REPORT NUMBER: CAL-09-08

VALIDATION
FRONTAL BARRIER IMPACT TEST

FORD MOTOR COMPANY
2010 FORD MUSTANG
2-DOOR COUPE

NHTSA NUMBER: MA0202

CALSPAN TEST NUMBER: 8865-NCAP-08

CALSPAN CORPORATION
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225

May 14, 2009

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
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Prepared by:

James Czarnecki, Project Engineer

Approved by:

David J. Travale, Program Manager
Transportation Science Center

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16. Abstract

A 56.3 km/h Validation Frontal Impact Test was conducted on a 2010 Ford Mustang 2-door coupe in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The test was conducted at the Calspan test facility in Buffalo, New York, on May 14, 2009.

The impact velocity of the vehicle was 57.0 km/h, and the ambient temperature at the barrier face at the time of impact was 21°C. The target vehicle post-test maximum crush was 382 mm. The test vehicle's performance is as follows:

	Driver ATD			**Passenger ATD**		
Measurement Description	**Units**	**Threshold**	**Result**	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{15})	N/A	700	505.9	N/A	700	215.3
Maximum Chest Compression	mm	63	32.1	mm	52	19.8
Nij	n/a	1	0.30	n/a	1	0.53
Neck Tension	Newtons	4170	1279.8	Newtons	2620	1014.8
Neck Compression	Newtons	4000	-29.8	Newtons	2520	-205.4
Left Femur Force	Newtons	10008	-2136.8	Newtons	6805	-1283.9
Right Femur Force	Newtons	10008	-1532.3	Newtons	6805	-599.4

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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This section briefly outlines the purpose for conducting the frontal impact test and states the appropriate test procedure followed during the test. The following is provided as an example.

This 57.0 km/h 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. DTNH22-06-D-00024. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 57.0 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2010 Ford Mustang 2-Door Coupe at a velocity of 57.0 km/h. The test was performed at Calspan Test facility on May 14, 2009. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

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.

One Part 572E 50th percentile male anthropomorphic test device (ATD), was placed in the driver seating position and one Part 572O ^{5th} percentile female ATD was placed in the right-front passenger according to dummy placement instructions specified in the Frontal NCAP Laboratory Test Procedure.

Both ATDs were fully instrumented with head , chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also 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. 064) and the right-front passenger (position 2) ATD (Serial No. 143) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 126 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.

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 static crush of the vehicle was 382 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: Airbag, head restraint and knee bolster. The passenger's visible contact points were as follows: Airbag, head restraint and knee bolster.

The occupant data is summarized below:

ATD Position	HIC_{15}	T^1	T2	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Compression (N)	Left Femur (N)	Right Femur (N)
Driver (50^{th})	505.9	56.0	71.0	-32.1	0.30	1279.8	-29.8	-2136.8	-1532.3
Passenger (5^{th})	215.3	54.6	69.7	-19.8	0.53	1014.8	-205.4	-1283.9	-599.4

SECTION 2
DATA SHEETS

DATA SHEET NO. 1 GENEREL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

TEST VEHICLE INFORMATION AND VEHICLE OPTIONS

NHTSA No.	MA0202	Anti-Lock Brakes	Yes
Model Year	2010	All-Wheel Drive	No
Make	Ford	Power Steering	Yes
Model	Mustang	Driver Front Airbag	Yes
Body Style	2-door Coupe	Driver Side Airbag	Yes
VIN	1ZVBP8AN3A5100933	Drive Head Airbag	NA
Body Color	Gray	Driver Curtain Airbag	Yes
Delivery Date	5/5/09	Driver Knee Bag	No
Odometer Reading (km/mi)	7	Pass. Front Airbag	Yes
Dealer	Manual	Pass. Side Airbag	Yes
Transmission	5	Pass. Head Airbag	NA
Final Drive	Rear	Pass. Curtain Airbag	Yes
Type/No. Cylinders	6	Pass. Knee Bag	No
Engine Displacement (L)	4.0	Pretensioners	Yes
Engine Placement	Lateral	Load Limiters	Yes
Roof Rack	No	Air Conditioning	Yes
Sunroof/T-Top	No	AM/FM CD	Yes
Tinted Glass	Yes	Tilting Steering	Yes
Traction Control	Yes	Automatic Door Locks	Yes
Power Brakes	Yes	Power Windows	Yes
Front Disc	Yes	Power Seats	No
Rear Disc	Yes	Other	NA

Does owner's manual provide instructions to turn off automatic door locks? No

DATA FROM MANUFACTORER'S CERTIFICATION LABEL

Manufactured By	Ford Motor Company	GVWR (kg)	2059
Date of Manufacture	03/09	GAWR Front (kg)	993
		GAWR Rear (kg)	1070

VEHICLE SEATING AND WEIGHT CAPACITY DATA

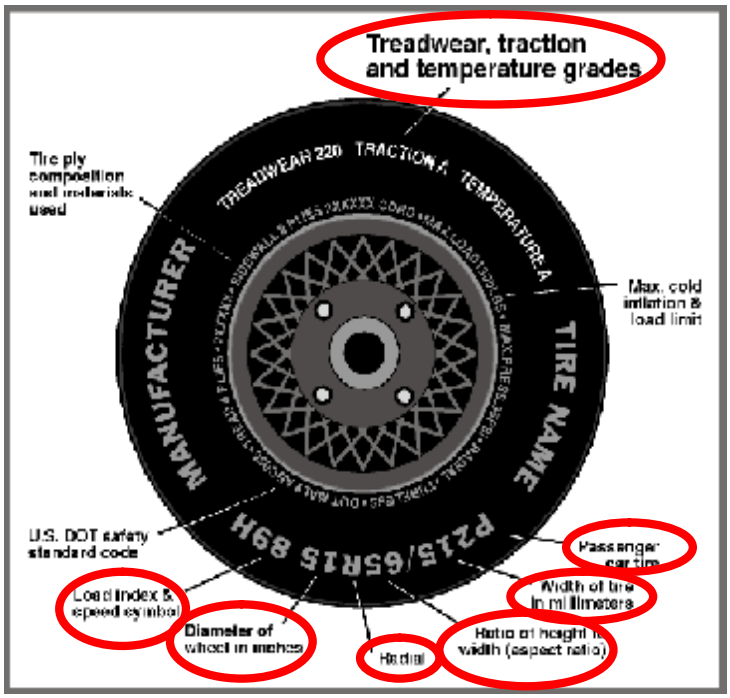
	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	NA	
Designated Seating Capacity (DSC)	2	2	NA	4
Capacity Weight (VCW) (kg)				326
Cargo Weight (RCLW) (kg)				54

VEHICLE SEAT TYPE

	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	X	-	-	-	-	X	-
Rear or Second Row Seat	-	-	-	X	X	-	-
Third row seat	NA	NA	NA	NA	NA	NA	NA

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

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009



Measured Parameter	Front	Rear
Maximum Tire Pressure	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P215/60R17	P215/60R17
Tire Size on Vehicle	P215/60R17	P215/60R17
Tire Manufacturer	BF Goodrich	BF Goodrich
Tire Model	Traction TA	Traction TA
Treadwear	620	620
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	-	-
Tire Plies Body	-	-
Load Index/Speed Symbol	95T	95T
Tire Material	Rubber	Rubber
DOT Safety Code Right	-	-
DOT Safety Code Left	-	-

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

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	425.5	348.5		443.0	429.0	
Right	kg	414.5	360.5		430.0	433.0	
Ratio	%	54.2	45.8		50.3	49.7	
Totals	kg	840.0	709.0	1549.0	873.0	862.0	1735.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1549.0
Weight of 1 P572E ATD & 1 P5720 ATD	kg	141.0
Rated Cargo/Luggage Weight (RCLW)	kg	54.0
Calculated Vehicle Target Weight (TVTW)	kg	1744.0

TEST VEHICLE ATTITUDE AND CG CALCULATION

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	735	737	764	759	1245
Pre-Test	mm	726	729	729	724	1351
As Tested	mm	732	731	734	734	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2721
Total Vehicle Length at Left Side	mm	4694
Total Vehicle Length at Centerline	mm	4779
Total Vehicle Length at Right Side	mm	4694
Weight of Ballast in Cargo Area	kg	35
Weight of Vehicle Components Removed	kg	0
Amount of Stoddard Solvent in Fuel Tank	L	56.0

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT:

None

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

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4779
2	Total Width	1840
3	Bumper Top Height	505
4	Bumper Bottom Height	381
5	Longitudinal Member Top Height	509
6	Distance Between Longitudinal Members	898
7	Longitudinal Member Width	71
8	Engine Top Height	943
9	Engine Bottom Height	190
10	Engine and Gearbox Width	533
11	Front Bumper-Engine Distance	790
12	Front Shock Absorber Fixing Height	913
13	Bonnet Leading Edge Height	743
14	Front Shock Absorber Fixing Width	1086
15	Front Bumper – Front Axle Distance	930
16	Front Axle – A Pillar Distance	3848
17	A- Pillar – B-Pillar Distance	1352
18	B-Pillar – Rear Axle Distance	639
19	B-Pillar – C-Pillar Distance	739
20	Roof Sill Bottom Height	1281
21	Roof Sill Top Height	1376
22	Floor Sill Bottom Height	252
23	Floor Sill Top Height	372

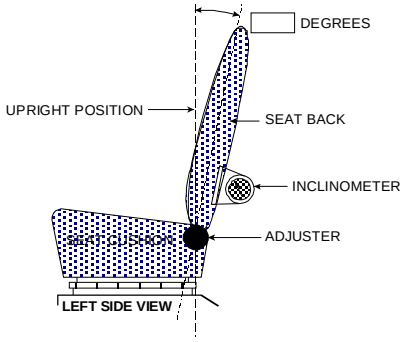
DATA SHEET NO. 2 - SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

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.

	Degrees
Driver w/Seated Dummy	13
Passenger w/Seated Dummy	18



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

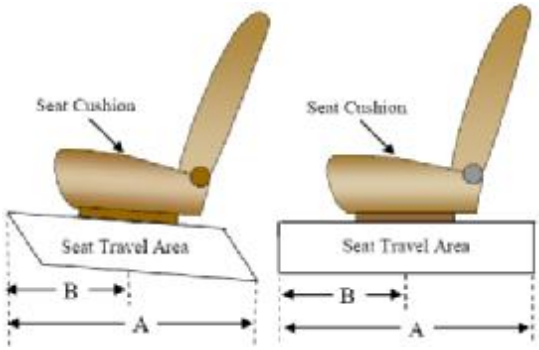
Describe the method used for positioning seat fore/aft positions:
Full up/forward to full down/rearward using front face of seat cushion

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	270 mm	Notch 11 from 0 - 135 mm
Passenger Seat	0-24 detents – 237 mm	0 – Full forward

SEAT BELT ANCHORAGES

Describe the method used for positioning seat belt upper anchorages:
NA

	Total # of Positions	Placed in Position #
Driver Seat	NA	NA
Passenger Seat	NA	NA



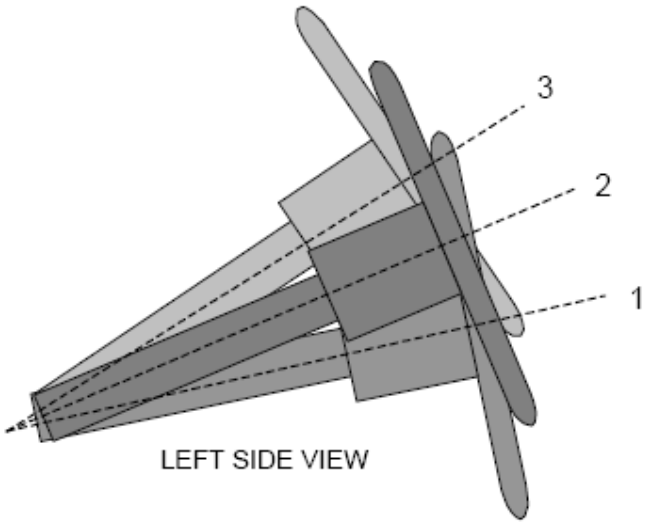
DATA SHEET NO. 2 (CONT.) - SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard" Fuel Tank	60.6
Usable Capacity of "Optional" Fuel Tank	-
92% -94% of Usable Capacity	55.7 to 56.9
Actual Amount of Solvent Used	56.0

Describe the fuel system – what type of fuel pump, details about how it operates. Etc.
Fuel filler is on left side of vehicle.
Fuel lines run along left frame rail.
Fuel tank is fore of rear axle.



STEERING COLUMN ASSEMBLY

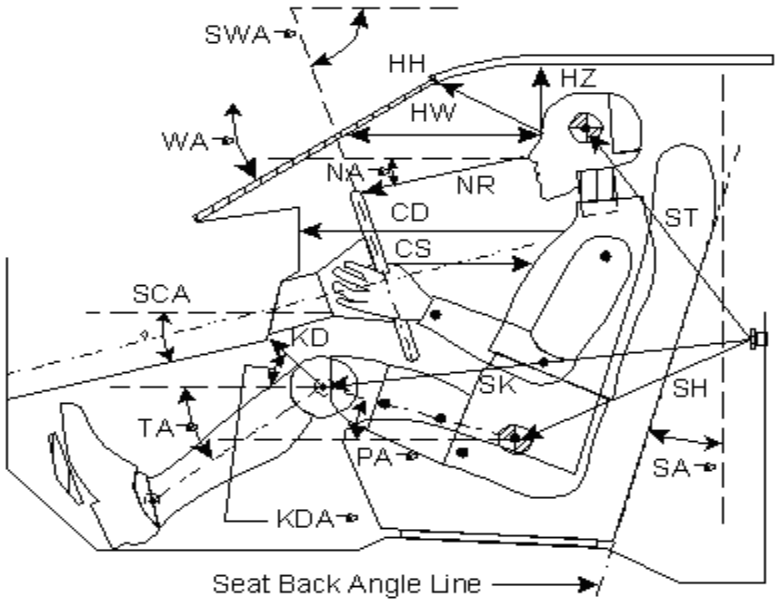
STEERING COLUMN ADJUSTMENT
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. Describe how this measurement was taken.
Angle measurements taken at full up to full down.
Center of loci is middle angle.

STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position No. 1	68.9	NA
Geometric Center Position No. 2 *	66.75	NA
Uppermost Position No. 3	64.6	NA
Telescoping Steering Wheel Travel	NA	NA
Test Position	NA	NA

DATA SHEET NO. 3 – DUMMY LONGITUNAL CLEARANCE DIMENSIONS

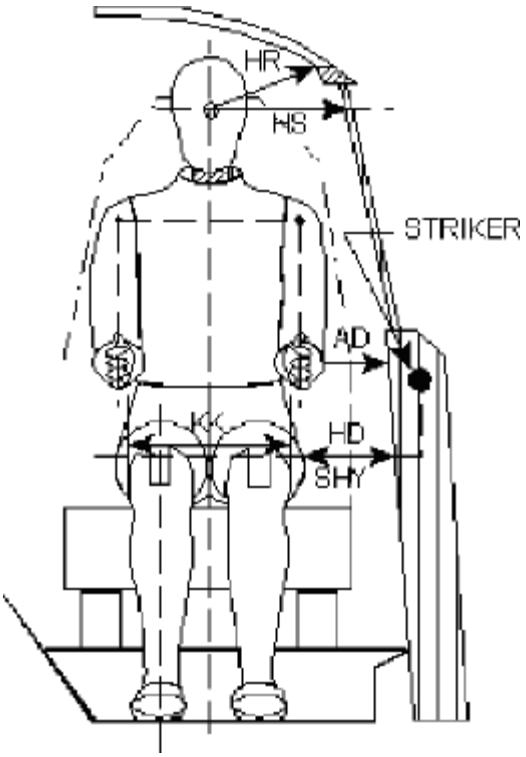
Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009



Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle(°)	Length (mm)	Angle (°)
WA°	Windshield Angle		28		
SWA°	Steering Wheel Angle		67		
SCA°	Steering Column Angle		23		
SA°	Seat Back Angle (on headrest post)		13		18
HZ	Head to Roof (Z)	186		199	
HH	Head to Header	330		261	
HW	Head to Windshield	551		489	
HR	Head to Side Header (Y)	226		241	
NR	Nose to Rim	359	5		
CD	Chest to Dash	526		426	
CS	Chest to Steering Hub	277			
RA	Rim to Abdomen	178			
KDL	Left Knee to Dash	143	31	75	
KDR	Right Knee to Dash	107		85	45
PA°	Pelvic Angle		23.3		20.0
TA°	Tibia Angle		43.9		43.0
SK	Striker to Knee	861	91	985	99
ST	Striker to Head	564	45	621	54
SH	Striker to H-Point	550	120	641	114

DATA SHEET NO. 4 – DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

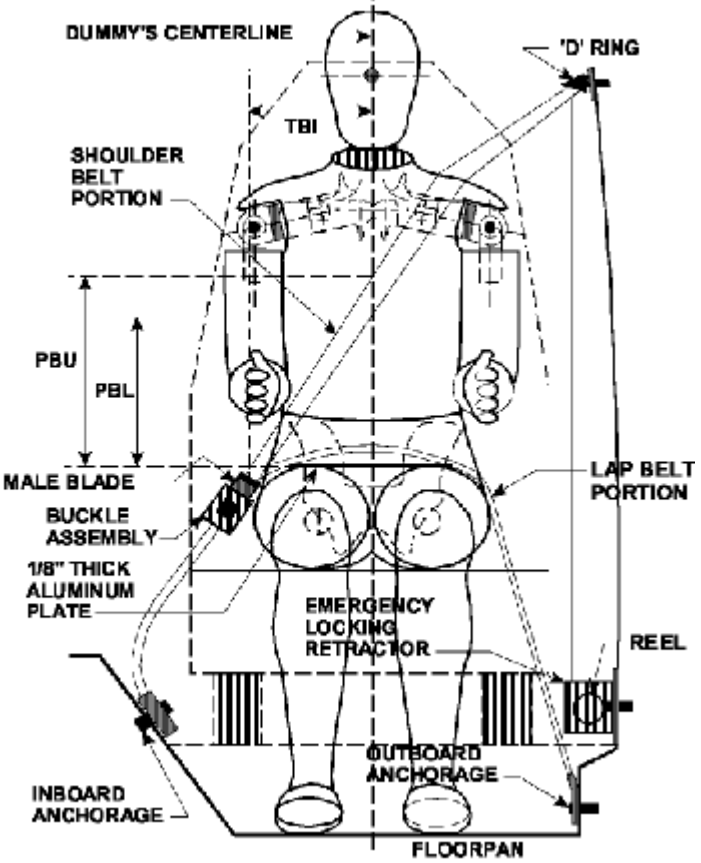


Code	Description	Driver	Passenger
AD	Arm to Door	111	154
HD	H-Point to Door	129	152
HR	Head to Side Header	226	241
HS	Head to Side Window	370	336
KK	Knee to Knee	324	170
SHY	Striker to H-Point (Y Direction)	261	253
AA	Ankle to Ankle	356	175

DATA SHEET NO. 5 – SEAT BELT POSITIONING DATA

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

SEAT BELT POSITIONING DATA



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

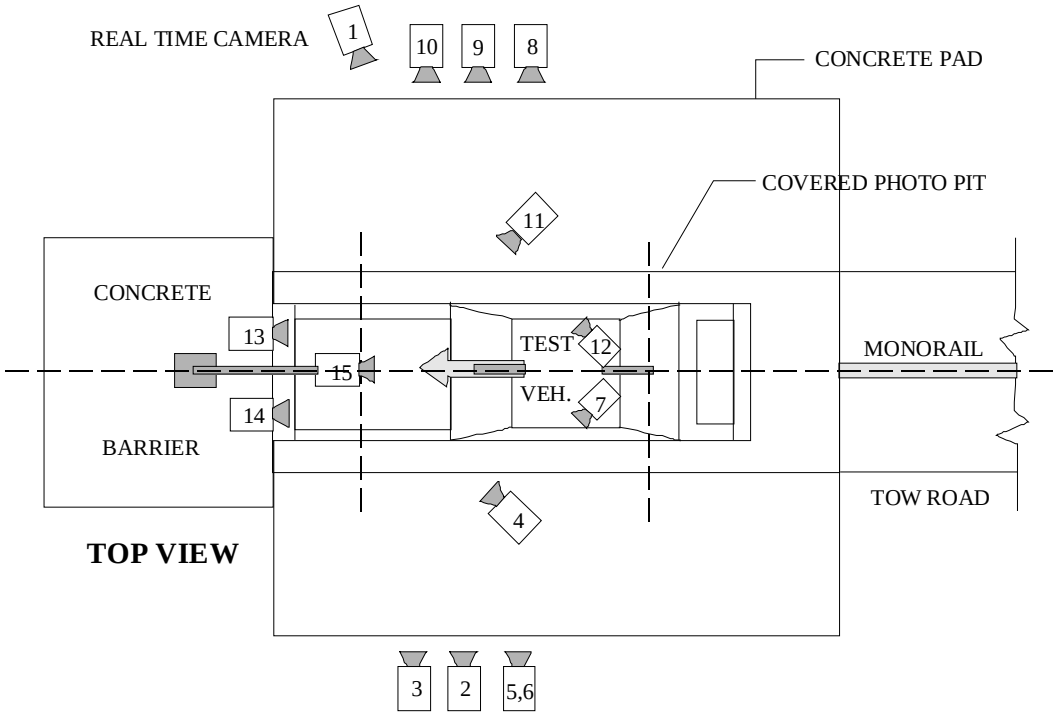
Measurement Description	Units	Driver	Passenger
PBU — Top surface of aluminum plate to belt upper edge	mm	327	269
PBL — Top surface of aluminum plate to belt lower edge	mm	247	181

BELT LENGTH DATA

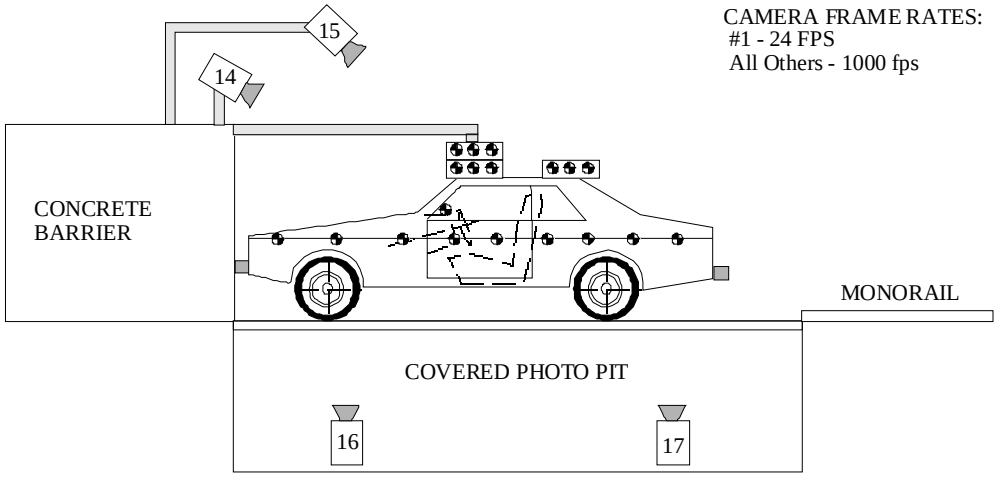
Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	1080	1180
Lap Belt Length as measured on ATD	mm	840	880
Remainder of belt on reel	mm	107	110
Total belt length for continuous webbing systems	mm	2027	2170

DATA SHEET NO. 6 – CAMERA LOCATIONS AND DATA

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009



TOP VIEW



CAMERA FRAME RATES:
#1 - 24 FPS
All Others - 1000 fps

LEFT SIDE VIEW

DATA SHEET NO. 6 (CONT.) – CAMERA LOCATIONS AND DATA

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

CAMERAS

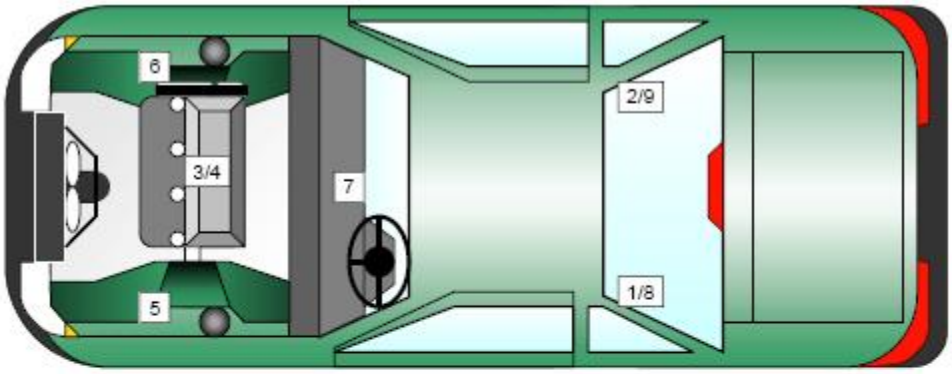
No.	Camera View	Location** (mm)			Angle (deg)***	Film Plane to Head Target	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	-
2	Overall Left Side	7476	2240	970	-2	7130	28	1000
3	Left Side A-Pillar	9310	1590	970	-3	8946	50	1000
4	Left Side B-Pillar	6936	3480	2050	-13	6572	50	1000
5	Steering Column, Upper	7301	2490	1190	-4	6937	28	1000
6	Steering Column, Lower	7301	2490	1820	-8	6937	28	1000
7	Driver's Seat Belt	-	-	-	-	-	-	-
8	Overall Right Side	7206	2465	880	-2	7570	28	1000
9	Right Side A-Pillar	9380	1920	1148	-2	9744	50	1000
10	Passenger-IP View	7116	3365	1880	-11	7480	50	1000
11	Right Side B-Pillar	7580	2365	1185	-3	7944	50	1000
12	Passenger's Seat Belt	-	-	-	-	-	-	-
13	Overhead Passenger View	620	-92	1987	-33	-	24	500
14	Overhead Driver View	620	-92	1987	-31	-	24	500
15	Overhead Windshield View	0	-530	3374	-47	-	25	500
16	Pit View of Engine Compartment	0	615	-3048	90	-	12.5	500
17	Pit View of Fuel Tank	0	2504	-3048	90	-	12.5	500

