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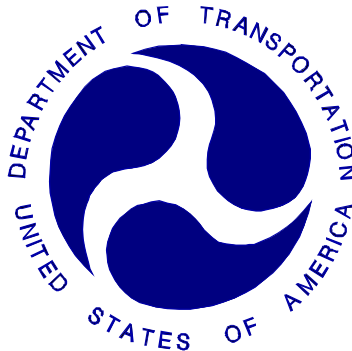
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

GENERAL MOTORS OF CANADA, LTD.
2005 BUICK LACROSSE
4-DOOR SEDAN

NHTSA NUMBER: M50102

GENERAL DYNAMICS TEST NUMBER: 8642-NCAP-54

GENERAL DYNAMICS
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December 17, 2004

FINAL REPORT

PREPARED FOR:

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National Highway Traffic Safety Administration
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				14. <i>Sponsoring Agency Code</i> NVS-111	
15. <i>Supplementary Notes</i>					
16. <i>Abstract</i> A frontal load cell barrier test of a 2005 Buick LaCrosse 4-Door Sedan was performed at General Dynamics crash test facility in Buffalo, New York, on December 17, 2004. The impact velocity was 56.49 kph and the temperature at the barrier face was 21.0 °C. The maximum post-test vehicle crush was 633 mm. The test vehicle was equipped with 3-point restraint systems, knee bolsters, and airbags at both the driver and right outboard passenger seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements.					
ATD Position	HIC	Clip (g's)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)
Driver (061)	374.0	42.6	-31.3	-4886.4	-4944.9
Passenger (064)	259.2	42.1	-26.5	-4044.2	-1803.4
17. <i>Key Words</i> 56 kph Frontal Barrier Impact test New Car Assessment Program (NCAP)				18. <i>Distribution Statement</i> Copies of this report are available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5111 Washington, DC 20590	
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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.49 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-01-D-32005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 56.49 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 56.49 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated December 1999. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

One real-time camera and 16 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with nine accelerometer array heads, chest and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also installed on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 061) and the right-front passenger (position 2) ATD (Serial No.064) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 196 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Appendix C contains the dummy calibration data and Appendix D contains the transducer calibration dates.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 36 load cells was impacted by a 2005 Buick LaCrosse 4-Door Sedan at a velocity of 56.49 kph. The test was performed at General Dynamics on December 17, 2004. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The occupant data is summarized below.

	HIC	Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)	Belt Stretch (mm/50 mm)
Driver ATD	374.0	42.6	-31.3	-4886.4	-4944.9	197	0
Passenger ATD	259.2	42.1	-26.5	-4044.2	-1803.4	245	0

AUTOMATIC DOOR LOCK SUMMARY

ADL Equipped Test Vehicle:	Yes
ADL Activation Status:	No (System can be deactivated)
Door Lock Condition:	Unlocked

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum vehicle static crush was 633 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The face to the upper center of the airbag, the back of the head to the center of the head restraint, the chest to the airbag and the left and right knees to the knee bolster. The passenger's visible contact points were as follows: The face to the center of the airbag, the top of the head to the sun visor, the chest to the airbag and the left and right knees to the glove compartment door.

The 2005 Buick LaCrosse 4-Door Sedan did not exceed the requirements of FMVSS 208, FMVSS 212, FMVSS 219, and FMVSS 301. Data pertaining to these standards are presented in the data sheets.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No.:	<u>M50102</u>	Test Mode:	<u>56.3 kph Frontal Barrier</u>
Test Date:	<u>December 17, 2004</u>	Time:	<u>14:25</u> Temperature: <u>21.0</u> °C
Vehicle Make/Model/Body Style:	<u>2005 Buick LaCrosse 4-Door Sedan</u>		
Vehicle Test Weight:	<u>1832.0</u>	kg	
Vehicle/Barrier Impact Angle:	<u>0</u>	°	
Impact Velocity:	<u>56.49</u>	kph	
Maximum Static Crush:	<u>633</u>	mm	
Vehicle Rebound:	<u>435</u>	mm	
<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Type:	<u>572E</u>	<u>572E</u>	
Restraint System:	<u>Three point safety belt with buckle pretensioner and shoulder belt force limiters, airbag, knee bolster and head restraint</u>	<u>Three point safety belt with buckle pretensioner and shoulder belt force limiters, airbag, knee bolster and head restraint</u>	
Number of Data Channels:	<u>196</u>		
Number of Cameras:	<u>1</u>	Real Time	
	<u>16</u>	High Speed	
<u>DOOR OPENING DATA:</u>	<u>Closed, latched and operable without tools - Left Front</u>		
	<u>Closed, latched and operable without tools - Right Front</u>		
Front Seat(s) Data:	<u>DRIVER</u>	<u>PASSENGER</u>	
Seat Track Failure: (mm of shift)	<u>20 forward</u>	<u>10 forward</u>	
Seat Back Failure:	<u>None</u>	<u>None</u>	
<u>VISIBLE DUMMY CONTACT POINTS:</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Head:	<u>The face to the upper center of the airbag, the back of the head to the center of the head restraint</u>	<u>The face to the center of the airbag, the top of the head to the sun visor</u>	
Abdomen:	<u>-</u>	<u>-</u>	
Chest:	<u>Airbag</u>	<u>Airbag</u>	
Knees:	<u>Knee bolster</u>	<u>Glove compartment door</u>	

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2005 Buick LaCrosse 4-Door Sedan

NHTSA No. : M50102 ; VIN: 2G4WC532151190569 ; Color: Silver

Engine Data: 6 cylinders; - CID; 3.8 Liters; - cc

Placement: - Longitudinal or In-Line; X Transverse or Lateral

Transmission Data: 4 speeds; - Manual; X Automatic; X Overdrive

Final Drive: - Rear Wheel Drive; X Front Wheel Drive; - Four Wheel Drive

Safety Belt Features – Driver X Pretensioner (Buckle); X Load Limiter; X Adj. Anchorage

Safety Belt Features - Passenger X Pretensioner (Buckle); X Load Limiter; X Adj. Anchorage

Major Options: X ADLs; X A/C; X Pwr.Strg.; X Pwr. Brakes

X Pwr. Windows; X Pwr. Door Locks; X Tilt Wheel

Date Received: 11/24/2004 ; Odometer Reading 121 km

Selling Dealer: Skill Buick Co., Inc.

& Address: 363 Delaware St., Tonawanda, NY 14150

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: General Motors of Canada, Ltd.

Date of Manufacture 10/04

GVWR: 2044 kg; GAWR: 1114 kg FRONT; 930 kg REAR

DATA FROM TIRE PLACARD:

Recommended Tire Size: P225/60R16

* Recommended Cold Tire Pressure: 210 kPa FRONT; 210 kPa REAR

DATA FROM TIRE SIDEWALL:

Size of Tires on Test Vehicle: P225/60R16 97S ; Manufacturer: Goodyear Integrity

Tire Pressure with Maximum Capacity Vehicle Load: Front: 300 kPa; Rear: 300 kPa

Treadwear: 460 ; Traction: A ; Temperature: B

VEHICLE CAPACITY DATA:

Type of Front Seats: - Bench; X Bucket; - Split Bench

Number of Occupants: 2 Front; 3 Rear; 5 Total

Vehicle Capacity Weight (VCW) = 416 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 75.8 kg

*Tire pressure used for test

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

Right Front	=	<u>518.0</u>	kg	Right Rear	=	<u>298.0</u>	kg
Left Front	=	<u>500.0</u>	kg	Left Rear	=	<u>297.0</u>	kg
TOTAL FRONT	=	<u>1018.0</u>	kg	TOTAL REAR	=	<u>595.0</u>	kg
TOTAL DELIVERED WEIGHT	=	<u>1613.0</u>	kg				
% of Total Front of Vehicle Weight	=	<u>63.1</u>		% of Total Rear Weight	=	<u>36.9</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW)	=	<u>1613.0</u>	kg
Rated Cargo/Luggage Weight (RCLW)	=	<u>75.8</u>	kg
Weight of 2 p.572 Dummies @ 76 each	=	<u>152</u>	kg
TARGET TEST WEIGHT	=	<u>1840.8</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 67.0 KG OF CARGO WEIGHT:

Right Front	=	<u>546.5</u>	kg	Right Rear	=	<u>369.5</u>	kg
Left Front	=	<u>540.5</u>	kg	Left Rear	=	<u>375.5</u>	kg
TOTAL FRONT	=	<u>1087.0</u>	kg	TOTAL REAR	=	<u>745.0</u>	kg
TOTAL TEST WEIGHT	=	<u>1832.0</u>	kg				
% of Total Front Weight	=	<u>59.3</u>	%	% of Total Rear Weight	=	<u>40.7</u>	%
Weight of Ballast Secured in Vehicle Trunk Area	=	<u>0</u>	kg				
Vehicle Components Removed for Weight Reduction:		<u>Trunk lid, tail lights, and muffler</u>					

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED:	RF	<u>742</u>	LF	<u>745</u>	RR	<u>745</u>	LR	<u>743</u>
FULLY LOADED:	RF	<u>729</u>	LF	<u>729</u>	RR	<u>710</u>	LR	<u>712</u>
AS TESTED:	RF	<u>729</u>	LF	<u>733</u>	RR	<u>710</u>	LR	<u>712</u>
Vehicle's Wheel Base:		<u>2815</u>	mm					
Location of Vehicle's C.G.:		<u>1145</u>	mm rearward of front wheel center.					

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual	=	<u>66.0</u>	liters
Usable Capacity Figure Furnished by COTR	=	<u>64.0</u>	liters
Test Volume Range (92 to 94% of Usable Capacity)	=	<u>58.88</u>	to <u>60.16</u> liters
ACTUAL TEST VOLUME	=	<u>21.2†</u>	liters (with entire fuel system filled)
Test Fluid Type:	<u>Stoddard Solution</u>	;	Spec. Grav. = <u>0.764</u>
Kinematic Viscosity	=	<u>0.96</u>	centistokes; Color = <u>Orange</u>
Type of Fuel Pump: Electric-	<u>X</u>	;	Mechanical- <u>-</u>
Does Electric Pump operate with ignition switch "ON" & engine "OFF"	Yes- <u>X</u>	No- <u>-</u>	
Details of Fuel System:	<u>Tank – centered ahead of the rear axle; Lines – Inboard of left frame stiffener;</u>		
Filler neck	<u>Left rear quarter panel, rear of the rear axle.</u>		

† With the COTR's permission, the test volume was reduced to achieve target test weight.

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°
Test Date: December 17, 2004 Time: 14:25 Temperature: 21.0 °C
Vehicle NHTSA No.: M50102
Required Impact Velocity Range: 55.5 to 57.1 kph

BARRIER IMPACT VELOCITY: (Speed traps within 5 feet of impact plane.)

Trap No. 1 = 56.49 kph; Trap No. 2 = 56.49 kph
Distance from vehicle to barrier: (1) entering trap = 813 mm
(2) exiting trap = 305 mm

VEHICLE STATIC CRUSH: (mm) (For frontal and rear impacts only.)

Vehicle Length:

Pre-Test	Left = <u>4962</u> ; C/L = <u>5035</u> ; Right = <u>4960</u>
Post-Test	Left = <u>4378</u> ; C/L = <u>4412</u> ; Right = <u>4373</u>
Crush	Left = <u>584</u> ; C/L = <u>623</u> ; Right = <u>587</u>
AVERAGE	= <u>598</u> mm

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

	Left = <u>452</u> ; C/L = <u>405</u> ; Right = <u>449</u>
AVERAGE	= <u>435</u> mm

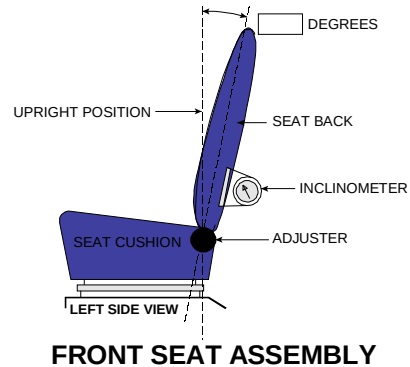
DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2005 Vehicle Model: Buick LaCrosse Body Style : 4-Door Sedan

1. NOMINAL DESIGN RIDING POSITION:

for adjustable driver and passenger seat backs.
Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



Seat back angle for driver's seat: 15

Measurement instructions: The seat back was placed 15 degrees back from its forward-most locking position (detent 8, where the forward-most detent is defined as 0)

Seat back angle for passenger's seat: 15

Measurement instructions: The seat back was placed 15 degrees back from its forward-most locking position (detent 8, where the forward-most detent is defined as 0)

2. SEAT FORE AND AFT POSITIONING:

Positioning of the driver's seat: The seat cushion was placed at the full down and at the middle of its absolute fore/aft travel (placed 123.5 mm forward of its rearward-most position, where the absolute travel was 247 mm)

Positioning of the passenger's seat: The seat cushion was placed at the middle of its absolute fore/aft travel (placed 120 mm forward of its rearward-most position, where the absolute travel was 240 mm)

3. FUEL TANK CAPACITY DATA:

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 66 liters

B. "Usable Capacity" of the optional equipment fuel tank is - liters

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 64 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 21.2 liters

3.3 Is vehicle equipped with electric fuel pump? Yes- ☒ ; No- ☐

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

The fuel pump operates briefly when the ignition key is turned to the 'ON' position and the engine is not running.

The fuel pump operates continuously while the engine is running.

DATA SHEET NO. 4 TEST VEHICLE INFORMATION (cont.)

4. STEERING COLUMN ADJUSTMENTS:

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions: The steering column was placed 12.5 degrees down from its upper-most tilt locking position (detent 5, where the upper-most detent is defined as 0 and there are 10 detents total)

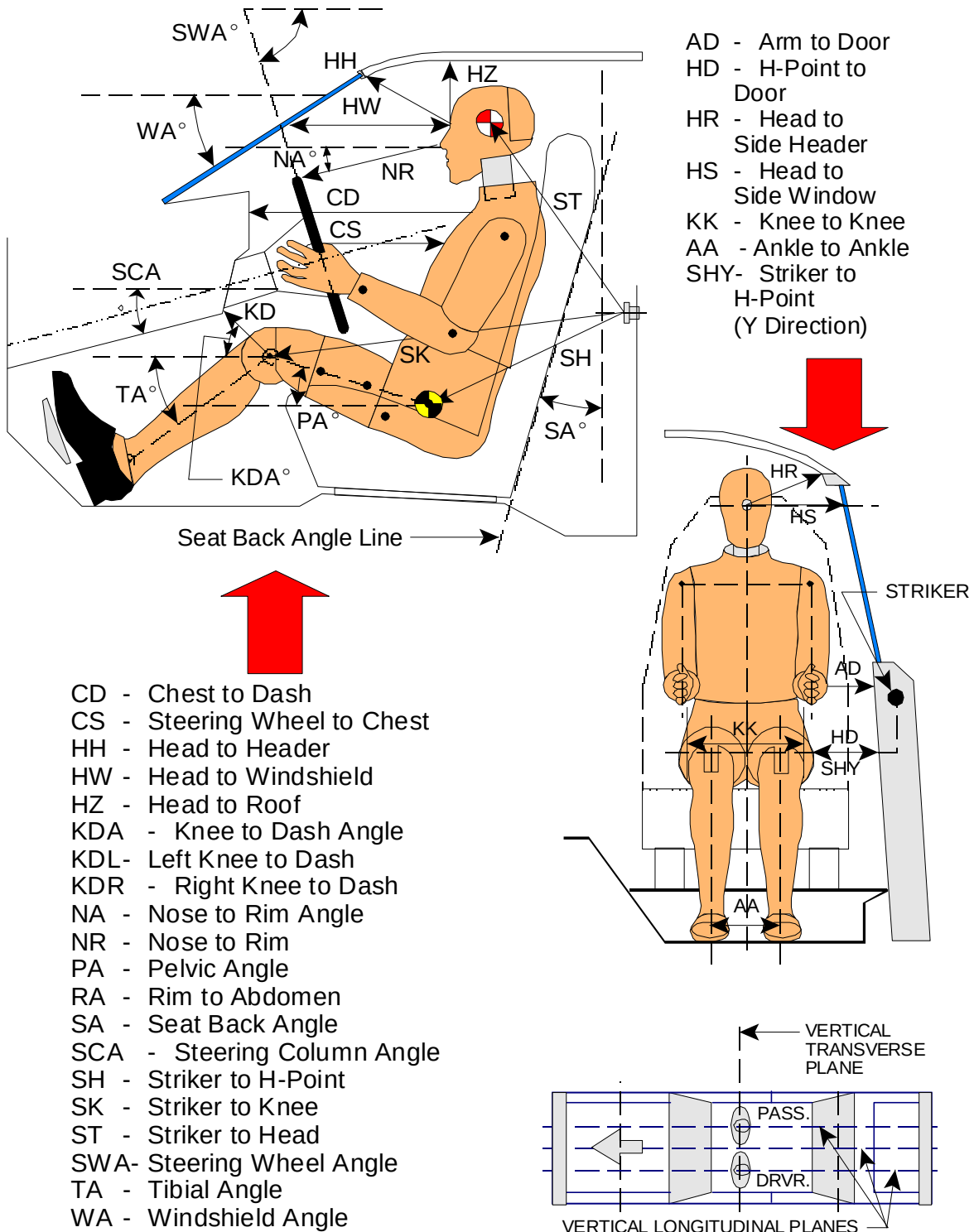
5. SEAT BELT UPPER ANCHORAGE:

Nominal design riding position: The seat belt upper anchorage was placed 20 mm down from its upper-most locking position (detent 1, where the upper most detent is defined as 0 and there are 4 detents total)

6. AUTOMATIC DOOR LOCKS: Is test vehicle equipped with ADLs? X Yes; - No;
Does vehicle owner's manual describe how to deactivate ADLs? X Yes; - No; - N/A

Comments: The doors were unlocked for the test

DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



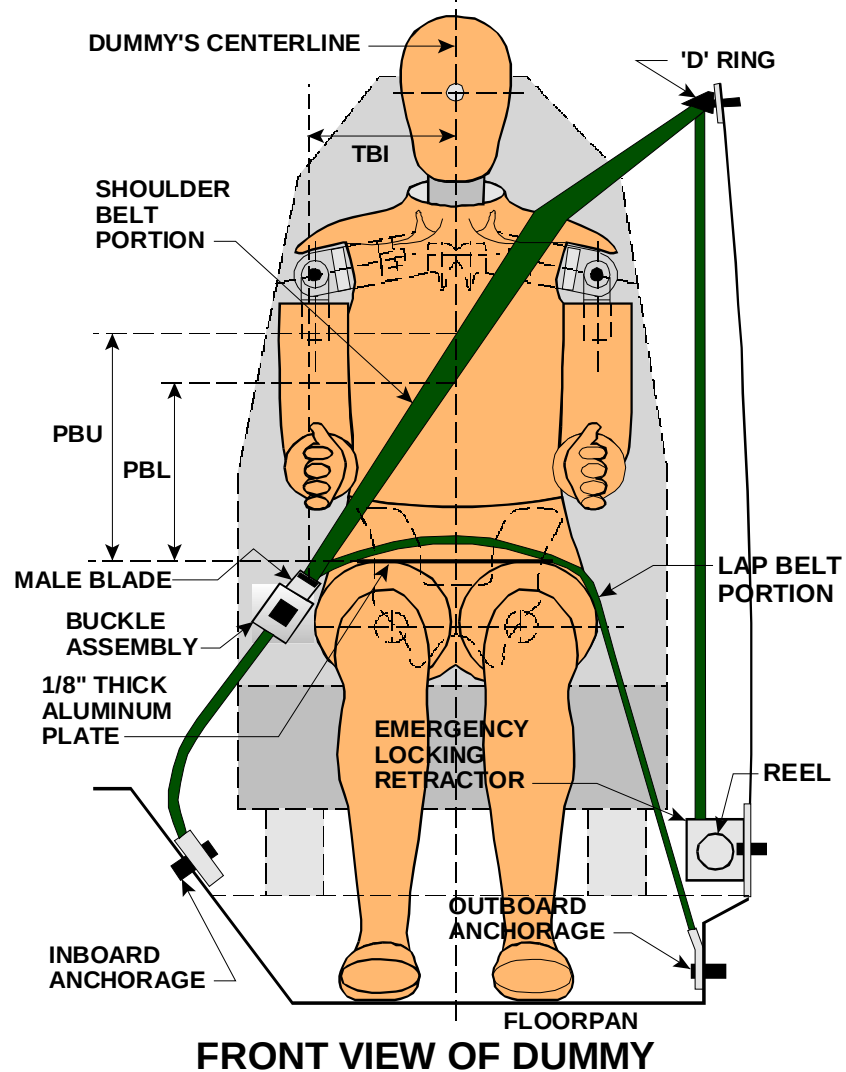
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #061)			PASS. (Serial #064)		
WA ^o	26.5 deg.			N/A		
SWA ^o	69.7 deg.			N/A		
SCA ^o	20.3 deg.			N/A		
SA ^o	15 deg. from the forward-most lock position			15 deg. from the forward-most lock position		
HZ	190			168		
HH	362			337		
HW	654			610		
HR	184			181		
NR	374	Angle	8 deg.	N/A		
CD	515			478		
CS	282			N/A		
RA	193			N/A		
KDL	171	Angle (KDA)	44 deg.	121		
KDR	154			139	Angle (KDA)	48 deg.
PA ^o	24.6 deg.			24.8 deg.		
TA ^o	43.0 deg.			44.1 deg.		
KK	405			320		
AA	348			190		
ST	518	Angle	5 deg.	537	Angle	6 deg.
SK	568	Angle	89 deg.	590	Angle	90 deg.
SH	236	Angle	120 deg.	240	Angle	121 deg.
SHY	240			248		
HS	331			333		
HD	131			139		
AD	102			111		

Dimensions in millimeters

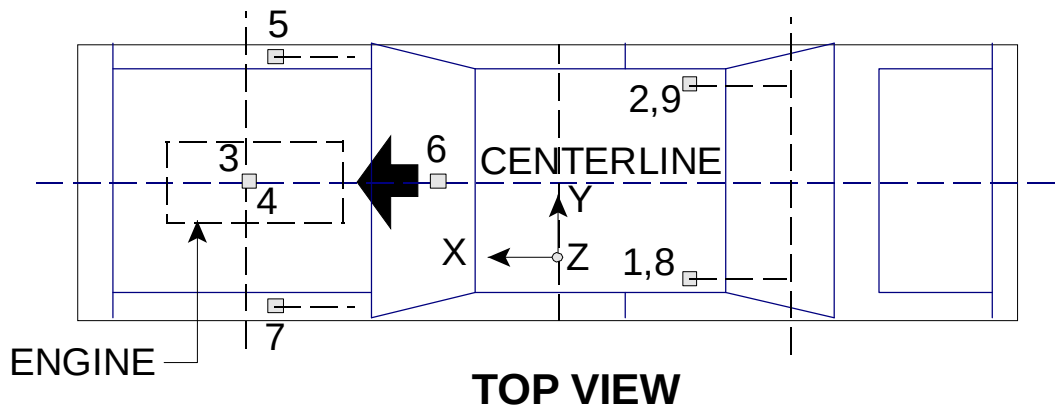
DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

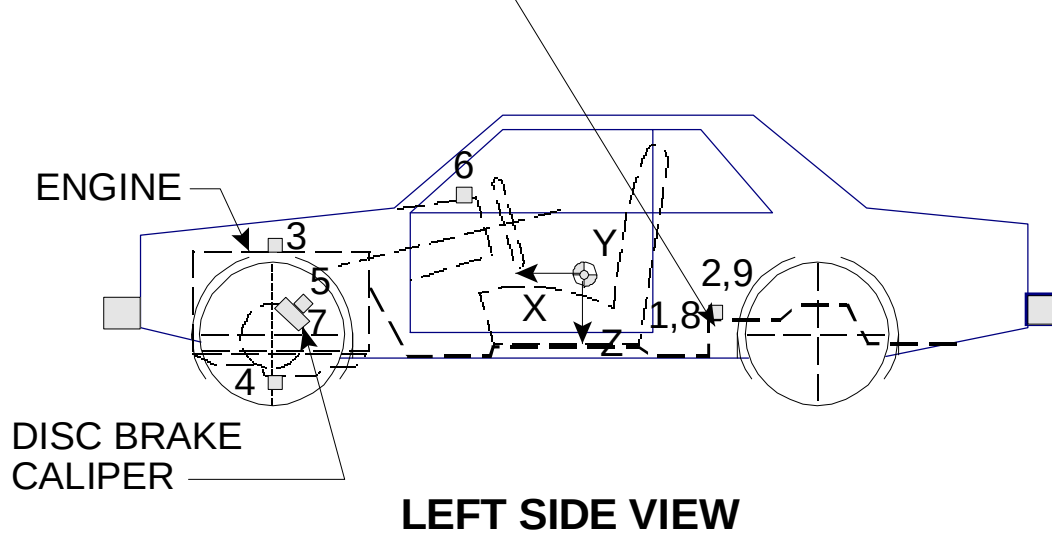


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	299	304
PBL-- Top surface of alum. plate to belt lower edge	218	220
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



Note: Vehicle accelerometer location and data summary shown in DATA SHEET NO. 7

DATA SHEET NO. 7 VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY (cont.)

LOCATION		PRE-TEST LENGTH (mm)		
		X	Y	Z
1	Left Rear Seat Cross Member X	1682	-651	-349
2	Right Rear Seat Cross Member X	1682	651	-349
3	Top of Engine Block	4063	309	-877
4	Bottom of Engine	3838	118	-325
5	Disc Brake Caliper @ Right Side	3888	656	-472
6	Instrument Panel	3041	0	-829
7	Disc Brake Caliper @Left Side	3886	-653	-480
8	Left Rear Seat Cross Member Z	1682	-651	-349
9	Right Rear Seat Cross Member Z	1682	651	-349

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Left Rear Seat Cross Member X	1.6	134.5	-31.6	61.0
2	Right Rear Seat Cross Member X	1.2	147.6	-34.3	60.4
3	Top of Engine Block	72.7	55.6	-116.9	41.0
4	Bottom of Engine	29.1	59.5	-83.9	39.4
5	Disc Brake Caliper @ Right Side	16.1	79.8	-82.0	57.3
6	Instrument Panel	53.2	85.4	†	-
7	Disc Brake Caliper @Left Side	20.5	83.8	-82.9	62.4
8	Left Rear Seat Cross Member Z	5.4	88.4	-7.2	72.1
9	Right Rear Seat Cross Member Z	5.0	55.6	-7.3	75.0

† Wire cut at 87 ms.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2005 Buick LaCrosse 4-Door Sedan

NHTSA Test No.: M50102 Test Date: December 17, 2004

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head 9 Array X Arm Y	g	5.5	77.5	-9.1	97.6	6.3	56.0	-32.8	63.9
Head 9 Array X Arm Z	g	16.8	84.2	-6.5	151.0	51.0	64.5	-23.4	57.4
Head 9 Array Y Arm X	g	0.6	25.1	-46.9	87.5	3.6	30.2	-45.7	63.8
Head 9 Array Y Arm Z	g	20.4	88.6	-4.1	46.2	29.1	86.2	-8.9	57.3
Head 9 Array Z Arm X	g	3.5	43.3	-48.4	88.3	18.8	64.9	-48.4	76.6
Head 9 Array Z Arm Y	g	6.2	171.7	-8.3	114.7	6.1	60.2	-17.9	92.8
Head X	g	1.2	25.1	-44.7	87.9	4.3	50.0	-34.3	65.8
Head Y	g	4.1	77.3	-5.2	101.3	4.8	70.4	-17.3	63.6
Head Z	g	21.0	88.8	-5.8	114.8	29.7	82.3	-9.6	57.5
Head Resultant	g	48.9	87.9	-	-	43.0	82.3	-	-
Redundant Head X	g	1.1	25.1	-45.4	89.3	4.4	50.0	-34.1	63.8
Redundant Head Y	g	4.0	77.3	-5.7	100.2	4.1	70.4	-17.2	64.1
Redundant Head Z	g	19.9	88.5	-5.5	115.1	29.6	82.1	-9.5	57.5
Redundant Head Resultant	g	49.4	89.1	-	-	42.5	82.0	-	-
Upper Neck Fx	N	667.6	89.6	-287.2	157.2	1258.0	73.8	-429.2	148.7
Upper Neck Fy	N	136.3	180.3	-129.7	100.2	341.9	69.7	-150.6	154.2
Upper Neck Fz	N	1202.4	88.1	-190.1	120.2	1166.8	58.7	-269.3	45.9
Upper Neck F Resultant	N	1366.6	88.1	-	-	1279.6	73.8	-	-
Upper Neck Mx	N-m	10.9	172.4	-13.9	117.2	10.5	105.1	-43.3	70.3
Upper Neck My	N-m	46.8	66.1	-8.5	40.4	112.3	74.1	-37.2	112.9
Upper Neck Mz	N-m	6.4	127.5	-5.8	83.6	23.7	106.3	-10.2	154.9
Upper Neck M Resultant	N-m	46.8	66.1	-	-	117.6	74.0	-	-
Chest X	g	2.5	192.1	-42.7	94.6	1.0	174.8	-39.7	72.5
Chest Y	g	3.9	108.4	-3.1	94.4	4.3	91.1	-6.2	100.7
Chest Z	g	11.6	87.4	-7.9	115.5	20.3	85.8	-9.9	121.9
Chest Resultant	g	43.4	94.0	-	-	43.1	72.8	-	-

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)

Vehicle Year/Make/Model/Body Style: 2005 Buick LaCrosse 4-Door Sedan

NHTSA Test No.: M50102 Test Date: December 17, 2004

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Redundant Chest X	g	2.4	192.0	-42.3	94.9	1.1	175.5	-38.5	72.5
Redundant Chest Y	g	3.9	108.5	-3.1	94.3	4.3	91.1	-6.3	100.7
Redundant Chest Z	g	11.9	87.3	-8.0	115.4	20.1	83.0	-10.0	121.9
Redundant Chest Resultant	g	42.9	94.8	-	-	41.9	73.0	-	-
Chest Displacement	mm	0.0	2.2	-31.3	89.3	0.0	5.6	-26.5	80.6
Pelvic X	g	3.1	153.6	-60.7	67.7	2.7	145.8	-41.9	70.9
Pelvic Y	g	11.2	98.7	-9.8	64.8	4.2	64.3	-6.8	80.4
Pelvic Z	g	2.1	176.8	-13.2	112.1	4.2	76.1	-14.7	117.4
Pelvic Resultant	g	61.9	67.7	-	-	42.2	67.3	-	-
Left Femur	N	182.1	180.3	-4886.4	71.2	164.7	18.8	-4044.2	77.3
Right Femur	N	255.2	56.8	-4944.9	67.2	106.2	34.8	-1803.4	78.0
Left Upper Tibia Mx	N-m	18.3	95.4	-28.7	75.7	41.7	75.2	-19.2	64.5
Left Upper Tibia My	N-m	58.9	35.2	-56.1	72.1	143.2	64.5	-9.4	161.5
Left Lower Tibia Fz	N	62.3	167.8	-1947.7	38.2	55.5	16.3	-3443.8	75.0
Left Lower Tibia Mx	N-m	48.4	75.5	-8.2	38.3	76.8	75.4	-17.9	64.7
Left Lower Tibia My	N-m	19.5	81.2	-32.0	64.9	56.1	73.8	-87.6	64.5
Right Upper Tibia Mx	N-m	17.4	62.8	-22.9	79.1	14.0	70.7	-34.2	99.4
Right Upper Tibia My	N-m	114.2	70.1	-17.8	154.3	82.8	74.9	-17.4	143.4
Right Lower Tibia Fz	N	154.2	183.6	-2492.7	66.4	88.9	175.8	-3108.4	74.4
Right Lower Tibia Mx	N-m	24.7	63.1	-10.9	40.8	107.7	76.4	-0.1	-22.3
Right Lower Tibia My	N-m	7.8	81.1	-47.7	68.2	40.4	80.0	-17.7	71.6
Left Foot Aft Ax	g	10.2	42.6	-70.6	66.8	31.5	76.1	-168.5	63.2
Left Foot Aft Az	g	7.5	90.4	-47.5	70.4	17.0	73.9	-60.0	68.5
Left Foot Fore Az	g	15.6	21.6	-113.1	32.4	80.2	74.0	-135.6	61.5
Right Foot Aft Ax	g	19.7	82.1	-85.6	67.8	20.7	92.7	-126.2	69.3
Right Foot Aft Az	g	13.7	87.8	-37.5	57.3	19.8	91.1	-40.4	75.4
Right Foot Fore Az	g	38.8†	37.6	-143.4†	71.5	36.8	70.3	-69.1	75.6
Lap Belt Load	N	4030.4	71.2	-5.8	-47.0	3455.4	75.5	-4.9	-50.0
Torso Belt	N	4440.4	96.9	-13.2	168.6	4078.4	96.9	-1.5	-44.5

† Questionable data.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)

Vehicle Year/Make/Model/Body Style: 2005 Buick LaCrosse 4-Door Sedan

NHTSA Test No.: M50102 Test Date: December 17, 2004

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	374.0	67.5	103.5	40.4
Position #2 - Passenger	259.2	60.3	96.3	34.9

** HIC is as defined in FMVSS 208. The maximum time interval from t₁ to t₂ is 36 milliseconds.

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	42.6	92.6	95.6	374.6
Position #2 - Passenger	42.1	71.9	74.9	394.4

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
REDUNDANT DATA

Vehicle Year/Make/Model/Body Style: 2005 Buick LaCrosse 4-Door Sedan

NHTSA Test No.: M50102 Test Date: December 17, 2004

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	378.0	67.5	103.5	40.6
Position #2 - Passenger	249.8	60.1	96.2	34.4

** HIC is as defined in FMVSS 208. The maximum time interval from t₁ to t₂ is 36 milliseconds.

CLIP SUMMARY* REDUNDANT				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	41.9	93.1	96.1	364.2
Position #2 - Passenger	41.0	71.9	74.9	370.8

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

DATA SHEET NO. 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

Belt length from trim panel exit
to bolt hole anchor point for
continuous webbing systems.

Driver

Passenger

1406

1453

Shoulder belt length as measured
on Part 572 Dummy.

781

810

Lap belt length as measured
on Part 572 Dummy.

625

643

SHOULDER BELT SPOOL-OFF DATA:

As determined mechanically.

197

245

BELT STRETCH DATA:

Measured mechanically.

0mm/m

0 mm/m

Dimensions in millimeters

DATA SHEET NO.10 SUMMARY OF FMVSS 212 DATA

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

Windshield is bonded in place and covered with a 12 mm molding.

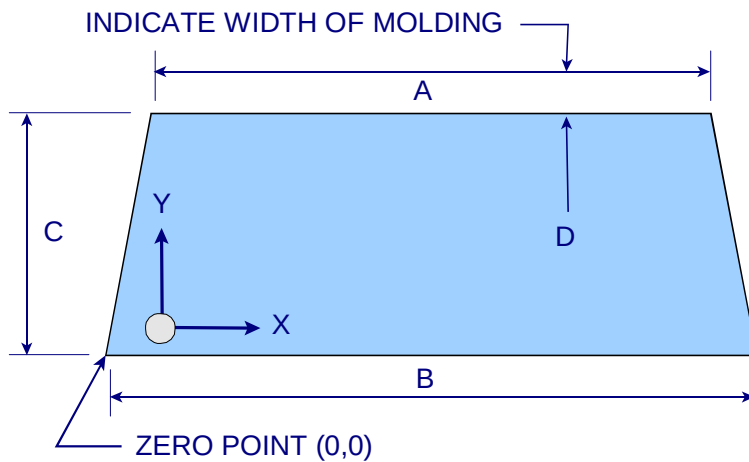
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants,

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		% OF RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	2225	2225	100.0%
LEFT SIDE	2225	2225	100.0%
TOTAL	4450	4450	100.0%

AREA OF RETENTION FAILURE: None



DIMENSIONS (mm)	
A	1150
B	1760
C	770
D	12

FRONT VIEW OF WINDSHIELD

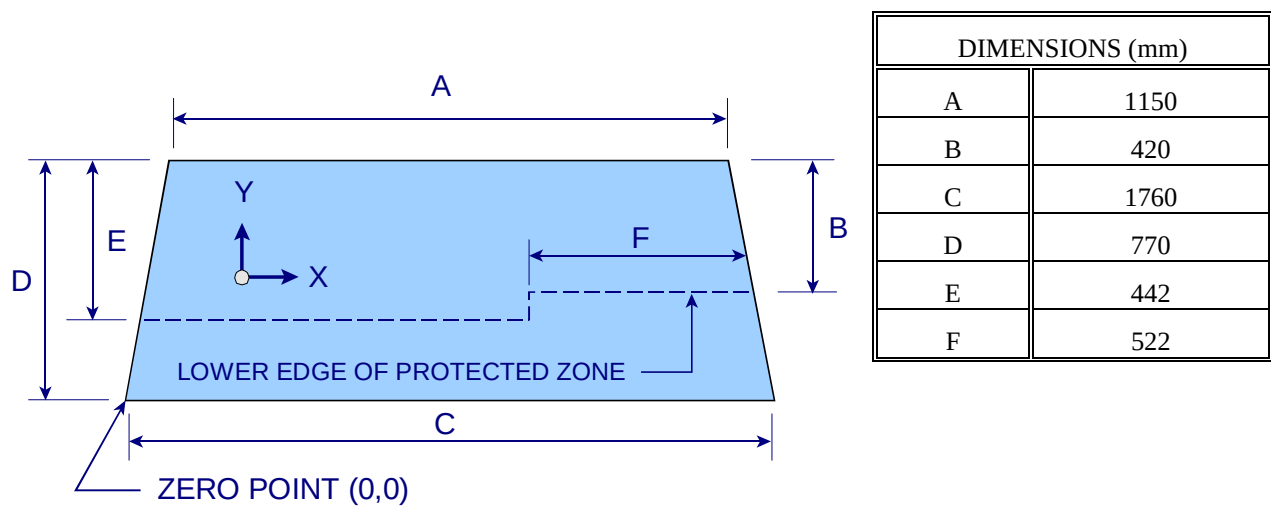
FAILURE DETAILS: None

DATA SHEET NO. 11 FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 165 mm diameter rigid sphere weighing 6.8 kg in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. The locus of points is drawn on the inner surface of the windshield contacted by the sphere across the width of the instrument panel. From the outermost contactable points extend the locus line horizontally to the edges of the windshield, then draw a line on the inner surface of the windshield below and 13 mm distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection of this line onto the outer surface of the windshield.

FMVSS 219 TEST DATA:



FRONT VIEW OF WINDSHIELD

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm: None

(Show location of penetration on the above sketch)

COORDINATES		
	X	Y
1.	-	-
2.	-	-
3.	-	-
4.	-	-

DATA SHEET NO. 12 FMVSS NO. 301-75 "FUEL SYSTEM INTEGRITY" POST IMPACT TEST DATA

NHTSA TEST No.: M50102 TEST DATE: December 17, 2004

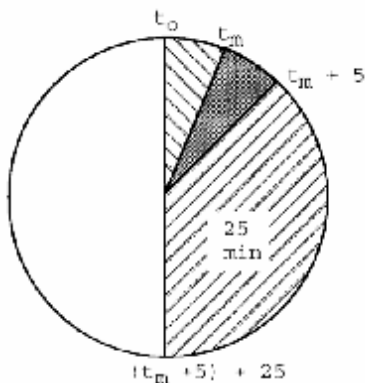
VEHICLE MAKE/MODEL: 2005 Buick LaCrosse 4-Door Sedan

The test vehicle was filled from 92% to 94% of the manufacture's "usable" capacity. The electric fuel pump was operating if it will operate without engine operation. Two Part 572 anthropomorphic test devices were located at each of the front designated seating positions.

=====

TEST VEHICLE IMPACT TYPE: X Frontal (56 kph)
 Oblique (48 kph) with _____ deg. barrier face first
 contacting _____
 - (driver/passenger) side
 - Rear Moving Barrier (48 kph)
 - Lateral Moving Barrier (32 kph)

FUEL SPILLAGE MEASUREMENT:



1. From impact until vehicle motion ceases
2. For 5 minute period after vehicle motion ceases
3. For next 25 minutes

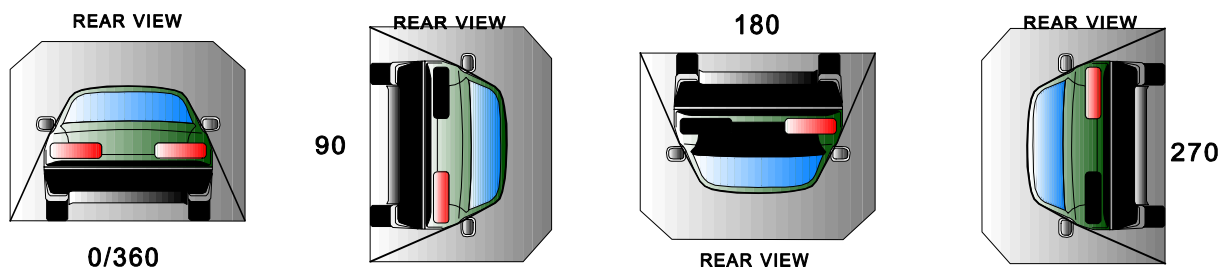
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

DATA SHEET NO. 13 - ROLLOVER DATA

Vehicle: 2005 Buick LaCrosse 4-Door Sedan

NHTSA No.: M50102



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0° - 90°	1	minutes	12	seconds	5	minutes	6	minutes	12	seconds	7	minutes
90° - 180°	1	minutes	4	seconds	5	minutes	6	minutes	4	seconds	7	minutes
180°-270°	1	minutes	2	seconds	5	minutes	6	minutes	2	seconds	7	minutes
270°-360°	1	minutes	8	seconds	5	minutes	6	minutes	8	seconds	7	minutes

II. FMVSS 301 REQUIREMENTS: (Maximum allowable solvent spillage):

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
142 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

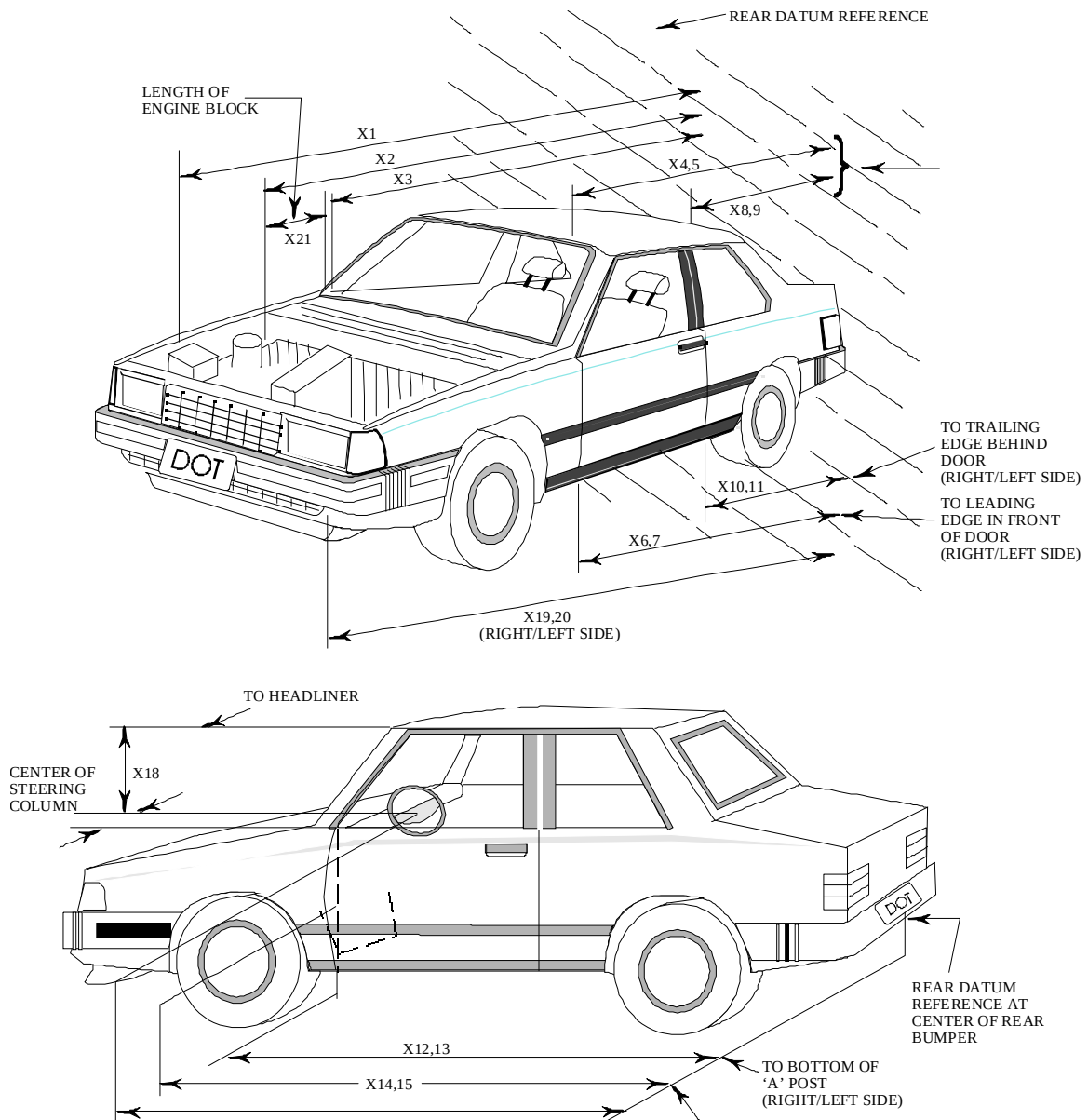
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	N/A
90° - 180°	0	0	0	N/A
180°-270°	0	0	0	N/A
270°-360°	0	0	0	N/A

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S):

Rollover Stage	Spillage Location
0° - 90°	None
90° - 180°	None
180°-270°	None
270°-360°	None

DATA SHEET NO. 14 TEST VEHICLE MEASUREMENTS

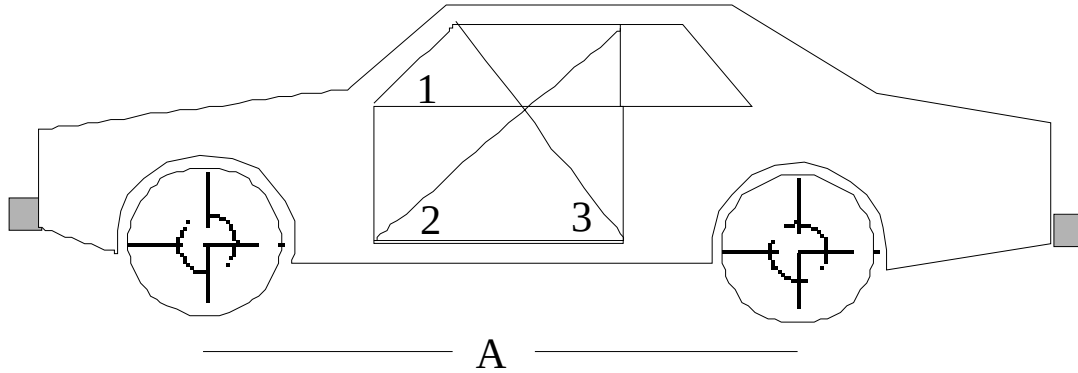


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	5035	4412	623
X2	Rear Surface of Vehicle to Front of Engine	4368	4083	285
X3	Rear Surface of Vehicle to Firewall	3803	3747	56
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3359	3360	-1
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3358	3358	0
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3403	3402	1
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3407	3404	3
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2294	2294	0
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2294	2293	1
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2307	2307	0
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2310	2307	3
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3496	3483	13
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3502	3508	-6
X14	Rear Surface of Vehicle to Firewall, Right Side	3754	3670	84
X15	Rear Surface of Vehicle to Firewall, Left Side	3751	3698	53
X16	Rear Surface of Vehicle to Steering Column	2908	2911	-3
X17	Center of Steering Column to "A" Post	306	283	23
X18	Center of Steering Column to Headliner	420	363	57
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4960	4373	587
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4962	4378	584
X21	Length of Engine Block	508	508	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3063	3050	13
CD	Rear Surface of Vehicle to Center of Dash Panel	3082	3035	47
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3061	3053	8

All Dimensions in mm

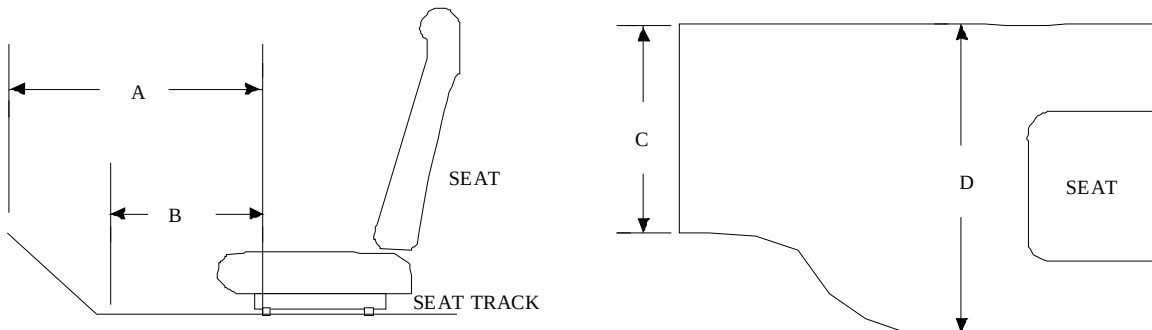
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	985	1441	950	985	1436	950
AFTER TEST	983	1441	948	984	1437	948
DIFFERENCE	2	0	2	1	-1	2

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2815	2815
AFTER TEST	2733	2677
DIFFERENCE	82	138

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 STATIC FOOTWELL DEFORMATION



DRIVER

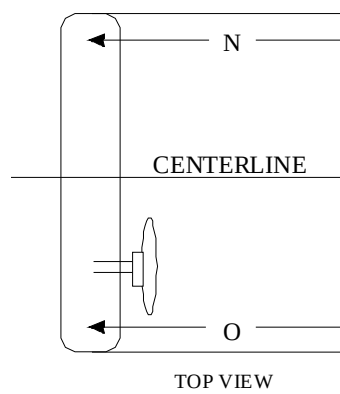
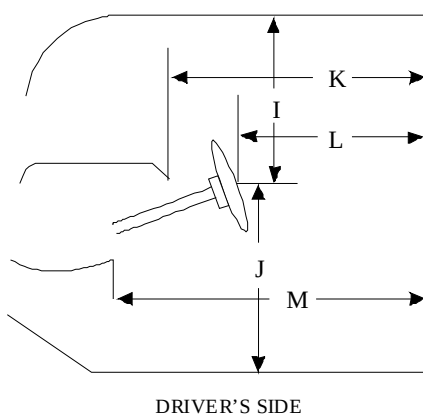
Measurement	Pre-Test	Post-Test	Difference
A	720	631	89
B	523	486	37
C	465	470	-5
D	451	448	3

PASSENGER

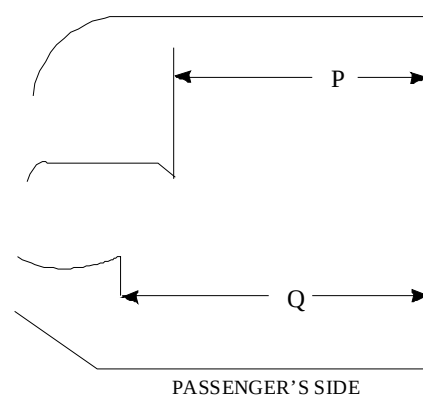
Measurement	Pre-Test	Post-Test	Difference
A	700	626	74
B	494	462	32
C	463	467	-4
D	451	445	6

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 STATIC PASSENGER COMPARTMENT INTRUSION



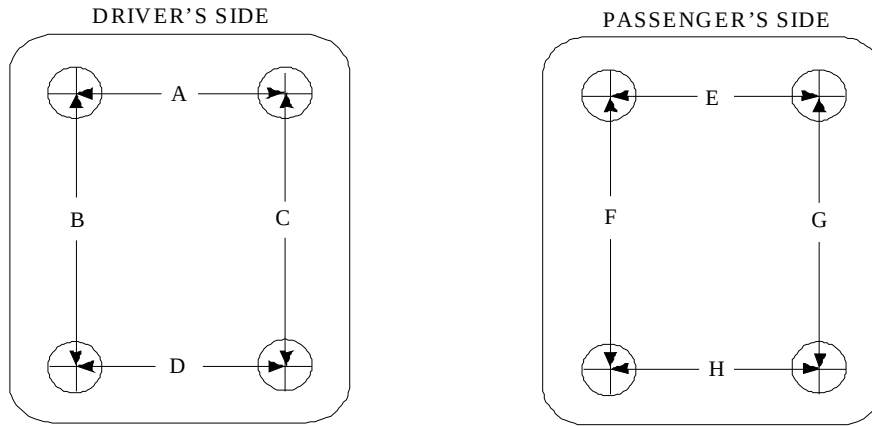
MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



Measurement	Pre-Test	Post-Test	Difference
I	420	363	57
J	643	766	-123
K	2085	2084	1
L	1914	1917	-3
M	2209	2173	36
N	2069	2055	14
O	2067	2059	8
P = K (PASS.)	2067	2040	27
Q = M (PASS.)	2195	2169	26

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
FLOORBOARD DEFORMATION

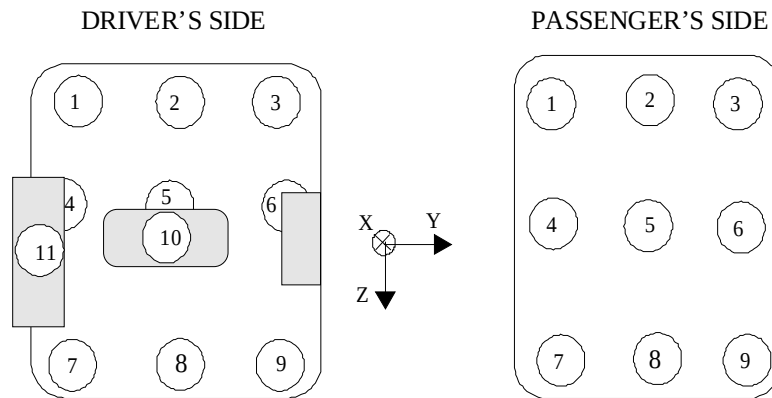


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	465	470	-5
B	358	355	3
C	439	406	33
D	451	448	3
E	463	467	-4
F	342	337	5
G	345	331	14
H	451	445	6

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
TOE-PAN INTRUSION



Driver Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3585	3538	47	-607	-622	15
2	3623	3537	86	-603	-622	19
3	3638	3516	122	-599	-613	14
4	3514	3477	37	-469	-480	11
5	3562	3516	46	-469	-476	7
6	3558	3496	62	-465	-471	6
7	3386	3365	21	-389	-383	-6
8	3426	3392	34	-389	-406	17
9	3428	3389	39	-391	-381	-10
10	3434	3235	199	-576	-687	111
11	3416	3394	22	-469	-463	-6

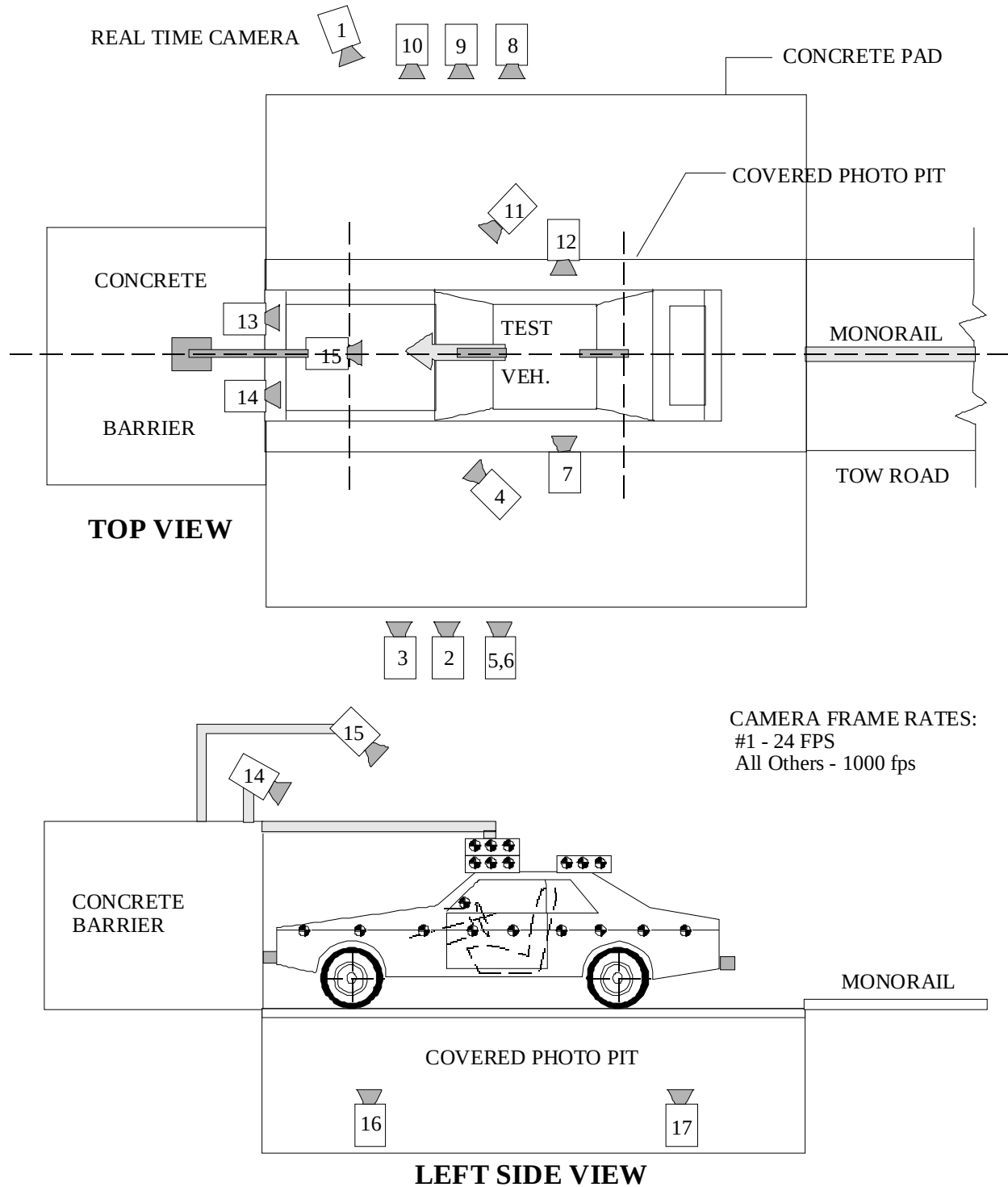
Passenger Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3599	3495	104	-572	-588	16
2	3602	3533	69	-580	-592	12
3	3527	3485	42	-595	-590	-5
4	3507	3452	55	-462	-459	-3
5	3510	3468	42	-463	-464	1
6	3452	3427	25	-461	-449	-12
7	3393	3361	32	-382	-365	-17
8	3396	3368	28	-376	-367	-9
9	3349	3328	21	-369	-356	-13

Reference: SAE: X = Rear Bumper (Positive: forward); Z = Ground (Positive: down)

DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS

NOTE: Camera information shown in DATA SHEET NO. 15.



DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS (cont.)

NHTSA Test No.: M50102 Vehicle: 2005 Buick LaCrosse 4-Door Sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)*			ANGLE (deg)**	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	7506	1975	1230	-4.5	7169	24	1000
3	Left Side View	8075	765	1060	-3.2	7738	25	1000
4	Driver and Interior View	7974	2728	2050	-8.3	-	35	500
5	Steering Column (Bottom)	7695	2050	1158	-2.7	7358	25	1000
6	Steering Column (Top)	7695	2050	1782	-7.9	7358	25	1000
7	Left CRS View	3330	3260	2290	-22.5	-	28	500
8	Overall Right Side	7356	2565	1180	-3.0	7620	24	500
9	Right Side View	8185	1745	1115	-2.6	8449	25	1000
10	Right Passenger View	8270	2510	1420	-3.9	8534	35	1000
11	Passenger and Interior View	7650	3390	1980	-7.8	-	35	500
12	Right CRS View	3280	3280	2340	-23.3	-	28	500
13	Passenger Front View	620	-92	1987	-33.1	-	13	500
14	Driver Front View	620	-92	1987	-32.2	-	13	500
15	Windshield View	0	-530	3374	-50.0	-	13	500
16	Pit View of Engine	0	615	-3048	90.0	-	13	500
17	Pit View of Fuel Tank	0	2955	-3048	90.0	-	13	500

*X = film plane to monorail centerline ** = referenced to horizontal plane

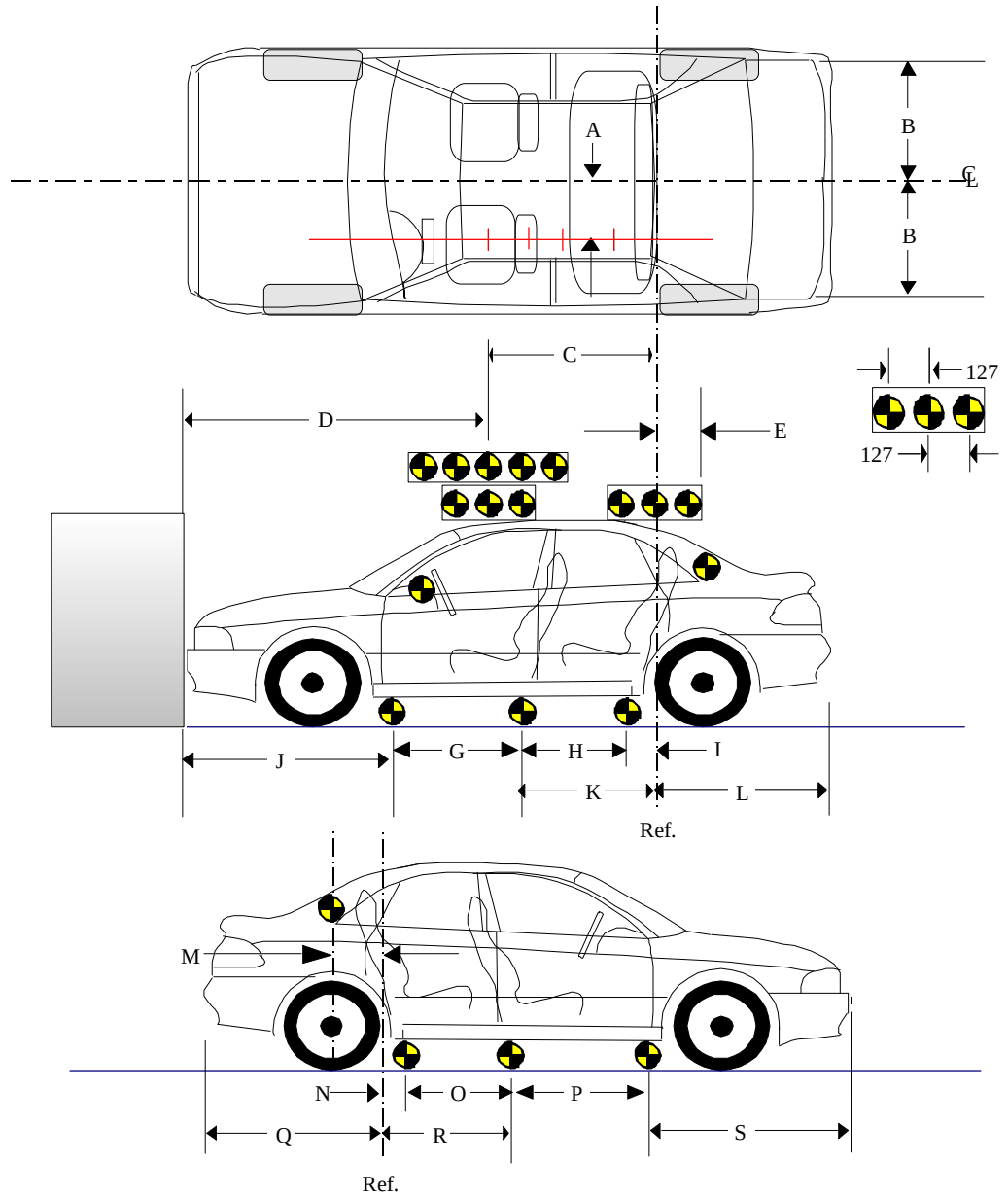
Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

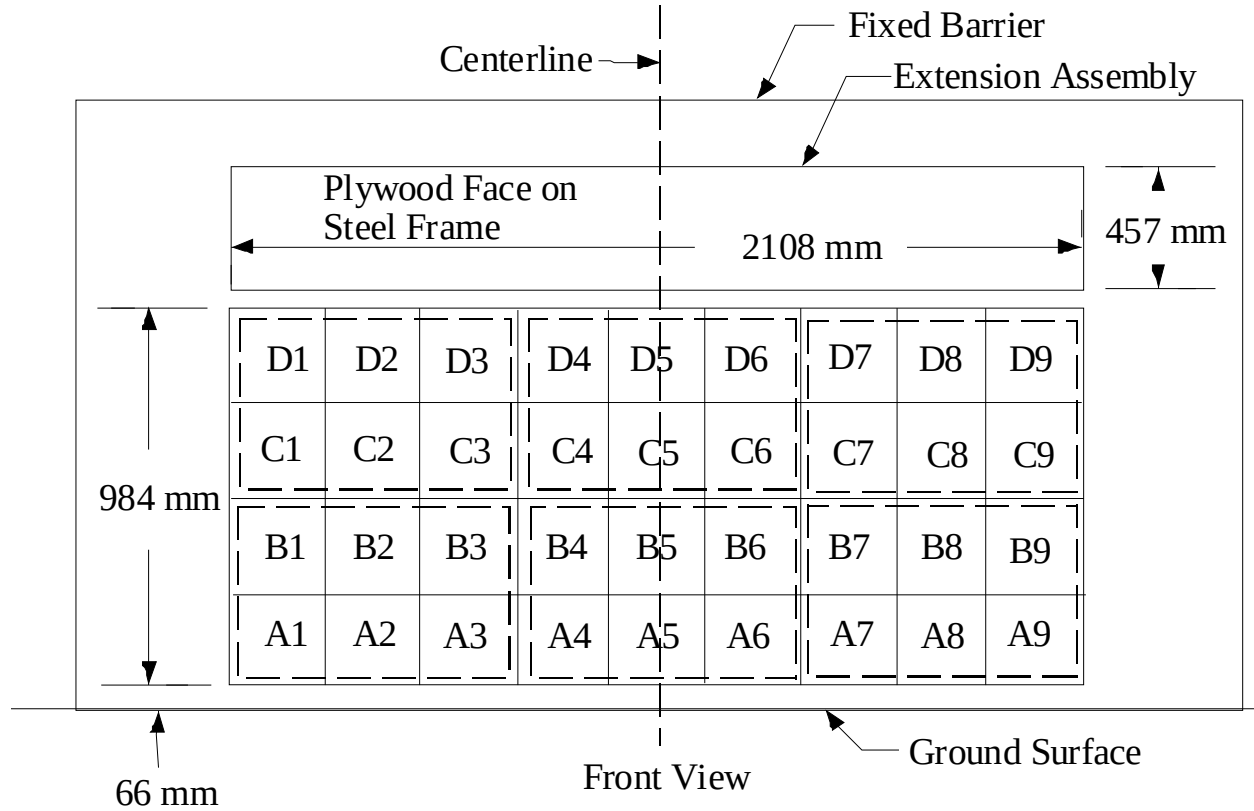
(Dimensions in millimeters)

A	340
B	601
C	1222
D	2404
E	415
F	1639
G	944
H	944
I	108
J	1584
K	1052
L	1455
M	415
N	109
O	941
P	942
Q	1454
R	1050
S	1590



DATA SHEET NO. 17 LOAD CELL LOCATIONS ON FIXED BARRIER

36 Load Cells
 4 Rows
 9 Columns
 6 Groupings (6 cells/group)



6 GROUPS OF 6 LOAD CELLS EACH

Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

The following data is presented in Appendix B:

- (1)Data from 36 individual load cells
- (2)Total or Sum of 36 individual load cells
- (3)Data from 6 Groupings shown above (6 cells/group)

DATA SHEET NO. 18 POST TEST AIR BAG DATA

NHTSA No.: M50102; Test Date: December 17, 2004; Technician: Lawrence Q. Valvo

Vehicle Model Year/Make/Model: 2005 Buick LaCrosse 4-Door Sedan

A. No. of vent holes: 2 -Driver 2 -Passenger

B. Size of vent holes: (mm²) 707 -Driver 2827 -Passenger

C. Total vent area: (mm²) 1414 -Driver 5654 -Passenger

D. Deflated air bag length and width dimensions or, if round, diameter. (mm)

Driver: 580 -Height; 580 -Width; 220 -Depth

Passenger: 480 -Height; 350 -Width; 400 -Depth

E. Is the air bag tethered?

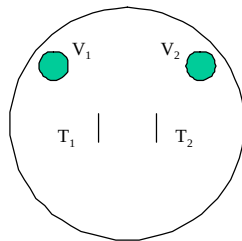
Driver: X -Yes; - -No; If yes, record length of tether- 270

Passenger: X -Yes; - -No; If yes, record length of tether- 480

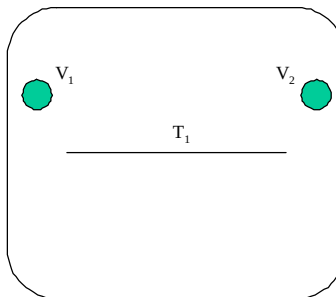
Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.

(Note: Not to scale; V_n = Vent hole_n, T_n = Tether_n).

Driver



Passenger



F. Record part numbers and manufacturer name of the air bag and gas generator.

Driver: Air bag: N/A

Generator: N/A

Passenger: Air bag: 2009055AD 90013045 22 09 04 G

Generator: N/A

DATA SHEET NO. 19 ACCIDENT INVESTIGATION DIVISION DATA

FOR FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Buick LaCrosse 4-Door Sedan

NHTSA Test No.: M50102 VIN: 2G4WC532151190569

Model Year: 2005 Build Date: 10/04 Test Date: December 17, 2004

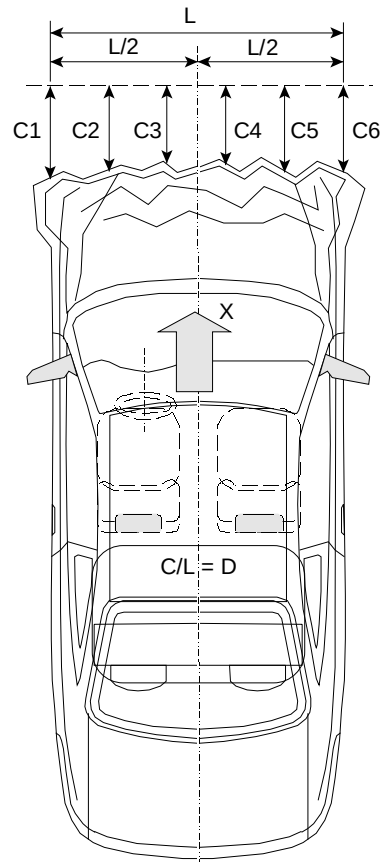
Vehicle Size Category: Passenger Car Test Weight: 1832.0 kg

Vehicle Wheelbase: 2815 mm; Front Overhang: 1111 mm; Overall Width: 1841 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4842	4303	539
C2 =	4973	4386	587
C3 =	5027	4394	633
C4 =	5027	4417	610
C5 =	4971	4382	589
C6 =	4838	4282	556



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region: L1= 1467 mm

L2= 733.5 mm

L5= 293.4 mm

APPENDIX A
PHOTOGRAPHS

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A-46	Pre-Test Passenger Position View	A-49
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A-50	Pre-Test Passenger Feet View	A-53
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A-54	Pre-Test Passenger Floor Pan View	A-57
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A-56	Post-Test Passenger Head View	A-59
A-57	Post-Test Passenger Contact To Airbag	A-60
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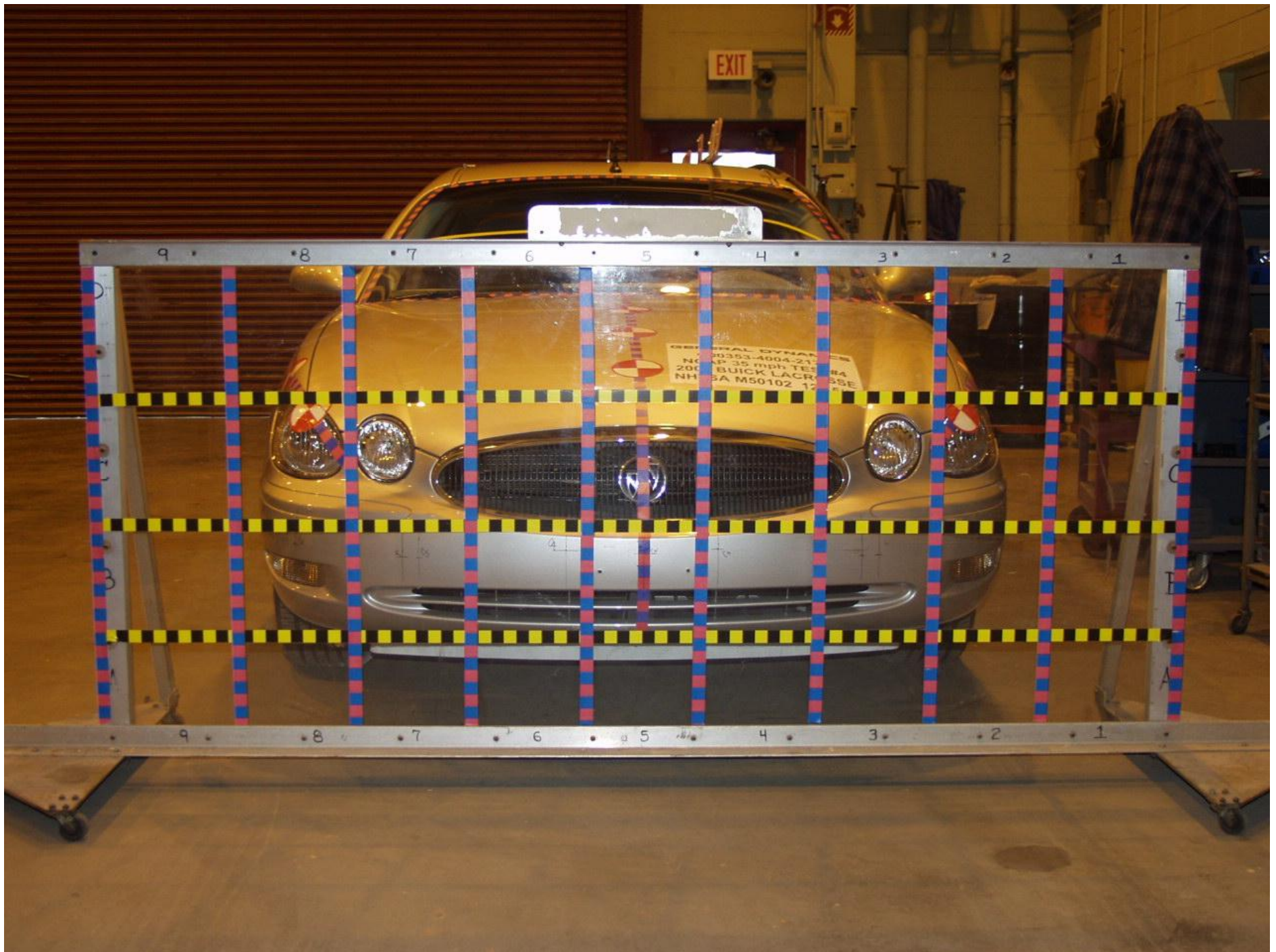


Figure A-1 LOAD CELL LOCATIONS



MFD BY GENERAL MOTORS OF CANADA LTD.

DATE
10/04

GVWR
2044 KG
4506 LB

GAWR FRT
1114 KG
2455 LB

GAWR RR
930 KG
2051 LB

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR
VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN
EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

2G4WC532151190569

TYPE: PASS CAR

Figure A-2 VEHICLE CERTIFICATION PLACARD



TIRE AND LOADING INFORMATION

SEATING CAPACITY TOTAL 5 | FRONT 2 | CENTER 0 | REAR 3

The combined weight of occupants and cargo should never exceed 416 kg or 917 lbs.

ORIGINAL TIRE SIZE	COLD TIRE INFLATION PRESSURE	
P225/60R16	FRONT	210 kPa, 30 PSI
P225/60R16	REAR	210 kPa, 30 PSI
T125/70D16	SPARE	420 kPa, 60 PSI

**SEE OWNER'S
MANUAL FOR
ADDITIONAL
INFORMATION**

Figure A-3 VEHICLE TIRE PLACARD



Figure A-4 RIGHT FRONT, AS RECEIVED



Figure A-5 LEFT REAR, AS RECEIVED



Figure A-6 PRE-TEST FRONT VIEW



Figure A-7 POST-TEST FRONT VIEW



Figure A-8 PRE-TEST LEFT SIDE VIEW



Figure A-9 POST-TEST LEFT SIDE VIEW



Figure A-10 PRE-TEST RIGHT SIDE VIEW



Figure A-11 POST-TEST RIGHT SIDE VIEW



Figure A-12 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

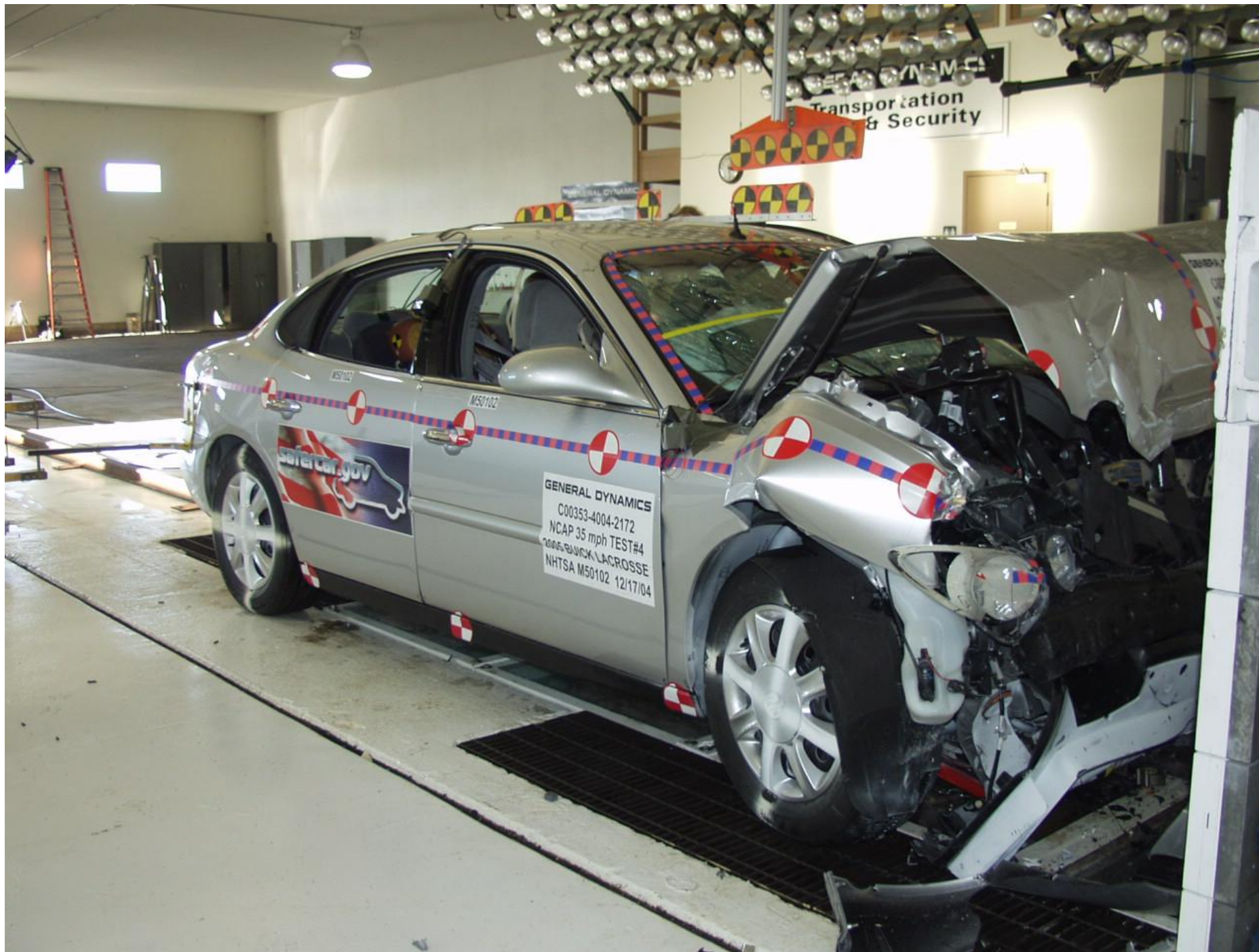


Figure A-13 POST-TEST RIGHT FRONT THREE-QUARTER VIEW



Figure A-14 PRE-TEST LEFT REAR THREE-QUARTER VIEW



Figure A-15 POST-TEST LEFT REAR THREE-QUARTER VIEW



Figure A-16 LEFT REAR THREE-QUARTER VIEW OF DOORS AFTER IMPACT



Figure A-17 RIGHT REAR THREE-QUARTER VIEW OF DOORS AFTER IMPACT

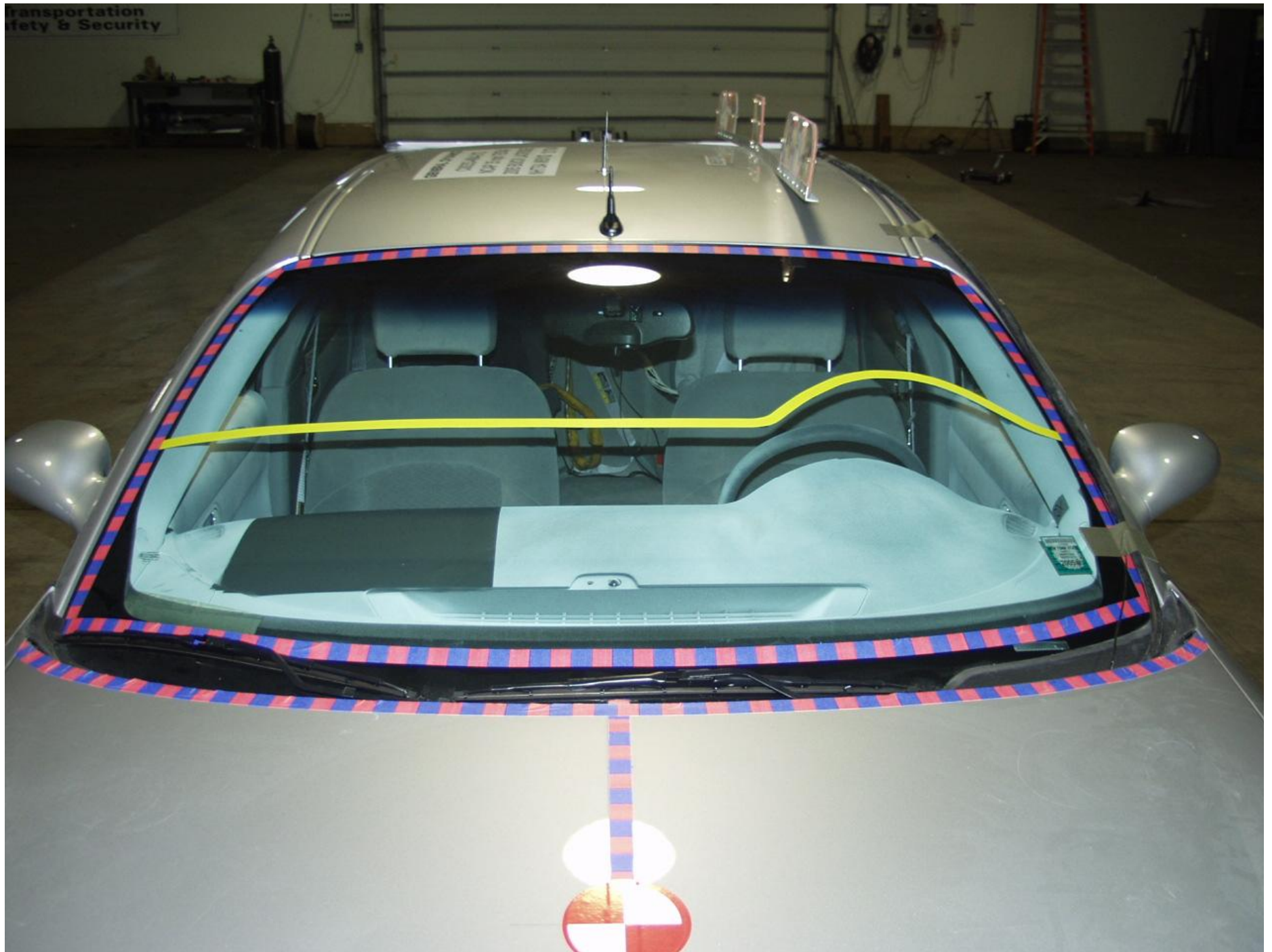


Figure A-18 PRE-TEST WINDSHIELD VIEW



A-22

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Figure A-19 POST-TEST WINDSHIELDVIEW



A-23

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Figure A-20 PRE-TEST ENGINE COMPARTMENT VIEW



