

REPORT NUMBER: 214-CAL-08-04

**SAFETY COMPLIANCE TESTING FOR FMVSS 214
SIDE IMPACT PROTECTION**

HYUNDAI MOTOR COMPANY
2009 HYUNDAI GENESIS
4-DOOR SEDAN

NHTSA NUMBER: C90504

CALSPAN
TRANSPORTATION SCIENCES CENTER
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November 18, 2008

FINAL REPORT

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
400 Seventh Street, SW
Room 6111 (NVS-220)
Washington, DC 20590

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-02-D-01114. This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufactures' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.



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16. Abstract A 48/24 kph 90 ⁰ Impact Moving Deformable Barrier Side Impact Test was conducted on the subject 2009 Hyundai Genesis 4-door Sedan in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-214D-06 (July 26, 2001) to determine FMVSS 214 Side Impact Protection compliance. This test was conducted at the Calspan Transportation Sciences Crash Test Facility in Buffalo, New York, on November 18, 2008. The impact velocity of the Moving Deformable Barrier (MDB) was 53.27 kph, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21 ⁰ C. The target vehicle post-test maximum crush was 200 mm at level 3. The test vehicle's performance follows: <table border="0" style="margin-left: 40px;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>Front SID</u></th> <th></th> <th style="text-align: center;"><u>Rear SID</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration (LUR):</td> <td style="text-align: center;">23.01</td> <td style="text-align: center;">g's</td> <td style="text-align: center;">19.43</td> <td style="text-align: center;">g's</td> </tr> <tr> <td>Left Lower Rib Acceleration (LLR):</td> <td style="text-align: center;">17.67</td> <td style="text-align: center;">g's</td> <td style="text-align: center;">21.98</td> <td style="text-align: center;">g's</td> </tr> <tr> <td>Lower Spine Acceleration (T₁₂):</td> <td style="text-align: center;">26.13</td> <td style="text-align: center;">g's</td> <td style="text-align: center;">22.67</td> <td style="text-align: center;">g's</td> </tr> <tr> <td>Thoracic Trauma Index (TTI):</td> <td style="text-align: center;">25</td> <td style="text-align: center;">g's</td> <td style="text-align: center;">33</td> <td style="text-align: center;">g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td style="text-align: center;">24</td> <td style="text-align: center;">g's</td> <td style="text-align: center;">34</td> <td style="text-align: center;">g's</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.					<u>Front SID</u>		<u>Rear SID</u>		Left Upper Rib Acceleration (LUR):	23.01	g's	19.43	g's	Left Lower Rib Acceleration (LLR):	17.67	g's	21.98	g's	Lower Spine Acceleration (T ₁₂):	26.13	g's	22.67	g's	Thoracic Trauma Index (TTI):	25	g's	33	g's	Pelvis Acceleration (PEV):	24	g's	34	g's
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SECTION 1

PURPOSE AND TEST PROCEDURE

This side impact test is part of the FMVSS 214 Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-02-D-01114. The purpose of this test was to evaluate side impact protection in a 2009 Hyundai Genesis 4-door Sedan. The test was conducted in accordance with the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-06, dated July 26, 2001).

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 2009 Hyundai Genesis 4-door Sedan was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 53.27 kph (33.1 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by the Calspan Transportation Sciences Center in Buffalo, New York on November 18, 2008. Pre- and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SIDs) are included in Appendix A.

Two restrained Side Impact Dummies (SIDs) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to the instructions specified in the OVSC Side Impact Laboratory Test Procedure (TP-214D-06, dated July 26, 2001). Both SIDs were certified prior to this test. The side impact test was documented by one real-time camera and 9 high-speed cameras. Camera locations and other pertinent camera information are included in this report.

The SIDs were instrumented with the following accelerometers:

1. Left Upper Rib (LUR) uniaxial and redundant accelerometer (Y-direction)
2. Left Lower Rib (LLR) uniaxial and redundant accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) uniaxial and redundant accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial and redundant accelerometer (Y-direction)
5. Head triaxial accelerometers (X-, Y- and Z-direction)

A summary of the side impact dummy (SID) configuration and verification test data can be found in Appendix C. A total of 48 channels of data were recorded. Appendix B contains the vehicle, MDB and dummy response data traces.

The following table summarizes the results of the test.

Injury Criteria	Front SID	Rear SID
TTI (g)	25	33
PEV (g)	24	34

FMVSS 214D requires that the TTI not exceed 85 g's for 4 door vehicles and not exceed 90 g's for 2 door vehicles. Peak lateral pelvis acceleration shall not exceed 130 g's.

SECTION 3

SUMMARY OF TEST RESULTS

DATA SHEET 1

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2009 Hyundai Genesis 4-door Sedan

Vehicle Body Color: Blue VIN: KMHGC46E59U026207

Vehicle NHTSA No.: C90504 Month & Year of Manufacture: 6/24/08

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

Engine Placement: x Longitudinal; or - Lateral

Transmission: 6 Speed; - Manual; x Automatic; - Overdrive

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

Odometer Reading 90 km

Supplemental Airbag Restraints:

Front Occupant: x Frontal; - Knee; x Side; x Curtain

Rear Occupant: - Frontal; - Knee; - Side; x Curtain

Options:

x ADL; x A/C; x Power Steering; x Power Brakes; x Power Windows

DATA FROM TIRE PLACARD

Recommended Tire Size: P225/55R17

*Recommended Cold Tire Pressure: 230 kpa FRONT; 230 kpa REAR

DATA FROM TIRE SIDEWALL:

Size of Tires on Test Vehicle: P225/55R17 ; Manufacturer: Dunlop

Tire Pressure with Maximum Capacity Vehicle Load: Front: 350 kPa; Rear: 350 kPa

Treadwear: 260 ; Traction: A ; Temperature: A

VEHICLE CAPACITY DATA:

Number of Occupants: 2 Front; 3 Rear; 0 3rd Seat; 5 Total

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

Type of Rear Seats: - Bucket; - Bench; - Split Bench; x Contoured

Type of Front Seat Back: - Fixed; x Adjustable with x Lever or - Knob

Type of Rear Seat Back: x Fixed; - Adjustable with - Lever or - Knob

Vehicle Max Capacity Loading = 390 kg (A)

No. of Occupants x 68.04 kg. = 340.2 kg (B)

Vehicle Cargo Capacity = 49.8 kg (A-B)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front = 460 kg Left Rear = 418 kg

Right Front = 444 kg Right Rear = 416 kg

TOTAL FRONT = 904.0 kg TOTAL REAR = 834.0 kg

% of Total Weight = 52.0% % % of Total Weight = 48.0 %

TOTAL WEIGHT = 1738.0 kg

* Tire pressure used in test.

DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Max. Fluids = 1738.0 kg (A)
Maximum Cargo Carrying Capacity of Test Vehicle = 49.8 kg (B)
Weight of instrumented Side Impact Dummies (2 X 81.2 kg) = 162.4 kg (C)
TEST VEHICLE TARGET WEIGHT: = 1950.2 kg (A+B+C)

FULLY LOADED TEST VEHICLE (UDVW + 1 or 2 SID(s) + CARGO):

Left Front	=	<u>511</u>	kg	Left Rear	=	<u>512</u>	kg
Right Front	=	<u>454</u>	kg	Right Rear	=	<u>476</u>	kg
TOTAL FRONT	=	<u>965.0</u>	kg	TOTAL REAR	=	<u>988.0</u>	kg
% of Total Weight	=	<u>49.4%</u>	%	% of Total Weight	=	<u>50.6%</u>	%
TOTAL TEST WEIGHT =		<u>1953.0</u>	kg				

AS TESTED WEIGHT OF TEST VEHICLE (1 OR 2 SID(s) + CARGO + EQUIPMENT & INSTRUMENTATION):

Left Front	=	<u>502</u>	kg	Left Rear	=	<u>503</u>	kg
Right Front	=	<u>457</u>	kg	Right Rear	=	<u>480</u>	kg
TOTAL FRONT	=	<u>959.0</u>	kg	TOTAL REAR	=	<u>983.0</u>	kg
% of Total Weight	=	<u>49.4%</u>	%	% of Total Weight	=	<u>50.6%</u>	%
TOTAL TEST WEIGHT =		<u>1942</u>	kg				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

AS DELIVERED:

Left Front 714 Right Front 718 Left Rear 716 Right Rear 719

FULLY LOADED:

Left Front 707 Right Front 694 Left Rear 715 Right Rear 702

READY FOR TEST:

Left Front 709 Right Front 699 Left Rear 715 Right Rear 705

Test Vehicle Wheelbase: 2938 millimeters

C.G. = 1487 millimeters rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4855 millimeters

Left Side = 4854 millimeters

Centerline = 4975 millimeters

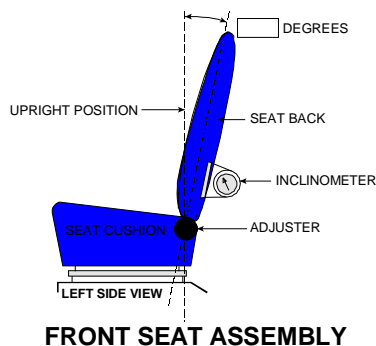
DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504

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.



FRONT SEAT CUSHION PLACEMENT: Seat was centered from full cushion travel

Total Length of Adjustment Travel: 300 millimeters

Total Number of Adjustment Positions or Detents: Electronic adjustment

FRONT SEAT BACK ADJUSTMENT POSITION: 11.5 degrees off of head restraint post

Seat Back Torso Angle: 25 degrees

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: - millimeters

Seat Back Adjustment Position: Fixed

ADJUSTABLE STEERING COLUMN POSITION: 66 degrees was middle at 15 mm telescoping travel from full in

WINDOW POSITIONS: Left Front: Closed Left Rear: Closed
Right Front: Open Right Rear: Open

Note: Windows will be in closed position on struck side of test vehicle and in open position on opposite side.

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

Comments: None

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

73.0 liters (Fuel Tank Usable Capacity)

67.5 liters used for test (92%-94% of Fuel Tank Usable Capacity)

LOCATION OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase = 2938 millimeters

Impact Point is 529 millimeters rearward of front axle centerline
(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 518 millimeters rearward of front axle centerline

DATA SHEET 2

TEST VEHICLE SUMMARY OF RESULTS

VEHICLE IDENTIFICATION:

Vehicle Year/Make/Model: 2009 Hyundai Genesis

Body Style: 4-door Sedan

VIN: KMHGC46E59U026207

NHTSA No.: C90504

Test Date: November 18, 2008

Overall Length = 4975 millimeters; Overall Width = 1854 millimeters

VEHICLE TEST WEIGHT (Pre-Test):

Left Front = 502 kg Left Rear = 503 kg

Right Front = 457 kg Right Rear = 480 kg

TOTAL FRONT = 959.0 kg TOTAL REAR = 983.0 kg

TOTAL VEHICLE WEIGHT 1942.0 kg

Wheelbase = 2938 millimeters

Longitudinal C.G. from Center of Front Axle = 1487.15 millimeters

Impact Angle with Respect to Impactor = 90 degrees

ACTUAL IMPACT POINT

Actual Impact Point is 10 mm rwd of nominal impact ref. line (Lateral)

Actual Impact Point is 4 mm below nominal impact point (Vertical)

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (230 mm above ground) = 36 millimeters

2. LEVEL 2 (512 mm above ground) = 200 millimeters

3. LEVEL 3 (625 mm above ground) = 197 millimeters

4. LEVEL 4 (883 mm above ground) = 171 millimeters

5. LEVEL 5 (1418 mm above ground) = 4 millimeters

Maximum Post-Test Intrusion = 200 millimeters

OCCUPANTS:

Front Passenger:

Rear Passenger:

Dummy Identification 013 015

Restraints Used 3-point belt systems 3-point belt systems

INSTRUMENTATION:

Number of Vehicle Data Channels: = 21

Number of Cameras: Onboard = 3

 Offboard = 7

 TOTAL = 10

DATA SHEET 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504

MDB FACE MANUFACTURER AND SERIAL NUMBER:

N/A

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

Overall Width of Framework Carriage	=	<u>1250</u>	millimeters
Overall Length of MDB (incl. honeycomb impact face)	=	<u>4120</u>	millimeters
Wheelbase of Framework Carriage	=	<u>2590</u>	millimeters
Tread of Framework Carriage (Front & Rear)	=	<u>1875</u>	millimeters
C.G. Location Rearward of Front Axle	=	<u>1104</u>	millimeters

MDB WEIGHT:

Left Front	=	<u>409.5</u>	kg	Left Rear	=	<u>281.5</u>	kg
Right Front	=	<u>372.5</u>	kg	Right Rear	=	<u>299.0</u>	kg
TOTAL FRONT	=	<u>782.0</u>	kg	TOTAL REAR	=	<u>580.5</u>	kg
TOTAL MDB WEIGHT	=	<u>1362.5</u>	kg				
Impact Angle (MDB C/L to Target Vehicle C/L)	=	<u>90</u>	degrees				
Impact Speed	=	<u>53.27</u>	kph				

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A at Center of Bumper Level	=	<u>135</u>	millimeters
2. Row B at Top of Bumper Level	=	<u>88</u>	millimeters
3. Row C at Mid Level	=	<u>95</u>	millimeters
4. Row D at Top of Stack Level	=	<u>112</u>	millimeters

INSTRUMENTATION:

Number of MDB Data Channels	=	<u>5</u>
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DATA SHEET 4

POST-TEST OBSERVATIONS

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504

VISIBLE DUMMY CONTACT POINTS:

LEFT FRONT SID

LEFT REAR SID

Head: Curtain airbag / Head restraint
Upper Torso: Airbag
Lower Torso: Airbag / Door Skin
Left Knee: Door Skin
Right Knee: Left Knee

Curtain airbag / Head restraint
Door Skin
Door Skin
Door Skin
Left Knee

DOOR OPENING:

LEFT DOOR

RIGHT DOOR

Front: Closed / Inoperable
Rear: Closed / Inoperable

Closed / Operable
Closed / Operable

MDB DISTANCE FROM TARGET IMPACT POINT:

Vertical: 4 mm
Horizontal: 10 mm

ARM REST LOCATIONS:

Front: OK
Rear: OK

SEAT MOVEMENT:

Front: None
Rear: None

GLAZING DAMAGE:

Windshield: OK
Window: Front window intact / Rear passenger side window blew out

PILLAR PERFORMANCE:

OK

SILL SEPARATION:

OK

AIR BAG DEPLOYMENT STATUS:

	DRIVER	FRONT PASSENGER	REAR PASSENGER
FRONT	NO	NO	N/A
SIDE	YES	NO	YES

OTHER NOTABLE IMPACT EFFECTS:

NONE

SECTION 4

OCCUPANT AND VEHICLE INFORMATION

DATA SHEET 5

SID INSTRUMENTATION DATA

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504

	Front Dummy ID# 013				Rear Dummy ID# 015			
	Pos. Direction		Neg. Direction		Pos. Direction		Neg. Direction	
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
HEAD ACCELERATIONS:								
Longitudinal X	3.0	29.2	-14.6	63.1	3.4	108.2	-10.7	53.4
Lateral Y	24.2	57.3	-8.6	30.3	29.6	47.3	-3.7	100.8
Vertical Z	5.5	39.9	-6.8	72.1	11.3	92.8	-14.7	74.8
Resultant R	26.3	57.3	0.0	-16.6	30.8	50.2	0.0	-11.4
HIC	62.1				60.2			
RIB ACCELERATIONS:								
Upper Rib Lateral Y	23.012	15	-7.526	102.5	19.426	57.5	-16.659	90.6
Upper Rib Lateral Y(R)	22.581	15	-8.117	102.5	19.485	57.5	-18.867	91.8
Lower Rib Lateral Y	17.672	13.1	-8.924	101.9	21.975	54.4	-44.068	88.8
Lower Rib Lateral Y(R)	18.721	12.5	-9.229	101.9	22.466	54.4	-26.072	90
SPINE ACCELERATIONS:								
Lower Lateral Y	26.134	32.5	-4.141	70.7	22.674	54.4	-8.548	96.9
Lower Lateral Y(R)	24.787	32.5	-3.866	71.3	22.036	54.4	-9.052	96.9
PELVIC ACCELERATIONS:								
Lateral Y	23.611	41.3	-4.544	61.3	33.659	51.3	-3.743	233.2
Lateral Y(R)	23.092	41.3	-4.675	61.3	33.632	51.3	-3.738	233.2

REFERENCE: Positive Direction –
 Longitudinal (X) = forward
 Lateral (Y) = to right
 Vertical (Z) = down

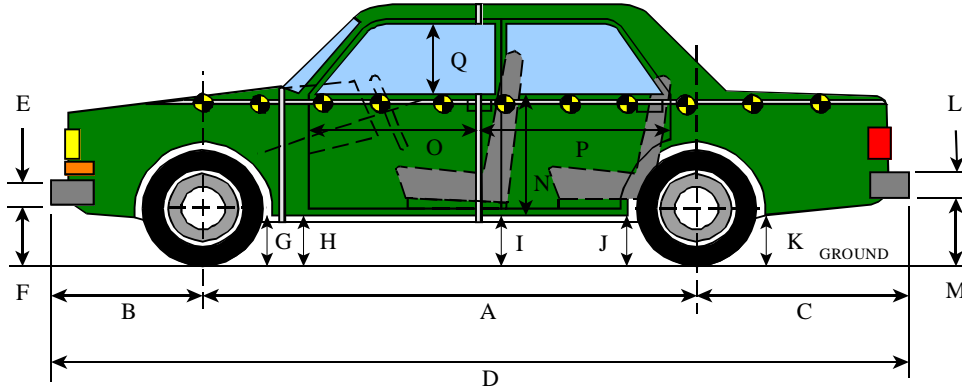
Note: Above data has been FIR filtered, Y(R) denotes redundant Y direction accelerometer.
 Head Accelerations are filtered at SAE Class 1000.

DATA SHEET 6

VEHICLE SIDE MEASUREMENTS

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504



LEFT SIDE VIEW

NOTE: all dimensions are in millimeters with tolerance of ± 3 mm

	PRE-TEST (as delivered)	PRE-TEST (as tested)	POST-TEST (as tested)	Δ CHANGE
A	2936	2938	2931	-7
B	876	874	878	4
C	1163	1163	1160	-3
D	4975	-	4969	-6
E	120	-	120	0
F	397	397	398	1
G	138	128	161	33
H	158	148	166	18
I	172	151	158	7
J1	162	140	142	2
J2	175	152	163	11
K	222	195	204	9
L	140	-	140	0
M	476	443	453	10
N	718	-	651	-67
O	770	-	757	-13
P	1280	-	1220	-60
Q	446	-	445	-1
R	4855	-	4844	-11
S	4854	-	4851	-3
T	927	-	930	3

D = Length at Centerline

E&L = Bumper Thickness

R = Right Side Length

S = Left Side Length

T = Width at B-Pillar

J1 = To Pinch Weld

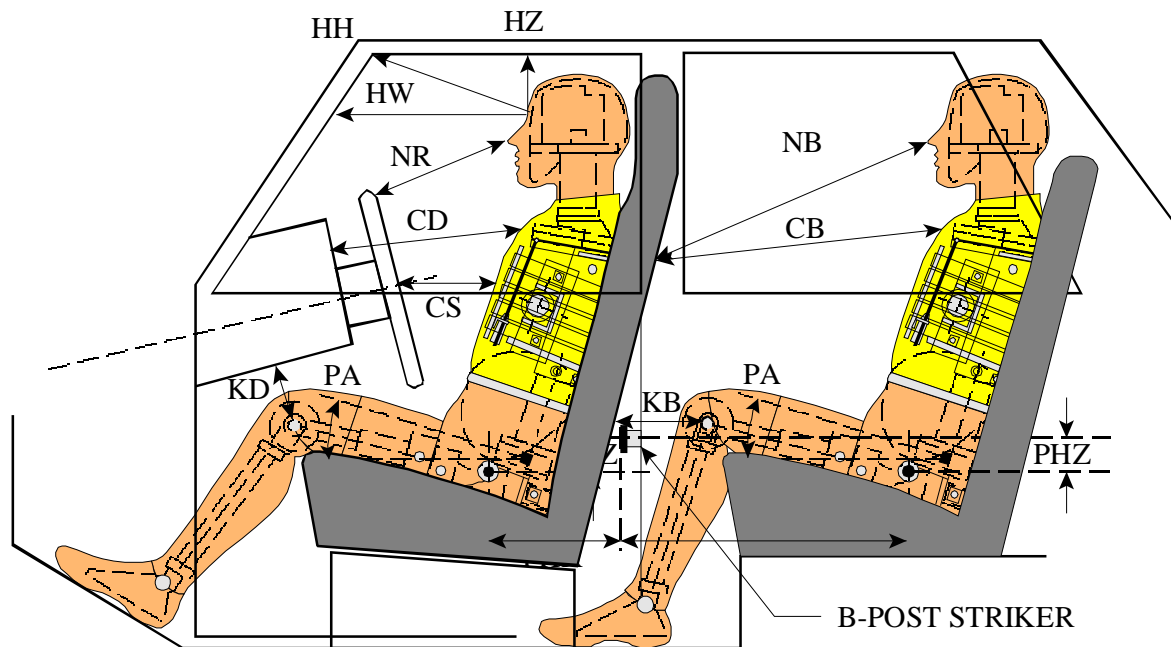
J2 = To Sill

DATA SHEET 7

SID LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504



LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
REAR DUMMY PHX & PHZ
MEASUREMENTS FOR A 4-DOOR
VEHICLE WOULD USE THE C-POST
STRIKER AS A REFERENCE POINT

NOTE: All dimensions are in millimeters with tolerance of ± 3 mm

	DRIVER ID# 013	LEFT REAR PASS. ID# 015
HH	383	N/A
HW	689	N/A
HZ	231	152
NR/NB	477	688
CD/CB	569	618
CS	300	N/A
KDL(KDA°)/KBL(KDA°)	185 / (33 °)	273 / (27 °)
KDR(KBA°)/KBR(KBA°)	114 / (49 °)	275 / (22 °)
PA°	23.4°	23.5°
PHX	243mm / 5 rearward	223 mm / 0
PHZ	256 mm / 2 up	220 mm / 6 up

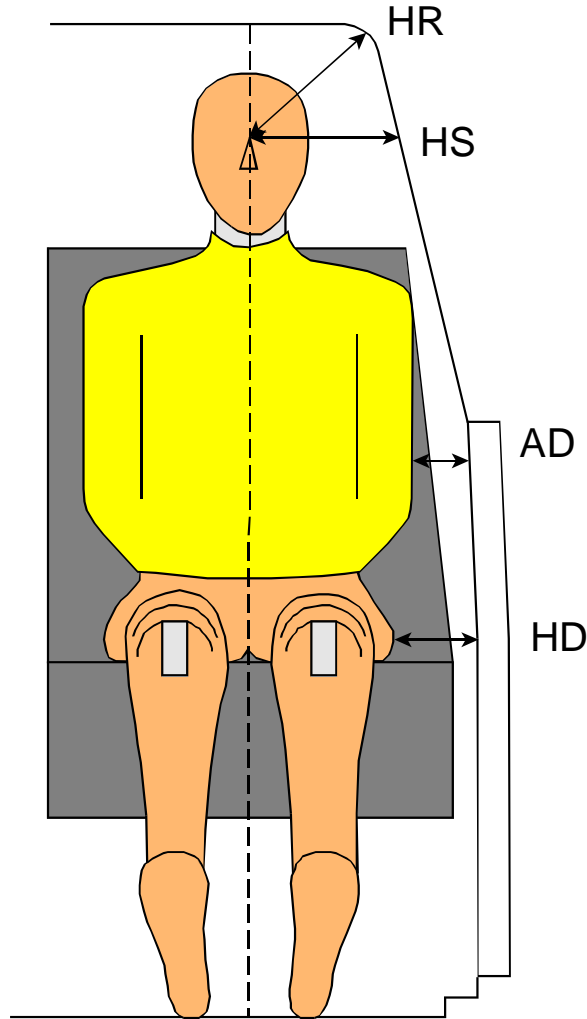
Note: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

DATA SHEET 8

SID LATERAL CLEARANCE DIMENSIONS

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504



NOTE: All dimensions are in millimeters with tolerance of ± 3 mm

	DRIVER ID # 013		LEFT REAR PASS. ID # 015	
HR	215		177	
HS	352		309	
AD*	LOWER: 140	UPPER: 140	LOWER: 132	UPPER: 115
HD	176		170	

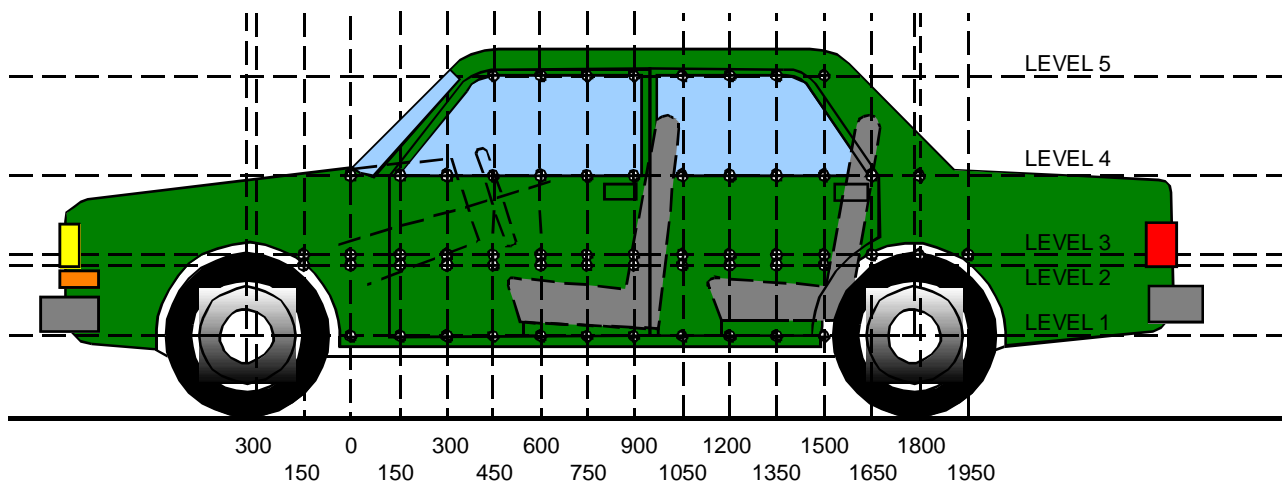
* Lower measurement is taken laterally at the center of the lower rib accelerometer height from the SID arm to the closest part of the vehicle side. Upper measurement is taken laterally at the center of the upper rib accelerometer height from the SID arm to the closest part of the vehicle side.

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504



LEFT SIDE VIEW

NOTE: All measurements are in millimeters (mm)

- LEVEL 5 - WINDOW TOP
- LEVEL 4 - WINDOW SILL
- LEVEL 3 - MID-DOOR
- LEVEL 2 - OCCUPANT H-POINT
- LEVEL 1 - SILL TOP HEIGHT

MEASUREMENTS ARE TAKEN WHEN THE VEHICLE IS IN THE "AS TESTED" CONFIGURATION.

Measurements Along the Vertical 750 mm Line Shown Above:

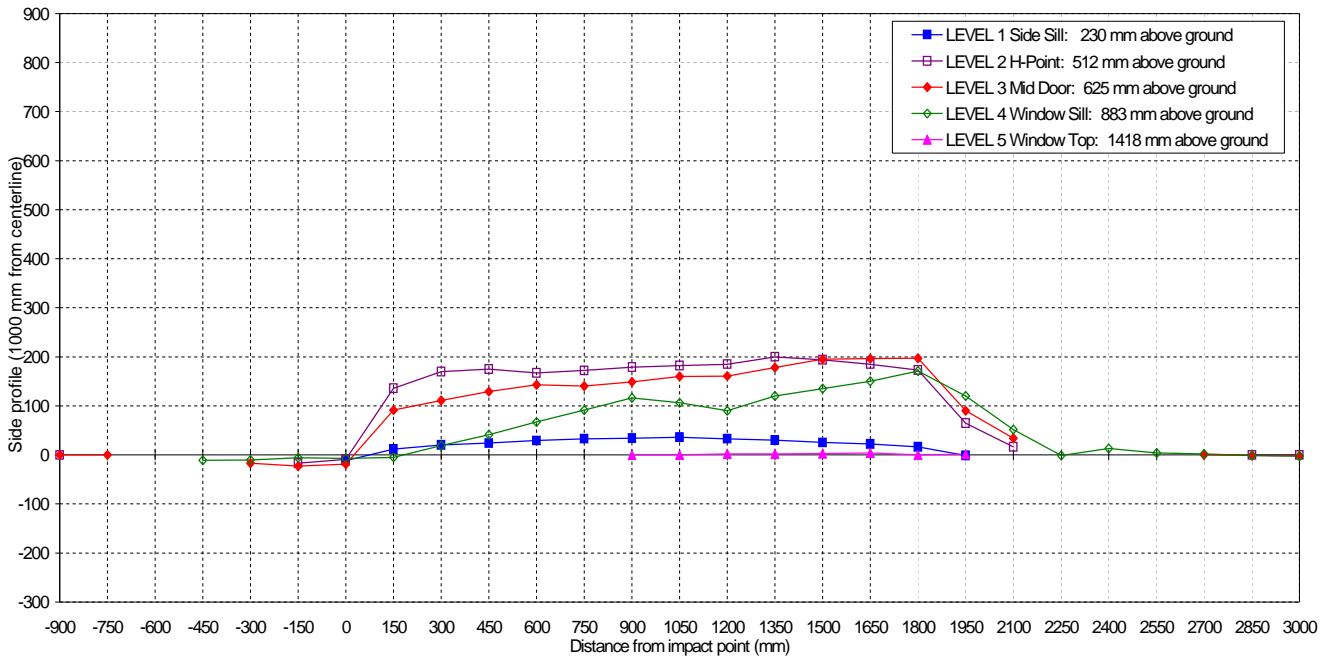
Level 5 @ Window Top	=	<u>4</u>	millimeters
Level 4 @ Window Sill	=	<u>171</u>	millimeters
Level 3 @ Mid Door	=	<u>197</u>	millimeters
Level 2 @ Occupant H-Point	=	<u>200</u>	millimeters
Level 1 @ Sill Top Height	=	<u>36</u>	millimeters

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504



NOTE: All dimensions are in millimeters with a tolerance of ±3 mm

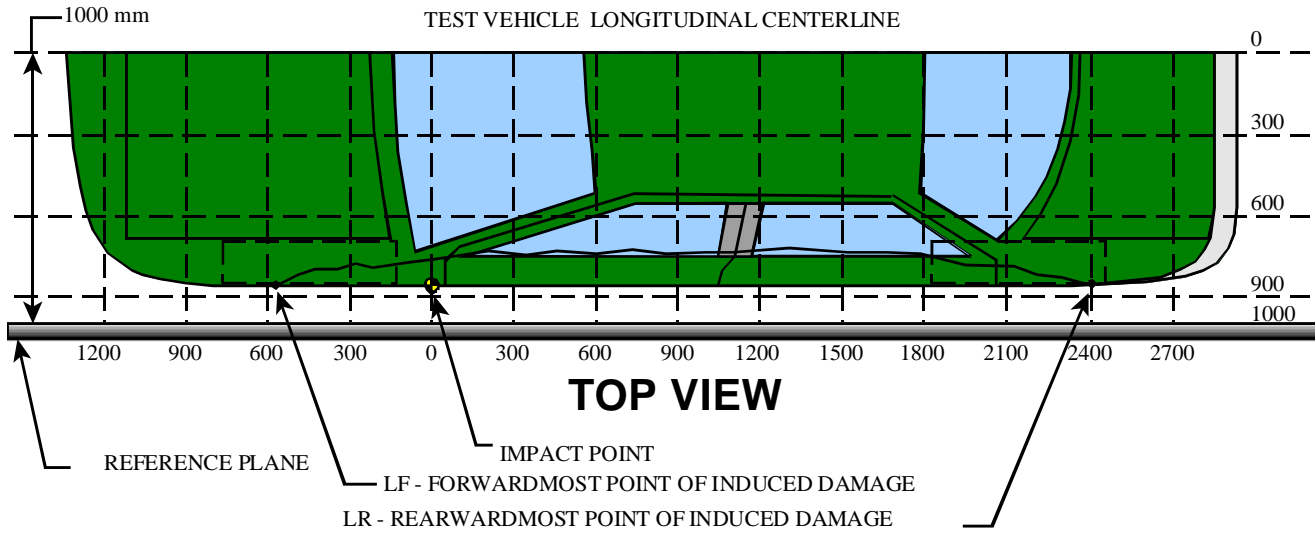
		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT																											
LEVEL	HEIGHT (mm)	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	
LEVEL 1 SIDE SILL	230	PRE	--	--	--	--	--	122	136	138	140	140	141	142	142	143	144	146	145	143	130	--	--	--	--	--	--	--	
		POST	--	--	--	--	--	110	148	158	164	169	174	176	178	176	174	171	167	159	129	--	--	--	--	--	--	--	
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	-12	12	20	24	29	33	34	36	33	30	25	22	16	-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LEVEL 2 H POINT	512	PRE	88	--	--	--	71	87	89	88	87	86	86	85	85	85	85	86	88	89	87	75	--	--	--	--	96	127	
		POST	88	--	--	--	54	78	225	258	262	253	258	264	267	270	285	280	273	262	152	91	--	--	--	--	96	127	
		CRUSH	0	N/A	N/A	N/A	N/A	-17	-9	136	170	175	167	172	179	182	185	200	194	185	173	65	16	N/A	N/A	N/A	N/A	0	0
LEVEL 3 MID DOOR	625	PRE	118	71	--	--	64	76	82	82	80	78	77	75	74	74	73	74	75	76	79	81	74	--	--	--	73	103	126
		POST	118	71	--	--	47	53	63	173	191	207	220	215	223	234	234	252	270	272	276	171	108	--	--	--	73	102	124
		CRUSH	0	0	N/A	N/A	-17	-23	-19	91	111	129	143	140	149	160	161	178	195	196	197	90	34	N/A	N/A	N/A	0	-1	-2
LEVEL 4 WINDOW SILL	883	PRE	--	--	--	268	222	179	158	145	134	125	116	109	104	100	95	93	91	91	92	95	72	105	111	120	131	145	162
		POST	--	--	--	257	212	173	151	140	153	166	183	200	220	206	185	213	226	241	263	215	124	104	124	124	133	144	159
		CRUSH	N/A	N/A	N/A	-11	-10	-6	-7	-5	19	41	67	91	116	106	90	120	135	150	171	120	52	-1	13	4	2	-1	-3
LEVEL 5 WINDOW TOP	1418	PRE	--	--	--	--	--	--	--	--	--	--	--	--	596	398	391	389	389	390	399	439	--	--	--	--	--	--	
		POST	--	--	--	--	--	--	--	--	--	--	--	--	596	398	393	391	392	394	399	440	--	--	--	--	--	--	
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0	2	2	3	4	0	1	N/A	N/A	N/A	N/A	N/A	N/A

DATA SHEET 11

VEHICLE DAMAGE PROFILE DISTANCES

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504



MEASUREMENT CONVENTIONS:
 Forward of the impact point (towards front of vehicle) is considered negative (-).
 Rearward of the impact point (toward rearend of vehicle) is considered positive (+).

NOTE: All dimensions are in millimeters with tolerance of ± 3 mm.

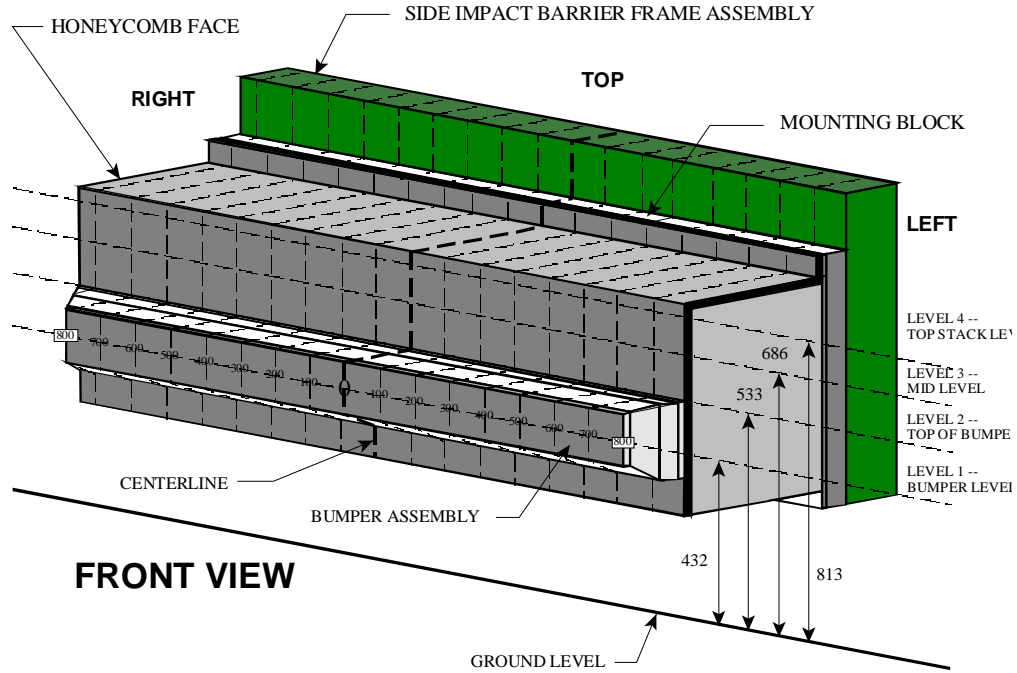
DPD MEASUREMENTS (mm)	POST TEST (mm)	PRETEST (mm)	STATIC CRUSH (mm)
1 (LR)	2250	105	104
2	1700	77	273
3	1150	85	269
4	600	86	253
5	50	88	127
6 (LF)	-500	268	268

DATA SHEET 12

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504



NOTE: Dimensions are shown in millimeters, mm

NOTE: All dimensions are in millimeters with a tolerance of ±3 mm

LEVEL	HEIGHT AT CL (mm)*		DISTANCE RIGHT OF CENTER (mm)									DISTANCE LEFT OF CENTER (mm)							
			-800	-700	-600	-500	-400	-300	-200	-100	0	100	200	300	400	500	600	700	800
LEVEL 4 TOP STACK	811	PRE	411	412	412	412	412	412	413	413	413	413	413	413	413	413	413	412	
		POST	421	414	407	401	380	345	358	366	376	389	396	390	381	368	353	339	300
		CRUSH	-10	-2	5	11	32	67	55	47	37	24	17	23	32	45	60	74	112
LEVEL 3 MID LEVEL	682	PRE	411	411	412	412	412	412	412	413	412	412	412	412	412	412	412	412	
		POST	406	410	404	397	379	365	373	395	401	402	401	399	394	389	378	357	317
		CRUSH	5	1	8	15	33	47	39	17	12	10	11	13	18	23	34	55	95
LEVEL 2 TOP BUMPER	542	PRE	411	412	412	412	412	412	412	413	412	412	412	412	412	412	412	412	
		POST	323	324	330	331	333	335	335	345	351	353	353	353	353	357	356	350	338
		CRUSH	88	88	82	81	79	77	77	67	62	59	59	59	59	55	56	62	74
LEVEL 1 MID BUMPER	430	PRE	501	513	513	513	513	513	514	514	514	514	514	514	514	514	514	505	
		POST	366	389	394	396	392	398	398	402	410	418	422	424	426	428	425	409	373
		CRUSH	135	124	119	117	121	115	115	112	104	96	92	90	88	86	89	105	132

LEVEL	HEIGHT AT CL (mm)*	MAX CRUSH
LEVEL 4 TOP STACK	811	112
LEVEL 3 MID LEVEL	682	95
LEVEL 2 TOP BUMPER	542	88
LEVEL 1 MID BUMPER	430	135

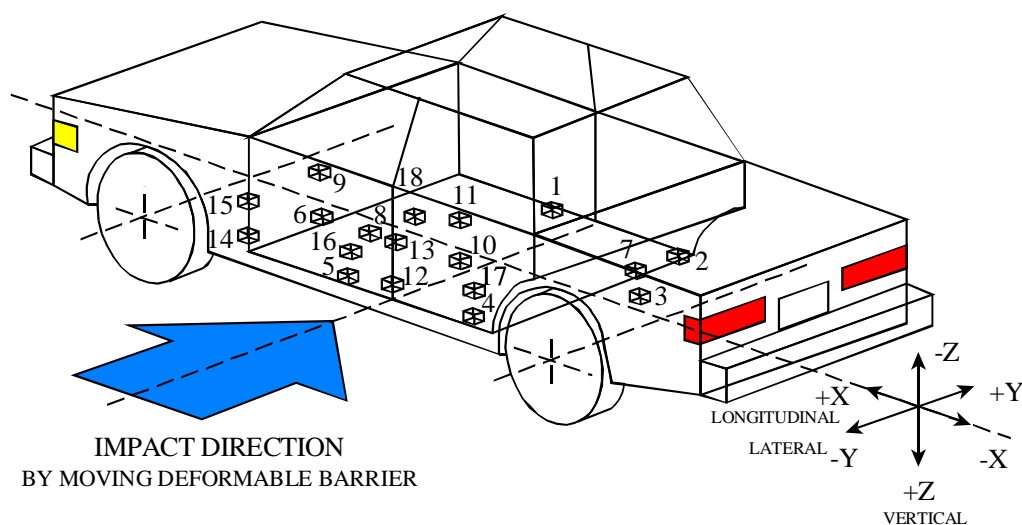
*Heights measured above ground level.

DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504



- | | |
|------------------------------------|------------------------------------|
| 1-Right Side Sill @ Front Seat | 10-Midrear of Left Rear Door |
| 2-Right Side Sill @ Rear Seat | 11-Left Rear Door Upper Centerline |
| 3-Rear Floorpan Above Axle | 12-Left Lower B-Pillar |
| 4-Left Side Sill @ Rear Seat | 13-Left Middle B-Pillar |
| 5-Left Side Sill @ Front Seat | 14-Left Lower A-Pillar |
| 6-Left Front Door on Centerline | 15-Left Middle A-Pillar |
| 7-Right Rear Occupant Compartment | 16-Front Seat Track |
| 8-Midrear of Left Front Door | 17-Rear Seat Track |
| 9-Left Front Door Upper Centerline | 18-Vehicle CG |

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504

Accel. No.	Location	Coordinates (mm)±3 mm				Long. (x)		Lat. (y)		Vert. (z)		Resultant	
		X*	Y*	Z*		Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
						pos.	neg.	pos.	neg.	pos.	neg.	pos.	neg.
1	Right Side Sill at Front Seat	2984	-687	-309	pos.	3.4	59.2	32.5	20	8.4	23.9	32.7	20
					neg.	-5.6	10.1	-2.7	92.7	-15.1	27.8	0	-19.6
2	Right Side Sill at Rear Seat	2212	-690	-318	pos.	3.9	58.5	282.7	184.8	8	13.6	282.7	184.8
					neg.	-5.4	10.5	-271.8	49.8	-10.2	17.7	0	-12.9
3	Rear Floorpan Above Axle	1335	105	-493	pos.	3.6	57.9	20.2	30.8	16.1	35.2	26.8	31
					neg.	-17.5	31.3	-2	88.9	-7.1	28.4	0	-19.1
4	Left Side Sill at Rear Seat	2199	687	-314	pos.	-	-	127.6	3.7	-	-	-	-
					neg.	-	-	-70.7	23.6	-	-	-	-
5	Left Side Sill at Front Seat	3073	686	-307	pos.	-	-	107.1	4.8	-	-	-	-
					neg.	-	-	-44.4	29.2	-	-	-	-
6**	Left Front Door on Centerline	-	-	-	pos.	-	-	-	-	-	-	-	-
					neg.	-	-	-	-	-	-	-	-
7	Right Rear Occupant Compartment	2233	-406	-181	pos.	-	-	20.1	19.3	-	-	-	-
					neg.	-	-	-2.6	91.6	-	-	-	-
8**	Midrear of Left Front Door	-	-	-	pos.	-	-	-	-	-	-	-	-
					neg.	-	-	-	-	-	-	-	-
9**	Left Front Door Upper Centerline	-	-	-	pos.	-	-	-	-	-	-	-	-
					neg.	-	-	-	-	-	-	-	-
10**	Midrear of Left Rear Door	-	-	-	Pos.	-	-	-	-	-	-	-	-
					neg.	-	-	-	-	-	-	-	-
11**	Left Rear Door Upper Centerline	-	-	-	pos.	-	-	-	-	-	-	-	-
					neg.	-	-	-	-	-	-	-	-

*Reference: X - Rear Bumper (+ Forward) Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Down)

**Accelerometer was not requested by COTR.

4-11

8857-

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504

Accel. No.	Location	Coordinates (mm)±3 mm				Long. (x)		Lat. (y)		Vert. (z)		Resultant	
		X*	Y*	Z*		Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
12	Left Lower B-Pillar	2413	689	-368	pos.	-	-	0.1	30.8	-	-	-	-
					neg.	-	-	-0.2	17.1	-	-	-	-
13	Left Middle B-Pillar	2323	679	-931	pos.	-	-	178.9	6.2	-	-	-	-
					neg.	-	-	-146.5	10.9	-	-	-	-
14	Left Lower A-Pillar	3507	671	-446	pos.	-	-	72.3	5.5	-	-	-	-
					neg.	-	-	-57.2	18.1	-	-	-	-
15	Left Middle A-Pillar	3294	674	-996	pos.	-	-	23.4	25.2	-	-	-	-
					neg.	-	-	-8.6	28.2	-	-	-	-
16	Front Seat Track	2543	598	-290	pos.	-	-	32.7	4.7	-	-	-	-
					neg.	-	-	-24.3	64.1	-	-	-	-
17	Rear Seat Track	1134	516	-559	pos.	-	-	19.1	6.6	-	-	-	-
					neg.	-	-	-3.7	90.2	-	-	-	-
18	Vehicle CG	2741	24	-499	pos.	8.4	46.8	26	12.2	26.7	28.5	35.1	28.3
					neg.	-15.9	14.3	-11.7	33.4	-19.8	34.2	0	-12.8

*Reference: X - Rear Bumper (+ Forward) Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Down)

4-12

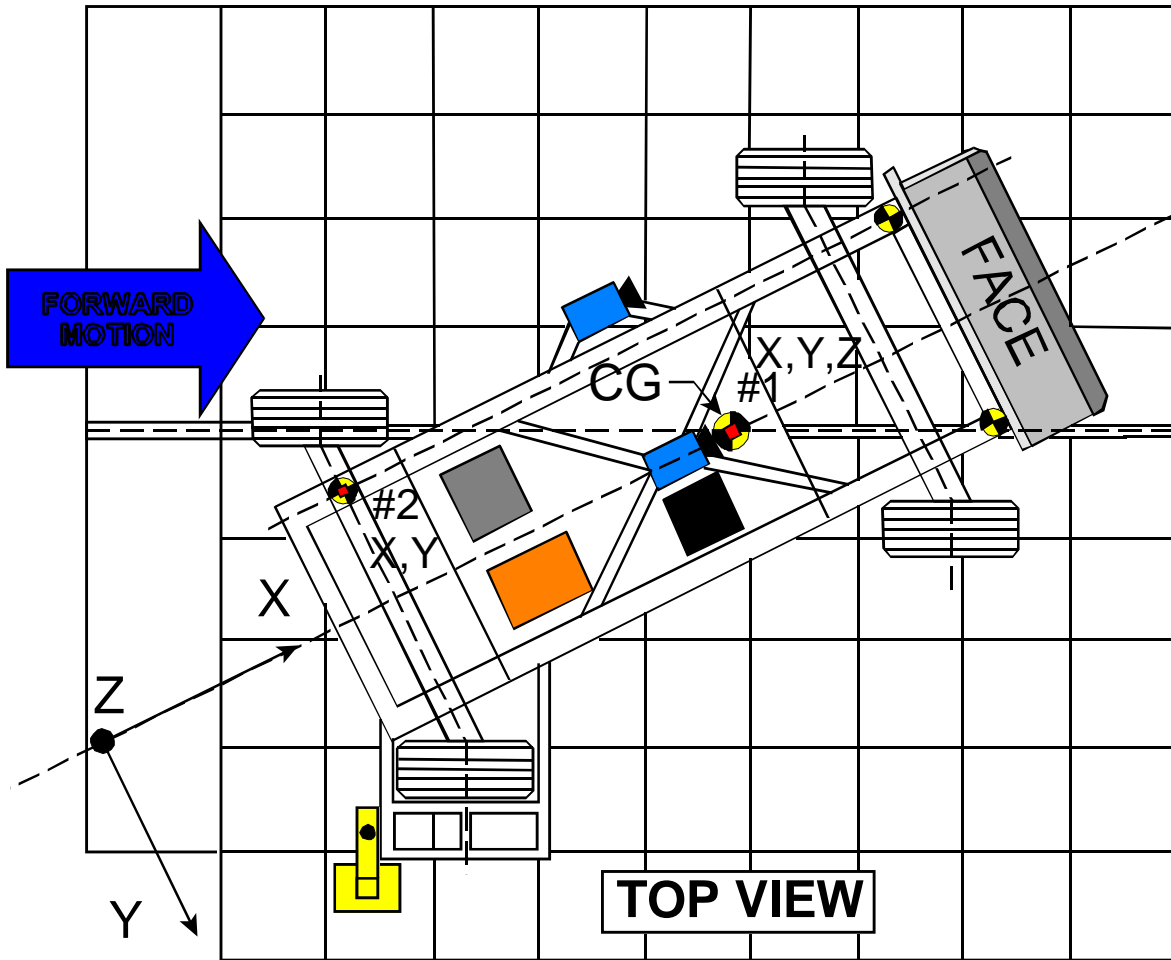
8867-
D11A 01

DATA SHEET 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504



Accel. No.	Location	Coordinates (millimeters)			Pos. Direct.		Neg. Direct.	
		X*	Y*	Z*	Max (g)	Time (msec)	Max (g)	Time (msec)
1	MDB Center of Gravity							
	Longitudinal... X	1859	0	-330	1.1	109.8	-18.7	36.2
	Lateral..... Y				4.3	64	-5.9	48.5
	Vertical..... Z				12.4	85.8	-13.3	22.1
	Resultant..... R				20.8	21.6	0.1	-15.1
2	Rear Frame Member							
	Longitudinal... X	386	-660	-660	1.6	107.3	-20.7	32.8
	Lateral..... Y				2.9	30.8	-4.4	63.9

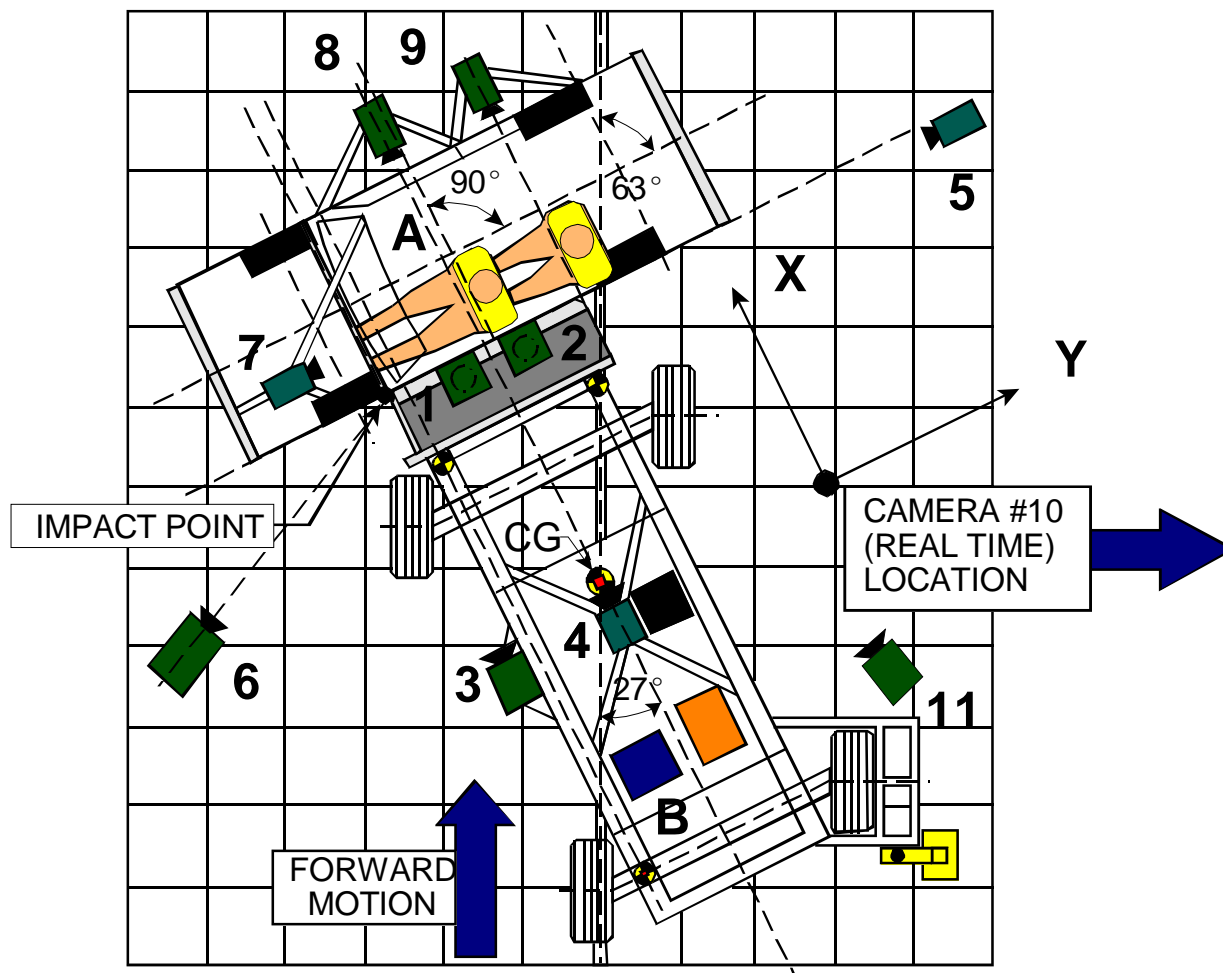
*Reference:
 X = Rear Bumper (+ Forward)
 Y = Vehicle Centerline (+ To Right)
 Z = Ground Level (+ Down)
 All measurements accurate to within ±3 mm.

DATA SHEET 15

HIGH SPEED CAMERA LOCATIONS AND DATA SUMMARY

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No. C90504



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Overhead view of test vehicle	72	812	-4880	-90	8	500
2	Overhead closeup view of impact plane	195	855	-4880	-90	12.5	500
3	MDB onboard closeup view of impact point	-1470	0	-847	0	13	500
4	MDB onboard view of driver dummy	-1140	838	-1586	-17	7.5	500
5	Right side ground level overall view	0	11050	954	-2.3	25	1000
6	Left side ground level overall view	2465	1535	985	-5.1	13	1000
7	Test vehicle onboard driver front view	555	405	1285	-7.5	13	1000
8	Test vehicle onboard driver side view	1725	915	1080	-4.1	8	1000
9	Test vehicle onboard passenger side view	1725	1850	1125	-3.0	8	1000
10	Real time film coverage of test	-	-	-	-	-	24

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

X = (Impact Point) + Forward

Y = (Impact Point) + To Right

Z = (Ground Level) + Down

SECTION 5

FUEL SYSTEM INTEGRITY

DATA SHEET 16

FMVSS 301 FUEL SYSTEM INTEGRITY DATA

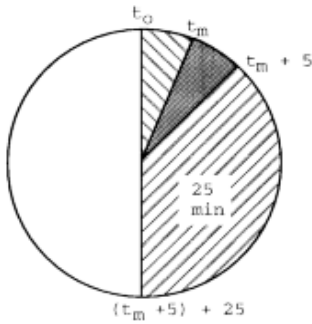
NHTSA No.: _____ C90504 _____ TEST DATE: _____ November 18, 2008 _____

Vehicle Mfgr./Make/Model: _____ Hyundai Motor Company 2009 Hyundai Genesis 4-door Sedan _____

TEST VEHICLE IMPACT TYPE:

- Frontal (48.28 kph)
- Oblique (48.28 kph) with - ° barrier face first
 contacting the - side
 (driver/passenger)
- Rear Moving Barrier (48.28 kph)
- Lateral Moving Barrier (32.19 kph)
- X - Side Impact Moving Deformable Barrier (53.27 kph)
 contacting the driver side side
 (driver/passenger)

FUEL SPILLAGE MEASUREMENT:



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

ACTUAL	MAX ALLOWED
0 g	28 g
0 g	142 g
0 g	28 g/1 min.

SOLVENT SPILLAGE DETAILS:

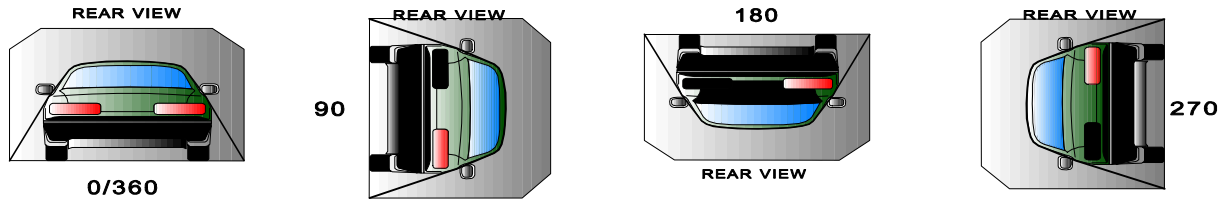
None

DATA SHEET 17

ROLLOVER DATA

Vehicle: 2009 Hyundai Genesis 4-door Sedan

NHTSA No.: C90504



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	
	1	minutes	09	seconds	5	minutes	6	minutes	9	seconds	7	minutes
0° - 90°	1	minutes	09	seconds	5	minutes	6	minutes	9	seconds	7	minutes
90° - 180°	1	minutes	13	seconds	5	minutes	6	minutes	13	seconds	7	minutes
180°-270°	1	minutes	05	seconds	5	minutes	6	minutes	5	seconds	7	minutes
270°-360°	1	minutes	07	seconds	5	minutes	6	minutes	7	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

APPENDIX A

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Figure A- 43	ROLLOVER 90 DEGREES	A- 45
Figure A- 44	ROLLOVER 180 DEGREES	A- 46
Figure A- 45	ROLLOVER 270 DEGREES	A- 47
Figure A- 46	ROLLOVER 360 DEGREES	A- 48



Figure A-1 PRE-TEST FRONTAL VIEW OF TEST VEHICLE



Figure A-2 POST-TEST FRONTAL VIEW OF TEST VEHICLE



Figure A-3 PRE-TEST REAR VIEW OF TEST VEHICLE

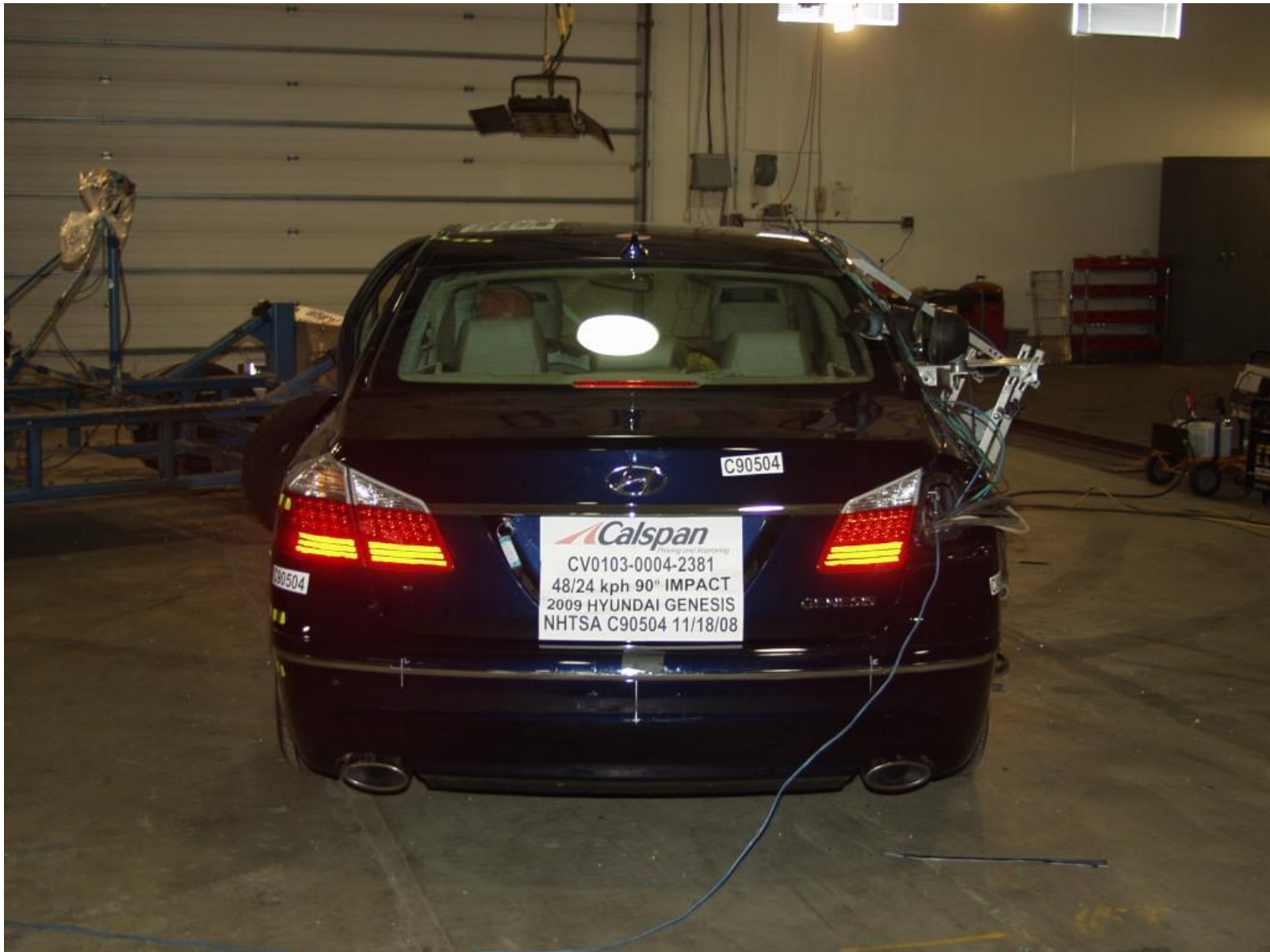


Figure A-4 POST-TEST REAR VIEW OF TEST VEHICLE



Figure A-5 PRE-TEST IMPACTED SIDE VIEW OF TEST VEHICLE



Figure A-6 POST-TEST IMPACTED SIDE VIEW OF TEST VEHICLE



Figure A-7 PRE-TEST LEFT FRONT VIEW OF TEST VEHICLE

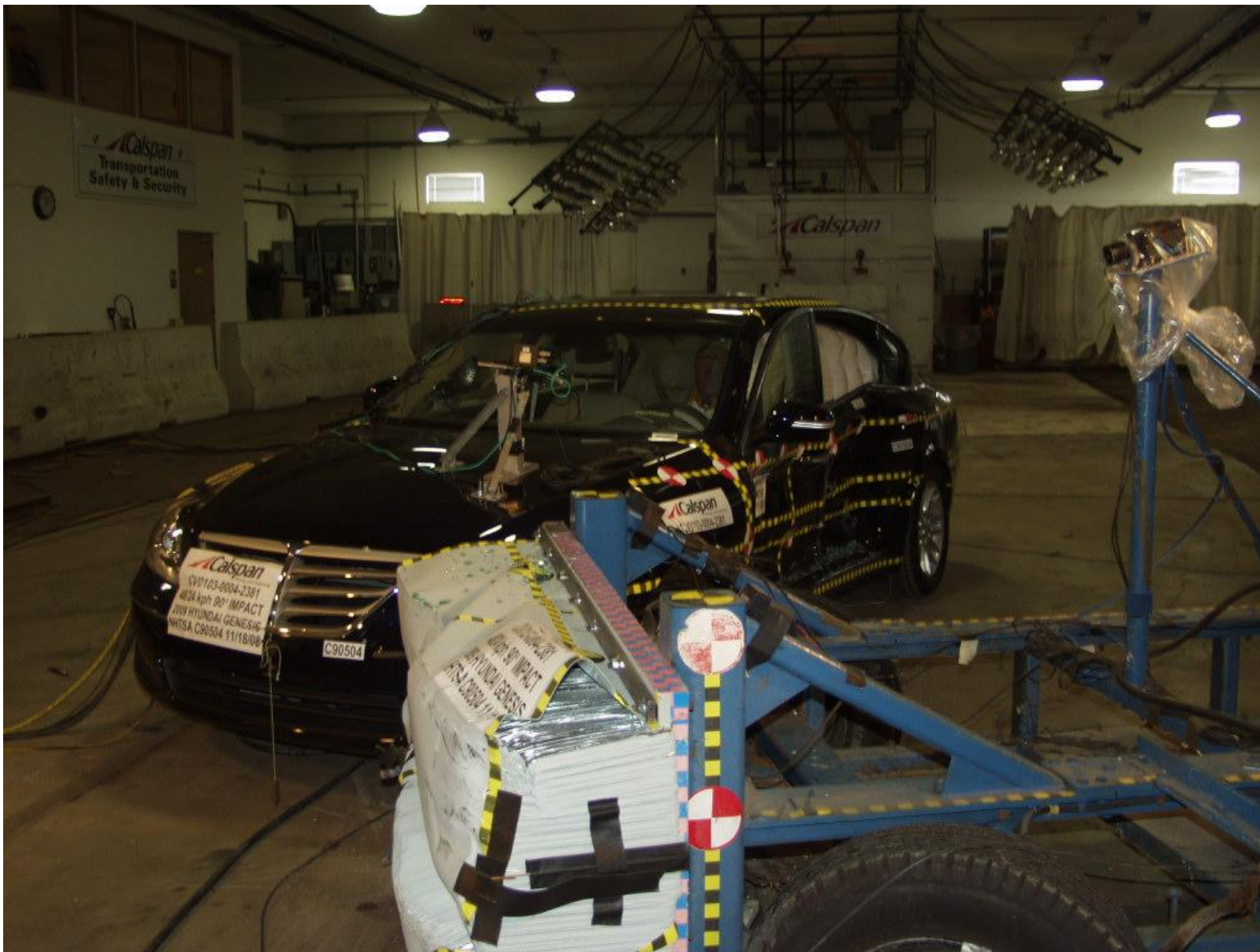


Figure A-8 POST-TEST LEFT FRONT VIEW OF TEST VEHICLE



Figure A-9 PRE-TEST LEFT REAR VIEW OF TEST VEHICLE



Figure A-10 POST-TEST LEFT REAR VIEW OF TEST VEHICLE



Figure A-11 PRE-TEST RIGHT FRONT VIEW OF TEST VEHICLE



Figure A-12 POST-TEST RIGHT FRONT VIEW OF TEST VEHICLE



Figure A-13 PRE-TEST RIGHT REAR VIEW OF TEST VEHICLE



Figure A-14 POST-TEST RIGHT REAR VIEW OF TEST VEHICLE



Figure A-15 PRE-TEST FRONTAL VIEW OF IMPACTOR FACE



Figure A-16 POST-TEST FRONTAL VIEW OF IMPACTOR FACE



Figure A-17 PRE-TEST LEFT SIDE VIEW OF IMPACTOR FACE



Figure A-18 POST-TEST LEFT SIDE VIEW OF IMPACTOR FACE



Figure A-19 PRE-TEST RIGHT SIDE VIEW OF IMPACTOR FACE



Figure A-20 POST-TEST RIGHT SIDE VIEW OF IMPACTOR FACE



Figure A-21 PRE-TEST TOP VIEW OF IMPACTOR FACE



Figure A-22 POST-TEST TOP VIEW OF IMPACTOR FACE



Figure A-23 PRE-TEST OVERHEAD VIEW OF ALIGNED MDB AND VEHICLE



Figure A-24 POST-TEST OVERHEAD VIEW OF MDB AND VEHICLE



A-27

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Figure A-25 PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID



Figure A-26 POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID



Figure A-27 PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID



A-30

8867-F214-04

Figure A-28 POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID



Figure A-29 PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID



Figure A-30 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID



Figure A-31 PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID



Figure A-32 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID



Figure A-33 PRE-TEST INTERIOR OF FRONT DOOR



Figure A-34 POST-TEST INTERIOR OF FRONT DOOR SHOWING SID IMPACT LOCATIONS



Figure A-35 PRE-TEST INTERIOR OF REAR DOOR



Figure A-36 POST-TEST INTERIOR OF REAR DOOR SHOWING SID IMPACT LOCATIONS



Figure A-37 PRE-TEST LEFT SIDE VIEW OF MDB WITH IMPACTOR FACE IN POSITION



Figure A-38 PRE-TEST RIGHT SIDE VIEW OF MDB WITH IMPACTOR FACE IN POSITION

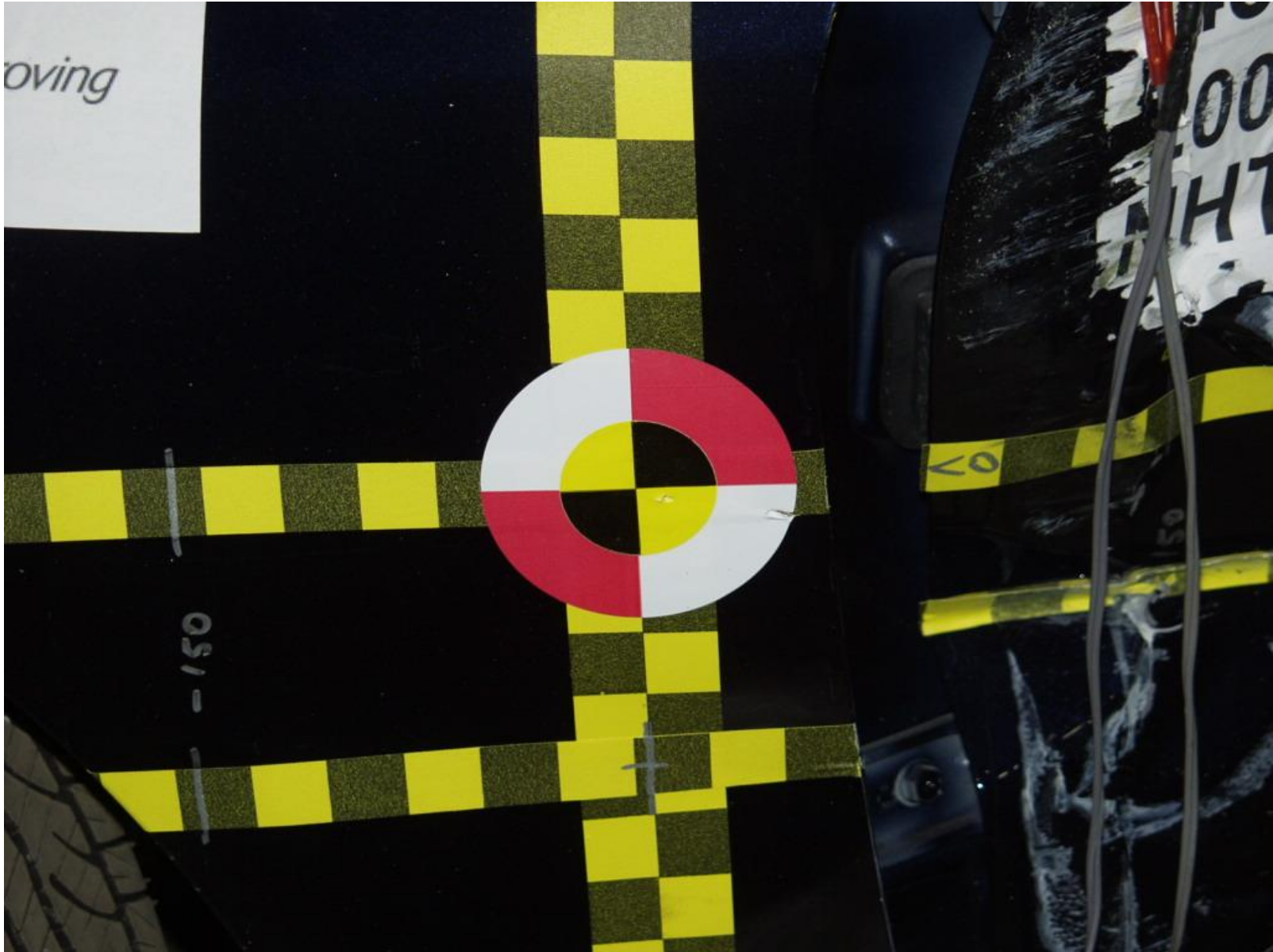


Figure A-39 POST-TEST CLOSE-UP VIEW OF IMPACT POINT TARGET



Figure A-40 CLOSE-UP VIEW OF VEHICLE'S CERTIFICATION LABEL



Figure A-41 CLOSE-UP VIEW OF VEHICLE'S TIRE PLACARD LABEL



Figure A-42 IMPACT PHOTO

A-45

8867-F214-04

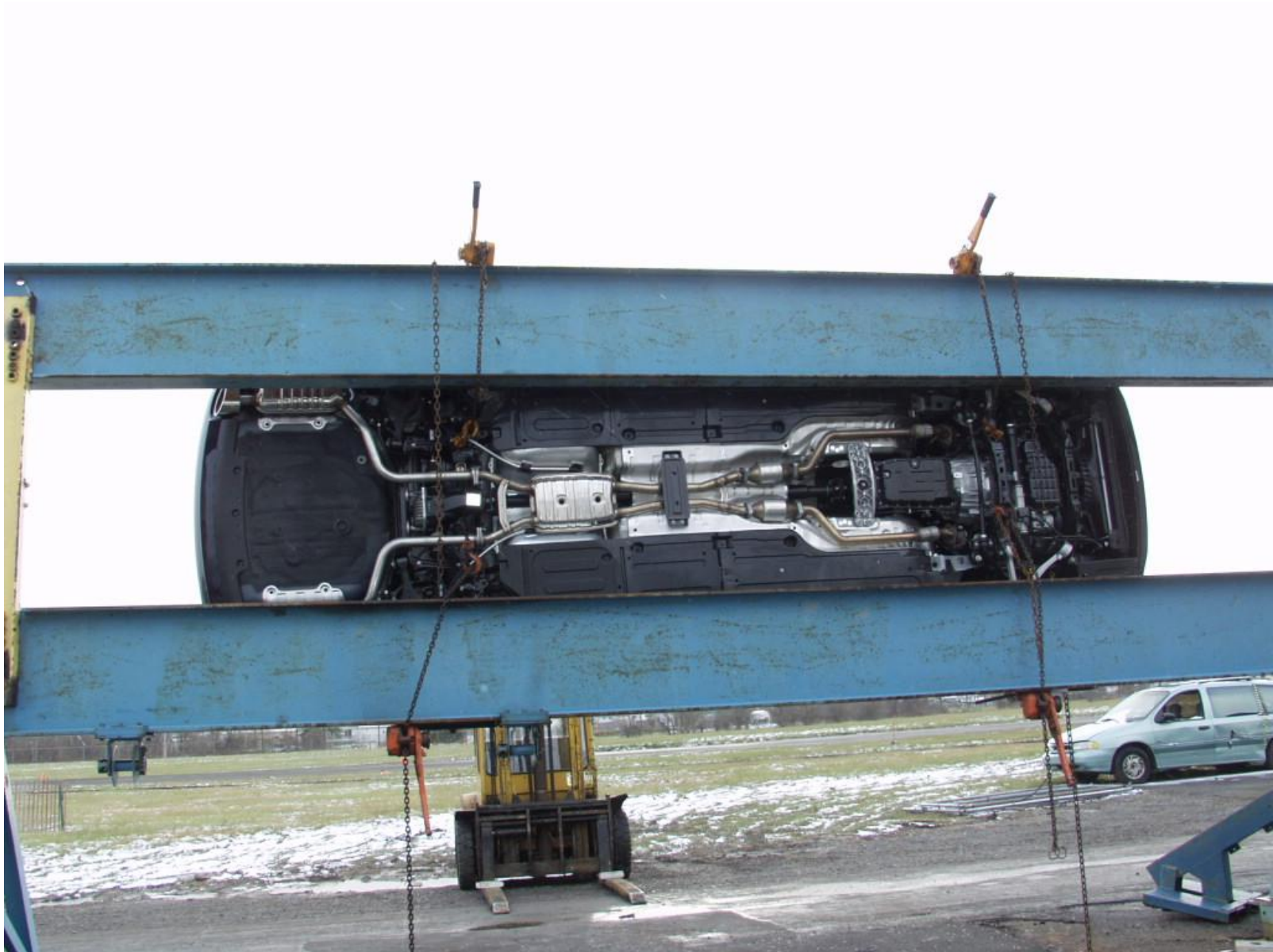


Figure A-43 ROLLOVER 90 DEGREES



Figure A-44 ROLLOVER 180 DEGREES



Figure A-45 ROLLOVER 270 DEGREES



Figure A-46 ROLLOVER 360 DEGREES

APPENDIX B

VEHICLE, MDB AND SID RESPONSE DATA

TABLE OF DATA PLOTS

DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOTS ACCELERATION DATA - FILTER CLASS 1000, LOWER SPINE - FILTER CLASS 180 INTEGRATION DATA - FILTER CLASS 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
1	DRIVER HEAD (X) ACCELERATION VS TIME	B- 6
2	DRIVER HEAD (X) VELOCITY VS TIME	B- 7
3	DRIVER HEAD (Y) ACCELERATION VS TIME	B- 8
4	DRIVER HEAD (Y) VELOCITY VS TIME	B- 9
5	DRIVER HEAD (Z) ACCELERATION VS TIME	B- 10
6	DRIVER HEAD (Z) VELOCITY VS TIME	B- 11
7	DRIVER HEAD RESULTANT ACCELERATION VS TIME	B- 12
8	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 13
9	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 14
10	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 15
11	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 16
12	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 17
13	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 18
14	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 19
15	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 20
16	PASSENGER HEAD (X) ACCELERATION VS TIME	B- 21
17	PASSENGER HEAD (X) VELOCITY VS TIME	B- 22
18	PASSENGER HEAD (Y) ACCELERATION VS TIME	B- 23
19	PASSENGER HEAD (Y) VELOCITY VS TIME	B- 24
20	PASSENGER HEAD (Z) ACCELERATION VS TIME	B- 25
21	PASSENGER HEAD (Z) VELOCITY VS TIME	B- 26
22	PASSENGER HEAD RESULTANT ACCELERATION VS TIME	B- 27
23	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 28
24	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 29
25	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 30
26	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 31
27	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 32
28	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 33
29	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 34
30	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 35

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS ACCELERATION DATA - FIR FILTERED

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
31	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 36
32	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 37
33	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 38
34	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 39
35	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 40
36	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 41
37	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 42
38	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 43