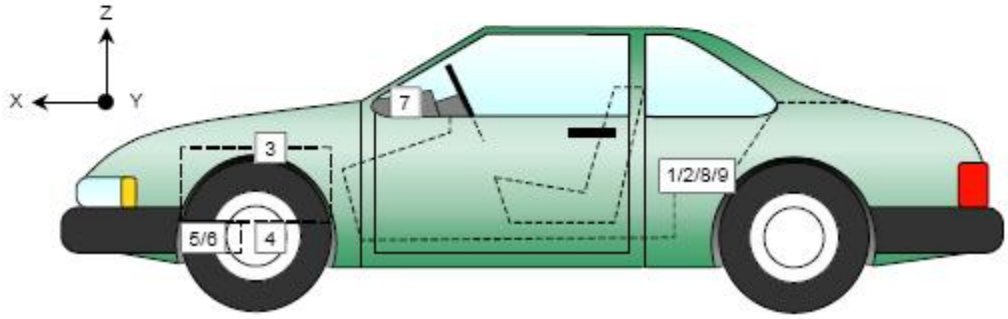
** COORDINATES:
X = film plane to impact location
Y = film plane to impact location
Z = film plane to ground

*** Referenced to horizontal

DATA SHEET NO. 7 – VEHICLE ACCELEROMETER DATA

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009





No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear X-Member X	1828	-658	585
2	Right Rear X-Member X	1833	660	583
3	Engine Top X	3719	67	920
4	Engine Bottom X	4538	51	190
5	Left Brake Caliper X	3771	-681	466
6	Right Brake Caliper X	3775	696	465
7	Left Rear X-Member Z	1828	-658	585
8	Right Rear X-Member Z	1833	660	583

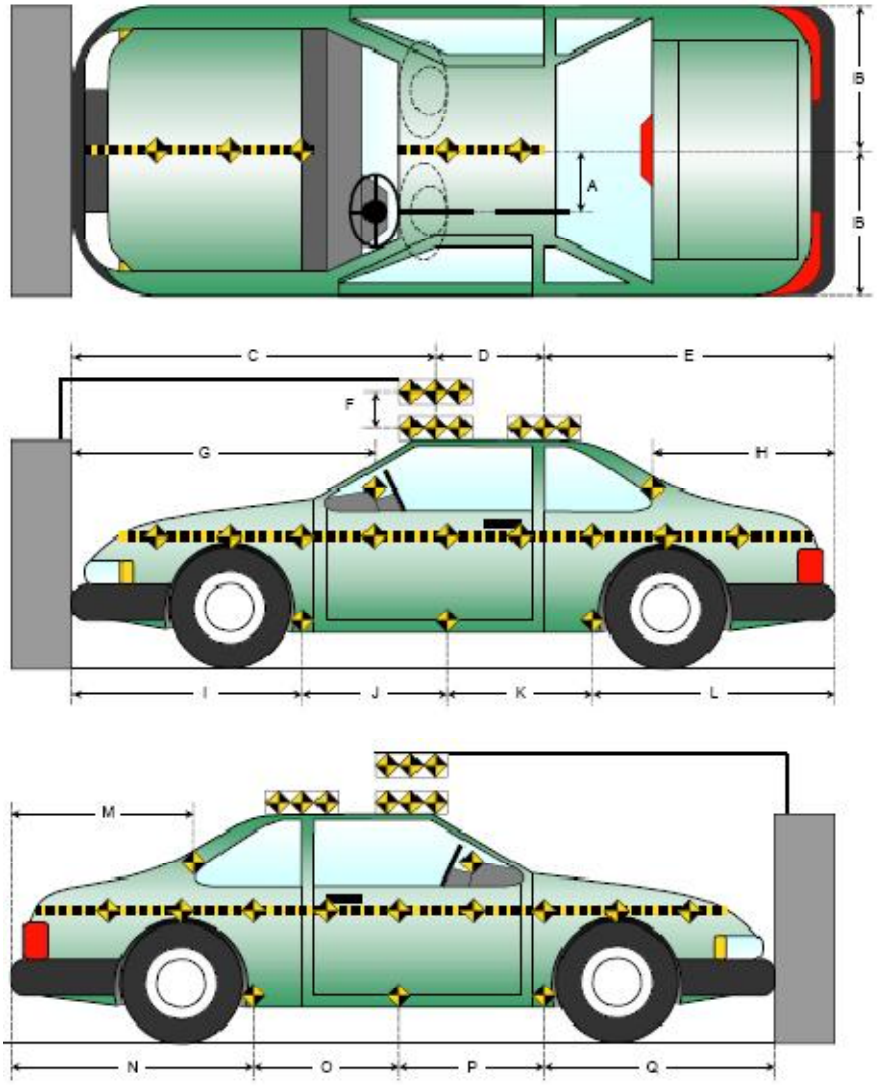
Reference Points: X – Rear Surface of Vehicle (+ forward)
Y – Vehicle Centerline (+ to right)
Z – Ground Plane (+ up)

DATA SHEET NO. 8 – PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

Item	Value*
A	364
B	631
C	2395
D	1218
E	1471
F	-
G	-
H	1026
I	1434
J	878
K	996
L	1585
M	1026
N	1434
O	878
P	996
Q	1585

*All units in mm



DATA SHEET NO. 9 – TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

INSTRUMENTATION

Driver Dummy Channels	41
Passenger Dummy Channels	41
Vehicle Structure Accelerometers	8
Barrier Channels	36
Total No. of Contact Switches	0
Total	126

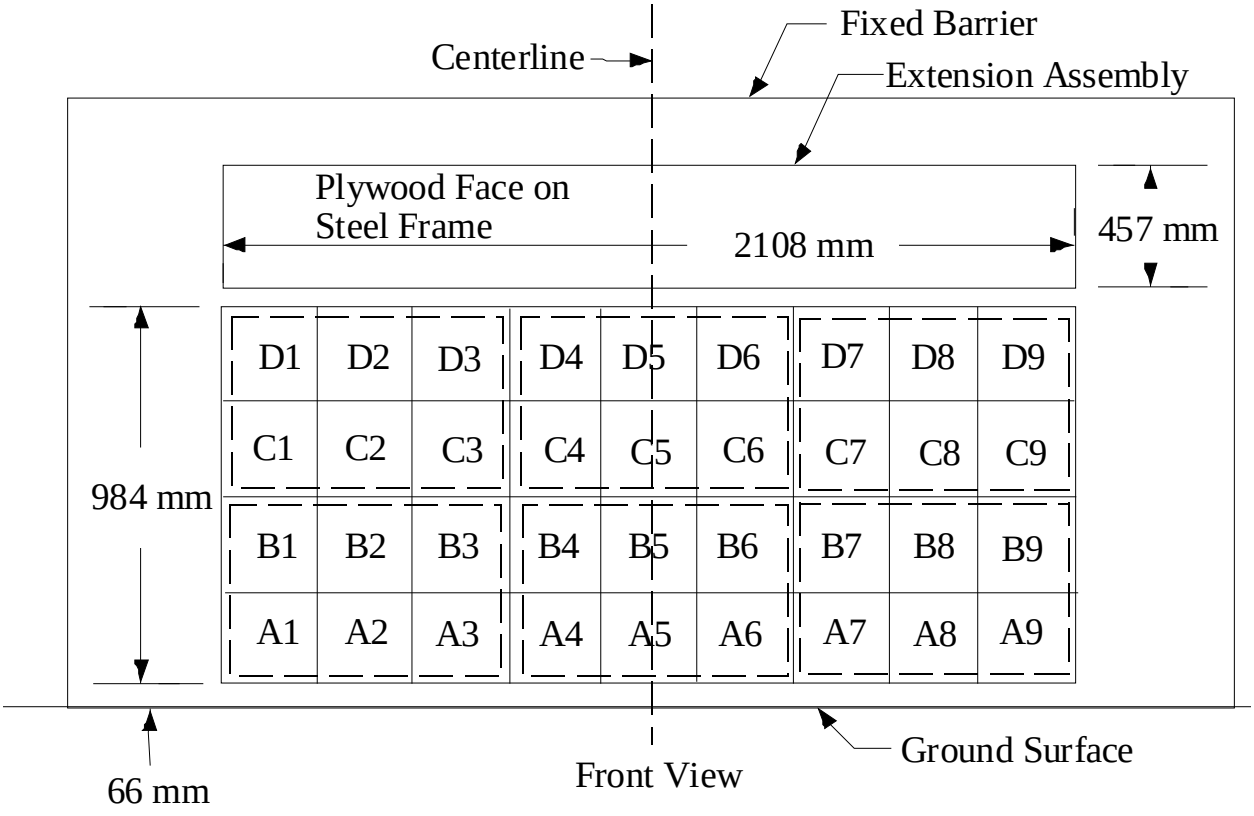
CAMERA COVERAGE

High-Speed Vehicle Onboard	0
High-Speed Offboard	16
High-Speed MDB Onboard	0
Real-Time Panning	1
Total	17

DATA SHEET NO. 10 – LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

36 Load Cell Rigid Barrier
Load Cell Locations on Fixed Barrier



DATA SHEET NO. 11 – POST TEST OBSERVATIONS

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type / Serial No.	HIII / 064	HIII / 143
Head Contact	Airbag / Back of the head to head restraint	Airbag / Back of the head to head restraint
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	-	-
Left Knee Contact	Knee Bolster	Knee Bolster
Right Knee Contact	Knee Bolster	Knee Bolster

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked/Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Closed / Operable	Closed / Operable
Rear Door Opening	NA	NA
Seat Track Shift (mm)	0	0
Seat Back Failure	None	None
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	None
Window Damage	None
Other Notable Effects	Driver side bag deployed / Passenger side did not deploy

VEHICLE REBOUND FROM BARRIER

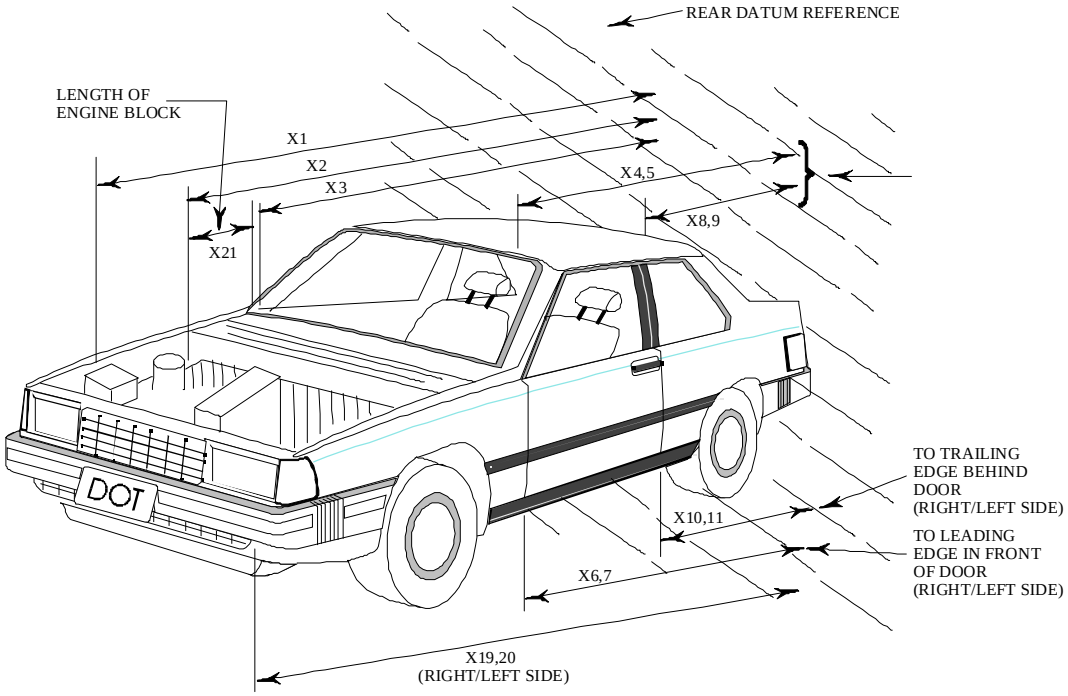
Measured Parameter	Units	Value
Left Side	mm	735
Center	mm	639
Right Side	mm	685
Average	mm	686

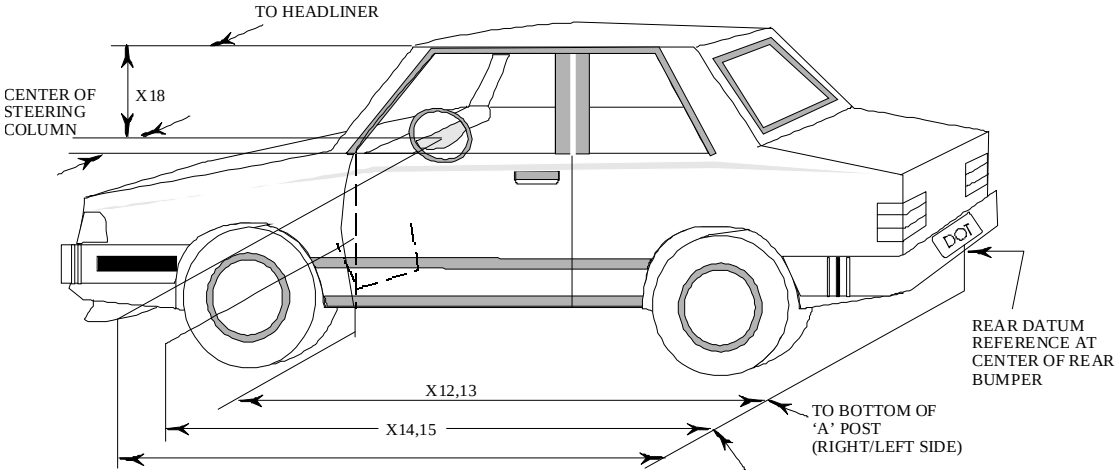
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver (Occupant 1)		Passenger	(Occupant 2)
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	X	X	X	X
Knee Airbag	NA	NA	NA	NA
Side Torso Airbag	NA	NA	NA	NA
Combination Head/Torso Airbag	X	X	X	-
Side Head Curtain/Tube Airbag	NA	NA	NA	NA
Seat Belt Pretensioner	X	X	X	X
Seat Belt Load Limiter	X	X	X	X

DATA SHEET NO. 12 – VEHICLE PROFILE MEASUREMENTS

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009





DATA SHEET NO. 12 (CONT.) – VEHICLE PROFILE MEASUREMENTS*

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4779	4397	382
2	Rear Surface of Vehicle (RSOV) to Front of Engine	3989	3853	136
3	RSOV to Firewall	3480	3445	35
4	RSOV to Upper Leading Edge of Right Door	3072	3070	2
5	RSOV to Upper Leading Edge of Left Door	3070	3069	1
6	RSOV to Lower Leading Edge of Right Door	3040	3036	4
7	RSOV to Lower Leading Edge of Left Door	3038	3038	0
8	RSOV to Upper Trailing Edge of Right Door	1773	1772	1
9	RSOV to Upper Trailing Edge of Left Door	1772	1772	0
10	RSOV to Lower Trailing Edge of Right Door	1923	1920	3
11	RSOV to Lower Trailing Edge of Left Door	1921	1921	0
12	RSOV to Bottom of “A” Post of Right Side	3137	3134	3
13	RSOV to Bottom of “A” Post of Left Side	3135	3133	2
14	RSOV to Firewall, Right Side	3411	3370	41
15	RSOV to Firewall, Left Side	3417	3405	12
16	RSOV to Steering Column	2641	2621	20
17	Center of Steering Column to “A” Post	287	289	-2
18	Center of Steering Column to Headliner	385	368	17
19	RSOV to Right Side of Front Bumper	4694	4329	365
20	RSOV to Left Side of Front Bumper	4694	4313	381
21	Length of Engine Block	453	453	0
RD	RSOV to Right Side of Dash Panel	2798	2800	-2
CD	RSOV to Center of Dash Panel	2841	2839	2
LD	RSOV to Left Side of Dash Panel	2798	2796	2

*All dimensions in mm

DATA SHEET NO. 13 – ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

VEHICLE INFORMATION

VIN: 1ZVBP8AN3A5100933 Wheelbase: 2721

Vehicle Size Category: Coupe Test Weight (kg): 1735.0

ACCELEROMETER DATA

Accelerometer Locations: -

Cal. Procedure/Interval: -

Integration Algorithm: - Linearity: -

Impact Velocity (km/h): 57.0

Velocity Change (km/h): -

Time of Separation (msec): -

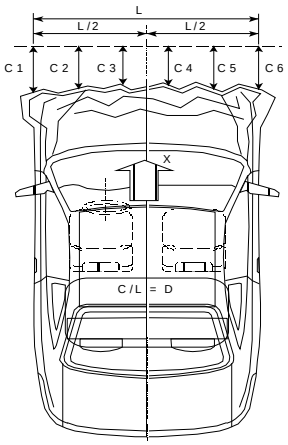
CRUSH PROFILE

Collision Deformation Classification:: 12FDEW2

Midpoint of Damage: 739

Damage Region Length (mm): 147.8

Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4523	4271	252
C2	Crush zone 2 at left side	mm	4692	4322	370
C3	Crush zone 3 at left side	mm	4754	4388	366
C4	Crush zone 4 at right side	mm	4755	4373	382
C5	Crush zone 5 at right side	mm	4692	4315	377
C6	Crush zone 6 at right side	mm	4525	4315	210
L	C1 to C6	mm	1478		

DATA SHEET NO. 14 – VEHICLE INTRUSION MEASUREMENTS

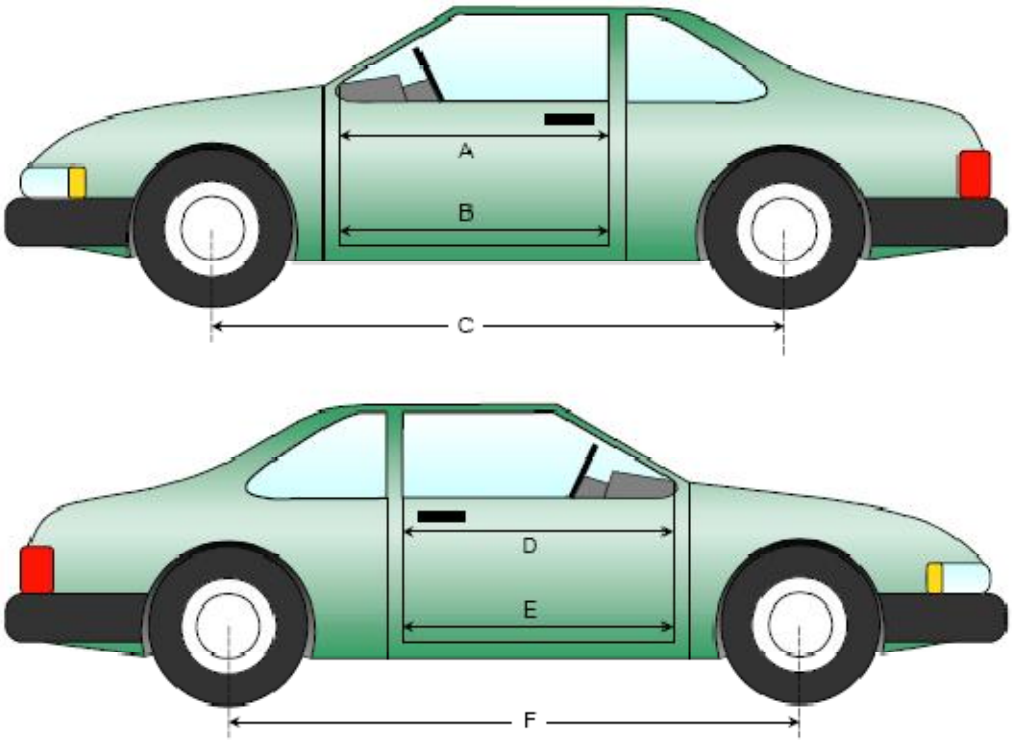
Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1179	1177	2
B	Left Side Lower	mm	-	-	-
D	Right Side Upper	mm	1179	1179	0
E	Right Side Lower	mm	-	-	-

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2721	2638	83
F	Right Side Wheelbase	mm	2723	2677	46



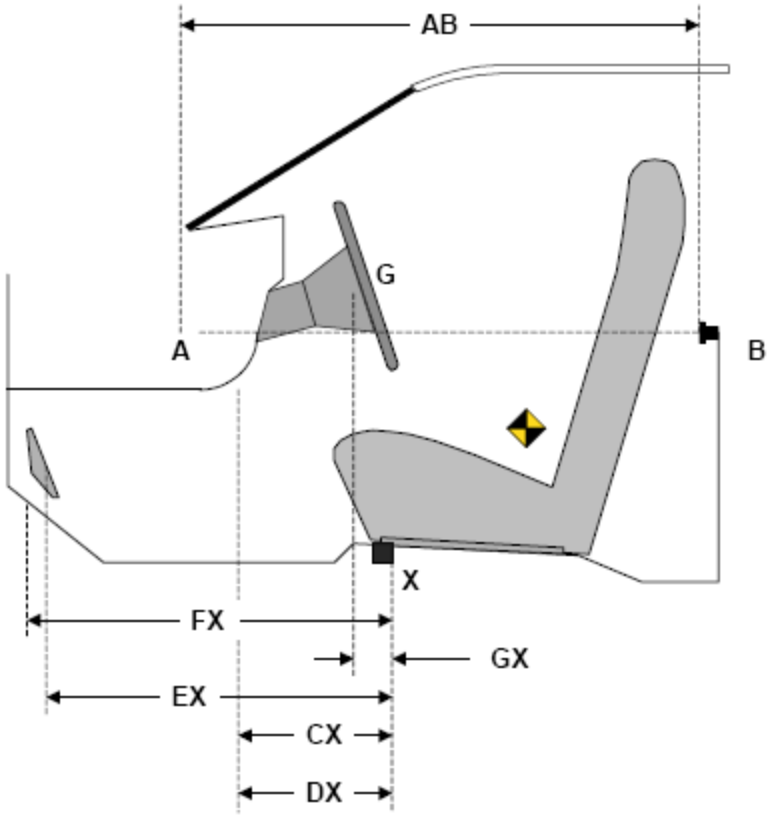
DATA SHEET NO. 14 (CONT.) – VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	1179	1177	2
CX	Left Knee Bolster to X	mm	2831	2834	-3
DX	Right Knee Bolster to X	mm	2791	2788	3
EX	Brake Pedal to X	mm	3166	3119	47
FX	Foot Rest to X	mm	2981	2974	7
GX	Center of Steering Column Wheel Hub to X	mm	813	793	20

X = Front of Seat Track (Stationary)



DRIVER COMPARTMENT

DATA SHEET NO. 14 (CONT.) – VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

All measurements in mm

DRIVER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	3246	3325	3330	3320	3197	3219	3206	3209	49	106	124	111
2	3160	3236	3233	3198	3134	3165	3142	3149	26	71	91	49
3	3114	3136	3131	3138	3098	3110	3113	3130	16	26	18	8
4	3064	3059	3057	3056	3058	3044	3054	3053	6	15	3	3
5	2981	2980	2979	2975	2974	2976	2977	2977	7	4	2	-2

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-607	-472	-350	-237	-612	-466	-344	-239	5	-6	-6	2
2	-607	-472	-352	-237	-615	-464	-349	-224	8	-8	-3	-13
3	-603	-477	-354	-238	-601	-478	-355	-242	-2	1	1	4
4	-607	-479	-354	-239	-597	-483	-359	-244	-10	4	5	5
5	-601	-480	-360	-241	-596	-483	-362	-243	-5	3	2	2

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	426	426	427	425	446	490	493	460	-20	-64	-66	-35
2	348	350	349	350	357	388	383	352	-9	-38	-34	-2
3	279	282	283	284	272	276	268	263	7	6	15	21
4	271	271	272	277	253	247	230	241	18	24	42	36
5	265	269	269	272	247	220	221	237	18	49	48	35

DATA SHEET NO. 14 (CONT.) – VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

All measurements in mm

PASSENGER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	3296	3314	3316	3313	3258	3259	3270	3287	38	55	46	26
2	3233	3243	3241	3244	3202	3184	3206	3221	31	59	35	23
3	3135	3135	3133	3134	3125	3126	3127	3128	10	9	6	6
4	3066	3062	3062	3058	3067	3067	3062	3058	-1	-5	0	0
5	2989	2987	2986	2990	2988	2989	2986	2989	1	-2	0	1

PASSENGER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	217	341	458	576	216	334	456	563	1	7	2	13
2	220	339	460	578	219	337	457	573	1	2	3	5
3	219	338	458	577	223	334	454	577	-4	4	4	0
4	220	338	459	577	222	337	457	576	-2	1	2	1
5	217	338	459	580	216	336	459	578	1	2	0	2

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	456	447	452	450	460	479	483	462	-4	-32	-31	-12
2	355	354	350	350	365	380	364	364	-10	-26	-14	-14
3	292	290	287	284	278	270	270	273	14	20	17	11
4	286	287	283	278	263	242	244	252	23	45	39	26
5	283	277	274	269	260	236	235	248	23	41	39	21

DATA SHEET NO. 15 – SUMMARY OF FMVSS 212 AND 219 (PARTIAL)

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

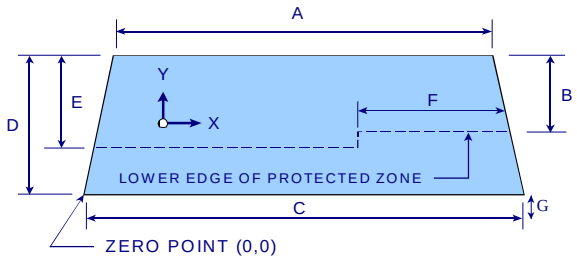
Please provide windshield mounting details.