Figure A-21 POST-TEST ENGINE COMPARTMENT VIEW



Figure A-22 PRE-TEST FUEL CAP VIEW

M50102



Figure A-23 POST-TEST FUEL CAP VIEW



Figure A-24 PRE-TEST FRONT UNDERBODY VIEW



Figure A-25 POST-TEST FRONT UNDERBODY VIEW



Figure A-26 PRE-TEST MID UNDERBODY VIEW



Figure A-27 POST-TEST MID UNDERBODY VIEW



Figure A-28 PRE-TEST REAR UNDERBODY VIEW



Figure A-29 POST-TEST REAR UNDERBODY VIEW

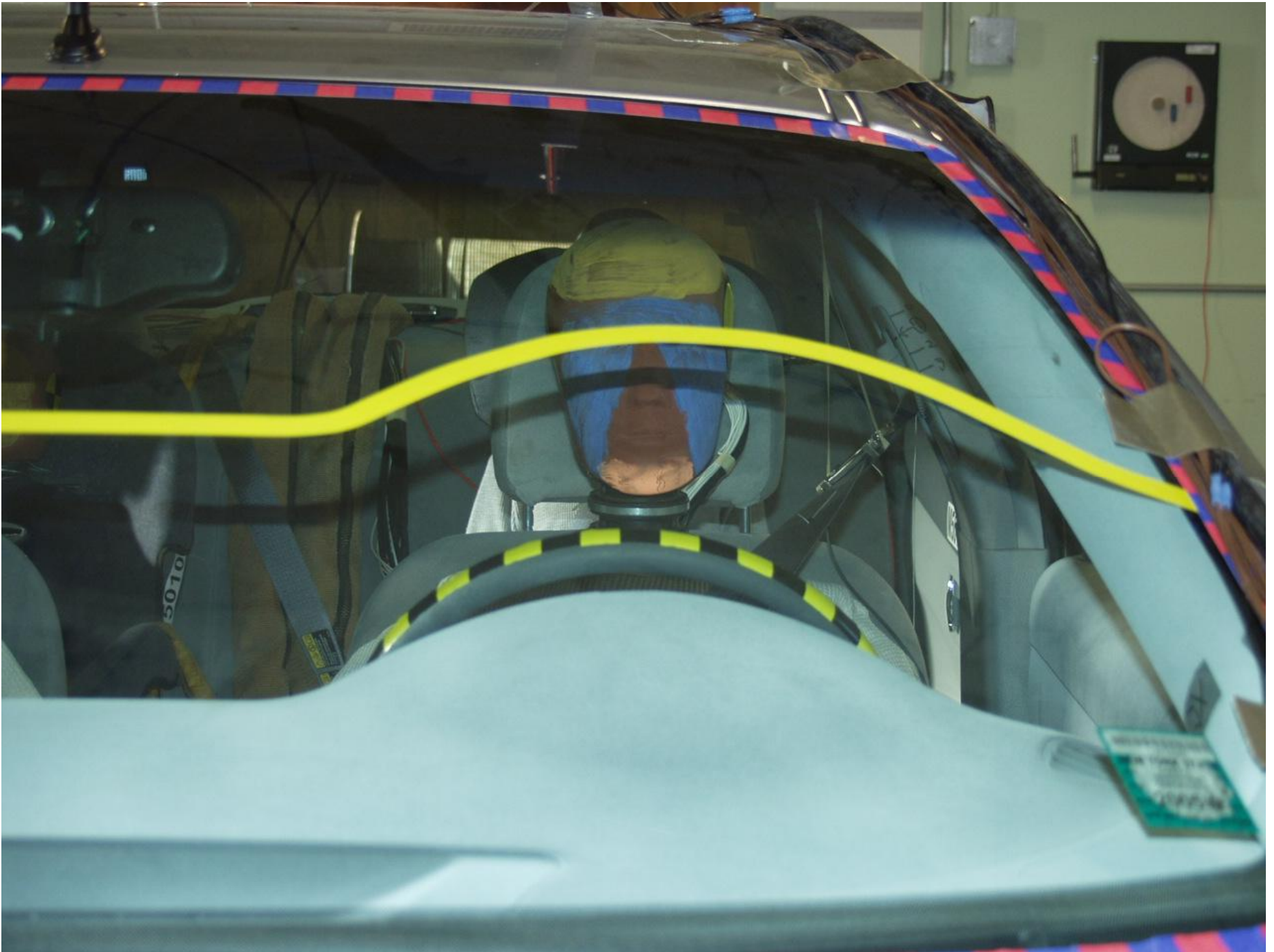


Figure A-30 PRE-TEST DRIVER HEAD LOCATION



Figure A-31 POST-TEST DRIVER HEAD LOCATION



Figure A-32 PRE-TEST DRIVER POSITION VIEW



Figure A-33 POST-TEST DRIVER POSITION VIEW



Figure A-34 PRE-TEST DRIVER AND INTERIOR VIEW



Figure A-35 POST-TEST DRIVER AND INTERIOR VIEW



Figure A-36 PRE-TEST DRIVER FEET VIEW



Figure A-37 POST-TEST DRIVER FEET VIEW



Figure A-38 PRE-TEST DRIVER KNEE BOLSTER VIEW



Figure A-39 POST-TEST DRIVER KNEE BOLSTER VIEW



Figure A-40 PRE-TEST DRIVER FLOOR PAN VIEW



Figure A-41 POST-TEST DRIVER FLOOR PAN VIEW



Figure A-42 POST-TEST DRIVER HEAD VIEW

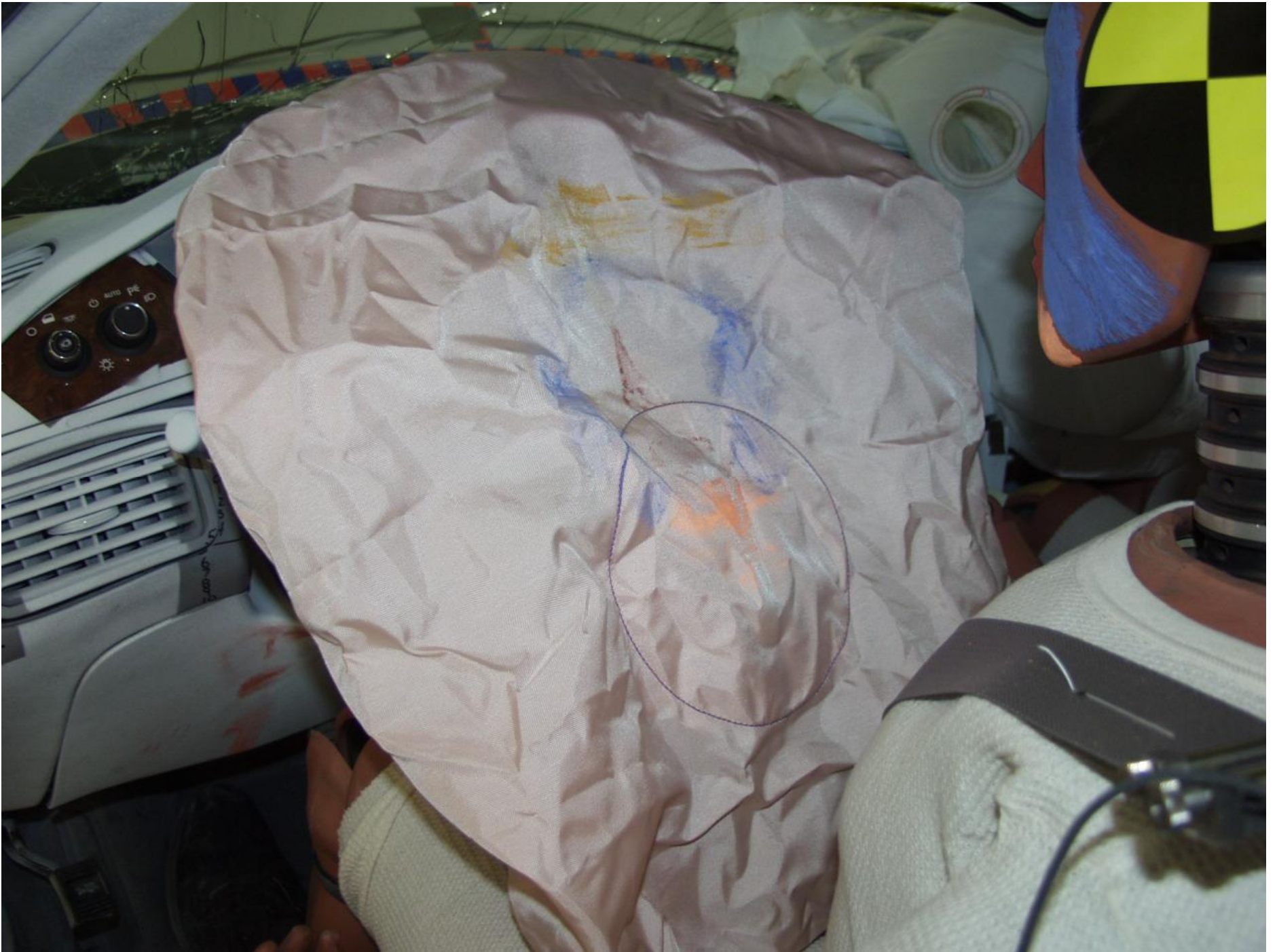


Figure A-43 POST-TEST DRIVER CONTACT TO AIRBAG



Figure A-44 PRE-TEST PASSENGER HEAD LOCATION



Figure A-45 POST-TEST PASSENGER HEAD LOCATION



A-49

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Figure A-46 PRE-TEST PASSENGER POSITION VIEW



Figure A-47 POST-TEST PASSENGER POSITION VIEW



A-51

8642-NCAP-54

Figure A-48 PRE-TEST PASSENGER AND INTERIOR VIEW



Figure A-49 POST-TEST PASSENGER AND INTERIOR VIEW



Figure A-50 PRE- TEST PASSENGER FEET VIEW



Figure A-51 POST-TEST PASSENGER FEET VIEW



A-55

8642-NCAP-54

Figure A-52 PRE-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-53 POST-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-54 PRE-TEST PASSENGER FLOOR PAN VIEW



Figure A-55 POST-TEST PASSENGER FLOOR PAN VIEW



Figure A-56 POST-TEST PASSENGER HEAD VIEW



Figure A-57 POST-TEST PASSENGER CONTACT TO AIRBAG



Figure A-58 ROLLOVER VIEW



Figure A-59 IMPACT VIEW

APPENDIX B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

**Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers**

Transducer	SAE Sign Convention (positive unless noted)	
Upper Neck Load Cell	Fx	Head rearward
	Fy	Head left
	Fz	Neck in tension
	Mx	Left ear to left shoulder
	My	Chin to chest (flexion)
	Mz	Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative	
Pelvic Load Cell (Lower Lumbar)	Fx	Chest rearward
	Fy	Chest left
	Fz	Spine in tension
Femur Load Cell	Compression is negative	
Upper Tibia Load Cell (right and left leg)	Mx	Support tibia at ends, load left side center
	My	Support tibia at ends, load front (shin) center
Lower Tibia Load Cell (right and left leg)	Fz	Tibia in tension
	Mx	Support tibia at ends, load left side center
	My	Support tibia at ends, load front (shin) center

DATA CHANNEL FILTER CLASS SUMMARY

NHTSA TEST NO. M50102

DATA TYPE	SAE FILTER CLASS (Hz)
Dummy Head Accelerations	1000
Dummy Chest Accelerations	180
Dummy Chest Displacements	600
Dummy Femur Forces	600
Dummy Belt Loads	60
Dummy Belt Displacements	180
Dummy Neck Forces	1000
Dummy Neck Moments	600
Vehicle Accelerations	60
Vehicle Velocity Integrations	180
Vehicle Displacement Integrations	180
Load Cell Barrier Forces	60

Table of Data Plots

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
1	V1P1 Head 9 Array X Arm Ay [g, CFC_1000]	B-8
2	V1P1 Head 9 Array X Arm Az [g, CFC_1000]	B-8
3	V1P1 Head 9 Array Y Arm Ax [g, CFC_1000]	B-8
4	V1P1 Head 9 Array Y Arm Az [g, CFC_1000]	B-8
5	V1P1 Head 9 Array Z Arm Ax [g, CFC_1000]	B-9
6	V1P1 Head 9 Array Z Arm Ay [g, CFC_1000]	B-9
7	V1P1 Head CG x [g, CFC_1000]	B-10
8	V1P1 Head CG y [g, CFC_1000]	B-10
9	V1P1 Head CG z [g, CFC_1000]	B-10
10	V1P1 Head CG Resultant [g, CFC_1000]	B-10
11	V1P1 Head CG Red x [g, CFC_1000]	B-11
12	V1P1 Head CG Red y [g, CFC_1000]	B-11
13	V1P1 Head CG Red z [g, CFC_1000]	B-11
14	V1P1 Head CG Red Resultant [g, CFC_1000]	B-11
15	V1P1 Upper Neck Fx [N, CFC_1000]	B-12
16	V1P1 Upper Neck Fy [N, CFC_1000]	B-12
17	V1P1 Upper Neck Fz [N, CFC_1000]	B-12
18	V1P1 Upper Neck F Resultant [N, CFC_1000]	B-12
19	V1P1 Upper Neck Mx [N-m, CFC_600]	B-13
20	V1P1 Upper Neck My [N-m, CFC_600]	B-13
21	V1P1 Upper Neck Mz [N-m, CFC_600]	B-13
22	V1P1 Upper Neck M Resultant [N-m, CFC_600]	B-13
23	V1P1 Chest x [g, CFC_180]	B-14
24	V1P1 Chest y [g, CFC_180]	B-14
25	V1P1 Chest z [g, CFC_180]	B-14
26	V1P1 Chest Resultant [g, CFC_180]	B-14
27	V1P1 Chest Red x [g, CFC_180]	B-15
28	V1P1 Chest Red y [g, CFC_180]	B-15
29	V1P1 Chest Red z [g, CFC_180]	B-15
30	V1P1 Chest Red Resultant [g, CFC_180]	B-15
31	V1P1 Chest Compression x [mm, CFC_600]	B-16
32	V1P1 Pelvic x [g, CFC_1000]	B-17
33	V1P1 Pelvic y [g, CFC_1000]	B-17
34	V1P1 Pelvic z [g, CFC_1000]	B-17
35	V1P1 Pelvic Resultant [g, CFC_1000]	B-17
36	V1P1 Left Femur z [N, CFC_600]	B-18
37	V1P1 Right Femur z [N, CFC_600]	B-18
38	V1P1 Left Upper Tibia Mx [N-m, CFC_600]	B-19
39	V1P1 Left Upper Tibia My [N-m, CFC_600]	B-19
40	V1P1 Left Lower Tibia Fz [N, CFC_600]	B-20
41	V1P1 Left Lower Tibia Mx [N-m, CFC_600]	B-20
42	V1P1 Left Lower Tibia My [N-m, CFC_600]	B-20
43	V1P1 Right Upper Tibia Mx [N-m, CFC_600]	B-21
44	V1P1 Right Upper Tibia My [N-m, CFC_600]	B-21
45	V1P1 Right Lower Tibia Fz [N, CFC_600]	B-22
46	V1P1 Right Lower Tibia Mx [N-m, CFC_600]	B-22

Table of Data Plots (Continued)

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
47	V1P1 Right Lower Tibia My [N-m, CFC_600]	B-22
48	V1P1 Left Foot Aft x [g, CFC_600]	B-23
49	V1P1 Left Foot Aft z [g, CFC_600]	B-23
50	V1P1 Left Foot Fore z [g, CFC_600]	B-23
51	V1P1 Right Foot Aft x [g, CFC_600]	B-24
52	V1P1 Right Foot Aft z [g, CFC_600]	B-24
53	V1P1 Right Foot Fore z [g, CFC_600]	B-24
54	V1 Driver Lap Belt [N, CFC_60]	B-25
55	V1 Driver Torso Belt [N, CFC_60]	B-25
56	V1P2 Head 9 Array X Arm Ay [g, CFC_1000]	B-26
57	V1P2 Head 9 Array X Arm Az [g, CFC_1000]	B-26
58	V1P2 Head 9 Array Y Arm Ax [g, CFC_1000]	B-26
59	V1P2 Head 9 Array Y Arm Az [g, CFC_1000]	B-26
60	V1P2 Head 9 Array Z Arm Ax [g, CFC_1000]	B-27
61	V1P2 Head 9 Array Z Arm Ay [g, CFC_1000]	B-27
62	V1P2 Head CG x [g, CFC_1000]	B-28
63	V1P2 Head CG y [g, CFC_1000]	B-28
64	V1P2 Head CG z [g, CFC_1000]	B-28
65	V1P2 Head CG Resultant [g, CFC_1000]	B-28
66	V1P2 Head CG Red x [g, CFC_1000]	B-29
67	V1P2 Head CG Red y [g, CFC_1000]	B-29
68	V1P2 Head CG Red z [g, CFC_1000]	B-29
69	V1P2 Head CG Red Resultant [g, CFC_1000]	B-29
70	V1P2 Upper Neck Fx [N, CFC_1000]	B-30
71	V1P2 Upper Neck Fy [N, CFC_1000]	B-30
72	V1P2 Upper Neck Fz [N, CFC_1000]	B-30
73	V1P2 Upper Neck F Resultant [N, CFC_1000]	B-30
74	V1P2 Upper Neck Mx [N-m, CFC_600]	B-31
75	V1P2 Upper Neck My [N-m, CFC_600]	B-31
76	V1P2 Upper Neck Mz [N-m, CFC_600]	B-31
77	V1P2 Upper Neck M Resultant [N-m, CFC_600]	B-31
78	V1P2 Chest x [g, CFC_180]	B-32
79	V1P2 Chest y [g, CFC_180]	B-32
80	V1P2 Chest z [g, CFC_180]	B-32
81	V1P2 Chest Resultant [g, CFC_180]	B-32
82	V1P2 Chest Red x [g, CFC_180]	B-33
83	V1P2 Chest Red y [g, CFC_180]	B-33
84	V1P2 Chest Red z [g, CFC_180]	B-33
85	V1P2 Chest Red Resultant [g, CFC_180]	B-33
86	V1P2 Chest Compression x [mm, CFC_600]	B-34
87	V1P2 Pelvic x [g, CFC_1000]	B-35
88	V1P2 Pelvic y [g, CFC_1000]	B-35
89	V1P2 Pelvic z [g, CFC_1000]	B-35
90	V1P2 Pelvic Resultant [g, CFC_1000]	B-35
91	V1P2 Left Femur z [N, CFC_600]	B-36
92	V1P2 Right Femur z [N, CFC_600]	B-36

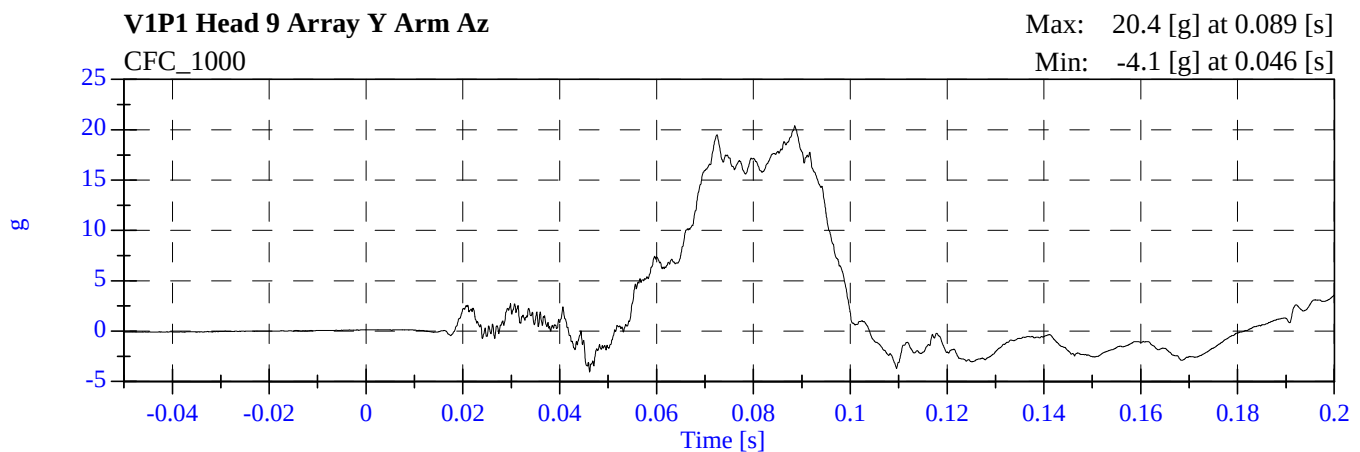
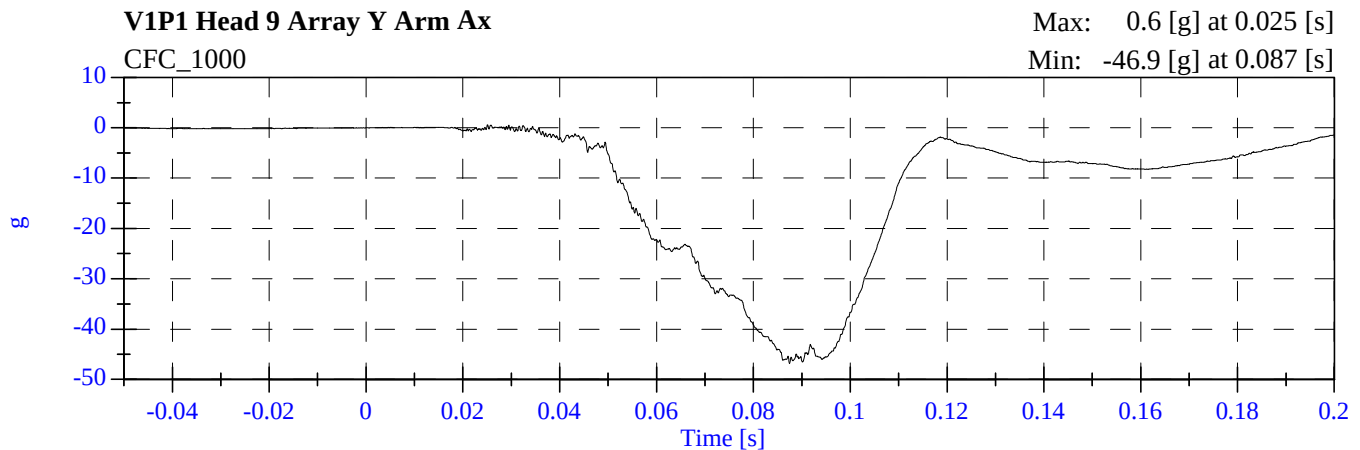
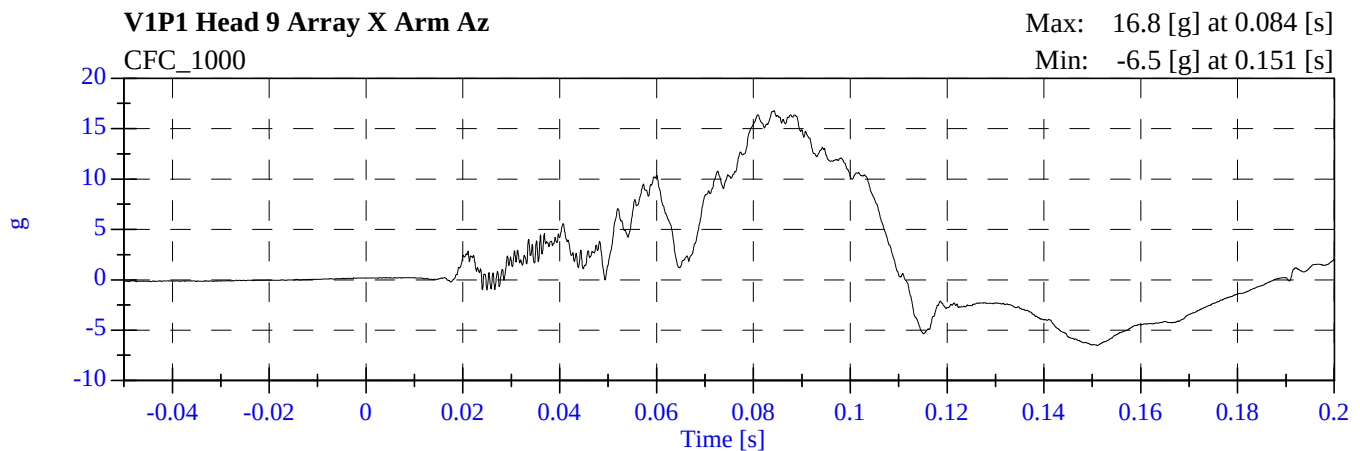
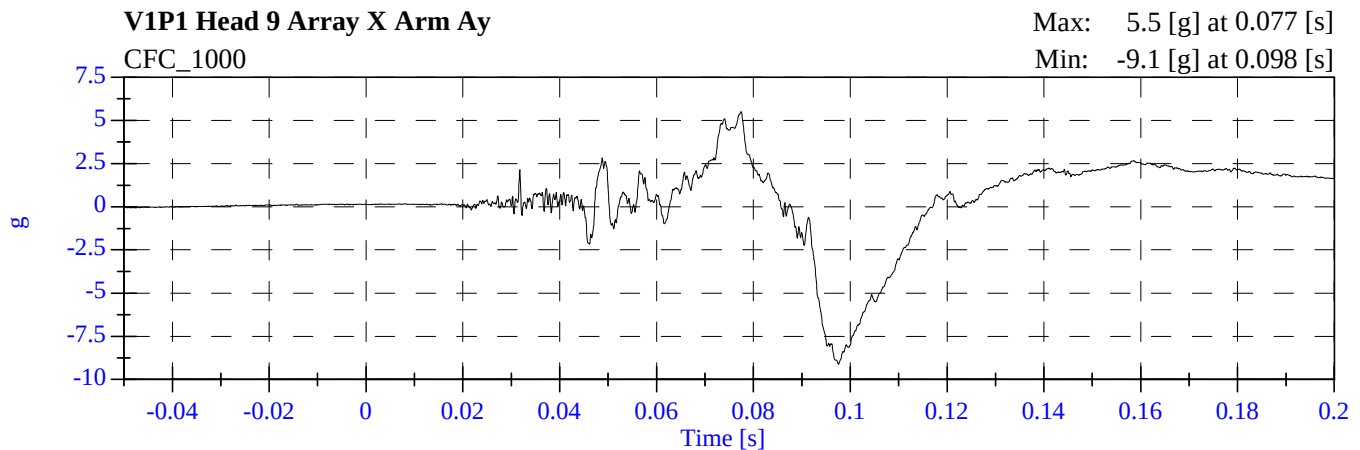
Table of Data Plots (Continued)

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
93	V1P2 Left Upper Tibia Mx [N-m, CFC_600]	B-37
94	V1P2 Left Upper Tibia My [N-m, CFC_600]	B-37
95	V1P2 Left Lower Tibia Fz [N, CFC_600]	B-38
96	V1P2 Left Lower Tibia Mx [N-m, CFC_600]	B-38
97	V1P2 Left Lower Tibia My [N-m, CFC_600]	B-38
98	V1P2 Right Upper Tibia Mx [N-m, CFC_600]	B-39
99	V1P2 Right Upper Tibia My [N-m, CFC_600]	B-39
100	V1P2 Right Lower Tibia Fz [N, CFC_600]	B-40
101	V1P2 Right Lower Tibia Mx [N-m, CFC_600]	B-40
102	V1P2 Right Lower Tibia My [N-m, CFC_600]	B-40
103	V1P2 Left Foot Aft x [g, CFC_600]	B-41
104	V1P2 Left Foot Aft z [g, CFC_600]	B-41
105	V1P2 Left Foot Fore z [g, CFC_600]	B-41
106	V1P2 Right Foot Aft x [g, CFC_600]	B-42
107	V1P2 Right Foot Aft z [g, CFC_600]	B-42
108	V1P2 Right Foot Fore z [g, CFC_600]	B-42
109	V1 RFP Lap Belt [N, CFC_60]	B-43
110	V1 RFP Torso Belt [N, CFC_60]	B-43
111	V1 Left Rear #1x [g, CFC_60]	B-44
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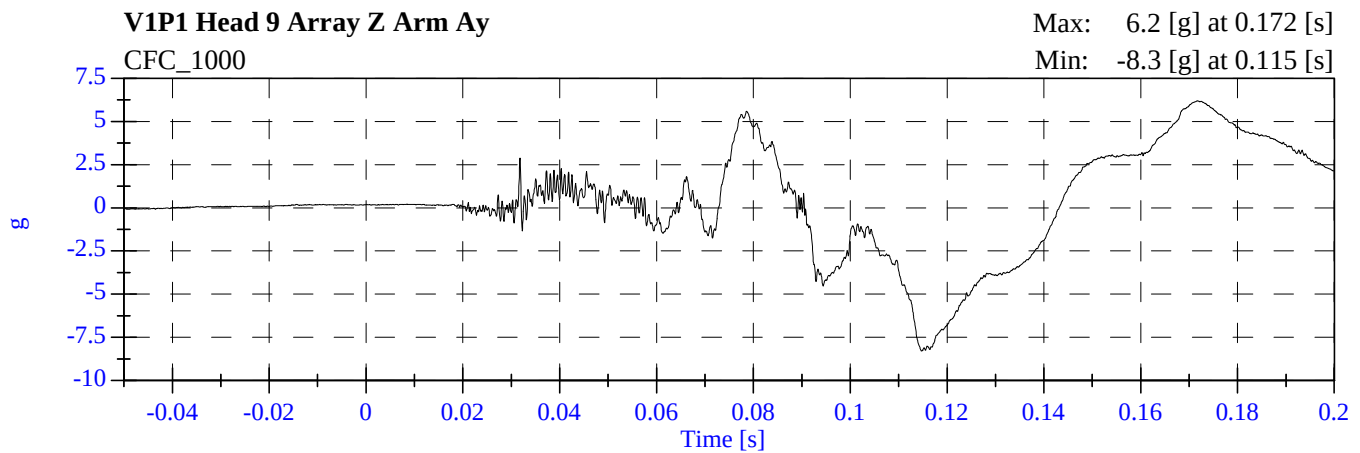
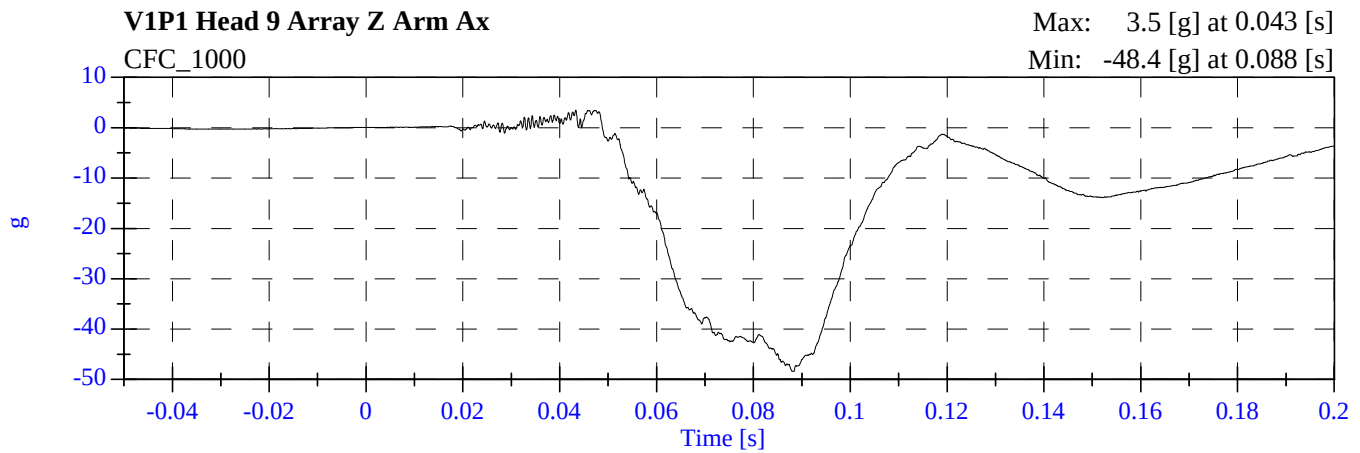
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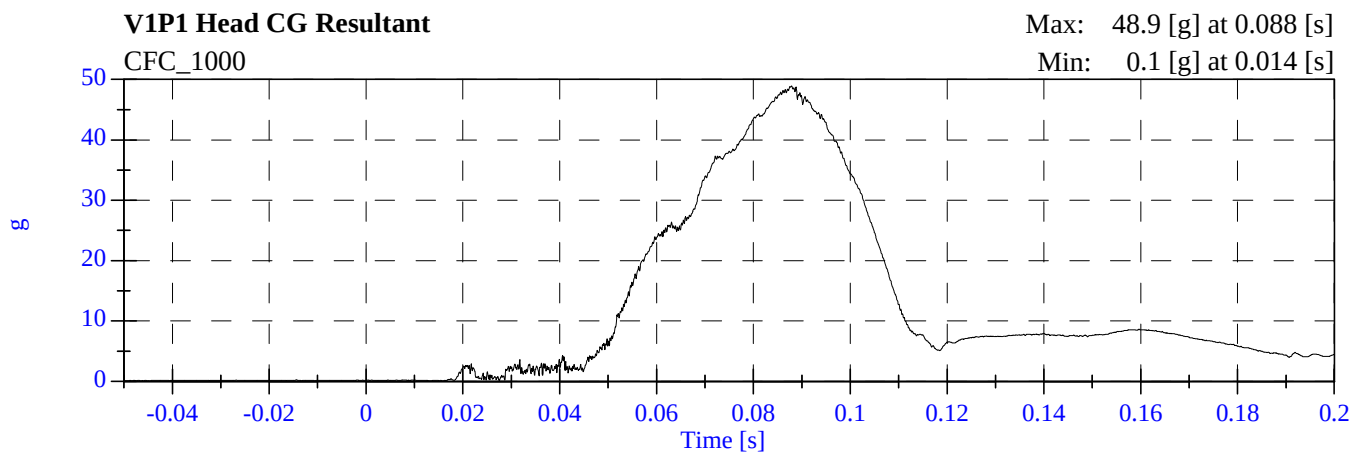
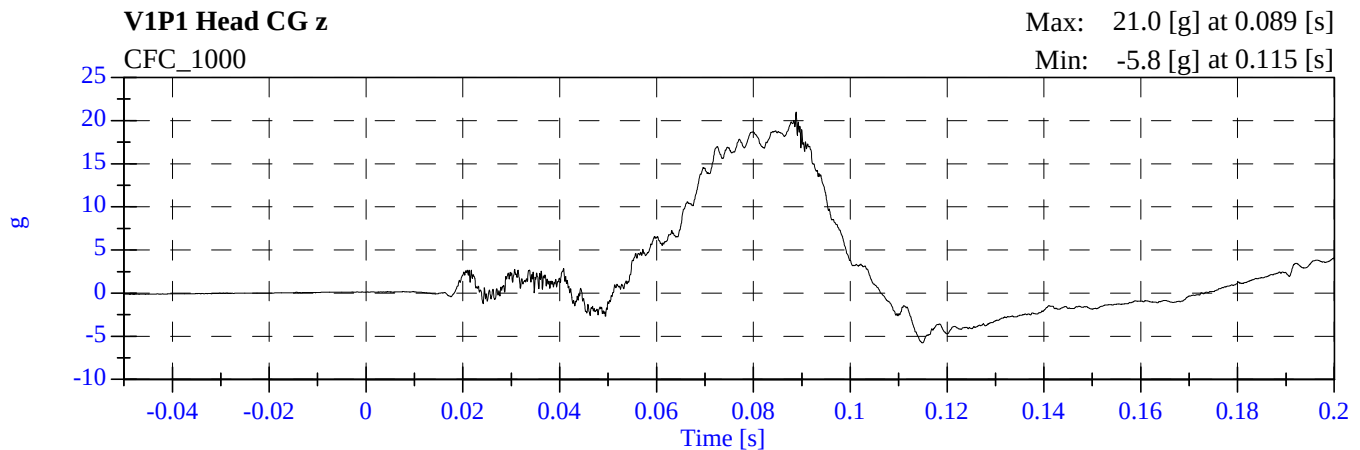
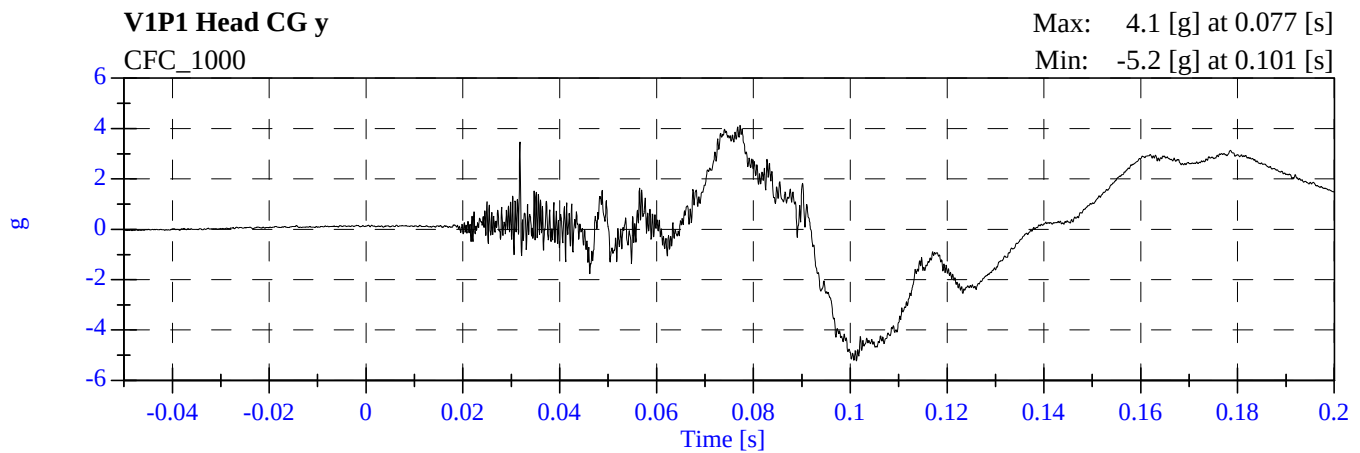
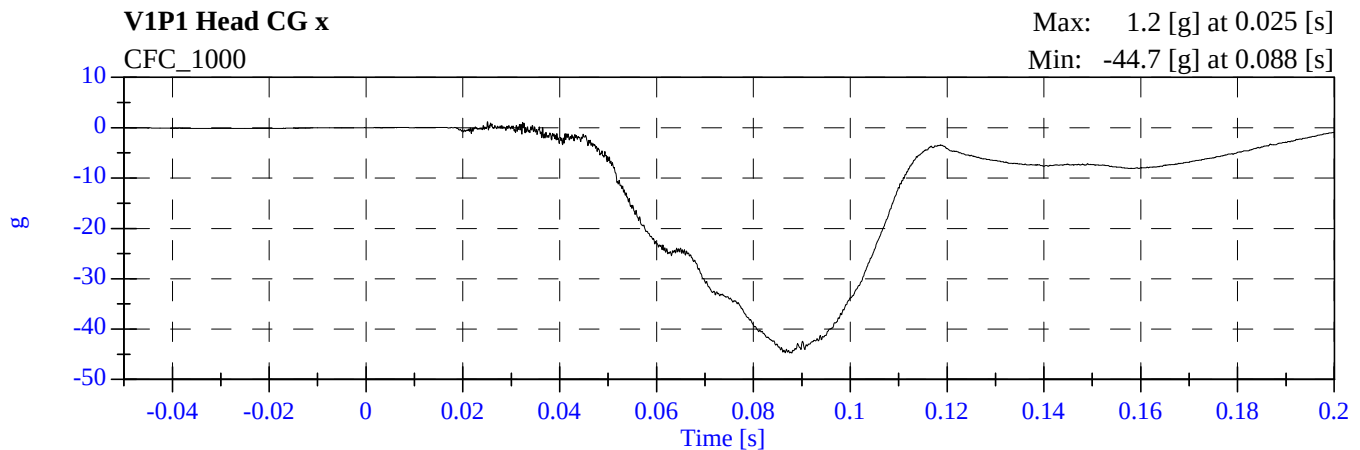
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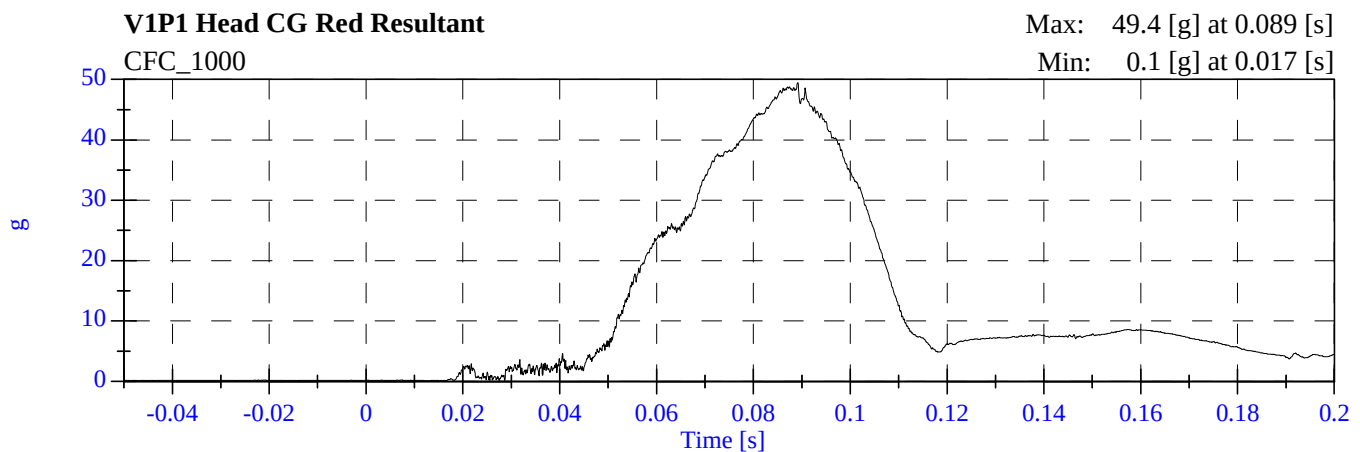
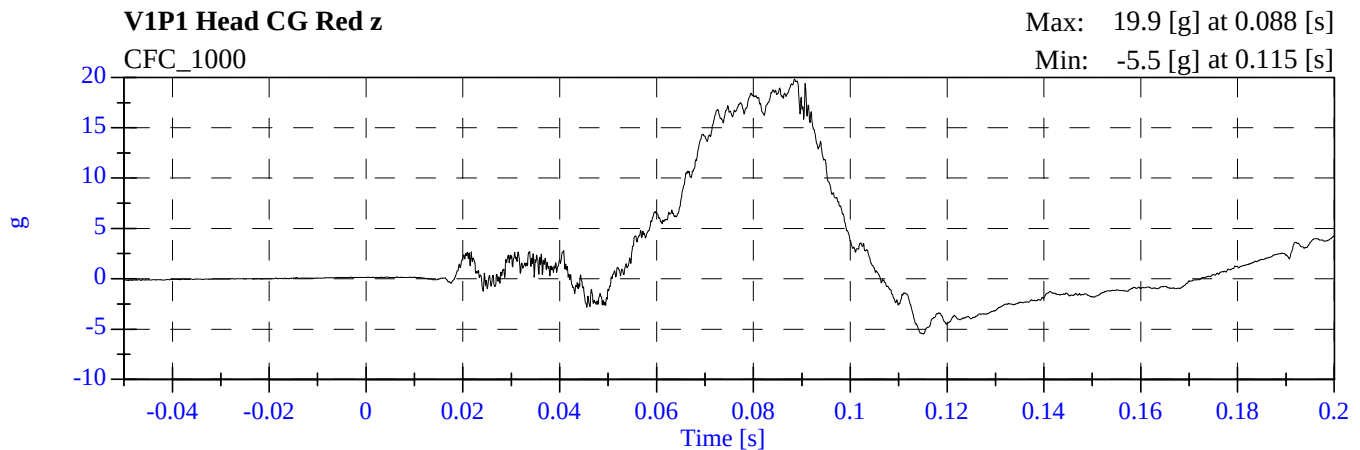
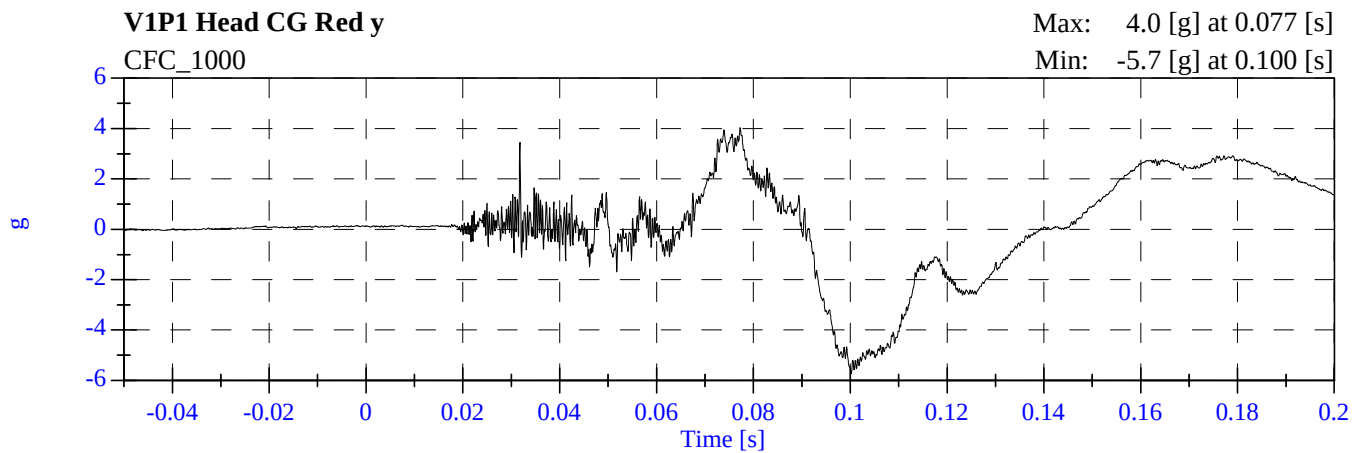
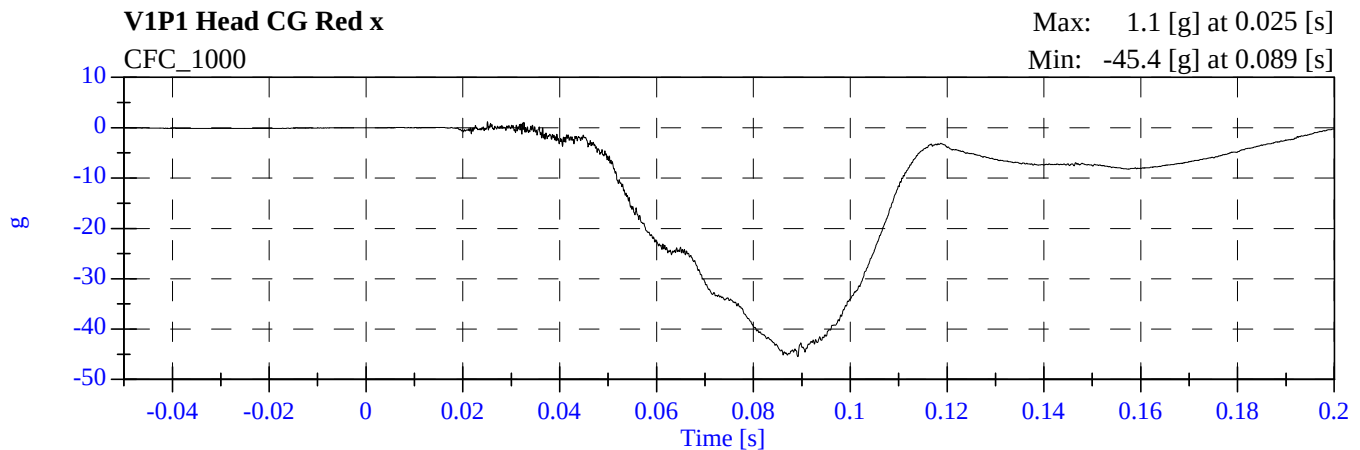
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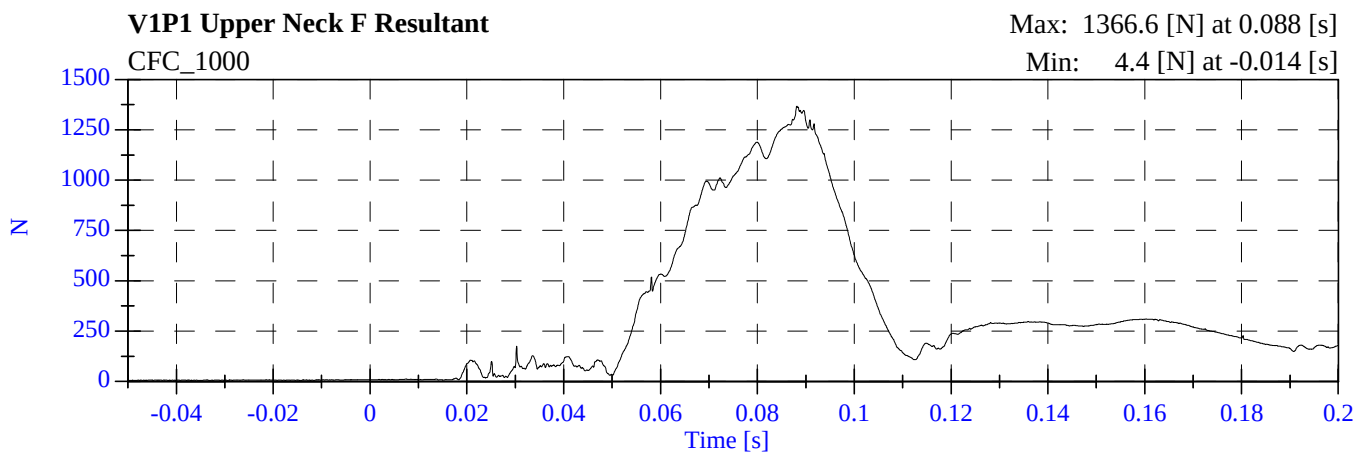
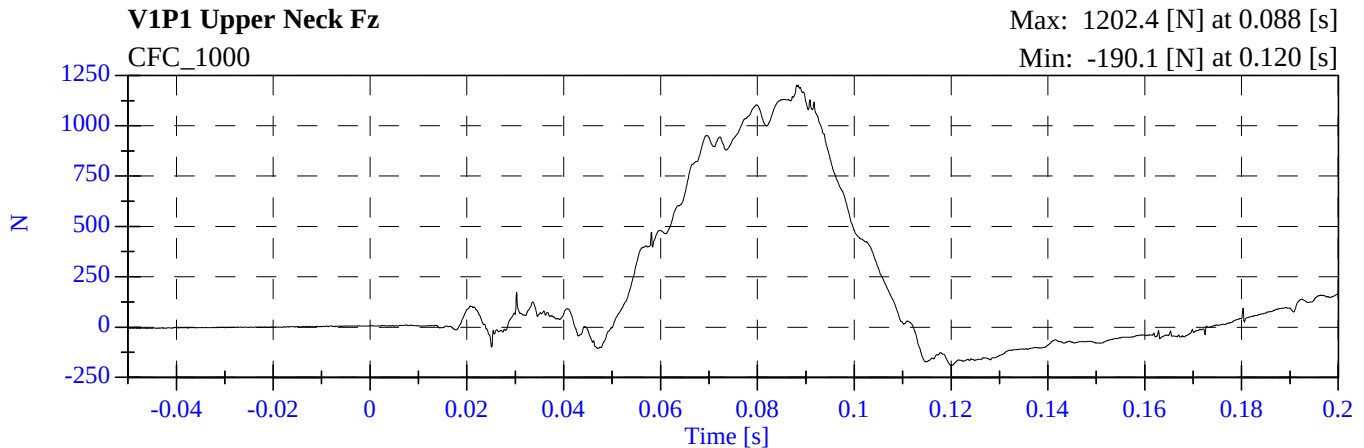
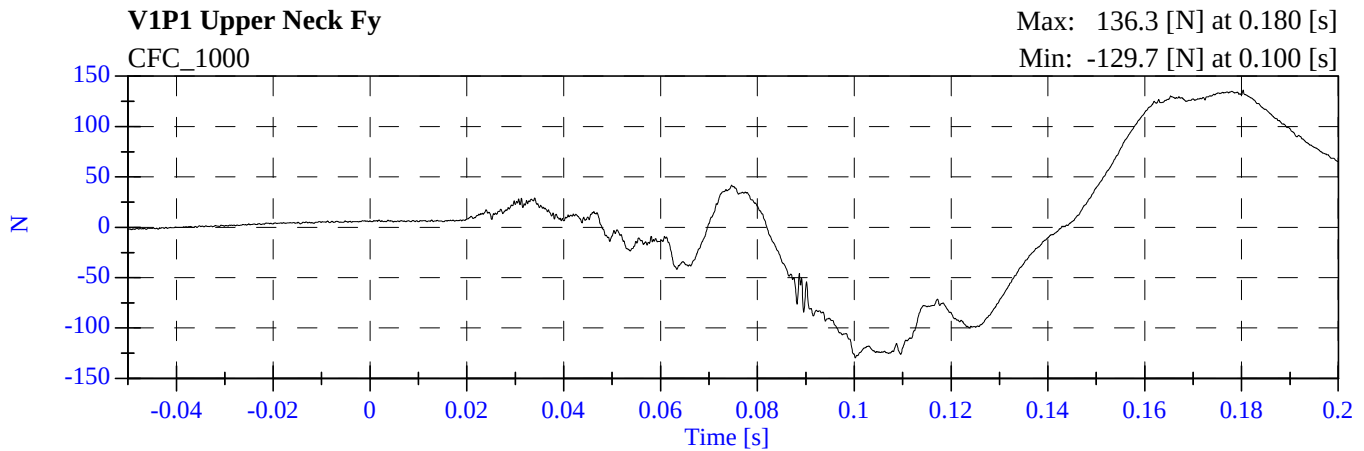
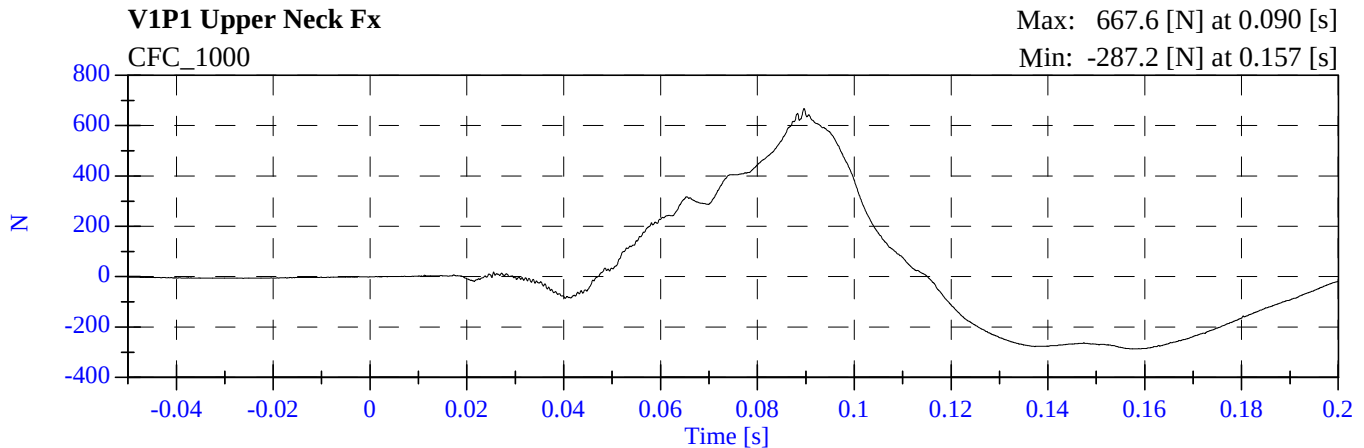
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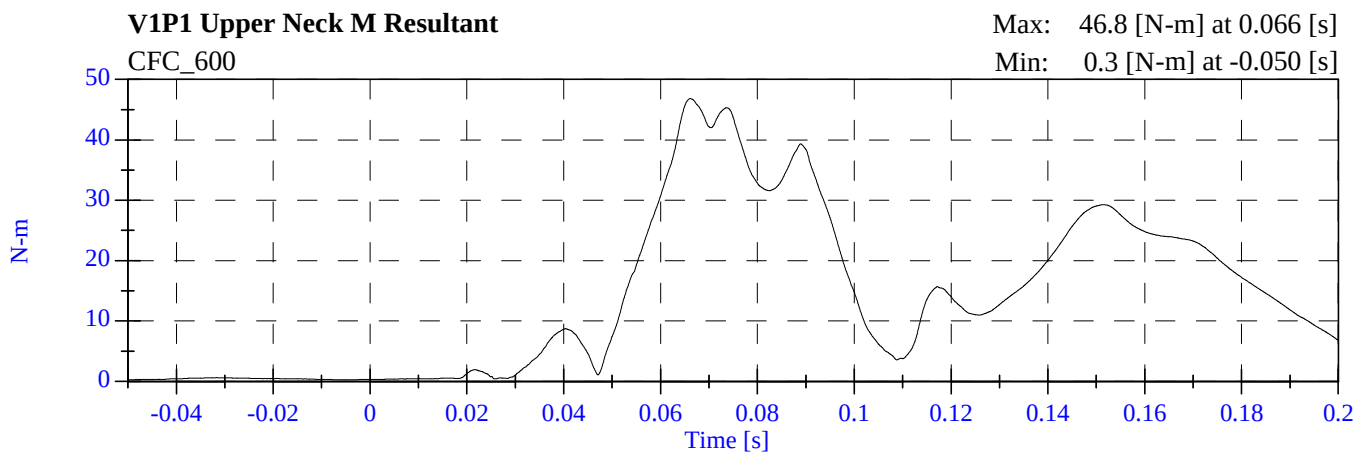
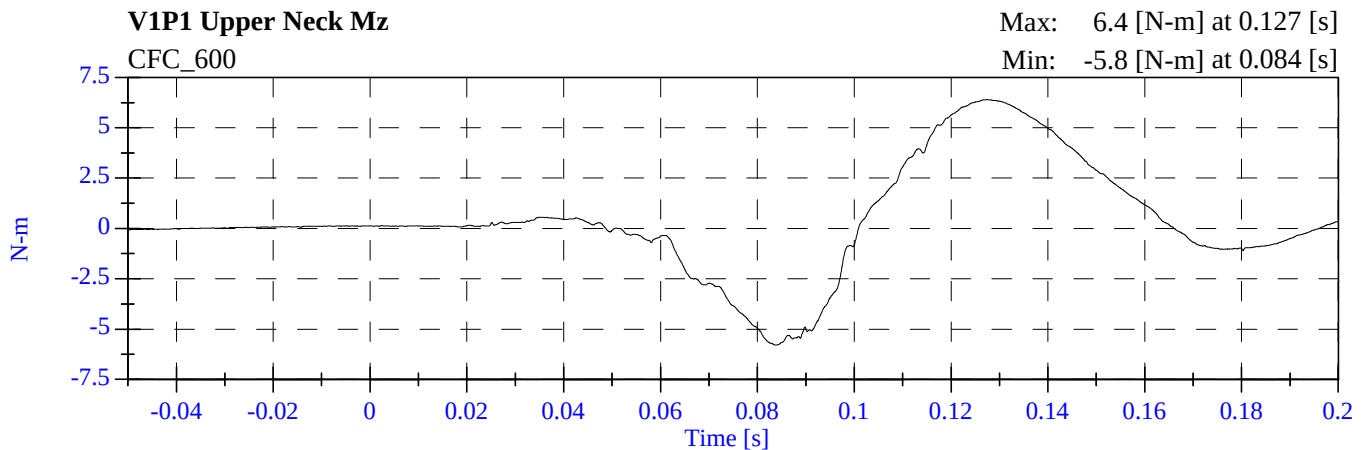
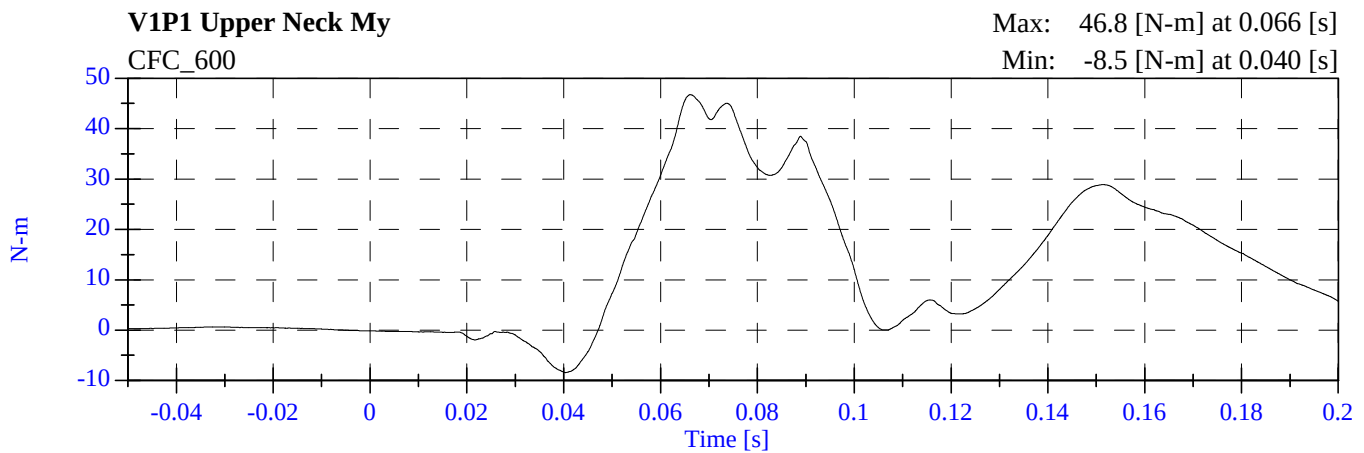
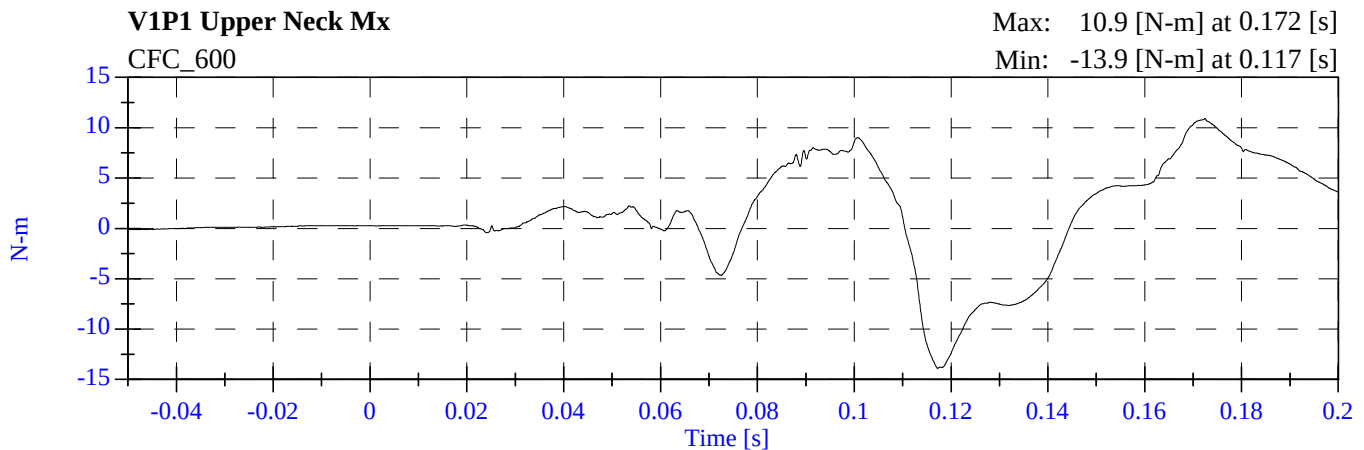


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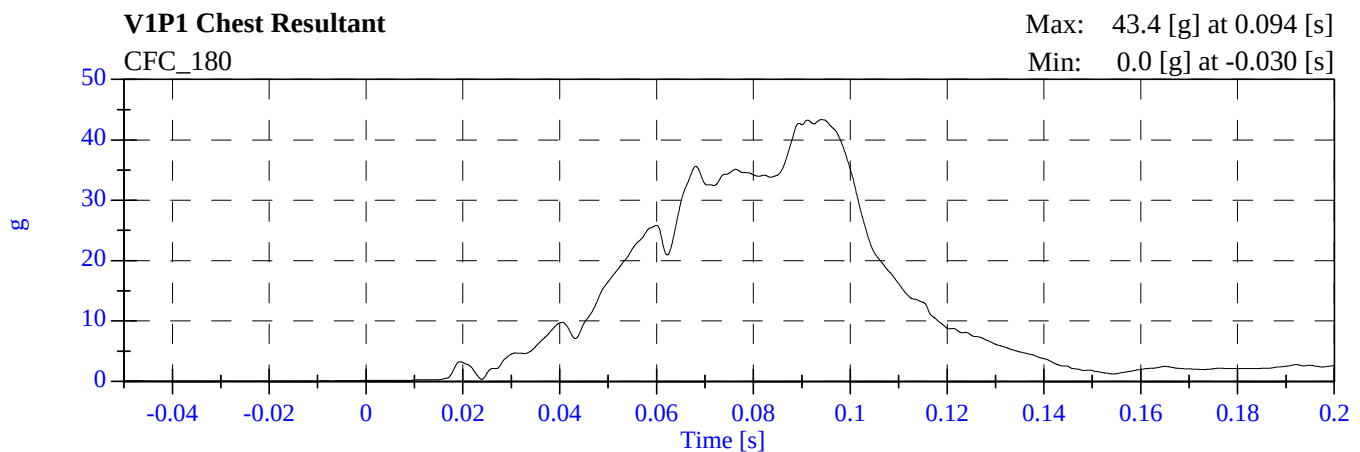
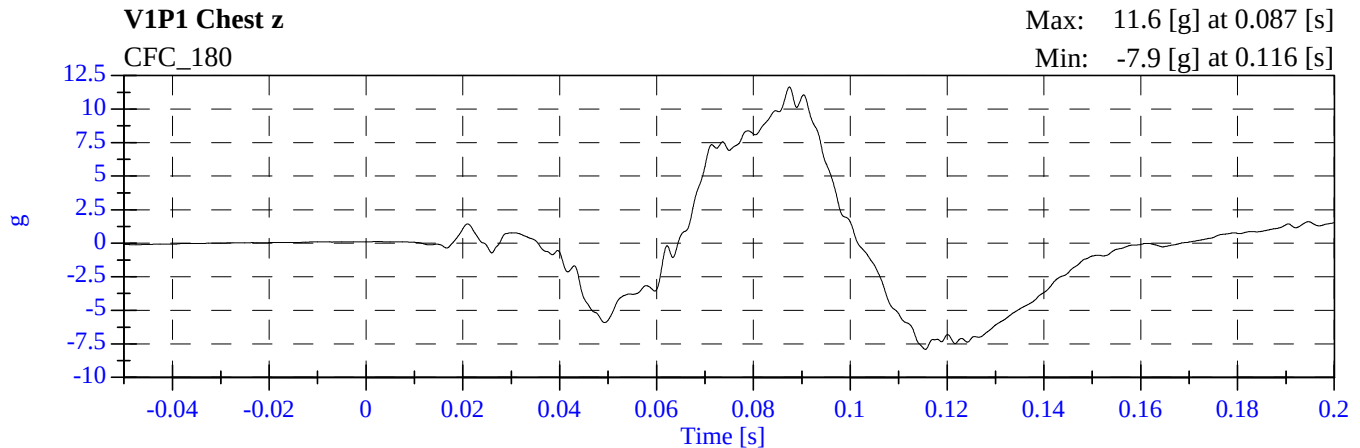
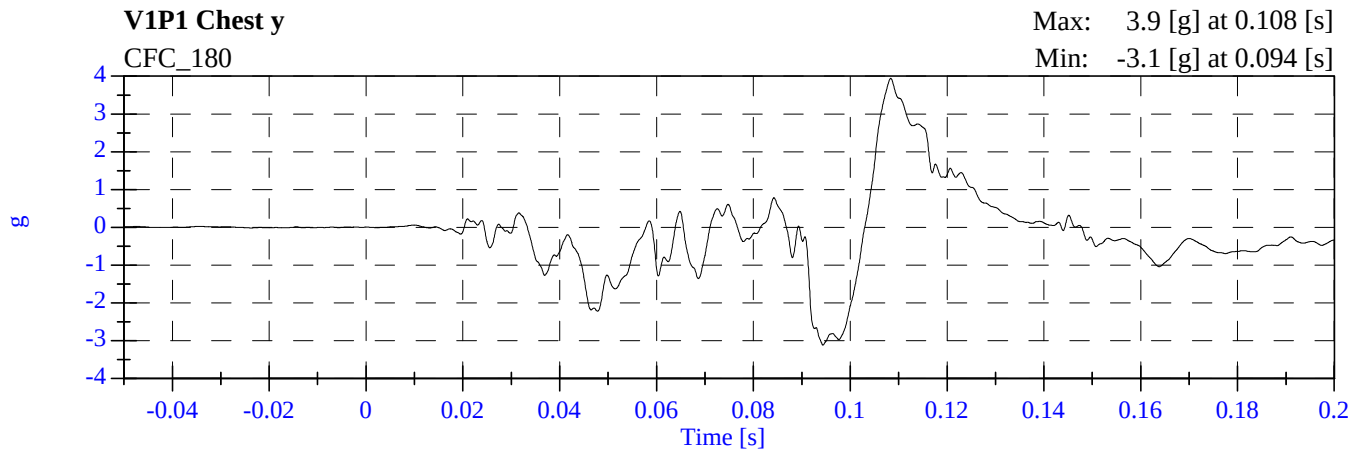
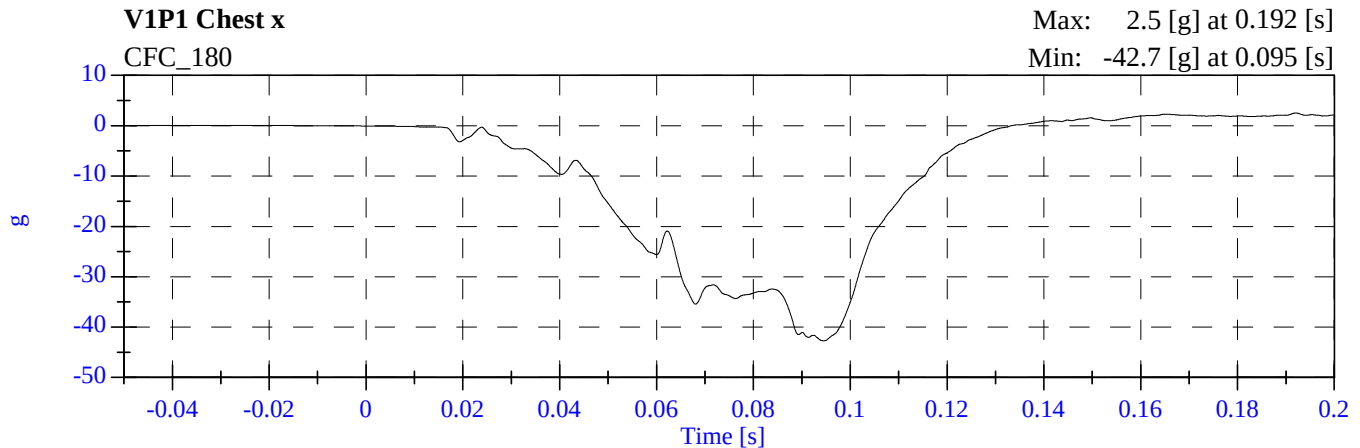


