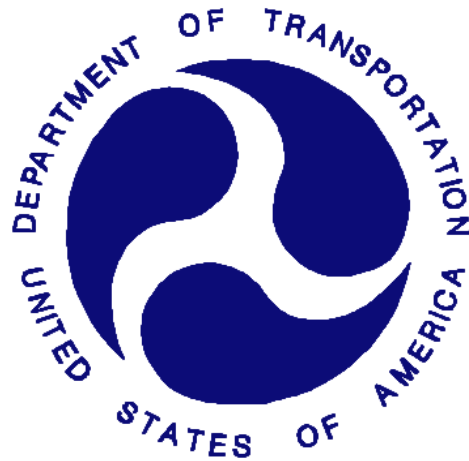


REPORT NUMBER: MCW-NOSAD-107

SIDE AIRBAG OCCUPANT RISK  
OCCUPANT OUT-OF-POSITION TESTS

CHRYSLER GROUP, LLC  
2013 FIAT 500 3-DOOR HATCHBACK  
NHTSA NUMBER: MD 0306 TWG 2

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



TEST DATE: 07 FEBRUARY 2013

REPORT DATE: 21 FEBRUARY 2013

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: 2013 Fiat 500 3-Door Hatchback  
Test Program: Occupant Out-of-Position Test

NHTSA Number: MD 0306 TWG 2  
Test Date: February 07, 2013

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Prepared by: Maria Meyer

Date: 4/2/13

Approved by: [Signature]

Date: 4/2/2013

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. MCW-NOSAD-107	2. Government Accession No.	3. Recipient's Catalog No.																																			
4. Title and Subtitle Final report of New Car Assessment Program Side Impact MDB Test of a 2013 Fiat 500 3-Door Hatchback NHTSA No. MD 0306 TWG 2		5. Report Date February 21, 2012																																			
		6. Performing Organization Code MCW																																			
7. Author(s) Frank A. Pintar, Ph. D, Project Manager Mark Meyer, Project Engineer Mike Rawski, Project Technologist		8. Performing Organization Report No. MCW-DOT-NOSAD-107																																			
9. Performing Organization Name and Address Medical College of Wisconsin 5000 W. National Ave. Research 151 Milwaukee, WI 53295		10. Work Unit No.																																			
		11. Contract or Grant No. DTNH22-09-D-00123																																			
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave, SE, Room W43-410 Washington, D.C. 20590		13. Type of Report and Period Covered: Final Test Report Feb. 07 to Feb. 21, 2013																																			
		14. Sponsoring Agency Code NVS-111																																			
15. Supplementary Notes																																					
<p>16. Abstract</p> <p>A side airbag out of position test was done on a inboard facing Hybrid III 6-year-old child dummy, seated on a booster block leaning against the door trim panel, in the front passenger seat of a 2013 Fiat 500 3-Door Hatchback 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 Lab in Milwaukee, Wisconsin, on 07 February 2013.</p> <p>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:</p> <table border="1" data-bbox="162 1344 1380 1638"> <thead> <tr> <th rowspan="2"></th> <th colspan="4"><u>Passenger ATD (Hybrid III 6-Year-Old)</u></th> </tr> <tr> <th><u>Units</u></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">39.1</td> </tr> <tr> <td>Head Injury Criteria (HIC<sub>36</sub>)</td> <td>N/a</td> <td>1000</td> <td colspan="2">41.0</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>0.08</td> <td>0.08</td> <td>0.41</td> <td>0.62</td> </tr> <tr> <td>Lower Neck (Nij)</td> <td>0.10</td> <td>0.03</td> <td>0.36</td> <td>0.43</td> </tr> </tbody> </table>					<u>Passenger ATD (Hybrid III 6-Year-Old)</u>				<u>Units</u>	<u>Threshold</u>	<u>Result</u>		Head Injury Criteria (HIC <sub>15</sub> )	N/a	700	39.1		Head Injury Criteria (HIC <sub>36</sub> )	N/a	1000	41.0			<u>Ntf</u>	<u>Nte</u>	<u>Ncf</u>	<u>Nce</u>	Upper Neck (Nij)	0.08	0.08	0.41	0.62	Lower Neck (Nij)	0.10	0.03	0.36	0.43
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**Technical Report Documentation Page (CONTINUED)**

<i>17. Key Words</i> Hybrid III 6-Year-Old New Car Assessment Program (NCAP) NHTSA No. MD 0306 TWG 2 Side Airbag Out-of-Position Technical Working Group		<i>18. Distribution Statement</i> Copies of this report are available from : National Highway Traffic Safety Administration Technical Information Service Division, NPO-411 1200 New Jersey Ave, SE, Room E12-100 Washington, D.C. 20590 e-mail: <a href="mailto:tis@nhtsa.dot.gov">tis@nhtsa.dot.gov</a> FAX: 202-493-2833	
<i>19. Security Classif. (of this report)</i> Unclassified	<i>20. Security Classif. (of this page)</i> Unclassified	<i>21. No. of Pages</i> 72	<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 Hybrid III 6-Year-Old dummy was seated inboard facing on a foam booster block in the front passenger seat. The seat was placed in its lowest height position and full-forward 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 booster foam block dimensions are 300 mm deep by 450 mm wide by 75 mm thick. The density of the foam is 40 – 80 g/l. The dummy was placed on the outboard edge of the foam block, with the dummy's back contacting the door trim panel/armrest, and the head center-of-gravity centered with the deployment trajectory of the airbag. The dummy's arms were hanging at its side, with its elbows bent until the fingertips just touch the booster seat. The legs were extended. This orientation complies with section 3.3.5.1 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 front passenger seat-mounted airbag was deployed in a 2013 Fiat 500 3 Door Hatchback on 07 February 2013. Previously, in November of 2012, the Fiat 500 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 Hybrid III 6-Year-Old 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 (Hybrid III 6-Year-Old) dummy was instrumented accordingly:*

Passenger ATD (Hybrid III 6-Year-Old)

- Head center of gravity tri-axial (X, Y, Z) accelerometers (primary)
- 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
- Middle spine tri-axial(X, Y, Z) accelerometers
- Upper spine (X) accelerometer
- Lower spine (X) accelerometer
- Upper sternum (X) accelerometer
- Lower sternum (X) accelerometer
- Chest (X) displacement transducer

*Supplemental restraint information is given below:*

<b>SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION</b>		
<b>Restraint type</b>	<b>Right Front (Passenger)</b>	
	<b>Mounted</b>	<b>Deployed</b>
Frontal Airbag	Yes	Did Not Deploy
Knee Airbag	Yes	Did Not Deploy
Side Curtain Airbag	Yes	Deployed
Side Torso/Pelvis 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 (Hybrid III 6-Year-Old)</b>
	<b>Result</b>
Head Injury Criteria (HIC <sub>15</sub> )	39.1
Head Injury Criteria (HIC <sub>36</sub> )	41.0
UNLC	
Ntf	0.08
Nte	0.08
Ncf	0.41
Nce	0.62
LNLC	
Ntf	0.10
Nte	0.03
Ncf	0.36
Nce	0.43

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

VEHICLE INFORMATION	
NHTSA No.	MD 0306 TWG 2
Model Year	2013
Make	Fiat
Model	500
Body Style	Hatchback
VIN	3C3CFFAR6DT515464
Body Color	Light Green
Odometer Reading (km/mi)	36 mi
Engine Displacement (L)	1.4
Type/No. of Cylinders	4
Engine Placement	Lateral
Transmission Type	Automatic
Transmission Speeds	5
Overdrive	Yes
Final Drive	2WD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
All-Wheel Drive (AWD)	No

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

DATA FROM CERTIFICATION LABEL			
Manufactured By	Chrysler Group, LLC	GVWR (kg)	1497
Date of Manufacture	August 2012	GAWR Front(kg)	849
Vehicle Type	Hatchback	GAWR Rear (kg)	810

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION					
	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	2	0	4	
Capacity Weight (VCW) (kg)				340.2	(A)
DSC X 68.04 (kg)				272.2	(B)
Cargo Weight (RCLW) (kg)				68.0	(A-B)

**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 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							

TEST VEHICLE AXLE WEIGHTS										
	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	347.9	193.2		377.4	275.8		378.4	285.4	
Right	kg	335.2	195.5		350.6	253.6		346.6	254.6	
Ratio	%	63.7	36.3		57.9	42.1		57.3	42.7	
Totals	kg	683.1	388.7	1071.8	728.0	529.4	1257.4	725.0	540.0	1265.0

TARGET TEST WEIGHT CALCULATION		
	Units	
Total Delivered Weight (UVW)	kg	1071.8
Sum of Actual Weight of 2 P572 ATDs used	kg	125.2
Rated Cargo/Luggage Weight (RCLW)	kg	68.0
<b>Calculated Target Vehicle Test Weight (TVTW)</b>	<b>kg</b>	<b>1265.0</b>

(A)  
(B)  
(C)  
(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. 2  
 SEAT ADJUSTMENT**

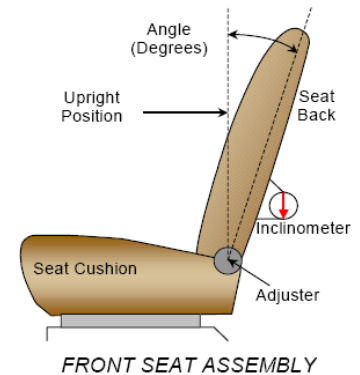
SEAT FORE/AFT TRAVEL				
Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents*	mm	Detents*
Front Passenger Seat	210	22	0	0**

\*If applicable

\*\*0 being full-forward

**Seat Back Angle Adjustment**

The passenger seat back is positioned to section 3.3.5.1 of the TWG recommendation in the Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags.



SEAT BACK ANGLE ADJUSTMENT				
Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detents*
Driver Seat w/ Seated Dummy	29.2	22	7.8	6
Front Passenger Seat	27.8	22	7.7	6
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 NUMBER 3  
 TEST DUMMY MEASUREMENTS**

DUMMY DIMENSION INFORMATION			
Passenger Code	Measurement Description	Passenger	
		Length (mm)	Angle
SA	Seat Back Angle		7.7°
ABL <sub>1</sub>	Side Airbag Length	350	
ABH <sub>1</sub>	Side Airbag Height	655	
ABL <sub>2</sub>	Curtain Airbag Length	1350	
ABH <sub>2</sub>	Curtain Airbag Height	410	
HZ	Head to Roof (Z)	357	
HHD	Head to Header	390	
HR	Head to Side Header	285	
CD	Chest to Dash	496	
KD <sub>L</sub>	Knee to Dash - Left	491	
KD <sub>R</sub>	Knee to Dash - Right	377	
KK	Knee to Knee	118	

**DATA SHEET 4  
 CAMERA AND INSTRUMENTATION DATA**

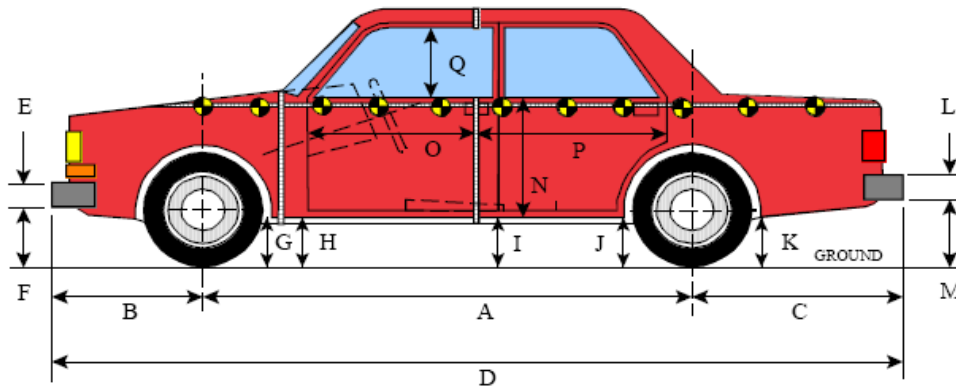
CAMERA COORDINATES & INFORMATION						
Loc. No.	View	Coordinates †			Lens Length	Operating Frame Rate
		X	Y	Z		
		mm	mm	mm	mm	fps
1	Offboard Front	2015	0	-385	35	1000
2	Offboard Front-Oblique	1695	-1088	-390	35	1000
3	Offboard Side	0	-1662	-70	25	1000

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 m*

INSTRUMENTATION	
Dummy Channels	23
Vehicle Structure Accelerometers	0
Total	23

**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	2298	2292	-6
B	Front Axle to FSOV	524	526	2
C	Rear Axle to RSOV	440	430	-10
D	Total Length at Centerline	3544	3539	-5
E	Front Bumper Thickness	222	222	0
F	Front Bumper Bottom to Ground	242	244	2
G	Sill Height at Front Wheel Well	258	283	25
H	Sill Height at Front Door Leading Edge	259	276	17
I	Sill Height at B-Pillar	260	234	-26
J1	Sill Height at Rear Wheel Well	219	173	-46
J2	Pinch Weld Height at Rear Wheel Well	259	225	-34
K	Sill Height Aft of Rear Wheel Well	345	290	-55
L	Rear Bumper Thickness	260	260	0
M	Rear Bumper Bottom to Ground	412	362	-50
N	Sill Height to Bottom of Front Window Sill	800	766	-34
O	Front Door Leading Edge to Impact C/L	1323	1223	-100
P	Rear Door Trailing Edge to Impact C/L	551	514	-37
Q	Front Window Opening	420	427	7
R	Right Side Length	3262	3260	-2
S	Left Side Length	3262	3248	-14
T	Vehicle Width at B-Pillar	1600	1453	-147

\*From SINCAP Test No. MD 0306

**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>Passenger Hybrid III 6-Year-Old</b>			
			<b>Max</b>	<b>Time</b>	<b>Min</b>	<b>Time</b>
Head CG	X	G's	36.87	9.60	-4.63	6.16
Head CG	Y	G's	37.98	9.44	-34.45	9.76
Head CG	Z	G's	47.84	9.44	-14.73	14.72
Head CG Resultant	N/a	G's	67.29	9.44	0.01	-2.80

<b>DUMMY UPPER NECK PEAK FORCES AND MOMENTS</b>						
<b>Location</b>	<b>Axis</b>	<b>Units</b>	<b>Passenger Hybrid III 6-Year-Old</b>			
			<b>Max</b>	<b>Time</b>	<b>Min</b>	<b>Time</b>
Neck Force	X	NWT	33.48	65.92	-380.58	33.36
Neck Force	Y	NWT	212.28	243.44	-55.73	9.44
Neck Force	Z	NWT	112.31	124.32	-720.97	15.36
Neck Moment	X	Nm	24.11	30.64	-15.47	246.40
Neck Moment	Y	Nm	14.78	16.08	-25.00	33.68
Neck Moment	Z	Nm	4.98	14.64	-9.13	64.96

<b>DUMMY LOWER NECK PEAK FORCES AND MOMENTS</b>						
<b>Location</b>	<b>Axis</b>	<b>Units</b>	<b>Passenger Hybrid III 6-Year-Old</b>			
			<b>Max</b>	<b>Time</b>	<b>Min</b>	<b>Time</b>
Neck Force	X	NWT	302.04	15.36	-261.96	32.32
Neck Force	Y	NWT	336.49	13.52	-84.16	35.36
Neck Force	Z	NWT	122.10	143.36	-793.40	15.12
Neck Moment	X	Nm	33.91	26.88	-13.40	103.68
Neck Moment	Y	Nm	38.77	34.72	-2.36	92.72
Neck Moment	Z	Nm	19.59	15.12	-7.16	70.16

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

<b>HEAD INJURY CRITERIA</b>			
<b>Criteria</b>	<b>Passenger Hybrid III 6-Year-Old</b>		
		$T_1$	$T_2$
HIC <sub>15</sub>	39.1	9.3	24.0
HIC <sub>36</sub>	41.0	9.3	26.6

<b>N<sub>IJ</sub> VALUES</b>				
<b>Location</b>	<b>Passenger Hybrid III 6-Year-Old</b>			
	$N_{tf}$	$N_{te}$	$N_{cf}$	$N_{ce}$
Upper Neck	0.08	0.08	0.41	0.62
Lower Neck	0.10	0.03	0.36	0.43

Test Vehicle: 2013 Fiat 500 3-Door Hatchback  
Test Program: Occupant Out-Of-Position

NHTSA Number: MD 0306 TWG 2  
Test Date: February 07, 2013

**APPENDIX A  
PHOTOGRAPHS**

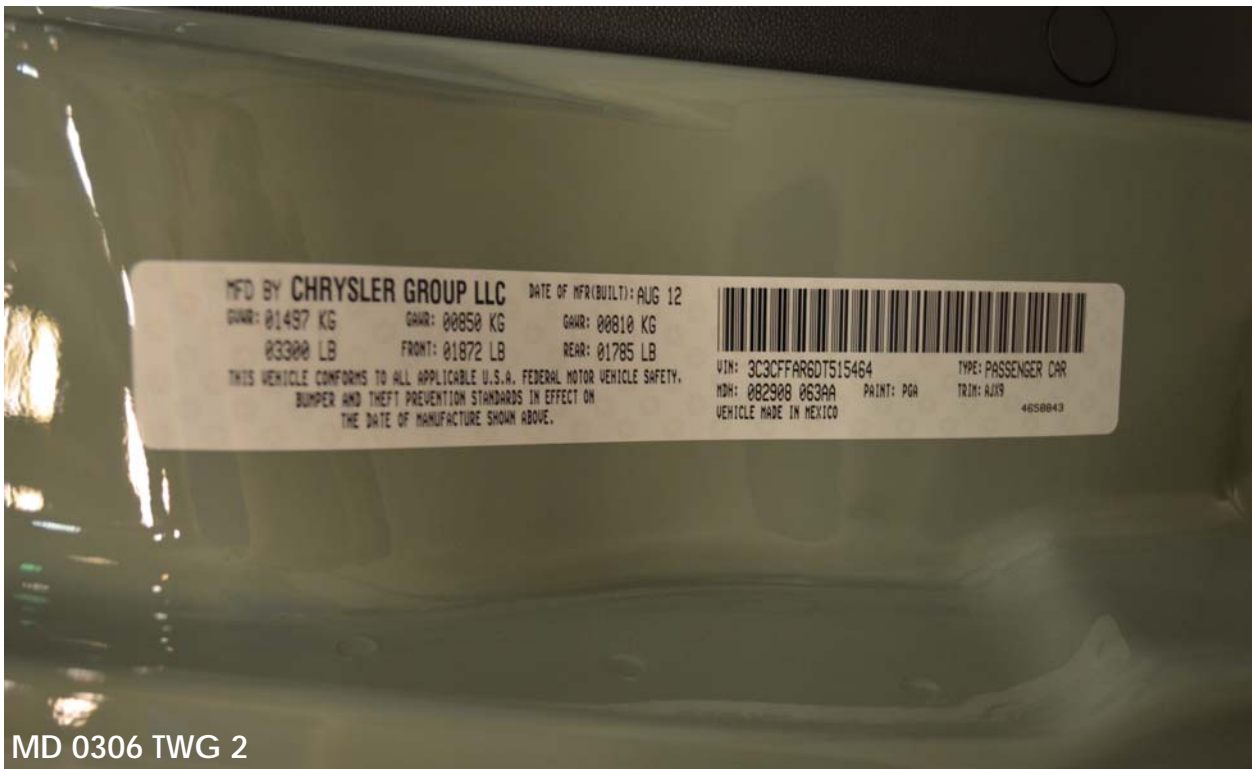
LIST OF PHOTOGRAPHS

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



MD 0306 TWG 2

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



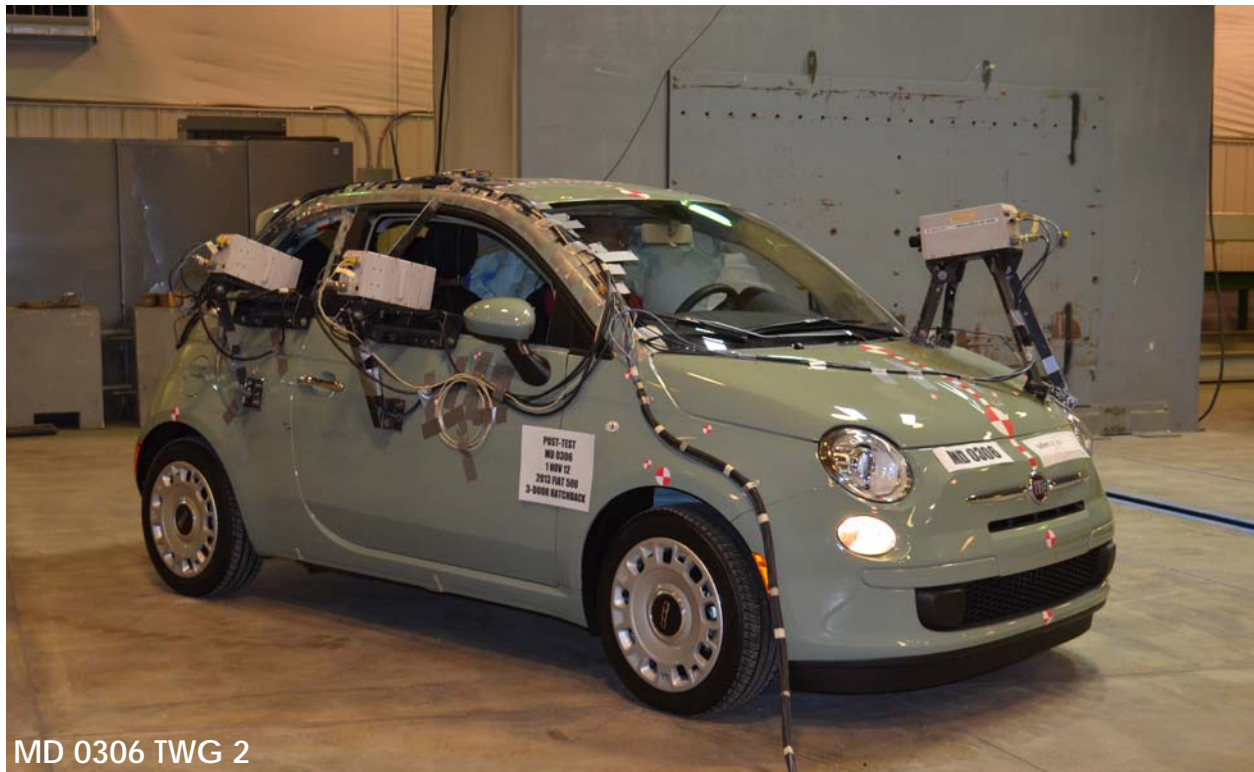
MD 0306 TWG 2

Figure A-2: Vehicle Certification Label



MD 0306 TWG 2

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



MD 0306 TWG 2

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



MD 0306 TWG 2

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



MD 0306 TWG 2

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



MD 0306 TWG 2

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



MD 0306 TWG 2

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 Side Airbag

Test Vehicle: 2013 Fiat 500 3-Door Hatchback  
Test Program: Occupant Out-Of-Position

