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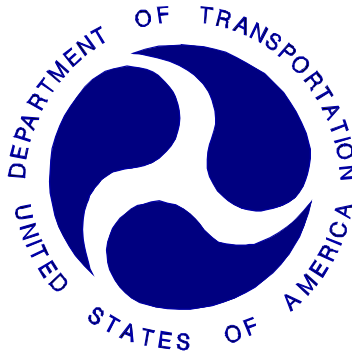
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

GENERAL MOTORS DE MEXICO
2005 BUICK RENDEZVOUS
MPV

NHTSA NUMBER: M50104

GENERAL DYNAMICS TEST NUMBER: 8642-NCAP-58

GENERAL DYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
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February 10, 2005

FINAL REPORT

PREPARED FOR:

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National Highway Traffic Safety Administration
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16. Abstract A frontal load cell barrier test of a 2005 Buick Rendezvous MPV was performed at General Dynamics crash test facility in Buffalo, New York, on February 10, 2005. The impact velocity was 56.17 kph and the temperature at the barrier face was 21 °C. The maximum post-test vehicle crush was 416 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" the driver appeared to comply with the head and femur requirements and exceed the chest requirements. The 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 (142)	328.8	64.1	-26.4	-4470	-6239
Passenger (150)	449.7	47.7	-24.2	-5376	-7415
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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.17 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 56.17 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 56.17 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. 142) and the right-front passenger (position 2) ATD (Serial No.150) 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 188 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 Rendezvous MPV at a velocity of 56.17 kph. The test was performed at General Dynamics on February 10, 2005. 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	328.8	64.1	-26.4	-4470	-6239	226 §	0
Passenger ATD	449.7	47.7	-24.2	-5376	-7415	236 §	0

§ - Shoulder belt spool off beyond the initial belt position (prior to pretensioner activation).

AUTOMATIC DOOR LOCK SUMMARY

ADL Equipped Test Vehicle:	Yes
ADL Activation Status:	Yes (system cannot be deactivated)
Door Lock Condition:	Locked

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 416 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 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 right half 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 glove compartment door.

The 2005 Buick Rendezvous MPV driver appeared to exceed the chest requirements of FMVSS 208. The vehicle and occupants appeared to meet the remaining 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.:	M50104	Test Mode:	56.3 kph Frontal Barrier
Test Date:	February 10, 2005	Time:	16:06
		Temperature:	21 °C
Vehicle Make/Model/Body Style:	2005 Buick Rendezvous MPV		
Vehicle Test Weight:	2151.0	kg	
Vehicle/Barrier Impact Angle:	0	°	
Impact Velocity:	56.17	kph	
Maximum Static Crush:	416	mm	
Vehicle Rebound:	461	mm	
<u>DUMMIES:</u>		<u>DRIVER</u>	<u>PASSENGER</u>
Type:		572E	572E
Restraint System:		Seatbelt, Airbag, Knee Bolster	Seatbelt, Airbag, Knee Bolster
Number of Data Channels:	188		
Number of Cameras:	1	Real Time	
	16	High Speed	
<u>DOOR OPENING DATA:</u>	Closed, latched, and operable without tools. - Left Front		
	Closed, latched, and operable without tools. - Right Front		
Front Seat(s) Data:		<u>DRIVER</u>	<u>PASSENGER</u>
Seat Track Failure: (mm of shift)		0	0
Seat Back Failure:		None	None
<u>VISIBLE DUMMY CONTACT POINTS:</u>		<u>DRIVER</u>	<u>PASSENGER</u>
Head:		The face to the center of the airbag, the back of the head to the center of the head restraint	The face to the right half of the airbag, the back of the head to the center half of the head restraint
Abdomen:		-	-
Chest:		The chest to the airbag	The chest to the airbag
Knees:		The left and right knees to the knee bolster	The left and right knees to the glove compartment door

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2005 Buick Rendezvous MPV

NHTSA No. : M50104 ; VIN: 3G5DB03E65S538583 ; Color: Red

Engine Data: 6 Cylinders; - CID; 3.4 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; - Front Wheel Drive; X Four Wheel Drive

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

Safety Belt Features - Passenger X Pretensioner (Shoulder); 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: 1/13/2005 ; Odometer Reading 60 km

Selling Dealer: East Aurora Buick Pontiac GMC Cadillac

& Address: 535 Main St, East Aurora, NY 14052-1703

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: General Motors De Mexico

Date of Manufacture 11/04

GVWR: 2470 kg; GAWR: 1260 kg FRONT; 1230 kg REAR

DATA FROM TIRE PLACARD:

Recommended Tire Size: P255/60R17 S

* Recommended Cold Tire Pressure: 240 kPa FRONT; 240 kPa REAR

DATA FROM TIRE SIDEWALL:

Size of Tires on Test Vehicle: P255/60R17 98S ; Manufacturer: Goodyear Integrity

Tire Pressure with Maximum Capacity Vehicle Load: Front: 240 kPa; Rear: 240 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) = 523 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 182.8 kg **

*Tire pressure used for test

** Maximum RCLW of 136.1 kg was used for the target weight calculation.

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>548.0</u>	kg	Right Rear =	<u>387.0</u>	kg
Left Front =	<u>554.0</u>	kg	Left Rear =	<u>381.0</u>	kg
TOTAL FRONT =	<u>1102.0</u>	kg	TOTAL REAR =	<u>768.0</u>	kg
TOTAL DELIVERED WEIGHT =	<u>1870.0</u>	kg			
% of Total Front of Vehicle Weight =	<u>58.9</u>		% of Total Rear Weight =	<u>41.1</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW) =	<u>1870.0</u>	kg
Rated Cargo/Luggage Weight (RCLW) =	<u>136.1</u>	kg
Weight of 2 p.572 Dummies @ 76 each =	<u>152</u>	kg
TARGET TEST WEIGHT =	<u>2158.1</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 129.0 KG OF CARGO WEIGHT:

Right Front =	<u>593.0</u>	kg	Right Rear =	<u>486.5</u>	kg
Left Front =	<u>591.5</u>	kg	Left Rear =	<u>480.0</u>	kg
TOTAL FRONT =	<u>1184.5</u>	kg	TOTAL REAR =	<u>966.5</u>	kg
TOTAL TEST WEIGHT =	<u>2151.0</u>	kg			
% of Total Front Weight =	<u>55.1</u>	%	% of Total Rear Weight =	<u>44.9</u>	%
Weight of Ballast Secured in Vehicle Trunk Area =	<u>9</u>	kg			
Vehicle Components Removed for Weight Reduction:	<u>None</u>				

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED:	RF	<u>784</u>	LF	<u>786</u>	RR	<u>805</u>	LR	<u>805</u>
FULLY LOADED:	RF	<u>773</u>	LF	<u>773</u>	RR	<u>777</u>	LR	<u>777</u>
AS TESTED:	RF	<u>773</u>	LF	<u>776</u>	RR	<u>777</u>	LR	<u>778</u>
Vehicle's Wheel Base:	<u>2850</u>	mm						
Location of Vehicle's C.G.:	<u>1281</u>	mm rearward of front wheel center.						

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual =	<u>68.1</u>	liters
Usable Capacity Figure Furnished by COTR =	<u>68.1</u>	liters
Test Volume Range (92 to 94% of Usable Capacity) =	<u>62.65</u>	to <u>64.01</u> liters
ACTUAL TEST VOLUME=	<u>62.7</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> </u>	No- <u> </u>
<u>Details of Fuel System: Tank – Inboard of the left frame stiffener, forward of the rear axle; Lines – Along the vehicle underbody, inboard of the left frame stiffener; Filler Neck – Left rear quarter panel, above the rear wheel.</u>		

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°
Test Date: February 10, 2005 Time: 16:06 Temperature: 21 °C
Vehicle NHTSA No.: M50104
Required Impact Velocity Range: 55.5 to 57.1 kph

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

Trap No. 1 = 56.17 kph; Trap No. 2 = 56.17 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>4660</u> ; C/L = <u>4734</u> ; Right = <u>4660</u>
Post-Test	Left = <u>4272</u> ; C/L = <u>4321</u> ; Right = <u>4254</u>
Crush	Left = <u>388</u> ; C/L = <u>413</u> ; Right = <u>406</u>
AVERAGE	= <u>402</u> mm

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

	Left = <u>459</u> ; C/L = <u>475</u> ; Right = <u>450</u>
AVERAGE	= <u>461</u> mm

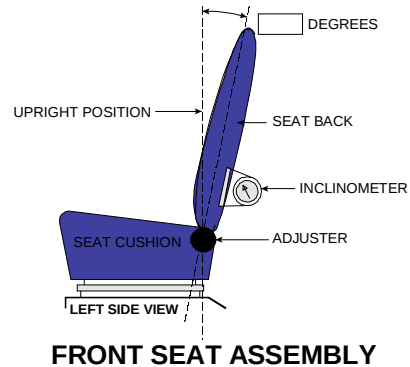
DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2005 Vehicle Model: Buick Rendezvous Body Style : MPV

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: 20.5 degrees

Measurement instructions: The seat back was placed in detent 7 where the forward-most detent is defined as 0.

Seat back angle for passenger's seat: 20.5 degrees

Measurement instructions: The seat back was placed in detent 7 where the forward-most detent is defined as 0.

2. SEAT FORE AND AFT POSITIONING:

Positioning of the driver's seat: The seat cushion absolute fore/aft travel was determined to be 196 mm. The seat was placed full down at the middle of its absolute fore/aft travel.

Positioning of the passenger's seat: The seat cushion was placed at the middle of its absolute fore/aft travel (detent 8, where the forward-most detent is defined as 0 and there are 17 possible positions)

3. FUEL TANK CAPACITY DATA:

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 68.1 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 = 68.1 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 62.7 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.

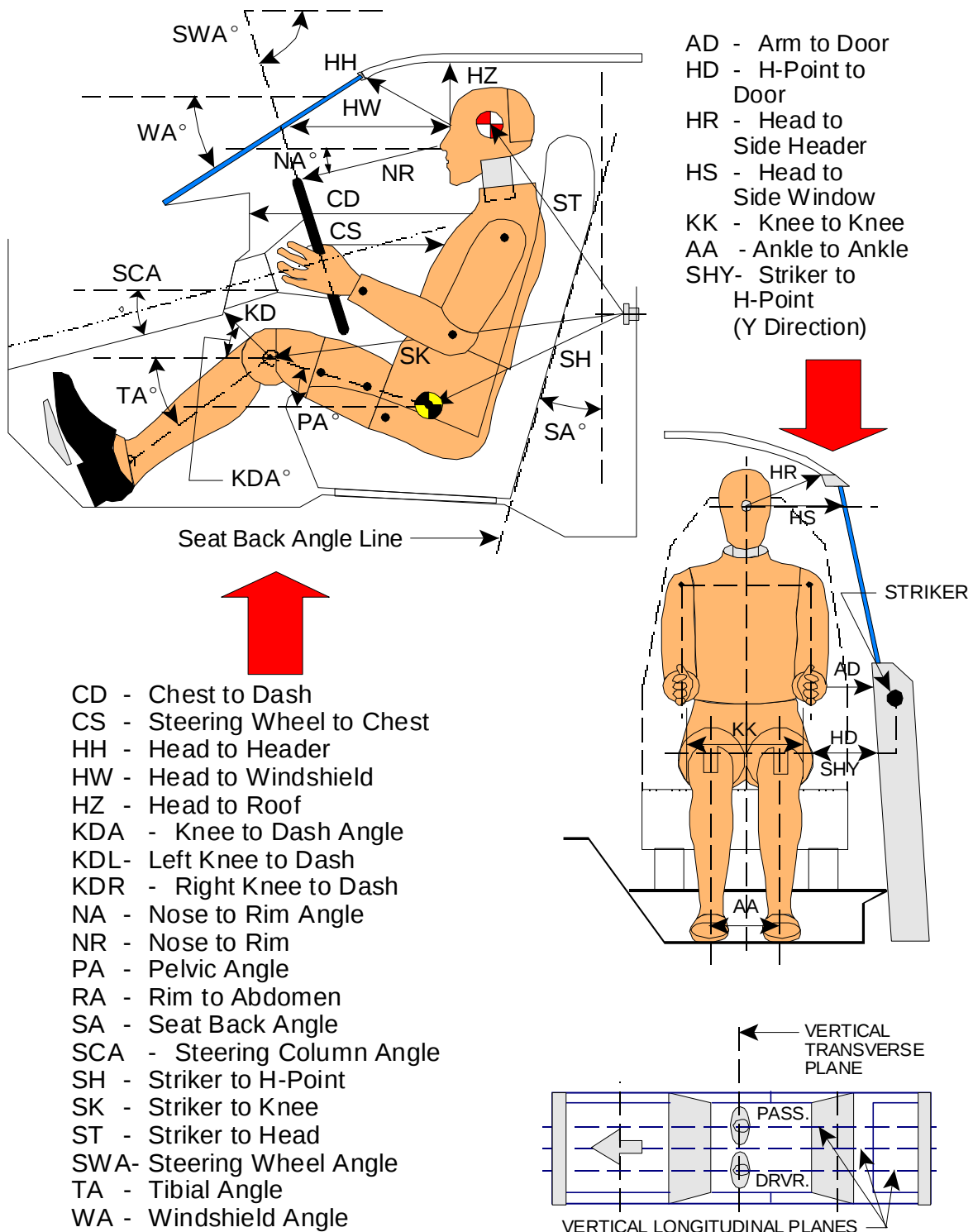
Operational Instructions: The steering column was positioned in detent 3, where the top-most detent is defined as 0. In this position, the steering column angle is 22.5 degrees referenced to the vehicle rocker panel.

5. SEAT BELT UPPER ANCHORAGE:

Nominal design riding position: The adjustable D-rings were positioned in detent 2, where the upper-most detent is defined as 0.

6. AUTOMATIC DOOR LOCKS: Is test vehicle equipped with ADLs? X Yes; - No;
Does vehicle owner's manual describe how to deactivate ADLs? - Yes; X No; - N/A
Comments: None

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



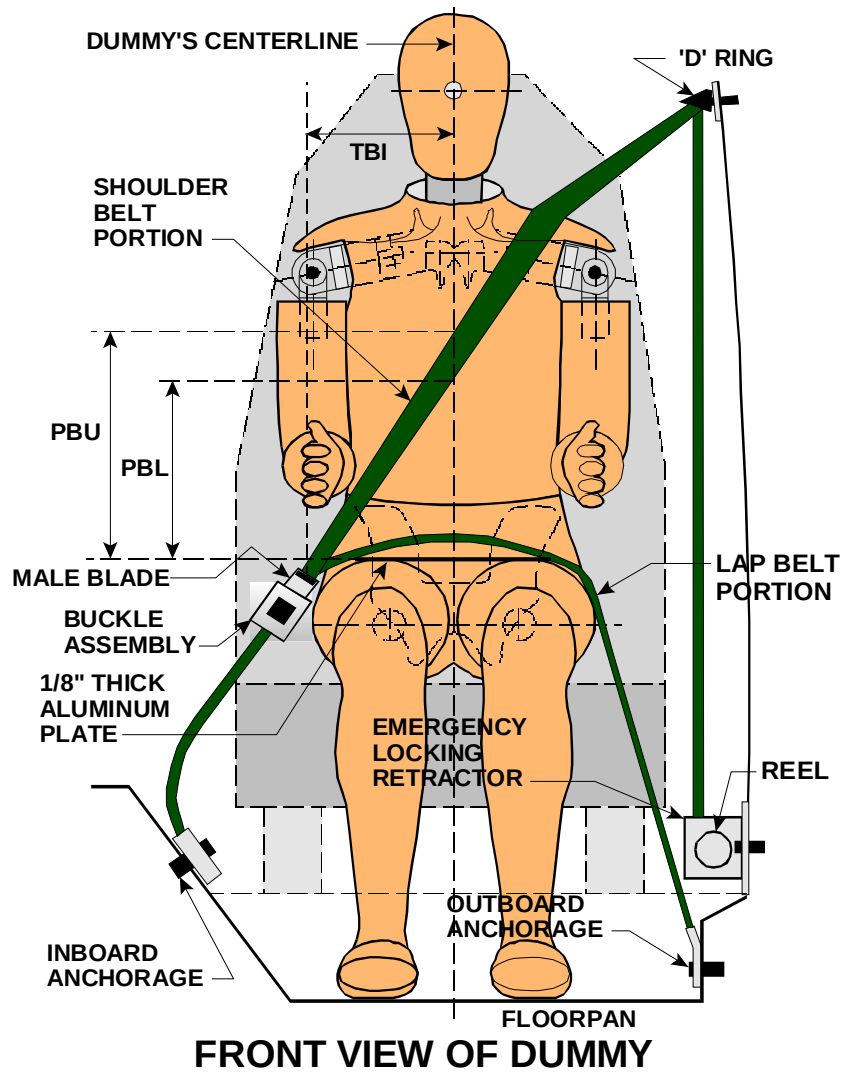
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #142)			PASS. (Serial #150)		
WA ^o	31.6 deg.			N/A		
SWA ^o	66.1 deg.			N/A		
SCA ^o	23.9 deg.			N/A		
SA ^o	20.5 deg.			20.5 deg.		
HZ	257			239		
HH	447			443		
HW	773			739		
HR	236			237		
NR	385	Angle	11 deg.	N/A		
CD	569			527		
CS	295			N/A		
RA	179			N/A		
KDL	184	Angle (KDA)	30 deg.	170		
KDR	183			167	Angle (KDA)	30 deg.
PA ^o	22.9 deg.			23.2 deg.		
TA ^o	50.5 deg.			51.5 deg.		
KK	425			310		
AA	369			200		
ST	585	Angle	8 deg.	597	Angle	8 deg.
SK	587	Angle	88 deg.	601	Angle	88 deg.
SH	215	Angle	106 deg.	212	Angle	104 deg.
SHY	240			235		
HS	371			360		
HD	201			199		
AD	105			110		

Dimensions in millimeters

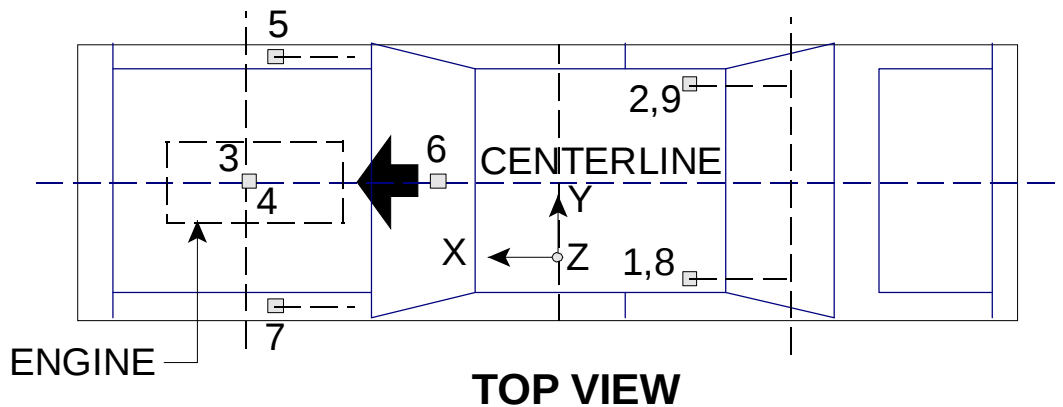
DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

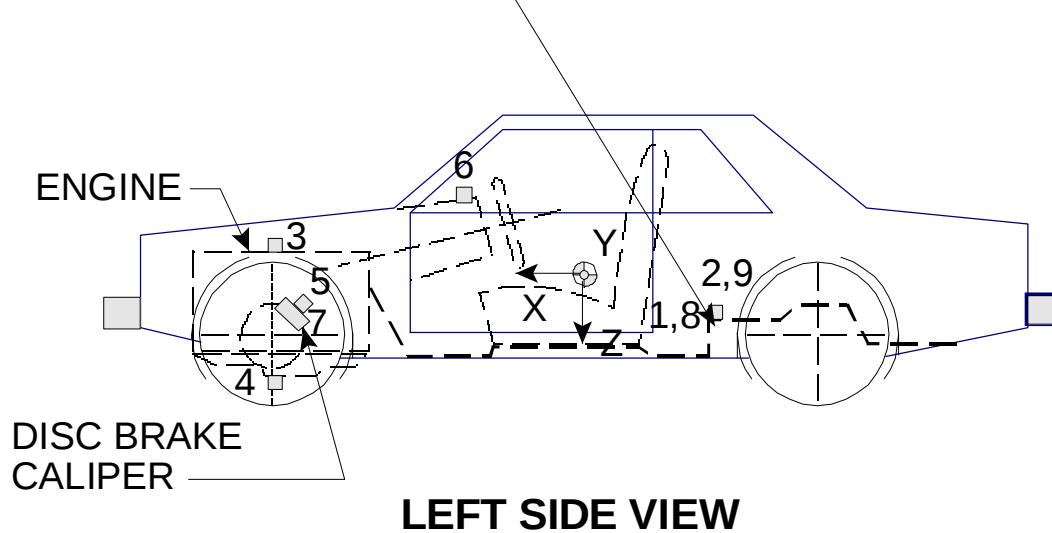


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	331	350
PBL-- Top surface of alum. plate to belt lower edge	249	261
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

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	4030	-52	-959
4	Bottom of Engine	3888	124	-378
5	Disc Brake Caliper @ Right Side	3735	654	-488
6	Instrument Panel	3012	0	-1170
7	Disc Brake Caliper @Left Side	3736	-648	-495
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	3.4	133.5	-36.7	51.6
2	Right Rear Seat Cross Member X	5.9	196.9	-40.0	53.0
3	Top of Engine Block	†	-	†	-
4	Bottom of Engine	49.9	45.8	-114.0	35.7
5	Disc Brake Caliper @ Right Side	††	-	††	-
6	Instrument Panel	26.3	58.2	-81.0	43.6
7	Disc Brake Caliper @Left Side	15.3	59.2	-76.5	39.9
8	Left Rear Seat Cross Member Z	11.5	28.8	-15.0	19.3
9	Right Rear Seat Cross Member Z	12.2	39.0	-16.1	66.1

† Wire was cut at 48 ms.

†† Wire was cut at 40 ms.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2005 Buick Rendezvous MPV

NHTSA Test No.: M50104 Test Date: February 10, 2005

DESCRIPTION	Unit	MAXIMUM VALUE							
		Driver				Passenger			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head 9 Array X Arm Y	g	8.1	199.1	-13.1	85.1	14.6	60.4	-12.8	89.2
Head 9 Array X Arm Z	g	32.8	90.5	-6.8	142.8	29.2	65.2	-4.7	157.5
Head 9 Array Y Arm X	g	0.3	6.0	-52.8	81.5	1.9	124.3	-69.5	83.5
Head 9 Array Y Arm Z	g	18.4	81.5	-21.1	95.2	26.6	83.2	-6.3	111.9
Head 9 Array Z Arm X	g	9.9	93.7	-60.8	81.5	9.5	111.8	-65.1	83.4
Head 9 Array Z Arm Y	g	8.1	96.2	-13.4	109.4	5.5	63.9	-7.5	145.2
Head X	g	0.9	32.4	-49.5	78.7	0.5	28.6	-62.2	85.1
Head Y	g	6.3	33.2	-13.3	85.7	5.6	60.3	-10.3	100.3
Head Z	g	14.6	80.2	-10.5	94.9	25.4	73.1	-2.4	32.8
Head Resultant	g	51.4	78.7	-	-	66.6	83.4	-	-
Redundant Head X	g	0.9	32.4	-49.5	78.7	0.5	27.1	-62.2	85.1
Redundant Head Y	g	6.5	33.2	-13.7	85.7	5.6	60.3	-12.0	100.3
Redundant Head Z	g	15.6	80.2	-10.6	94.9	25.6	73.1	-2.3	27.8
Redundant Head Resultant	g	51.7	78.7	-	-	66.6	83.5	-	-
Upper Neck Fx	N	732.1	93.2	-383.1	141.7	876.8	73.3	-360.6	150.0
Upper Neck Fy	N	112.0	33.7	-275.4	98.5	115.6	93.4	-181.8	139.8
Upper Neck Fz	N	1302.2	80.4	-523.0	94.7	591.2	68.8	-169.5	102.8
Upper Neck F Resultant	N	1440.6	80.4	-	-	1045.5	73.1	-	-
Upper Neck Mx	N-m	32.7	95.7	-22.7	127.1	19.4	109.0	-16.2	142.7
Upper Neck My	N-m	32.9	64.4	-8.7	199.1	78.3	73.3	-35.7	112.2
Upper Neck Mz	N-m	13.9	96.2	-7.6	153.8	18.7	115.3	-8.8	169.2
Upper Neck M Resultant	N-m	37.6	95.0	-	-	78.5	73.3	-	-
Chest X	g	2.6	145.5	-68.5	86.3	1.4	165.5	-48.8	80.6
Chest Y	g	11.5	31.0	-4.4	34.9	4.7	84.3	-4.8	94.9
Chest Z	g	8.9	87.9	-7.5	104.6	12.6	94.5	-4.9	79.0
Chest Resultant	g	68.8	86.3	-	-	49.0	80.6	-	-

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

Vehicle Year/Make/Model/Body Style: 2005 Buick Rendezvous MPV

NHTSA Test No.: M50104 Test Date: February 10, 2005

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Redundant Chest X	g	2.6	145.0	-67.8	86.3	1.4	164.7	-47.8	80.7
Redundant Chest Y	g	11.6	31.0	-4.5	34.9	4.0	86.2	-5.4	94.9
Redundant Chest Z	g	9.2	87.8	-7.5	104.8	12.6	94.5	-5.5	79.0
Redundant Chest Resultant	g	68.2	86.3	-	-	47.9	80.7	-	-
Chest Displacement	mm	0.0	-50.0	-26.4	76.6	0.0	-13.5	-24.2	94.9
Pelvic X	g	2.2	132.6	-67.1	60.8	4.9	120.5	-80.2	59.4
Pelvic Y	g	10.7	94.1	-8.8	60.6	4.0	39.7	-8.2	88.9
Pelvic Z	g	2.3	152.0	-26.0	78.5	4.0	36.7	-31.1	77.6
Pelvic Resultant	g	69.9	60.4	-	-	81.9	59.4	-	-
Left Femur	N	877.0	199.1	-4470.0	56.4	482.3	44.7	-5375.7	59.5
Right Femur	N	745.2	199.1	-6239.1	60.3	523.0	36.8	-7415.2	60.2
Left Upper Tibia Mx	N-m	1.8	169.8	-37.2	49.5	24.2	42.2	-38.0	59.6
Left Upper Tibia My	N-m	82.6	57.0	-17.0	106.6	19.2	135.1	-109.8	41.9
Left Lower Tibia Fz	N	75.2	77.9	-2240.5	34.8	239.2	70.9	-1798.2	41.5
Left Lower Tibia Mx	N-m	19.7	56.5	-0.5	15.9	18.9	41.8	-73.2	56.8
Left Lower Tibia My	N-m	11.3	40.5	-46.9	57.0	220.7	61.3	-58.3	41.7
Right Upper Tibia Mx	N-m	31.7	92.1	-31.8	60.9	22.9†	59.2	-305.5†	33.0
Right Upper Tibia My	N-m	84.9	60.0	-21.3	95.2	15.0	136.2	-153.7	36.5
Right Lower Tibia Fz	N	118.4	155.3	-1912.4	56.7	277.0	73.0	-2110.0	36.2
Right Lower Tibia Mx	N-m	10.5	46.4	-91.4	67.5	47.8	60.2	-13.7	36.5
Right Lower Tibia My	N-m	94.3	63.9	-46.3	45.2	172.0	64.7	-101.9	35.8
Left Foot Aft Ax	g	15.6	49.5	-56.1	35.2	14.4	59.5	-67.1	54.4
Left Foot Aft Az	g	15.0	50.4	-54.4	58.2	38.9	56.7	-109.4	41.2
Left Foot Fore Az	g	47.7	50.4	-87.5	34.1	120.8	53.5	-157.3	40.1
Right Foot Aft Ax	g	17.8	65.8	-78.3	43.9	35.7	48.1	-164.3	35.4
Right Foot Aft Az	g	8.1	88.6	-72.7	52.9	32.1	49.1	-76.7	61.0
Right Foot Fore Az	g	27.9	60.3	-154.1	46.5	201.4	48.1	-210.7	34.6
Lap Belt Load	N	3327.0	71.2	-5.4	195.6	2582.3	50.1	-1.0	-50.0
Torso Belt	N	4328.8	73.8	-36.5	141.3	4551.5	92.5	-22.3	187.3

† Questionable Data

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

Vehicle Year/Make/Model/Body Style: 2005 Buick Rendezvous MPV

NHTSA Test No.: M50104 Test Date: February 10, 2005

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	328.8	64.2	96.3	40.2
Position #2 - Passenger	449.7	72.5	99.0	49.2

** 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	64.1	85.1	88.1	564.3
Position #2 - Passenger	47.7	78.5	81.5	381.9

* 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 Rendezvous MPV

NHTSA Test No.: M50104 Test Date: February 10, 2005

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	334.7	63.4	96.2	40.1
Position #2 - Passenger	443.3	72.5	98.8	49.0

** 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	63.4	85.2	88.2	551.2
Position #2 - Passenger	46.6	78.5	81.5	359.7

* 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

2190

2162

Shoulder belt length as measured
on Part 572 Dummy.

865

848

Lap belt length as measured
on Part 572 Dummy.

815

804

SHOULDER BELT SPOOL-OFF DATA:

As determined mechanically*.

226

236

BELT STRETCH DATA:

Measured mechanically.

0 mm/M

0 mm/M

*Shoulder belt spool off beyond the initial belt position (prior to pretensioner activation).

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 25 mm molding.

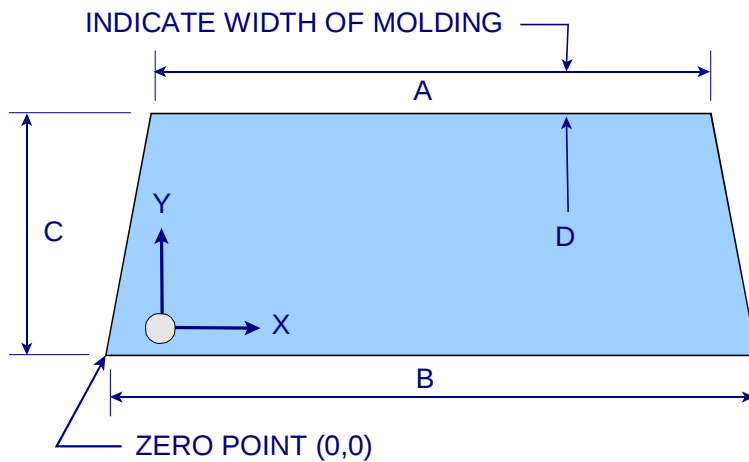
FMVSS 212 REQUIREMENTS:

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	2237.5	2237.5	100.0%
LEFT SIDE	2237.5	2237.5	100.0%
TOTAL	4475	4475	100.0%

AREA OF RETENTION FAILURE: None



DIMENSIONS (mm)	
A	1330
B	1545
C	800
D	25

FRONT VIEW OF WINDSHIELD

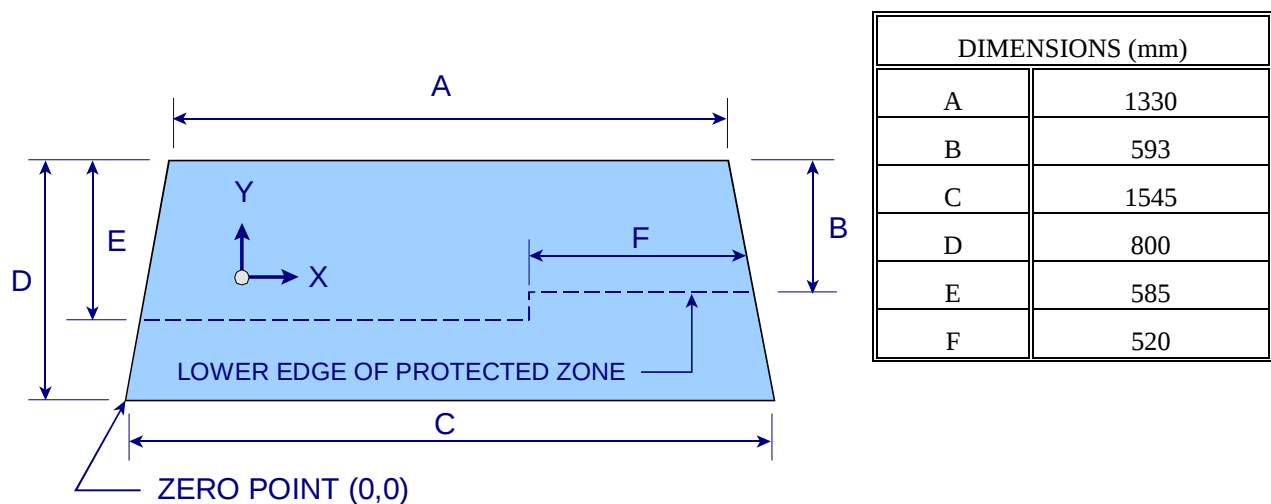
FAILURE DETAILS: None

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

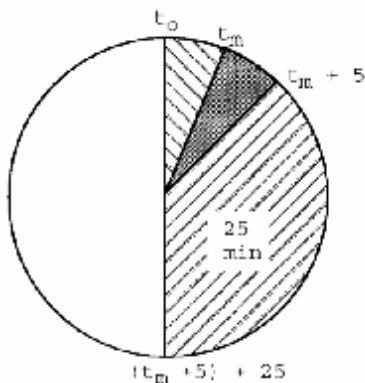
NHTSA TEST No.: M50104 TEST DATE: February 10, 2005
VEHICLE MAKE/MODEL: 2005 Buick Rendezvous MPV

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

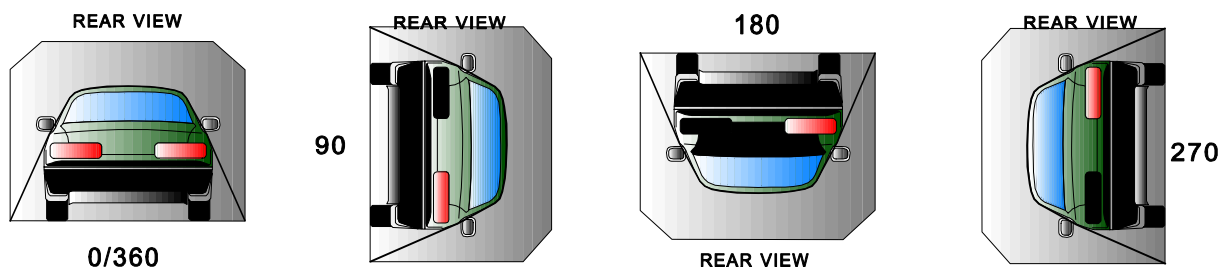
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

DATA SHEET NO. 13 - ROLLOVER DATA

Vehicle: 2005 Buick Rendezvous MPV

NHTSA No.: M50104



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	4	seconds	5	minutes	6	minutes	4	seconds	7	minutes
90° - 180°	1	minutes	5	seconds	5	minutes	6	minutes	5	seconds	7	minutes
180°-270°	1	minutes	6	seconds	5	minutes	6	minutes	6	seconds	7	minutes
270°-360°	1	minutes	15	seconds	5	minutes	6	minutes	15	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:

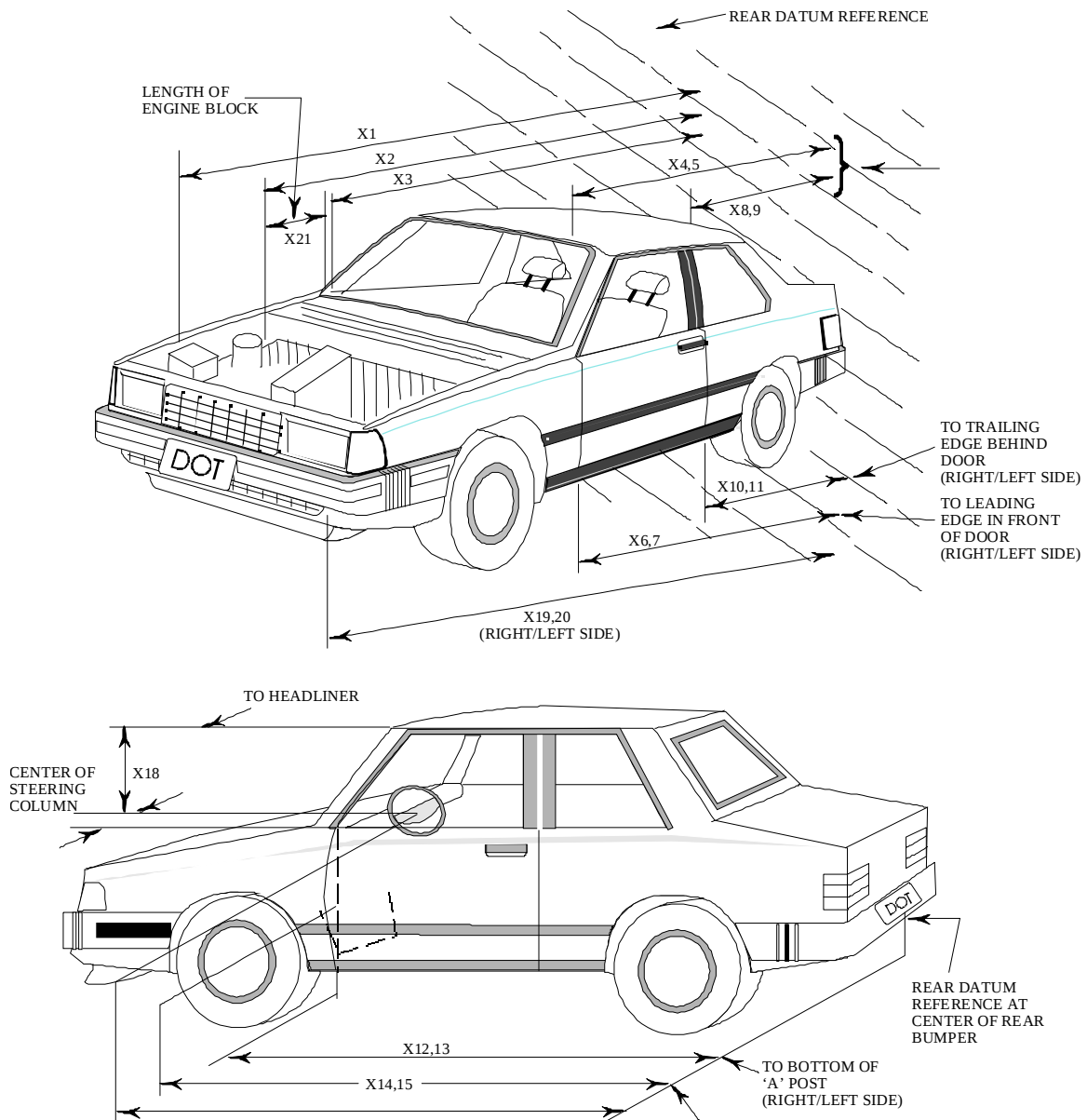
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	N/A
90° - 180°	0	0	0	N/A
180°-270°	0	0	0	N/A
270°-360°	0	0	0	N/A

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

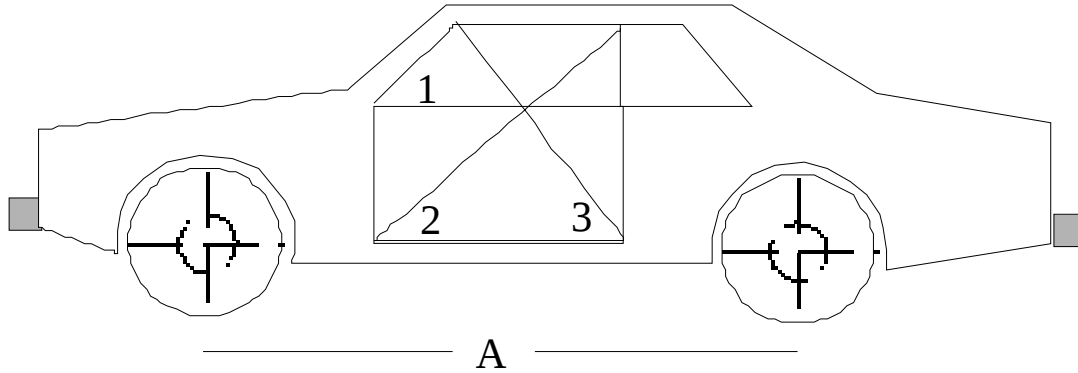


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4737	4321	416
X2	Rear Surface of Vehicle to Front of Engine	4172	3850	322
X3	Rear Surface of Vehicle to Firewall	3937	3911	26
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3352	3354	-2
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3351	3351	0
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3285	3286	-1
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3279	3279	0
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2205	2204	1
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2205	2203	2
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2261	2264	-3
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2258	2259	-1
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3328	3299	29
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3347	3346	1
X14	Rear Surface of Vehicle to Firewall, Right Side	3926	3856	70
X15	Rear Surface of Vehicle to Firewall, Left Side	3927	3893	34
X16	Rear Surface of Vehicle to Steering Column	2827	2860	-33
X17	Center of Steering Column to "A" Post	288	286	2
X18	Center of Steering Column to Headliner	457	397	60
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4660	4254	406
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4660	4272	388
X21	Length of Engine Block	350	350	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3020	3013	7
CD	Rear Surface of Vehicle to Center of Dash Panel	3023	3024	-1
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3023	3019	4

All Dimensions in mm

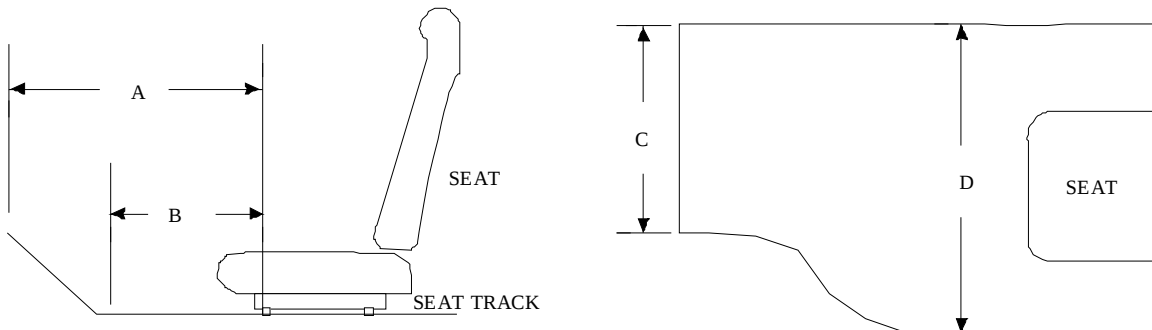
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	1000	1563	1162	999	1576	1151
AFTER TEST	998	1562	1165	996	1573	1158
DIFFERENCE	2	1	-3	3	3	-7

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2850	2850
AFTER TEST	2746	2728
DIFFERENCE	104	122

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



DRIVER

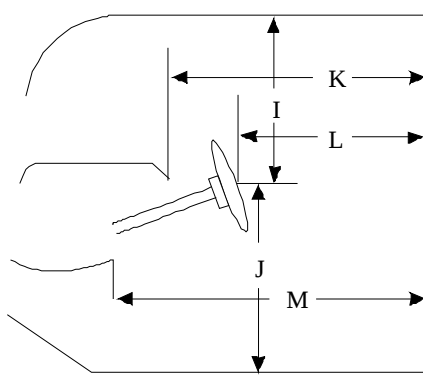
Measurement	Pre-Test	Post-Test	Difference
A	818	755	63
B	623	620	3
C	524	517	7
D	575	574	1

PASSENGER

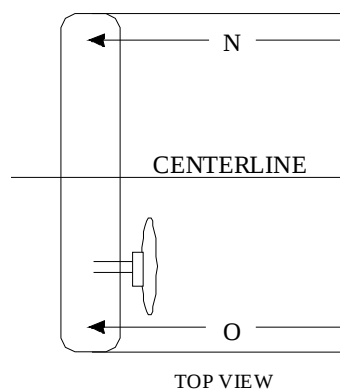
Measurement	Pre-Test	Post-Test	Difference
A	819	628	191
B	587	585	2
C	532	492	40
D	568	563	5

Units = mm

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

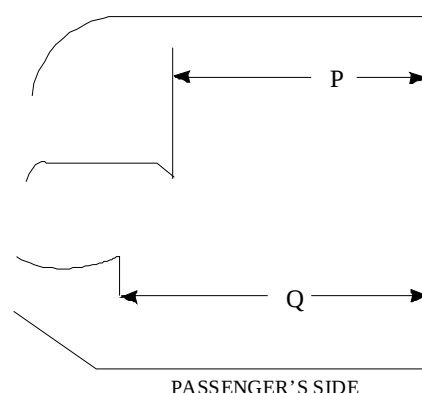


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE

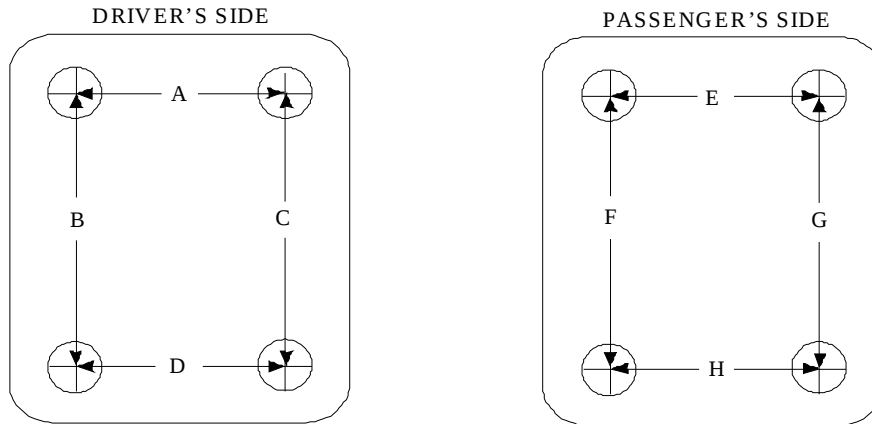


PASSENGER'S SIDE

Measurement	Pre-Test	Post-Test	Difference
I	457	397	60
J	706	766	-60
K	1884	1890	-6
L	1642	1678	-36
M	1932	1937	-5
N	1836	1829	7
O	1838	1837	1
P = K (PASS.)	1894	2174	-280
Q = M (PASS.)	1934	1916	18

Units = mm

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

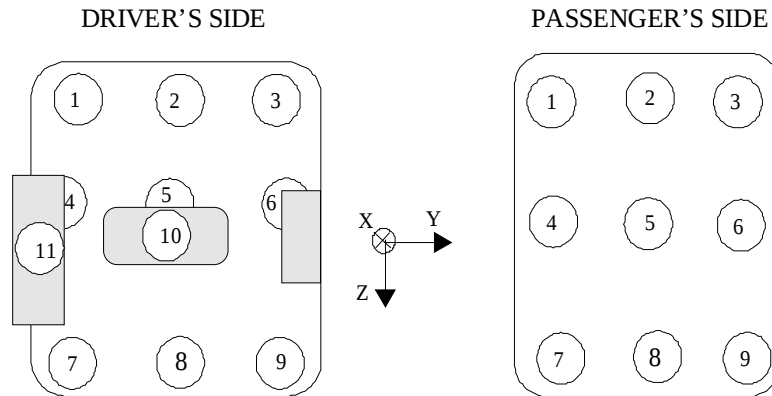


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	524	517	7
B	357	360	-3
C	356	356	0
D	575	574	1
E	532	492	40
F	377	374	3
G	342	342	0
H	568	563	5

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	3490	3454	36	-715	-743	28
2	3517	3460	57	-714	-732	18
3	3539	3447	92	-719	-744	25
4	3405	3391	14	-590	-613	23
5	3435	3412	23	-596	-602	6
6	3464	3423	41	-595	-615	20
7	3289	3290	-1	-500	-503	3
8	3323	3326	-3	-501	-492	-9
9	3343	3344	-1	-500	-486	-14
10	3317	3220	97	-698	-771	73
11	3336	3337	-1	-605	-609	4

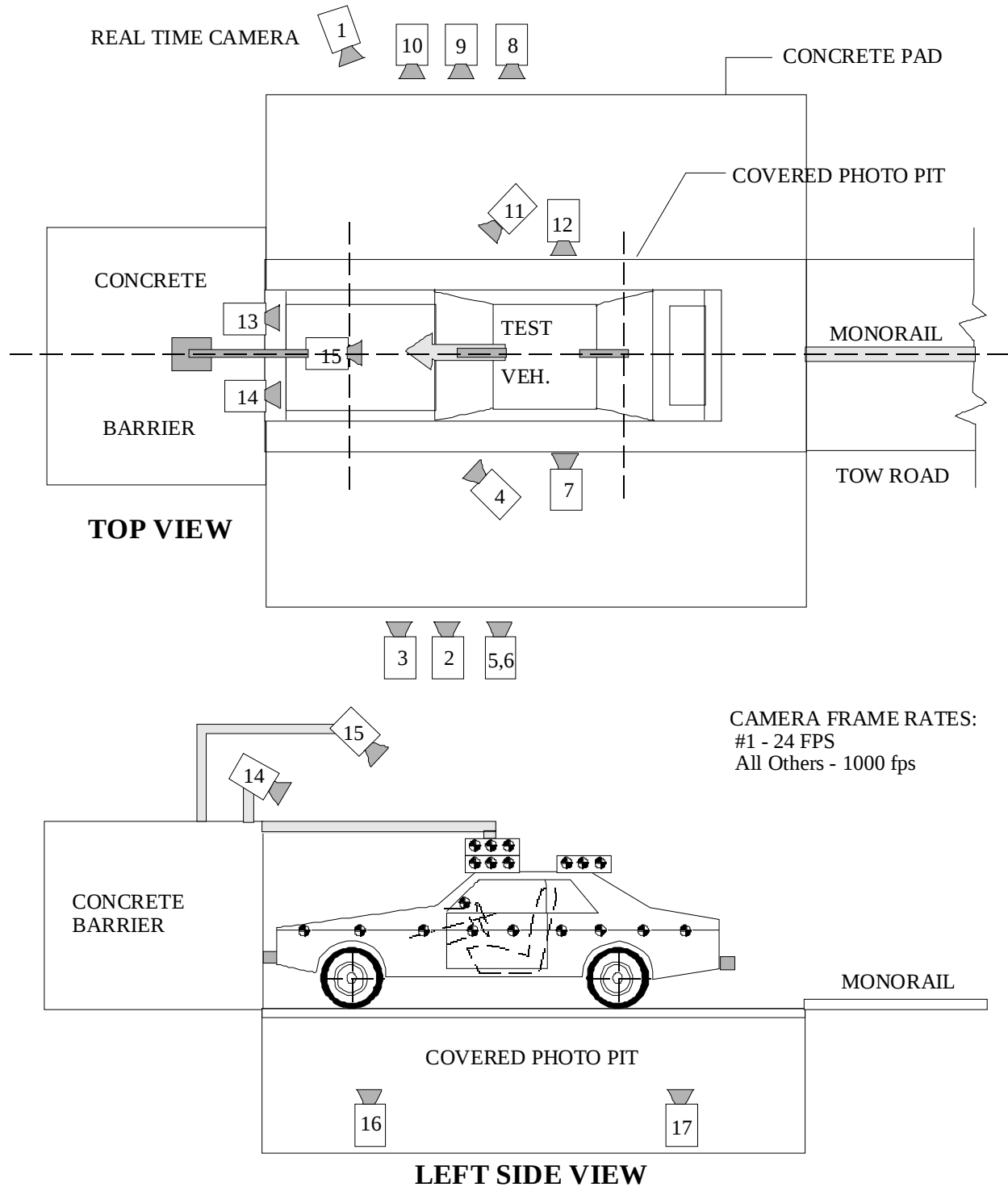
Passenger Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3513	3356	157	-695	-738	43
2	3520	3334	186	-694	-760	66
3	3476	3310	166	-718	-787	69
4	3412	3328	84	-585	-613	28
5	3414	3292	122	-585	-633	48
6	3404	3292	112	-586	-640	54
7	3282	3291	-9	-509	-498	-11
8	3288	3291	-3	-507	-494	-13
9	3276	3265	11	-507	-488	-19

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.: M50104 Vehicle: 2005 Buick Rendezvous MPV

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	7440	1795	1320	-6.1	7071	24	1000
3	Left Side View	9064	1045	1070	-1.7	8695	25	1000
4	Driver and Interior View	7520	2640	2042	-7.6	-	35	500
5	Steering Column (Bottom)	7640	2185	1165	-2.5	7271	25	1000
6	Steering Column (Top)	7640	2185	1775	-7.2	7271	25	1000
7	Left CRS View	3320	3270	2265	-21.0	-	28	500
8	Overall Right Side	7415	2015	1095	-2.1	7725	24	500
9	Right Side View	7680	1285	1150	-2.1	7990	25	1000
10	Right Passenger View	8045	1640	1335	-1.6	8355	35	1000
11	Passenger and Interior View	7765	2775	1985	-8.0	-	35	500
12	Right CRS View	3300	3270	2215	-20.1	-	28	500
13	Passenger Front View	620	-92	1987	-34.4	-	13	500
14	Driver Front View	620	-92	1987	-32.1	-	13	500
15	Windshield View	0	-530	3374	-49.0	-	13	500
16	Pit View of Engine	0	615	-3048	90.0	-	13	500
17	Pit View of Fuel Tank	0	2465	-3048	90.0	-	13	500

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

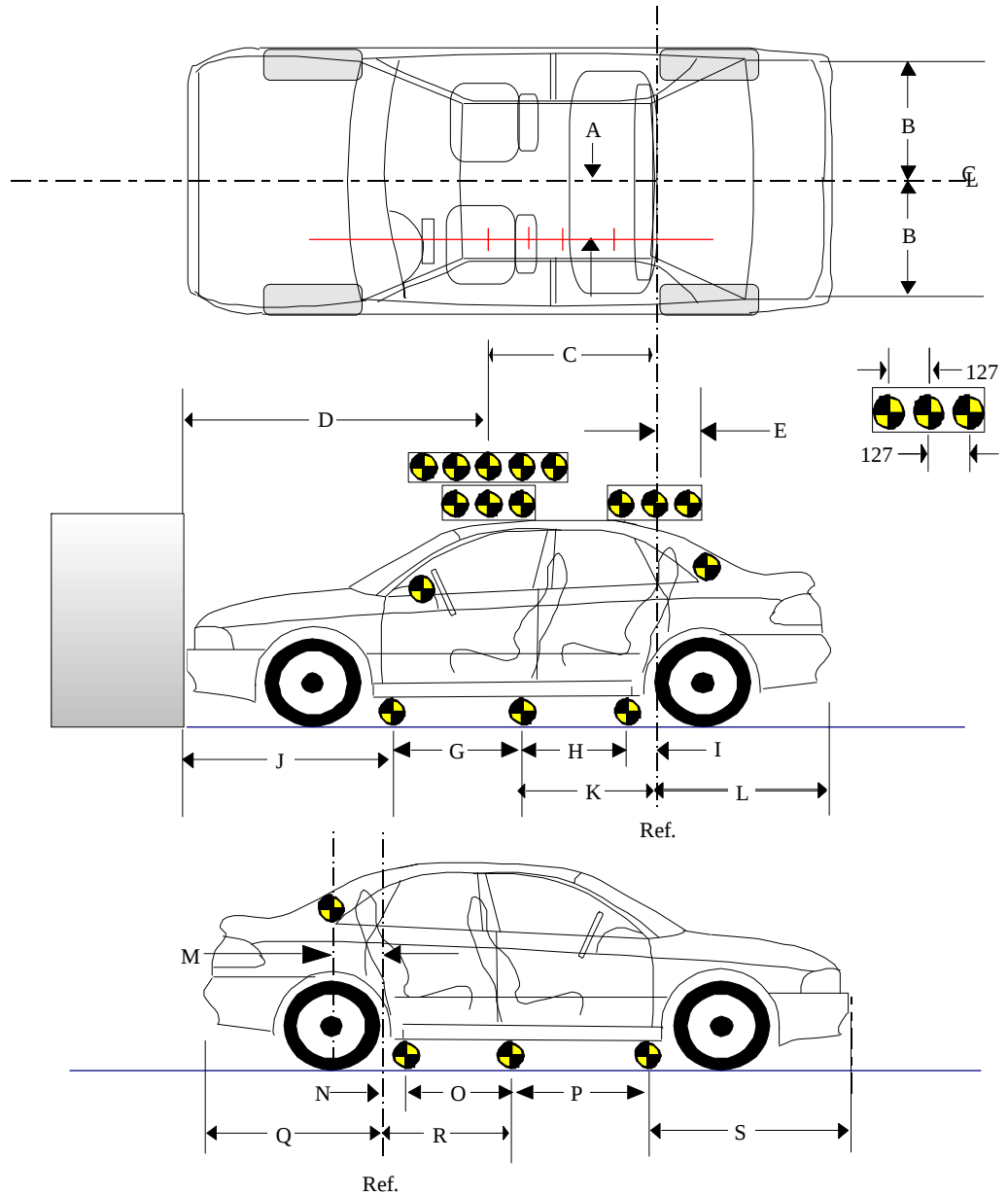
Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

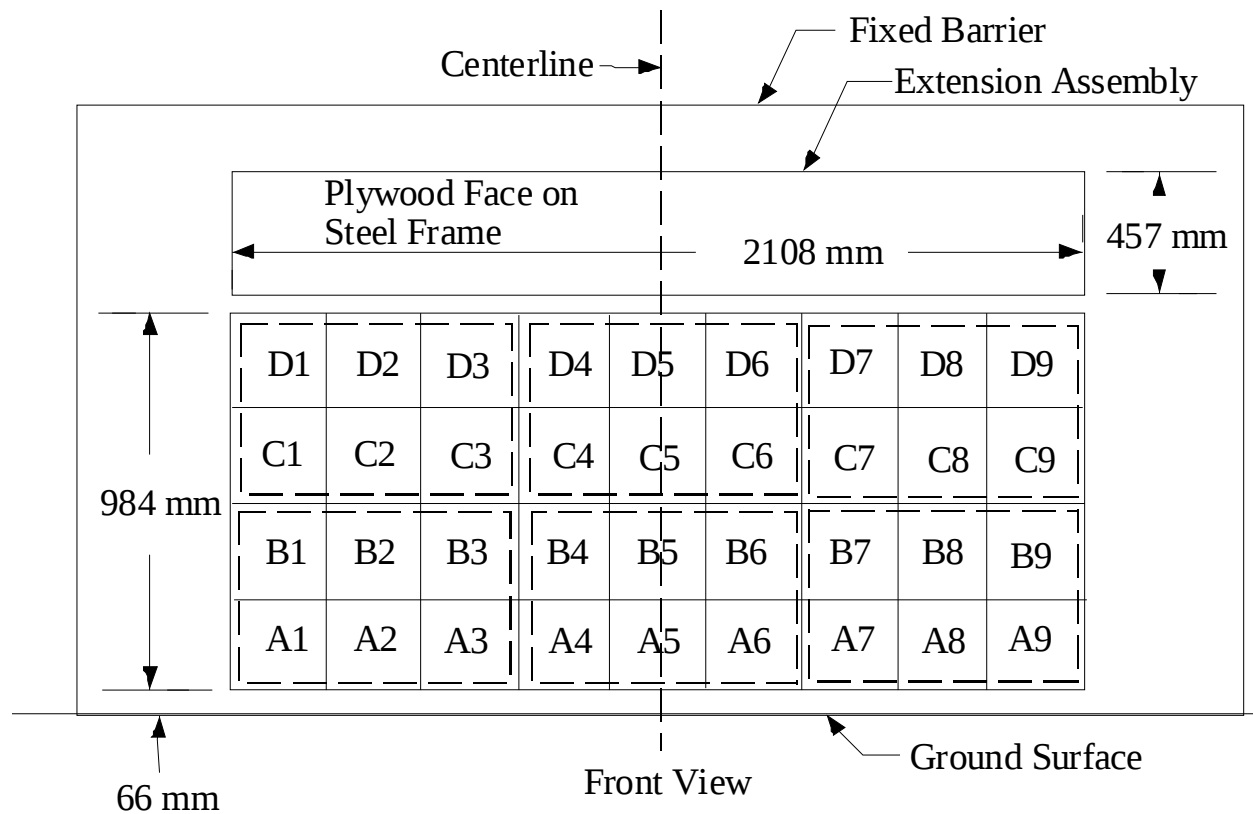
(Dimensions in millimeters)

A	386
B	679
C	1222
D	2243
E	87
F	1746
G	953
H	960
I	124
J	1418
K	1084
L	1282
M	88
N	129
O	955
P	954
Q	1281
R	1084
S	1418



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.: M50104; Test Date: February 10, 2005; Technician: Lawrence Q. Valvo

Vehicle Model Year/Make/Model: 2005 Buick Rendezvous MPV

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

B. Size of vent holes: (mm²) 962 -Driver 2376 -Passenger

C. Total vent area: (mm²) 1924 -Driver 4752 -Passenger

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

Driver: 620 -Height; 620 -Width; 200 -Depth

Passenger: 650 -Height; 470 -Width; 350 -Depth

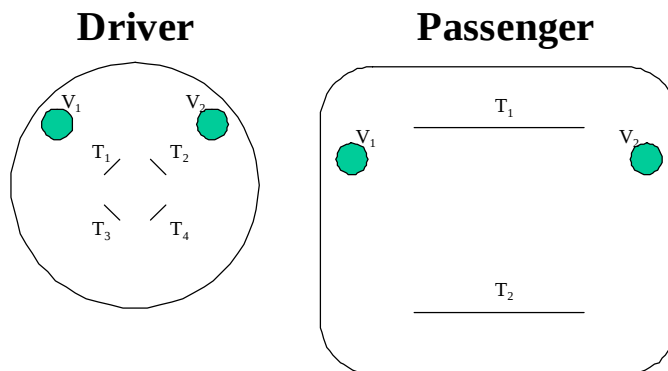
E. Is the air bag tethered?

Driver: X -Yes; - -No; If yes, record length of tether- 245

Passenger: X -Yes; - -No; If yes, record length of tether- 500

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).



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

Driver: Air bag: 16869545-02 GMX GMT 257-35 DF41YNM

Generator: -

Passenger: Air bag: CMXGMT 257 P600077200EE07 G6CR9VSCANS

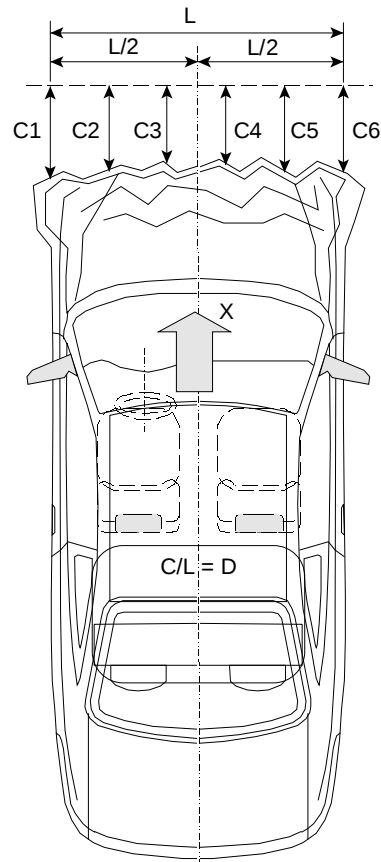
Generator: -

DATA SHEET NO. 19 ACCIDENT INVESTIGATION DIVISION DATA
FOR FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Buick Rendezvous MPV
 NHTSA Test No.: M50104 VIN: 3G5DB03E65S538583
 Model Year: 2005 Build Date: 11/04 Test Date: February 10, 2005
 Vehicle Size Category: MPV Test Weight: 2151.0 kg
 Vehicle Wheelbase: 2850 mm; Front Overhang: 958 mm; Overall Width: 1869 mm
 Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4572	4232	340
C2 =	4678	4272	406
C3 =	4730	4317	413
C4 =	4731	4316	415
C5 =	4674	4264	410
C6 =	4560	4182	378



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region: L1= 1556 mm
 L2= 778.0 mm
 L5= 311.2 mm

APPENDIX A
PHOTOGRAPHS

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Figure A-1 LOAD CELL LOCATIONS



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 523 kg or 1152 lbs.

ORIGINAL TIRE SIZE	COLD TIRE INFLATION PRESSURE	
P225/60R17 S	FRONT	240 kPa, 35 PSI
P225/60R17 S	REAR	240 kPa, 35 PSI
T135/70R16 M	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

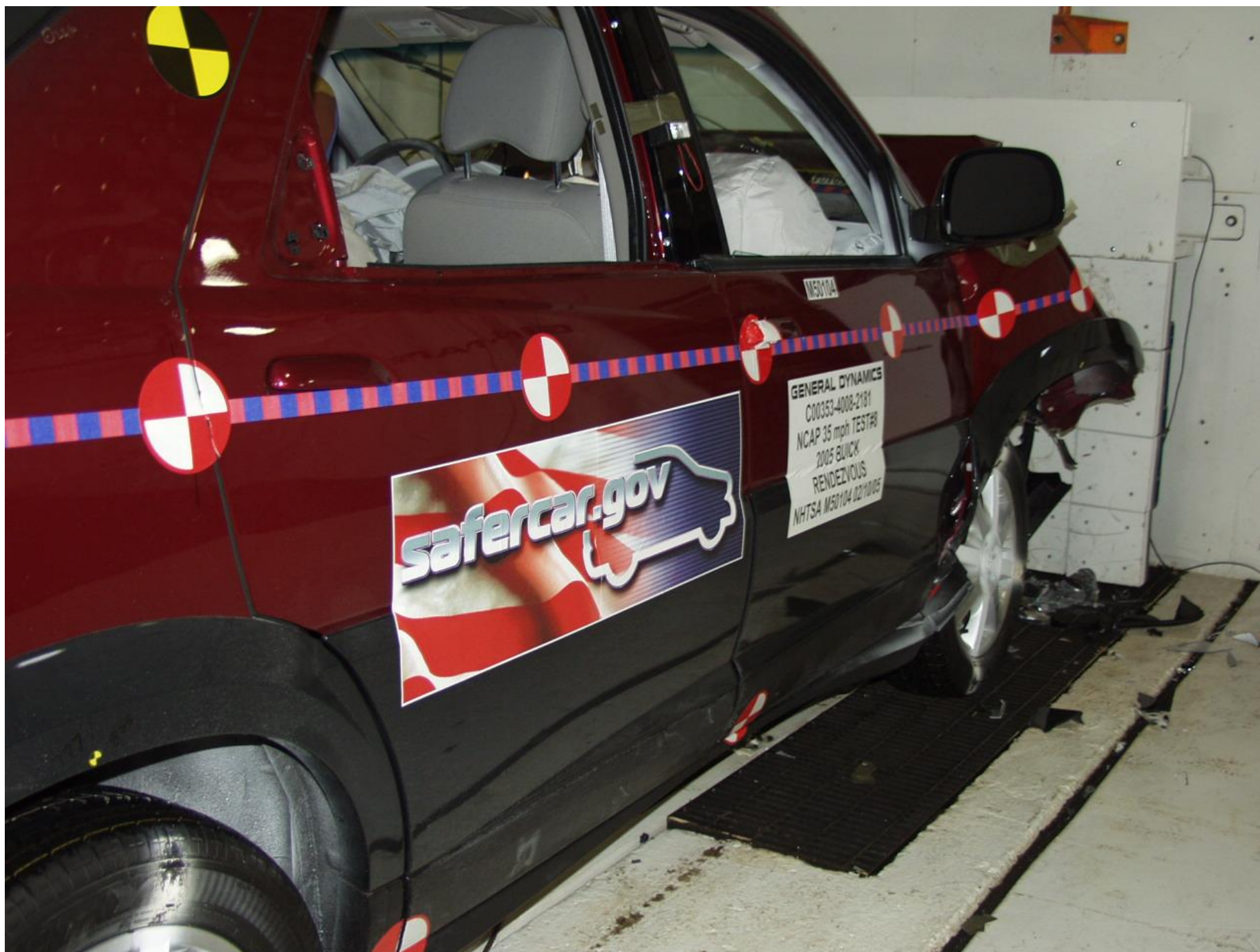


Figure A-17 RIGHT REAR THREE-QUARTER VIEW OF DOORS AFTER IMPACT



Figure A-18 PRE-TEST WINDSHIELD VIEW



Figure A-19 POST-TEST WINDSHIELDVIEW



Figure A-20 PRE-TEST ENGINE COMPARTMENT VIEW



Figure A-21 POST-TEST ENGINE COMPARTMENT VIEW



Figure A-22 PRE-TEST FUEL CAP VIEW



Figure A-23 POST-TEST FUEL CAP VIEW



Figure A-24 PRE-TEST FRONT UNDERBODY VIEW

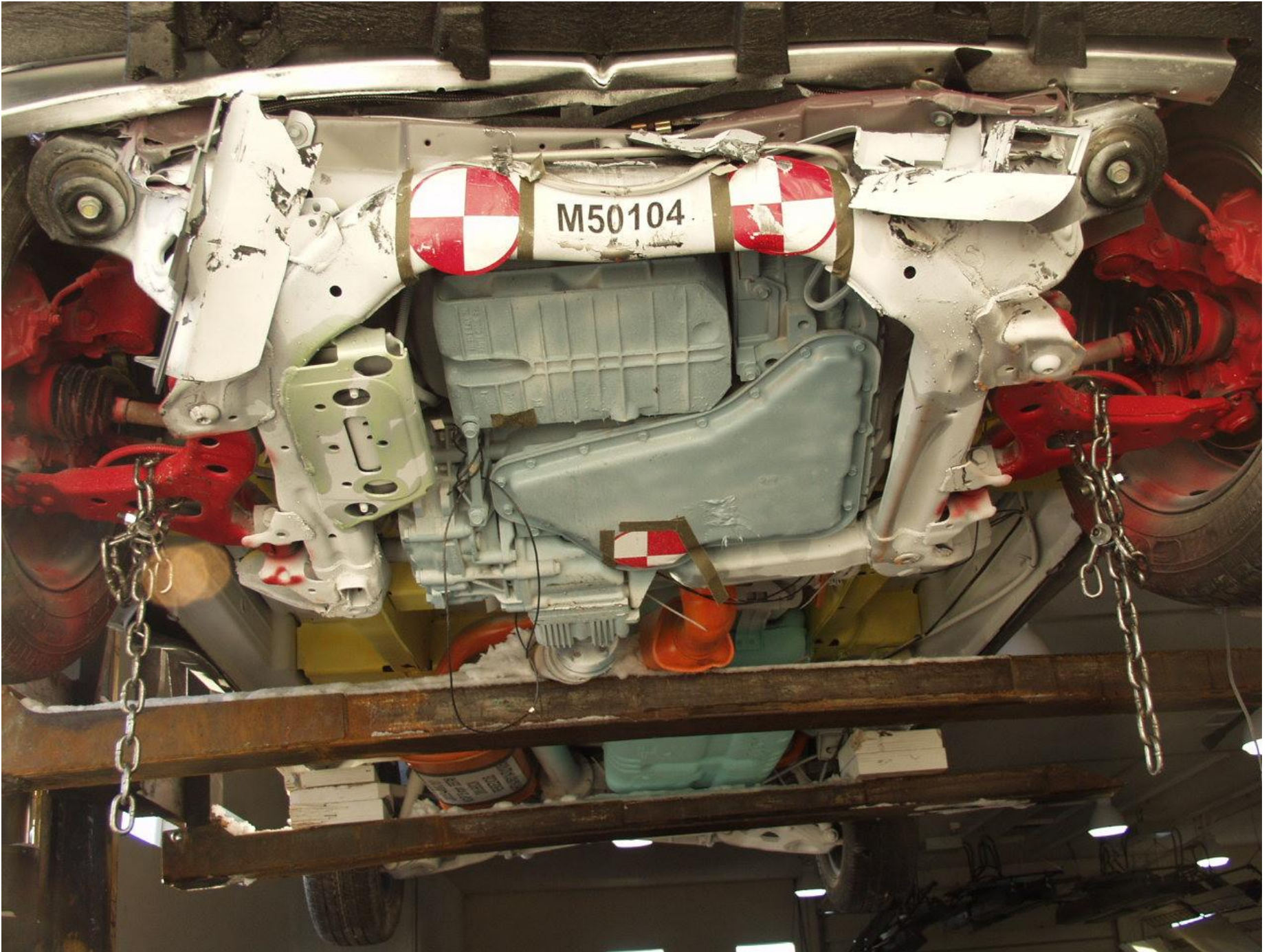


Figure A-25 POST-TEST FRONT UNDERBODY VIEW



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



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Figure A-41 POST-TEST DRIVER FLOOR PAN VIEW



A-45

8642-NCAP-58

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



A-48

8642-NCAP-58

Figure A-45 POST-TEST PASSENGER HEAD LOCATION



Figure A-46 PRE-TEST PASSENGER POSITION VIEW



Figure A-47 POST-TEST PASSENGER POSITION VIEW



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



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. M50104

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 y [g, CFC_1000]	B-8
2	V1P1 Head 9 Array X Arm z [g, CFC_1000]	B-8
3	V1P1 Head 9 Array Y Arm x [g, CFC_1000]	B-8
4	V1P1 Head 9 Array Y Arm z [g, CFC_1000]	B-8
5	V1P1 Head 9 Array Z Arm x [g, CFC_1000]	B-9
6	V1P1 Head 9 Array Z Arm y [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 [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 [N, CFC_600]	B-18
37	V1P1 Right Femur [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 [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 [N, CFC_600]	B-36
92	V1P2 Right Femur [N, CFC_600]	B-36

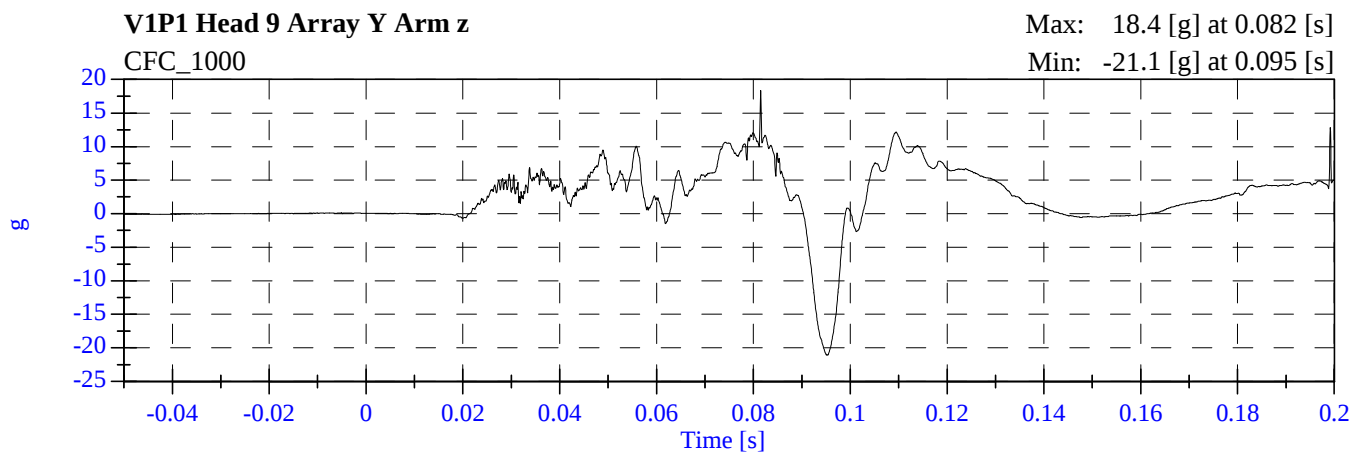
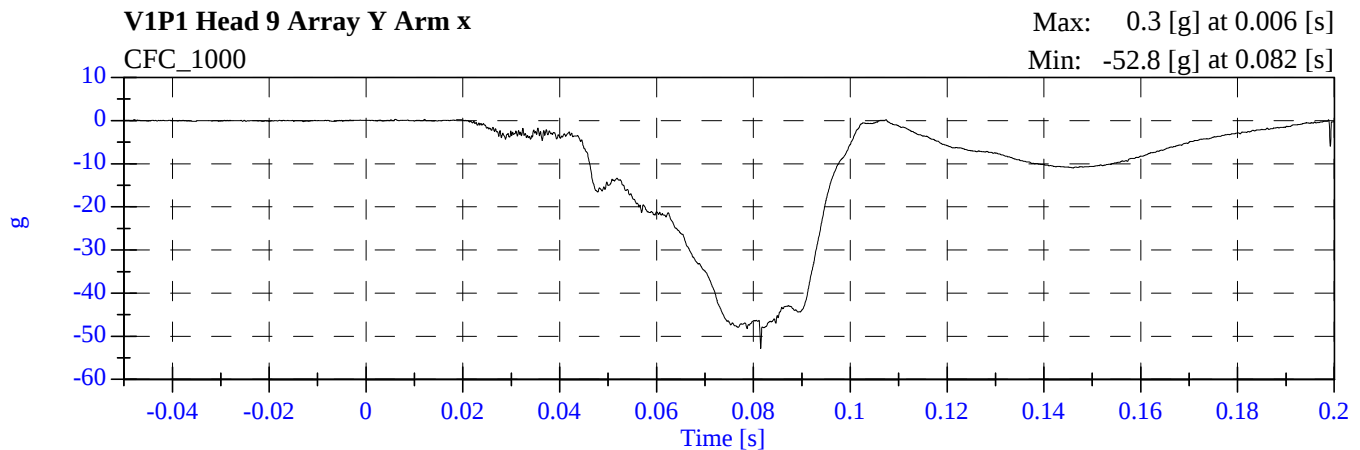
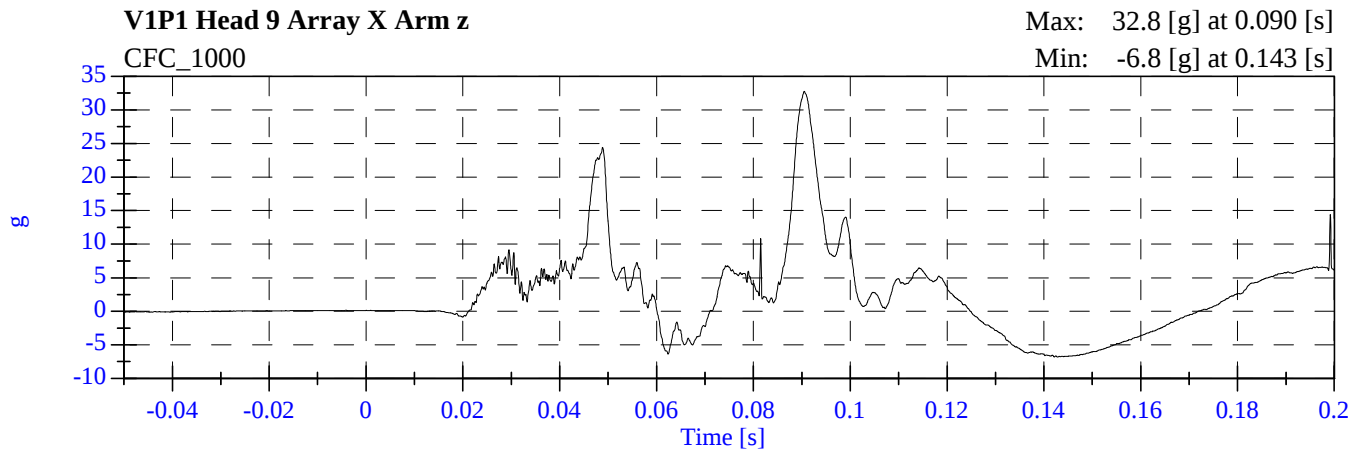
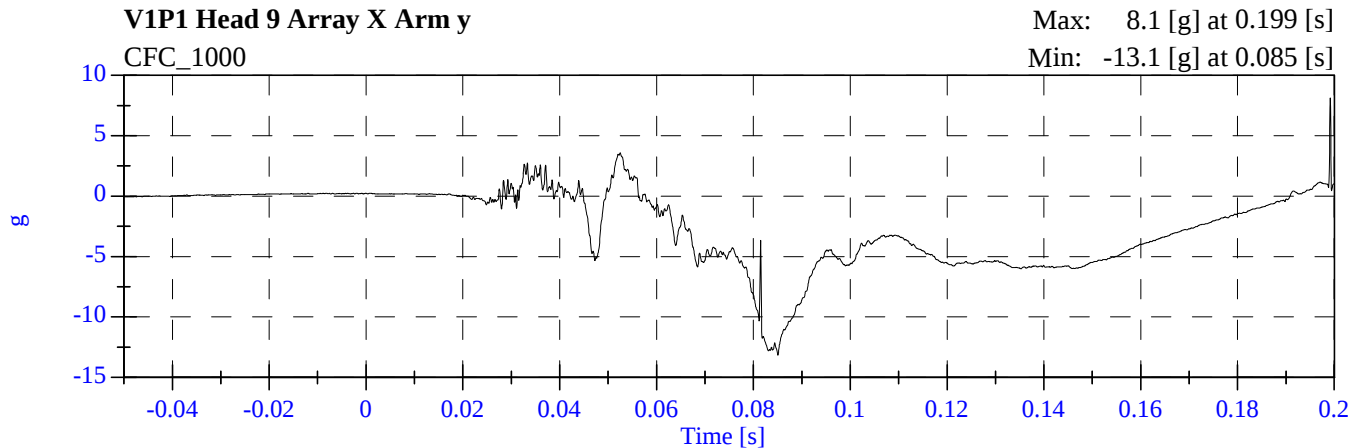
Table of Data Plots (Continued)