TEST VEHICLE INSTRUMENTATION PLOTS
ACCELERATION DATA - FILTER CLASS 60
INTEGRATION DATA - FILTER CLASS 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
39	RIGHT SIDE SILL AT FRONT SEAT (X) ACCELERATION VS TIME	B- 44
40	RIGHT SIDE SILL AT FRONT SEAT (X) VELOCITY VS TIME	B- 45
41	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME	B- 46
42	RIGHT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME	B- 47
43	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION VS TIME	B- 48
44	RIGHT SIDE SILL AT FRONT SEAT (Z) VELOCITY VS TIME	B- 49
45	RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION VS TIME	B- 50
46	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION VS TIME	B- 51
47	RIGHT SIDE SILL AT REAR SEAT (X) VELOCITY VS TIME	B- 52
48	RIGHT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	B- 53
49	RIGHT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	B- 54
50	RIGHT SIDE SILL AT REAR SEAT (Z) ACCELERATION VS TIME	B- 55
51	RIGHT SIDE SILL AT REAR SEAT (Z) VELOCITY VS TIME	B- 56
52	RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION VS TIME	B- 57
53	REAR FLOORPAN ABOVE AXLE (X) ACCELERATION VS TIME	B- 58
54	REAR FLOORPAN ABOVE AXLE (X) VELOCITY VS TIME	B- 59
55	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION VS TIME	B- 60
56	REAR FLOORPAN ABOVE AXLE (Y) VELOCITY VS TIME	B- 61
57	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION VS TIME	B- 62
58	REAR FLOORPAN ABOVE AXLE (Z) VELOCITY VS TIME	B- 63
59	REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION VS TIME	B- 64
60	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	B- 65
61	LEFT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	B- 66
62	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME	B- 67
63	LEFT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME	B- 68
64	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION VS TIME	B- 69
65	RIGHT REAR OCCUPANT COMPARTMENT (Y) VELOCITY VS TIME	B- 70
66	LOWER B-POST (Y) ACCELERATION VS TIME	B- 71
67	LOWER B-POST (Y) VELOCITY VS TIME	B- 72
68	MIDDLE B-POST (Y) ACCELERATION VS TIME	B- 73
69	MIDDLE B-POST (Y) VELOCITY VS TIME	B- 74
70	LOWER A-POST (Y) ACCELERATION VS TIME	B- 75
71	LOWER A-POST (Y) VELOCITY VS TIME	B- 76
72	MIDDLE A-POST (Y) ACCELERATION VS TIME	B- 77
73	MIDDLE A-POST (Y) VELOCITY VS TIME	B- 78
74	FRONT SEAT TRACK (Y) ACCELERATION VS TIME	B- 79
75	FRONT SEAT TRACK (Y) VELOCITY VS TIME	B- 80
76	REAR SEAT TRACK (Y) ACCELERATION VS TIME	B- 81
77	REAR SEAT TRACK (Y) VELOCITY VS TIME	B- 82

TEST VEHICLE INSTRUMENTATION PLOTS
 ACCELERATION DATA - FILTER CLASS 60
 INTEGRATION DATA - FILTER CLASS 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
78	VEHICLE CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 83
79	VEHICLE CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 84
80	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 85
81	VEHICLE CENTER OF GRAVITY (Y) VELOCITY ACCELERATION VS TIME	B- 86
82	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 87
83	VEHICLE CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 88
84	VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 89

MDB INSTRUMENTATION PLOTS
 ACCELERATION DATA - FILTER CLASS 60
 INTEGRATION DATA - FILTER CLASS 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
85	MDB CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 90
86	MDB CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 91
87	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 92
88	MDB CENTER OF GRAVITY (Y) VELOCITY VS TIME	B- 93
89	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 94
90	MDB CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 95
91	MDB CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 96
92	MDB REAR (X) ACCELERATION VS TIME	B- 97
93	MDB REAR (X) VELOCITY VS TIME	B- 98
94	MDB REAR (Y) ACCELERATION VS TIME	B- 99
95	MDB REAR (Y) VELOCITY VS TIME	B- 100

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS (REDUNDANT)
 ACCELERATION DATA - FILTER CLASS 1000, LOWER SPINE - FILTER CLASS 180
 INTEGRATION DATA - FILTER CLASS 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
96	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 101
97	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 102
98	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 103
99	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 104
100	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 105
101	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 106
102	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 107
103	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 108
104	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 109
105	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 110
106	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 111
107	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 112
108	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 113
109	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 114
110	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 115
111	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 116

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS (REDUNDANT)
 ACCELERATION DATA - FIR FILTERED

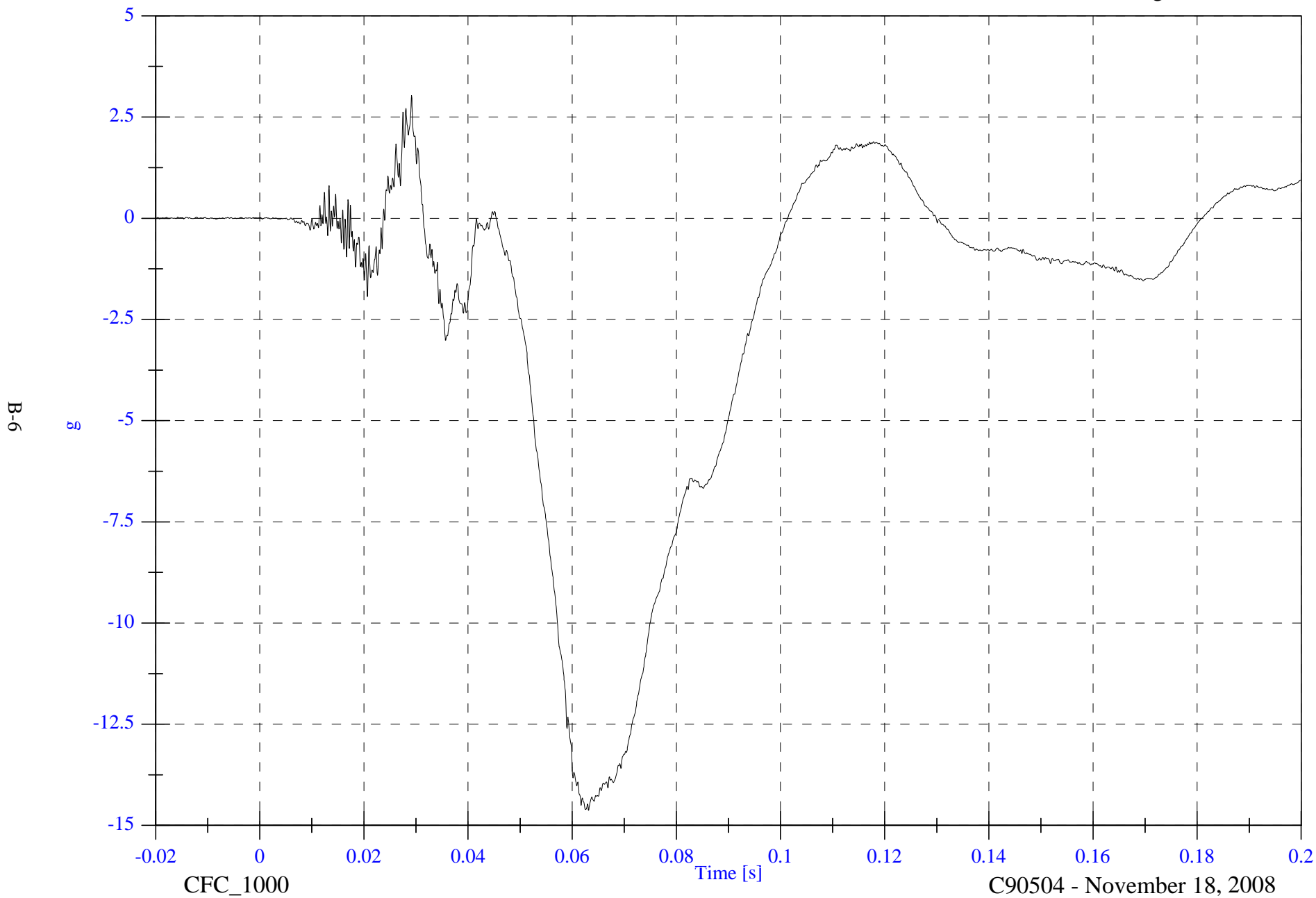
<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
112	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 117
113	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 118
114	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 119
115	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 120
116	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 121
117	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 122
118	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 123
119	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 124

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Head x

Max: 3.0 [g] at 0.029 [s]

Min: -14.6 [g] at 0.063 [s]



B-6

g

CFC_1000

Time [s]

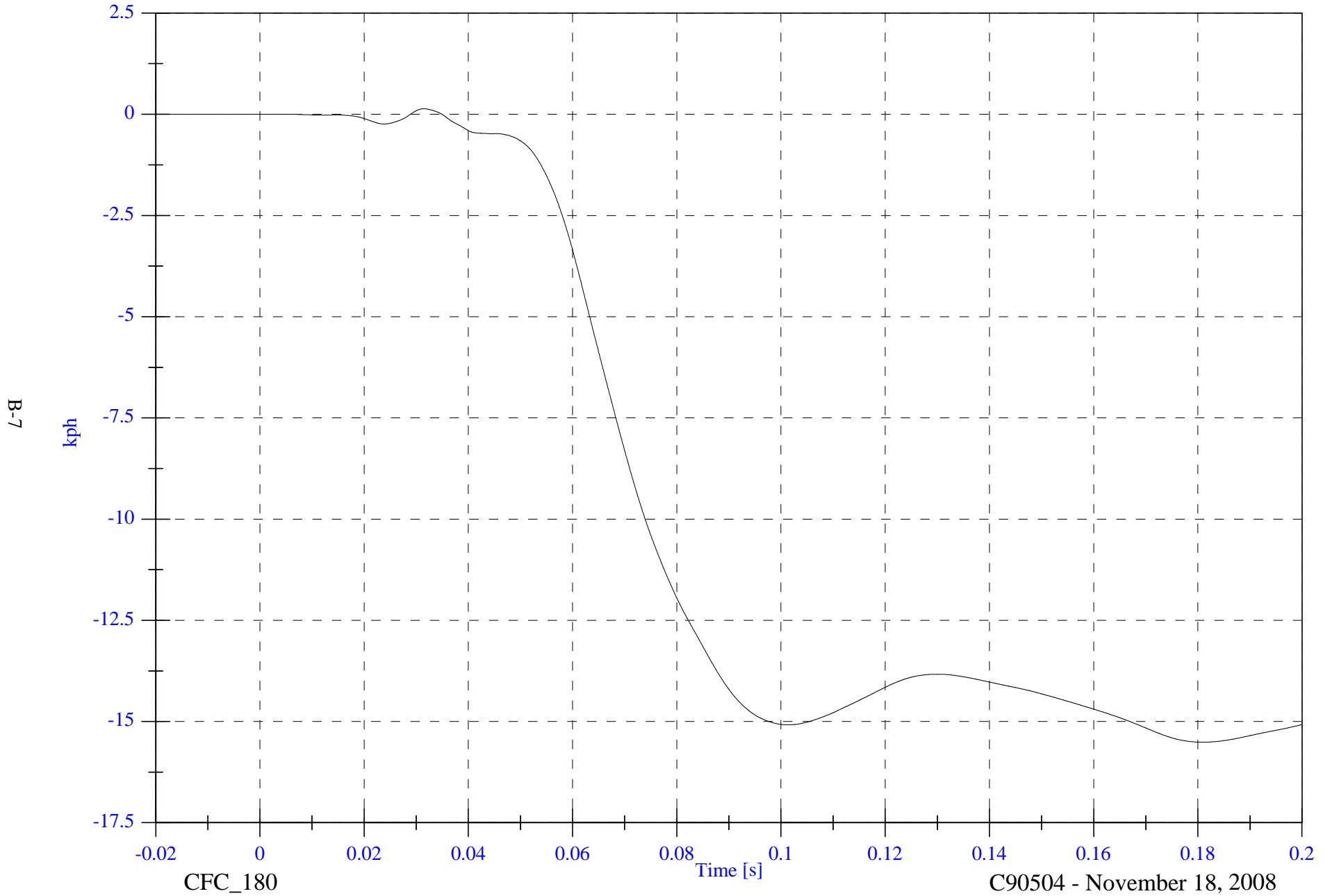
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Head x Velocity

Max: 0.1 [kph] at 0.031 [s]

Min: -15.5 [kph] at 0.181 [s]



B-7

CFC_180

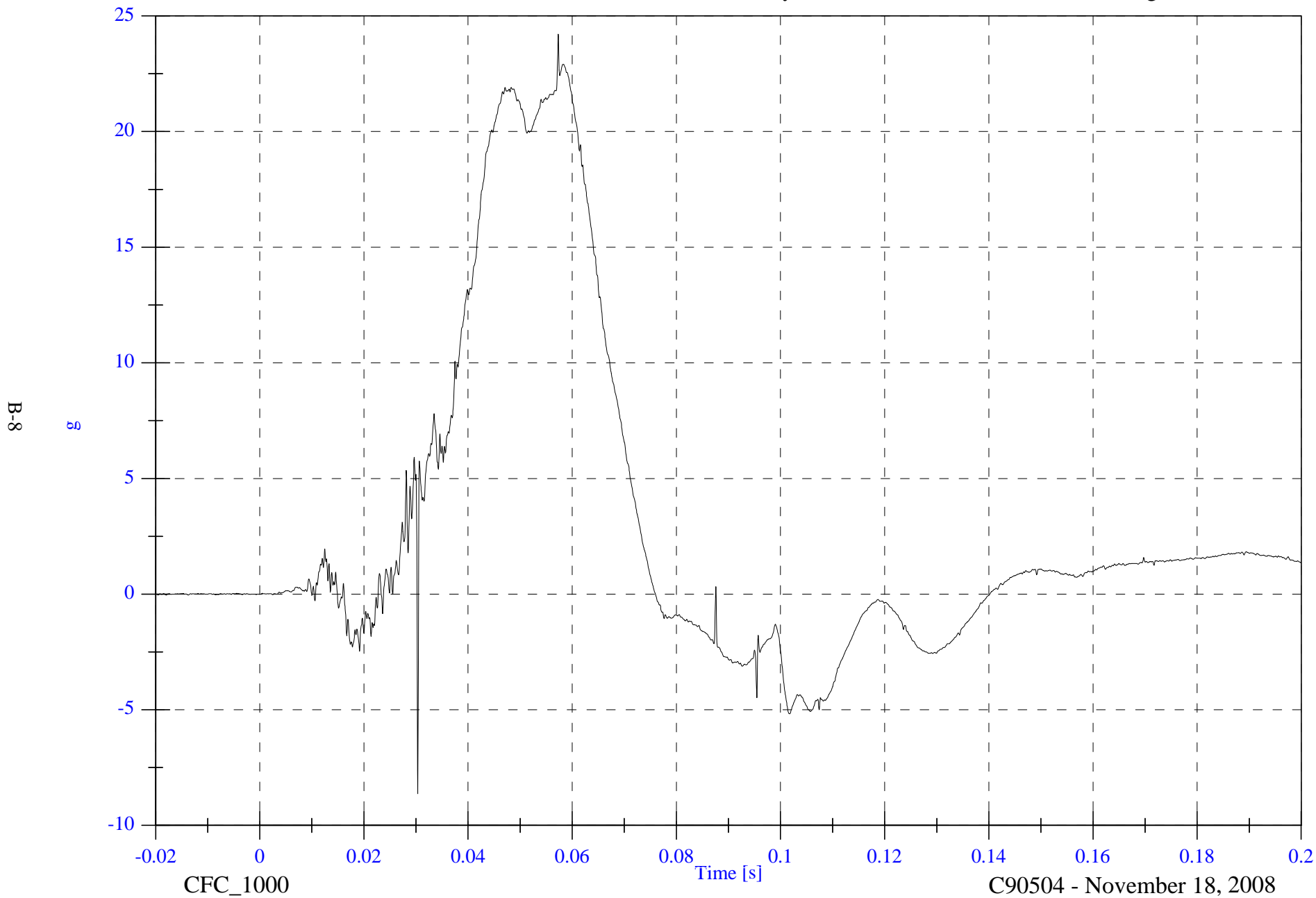
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Head y

Max: 24.2 [g] at 0.057 [s]

Min: -8.6 [g] at 0.030 [s]

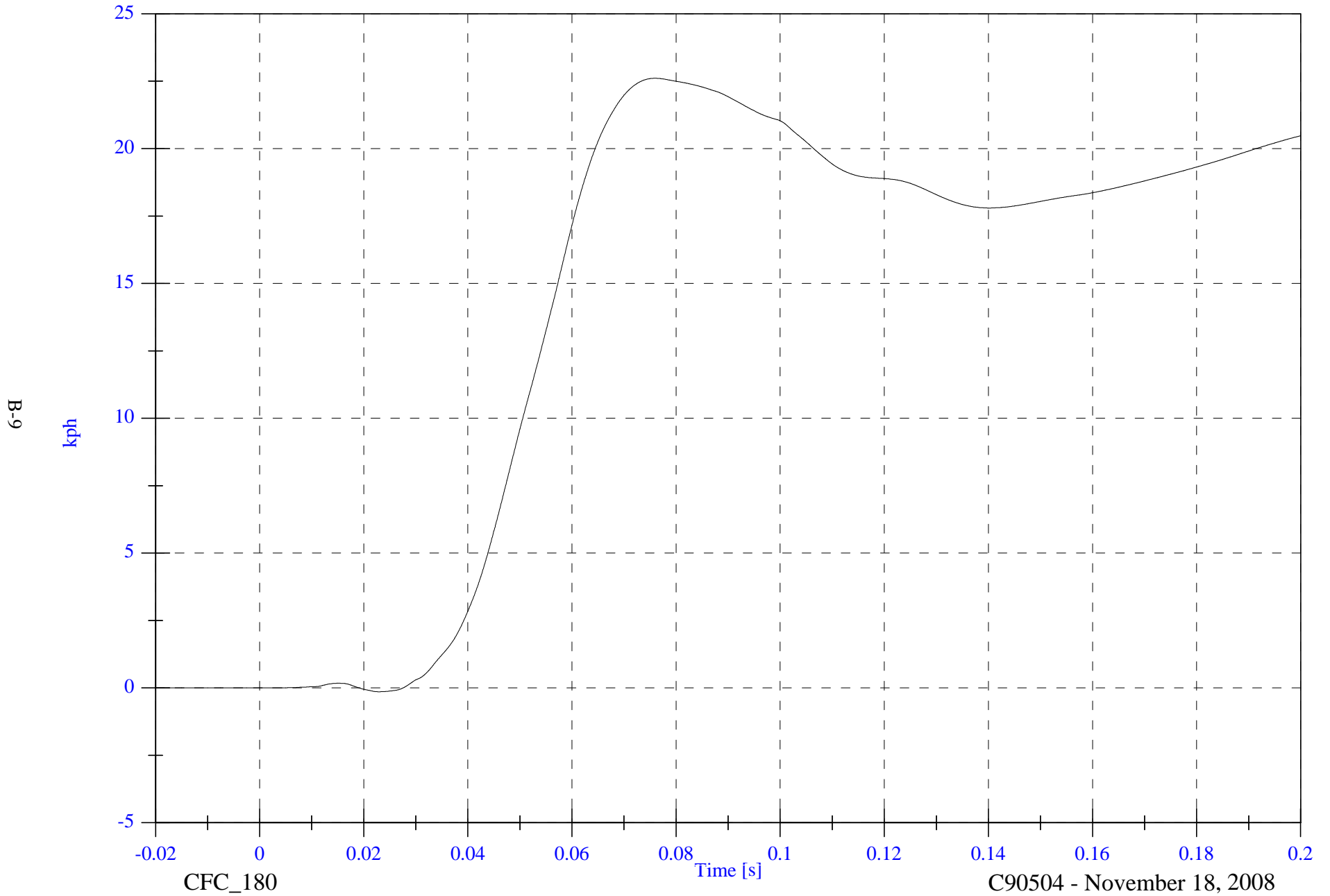


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Head y Velocity

Max: 22.6 [kph] at 0.076 [s]

Min: -0.1 [kph] at 0.023 [s]

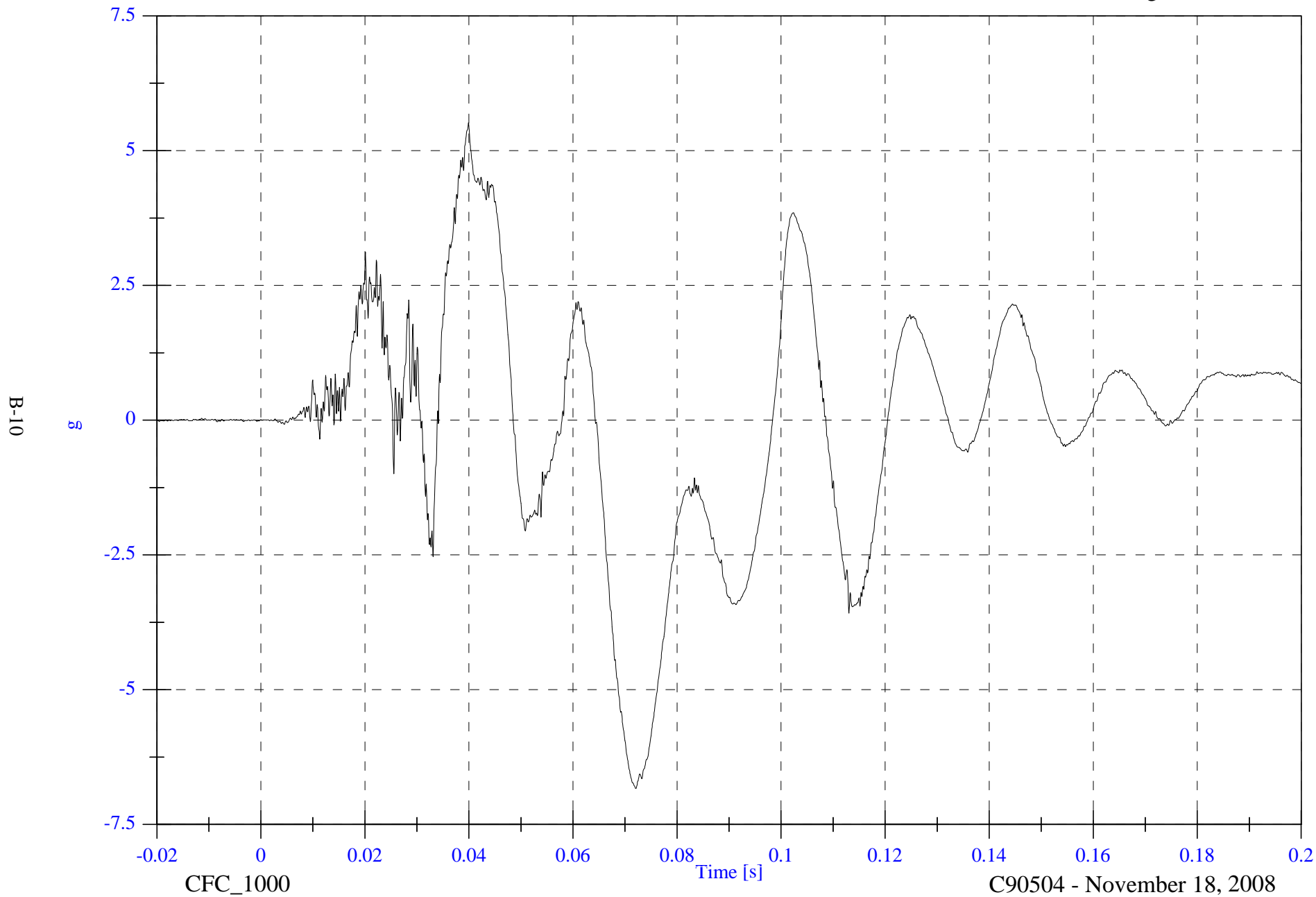


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Head z

Max: 5.5 [g] at 0.040 [s]

Min: -6.8 [g] at 0.072 [s]



B-10

g

CFC_1000

Time [s]

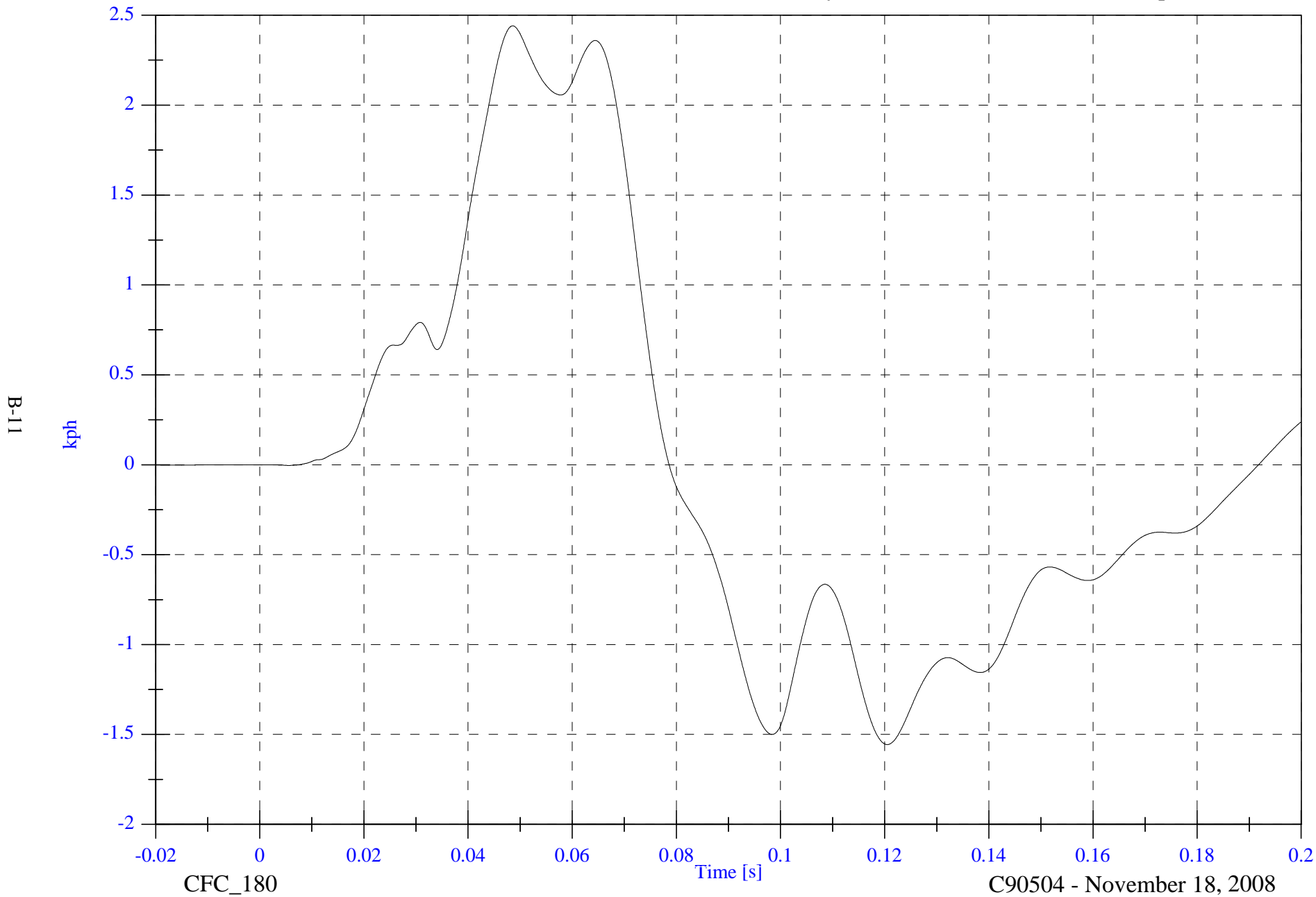
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Head z Velocity

Max: 2.4 [kph] at 0.049 [s]

Min: -1.6 [kph] at 0.120 [s]

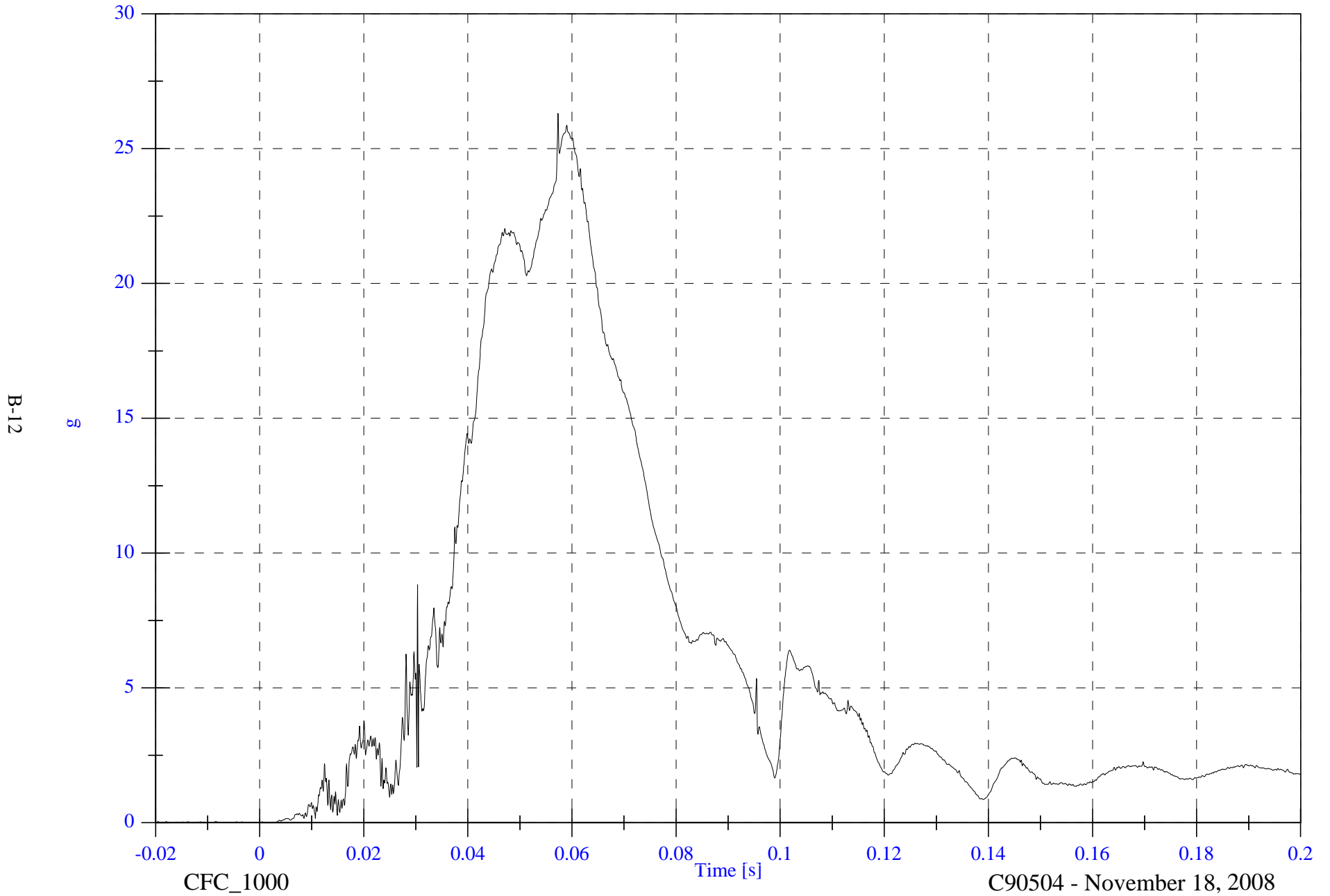


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Head Resultant

Max: 26.3 [g] at 0.057 [s]

Min: 0.0 [g] at -0.017 [s]

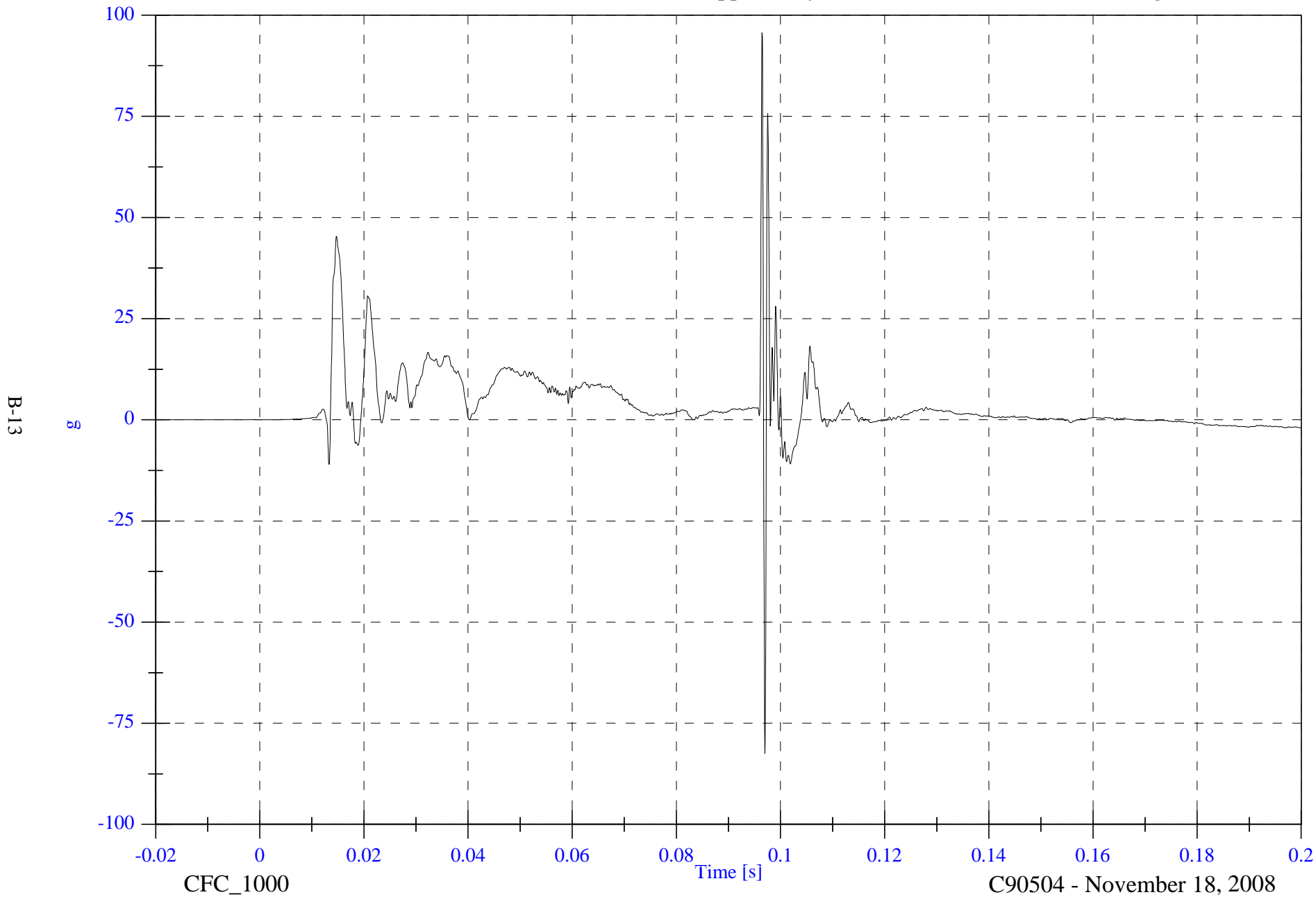


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Upper Rib y

Max: 95.7 [g] at 0.096 [s]

Min: -82.5 [g] at 0.097 [s]



B-13

CFC_1000

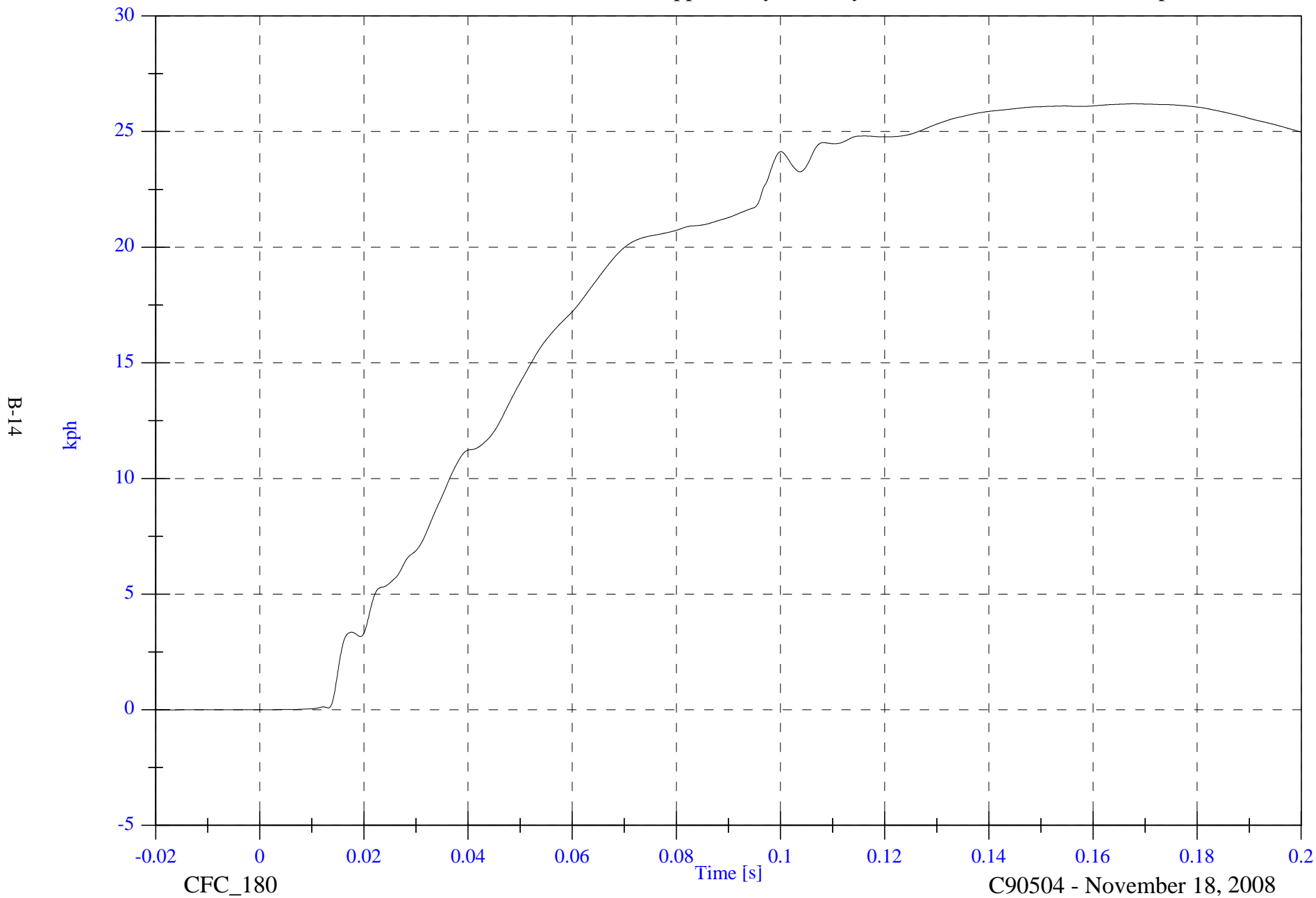
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

Max: 26.2 [kph] at 0.168 [s]

V2P1 Upper Rib y Velocity

Min: -0.0 [kph] at -0.020 [s]

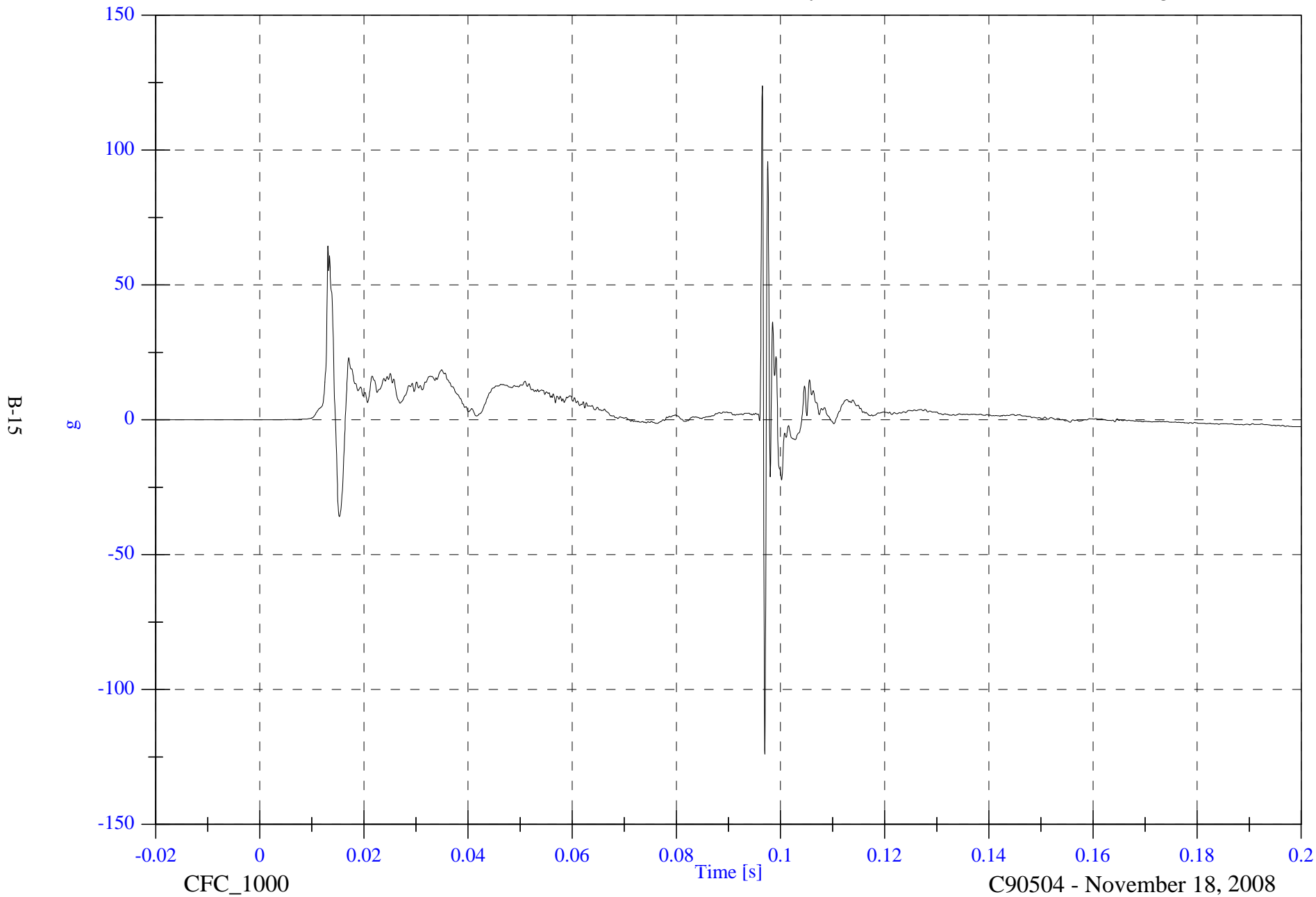


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Rib y

Max: 123.8 [g] at 0.096 [s]

Min: -123.9 [g] at 0.097 [s]

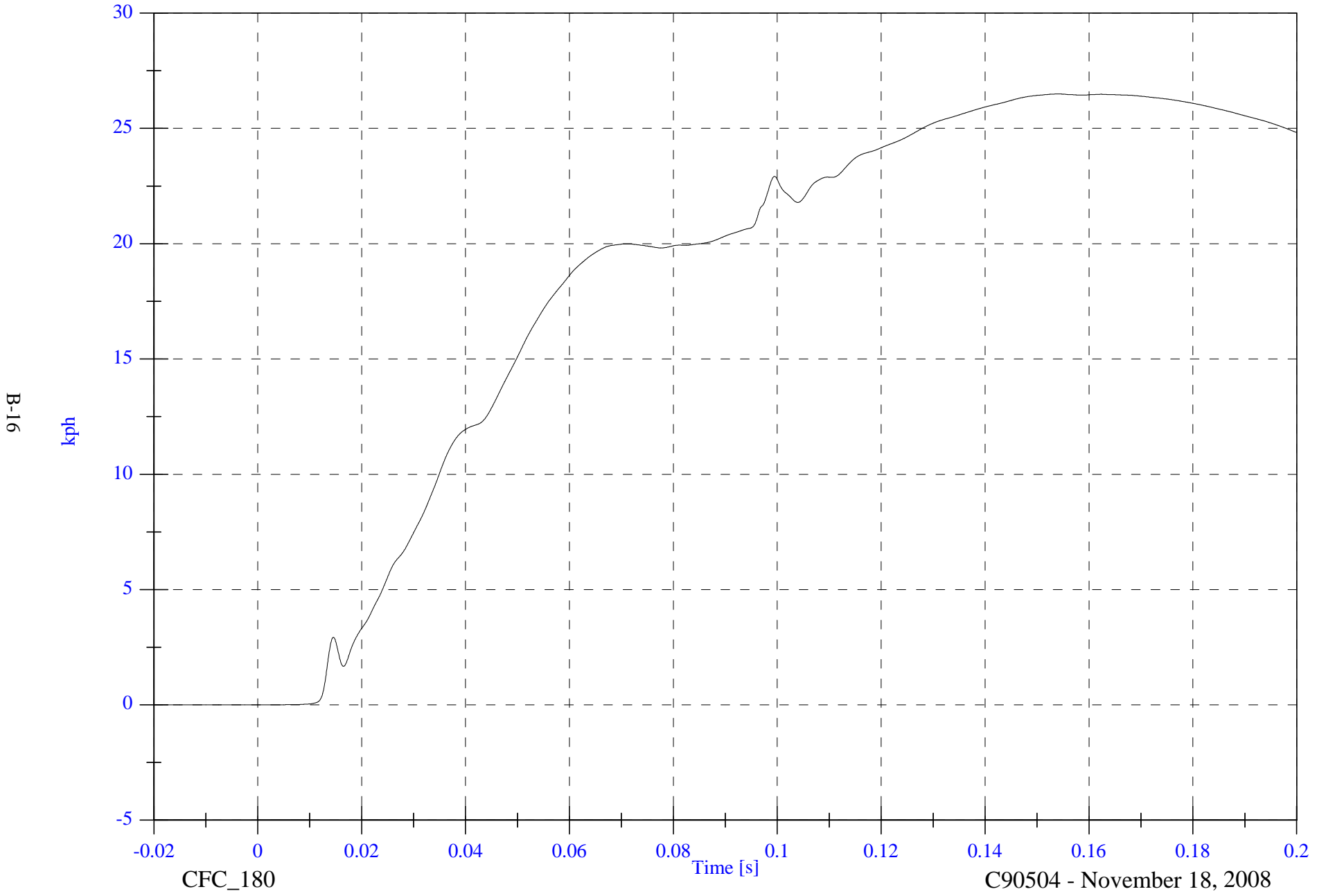


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Rib y Velocity

Max: 26.5 [kph] at 0.154 [s]

Min: -0.0 [kph] at -0.020 [s]

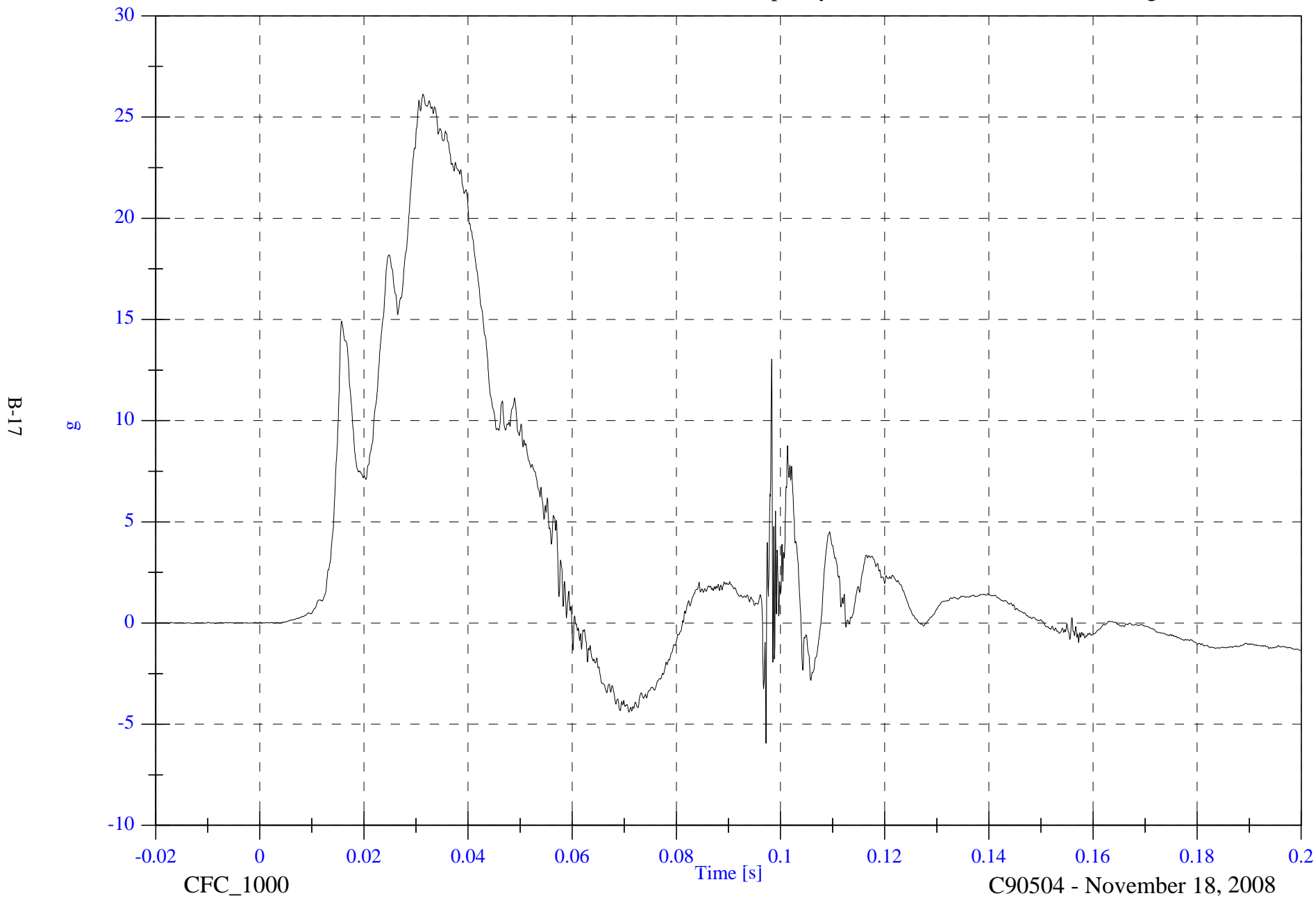


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Spine y

Max: 26.1 [g] at 0.031 [s]

Min: -5.9 [g] at 0.097 [s]



B-17

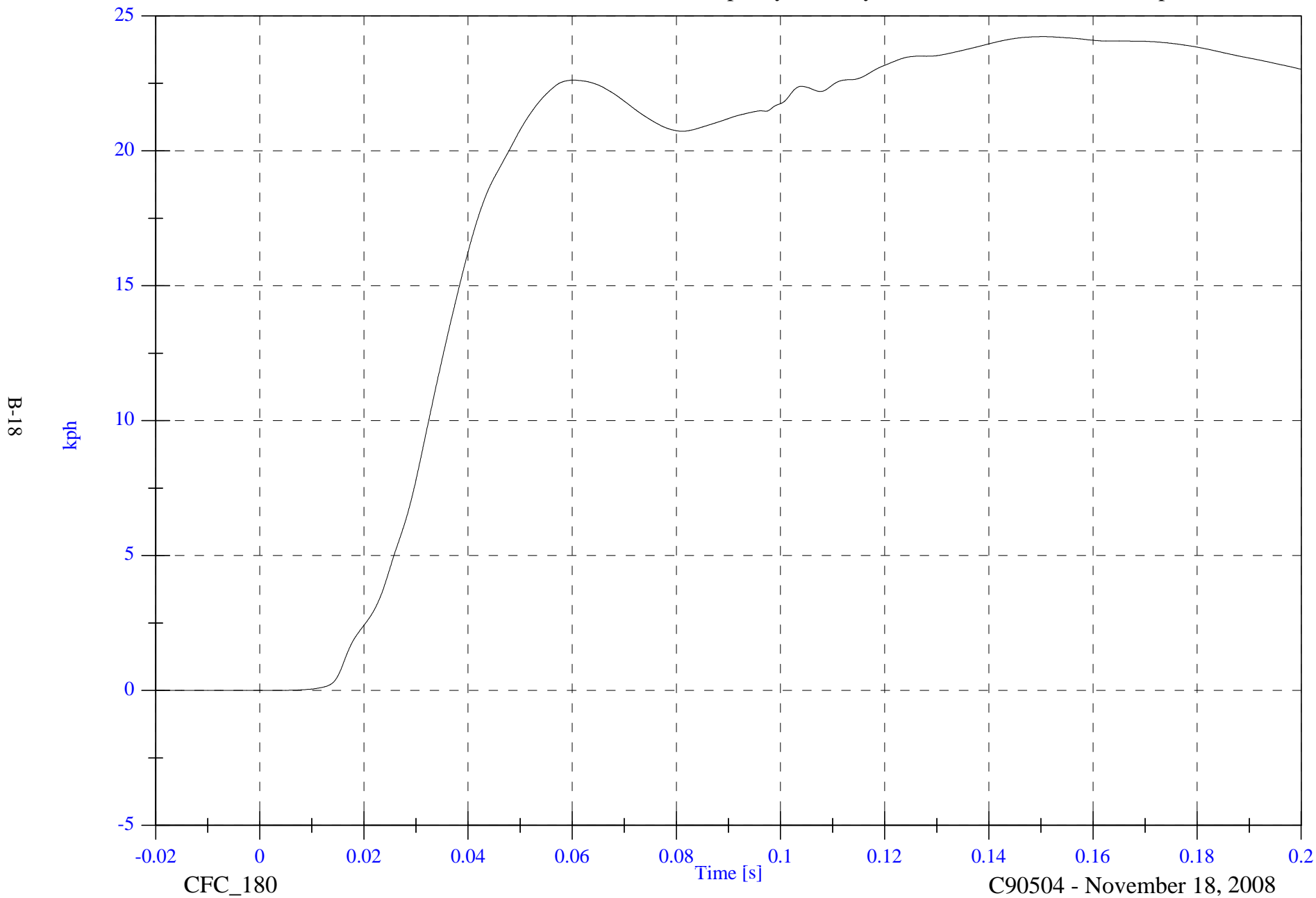
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Spine y Velocity

Max: 24.2 [kph] at 0.150 [s]

Min: -0.0 [kph] at -0.018 [s]



B-18

kph

CFC_180

Time [s]

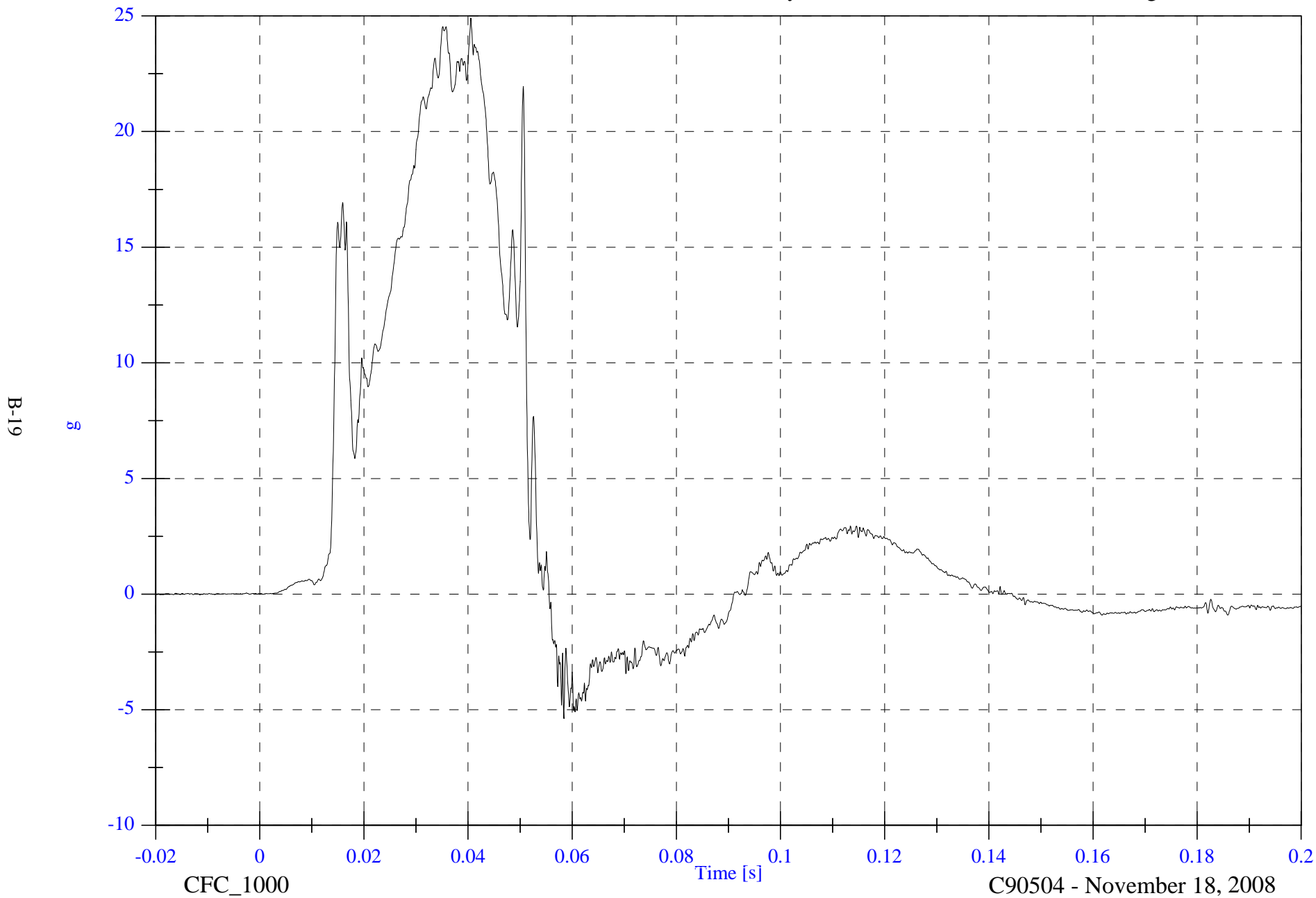
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Pelvic y

Max: 24.9 [g] at 0.040 [s]

Min: -5.4 [g] at 0.058 [s]



CFC_1000

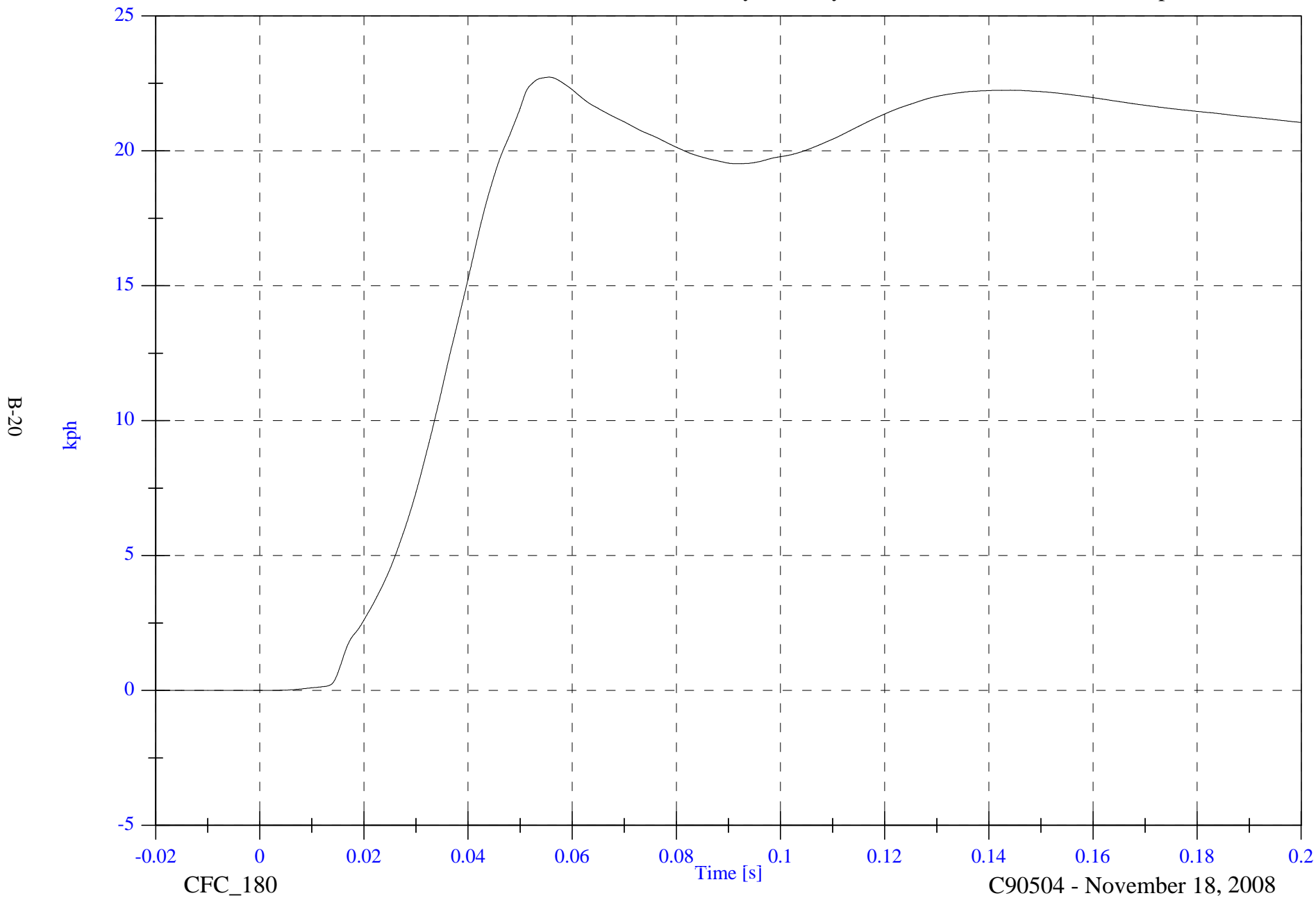
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Pelvic y Velocity

Max: 22.7 [kph] at 0.056 [s]

Min: -0.0 [kph] at -0.018 [s]



B-20

CFC_180

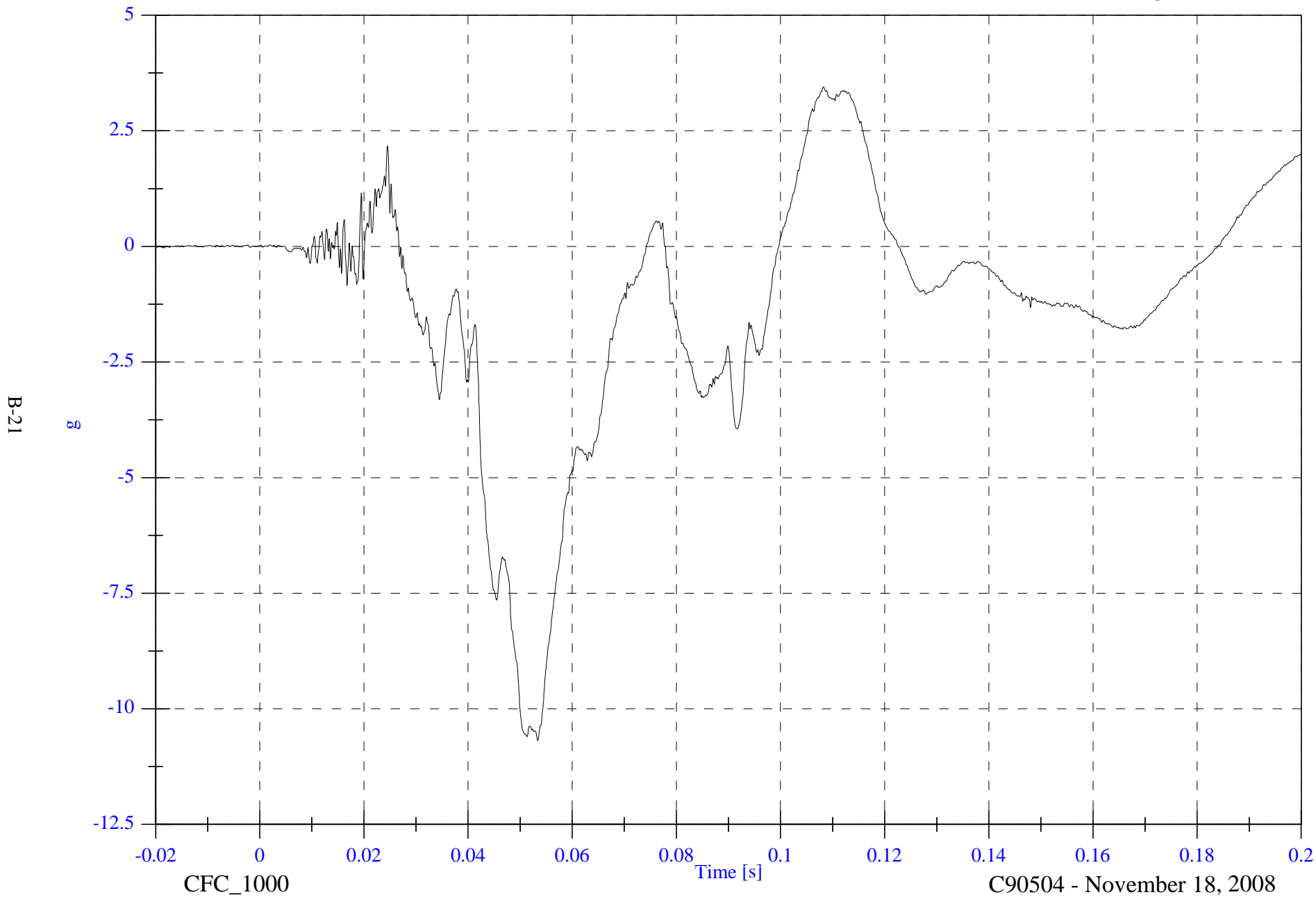
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Head x

Max: 3.4 [g] at 0.108 [s]

Min: -10.7 [g] at 0.053 [s]



2009 NHTSA 214D Test 4 2009 Hyundai Genesis

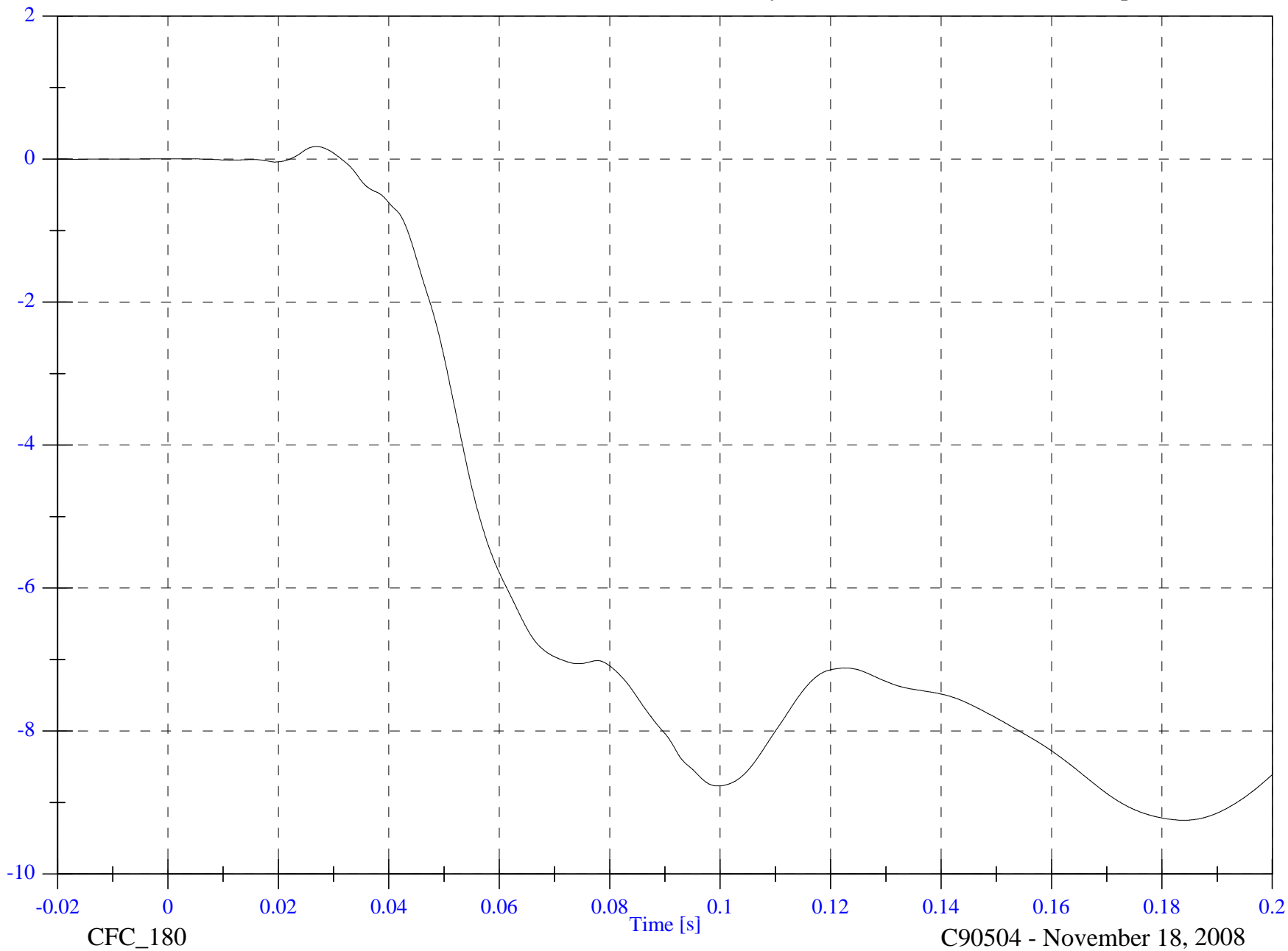
V2P4 Head x Velocity

Max: 0.2 [kph] at 0.027 [s]

Min: -9.2 [kph] at 0.184 [s]

B-22

kph



CFC_180

Time [s]

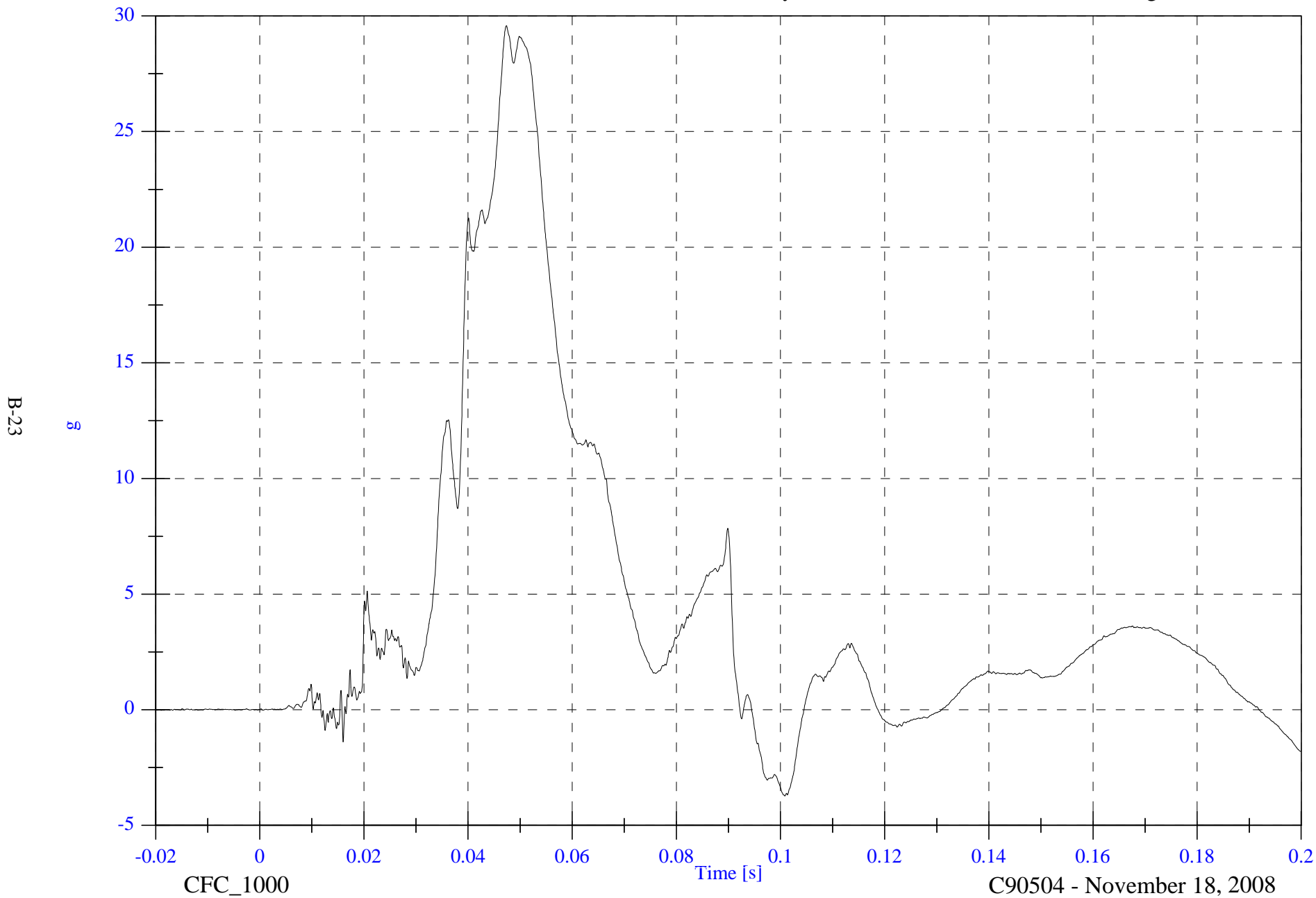
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Head y

Max: 29.6 [g] at 0.047 [s]

Min: -3.7 [g] at 0.101 [s]



2009 NHTSA 214D Test 4 2009 Hyundai Genesis

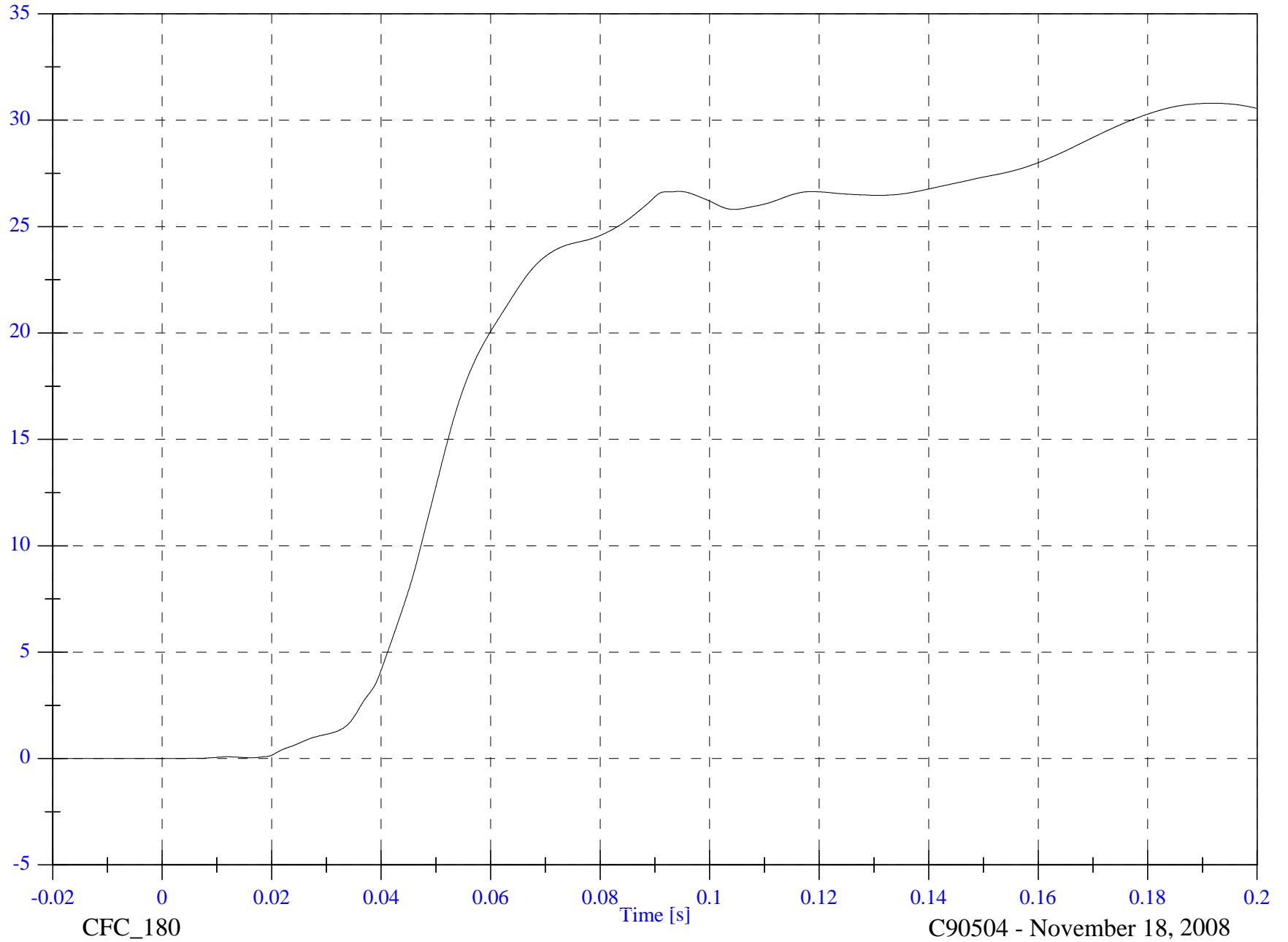
V2P4 Head y Velocity

Max: 30.8 [kph] at 0.192 [s]

Min: -0.0 [kph] at -0.017 [s]

B-24

kph



CFC_180

Time [s]

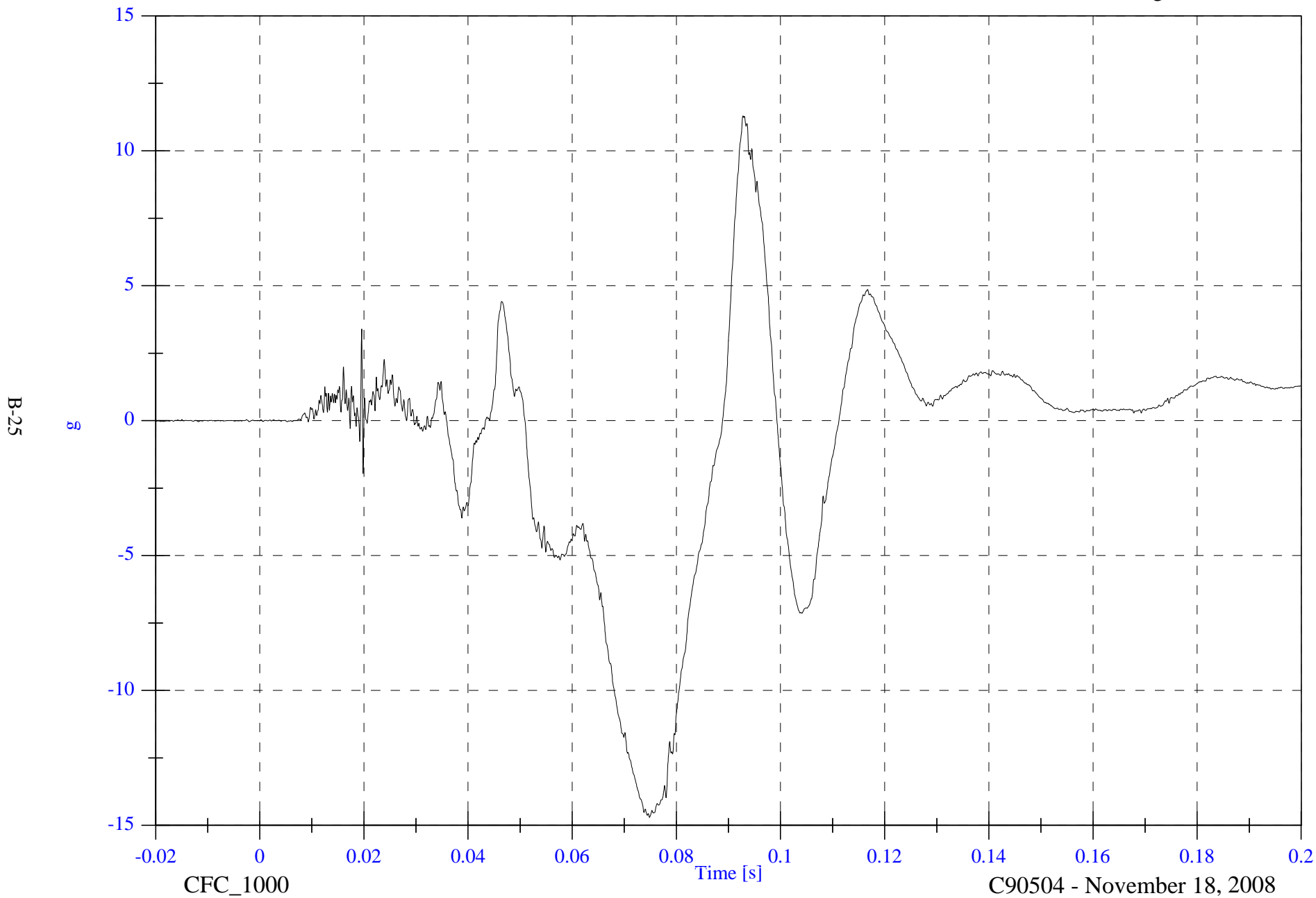
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Head z

