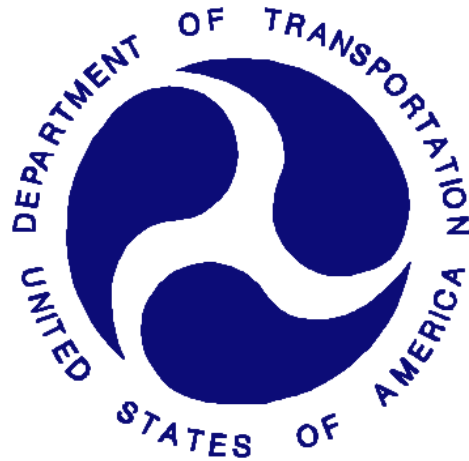


**REPORT NUMBER: MCW-NOSAD-108**

**SIDE AIRBAG OCCUPANT RISK  
OCCUPANT OUT-OF-POSITION TESTS**

**CHRYSLER GROUP, LLC  
2014 JEEP PATRIOT 5-DOOR SUV  
NHTSA NUMBER: M20140308TWG2**

**PREPARED BY:  
MEDICAL COLLEGE OF WISCONSIN  
5000 WEST NATIONAL AVENUE  
RESEARCH 151  
MILWAUKEE, WISCONSIN 53295**



**TEST DATE: 11 FEBRUARY 2014**

**REPORT DATE: 24 FEBRUARY 2014**

**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
OFFICE OF CRASHWORTHINESS STANDARDS  
MAIL CODE: NVS-111  
1200 NEW JERSEY AVE, SE, ROOM W43-410  
WASHINGTON, D.C. 20590**

Test Vehicle: 2014 Jeep Patriot 5-Door SUV  
Test Program: Occupant Out-of-Position Test

NHTSA Number: M20140308TWG 2  
Test Date: February 11, 2014

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Prepared by: \_\_\_\_\_

Date: \_\_\_\_\_

Approved by: \_\_\_\_\_

Date: \_\_\_\_\_

FINAL REPORT ACCEPTANCE BY OCWS:

\_\_\_\_\_  
Division Chief, New Car Assessment Program  
NHTSA, Office of Crashworthiness Standards

Date: \_\_\_\_\_

\_\_\_\_\_  
COTR, New Car Assessment Program  
NHTSA, Office of Crashworthiness Standards

Date: \_\_\_\_\_

**Technical Report Documentation Page**

| 1. Report No.<br>MCW-NOSAD-108                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2. Government Accession No. | 3. Recipient's Catalog No.                                                        |               |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
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| 4. Title and Subtitle<br>Final report of Out of Position Test<br>Side Impact MDB Test of a 2014 Jeep Patriot 5-Door SUV<br>NHTSA No. M20140308TWG2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             | 5. Report Date<br>February 24, 2014                                               |               |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             | 6. Performing Organization Code<br>MCW                                            |               |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
| 7. Author(s)<br>Brian D. Stemper, Ph. D, Project Manager<br>Mark Meyer, Project Engineer<br>Mike Rawski, Project Technologist                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             | 8. Performing Organization Report No.<br>MCW-DOT-NOSAD-108                        |               |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
| 9. Performing Organization Name and Address<br>Medical College of Wisconsin<br>5000 W. National Ave.<br>Research 151<br>Milwaukee, WI 53295                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             | 10. Work Unit No.                                                                 |               |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
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| 12. Sponsoring Agency Name and Address<br>U.S. Department of Transportation<br>National Highway Traffic Safety Administration<br>Office of Crashworthiness Standards (NVS-111)<br>1200 New Jersey Ave, SE, Room W43-410<br>Washington, D.C. 20590                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             | 13. Type of Report and Period Covered:<br>Final Test Report<br>Feb. 11 to Feb. 24 |               |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
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| 15. Supplementary Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                                                                                   |               |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
| 16. Abstract<br>A side airbag out of position test was done on a forward facing SID-II's dummy, seated against the door trim panel, in the front passenger seat of a 2014 Jeep Patriot 5-Door SUV in accordance with instructions specified in the Technical Working Group's Recommended Procedures For Evaluating Occupant Injury Risk From Deploying Side Airbags, dated July 2008. The test was conducted at the Medical College of Wisconsin's Vehicle Crashworthiness Laboratory in Milwaukee, Wisconsin, on 11 February 2014.<br><br>The ambient temperature at the passenger side (by the positioned dummy) of the vehicle at the time of deployment was 21.0° C. The test dummy's performance follows: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th><u>Units</u></th> <th colspan="3"><u>Passenger ATD (SID-II's)</u></th> </tr> <tr> <th></th> <th></th> <th><u>Threshold</u></th> <th colspan="2"><u>Result</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC<sub>15</sub>)</td> <td>N/a</td> <td>700</td> <td colspan="2">2.90</td> </tr> <tr> <td>Head Injury Criteria (HIC<sub>36</sub>)</td> <td>N/a</td> <td>1000</td> <td colspan="2">2.90</td> </tr> <tr> <td></td> <td><u>Ntf</u></td> <td><u>Nte</u></td> <td><u>Ncf</u></td> <td><u>Nce</u></td> </tr> <tr> <td>Upper Neck (Nij)</td> <td>0.16</td> <td>0.19</td> <td>0.16</td> <td>0.16</td> </tr> <tr> <td>Lower Neck (Nij)</td> <td>0.11</td> <td>0.35</td> <td>0.12</td> <td>0.31</td> </tr> </tbody> </table> |                             |                                                                                   |               |            |  | <u>Units</u> | <u>Passenger ATD (SID-II's)</u> |  |  |  |  | <u>Threshold</u> | <u>Result</u> |  | Head Injury Criteria (HIC <sub>15</sub> ) | N/a | 700 | 2.90 |  | Head Injury Criteria (HIC <sub>36</sub> ) | N/a | 1000 | 2.90 |  |  | <u>Ntf</u> | <u>Nte</u> | <u>Ncf</u> | <u>Nce</u> | Upper Neck (Nij) | 0.16 | 0.19 | 0.16 | 0.16 | Lower Neck (Nij) | 0.11 | 0.35 | 0.12 | 0.31 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <u>Units</u>                | <u>Passenger ATD (SID-II's)</u>                                                   |               |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             | <u>Threshold</u>                                                                  | <u>Result</u> |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
| Head Injury Criteria (HIC <sub>15</sub> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | N/a                         | 700                                                                               | 2.90          |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
| Head Injury Criteria (HIC <sub>36</sub> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | N/a                         | 1000                                                                              | 2.90          |            |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <u>Ntf</u>                  | <u>Nte</u>                                                                        | <u>Ncf</u>    | <u>Nce</u> |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
| Upper Neck (Nij)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.16                        | 0.19                                                                              | 0.16          | 0.16       |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |
| Lower Neck (Nij)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.11                        | 0.35                                                                              | 0.12          | 0.31       |  |              |                                 |  |  |  |  |                  |               |  |                                           |     |     |      |  |                                           |     |      |      |  |  |            |            |            |            |                  |      |      |      |      |                  |      |      |      |      |

Test Vehicle: 2014 Jeep Patriot 5-Door SUV  
Test Program: Occupant Out-of-Position Test

NHTSA Number: M20140308TWG 2  
Test Date: February 11, 2014

**Technical Report Documentation Page (CONTINUED)**

|                                                                                                                                                            |                                                             |                                                                                                                                                                                                                                                                                                                                                  |                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <i>17. Key Words</i><br>SID-ILs<br>New Car Assessment Program (NCAP)<br>NHTSA No. M20140308TWG 2<br>Side Airbag Out-of-Position<br>Technical Working Group |                                                             | <i>18. Distribution Statement</i><br>Copies of this report are available from :<br>National Highway Traffic Safety Administration<br>Technical Information Service Division, NPO-411<br>1200 New Jersey Ave, SE, Room E12-100<br>Washington, D.C. 20590<br>e-mail: <a href="mailto:tis@nhtsa.dot.gov">tis@nhtsa.dot.gov</a><br>FAX: 202-493-2833 |                  |
| <i>19. Security Classif. (of this report)</i><br>Unclassified                                                                                              | <i>20. Security Classif. (of this page)</i><br>Unclassified | <i>21. No. of Pages</i><br>83                                                                                                                                                                                                                                                                                                                    | <i>22. Price</i> |

Form DOT F1700.7 (8-72)

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## **SECTION 1**

### **TEST PURPOSE AND PROCEDURE**

This occupant out-of-position static side airbag deployment test is part of the Technical Working Group's Occupant Injury Risk from Deploying Side Airbags Testing Program sponsored by Alpha Technology Associate, Inc. under contract number DTNH22-09-D-00123. The purpose of this test was to obtain occupant injury data for a side airbag deployment. The occupant out-of-position side airbag test was conducted in accordance with the Technical Working Group Recommended Procedures for Evaluating Occupant Injury from Deploying Side Airbags dated July 2008.

One SID-II's dummy was seated forward facing in the front passenger seat. The seat was placed in its lowest height position and in the 5<sup>th</sup> detent from full-forward in the fore/aft position with the seatback at the manufacturer's design for a 50<sup>th</sup> percentile male, as stated in section 3.3.1, General Seat Preparation Procedure. The dummy was placed on the outboard edge of the seat cushion, with the dummy's back contacting the seatback, and the head center-of-gravity centered with the deployment trajectory of the airbag. The dummy's right arm was in contact of the door panel with the arm resting at 90 degrees. This orientation complies with section 3.3.5.2 of the TWG Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags as defined by Lund, et al. and the Technical Working Group dated July 2008.

## SECTION 2 SUMMARY OF TEST RESULTS

A curtain and front passenger seat-mounted airbag was deployed in a 2014 Jeep Patriot 5-Door SUV on 11 February 2014. Previously, in November of 2013, the Jeep Patriot was involved in a NCAP side impact. Both tests were conducted by the Medical College of Wisconsin. Pre - and post - test photographs of the test vehicle and the SID-IIs are included in Appendix A.

The dummy was placed in the right front designated seating position according to instructions specified in the TWG Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags as defined by Lund, et al. and the Technical Working Group dated July 2008. The Out-of-Position impact event was documented by three cameras. Camera locations are included in this report.

*The Part 572V (SID-IIs) dummy was instrumented accordingly:*

Passenger ATD (SID-IIs)

- Head center of gravity tri-axial (X, Y, Z) accelerometers (primary and redundant)
- Upper neck tri-axial (X, Y, Z) force load cells and tri-axial (X, Y, Z) moment load cells
- Lower neck tri-axial (X, Y, Z) force load cells and tri-axial (X, Y, Z) moment load cells

*Supplemental restraint information is given below:*

| SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION |                         |                |
|-------------------------------------------|-------------------------|----------------|
| Restraint type                            | Right Front (Passenger) |                |
|                                           | Mounted                 | Deployed       |
| Frontal Airbag                            | Yes                     | Did Not Deploy |
| Knee Airbag                               | No                      | N/a            |
| Side Curtain Airbag                       | Yes                     | Deployed       |
| Side Torso Airbag                         | Yes                     | Deployed       |
| Seat Belt Pretensioner                    | Yes                     | No             |
| Seat Belt Load Limiter                    | Yes                     | N/a            |
| Other                                     | N/a                     | N/a            |

**SECTION 2**  
**SUMMARY OF TEST RESULTS (CONTINUED)**

*Dummy injury values were recorded as follows:*

| <b>DUMMY INJURY VALUES</b>                |                                             |
|-------------------------------------------|---------------------------------------------|
| <b>Measurement Description</b>            | <b>Passenger ATD<br/>(SID-IIs S/N- 298)</b> |
|                                           | <b>Result</b>                               |
| Head Injury Criteria (HIC <sub>15</sub> ) | 2.90                                        |
| Head Injury Criteria (HIC <sub>36</sub> ) | 2.90                                        |
| UNLC                                      |                                             |
| Ntf                                       | 0.16                                        |
| Nte                                       | 0.19                                        |
| Ncf                                       | 0.16                                        |
| Nce                                       | 0.16                                        |
| LNLC                                      |                                             |
| Ntf                                       | 0.11                                        |
| Nte                                       | 0.35                                        |
| Ncf                                       | 0.12                                        |
| Nce                                       | 0.31                                        |

**DATA SHEET NO. 1  
 GENERAL TEST AND VEHICLE PARAMETER DATA**

| VEHICLE INFORMATION      |                   |
|--------------------------|-------------------|
| NHTSA No.                | M20140308         |
| Model Year               | 2014              |
| Make                     | Jeep              |
| Model                    | Patriot           |
| Body Style               | SUV               |
| VIN                      | 1C4NJPBA4ED559911 |
| Body Color               | Gray Metallic     |
| Odometer Reading (km/mi) | 14 mi             |
| Engine Displacement (L)  | 2.0               |
| Type/No. of Cylinders    | 4                 |
| Engine Placement         | Lateral           |
| Transmission Type        | 5-Speed Manual    |
| Transmission Speeds      | 5                 |
| Overdrive                | Yes               |
| Final Drive              | FWD               |
| Roof Rack                | Yes               |
| Sunroof/T-Top            | No                |
| Running Boards           | No                |
| Tilt Steering Wheel      | Yes               |
| Power Seats              | No                |
| Anti-Lock Brakes (ABS)   | Yes               |

| VEHICLE OPTIONS                   |            |
|-----------------------------------|------------|
| Traction Control System (TCS)     | Yes        |
| Auto-Leveling System              | No         |
| Automatic Door Locks (ADL)        | No         |
| Power Window Auto-Reverse         | No         |
| Other Optional Features           | Yes        |
| Driver Front Airbag               | Yes        |
| Driver Curtain Airbag             | Yes        |
| Driver Head/Torso Airbag          | No         |
| Driver Torso Airbag               | Yes        |
| Driver Torso/Pelvis Airbag        | No         |
| Driver Pelvis Airbag              | No         |
| Driver Knee Airbag                | No         |
| Rear Pass. Curtain Airbag         | Yes        |
| Rear Pass. Head/Torso Airbag      | No         |
| Rear Pass. Torso Airbag           | No         |
| Rear Pass. Torso/Pelvis Airbag    | No         |
| Rear Pass. Pelvis Airbag          | No         |
| Driver Seat Belt Pretensioner     | Yes        |
| Rear Pass. Seat Belt Pretensioner | No         |
| Driver Load Limiter               | Yes        |
| Rear Pass. Load Limiter           | No         |
| Other Safety Restraint            | None Noted |

Does owner's manual provide instructions to turn off automatic door locks?

No

| DATA FROM CERTIFICATION LABEL |                       |                |      |
|-------------------------------|-----------------------|----------------|------|
| Manufactured By               | Chrysler Group, LLC   | GVWR (kg)      | 2012 |
| Date of Manufacture           | August 2013           | GAWR Front(kg) | 1080 |
| Vehicle Type                  | Sport Utility Vehicle | GAWR Rear (kg) | 1044 |

| VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION |       |      |       |       |
|-------------------------------------------------|-------|------|-------|-------|
|                                                 | Front | Rear | Third | Total |
| Designated Seating Capacity (DSC)               | 2     | 3    | 0     | 5     |
| Capacity Weight (VCW) (kg)                      |       |      |       | 419.6 |
| DSC X 68.04 (kg)                                |       |      |       | 340.2 |
| Cargo Weight (RCLW) (kg)                        |       |      |       | 79.4  |

(A)  
 (B)  
 (A-B)

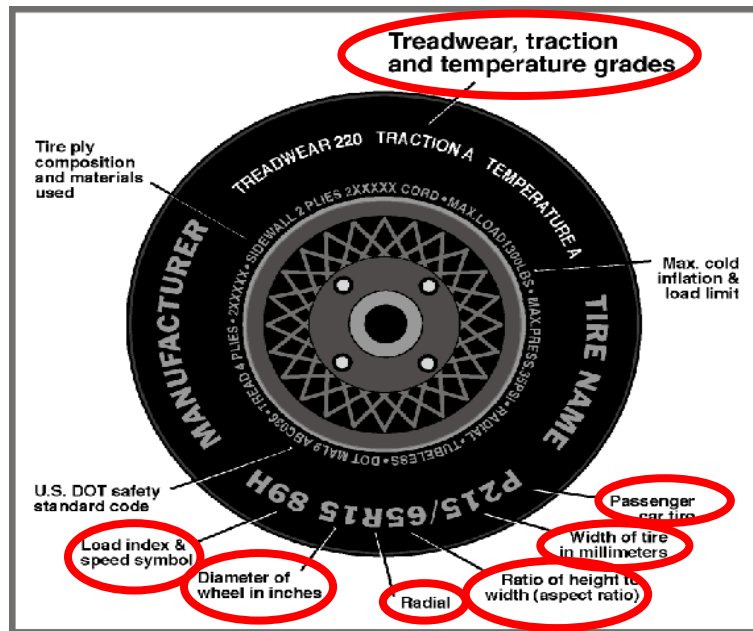
Test Vehicle: 2014 Jeep Patriot 5-Door SUV  
 Test Program: Occupant Out-Of-Position

NHTSA Number: M20140308TWG 2  
 Test Date: February 11, 2014

**DATA SHEET NO. 1**  
**GENERAL TEST AND VEHICLE PARAMETER DATA (CONTINUED)**

| VEHICLE SEAT TYPE       |                  |       |                |           |                   |            |         |
|-------------------------|------------------|-------|----------------|-----------|-------------------|------------|---------|
| Seating Location        | Type of Seat Pan |       |                |           | Type of Seat Back |            |         |
|                         | Bucket           | Bench | Split<br>Bench | Contoured | Fixed             | Adjustable |         |
|                         |                  |       |                |           |                   | W/ Lever   | W/ Knob |
| Front Seat              | X                |       |                |           |                   | X          |         |
| Rear or Second Row Seat |                  |       | X              | X         | X                 | N/a        |         |
| Third Row Seat          |                  |       |                |           |                   |            |         |

**DATA SHEET NO. 1**  
**GENERAL TEST AND VEHICLE PARAMETER DATA (CONTINUED)**



| VEHICLE TIRE INFORMATION |                   |                   |
|--------------------------|-------------------|-------------------|
| Measured Parameter       | Front             | Rear              |
| Max. Tire Pressure (kPa) | 300               | 300               |
| Cold Pressure (kPa)      | 241.3             | 241.3             |
| Recommended Tire Size    | P205/70R16        | P205/70R16        |
| Tire Size on Vehicle     | P205/70R16        | P205/70R16        |
| Tire Manufacturer        | Goodyear          | Goodyear          |
| Tire Model               | Eagle LS          | Eagle LS          |
| Treadwear                | 400               | 400               |
| Traction                 | A                 | A                 |
| Temperature Grades       | B                 | B                 |
| Tire Plies Sidewall      | 2                 | 2                 |
| Tire Plies Body          | 4                 | 4                 |
| Load Index/Speed Symbol  | 96T               | 96T               |
| Tire Material            | Polyester & Steel | Polyester & Steel |
| DOT Safety Code Left     | M60W CUER 3113    | M60W CUER 3113    |
| DOT Safety Code Right    | M60W CUER 3113    | M60W CUER 3113    |

**DATA SHEET NO. 1**  
**GENERAL TEST AND VEHICLE PARAMETER DATA (CONTINUED)**

| TIRE PRESSURES |       |       |       |       |       |
|----------------|-------|-------|-------|-------|-------|
|                | Units | LF    | RF    | LR    | RR    |
| As Delivered   | kPa   | 241.3 | 241.3 | 241.3 | 241.3 |
| Tire Placard   | kPa   | 241.3 | 241.3 | 241.3 | 241.3 |
| Owner's Manual | kPa   | 241.3 | 241.3 | 241.3 | 241.3 |
| As Tested      | kPa   | 241.3 | 241.3 | 241.3 | 241.3 |

| MDB TIRE SPECIFICATIONS |       |             |            |            |            |            |
|-------------------------|-------|-------------|------------|------------|------------|------------|
|                         | Units | Requirement | LF         | RF         | LR         | RR         |
| Tire Size               |       | 205/75R15   | P205/75R15 | P205/75R15 | P205/75R15 | P205/75R15 |
| Tire Pressure           | kPa   | 200 +/- 21  | 200        | 200        | 200        | 200        |

| TEST VEHICLE WEIGHTS |       |                    |           |        |                 |           |        |              |           |        |
|----------------------|-------|--------------------|-----------|--------|-----------------|-----------|--------|--------------|-----------|--------|
|                      | Units | As Delivered (UVW) |           |        | As Tested (ATW) |           |        | Fully Loaded |           |        |
|                      |       | Front Axle         | Rear Axle | Total  | Front Axle      | Rear Axle | Total  | Front Axle   | Rear Axle | Total  |
| Left                 | kg    | 411.0              | 299.4     |        | 454.0           | 380.1     |        | 459.1        | 384.8     |        |
| Right                | kg    | 394.6              | 301.6     |        | 381.9           | 388.3     |        | 388.8        | 378.5     |        |
| Ratio                | %     | 57.3               | 42.7      |        | 52.1            | 47.9      |        | 52.6         | 47.4      |        |
| Totals               | kg    | 805.6              | 601.0     | 1406.6 | 835.9           | 768.4     | 1604.3 | 847.9        | 763.3     | 1611.2 |

| TARGET TEST WEIGHT CALCULATION               |       |        |             |
|----------------------------------------------|-------|--------|-------------|
|                                              | Units |        |             |
| Total Delivered Weight (UVW)                 | kg    | 1406.6 | (A)         |
| Sum of Actual Weight of 2 P572 ATDs used     | kg    | 125.2  | (B)         |
| Rated Cargo/Luggage Weight (RCLW)            | kg    | 79.4   | (C)         |
| Calculated Target Vehicle Test Weight (TVTW) | kg    | 1611.2 | (A + B + C) |

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)?

Yes

**DATA SHEET NO. 1**  
**GENERAL TEST AND VEHICLE PARAMETER DATA (CONTINUED)**

| <b>TEST VEHICLE ATTITUDE AND CG</b>                         |              |                     |                  |                             |
|-------------------------------------------------------------|--------------|---------------------|------------------|-----------------------------|
| <b>Measurement description</b>                              | <b>Units</b> | <b>Fully Loaded</b> | <b>As Tested</b> | <b>Meets Requirement***</b> |
| LF                                                          | mm           | 806                 | 809              | Yes                         |
| RF                                                          | mm           | 811                 | 810              | Yes                         |
| RR                                                          | mm           | 787                 | 791              | Yes                         |
| LR                                                          | mm           | 795                 | 795              | Yes                         |
| Vehicle CG (Aft of Front Axle)                              | mm           | 1248.3              | 1262.1           |                             |
| Vehicle CG (Left(+))/Right(-) from Longitudinal Centerline) | mm           | 42.0                | 35.2             |                             |

\*\*\*The "As Tested" vehicle attitude measurements must be equal to or within +/- 10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. "Yes" or "No" is indicated.

| <b>WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW</b>                                             |                    |
|------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Ballast</b>                                                                                                   | <b>Weight (kg)</b> |
| Removed spare tire & floor cover, plastic cover under engine, and jack to achieve calculated "As Tested" weight. | 28.6               |

**DATA SHEET NO. 2**  
**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA**

| SCRL ANGLE RANGE          |          |       |                    |
|---------------------------|----------|-------|--------------------|
| Seat                      | SCRL (°) |       |                    |
|                           | Max      | Min   | Mid                |
| Driver Seat               | Fixed    | Fixed | Set at 0° for test |
| Front Passenger Seat      | Fixed    | Fixed | Set at 0° for test |
| Front Center Seat*        |          |       |                    |
| Struck Side Rear Seat     | Fixed    | Fixed | Fixed              |
| Non-Struck Side Rear Seat | Fixed    | Fixed | Fixed              |
| Rear Center Seat*         |          |       |                    |

\*If applicable

| SCRL ANGLE RANGE             |                                      |                                 |                        |                 |              |                  |
|------------------------------|--------------------------------------|---------------------------------|------------------------|-----------------|--------------|------------------|
| Seat                         | As Tested<br>SCRL Angle<br>(Mid) (°) | As Tested<br>SCR Height<br>(mm) | SCR Height<br>Position | SCR Height (mm) |              |                  |
|                              |                                      |                                 |                        | Rearmost        | Mid-Fore/Aft | Forward-<br>Most |
| Driver's Seat                | N/a**                                | N/a**                           | Max                    | N/a**           | N/a**        | N/a**            |
|                              | 0.0                                  | 40                              | Mid                    | 51              | 40           | 30               |
|                              | N/a**                                | N/a**                           | Min                    | N/a**           | N/a**        | N/a**            |
| Front<br>Passenger Seat      | N/a**                                | N/a**                           | Max                    | N/a**           | N/a**        | N/a**            |
|                              | 0.0                                  | 32                              | Mid                    | 44              | 33           | 23               |
|                              | N/a**                                | N/a**                           | Min                    | N/a**           | N/a**        | N/a**            |
| Front Center<br>Seat*        |                                      |                                 | Max                    |                 |              |                  |
|                              |                                      |                                 | Mid                    |                 |              |                  |
|                              |                                      |                                 | Min                    |                 |              |                  |
| Struck Side<br>Rear Seat     | Fixed                                | Fixed                           | Max                    | Fixed           | Fixed        | Fixed            |
|                              | Fixed                                | Fixed                           | Mid                    | Fixed           | Fixed        | Fixed            |
|                              | Fixed                                | Fixed                           | Min                    | Fixed           | Fixed        | Fixed            |
| Non-Struck<br>Side Rear Seat | Fixed                                | Fixed                           | Max                    | Fixed           | Fixed        | Fixed            |
|                              | Fixed                                | Fixed                           | Mid                    | Fixed           | Fixed        | Fixed            |
|                              | Fixed                                | Fixed                           | Min                    | Fixed           | Fixed        | Fixed            |
| Rear Center<br>Seat*         |                                      |                                 | Max                    |                 |              |                  |
|                              |                                      |                                 | Mid                    |                 |              |                  |
|                              |                                      |                                 | Min                    |                 |              |                  |

\*If applicable

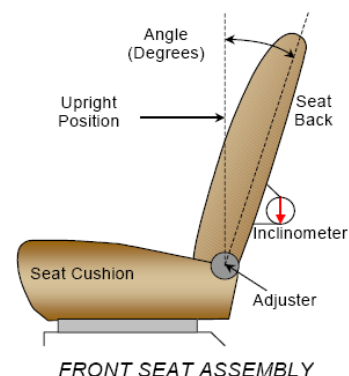
**DATA SHEET NO. 2**  
**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA (CONTINUED)**

| SEAT FORE/AFT POSITION    |                       |         |                                          |         |
|---------------------------|-----------------------|---------|------------------------------------------|---------|
| Seat                      | Total Fore/Aft Travel |         | Test Position from Forward most Position |         |
|                           | mm                    | Detent* | mm                                       | Detent* |
| Driver Seat               | 260                   | 38      | 130                                      | 19      |
| Front Passenger Seat      | 260                   | 38      | 130                                      | 5       |
| Front Center Seat*        |                       |         |                                          |         |
| Struck Side Rear Seat     | Fixed                 | N/a     | Fixed                                    | N/a     |
| Non-Struck Side Rear Seat | Fixed                 | N/a     | Fixed                                    | N/a     |
| Rear Center Seat*         |                       |         |                                          |         |

\*If applicable

**Seat Back Angle Adjustment**

The driver's seat back is positioned to the manufacturer's designated design angle. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck side rear seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck-side rear seat back.



| SEAT BACK ANGLE ADJUSTMENT  |                             |          |                                 |          |
|-----------------------------|-----------------------------|----------|---------------------------------|----------|
| Seat                        | Total Seat Back Angle Range |          | Test Position from Most Upright |          |
|                             | Degrees                     | Detents* | Degrees                         | Detents* |
| Driver Seat w/ Seated Dummy | 60.0                        | 41       | 12.7                            | 5        |
| Front Passenger Seat        | 60.0                        | 39       | 4.0                             | 5        |
| Front Center Seat*          |                             |          |                                 |          |
| Struck Side Rear Seat       | Fixed                       | Fixed    | Fixed                           | Fixed    |
| Non-Struck Side Rear Seat   | Fixed                       | Fixed    | Fixed                           | Fixed    |
| Rear Center Seat*           |                             |          |                                 |          |

\*If applicable

**DATA SHEET NO. 2**  
**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA (CONTINUED)**

**Seat Belt Anchorage Adjustment**

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1.

| SEAT BELT ANCHORAGE ADJUSTMENT |                      |                      |
|--------------------------------|----------------------|----------------------|
|                                | Total # of Positions | Placed in Position # |
| Driver Seat                    | 4                    | H                    |
| Rear Seat                      | Fixed                | As Positioned        |

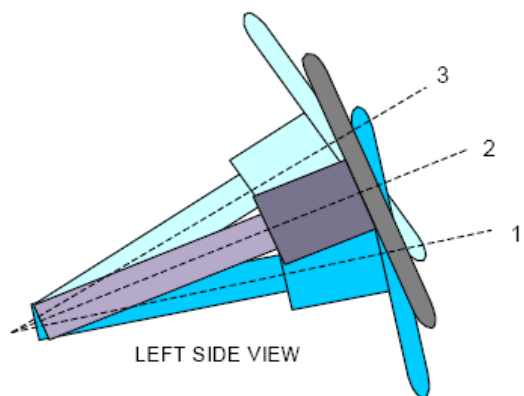
**Head Restraint Adjustment**

The driver's head restraint is adjusted to the highest and most forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

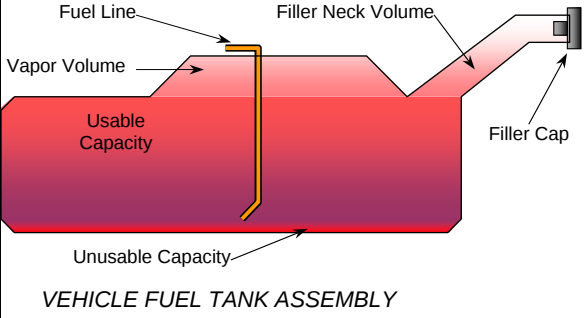
| HEAD RESTRAINT ADJUSTMENT |                      |                      |
|---------------------------|----------------------|----------------------|
|                           | Total # of Positions | Placed in Position # |
| Driver Seat               | 5                    | Highest Position     |
| Rear Seat                 | 1                    | Lowest Detent        |

**Steering Column Adjustment**

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion.

| STEERING COLUMN ADJUSTMENT        |                 |                        |                                                                                                                                                                          |
|-----------------------------------|-----------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | Degrees         | Fore/Aft Position (mm) |  <p align="center">LEFT SIDE VIEW</p> <p align="center">STEERING COLUMN ASSEMBLY</p> |
| Lowermost, Pos. No. 1             | 62.0            | N/a                    |                                                                                                                                                                          |
| Geometric Center, Pos. No. 2      | 65.3            | N/a                    |                                                                                                                                                                          |
| Uppermost, Pos. No. 3             | 68.6            | N/a                    |                                                                                                                                                                          |
| Telescoping Steering Wheel Travel | Non-telescoping | N/a                    |                                                                                                                                                                          |
| Test Position                     | 65.3            | N/a                    |                                                                                                                                                                          |

**DATA SHEET NO. 2**  
**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA (CONTINUED)**

| FUEL TANK CAPACITY DATA               |       |       |                                                                                                                         |
|---------------------------------------|-------|-------|-------------------------------------------------------------------------------------------------------------------------|
| Description                           | Units | Value | <br><i>VEHICLE FUEL TANK ASSEMBLY</i> |
| Usable Capacity of “Standard Tank”    | L     | 51.5  |                                                                                                                         |
| Usable Capacity of “Optional Tank”    | L     | 51.1  |                                                                                                                         |
| Usable Capacity of Standard Tank      | L     | 51.5  |                                                                                                                         |
| Usable Capacity of Optional Tank      | L     | 51.1  |                                                                                                                         |
| 93% of Usable Capacity                | %     | 47.9  |                                                                                                                         |
| Actual Amount of Solvent Used in Test | L     | 48.4  |                                                                                                                         |
| 1/3 of Usable Capacity                | 17.2  |       |                                                                                                                         |

**Fuel Pump**

The vehicle is equipped with an electronic fuel pump. Key is "ON" position. The fuel pump is on the left side.