The standard requires that the post-test retention measurement be a minimum of 75% of the pretest total periphery measurement for vehicles not equipped with occupant passive restraints and 50% for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21ºC

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2076	2076	100
Right Side	2076	2076	100
Total	4152	4152	100



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1235
B	mm	325
C	mm	1507
D	mm	705
E	mm	325
F	mm	570

AREAS OF PROTECTED ZONE FAILURES

A. Provide coordinates of the area that the protected zone was penetrated more than .25 inches by a vehicle component other than one that is normally in contact with the windshield.

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

X	Y
-	-
-	-
-	-
-	-
-	-
-	-

DATA SHEET NO. 16 – FMVSS 301 FUEL SYSTEM INTEGRAITY POST-IMPACT DATA

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

Temperature at Time of Impact: 21ºC Test Time: 14:16

STODDARD SOLVENT SPILLAGE MEASUREMENTS

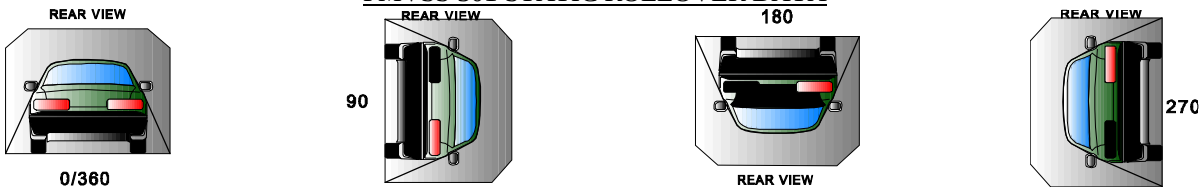
A.	From impact until vehicle motion ceases: (maximum allowable = 1 oz.)	0	oz.
B.	For the 5-minute period after motion ceases: (maximum allowable = 5 oz.)	0	oz,
C.	For the following 25 minutes: (maximum allowable = 1 oz./minute)	0	oz.

D. Spillage Details: None

DATA SHEET NO. 17 – FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

FMVSS 301 STATIC ROLLOVER DATA



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage: None

DATA SHEET NO. 17 (CONT.)– FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	1:10	5	6:10
90° to 180°	1:08	5	6:08
180° to 270°	1:02	5	6:02
270° to 360°	1:12	5	6:12

FMVSS 301 SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0	0	-
90° to 180°	0	0	0	-
180° to 270°	0	0	0	-
270° to 360°	0	0	0	-

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 18 - DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle:	2010 Ford Mustang	NHTSA No.	MA0202
Test Program:	Frontal Validation Testing	Test Date:	May 14, 2009

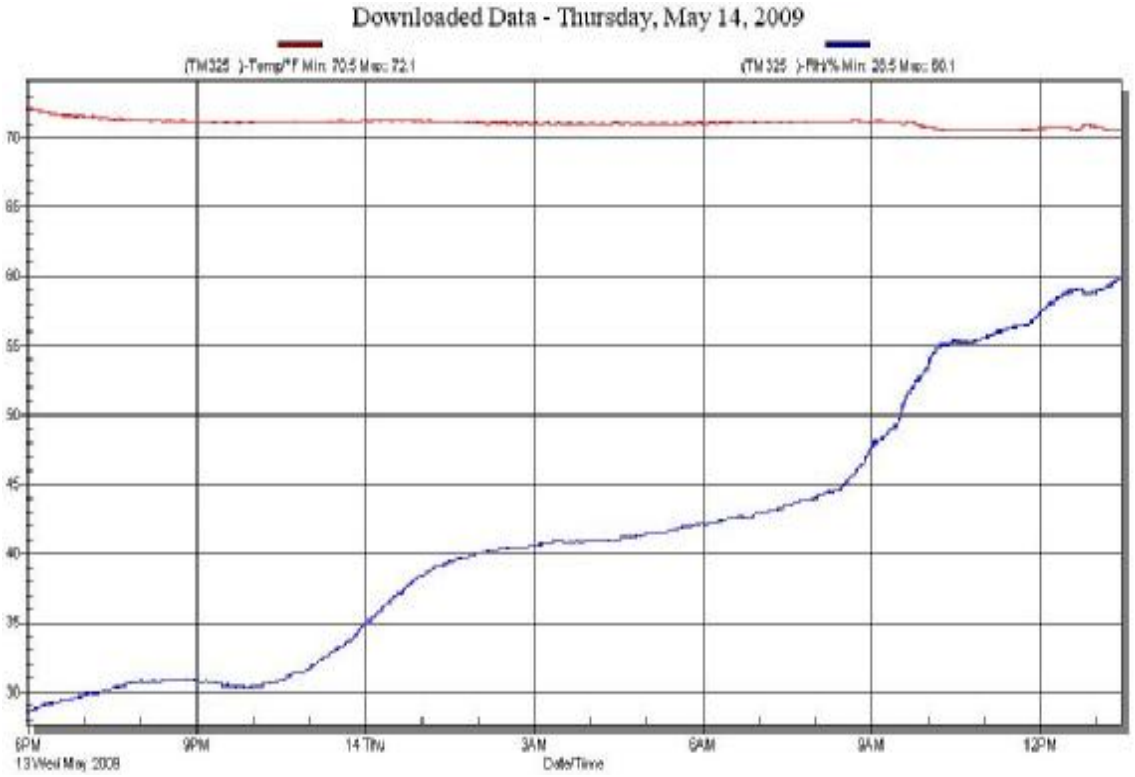


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Figure A-2 Manufacturer's Label

Figure A-3 Tire Placard

Figure A-4 Right Front ¾ View, as Received

Figure A-5 Left Rear ¾ View, as Received

Figure A-6 Pre-test Front View of Test Vehicle

Figure A-7 Post-test Front View of Test Vehicle

Figure A-8 Pre-test Left View of Test Vehicle

Figure A-9 Post-test Left View of Test Vehicle

Figure A-10 Pre-test Right View of Test Vehicle

Figure A-11 Post-test Right View of Test Vehicle

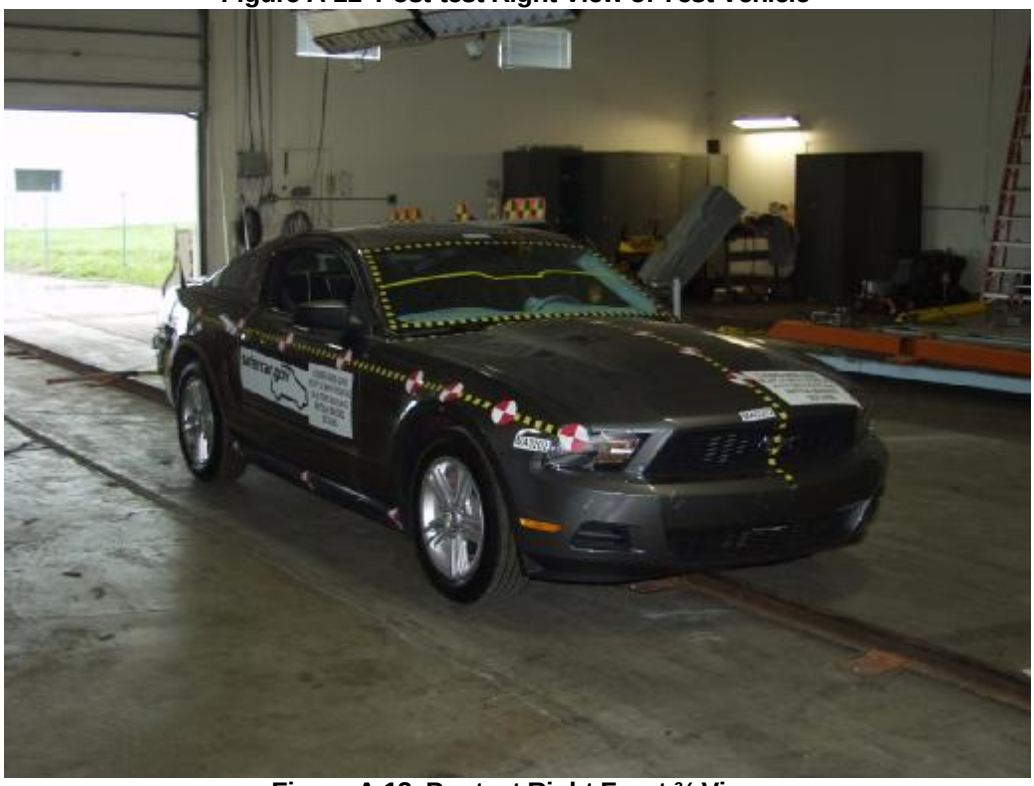

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Figure A-13 Post-test Right Front ¾ View

Figure A-14 Pre-test Left Rear ¾ View

Figure A-15 Post-test Left Rear ¾ View

Figure A-16 Pre-test Windshield View

Figure A-17 Pre-test Windshield View

Figure A-18 Pre-test Engine Compartment View

Figure A-19 Post-test Engine Compartment View

Figure A-20 Pre-test Fuel Filler Cap View

Figure A-21 Post-test Fuel Filler Cap View

Figure A-22 Pre-test Front Underbody View

Figure A-23 Post-test Front Underbody View

Figure A-24 Pre-test Rear Underbody View

Figure A-25 Post-test Rear Underbody View

Figure A-26 Pre-test Dummy Cable Routing

Figure A-27 Post-test Dummy Cable Routing

Figure A-28 Pre-test Driver Dummy Front View

Figure A-29 Post-test Driver Dummy Front View

Figure A-30 Pre-test Driver Dummy Window View

Figure A-31 Post-test Driver Dummy Window View

Figure A-32 Pre-test Driver Dummy and Vehicle Interior View

Figure A-33 Post-test Driver Dummy and Vehicle Interior View

Figure A-34 Pre-test Driver's Seat Fore-Aft Markings

Photo Not Available

Figure A-35 Post-test Driver's Seat Fore-Aft Markings

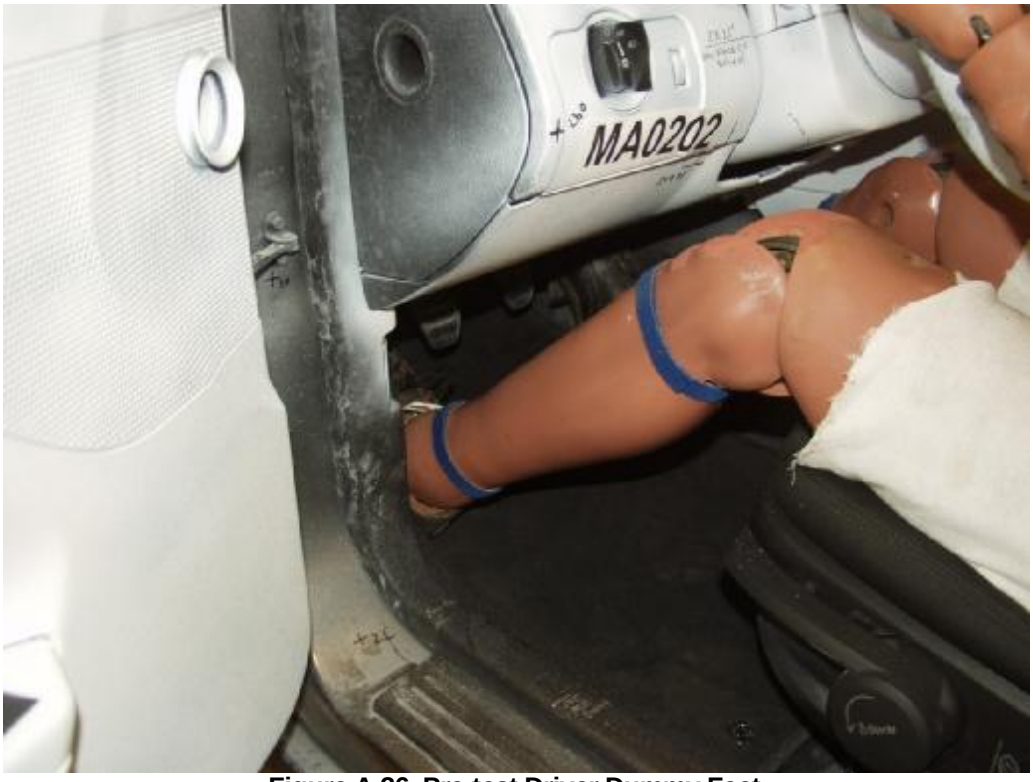


Figure A-36 Pre-test Driver Dummy Feet

Figure A-37 Post-test Driver Dummy Feet

Figure A-38 Pre-test Driver's Side Knee Bolster

Figure A-39 Post-test Driver's Side Knee Bolster

Figure A-40 Pre-test Driver's Side Floorpan

Figure A-41 Post-test Driver's Side Floorpan

Figure A-42 Post-test Driver Dummy Contact With Airbag

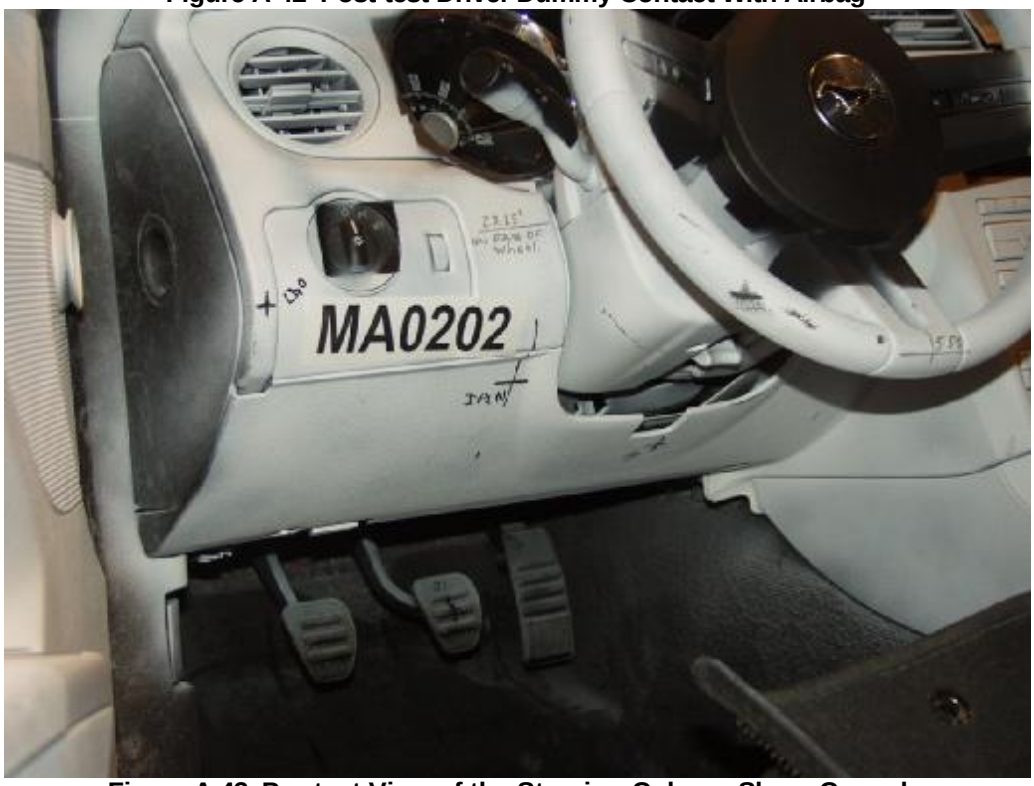


Figure A-43 Pre-test View of the Steering Column Shear Capsule

Figure A-44 Post-test View of the Steering Column Shear Capsule

Figure A-45 Pre-test Passenger Dummy Front View

Figure A-46 Post-test Passenger Dummy Front View

Figure A-47 Pre-test Passenger Dummy Window View

Figure A-48 Post-test Passenger Dummy Window View

Figure A-49 Pre-test Passenger Dummy and Vehicle Interior View

Figure A-50 Post-test Passenger Dummy and Vehicle Interior View

Figure A-51 Pre-test Passenger's Seat Fore-Aft Markings

Photo Not Available

Figure A-52 Post-test Passenger's Seat Fore-Aft Markings

Figure A-53 Pre-test Passenger Dummy Feet

Figure A-54 Post-test Passenger Dummy Feet

Figure A-55 Pre-test Passenger's Side Knee Bolster

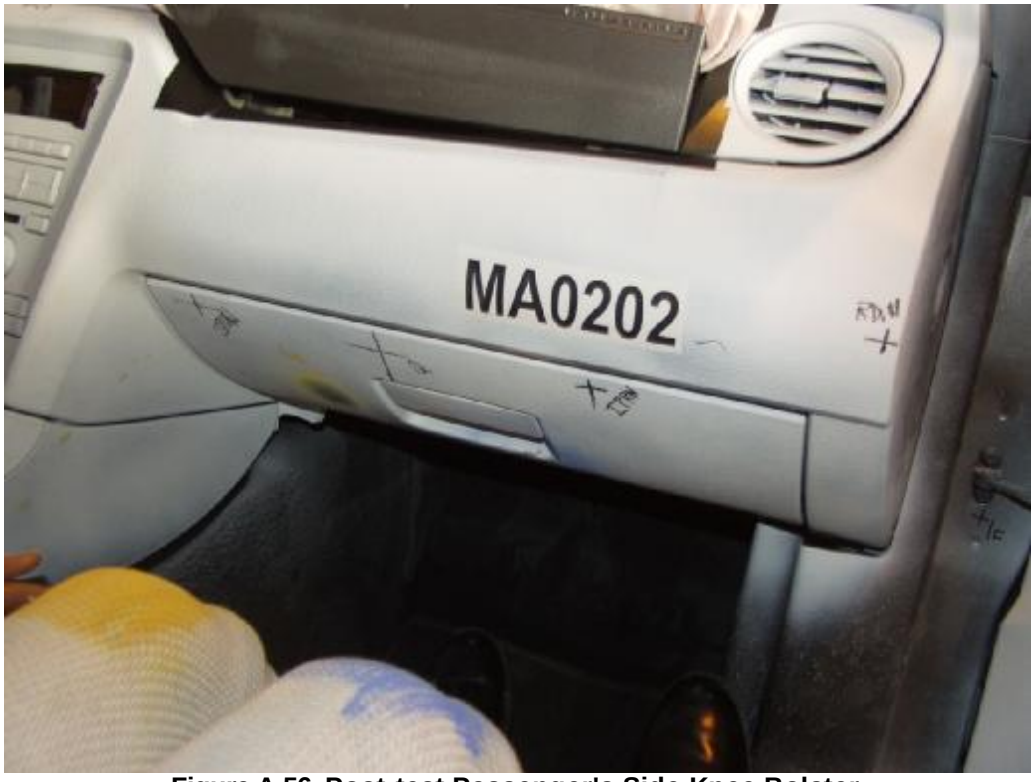


Figure A-56 Post-test Passenger's Side Knee Bolster

Figure A-57 Pre-test Passenger's Side Floorpan

Figure A-58 Post-test Passenger's Side Floorpan

Figure A-59 Post-test Passenger Dummy Contact With Airbag

Photo Not Available – Ballast under steel plate

Figure A-60 Photograph of ballast installed in vehicle

Photo Not Available – No Spillage

Figure A-61 Post-test Stoddard solvent spillage location view

Figure A-62 Post-test Speed Trap Read-out

Figure A-63 Vehicle at 0° on Static Rollover Device

Figure A-64 Vehicle at 90° on Static Rollover Device

Figure A-65 Vehicle at 180° on Static Rollover Device

Figure A-66 Vehicle at 270° on Static Rollover Device

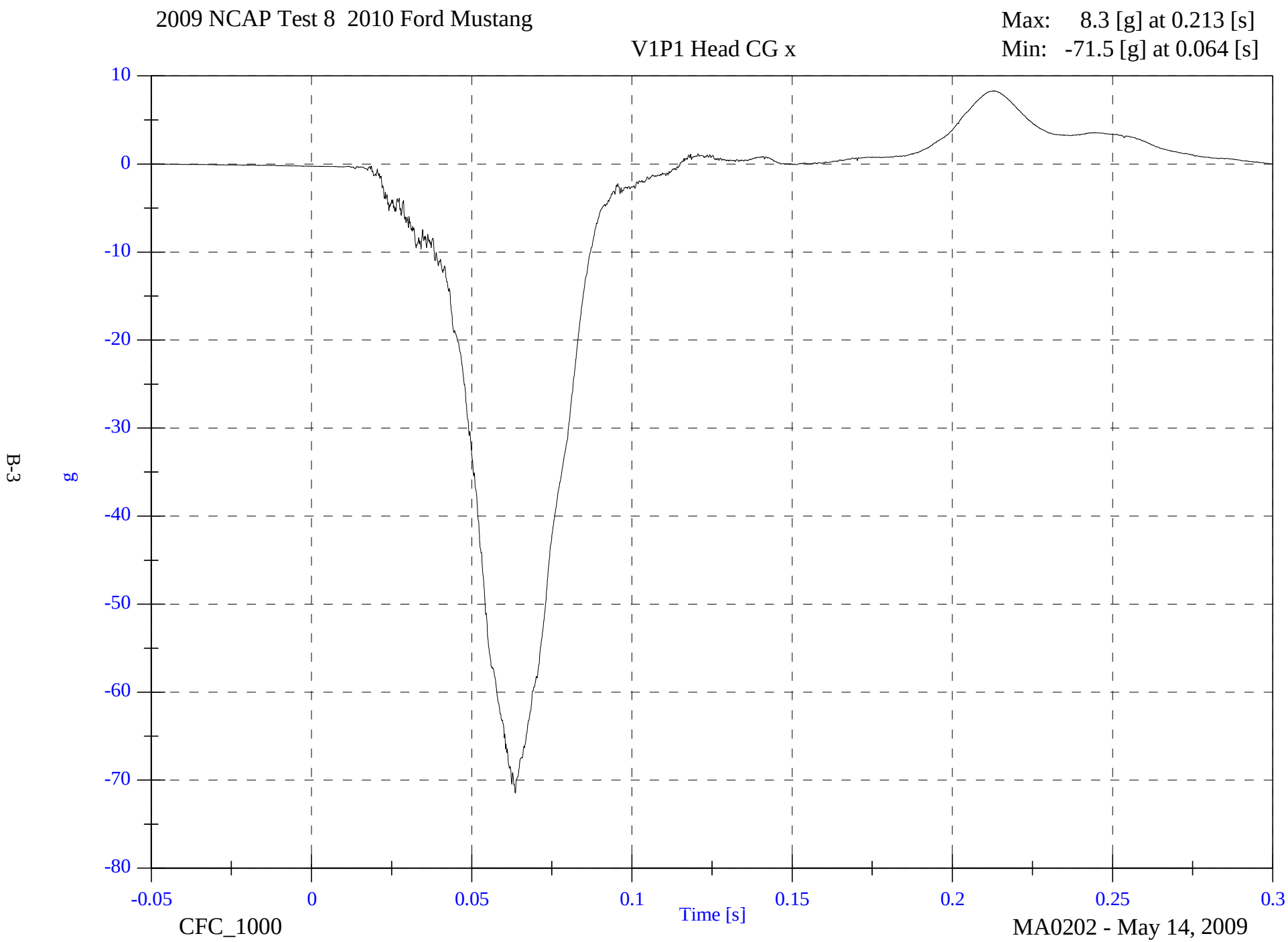
Figure A-67 Vehicle at 360° on Static Rollover Device