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 Ax [g, CFC_600]	B-41
104	V1P2 Left Foot Aft Az [g, CFC_600]	B-41
105	V1P2 Left Foot Fore Az [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
112	V1 Left Rear #1x Velocity [kph, CFC_180]	B-44
113	V1 Left Rear #1x Displacement [mm, CFC_180]	B-44
114	V1 Right Rear #2x [g, CFC_60]	B-45
115	V1 Right Rear #2x Velocity [kph, CFC_180]	B-45
116	V1 Right Rear #2x Displacement [mm, CFC_180]	B-45
117	V1 Engine Top #3x [g, CFC_60]	B-46
118	V1 Engine Top #3x Velocity [kph, CFC_180]	B-46
119	V1 Engine Top #3x Displacement [mm, CFC_180]	B-46
120	V1 Engine Bottom #4x [g, CFC_60]	B-47
121	V1 Engine Bottom #4x Velocity [kph, CFC_180]	B-47
122	V1 Engine Bottom #4x Displacement [mm, CFC_180]	B-47
123	V1 Right Caliper #5x [g, CFC_60]	B-48
124	V1 Right Caliper #5x Velocity [kph, CFC_180]	B-48
125	V1 Right Caliper #5x Displacement [mm, CFC_180]	B-48
126	V1 Instrument Panel #6x [g, CFC_60]	B-49
127	V1 Instrument Panel #6x Velocity [kph, CFC_180]	B-49
128	V1 Instrument Panel #6x Displacement [mm, CFC_180]	B-49
129	V1 Left Caliper #7x [g, CFC_60]	B-50
130	V1 Left Caliper #7x Velocity [kph, CFC_180]	B-50
131	V1 Left Caliper #7x Displacement [mm, CFC_180]	B-50
132	V1 Left Rear #8z [g, CFC_60]	B-51
133	V1 Left Rear #8z Velocity [kph, CFC_180]	B-51
134	V1 Left Rear #8z Displacement [mm, CFC_180]	B-51
135	V1 Right Rear #9z [g, CFC_60]	B-52
136	V1 Right Rear #9z Velocity [kph, CFC_180]	B-52
137	V1 Right Rear #9z Displacement [mm, CFC_180]	B-52