Is the Actual Amount of Solvent Used in the test equal to 93% +/- 1% of the Usable Capacity stated in on Form No. 1?

Yes

**DATA SHEET NUMBER 3  
 TEST DUMMY MEASUREMENTS**

| <b>DUMMY DIMENSION INFORMATION</b> |                                                    |                    |              |
|------------------------------------|----------------------------------------------------|--------------------|--------------|
| <b>Passenger Code</b>              | <b>Measurement Description</b>                     | <b>Passenger</b>   |              |
|                                    |                                                    | <b>Length (mm)</b> | <b>Angle</b> |
| SA                                 | Seat Back Angle                                    |                    | 4.0°         |
| AN                                 | Top of Curtain Airbag Module to Head/Neck Junction | 440                |              |
| AN                                 | Top of Seat Airbag Module to Head/Neck Junction    | 0                  |              |
| HW                                 | Head to Windshield                                 | 810                |              |
| HS                                 | Head to Side Window                                | 181                |              |
| HSC                                | Head to Seat Back Centerline                       | 90                 |              |
| CD                                 | Chest to Dash                                      | 432                |              |
| CS                                 | Chest to Seat Back                                 | 100                |              |
| RACL                               | Right Arm to Seat Back Centerline                  | 305                |              |
| LACL                               | Left Arm to Seat Back Centerline                   | N/a                |              |
| RA                                 | Right Arm to Door Panel                            | 30                 |              |
| LA                                 | Left Arm to Door Panel                             | N/a                |              |
| KK                                 | Knee to Knee                                       | 152                |              |
| TT                                 | Toe to Toe                                         | 105                |              |
| KSCR                               | Right Knee to Seat Cushion Centerline              | 90                 |              |
| KSCL                               | Left Knee to Seat Cushion Centerline               | 85                 |              |
| ND                                 | Nose to Dash                                       | 526                |              |
| NS                                 | Nose to Headrest Centerline                        | 141                |              |
| NH                                 | Nose to Side Header                                | 214                |              |

**DATA SHEET 4**  
**CAMERA AND INSTRUMENTATION DATA**

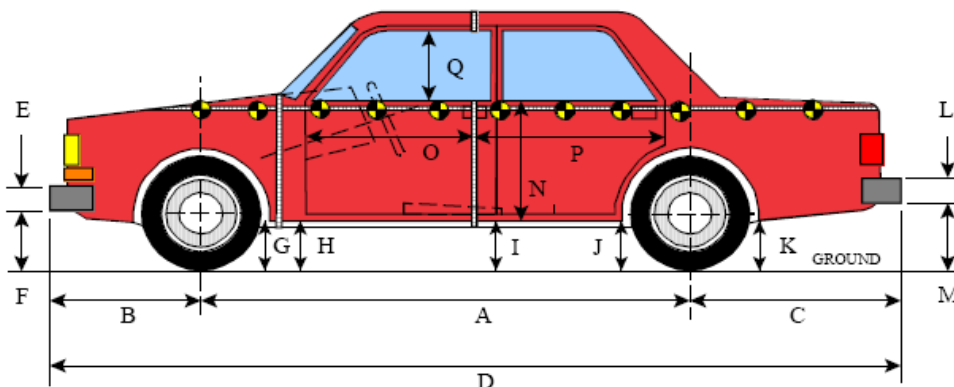
| CAMERA COORDINATES & INFORMATION |                        |               |       |      |             |            |                      |
|----------------------------------|------------------------|---------------|-------|------|-------------|------------|----------------------|
| Loc. No.                         | View                   | Coordinates † |       |      | Lens Length | Lens Angle | Operating Frame Rate |
|                                  |                        | X             | Y     | Z    |             |            |                      |
|                                  |                        | mm            | mm    | mm   | mm          | Deg.       | fps                  |
| 1                                | Offboard Front         | 2338          | 45.0  | -500 | 50          | 14.7       | 1000                 |
| 2                                | Offboard Front-Oblique | 1501          | -1687 | -382 | 35          | 13.7       | 1000                 |
| 3                                | Offboard Side          | 105           | -2123 | 250  | 25          | 0.5        | 1000                 |

|        |               |             |              |
|--------|---------------|-------------|--------------|
| Origin |               | Orientation |              |
| X      | Dummy Head CG | X           | +(X) Forward |
| Y      | Dummy Head CG | Y           | +(Y) Right   |
| Z      | Dummy Head CG | Z           | +(Z) Down    |

*\*All measurements accurate to +/- 6 mm*

| INSTRUMENTATION                  |    |
|----------------------------------|----|
| Dummy Channels                   | 18 |
| Vehicle Structure Accelerometers | 0  |
| Total:                           | 18 |

**DATA SHEET NUMBER 5**  
**TEST VEHICLE PROFILE MEASUREMENTS**



| VEHICLE PRE - AND POST - TEST MEASUREMENT INFORMATION |                                            |          |           |            |
|-------------------------------------------------------|--------------------------------------------|----------|-----------|------------|
| Code                                                  | Description                                | Pre test | Post test | Difference |
|                                                       |                                            | mm       | mm        | mm         |
| A                                                     | Wheelbase                                  | 2635     | 2630      | -5         |
| B                                                     | Front Axle to FSOV                         | 712      | 700       | -12        |
| C                                                     | Rear Axle to RSOV                          | 757      | 762       | 5          |
| D                                                     | Total Length at Centerline                 | 4415     | 4412      | -3         |
| E                                                     | Front Bumper Thickness                     | 185      | 185       | 0          |
| F                                                     | Front Bumper Bottom to Ground              | 433      | 442       | 9          |
| G                                                     | Sill Height at Front Wheel Well            | 260      | 262       | 2          |
| H                                                     | Sill Height at Front Door Leading Edge     | 297      | 298       | 1          |
| I                                                     | Sill Height at B-Pillar                    | 301      | 306       | 5          |
| J1                                                    | Sill Height at Rear Wheel Well             | 265      | 249       | -16        |
| J2                                                    | Pinch Weld Height at Rear Wheel Well       | 270      | 257       | -13        |
| K                                                     | Sill Height Aft of Rear Wheel Well         | 364      | 340       | -24        |
| L                                                     | Rear Bumper Thickness                      | 170      | 170       | 0          |
| M                                                     | Rear Bumper Bottom to Ground               | 523      | 500       | -23        |
| N                                                     | Sill Height to Bottom of Front Window Sill | 760      | 748       | -12        |
| O                                                     | Front Door Leading Edge to Impact C/L      | 1038     | 1057      | 19         |
| P                                                     | Rear Door Trailing Edge to Impact C/L      | 867      | 835       | -32        |
| Q                                                     | Front Window Opening                       | 408      | 406       | -2         |
| R                                                     | Right Side Length                          | 4104     | 4110      | 6          |
| S                                                     | Left Side Length                           | 4104     | 4092      | -12        |
| T                                                     | Vehicle Width at B-Pillar                  | 1765     | 1653      | -112       |

\*From SINCAP Test No. M20140308

**DATA SHEET 6  
 DUMMY SENSOR DATA AND INJURY CRITERIA**

| <b>DUMMY HEAD PEAK ACCELERATIONS</b> |             |              |                 |             |            |             |
|--------------------------------------|-------------|--------------|-----------------|-------------|------------|-------------|
| <b>Location</b>                      | <b>Axis</b> | <b>Units</b> | <b>SID-II's</b> |             |            |             |
|                                      |             |              | <b>Max</b>      | <b>Time</b> | <b>Min</b> | <b>Time</b> |
| Primary Head CG                      | X           | G's          | 11.4            | 18.9        | -3.00      | 156.6       |
| Primary Head CG                      | Y           | G's          | 2.25            | 158.9       | -4.19      | 13.6        |
| Primary Head CG                      | Z           | G's          | 11.7            | 20.7        | -9.17      | 16.6        |
| Primary Head CG Resultant            | N/a         | G's          | 13.8            | 20.6        | 0.03       | -24.8       |
| Redundant Head CG                    | X           | G's          | 11.4            | 18.7        | -3.17      | 156.1       |
| Redundant Head CG                    | Y           | G's          | 2.34            | 160.5       | -4.10      | 22.6        |
| Redundant Head CG                    | Z           | G's          | 11.5            | 20.6        | -9.42      | 16.4        |
| Redundant Head CG Resultant          | N/a         | G's          | 13.9            | 20.5        | 0.02       | -44.9       |

| <b>DUMMY UPPER NECK PEAK FORCES AND MOMENTS</b> |             |              |                 |             |            |             |
|-------------------------------------------------|-------------|--------------|-----------------|-------------|------------|-------------|
| <b>Location</b>                                 | <b>Axis</b> | <b>Units</b> | <b>SID-II's</b> |             |            |             |
|                                                 |             |              | <b>Max</b>      | <b>Time</b> | <b>Min</b> | <b>Time</b> |
| Neck Force                                      | X           | NWT          | 156.8           | 17.3        | -70.1      | 157.5       |
| Neck Force                                      | Y           | NWT          | 83.4            | 15.0        | -81.9      | 89.6        |
| Neck Force                                      | Z           | NWT          | 442.7           | 20.6        | -402.8     | 15.6        |
| Neck Moment                                     | X           | Nm           | 11.0            | 23.8        | -8.48      | 100.4       |
| Neck Moment                                     | Y           | Nm           | 13.5            | 17.4        | -11.9      | 38.5        |
| Neck Moment                                     | Z           | Nm           | 4.23            | 106.5       | -5.33      | 31.0        |

**DATA SHEET 6**  
**DUMMY SENSOR DATA AND INJURY CRITERIA**  
**(CONTINUED)**

| <b>DUMMY LOWER NECK PEAK FORCES AND MOMENTS</b> |      |       |         |       |        |       |
|-------------------------------------------------|------|-------|---------|-------|--------|-------|
| Location                                        | Axis | Units | SID-IIs |       |        |       |
|                                                 |      |       | Max     | Time  | Min    | Time  |
| Neck Force                                      | X    | NWT   | 332.4   | 20.2  | -126.6 | 158.2 |
| Neck Force                                      | Y    | NWT   | 147.8   | 16.6  | -92.9  | 67.0  |
| Neck Force                                      | Z    | NWT   | 519.3   | 20.6  | -477.8 | 16.2  |
| Neck Moment                                     | X    | Nm    | 17.8    | 158.7 | -17.1  | 93.1  |
| Neck Moment                                     | Y    | Nm    | 21.5    | 142.6 | -46.7  | 20.6  |
| Neck Moment                                     | Z    | Nm    | 7.30    | 101.4 | -6.15  | 42.7  |

| <b>HEAD INJURY CRITERIA</b> |         |                |                |
|-----------------------------|---------|----------------|----------------|
| Criteria                    | SID-IIs |                |                |
|                             |         | T <sub>1</sub> | T <sub>2</sub> |
| HIC <sub>15</sub>           | 2.90    | 12.9           | 27.8           |
| HIC <sub>36</sub>           | 2.90    | 12.9           | 27.8           |

| <b>N<sub>IJ</sub> VALUES</b> |         |      |      |      |
|------------------------------|---------|------|------|------|
| Location                     | SID-IIs |      |      |      |
|                              | Ntf     | Nte  | Ncf  | Nce  |
| Upper Neck                   | 0.16    | 0.19 | 0.16 | 0.16 |
| Lower Neck                   | 0.11    | 0.34 | 0.12 | 0.31 |

Test Vehicle: 2014 Jeep Patriot 5-Door SUV  
Test Program: Occupant Out-Of-Position

NHTSA Number: M20140308TWG2  
Test Date: February 11, 2014

**APPENDIX A**  
**PHOTOGRAPHS**

LIST OF PHOTOGRAPHS

| Figure | Photograph Description                                                        | Page |
|--------|-------------------------------------------------------------------------------|------|
| A-1    | As-Delivered Front Right $\frac{3}{4}$ View of Test Vehicle                   | A-3  |
| A-2    | Vehicle Certification Label                                                   | A-3  |
| A-3    | Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle                        | A-4  |
| A-4    | Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle                       | A-4  |
| A-5    | Pre-Test Dummy Position – Front View of Dummy                                 | A-5  |
| A-6    | Pre-Test Dummy Position - Front Left $\frac{3}{4}$ View of Dummy              | A-5  |
| A-7    | Pre-Test Dummy Position – Left Side View of Dummy                             | A-6  |
| A-8    | Post-Test Dummy Position – Front View of Dummy and Airbag                     | A-6  |
| A-9    | Post-Test Dummy Position - Front Left $\frac{3}{4}$ View of Dummy and Airbag  | A-7  |
| A-10   | Post-Test Dummy Position – Left Side View of Dummy and Airbag                 | A-7  |
| A-11   | Post-Test Curtain and Side Airbag – Left Side View of Curtain and Side Airbag | A-8  |



M20140308TWG2

Figure A-1: As-Delivered Right Front 3-4 View of Test Vehicle



M20140308TWG2

Figure A-2: Vehicle Certification Label



Figure A-3: Pre-Test Left Front 3/4 View of Test Vehicle



Figure A-4: Post-Test Left Front 3/4 View of Test Vehicle



Figure A-5: Pre-Test Front View of Dummy

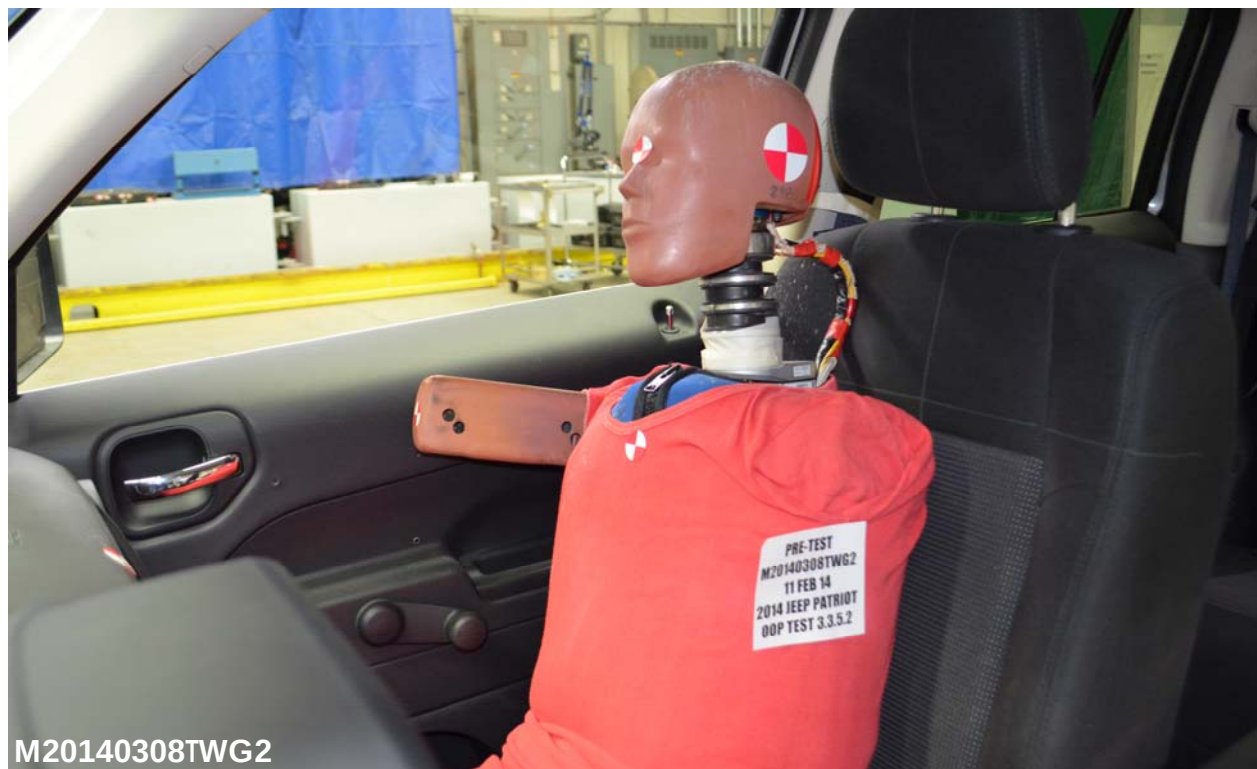


Figure A-6: Pre-Test Left Front 3-4 View of Dummy



Figure A-7: Pre-Test Left Side View of Dummy



Figure A-8: Post-Test Front View of Dummy and Side Airbag



Figure A-9: Post-Test Front Left 3-4 View of Dummy and Side Airbag



Figure A-10: Post-Test Left Side View of Dummy and Side Airbag



Figure A-11: Post-Test Left Side View of Curtain and Side Airbag

Test Vehicle: 2014 Jeep Patriot 5-Door SUV  
Test Program: Occupant Out-Of-Position

NHTSA Number: M20140308TWG2  
Test Date: February 11, 2014

**APPENDIX B**  
**DUMMY INSTRUMENTATION PLOTS**

**The following plots are provided in the test report**

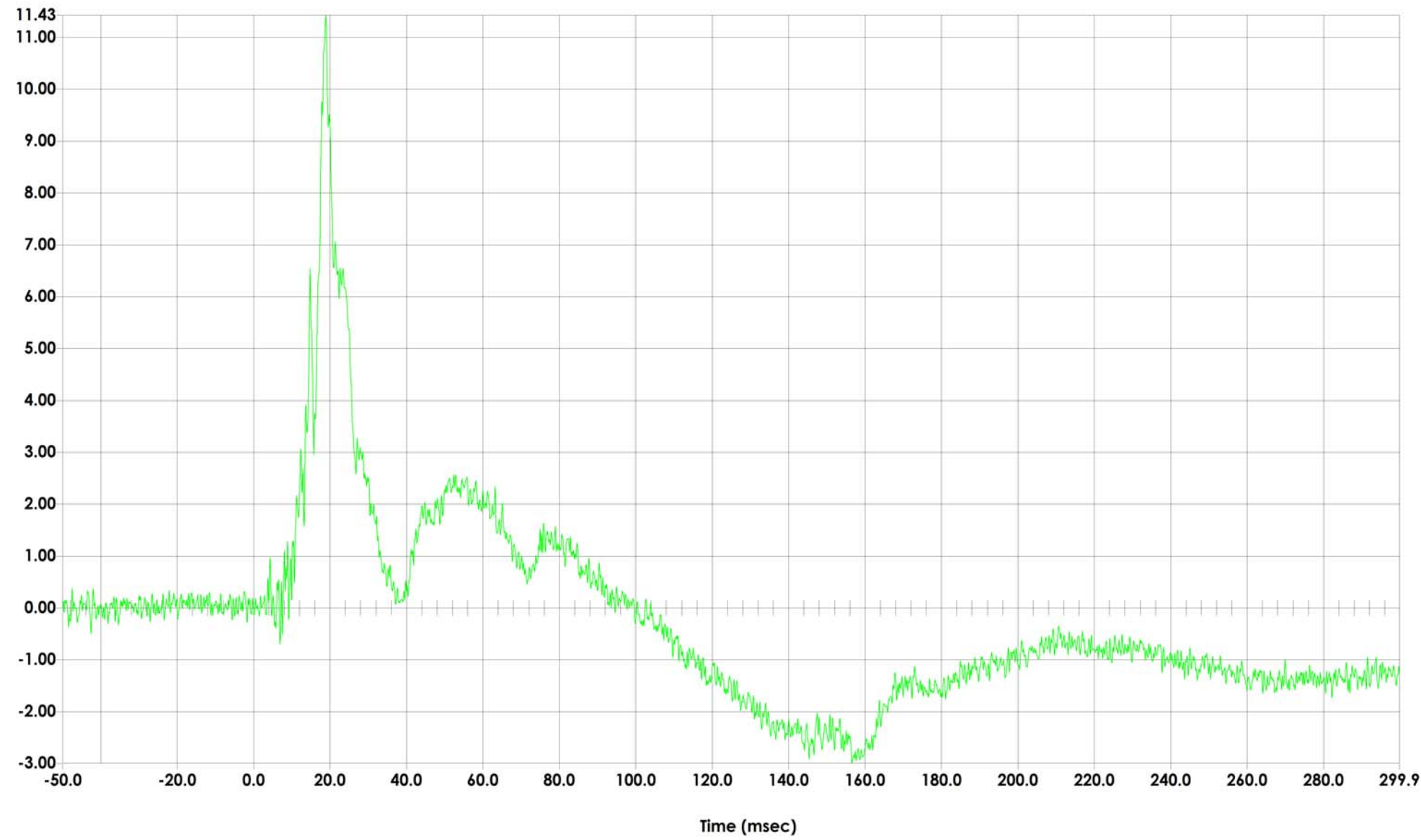
| Data Plot | Description                                    | Page |
|-----------|------------------------------------------------|------|
| 1         | Primary Head CG (X) Acceleration vs. Time      | B-3  |
| 2         | Primary Head CG (Y) Acceleration vs. Time      | B-4  |
| 3         | Primary Head CG (Z) Acceleration vs. Time      | B-5  |
| 4         | Primary Head Resultant Acceleration vs. Time   | B-6  |
| 5         | Primary Head HIC15                             | B-7  |
| 6         | Primary Head HIC36                             | B-8  |
| 7         | Redundant Head CG (X) Acceleration vs. Time    | B-9  |
| 8         | Redundant Head CG (Y) Acceleration vs. Time    | B-10 |
| 9         | Redundant Head CG (Z) Acceleration vs. Time    | B-11 |
| 10        | Redundant Head Resultant Acceleration vs. Time | B-12 |
| 11        | Upper Neck (X) Force vs. Time                  | B-13 |
| 12        | Upper Neck (Y) Force vs. Time                  | B-14 |
| 13        | Upper Neck (Z) Force vs. Time                  | B-15 |
| 14        | Upper Neck (X) Moment vs. Time                 | B-16 |
| 15        | Upper Neck (Y) Moment vs. Time                 | B-17 |
| 16        | Upper Neck (Z) Moment vs. Time                 | B-18 |
| 17        | Upper Neck Nij Criteria vs. Time               | B-19 |
| 18        | Upper Neck Nij Forces vs. Time                 | B-20 |
| 19        | Upper Neck Nij Moments vs. Time                | B-21 |
| 20        | Upper Neck Nij Kite Plot vs. Time              | B-22 |
| 21        | Lower Neck (X) Force vs. Time                  | B-23 |
| 22        | Lower Neck (Y) Force vs. Time                  | B-24 |
| 23        | Lower Neck (Z) Force vs. Time                  | B-25 |
| 24        | Lower Neck (X) Moment vs. Time                 | B-26 |
| 25        | Lower Neck (Y) Moment vs. Time                 | B-27 |
| 26        | Lower Neck (Z) Moment vs. Time                 | B-28 |
| 27        | Lower Neck Nij Criteria vs. Time               | B-29 |
| 28        | Lower Neck Nij Forces vs. Time                 | B-30 |
| 29        | Lower Neck Nij Moments vs. Time                | B-31 |
| 30        | Lower Neck Nij Kite Plot vs. Time              | B-32 |

|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 001           |
| Units              | G'S           |

|     |        |      |
|-----|--------|------|
| Max | 11.43  | G'S  |
|     | 18.88  | msec |
| Min | -3.00  | G'S  |
|     | 156.56 | msec |



Primary Head Center of Gravity (X) Acceleration vs. Time

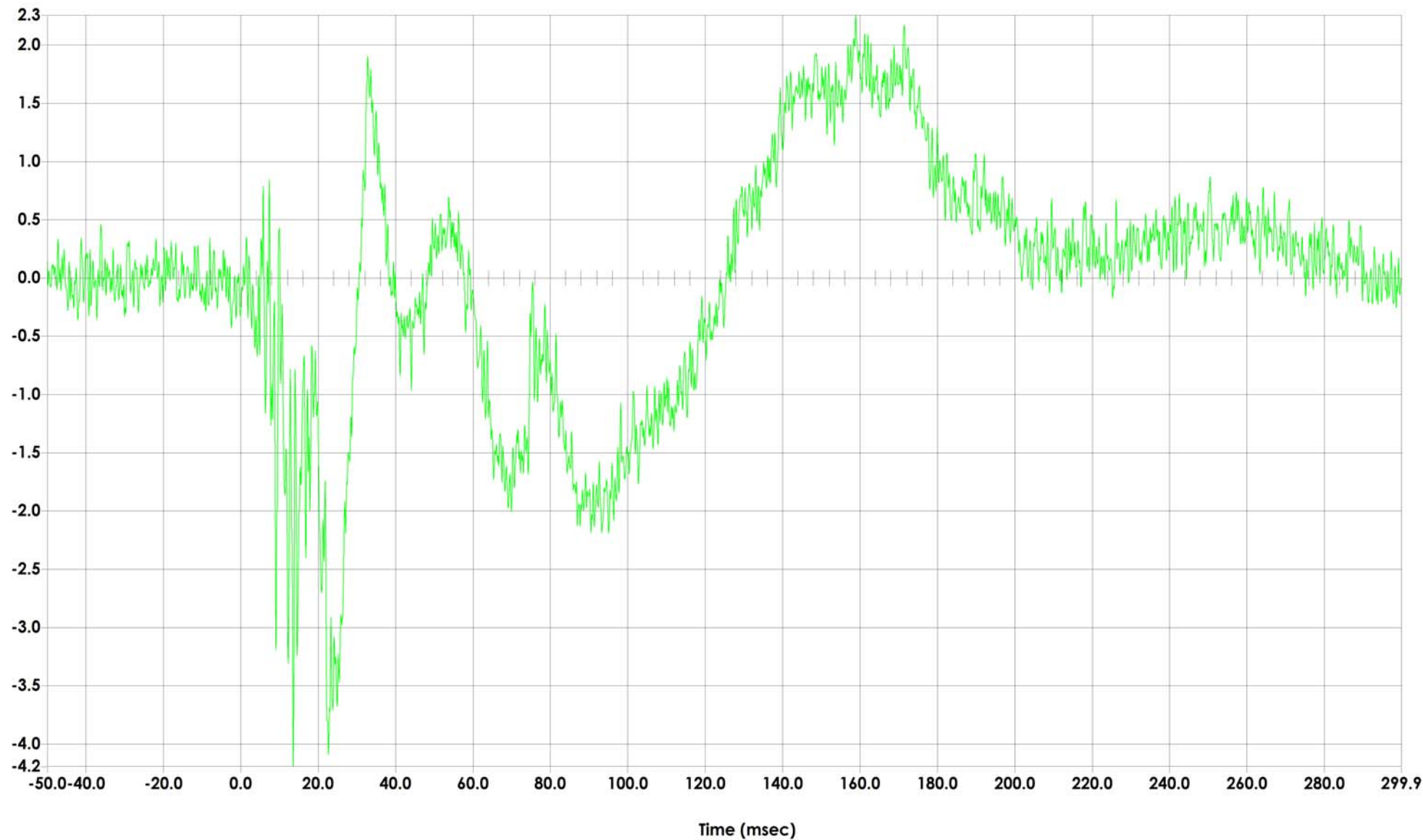


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 002           |
| Units              | G'S           |

|     |        |      |
|-----|--------|------|
| Max | 2.25   | G'S  |
|     | 158.88 | msec |
| Min | -4.19  | G'S  |
|     | 13.60  | msec |