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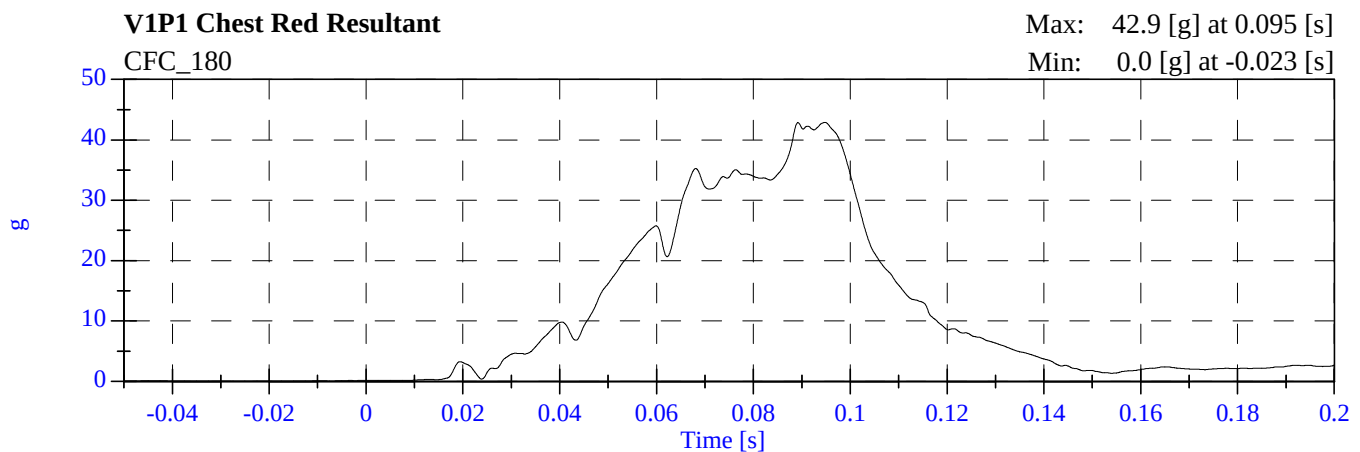
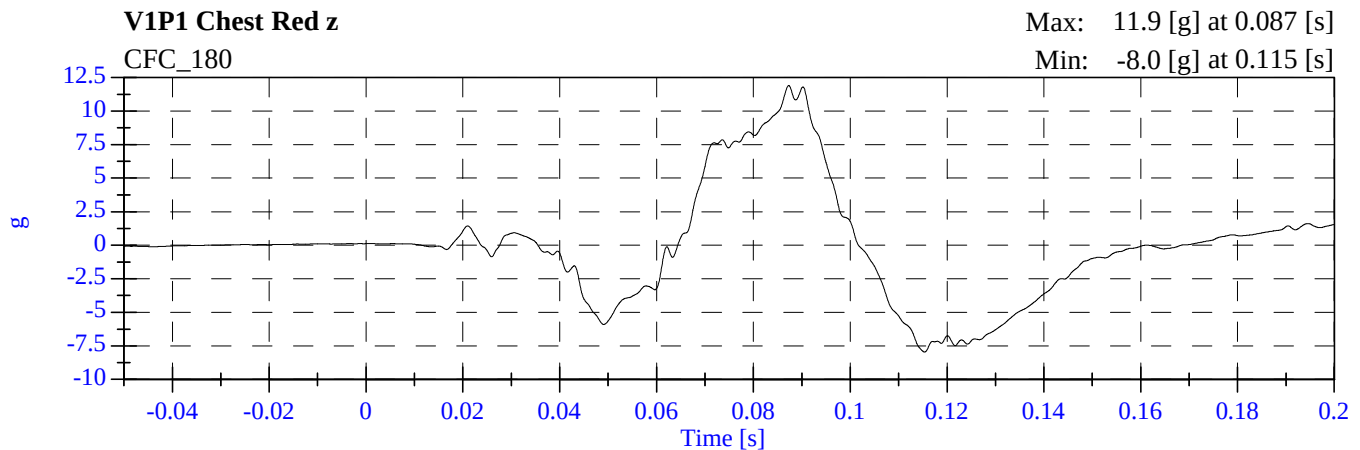
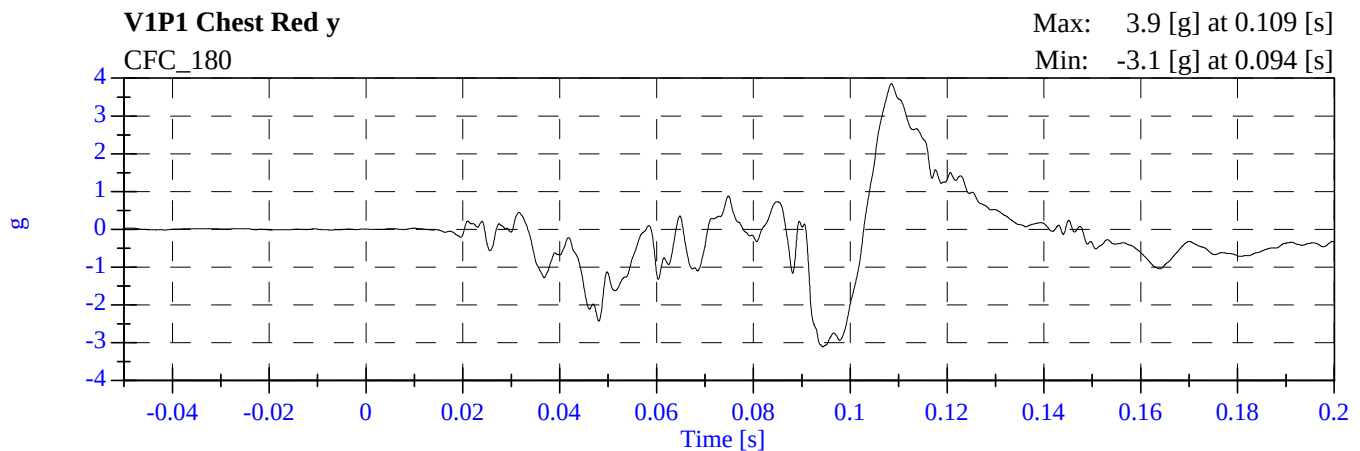
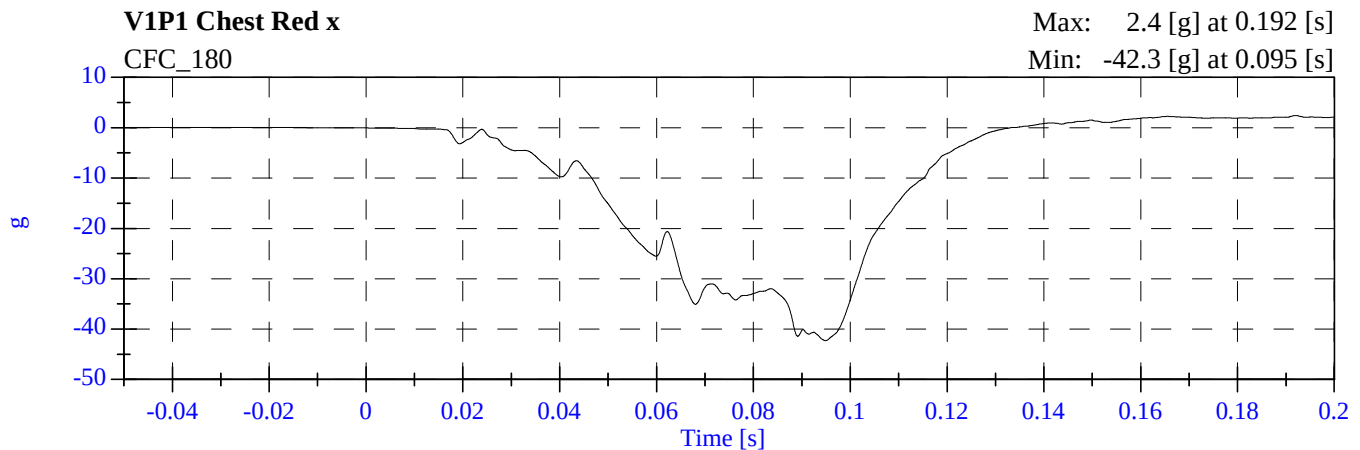
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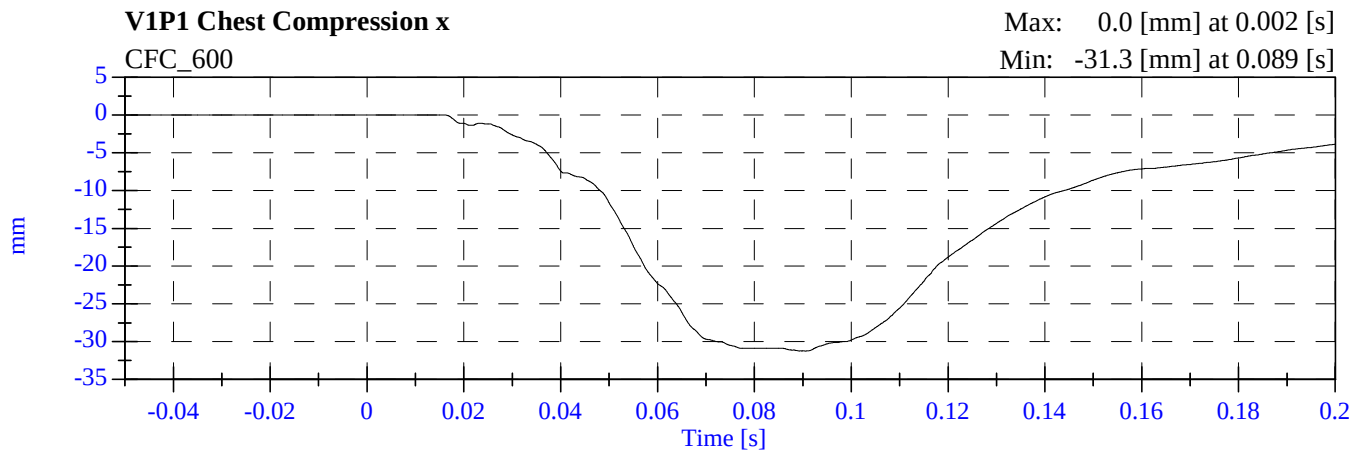
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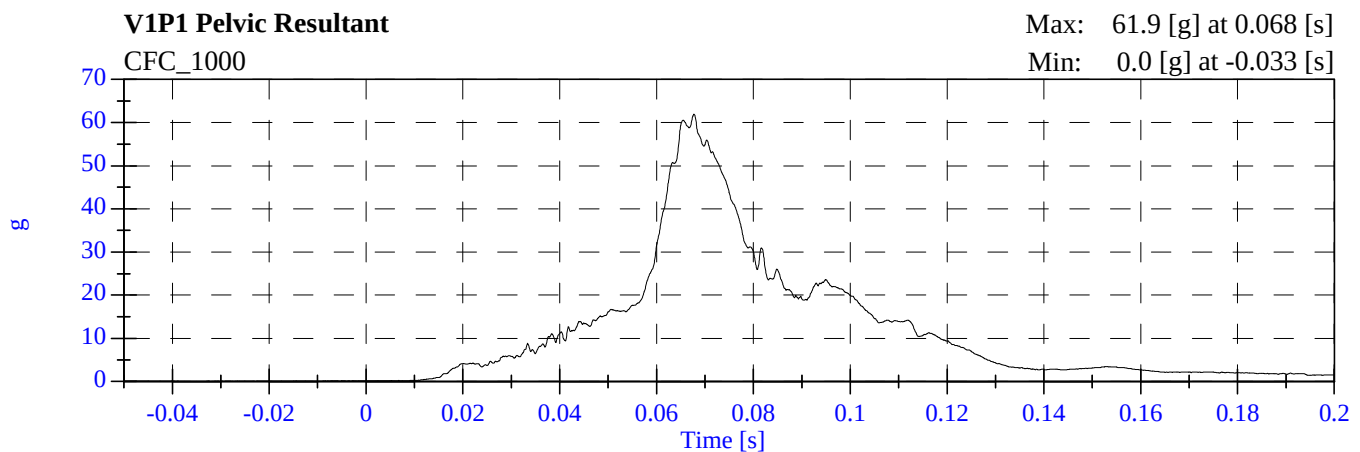
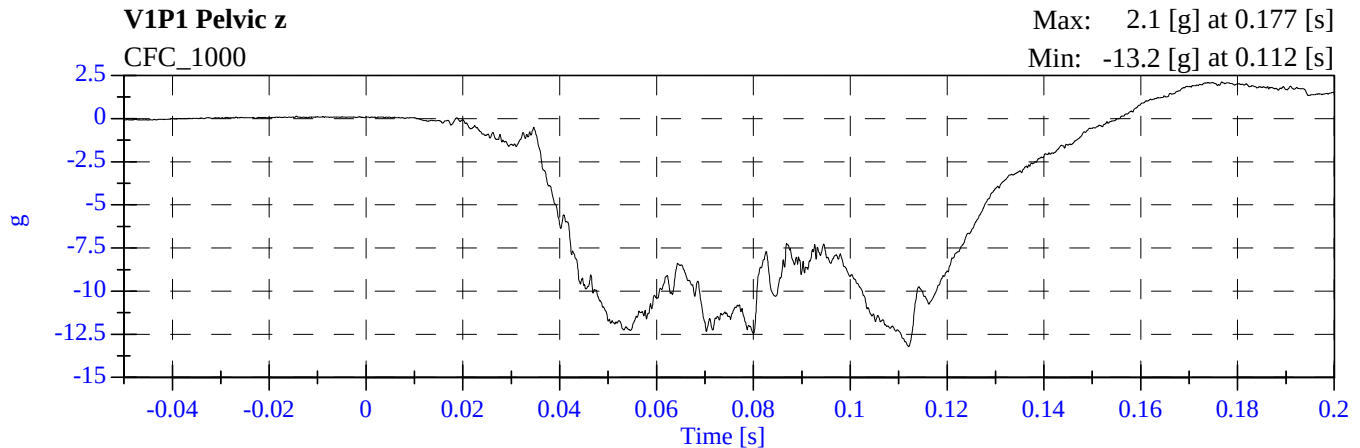
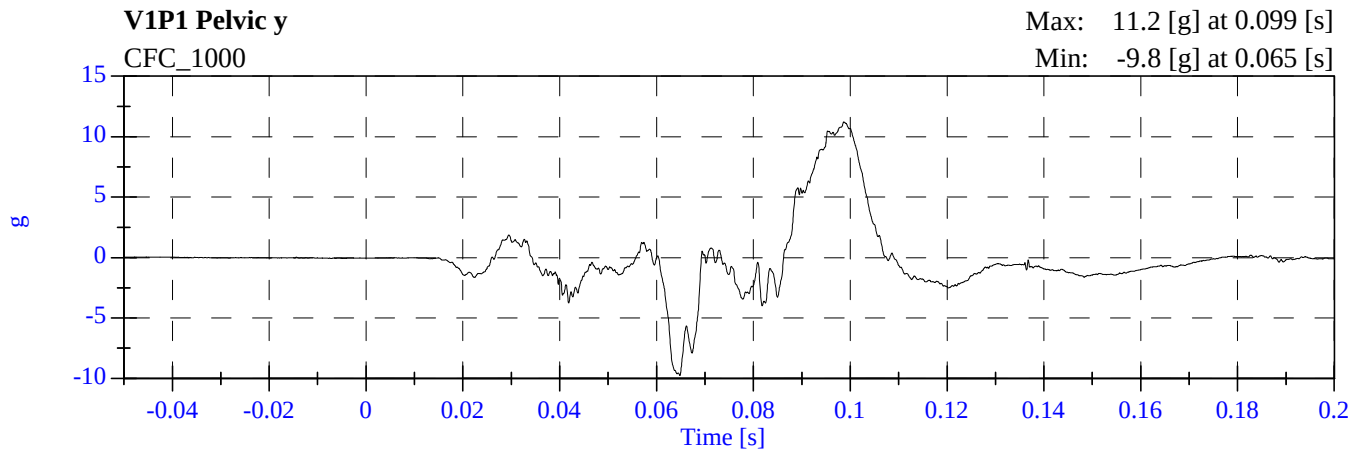
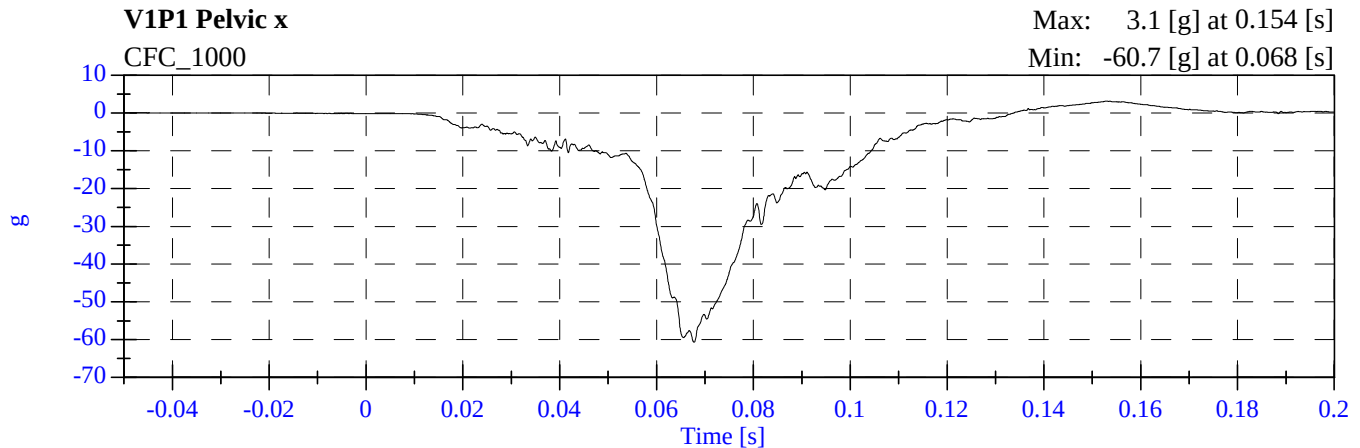
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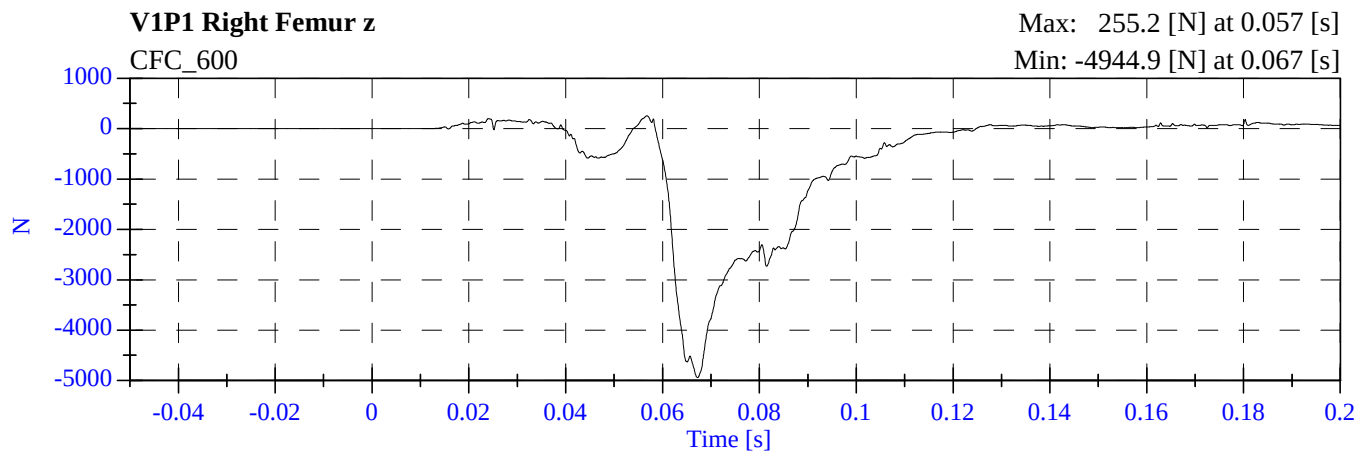
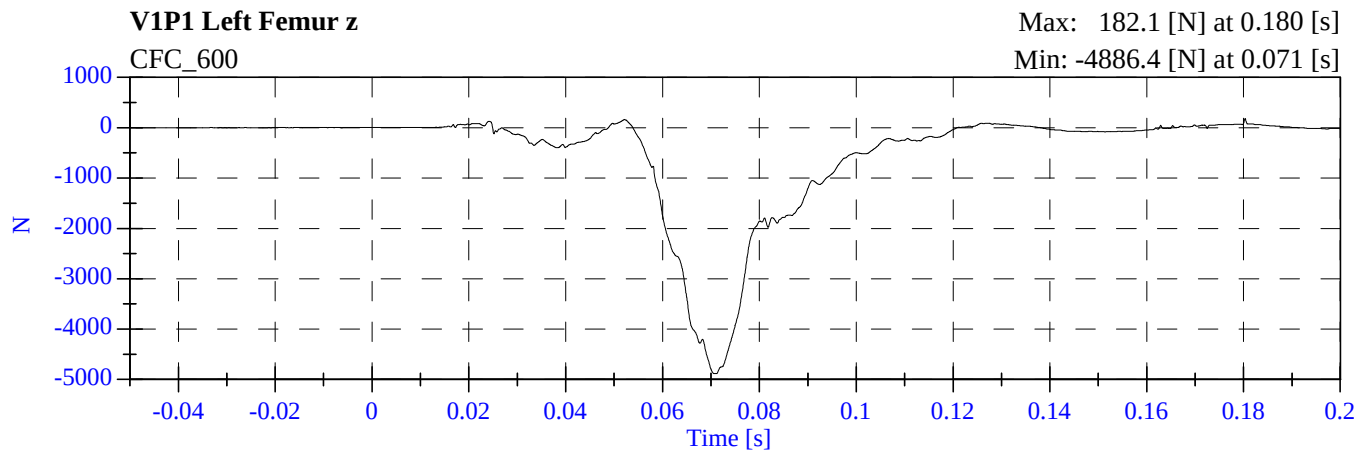
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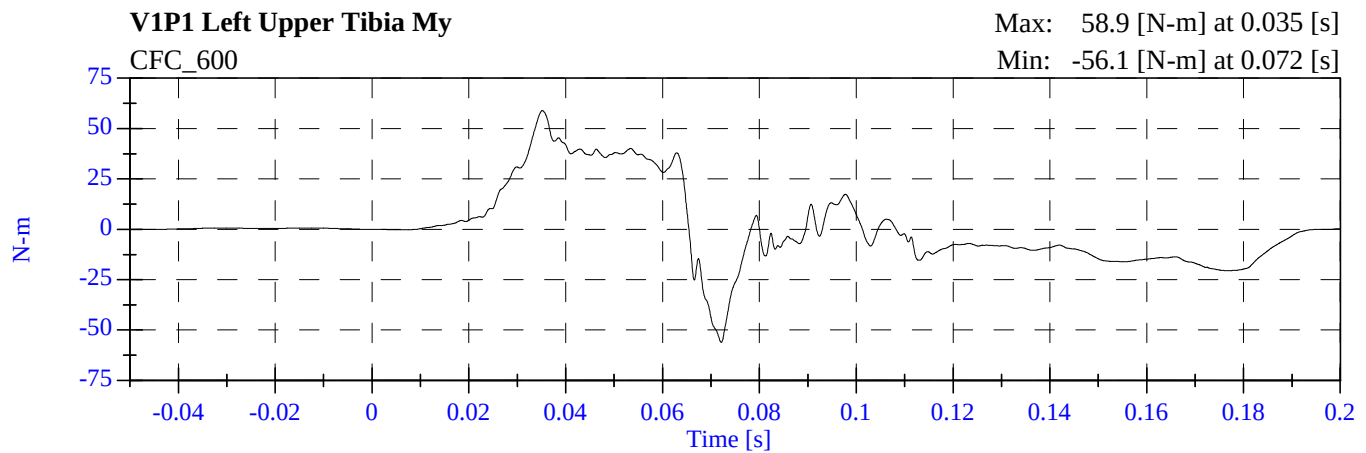
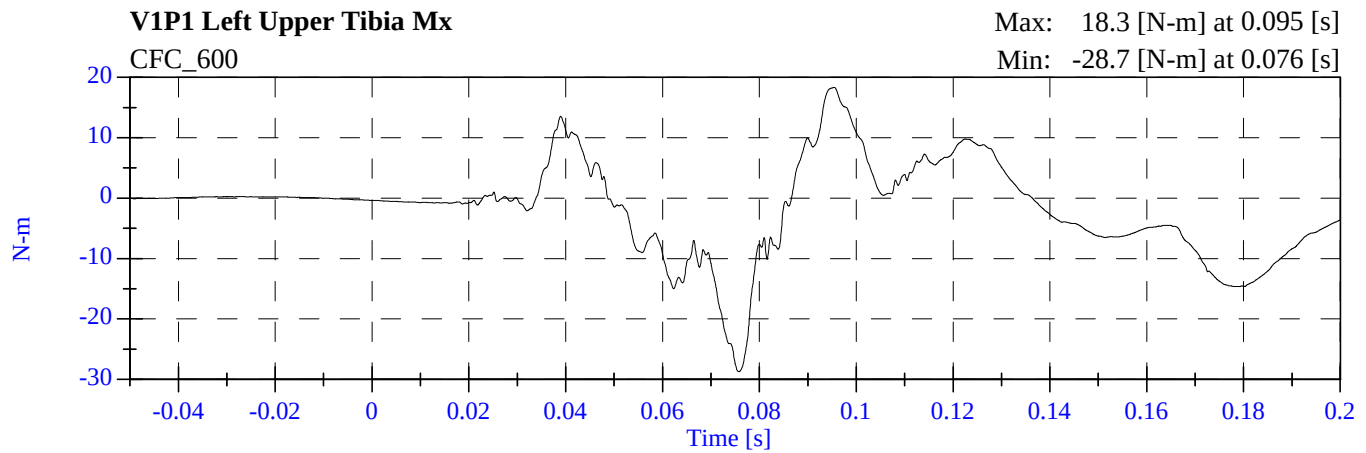
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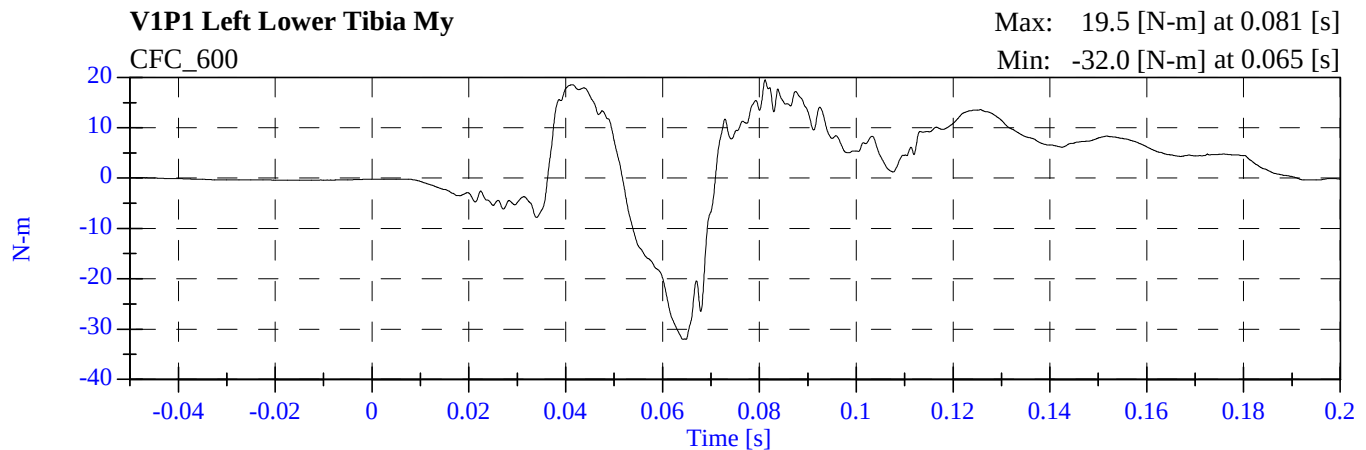
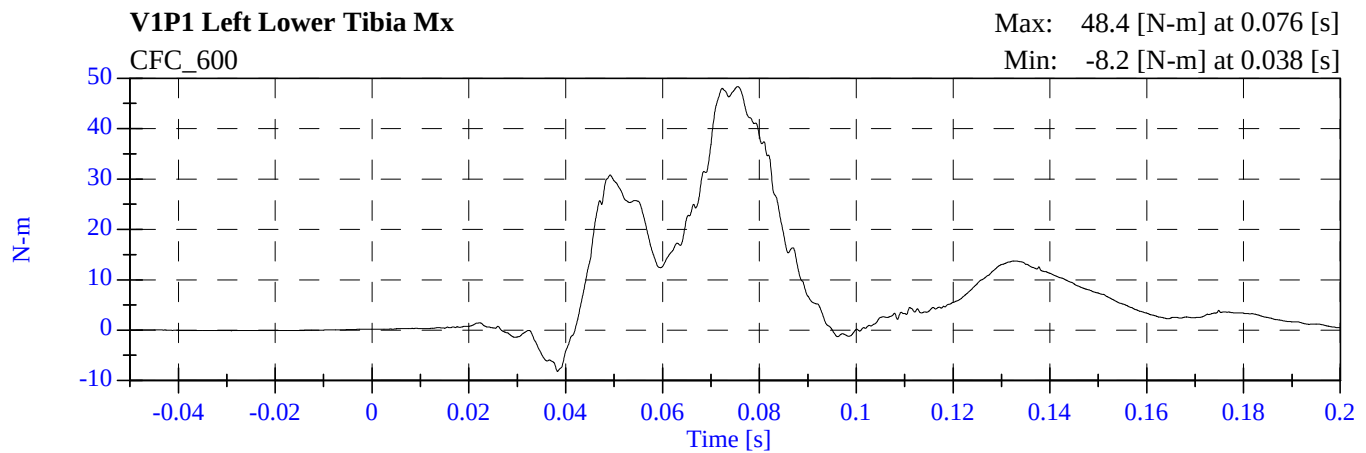
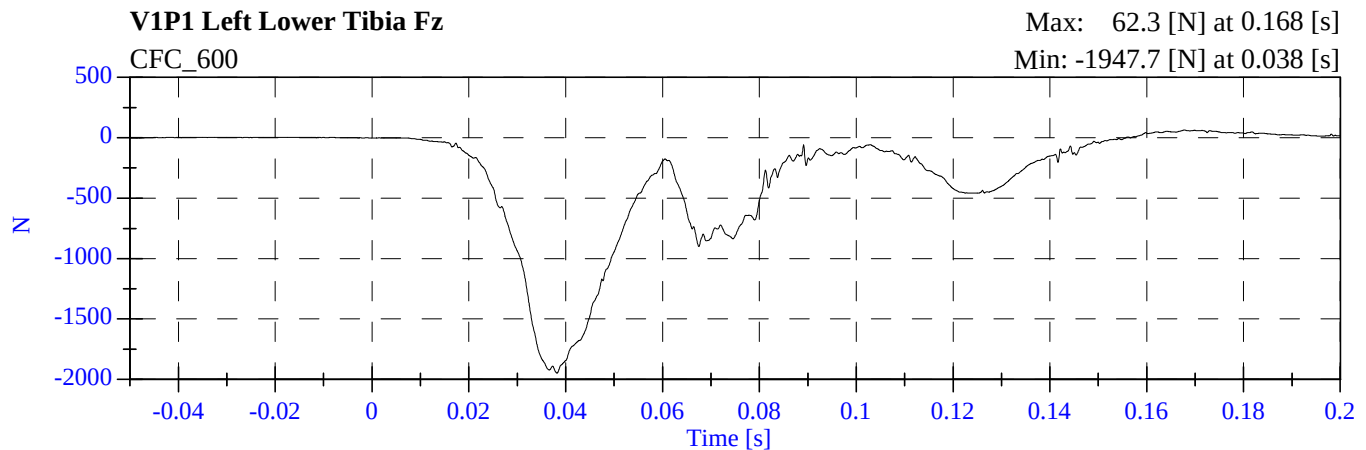
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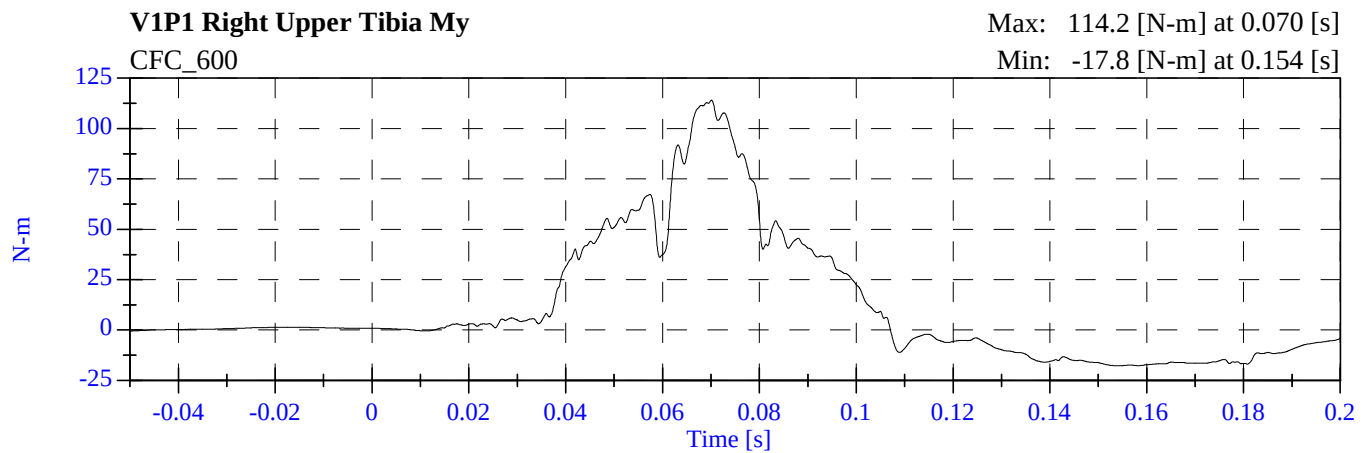
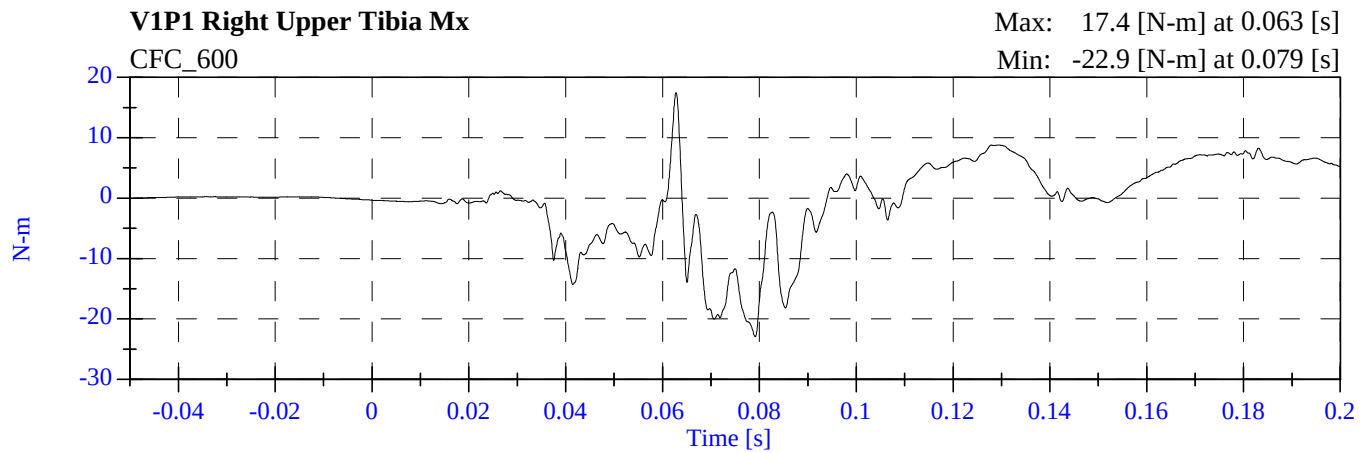
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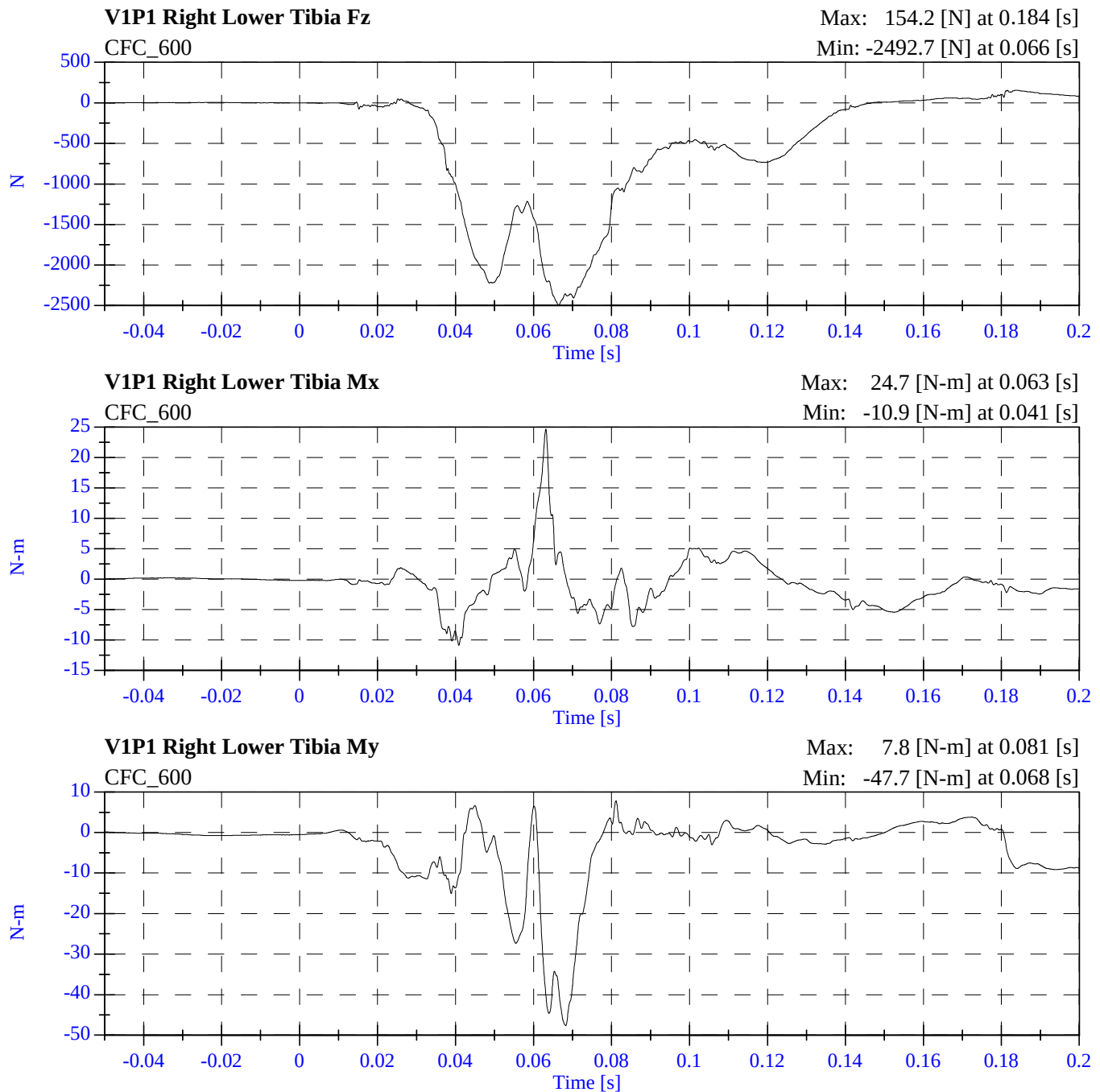
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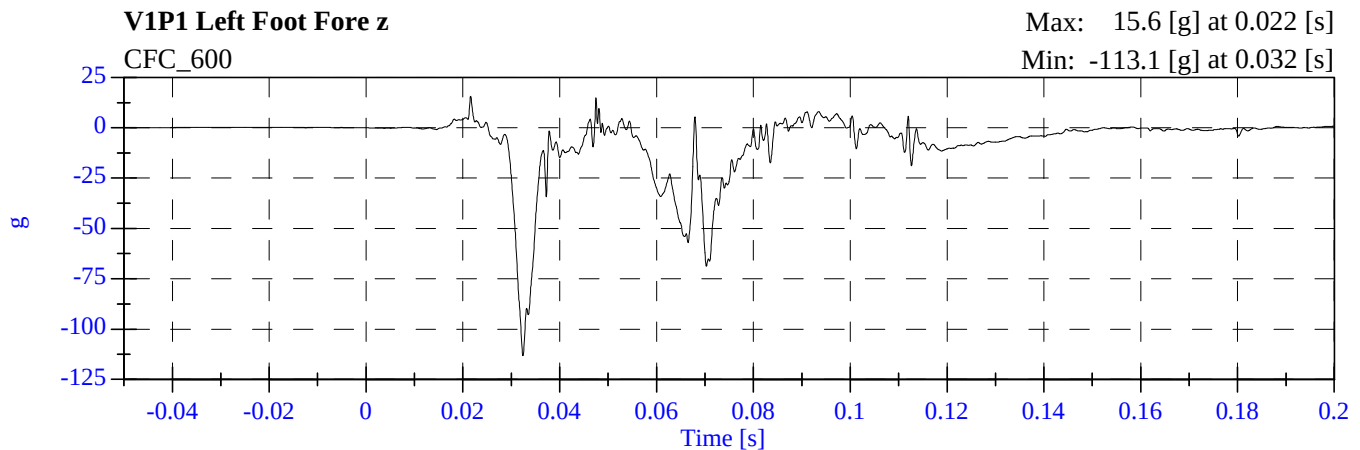
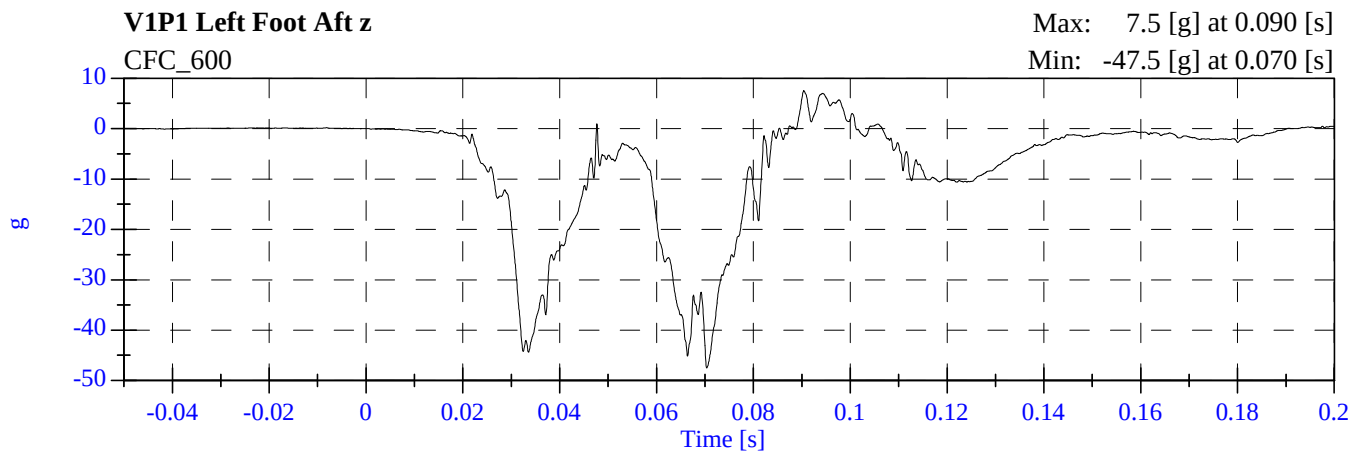
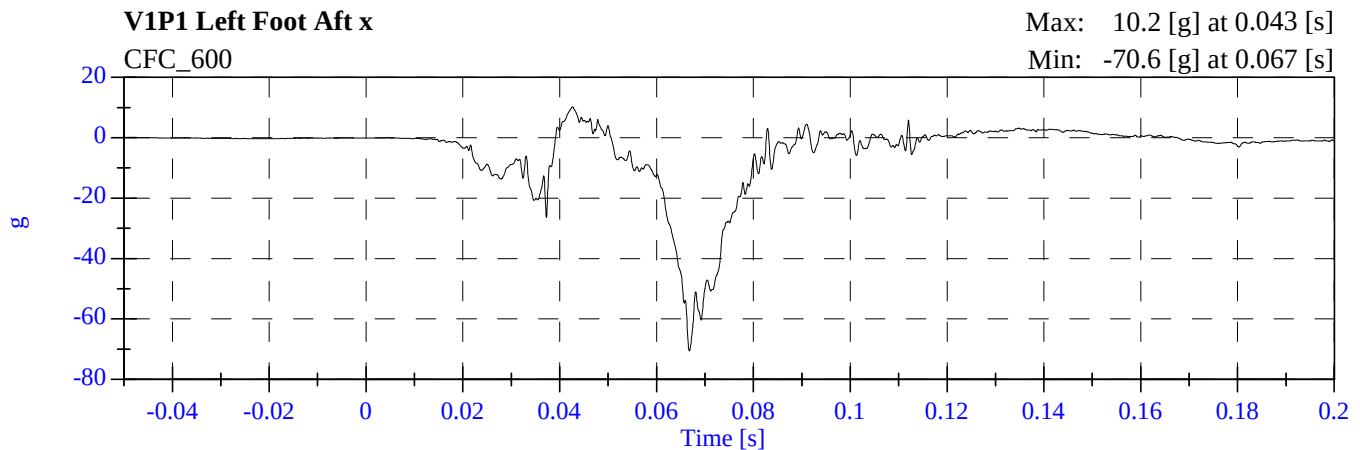
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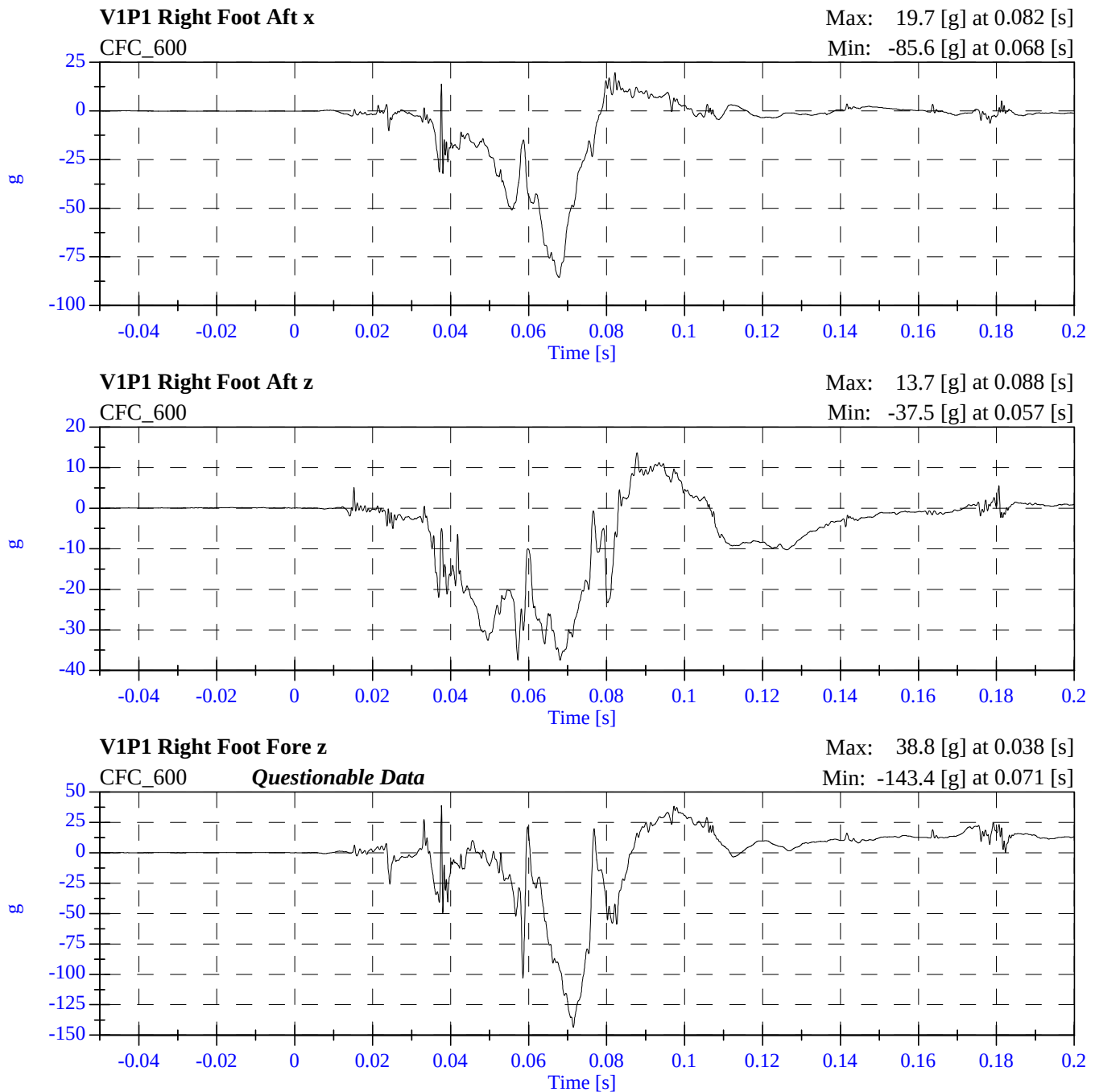
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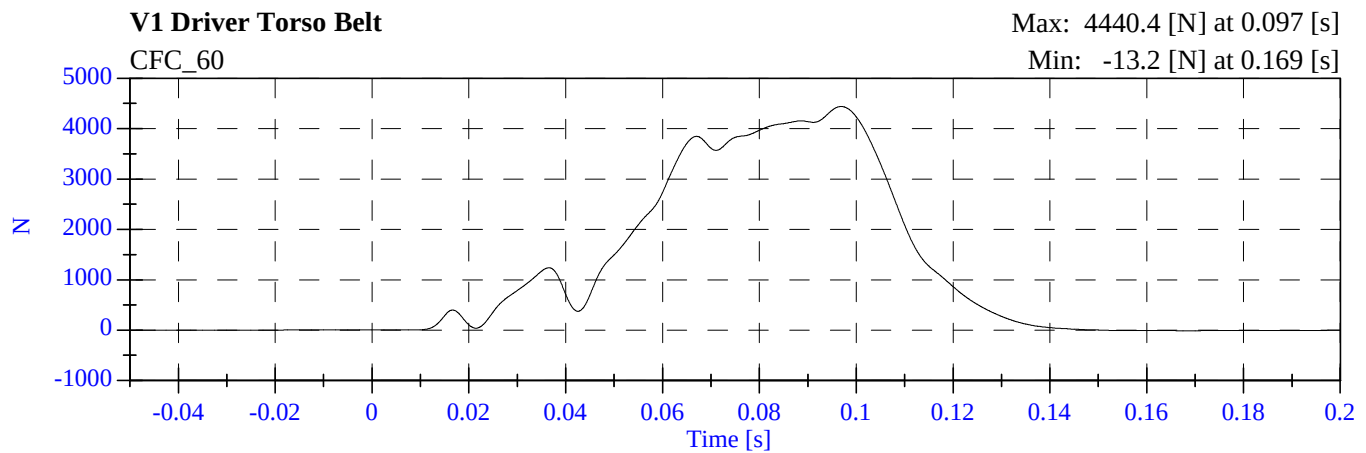
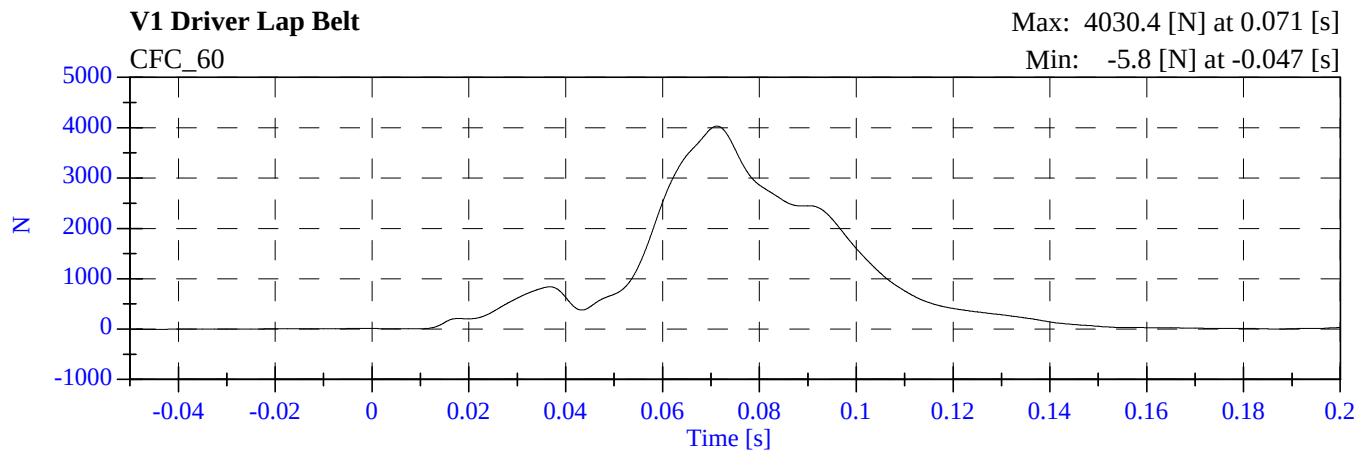
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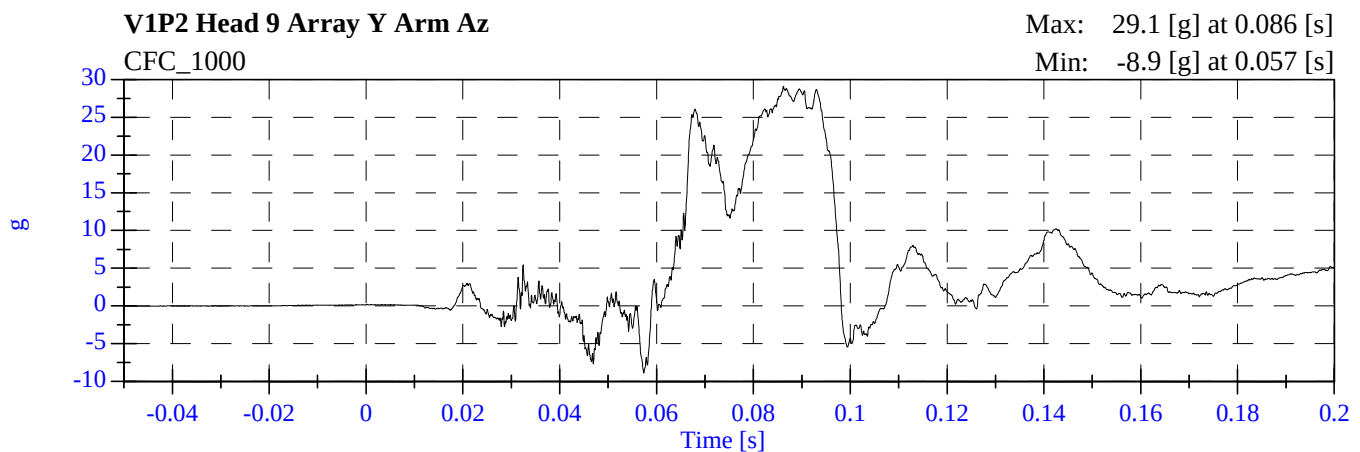
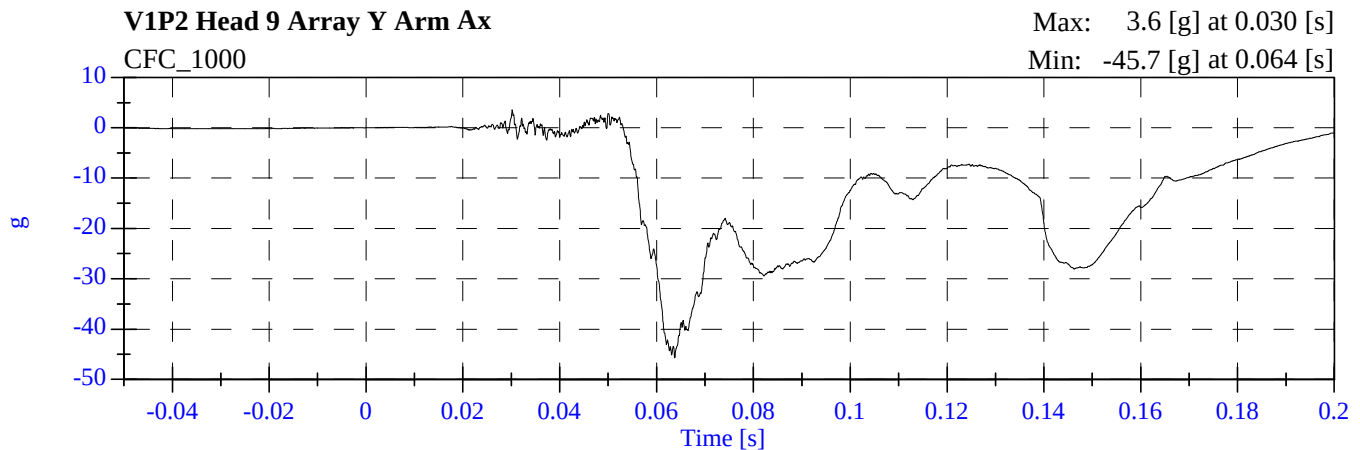
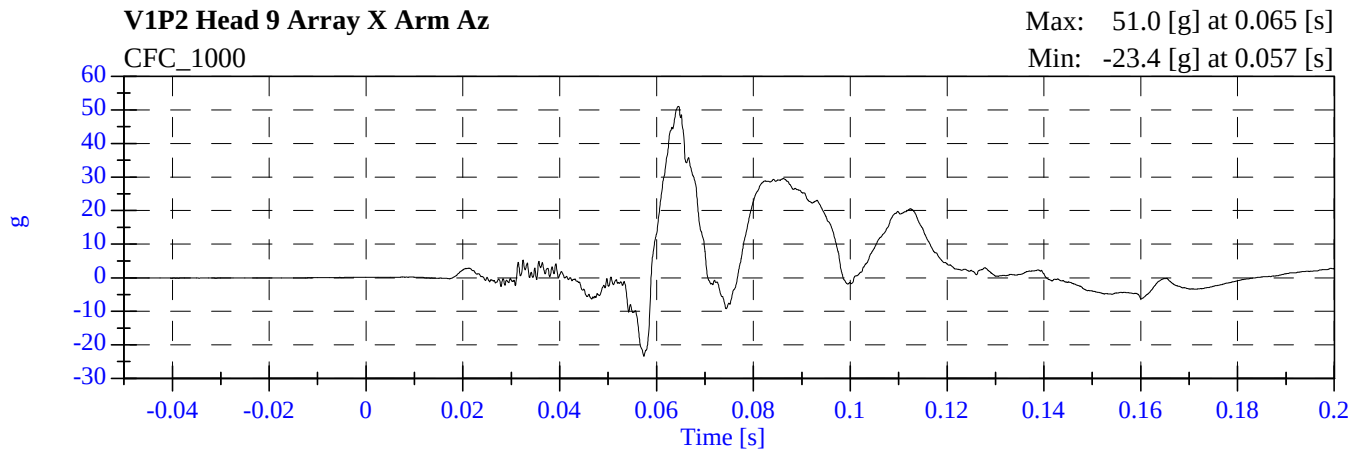
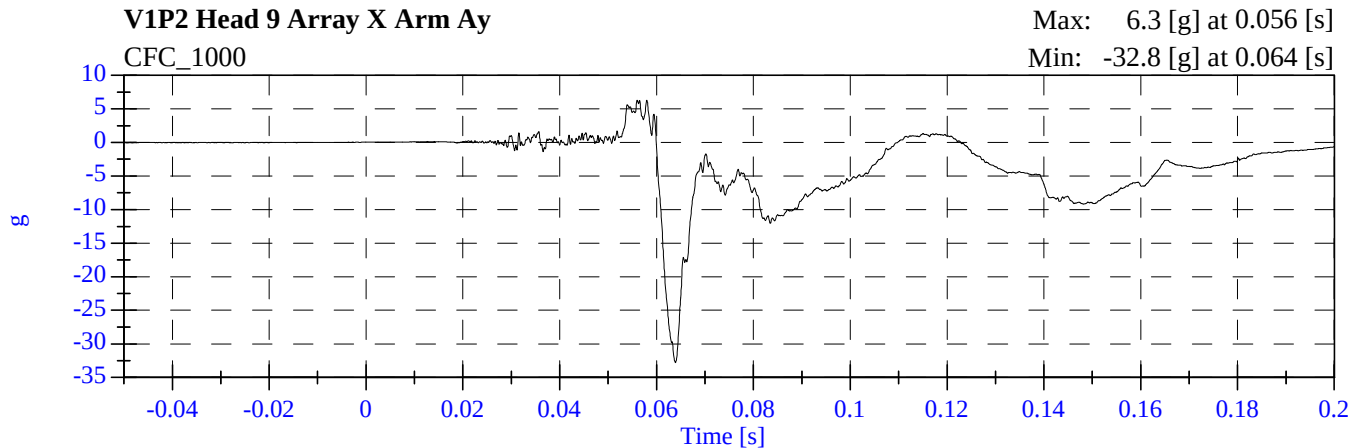
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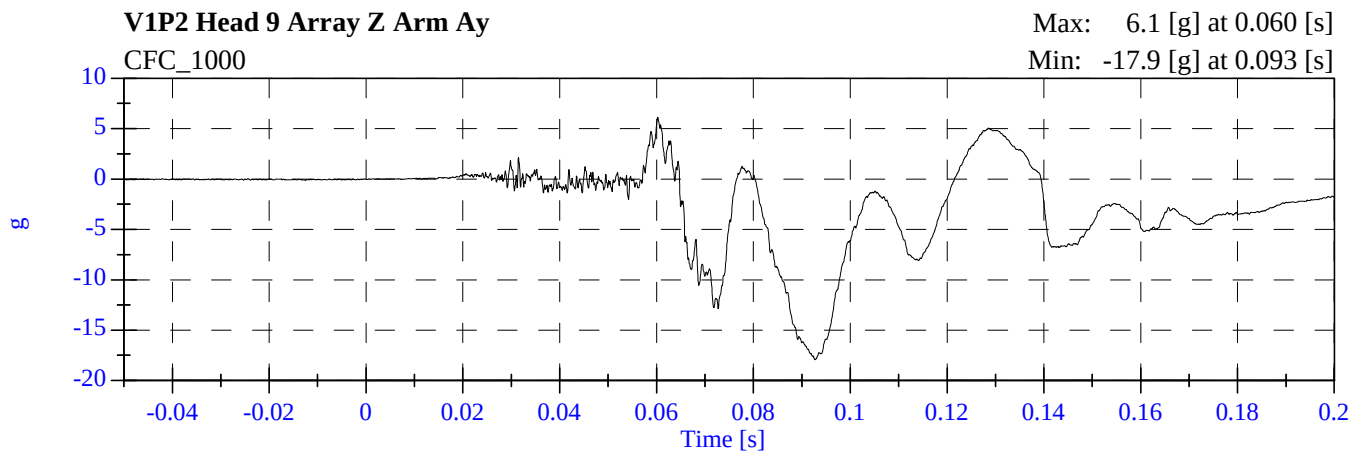
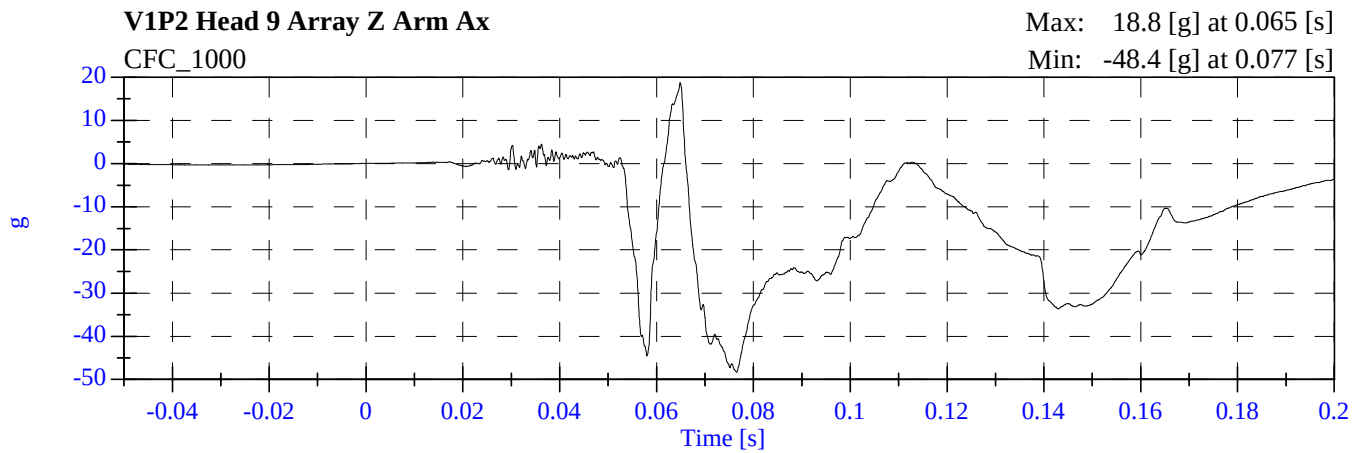
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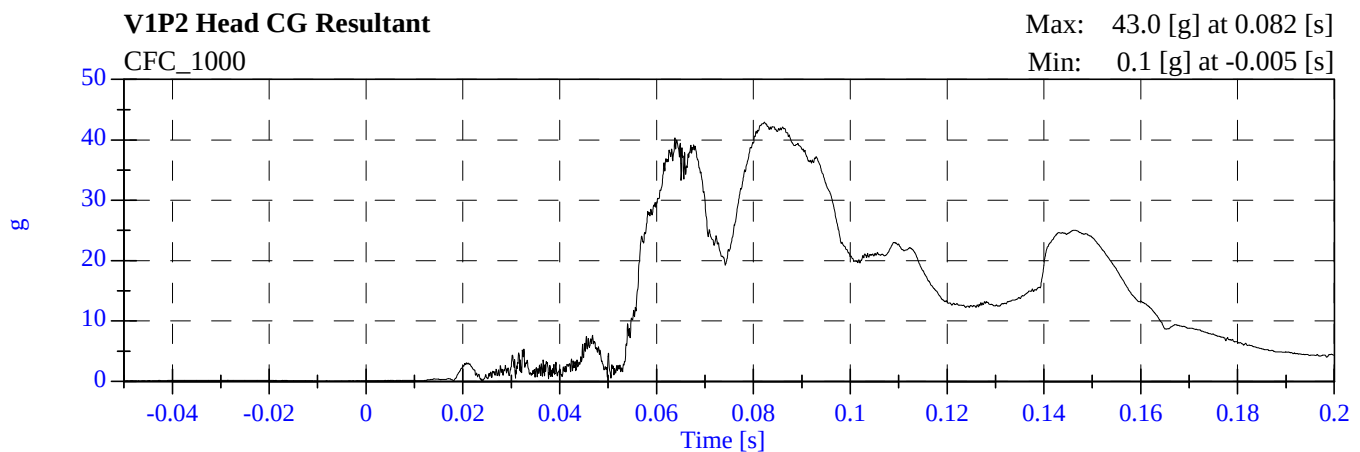
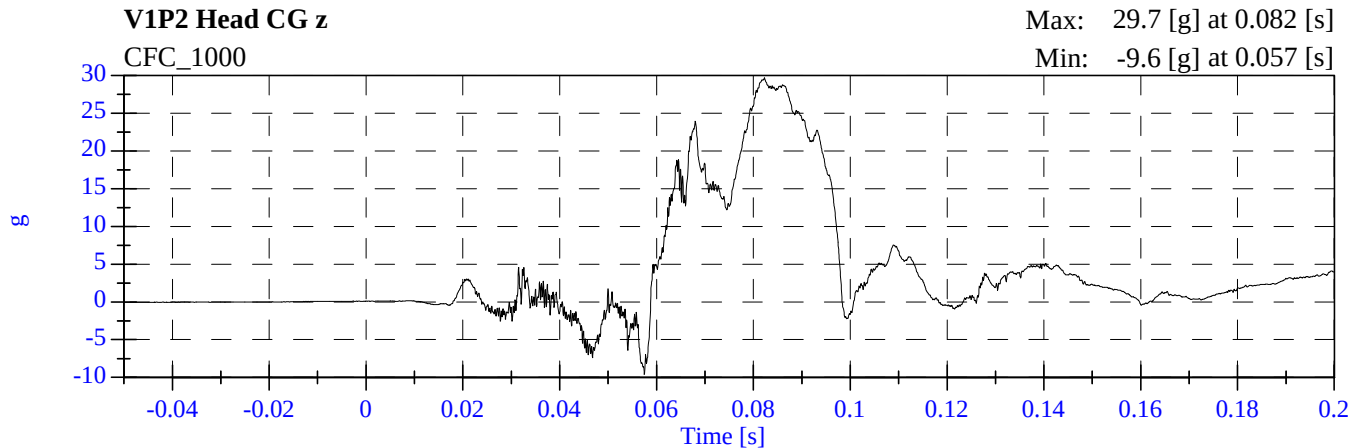
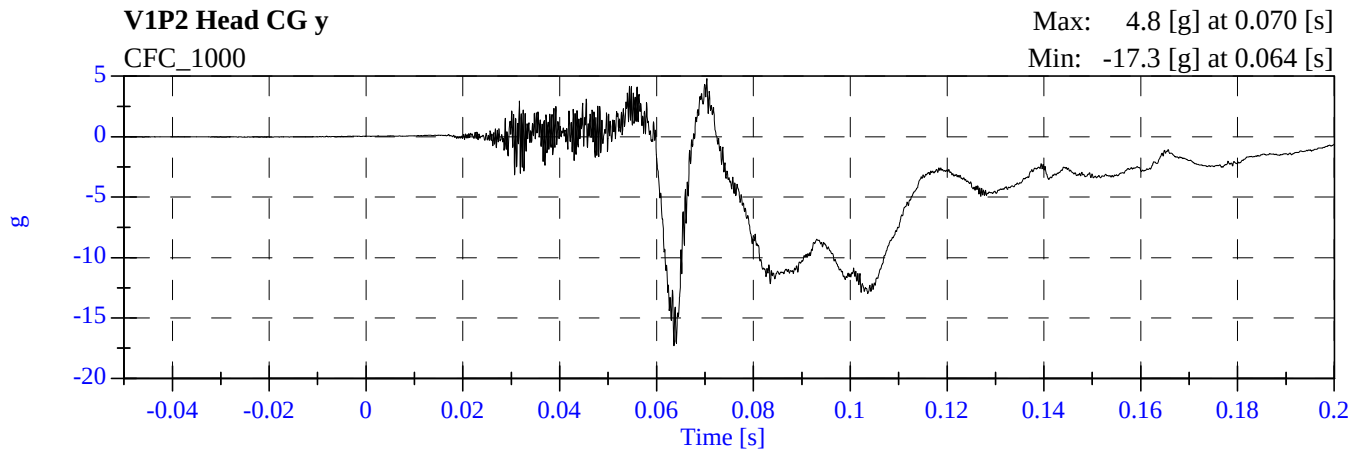
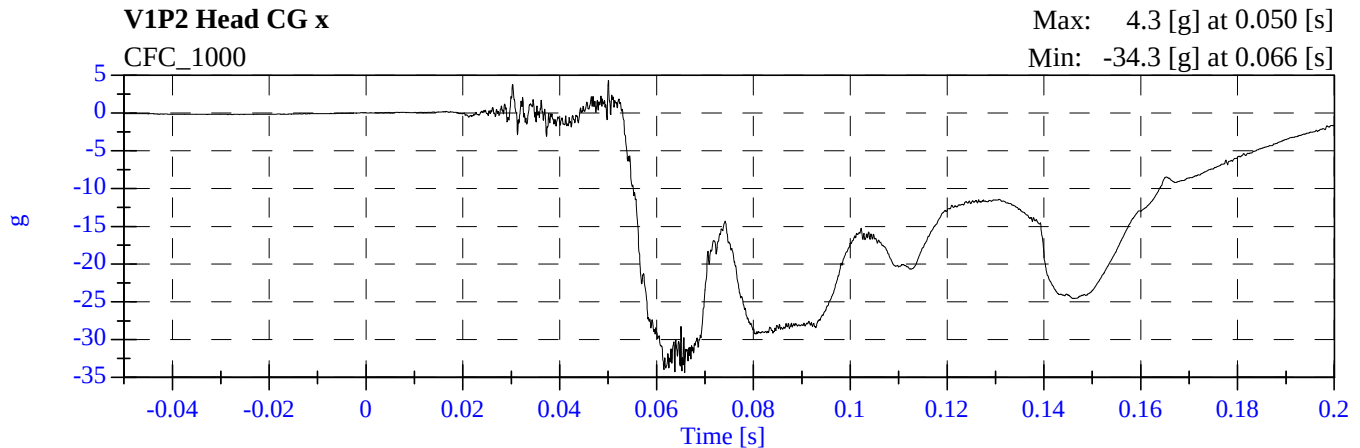
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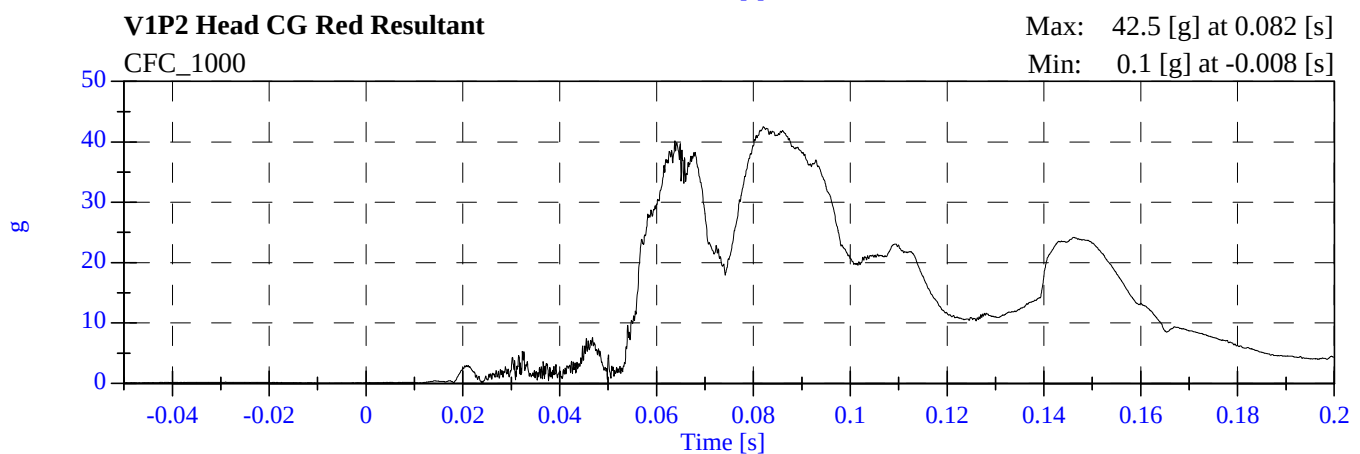
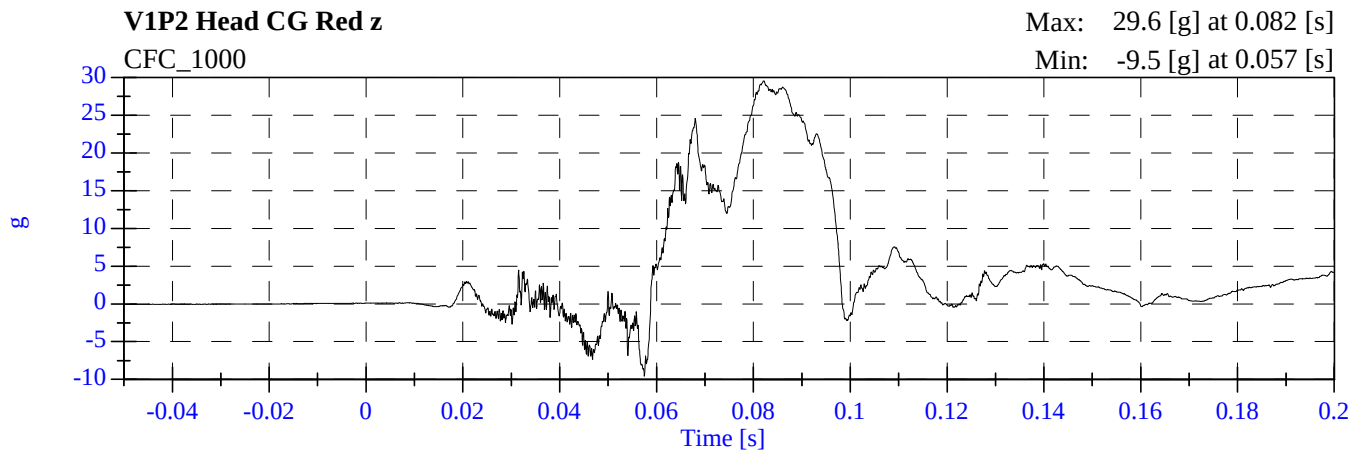
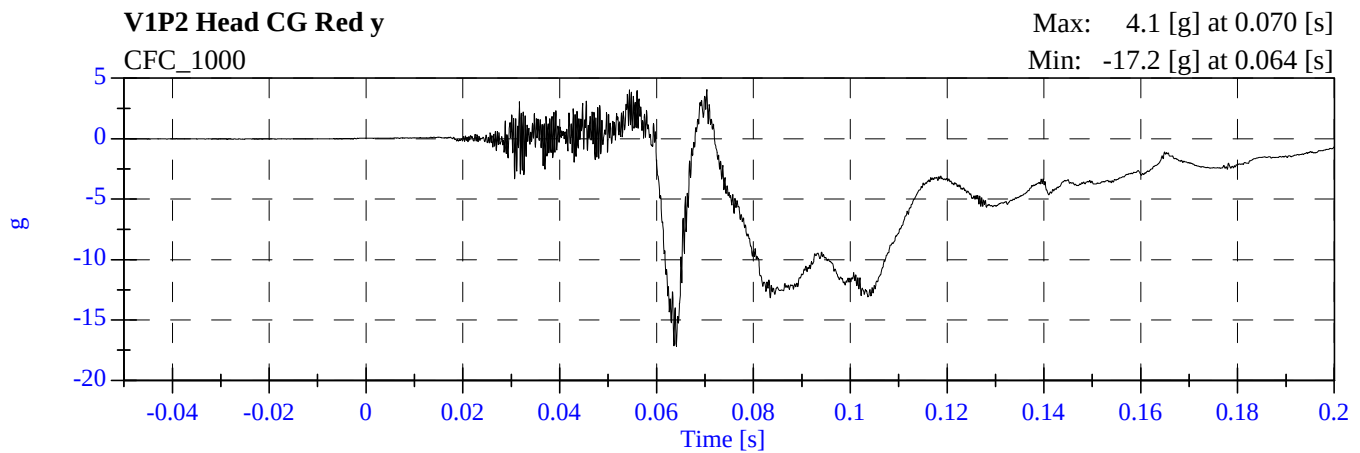
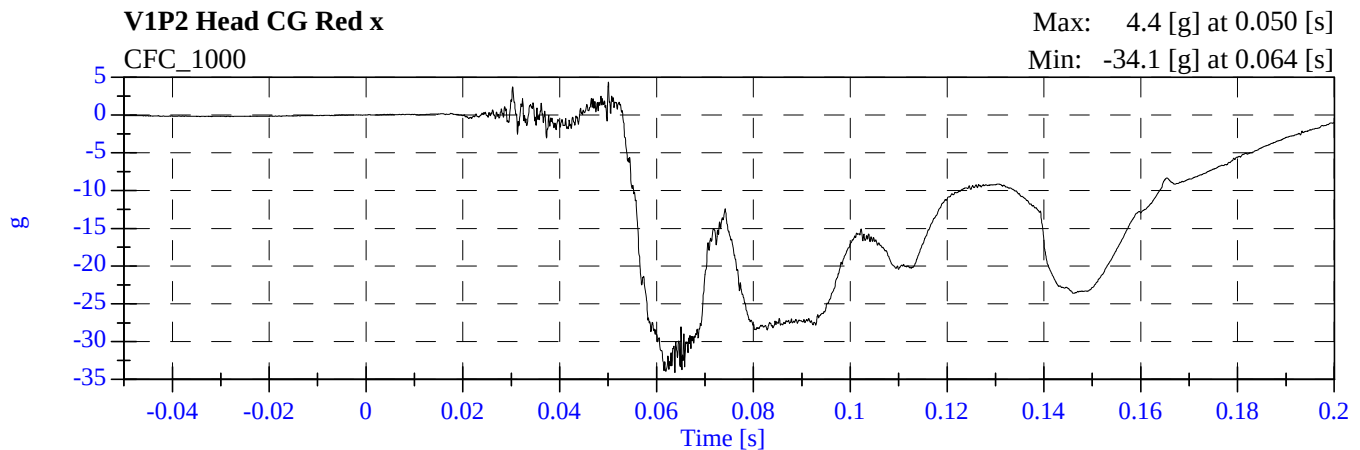
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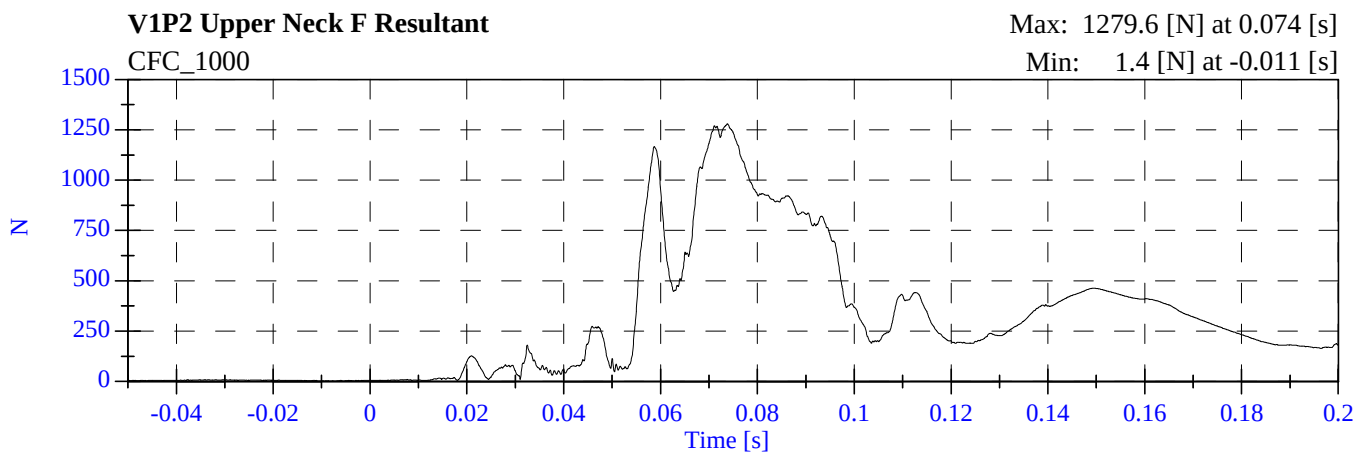
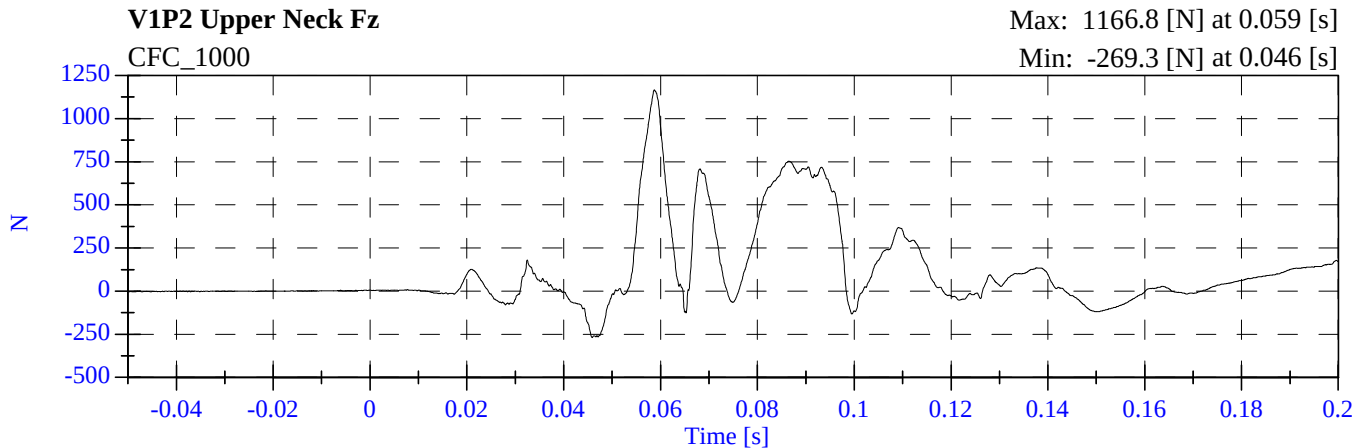
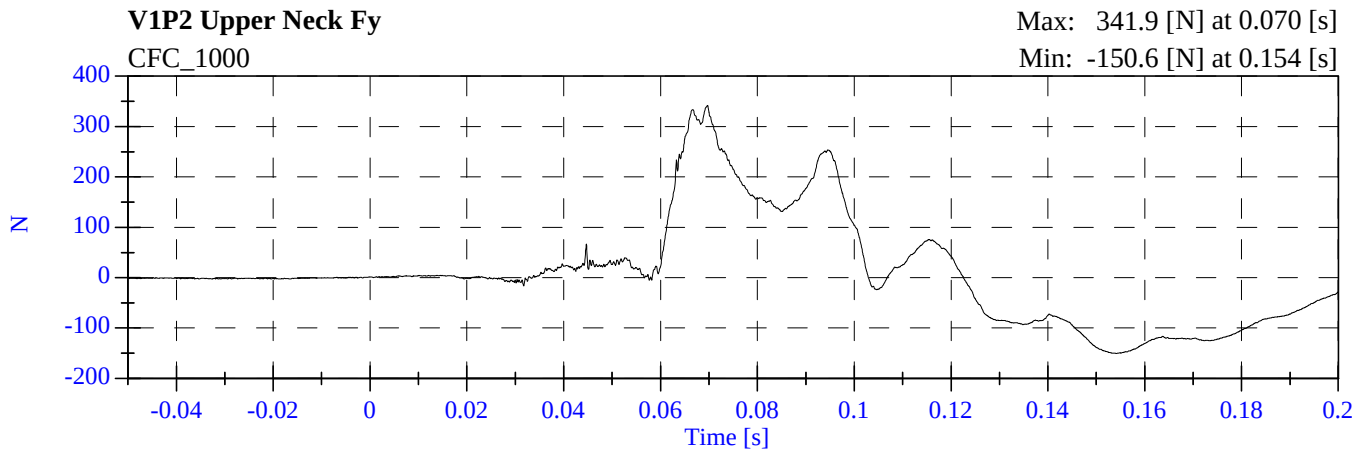
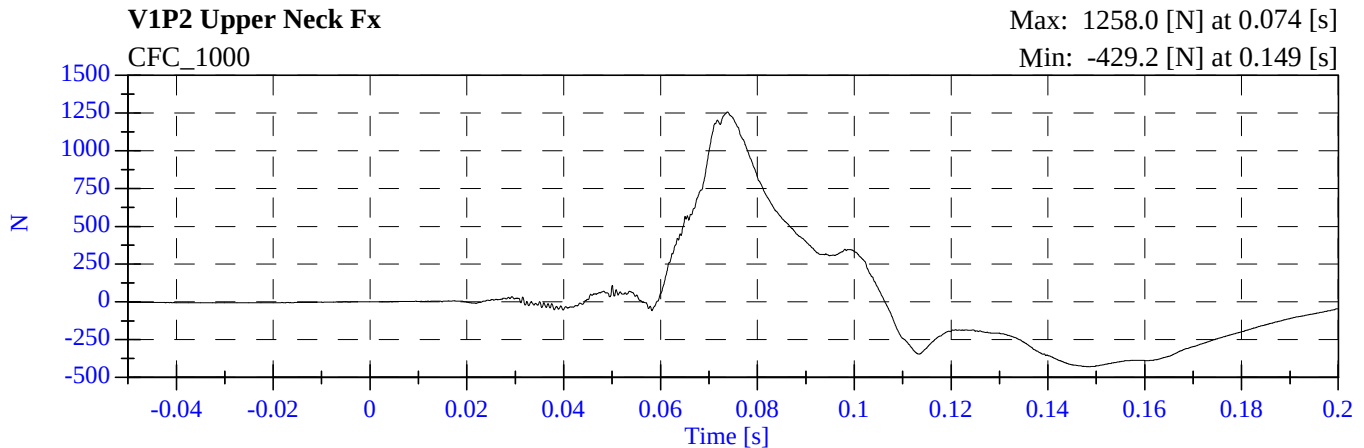
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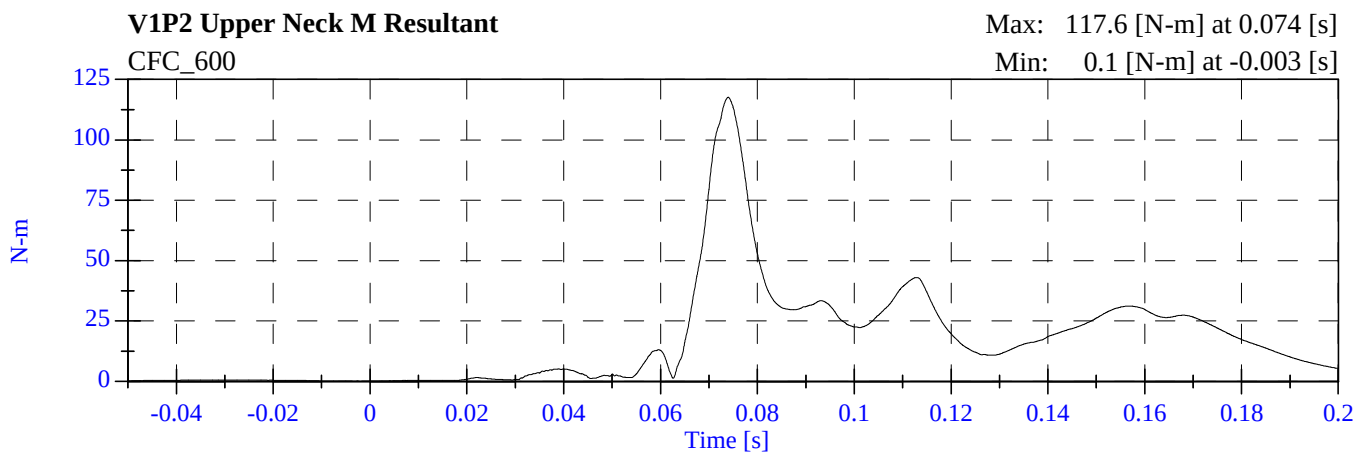
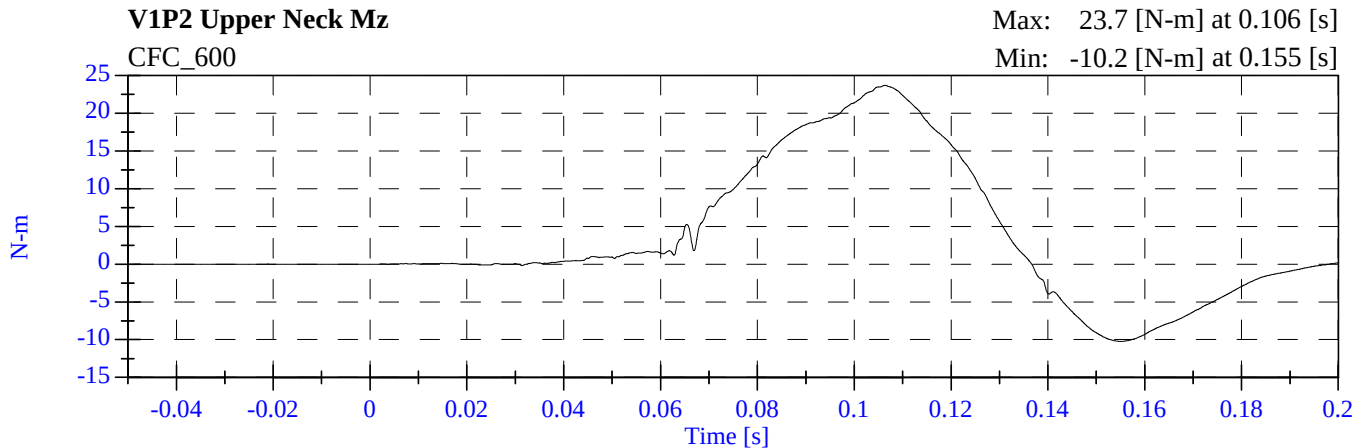
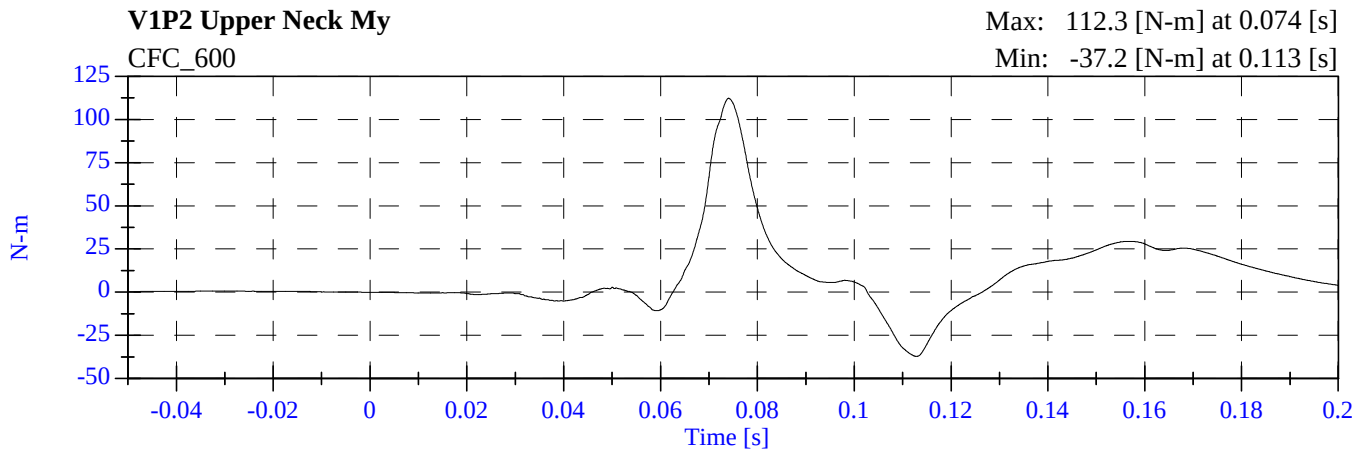
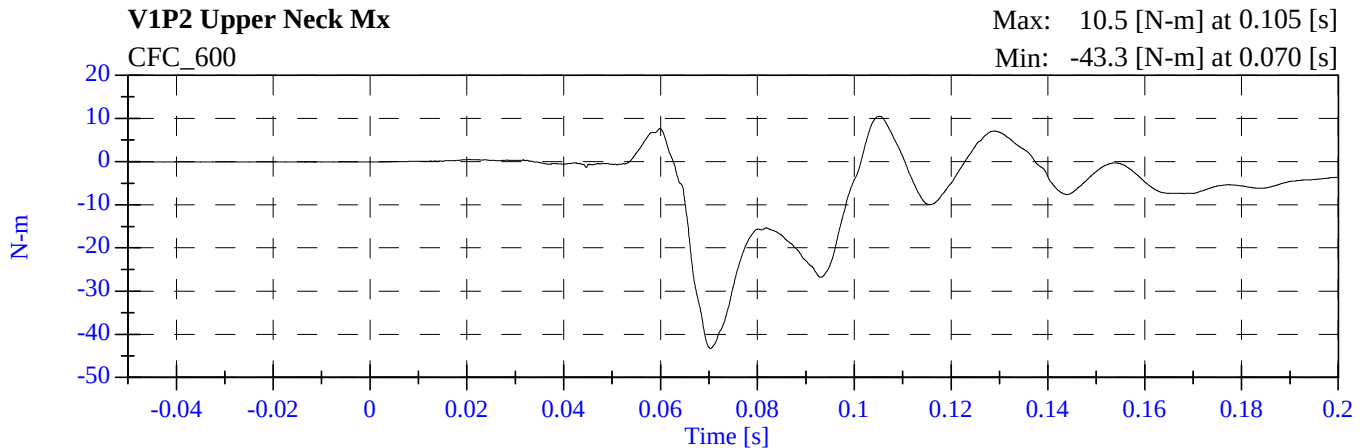
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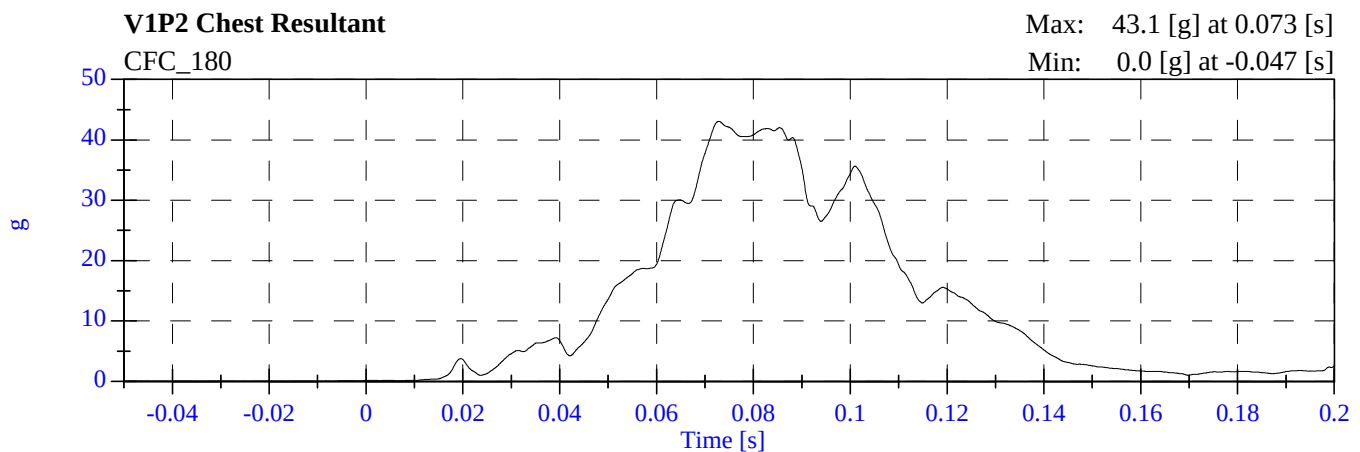
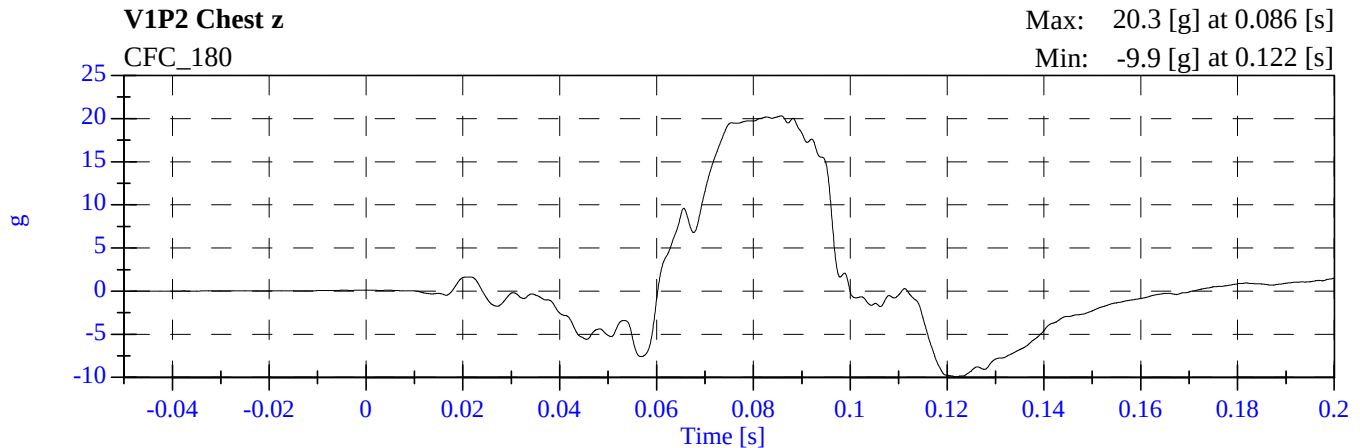
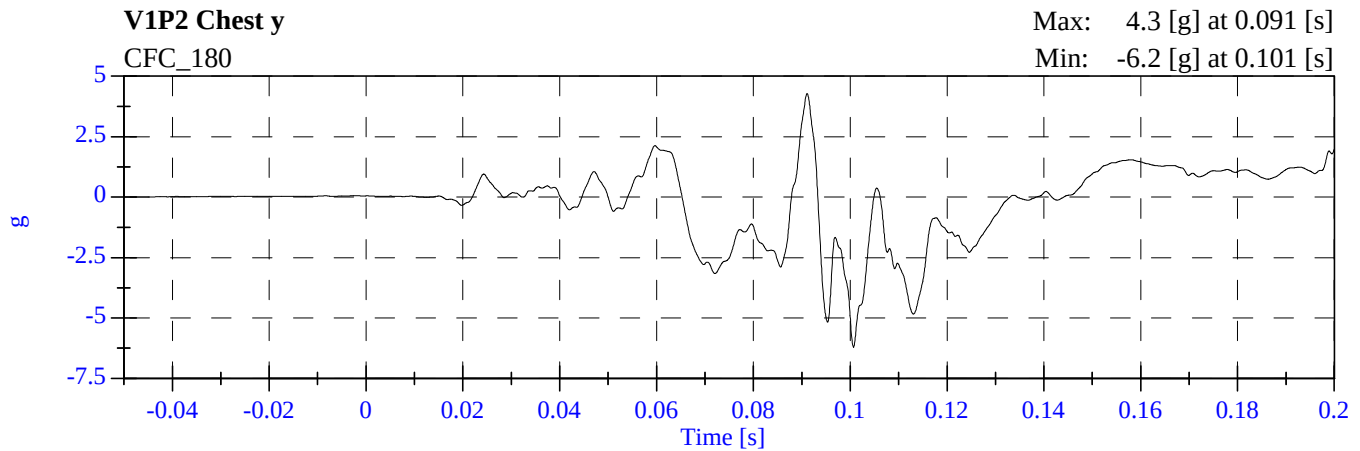
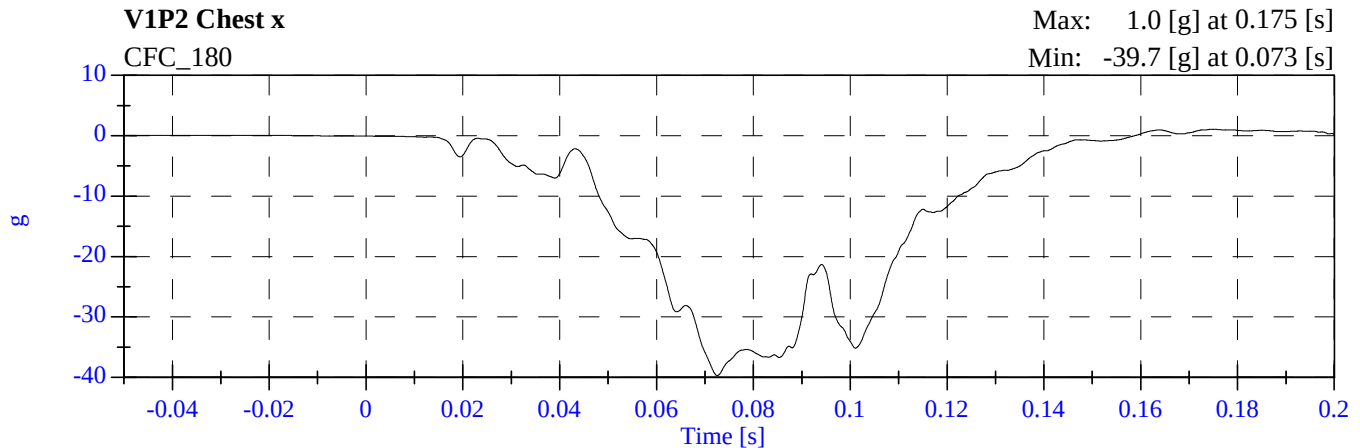
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



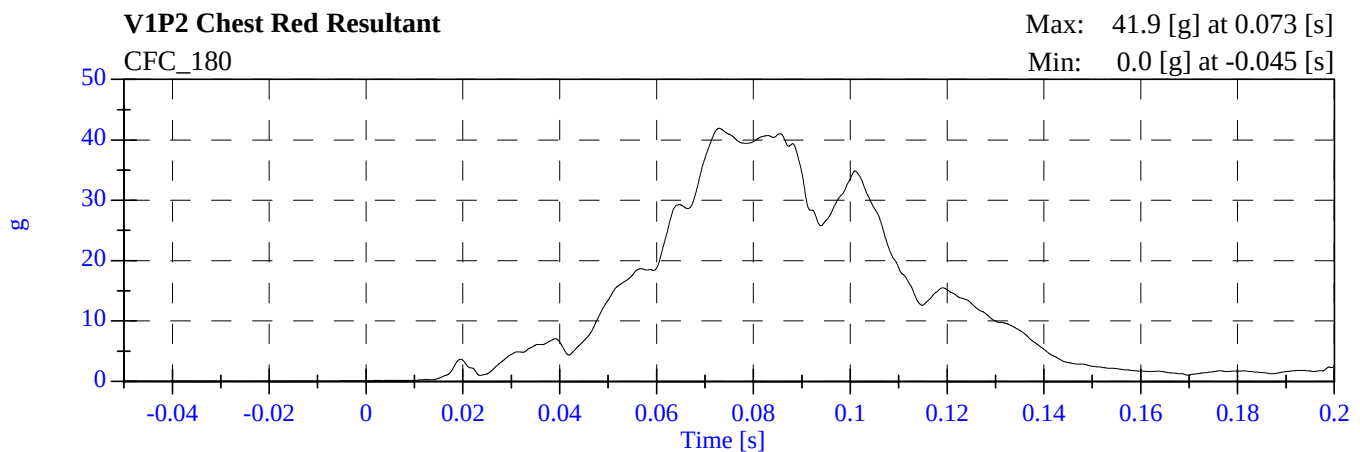
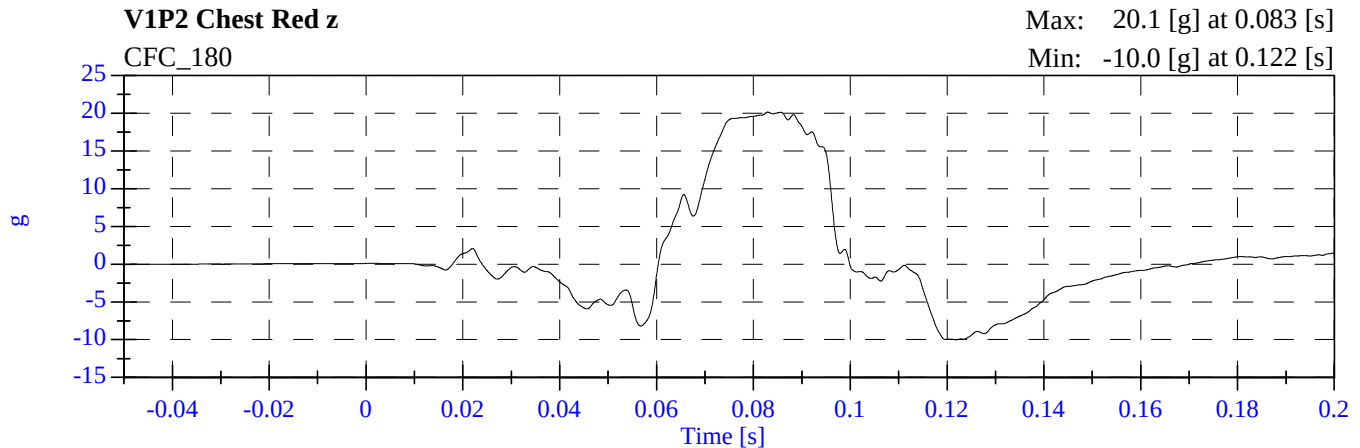
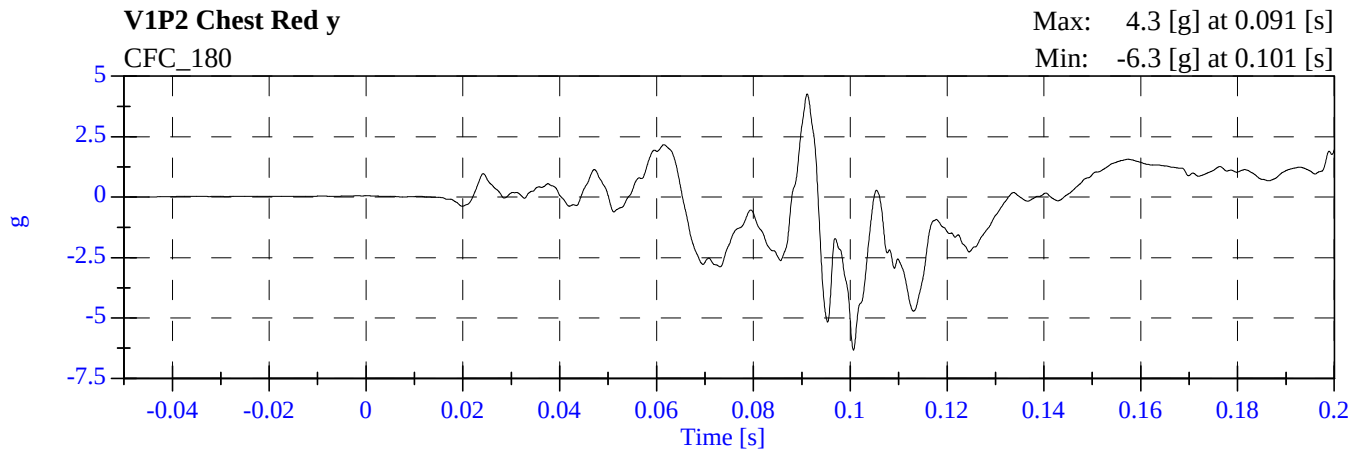
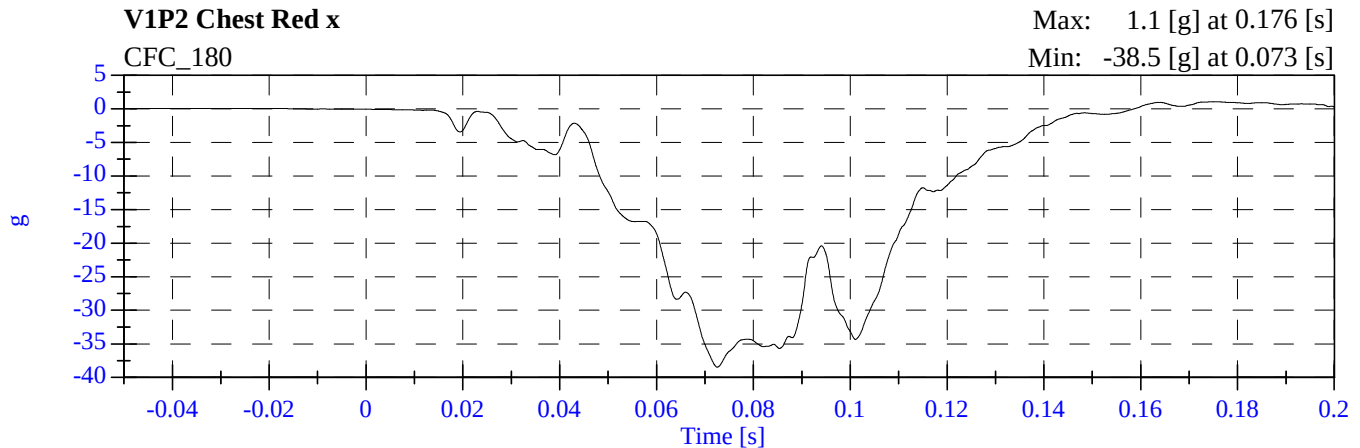
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