NHTSA Number: MD 0306 TWG 2  
Test Date: February 07, 2013

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

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

Data Plot	Description	Page
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2	Head CG (Y) Acceleration vs. Time	B-4
3	Head CG (Z) Acceleration vs. Time	B-5
4	Head Resultant Acceleration vs. Time	B-6
5	Upper Neck (X) Force vs. Time	B-7
6	Upper Neck (Y) Force vs. Time	B-8
7	Upper Neck (Z) Force vs. Time	B-9
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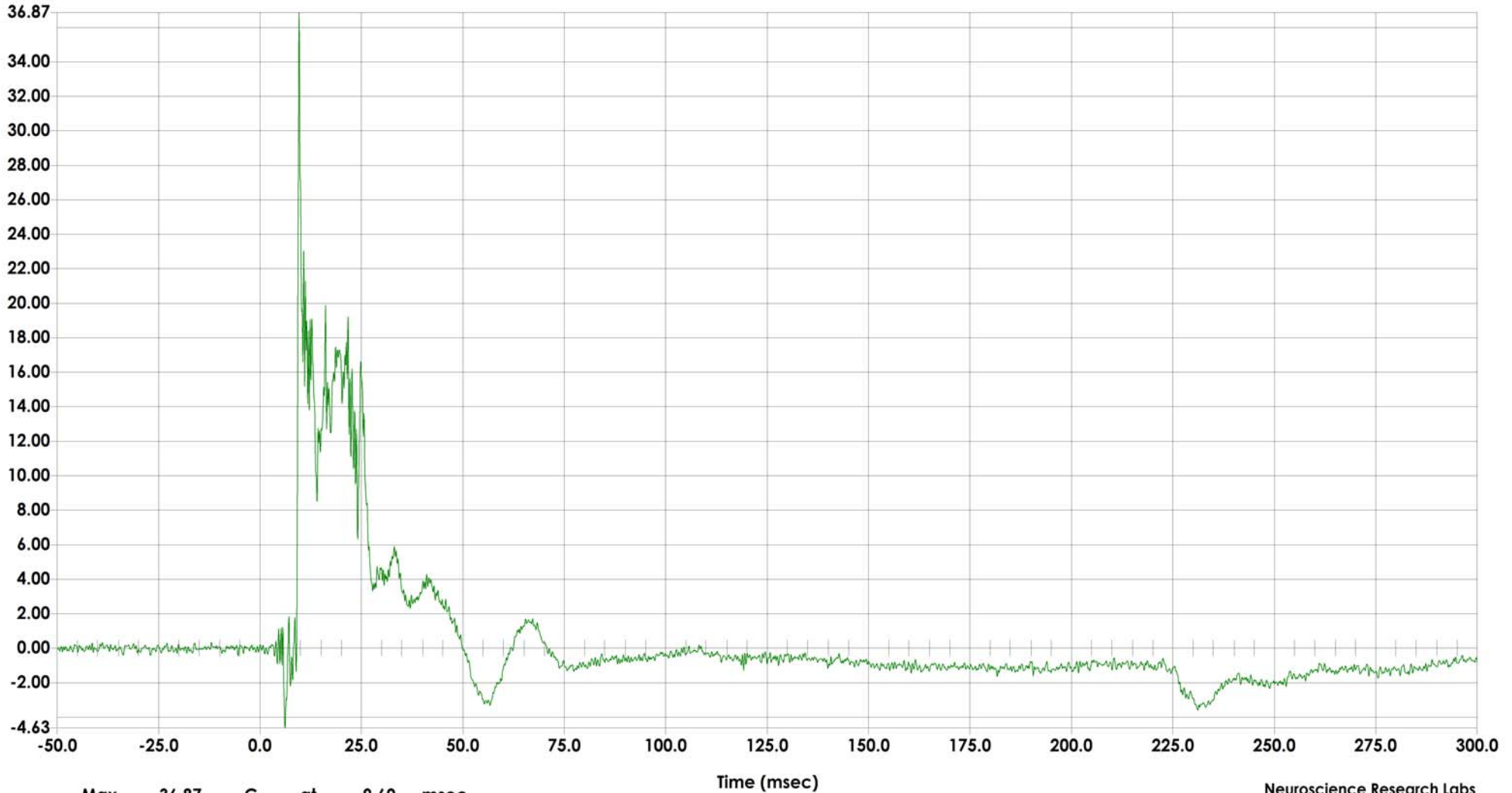
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Date 02-07-2013  
Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location HDCG  
Sensor Info ENDEVCO 7264C-2K TZ  
Serial Number 7264C-P58771



### G Head CG (X) Acceleration vs. Time



Max 36.87 G at 9.60 msec  
Min -4.63 G at 6.16 msec

MD 0306 TWG 2 Plot 001

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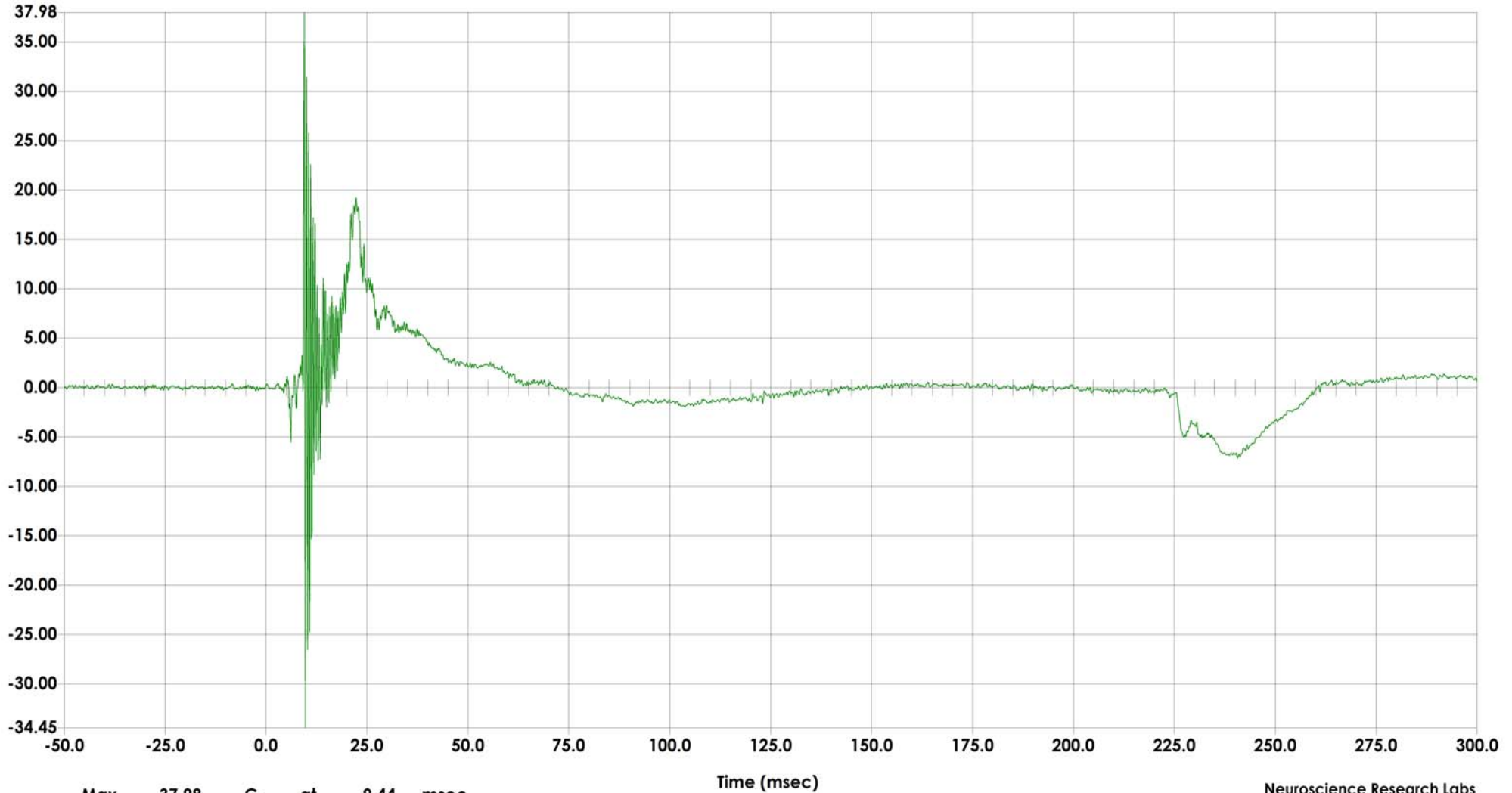
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Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location HDCG  
Sensor Info ENDEVCO 7264C-2K TZ  
Serial Number 7264C-P63954



### G Head CG (Y) Acceleration vs. Time



Max 37.98 G at 9.44 msec  
Min -34.45 G at 9.76 msec

MD 0306 TWG 2 Plot 002

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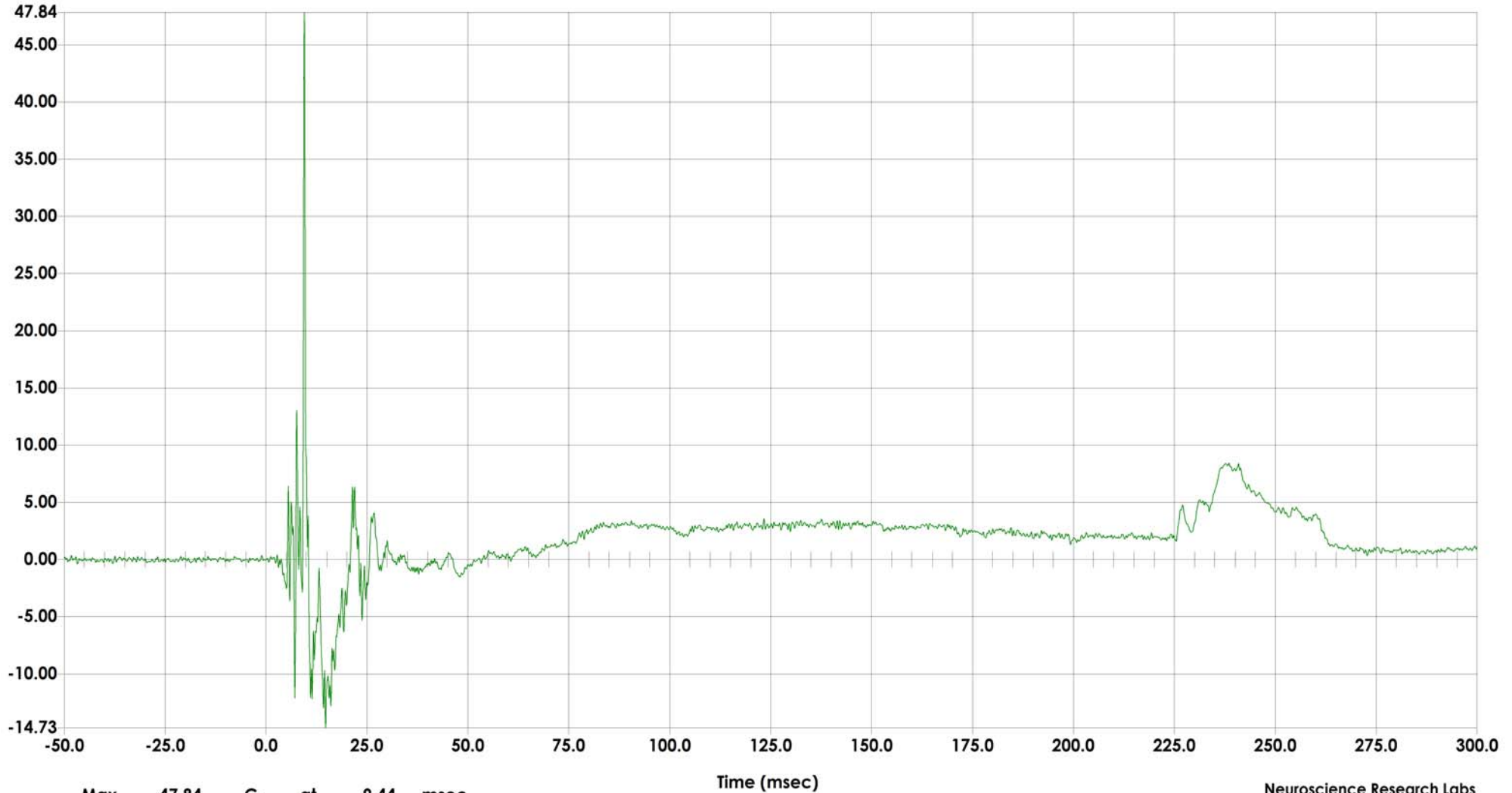
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Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location HDCG  
Sensor Info ENDEVCO 7264C-2K TZ  
Serial Number 7264C-P51954



### G Head CG (Z) Acceleration vs. Time



Max 47.84 G at 9.44 msec  
Min -14.73 G at 14.72 msec

MD 0306 TWG 2 Plot 003

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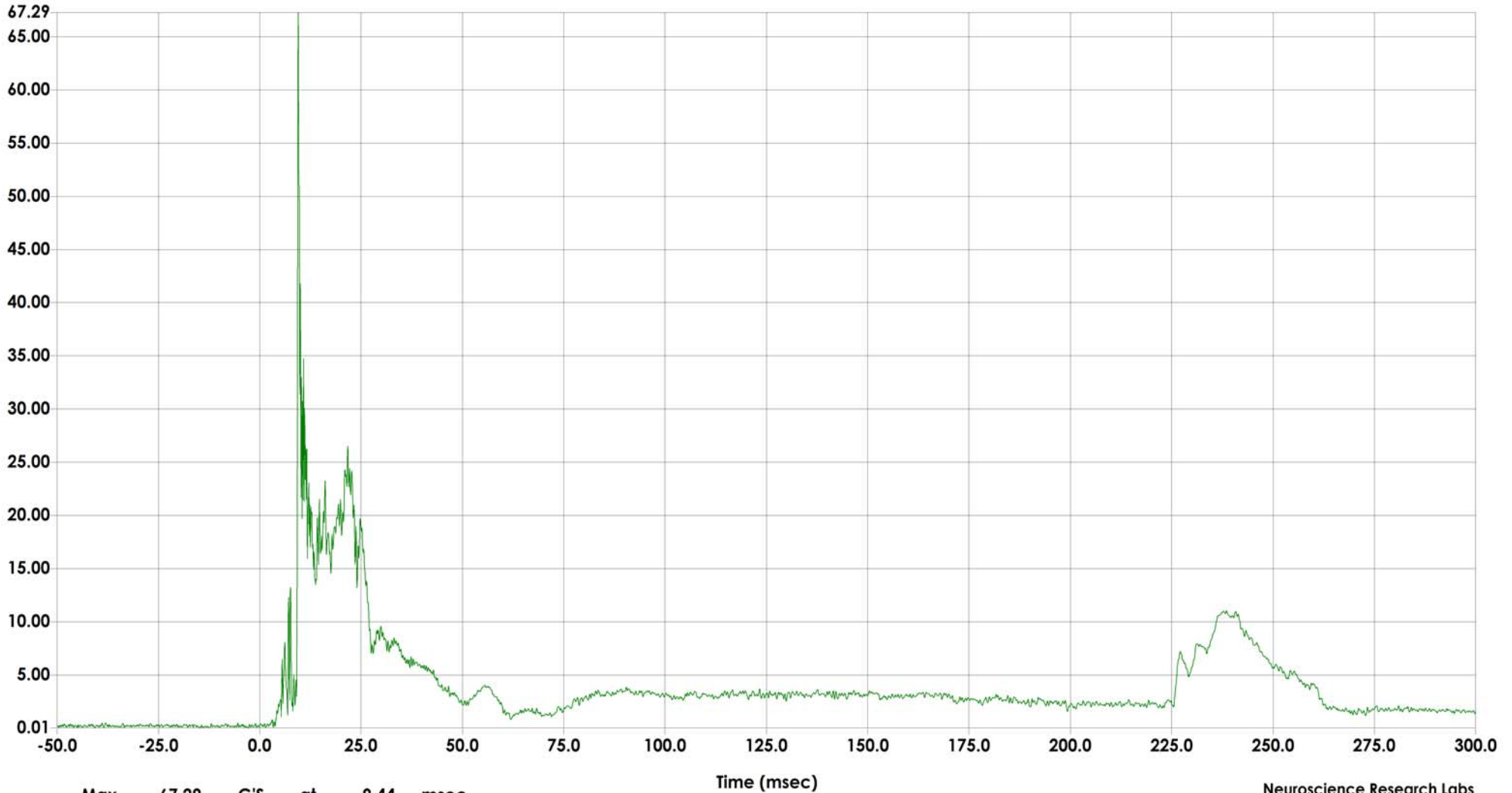
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Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location  
Sensor Info MCW Multiviewer  
Serial Number 3.5.2j



### G'S Head Resultant Acceleration Primary vs. Time



Max 67.29 G'S at 9.44 msec  
Min 0.01 G'S at -2.80 msec

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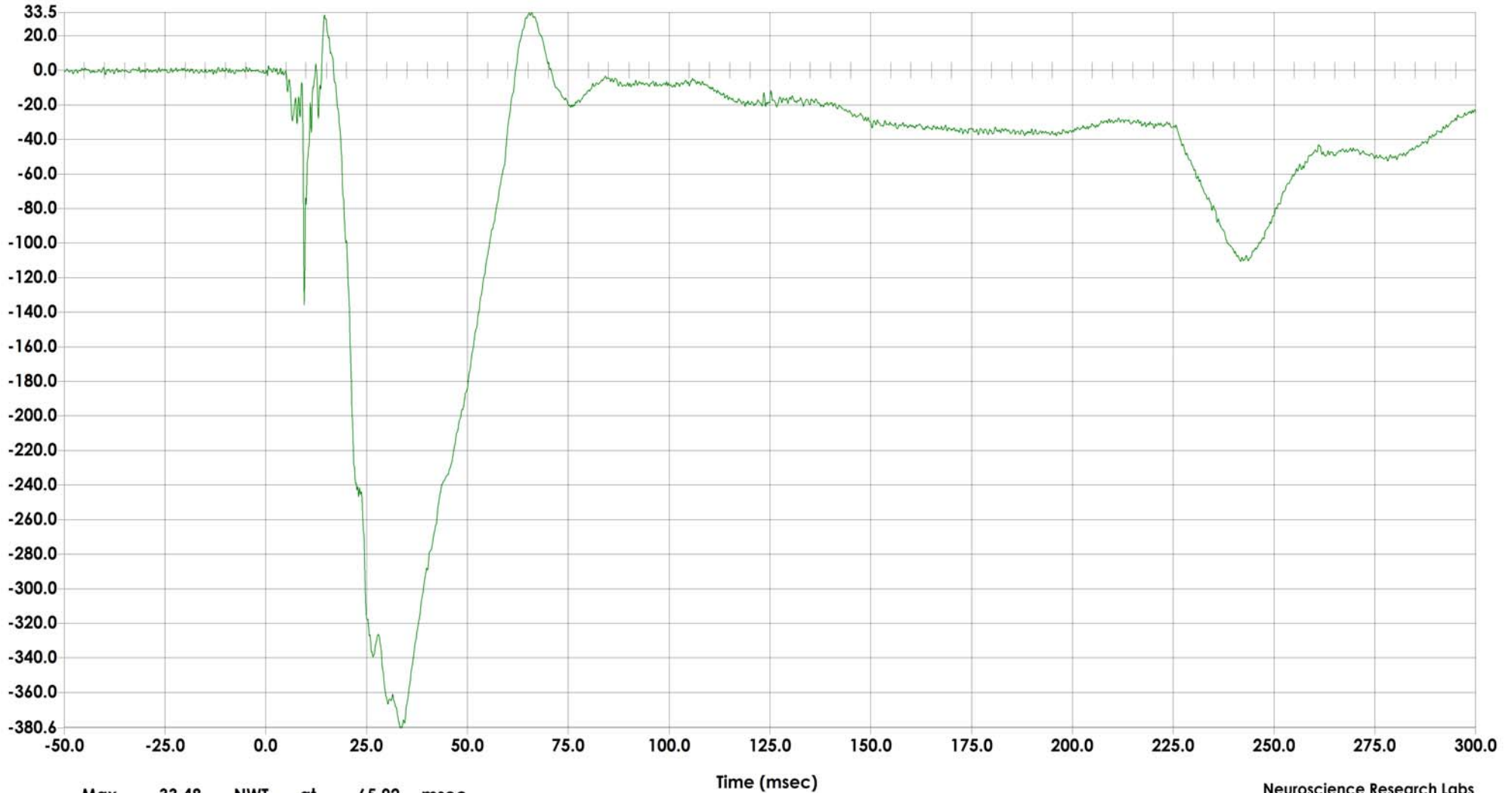
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Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNU  
Sensor Info DENTON 1716A  
Serial Number 1716A\_1647\_FX



### NWT Upper Neck (X) Force vs. Time



Max 33.48 NWT at 65.92 msec  
Min -380.58 NWT at 33.36 msec

MD 0306 TWG 2 Plot 004

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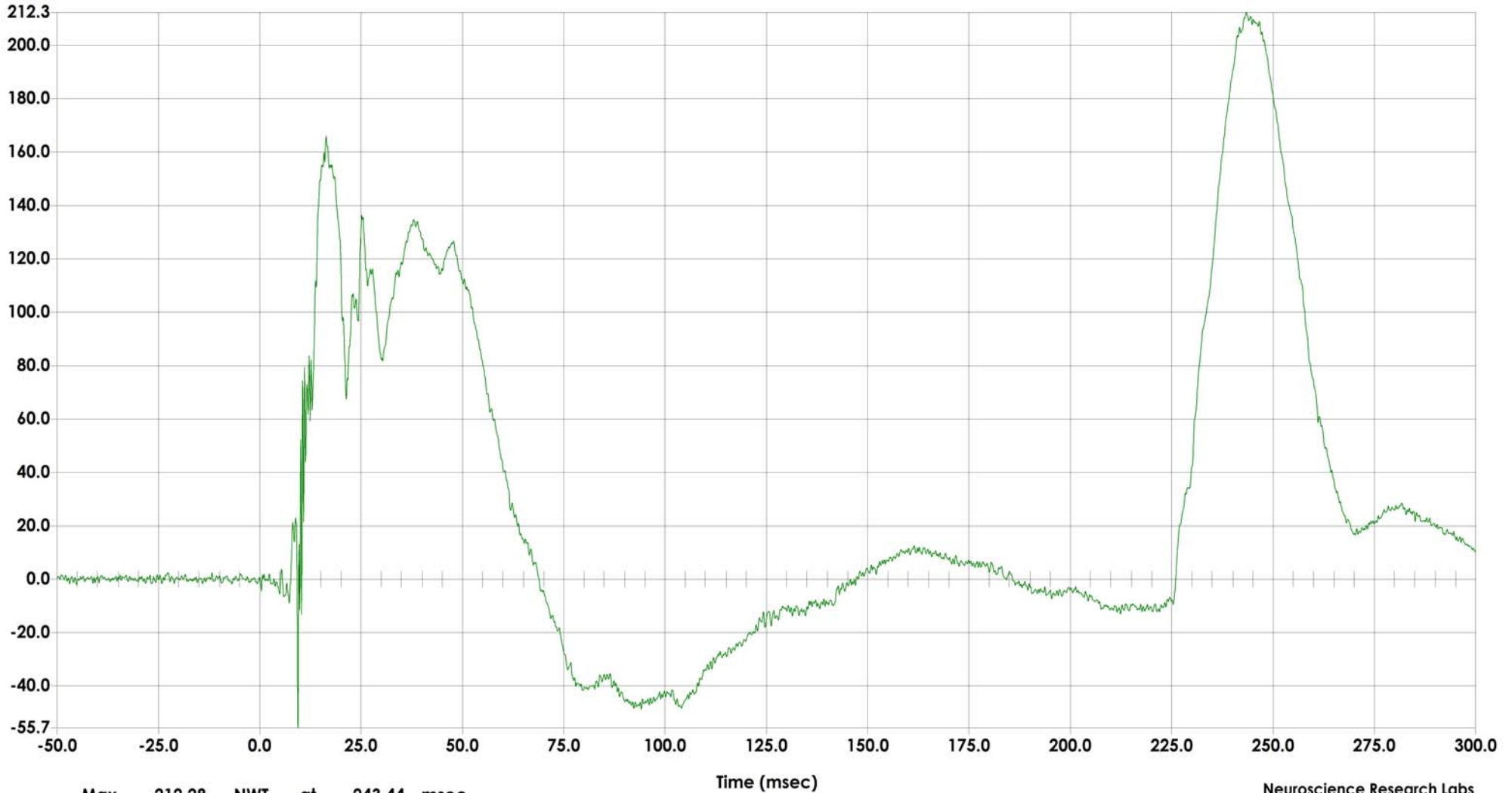
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Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNU  
Sensor Info DENTON 1716A  
Serial Number 1716A\_1647\_FY



