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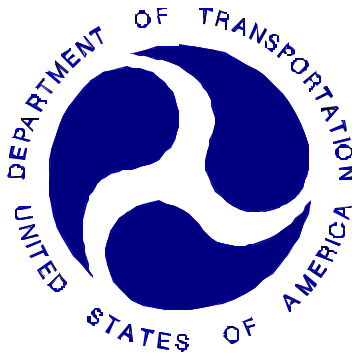
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

GM DAEWOO AUTO & TECHNOLOGY COMPANY
2004 SUZUKI FORENZA
4-DOOR SEDAN

NHTSA NUMBER: M40510

GENERAL DYNAMICS TEST NUMBER: 8642-NCAP-40

GENERAL DYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
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January 13, 2004

FINAL REPORT

PREPARED FOR:

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Office of Crashworthiness Standards
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16. Abstract A frontal load cell barrier test of a 2004 Suzuki Forenza 4-Door Sedan was performed at General Dynamics crash test facility in Buffalo, New York, on January 13, 2004. The impact velocity was 56.81 kph and the temperature at the barrier face was 21°C. The maximum post-test vehicle crush was 435 mm. The test vehicle was equipped with 3-point restraint systems with torso belt pretensioners and force limiters, knee bolsters, and airbags at both the driver and right outboard passenger seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements.					
ATD Position	HIC	Clip (g's)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)
Driver (061)	475.2§	49.9	36	-1941.9	-4481.5
Passenger (064)	493.5	50.4	38.9	-2726.9	-1769.3
§- Calculated using redundant head z.					
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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.81 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-01-D-32005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 56.81 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 56.81 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated December 1999. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

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

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

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

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 169 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Appendix C contains the dummy calibration data and Appendix D contains the transducer calibration dates.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 36 load cells was impacted by a 2004 Suzuki Forenza 4-Door Sedan at a velocity of 56.81 kph. The test was performed at General Dynamics on January 13, 2004. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The occupant data is summarized below.

	HIC	Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)	Belt Stretch (mm/50 mm)
Driver ATD	475.2§	49.9	36	-1941.9	-4481.5	-	-
Passenger ATD	493.5	50.4	38.9	-2726.9	-1769.3	-	-

§ - Calculated using redundant head z.

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

The maximum vehicle static crush was 435 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The face to the center of the airbag, the back of the head to the center of the head restraint; the chest to the airbag and the left and right knees to the knee bolster. The passenger's visible contact points were as follows: The face to the top of the center of the airbag, the back of the head to the right side of the center of the head restraint; the chest to the airbag and the left and right knees to the knee bolster.

The 2004 Suzuki Forenza 4-Door Sedan did not exceed the requirements of FMVSS 208, FMVSS 212, FMVSS 219, and FMVSS 301. Data pertaining to these standards are presented in the data sheets.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No.:	M40510	Test Mode:	56.3 kph Frontal Barrier
Test Date:	January 13, 2004	Time:	13:51
		Temperature:	21 °C
Vehicle Make/Model/Body Style:	2004 Suzuki Forenza 4-Door Sedan		
Vehicle Test Weight:	1473.5	kg	
Vehicle/Barrier Impact Angle:	0	°	
Impact Velocity:	56.81	kph	
Maximum Static Crush:	435	mm	
Vehicle Rebound:	441	mm	

<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>
Type:	572E	572E
Restraint System:	Seatbelt with torso belt pretensioners and force limiters, Airbag, Knee Bolster and Head Restraint	Seatbelt with torso belt pretensioners and force limiters, Airbag, Knee Bolster and Head Restraint

Number of Data Channels:	169	
Number of Cameras:	1	Real Time
	16	High Speed

DOOR OPENING DATA:

	Closed, latched and operable without tools - Left Front
	Closed, latched and operable without tools - Right Front

Front Seat(s) Data:	<u>DRIVER</u>	<u>PASSENGER</u>
Seat Track Failure: (mm of shift)	0	0
Seat Back Failure:	None	None

<u>VISIBLE DUMMY CONTACT POINTS:</u>	<u>DRIVER</u>	<u>PASSENGER</u>
Head:	The face to the center of the airbag, the back of the head to the center of the head restraint	The face to the top of the center of the airbag, the back of the head to the right side of the center of the head restraint
Abdomen:	-	-
Chest:	Airbag	Airbag
Knees:	Knee Bolster	Knee Bolster

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2004 Suzuki Forenza 4-Door Sedan

NHTSA No. : M40510 ; VIN: KL5JD52Z04K936623 ; Color: Black

Engine Data: 4 cylinders; - CID; 2.0 Liters; - cc

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

Transmission Data: 5 speeds; X Manual; - Automatic; X Overdrive

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

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

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

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

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

Date Received: 1/06/2004 ; Odometer Reading 26 km

Selling Dealer: Culligan Suzuki, Inc.

& Address: 8129 Main Street Williamsville, NY 14231

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: GM Daewoo Auto & Technology Company

Date of Manufacture 10/03

GVWR: 1670 kg; GAWR: 870 kg FRONT; 800 kg REAR

DATA FROM TIRE PLACARD:

Recommended Tire Size: P195/55R15 84V

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

DATA FROM TIRE SIDEWALL:

Size of Tires on Test Vehicle: P195/55R15 84V ; Manufacturer: Hankook

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

Treadwear: † ; Traction: † ; Temperature: †

VEHICLE CAPACITY DATA:

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

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

Vehicle Capacity Weight (VCW) = 396 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 55.8 kg

*Tire pressure used for test

† - Data not shown on tire sidewall

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

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

Right Front =	<u>388.0</u>	kg	Right Rear =	<u>245.5</u>	kg
Left Front =	<u>387.0</u>	kg	Left Rear =	<u>250.0</u>	kg
TOTAL FRONT =	<u>775.0</u>	kg	TOTAL REAR =	<u>495.5</u>	kg
TOTAL DELIVERED WEIGHT =	<u>1270.5</u>	kg			
% of Total Front of Vehicle Weight =	<u>61.0%</u>		% of Total Rear Weight =	<u>39.0%</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW) =	<u>1270.5</u>	kg
Rated Cargo/Luggage Weight (RCLW) =	<u>55.8</u>	kg
Weight of 2 p.572 Dummies @ 76 each =	<u>152</u>	kg
TARGET TEST WEIGHT =	<u>1478.3</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND

51.0

KG OF CARGO WEIGHT:

Right Front =	<u>432.0</u>	kg	Right Rear =	<u>312.0</u>	kg
Left Front =	<u>420.0</u>	kg	Left Rear =	<u>309.5</u>	kg
TOTAL FRONT =	<u>852.0</u>	kg	TOTAL REAR =	<u>621.5</u>	kg
TOTAL TEST WEIGHT =	<u>1473.5</u>	kg			
% of Total Front Weight =	<u>57.8%</u>	%	% of Total Rear Weight =	<u>42.2%</u>	%
Weight of Ballast Secured in Vehicle Trunk Area =	<u>0</u>	kg			
Vehicle Components Removed for Weight Reduction:			Rear Bumper, Side mirrors, Rear door glass, Trunk lid, Muffler, 32 L of Stoddard		

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED:	RF	<u>668</u>	LF	<u>665</u>	RR	<u>669</u>	LR	<u>667</u>
FULLY LOADED:	RF	<u>652</u>	LF	<u>649</u>	RR	<u>634</u>	LR	<u>633</u>
AS TESTED:	RF	<u>658</u>	LF	<u>650</u>	RR	<u>634</u>	LR	<u>639</u>
Vehicle's Wheel Base:	<u>2600</u>	mm						
Location of Vehicle's C.G.:	<u>1097</u>	mm rearward of front wheel center.						

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual =	<u>54.1</u>	liters
Usable Capacity Figure Furnished by COTR =	<u>54.1</u>	liters
Test Volume Range (92 to 94% of Usable Capacity) =	<u>49.77</u>	to <u>50.85</u> liters
ACTUAL TEST VOLUME=	<u>18.5</u>	liters (with entire fuel system filled)
Test Fluid Type:	<u>Stoddard Solution</u>	; Spec. Grav. = <u>0.764</u>
Kinematic Viscosity =	<u>0.96</u>	centistokes; Color = <u>Orange</u>
Type of Fuel Pump: Electric-	<u>X</u>	; Mechanical- <u>-</u>
Does Electric Pump operate with ignition switch "ON" & engine "OFF"	Yes- <u>X</u>	No- <u>-</u>
<u>Details of Fuel System: Fuel Tank – centered ahead of rear axle; Lines – inside right frame stiffener;</u>		
<u>Filler neck – right side behind rear axle.</u>		

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°
Test Date: January 13, 2004 Time: 13:51 Temperature: 21 °C
Vehicle NHTSA No.: M40510
Required Impact Velocity Range: 55.5 to 57.1 kph

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

Trap No. 1 = 56.81 kph; Trap No. 2 = 56.81 kph
Distance from vehicle to barrier: (1) entering trap = 813 mm
(2) exiting trap = 305 mm

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

Vehicle Length:

Pre-Test	Left = <u>4442</u>	C/L = <u>4500</u>	Right = <u>4442</u>
Post-Test	Left = <u>4092</u>	C/L = <u>4065</u>	Right = <u>4022</u>
Crush	Left = <u>350</u>	C/L = <u>435</u>	Right = <u>420</u>
AVERAGE	= <u>401.67</u>	mm	

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

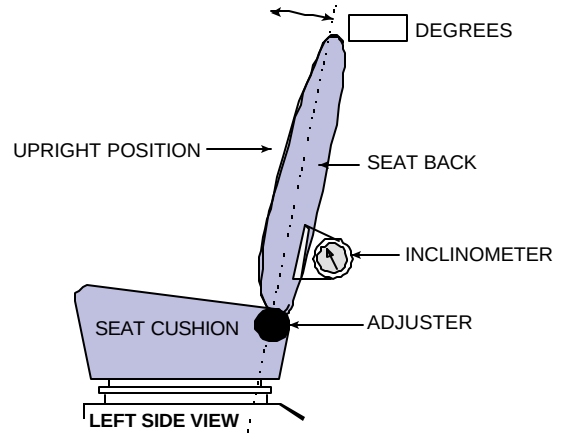
	Left = <u>433</u>	C/L = <u>442</u>	Right = <u>447</u>
AVERAGE	= <u>441</u>	mm	

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2004 Vehicle Model: Suzuki Forenza Body Style : 4-Door Sedan

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



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat: 25

Measurement instructions: Measure 290 mm up from seat back pivot point on outboard seat frame.

Seat back angle for passenger's seat: 25

Measurement instructions: The same as the driver's seat

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: 230 mm total travel; Placed in detent 10 of 0 to 19 total detents.

Positioning of the passenger's seat: The same as the driver's seat

3. Fuel Tank Capacity Data

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 54.1 liters

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

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 54.1 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 51.2 liters

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

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

When the ignition is turned to the "ON" position and while the engine is running.

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

4. STEERING COLUMN ADJUSTMENTS:

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

Operational Instructions:

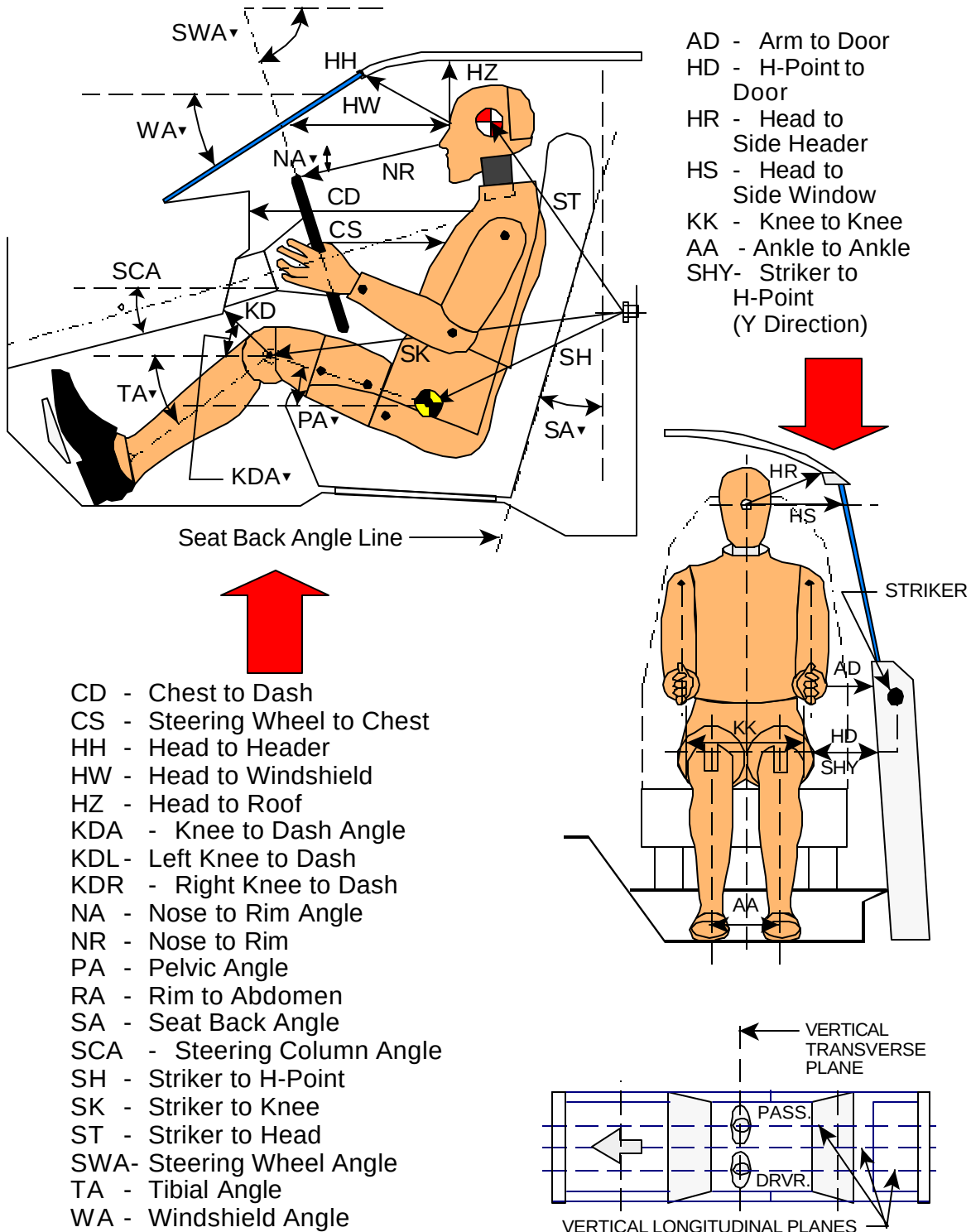
Placed in mid-angle position - 23°

5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position:

Placed in mid-position (detent three of five detents)

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



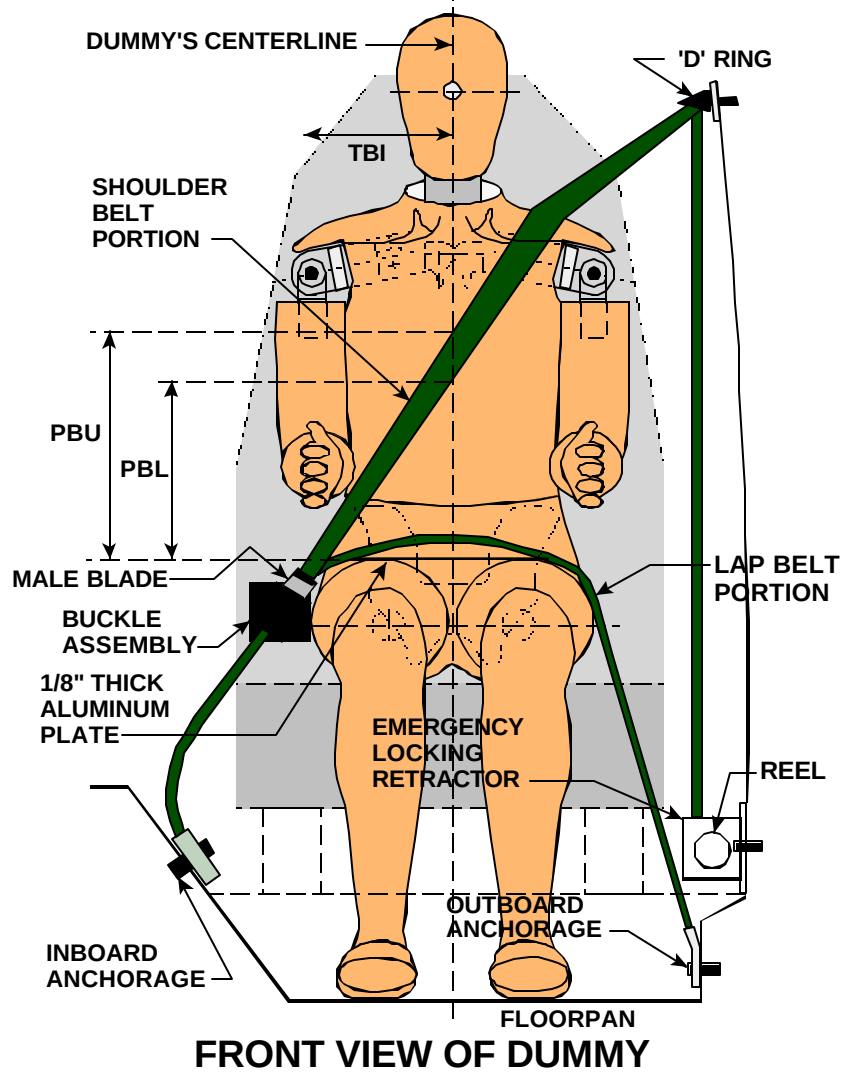
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #061)			PASS. (Serial #064)		
WA ⁰	26.5 deg.			N/A		
SWA ⁰	67 deg.			N/A		
SCA ⁰	23 deg.			N/A		
SA ⁰	25 deg.			25 deg.		
HZ	192			183		
HH	347			336		
HW	616			561		
HR	181			200		
NR	430	Angle	-10 deg.	N/A		
CD	537			573		
CS	333			N/A		
RA	227			N/A		
KDL	199	Angle (KDA)	35 deg.	180		
KDR	177			196	Angle (KDA)	29 deg.
PA ⁰	22.8 deg.			21.9 deg.		
TA ⁰	42.5 deg.			40.0 deg.		
KK	320			270		
AA	330			225		
ST	485	Angle	1 deg.	502	Angle	0 deg.
SK	543	Angle	95 deg.	555	Angle	96 deg.
SH	223	Angle	137 deg.	220	Angle	133 deg.
SHY	245			245		
HS	296			303		
HD	141			140		
AD	109			102		

Dimensions in millimeters

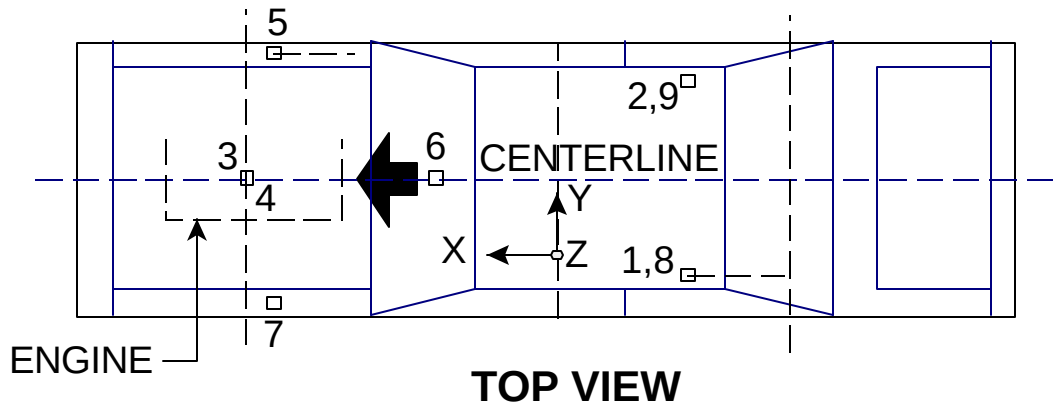
DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

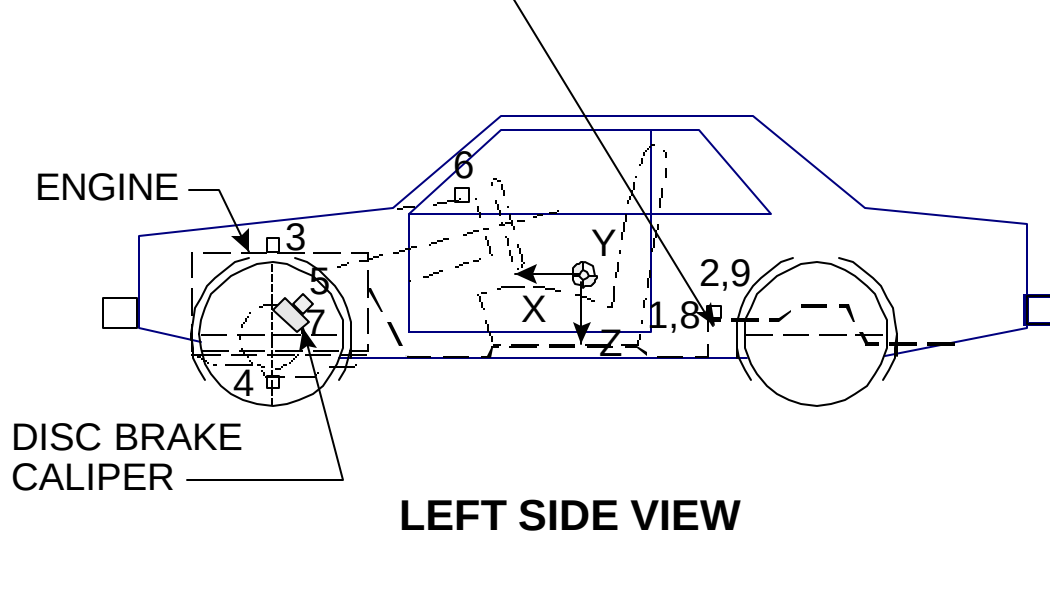


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	345	340
PBL-- Top surface of alum. plate to belt lower edge	270	260
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



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

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

LOCATION		PRE-TEST LENGTH (mm)		
		X	Y	Z
1	Left Rear Seat Cross Member X	1791	-656	-312
2	Right Rear Seat Cross Member X	1805	653	-312
3	Top of Engine Block	3936	-78	-686
4	Bottom of Engine	3303	75	-163
5	Disc Brake Caliper @ Right Side	3754	782	-299
6	Instrument Panel	2878	-16	-846
7	Disc Brake Caliper @Left Side	3766	-791	-272
8	Left Rear Seat Cross Member Z	1791	-656	-312
9	Right Rear Seat Cross Member Z	1805	653	-312

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Left Rear Seat Cross Member X	1.6	155.3	-45.4	43.3
2	Right Rear Seat Cross Member X	2.0	159.9	-41.4	49.4
3	Top of Engine Block	26.4	44.6	-102.5	34.2
4	Bottom of Engine	20.0	46.9	-131.2	27.7
5	Disc Brake Caliper @ Right Side	13.0	66.6	-80.9	49.9
6	Instrument Panel	37.0	25.7	-102.8	42.3
7	Disc Brake Caliper @Left Side	§	§	§	§
8	Left Rear Seat Cross Member Z	12.1	32.7	-16.3	19.3
9	Right Rear Seat Cross Member Z	11.8	24.3	-9.6	19.1

§ - Questionable Data

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2004 Suzuki Forenza 4-Door Sedan

NHTSA Test No.: M40510 Test Date: January 13, 2004

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head 9 Array X Arm Y	g	7.9	48.9	-8.0	78.9	3.1	41.4	-12.7	64.3
Head 9 Array X Arm Z	g	32.5	56.8	-12.1	124.2	50.9	73.4	-8.6	124.8
Head 9 Array Y Arm X	g	4.9	254.8	-54.5	72.0	3.8	235.9	-57.1	73.0
Head 9 Array Y Arm Z	g	32.1	56.7	-2.4	16.6	38.4	75.4	-1.1	124.4
Head 9 Array Z Arm X	g	8.8	219.9	-48.7	74.1	6.6	227.2	-52.1	82.1
Head 9 Array Z Arm Y	g	§	§	§	§	4.0	51.1	-11.9	66.1
Head X	g	4.3	255.0	-54.8	74.0	3.6	244.9	-53.7	72.9
Head Y	g	4.9	49.3	-6.6	87.2	6.8	38.3	-6.6	96.0
Head Z	g	†	†	†	†	39.8	75.6	-1.8	124.0
Head Resultant	g	†	†	†	†	64.6	73.7	0.0	-25.6
Redundant Head X	g	4.4	255.4	-53.9	74.4	3.8	233.0	-54.0	72.9
Redundant Head Y	g	4.7	51.6	-7.1	80.6	‡	‡	‡	‡
Redundant Head Z	g	31.6	57.0	-2.1	16.6	‡	‡	‡	‡
Redundant Head Resultant	g	56.8	74.4	0.1	-27.3	‡	‡	‡	‡
Upper Neck Fx	N	673.9	66.8	-588.4	124.8	208.1	58.8	-739.2	110.9
Upper Neck Fy	N	223.9	60.5	-196.8	97.4	98.4	33.4	-139.9	104.9
Upper Neck Fz	N	1557.6	56.8	-74.9	16.5	1755.7	75.9	-295.2	132.4
Upper Neck F Resultant	N	1635.3	56.8	5.0	-49.3	1803.5	75.9	0.9	-22.8
Upper Neck Mx	N-m	8.9	63.7	-16.7	106.2	16.2	83.6	-9.5	60.3
Upper Neck My	N-m	57.8	124.0	-21.6	215.4	55.5	124.1	-26.4	72.6
Upper Neck Mz	N-m	5.4	104.6	-5.5	139.1	17.9	84.1	-8.9	130.4
Upper Neck M Resultant	N-m	58.2	124.0	0.0	8.8	56.2	124.2	0.0	-22.4
Chest X	g	3.1	298.3	-50.9	59.8	2.7 ¹	132.0 ¹	-51.8 ¹	68.9 ¹
Chest Y	g	5.2	96.7	-4.2	40.3	3.9	43.8	-6.3	83.9
Chest Z	g	14.3	94.5	-11.6	46.4	13.7	47.4	-11.0	99.5
Chest Resultant	g	51.6	59.8	0.1	-27.8	51.9 ¹	68.9 ¹	0.0 ¹	-20.5 ¹

§ - Data is invalid after 39 ms.