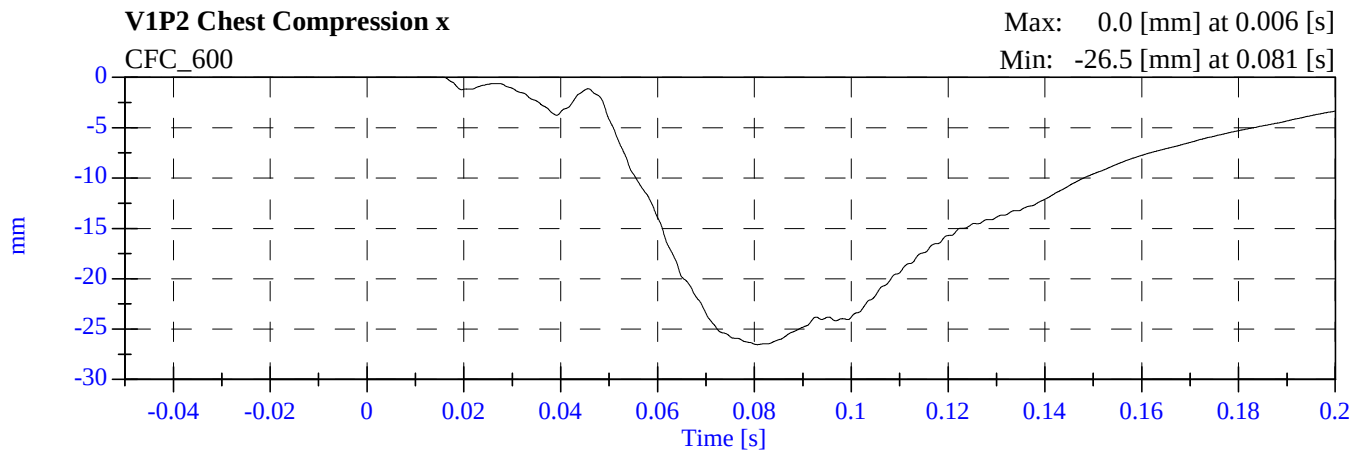
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



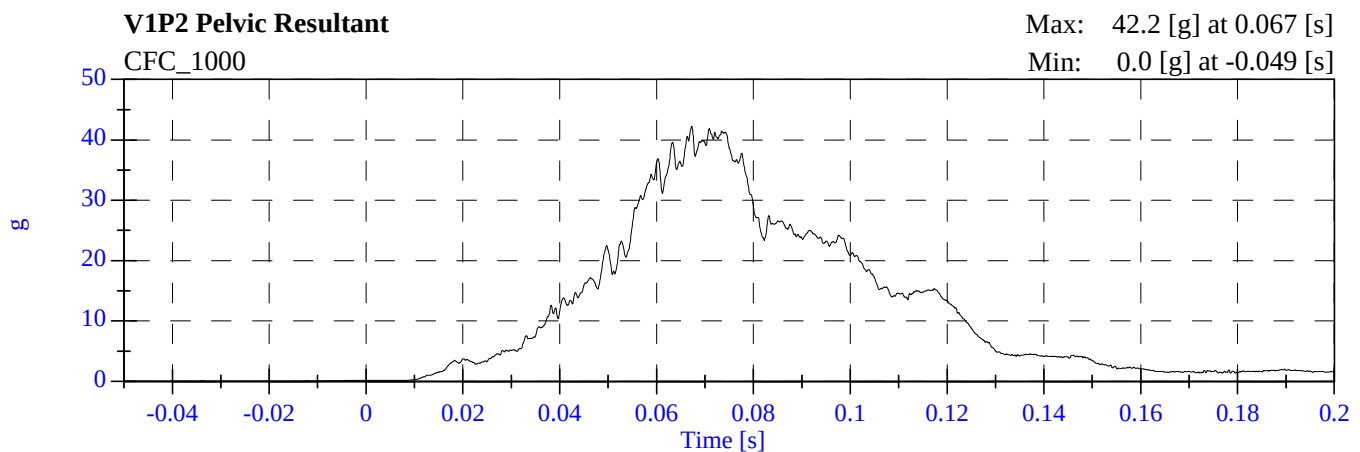
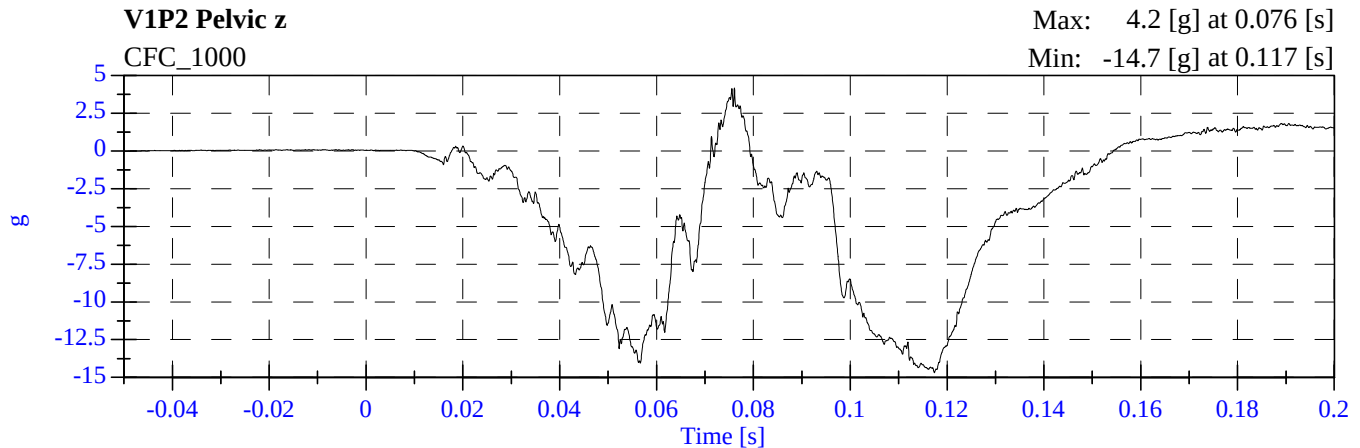
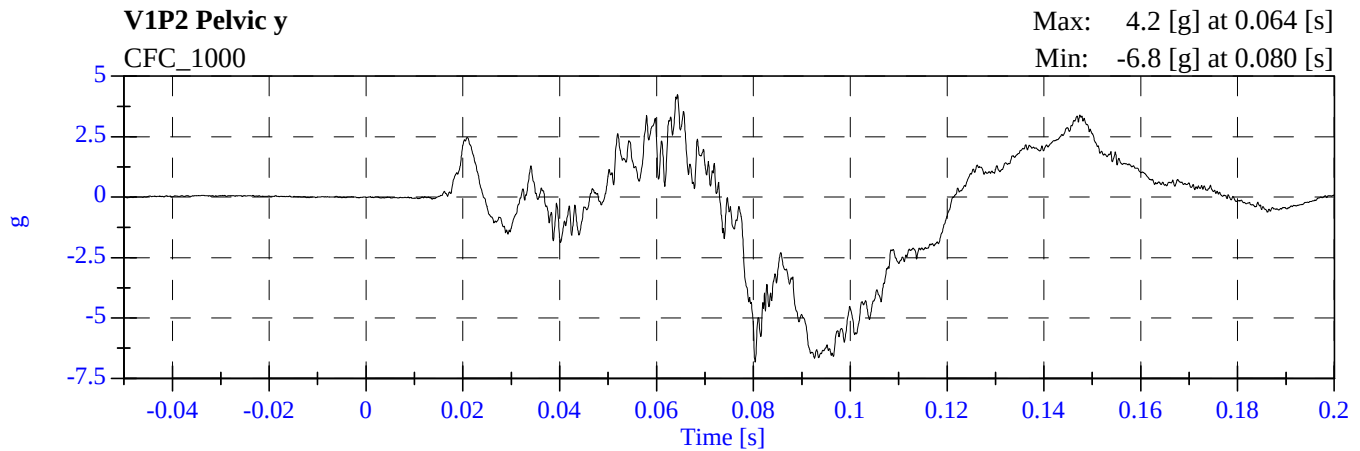
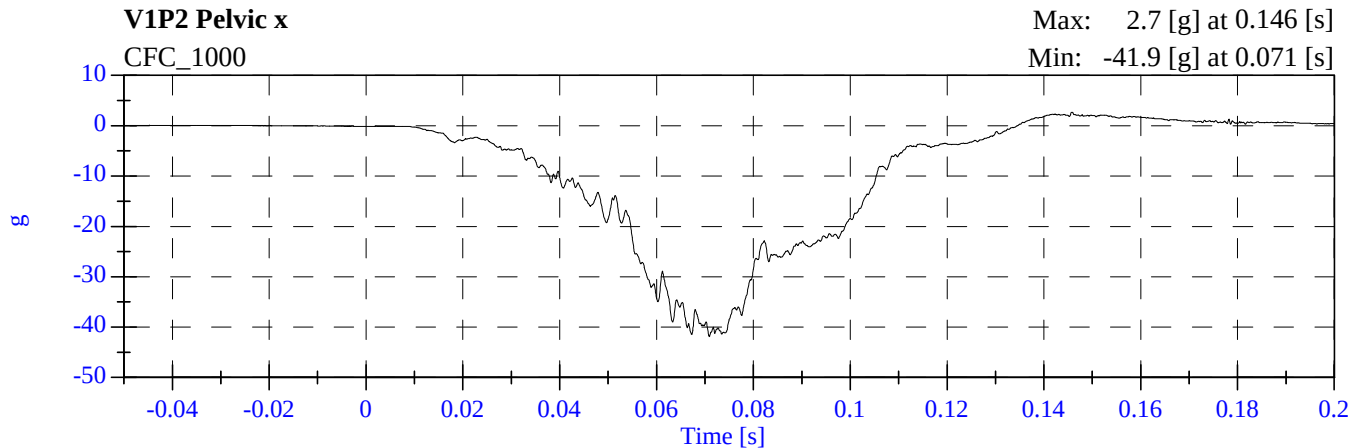
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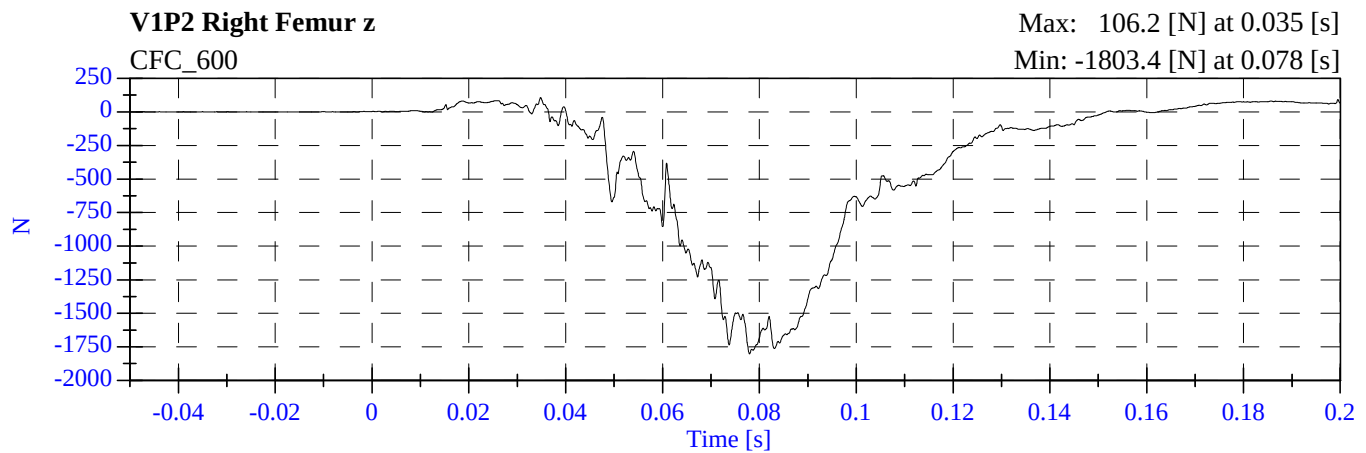
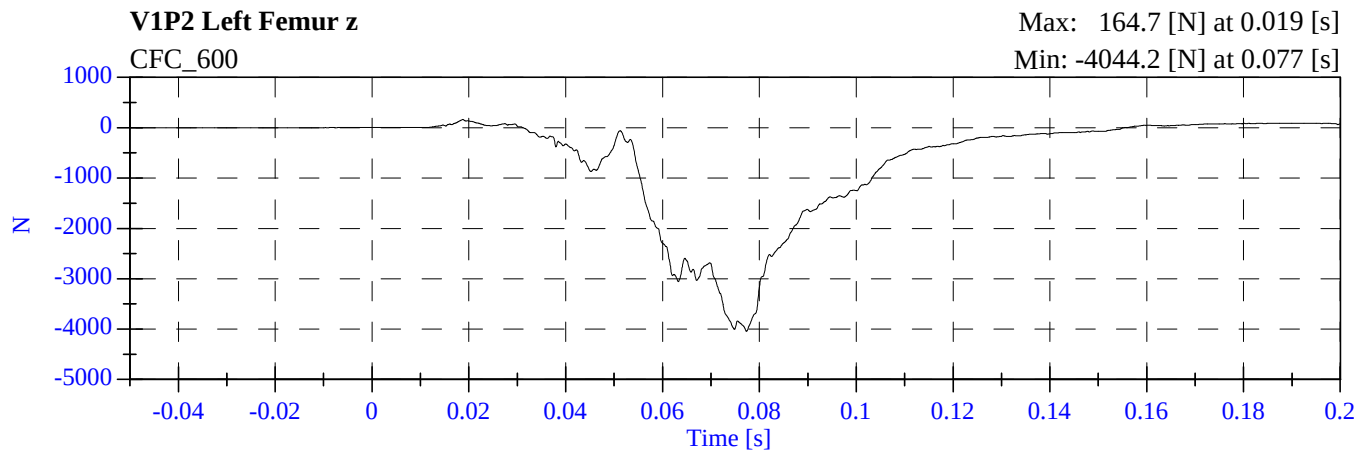
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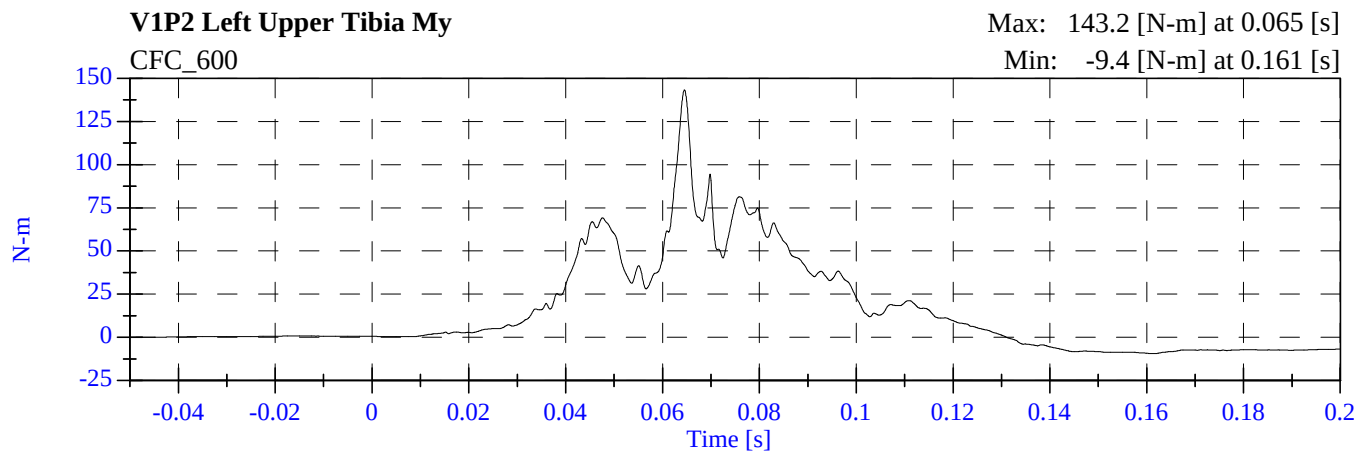
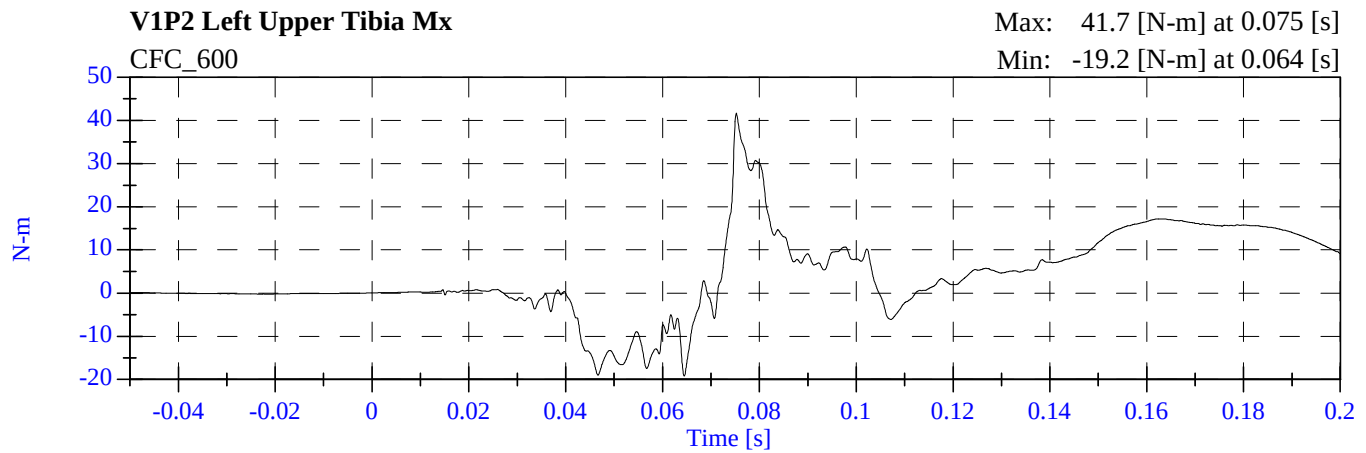
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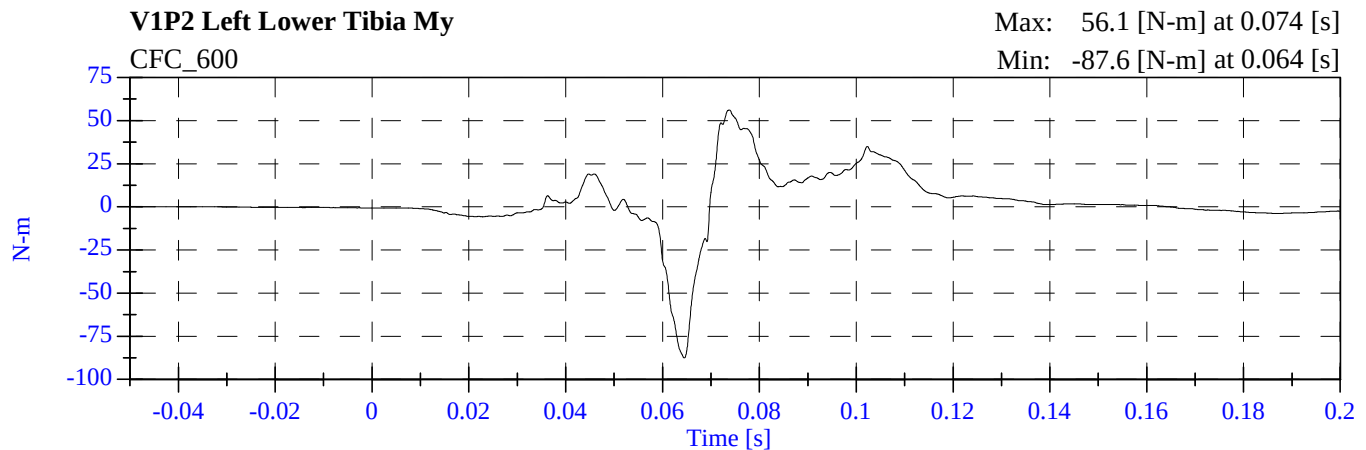
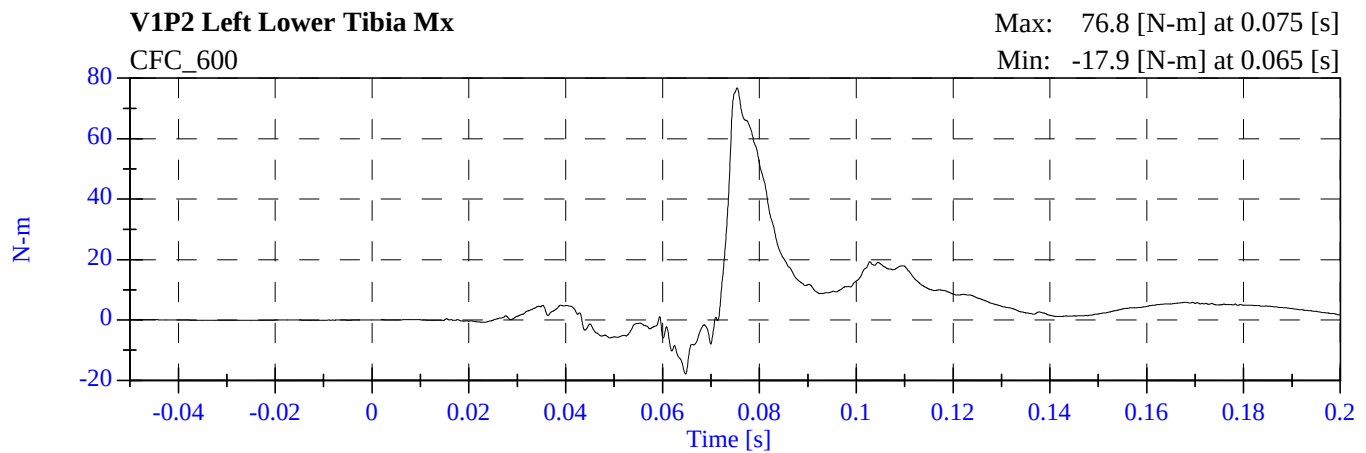
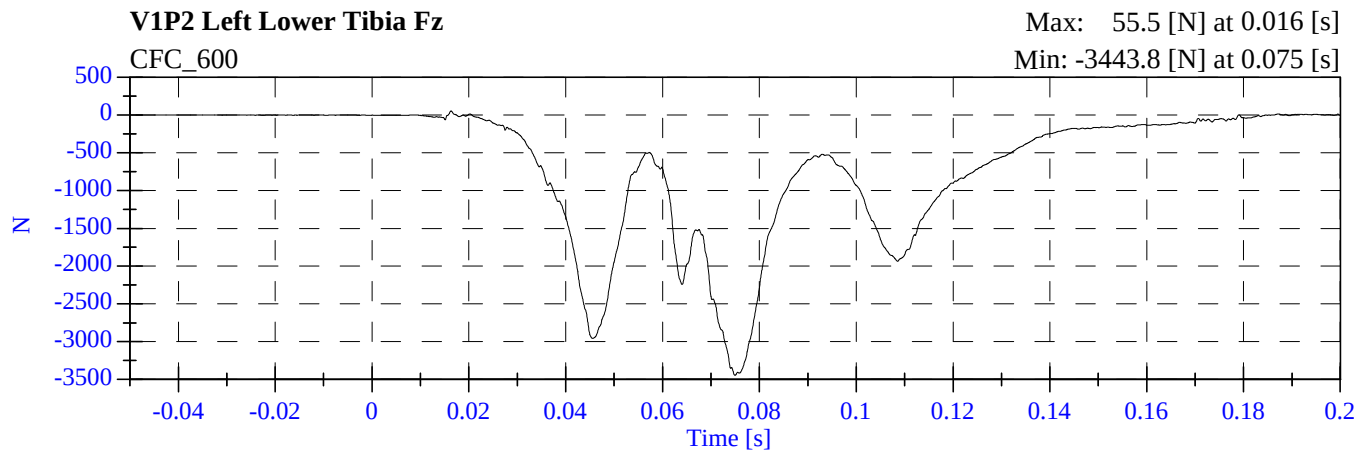
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



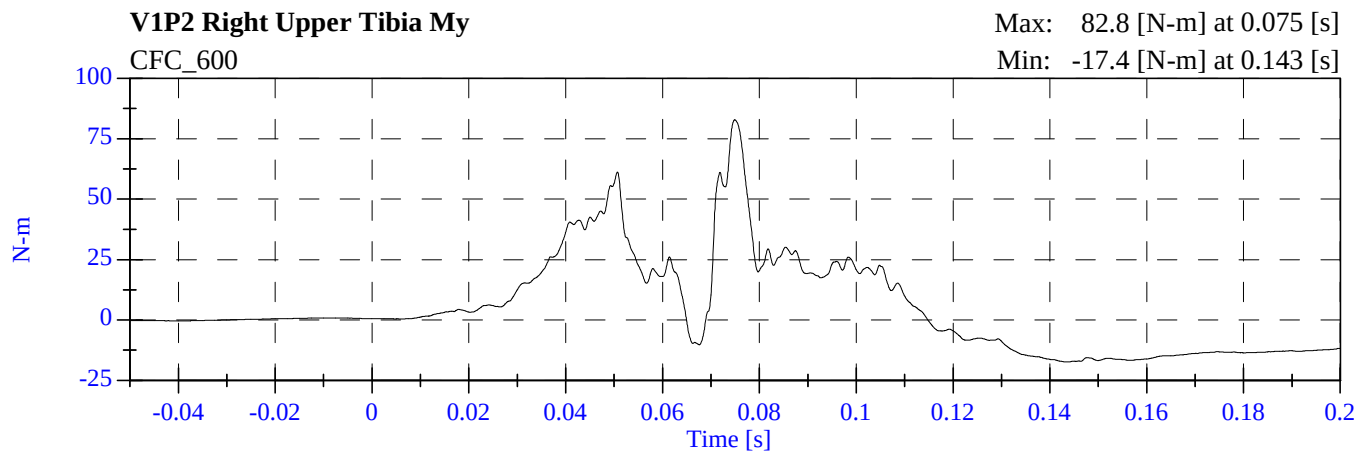
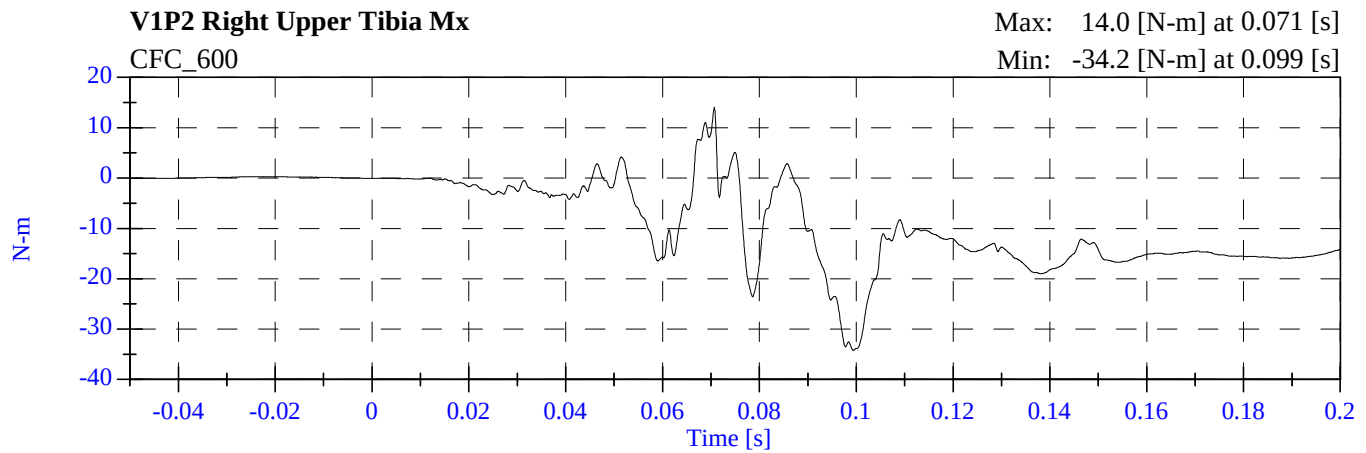
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



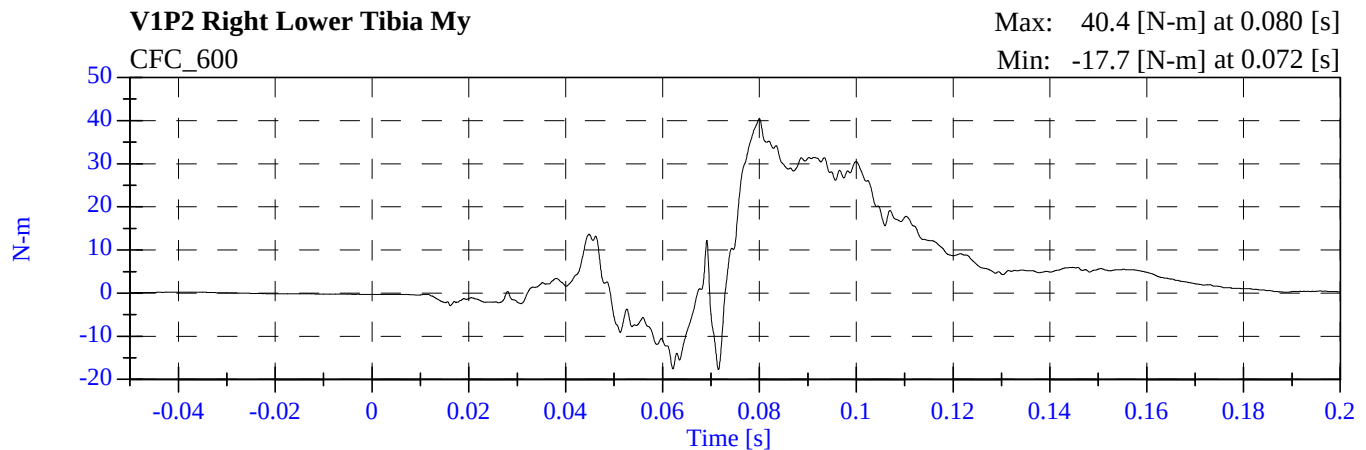
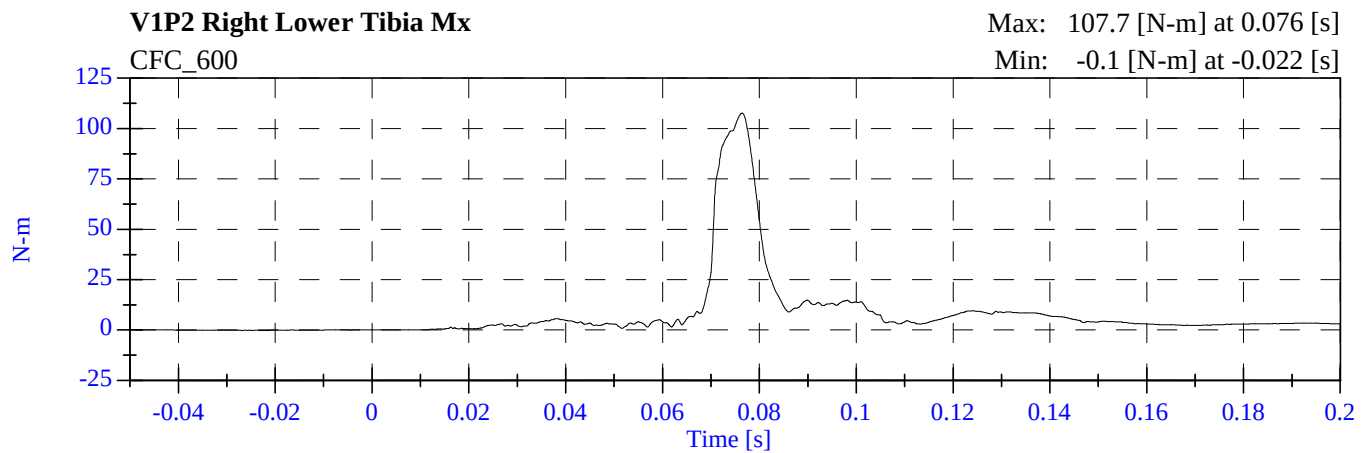
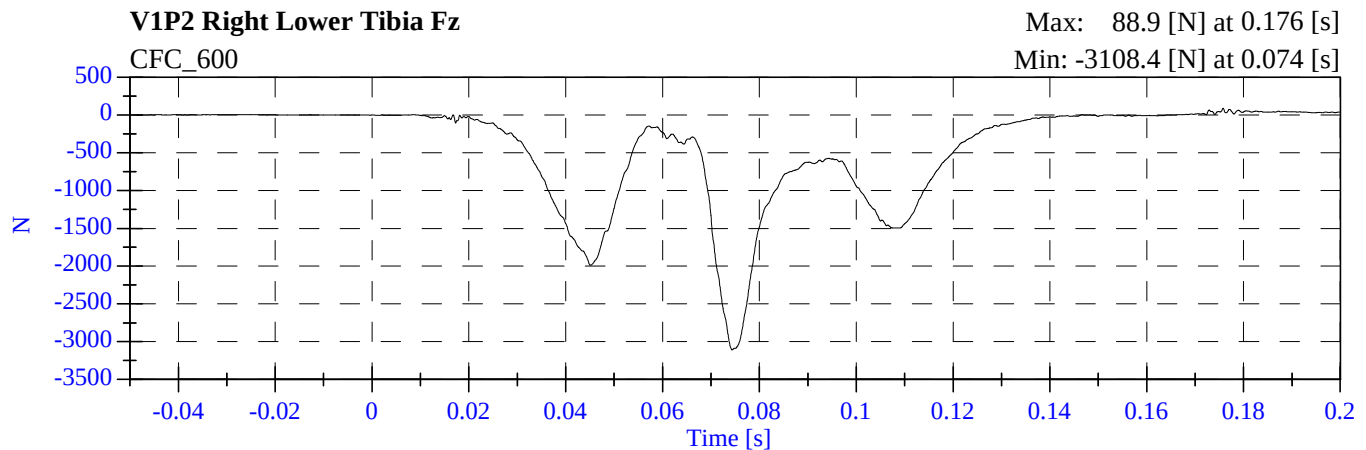
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



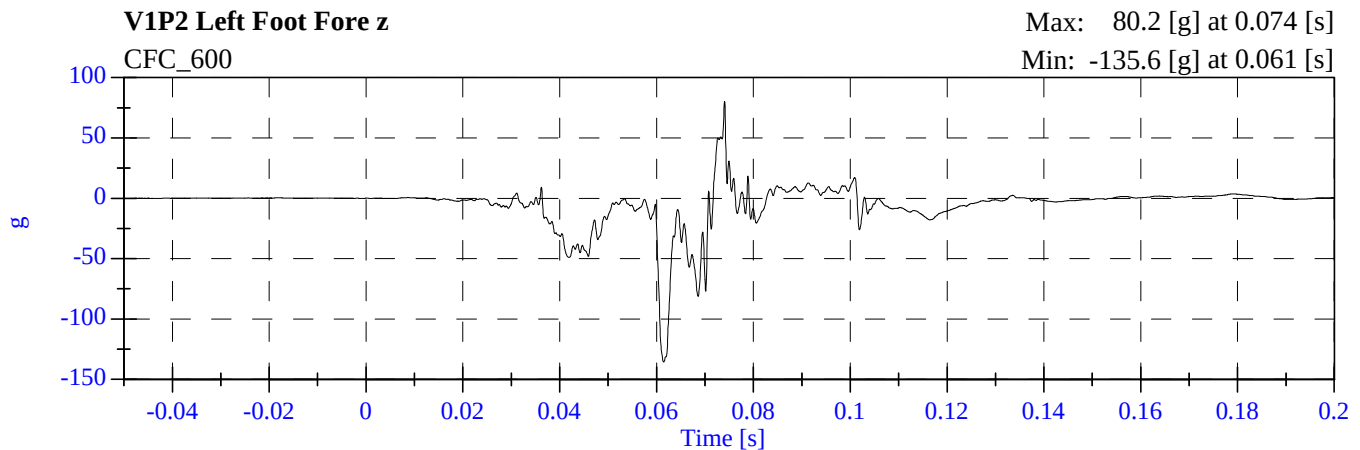
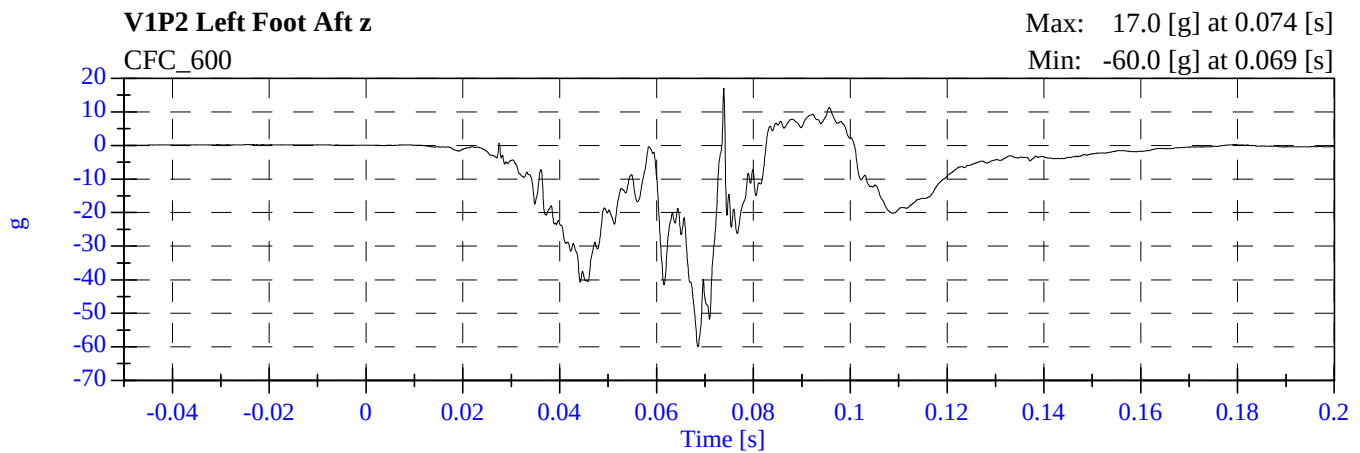
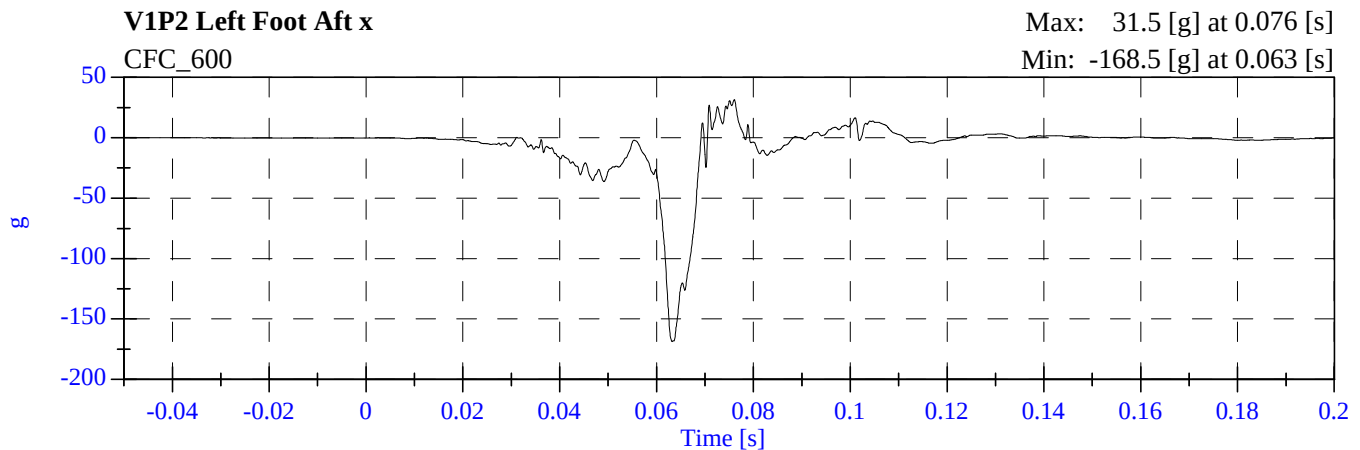
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



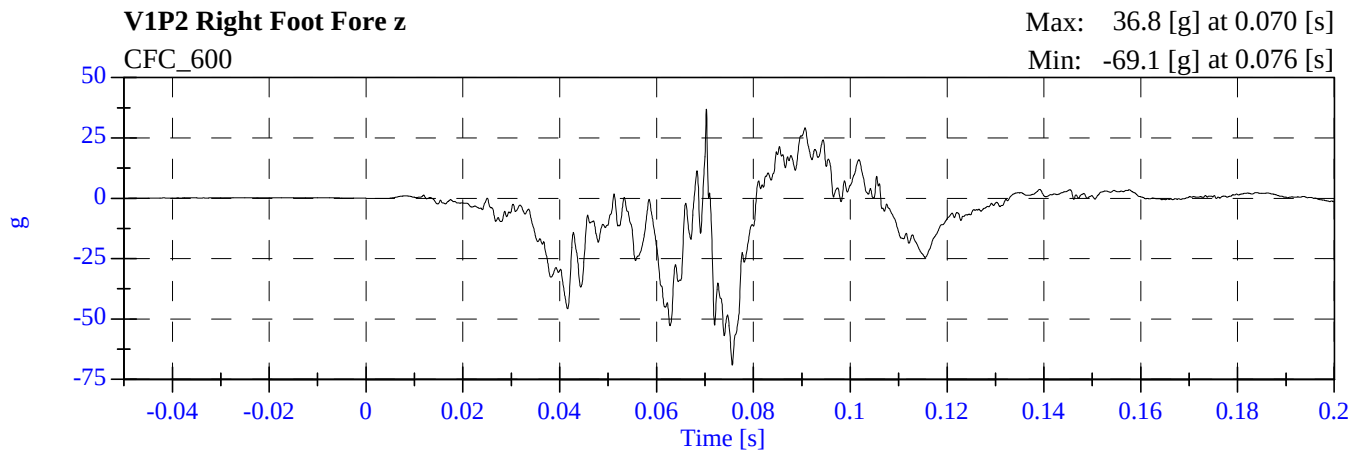
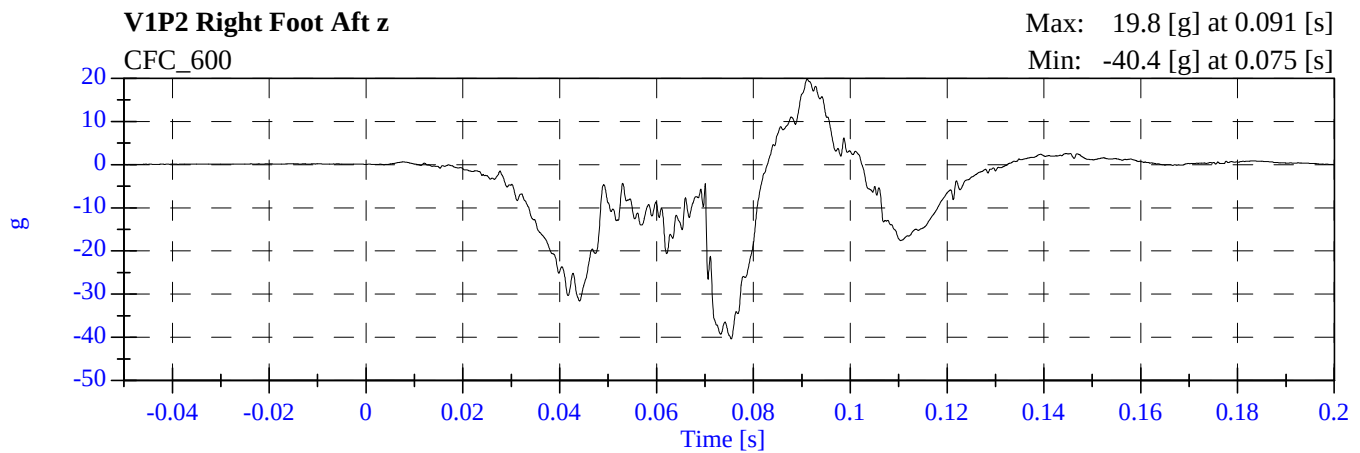
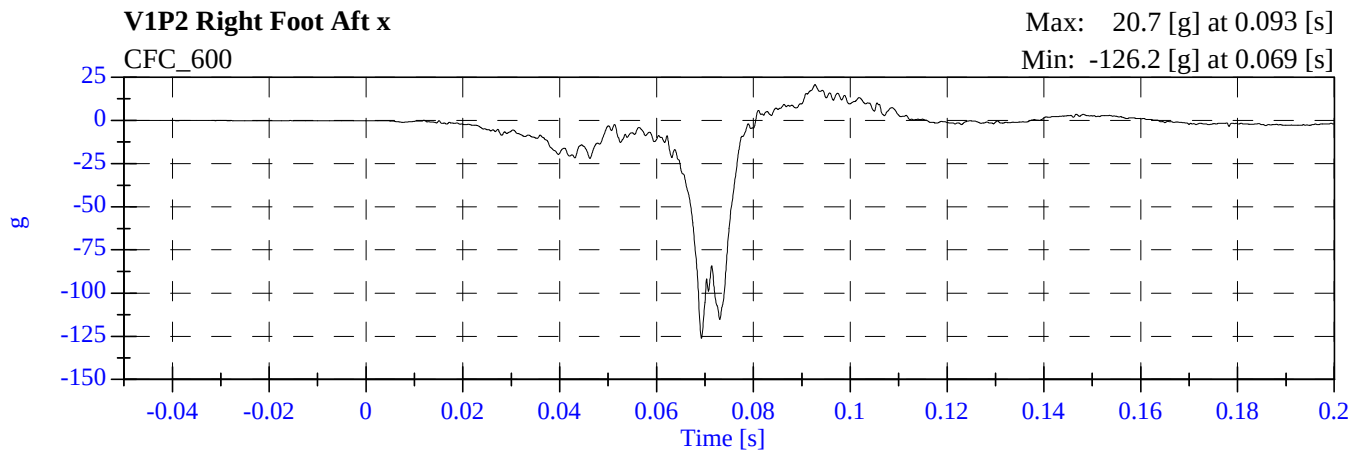
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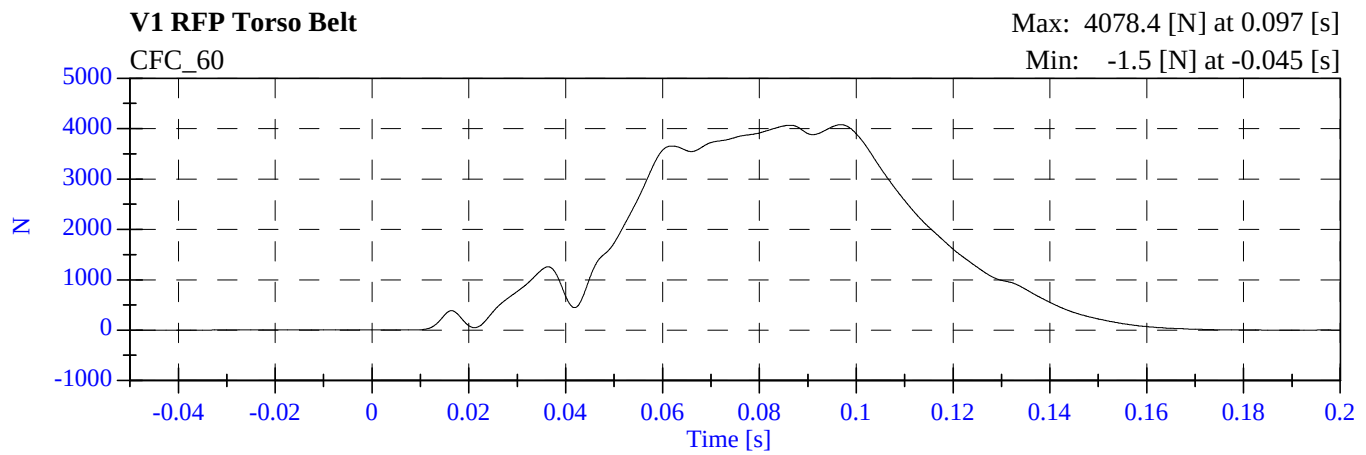
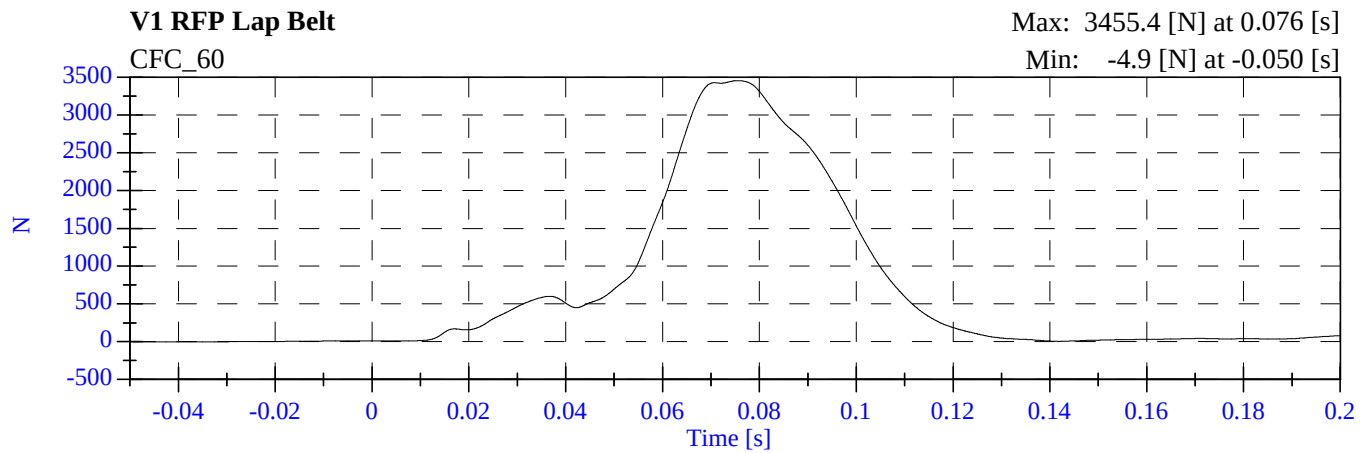
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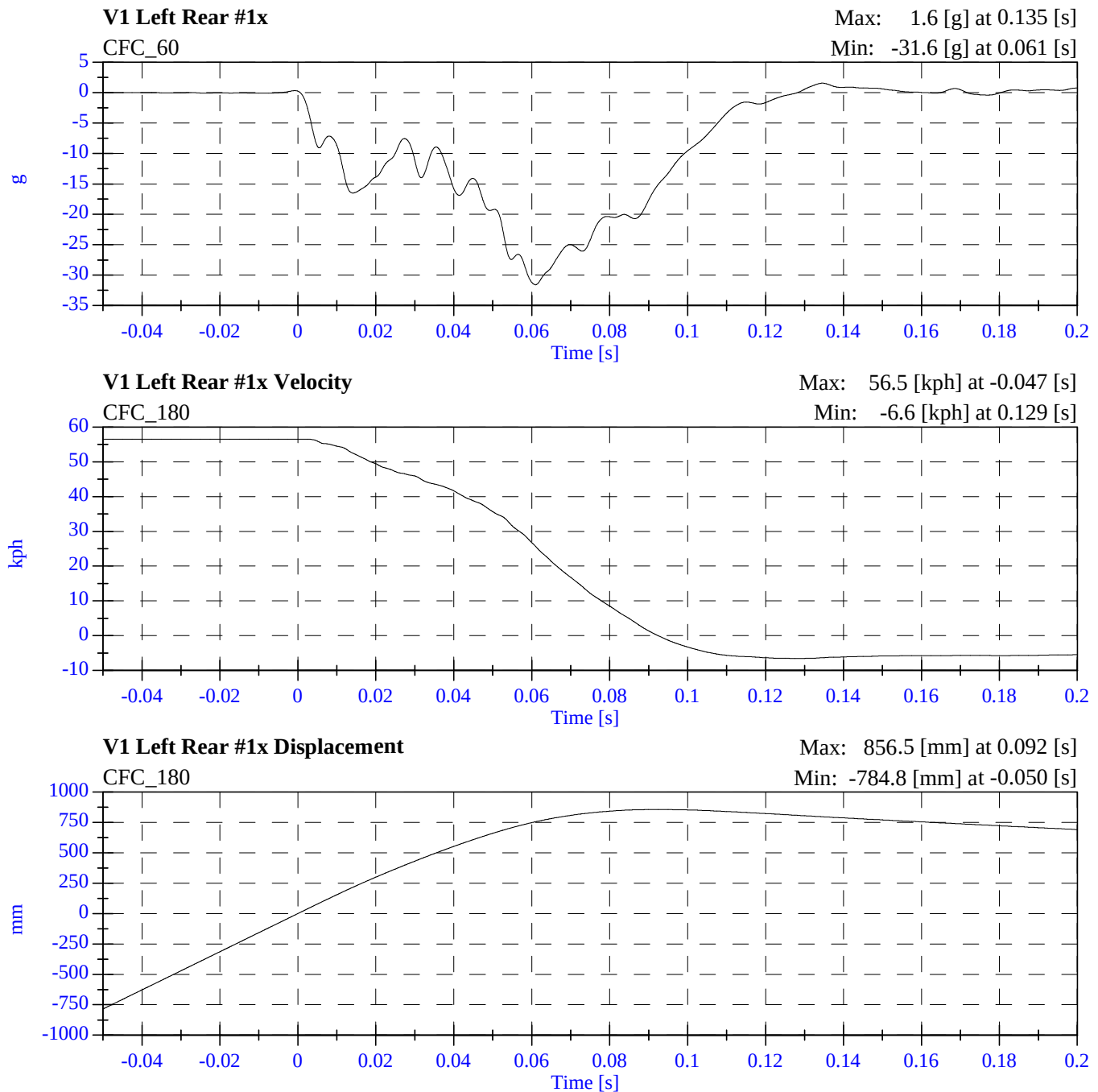
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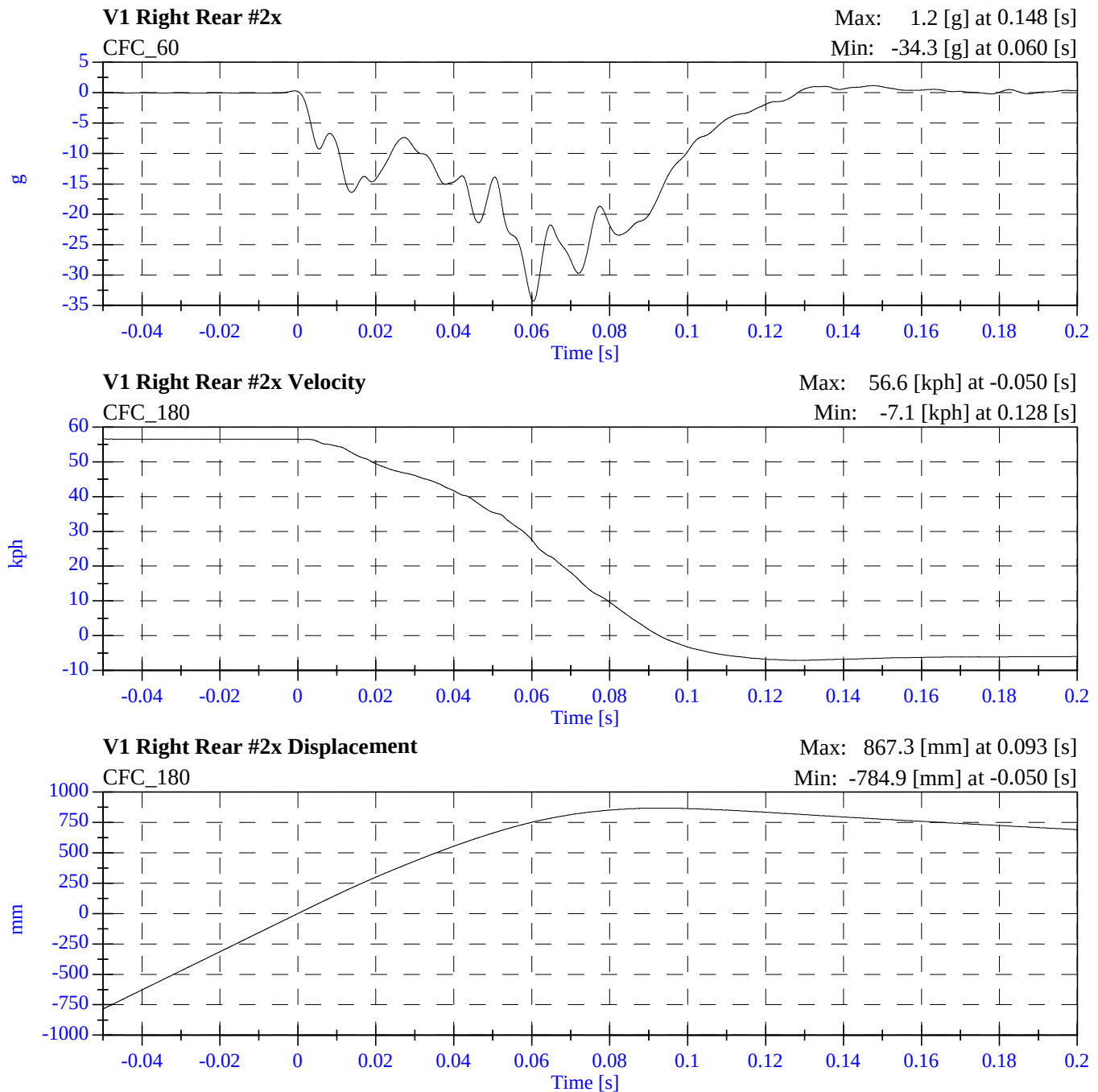
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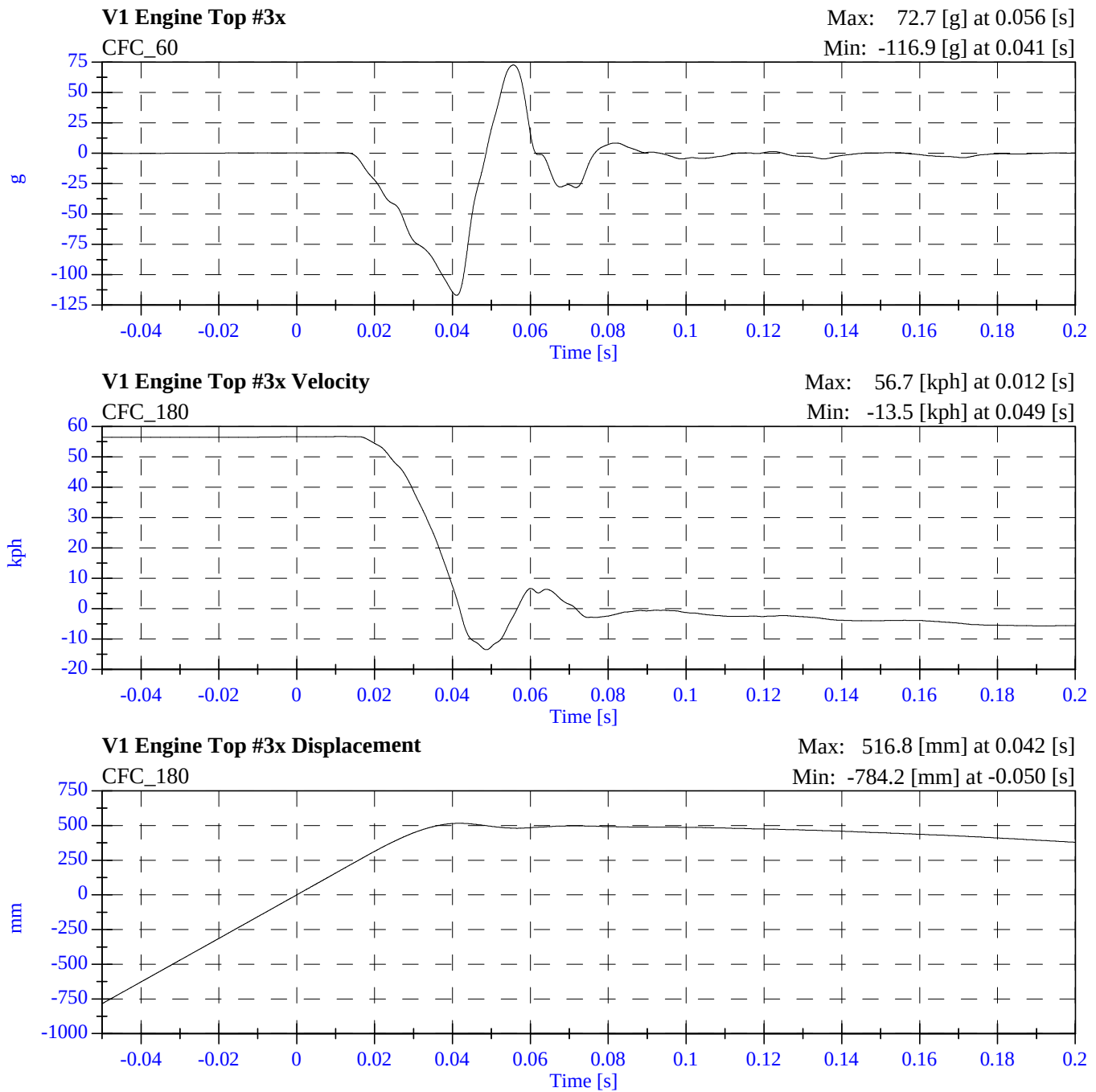
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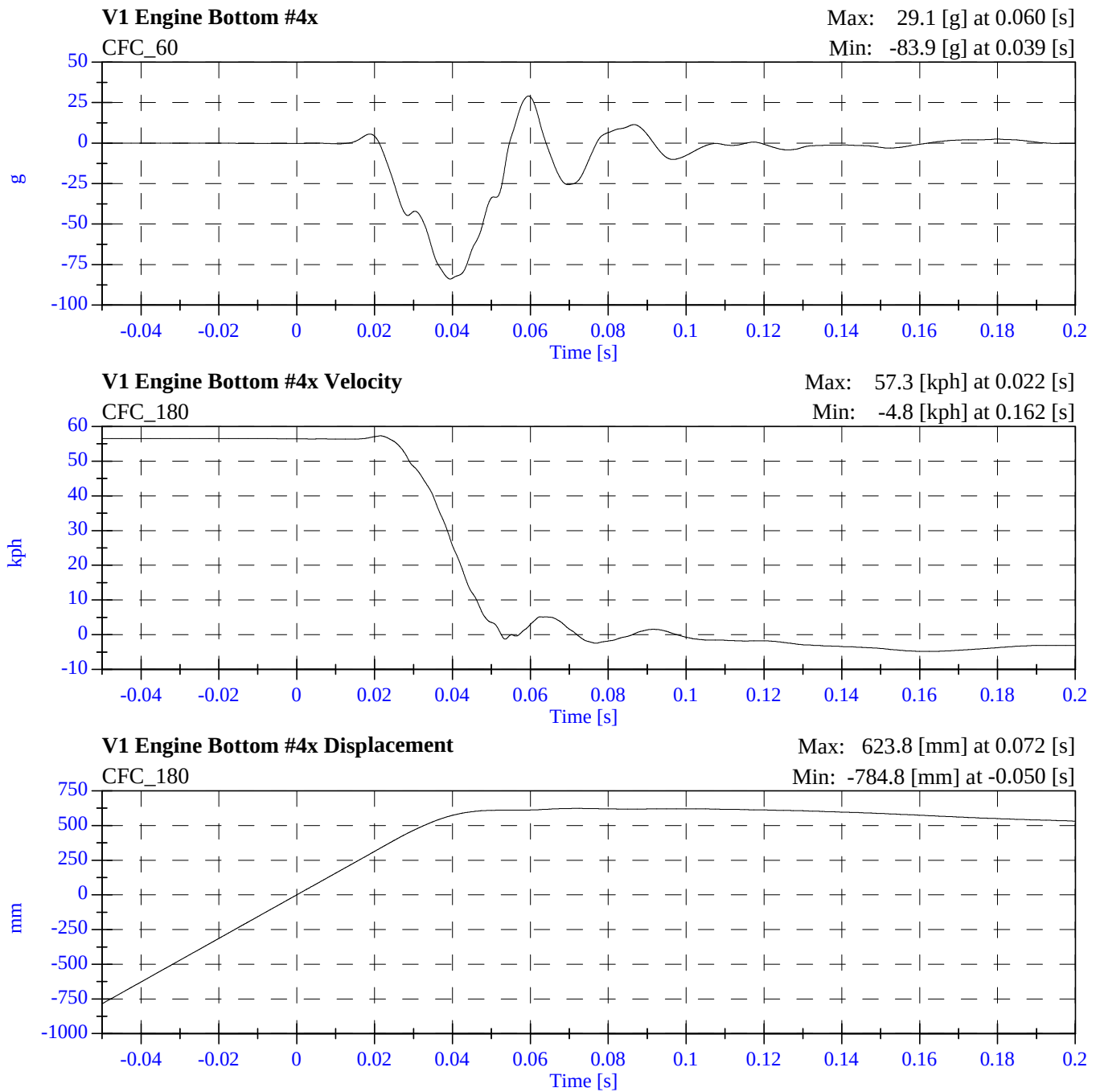
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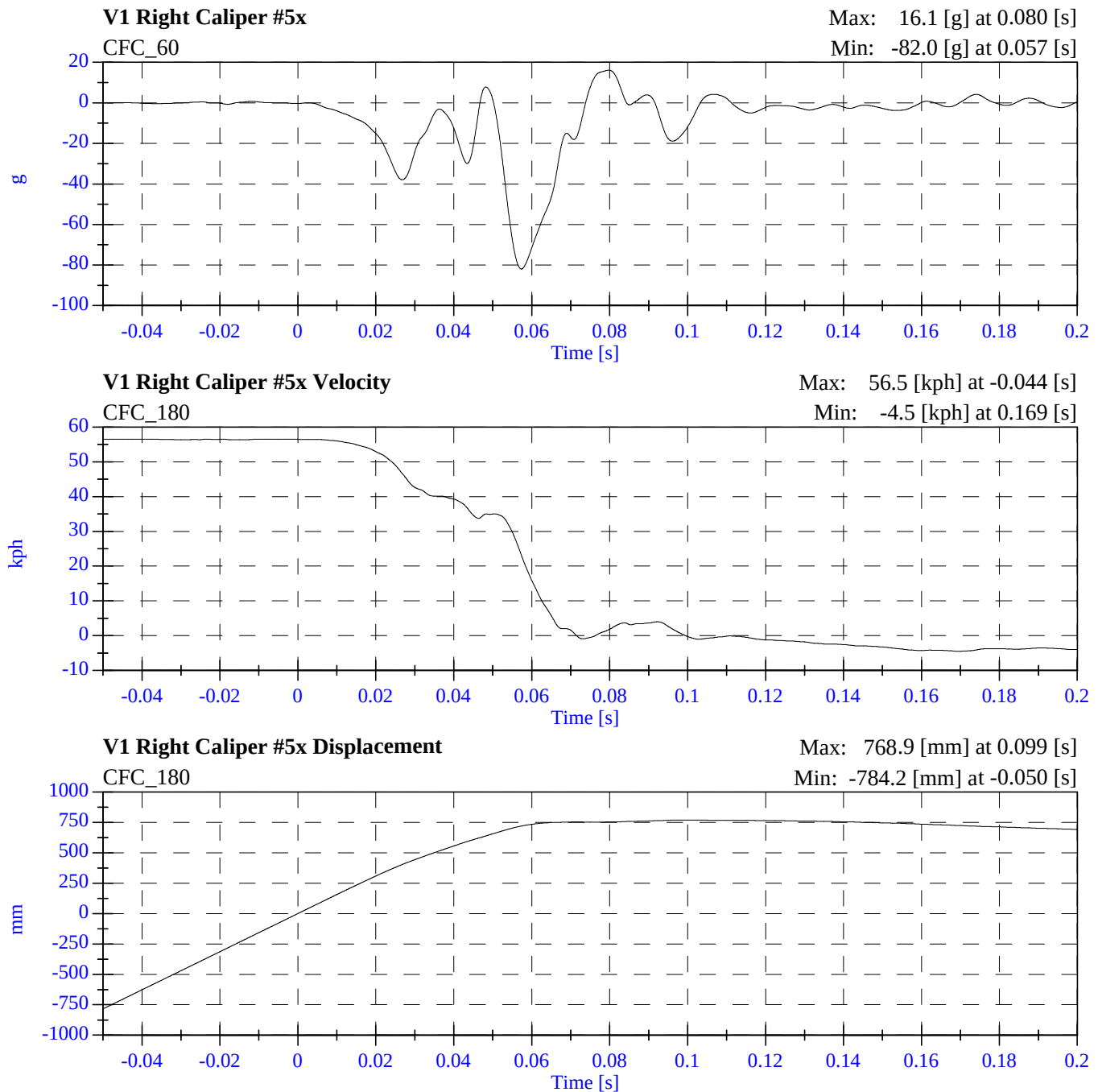
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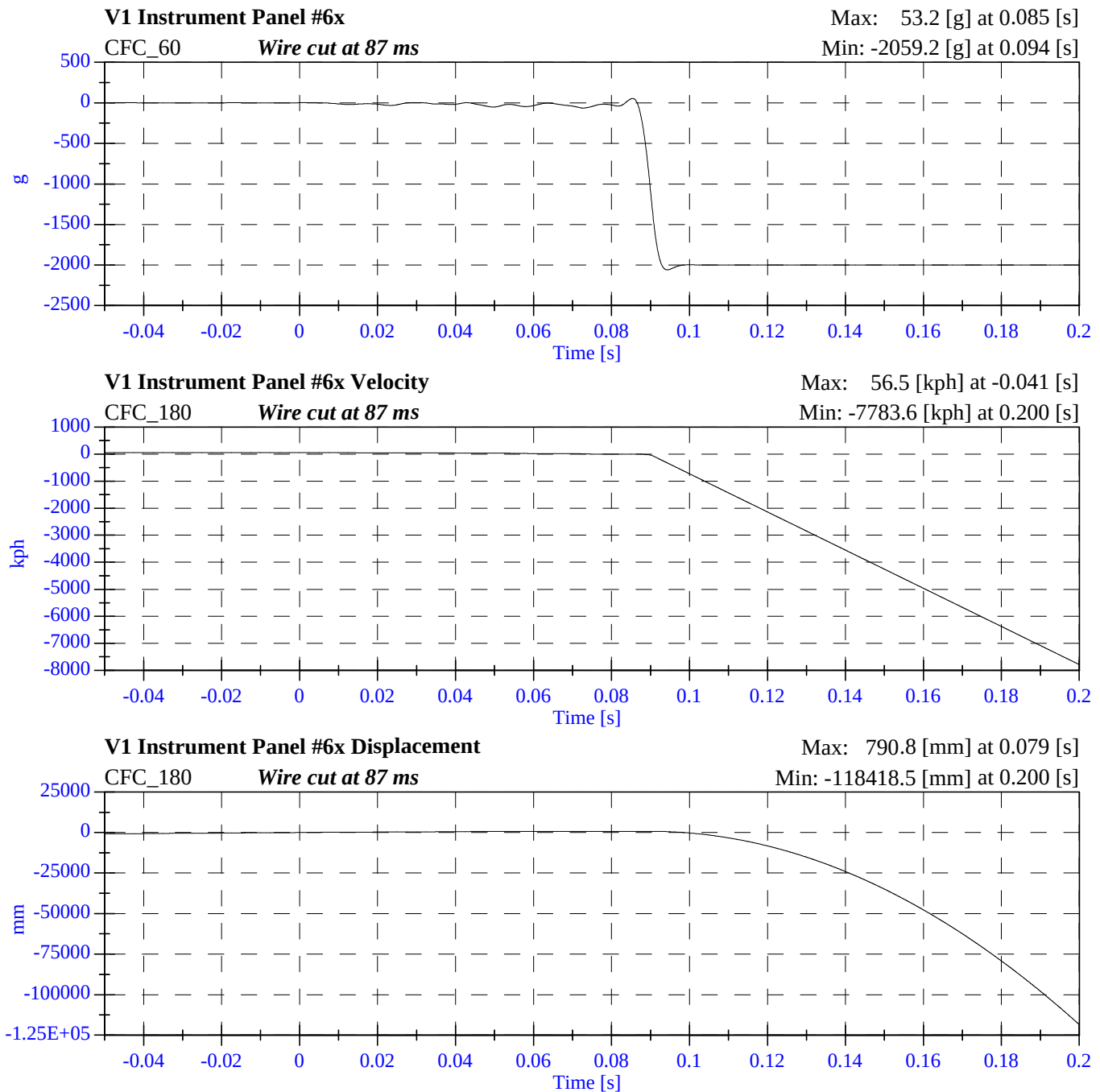
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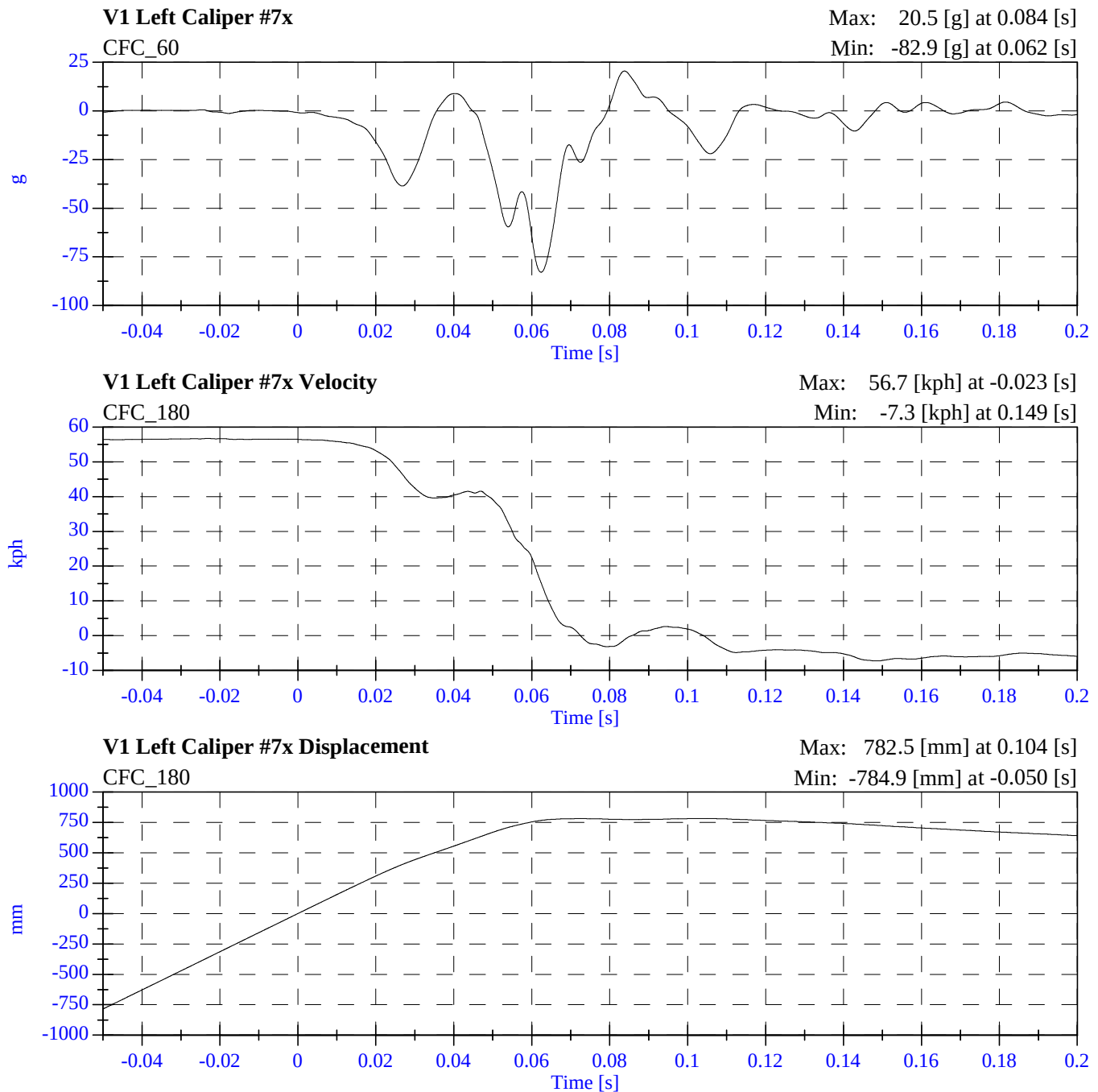
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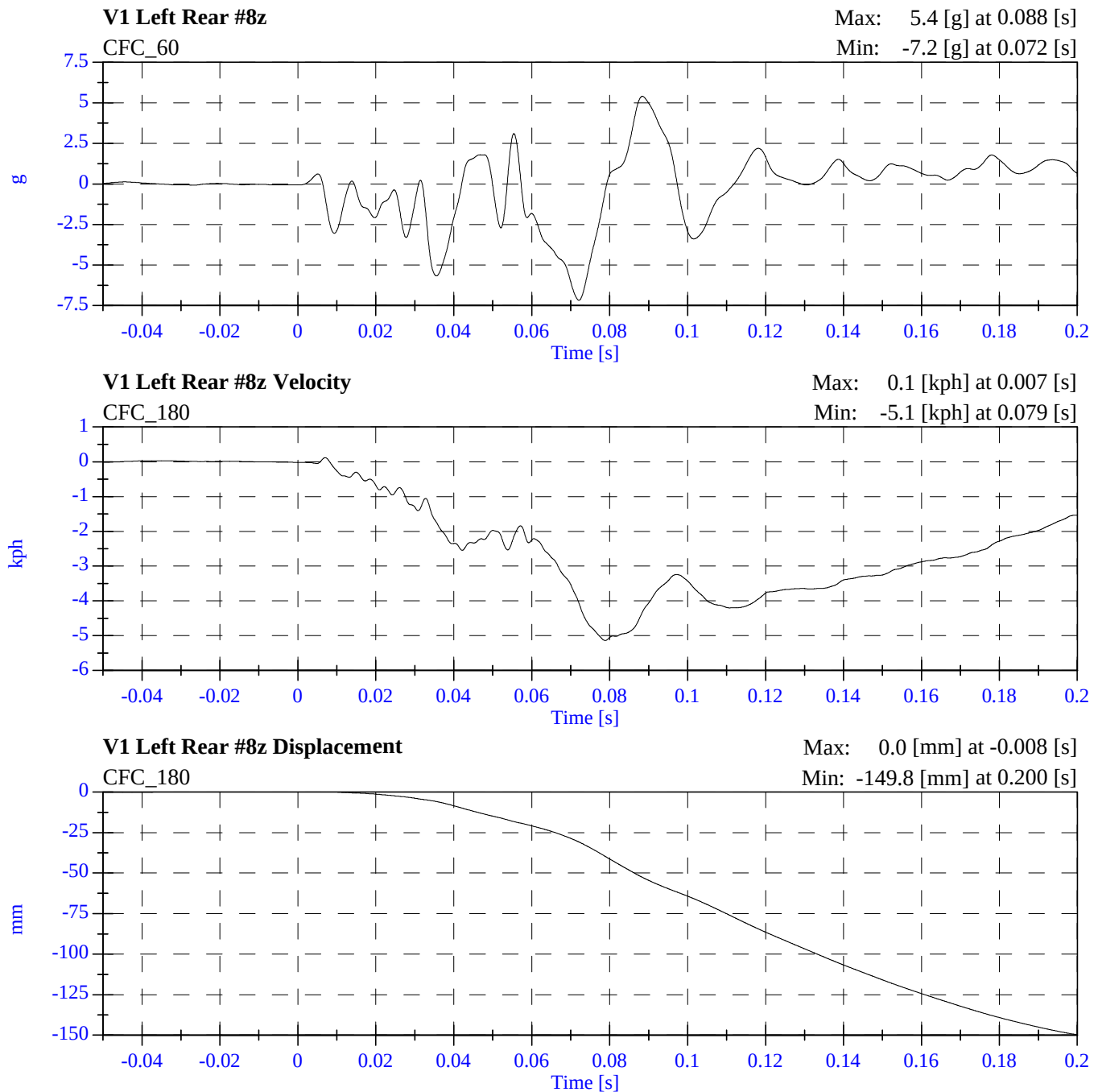
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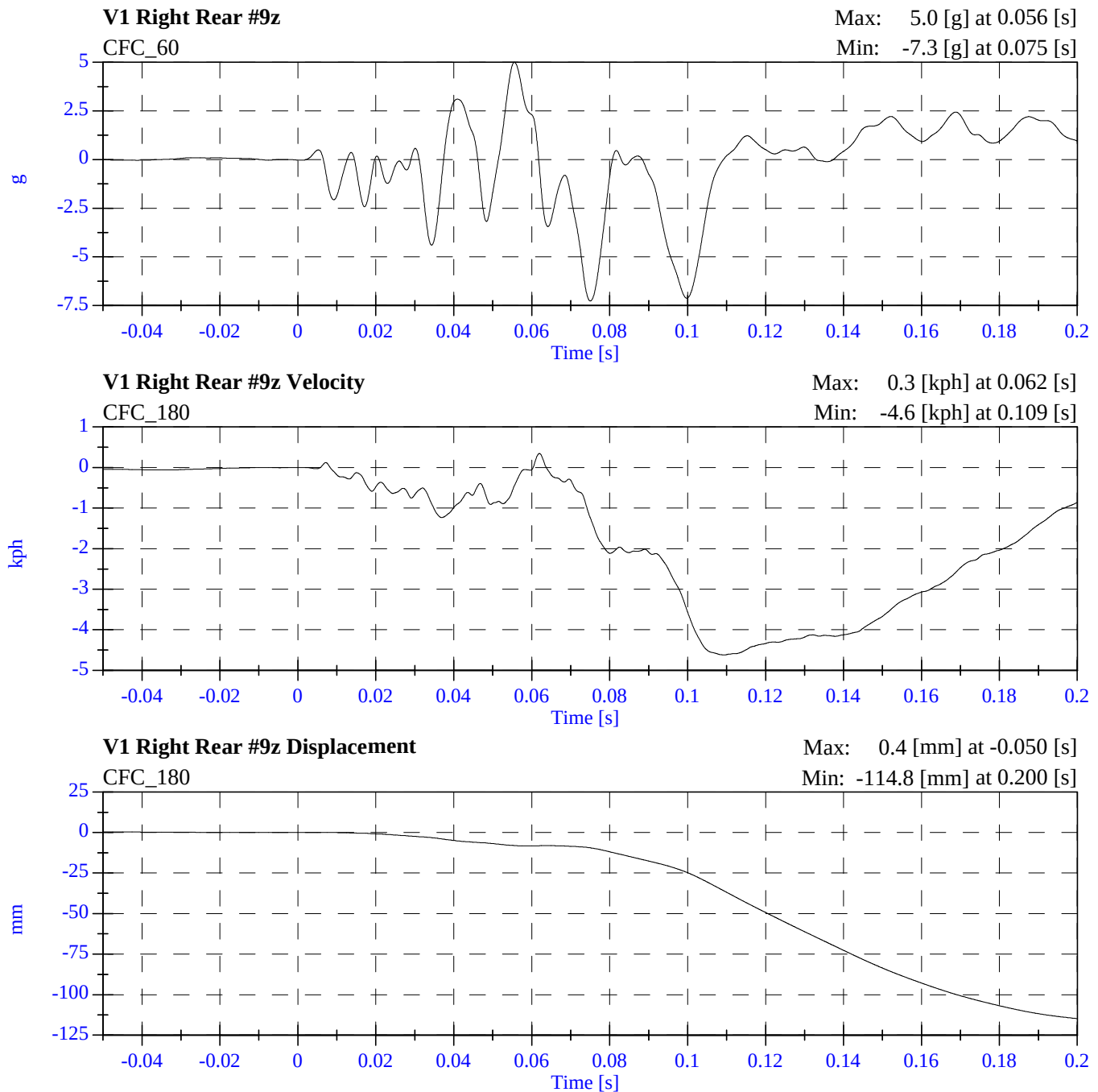
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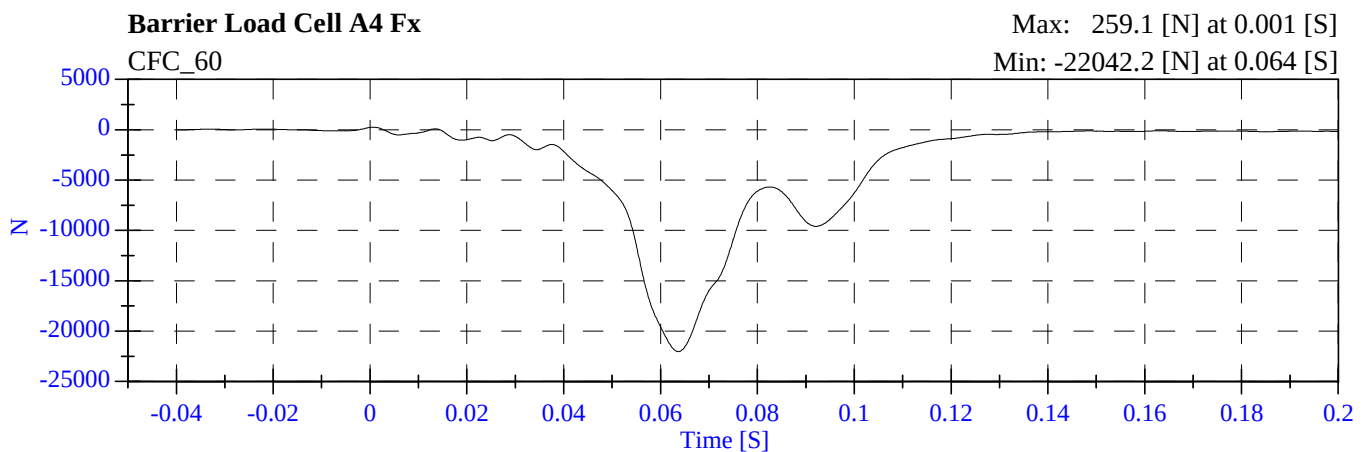
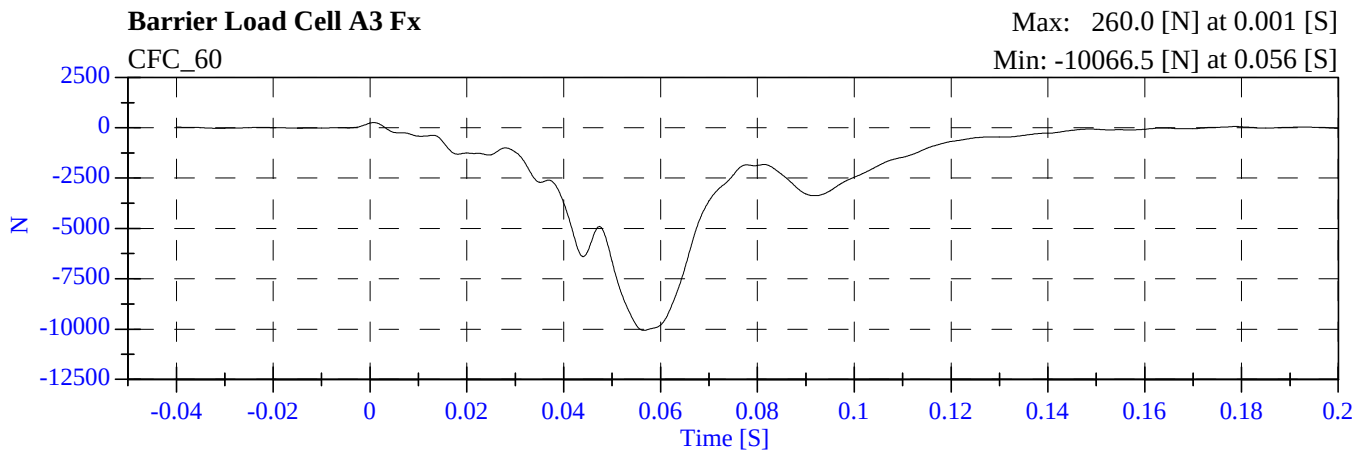
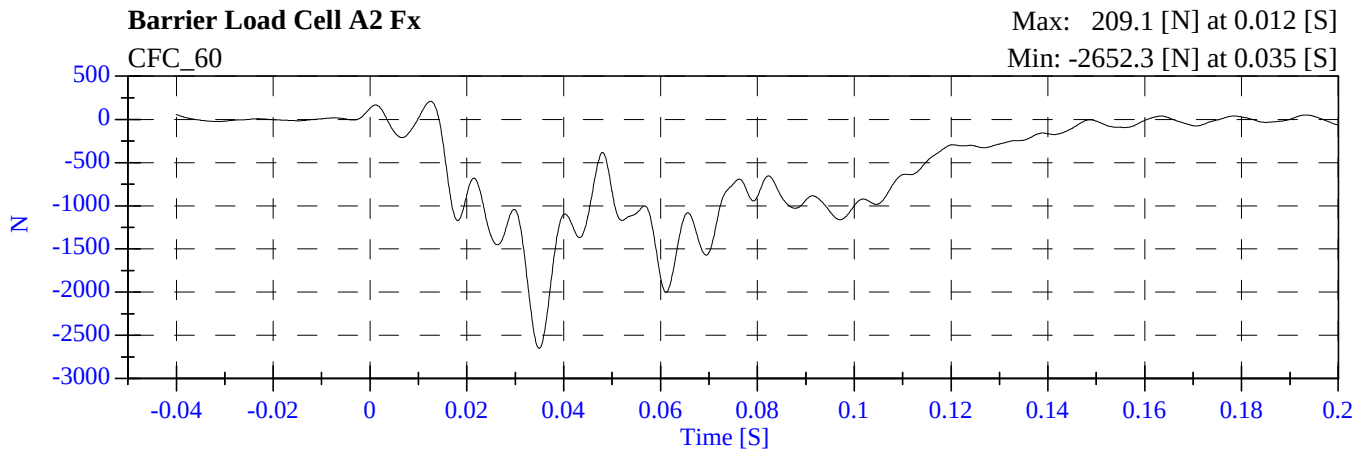
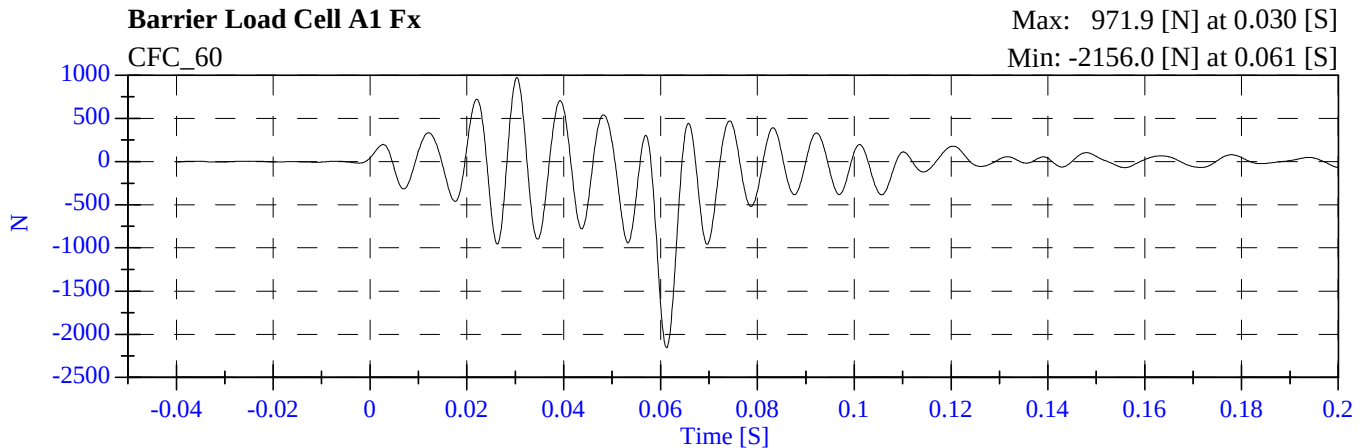
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