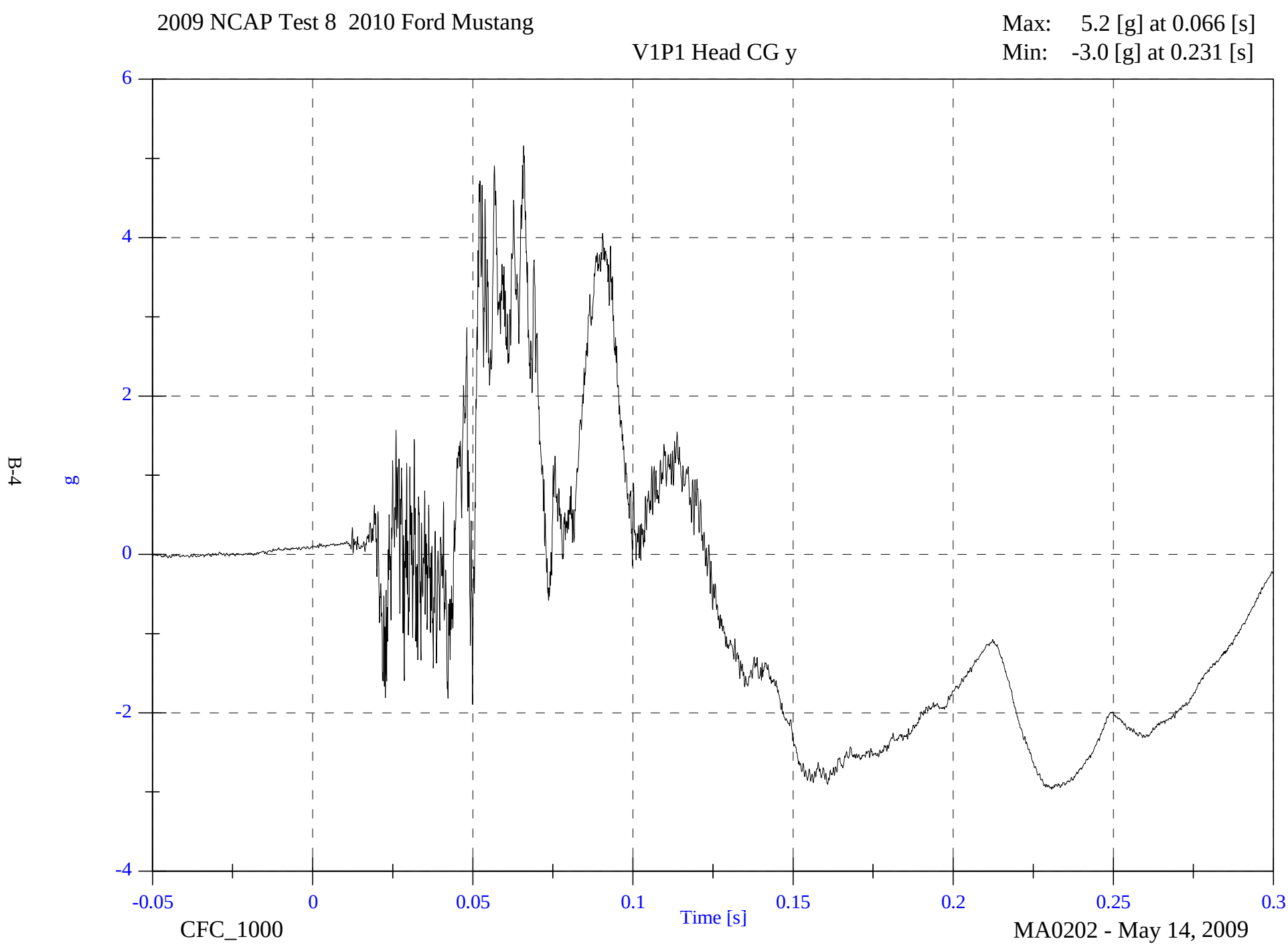
Figure A-68 Impact Photograph

Appendix B

DUMMY RESPONSE DATA TRACES

Fig. No.	List of Data Plots Provided In The Test Report	Page No.
1	Driver Head X Acceleration vs. Time Primary	B-3
2	Driver Head Y Acceleration vs. Time Primary	B-4
3	Driver Head Z Acceleration vs. Time Primary	B-5
4	Driver Head Resultant Acceleration vs. Time Primary	B-6
5	Driver Chest X Deflection vs. Time	B-7
6	Driver Chest X Acceleration vs. Time Primary	B-8
7	Driver Chest Y Acceleration vs. Time Primary	B-9
8	Driver Chest Z Acceleration vs. Time Primary	B-10
9	Driver Chest Resultant Acceleration vs. Time Primary	B-11
10	Driver Upper Neck Force X vs. Time Primary	B-12
11	Driver Upper Neck Force Z vs. Time Primary	B-13
12	Driver Upper Neck Moment Y vs. Time Primary	B-14
13	Driver Nij vs. Time Primary	B-15
14	Driver Left Femur Force vs. Time	B-16
15	Driver Right Femur Force vs. Time	B-17
16	Passenger Head X Acceleration vs. Time Primary	B-18
17	Passenger Head Y Acceleration vs. Time Primary	B-19
18	Passenger Head Z Acceleration vs. Time Primary	B-20
19	Passenger Head Resultant Acceleration vs. Time Primary	B-21
20	Passenger Chest X Deflection vs. Time	B-22
21	Passenger Chest X Acceleration vs. Time Primary	B-23
22	Passenger Chest Y Acceleration vs. Time Primary	B-24
23	Passenger Chest Z Acceleration vs. Time Primary	B-25
24	Passenger Chest Resultant Acceleration vs. Time Primary	B-26
25	Passenger Upper Neck Force X vs. Time Primary	B-27
26	Passenger Upper Neck Force Z vs. Time Primary	B-28
27	Passenger Upper Neck Moment Y vs. Time Primary	B-29
28	Passenger Nij vs. Time Primary	B-30
29	Passenger Left Femur Force vs. Time	B-31
30	Passenger Right Femur Force vs. Time	B-32

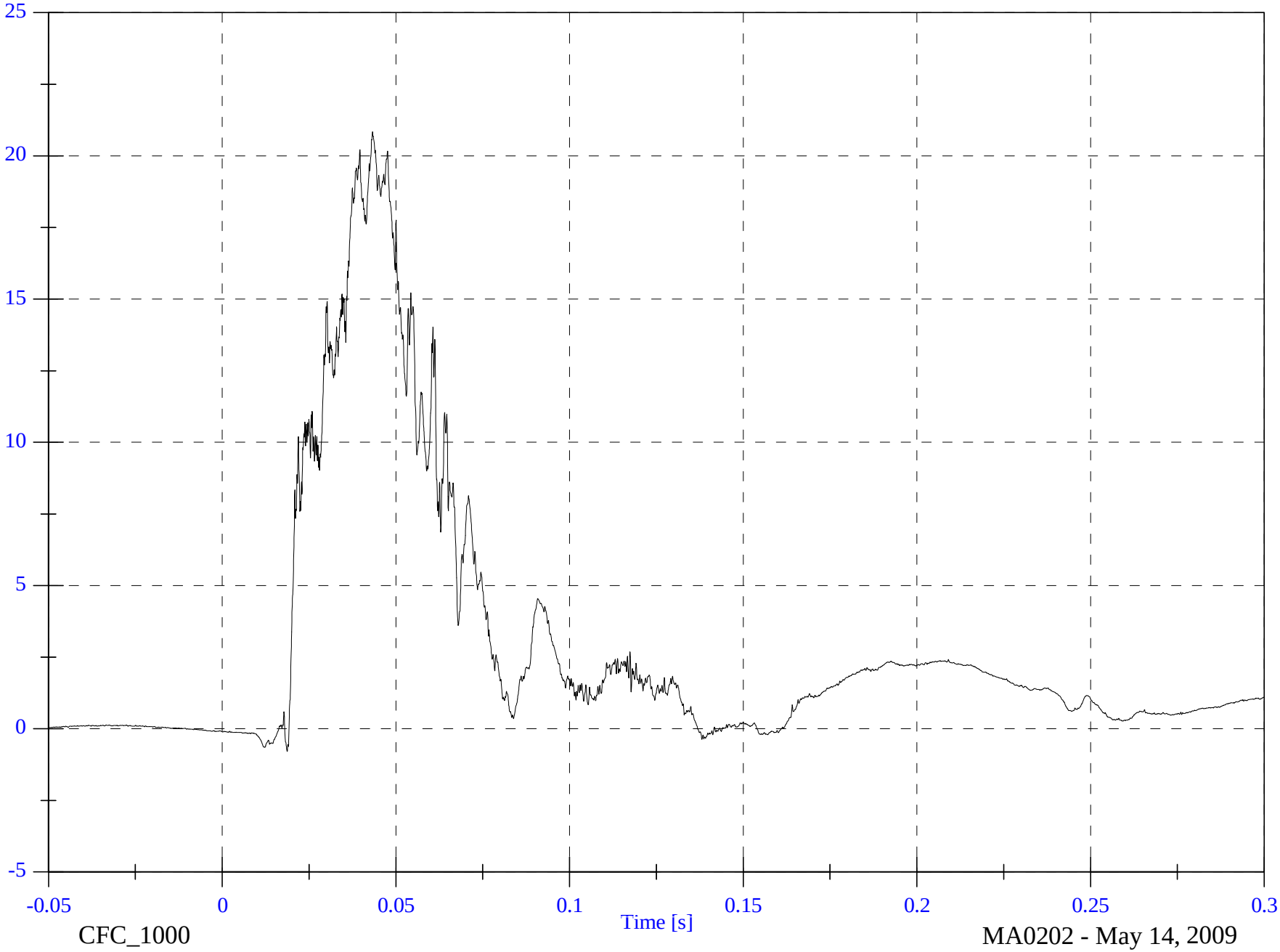

2009 NCAP Test 8 2010 Ford Mustang
V1P1 Head CG x
Max: 8.3 [g] at 0.213 [s]
Min: -71.5 [g] at 0.064 [s]
10
0
-10
-20
-30
-40
-50
-60
-70
-80
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_1000
MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P1 Head CG y
Max: 5.2 [g] at 0.066 [s]
Min: -3.0 [g] at 0.231 [s]
6
4
2
0
-2
-4
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_1000
MA0202 - May 14, 2009

2009 NCAP Test 8 2010 Ford Mustang

V1P1 Head CG z

Max: 20.8 [g] at 0.043 [s]
Min: -0.8 [g] at 0.019 [s]



B-5

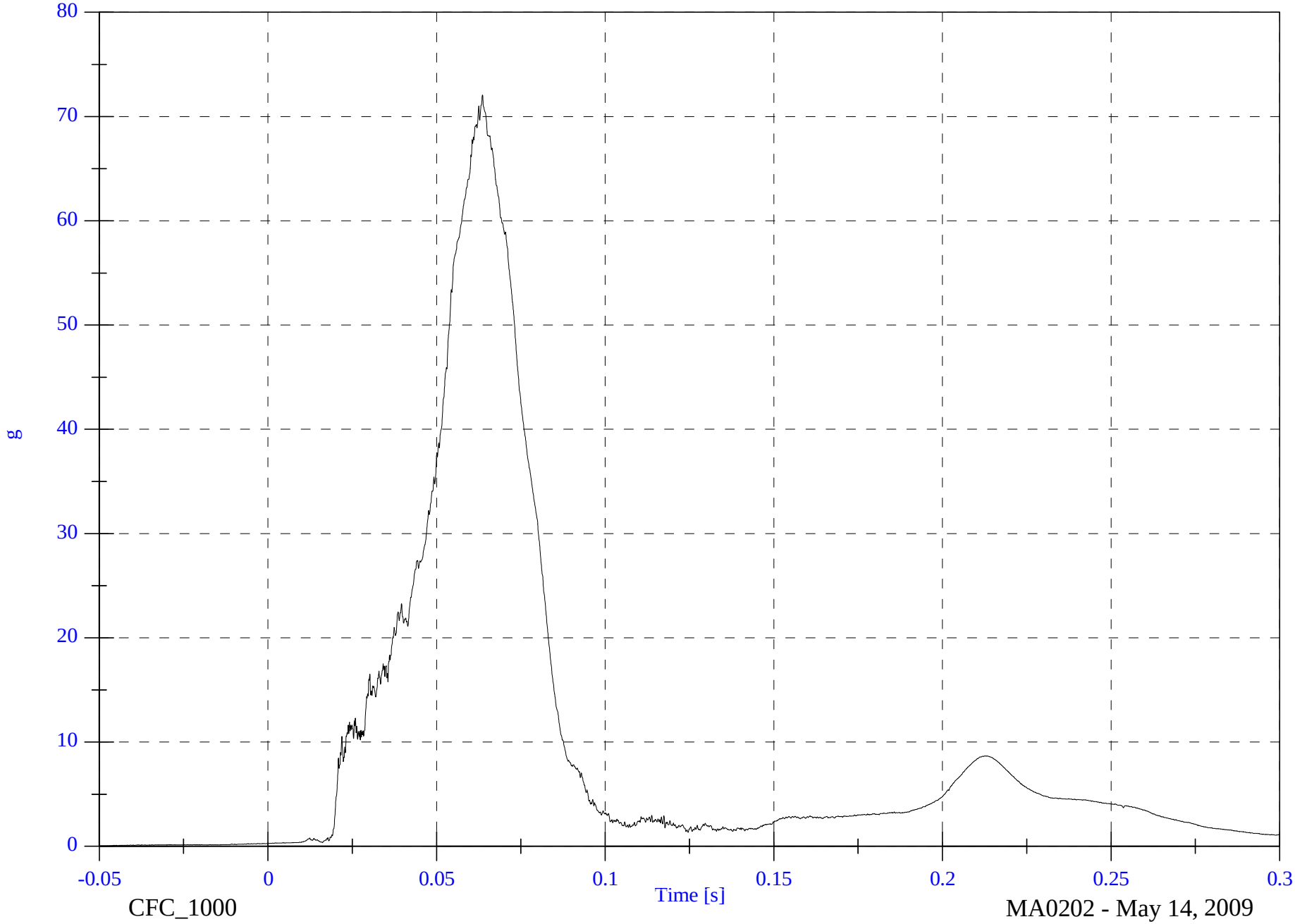
CFC_1000

MA0202 - May 14, 2009

2009 NCAP Test 8 2010 Ford Mustang

V1P1 Head CG Resultant

Max: 72.1 [g] at 0.064 [s]
Min: 0.0 [g] at -0.050 [s]



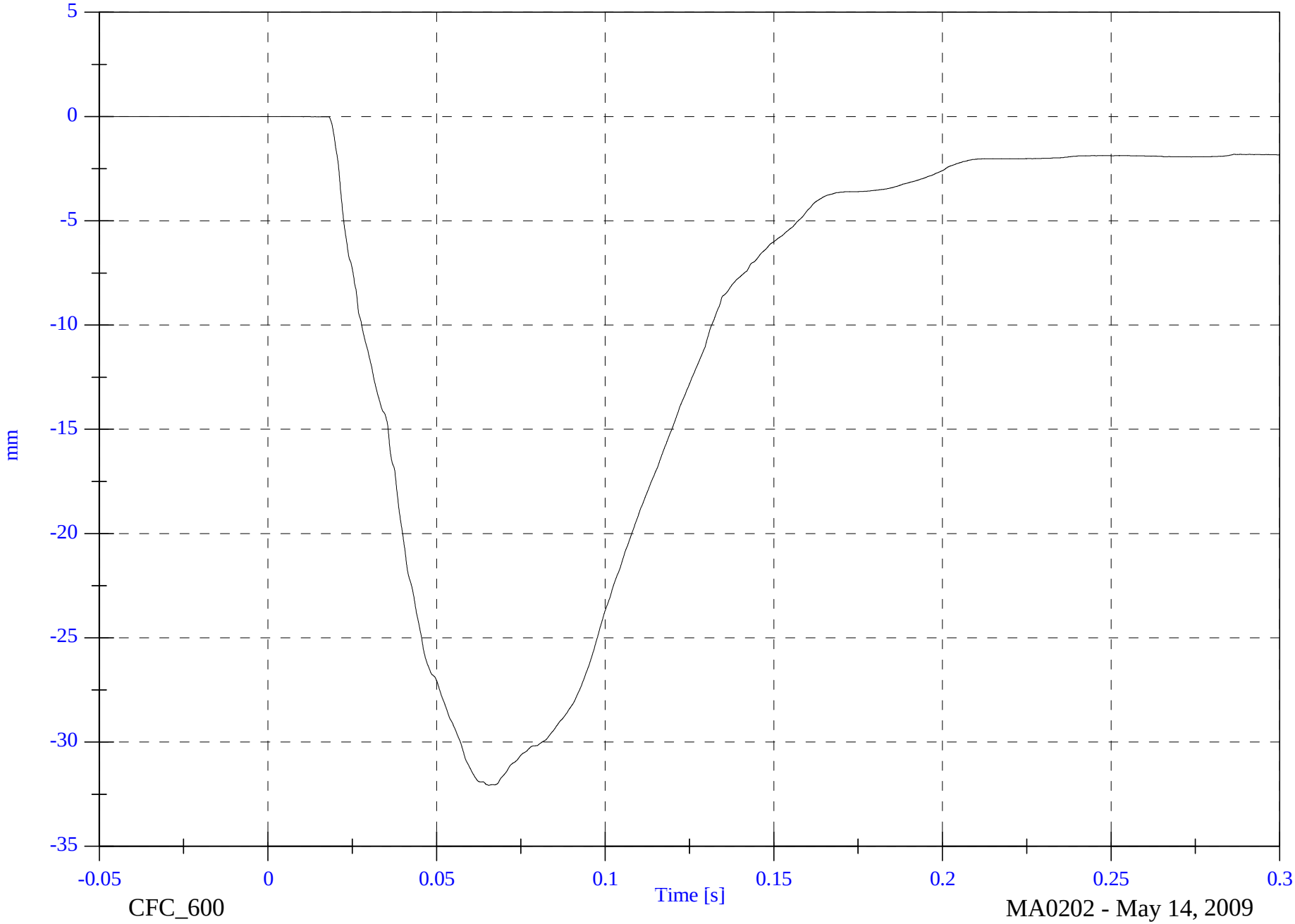
CFC_1000

MA0202 - May 14, 2009

2009 NCAP Test 8 2010 Ford Mustang

V1P1 Chest Compression x

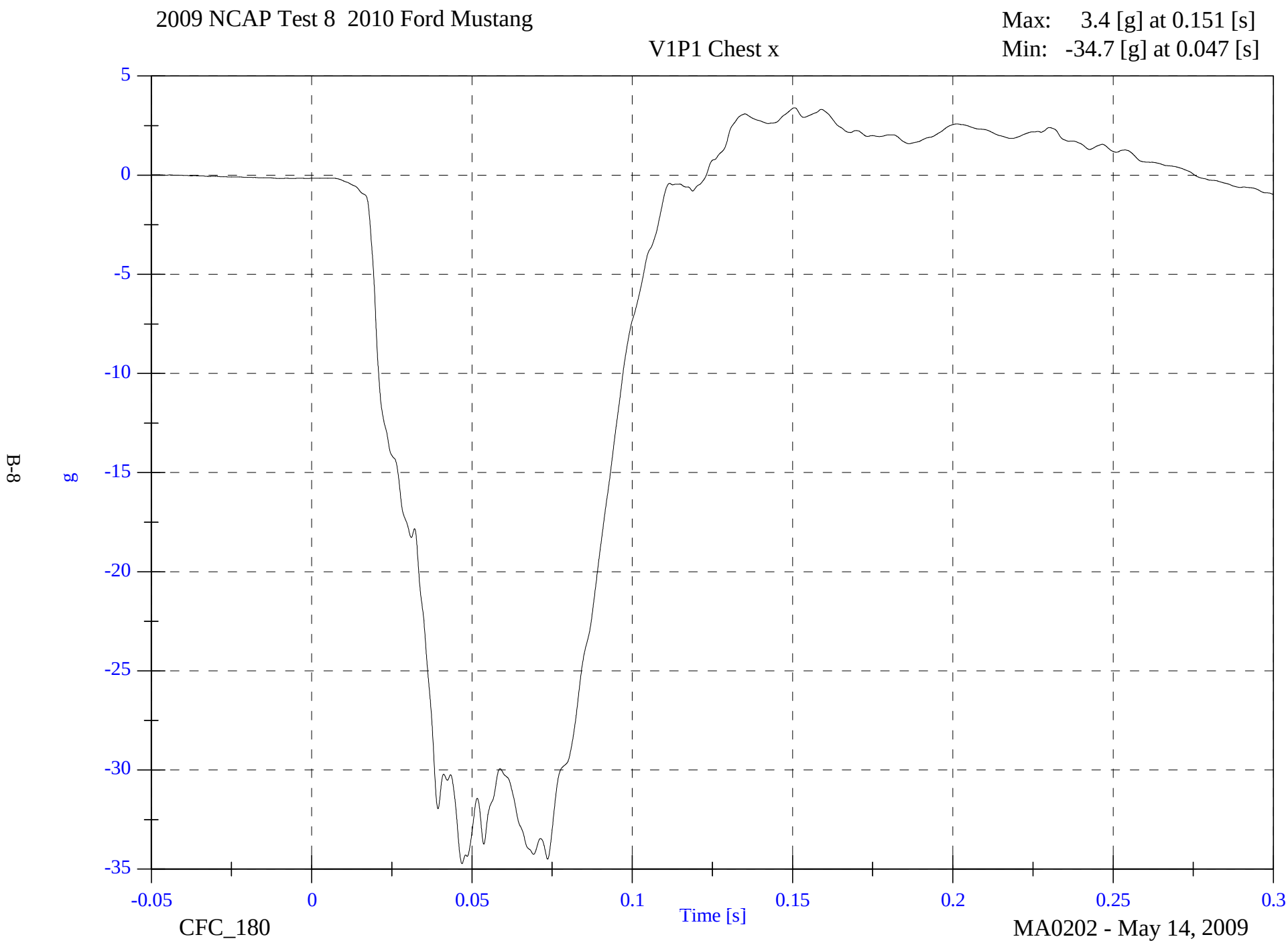
Max: 0.0 [mm] at -0.044 [s]
Min: -32.1 [mm] at 0.065 [s]



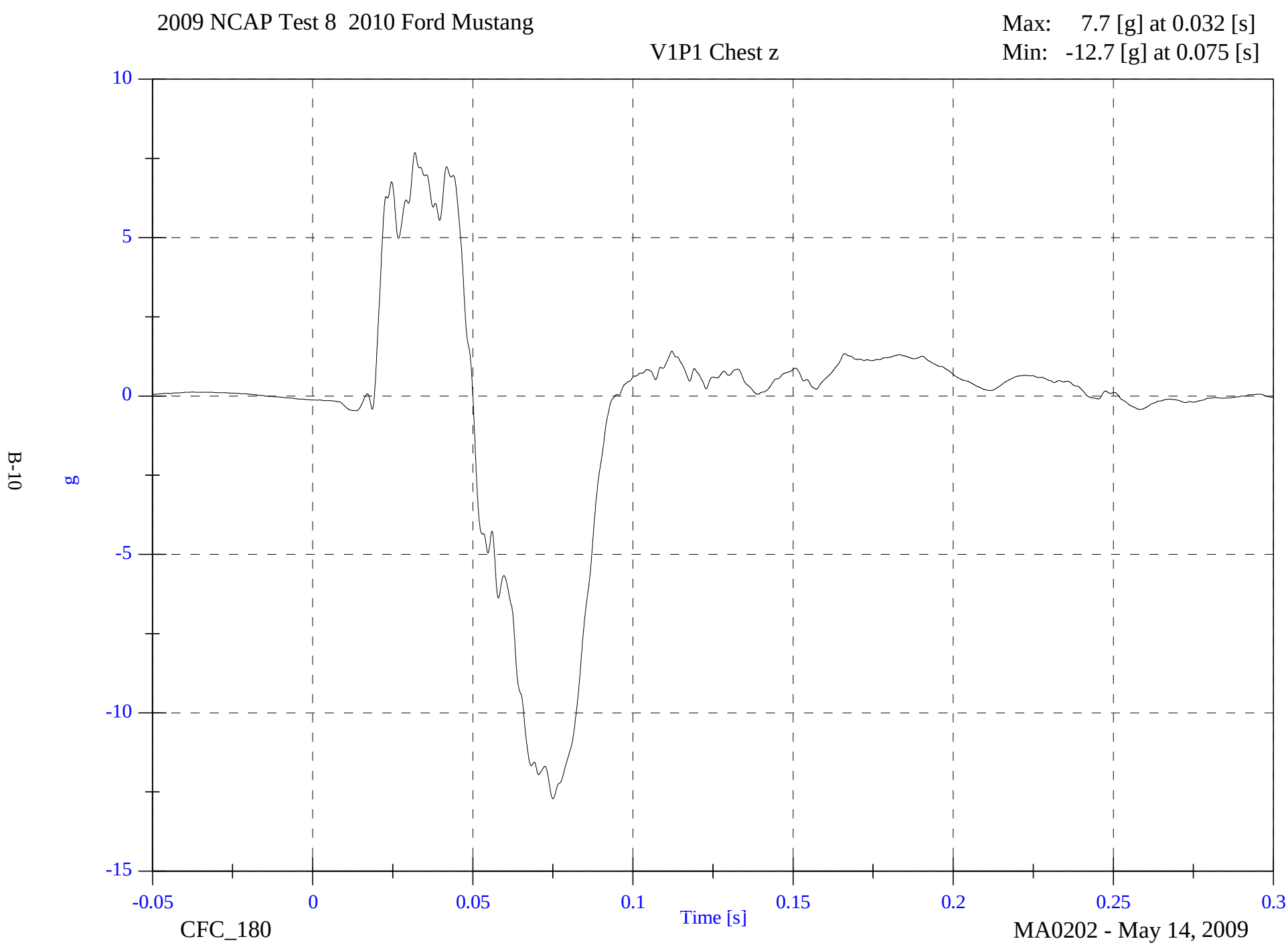
CFC_600

MA0202 - May 14, 2009

B-7


2009 NCAP Test 8 2010 Ford Mustang
V1P1 Chest x
Max: 3.4 [g] at 0.151 [s]
Min: -34.7 [g] at 0.047 [s]
5
0
-5
-10
-15
-20
-25
-30
-35
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_180
MA0202 - May 14, 2009

