TEGID-17

Humanetics update to BioRID II GTR7/TEG

July 13, 2010

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Agenda

- Drawing package status
- Headrest test development
- Humidity Effect on mini-sled ETD
- Head contact switch
- Variation Studies
- Component Tests
- Other issues

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Drawing Package Status

- Complete metric package under review
  - By former Denton and FTSS engineers
  - Review to be complete by July 16
- Updates to be made by July 23
- Release to GTR7/TEG July 30
  - How should we submit?

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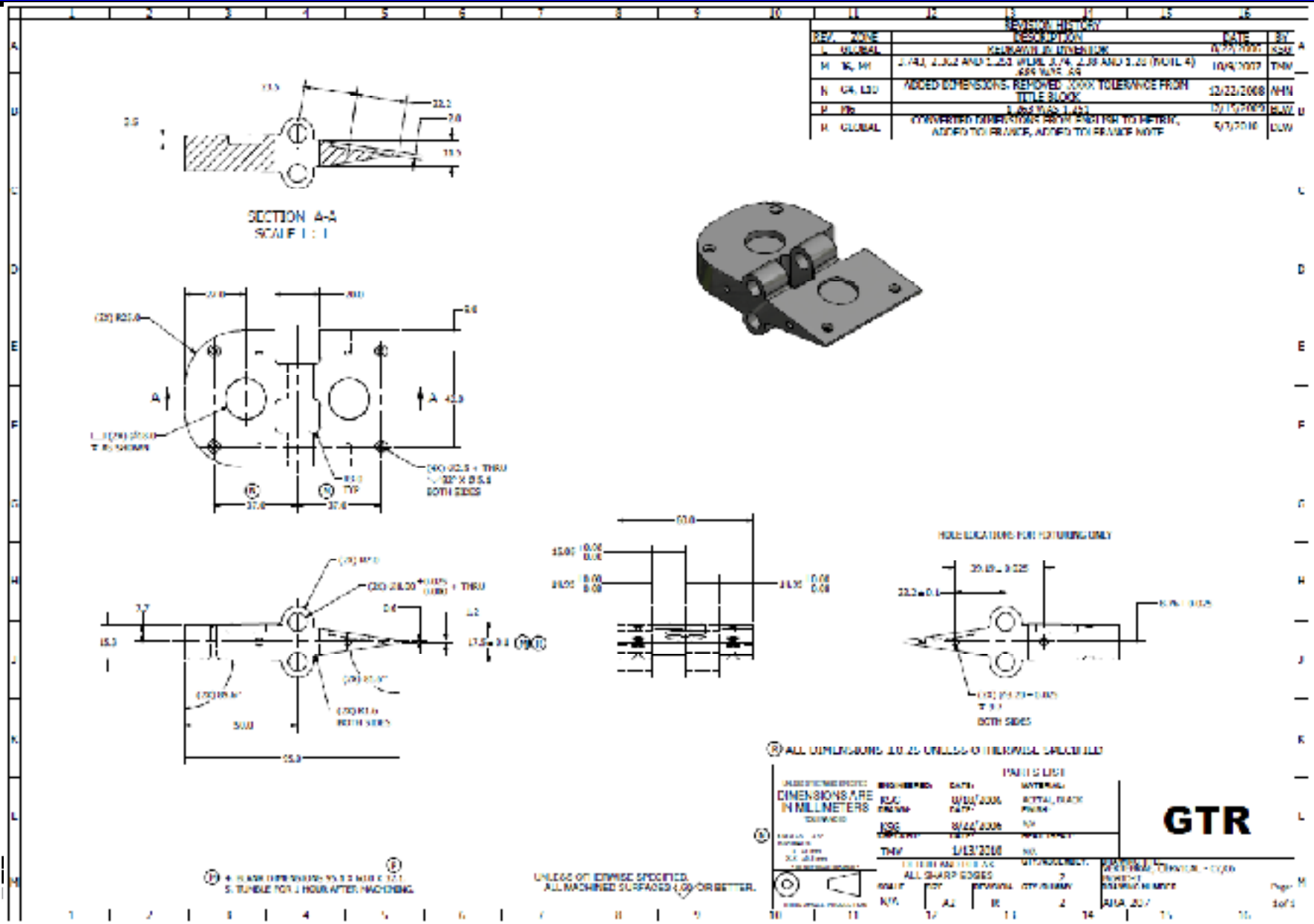
Drawing Package - Sample



Headrest Test Development

- Goals
  - Repeatable and Reproducible
  - Detect differences between dummies that show up with head loading
  - Padded impact with duration similar to car seats
  - Similar type of load inputs to dummy as car seat
    - Use Upper Neck Fx & My presented by JASIC/Japan in February
- Use sled pulse proposed by Johann Davidson (16 kph, 10 g)

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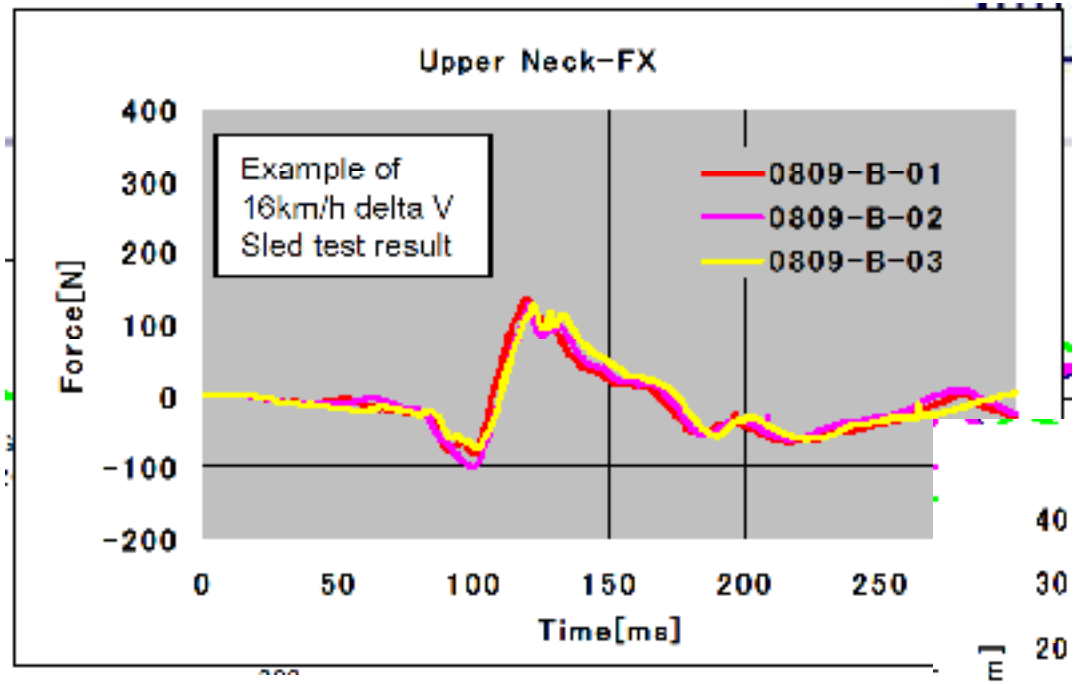
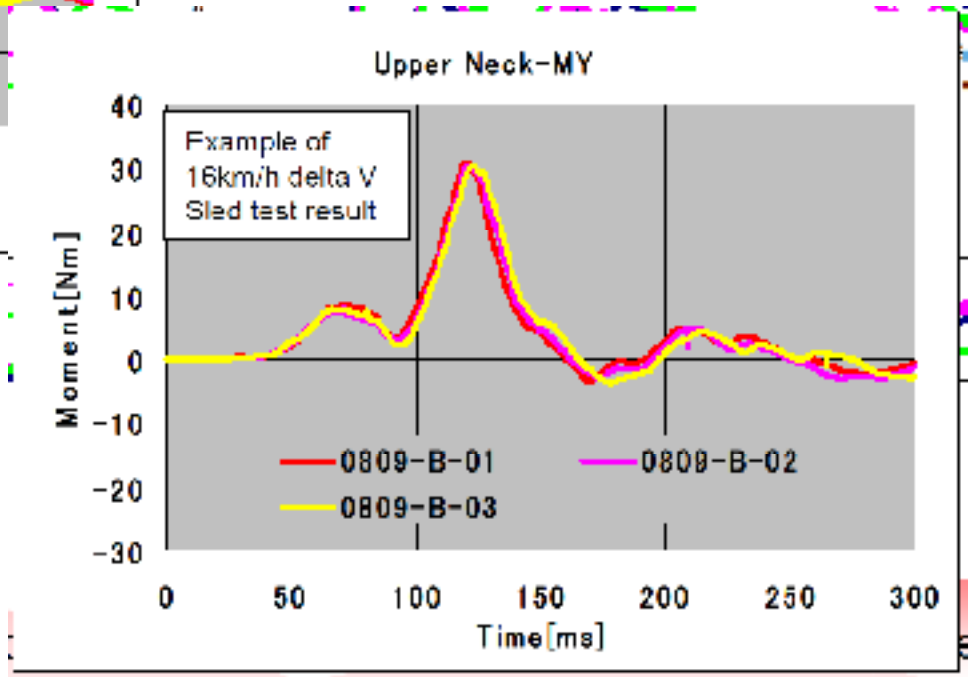
Headrest Test Development

- Target curves from **JASIC/Japan**





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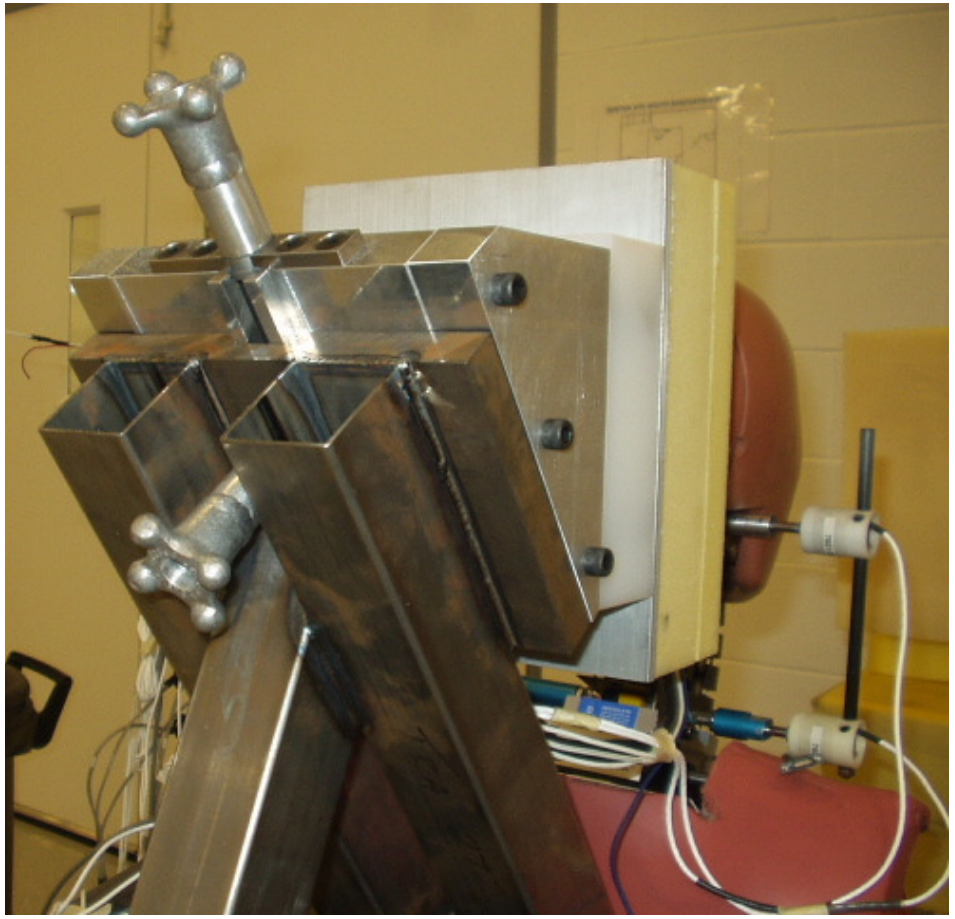
Headrest Test Development

-Adjust headrest for 70 mm backset with head level.