### NWT Upper Neck (Y) Force vs. Time



Max 212.28 NWT at 243.44 msec  
Min -55.73 NWT at 9.44 msec

MD 0306 TWG 2 Plot 005

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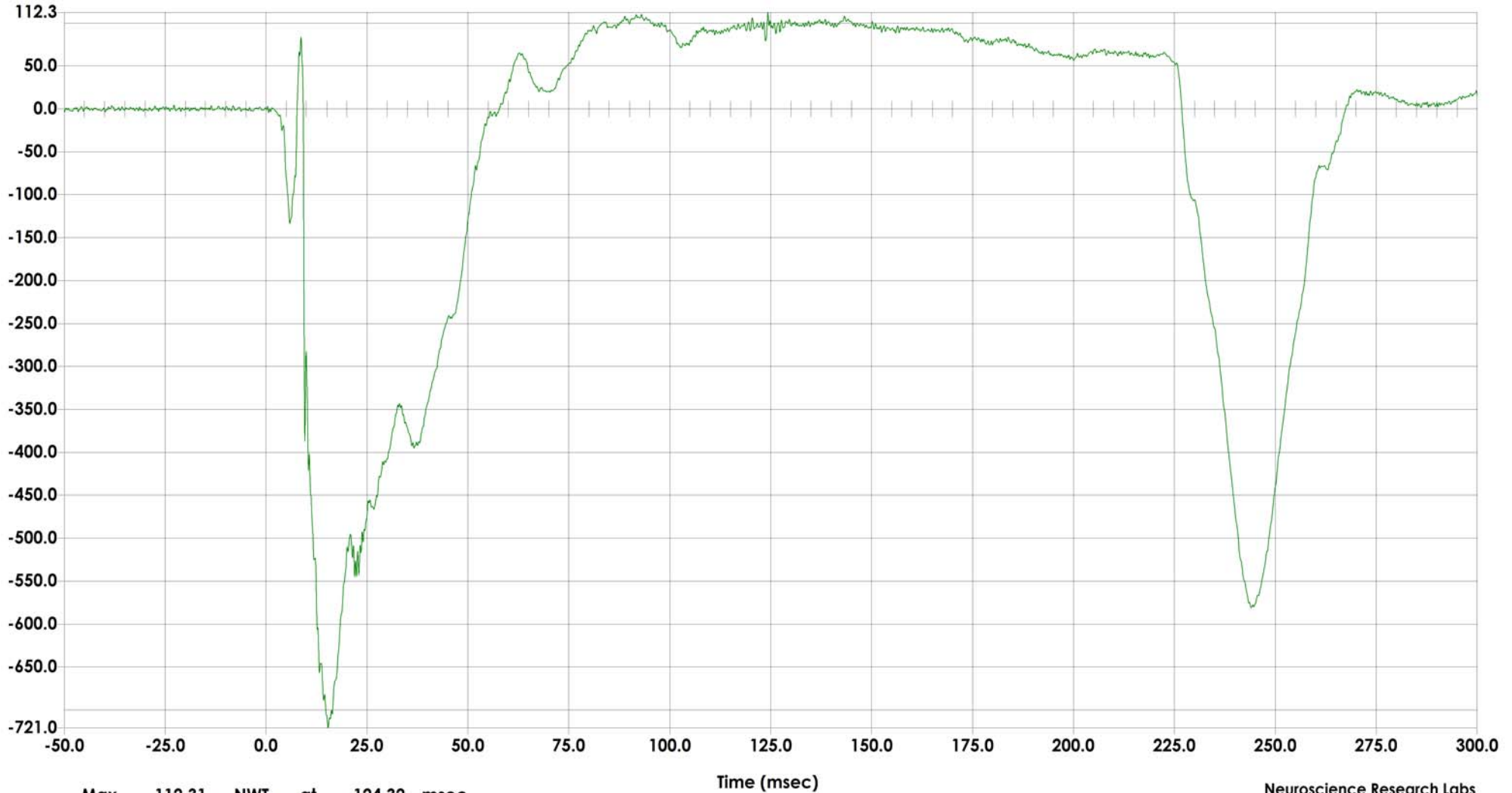
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Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNU  
Sensor Info DENTON 1716A  
Serial Number 1716A\_1647\_FZ



### NWT Upper Neck (Z) Force vs. Time



Max 112.31 NWT at 124.32 msec  
Min -720.97 NWT at 15.36 msec

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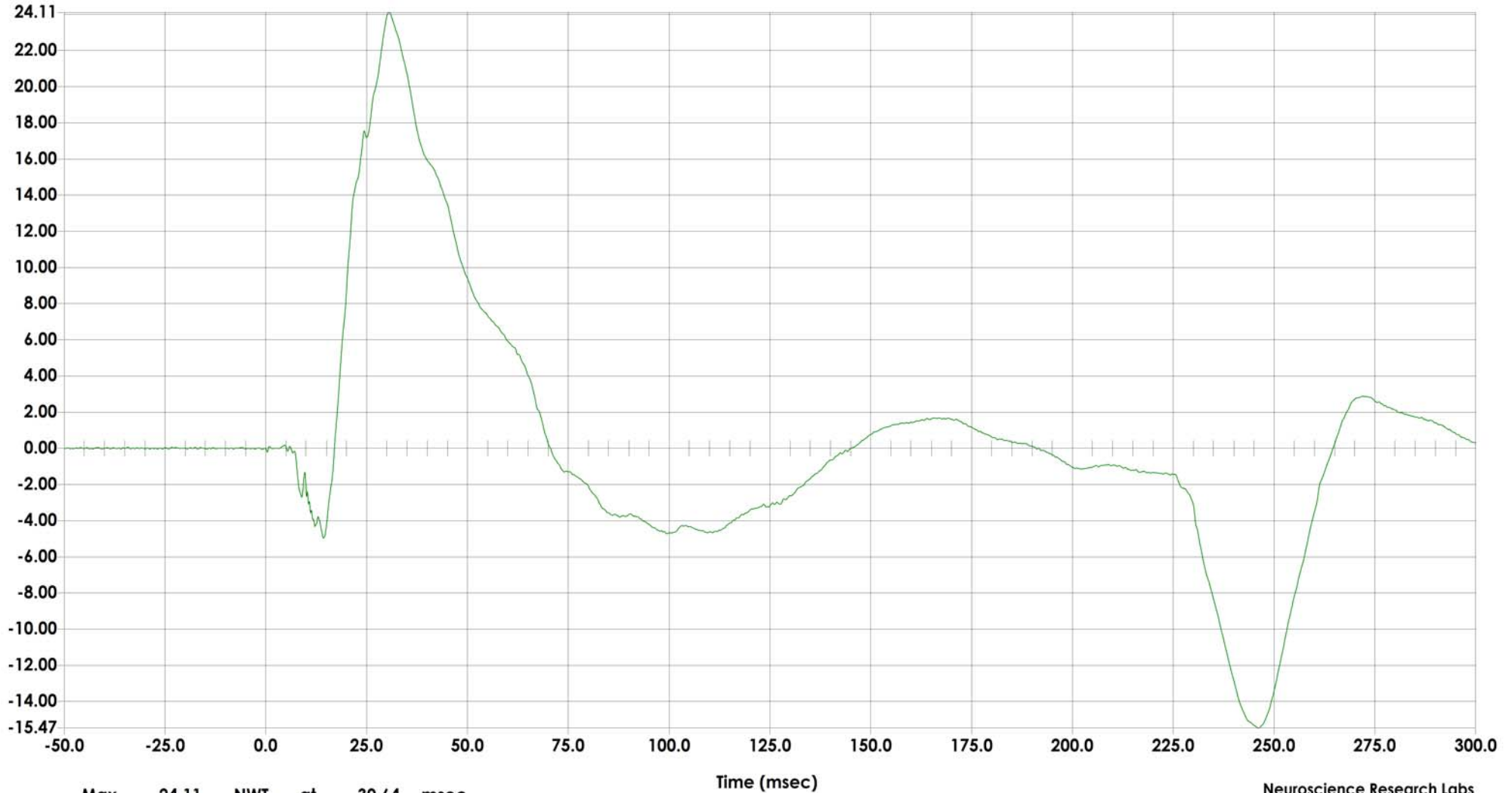
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Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC600  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNU  
Sensor Info DENTON 1716A  
Serial Number 1716A\_1647\_MX



### NWT Upper Neck (X) Moment vs. Time



Max 24.11 NWT at 30.64 msec  
Min -15.47 NWT at 246.40 msec

MD 0306 TWG 2 Plot 007

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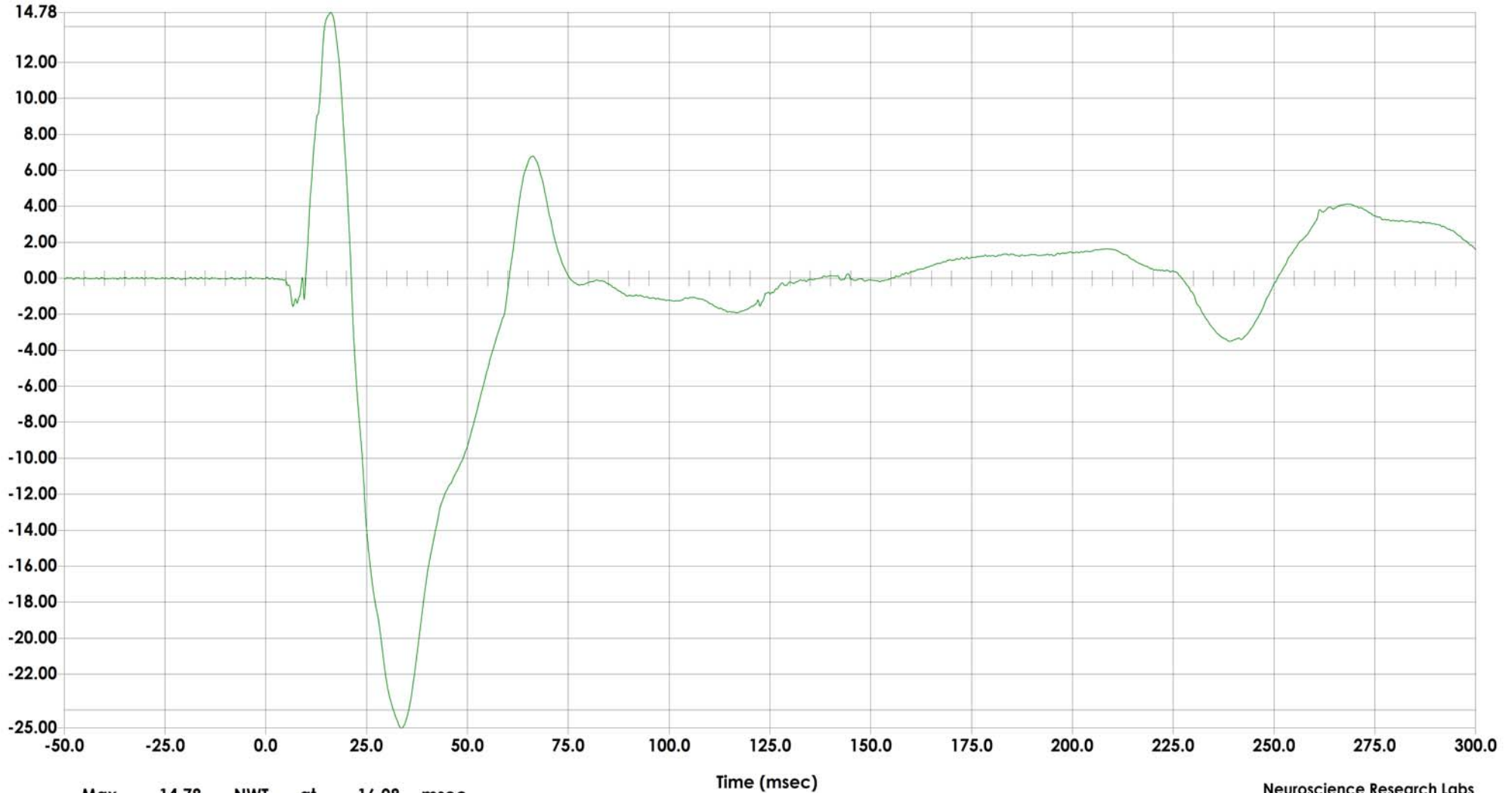
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Date 02-07-2013  
Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC600  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPU  
Sensor Info DENTON 1716A  
Serial Number 1716A\_1647\_MY



### NWT Upper Neck (Y) Moment vs. Time



Max 14.78 NWT at 16.08 msec  
Min -25.00 NWT at 33.68 msec

MD 0306 TWG 2 Plot 008

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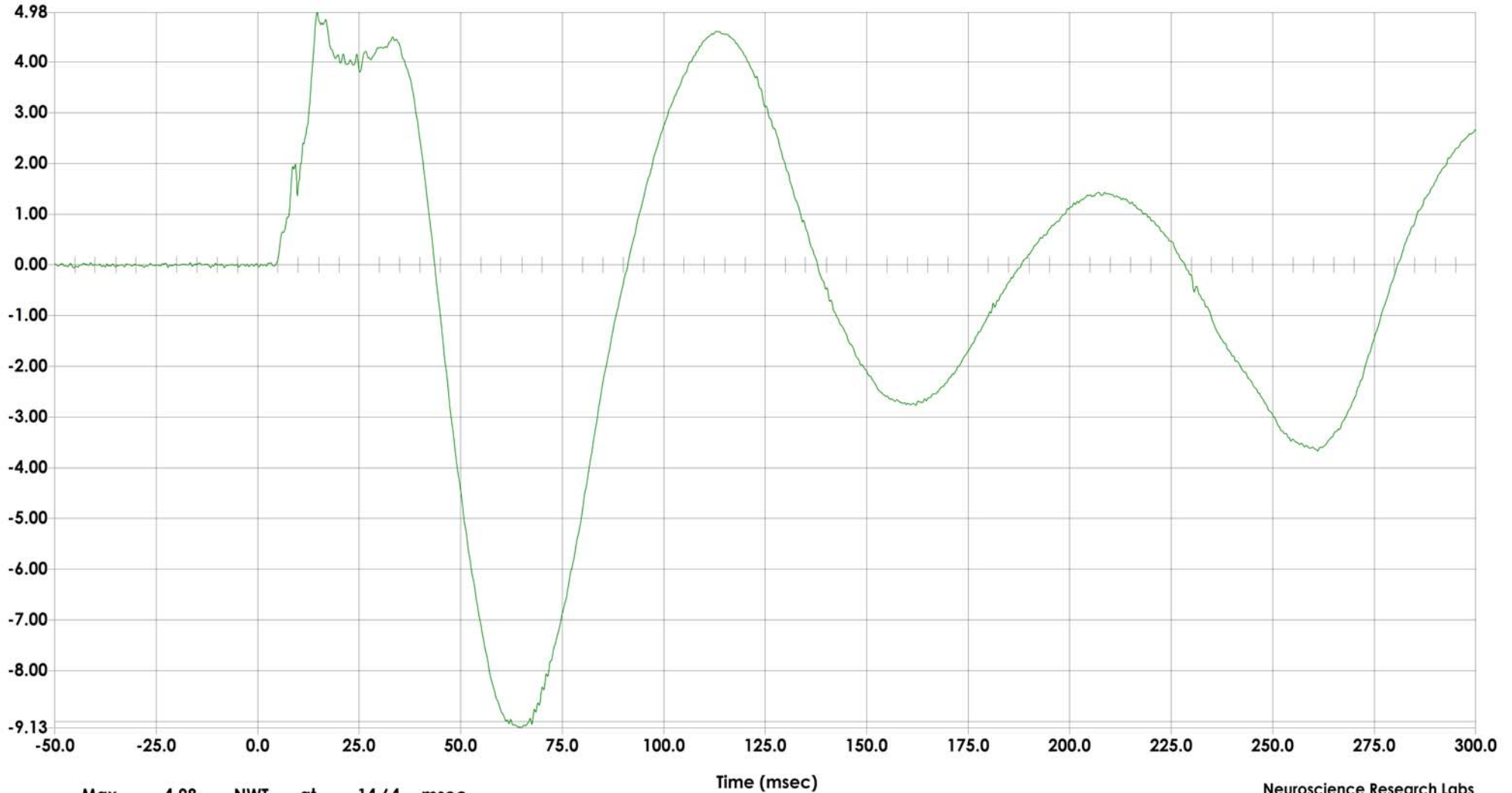
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Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC600  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNU  
Sensor Info DENTON 1716A  
Serial Number 1716A\_1647\_MZ



### NWT Upper Neck (Z) Moment vs. Time



Max 4.98 NWT at 14.64 msec  
Min -9.13 NWT at 64.96 msec

MD 0306 TWG 2 Plot 009

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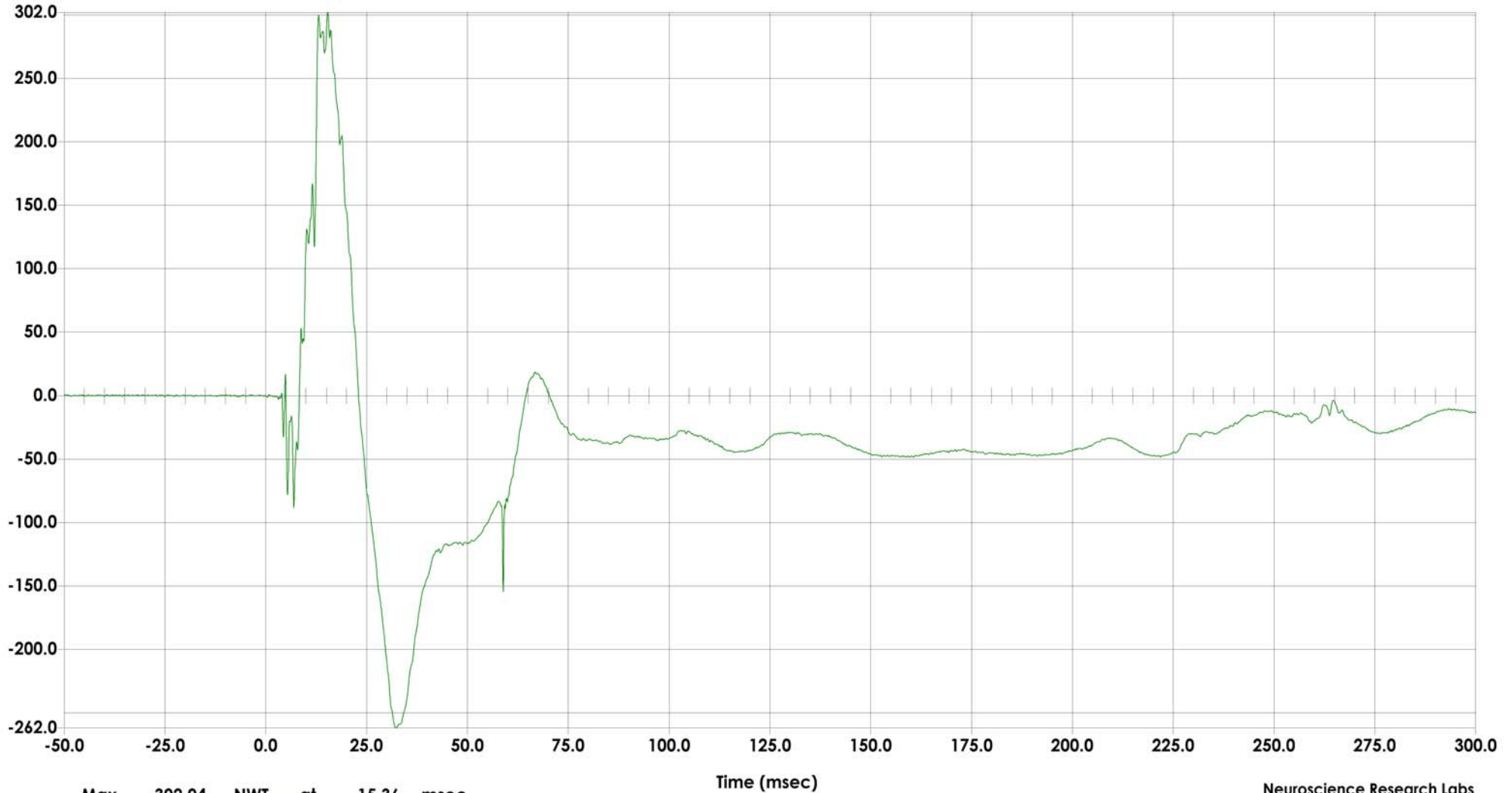
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Dummy on Booster Block

Filter CFC1000  
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Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNL  
Sensor Info DENTON 1716A  
Serial Number 1716A\_147\_FX



### NWT Lower Neck (X) Force vs. Time



Max 302.04 NWT at 15.36 msec  
Min -261.96 NWT at 32.32 msec

MD 0306 TWG 2 Plot 010

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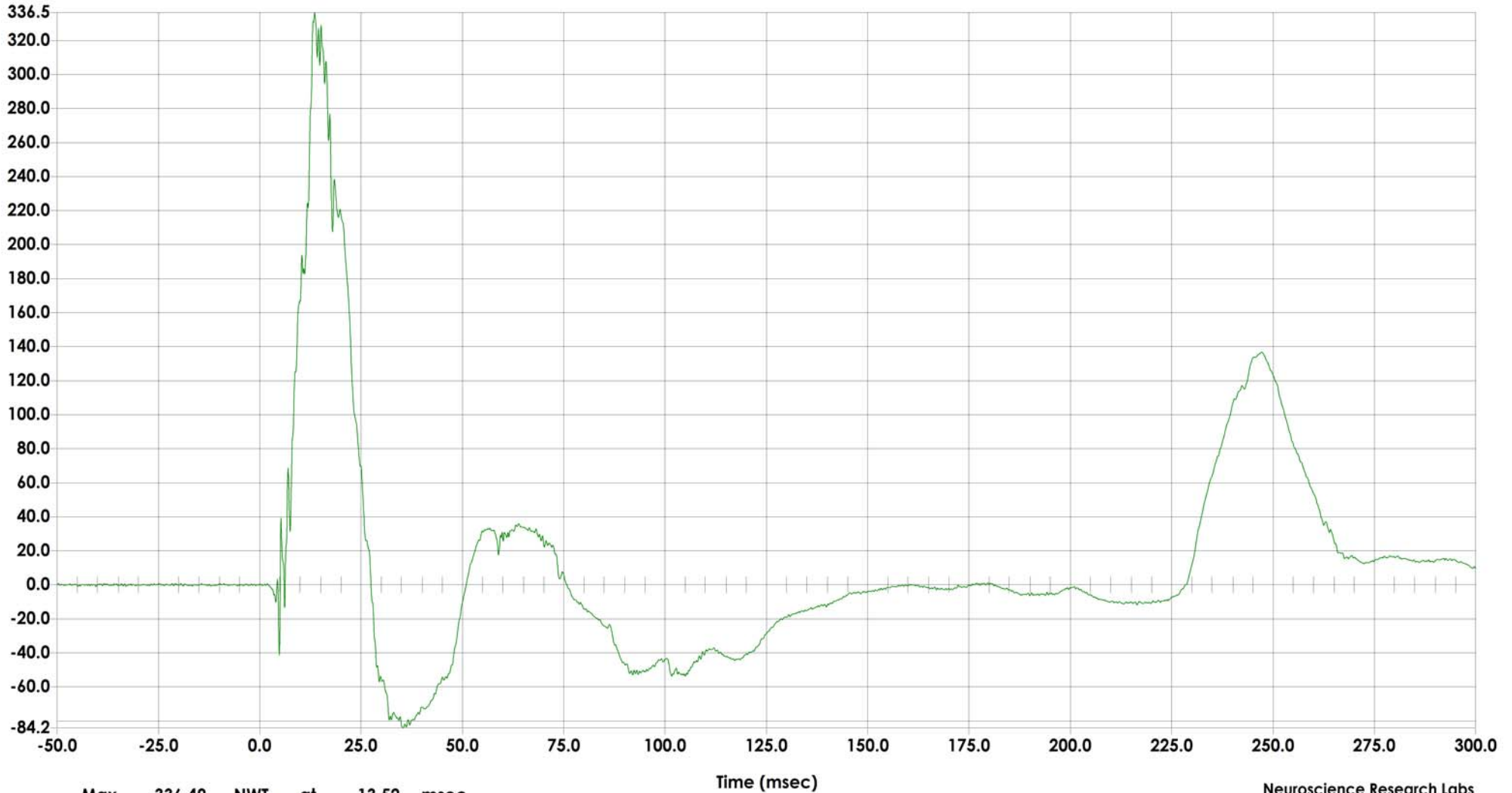
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Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNL  
Sensor Info DENTON 1716A  
Serial Number 1716A\_147\_FY



