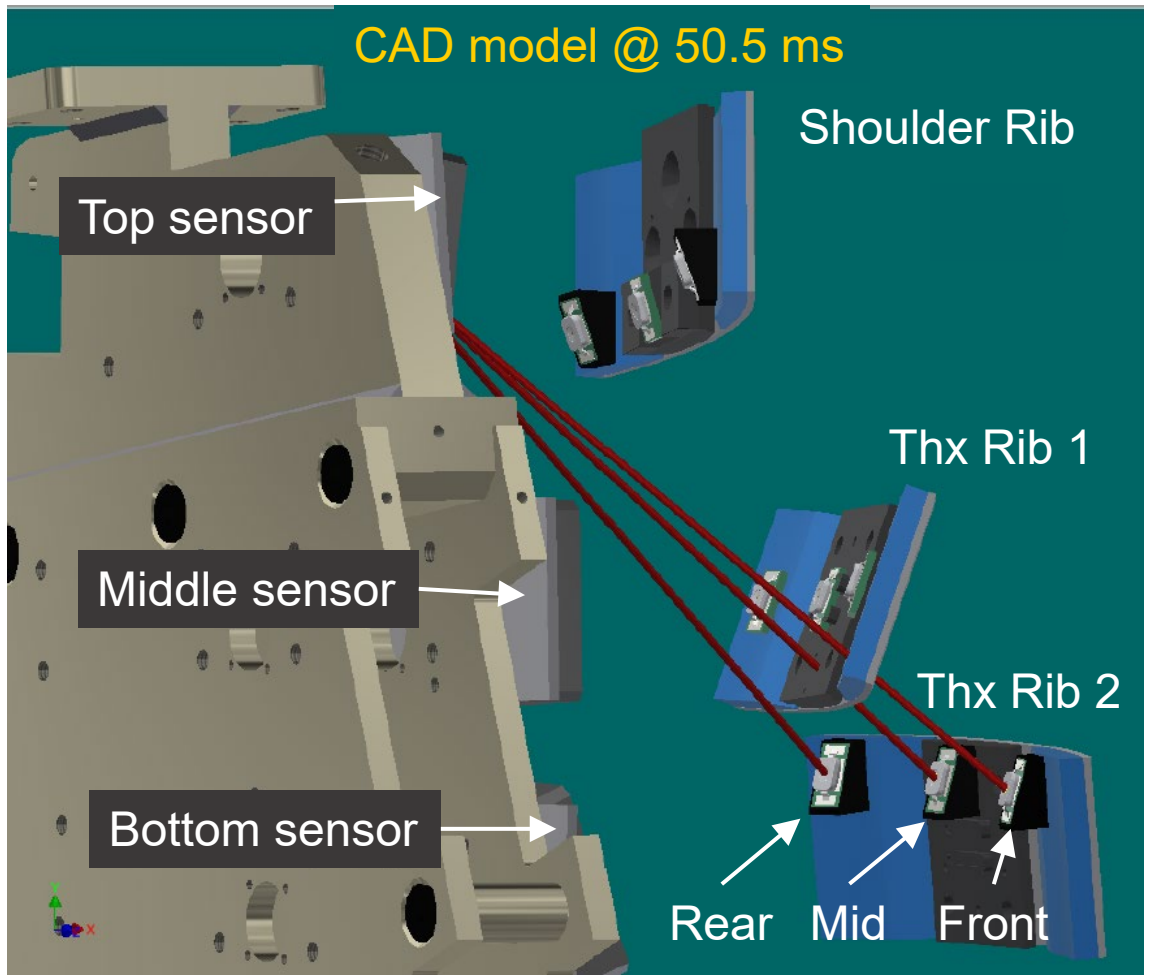
X vs. Y Position



Example 2: One thorax rib blocks another thorax rib

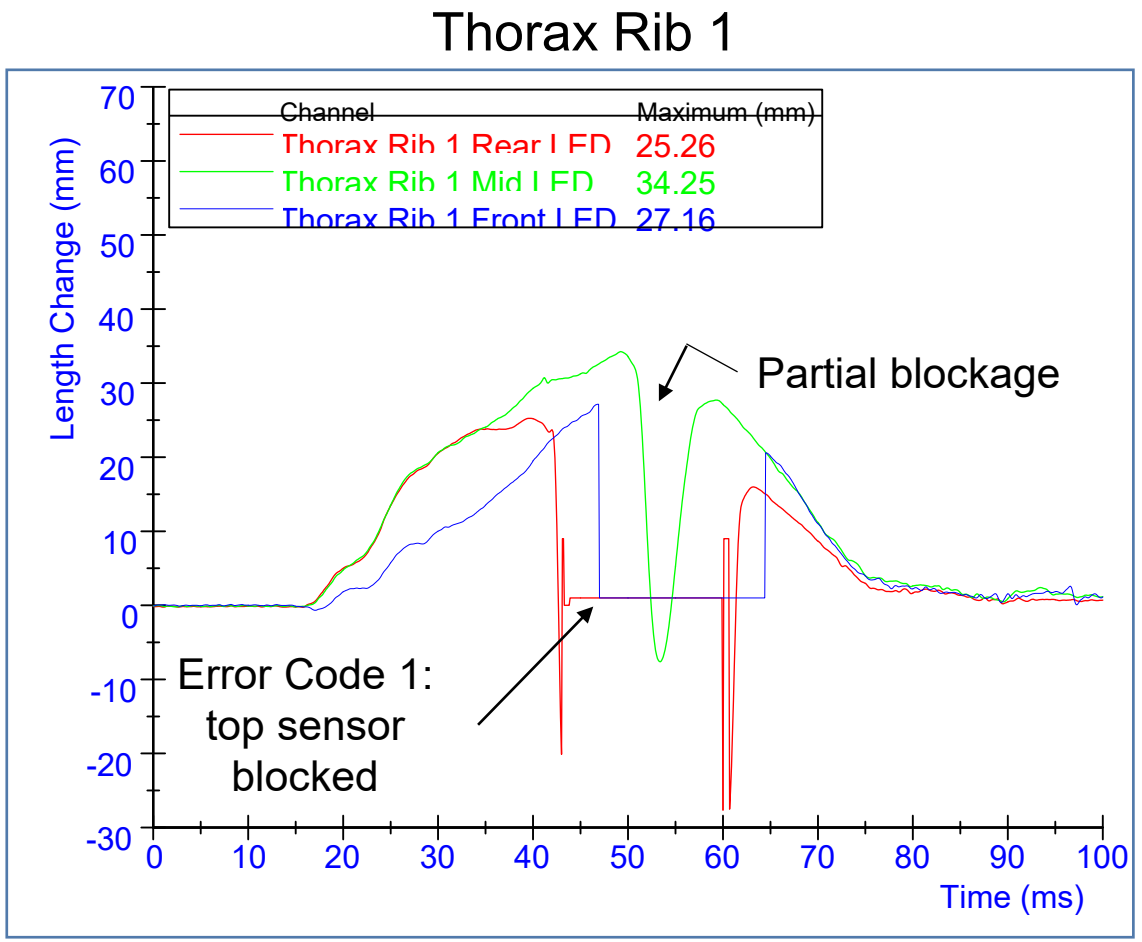
210408 Pole test – Thorax Ribs

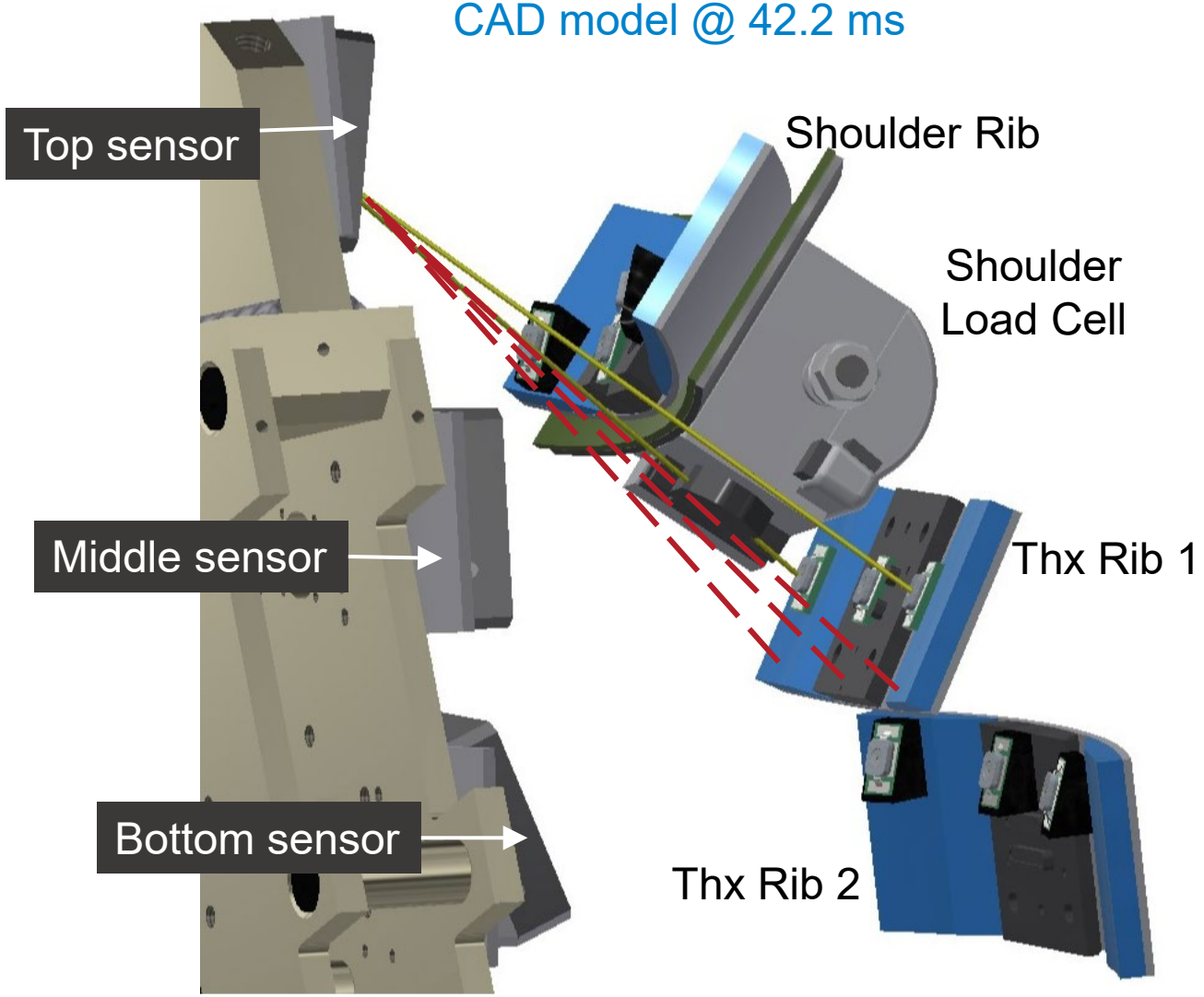




Example 3: Shoulder rib blocks Thorax Rib 1

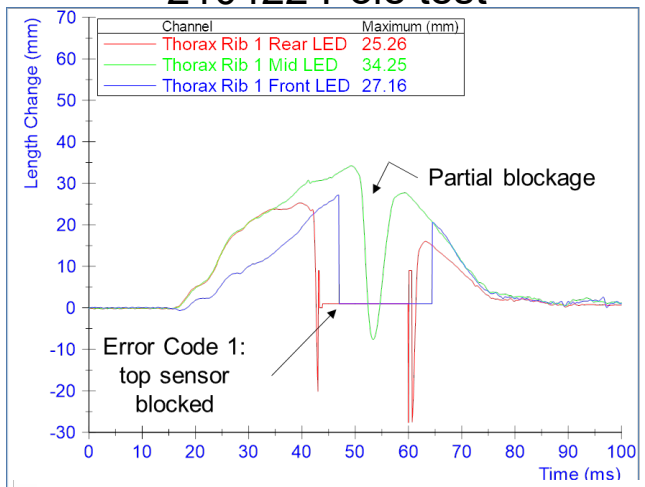