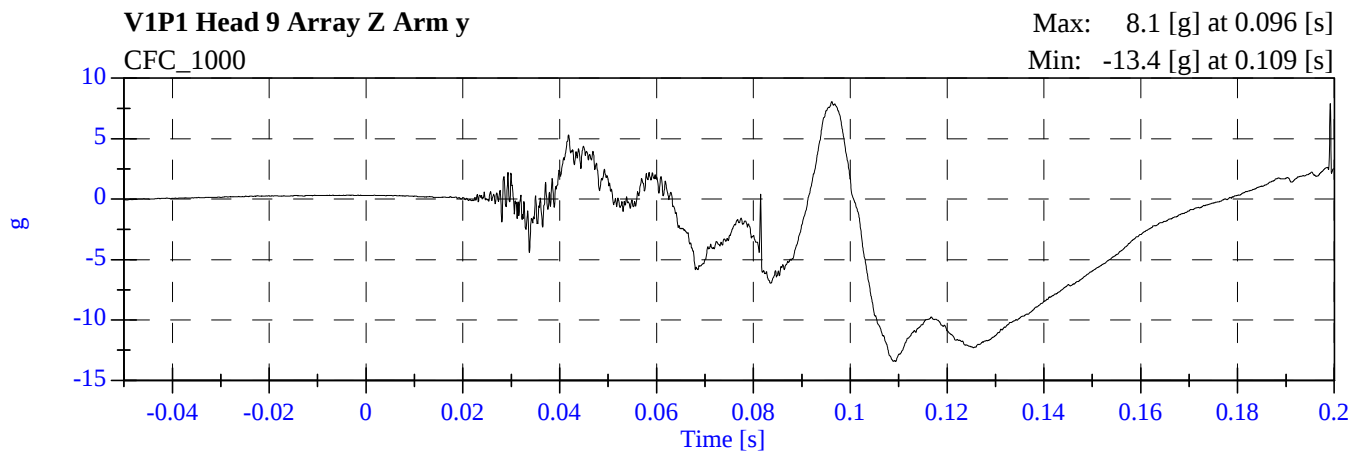
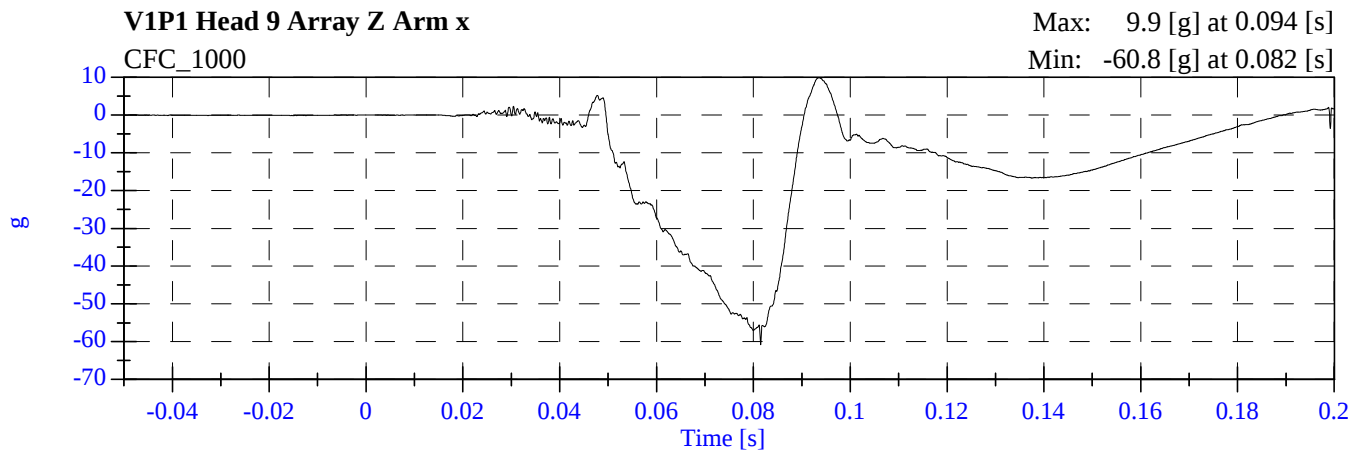
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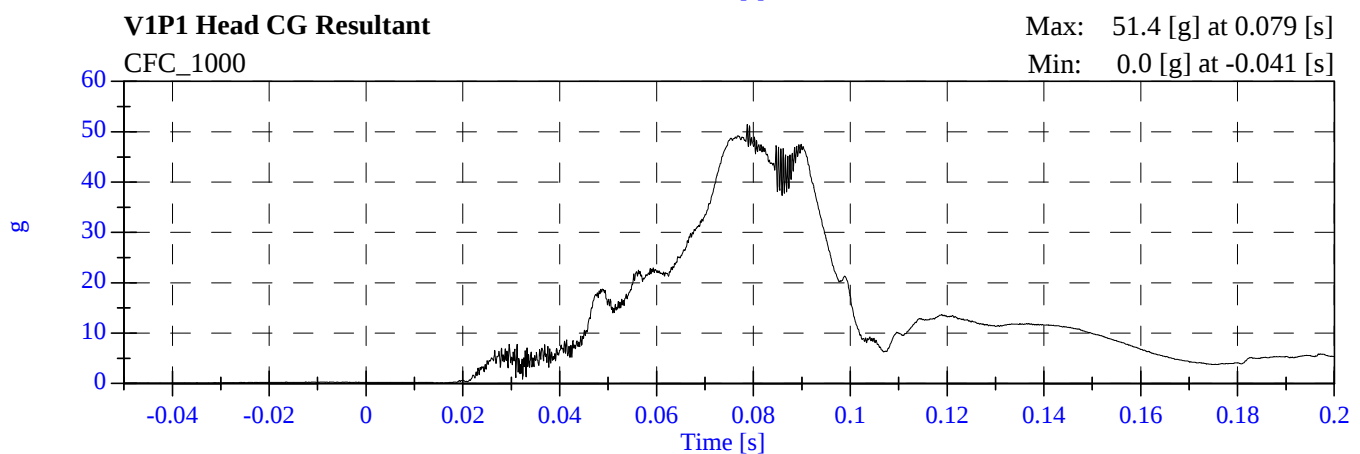
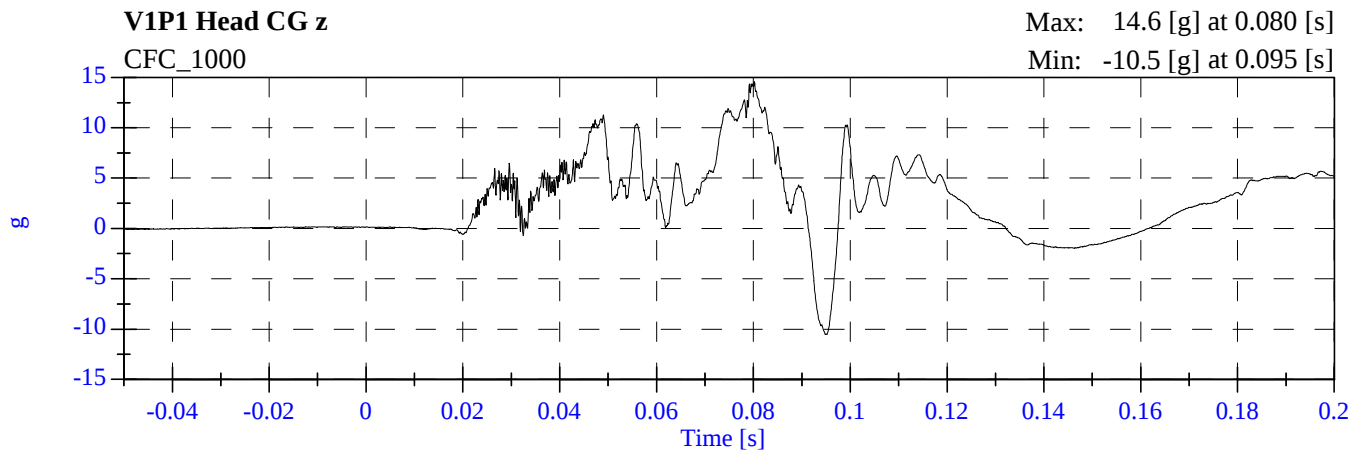
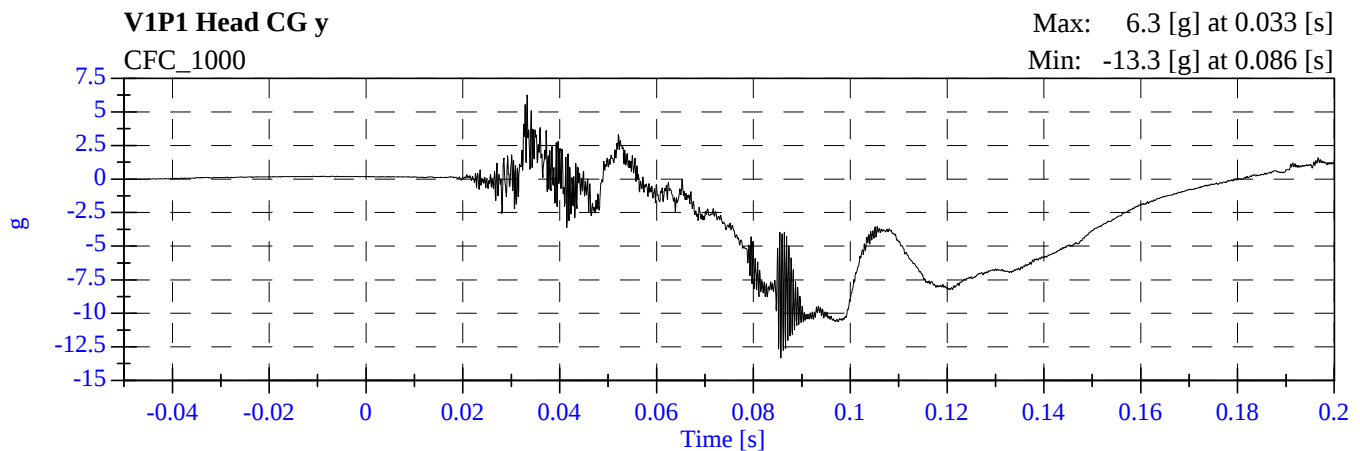
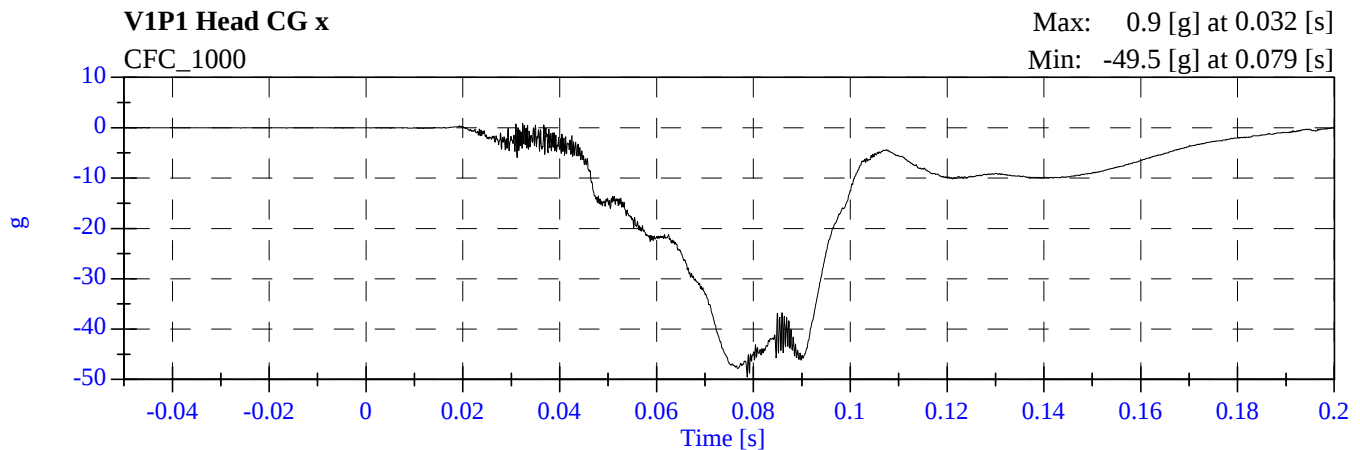
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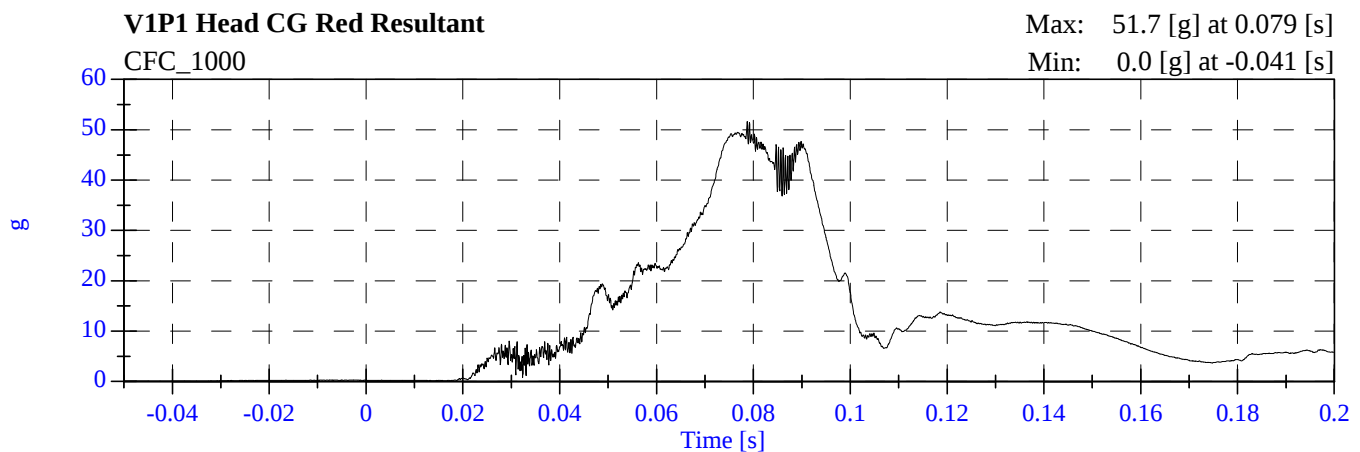
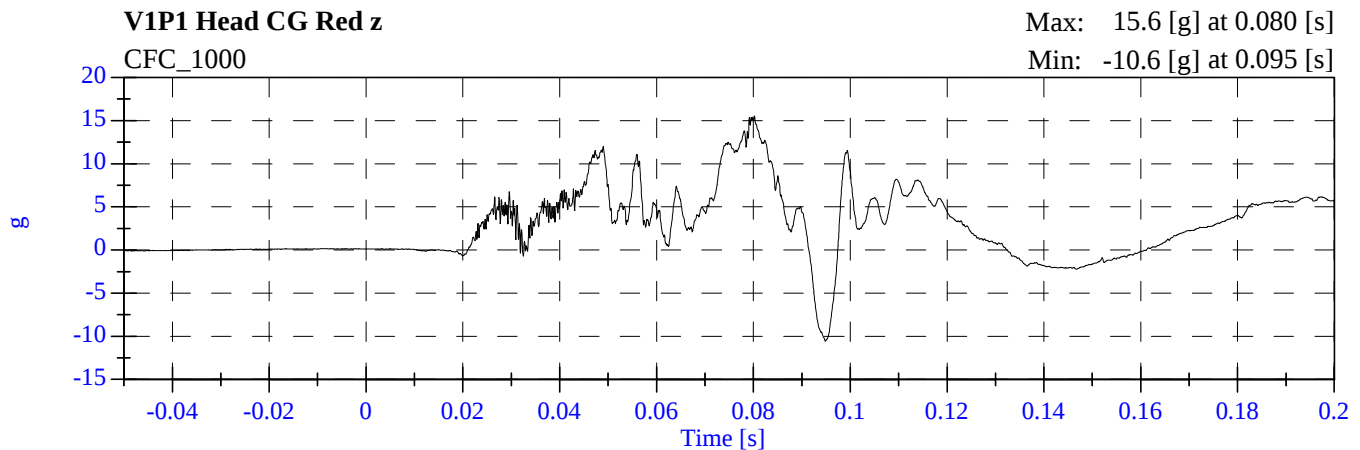
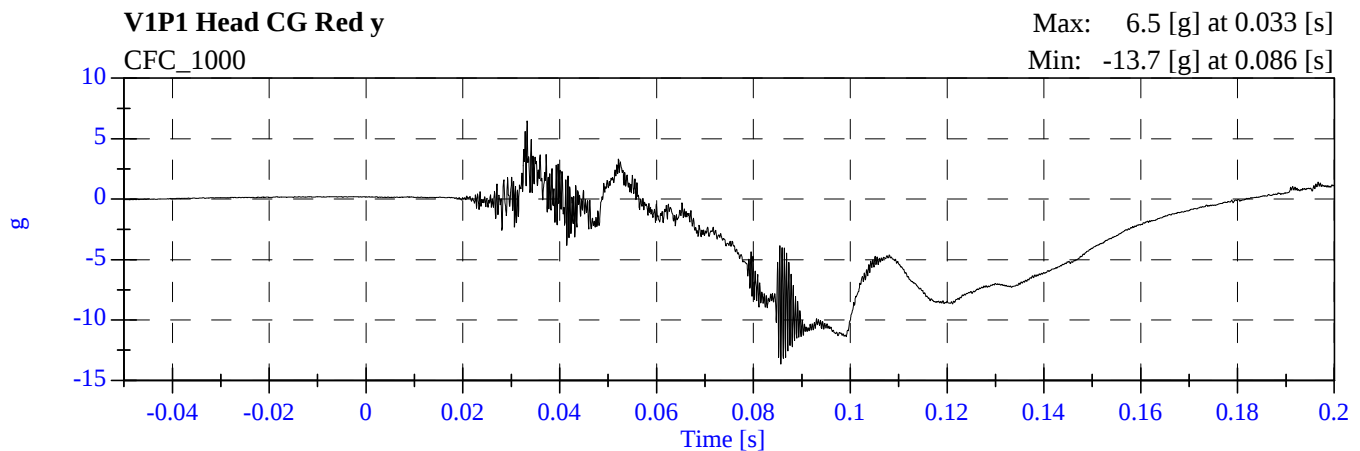
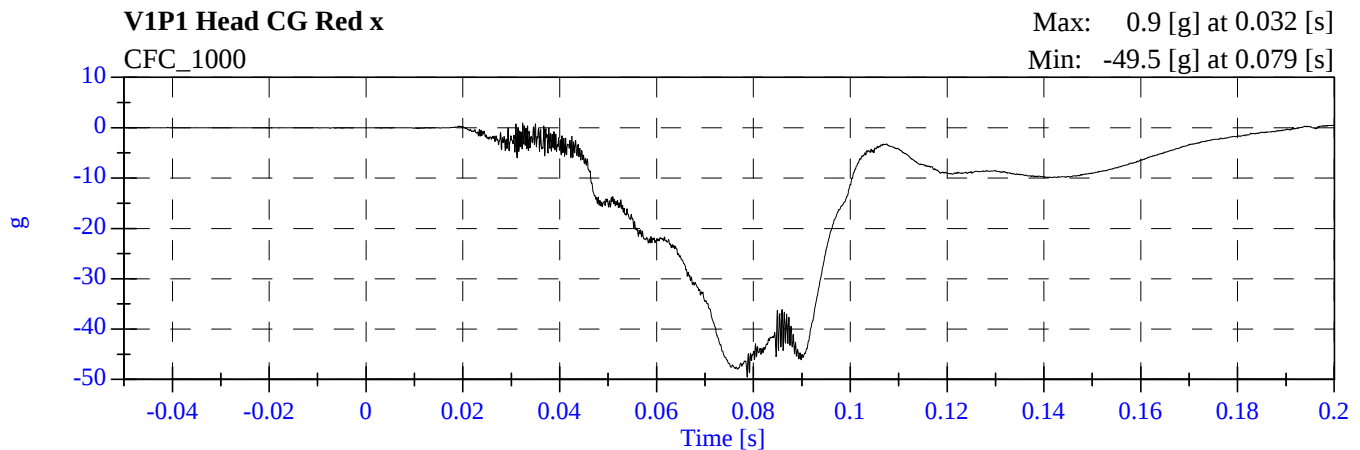
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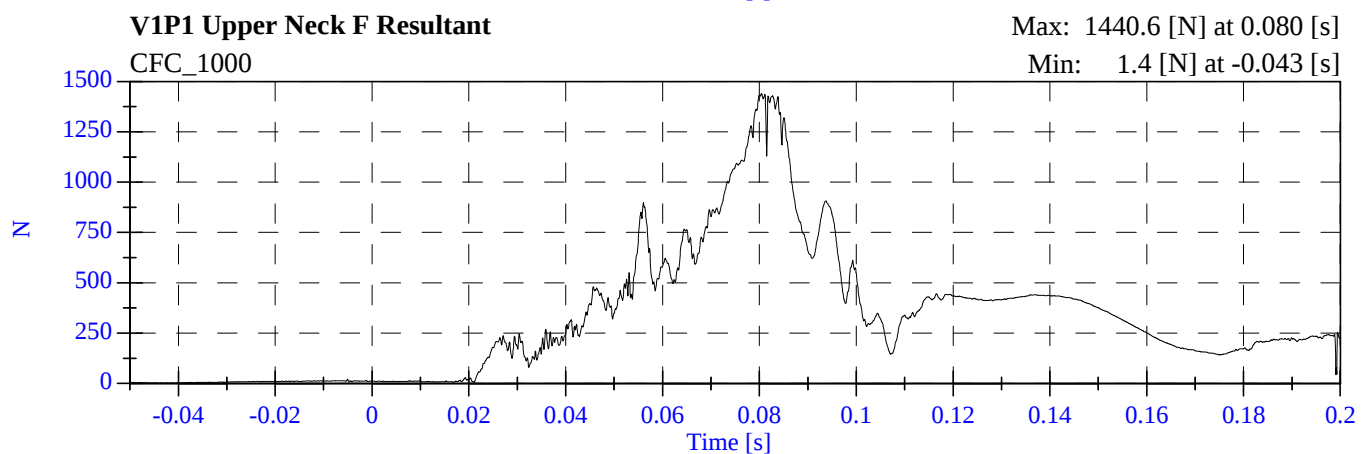
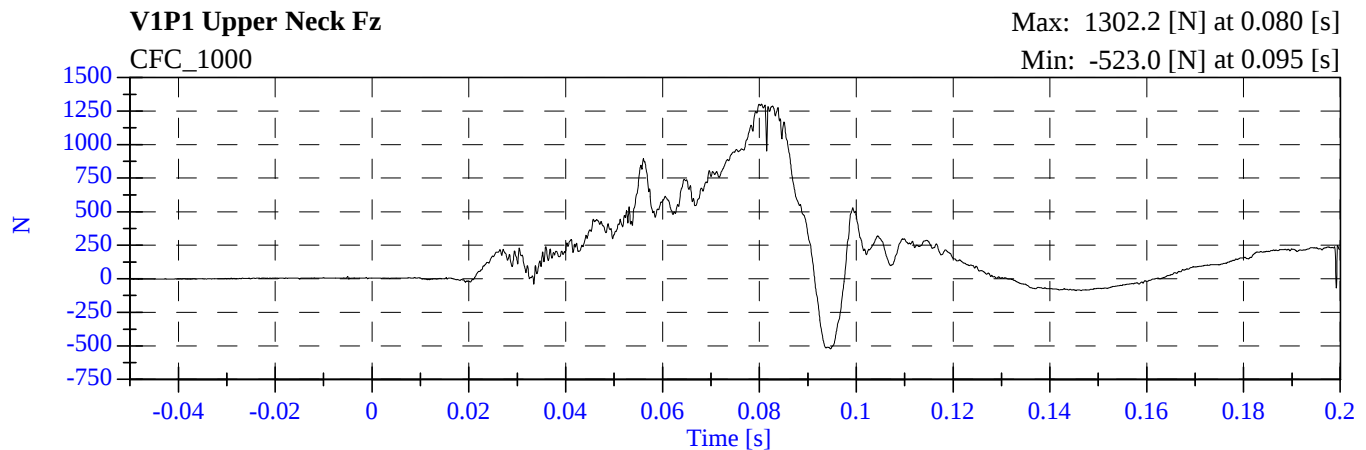
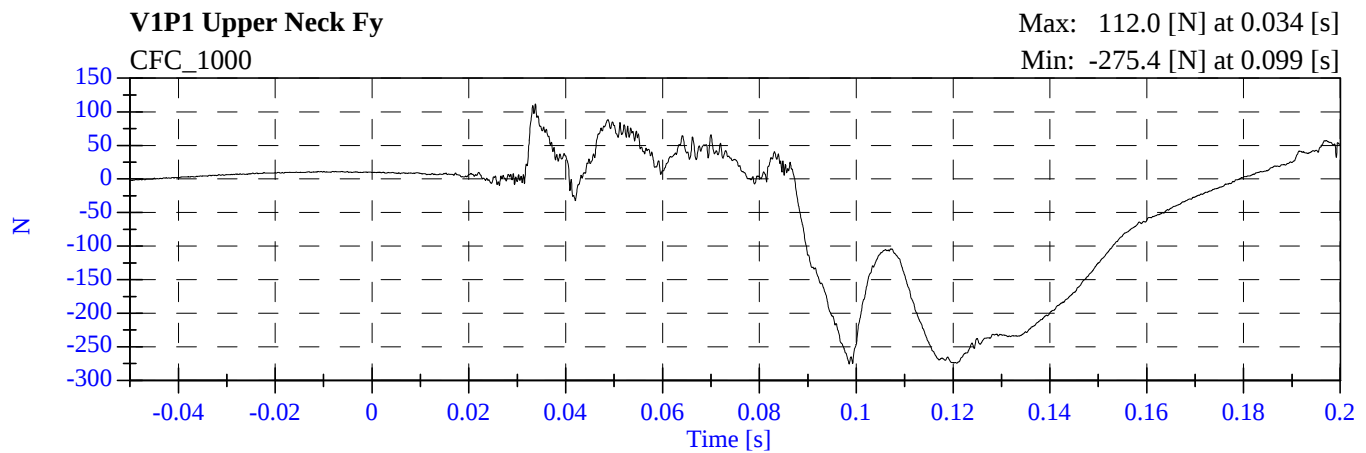
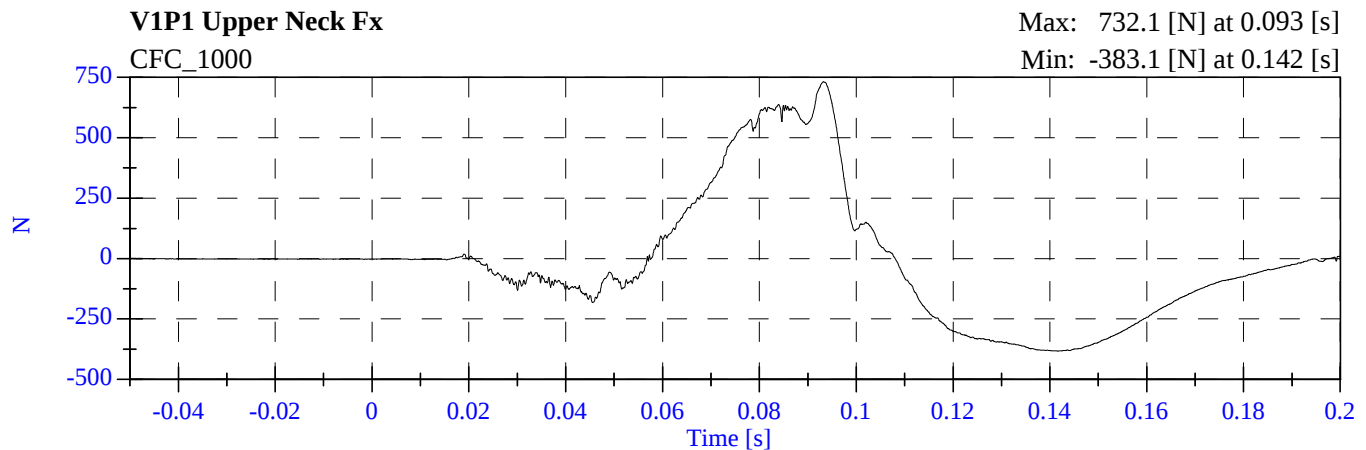
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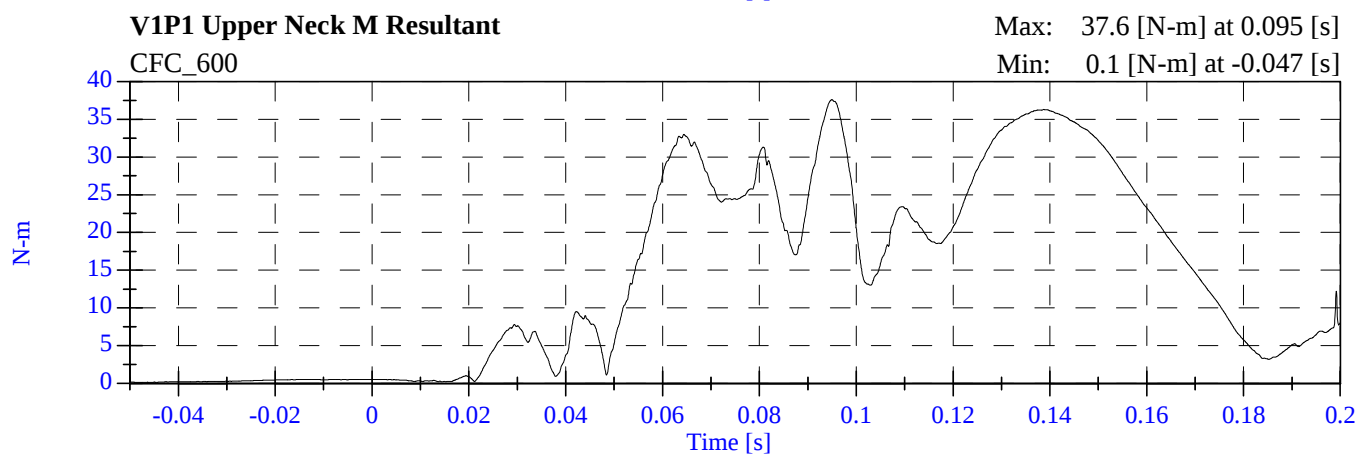
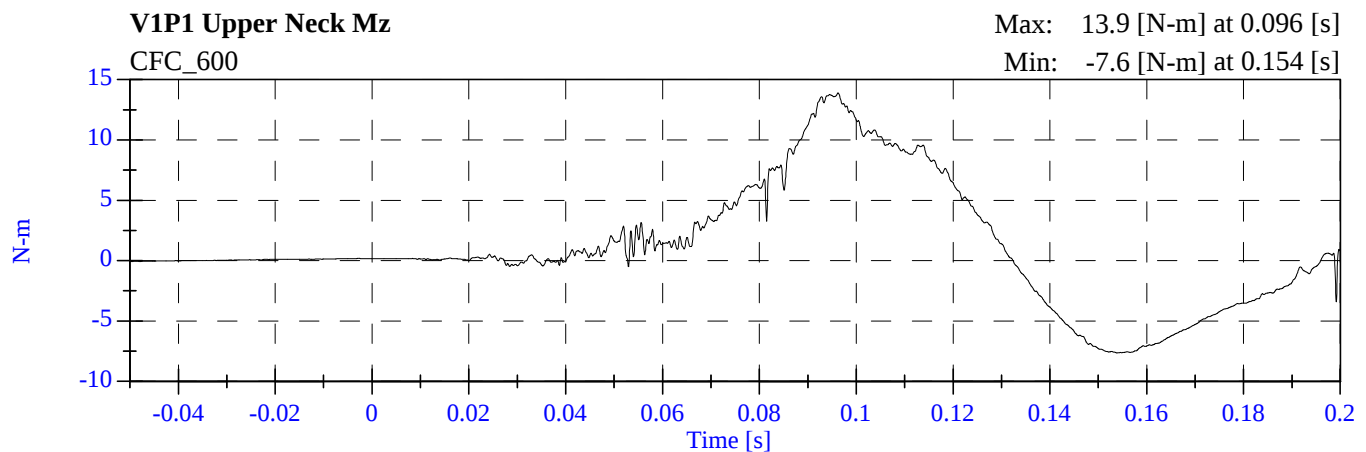
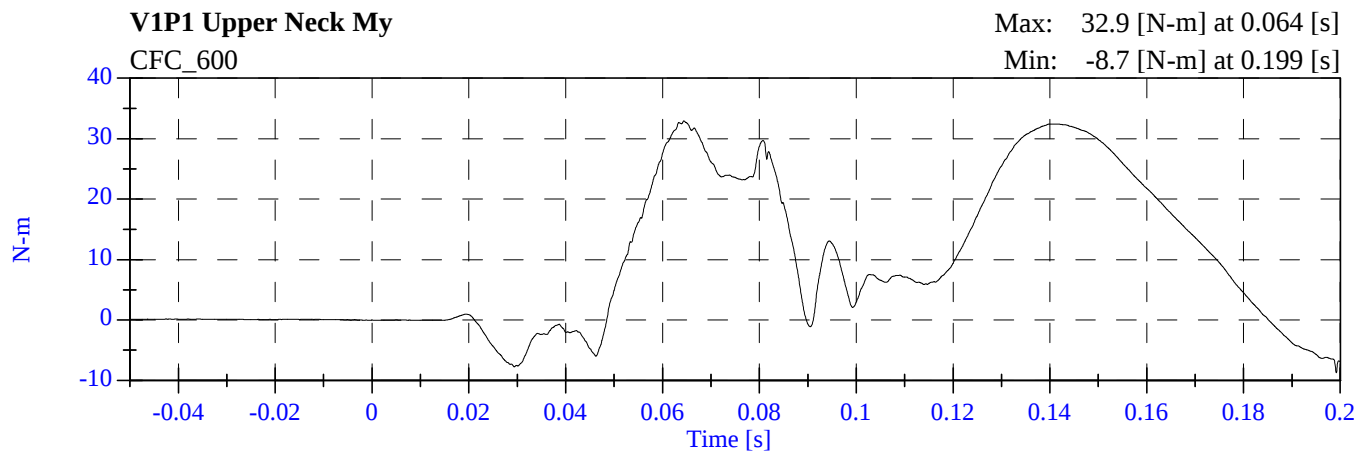
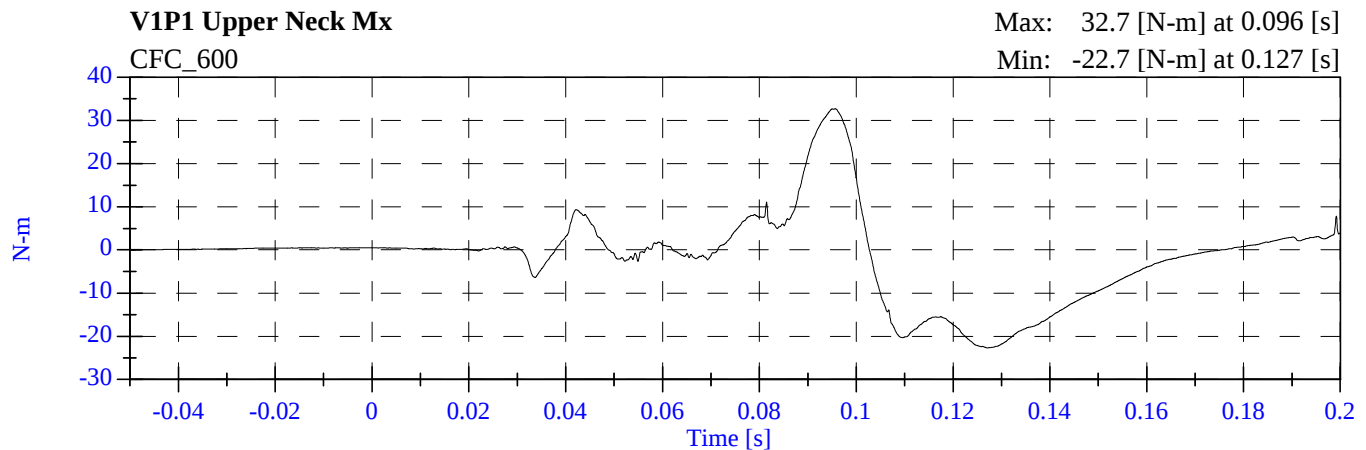
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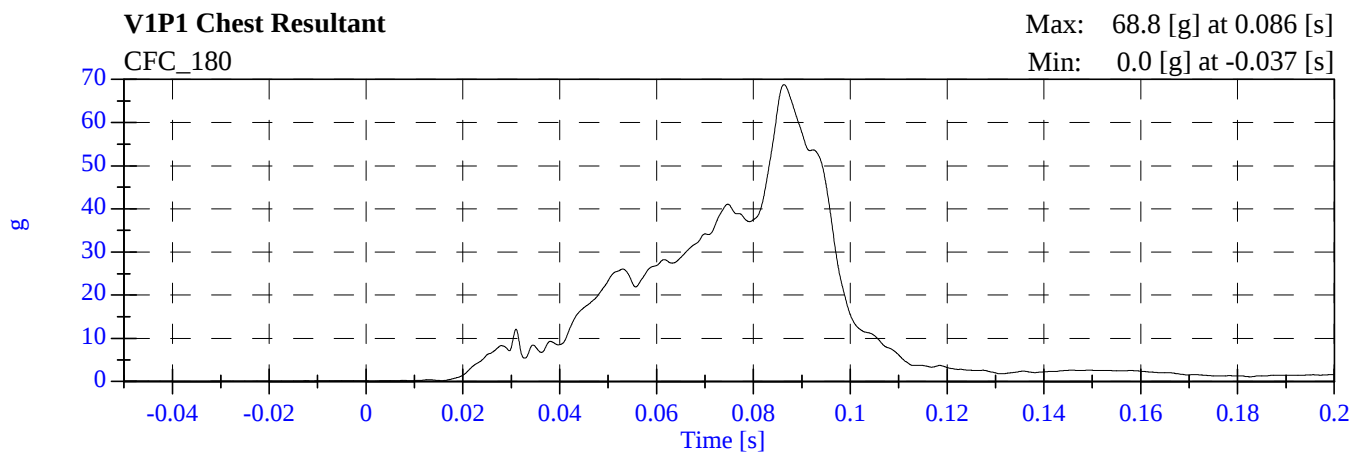
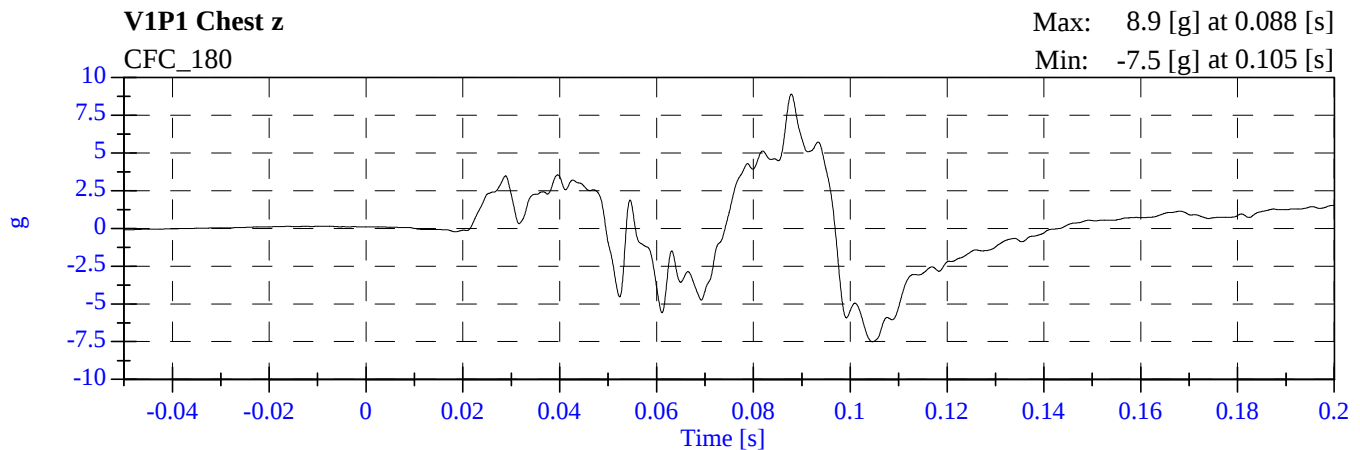
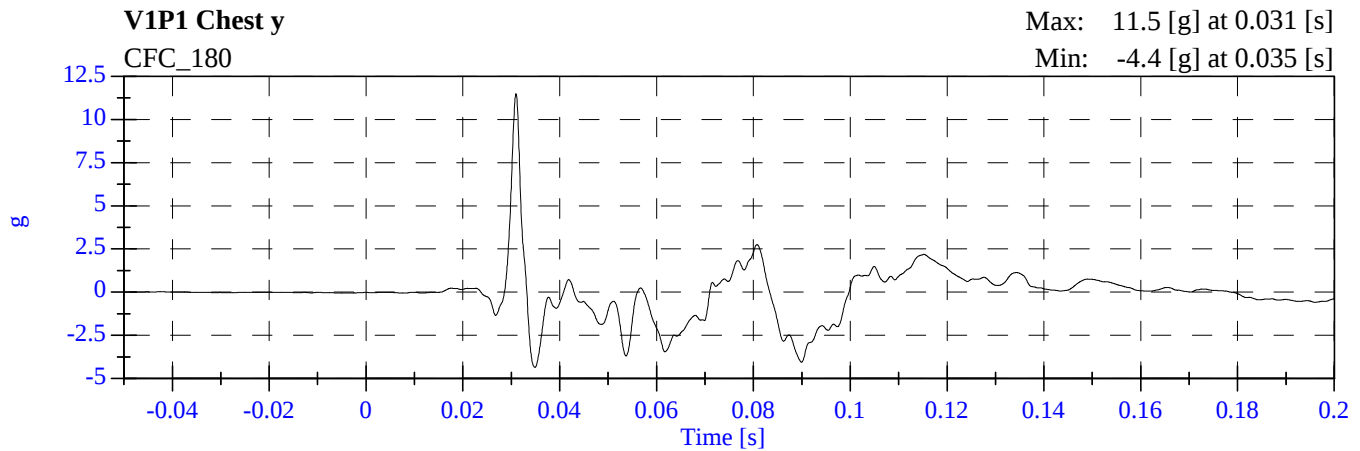
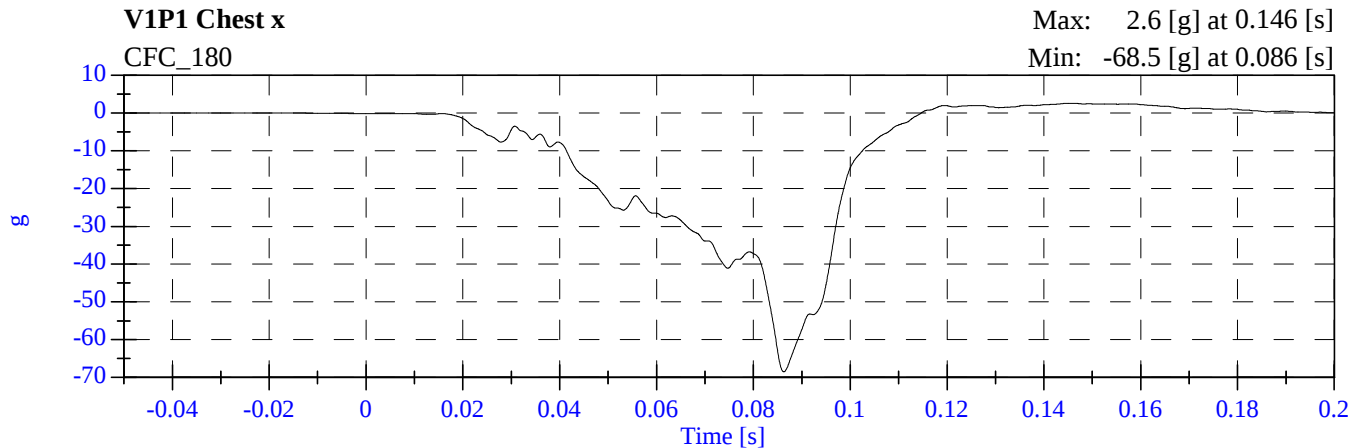
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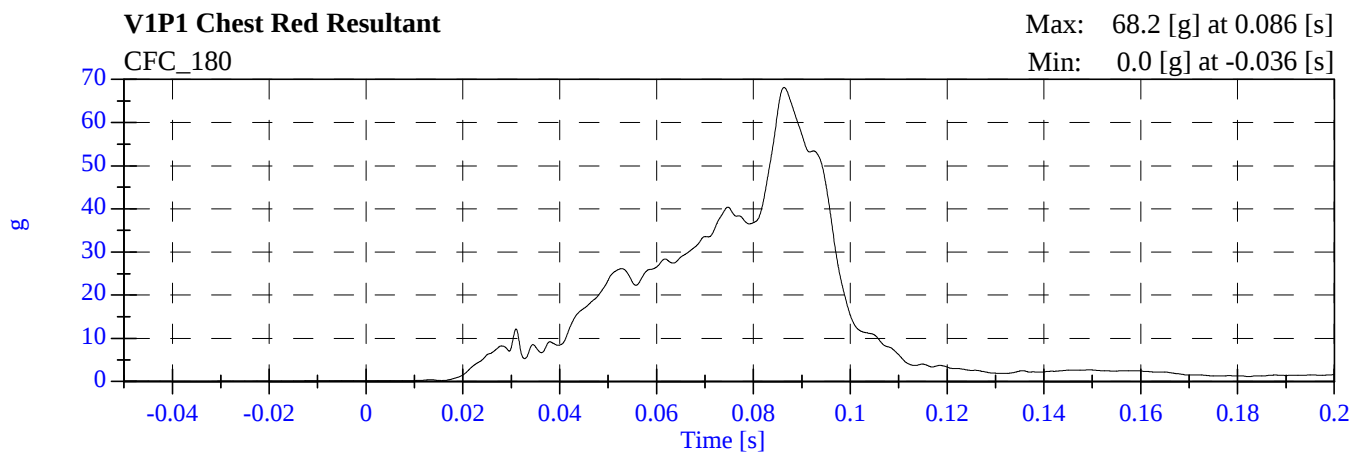
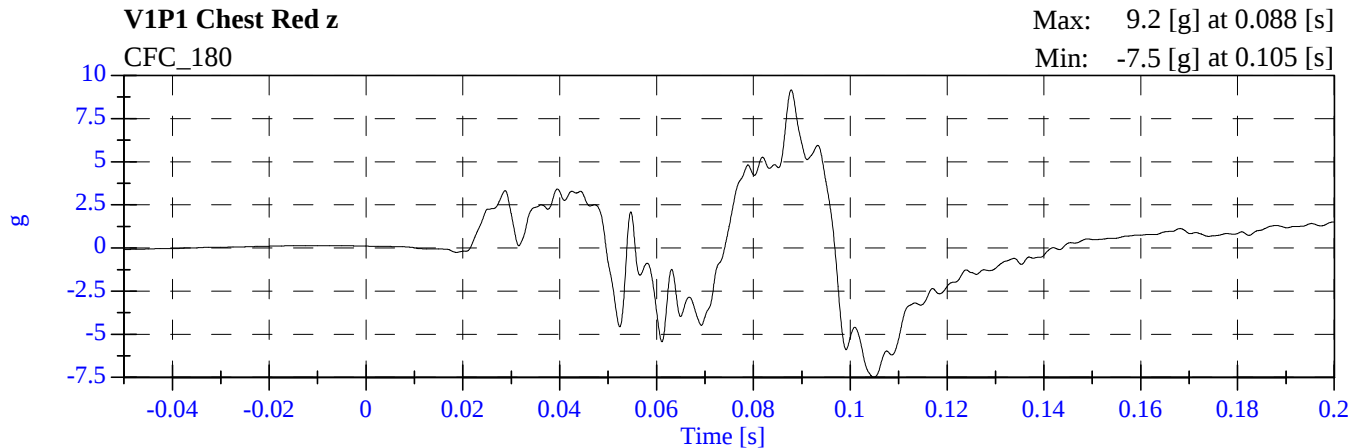
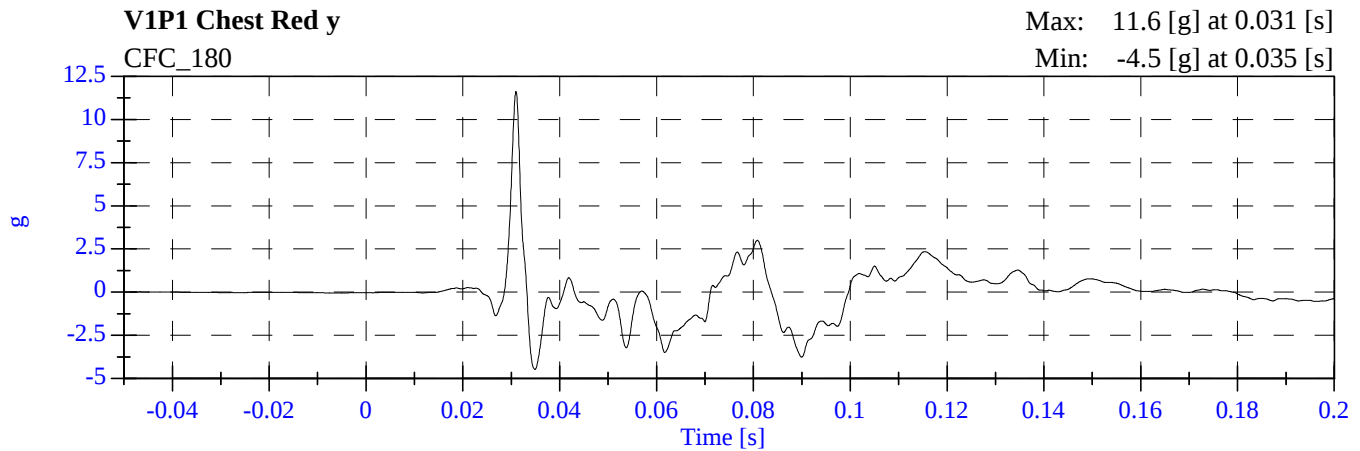
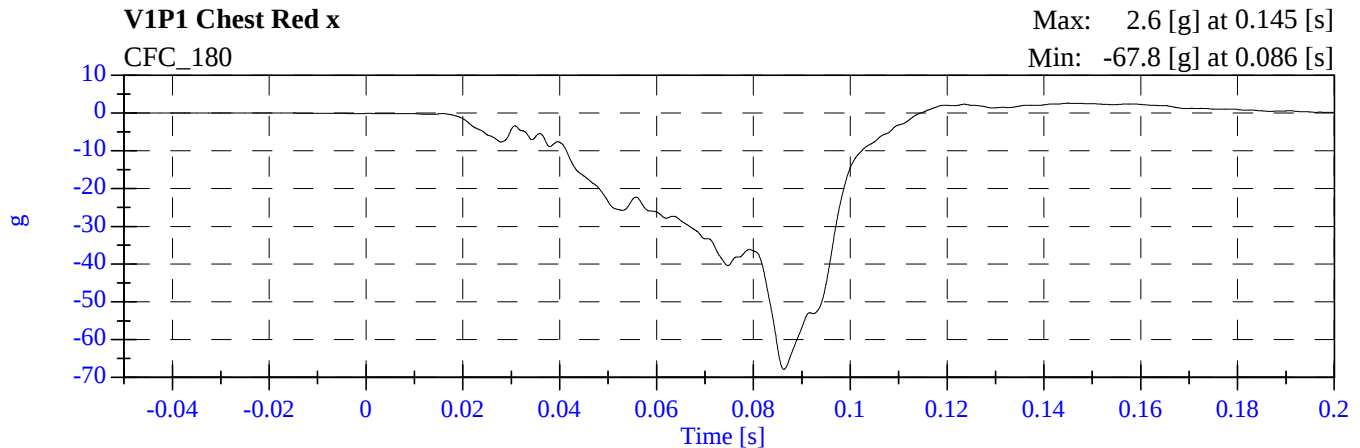
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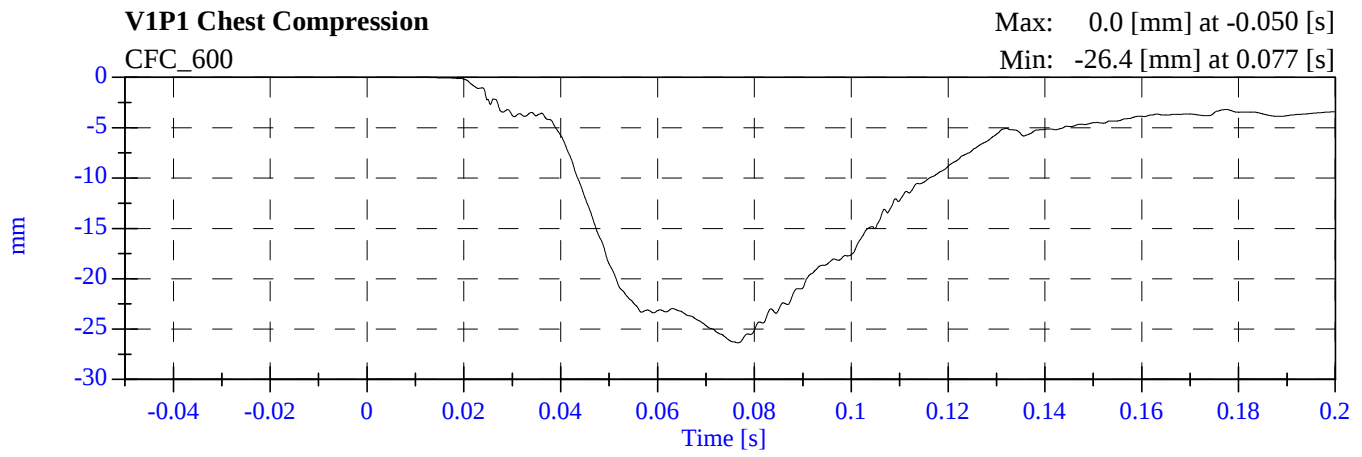
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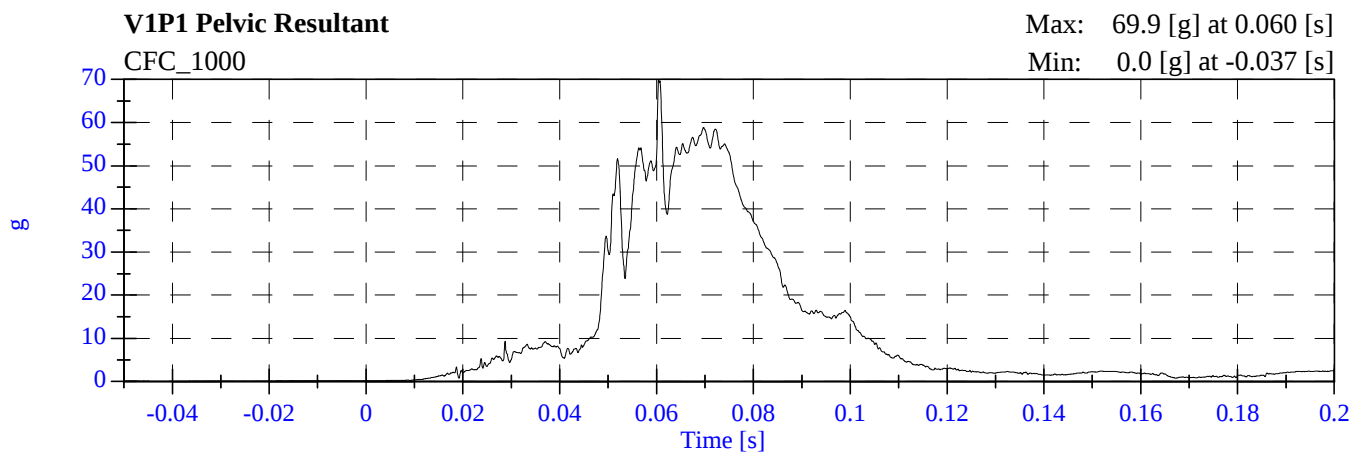
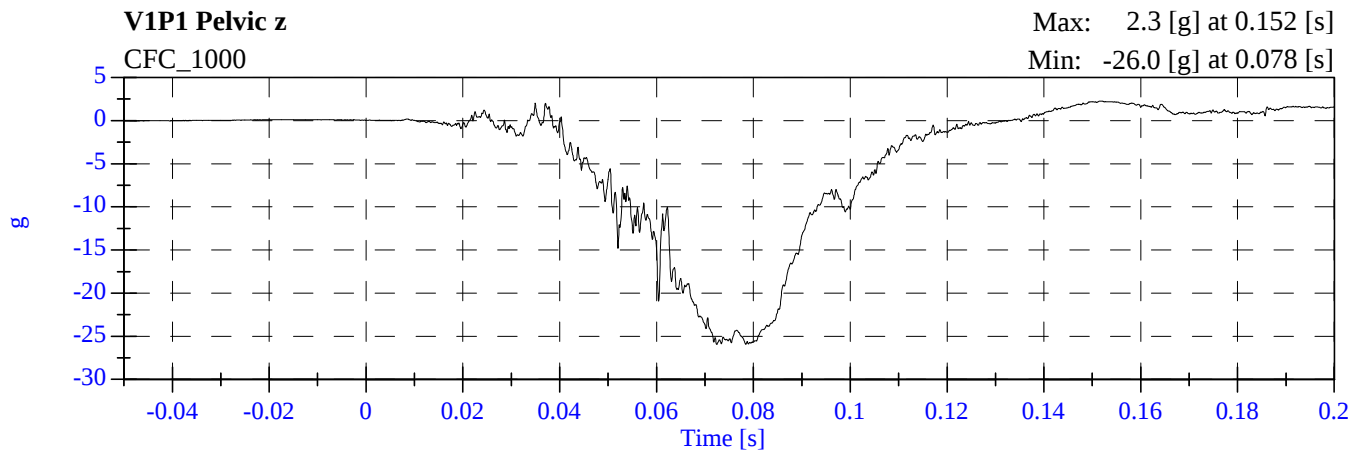
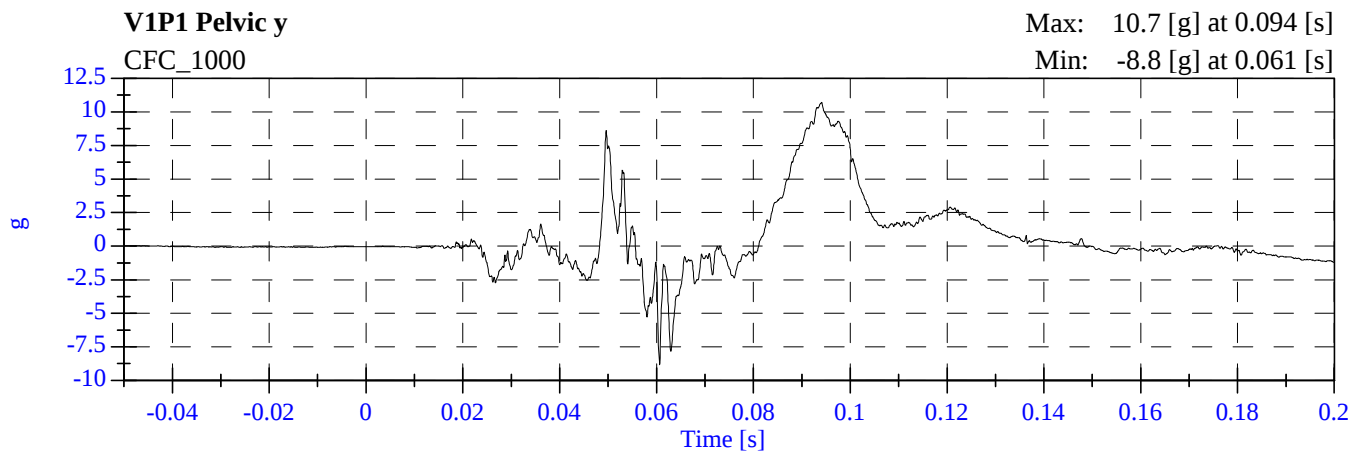
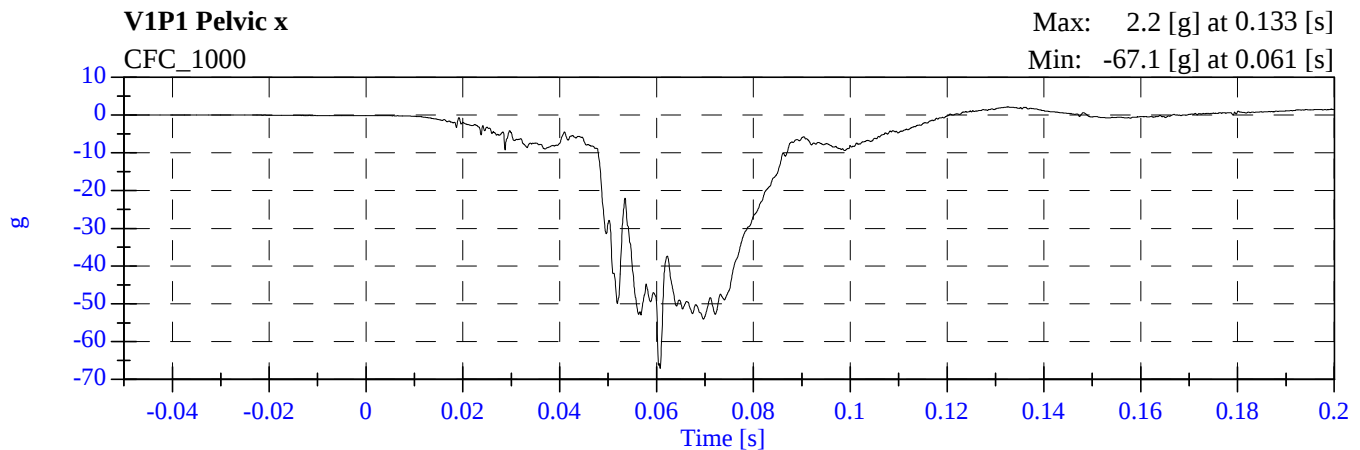
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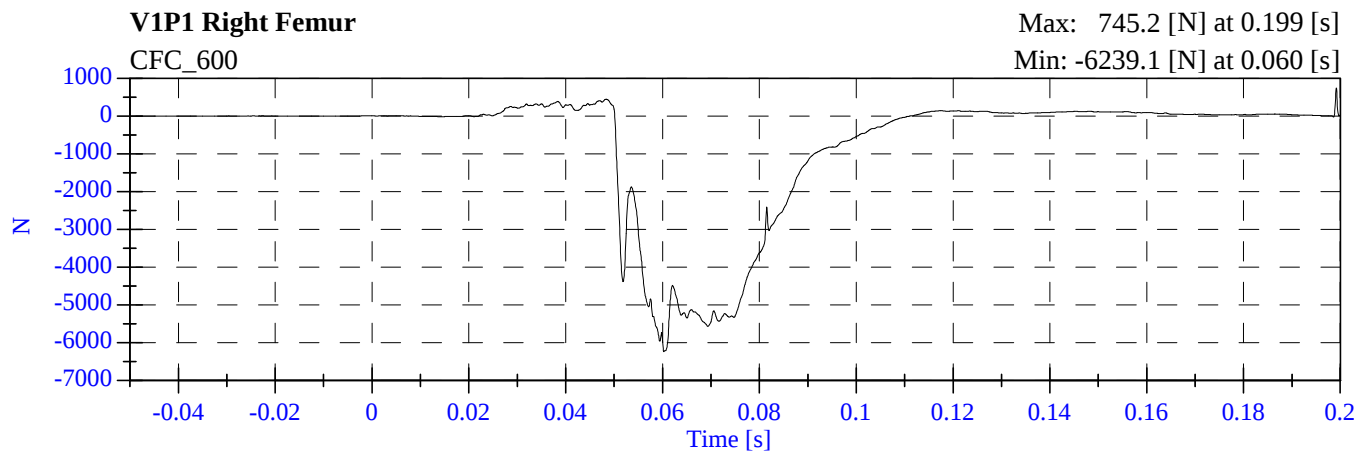
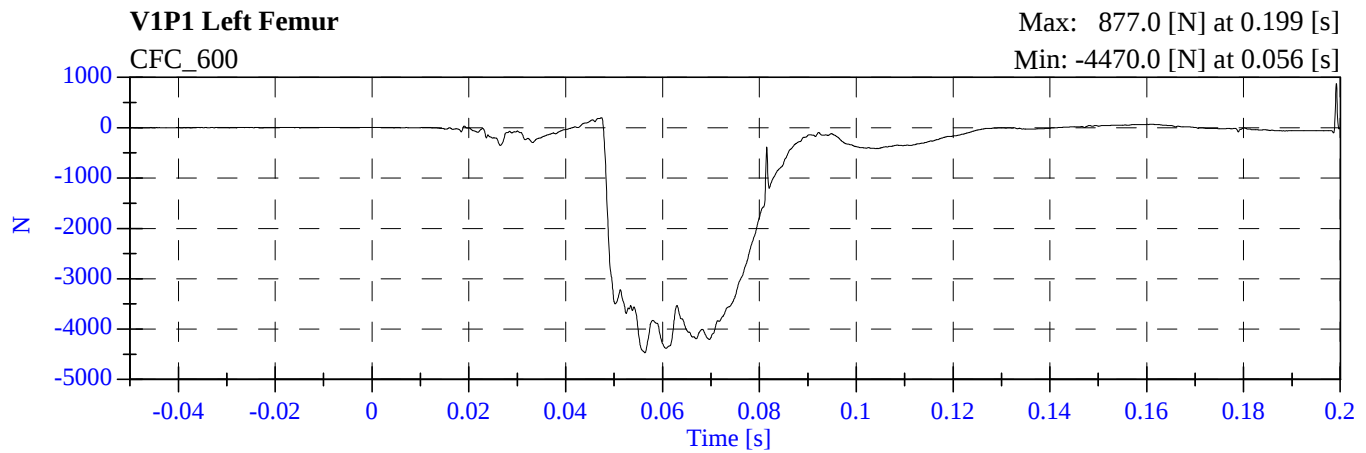
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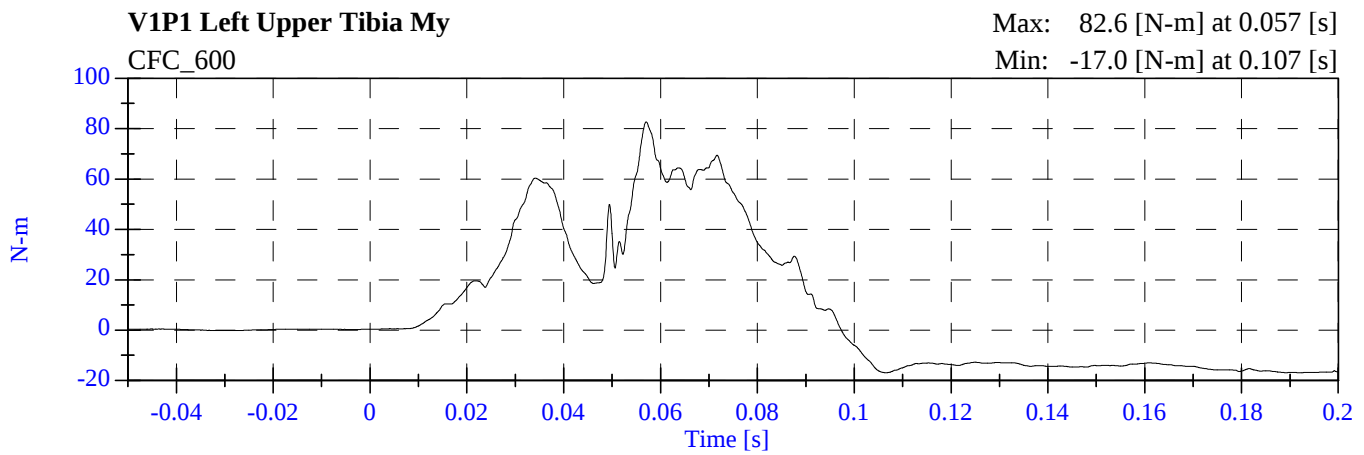
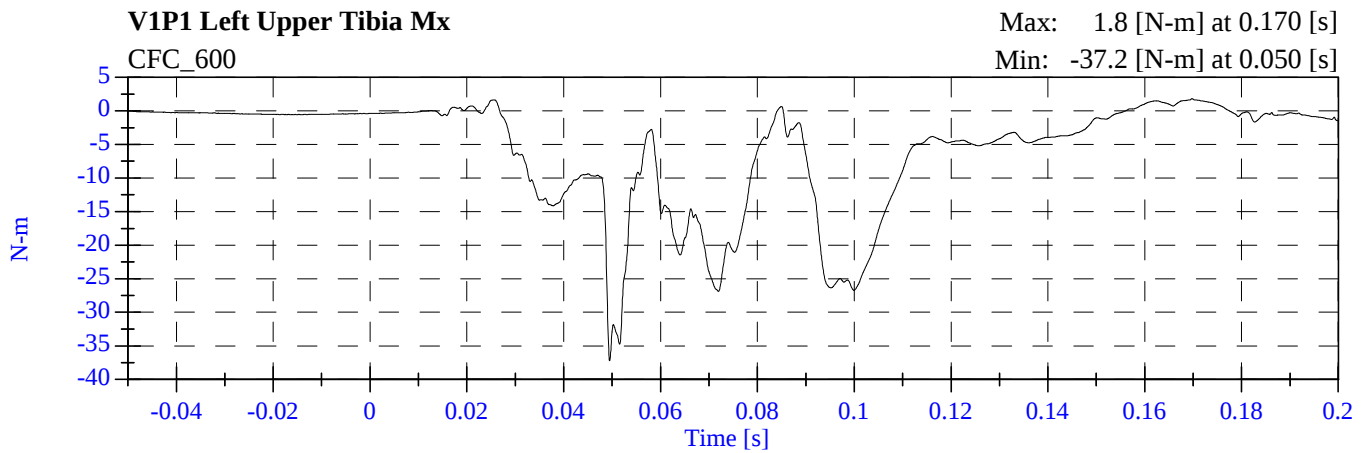
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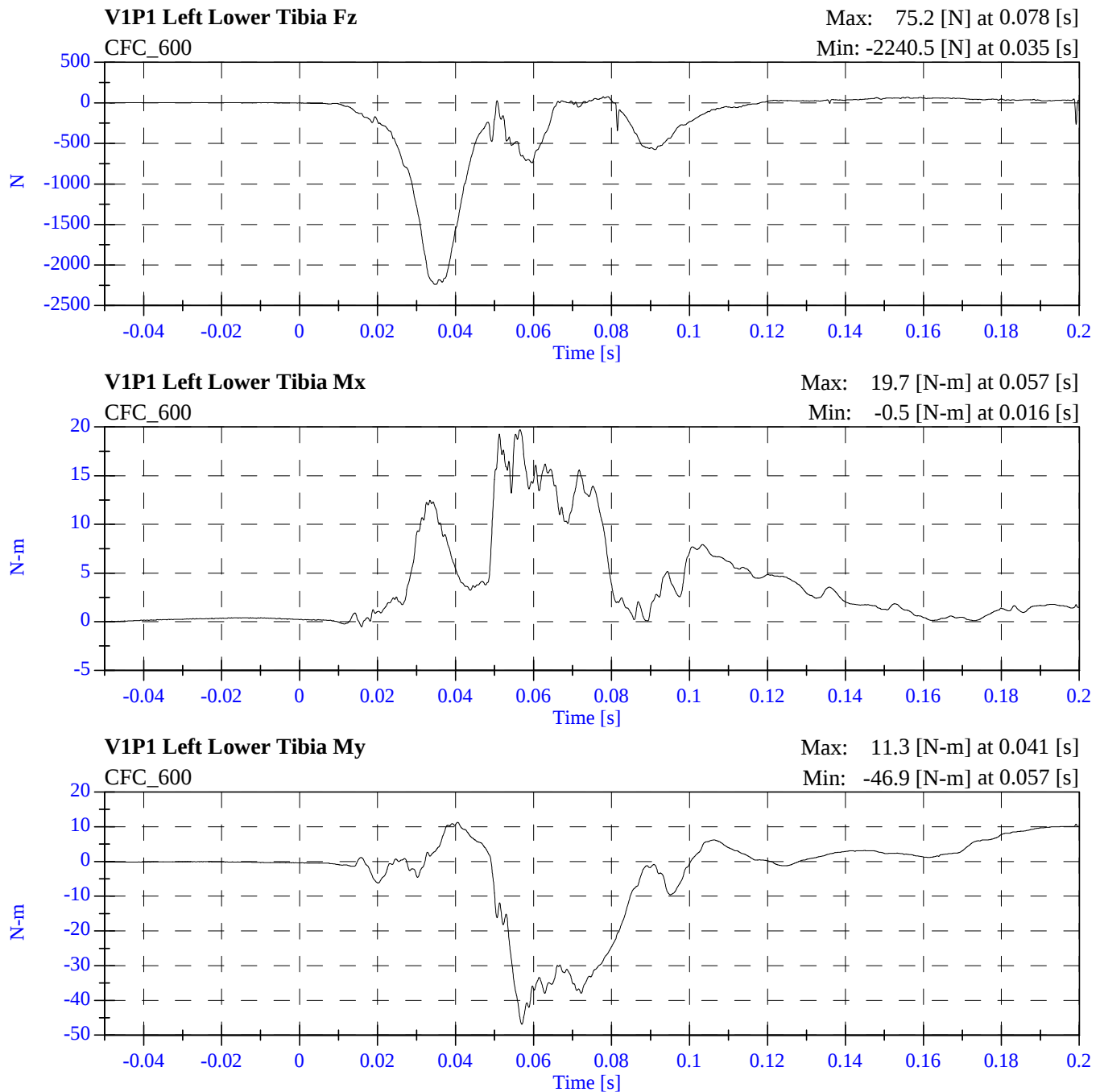
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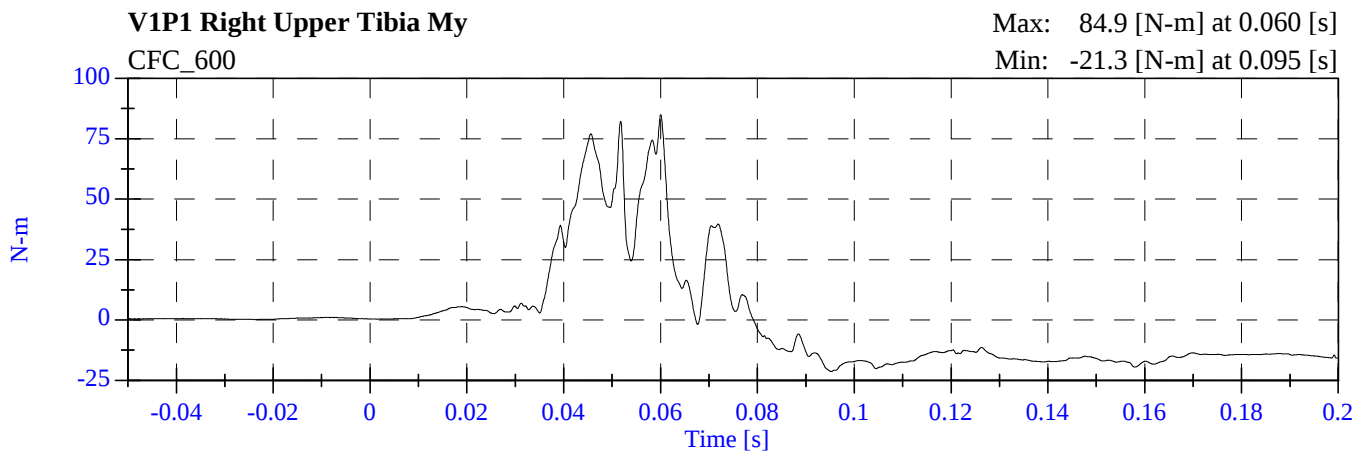
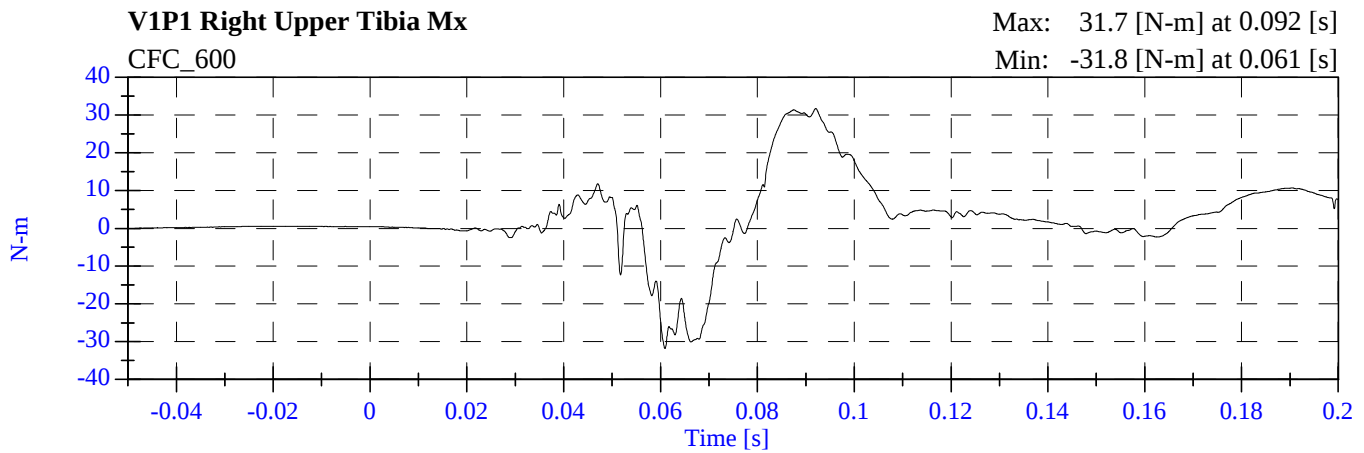
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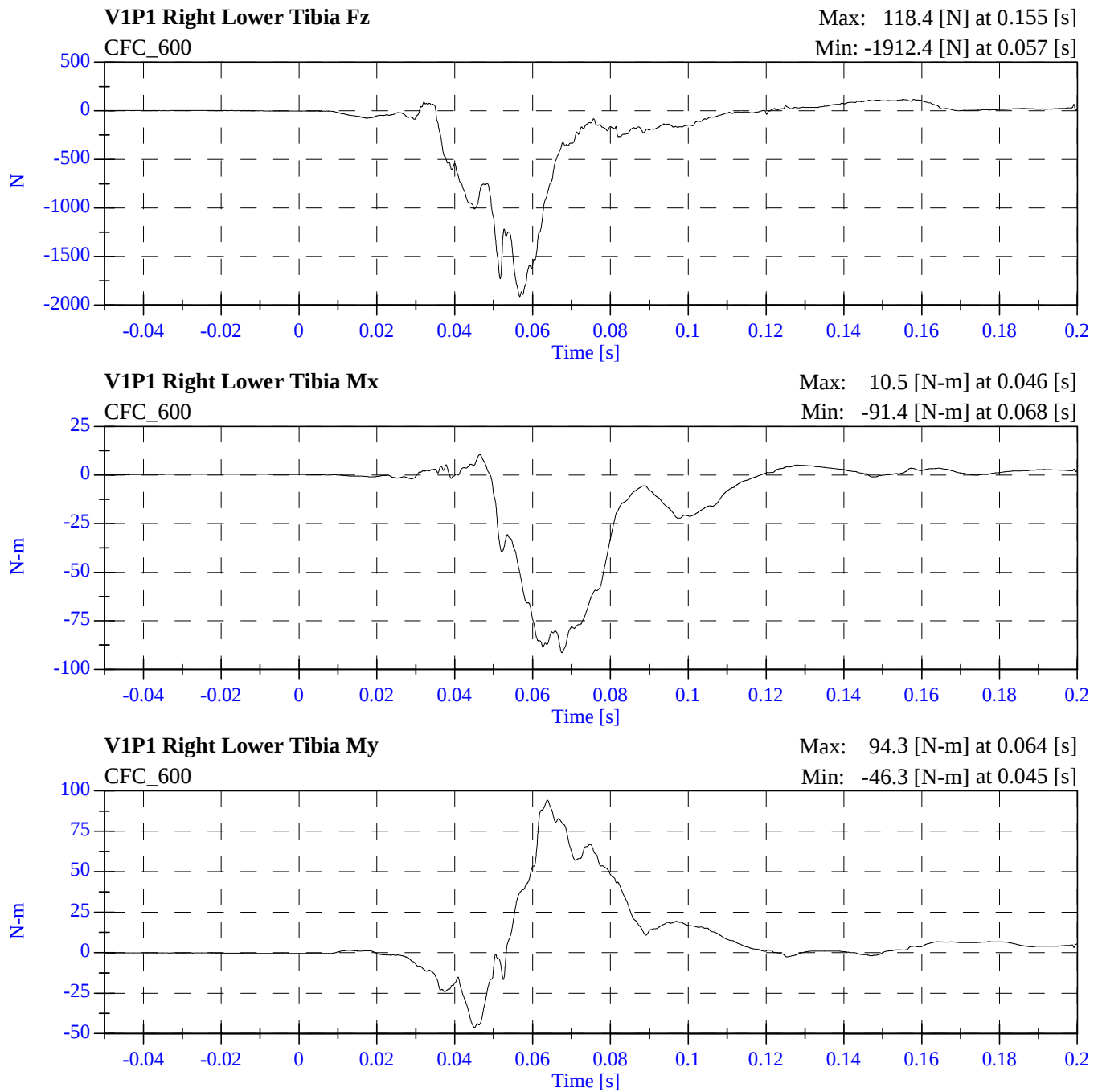
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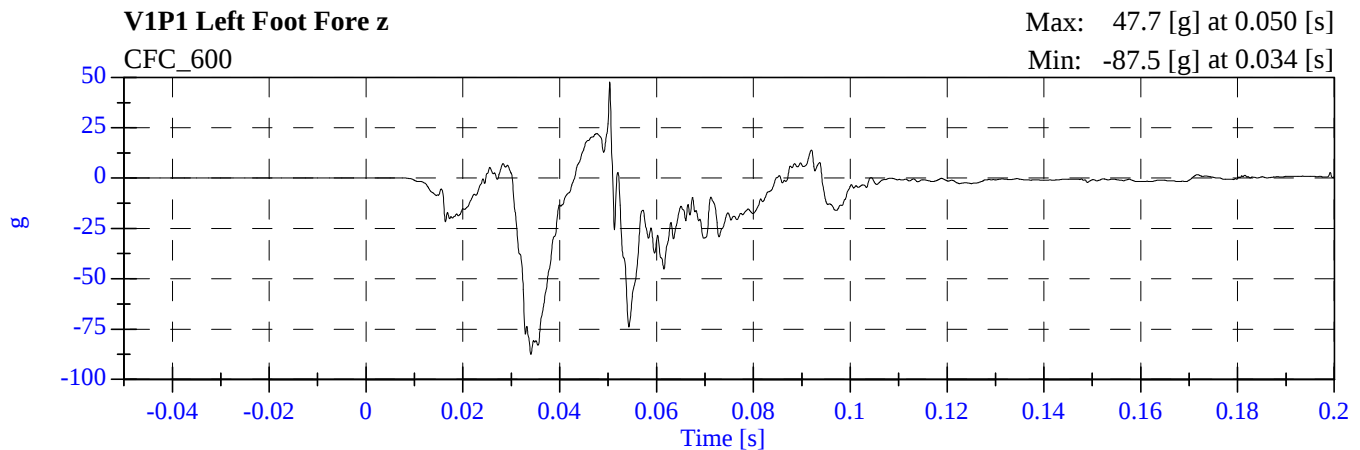
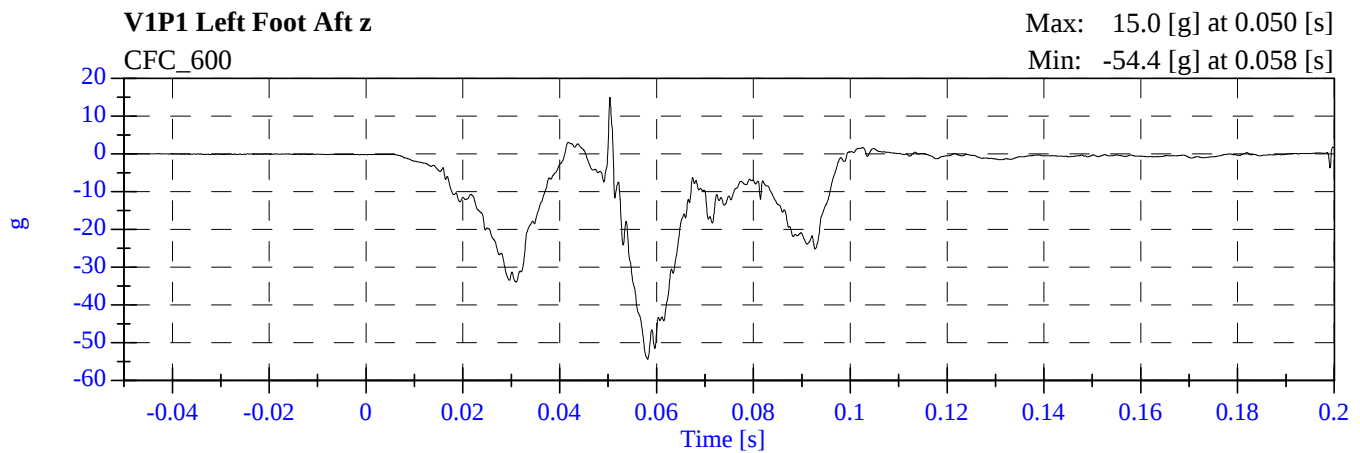
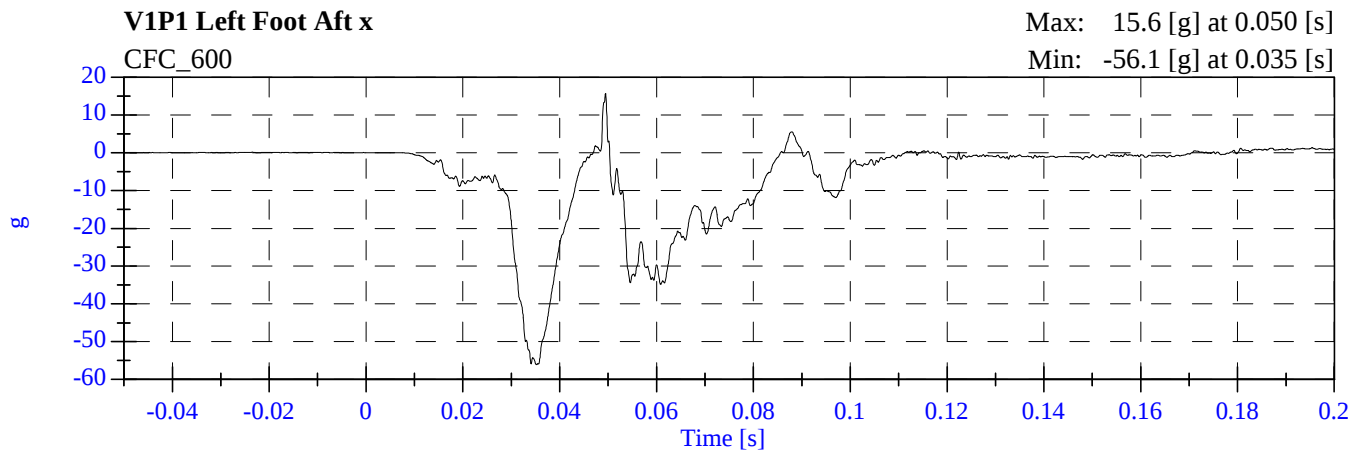
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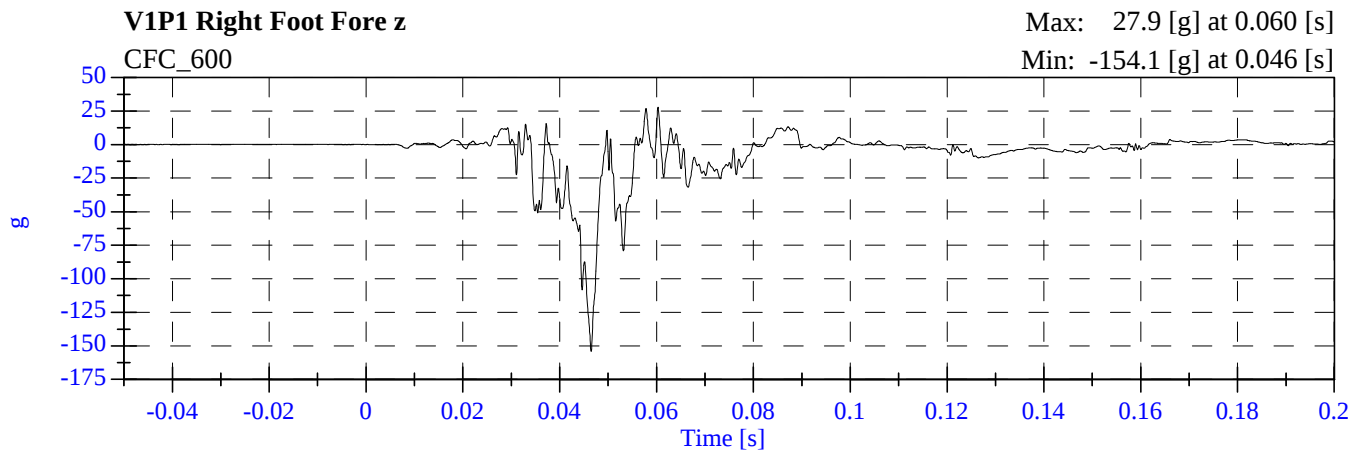
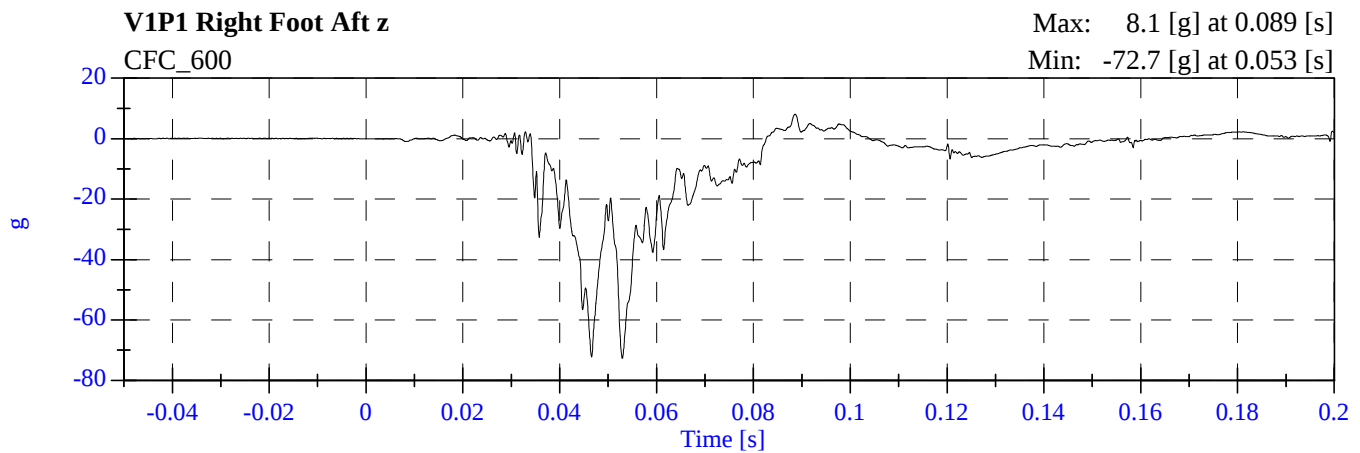
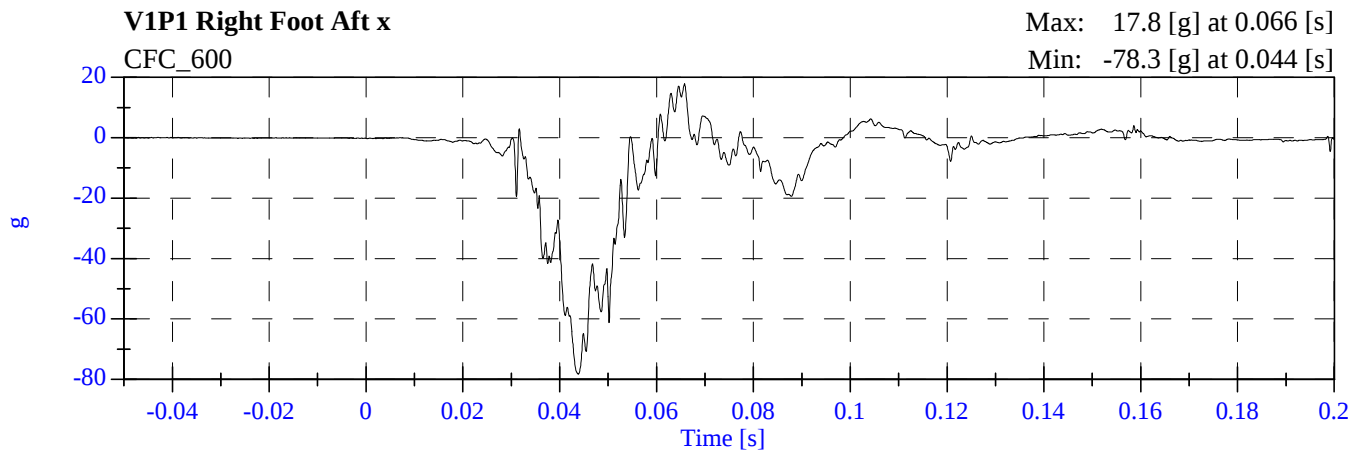
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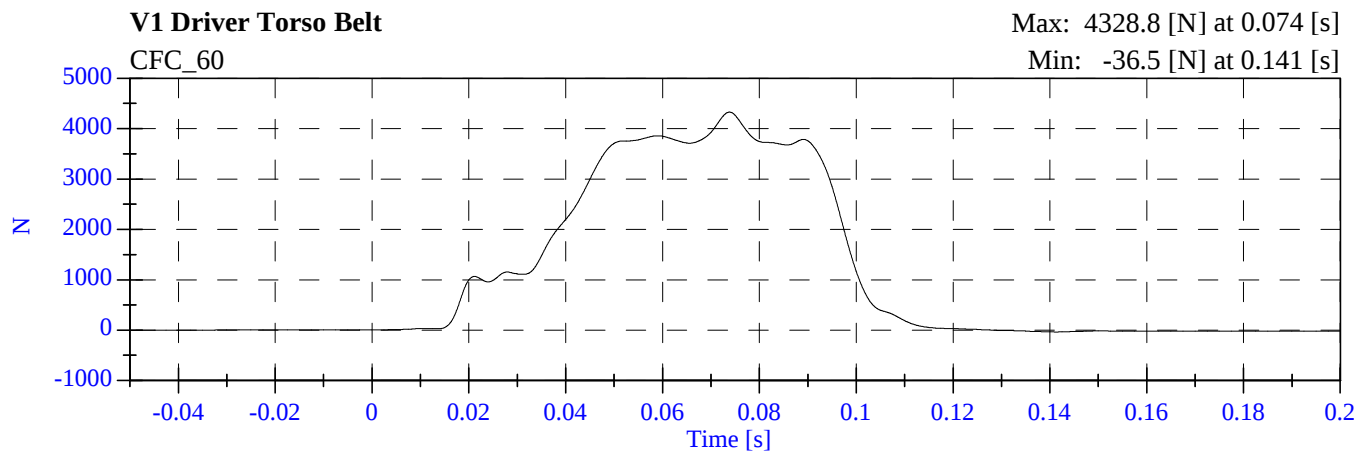
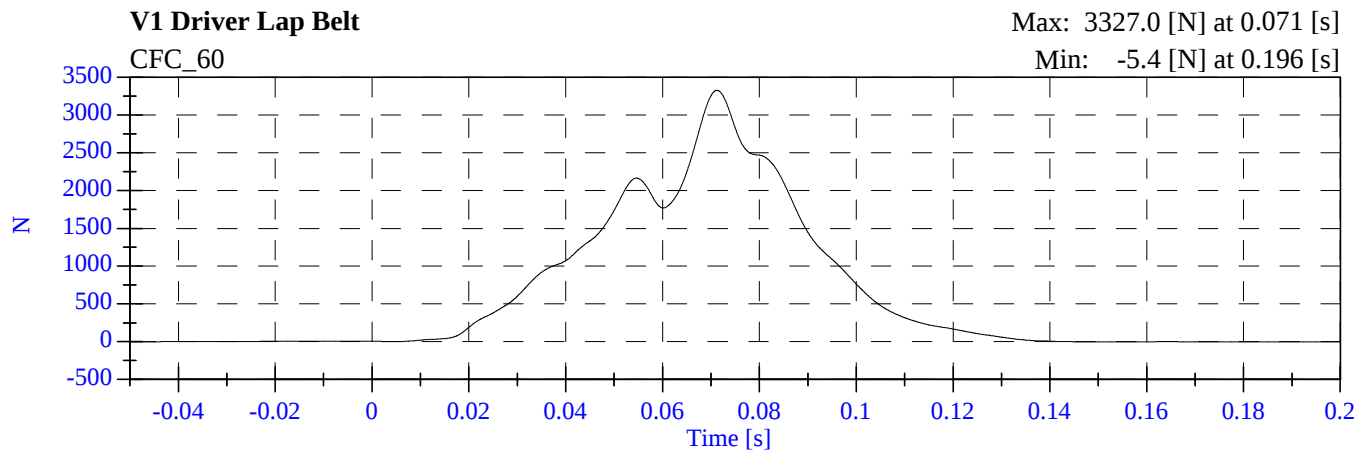
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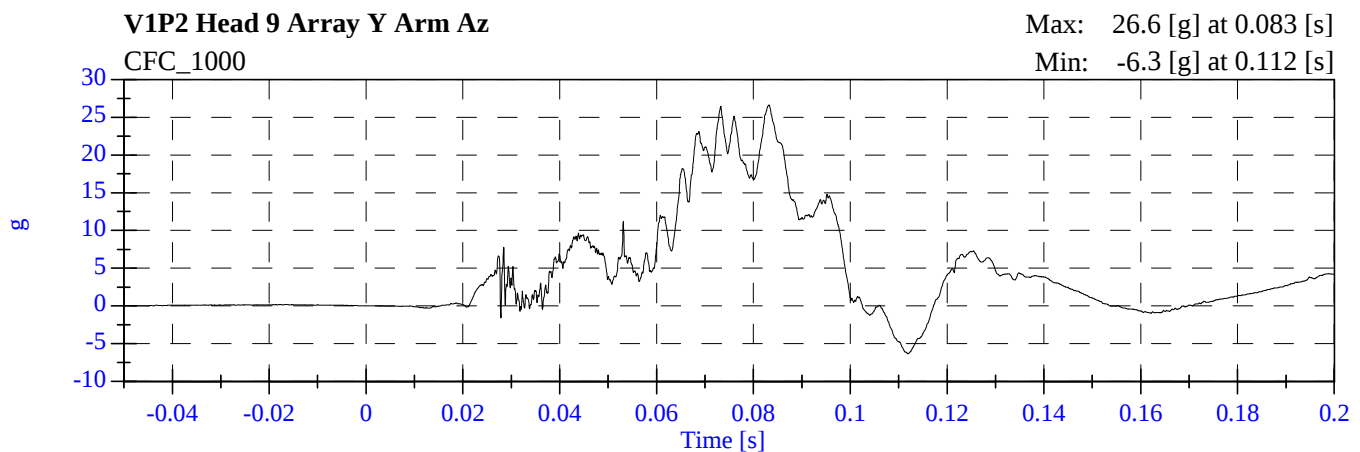
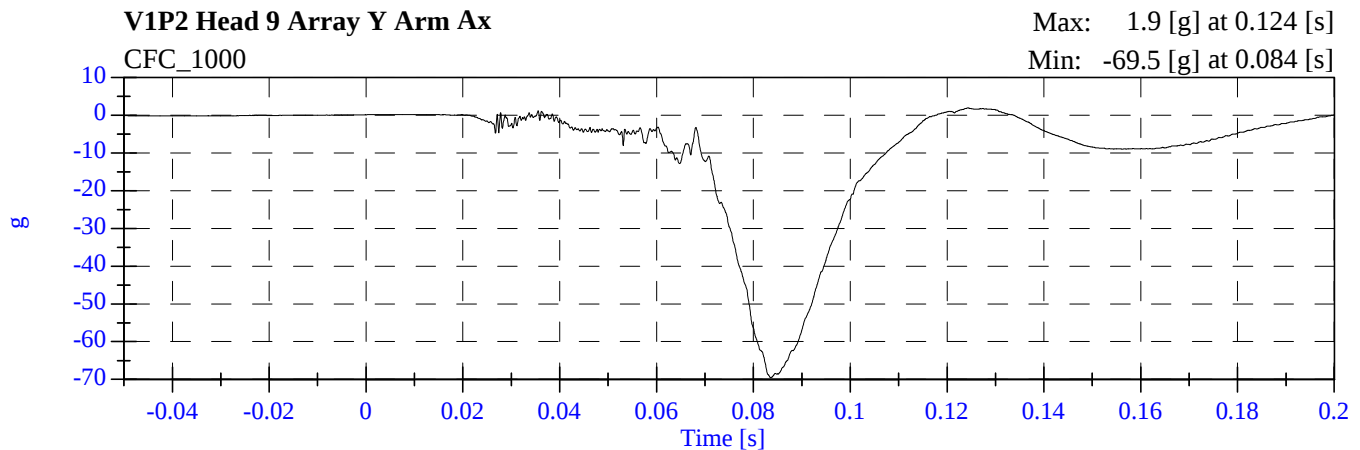
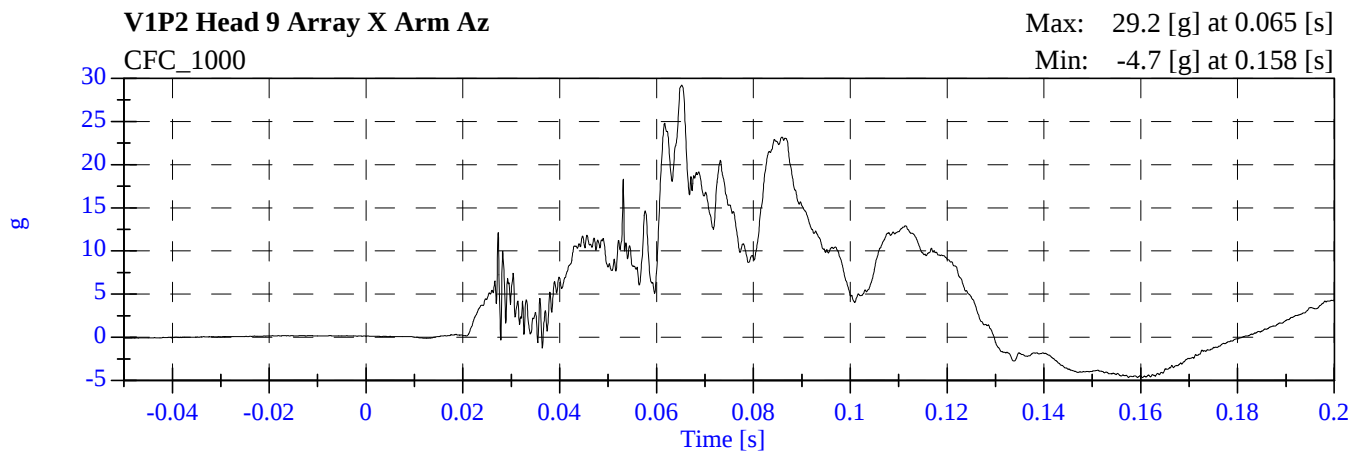
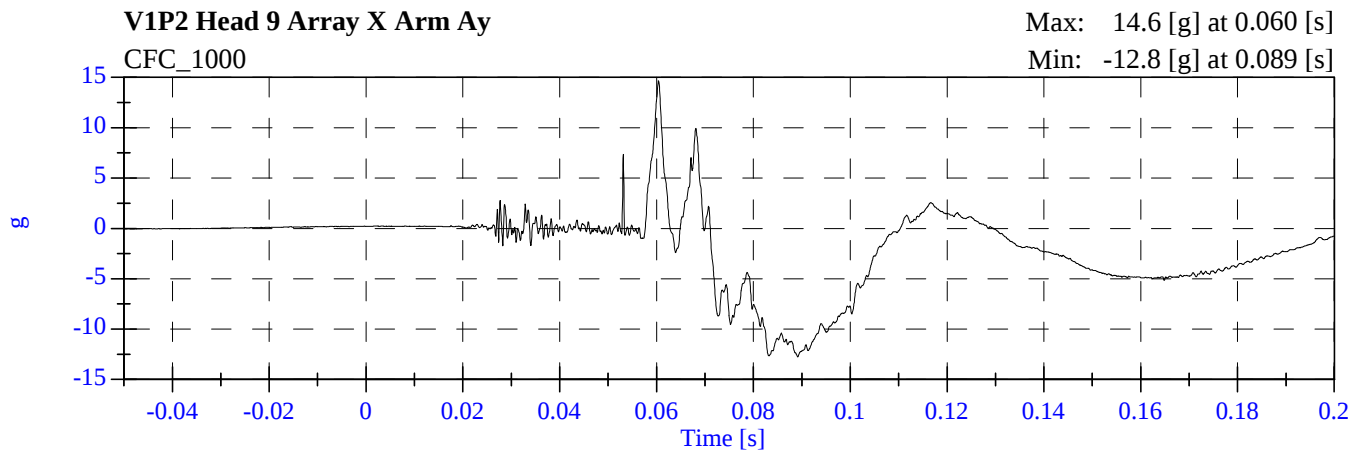
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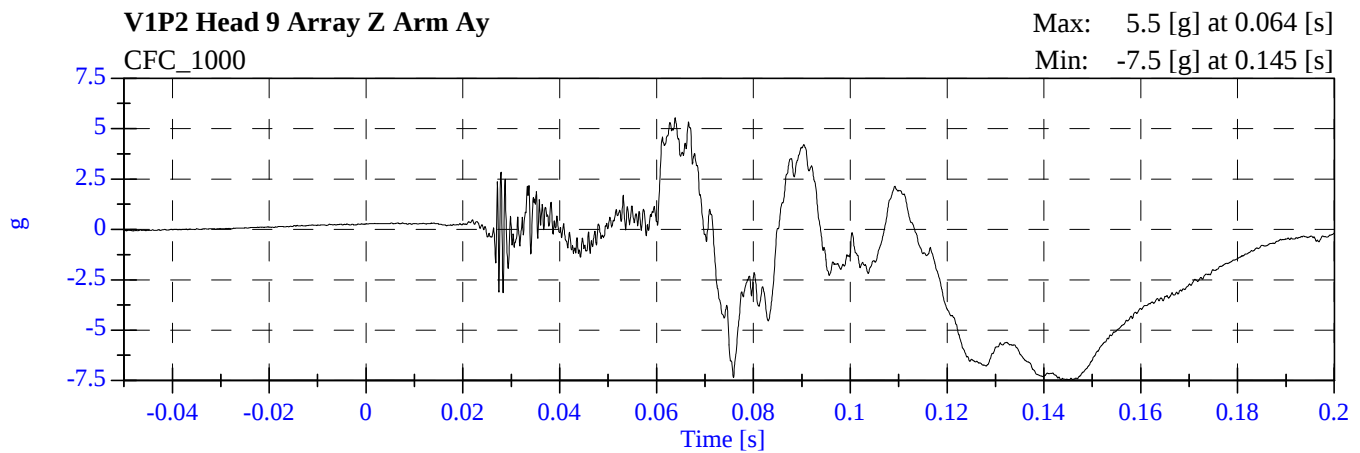
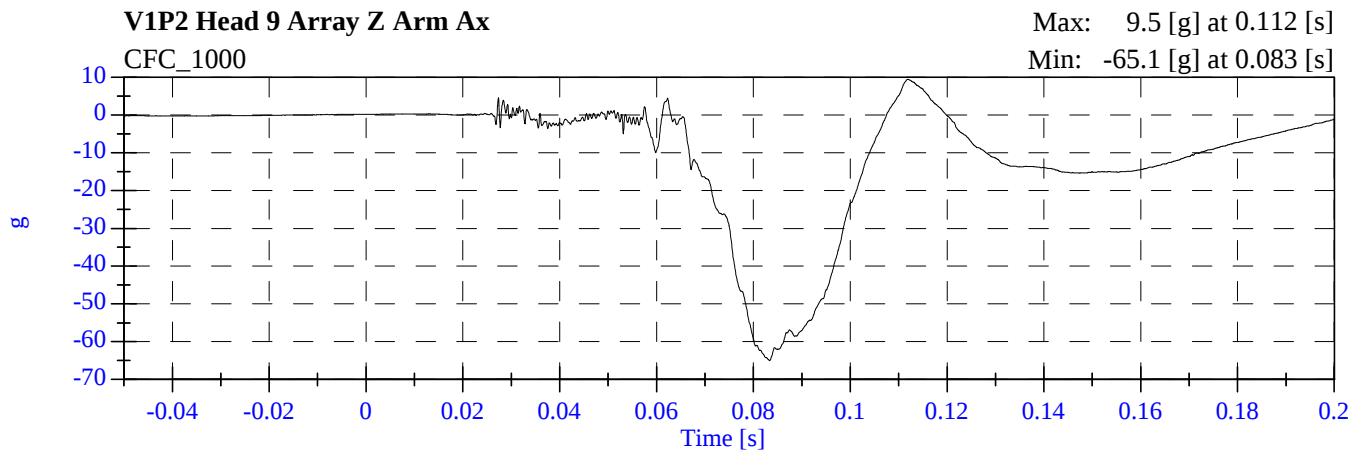
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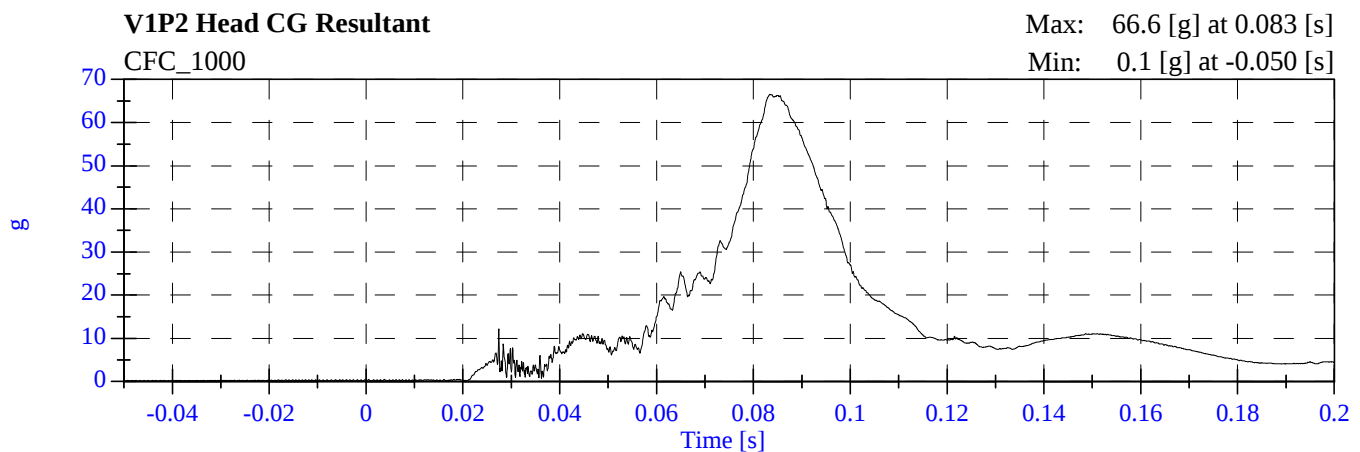
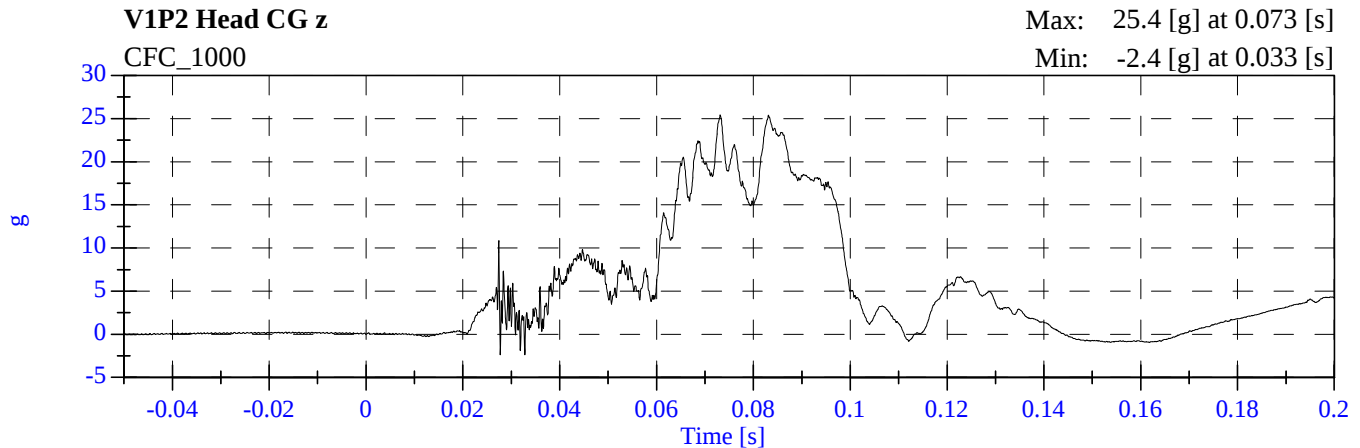
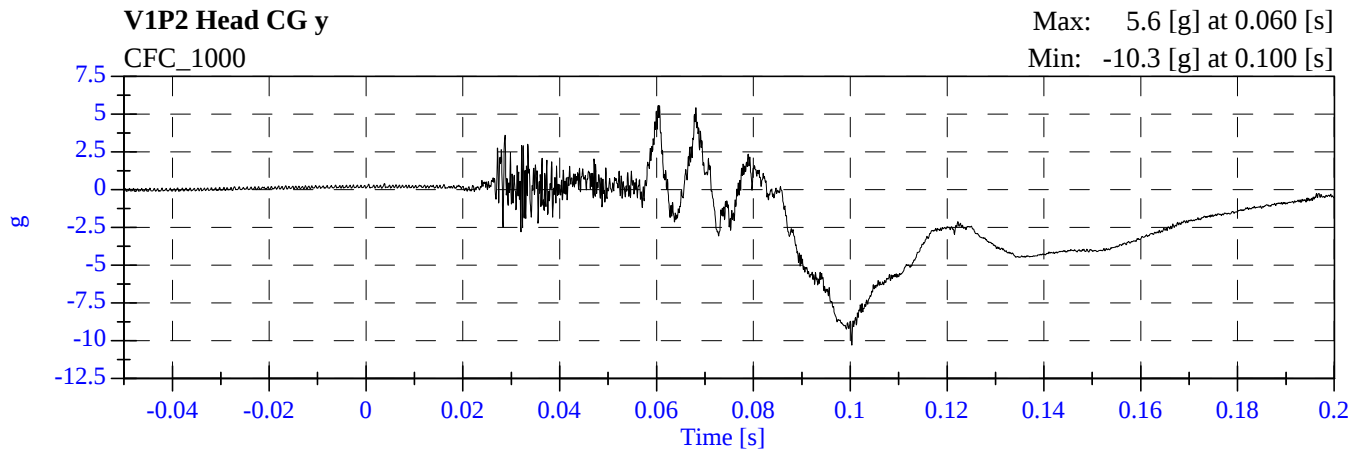
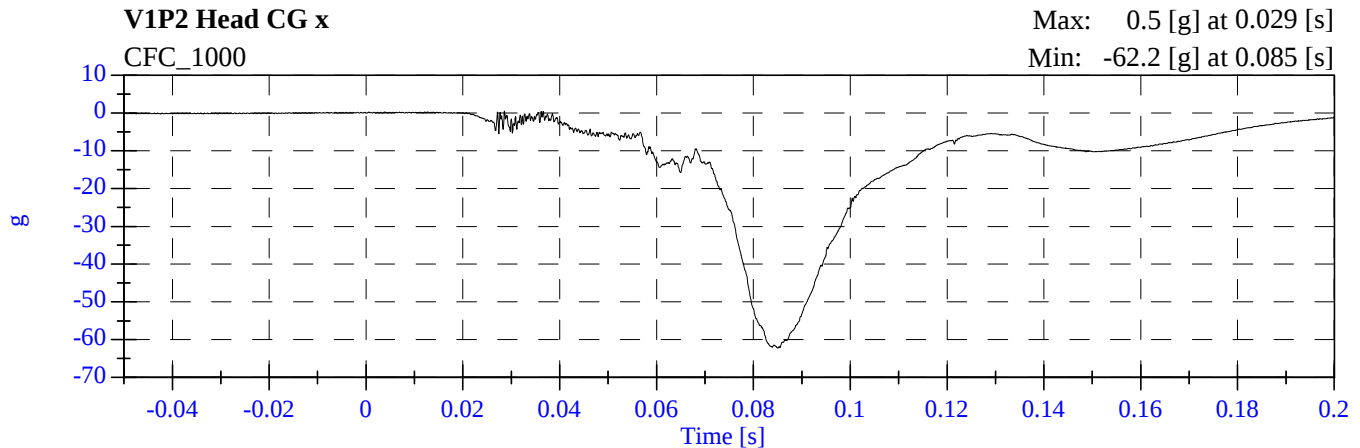
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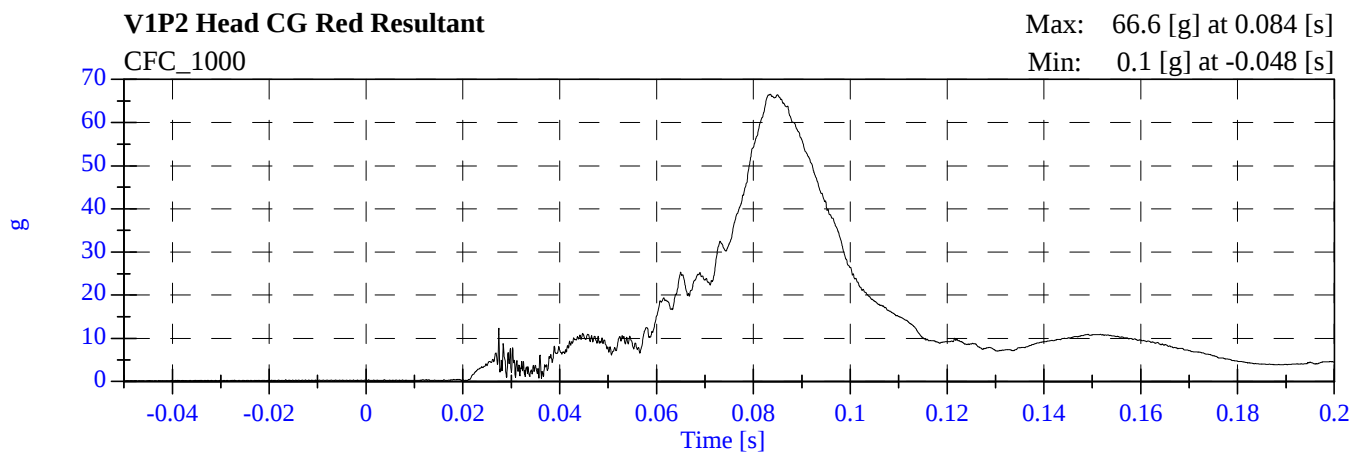
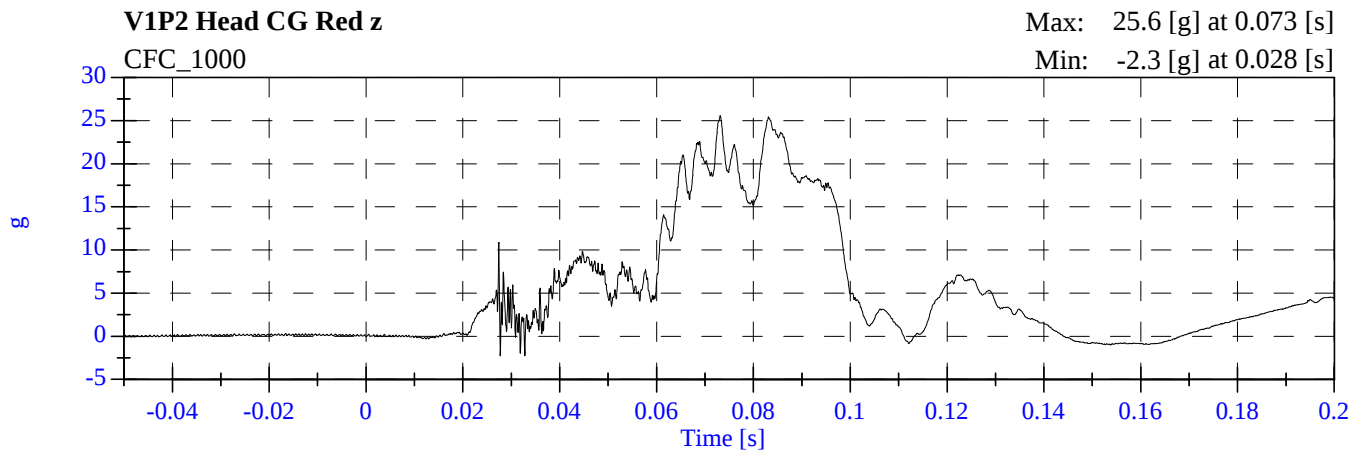
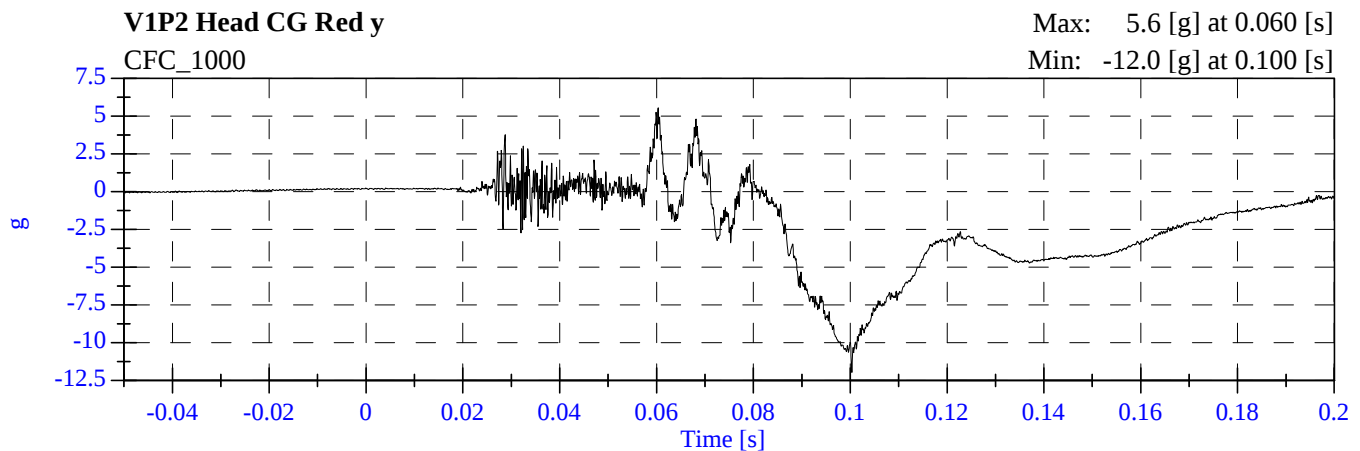
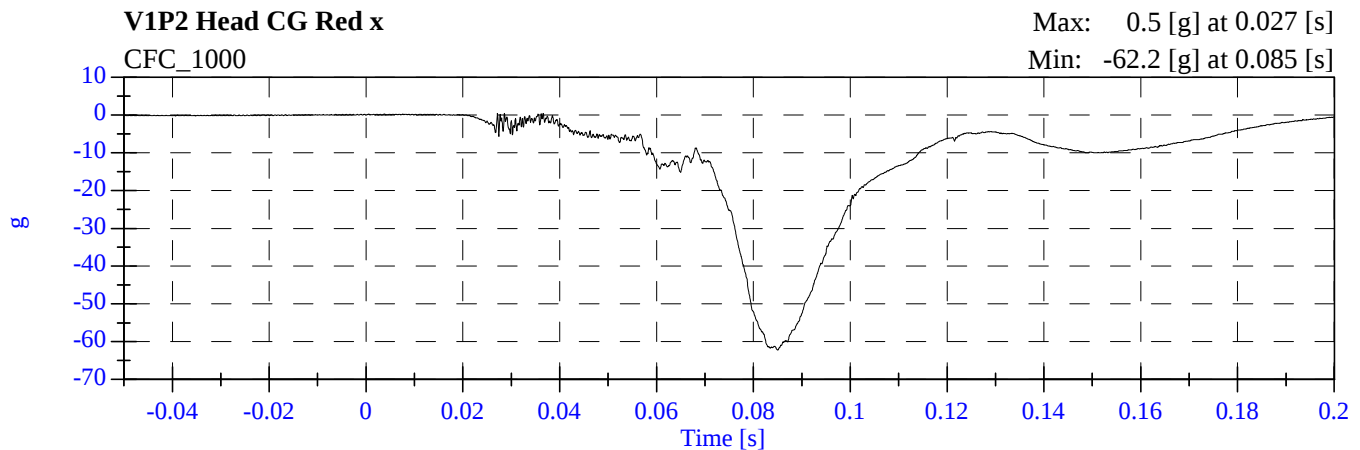
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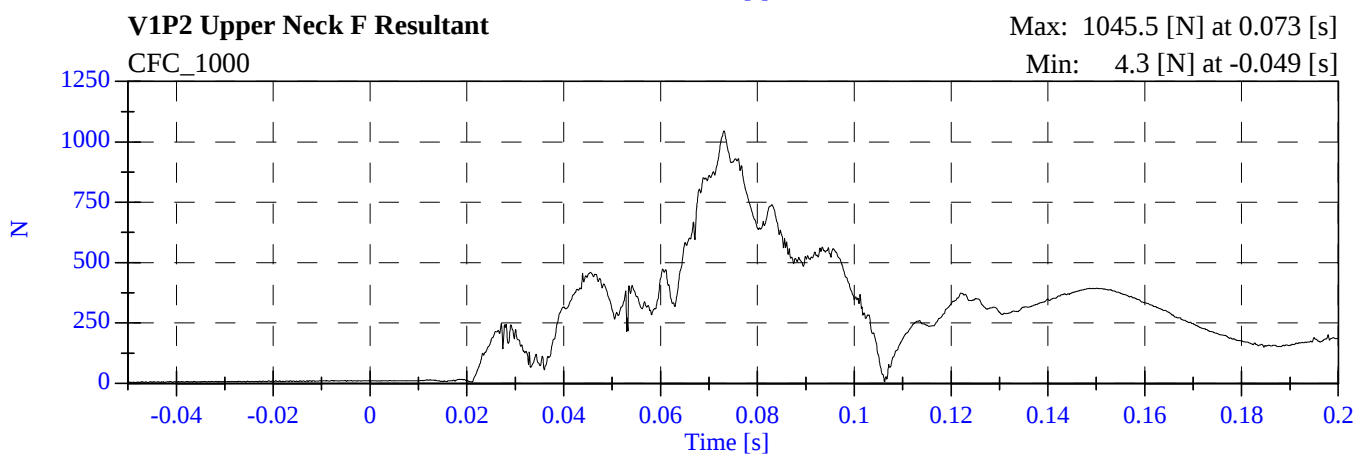
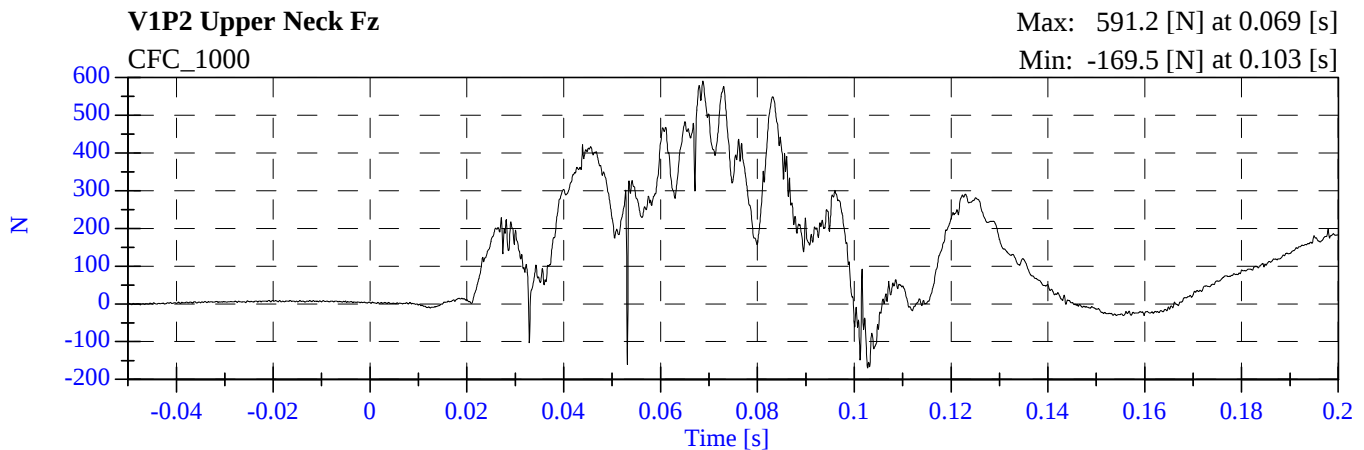
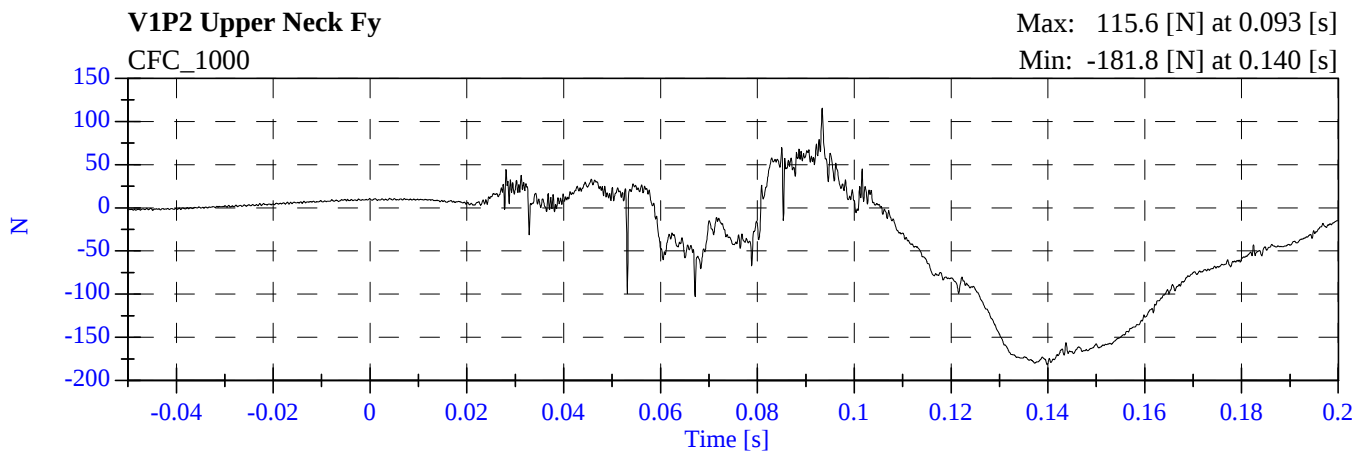
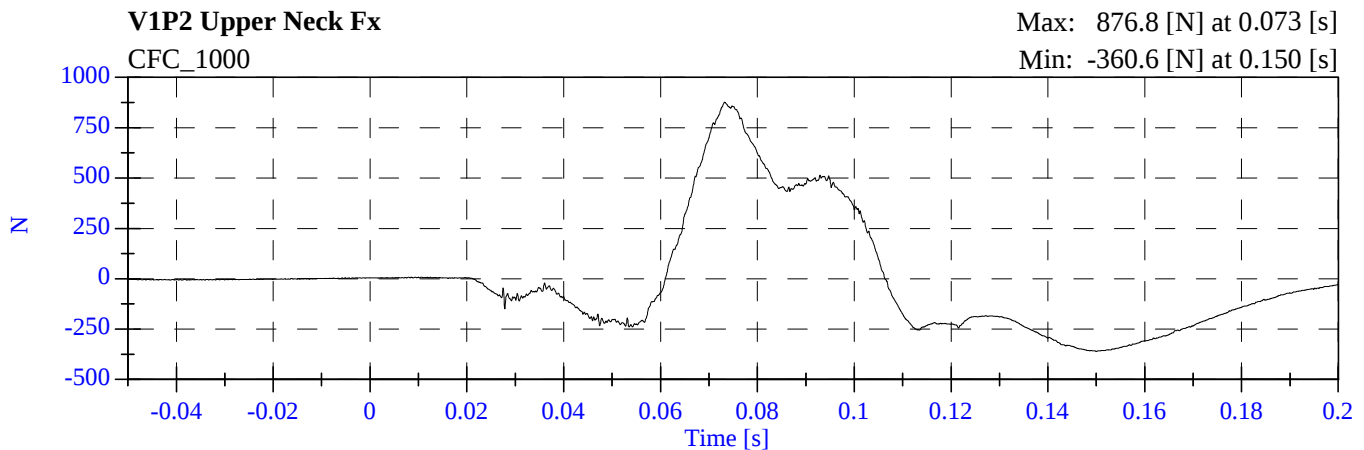
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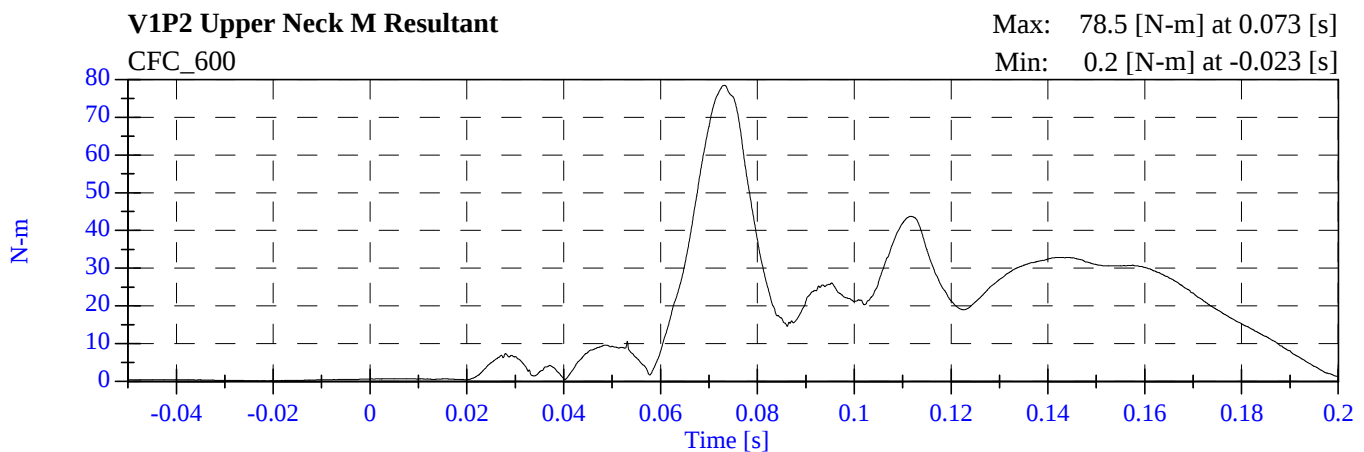
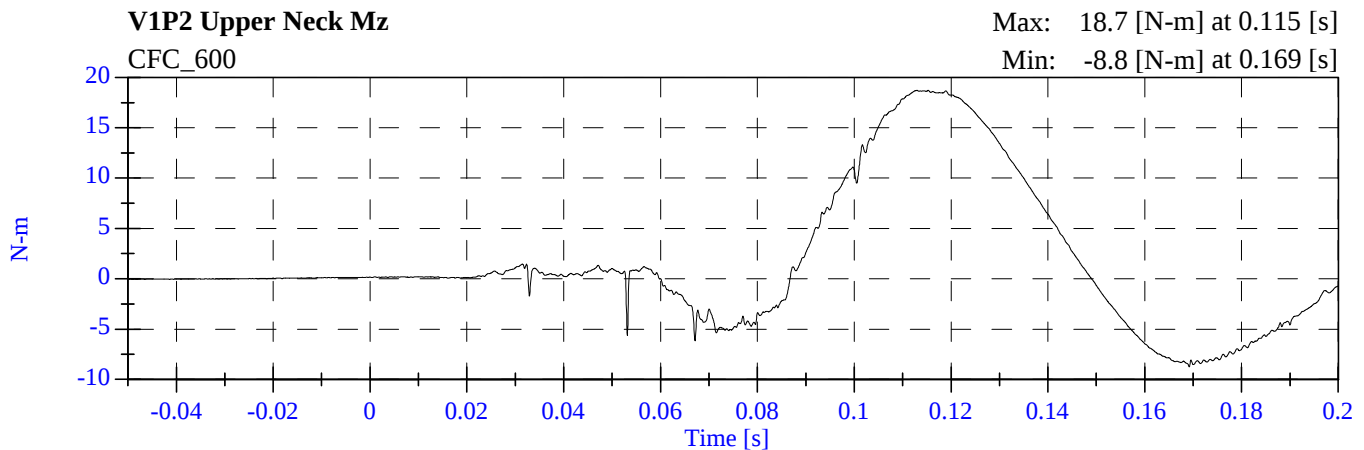
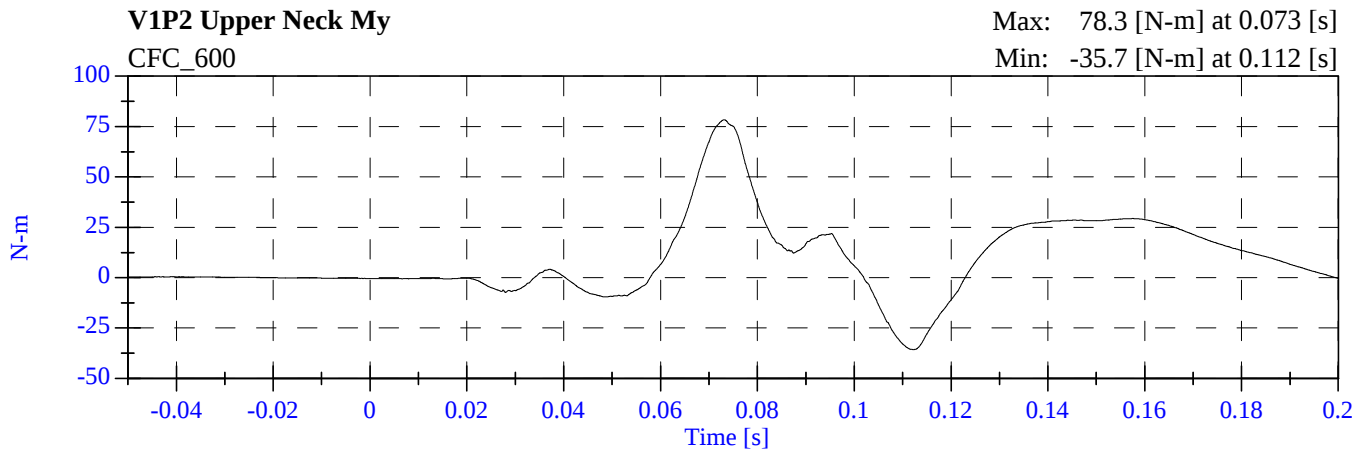
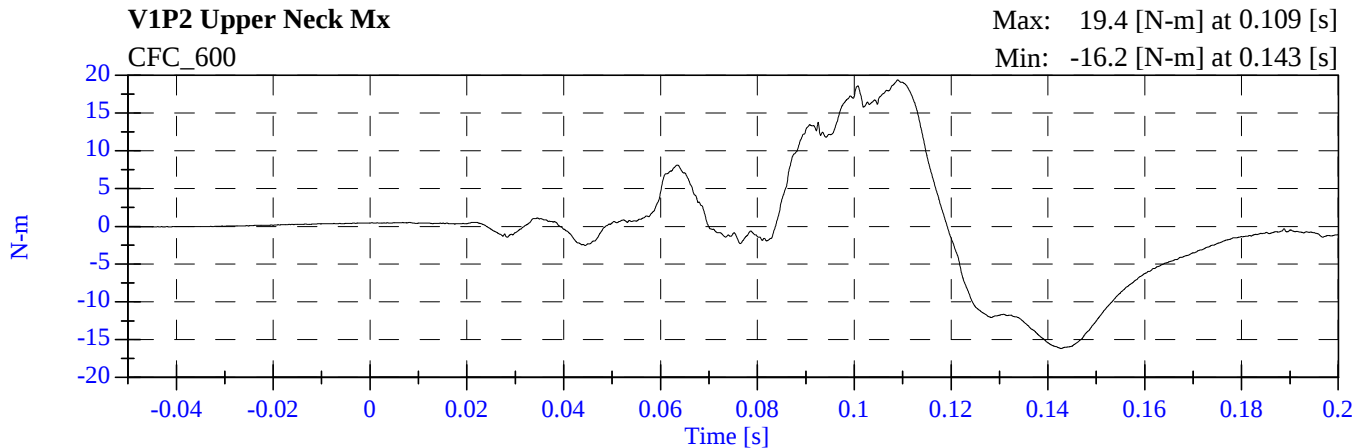
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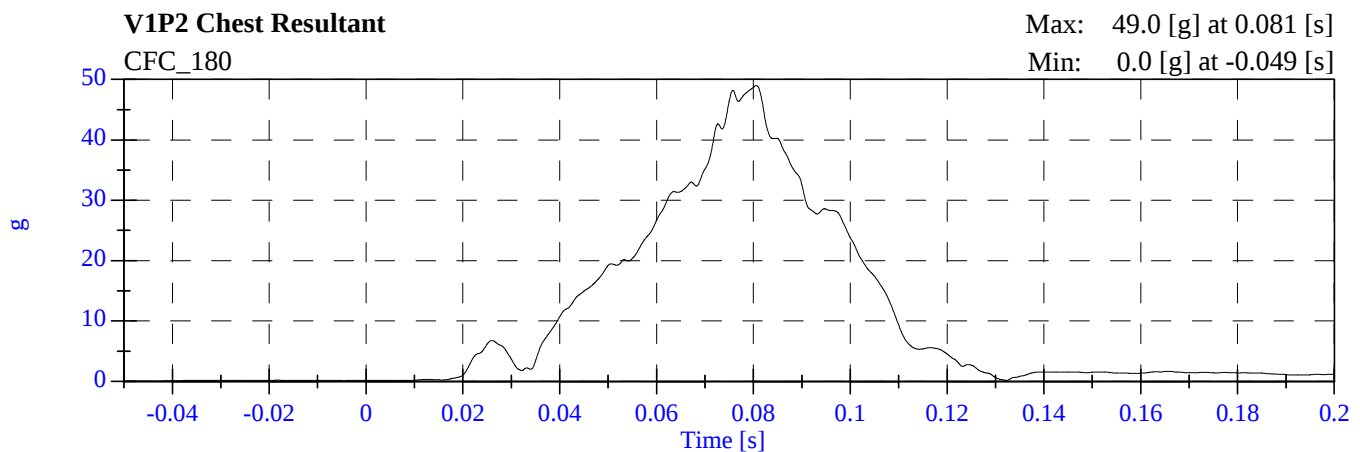
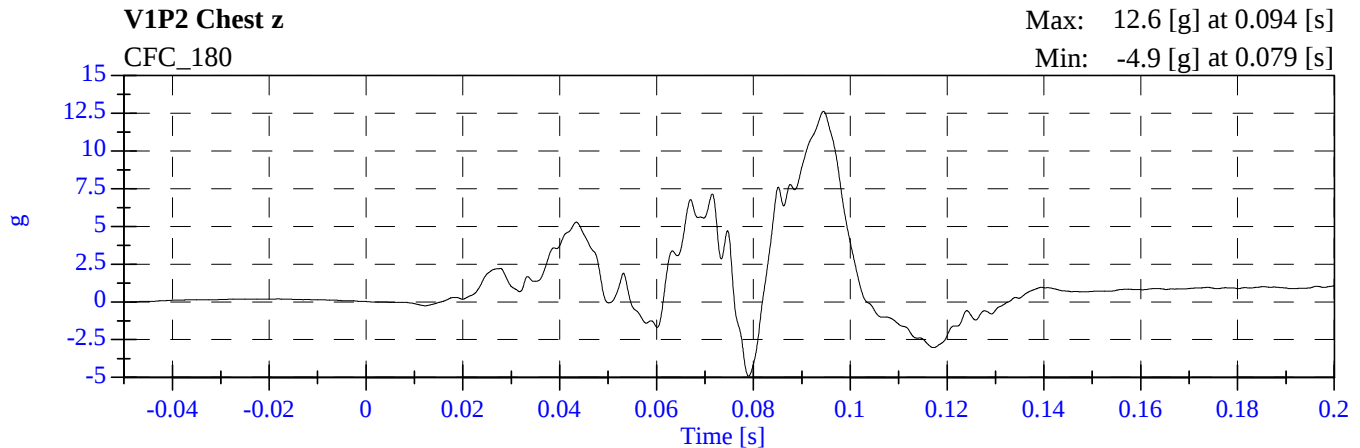
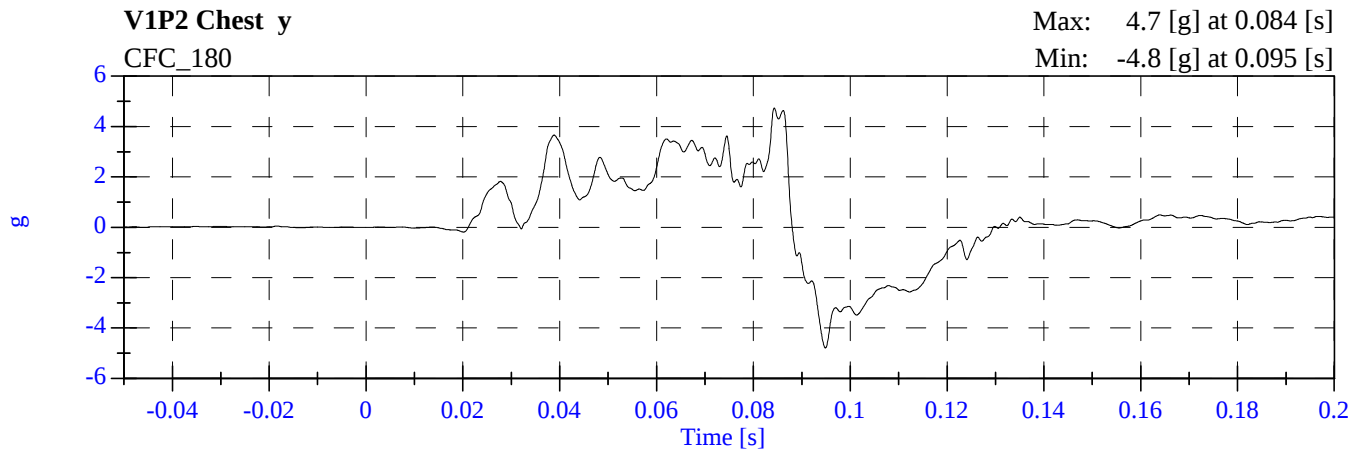
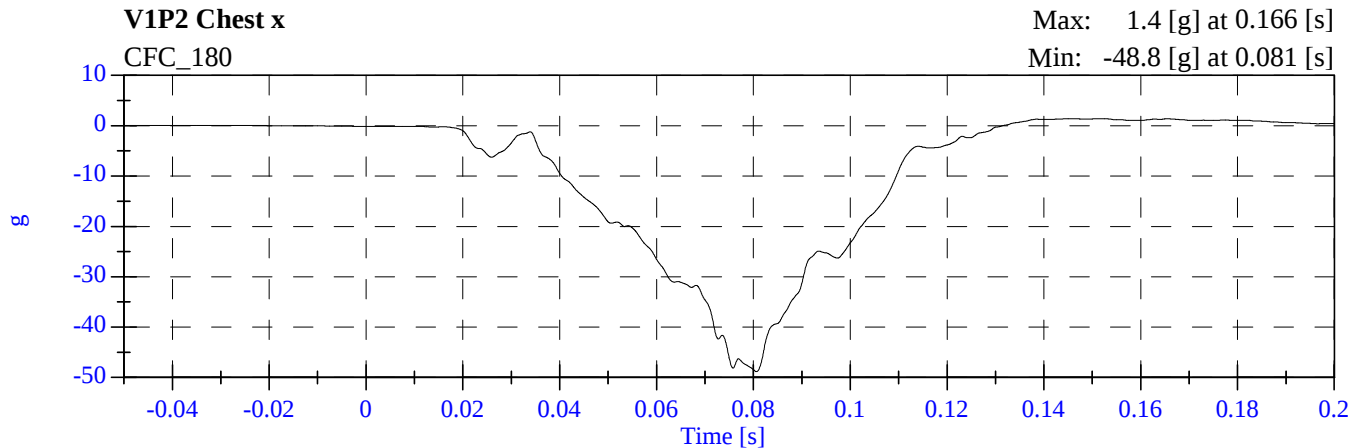