## Primary Head Center of Gravity (Y) Acceleration vs. Time

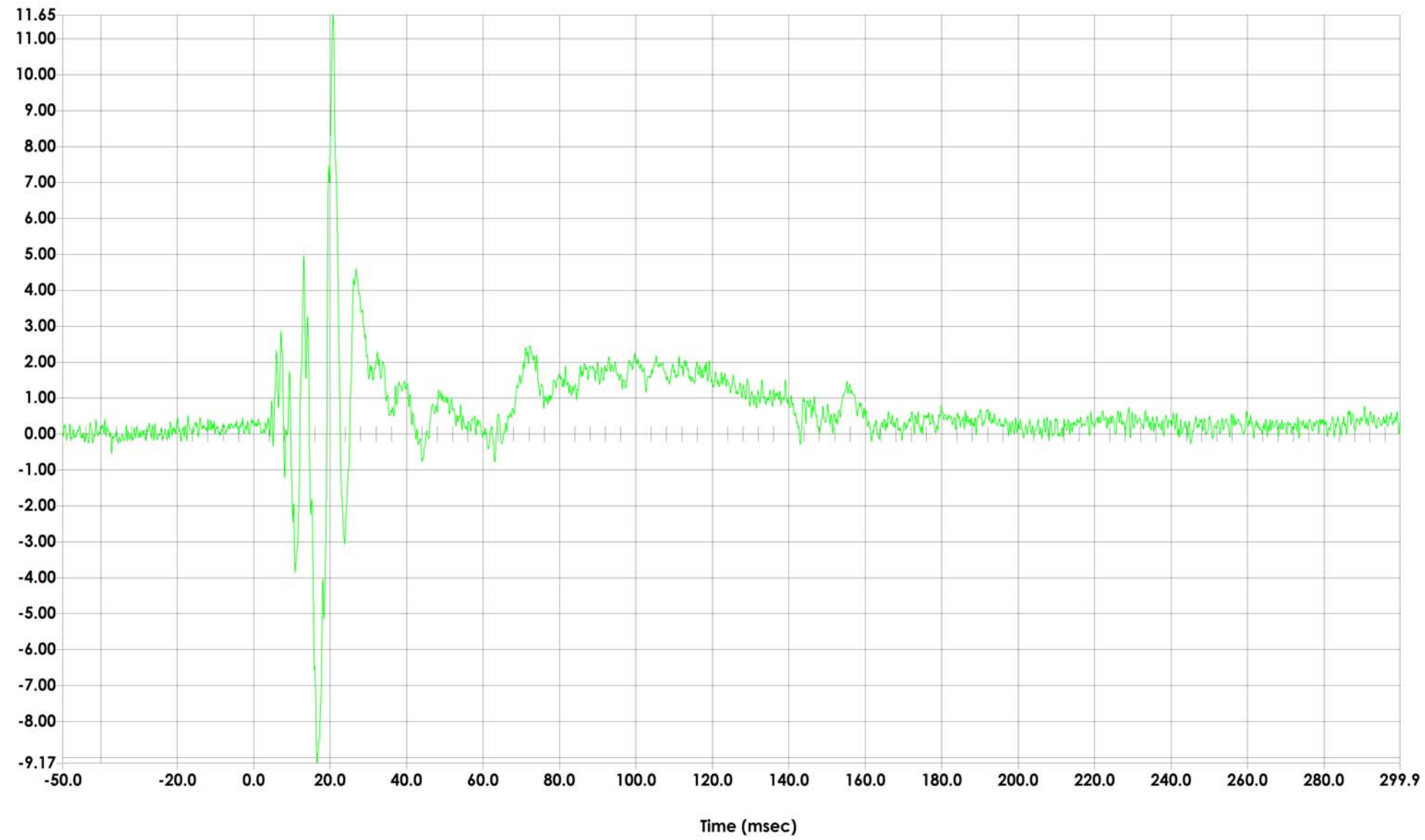


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 003           |
| Units              | G'S           |

|     |       |      |
|-----|-------|------|
| Max | 11.65 | G'S  |
|     | 20.72 | msec |
| Min | -9.17 | G'S  |
|     | 16.56 | msec |



Primary Head Center of Gravity (Z) Acceleration vs. Time

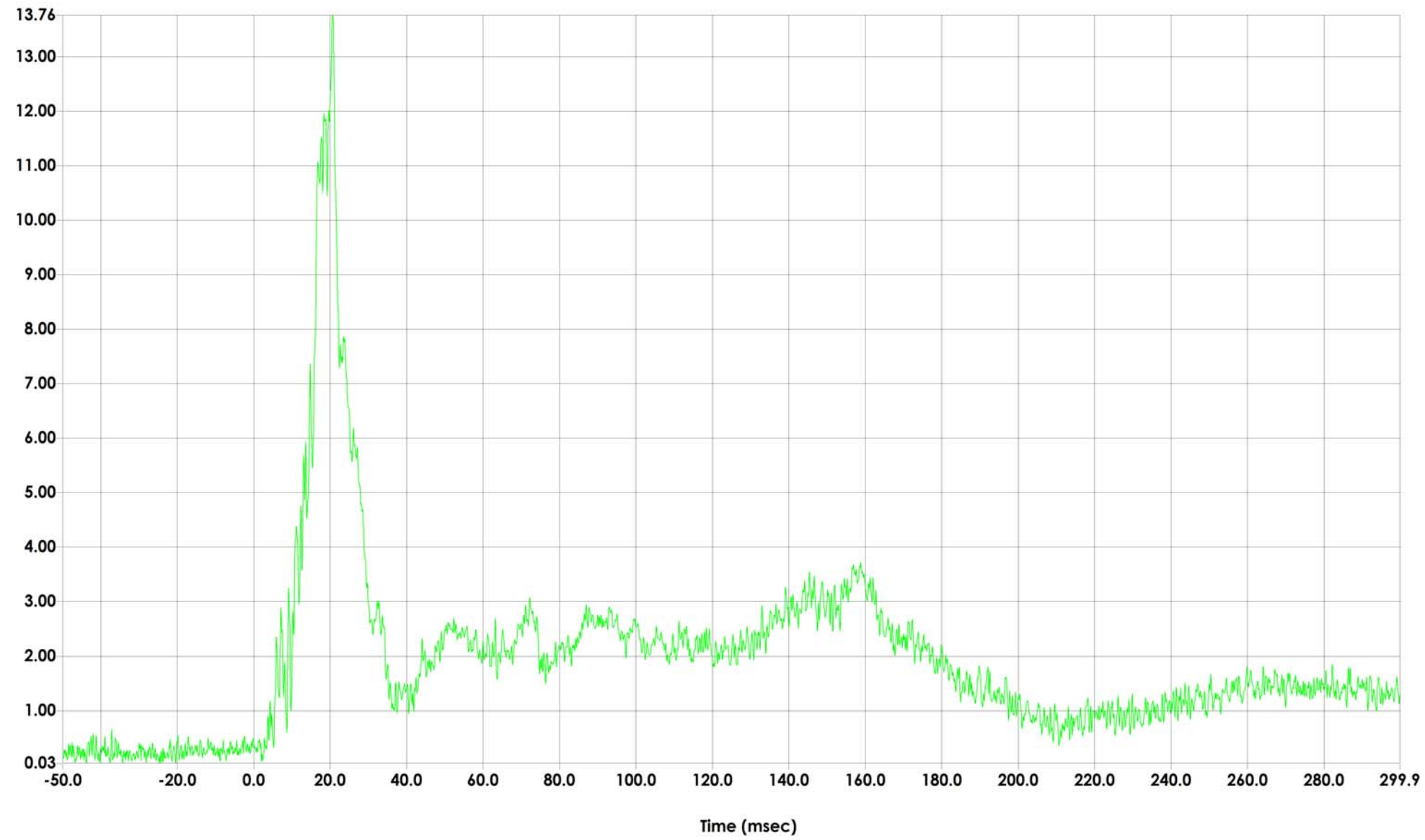


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 019           |
| Units              | G'S           |

|     |        |      |
|-----|--------|------|
| Max | 13.76  | G'S  |
|     | 20.64  | msec |
| Min | 0.03   | G'S  |
|     | -24.80 | msec |

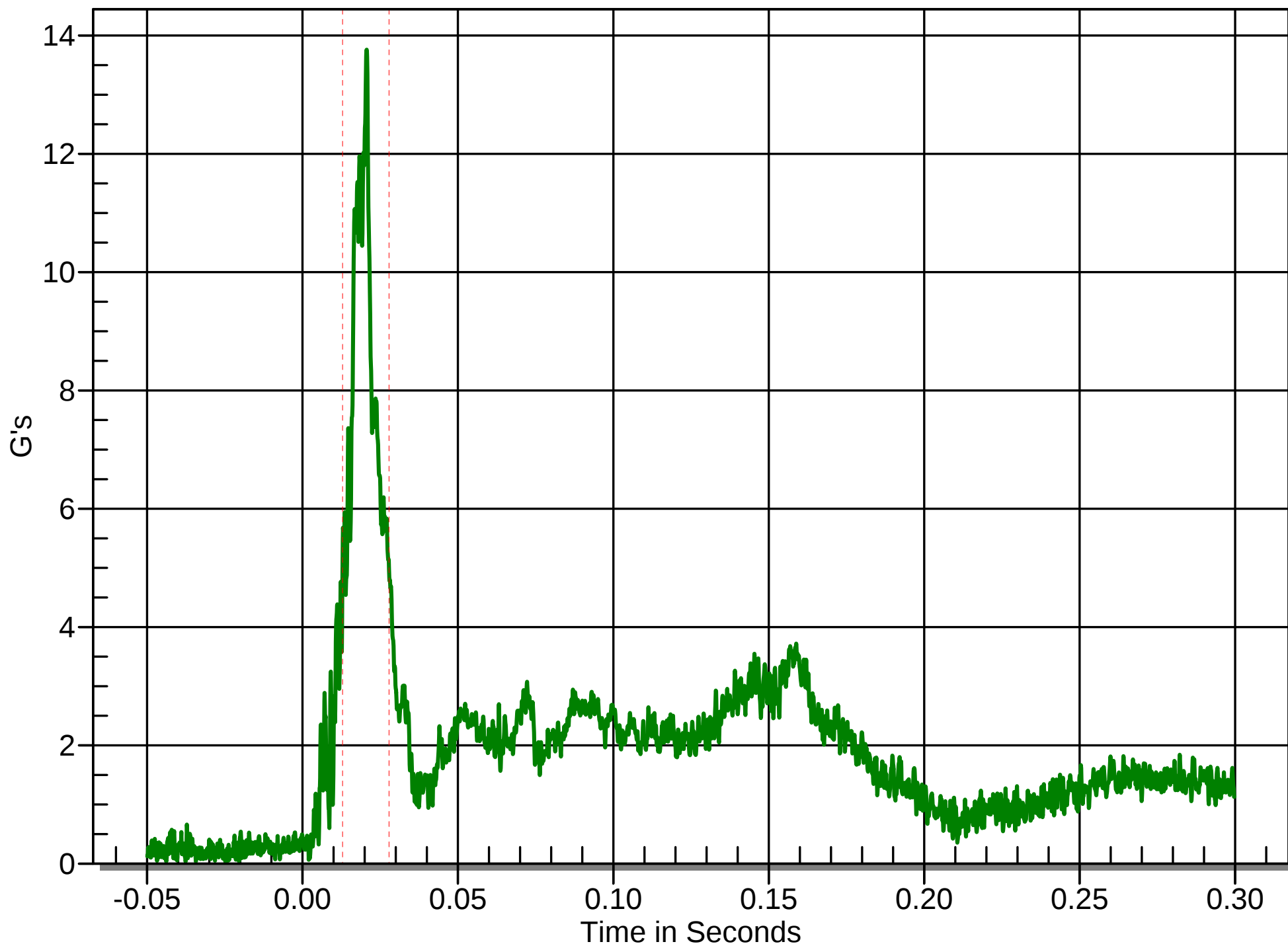


Primary Head Resultant Acceleration Primary vs. Time



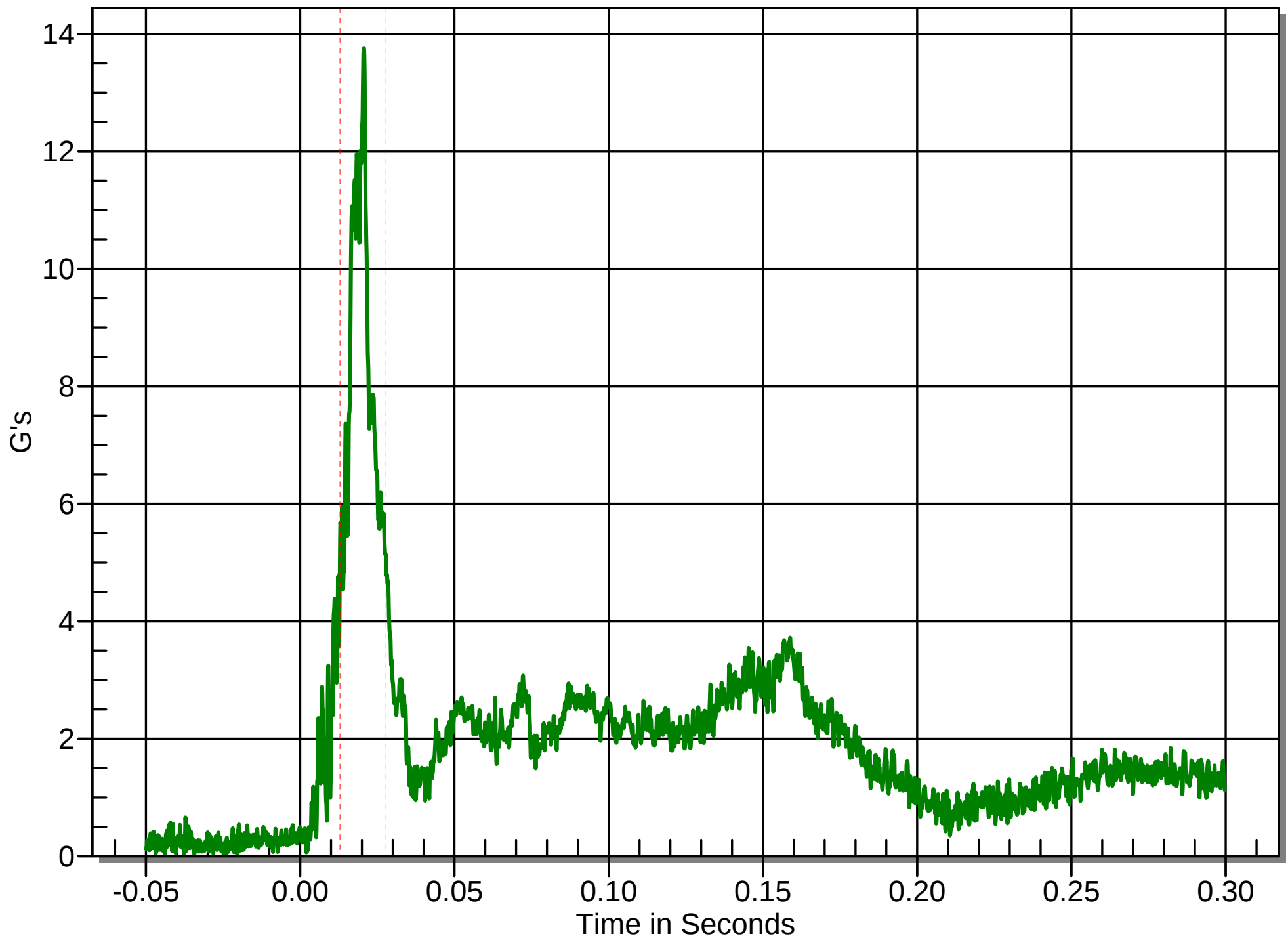
# M20140308TWG2

15.0 ms HIC = 2.9 from 12.9 to 27.8 ms (15.0 ms)



# M20140308TWG2

36.0 ms HIC = 2.9 from 12.9 to 27.8 ms (15.0 ms)

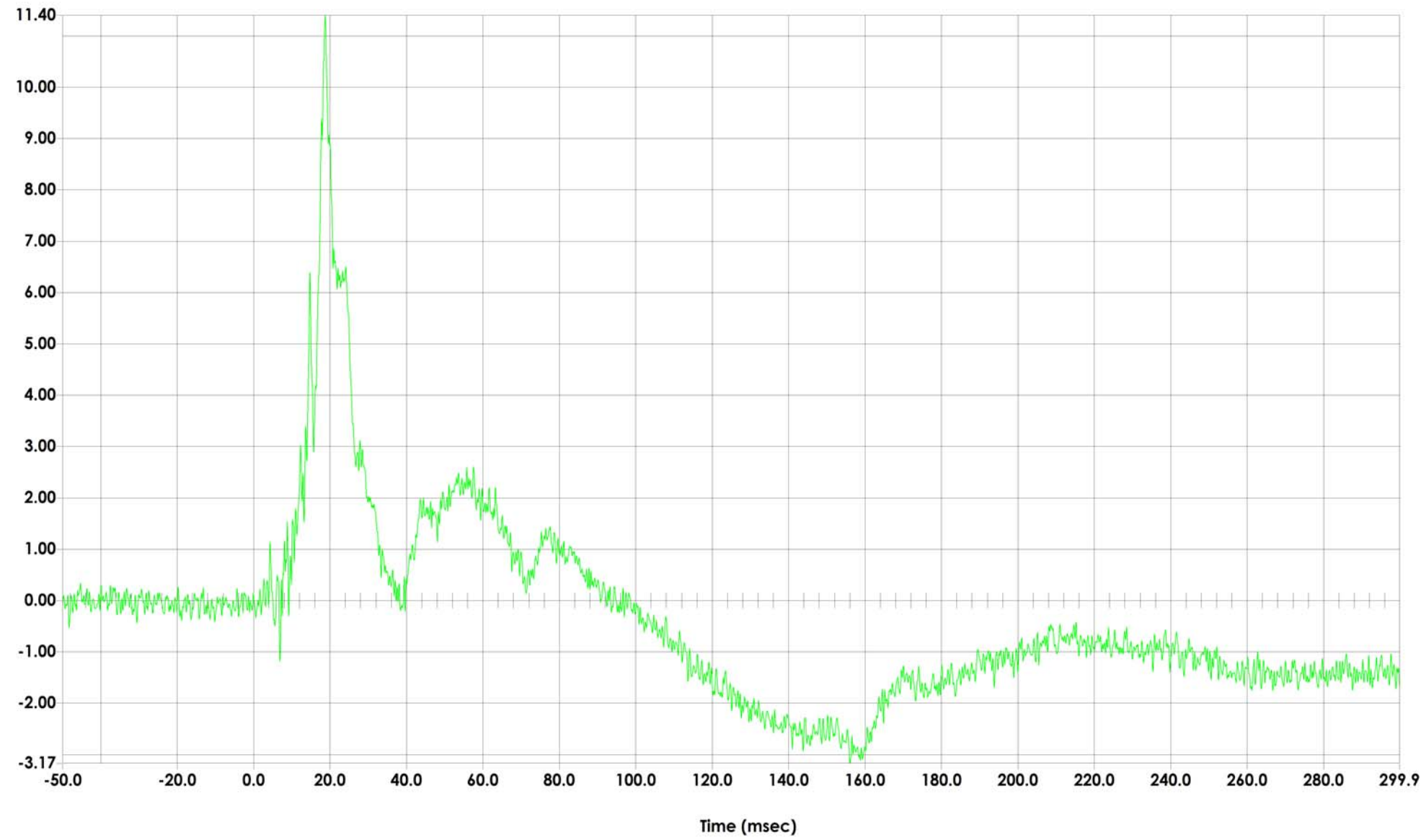


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 016           |
| Units              | G'S           |

|     |        |      |
|-----|--------|------|
| Max | 11.40  | G'S  |
|     | 18.72  | msec |
| Min | -3.17  | G'S  |
|     | 156.08 | msec |



**Redundant Head Center of Gravity (X) Acceleration vs. Time**

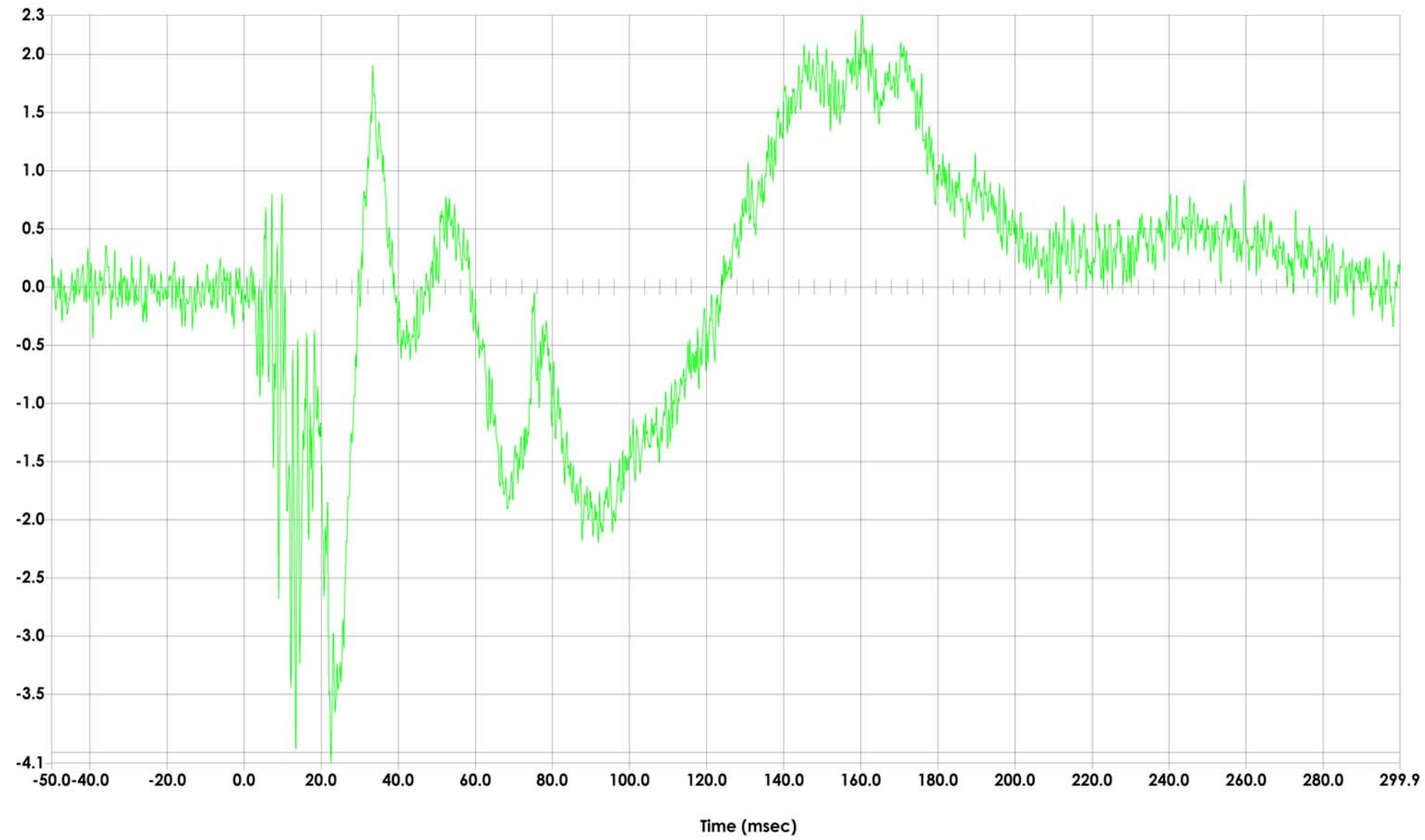


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 017           |
| Units              | G'S           |

|     |        |      |
|-----|--------|------|
| Max | 2.34   | G'S  |
|     | 160.48 | msec |
| Min | -4.10  | G'S  |
|     | 22.56  | msec |



Redundant Head Center of Gravity (Y) Acceleration vs. Time

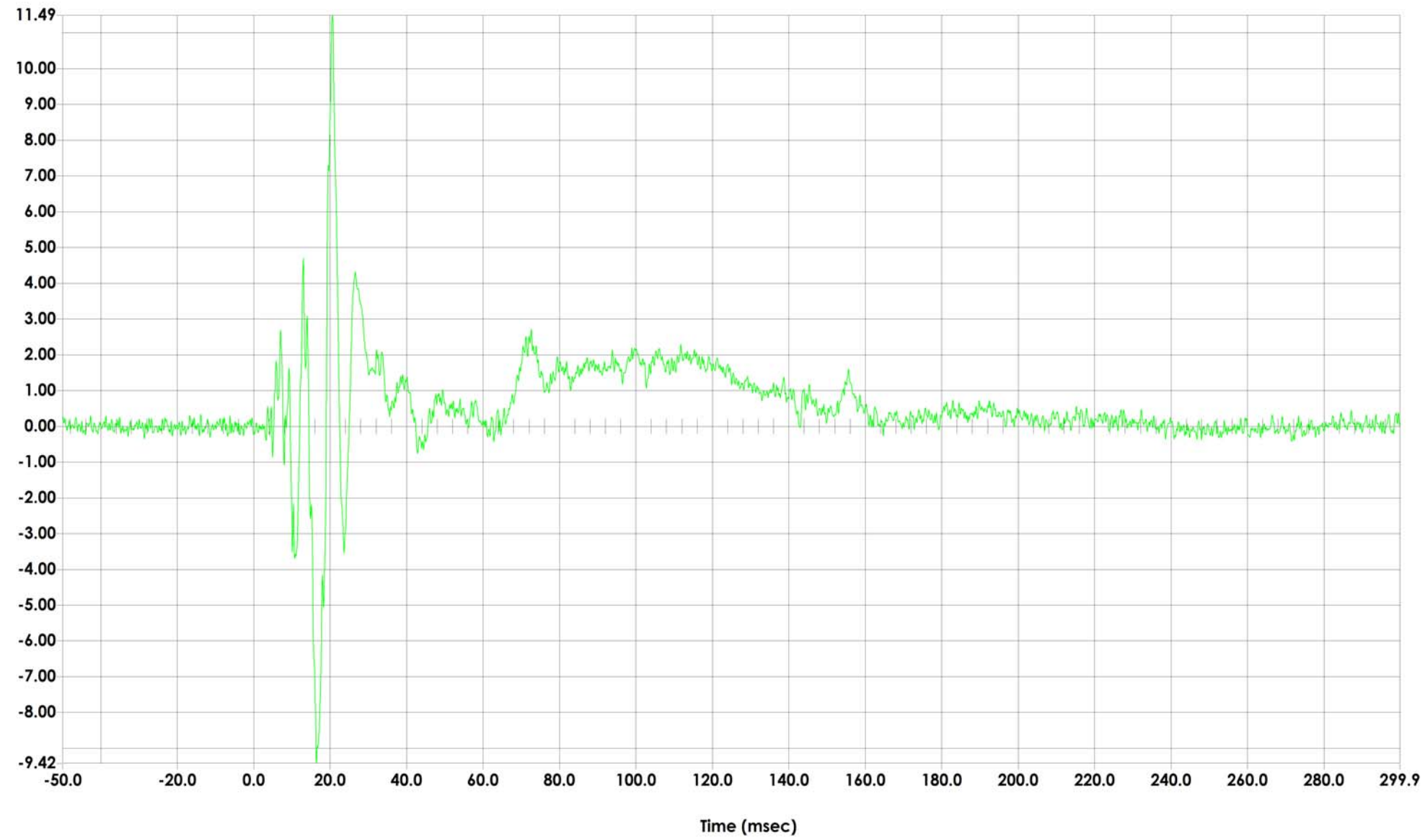


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 018           |
| Units              | G'S           |

|     |       |      |
|-----|-------|------|
| Max | 11.49 | G'S  |
|     | 20.56 | msec |
| Min | -9.42 | G'S  |
|     | 16.40 | msec |