Max: 11.3 [g] at 0.093 [s]

Min: -14.7 [g] at 0.075 [s]

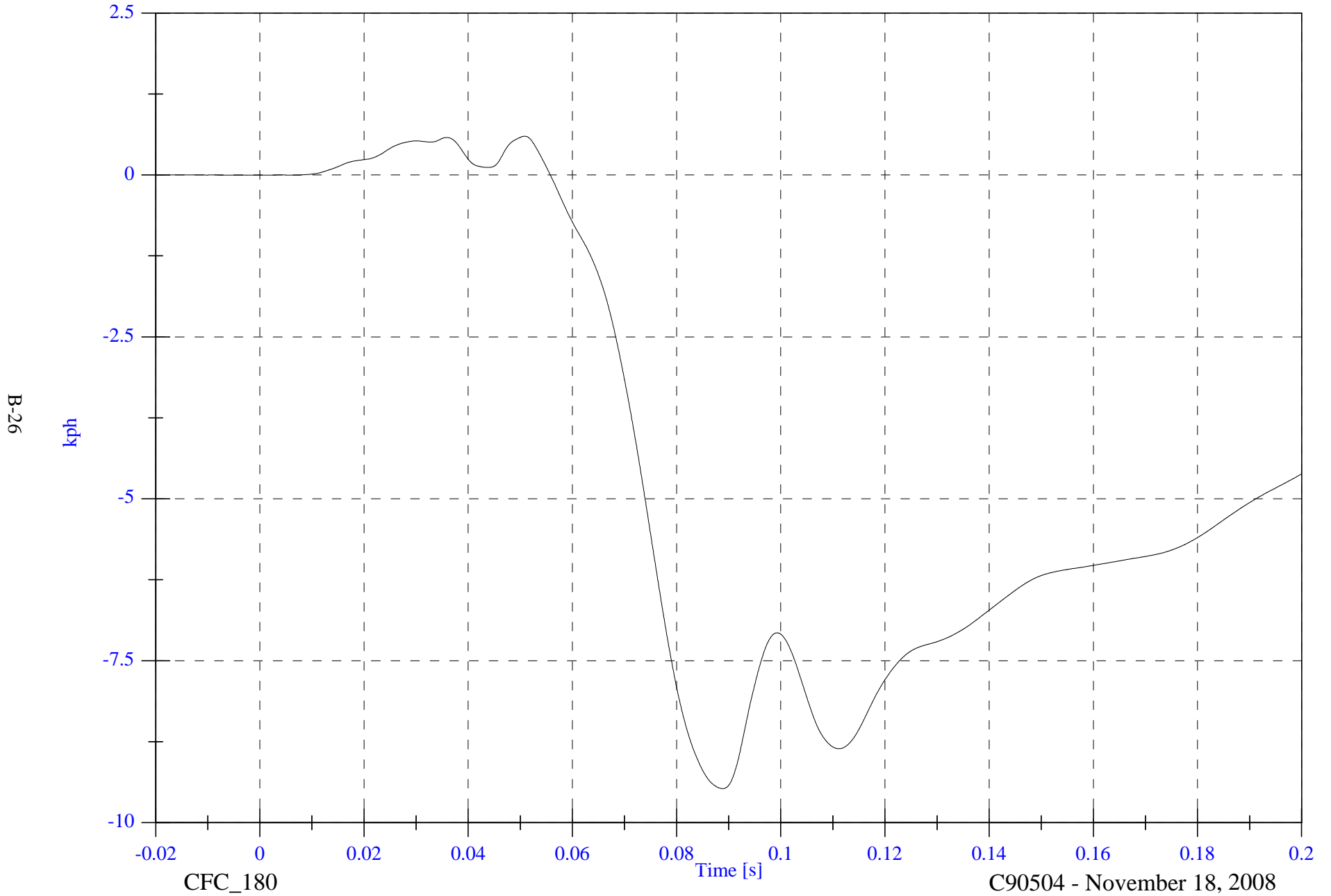


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Head z Velocity

Max: 0.6 [kph] at 0.051 [s]

Min: -9.5 [kph] at 0.089 [s]

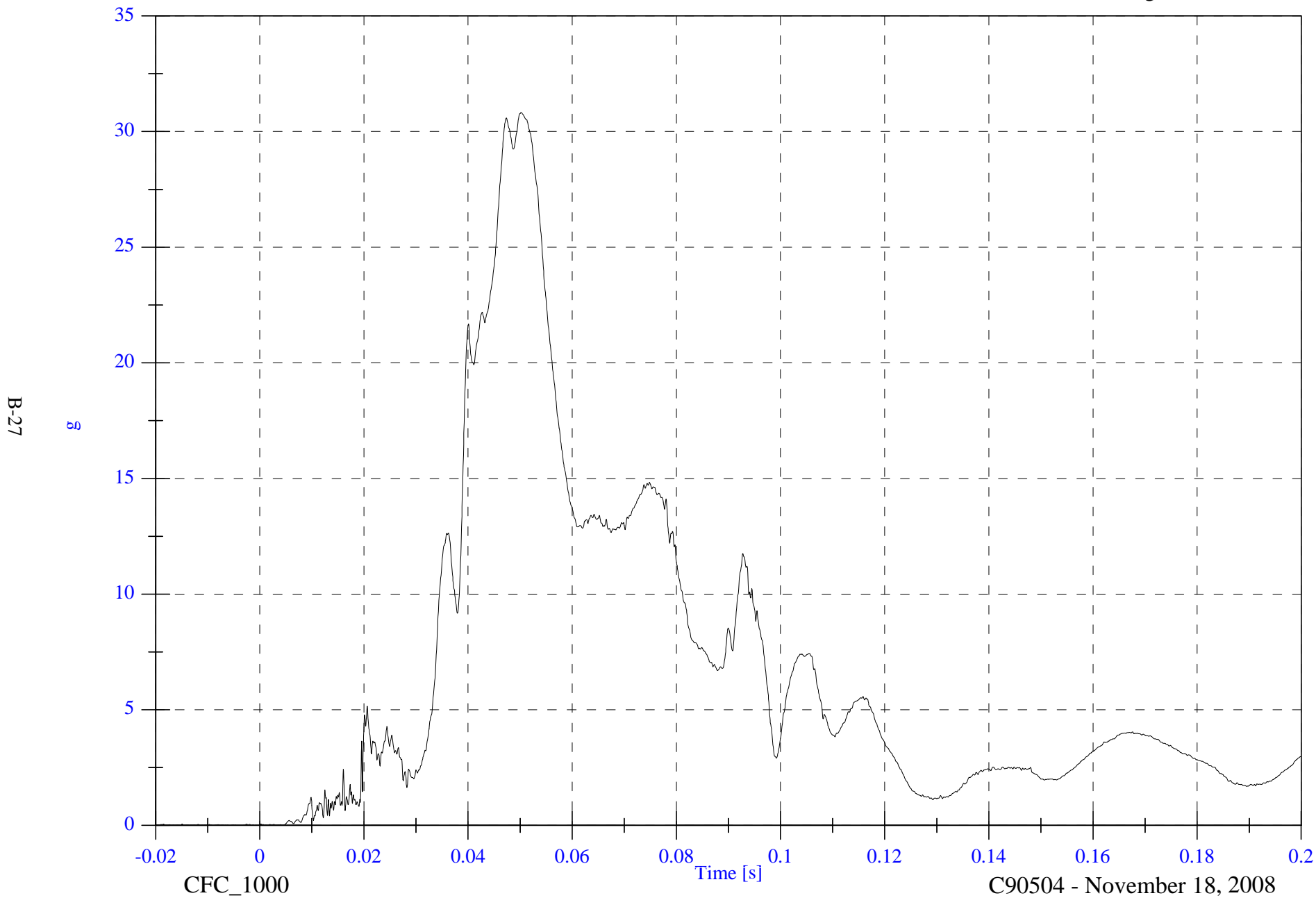


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Head Resultant

Max: 30.8 [g] at 0.050 [s]

Min: 0.0 [g] at -0.011 [s]

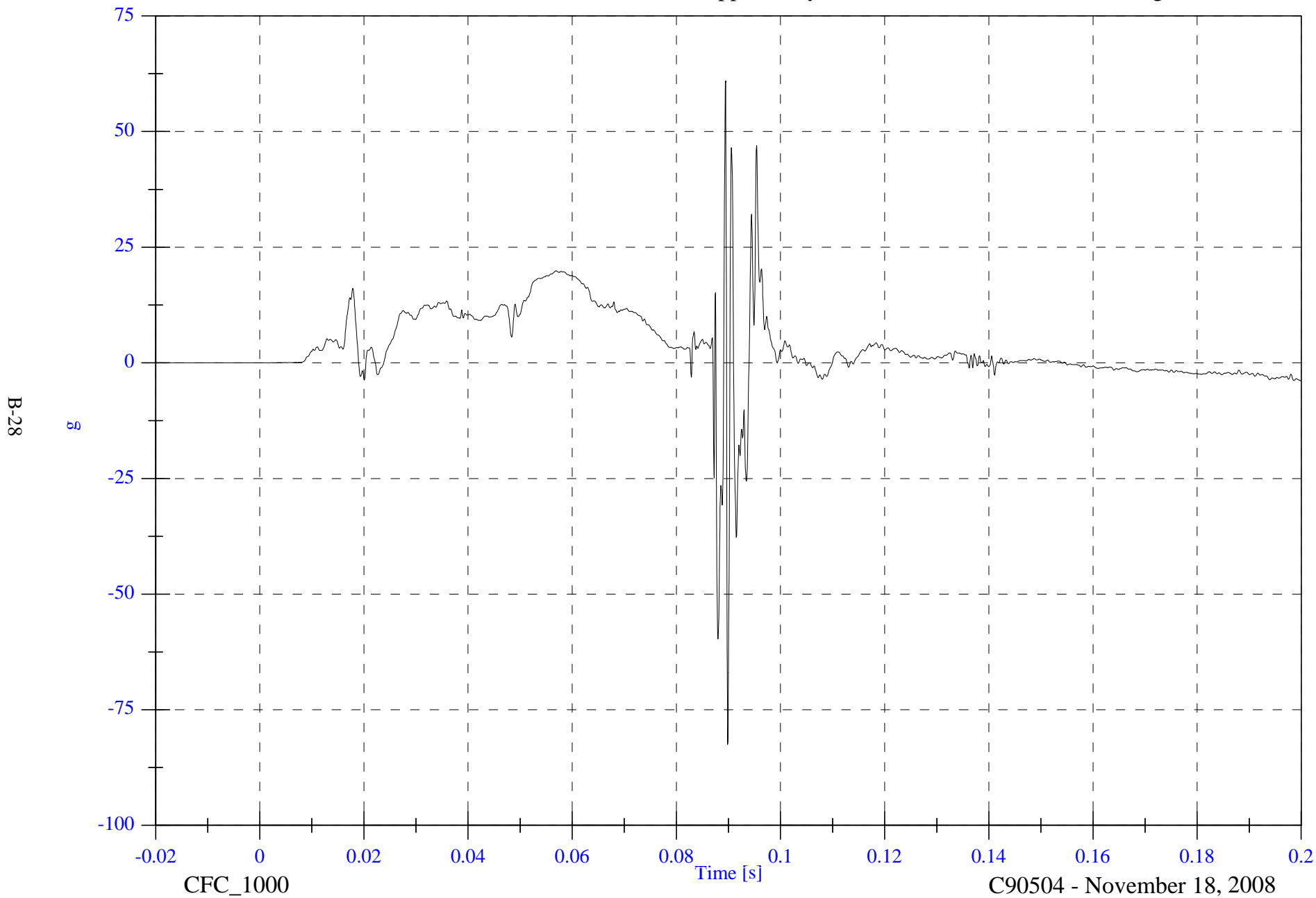


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Upper Rib y

Max: 61.0 [g] at 0.089 [s]

Min: -82.6 [g] at 0.090 [s]



CFC_1000

C90504 - November 18, 2008

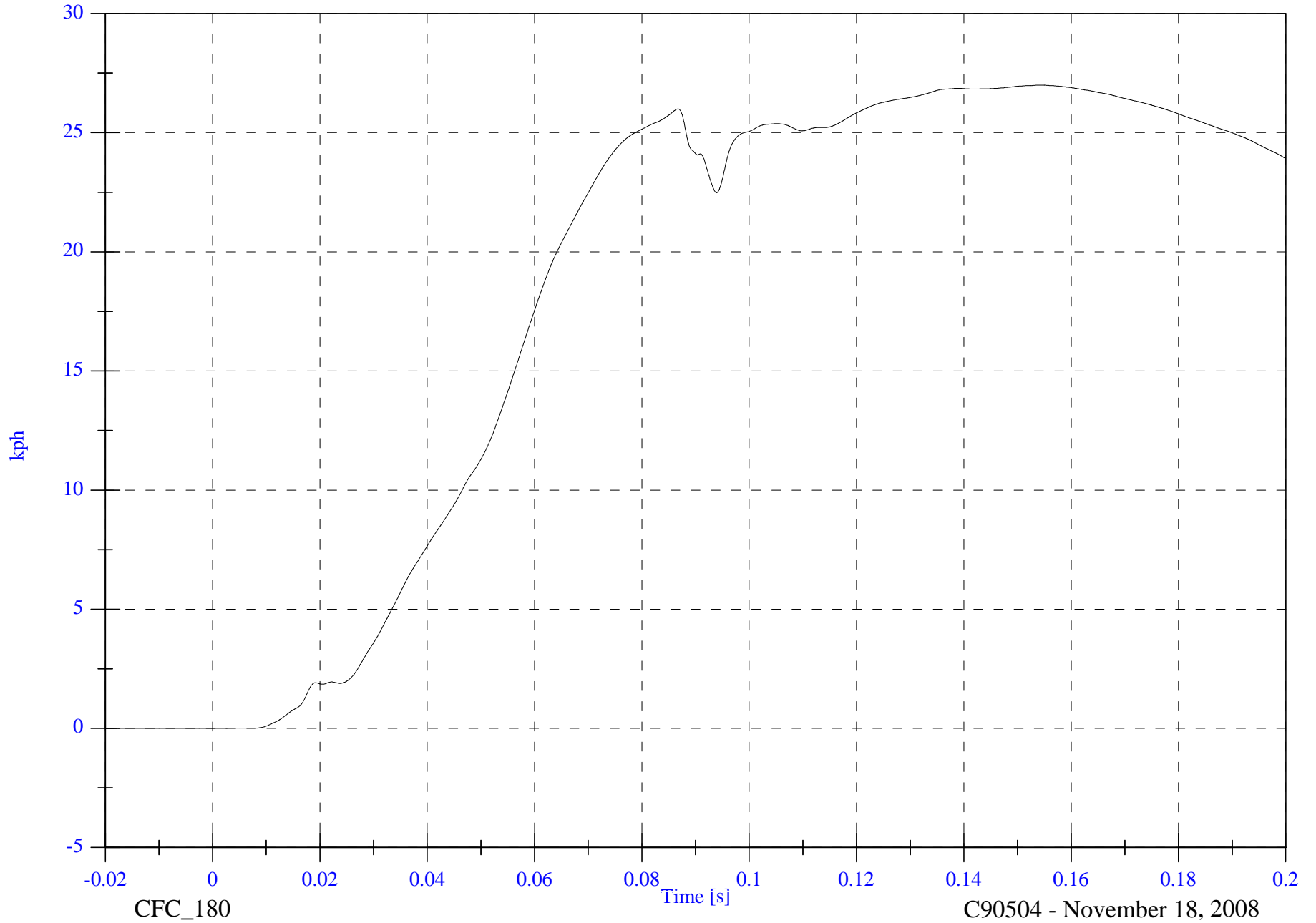
2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Upper Rib y Velocity

Max: 27.0 [kph] at 0.154 [s]

Min: -0.0 [kph] at -0.020 [s]

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CFC_180

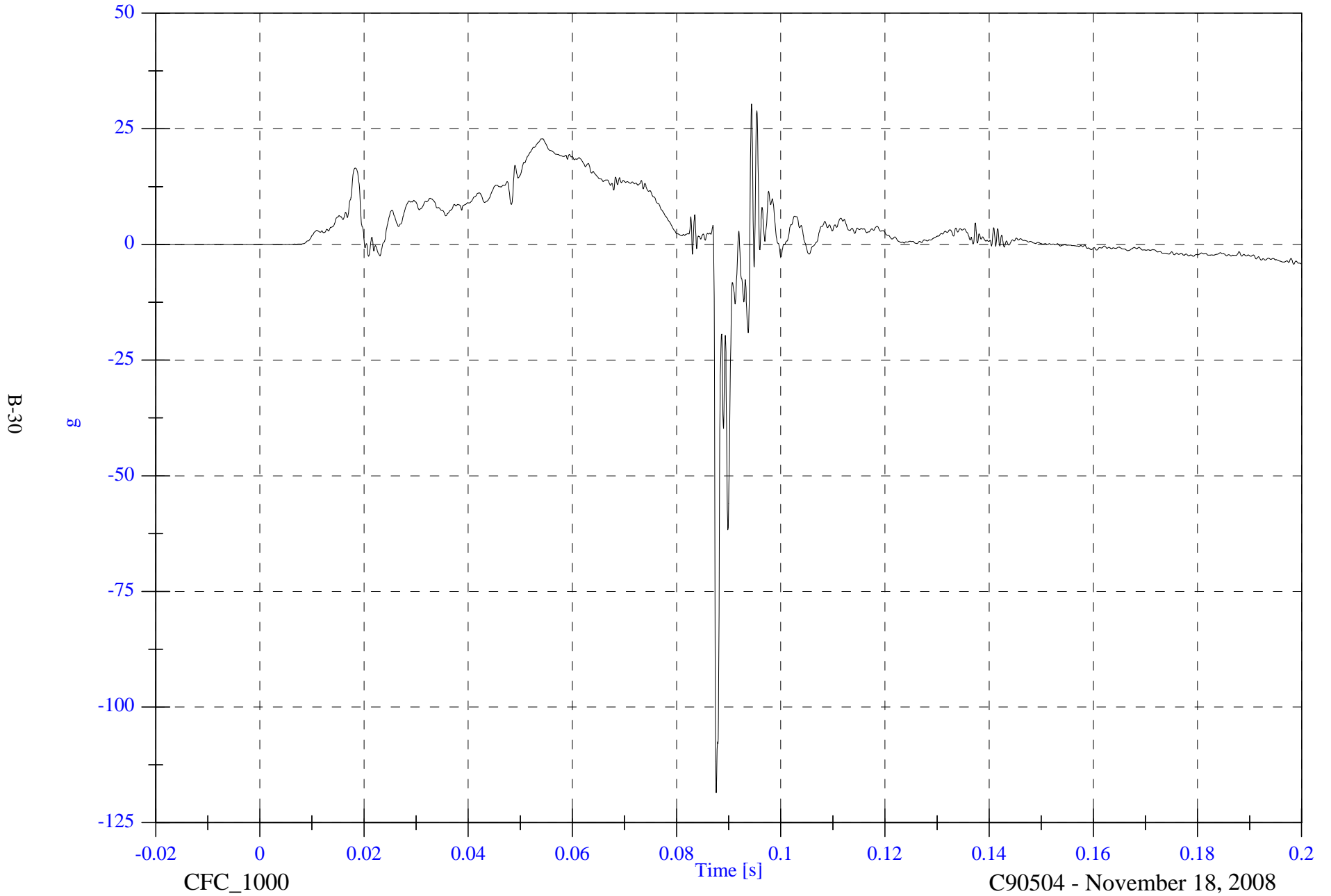
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Rib y

Max: 30.3 [g] at 0.094 [s]

Min: -118.5 [g] at 0.088 [s]



CFC_1000

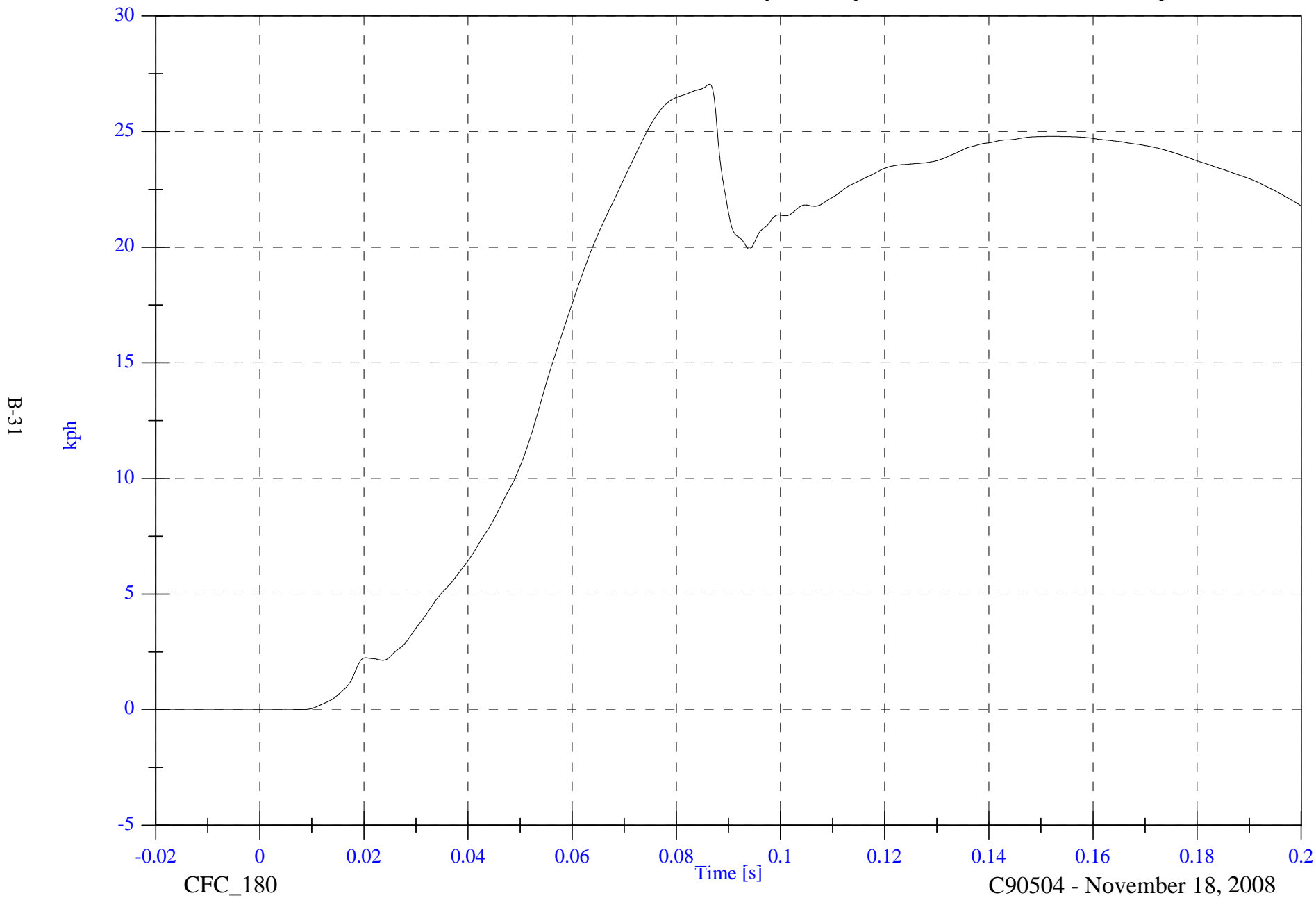
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Rib y Velocity

Max: 27.0 [kph] at 0.086 [s]

Min: -0.0 [kph] at -0.013 [s]



B-31

kph

Time [s]

CFC_180

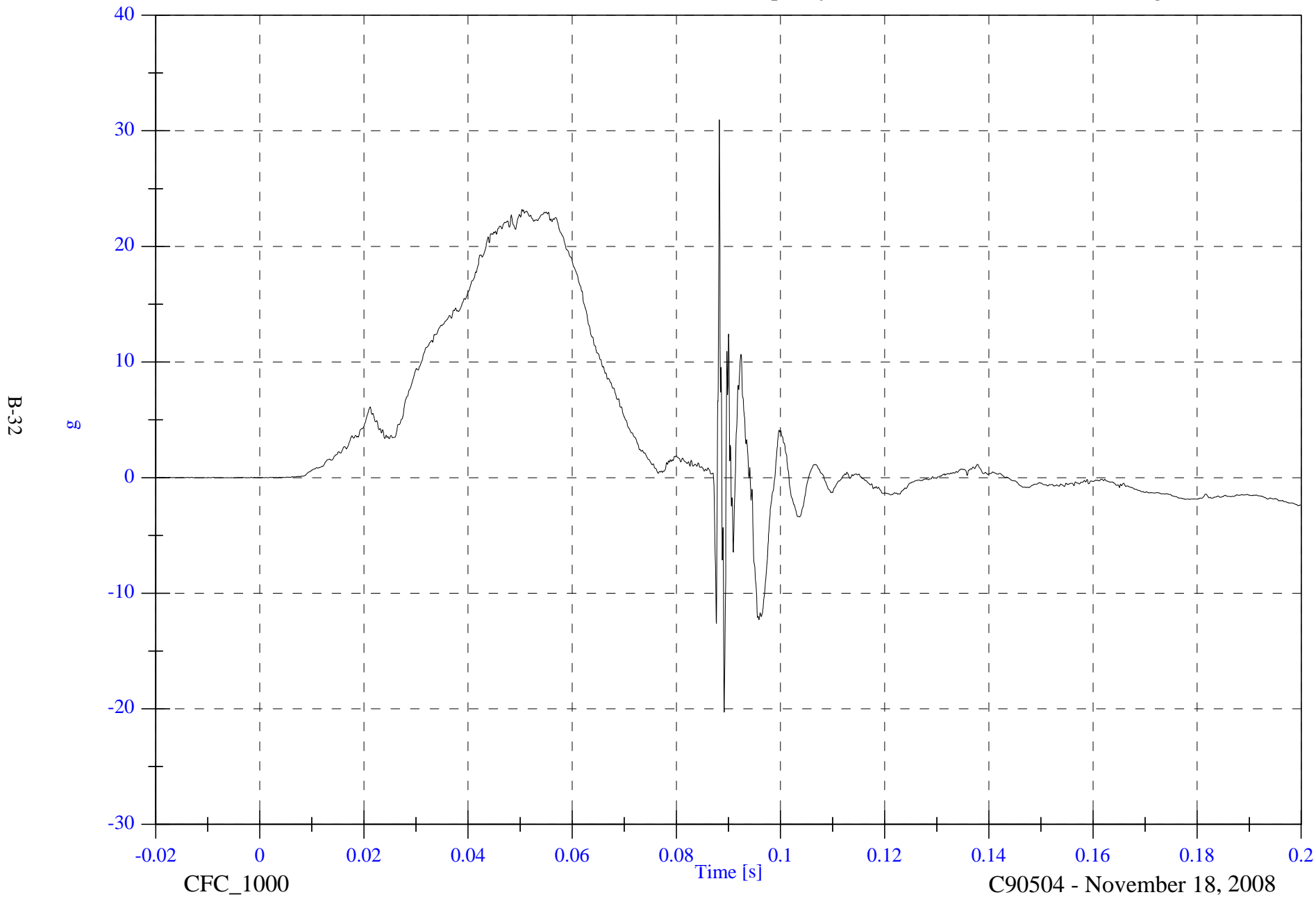
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Spine y

Max: 31.0 [g] at 0.088 [s]

Min: -20.3 [g] at 0.089 [s]



B-32

CFC_1000

C90504 - November 18, 2008

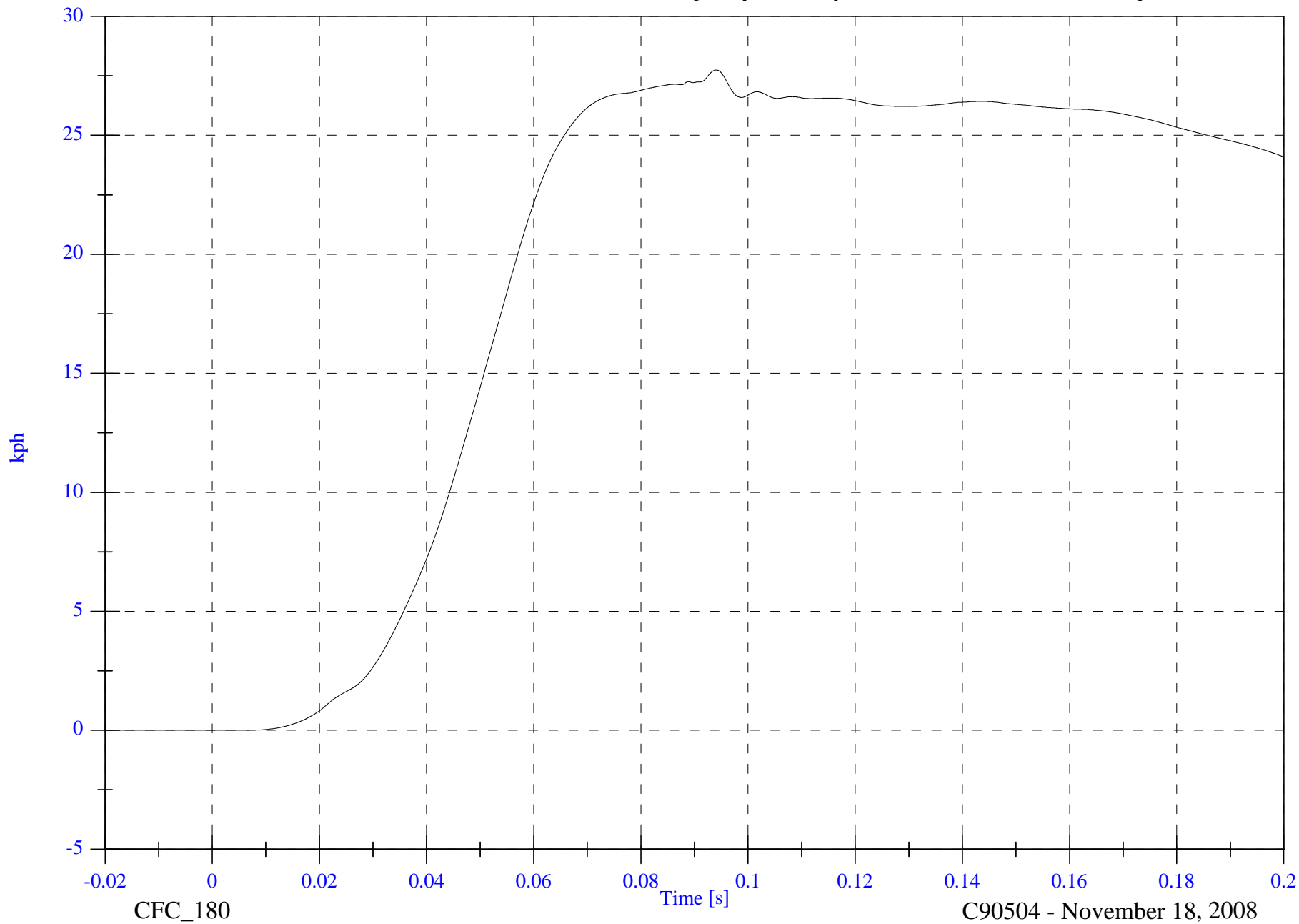
2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Spine y Velocity

Max: 27.7 [kph] at 0.094 [s]

Min: -0.0 [kph] at -0.020 [s]

B-33



CFC_180

C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Pelvic y

Max: 35.1 [g] at 0.050 [s]

Min: -5.2 [g] at 0.090 [s]

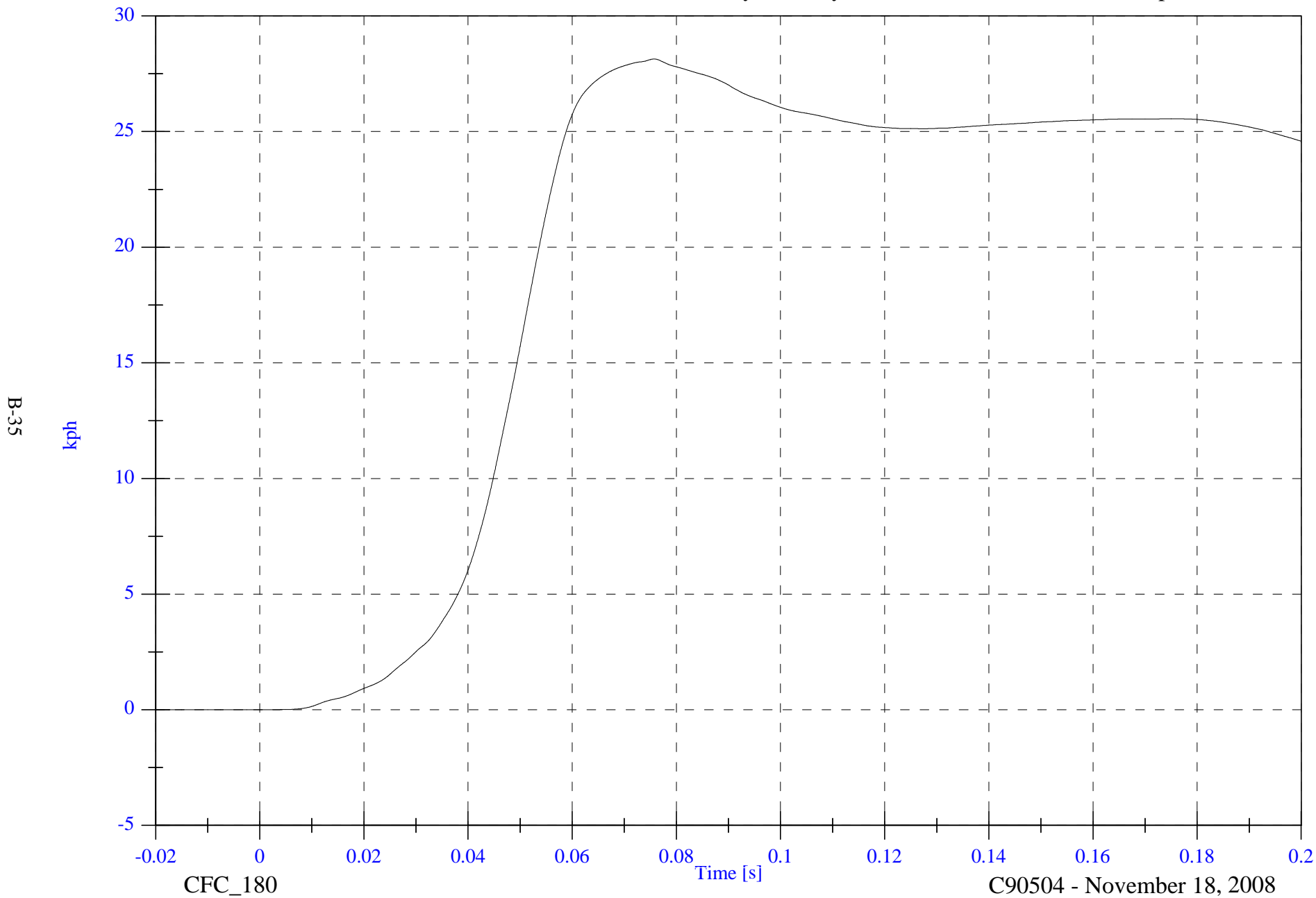


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

Max: 28.1 [kph] at 0.076 [s]

V2P4 Pelvic y Velocity

Min: -0.0 [kph] at -0.020 [s]



B-35

CFC_180

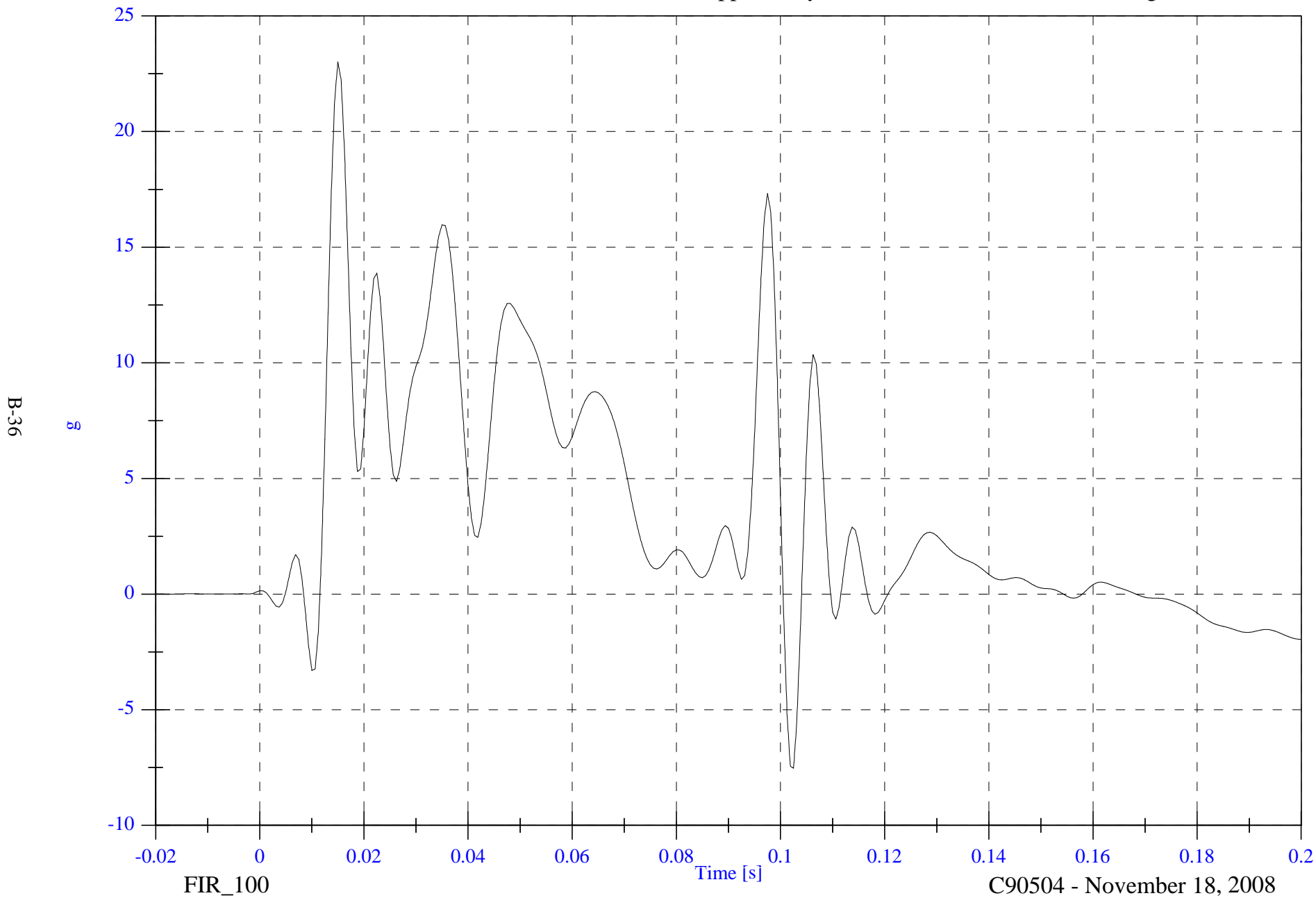
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Upper Rib y

Max: 23.0 [g] at 0.015 [s]

Min: -7.5 [g] at 0.102 [s]

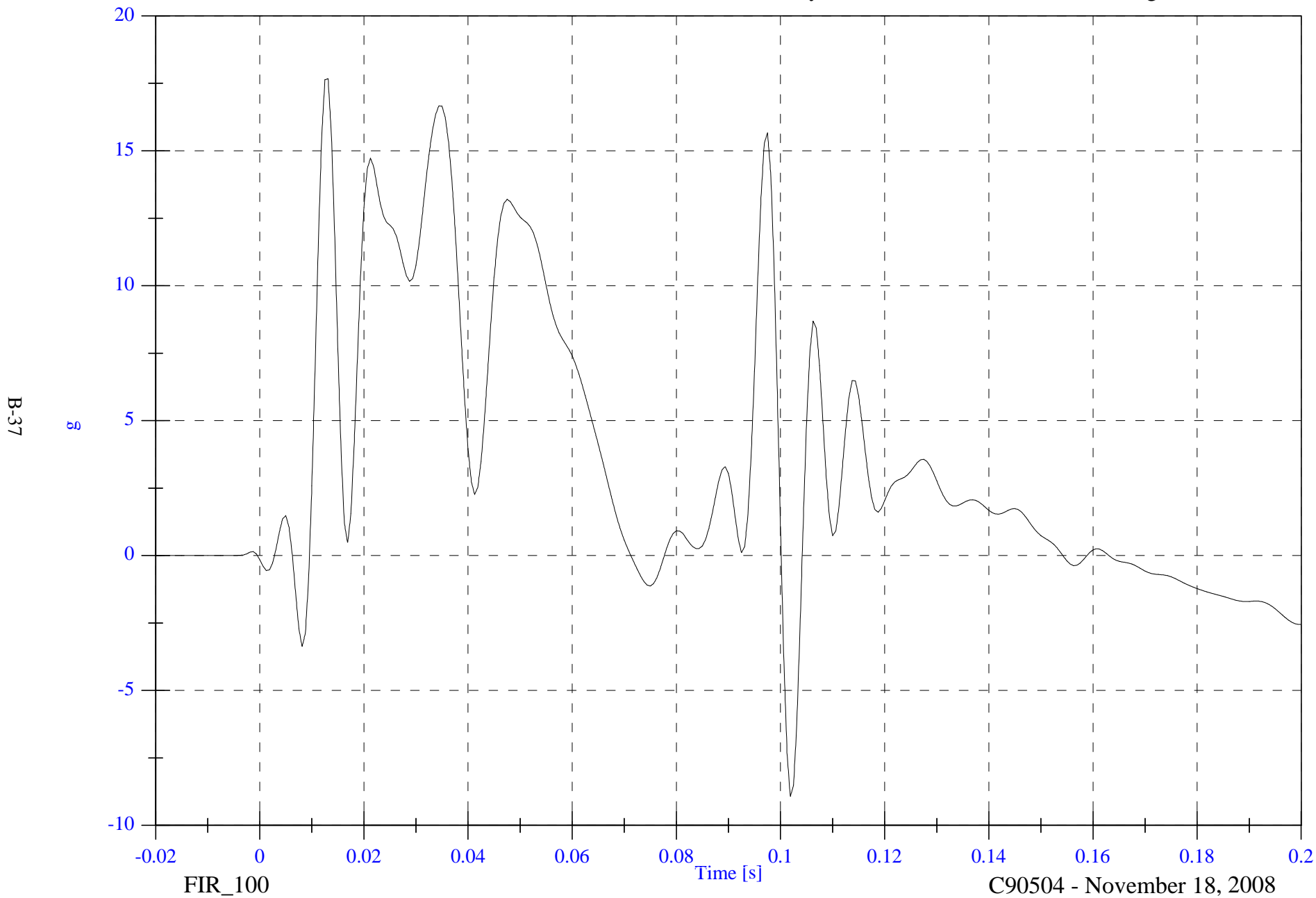


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Rib y

Max: 17.7 [g] at 0.013 [s]

Min: -8.9 [g] at 0.102 [s]

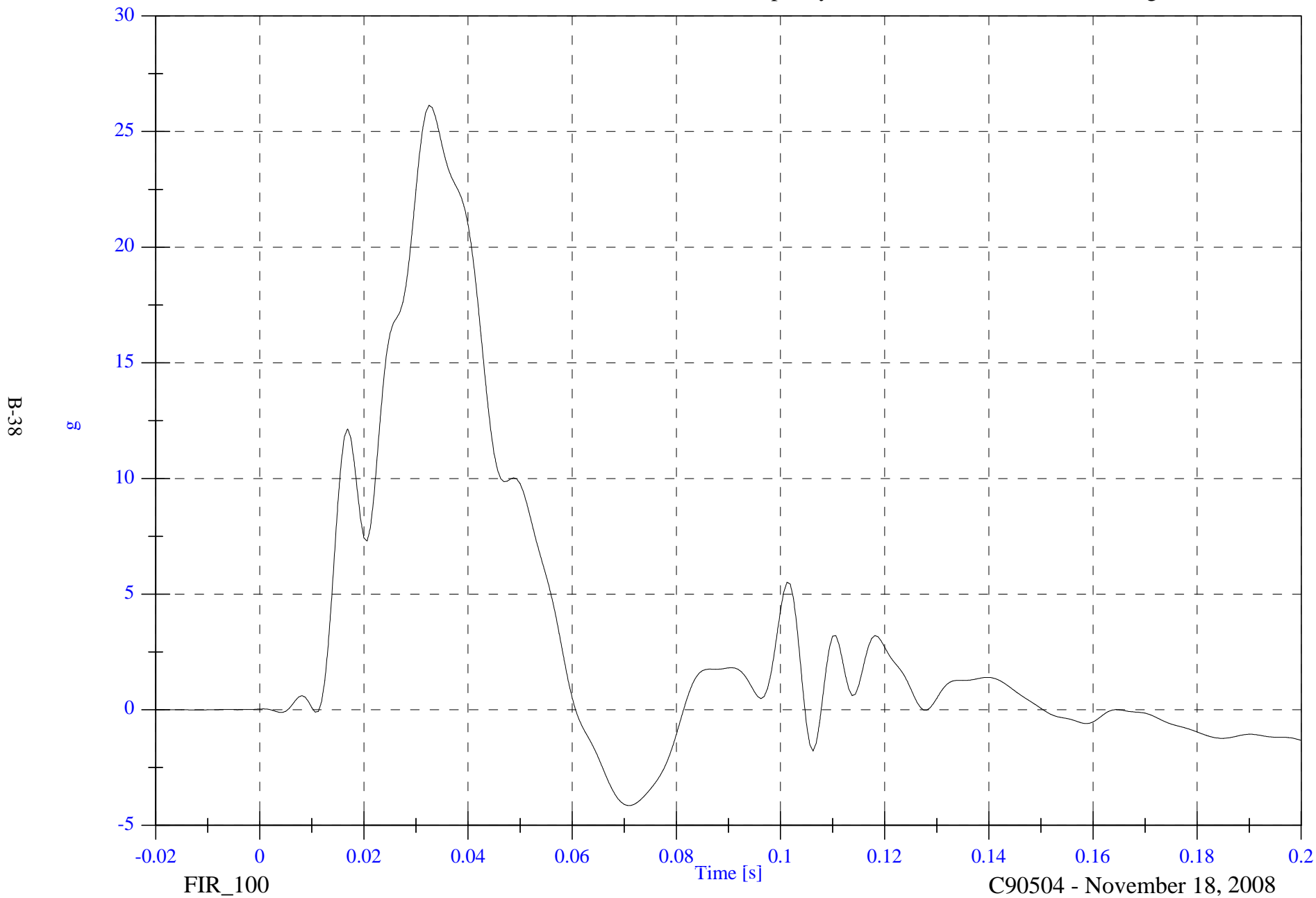


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

Max: 26.1 [g] at 0.032 [s]

V2P1 Lower Spine y

Min: -4.1 [g] at 0.071 [s]



B-38

g

FIR_100

Time [s]

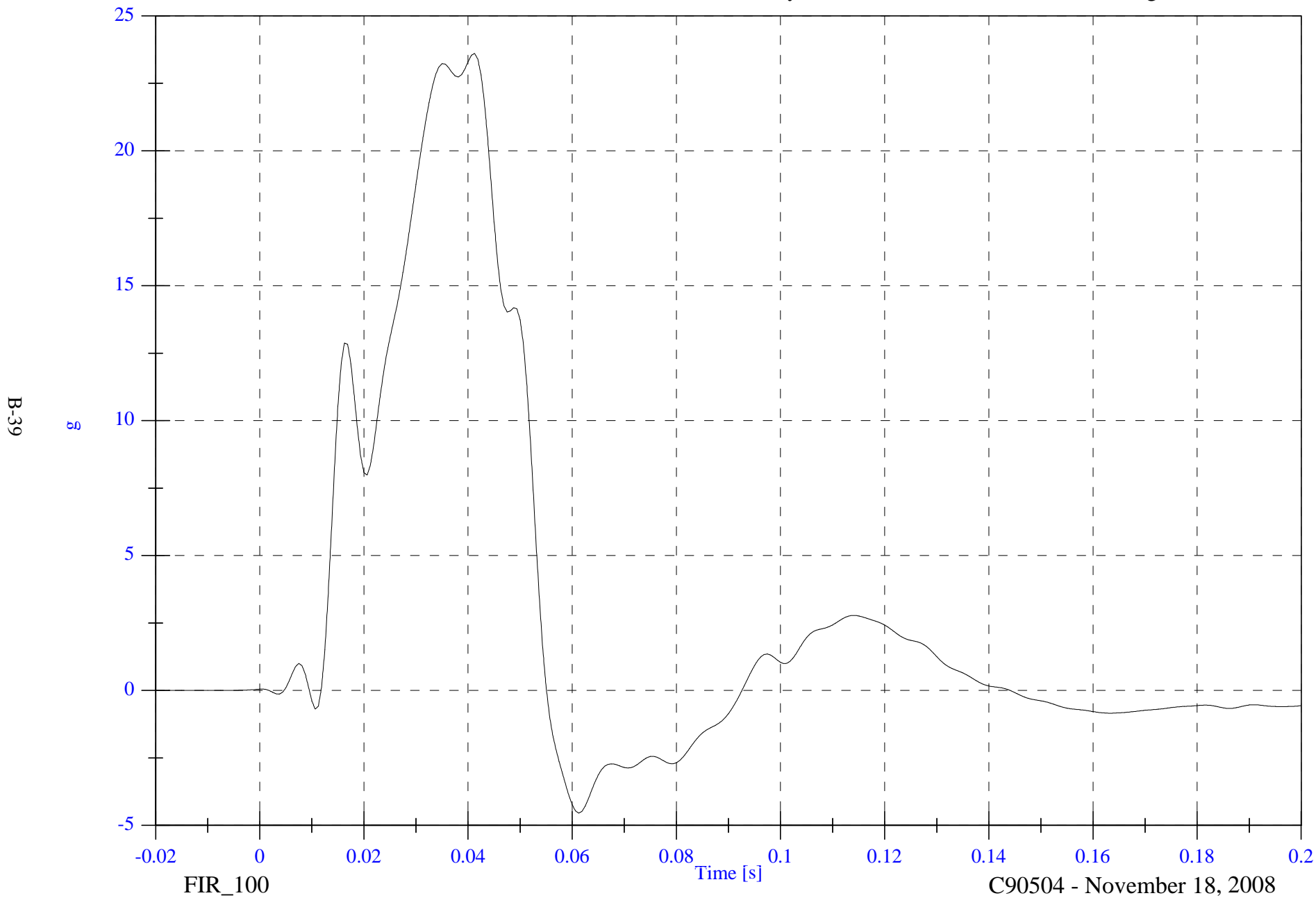
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Pelvic y

Max: 23.6 [g] at 0.041 [s]

Min: -4.5 [g] at 0.061 [s]

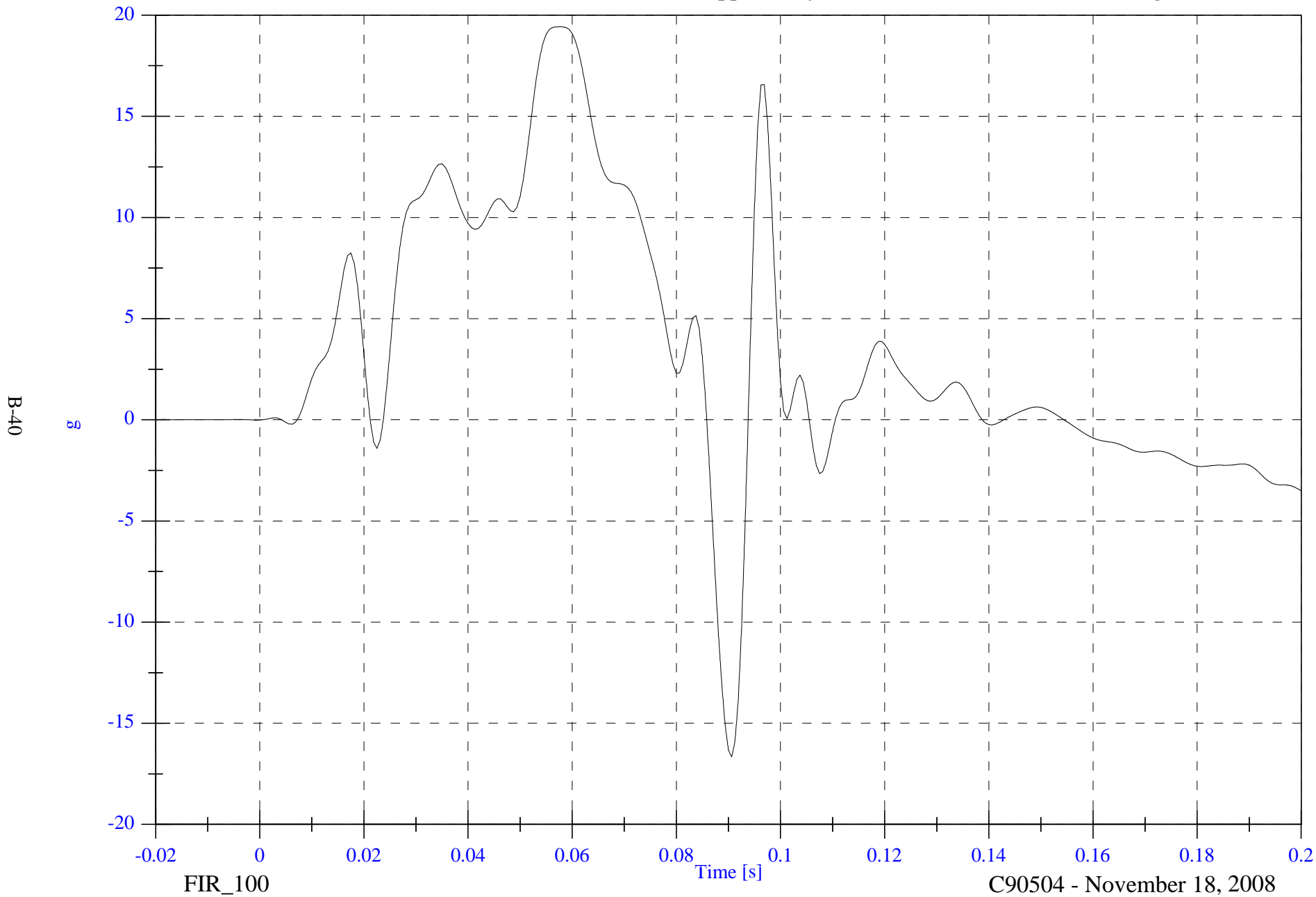


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Upper Rib y

Max: 19.4 [g] at 0.057 [s]

Min: -16.7 [g] at 0.091 [s]



FIR_100

C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Rib y

Max: 22.0 [g] at 0.054 [s]

Min: -44.1 [g] at 0.089 [s]



FIR_100

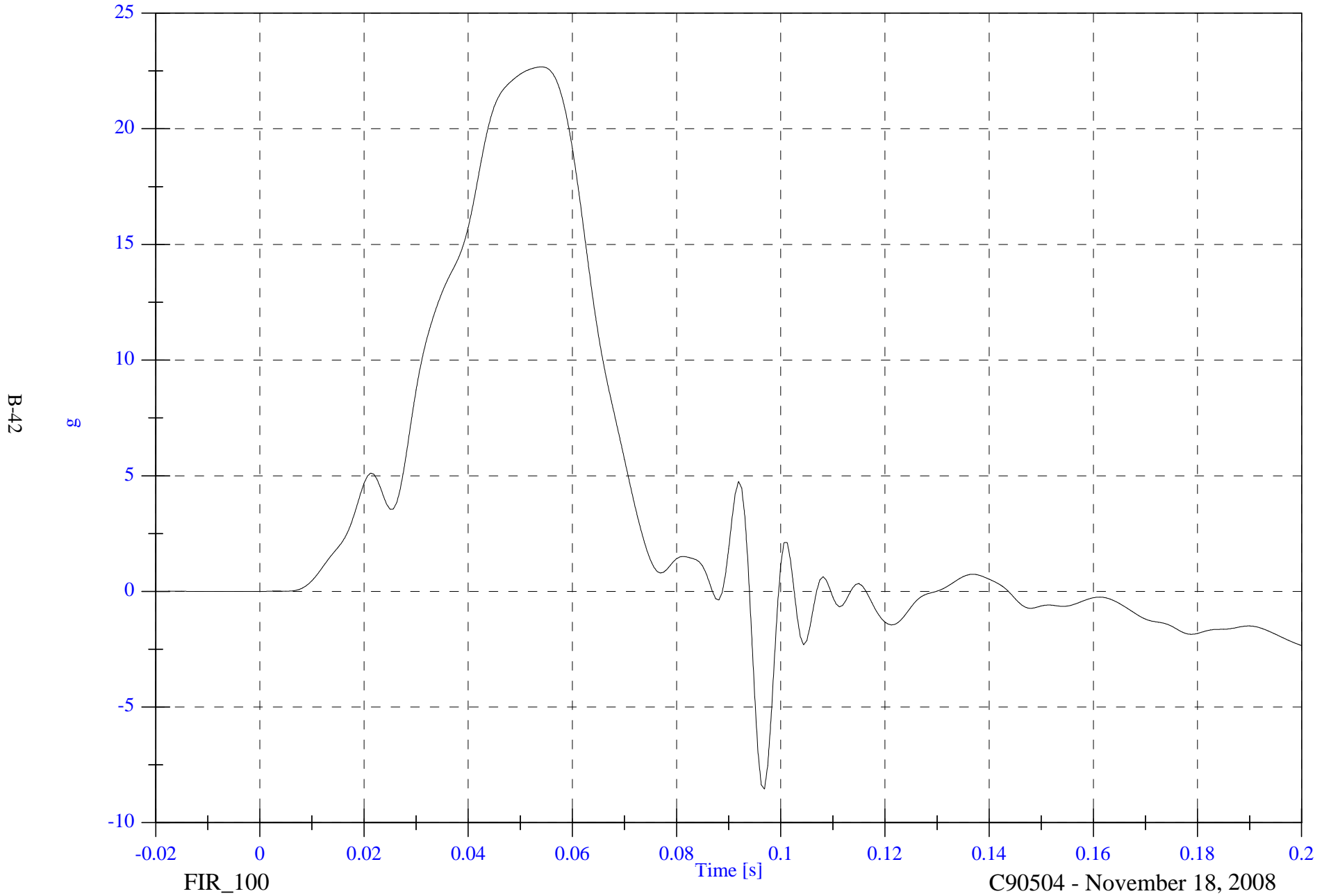
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Spine y

Max: 22.7 [g] at 0.054 [s]

Min: -8.5 [g] at 0.097 [s]

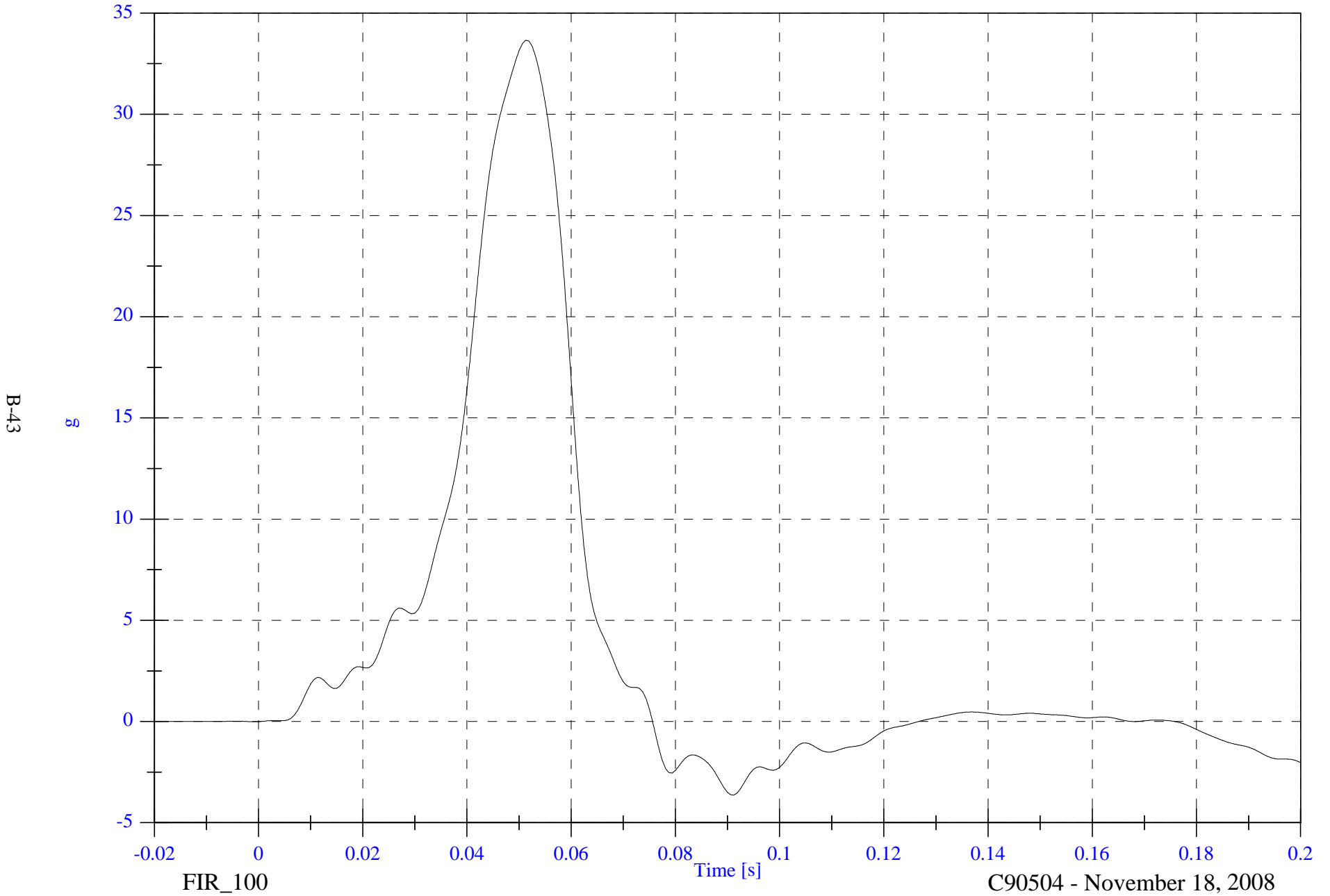


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Pelvic y

Max: 33.7 [g] at 0.051 [s]

Min: -3.6 [g] at 0.091 [s]



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FIR_100

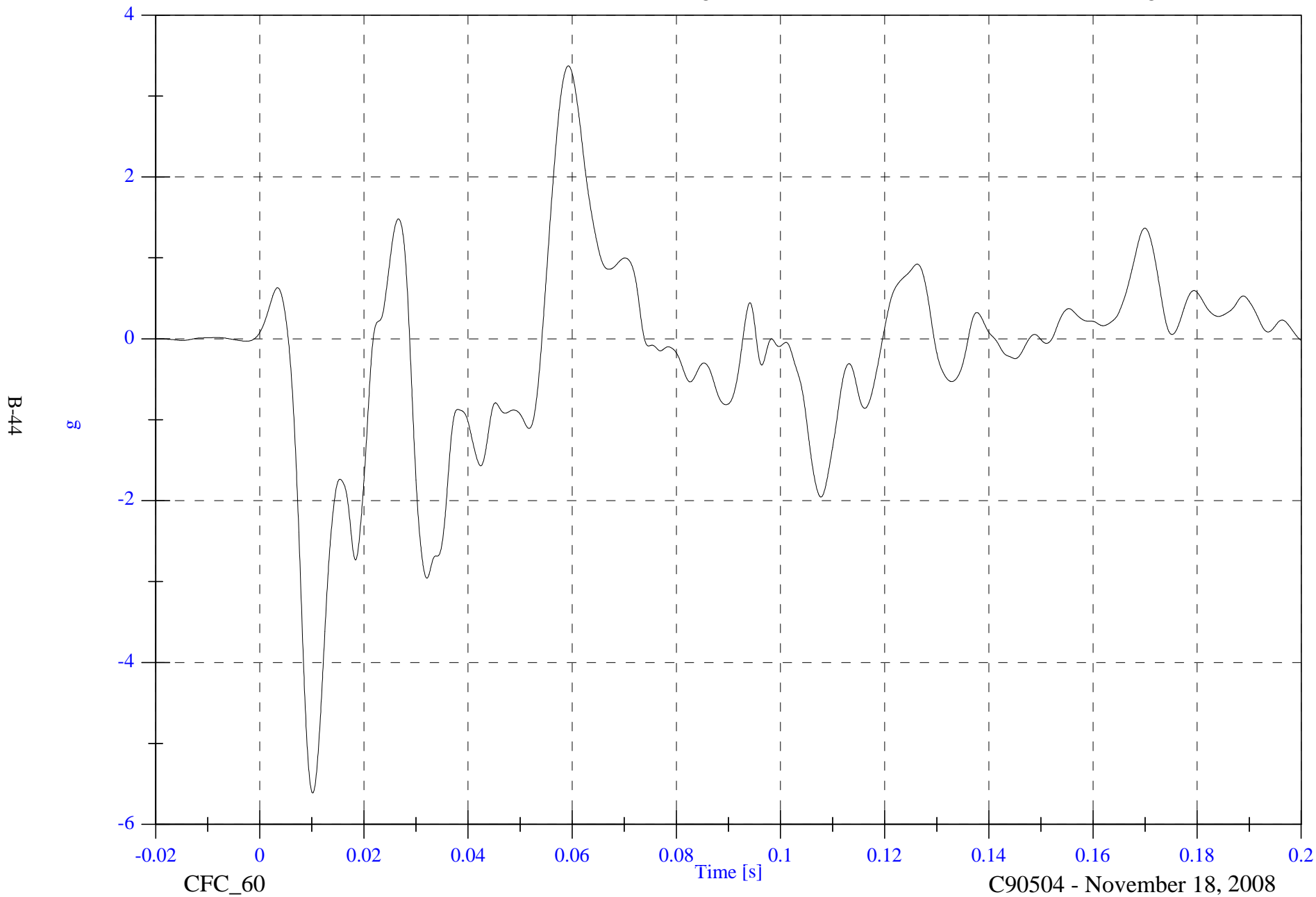
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A1 Right Front Sill X

Max: 3.4 [g] at 0.059 [s]

Min: -5.6 [g] at 0.010 [s]

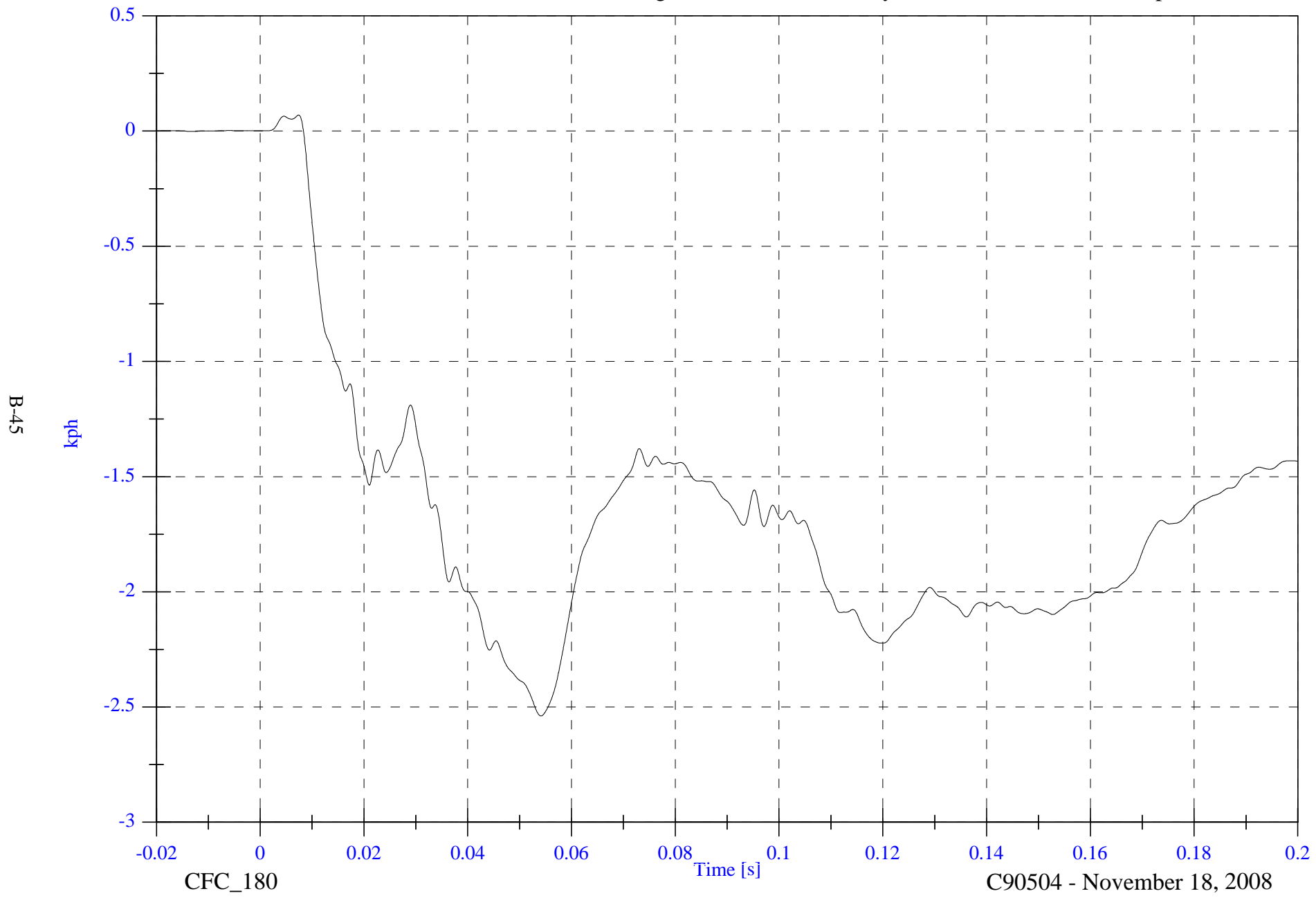


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A1 Right Front Sill X Velocity

Max: 0.1 [kph] at 0.007 [s]

Min: -2.5 [kph] at 0.054 [s]



B-45

kph

Time [s]

CFC_180

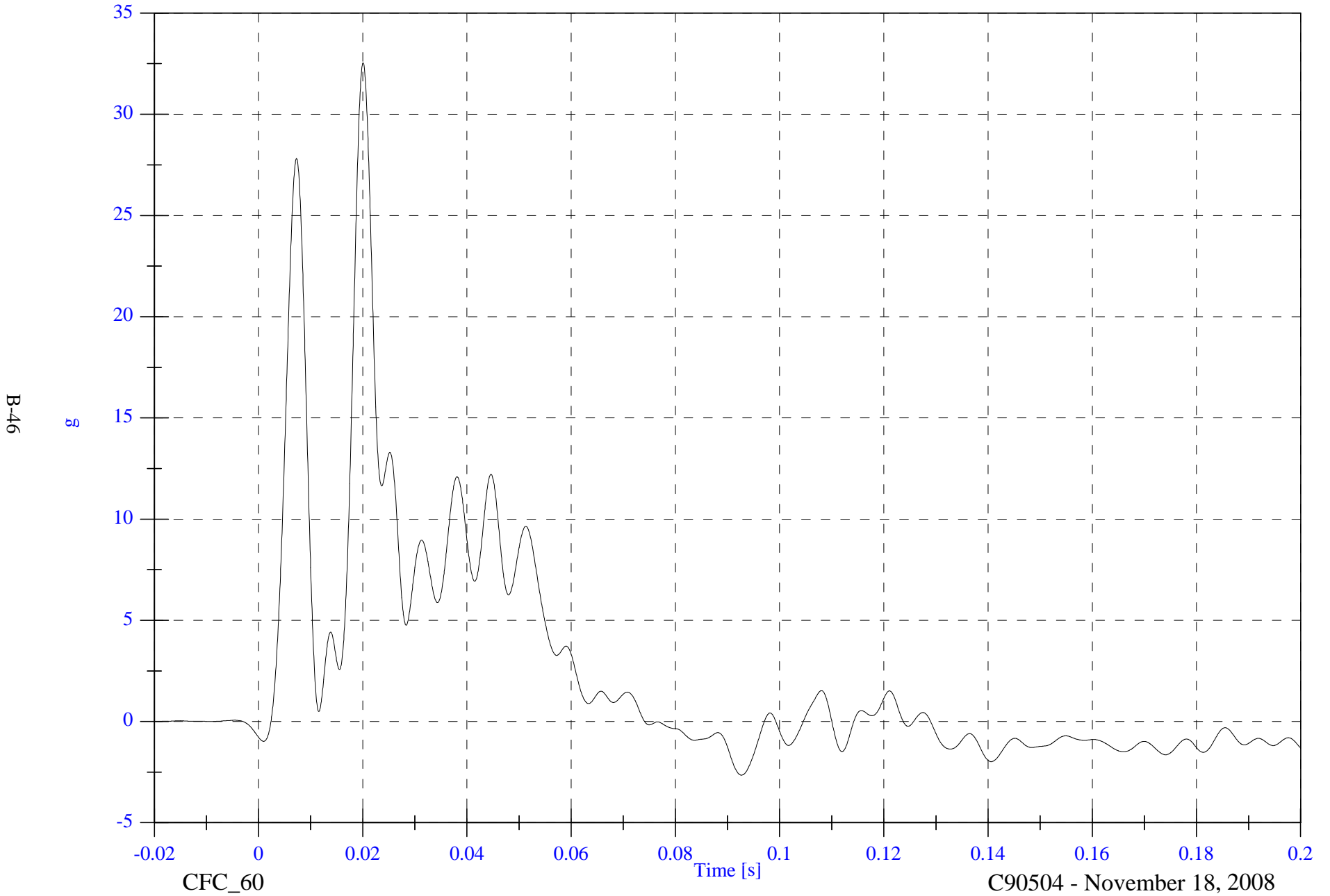
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A1 Right Front Sill Y

Max: 32.5 [g] at 0.020 [s]

Min: -2.7 [g] at 0.093 [s]

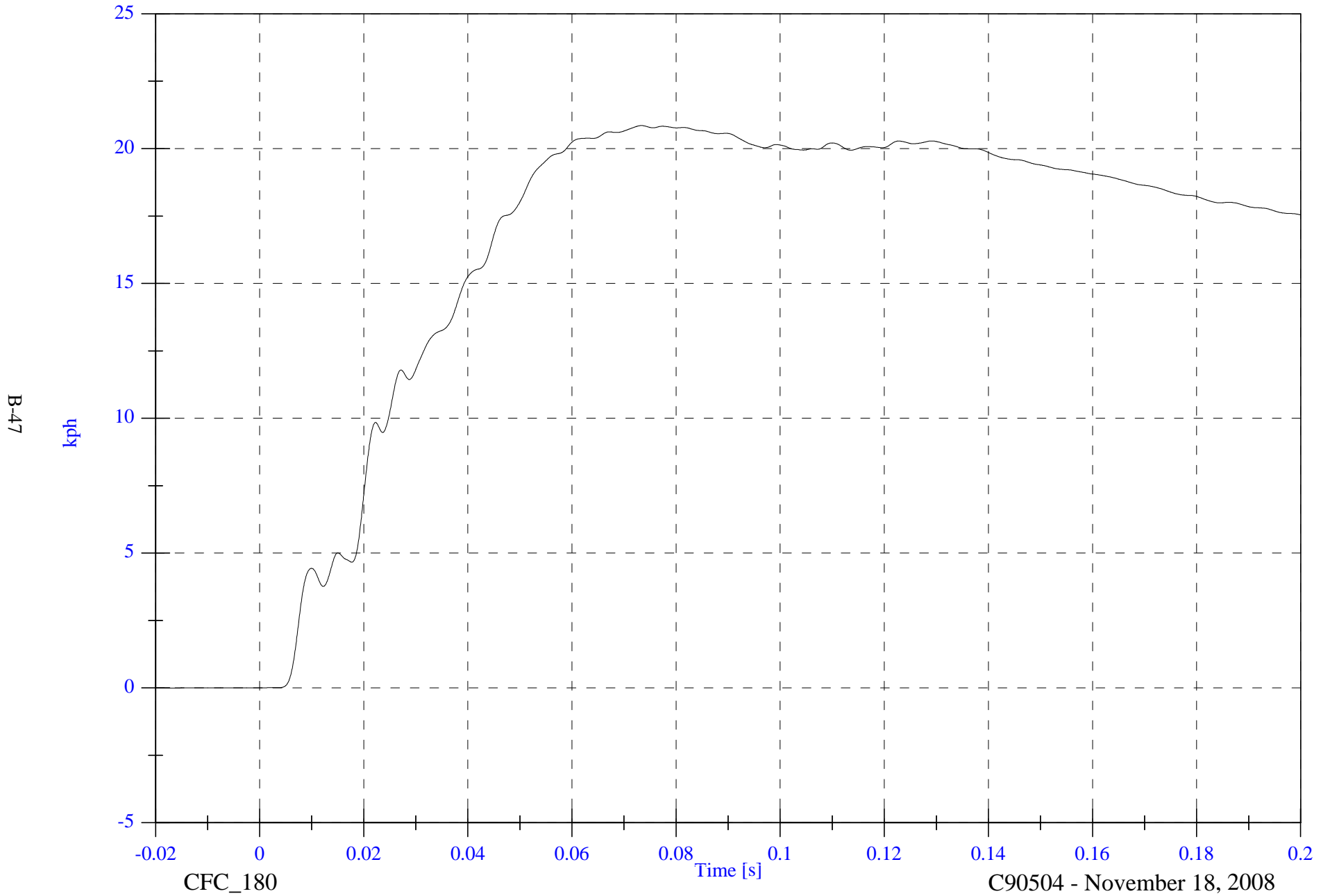


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A1 Right Front Sill Y Velocity

Max: 20.9 [kph] at 0.073 [s]

Min: -0.0 [kph] at -0.018 [s]



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CFC_180

Time [s]