† - Data is questionable from 52 to 55 ms.

¹Wire cut at 178 ms.

‡ - Data spikes present

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

Vehicle Year/Make/Model/Body Style: 2004 Suzuki Forenza 4-Door Sedan

NHTSA Test No.: M40510 Test Date: January 13, 2004

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Redundant Chest X	g	3.1	298.7	-50.4	60.0	1.9	132.0	-49.8	68.8
Redundant Chest Y	g	5.2	96.8	-4.8	40.2	§	§	§	§
Redundant Chest Z	g	14.6	94.1	-12.5	46.5	13.8	47.1	-11.3	99.5
Redundant Chest Resultant	g	51.1	60.0	0.1	-27.2	62.0	54.5	0.0	-21.0
Chest Displacement	mm	0.0	-39.3	-36.0	62.0	0.0	-14.9	-38.9	60.4
Pelvic X	g	10.0	85.0	-86.2	53.0	7.1	91.5	-76.1	59.4
Pelvic Y	g	13.9	79.4	-11.5	47.4	6.3	45.6	-11.4	66.4
Pelvic Z	g	3.7	20.5	-24.2	55.8	1.5	143.4	-22.2	59.1
Pelvic Resultant	g	89.1	53.0	0.1	-27.2	79.4	59.4	0.1	-26.9
Left Femur	N	1312.4	46.6	-1941.9	57.2	1056.5	45.6	-2726.9	61.7
Right Femur	N	353.4	29.0	-4481.5	52.0	1480.4	46.6	-1769.3	53.0
Left Upper Tibia Mx	N-m	32.4	48.6	-12.4	69.5	35.3	78.2	-55.9	58.2
Left Upper Tibia My	N-m	14.5	231.7	-96.1	48.4	117.8	53.7	-120.9	44.8
Left Lower Tibia Fz	N	§	§	§	§	80.7	22.3	-3270.3	46.3
Left Lower Tibia Mx	N-m	16.4	50.8	-25.7	83.9	10.2	75.5	-39.7	80.9
Left Lower Tibia My	N-m	55.6	89.1	-48.0	49.3	49.0	79.3	-55.1	44.9
Right Upper Tibia Mx	N-m	37.5	50.7	-13.3	83.7	8.1	46.9	-29.1	73.3
Right Upper Tibia My	N-m	70.3	50.7	-108.6	44.1	26.7	59.8	-105.0	45.6
Right Lower Tibia Fz	N	65.5	139.8	-3176.4	43.6	95.4	116.7	-3489.2	40.2
Right Lower Tibia Mx	N-m	22.4	46.3	-47.6	58.9	23.8	71.8	-16.7	47.6
Right Lower Tibia My	N-m	55.3	59.7	-46.8	46.7	40.7	70.0	-45.4	46.3
Left Foot Aft Ax	g	17.4	89.9	-49.9	17.8	†	†	†	†
Left Foot Aft Az	g	6.7	164.3	-43.5	38.5	20.5	63.5	-58.5	45.3
Left Foot Fore Az	g	51.0	18.1	-119.1	15.2	54.0	41.0	-143.8	45.2
Right Foot Aft Ax	g	16.4	61.7	-117.6	49.8	16.9	67.0	-71.1	37.9
Right Foot Aft Az	g	38.3	52.2	-84.6	47.0	5.6	23.1	-66.7	45.2
Right Foot Fore Az	g	100.5	52.5	-157.3	47.1	39.9	60.8	-102.7	45.2
Lap Belt Load	N	10478.9	55.2	-16.9	299.9	9287.6	55.1	-2.4	-50.0

§ - Data spikes are present

† - Data is Questionable

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

Vehicle Year/Make/Model/Body Style: 2004 Suzuki Forenza 4-Door Sedan

NHTSA Test No.: M40510 Test Date: January 13, 2004

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	475.2§	52.9	87.4	45.3 g
Position #2 - Passenger	493.5	56.4	92.4	45.2 g

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

§ - Calculated using redundant head z

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	49.9	57.8	60.8	524.7
Position #2 - Passenger	50.4	56.2	59.2	520.1

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

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

Vehicle Year/Make/Model/Body Style: 2004 Suzuki Forenza 4-Door Sedan
NHTSA Test No.: M40510 Test Date: January 13, 2004

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	460.3	52.9	87.3	44.7 g
Position #2 - Passenger	474.9 ¹	56.4	92.4	44.5 g

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

¹Calculated using primary head y and z data

CLIP SUMMARY* REDUNDANT				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	49.0	58.0	61.0	514.9
Position #2 - Passenger	48.9 ²	66.6	69.6	484.9

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

²Calculated using primary chest y data

DATA SHEET NO. 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

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

Driver

Passenger

1840

1840

Shoulder belt length as measured
on Part 572 Dummy.

840

840

Lap belt length as measured
on Part 572 Dummy.

830

830

Dimensions in millimeters

DATA SHEET NO.10 SUMMARY OF FMVSS 212 DATA

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA

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

Windshield is bonded in place and covered with a 25 mm molding.

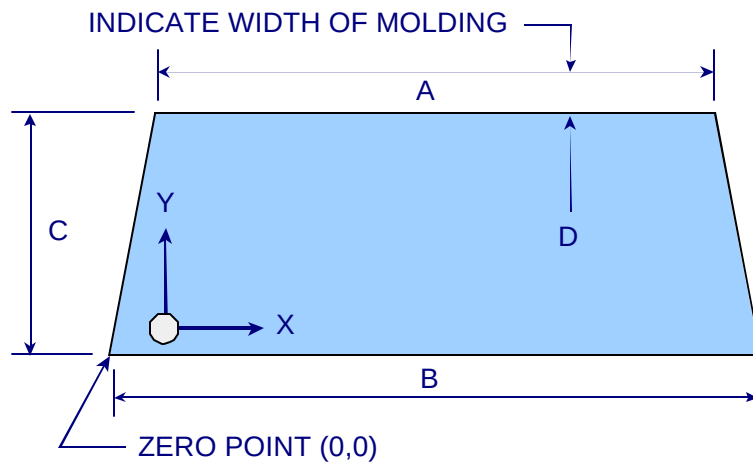
FMVSS 212 REQUIREMENTS:

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

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		% OF RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	1966.5	1966.5	100.0%
LEFT SIDE	1966.5	1966.5	100.0%
TOTAL	3933	3933	100.0%

AREA OF RETENTION FAILURE: None



DIMENSIONS (mm)	
A	1108
B	1345
C	740
D	25

FRONT VIEW OF WINDSHIELD

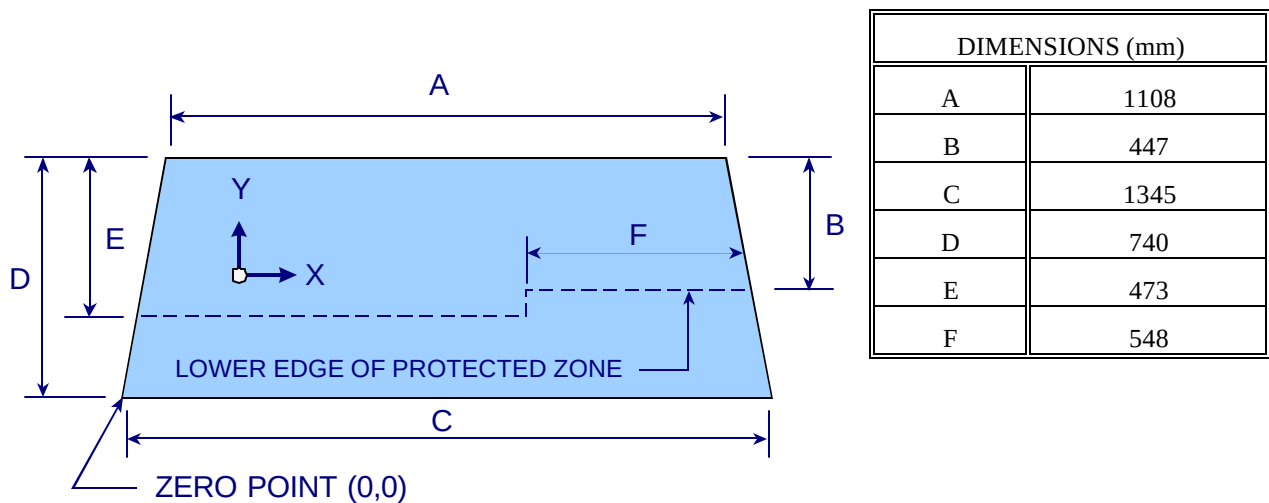
FAILURE DETAILS: None

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

PROTECTED ZONE LOWER EDGE REQUIREMENT:

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

FMVSS 219 TEST DATA:



FRONT VIEW OF WINDSHIELD

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm: None

(Show location of penetration on the above sketch)

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

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

NHTSA TEST No.: M40510 TEST DATE: January 13, 2004

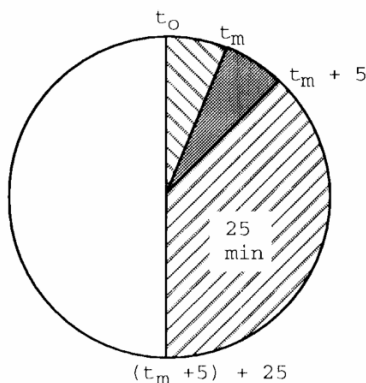
VEHICLE MAKE/MODEL: 2004 Suzuki Forenza 4-Door Sedan

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

=====

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

FUEL SPILLAGE MEASUREMENT:



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

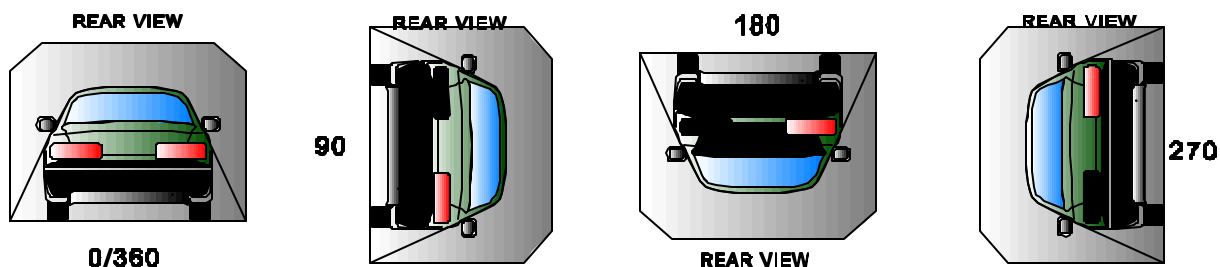
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

DATA SHEET NO. 13 - ROLLOVER DATA

Vehicle: 2004 Suzuki Forenza 4-Door Sedan

NHTSA No.: M40510



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0° - 90°	1	minutes	10	seconds	5	minutes	6	minutes	10	seconds	7	minutes
90° - 180°	1	minutes	06	seconds	5	minutes	6	minutes	6	seconds	7	minutes
180°-270°	1	minutes	02	seconds	5	minutes	6	minutes	2	seconds	7	minutes
270°-360°	1	minutes	12	seconds	5	minutes	6	minutes	12	seconds	7	minutes

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

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

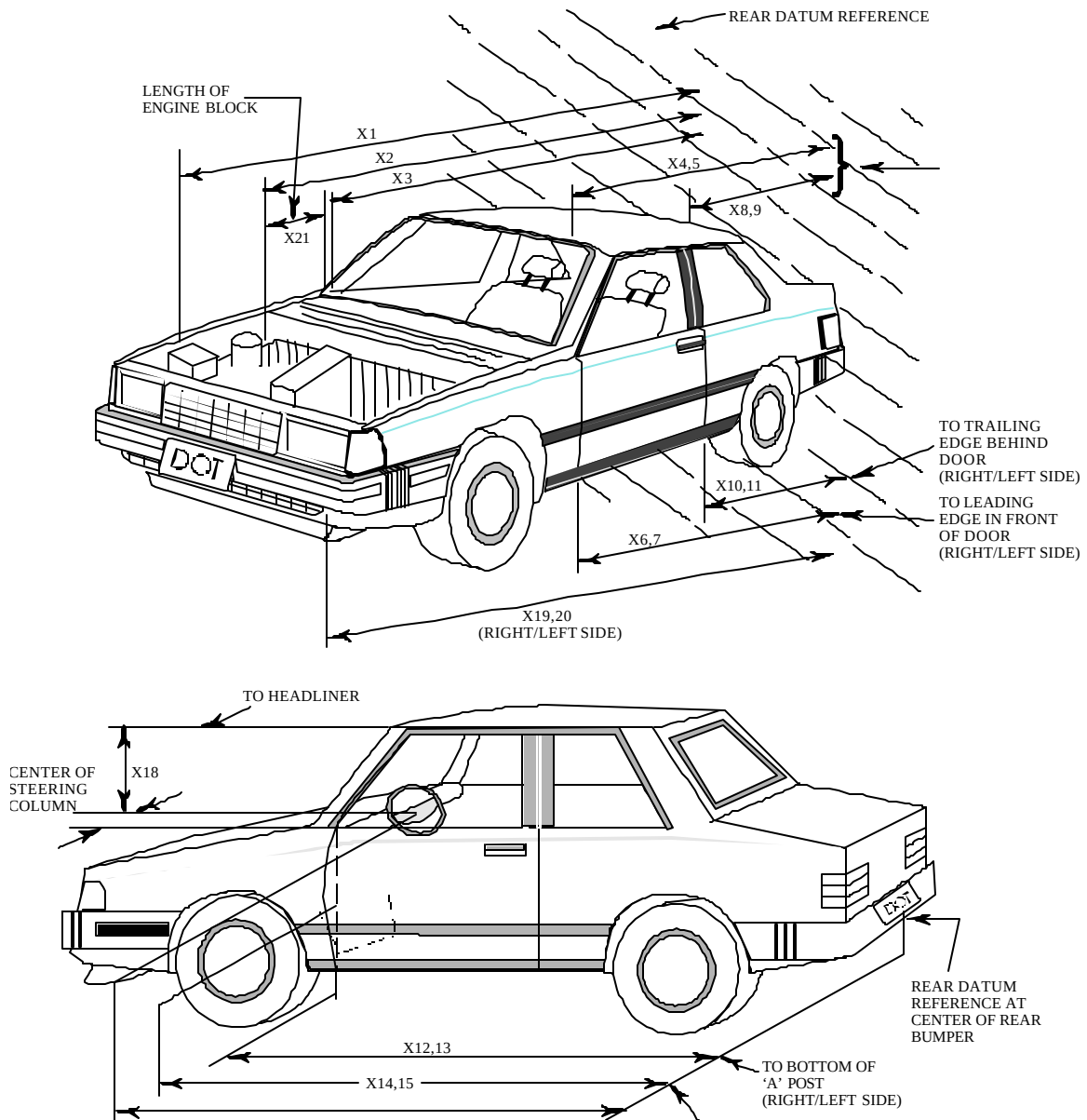
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	N/A
90° - 180°	0	0	0	N/A
180°-270°	0	0	0	N/A
270°-360°	0	0	0	N/A

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

IV. SOLVENT SPILLAGE LOCATION(S):

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

DATA SHEET NO. 14 TEST VEHICLE MEASUREMENTS

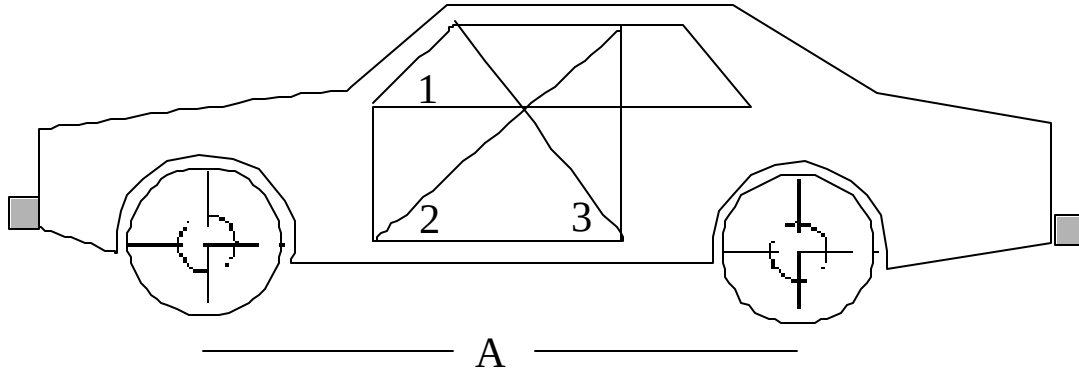


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4500	4065	435
X2	Rear Surface of Vehicle to Front of Engine	3950	3777	173
X3	Rear Surface of Vehicle to Firewall	3456	3442	14
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3085	3084	1
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3092	3076	16
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3097	3083	14
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3099	3098	1
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2072	2070	2
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2077	2075	2
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2103	2099	4
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2104	2102	2
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3138	3137	1
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3143	3139	4
X14	Rear Surface of Vehicle to Firewall, Right Side	3505	3469	36
X15	Rear Surface of Vehicle to Firewall, Left Side	3485	3476	9
X16	Rear Surface of Vehicle to Steering Column	2670	2674	-4
X17	Center of Steering Column to "A" Post	322	331	-9
X18	Center of Steering Column to Headliner	390	432	-42
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4442	4022	420
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4442	4092	350
X21	Length of Engine Block	430	430	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2873	2868	5
CD	Rear Surface of Vehicle to Center of Dash Panel	2915	2902	13
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2872	2868	4

All Dimensions in mm

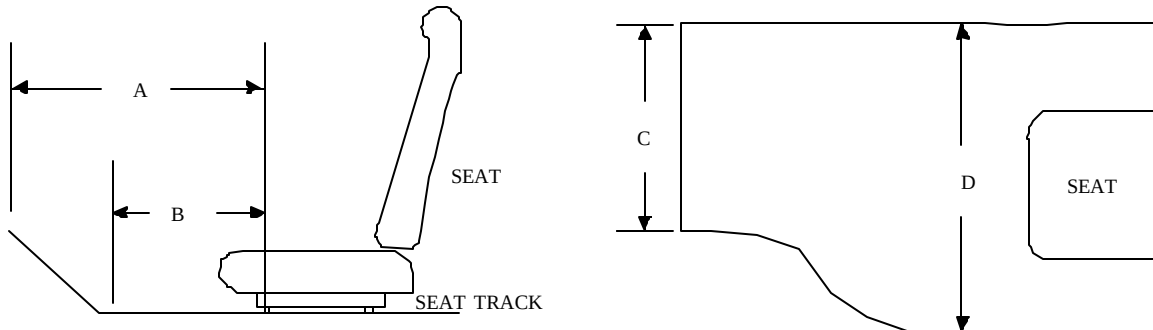
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	916	1407	943	908	1391	918
AFTER TEST	900	1367	947	900	1380	924
DIFFERENCE	16	40	-4	8	11	-6

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2600	2600
AFTER TEST	2595	2575
DIFFERENCE	5	25

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



DRIVER

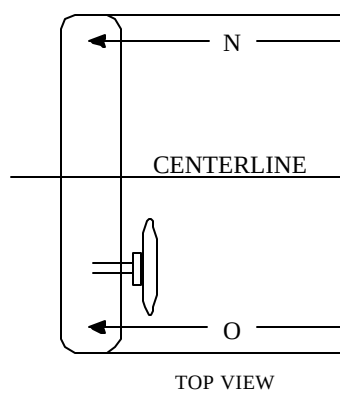
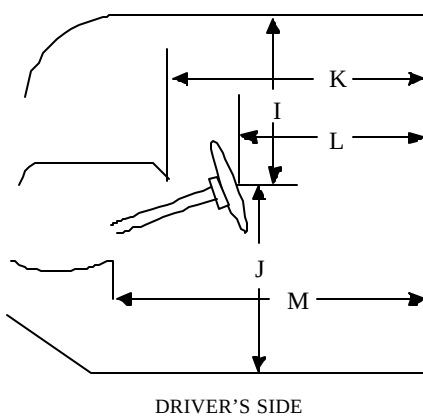
Measurement	Pre-Test	Post-Test	Difference
A	733	760	-27
B	554	556	-2
C	485	467	18
D	436	419	17

PASSENGER

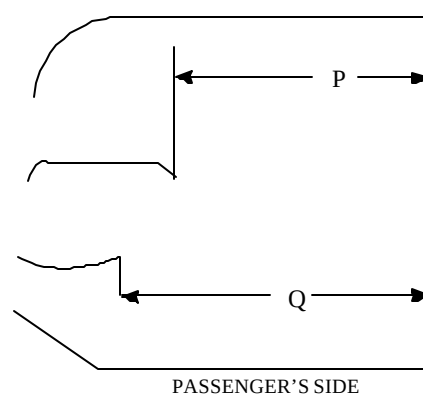
Measurement	Pre-Test	Post-Test	Difference
A	782	689	93
B	572	533	39
C	488	459	29
D	485	477	8

Units = mm

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



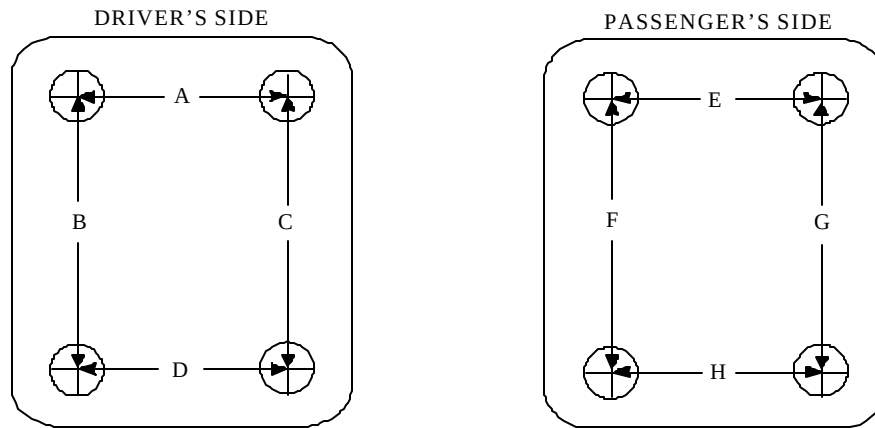
MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



Measurement	Pre-Test	Post-Test	Difference
I	390	432	-42
J	667	642	25
K	1757	1756	1
L	1578	1585	-7
M	1811	1811	0
N	1777	1768	9
O	1780	1779	1
P = K (PASS.)	1810	1809	1
Q = M (PASS.)	1836	1827	9

Units = mm

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

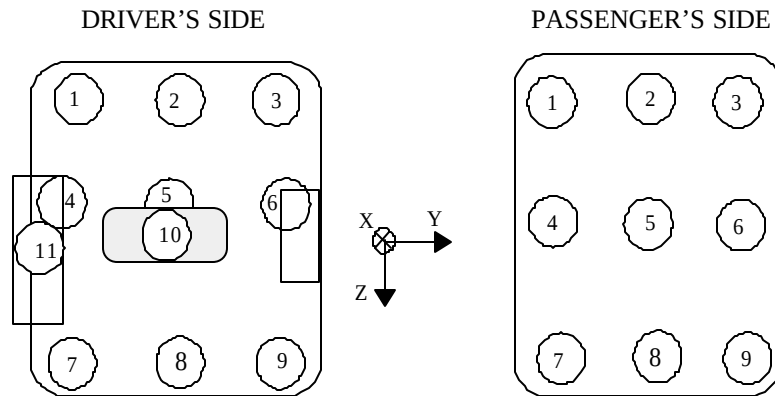


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	485	467	18
B	437	442	-5
C	465	459	6
D	436	419	17
E	488	459	29
F	471	425	46
G	485	470	15
H	485	477	8