-75 mm thick foam pad



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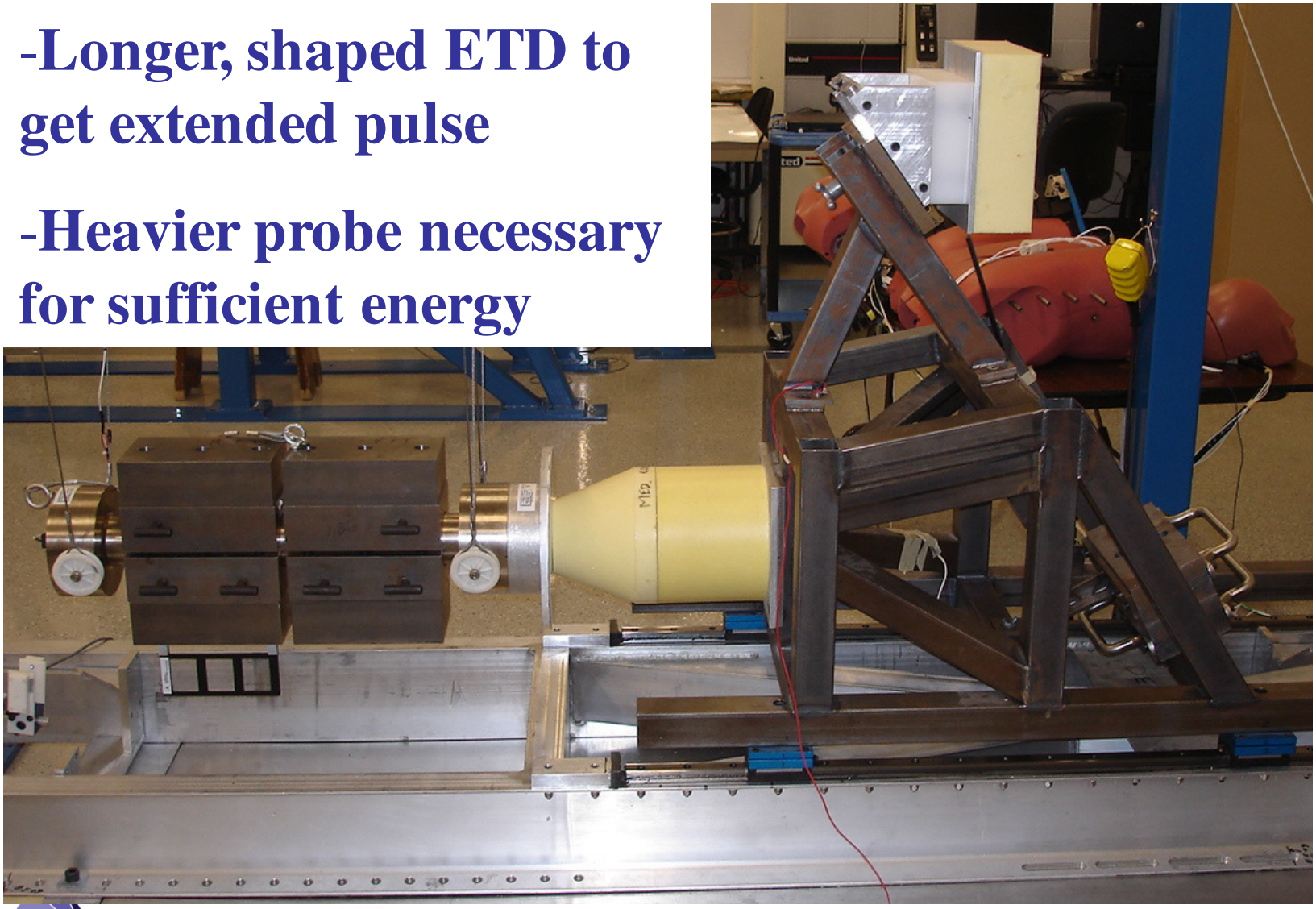
Headrest Test Development

-Longer, shaped ETD to get extended pulse

-Heavier probe necessary for sufficient energy



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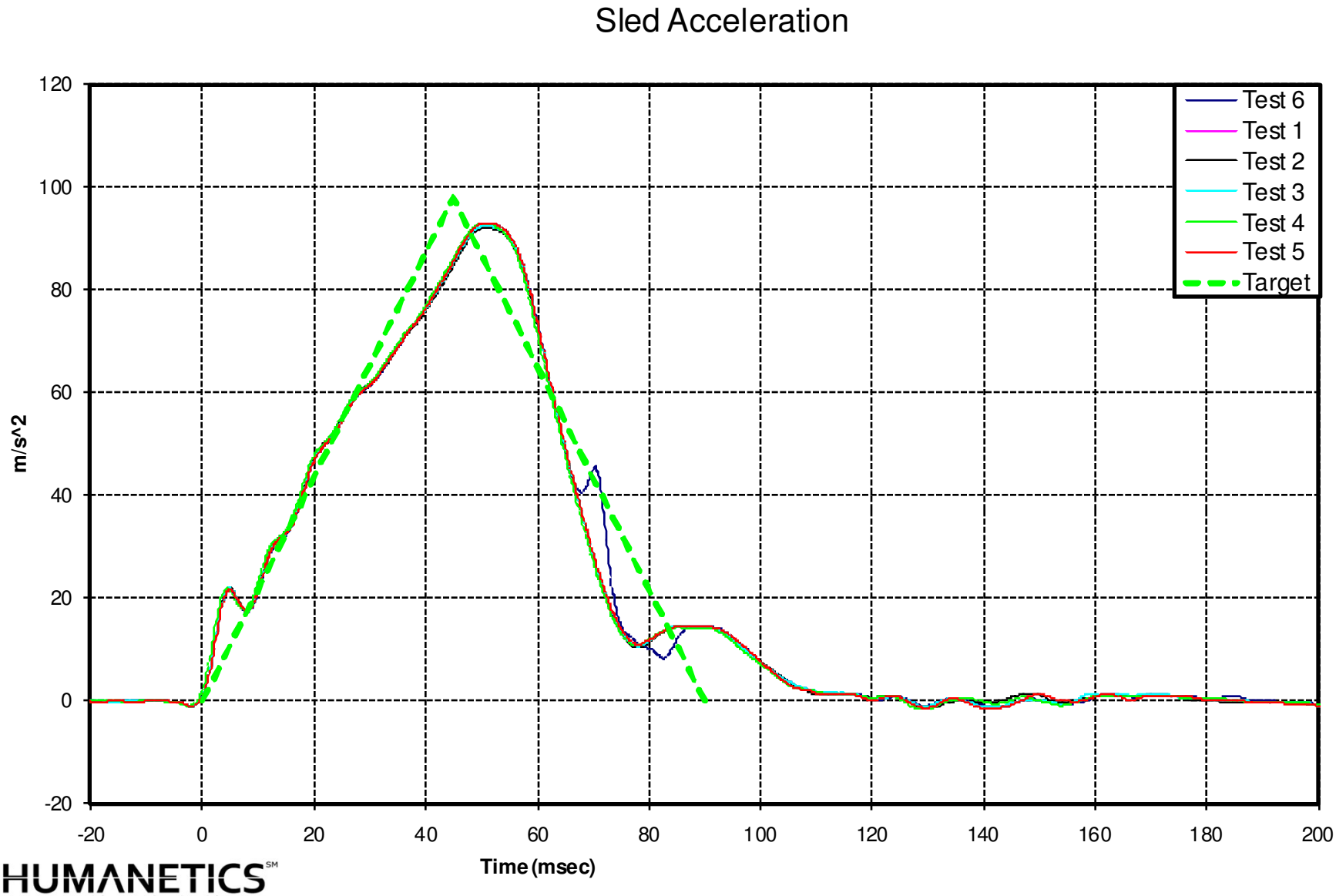
Headrest Test Development



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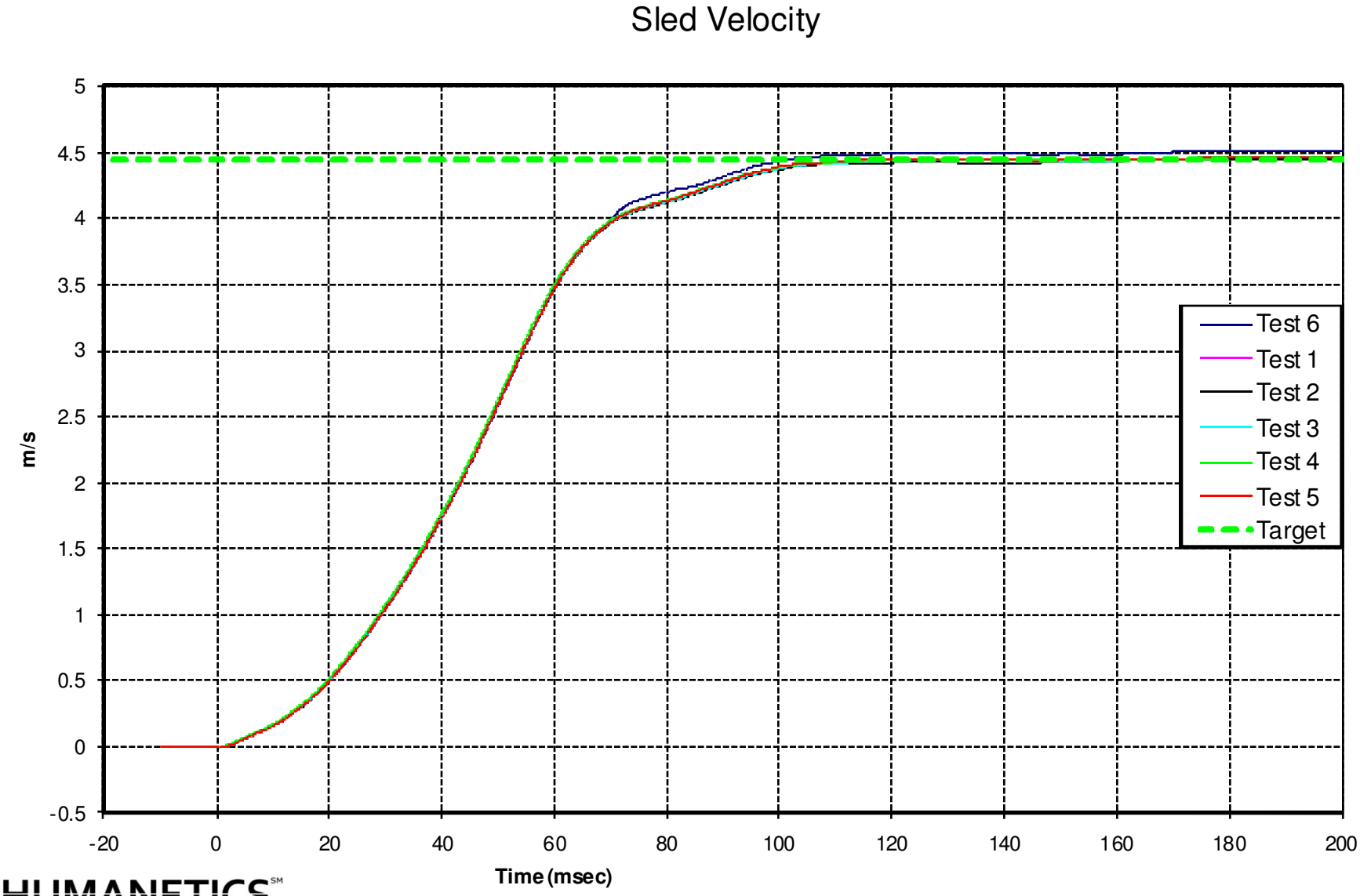
Headrest Test Development



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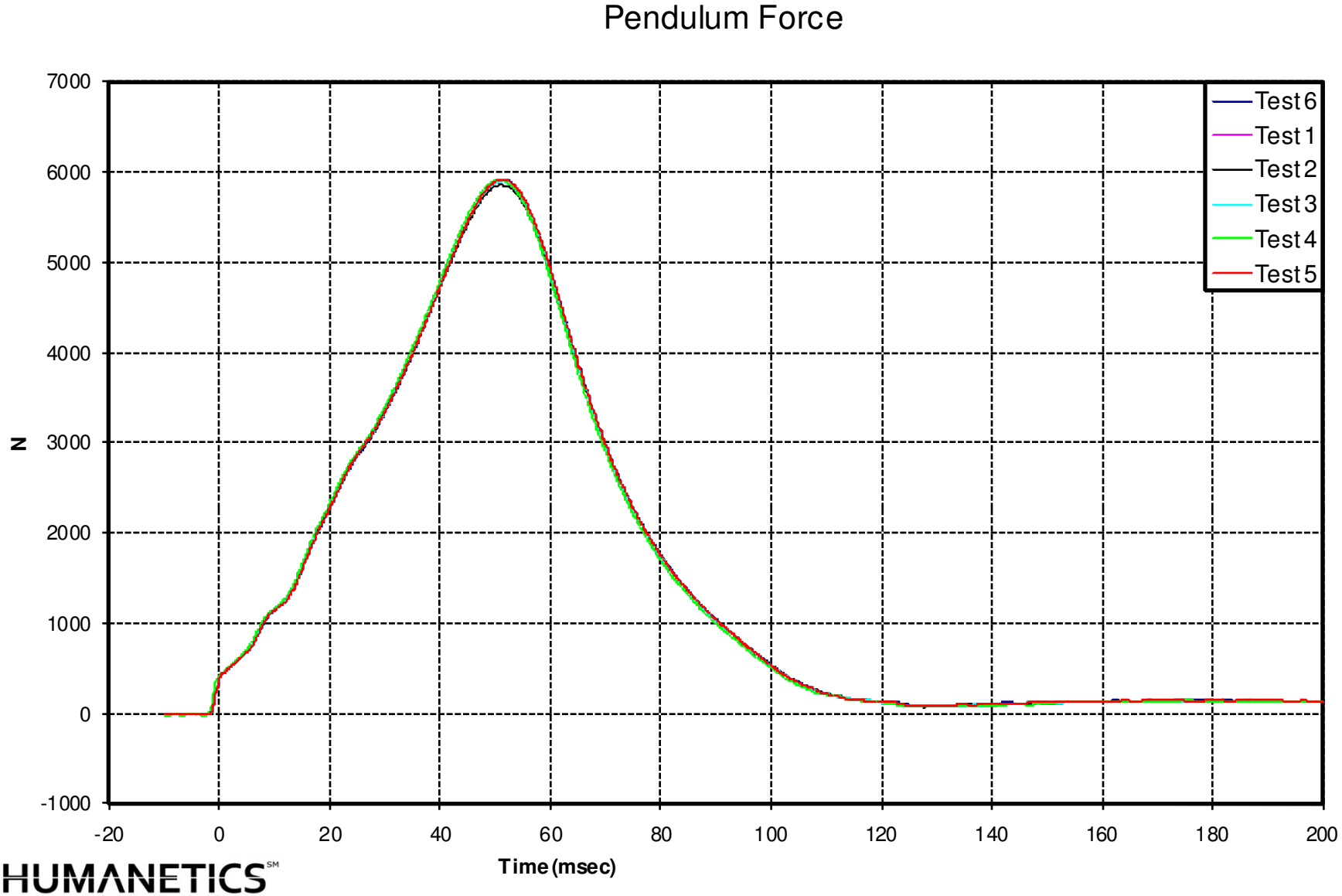
Headrest Test Development