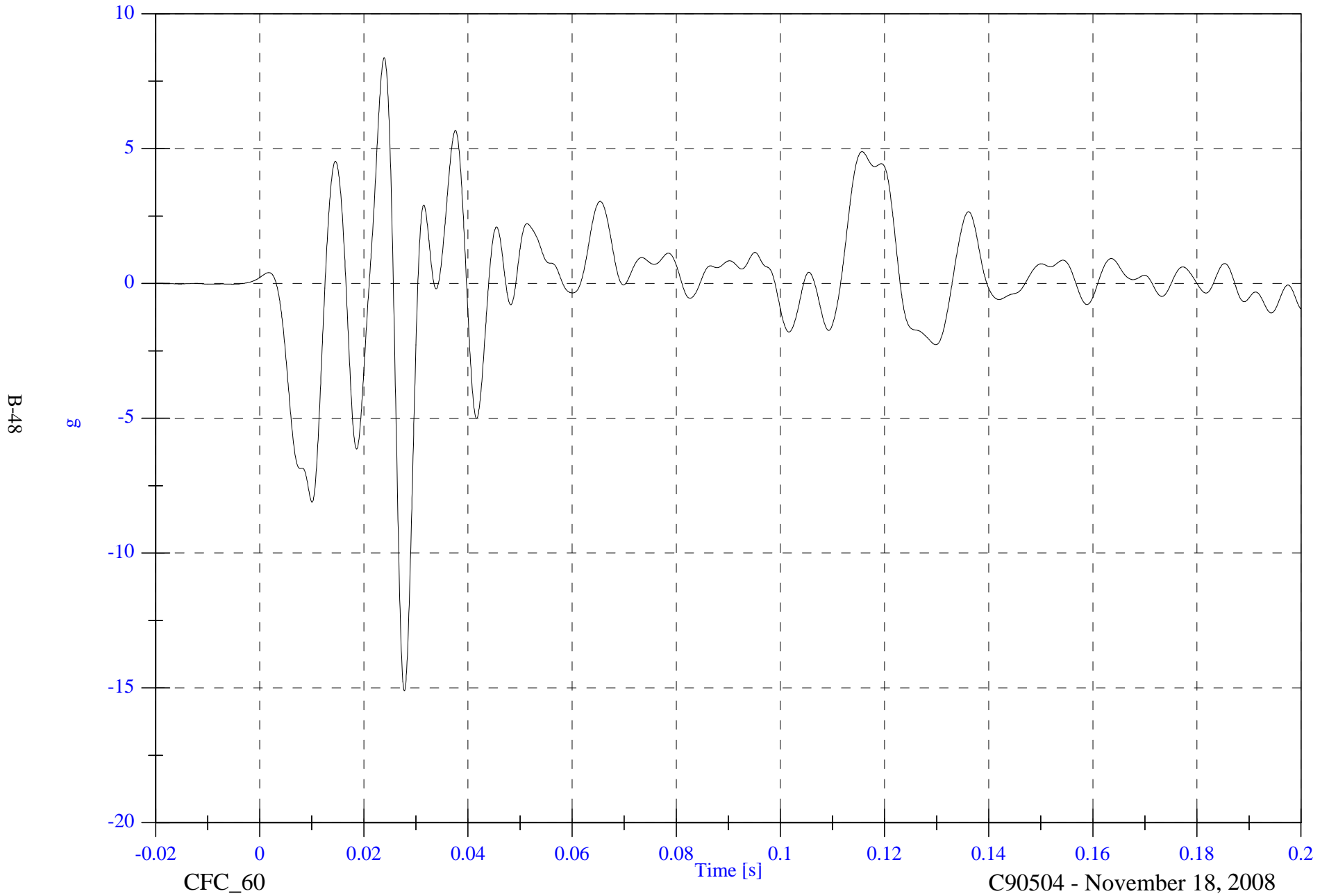
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A1 Right Front Sill Z

Max: 8.4 [g] at 0.024 [s]

Min: -15.1 [g] at 0.028 [s]

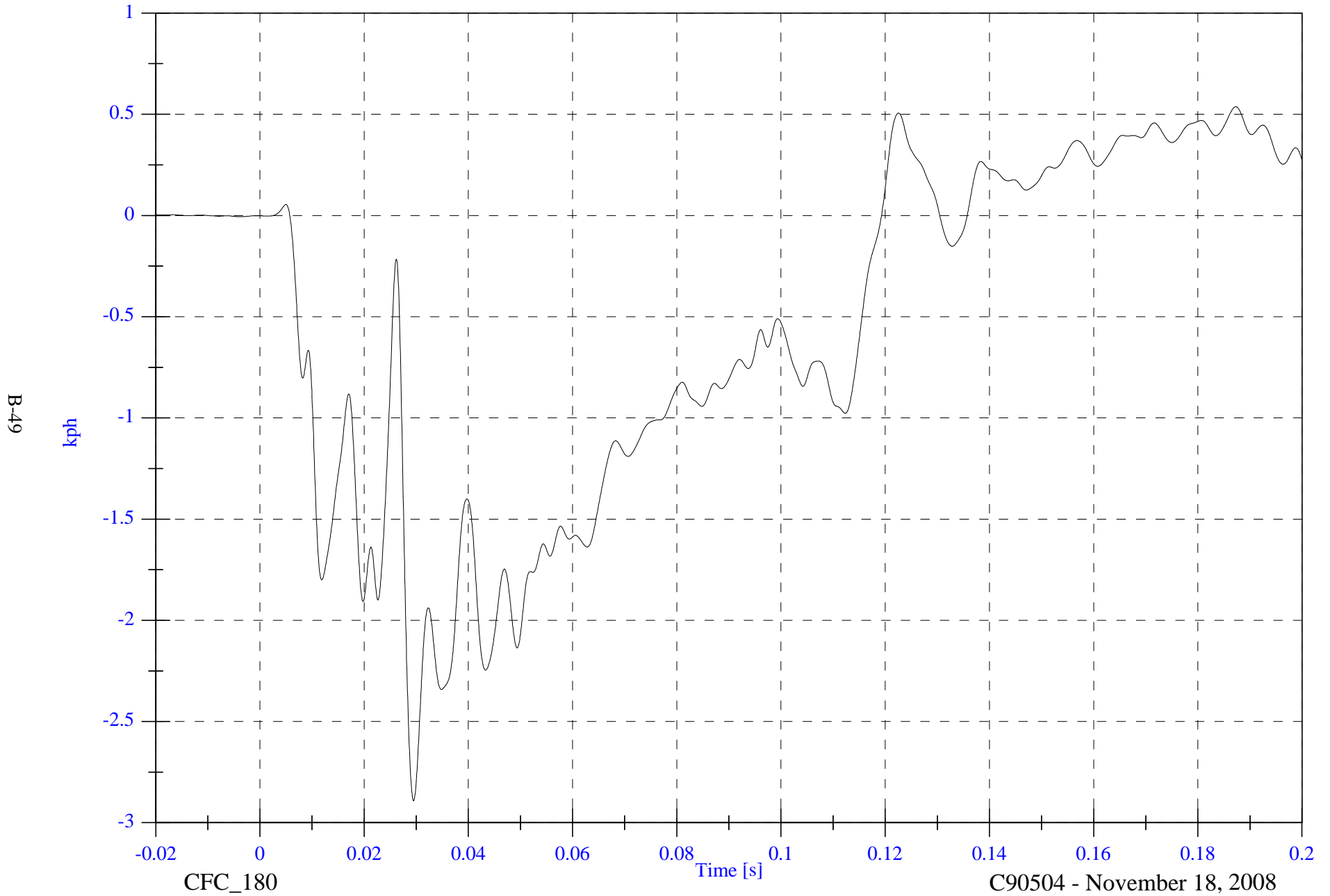


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A1 Right Front Sill Z Velocity

Max: 0.5 [kph] at 0.187 [s]

Min: -2.9 [kph] at 0.029 [s]



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CFC_180

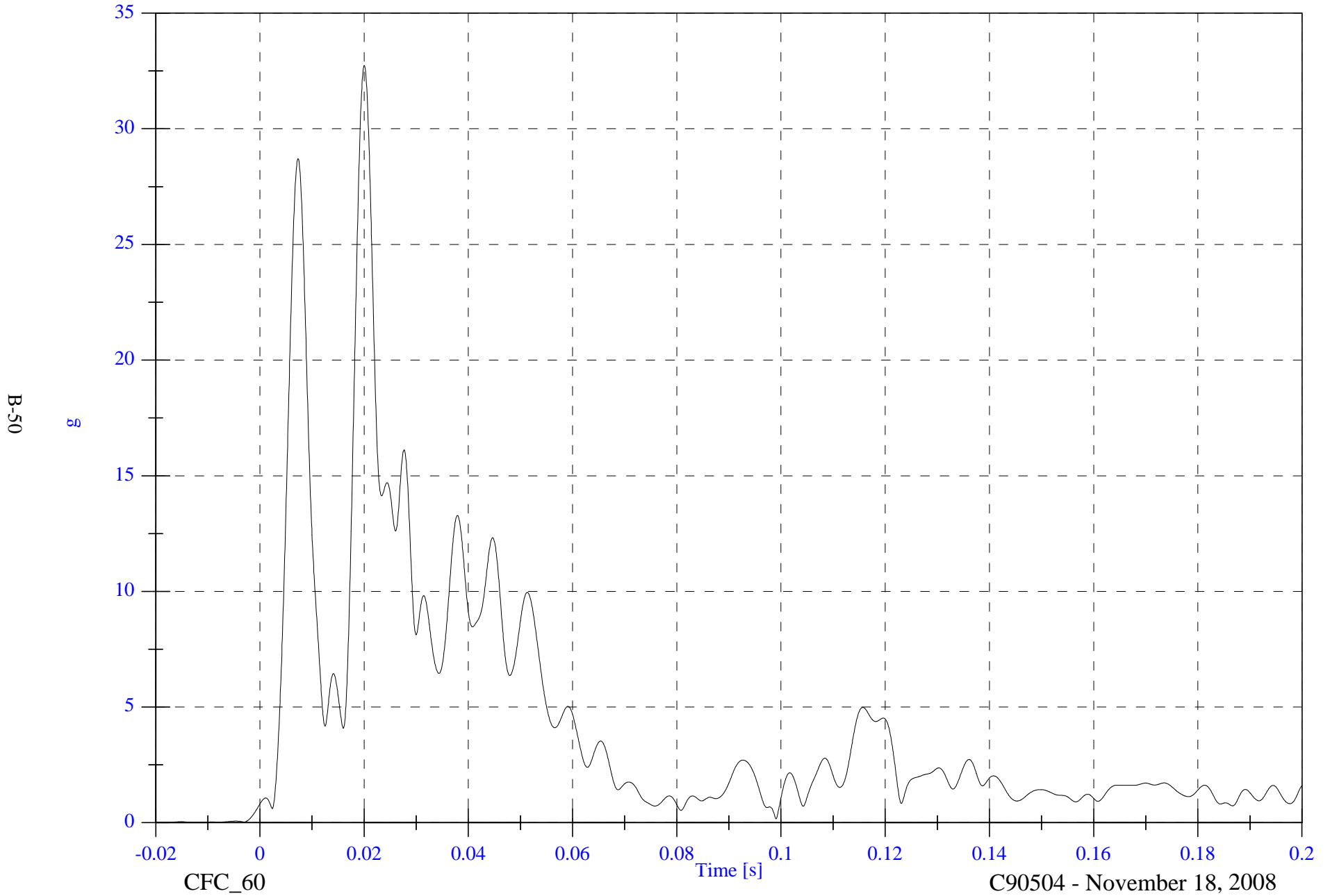
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A1 Right Front Sill Resultant

Max: 32.7 [g] at 0.020 [s]

Min: 0.0 [g] at -0.020 [s]

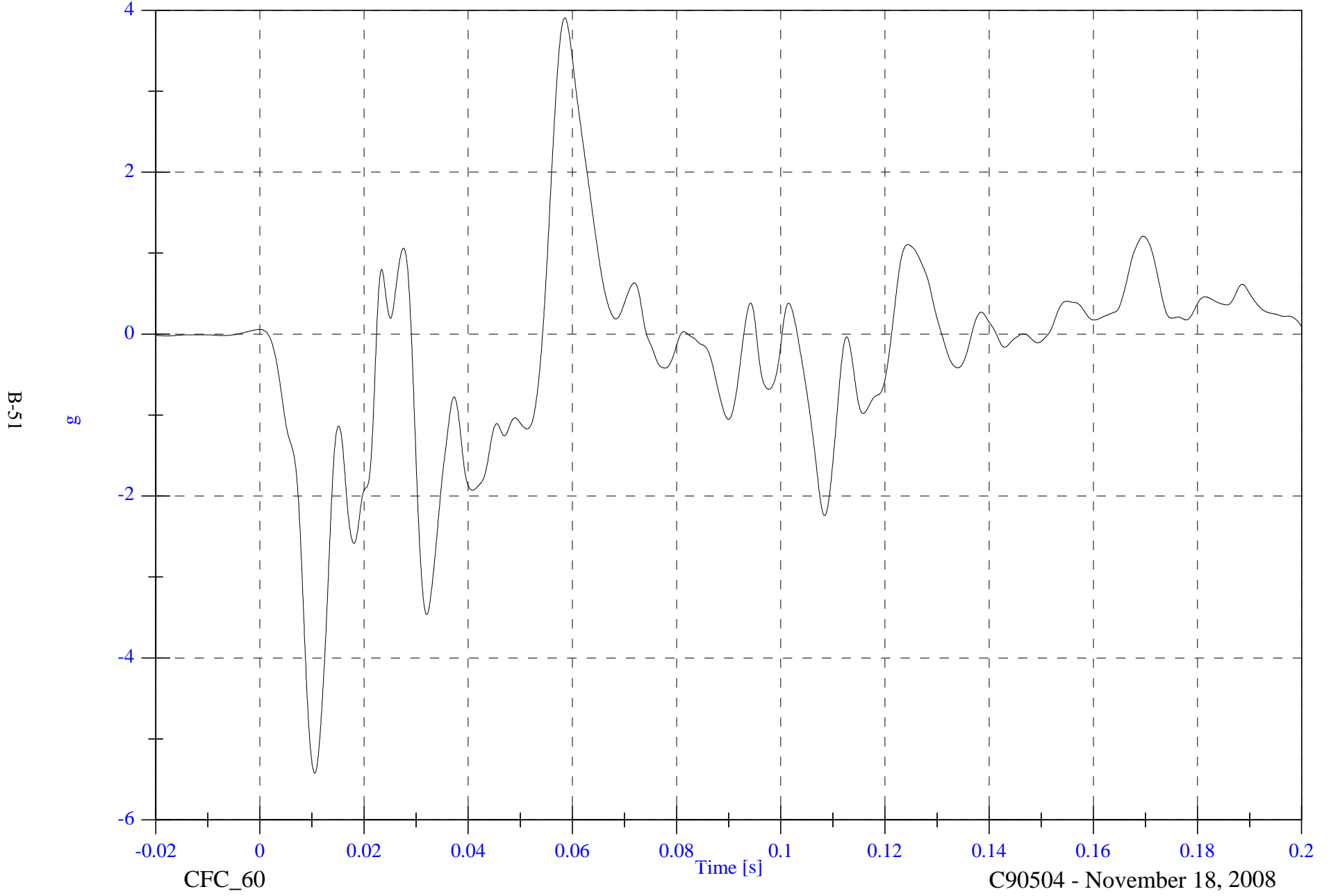


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A2 Right Rear Sill X

Max: 3.9 [g] at 0.059 [s]

Min: -5.4 [g] at 0.011 [s]

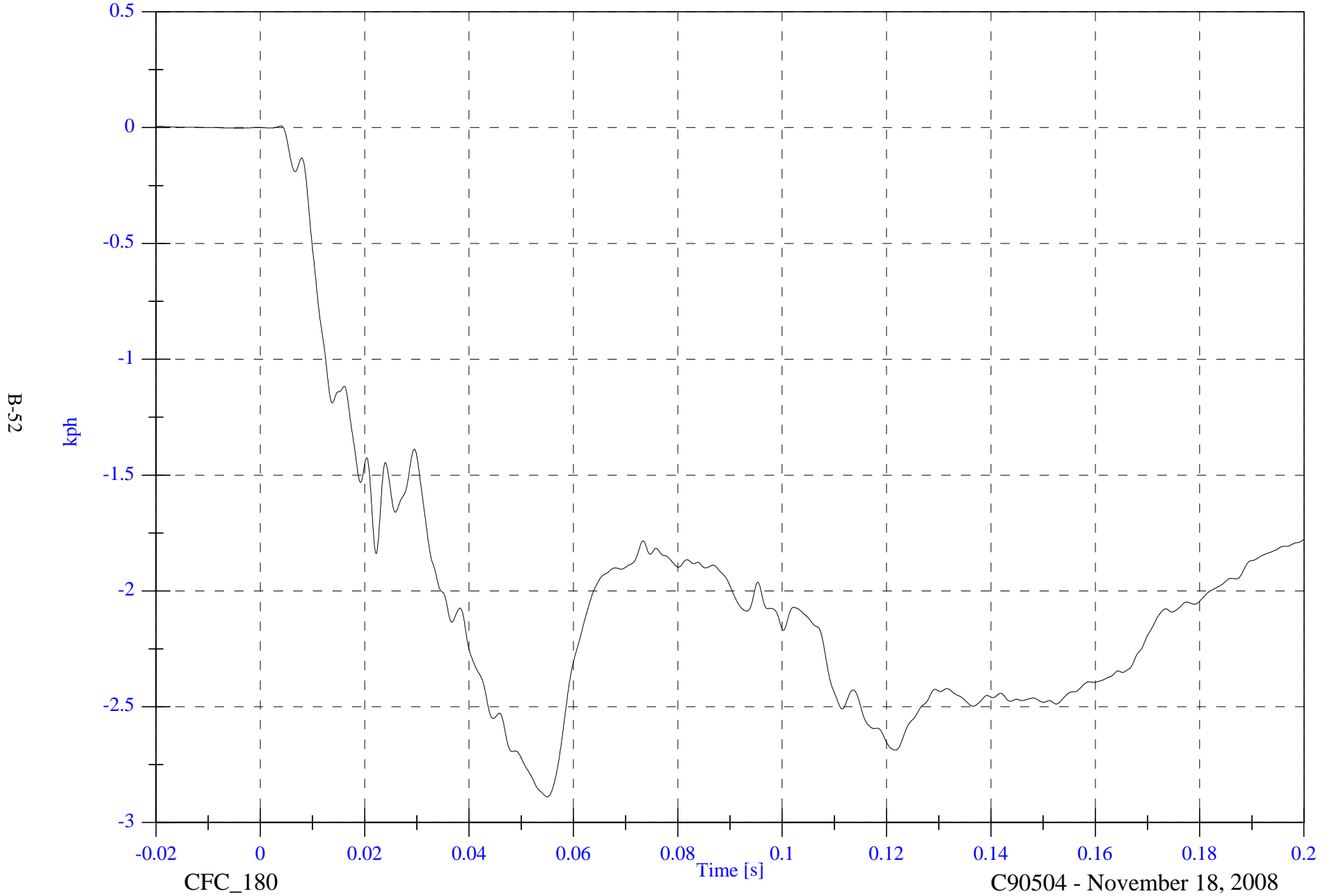


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A2 Right Rear Sill X Velocity

Max: 0.0 [kph] at 0.004 [s]

Min: -2.9 [kph] at 0.055 [s]



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kph

CFC_180

Time [s]

C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A2 Right Rear Sill Y

Max: 282.7 [g] at 0.185 [s]

Min: -271.8 [g] at 0.050 [s]



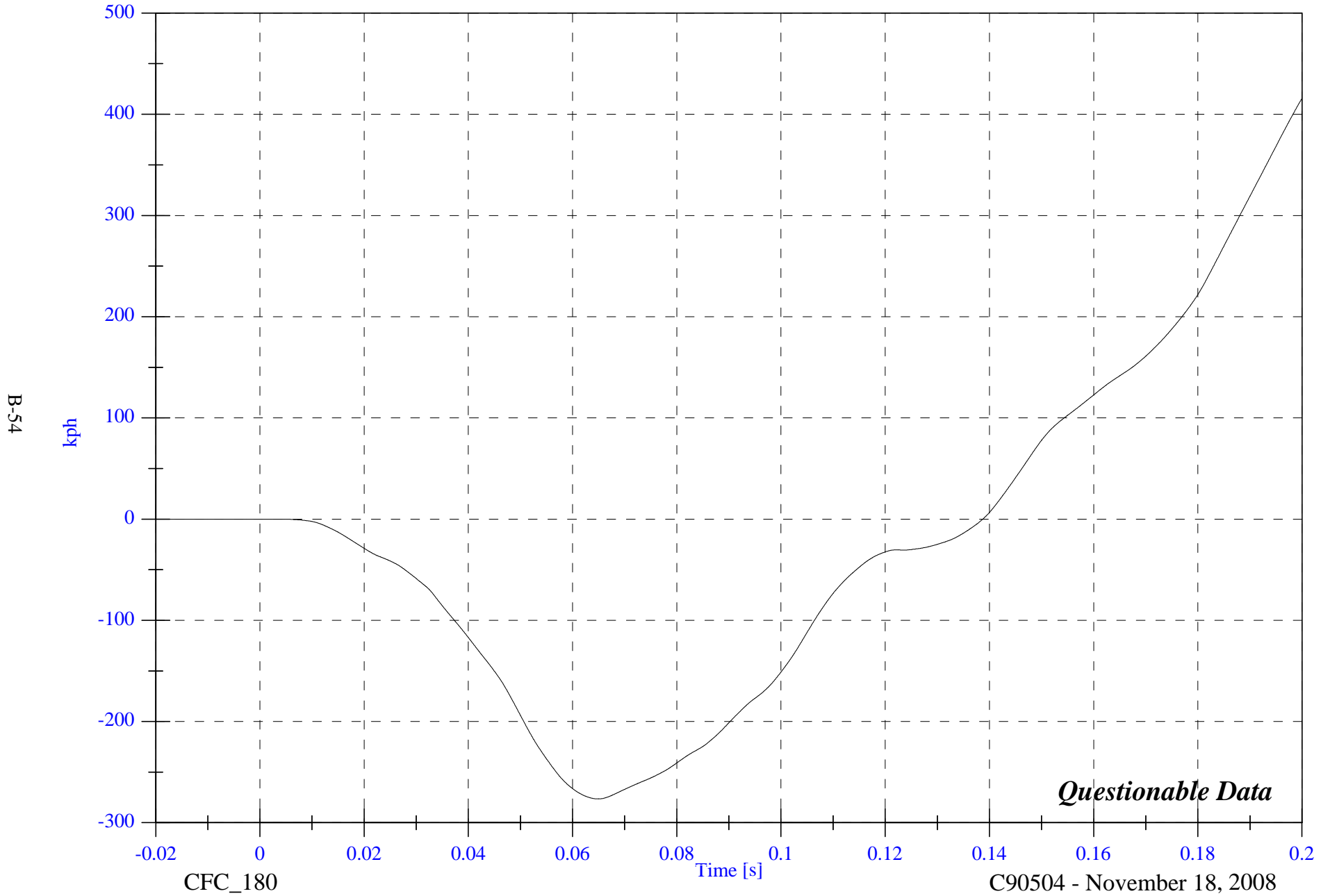
Questionable Data

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A2 Right Rear Sill Y Velocity

Max: 415.5 [kph] at 0.200 [s]

Min: -276.5 [kph] at 0.065 [s]

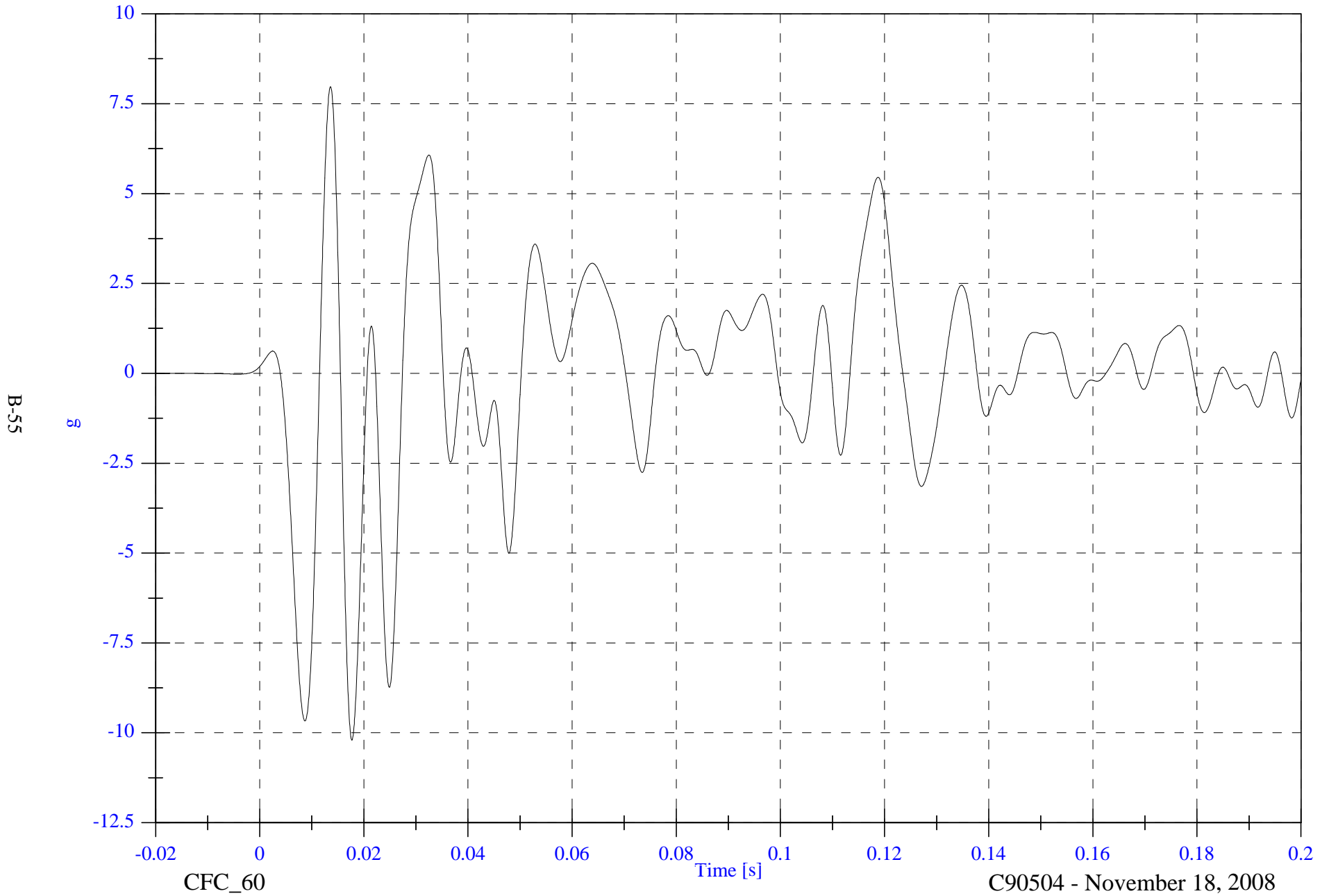


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A2 Right Rear Sill Z

Max: 8.0 [g] at 0.014 [s]

Min: -10.2 [g] at 0.018 [s]

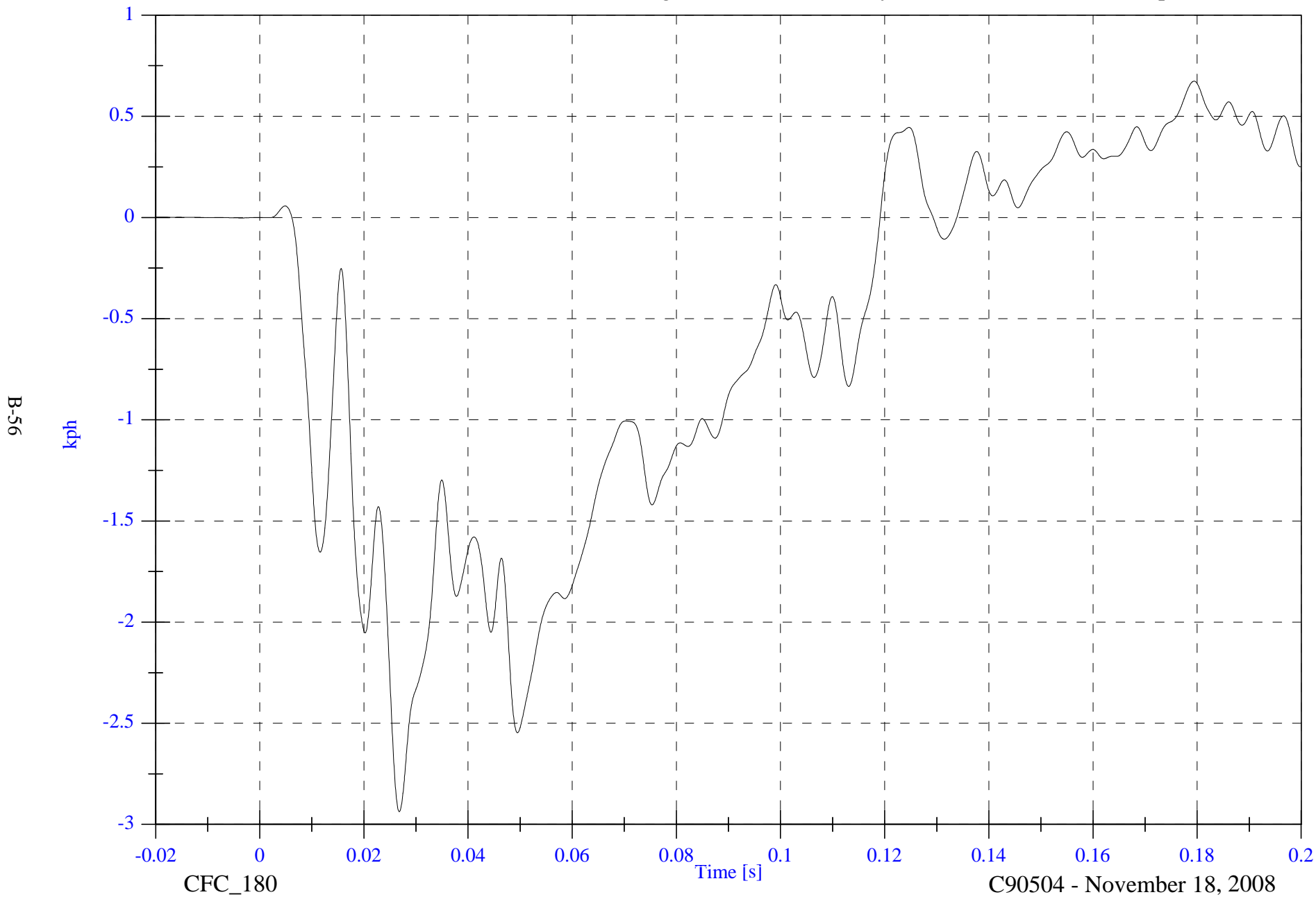


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A2 Right Rear Sill Z Velocity

Max: 0.7 [kph] at 0.179 [s]

Min: -2.9 [kph] at 0.027 [s]

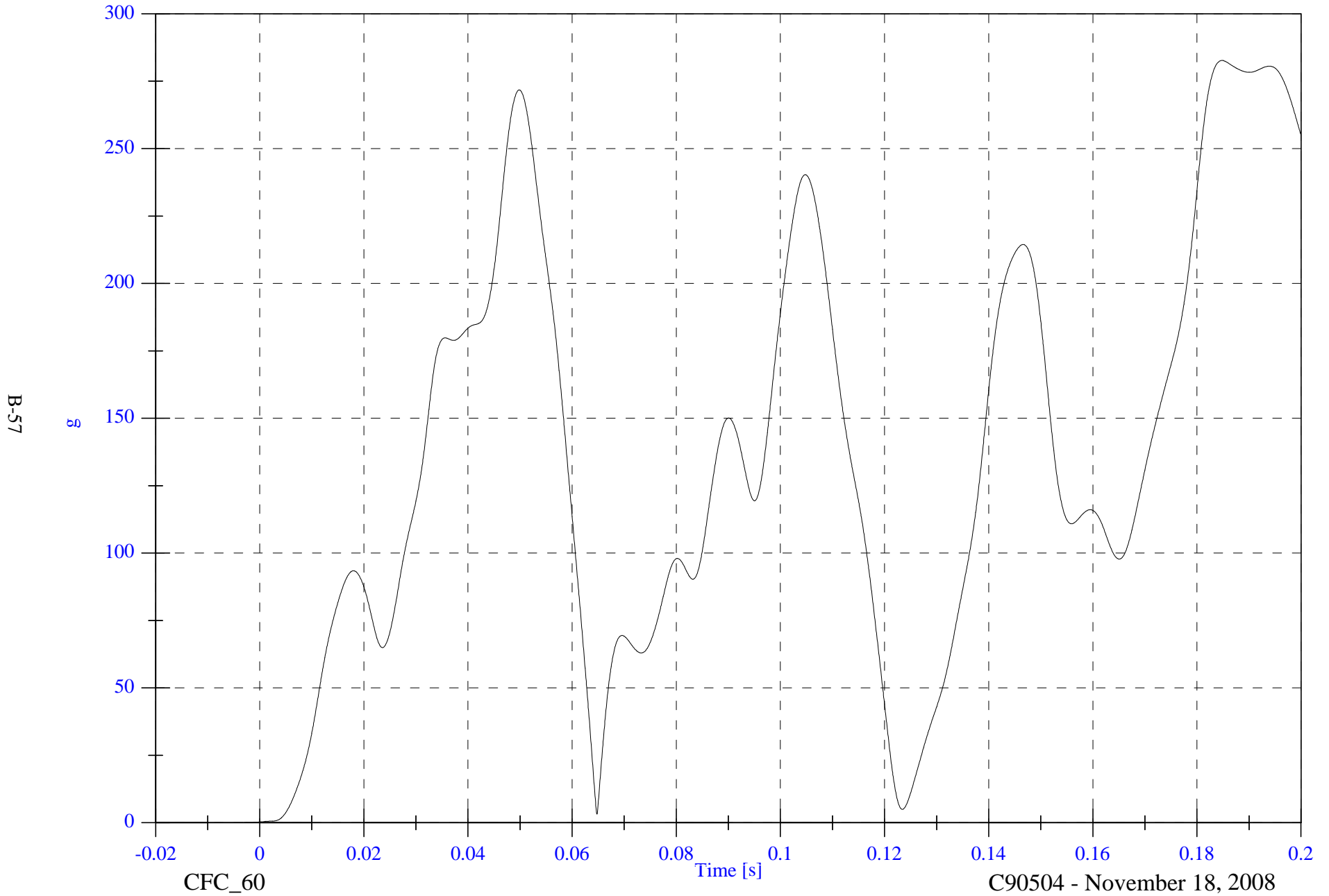


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A2 Right Rear Sill Resultant

Max: 282.7 [g] at 0.185 [s]

Min: 0.0 [g] at -0.013 [s]



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CFC_60

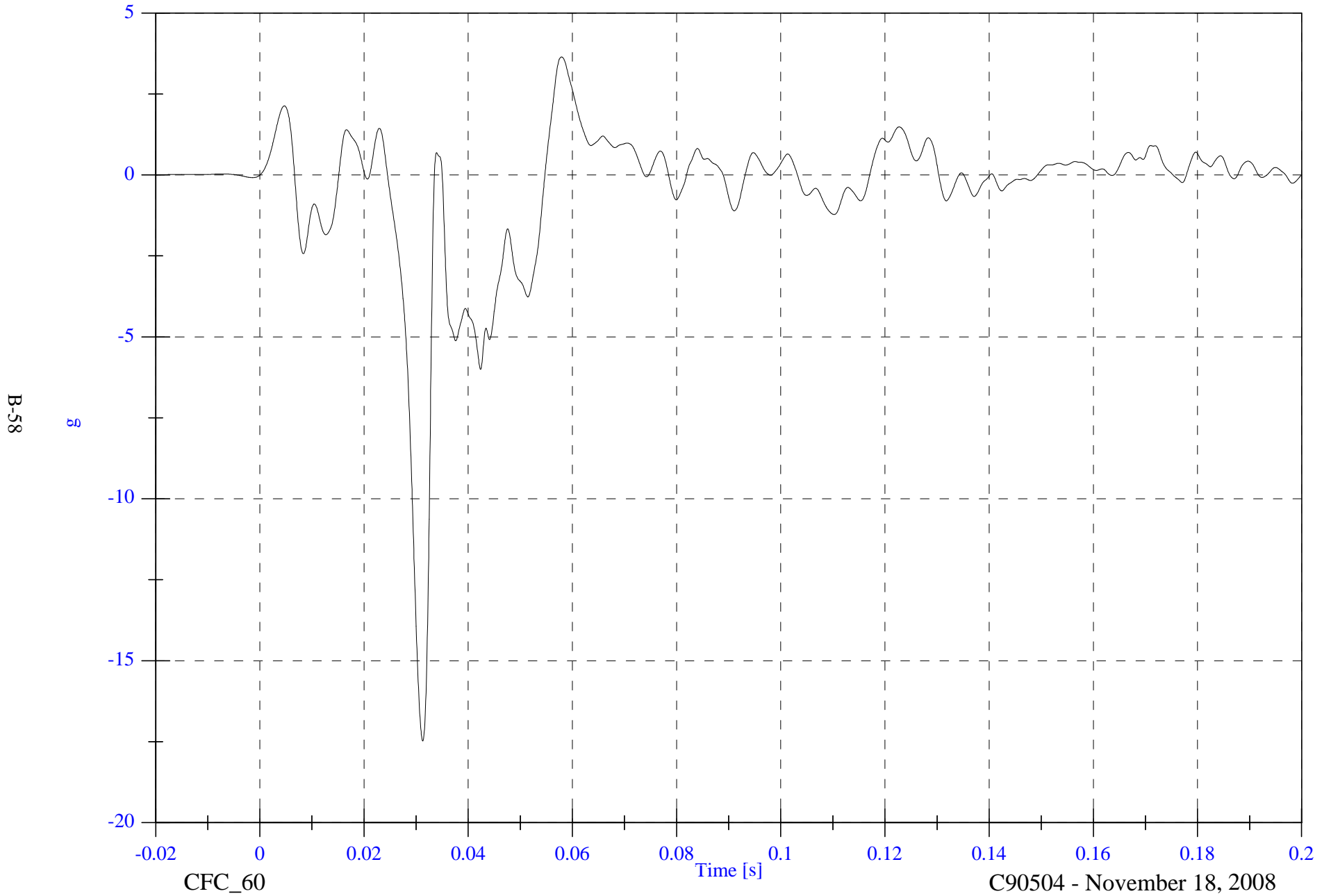
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A3 Rear Floorpan X

Max: 3.6 [g] at 0.058 [s]

Min: -17.5 [g] at 0.031 [s]

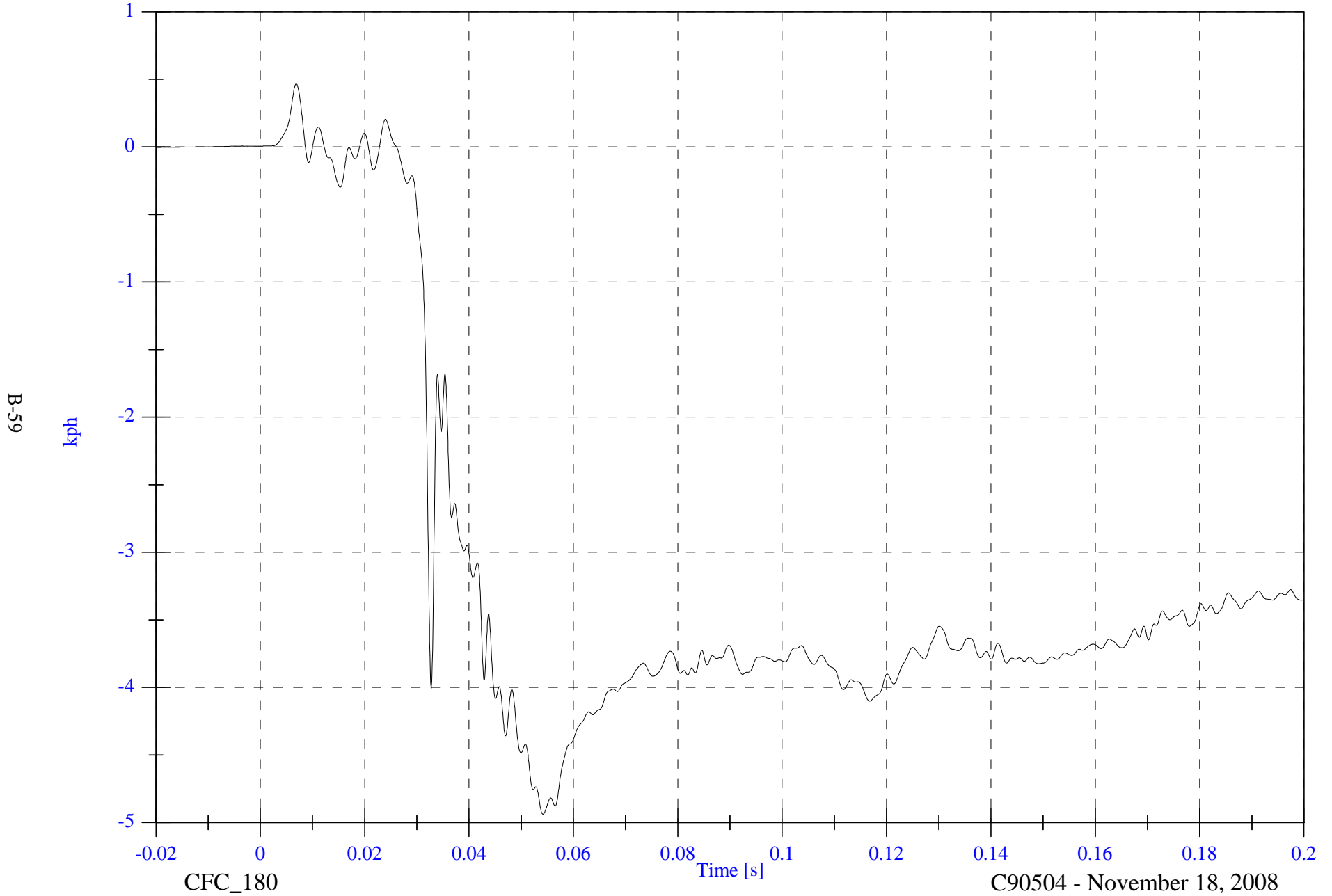


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A3 Rear Floorpan X Velocity

Max: 0.5 [kph] at 0.007 [s]

Min: -4.9 [kph] at 0.054 [s]



B-59

kph

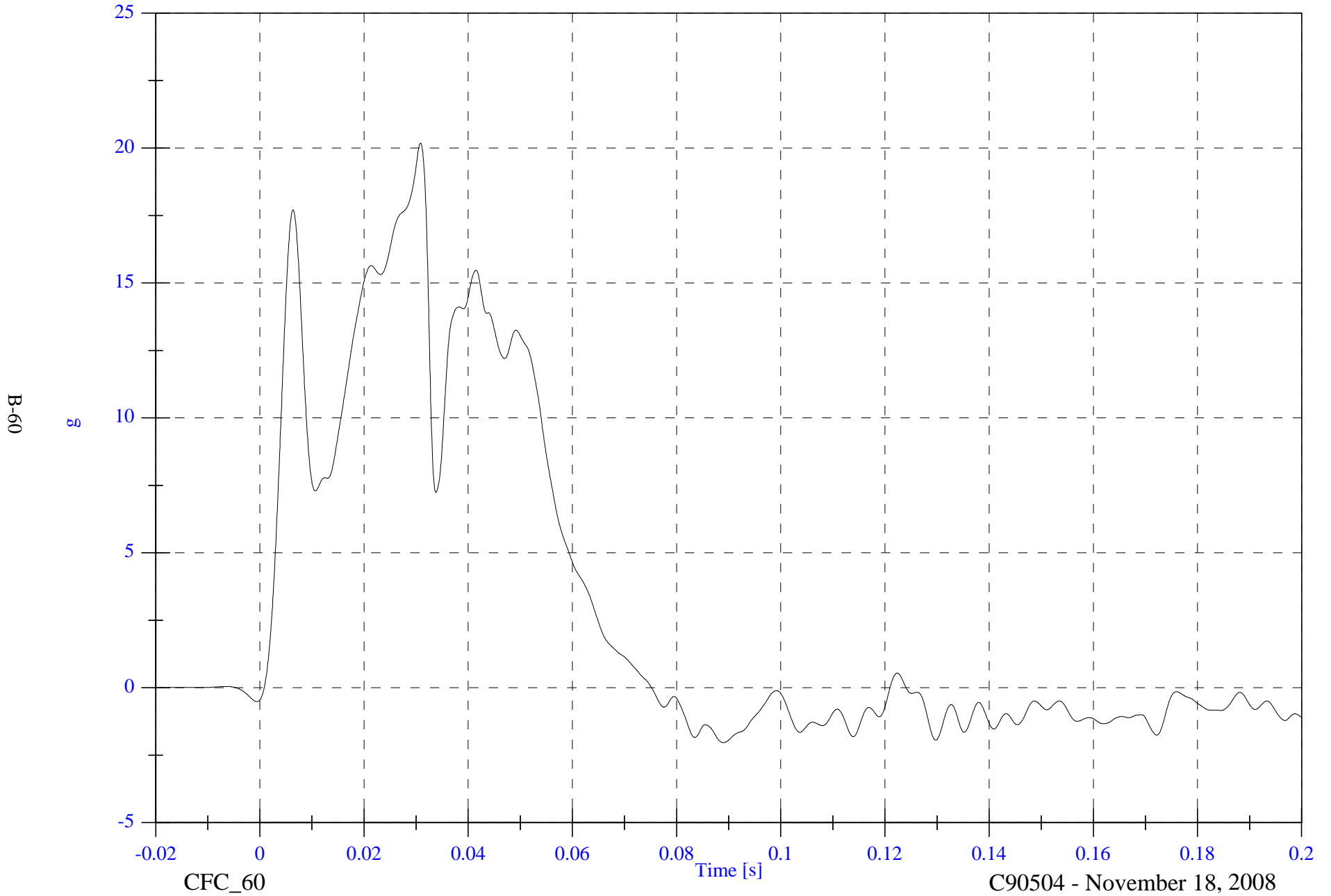
-0.02 0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2
Time [s]
CFC_180 C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A3 Rear Floorpan Y

Max: 20.2 [g] at 0.031 [s]

Min: -2.0 [g] at 0.089 [s]

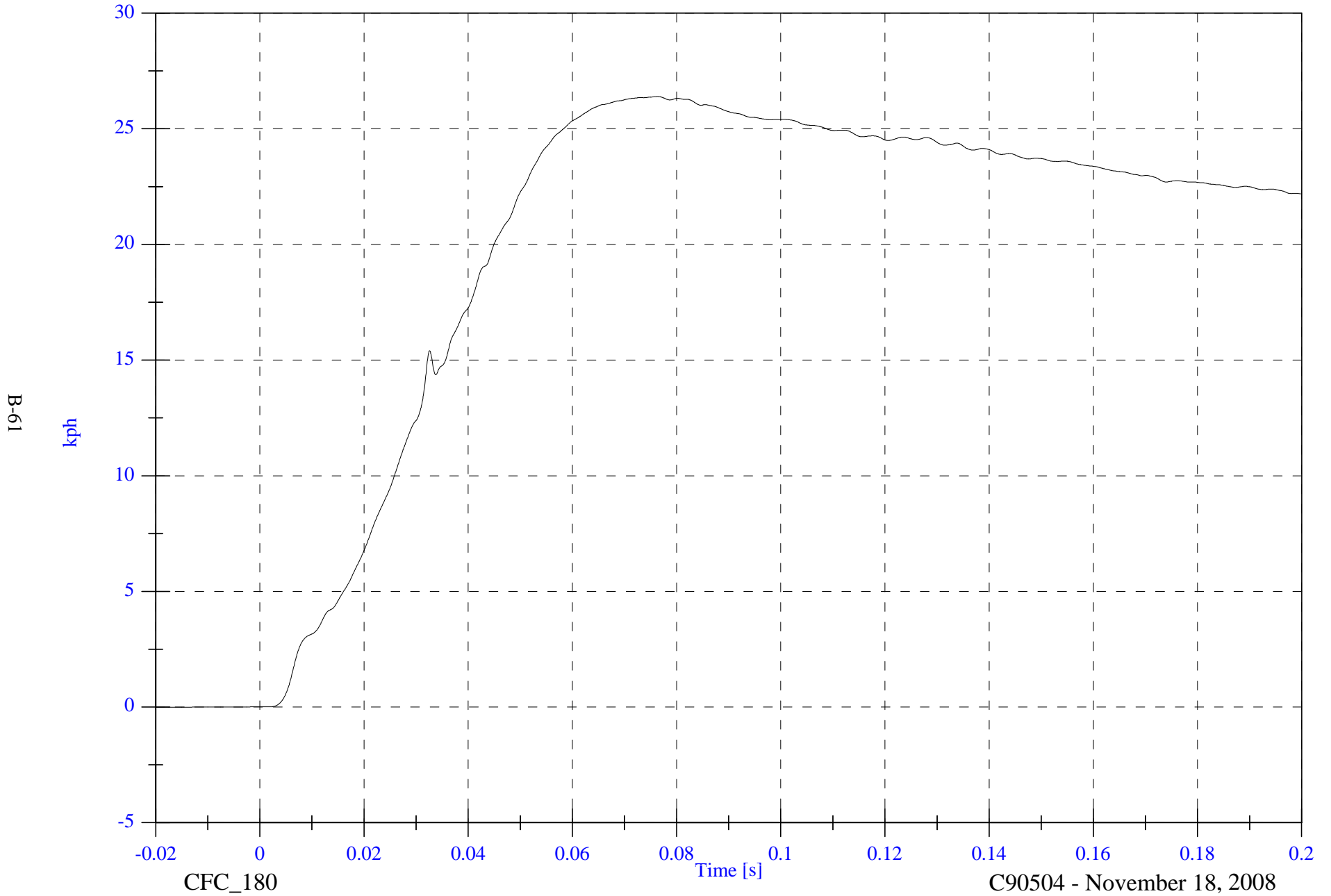


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A3 Rear Floorpan Y Velocity

Max: 26.4 [kph] at 0.076 [s]

Min: -0.0 [kph] at -0.019 [s]



B-61

kph

CFC_180

Time [s]

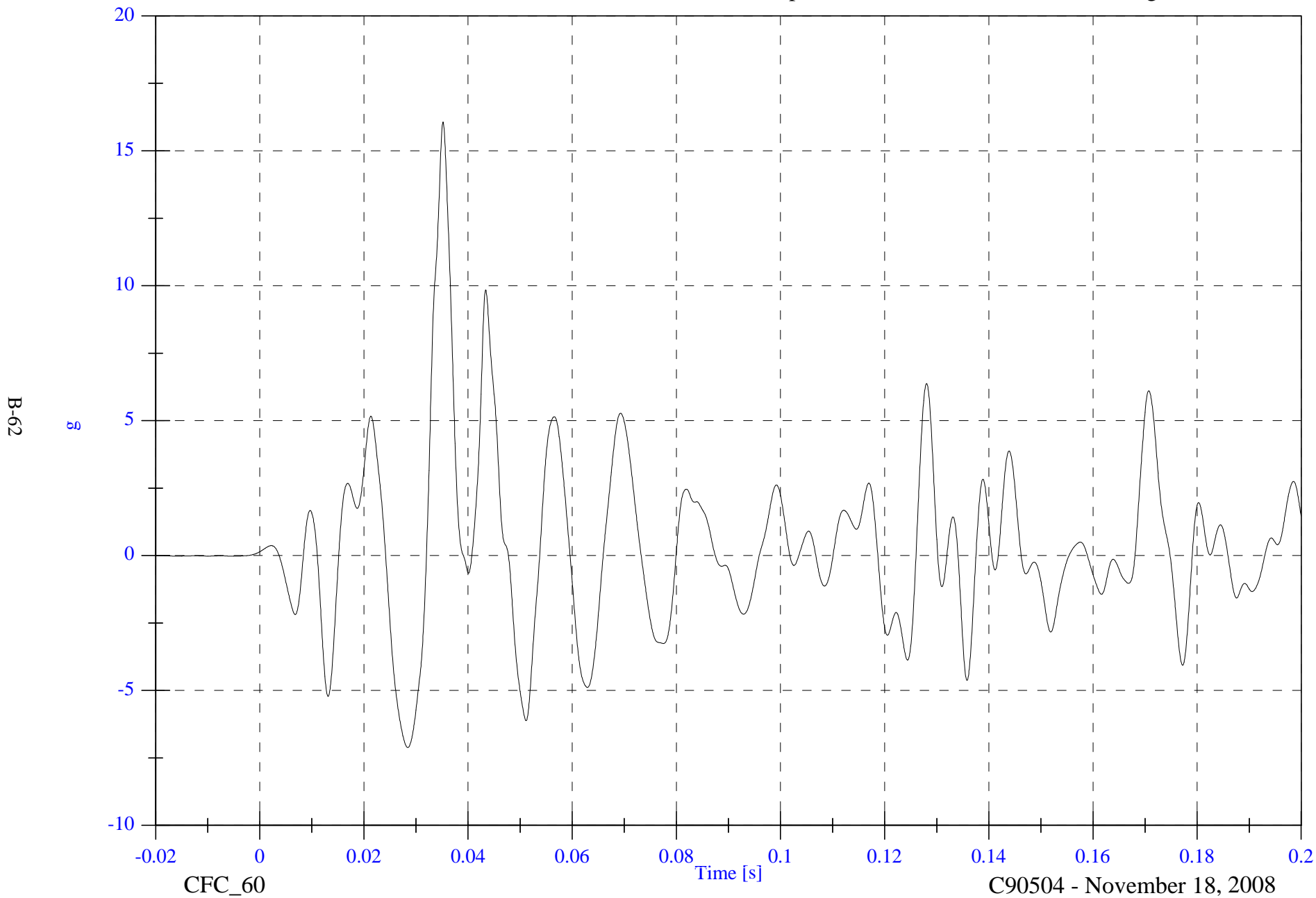
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A3 Rear Floorpan Z

Max: 16.1 [g] at 0.035 [s]

Min: -7.1 [g] at 0.028 [s]

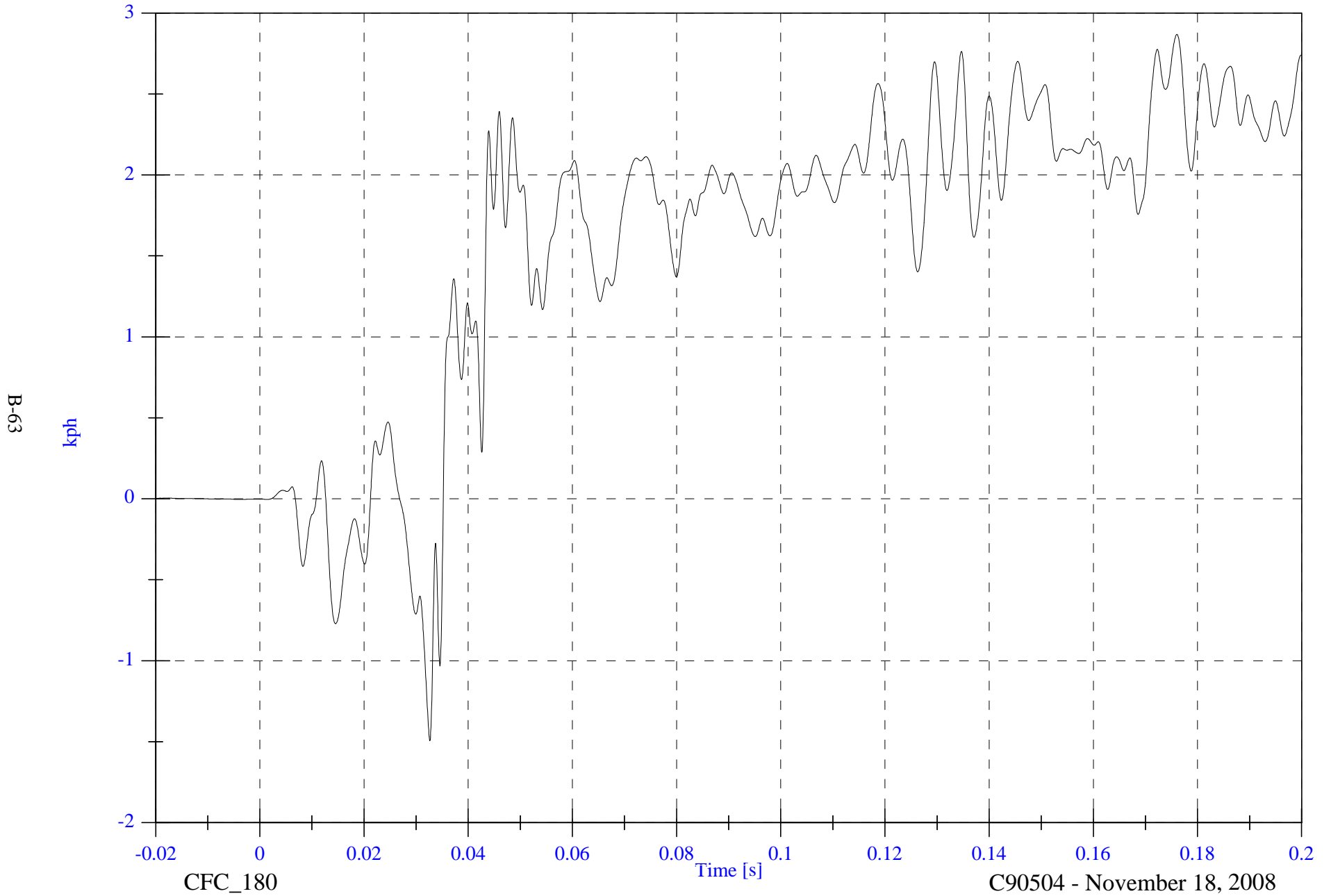


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A3 Rear Floorpan Z Velocity

Max: 2.9 [kph] at 0.176 [s]

Min: -1.5 [kph] at 0.033 [s]

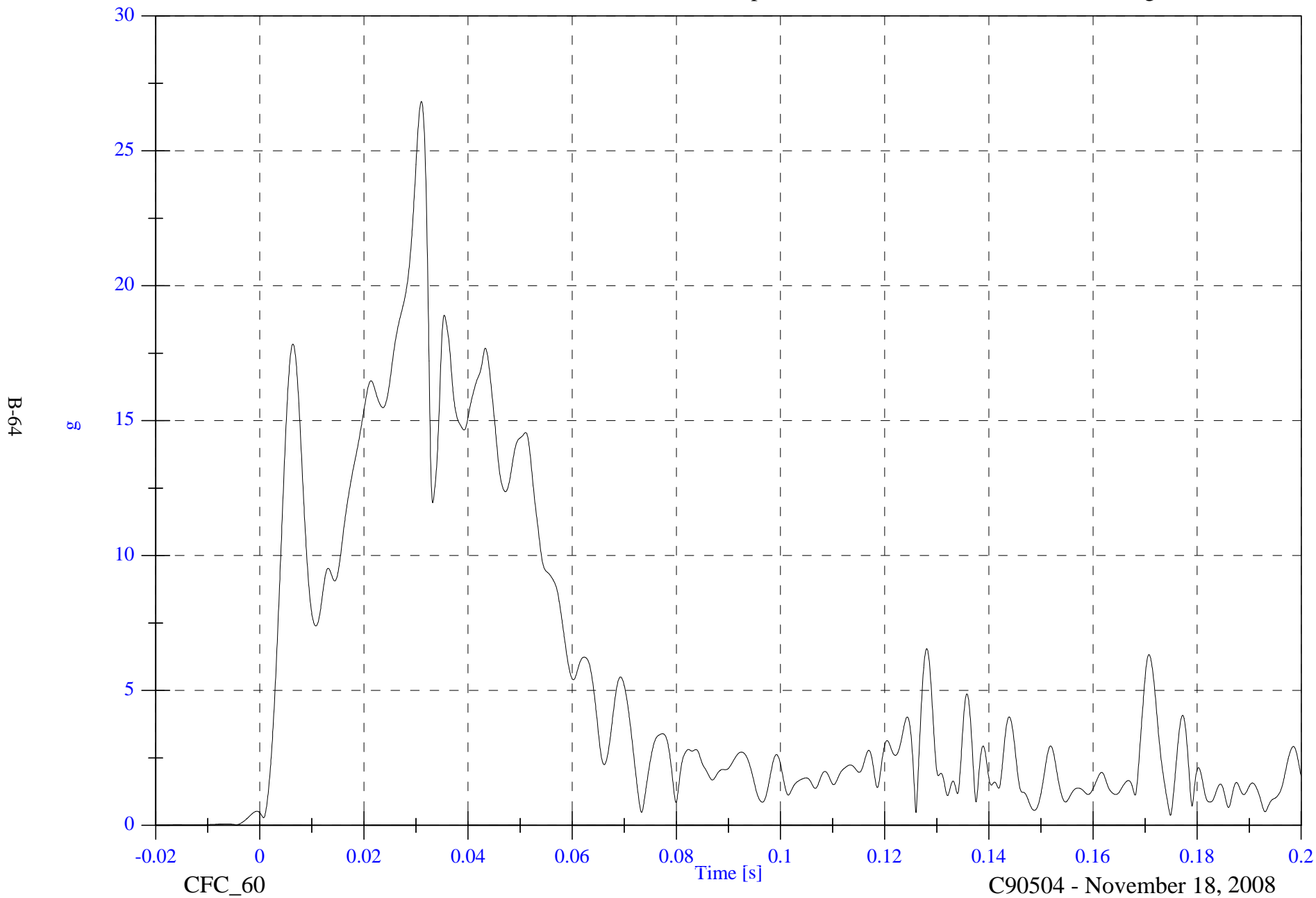


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A3 Rear Floorpan Resultant

Max: 26.8 [g] at 0.031 [s]

Min: 0.0 [g] at -0.019 [s]

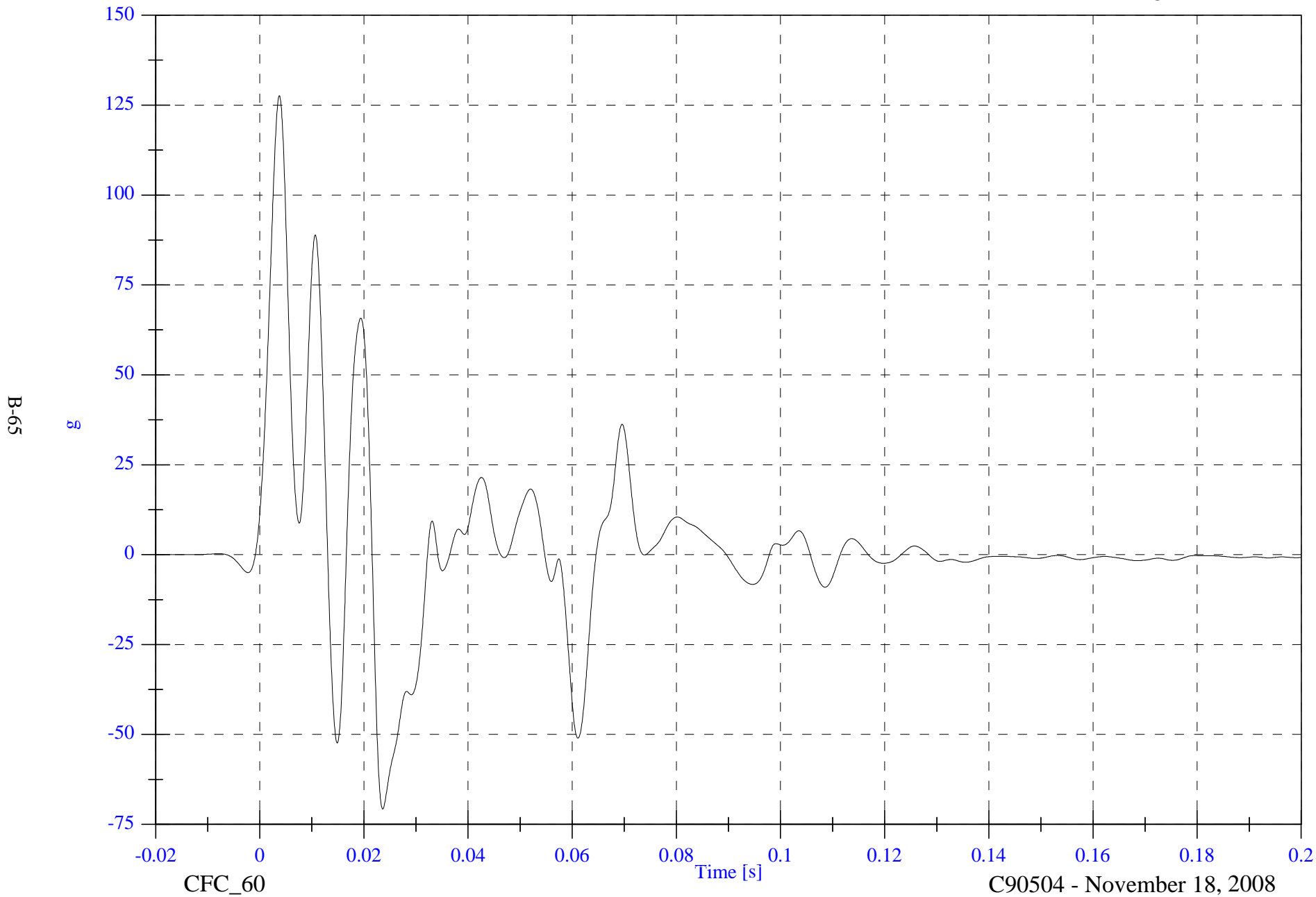


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A4 Left Rear Sill Y

Max: 127.6 [g] at 0.004 [s]

Min: -70.7 [g] at 0.024 [s]



B-65

g

Time [s]

CFC_60

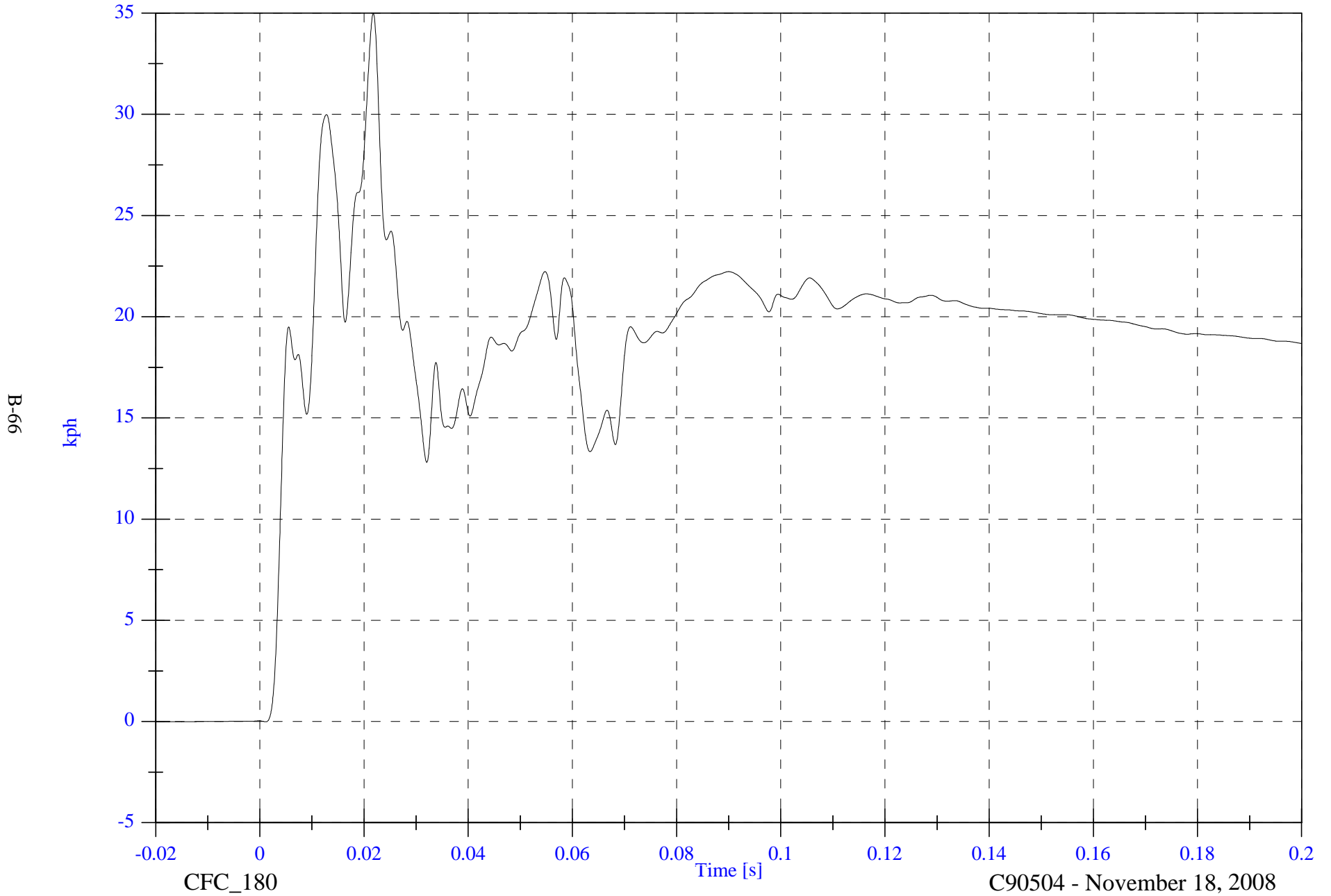
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A4 Left Rear Sill Y Velocity

Max: 35.0 [kph] at 0.022 [s]

Min: -0.0 [kph] at 0.001 [s]



B-66

kph

CFC_180

Time [s]

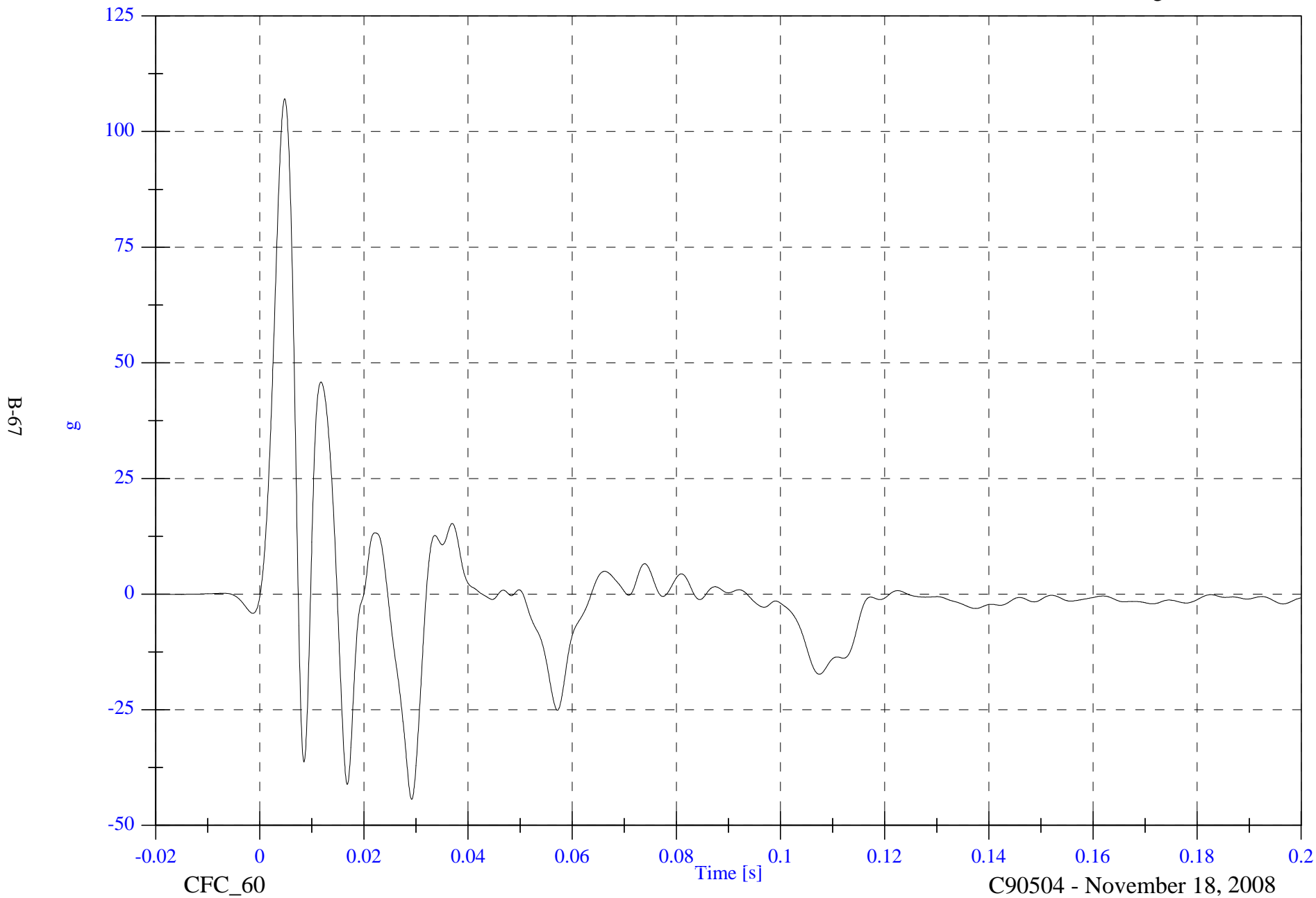
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A5 Left Front Sill Y

Max: 107.1 [g] at 0.005 [s]

Min: -44.4 [g] at 0.029 [s]



B-67

g

CFC_60

Time [s]

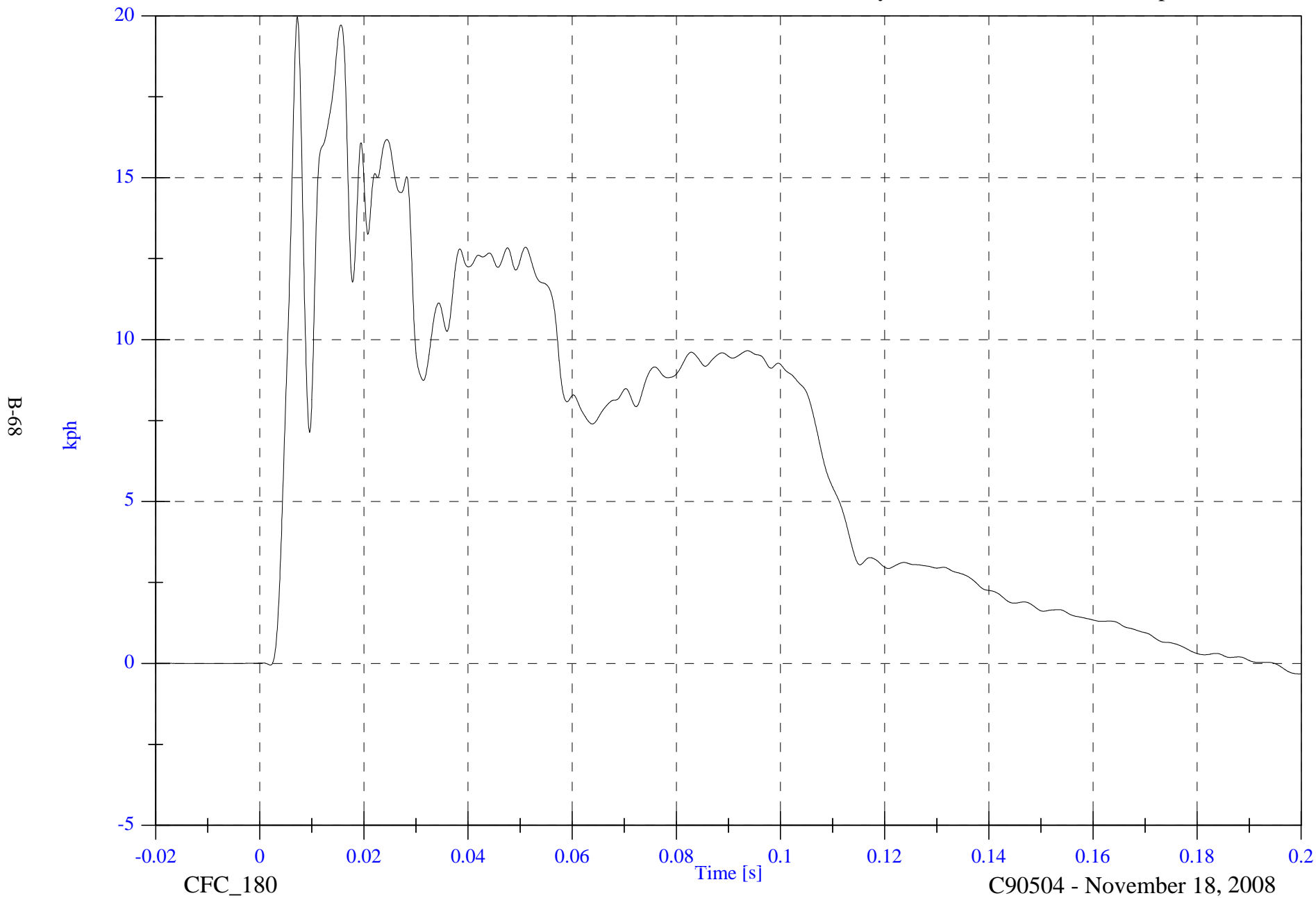
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A5 Left Front Sill Y Velocity

Max: 20.0 [kph] at 0.007 [s]

Min: -0.3 [kph] at 0.200 [s]



B-68

kph

CFC_180

Time [s]

C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A7 Right Rear Compartment Y

Max: 20.1 [g] at 0.019 [s]

Min: -2.6 [g] at 0.092 [s]

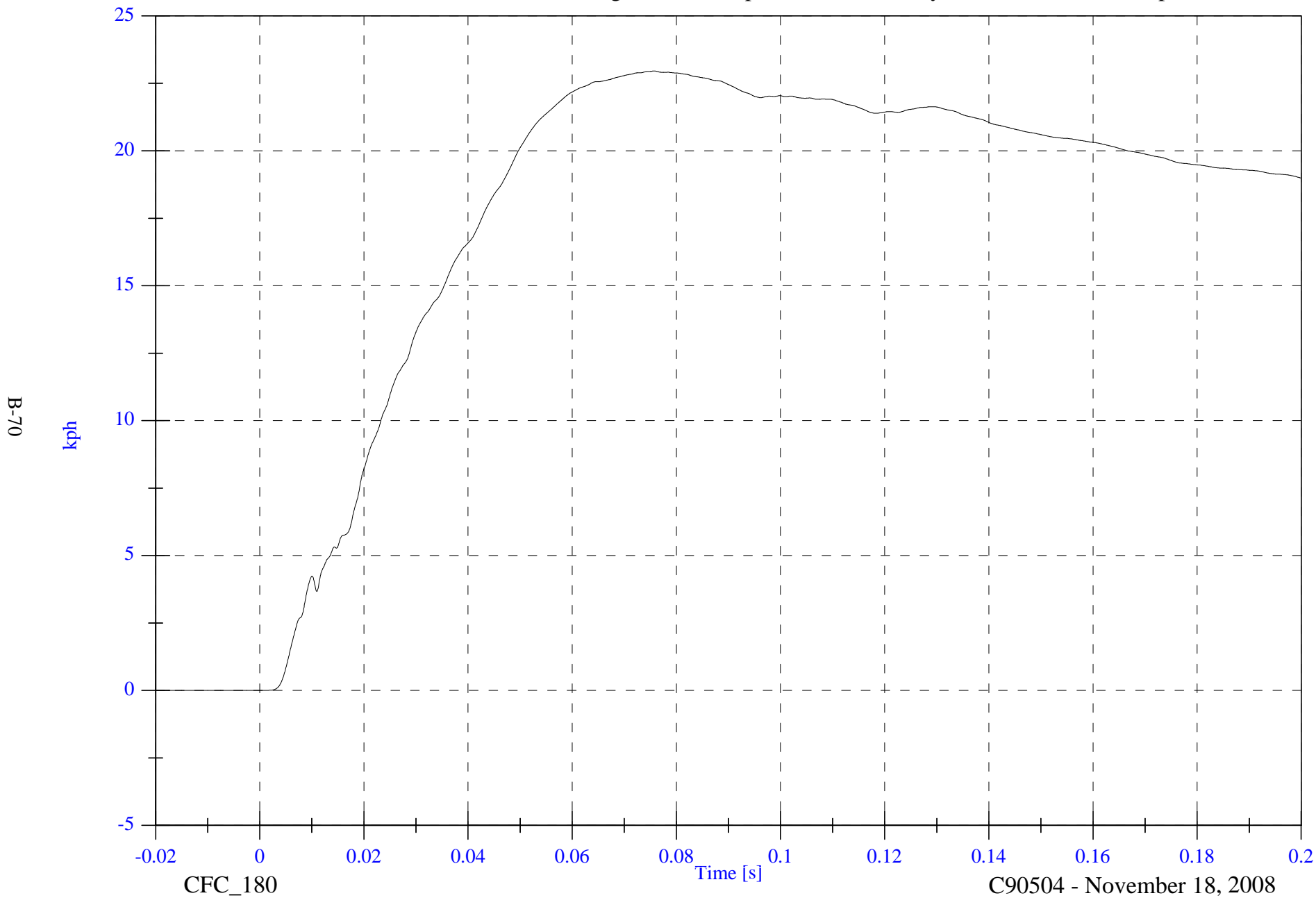


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A7 Right Rear Compartment Y Velocity