### NWT Lower Neck (Y) Force vs. Time



Max 336.49 NWT at 13.52 msec  
Min -84.16 NWT at 35.36 msec

MD 0306 TWG 2 Plot 011

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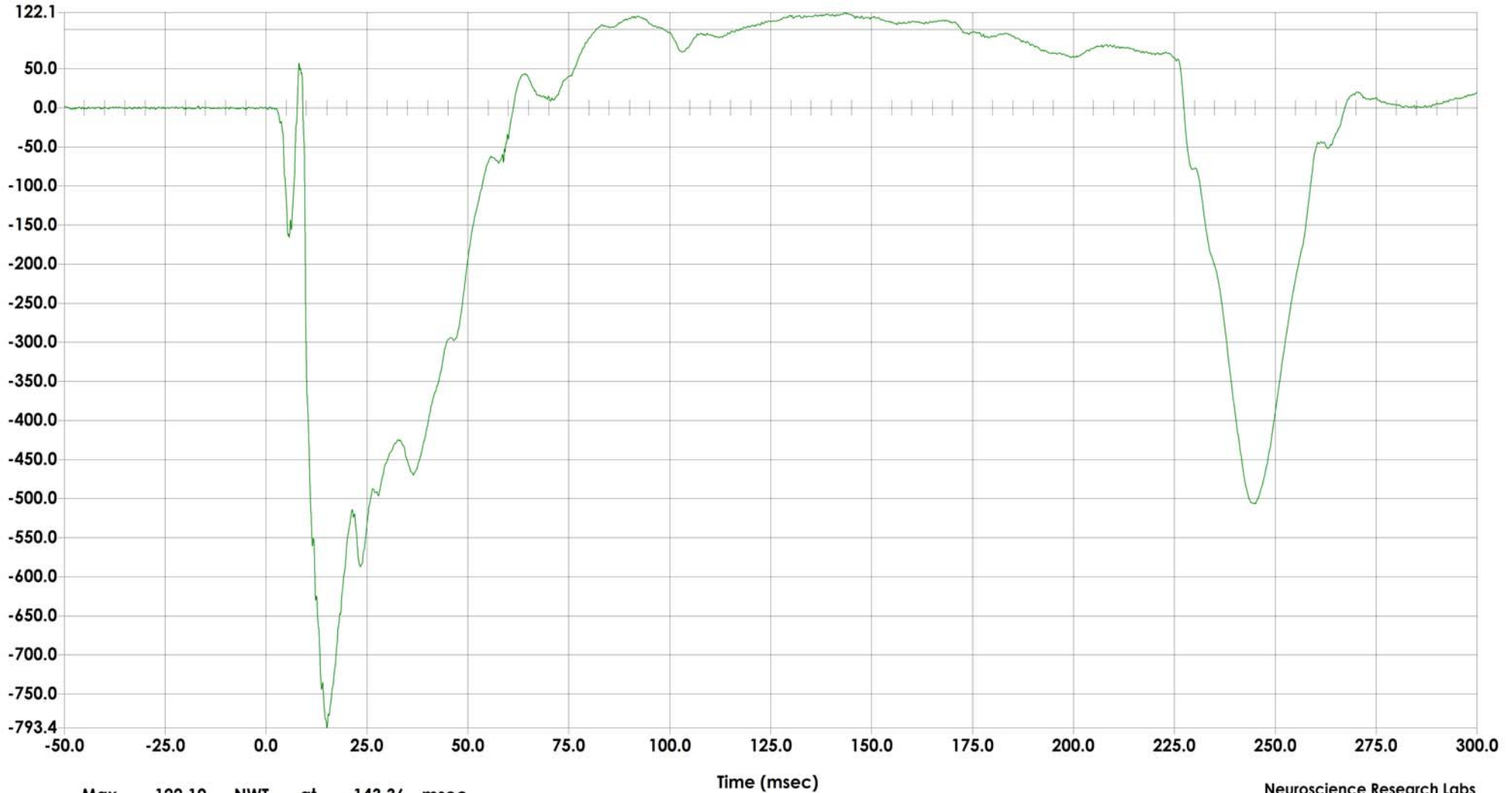
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Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNL  
Sensor Info DENTON 1716A  
Serial Number 1716A\_147\_FZ



### NWT Lower Neck (Z) Force vs. Time



Max 122.10 NWT at 143.36 msec  
Min -793.40 NWT at 15.12 msec

MD 0306 TWG 2 Plot 012

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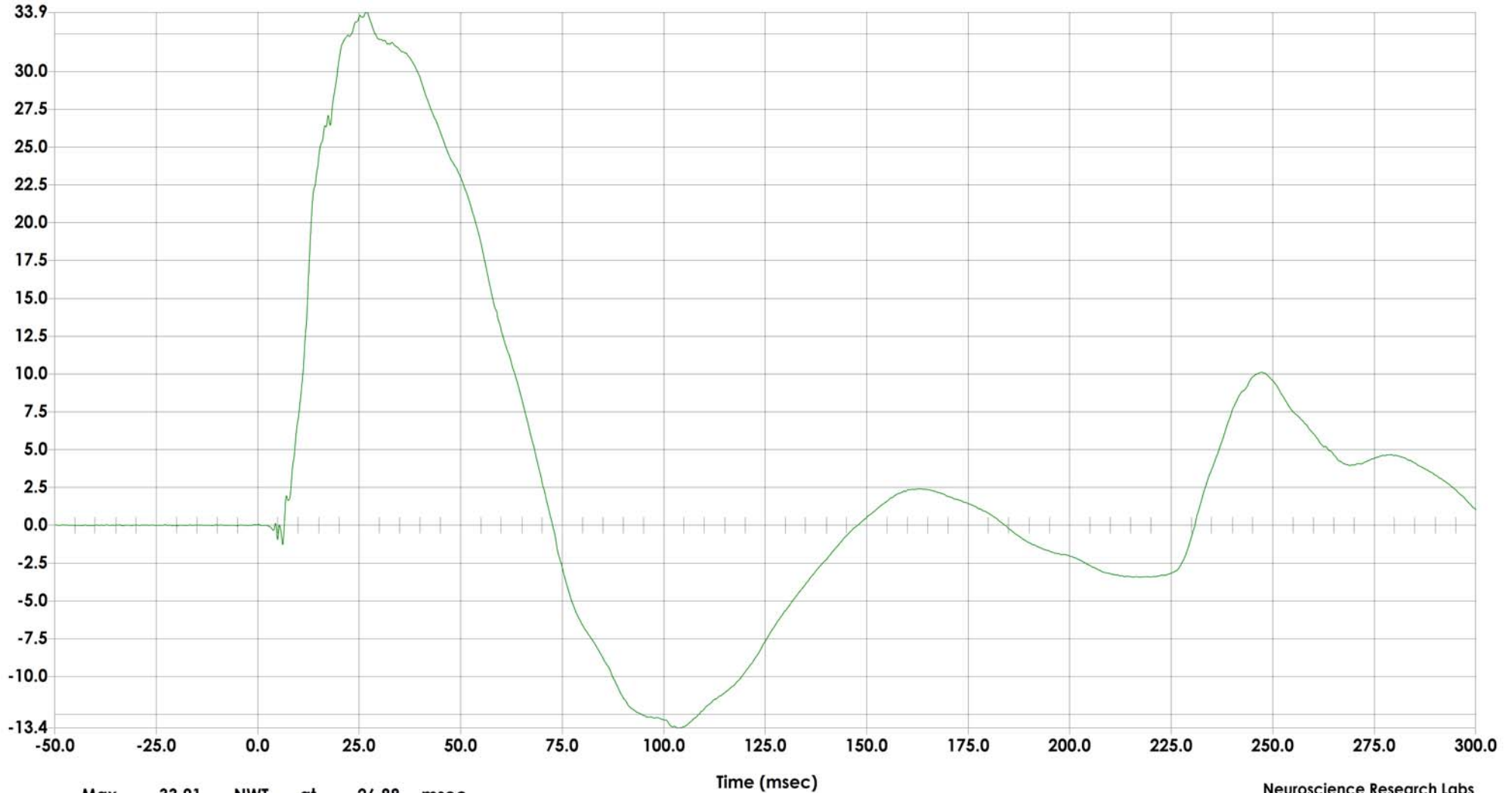
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Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC600  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNL  
Sensor Info DENTON 1716A  
Serial Number 1716A\_147\_MX



### NWT Lower Neck (X) Moment vs. Time



Max 33.91 NWT at 26.88 msec  
Min -13.40 NWT at 103.68 msec

MD 0306 TWG 2 Plot 013

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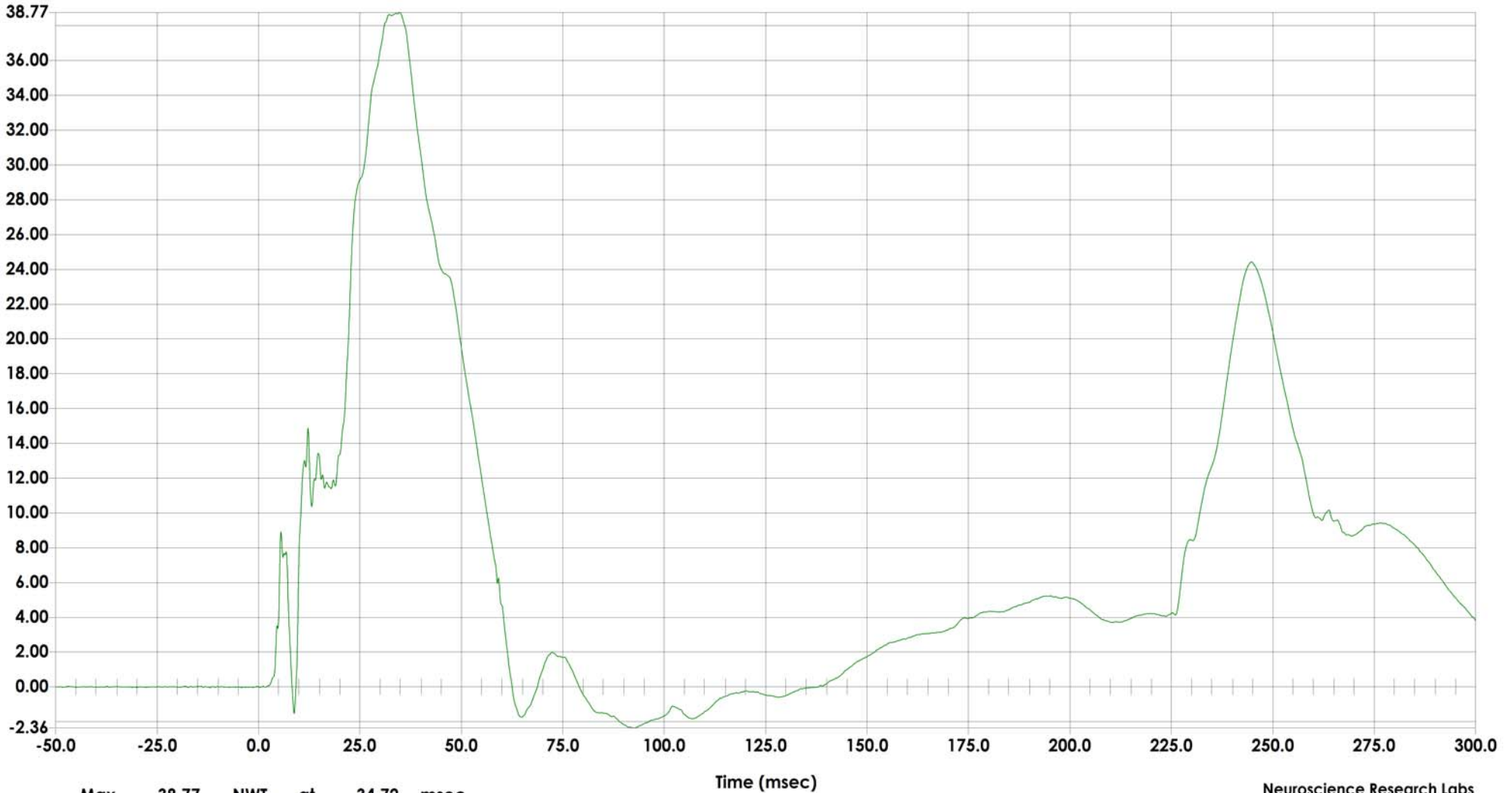
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Dummy on Booster Block

Filter CFC600  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNL  
Sensor Info DENTON 1716A  
Serial Number 1716A\_147\_MY



### NWT Lower Neck (Y) Moment vs. Time



Max 38.77 NWT at 34.72 msec  
Min -2.36 NWT at 92.72 msec

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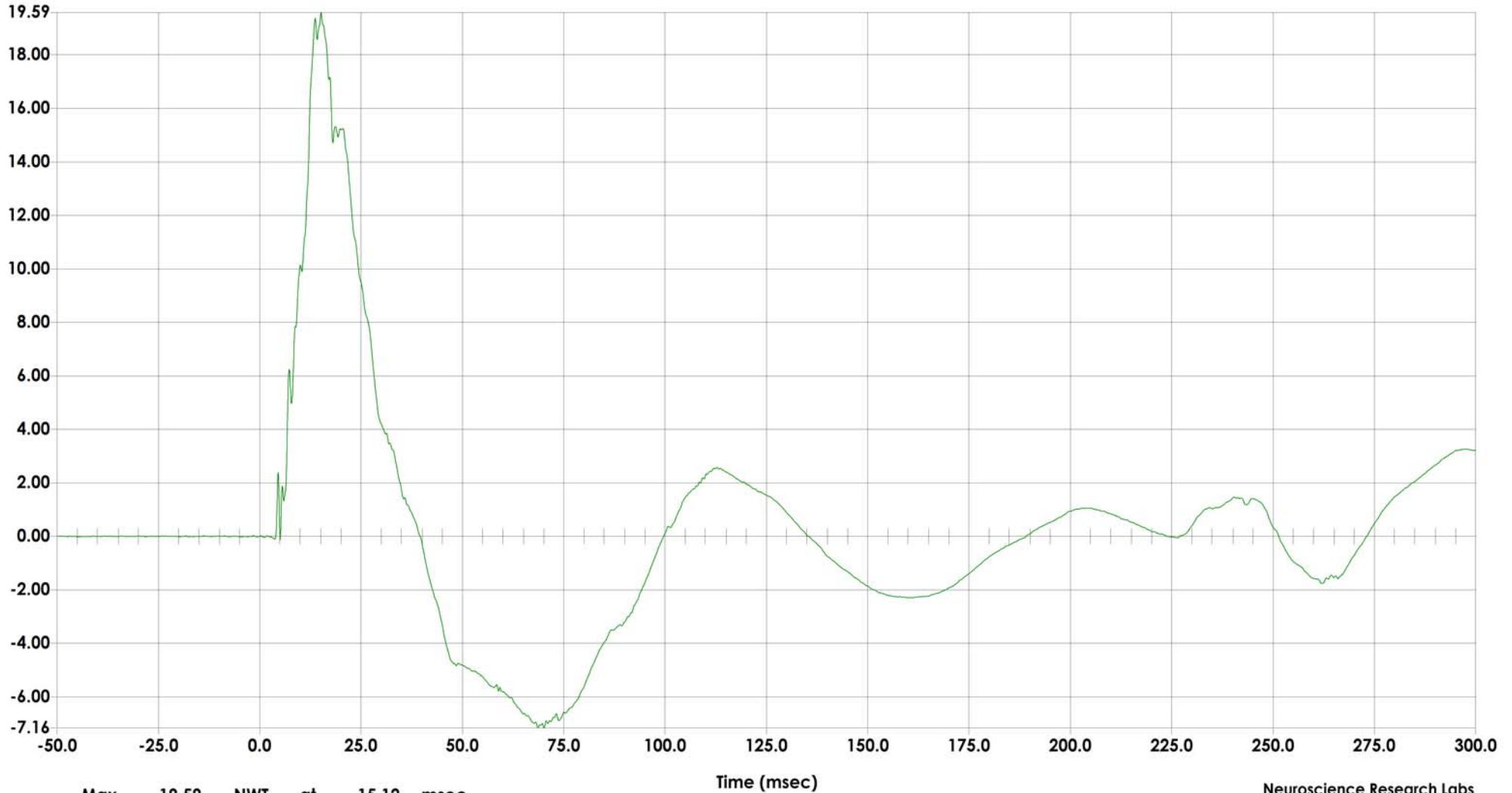
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Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC600  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNL  
Sensor Info DENTON 1716A  
Serial Number 1716A\_147\_MZ



### NWT Lower Neck (Z) Moment vs. Time



Max 19.59 NWT at 15.12 msec  
Min -7.16 NWT at 70.16 msec

MD 0306 TWG 2 Plot 015

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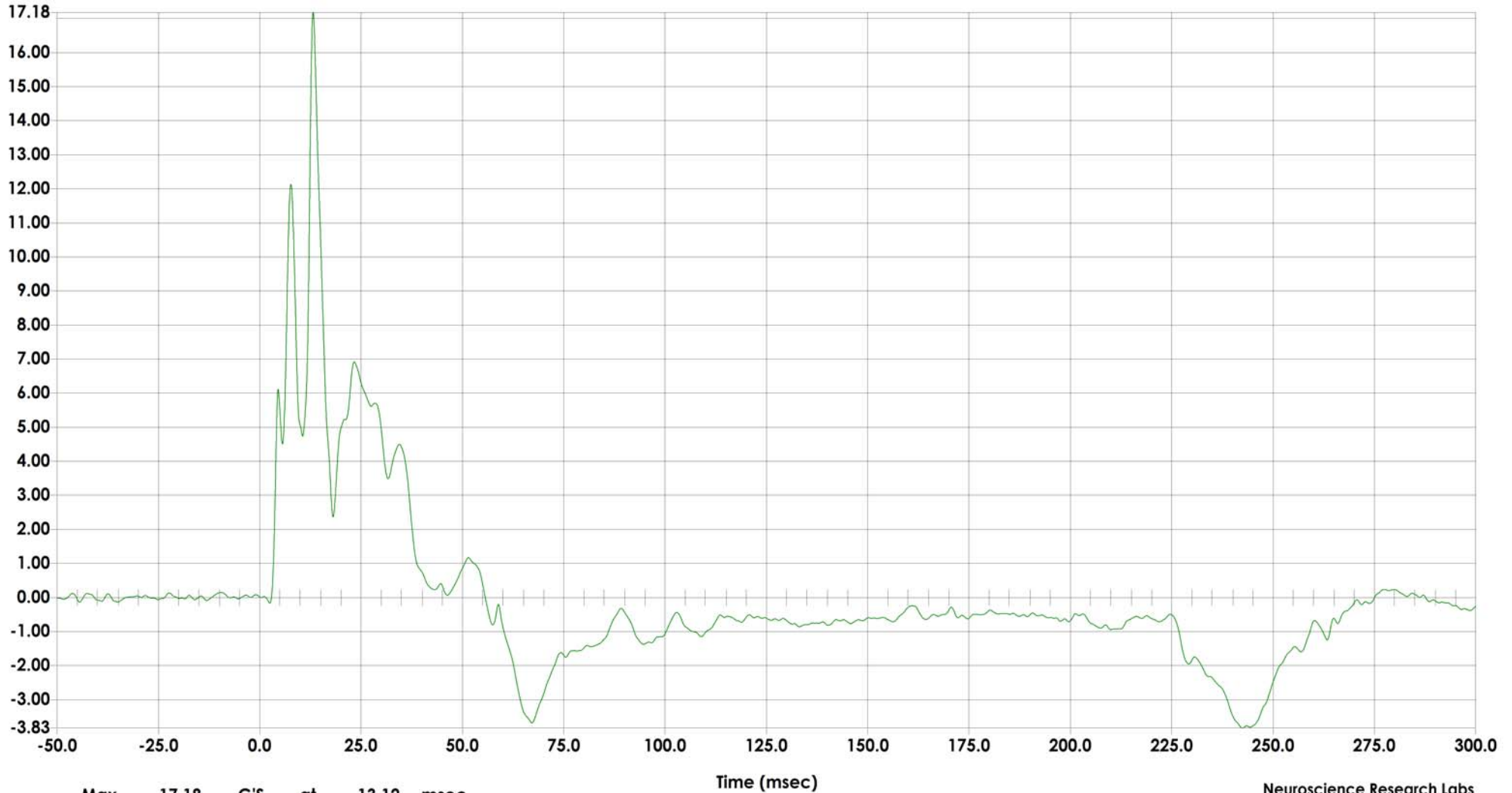
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Date 02-07-2013  
Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC180  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNM  
Sensor Info ENDEVCO 7264D-2KTZ-2-360  
Serial Number 12122



### G'S Middle Spine T4 (X) Acceleration vs. Time



Max 17.18 G'S at 13.12 msec  
Min -3.83 G'S at 242.48 msec

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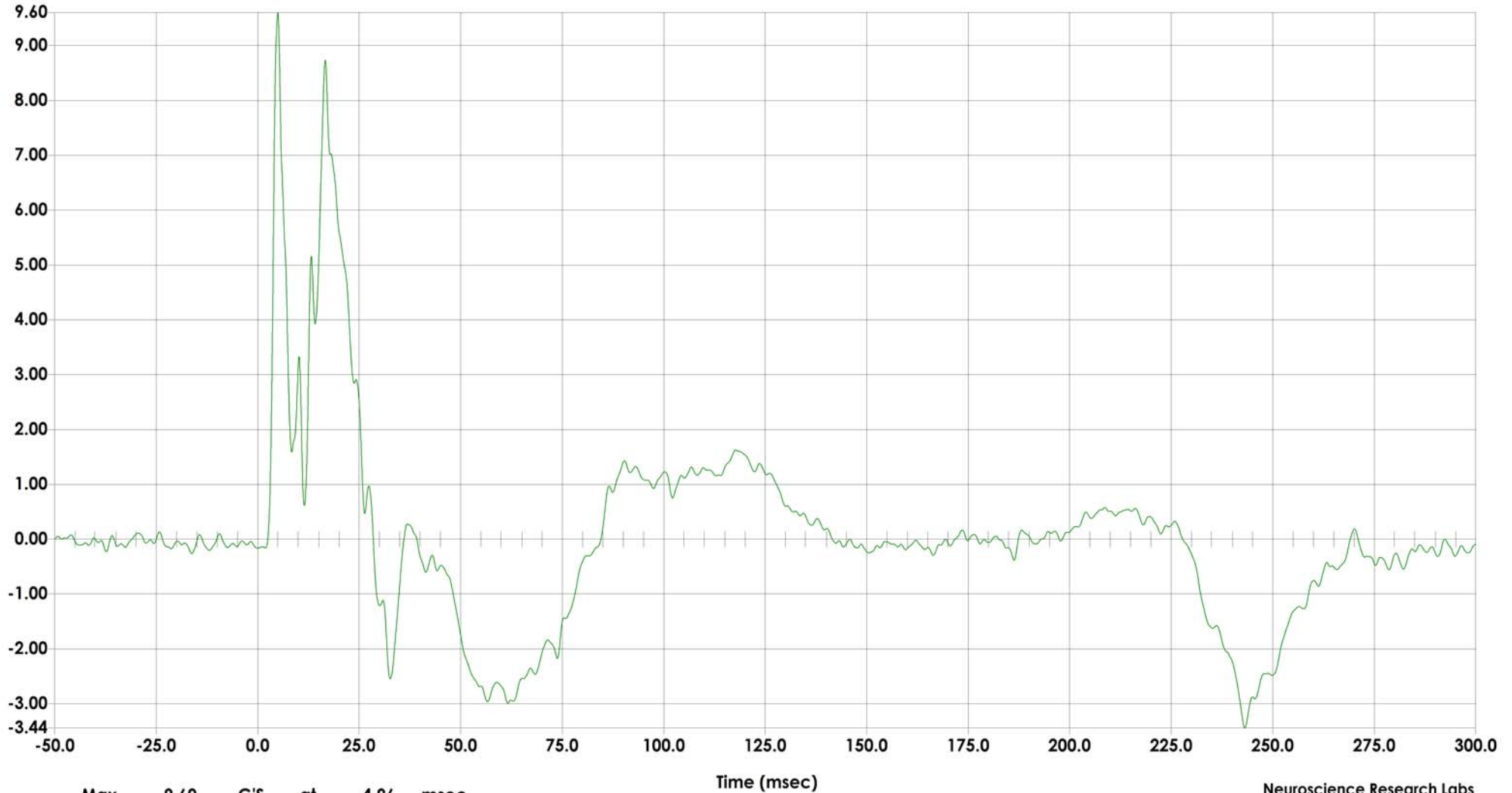
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Date 02-07-2013  
Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC180  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNM  
Sensor Info ENDEVCO 7264D-2KTZ-2-360  
Serial Number 12120



