TEGID-08

Denton ATD, Inc.

Denton ATD Update to BioRID II TEG

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April 28, 2010

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Agenda

- GM Dummy Problem
- Certification Progress
  - Corridors
    - New proposed corridors
    - Ford data
      - Working on overlaying Ford data with corridors
      - Show weight package Ford data
  - New Adjustable Headrest test
  - Variability investigation plans
  - Possible additional inspection tests
- Skull cap switch
- Drawing review

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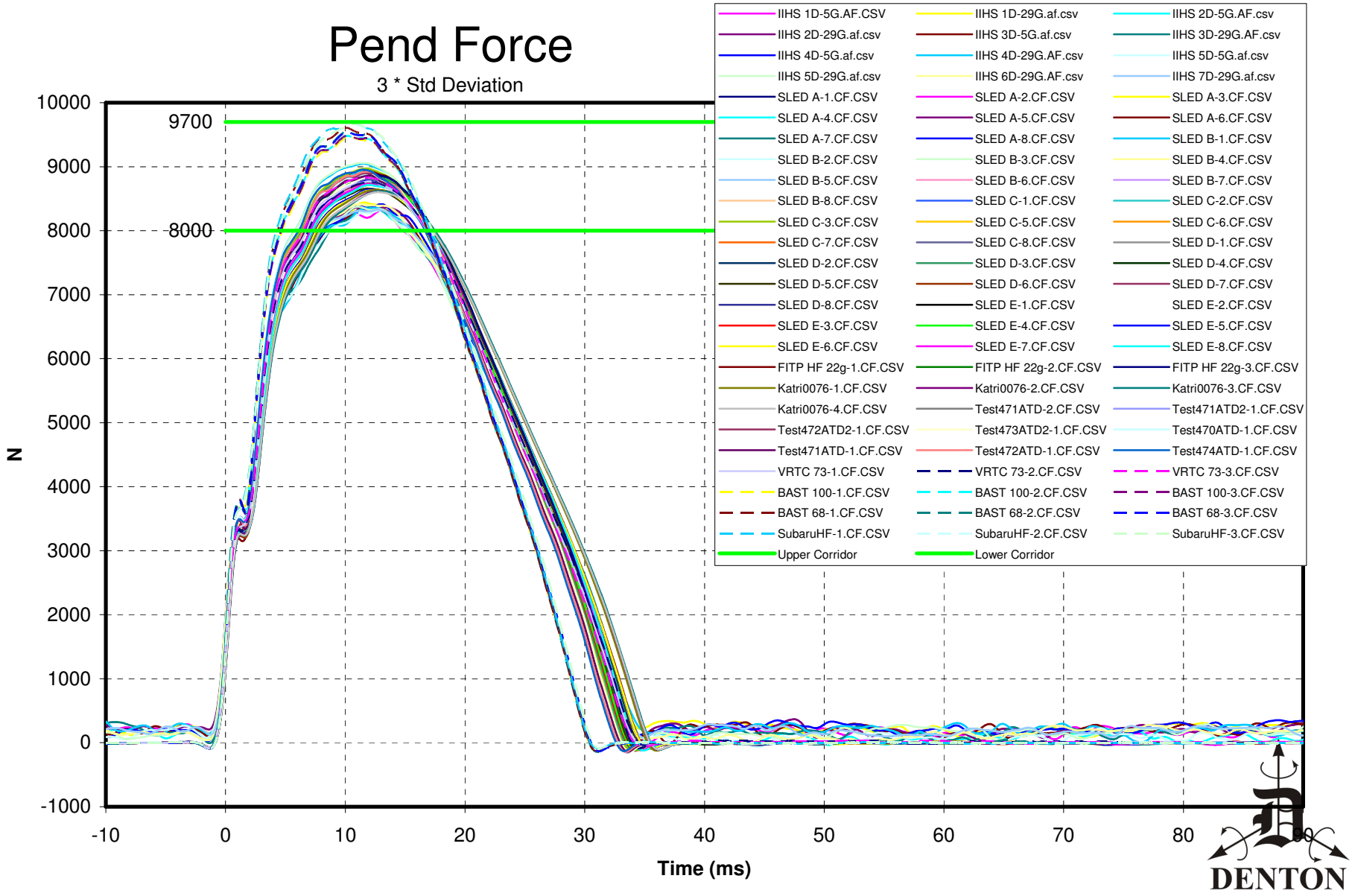
Dummy Test with Corridors



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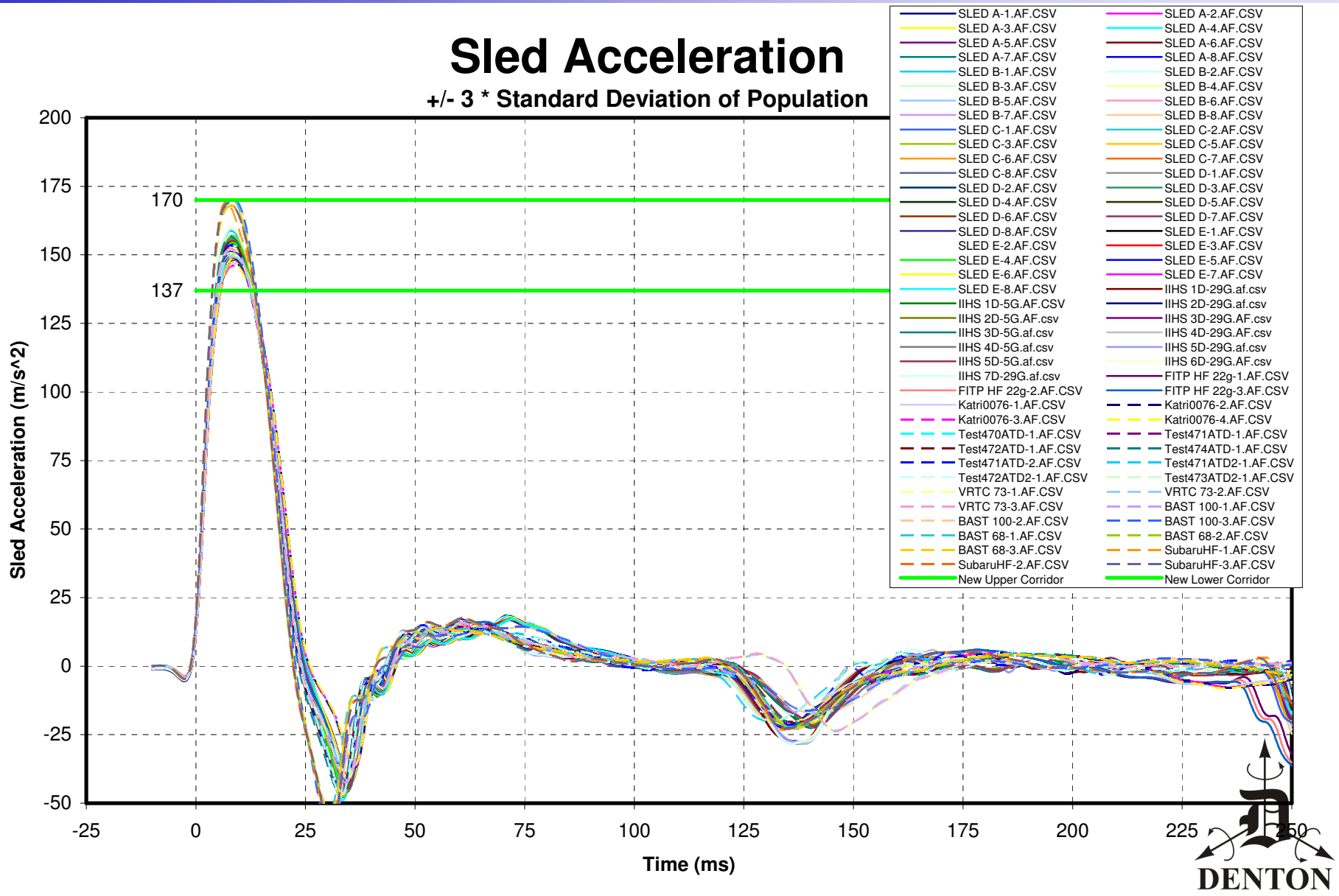