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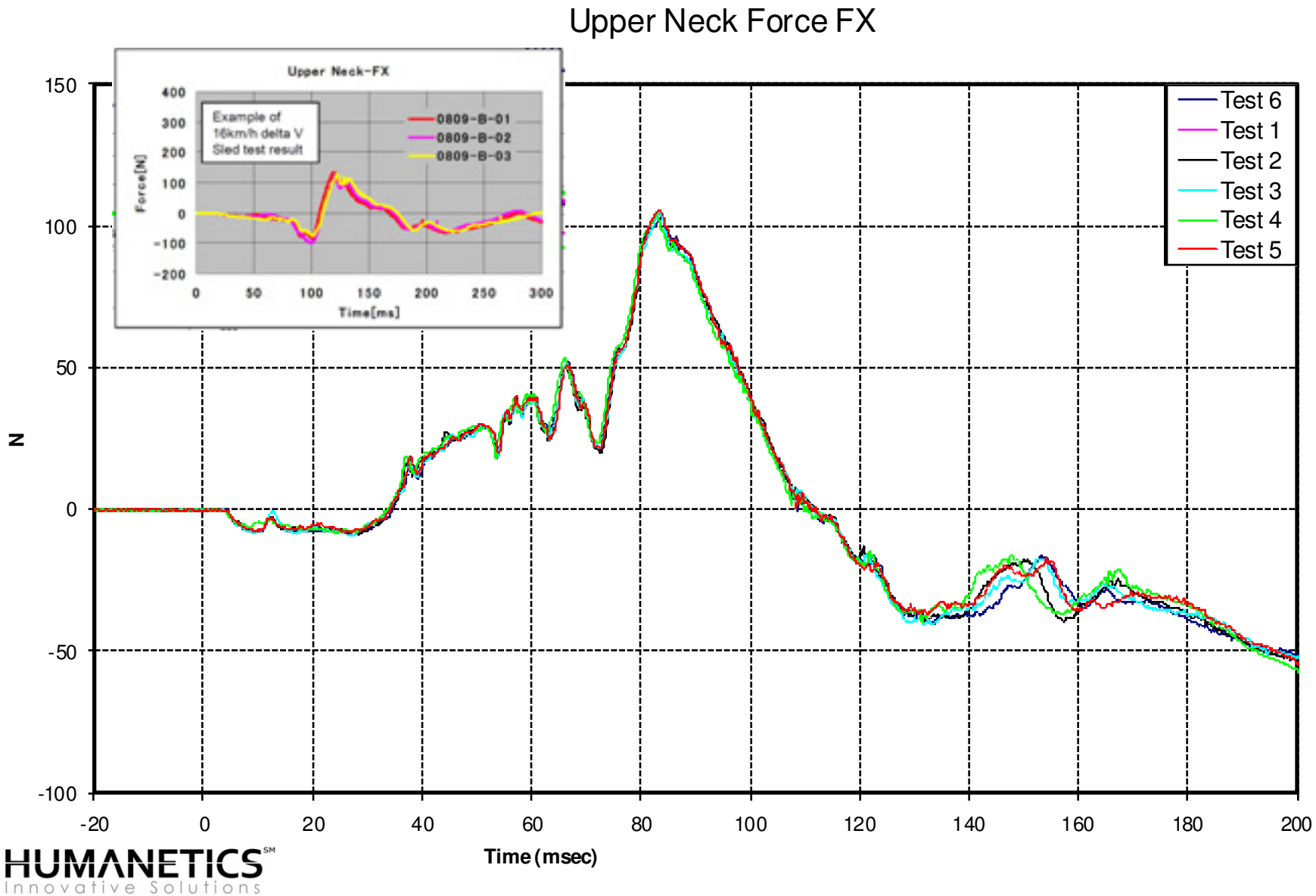
Headrest Test Development



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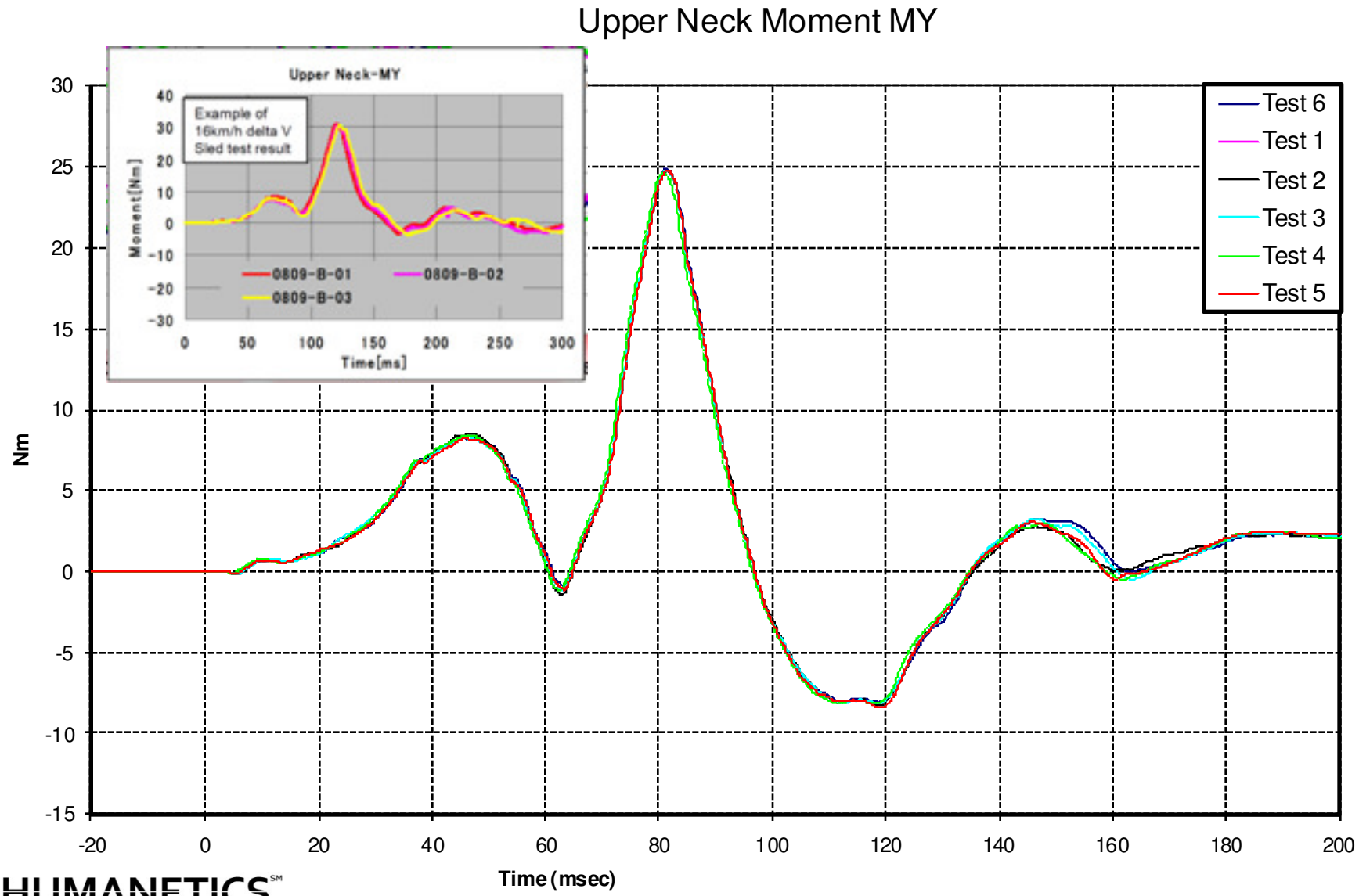
Headrest Test Development



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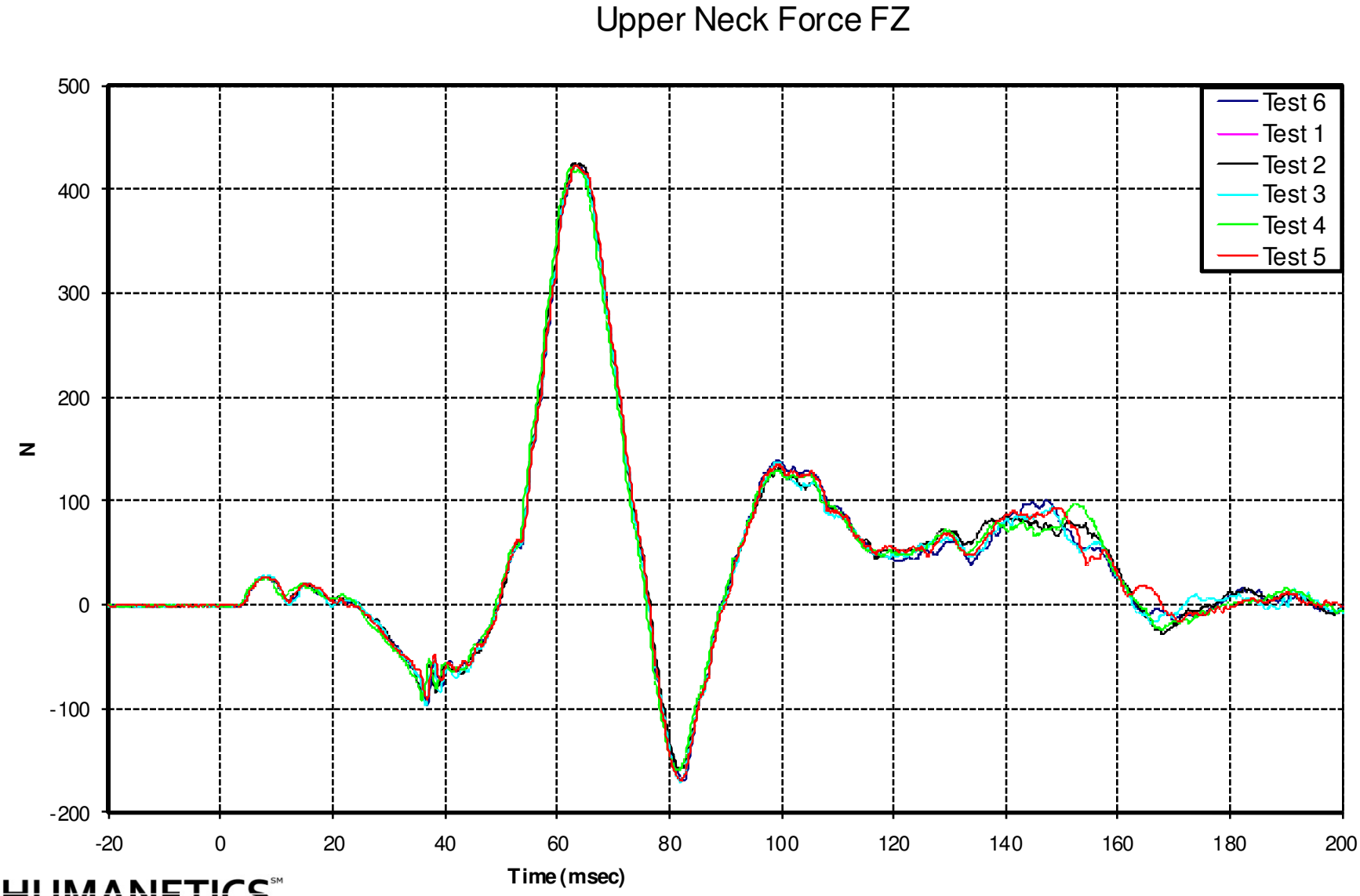
Headrest Test Development



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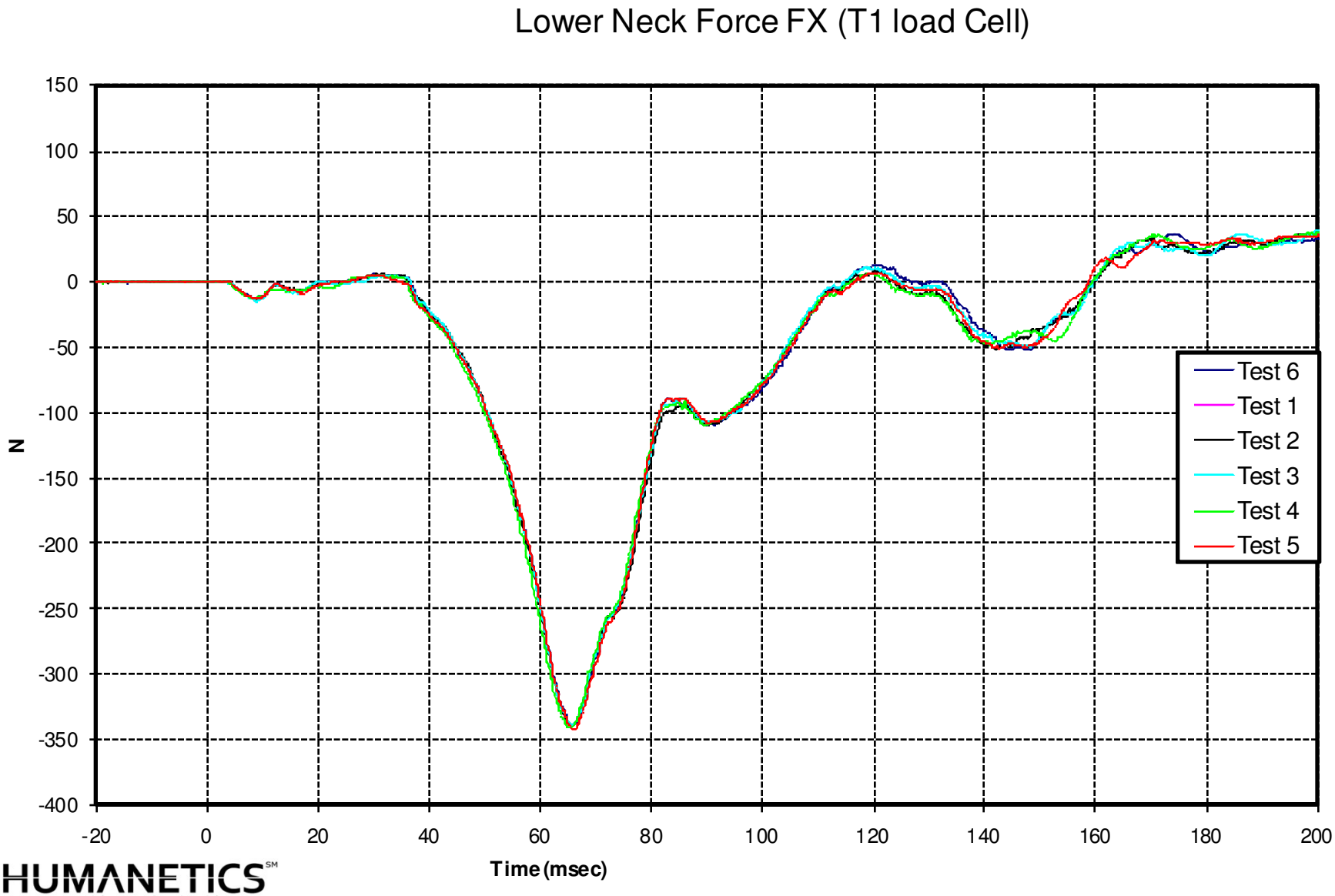