### G'S Middle Spine T4 (Y) Acceleration vs. Time



Max 9.60 G'S at 4.96 msec  
Min -3.44 G'S at 243.12 msec

MD 0306 TWG 2 Plot 017

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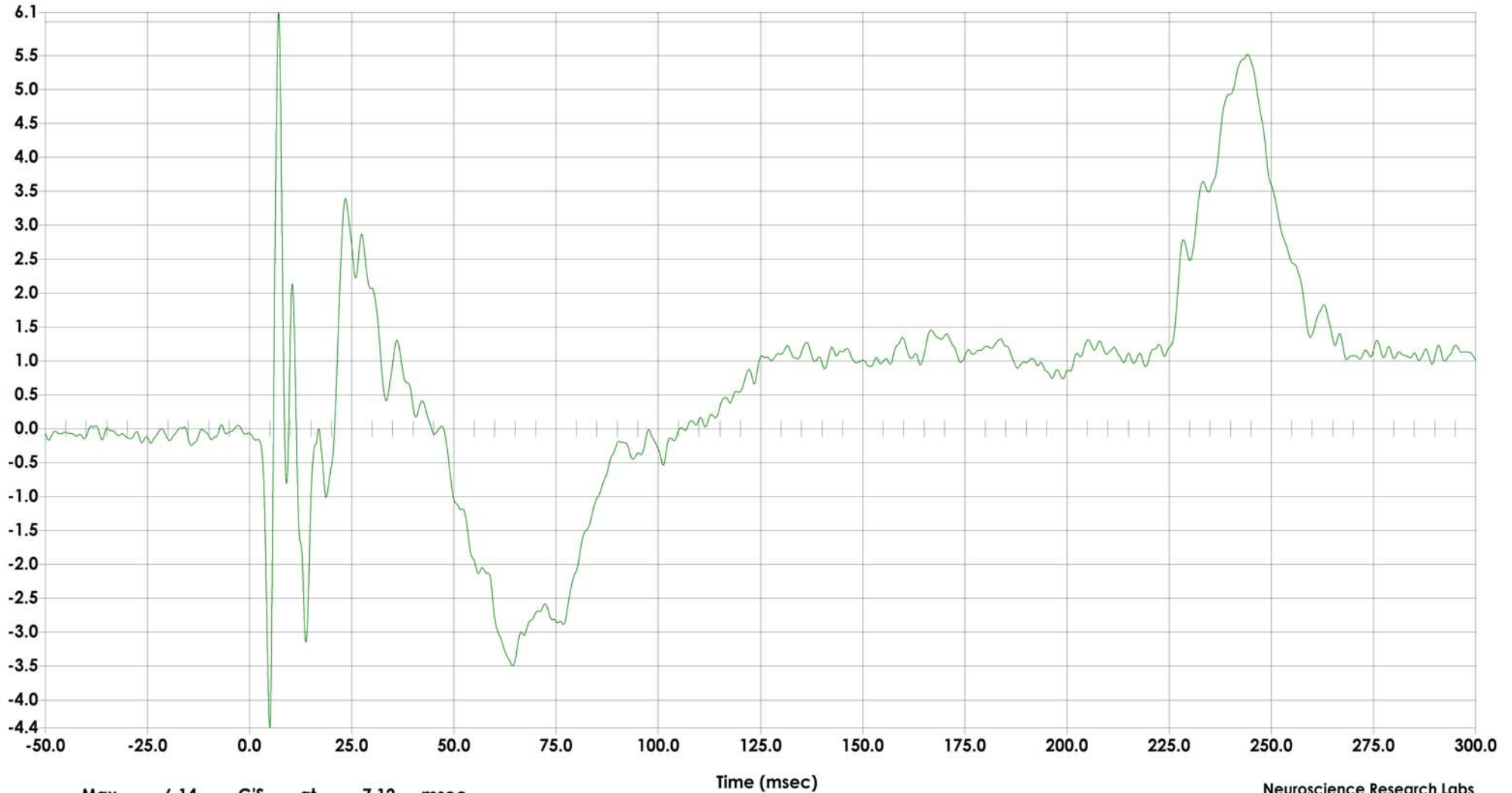
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Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC180  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNM  
Sensor Info ENDEVCO 7264D-2KTZ-2-360  
Serial Number 12116



### G'S Middle Spine T4 (Z) Acceleration vs. Time



Max 6.14 G'S at 7.12 msec  
Min -4.41 G'S at 4.96 msec

MD 0306 TWG 2 Plot 018

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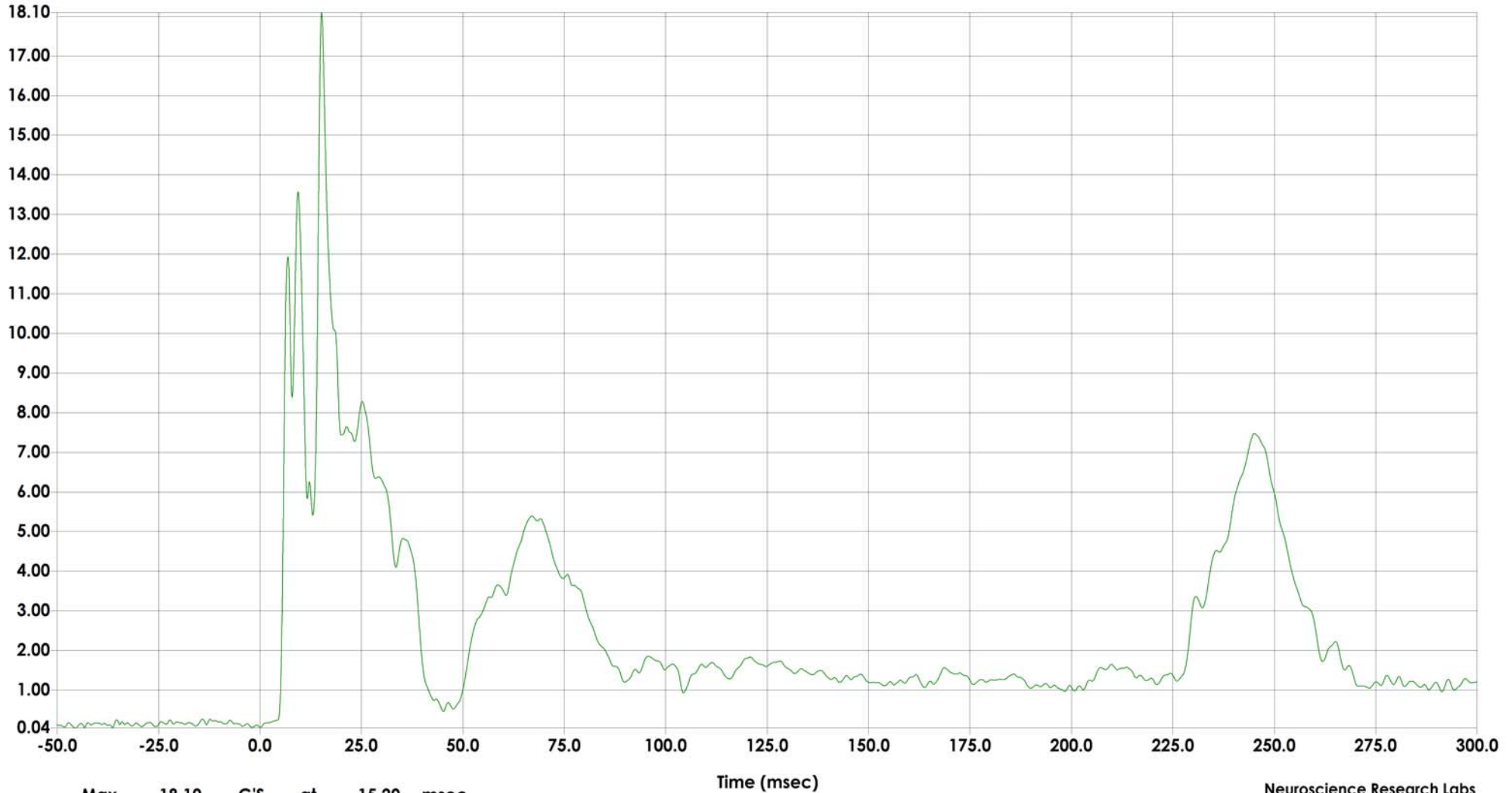
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Date 02-07-2013  
Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC180  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location  
Sensor Info MCW Multiviewer  
Serial Number 3.5.2j



### G'S Middle Spine T4 Resultant Acceleration vs. Time



Max 18.10 G'S at 15.20 msec  
Min 0.04 G'S at -45.52 msec

MD 0306 TWG 2 Plot 025

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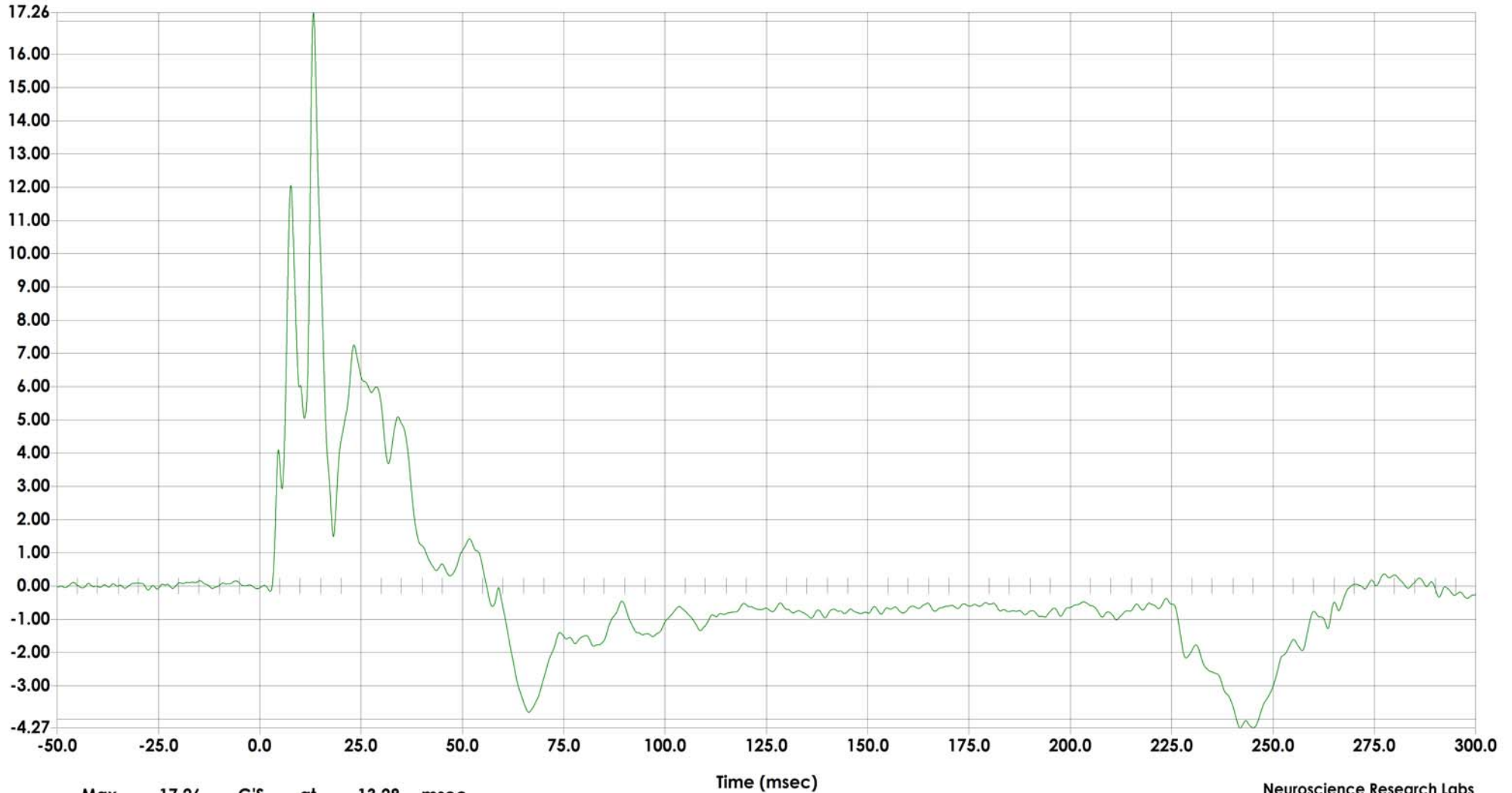
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Dummy on Booster Block

Filter CFC180  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNU  
Sensor Info ENDEVCO 7264D-2KTZ-2-360  
Serial Number 12108



### G'S Upper Spine T1 (X) Acceleration vs. Time



Max 17.26 G'S at 13.28 msec  
Min -4.27 G'S at 241.84 msec

MD 0306 TWG 2 Plot 019

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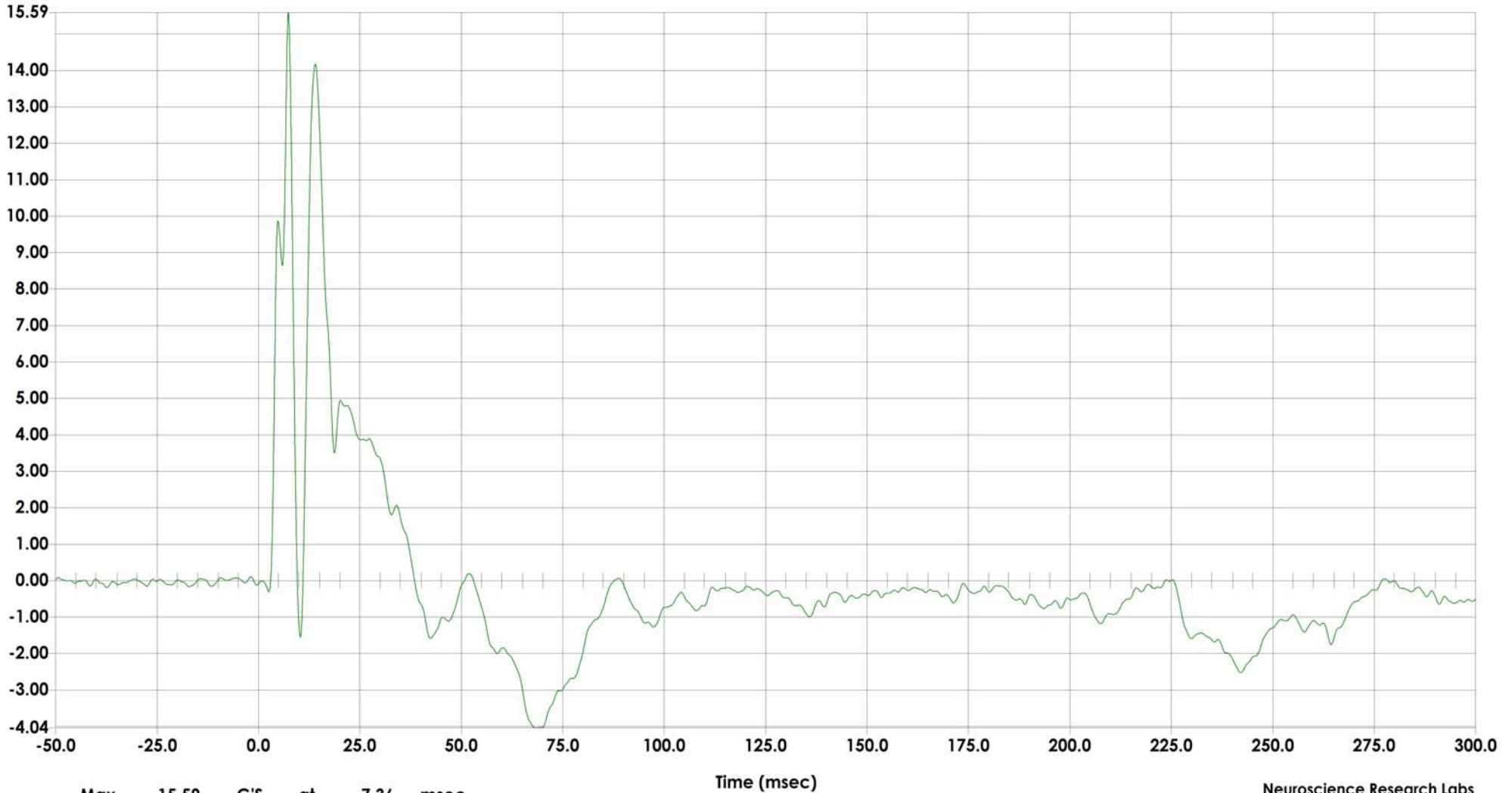
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Dummy on Booster Block

Filter CFC180  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SPNL  
Sensor Info ENDEVCO 7264D-2KTZ-2-360  
Serial Number 12106



### G'S Middle Spine T6 (X) Acceleration vs. Time



Max 15.59 G'S at 7.36 msec  
Min -4.04 G'S at 68.48 msec

MD 0306 TWG 2 Plot 020

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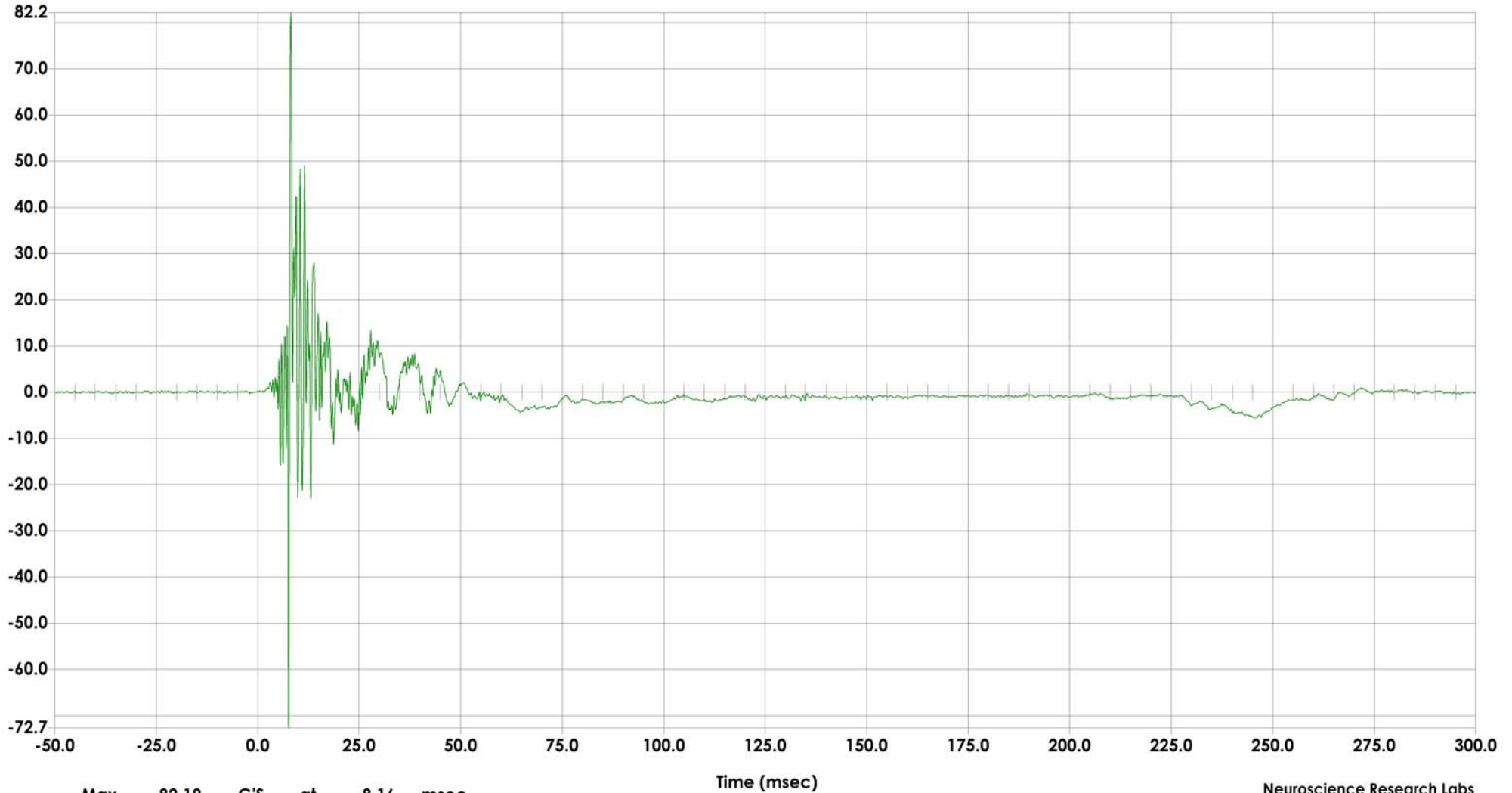
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Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SNMU  
Sensor Info ENDEVCO 7264-2000TZ  
Serial Number J35768



### G'S Upper Sternum (X) Acceleration vs. Time



Max 82.19 G'S at 8.16 msec  
Min -72.67 G'S at 7.60 msec

MD 0306 TWG 2 Plot 021

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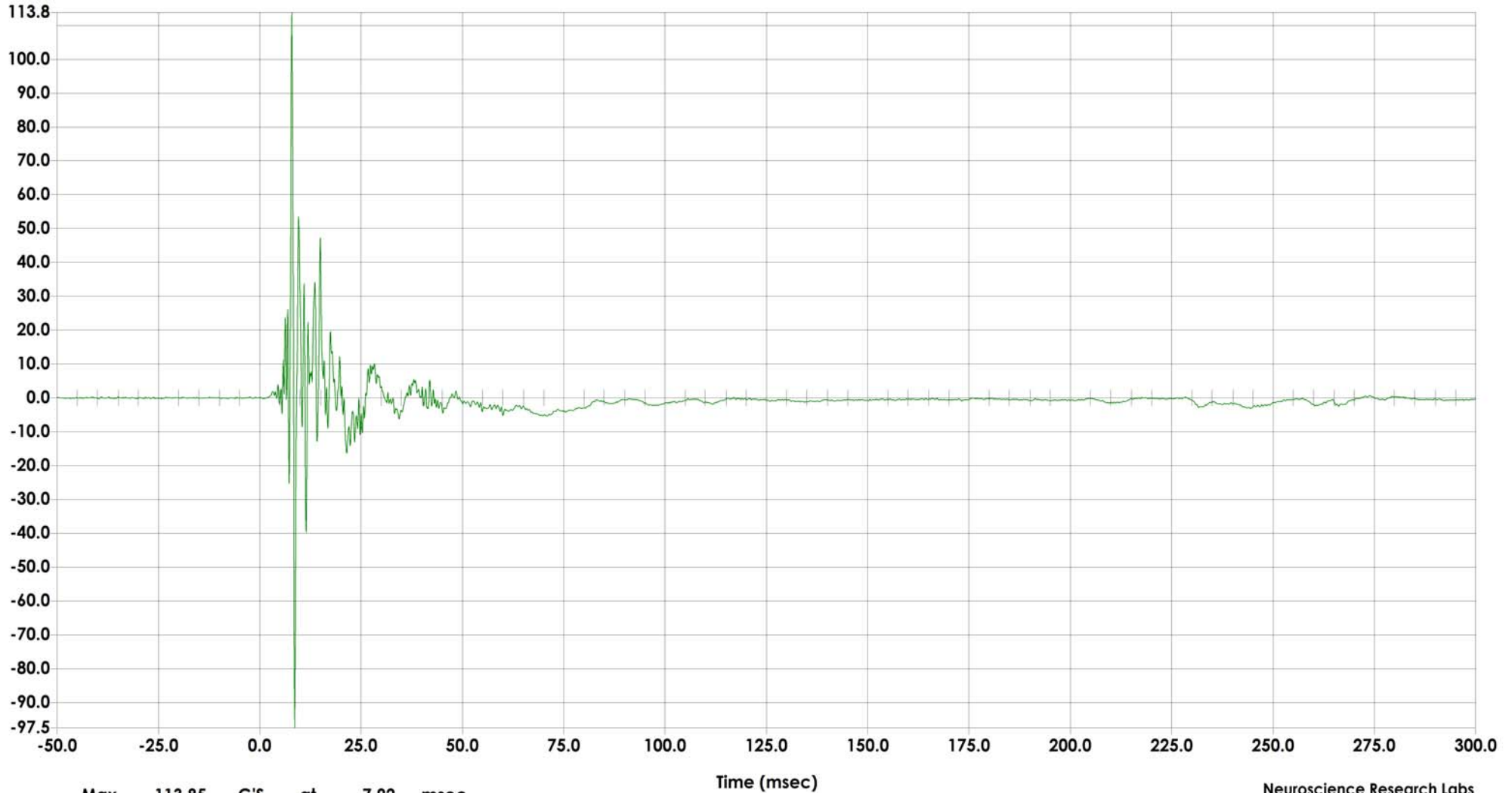
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Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SNML  
Sensor Info ENDEVCO 7264-2000  
Serial Number J43740