Units = mm

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



Driver Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3332	3329	3	-417	-413	-4
2	3339	3356	-17	-411	-444	33
3	3355	3360	-5	-408	-402	-6
4	3260	3242	18	-319	-335	16
5	3261	3244	17	-318	-330	12
6	3260	3232	28	-322	-312	-10
7	3160	3154	6	-245	-240	-5
8	3160	3152	8	-242	-229	-13
9	3160	3133	27	-242	-229	-13
10	3081	3184	-103	-393	-396	3
11	3203	3180	23	-389	-389	0

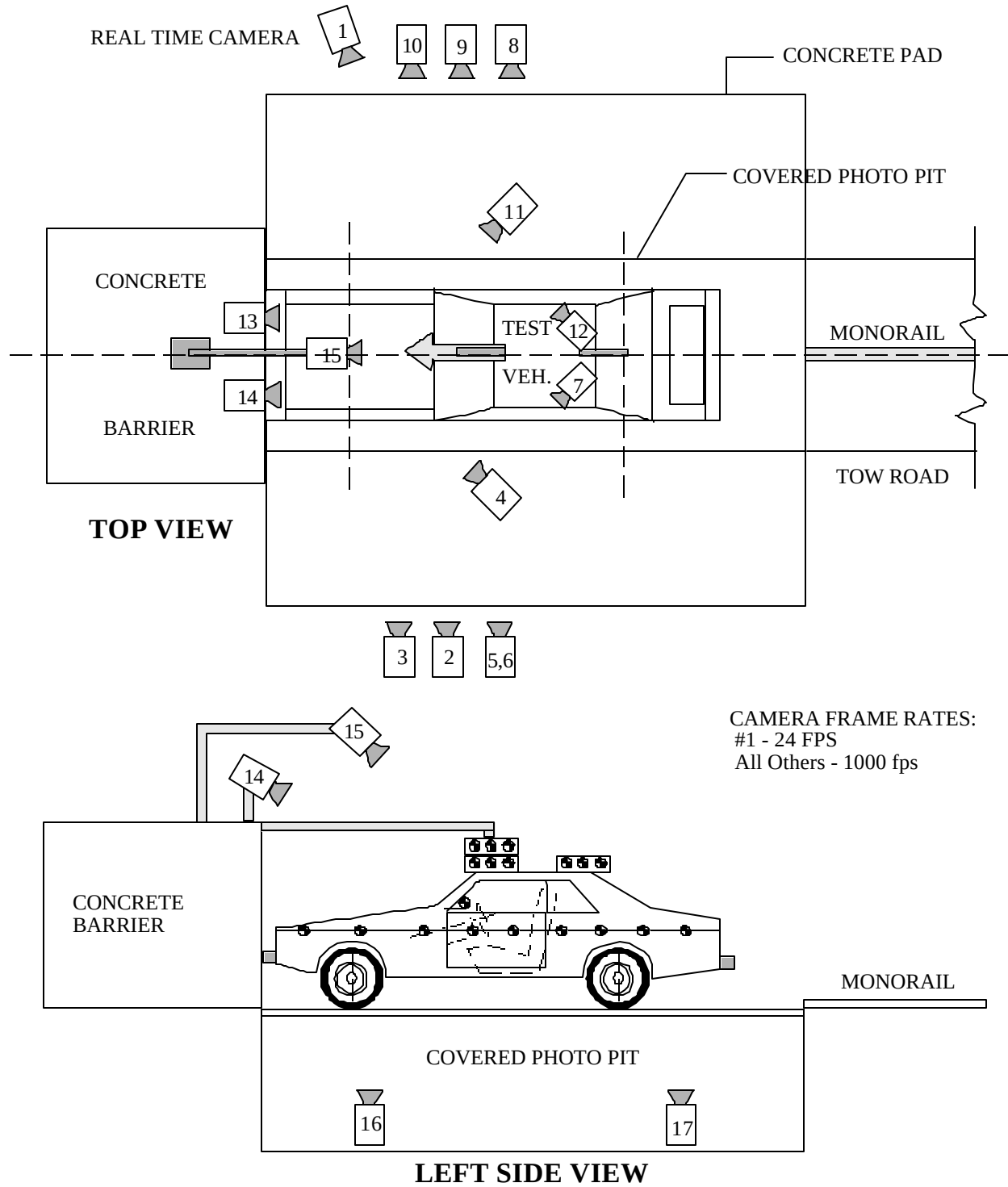
Passenger Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3339	3339	0	-427	-480	53
2	3343	3309	34	-429	-455	26
3	3323	3301	22	-461	-467	6
4	3235	3235	0	-289	-361	72
5	3235	3245	-10	-323	-354	31
6	3232	3215	17	-343	-387	44
7	3109	3147	-38	-240	-249	9
8	3132	3153	-21	-240	-254	14
9	3136	3166	-30	-239	-259	20

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

DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS

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



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

NHTSA Test No.: M40510 Vehicle: 2004 Suzuki Forenza 4-Door Sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)*			ANGLE (deg)**	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	6406	1527	1097	-2	6049	12.5	1020
3	Left Side View	7720	991	1110	-4	7363	25	1020
4	Driver and Interior View	7846	2611	1992	-11	-	25	1060
5	Steering Column (Bottom)	7520	1831	1177	-3	7163	25	1030
6	Steering Column (Top)	7520	1831	1777	-8	7163	25	1020
7	Left side CRS lateral view	3658	2708	2555	-20	-		1000
8	Overall Right Side	5620	1698	1060	-3	5895	12.5	1020
9	Right Side View	7740	1208	1202	-2	8015	25	1010
10	Right Passenger View	7900	1578	1315	-3	8175	35	1010
11	Passenger and Interior View	6950	2978	1974	-5	-	25	1000
12	Right side CRS lateral view	3642	2642	2567	-24	-		1000
13	Passenger Front View	620	-92	1987	-40	-	13	1015
14	Driver Front View	620	-92	1987	-38	-	13	1020
15	Windshield View	0	-530	3374	-53	-	13	1015
16	Pit View of Engine	0	615	-3048	90	-	13	1005
17	Pit View of Fuel Tank	0	2755	-3048	90	-	13	1005

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

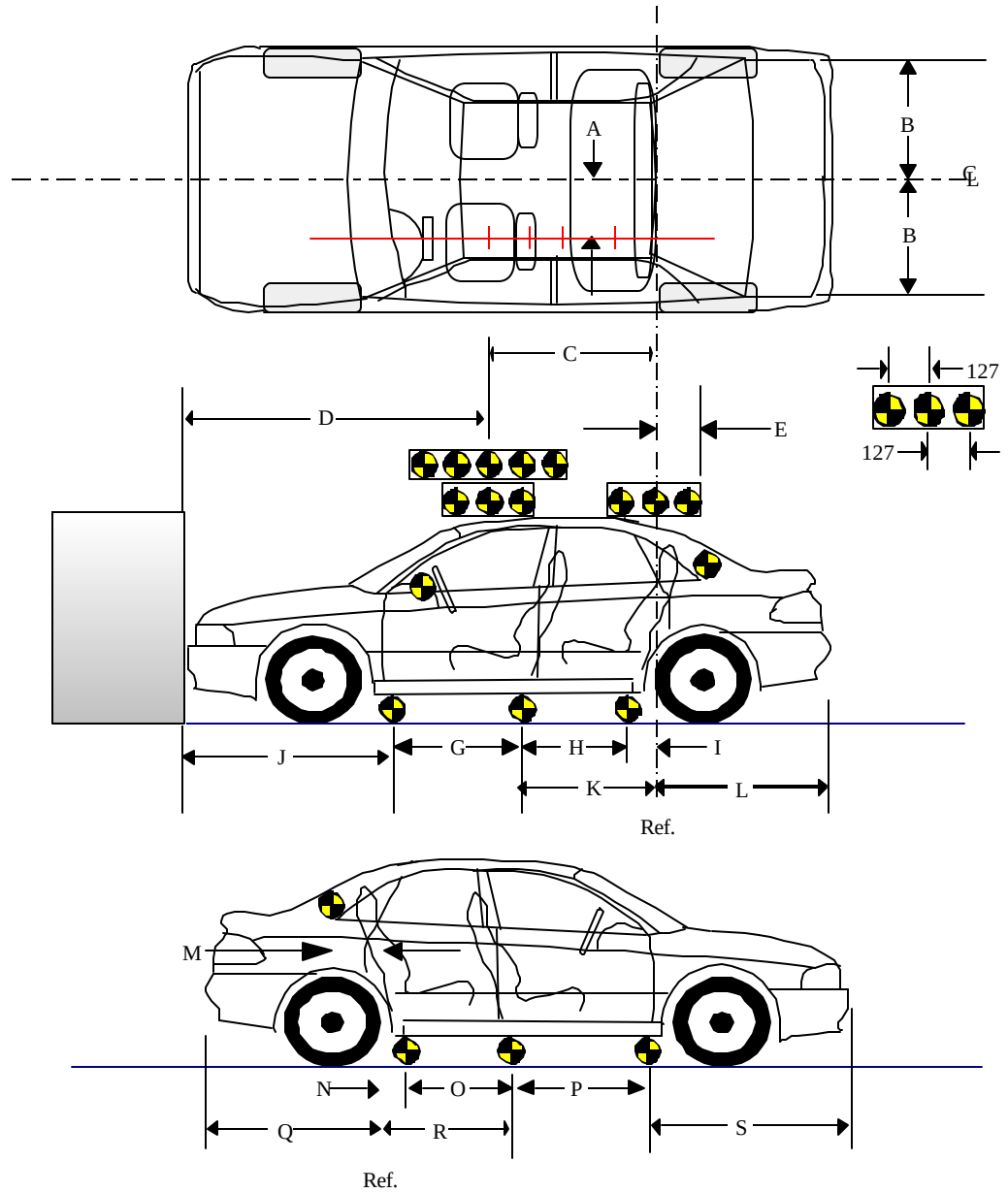
Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

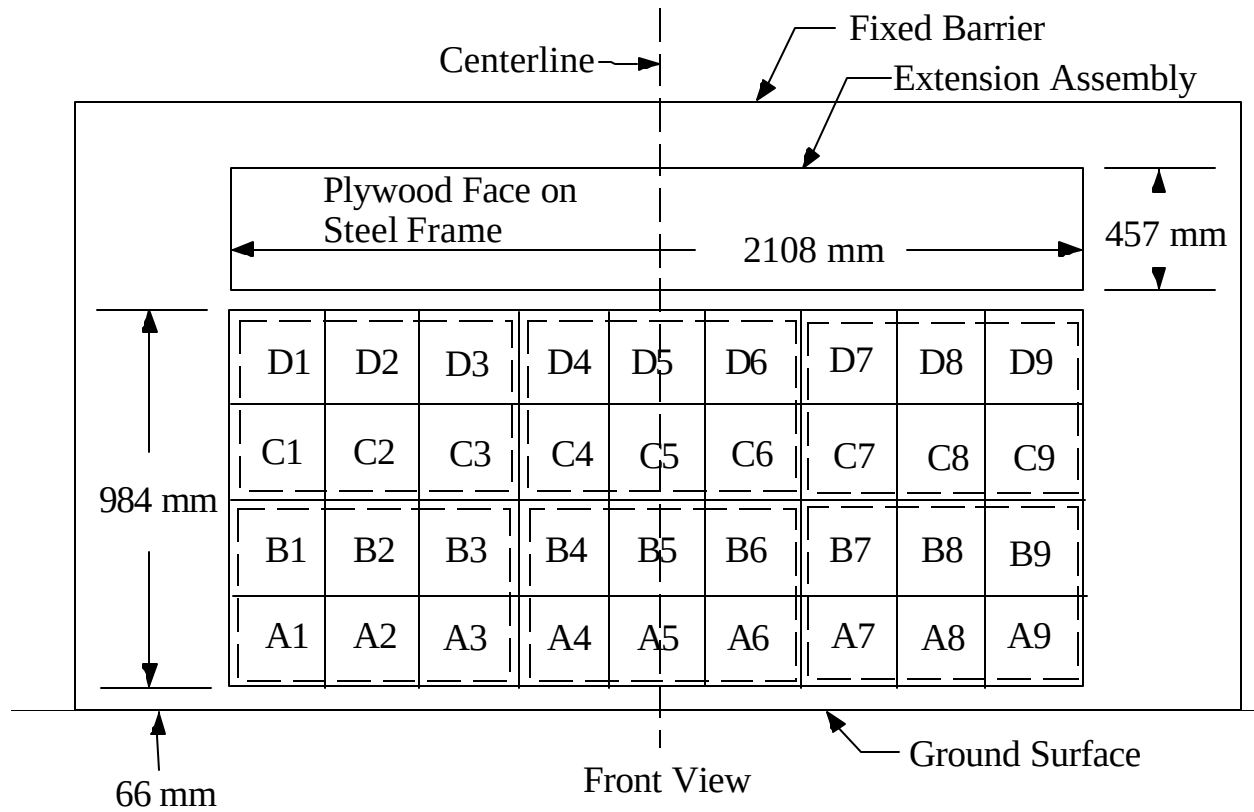
(Dimensions in millimeters)

A	351
B	632
C	1228
D	1939
E	242
F	1499
G	887
H	882
I	117
J	1292
K	999
L	1321
M	235
N	118
O	885
P	886
Q	1406
R	1003
S	1295



DATA SHEET NO. 17 LOAD CELL LOCATIONS ON FIXED BARRIER

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



6 GROUPS OF 6 LOAD CELLS EACH

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

The following data is presented in Appendix B:

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

DATA SHEET NO. 18 POST TEST AIR BAG DATA

NHTSA No.: M40510; Test Date: January 13, 2004; Technician: P. MacDiarmid

Vehicle Model Year/Make/Model: 2004 Suzuki Forenza 4-Door Sedan

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

B. Size of vent holes: (mm²) 1256 -Driver 1256 -Passenger

C. Total vent area: (mm²) 2512 -Driver 2512 -Passenger

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

Driver: 500 -Height; 600 -Width; 200 -Depth

Passenger: 800 -Height; 700 -Width; 500 -Depth

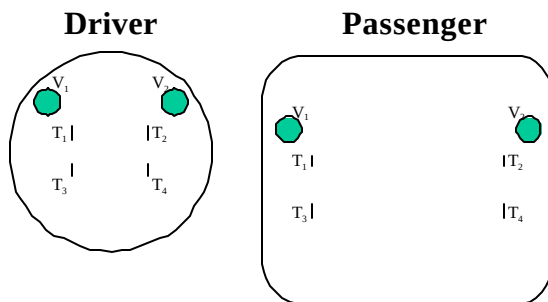
E. Is the air bag tethered?

Driver: X -Yes; - -No; If yes, record length of tether- 200

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

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

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



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

Driver: Air bag: 608837F2D049

Generator: 96 404 247 3 10070027 AN3CX01JB 95D00200

Passenger: Air bag: E01275MAD042

Generator: 96 557 009 3 10070073 BN3CL03MP

DATA SHEET NO. 19 ACCIDENT INVESTIGATION DIVISION DATA

FOR FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Suzuki Forenza 4-Door Sedan

NHTSA Test No.: M40510 VIN: KL5JD52Z04K936623

Model Year: 2004 Build Date: 10/03 Test Date: January 13, 2004

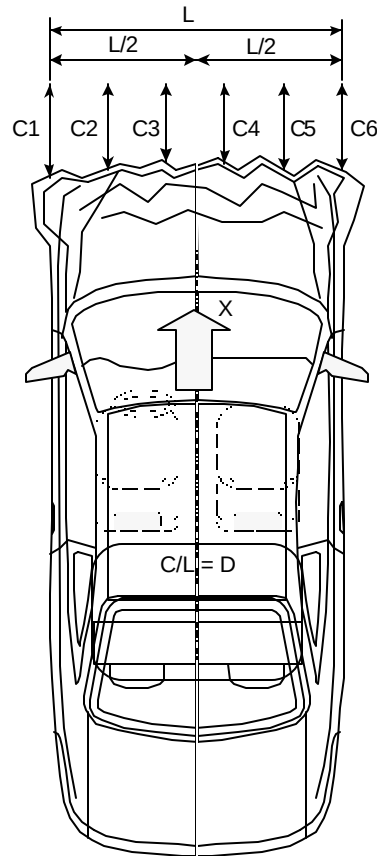
Vehicle Size Category: _____ Test Weight: 1473.5 kg

Vehicle Wheelbase: 2600 mm; Front Overhang: 873 mm; Overall Width: 1725 mm

Collision Deformation Classification (CDC) Code: 12FDEW 3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4390	4088	302
C2 =	4475	4111	364
C3 =	4495	4112	383
C4 =	4495	4099	396
C5 =	4475	4061	414
C6 =	4390	4022	368



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region:

L1=	<u>1330</u>	mm
L2=	<u>665.0</u>	mm
L5=	<u>266</u>	mm

APPENDIX A
PHOTOGRAPHS

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Figure A-1 LOAD CELL LOCATIONS