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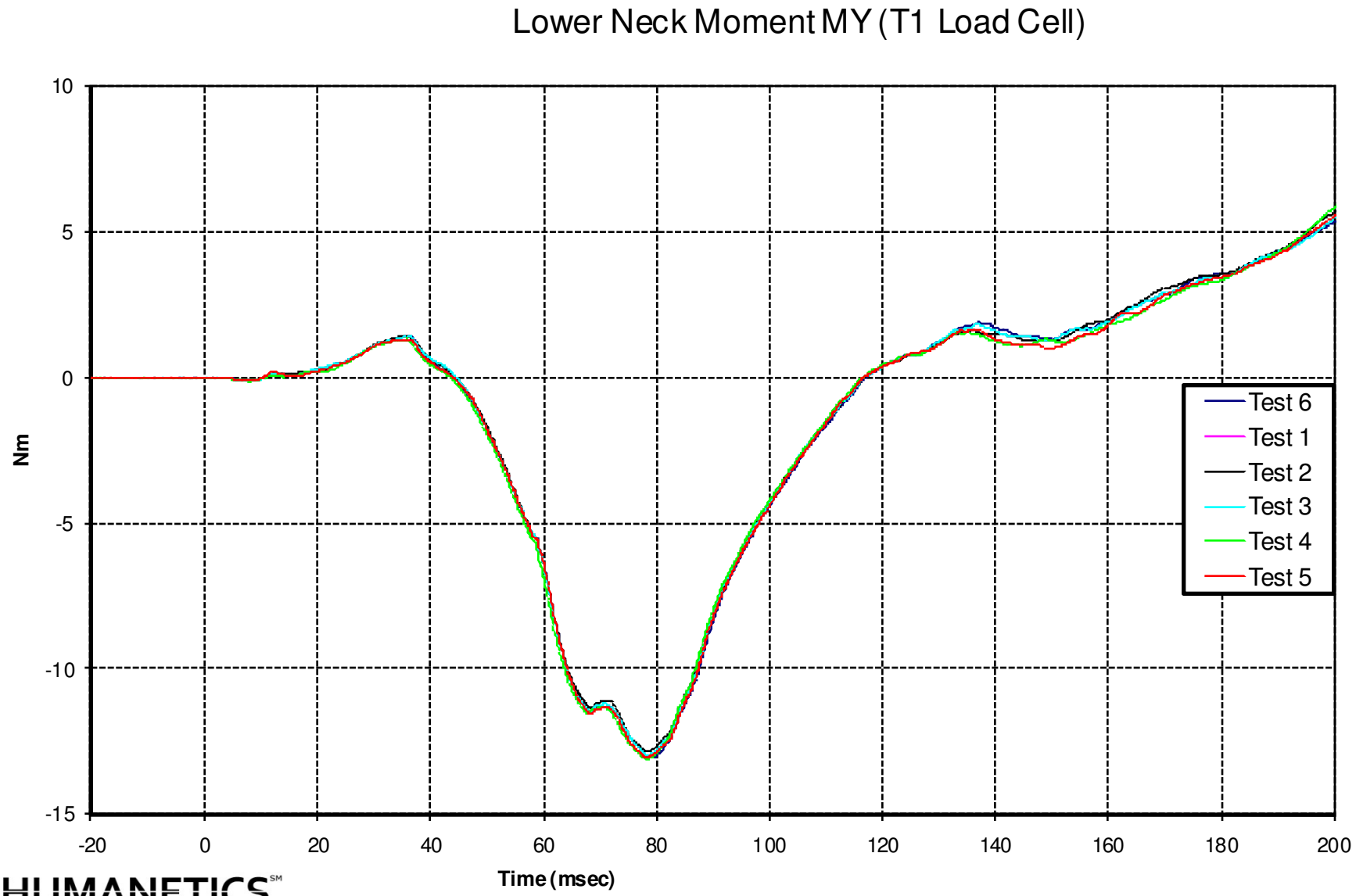

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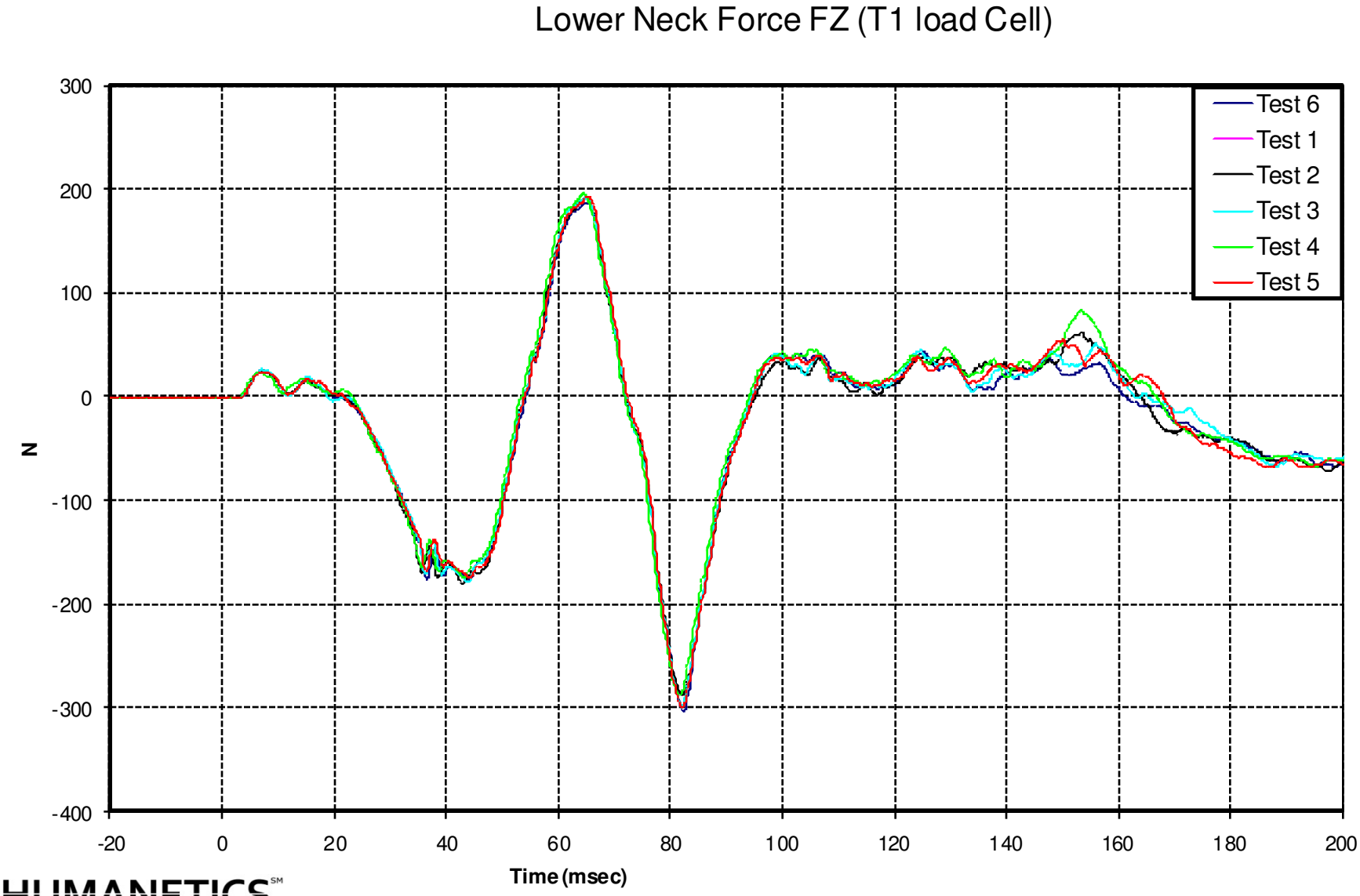

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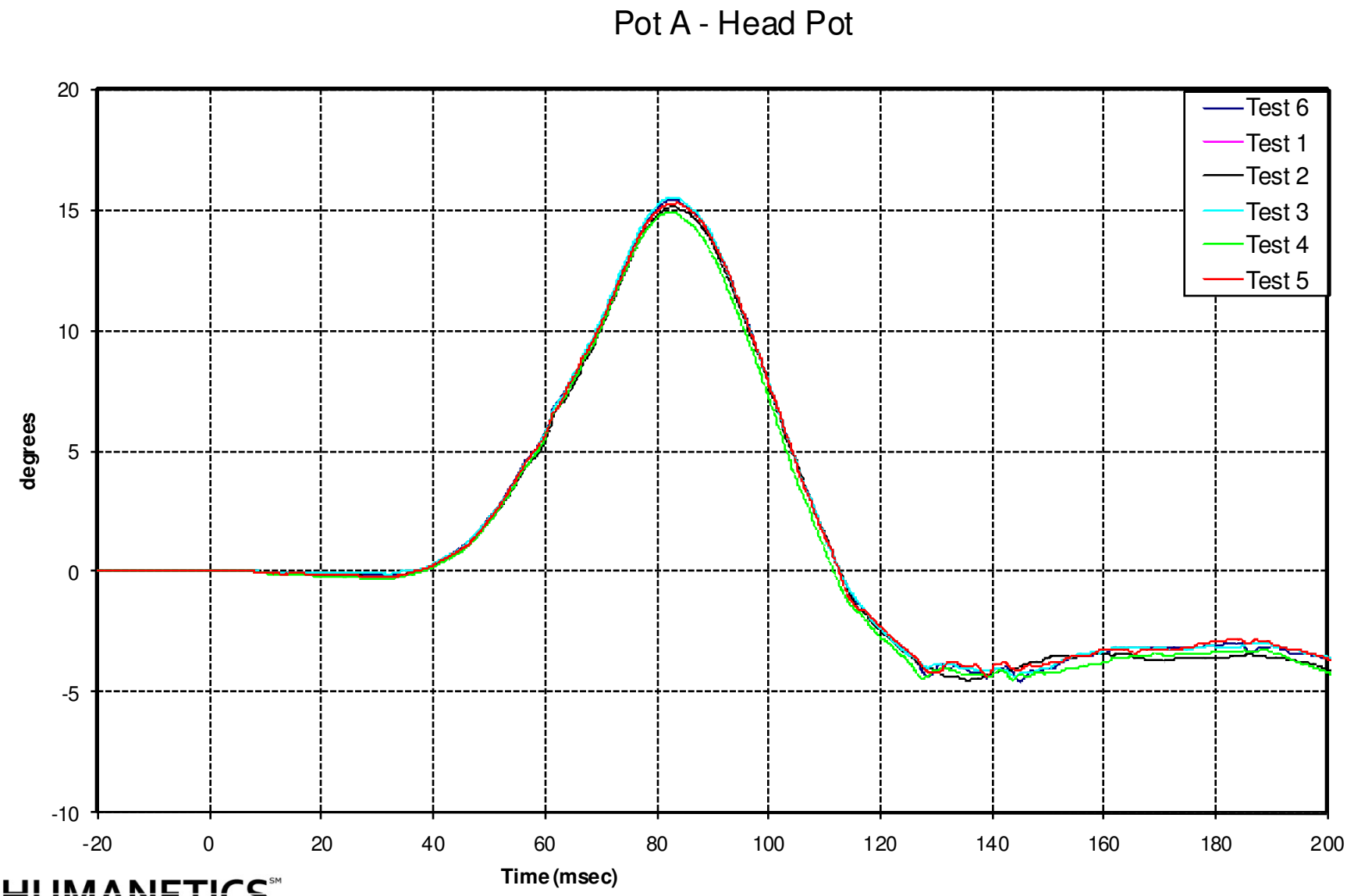
Headrest Test Development



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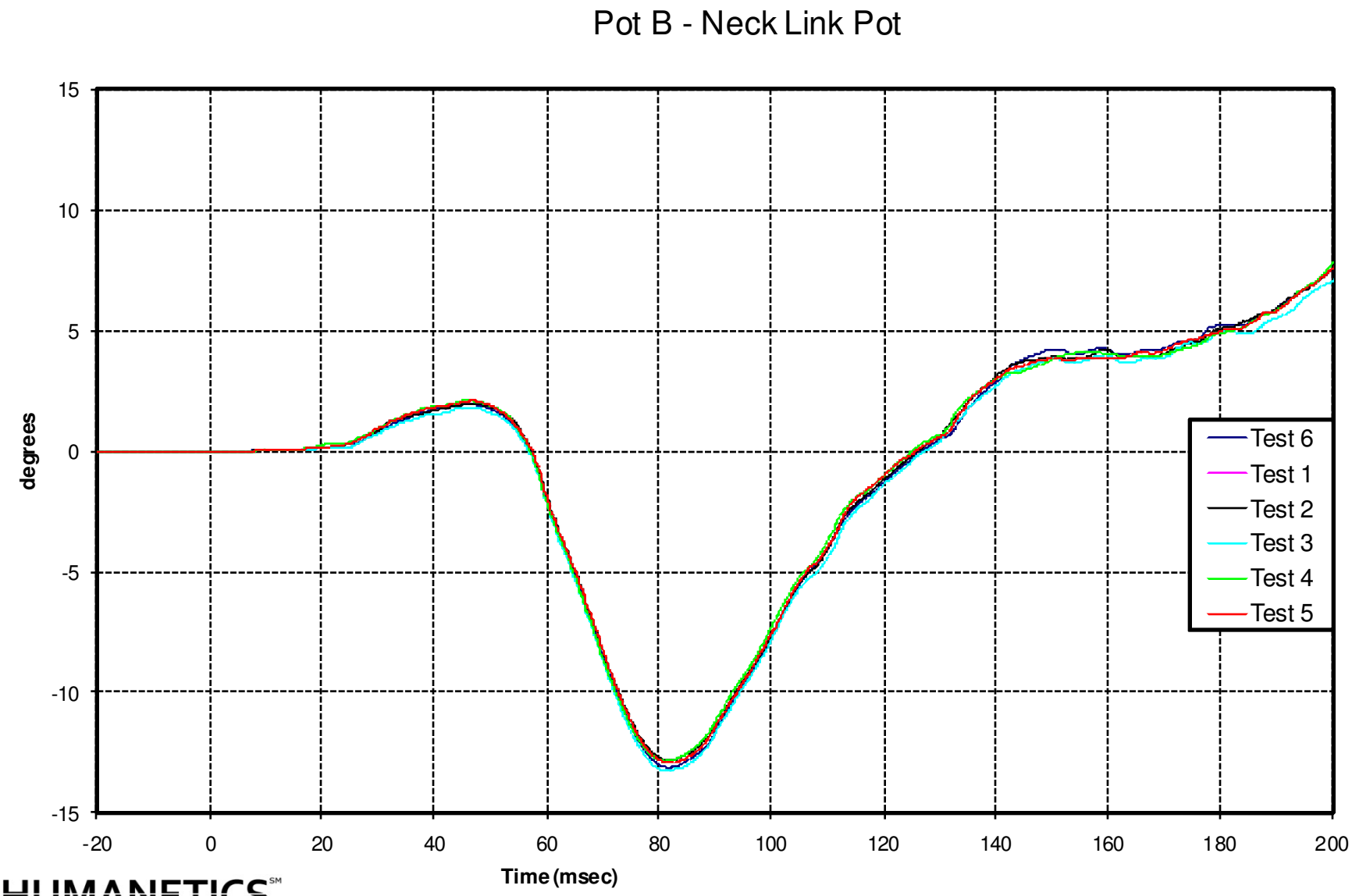
Headrest Test Development