**Redundant Head Center of Gravity (Z) Acceleration vs. Time**

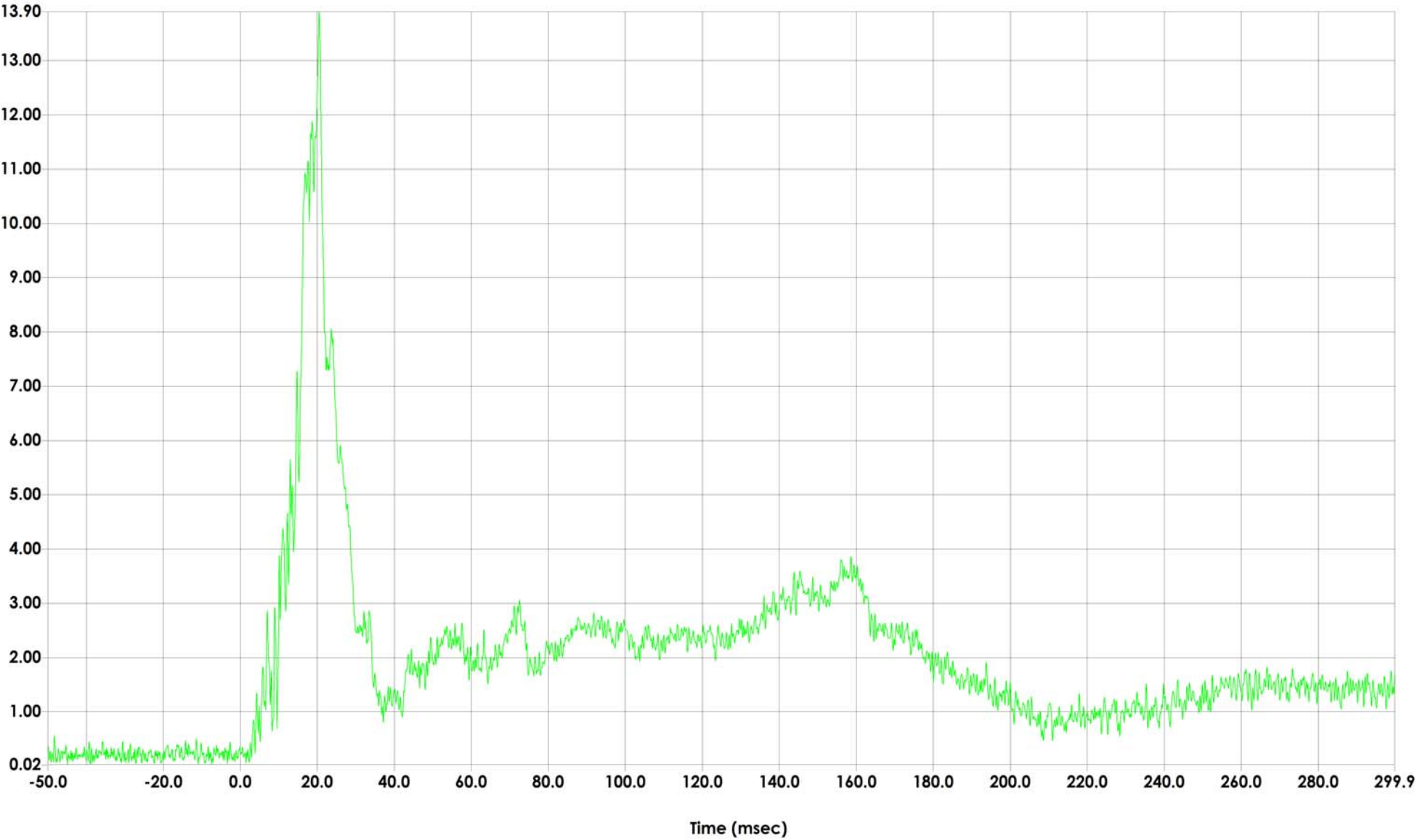


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 020           |
| Units              | G'S           |

|     |        |      |
|-----|--------|------|
| Max | 13.90  | G'S  |
|     | 20.48  | msec |
| Min | 0.02   | G'S  |
|     | -44.88 | msec |



**Redundant Head Resultant Acceleration Primary vs. Time**

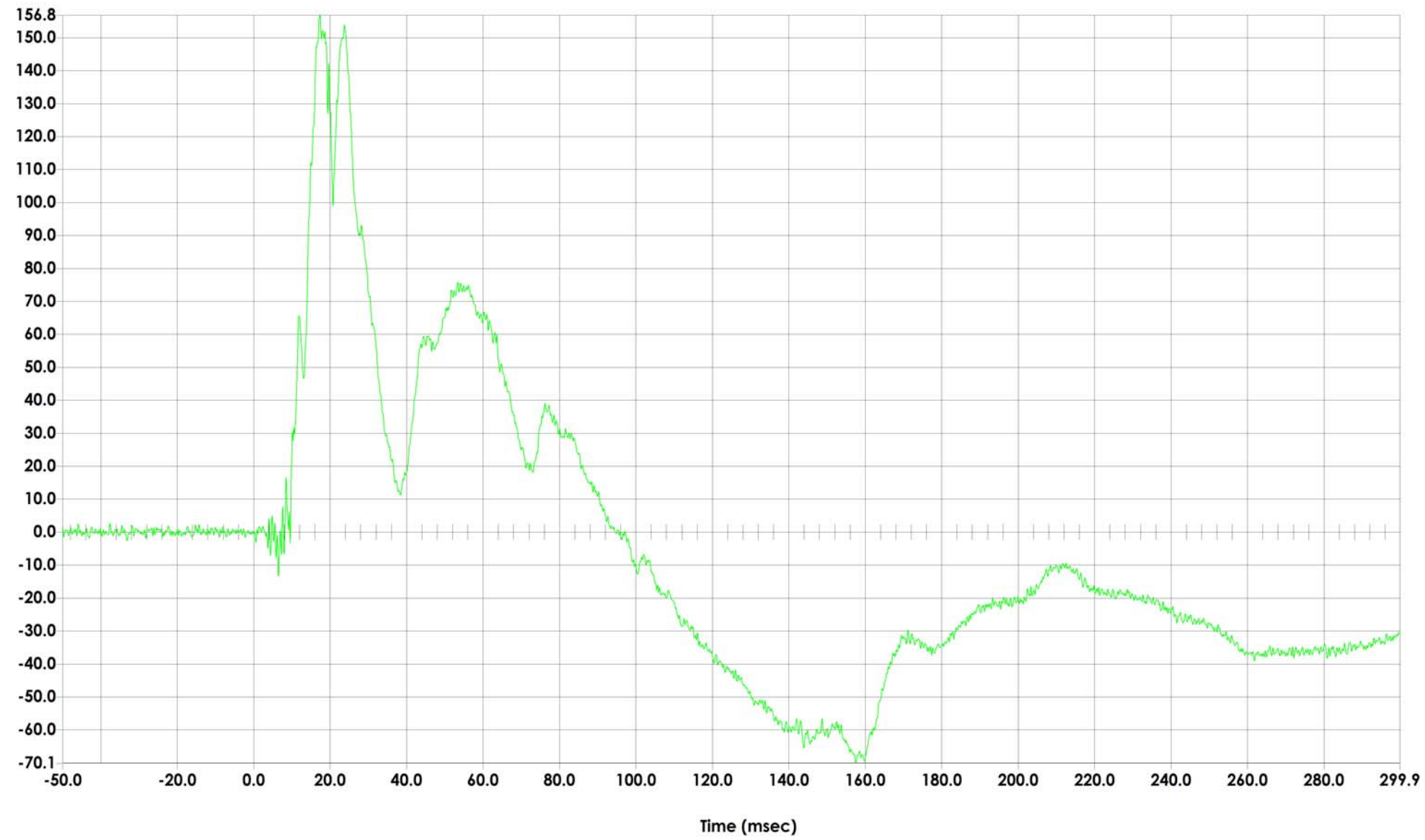


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 004           |
| Units              | NWT           |

|     |        |      |
|-----|--------|------|
| Max | 156.79 | NWT  |
|     | 17.28  | msec |
| Min | -70.14 | NWT  |
|     | 157.52 | msec |



SID-IIs UNLC (X) Force vs. Time

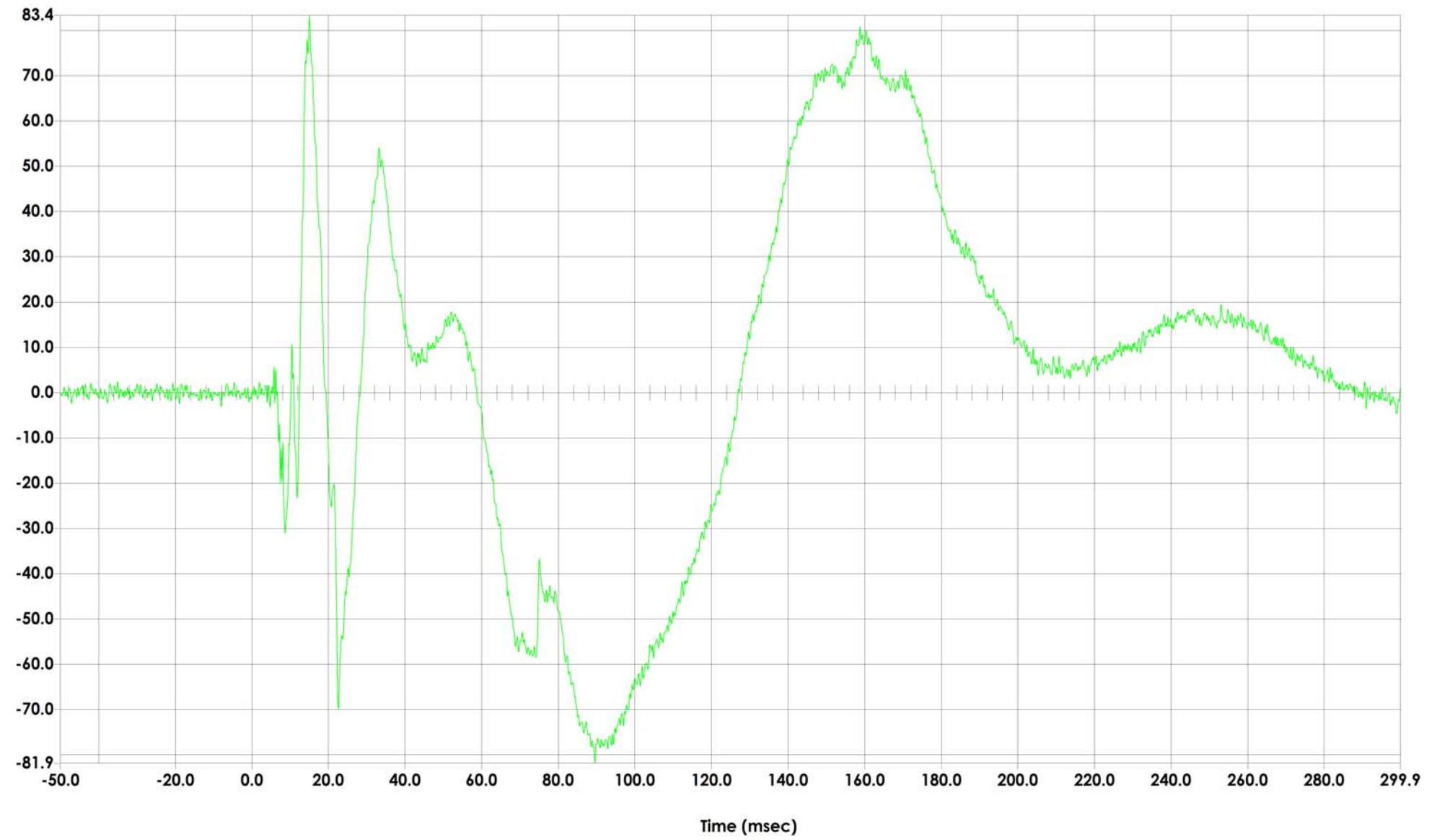


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 005           |
| Units              | NWT           |

|     |        |      |
|-----|--------|------|
| Max | 83.35  | NWT  |
|     | 15.04  | msec |
| Min | -81.89 | NWT  |
|     | 89.60  | msec |



SID-IIs UNLC (Y) Force vs. Time

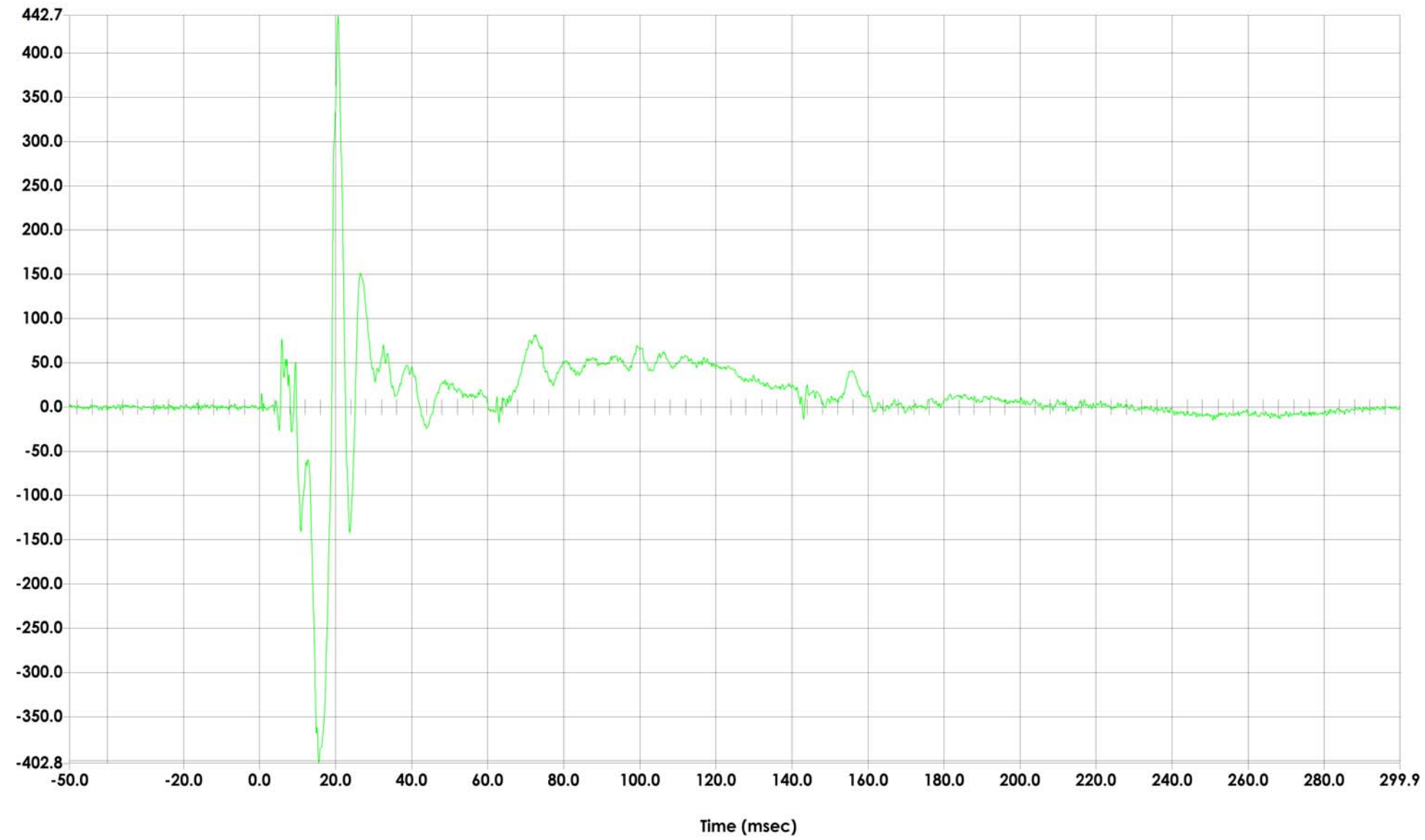


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 006           |
| Units              | NWT           |

|     |         |      |
|-----|---------|------|
| Max | 442.65  | NWT  |
|     | 20.64   | msec |
| Min | -402.77 | NWT  |
|     | 15.60   | msec |



SID-IIs UNLC (Z) Force vs. Time

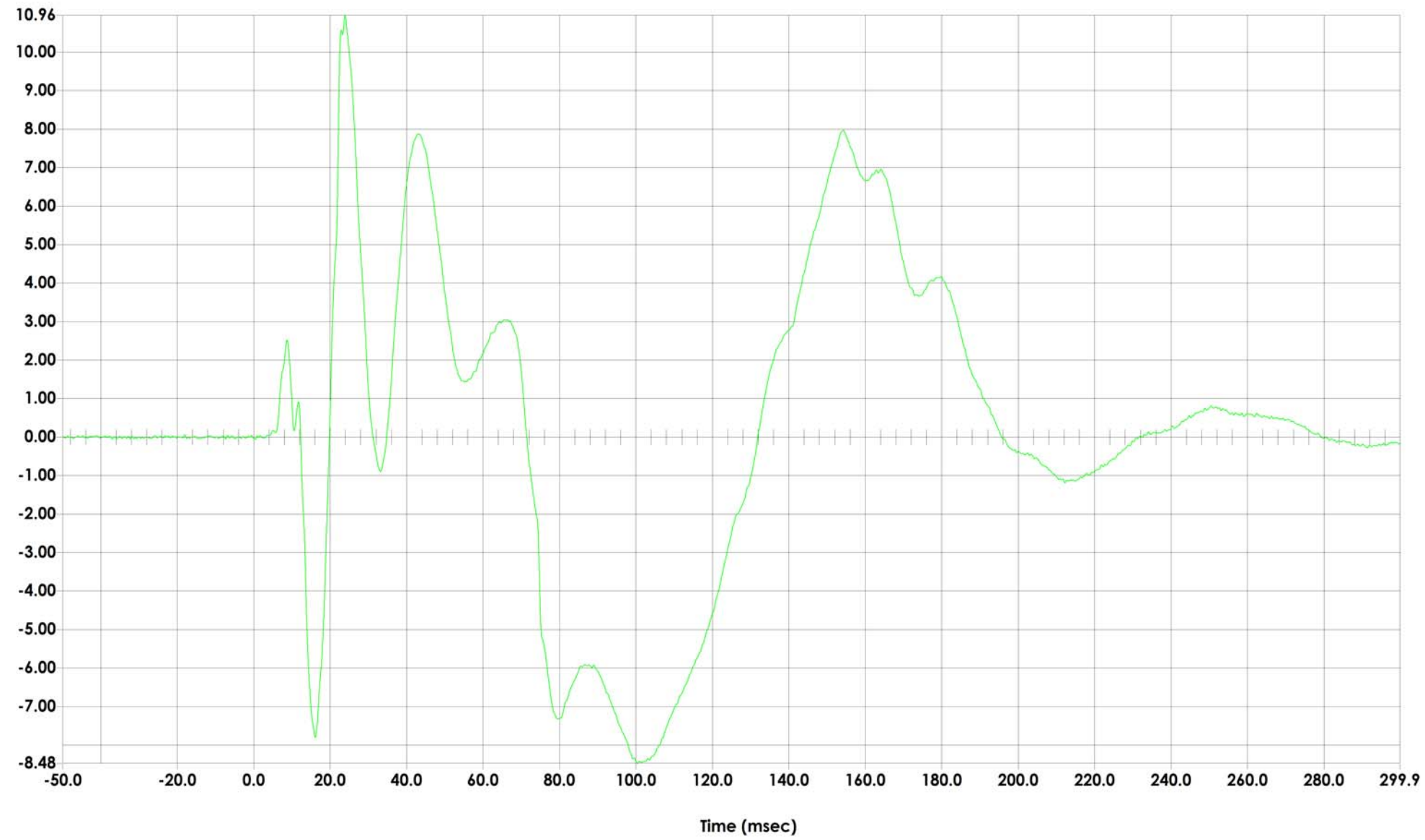


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC600        |
| Plot number        | 007           |
| Units              | NWM           |

|     |        |      |
|-----|--------|------|
| Max | 10.96  | NWM  |
|     | 23.84  | msec |
| Min | -8.48  | NWM  |
|     | 100.40 | msec |



SID-IIs UNLC (X) Moment vs. Time

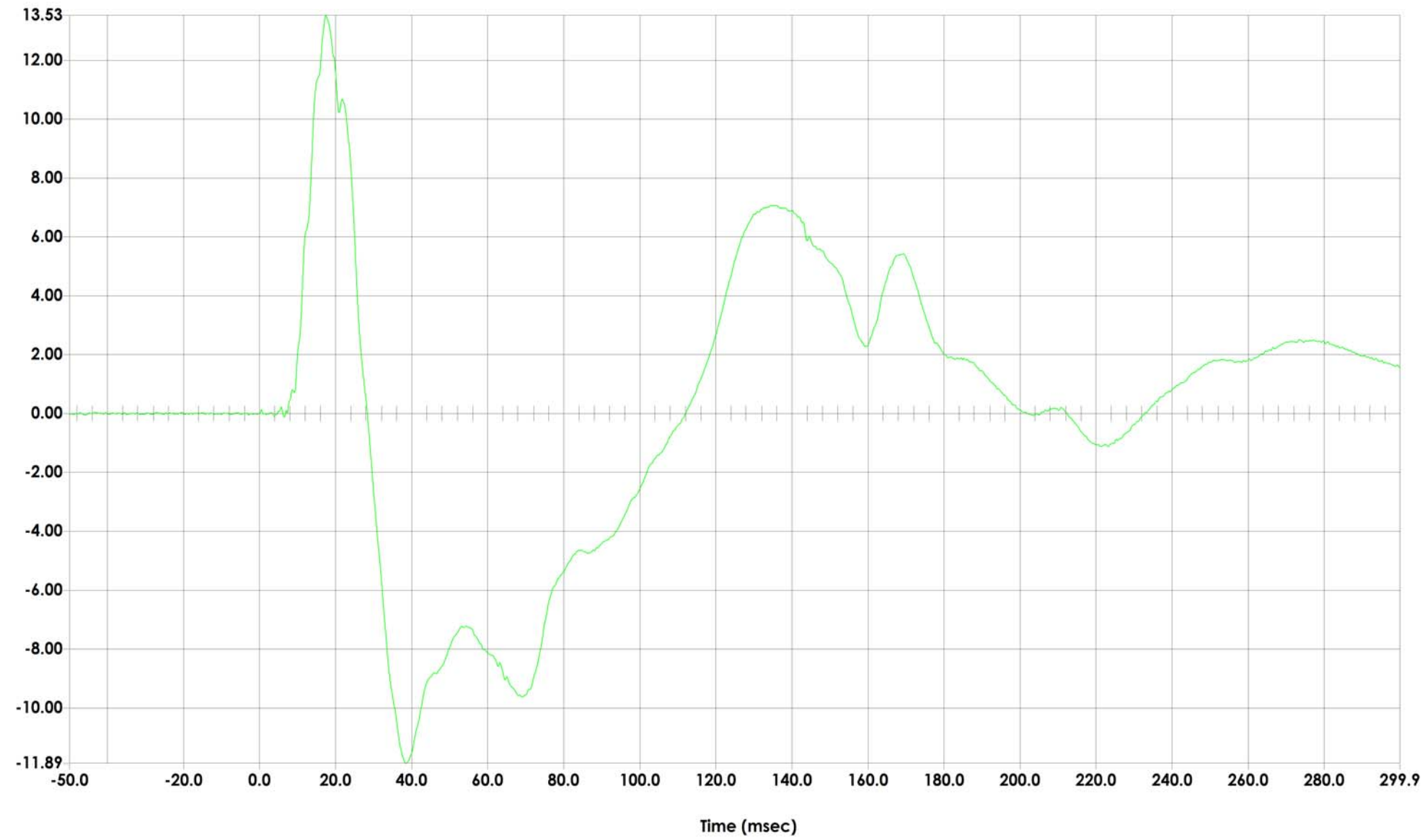


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC600        |
| Plot number        | 008           |
| Units              | NWM           |

|     |        |      |
|-----|--------|------|
| Max | 13.53  | NWM  |
|     | 17.44  | msec |
| Min | -11.89 | NWM  |
|     | 38.48  | msec |



SID-IIs UNLC (Y) Moment vs. Time

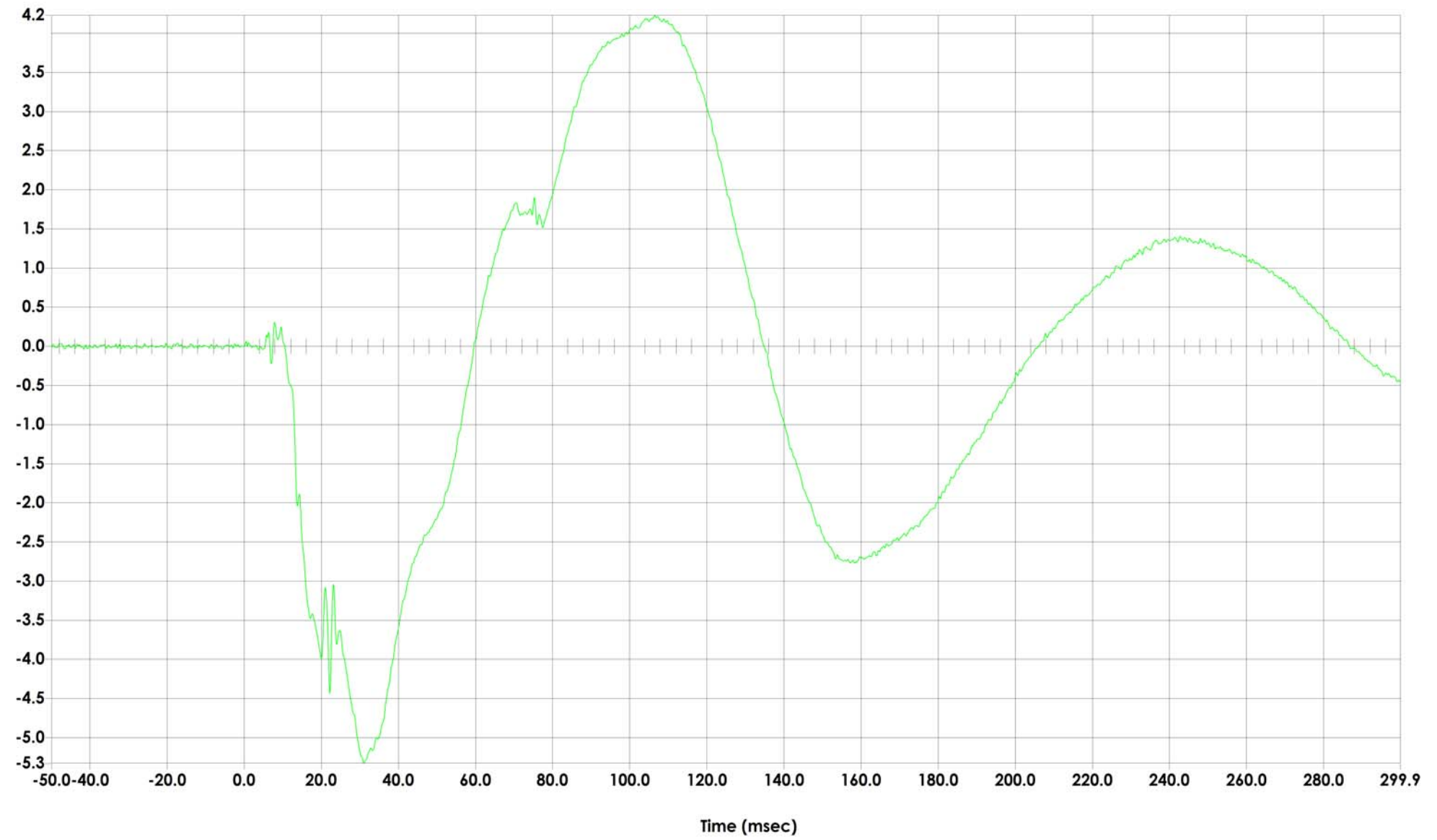


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC600        |
| Plot number        | 009           |
| Units              | NWM           |

|     |        |      |
|-----|--------|------|
| Max | 4.23   | NWM  |
|     | 106.48 | msec |
| Min | -5.33  | NWM  |
|     | 31.04  | msec |