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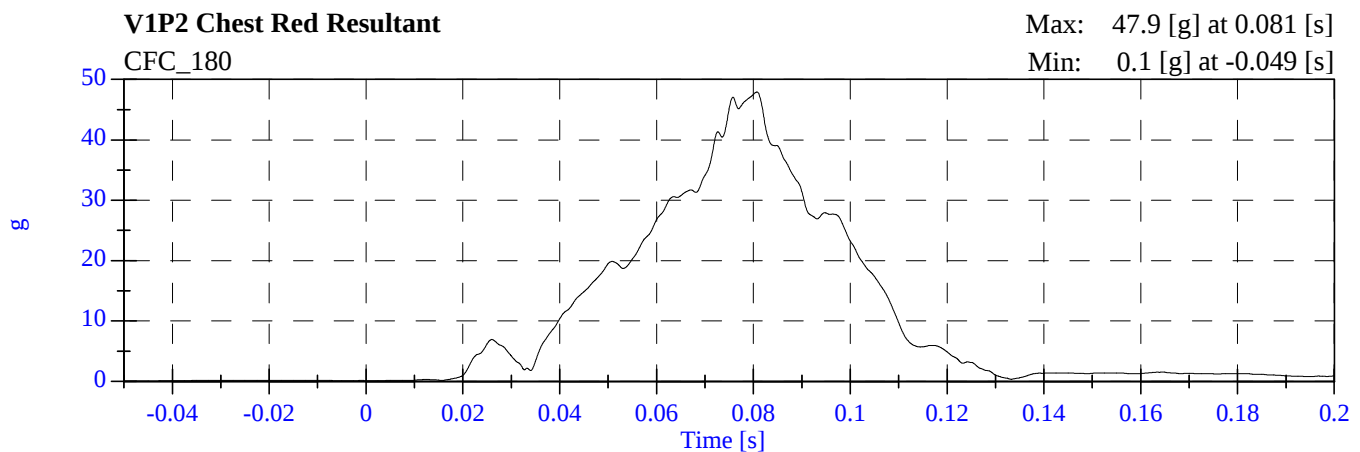
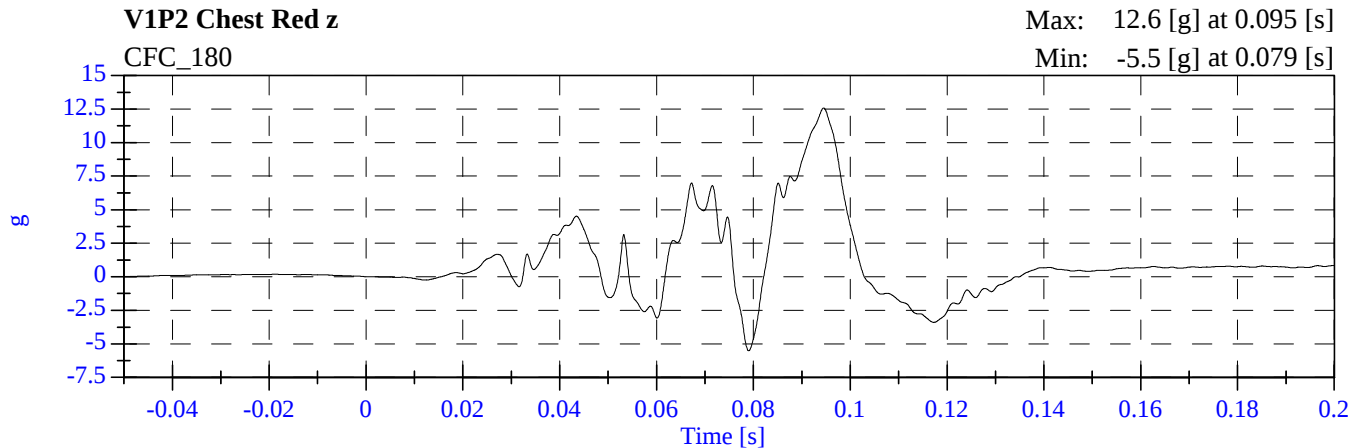
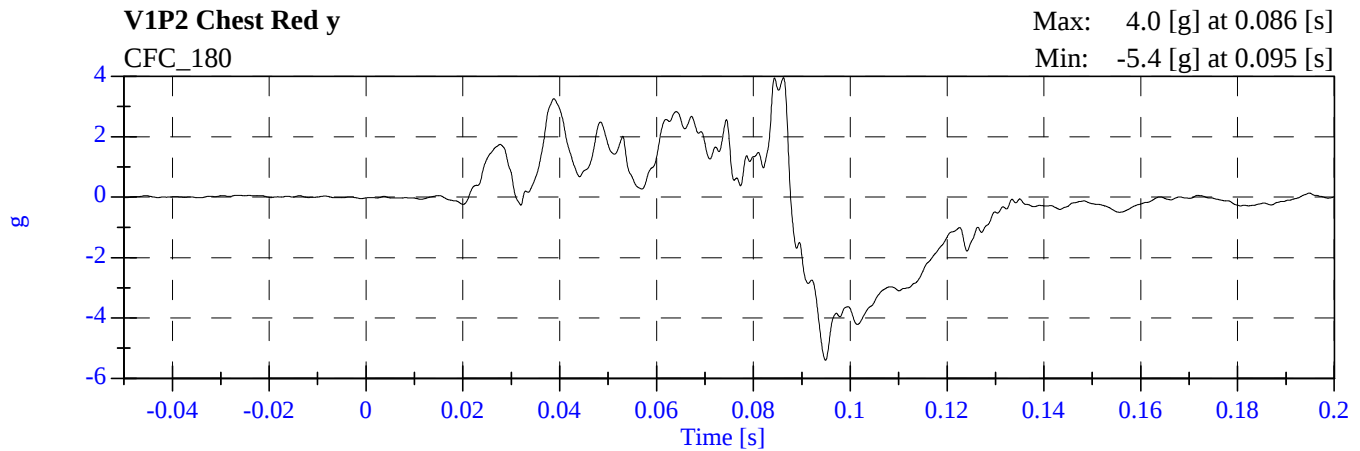
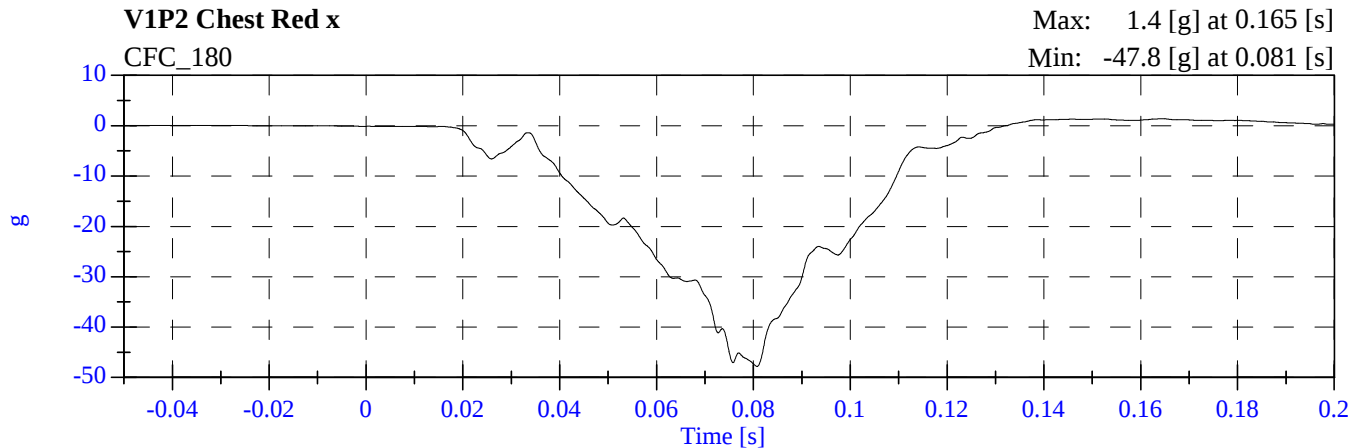
2005 NCAP Test 8 - 2005 Buick Rendezvous

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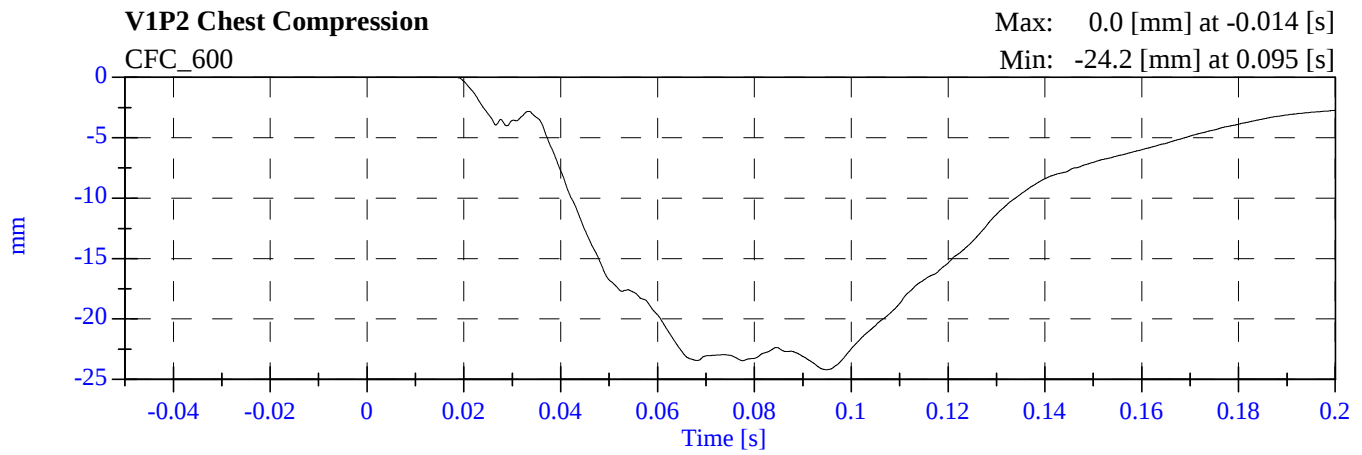


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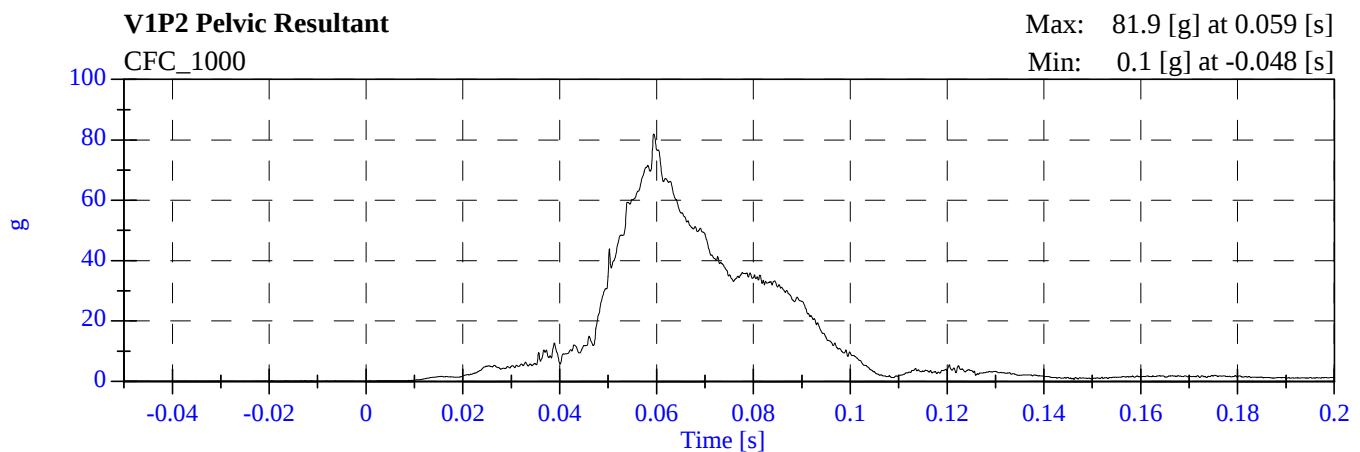
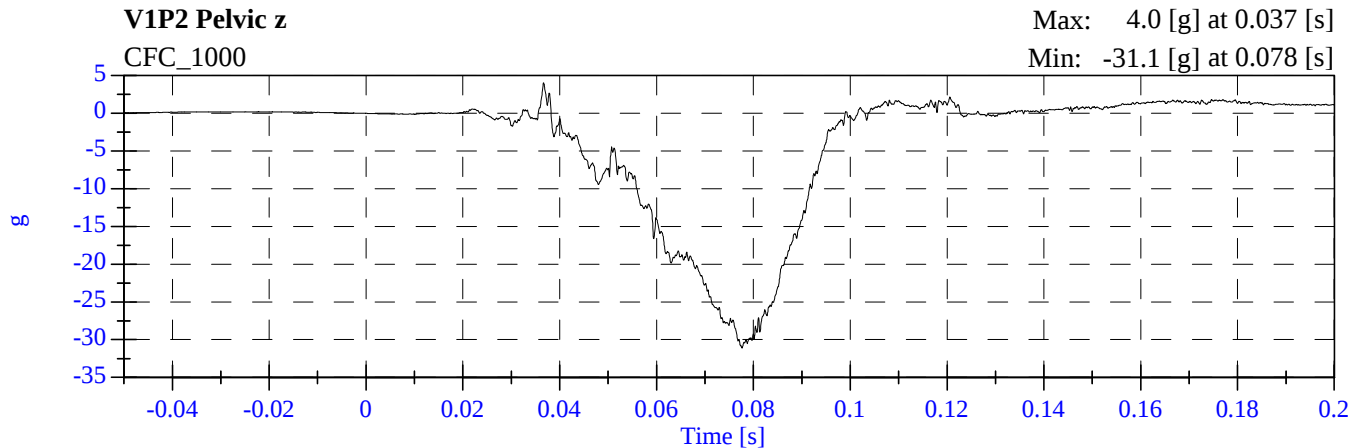
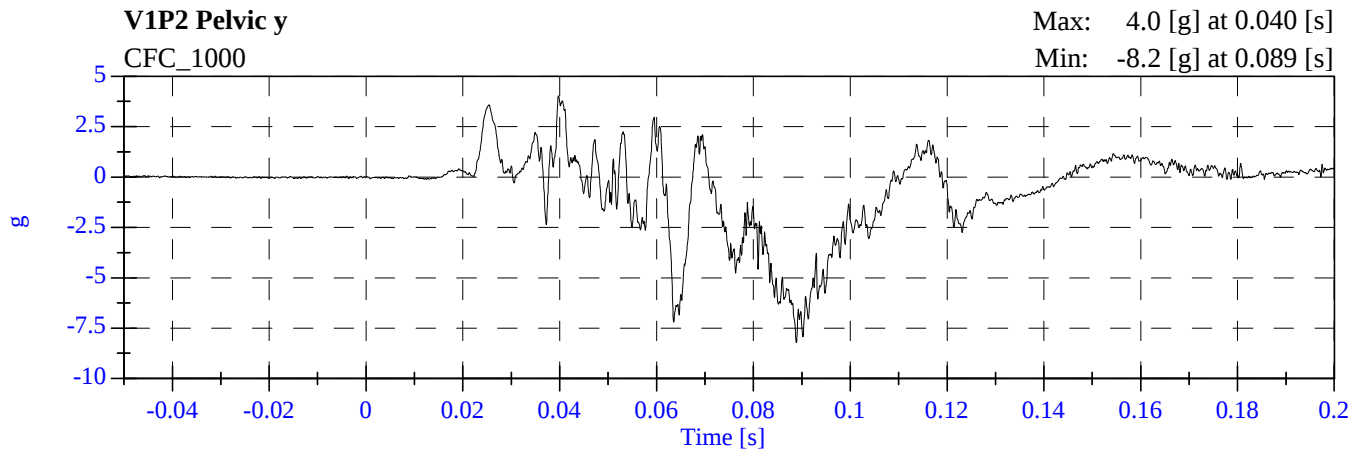
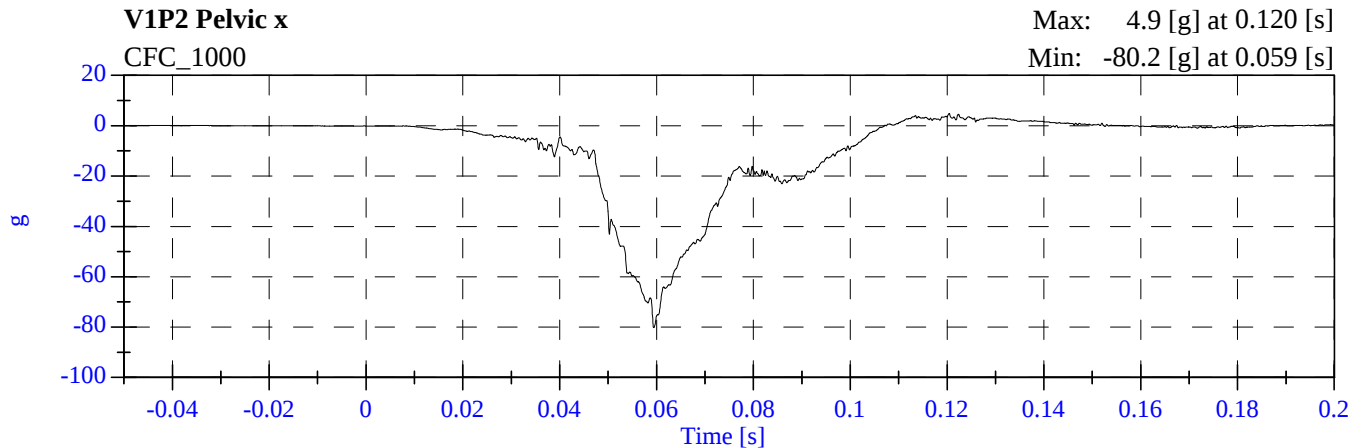
M50104 - February 10, 2005



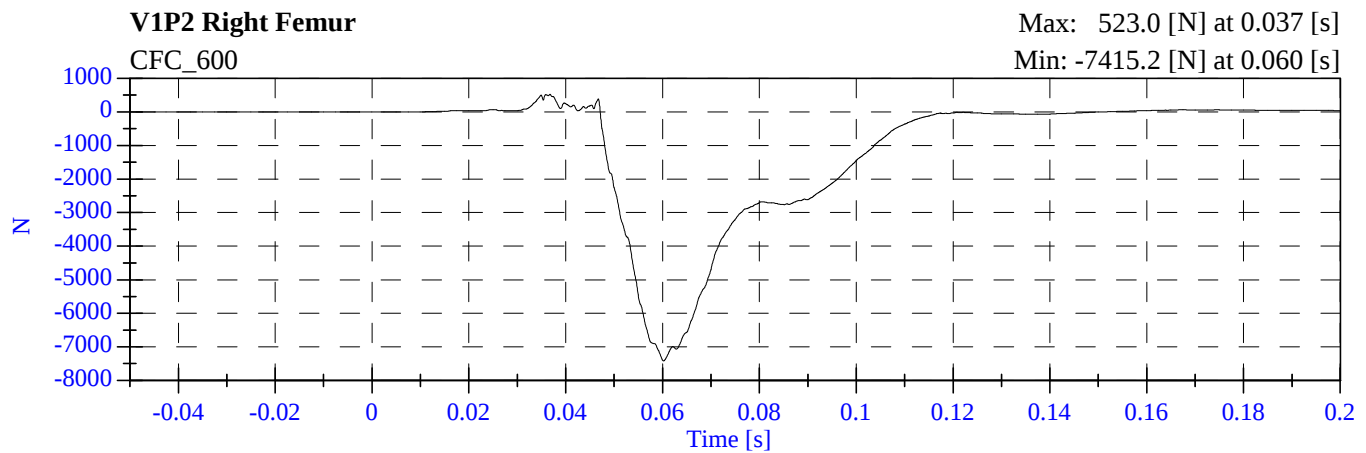
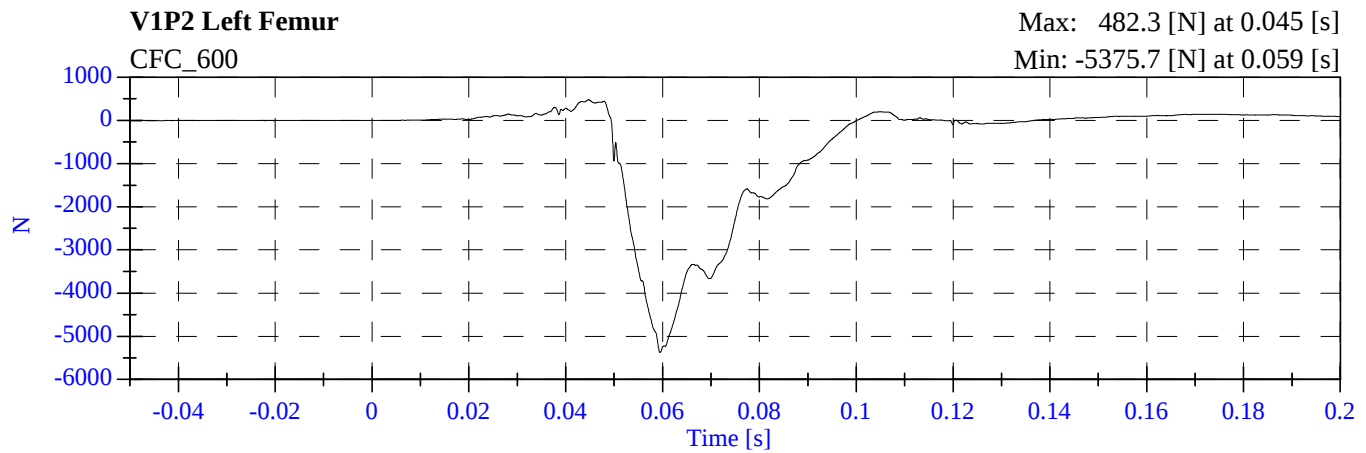
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



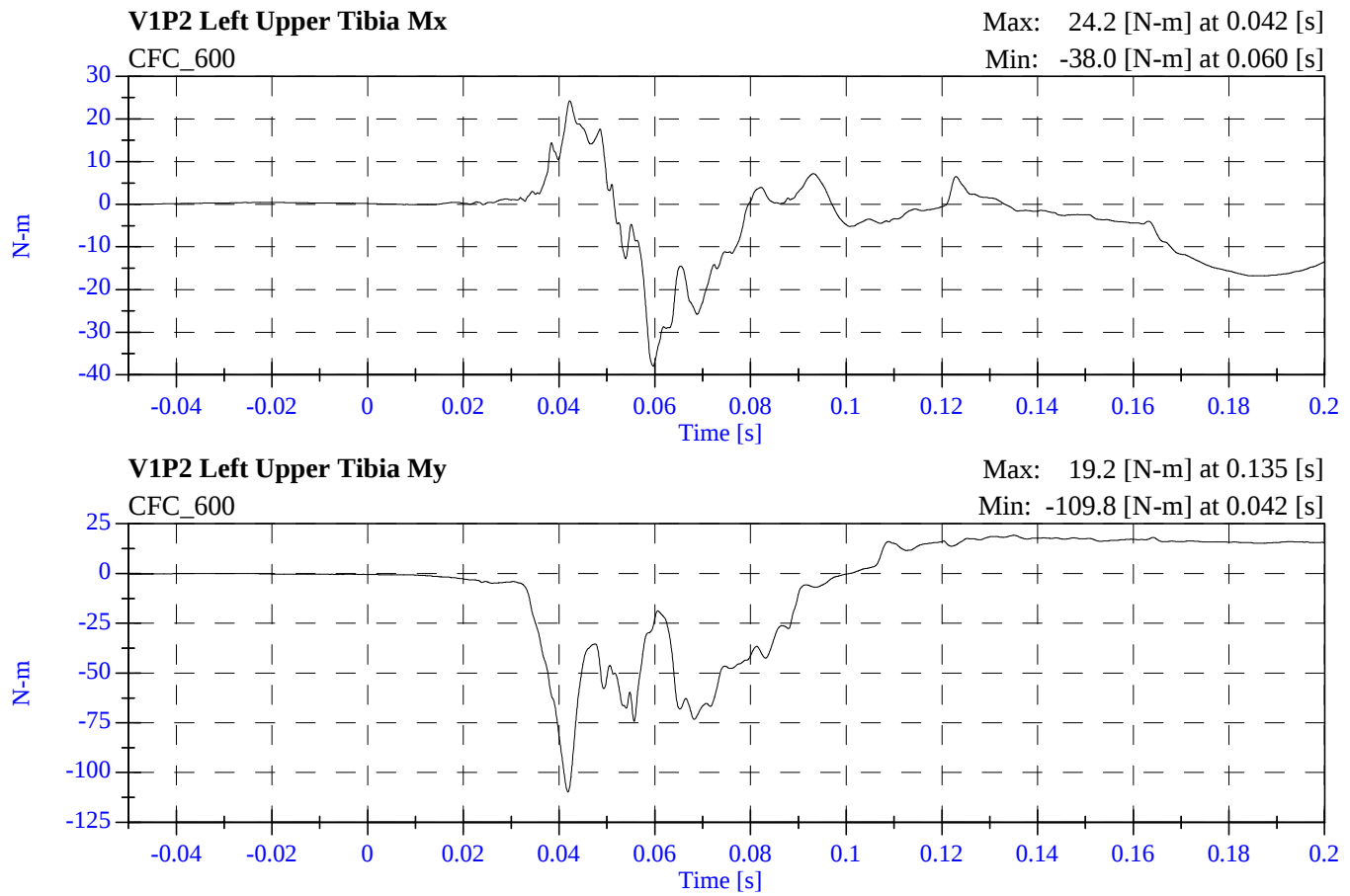
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005

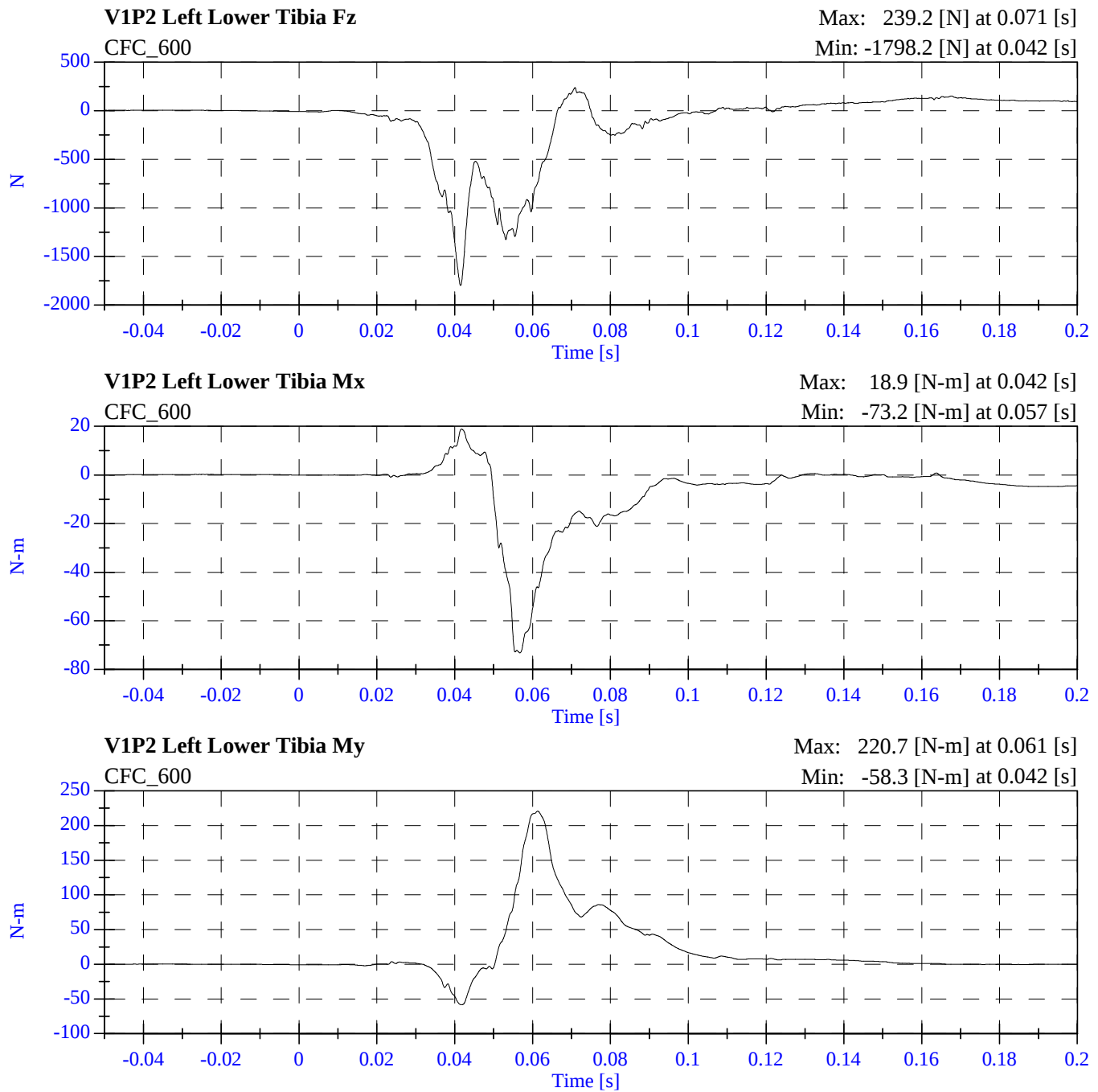


2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005

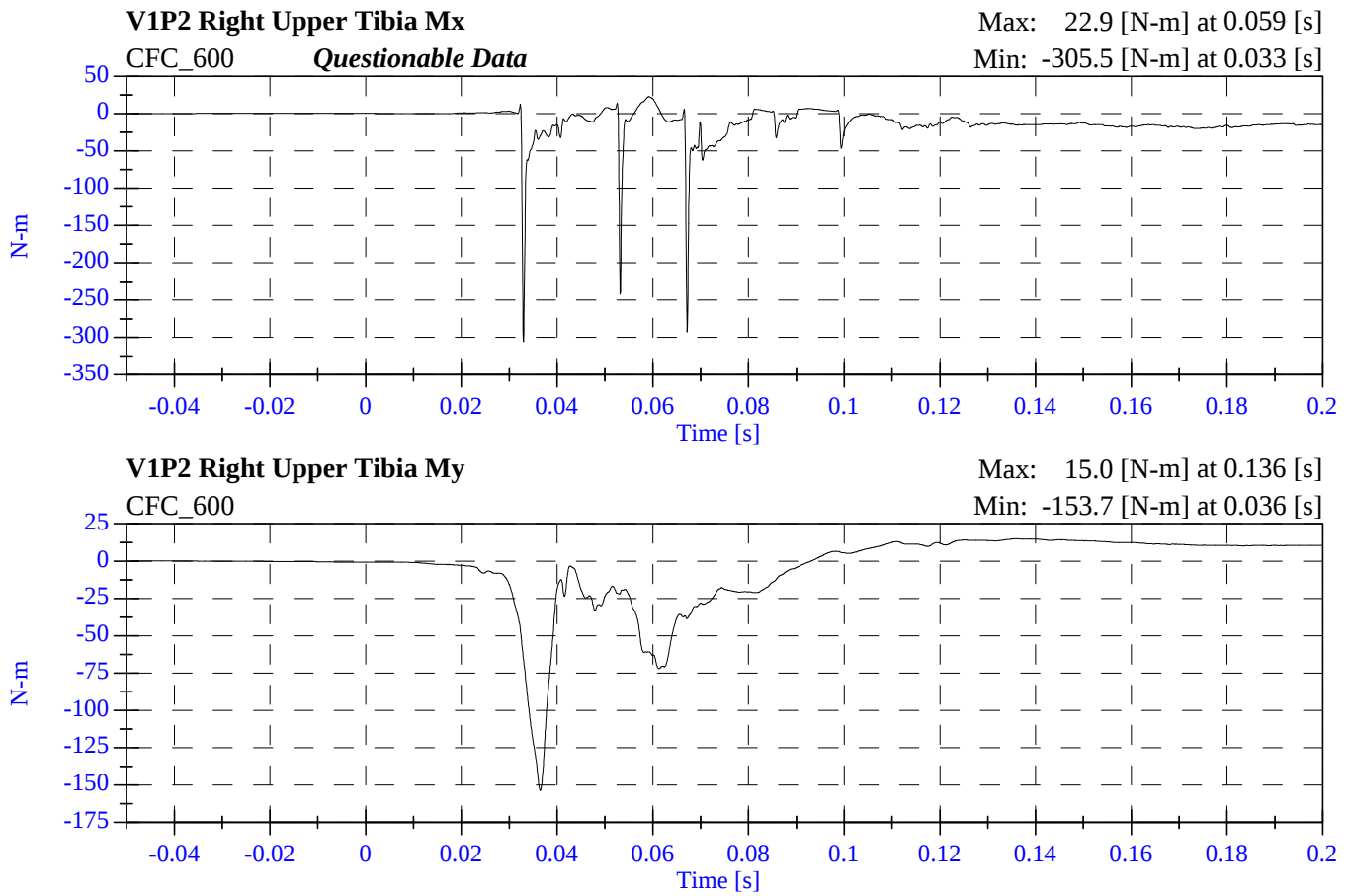


2005 NCAP Test 8 - 2005 Buick Rendezvous

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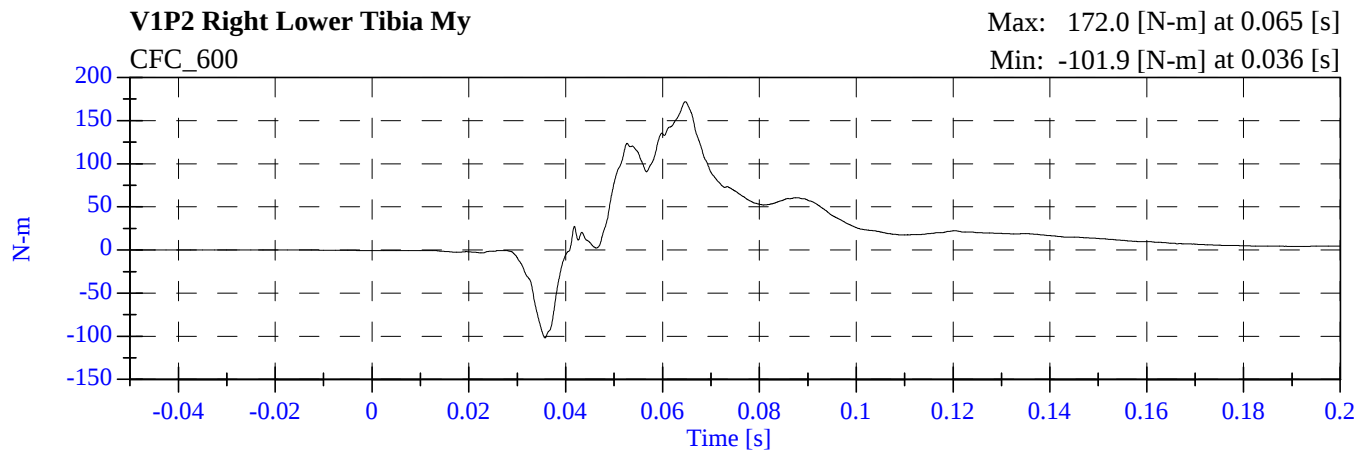
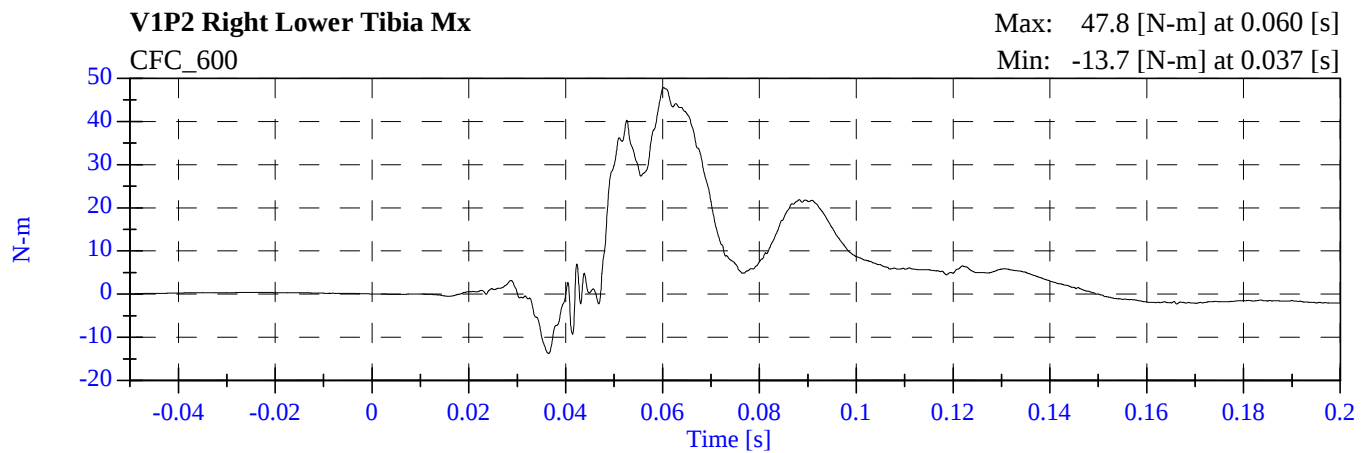
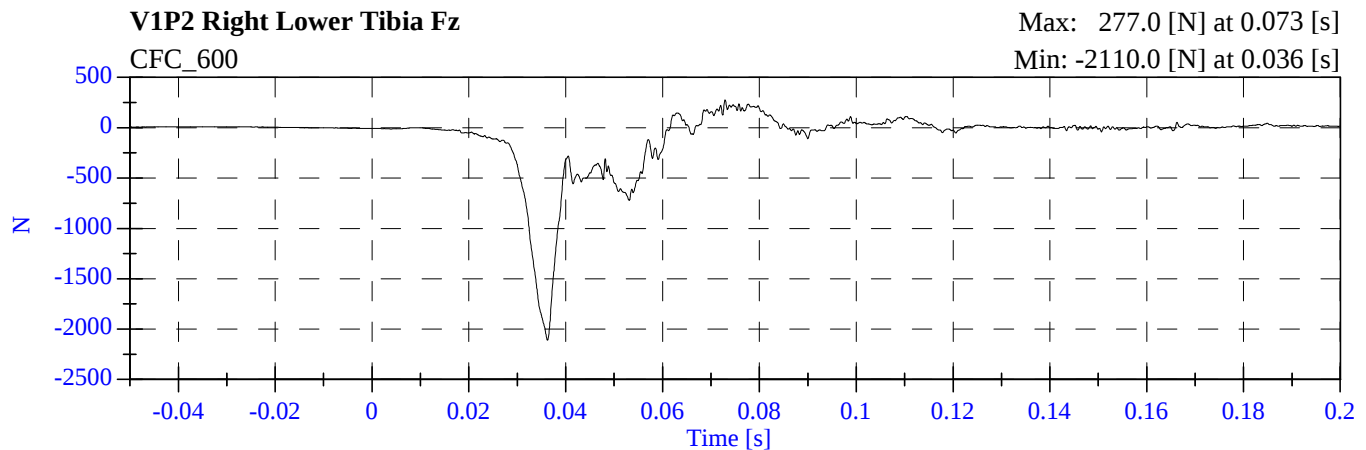


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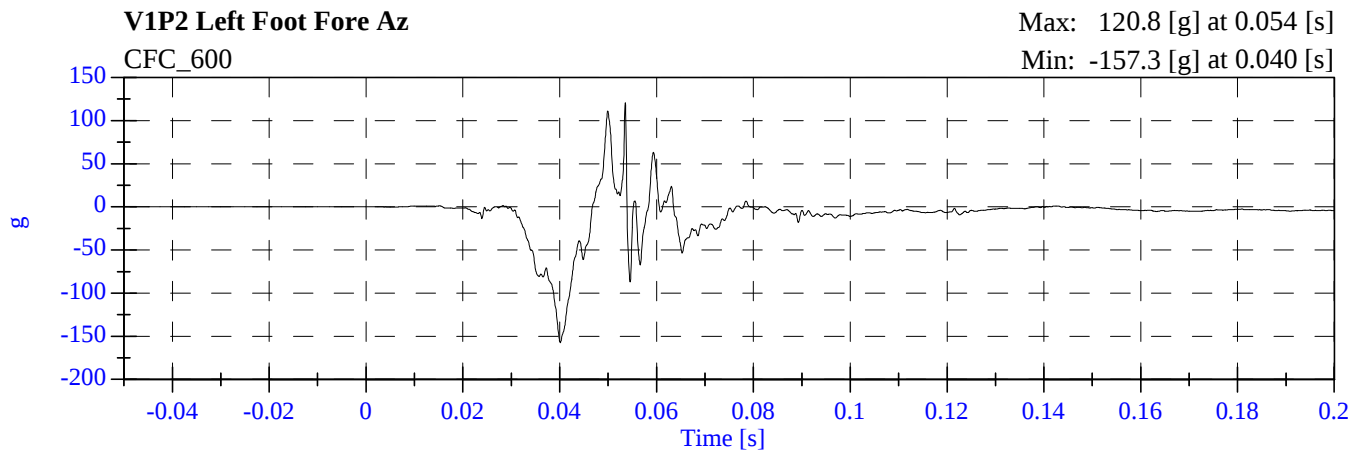
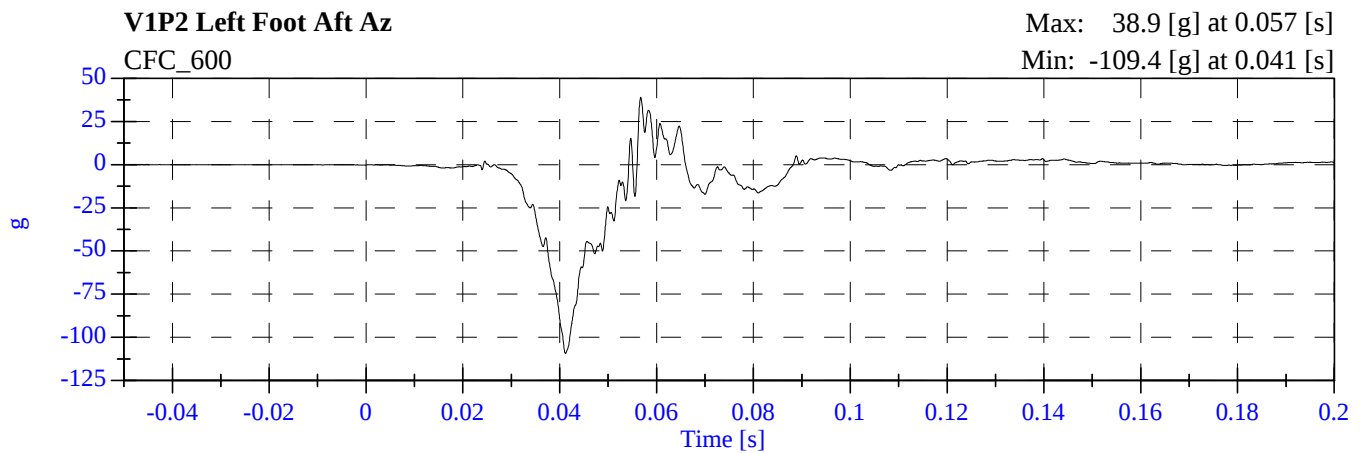
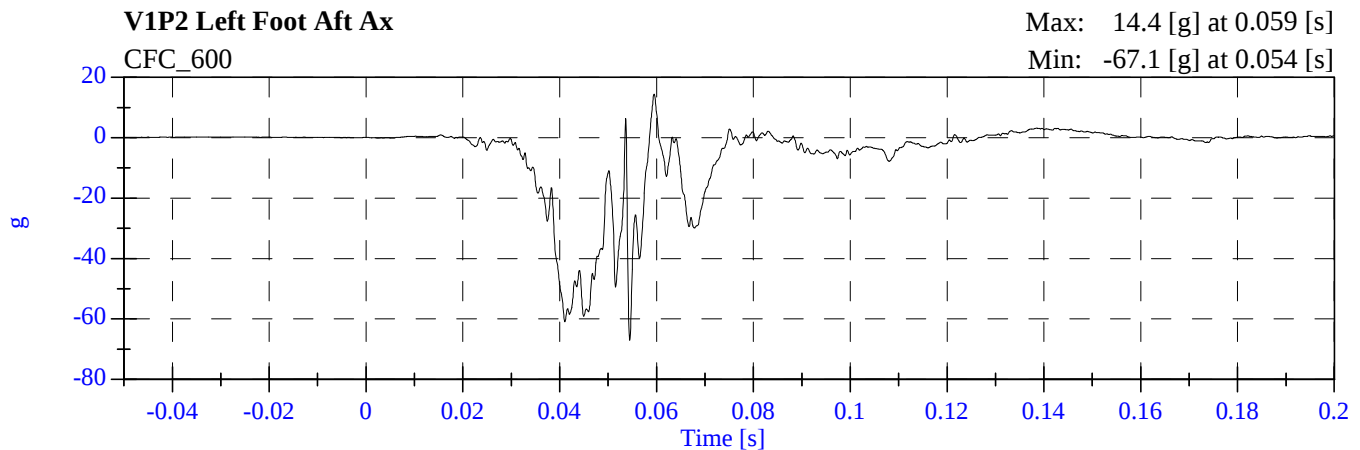


2005 NCAP Test 8 - 2005 Buick Rendezvous

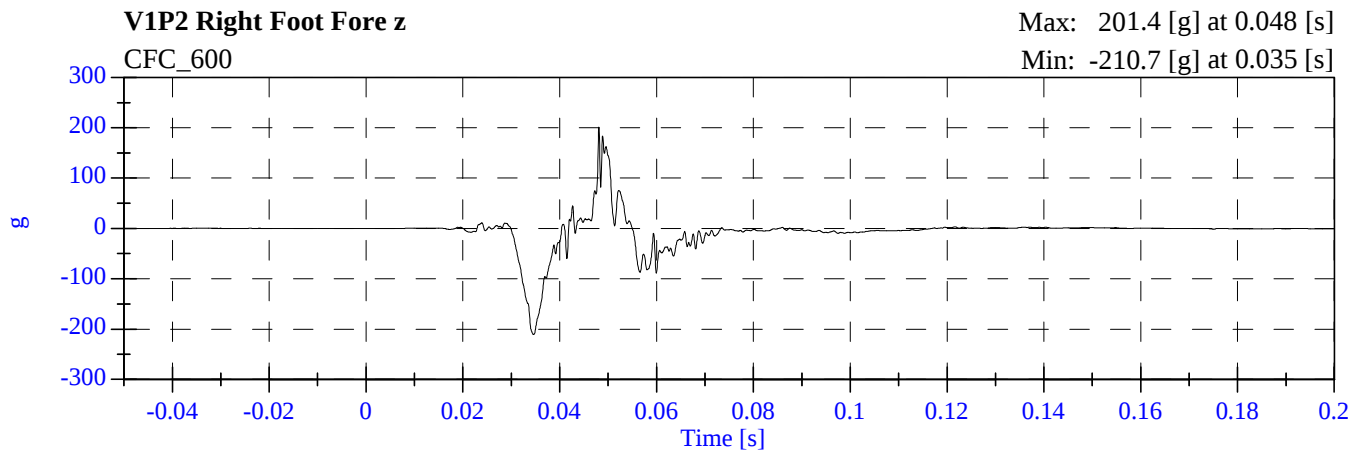
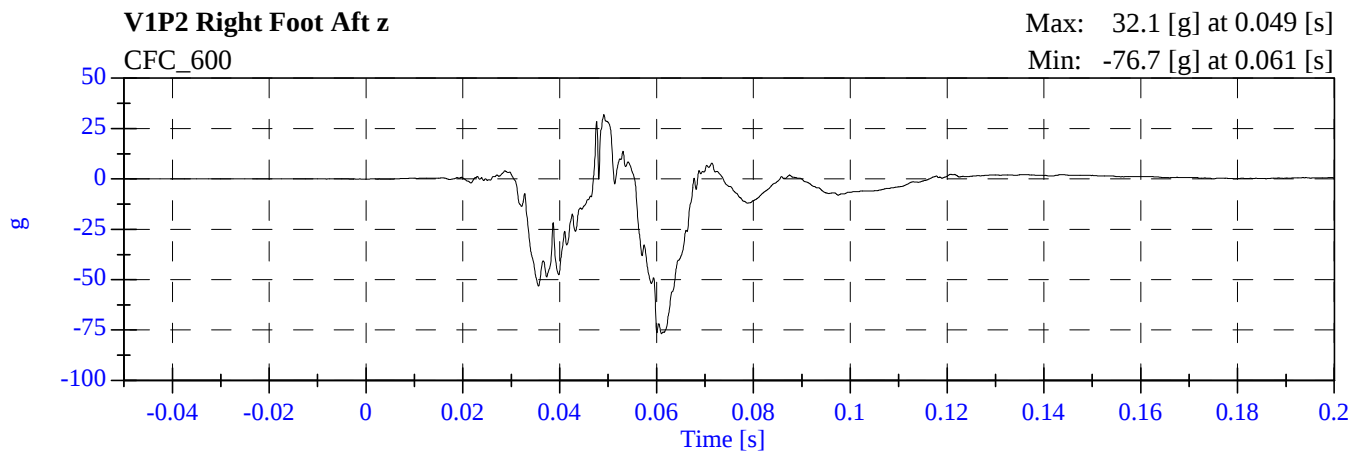
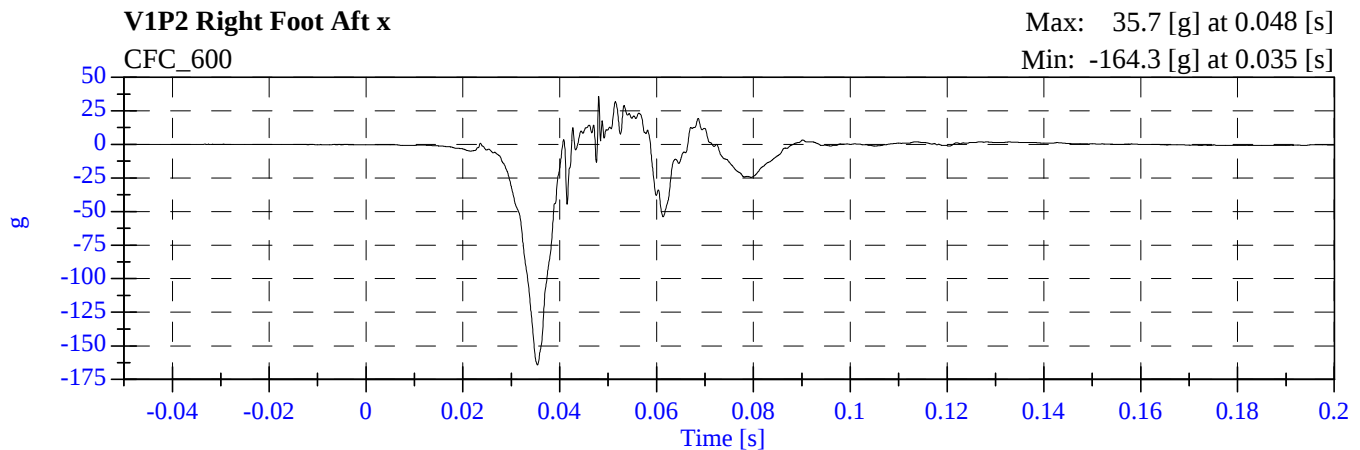
M50104 - February 10, 2005



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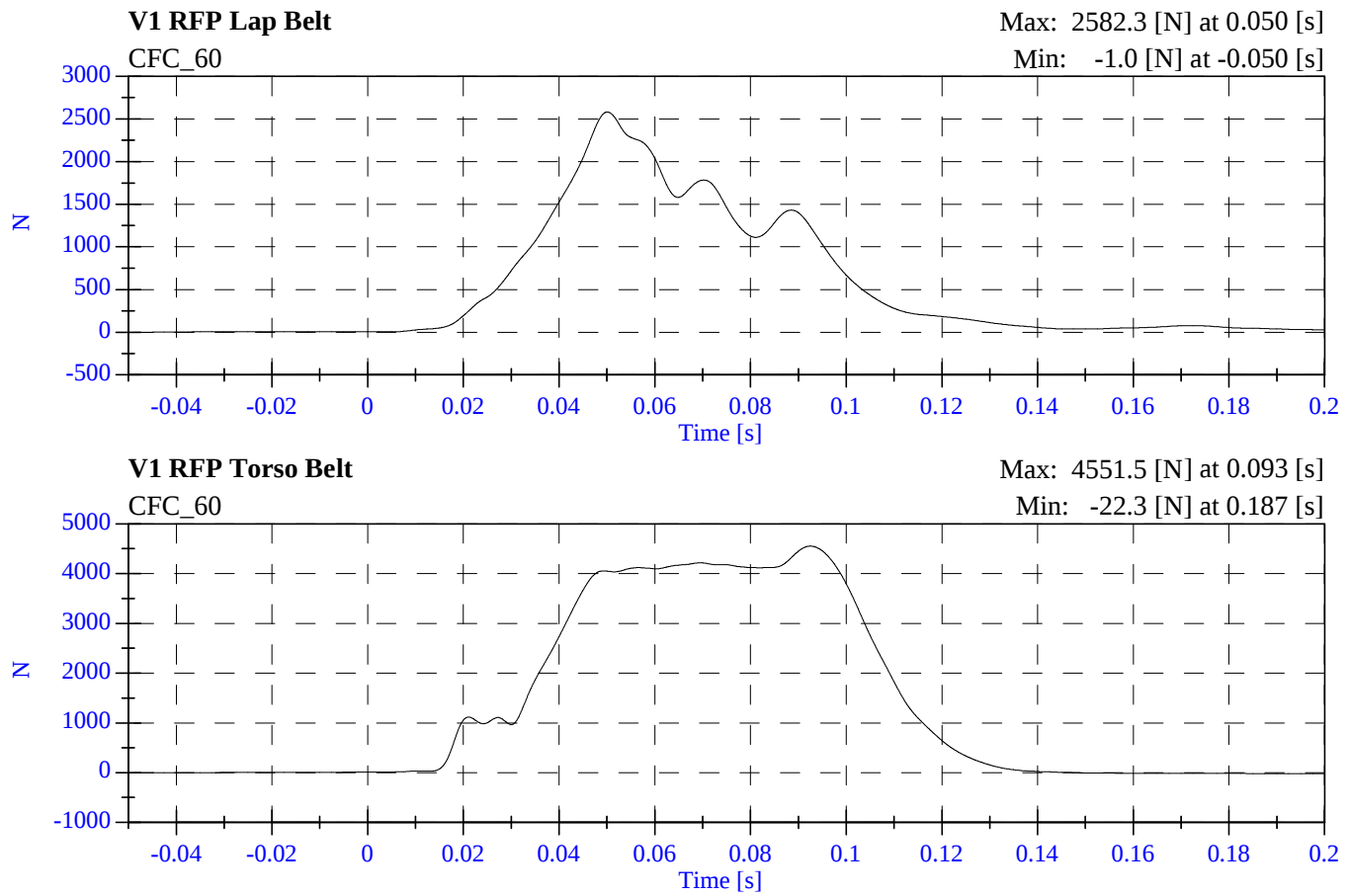


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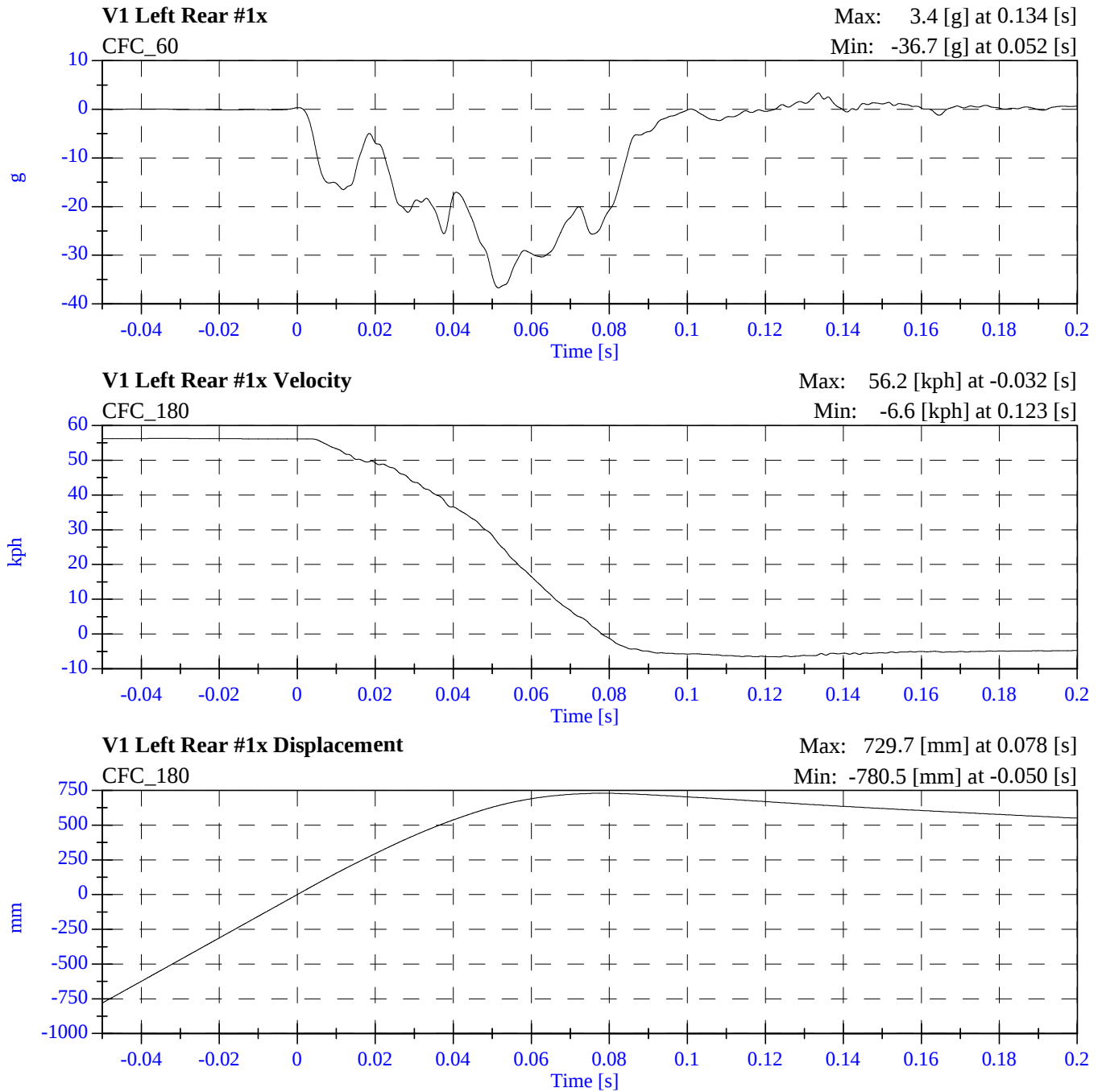
2005 NCAP Test 8 - 2005 Buick Rendezvous

M50104 - February 10, 2005



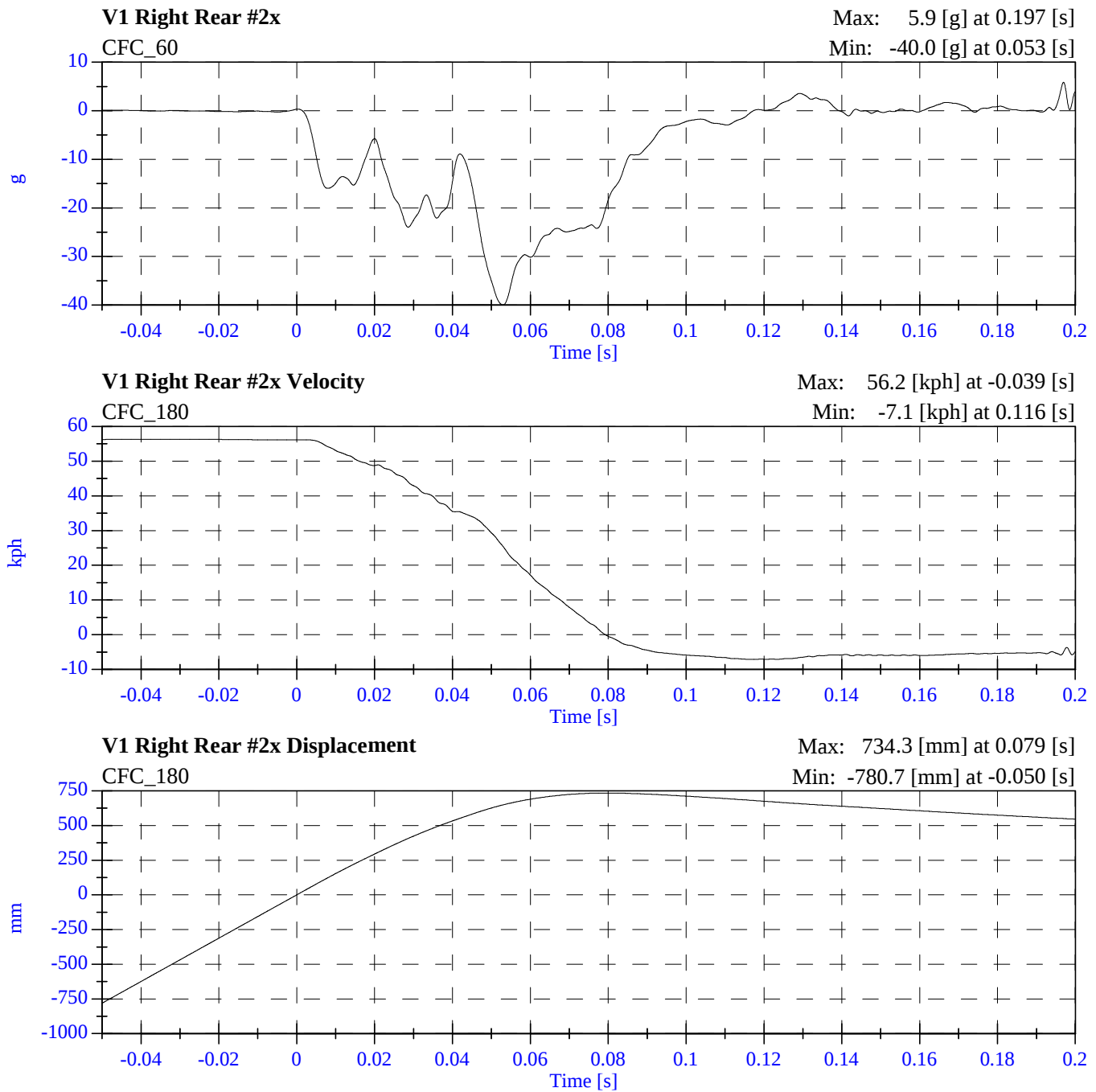
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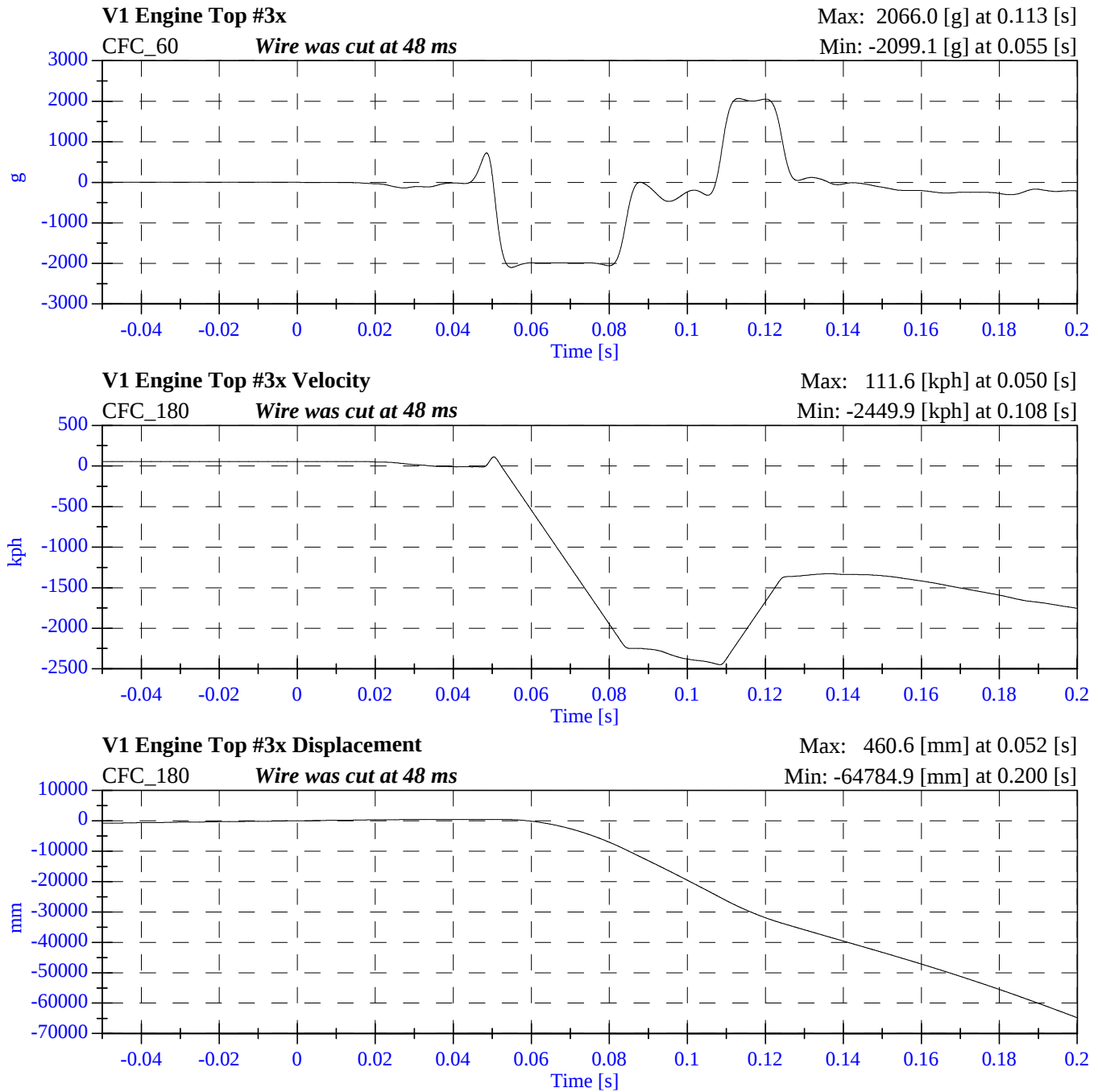


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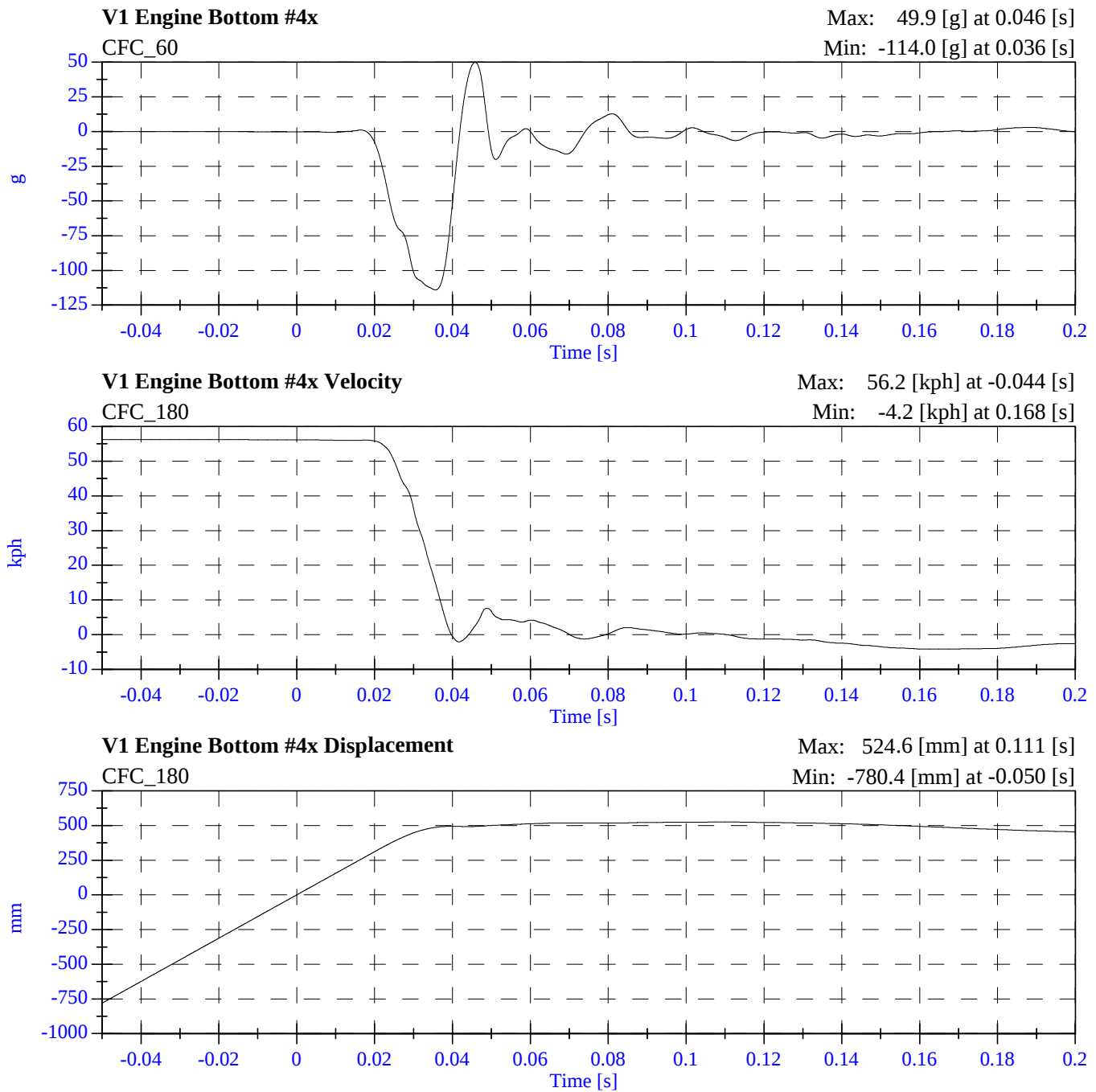
M50104 - February 10, 2005



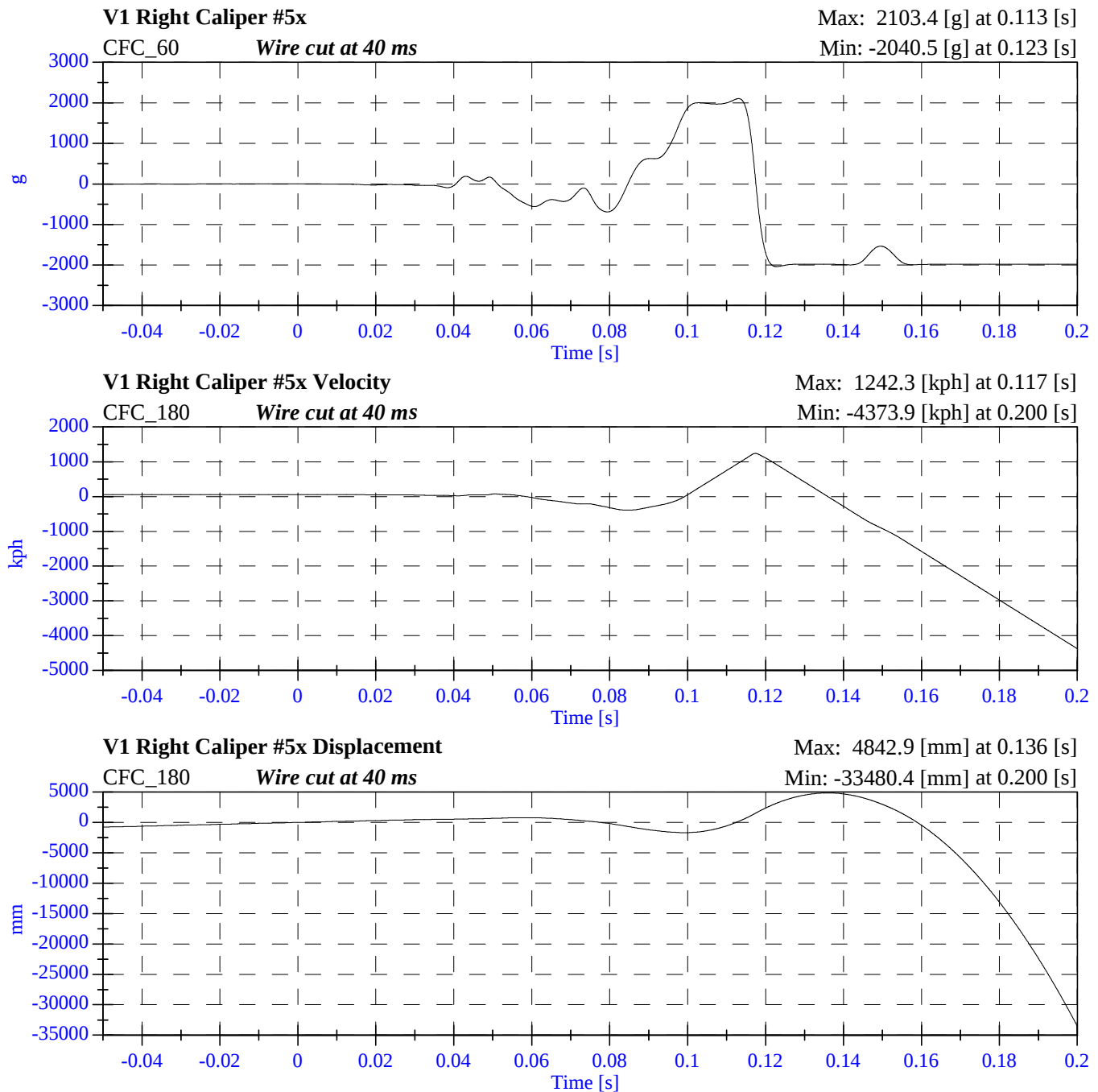
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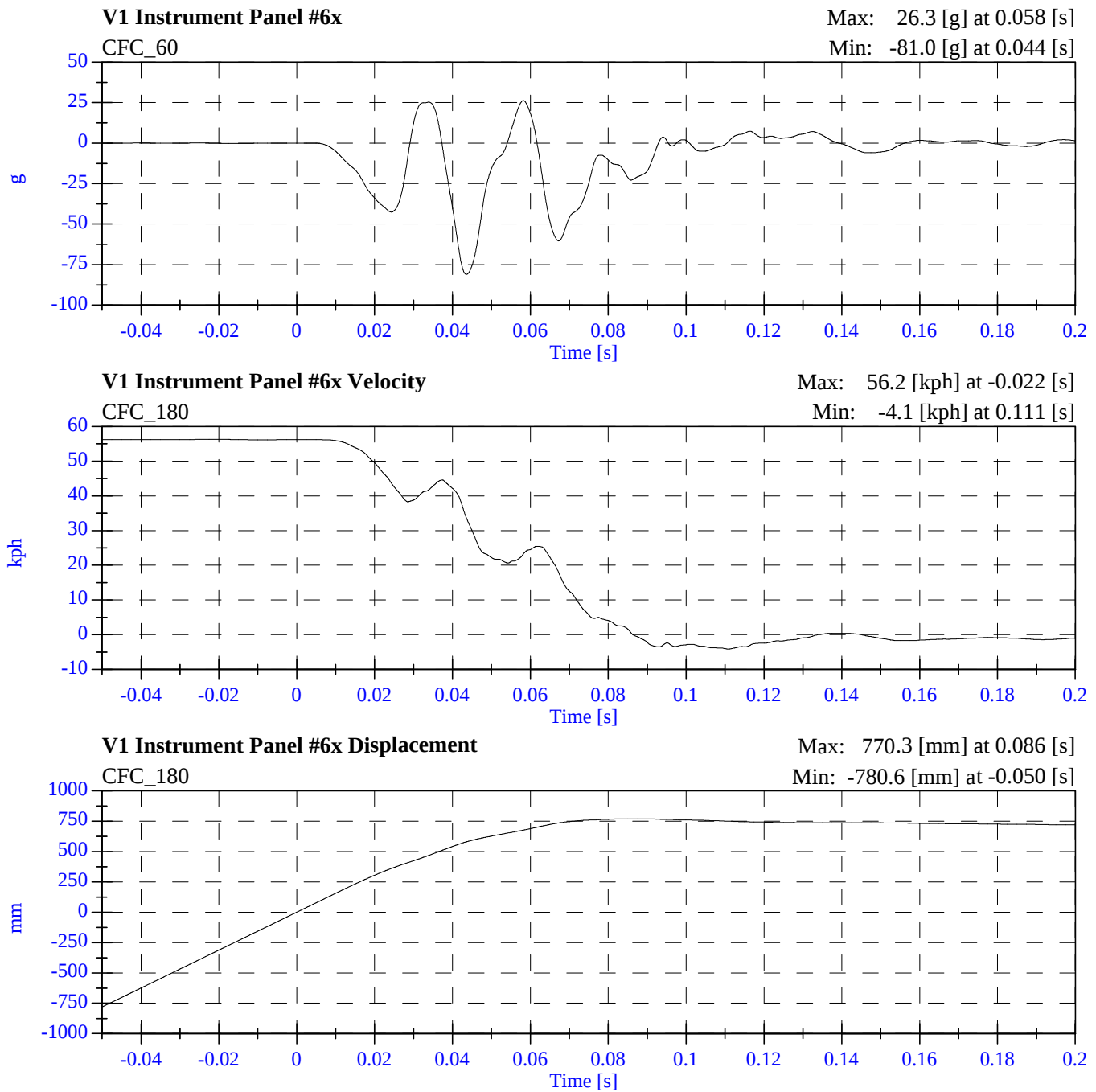
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