Figure A-2 VEHICLE CERTIFICATION PLACARD



Figure A-3 VEHICLE TIRE PLACARD



Figure A-4 RIGHT FRONT, AS RECEIVED



Figure A-5 LEFT REAR, AS RECEIVED



Figure A-6 PRE-TEST FRONT VIEW



Figure A-7 POST-TEST FRONT VIEW



Figure A-8 PRE-TEST LEFT SIDE VIEW



Figure A-9 POST-TEST LEFT SIDE VIEW



Figure A-10 PRE-TEST RIGHT SIDE VIEW



Figure A-11 POST-TEST RIGHT SIDE VIEW



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



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



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



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



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



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

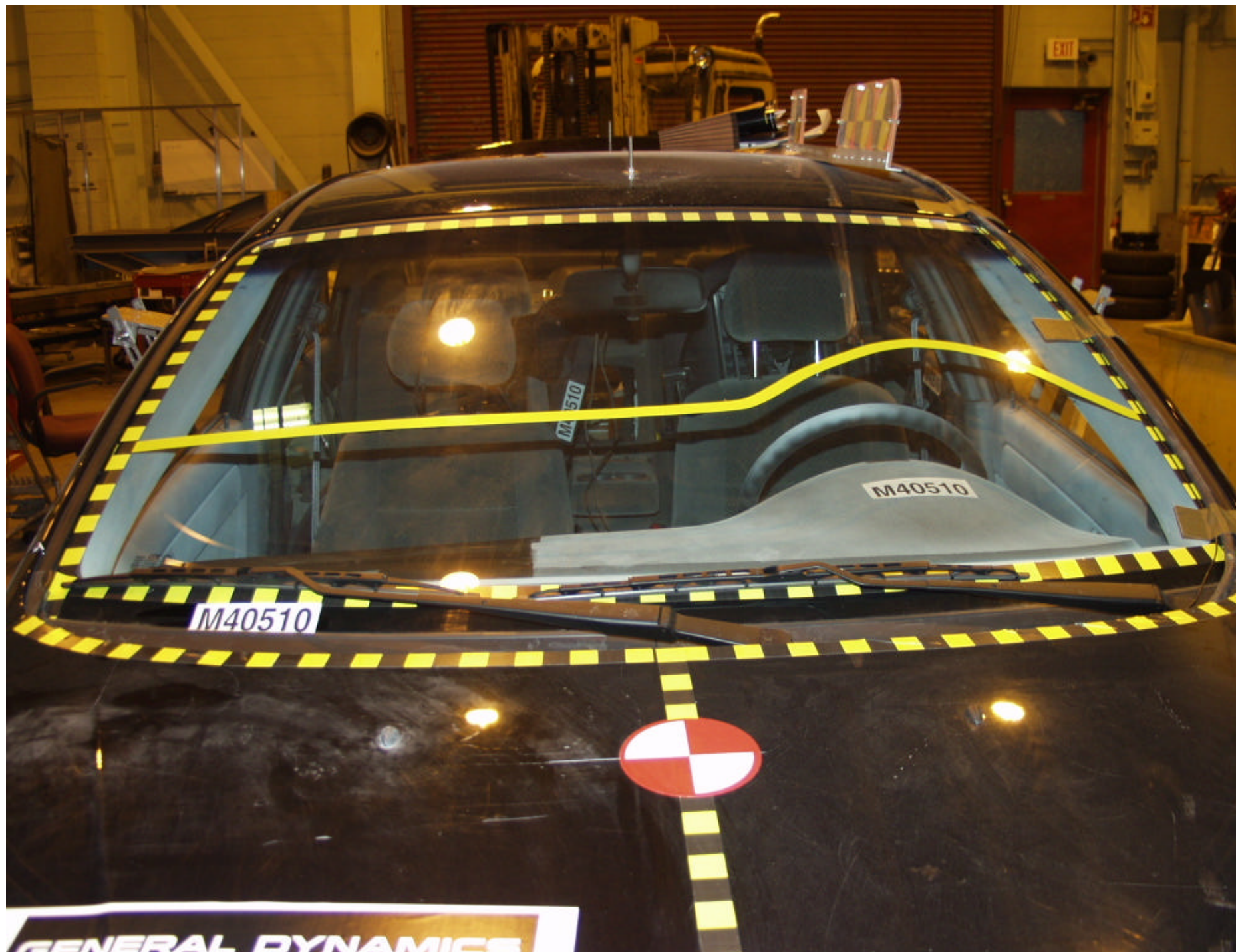


Figure A-18 PRE-TEST WINDSHIELD VIEW



Figure A-19 POST-TEST WINDSHIELD VIEW



Figure A-20 PRE-TEST ENGINE COMPARTMENT VIEW

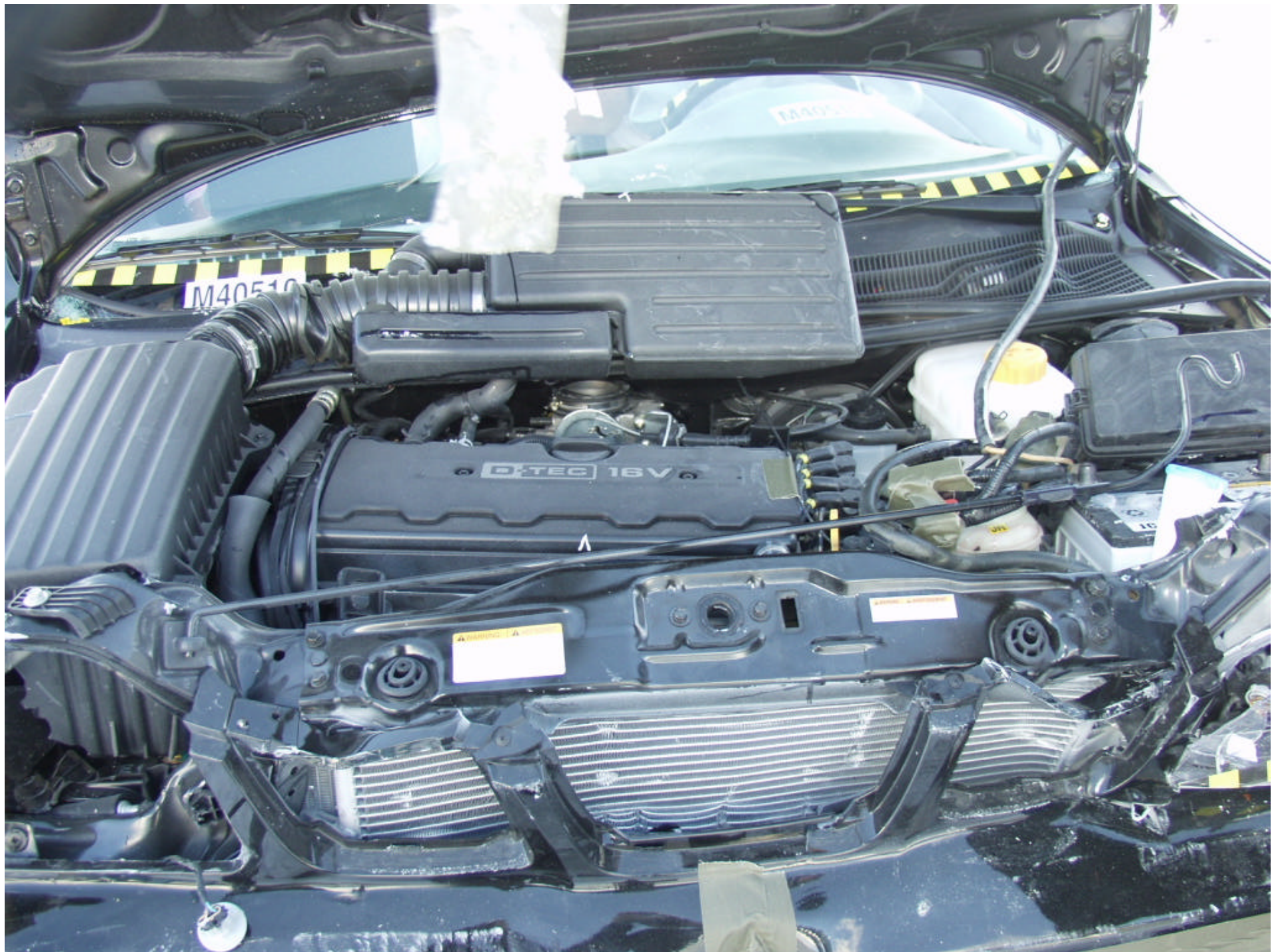


Figure A-21 POST-TEST ENGINE COMPARTMENT VIEW



Figure A-22 PRE-TEST FUEL CAP VIEW



Figure A-23 POST-TEST FUEL CAP VIEW



Figure A-24 PRE-TEST FRONT UNDERBODY VIEW

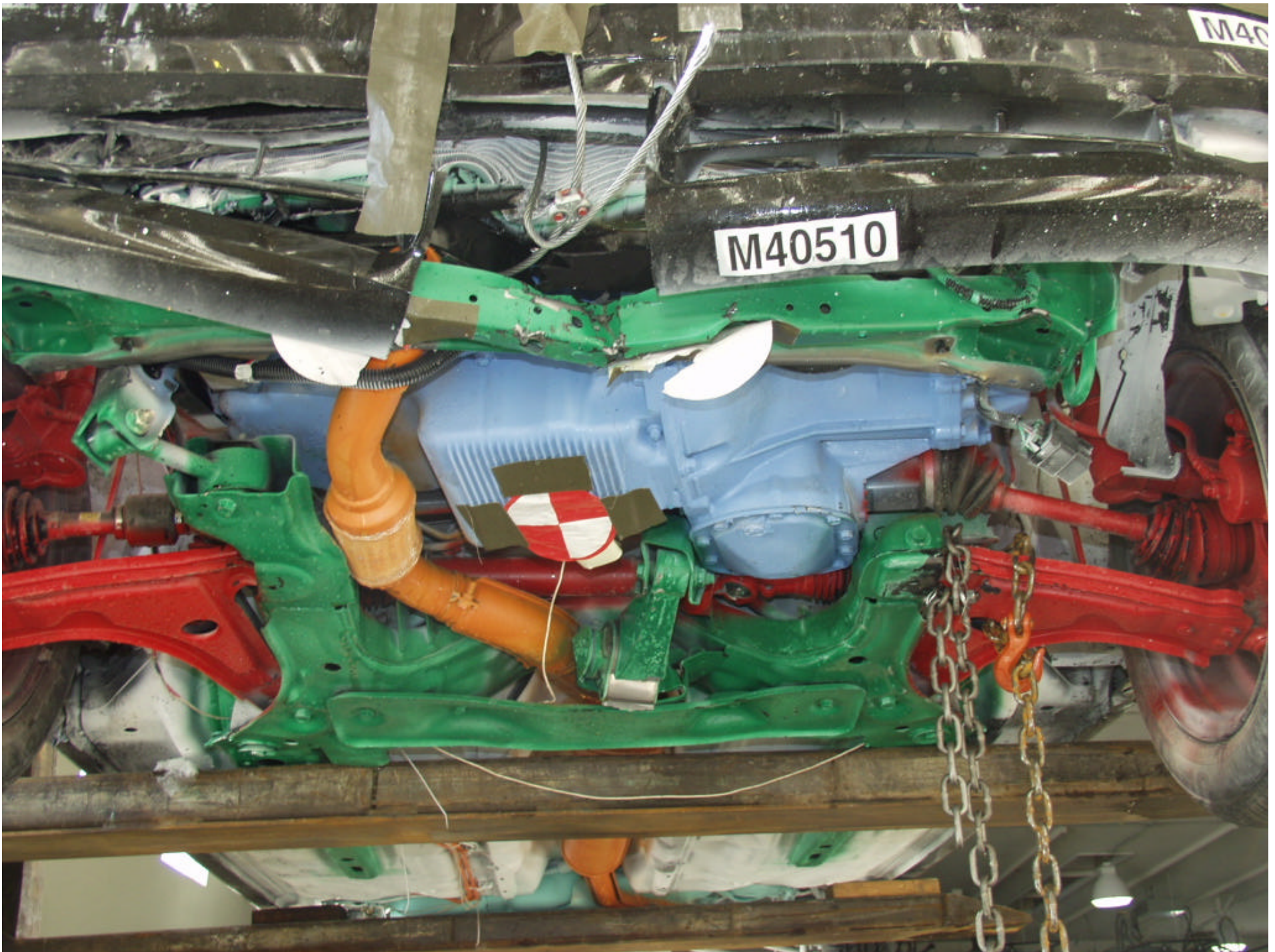


Figure A-25 POST-TEST FRONT UNDERBODY VIEW

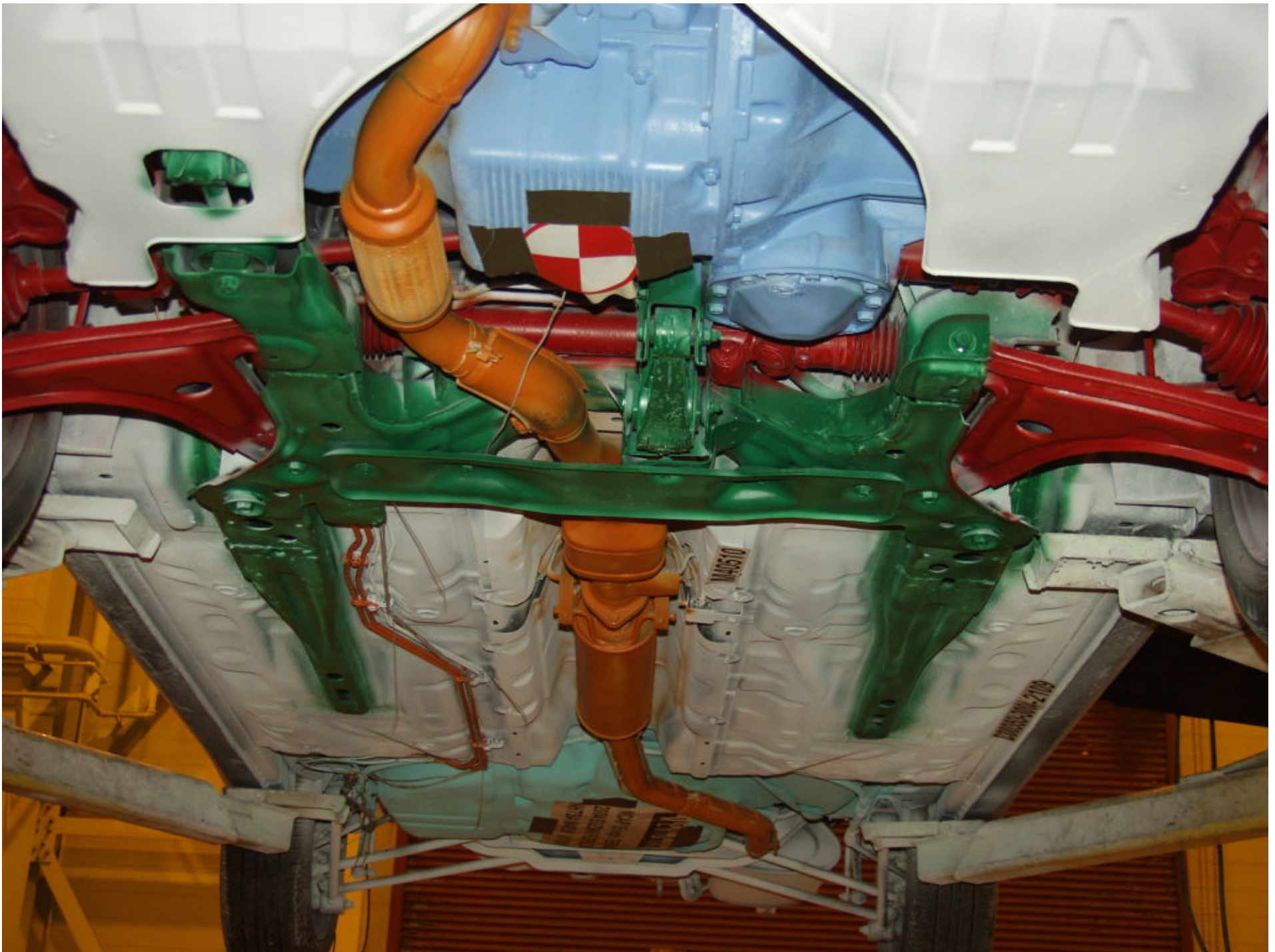


Figure A-26 PRE-TEST MID UNDERBODY VIEW

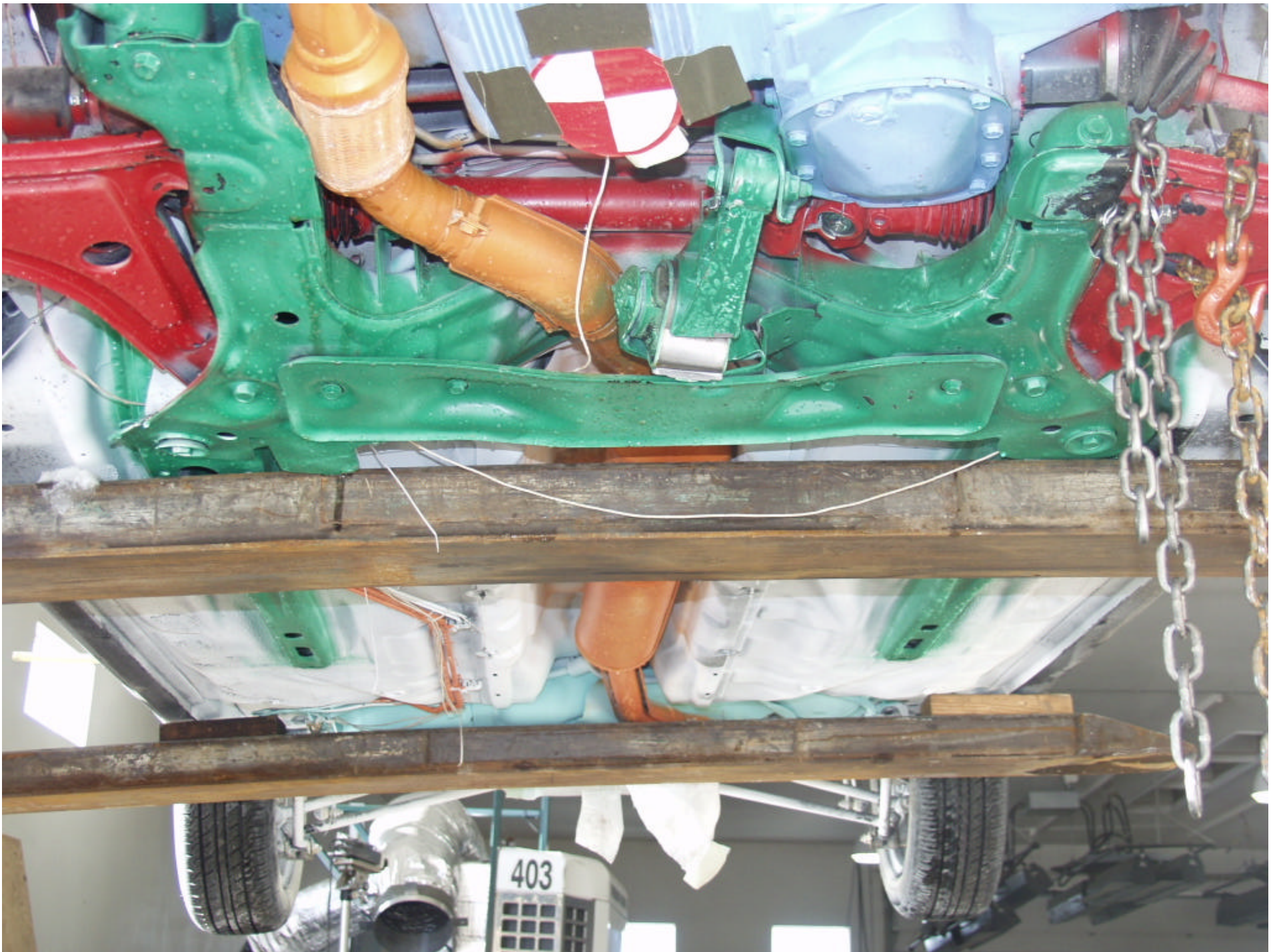


Figure A-27 POST-TEST MID UNDERBODY VIEW



Figure A-28 PRE-TEST REAR UNDERBODY VIEW



Figure A-29 POST-TEST REAR UNDERBODY VIEW



Figure A-30 PRE-TEST DRIVER HEAD LOCATION



Figure A-31 POST-TEST DRIVER HEAD LOCATION



Figure A-32 PRE-TEST DRIVER POSITION VIEW



Figure A-33 POST-TEST DRIVER POSITION VIEW



Figure A-34 PRE-TEST DRIVER AND INTERIOR VIEW



Figure A-35 POST-TEST DRIVER AND INTERIOR VIEW



Figure A-36 PRE-TEST DRIVER FEET VIEW



Figure A-37 POST-TEST DRIVER FEET VIEW



Figure A-38 PRE-TEST DRIVER KNEE BOLSTER VIEW



Figure A-39 POST-TEST DRIVER KNEE BOLSTER VIEW



Figure A-40 PRE-TEST DRIVER FLOOR PAN VIEW



Figure A-41 POST-TEST DRIVER FLOOR PAN VIEW



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Figure A-42 POST-TEST DRIVER HEAD VIEW



Figure A-43 POST-TEST DRIVER CONTACT TO AIRBAG



Figure A-44 PRE-TEST PASSENGER HEAD LOCATION



Figure A-45 POST-TEST PASSENGER HEAD LOCATION



Figure A-46 PRE-TEST PASSENGER POSITION VIEW



Figure A-47 POST-TEST PASSENGER POSITION VIEW



Figure A-48 PRE-TEST PASSENGER AND INTERIOR VIEW



Figure A-49 POST-TEST PASSENGER AND INTERIOR VIEW



Figure A-50 PRE- TEST PASSENGER FEET VIEW



A-54

8642-NCAP-40

Figure A-51 POST-TEST PASSENGER FEET VIEW



Figure A-52 PRE-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-53 POST-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-54 PRE-TEST PASSENGER FLOOR PAN VIEW



Figure A-55 POST-TEST PASSENGER FLOOR PAN VIEW



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8642-NCAP-40

Figure A-56 POST-TEST PASSENGER HEAD VIEW



Figure A-57 POST-TEST PASSENGER CONTACT TO AIRBAG



Figure A-58 ROLLOVER VIEW



Figure A-59 IMPACT VIEW

APPENDIX B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

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

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

DATA CHANNEL FILTER CLASS SUMMARY

NHTSA TEST NO.

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

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2	V1P1 Head 9 Array X Arm Az [g, CFC_1000]	B-9
3	V1P1 Head 9 Array Y Arm Ax [g, CFC_1000]	B-10
4	V1P1 Head 9 Array Y Arm Az [g, CFC_1000]	B-11
5	V1P1 Head 9 Array Z Arm Ax [g, CFC_1000]	B-12
6	V1P1 Head 9 Array Z Arm Ay [g, CFC_1000]	B-13
7	V1P1 Head CG x [g, CFC_1000]	B-14
8	V1P1 Head CG y [g, CFC_1000]	B-15
9	V1P1 Head CG z [g, CFC_1000]	B-16
10	V1P1 Head CG Resultant [g, CFC_1000]	B-17
11	V1P1 Head CG Red x [g, CFC_1000]	B-18
12	V1P1 Head CG Red y [g, CFC_1000]	B-19
13	V1P1 Head CG Red z [g, CFC_1000]	B-20
14	V1P1 Head CG Red Resultant [g, CFC_1000]	B-21
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16	V1P1 Upper Neck Fy [N, CFC_1000]	B-23
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18	V1P1 Upper Neck F Resultant [N, CFC_1000]	B-25
19	V1P1 Upper Neck Mx [N-m, CFC_600]	B-26
20	V1P1 Upper Neck My [N-m, CFC_600]	B-27
21	V1P1 Upper Neck Mz [N-m, CFC_600]	B-28
22	V1P1 Upper Neck M Resultant [N-m, CFC_600]	B-29
23	V1P1 Chest x [g, CFC_180]	B-30
24	V1P1 Chest y [g, CFC_180]	B-31
25	V1P1 Chest z [g, CFC_180]	B-32
26	V1P1 Chest Resultant [g, CFC_180]	B-33
27	V1P1 Chest Red x [g, CFC_180]	B-34
28	V1P1 Chest Red y [g, CFC_180]	B-35
29	V1P1 Chest Red z [g, CFC_180]	B-36
30	V1P1 Chest Red Resultant [g, CFC_180]	B-37
31	V1P1 Chest Compression x [mm, CFC_600]	B-38
32	V1P1 Pelvic x [g, CFC_1000]	B-39
33	V1P1 Pelvic y [g, CFC_1000]	B-40
34	V1P1 Pelvic z [g, CFC_1000]	B-41
35	V1P1 Pelvic Resultant [g, CFC_1000]	B-42
36	V1P1 Left Femur z [N, CFC_600]	B-43
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38	V1P1 Left Upper Tibia Mx [N-m, CFC_600]	B-45
39	V1P1 Left Upper Tibia My [N-m, CFC_600]	B-46
40	V1P1 Left Lower Tibia Fz [N, CFC_600]	B-47
41	V1P1 Left Lower Tibia Mx [N-m, CFC_600]	B-48
42	V1P1 Left Lower Tibia My [N-m, CFC_600]	B-49
43	V1P1 Right Upper Tibia Mx [N-m, CFC_600]	B-50
44	V1P1 Right Upper Tibia My [N-m, CFC_600]	B-51
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50	V1P1 Left Foot Fore z [g, CFC_600]	B-57
51	V1P1 Right Foot Aft x [g, CFC_600]	B-58
52	V1P1 Right Foot Aft z [g, CFC_600]	B-59
53	V1P1 Right Foot Fore z [g, CFC_600]	B-60
54	V1P1 Lap Belt [N, CFC_60]	B-61
55	V1P2 Head 9 Array X Arm Ay [g, CFC_1000]	B-62
56	V1P2 Head 9 Array X Arm Az [g, CFC_1000]	B-63
57	V1P2 Head 9 Array Y Arm Ax [g, CFC_1000]	B-64
58	V1P2 Head 9 Array Y Arm Az [g, CFC_1000]	B-65
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62	V1P2 Head CG y [g, CFC_1000]	B-69
63	V1P2 Head CG z [g, CFC_1000]	B-70
64	V1P2 Head CG Resultant [g, CFC_1000]	B-71
65	V1P2 Head CG Red x [g, CFC_1000]	B-72
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68	V1P2 Head CG Red Resultant [g, CFC_1000]	B-75
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83	V1P2 Chest Red z [g, CFC_180]	B-90
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85	V1P2 Chest Compression x [mm, CFC_600]	B-92
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87	V1P2 Pelvic y [g, CFC_1000]	B-94
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89	V1P2 Pelvic Resultant [g, CFC_1000]	B-96
90	V1P2 Left Femur z [N, CFC_600]	B-97
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95	V1P2 Left Lower Tibia Mx [N-m, CFC_600]	B-102
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97	V1P2 Right Upper Tibia Mx [N-m, CFC_600]	B-104
98	V1P2 Right Upper Tibia My [N-m, CFC_600]	B-105
99	V1P2 Right Lower Tibia Fz [N, CFC_600]	B-106
100	V1P2 Right Lower Tibia Mx [N-m, CFC_600]	B-107
101	V1P2 Right Lower Tibia My [N-m, CFC_600]	B-108
102	V1P2 Left Foot Aft x [g, CFC_600]	B-109
103	V1P2 Left Foot Aft z [g, CFC_600]	B-110
104	V1P2 Left Foot Fore z [g, CFC_600]	B-111
105	V1P2 Right Foot Aft x [g, CFC_600]	B-112
106	V1P2 Right Foot Aft z [g, CFC_600]	B-113
107	V1P2 Right Foot Fore z [g, CFC_600]	B-114
108	V1P2 Lap Belt [N, CFC_60]	B-115
109	V1 Left Rear #1x [g, CFC_60]	B-116
110	V1 Left Rear #1x Velocity [kph, CFC_180]	B-117
111	V1 Left Rear #1x Displacement [mm, CFC_180]	B-118
112	V1 Right Rear #2x [g, CFC_60]	B-119
113	V1 Right Rear #2x Velocity [kph, CFC_180]	B-120
114	V1 Right Rear #2x Displacement [mm, CFC_180]	B-121
115	V1 Engine Top #3x [g, CFC_60]	B-122
116	V1 Engine Top #3x Velocity [kph, CFC_180]	B-123
117	V1 Engine Top #3x Displacement [mm, CFC_180]	B-124
118	V1 Engine Bottom #4x [g, CFC_60]	B-125
119	V1 Engine Bottom #4x Velocity [kph, CFC_180]	B-126
120	V1 Engine Bottom #4x Displacement [mm, CFC_180]	B-127
121	V1 Right Caliper #5x [g, CFC_60]	B-128
122	V1 Right Caliper #5x Velocity [kph, CFC_180]	B-129
123	V1 Right Caliper #5x Displacement [mm, CFC_180]	B-130
124	V1 Instrument Panel #6x [g, CFC_60]	B-131
125	V1 Instrument Panel #6x Velocity [kph, CFC_180]	B-132
126	V1 Instrument Panel #6x Displacement [mm, CFC_180]	B-133
127	V1 Left Caliper #7x [g, CFC_60]	B-134
128	V1 Left Caliper #7x Velocity [kph, CFC_180]	B-135
129	V1 Left Caliper #7x Displacement [mm, CFC_180]	B-136
130	V1 Left Rear #8z [g, CFC_60]	B-137
131	V1 Left Rear #8z Velocity [kph, CFC_180]	B-138
132	V1 Left Rear #8z Displacement [mm, CFC_180]	B-139
133	V1 Right Rear #9z [g, CFC_60]	B-140
134	V1 Right Rear #9z Velocity [kph, CFC_180]	B-141
135	V1 Right Rear #9z Displacement [mm, CFC_180]	B-142
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137	Barrier Load Cell A2 Fx [N, CFC_60]	B-144
138	Barrier Load Cell A3 Fx [N, CFC_60]	B-145

Table of Data Plots (Continued)

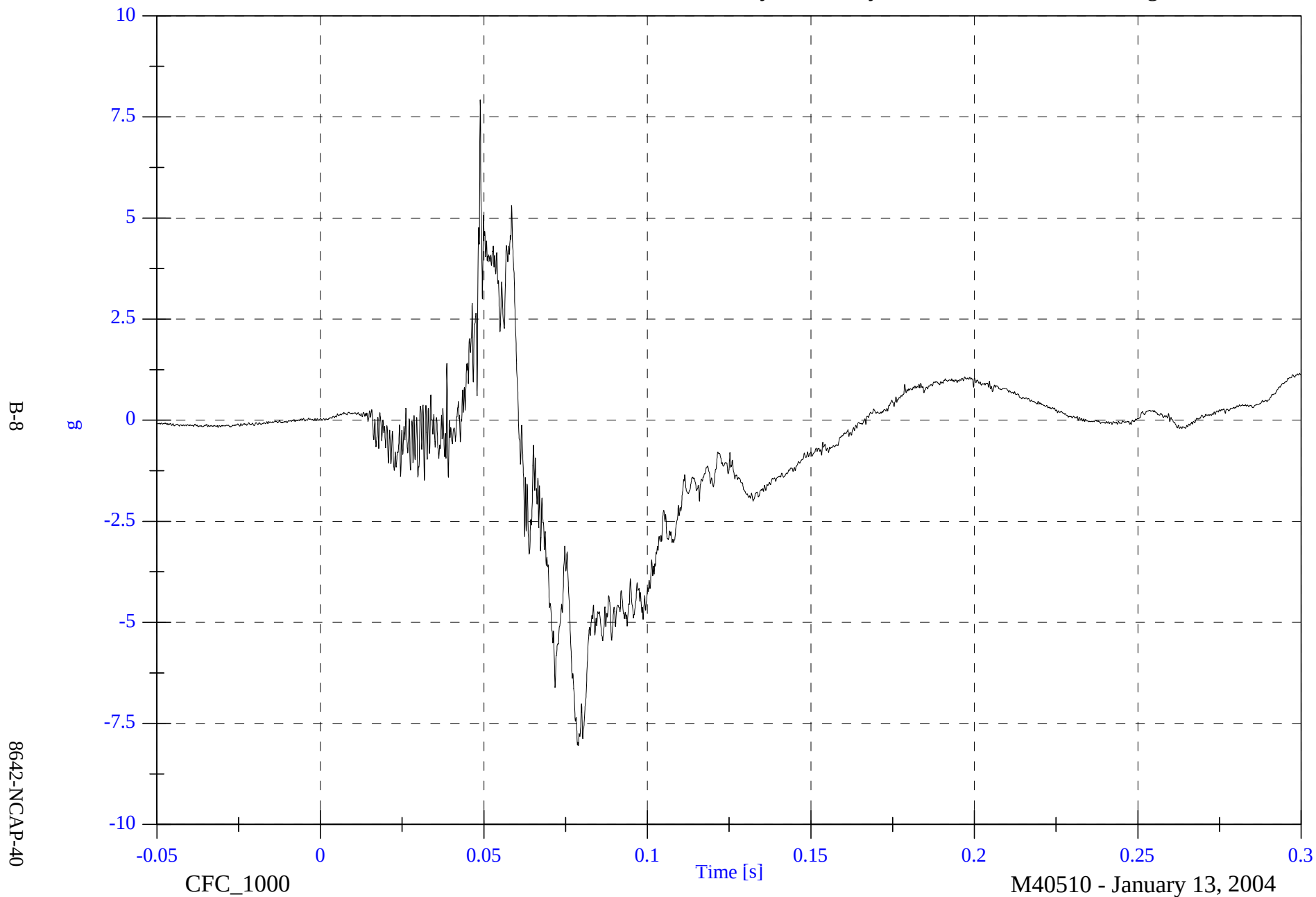
PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
139	Barrier Load Cell A4 Fx [N, CFC_60]	B-146
140	Barrier Load Cell A5 Fx [N, CFC_60]	B-147
141	Barrier Load Cell A6 Fx [N, CFC_60]	B-148
142	Barrier Load Cell A7 Fx [N, CFC_60]	B-149
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146	Barrier Load Cell B2 Fx [N, CFC_60]	B-153
147	Barrier Load Cell B3 Fx [N, CFC_60]	B-154
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149	Barrier Load Cell B5 Fx [N, CFC_60]	B-156
150	Barrier Load Cell B6 Fx [N, CFC_60]	B-157
151	Barrier Load Cell B7 Fx [N, CFC_60]	B-158
152	Barrier Load Cell B8 Fx [N, CFC_60]	B-159
153	Barrier Load Cell B9 Fx [N, CFC_60]	B-160
154	Barrier Load Cell C1 Fx [N, CFC_60]	B-161
155	Barrier Load Cell C2 Fx [N, CFC_60]	B-162
156	Barrier Load Cell C3 Fx [N, CFC_60]	B-163
157	Barrier Load Cell C4 Fx [N, CFC_60]	B-164
158	Barrier Load Cell C5 Fx [N, CFC_60]	B-165
159	Barrier Load Cell C6 Fx [N, CFC_60]	B-166
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161	Barrier Load Cell C8 Fx [N, CFC_60]	B-168
162	Barrier Load Cell C9 Fx [N, CFC_60]	B-169
163	Barrier Load Cell D1 Fx [N, CFC_60]	B-170
164	Barrier Load Cell D2 Fx [N, CFC_60]	B-171
165	Barrier Load Cell D3 Fx [N, CFC_60]	B-172
166	Barrier Load Cell D4 Fx [N, CFC_60]	B-173
167	Barrier Load Cell D5 Fx [N, CFC_60]	B-174
168	Barrier Load Cell D6 Fx [N, CFC_60]	B-175
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170	Barrier Load Cell D8 Fx [N, CFC_60]	B-177
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172	Group 1 Load Cell Sum (A1,A2,A3,B1,B2,B3)	B-179
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2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Head 9 Array X Arm Ay