Max: 23.0 [kph] at 0.076 [s]

Min: -0.0 [kph] at -0.012 [s]

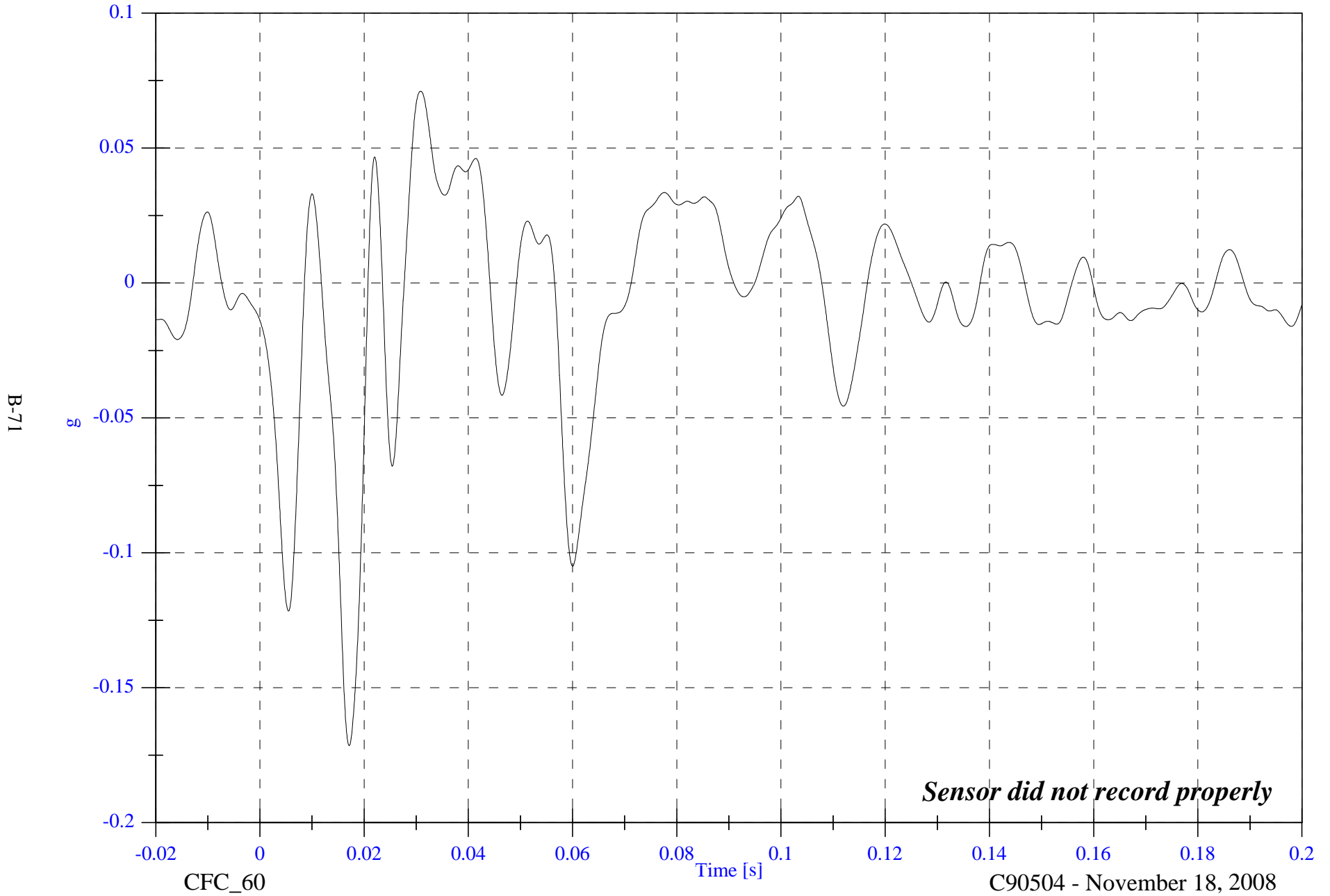


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A12 Left Lower B Post Y

Max: 0.1 [g] at 0.031 [s]

Min: -0.2 [g] at 0.017 [s]



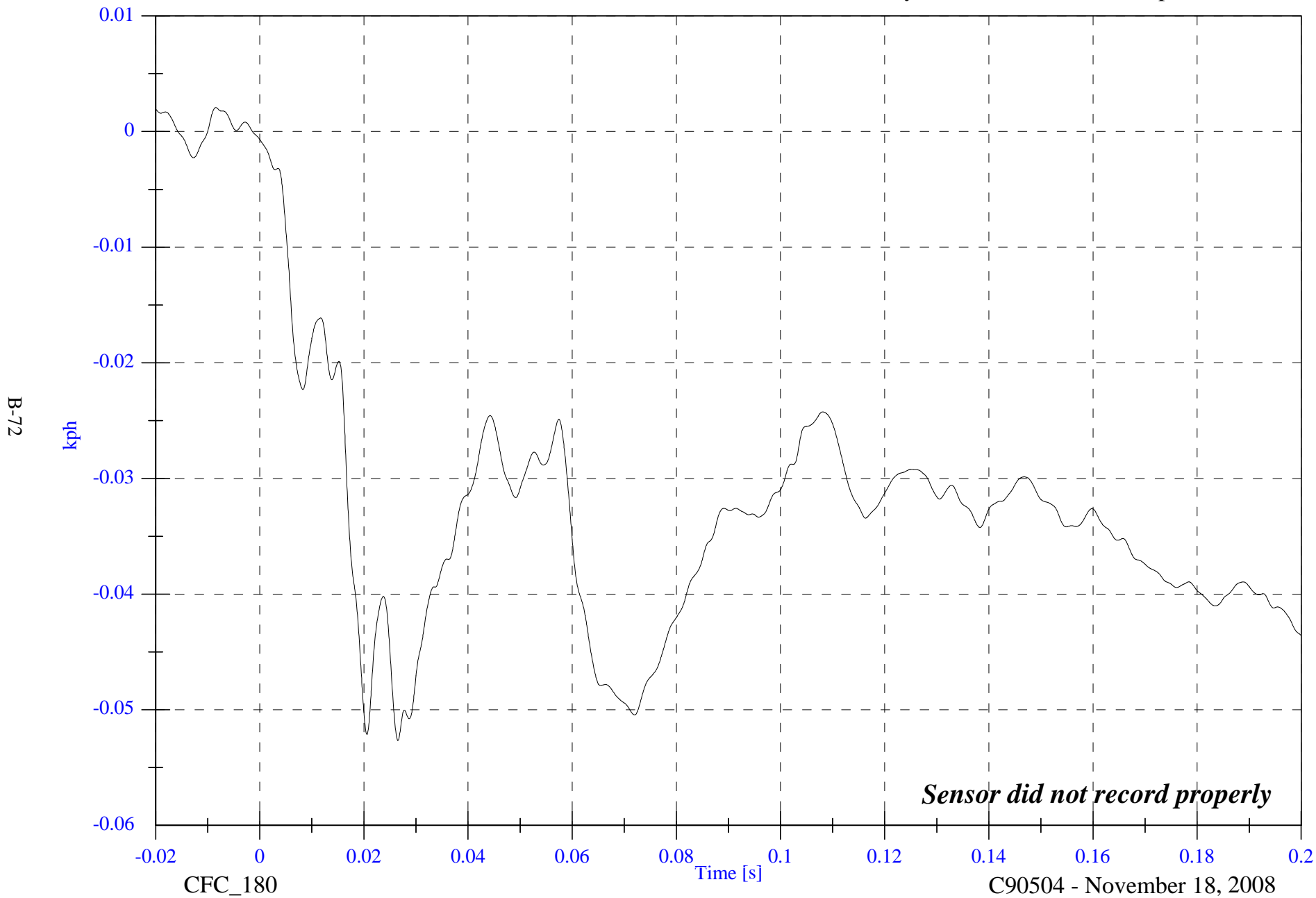
Sensor did not record properly

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

Max: 0.0 [kph] at -0.008 [s]

V2 A12 Left Lower B Post Y Velocity

Min: -0.1 [kph] at 0.026 [s]



B-72

kph

CFC_180

Time [s]

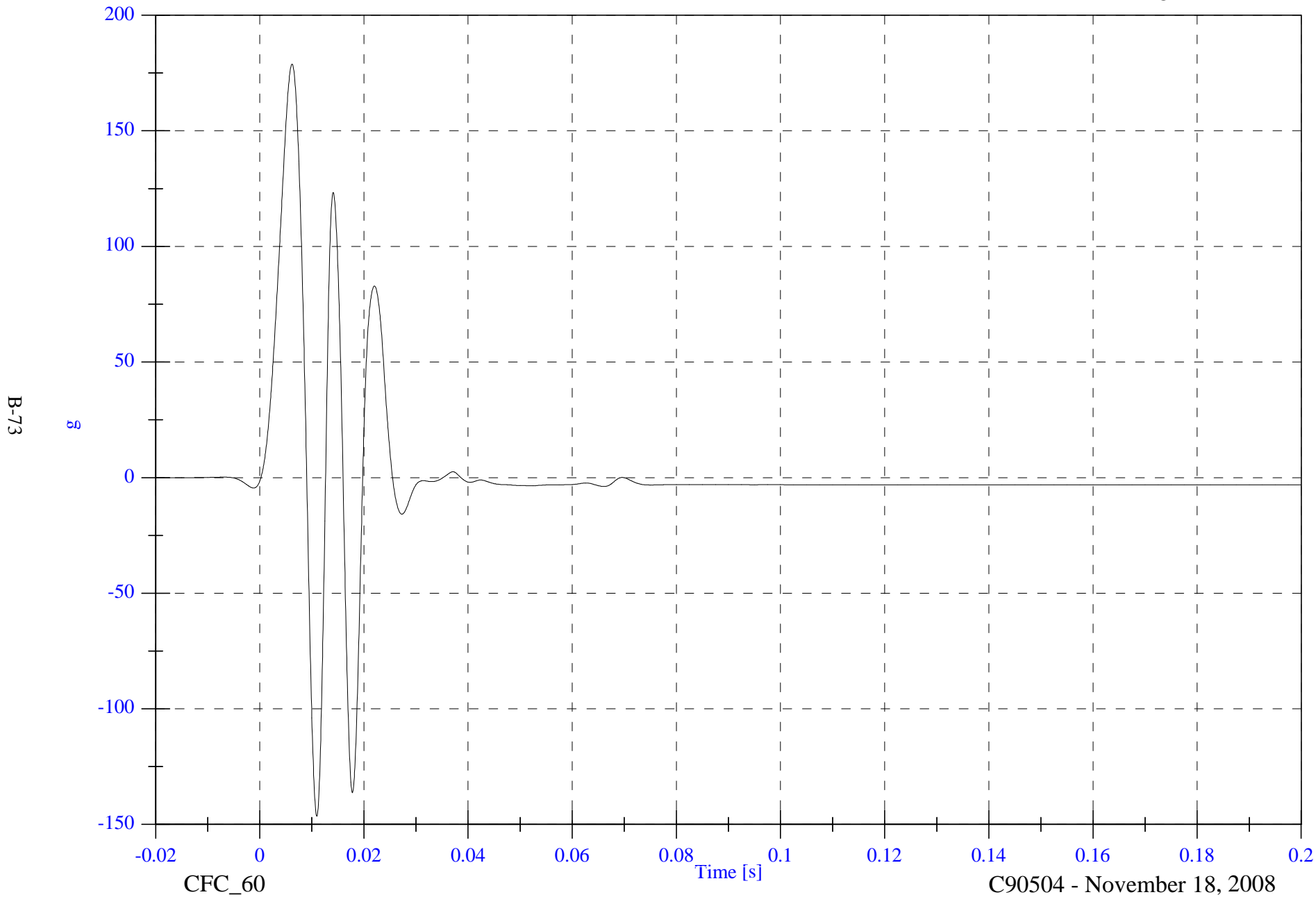
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A13 Left Middle B Post Y

Max: 178.9 [g] at 0.006 [s]

Min: -146.5 [g] at 0.011 [s]



B-73

g

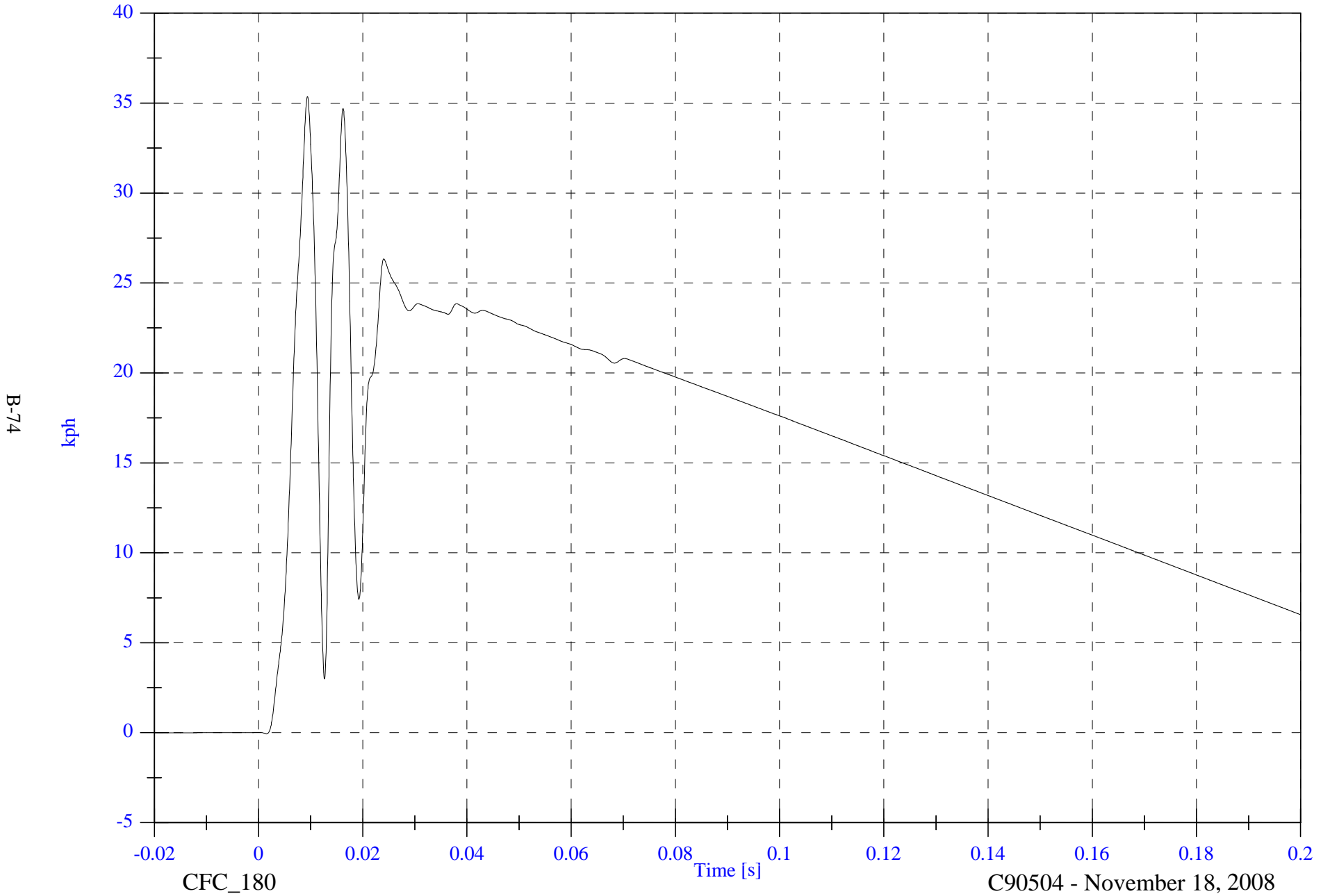
CFC_60 Time [s] C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A13 Left Middle B Post Y Velocity

Max: 35.4 [kph] at 0.009 [s]

Min: -0.1 [kph] at 0.001 [s]



B-74

kph

CFC_180

Time [s]

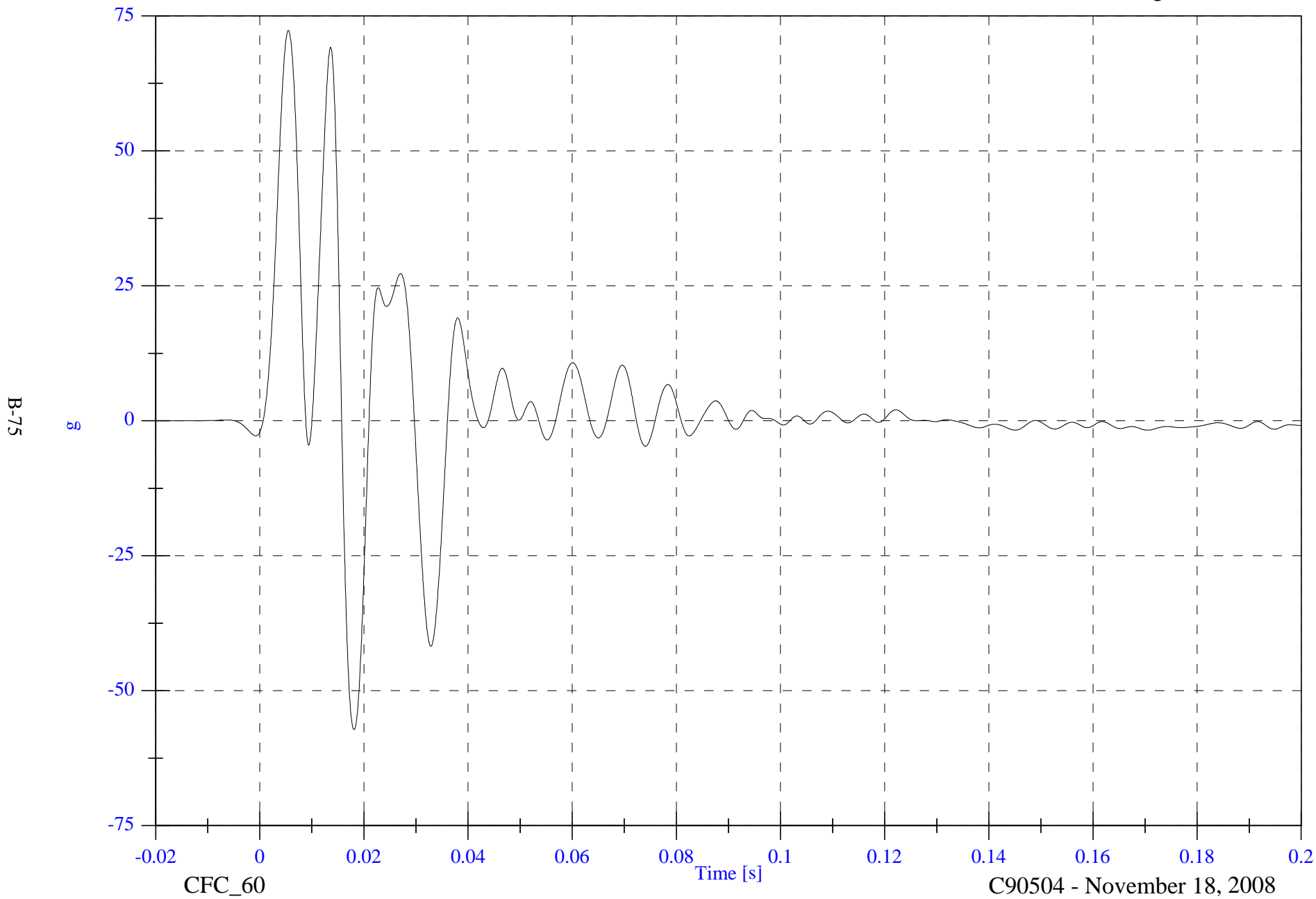
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A14 Left Lower A Post Y

Max: 72.3 [g] at 0.005 [s]

Min: -57.2 [g] at 0.018 [s]

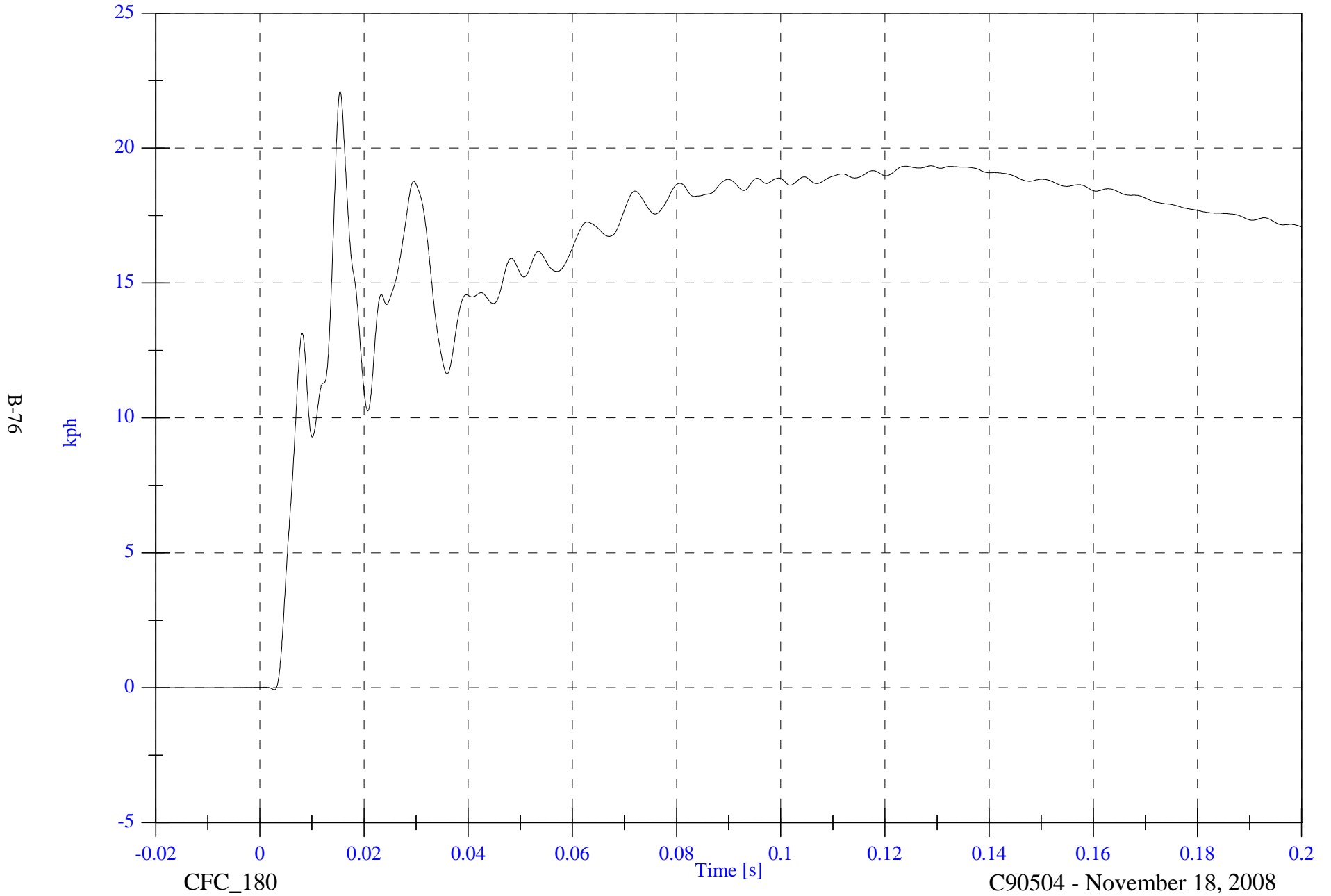


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A14 Left Lower A Post Y Velocity

Max: 22.1 [kph] at 0.015 [s]

Min: -0.1 [kph] at 0.003 [s]



B-76

kph

CFC_180

Time [s]

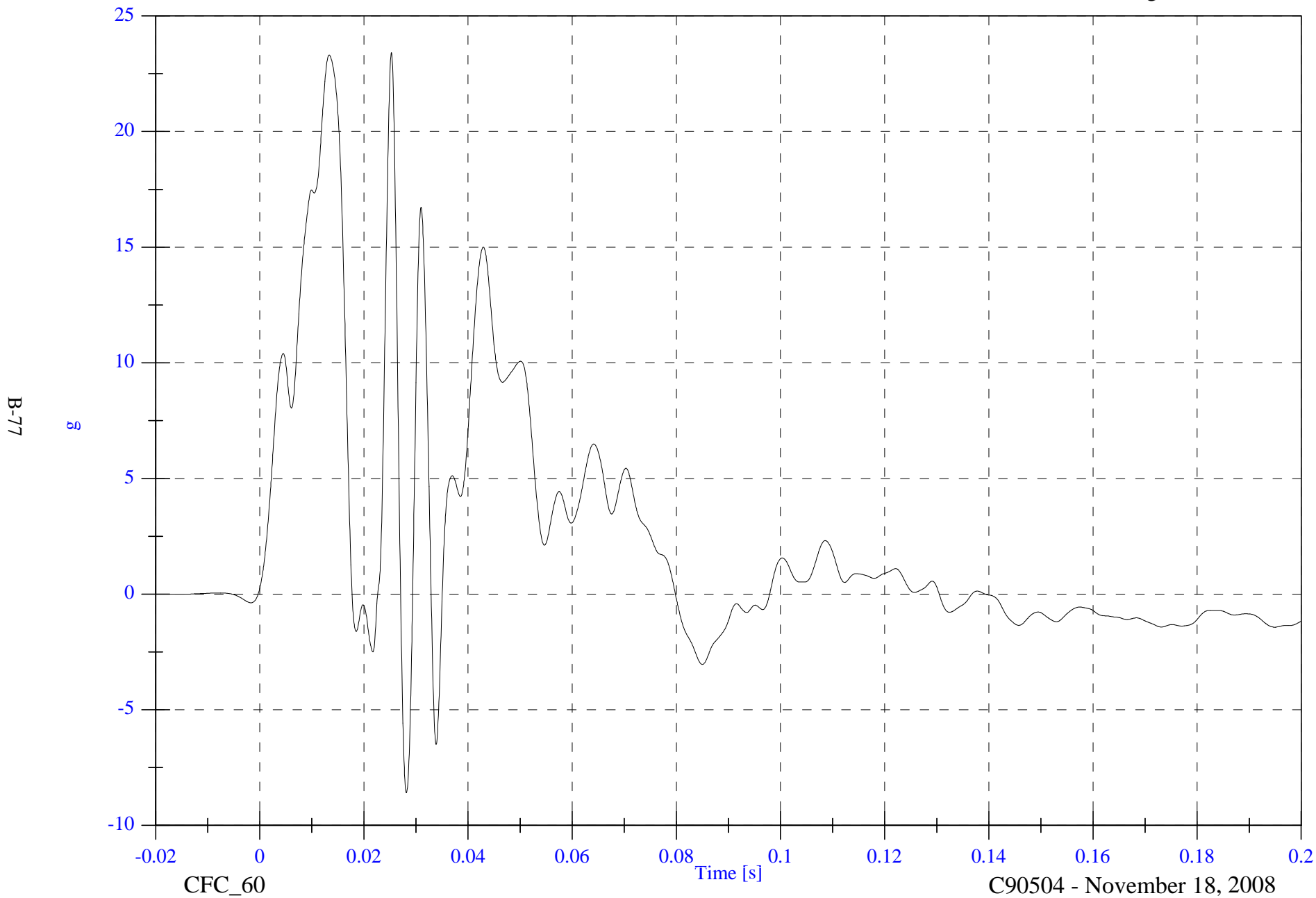
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A15 Left Mid A Post Y

Max: 23.4 [g] at 0.025 [s]

Min: -8.6 [g] at 0.028 [s]

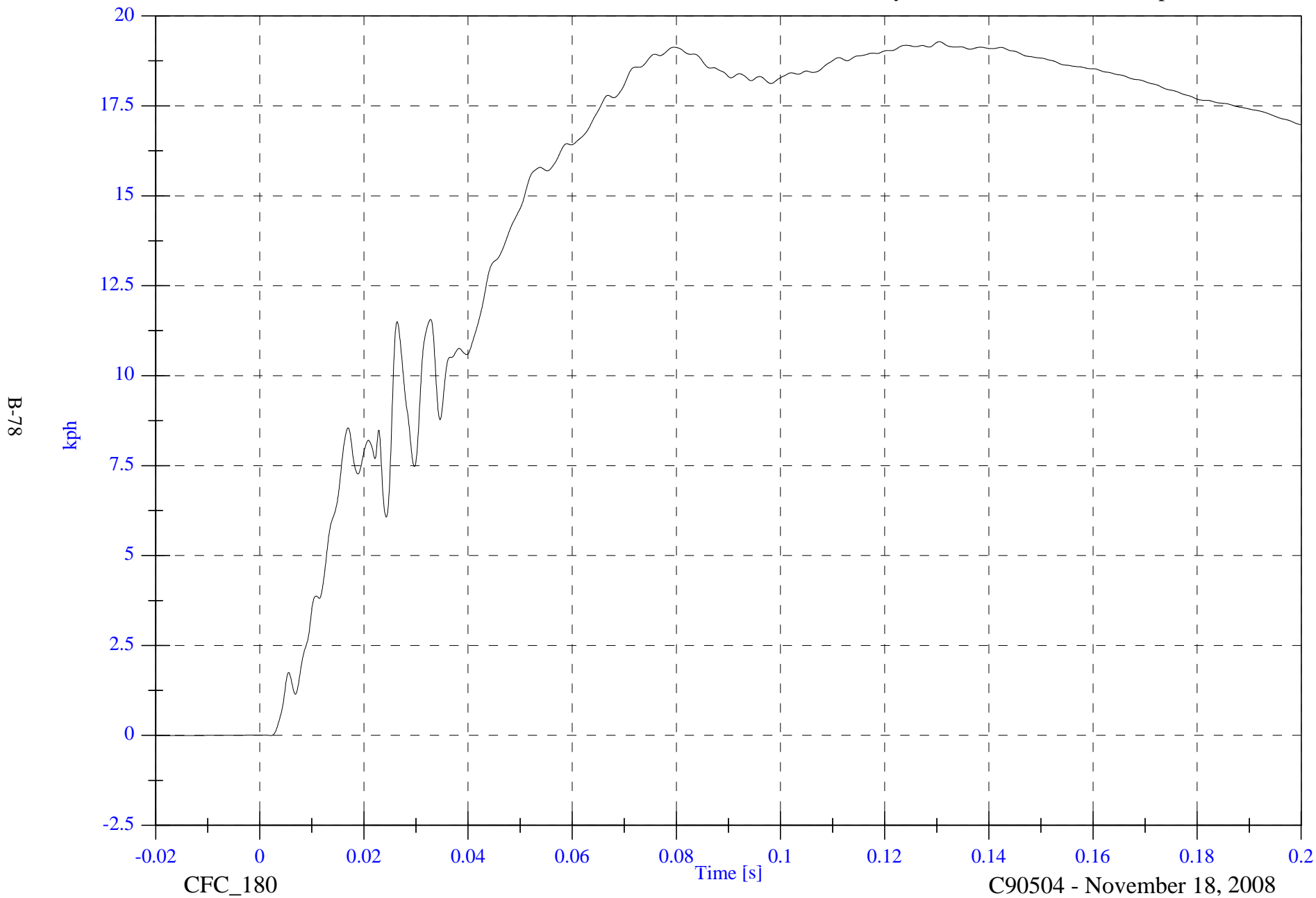


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A15 Left Mid A Post Y Velocity

Max: 19.3 [kph] at 0.130 [s]

Min: -0.0 [kph] at 0.002 [s]



B-78

CFC_180

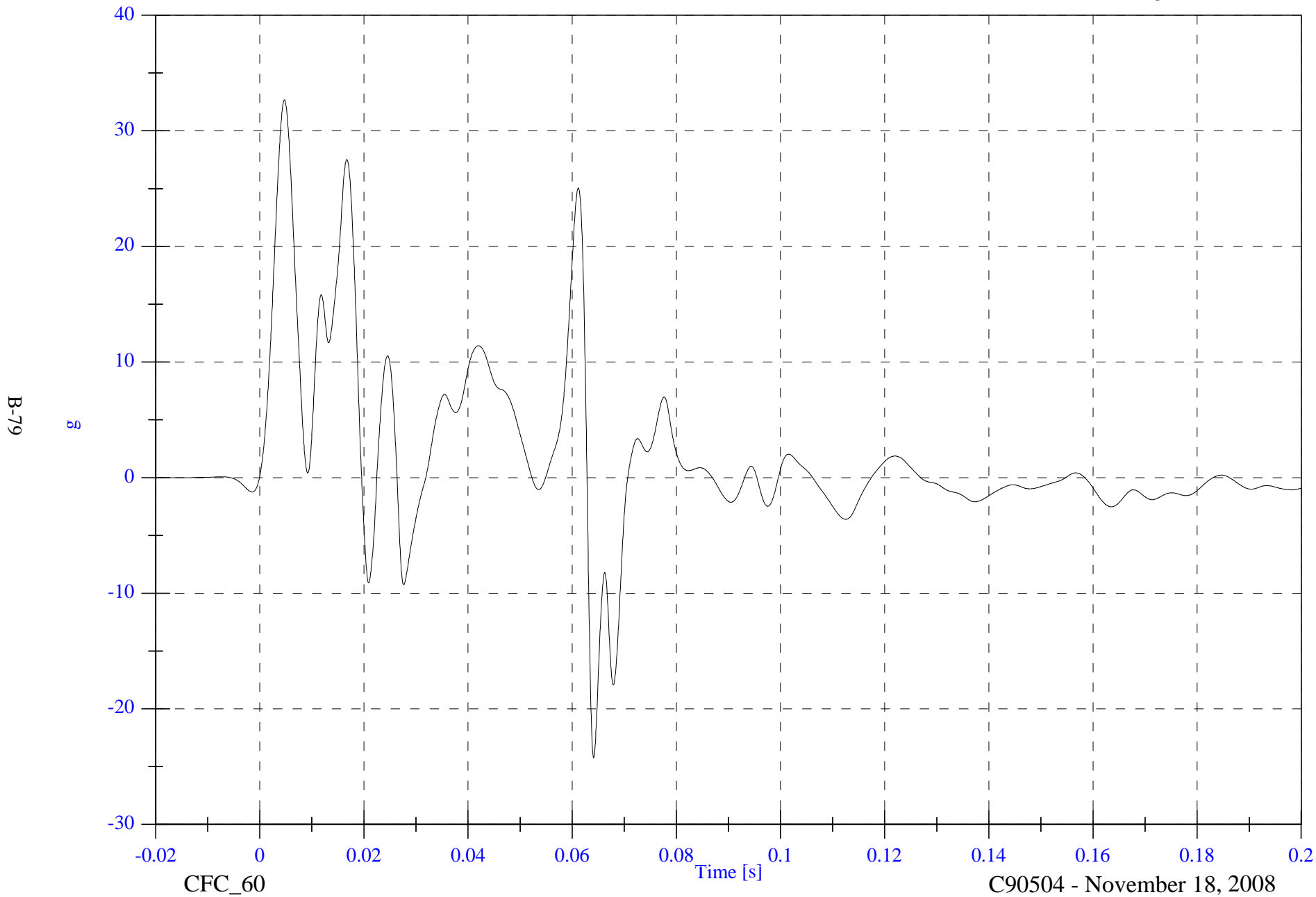
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A16 Front Seat Track Y

Max: 32.7 [g] at 0.005 [s]

Min: -24.3 [g] at 0.064 [s]



B-79

g

CFC_60

Time [s]

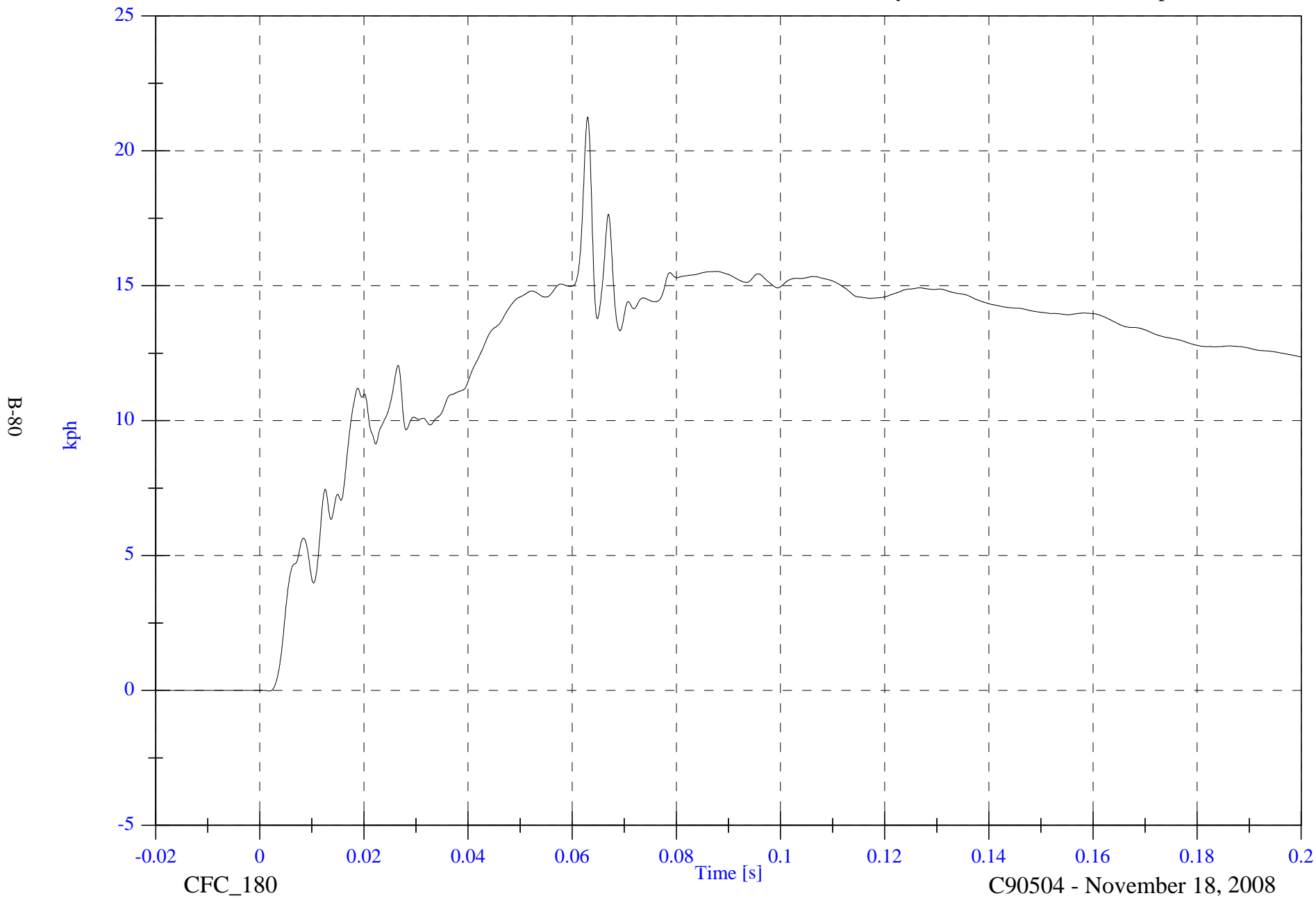
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A16 Front Seat Track Y Velocity

Max: 21.3 [kph] at 0.063 [s]

Min: -0.0 [kph] at 0.002 [s]

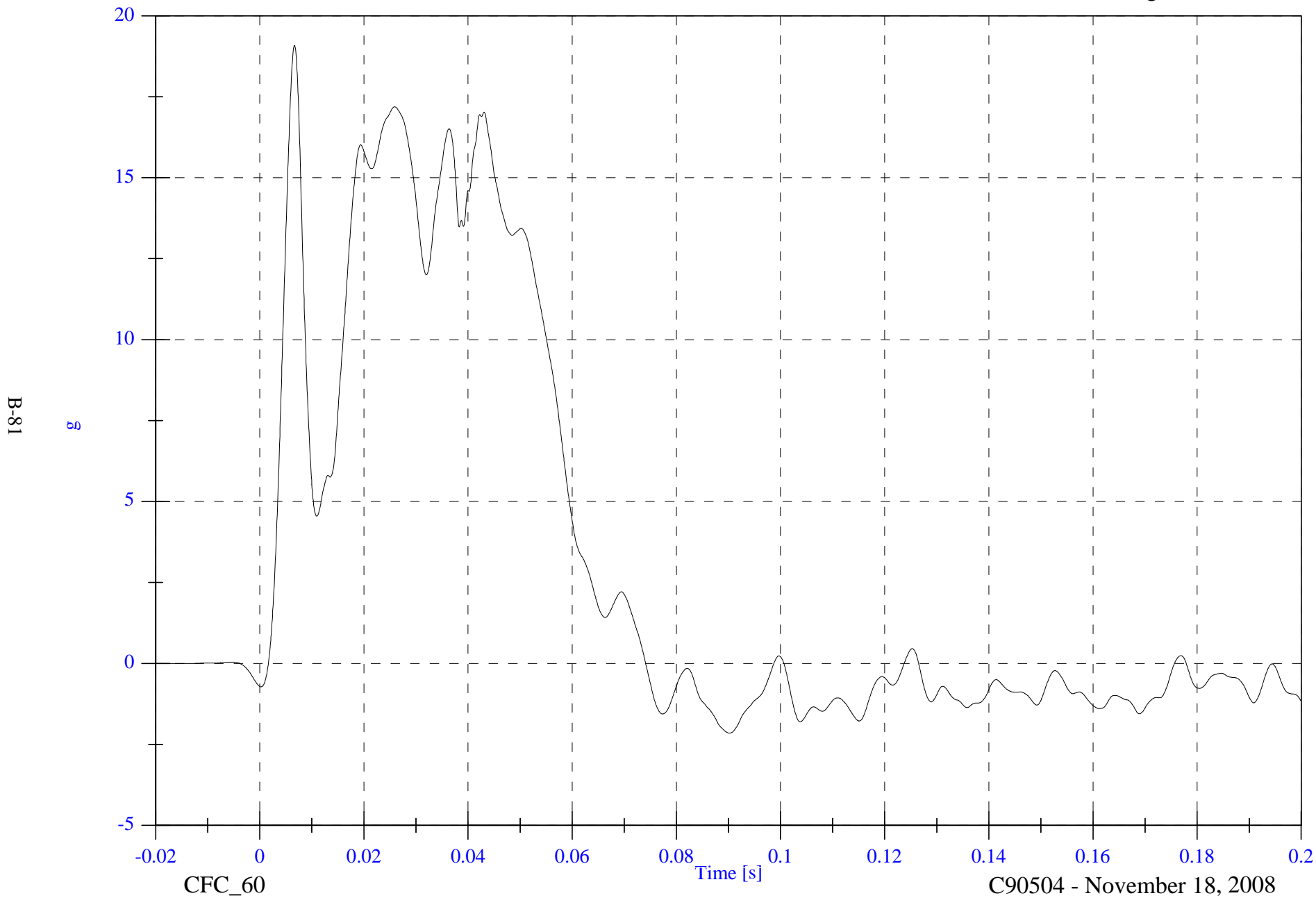


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A17 Rear Seat Track Y

Max: 19.1 [g] at 0.007 [s]

Min: -2.2 [g] at 0.090 [s]



B-81

g

Time [s]

CFC_60

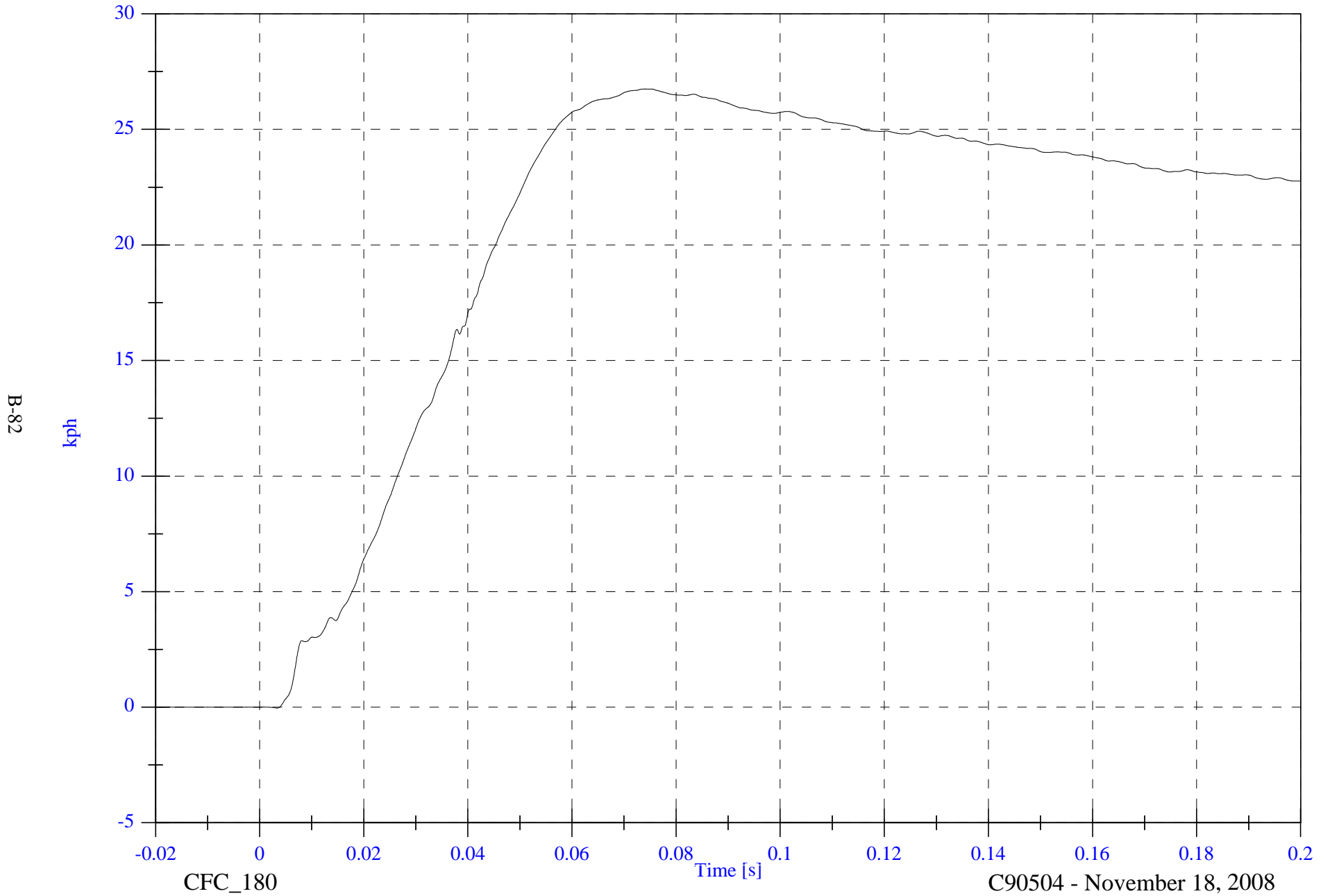
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A17 Rear Seat Track Y Velocity

Max: 26.7 [kph] at 0.074 [s]

Min: -0.0 [kph] at 0.003 [s]



B-82

kph

-0.02

0

0.02

0.04

0.06

0.08

0.1

0.12

0.14

0.16

0.18

0.2

CFC_180

Time [s]

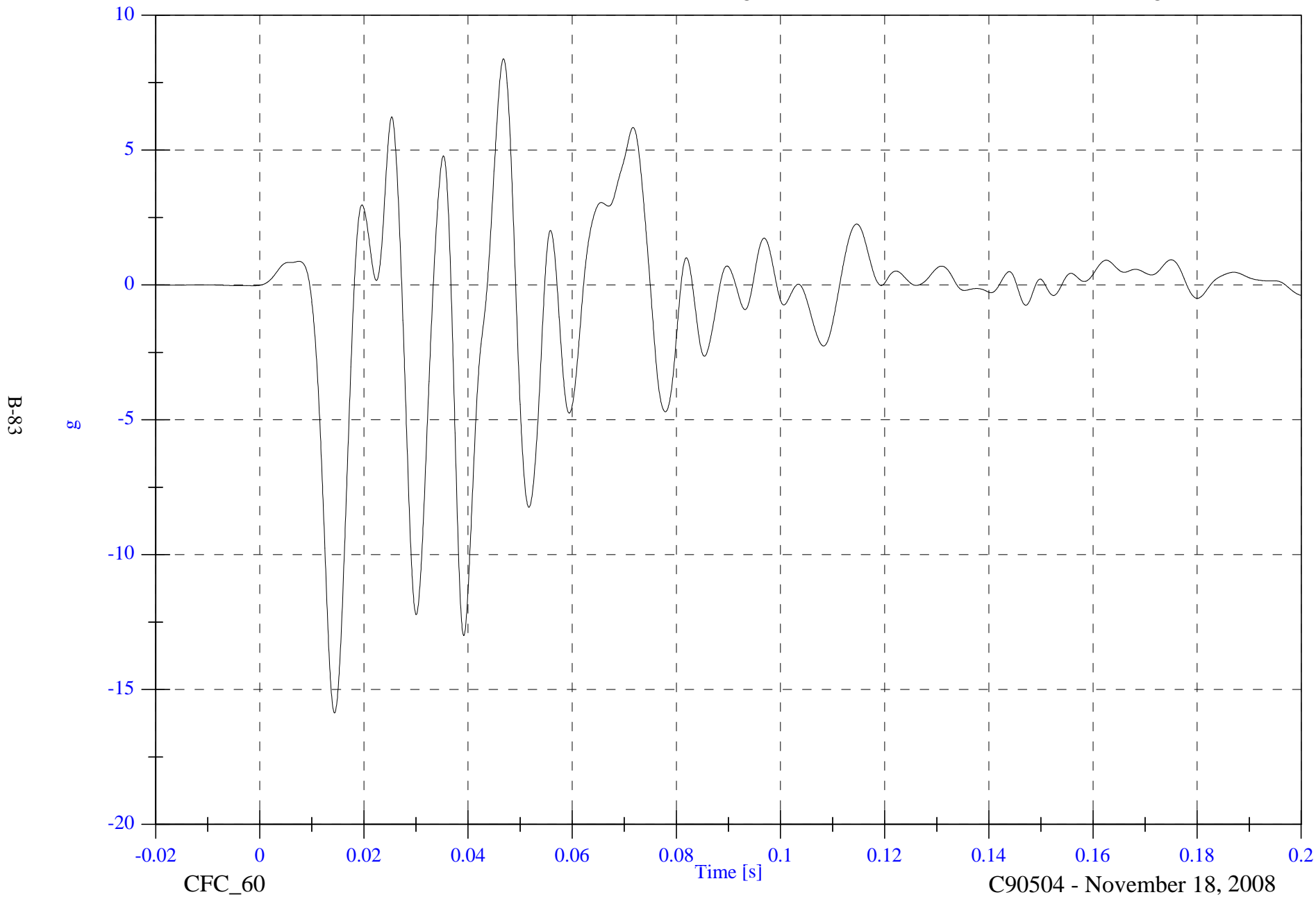
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A18 Target CG X

Max: 8.4 [g] at 0.047 [s]

Min: -15.9 [g] at 0.014 [s]

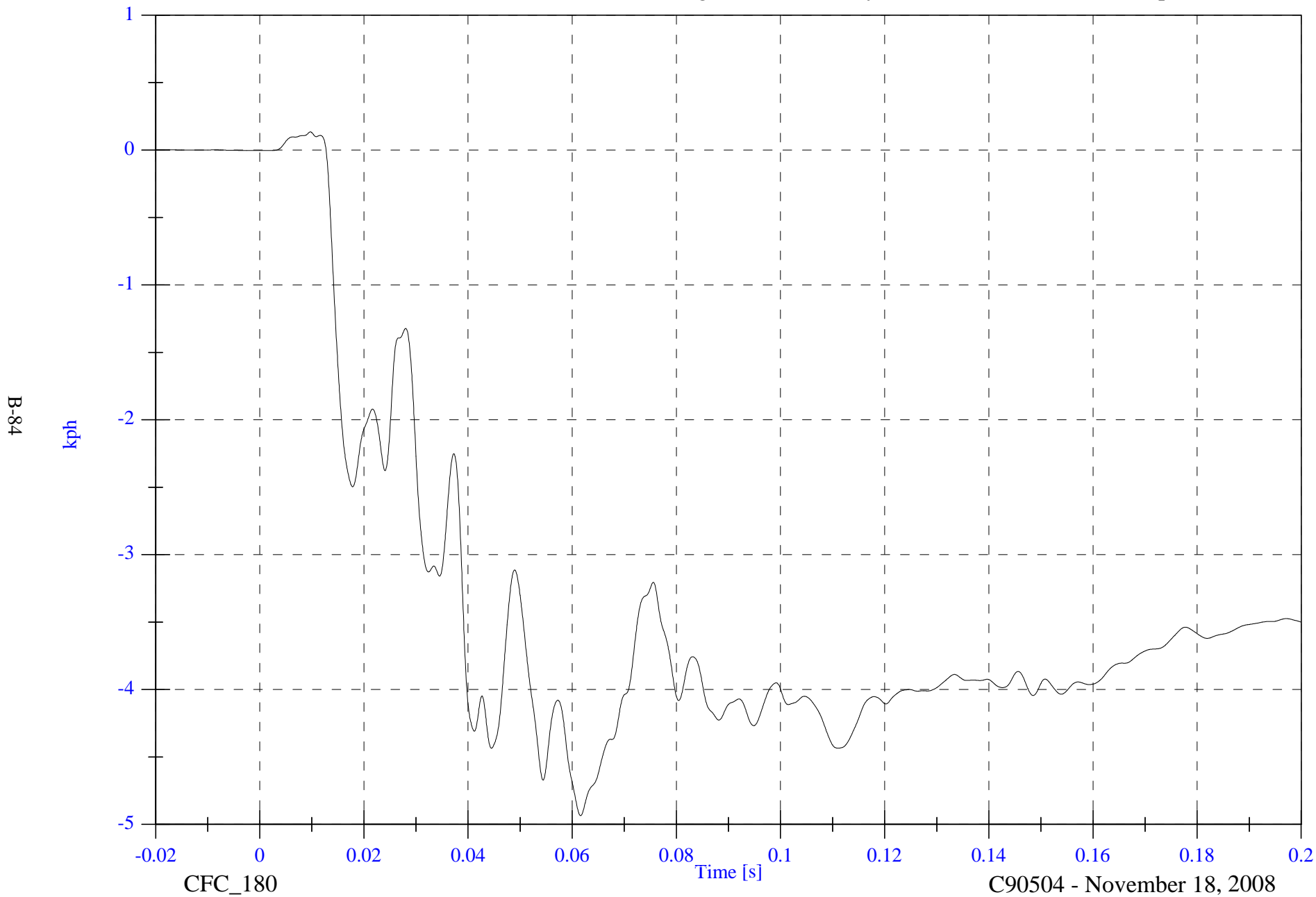


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A18 Target CG X Velocity

Max: 0.1 [kph] at 0.010 [s]

Min: -4.9 [kph] at 0.062 [s]

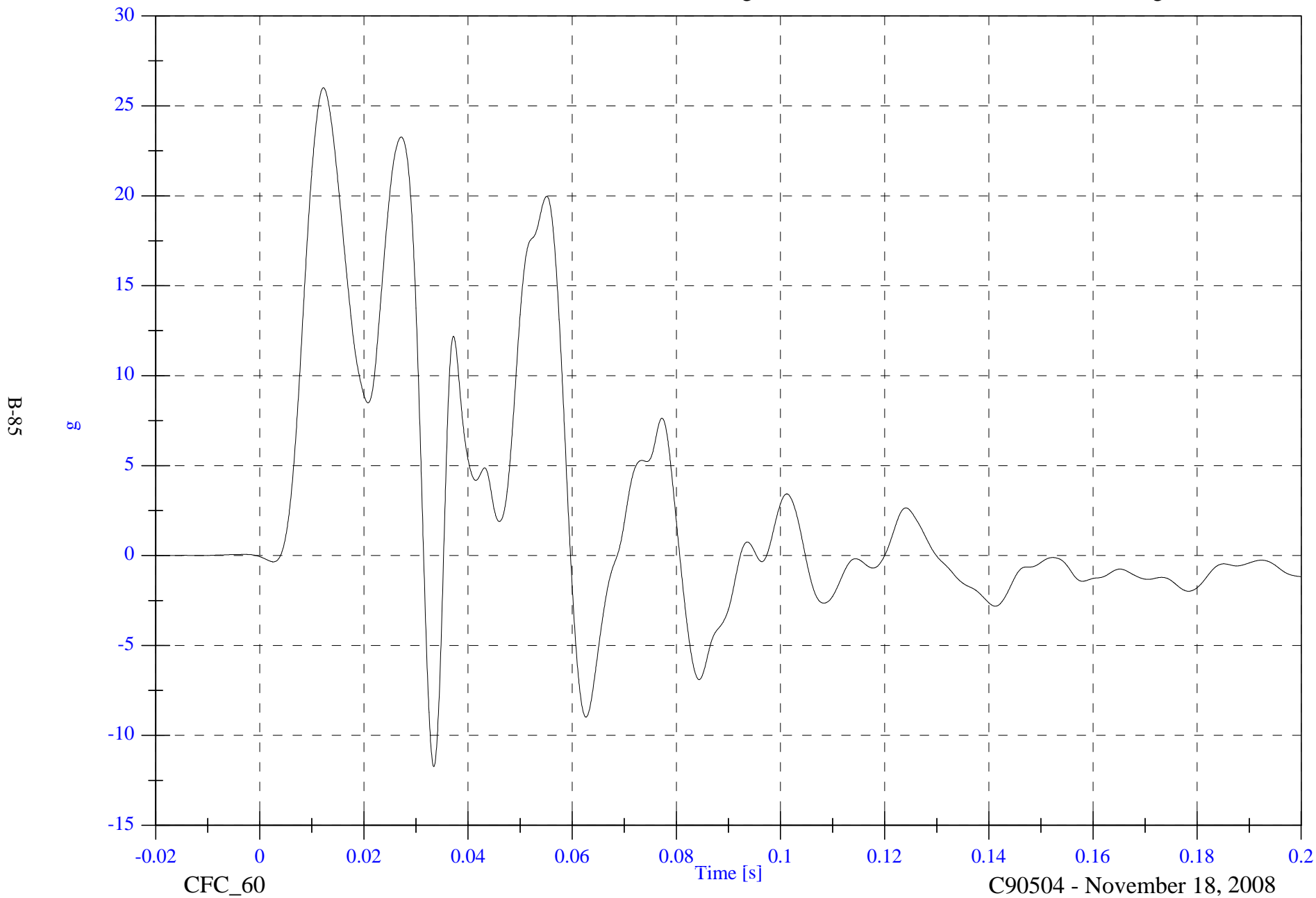


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A18 Target CG Y

Max: 26.0 [g] at 0.012 [s]

Min: -11.7 [g] at 0.033 [s]

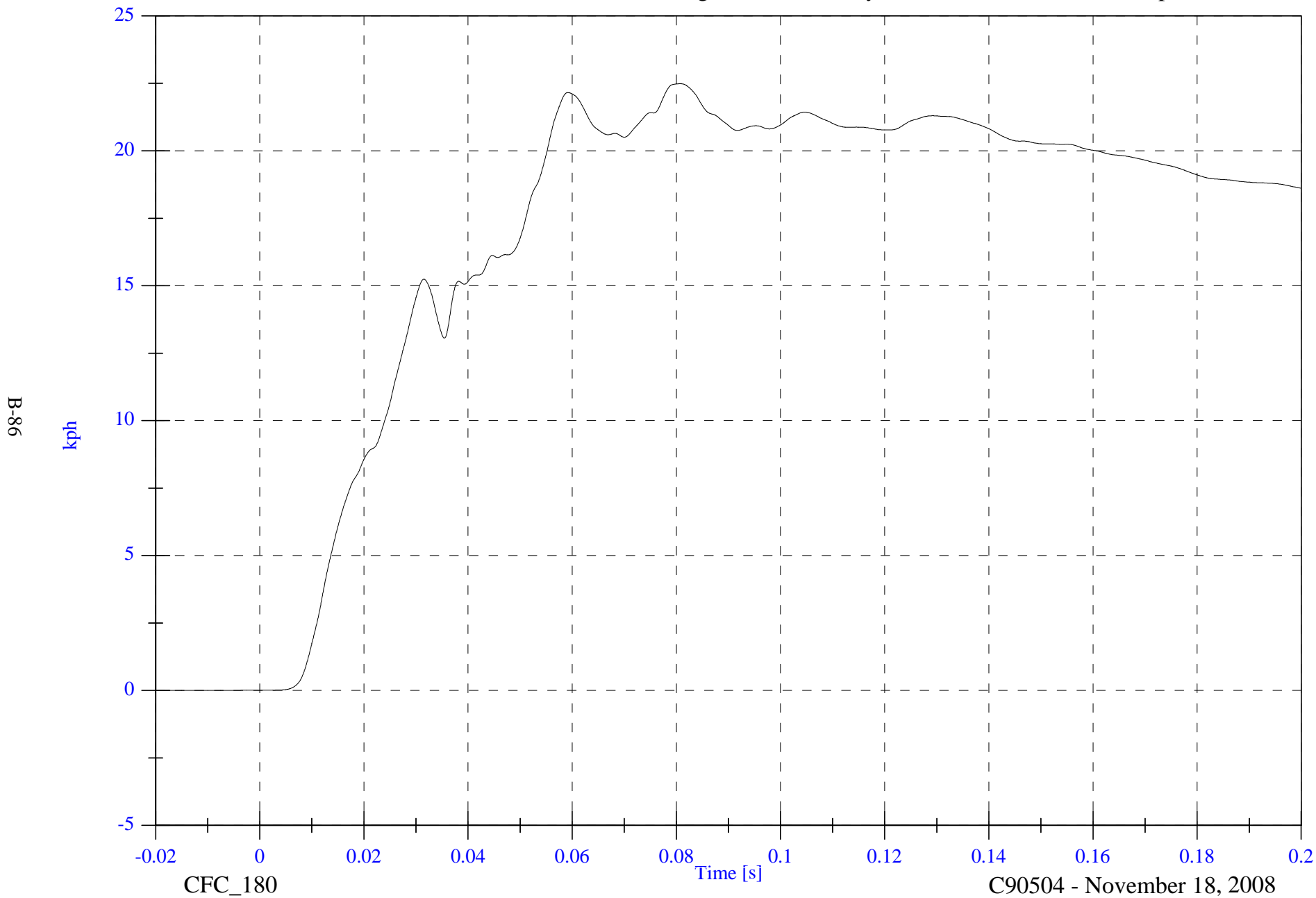


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A18 Target CG Y Velocity

Max: 22.5 [kph] at 0.081 [s]

Min: -0.0 [kph] at -0.020 [s]



B-86

kph

CFC_180

Time [s]

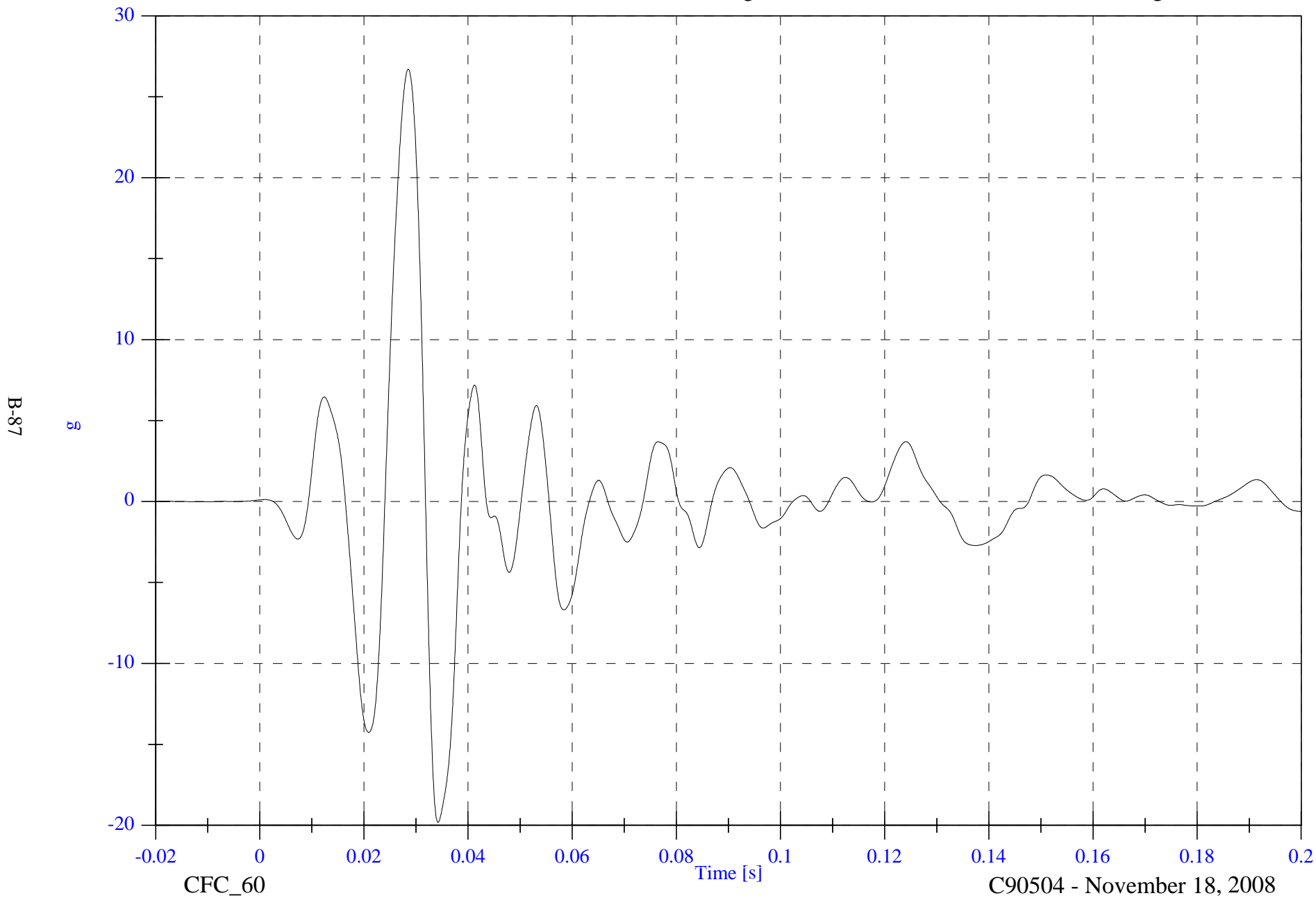
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A18 Target CG Z

Max: 26.7 [g] at 0.028 [s]

Min: -19.8 [g] at 0.034 [s]

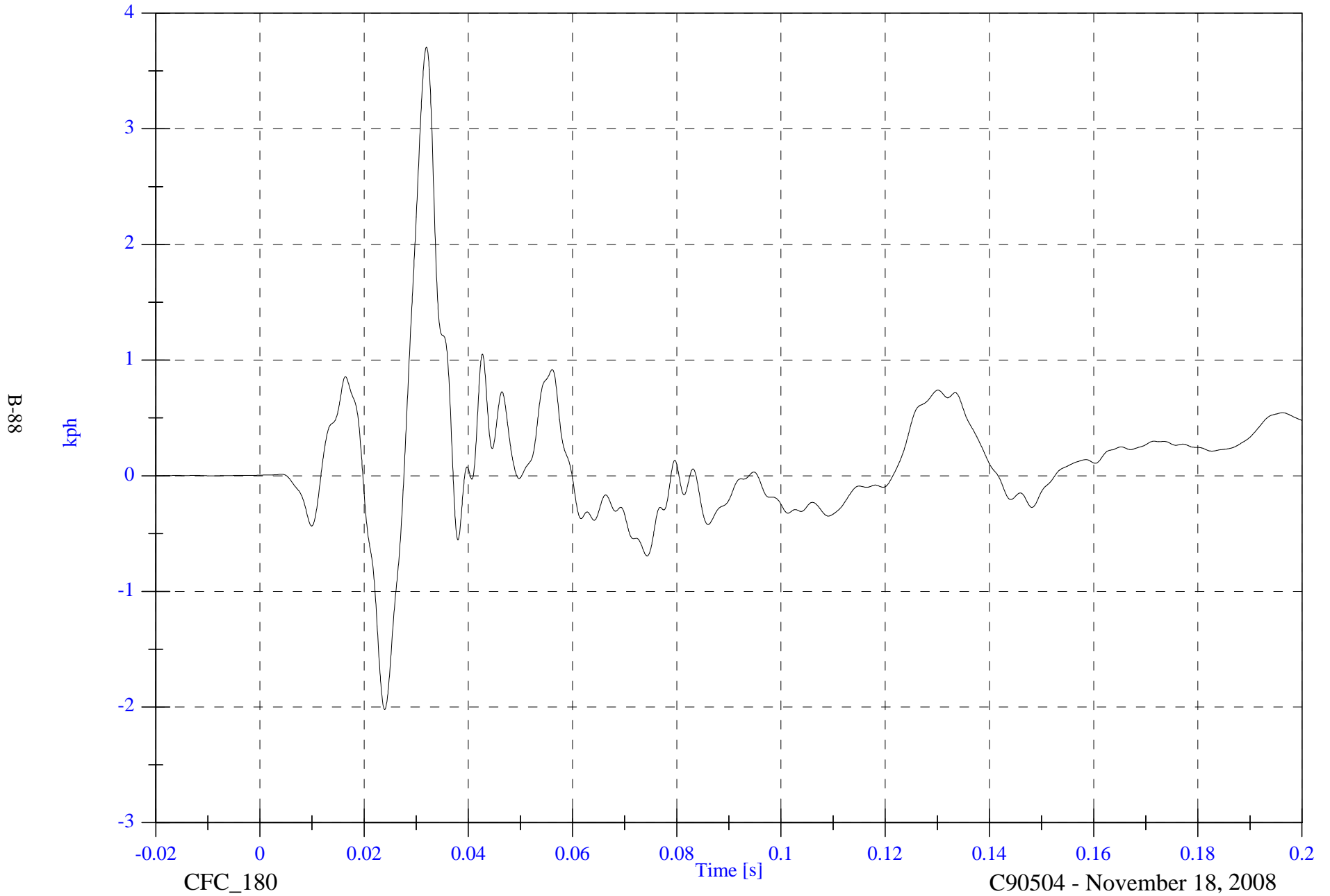


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A18 Target CG Z Velocity

Max: 3.7 [kph] at 0.032 [s]

Min: -2.0 [kph] at 0.024 [s]



B-88

CFC_180

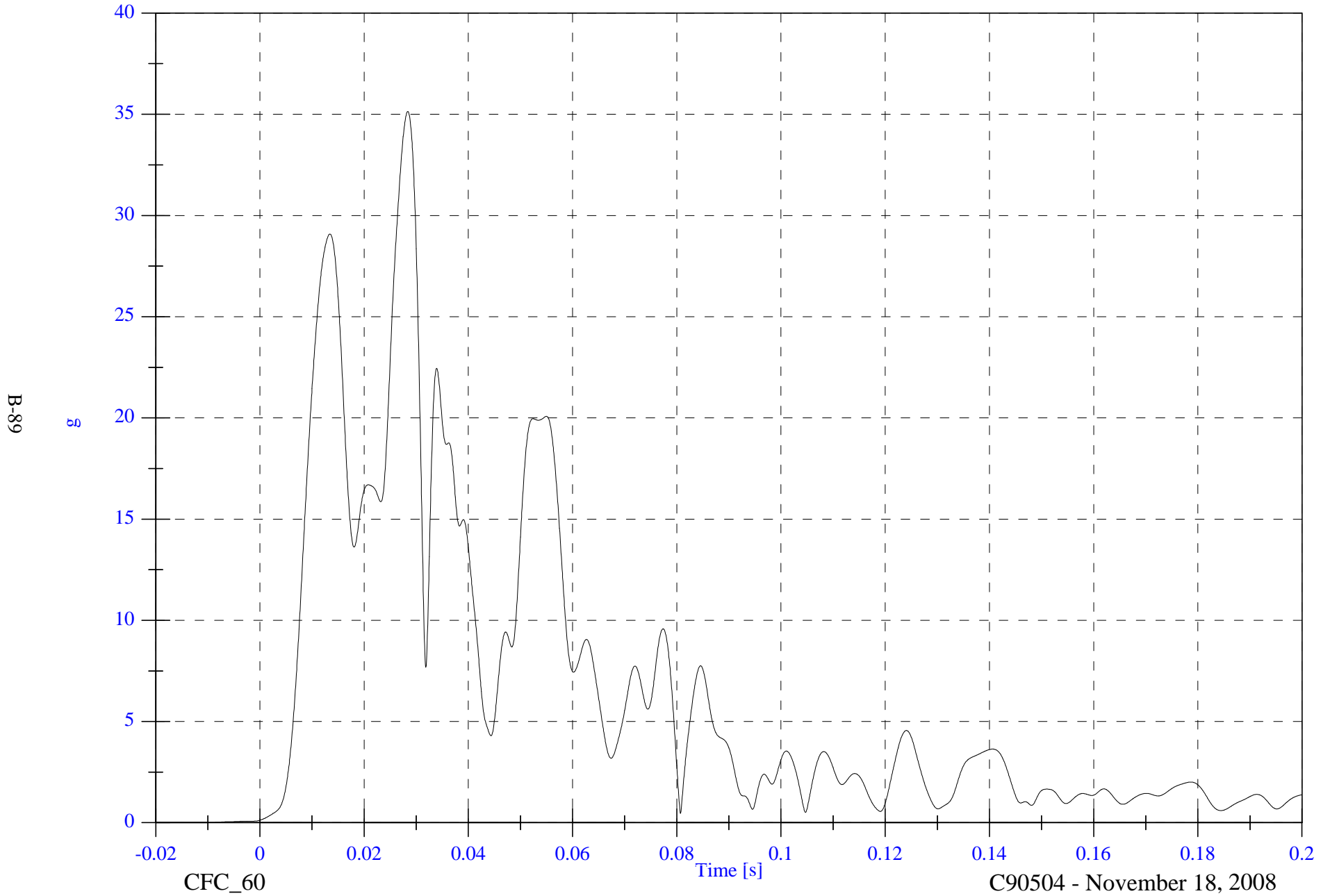
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2 A18 Target CG Resultant

Max: 35.1 [g] at 0.028 [s]

Min: 0.0 [g] at -0.013 [s]



B-89

CFC_60

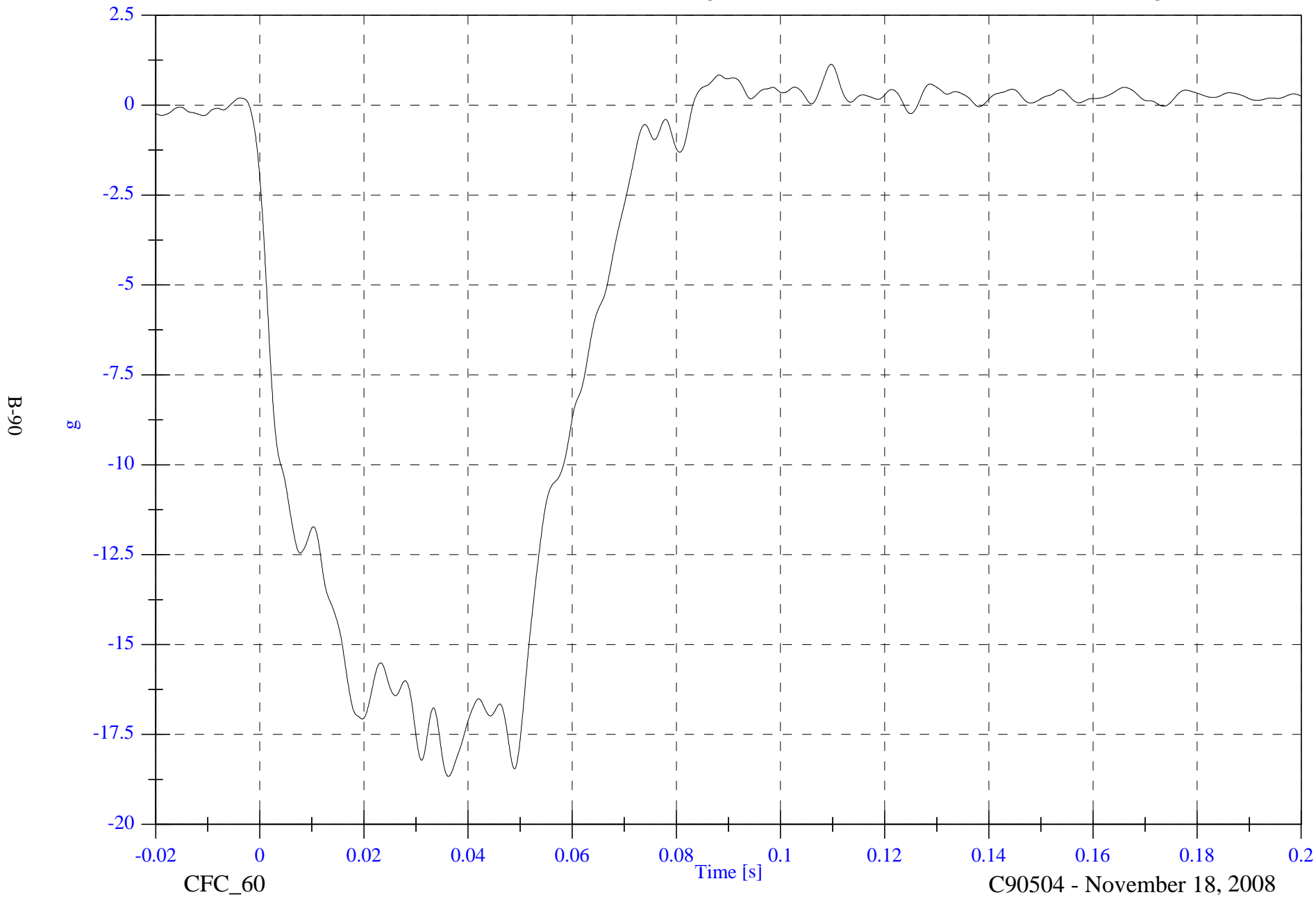
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V1 Moving Barrier CG X

Max: 1.1 [g] at 0.110 [s]

Min: -18.7 [g] at 0.036 [s]

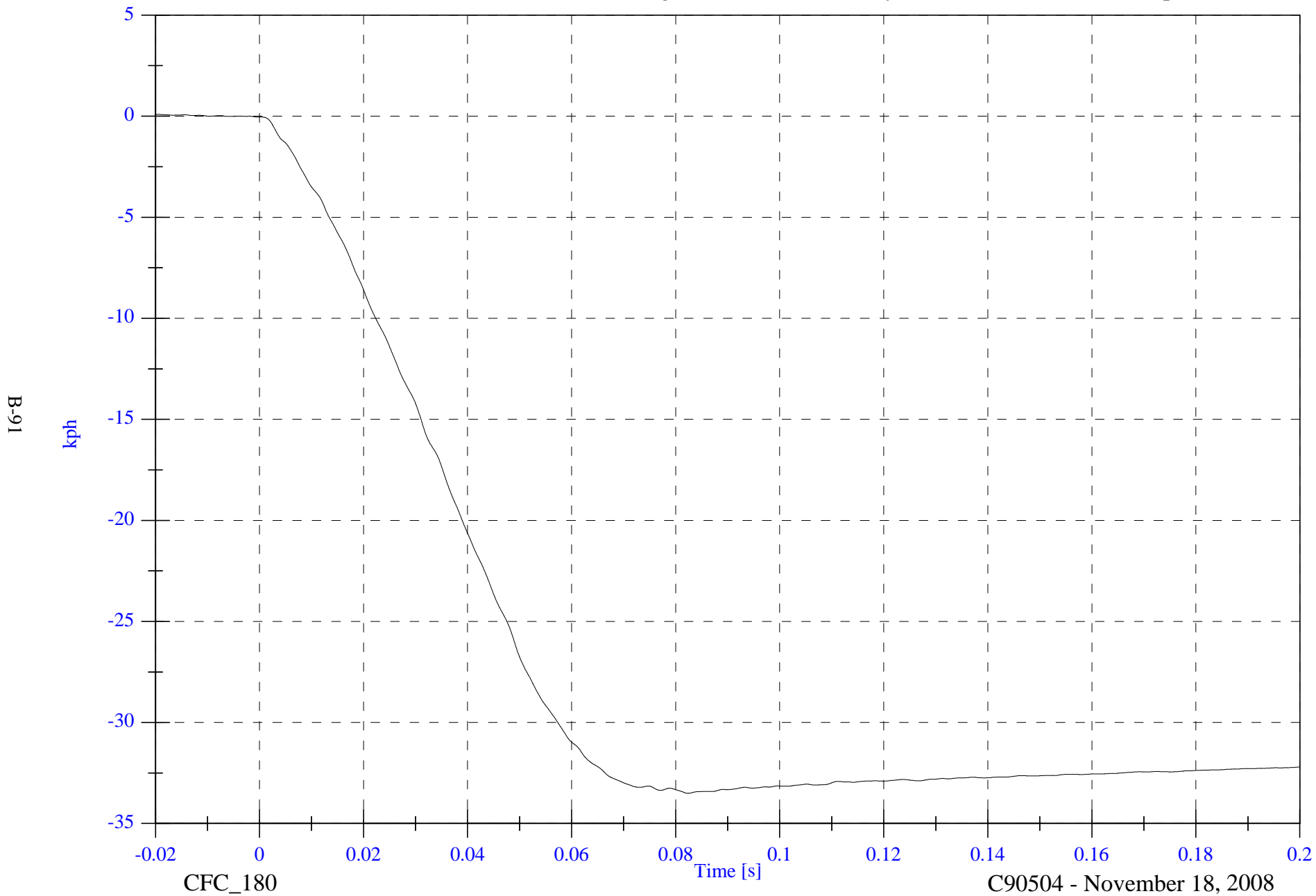


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

Max: 0.1 [kph] at -0.020 [s]