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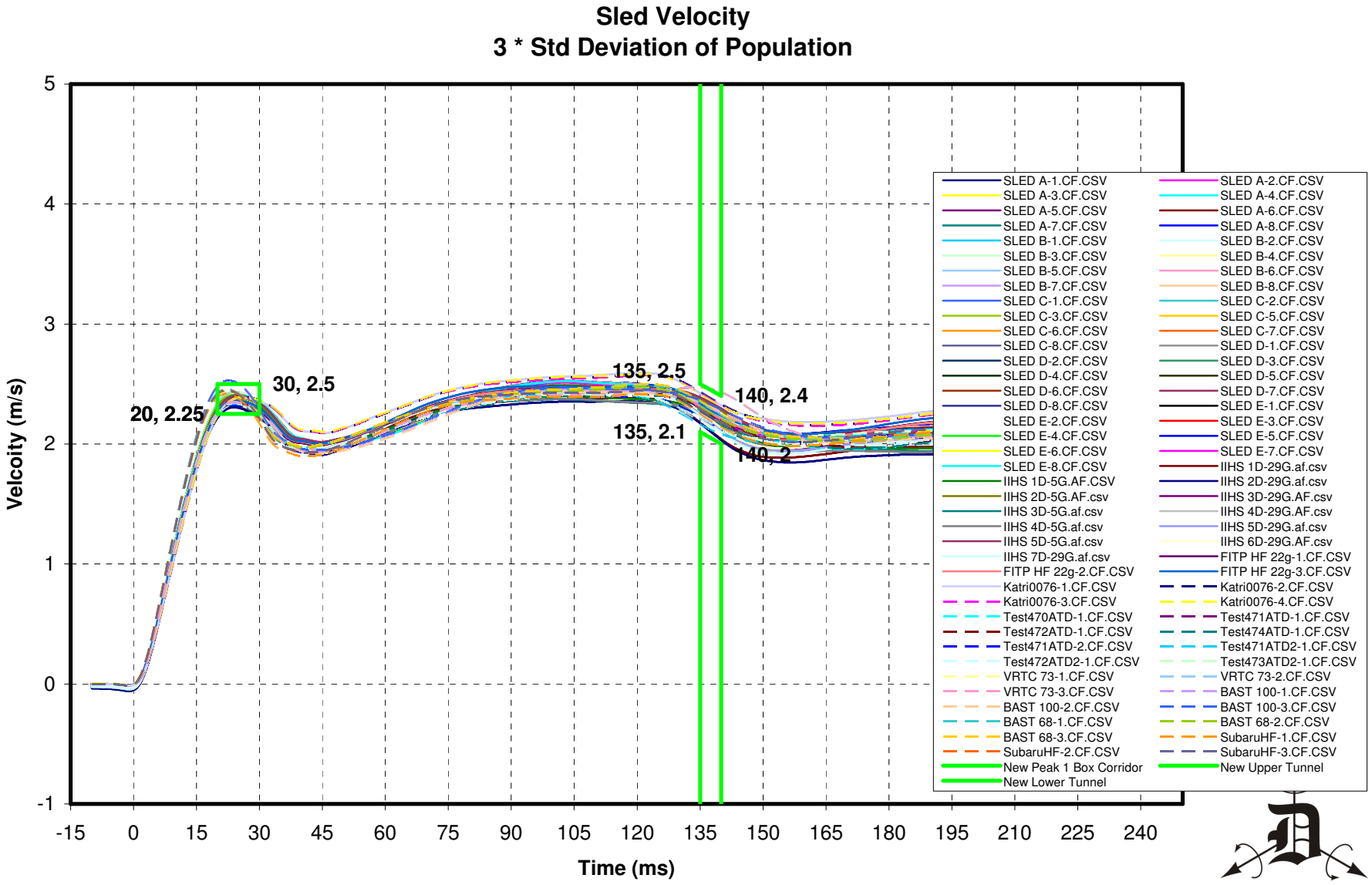