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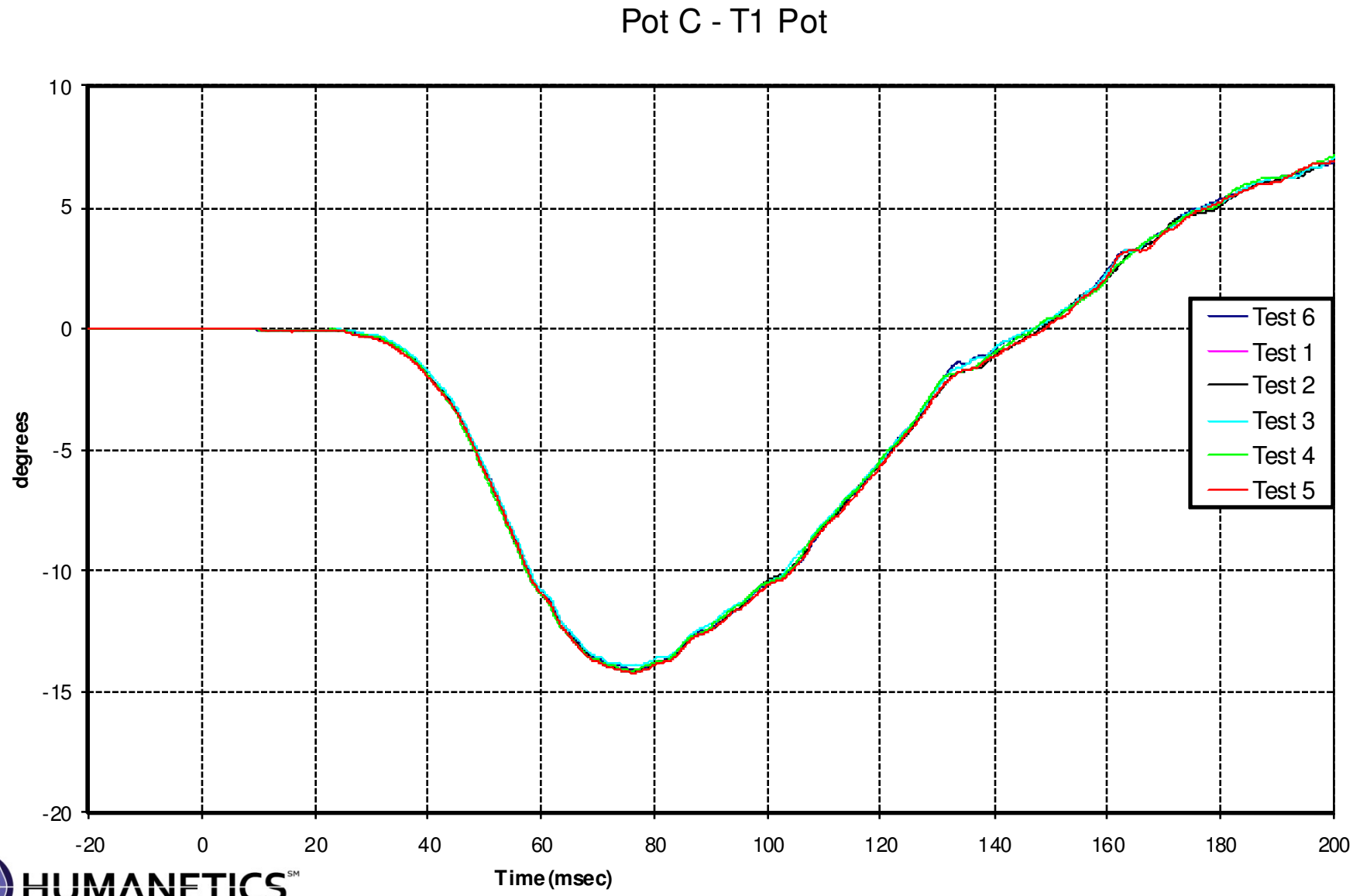
Headrest Test Development



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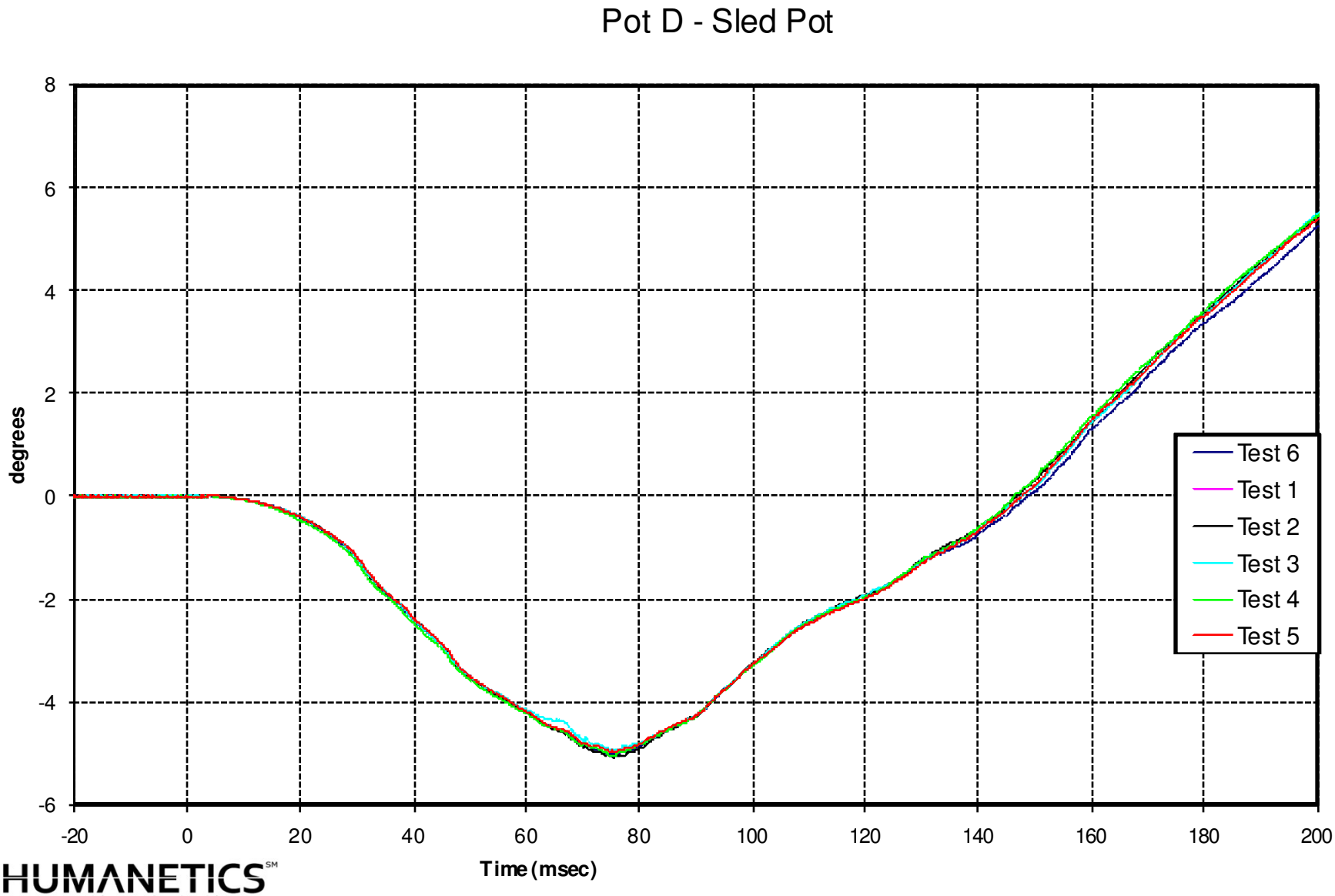
Headrest Test Development



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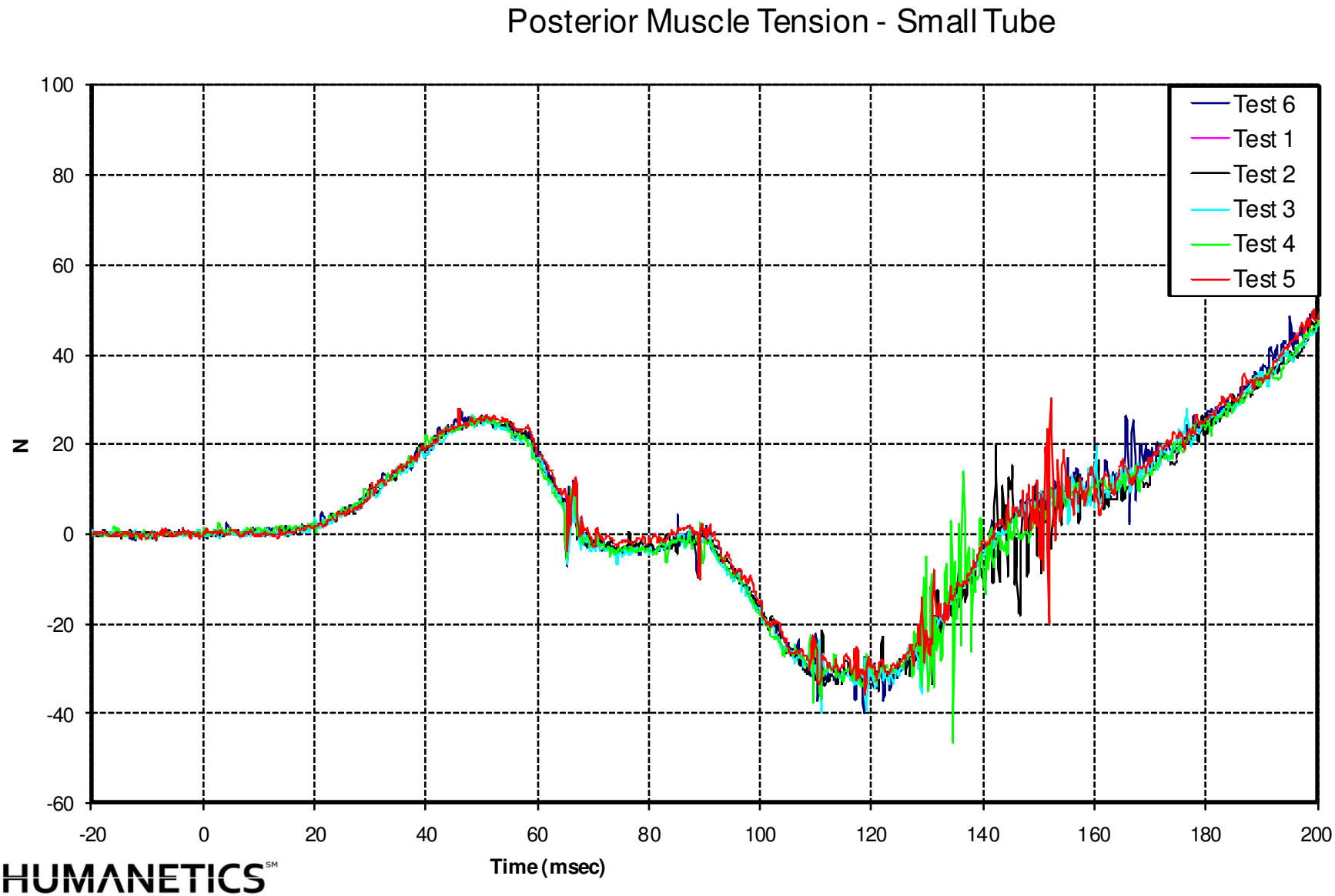