Max: 7.9 [g] at 0.049 [s]

Min: -8.0 [g] at 0.079 [s]

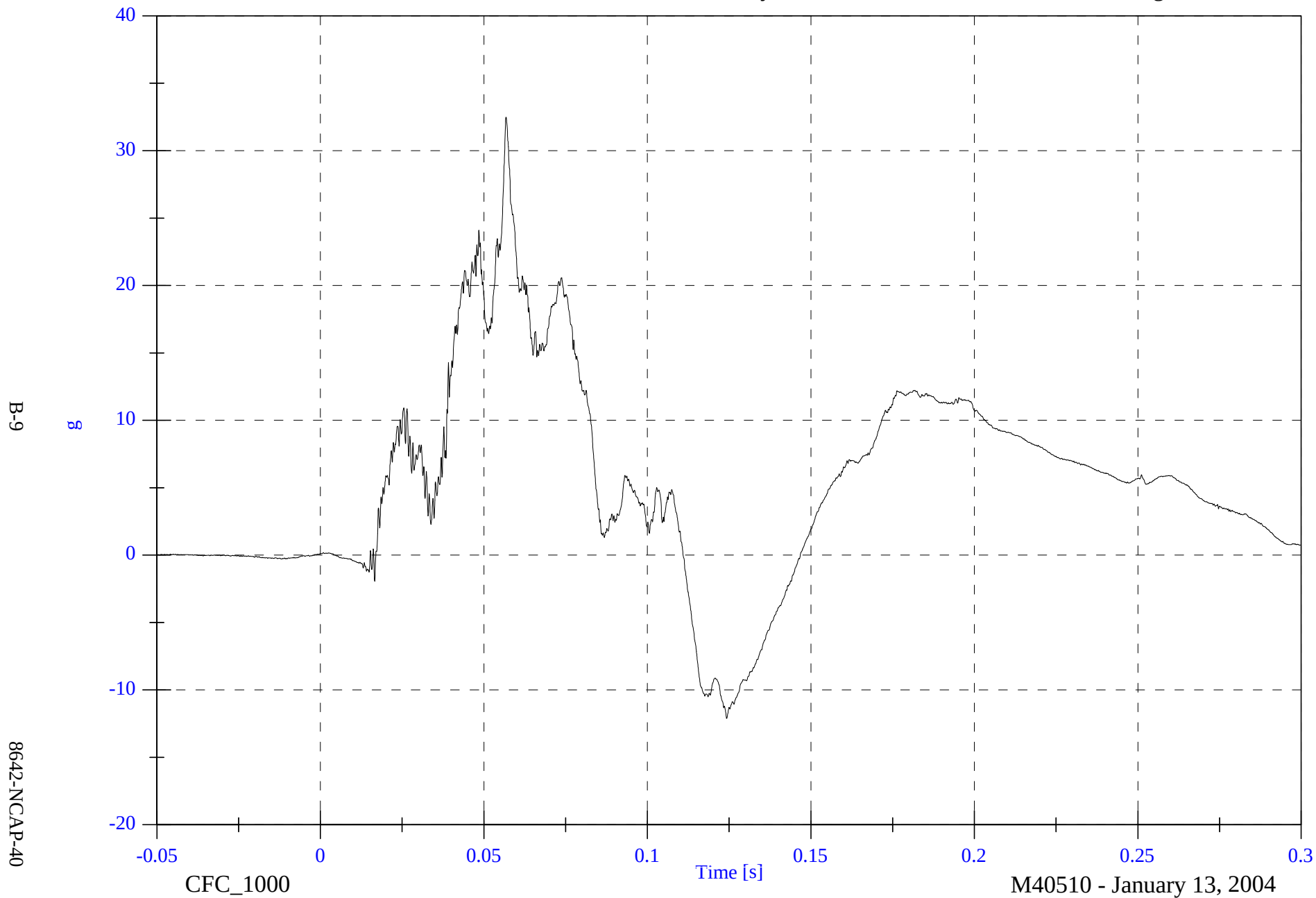


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Head 9 Array X Arm Az

Max: 32.5 [g] at 0.057 [s]

Min: -12.1 [g] at 0.124 [s]

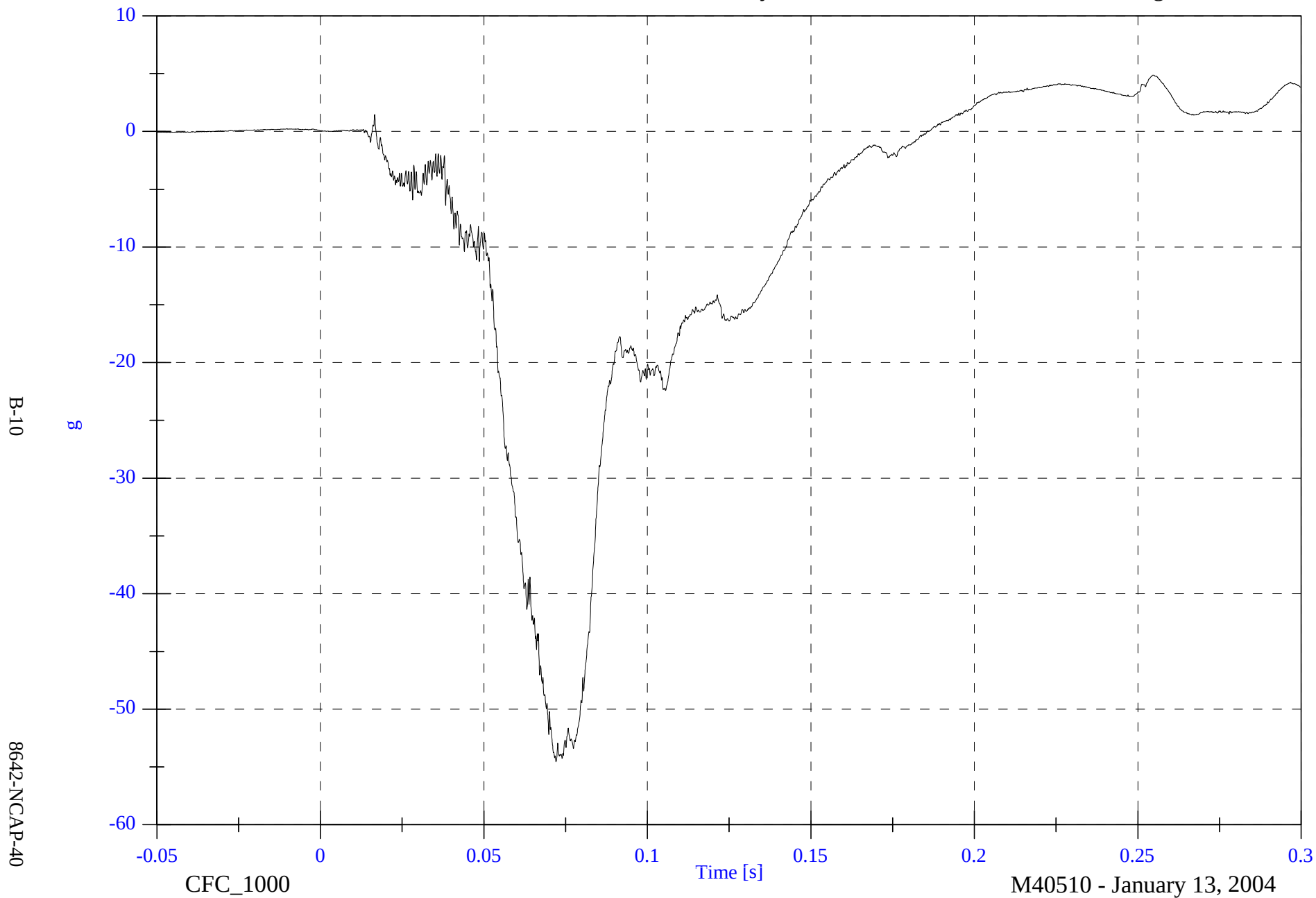


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Head 9 Array Y Arm Ax

Max: 4.9 [g] at 0.255 [s]

Min: -54.5 [g] at 0.072 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

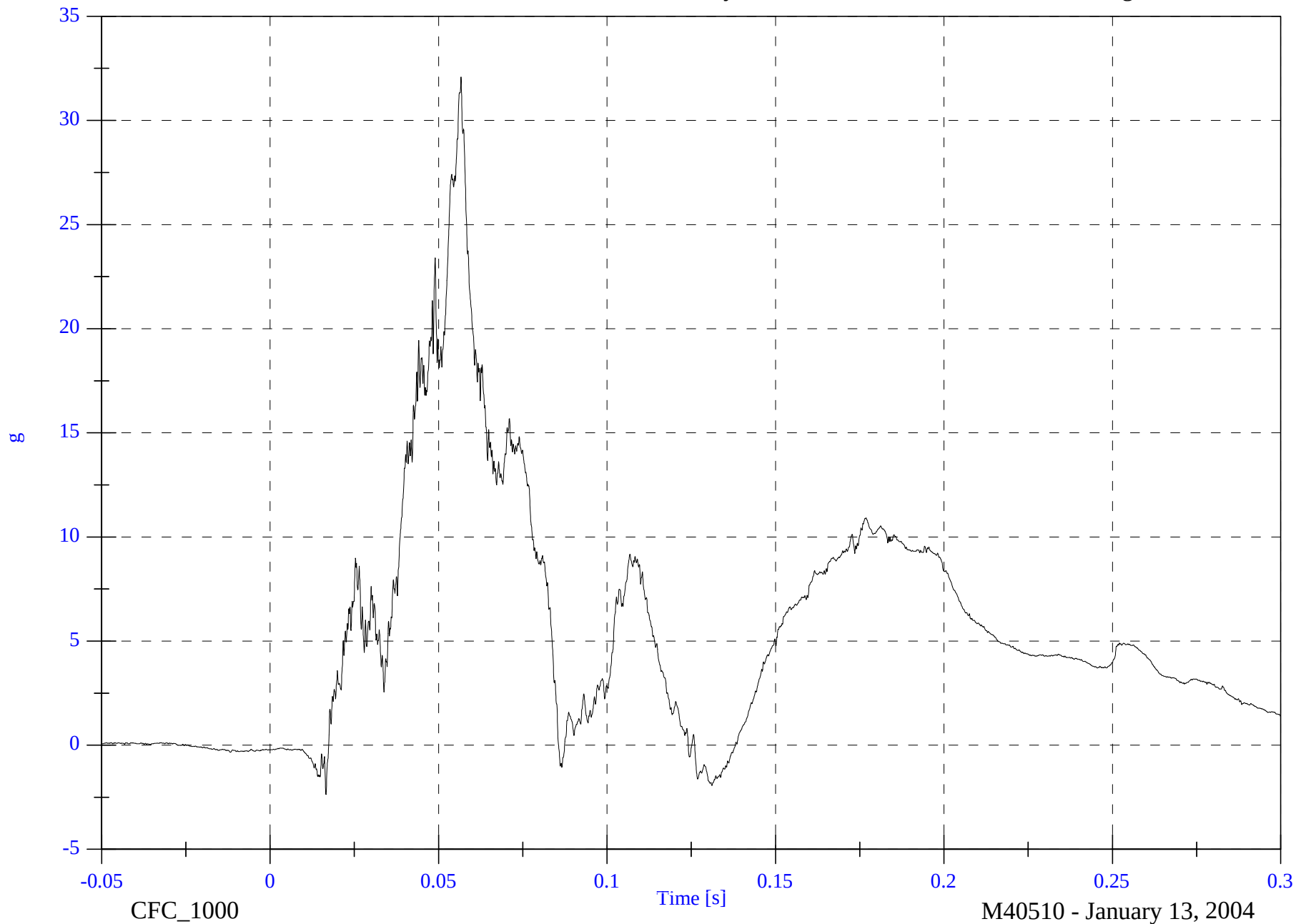
V1P1 Head 9 Array Y Arm Az

Max: 32.1 [g] at 0.057 [s]

Min: -2.4 [g] at 0.017 [s]

B-11

8642-NCAP-40

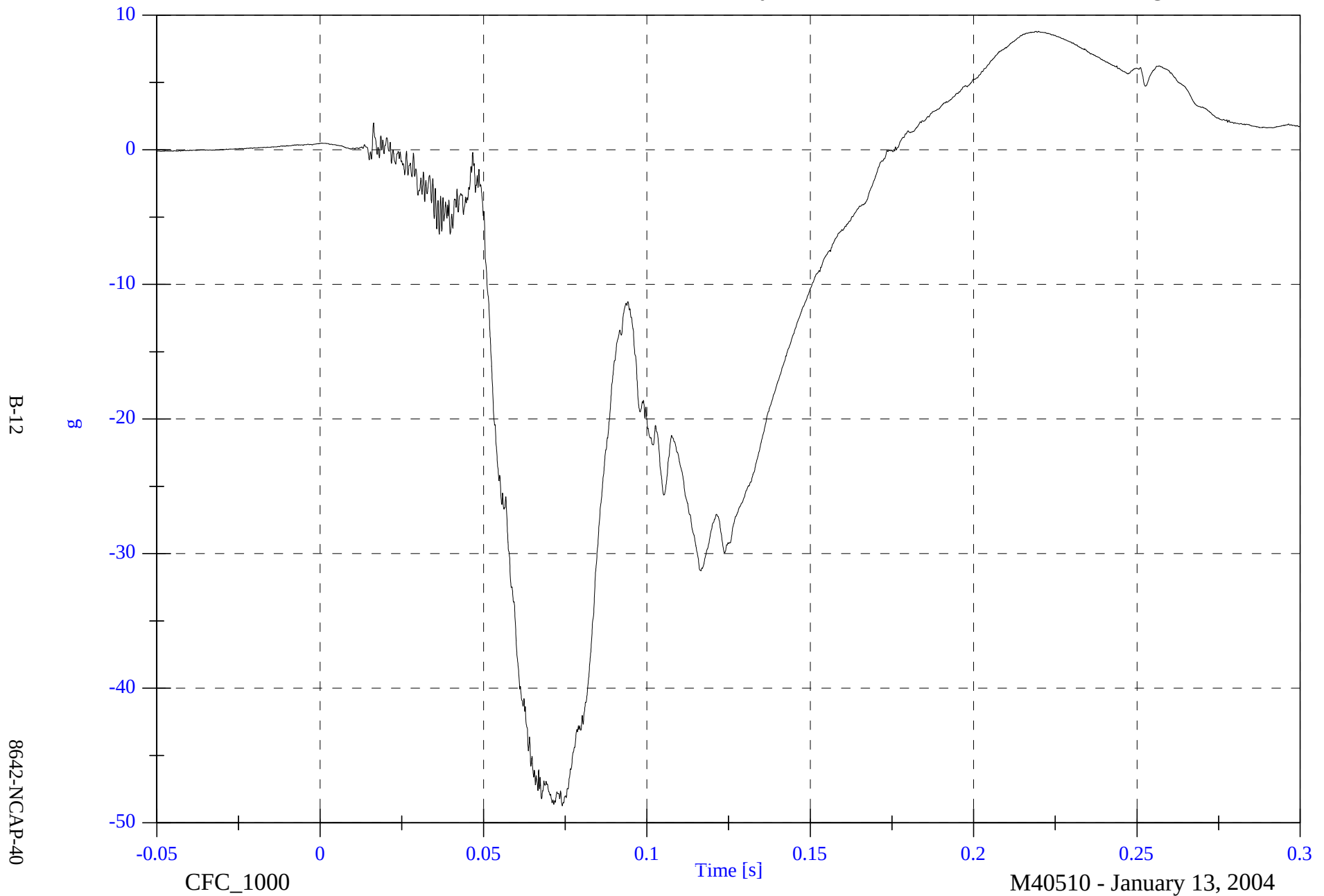


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Head 9 Array Z Arm Ax

Max: 8.8 [g] at 0.220 [s]

Min: -48.7 [g] at 0.074 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

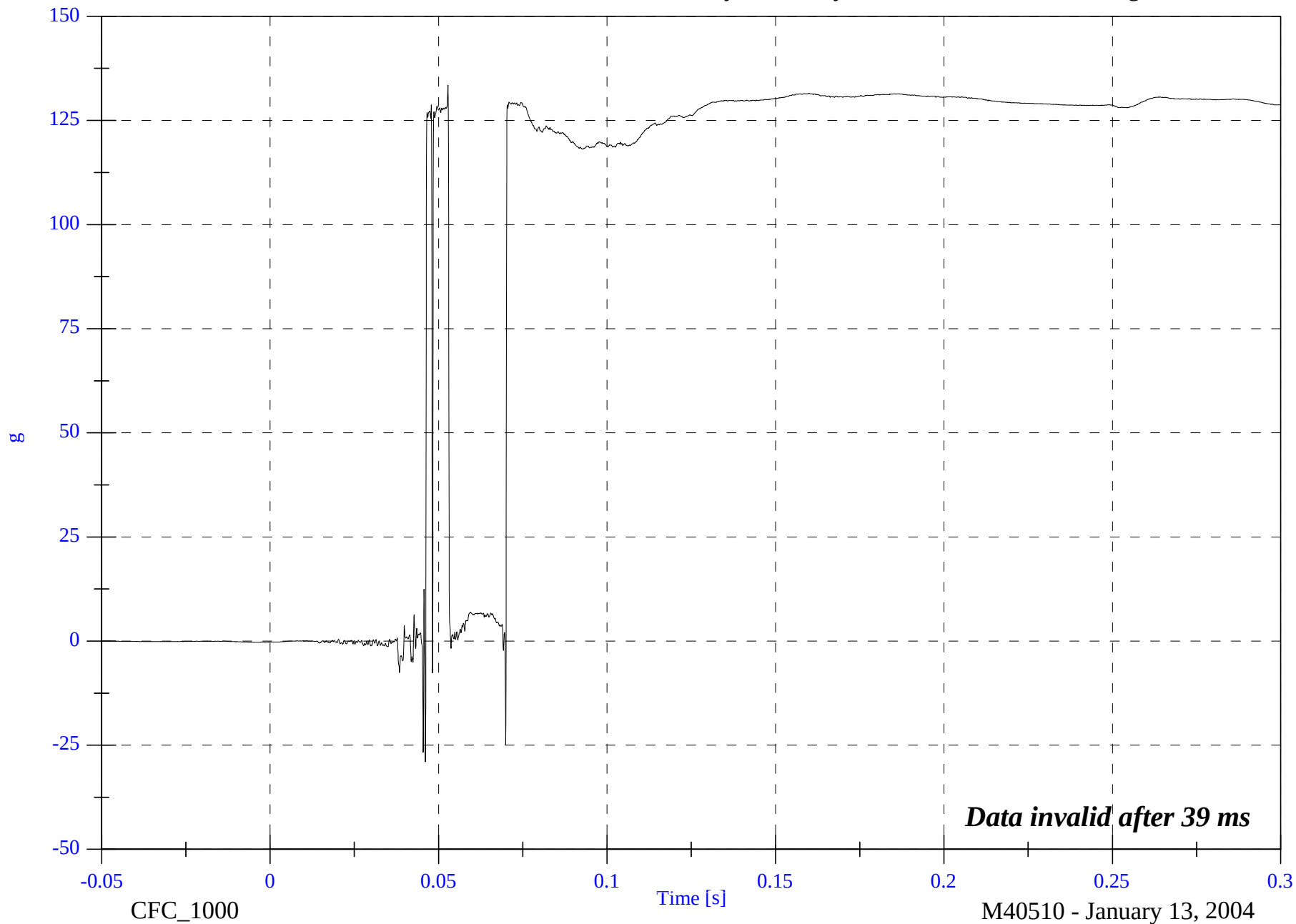
V1P1 Head 9 Array Z Arm Ay

Max: 133.5 [g] at 0.053 [s]

Min: -29.0 [g] at 0.046 [s]

B-13

8642-NCAP-40

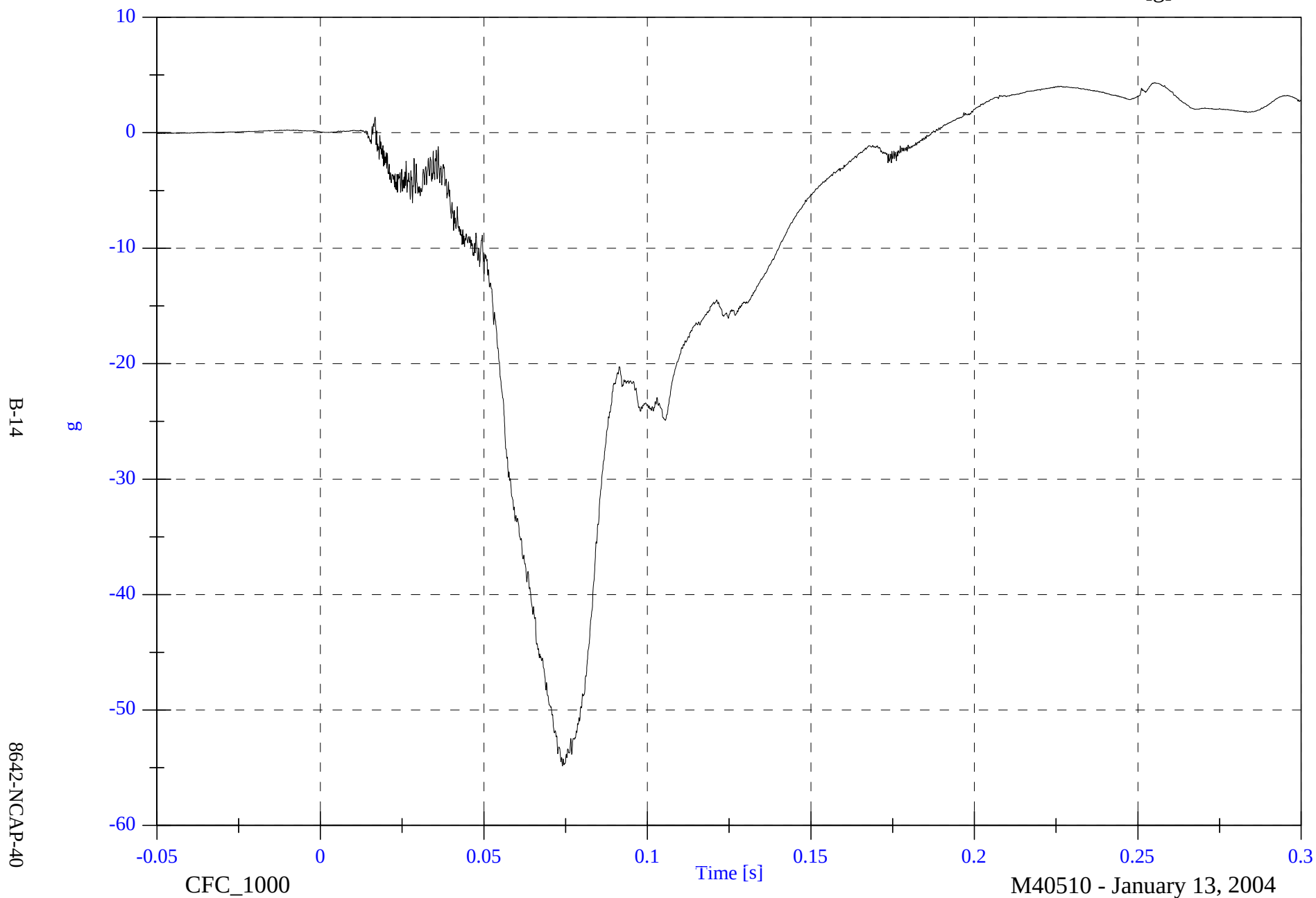


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Head CG x

Max: 4.3 [g] at 0.255 [s]