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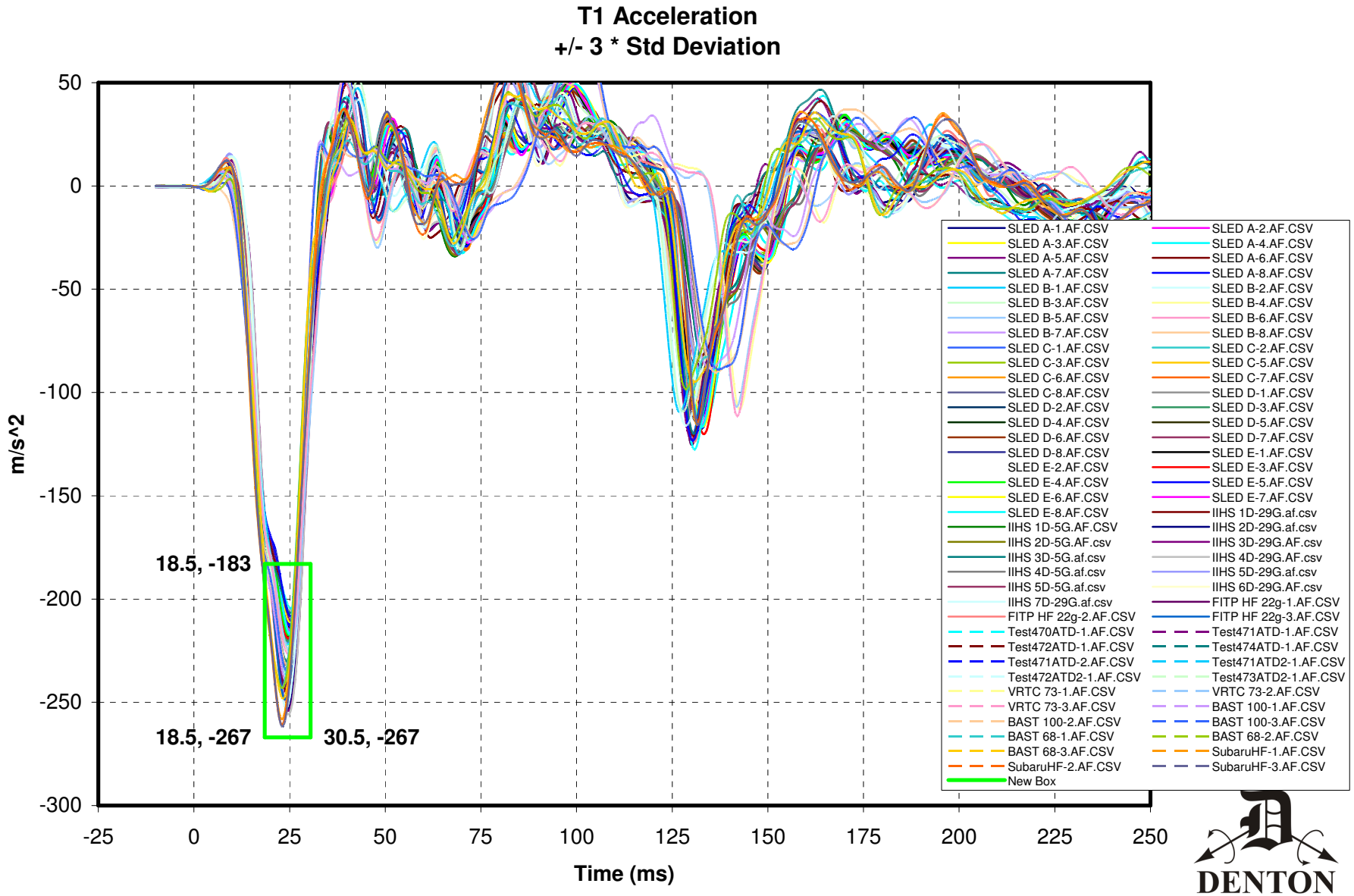

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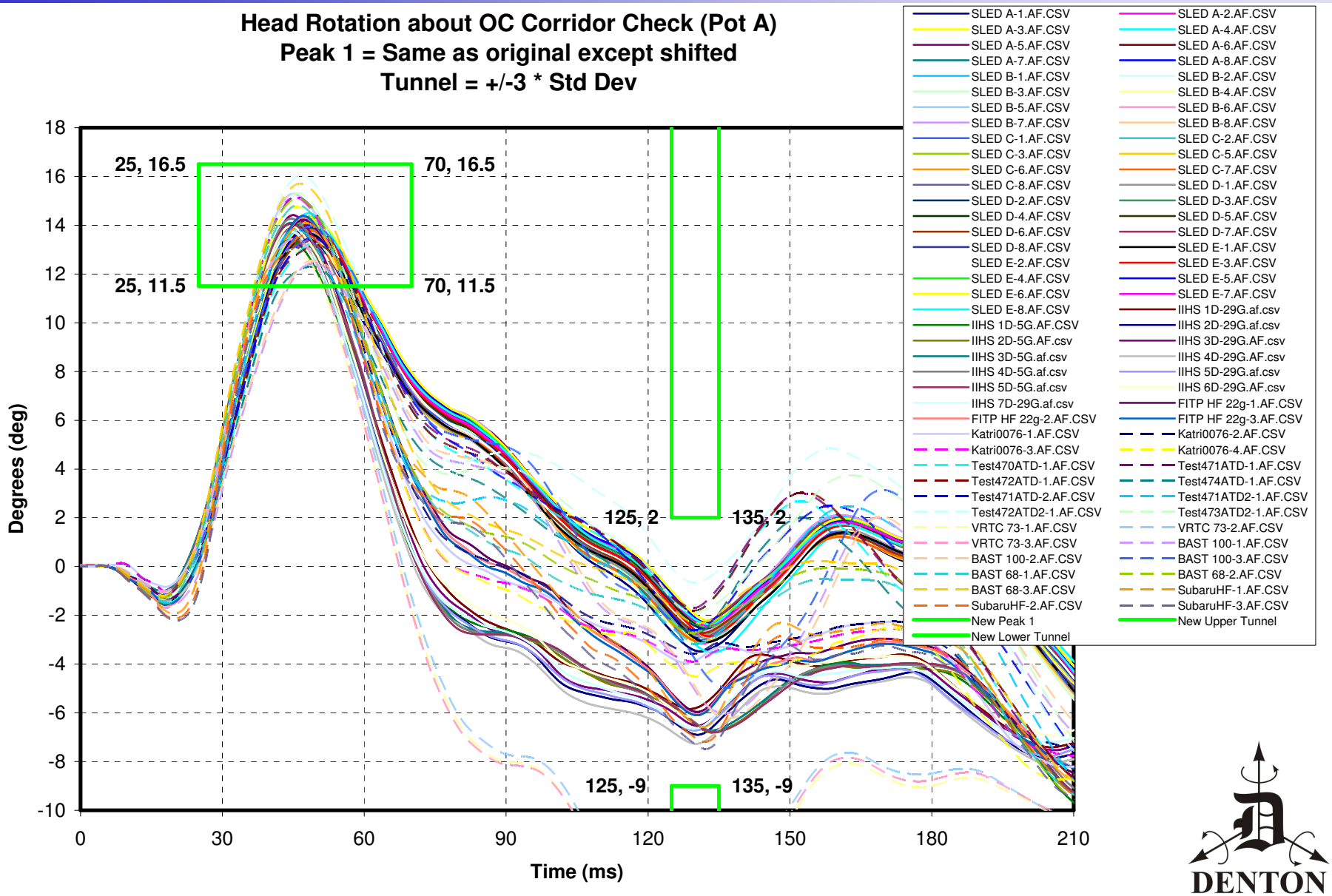