### G'S Lower Sternum (X) Acceleration vs. Time



Max 113.85 G'S at 7.92 msec  
Min -97.52 G'S at 8.64 msec

MD 0306 TWG 2 Plot 022

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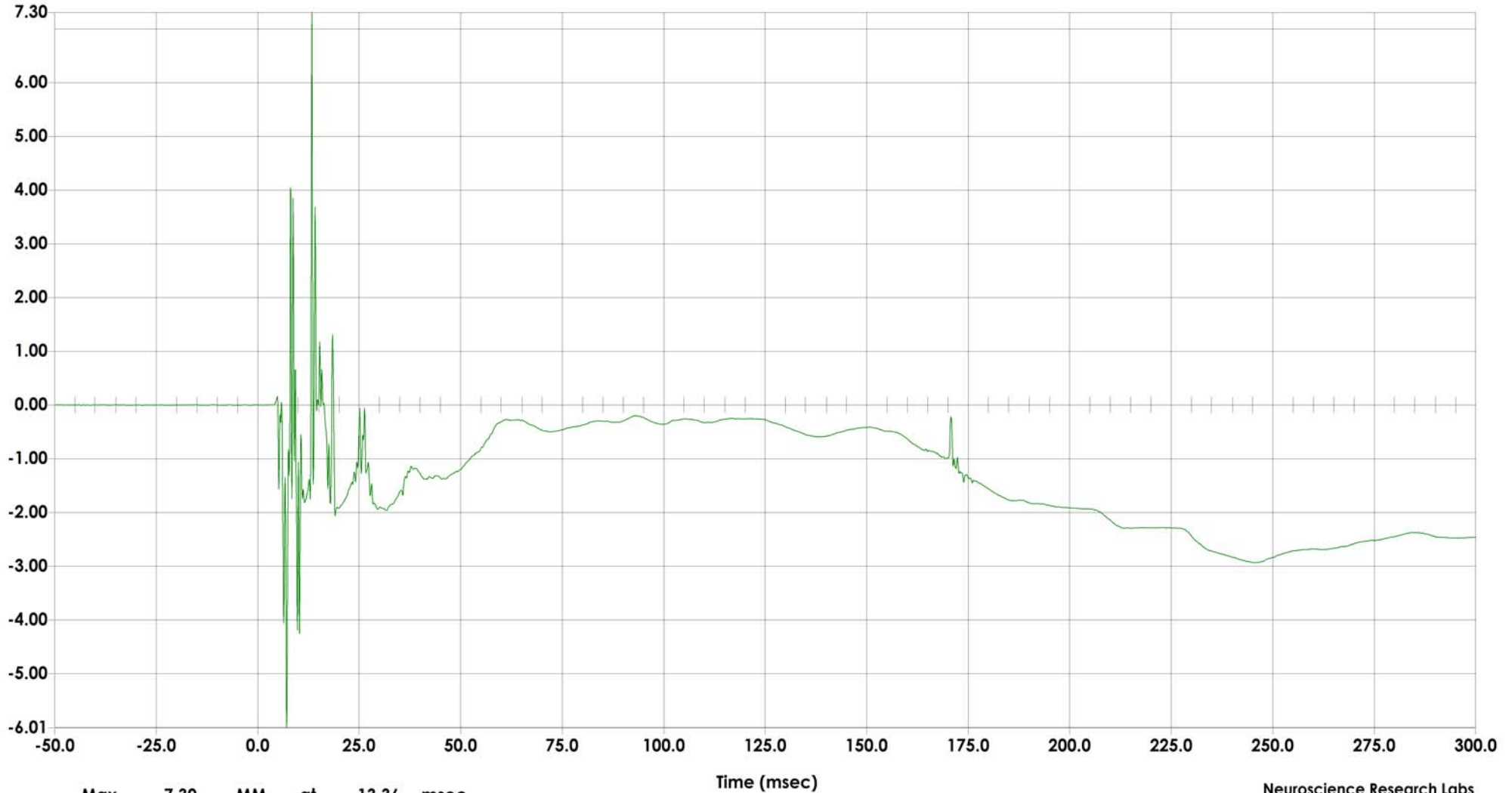
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Description 3.3.5.1 Inboard Facing Hybrid III 6-Year-Old Child  
Dummy on Booster Block

Filter CFC1000  
Sampling Rate (Hz) 12500  
Number of Points 4376  
Pretrigger Points 625

Sensor Location SNML  
Sensor Info  
Serial Number CST-182



### MM Chest (X) Displacement vs. Time



Max 7.30 MM at 13.36 msec  
Min -6.01 MM at 7.12 msec

MD 0306 TWG 2 Plot 023

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**Transportation Research Center Inc.**

**ATD Calibration Report**

**for**

**VRTC**

**HIII 6-Year-Old  
Serial No. 182  
Calibration No. 02**



**Transportation Research Center Inc.  
P.O. Box B-67  
10820 St. Rt. 347  
East Liberty, OH 43319-0367**

# Transportation Research Center Inc.

Front Head Drop

HIII 6YO Serial No. 182 Certification No. 2-1

Test Date: 3/20/2012

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Peak Head Resultant Acceleration	245 - 300 g	290.9 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	-6.9 g	Yes
Is Acceleration Curve Unimodal	Yes	Yes	Yes

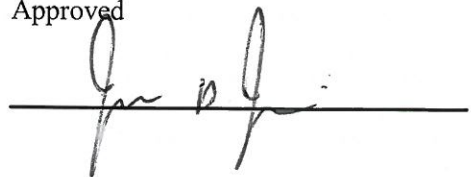
**Test meets specifications.**

**Comments:**

Technician



Approved

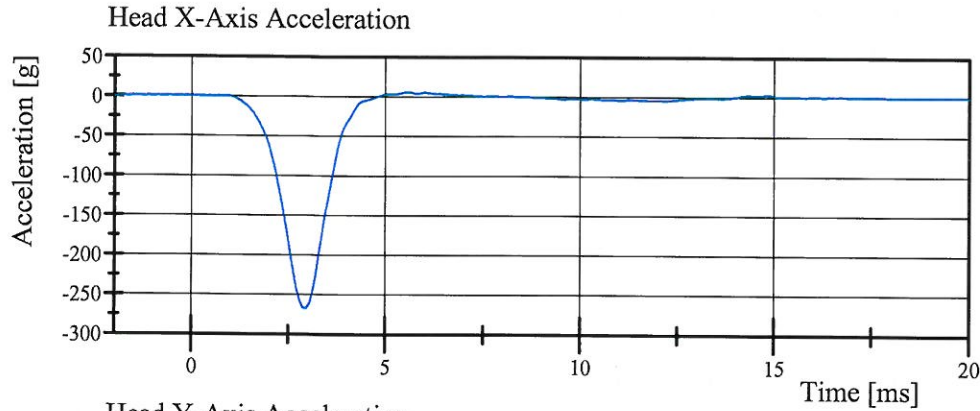


# Transportation Research Center Inc.

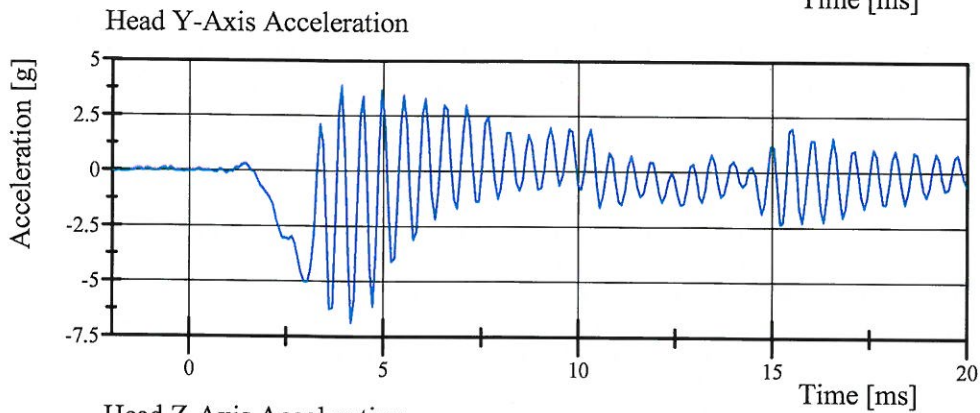
Front Head Drop

HIII 6YO Serial No. 182 Certification No. 2-1

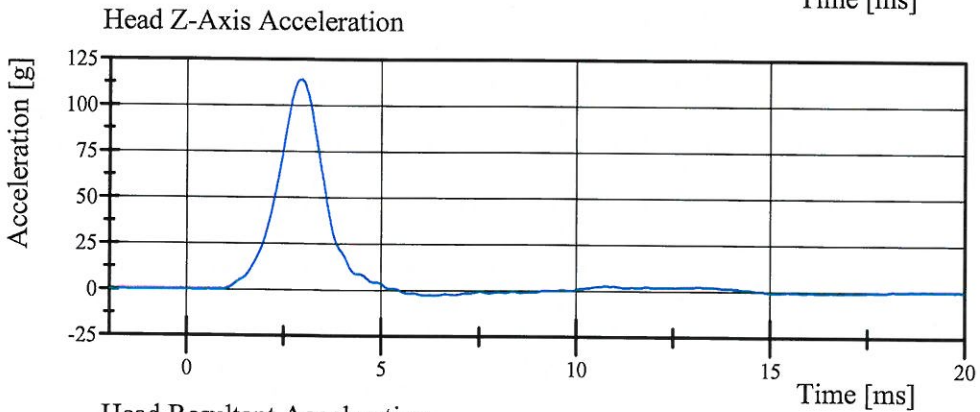
Test Date: 3/20/2012



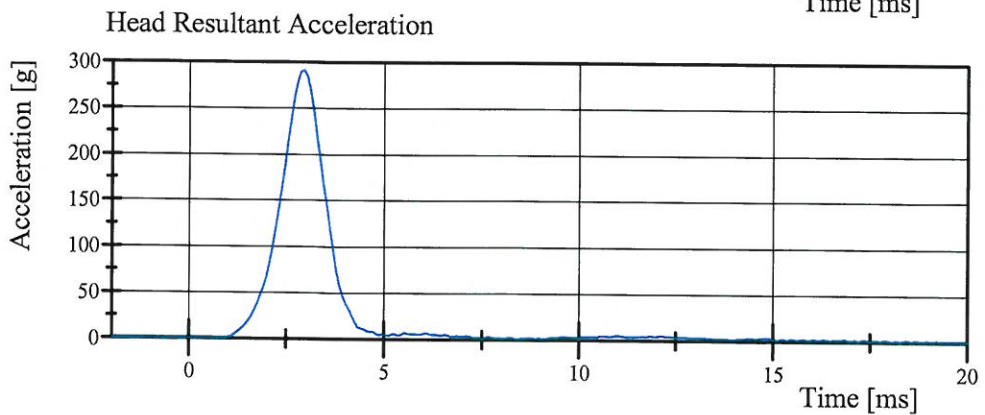
Filter Class: CFC\_1000  
Max: 5.9 gn at 5.6 ms  
Min: -267.5 gn at 3.0 ms



Filter Class: CFC\_1000  
Max: 3.8 gn at 3.9 ms  
Min: -6.9 gn at 4.2 ms



Filter Class: CFC\_1000  
Max: 114.2 gn at 3.0 ms  
Min: -2.8 gn at 6.4 ms



Filter Class: CFC\_1000  
Max: 290.9 gn at 3.0 ms  
Min: 0.0 gn at -0.8 ms

# Transportation Research Center Inc.

Neck Flexion

HIII 6YO Serial No. 182 Certification No. 2-1

Test Date: 3/21/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.0 °C	Yes
Relative Humidity	10 - 70 %	53 %	Yes
Pendulum Impact Velocity	4.83 - 5.07 m/s	4.903 m/s	Yes
Pendulum Integrated Velocity at 10ms	(-1.2) - (-1.6) m/s	-1.56 m/s	Yes
Pendulum Integrated Velocity at 20ms	(-2.4) - (-3.4) m/s	-2.96 m/s	Yes
Pendulum Integrated Velocity at 30ms	(-3.8) - (-5.0) m/s	-4.21 m/s	Yes
Total Head D-Plane Rotation	(-74) - (-92) °	-83.2 °	Yes
Peak Neck Occipital Condyles Moment Between -74° and -92° Rotation	27 - 33 Nm	30.6 Nm	Yes
Neck Occipital Condyles Moment Decay to 5 Nm	103 - 123 ms	115.7 ms	Yes

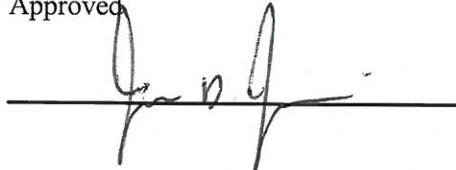
**Test meets specifications.**

**Comments:**

Technician



Approved

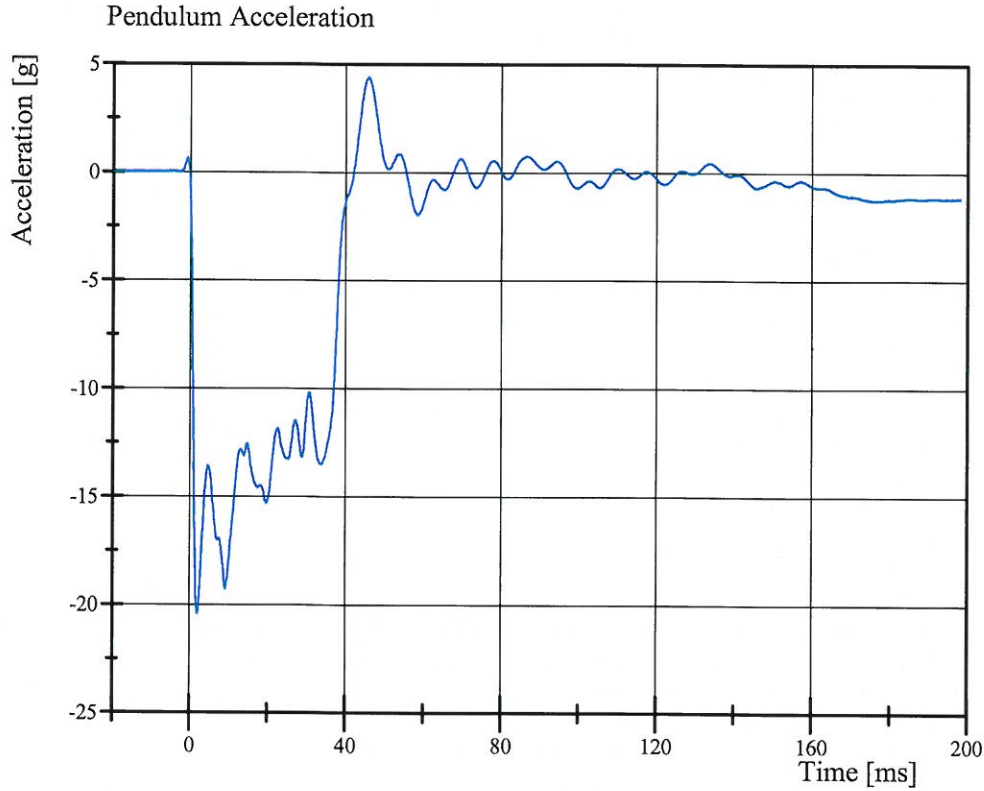


# Transportation Research Center Inc.

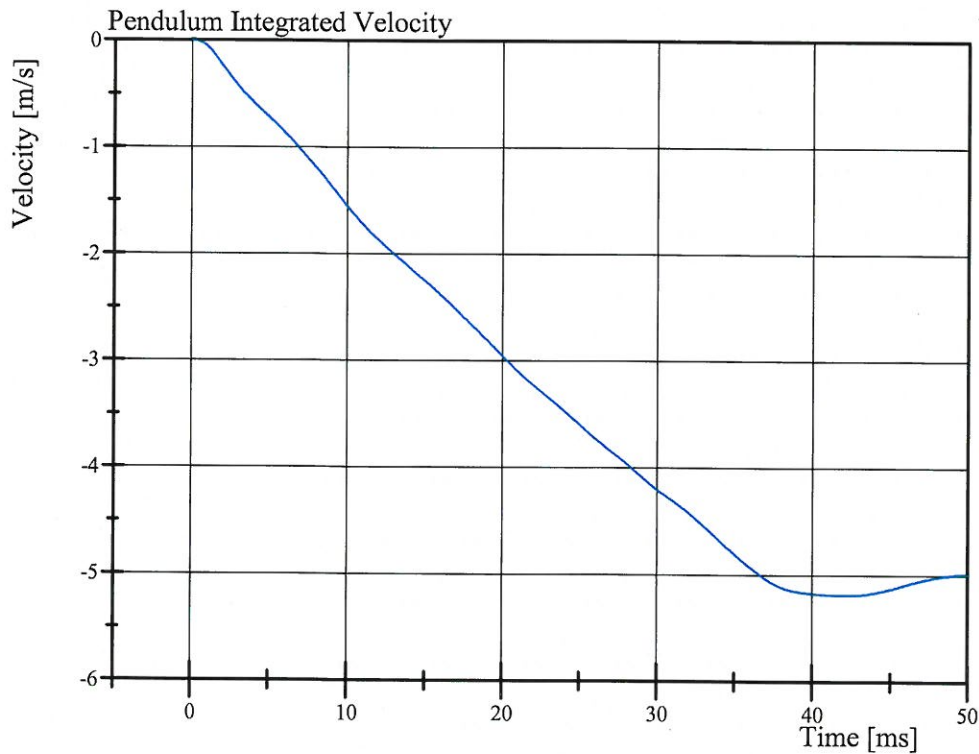
Neck Flexion

HIII 6YO Serial No. 182 Certification No. 2-1

Test Date: 3/21/2012



Filter Class: CFC\_180  
Max: 4.4 gn at 45.9 ms  
Min: -20.4 gn at 2.0 ms



Filter Class: CFC\_180  
Max: 0.0 m/s at 0.0 ms  
Min: -5.2 m/s at 42.1 ms

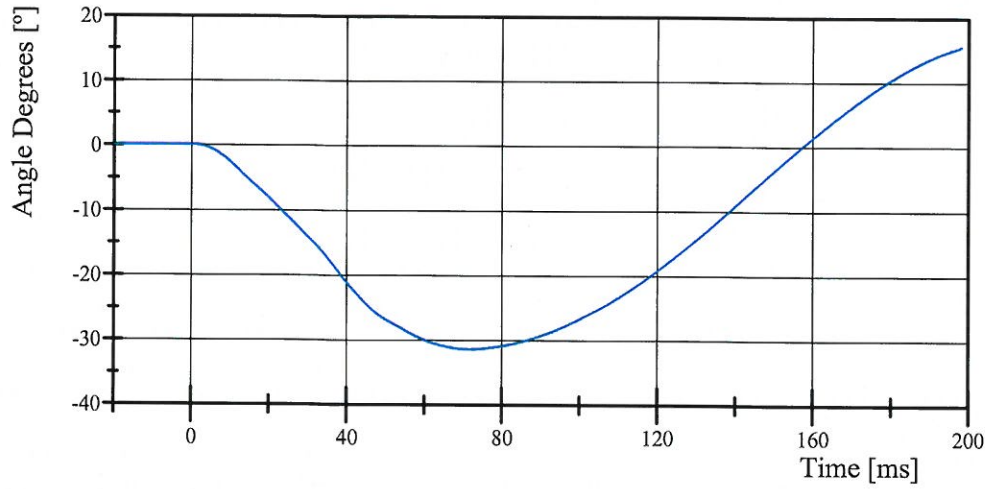
# Transportation Research Center Inc.