Min: -54.8 [g] at 0.074 [s]

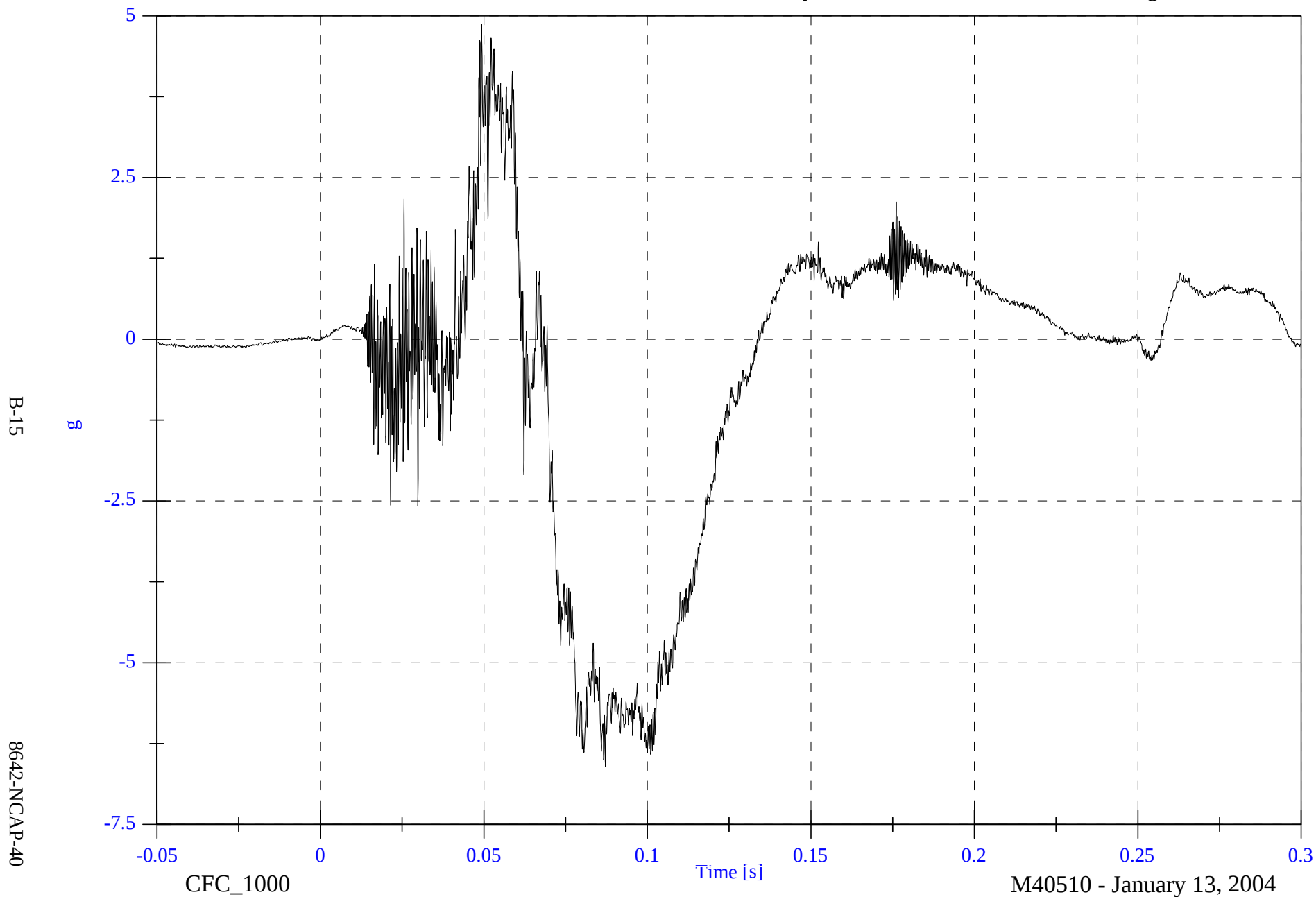


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Head CG y

Max: 4.9 [g] at 0.049 [s]

Min: -6.6 [g] at 0.087 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

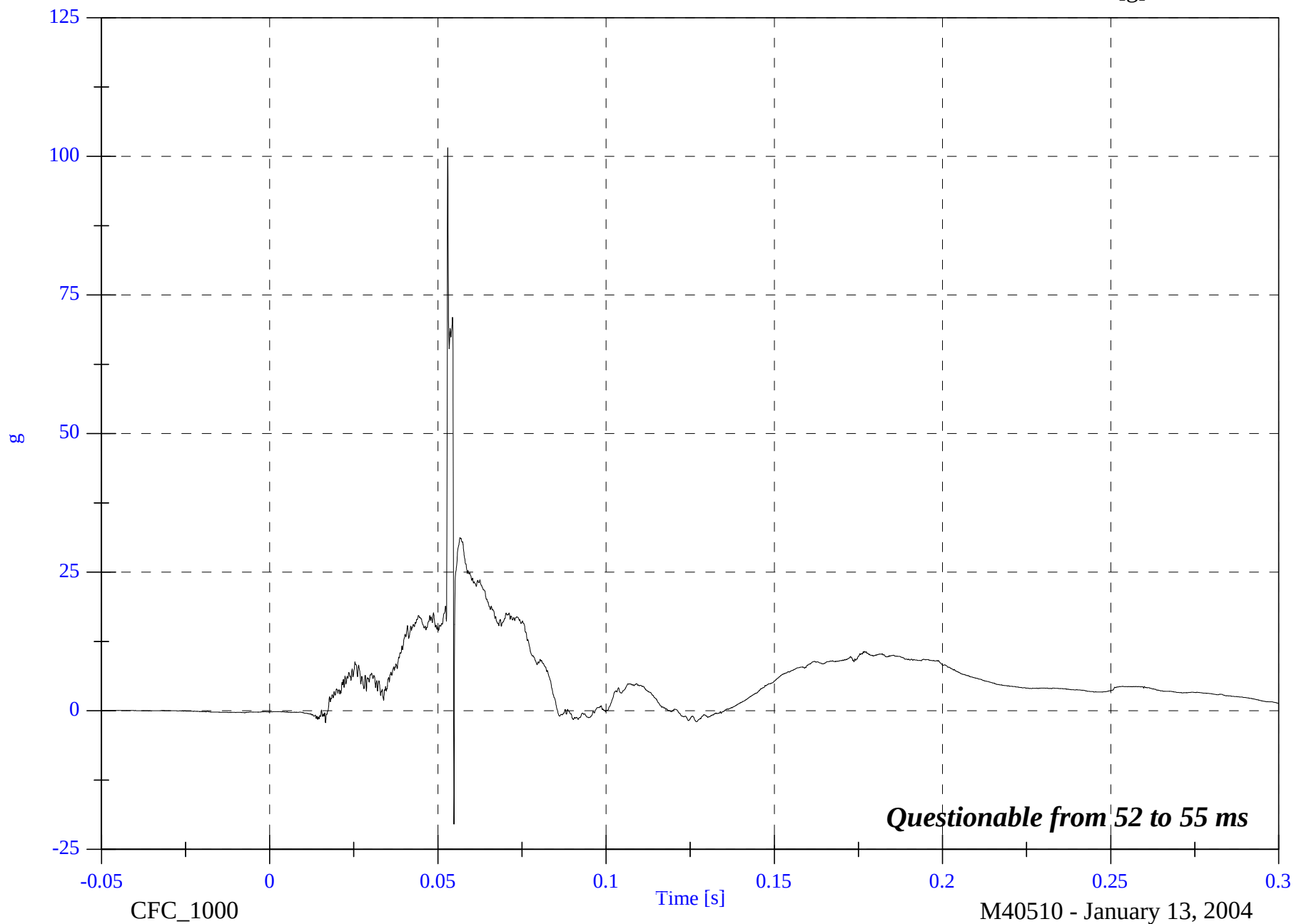
V1P1 Head CG z

Max: 101.6 [g] at 0.053 [s]

Min: -20.5 [g] at 0.055 [s]

B-16

8642-NCAP-40



2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Head CG Resultant

Max: 103.0 [g] at 0.053 [s]

Min: 0.1 [g] at -0.036 [s]

B-17

8642-NCAP-40

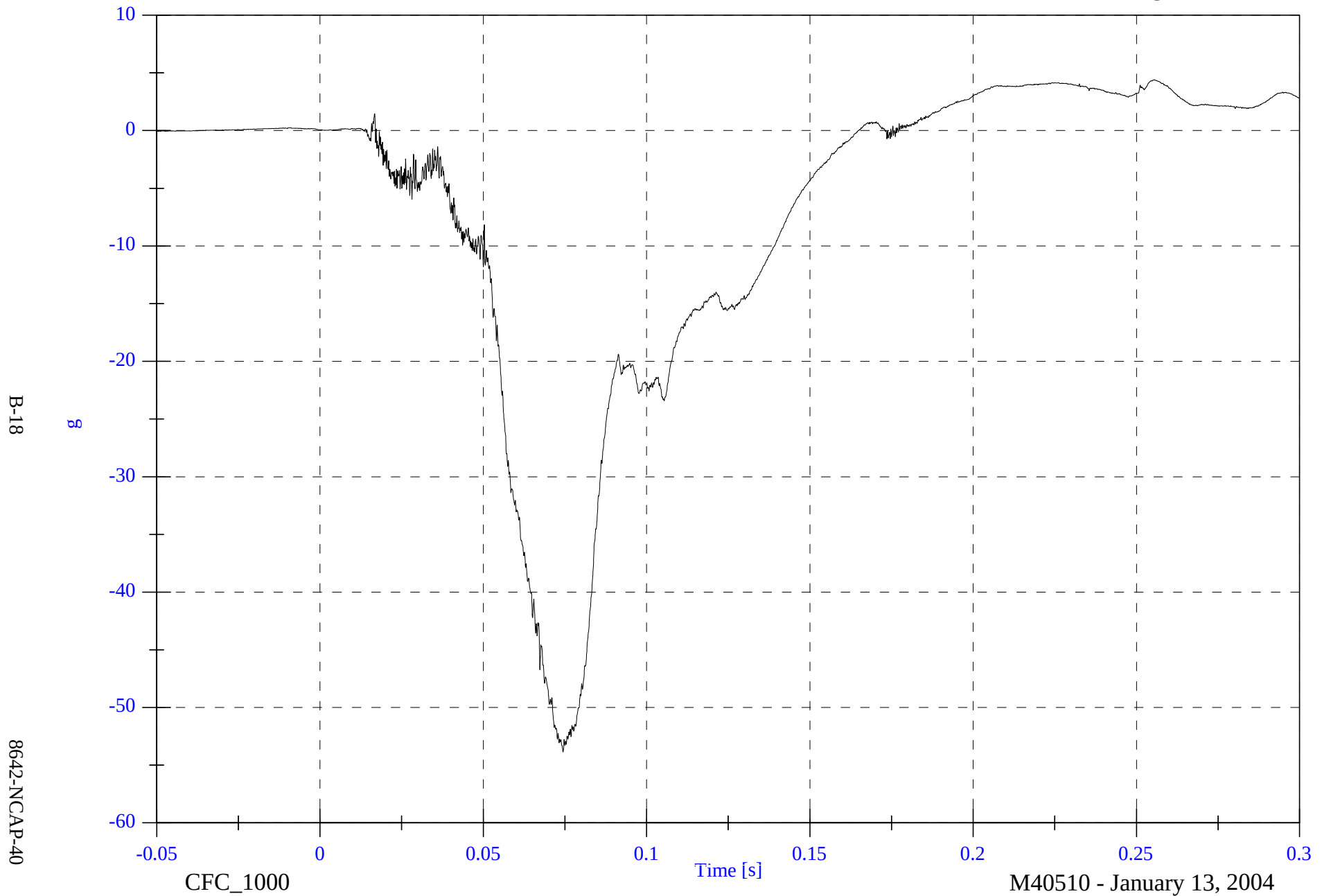


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Head CG Red x

Max: 4.4 [g] at 0.255 [s]

Min: -53.9 [g] at 0.074 [s]

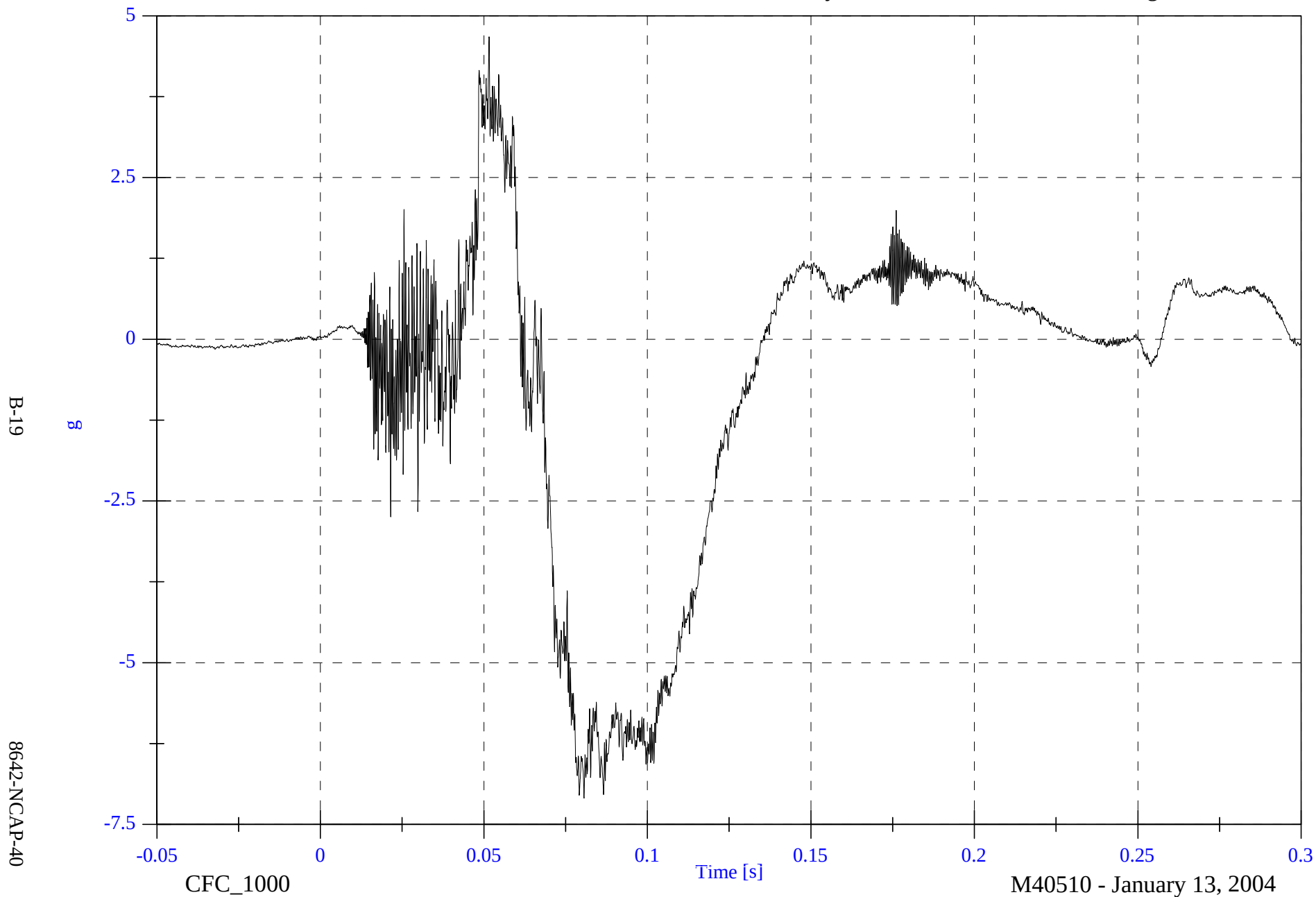


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Head CG Red y

Max: 4.7 [g] at 0.052 [s]

Min: -7.1 [g] at 0.081 [s]

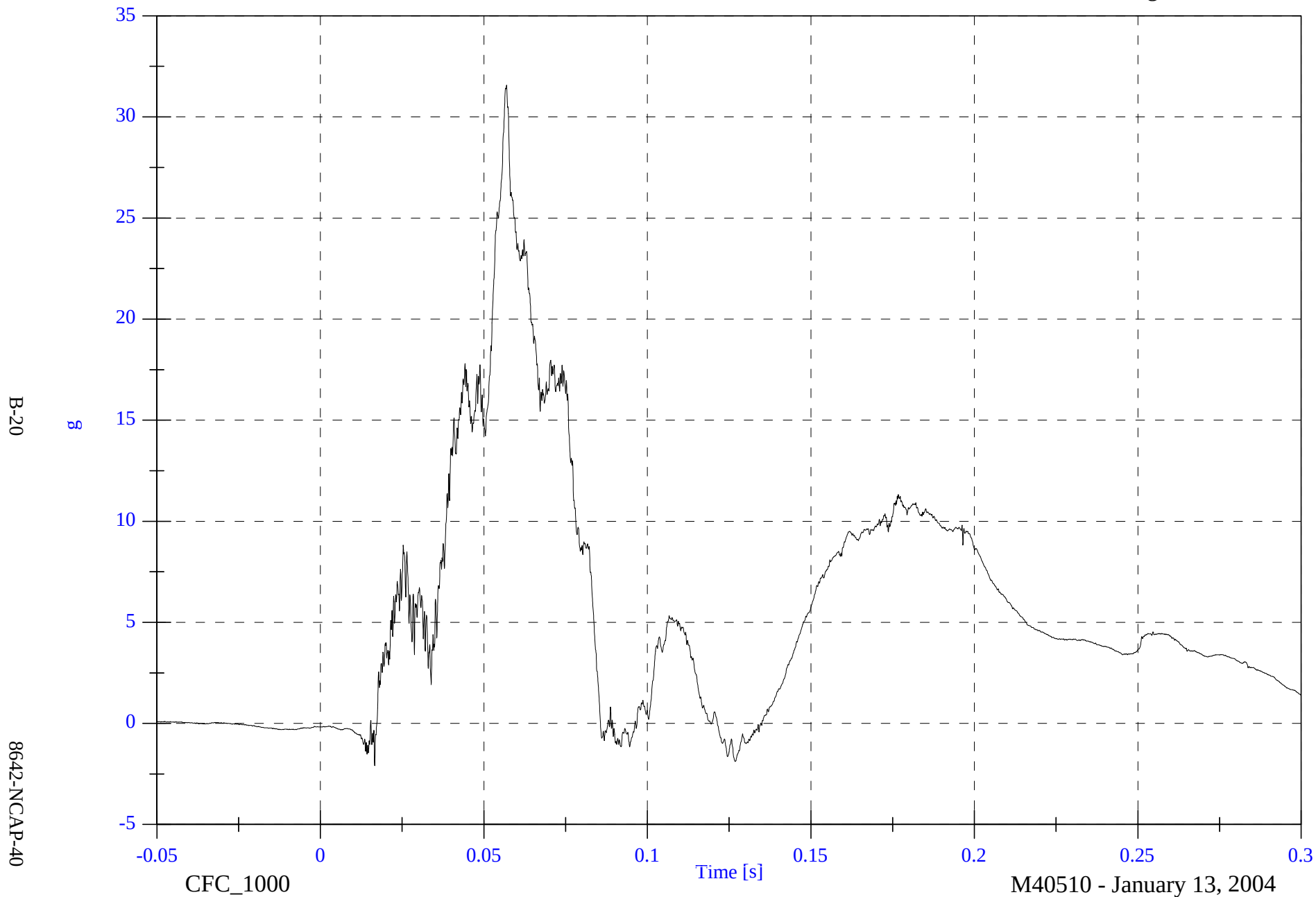


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Head CG Red z

Max: 31.6 [g] at 0.057 [s]

Min: -2.1 [g] at 0.017 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

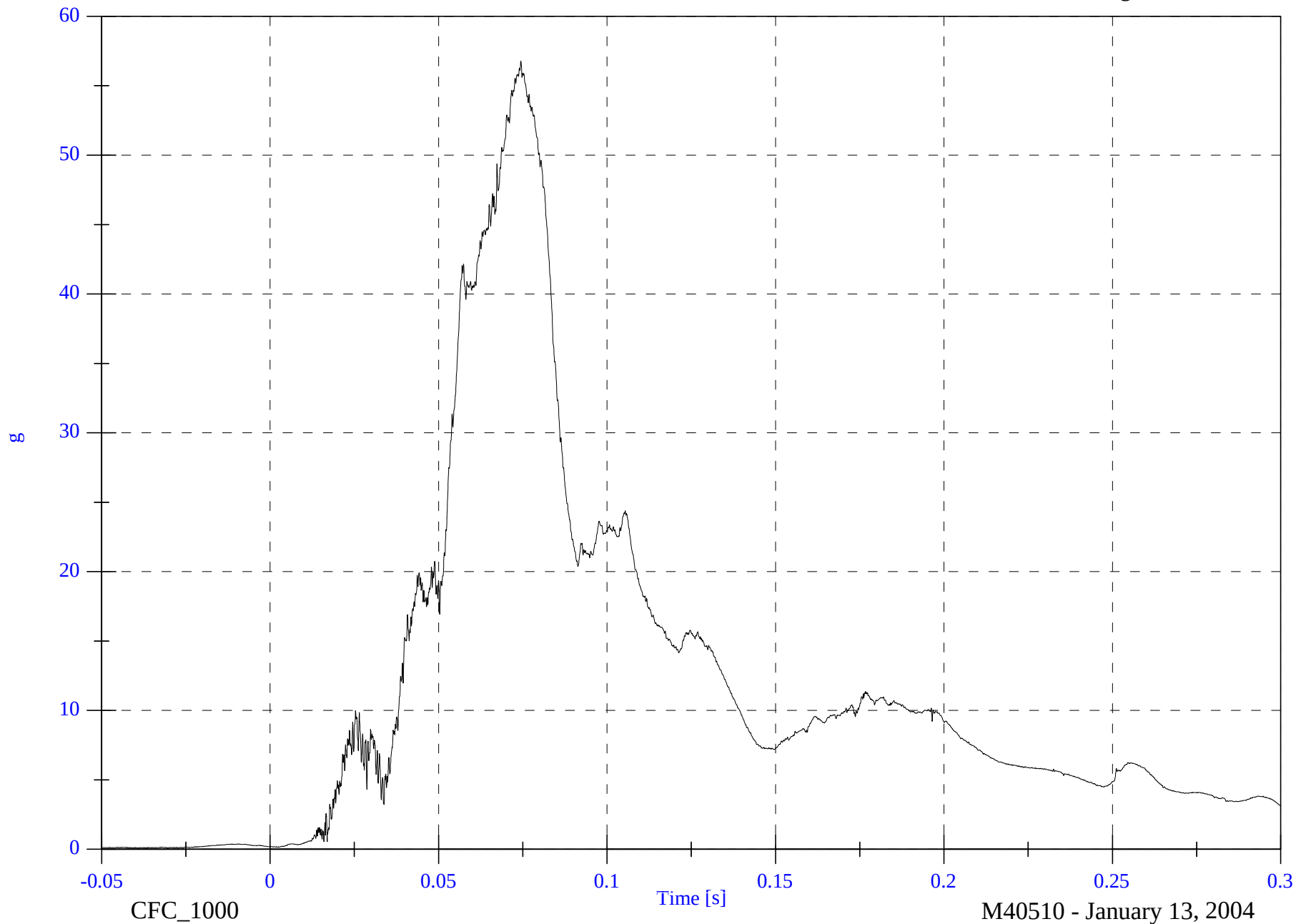
V1P1 Head CG Red Resultant

Max: 56.8 [g] at 0.074 [s]

Min: 0.1 [g] at -0.027 [s]