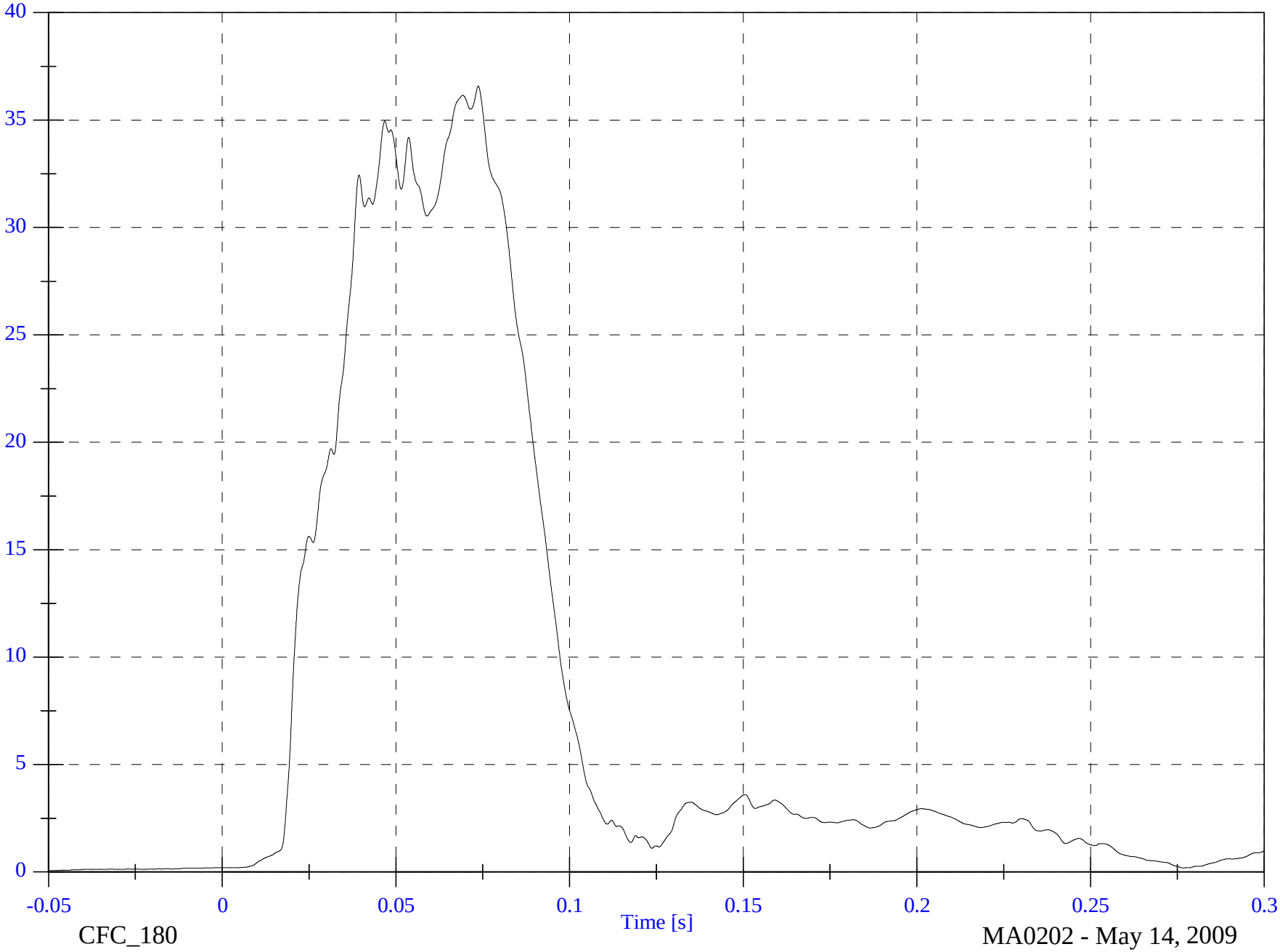

2009 NCAP Test 8 2010 Ford Mustang
V1P1 Chest y
Max: 4.2 [g] at 0.053 [s]
Min: -3.4 [g] at 0.091 [s]
5
4
3
2
1
0
-1
-2
-3
-4
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_180
MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P1 Chest z
Max: 7.7 [g] at 0.032 [s]
Min: -12.7 [g] at 0.075 [s]
10
5
0
-5
-10
-15
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_180
MA0202 - May 14, 2009

2009 NCAP Test 8 2010 Ford Mustang

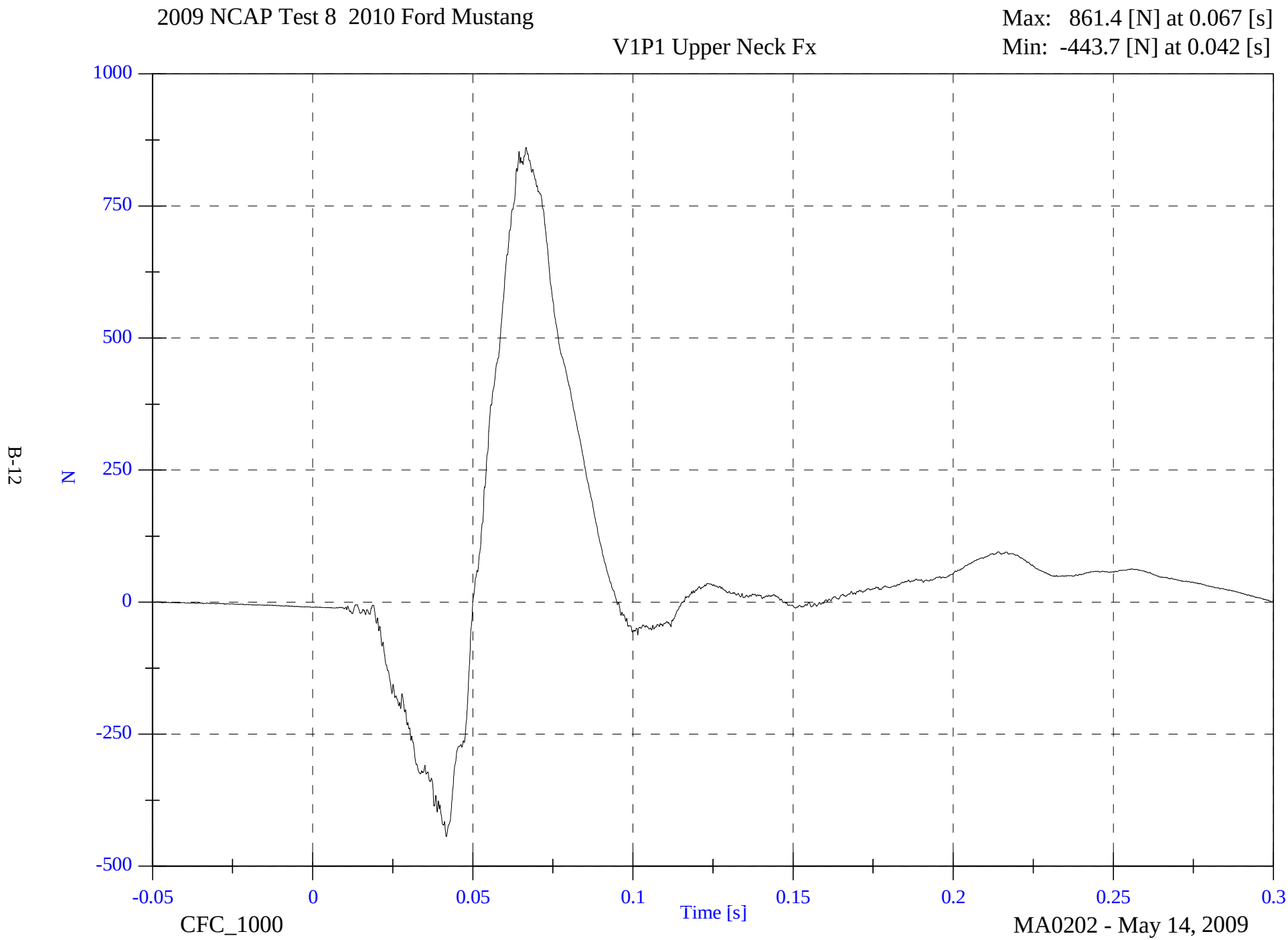
V1P1 Chest Resultant

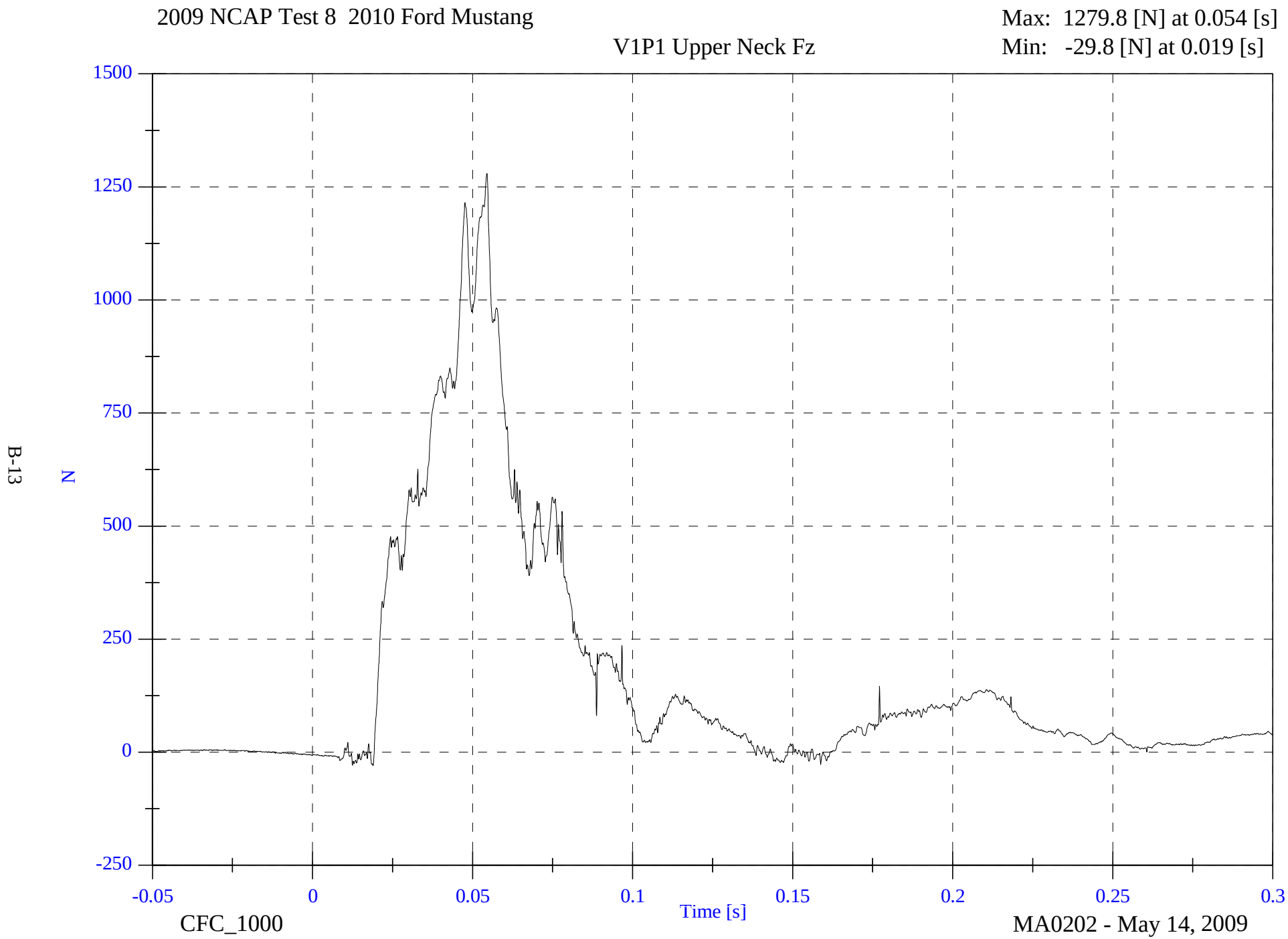
Max: 36.6 [g] at 0.074 [s]
Min: 0.1 [g] at -0.050 [s]



CFC_180

MA0202 - May 14, 2009

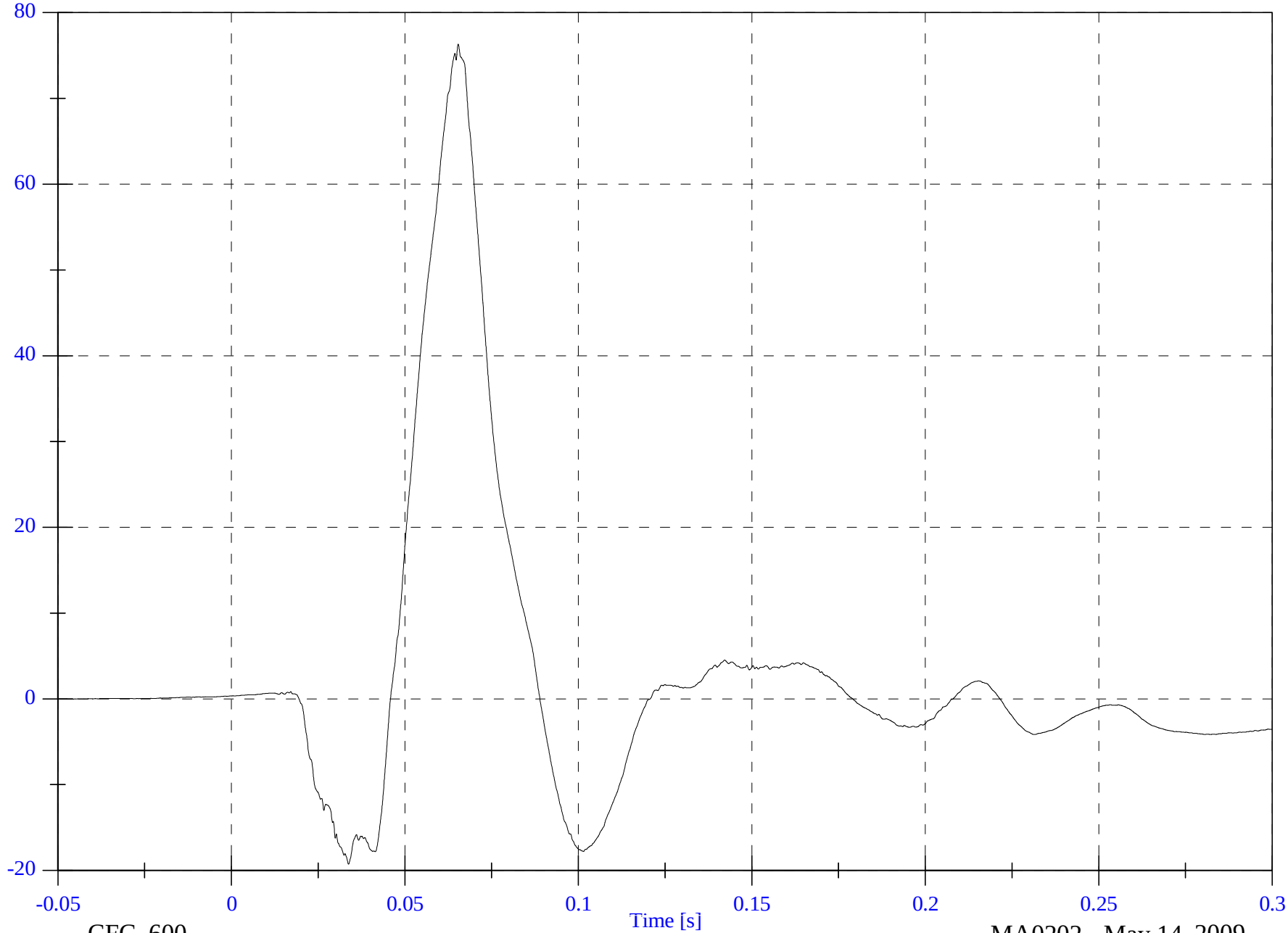

2009 NCAP Test 8 2010 Ford Mustang
V1P1 Upper Neck Fx
Max: 861.4 [N] at 0.067 [s]
Min: -443.7 [N] at 0.042 [s]
1000
750
500
250
0
-250
-500
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_1000
MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P1 Upper Neck Fz
Max: 1279.8 [N] at 0.054 [s]
Min: -29.8 [N] at 0.019 [s]
1500
1250
1000
750
500
250
0
-250
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_1000
MA0202 - May 14, 2009

2009 NCAP Test 8 2010 Ford Mustang

V1P1 Upper Neck My

Max: 76.3 [N-m] at 0.065 [s]
Min: -19.3 [N-m] at 0.034 [s]



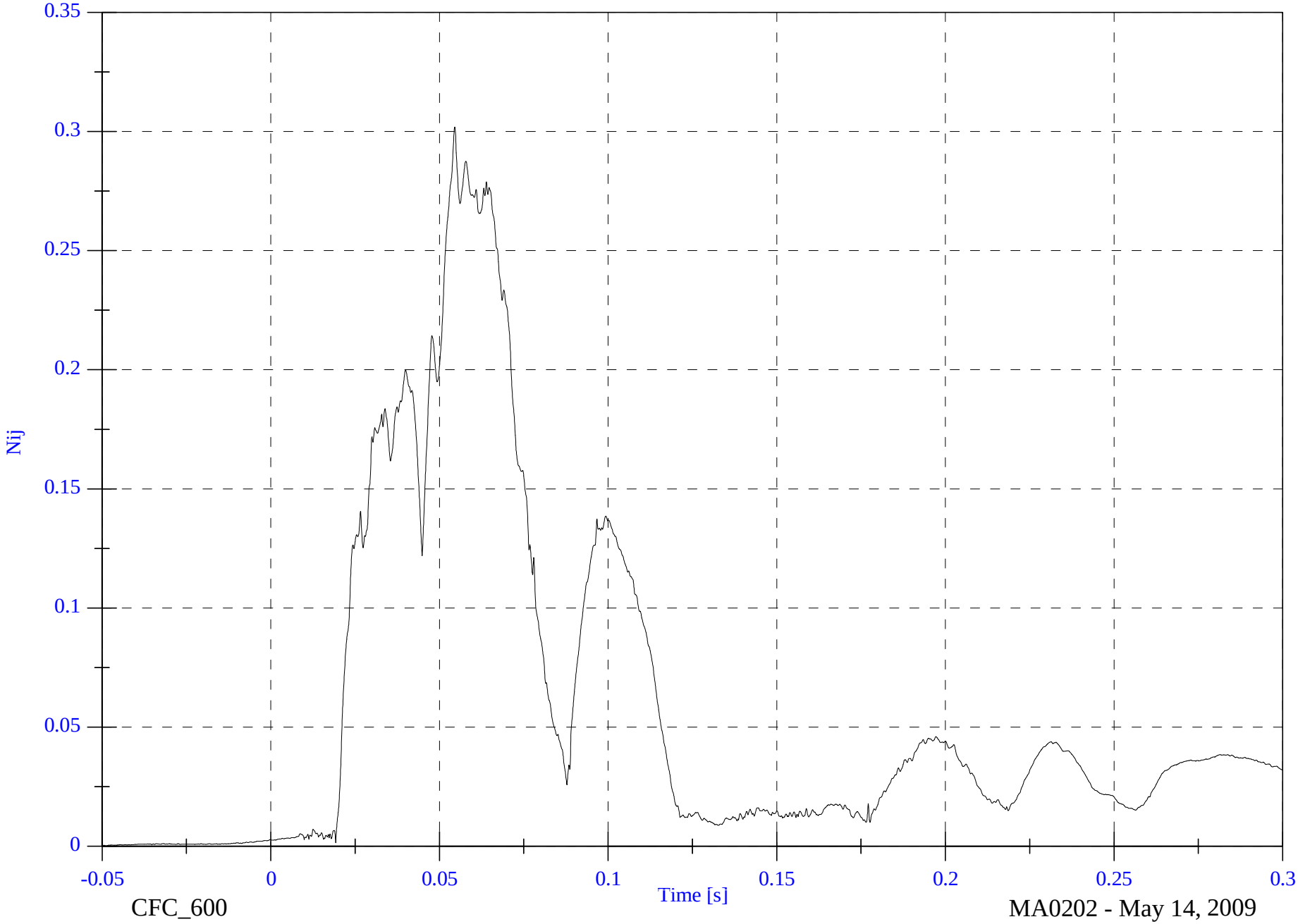
CFC_600

MA0202 - May 14, 2009

2009 NCAP Test 8 2010 Ford Mustang

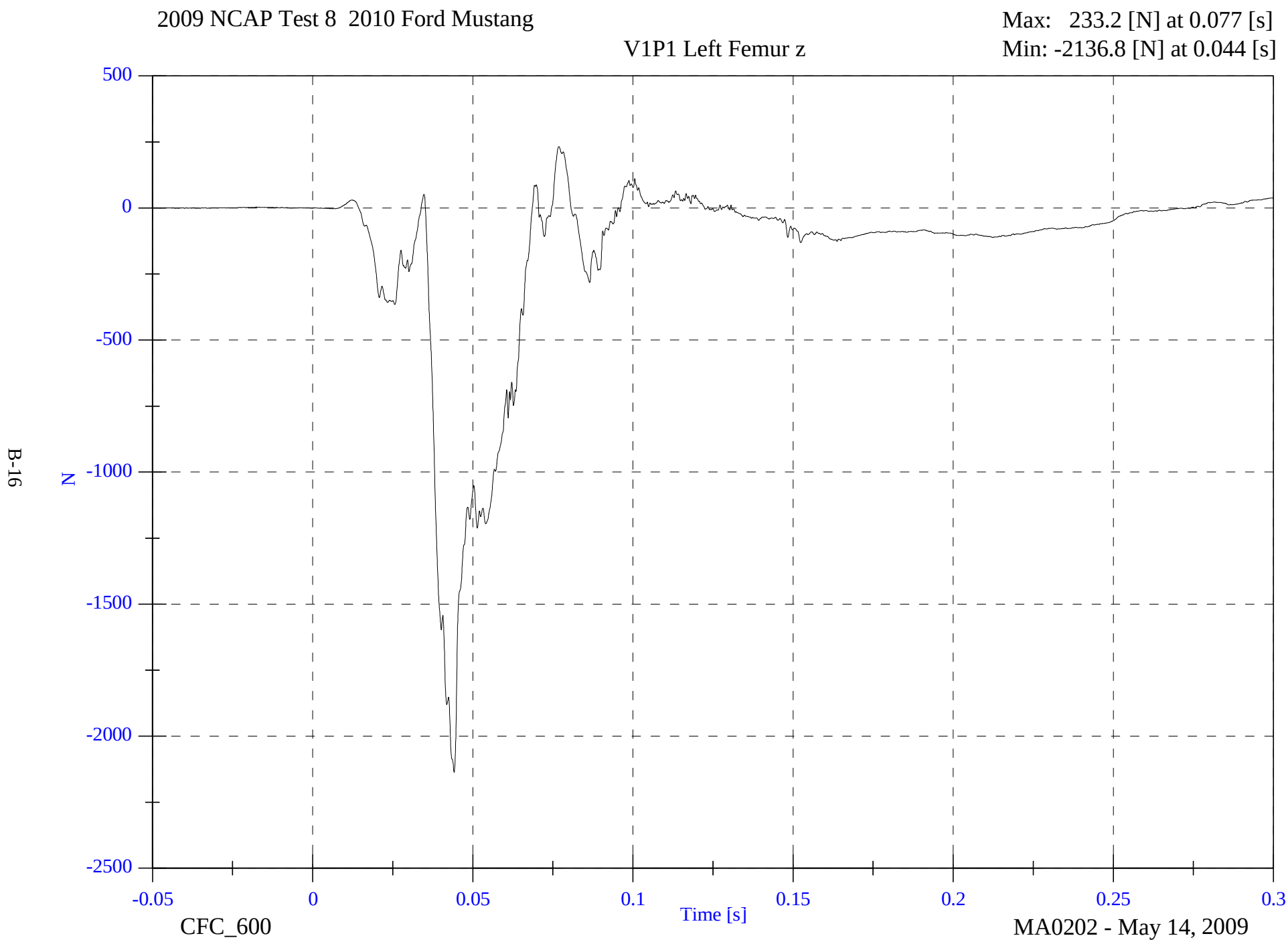
V1P1 Upper Neck Nij

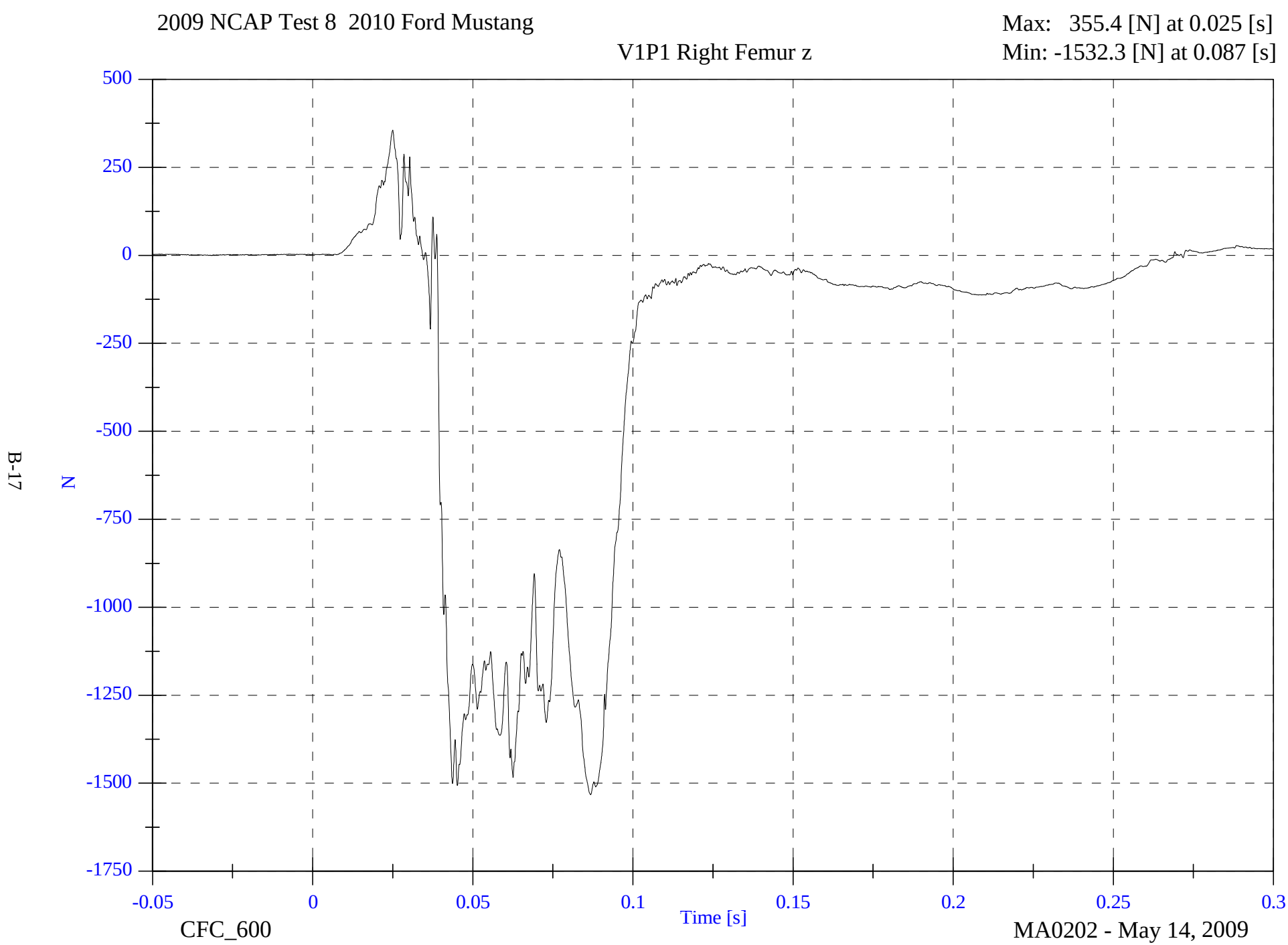
Max: 0.3 [Nij] at 0.055 [s]
Min: 0.0 [Nij] at -0.049 [s]