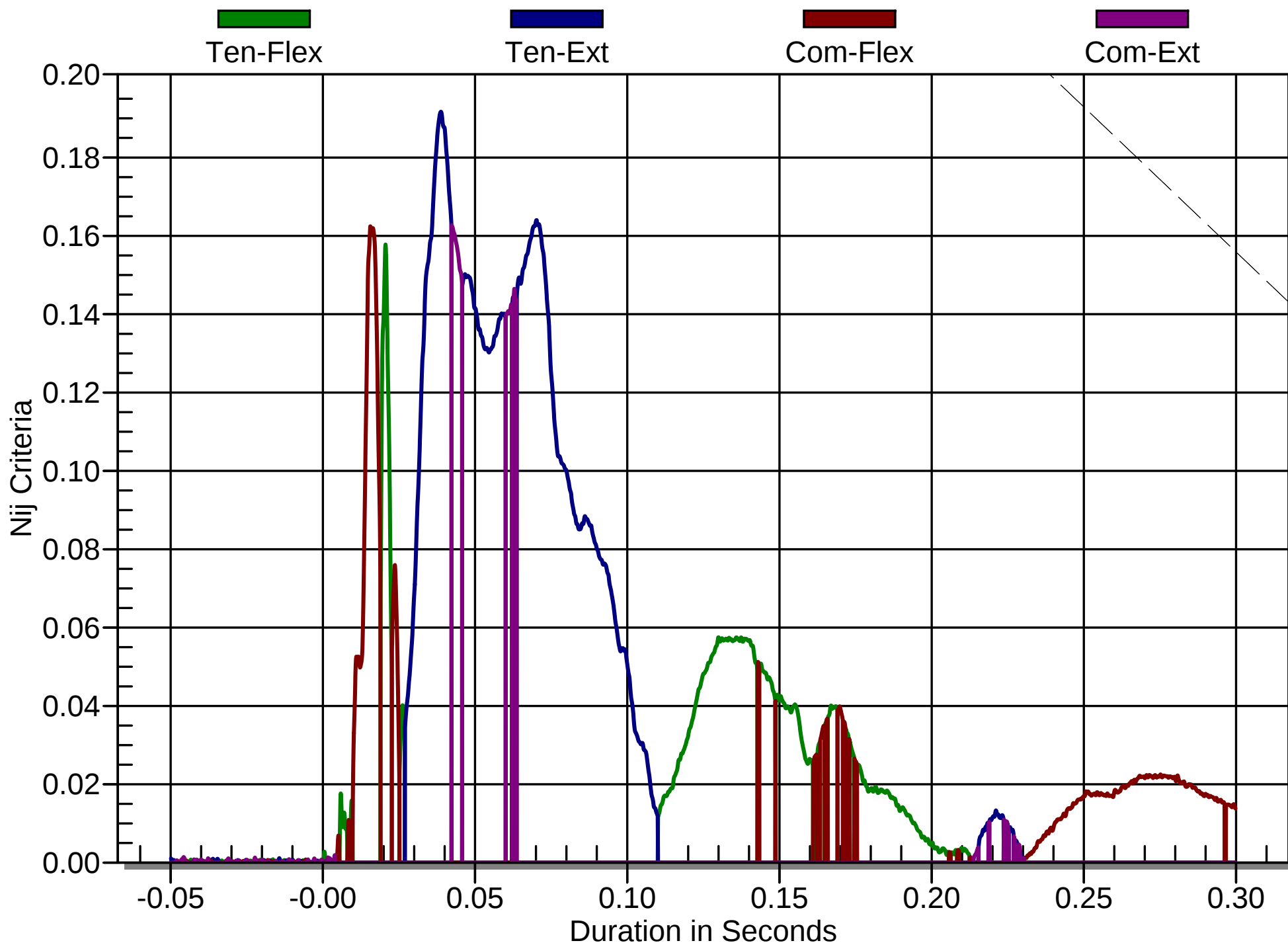


SID-IIs UNLC (Z) Moment vs. Time



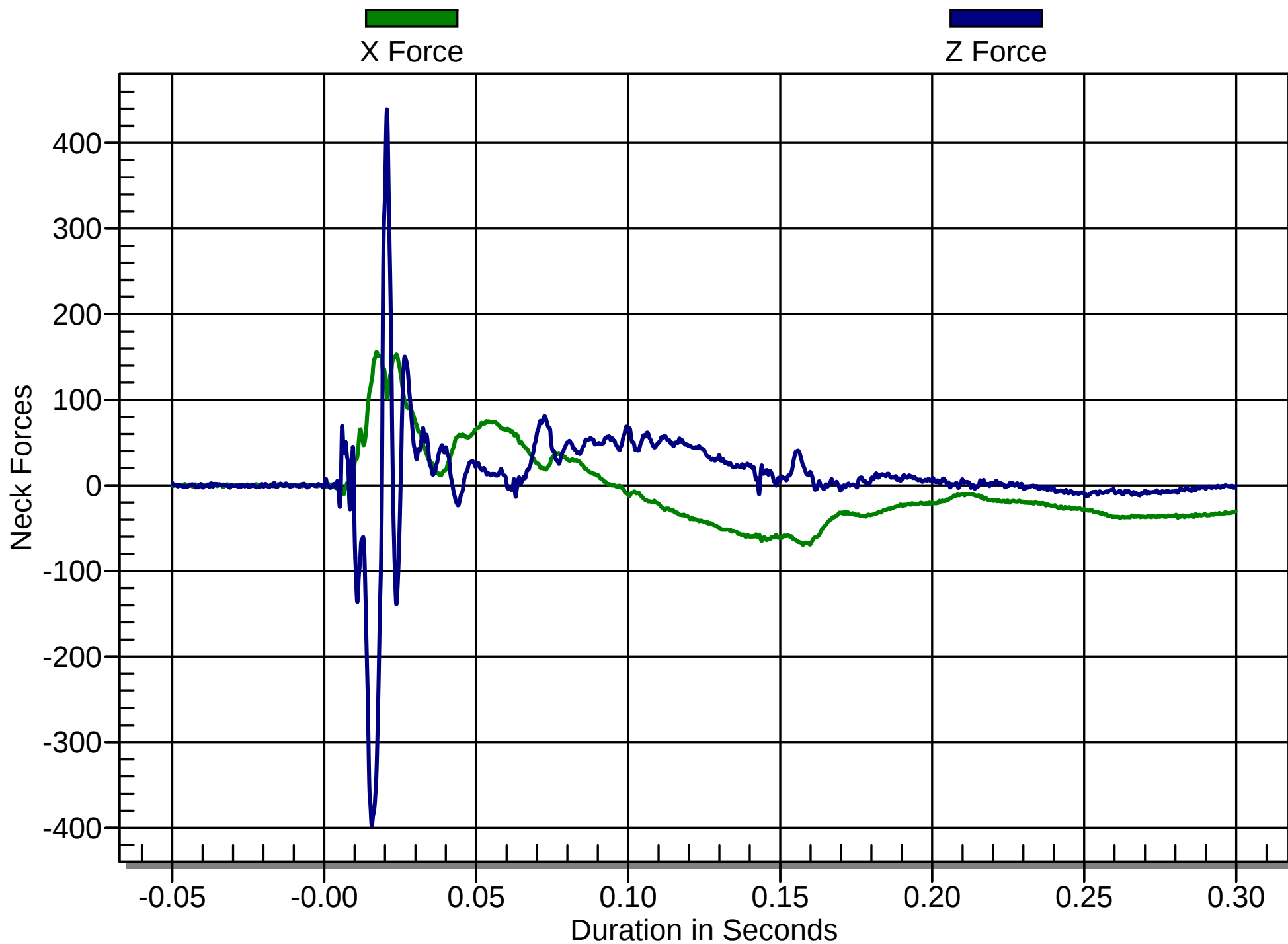
# Nij Version 10

Ntf= 0.16, Nte= 0.19, Ncf= 0.16, Nce= 0.16



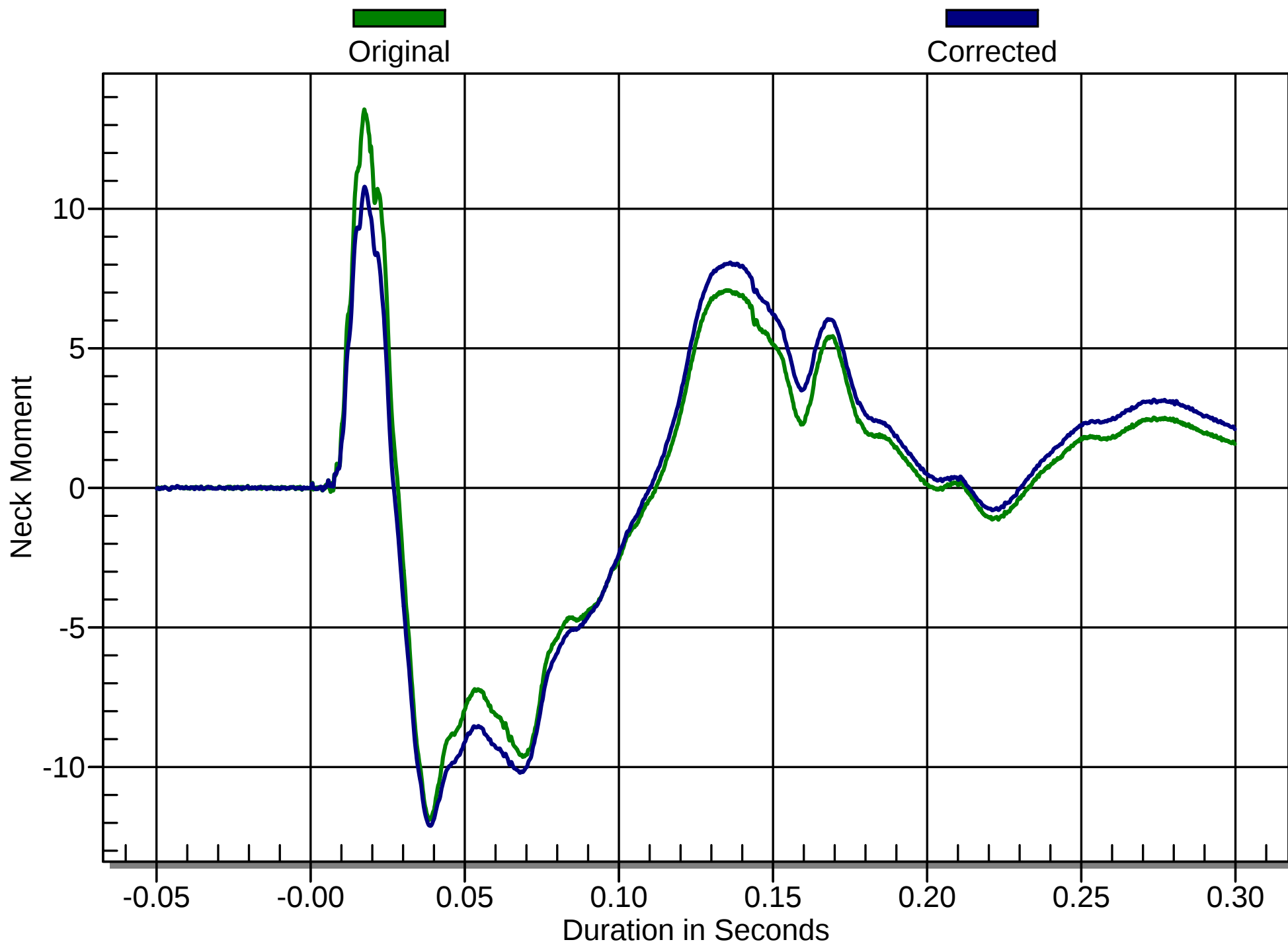
# Nij Version 10

Ntf= 0.16, Nte= 0.19, Ncf= 0.16, Nce= 0.16



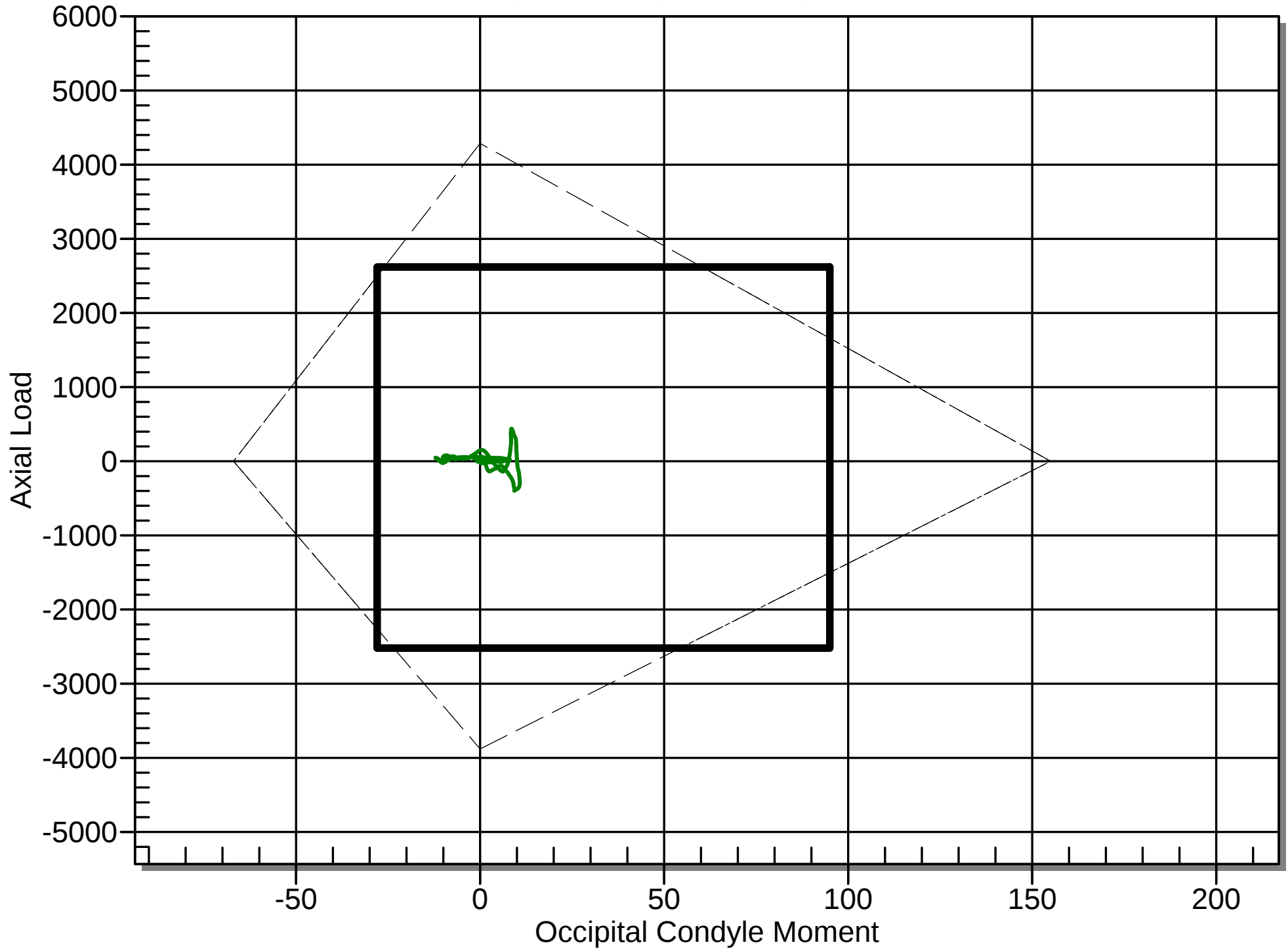
# Nij Version 10

Ntf= 0.16, Nte= 0.19, Ncf= 0.16, Nce= 0.16



# Nij Version 10

Ntf= 0.16, Nte= 0.19, Ncf= 0.16, Nce= 0.16

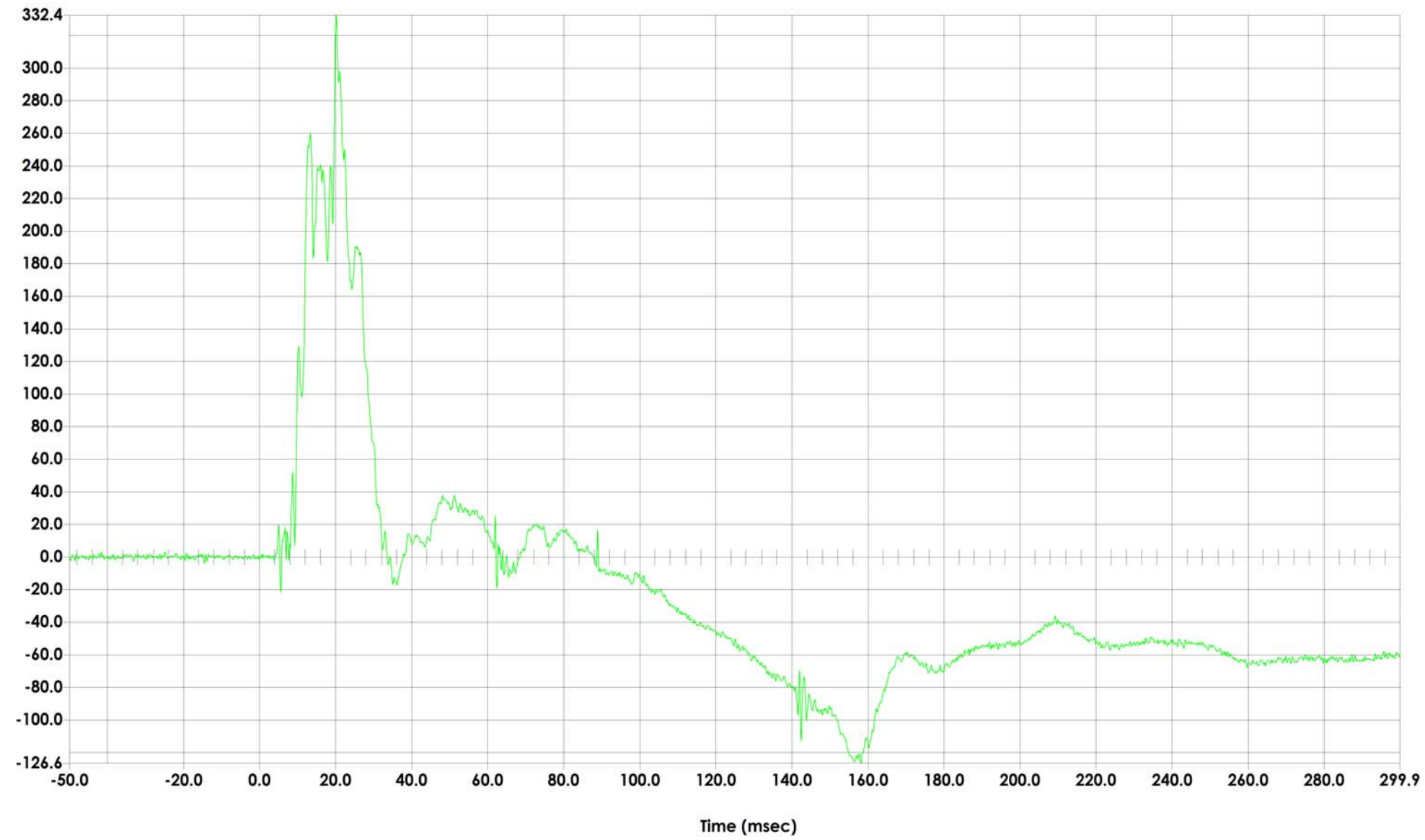


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 010           |
| Units              | NWT           |

|     |         |      |
|-----|---------|------|
| Max | 332.42  | NWT  |
|     | 20.16   | msec |
| Min | -126.62 | NWT  |
|     | 158.16  | msec |



SID-IIs LNLC (X) Force vs. Time

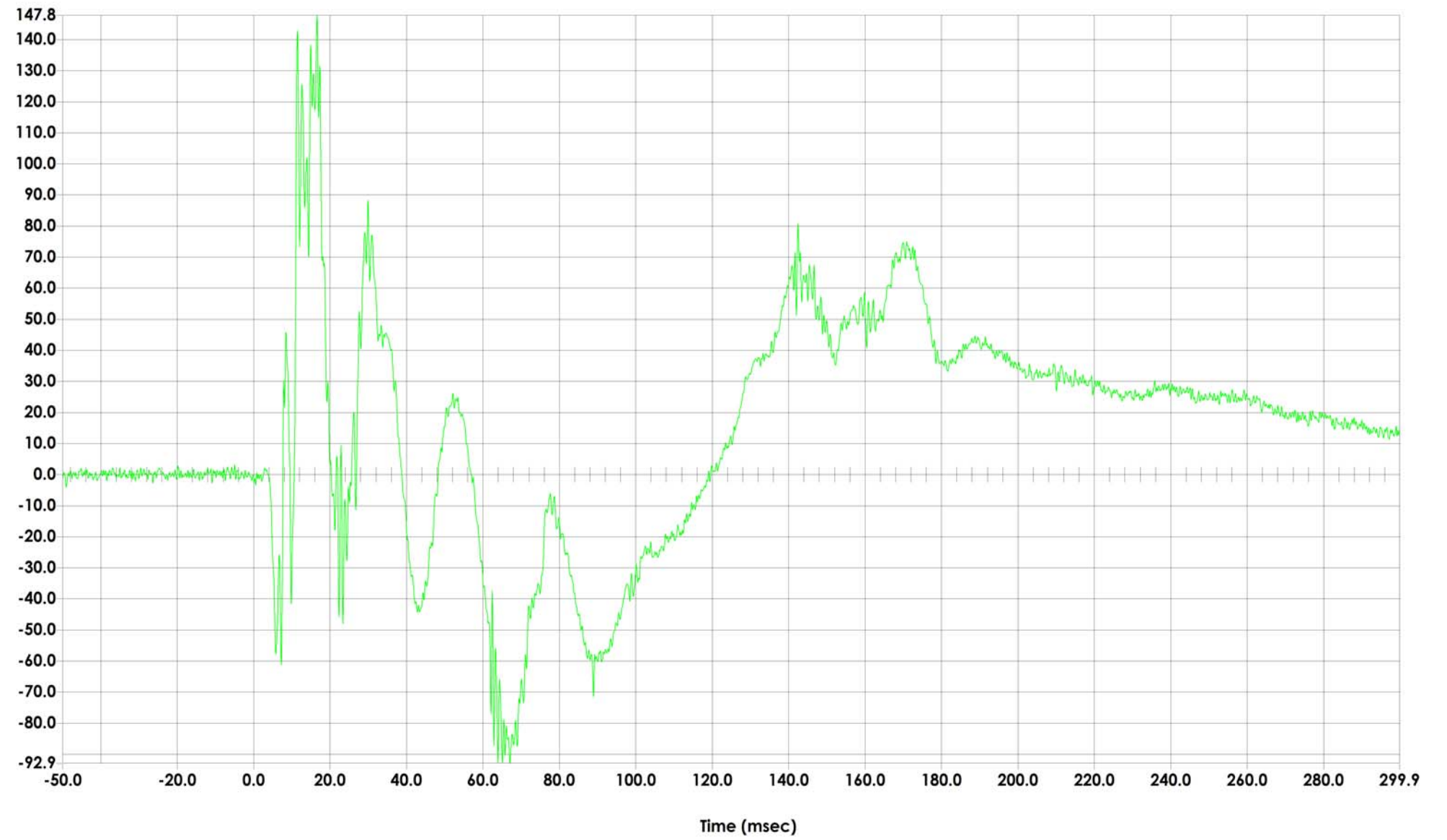


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 011           |
| Units              | NWT           |

|     |        |      |
|-----|--------|------|
| Max | 147.83 | NWT  |
|     | 16.56  | msec |
| Min | -92.94 | NWT  |
|     | 67.04  | msec |



SID-IIs LNLC (Y) Force vs. Time

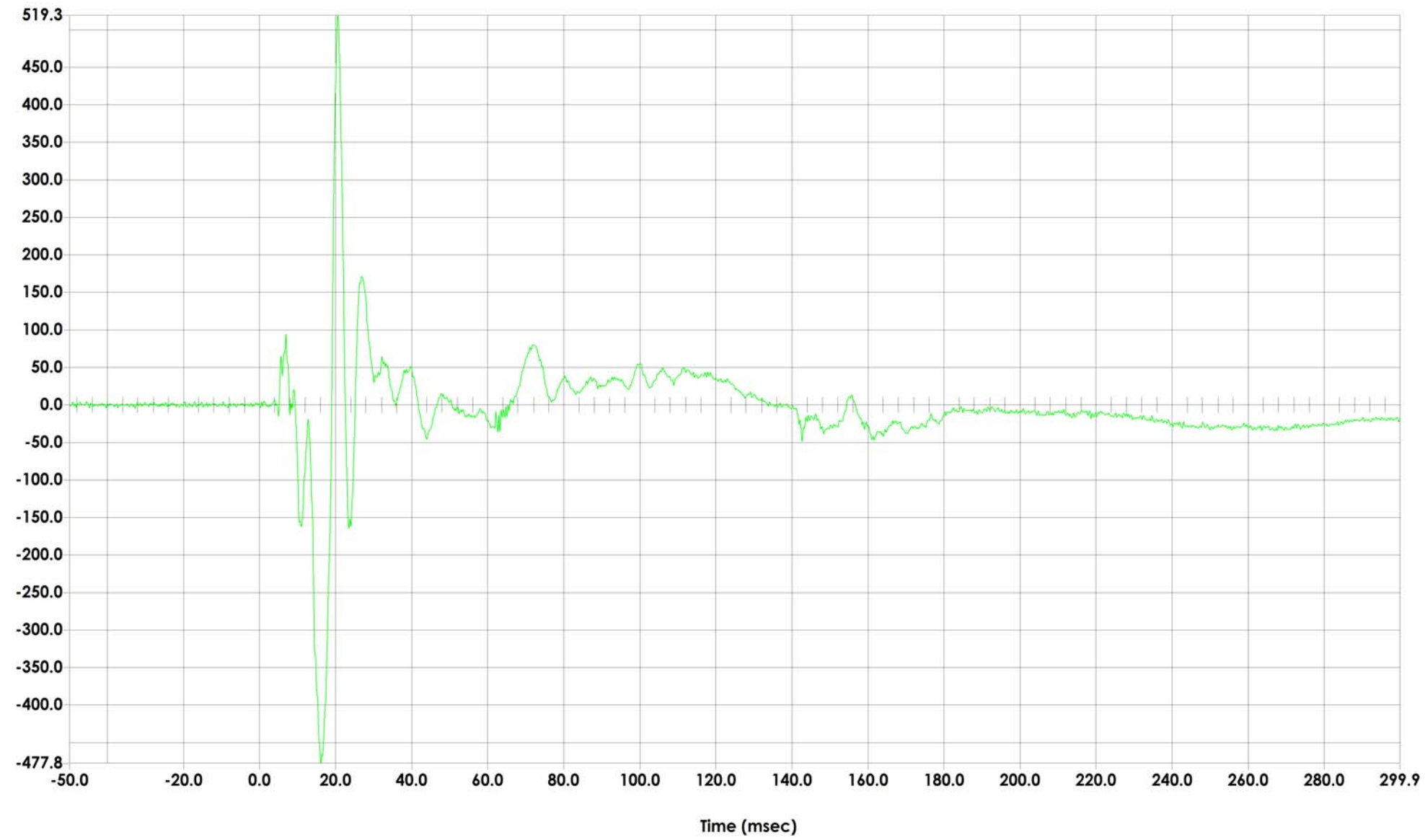


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC1000       |
| Plot number        | 012           |
| Units              | NWT           |

|     |         |      |
|-----|---------|------|
| Max | 519.34  | NWT  |
|     | 20.56   | msec |
| Min | -477.77 | NWT  |
|     | 16.16   | msec |



SID-IIs LNLC (Z) Force vs. Time

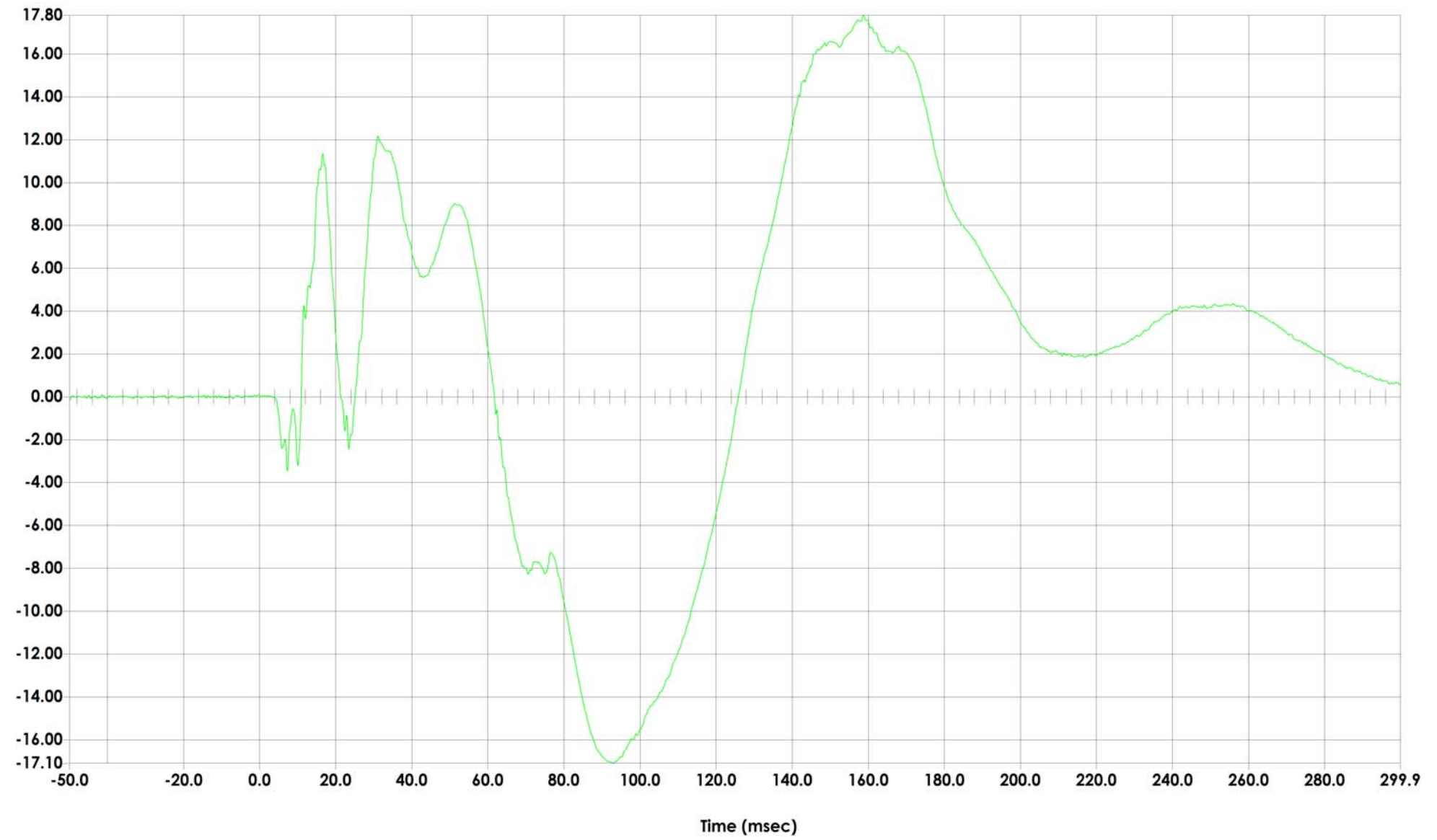


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC600        |
| Plot number        | 013           |
| Units              | NWM           |

|     |        |      |
|-----|--------|------|
| Max | 17.80  | NWM  |
|     | 158.72 | msec |
| Min | -17.10 | NWM  |
|     | 93.12  | msec |