B-21

8642-NCAP-40

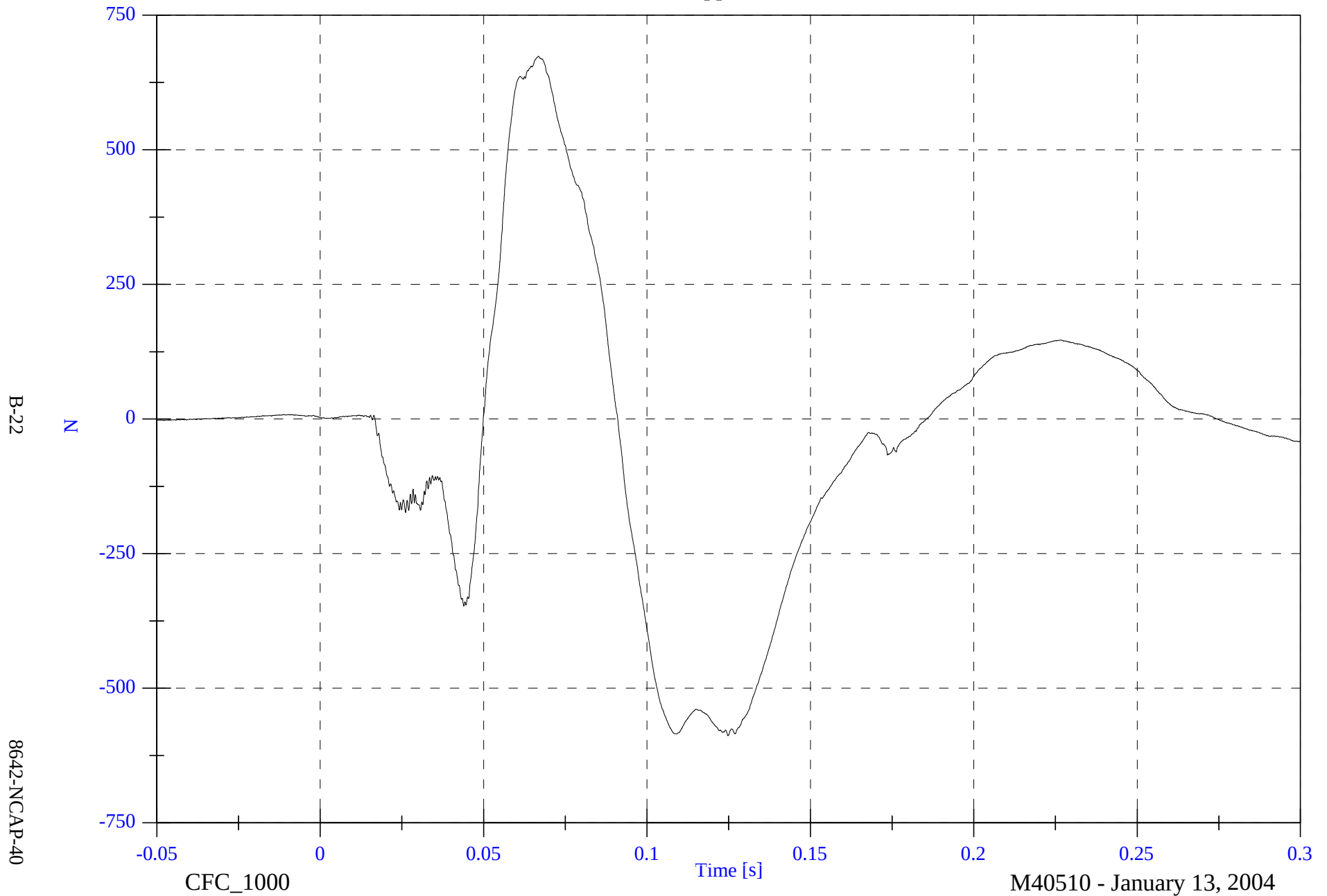


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 673.9 [N] at 0.067 [s]

Min: -588.4 [N] at 0.125 [s]

V1P1 Upper Neck Fx

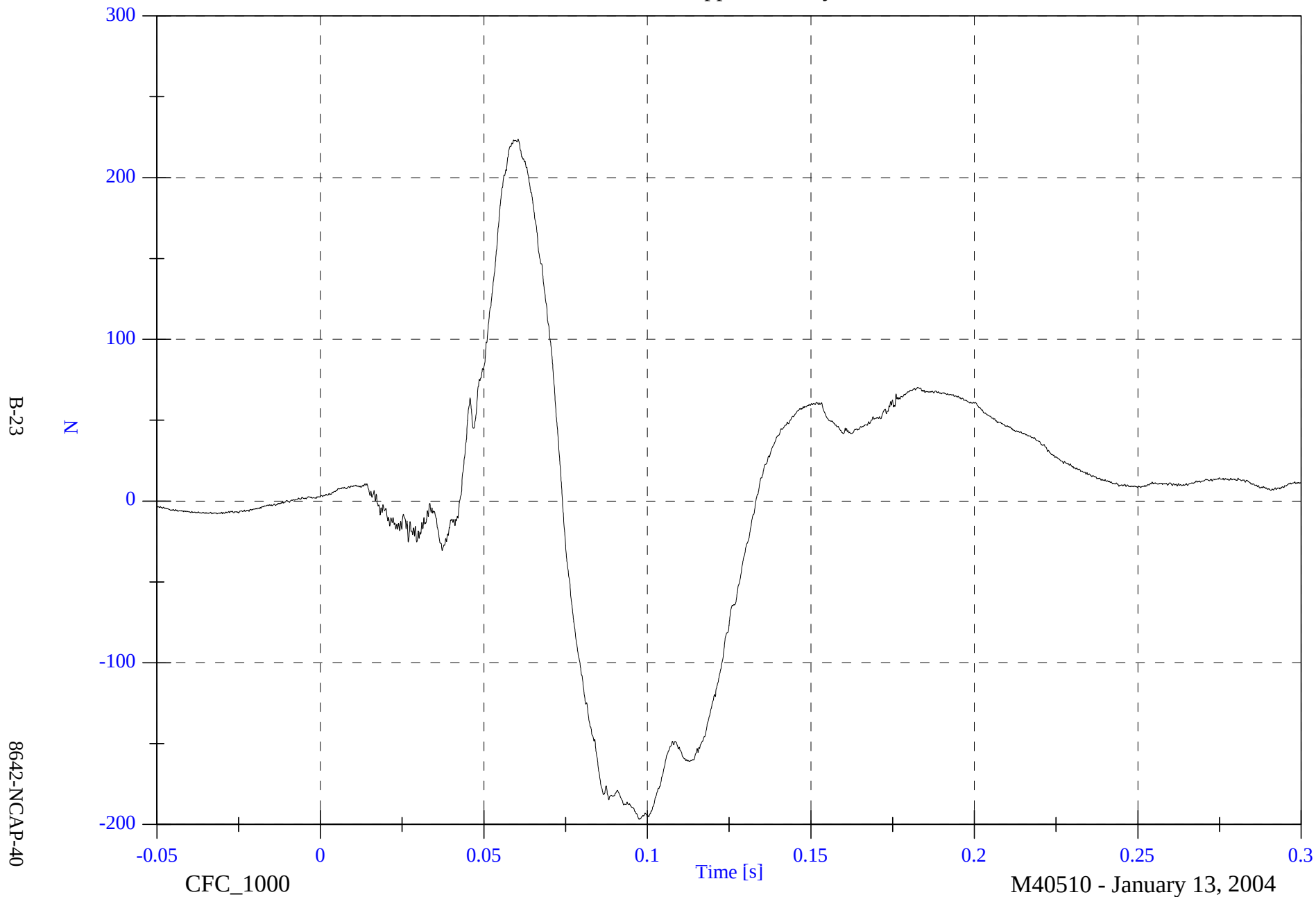


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Upper Neck Fy

Max: 223.9 [N] at 0.060 [s]

Min: -196.8 [N] at 0.097 [s]

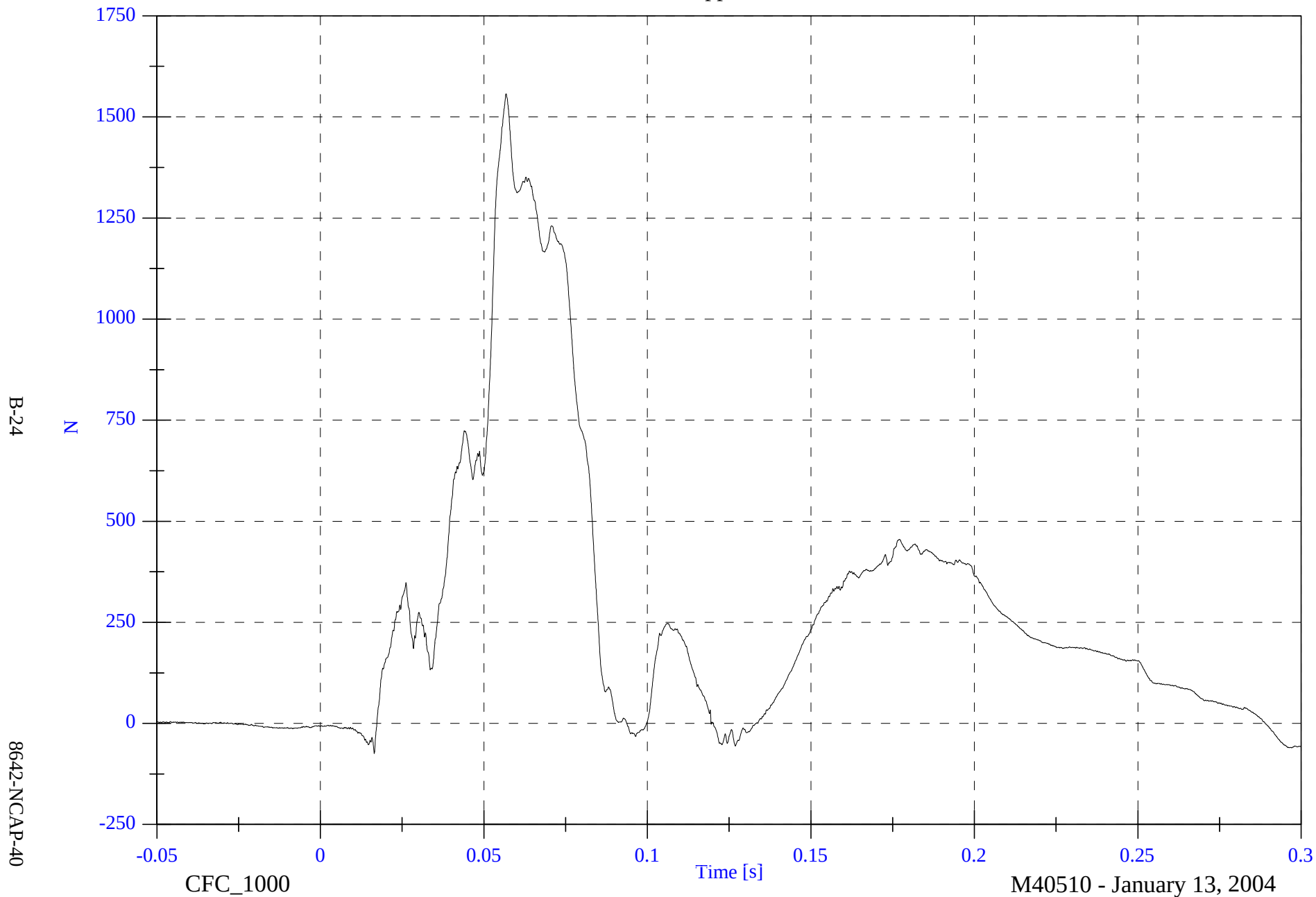


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 1557.6 [N] at 0.057 [s]

Min: -74.9 [N] at 0.017 [s]

V1P1 Upper Neck Fz

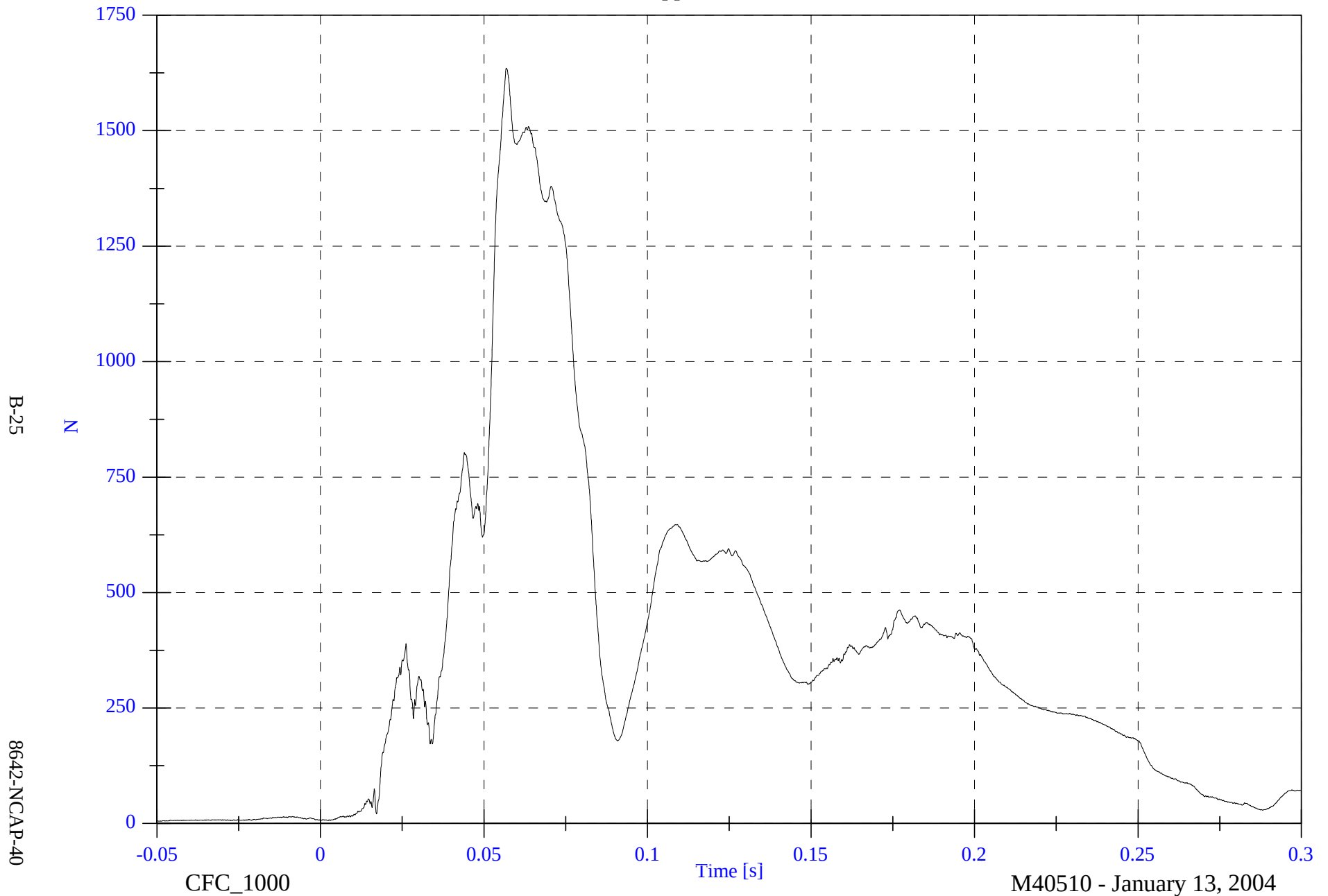


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Upper Neck F Resultant

Max: 1635.3 [N] at 0.057 [s]

Min: 5.0 [N] at -0.049 [s]

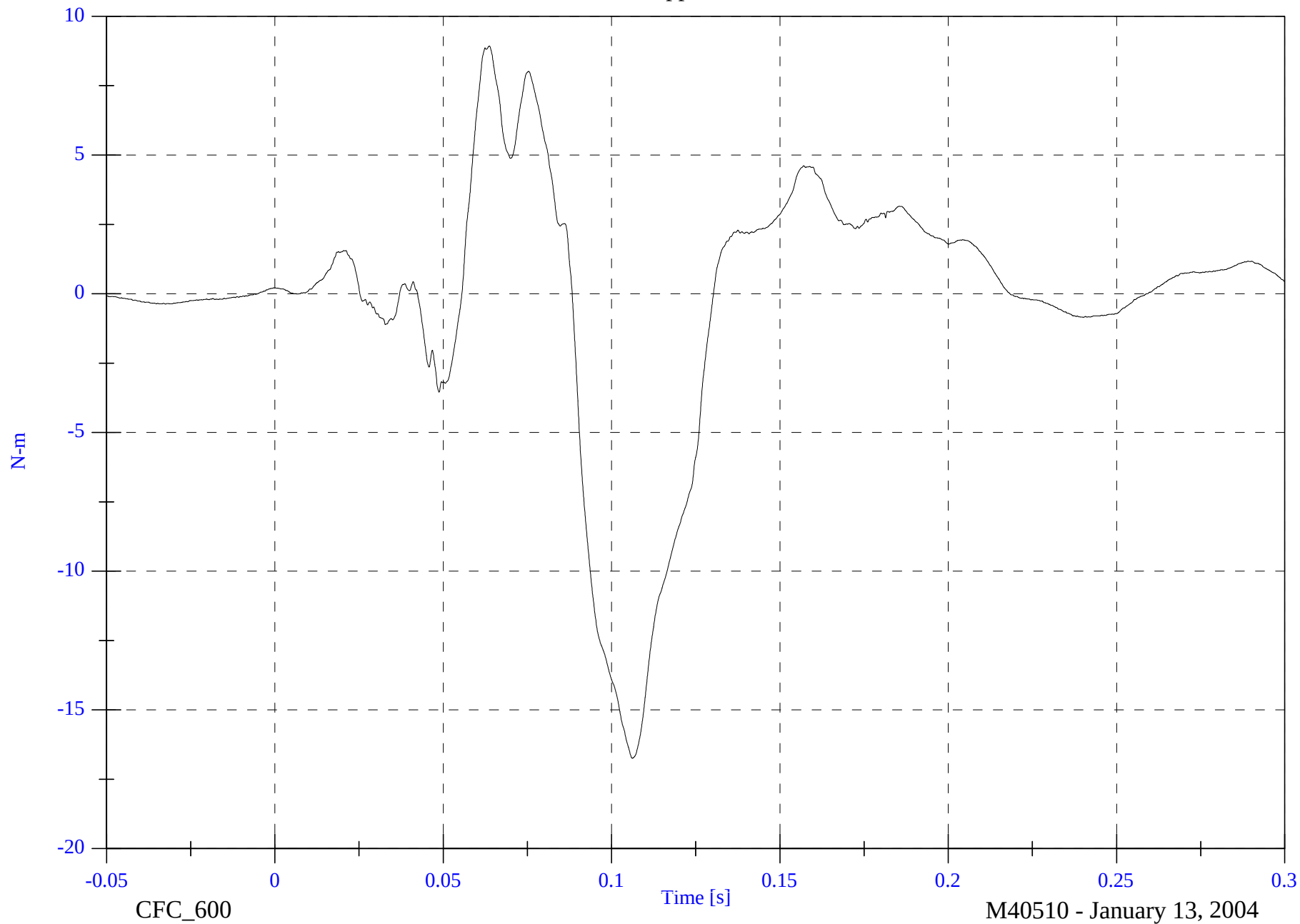


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Upper Neck Mx

Max: 8.9 [N-m] at 0.064 [s]

Min: -16.7 [N-m] at 0.106 [s]



B-26

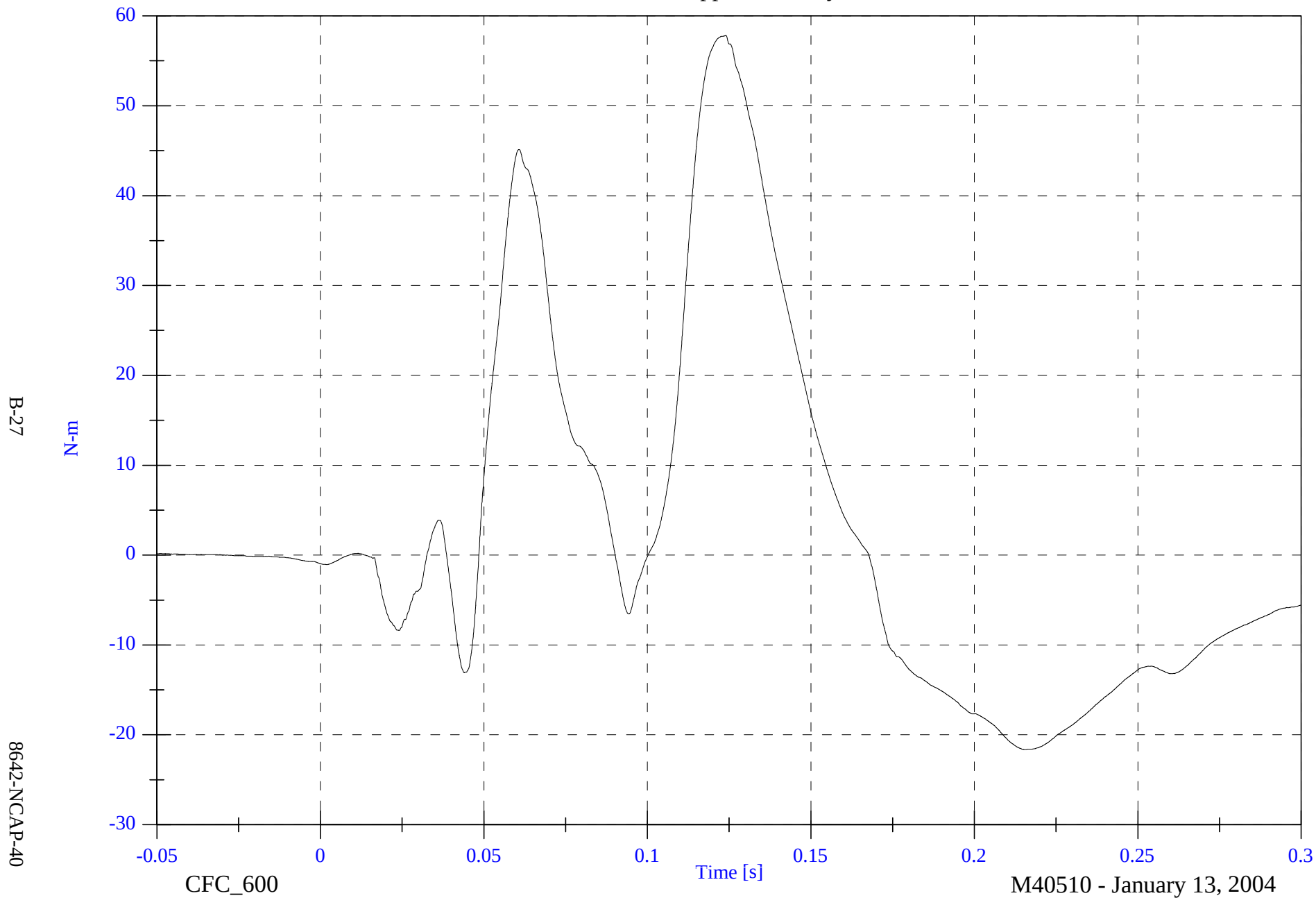
8642-NCAP-40

2004 NCAP Test 4 2004 Suzuki Forenza

Max: 57.8 [N-m] at 0.124 [s]

Min: -21.6 [N-m] at 0.215 [s]

V1P1 Upper Neck My

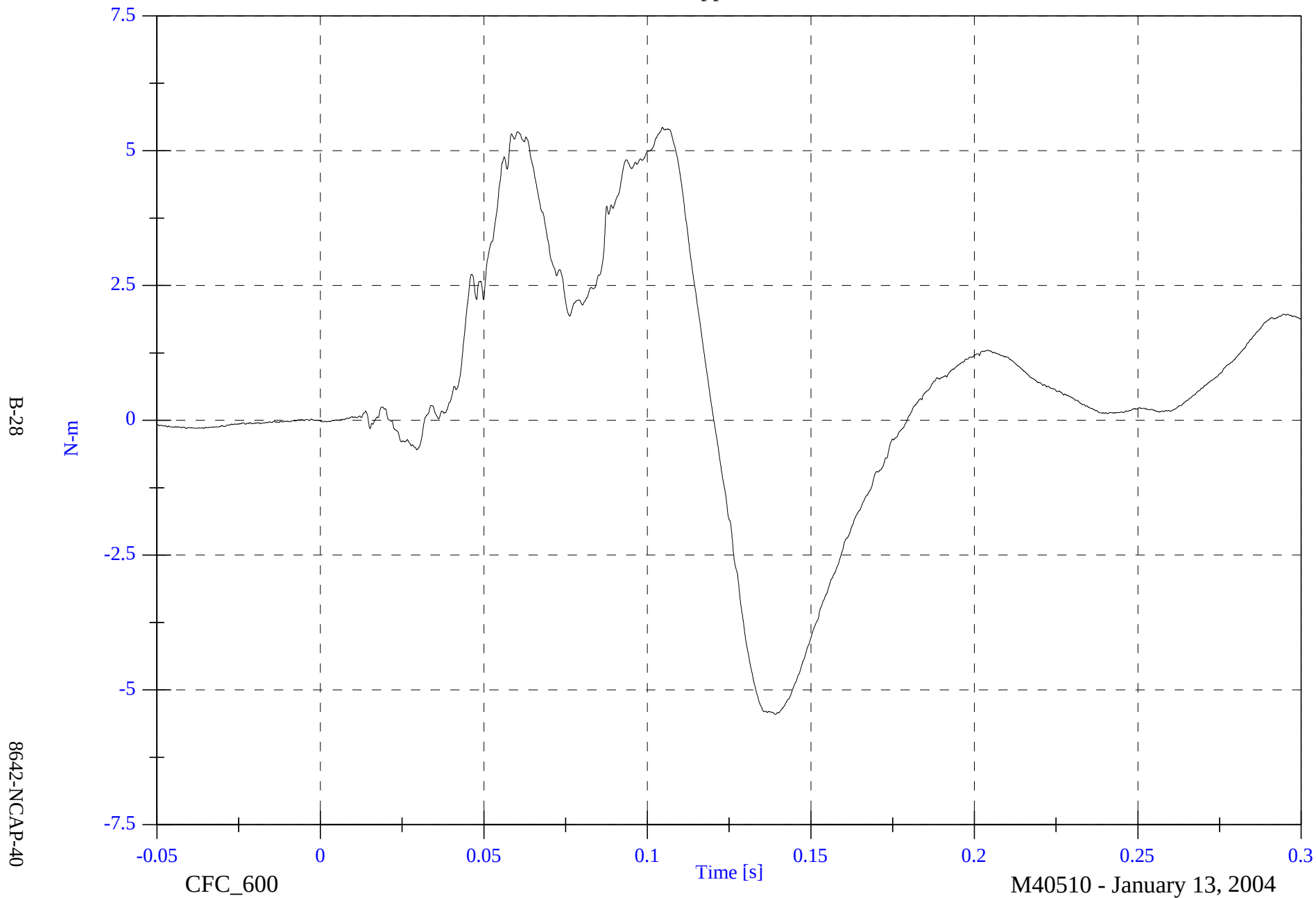


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Upper Neck Mz

Max: 5.4 [N-m] at 0.105 [s]