V1 Moving Barrier CG X Velocity

Min: -33.5 [kph] at 0.082 [s]



B-91

kph

CFC_180

Time [s]

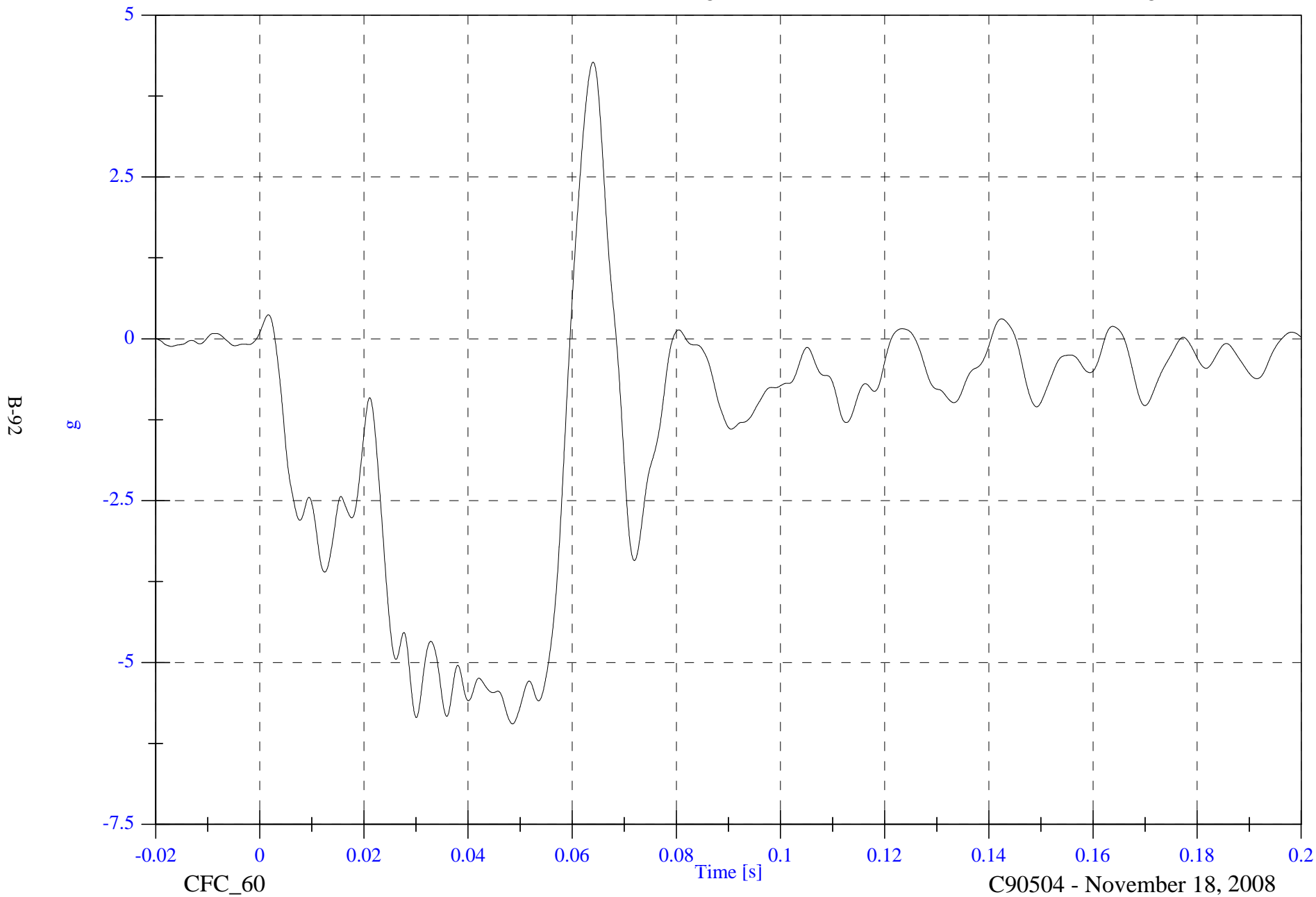
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

Max: 4.3 [g] at 0.064 [s]

V1 Moving Barrier CG Y

Min: -5.9 [g] at 0.049 [s]

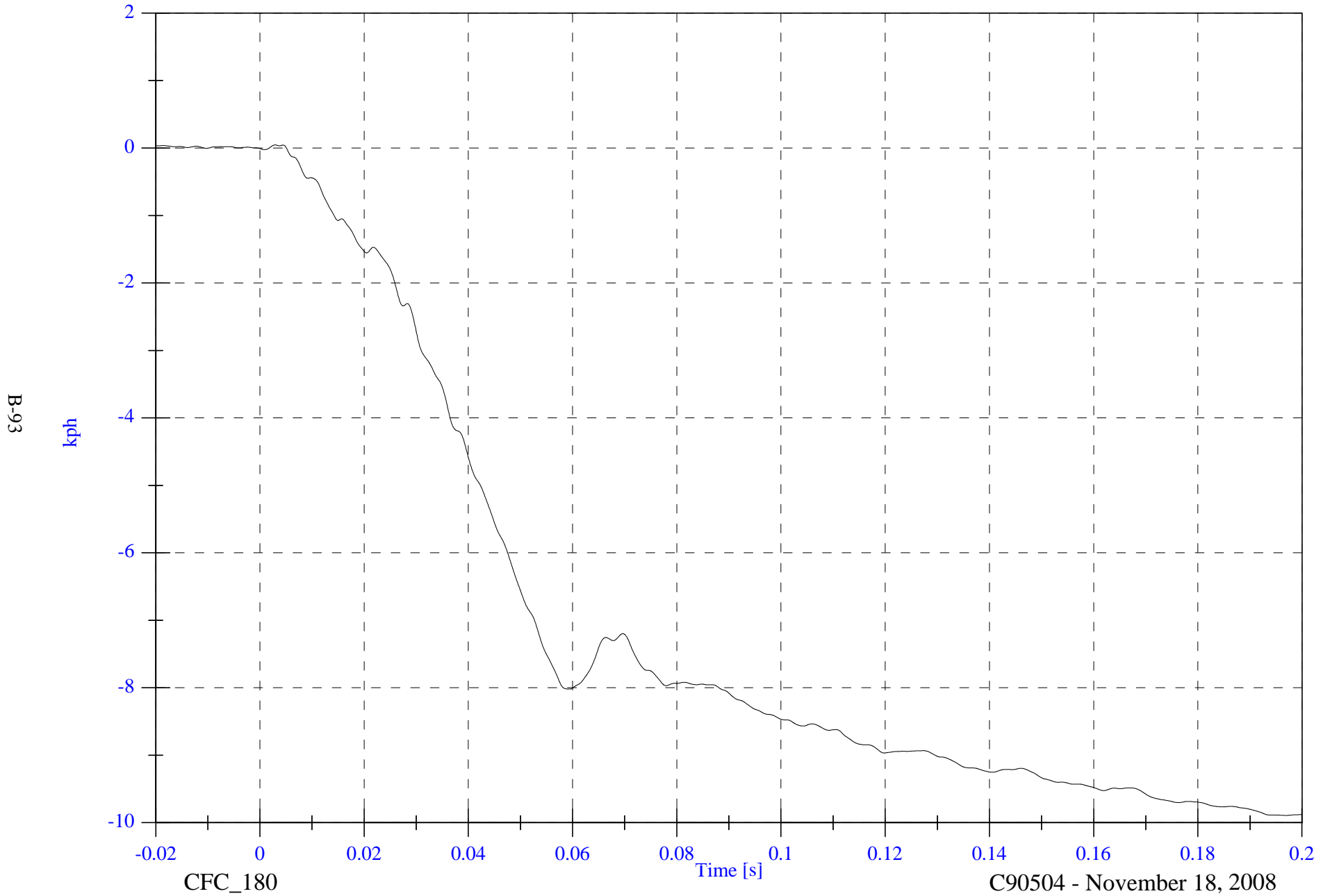


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V1 Moving Barrier CG Y Velocity

Max: 0.0 [kph] at 0.003 [s]

Min: -9.9 [kph] at 0.197 [s]



B-93

kph

CFC_180

Time [s]

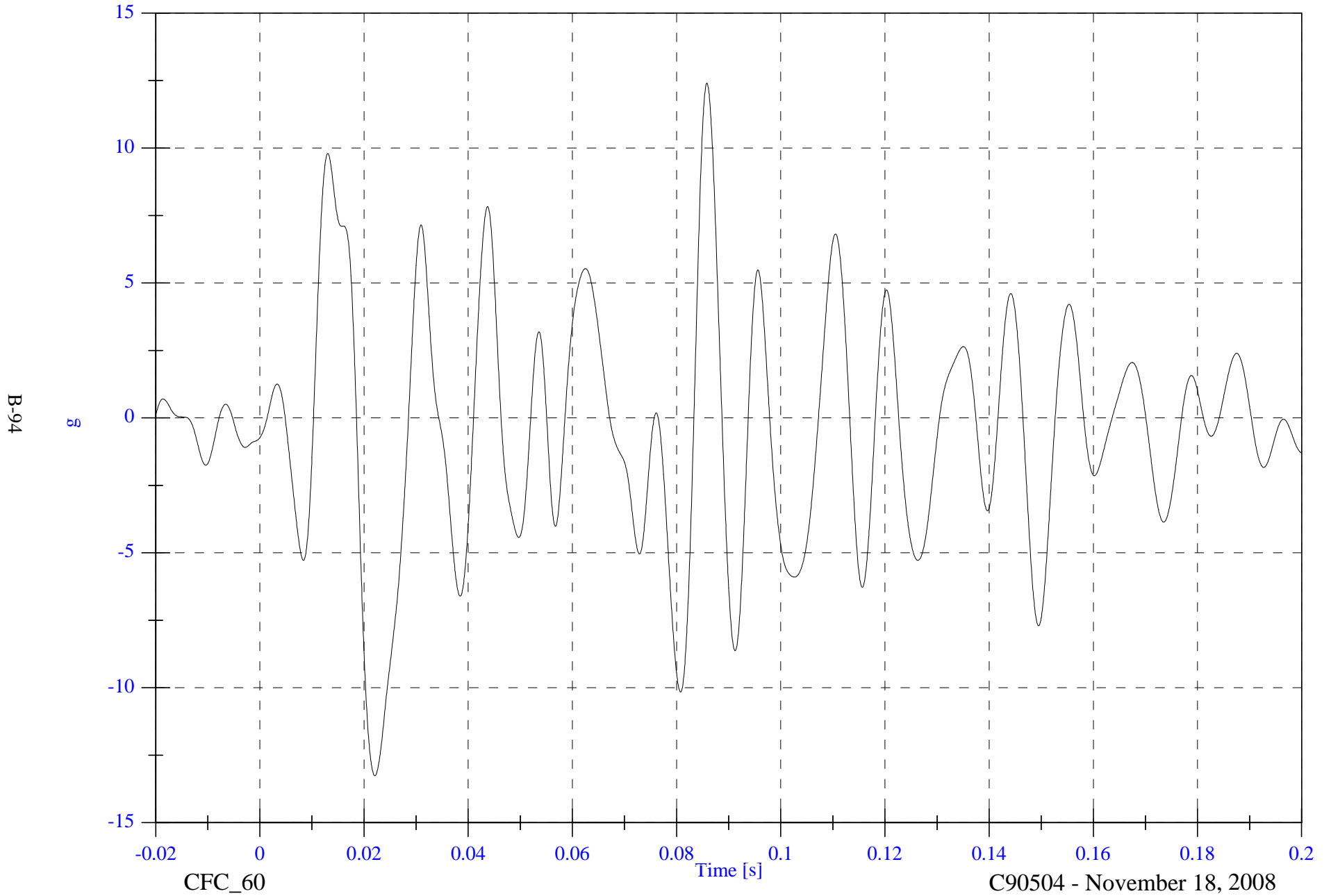
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V1 Moving Barrier CG Z

Max: 12.4 [g] at 0.086 [s]

Min: -13.3 [g] at 0.022 [s]

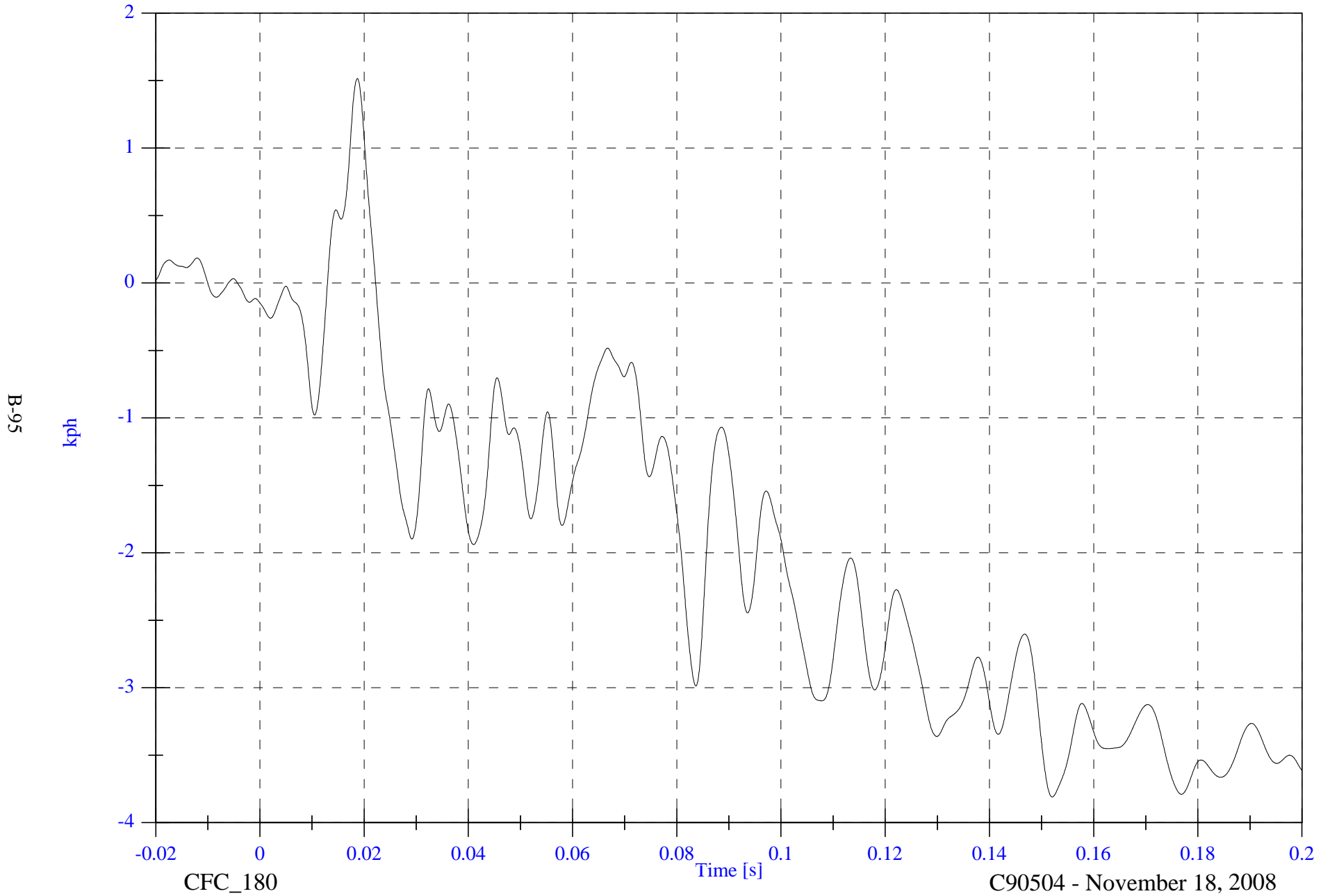


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V1 Moving Barrier CG Z Velocity

Max: 1.5 [kph] at 0.019 [s]

Min: -3.8 [kph] at 0.152 [s]



B-95

kph

-0.02

0

0.02

0.04

0.06

0.08

0.1

0.12

0.14

0.16

0.18

0.2

CFC_180

Time [s]

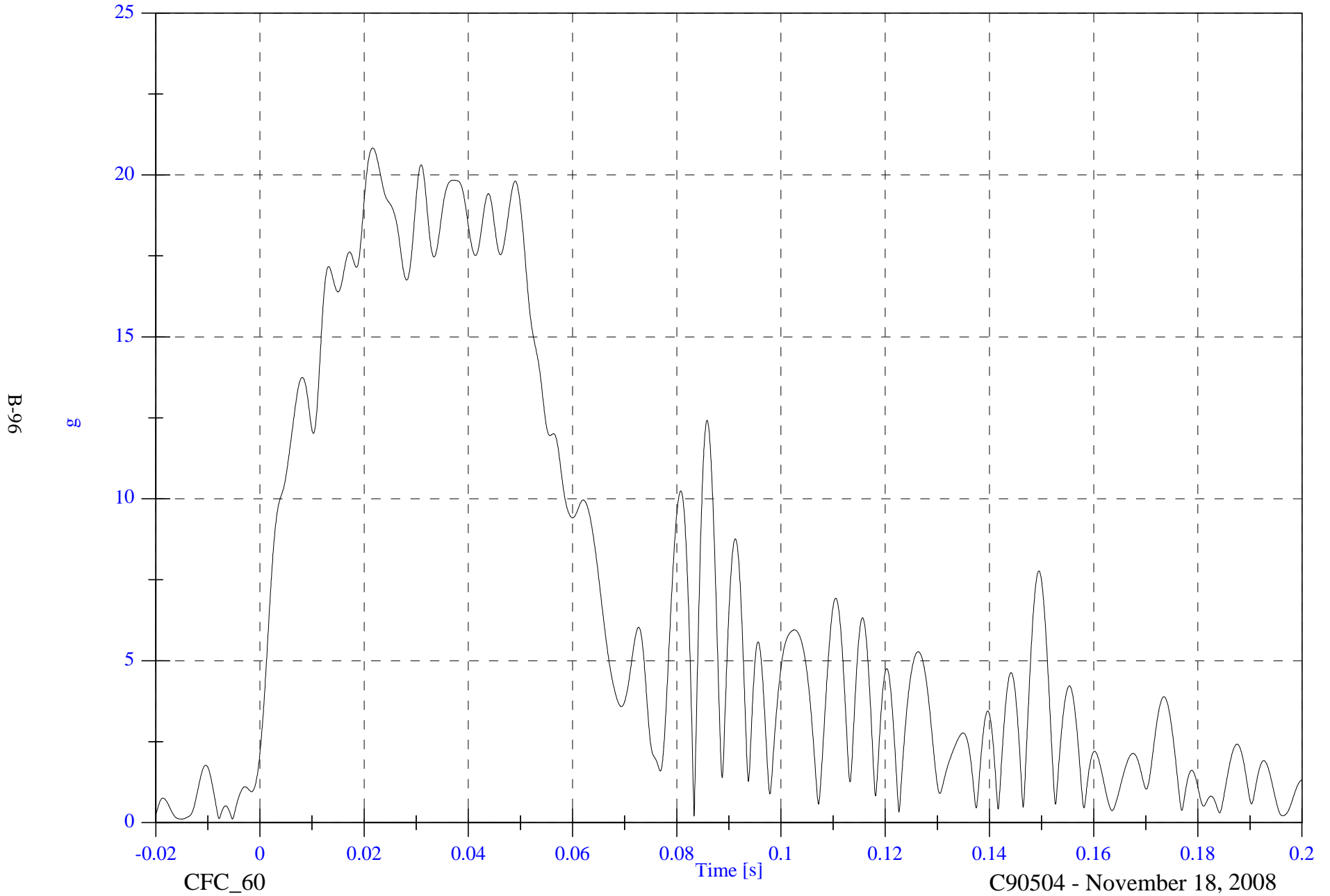
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V1 Moving Barrier CG Resultant

Max: 20.8 [g] at 0.022 [s]

Min: 0.1 [g] at -0.015 [s]

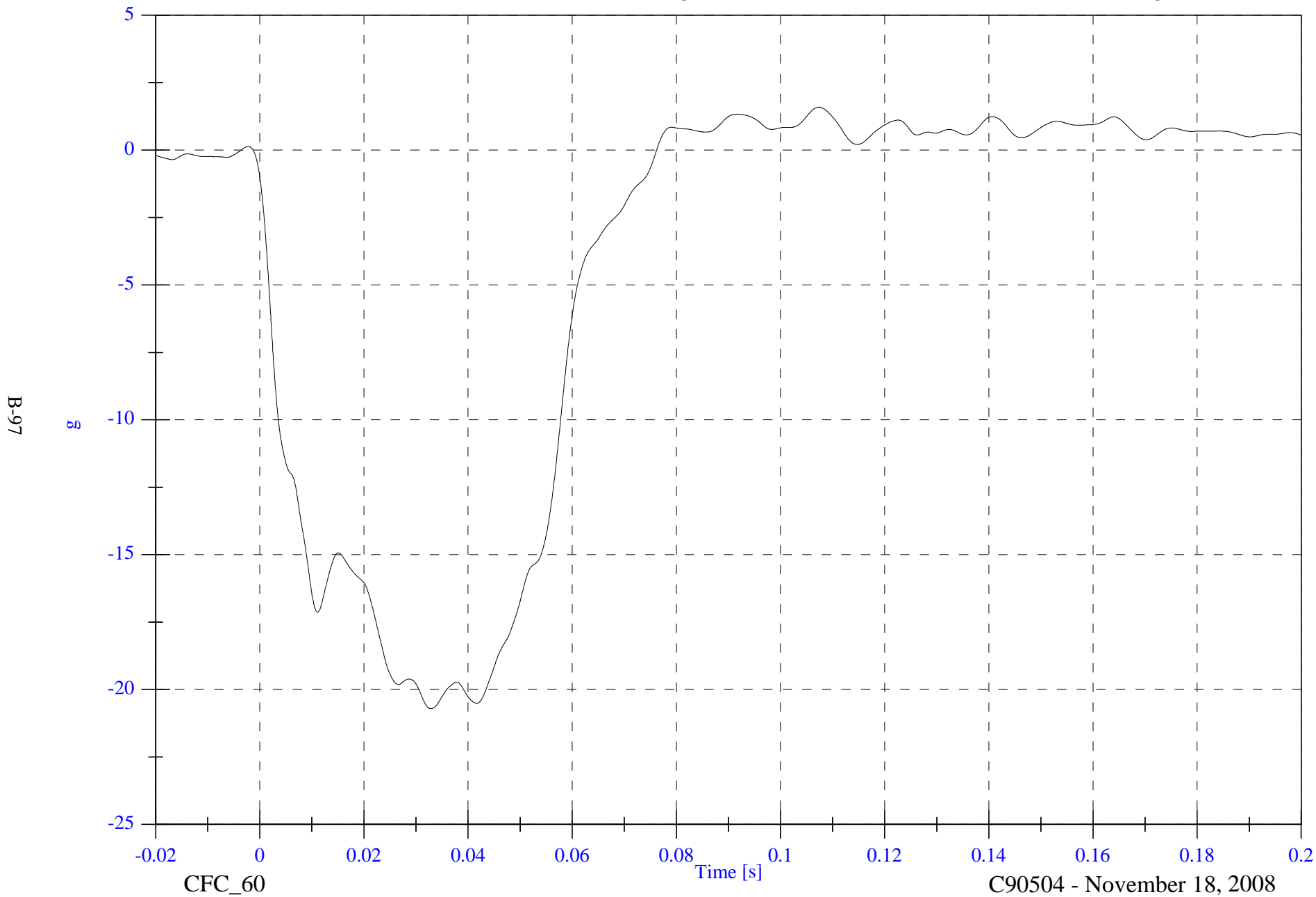


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V1 Moving Barrier Left Rail X

Max: 1.6 [g] at 0.107 [s]

Min: -20.7 [g] at 0.033 [s]

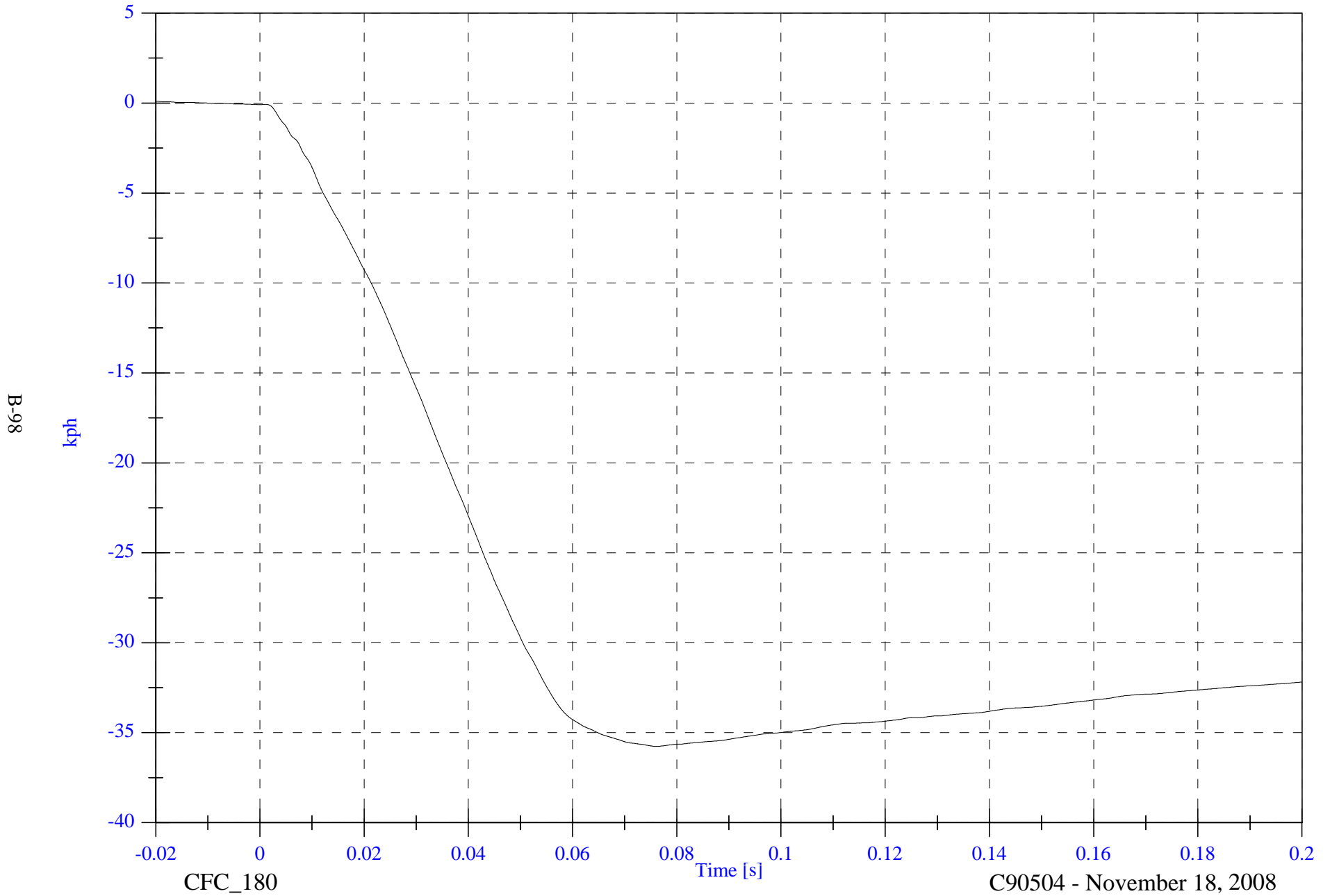


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V1 Moving Barrier Left Rail X Velocity

Max: 0.1 [kph] at -0.020 [s]

Min: -35.8 [kph] at 0.076 [s]

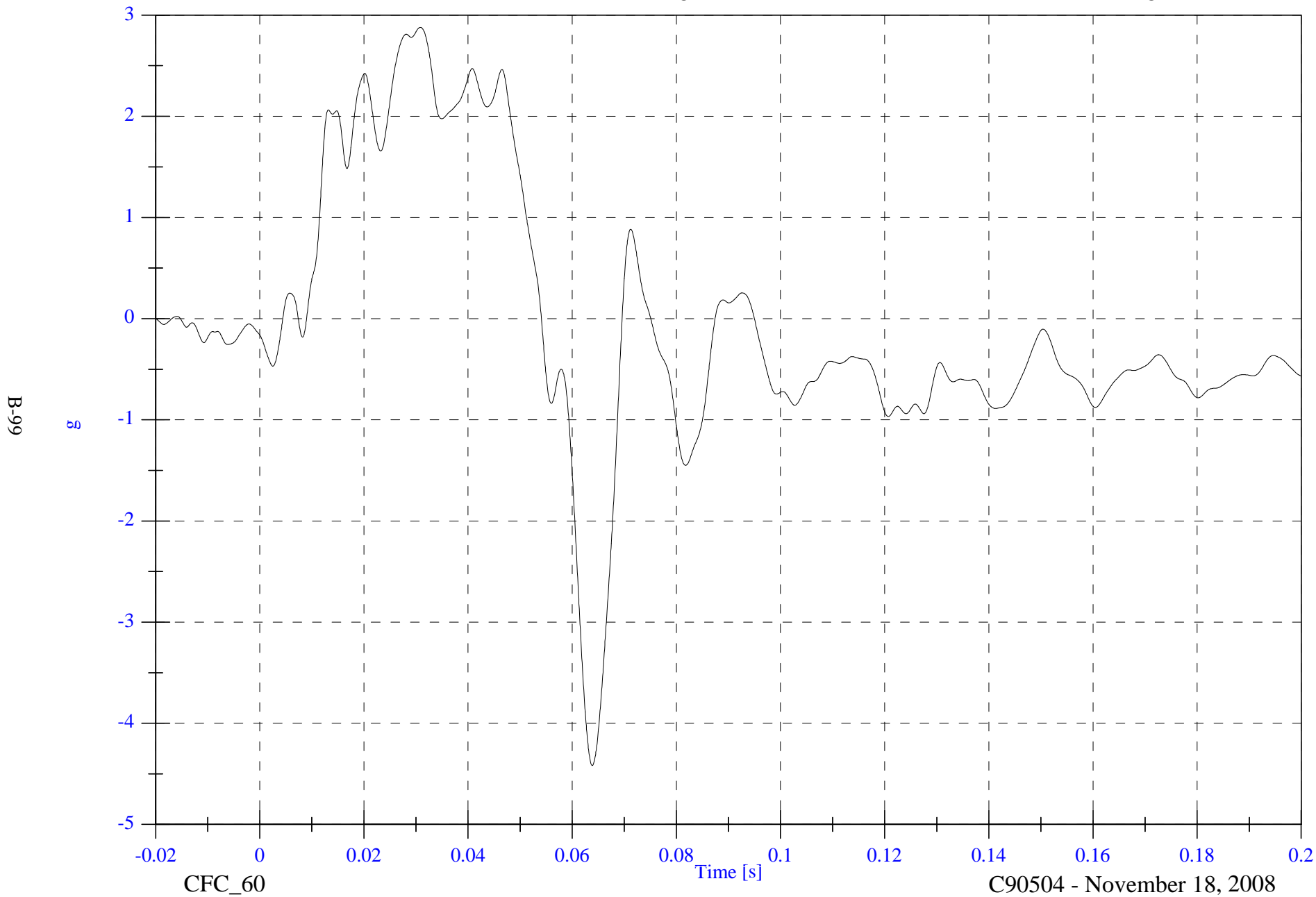


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V1 Moving Barrier Left Rail Y

Max: 2.9 [g] at 0.031 [s]

Min: -4.4 [g] at 0.064 [s]

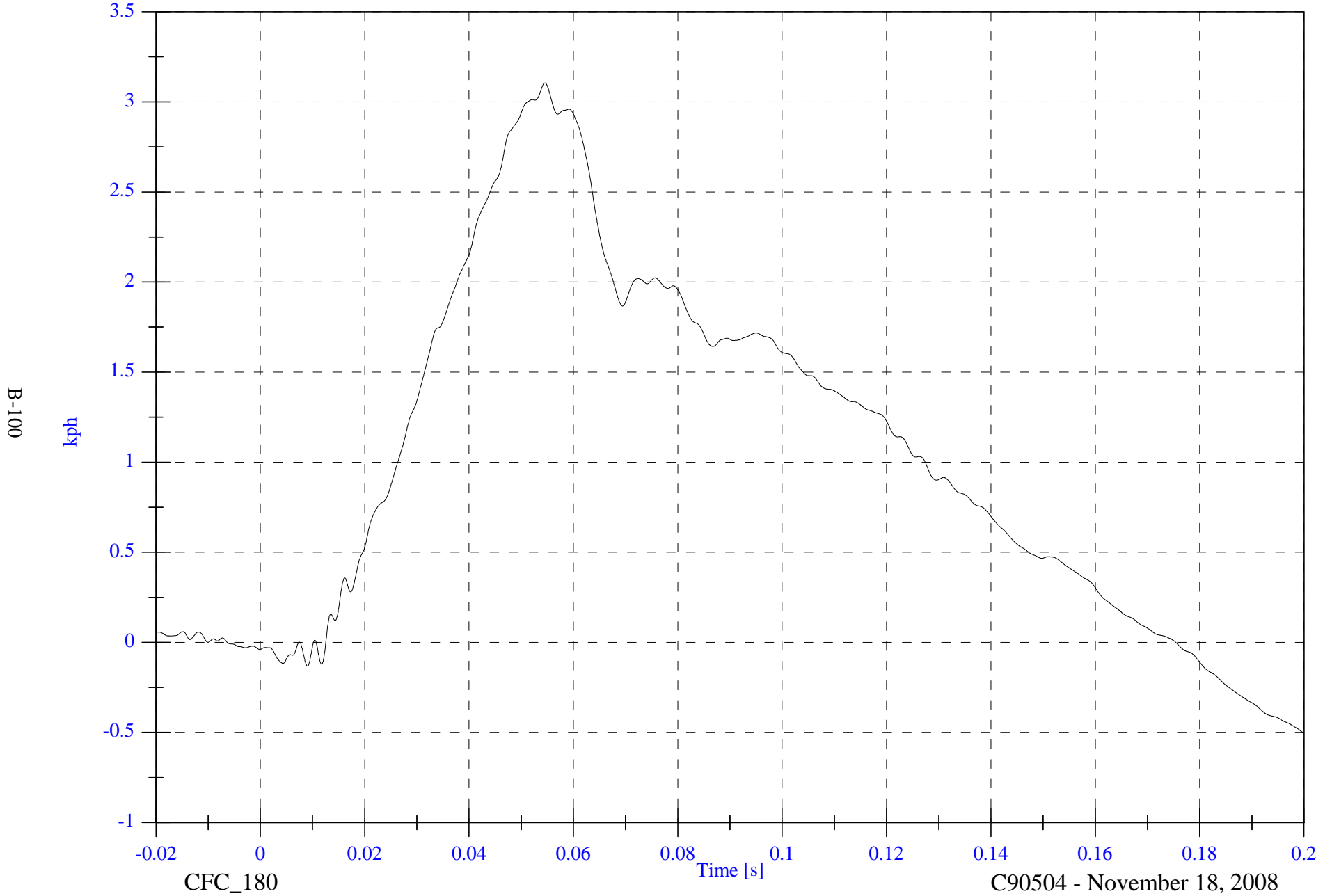


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V1 Moving Barrier Left Rail Y Velocity

Max: 3.1 [kph] at 0.055 [s]

Min: -0.5 [kph] at 0.200 [s]



B-100

CFC_180

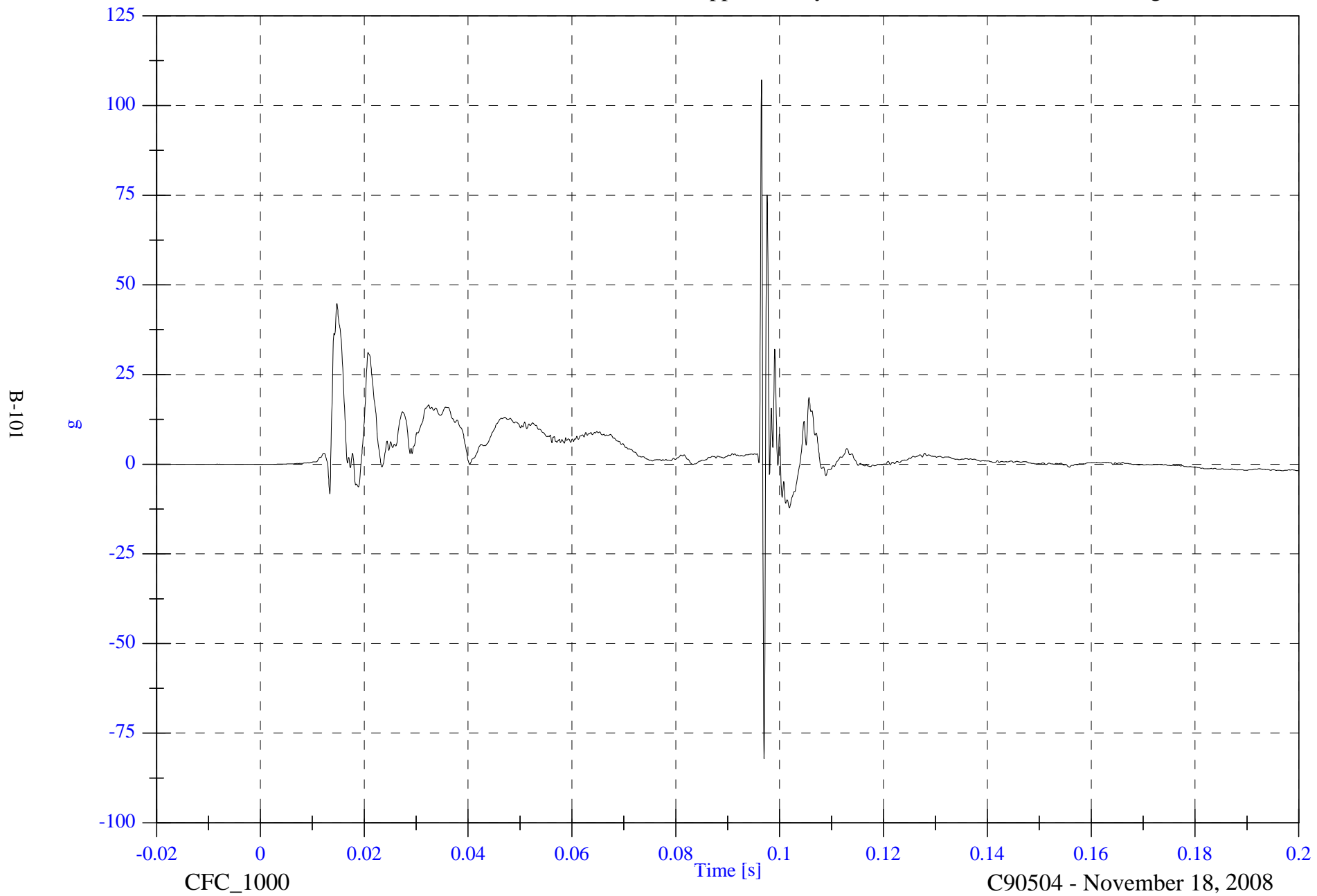
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Upper Rib Ry

Max: 107.1 [g] at 0.096 [s]

Min: -82.0 [g] at 0.097 [s]



B-101

CFC_1000

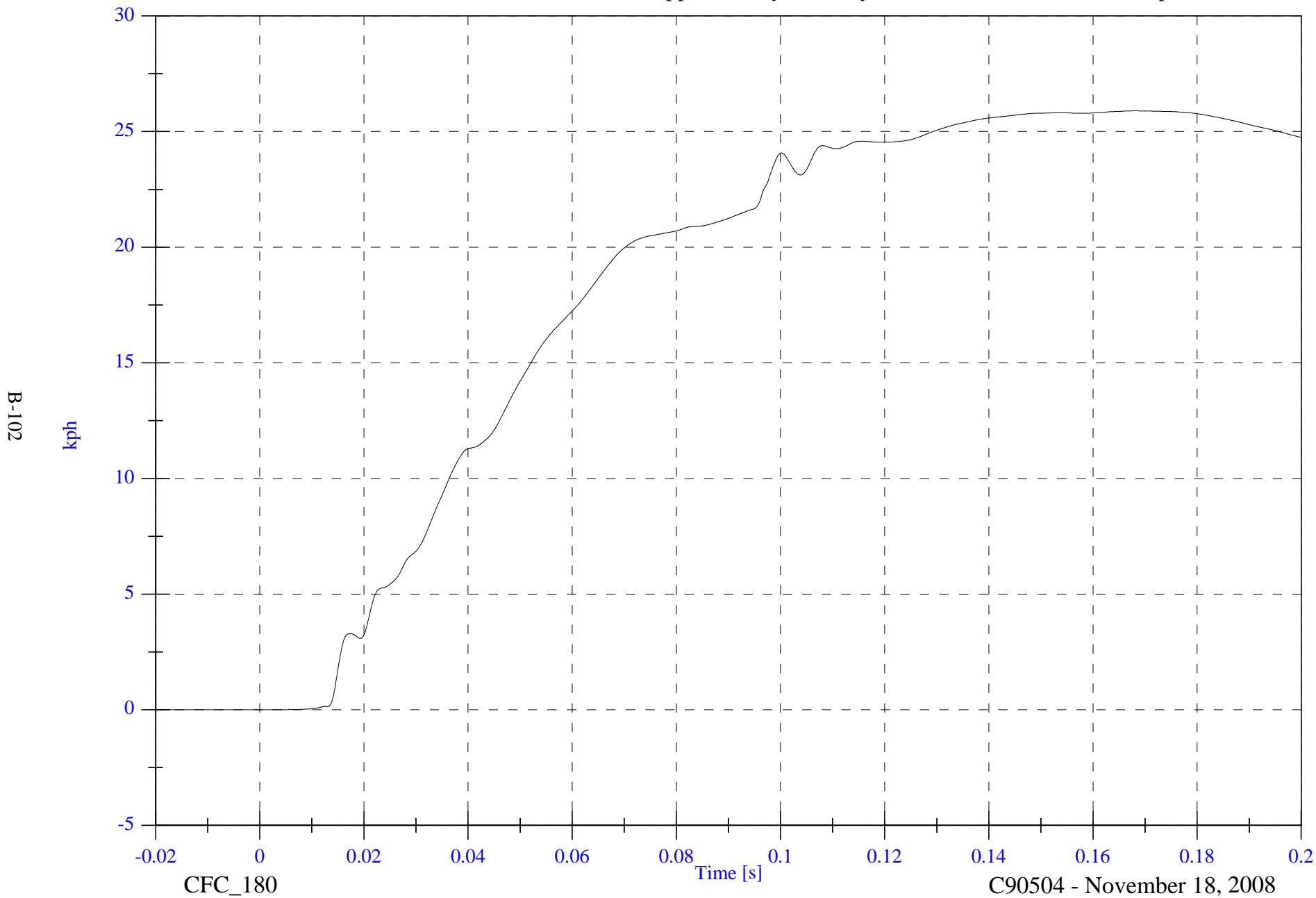
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

Max: 25.9 [kph] at 0.168 [s]

V2P1 Upper Rib Ry Velocity

Min: -0.0 [kph] at -0.020 [s]



B-102

CFC_180

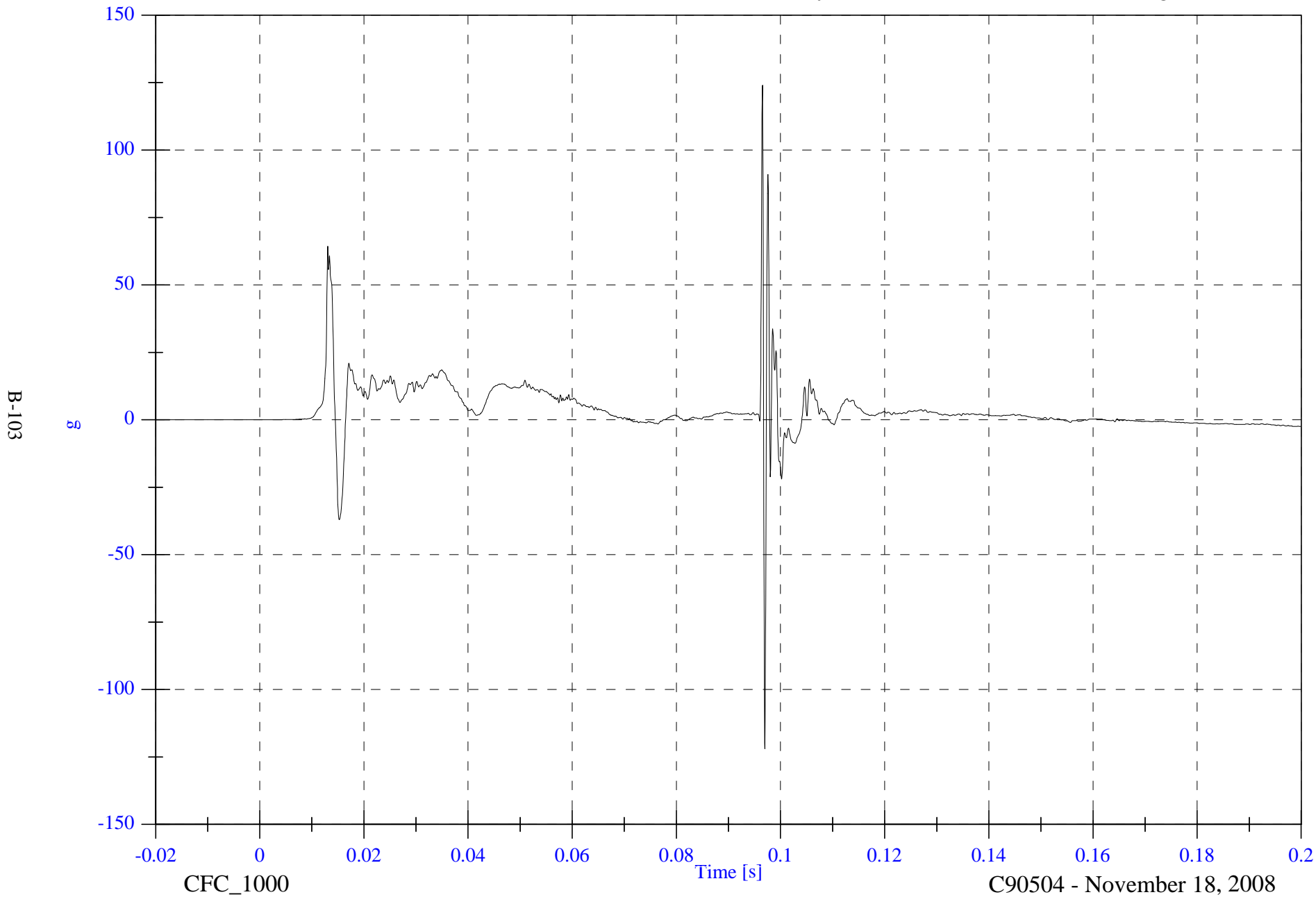
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Rib Ry

Max: 124.0 [g] at 0.097 [s]

Min: -122.0 [g] at 0.097 [s]

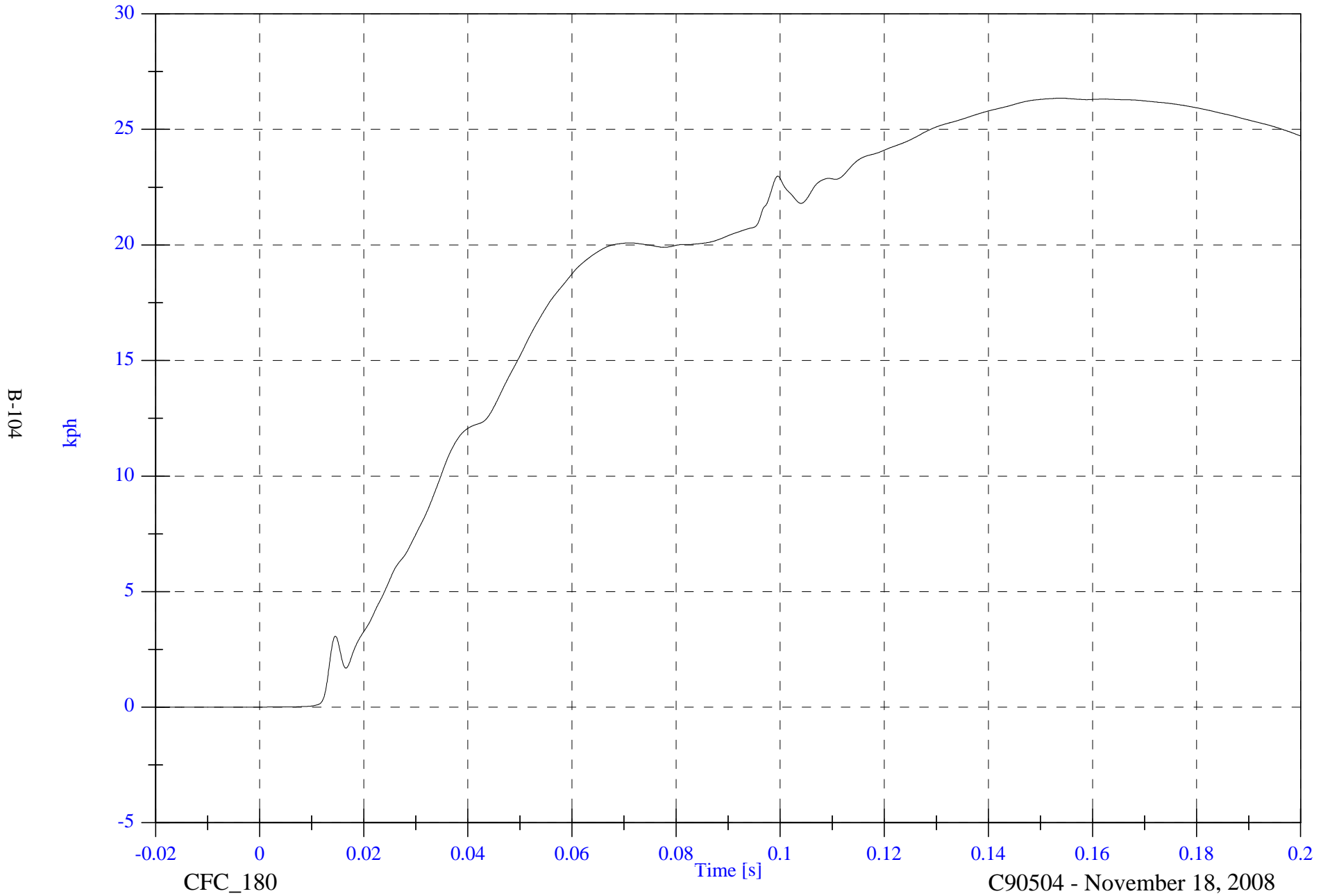


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Rib Ry Velocity

Max: 26.3 [kph] at 0.154 [s]

Min: -0.0 [kph] at -0.020 [s]



B-104

kph

CFC_180

Time [s]

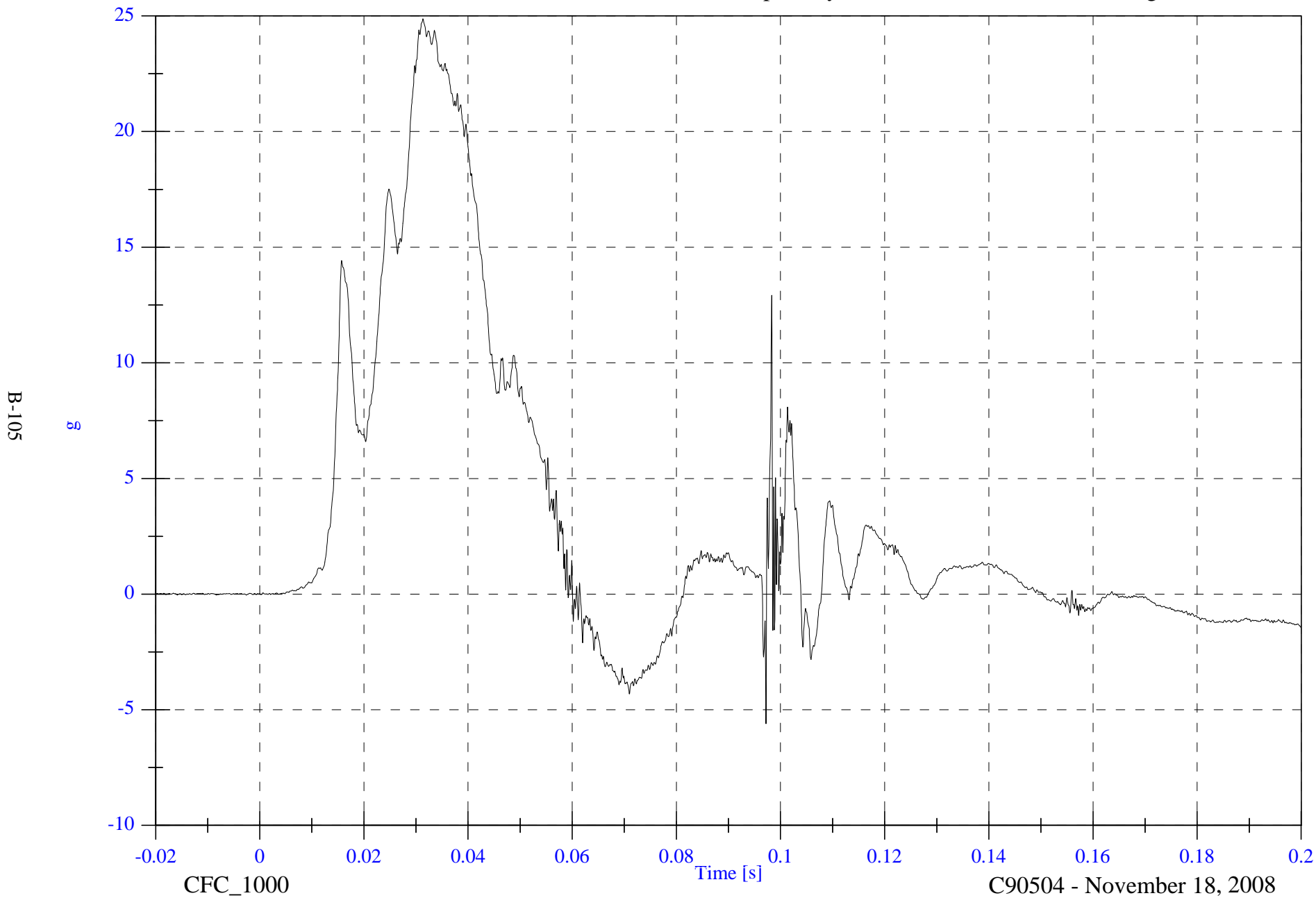
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Spine Ry

Max: 24.9 [g] at 0.031 [s]

Min: -5.6 [g] at 0.097 [s]

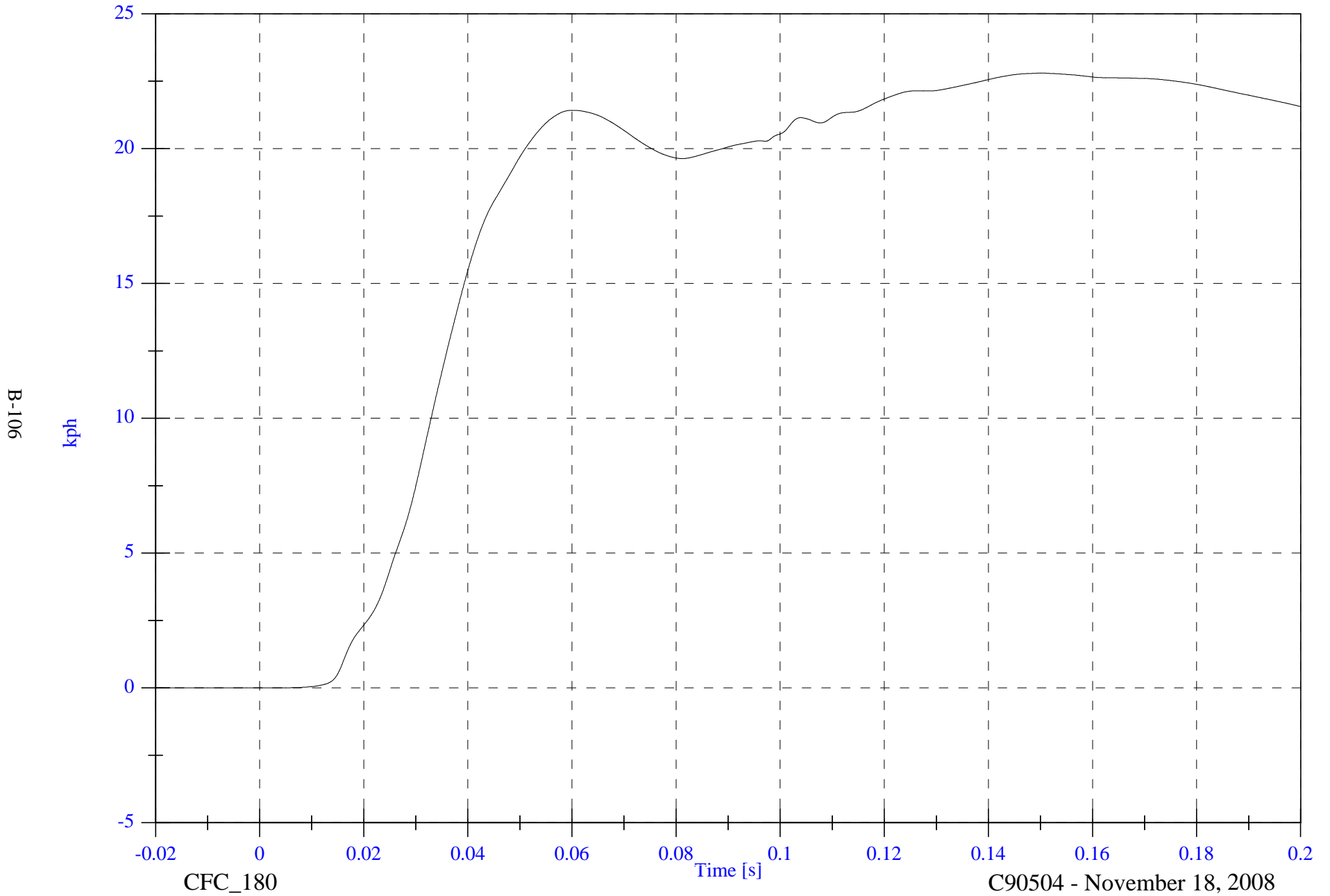


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Spine Ry Velocity

Max: 22.8 [kph] at 0.150 [s]

Min: -0.0 [kph] at -0.020 [s]



B-106

CFC_180

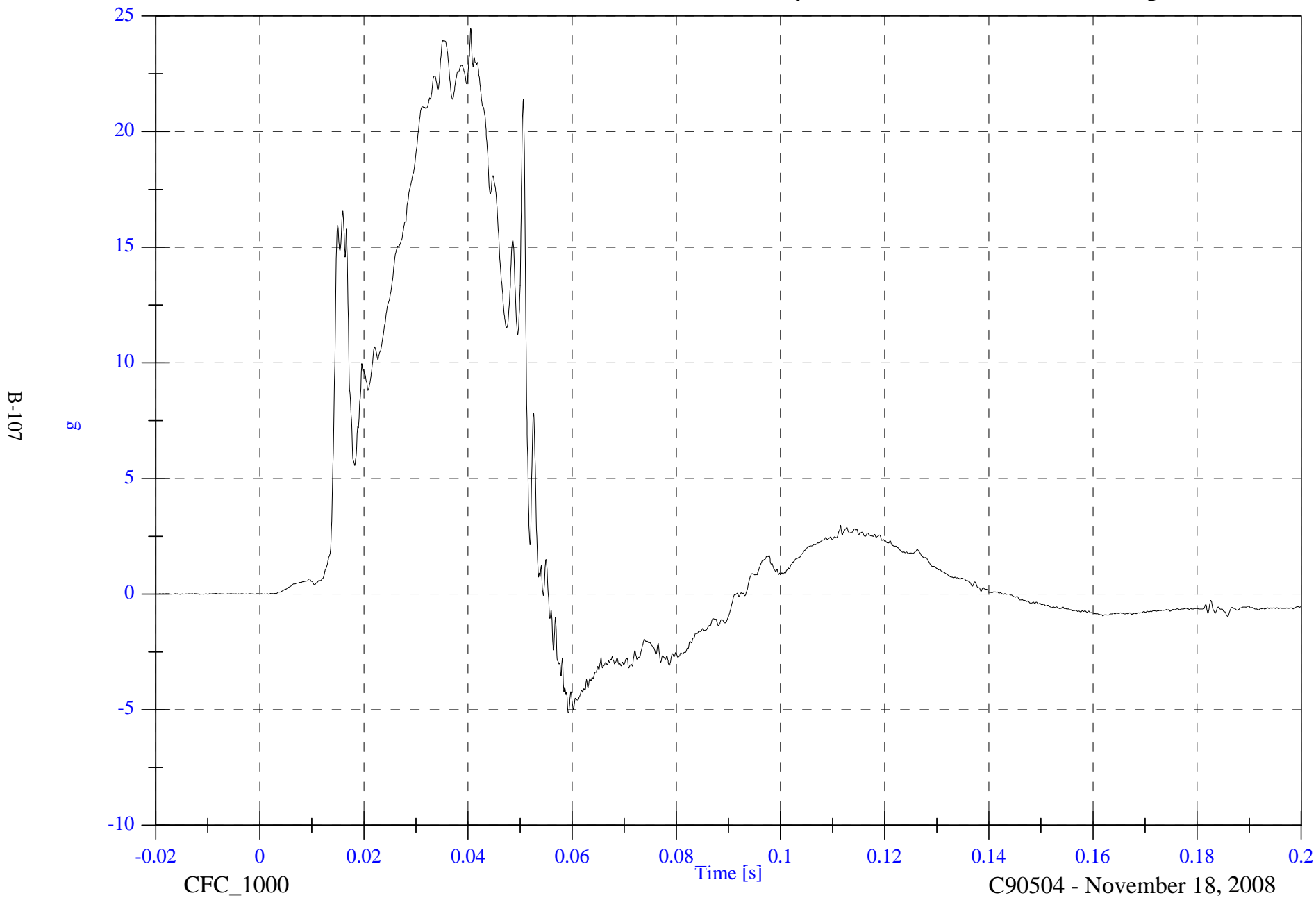
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Pelvic Ry

Max: 24.5 [g] at 0.040 [s]

Min: -5.1 [g] at 0.059 [s]

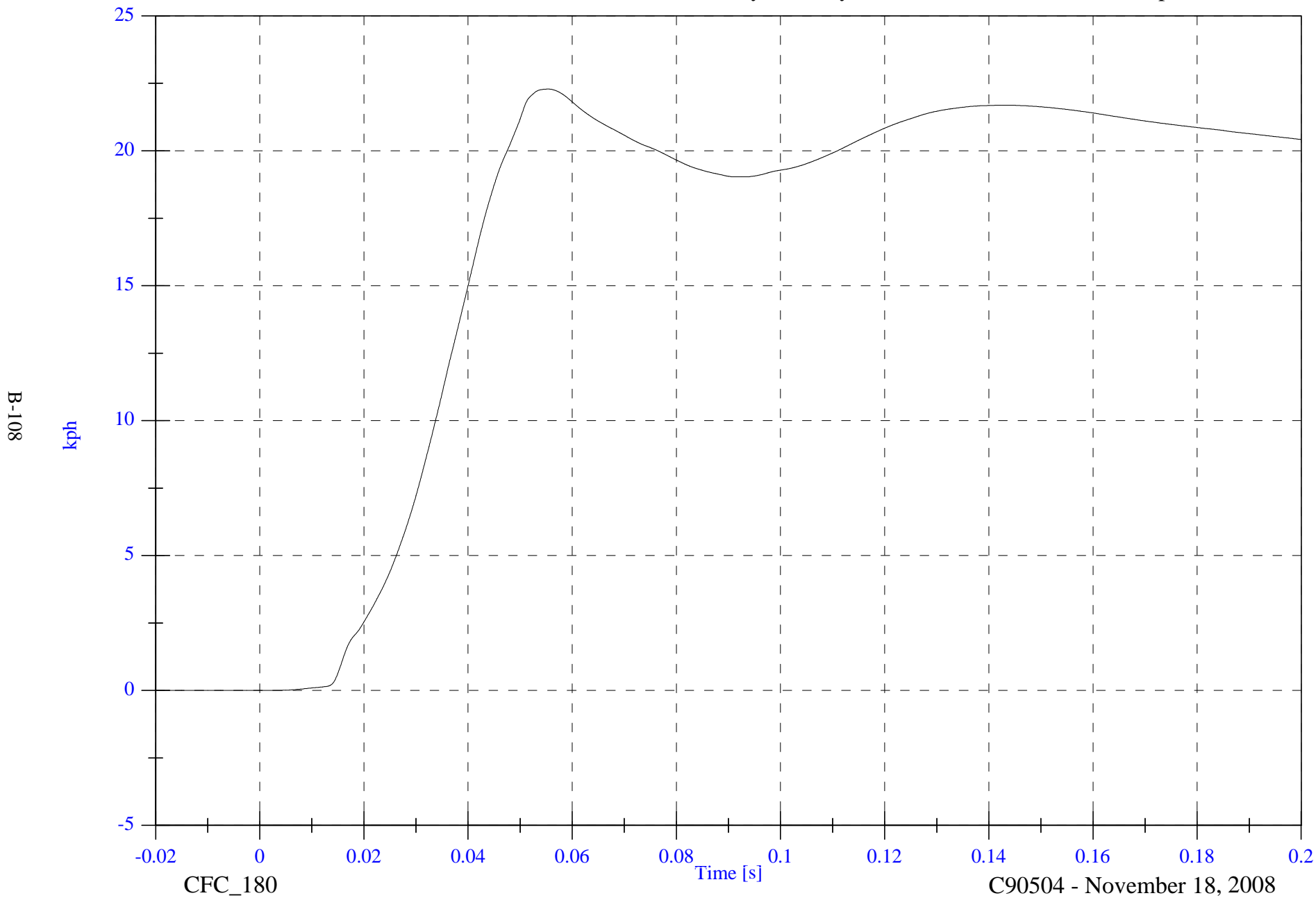


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

Max: 22.3 [kph] at 0.055 [s]

V2P1 Pelvic Ry Velocity

Min: -0.0 [kph] at -0.020 [s]

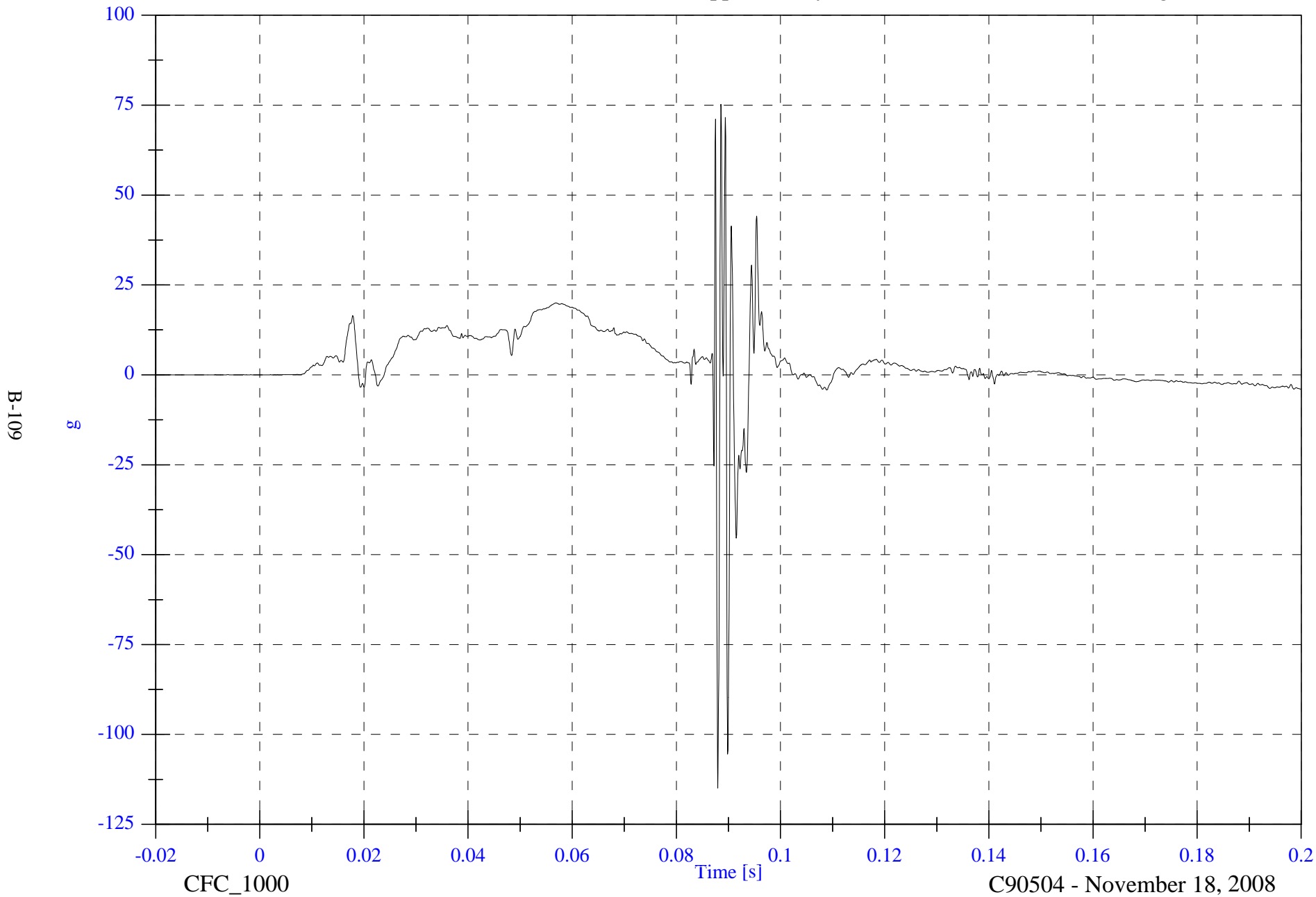


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Upper Rib Ry

Max: 75.2 [g] at 0.089 [s]

Min: -114.9 [g] at 0.088 [s]

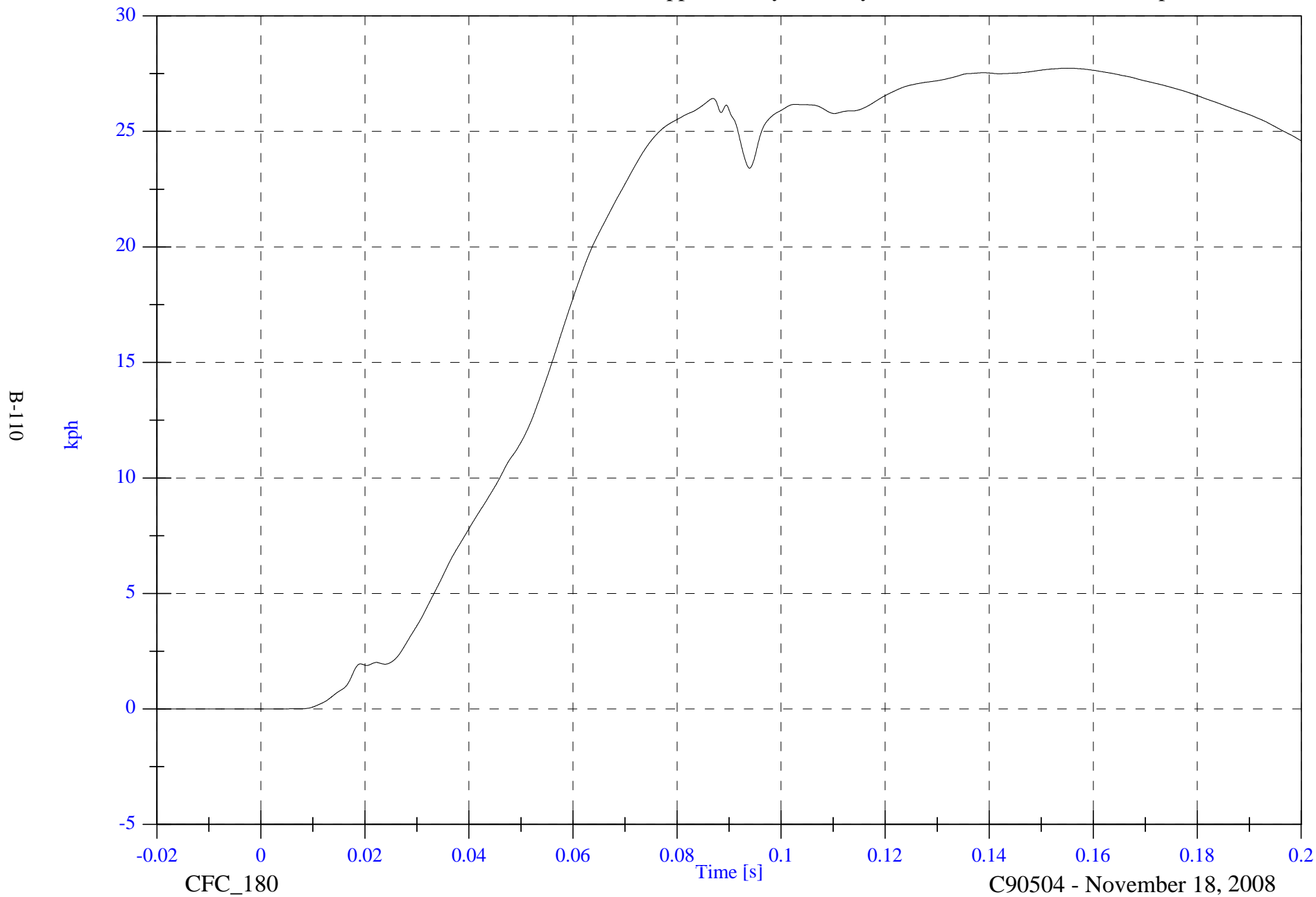


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Upper Rib Ry Velocity

Max: 27.7 [kph] at 0.155 [s]

Min: -0.0 [kph] at -0.020 [s]



B-110

CFC_180

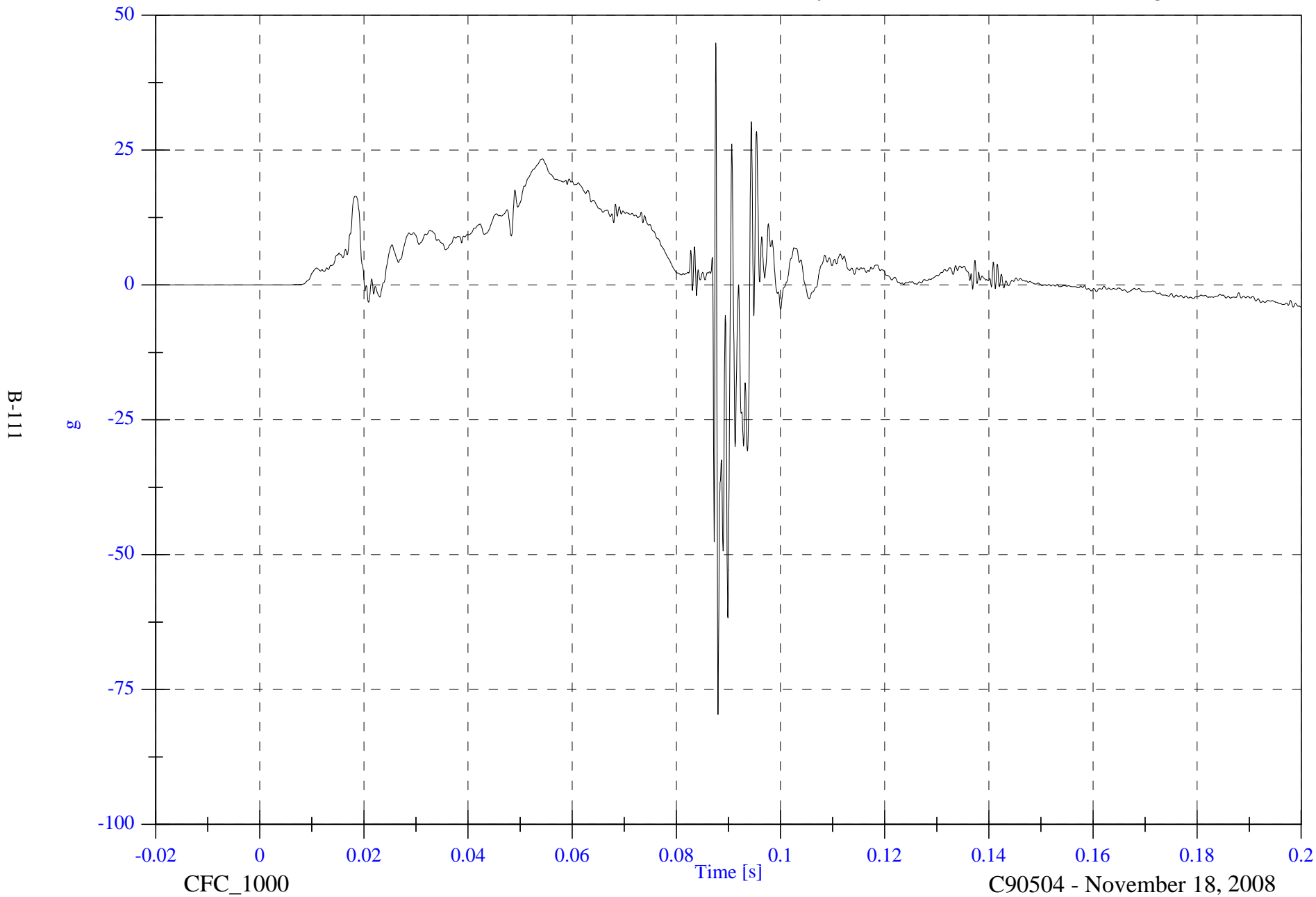
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Rib Ry

Max: 44.9 [g] at 0.088 [s]

Min: -79.6 [g] at 0.088 [s]