## Neck Flexion

HIII 6YO Serial No. 182 Certification No. 2-1

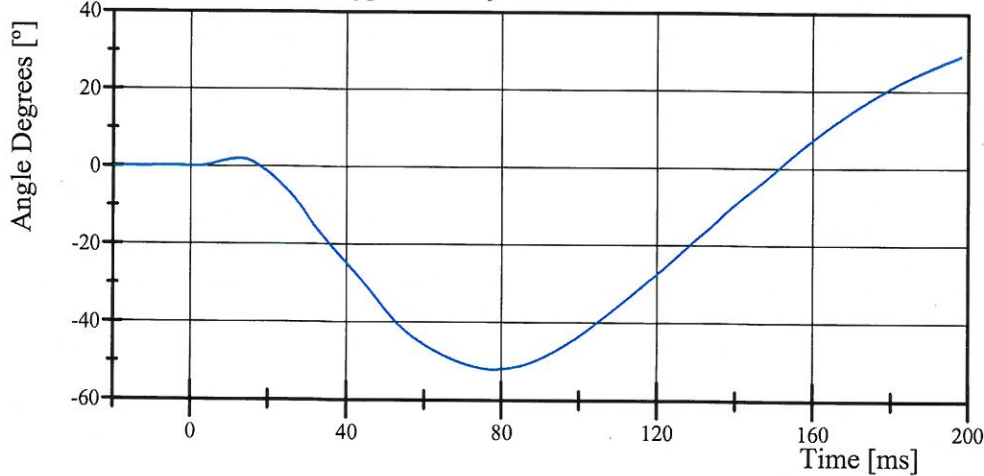
Test Date: 3/21/2012

Pot Rotation at the Base of Neck



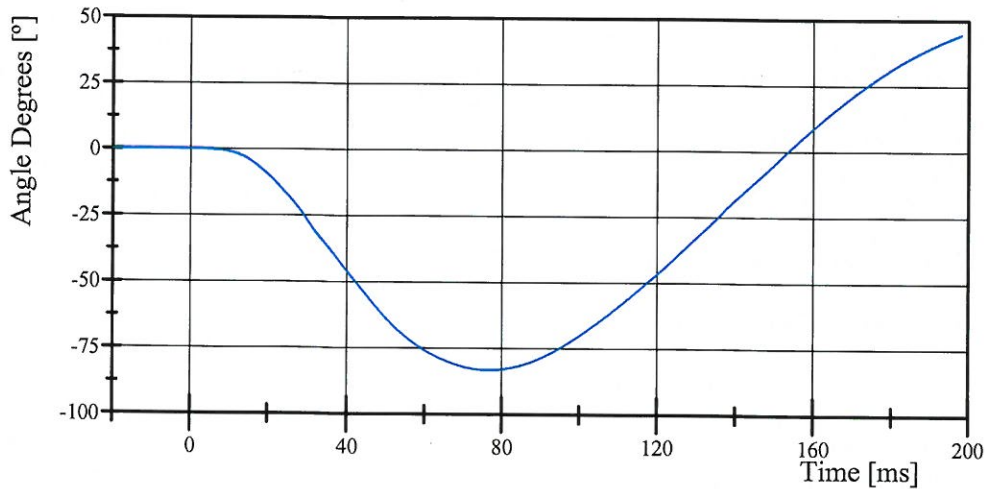
Filter Class: CFC\_60  
Max: 15.5 ° at 198.1 ms  
Min: -31.4 ° at 71.7 ms

Head Rotation at Occypital Condyles



Filter Class: CFC\_60  
Max: 29.1 ° at 198.1 ms  
Min: -52.1 ° at 77.8 ms

Total Head D-Plane Rotation



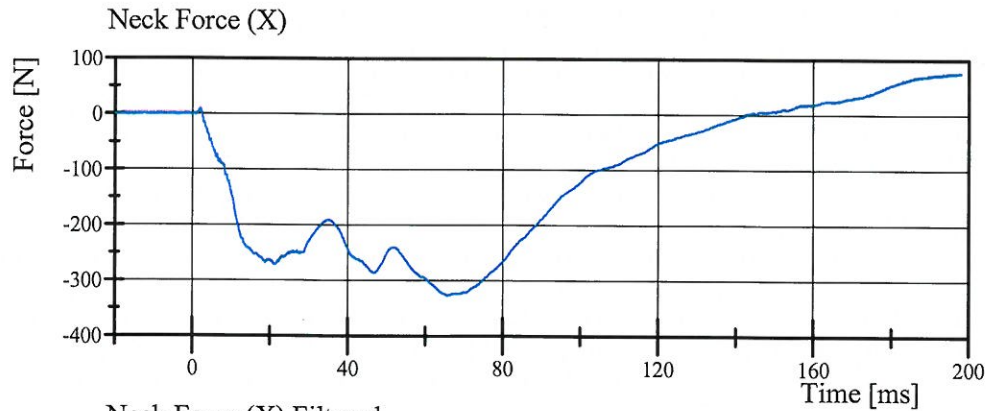
Filter Class: CFC\_60  
Max: 44.6 ° at 198.1 ms  
Min: -83.2 ° at 76.6 ms

# Transportation Research Center Inc.

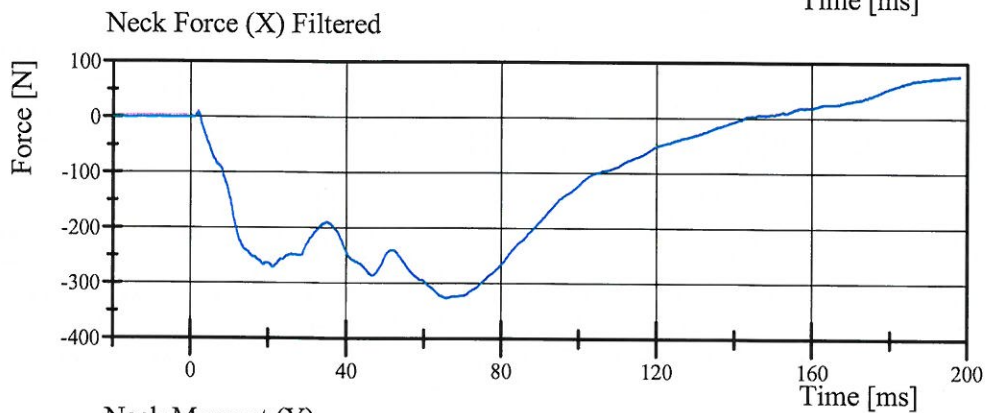
Neck Flexion

HIII 6YO Serial No. 182 Certification No. 2-1

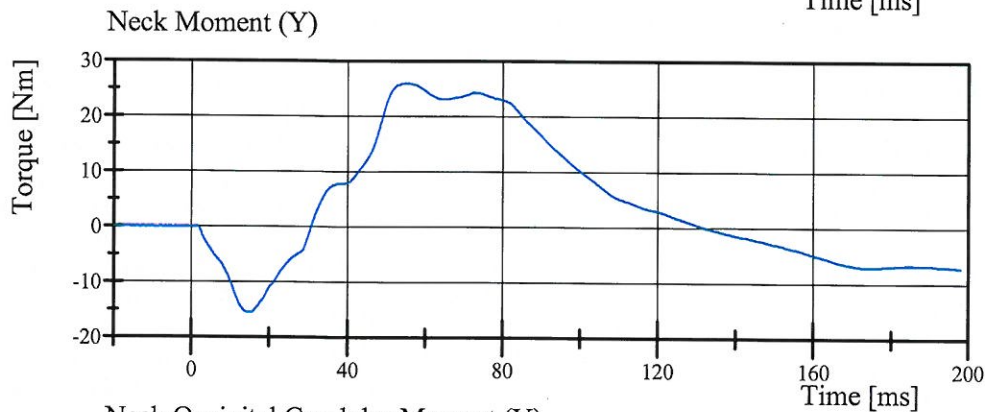
Test Date: 3/21/2012



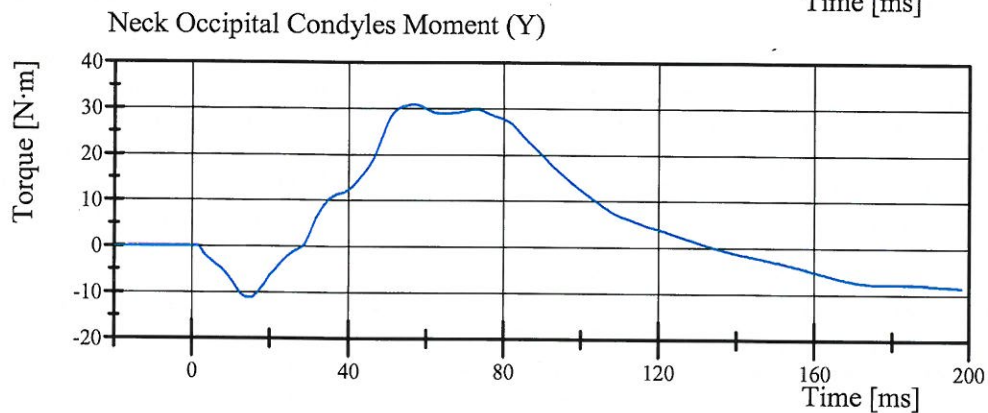
Filter Class: CFC\_1000  
Max: 76.1 N at 197.5 ms  
Min: -327.2 N at 65.8 ms



Filter Class: CFC\_600  
Max: 76.1 N at 198.1 ms  
Min: -326.9 N at 65.7 ms



Filter Class: CFC\_600  
Max: 25.9 Nm at 55.2 ms  
Min: -15.5 Nm at 15.6 ms



Filter Class: Without\_(Consta  
Max: 30.8 N·m at 56.7 ms  
Min: -11.1 N·m at 14.4 ms

# Transportation Research Center Inc.

Neck Extension

HIII 6YO Serial No. 182 Certification No. 2-1

Test Date: 3/21/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.0 °C	Yes
Relative Humidity	10 - 70 %	53 %	Yes
Pendulum Impact Velocity	4.18 - 4.42 m/s	4.266 m/s	Yes
Pendulum Integrated Velocity at 10ms	(-1.0) - (-1.4) m/s	-1.23 m/s	Yes
Pendulum Integrated Velocity at 20ms	(-2.2) - (-3.0) m/s	-2.49 m/s	Yes
Pendulum Integrated Velocity at 30ms	(-3.2) - (-4.2) m/s	-3.62 m/s	Yes
Total Head D-Plane Rotation	85 - 103 °	94.9 °	Yes
Peak Neck Occipital Condyles Moment Between 85° and 103° Rotation	(-19) - (-24) Nm	-22.1 Nm	Yes
Neck Occipital Condyles Moment Decay to 5 Nm	123 - 147 ms	137.6 ms	Yes

**Test meets specifications.**

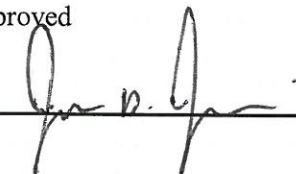
**Comments:**

Technician



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Approved



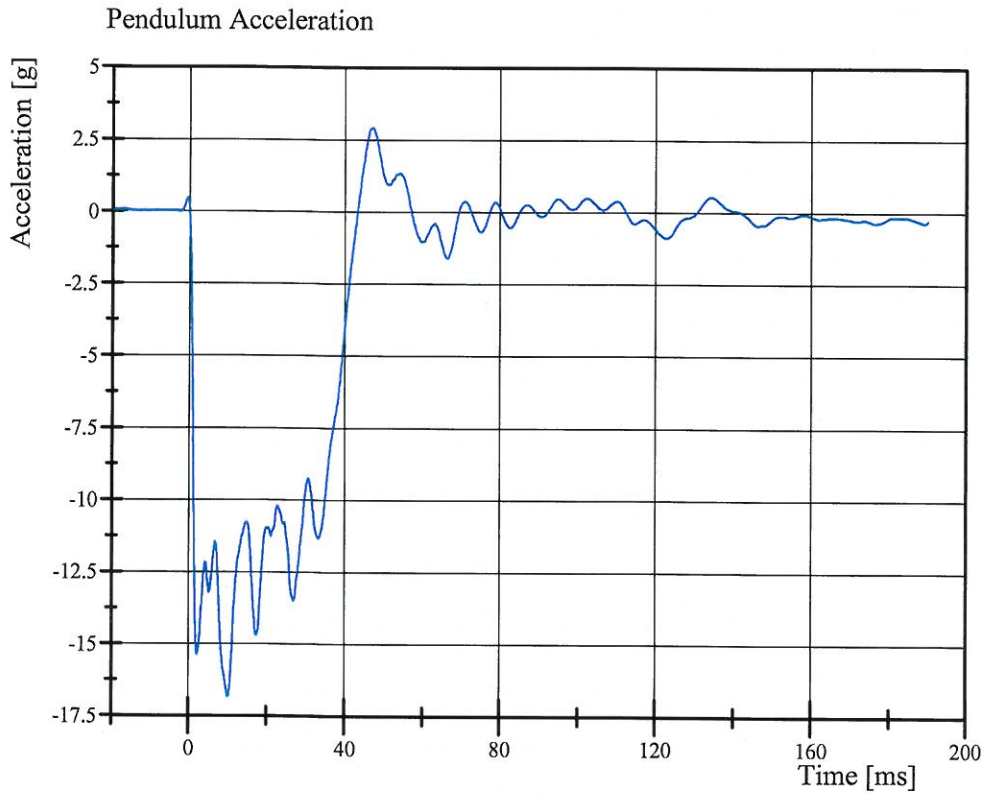
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# Transportation Research Center Inc.

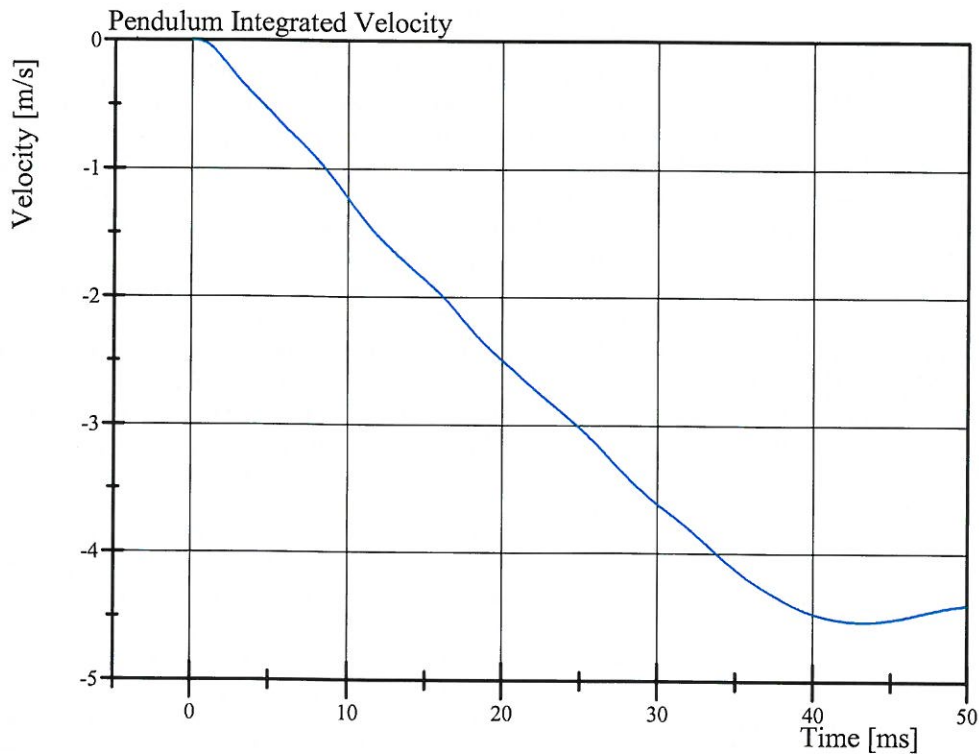
Neck Extension

HIII 6YO Serial No. 182 Certification No. 2-1

Test Date: 3/21/2012



Filter Class: CFC\_180  
Max: 2.9 gn at 47.2 ms  
Min: -16.9 gn at 10.2 ms



Filter Class: CFC\_180  
Max: 0.0 m/s at 0.0 ms  
Min: -4.5 m/s at 43.2 ms

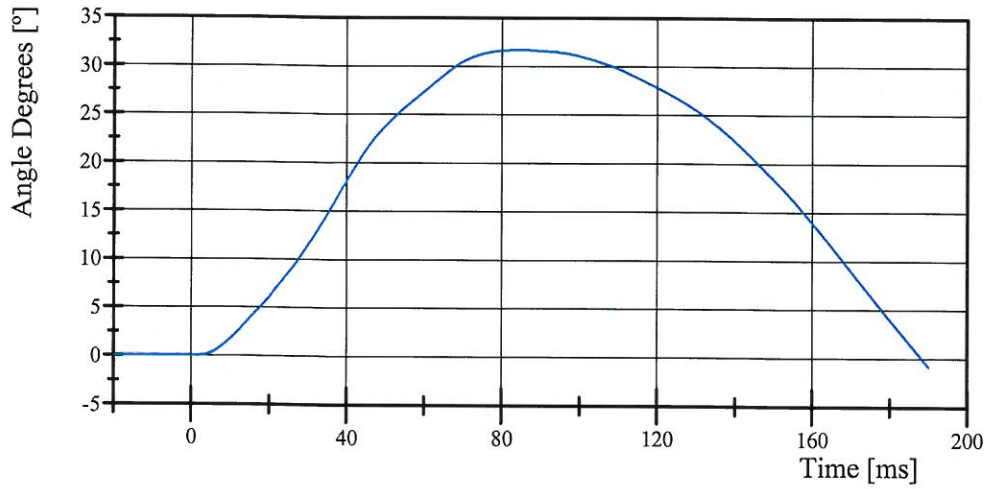
# Transportation Research Center Inc.

Neck Extension

HIII 6YO Serial No. 182 Certification No. 2-1

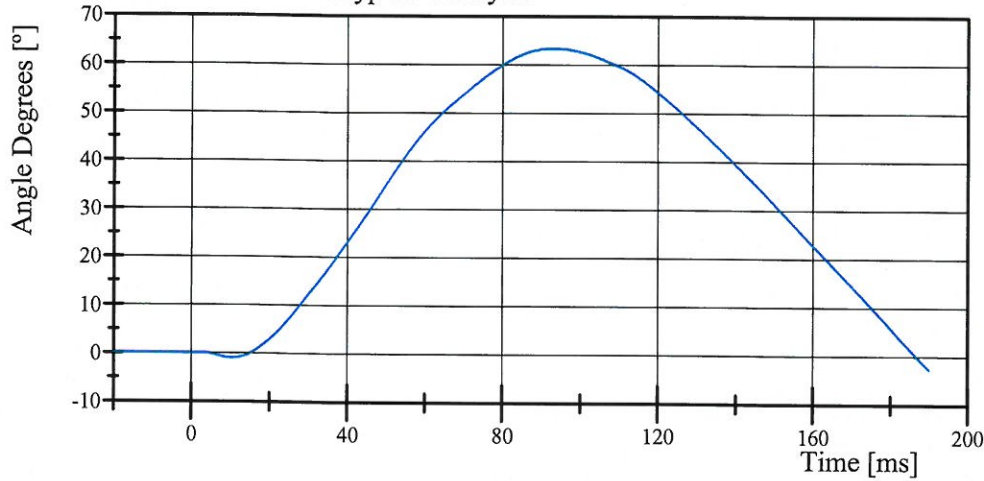
Test Date: 3/21/2012

Pot Rotation at the Base of Neck



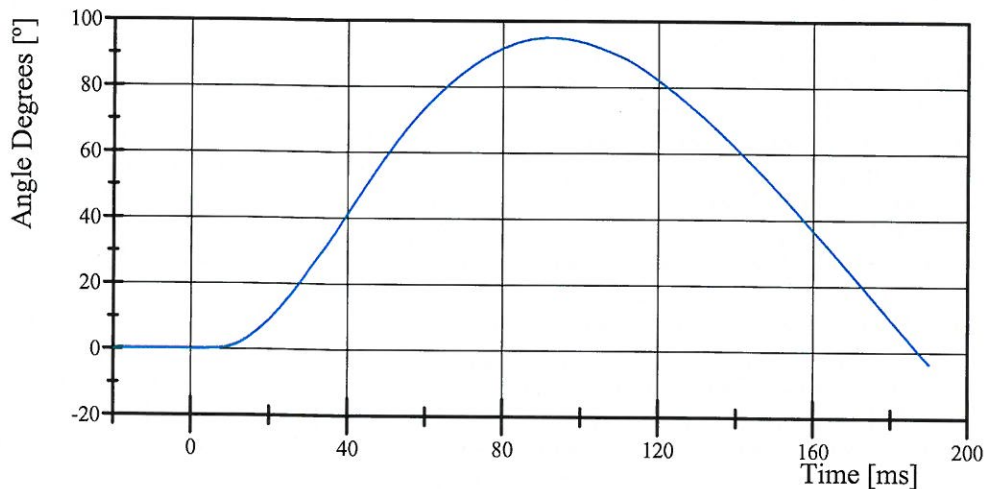
Filter Class: CFC\_60  
Max: 31.7 ° at 84.6 ms  
Min: -0.9 ° at 190.0 ms

Head Rotation at Occypital Condyles



Filter Class: CFC\_60  
Max: 63.4 ° at 92.9 ms  
Min: -2.7 ° at 190.0 ms

Total Head D-Plane Rotation



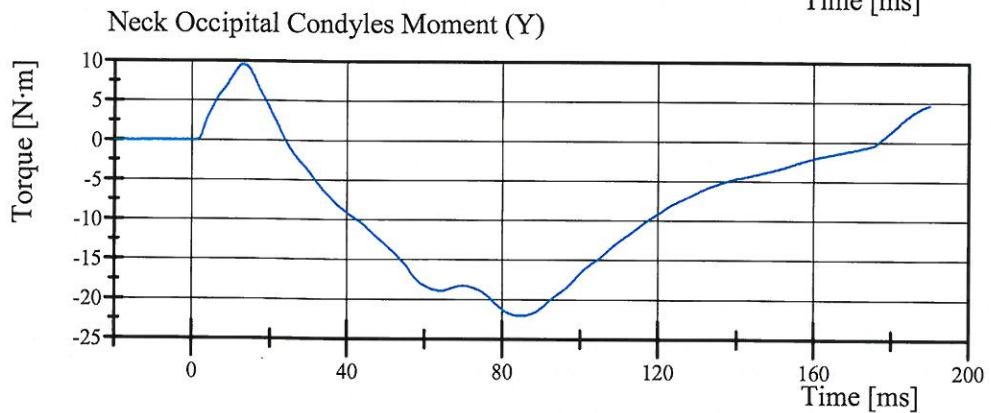
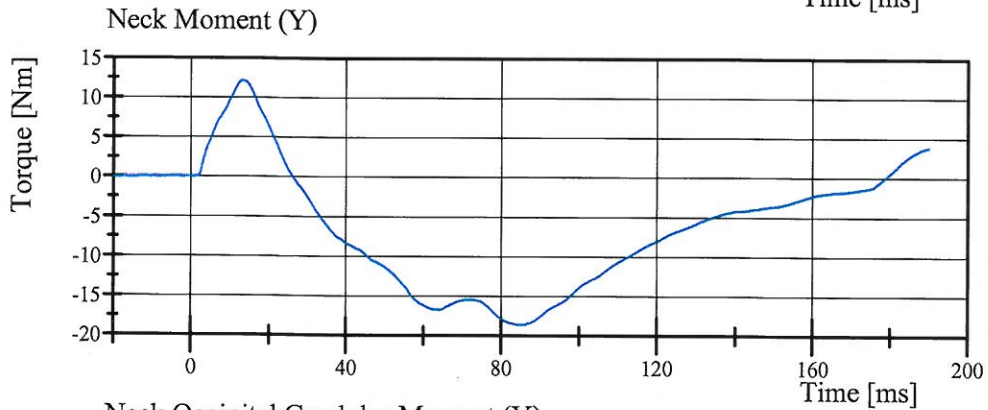
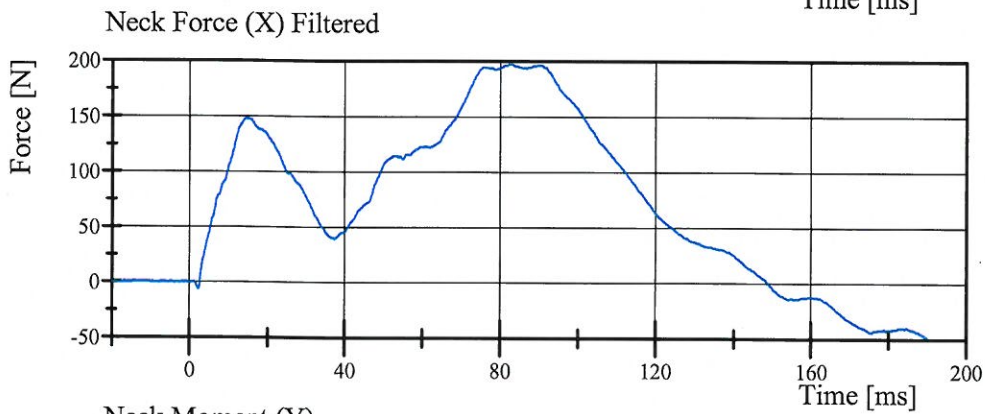
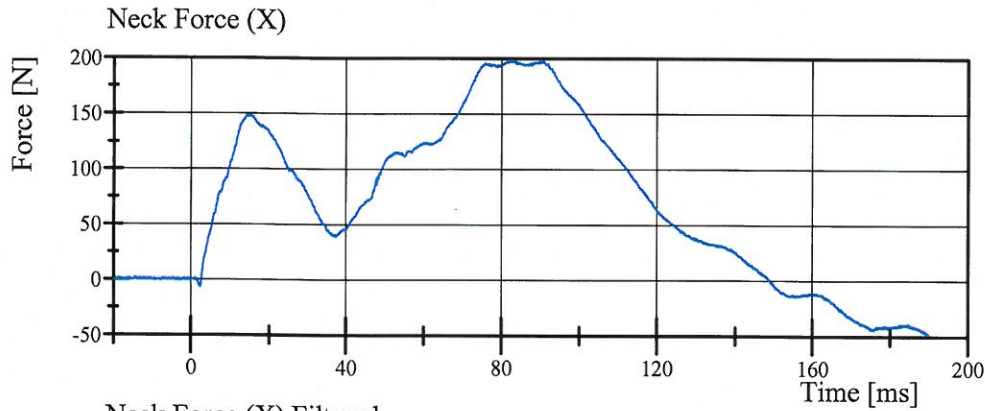
Filter Class: CFC\_60  
Max: 94.9 ° at 92.0 ms  
Min: -3.6 ° at 190.0 ms

# Transportation Research Center Inc.

Neck Extension

HIII 6YO Serial No. 182 Certification No. 2-1

Test Date: 3/21/2012



# Transportation Research Center Inc.

Front Thorax

HIII 6YO Serial No. 182 Certification No. 2-2

Test Date: 3/20/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.694 m/s	Yes
Probe Force Peak Between 38.0 mm and 46.0 mm Chest Deflection	(-1,150) - (-1,380) N	-1,200.2 N	Yes
Probe Force Peak Between 12.5 mm and 38.0 mm Chest Deflection	$\geq$ (-1,500) N	-1,282.9 N	Yes
Maximum Chest Compression	(-38) - (-46) mm	-40.4 mm	Yes
Internal Hysteresis	65 - 85 %	78.3 %	Yes

**Test meets specifications.**

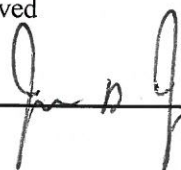
**Comments:**

Technician



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Approved



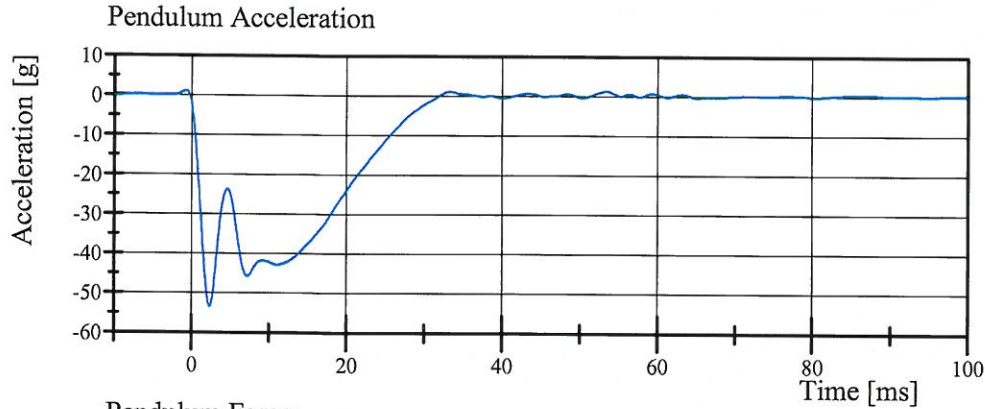
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# Transportation Research Center Inc.