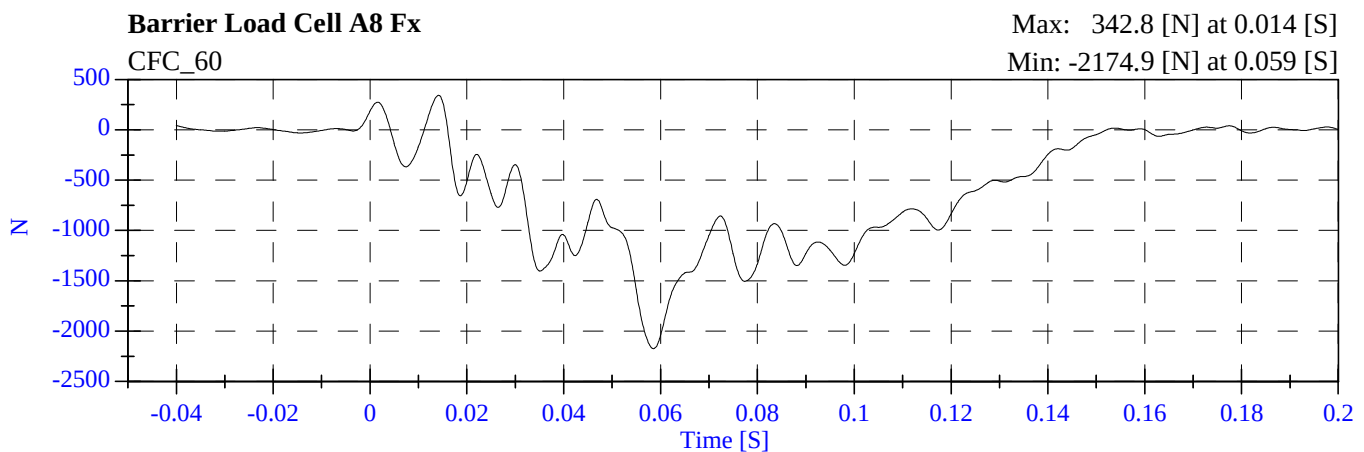
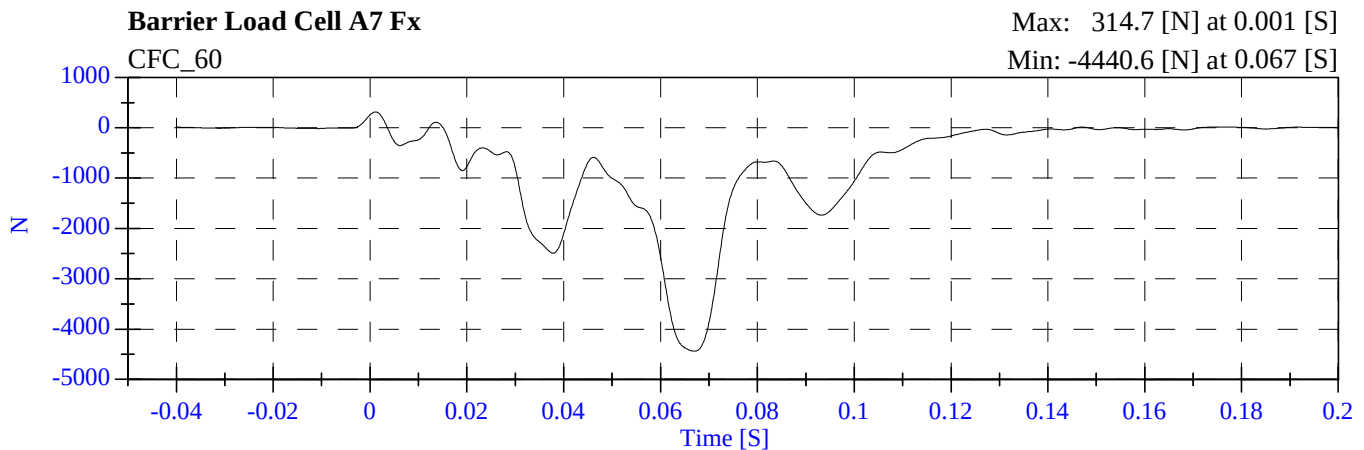
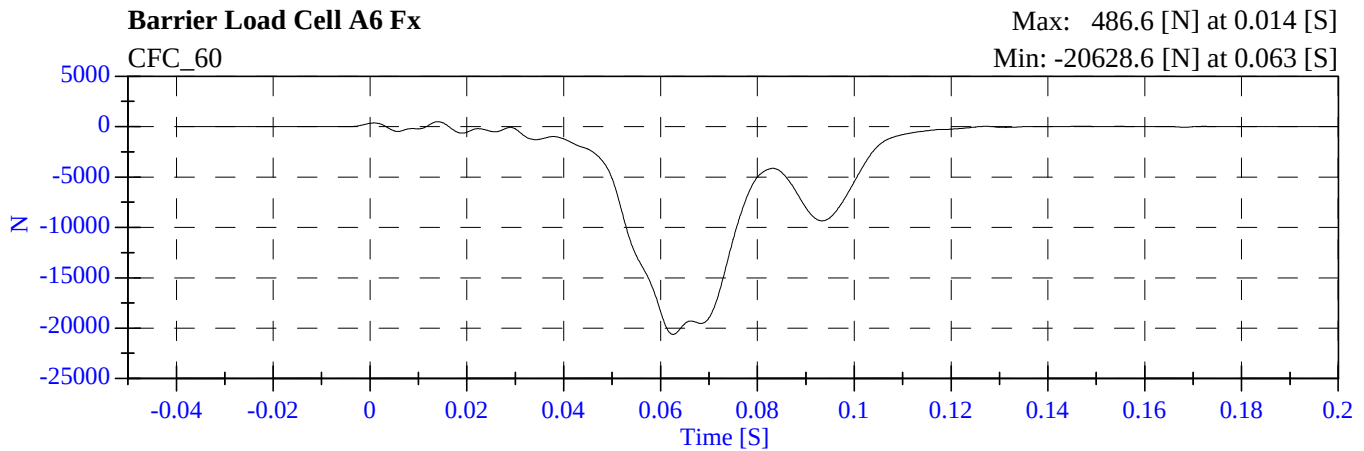
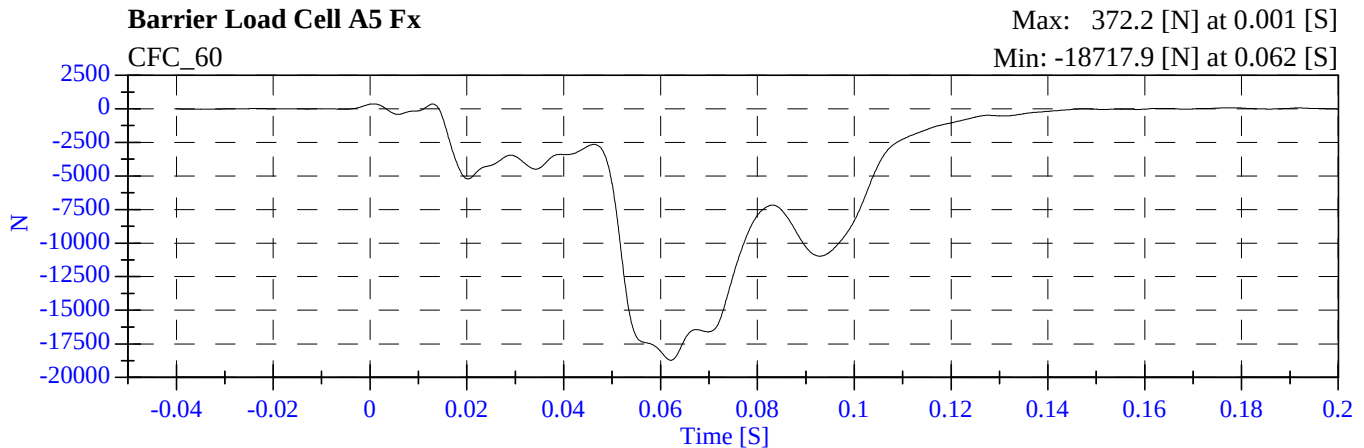
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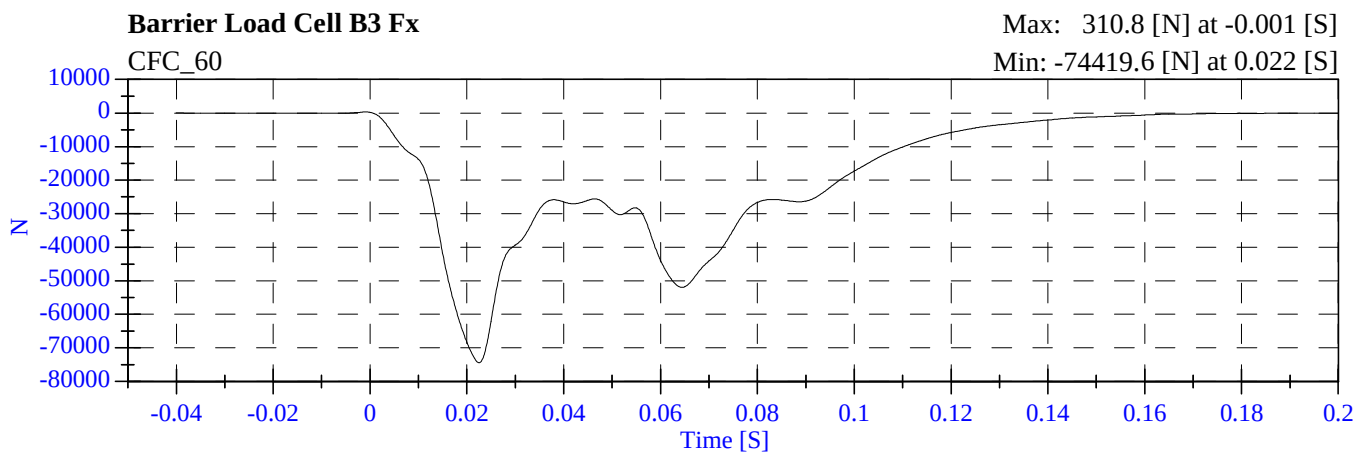
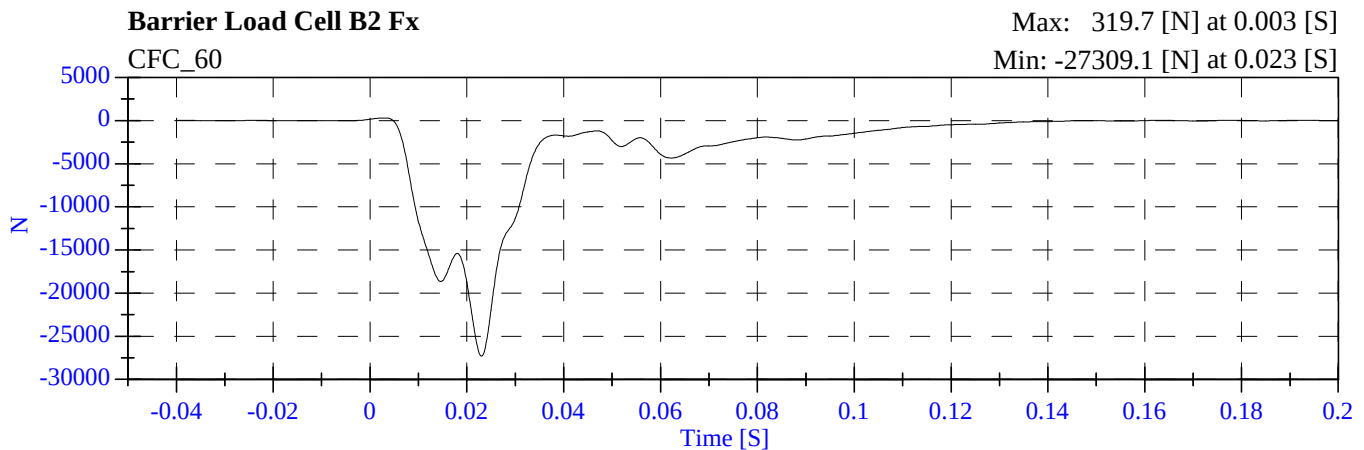
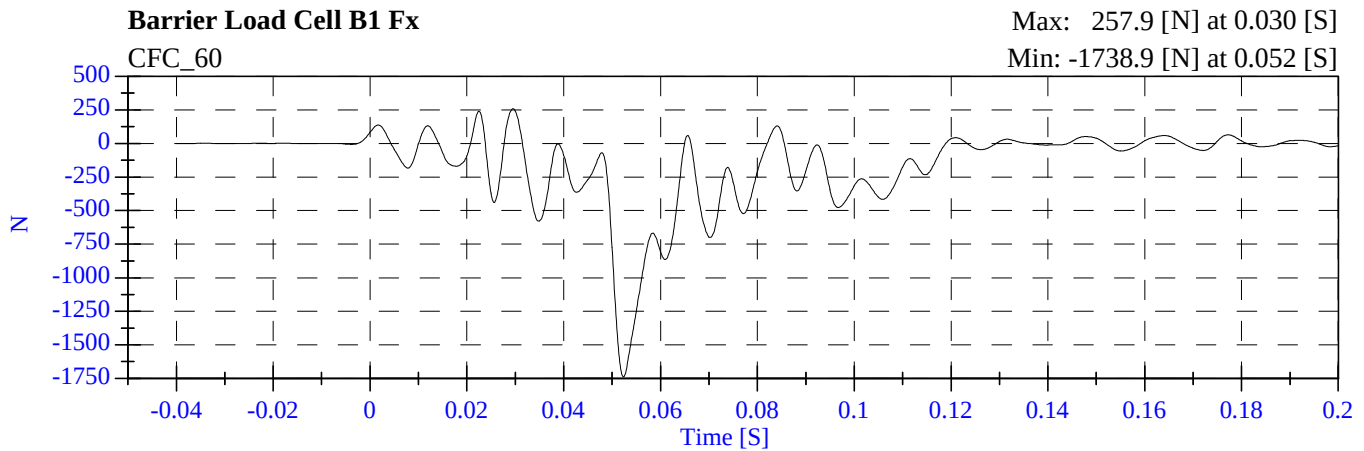
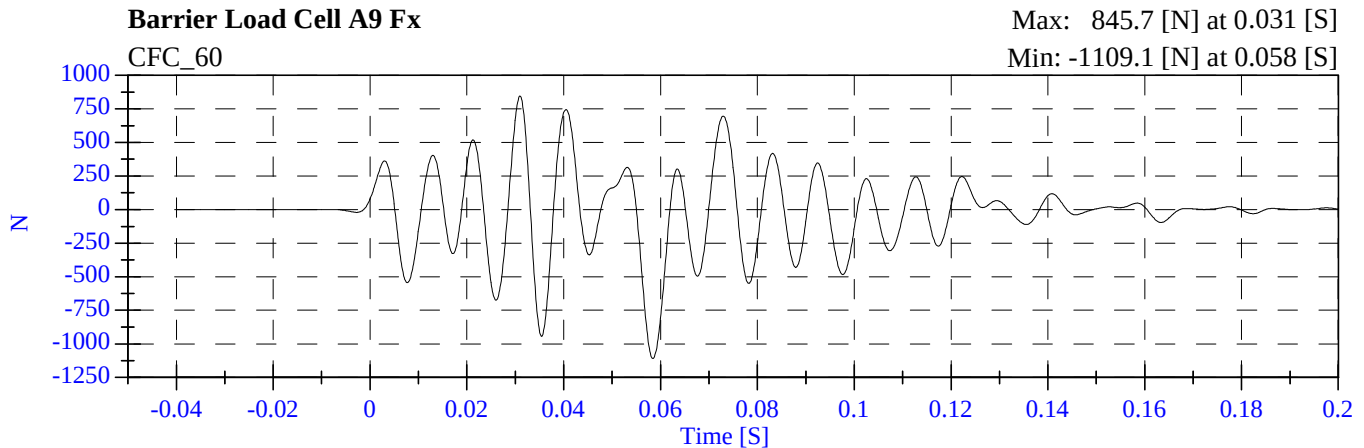
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



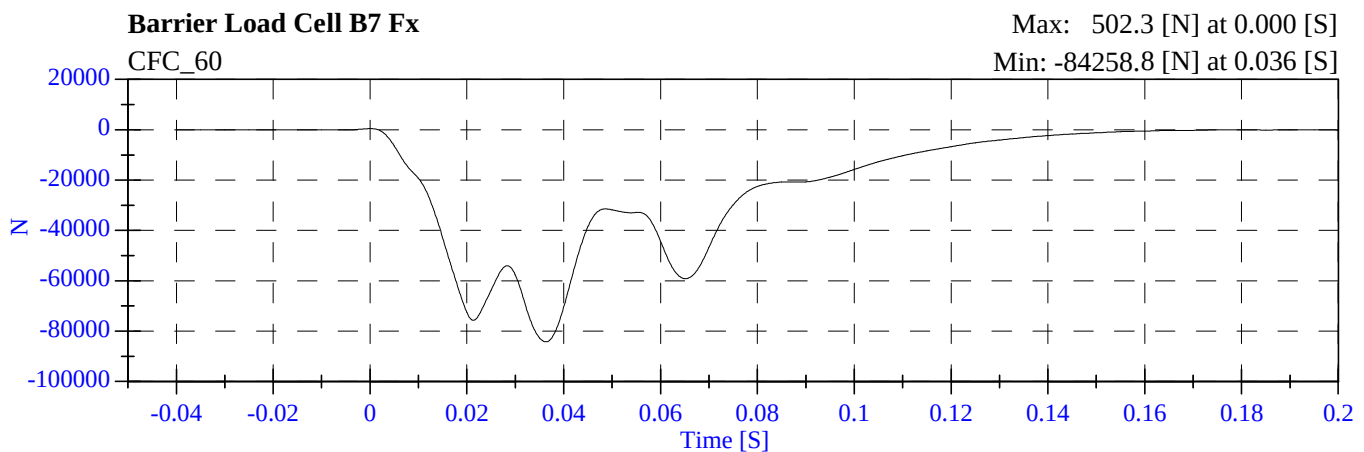
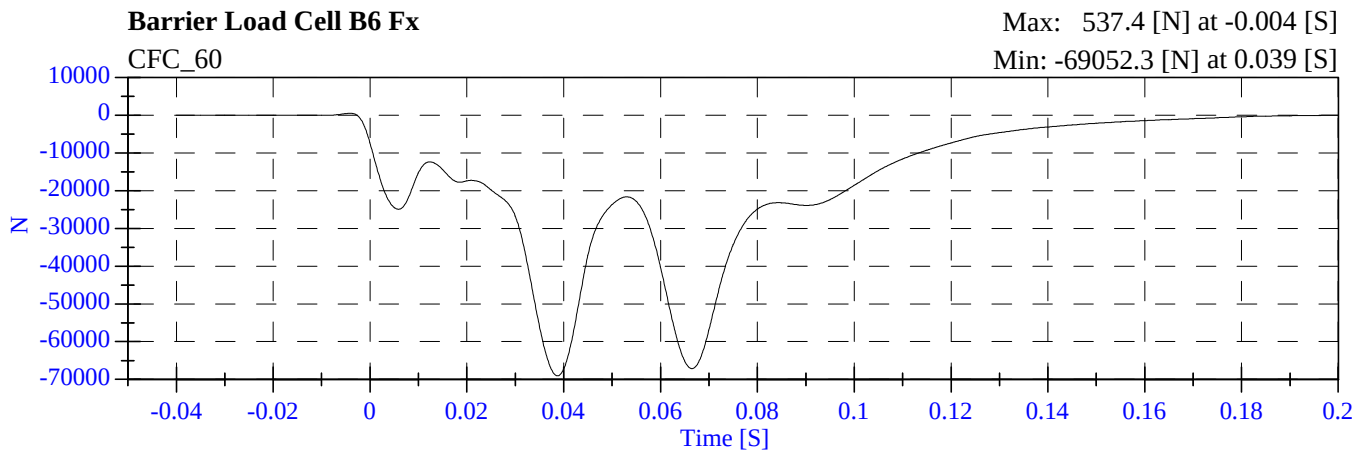
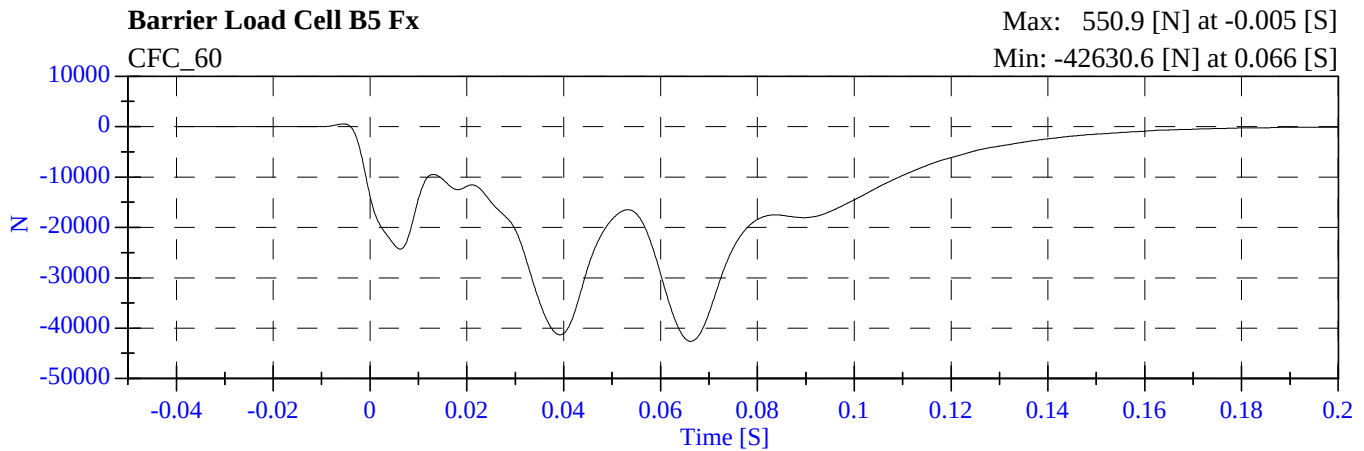
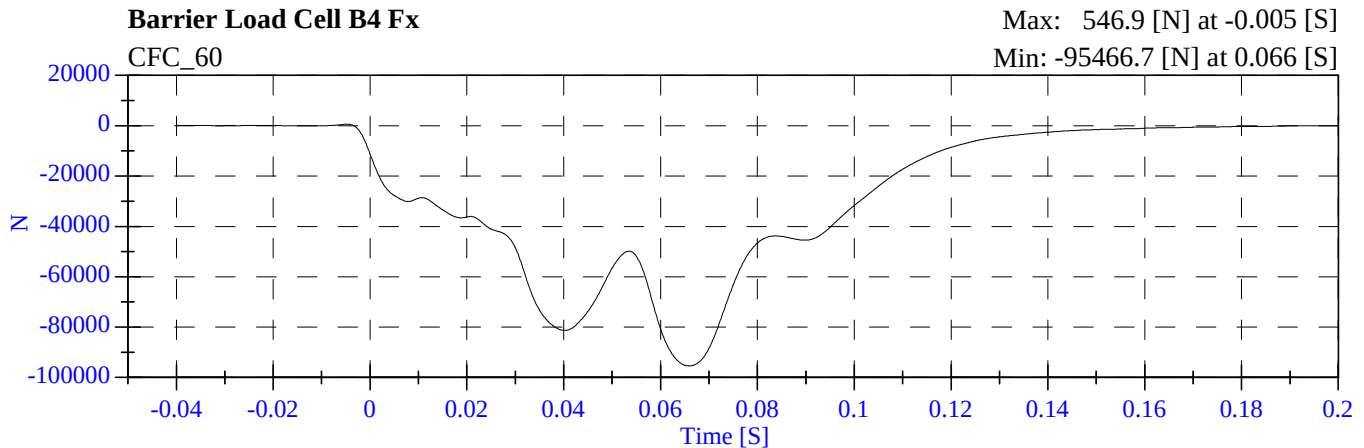
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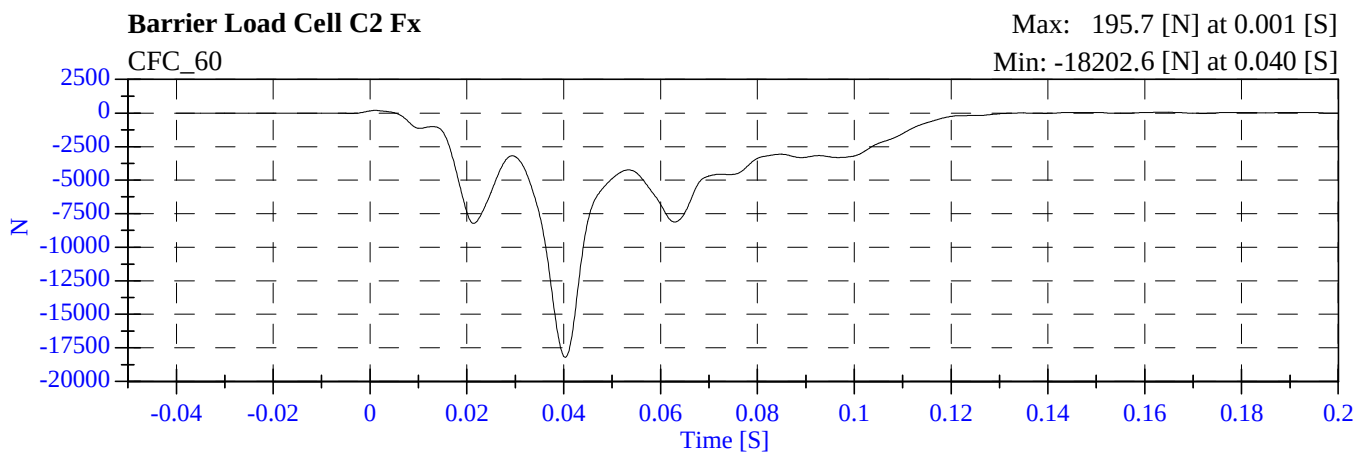
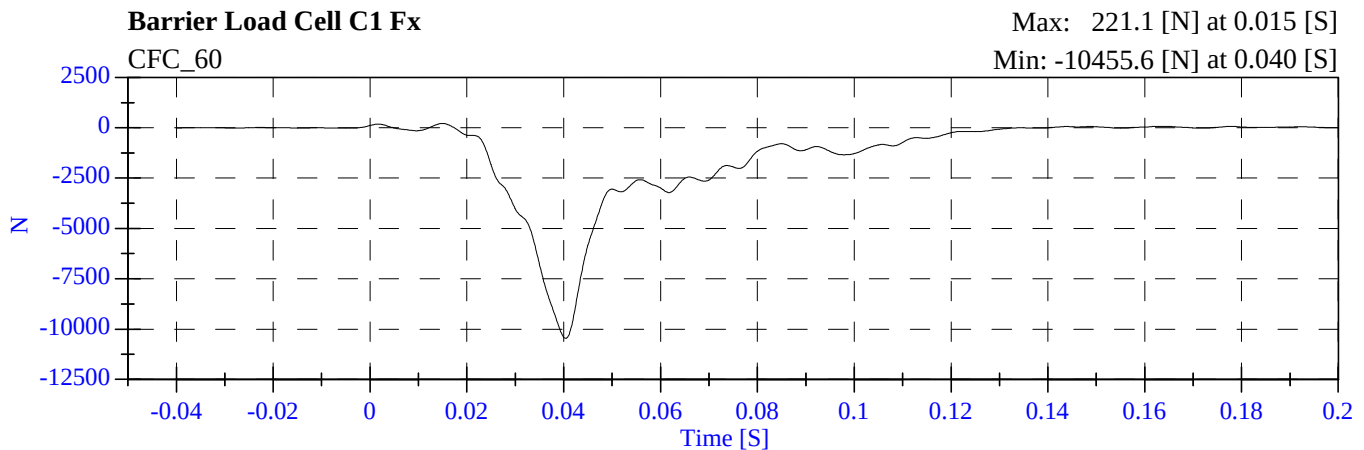
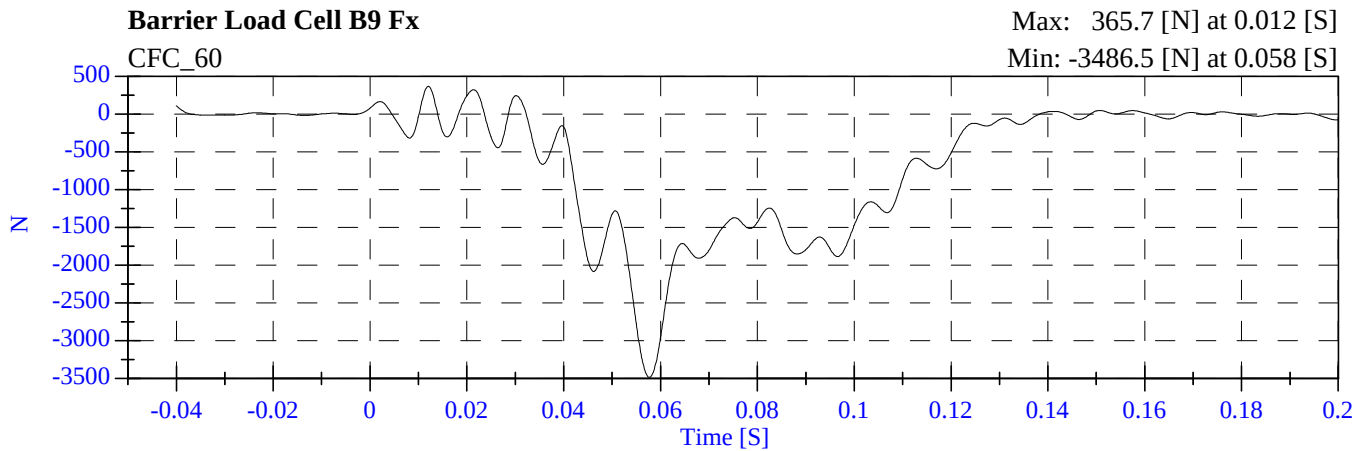
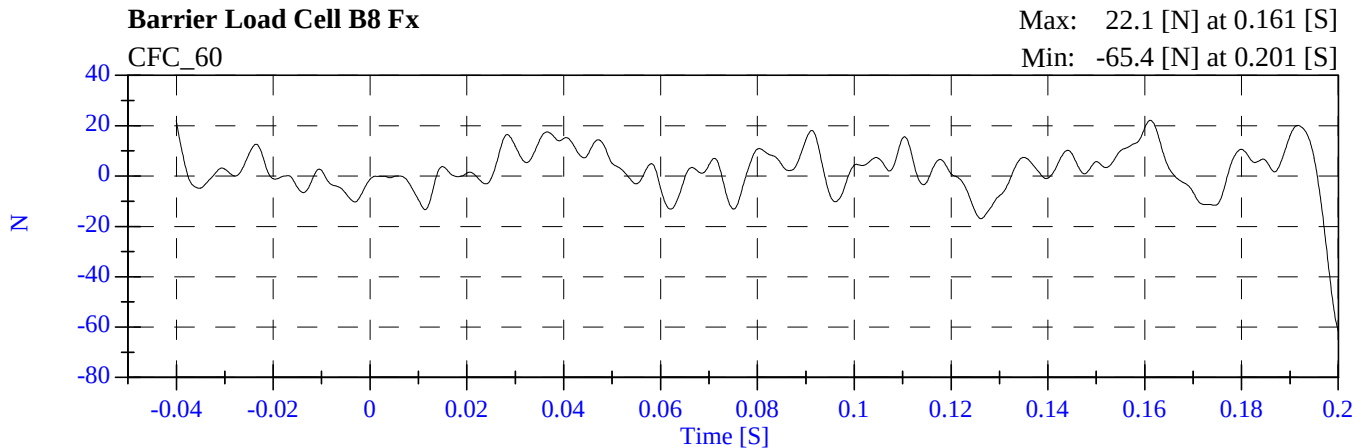
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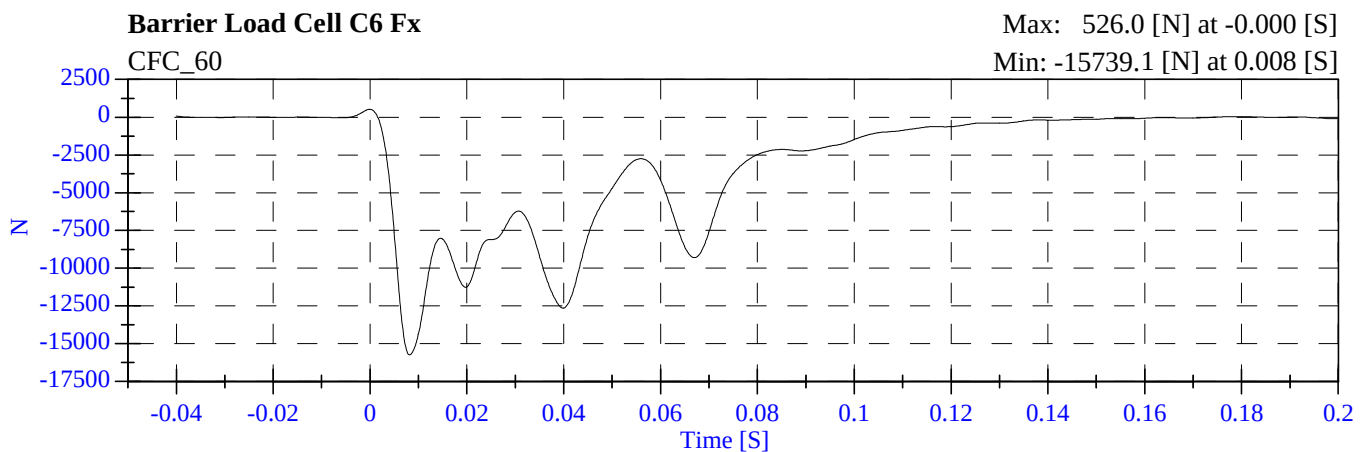
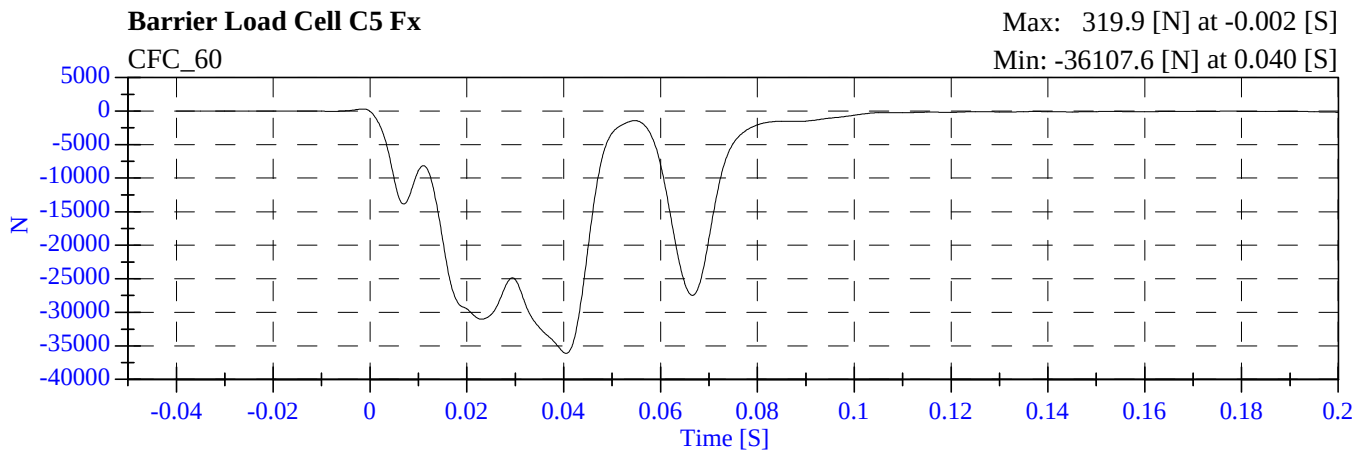
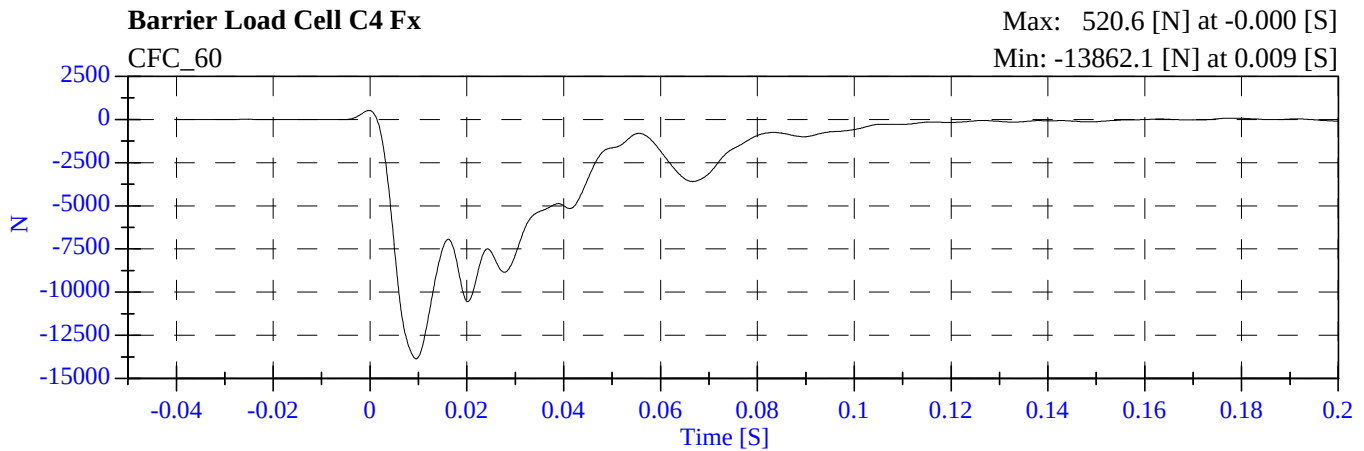
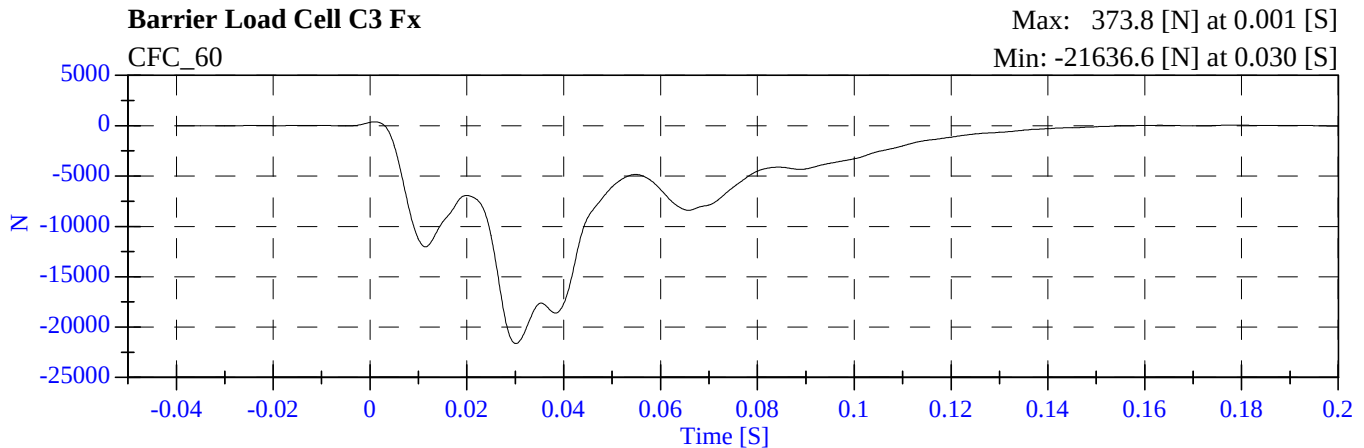
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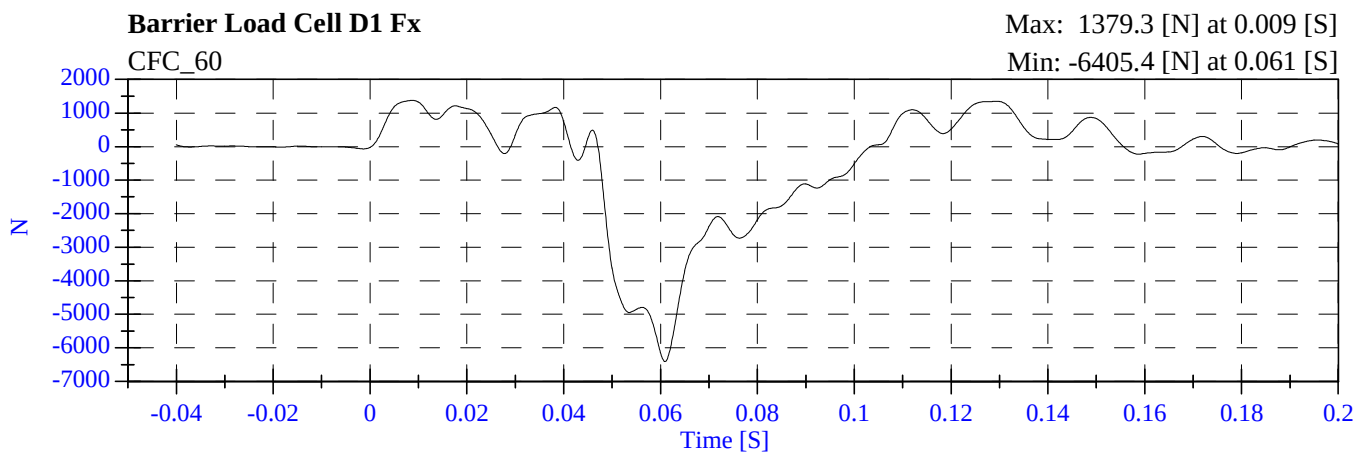
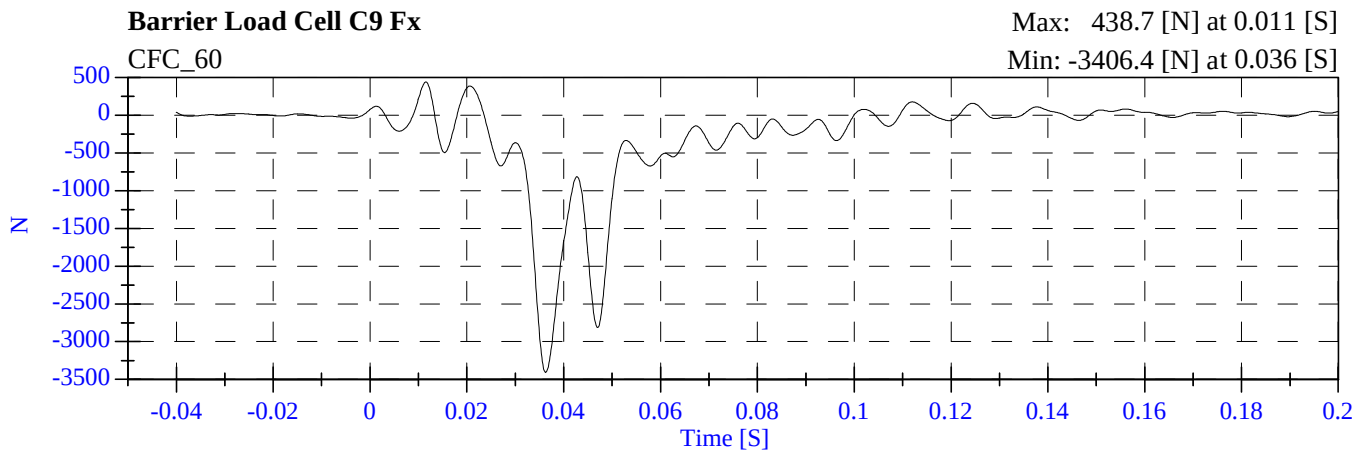
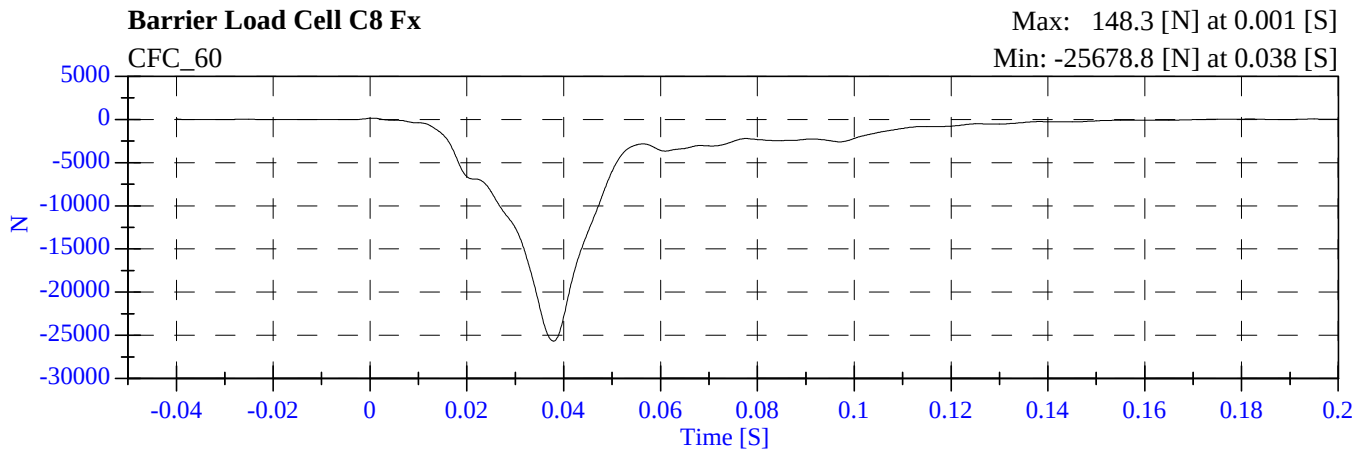
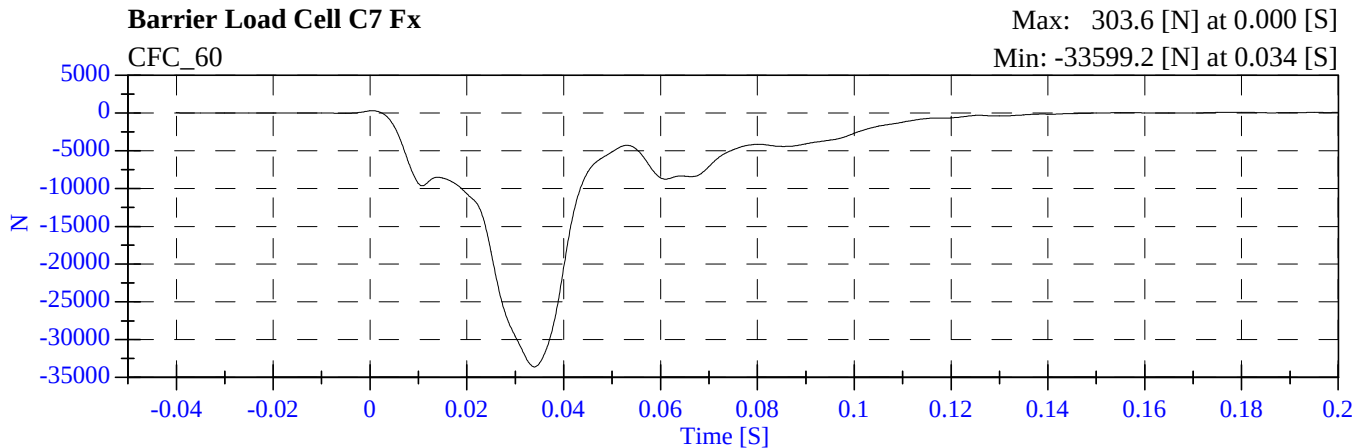
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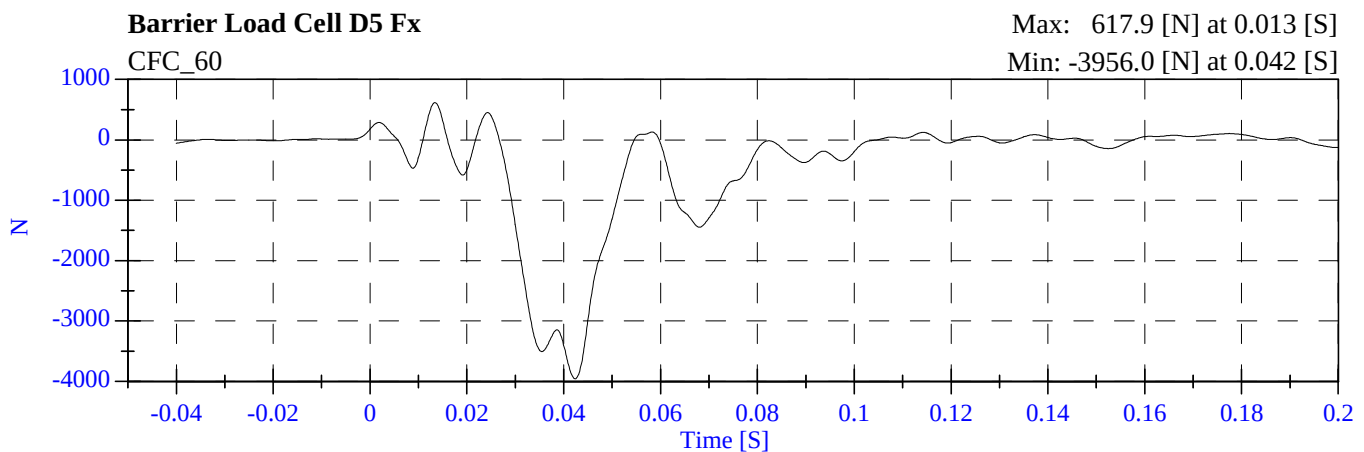
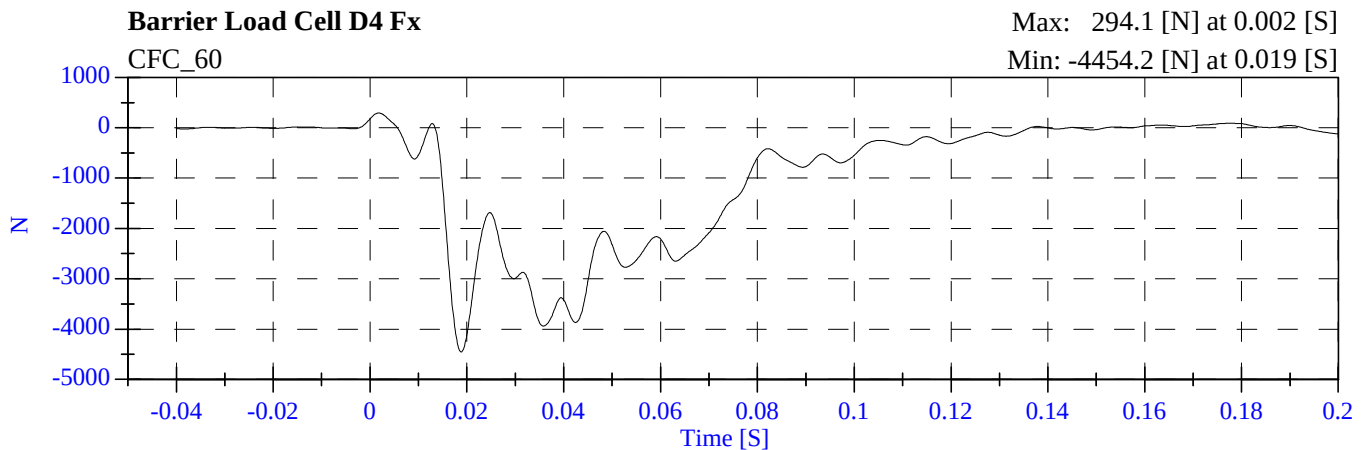
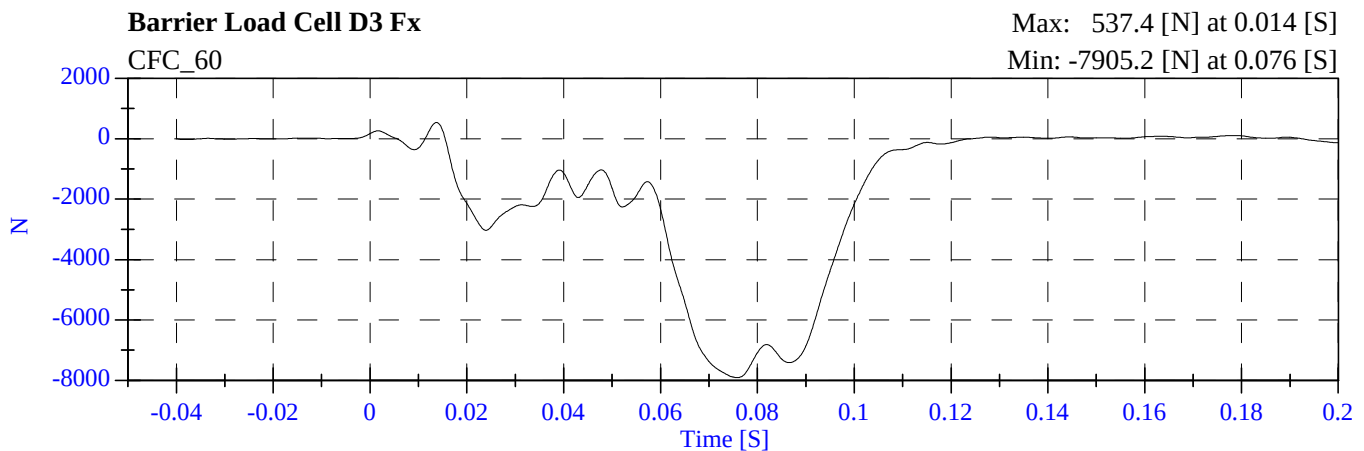
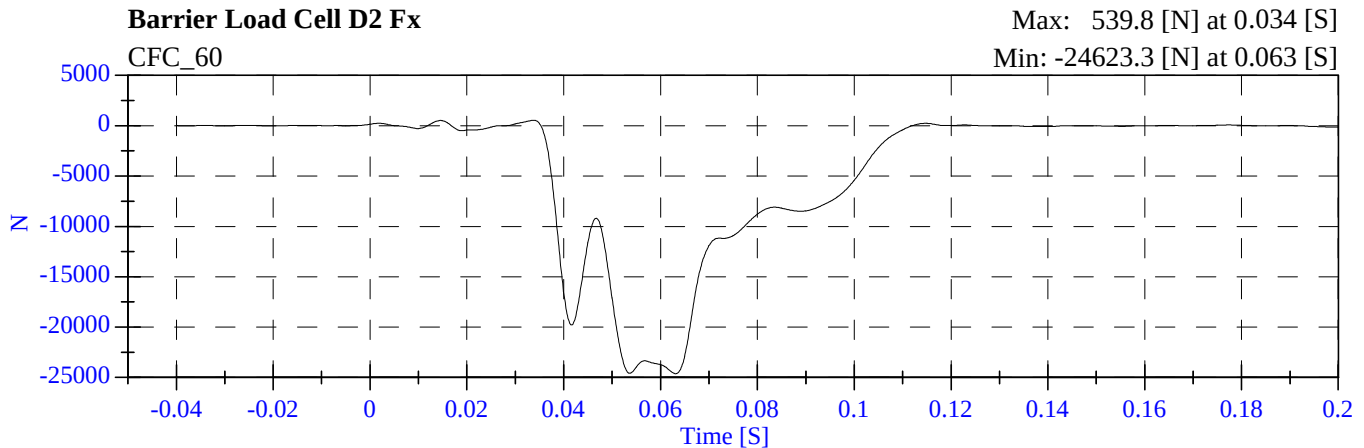
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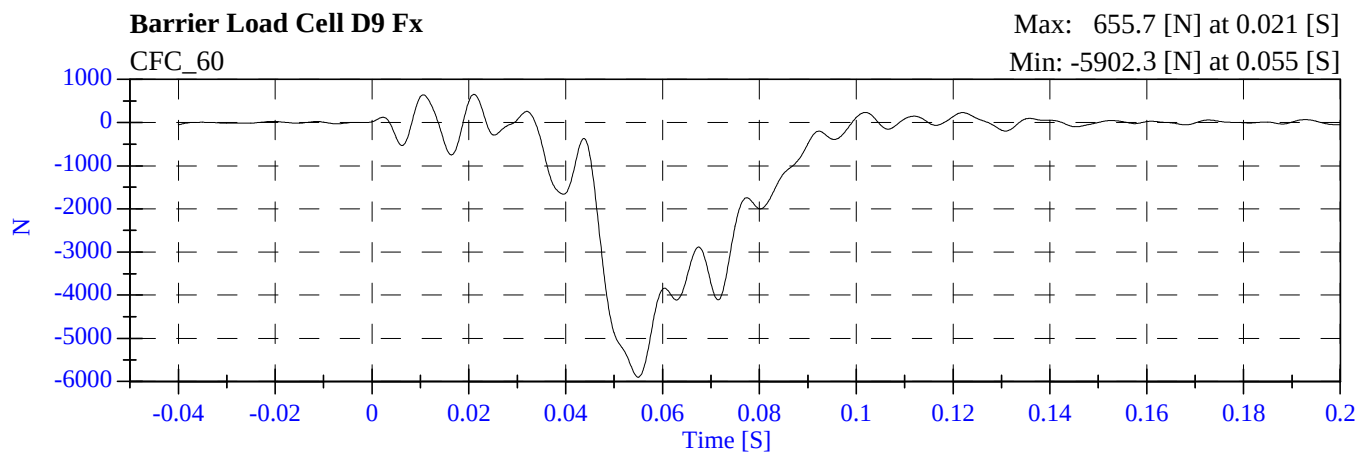
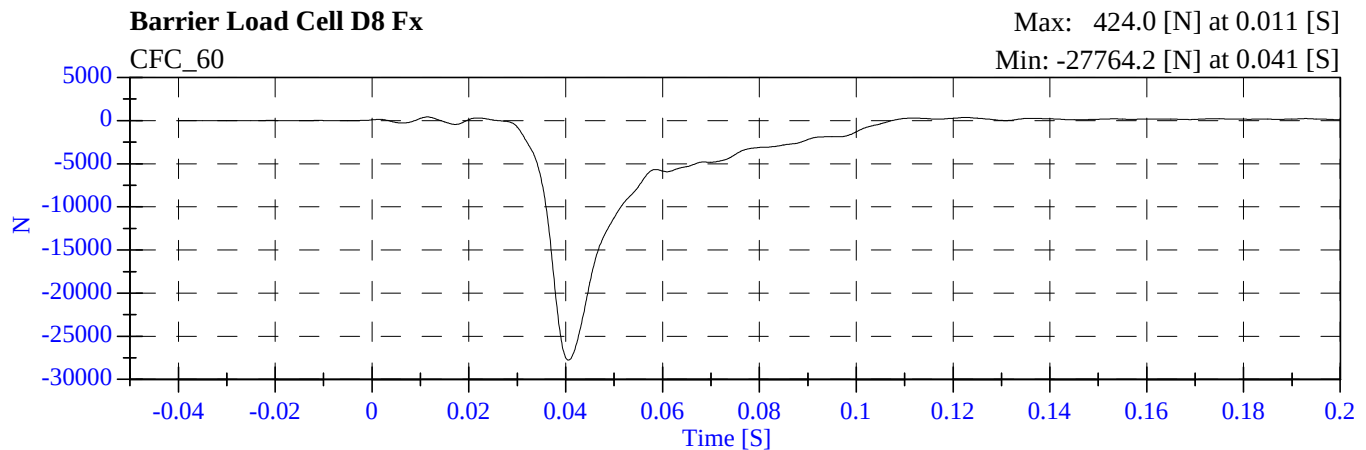
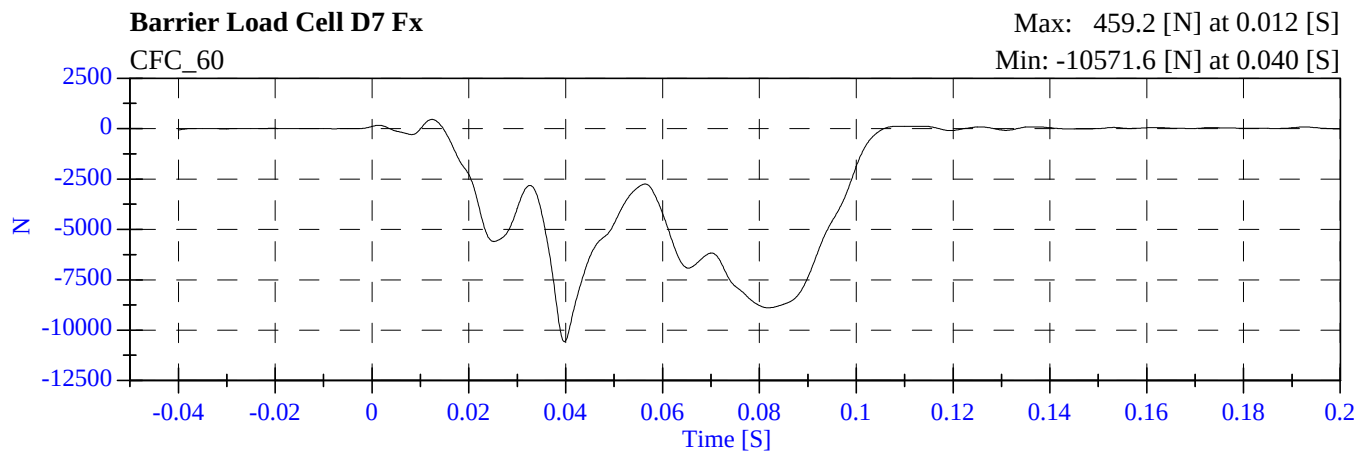
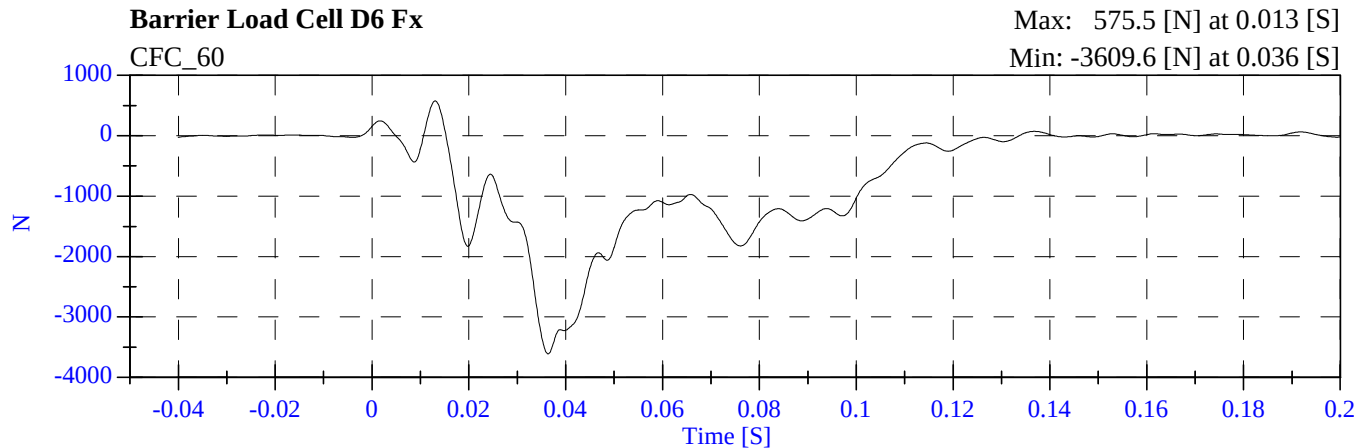
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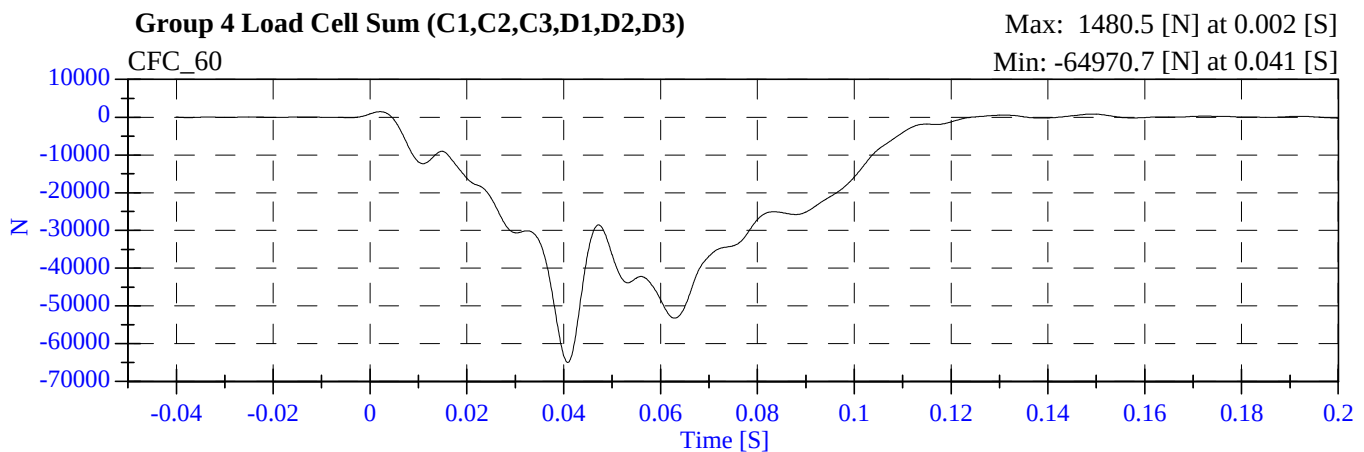
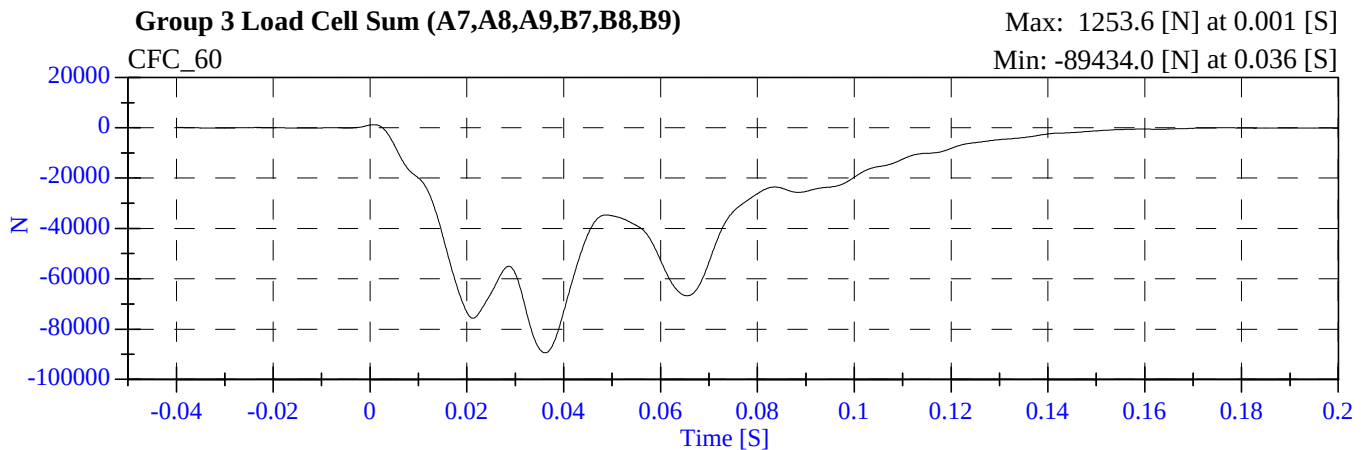
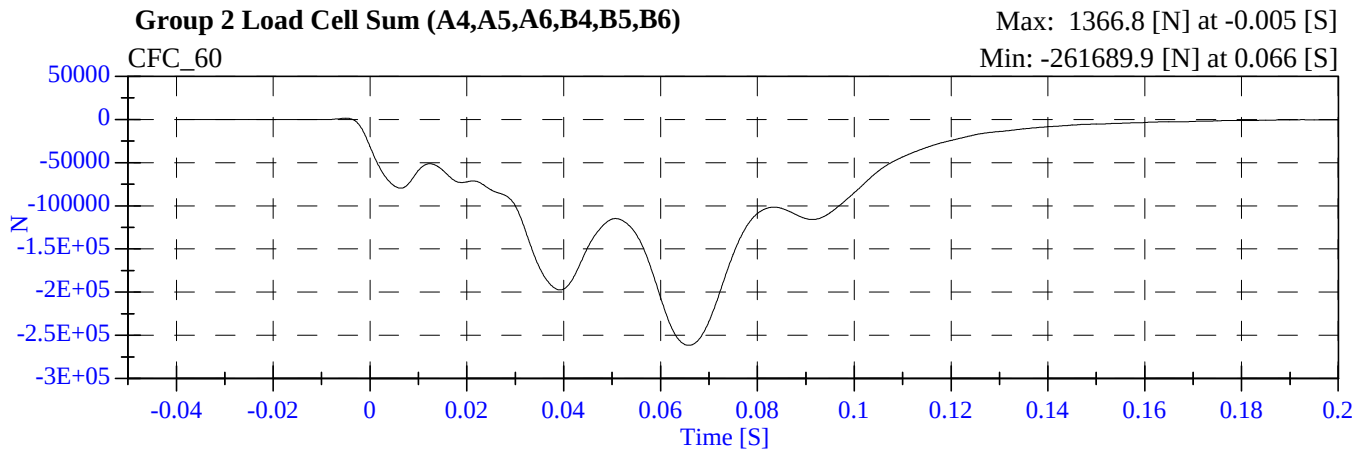
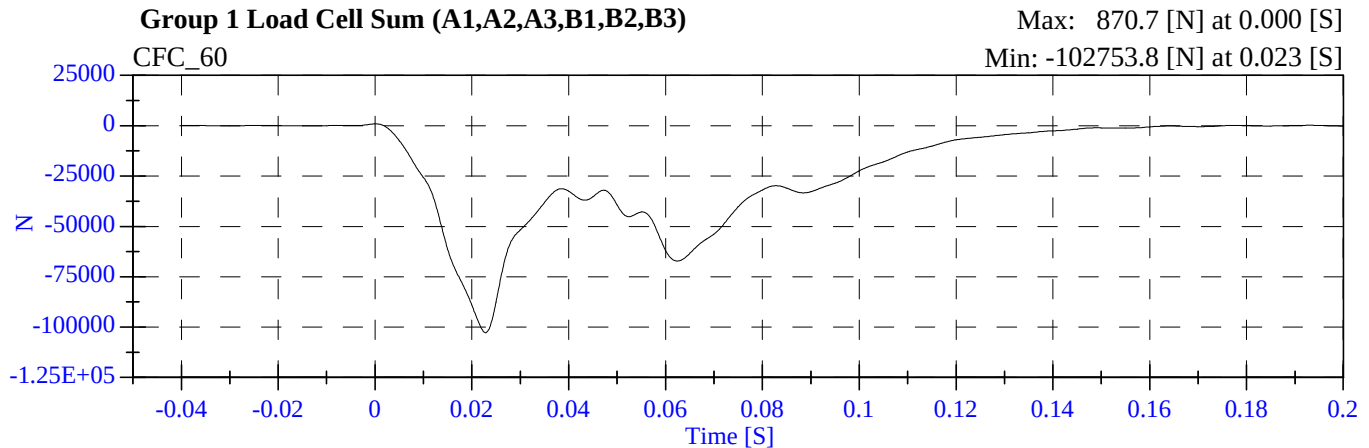
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



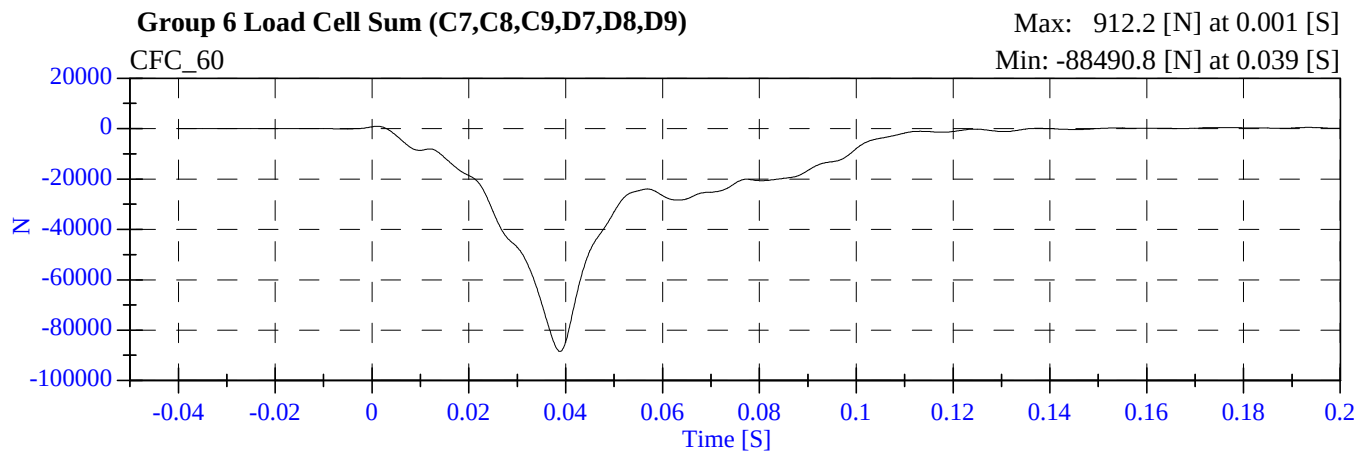
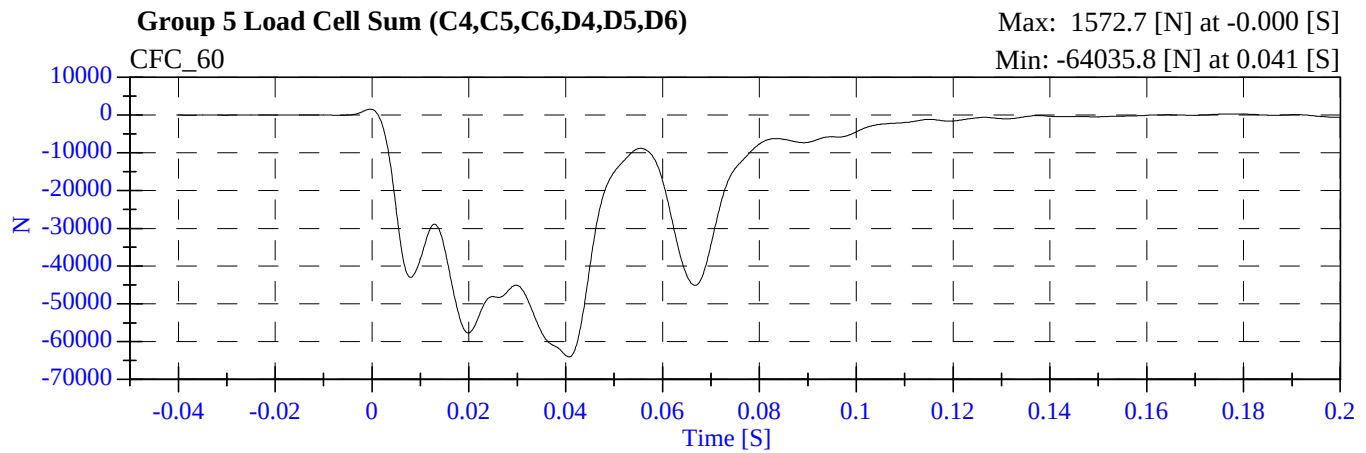
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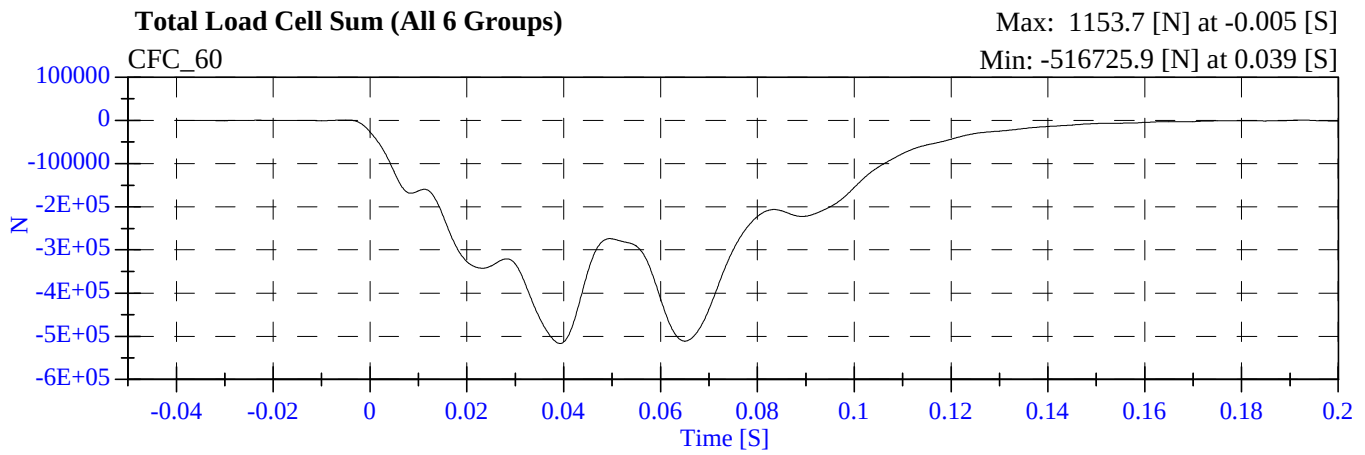
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



APPENDIX C

PART 572B/E DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA SHEETS

Appendix C contains the results from certification tests performed on the 50th percentile male anthropomorphic test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of General Dynamics. A summary of the test results, and Part 572 specifications are included in this Appendix.

Dummy serial numbers and certification dates are:

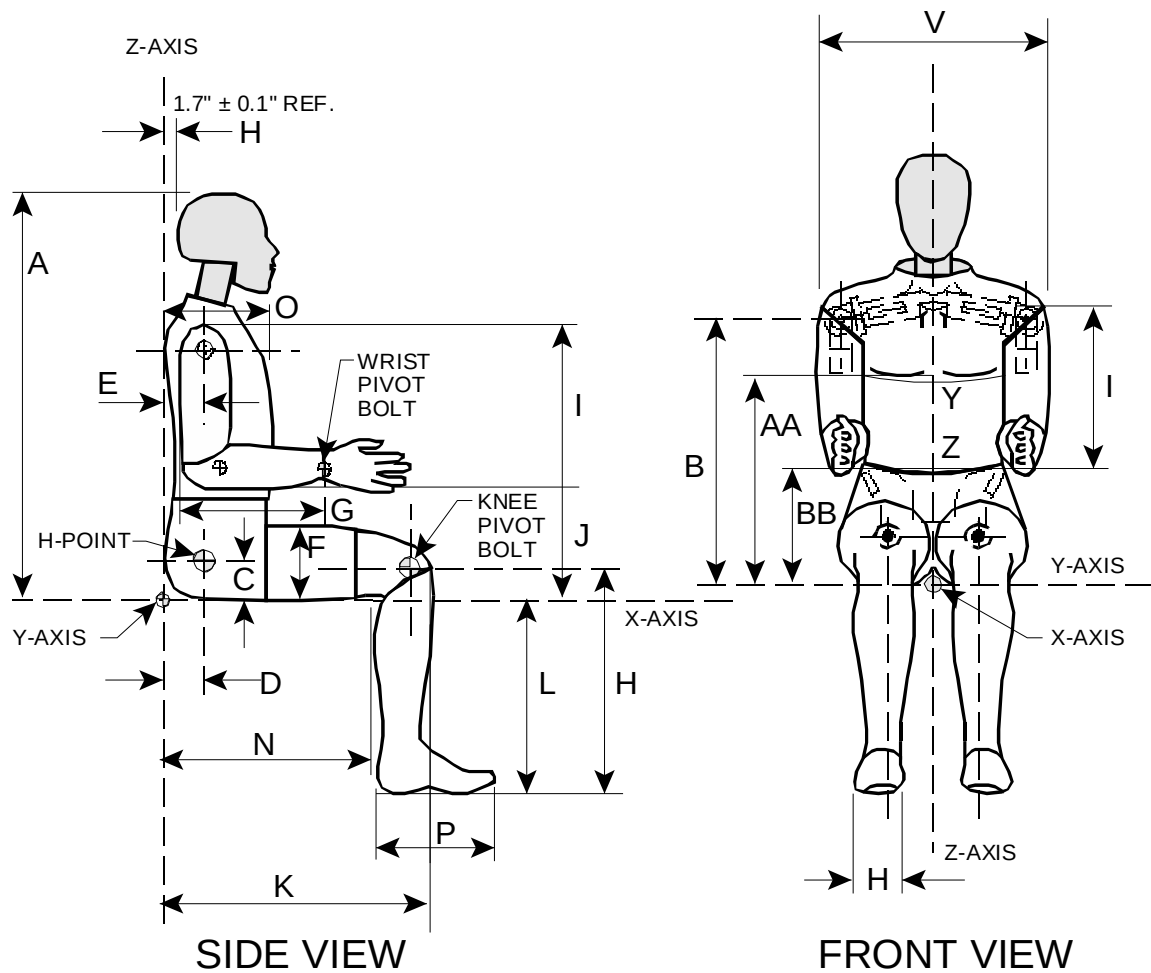
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	061	12/15/2004
#2/Right Front Passenger	064	12/15/2004

Electronic Test Equipment

The complement of signal conditioning, recording and display equipment, in conjunction with dummy certification testing, can be found in New Car Assessment and Standards Inducant Testing Final Report No. 6525-V-1.