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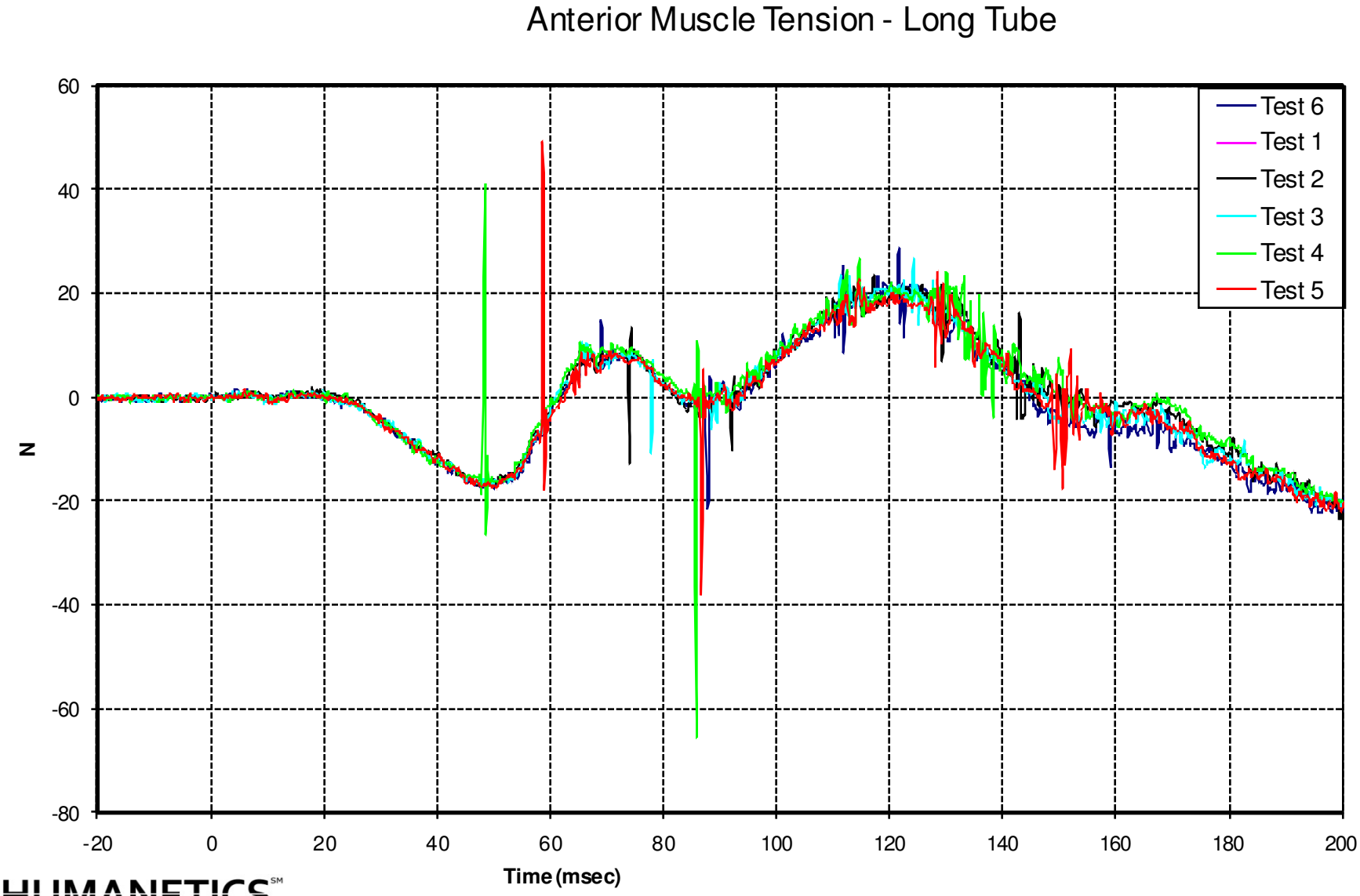

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Headrest Test Development

- Other data collected
  - Pendulum force
  - Pots A, B, C, D
  - Anterior & Posterior spring forces
  - Skull cap loads (when applicable)
  - Total neck rotation and total thorax rotation
  - Skull contact switch
  - Upper neck Mx, Mz

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Headrest Test Development

- Is this test data close enough to car seats?
  - *View presentation from JASIC/Japan*
  - Does Fz need to match better?
- Are the kinematics close enough?
- How to Verify headrest foam

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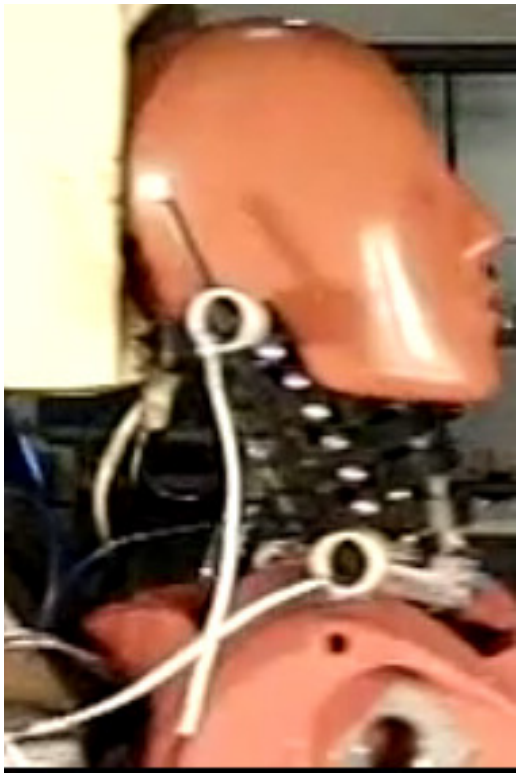
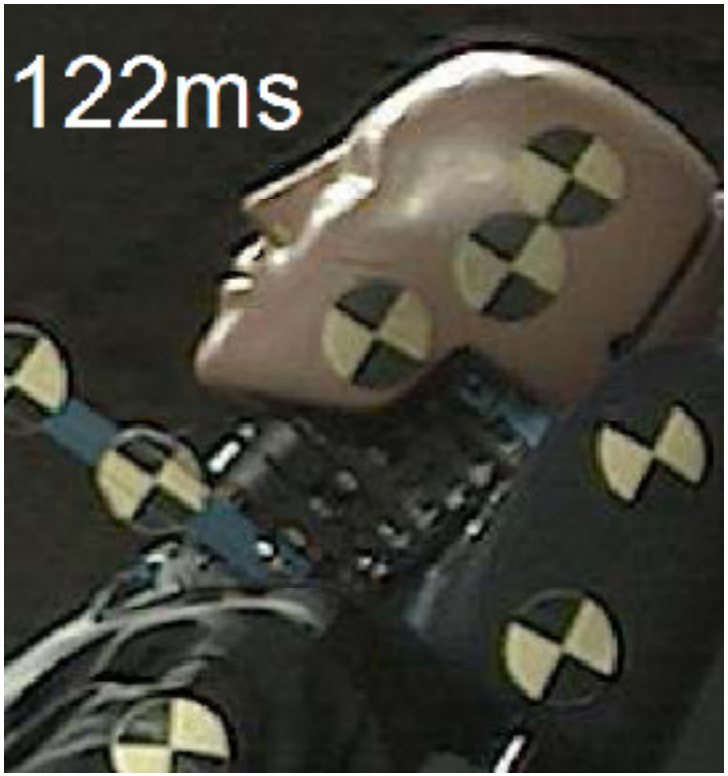
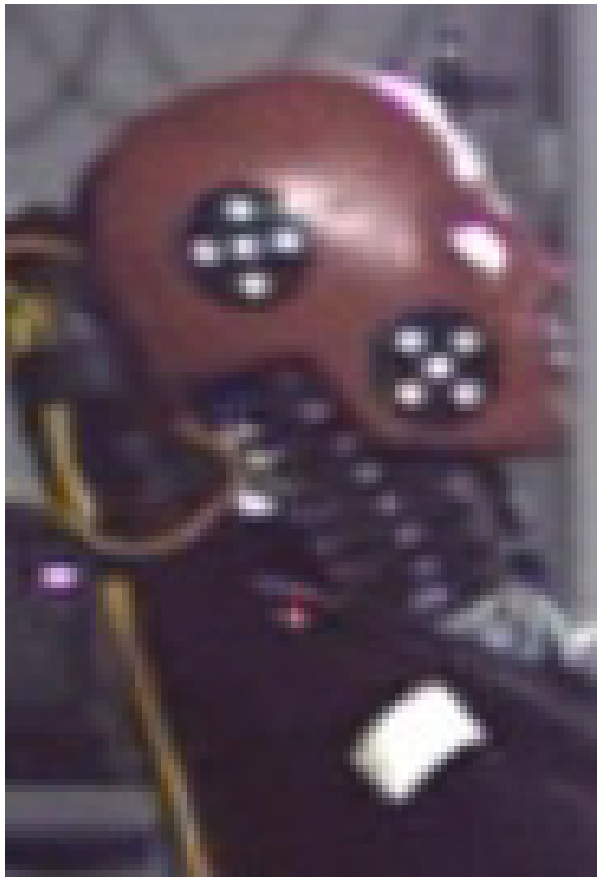
Headrest Test Kinematics



Mini-sled



JASIC sled test



PDB sport seat

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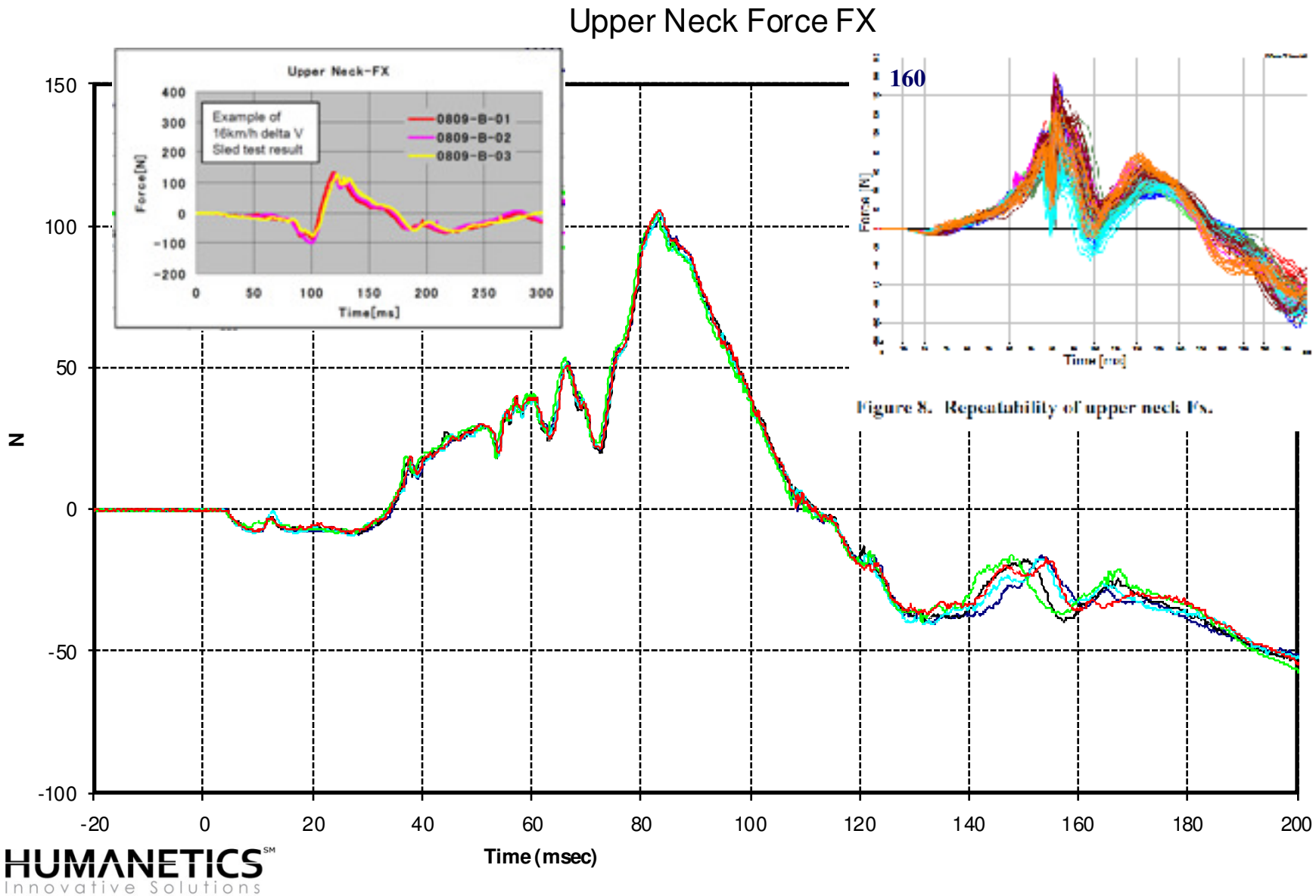
Headrest Test vs Sport Seat



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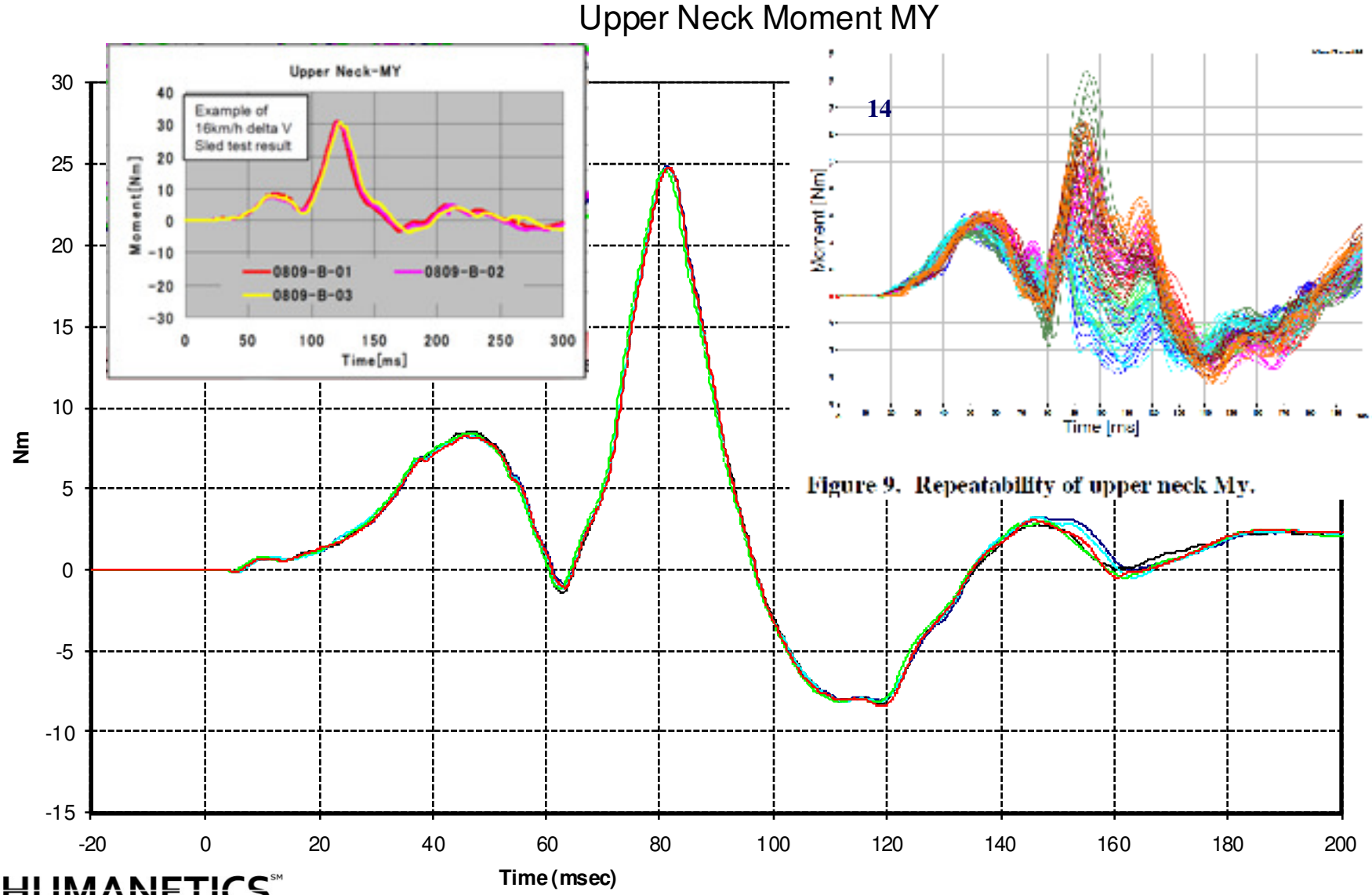
Headrest Test vs Sport Seat