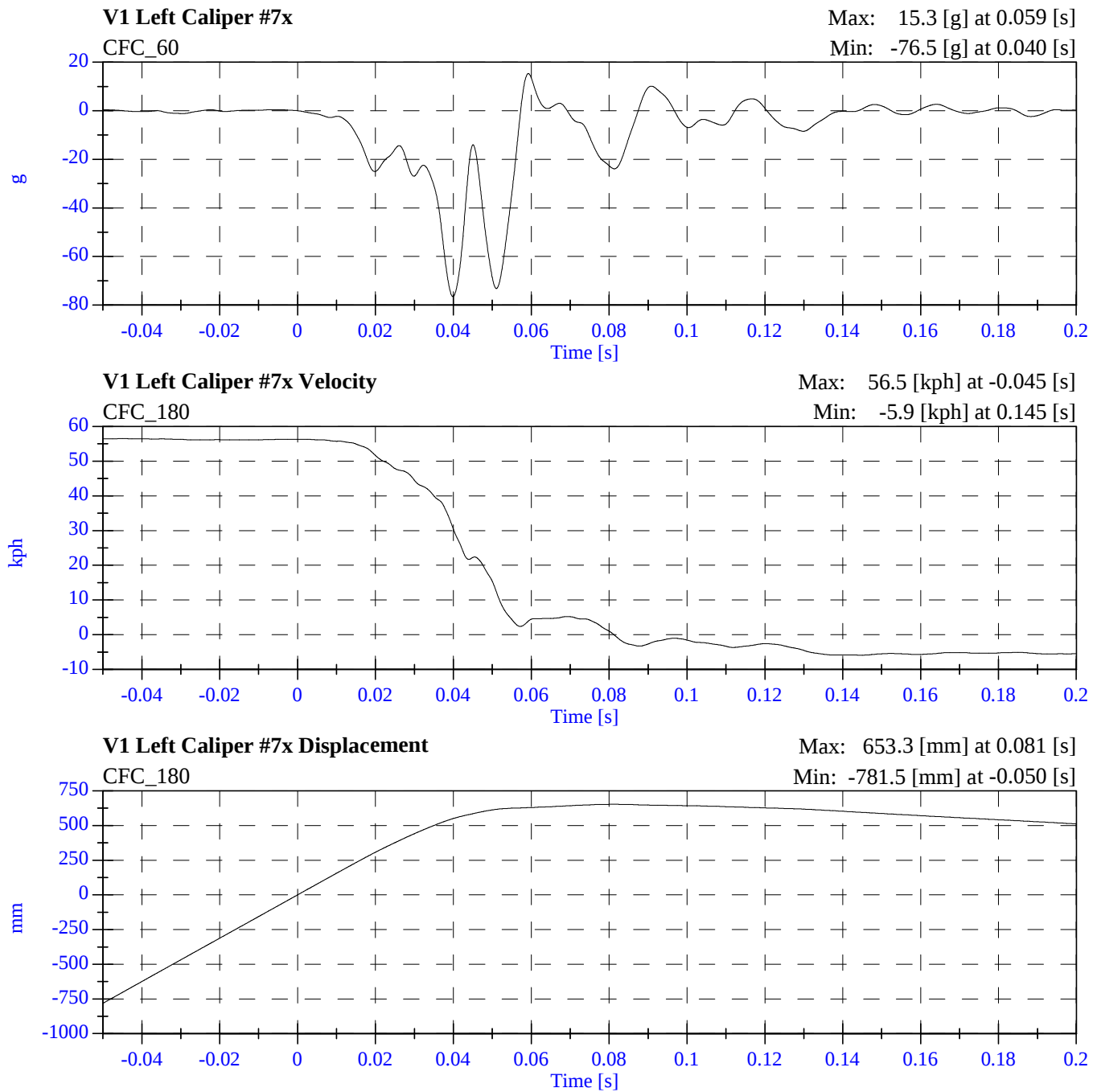
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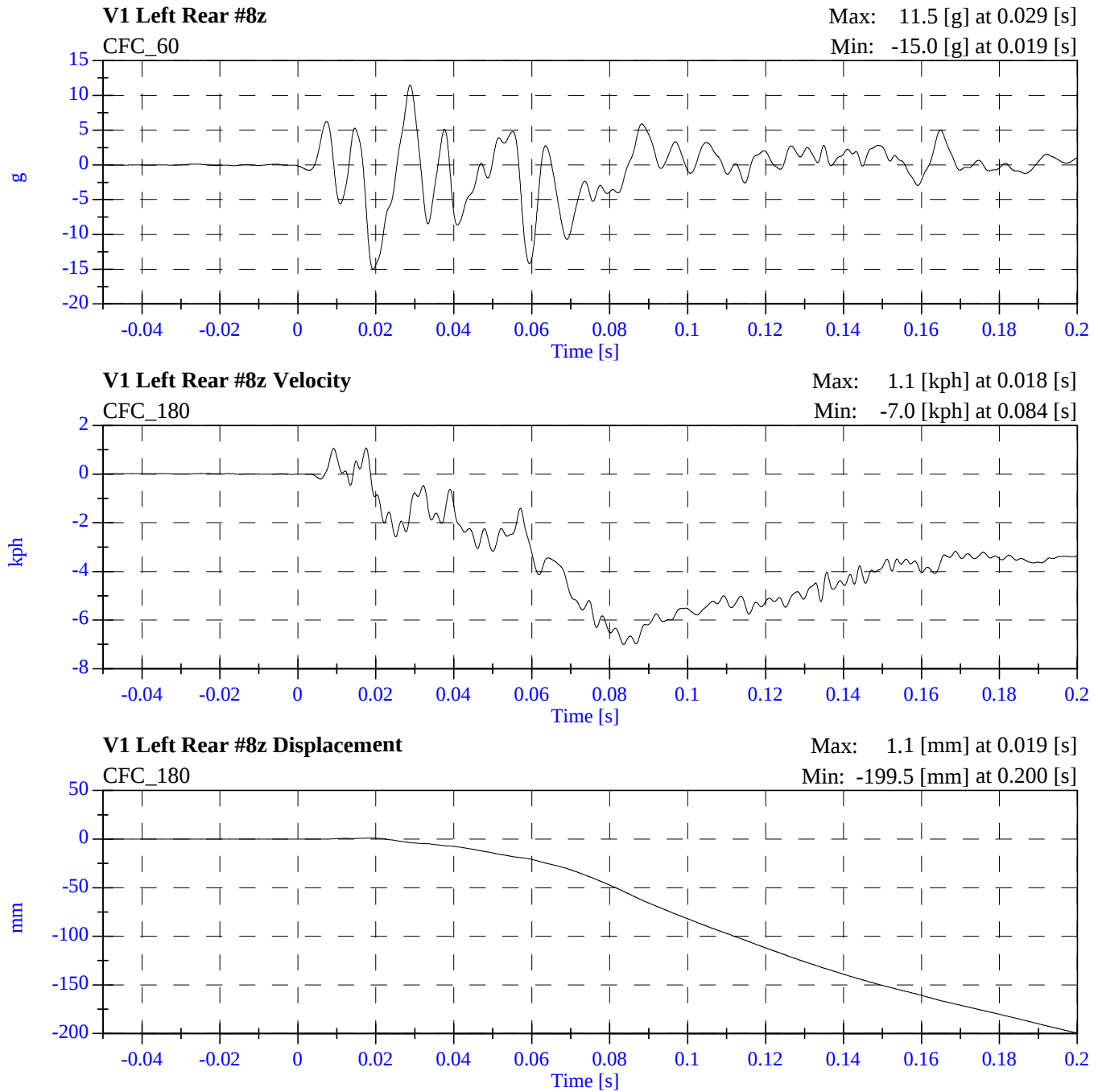
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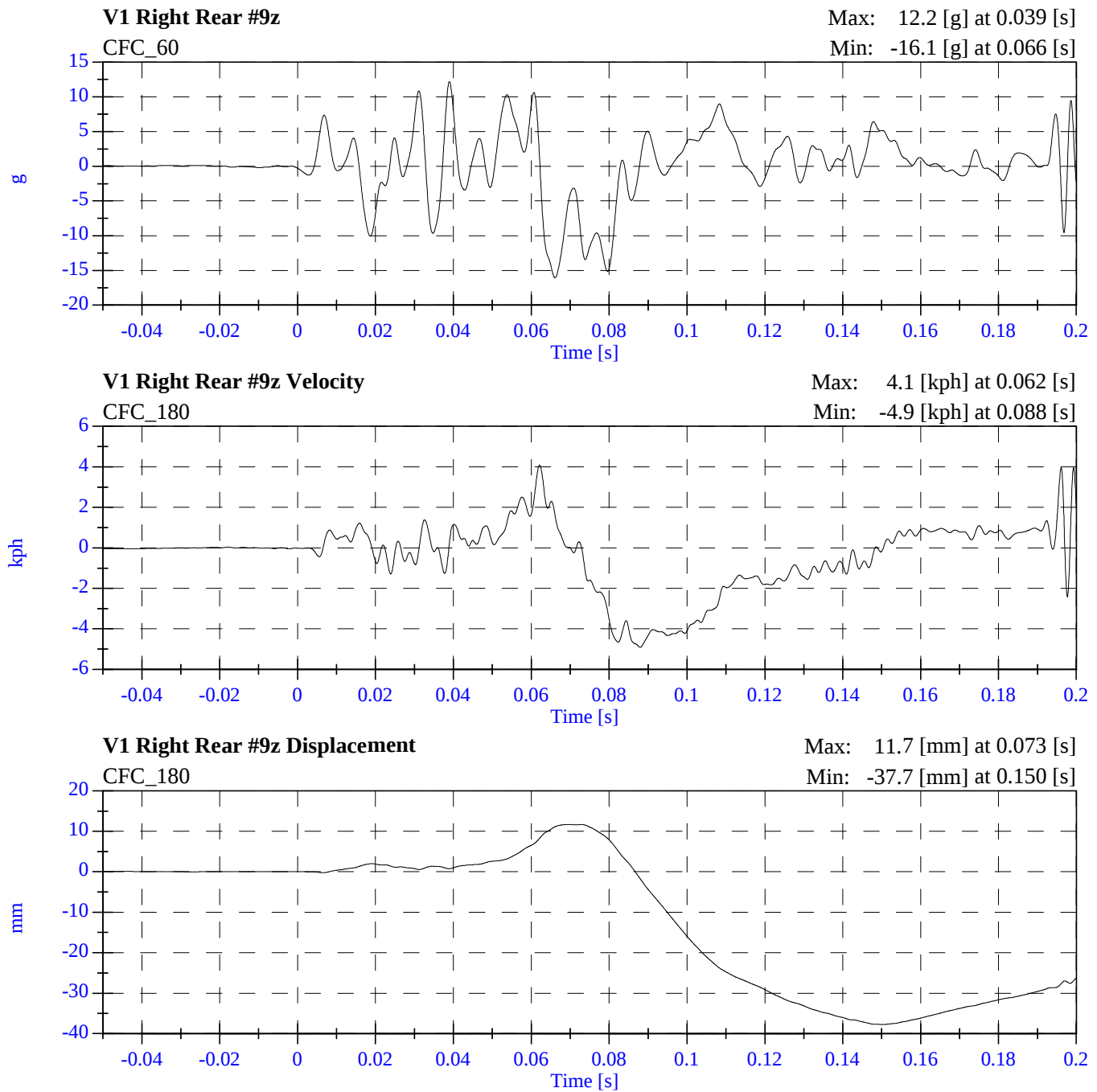
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



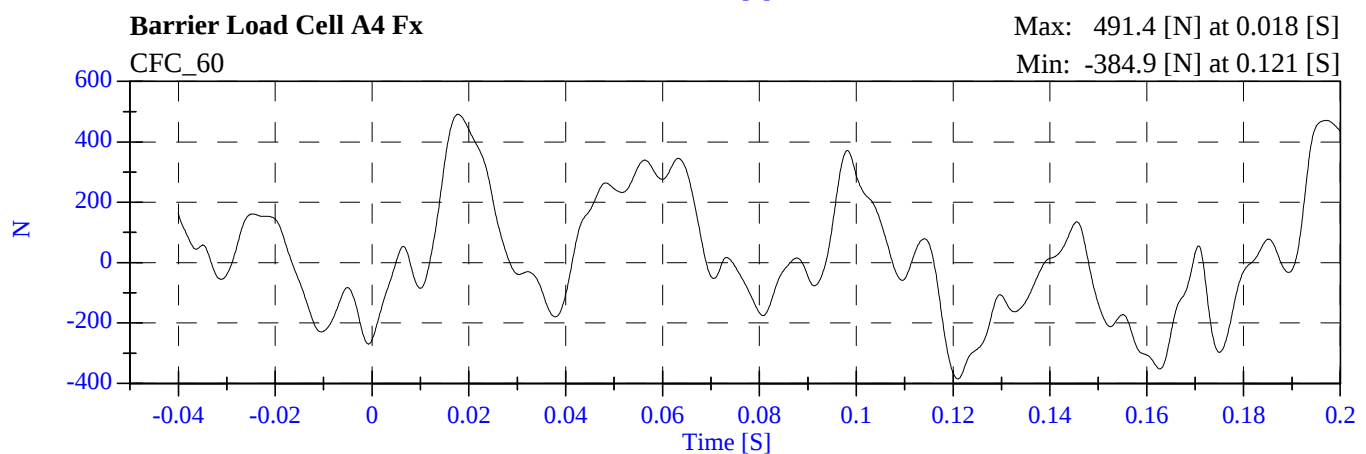
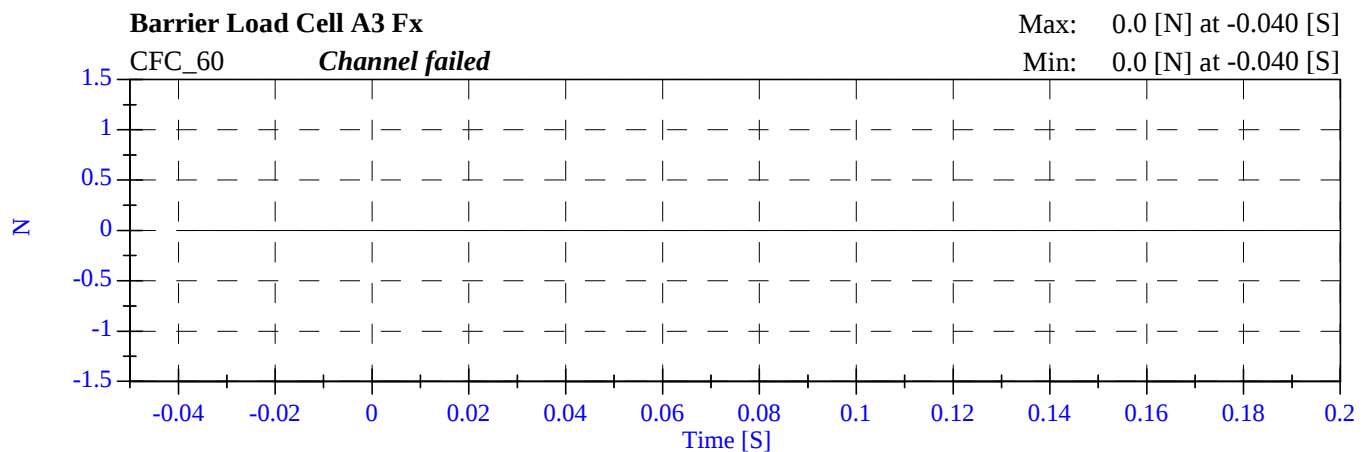
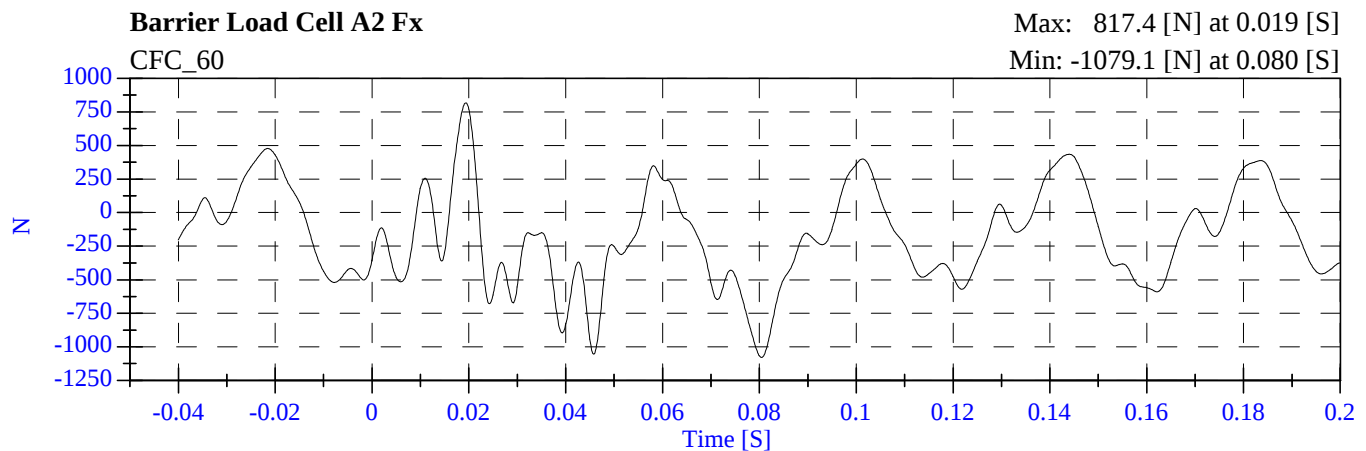
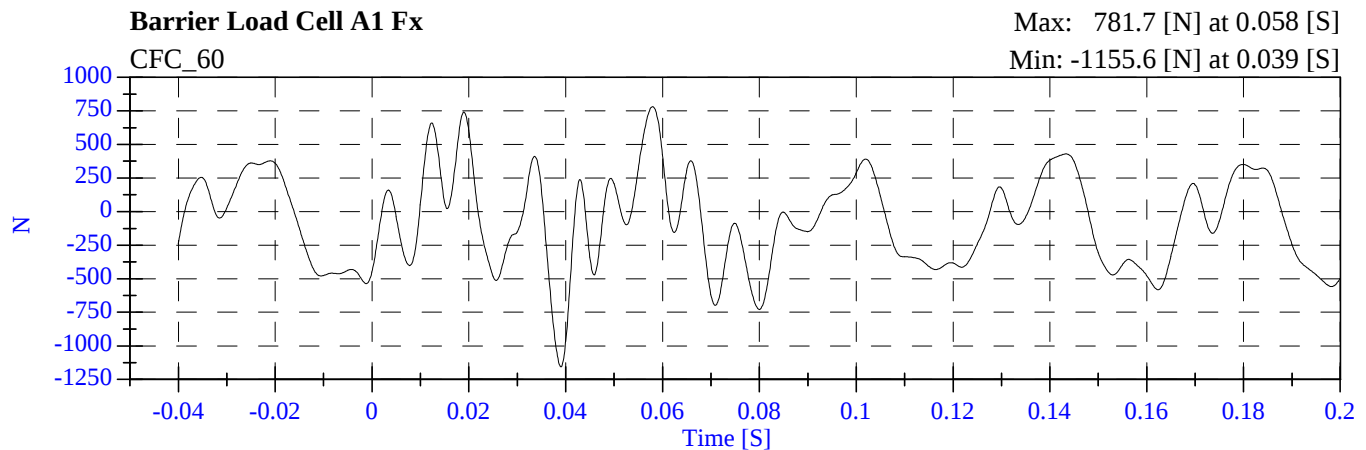
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



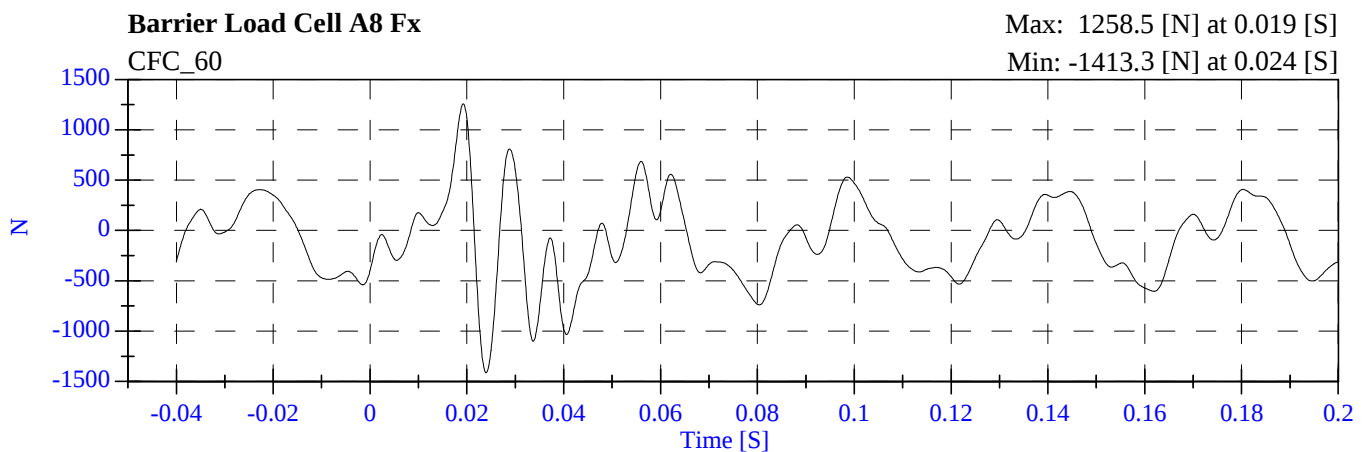
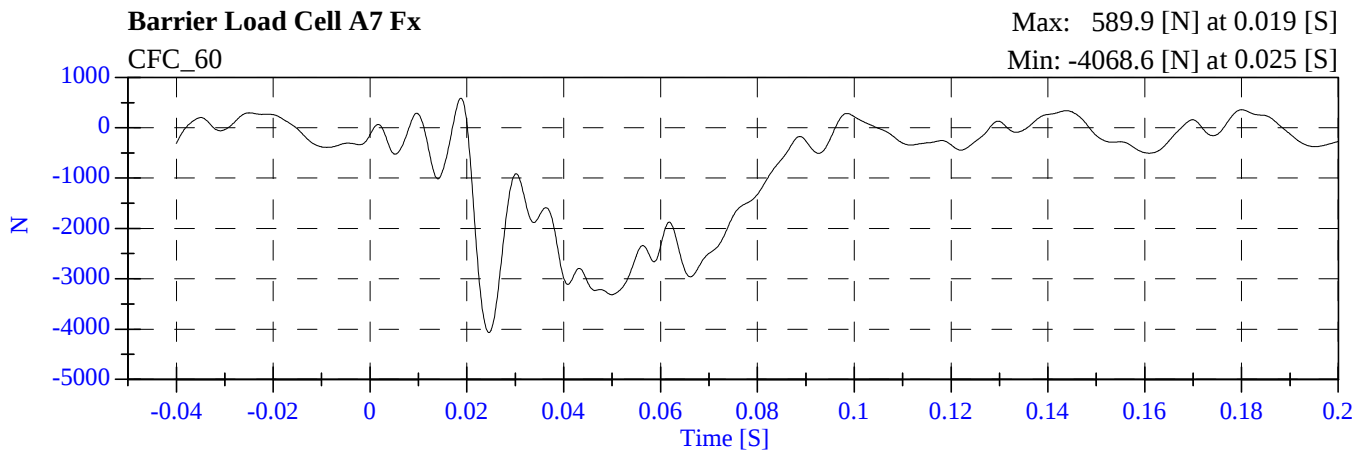
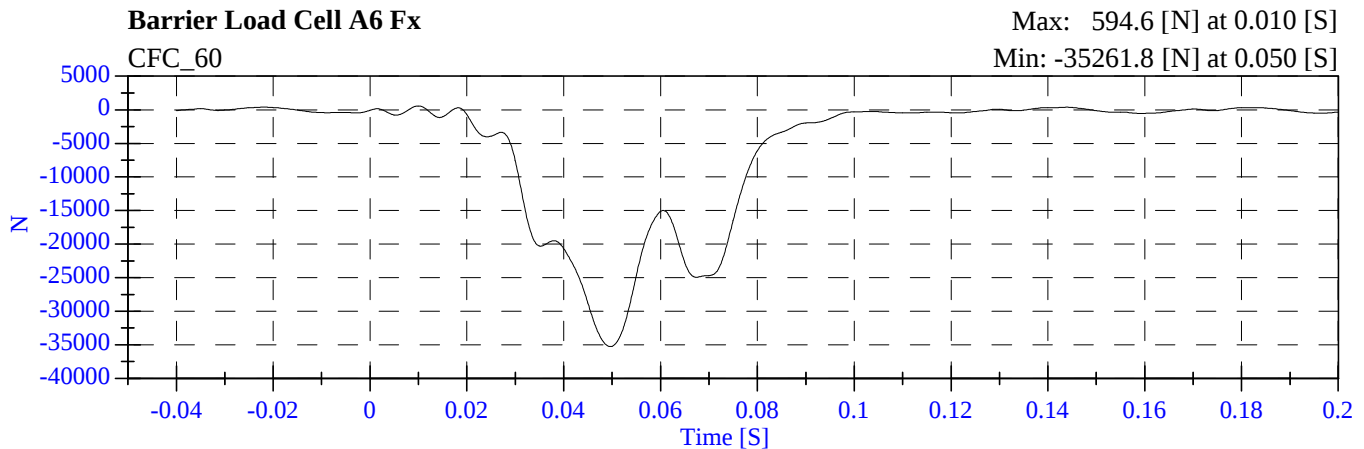
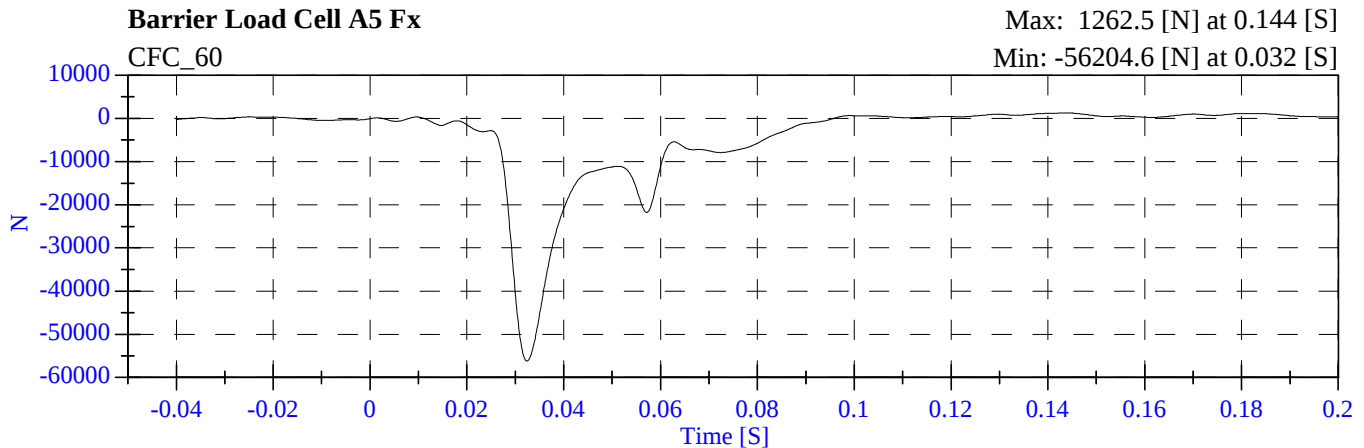
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



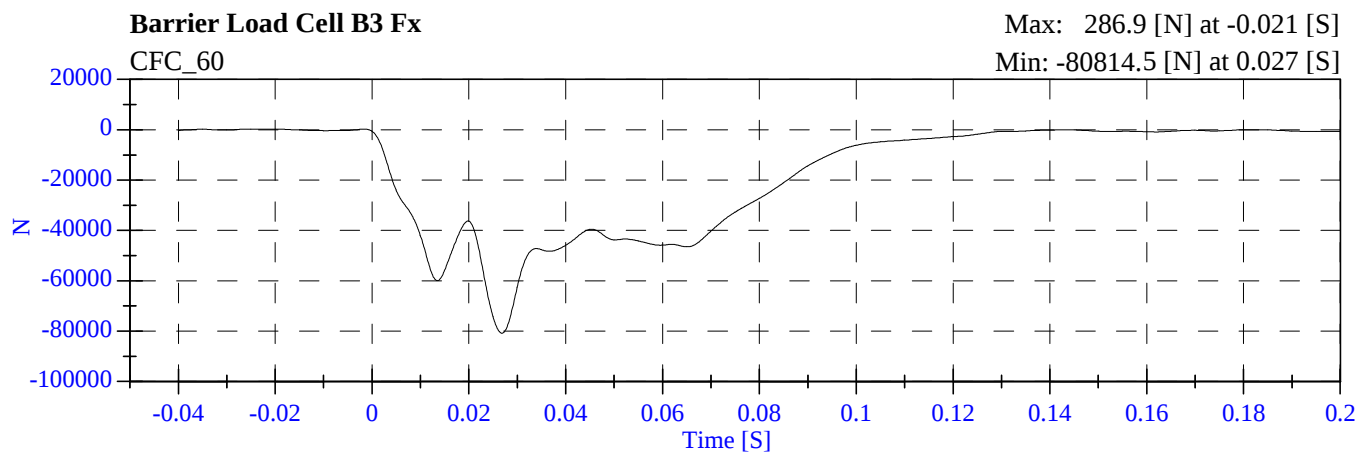
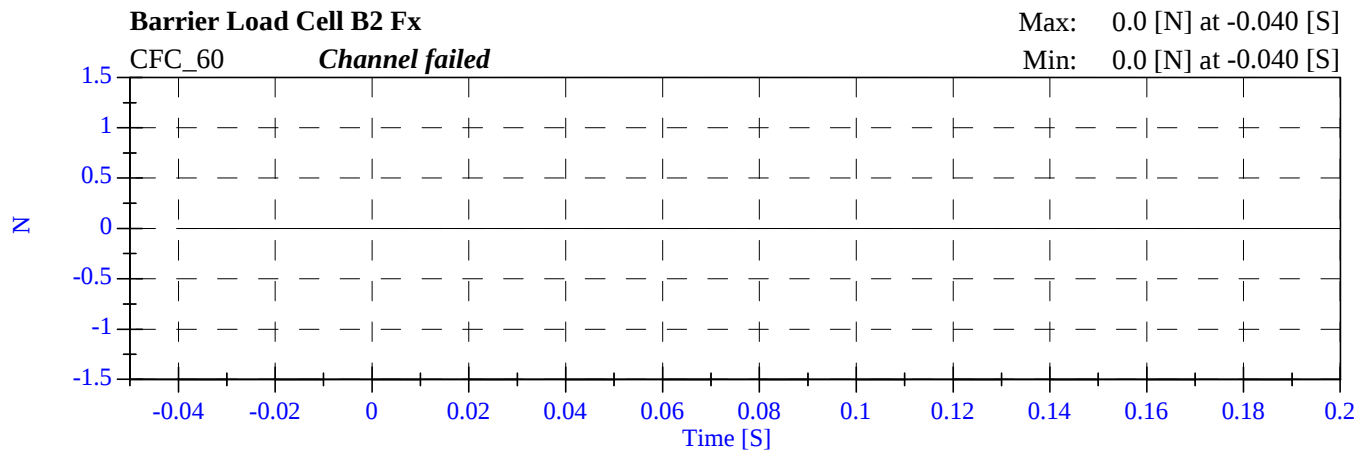
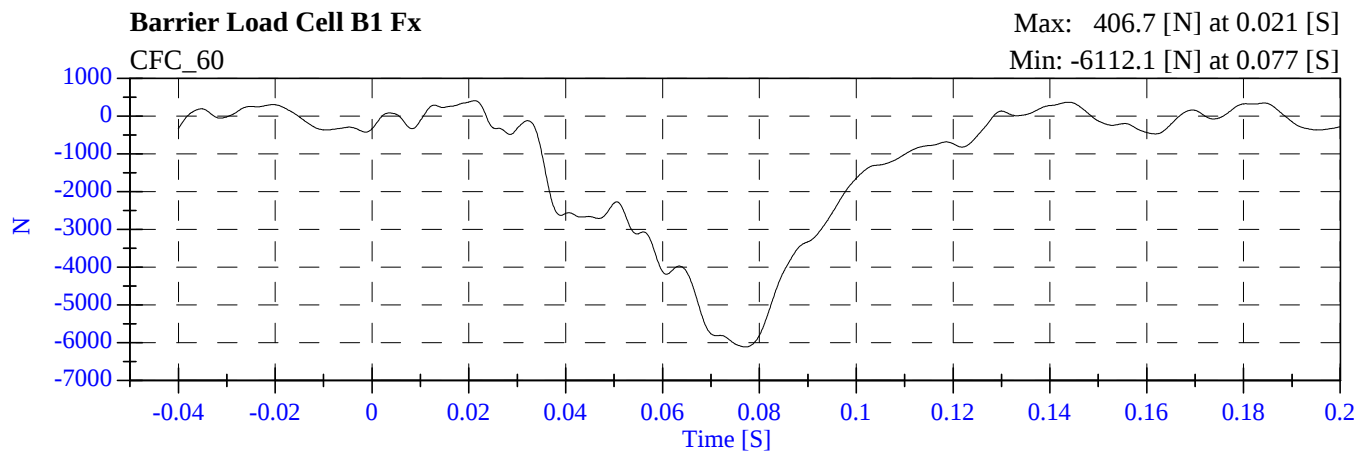
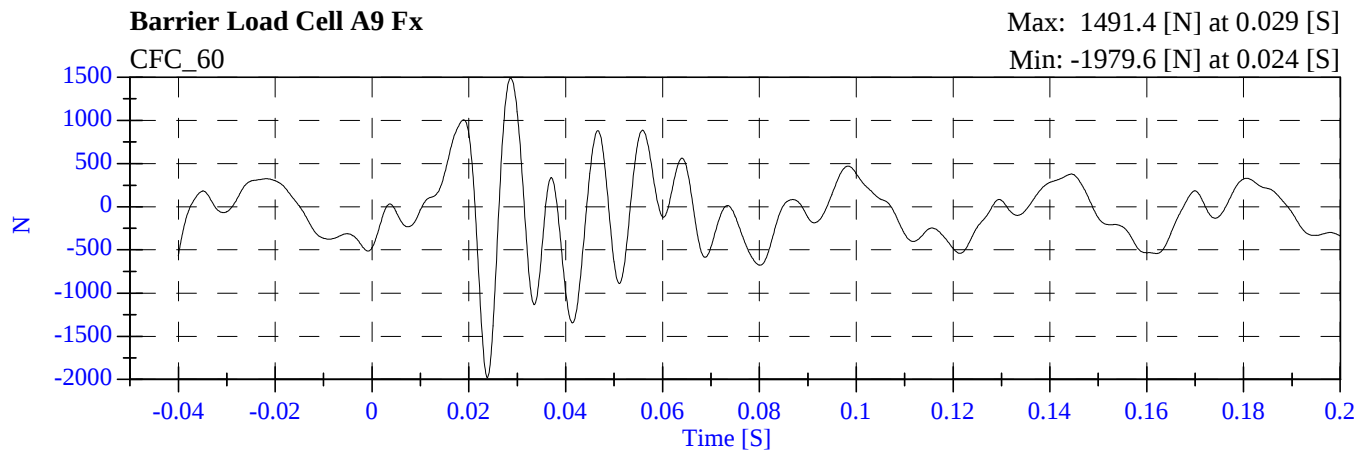
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



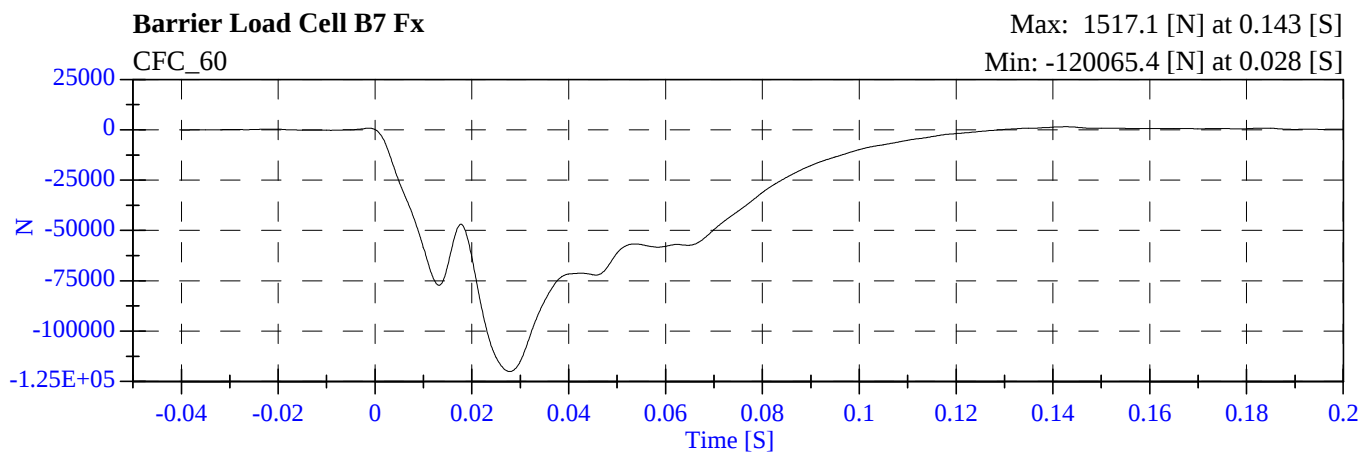
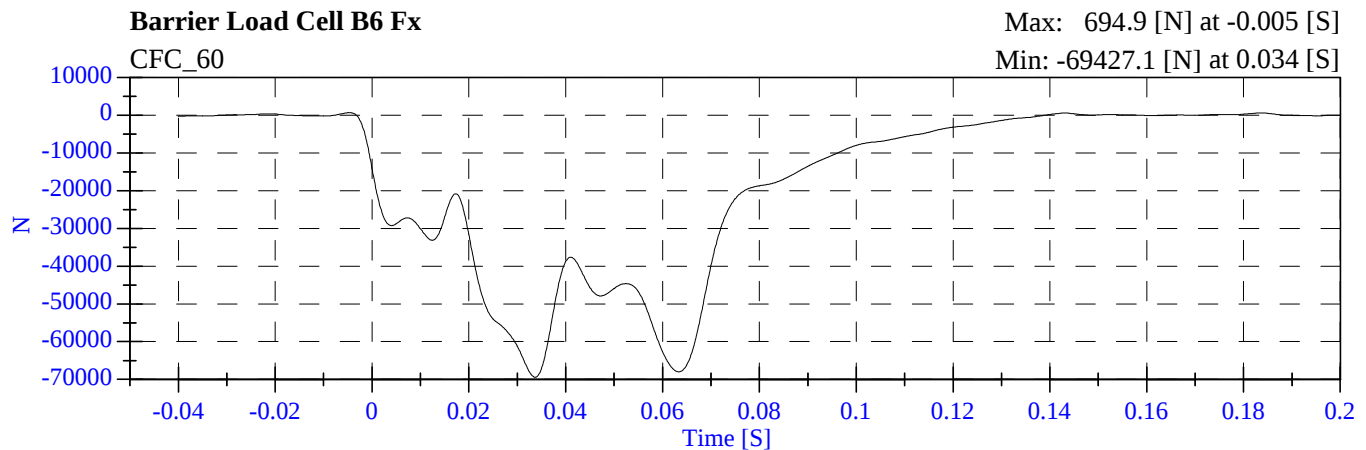
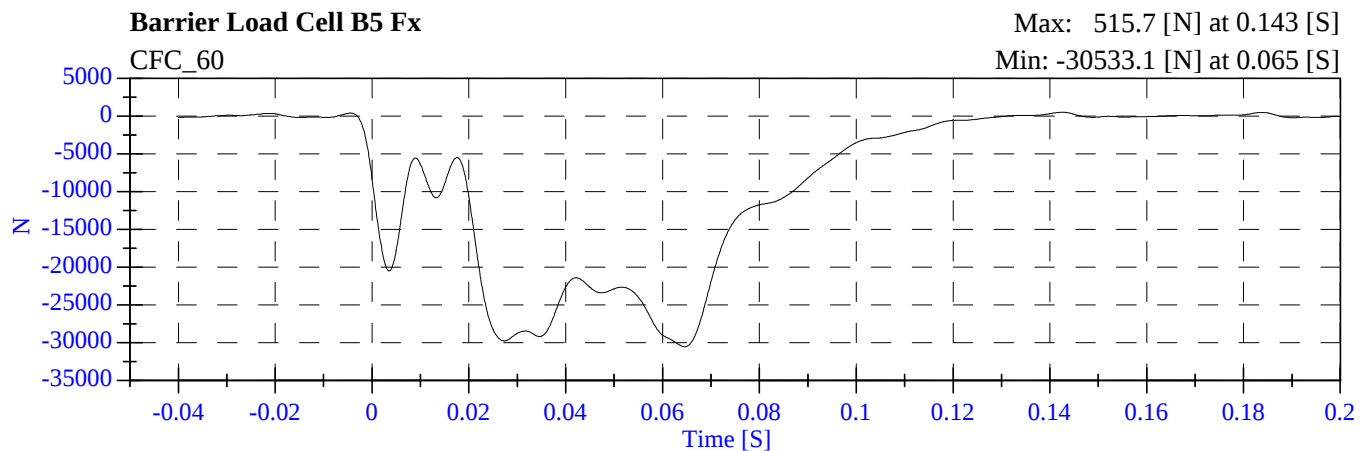
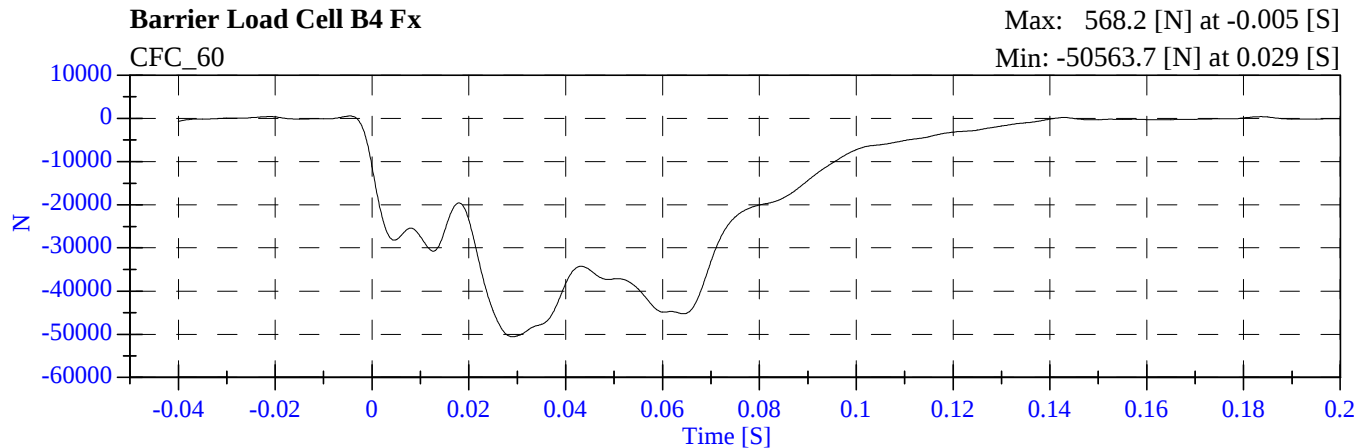
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



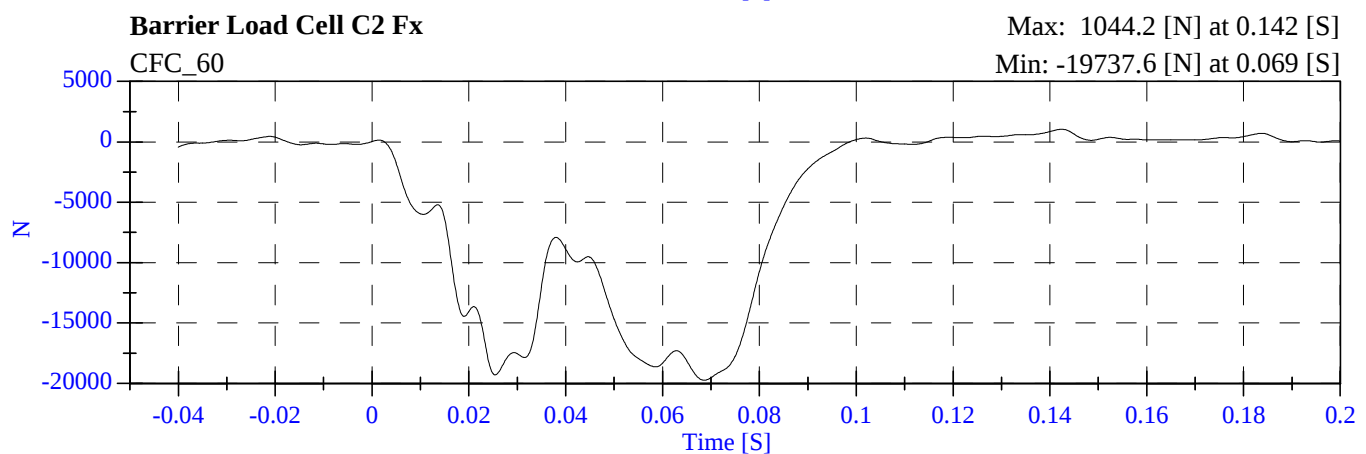
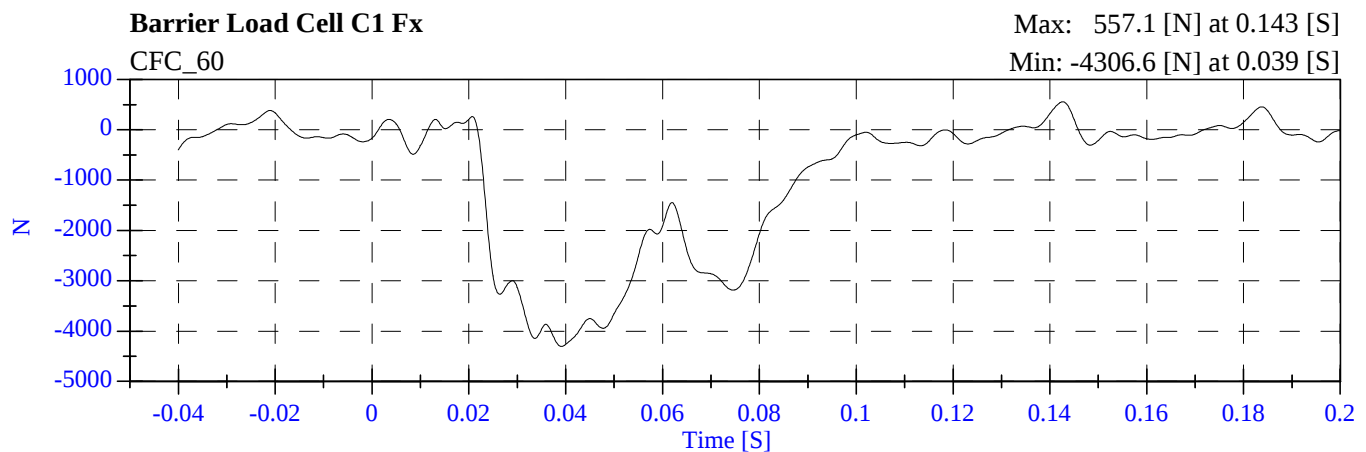
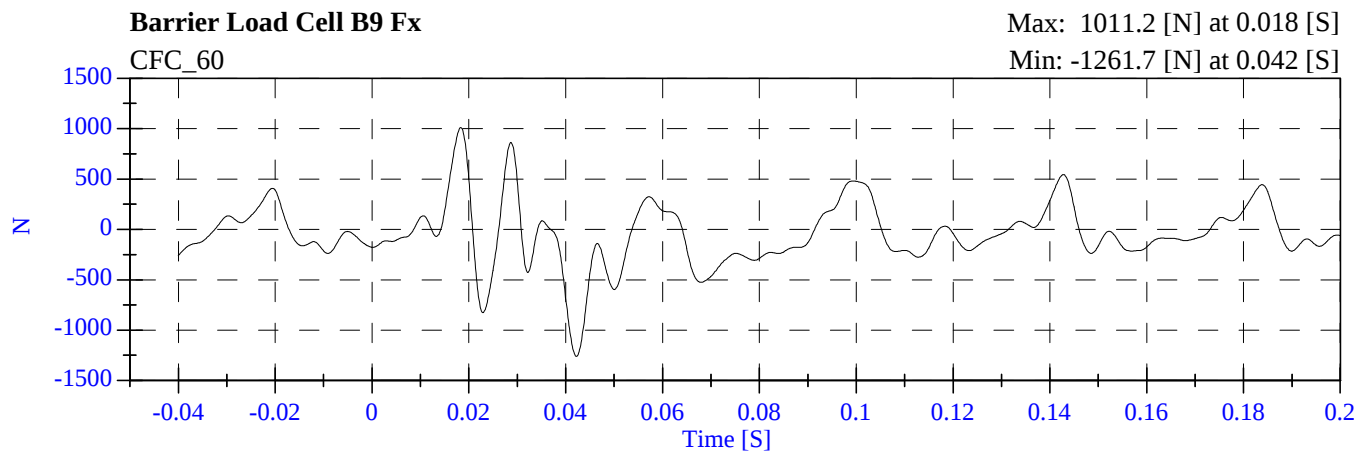
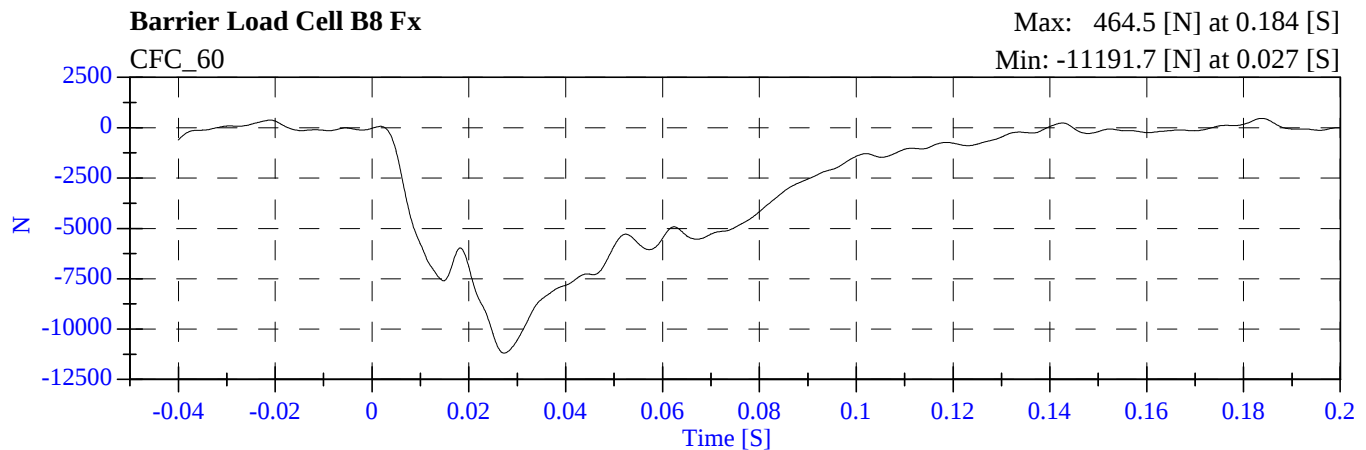
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005

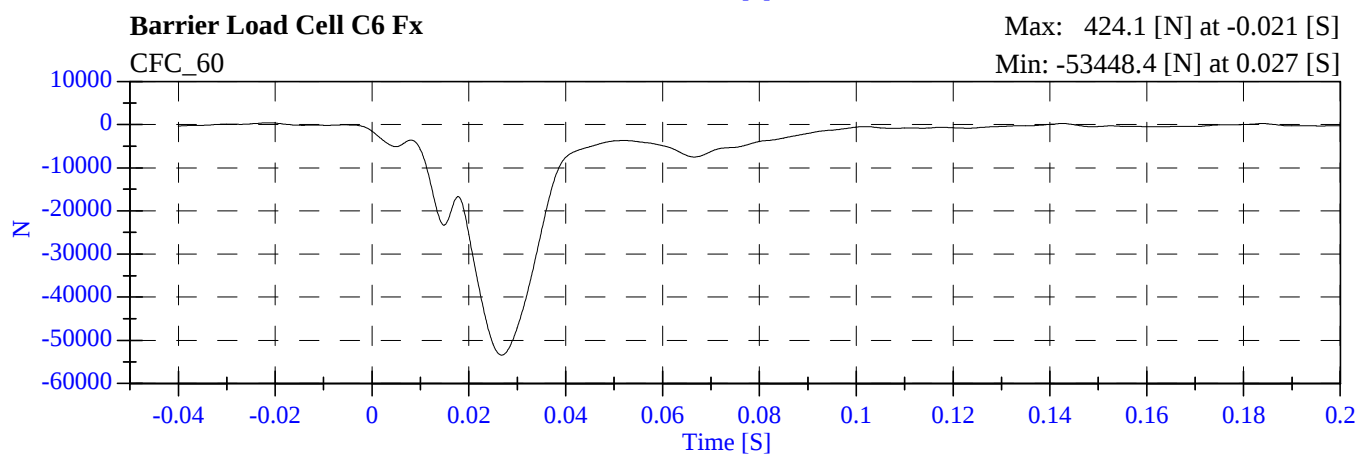
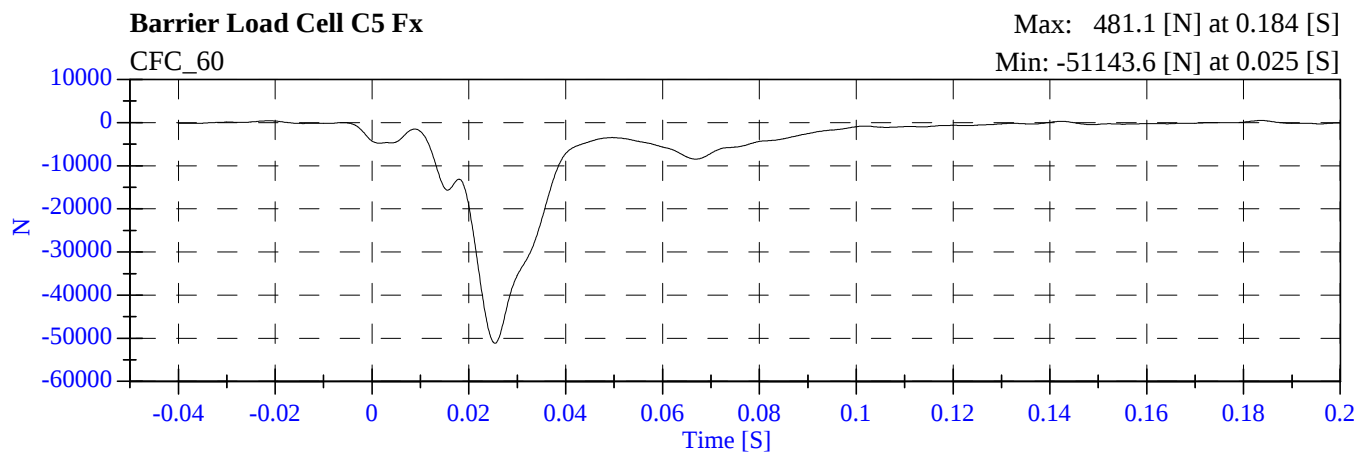
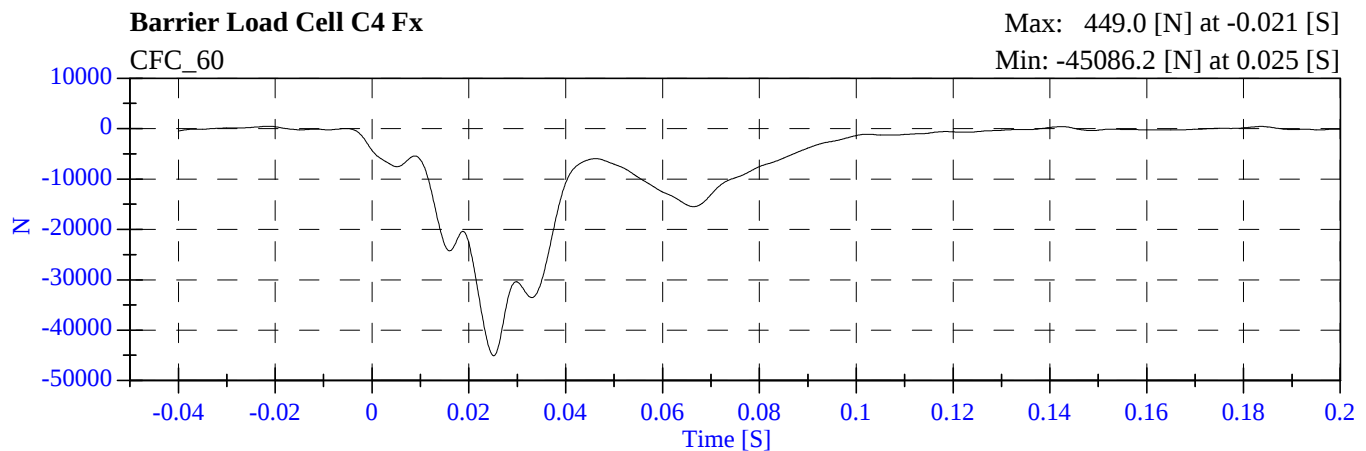
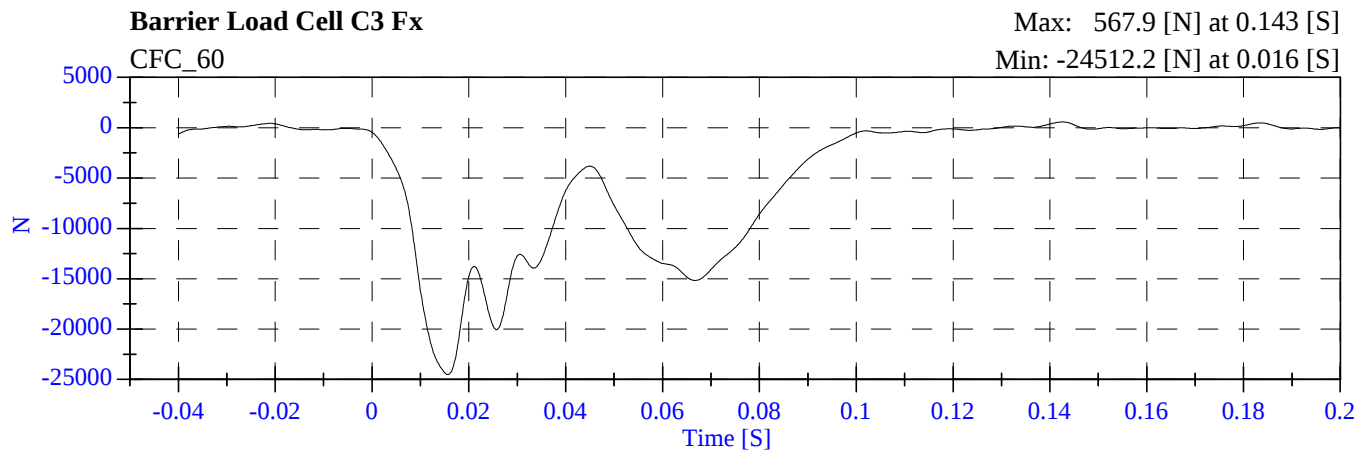


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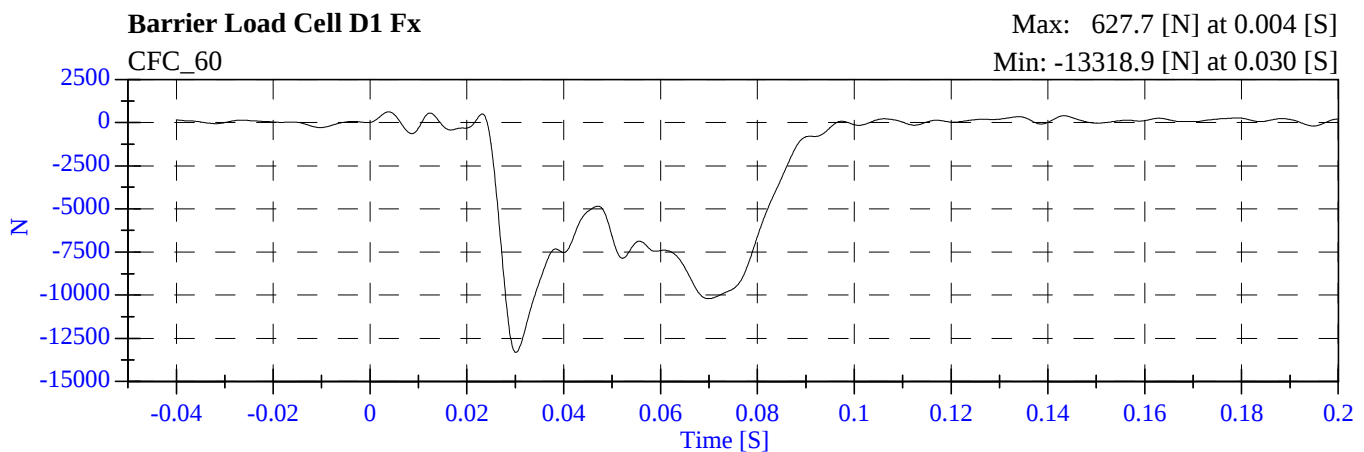
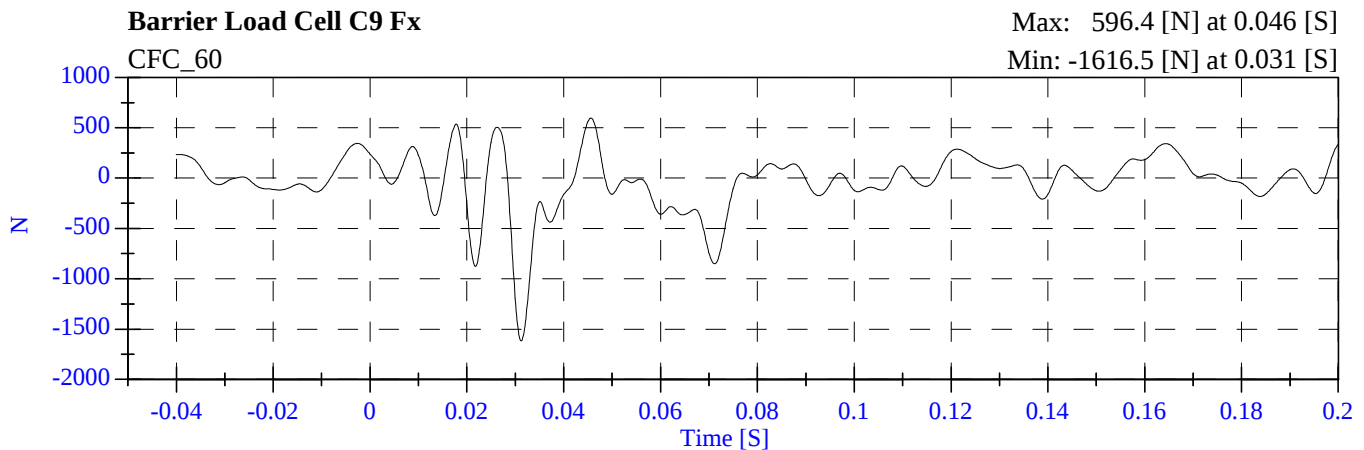
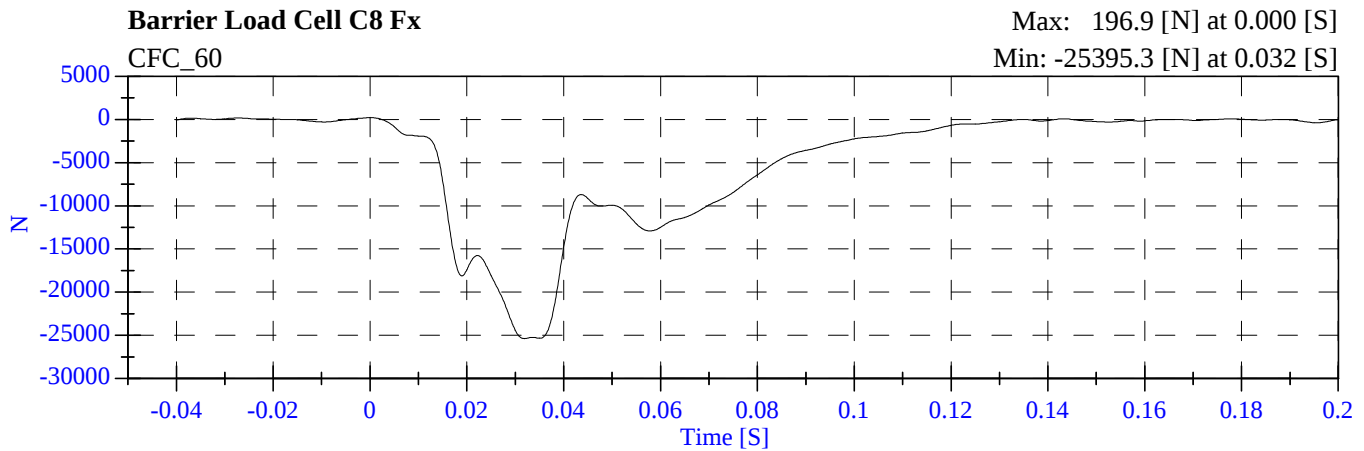
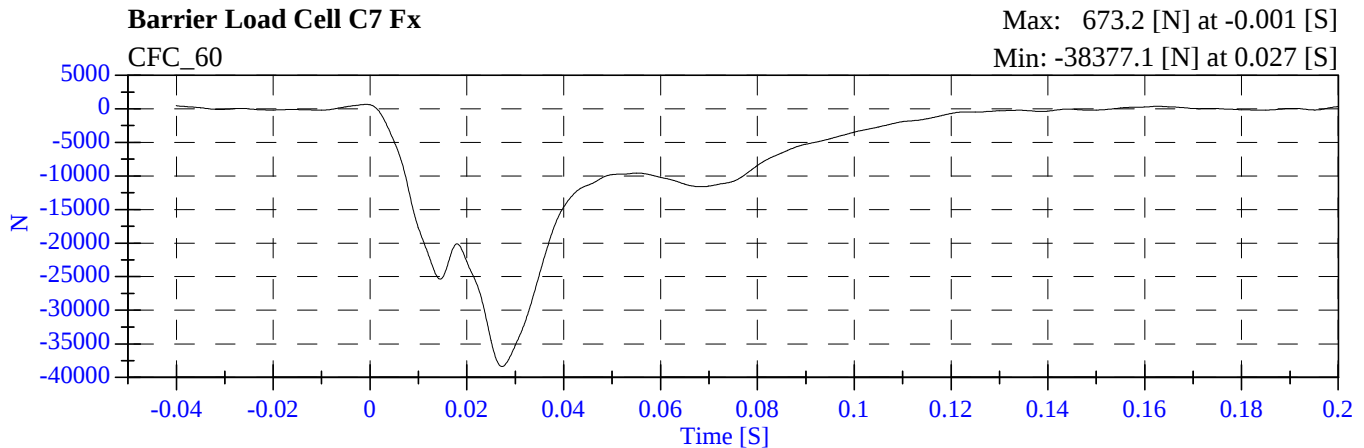
2005 NCAP Test 8 - 2005 Buick Rendezvous

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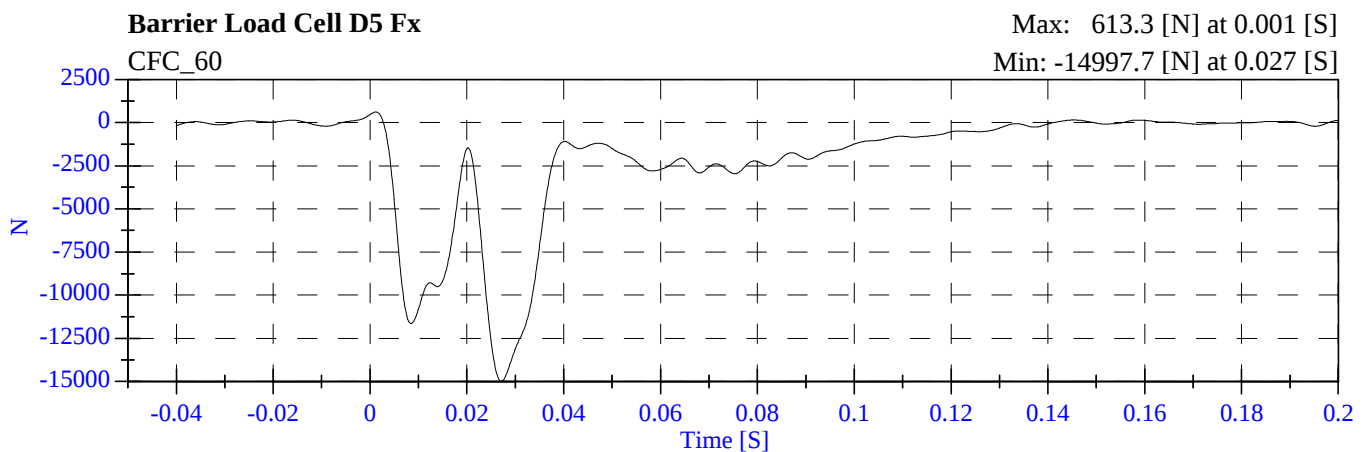
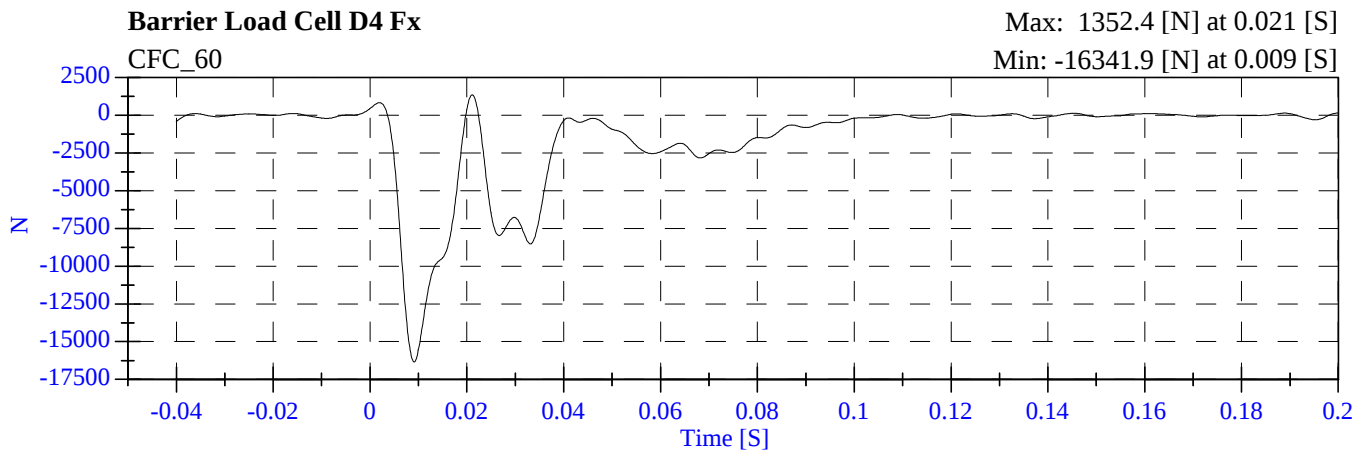
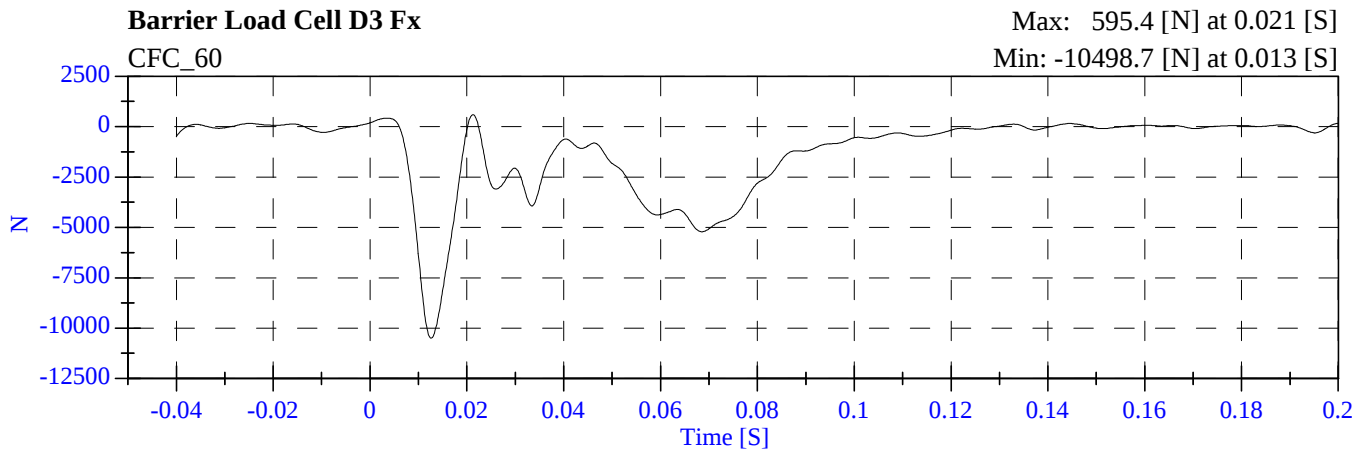
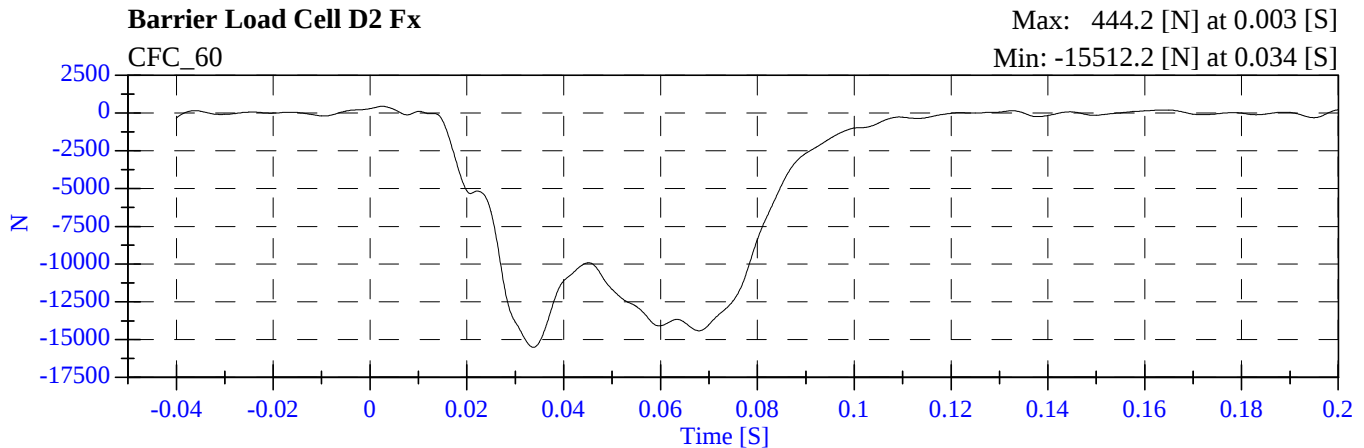
2005 NCAP Test 8 - 2005 Buick Rendezvous

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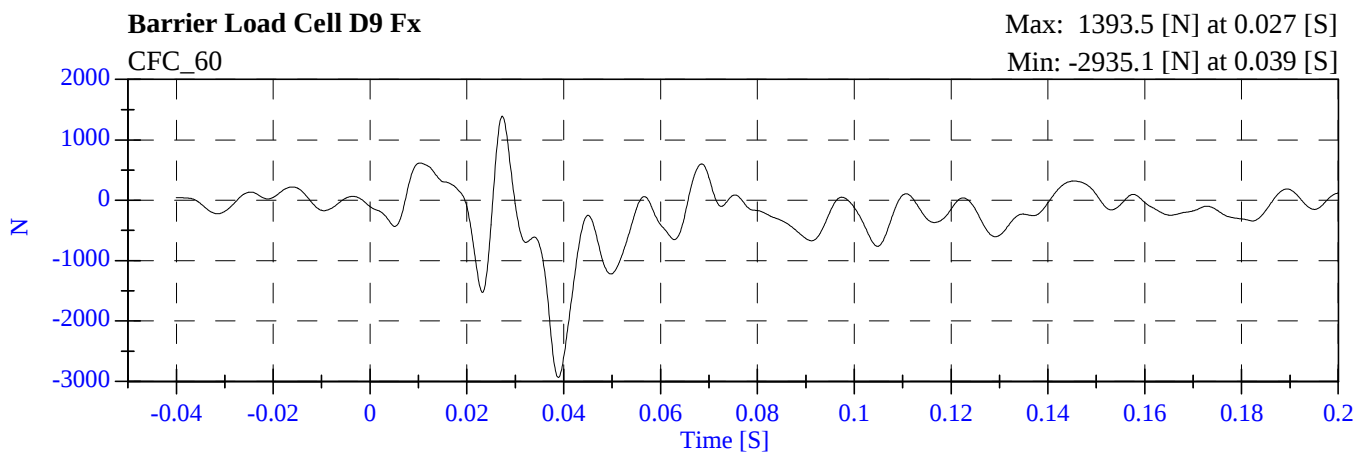
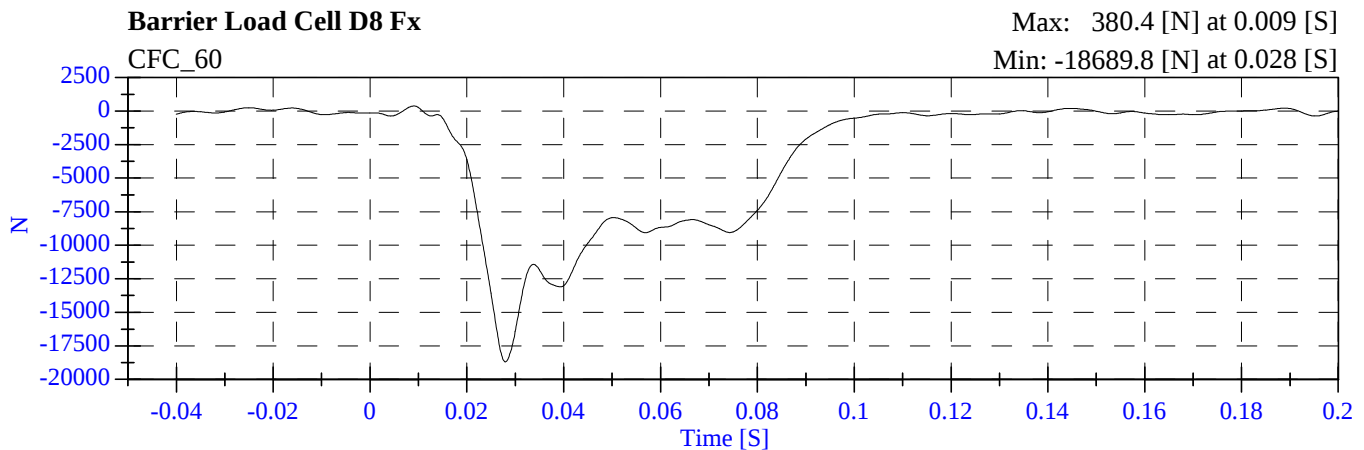
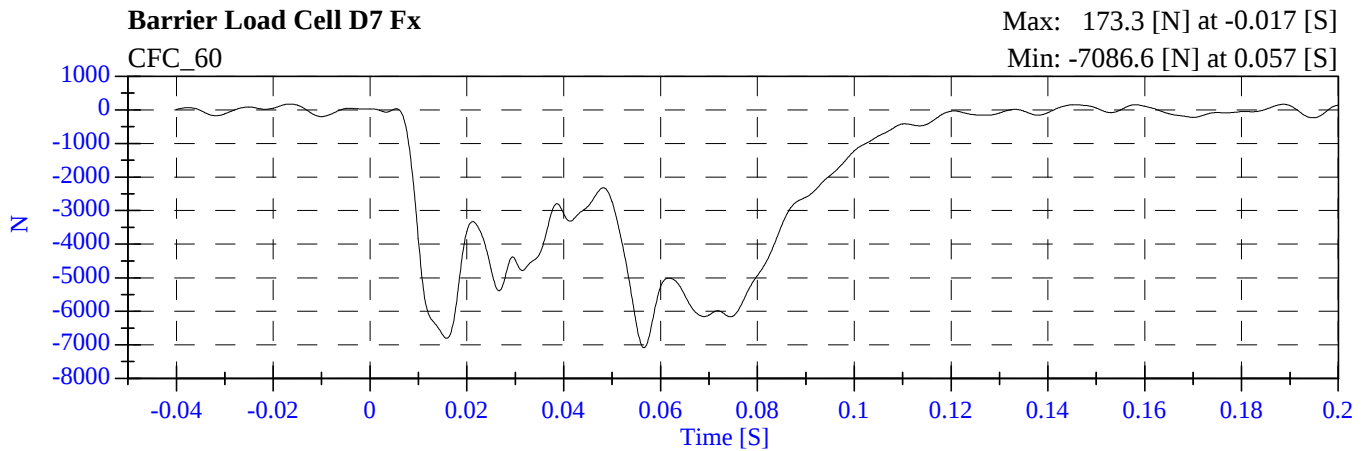
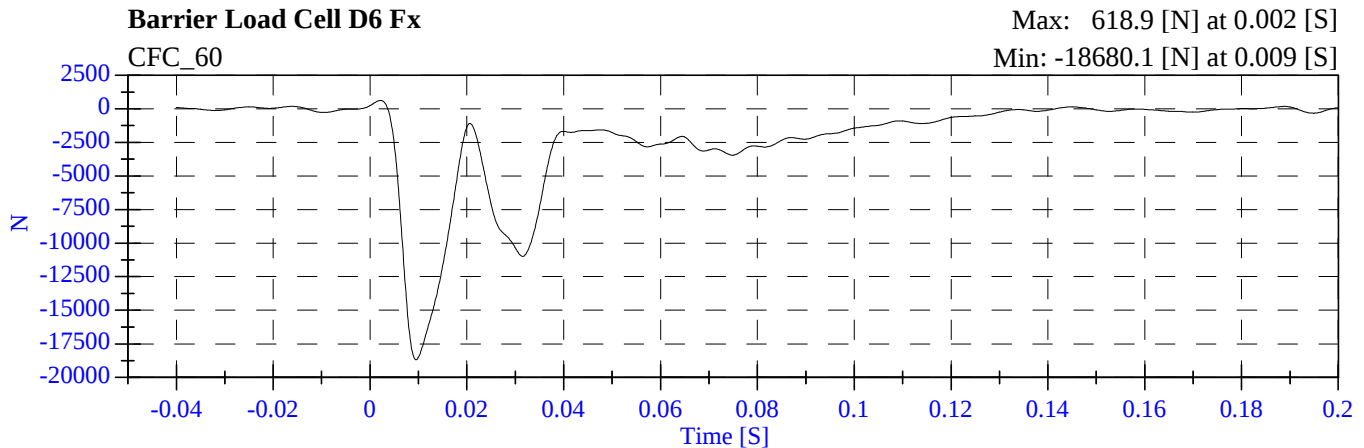