SID-IIs LNLC (X) Moment vs. Time

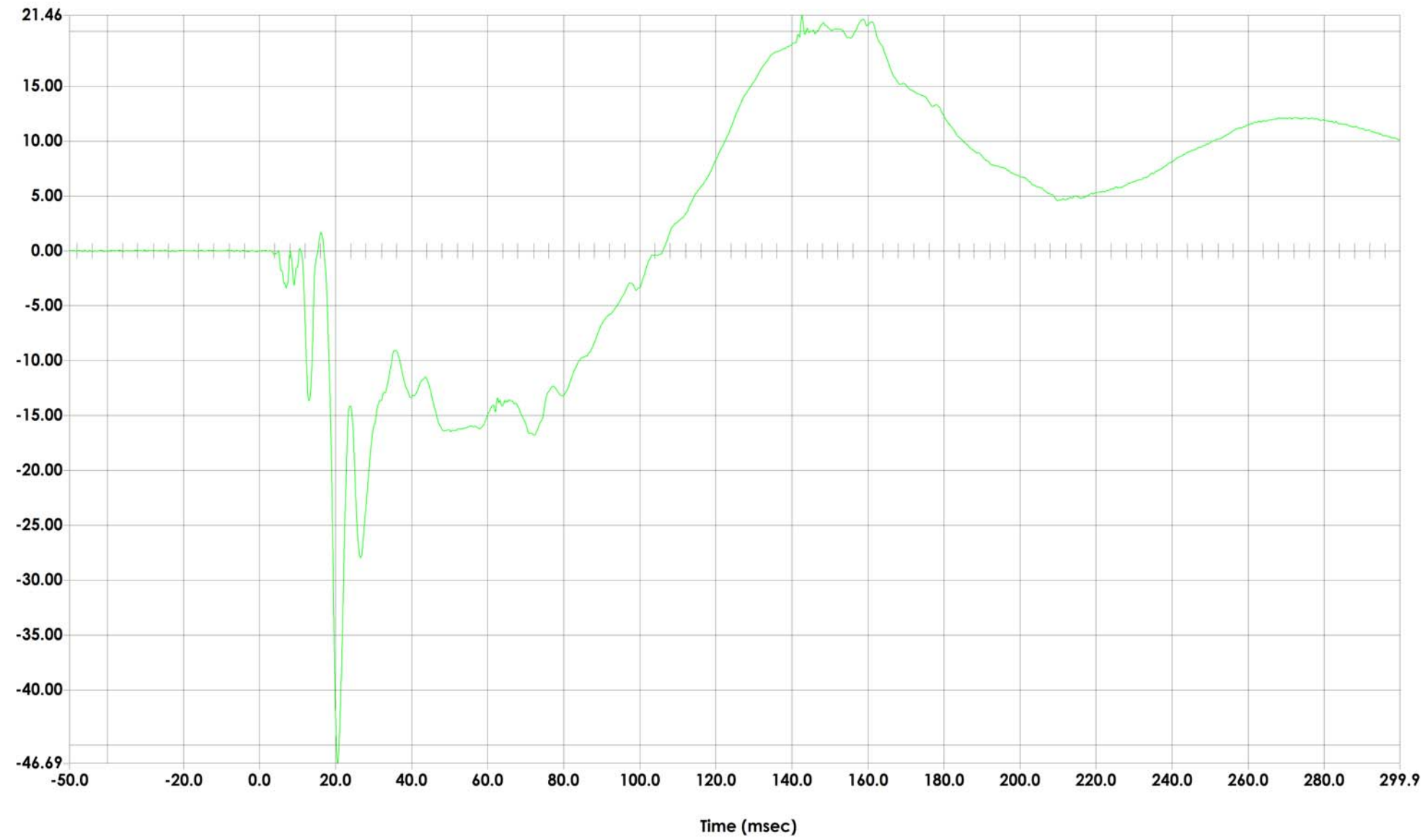


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC600        |
| Plot number        | 014           |
| Units              | NWM           |

|     |        |      |
|-----|--------|------|
| Max | 21.46  | NWM  |
|     | 142.64 | msec |
| Min | -46.69 | NWM  |
|     | 20.56  | msec |



SID-IIs LNLC (Y) Moment vs. Time

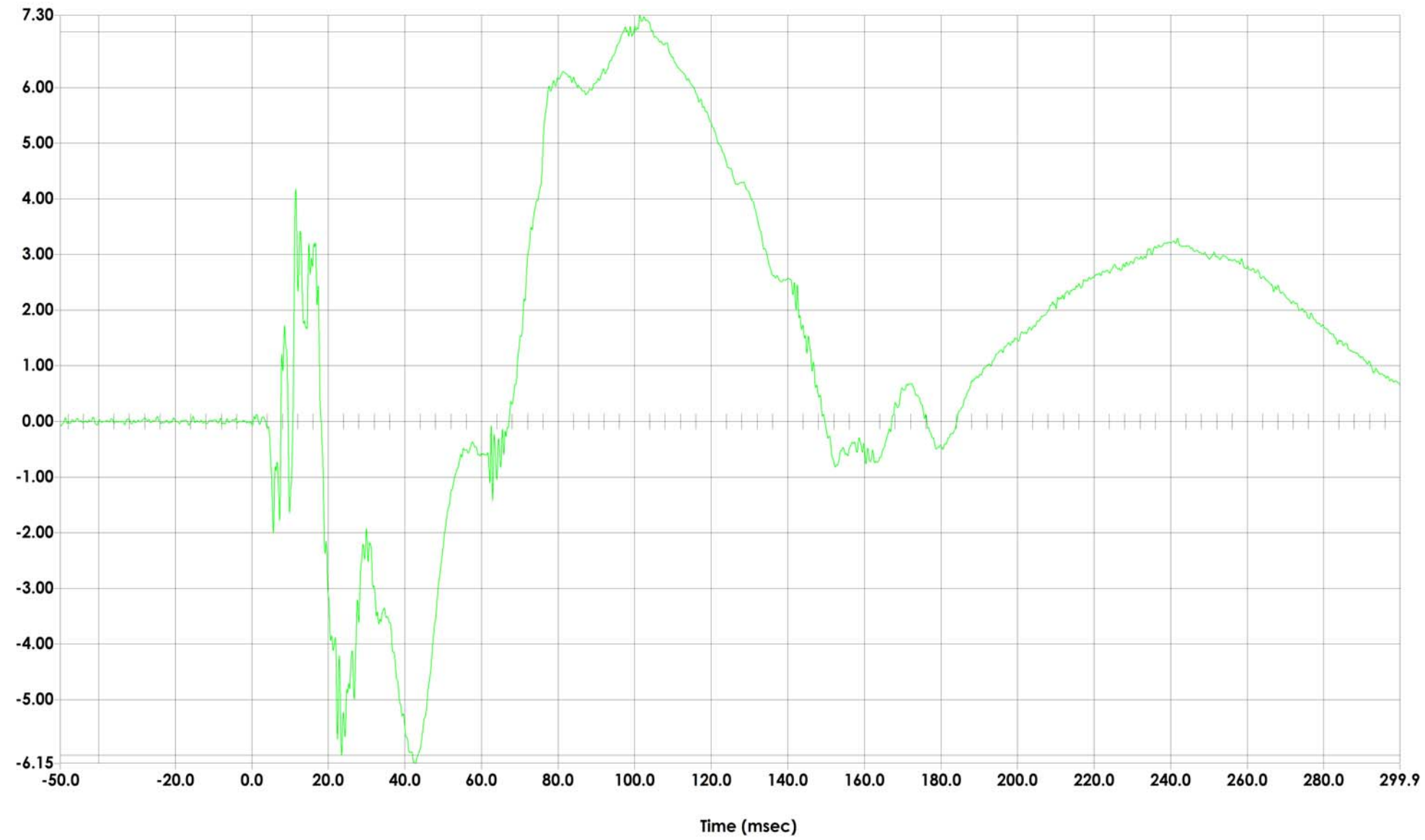


|                    |               |
|--------------------|---------------|
| Test ID            | M20140308TWG2 |
| Sampling Rate (Hz) | 12500         |
| Filter             | CFC600        |
| Plot number        | 015           |
| Units              | NWM           |

|     |        |      |
|-----|--------|------|
| Max | 7.30   | NWM  |
|     | 101.36 | msec |
| Min | -6.15  | NWM  |
|     | 42.72  | msec |



SID-IIs LNLC (Z) Moment vs. Time



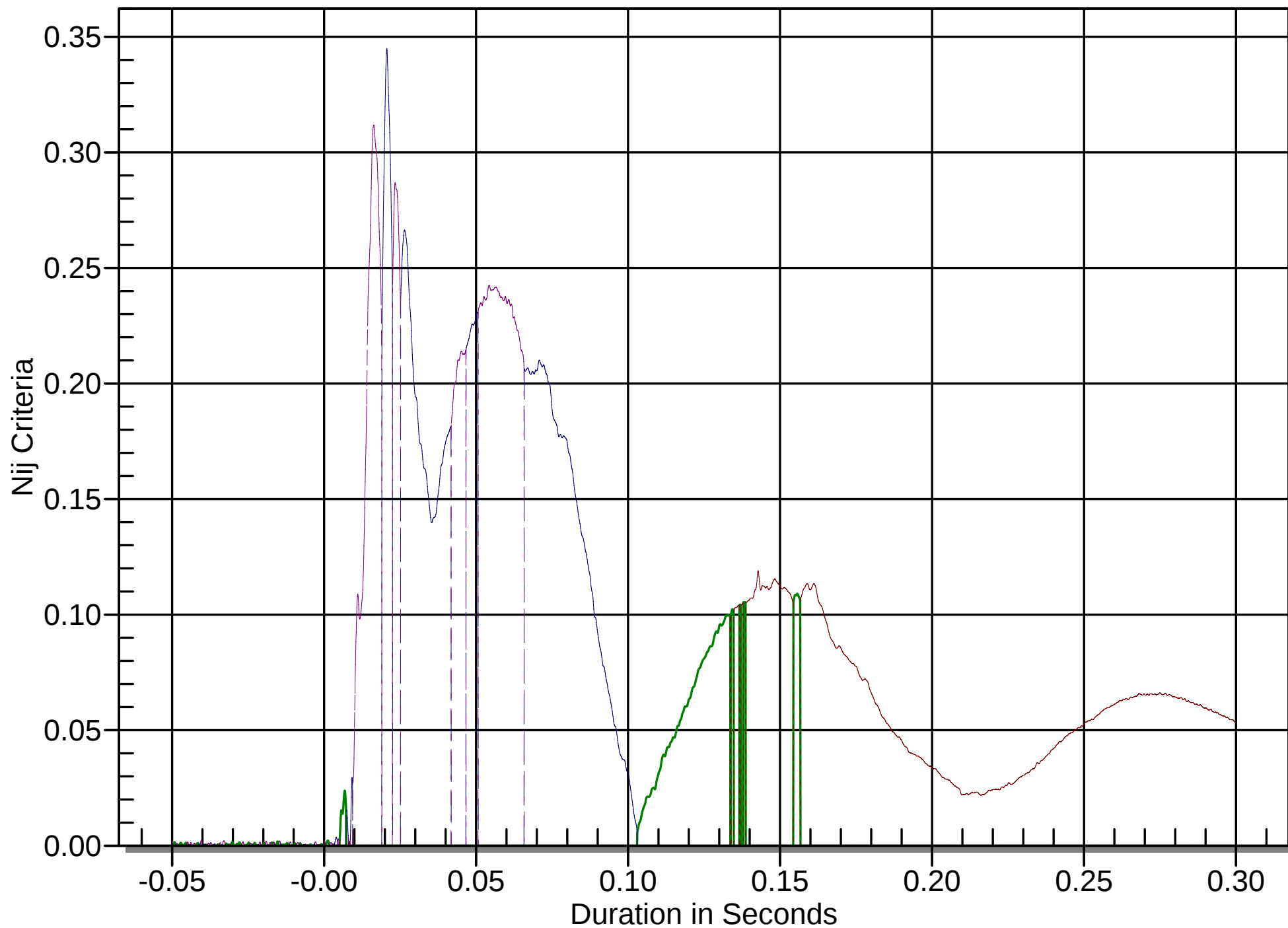
Ntf= 0.11, Nte= 0.34, Ncf= 0.12, Nce= 0.31

Ten-Flex

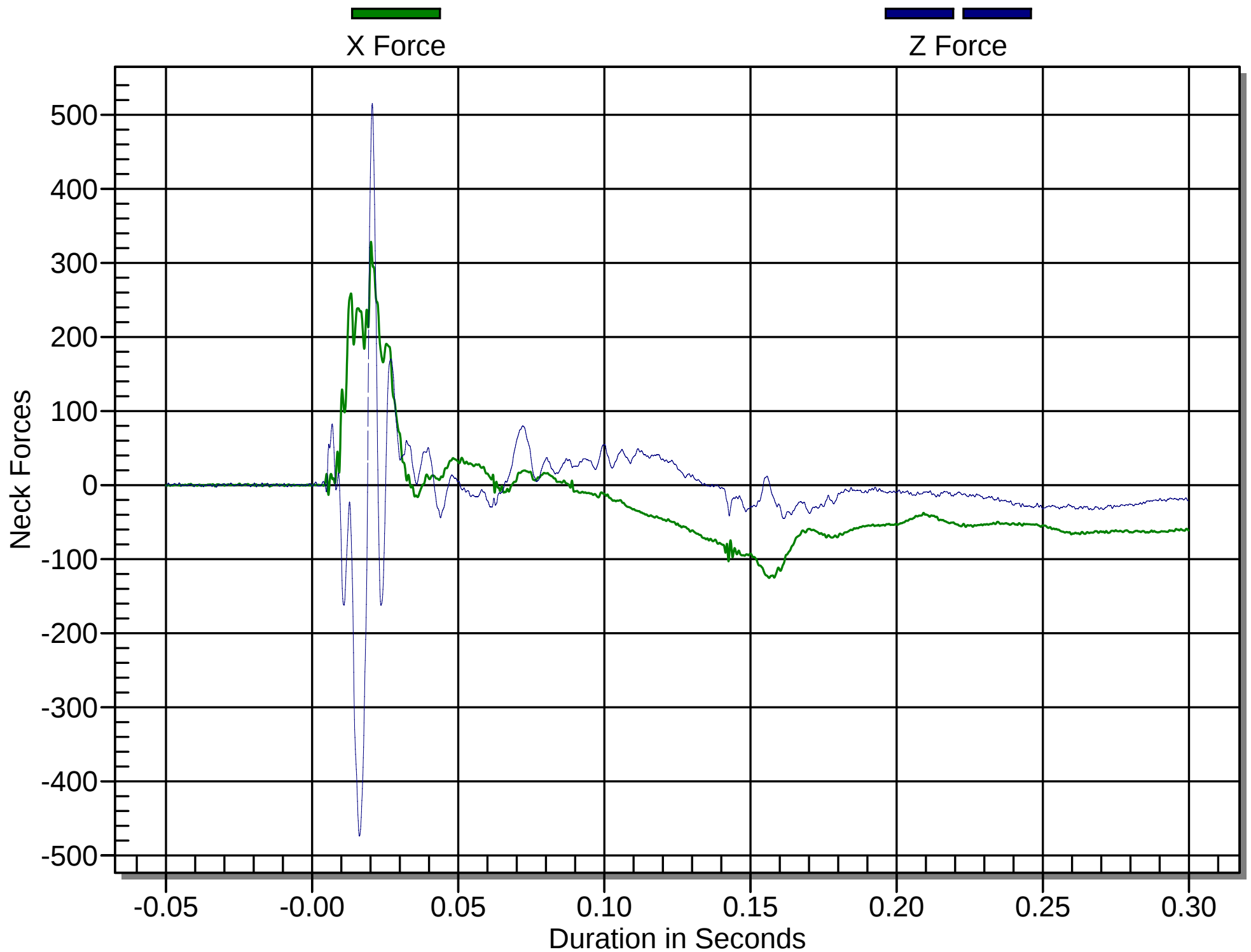
Ten-Ext

Com-Flex

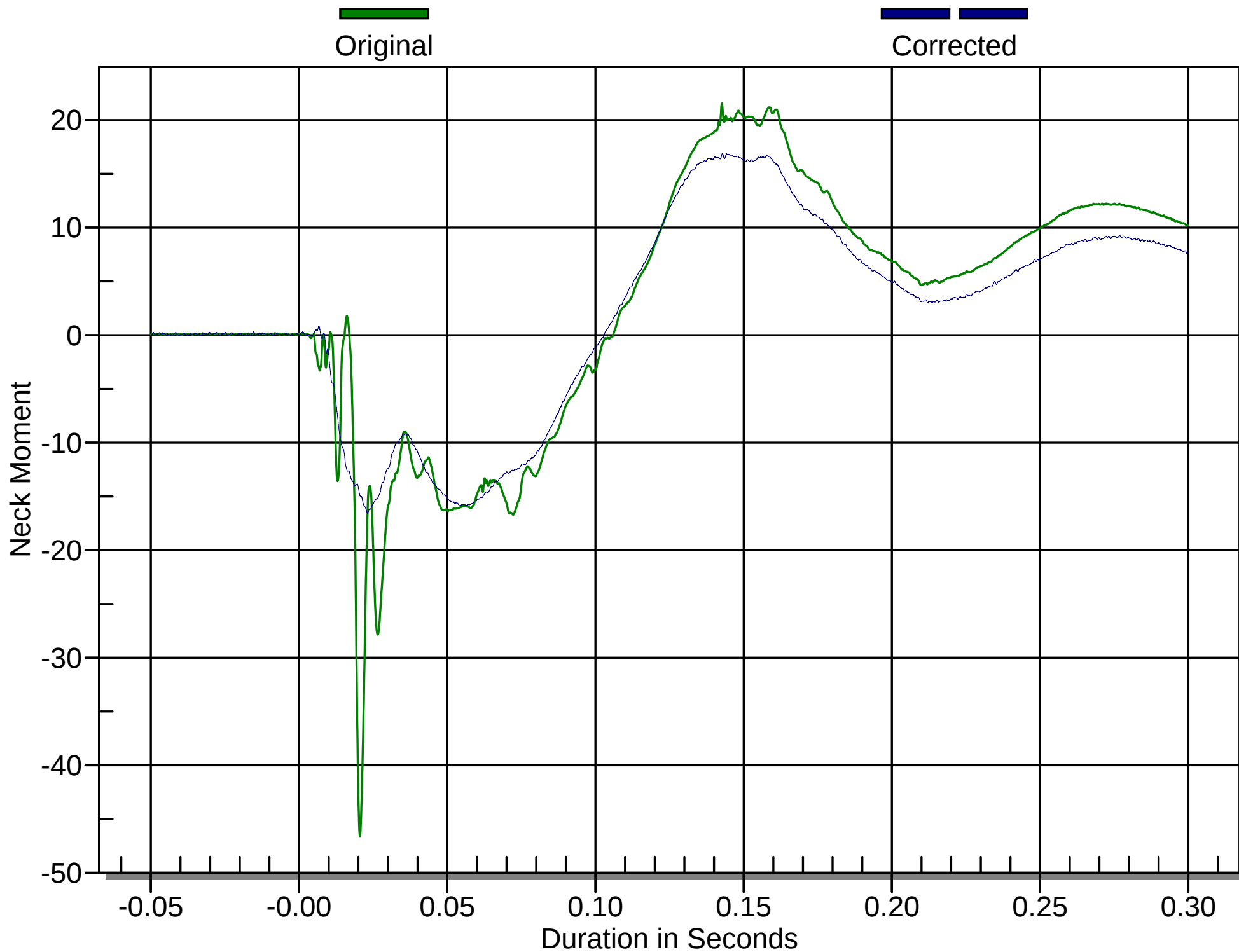
Com-Ext



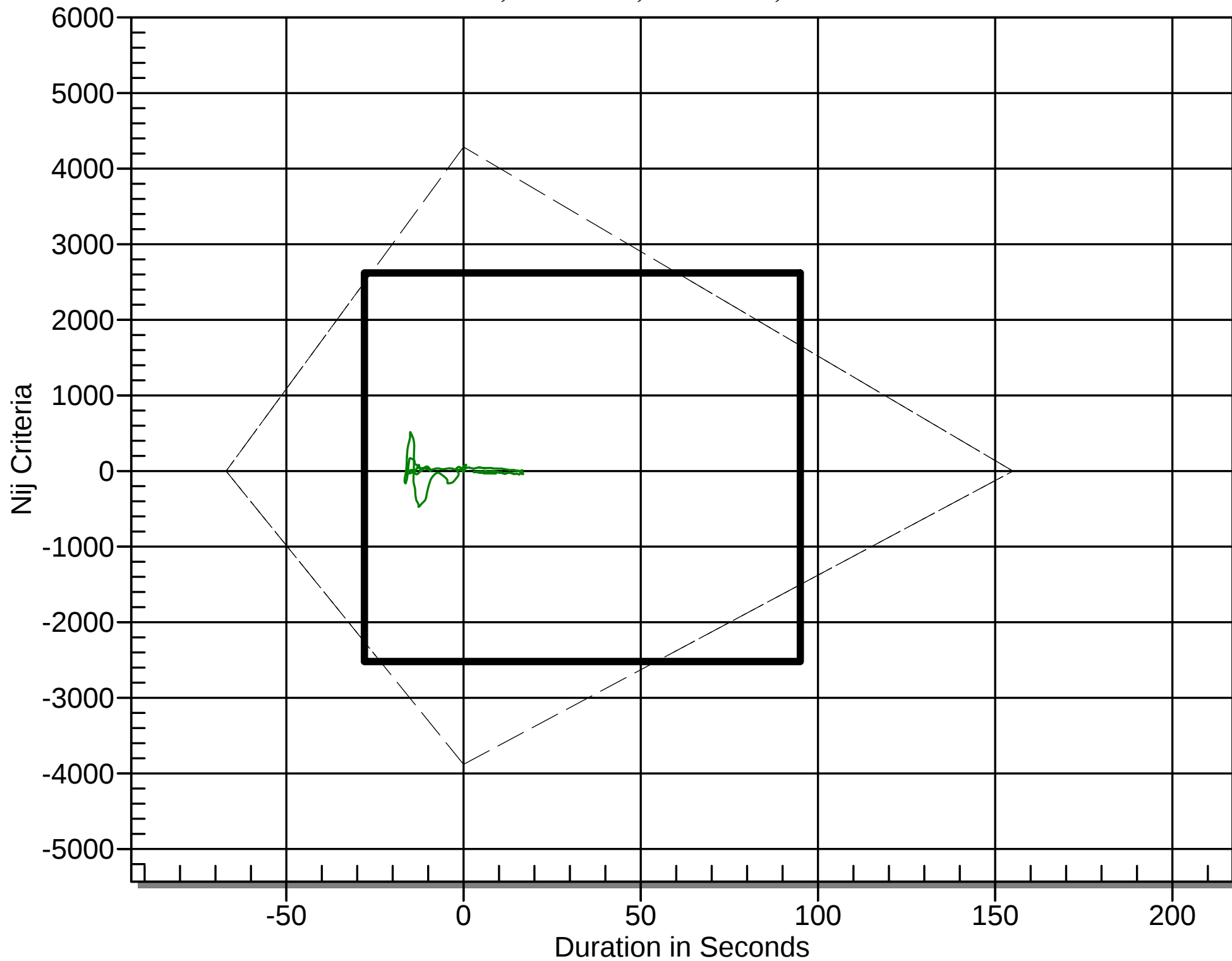
Ntf= 0.11, Nte= 0.34, Ncf= 0.12, Nce= 0.31



Ntf= 0.11, Nte= 0.34, Ncf= 0.12, Nce= 0.31



Ntf= 0.11, Nte= 0.34, Ncf= 0.12, Nce= 0.31



Test Vehicle: 2014 Jeep Patriot 5-Door SUV  
Test Program: Occupant Out-Of-Position

NHTSA Number: M20140308 TWG 2  
Test Date: February 11, 2013

**APPENDIX C**  
**DUMMY CONFIGURATION AND PERFORMANCE DATA**

**TABLE 1**  
**EXTERNAL MEASUREMENTS (SID-IIIs)**

|                              |           |                |           |          |           |
|------------------------------|-----------|----------------|-----------|----------|-----------|
| SIDIIs Serial Number         | 298       | Test Sequences |           | 1 & 2    |           |
| TEST PARAMETER               | SPEC.     | PRE            |           | POST     |           |
| Date                         | -         | 11-11-13       |           | 11-18-13 |           |
| Sequential Test Number       | -         | 1              |           | 2        |           |
|                              |           | Result         | Pass/Fail | Result   | Pass/Fail |
| Temperature (°C)             | 20.6-22.2 | 20.9           | Pass      | 21.1     | Pass      |
| Relative Humidity (%)        | 10-70     | 32.8           | Pass      | 34.1     | Pass      |
| Sitting Height               | 772 – 788 | 774            | Pass      | 775      | Pass      |
| Shoulder Pivot Height        | 437 – 453 | 451            | Pass      | 448      | Pass      |
| H-Point Height               | 79 – 89   | 87             | Pass      | 86       | Pass      |
| H-Point from Seat Back       | 141 – 151 | 146            | Pass      | 146      | Pass      |
| Shoulder Pivot from Backline | 97 – 107  | 100            | Pass      | 102      | Pass      |
| Thigh Clearance              | 119 – 135 | 128            | Pass      | 125      | Pass      |
| Head Breadth                 | 140 – 148 | 146            | Pass      | 143      | Pass      |
| Head Back from Backline      | 40 – 46   | 45             | Pass      | 42       | Pass      |
| Head Depth                   | 178 – 188 | 181            | Pass      | 182      | Pass      |
| Head Circumference           | 541 – 551 | 543            | Pass      | 542      | Pass      |
| Buttock to Knee Length       | 514 – 540 | 520            | Pass      | 525      | Pass      |
| Popliteal Height             | 343 – 369 | 353            | Pass      | 356      | Pass      |
| Knee Pivot to Floor Height   | 392 – 409 | 407            | Pass      | 405      | Pass      |
| Buttock Popliteal Length     | 416 – 442 | 434            | Pass      | 431      | Pass      |
| Chest Depth w/o Jacket       | 195 – 211 | 208            | Pass      | 207      | Pass      |
| Foot Length                  | 216 – 232 | 224            | Pass      | 225      | Pass      |
| Hip Breadth                  | 313 – 323 | 319            | Pass      | 318      | Pass      |
| Arm Length                   | 249 – 259 | 253            | Pass      | 255      | Pass      |
| Knee Joint to Seat Back      | 477 – 493 | 486            | Pass      | 485      | Pass      |
| Shoulder Width               | 341 – 357 | 347            | Pass      | 351      | Pass      |
| Foot Width                   | 78 – 94   | 86             | Pass      | 87       | Pass      |
| Chest Circumference w/Jacket | 851 – 881 | 872            | Pass      | 874      | Pass      |
| Waist Circumference          | 761 – 791 | 774            | Pass      | 775      | Pass      |