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS SPECIFICATIONS



NOTE: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude.
(REF: S572.31(A)(6))

PART 572E
HEAD DROP TEST

Dummy Serial Number 061
Sequential Test Number 1
Date 12/10/2004
Workfile 061H4 12-10-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	40.0
Peak Resultant Acceleration	225-275 G's	241.76
Peak Lateral Acceleration	15 G's Max	10.31
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	12/14/2004	6 Axis Neck Transducer
Workfile	061NF 12-14-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	37.0
Impact Velocity		22.60 - 23.40 Ft/s	23.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.71
	20 ms	17.60 - 22.60 G's	20.90
	30 ms	12.50 - 18.50 G's	17.66
Max Pendulum G's Above 30 ms		29 G's Max	17.66
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.00
D Plane Rotation	Max	64 - 78 Deg	68.28
	Time	57 - 64 ms	58.50
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	73.67
	Time	47 - 58 ms	51.30
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	116.10
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.50

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	12/14/2004	6 Axis Neck Transducer
Workfile	061NE6 12-14-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.00
Relative Humidity		10% - 70%	37.00
Impact Velocity		19.50 - 20.30 Ft/s	19.70
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.73
	20 ms	14.00 - 19.00 G's	18.41
	30 ms	11.00 - 16.00 G's	14.49
Max Pendulum G's Above 30 ms		22 G's Max	14.49
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	38.50
D Plane Rotation	Max	81 - 106 Deg	92.68
	Time	72 - 82 ms	74.90
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-53.05
	Time	65 - 79 ms	71.10
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	153.60
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	136.00

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 1
Date 12/15/2004
Workfile 061T 12-15-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	33.00
Pendulum Velocity	21.6 - 22.4 Ft/s	22.37
Maximum Deflection	2.50 - 2.86 in	2.50
Maximum Resistive Force	1160 - 1325 Lbs	1257.94
Internal Hysteresis	69 - 85 %	76.44

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 1
Date 12/15/2004
Workfile 061RF 12-15-04; 061LF 12-15-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	36.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1214.06
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	36.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1261.07

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Sequential Test Number 1
Date 12/15/2004

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70.00
Relative Humidity			37.00
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	33.6
Chest Depth	O	8.4 - 9.0 in	8.4
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.7
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
Elbow Rest Height	J	7.5 - 8.3 in	7.8
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.4
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number 064
Sequential Test Number 1
Date 12/10/2004
Workfile 064 12-10-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	40.00
Peak Resultant Acceleration	225-275 G's	249.35
Peak Lateral Acceleration	15 G's Max	3.78
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	12/14/2004	6 Axis Neck Transducer
Workfile	064NF7 12-14-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.00
Relative Humidity		10% - 70%	38.00
Impact Velocity		22.60 - 23.40 Ft/s	22.62
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.24
	20 ms	17.60 - 22.60 G's	21.84
	30 ms	12.50 - 18.50 G's	18.10
Max Pendulum G's Above 30 ms		29 G's Max	18.10
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.90
D Plane Rotation	Max	64 - 78 Deg	67.89
	Time	57 - 64 ms	57.40
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	70.95
	Time	47 - 58 ms	48.80
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	113.00
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	102.70

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	12/14/2004	6 Axis Neck Transducer
Workfile	064NE1 12-14-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.00
Relative Humidity		10% - 70%	38.00
Impact Velocity		19.50 - 20.30 Ft/s	19.65
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	17.93
	20 ms	14.00 - 19.00 G's	17.15
	30 ms	11.00 - 16.00 G's	14.98
Max Pendulum G's Above 30 ms		22 G's Max	15.49
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	41.70
D Plane Rotation	Max	81 - 106 Deg	88.29
	Time	72 - 82 ms	76.80
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-41.21
	Time	65 - 79 ms	74.80
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	156.00
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	139.10

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 1
Date 12/15/2004
Workfile 064T 12-15-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	33.00
Pendulum Velocity	21.6 - 22.4 Ft/s	22.31
Maximum Deflection	2.50 - 2.86 in	2.57
Maximum Resistive Force	1160 - 1325 Lbs	1321.99
Internal Hysteresis	69 - 85 %	74.76

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 1
Date 12/15/2004
Workfile 064LF 12-15-04; 064RF 12-15-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	36.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1184.09
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	36.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1205.97

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 1
Date 12/15/2004

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70.00
Relative Humidity			37.00
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	34.0
Chest Depth	O	8.4 - 9.0 in	8.6
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.2
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.4
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P32295	12-Jul-04	10-Jan-05
	X Arm Z	ENDEVCO	AC-P32455	12-Jul-04	10-Jan-05
	Y Arm X	ENDEVCO	AC-P32227	12-Jul-04	10-Jan-05
	Y Arm Z	ENDEVCO	AC-P32139	12-Jul-04	10-Jan-05
	Z Arm X	ENDEVCO	AC-P32197	12-Jul-04	10-Jan-05
	Z Arm Y	ENDEVCO	AC-P32464	12-Jul-04	10-Jan-05
Head	X	ENDEVCO	AC-P32276	12-Jul-04	10-Jan-05
	Y	ENDEVCO	AC-P32146	12-Jul-04	10-Jan-05
	Z	ENDEVCO	AC-P32217	12-Jul-04	10-Jan-05
Head	X (R)	ENDEVCO	AC-P32289	12-Jul-04	10-Jan-05
	Y (R)	ENDEVCO	AC-P32225	12-Jul-04	10-Jan-05
	Z (R)	ENDEVCO	AC-P32453	12-Jul-04	10-Jan-05
Neck Load Cell	X	DENTON	LC-1633FX	5-Aug-04	3-Feb-05
	Y	DENTON	LC-1633FY	5-Aug-04	3-Feb-05
	Z	DENTON	LC-1633FZ	5-Aug-04	3-Feb-05
Neck Moment	X	DENTON	LC-1633MX	5-Aug-04	3-Feb-05
	Y	DENTON	LC-1633MY	5-Aug-04	3-Feb-05
	Z	DENTON	LC-1633MZ	5-Aug-04	3-Feb-05
Chest	X	ENDEVCO	AC-P16863	19-Jul-04	17-Jan-05
	Y	ENDEVCO	AC-P17283	19-Jul-04	17-Jan-05
	Z	ENDEVCO	AC-P23640	14-Jul-04	12-Jan-05
Chest	X (R)	ENDEVCO	AC-P17235	14-Jul-04	12-Jan-05
	Y (R)	ENDEVCO	AC-P17285	19-Jul-04	17-Jan-05
	Z (R)	ENDEVCO	AC-P14393	14-Jul-04	12-Jan-05
Chest Deflection	X	SERVO	DS-061	11-Nov-04	12-May-05
Pelvic	X	ENDEVCO	AC-P23939	8-Sep-04	9-Mar-05
	Y	ENDEVCO	AC-P23999	8-Sep-04	9-Mar-05
	Z	ENDEVCO	AC-P23993	8-Sep-04	9-Mar-05

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	GSE	LC-656	5-Nov-04	6-May-05
Right Femur Load Cell	Fz	GSE	LC-657	5-Nov-04	6-May-05
Left Upper Tibia	Mx	DENTON	LC-199MX	24-Aug-04	22-Feb-05
	My	DENTON	LC-199MY	24-Aug-04	22-Feb-05
Left Lower Tibia	Fz	DENTON	LC-128FZ	23-Aug-04	21-Feb-05
	Mx	DENTON	LC-128MX	23-Aug-04	21-Feb-05
	My	DENTON	LC-128MY	23-Aug-04	21-Feb-05
Right Upper Tibia	Mx	DENTON	LC-045MX	9-Nov-04	10-May-05
	My	DENTON	LC-045MY	9-Nov-04	10-May-05
Right Lower Tibia	Fz	DENTON	LC-125FZ	9-Nov-04	10-May-05
	Mx	DENTON	LC-125MX	9-Nov-04	10-May-05
	My	DENTON	LC-125MY	9-Nov-04	10-May-05
Left Foot Rear	X	ENDEVCO	AC-AJ8C0	8-Nov-04	9-May-05
	Z	ENDEVCO	AC-J19868	8-Nov-04	9-May-05
Left Foot Front	Z	ENDEVCO	AC-J34378	8-Nov-04	9-May-05
Right Foot Rear	X	ENTRAN	AC-01G18-F15	8-Nov-04	9-May-05
	Z	ENTRAN	AC-01G18-F14	8-Nov-04	9-May-05
Right Foot Front	Z	ENTRAN	AC-00L13-F04	8-Nov-04	9-May-05
Lap Belt Load Cell		LEBOW	LC-706	1-Nov-04	2-May-05
Shoulder Belt Load Cell		FIRST TECHNOLOGY	LC-174	1-Nov-04	2-May-05

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P17563	26-Jul-04	24-Jan-05
	X Arm Z	ENDEVCO	AC-P32218	4-Nov-04	5-May-05
	Y Arm X	ENDEVCO	AC-P14965	26-Jul-04	24-Jan-05
	Y Arm Z	ENDEVCO	AC-P18948	20-Jul-04	18-Jan-05
	Z Arm X	ENDEVCO	AC-P18785	7-Sep-04	8-Mar-05
	Z Arm Y	ENDEVCO	AC-P23926	20-Jul-04	18-Jan-05
Head	X	ENDEVCO	AC-P18524	19-Aug-04	17-Feb-05
	Y	ENDEVCO	AC-P18518	19-Aug-04	17-Feb-05
	Z	ENDEVCO	AC-P18533	19-Aug-04	17-Feb-05
Head	X (R)	ENDEVCO	AC-P18514	19-Aug-04	17-Feb-05
	Y (R)	ENDEVCO	AC-P18688	19-Aug-04	17-Feb-05
	Z (R)	ENDEVCO	AC-P18531	19-Aug-04	17-Feb-05
Neck Load Cell	X	DENTON	LC-1634FX	5-Aug-04	3-Feb-05
	Y	DENTON	LC-1634FY	5-Aug-04	3-Feb-05
	Z	DENTON	LC-1634FZ	5-Aug-04	3-Feb-05
Neck Moment	X	DENTON	LC-1634MX	5-Aug-04	3-Feb-05
	Y	DENTON	LC-1634MY	5-Aug-04	3-Feb-05
	Z	DENTON	LC-1634MZ	5-Aug-04	3-Feb-05
Chest	X	ENDEVCO	AC-P17141	19-Jul-04	17-Jan-05
	Y	ENDEVCO	AC-P16832	19-Jul-04	17-Jan-05
	Z	ENDEVCO	AC-P17152	19-Jul-04	17-Jan-05
Chest	X (R)	ENDEVCO	AC-P16286	19-Jul-04	17-Jan-05
	Y (R)	ENDEVCO	AC-P17242	19-Jul-04	17-Jan-05
	Z (R)	ENDEVCO	AC-P16591	7-Oct-04	7-Apr-05
Chest Deflection	X	SERVO	DS-064	11-Nov-04	12-May-05
Pelvic	X	ENDEVCO	AC-P12587	16-Aug-04	14-Feb-05
	Y	ENDEVCO	AC-P17236	16-Aug-04	14-Feb-05
	Z	ENDEVCO	AC-P16597	16-Aug-04	14-Feb-05

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	GSE	LC-653	5-Nov-04	6-May-05
Right Femur Load Cell	Fz	GSE	LC-654	5-Nov-04	6-May-05
Left Upper Tibia	Mx	DENTON	LC-264MX	23-Aug-04	21-Feb-05
	My	DENTON	LC-264MY	23-Aug-04	21-Feb-05
Left Lower Tibia	Fz	DENTON	LC-177FZ	23-Aug-04	21-Feb-05
	Mx	DENTON	LC-177MX	23-Aug-04	21-Feb-05
	My	DENTON	LC-177MY	23-Aug-04	21-Feb-05
Right Upper Tibia	Mx	DENTON	LC-265MX	10-Aug-04	8-Feb-05
	My	DENTON	LC-265MY	10-Aug-04	8-Feb-05
Right Lower Tibia	Fz	DENTON	LC-178FZ	14-Aug-04	12-Feb-05
	Mx	DENTON	LC-178MX	14-Aug-04	12-Feb-05
	My	DENTON	LC-178MY	14-Aug-04	12-Feb-05
Left Foot Rear	X	ENDEVCO	AC-P17912	27-Oct-04	27-Apr-05
	Z	ENTRAN	AC-01G18-F03	8-Nov-04	9-May-05
Left Foot Front	Z	ENTRAN	AC-01G18-F05	8-Nov-04	9-May-05
Right Foot Rear	X	ENDEVCO	AC-J36176	8-Nov-04	9-May-05
	Z	ENDEVCO	AC-J18662	8-Nov-04	9-May-05
Right Foot Front	Z	ENDEVCO	AC-J18059	8-Nov-04	9-May-05
Lap Belt Load Cell		LEBOW	LC-707	1-Nov-04	2-May-05
Shoulder Belt Load Cell		FIRST TECHNOLOGY	LC-170	1-Nov-04	2-May-05

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	ICS	AC-FGP50	24-Aug-04	22-Feb-05
Right Rear Seat Crossmember X	ICS	AC-FGP19	27-Aug-04	25-Feb-05
Top of Engine	ICS	AC-FGP12	27-Aug-04	25-Feb-05
Bottom of Engine	ICS	AC-FGP49	24-Aug-04	22-Feb-05
Right Disc Brake Caliper	ICS	AC-FGP18	20-Aug-04	18-Feb-05
Instrument Panel	ICS	AC-FGP20	27-Aug-04	25-Feb-05
Left Disc Brake Caliper	ICS	AC-FGP35	20-Aug-04	18-Feb-05
Left Seat Rear Crossmember Z	ICS	AC-FGP26	27-Aug-04	25-Feb-05
Right Seat Rear Crossmember Z	ICS	AC-FGP29	27-Aug-04	25-Feb-05

REPORT NUMBER: CAL-05-04

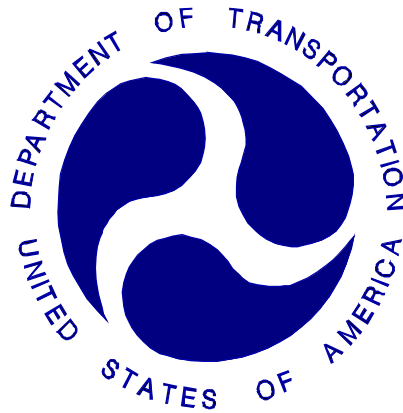
NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

EVENFLO TITAN V FORWARD FACING CONVERTIBLE WITH LATCH AND TOP TETHER
GRACO TURBOBOOSTER

NHTSA NUMBER: M50102

GENERAL DYNAMICS REPORT NUMBER: 8642-NCAP-54

GENERAL DYNAMICS
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225



December 17, 2004

FINAL REPORT

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Rulemaking
Office of Crashworthiness Standards
Mail Code: NVS-111
400 Seventh Street, SW, Room No. 5313
Washington, DC 20590

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-01-D-32005. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

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FINAL REPORT ACCEPTANCE BY:

Accepted By:

Acceptance Date:

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. CAL-05-04		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of Evenflo Titan V Forward Facing Convertible with LATCH and Top Tether / Graco TurboBooster NHTSA No.: M50102				5. Report Date December 17, 2004	
				6. Performing Organization Code CAL	
7. Author(s) Lawrence Q. Valvo, Project Engineer David J. Travale, Program Manager				8. Performing Organization Report No. 8642-NCAP-54	
9. Performing Organization Name and Address General Dynamics Transportation Sciences Center P.O. Box 400 Buffalo, New York 14225				10. Work Unit No.	
				11. Contract or Grant No. DTNH22-01-D-32005	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards Mail Code: NVS-111 400 Seventh SW, Room 5313 Washington, D.C. 20590				13. Type of Report and Period Covered Final Report, December 2004	
				14. Sponsoring Agency Code NVS-111	
15. Supplementary Notes					
16. Abstract This CRS test was performed in conjunction with a New Car Assessment Program (NCAP) load cell barrier test. An Evenflo Titan V Forward Facing Convertible CRS was secured in Position 3 (P3) with the LATCH system and top tether. A Graco TurboBooster CRS was placed in Position 4 (P4). This test was conducted at the General Dynamics Crash Test Facility in Buffalo, New York, on December 17, 2004.					
ATD Position		HIC 15		HIC 36	
P3 (Right Rear) (040)		270.9		479.6	
P4 (Left Rear) (009)		286.1		561.6	
				Clip (3 ms)	
				37.8	
				487.7	
17. Key Words New Car Assessment Program (NCAP)				18. Distribution Statement	
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SECTION 1

PURPOSE AND SUMMARY OF TEST M50102

The purpose of this test was to obtain CRS performance data in a frontal impact NCAP condition. These data constitute part of the general consumer information collected by the New Car Assessment Program (NCAP).

The 56.49 kph NCAP frontal impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

Both child dummies were instrumented with head, chest, and pelvic triaxial accelerometers. In addition, chest displacement and upper six axial neck force and moment load cell sensors were utilized. Position 3 was equipped with left and right clavicle force transducers, lumbar spine force and moment transducers, left and right lower ASIS force transducers and left and right femur force transducers.

The right rear (Position 3) child dummy (serial no. 040) and left rear (Position 4) child dummy (serial no. 009) were calibrated previous to this test. Child dummy certification information is found in section 5.

The right rear child dummy's HIC (15 ms) was 270.9, maximum chest deceleration over 3 ms was 37.8 g's. The left rear child dummy's HIC (15 ms) was 286.1, maximum chest deceleration over 3 ms was 51.0 g's.

SECTION 2
DATA SHEET NO. 1
CRASH TEST SUMMARY

TEST DUMMY INFORMATION:

DESCRIPTION	Position #3 CRS	Position #4 CRS
ATD Type/Serial No.	Hybrid III 3C/040	Hybrid III 10C /009
Restraint System:	Evenflo Titan V Forward Facing Convertible with LATCH and Top Tether	Graco TurboBooster

Number of Data Channels 55
Number of Cameras: 1 Real Time
2 High Speed

POST TEST DOOR OPENING

DESCRIPTION	FRONT	REAR
Left Side Doors	Closed, Latched and Operable without tools	Closed, Latched and Operable without tools
Right Side Doors	Closed, Latched and Operable without tools	Closed, Latched and Operable without tools
Hatch/Other Door	N/A	N/A

POST TEST SEAT DATA

LOCATION	SEAT MOVEMENT (mm)	SEAT BACK FAILURE
P1 (Left Front)	20	None
P2 (Right Front)	10	None
P3 (Right Rear)	0	None
P4 (Left Rear)	0	None

VISIBLE DUMMY CONTACT POINTS

	Position #3 CRS	Position #4 CRS
Head Contact:	The chin to the chest and the back of the head to the child restraint seat back	The chin to the chest and the back of the head to the child restraint seat back
Upper Torso Contact:	The chin to the chest	The chin to the chest; The left hand to the P1 seat back
Lower Torso Contact:	None	None
Left Knee Contact:	No knee contact; The left foot to the inboard half of the P2 seat back	The left foot to the outboard half of the P1 seatback
Right Knee Contact:	No knee contact; The right foot to the outboard half of the P2 seat back	The right foot to the inboard half of the P1 seatback

DATA SHEET NO. 2

CRS PARAMETER DATA

CRS: Evenflo Titan V Forward Facing Convertible with LATCH and Top Tether / Graco TurboBooster

NHTSA No. M50102

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Delivered Weight of Vehicle with Maximum Fluids = 1613.0 kg (A)

AS TESTED WEIGHT OF VEHICLE

(2 P572E + 1 P572P w/ CRS + 1 10 year old w/ CRS +CARGO + EQUIPMENT & INSTRUMENTATION):

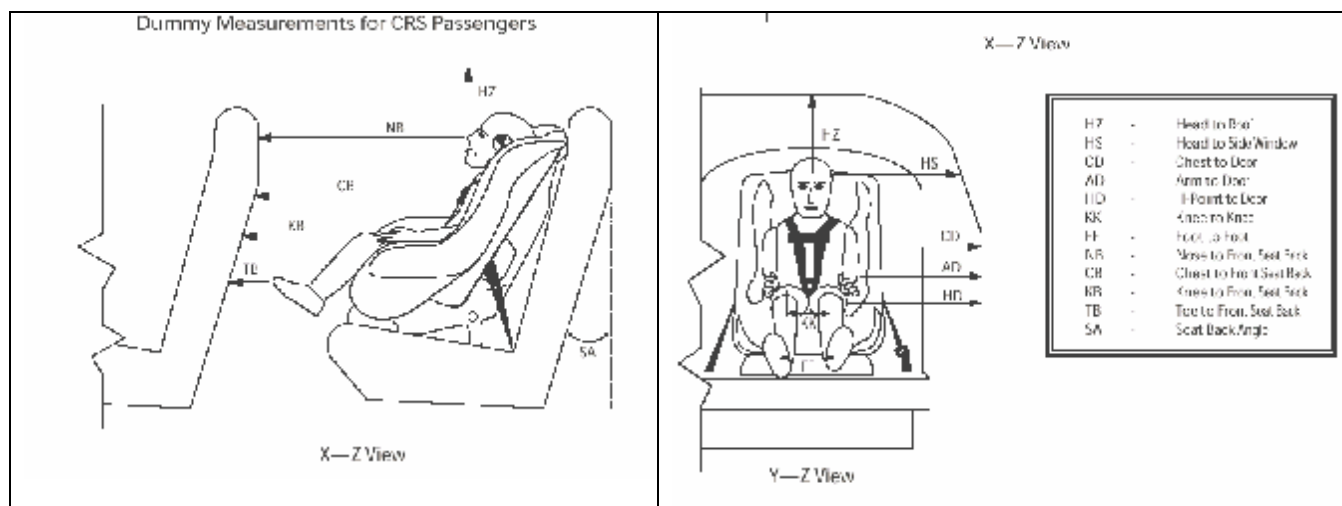
Left Front	=	<u>540.5</u>	kg	Left Rear	=	<u>375.5</u>	kg
Right Front	=	<u>546.5</u>	kg	Right Rear	=	<u>369.5</u>	kg
TOTAL FRONT	=	<u>1087.0</u>	kg	TOTAL REAR	=	<u>745.0</u>	kg
TOTAL TEST WEIGHT =		<u>1832.0</u>	kg				

DATA SHEET NO. 3

CHILD DUMMY POSITIONING IN VEHICLE

CRS: Evenflo Titan V Forward Facing Convertible with LATCH and Top Tether / Graco TurboBooster

NHTSA No. M50102



Measurement	(mm)	(mm)
	P3 CRS (040)	P4 CRS (009)
SA	27.0°	27.0°
HS	398	312
CD	354	364
AD	212	200
HD	276	261
HZ	303	140
NB	634	677
CB	574	553
KB	113	161
FF	103	128
KB – LEFT	398	302
KB – RIGHT	398	304
TB – LEFT	126	100
TB – RIGHT	126	100
Top Tether Anchor to CRS		
Angle	7.1° from horizontal	N/A
Length	202	N/A
X	200	N/A
Y	0	N/A
Z	25	N/A

All dimensions in mm (unless noted)

P3 – Right Rear Passenger (CRS #1)

P4 – Left Rear Passenger (CRS #2)

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES

CRS: Evenflo Titan V Forward Facing Convertible with LATCH and Top Tether / Graco TurboBooster

NHTSA No. M50102

DESCRIPTION	Unit	MAXIMUM VALUE							
		Position #3				Position #4			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head X	g	0.1	-24.3	-36.6	94.5	1.1	33.5	-52.1	115.7
Head Y	g	3.0	96.6	-2.4	123.5	3.2	130.3	-9.8	72.7
Head Z	g	46.3	100.2	-2.4	39.7	42.9	100.7	-1.6	43.3
Head Resultant	g	54.6	94.6	-	-	58.4	115.5	-	-
Upper Neck Fx	N	4.2	15.5	-594.5	94.6	12.0	33.9	-1241.2	116.0
Upper Neck Fy	N	82.3	90.6	-33.8	117.3	149.1	82.2	-101.5	95.9
Upper Neck Fz	N	1890.9	97.5	-55.6	37.8	2245.8	114.3	-44.9	45.2
Upper Neck F Resultant	N	1957.1	97.5	-	-	2548.3	114.4	-	-
Upper Neck Mx	N-m	3.3	105.2	-2.4	120.1	17.5	94.7	-6.8	82.5
Upper Neck My	N-m	5.4	88.2	-5.4	199.9	9.7	139.0	-25.3	70.3
Upper Neck Mz	N-m	1.0	199.5	-1.4	126.8	0.5	191.6	-7.1	94.8
Upper Neck M Resultant	N-m	5.6	88.2	-	-	25.4	70.3	-	-
Left Clavicle Fx	N	-	-	-	-	3.0	199.7	-2325.4	96.2
Left Clavicle Fz	N	-	-	-	-	723.6	102.6	-0.7	-25.3
Right Clavicle Fx	N	-	-	-	-	102.5	81.7	-471.0	112.9
Right Clavicle Fz	N	-	-	-	-	128.6	113.2	-58.5	129.4
Chest X	g	2.5	172.7	-39.1	102.1	1.0	170.1	-51.4	80.6
Chest Y	g	5.8	99.3	-1.5	56.6	0.9	115.3	-11.6	92.7
Chest Z	g	4.9	199.9	-25.2	82.2	1.9	170.8	-25.0	96.2
Chest Resultant	g	39.6	102.2	-	-	53.3	80.7	-	-
Chest Displacement	g	0.0	23.3	-20.3	100.4	0.0	3.6	-37.6	99.5
Lumbar Fx	N	-	-	-	-	2649.8	114.7	-436.1	79.9
Lumbar Fy	N	-	-	-	-	0.9	18.8	-640.1	86.6
Lumbar Fz	N	-	-	-	-	572.6	157.5	-2040.8	93.8
Lumbar F Resultant	N	-	-	-	-	2692.1	114.3	-	-
Lumbar Mx	Nm	-	-	-	-	3.3	197.4	-89.3	92.0
Lumbar My	Nm	-	-	-	-	21.8	157.4	-102.2	103.0
Lumbar Mz	Nm	-	-	-	-	31.7	86.5	0.1	2.1
Lumbar M Resultant	Nm	-	-	-	-	124.9	100.5	-	-

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Titan V Forward Facing Convertible with LATCH and Top Tether / Graco TurboBooster

NHTSA No. M50102

DESCRIPTION	Unit	MAXIMUM VALUE							
		Position #3				Position #4			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Pelvic X	g	4.8	167.0	-32.8	74.4	11.8	126.1	-53.9	76.5
Pelvic Y	g	4.7	106.4	-3.6	76.3	16.1	100.0	-7.8	75.6
Pelvic Z	g	4.0	199.5	-33.4	83.5	2.8	142.4	-37.3	94.9
Pelvic Resultant	g	45.5	83.5	-	-	55.7	76.5	-	-
Left Lower ASIS Fx	N	-	-	-	-	1.5	34.7	-351.5	82.4
Left Upper ASIS Fx	N	-	-	-	-	86.3	151.6	-256.5	87.2
Right Lower ASIS Fx	N	-	-	-	-	1.0	34.8	-500.5	79.8
Right Upper ASIS Fx	N	-	-	-	-	176.2	121.6	-454.7	84.8
Left Femur Force	N	-	-	-	-	1110.1	87.0	-79.6	199.9
Right Femur Force	N	-	-	-	-	1006.7	82.9	-56.3	196.6
Latch Belt Load	N	2569.5	77.6	-146.1	148.0	-	-	-	-
Tether Belt Load	N	3319.7	96.8	-171.8	190.9	-	-	-	-
Lap Belt Load	N	-	-	-	-	5511.2	81.9	-0.6	3.9
Shoulder Belt Load	N	-	-	-	-	6188.1	90.7	-0.6	-28.6

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Titan V Forward Facing Convertible with LATCH and Top Tether / Graco TurboBooster

NHTSA No. M50102

	HEAD INJURY CRITERIA (HIC)							
	HIC15				HIC36			
	HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂	HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #3 - Right	270.9	89.5	104.5	50.4	479.6	82.0	118.0	44.7
Position #4 - Left	286.1	103.5	118.5	51.5	561.6	85.8	121.8	47.6

	CLIP SUMMARY*			
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #3 - Right	37.8	84.1	87.1	340.5
Position #4 - Left	51.0	79.2	82.2	487.7

* The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

	FEMUR SUMMARY			
	Left Femur (N)	t ₁ (msec)	Right Femur (N)	t ₂ (msec)
Position #3 - Right	-	-	-	-
Position #4 - Left	-137.0	202.0	-119.8	227.1

DATA SHEET NO. 5

CRS PERFORMANCE DATA

CRS: Evenflo Titan V Forward Facing Convertible with LATCH and Top Tether / Graco TurboBooster

NHTSA No. M50102

		MAXIMUM VALUE			
DESCRIPTION	Unit	Positive	Time (ms)	Negative	Time (ms)
P3 CRS X	g	6.6	196.1	-45.2	74.9
P3 CRS Y	g	2.9	116.9	-4.6	72.1
P3 CRS Z	g	13.7	66.7	-18.9	98.3
P3 CRS Resultant	g	45.3	75.1	-	-

DATA SHEET NO. 5

CRS PERFORMANCE DATA (CONTINUED)

CRS: Evenflo Titan V Forward Facing Convertible with LATCH and Top Tether / Graco TurboBooster

NHTSA No. M50102

POSITION #3 CRS POST-TEST INSPECTION (Serial No. 3671439 P1 – 13OCT04)

LOCATION	DAMAGE	REMARKS
Upper Tether Strap	No	None
Upper Tether Buckle	No	None
Upper Tether Hook	No	None
Vehicle Upper Tether Anchor	No	None
Lower Anchor Strap	No	None
Lower Anchor Buckle	No	None
Lower Anchor Hooks	No	None
Vehicle Lower CRS Anchors	No	None
Five Point Harness Connections	No	None
Cracks on CRS	No	None
Fabric Tears on CRS	No	None
Vehicle Seat Structure	No	None
Vehicle Seat Fabric Tears	No	None
Child Dummy	No	None

POSITION #4 CRS POST-TEST INSPECTION (Serial No. JJ0917041915485 - 091704)

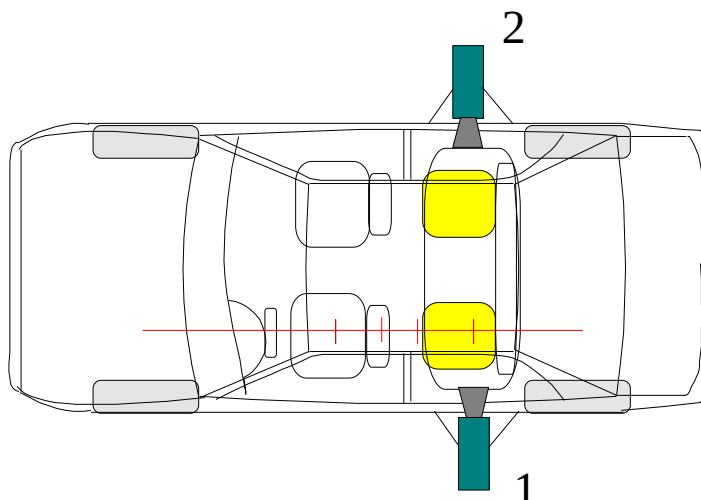
LOCATION	DAMAGE	REMARKS
Upper Tether Strap	NA	NA
Upper Tether Buckle	NA	NA
Upper Tether Hook	NA	NA
Vehicle Upper Tether Anchor	NA	NA
Lower Anchor Strap	NA	NA
Lower Anchor Buckle	NA	NA
Lower Anchor Hooks	NA	NA
Vehicle Lower CRS Anchors	NA	NA
Five Point Harness Connections	NA	NA
Cracks on CRS	No	None
Fabric Tears on CRS	No	None
Vehicle Seat Structure	No	None
Vehicle Seat Fabric Tears	No	None
Child Dummy	No	None

DATA SHEET NO. 6

CRS CAMERA DATA

CRS: Evenflo Titan V Forward Facing Convertible with LATCH and Top Tether / Graco TurboBooster

NHTSA No. M50102



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Left side CRS lateral view	3330	3260	2290	-22.5	28	500
2	Right side CRS lateral view	3280	3280	2340	-23.3	28	500

* Reference (from point of impact); all measurements accurate to within ± 6 mm.

X = + Forward

Y = + To Right

Z = + Down

SECTION 3

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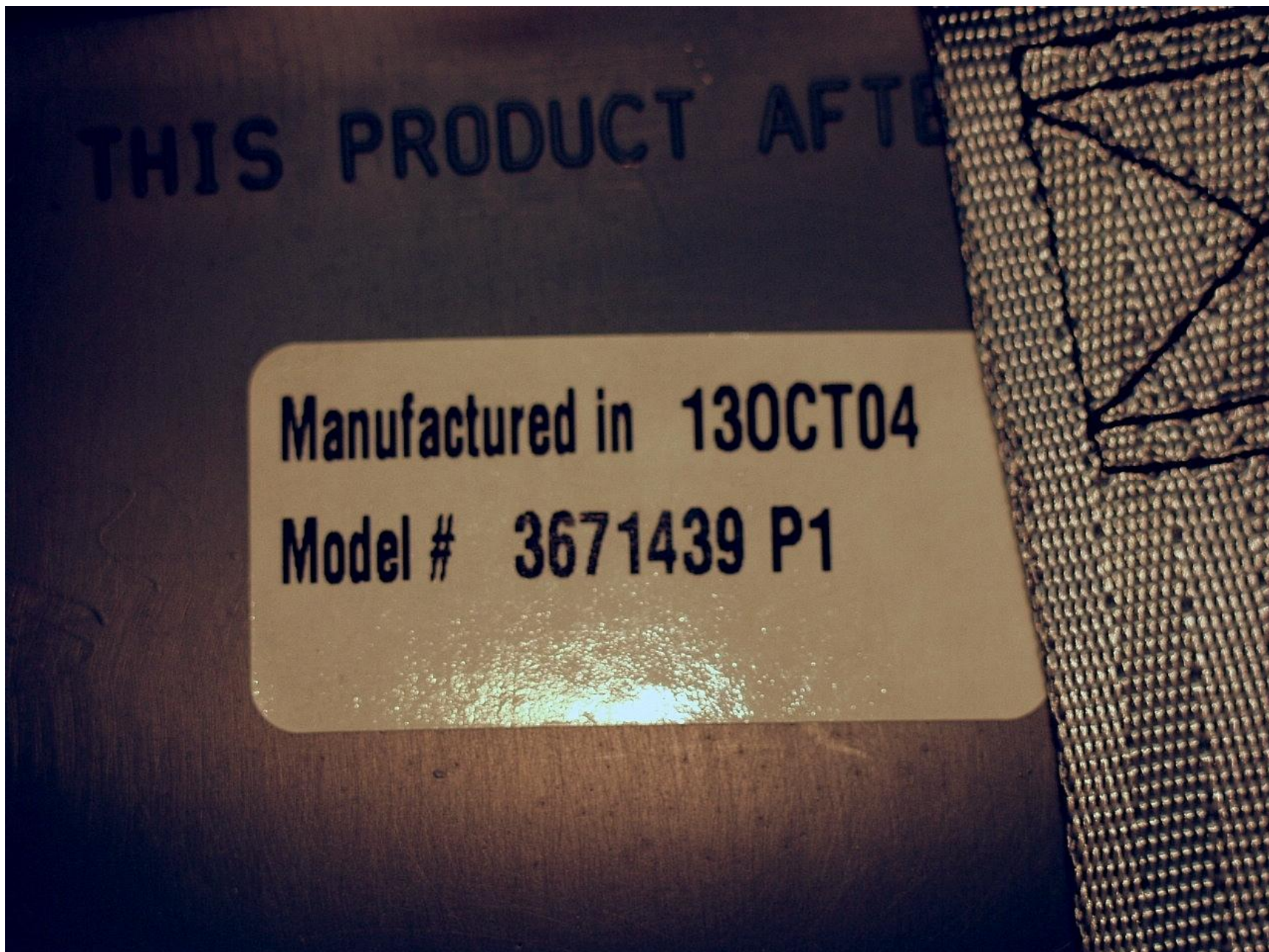


Figure 3-1: CLOSE-UP VIEW OF POSITION 3 CRS LABEL



Figure 3-2: PRE-TEST FRONTAL VIEW OF POSITION 3 CRS



Figure 3-3: POST-TEST FRONTAL VIEW OF POSITION 3 CRS



Figure 3-4: PRE-TEST REAR VIEW OF POSITION 3 CRS



Figure 3-5: POST-TEST REAR VIEW OF POSITION 3 CRS



Figure 3-6: PRE-TEST LEFT SIDE VIEW OF POSITION 3 CRS



Figure 3-7: POST-TEST LEFT SIDE VIEW OF POSITION 3 CRS



Figure 3-8: PRE-TEST RIGHT SIDE VIEW OF POSITION 3 CRS



Figure 3-9: POST-TEST RIGHT SIDE VIEW OF POSITION 3 CRS

retiradas. Envíe su nombre, dirección y número de teléfono a Graco Children's Products Inc., 150 Oaklan
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MODEL 8495STO NAME: TurboBooster
SERIAL JJ 0917041915485
Manufactured in 091704
GRACO CHILDREN'S PRODUCTS, INC.
EXTON, PA 19341 1-888-224-6549
Made in China

LAPZ0004B

Figure 3-10: CLOSE-UP VIEW OF POSITION 4 CRS LABEL



Figure 3-11: PRE-TEST FRONTAL VIEW OF POSITION 4 CRS



Figure 3-12: POST-TEST FRONTAL VIEW OF POSITION 4 CRS



Figure 3-13: PRE-TEST REAR VIEW OF POSITION 4 CRS



Figure 3-14: POST-TEST REAR VIEW OF POSITION 4 CRS



Figure 3-15: PRE-TEST LEFT SIDE VIEW OF POSITION 4 CRS



Figure 3-16: POST-TEST LEFT SIDE VIEW OF POSITION 4 CRS



Figure 3-17: PRE-TEST RIGHT SIDE VIEW OF POSITION 4 CRS



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Figure 3-19: PRE-TEST POSITION 3 LEFT SIDE VIEW



Figure 3-20: POST-TEST POSITION 3 LEFT SIDE VIEW



Figure 3-21: PRE-TEST POSITION 4 LEFT SIDE VIEW



Figure 3-22: POST-TEST POSITION 4 LEFT SIDE VIEW



Figure 3-23: PRE-TEST POSITION 3 RIGHT SIDE VIEW



Figure 3-24: POST-TEST POSITION 3 RIGHT SIDE VIEW



Figure 3-25: PRE-TEST POSITION 4 RIGHT SIDE VIEW



Figure 3-26: POST-TEST POSITION 4 RIGHT SIDE VIEW



Figure 3-27: PRE-TEST POSITION 3 FRONT VIEW



Figure 3-28: POST-TEST POSITION 3 FRONT VIEW



Figure 3-29: PRE-TEST POSITION 4 FRONT VIEW



Figure 3-30: POST-TEST POSITION 4 FRONT VIEW

SECTION 4

CHILD DUMMY RESPONSE AND CRS DATA TRACES

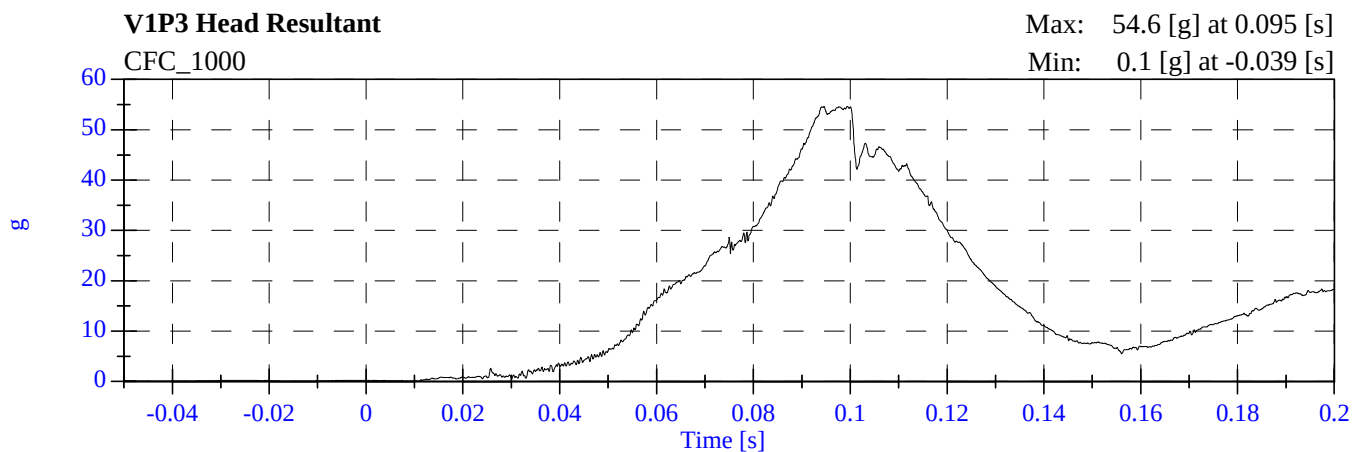
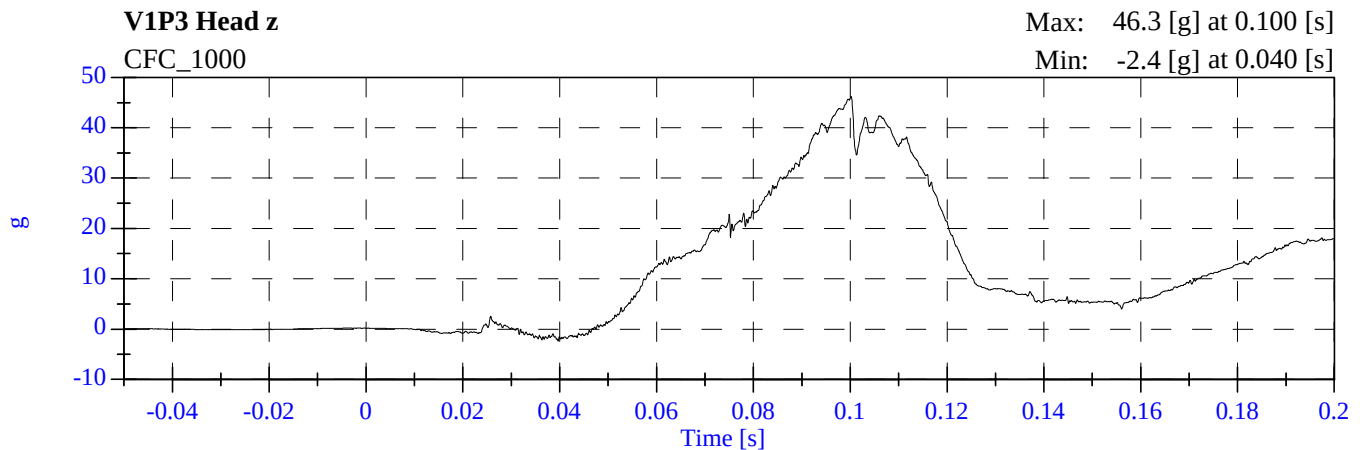
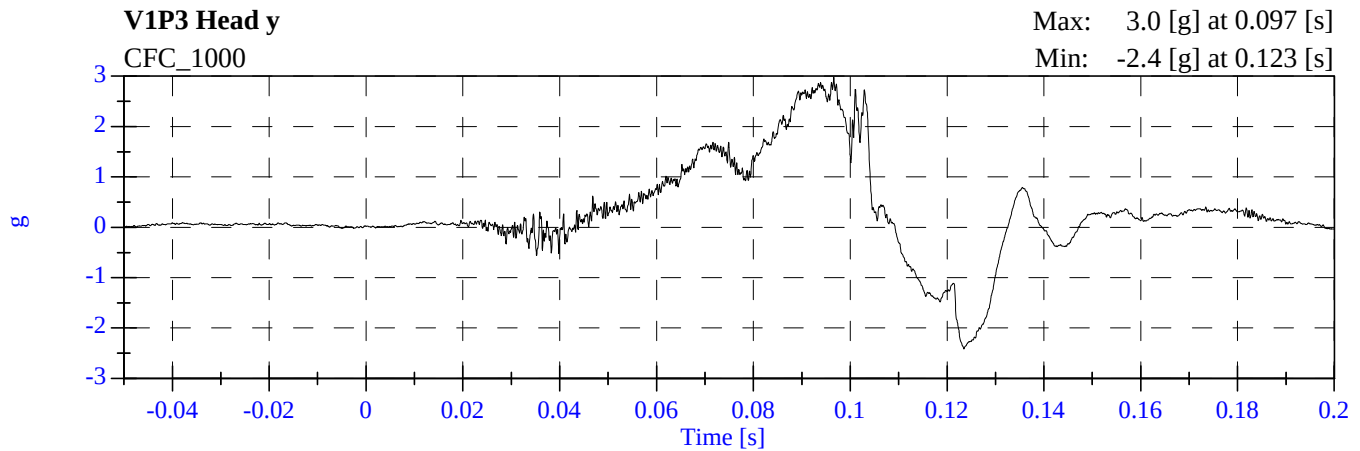
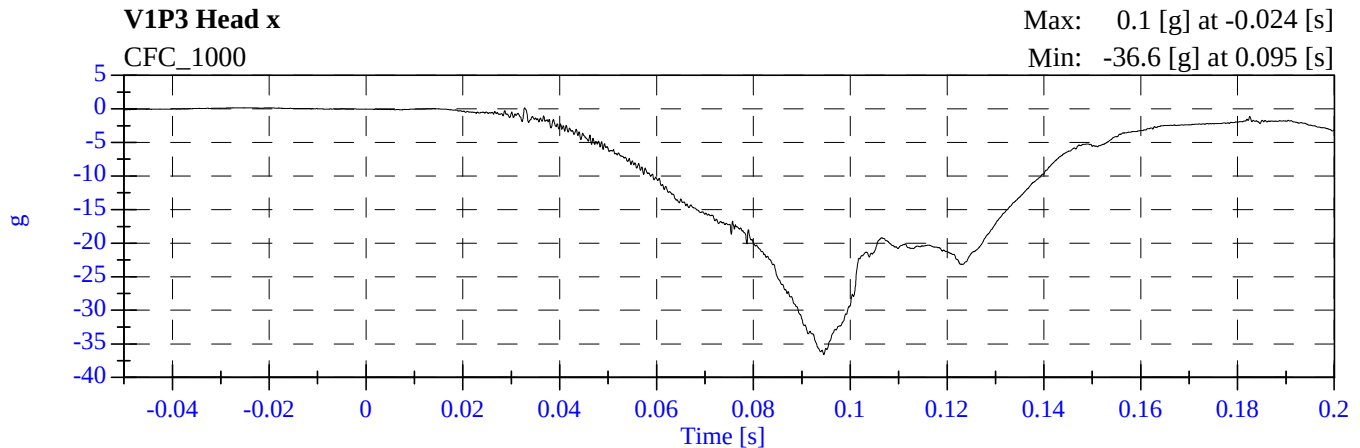
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47	V1P4 Left Clavicle Fz [N, CFC_1000]	4-17
48	V1P4 Right Clavicle Fx [N, CFC_1000]	4-17
49	V1P4 Right Clavicle Fz [N, CFC_1000]	4-17

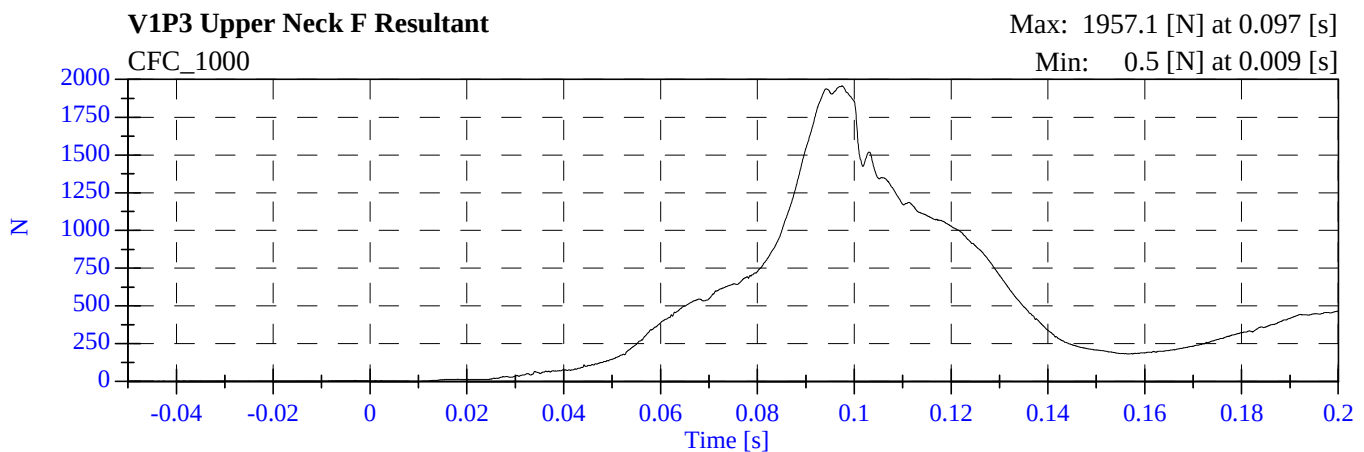
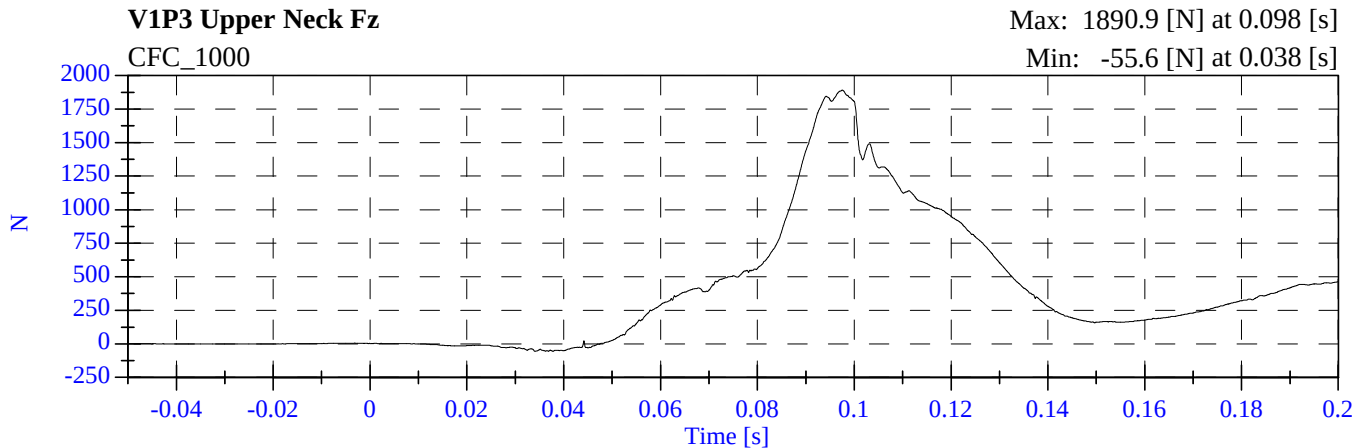
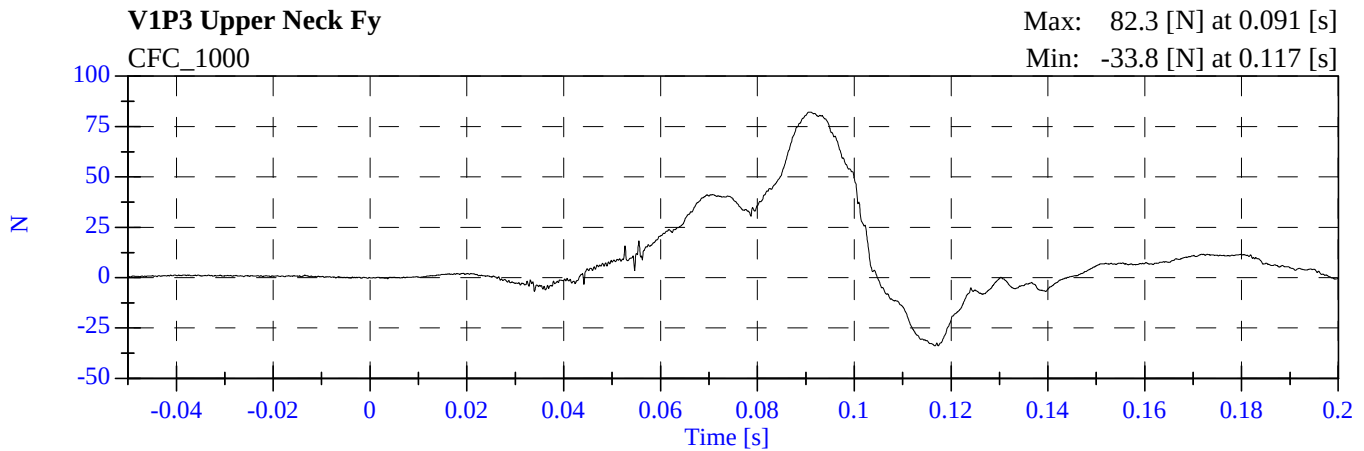
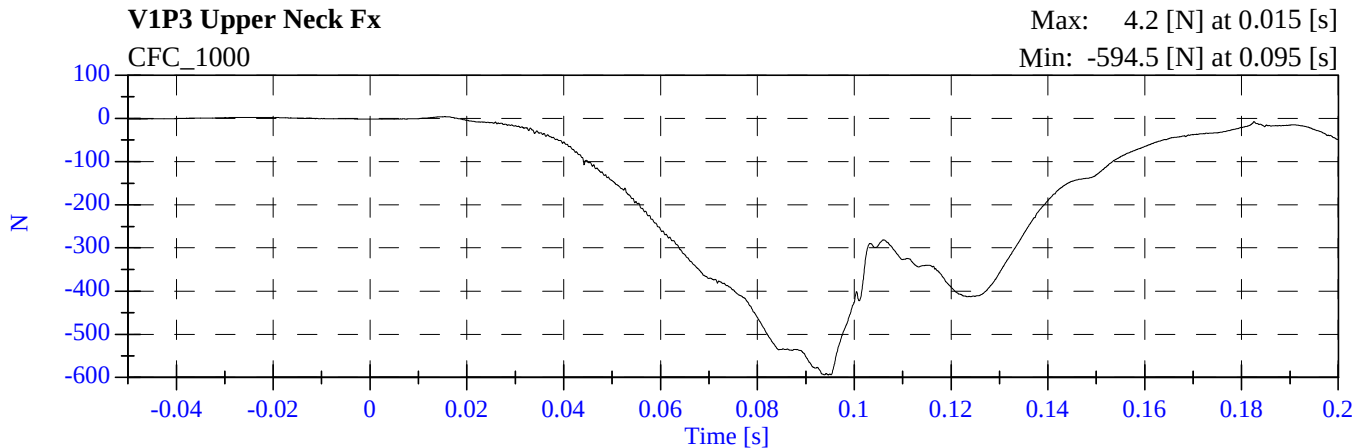
TABLE OF DATA PLOTS (Continued)

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
50	V1P4 Chest x [g, CFC_180]	4-18
51	V1P4 Chest y [g, CFC_180]	4-18
52	V1P4 Chest z [g, CFC_180]	4-18
53	V1P4 Chest Resultant [g, CFC_180]	4-18
54	V1P4 Chest Displacement [mm, CFC_600]	4-19
55	V1P4 Lumbar Fx [N, CFC_1000]	4-20
56	V1P4 Lumbar Fy [N, CFC_1000]	4-20
57	V1P4 Lumbar Fz [N, CFC_1000]	4-20
58	V1P4 Lumbar F Resultant [N, CFC_1000]	4-20
59	V1P4 Lumbar Mx [N-m, CFC_1000]	4-21
60	V1P4 Lumbar My [N-m, CFC_1000]	4-21
61	V1P4 Lumbar Mz [N-m, CFC_1000]	4-21
62	V1P4 Lumbar M Resultant [N-m, CFC_1000]	4-21
63	V1P4 Pelvic x [g, CFC_1000]	4-22
64	V1P4 Pelvic y [g, CFC_1000]	4-22
65	V1P4 Pelvic z [g, CFC_1000]	4-22
66	V1P4 Pelvic Resultant [g, CFC_1000]	4-22
67	V1P4 Left Lower ASIS Fx [N, CFC_600]	4-23
68	V1P4 Left Upper ASIS Fx [N, CFC_600]	4-23
69	V1P4 Right Lower ASIS Fx [N, CFC_600]	4-23
70	V1P4 Right Upper ASIS Fx [N, CFC_600]	4-23
71	V1P4 Left Femur [N, CFC_600]	4-24
72	V1P4 Right Femur [N, CFC_600]	4-24
73	V1P4 Lap Belt [N, CFC_60]	4-25
74	V1P4 Shoulder Belt [N, CFC_60]	4-25

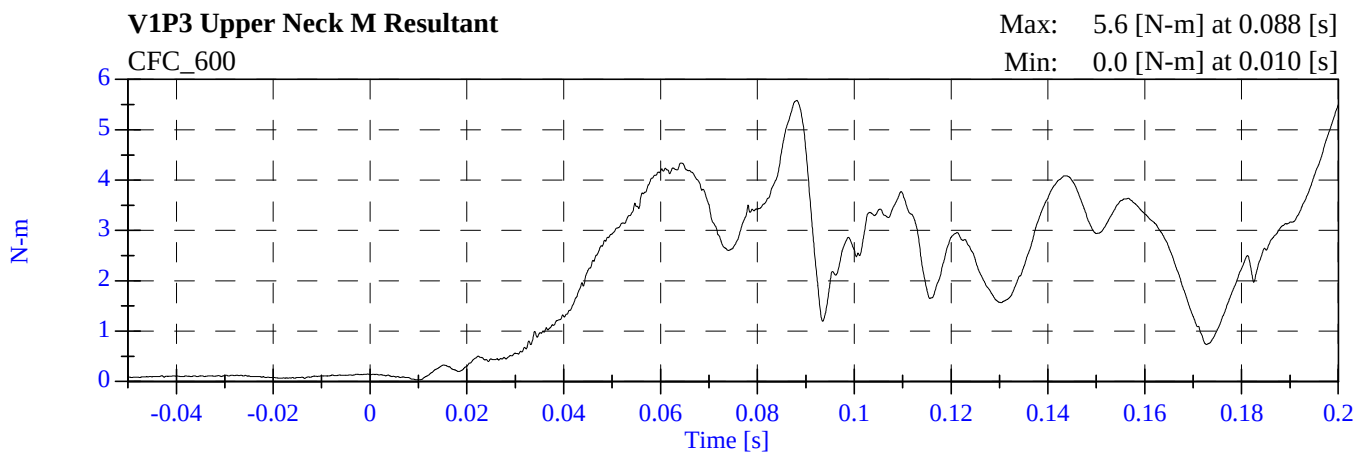
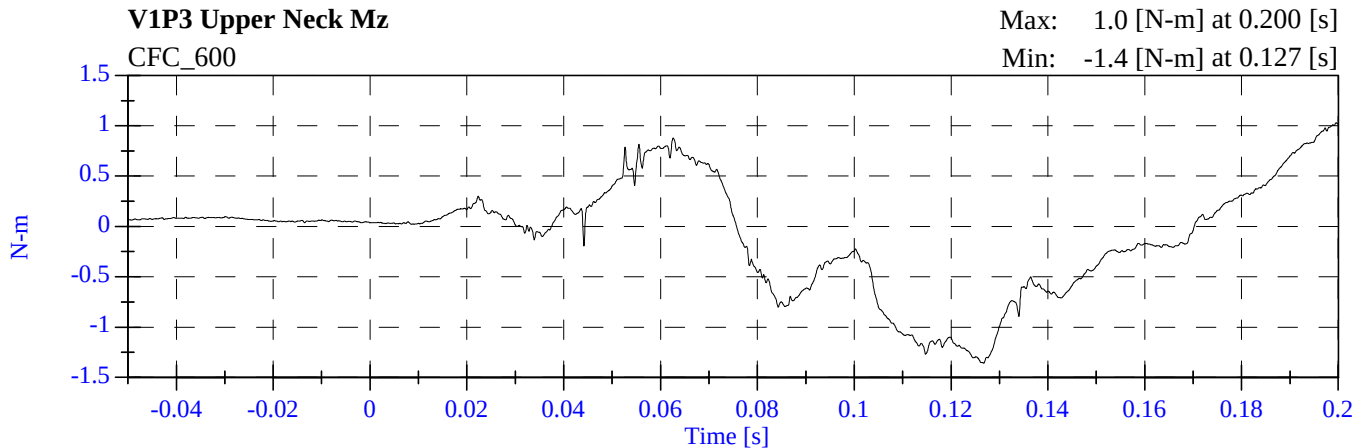
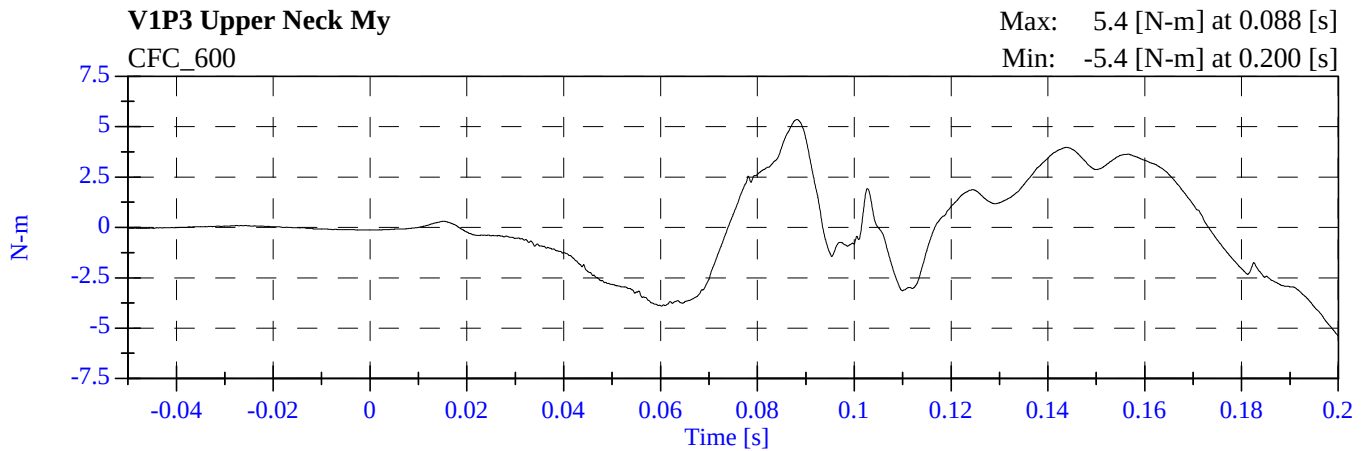
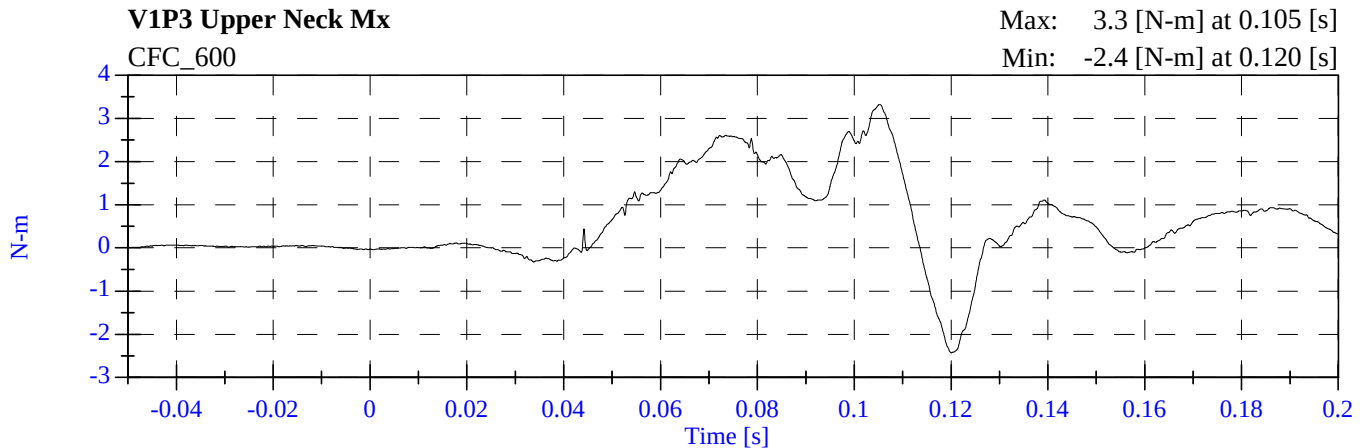
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



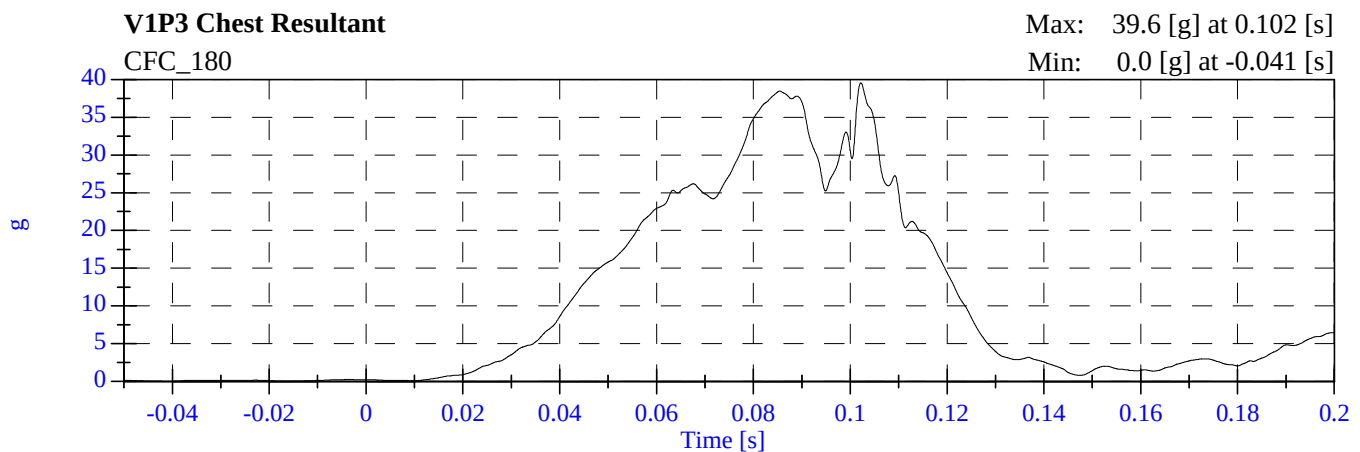
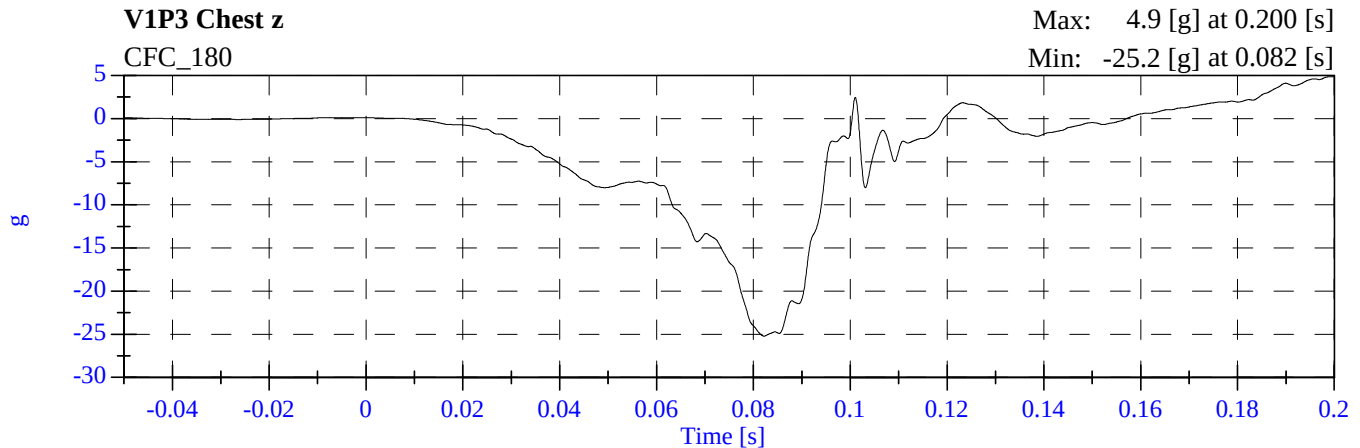
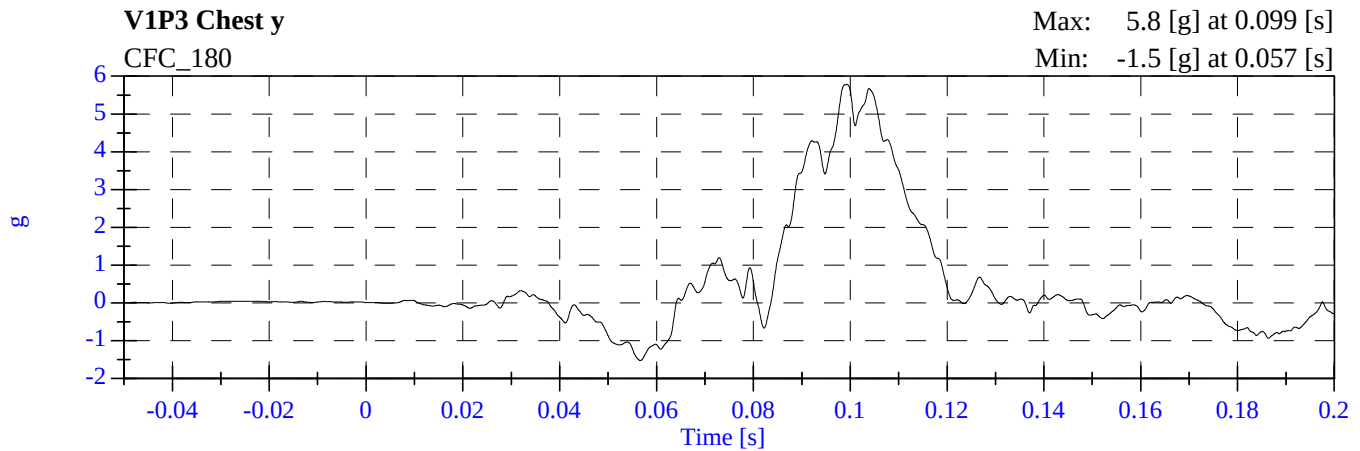
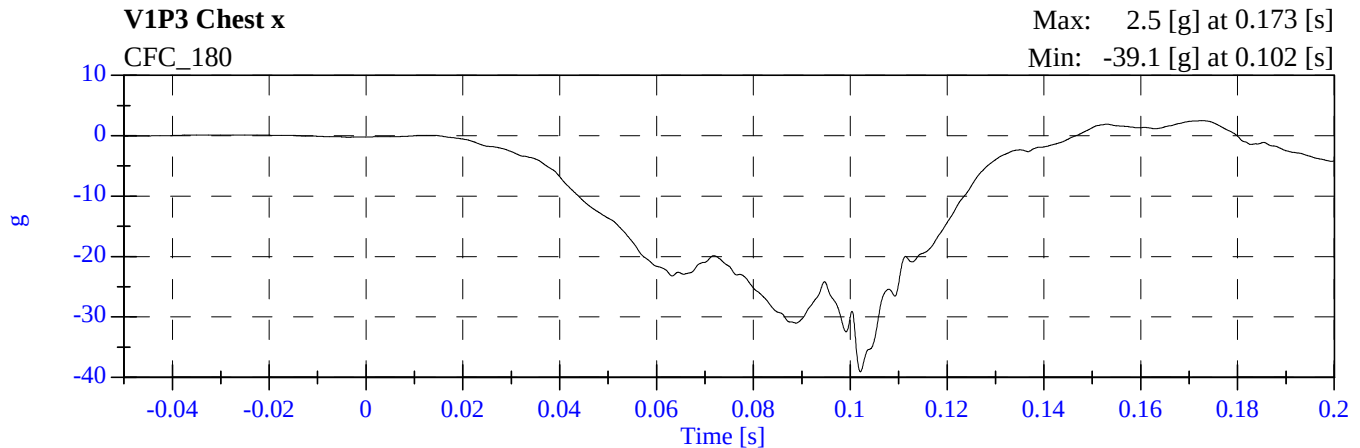
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



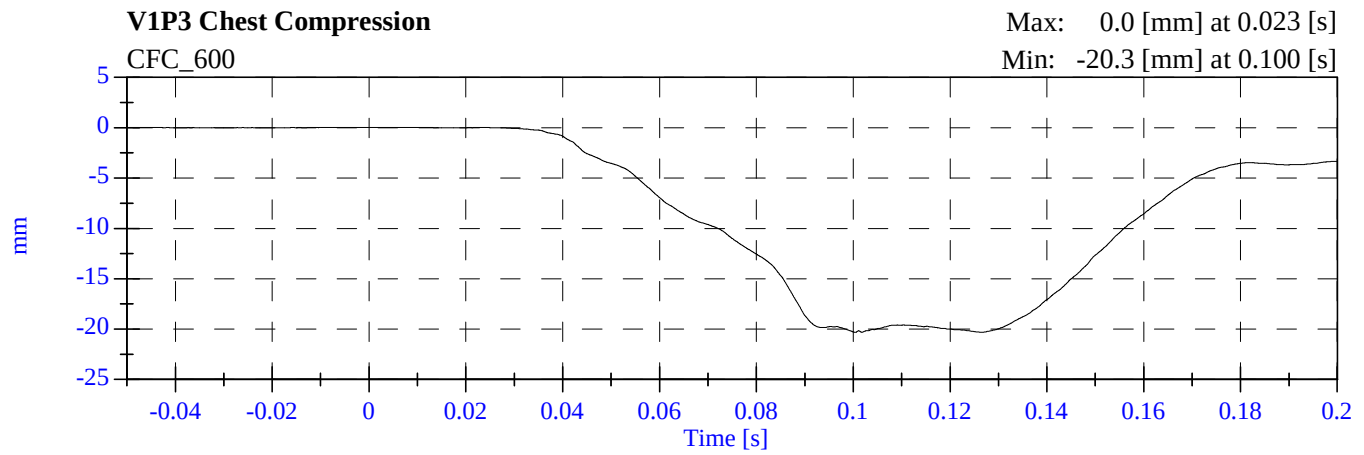
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



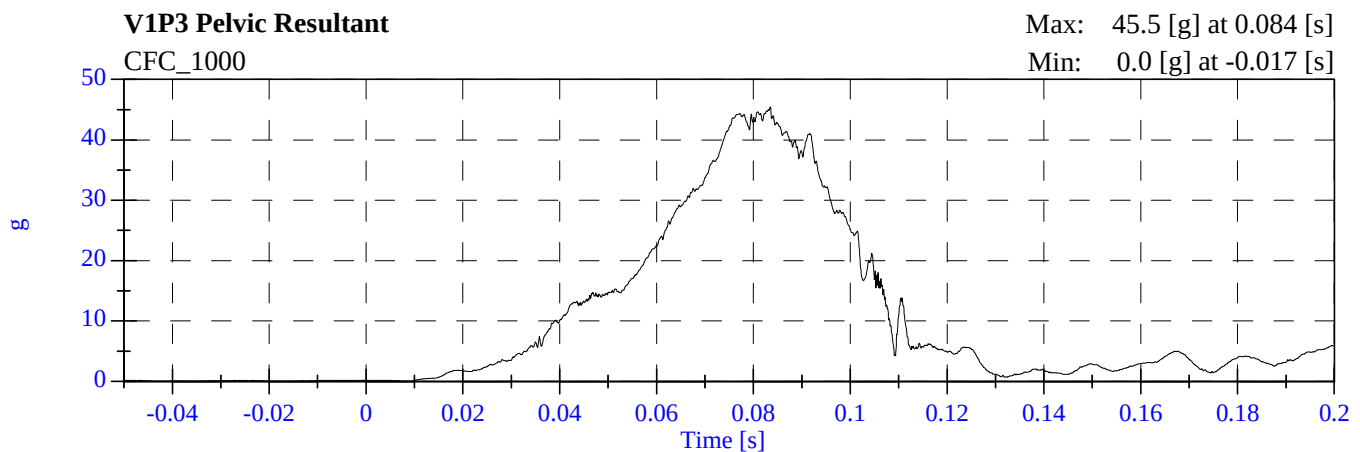
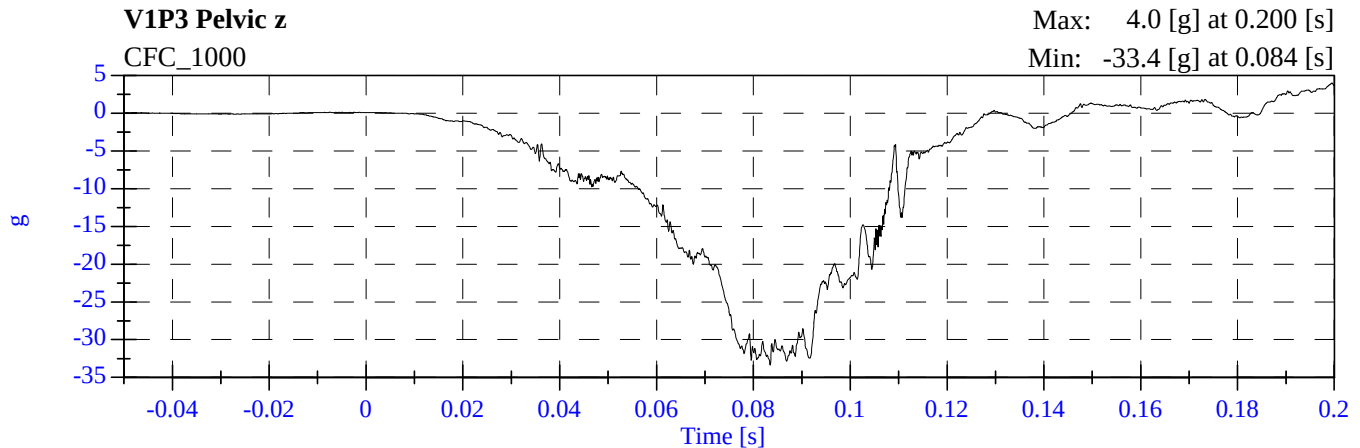
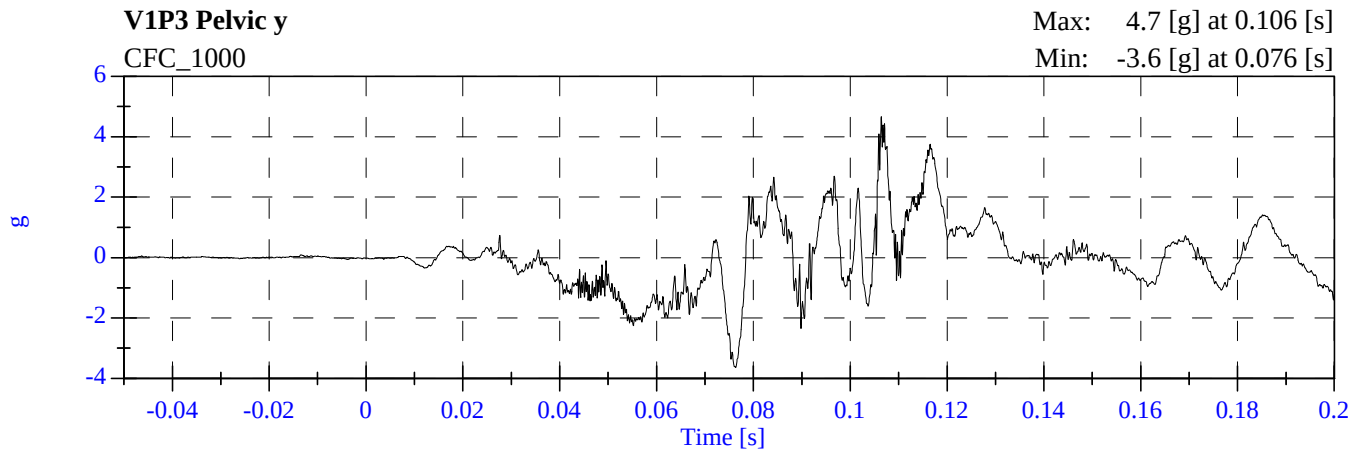
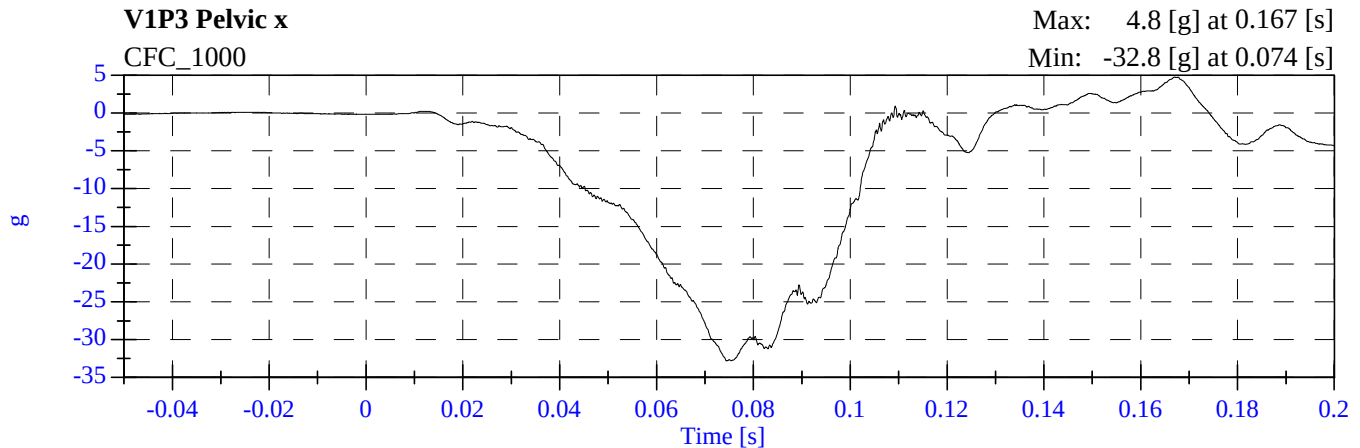
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2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004

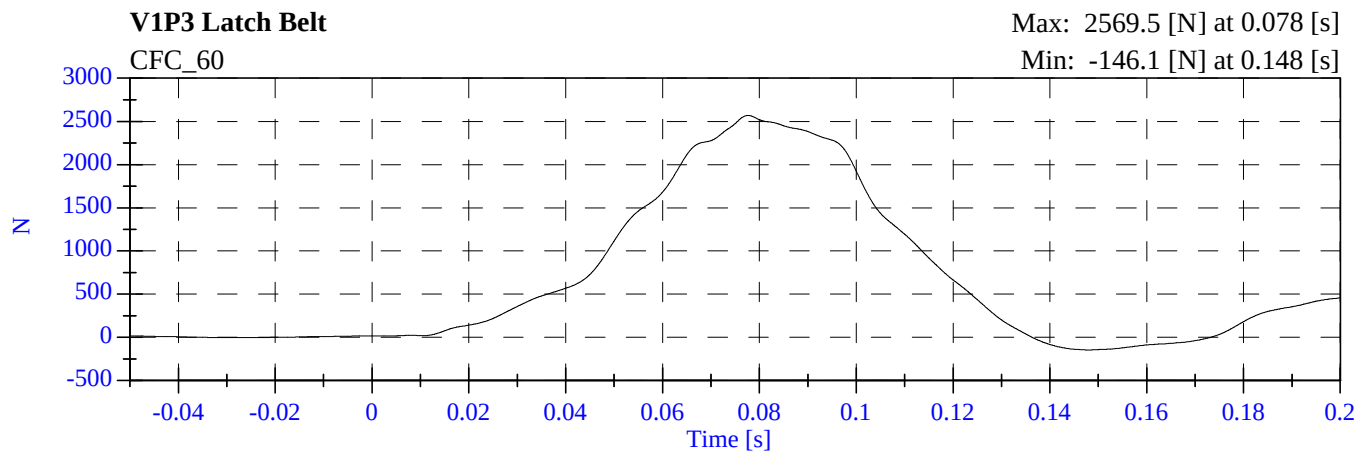
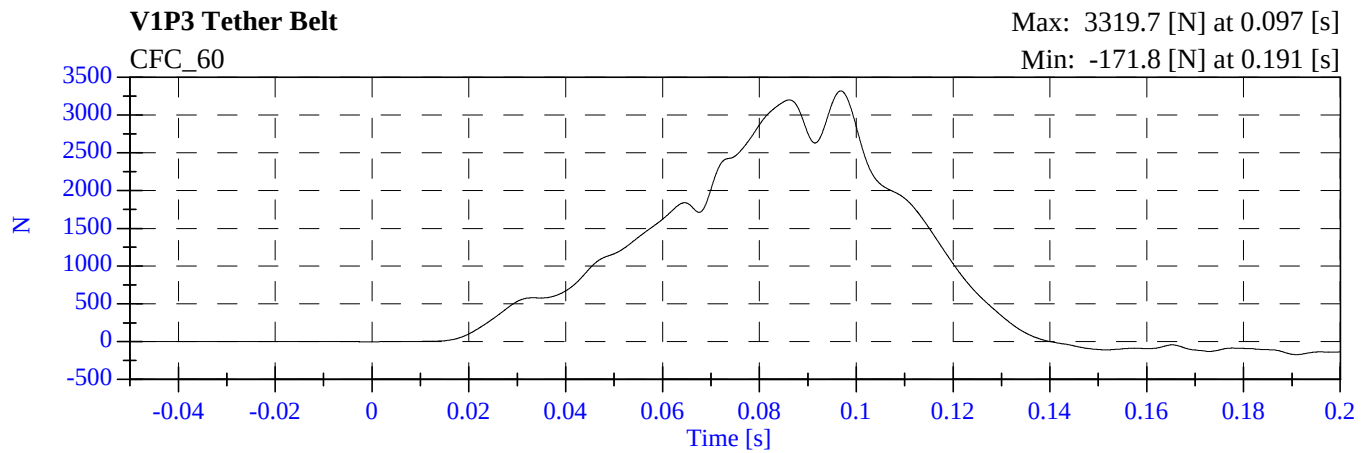


2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004

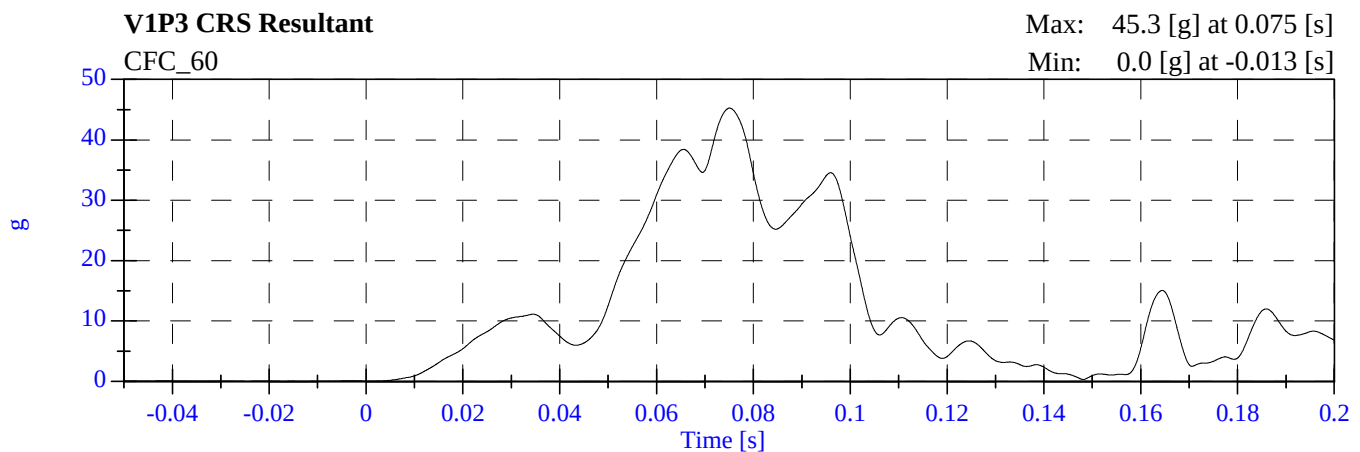
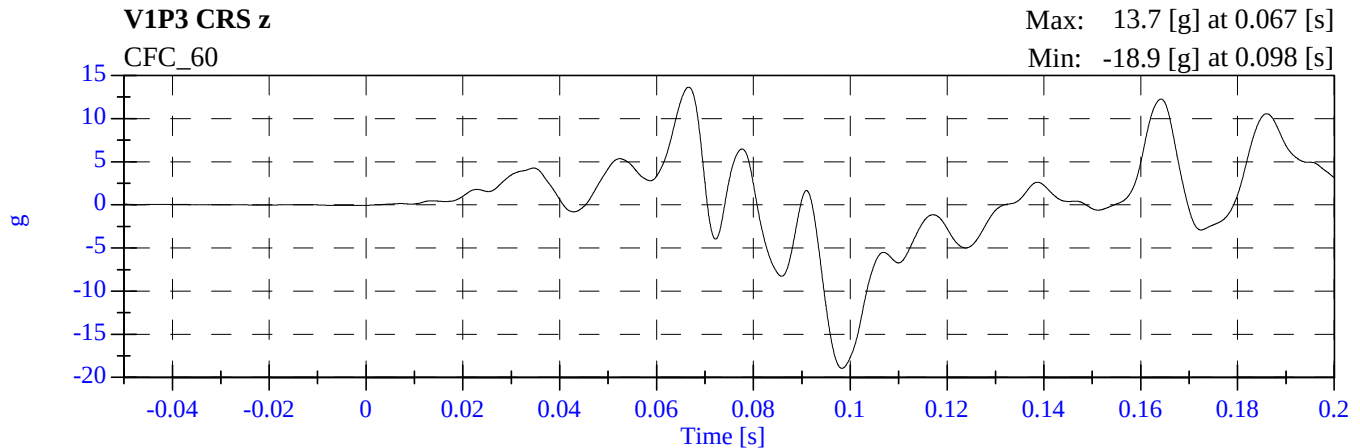
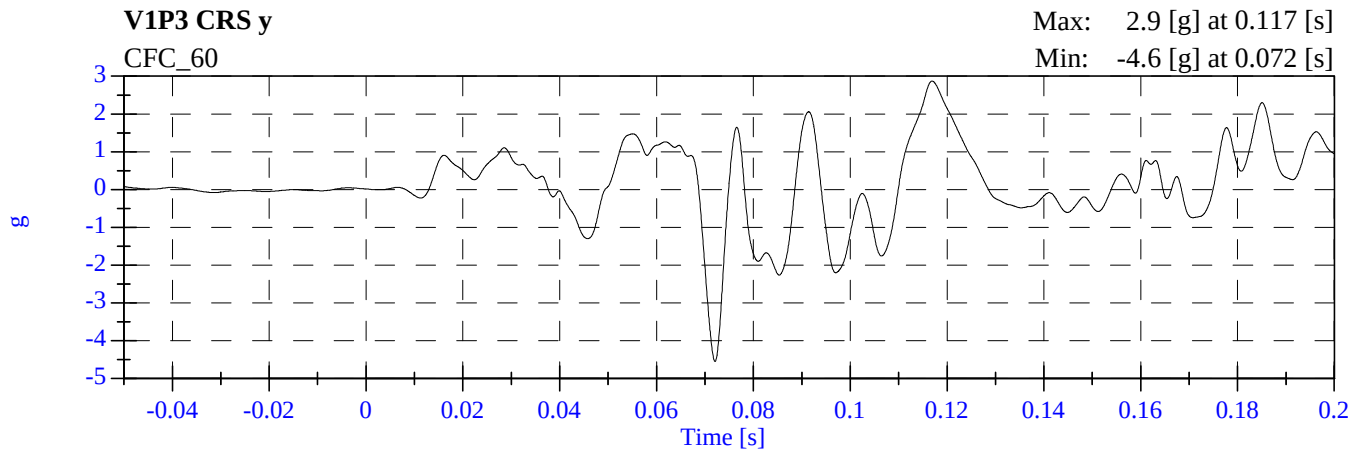
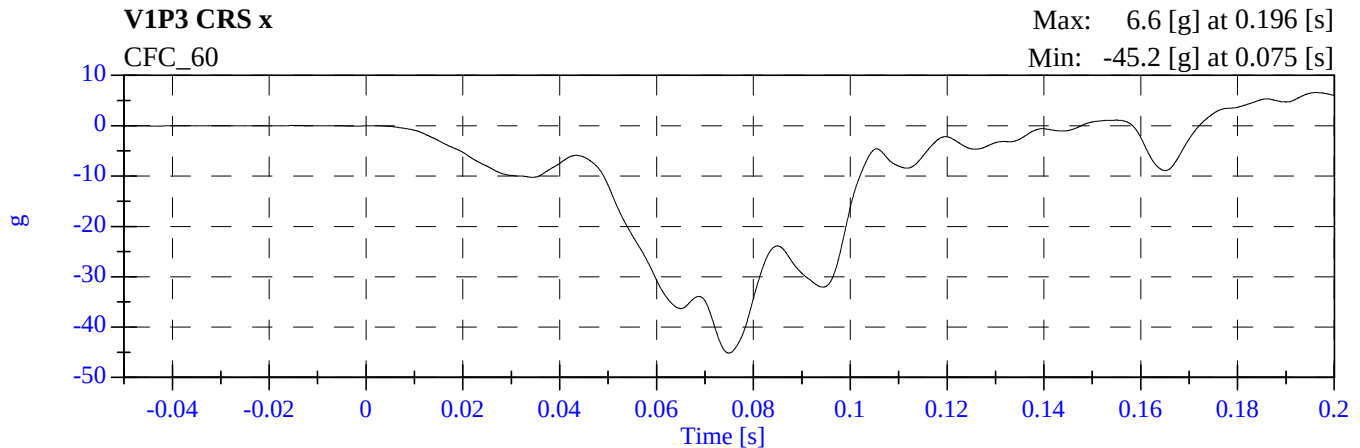