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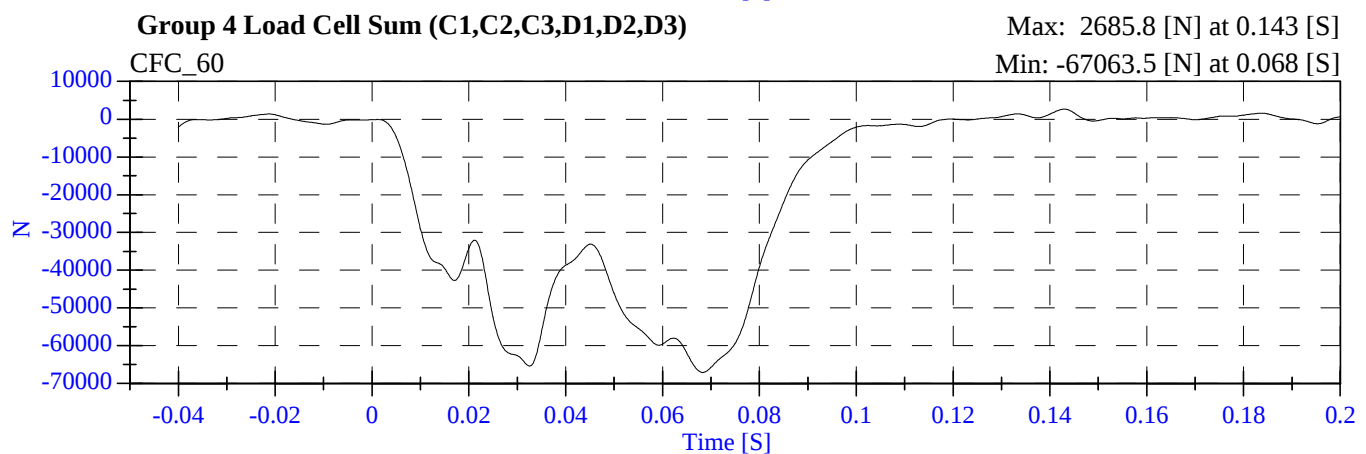
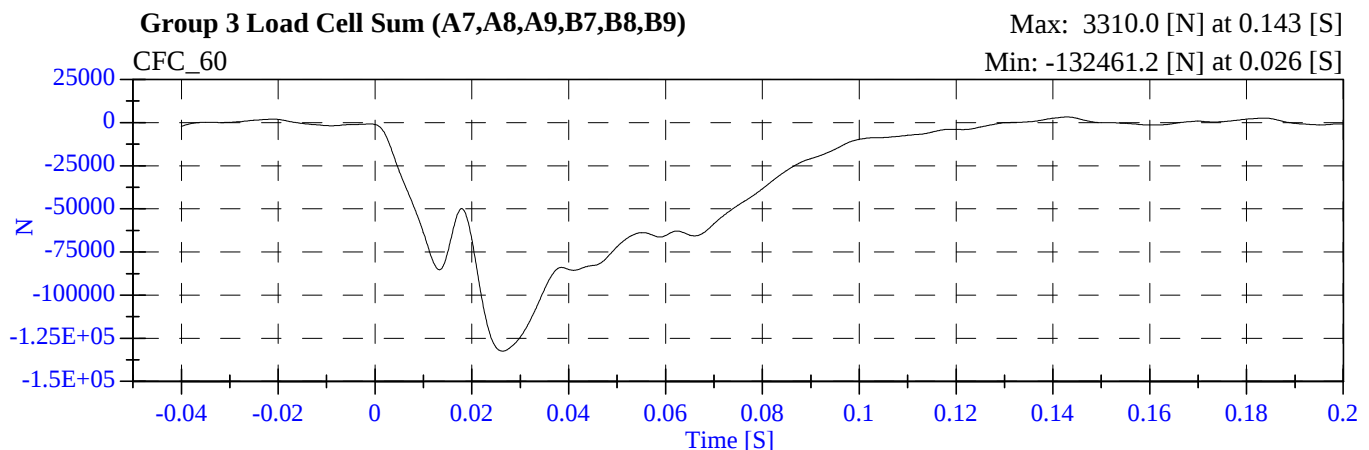
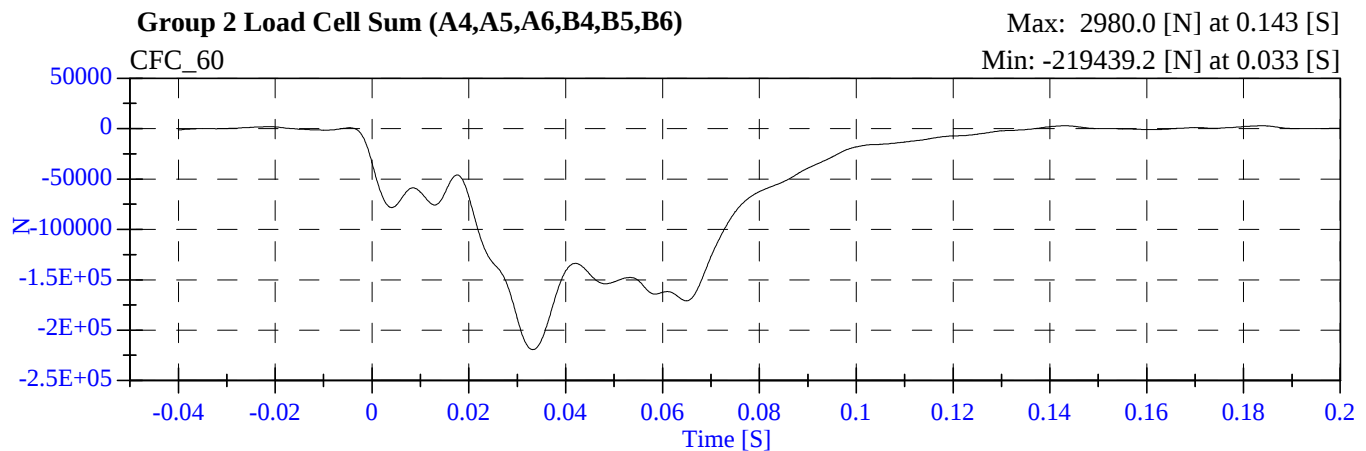
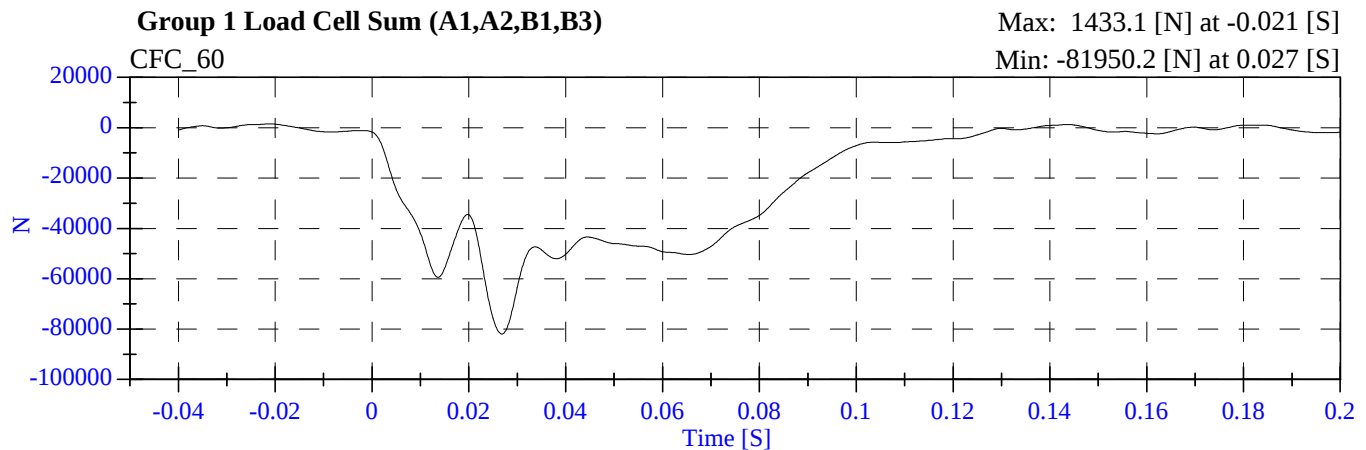


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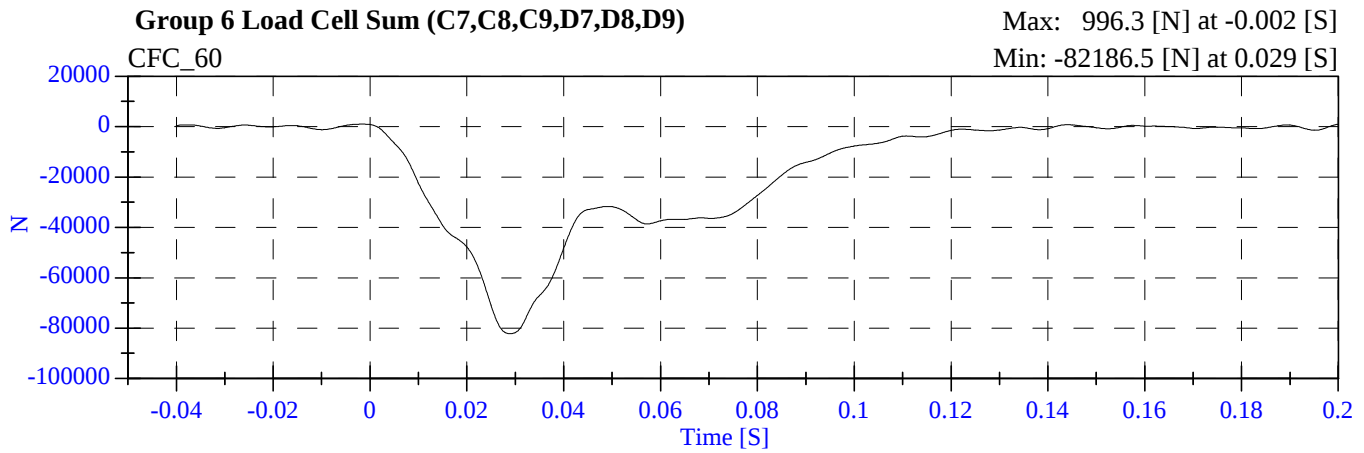
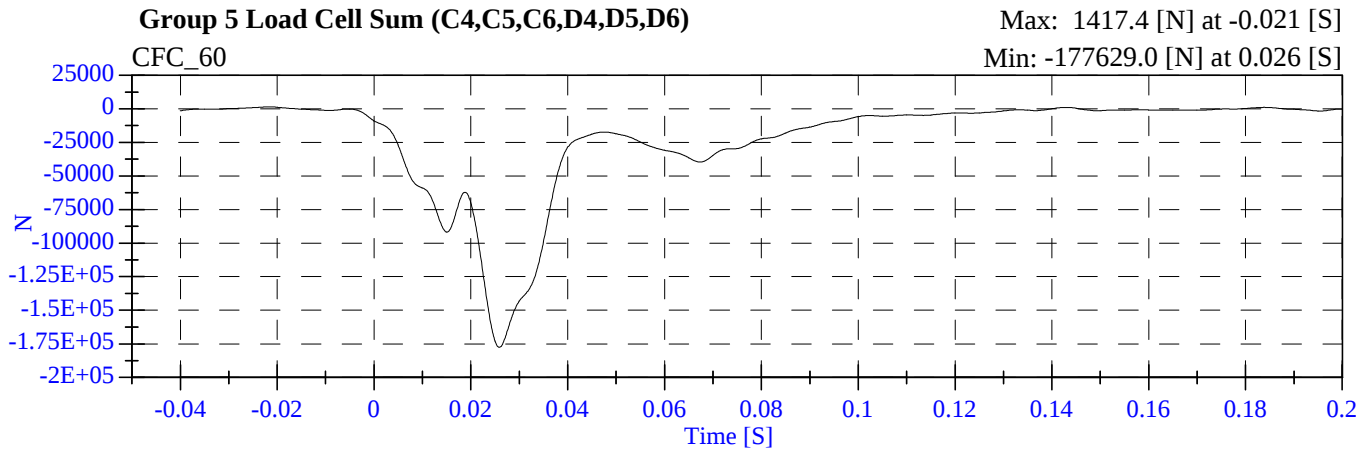


2005 NCAP Test 8 - 2005 Buick Rendezvous

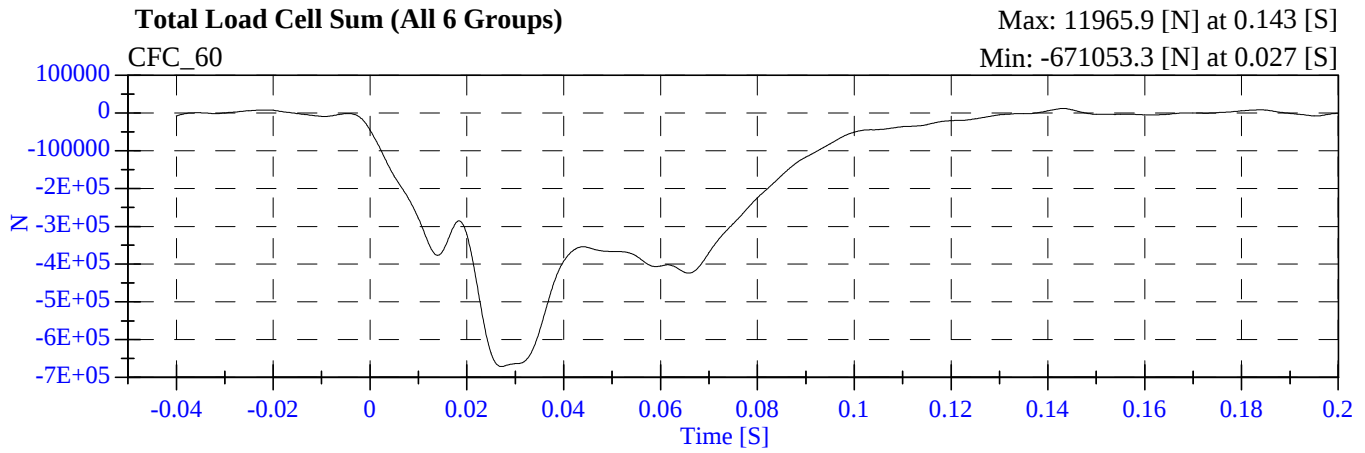
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APPENDIX C

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.

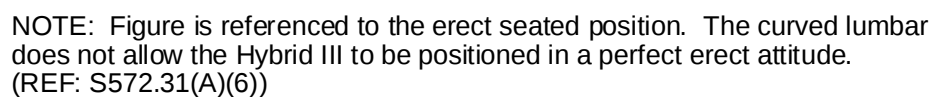
Dummy serial numbers and certification dates are:

<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	142	January 31, 2005
#2/Right Front Passenger	150	January 31, 2005

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.

EXTERNAL DIMENSIONS SPECIFICATIONS



PART 572E
HEAD DROP TEST

Dummy Serial Number 142
Sequential Test Number 2
Date January 21, 2005
Workfile 142H2 01-21-05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.00
Relative Humidity	10% - 70%	29.00
Peak Resultant Acceleration	225-275 G's	225.09
Peak Lateral Acceleration	15 G's Max	6.64
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	142	
Sequential Test Number	2	
Date	January 24, 2005	6 Axis Neck Transducer
Workfile	142NF 01-24-05	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6-22.2 Deg C	21.1
Relative Humidity		10% - 70%	33.00
Impact Velocity		6.89-7.13 m/s	7.01
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.59
	20 ms	17.60 - 22.60 G's	22.53
	30 ms	12.50 - 18.50 G's	17.78
Max Pendulum G's Above 30 ms		29 G's Max	17.78
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	37.00
D Plane Rotation	Max	64 - 78 Deg	66.09
	Time	57 - 64 ms	59.70
Moment About Occipital Condyle	Max	88.13-108.47 N-m	99.02
	Time	47 - 58 ms	49.70
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	120.10
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.09

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	142	
Sequential Test Number	2	
Date	January 24, 2005	6 Axis Neck Transducer
Workfile	142NE 01-24-05	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6-22.2 Deg C	21.11
Relative Humidity		10% - 70%	33.00
Impact Velocity		5.94 – 6.19 Ft/s	6.00
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.09
	20 ms	14.00 - 19.00 G's	18.27
	30 ms	11.00 - 16.00 G's	15.89
Max Pendulum G's Above 30 ms		22 G's Max	15.89
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	38.60
D Plane Rotation	Max	81 - 106 Deg	96.57
	Time	72 - 82 ms	76.40
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-68.41
	Time	65 - 79 ms	72.20
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	162.00
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	141.60

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 142
Sequential Test Number 2
Date January 26, 2005
Workfile 142T1 01-26-05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6-22.2 Deg C	21.1
Relative Humidity	10% - 70%	35.00
Pendulum Velocity	6.58 – 6.83 m/s	6.74
Maximum Deflection	64.52 – 72.64 mm	68.23
Maximum Resistive Force	5159.90 – 5893.90 N	5465.36
Internal Hysteresis	69 - 85 %	75.52

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 142
Sequential Test Number 1
Date January 28, 2005
Workfile 142LF 01-28-05/142RF 01-28-05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.00
Relative Humidity	10% - 70%	33.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1073.54
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.00
Relative Humidity	10% - 70%	33.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1086.61

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 142
Sequential Test Number 2
Date January 31, 2005

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70.0
Relative Humidity			35.0
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Total Sitting Height	A	34.6 - 35.0 in	35.0
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
H-Point Height	C	3.3 - 3.5 in	3.5
H-Point from Backline	D	5.3 - 5.5 in	5.3
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.7
Thigh Clearance	F	5.5 - 6.1 in	6.0
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.5
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.5
Elbow Rest Height	J	7.5 - 8.3 in	8.25
Buttock Knee Length	K	22.8 - 23.8 in	23.5
Popliteal Height	L	16.9 - 17.9 in	17.75
Knee Pivot Height	M	19.1 - 19.7 in	19.25
Buttock Popliteal Length	N	17.8 - 18.8 in	18.75
Chest Depth	O	8.4 - 9.0 in	9.0
Foot Length	P	9.9 - 10.5 in	10.25
Shoulder Breadth	V	16.6 - 17.2 in	16.9
Foot Breadth	W	3.6 - 4.2 in	4.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.75
Waist Circumference	Z	32.9 - 34.1 in	33.0

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number 150
Sequential Test Number 2
Date January 24, 2005
Workfile 150H 01-24-05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	33.00
Peak Resultant Acceleration	225-275 G's	237.16
Peak Lateral Acceleration	15 G's Max	1.10
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	150	
Sequential Test Number	2	
Date	January 25, 2005	6 Axis Neck Transducer
Workfile	150NF 01-25-05	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	38.00
Impact Velocity		6.89 – 7.13 m/s	7.01
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	25.10
	20 ms	17.60 - 22.60 G's	21.97
	30 ms	12.50 - 18.50 G's	16.58
Max Pendulum G's Above 30 ms		29 G's Max	16.58
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	37.20
D Plane Rotation	Max	64 - 78 Deg	69.11
	Time	57 - 64 ms	58.10
Moment About Occipital Condyle	Max	88.13 – 108.47 N-m	93.84
	Time	47 - 58 ms	51.40
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	121.40
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	99.00

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	150	
Sequential Test Number	2	
Date	January 25, 2005	6 Axis Neck Transducer
Workfile	150NE 01-25-05	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	38.00
Impact Velocity		5.94 – 6.19 m/s	6.02
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.88
	20 ms	14.00 - 19.00 G's	18.62
	30 ms	11.00 - 16.00 G's	14.91
Max Pendulum G's Above 30 ms		22 G's Max	14.91
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	40.00
D Plane Rotation	Max	81 - 106 Deg	93.42
	Time	72 - 82 ms	76.30
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-65.41
	Time	65 - 79 ms	71.90
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	163.10
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	138.90

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 150
Sequential Test Number 2
Date January 28, 2005
Workfile 150T1 01-28-05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.1
Relative Humidity	10% - 70%	33.00
Pendulum Velocity	6.58 – 6.83 m/s	6.60
Maximum Deflection	64.52 – 72.64 mm	65.05
Maximum Resistive Force	5159.90 – 5893.90 N	5318.43
Internal Hysteresis	69 - 85 %	72.43

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 150
Sequential Test Number 2
Date January 28, 2005
Workfile 150LF 01-28-05/150RF 01-28-05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.00
Relative Humidity	10% - 70%	33.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1093.56
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.00
Relative Humidity	10% - 70%	33.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1140.72

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 150
Sequential Test Number 1
Date January 31, 2005

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			35
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Total Sitting Height	A	34.6 - 35.0 in	34.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.5
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.7
Thigh Clearance	F	5.5 - 6.1 in	6.0
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.5
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Elbow Rest Height	J	7.5 - 8.3 in	8.1
Buttock Knee Length	K	22.8 - 23.8 in	23.5
Popliteal Height	L	16.9 - 17.9 in	17.8
Knee Pivot Height	M	19.1 - 19.7 in	19.5
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Chest Depth	O	8.4 - 9.0 in	9.0
Foot Length	P	9.9 - 10.5 in	10.2
Shoulder Breadth	V	16.6 - 17.2 in	16.9
Foot Breadth	W	3.6 - 4.2 in	4.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.0
Waist Circumference	Z	32.9 - 34.1 in	34.0

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 142)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENTRAN	AC-03D03D09-N10	11/3/2004	5/4/2005
	X Arm Z	ENTRAN	AC-03E03E20-N13	11/3/2004	5/4/2005
	Y Arm X	ENTRAN	AC-04J04I01-R09	11/4/2004	5/5/2005
	Y Arm Z	ENTRAN	AC-04J04J20-A17	11/4/2004	5/5/2005
	Z Arm X	ENTRAN	AC-04J04I08-F25	11/4/2004	5/5/2005
	Z Arm Y	ENTRAN	AC-04J04I20-Z23	11/4/2004	5/5/2005
Head	X	ENDEVCO	AC-P35811	1/4/2005	7/5/2005
	Y	ENDEVCO	AC-P35764	12/10/2004	6/10/2005
	Z	ENDEVCO	AC-P39729	12/14/2004	6/14/2005
Head	X (R)	ENDEVCO	AC-P35788	12/9/2004	6/9/2005
	Y (R)	ENDEVCO	AC-P35761	1/4/2005	7/5/2005
	Z (R)	ENDEVCO	AC-P39736	12/7/2004	6/7/2005
Neck Load Cell	X	DENTON	LC-441FX	11/12/2004	5/13/2005
	Y	DENTON	LC-441FY	11/12/2004	5/13/2005
	Z	DENTON	LC-441FZ	11/12/2004	5/13/2005
Neck Moment	X	DENTON	LC-441MX	11/12/2004	5/13/2005
	Y	DENTON	LC-441MY	11/12/2004	5/13/2005
	Z	DENTON	LC-441MZ	11/12/2004	5/13/2005
Chest	X	ENDEVCO	AC-P19255	12/1/2004	6/1/2005
	Y	ENDEVCO	AC-P16576	12/1/2004	6/1/2005
	Z	ENDEVCO	AC-P19216	12/1/2004	6/1/2005
Chest	X (R)	ENDEVCO	AC-P15534	12/1/2004	6/1/2005
	Y (R)	ENDEVCO	AC-P23303	12/1/2004	6/1/2005
	Z (R)	ENDEVCO	AC-P15526	12/1/2004	6/1/2005
Chest Deflection	X	SERVO	DS-142	1/27/2005	7/28/2005
Pelvic	X	ENDEVCO	AC-P18792	11/17/2004	5/18/2005
	Y	ENDEVCO	AC-P17535	11/17/2004	5/18/2005
	Z	ENDEVCO	AC-P23134	11/17/2004	5/18/2005

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 142)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	GSE	LC-652	11/5/2004	5/6/2005
Right Femur Load Cell	Fz	GSE	LC-655	11/5/2004	5/6/2005
Left Upper Tibia	Mx	DENTON	LC-038MX	11/9/2004	5/10/2005
	My	DENTON	LC-038MY	11/9/2004	5/10/2005
Left Lower Tibia	Fz	DENTON	LC-124FZ	11/9/2004	5/10/2005
	Mx	DENTON	LC-124MX	11/9/2004	5/10/2005
	My	DENTON	LC-124MY	11/9/2004	5/10/2005
Right Upper Tibia	Mx	DENTON	LC-045MX	11/9/2004	5/10/2005
	My	DENTON	LC-045MY	11/9/2004	5/10/2005
Right Lower Tibia	Fz	DENTON	LC-125FZ	11/9/2004	5/10/2005
	Mx	DENTON	LC-125MX	11/9/2004	5/10/2005
	My	DENTON	LC-125MY	11/9/2004	5/10/2005
Left Foot Rear	X	ENDEVCO	AC-J31034	1/7/2005	7/8/2005
	Z	ENTRAN	AC-02I02I10-N17	11/3/2004	5/4/2005
Left Foot Front	Z	ENTRAN	AC-03E03E18-F18	11/3/2004	5/4/2005
Right Foot Rear	X	ENTRAN	AC-03E03E02-N16	11/3/2004	5/4/2005
	Z	ENTRAN	AC-03D03D16-F18	11/3/2004	5/4/2005
Right Foot Front	Z	ENDEVCO	AC-J32787	1/7/2005	7/8/2005
Lap Belt Load Cell		LEBOW	LC-711	11/1/2004	5/2/2005
Shoulder Belt Load Cell		FIRST TECHNOLOGY	LC-174	11/1/2004	5/2/2005

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 150)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENTRAN	AC-03E03D30-N03	11/3/2004	5/4/2005
	X Arm Z	ENTRAN	AC-03E03D30-N04	11/3/2004	5/4/2005
	Y Arm X	ENTRAN	AC-02I02I05-F04	11/3/2004	5/4/2005
	Y Arm Z	ENTRAN	AC-03F03F09-N17	11/3/2004	5/4/2005
	Z Arm X	ENTRAN	AC-03E03D30-N11	11/3/2004	5/4/2005
	Z Arm Y	ENTRAN	AC-03E03E21-M19	11/3/2004	5/4/2005
	Head	X	ENDEVCO	AC-P39575	1/4/2005
Y		ENDEVCO	AC-P35818	1/4/2005	7/5/2005
Z		ENDEVCO	AC-P39743	1/4/2005	7/5/2005
Head	X (R)	ENDEVCO	AC-P35803	1/6/2005	7/7/2005
	Y (R)	ENDEVCO	AC-P35758	1/4/2005	7/5/2005
	Z (R)	ENDEVCO	AC-P35804	1/4/2005	7/5/2005
Neck Load Cell	X	DENTON	LC-076FX	11/12/2004	5/13/2005
	Y	DENTON	LC-076FY	11/12/2004	5/13/2005
	Z	DENTON	LC-076FZ	11/12/2004	5/13/2005
Neck Moment	X	DENTON	LC-076MX	11/12/2004	5/13/2005
	Y	DENTON	LC-076MY	11/12/2004	5/13/2005
	Z	DENTON	LC-076MZ	11/12/2004	5/13/2005
Chest	X	ENTRAN	AC-03D03D09-N07	11/3/2004	5/4/2005
	Y	ENTRAN	AC-02A09-F12	11/3/2004	5/4/2005
	Z	ENTRAN	AC-03E03E02-N13	11/3/2004	5/4/2005
Chest	X (R)	ENTRAN	AC-03D03D16-F01	11/3/2004	5/4/2005
	Y (R)	ENTRAN	AC-03E03E20-N16	11/3/2004	5/4/2005
	Z (R)	ENTRAN	AC-03F03E29-N17	11/3/2004	5/4/2005
Chest Deflection	X	SERVO	DS-150	11/12/2004	5/13/2005
Pelvic	X	ENDEVCO	AC-P23164	11/16/2004	5/17/2005
	Y	ENDEVCO	AC-P23174	11/16/2004	5/17/2005
	Z	ENDEVCO	AC-P23137	11/16/2004	5/17/2005

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 150)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	LC-231	11/5/2004	5/6/2005
Right Femur Load Cell	Fz	DENTON	LC-232	11/5/2004	5/6/2005
Left Upper Tibia	Mx	DENTON	LC-023MX	11/9/2004	5/10/2005
	My	DENTON	LC-023MY	11/9/2004	5/10/2005
Left Lower Tibia	Fz	DENTON	LC-111FZ	11/9/2004	5/10/2005
	Mx	DENTON	LC-111MX	11/9/2004	5/10/2005
	My	DENTON	LC-111MY	11/9/2004	5/10/2005
Right Upper Tibia	Mx	DENTON	LC-016MX	11/10/2004	5/11/2005
	My	DENTON	LC-016MY	11/10/2004	5/11/2005
Right Lower Tibia	Fz	DENTON	LC-123FZ	11/9/2004	5/10/2005
	Mx	DENTON	LC-123MX	11/9/2004	5/10/2005
	My	DENTON	LC-123MY	11/9/2004	5/10/2005
Left Foot Rear	X	ENDEVCO	AC-J31066	11/10/2004	5/11/2005
	Z	ENTRAN	AC-04J04I20-Z11	11/4/2004	5/5/2005
Left Foot Front	Z	ENTRAN	AC-04J04I20-Z22	11/4/2004	5/5/2005
Right Foot Rear	X	ENTRAN	AC-04J04I01-R12	11/4/2004	5/5/2005
	Z	ENTRAN	AC-04J04I01-R23	11/5/2004	5/6/2005
Right Foot Front	Z	ENTRAN	AC-04J04I01-R02	11/5/2004	5/6/2005
Lap Belt Load Cell		LEBOW	LC-712	11/1/2004	5/2/2005
Shoulder Belt Load Cell		FIRST TECHNOLOGY	LC-170	11/1/2004	5/2/2005

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	GS SENSORS	AC-9440-046	12/14/2004	6/14/2005
Right Rear Seat Crossmember X	GS SENSORS	AC-9440-032	12/14/2004	6/14/2005
Top of Engine	ICS	AC-FGP48	8/24/2004	2/22/2005
Bottom of Engine	ICS	AC-FGP33	8/20/2004	2/18/2005
Right Disc Brake Caliper	ICS	AC-FGP46	8/24/2004	2/22/2005
Instrument Panel	ICS	AC-FGP37	8/27/2004	2/25/2005
Left Disc Brake Caliper	ICS	AC-FGP42	8/20/2004	2/18/2005
Left Seat Rear Crossmember Z	GS SENSORS	AC-9440-023	12/14/2004	6/14/2005
Right Seat Rear Crossmember Z	GS SENSORS	AC-9440-017	12/14/2004	6/14/2005

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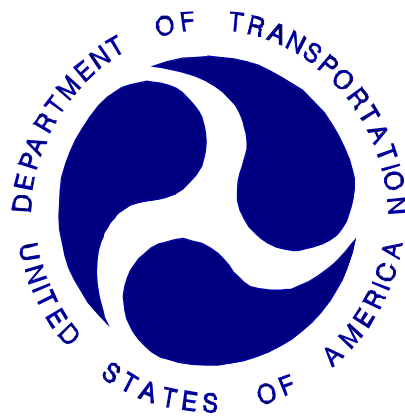
NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

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

NHTSA NUMBER: M50104

GDAIS ENGINEERING REPORT NUMBER: 8642-NCAP-58

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



February 10, 2005

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

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				14. Sponsoring Agency Code NVS-111	
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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 Highback Booster was placed in Position 4 (P4) with the safety belt in ALR mode. This test was conducted at the General Dynamics Crash Test Facility in Buffalo, New York, on February 10, 2005.					
ATD Position		HIC 15		HIC 36	
P3 (Right Rear) (040)		514.7		736.1	
P4 (Left Rear) (186)		525.4		882.3	
				Clip (3 ms)	
				52.4	
				56.5	
17. Key Words New Car Assessment Program (NCAP)				18. Distribution Statement	
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SECTION 1

PURPOSE AND SUMMARY OF TEST M35306

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 56.17 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 lower neck force and moment transducers.

The right rear (Position 3) child dummy (serial no. 040) and left rear (Position 4) child dummy (serial no. 186) 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 514.7, the 36 ms HIC was 736.1 and the maximum chest deceleration over 3 ms was 52.4 g's. The left rear child dummy's HIC (15 ms) was 525.4, the 36 ms HIC was 882.3 and the maximum chest deceleration over 3 ms was 56.5 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 6C /186
Restraint System:	Evenflo Titan V forward facing LATCH	Graco TurboBooster

Number of Data Channels	47	
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	Closed, Latched and Operable without tools

POST TEST SEAT DATA

LOCATION	SEAT MOVEMENT (mm)	SEAT BACK FAILURE
P1 (Left Front)	0	None
P2 (Right Front)	0	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	The face and chin to the chest and the back of the head to the child restraint
Upper Torso Contact:	None	None
Lower Torso Contact:	None	None
Left Knee Contact:	Left foot to inboard side of P2 seat back	Left foot to outboard side of P1 seat back
Right Knee Contact:	Right foot to outboard side of P2 seat back	Right foot to inboard side of P1 seat back

DATA SHEET NO. 2

CRS PARAMETER DATA

CRS: Evenflo Vangaurd V forward facing LATCH and Graco TurboBooster

NHTSA No. M50104

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Delivered Weight of Vehicle with Maximum Fluids = 1870.0 kg (A)

AS TESTED WEIGHT OF VEHICLE

(2 P572E + 1 P572P w/ CRS + 1 P572N w/ CRS +CARGO + EQUIPMENT & INSTRUMENTATION):

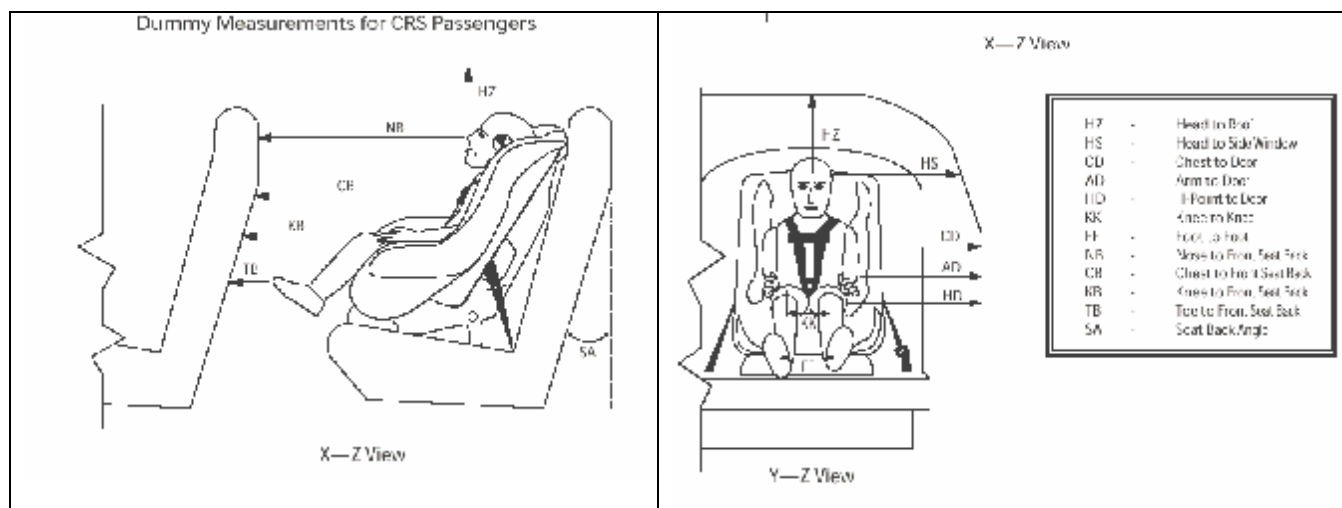
Left Front	=	<u>591.5</u>	kg	Left Rear	=	<u>480.0</u>	kg
Right Front	=	<u>593.0</u>	kg	Right Rear	=	<u>486.5</u>	kg
TOTAL FRONT	=	<u>1184.5</u>	kg	TOTAL REAR	=	<u>966.5</u>	kg
TOTAL TEST WEIGHT =		<u>2151.0</u>	kg				

DATA SHEET NO. 3

CHILD DUMMY POSITIONING IN VEHICLE

CRS: Evenflo Vangaurd V forward facing LATCH and Graco TurboBooster

NHTSA No. M50104



Measurement	(mm)	(mm)
	P3 CRS (040)	P4 CRS (186)
SA	20.5°	20.5°
HS	370	363
CD	319	328
AD	180	165
HD	257	179
HZ	422	345
NB	650	630
CB	589	587
KB	113	120
FF	102	128
KB – LEFT	452	426
KB – RIGHT	452	425
TB – LEFT	132	122
TB – RIGHT	132	122
Top Tether Anchor to CRS		
Angle †	-	N/A
Length	595 (along tether)	N/A
X	-94	N/A
Y	0	N/A
Z	-500	N/A

All dimensions in mm (unless noted)

P3 – Right Rear Passenger (CRS #1)

P4 – Left Rear Passenger (CRS #2)

† Tether wraps around the top of the seat back and attaches to an anchor located on the back of the seat cushion frame.

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES

CRS: Evenflo Vangaurd V forward facing LATCH and Graco TurboBooster

NHTSA No. M50104

DESCRIPTION	Unit	MAXIMUM VALUE							
		Position #3				Position #4			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head X	g	66.2	187.7	-24.9	73.3	1.0	31.4	-42.2	115.1
Head Y	g	5.5	194.1	-3.4	118.9	10.5	118.3	-32.5	115.0
Head Z	g	70.7	92.6	-8.0	38.9	74.5	86.7	-2.7	36.6
Head Resultant	g	73.3	92.7	-	-	86.8	115.0	-	-
Upper Neck Fx	N	31.3	175.9	-534.9	73.1	7.0	28.3	-696.6	115.7
Upper Neck Fy	N	56.6	193.8	-46.3	187.2	70.5	115.3	-270.6	103.2
Upper Neck Fz	N	2066.2	95.0	-157.9	37.8	2384.6	86.8	-97.1	36.8
Upper Neck F Resultant	N	2088.0	95.0	-	-	2433.8	86.8	-	-
Upper Neck Mx	N-m	4.3	188.0	-4.2	107.9	4.0	128.8	-14.3	94.2
Upper Neck My	N-m	8.8	154.2	-10.7	199.9	29.8	103.0	-18.5	59.8
Upper Neck Mz	N-m	3.0	199.9	-1.2	179.5	6.4	107.0	-8.4	80.3
Upper Neck M Resultant	N-m	11.1	199.9	-	-	30.3	103.2	-	-
Lower Neck Fx	N	-	-	-	-	15.9	28.5	-2219.1	86.9
Lower Neck Fy	N	-	-	-	-	360.1	116.5	-773.5	86.9
Lower Neck Fz	N	-	-	-	-	1284.4	59.6	-760.8	115.8
Lower Neck F Resultant	N	-	-	-	-	2634.3	86.7	-	-
Lower Neck Mx	N-m	-	-	-	-	3.0	199.9	-82.7	89.4
Lower Neck My	N-m	-	-	-	-	142.9	112.1	-16.4	199.9
Lower Neck Mz	N-m	-	-	-	-	34.8	116.7	-29.3	86.9
Lower Neck M Resultant	N-m	-	-	-	-	152.9	91.8	-	-
Chest X	g	9.0	180.9	-35.5	82.6	4.4	197.6	-55.6	78.9
Chest Y	g	2.6	174.2	-2.7	66.6	1.7	122.4	-9.5	59.4
Chest Z	g	34.9	96.6	-45.6	69.8	3.2	95.8	-21.5	59.6
Chest Resultant	g	53.9	69.5	-	-	58.8	78.9	-	-
Chest Displacement	g	0.1	19.6	-18.1	108.9	0.0	-43.6	-41.6	86.4

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vangaurd V forward facing LATCH and Graco TurboBooster

NHTSA No. M50104

		MAXIMUM VALUE							
		Position #3				Position #4			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Pelvic X	g	11.9	125.0	-389.9	81.7	7.9	185.6	-60.0	68.8
Pelvic Y	g	4.1	138.0	-10.0	95.1	23.5	90.3	-10.6	57.0
Pelvic Z	g	27.3	97.9	-39.2	66.2	6.6	116.0	-48.1	85.8
Pelvic Resultant	g	390.8	81.7	-	-	60.9	85.8	-	-
Lap Belt Load	N	-	-	-	-	4747.1	67.5	-13.9	148.3
Torso Belt Load	N	-	-	-	-	6398.3	76.1	-20.2	175.8
LATCH Belt Load		-	-	-	-	-	-	-	-
Tether Belt Load	N	693.7	90.0	-52.4	160.7	-	-	-	-

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vangaurd V forward facing LATCH and Graco TurboBooster

NHTSA No. M50104

	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	514.7	83.7	98.7	65.2 g	736.1	77.0	113.0	53.0 g
Position #4 - Left	525.4	78.0	93.0	65.7 g	882.3	64.5	100.5	57.0 g

	CLIP SUMMARY*			
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #3 - Right	52.4	67.5	70.5	509.9
Position #4 - Left	56.5	67.1	70.1	552.1

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

DATA SHEET NO. 5

CRS PERFORMANCE DATA

CRS: Evenflo Vangaurd V forward facing LATCH and Graco TurboBooster

NHTSA No. M50104

		MAXIMUM VALUE			
DESCRIPTION	Unit	Positive	Time (ms)	Negative	Time (ms)
P3 CRS X	g	15.8	141.4	-66.1	59.2
P3 CRS Y	g	8.4	110.4	-15.6	93.8
P3 CRS Z	g	24.4	173.1	-25.6	60.8
P3 CRS Resultant	g	69.8	59.5	-	-
P4 CRS X	g	†	-	†	-
P4 CRS Y	g	†	-	†	-
P4 CRS Z	g	15.1	154.6	-17.1	57.8
P4 CRS Resultant	g	2878.9	75.2	-	-

† Wire was cut at 54 ms.

DATA SHEET NO. 5

CRS PERFORMANCE DATA (CONTINUED)

CRS: Evenflo Vangaurd V forward facing LATCH and Graco TurboBooster

NHTSA No. M50104

POSITION #3 CRS POST-TEST INSPECTION (Serial No. 3671439 P1 06JAN05)

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. JJ 1008042008620 100804)

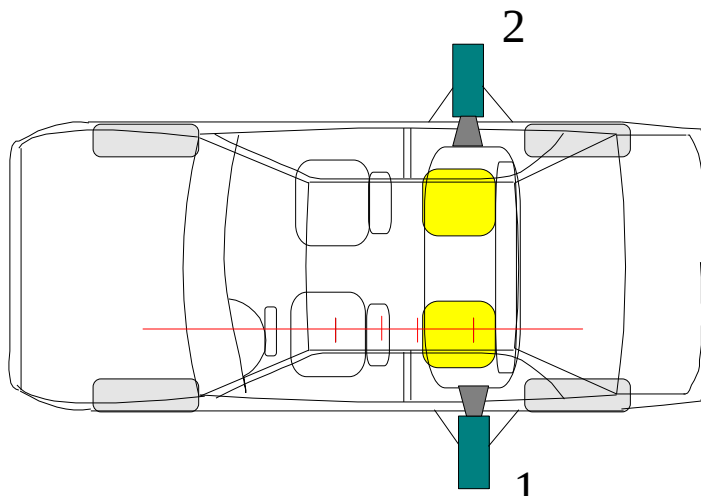
LOCATION	DAMAGE	REMARKS
Upper Tether Strap	NA	NA
Upper Tether Buckle	NA	NA
Upper Tether Hook	NA	NA
Vehicle Upper Tether Anchor	NA	NA
Lower Anchor Strap	NA	NA
Lower Anchor Buckle	NA	NA
Lower Anchor Hooks	NA	NA
Vehicle Lower CRS Anchors	NA	NA
Five Point Harness Connections	NA	NA
Cracks on CRS	No	None
Fabric 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 Vangaurd V forward facing LATCH and Graco TurboBooster

NHTSA No. M50104



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Left side CRS lateral view	3320	3270	2265	-21.0	28	500
2	Right side CRS lateral view	3300	3270	2215	-20.1	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

Exton, PA 19341 EE.UU. o llame al 1-800-345-4109.

Para información sobre retiradas, llame a la línea de información sobre seguridad automotriz del gobierno de EE.UU. al 1-800-424-9393 (202-366-0123 en el Distrito de Columbia).

LAPB0095

MODEL 8495STO NAME: TurboBooster
SERIAL JJ 1008042008620
Manufactured in 100804
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



Figure 3-18 POST-TEST RIGHT SIDE VIEW OF POSITION 4 CRS



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

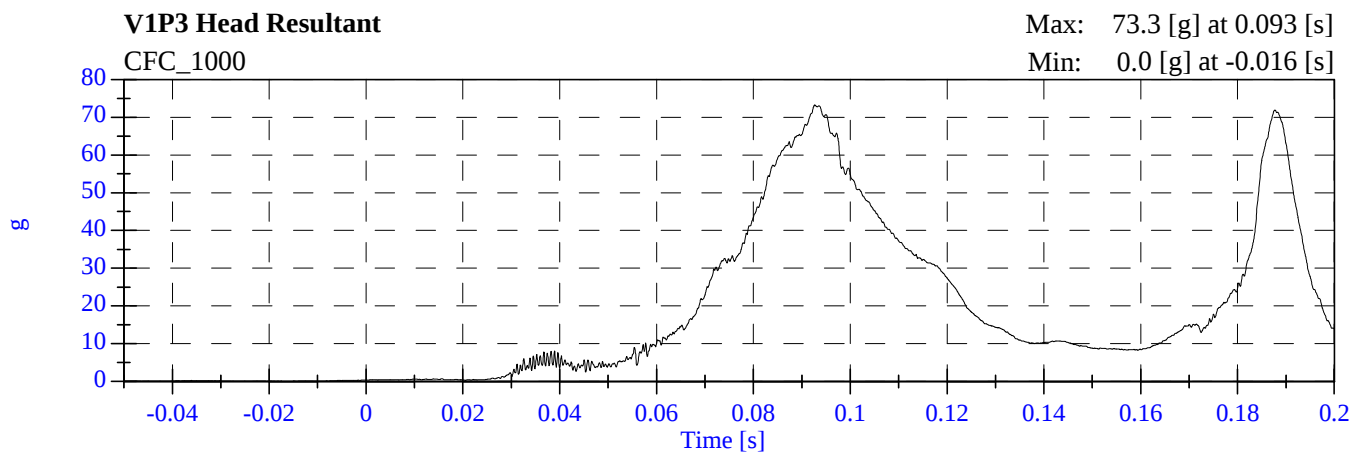
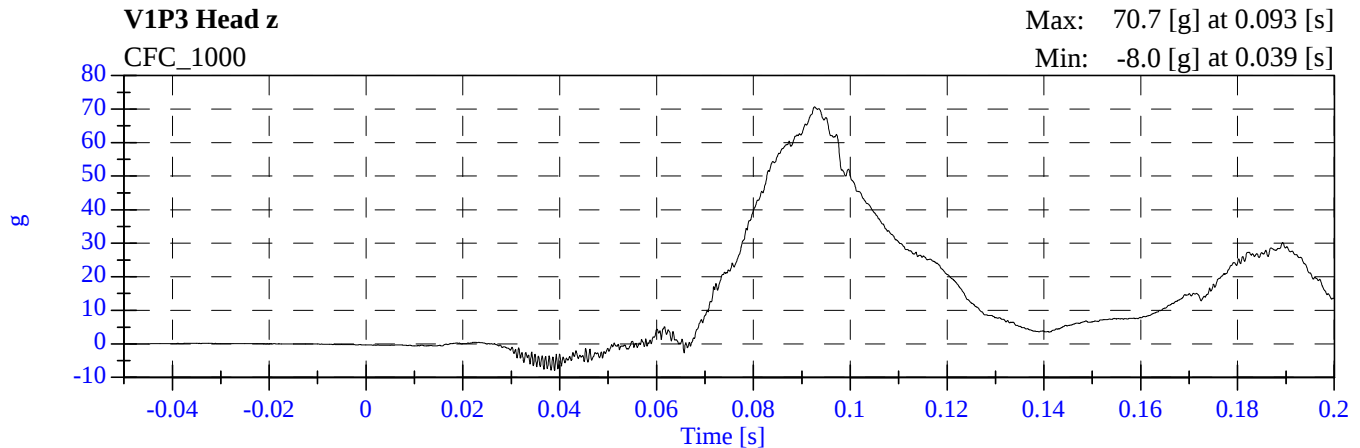
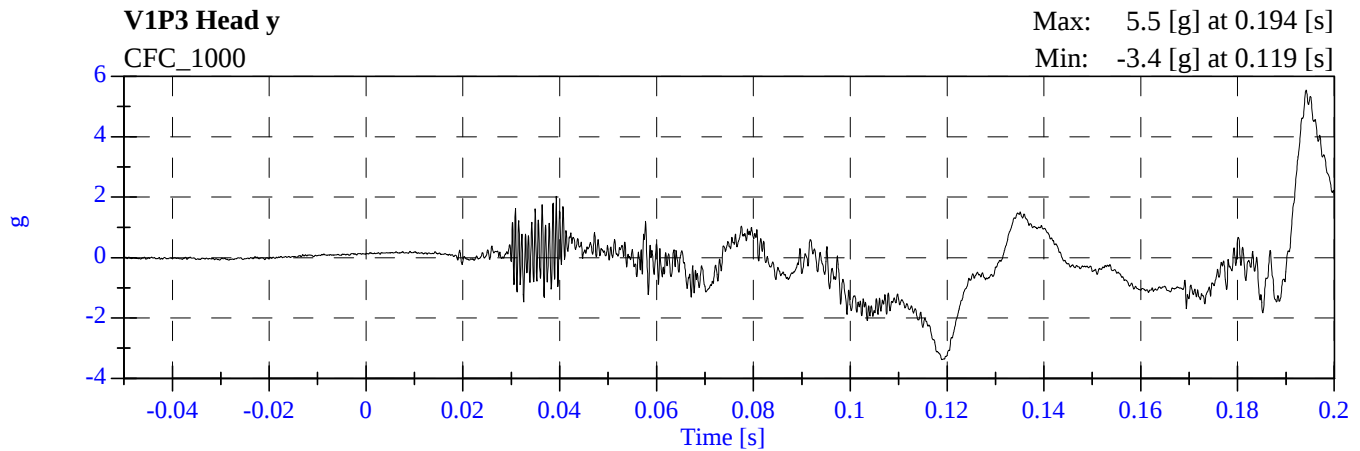
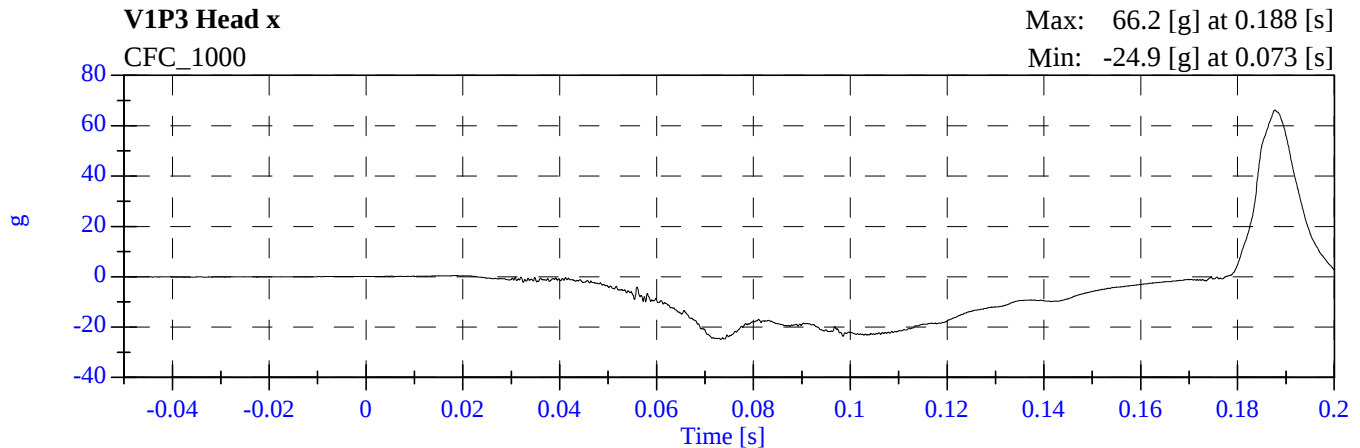
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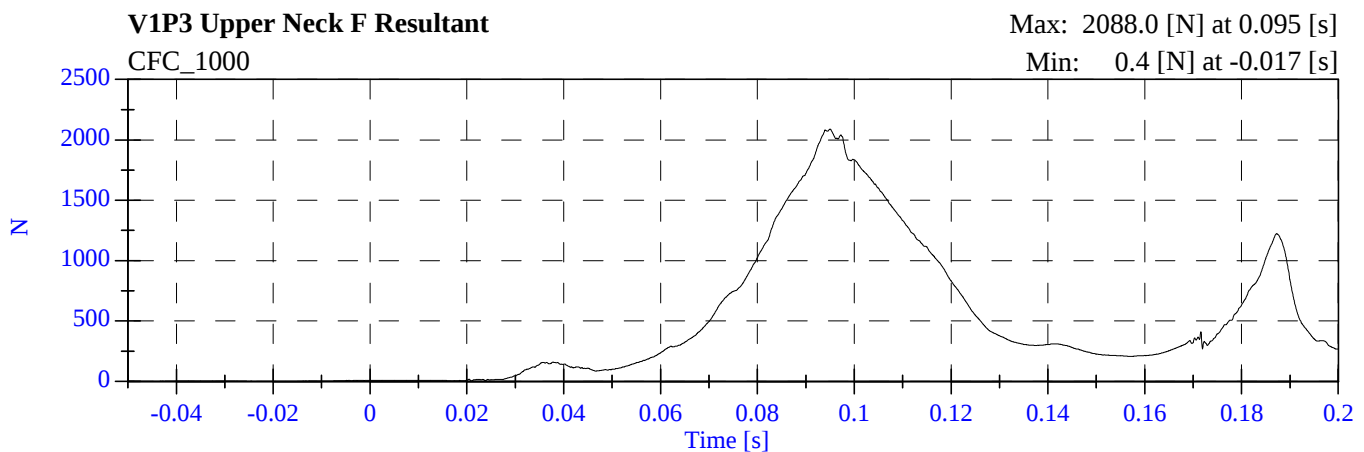
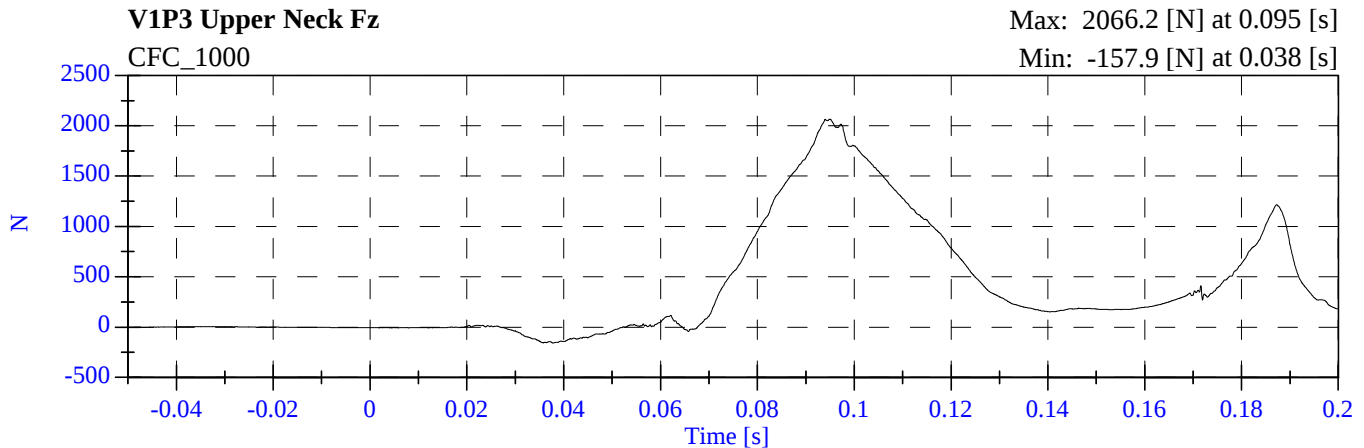
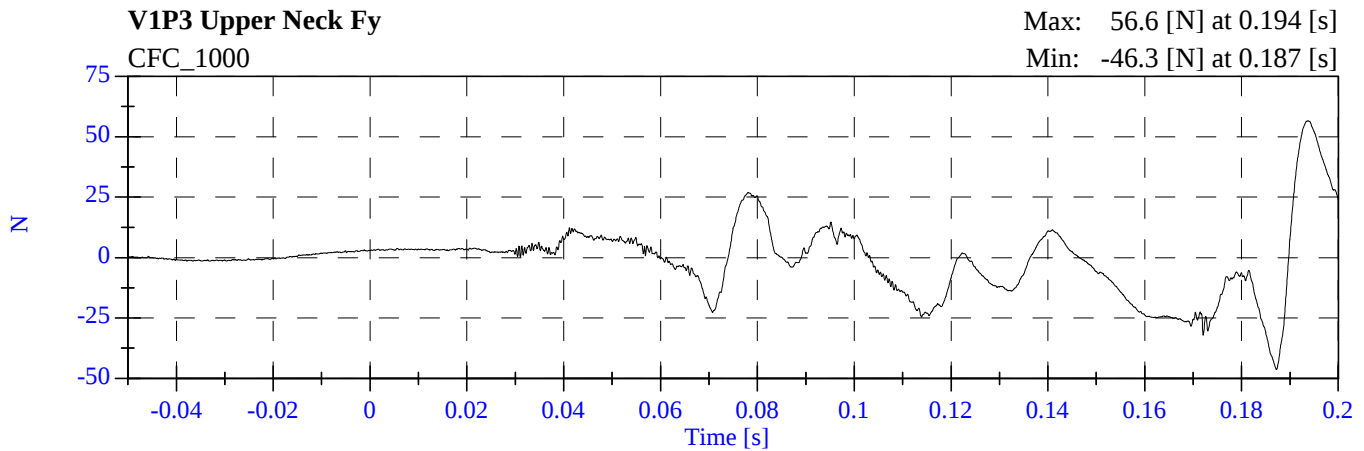
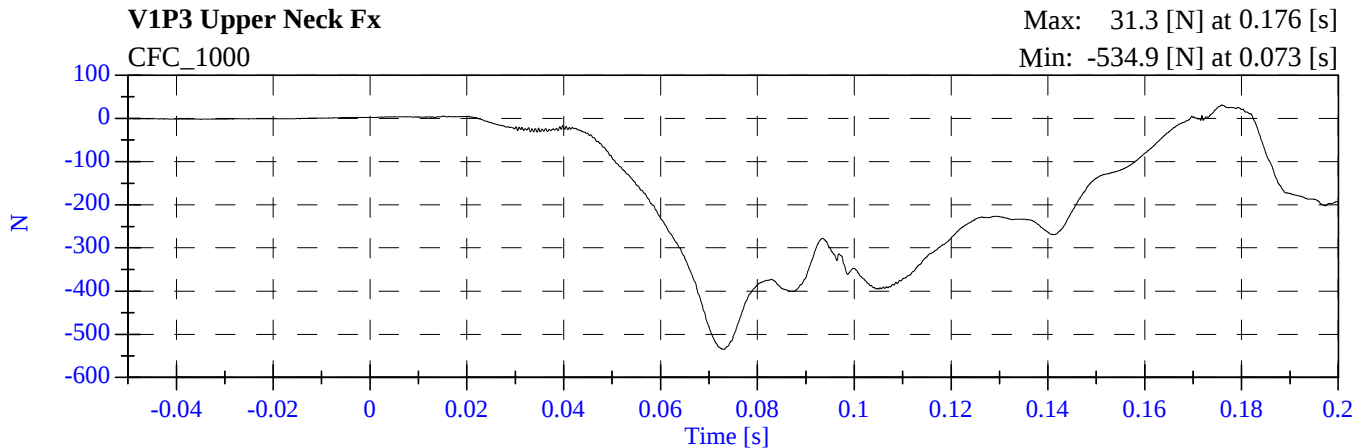
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72	V1P4 CRS Ay Displacement [mm, CFC_180]	4-25
73	V1P4 CRS Az Displacement [mm, CFC_180]	4-25

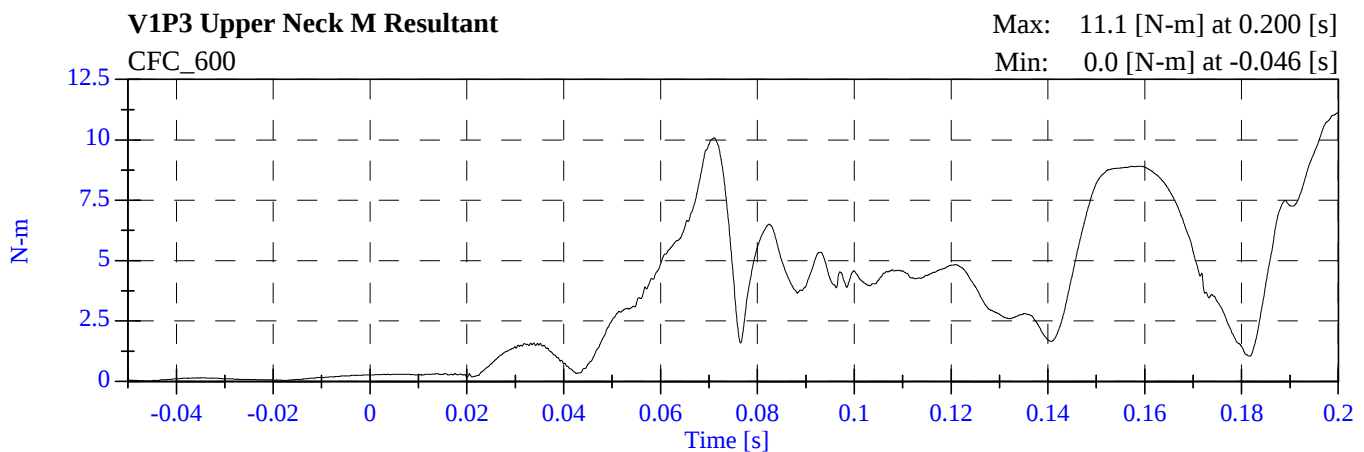
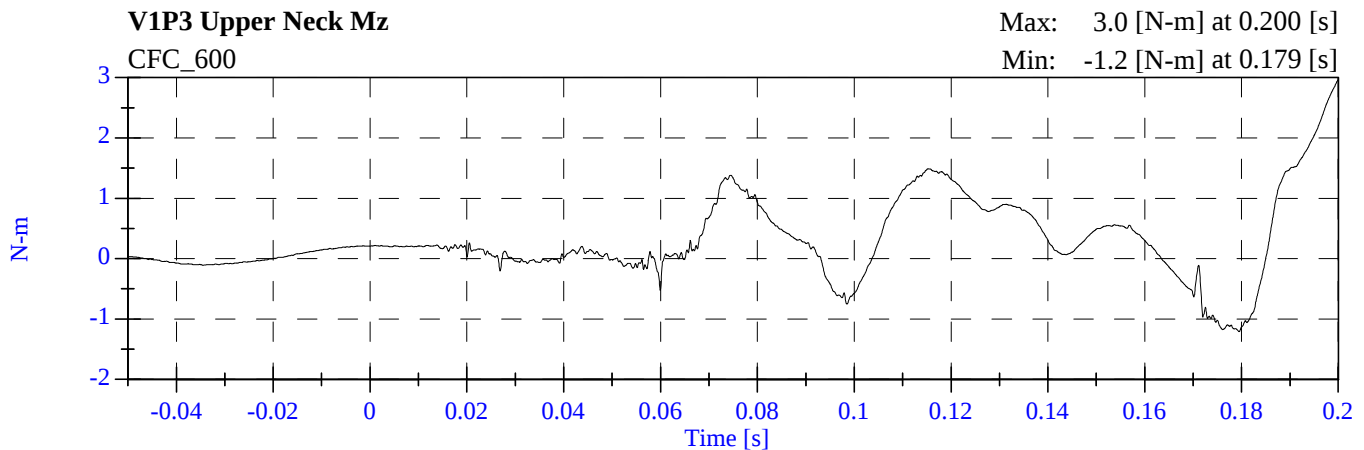
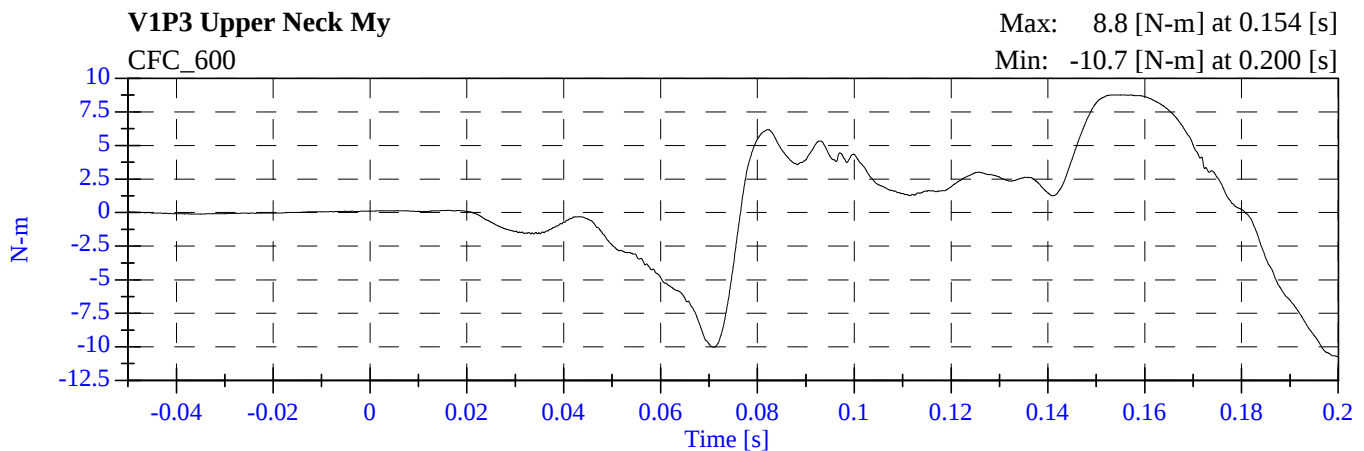
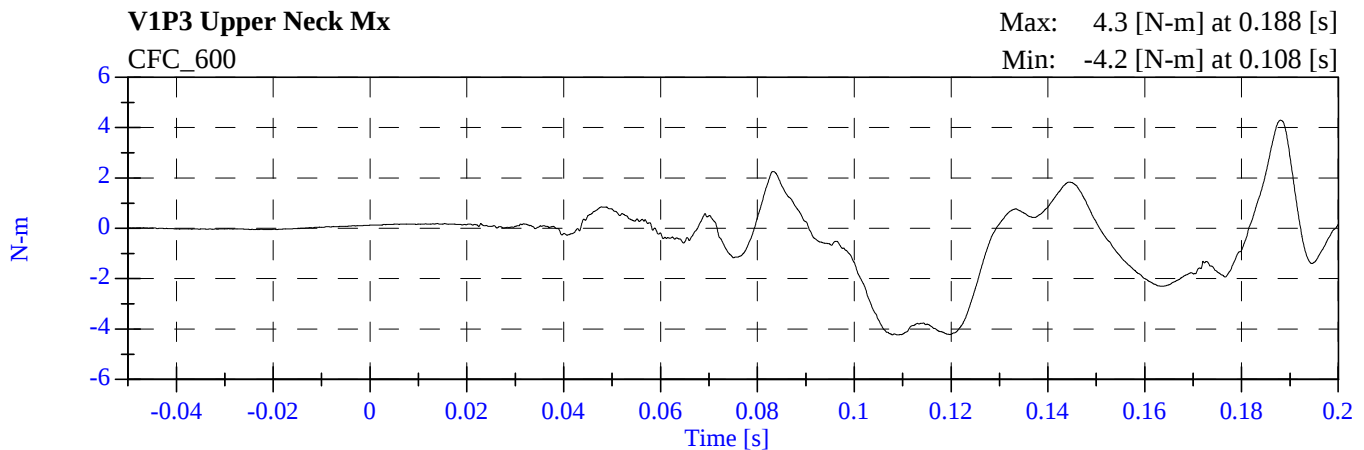
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



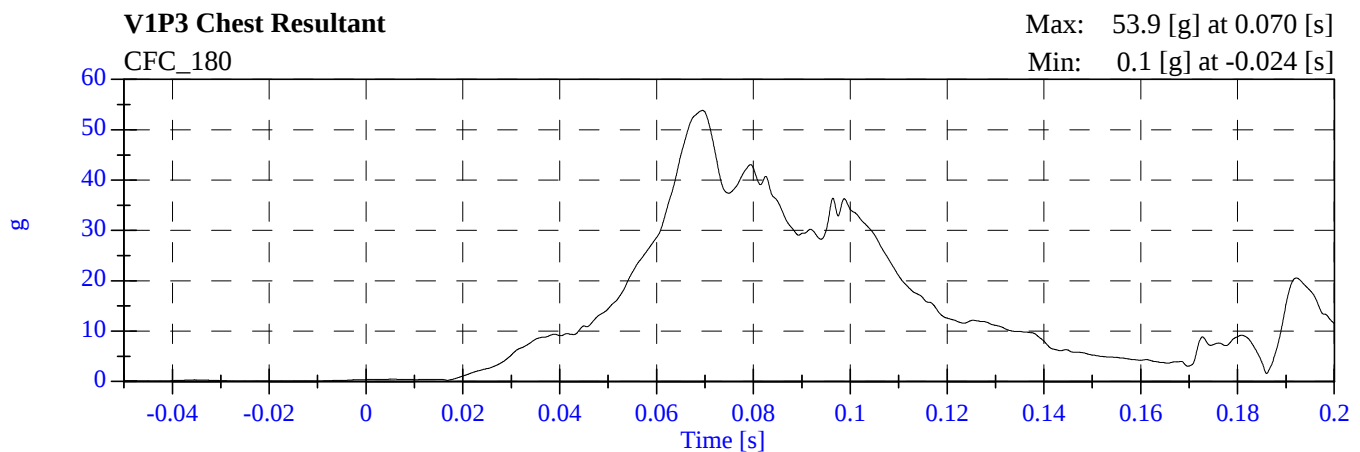
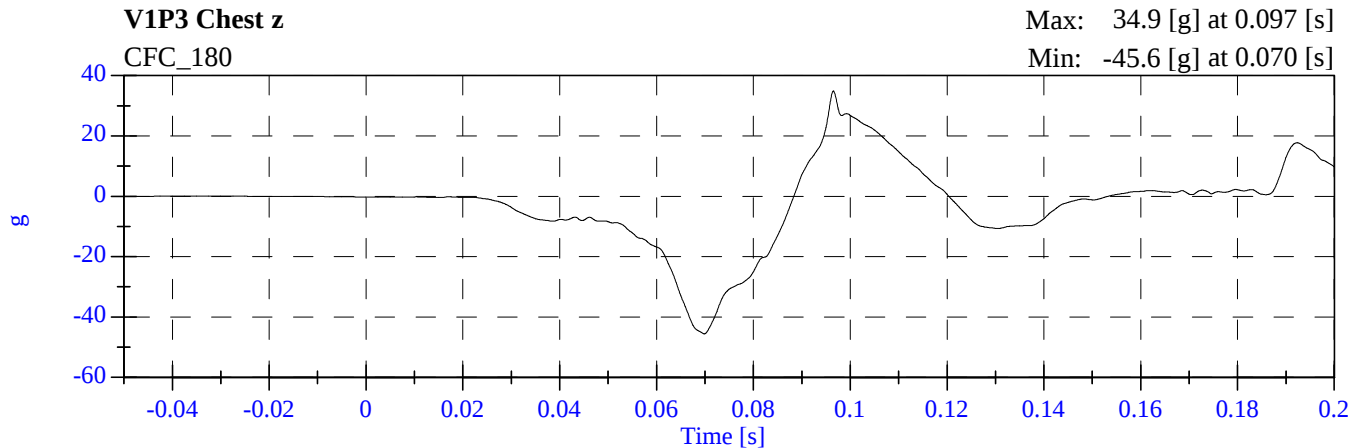
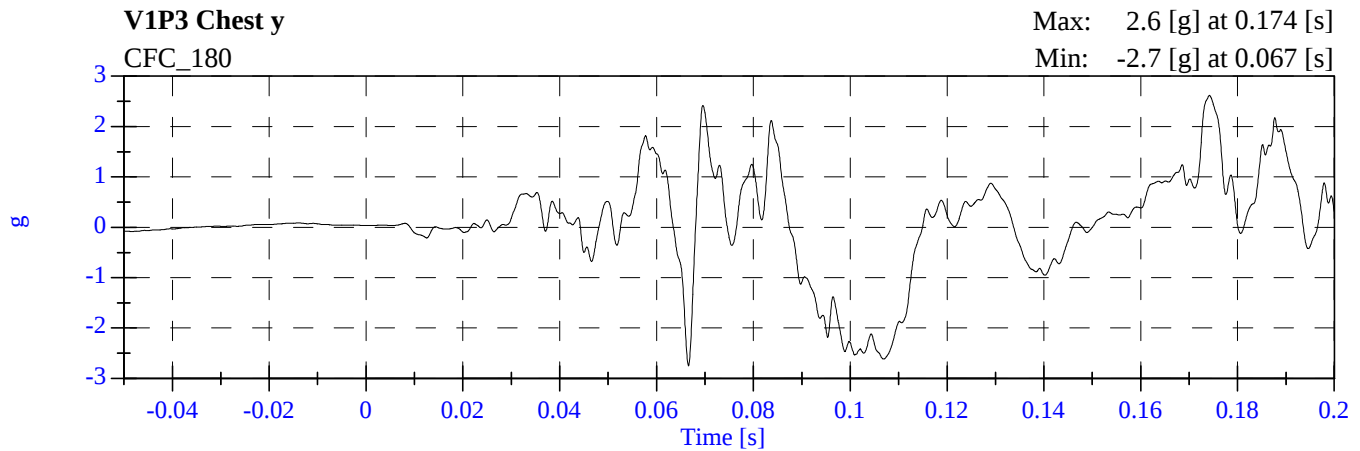
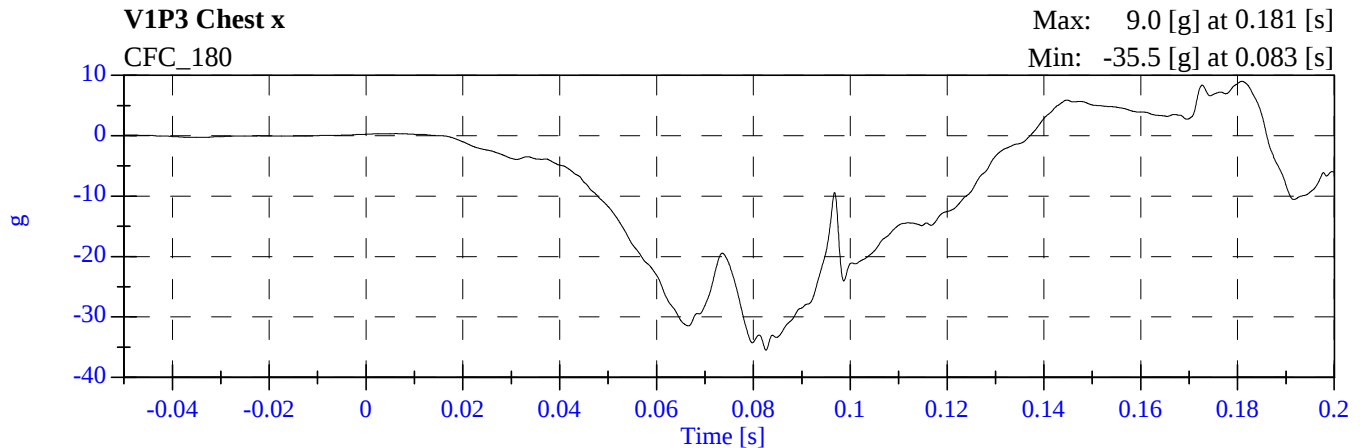
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