**TABLE 2**  
**HEAD DROP TEST (SID-IIs)**

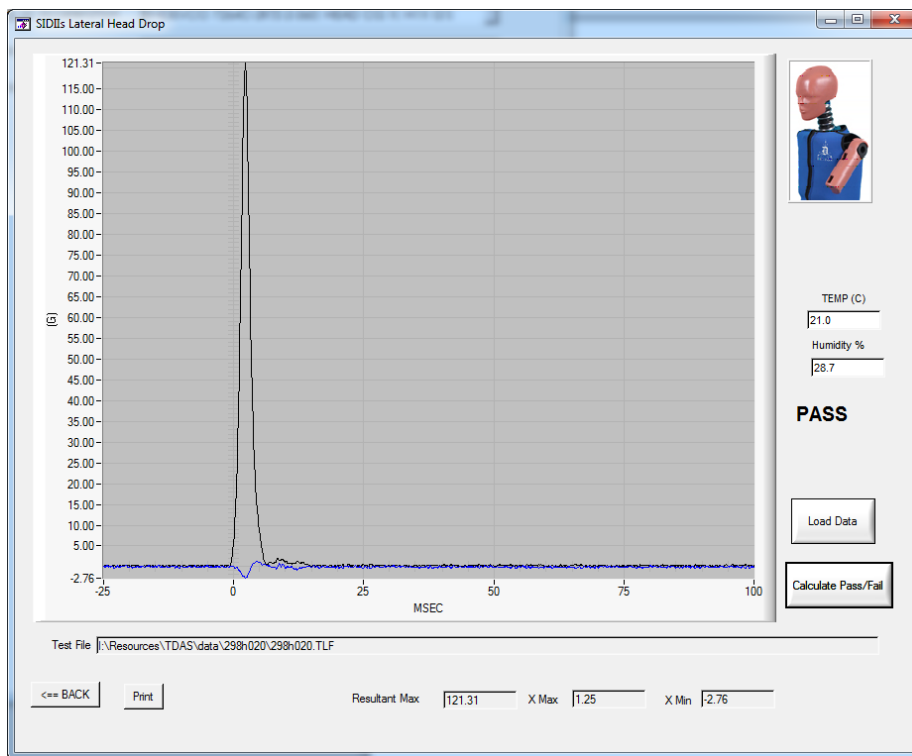
SIDIIs Serial Number 298

Test Sequences 1 & 2

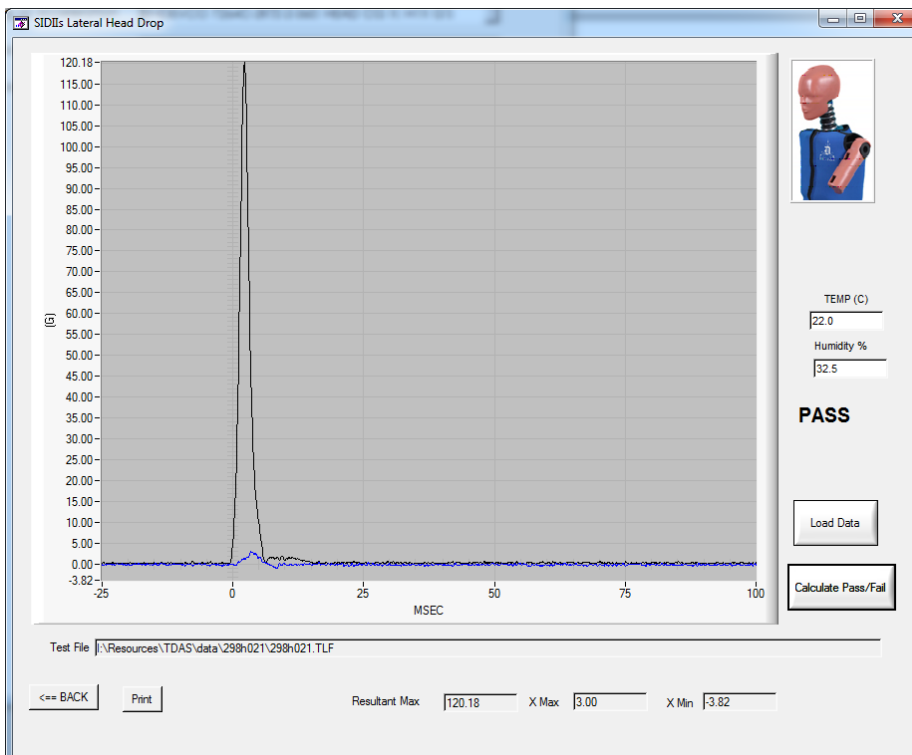
| TEST PARAMETER                       |     | SPEC.            | PRE     |           | POST     |           |
|--------------------------------------|-----|------------------|---------|-----------|----------|-----------|
| Date                                 |     | -                | 11-9-13 |           | 11-16-13 |           |
| Sequential Test Number               |     | -                | 1       |           | 2        |           |
|                                      |     |                  | Result  | Pass/Fail | Result   | Pass/Fail |
| Head Soak Time (min)                 |     | <b>≥ 240</b>     | 240     | Pass      | 240      | Pass      |
| Temperature(°C) –<br>During Soak     | Max | <b>20.6-22.2</b> | 21.0    | Pass      | 22.0     | Pass      |
|                                      | Min |                  | 20.7    | Pass      | 21.3     | Pass      |
| Humidity(%) –<br>During Soak         | Max | <b>10.0-70.0</b> | 28.7    | Pass      | 32.5     | Pass      |
|                                      | Min |                  | 27.3    | Pass      | 30.1     | Pass      |
| Temperature – During Test (°C)       |     | <b>20.6-22.2</b> | 21.0    | Pass      | 22.0     | Pass      |
| Humidity – During Test (%)           |     | <b>10-70</b>     | 28.7    | Pass      | 32.5     | Pass      |
| Peak Head Resultant Acceleration (G) |     | <b>115-137</b>   | 121.3   | Pass      | 120.2    | Pass      |
| Peak Head X Acceleration (G)         |     | <b>&lt;15</b>    | 1.3     | Pass      | 3        | Pass      |
| Unimodal (Oscillation) (Yes/No)      |     | <b>&lt;15%</b>   | Yes     | Pass      | Yes      | Pass      |

**TABLE 2**  
**HEAD DROP TEST (SID-II<sub>s</sub>) (CONTINUED)**

**PRE-TEST**



**POST-TEST**



**TABLE 3**  
**LATERAL NECK PENDULUM TEST (SID-IIIs)**

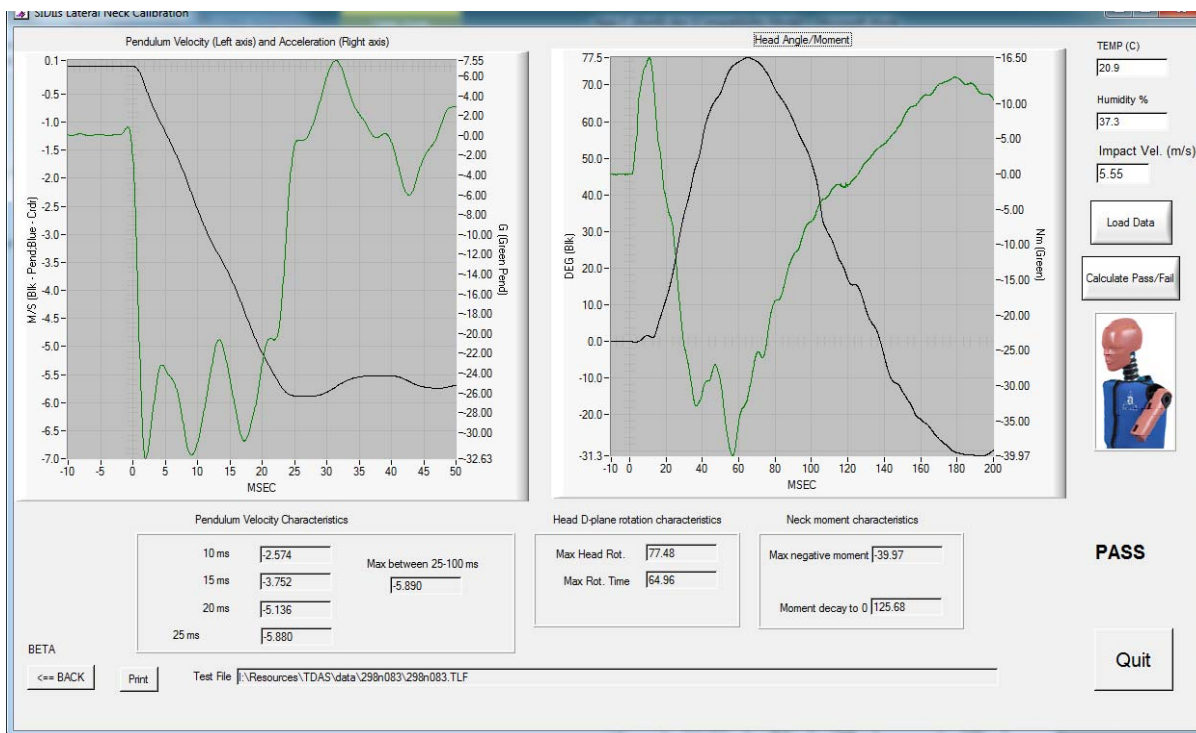
SIDIIs Serial Number 298

Test Sequences 1 & 2

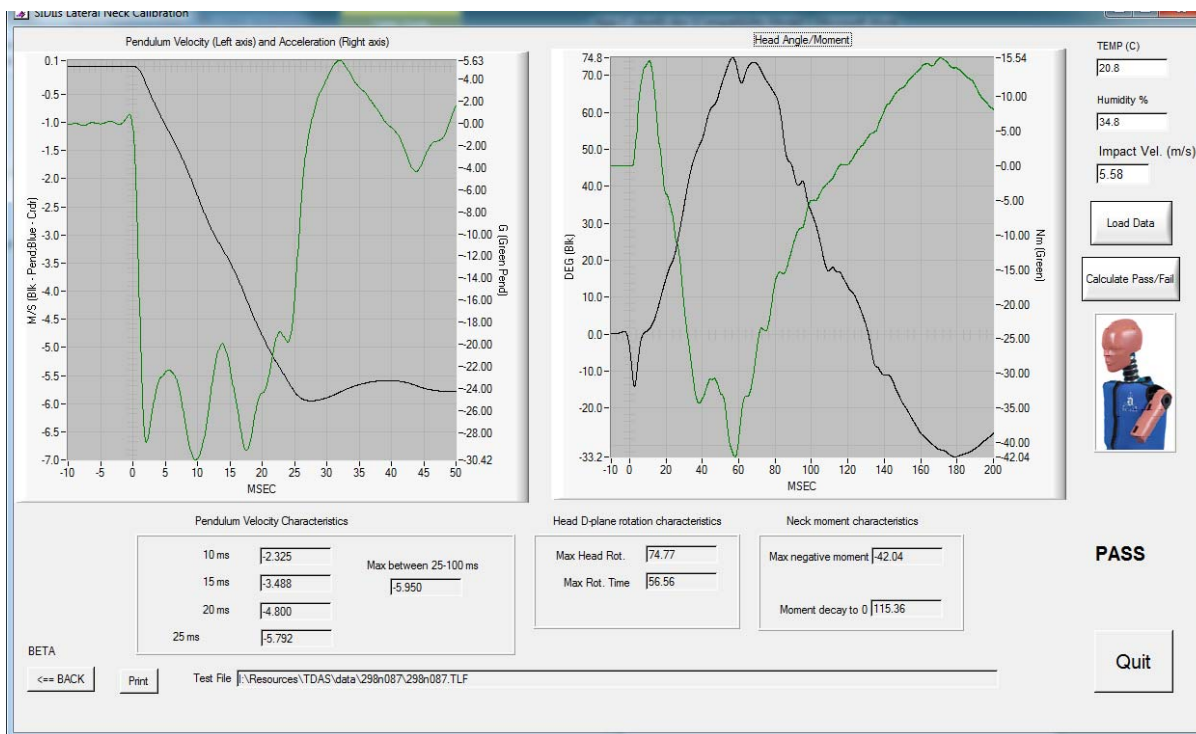
| TEST PARAMETER                        |           | SPEC.     | PRE     |           | POST     |           |
|---------------------------------------|-----------|-----------|---------|-----------|----------|-----------|
| Date                                  |           | -         | 11-4-13 |           | 11-18-13 |           |
| Sequential Test Number                |           | -         | 1       |           | 2        |           |
|                                       |           |           | Result  | Pass/Fail | Result   | Pass/Fail |
| Neck Assembly Soak Time (min)         |           | ≥ 240     | 240     | Pass      | 240      | Pass      |
| Temperature(°C) –<br>During Soak      | Max       | 20.6-22.2 | 20.9    | Pass      | 20.8     | Pass      |
|                                       | Min       |           | 20.6    | Pass      | 20.6     | Pass      |
| Humidity(%) –<br>During Soak          | Max       | 10.0-70.0 | 37.3    | Pass      | 34.8     | Pass      |
|                                       | Min       |           | 36.0    | Pass      | 31.1     | Pass      |
| Temperature – During Test (°C)        |           | 20.6-22.2 | 20.9    | Pass      | 20.8     | Pass      |
| Humidity – During Test (%)            |           | 10-70     | 37.3    | Pass      | 34.8     | Pass      |
| Pendulum Velocity (m/s)               |           | 5.51-5.63 | 5.55    | Pass      | 5.58     | Pass      |
| Pendulum<br>Deceleration (G)          | 10 ms     | 2.20-2.80 | 2.6     | Pass      | 2.3      | Pass      |
|                                       | 15 ms     | 3.30-4.10 | 3.8     | Pass      | 3.5      | Pass      |
|                                       | 20 ms     | 4.40-5.40 | 5.1     | Pass      | 4.8      | Pass      |
|                                       | 25 ms     | 5.40-6.10 | 5.9     | Pass      | 5.8      | Pass      |
|                                       | 25-100 ms | 5.50-6.20 | 5.9     | Pass      | 6.0      | Pass      |
| Maximum D-Plane rotation (deg)        |           | 71-81     | 77.5    | Pass      | 74.8     | Pass      |
| Time of Maximum D-Plane Rotation (ms) |           | 50-70     | 65.0    | Pass      | 56.6     | Pass      |
| Peak Occ. Condyle Moment (Nm)         |           | 36-44     | 40.0    | Pass      | 42.0     | Pass      |
| Time of Moment Decay (ms)             |           | 102-126   | 125.7   | Pass      | 115.4    | Pass      |

**TABLE 3**  
**LATERAL NECK PENDULUM TEST (SID-II<sub>s</sub>) (CONTINUED)**

**PRE-TEST**



**POST-TEST**



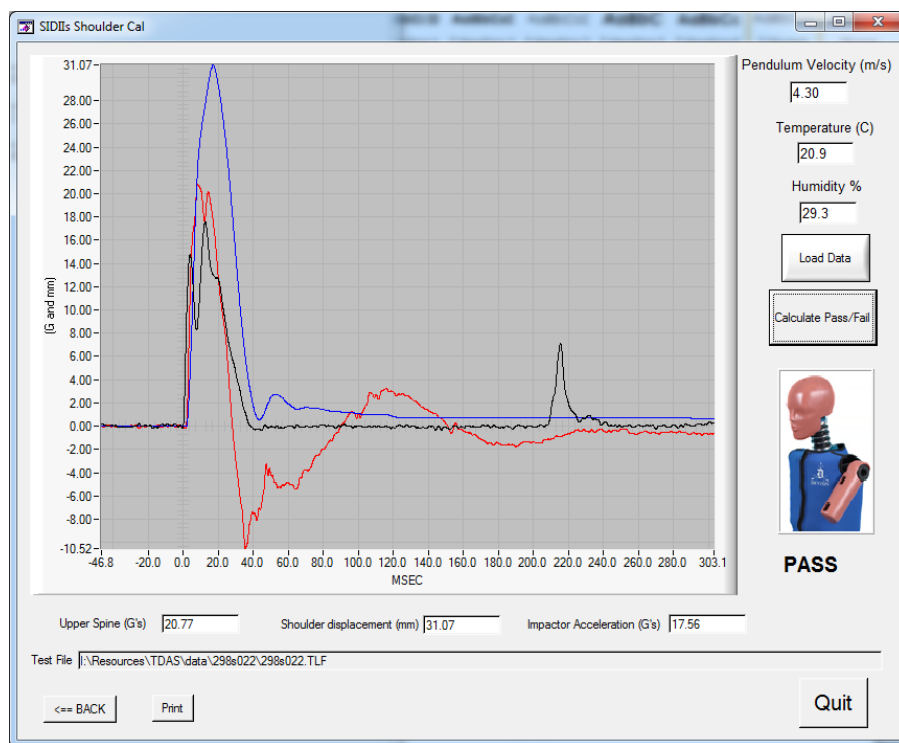
**TABLE 4**  
**SHOULDER IMPACT TEST (SID-IIs)**

SIDIIs Serial Number 298 Test Sequences 1 & 2

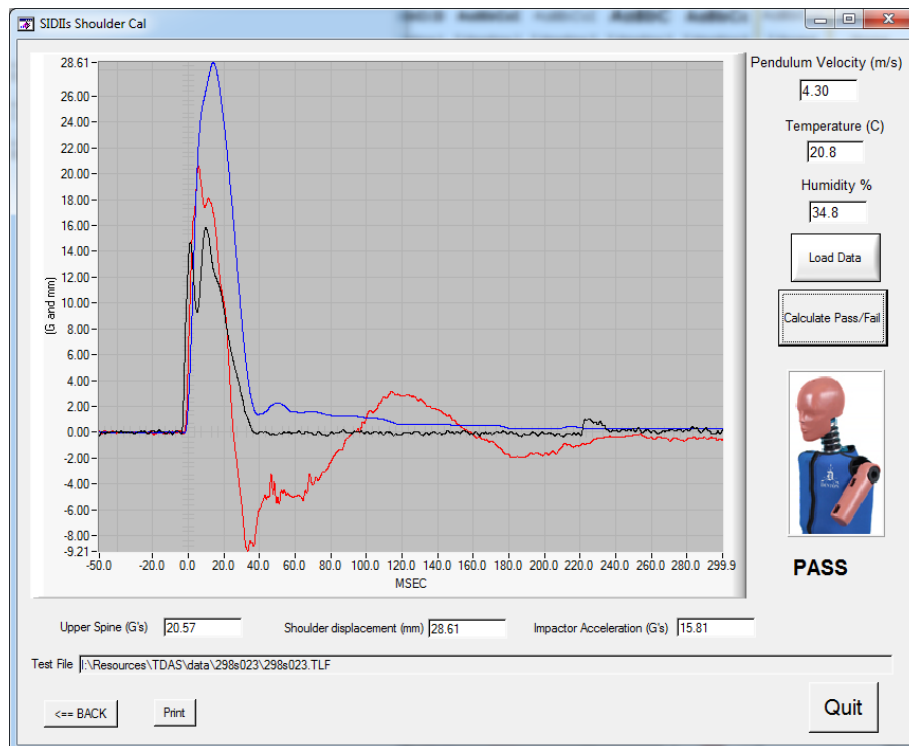
| TEST PARAMETER                             |     | SPEC.            | PRE           |                  | POST          |                  |
|--------------------------------------------|-----|------------------|---------------|------------------|---------------|------------------|
| Date                                       |     | -                | 11-9-13       |                  | 11-18-13      |                  |
| Sequential Test Number                     |     | -                | 1             |                  | 2             |                  |
|                                            |     |                  | <b>Result</b> | <b>Pass/Fail</b> | <b>Result</b> | <b>Pass/Fail</b> |
| Dummy Soak Time (min)                      |     | <b>≥ 180</b>     | 180           | Pass             | 180           | Pass             |
| Temperature(°C) –<br>During Soak           | Max | <b>20.6-22.2</b> | 20.9          | Pass             | 20.8          | Pass             |
|                                            | Min |                  | 20.6          | Pass             | 20.6          | Pass             |
| Humidity(%) –<br>During Soak               | Max | <b>10.0-70.0</b> | 29.3          | Pass             | 34.8          | Pass             |
|                                            | Min |                  | 28.4          | Pass             | 31.2          | Pass             |
| Temperature – During Test (°C)             |     | <b>20.6-22.2</b> | 20.9          | Pass             | 20.8          | Pass             |
| Relative Humidity – During Test (%)        |     | <b>10-70</b>     | 29.3          | Pass             | 34.8          | Pass             |
| Impactor Velocity (m/s)                    |     | <b>4.2-4.4</b>   | 4.3           | Pass             | 4.3           | Pass             |
| Peak Shoulder Deflection (mm)              |     | <b>28-37</b>     | 31.1          | Pass             | 28.6          | Pass             |
| Peak Lateral Spine (T1) Acceleration Y (G) |     | <b>17-22</b>     | 20.8          | Pass             | 20.6          | Pass             |
| Peak Impactor Acceleration (G)             |     | <b>13-18</b>     | 17.6          | Pass             | 15.8          | Pass             |

**TABLE 4**  
**SHOULDER IMPACT TEST (SID-II<sub>s</sub>) (CONTINUED)**

**PRE-TEST**



**POST-TEST**



**TABLE 5**  
**THORAX (WITH ARM) IMPACT TEST (SID-IIIs)**

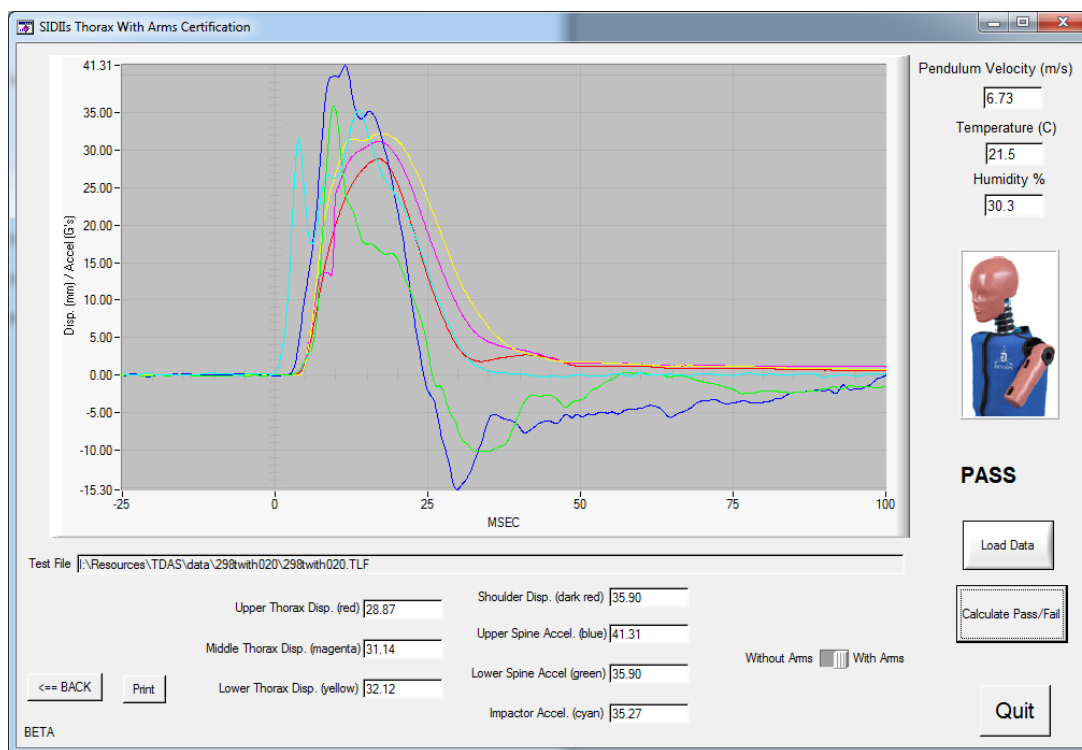
SIDIIs Serial Number 298

Test Sequences 1 & 2

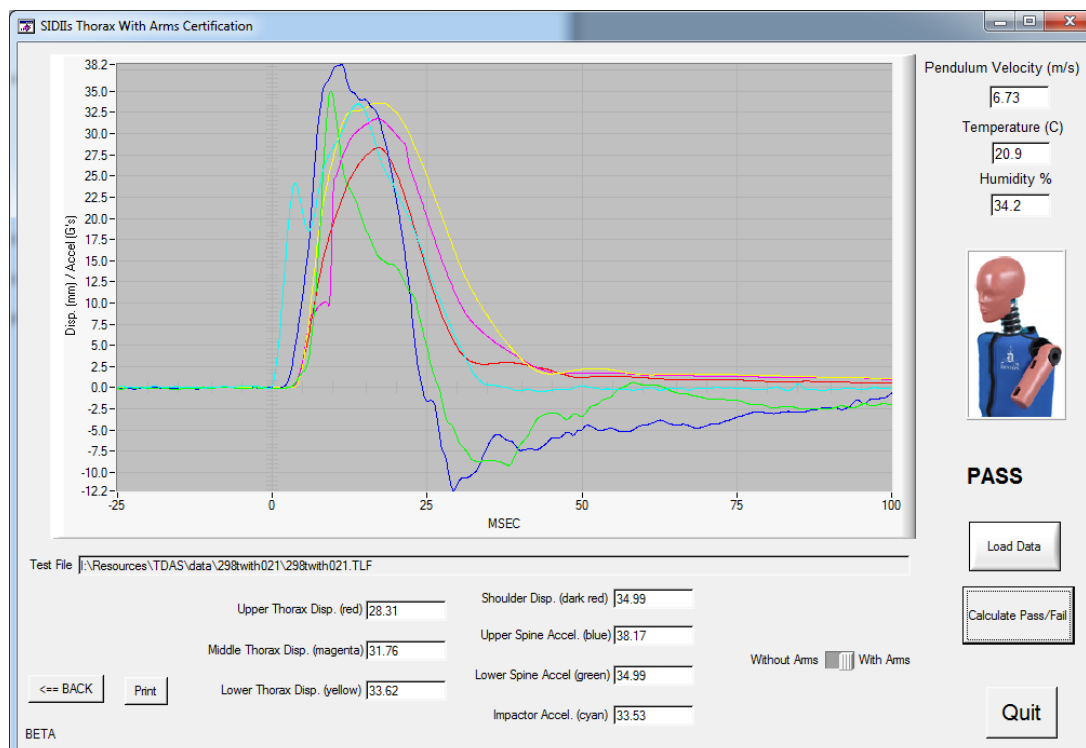
| TEST PARAMETER                            |     | SPEC.     | PRE     |           | POST     |           |
|-------------------------------------------|-----|-----------|---------|-----------|----------|-----------|
| Date                                      |     | -         | 11-9-13 |           | 11-18-13 |           |
| Sequential Test Number                    |     | -         | 1       |           | 2        |           |
|                                           |     |           | Result  | Pass/Fail | Result   | Pass/Fail |
| Dummy Soak Time (min)                     |     | ≥ 180     | 180     | Pass      | 180      | Pass      |
| Temperature(°C) –<br>During Soak          | Max | 20.6-22.2 | 21.5    | Pass      | 20.9     | Pass      |
|                                           | Min |           | 20.8    | Pass      | 20.6     | Pass      |
| Humidity(%) – During<br>Soak              | Max | 10.0-70.0 | 30.3    | Pass      | 34.2     | Pass      |
|                                           | Min |           | 28.7    | Pass      | 33.1     | Pass      |
| Temperature – During Test (°C)            |     | 20.6-22.2 | 21.5    | Pass      | 20.9     | Pass      |
| Relative Humidity – During Test (%)       |     | 10-70     | 30.3    | Pass      | 34.2     | Pass      |
| Impactor Velocity (m/s)                   |     | 6.6-6.8   | 6.73    | Pass      | 6.73     | Pass      |
| Peak Shoulder Deflection (mm)             |     | 31-40     | 35.9    | Pass      | 35.0     | Pass      |
| Peak Upper Rib Deflection (mm)            |     | 25-32     | 28.9    | Pass      | 28.3     | Pass      |
| Peak Middle Rib Deflection (mm)           |     | 30-36     | 31.1    | Pass      | 31.8     | Pass      |
| Peak Lower Rib Deflection (mm)            |     | 32-38     | 32.1    | Pass      | 33.6     | Pass      |
| Peak Upper Spine (T1) Acceleration Y (G)  |     | 34-43     | 41.3    | Pass      | 38.2     | Pass      |
| Peak Lower Spine (T12) Acceleration Y (G) |     | 29-37     | 35.9    | Pass      | 35.0     | Pass      |
| Peak Impactor Acceleration (G)            |     | 30-36     | 35.3    | Pass      | 33.5     | Pass      |

**TABLE 5**  
**THORAX (WITH ARM) IMPACT TEST (SID-II<sub>s</sub>) (CONTINUED)**

**PRE-TEST**



**POST-TEST**



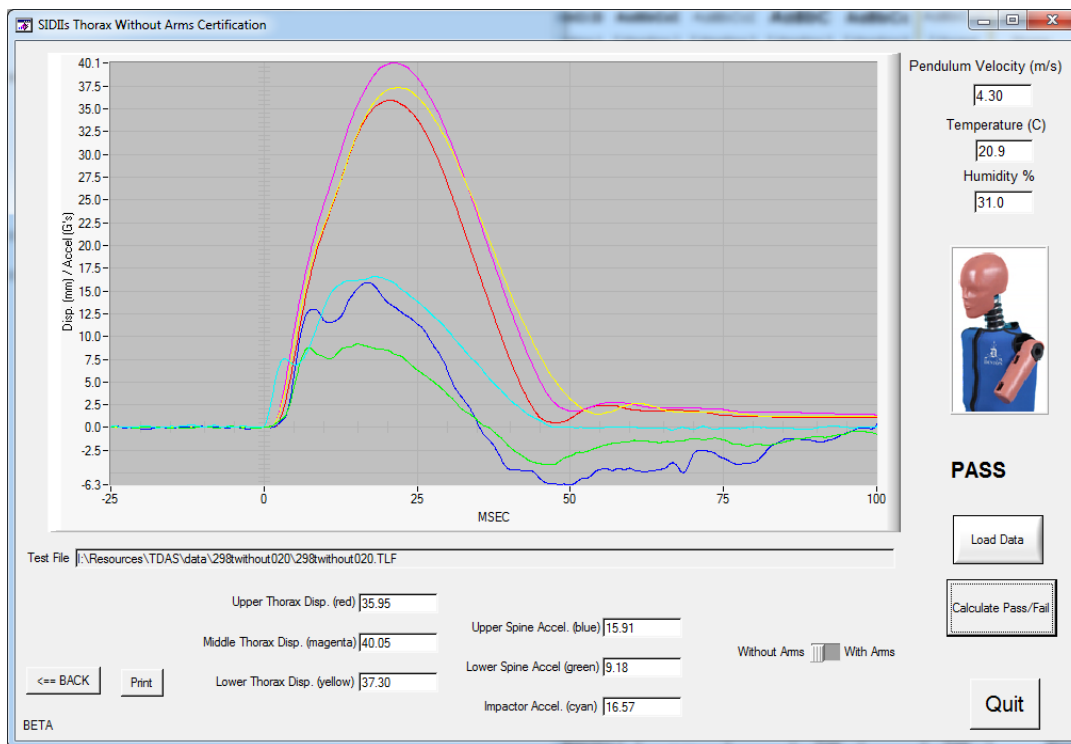
**TABLE 6**  
**THORAX (WITHOUT ARM) IMPACT TEST (SID-IIIs)**