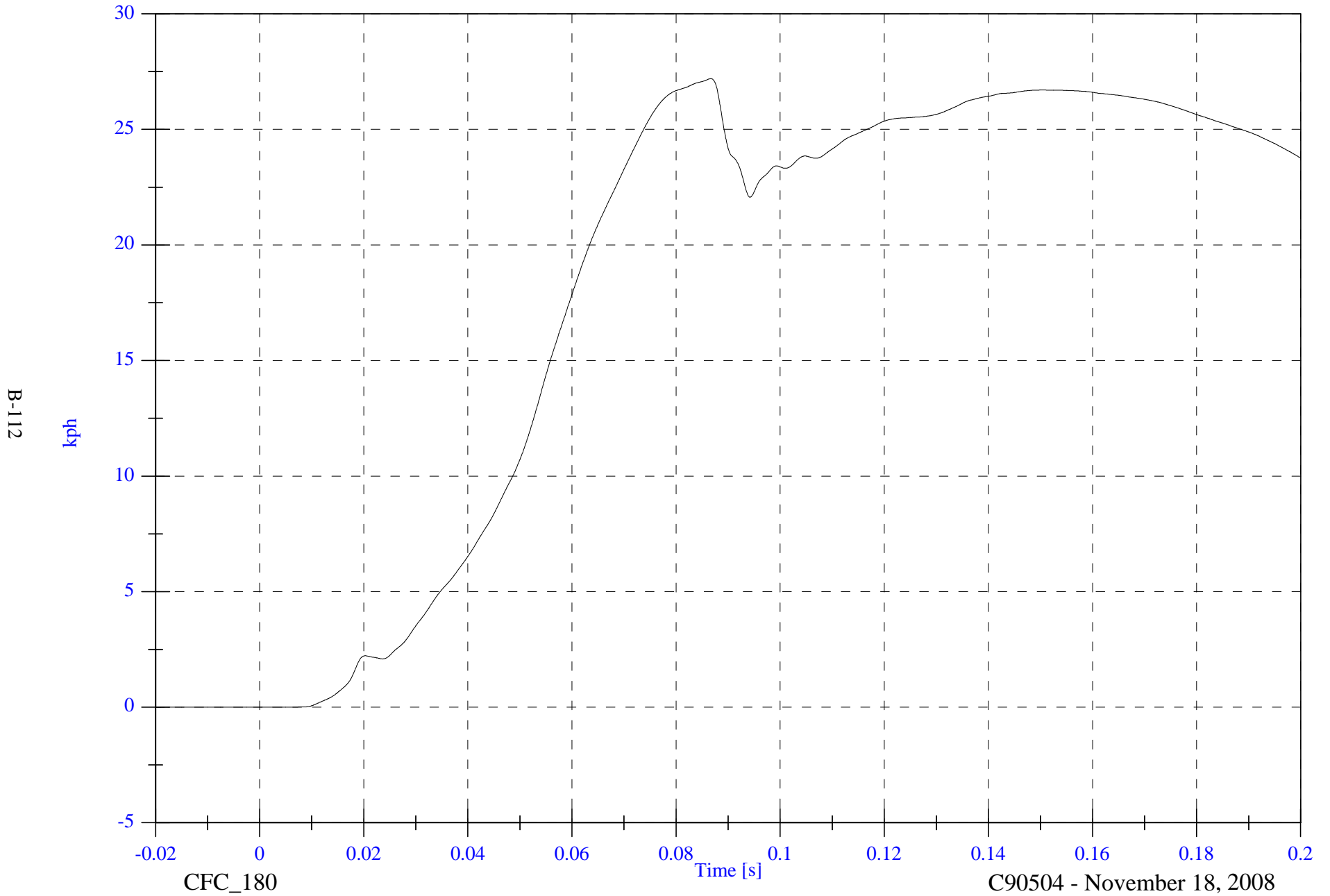


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Rib Ry Velocity

Max: 27.2 [kph] at 0.087 [s]

Min: -0.0 [kph] at -0.020 [s]



B-112

kph

Time [s]

CFC_180

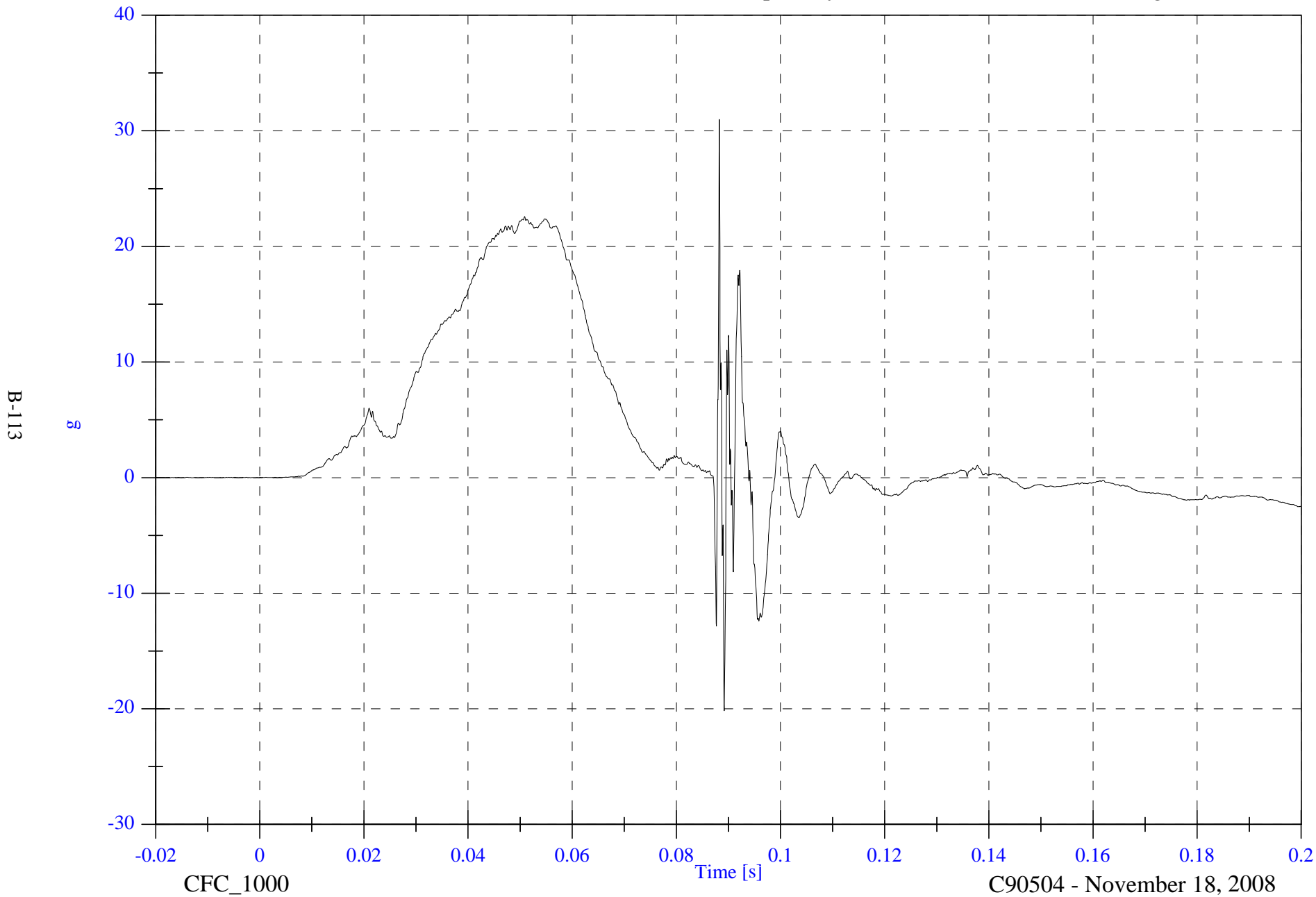
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Spine Ry

Max: 31.0 [g] at 0.088 [s]

Min: -20.2 [g] at 0.089 [s]



B-113

CFC_1000

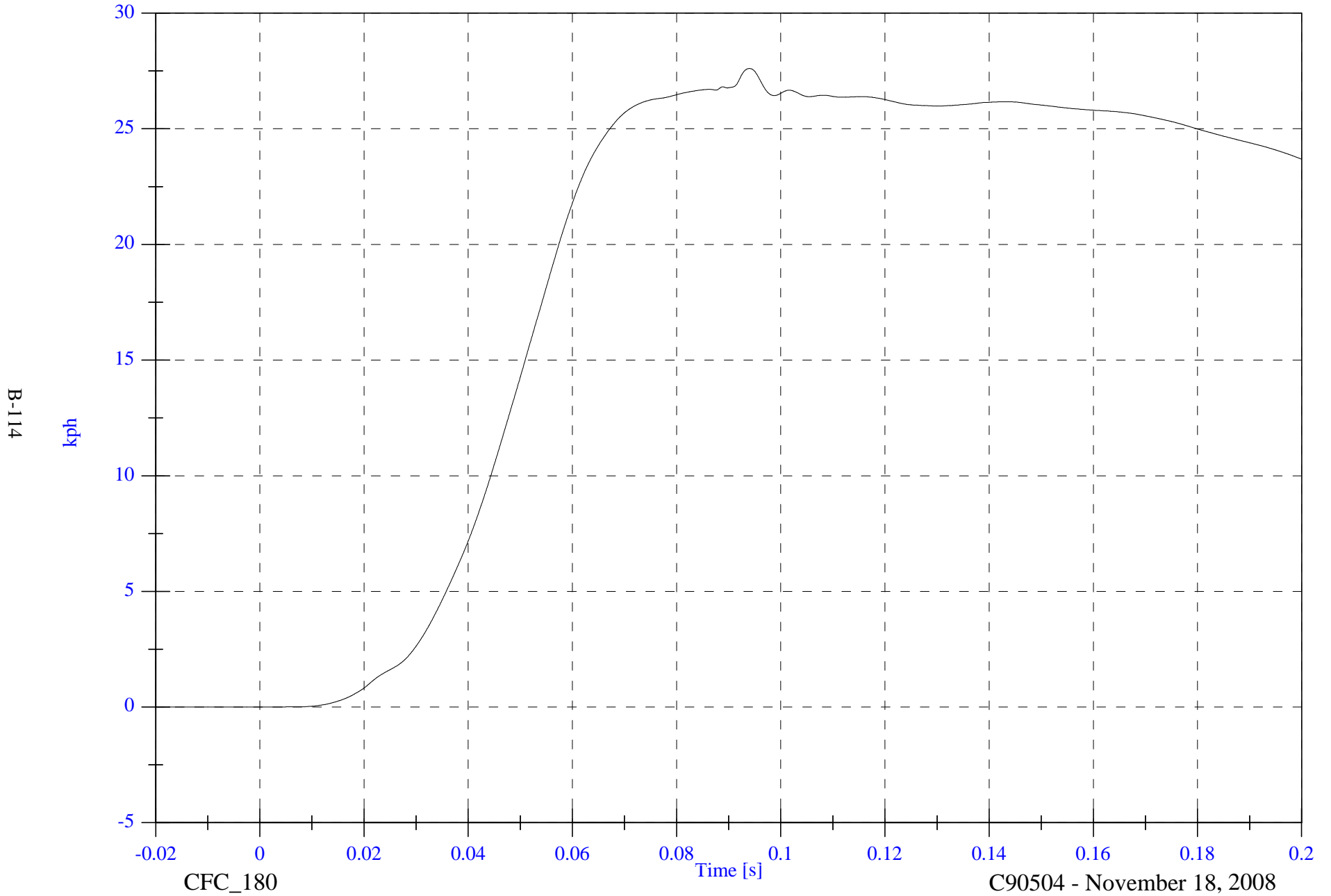
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Spine Ry Velocity

Max: 27.6 [kph] at 0.094 [s]

Min: -0.0 [kph] at -0.018 [s]



B-114

CFC_180

C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Pelvic Ry

Max: 35.1 [g] at 0.050 [s]

Min: -5.2 [g] at 0.090 [s]

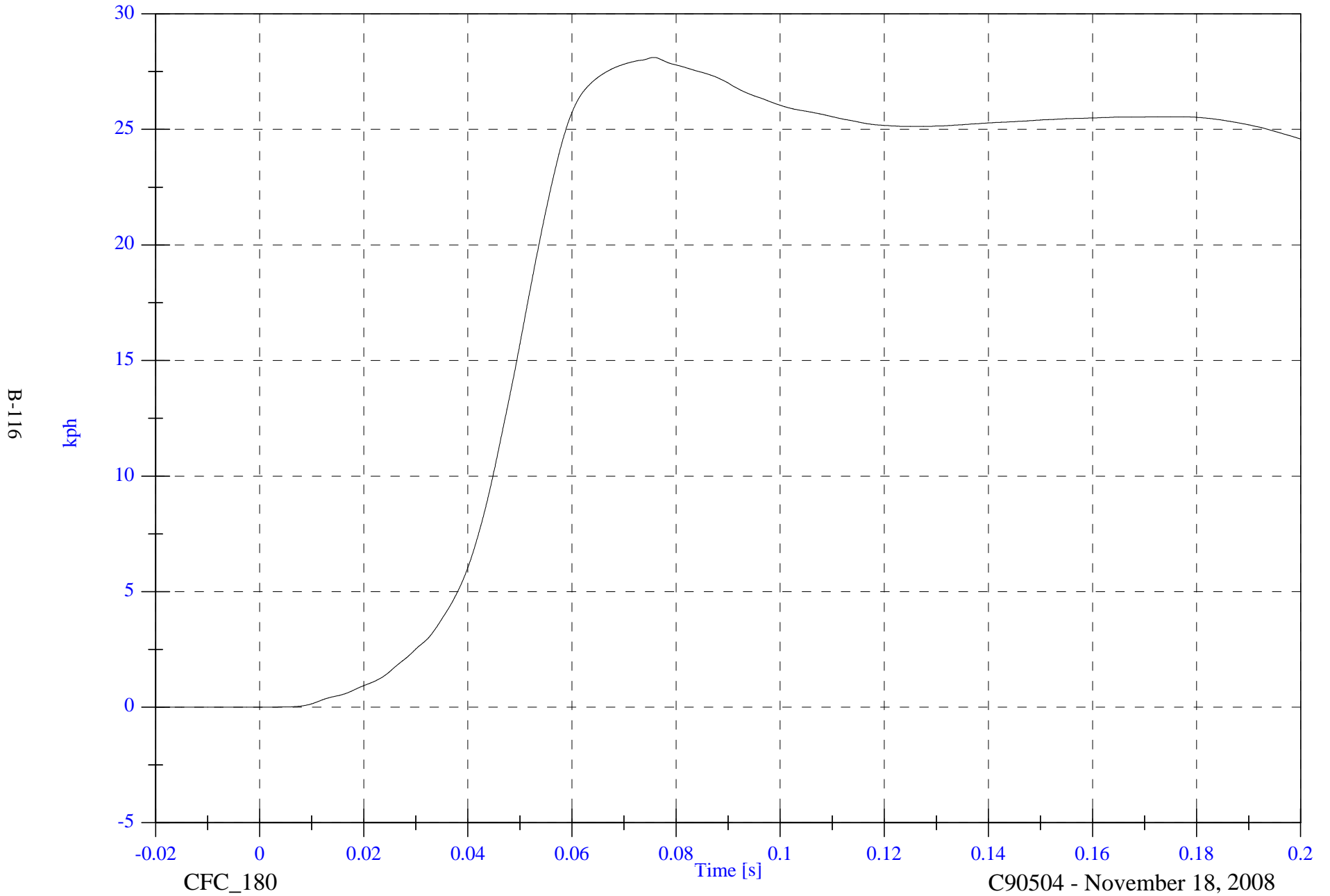


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

Max: 28.1 [kph] at 0.076 [s]

V2P4 Pelvic Ry Velocity

Min: -0.0 [kph] at -0.020 [s]



B-116

CFC_180

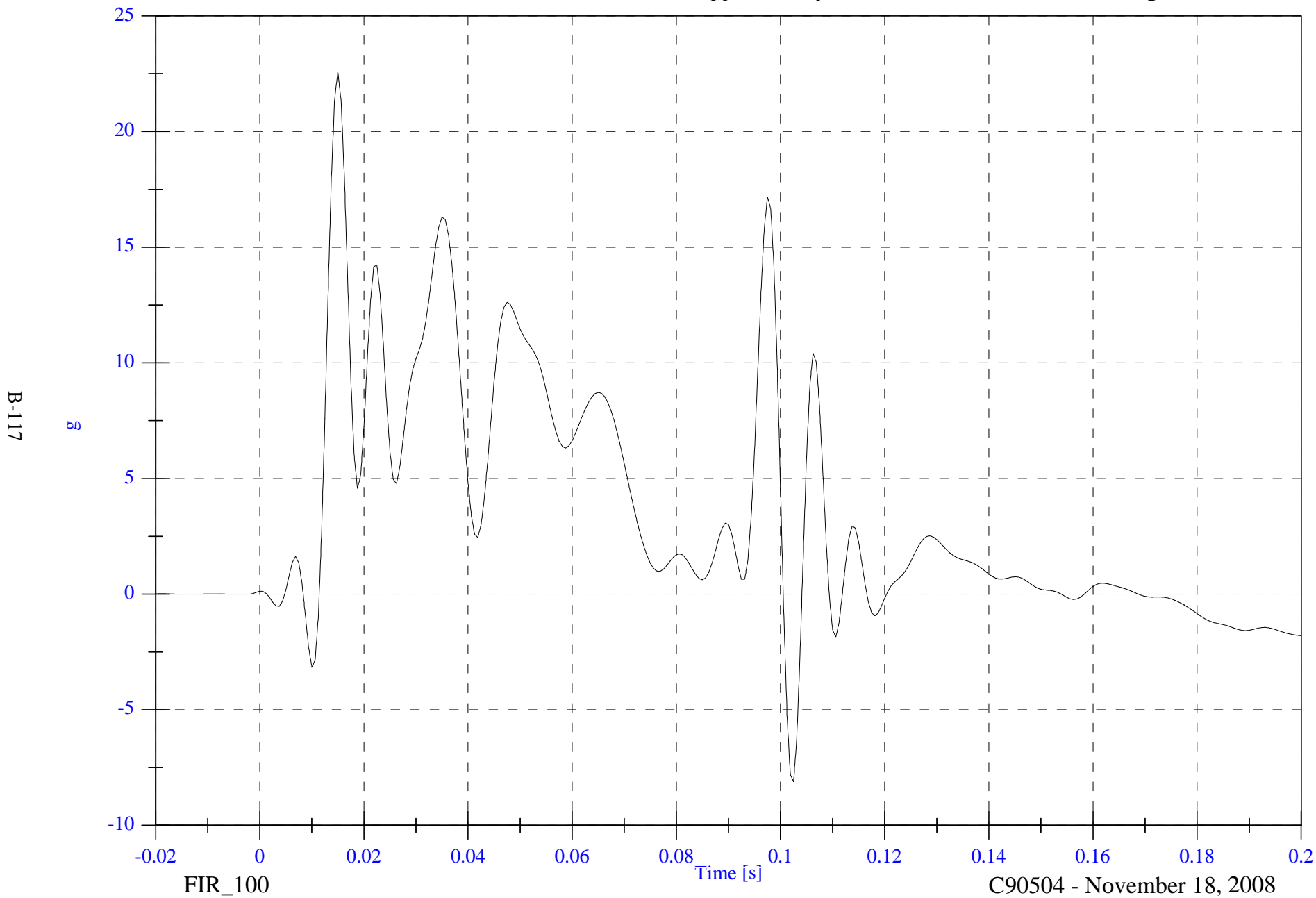
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Upper Rib Ry

Max: 22.6 [g] at 0.015 [s]

Min: -8.1 [g] at 0.102 [s]



B-117

g

FIR_100

Time [s]

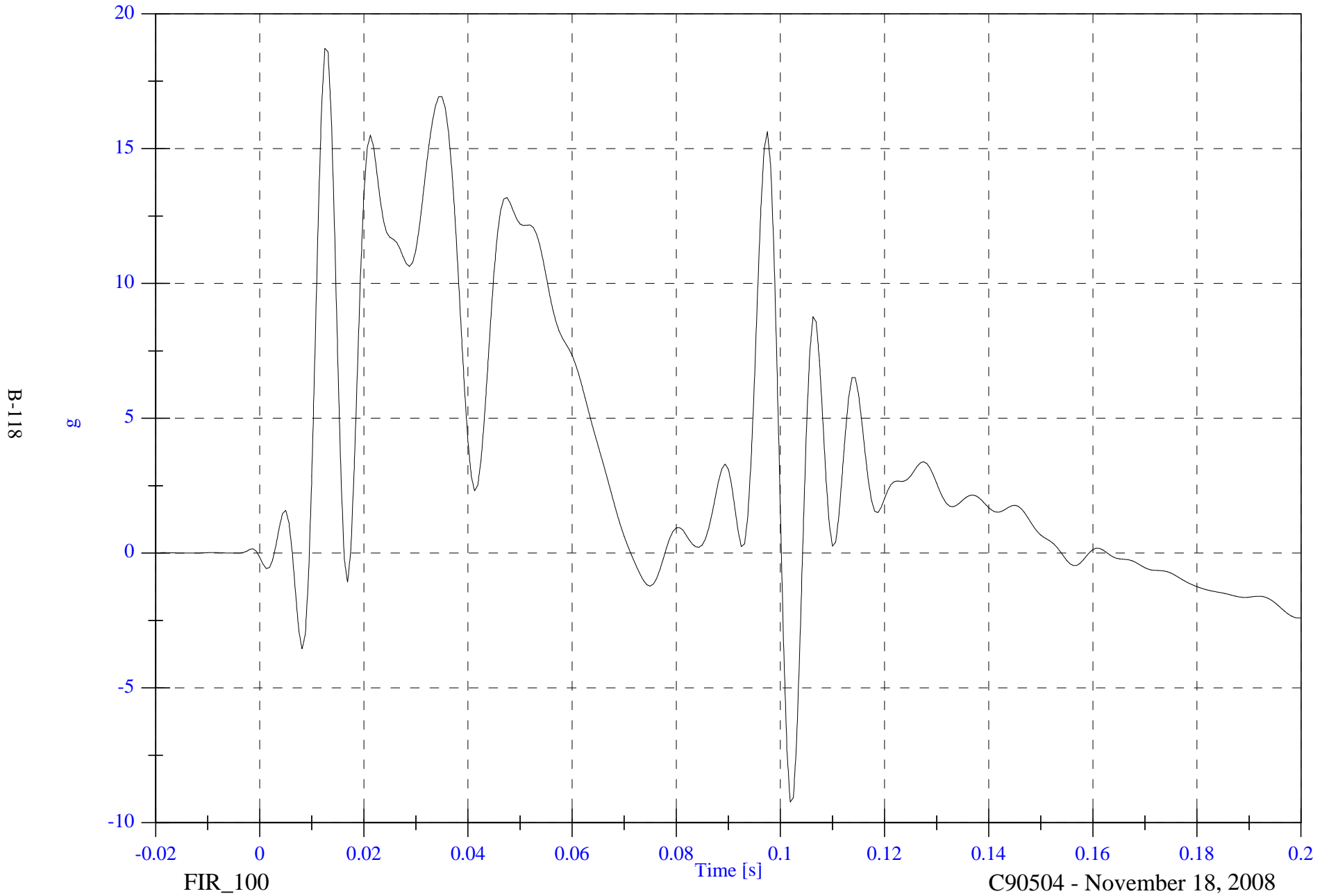
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Rib Ry

Max: 18.7 [g] at 0.012 [s]

Min: -9.2 [g] at 0.102 [s]

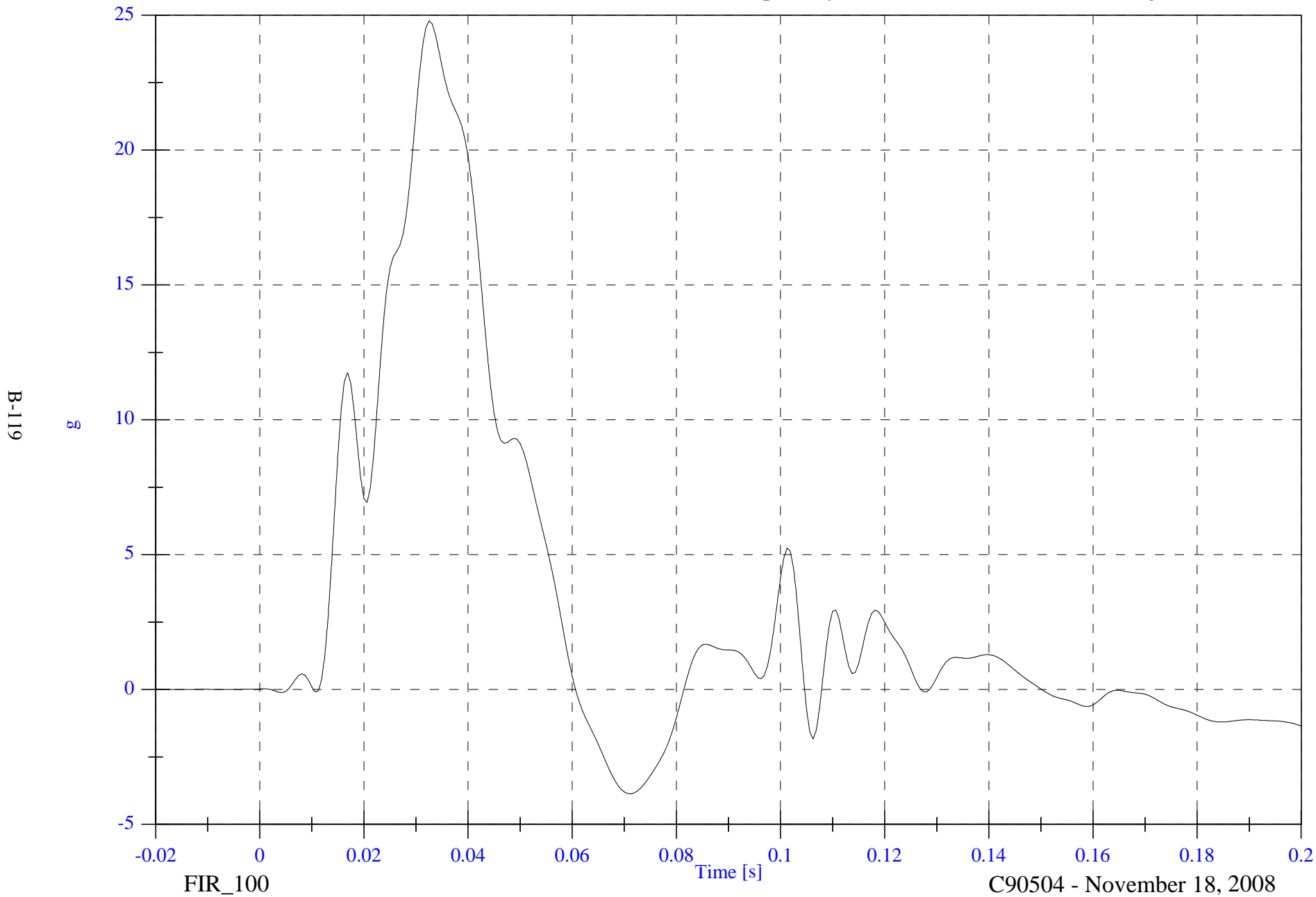


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Lower Spine Ry

Max: 24.8 [g] at 0.032 [s]

Min: -3.9 [g] at 0.071 [s]

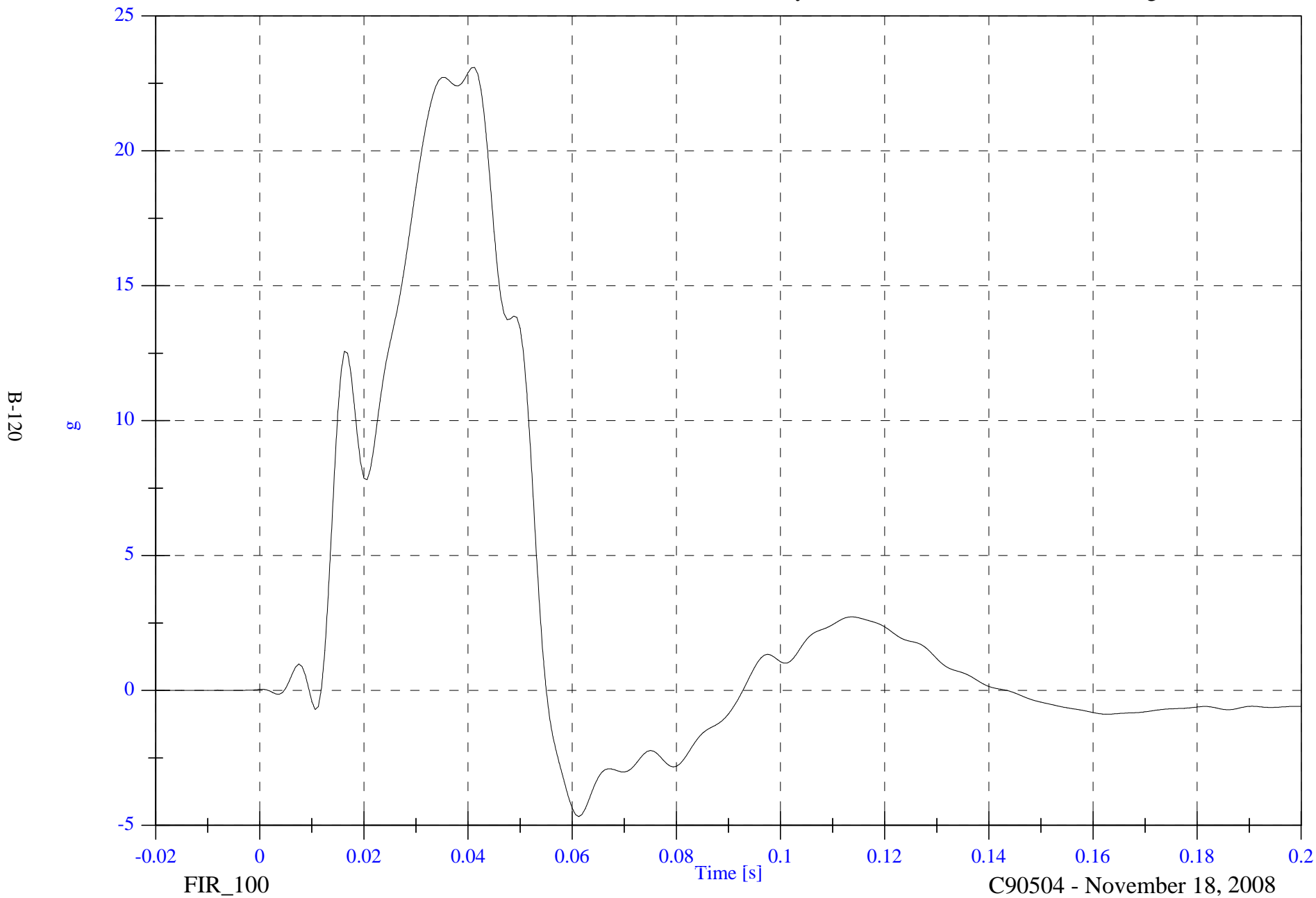


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P1 Pelvic Ry

Max: 23.1 [g] at 0.041 [s]

Min: -4.7 [g] at 0.061 [s]

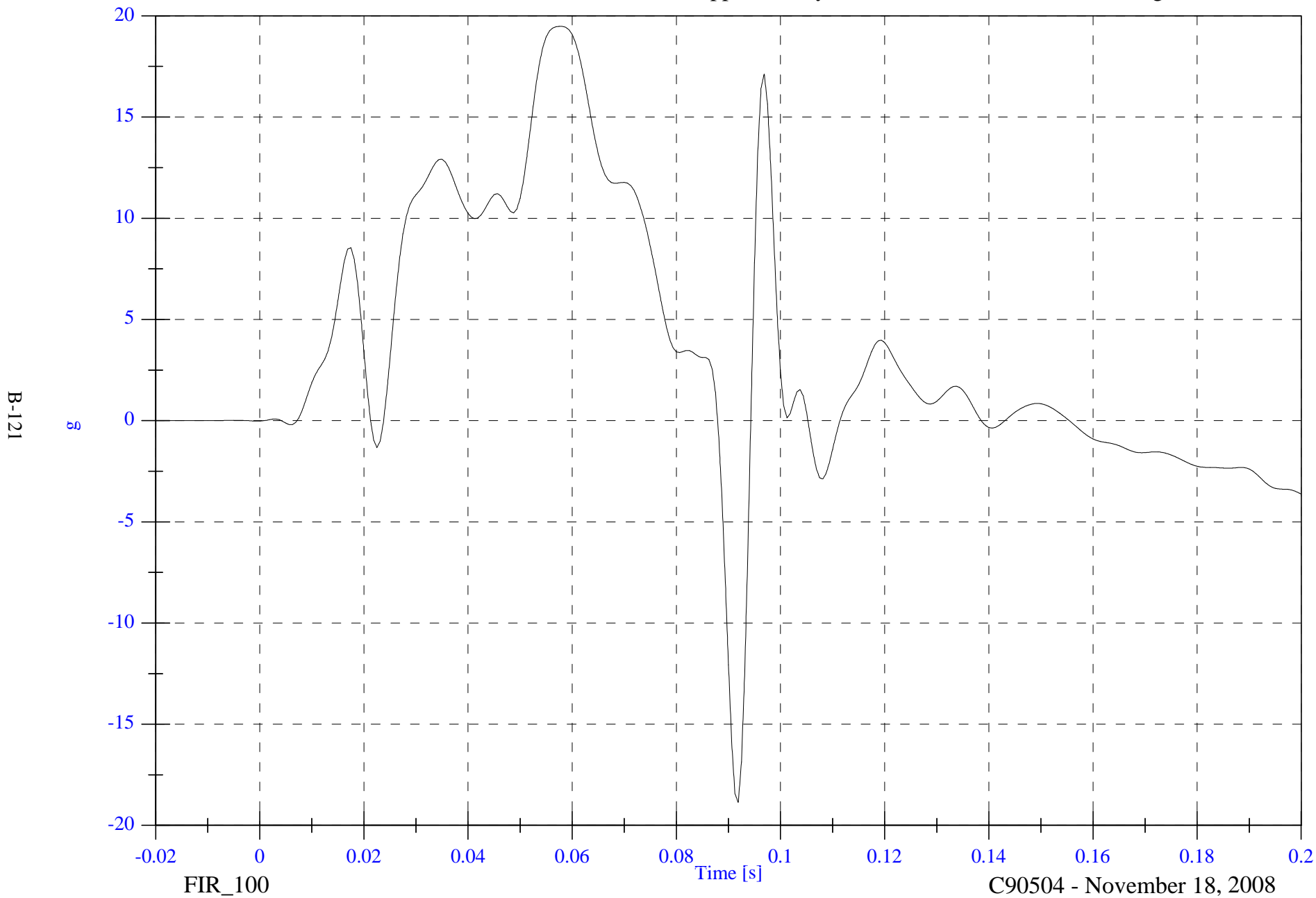


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Upper Rib Ry

Max: 19.5 [g] at 0.057 [s]

Min: -18.9 [g] at 0.092 [s]

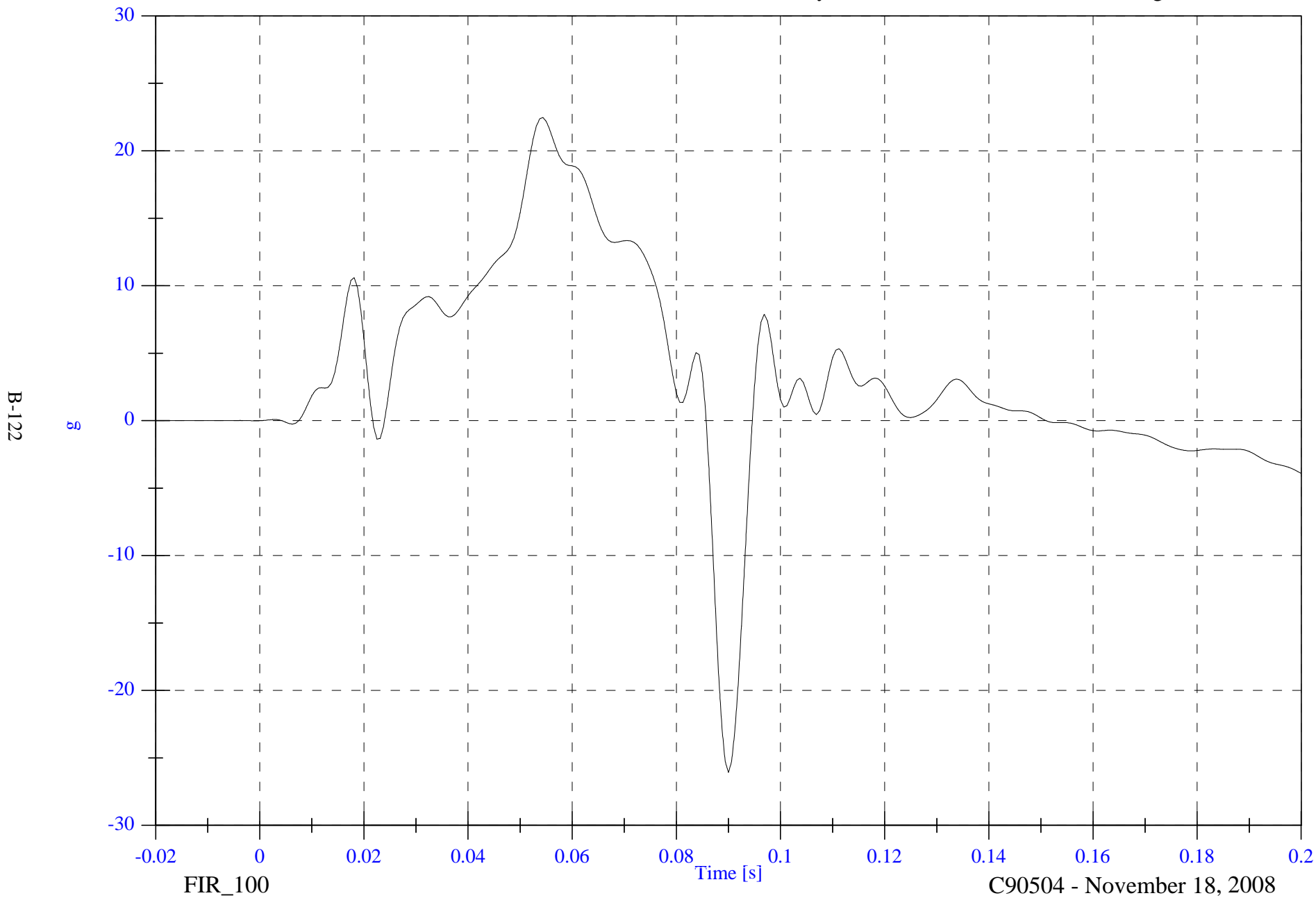


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Rib Ry

Max: 22.5 [g] at 0.054 [s]

Min: -26.1 [g] at 0.090 [s]



B-122

g

FIR_100

Time [s]

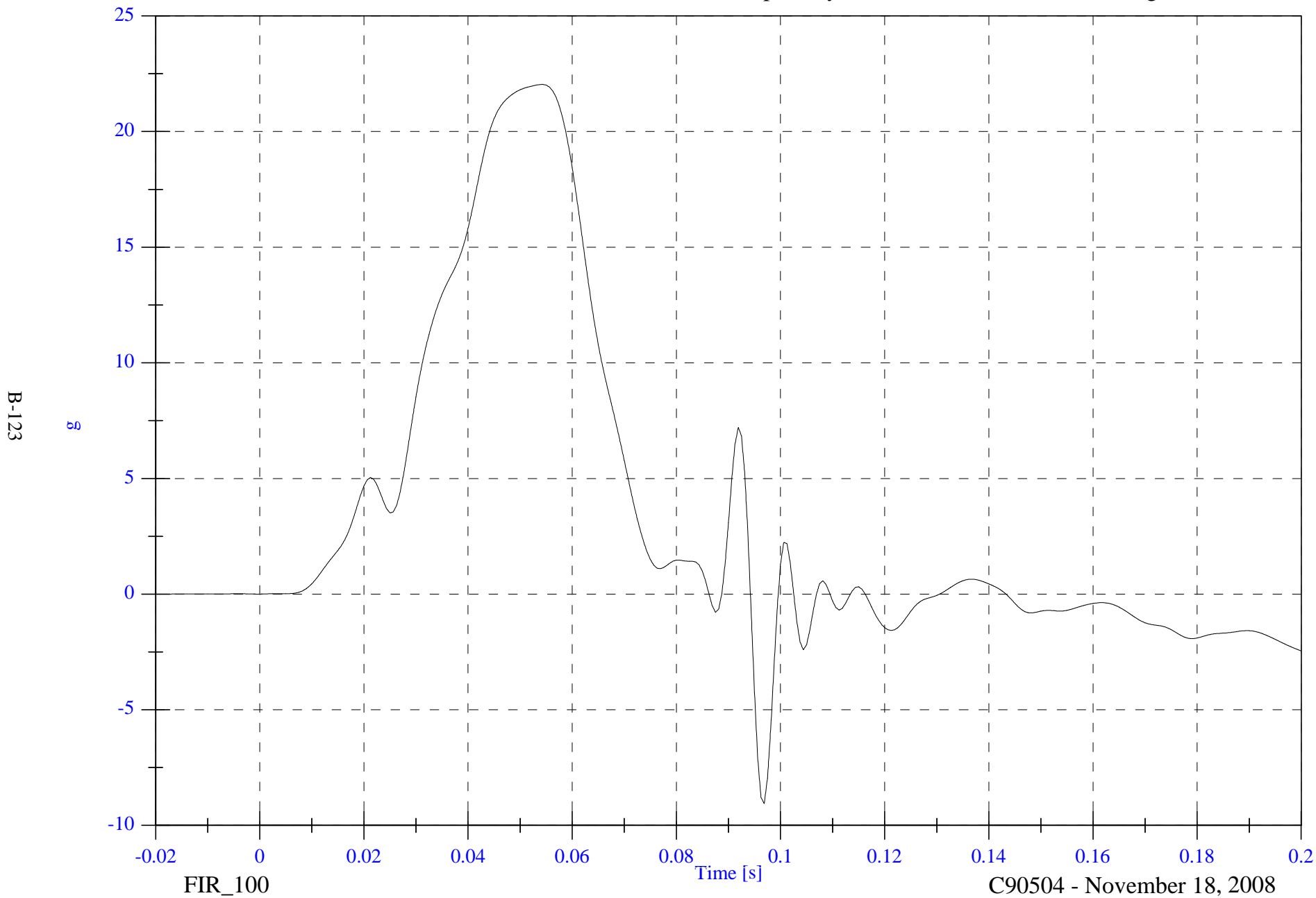
C90504 - November 18, 2008

2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Lower Spine Ry

Max: 22.0 [g] at 0.054 [s]

Min: -9.1 [g] at 0.097 [s]

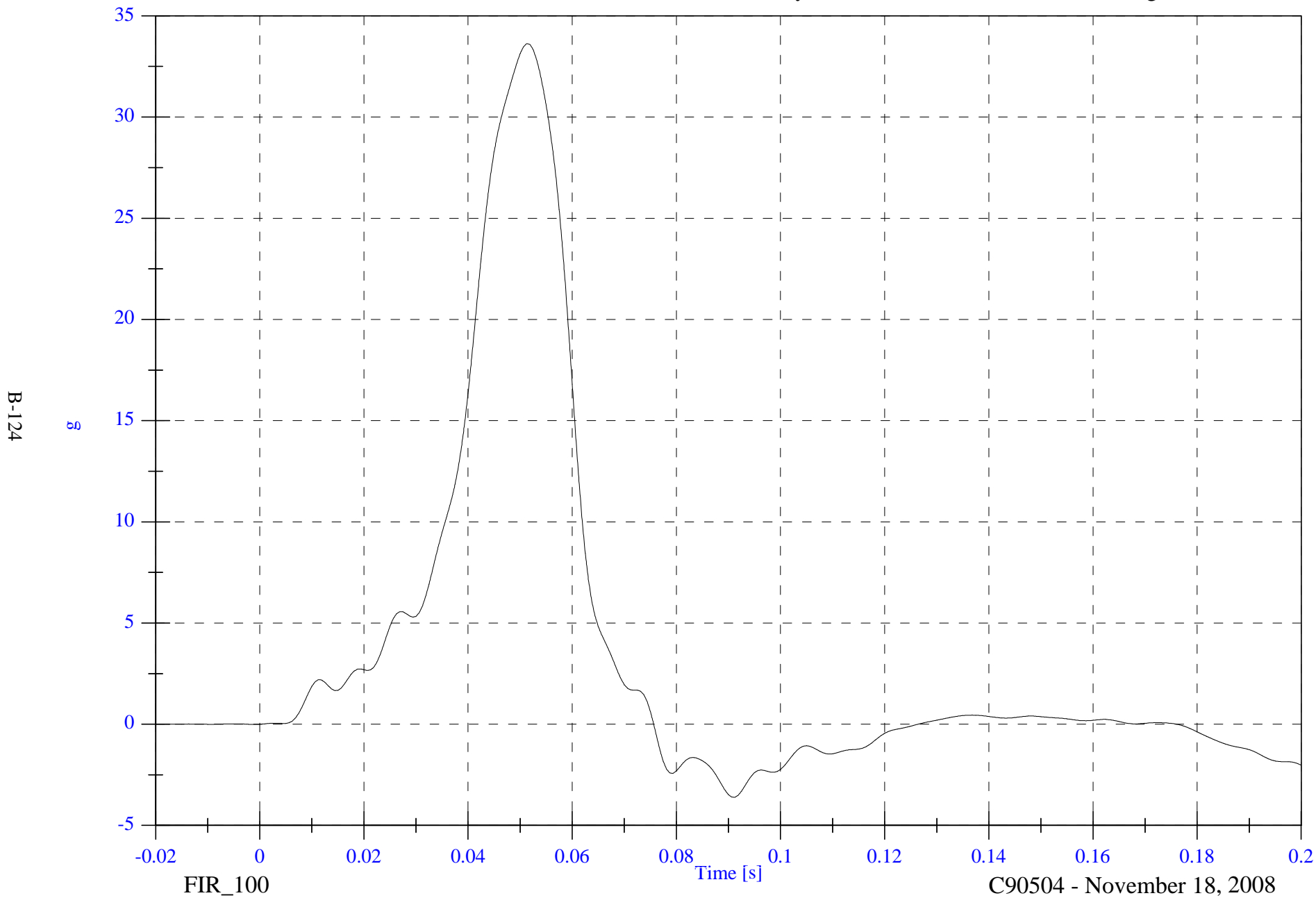


2009 NHTSA 214D Test 4 2009 Hyundai Genesis

V2P4 Pelvic Ry

Max: 33.6 [g] at 0.051 [s]

Min: -3.6 [g] at 0.091 [s]



B-124

FIR_100

C90504 - November 18, 2008

APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

**SUMMARY
SID PRE & POST TEST CALIBRATION**

CONFIGURED FOR LEFT SIDE IMPACT

Date: 11/11/08; 12/16/08

Sequential Test Number: 1

Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	SID NO.: 013		SID NO.: 015	
		PRE TEST	POST TEST	PRE TEST	POST TEST
SH- Seated Height (mm)	889 - 909	905	902	904	902
RH- Rib Height (mm)	501 - 521	510	513	510	511
HP- Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD- Rib from Back Line (mm)	229 - 241	235	239	233	239
KV- Knee Pivot from Back Line (mm)	511 - 526	514	518	516	518
SW- Knee Pivot to Floor (mm)	490 - 505	495	493	496	493
HW- Hip Width (mm)	356 - 391	370	378	369	376
THORAX IMPACTS					
TEMPERATURE (°C)	18.9 - 25.5	21.7	21.7	21.7	21.7
RELATIVE HUMIDITY (%)	10 - 70	22	34	21	34
PROBE SPEED (m/s)	4.27 - 4.33	4.31	4.31	4.31	4.32
UPPER RIB (g's)	37 - 46	40.24	40.13	41.89	39.86
LOWER RIB (g's)	37 - 46	39.80	38.87	39.37	37.08
LOWER SPINE (g's)	15 - 22	19.51	18.31	18.96	18.75
PELVIS IMPACT					
TEMPERATURE (°C)	18.9 - 25.5	21.7	21.7	21.7	21.7
RELATIVE HUMIDITY (%)	10 - 70	21	34	22	34
PROBE SPEED (m/s)	4.27 - 4.33	4.28	4.30	4.28	4.29
PELVIS (g's)	40 - 60	50.68	47.02	40.66	40.93

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID NO.: 013

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: 11/11/08 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
THORACIC SHOCK ABSORBER TEST	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: 11/11/08 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 – 909	905
RH- Rib Height (mm)	502 – 520	510
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 – 241	235
KH- Knee Pivot from Back Line (mm)	511 – 526	514
KV- Knee Pivot to Floor (mm)	490 – 505	495
HW- Hip Width (mm)	356 - 391	370

REMARKS: None

Shock Test (3.05 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

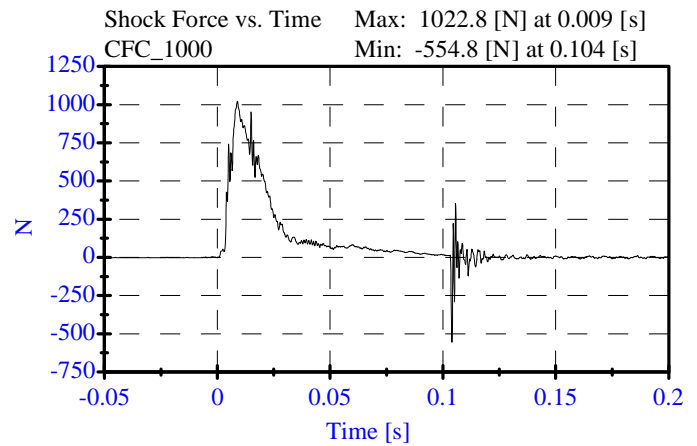
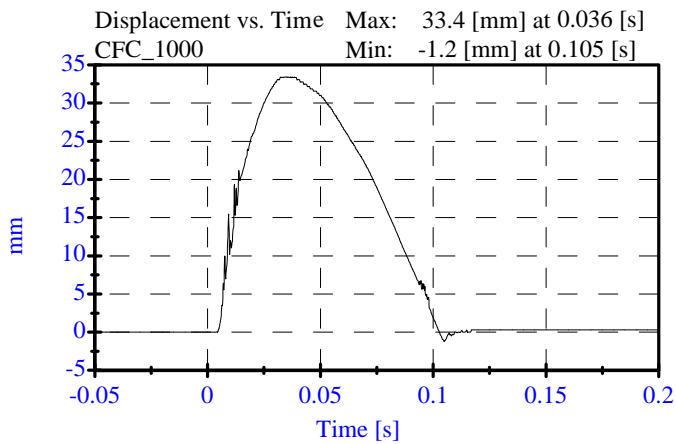
ATD Serial No: 013

Date: 11-10-08

Sequential Test Number: 1 File: 013 SL 11-10-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	24.00 %	Passed
Displacement:	30.00-35.00 mm	33.40 mm	Passed
Maximum Force:	836.00-1125.00 N	1022.84 N	Passed
Impact Test Velocity:	3.05 m/s		
Damper Identification:	013		
Damper Setting:	5		



Shock Test (4.27 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

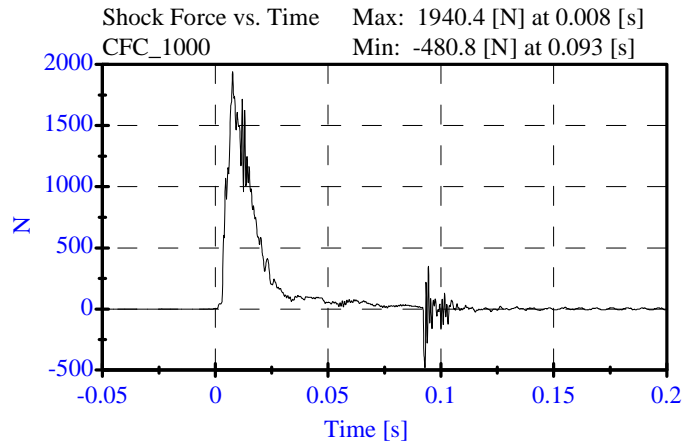
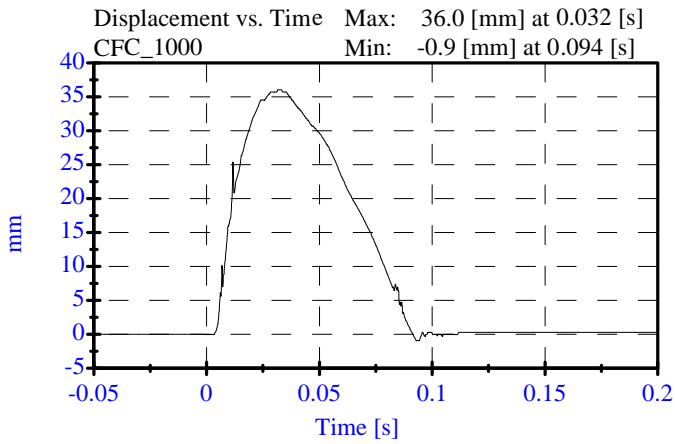
ATD Serial No: 013

Date: 11-10-08

Sequential Test Number: 1 File: 013 SM 11-10-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	24.00 %	Passed
Displacement:	32.00-37.00 mm	36.04 mm	Passed
Maximum Force:	1730.00-2099.00 N	1940.35 N	Passed
Impact Test Velocity:	4.27 m/s		
Damper Identification:	013		
Damper Setting:	5		



Shock Test (6.10 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

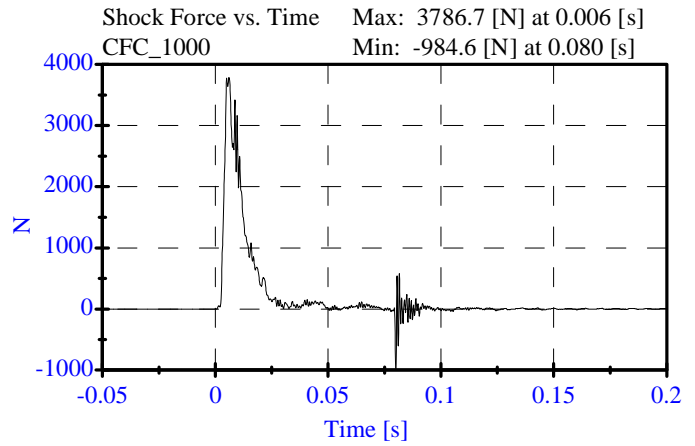
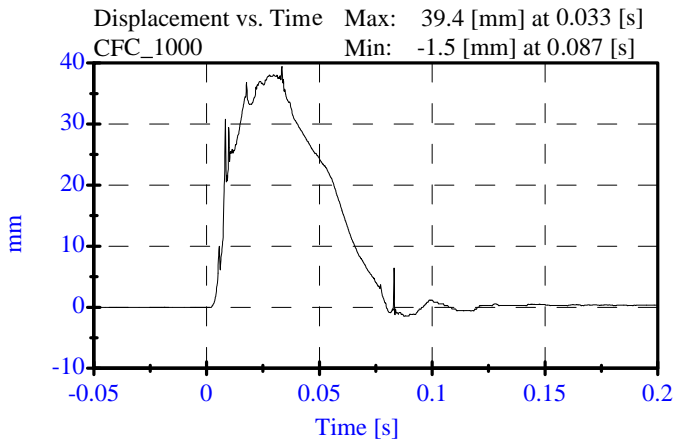
ATD Serial No: 013

Date: 11-10-08

Sequential Test Number: 1 File: 013 SH 11-10-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	24.00 %	Passed
Displacement:	33.00-40.00 mm	39.41 mm	Passed
Maximum Force:	3741.00-4448.00 N	3786.69 N	Passed
Impact Test Velocity:	6.10 m/s		
Damper Identification:	013		
Damper Setting:	5		

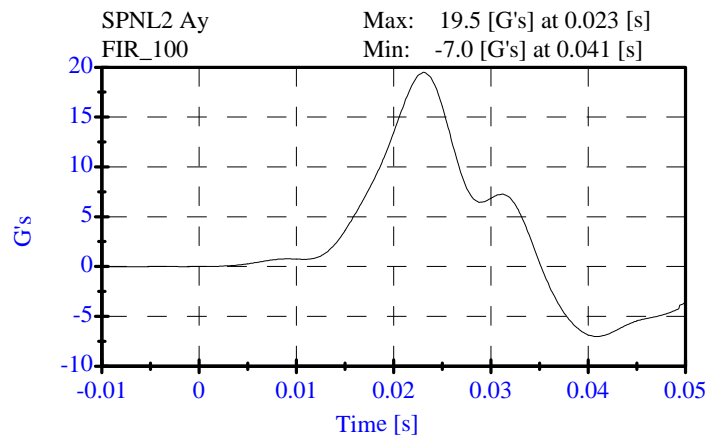
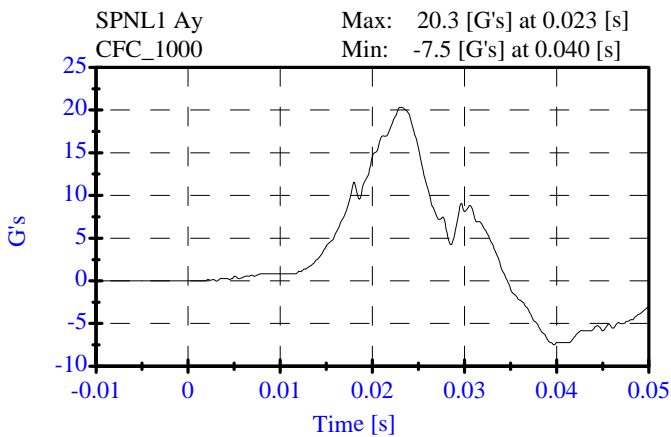
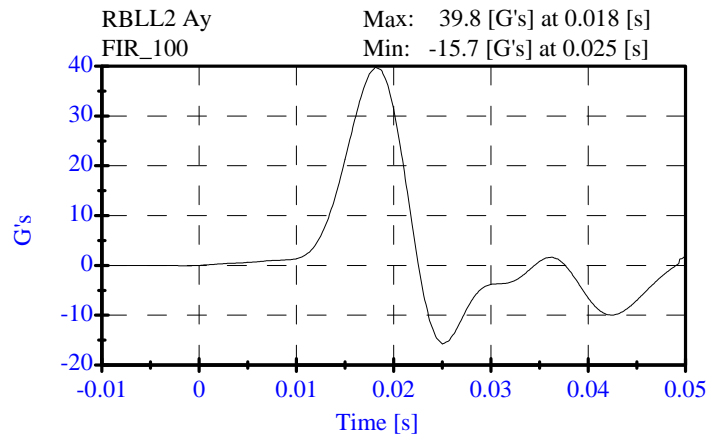
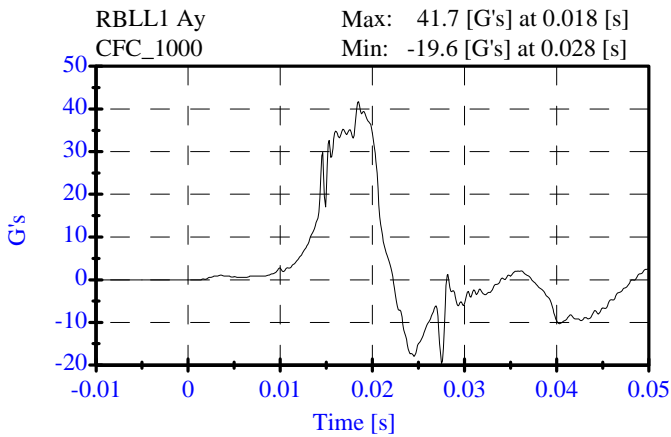
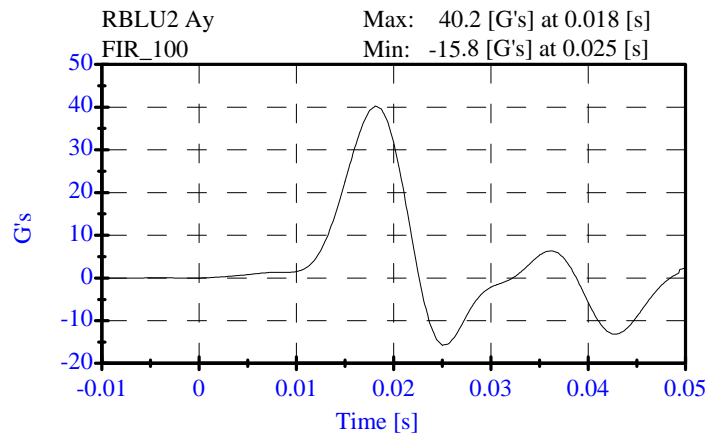
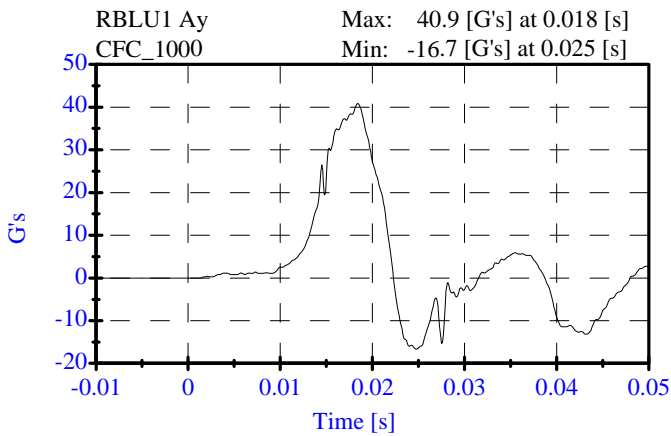


Thorax Impact
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 013
 Date: 11-11-08

Sequential Test Number: 1 File: 013T2 11-11-08
 Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	22.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.31 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	40.24 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	39.80 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	19.51 G's	Passed



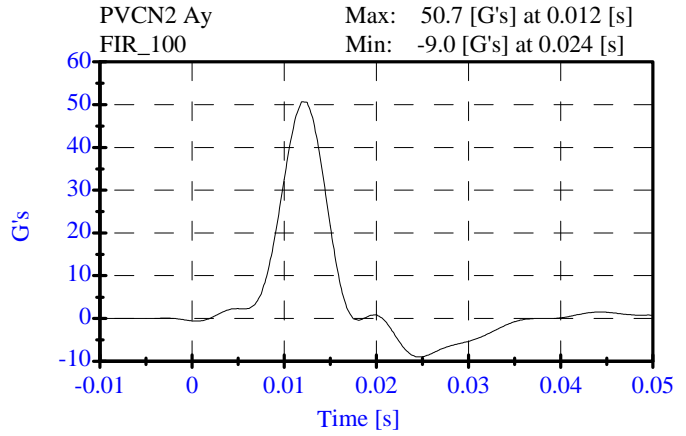
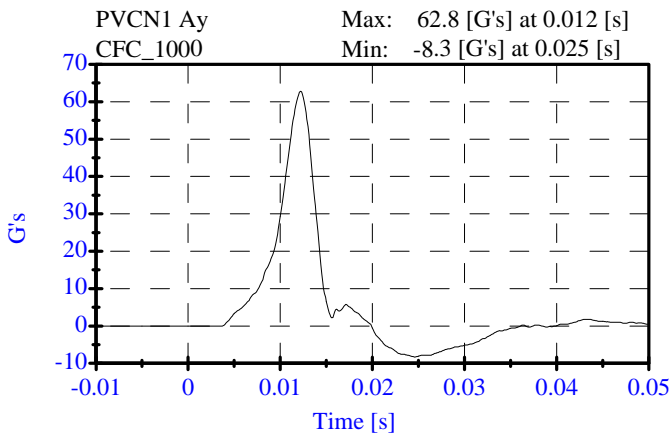
**Pelvis Impact
Pre-Test**

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 013
Date: 11-11-08

Sequential Test Number: 1 File: 013P 11-11-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	21.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.28 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	50.68 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	6.1 ms	Passed



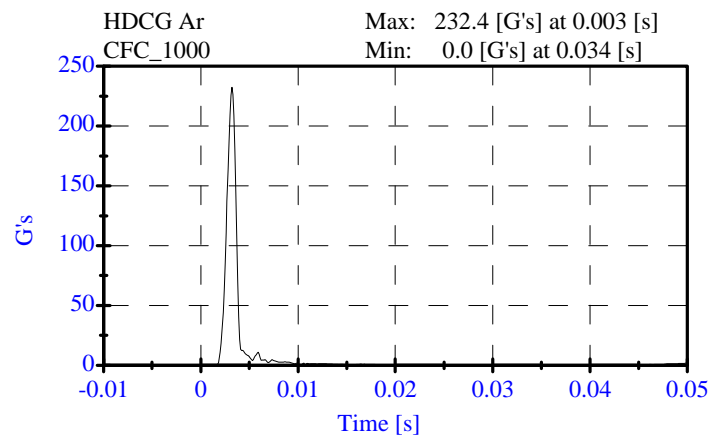
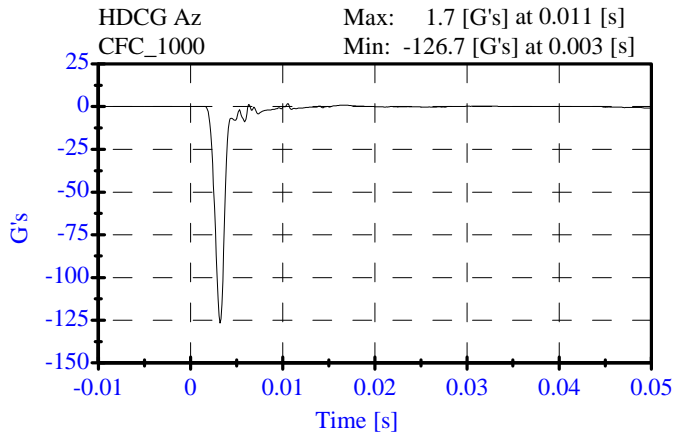
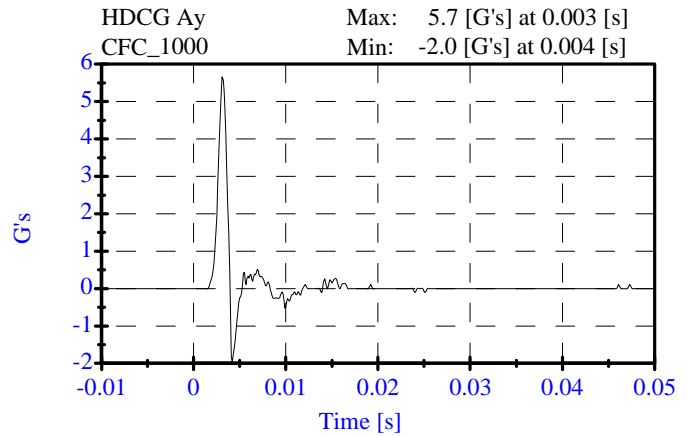
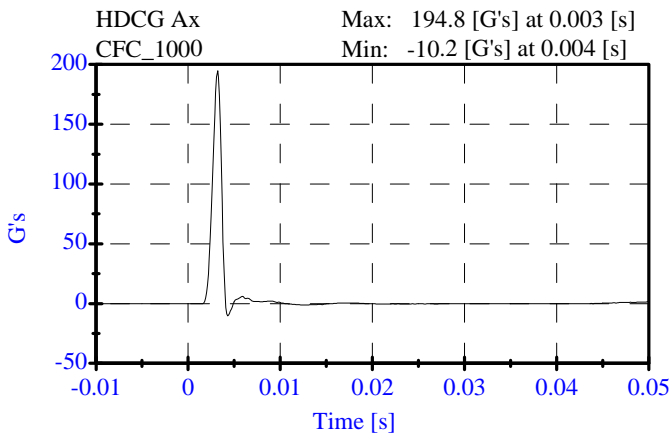
**Head Drop
Pre-Test**

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 013
Date: 11-11-08

Sequential Test Number: 1 File: 013HD 11-11-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.6 C	21.1 C	Passed
Lab Humidity:	10-70 %	31.00 %	Passed
Peak Resultant Accel.:	210-260 Gs	232.44 Gs	Passed
Peak Lateral Accel.:	10 Gs Max	5.66 Gs	Passed
Unimodal Criteria Above 100 Gs:	0.9-1.5 ms	1.16 ms	Passed
Curve PerCent NonModal:	< 10%	5.44 %	Passed



Abdominal Compression Test

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 013

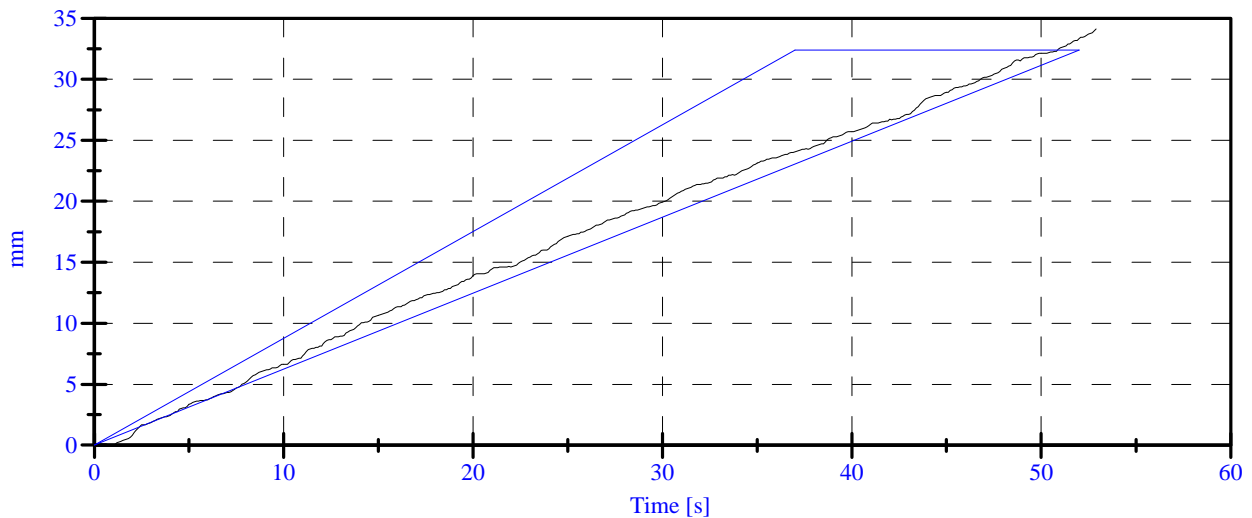
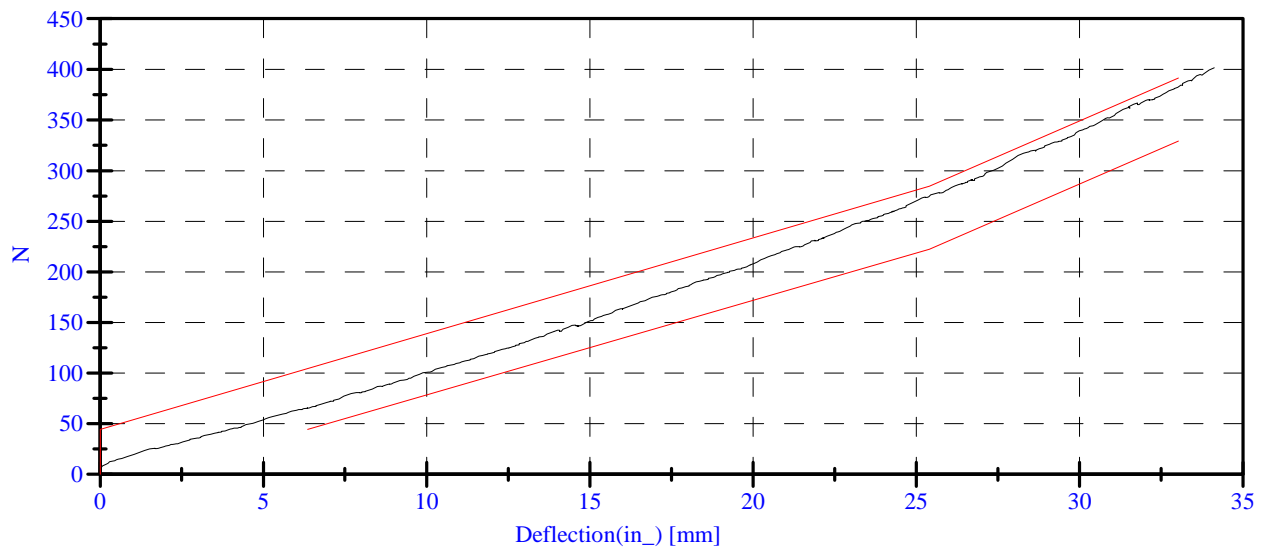
Date: 11-11-08

Sequential Test Number: 1 File: 013 Spine 11-11-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	22.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	130.12 N	Passed
Force at 19.05 mm :	162.98-220.99 N	198.02 N	Passed
Force at 25.40 mm :	221.97-280.02 N	274.31 N	Passed
Force at 33.02 mm :	324.99-391.00 N	382.36 N	Passed

ABDOMINAL COMPRESSION TEST



Lumbar Spine Test

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 013

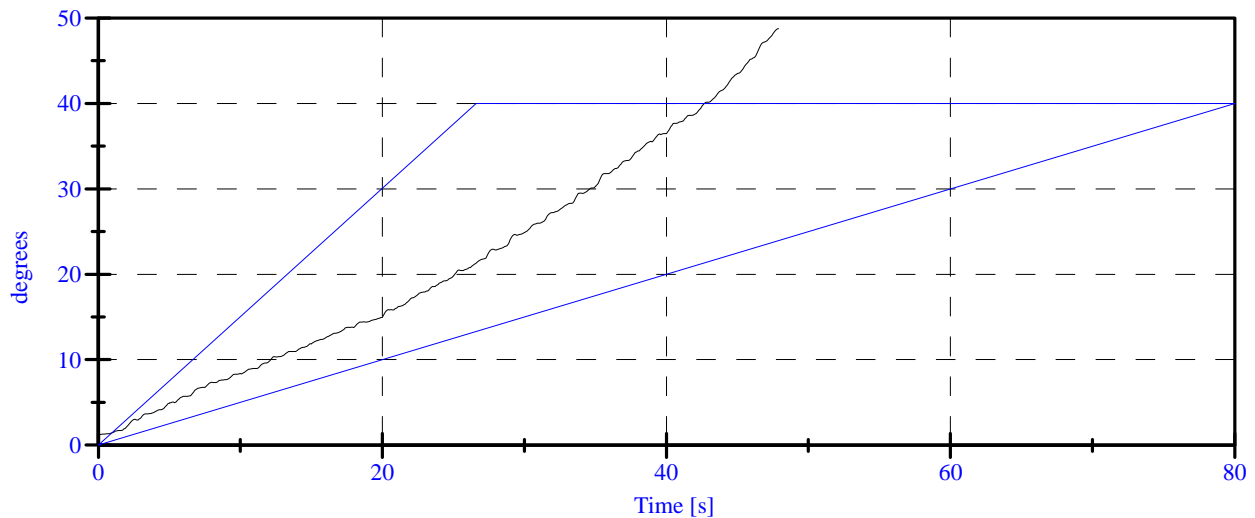
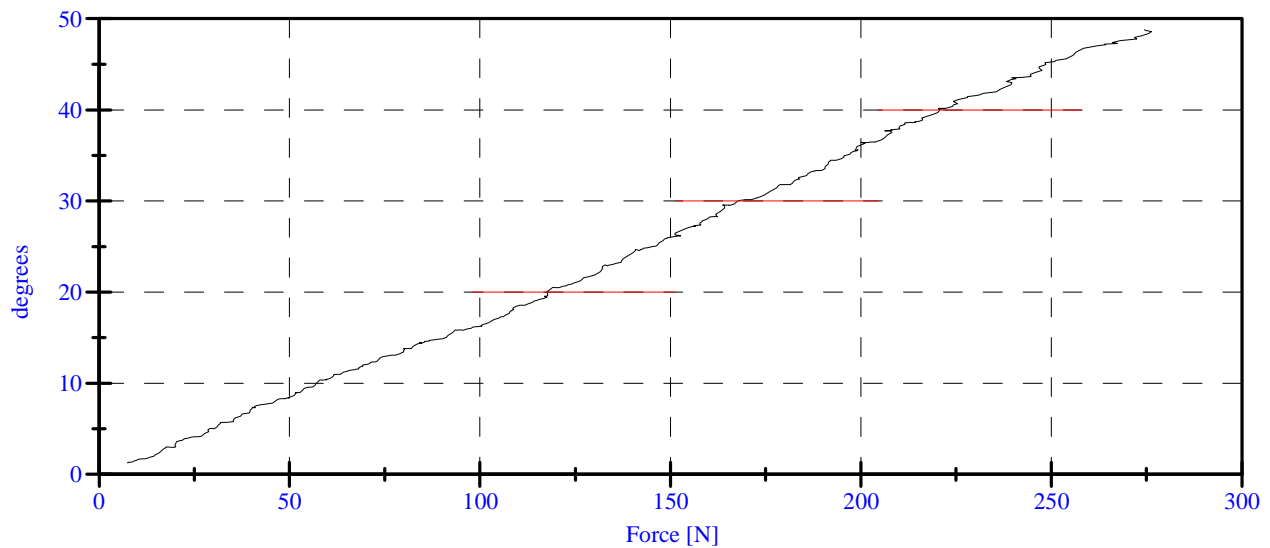
Date: 11-11-08

Sequential Test Number: 1 File: 013 Spine 11-11-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	22.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	7.57 N	Passed
Force at 20 Deg:	97.86-151.24 N	117.52 N	Passed
Force at 30 Deg:	151.24-204.62 N	167.92 N	Passed
Force at 40 Deg:	204.62-258.00 N	220.67 N	Passed
Return Angle	12 Deg Max	6.63 deg	Passed

LUMBAR SPINE FLEXION TEST



PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
 Date: 11/09/08 Laboratory Technician: B. Swiecicki

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID NO.: 015

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: 11/11/08 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
THORACIC SHOCK ABSORBER TEST	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: 11/11/08 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	904
RH- Rib Height (mm)	502 - 520	510
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	233
KH- Knee Pivot from Back Line (mm)	511 - 526	516
KV- Knee Pivot to Floor (mm)	490 - 505	496
HW- Hip Width (mm)	356 - 391	369

REMARKS: None

Shock Test (3.05 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

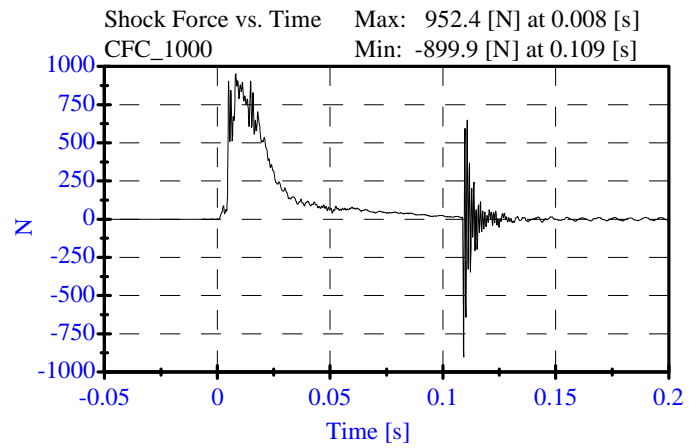
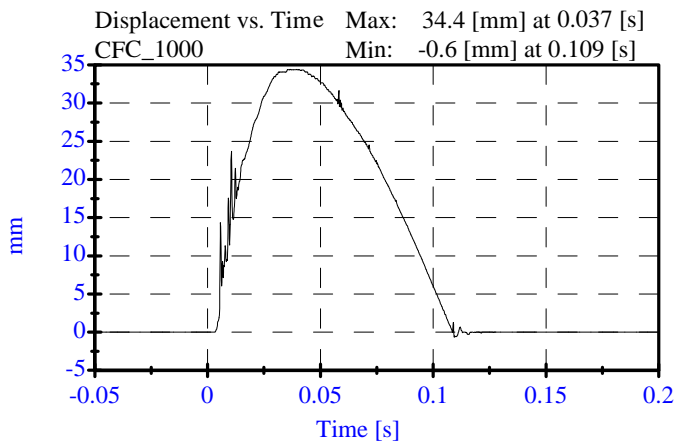
ATD Serial No: 015

Date: 11-10-07

Sequential Test Number: 1 File: 015 SL 11-10-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	24.00 %	Passed
Displacement:	30.00-35.00 mm	34.39 mm	Passed
Maximum Force:	836.00-1125.00 N	952.37 N	Passed
Impact Test Velocity:	3.05 m/s		
Damper Identification:	015		
Damper Setting:	5		