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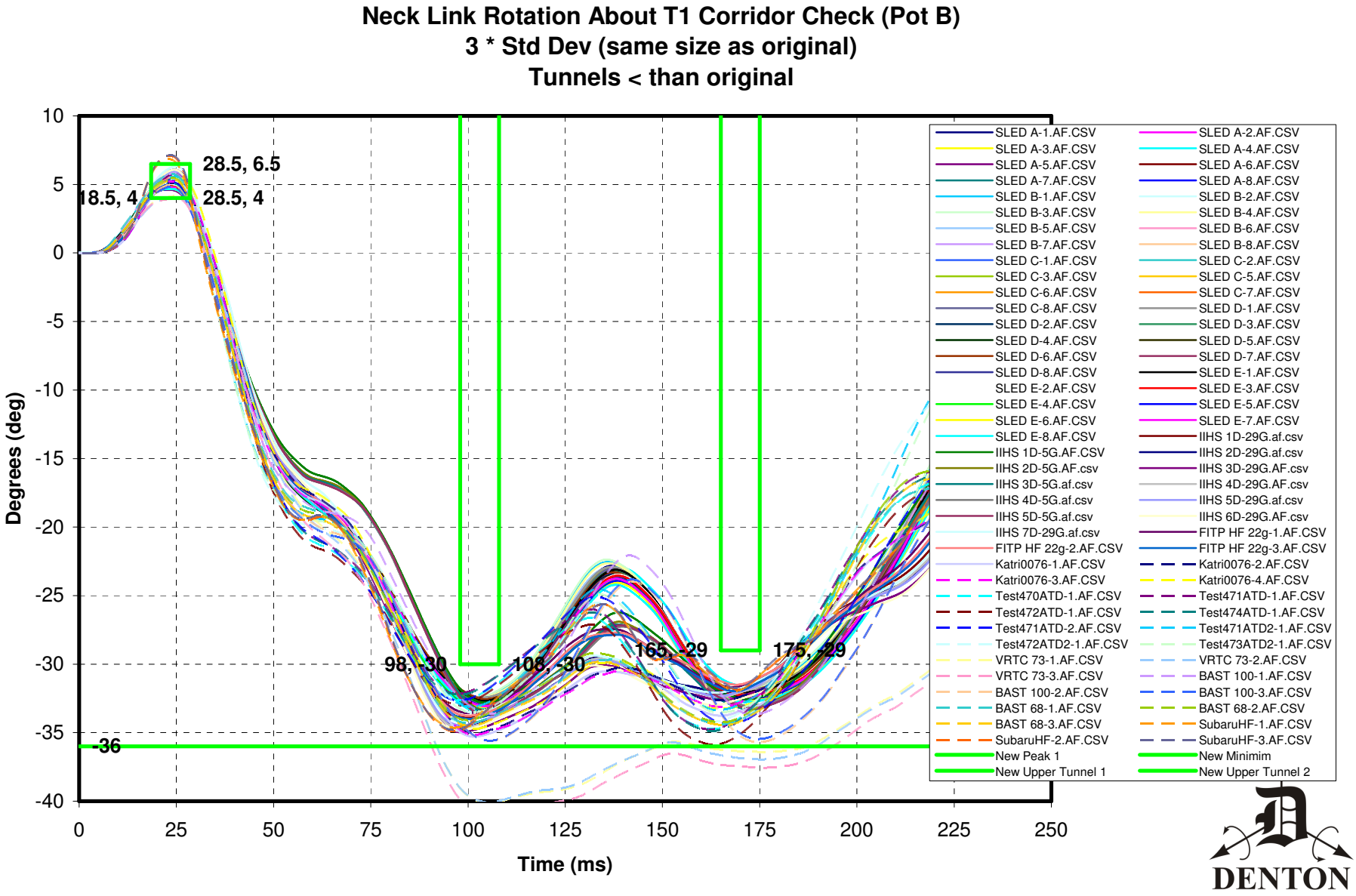

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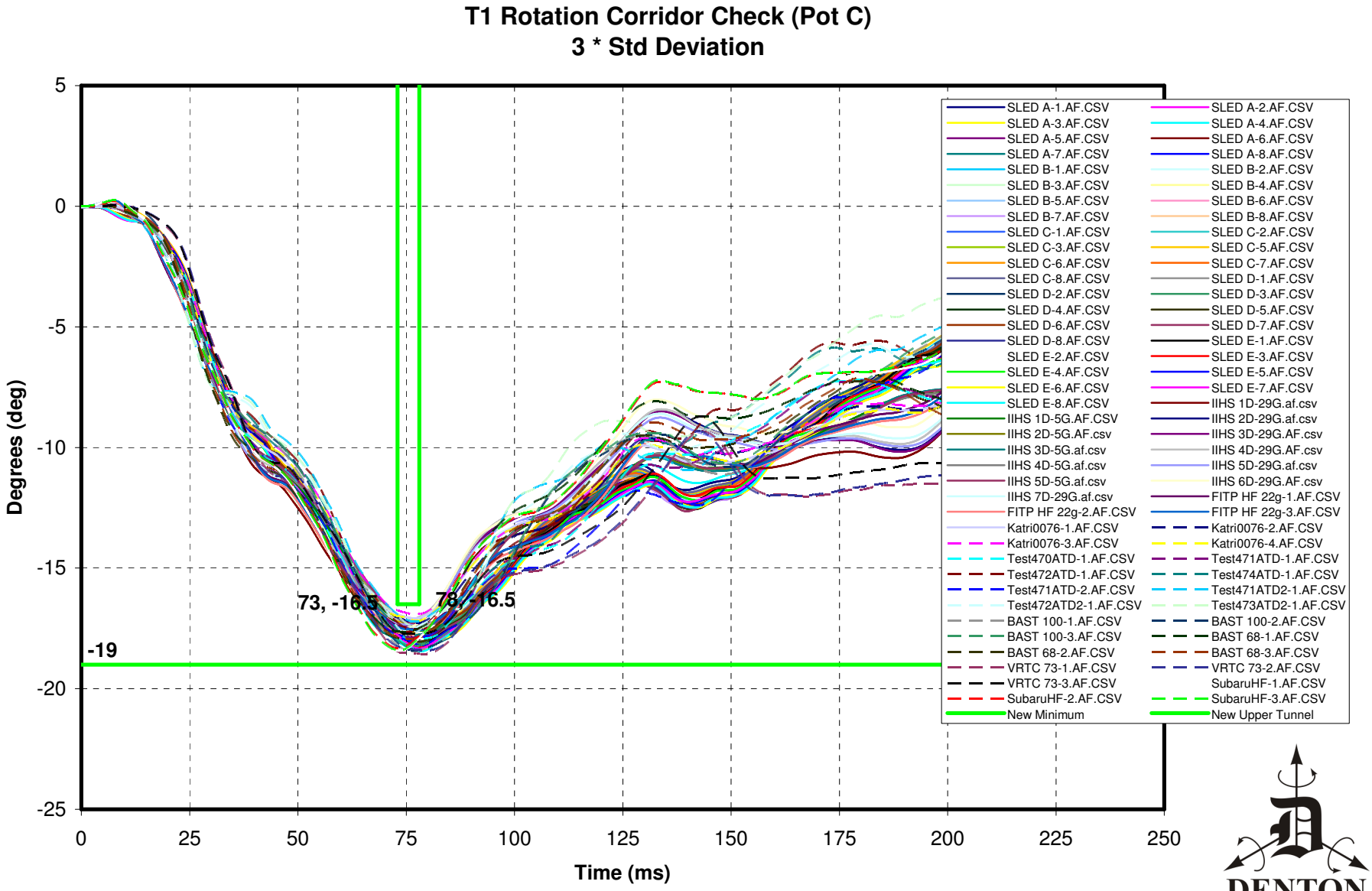