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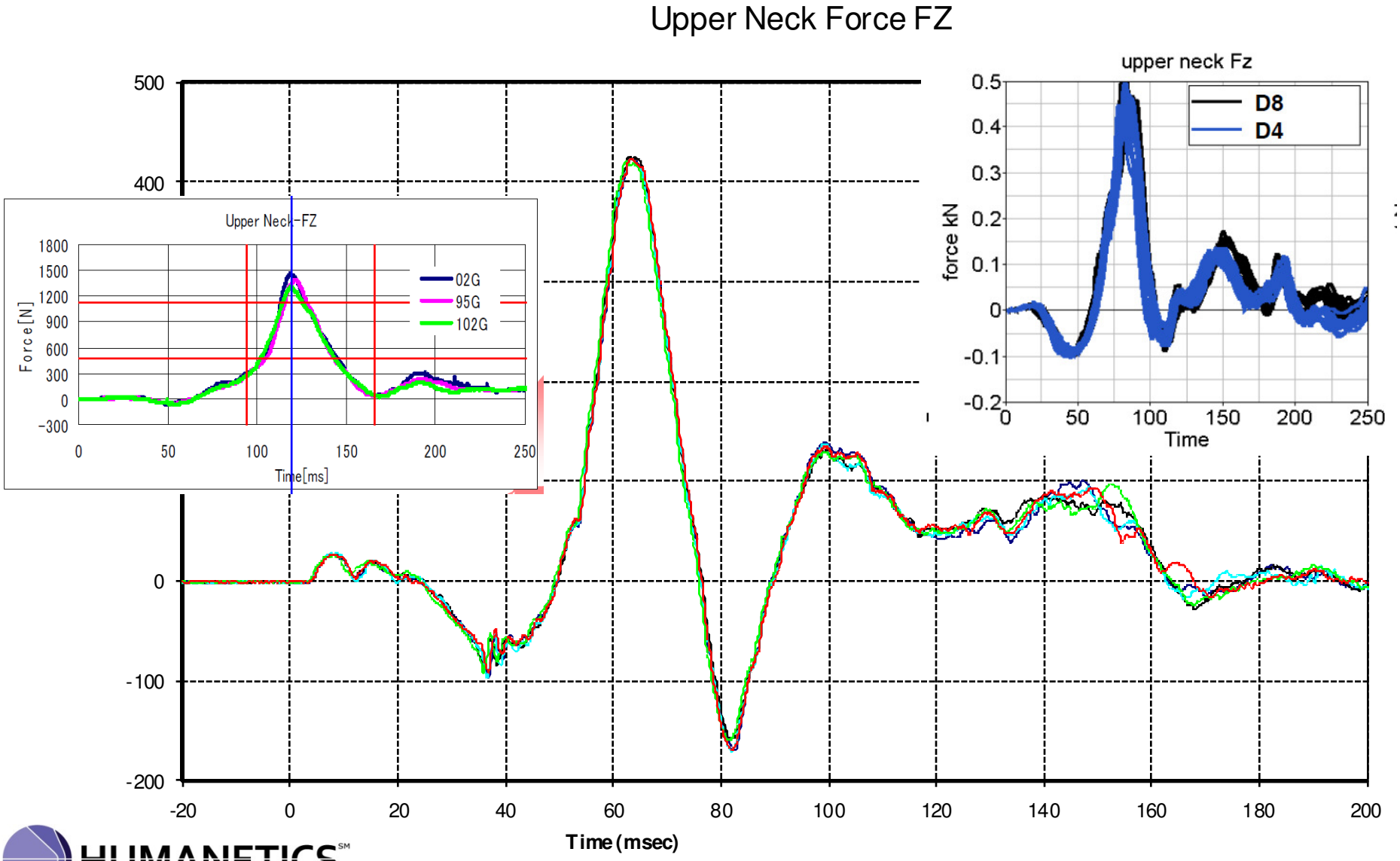
Headrest Test vs Sport Seat



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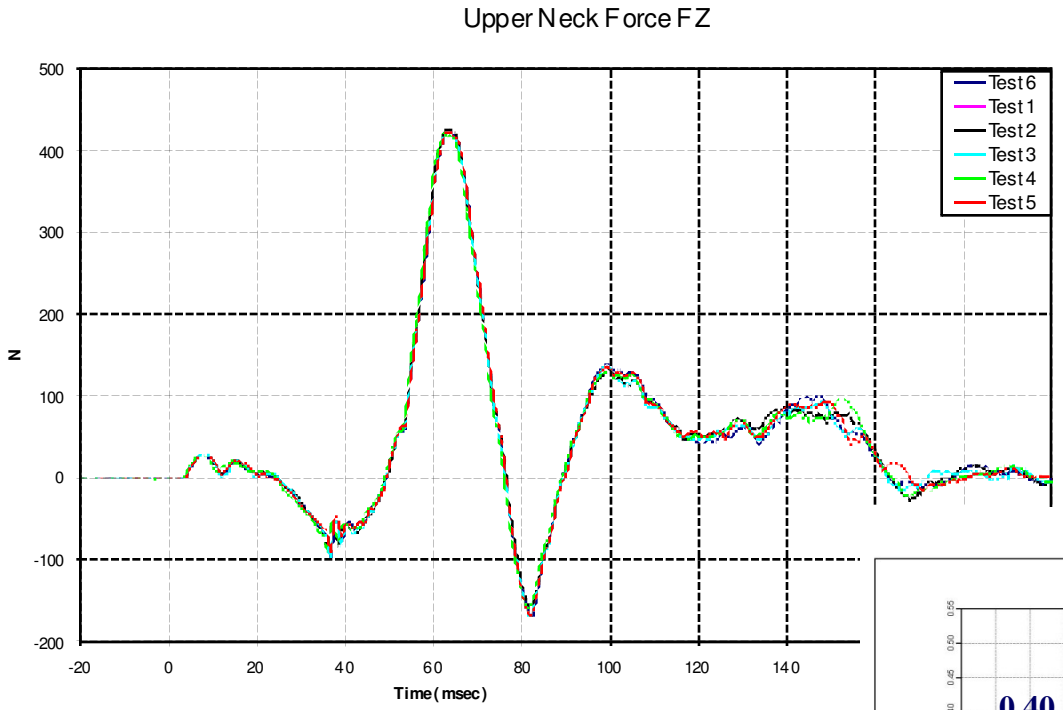
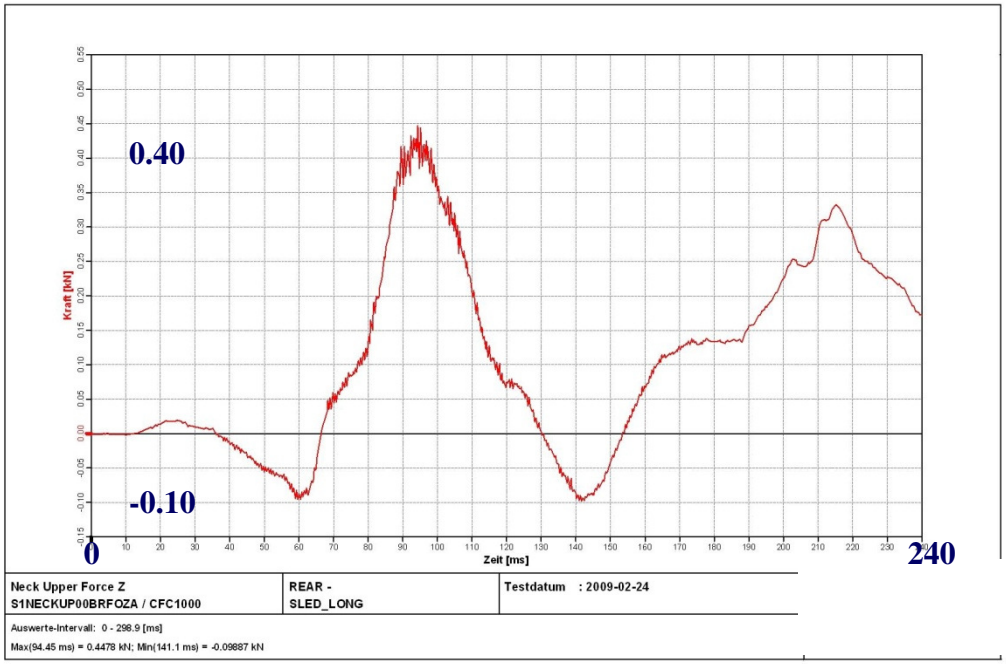
Headrest test vs German Seat





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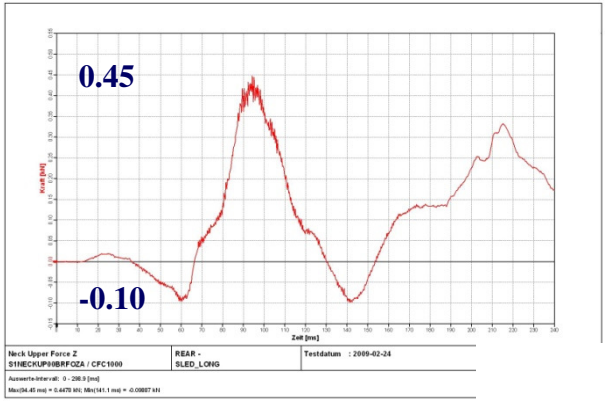
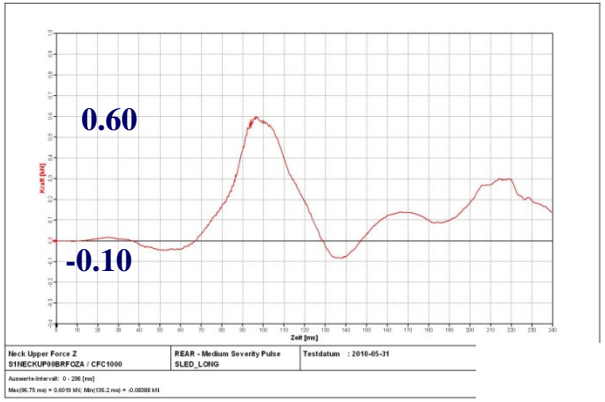
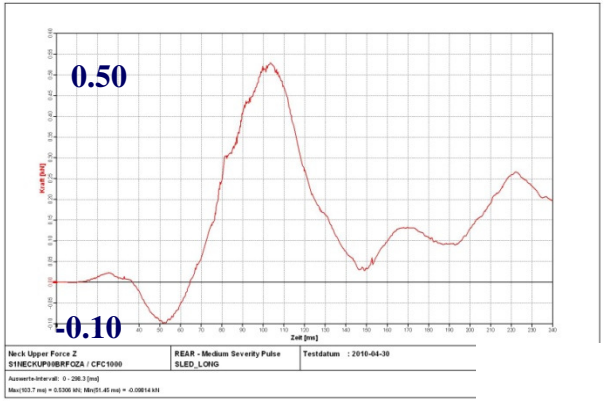
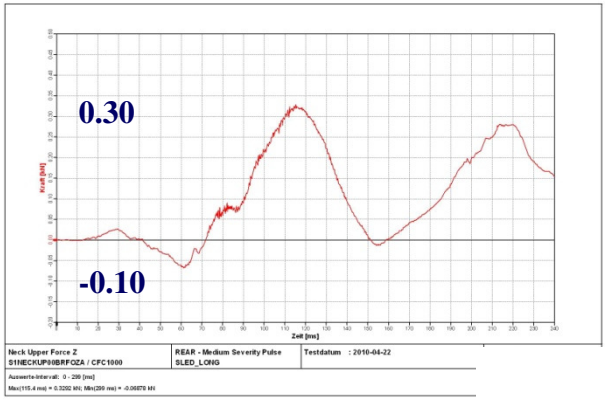
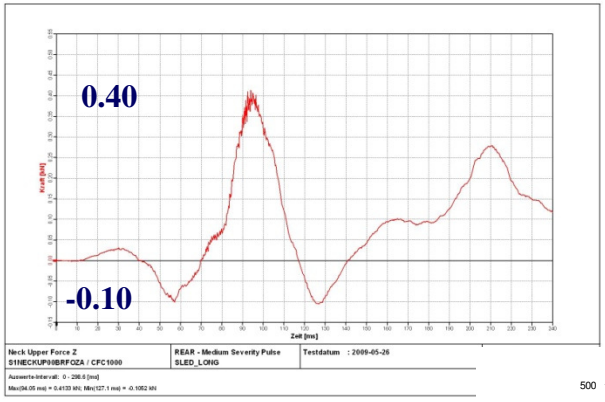
German Car Seats – Upper Fz