2005 NCAP Test 4 - 2005 Buick LaCrosse

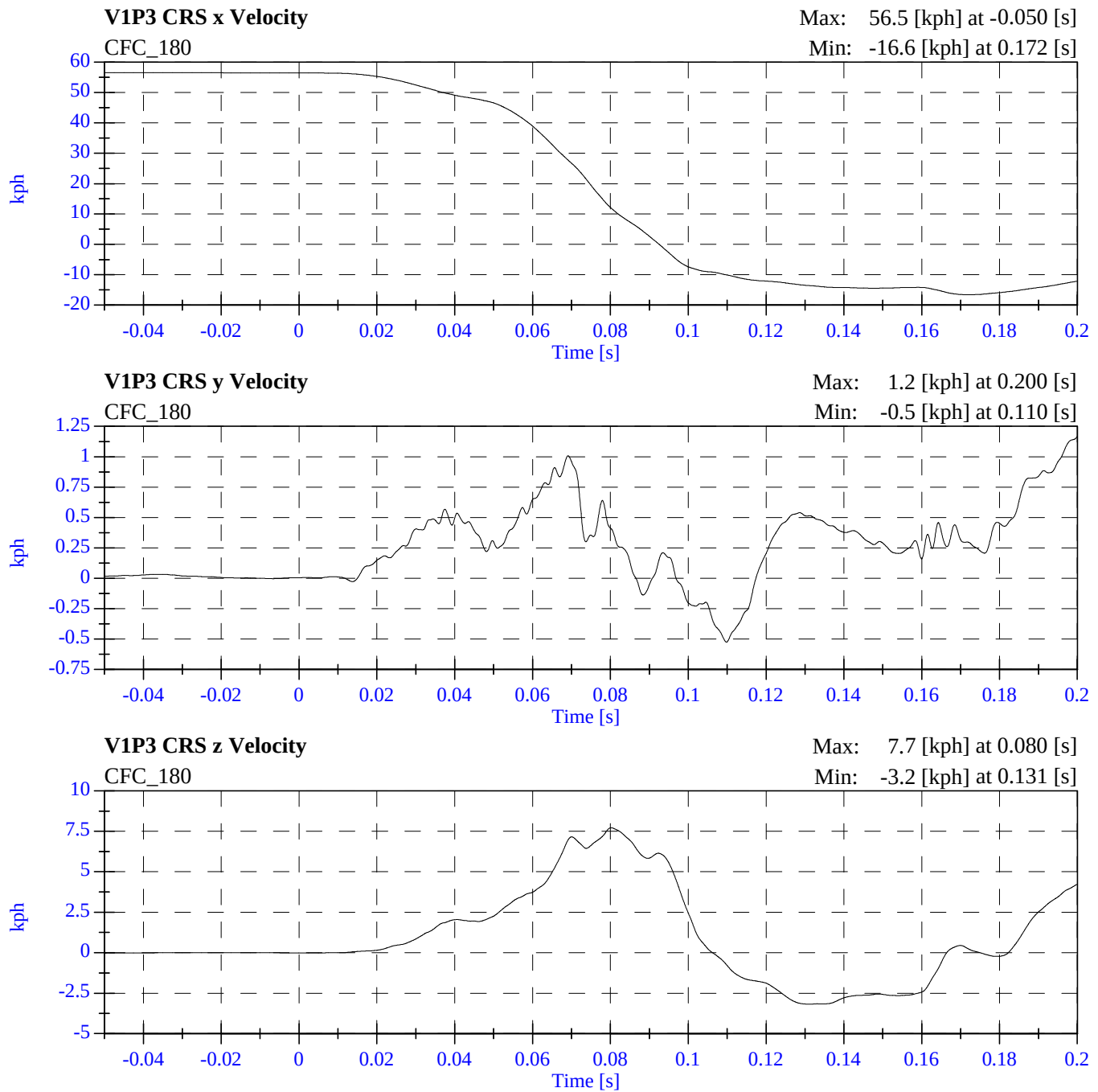
M50102 - December 17, 2004



2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004

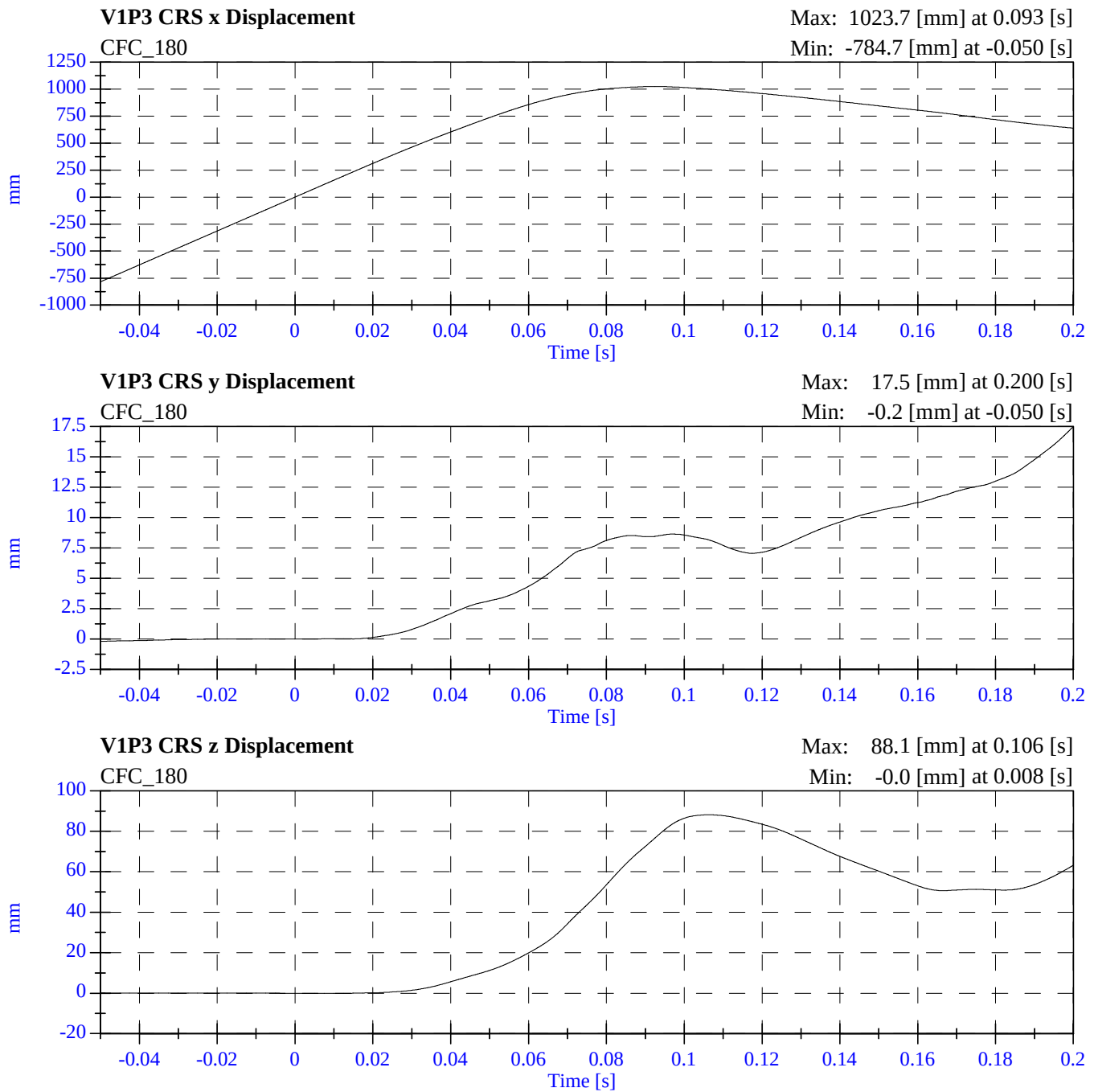


2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004

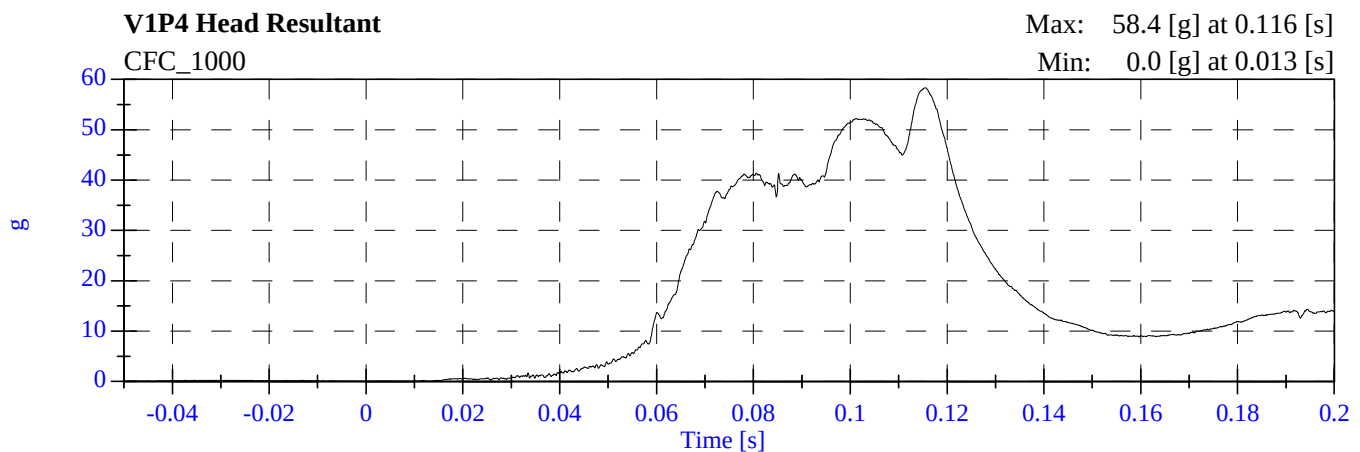
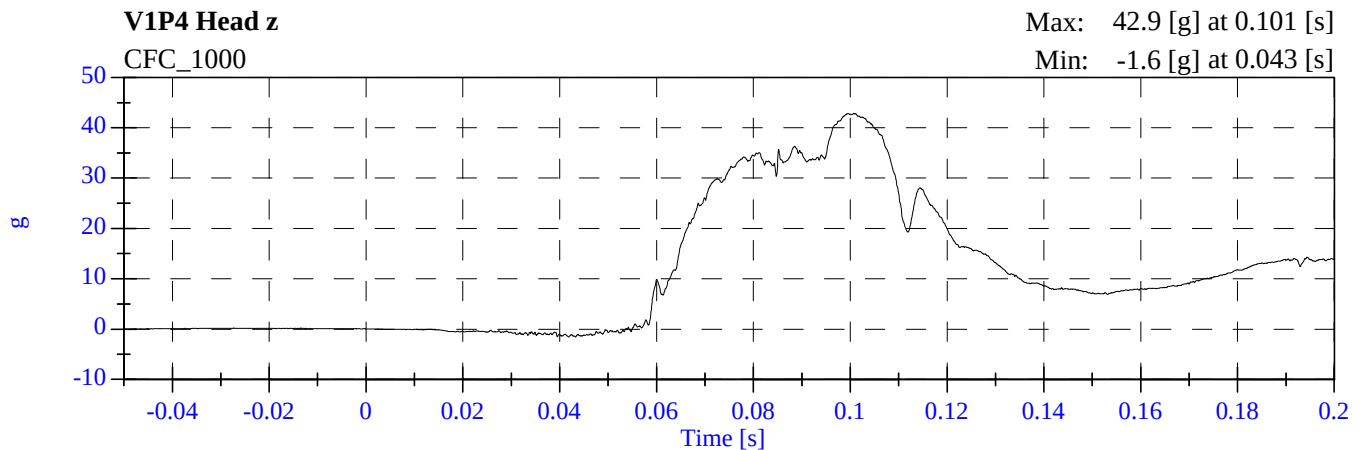
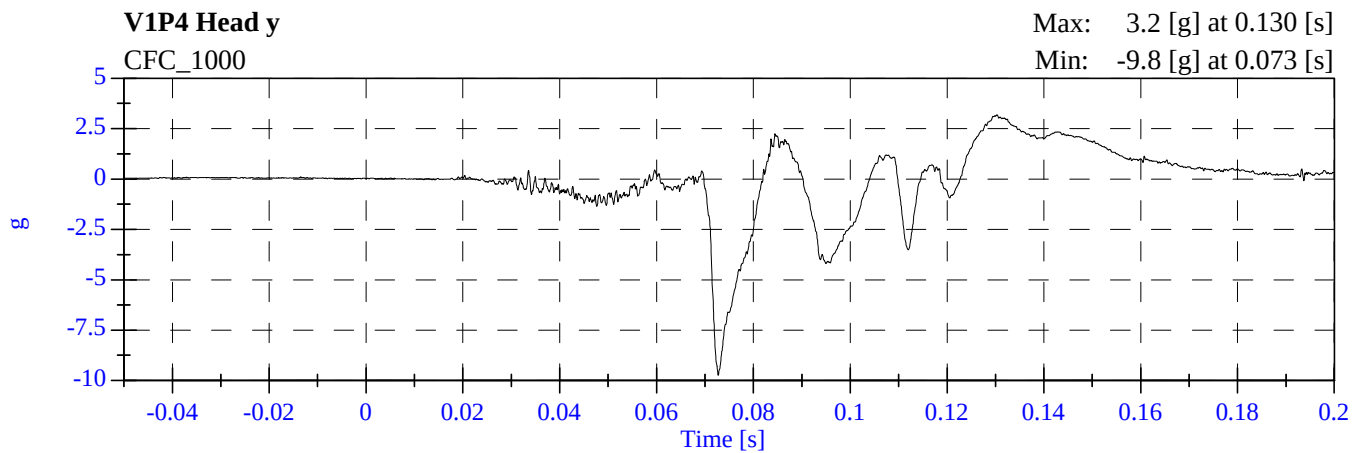
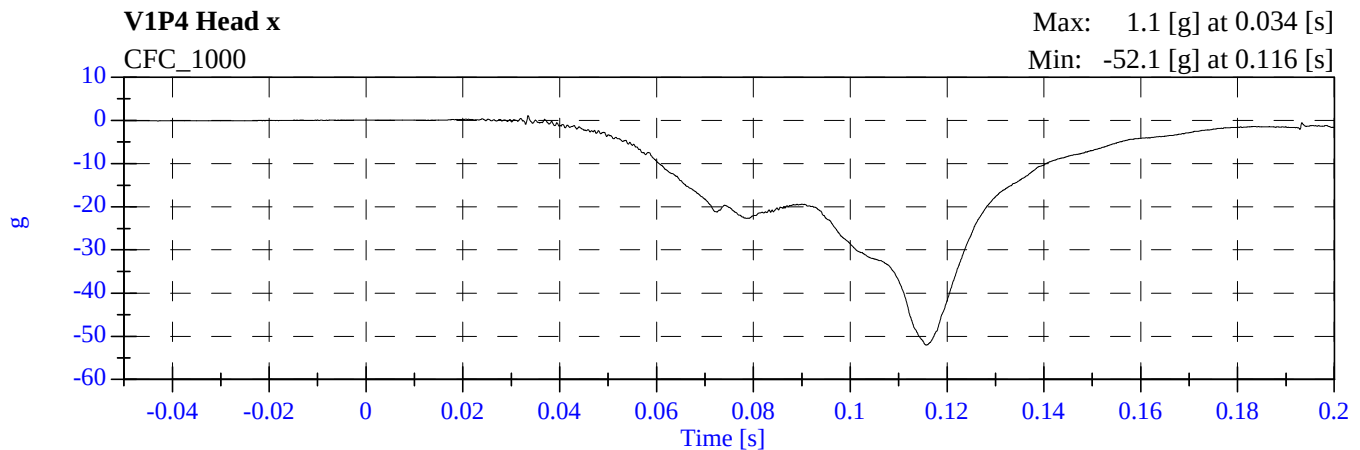


2005 NCAP Test 4 - 2005 Buick LaCrosse

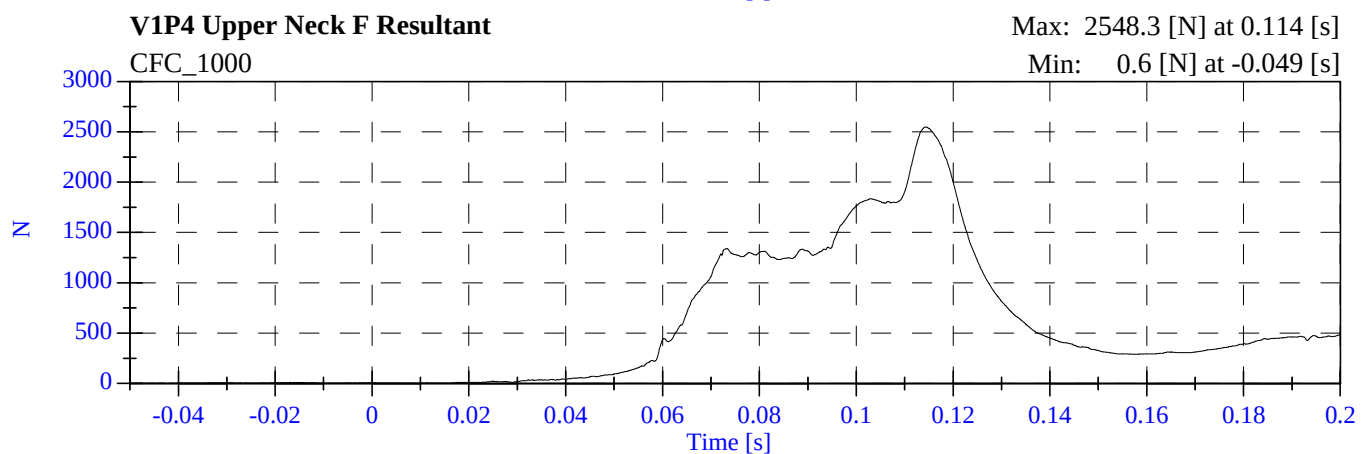
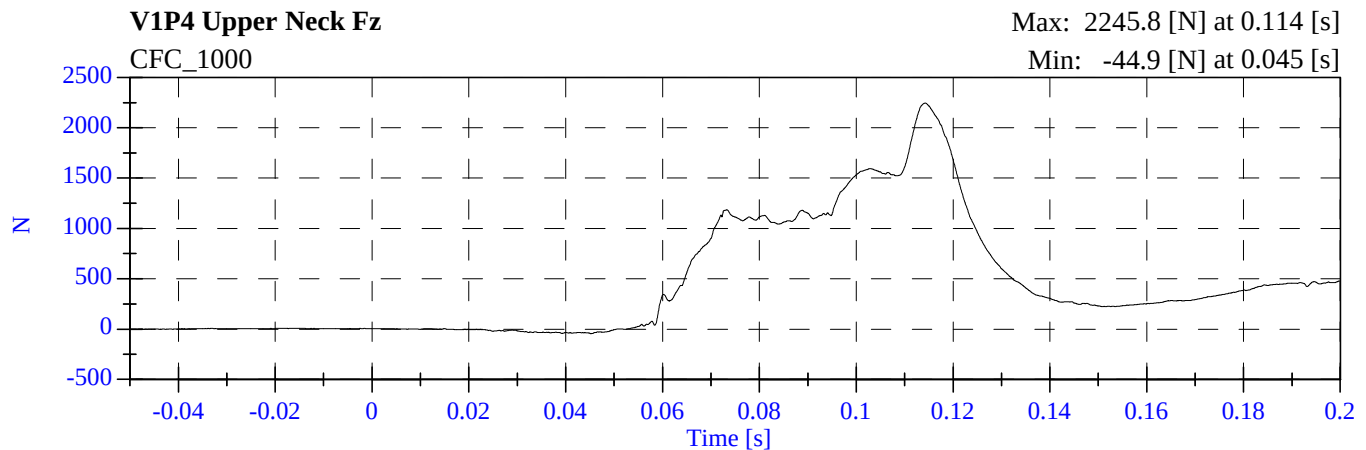
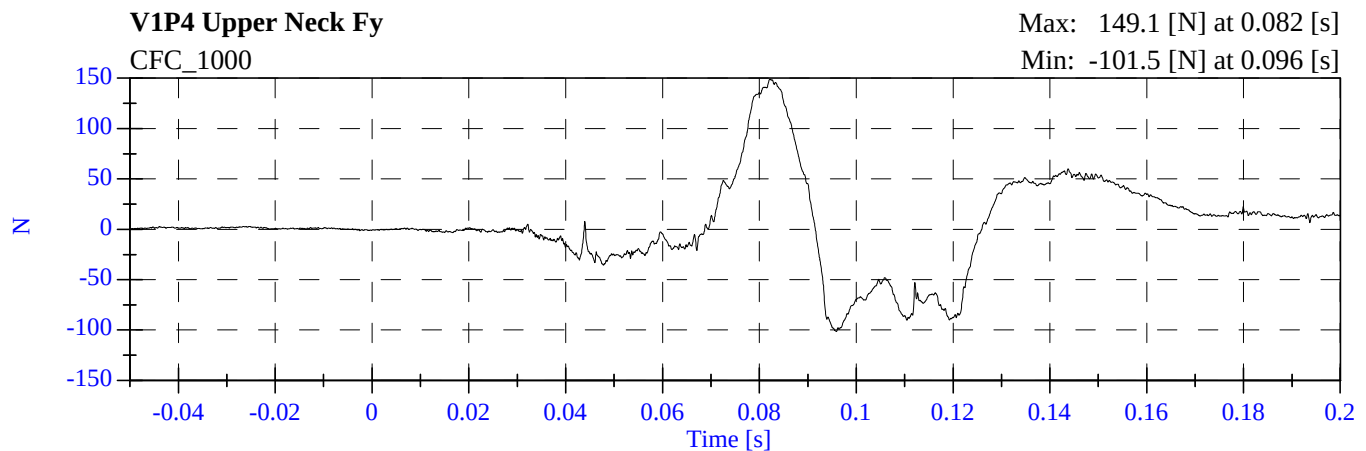
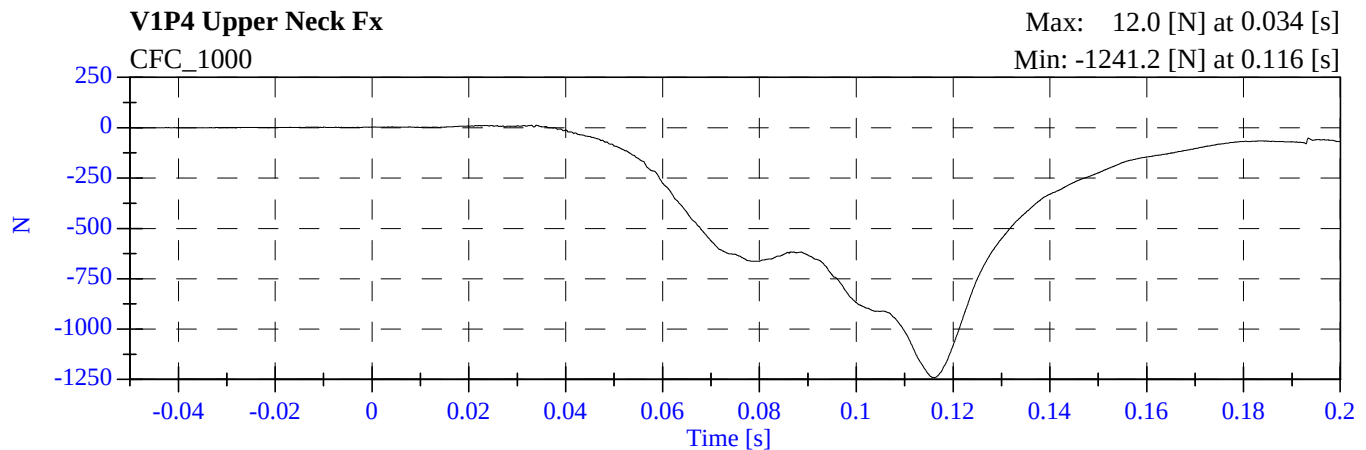
M50102 - December 17, 2004



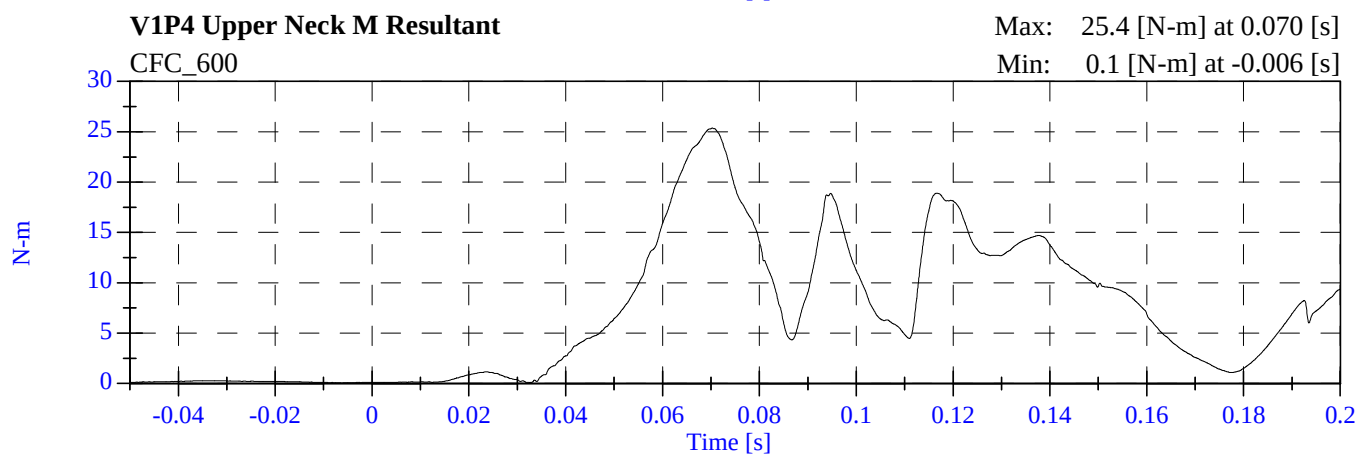
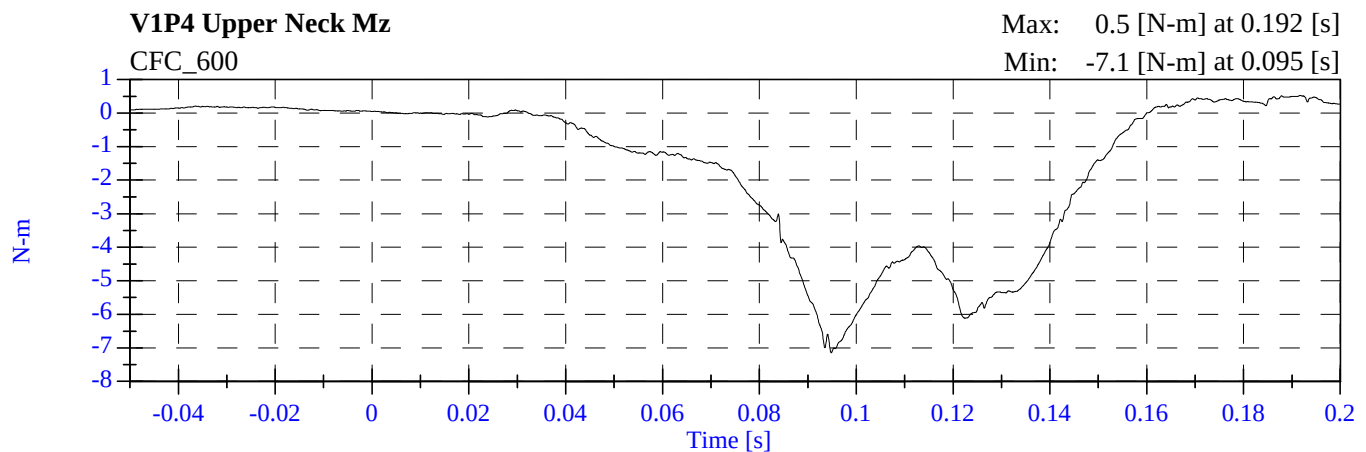
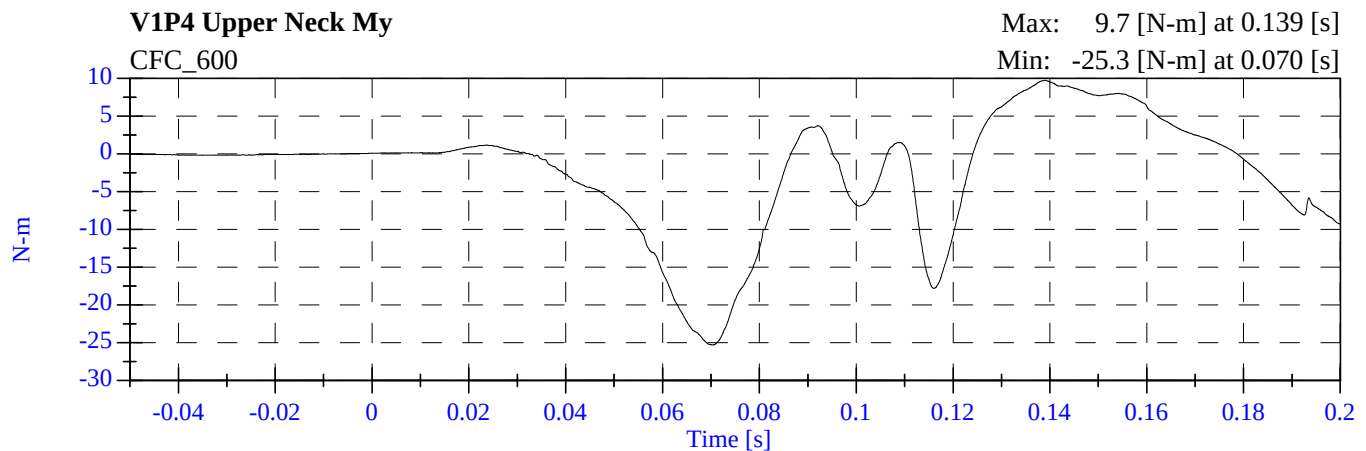
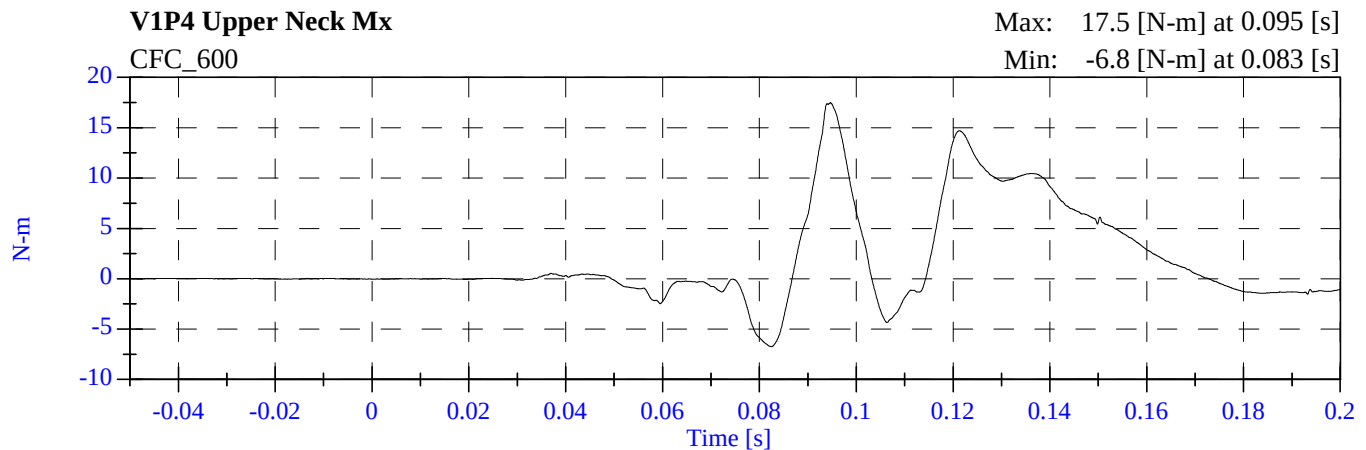
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



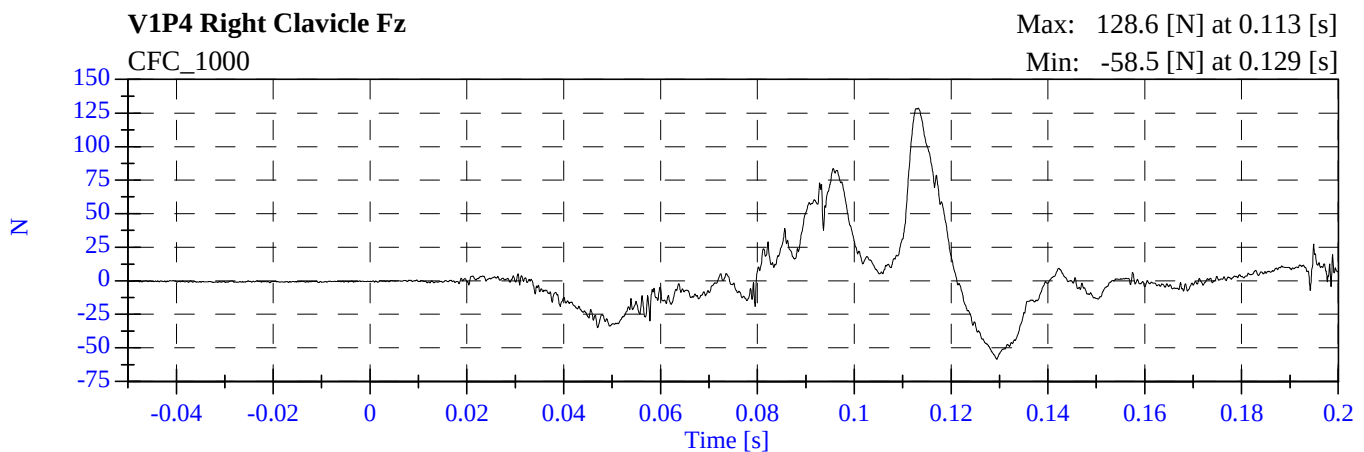
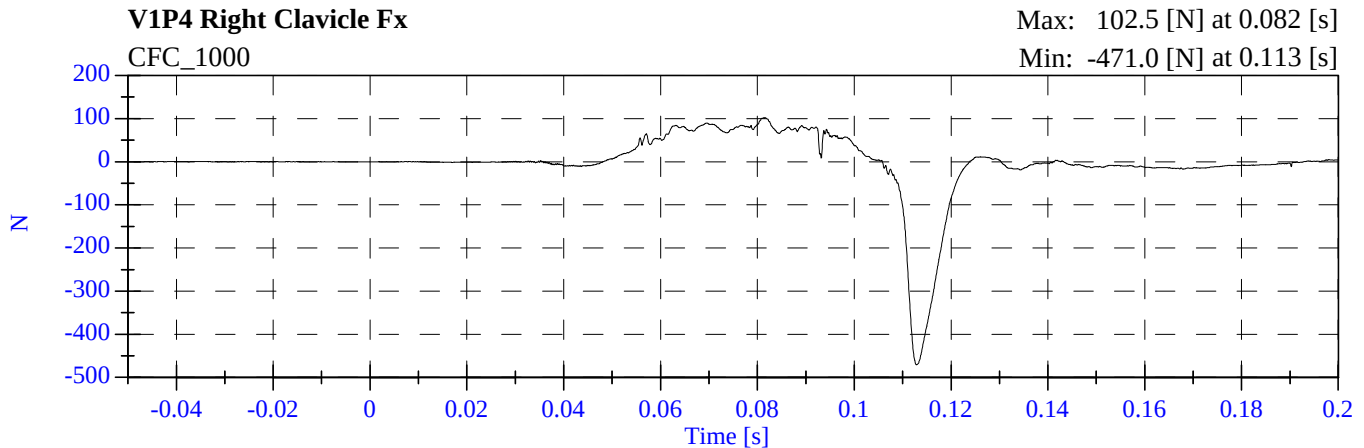
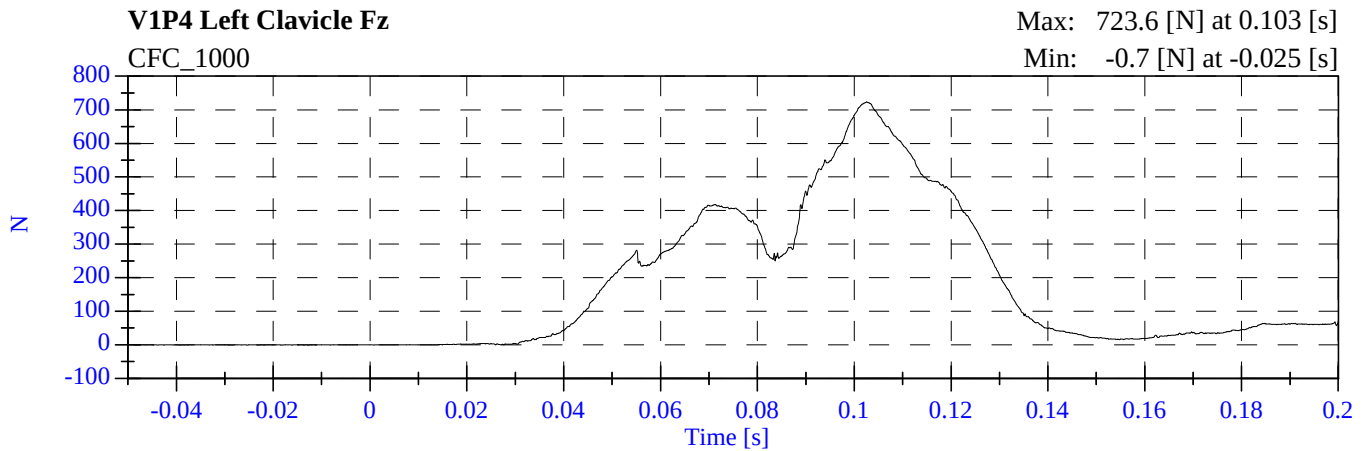
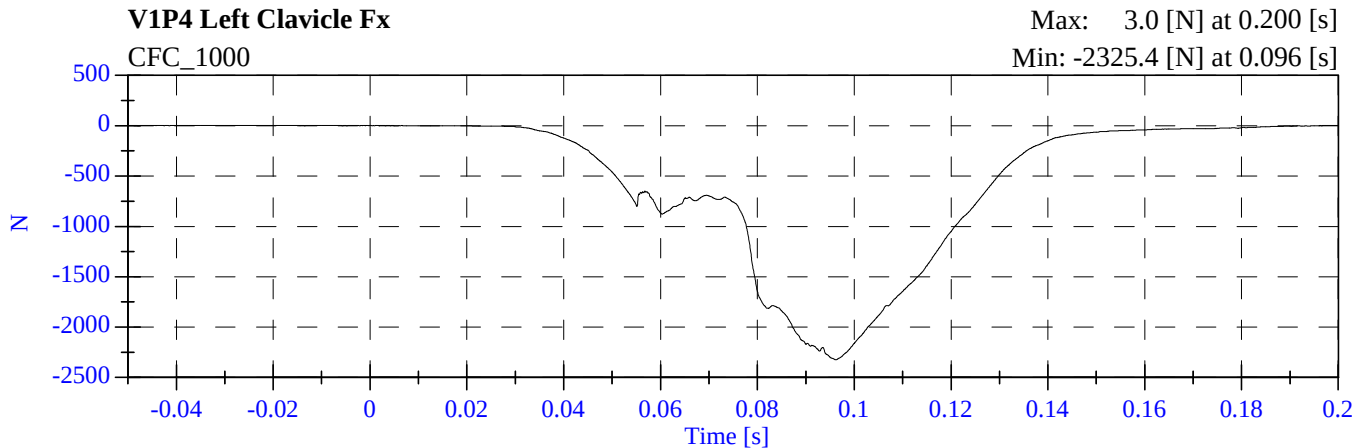
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



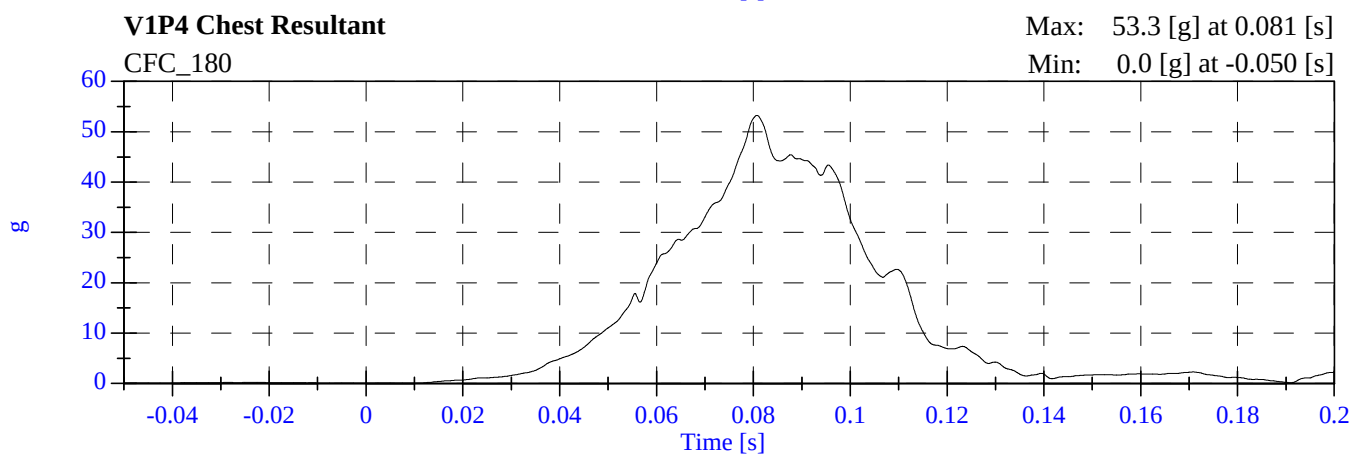
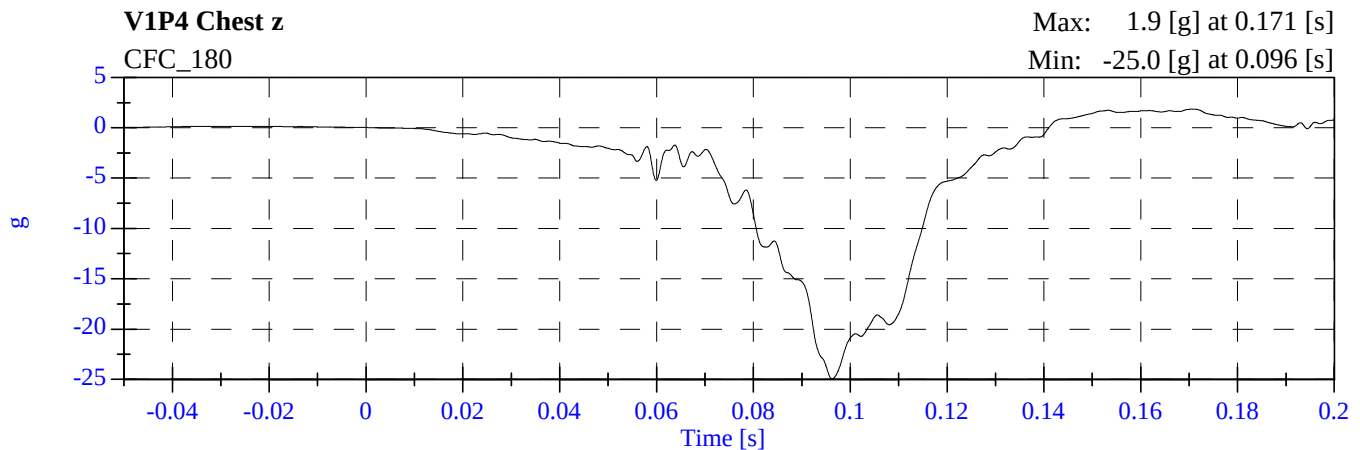
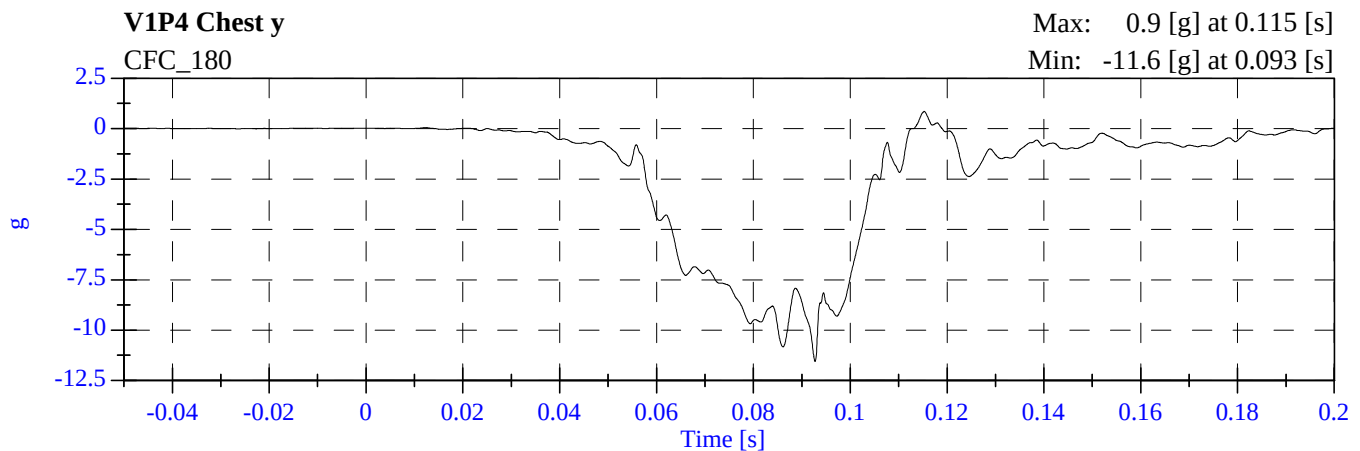
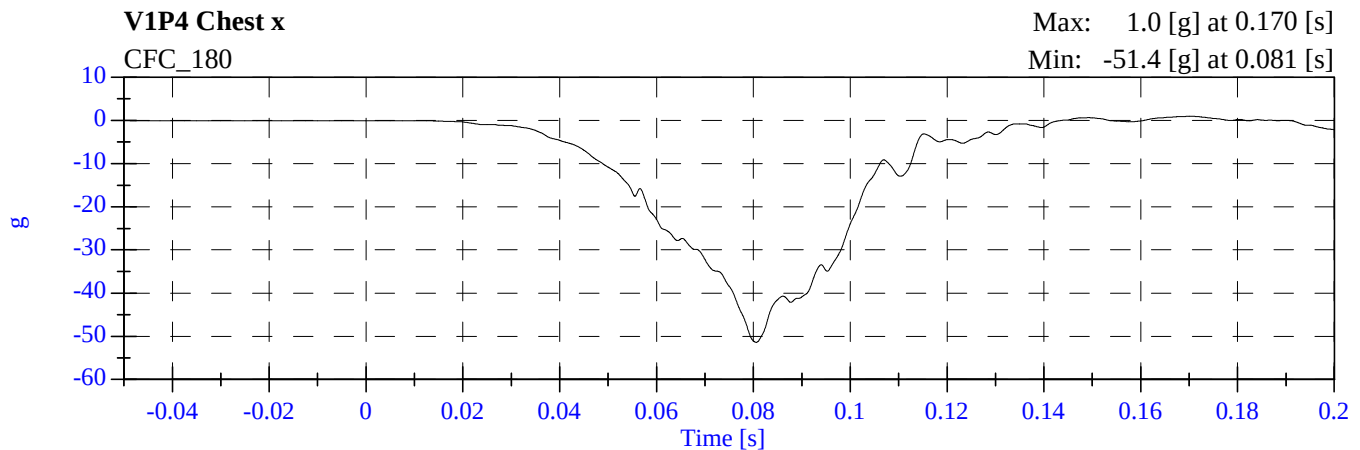
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



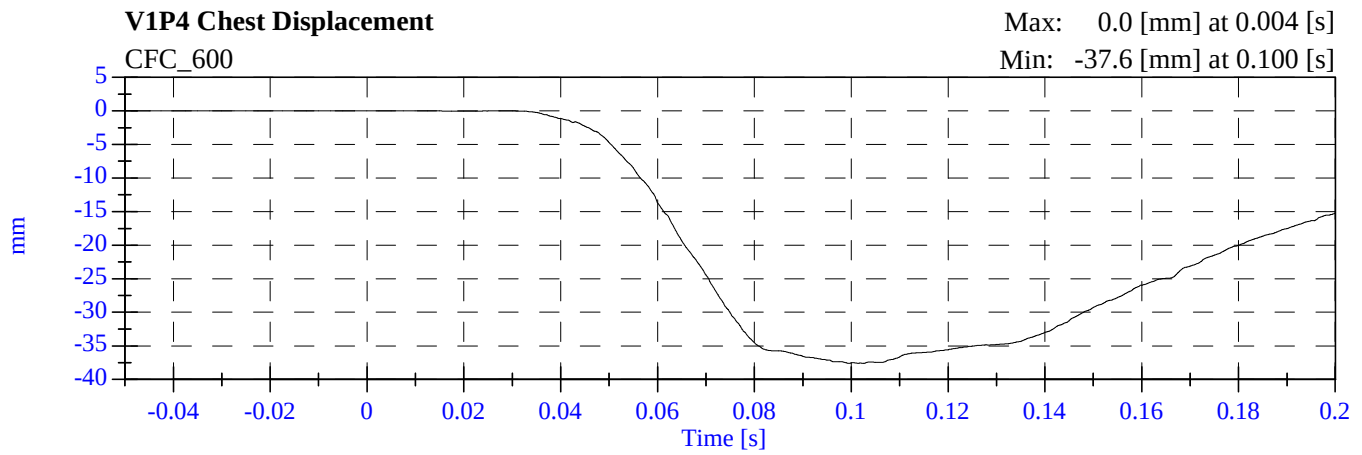
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



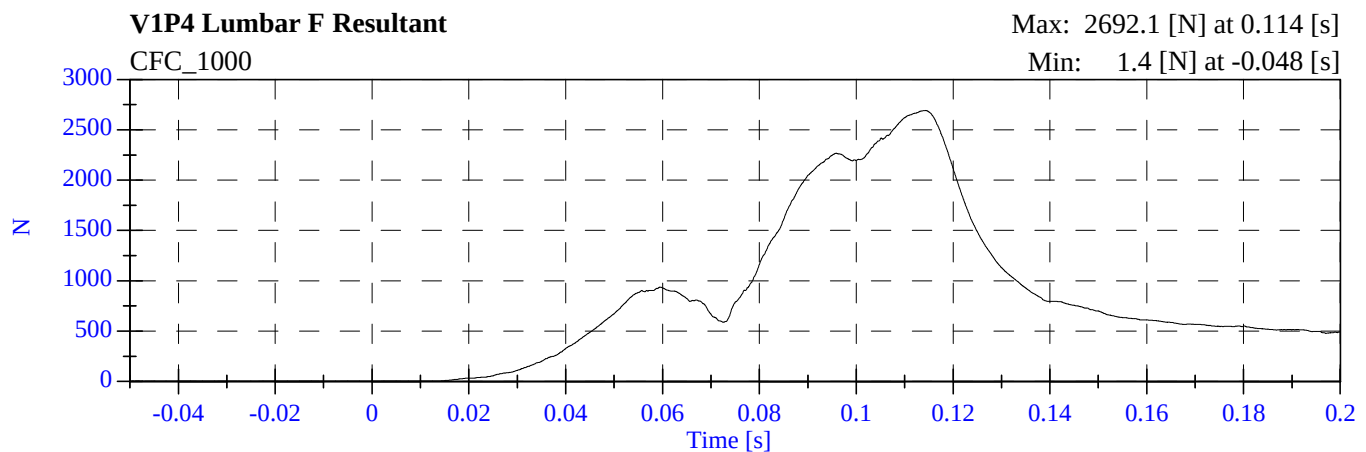
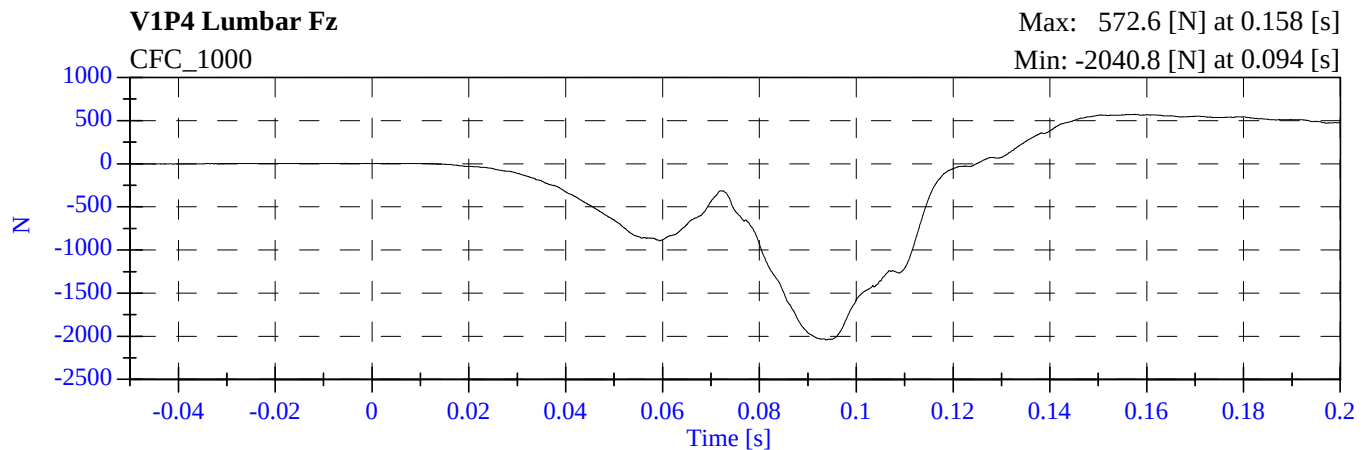
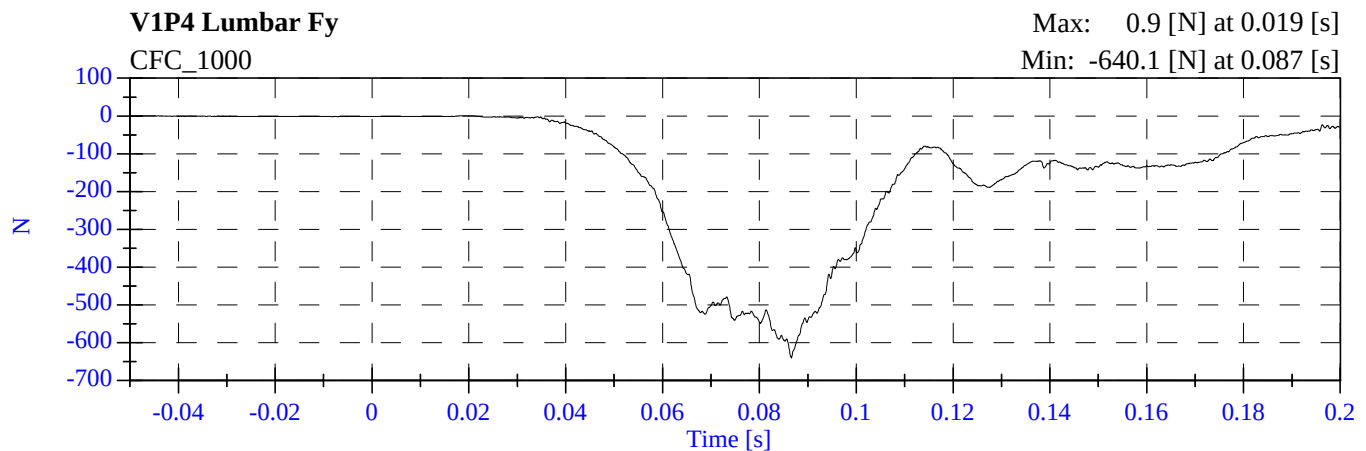
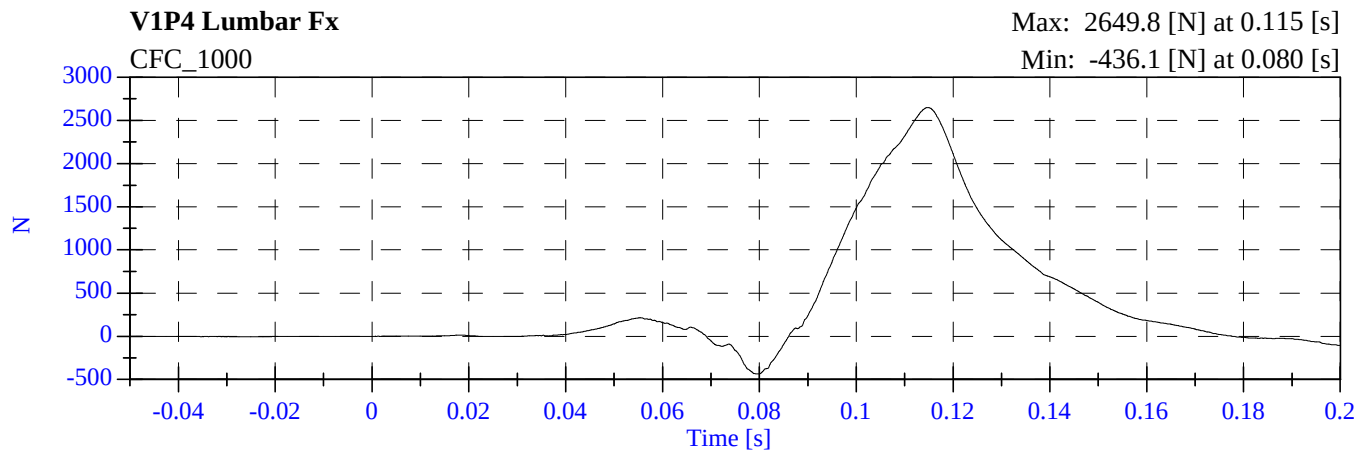
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



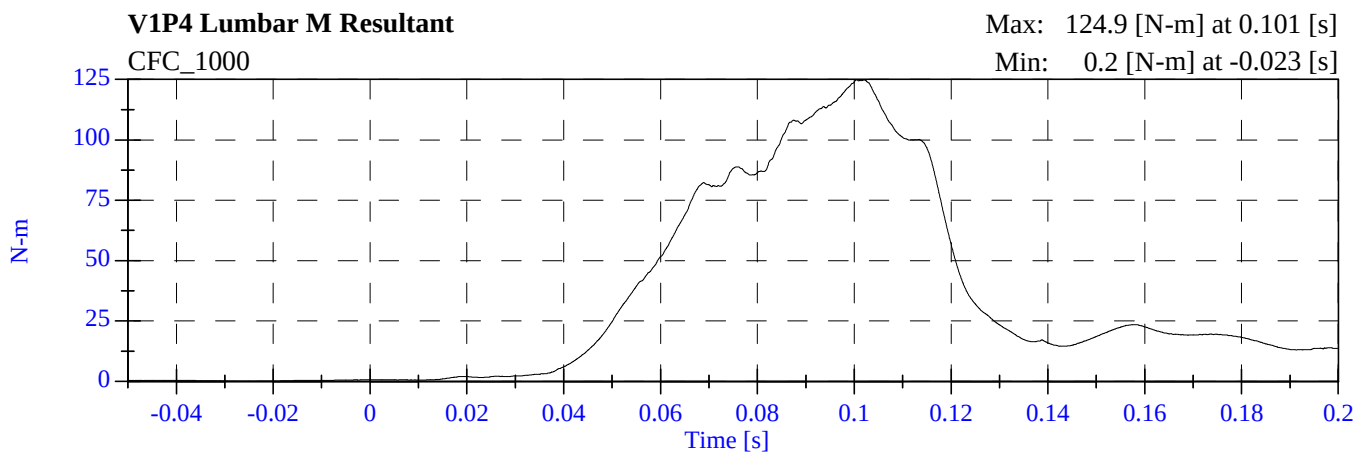
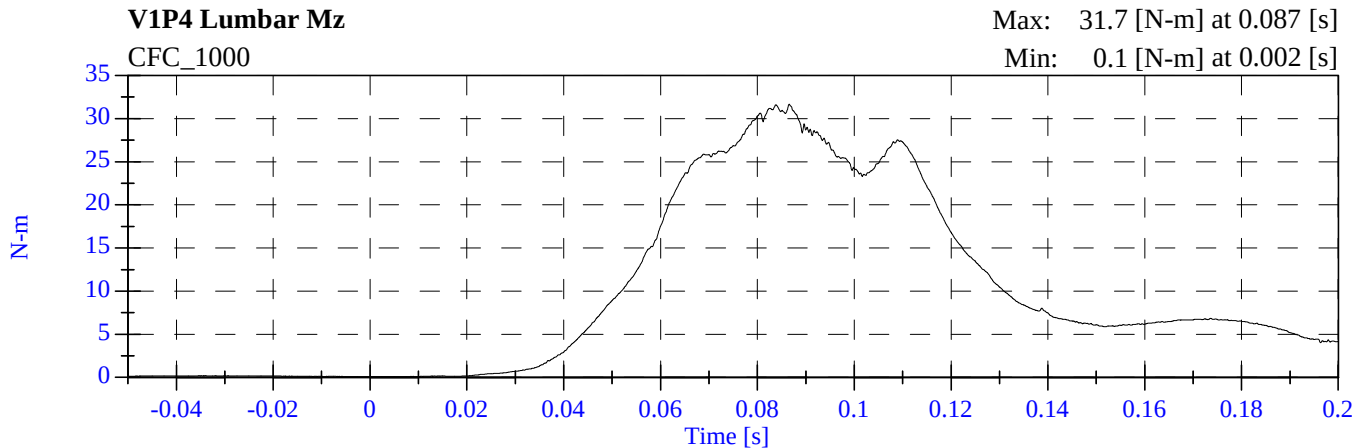
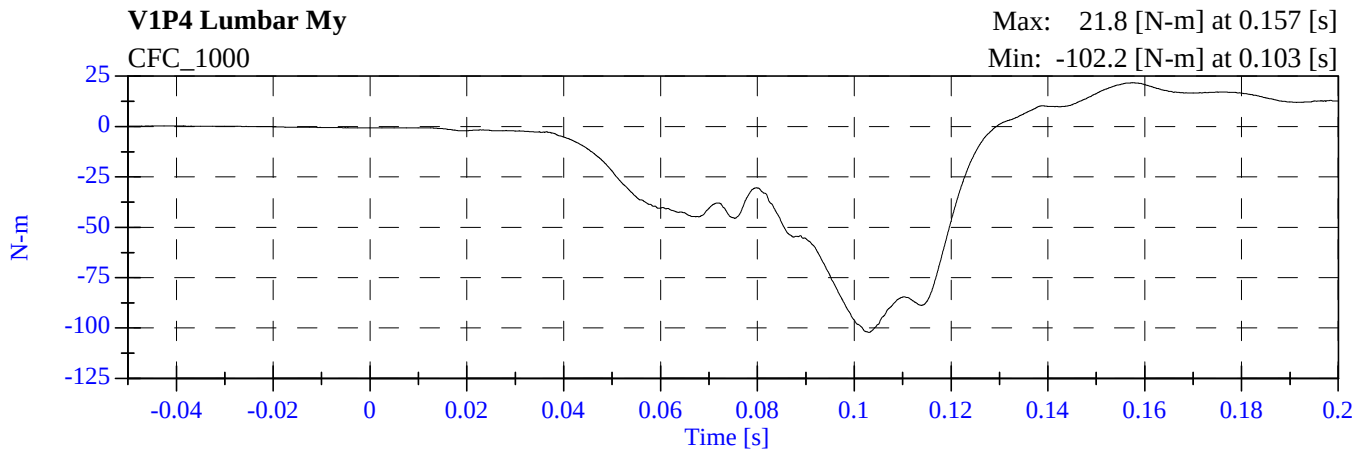
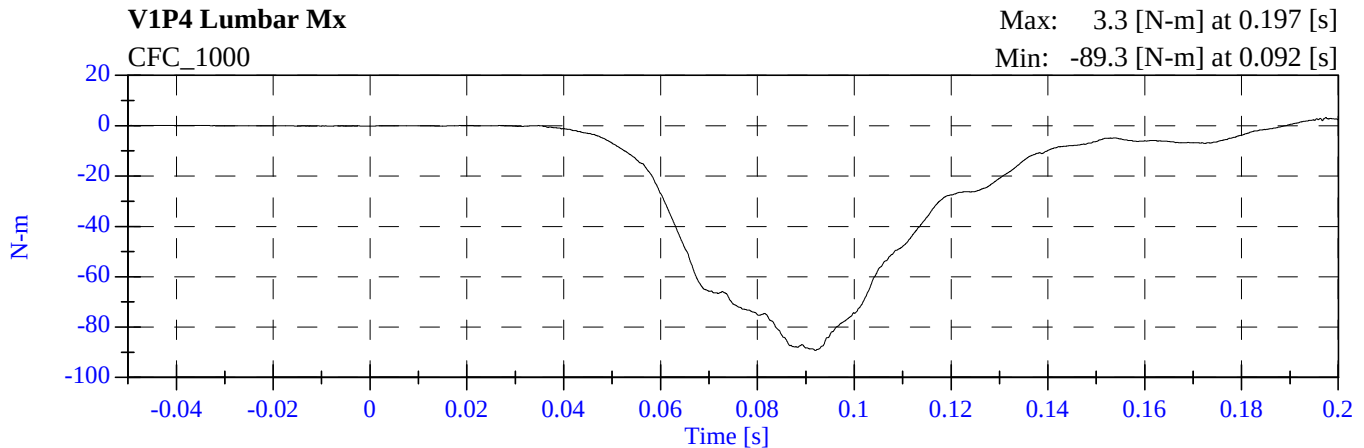
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



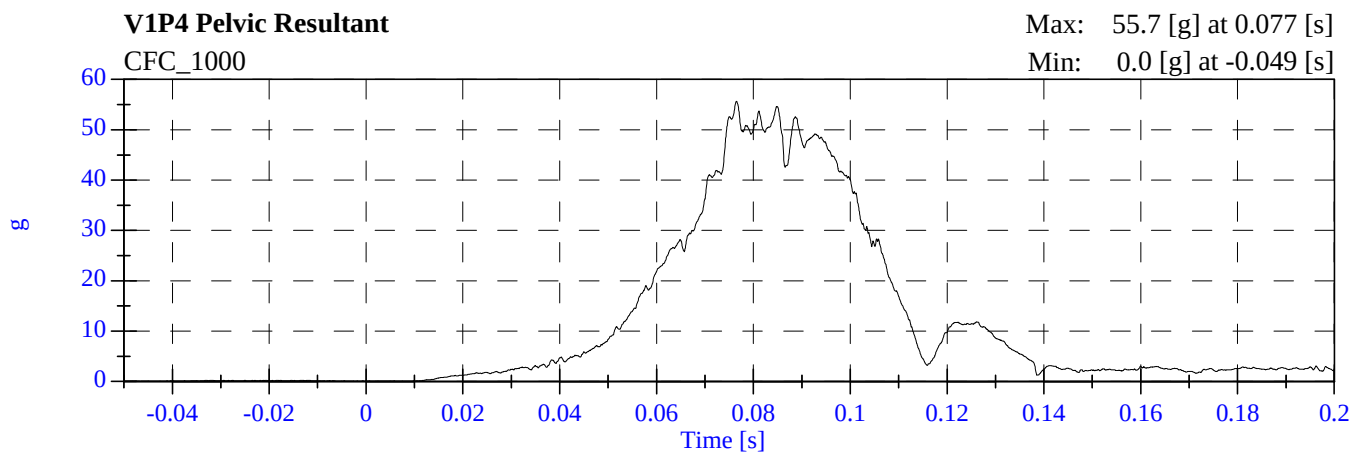
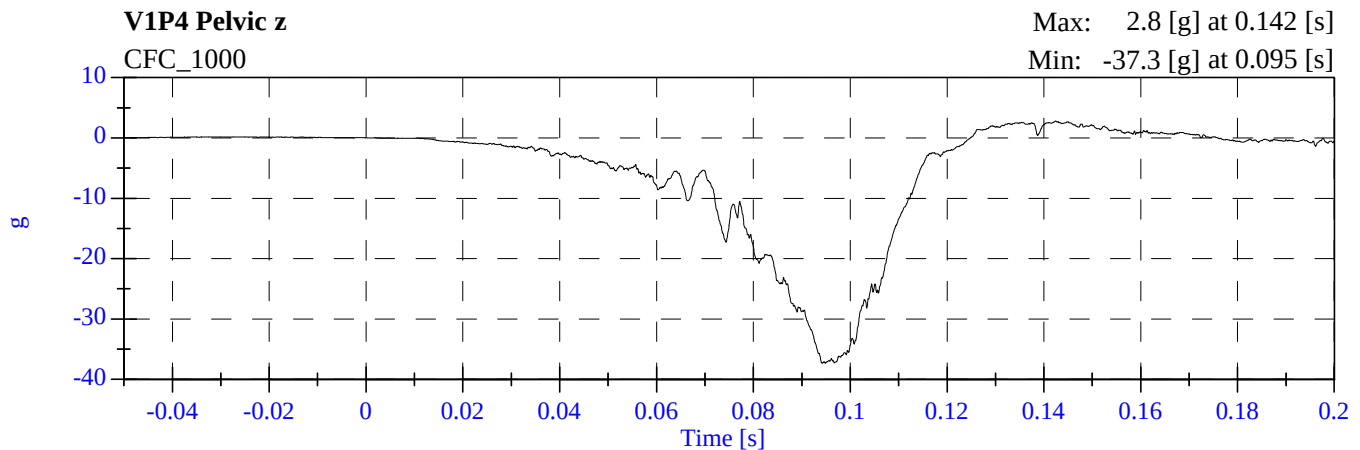
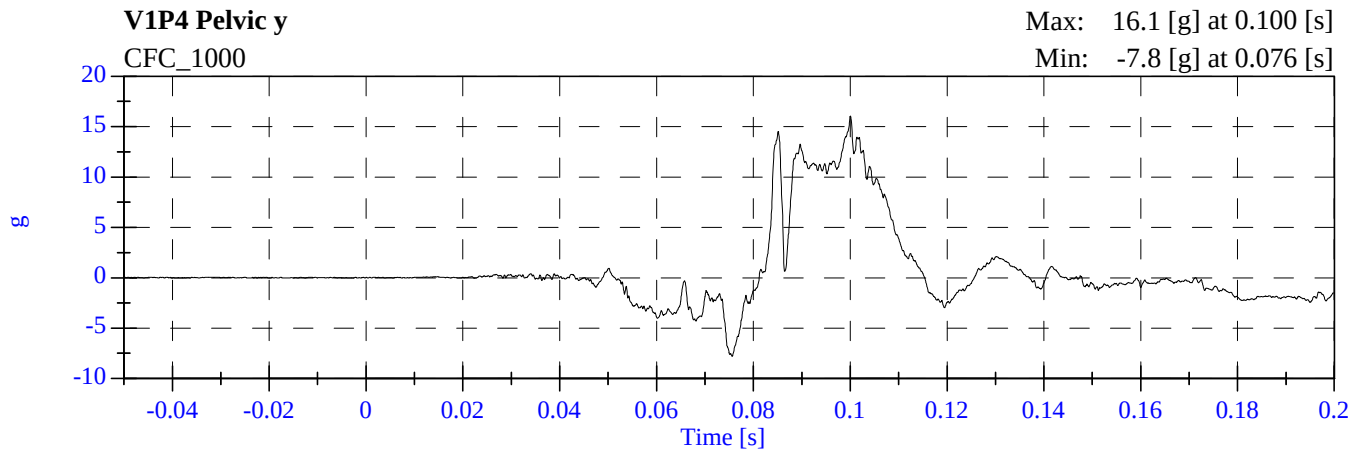
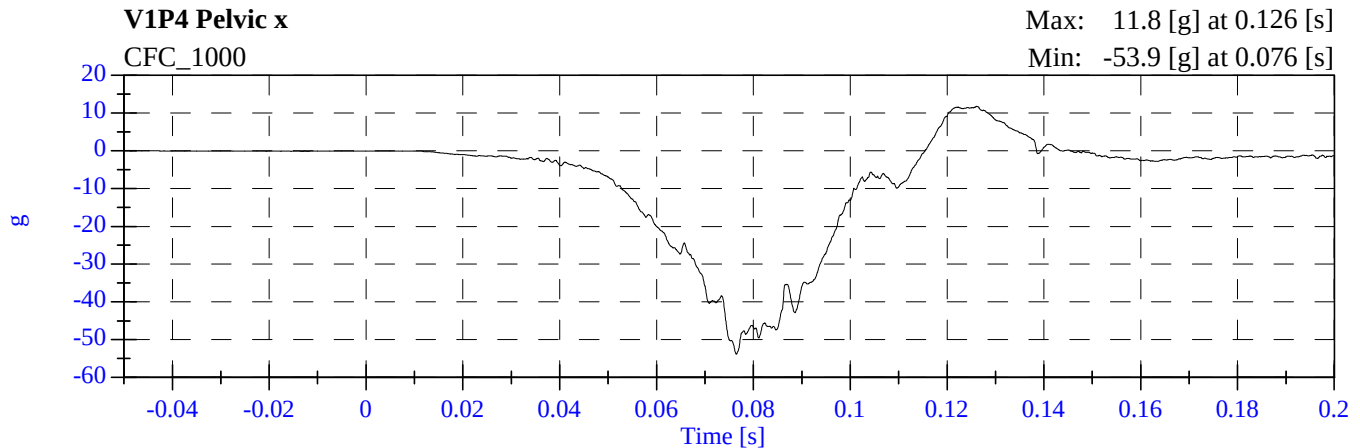
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



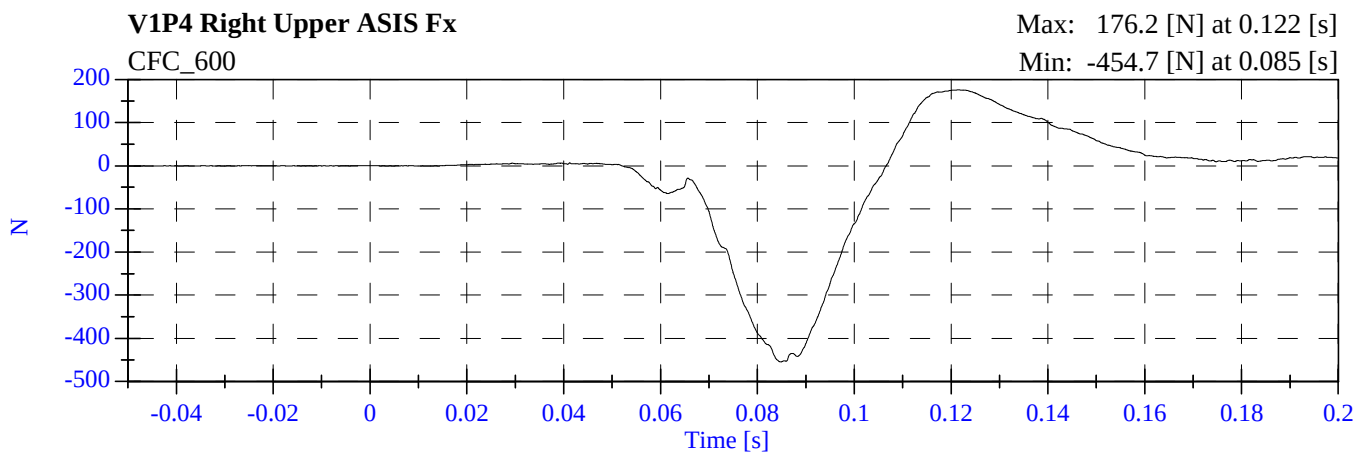
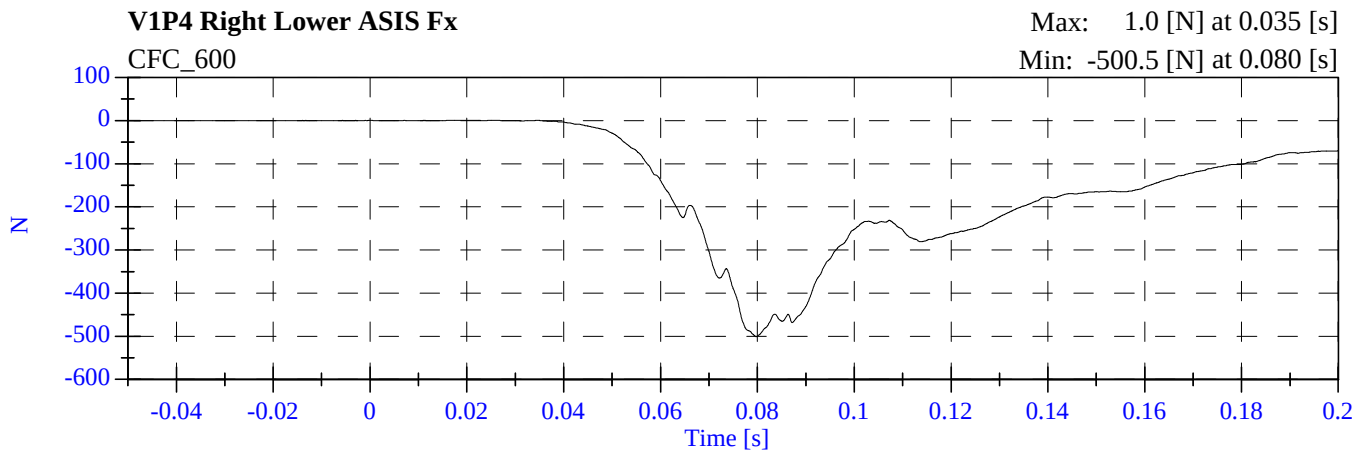
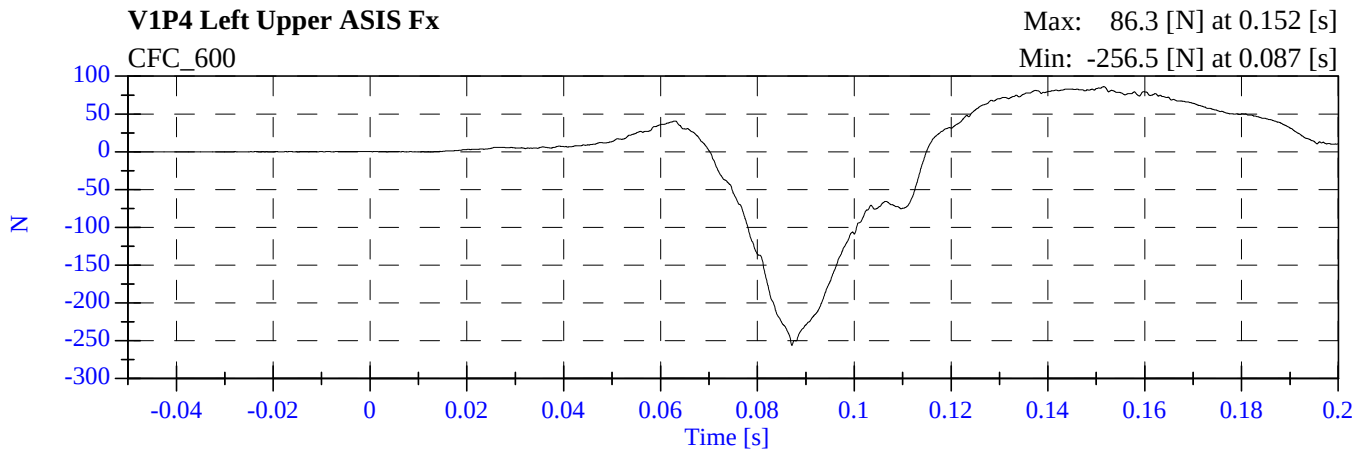
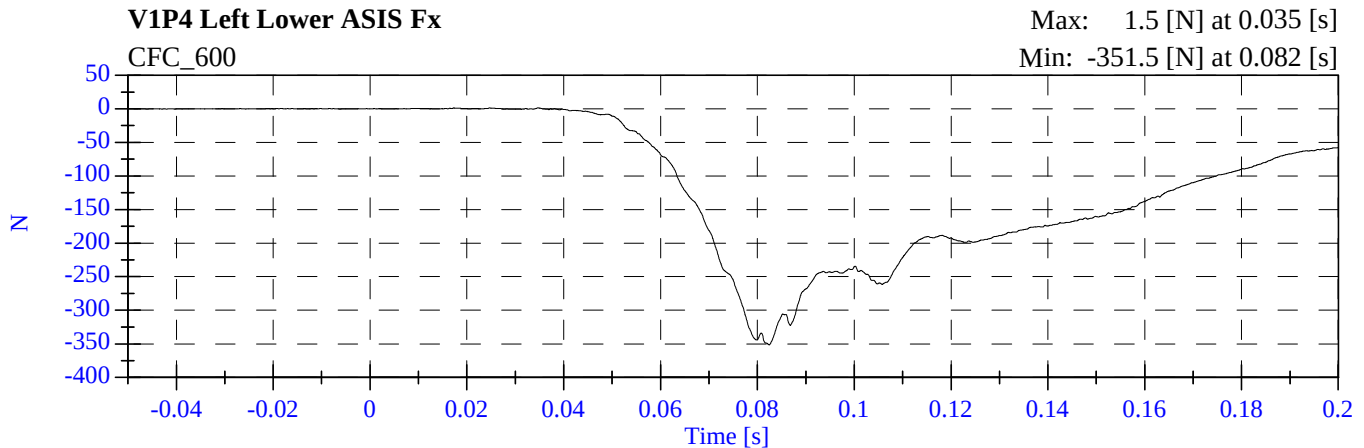
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



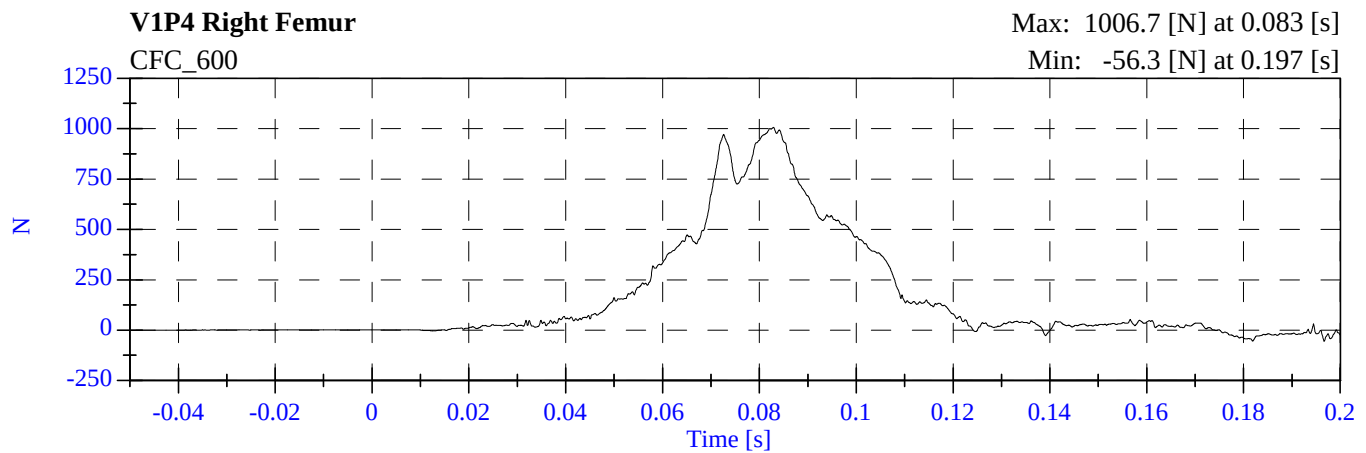
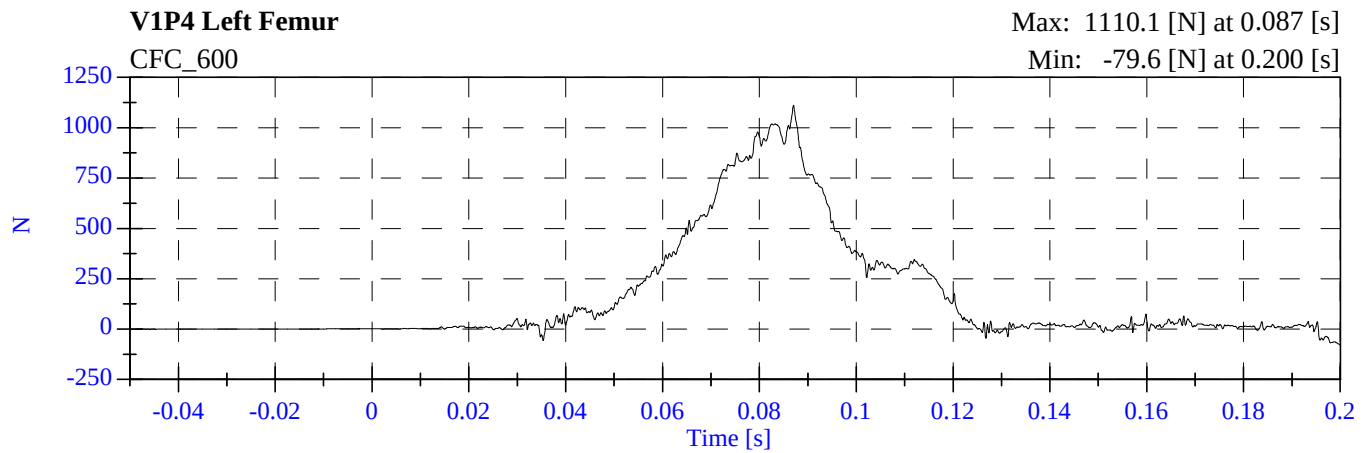
2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



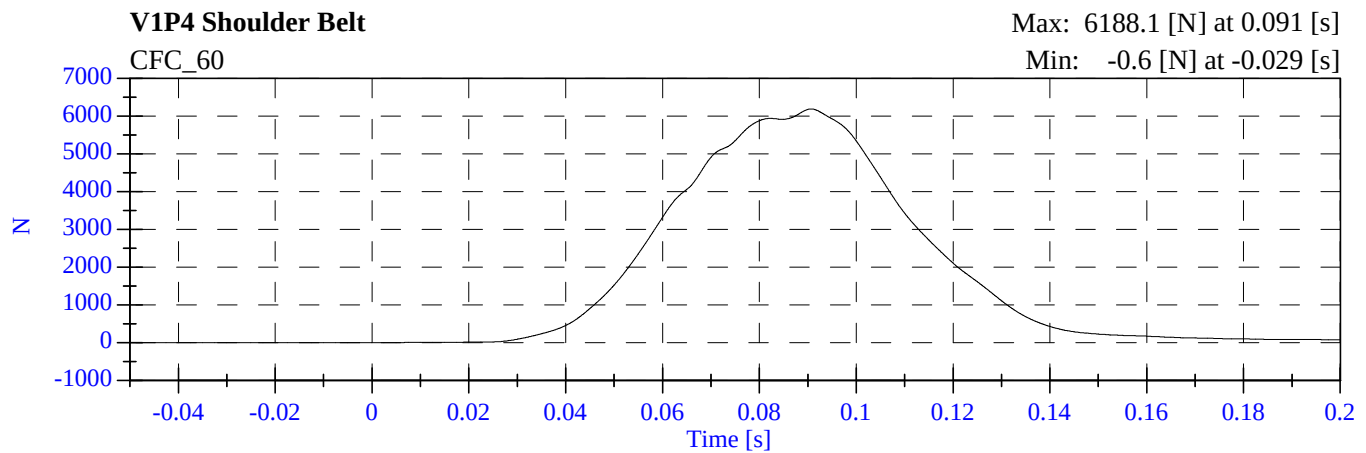
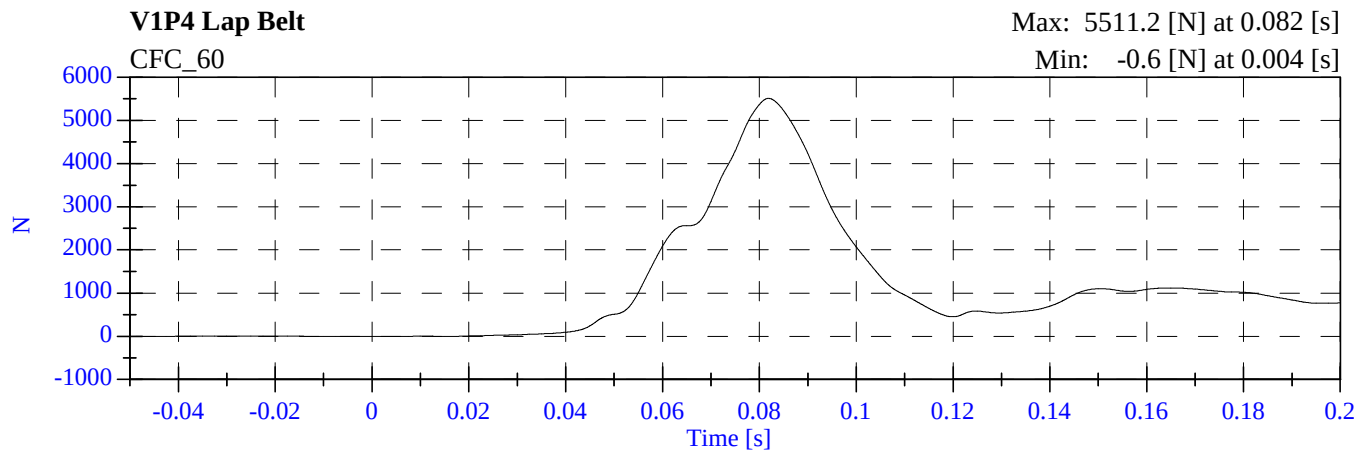
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2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



2005 NCAP Test 4 - 2005 Buick LaCrosse M50102 - December 17, 2004



SECTION 5

CHILD DUMMY CALIBRATION INFORMATION

**Transportation Research Center
Inc.**

ATD Calibration Report

for

VRTC

**HIII 3 Year Old Serial No. 040
Calibration No. 04**



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

Transportation Research Center Inc.
572P HIII 3 Year Old Dummy
External Dimensions
Serial No. 040 Calibration No. 04
08/06/04

Test Parameter	Dimension	Specification	Results	Pass
Total Sitting Height	A	538.5 - 553.7 mm	550 mm	Yes
Shoulder Pivot Height	B	307.3 - 322.6 mm	315 mm	Yes
Hip Pivot Height	C	33.0 - 43.2 mm	40 mm	Yes
Hip Pivot from Backline	D	56.9 - 67.1 mm	63 mm	Yes
Shoulder Pivot from Backline	E	58.4 - 68.6 mm	66 mm	Yes
Thigh Clearance	F	81.0 - 91.2 mm	85 mm	Yes
Back of Elbow to Finger Tip	G	247.4 - 262.6 mm	254 mm	Yes
Head Back to Backline	H	48.3 - 58.4 mm	53 mm	Yes
Shoulder to Elbow Length	I	185.0 - 200.7 mm	197 mm	Yes
Elbow Rest Height	J	133.6 - 148.8 mm	140 mm	Yes
Buttock to Knee Length	K	287.3 - 302.5 mm	295 mm	Yes
Popliteal Height	L	221.0 - 236.2 mm	226 mm	Yes
Knee to Floor Height	M	241.6 - 256.8 mm	251 mm	Yes
Buttock Popliteal Length	N	217.9 - 233.2 mm	224 mm	Yes
Chest Depth with Jacket	O	134.6 - 149.9 mm	143 mm	Yes
Foot Length	P	137.7 - 147.8 mm	140 mm	Yes
Stature	Q	932.2 - 957.6 mm	944 mm	Yes
Buttock to Knee Pivot Length	R	251.5 - 261.6 mm	254 mm	Yes
Head Breadth	S	128.3 - 143.5 mm	135 mm	Yes
Head Depth	T	167.4 - 182.6 mm	175 mm	Yes
Hip Breadth	U	200.7 - 215.9 mm	205 mm	Yes
Shoulder Breadth	V	236.5 - 251.7 mm	243 mm	Yes
Foot Breadth	W	53.6 - 63.8 mm	57 mm	Yes
Head Circumference	X	500.4 - 515.6 mm	502 mm	Yes
Chest Circumference with Jacket	Y	527.1 - 552.5 mm	543 mm	Yes
Waist Circumference	Z	527.1 - 552.5 mm	545 mm	Yes
Reference Location for Chest Circumference	AA	248.9 - 259.1 mm	254 mm	Yes
Reference Location for Waist Circumference	BB	160.0 - 170.2 mm	165 mm	Yes

Technician



Approved





Transportation Research Center Inc.