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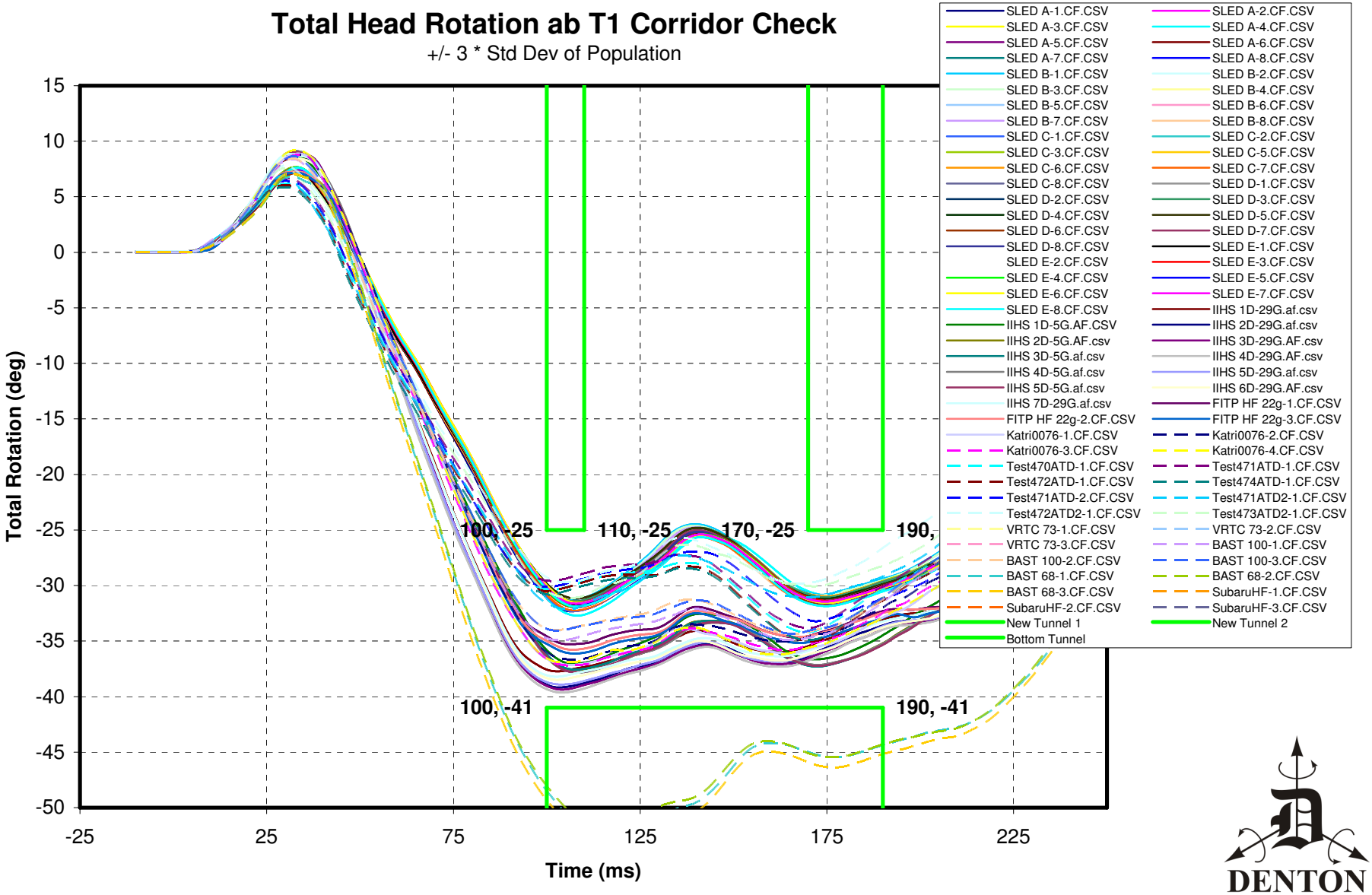