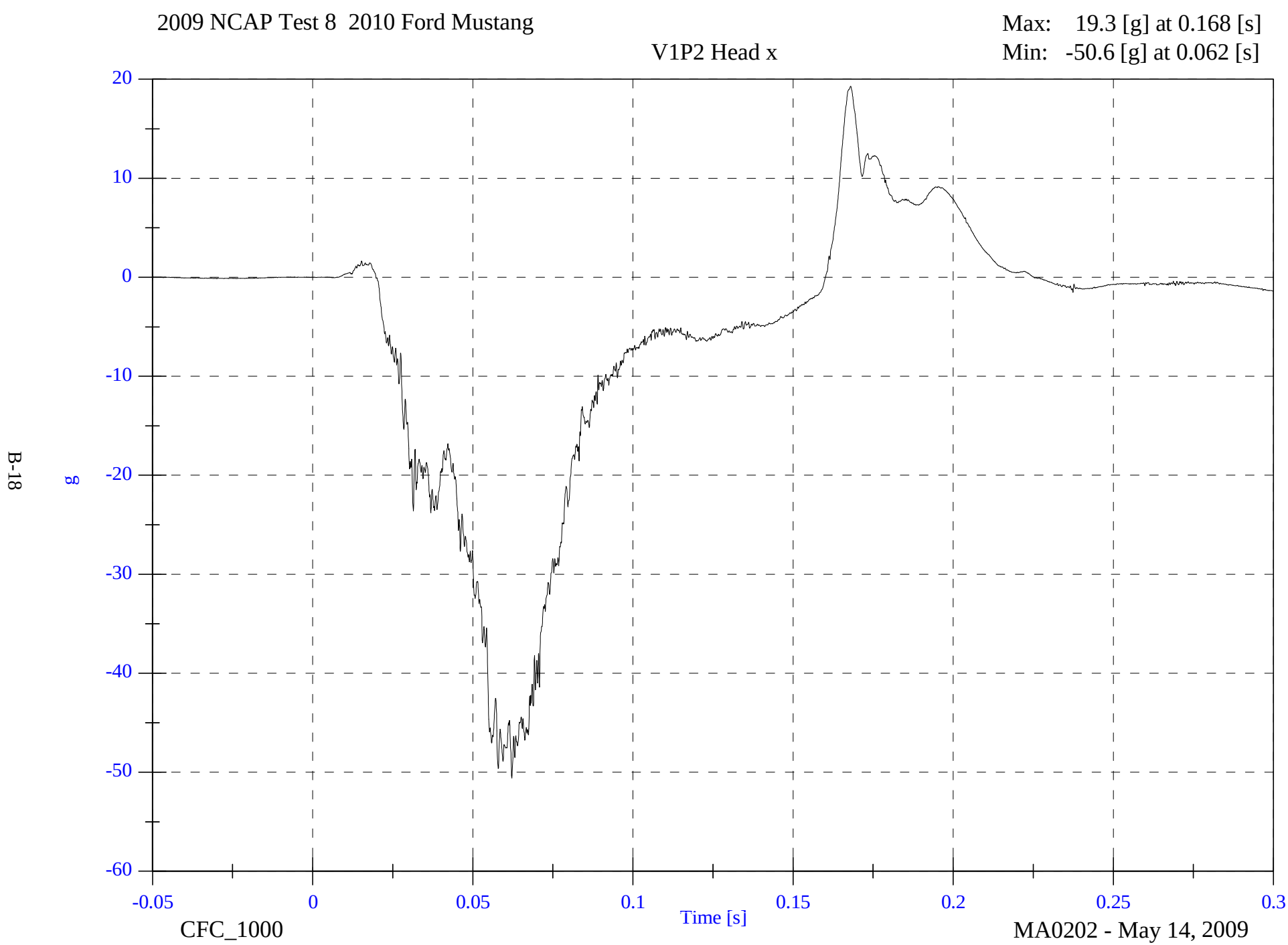


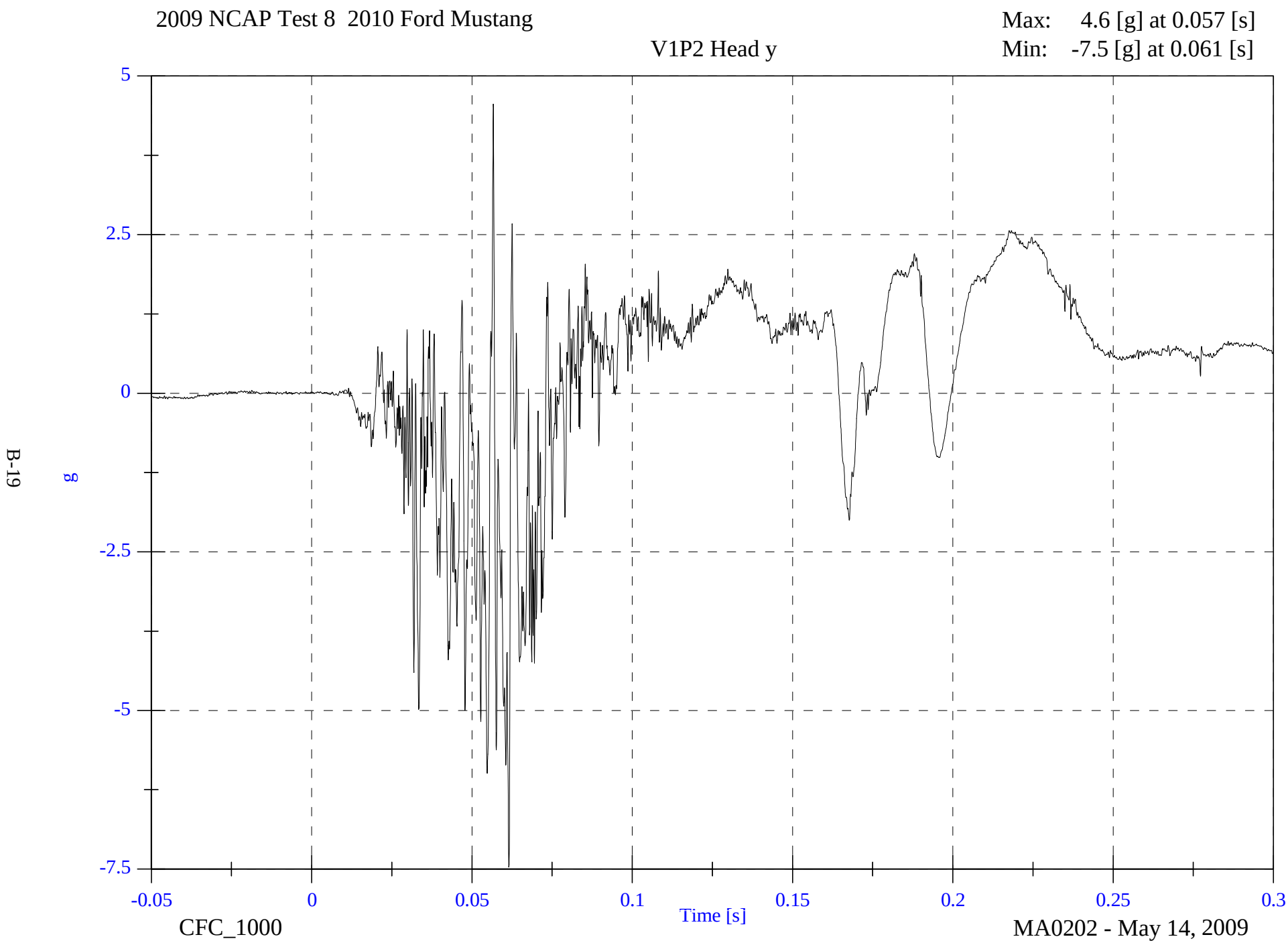
CFC_600

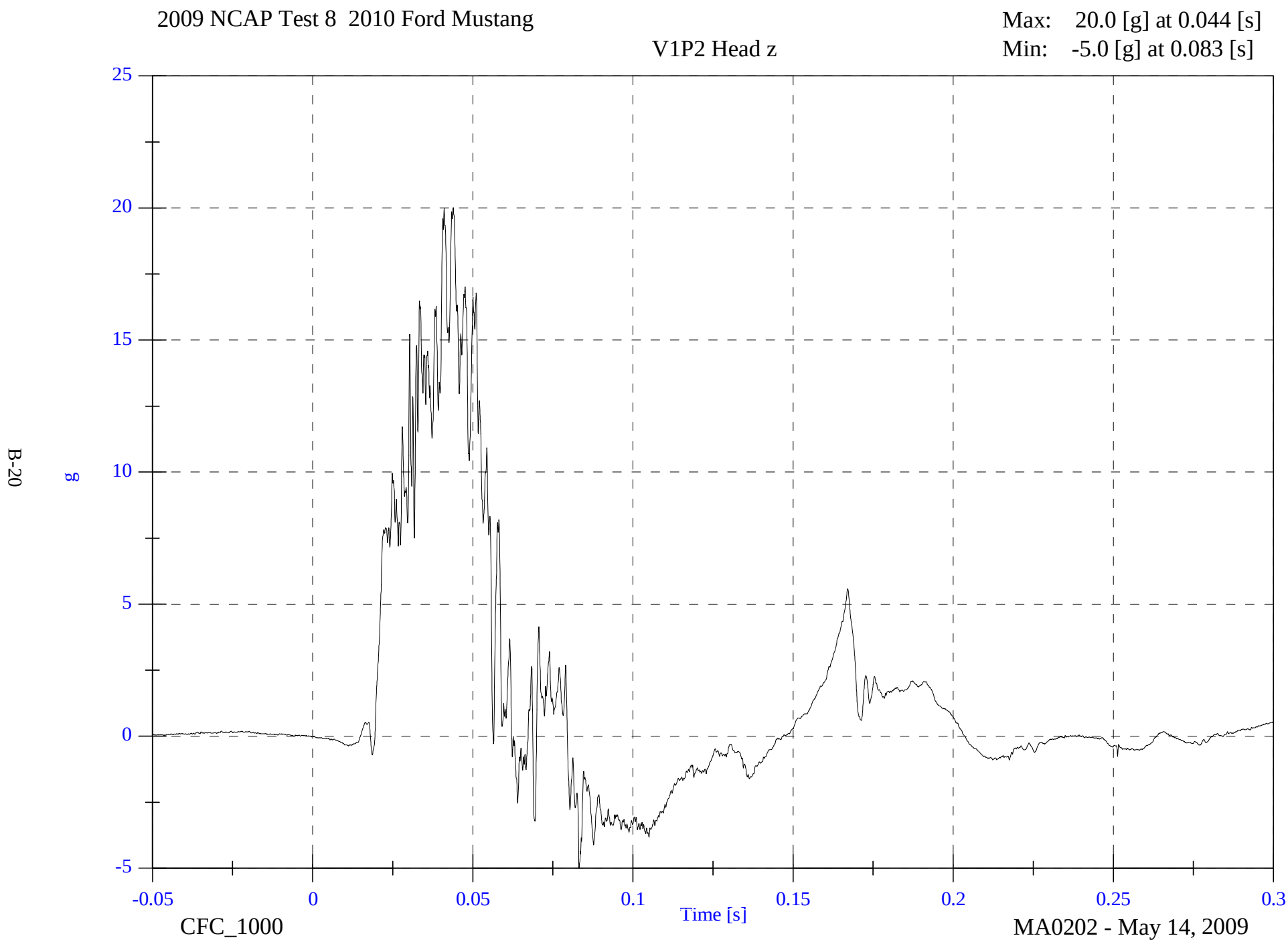
MA0202 - May 14, 2009

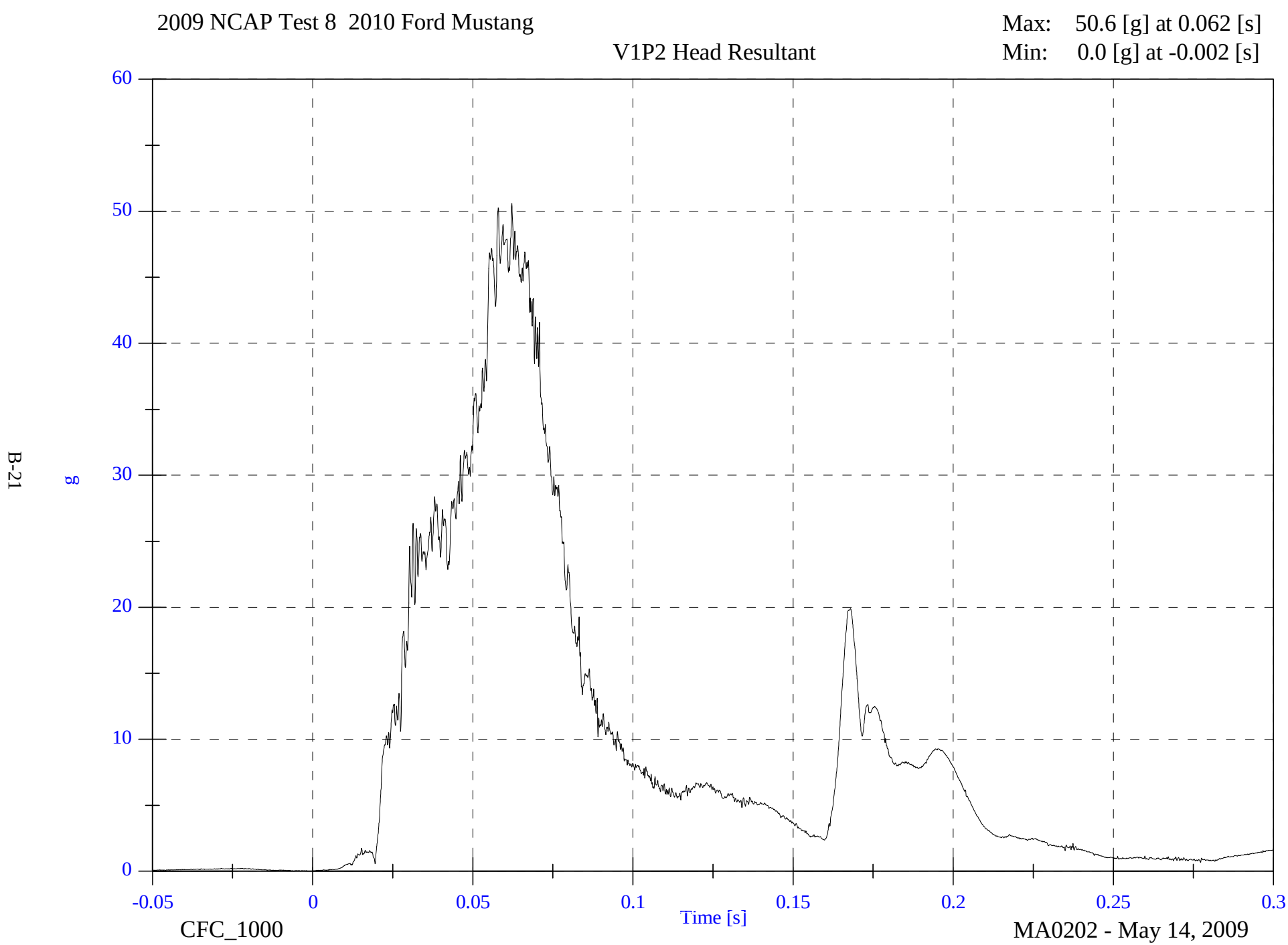

2009 NCAP Test 8 2010 Ford Mustang
V1P1 Left Femur z
Max: 233.2 [N] at 0.077 [s]
Min: -2136.8 [N] at 0.044 [s]
500
0
-500
-1000
-1500
-2000
-2500
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_600
MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P1 Right Femur z
Max: 355.4 [N] at 0.025 [s]
Min: -1532.3 [N] at 0.087 [s]
500
250
0
-250
-500
-750
-1000
-1250
-1500
-1750
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_600
MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P2 Head x
Max: 19.3 [g] at 0.168 [s]
Min: -50.6 [g] at 0.062 [s]
20
10
0
-10
-20
-30
-40
-50
-60
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_1000
MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P2 Head y
Max: 4.6 [g] at 0.057 [s]
Min: -7.5 [g] at 0.061 [s]
5
2.5
0
-2.5
-5
-7.5
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_1000
MA0202 - May 14, 2009

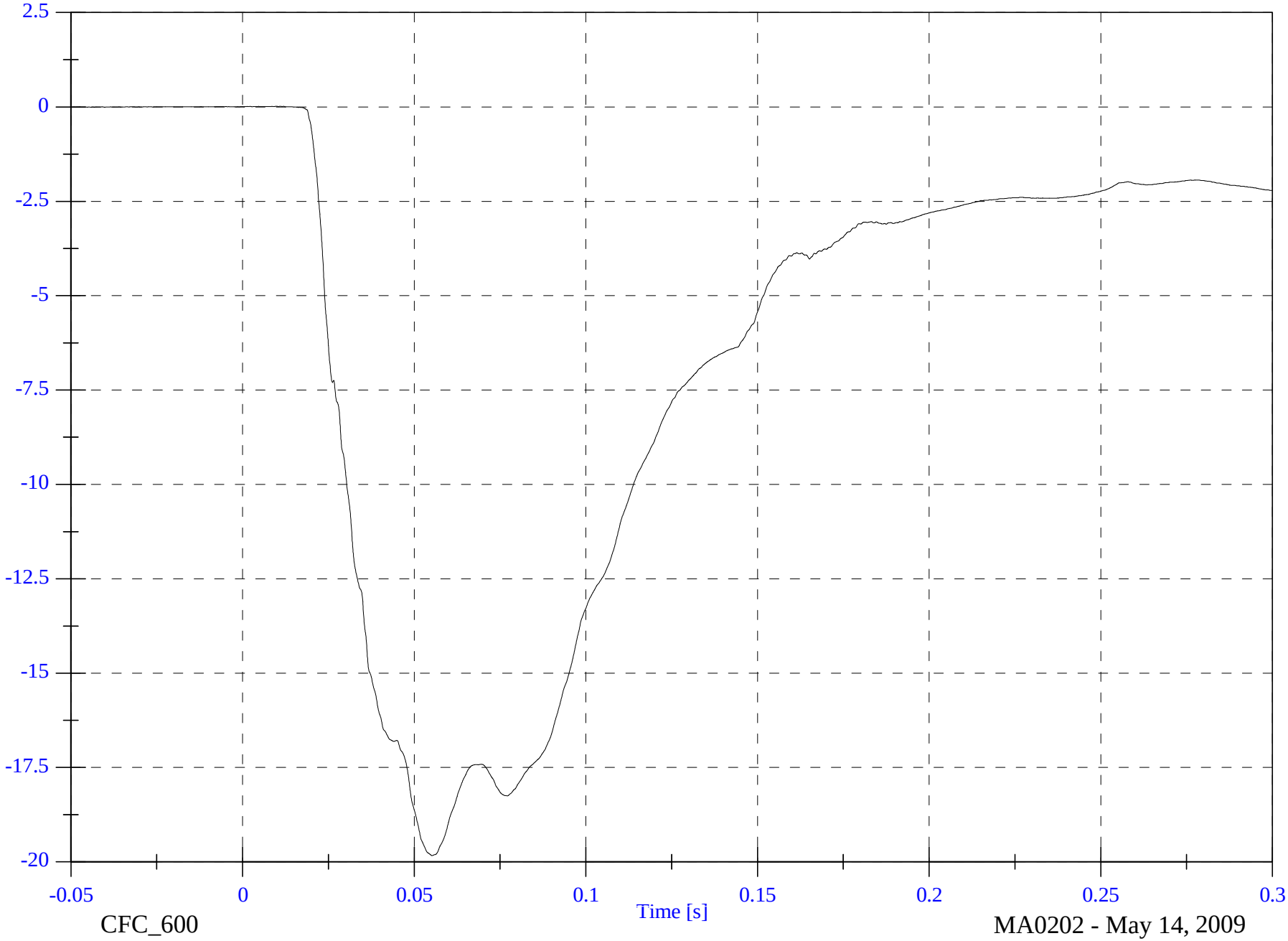

2009 NCAP Test 8 2010 Ford Mustang
V1P2 Head z
Max: 20.0 [g] at 0.044 [s]
Min: -5.0 [g] at 0.083 [s]
25
20
15
10
5
0
-5
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_1000
MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P2 Head Resultant
Max: 50.6 [g] at 0.062 [s]
Min: 0.0 [g] at -0.002 [s]
60
50
40
30
20
10
0
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_1000
MA0202 - May 14, 2009

2009 NCAP Test 8 2010 Ford Mustang

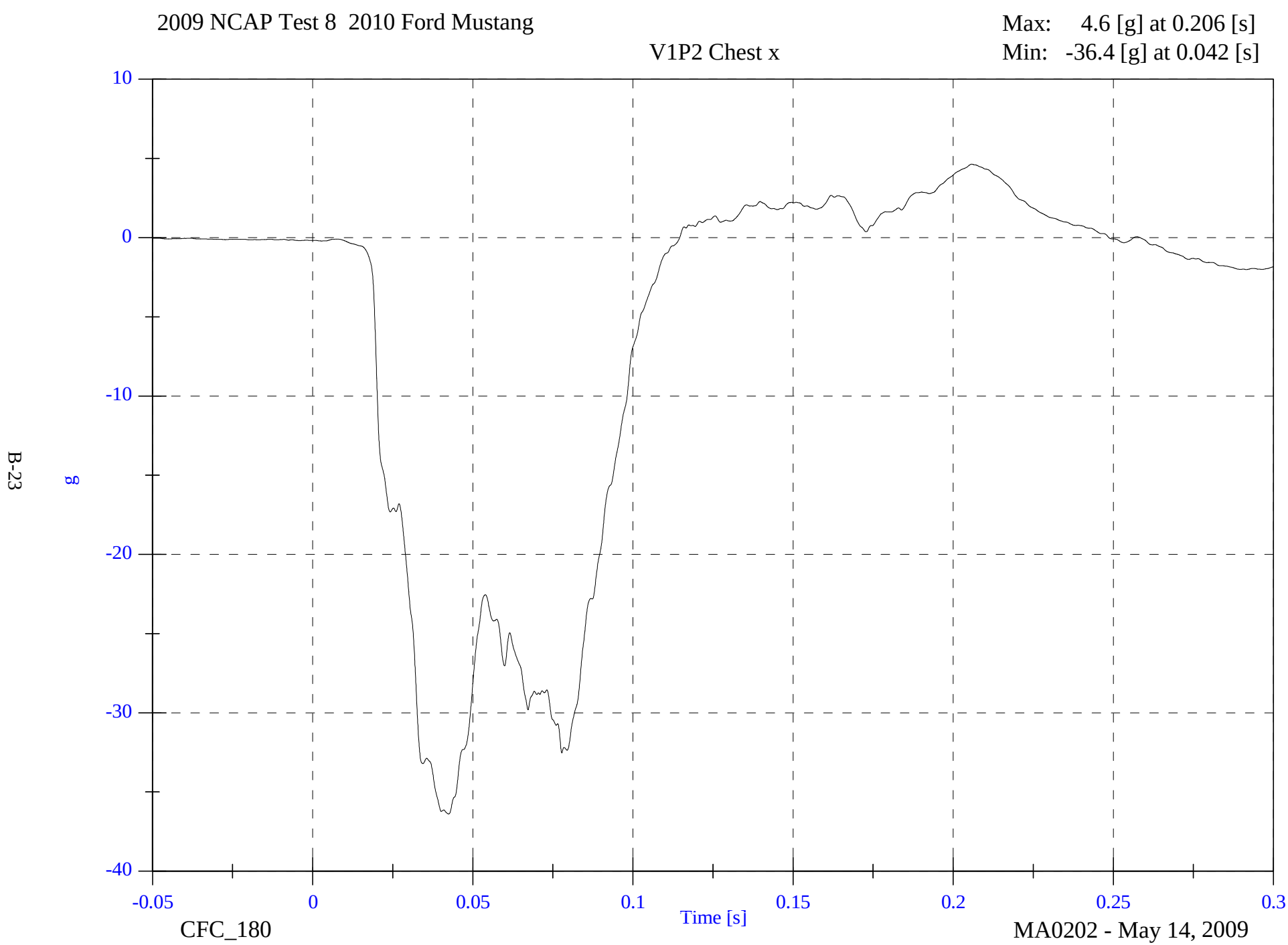
V1P2 Chest Displacement

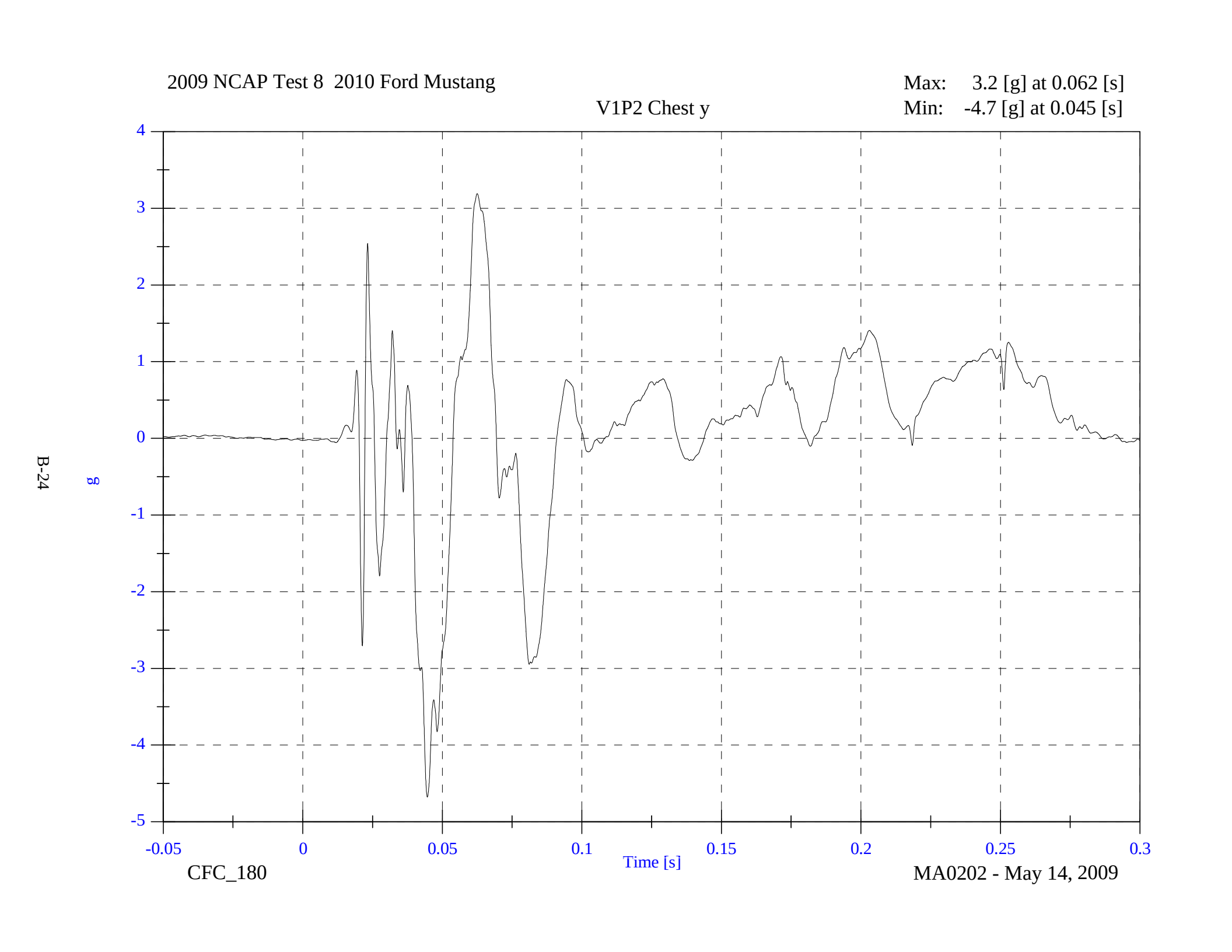
Max: 0.0 [mm] at 0.012 [s]
Min: -19.8 [mm] at 0.055 [s]