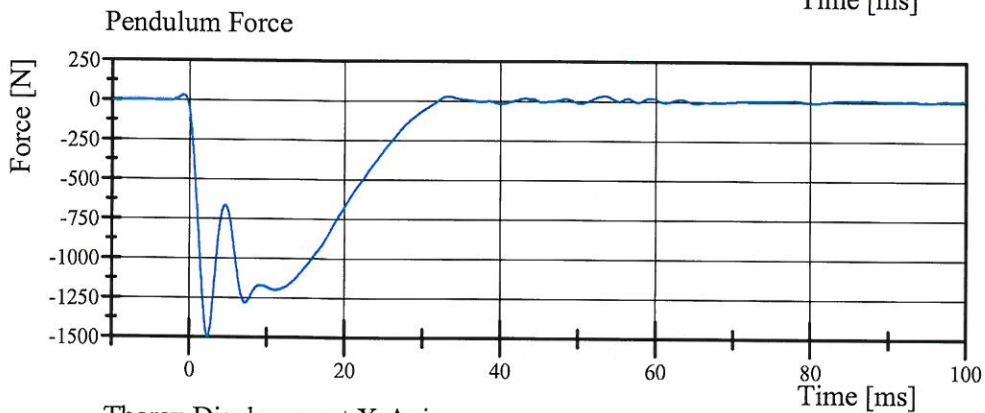
Front Thorax

HIII 6YO Serial No. 182 Certification No. 2-2

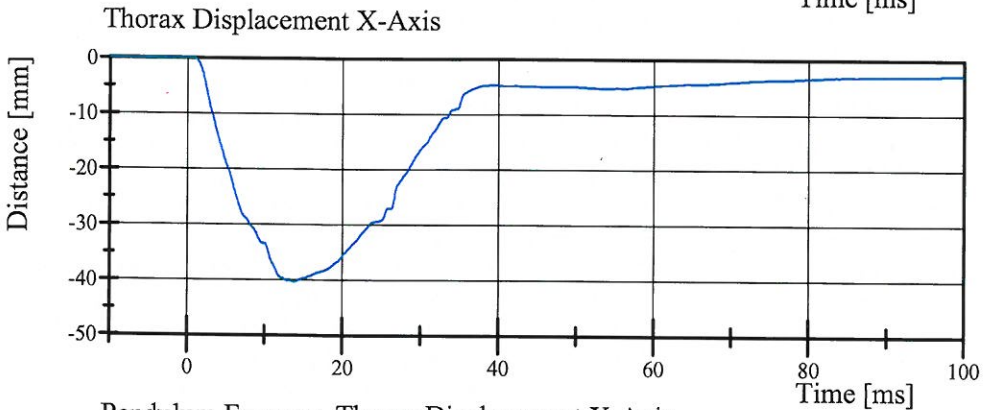
Test Date: 3/20/2012



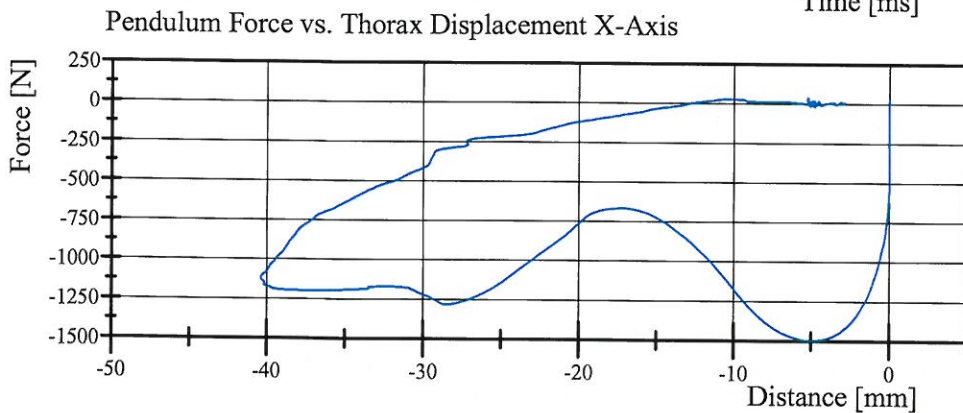
Filter Class: CFC\_180  
Max: 1.3 gn at 53.4 ms  
Min: -53.4 gn at 2.3 ms



Filter Class: CFC\_180  
Max: 36.5 N at 53.4 ms  
Min: -1,498.2 N at 2.3 ms



Filter Class: CFC\_600  
Max: 0.0 mm at -9.7 ms  
Min: -40.4 mm at 13.8 ms



Filter Class: CFC\_180  
Max: 36.5 N at -5.2 mm  
Min: -1,498.2 N at -4.7 mm

TRANSPORTATION RESEARCH CENTER INC.

TORSO FLEXION TEST

HYBRID III 6 Year Old

CAL DATE: 23-Mar-12

TRC, INC.

TEST NO: TOFL-04

572N SN 182 TORSO FLEX CAL 02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TIME		1028
TEMPERATURE	20.6 – 22.2° C	21.7 ° C
RELATIVE HUMIDITY	10 – 70 %	55 %
INITIAL ANGLE OF UNSUPPORTRED DUMMY <u>START ANGLE</u>	<= 22°  REFERENCED  TO VERTICAL	14.8 °
DIFFERENCE BETWEEN <u>RETURN</u> <u>ANGLE</u> & INTIAL ANGLE	+/- 8 ° OF  INTIAL ANGLE	9.1 °
MAXIMUM FORCE AT 45 DEG.  DURING 10 SECOND PERIOD	147 - 200 N	161.9 N
RATE	0.5° - 1.5°/sec	1.04 °/sec

TEST MEETS SPECIFICATIONS

TECHNICIAN



# Transportation Research Center Inc.

Left Knee Femur Response Test

HIII 6YO Serial No. 182 Certification No. 2-1

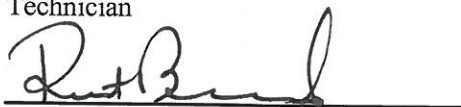
Test Date: 3/20/2012

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	22.0 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Probe Velocity	2.08 - 2.13 m/s	2.129 m/s	Yes
Peak Femur Force	(-2,000) - (-3,000) N	-2,241.8 N	Yes

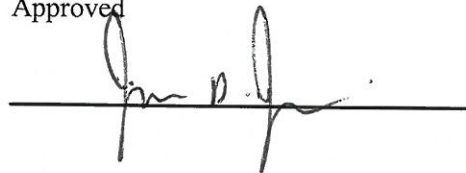
**Test meets specifications.**

**Comments:**

Technician



Approved

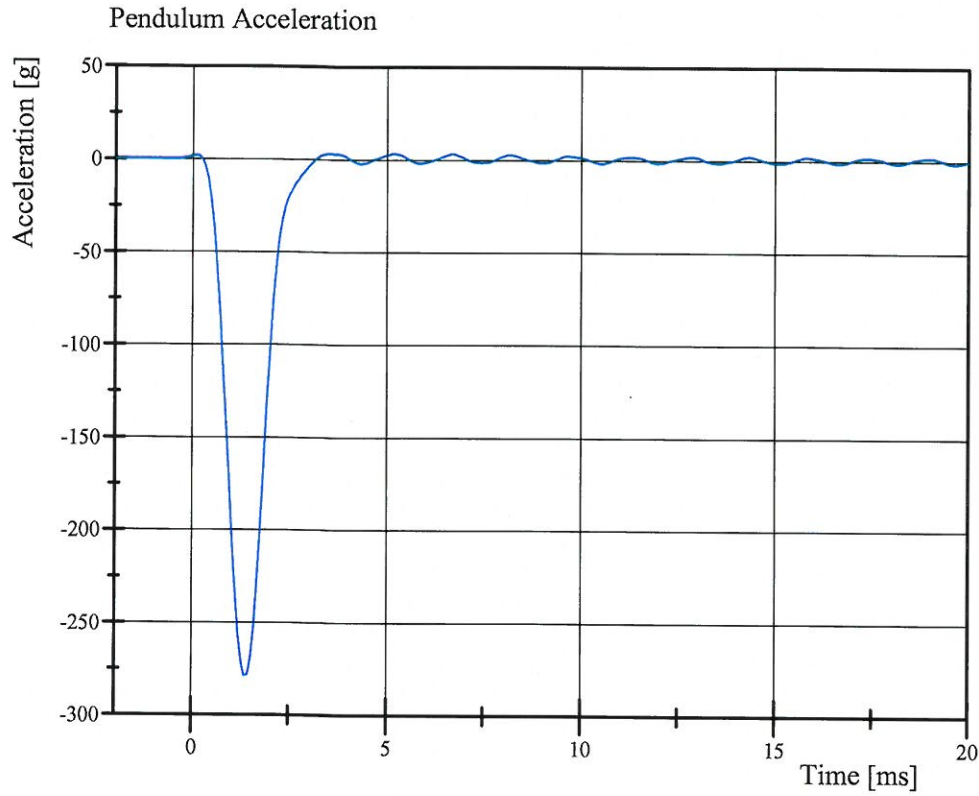


# Transportation Research Center Inc.

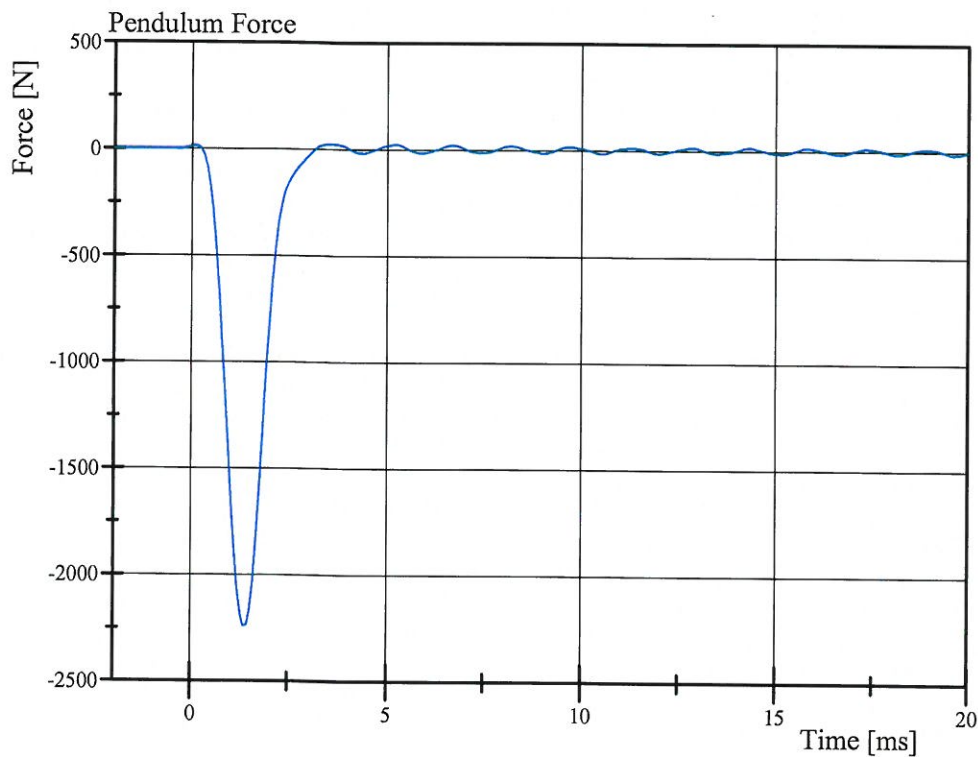
Left Knee Femur Response Test

HIII 6YO Serial No. 182 Certification No. 2-1

Test Date: 3/20/2012



Filter Class: CFC\_600  
Max: 3.0 gn at 5.2 ms  
Min: -278.8 gn at 1.4 ms



Filter Class: CFC\_600  
Max: 23.9 N at 5.2 ms  
Min: -2,241.8 N at 1.4 ms

# Transportation Research Center Inc.

Right Knee Femur Response Test

HIII 6YO Serial No. 182 Certification No. 2-1

Test Date: 3/20/2012

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Probe Velocity	2.08 - 2.13 m/s	2.127 m/s	Yes
Peak Femur Force	(-2,000) - (-3,000) N	-2,036.3 N	Yes

**Test meets specifications.**

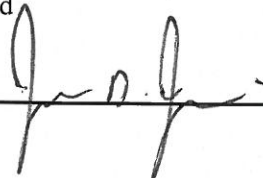
**Comments:**

Technician



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Approved



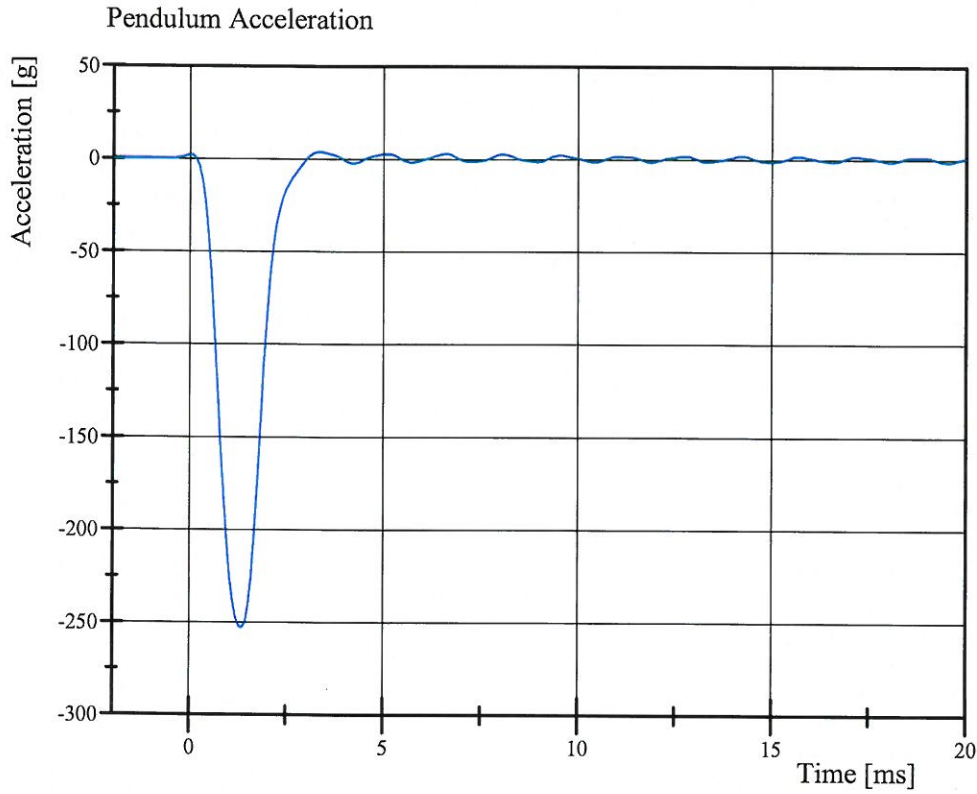
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# Transportation Research Center Inc.

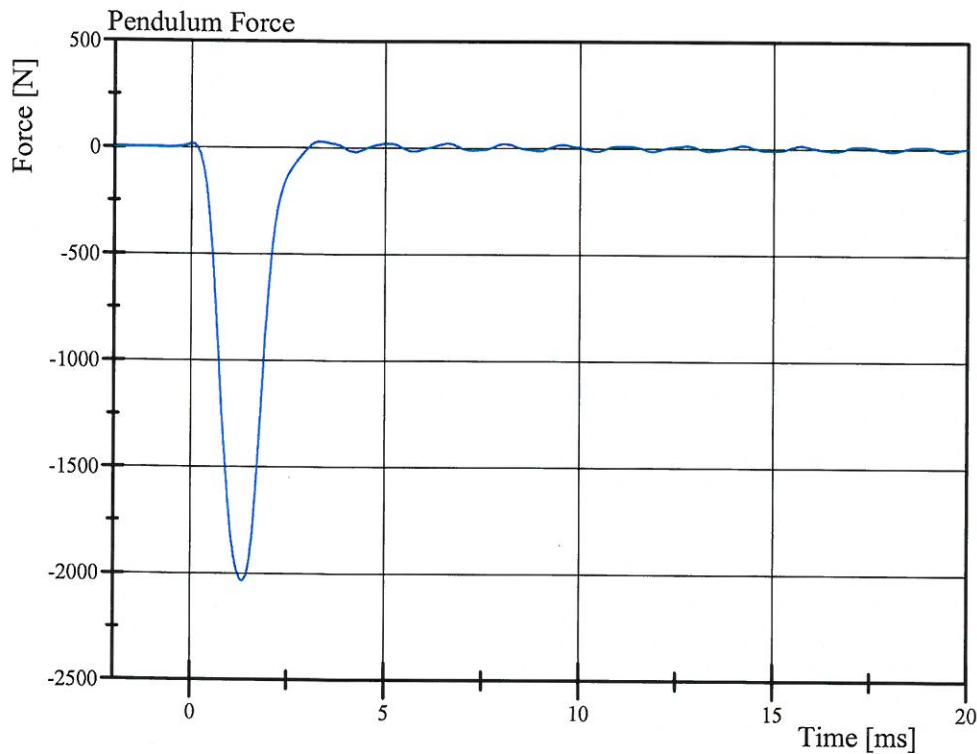
Right Knee Femur Response Test

HIII 6YO Serial No. 182 Certification No. 2-1

Test Date: 3/20/2012



Filter Class: CFC\_600  
Max: 3.5 gn at 3.4 ms  
Min: -253.2 gn at 1.4 ms



Filter Class: CFC\_600  
Max: 28.3 N at 3.4 ms  
Min: -2,036.3 N at 1.4 ms

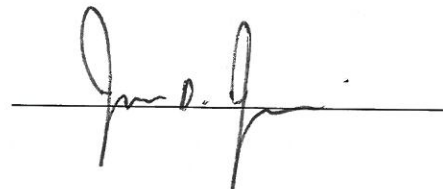
**Transportation Research Center Inc.**  
**572N HIII 6 Year Old Dummy**  
**External Dimensions**  
**Serial No. 182 Calibration No. 02**

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	622.3 - 647.7	634	Yes
B	Shoulder Pivot Height	348.0 - 363.2	357	Yes
C	Hip Pivot Height	63.5 - 73.7	69	Yes
D	Hip Pivot from Backline	88.9 - 99.1	97	Yes
E	Shoulder Pivot from Backline	53.3 - 63.5	62	Yes
F	Thigh Clearance	88.9 - 104.1	100	Yes
G	Back of Elbow to Wrist Pivot	182.9 - 198.1	191	Yes
H	Head Back to Backline	17.8 - 22.8	22	Yes
I	Shoulder to Elbow Length	215.9 - 231.1	220	Yes
J	Elbow Rest Height	157.4 - 177.8	160	Yes
K	Buttock to Knee Length	370.8 - 391.2	386	Yes
L	Popliteal Height	269.2 - 289.6	280	Yes
M	Knee to Floor Height	307.4 - 322.6	314	Yes
N	Buttock Popliteal Height	320.0 - 340.4	327	Yes
O	Chest Depth without Jacket	129.6 - 144.8	141	Yes
P	Foot Length	170.2 - 185.4	171	Yes
Q	Stature (Q=A-C-D+R+M)	1099.9 - 1181.1	1130	Yes
R	Buttock to Knee Pivot Length	342.9 - 363.2	345	Yes
S	Head Breadth	137.1 - 147.3	140	Yes
T	Head Depth	167.6 - 177.8	175	Yes
U	Hip Breadth	208.3 - 223.5	222	Yes
V	Shoulder Breadth	259.1 - 274.3	270	Yes
W	Foot Breadth	62.3 - 77.5	66	Yes
X	Head Circumference	510.5 - 530.9	522	Yes
Y	Chest Circumference with Jacket	596.9 - 622.3	610	Yes
Z	Waist Circumference	558.8 - 584.2	572	Yes
AA	Reference Location for Chest Circumferenc	325.1 - 335.3	331	Yes
BB	Reference Location for Waist Circumferenc	153.7 - 163.9	156	Yes

Technician



Approved




Test Vehicle: 2013 Fiat 500 3-Door Hatchback  
Test Program: Occupant Out-Of-Position

NHTSA Number: MD 0306 TWG 2  
Test Date: February 07, 2013

**APPENDIX D  
INSTRUMENTATION CALIBRATION DATA**

TABLE 1 - DUMMY INSTRUMENTATION - HYBRID III 6-YEAR-OLD				
		Hybrid III 6-Year-Old S/N: 182		
		Serial Number	Manufacturer	Calibration Date
Head Accelerometers	X	P58771	Endevco	13/MAR/2012
	Y	P63954	Endevco	13/MAR/2012
	Z	P51954	Endevco	13/MAR/2012
Neck Load Cells	Upper	1647	Denton	14/MAR/2012
	Lower	147	Denton	15/MAR/2012
Middle Spine Accelerometers (T <sub>4</sub> )	X	12122	Endevco	08/AUG/2012
	Y	12120	Endevco	16/JUN/2012
	Z	12116	Endevco	16/JUN/2012
Upper Spine Accelerometers (T <sub>1</sub> )	X	12108	Endevco	16/JUN/2012
Middle Spine Accelerometers (T <sub>6</sub> )	X	12106	Endevco	16/JUN/2012
Upper Sternum Accelerometer	X	J35768	Endevco	06/AUG/2012
Lower Sternum Accelerometer	X	J43740	Endevco	06/AUG/2012
Chest Displacement Potentiometer	X	CST-182	VRTC	14/MAR/2012