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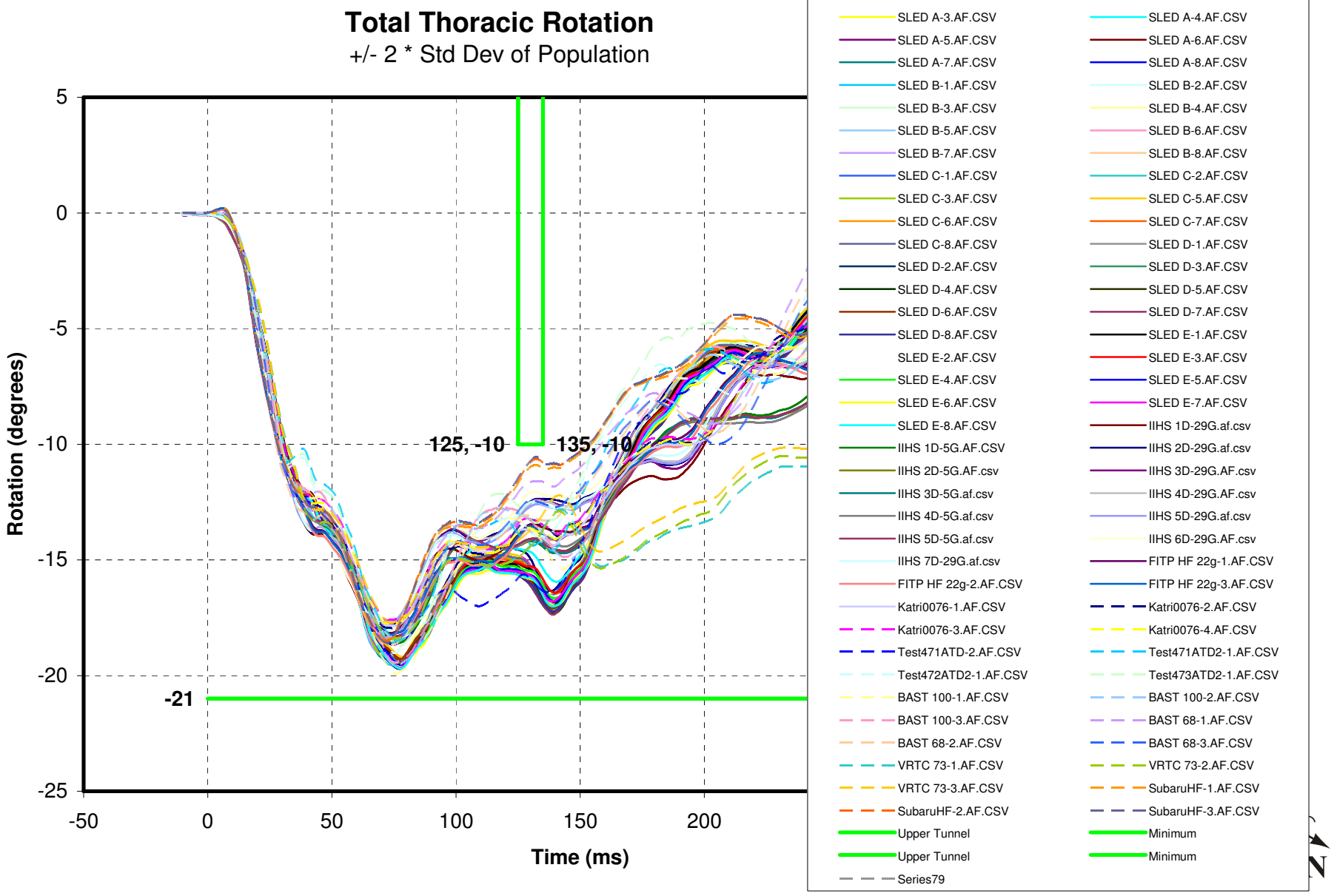

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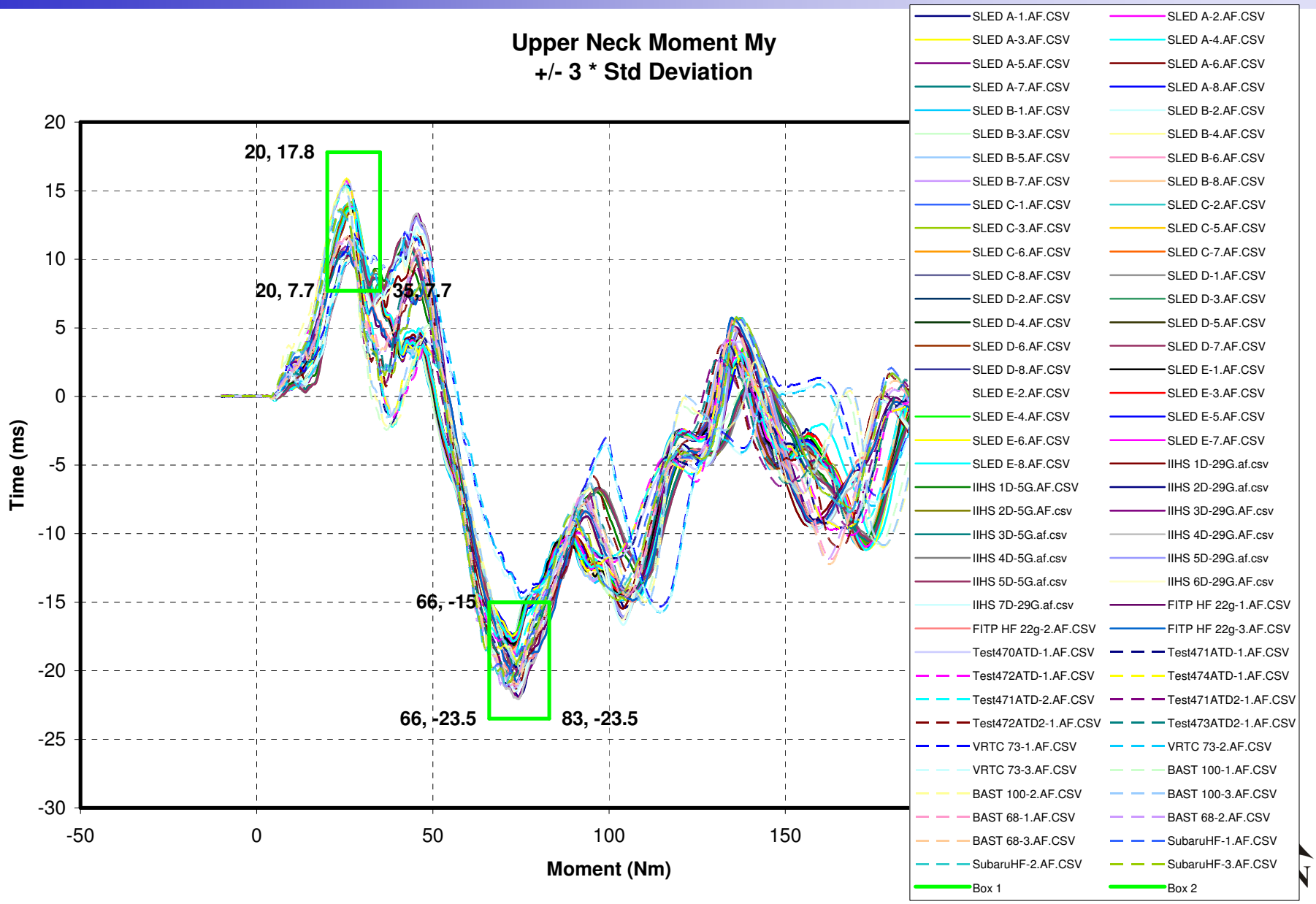