Shock Test (4.27 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 015

Date: 11-10-08

Sequential Test Number: 1 File: 015 SM 11-10-08

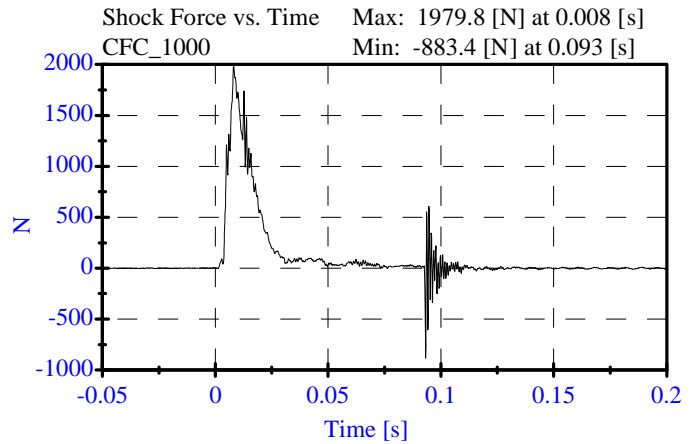
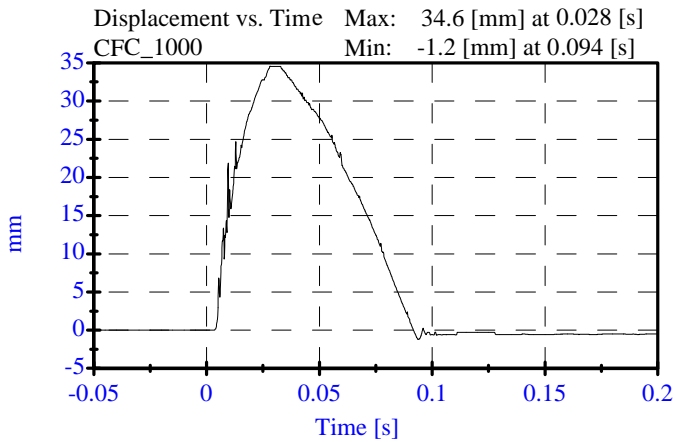
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	24.00 %	Passed
Displacement:	32.00-37.00 mm	34.59 mm	Passed
Maximum Force:	1730.00-2099.00 N	1979.80 N	Passed

Impact Test Velocity: 4.27 m/s

Damper Identification: 015

Damper Setting: 5



Shock Test (6.10 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

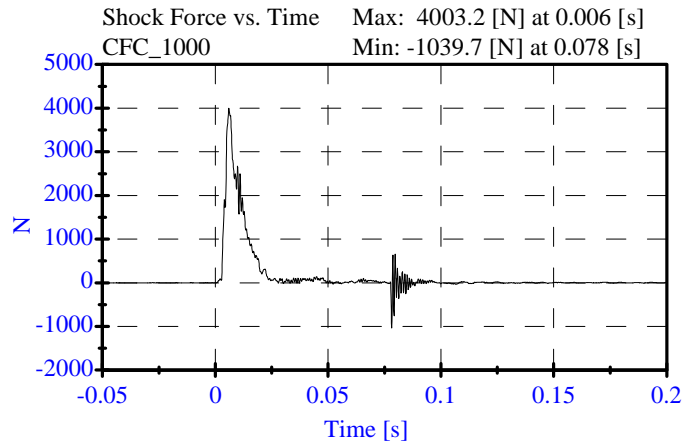
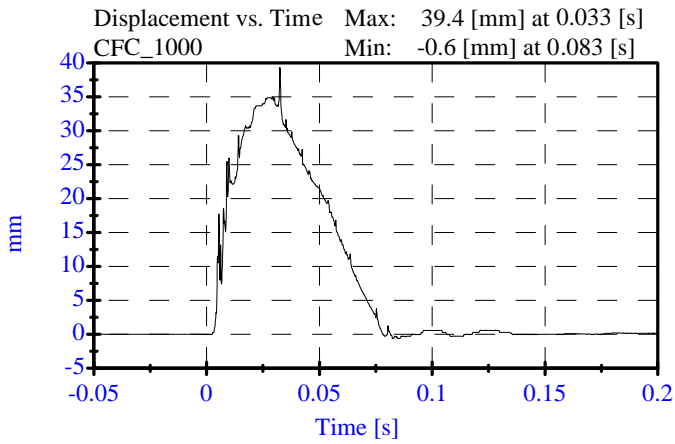
ATD Serial No: 015

Date: 11-11-08

Sequential Test Number: 1 File: 015 SH1 11-11-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	22.00 %	Passed
Displacement:	33.00-40.00 mm	39.35 mm	Passed
Maximum Force:	3741.00-4448.00 N	4003.16 N	Passed
Impact Test Velocity:	6.10 m/s		
Damper Identification:	015		
Damper Setting:	5		



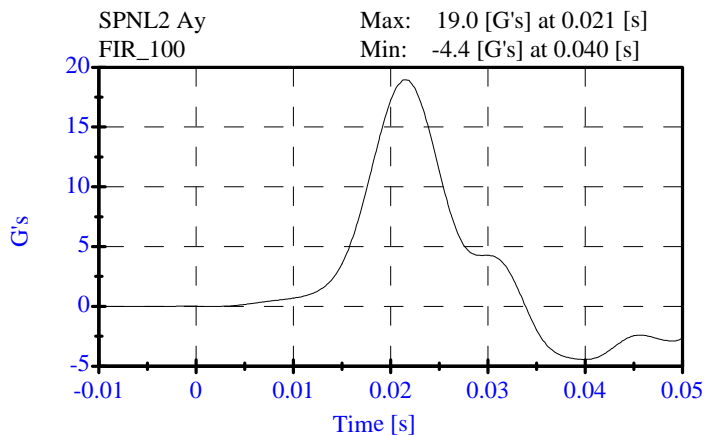
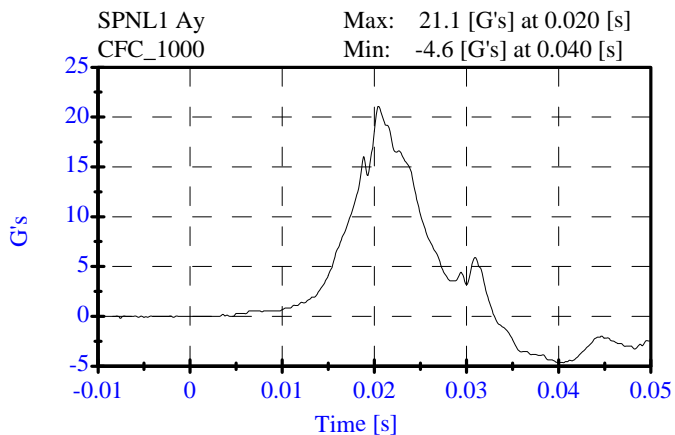
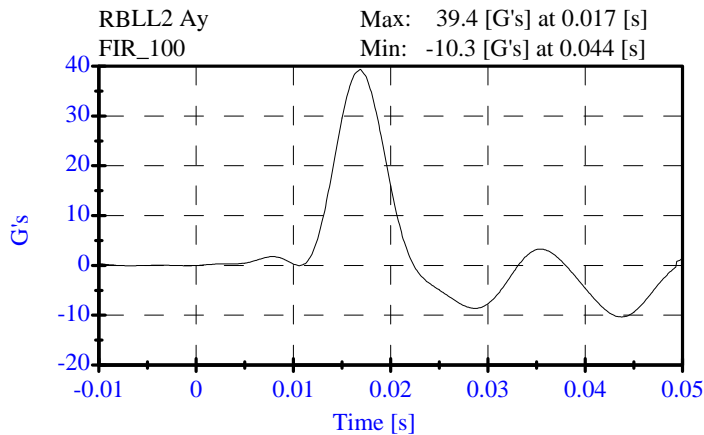
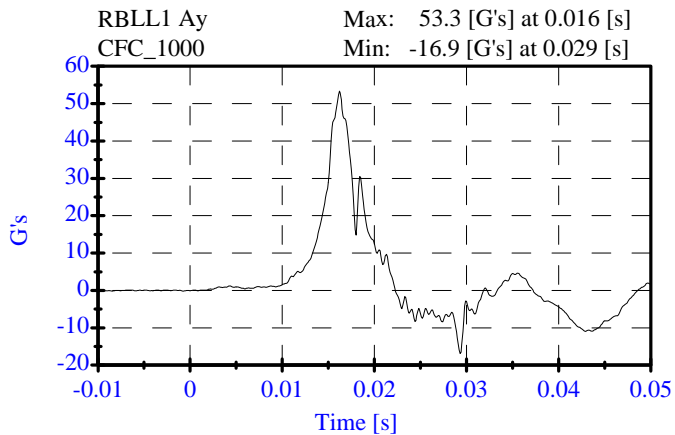
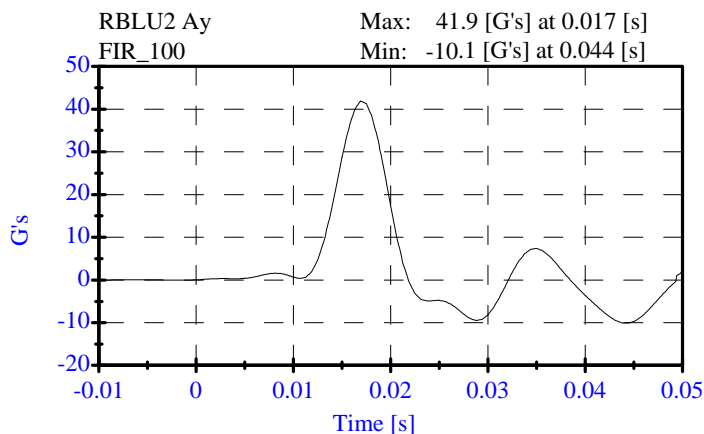
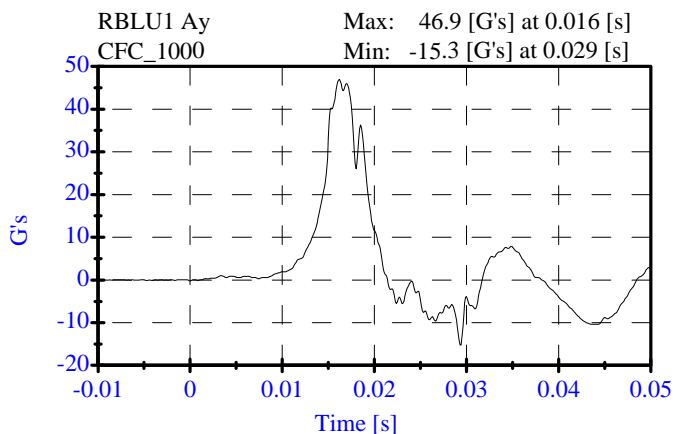
**Thorax Impact
Pre-Test**

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 015
Date: 11-11-08

Sequential Test Number: 1 File: 015T 11-11-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	21.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.31 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	41.89 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	39.37 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	18.96 G's	Passed



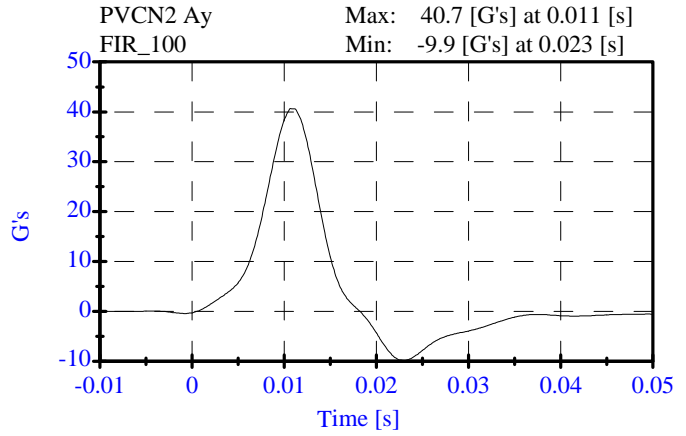
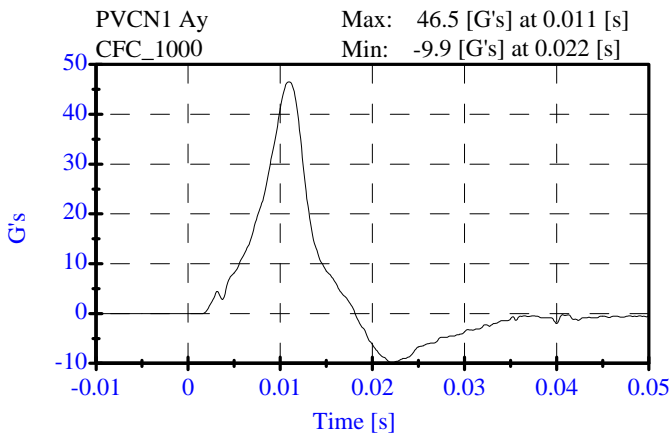
**Pelvis Impact
Pre-Test**

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 015
Date: 11-11-08

Sequential Test Number: 1 File: 015P 11-11-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	22.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.28 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	40.66 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	6.2 ms	Passed



Head Drops

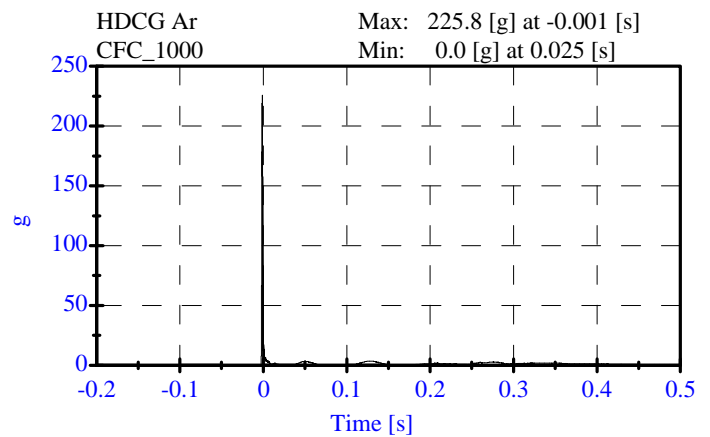
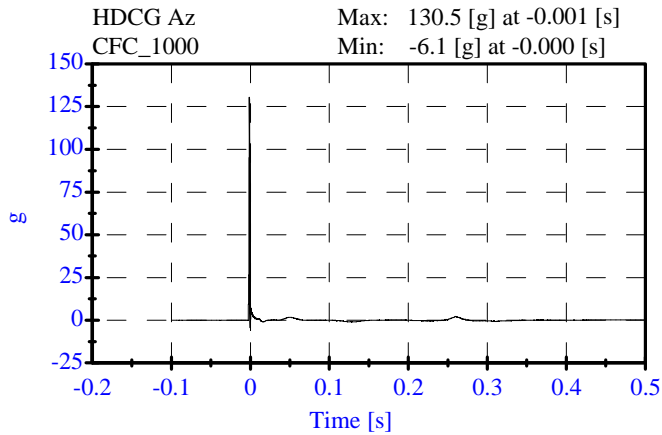
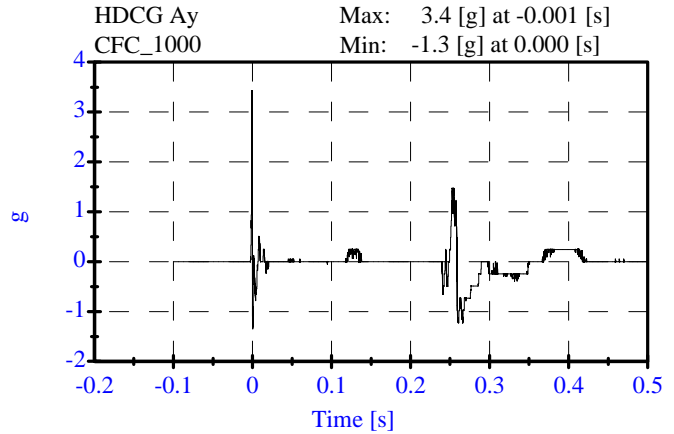
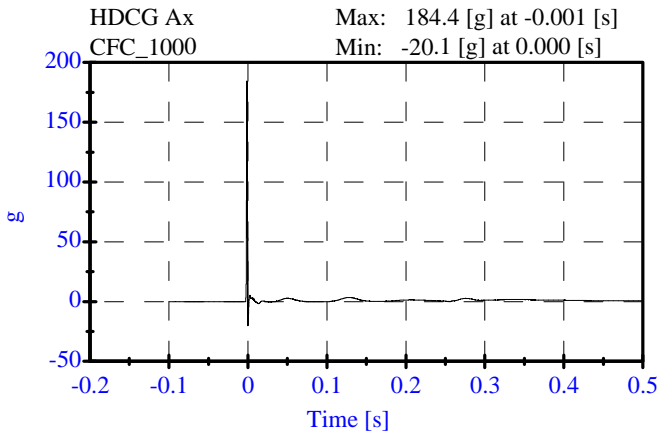
Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 15
Date: November 17, 2008

Sequential Test Number: 1 File: 015
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.6 C	21.7 C	Passed
Lab Humidity:	10-70 %	24.00 %	Passed
Peak Resultant Accel.:	210-260 Gs	225.77 Gs	Passed
Peak Lateral Accel.:	10 Gs Max	3.43 Gs	Passed
Unimodal Criteria Above 100 Gs:	0.9-1.5 ms	1.21 ms	Passed
Curve PerCent NonModal:	< 10%	9.27 %	Passed



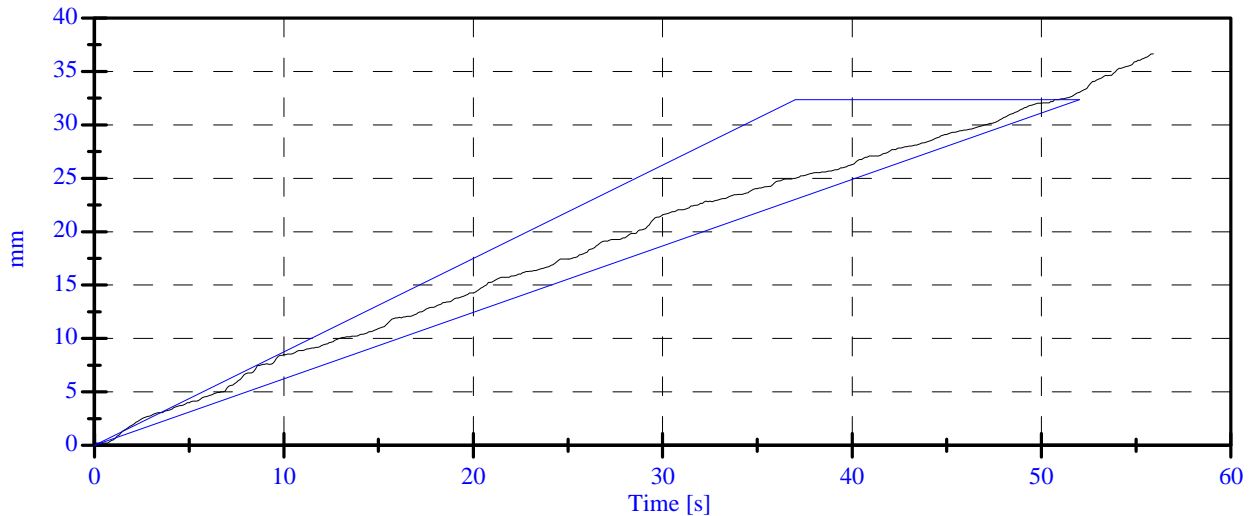
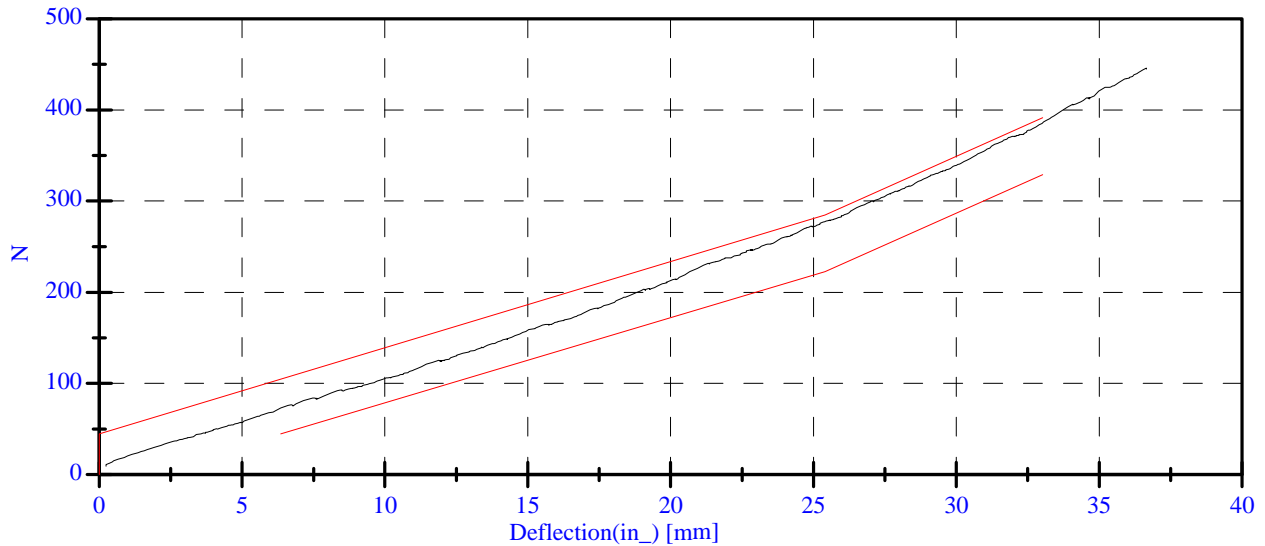
Abdominal Compression Test
Pre-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 015
 Date: 11-11-08

Sequential Test Number: 1 File: 015 Ab 11-11-08
 Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	22.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	134.50 N	Passed
Force at 19.05 mm :	162.98-220.99 N	203.13 N	Passed
Force at 25.40 mm :	221.97-280.02 N	277.59 N	Passed
Force at 33.02 mm :	324.99-391.00 N	385.28 N	Passed

ABDOMINAL COMPRESSION TEST



Lumbar Spine Test

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 015

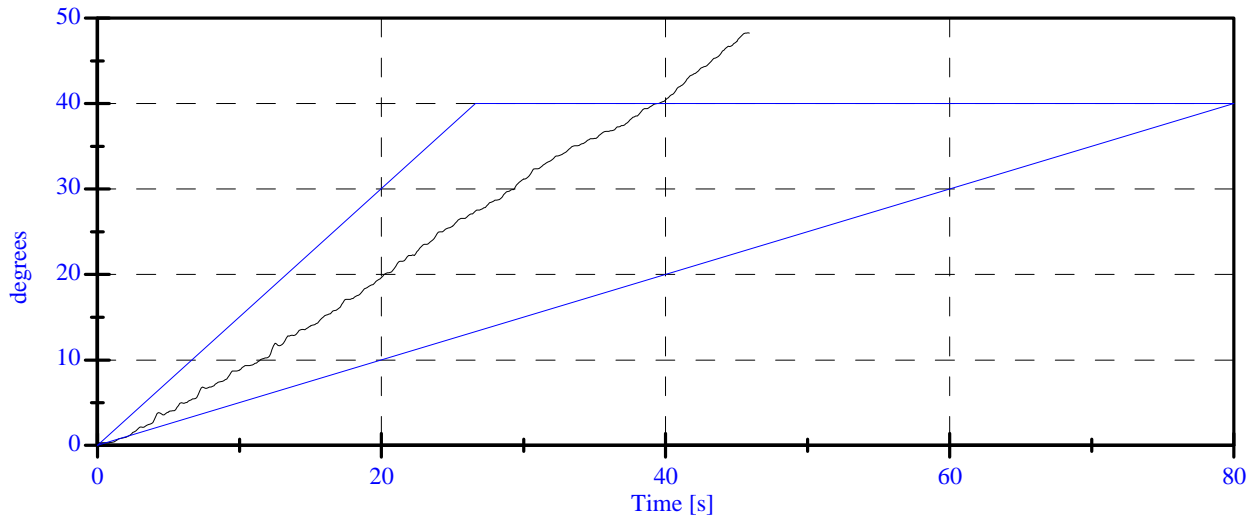
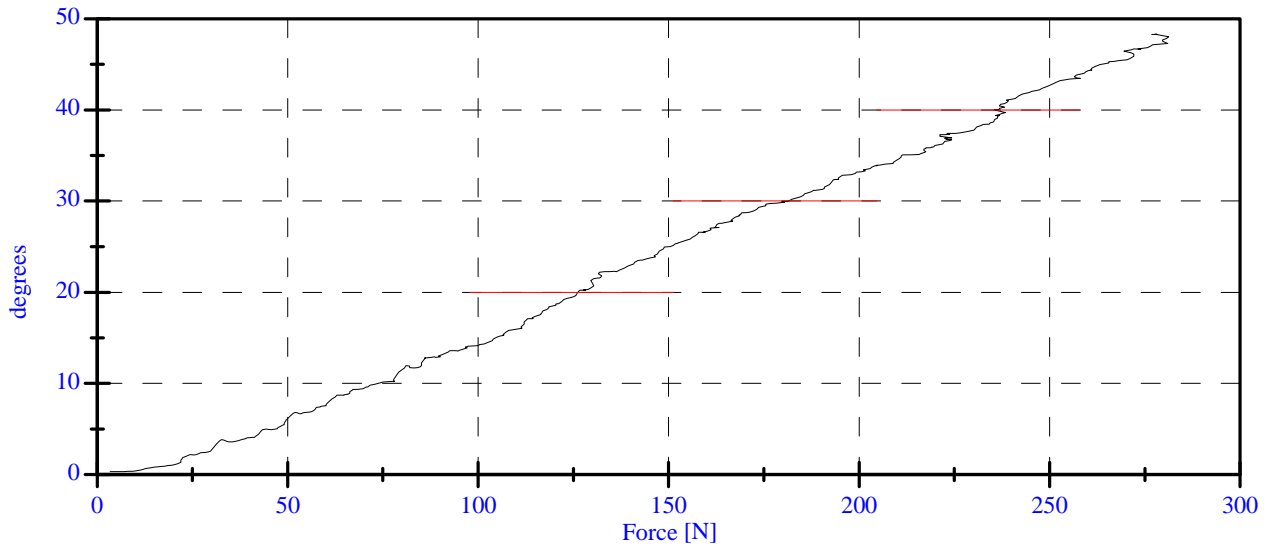
Date: 11-11-08

Sequential Test Number: 1 File: 015 Spine 11-11-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	22.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	3.39 N	Passed
Force at 20 Deg:	97.86-151.24 N	126.14 N	Passed
Force at 30 Deg:	151.24-204.62 N	179.67 N	Passed
Force at 40 Deg:	204.62-258.00 N	235.82 N	Passed
Return Angle	12 Deg Max	7.03 deg	Passed

LUMBAR SPINE FLEXION TEST



PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
 Date: 11/09/08 Laboratory Technician: B. Swiecicki

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

CALIBRATION TEST RESULTS

POST TEST

SID NO.: 013

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: 12/16/08 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: 12/16/08 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	513
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	518
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	378

REMARKS: None

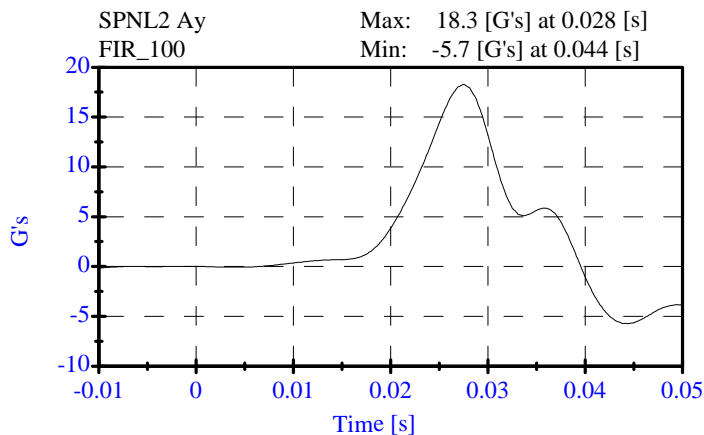
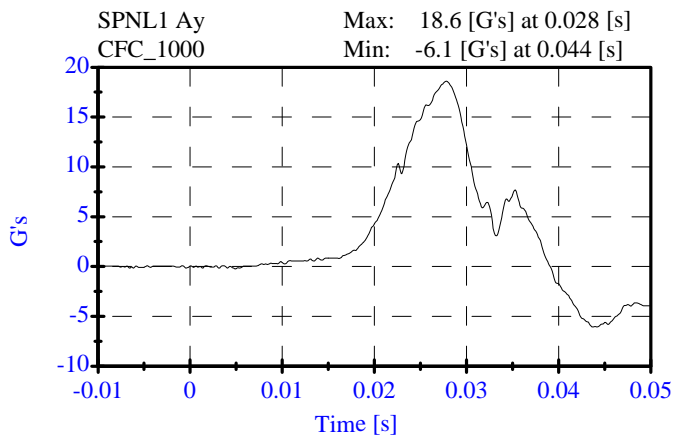
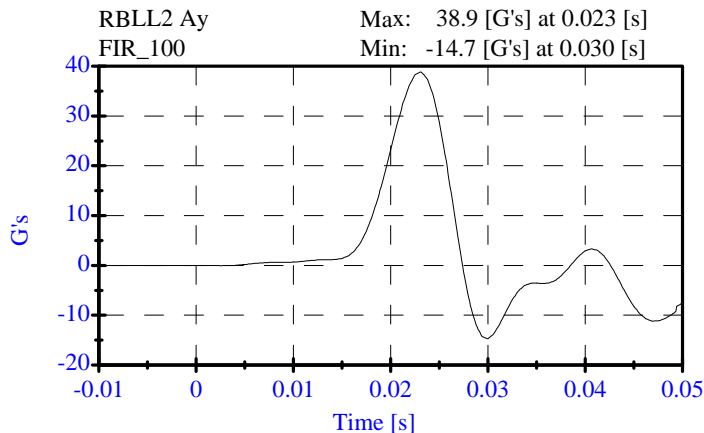
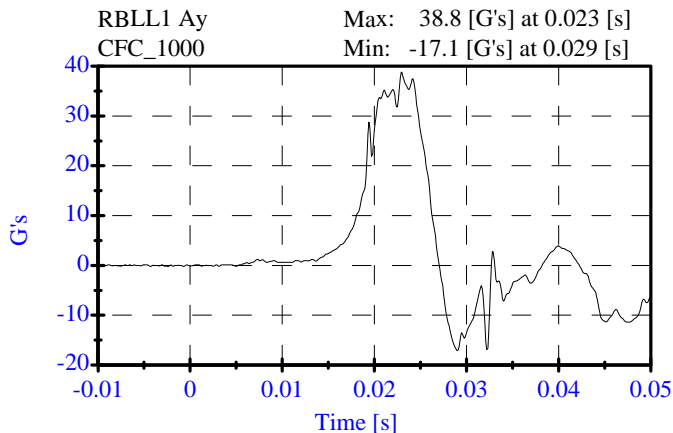
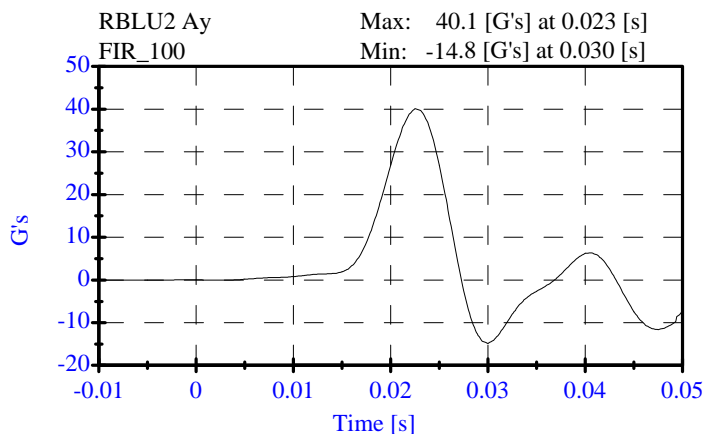
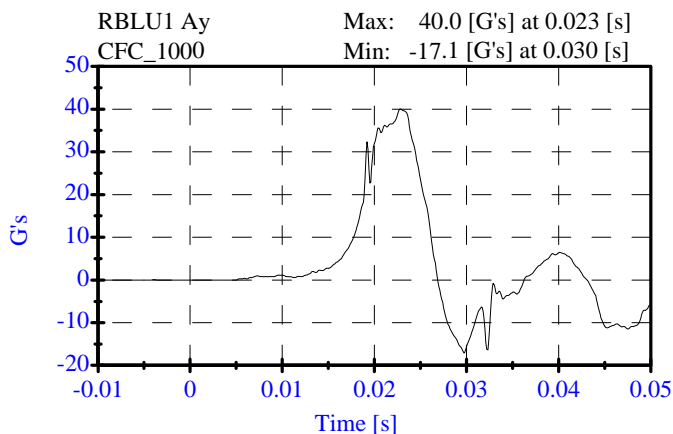
**Thorax Impact
Post-Test**

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 013
Date: 12-15-08

Sequential Test Number: 1 File: 013T1 12-15-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	34.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.31 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	40.13 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	38.87 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	18.31 G's	Passed



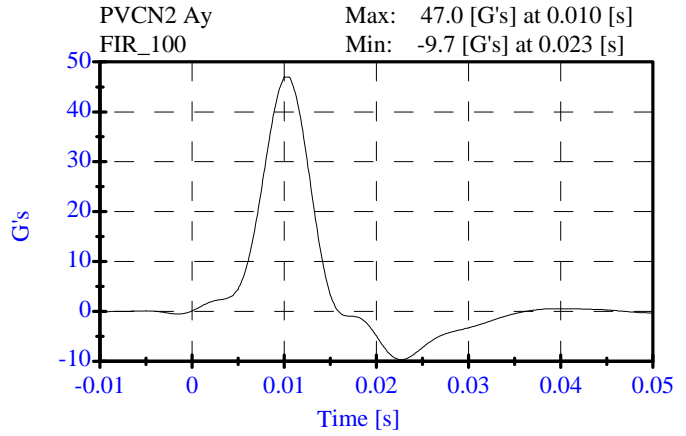
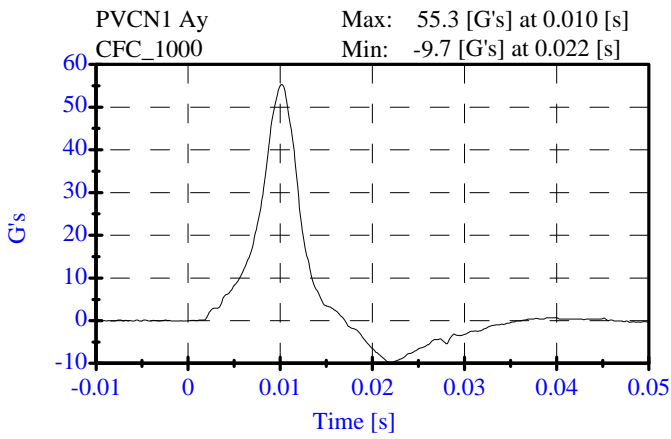
**Pelvis Impact
Post-Test**

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 013
Date: 12-15-08

Sequential Test Number: 1 File: 013P 12-15-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	34.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.30 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	47.02 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	6.1 ms	Passed



Head Drop Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

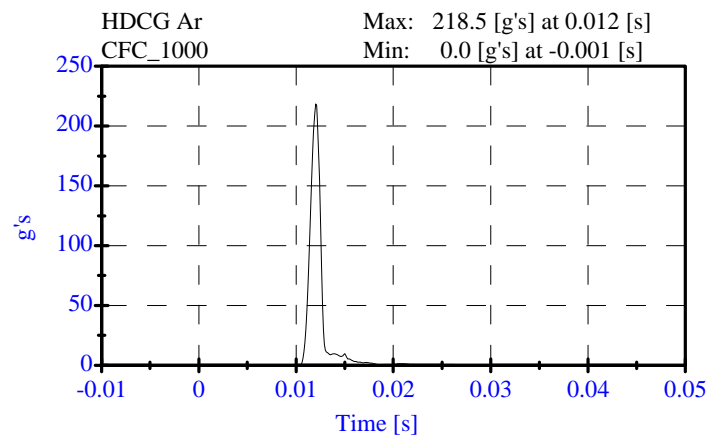
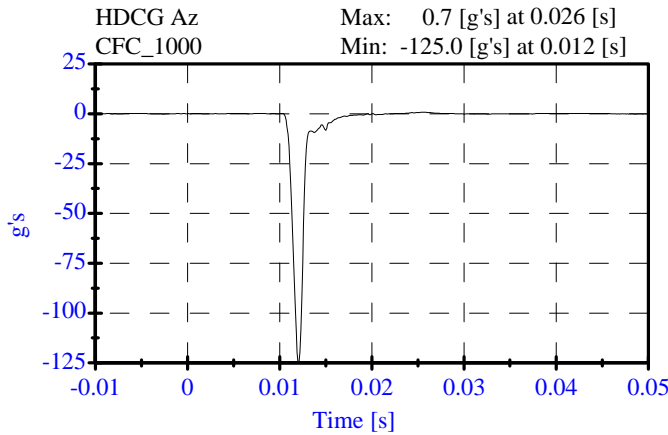
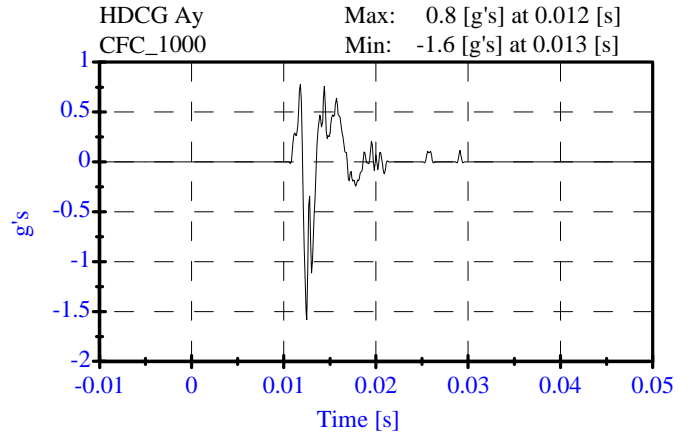
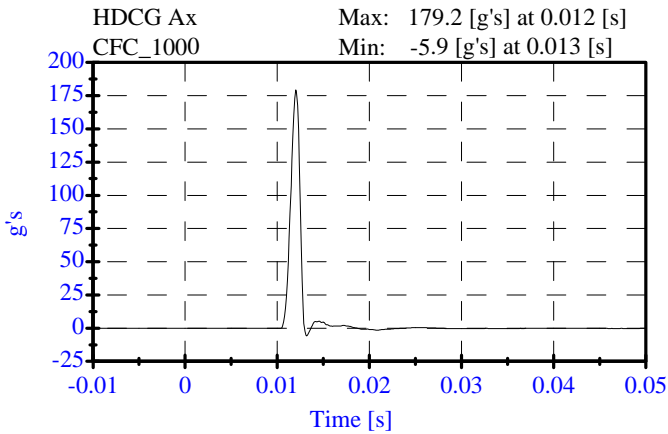
ATD Serial No: 013

Date: 12-12-08

Sequential Test Number: 1 File: 013H 12-12-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.6 C	21.1 C	Passed
Lab Humidity:	10-70 %	20.00 %	Passed
Peak Resultant Accel.:	210-260 Gs	218.46 Gs	Passed
Peak Lateral Accel.:	10 Gs Max	1.58 Gs	Passed
Unimodal Criteria Above 100 Gs:	0.9-1.5 ms	1.18 ms	Passed
Curve PerCent NonModal:	< 10%	4.41 %	Passed



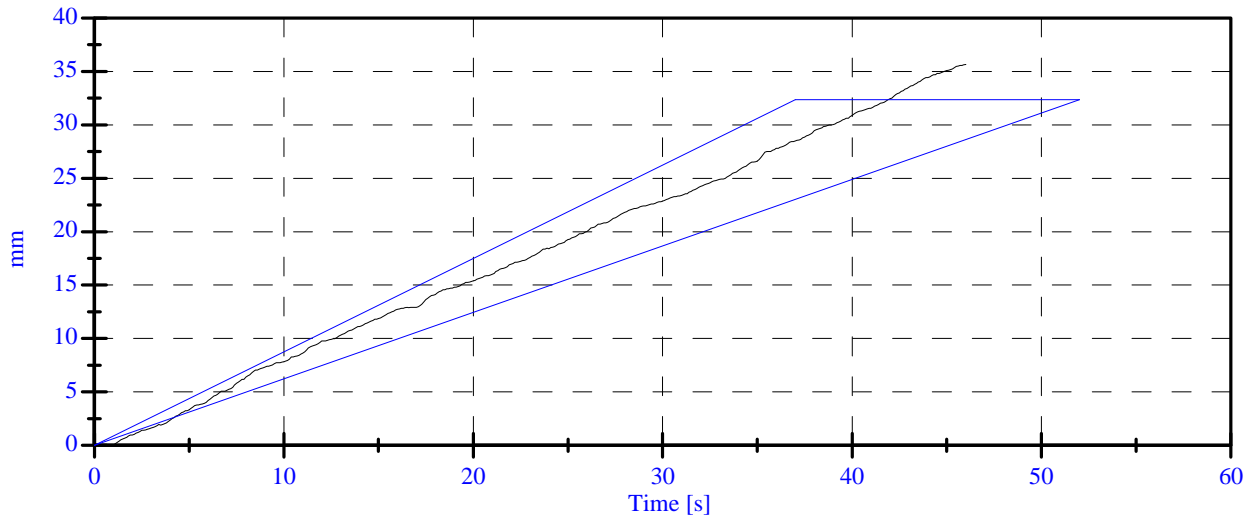
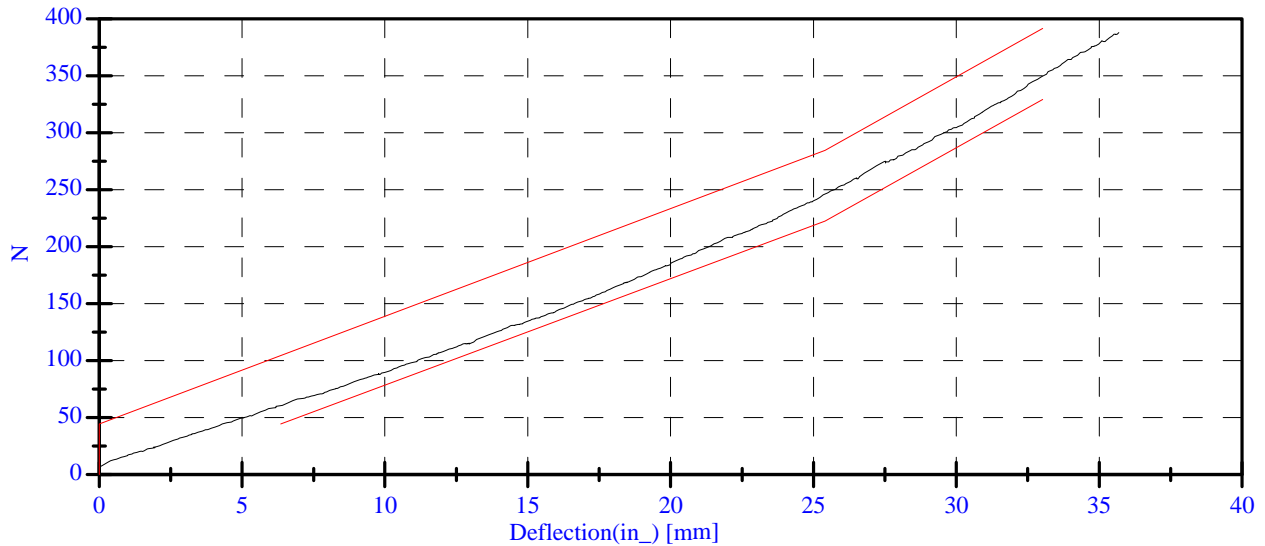
Abdominal Compression Test
Post-Test
CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 013
 Date: 12-16-08

Sequential Test Number: 1 File: 013 Ab 12-16-08
 Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	25.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	115.15 N	Passed
Force at 19.05 mm :	162.98-220.99 N	174.29 N	Passed
Force at 25.40 mm :	221.97-280.02 N	245.47 N	Passed
Force at 33.02 mm :	324.99-391.00 N	349.51 N	Passed

ABDOMINAL COMPRESSION TEST



Lumbar Spine Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 013

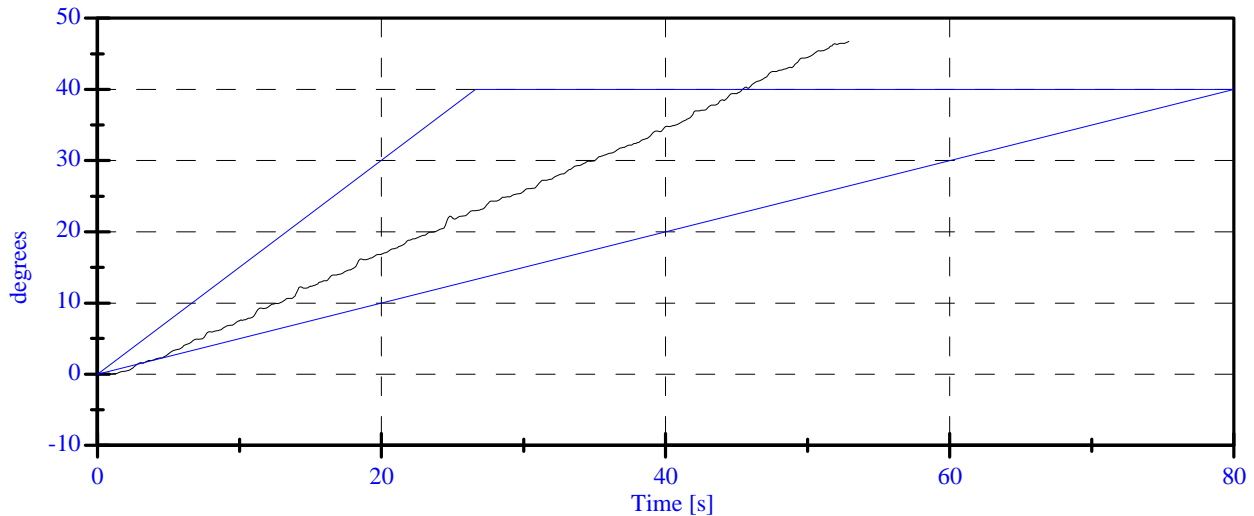
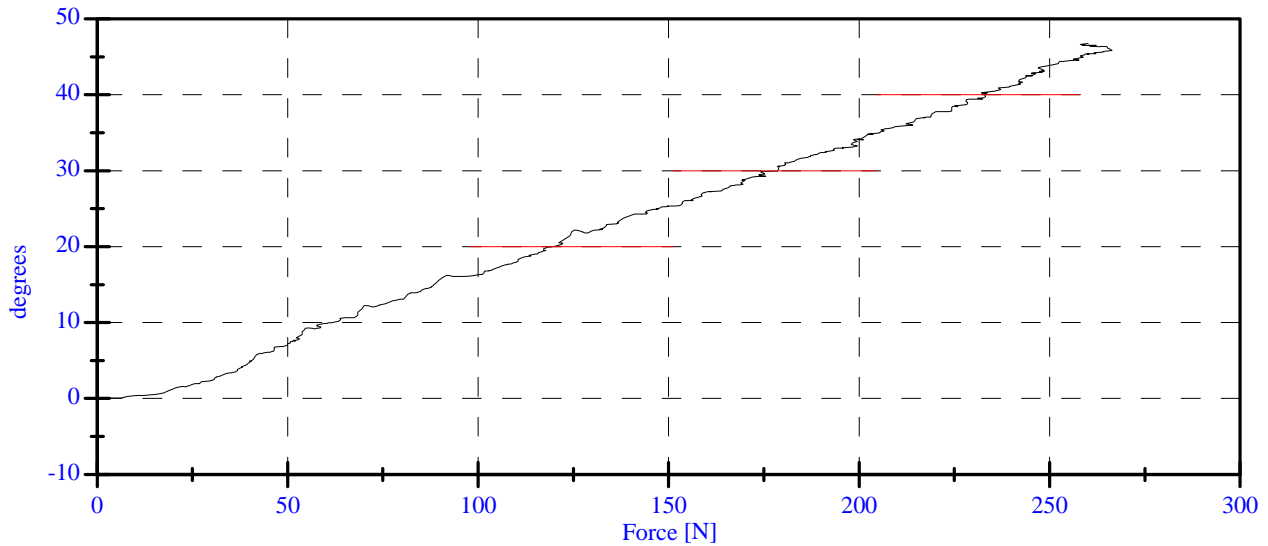
Date: 12-15-08

Sequential Test Number: 1 File: 013 Spine 12-15-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	34.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	1.83 N	Passed
Force at 20 Deg:	97.86-151.24 N	119.35 N	Passed
Force at 30 Deg:	151.24-204.62 N	178.63 N	Passed
Force at 40 Deg:	204.62-258.00 N	232.95 N	Passed
Return Angle	12 Deg Max	7.87 deg	Passed

LUMBAR SPINE FLEXION TEST



POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
 Date: 12/11/08 Laboratory Technician: B. Swiecicki

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

CALIBRATION TEST RESULTS

POST TEST

SID NO.: 015

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: 12/16/08 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: 12/16/08 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	511
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	518
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	376

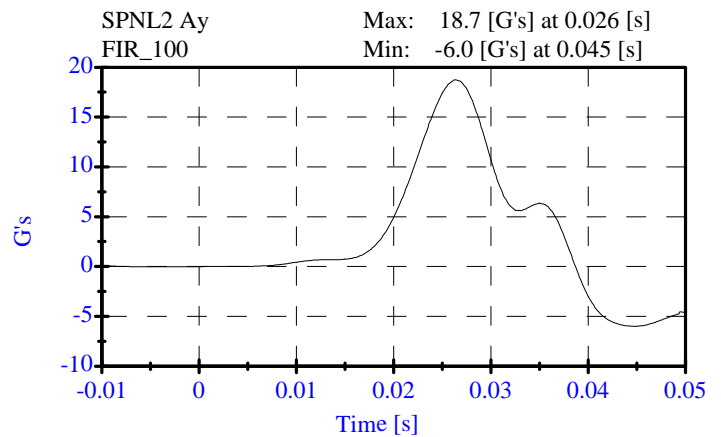
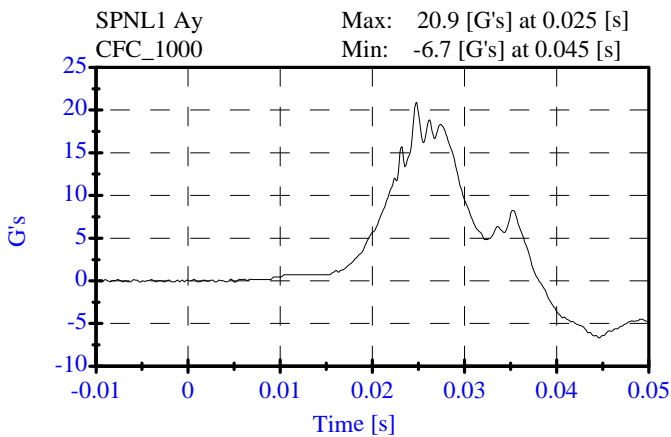
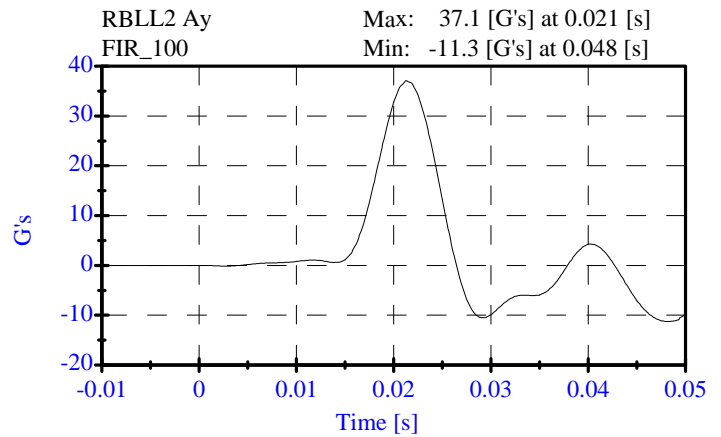
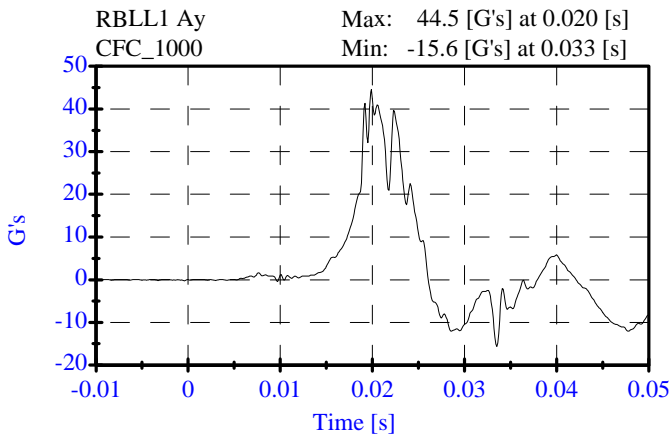
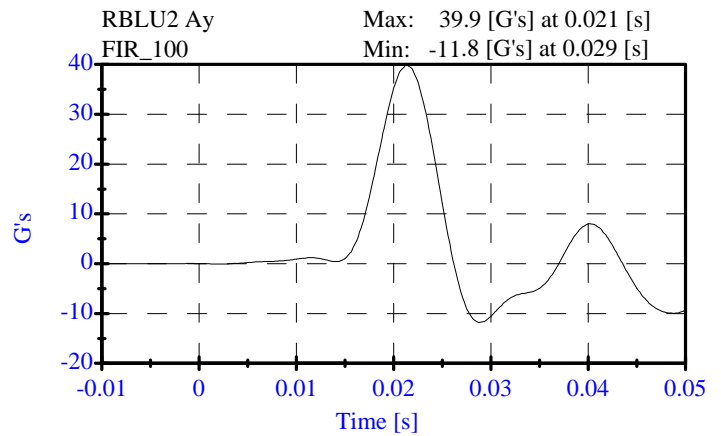
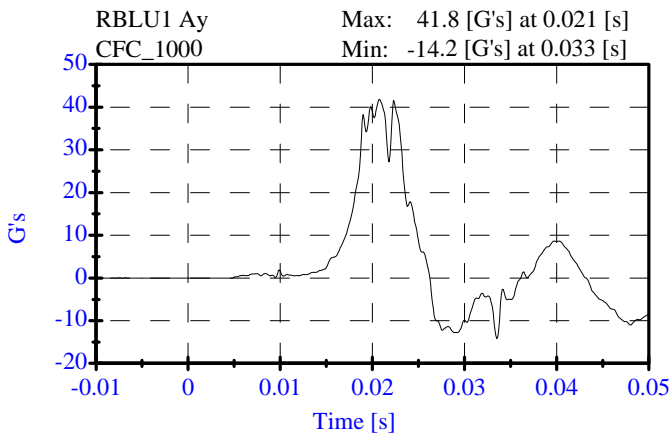
REMARKS: None

**Thorax Impact
Post-Test
CONFIGURED FOR LEFT SIDE IMPACT**

ATD Serial No: 015
Date: 12-15-08

Sequential Test Number: 1 File: 015T1 12-15-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	34.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.32 m/s	Passed
Upper Rib Acceleration:	37.00-46.00 G's	39.86 G's	Passed
Lower Rib Acceleration:	37.00-46.00 G's	37.08 G's	Passed
Lower Spine Acceleration:	15.00-22.00 G's	18.75 G's	Passed



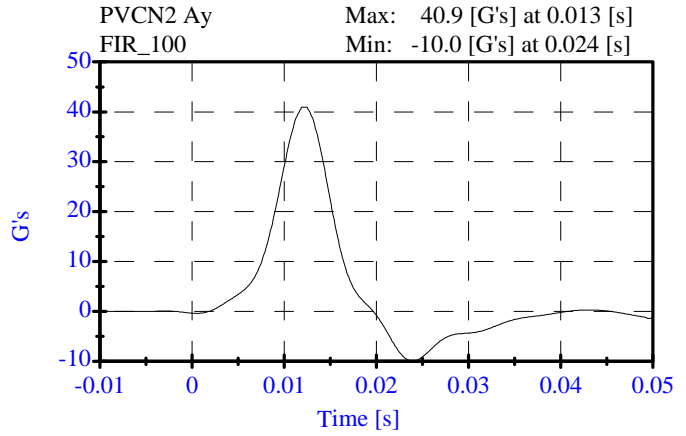
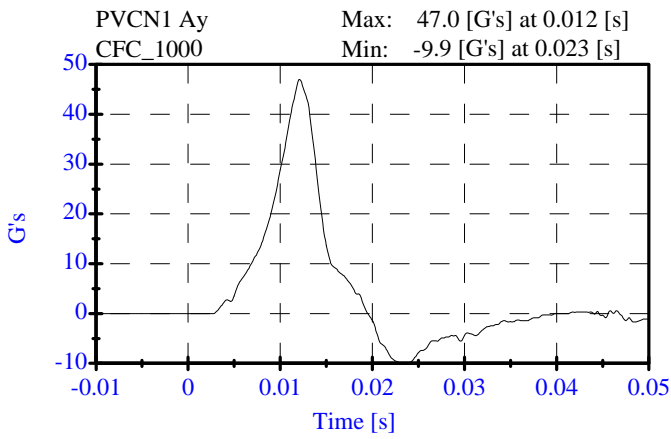
**Pelvis Impact
Post-Test**

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 015
Date: 12-15-08

Sequential Test Number: 1 File: 015P1 12-15-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	34.00 %	Passed
Probe Velocity:	4.27- 4.33 m/s	4.29 m/s	Passed
Pelvis Y Acceleration:	40.00-60.00 G's	40.93 G's	Passed
Time Above 20 Gs	3.0-7.0 ms	6.3 ms	Passed



Head Drop Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

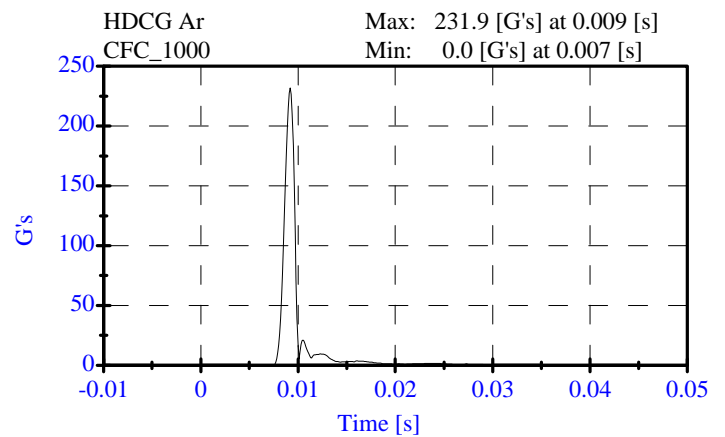
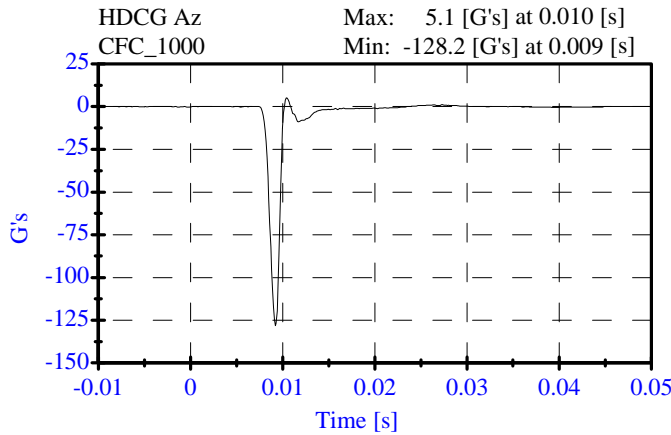
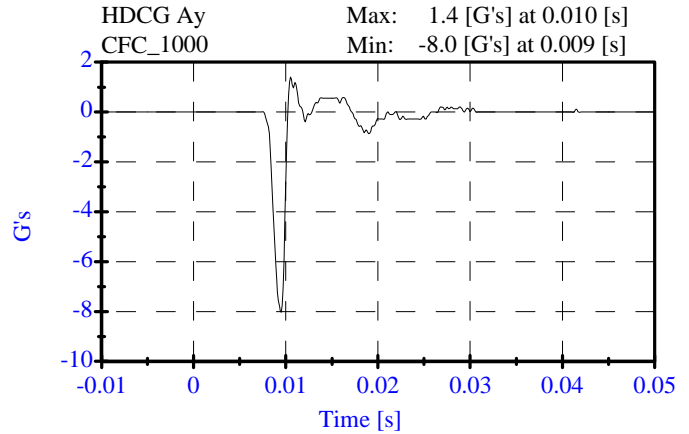
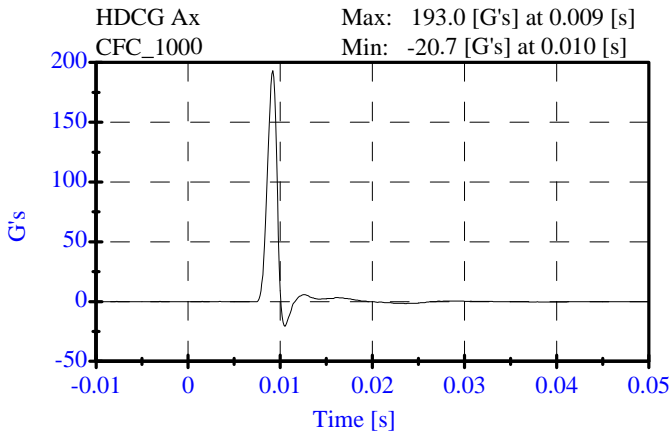
ATD Serial No: 015

Date: 12-12-08

Sequential Test Number: 1 File: 015H 12-12-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.6 C	21.1 C	Passed
Lab Humidity:	10-70 %	20.00 %	Passed
Peak Resultant Accel.:	210-260 Gs	231.87 Gs	Passed
Peak Lateral Accel.:	10 Gs Max	8.02 Gs	Passed
Unimodal Criteria Above 100 Gs:	0.9-1.5 ms	1.23 ms	Passed
Curve PerCent NonModal:	< 10%	9.18 %	Passed



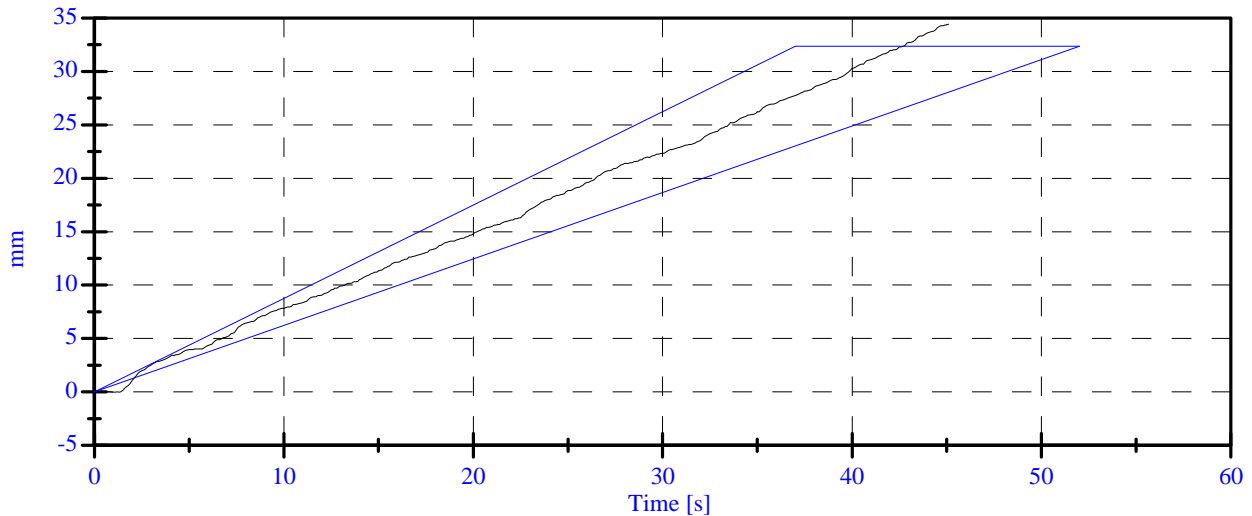
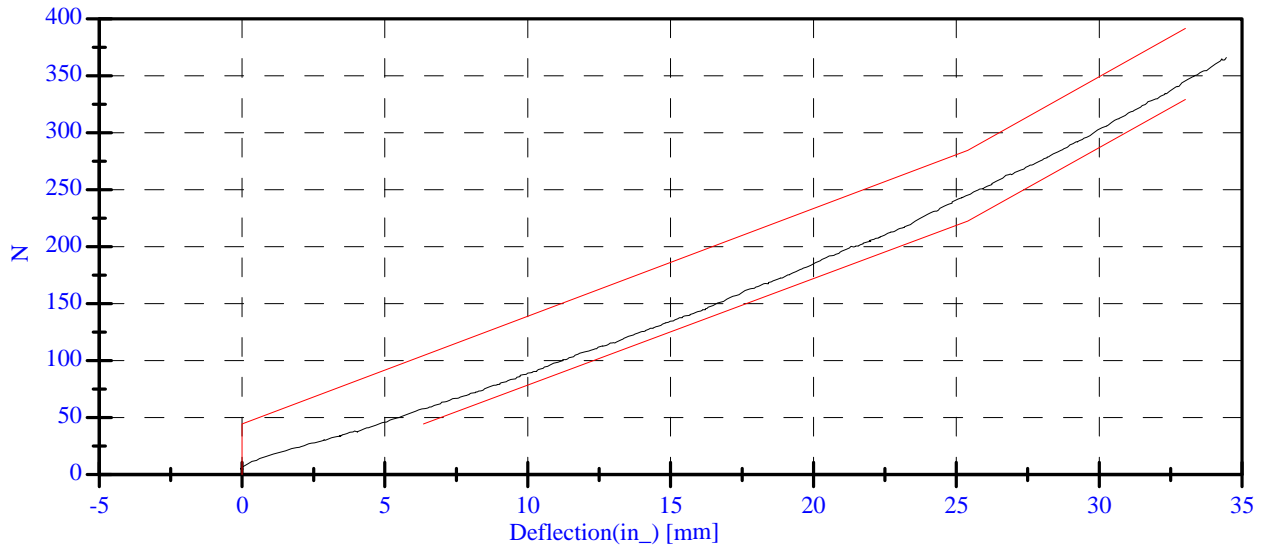
**Abdominal Compression Test
Post-Test
CONFIGURED FOR LEFT SIDE IMPACT**

ATD Serial No: 015
Date: 12-16-08

Sequential Test Number: 1 File: 015 Ab 12-16-08
Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	25.00 %	Passed
Force at 12.95 mm :	104.00-162.00 N	115.52 N	Passed
Force at 19.05 mm :	162.98-220.99 N	173.92 N	Passed
Force at 25.40 mm :	221.97-280.02 N	244.74 N	Passed
Force at 33.02 mm :	324.99-391.00 N	346.95 N	Passed

ABDOMINAL COMPRESSION TEST



Lumbar Spine Test

Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 015

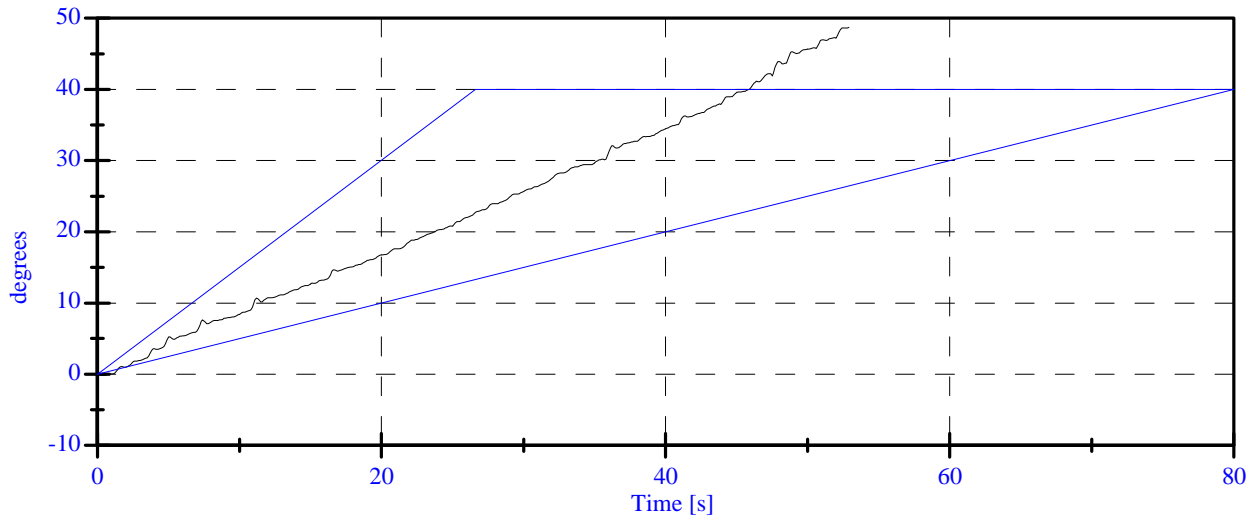
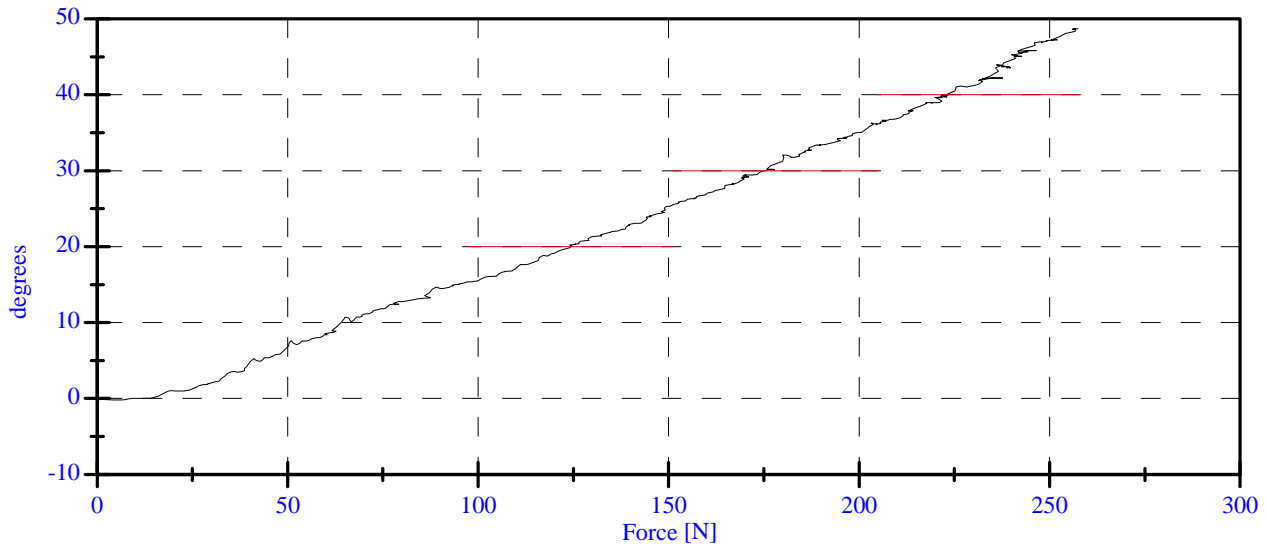
Date: 12-15-08

Sequential Test Number: 1 File: 015 Spine 12-15-08

Laboratory Technician: B. Swiecicki

<u>TEST PARAMETER</u>	<u>SPECIFICATION</u>	<u>TEST RESULTS</u>	<u>STATUS</u>
Lab Temperature:	18.9-25.5 C	21.7 C	Passed
Lab Humidity:	10-70 %	34.00 %	Passed
Force at 0 Deg:	0.00-26.69 N	9.14 N	Passed
Force at 20 Deg:	97.86-151.24 N	124.31 N	Passed
Force at 30 Deg:	151.24-204.62 N	175.23 N	Passed
Force at 40 Deg:	204.62-258.00 N	222.76 N	Passed
Return Angle	12 Deg Max	9.07 deg	Passed

LUMBAR SPINE FLEXION TEST



POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

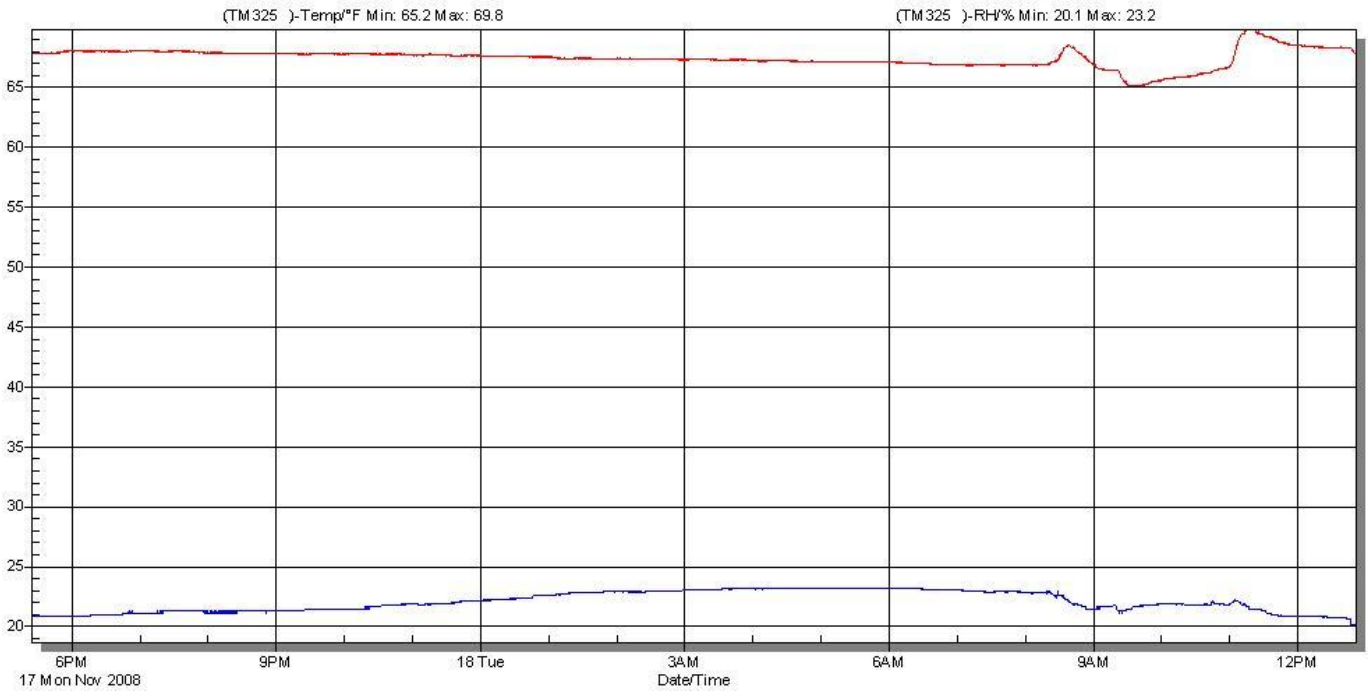
SID Serial No.: 015 Sequential Test Number: 1
 Date: 12/11/08 Laboratory Technician: B. Swiecicki

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

TEMPERATURE TRACE

Downloaded Data - Tuesday, November 18, 2008



APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SID INSTRUMENTATION

	FRONT SID NO.: 013		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	P35812	ENDEVCO	10/3/2008
HEAD AY	P19212	ENDEVCO	10/3/2008
HEAD AZ	P35761	ENDEVCO	10/3/2008
UPPER RIB	P52388	ENDEVCO	7/11/2008
LOWER RIB	P52391	ENDEVCO	6/30/2008
LOWER SPINE	P52389	ENDEVCO	7/11/2008
PELVIS	P52383	ENDEVCO	7/1/2008
UPPER RIB REDUNDANT	P52398	ENDEVCO	6/30/2008
LOWER RIB REDUNDANT	P52405	ENDEVCO	6/30/2008
LOWER SPINE REDUNDANT	P52255	ENDEVCO	6/30/2008
PELVIS REDUNDANT	P52394	ENDEVCO	7/11/2008

	REAR SID NO.: 015		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	P19222	ENDEVCO	6/16/2008
HEAD AY	P21297	ENDEVCO	8/6/2008
HEAD AZ	P23128	ENDEVCO	8/6/2008
UPPER RIB	P35786	ENDEVCO	6/16/2008
LOWER RIB	P16761	ENDEVCO	6/18/2008
LOWER SPINE	P52413	ENDEVCO	7/11/2008
PELVIS	P38216	ENDEVCO	6/19/2008
UPPER RIB REDUNDANT	P35818	ENDEVCO	6/16/2008
LOWER RIB REDUNDANT	P39740	ENDEVCO	6/16/2008
LOWER SPINE REDUNDANT	P52415	ENDEVCO	7/21/2008
PELVIS REDUNDANT	P35804	ENDEVCO	6/19/2008

REMARKS: None

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

VEHICLE AND MDB INSTRUMENTATION

	VEHICLE AND MDB INSTRUMENTS		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
RIGHT FRONT SILL (X)	P35811	ENDEVCO	7/11/2008
RIGHT FRONT SILL (Y)	P35789	ENDEVCO	7/11/2008
RIGHT FRONT SILL (Z)	P35803	ENDEVCO	7/11/2008
RIGHT REAR SILL (X)	P38188	ENDEVCO	6/19/2008
RIGHT REAR SILL (Y)	P39575	ENDEVCO	7/11/2008
RIGHT REAR SILL (Z)	P15526	ENDEVCO	7/11/2008
REAR FLOORPAN ABOVE AXLE (X)	P32455	ENDEVCO	9/5/2008
REAR FLOORPAN ABOVE AXLE (Y)	P32464	ENDEVCO	9/5/2008
REAR FLOORPAN ABOVE AXLE (Z)	P32139	ENDEVCO	9/5/2008
LEFT REAR SILL (Y)	P21516	ENDEVCO	6/18/2008
LEFT FRONT SILL (Y)	J31095	ENDEVCO	10/6/2008
LEFT FRONT DOOR CENTERLINE (Y)	-	-	-
RIGHT REAR SEAT OCCUPANT COMP. (Y)	P23960	ENDEVCO	6/30/2008
MID REAR OF LEFT FRONT DOOR (Y)	-	-	-
LEFT FRONT DOOR UPPER C\L (Y)	-	-	-
MID REAR OF LEFT REAR DOOR (Y)	-	-	-
LEFT REAR DOOR UPPER C\L (Y)	-	-	-
LOWER LEFT B- PILLAR (Y)	P35788	ENDEVCO	10/3/2008
MIDDLE LEFT B-PILLAR (Y)	P26259	ENDEVCO	10/3/2008
LOWER LEFT A-PILLAR (Y)	J29805	ENDEVCO	10/6/2008
UPPER LEFT A-PILLAR (Y)	P16286	ENDEVCO	10/3/2008
FRONT SEAT TRACK (Y)	P22639	ENDEVCO	9/5/2008
REAR SEAT TRACK (Y)	P18531	ENDEVCO	8/6/2008
VEHICLE CG (X)	P23993	ENDEVCO	9/5/2008
VEHICLE CG (Y)	P23164	ENDEVCO	9/5/2008
VEHICLE CG (Z)	P23939	ENDEVCO	9/5/2008
MDB CG (X)	C15007	ENDEVCO	6/5/2008
MDB CG (Y)	GE16	ENDEVCO	6/5/2008
MDB CG (Z)	C16499	ENDEVCO	6/5/2008
MDB REAR FRAME MEMBER (X)	C14948	ENDEVCO	6/5/2008
MDB REAR FRAME MEMBER (Y)	C16680	ENDEVCO	6/5/2008

REMARKS: None