CFC_600

MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P2 Chest x
Max: 4.6 [g] at 0.206 [s]
Min: -36.4 [g] at 0.042 [s]
10
0
-10
-20
-30
-40
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_180
MA0202 - May 14, 2009

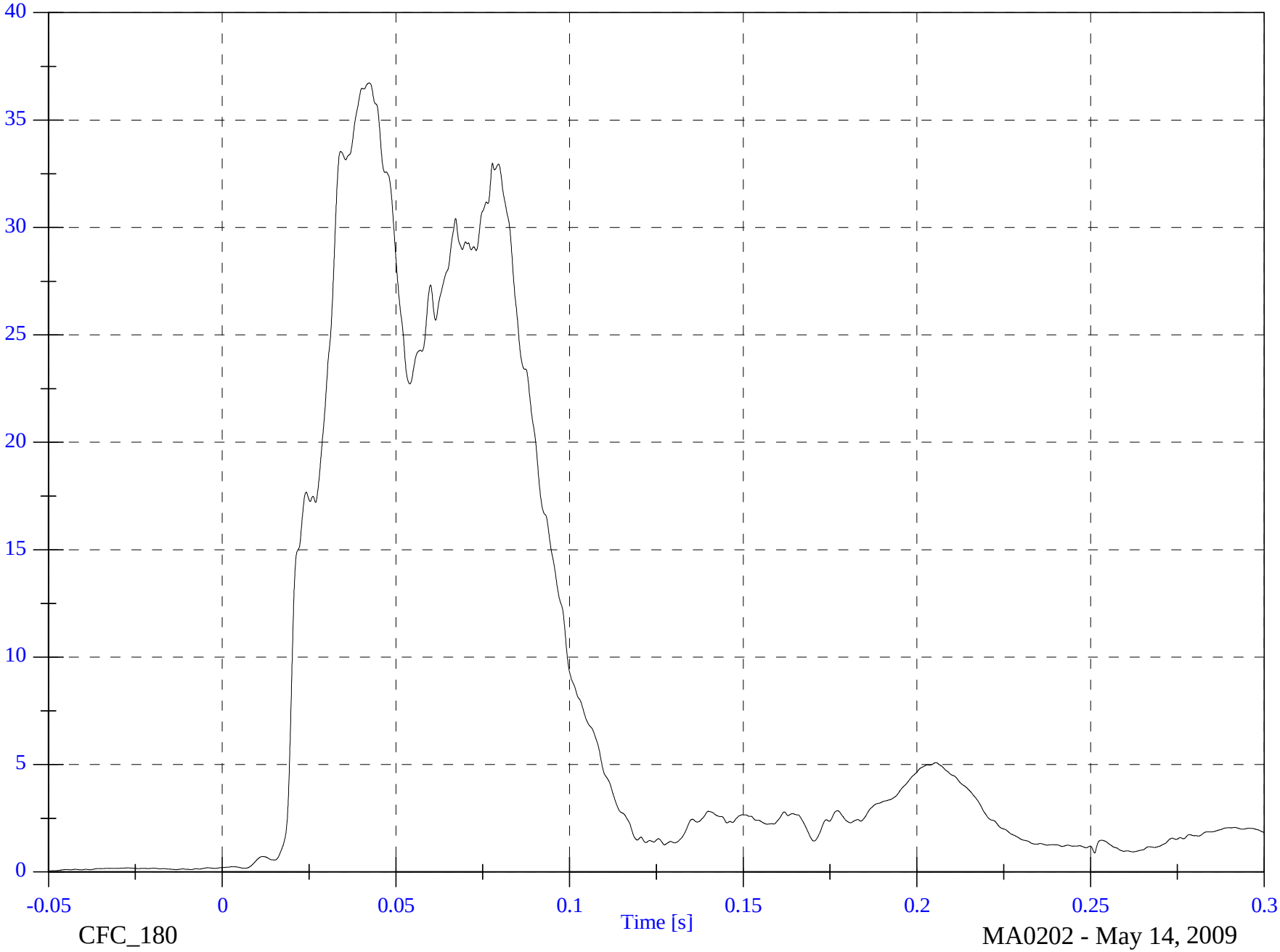

2009 NCAP Test 8 2010 Ford Mustang
V1P2 Chest y
Max: 3.2 [g] at 0.062 [s]
Min: -4.7 [g] at 0.045 [s]
4
3
2
1
0
-1
-2
-3
-4
-5
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_180
MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P2 Chest z
Max: 6.0 [g] at 0.052 [s]
Min: -6.8 [g] at 0.064 [s]
7.5
5
2.5
0
-2.5
-5
-7.5
g
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_180
MA0202 - May 14, 2009

2009 NCAP Test 8 2010 Ford Mustang

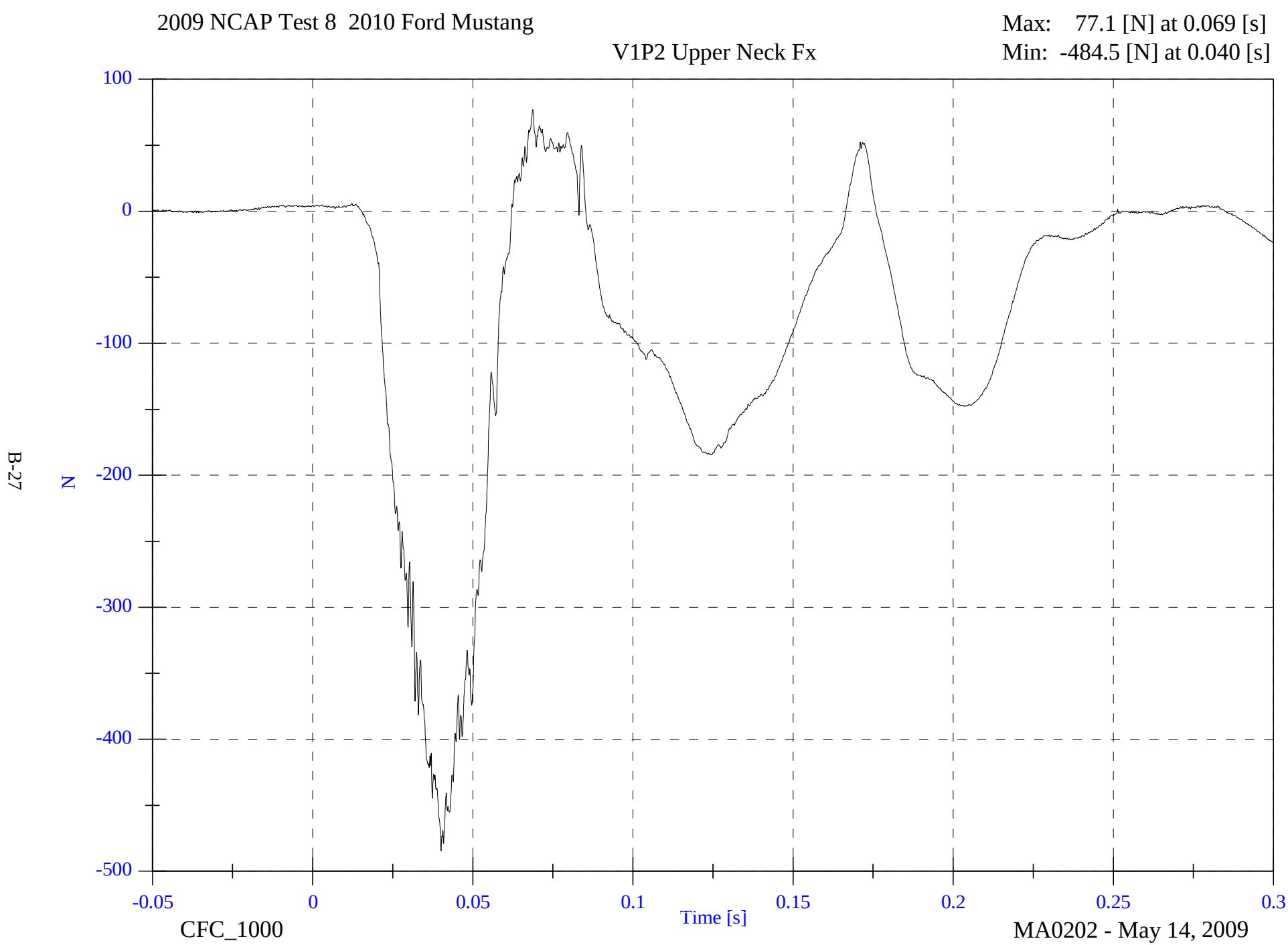
V1P2 Chest Resultant

Max: 36.7 [g] at 0.042 [s]
Min: 0.0 [g] at -0.050 [s]



CFC_180

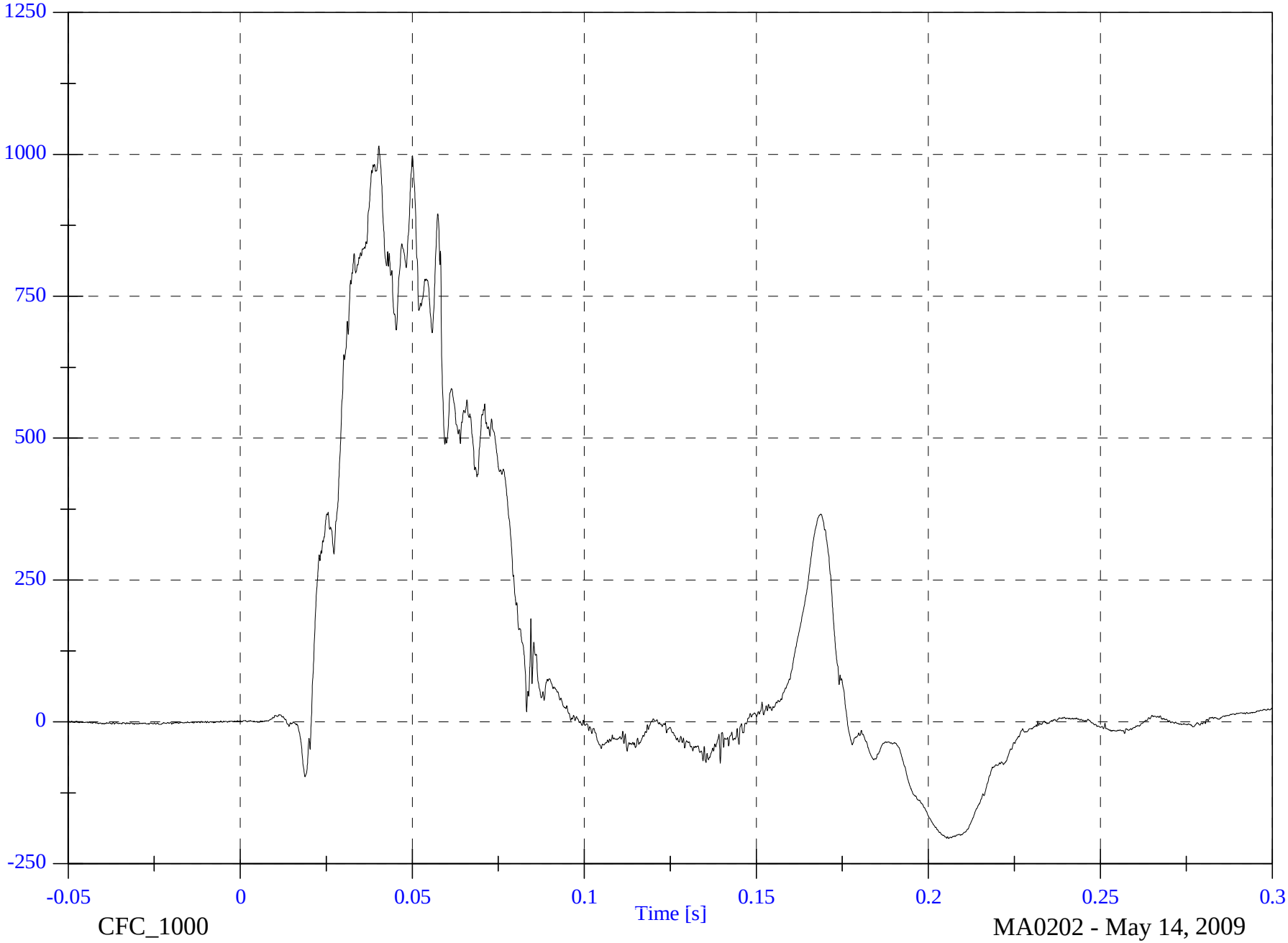
MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P2 Upper Neck Fx
Max: 77.1 [N] at 0.069 [s]
Min: -484.5 [N] at 0.040 [s]
100
0
-100
-200
-300
-400
-500
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_1000
MA0202 - May 14, 2009

2009 NCAP Test 8 2010 Ford Mustang

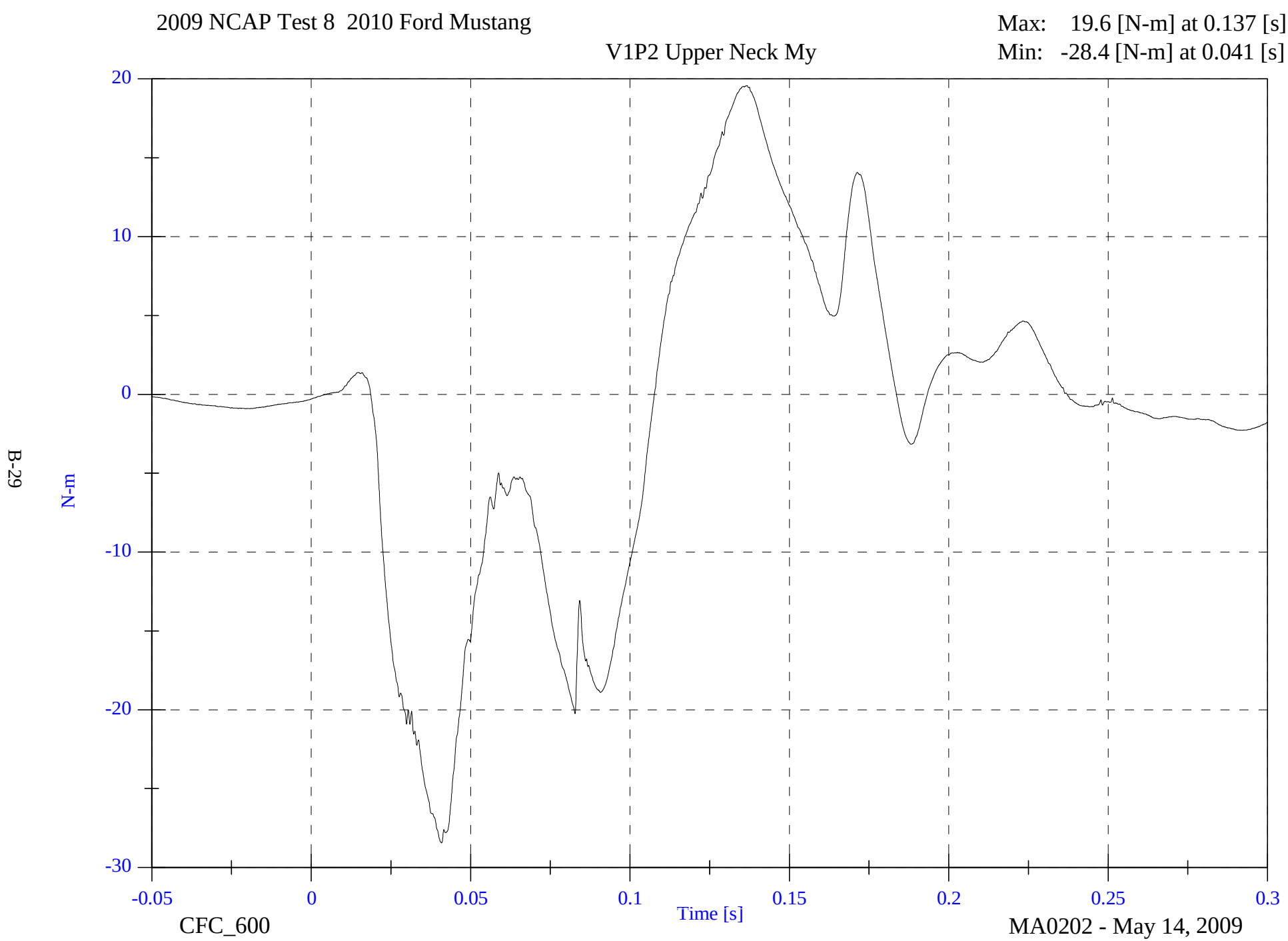
V1P2 Upper Neck Fz

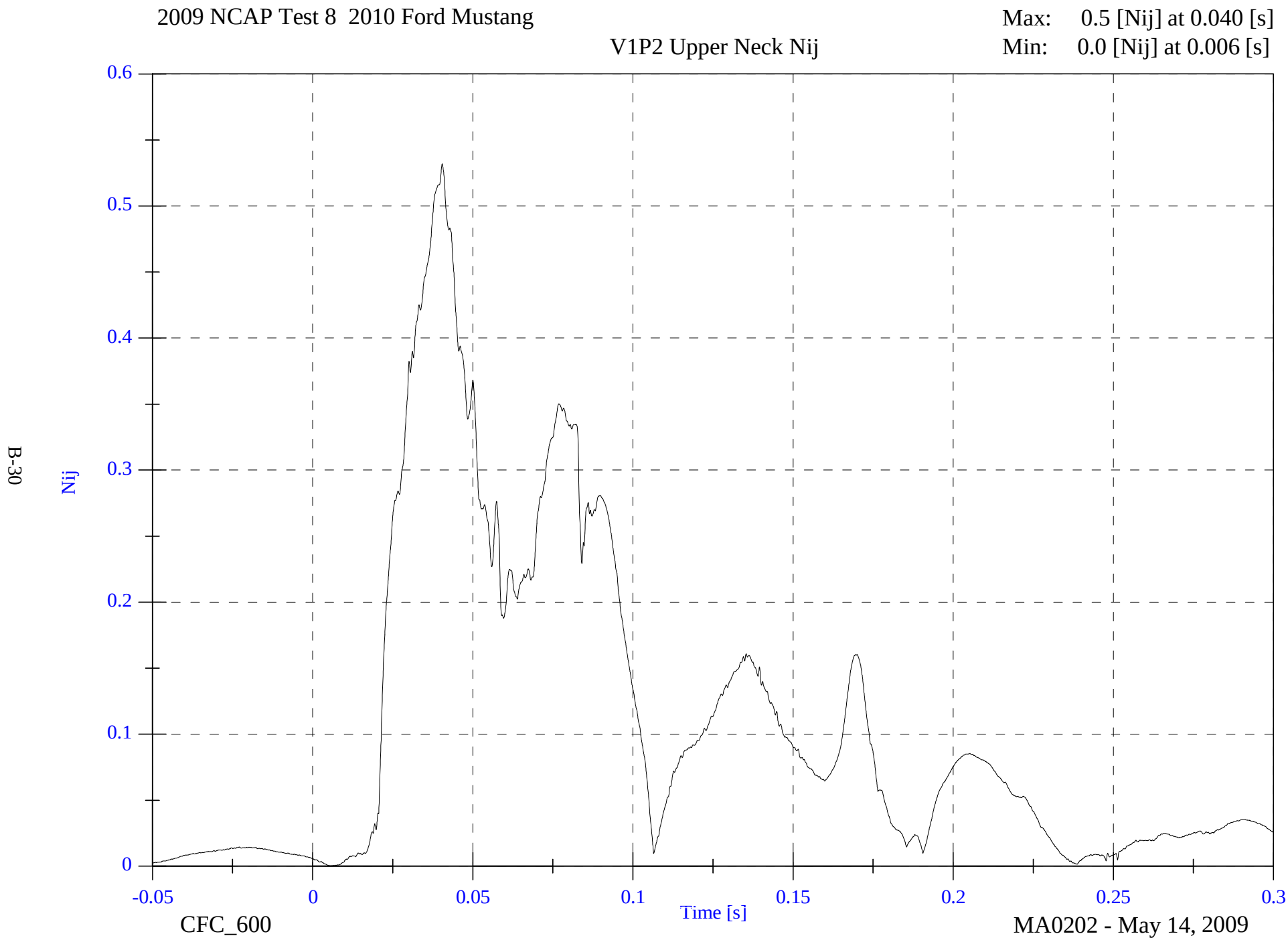
Max: 1014.8 [N] at 0.040 [s]
Min: -205.4 [N] at 0.206 [s]



CFC_1000

MA0202 - May 14, 2009

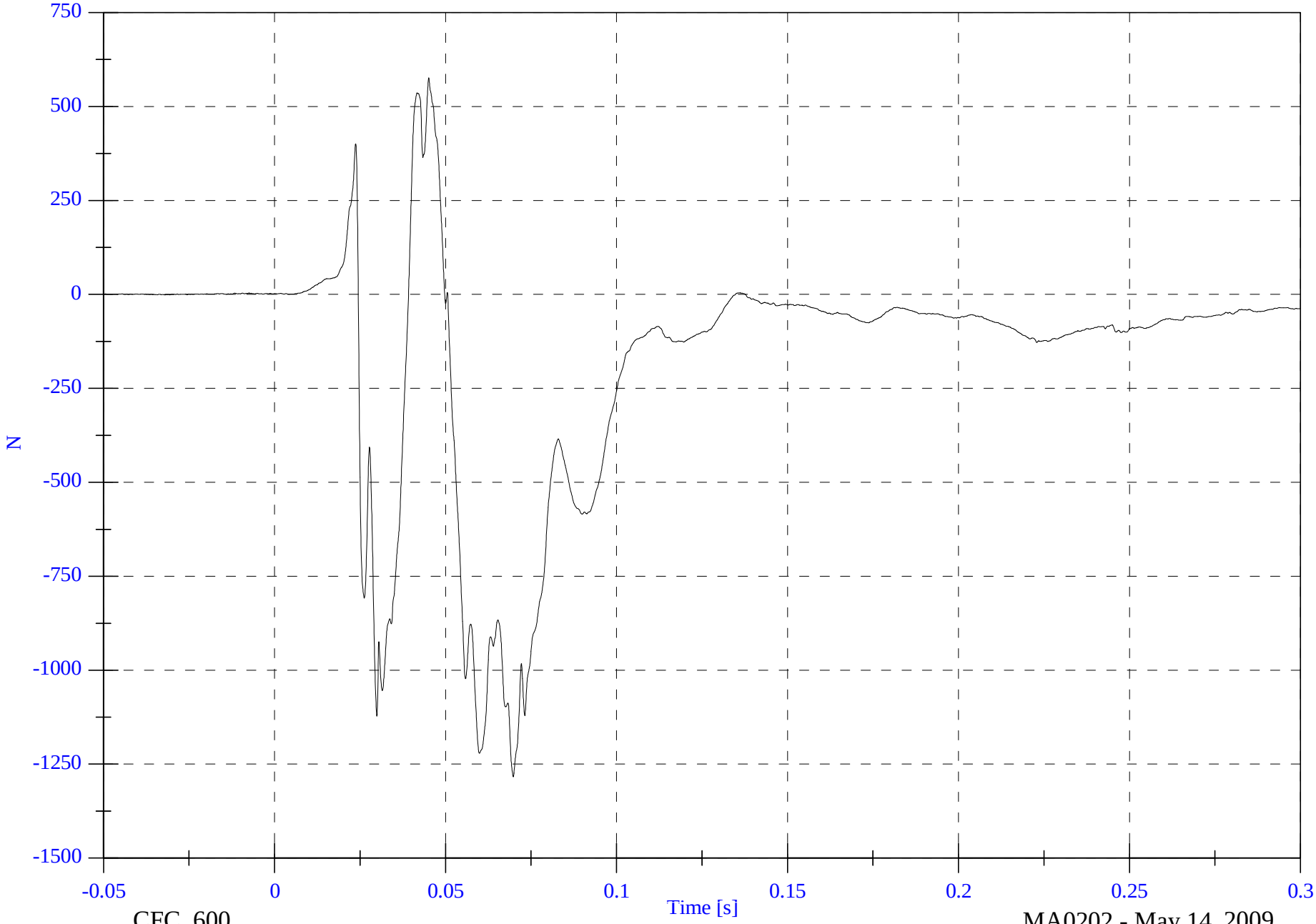

2009 NCAP Test 8 2010 Ford Mustang
V1P2 Upper Neck My
Max: 19.6 [N-m] at 0.137 [s]
Min: -28.4 [N-m] at 0.041 [s]
20
10
0
-10
-20
-30
N-m
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_600
MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P2 Upper Neck Nij
Max: 0.5 [Nij] at 0.040 [s]
Min: 0.0 [Nij] at 0.006 [s]
0.6
0.5
0.4
0.3
0.2
0.1
0
Nij
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_600
MA0202 - May 14, 2009