New Adjustable Headrest Test

- Fixed rigid headrest test was unacceptable
- New design
  - Adjustable for 50 to 100 mm backset
  - Foam pad to simulate headrest
  - Trying to match **JASIC/Japan** seat test Fx & My peaks and curve shapes from their Feb. 2010 presentation

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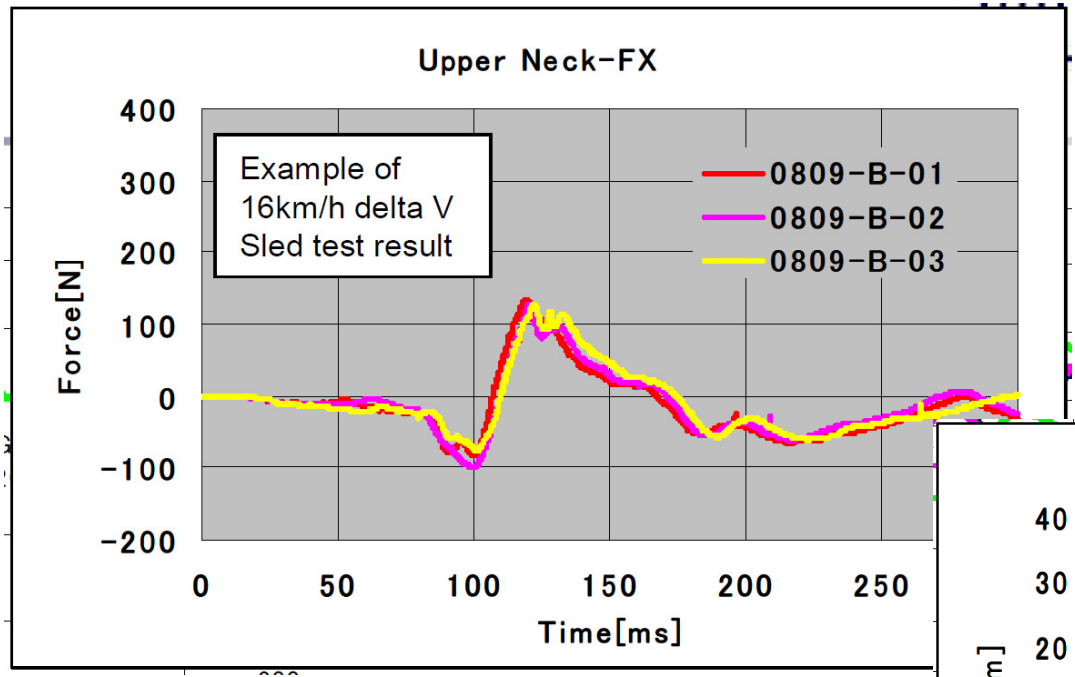
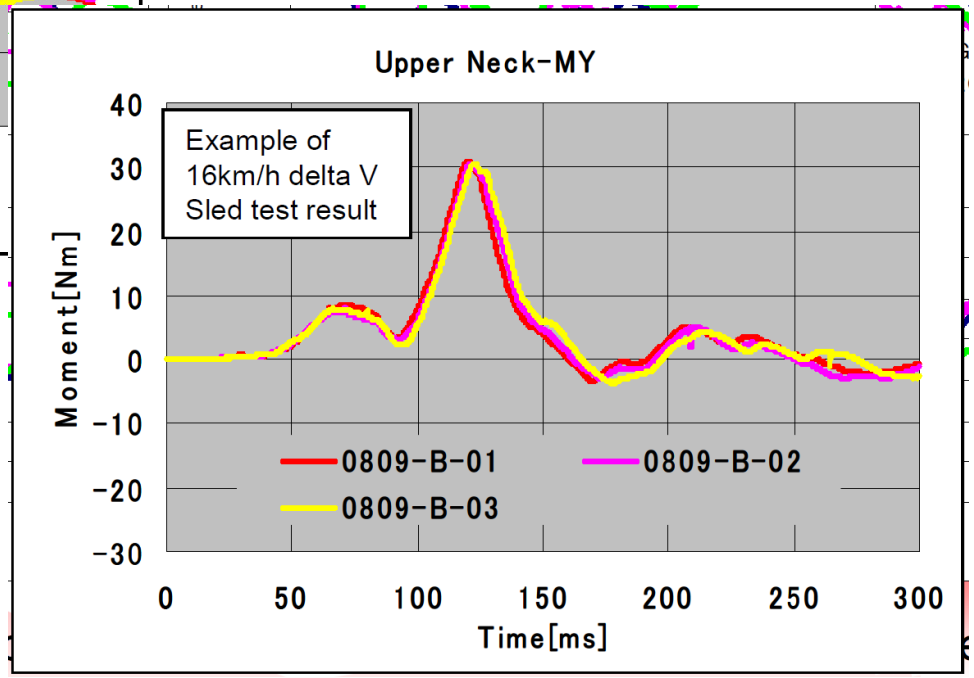
New Adjustable Headrest Test