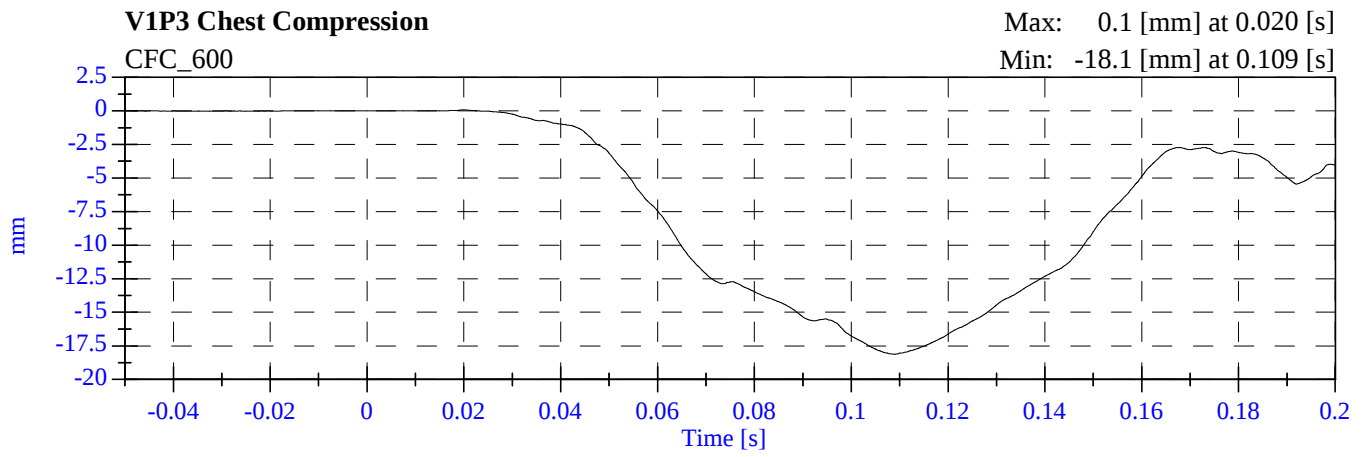
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005

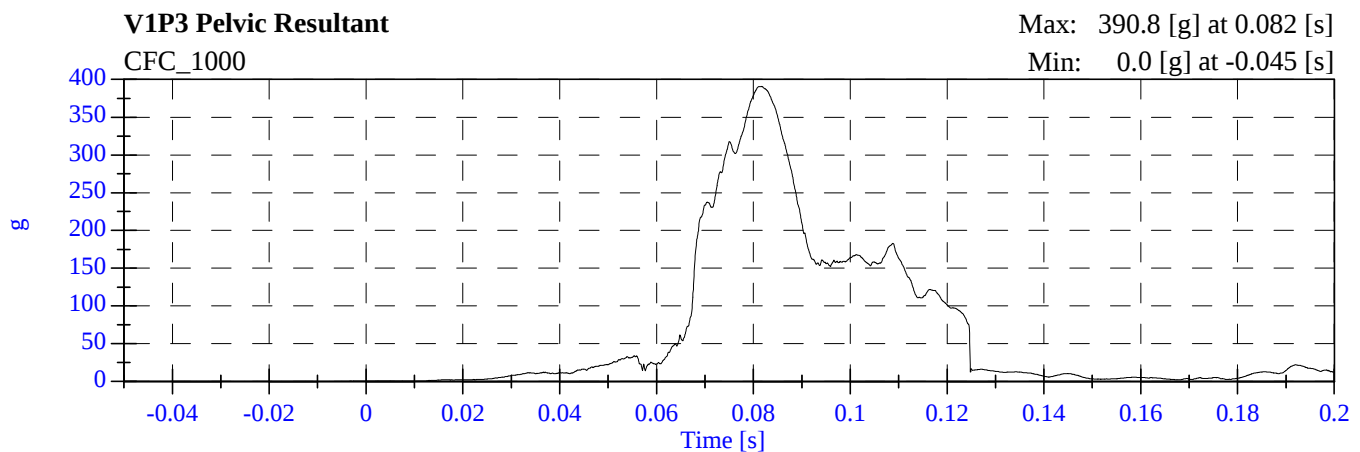
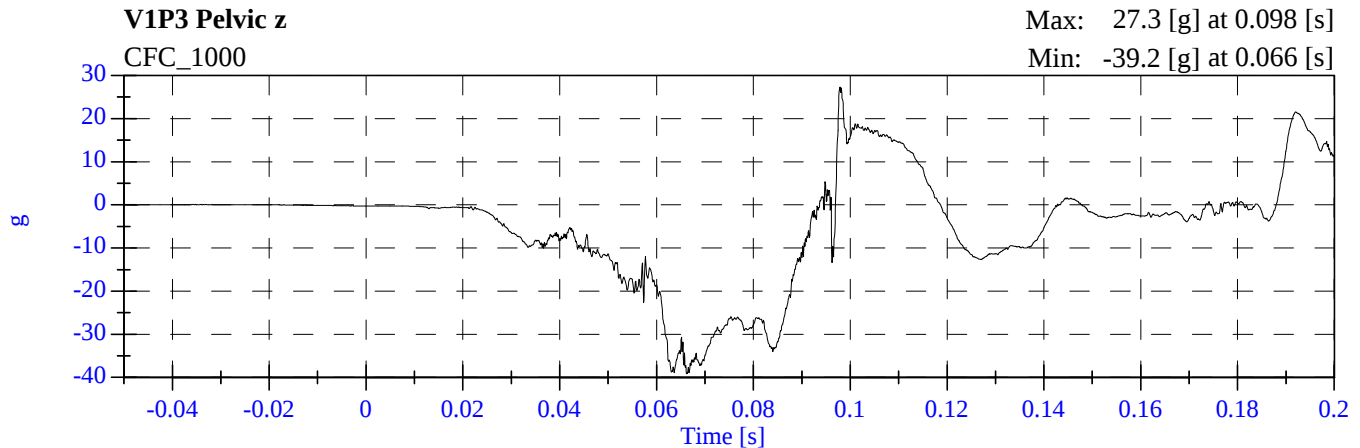
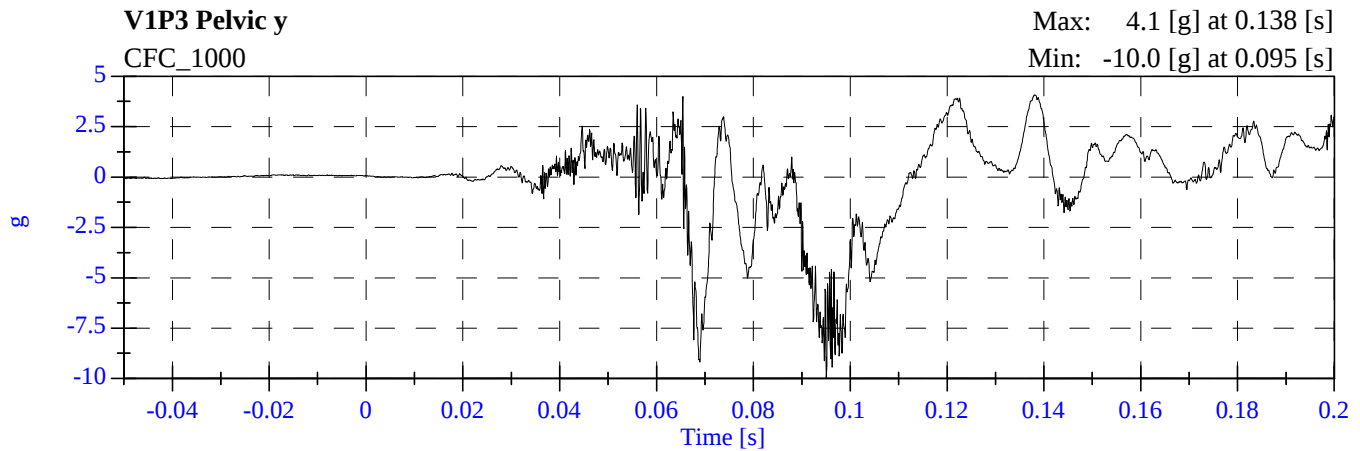
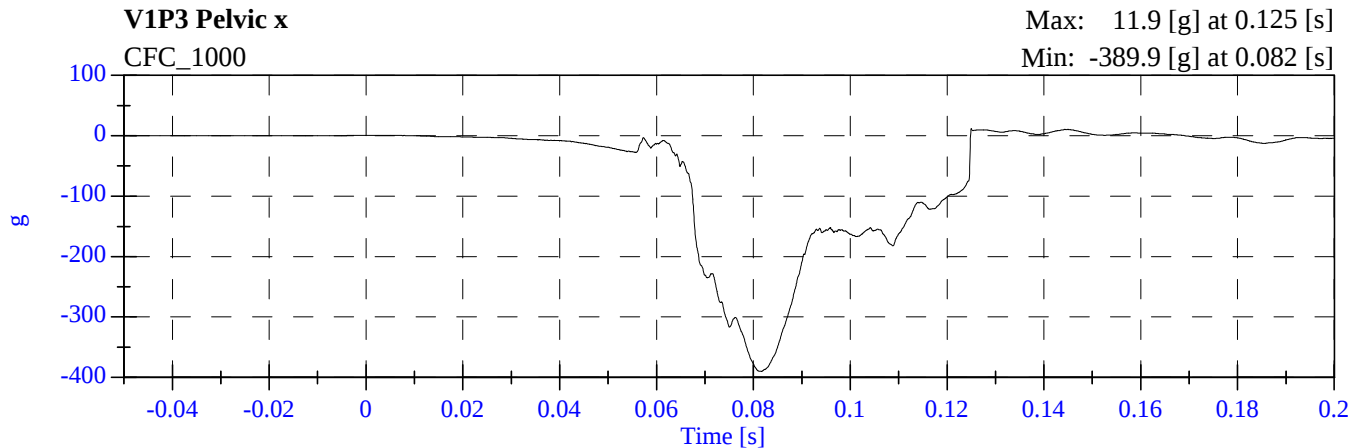


2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005

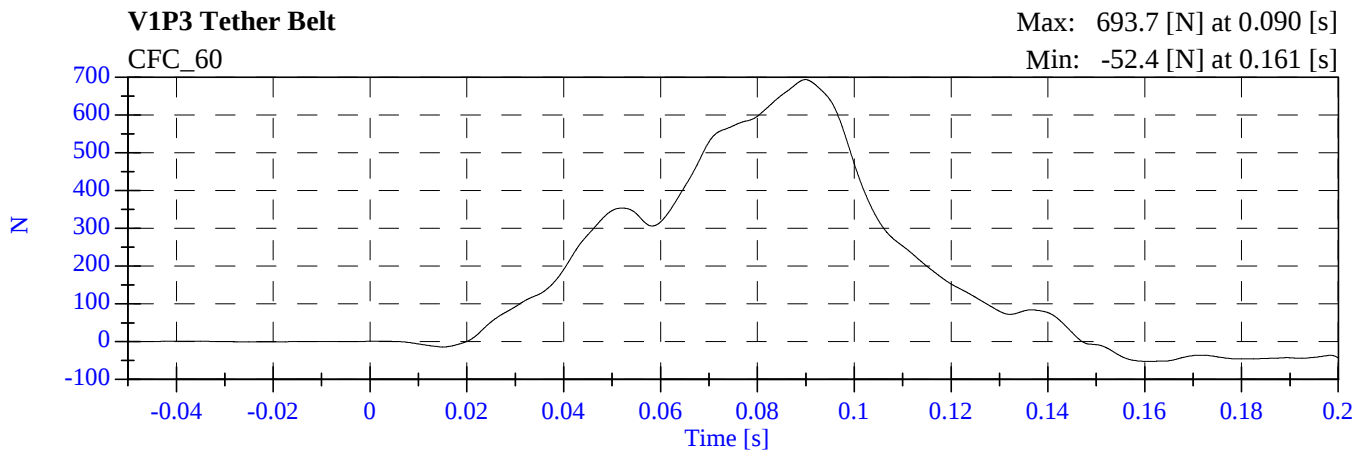


2005 NCAP Test 8 - 2005 Buick Rendezvous

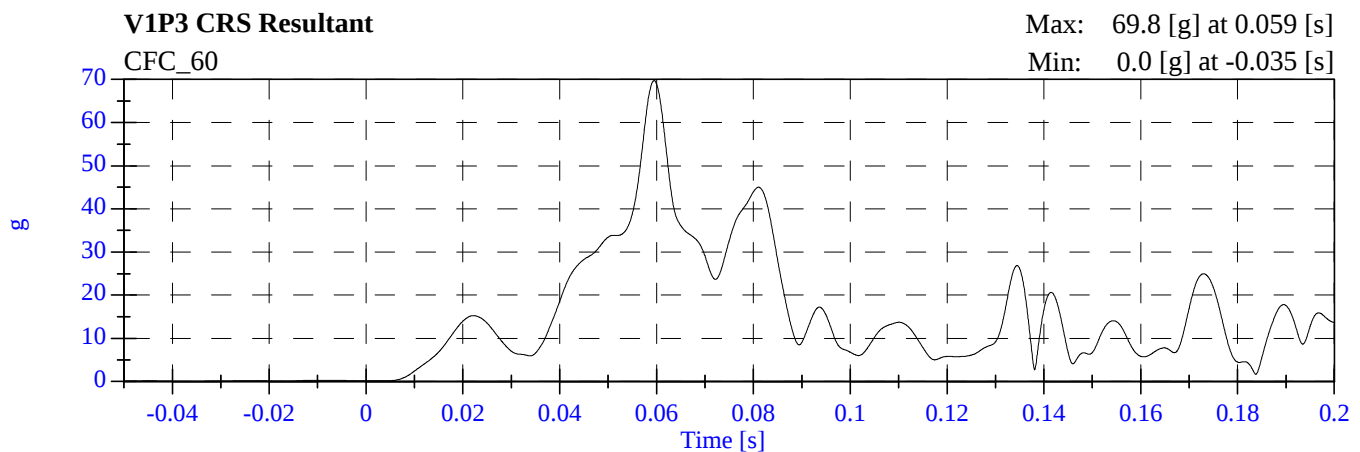
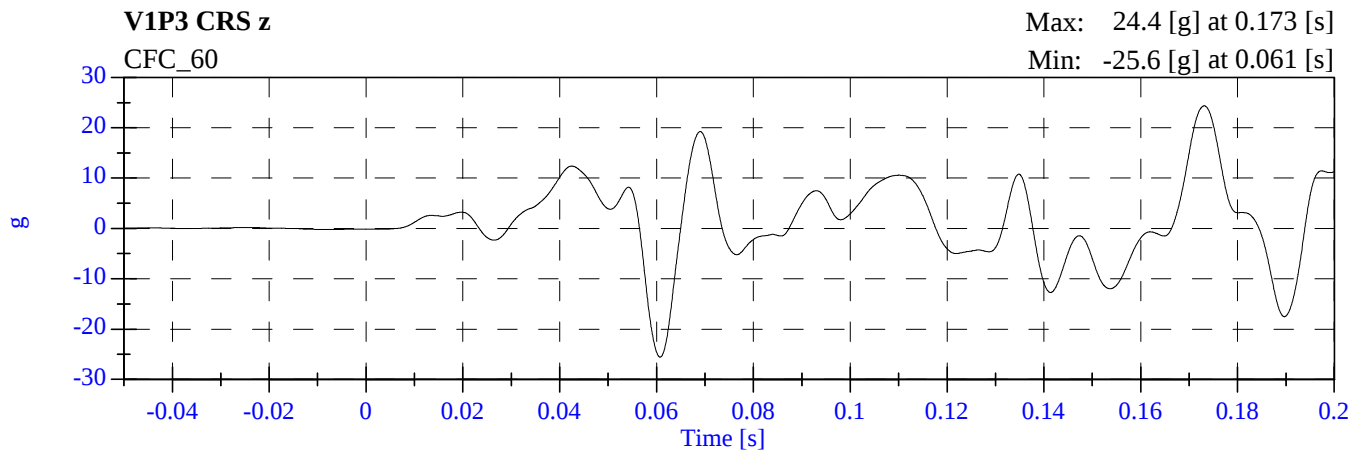
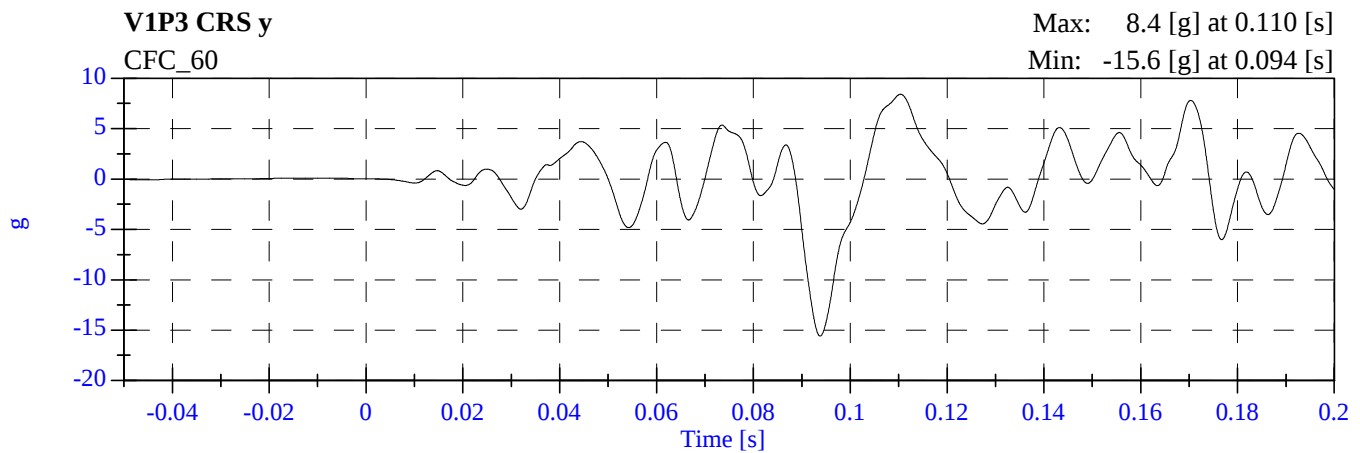
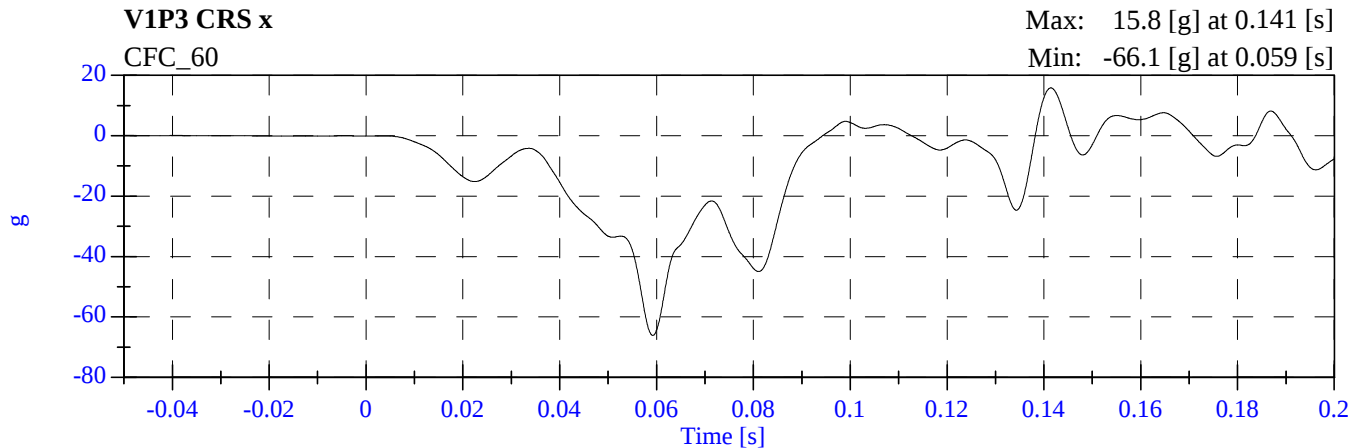
M50104 - February 10, 2005



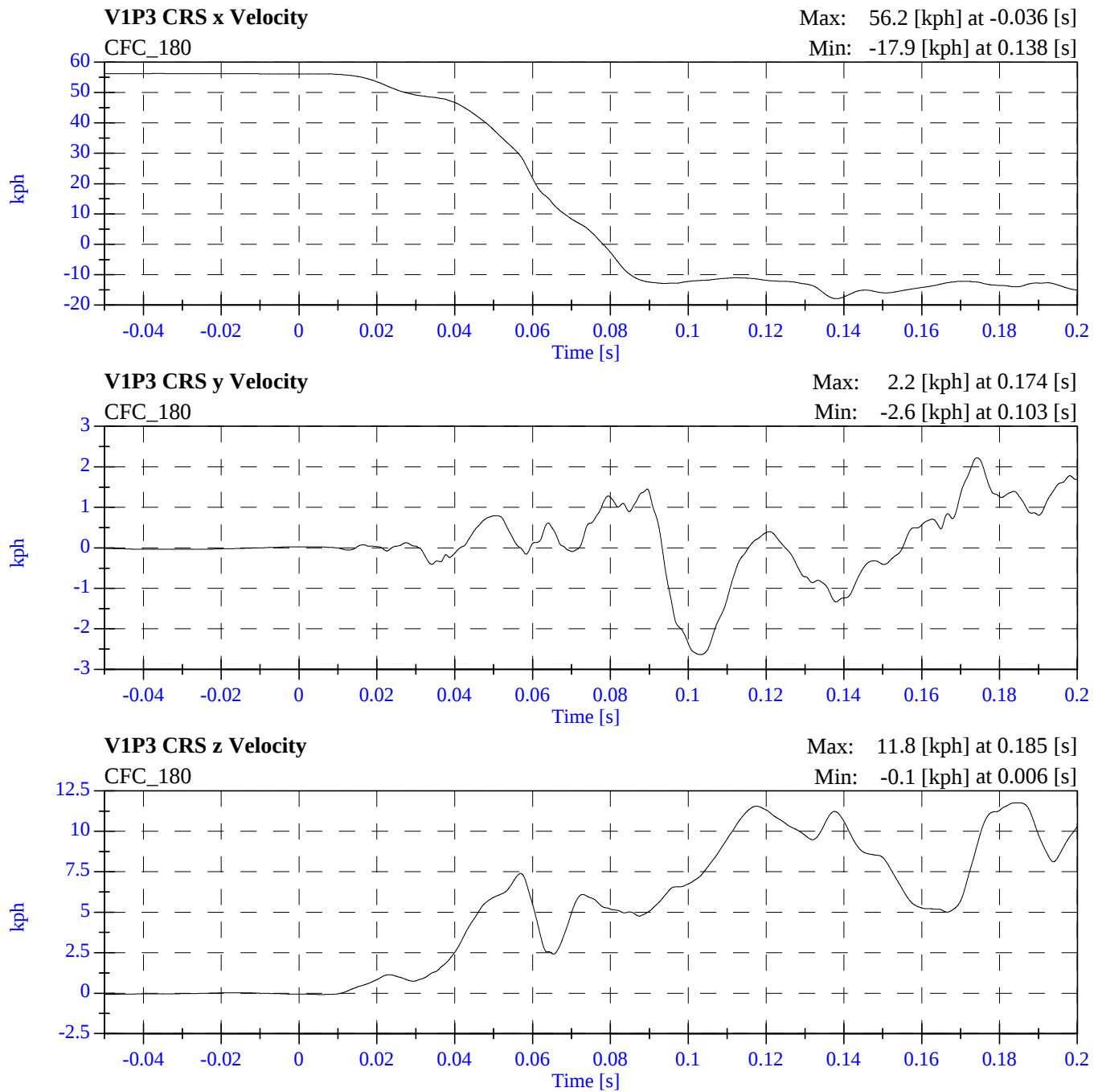
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005

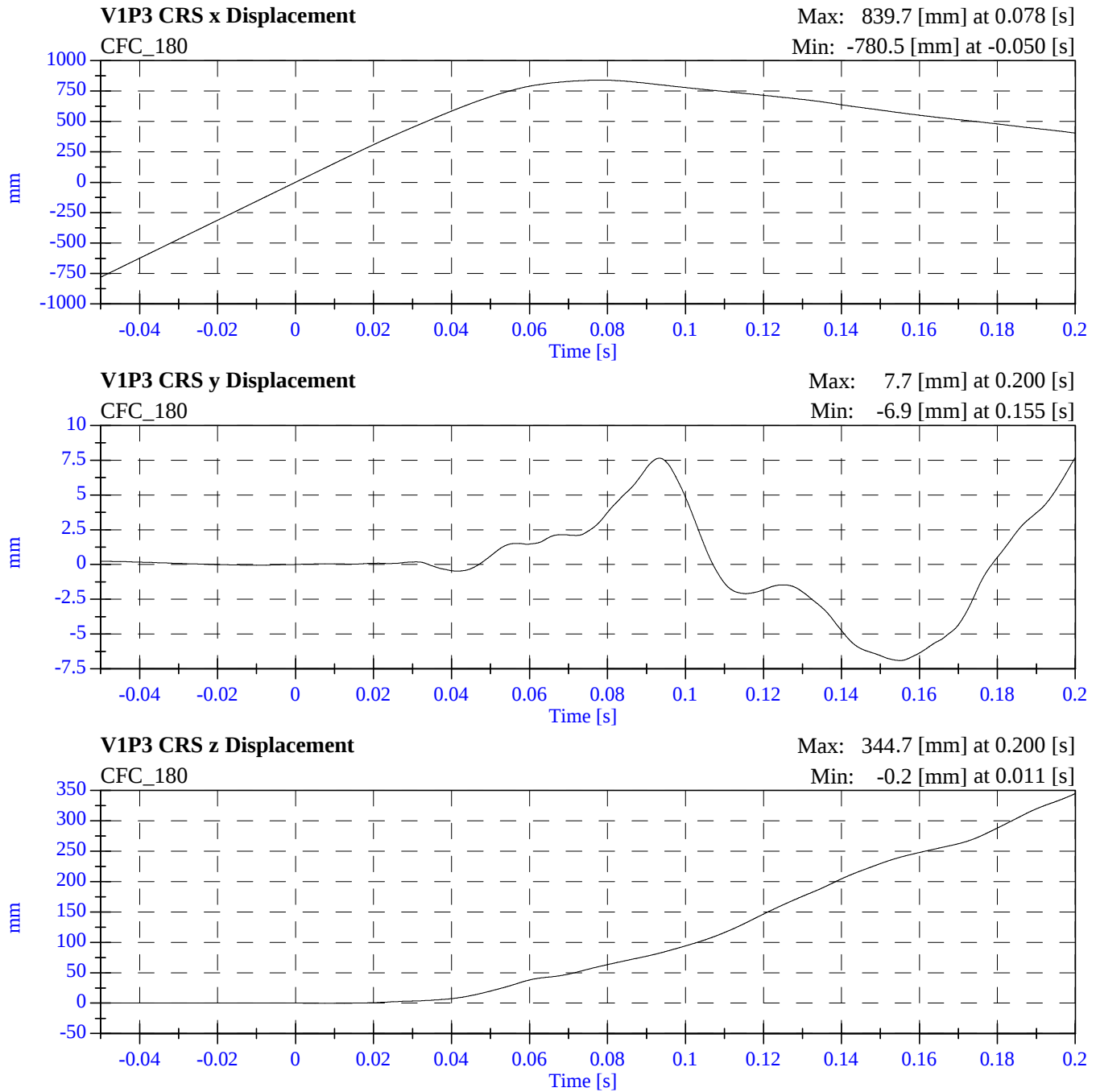


2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005

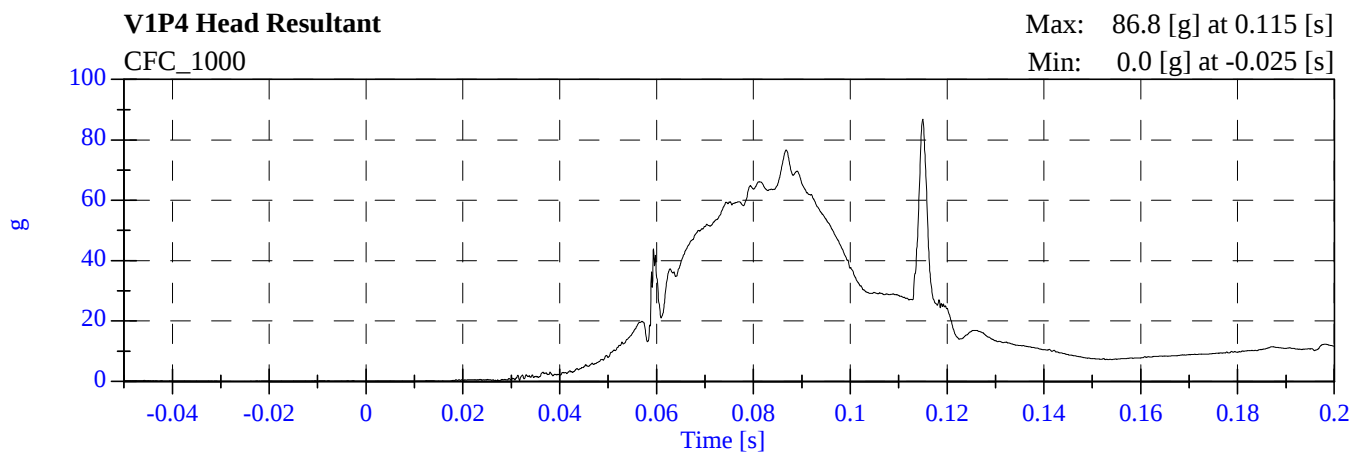
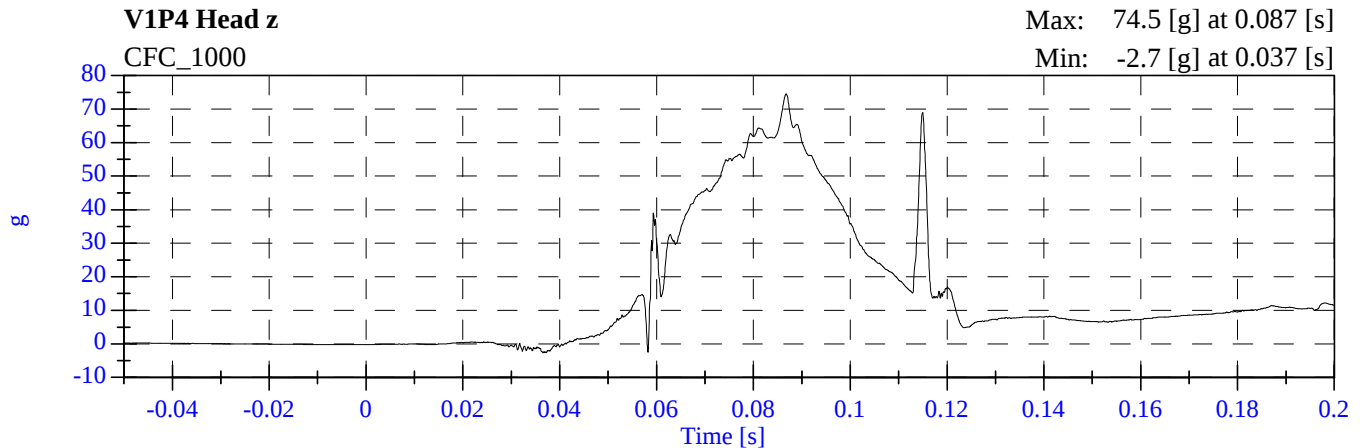
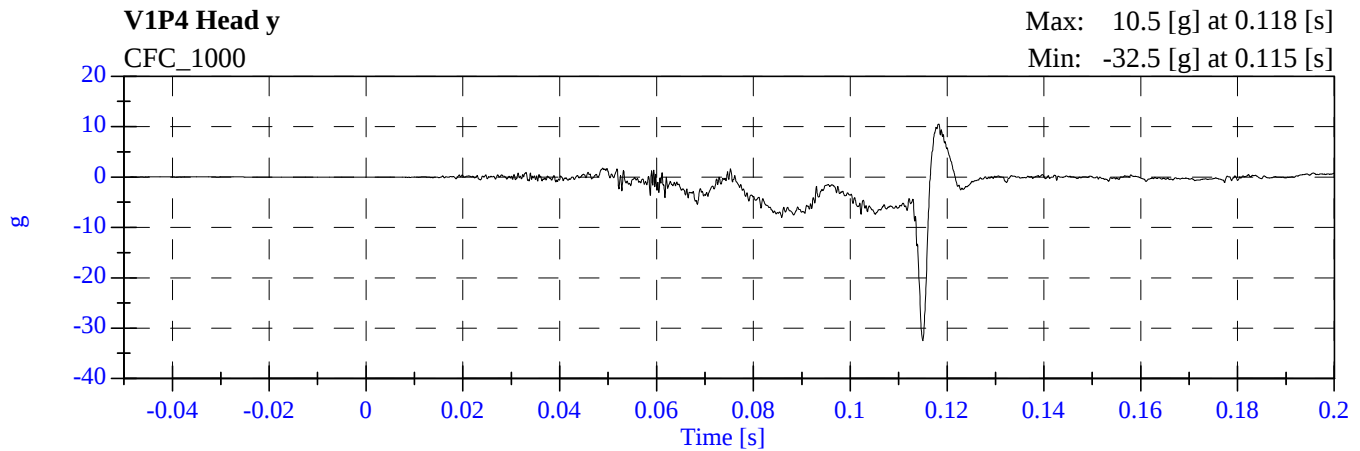
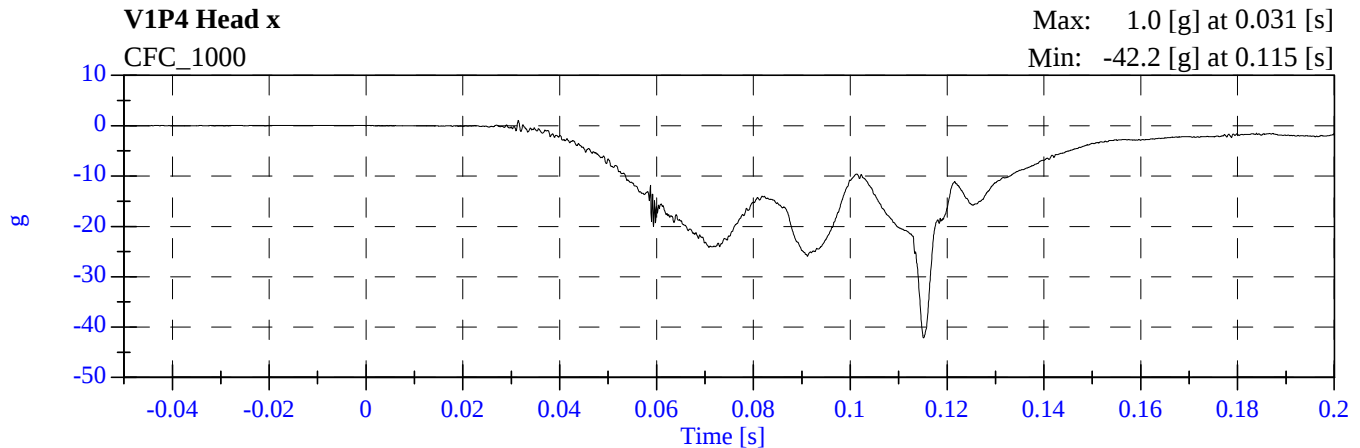


2005 NCAP Test 8 - 2005 Buick Rendezvous

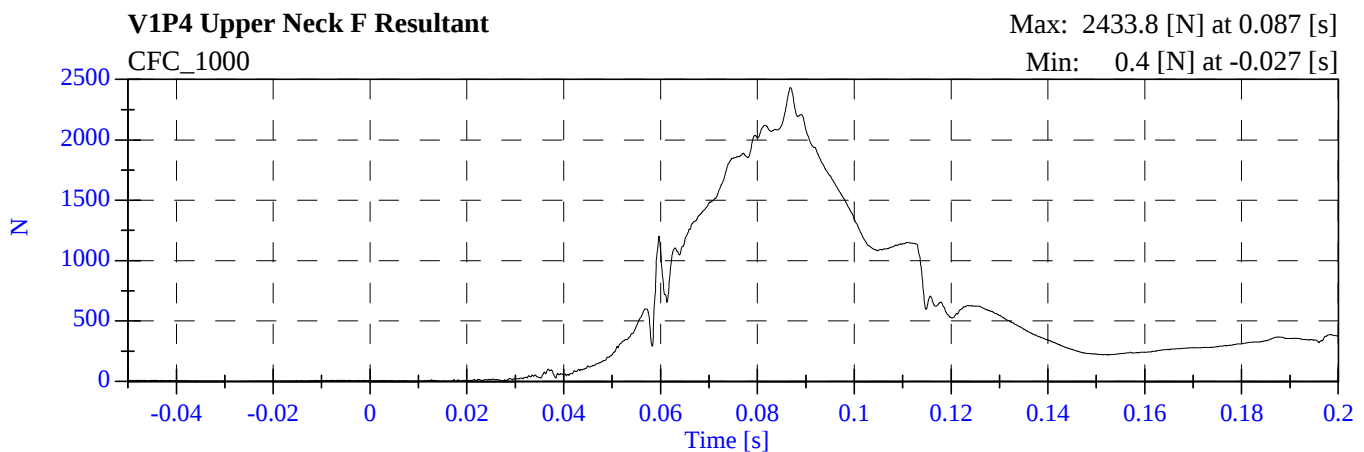
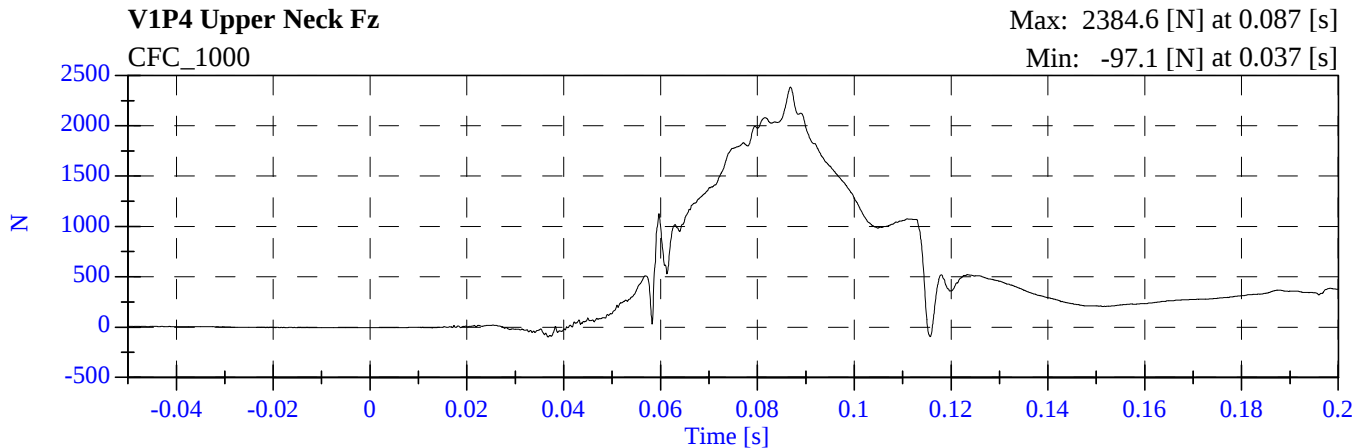
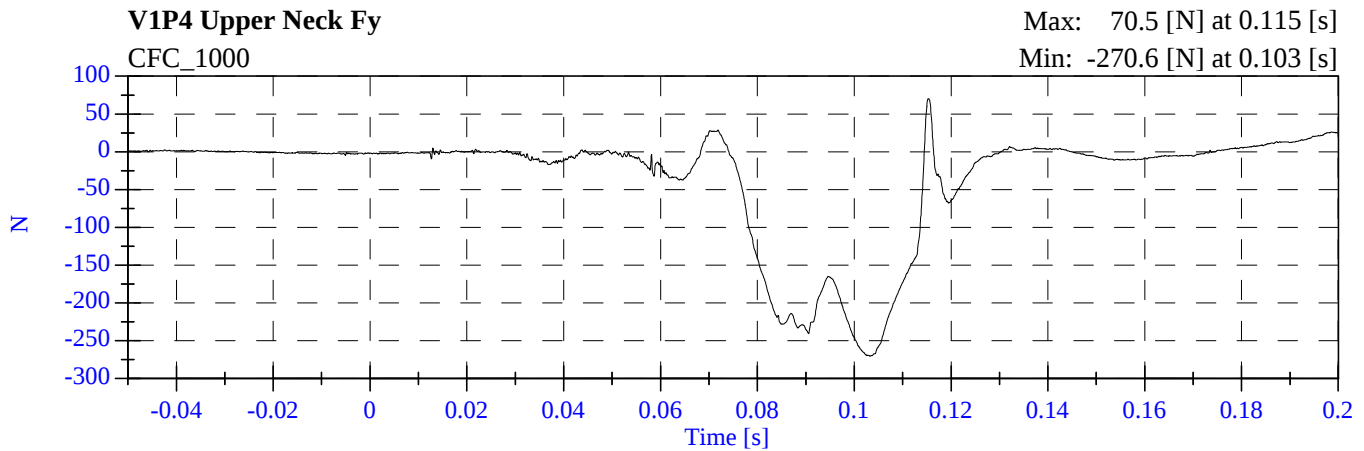
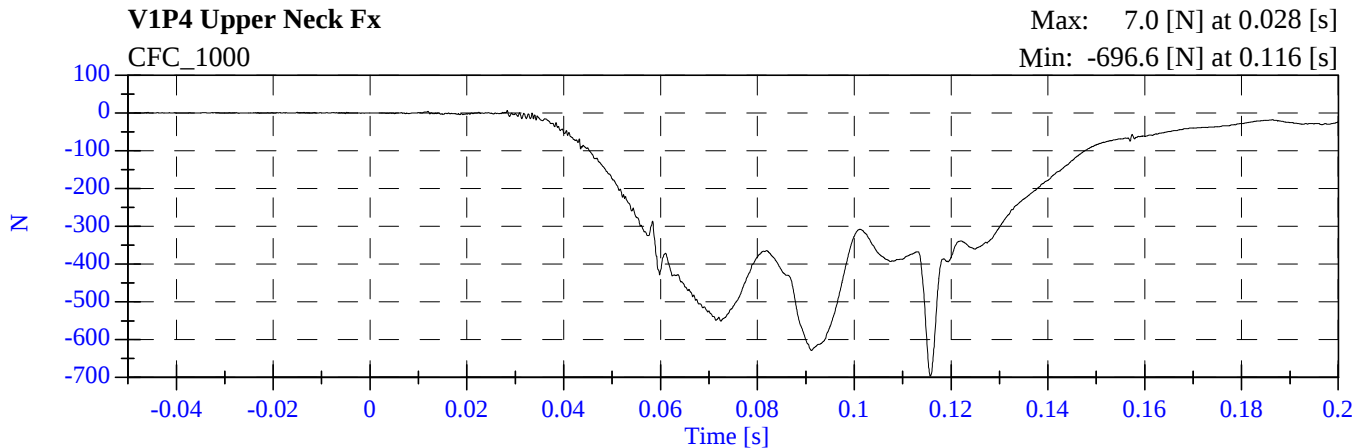
M50104 - February 10, 2005



2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005

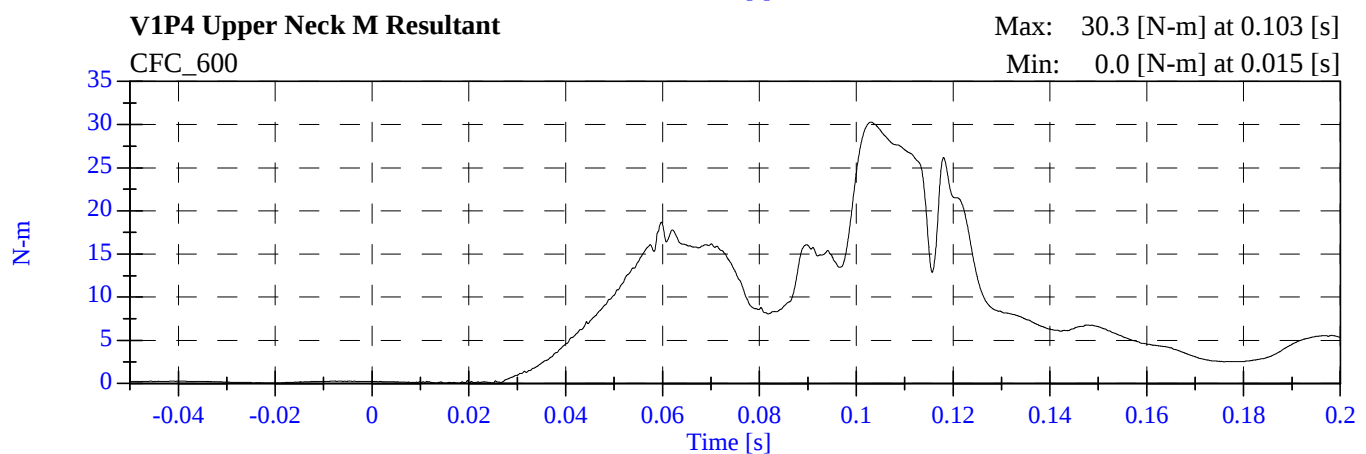
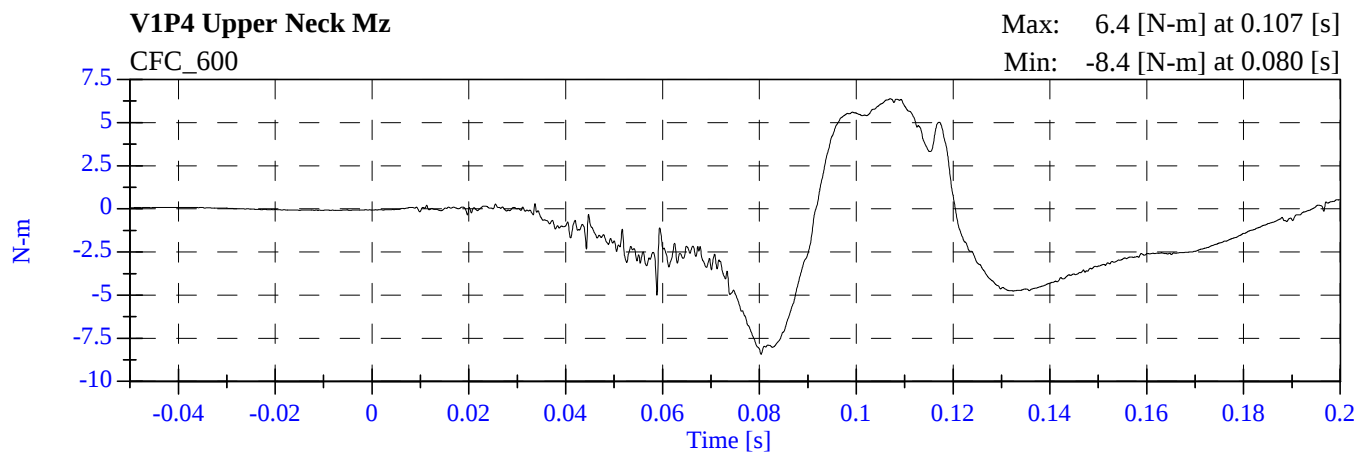
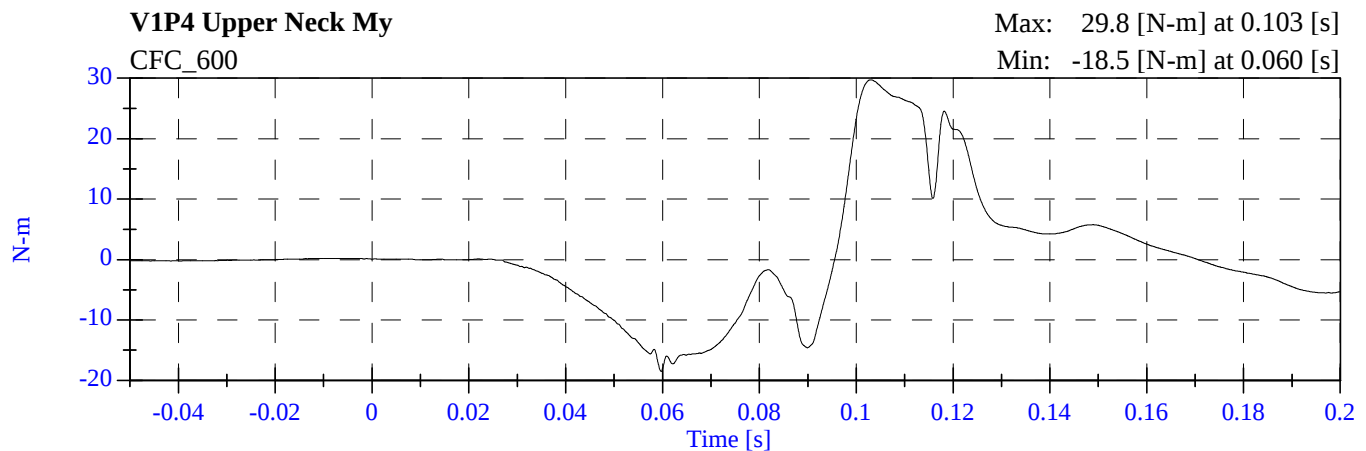
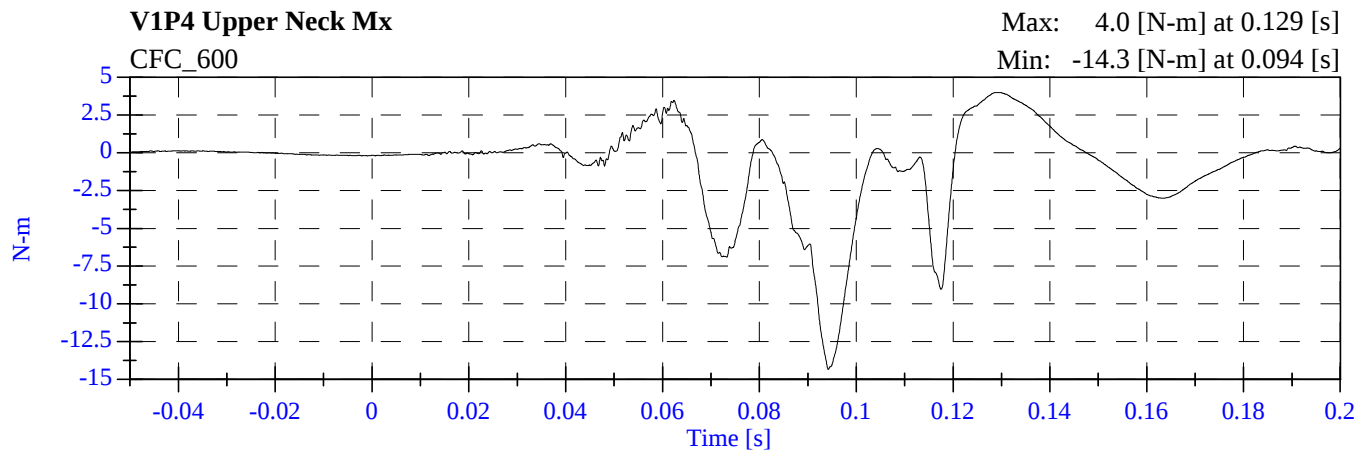


2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005

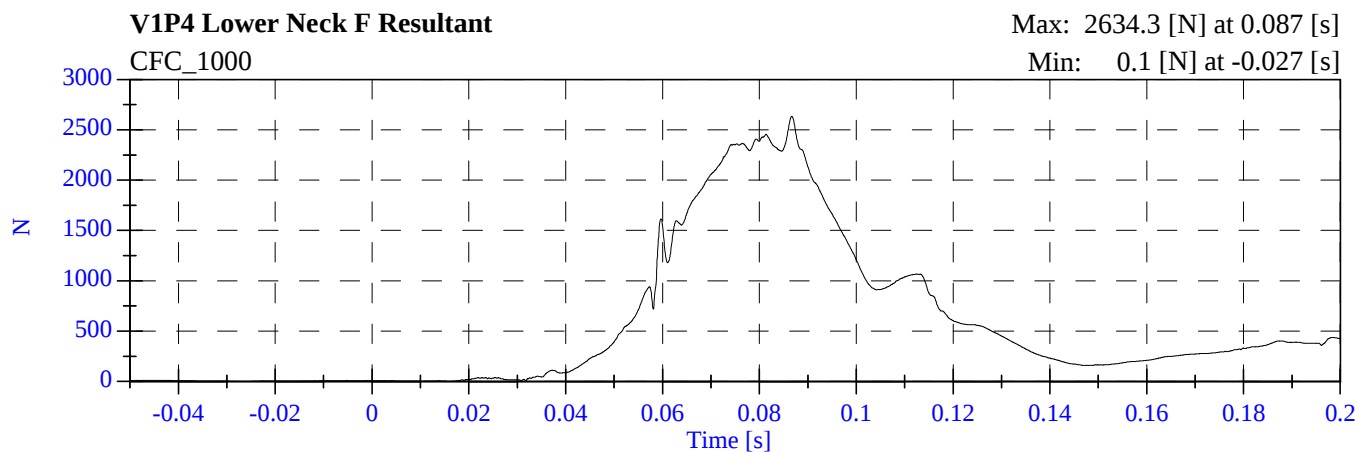
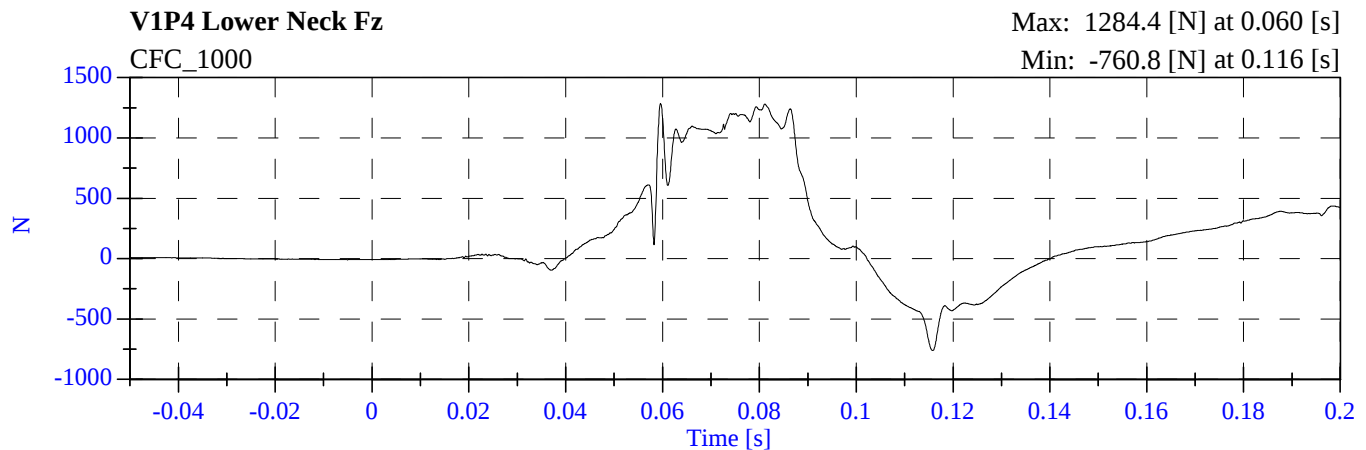
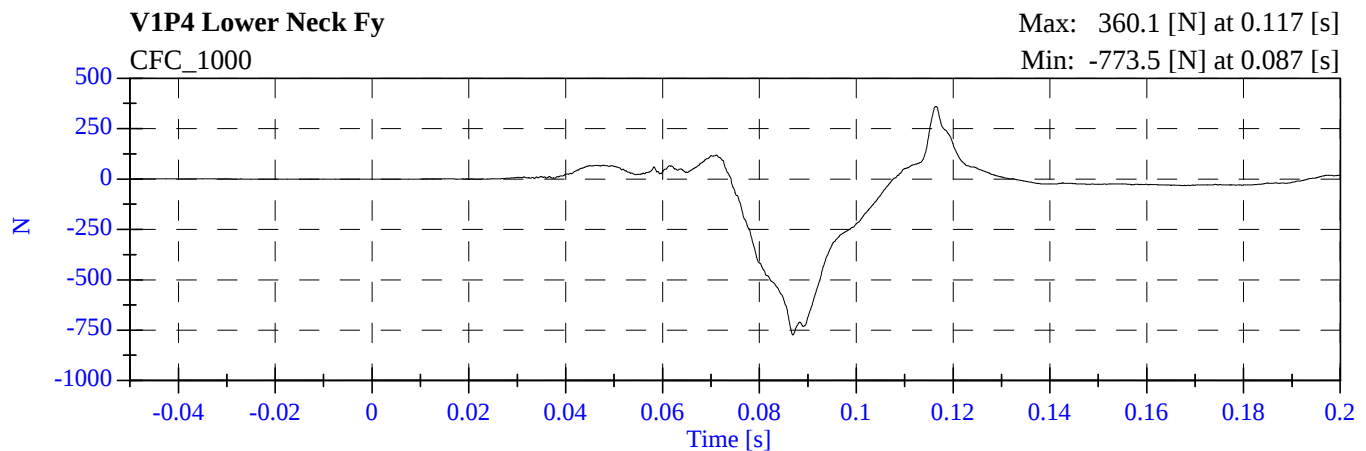
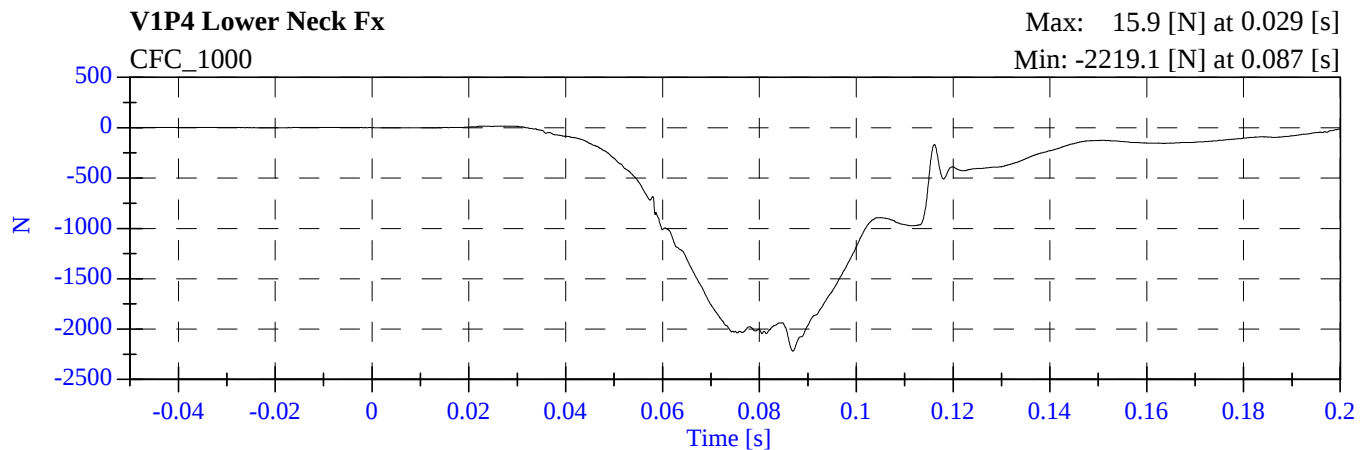


2005 NCAP Test 8 - 2005 Buick Rendezvous

M50104 - February 10, 2005

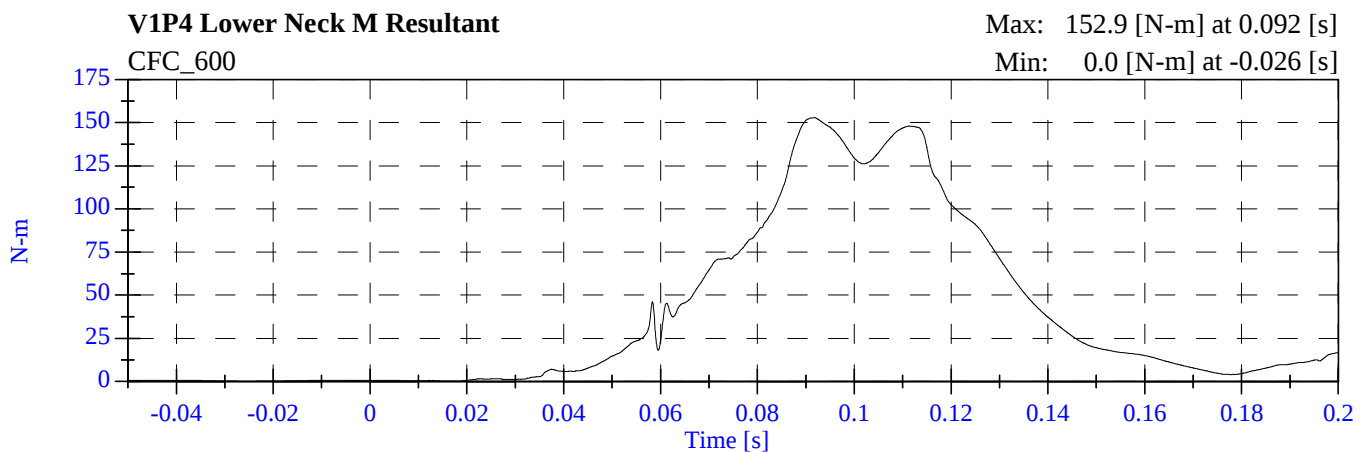
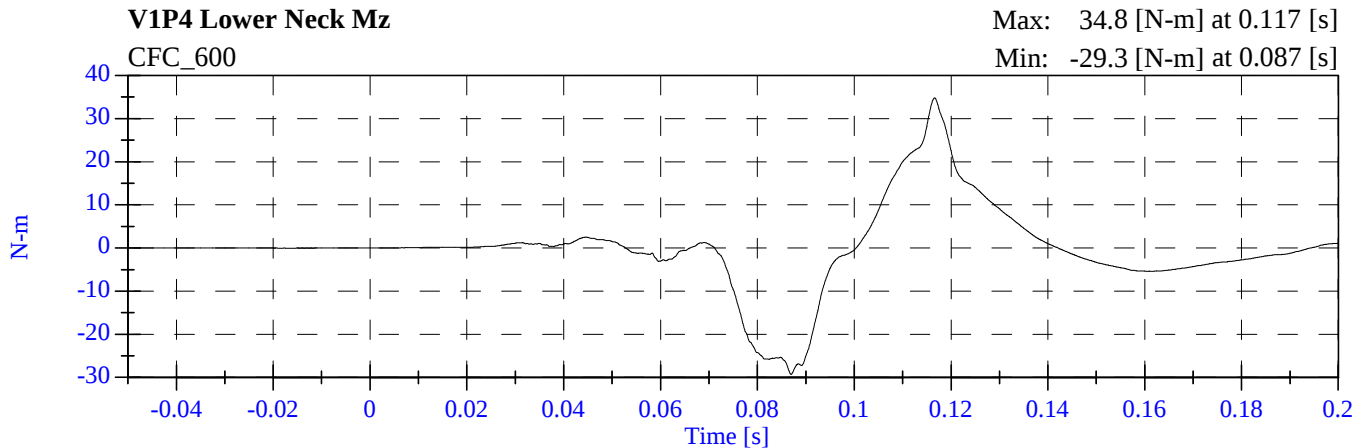
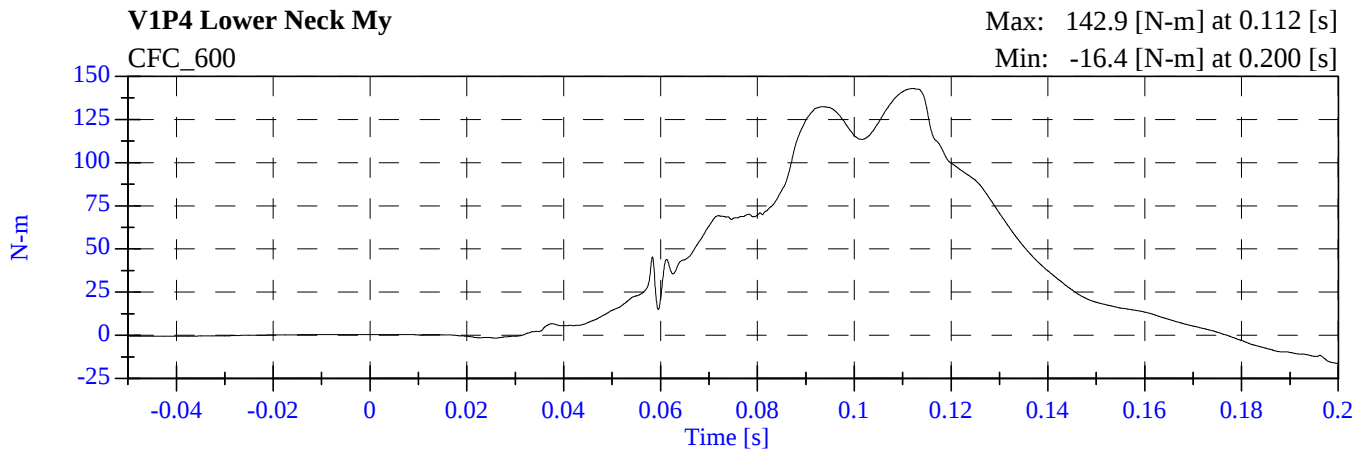
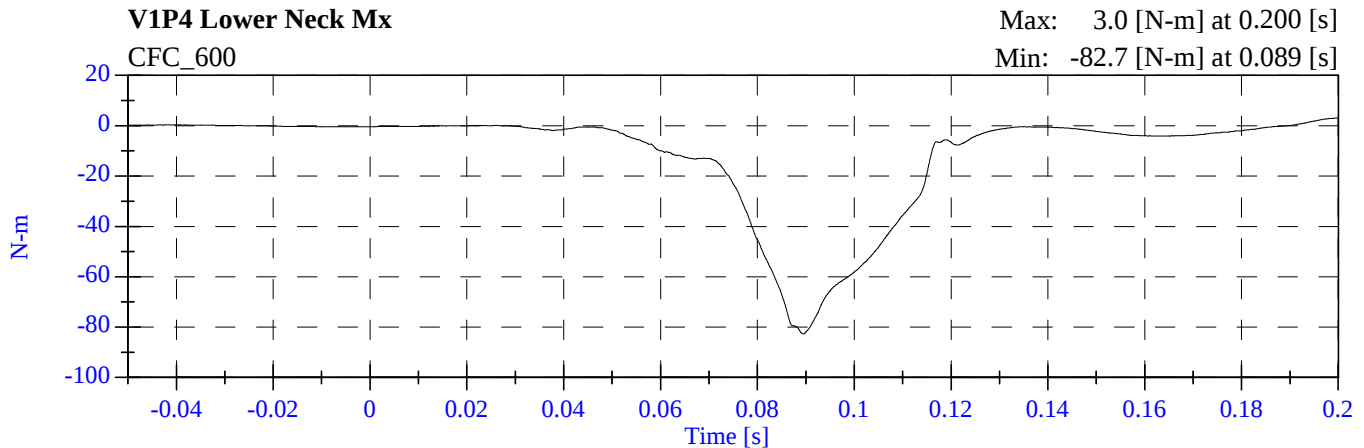


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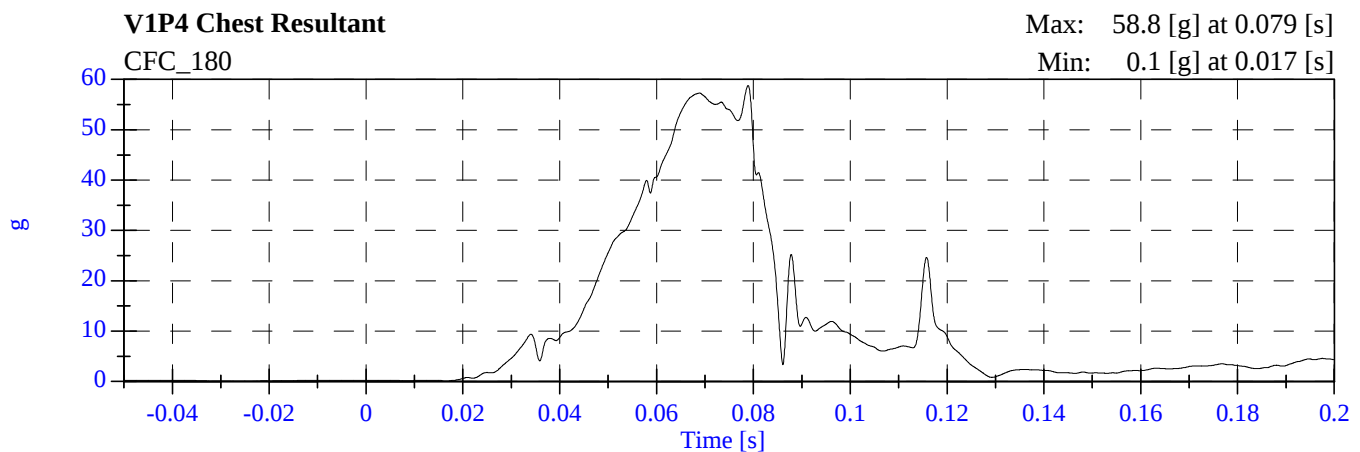
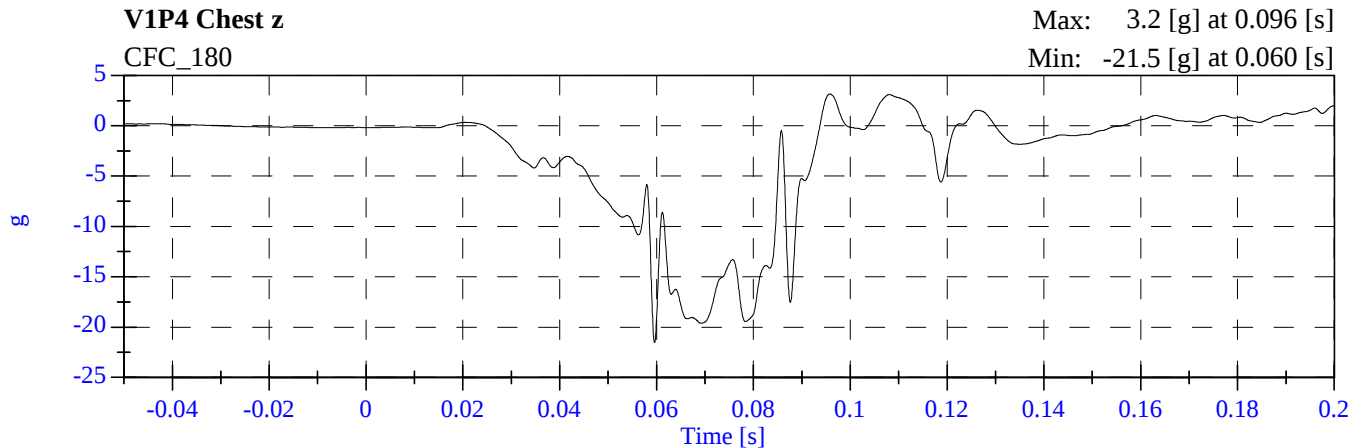
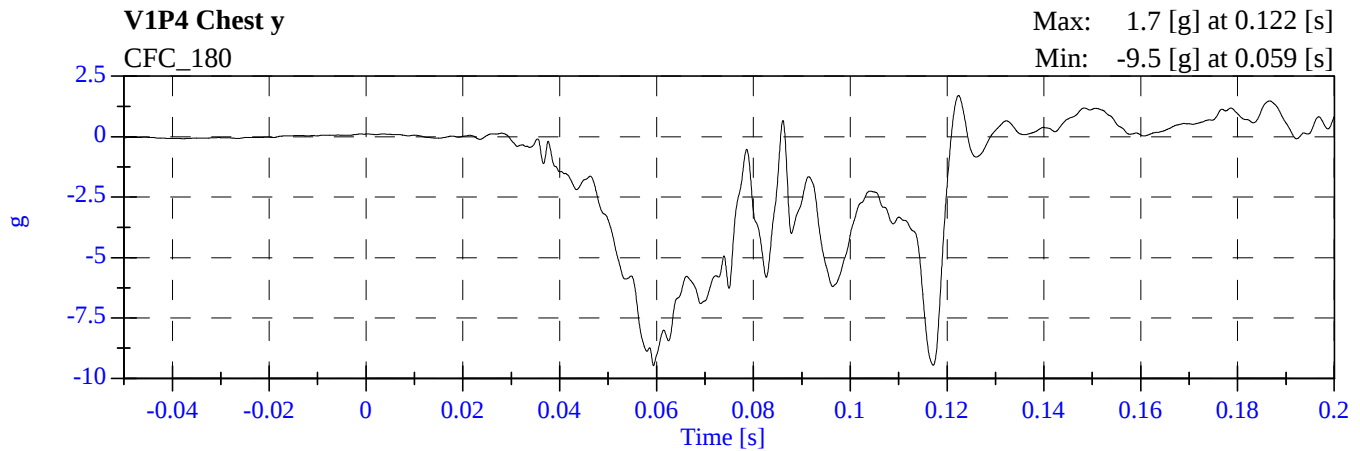
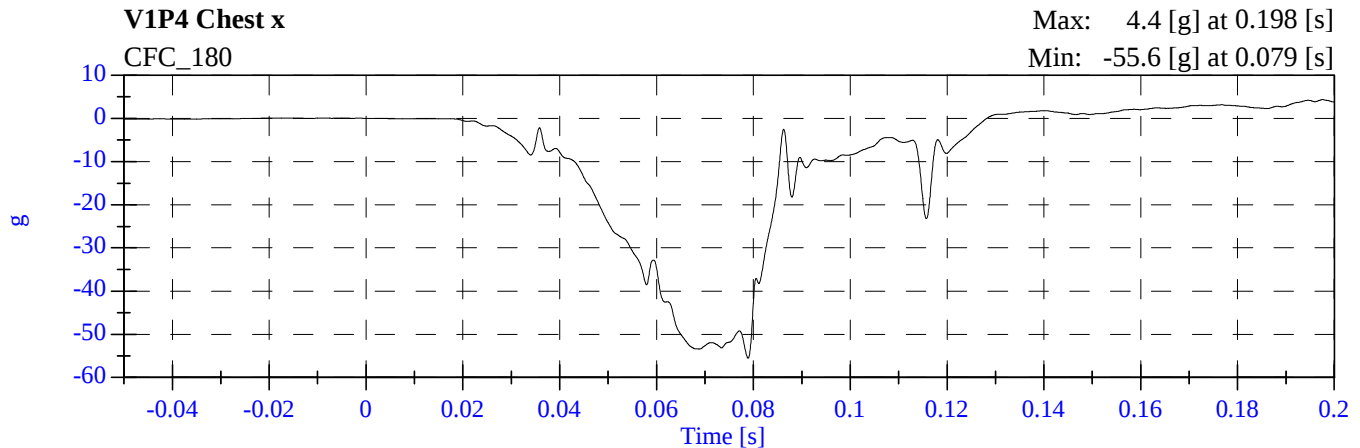
2005 NCAP Test 8 - 2005 Buick Rendezvous

M50104 - February 10, 2005



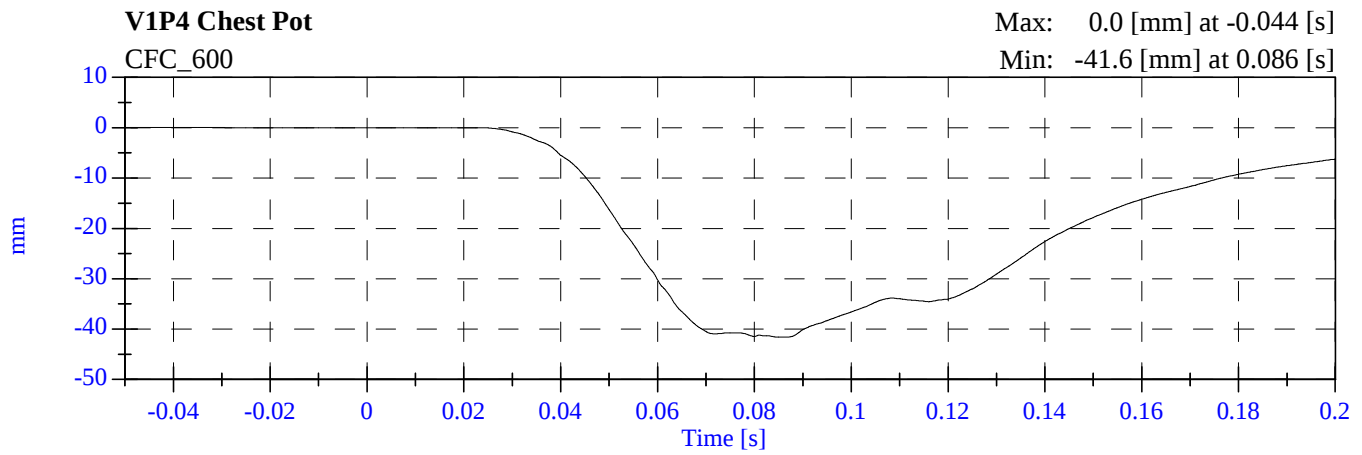
2005 NCAP Test 8 - 2005 Buick Rendezvous