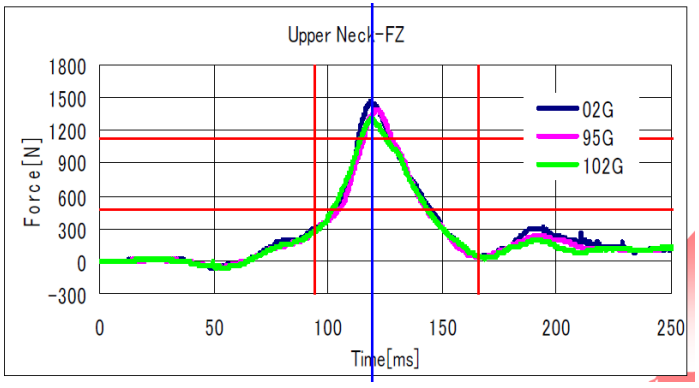


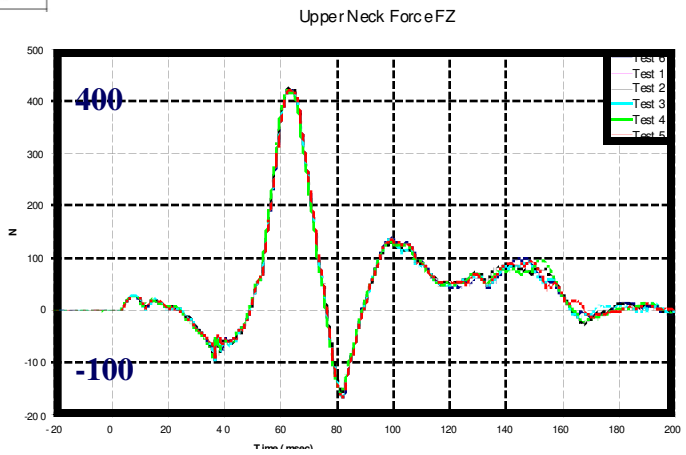




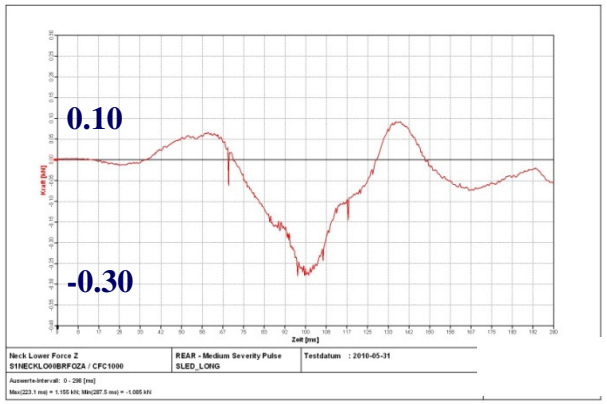


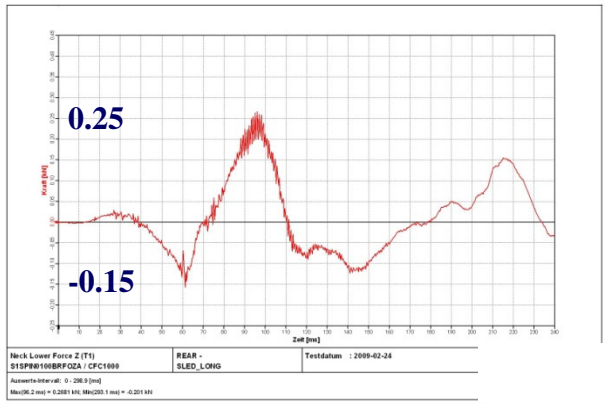


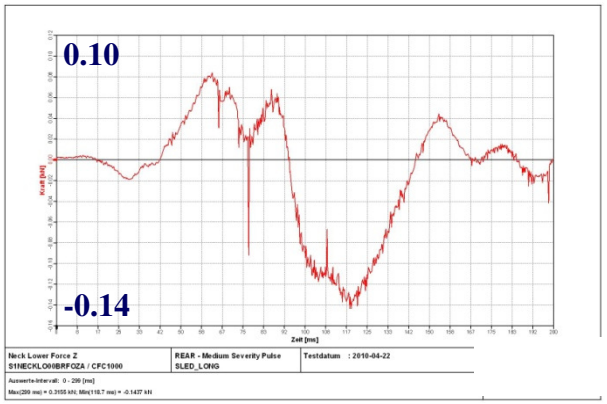


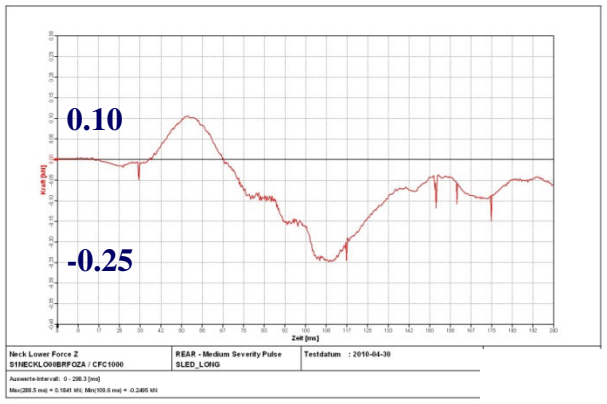


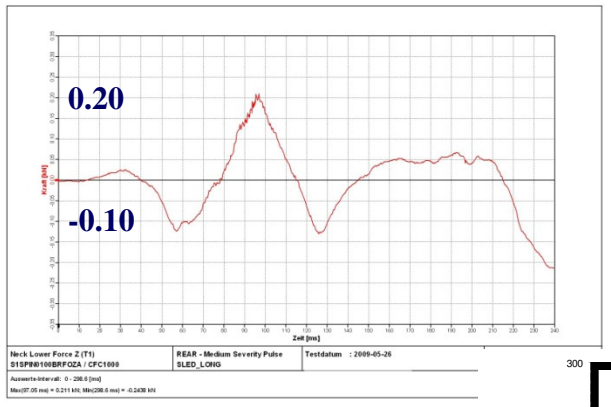
German Car Seats – Lower Fz

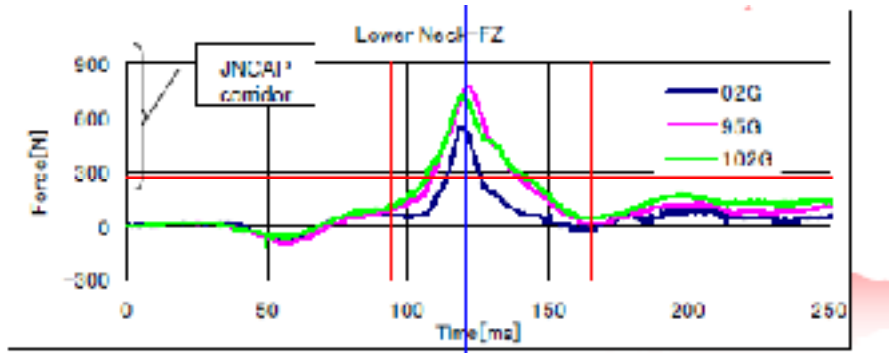




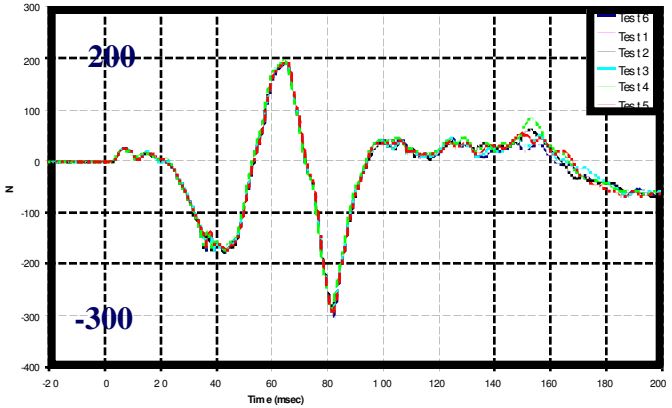








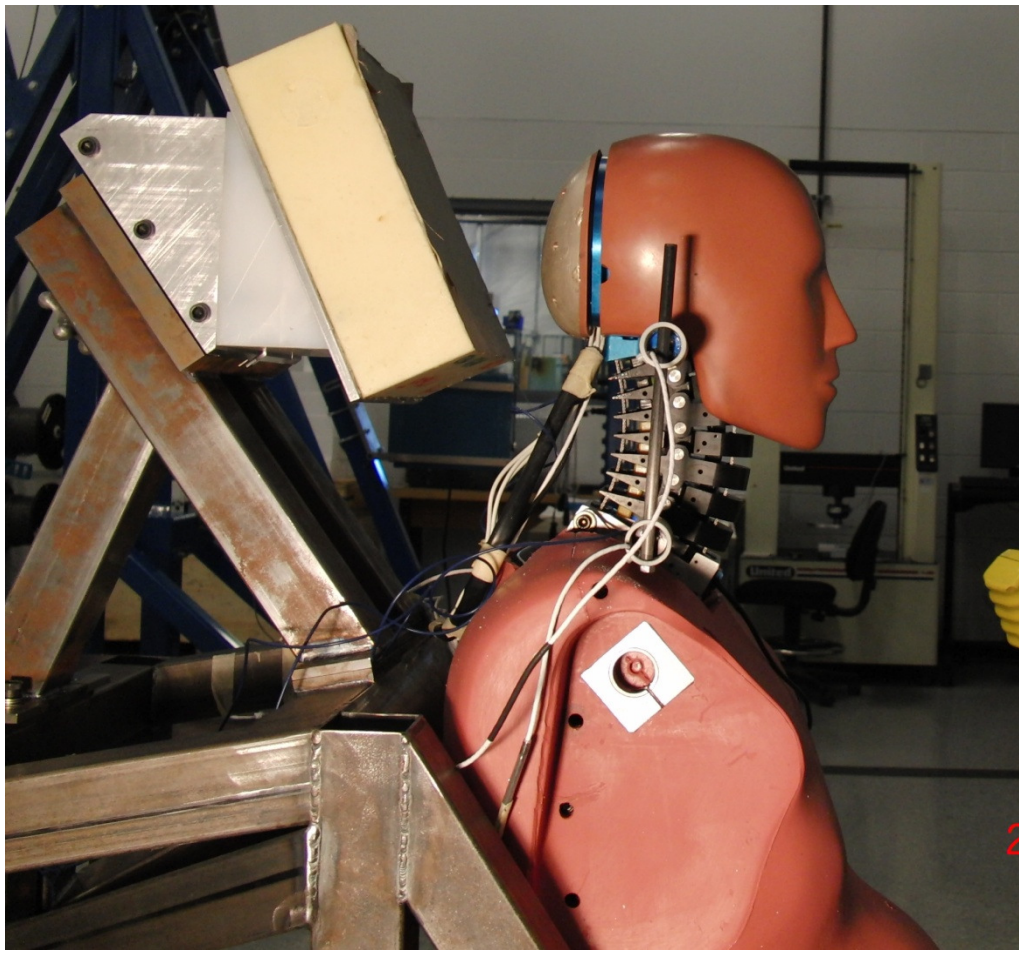
Lower Neck Force FZ (T1 load Cell)



Headrest Test – Increase Fz?

- Tilt headrest back to get more positive Fz
- Still need to adjust for correct backset (70 mm) before testing.

Should the backset in this test be larger than 70 mm since a car seat moves during a sled test giving the head more time to move?



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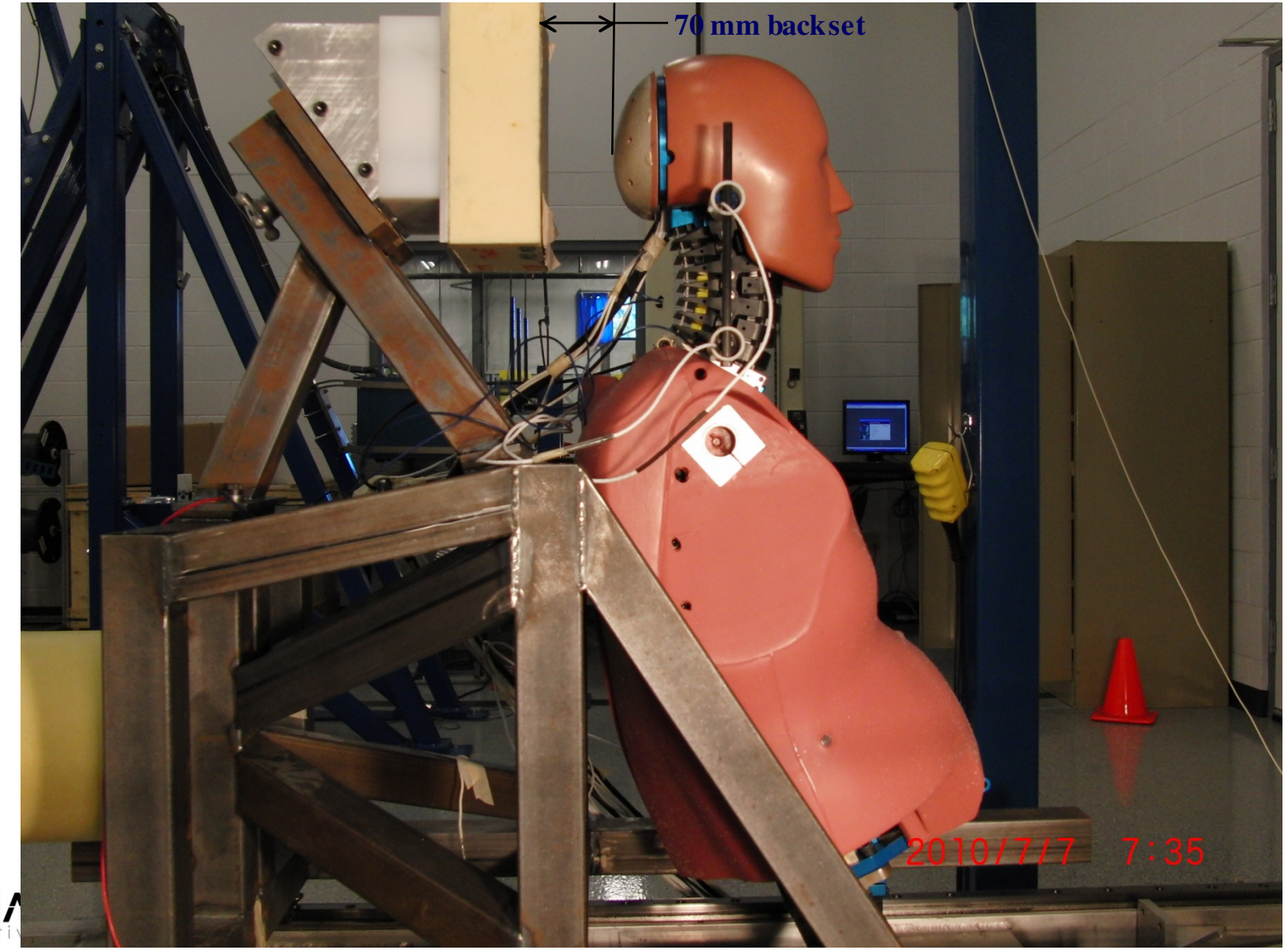
Headrest Test – Setup Position



Headrest Test – Setup Position