210422 Pole test



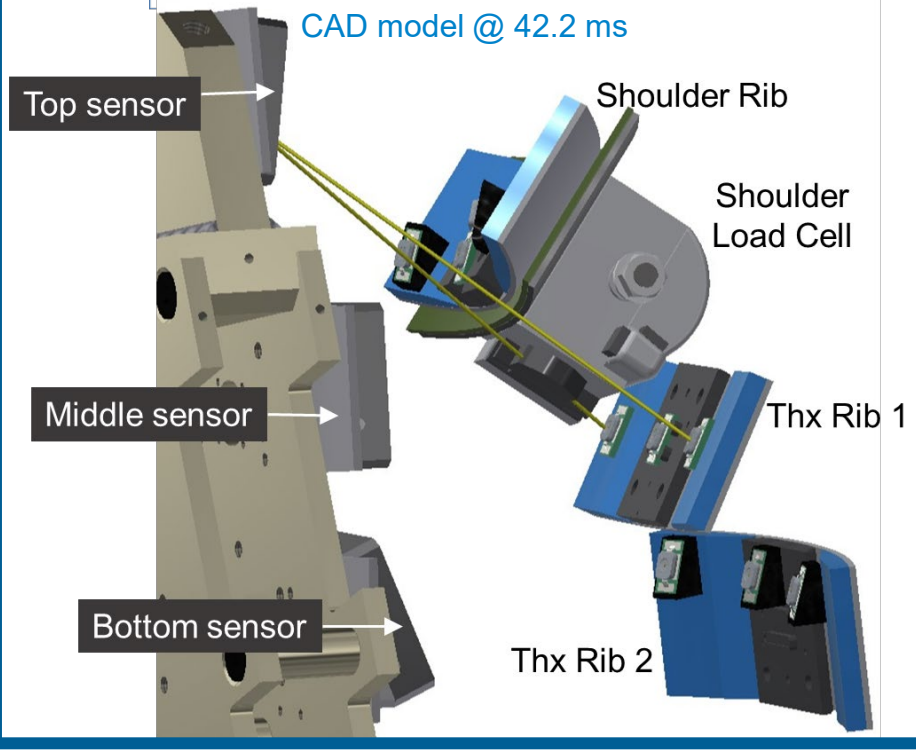


Example 4: Shoulder rib DOES NOT block Thorax Rib 1

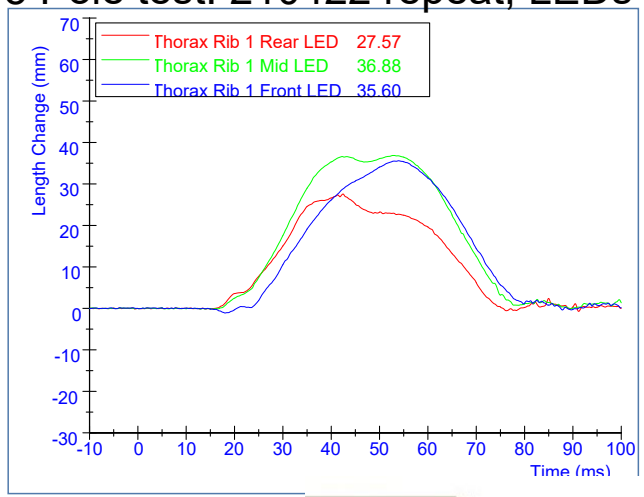
210422 Pole test



CAD model @ 42.2 ms

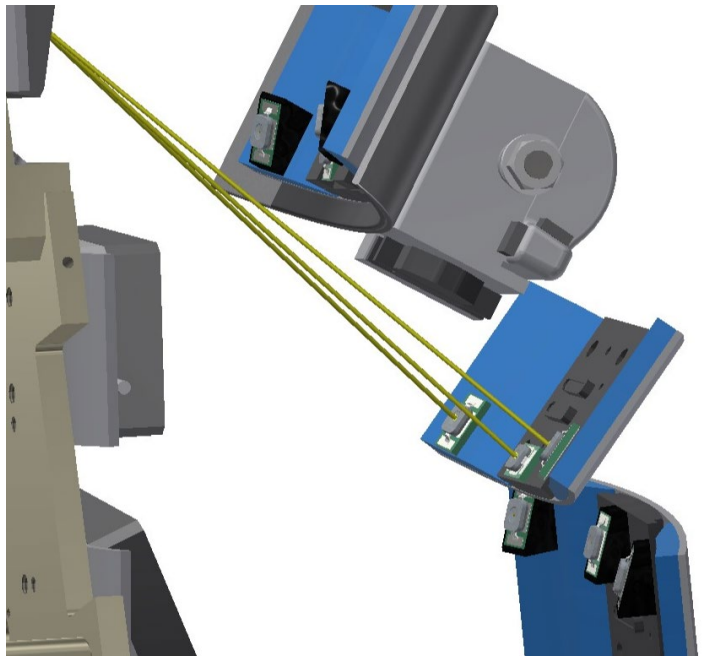


210915 Pole test: 210422 repeat, LEDs moved

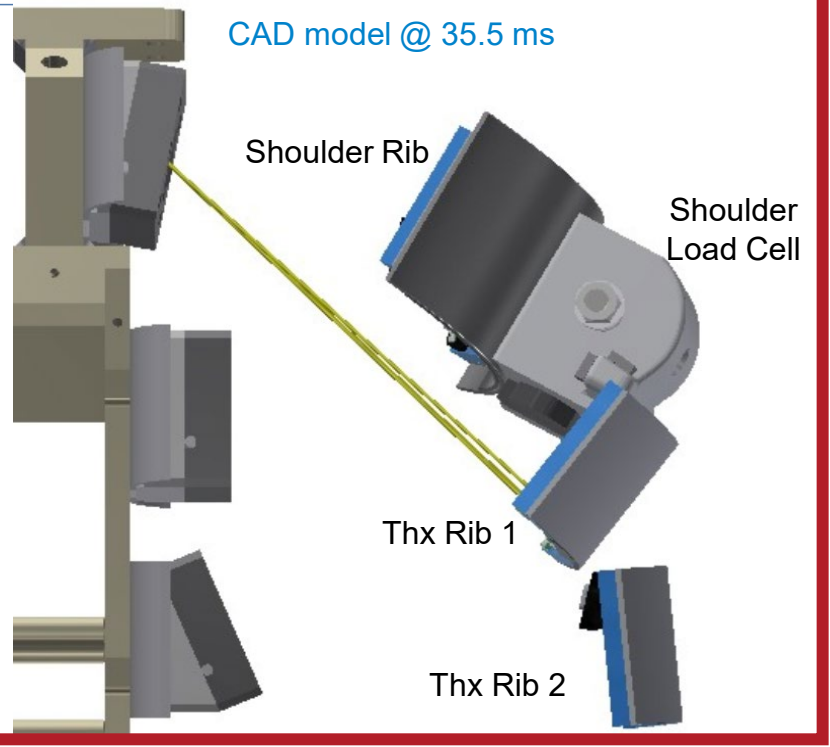


No blockages on Thorax rib 1; max deflection obtained

CAD model @ 35.5 ms



CAD model @ 35.5 ms



Summary

- Single point chest deflection instrumentation will underestimate injury risk during oblique chest loading; oblique chest loading has been observed in crash tests
- The value of RibEye measuring multiple points of deflection was demonstrated in crash tests where the injury risk difference from the middle LED was 56%.
- Thorax and abdomen RibEye error codes caused by LEDs exceeding the sensor range are inconsequential as long as at least one LED per rib stays in range
- RibEye signal blockages caused by one thorax rib deflecting more than another thorax rib are not important
- Thorax rib 1 LEDs will now be located at the bottom of the rib
- WorldSID-50M with RibEye is a feasible tool for FMVSS/NCAP
- Report on RibEye evaluation to be docketed

Thank you for your time and attention

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