SIDIIs Serial Number 298 Test Sequences 1 & 2

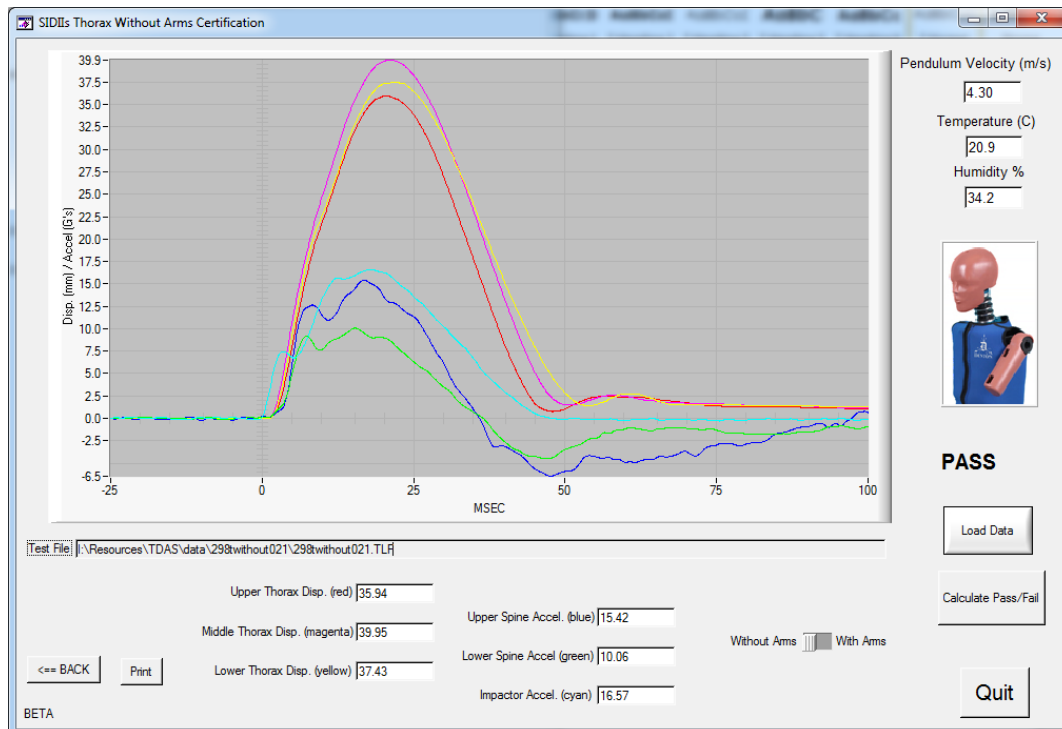
| TEST PARAMETER                            |     | SPEC.     | PRE     |           | POST     |           |
|-------------------------------------------|-----|-----------|---------|-----------|----------|-----------|
| Date                                      |     | -         | 11-9-13 |           | 11-18-13 |           |
| Sequential Test Number                    |     | -         | 1       |           | 2        |           |
|                                           |     |           | Result  | Pass/Fail | Result   | Pass/Fail |
| Dummy Soak Time (min)                     |     | ≥ 180     | 180     | Pass      | 180      | Pass      |
| Temperature(°C) – During Soak             | Max | 20.6-22.2 | 20.9    | Pass      | 20.9     | Pass      |
|                                           | Min |           | 20.6    | Pass      | 20.6     | Pass      |
| Humidity(%) – During Soak                 | Max | 10.0-70.0 | 31.0    | Pass      | 34.2     | Pass      |
|                                           | Min |           | 28.6    | Pass      | 31.3     | Pass      |
| Temperature – During Test (°C)            |     | 20.6-22.2 | 20.9    | Pass      | 20.9     | Pass      |
| Relative Humidity – During Test (%)       |     | 10-70     | 31.0    | Pass      | 34.2     | Pass      |
| Impactor Velocity (m/s)                   |     | 4.2-4.4   | 4.30    | Pass      | 4.3      | Pass      |
| Peak Upper Rib Deflection (mm)            |     | 32-40     | 36.0    | Pass      | 36.0     | Pass      |
| Peak Middle Rib Deflection (mm)           |     | 39-45     | 40.1    | Pass      | 40.0     | Pass      |
| Peak Lower Rib Deflection (mm)            |     | 35-43     | 37.3    | Pass      | 37.4     | Pass      |
| Peak Upper Spine (T1) Acceleration Y (G)  |     | 13-17     | 16.0    | Pass      | 15.4     | Pass      |
| Peak Lower Spine (T12) Acceleration Y (G) |     | 7-11      | 9.2     | Pass      | 10.1     | Pass      |
| Peak Impactor Acceleration (G)            |     | 14-18     | 16.6    | Pass      | 16.6     | Pass      |

**TABLE 6**  
**THORAX (WITHOUT ARM) IMPACT TEST (SID-II<sub>s</sub>) (CONTINUED)**

**PRE-TEST**



**POST-TEST**



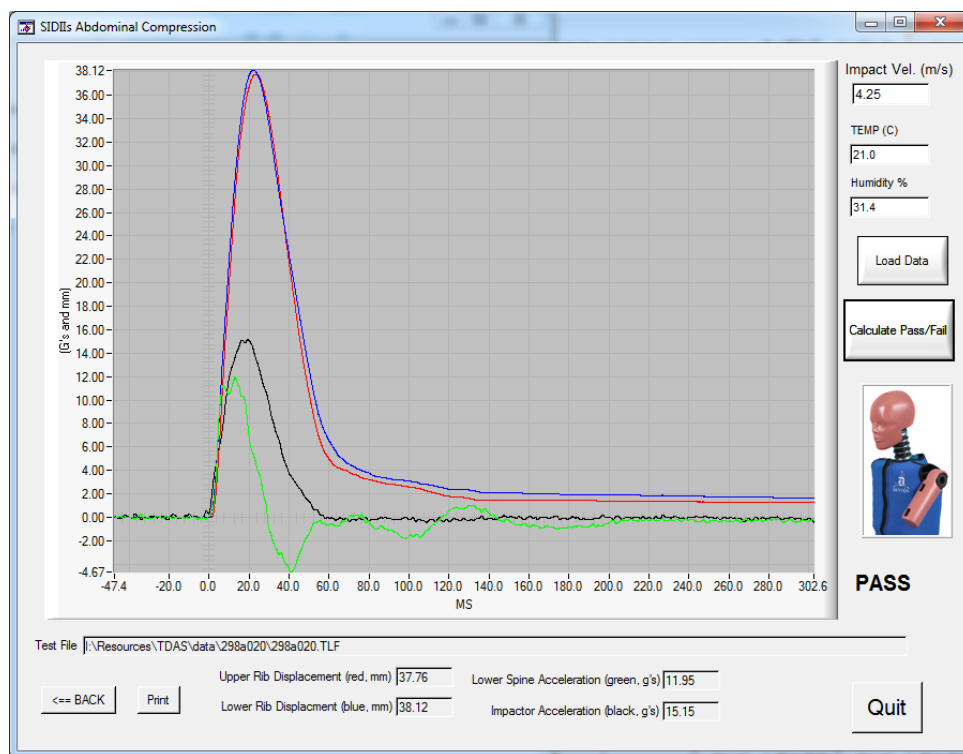
**TABLE 7**  
**ABDOMEN IMPACT TEST (SID-IIs)**

SIDIIs Serial Number 298 Test Sequences 1 & 2

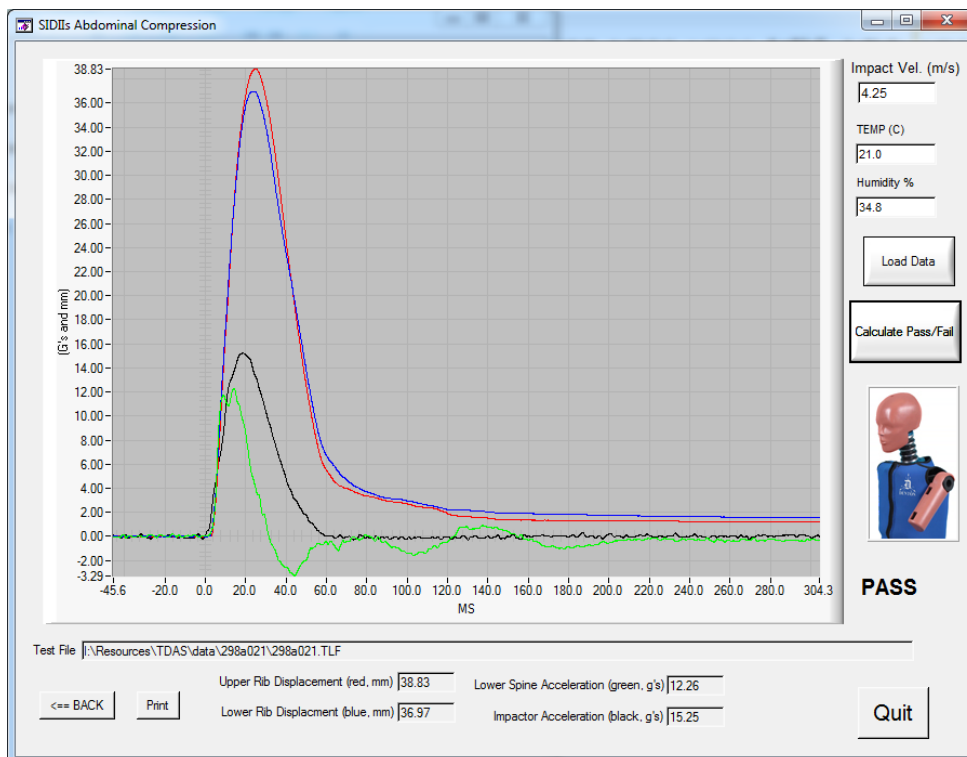
| TEST PARAMETER                            |     | SPEC.            | PRE           |                  | POST          |                  |
|-------------------------------------------|-----|------------------|---------------|------------------|---------------|------------------|
| Date                                      |     | -                | 11-9-13       |                  | 11-18-13      |                  |
| Sequential Test Number                    |     | -                | 1             |                  | 2             |                  |
|                                           |     |                  | <b>Result</b> | <b>Pass/Fail</b> | <b>Result</b> | <b>Pass/Fail</b> |
| Dummy Soak Time (min)                     |     | <b>≥ 180</b>     | 180           | Pass             | 180           | Pass             |
| Temperature(°C) –<br>During Soak          | Max | <b>20.6-22.2</b> | 21.0          | Pass             | 21.0          | Pass             |
|                                           | Min |                  | 20.7          | Pass             | 20.7          | Pass             |
| Humidity(%) –<br>During Soak              | Max | <b>10.0-70.0</b> | 31.4          | Pass             | 34.8          | Pass             |
|                                           | Min |                  | 28.6          | Pass             | 32.6          | Pass             |
| Temperature – During Test (°C)            |     | <b>20.6-22.2</b> | 21.0          | Pass             | 21.0          | Pass             |
| Relative Humidity – During Test (%)       |     | <b>10-70</b>     | 31.4          | Pass             | 34.8          | Pass             |
| Impactor Velocity (m/s)                   |     | <b>4.2-4.4</b>   | 4.25          | Pass             | 4.25          | Pass             |
| Peak Upper Abdominal Rib Deflection (mm)  |     | <b>36-47</b>     | 37.8          | Pass             | 38.8          | Pass             |
| Peak Lower Abdominal Rib Deflection (mm)  |     | <b>33-44</b>     | 38.1          | Pass             | 37.0          | Pass             |
| Peak Lower Spine (T12) Acceleration Y (G) |     | <b>9-14</b>      | 12.0          | Pass             | 12.3          | Pass             |
| Peak Impactor Acceleration (G)            |     | <b>12-16</b>     | 15.2          | Pass             | 15.3          | Pass             |

**TABLE 7**  
**ABDOMEN IMPACT TEST (SID-II<sub>s</sub>) (CONTINUED)**

**PRE-TEST**

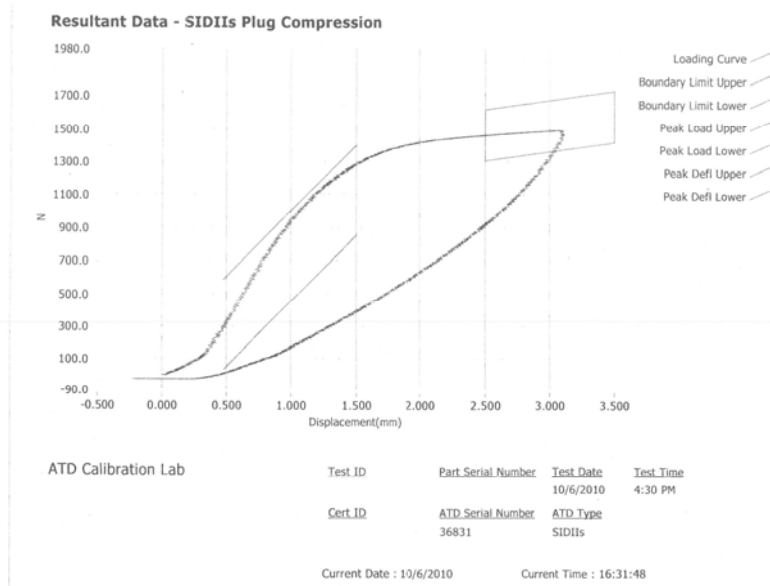


**POST-TEST**

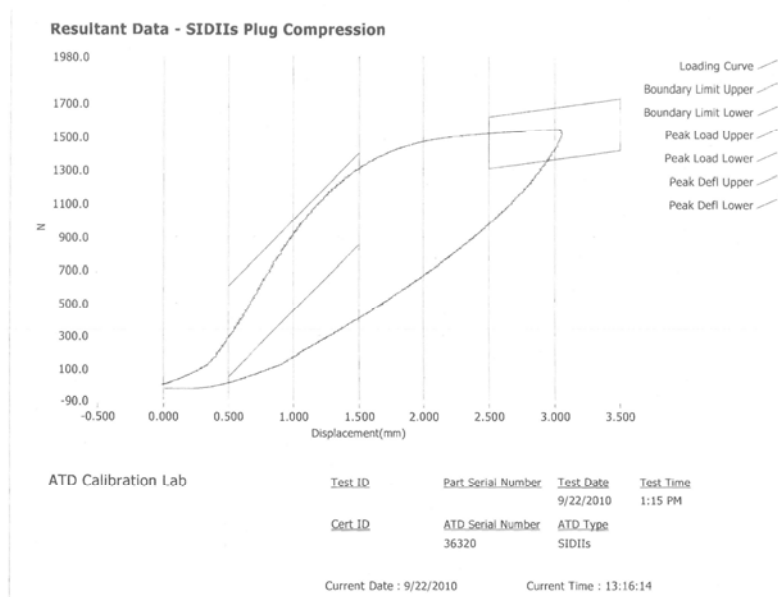


**TABLE 8**  
**PELVIS PLUG QUASI-STATIC TEST (SID-IIIs)**

**PRE-Test**



**POST-TEST**



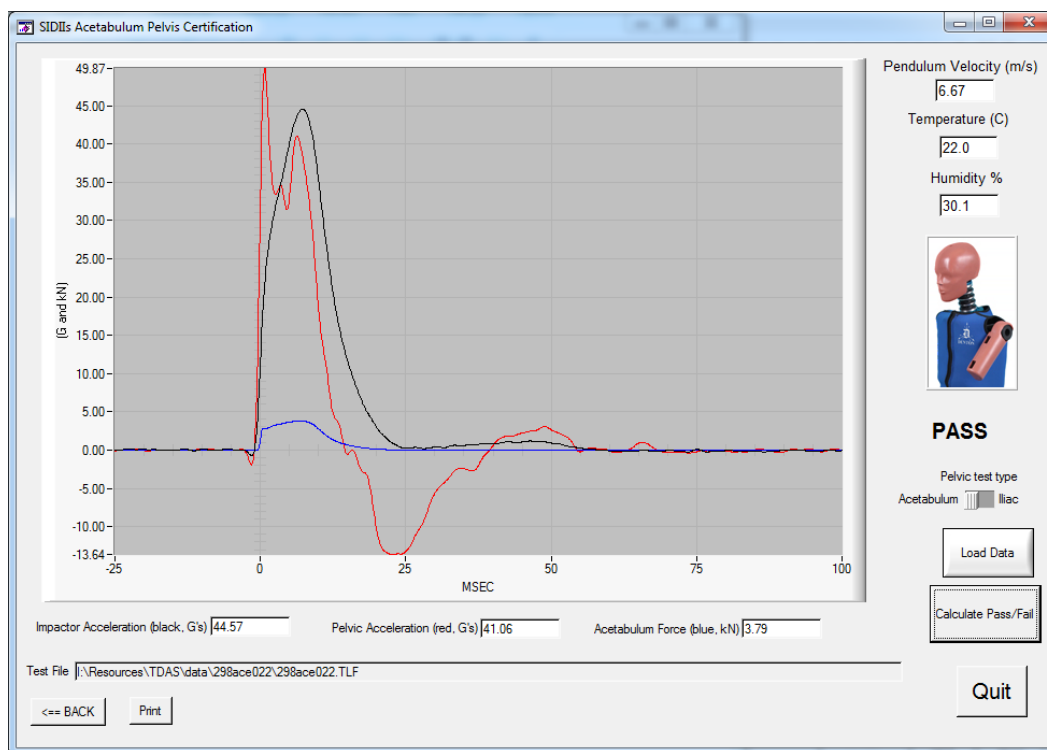
**TABLE 9**  
**PELVIS ACETABULUM IMPACT TEST (SID-IIIs)**

SIDIIs Serial Number 298 Test Sequences 1 & 2

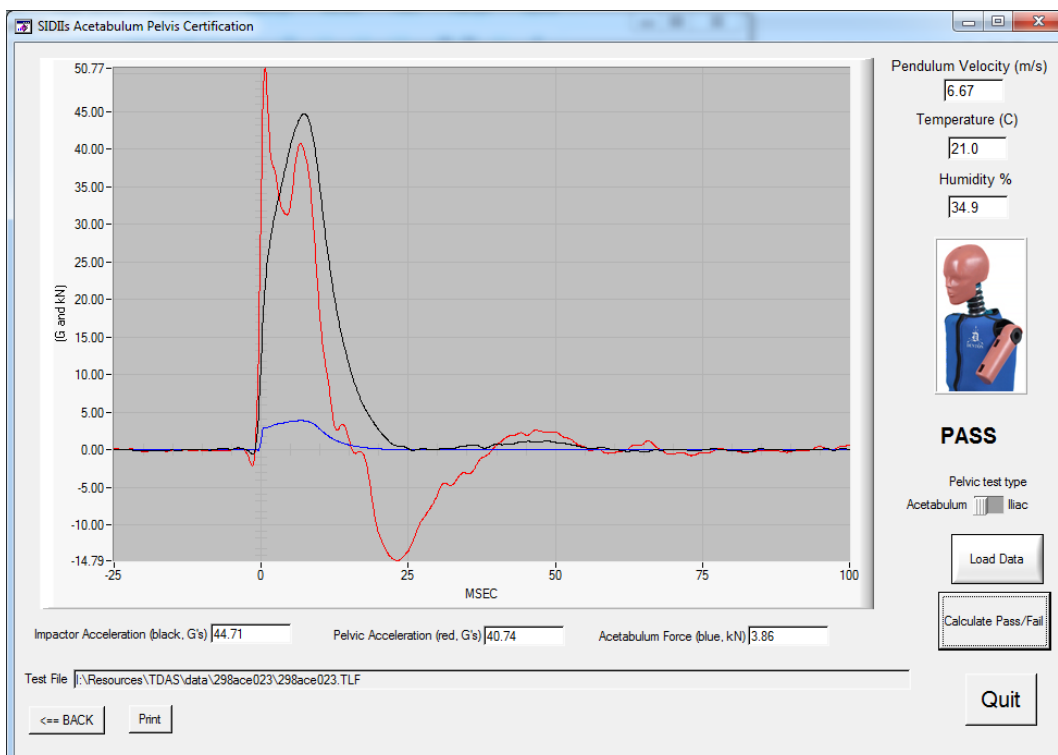
| TEST PARAMETER                                      |     | SPEC.     | PRE      |           | POST     |           |
|-----------------------------------------------------|-----|-----------|----------|-----------|----------|-----------|
| Date                                                |     | -         | 11-11-13 |           | 11-18-13 |           |
| Sequential Test Number                              |     | -         | 1        |           | 2        |           |
|                                                     |     |           | Result   | Pass/Fail | Results  | Pass/Fail |
| Dummy Soak Time (min)                               |     | ≥ 180     | 180      | Pass      | 180      | Pass      |
| Temperature(°C) –<br>During Soak                    | Max | 20.6-22.2 | 22.0     | Pass      | 21.0     | Pass      |
|                                                     | Min |           | 20.9     | Pass      | 20.6     | Pass      |
| Humidity(%) – During<br>Soak                        | Max | 10.0-70.0 | 30.1     | Pass      | 34.9     | Pass      |
|                                                     | Min |           | 28.4     | Pass      | 33.2     | Pass      |
| Temperature – During Test (°C)                      |     | 20.6-22.2 | 22.0     | Pass      | 21.0     | Pass      |
| Humidity – During Test (%)                          |     | 10-70     | 30.1     | Pass      | 34.9     | Pass      |
| Impactor Velocity (m/s)                             |     | 6.6-6.8   | 6.67     | Pass      | 6.67     | Pass      |
| Peak Impactor Acceleration (G)                      |     | 38-47     | 44.6     | Pass      | 44.7     | Pass      |
| Pelvis Acceleration Y after 6ms (G)                 |     | 34-42     | 41.1     | Pass      | 40.7     | Pass      |
| Peak Acetabulum Force (kN)                          |     | 3.60-4.30 | 3.8      | Pass      | 3.9      | Pass      |
| Pelvis Plug Serial No. 36831 (Pre) No. 36320 (Post) |     |           |          |           |          |           |

**TABLE 9**  
**PELVIS ACETABULUM IMPACT TEST (SID-II<sub>s</sub>) (CONTINUED)**

**PRE-TEST**



**POST-TEST**



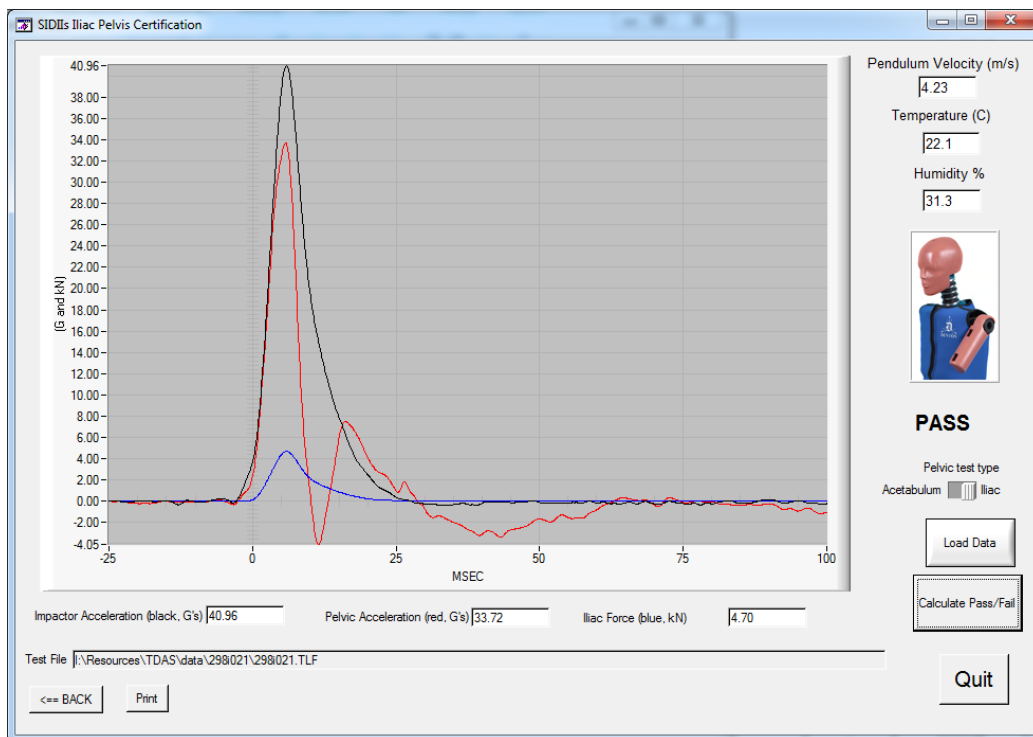
**TABLE 10**  
**PELVIS ILIAC IMPACT TEST (SID-IIIs)**

SIDIIs Serial Number 298 Test Sequences 1 & 2

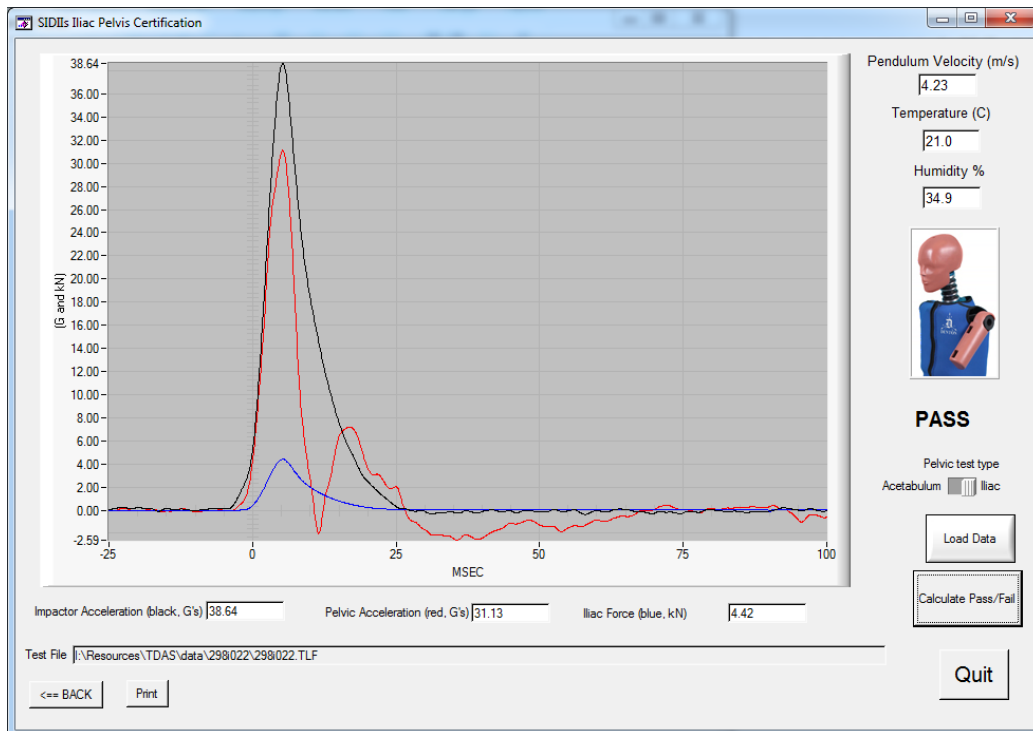
| TEST PARAMETER                                      |     | SPEC.     | PRE      |           | POST     |           |
|-----------------------------------------------------|-----|-----------|----------|-----------|----------|-----------|
| Date                                                |     | -         | 11-11-13 |           | 11-18-13 |           |
| Sequential Test Number                              |     | -         | 1        |           | 2        |           |
|                                                     |     |           | Result   | Pass/Fail | Result   | Pass/Fail |
| Dummy Soak Time (min)                               |     | ≥ 180     | 180      | Pass      | 180      | Pass      |
| Temperature(°C) – During Soak                       | Max | 20.6-22.2 | 22.1     | Pass      | 21.0     | Pass      |
|                                                     | Min |           | 20.8     | Pass      | 20.7     | Pass      |
| Humidity(%) – During Soak                           | Max | 10.0-70.0 | 31.3     | Pass      | 34.9     | Pass      |
|                                                     | Min |           | 29.8     | Pass      | 30.9     | Pass      |
| Temperature – During Test (°C)                      |     | 20.6-22.2 | 22.1     | Pass      | 21.0     | Pass      |
| Humidity – During Test (%)                          |     | 10-70     | 31.3     | Pass      | 34.9     | Pass      |
| Pendulum Velocity (m/s)                             |     | 4.2-4.4   | 4.23     | Pass      | 4.23     | Pass      |
| Peak Impactor Acceleration (G)                      |     | 36-45     | 41.0     | Pass      | 38.6     | Pass      |
| Pelvis Acceleration Y (G)                           |     | 28-39     | 33.7     | Pass      | 31.1     | Pass      |
| Peak Iliac Force Y (N)                              |     | 4.10-5.10 | 4.7      | Pass      | 4.4      | Pass      |
| Pelvis Plug Serial No. 36831 (Pre) No. 36320 (Post) |     |           |          |           |          |           |

**TABLE 10**  
**PELVIS ILIAC IMPACT TEST (SID-II<sub>s</sub>) (CONTINUED)**

**PRE-TEST**



**POST-TEST**



Test Vehicle: 2014 Jeep Patriot 5-Door SUV  
Test Program: Occupant Out-Of-Position

NHTSA Number: M20140308TWG2  
Test Date: February 11, 2014

**APPENDIX D**  
**INSTRUMENTATION CALIBRATION DATA**

| TABLE 1 - DUMMY INSTRUMENTATION – SID-IIs |       |  |                 |              |                  |
|-------------------------------------------|-------|--|-----------------|--------------|------------------|
|                                           |       |  | SID-II S/N: 298 |              |                  |
|                                           |       |  | Serial Number   | Manufacturer | Calibration Date |
| Primary Head Accelerometers               | X     |  | P59221          | Endevco      | 05/NOV/2014      |
|                                           | Y     |  | P22311          | Endevco      | 05/NOV/2014      |
|                                           | Z     |  | P23582          | Endevco      | 05/NOV/2014      |
| Redundant Head Accelerometers             | X     |  | 12099           | Endevco      | 05/NOV/2014      |
|                                           | Y     |  | 12103           | Endevco      | 05/NOV/2014      |
|                                           | S     |  | 12108           | Endevco      | 05/NOV/2014      |
| Neck Load Cells                           | Upper |  | 1915            | Denton       | 23/MAY/2013      |
|                                           | Lower |  | 151             | Denton       | 28/FEB/2013      |