572P Head Drop Test

HIII 3 Year Old Serial No. 040 Calibration No. 04 - 2

Test Date 08/05/2004

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	53 %	Yes
Peak Resultant Acceleration	250 - 280 g	254.1 g	Yes
Peak Lateral Acceleration	15 g Max	-3.0 g	Yes
Is Acceleration Curve Unimodal?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician



Approved

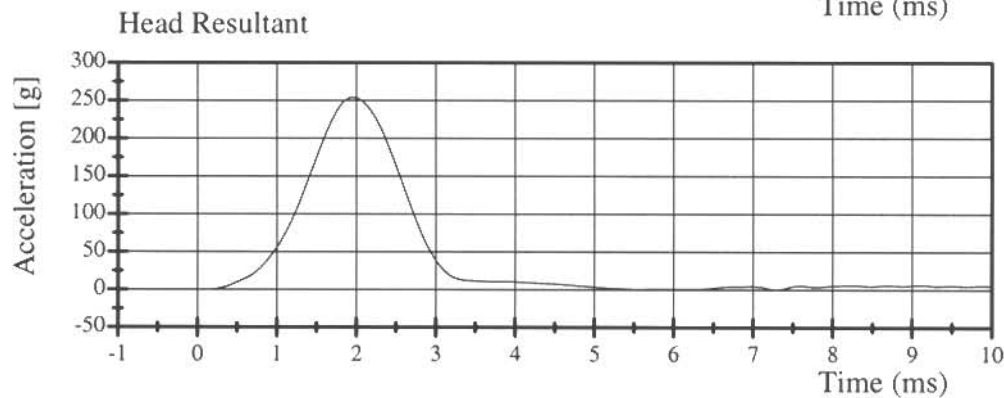
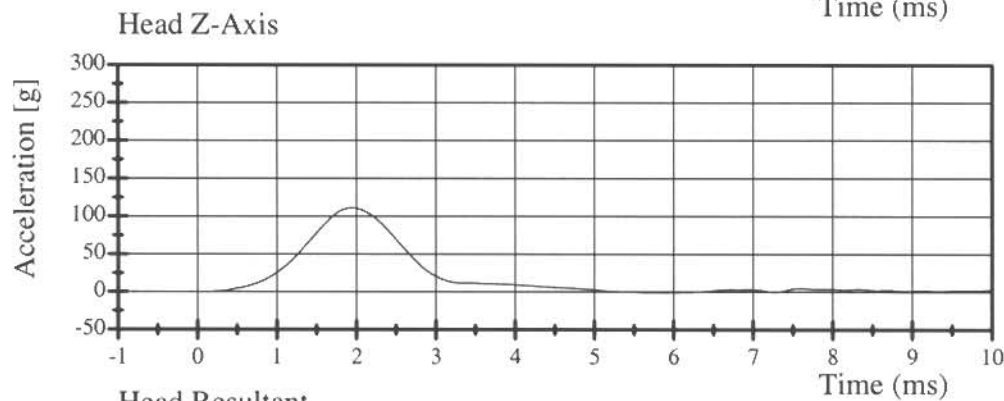
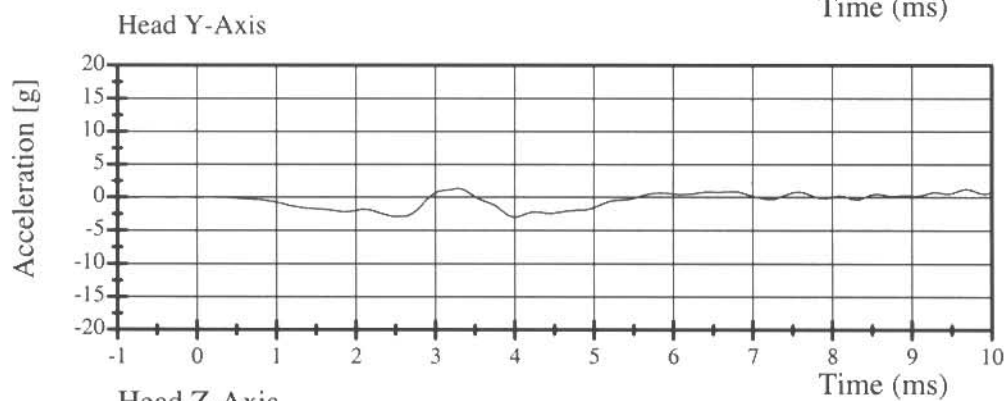
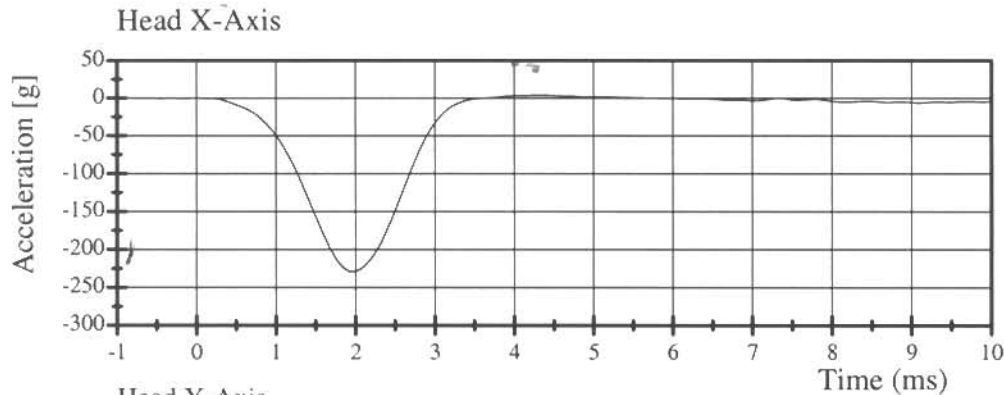


Transportation Research Center Inc.

572P Head Drop Test

HIII 3 Year Old Serial No. 040 Calibration No. 04 - 2

Test Date 08/05/2004



Transportation Research Center Inc.

572P Neck Flexion Test - 6 Channel Transducer

HIII 3 Year Old Serial No. 040 Calibration No. 04 - 1

Test Date 08/06/2004

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impact Velocity	5.40 - 5.60 m/s	5.58 m/s	Yes
Integrated Pendulum Velocity			
10 ms	2.00 - 2.70 m/s	2.44 m/s	Yes
15 ms	3.00 - 4.00 m/s	3.50 m/s	Yes
20 ms	4.00 - 5.10 m/s	4.76 m/s	Yes
Peak D Plane Rotation	70 - 82 °	72.7 °	Yes
Peak Moment About Occipital Condyles (During time interval rotation is within specified corridors)	42.0 - 53.0 N·m	42.70 N·m	Yes
Positive Moment Decay Time To 10 N·m	60 - 80 ms	70.72 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



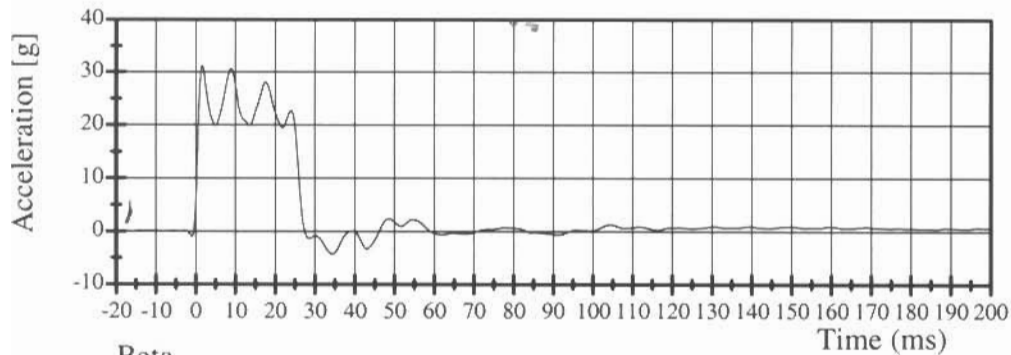
Transportation Research Center Inc.

572P Neck Flexion Test

HIII 3 Year Old Serial No. 040 Calibration No. 04 - 1

Test Date 08/06/2004

Pendulum Deceleration

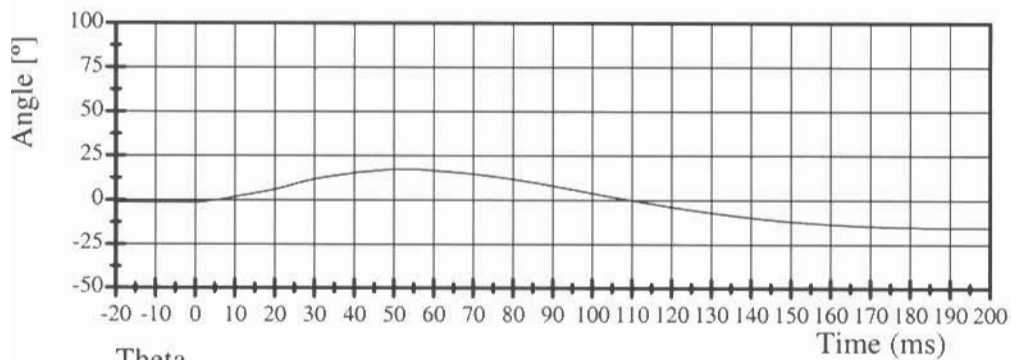


Filter Class: 180

Max: 31.2 g at 1.7 ms

Min: -4.3 g at 34.4 ms

Beta

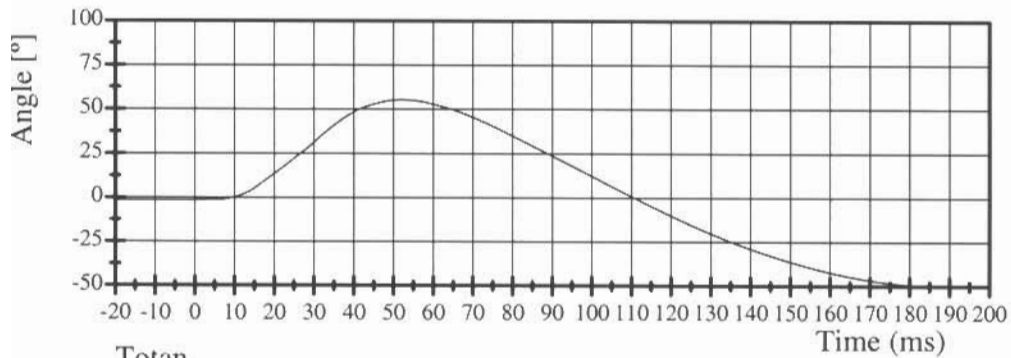


Filter Class: 60

Max: 17.4 ° at 52.0 ms

Min: -15.4 ° at 192.4 ms

Theta

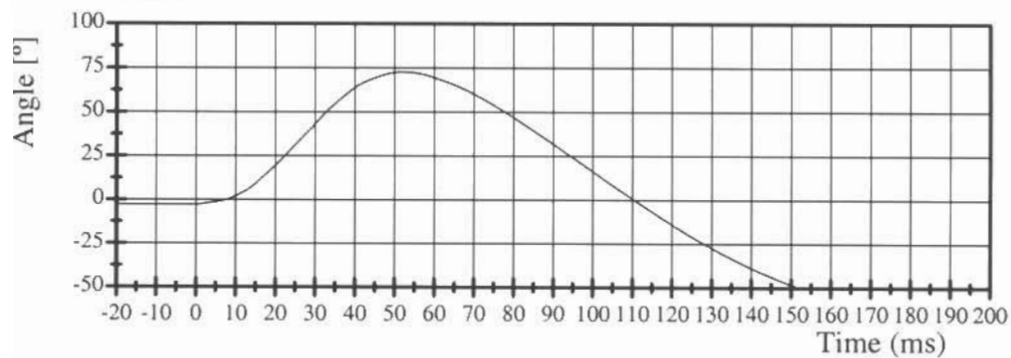


Filter Class: 60

Max: 55.3 ° at 52.0 ms

Min: -50.0 ° at 192.3 ms

Totan



Filter Class: 60

Max: 72.7 ° at 52.0 ms

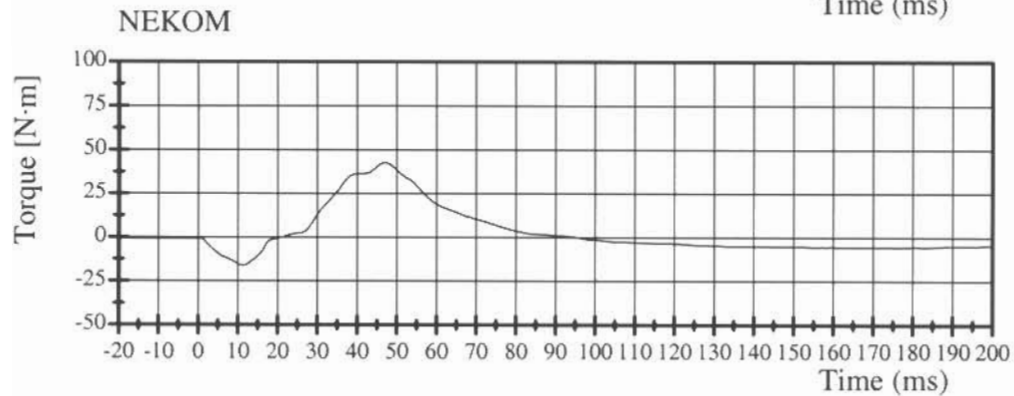
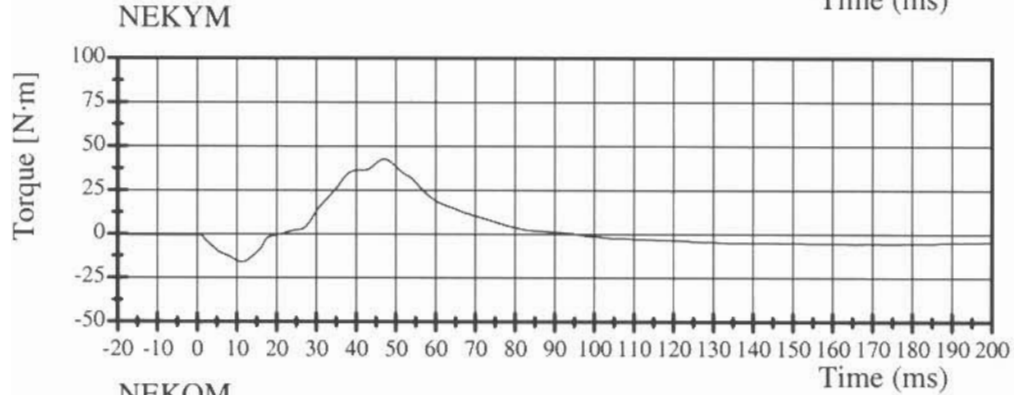
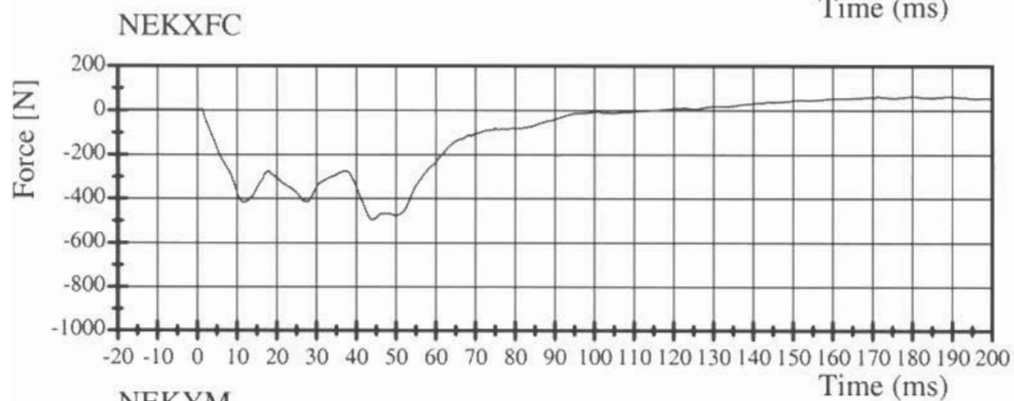
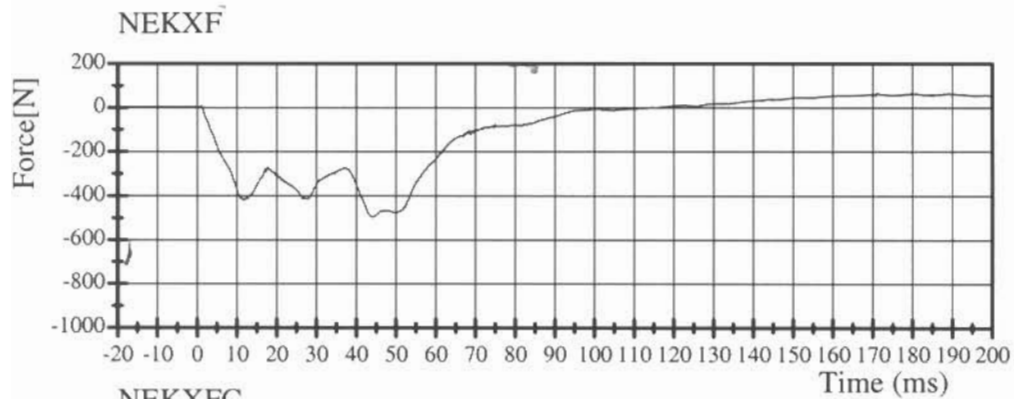
Min: -65.4 ° at 192.3 ms

Transportation Research Center Inc.

572P Neck Flexion Test

HIII 3 Year Old Serial No. 040 Calibration No. 04 - 1

Test Date 08/06/2004



Transportation Research Center Inc.

572P Neck Extension Test - 6 Channel Transducer

HIII 3 Year Old Serial No. 040 Calibration No. 04 - 3

Test Date 08/06/2004

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Impact Velocity	3.55 - 3.75 m/s	3.66 m/s	Yes
Integrated Pendulum Velocity			
10 ms	1.00 - 1.40 m/s	1.19 m/s	Yes
15 ms	1.90 - 2.50 m/s	2.10 m/s	Yes
20 ms	2.80 - 3.50 m/s	2.86 m/s	Yes
Peak D Plane Rotation	83 - 93 °	84.2 °	Yes
Peak Moment About Occipital Condyles (During time interval rotation is within specified corridors)	-53.3 - (-43.7) N·m	-44.22 N·m	Yes
Positive Moment Decay Time To -10 N·m	60 - 80 ms	70.80 ms	Yes

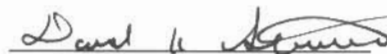
Test meets specifications.

Comments:

Technician



Approved



08.06.2004 10:06:41 1000

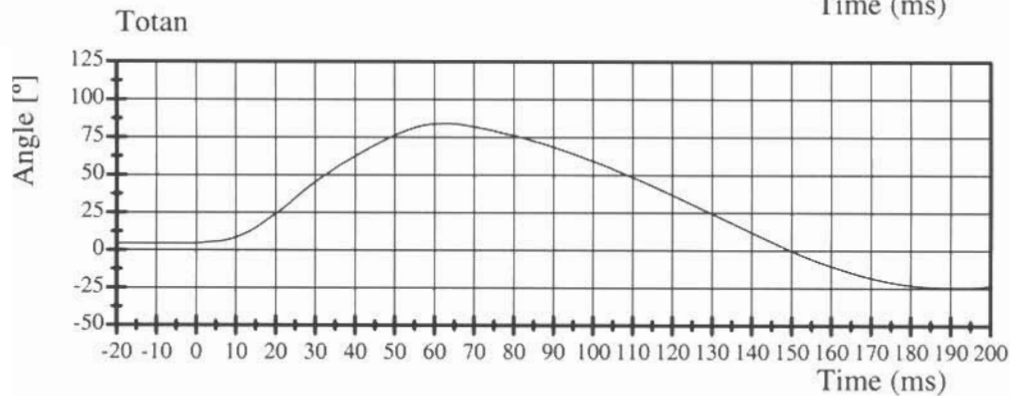
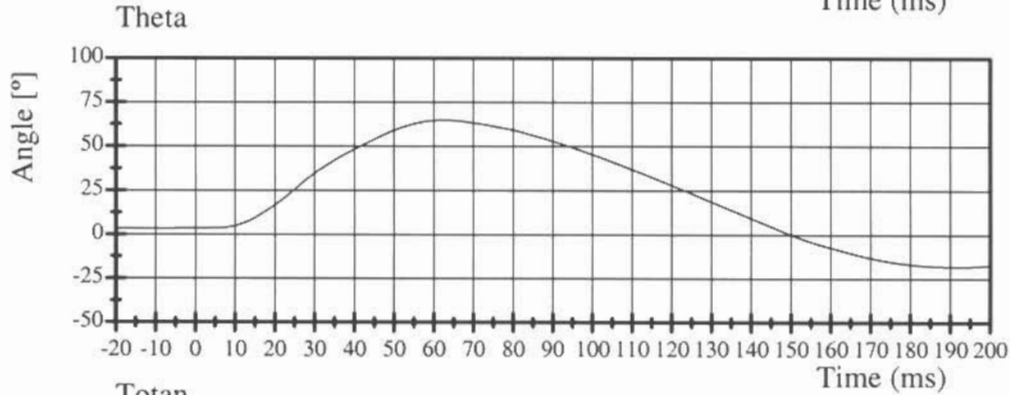
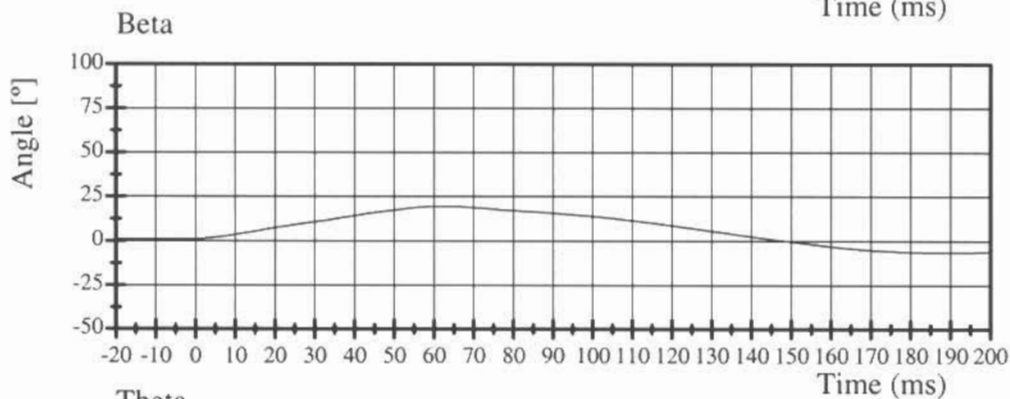
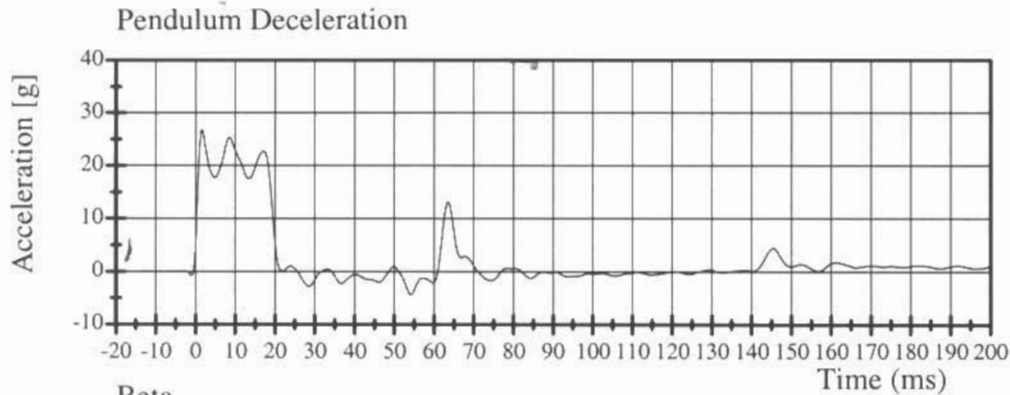


Transportation Research Center Inc.

572P Neck Extension Test

HIII 3 Year Old Serial No. 040 Calibration No. 04 - 3

Test Date 08/06/2004

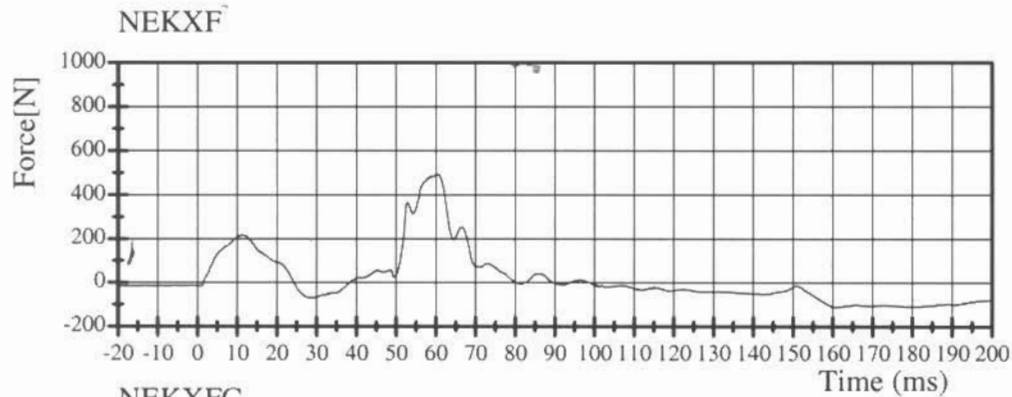


Transportation Research Center Inc.

572P Neck Extension Test

HIII 3 Year Old Serial No. 040 Calibration No. 04 - 3

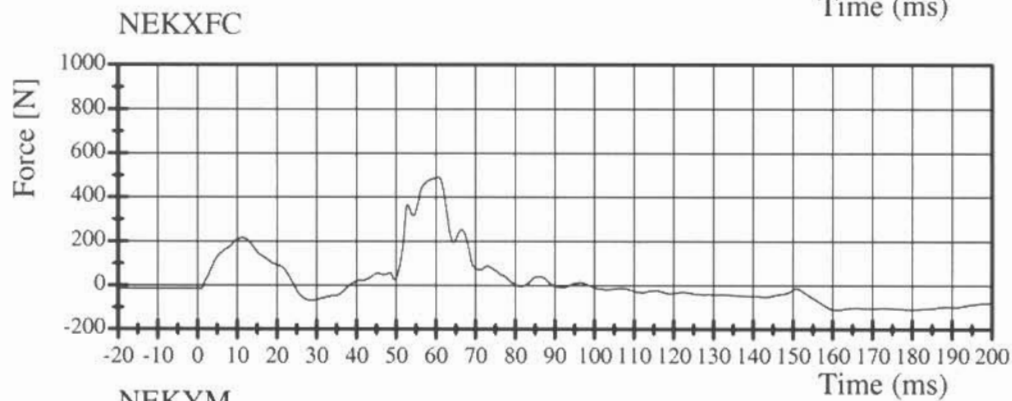
Test Date 08/06/2004



Filter Class: 1000

Max: 491.8 N at 60.8 ms

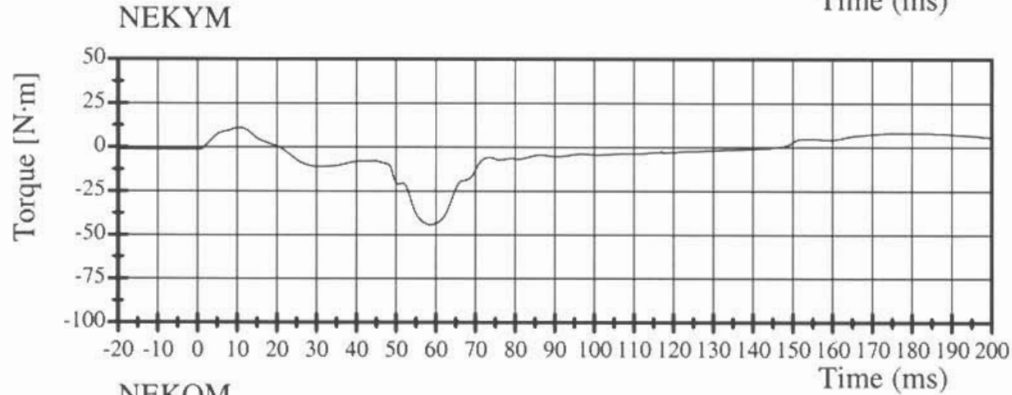
Min: -111.4 N at 161.0 ms



Filter Class: 600

Max: 491.8 N at 60.6 ms

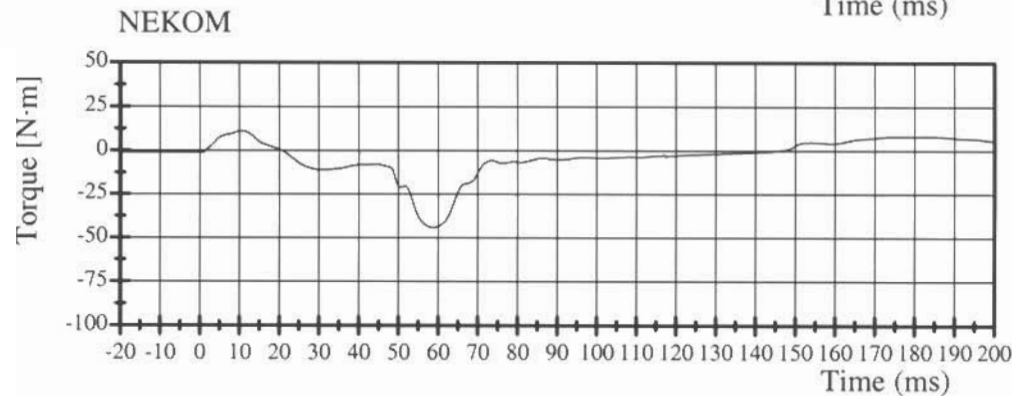
Min: -111.3 N at 161.0 ms



Filter Class: 600

Max: 11.1 N·m at 10.4 ms

Min: -44.2 N·m at 58.6 ms



Filter Class: 600

Max: 11.1 N·m at 10.4 ms

Min: -44.2 N·m at 58.6 ms

Transportation Research Center Inc.

572P Thorax Test

HIH 3 Year Old Serial No. 040 Calibration No. 04 - 1

Test Date 08/05/2004

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	53 %	Yes
Pendulum Velocity	5.90 - 6.10 m/s	5.97 m/s	Yes
Maximum Chest Deflection	-38.0 - (-32.0) mm	-35.8 mm	Yes
Peak Impact Probe Force Within Compression Corridor	680 - 810 N	741 N	Yes
Internal Hysteresis	65 - 85 %	67 %	Yes
Maximum Force Between 12.5 mm & 32 mm Of Deflection	<= 910	758	Yes

Test meets specifications.

Comments:

Technician



Approved



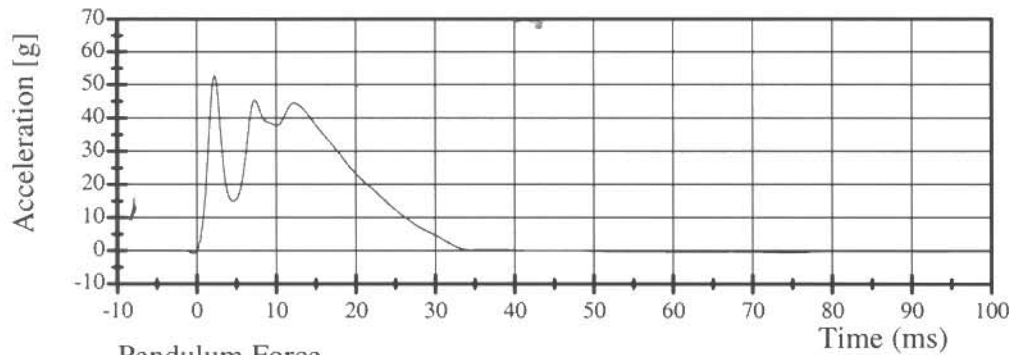
Transportation Research Center Inc.

572P Thorax Test

HIII 3 Year Old Serial No. 040 Calibration No. 04 - 1

Test Date 08/05/2004

Pendulum Deceleration

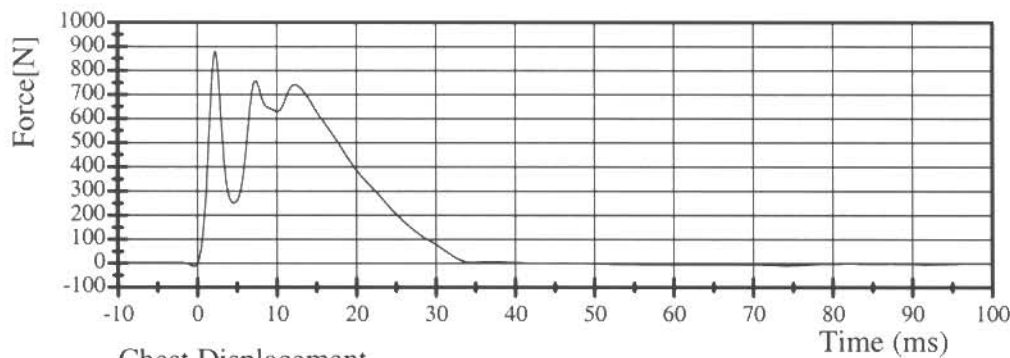


Filter Class: 180

Max: 52.8 g at 2.2 ms

Min: -0.7 g at -0.4 ms

Pendulum Force

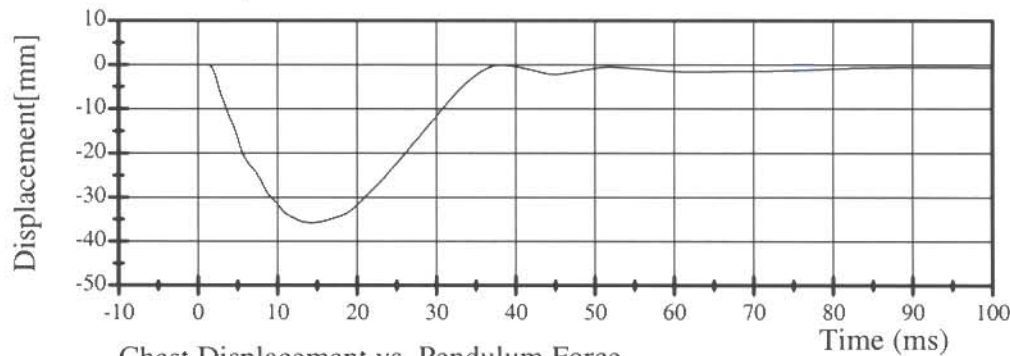


Filter Class: 180

Max: 880.2 N at 2.2 ms

Min: -11.7 N at -0.4 ms

Chest Displacement

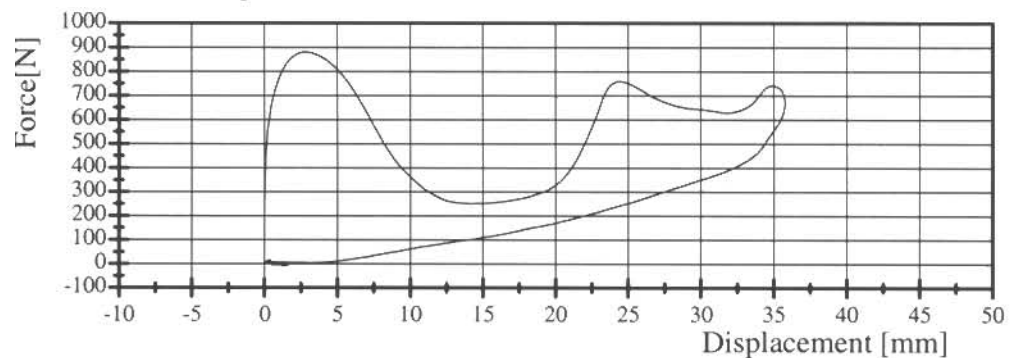


Filter Class: 600

Max: 0.0 mm at -80.0 ms

Min: -35.8 mm at 14.3 ms

Chest Displacement vs. Pendulum Force



TRANSPORTATION RESEARCH CENTER INC.

TORSO FLEXION TEST

HYBRID III THREE-YEAR-OLD

CAL DATE: 04-Aug-04

TRC, INC.

TEST NO: 040C04TF1

572 P SN 040 TORSO FLEX CAL 04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 – 70 %	56 %
INITIAL ANGLE OF UNSUPPORTED DUMMY	<= 15 DEG. REFERENCED TO VERTICAL	8.3 DEG.
MAXIMUM FORCE AT 45 DEG. DURING 10 SECOND PERIOD	130 – 180 N	165.3 N
RETURN ANGLE		5.4 °
DIFFERENCE BETWEEN RETURN ANGLE & INITIAL ANGLE	+/- 8 ° OF INITIAL ANGLE	2.9 °
RATE	0.5° - 1.5°/sec	1.06 °/sec

TEST MEETS SPECIFICATIONS

TECHNICIAN



Transportation Research Center Inc.

ATD Calibration Report

for

VRTC

**HIII 10 Year Old
Serial No. D009
Calibration No. 01**



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

Transportation Research Center Inc.
572N HHH 10 Year Old Dummy
External Dimensions
Serial No. D009 Calibration No. 01
Date: 8/02/04

Symbol	Description	Specification*	Results	Pass
		mm	mm	
A	Total Sitting Height	710.3 - 736.6	726	Yes
B	Shoulder Pivot Height	384.8 - 405.1	395	Yes
C	Hip Pivot Height	77.5 - 87.6	84	Yes
D	Hip Pivot from Backline	133.1 - 143.3	142	Yes
E	Shoulder Pivot from Backline	80.0 - 90.2	85	Yes
F	Thigh Clearance	105.4 - 120.6	112	Yes
G	Back of Elbow to Wrist Pivot	227.4 - 242.6	233	Yes
H	Head Back to Backline	45.8 - 50.8	48	Yes
I	Shoulder to Elbow Length	269.2 - 284.5	271	Yes
J	Elbow Rest Height	137.2 - 157.5	145	Yes
K	Buttock to Knee Length	463.6 - 483.9	475	Yes
L	Popliteal Height	321.3 - 341.6	335	Yes
M	Knee to Floor Height	370.4 - 388.6	380	Yes
N	Buttock Popliteal Height	367.0 - 387.4	375	Yes
O	Chest Depth without Jacket	157.5 - 172.7	163	Yes
P	Foot Length	188.0 - 203.2	194	Yes
Q	Standing Height (A-C+R-D+M)	1296.7 REF	1299	
R	Buttock to Knee Pivot Length	414.0 - 434.3	419	Yes
S	Head Breadth	137.1 - 147.3	142	Yes
T	Head Depth	177.8 - 188.0	182	Yes
U	Hip Breadth	256.6 - 271.8	264	Yes
V	Shoulder Breadth	307.4 - 322.6	315	Yes
W	Foot Breadth	68.6 - 83.8	75	Yes
X	Head Circumference	528.3 - 548.7	538	Yes
Y	Chest Circumference with Jacket	690.9 - 716.3	704	Yes
Z	Waist Circumference	696.0 - 721.4	706	Yes
AA	Reference Location for Chest Circumference	337.8 - 348.0	342	Yes
BB	Reference Location for Waist Circumference	* *	182	

* With specification revisions provided by VRTC 08/02/04

** Measured 1 cm below top rear surface of pelvis flesh, parallel to pelvis rim

Technician



Approved




Transportation Research Center Inc.

Head Drop Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 2

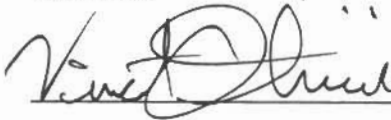
Test Date 07/26/2004

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	22.0 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Peak Resultant Acceleration	240 - 295 g	246.4 g	Yes
Peak Lateral Acceleration	15 g Max	-1.7 g	Yes
Oscillations After Main Pulse	Less Than 10% of Peak Resultant Acceleration?	Yes	Yes

Test meets specifications.

Comments:

Technician



Approved



07.26.2004 11:13:55 609

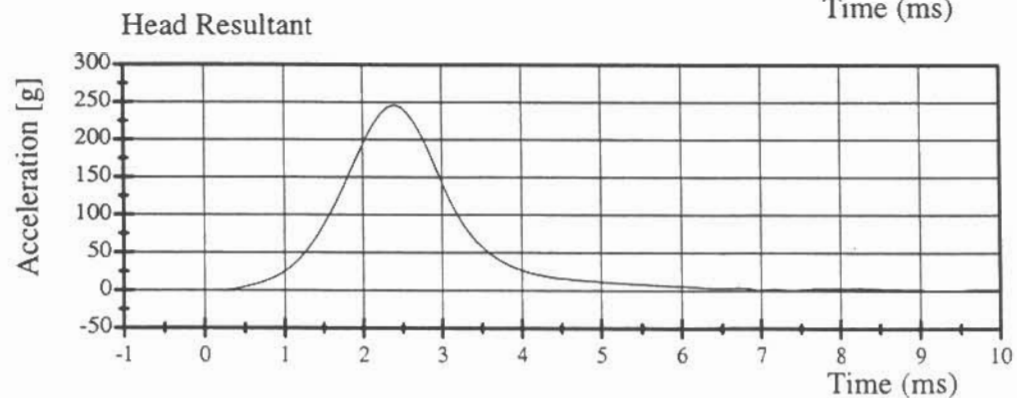
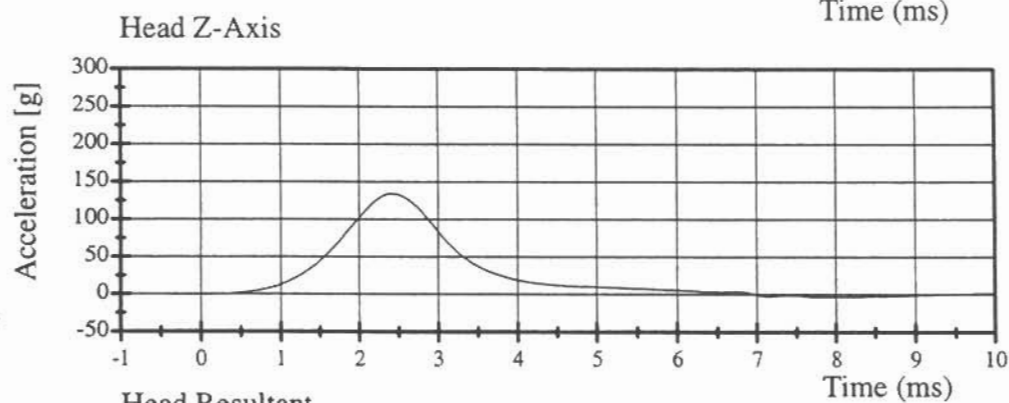
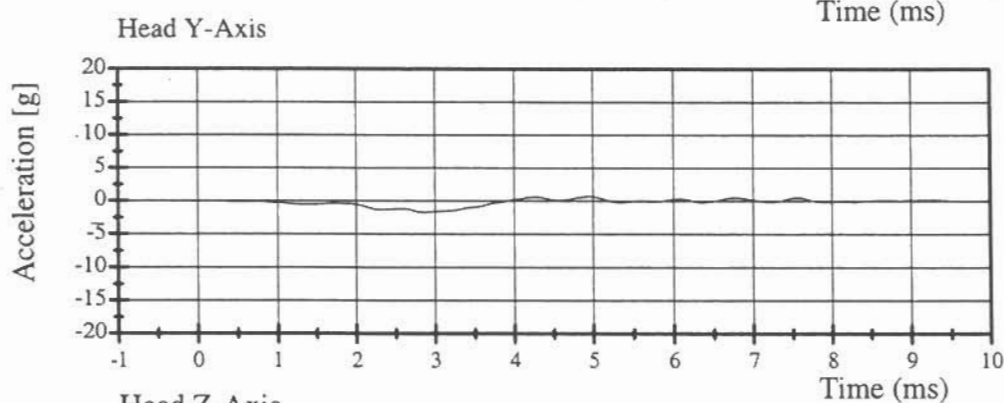
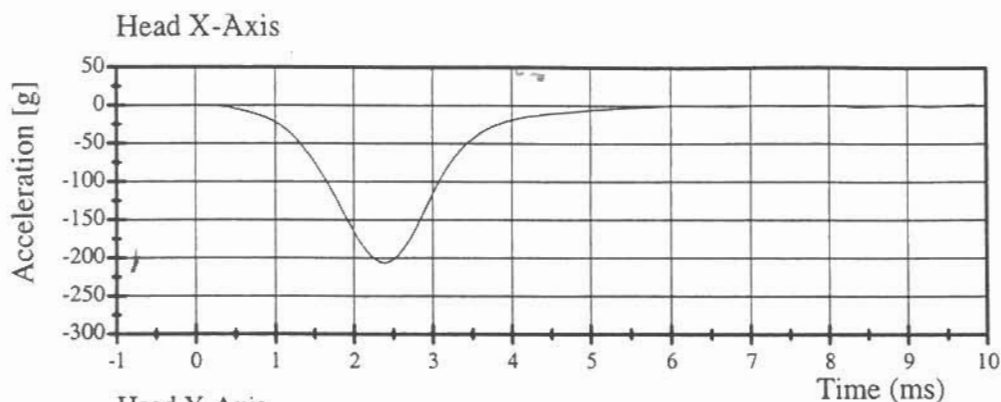


Transportation Research Center Inc.

Head Drop Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 2

Test Date 07/26/2004



Transportation Research Center Inc.

Neck Flexion Test - 6 Channel Transducer

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 1

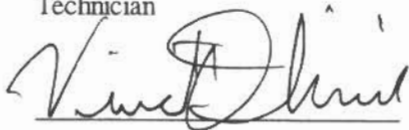
Test Date 07/29/2004

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Impact Velocity	5.98 - 6.22 m/s	6.11 m/s	Yes
Integrated Pendulum Velocity			
10 ms	1.64 - 2.04 m/s	1.90 m/s	Yes
20 ms	3.04 - 4.04 m/s	3.71 m/s	Yes
30 ms	4.45 - 5.65 m/s	5.35 m/s	Yes
Peak D Plane Rotation	74.0 - 88.0 °	78.4 °	Yes
Peak Moment About Occipital Condyles (During time interval rotation is within specified corridors)	51.0 - 65.0 N·m	52.85 N·m	Yes
Positive Moment Decay Time To 10 N·m	85 - 105 ms	95.84 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



07.29.2004 13:28:39 593



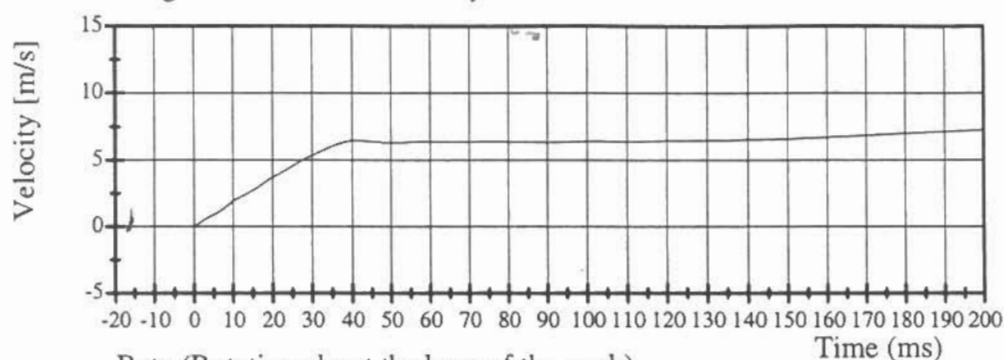
Transportation Research Center Inc.

Neck Flexion Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 1

Test Date 07/29/2004

Integrated Pendulum Velocity

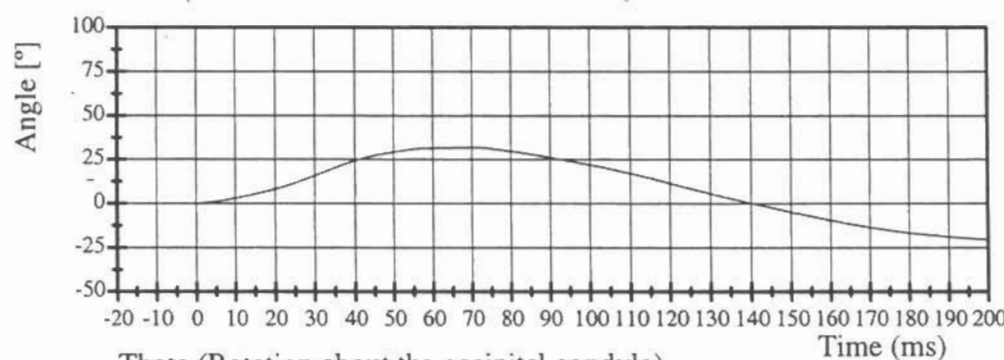


Filter Claßs: 180

Max: 7.95 m/s at 952.6 ms

Min: -0.00 m/s at -30.2 ms

Beta (Rotation about the base of the neck)

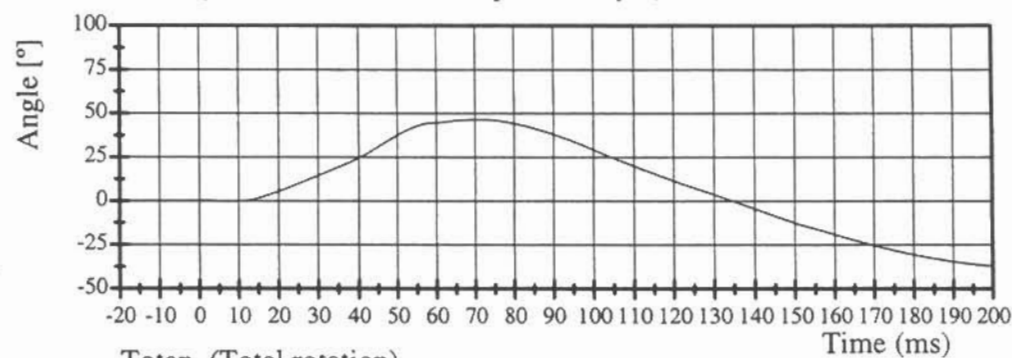


Filter Class: 60

Max: 32.0 ° at 68.8 ms

Min: -21.0 ° at 212.4 ms

Theta (Rotation about the occipital condyle)

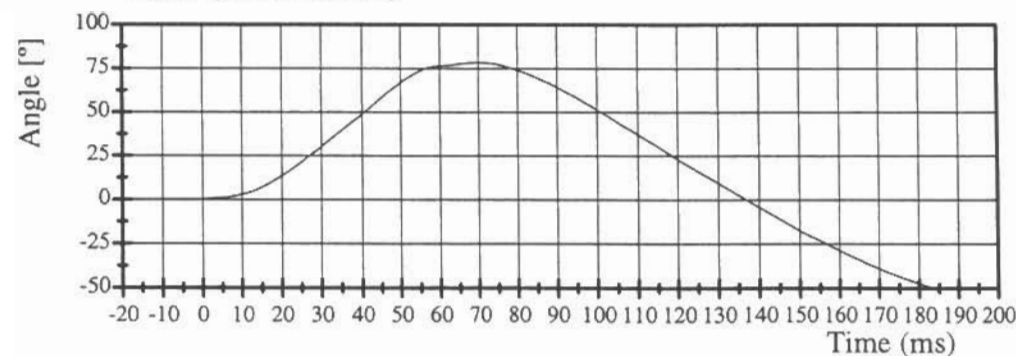


Filter Class: 60

Max: 46.4 ° at 71.0 ms

Min: -38.3 ° at 212.4 ms

Totan (Total rotation)



Filter Class: 60

Max: 78.4 ° at 69.7 ms

Min: -59.2 ° at 212.4 ms

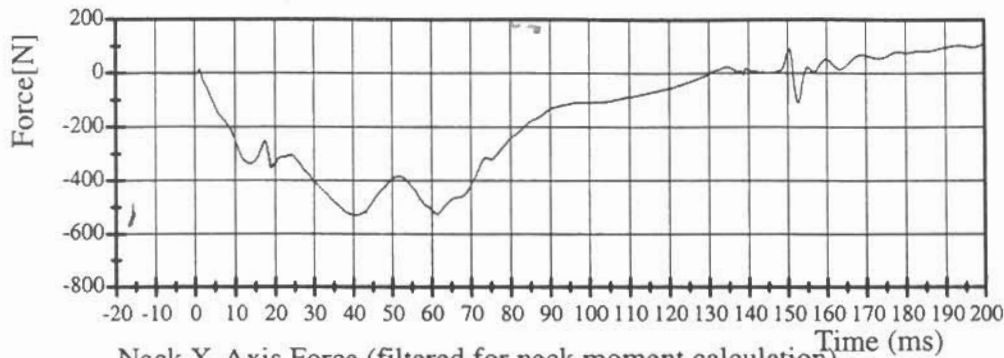
Transportation Research Center Inc.

Neck Flexion Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 1

Test Date 07/29/2004

Neck X-Axis Force

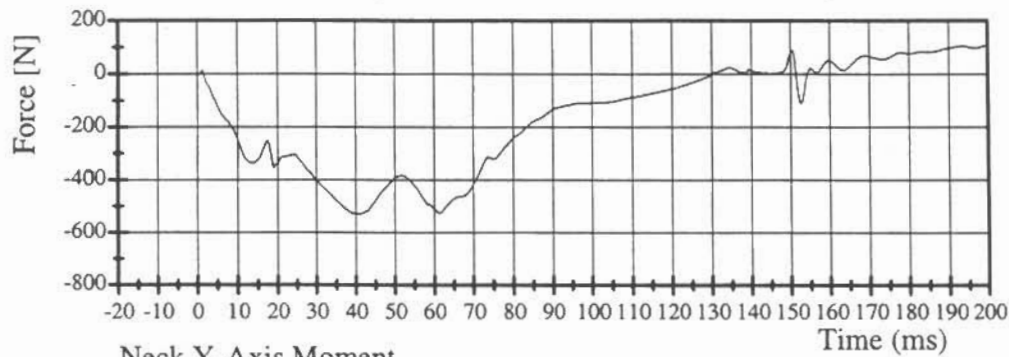


Filter Class: 1000

Max: 110.5 N at 201.4 ms

Min: -529.4 N at 40.5 ms

Neck X-Axis Force (filtered for neck moment calculation)

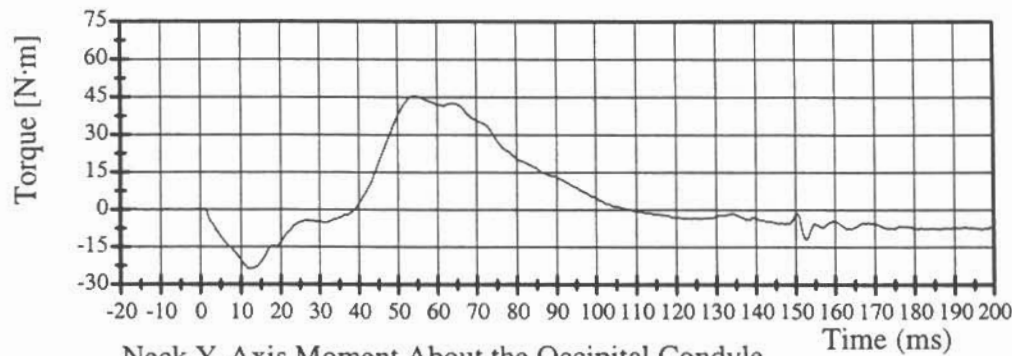


Filter Class: 600

Max: 110.2 N at 201.4 ms

Min: -529.2 N at 40.6 ms

Neck Y-Axis Moment

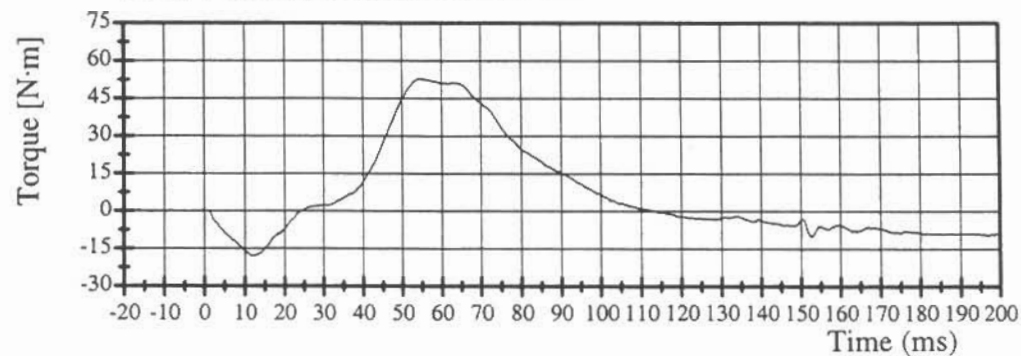


Filter Class: 600

Max: 45.5 N·m at 54.1 ms

Min: -23.6 N·m at 11.8 ms

Neck Y-Axis Moment About the Occipital Condyle



Filter Class: 600

Max: 52.9 N·m at 55.3 ms

Min: -18.0 N·m at 11.7 ms

Transportation Research Center Inc.

Neck Extension Test - 6 Channel Transducer

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 1

Test Date 07/29/2004

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Impact Velocity	4.91 - 5.15 m/s	5.01 m/s	Yes
Integrated Pendulum Velocity			
10 ms	1.49 - 1.89 m/s	1.62 m/s	Yes
20 ms	2.88 - 3.68 m/s	3.15 m/s	Yes
30 ms	4.20 - 5.20 m/s	4.60 m/s	Yes
Peak D Plane Rotation	98.5 - 113.5 °	104.2 °	Yes
Peak Moment About Occipital Condyles (During time interval rotation is within specified corridors)	(-47.0) - (-35.0) N·m	-40.40 N·m	Yes
Negative Moment Decay Time To -10 N·m	100 - 120 ms	107.36 ms	Yes

Test meets specifications.

Comments:

Technician

Vince Oliveri

Approved

V. J. Watter

07.29.2004 14:22:22 724



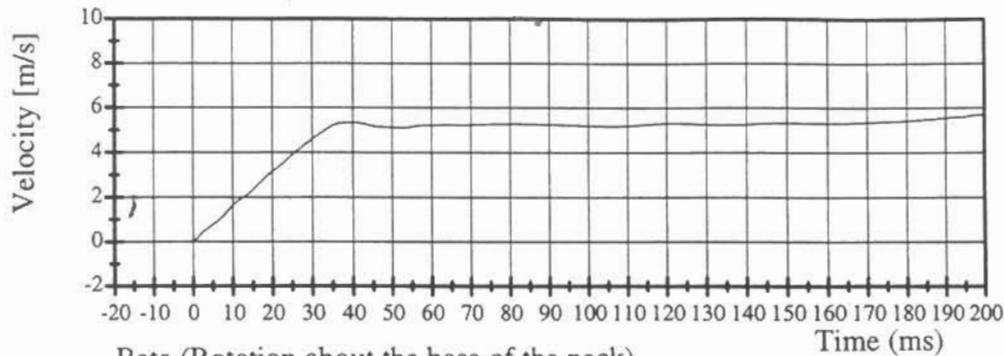
Transportation Research Center Inc.

Neck Extension Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 1

Test Date 07/29/2004

Integrated Pendulum Velocity

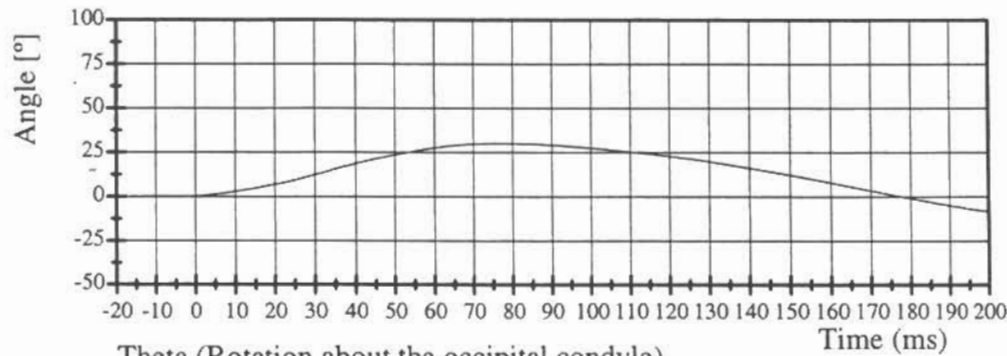


Filter Class: 180

Max: 6.7 m/s at 857.0 ms

Min: -0.0 m/s at -0.6 ms

Beta (Rotation about the base of the neck)

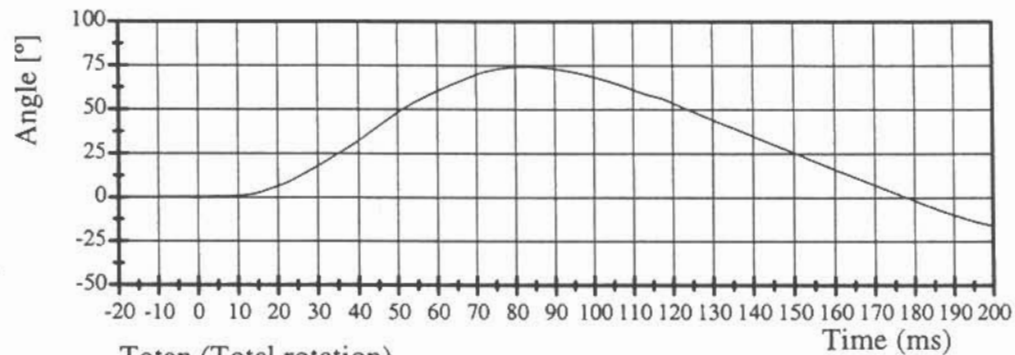


Filter Class: 60

Max: 30.0 ° at 73.8 ms

Min: -12.9 ° at 232.6 ms

Theta (Rotation about the occipital condyle)

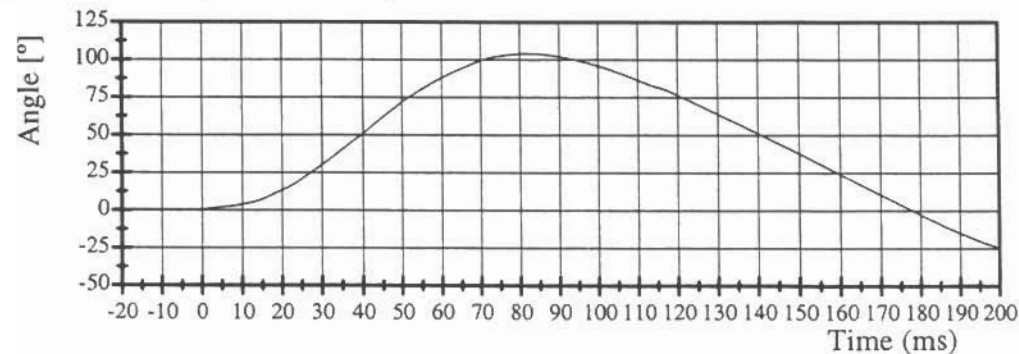


Filter Class: 60

Max: 74.3 ° at 82.9 ms

Min: -23.5 ° at 229.0 ms

Totan (Total rotation)



Filter Class: 60

Max: 104.2 ° at 82.5 ms

Min: -36.4 ° at 229.3 ms

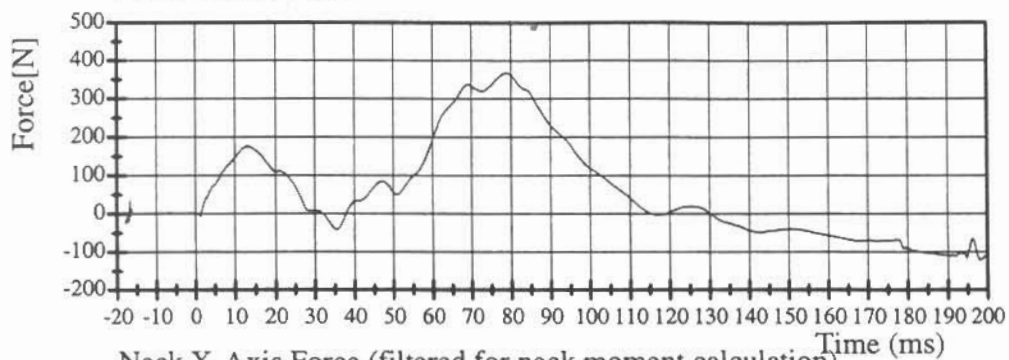
Transportation Research Center Inc.

Neck Extension Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 1

Test Date 07/29/2004

Neck X-Axis Force

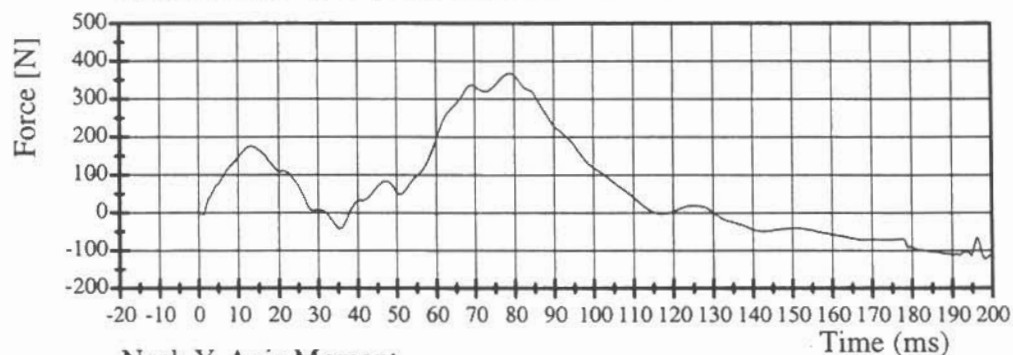


Filter Class: 1000

Max: 367.7 N at 78.9 ms

Min: -140.6 N at 211.0 ms

Neck X-Axis Force (filtered for neck moment calculation)

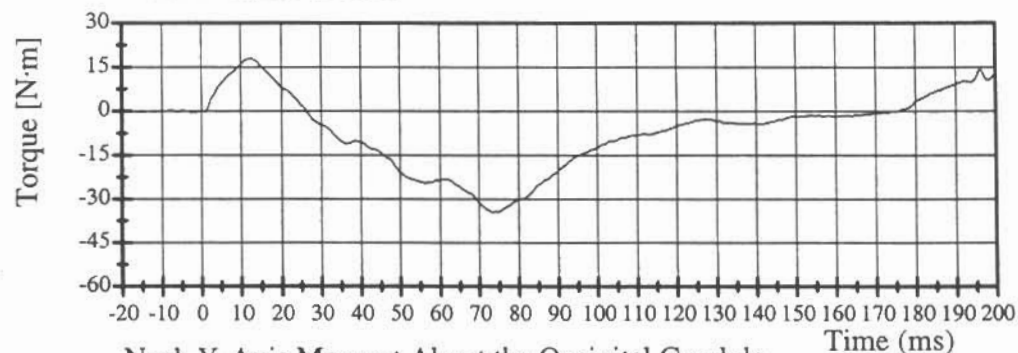


Filter Class: 600

Max: 367.4 N at 78.9 ms

Min: -140.3 N at 211.0 ms

Neck Y-Axis Moment

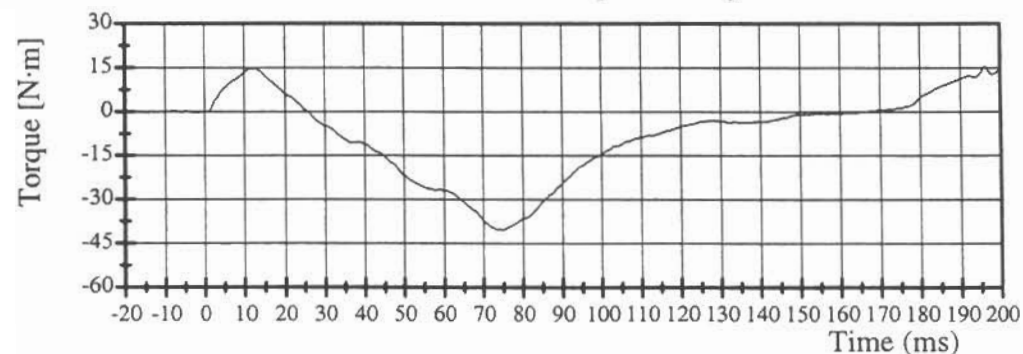


Filter Class: 600

Max: 17.9 N·m at 12.6 ms

Min: -34.6 N·m at 73.4 ms

Neck Y-Axis Moment About the Occipital Condyle



Filter Class: 600

Max: 16.8 N·m at 224.0 ms

Min: -40.4 N·m at 74.7 ms

Transportation Research Center Inc.

Thorax Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 8

Test Date 08/02/2004

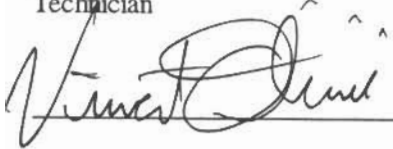
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Pendulum Velocity	5.88 - 6.12 m/s	5.88	Yes
Maximum Chest Deflection	-47.0 - (-39.0) mm	-42.5 mm	Yes
Peak Impact Probe Force Within Compression Corridor	1830 - 2330 N	2312 N	Yes
Internal Hysteresis	65 - 85 %	83.6 %	Yes

Test Meets Specifications.

Comments:

New rib stiffeners and replacement rib set # 22030024A installed.

Technician



Approved



08.02.2004 15:21:42 1166

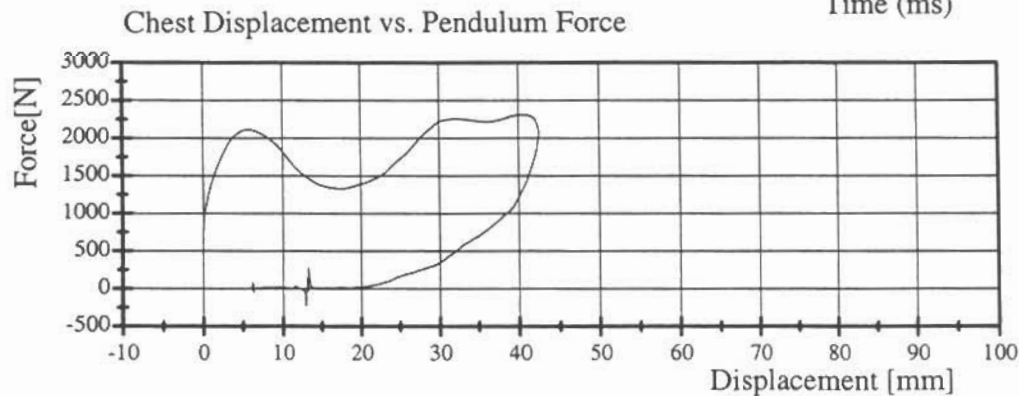
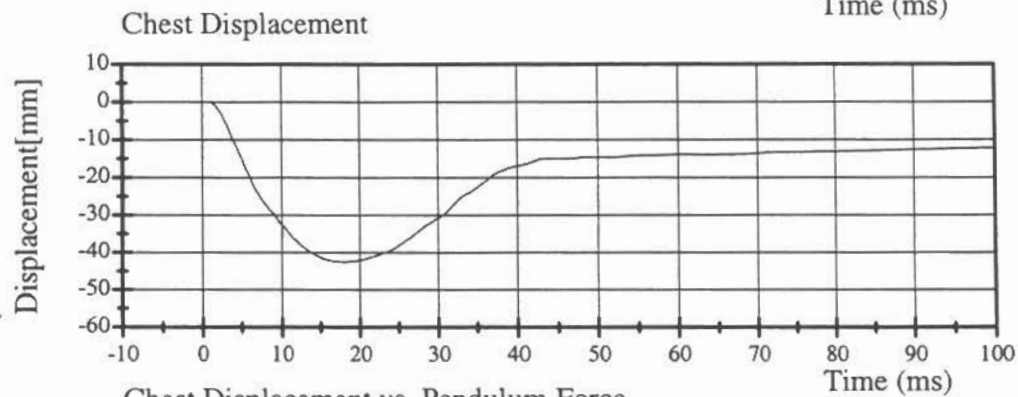
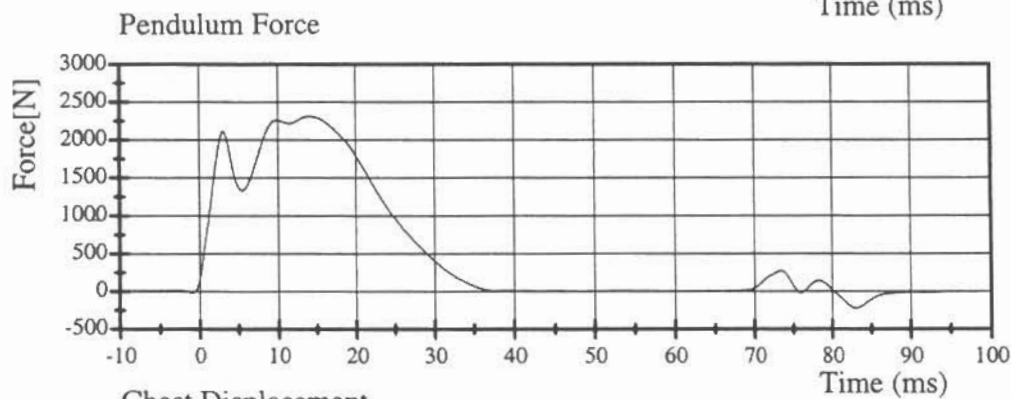
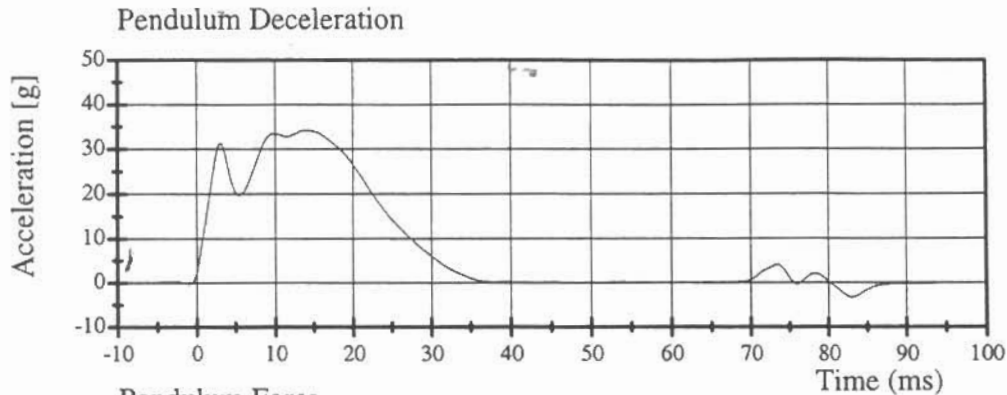


Transportation Research Center Inc.

Thorax Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 8

Test Date 08/02/2004



TRANSPORTATION RESEARCH CENTER INC.

TORSO FLEXION TEST

HYBRID III TEN YEAR-OLD

CAL DATE: 23-Jul-04

TRC, INC.

TEST NO: D009C01TF8

SND009 TORSO FLEX CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6 – 22.2° C	21.7 ° C
RELATIVE HUMIDITY	10 – 70 %	50 %
INITIAL ANGLE OF UNSUPPORTRED DUMMY	<= 20° REFERENCED TO VERTICAL	15.0 °
MAXIMUM FORCE AT 35 DEG. DURING 10 SECOND PERIOD	180 - 240 N	232.3 N
RETURN ANGLE		19.6 °
DIFFERENCE BETWEEN RETURN ANGLE & INTIAL ANGLE	+/- 8 ° OF INTIAL ANGLE	4.6 °
RATE	0.5° - 1.5°/sec	1.00 °/sec

TEST MEETS SPECIFICATIONS

Comments:

TECHNICIAN



Transportation Research Center Inc.

Left Knee Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 1

Test Date 07/30/2004

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Pendulum Velocity	2.07 - 2.13 m/s	2.09 m/s	Yes
Maximum Pendulum Force	2560 - 3140 N	2958 N	Yes

Test meets specifications.

Comments:

Technician

Vincent Oliver

Approved

V. J. Walter

07.30.2004 15:10:53 1855



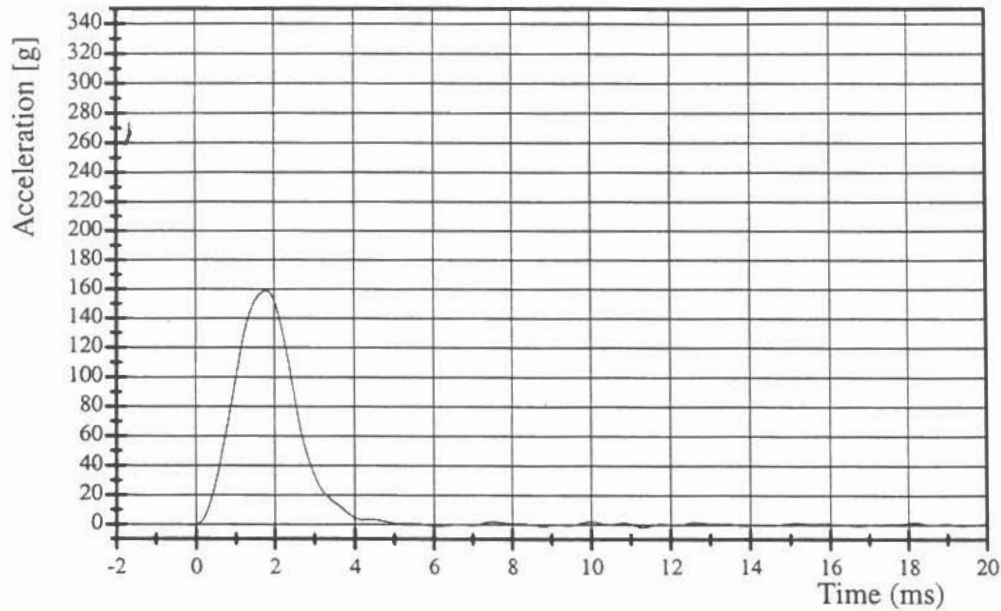
Transportation Research Center Inc.

Left Knee Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 1

Test Date 07/30/2004

Pendulum Deceleration

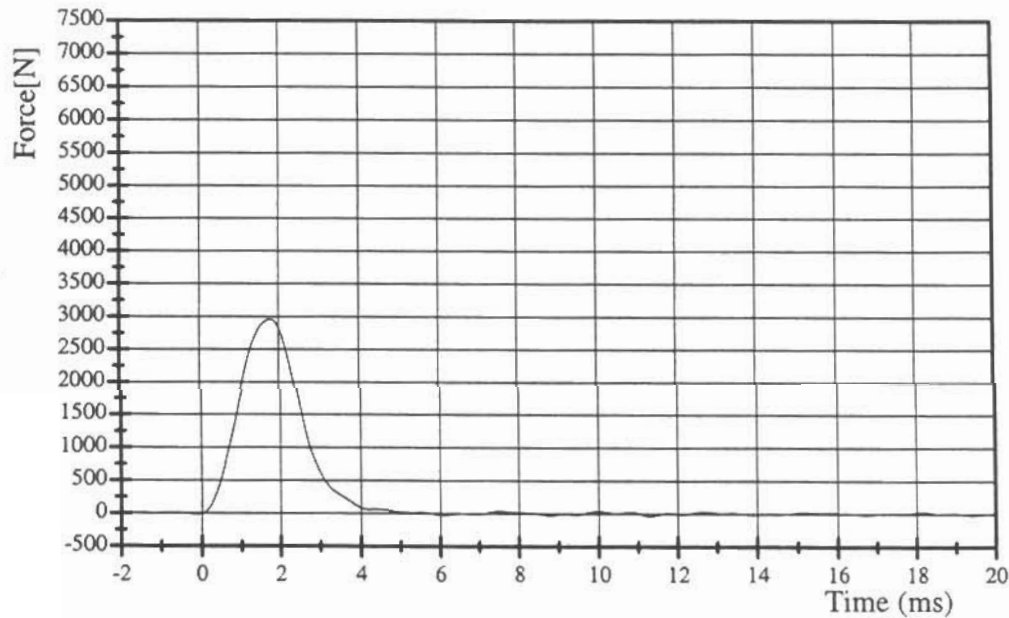


Filter Class: 600

Max: 158.8 g at 1.8 ms

Min: -1.9 g at 11.3 ms

Pendulum Force



Filter Class: 600

Max: 2958.4 N at 1.8 ms

Min: -34.8 N at 11.3 ms

Transportation Research Center Inc.

Right Knee Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 1

Test Date 07/30/2004

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Pendulum Velocity	2.07 - 2.13 m/s	2.09 m/s	Yes
Maximum Pendulum Force	2560 - 3140 N	3022 N	Yes

Test meets specifications.

Comments:

Technician



Approved



07.30.2004 15:24:00 1854



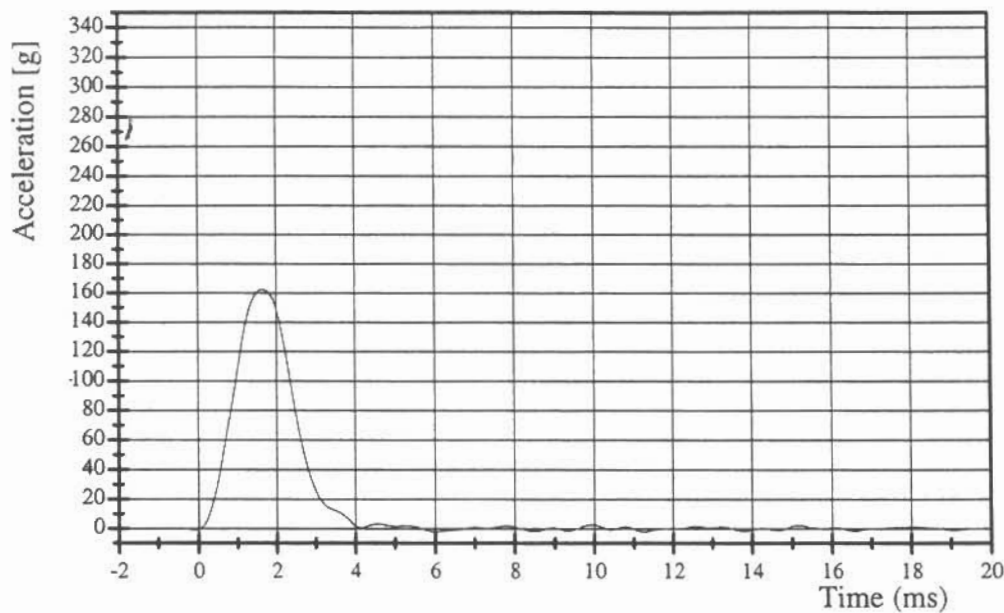
Transportation Research Center Inc.

Right Knee Test

HIII 10 Year Old Serial No. D009 Calibration No. 01 - 1

Test Date 07/30/2004

Pendulum Deceleration

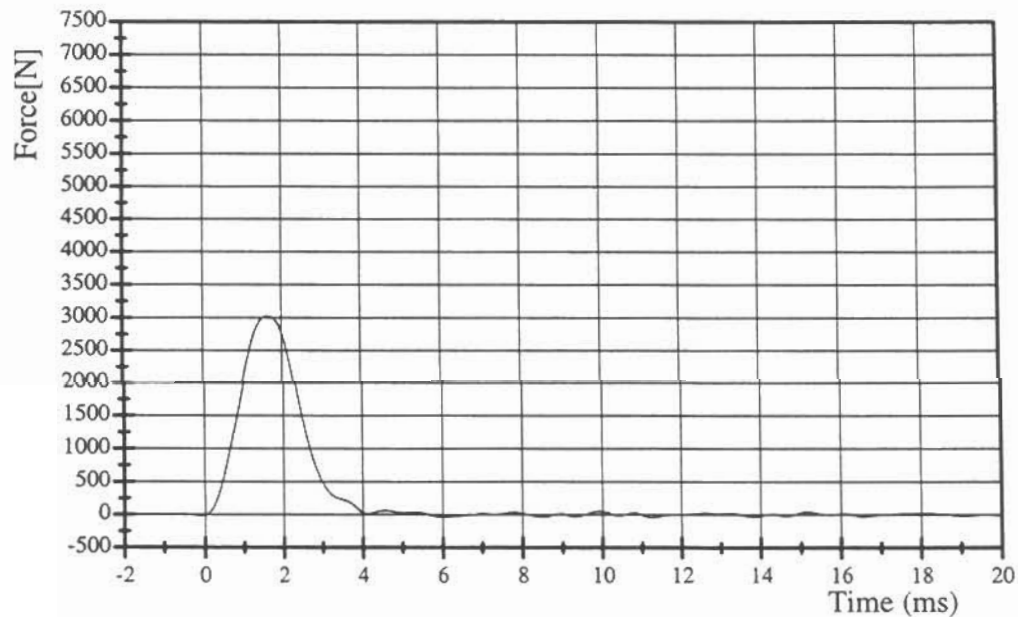


Filter Class: 600

Max: 162.2 g at 1.7 ms

Min: -2.2 g at 11.3 ms

Pendulum Force



Filter Class: 600

Max: 3022.0 N at 1.7 ms

Min: -40.4 N at 11.3 ms

SECTION 6

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III INSTRUMENTATION

	POSITION #3 (RIGHT) SERIAL NO.: 3672098 P1 - 22JAN04		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-J36611	ENDEVCO	22-Jul-04
HEAD AY	AC-J19501	ENDEVCO	21-Jul-04
HEAD AZ	AC-J27466	ENDEVCO	22-Jul-04
UPPER NECK FX	LC-210FX	DENTON	2-Aug-04
UPPER NECK FY	LC-210FY	DENTON	2-Aug-04
UPPER NECK FZ	LC-210FZ	DENTON	2-Aug-04
UPPER NECK MX	LC-210MX	DENTON	2-Aug-04
UPPER NECK MY	LC-210MY	DENTON	2-Aug-04
UPPER NECK MZ	LC-210MZ	DENTON	2-Aug-04
CHEST AX	AC-J20047	ENDEVCO	22-Jul-04
CHEST AY	AC-CC92H	ENDEVCO	22-Jul-04
CHEST AZ	AC-J29006	ENDEVCO	22-Jul-04
CHEST DISPLACEMENT X	DS-040	SERVO	2-Aug-04
PELVIS AX	AC-01G18-F09	ENTRAN	27-Oct-04
PELVIS AY	AC-J27525	ENDEVCO	22-Jul-04
PELVIS AZ	AC-J17988	ENDEVCO	22-Jul-04
TETHER BELT LOAD	LC-711	LEBOW	1-Nov-04
LATCH BELT LOAD	LC-156	FIRST TECHNOLOGY	1-Nov-04

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III INSTRUMENTATION

	POSITION #4 (LEFT) SERIAL NO.: JJ 0917041915543 - 091704		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-P16616	ENDEVCO	16-Aug-04
HEAD AY	AC-P16628	ENDEVCO	16-Aug-04
HEAD AZ	AC-P23178	ENDEVCO	16-Aug-04
UPPER NECK FX	LC-1625FX	DENTON	20-Jul-04
UPPER NECK FY	LC-1625FY	DENTON	20-Jul-04
UPPER NECK FZ	LC-1625FZ	DENTON	20-Jul-04
UPPER NECK MX	LC-1625MX	DENTON	20-Jul-04
UPPER NECK MY	LC-1625MY	DENTON	20-Jul-04
UPPER NECK MZ	LC-1625MZ	DENTON	20-Jul-04
Left Clavicle Fx	LC-075LFX	DENTON	26-Aug-04
Left Clavicle Fz	LC-075LFZ	DENTON	26-Aug-04
Right Clavicle Fx	LC-075RFX	DENTON	26-Aug-04
Right Clavicle Fz	LC-075RFZ	DENTON	26-Aug-04
CHEST AX	AC-P32224	ENDEVCO	16-Aug-04
CHEST AY	AC-P32204	ENDEVCO	16-Aug-04
CHEST AZ	AC-P16625	ENDEVCO	16-Aug-04
CHEST DISPLACEMENT X	DS-009	SERVO	21-Jul-04
LUMBAR FX	LC-135FX	DENTON	26-Aug-04
LUMBAR FY	LC-135FY	DENTON	26-Aug-04
LUMBAR FZ	LC-135FZ	DENTON	26-Aug-04
LUMBAR MX	LC-135MX	DENTON	26-Aug-04
LUMBAR MY	LC-135MY	DENTON	26-Aug-04
LUMBAR MZ	LC-135MZ	DENTON	26-Aug-04
PELVIS AX	AC-P23940	ENDEVCO	16-Aug-04
PELVIS AY	AC-P23804	ENDEVCO	12-Nov-04
PELVIS AZ	AC-P18741	ENDEVCO	16-Aug-04
LEFT LOWER ASIS FX	LC-089LLFX	DENTON	25-Aug-04
LEFT UPPER ASIS FX	LC-089LUFx	DENTON	25-Aug-04
RIGHT LOWER ASIS FX	LC-089RLFX	DENTON	25-Aug-04
RIGHT UPPER ASIS FX	LC-089RUFx	DENTON	25-Aug-04
LEFT FEMUR	LC-237	DENTON	21-Jul-04
RIGHT FEMUR	LC-238	DENTON	21-Jul-04
LAP BELT LOAD	LC-712	LEBOW	1-Nov-04
SHOULDER BELT LOAD	LC-175	FIRST TECHNOLOGY	1-Nov-04

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

CRS INSTRUMENTATION

	CRS Accelerometers		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
P3 CRS AX	AC-J37980	ENDEVCO	7-Oct-04
P3 CRS AY	AC-J38127	ENDEVCO	7-Oct-04
P3 CRS AZ	AC-J37854	ENDEVCO	7-Oct-04