- Target curves from **JASIC/Japan**





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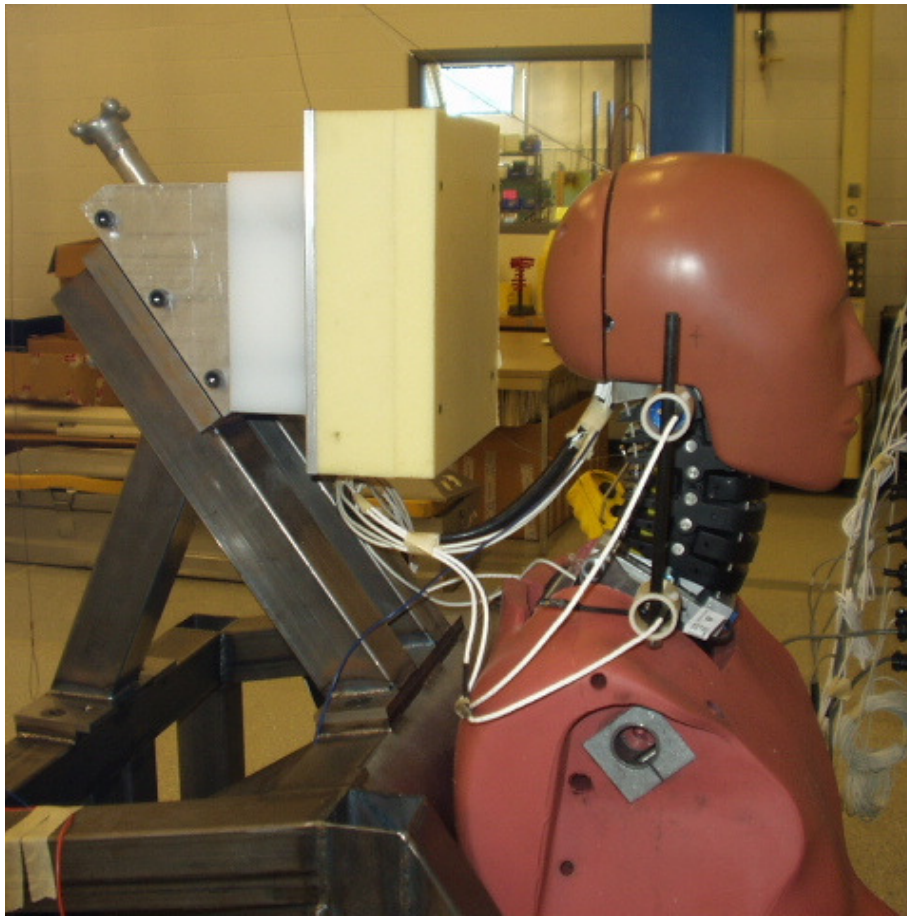

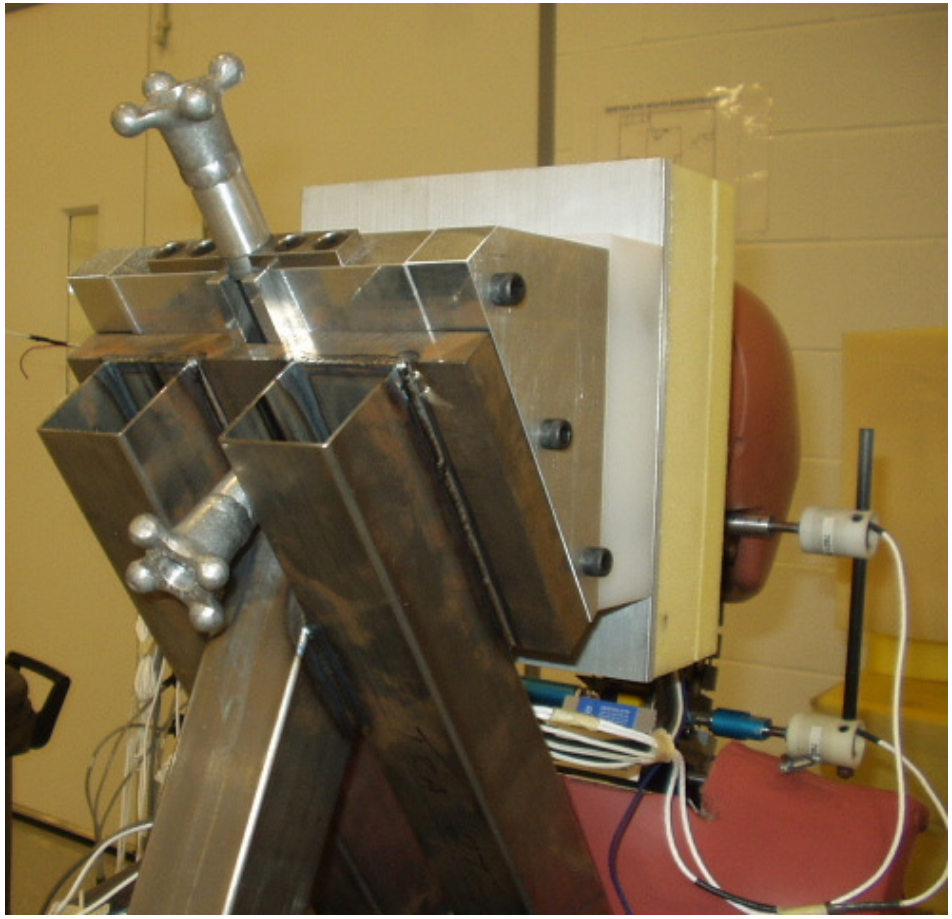

New Adjustable Headrest Test

- Have done preliminary testing
- Working on
  - Targeting 10 g peak 16 kph pulse
  - Adjusting foam headrest pad
    - Thickness
    - Stiffness
  - Will require dynamic foam headrest pad certification test
    - Probably drop tower test at 2 velocities

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Variability Investigation Plans

- Planning studies of the effects of the following factors on mini-sled tests
  - loss of oil in damper (started)
  - humidity on ETD
  - spine setup variation
  - lateral OC plate adjustment
  - Jacket stiffness
  - with & without water in abdomen
  - Pin fit tolerances
  - Bumper stiffness and height variations
  - Vertebrae fit tolerances
  - MMI variation in head
  - Muscle substitute spring stiffness variation
  - Other?
- Schedule: May through September

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Variability Investigation Plans

- Most will run on tests with and without headrest
  - Primary focus will be foam headrest test
- For parameters that seem most important on mini-sled
  - We have a partner where we will try to run in a car seat
- Will report out on results at each meeting
  - Planning to finish all testing before September meeting

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Additional Certification Tests

- Possible need for additional inspection tests
  - Pelvis impact (bottom or back)
  - Jacket (dynamic impact)
  - Head drop
  - Static spring/spine setup and measurements
    - Use existing, improve, or new
  - Dynamic damper test

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Pelvis & Jacket Tests

- Check at manufacturing to control process
- Occasional check at customer to look for material change over time
- Impact test to back or bottom of pelvis
- Possible fixtures:
  - Quasi-static compression
  - Dynamic on knee impact fixture
  - Dynamic on front of mini-sled
- Currently building fixtures to try out pelvis and jacket tests
  - Start testing next week

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Skull Cap Switch

- Found way to adhere to vinyl
  - Will have flexible conductive cloth to drape over headrest
- Provide consistent friction between cap skin and headrest
- Same cap material as existing caps

Drawing Review

- Denton and FTSS are continuing drawing review process
  - Have compared most vertabrae, damper, skull drawings
- Working together to develop drawing package for submission

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THANK YOU

for your attention

Questions?

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