M50104 - February 10, 2005

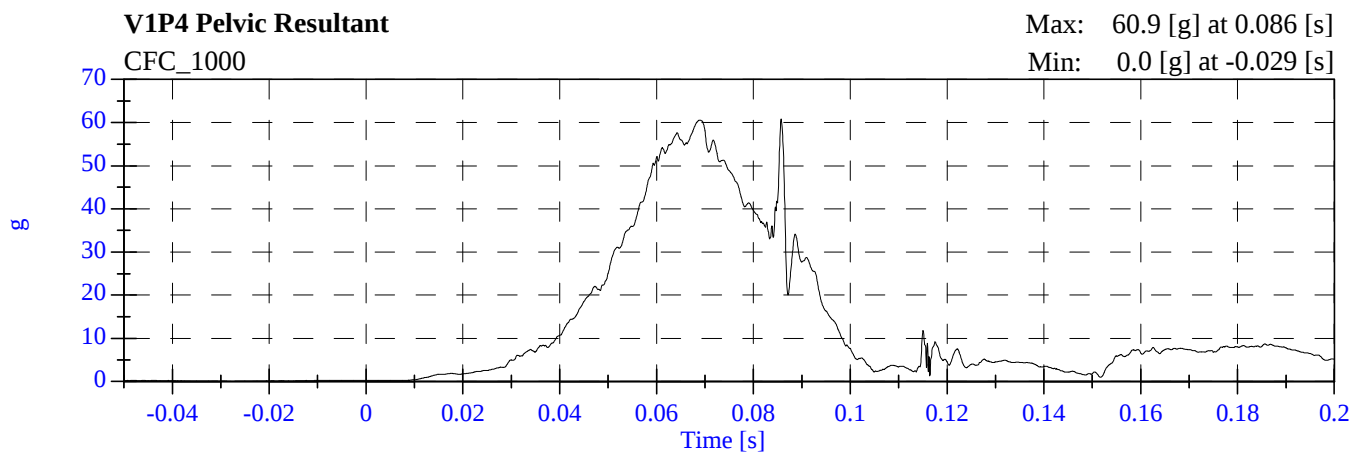
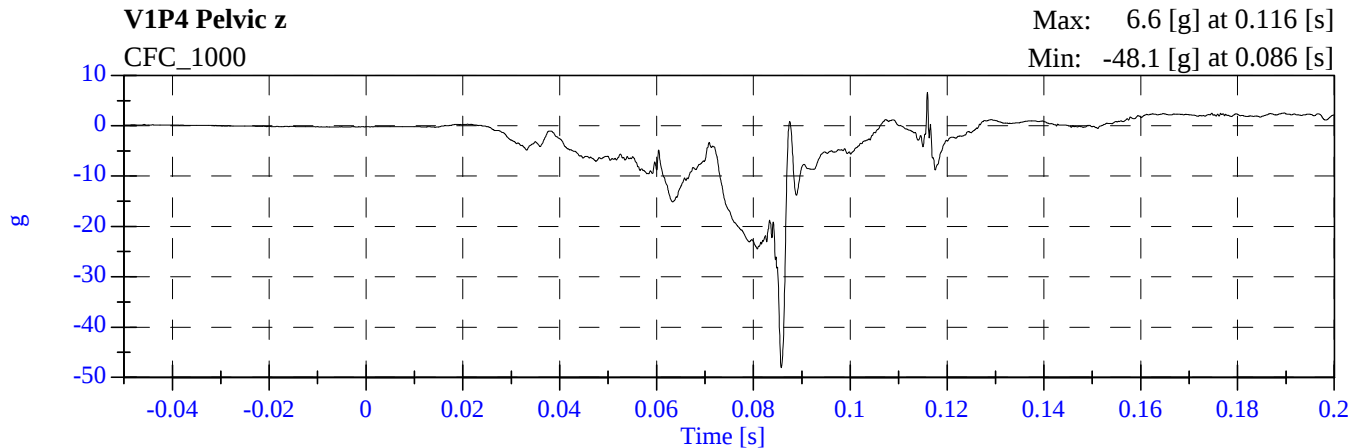
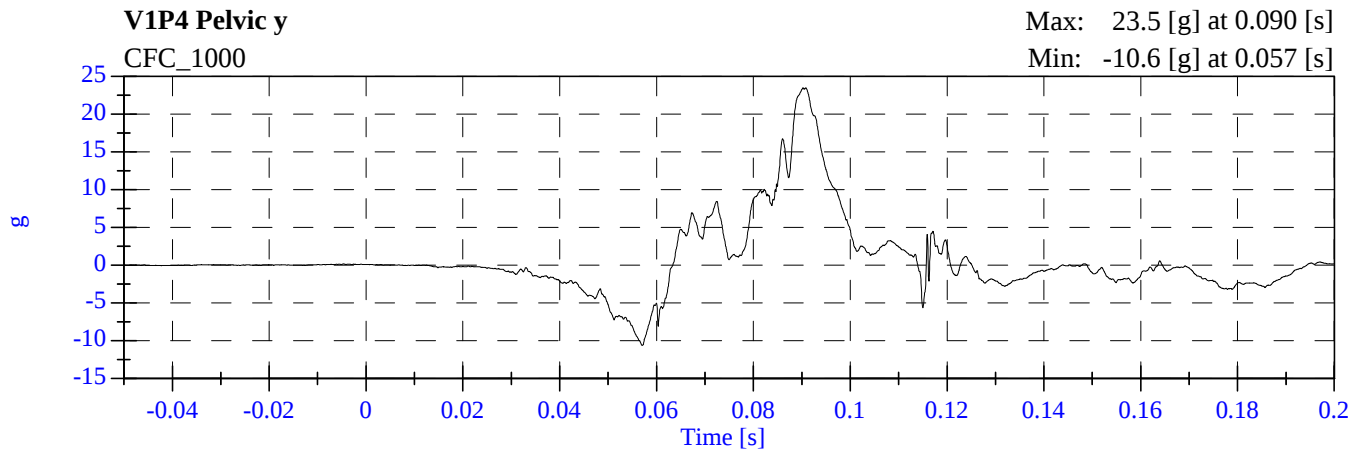
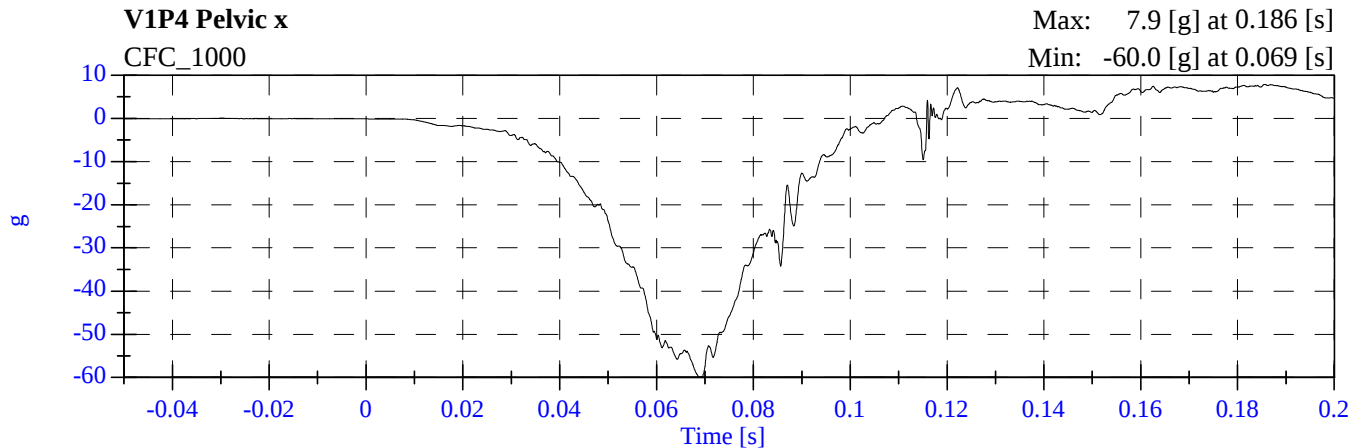


2005 NCAP Test 8 - 2005 Buick Rendezvous

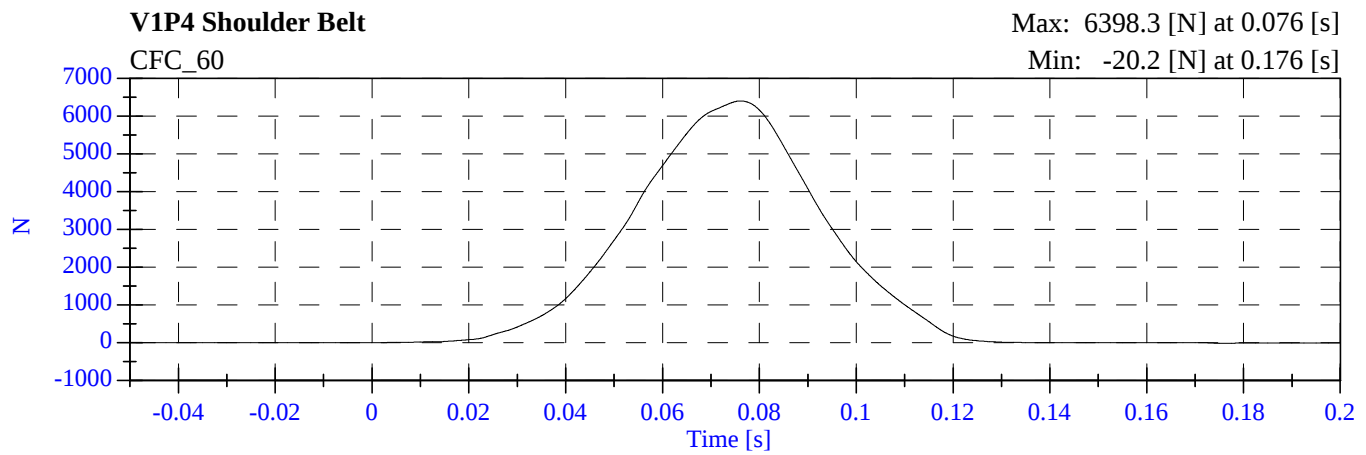
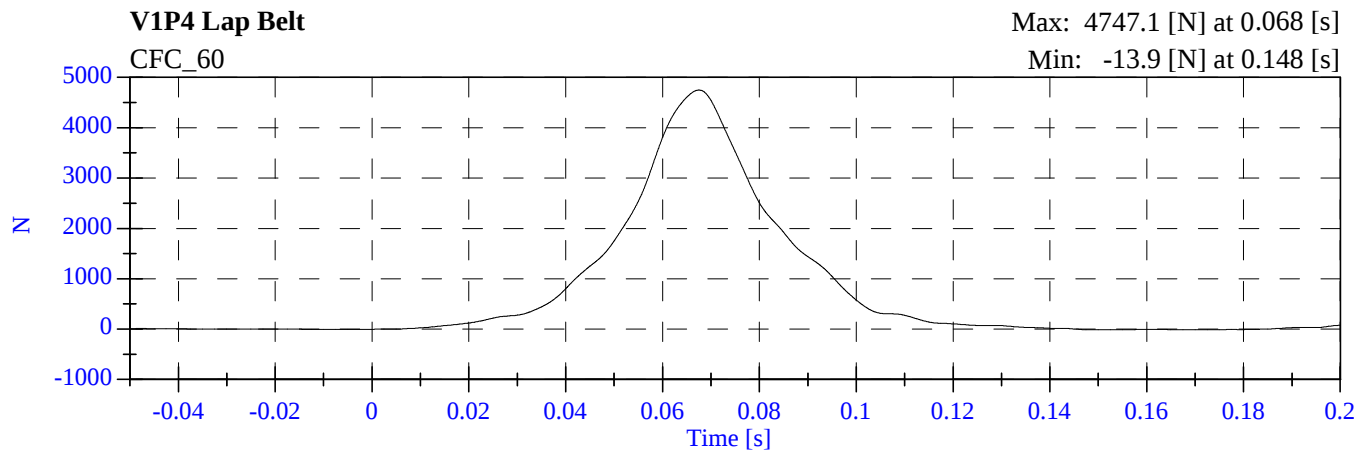
M50104 - February 10, 2005



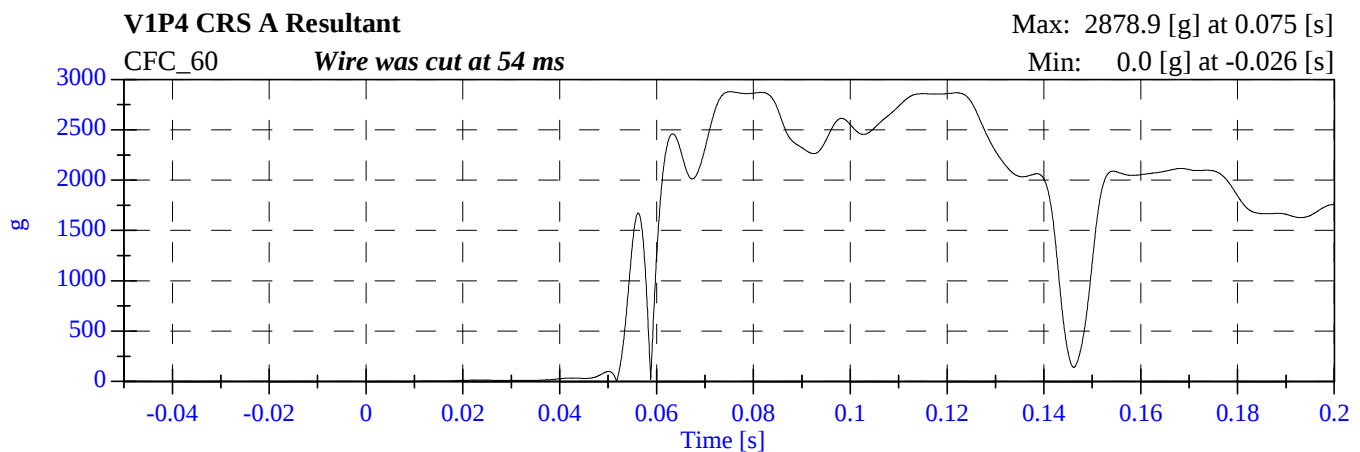
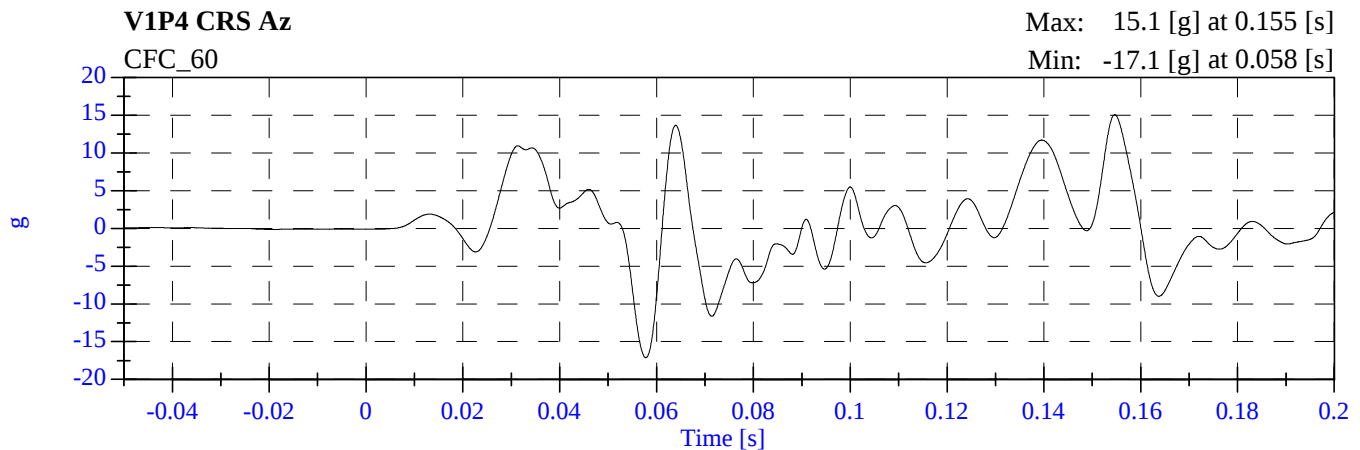
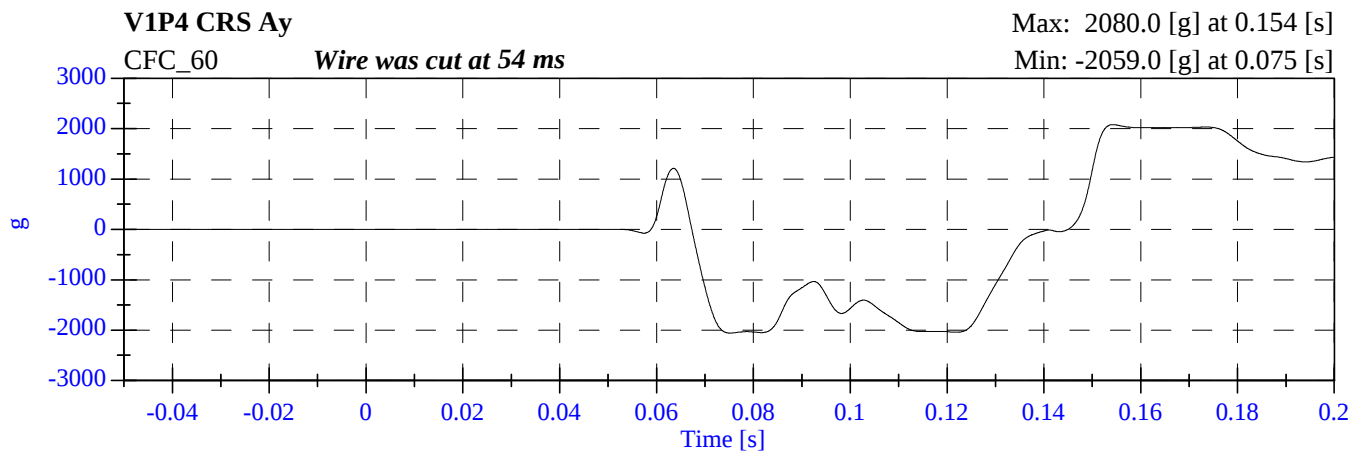
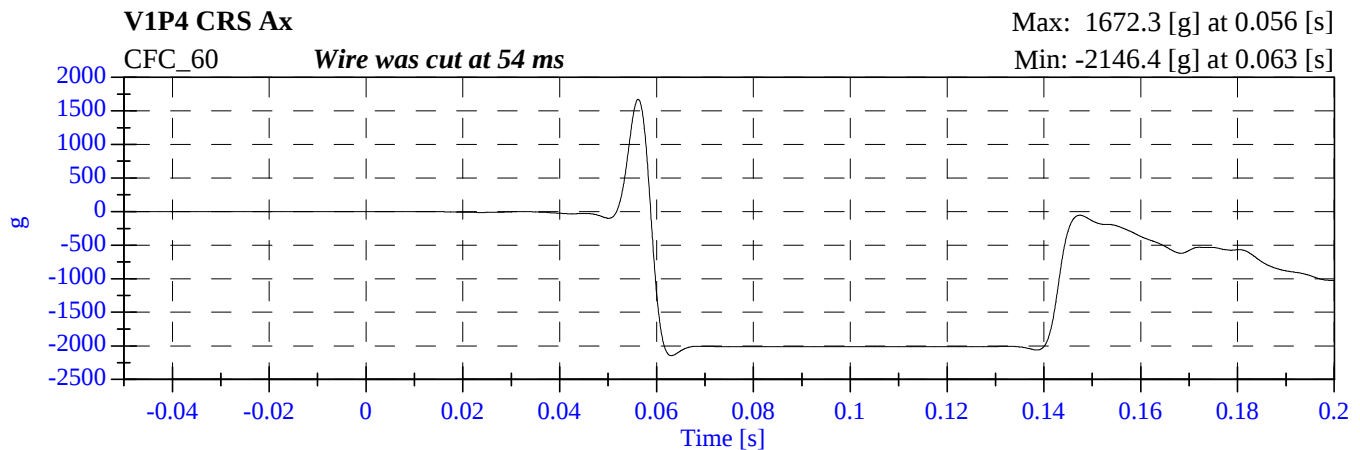
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



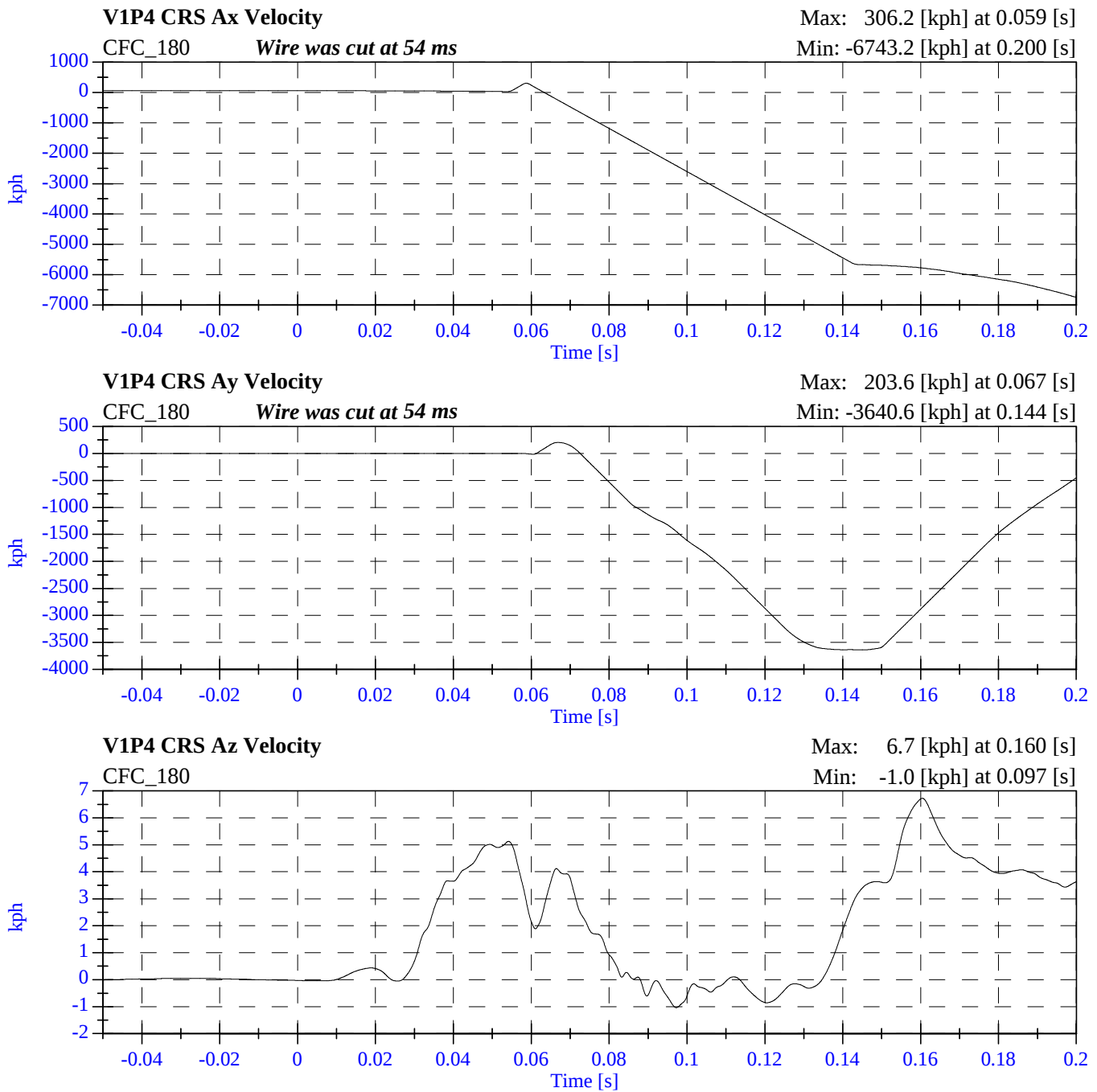
2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005

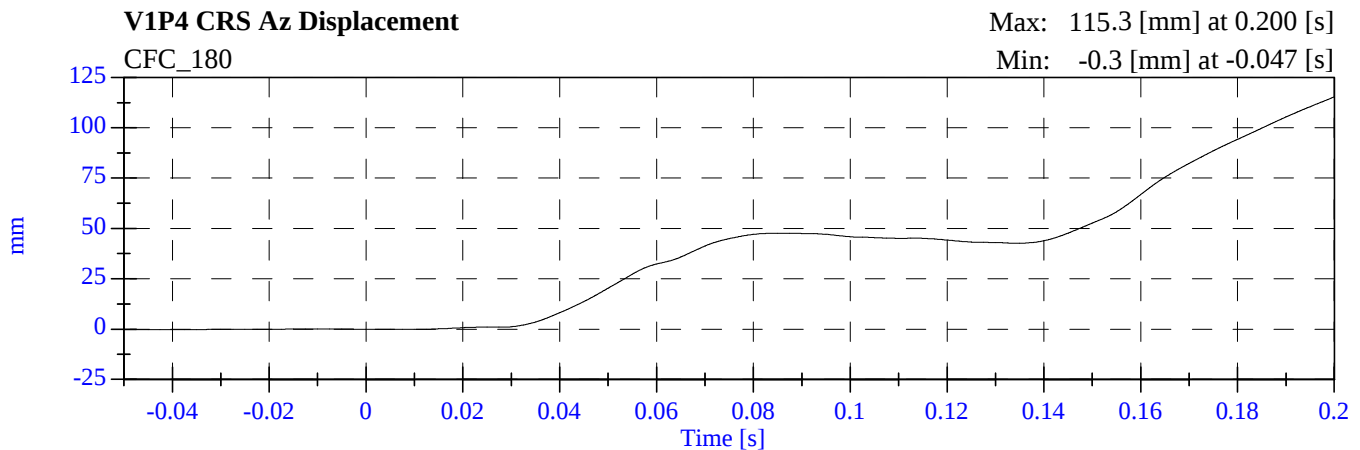
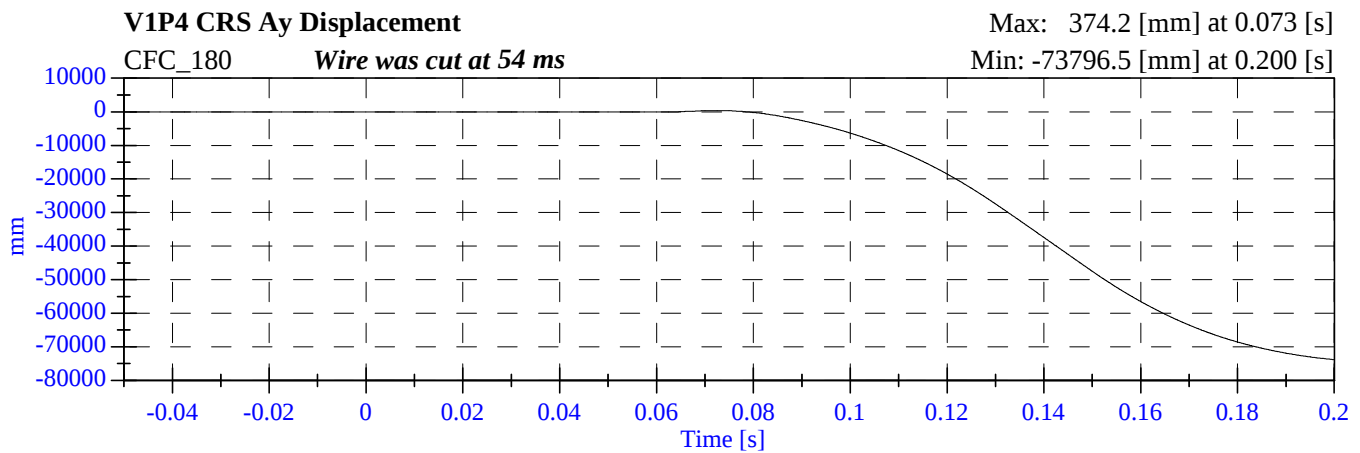
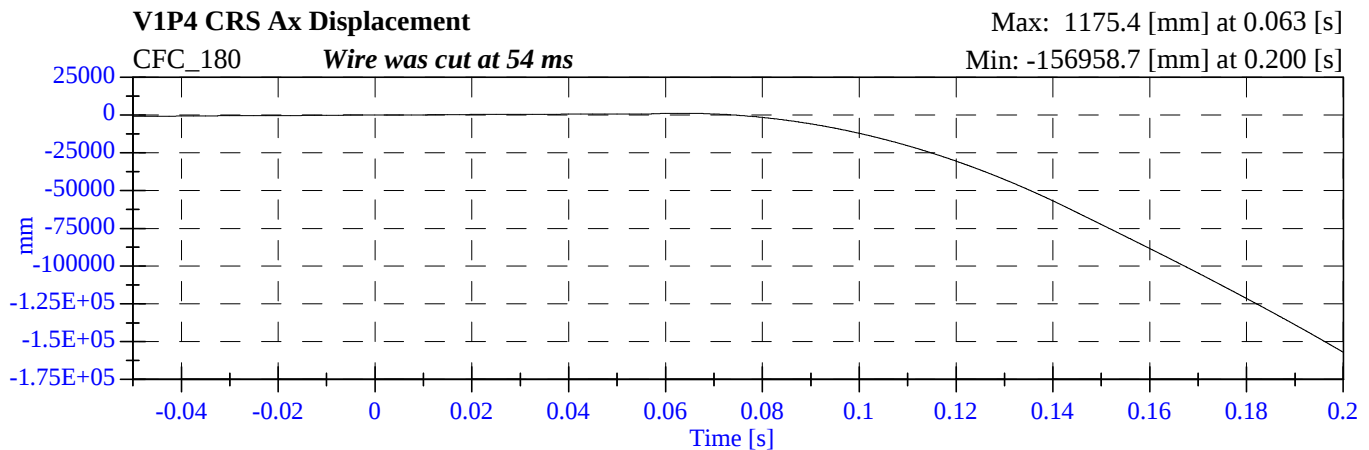


2005 NCAP Test 8 - 2005 Buick Rendezvous M50104 - February 10, 2005



2005 NCAP Test 8 - 2005 Buick Rendezvous

M50104 - February 10, 2005



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

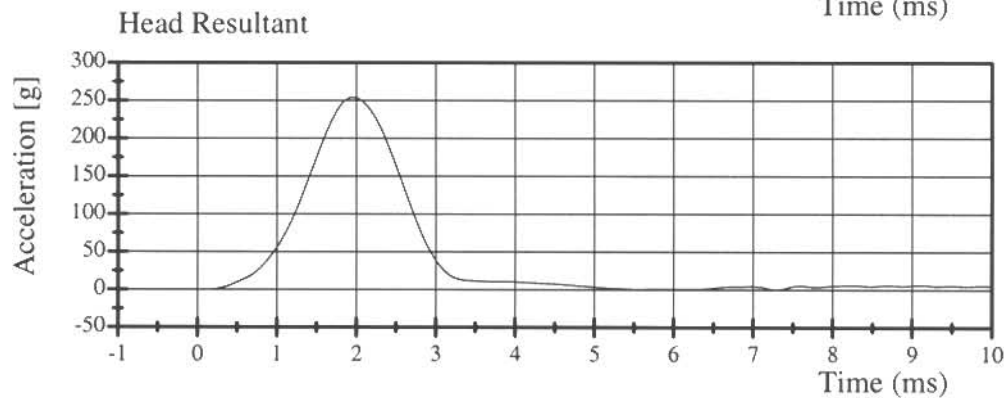
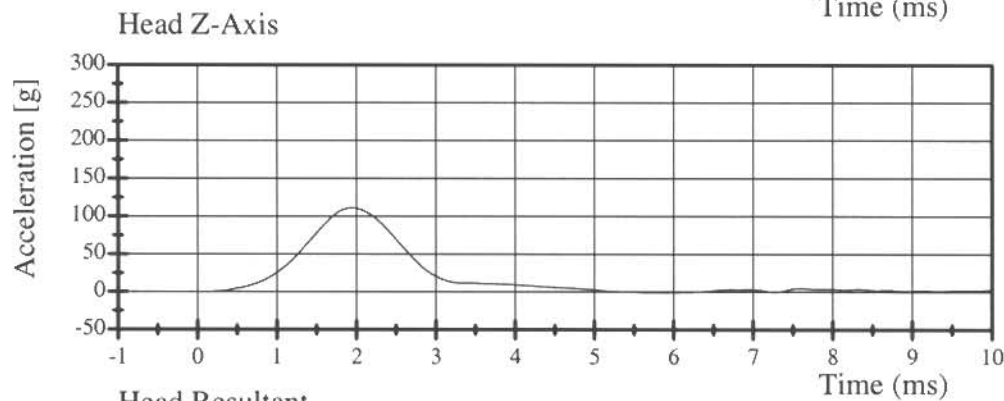
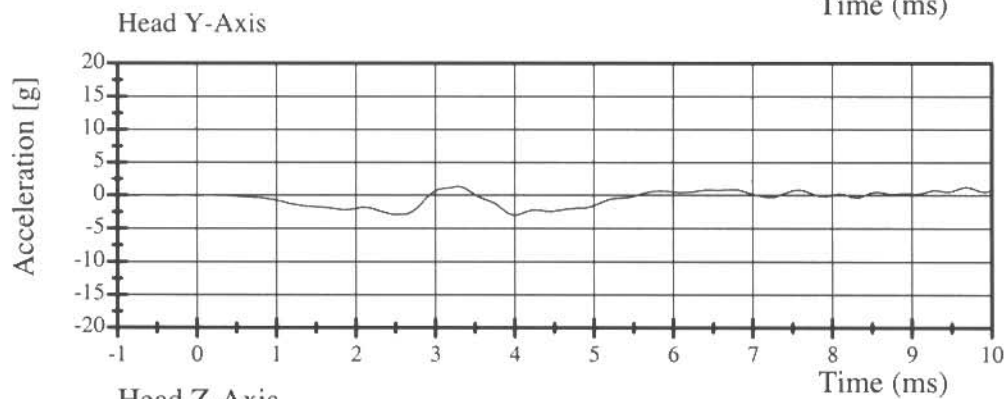
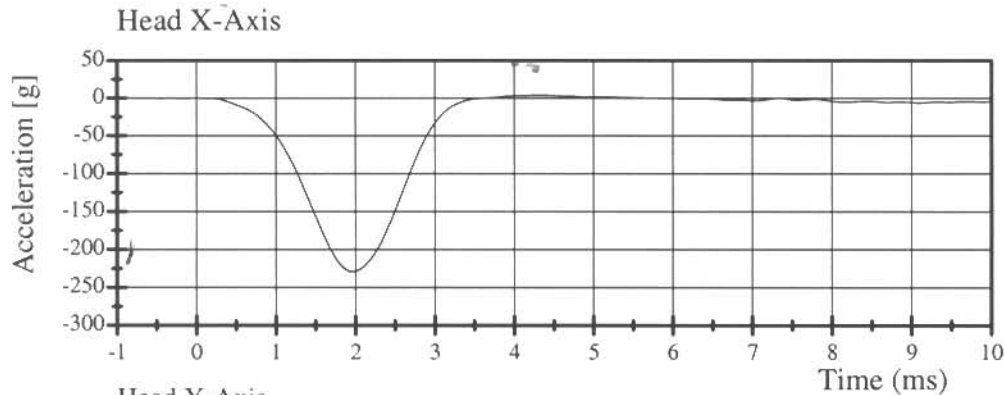


Transportation Research Center Inc.

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



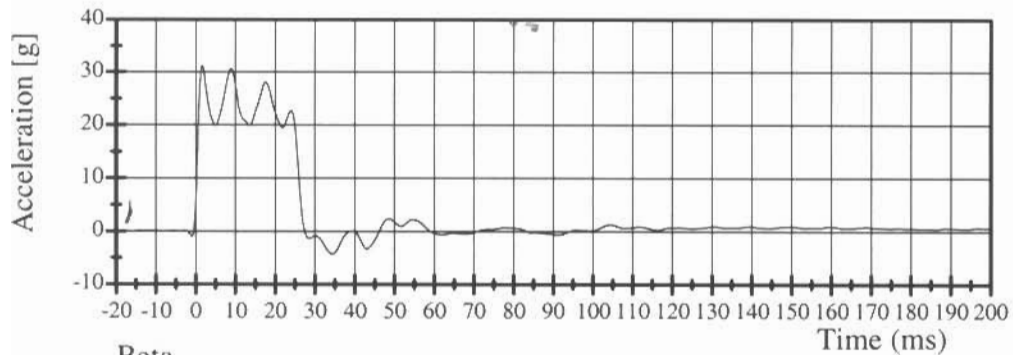
Transportation Research Center Inc.

572P Neck Flexion Test

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

Test Date 08/06/2004

Pendulum Deceleration

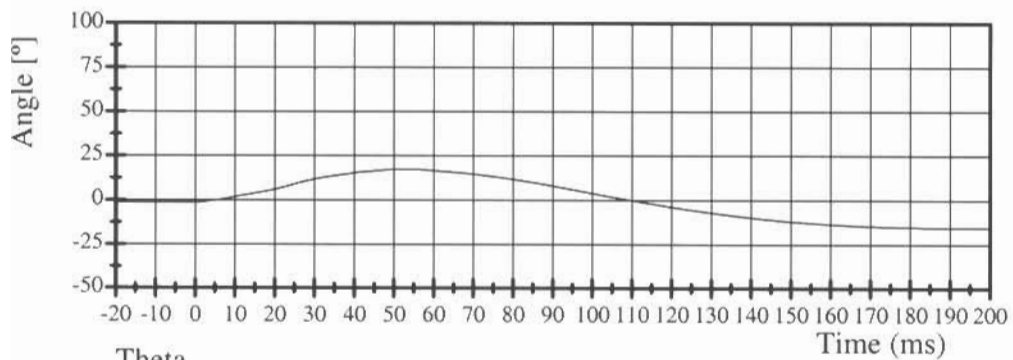


Filter Class: 180

Max: 31.2 g at 1.7 ms

Min: -4.3 g at 34.4 ms

Beta

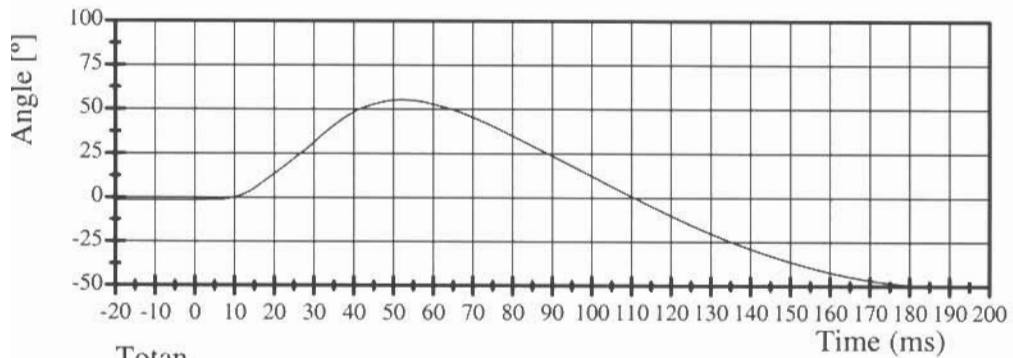


Filter Class: 60

Max: 17.4 ° at 52.0 ms

Min: -15.4 ° at 192.4 ms

Theta

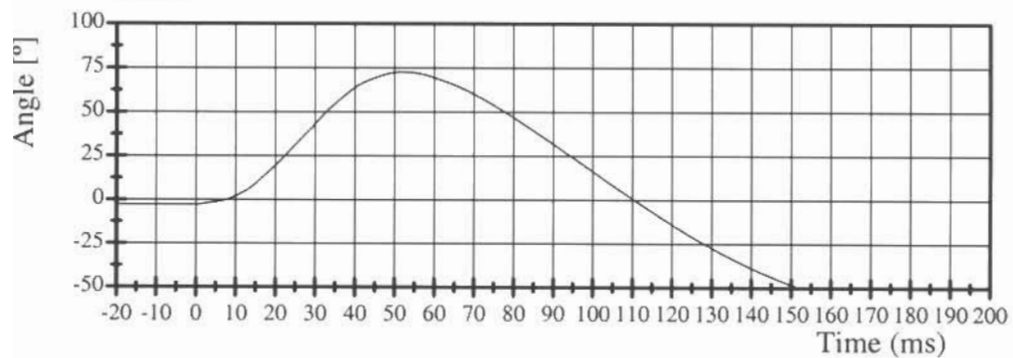


Filter Class: 60

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

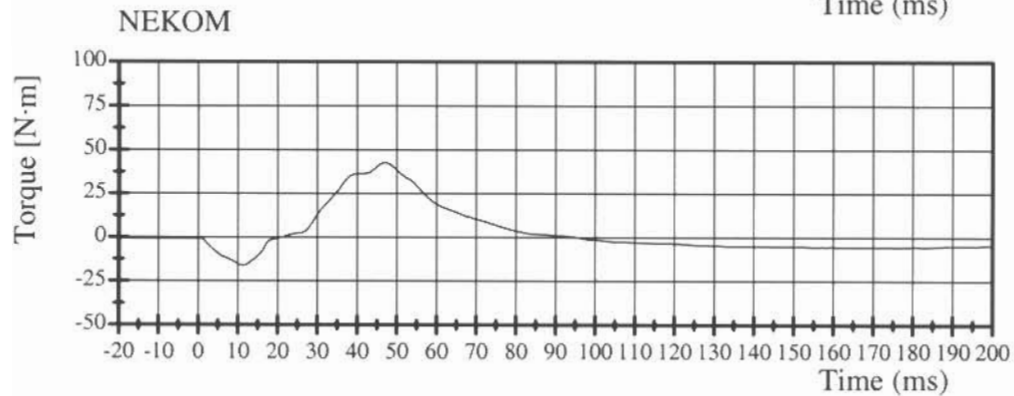
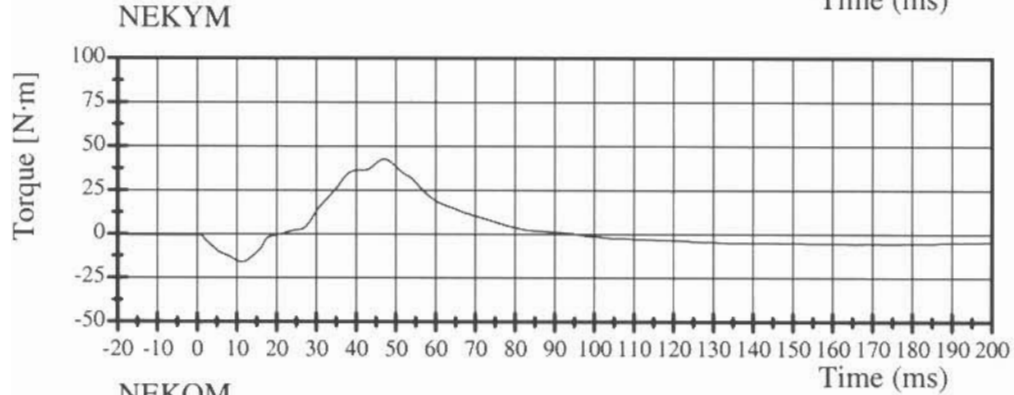
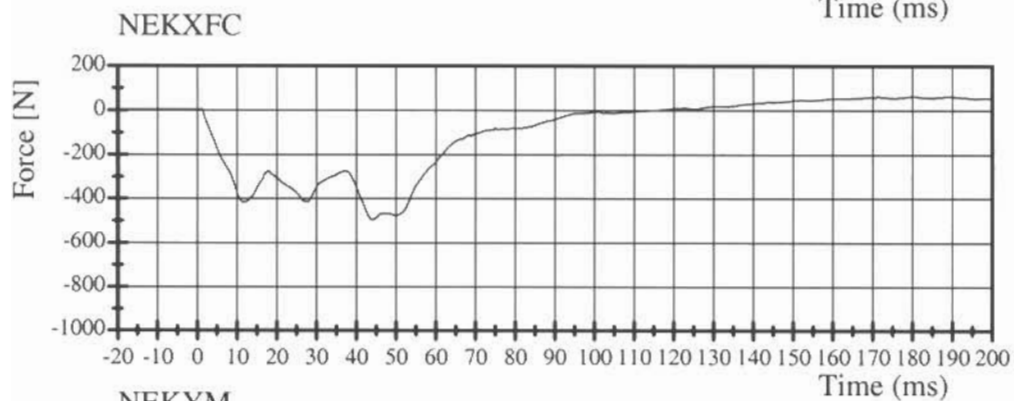
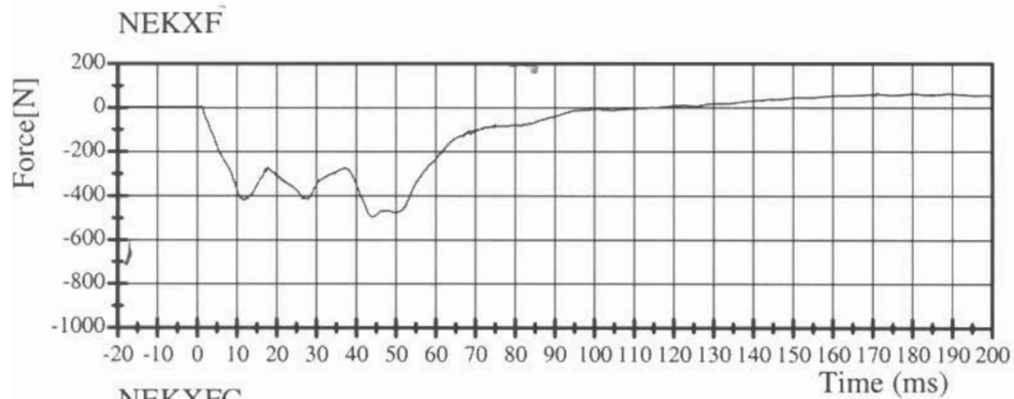
Min: -65.4 ° at 192.3 ms

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

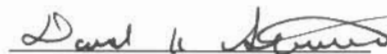
Test meets specifications.

Comments:

Technician



Approved



08.06.2004 10:06:41 1000

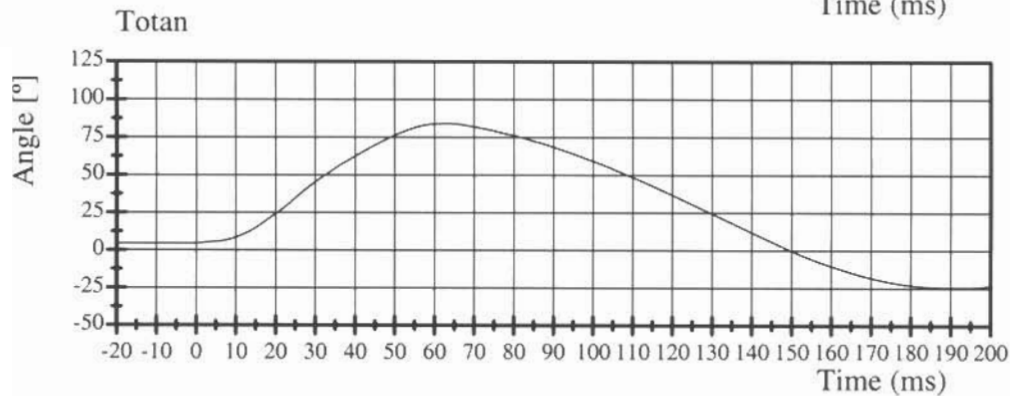
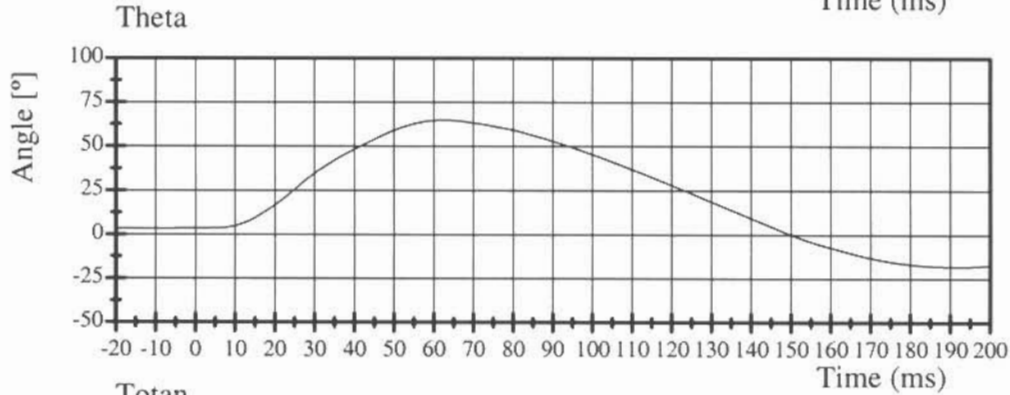
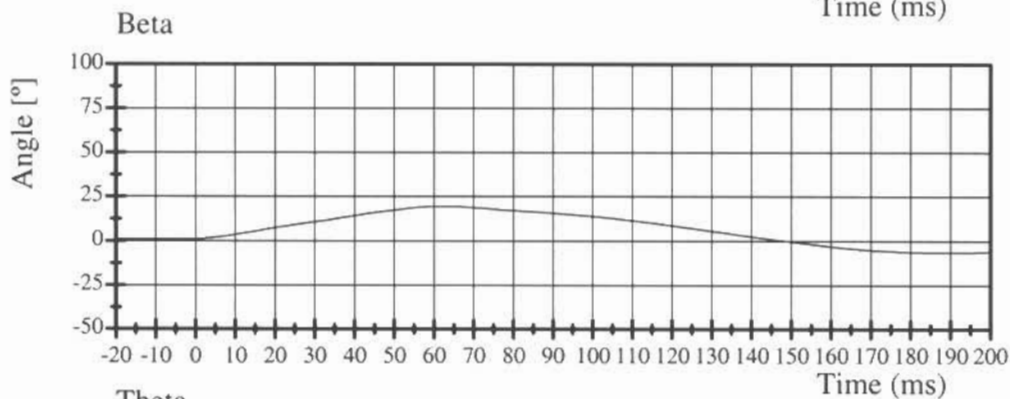
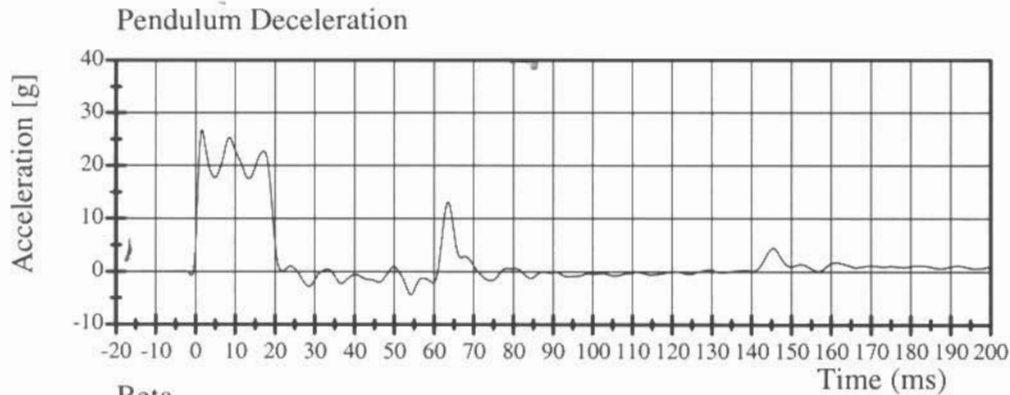


Transportation Research Center Inc.

572P Neck Extension Test

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

Test Date 08/06/2004

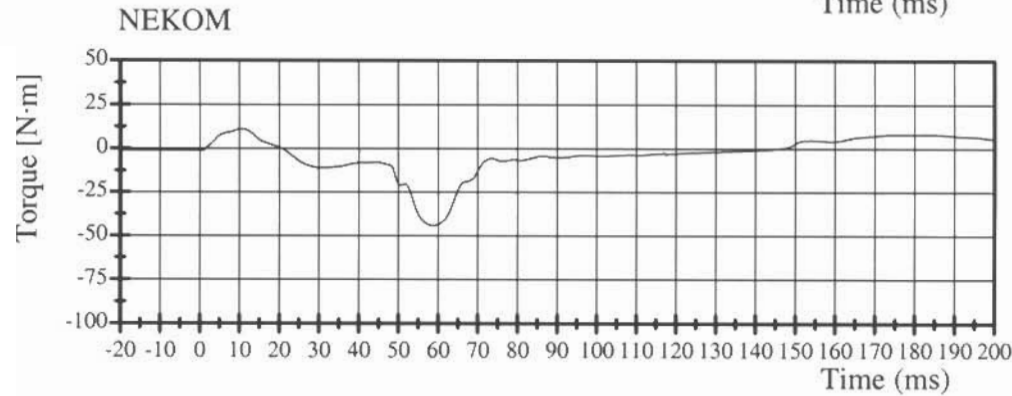
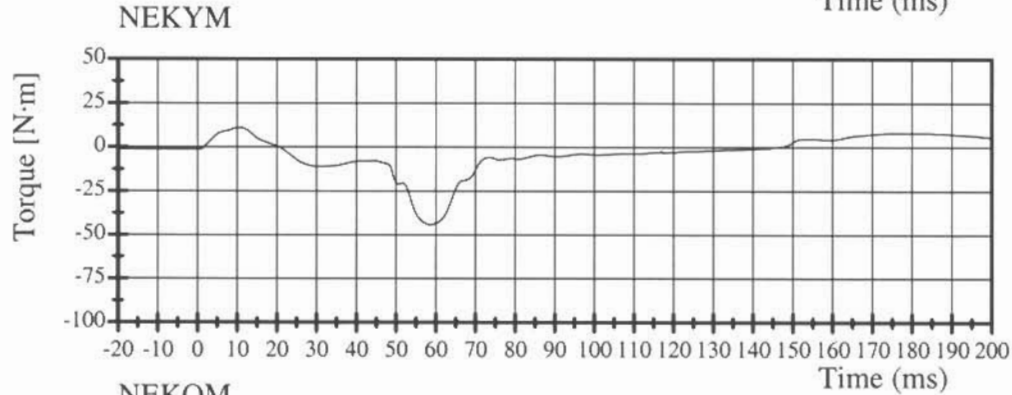
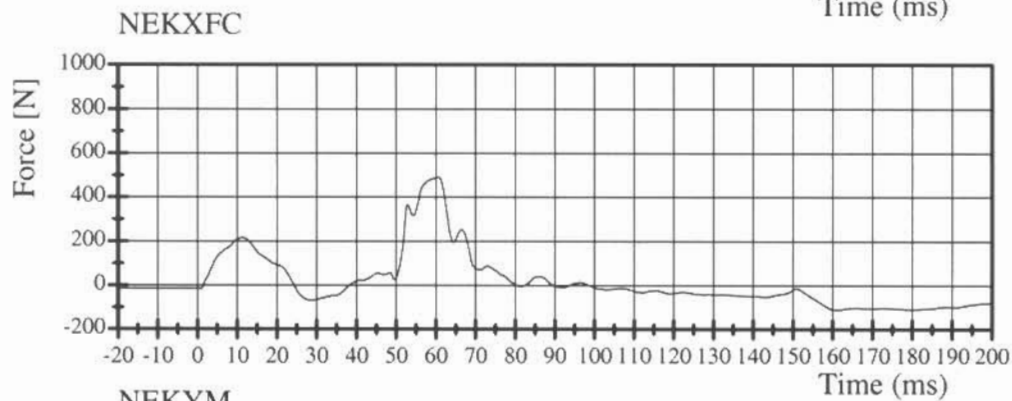
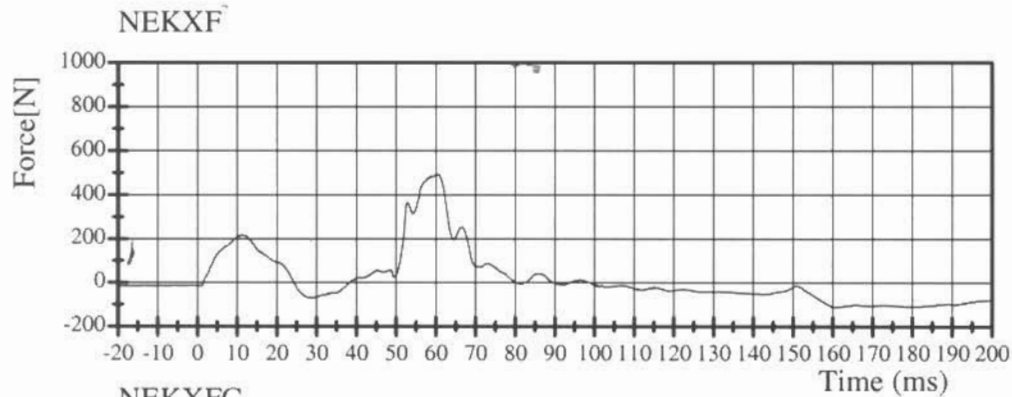


Transportation Research Center Inc.

572P Neck Extension Test

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

Test Date 08/06/2004



Transportation Research Center Inc.

572P Thorax Test

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

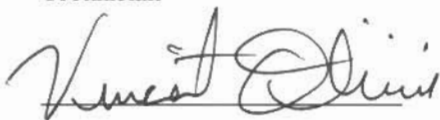
Test Date 08/05/2004

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

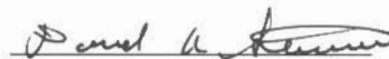
Test meets specifications.

Comments:

Technician



Approved



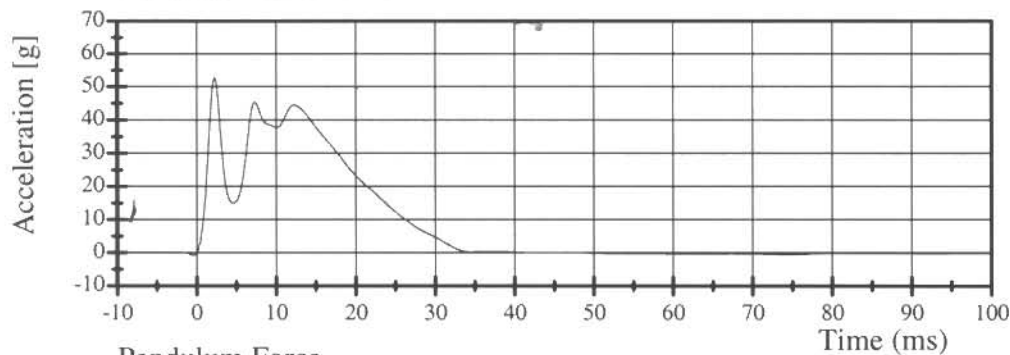
Transportation Research Center Inc.

572P Thorax Test

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

Test Date 08/05/2004

Pendulum Deceleration

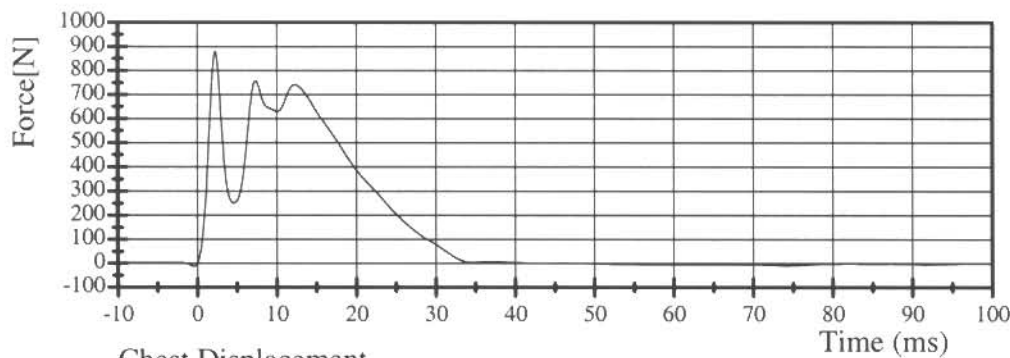


Filter Class: 180

Max: 52.8 g at 2.2 ms

Min: -0.7 g at -0.4 ms

Pendulum Force

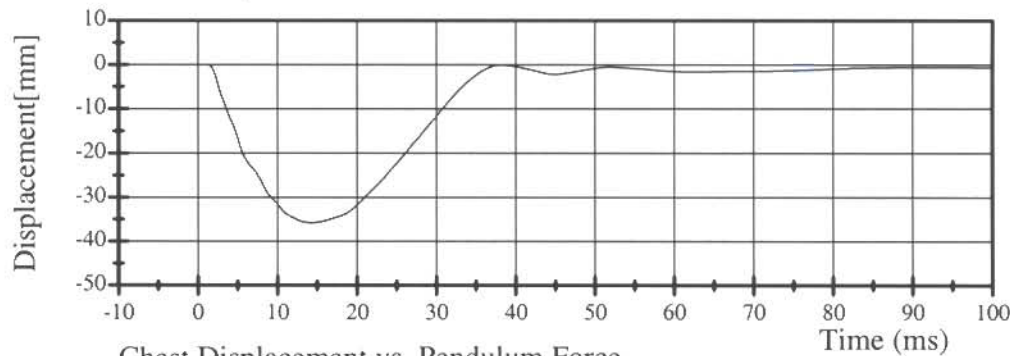


Filter Class: 180

Max: 880.2 N at 2.2 ms

Min: -11.7 N at -0.4 ms

Chest Displacement

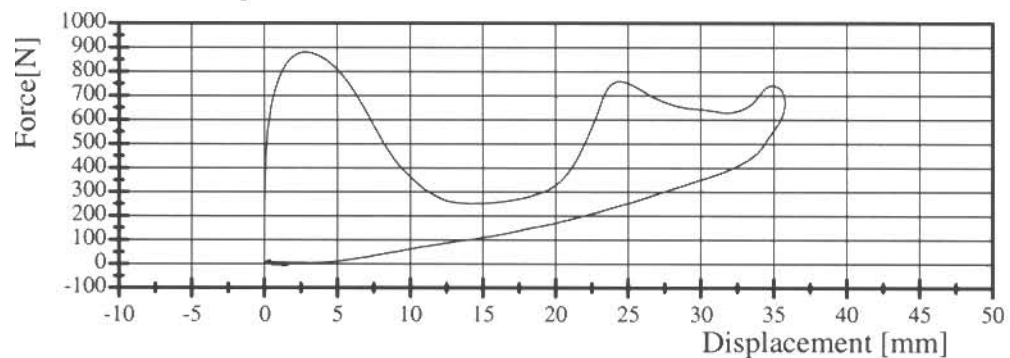


Filter Class: 600

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 UNSUPPORTRED 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 & INTIAL ANGLE	+/- 8 ° OF INTIAL ANGLE	2.9 °
RATE	0.5° - 1.5°/sec	1.06 °/sec

TEST MEETS SPECIFICATIONS

TECHNICIAN



Head Drop

Part 572N Head Drop

Calibration Date:

February 3, 2005

Serial No: 186

Work File:

186H2 02-03-05

-----TEST RESULTS-----

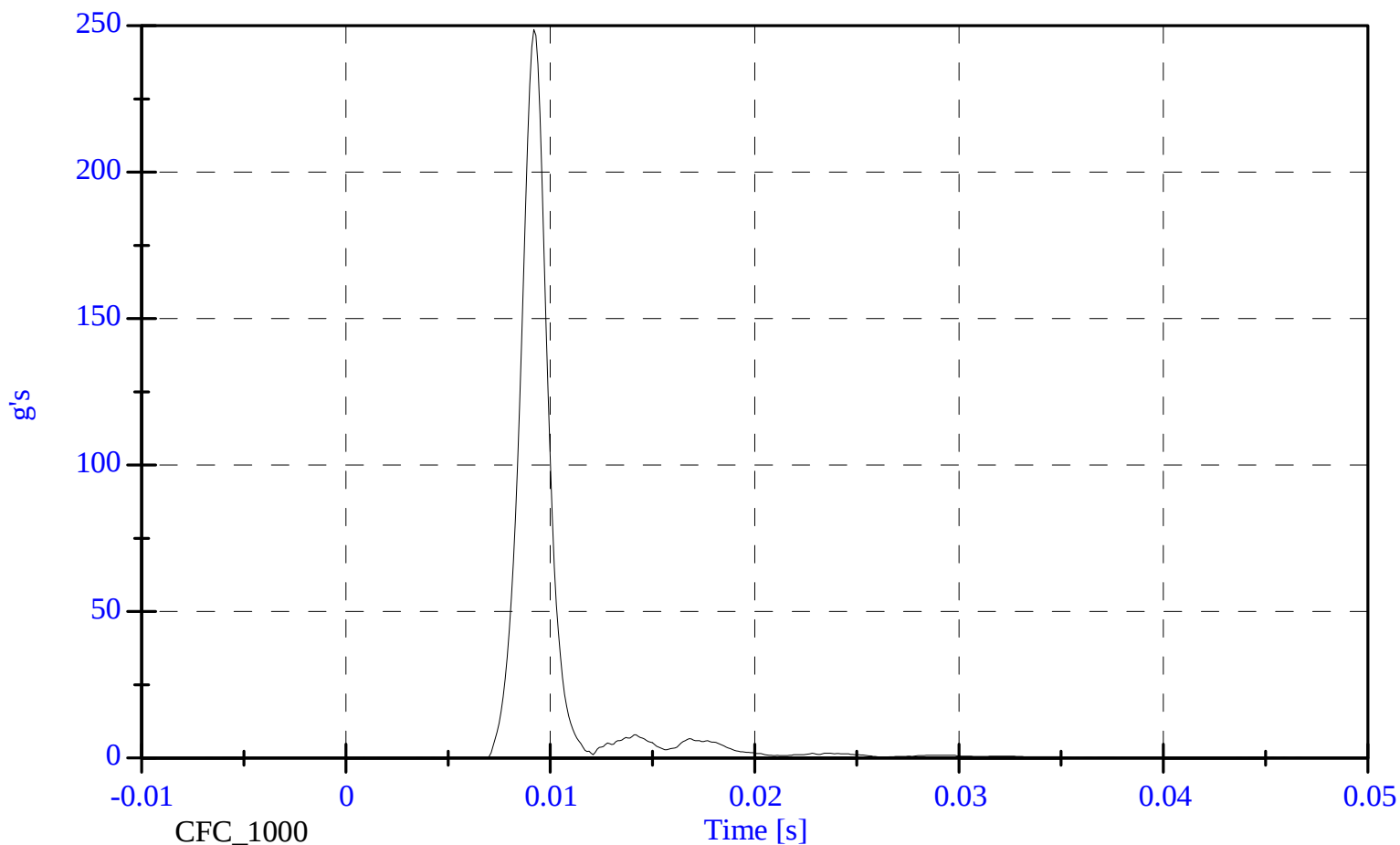
<u>TEST CONDITION</u>	<u>PARAMETERS</u>	<u>RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.6 C	21.1 C	Passed
Lab Humidity:	10-70 %	37.00 %	Passed
Peak Resultant Accel.:	245-300 Gs	248.69 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	7.98 Gs	Passed
Curve PerCent NonModal:	< 10%	3.19 %	Passed

Head Drop

Head Resultant

Max: 248.7 [g's] at 0.009 [s]

Min: 0.0 [g's] at 0.041 [s]



Neck Extension

Part 572N	Neck Extension Test	Calibration Date:	February 2, 2005
Serial No:	186	Work File:	186NF 02-03-05

-----TEST RESULTS-----

<u>TEST CONDITION</u>	<u>PARAMETERS</u>	<u>RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.11 C	Passed
Lab Humidity:	10-70 %	37.00 %	Passed
Test Pendulum Speed:	4.18- 4.42 m/s	4.27 m/s	Passed

-----PENDULUM PULSE-----

Pulse at 10 ms:	1.00- 1.40 m/s	1.28 m/s	Passed
Pulse at 20 ms:	2.20- 3.00 m/s	2.64 m/s	Passed
Pulse at 30 ms:	3.20- 4.20 m/s	3.92 m/s	Passed

-----D PLANE ROTATION-----

Maximum Rotation:	85.0-103.0 Deg	94.48 Deg	Passed
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-----MOMENT ABOUT THE OCCIPITAL CONDYLE-----

Max Occipital Moment:	-24.00--19.00 N-m	-19.22 N-m	Passed
Occipital Moment Decay:	123.0-147.0 ms	131.00 ms	Passed

Neck Flexion

Part 572N	Neck Flexion Test	Calibration Date:	February 3, 2005
Serial No:	186	Work File:	186NF 02-03-05

-----TEST RESULTS-----

<u>TEST CONDITION</u>	<u>PARAMETERS</u>	<u>RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.11 C	Passed
Lab Humidity:	10-70 %	37.00 %	Passed
Test Pendulum Speed:	4.83- 5.07 m/s	4.95 m/s	Passed

-----PENDULUM PULSE-----

Pulse at 10 ms:	1.20- 1.60 m/s	1.60 m/s	Passed
Pulse at 20 ms:	2.40- 3.40 m/s	3.22 m/s	Passed
Pulse at 30 ms:	3.80- 5.00 m/s	4.71 m/s	Passed

-----D PLANE ROTATION-----

Maximum Rotation:	74.0-92.0 Deg	86.76 Deg	Passed
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-----MOMENT ABOUT THE OCCIPITAL CONDYLE-----

Max Occipital Moment:	27.00- 33.00 N-m	30.11 N-m	Passed
Occipital Moment Decay:	103.0-123.0 ms	113.60 ms	Passed

Thorax Impact

Part 572N Thorax Impact

Calibration Date: 02-04-05

Serial No: 186

Work File: 186T1 02-04-05

-----TEST RESULTS-----

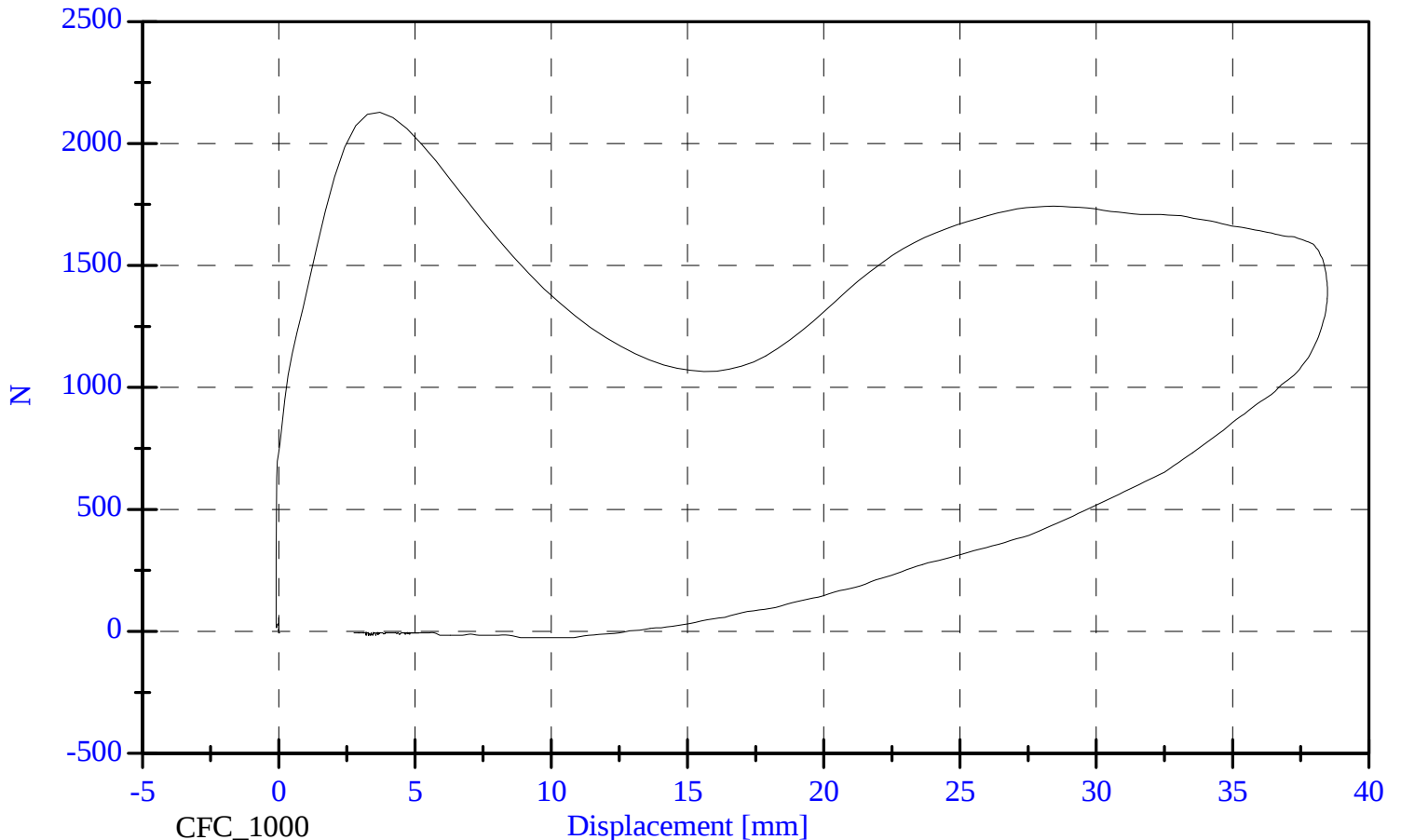
<u>TEST CONDITION</u>	<u>PARAMETERS</u>	<u>RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	33.00 %	Passed
Pendulum Velocity:	6.59- 6.83 m/s	6.71 m/s	Passed
Maximum Deflection:	38.00-46.00 mm	38.48 mm	Passed
Maximum Res. Force:	1150.00-1380.00 N	1167.99 N	Passed
Internal Hysteresis:	65-85 %	82.25 %	Passed

Thorax Impact

Probe Force vs. Displacement

Max: 2127.8 [N] at 3.716 [mm]

Min: -25.4 [N] at 9.024 [mm]



Torso Flexion Test
P572N Hybrid III Six-Year-Old Child Dummy

February 03, 2005

Dummy SN: 186
Force@45 Degrees: 41 lbf
Return Angle: 6 degrees

SECTION 6

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III 3C INSTRUMENTATION

	POSITION #3 (RIGHT) SERIAL NO.: 040		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-J36611	ENDEVCO	1/25/2005
HEAD AY	AC-P35789	ENDEVCO	1/4/2005
HEAD AZ	AC-J27466	ENDEVCO	1/25/2005
UPPER NECK FX	LC-210FX	DENTON	8/2/2004
UPPER NECK FY	LC-210FY	DENTON	8/2/2004
UPPER NECK FZ	LC-210FZ	DENTON	8/2/2004
UPPER NECK MX	LC-210MX	DENTON	8/2/2004
UPPER NECK MY	LC-210MY	DENTON	8/2/2004
UPPER NECK MZ	LC-210MZ	DENTON	8/2/2004
CHEST AX	AC-J20047	ENDEVCO	1/25/2005
CHEST AY	AC-CC92H	ENDEVCO	1/25/2005
CHEST AZ	AC-J29006	ENDEVCO	1/25/2005
CHEST DISPLACEMENT X	DS-040	SERVO	8/2/2004
PELVIS AX	AC-01G18-F09	ENTRAN	1/25/2005
PELVIS AY	AC-J27525	ENDEVCO	1/25/2005
PELVIS AZ	AC-J17988	ENDEVCO	1/25/2005
LATCH BELT LOAD	LC-707	LEBOW	11/1/2004

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III 6C INSTRUMENTATION

	POSITION #4 (LEFT) SERIAL NO.: 186		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-99H30-Z09	ENTRAN	2/2/2005
HEAD AY	AC-J31026	ENDEVCO	8/18/2004
HEAD AZ	AC-01J02-F08	ENTRAN	2/2/2005
UPPER NECK FX	LC-1632FX	DENTON	8/12/2003
UPPER NECK FY	LC-1632FY	DENTON	8/12/2003
UPPER NECK FZ	LC-1632FZ	DENTON	8/12/2003
UPPER NECK MX	LC-1632MX	DENTON	8/12/2003
UPPER NECK MY	LC-1632MY	DENTON	8/12/2003
UPPER NECK MZ	LC-1632MZ	DENTON	8/12/2003
LOWER NECK FX	LC-138FX	DENTON	4/16/2003
LOWER NECK FY	LC-138FY	DENTON	4/16/2003
LOWER NECK FZ	LC-138FZ	DENTON	4/16/2003
LOWER NECK MX	LC-138MX	DENTON	4/16/2003
LOWER NECK MY	LC-138MY	DENTON	4/16/2003
LOWER NECK MZ	LC-138MZ	DENTON	4/16/2003
CHEST AX	AC-02I02I05-F10	ENTRAN	2/2/2005
CHEST AY	AC-02I02I16-A04	ENTRAN	2/2/2005
CHEST AZ	AC-03E03E20-N18	ENTRAN	2/2/2005
CHEST DISPLACEMENT X	DS-186	SERVO	5/19/2004
PELVIS AX	AC-02I02I05-F05	ENTRAN	2/2/2005
PELVIS AY	AC-98H14-K13	ENTRAN	2/2/2005
PELVIS AZ	AC-02I02I16-A10	ENTRAN	2/2/2005
LAP BELT LOAD	LC-706	LEBOW	11/1/2004
TORSO BELT LOAD	LC-156	FIRST TECHNOLOGY	11/1/2004

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

CRS INSTRUMENTATION

	CRS Accelerometers		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
P3 CRS AX	AC-P23139	ENDEVCO	10/27/2004
P3 CRS AY	AC-P13323	ENDEVCO	10/27/2004
P3 CRS AZ	AC-P22943	ENDEVCO	10/27/2004
P4 CRS AX	AC-J30041	ENDEVCO	1/10/2005
P4 CRS AY	AC-J32185	ENDEVCO	11/4/2004
P4 CRS AZ	AC-J33843	ENDEVCO	9/8/2004