2009 NCAP Test 8 2010 Ford Mustang

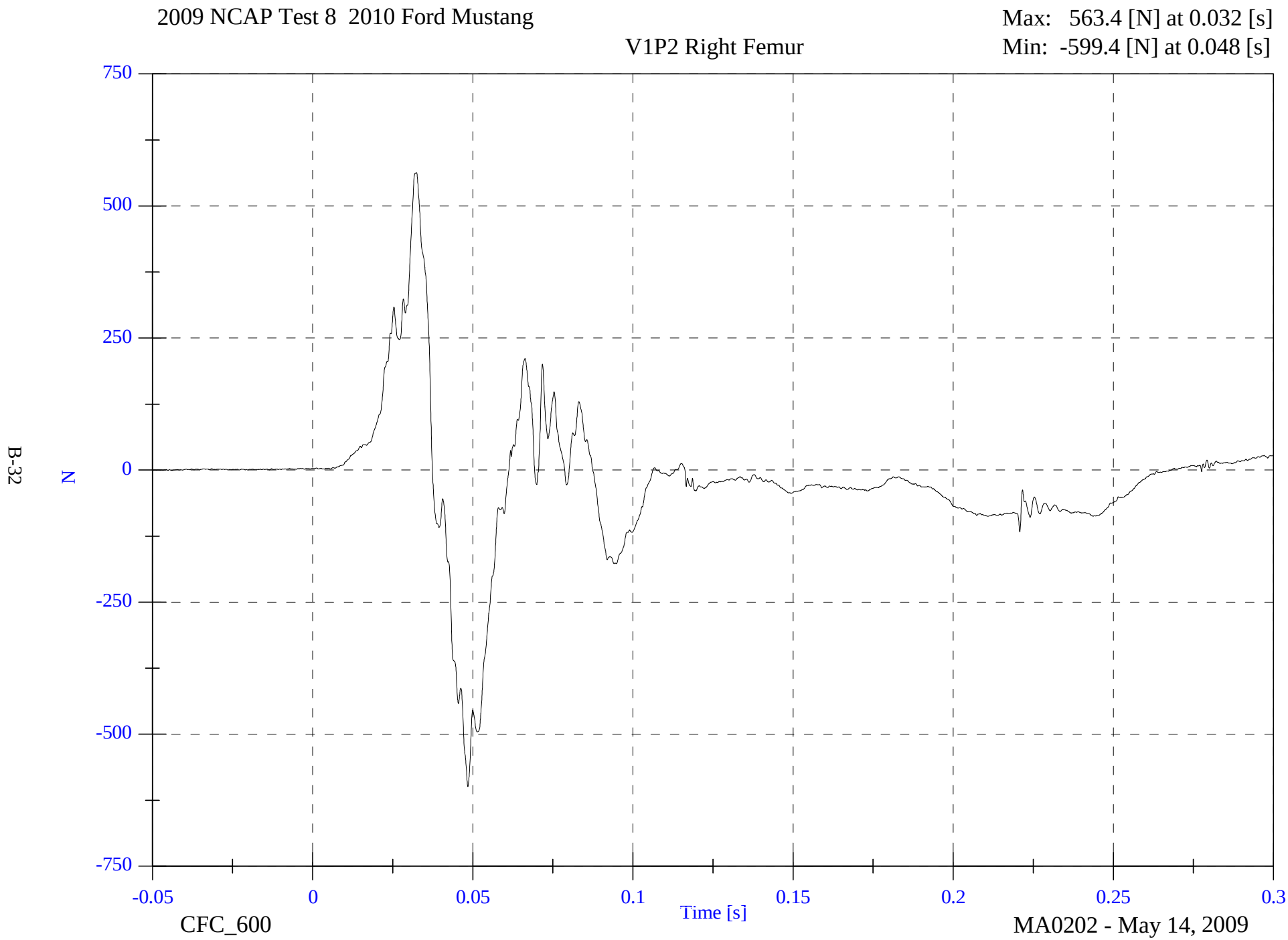
V1P2 Left Femur

Max: 576.8 [N] at 0.045 [s]
Min: -1283.9 [N] at 0.070 [s]



CFC_600

MA0202 - May 14, 2009


2009 NCAP Test 8 2010 Ford Mustang
V1P2 Right Femur
Max: 563.4 [N] at 0.032 [s]
Min: -599.4 [N] at 0.048 [s]
750
500
250
0
-250
-500
-750
N
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
Time [s]
CFC_600
MA0202 - May 14, 2009

APPENDIX C

DUMMY CALIBRATION AND PERFORMANCE VERITICATION DATA

Appendix C contains the results from certification tests performed on the 50th percentile male and 5th percentile 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 Calspan. A summary of the test results, and Part 572 specifications are included in this Appendix.

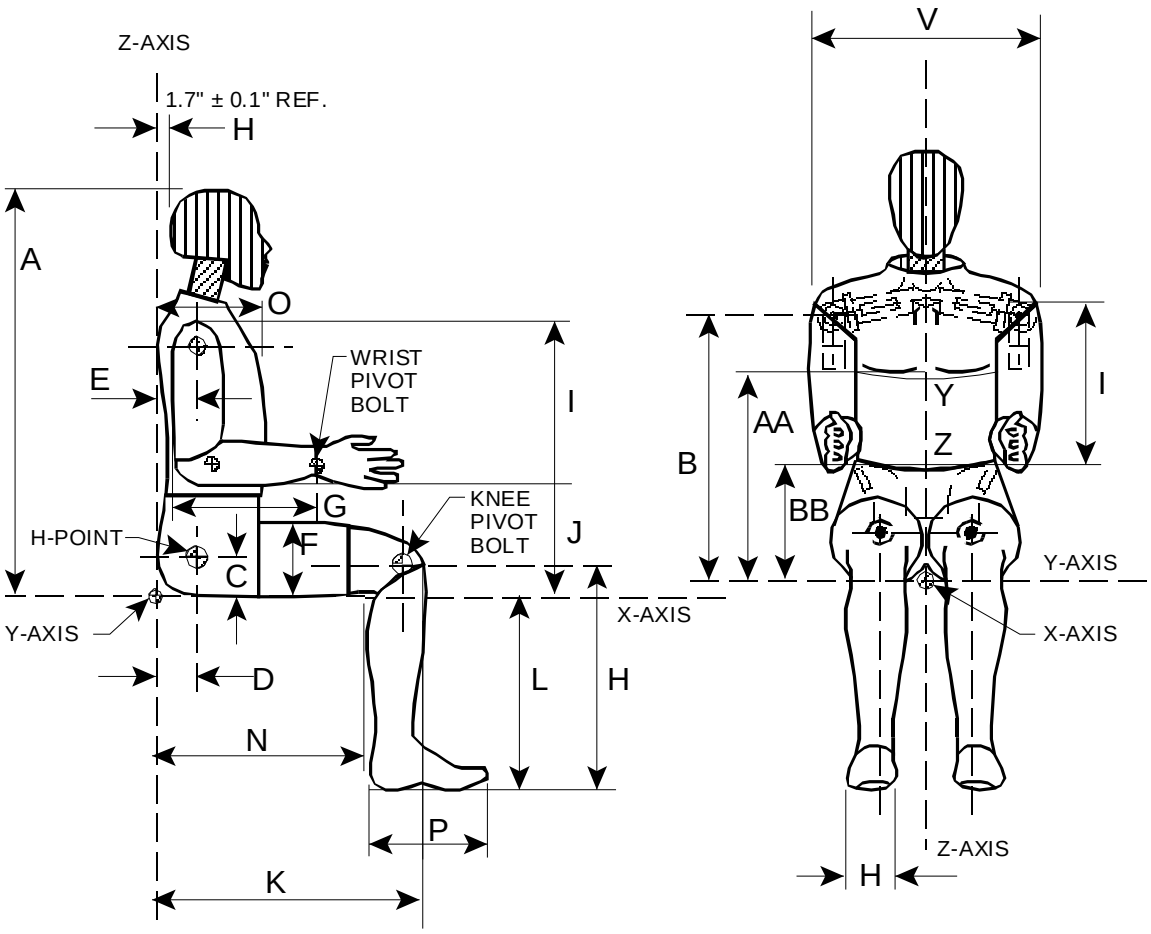
Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	064	4/21/09
#2/Right Front Passenger	143	5/8/09

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 Indicant Testing Final Report No. 6525-V-1.

EXTERNAL DIMENSIONS SPECIFICATIONS



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

PART 572E
HEAD DROP TEST

Dummy Serial Number	064
Sequential Test Number	1
Date	02/10/09
Workfile	064H 02-10-09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	21.7
Relative Humidity	10% - 70%	27
Peak Resultant Acceleration	225-275 G's	263.90
Peak Lateral Acceleration	15 G's Max	7.33
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	02/26/09	6 Axis Neck Transducer
Workfile	064NF3 02-26-09	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.67
Relative Humidity		10% - 70%	23.0
Impact Velocity		6.89 – 7.13 m/s	7.03
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.59
	20 ms	17.60 - 22.60 G's	20.94
	30 ms	12.50 - 18.50 G's	16.63
Max Pendulum G's Above 30 ms		29 G's Max	16.63
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.40
D Plane Rotation	Max	64 - 78 Deg	70.63
	Time	57 - 64 ms	60.10
Moment About Occipital	Max	88.13 – 108.47 N-m	92.40
Condyle	Time	47 - 58 ms	50.80
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	116.00
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.60

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	02/26/09	6 Axis Neck Transducer
Workfile	064NE 02-26-09	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.67
Relative Humidity		10% - 70%	24.0
Impact Velocity		5.94 – 6.19 m/s	6.07
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	20.00
	20 ms	14.00 - 19.00 G's	18.32
	30 ms	11.00 - 16.00 G's	14.49
Max Pendulum G's Above 30 ms		22 G's Max	14.49
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	39.70
D Plane Rotation	Max	81 - 106 Deg	99.76
	Time	72 - 82 ms	76.10
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-70.85
	Time	65 - 79 ms	71.60
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	156.60
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	143.80

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	064
Sequential Test Number	1
Date	04/21/09
Workfile	064 142 RIBST12 04-21-09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.0
Relative Humidity	10% - 70%	30.0
Pendulum Velocity	6.58 – 6.83 m/s	6.58
Maximum Deflection	63.50 – 72.64 mm	68.32
Maximum Resistive Force	5159.9 – 5893.9 N	5381.6
Internal Hysteresis	69 - 85 %	71.80

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	064
Sequential Test Number	1
Date	02/16/09
Workfile	064LF/RF 02-16-09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.7
Relative Humidity	10% - 70%	18.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5163.11
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.7
Relative Humidity	10% - 70%	18.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5335.72

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 1
Date 03/25/09

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			21.0
Relative Humidity			18.0
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	34.6
Shoulder Pivot Height	B	19.9 - 20.5 in	20.5
H-Point Height	C	3.3 - 3.5 in	3.5
H-Point from Backline	D	5.3 - 5.5 in	5.5
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
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	7.8
Buttock Knee Length	K	22.8 - 23.8 in	23.5
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.1
Buttock Popliteal Length	N	17.8 - 18.8 in	18.7
Chest Depth	O	8.4 - 9.0 in	8.5
Foot Length	P	9.9 - 10.5 in	10.2
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Foot Breadth	W	3.6 - 4.2 in	3.8
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.5
Waist Circumference	Z	32.9 - 34.1 in	33.4

Remarks:

Laboratory Technician: B. Swiecicki

PART 572O
HEAD DROP TEST

Dummy Serial Number	143
Sequential Test Number	1
Date	4/24/09
Workfile	143H2 04-24-09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	21.7
Relative Humidity	10% - 70%	27
Peak Resultant Acceleration	250-300 G's	253.89
Peak Lateral Acceleration	15 G's Max	9.05
Is Acceleration Curve Unimodal?	YES	Yes

Remarks:

Laboratory Technician: B. Swiecicki

PART 572O
NECK FLEXION TEST

Dummy Serial Number	143	
Sequential Test Number	1	
Date	5/5/09	6 Axis Neck Transducer
Workfile	143NF5 05-05-09	

TEST PARAMETER			SPECIFICATION	TEST RESULTS
Temperature			20.6 – 22.2 Deg C	22.2
Relative Humidity			10% - 70%	24
Impact Velocity			6.89 – 7.13 m/s	6.08
Pendulum Delta V	10 ms		2.1 – 2.5 m/s	2.14
	20 ms		4.0 – 5.0 m/s	4.40
	30 ms		5.8 – 7.0 m/s	6.36
D Plane Rotation		Max	77 - 91 Deg	77.38
Moment About Occipital		Max	69 - 83 N-m	76.99
Condyle		Time	80 - 100 ms	84.70

Remarks:

Laboratory Technician: B. Swiecicki

PART 572O
NECK EXTENSION TEST

Dummy Serial Number	143	
Sequential Test Number	1	
Date	5/5/09	6 Axis Neck Transducer
Workfile	143NE 05-05-09	

TEST PARAMETER			SPECIFICATION	TEST RESULTS
Temperature			20.6 – 22.2 Deg C	22.2
Relative Humidity			10% - 70%	24
Impact Velocity			5.95 – 6.19 m/s	6.08
Pendulum Delta V	10 ms		1.5 – 1.9 m/s	1.67
	20 ms		3.1 – 3.9 m/s	3.52
	30 ms		4.6 – 5.6 m/s	5.21
D Plane Rotation		Max	99 - 114 Deg	106.30
Moment About Occipital		Max	-65 to -53 N-m	-61.09
Condyle		Time	94 -114 ms	106.30

Remarks:

Laboratory Technician: B. Swiecicki

PART 572O
THORAX IMPACT TEST

Dummy Serial Number	143
Sequential Test Number	1
Date	5/8/09
Workfile	143T5 05-08-09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	22.2
Relative Humidity	10% - 70%	43
Pendulum Velocity	6.58 – 6.83 m/s	6.64
Maximum Deflection	50 -58 mm	51.43
Maximum Resistive Force	3900 - 4400 N	4176.89
Internal Hysteresis	69 - 85 %	74.89

Remarks:

Laboratory Technician: B. Swiecicki

PART 572O
KNEE IMPACT TEST

Dummy Serial Number	143
Sequential Test Number	1
Date	5/6/09
Workfile	143LF2 05-06-09; 143RF2 05-06-09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.7
Relative Humidity	10% - 70%	43
Probe Velocity	2.07 – 2.13 m/s	2.10
Peak Knee Impact Force	3450 - 4060 N	3466.59
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.7
Relative Humidity	10% - 70%	43
Probe Velocity	2.07 – 2.13 m/s	2.12
Peak Knee Impact Force	3450 - 4060 N	3574.15

Remarks:

Laboratory Technician: B. Swiecicki

PART 572O
EXTERNAL DIMENSIONS

Dummy Serial Number 143
Sequential Test Number 1
Date 5/6/09

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			21
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	774.7 – 800.1 mm	780.3
Shoulder Pivot Height	B	431.8 – 457.2 mm	444.0
H-Point Height	C	81.3 – 86.3 mm	83.2
H-Point from Backline	D	144.8 – 149.8 mm	147.0
Shoulder Pivot from Backline	E	68.6 – 83.8 mm	71.5
Thigh Clearance	F	119.4 – 134.6 mm	124.9
Back of Elbow to Wrist Pivot	G	243.9 – 259.1 mm	251.8
Skull Cap to Backline	H	43.2 – 48.2 mm	44.0
Shoulder - Elbow Length	I	276.8 – 297.2 mm	281.7
Elbow Rest Height	J	182.8 – 203.2 mm	190.4
Buttock Knee Length	K	520.7 – 546.1 mm	532.3
Popliteal Height	L	355.6 – 376.0 mm	361.1
Knee Pivot Height	M	393.7 – 419.1 mm	405.0
Buttock Popliteal Length	N	414.0 – 439.4 mm	422.2
Chest Depth	O	175.3 – 190.5 mm	181.1
Foot Length	P	218.5 – 233.7 mm	223.7
Shoulder Breadth	V	350.5 – 365.7 mm	359.9
Foot Breadth	W	78.8 – 94.0 mm	84.6
Chest Circumference (With Jacket)	Y	850.9 – 881.3 mm	865.9
Waist Circumference	Z	160.1 – 170.2 mm	165.4

Remarks:

Laboratory Technician: B. Swiecicki

APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION
(including temperature stabilization data)

P1 - Driver	Manufacturer / Serial Number	Calibration Date
V1P1 HDCG Ax	MFG: ENDEVCO S/N: P52011	12/03/08
V1P1 HDCG Ay	MFG: ENDEVCO S/N: P52128	12/03/08
V1P1 HDCG Az	MFG: ENDEVCO S/N: P51990	12/03/08
V1P1 NEKU Fx	MFG: DENTON S/N: 2019Fx	05/19/08
V1P1 NEKU Fy	MFG: DENTON S/N: 2019Fy	05/19/08
V1P1 NEKU Fz	MFG: DENTON S/N: 2019Fz	05/19/08
V1P1 NEKU Mx	MFG: DENTON S/N: 2019Mx	05/19/08
V1P1 NEKU My	MFG: DENTON S/N: 2019My	05/19/08
V1P1 NEKU Mz	MFG: DENTON S/N: 2019Mz	05/19/08
V1P1 CHST Ax	MFG: ENDEVCO S/N: P52000	12/02/08
V1P1 CHST Ay	MFG: ENDEVCO S/N: P49163	12/02/08
V1P1 CHST Az	MFG: ENDEVCO S/N: P52009	12/02/08
V1P1 CHST Dx	MFG: SERVO S/N: 064	06/24/08
V1P1 PVCN Ax	MFG: ENDEVCO S/N: P17285	03/03/09
V1P1 PVCN Ay	MFG: ENDEVCO S/N: P17837	04/01/09
V1P1 PVCN Az	MFG: ENDEVCO S/N: P17553	04/02/09
V1P1 FMRL Fz	MFG: DENTON S/N: 1525	05/19/08
V1P1 FMRR Fz	MFG: DENTON S/N: 1533	05/19/08
V1P1 FTLF Az	MFG: ENDEVCO S/N: P16286	03/03/09
V1P1 FTLR Ax	MFG: ENDEVCO S/N: P52152	12/03/08
V1P1 FTLR Az	MFG: ENDEVCO S/N: P52082	12/03/08
V1P1 FTRF Az	MFG: ENDEVCO S/N: P52025	12/03/08
V1P1 FTRR Ax	MFG: ENDEVCO S/N: P51873	12/03/08
V1P1 FTRR Az	MFG: ENDEVCO S/N: P58987	12/03/08
V1P1 TBLU Mx	MFG: DENTON S/N: 374Mx	05/19/08
V1P1 TBLU My	MFG: DENTON S/N: 374My	05/19/08
V1P1 TBLL Fz	MFG: DENTON S/N: 372Fz	05/19/08
V1P1 TBLL Mx	MFG: DENTON S/N: 372My	05/19/08
V1P1 TBLL My	MFG: DENTON S/N: 372My	05/19/08
V1P1 TBRU Mx	MFG: DENTON S/N: 404Mx	05/19/08
V1P1 TBRU My	MFG: DENTON S/N: 404My	05/19/08
V1P1 TBRL Fz	MFG: DENTON S/N: 396Fz	05/19/08
V1P1 TBRL Mx	MFG: DENTON S/N: 396Mx	05/19/08
V1P1 TBRL My	MFG: DENTON S/N: 396My	05/19/08
V1P1 HDCG RAx	MFG: ENDEVCO S/N: P51303	12/03/08
V1P1 HDCG RAy	MFG: ENDEVCO S/N: P51985	12/03/08
V1P1 HDCG RAz	MFG: ENDEVCO S/N: P51294	12/03/08
V1P1 CHST RAx	MFG: ENDEVCO S/N: P52035	12/02/08
V1P1 CHST RAy	MFG: ENDEVCO S/N: P52030	12/03/08
V1P1 CHST RAz	MFG: ENDEVCO S/N: P52033	12/02/08

P2 -Passenger	Manufacturer / SN	Calibration Date
V1P2 HDCG Ax	MFG: ENDEVCO S/N: P58709	03/27/09
V1P2 HDCG Ay	MFG: ENDEVCO S/N: P51723	03/26/09
V1P2 HDCG Az	MFG: ENTRAN S/N: 05G20-L01	03/27/09
V1P2 CHST Ax	MFG: ENDEVCO S/N: AAKC6	03/27/09
V1P2 CHST Ay	MFG: ENTRAN S/N: 03F03E29-N17	03/27/09
V1P2 CHST Az	MFG: ENDEVCO S/N: P51704	03/26/09
V1P2 NEKU Fx	MFG: DENTON S/N: 443Fx	04/07/09
V1P2 NEKU Fy	MFG: DENTON S/N: 443Fy	04/07/09
V1P2 NEKU Fz	MFG: DENTON S/N: 443Fz	04/07/09
V1P2 NEKU Mx	MFG: DENTON S/N: 443Mx	04/07/09
V1P2 NEKU My	MFG: DENTON S/N: 443My	04/07/09
V1P2 NEKU Mz	MFG: DENTON S/N: 443Mz	04/07/09
V1P2 PLVC Ax	MFG: ENTRAN S/N: 03E03D30-N08	03/30/09
V1P2 PLVC Ay	MFG: ENDEVCO S/N: P51688	03/26/09
V1P2 PLVC Az	MFG: ENDEVCO S/N: P51709	03/27/09
V1P2 FMRL Fz	MFG: DENTON S/N: 1713	12/29/08
V1P2 FMRR Fz	MFG: DENTON S/N: 1708	12/15/08
V1P2 CHST Dx	MFG: DENTON S/N: 0728	04/13/09
V1P2 TBRU Mx	MFG: DENTON S/N: 480Mx	04/13/09
V1P2 TBRU My	MFG: DENTON S/N: 480My	04/13/09
V1P2 TBRL Fz	MFG: DENTON S/N: 504Fz	04/14/09
V1P2 TBRL Mx	MFG: DENTON S/N: 504Mx	04/14/09
V1P2 TBRL My	MFG: DENTON S/N: 504My	04/14/09
V1P2 FTRF Az	MFG: ENDEVCO S/N: P51277	04/13/09
V1P2 FTRR Ax	MFG: ENDEVCO S/N: P51292	04/13/09
V1P2 FTRR Az	MFG: ENDEVCO S/N: P51257	04/13/09
V1P2 TBLU Mx	MFG: DENTON S/N: 361Mx	04/14/09
V1P2 TBLU My	MFG: DENTON S/N: 361My	04/14/09
V1P2 TBLL Fz	MFG: DENTON S/N: 360Fz	04/16/09
V1P2 TBLL Mx	MFG: DENTON S/N: 360Mx	04/16/09
V1P2 TBLL My	MFG: DENTON S/N: 360My	04/16/09
V1P2 FTLF Az	MFG: ENTRAN S/N: 01G18-F03	03/27/09
V1P2 FTLR Ax	MFG: ENTRAN S/N: 02I02I10-N24	03/27/09
V1P2 FTLR Az	MFG: ENTRAN S/N: 02I02I16-A04	03/12/09
V1P2 HDCG RAx	MFG: ENDEVCO S/N: P45014	03/27/09
V1P2 HDCG RAy	MFG: ENTRAN S/N: 05G15-L02	03/30/09
V1P2 HDCG RAz	MFG: ENTRAN S/N: 99H30-Z15	03/27/09
V1P2 CHST RAx	MFG: ENDEVCO S/N: P51666	03/27/09
V1P2 CHST RAy	MFG: ENTRAN S/N: 03E03E20-N05	03/27/09
V1P2 CHST RAz	MFG: ENTRAN S/N: 04J04120-Z18	03/30/09

Vehicle	Manufacturer / SN	Calibration Date
V1 SELR01 Ax	MFG: ENDEVCO S/N: P16841	04/03/09
V1 SERR02 Ax	MFG: ENDEVCO S/N: P23939	03/03/09
V1 ENGN03 Ax	MFG: ENDEVCO S/N: J25745	03/03/09
V1 ENGN04 Ax	MFG: ICS S/N: FA2487	03/27/09
V1 BRCR05 Ax	MFG: GS SENSORS S/N: 9440-011	04/16/09
V1 BRCL07 Ax	MFG: ICS S/N: FA2481	04/16/09
V1 SELR08 Az	MFG: ENDEVCO S/N: P35793	04/03/09
V1 SERR09 Az	MFG: ENDEVCO S/N: P23164	03/24/09
V1P1 LPBO F	MFG: First Technology S/N: 156	04/02/09
V1P2 LPBO F	MFG: First Technology S/N: 173	04/02/09