Min: -5.5 [N-m] at 0.139 [s]

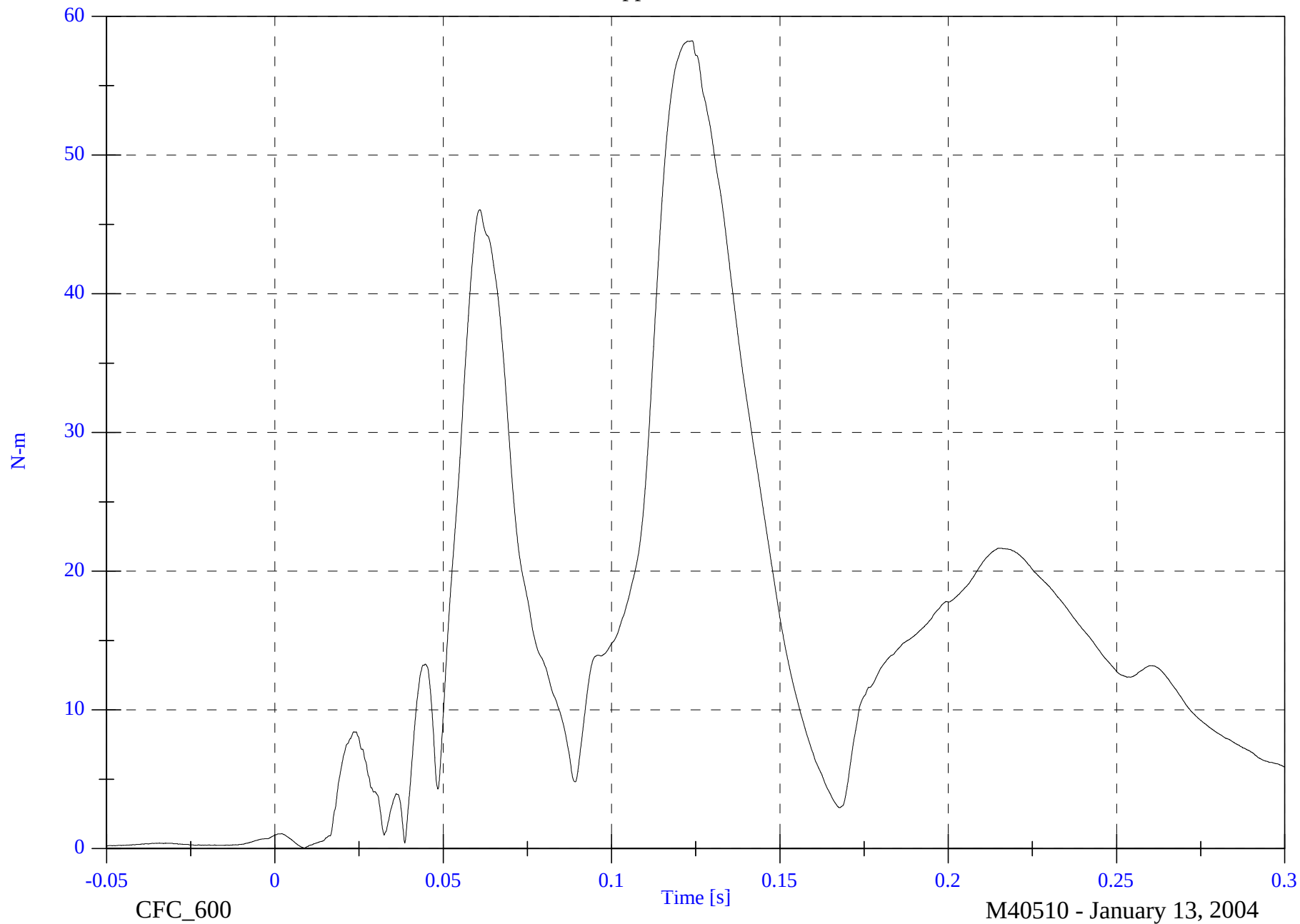


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Upper Neck M Resultant

Max: 58.2 [N-m] at 0.124 [s]

Min: 0.0 [N-m] at 0.009 [s]



B-29

8642-NCAP-40

CFC_600

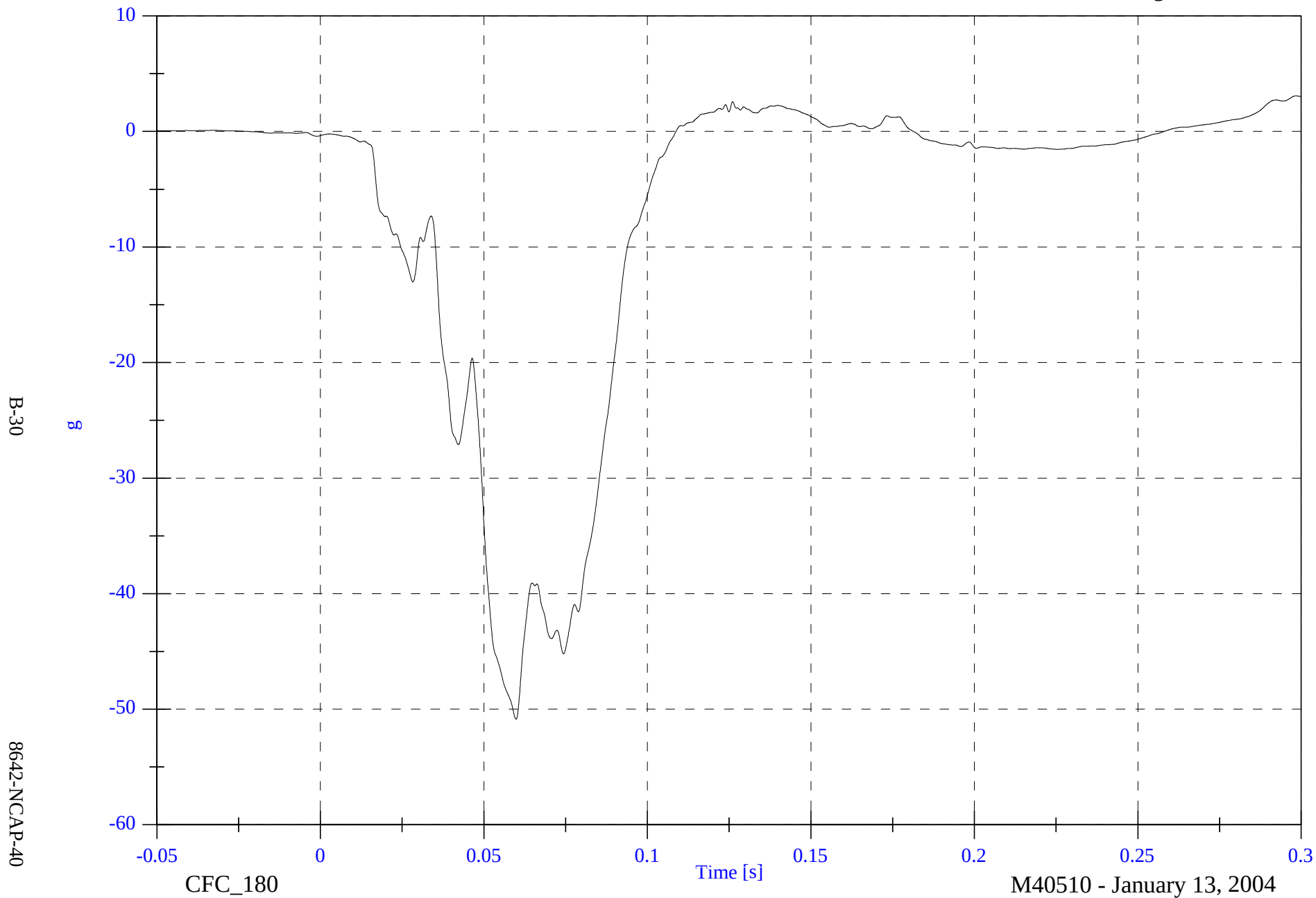
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Chest x

Max: 3.1 [g] at 0.298 [s]

Min: -50.9 [g] at 0.060 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

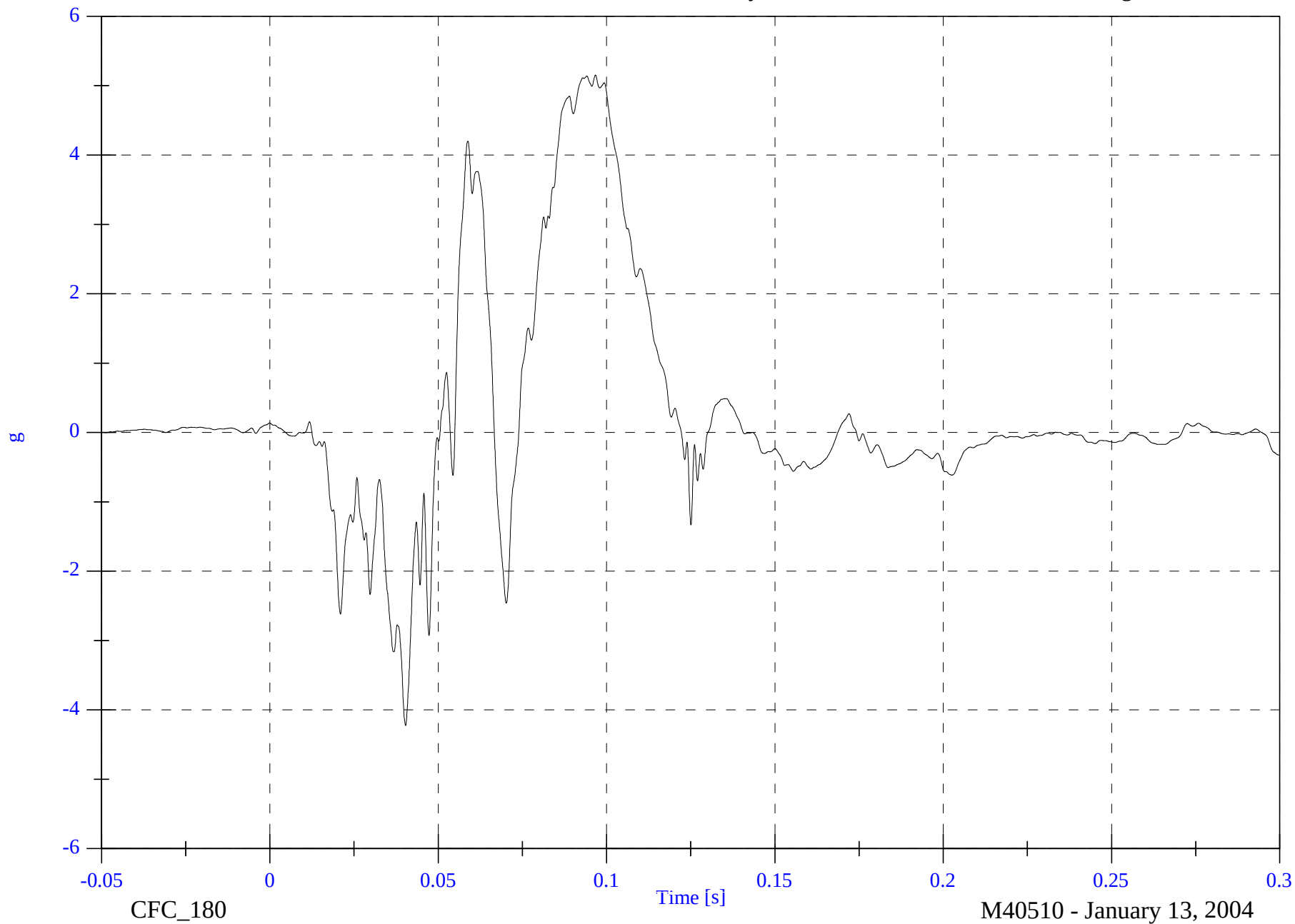
Max: 5.2 [g] at 0.097 [s]

Min: -4.2 [g] at 0.040 [s]

V1P1 Chest y

B-31

8642-NCAP-40

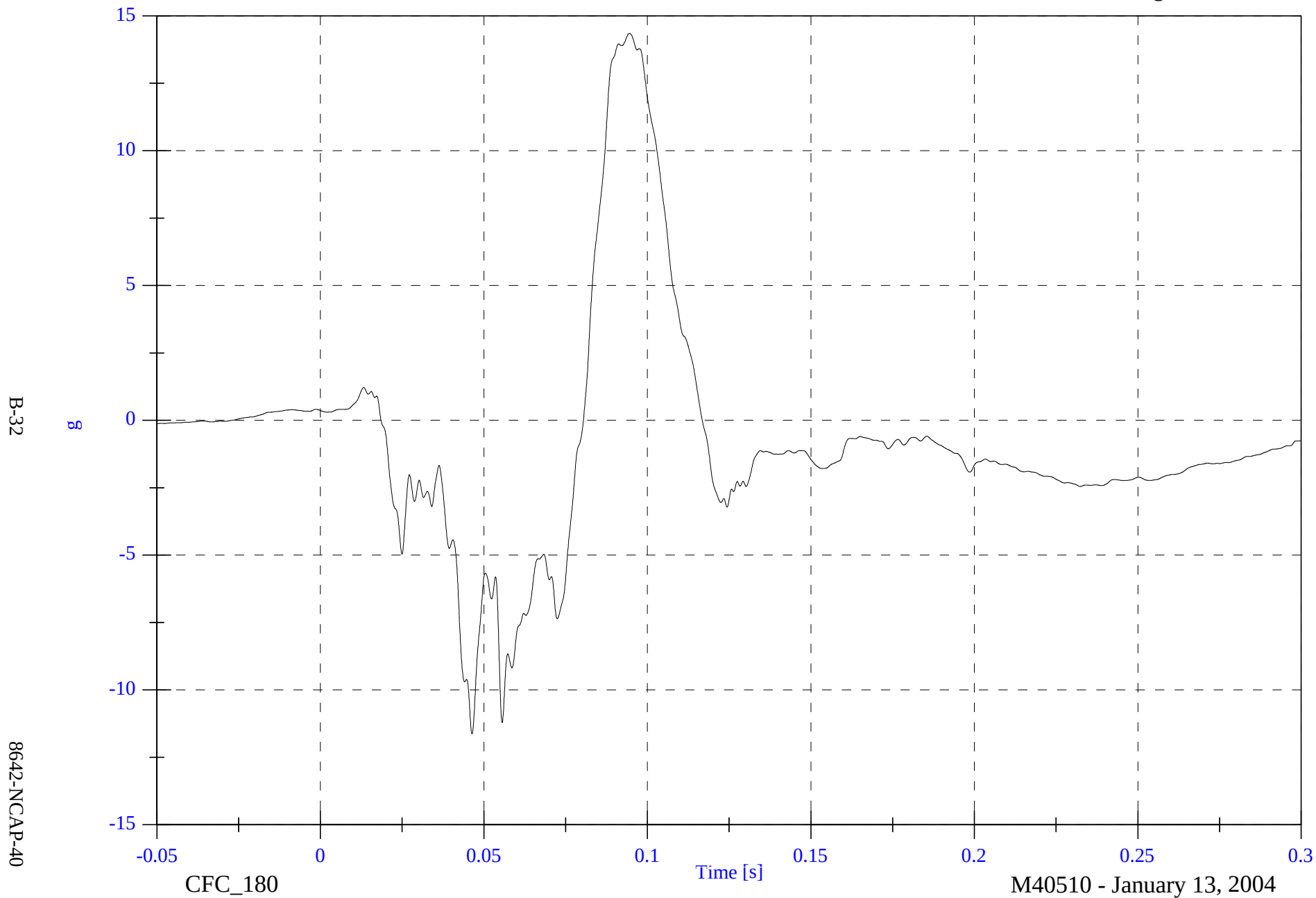


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 14.3 [g] at 0.095 [s]

Min: -11.6 [g] at 0.046 [s]

V1P1 Chest z



2004 NCAP Test 4 2004 Suzuki Forenza

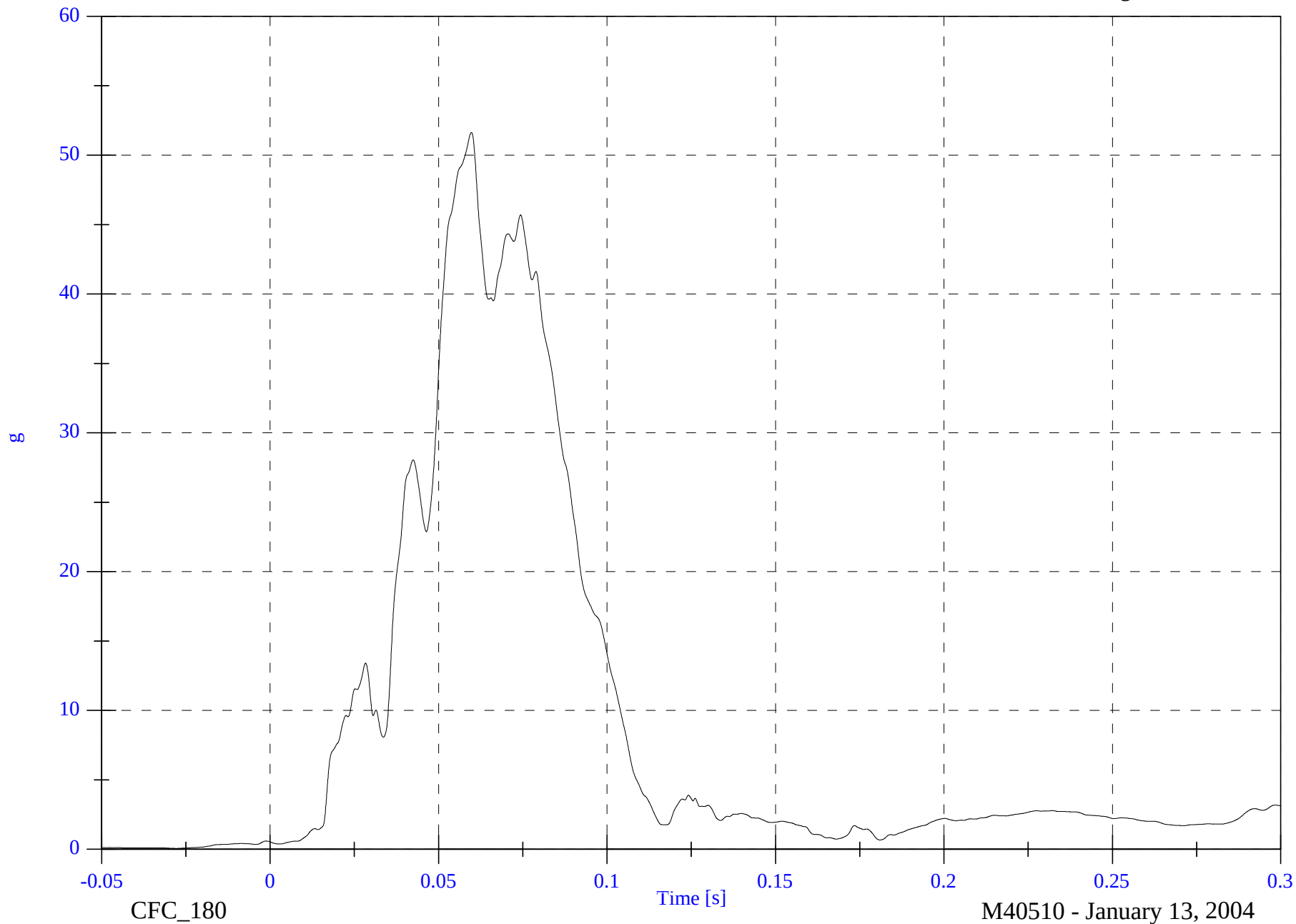
V1P1 Chest Resultant

Max: 51.6 [g] at 0.060 [s]

Min: 0.1 [g] at -0.028 [s]

B-33

8642-NCAP-40

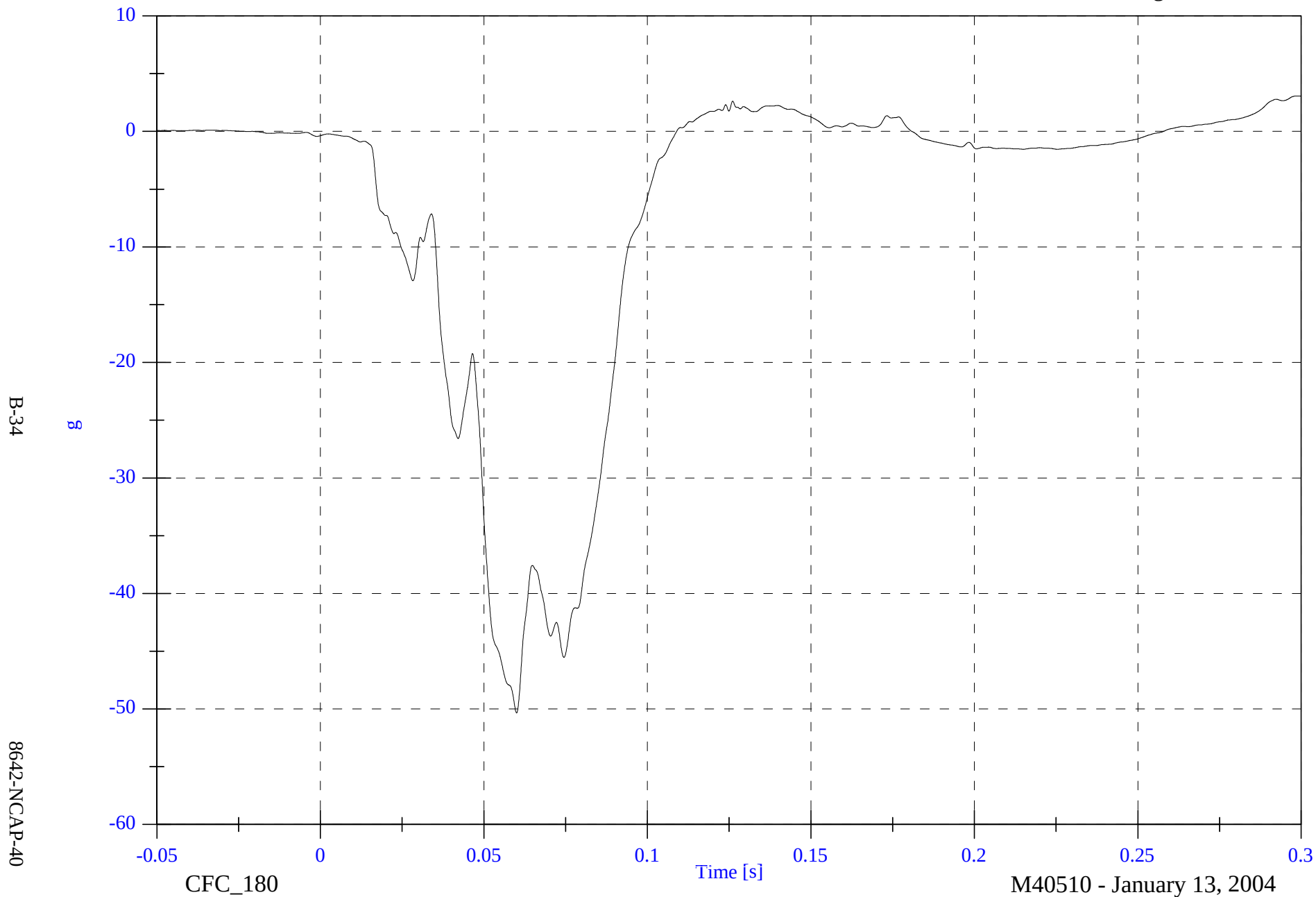


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Chest Red x

Max: 3.1 [g] at 0.299 [s]

Min: -50.4 [g] at 0.060 [s]

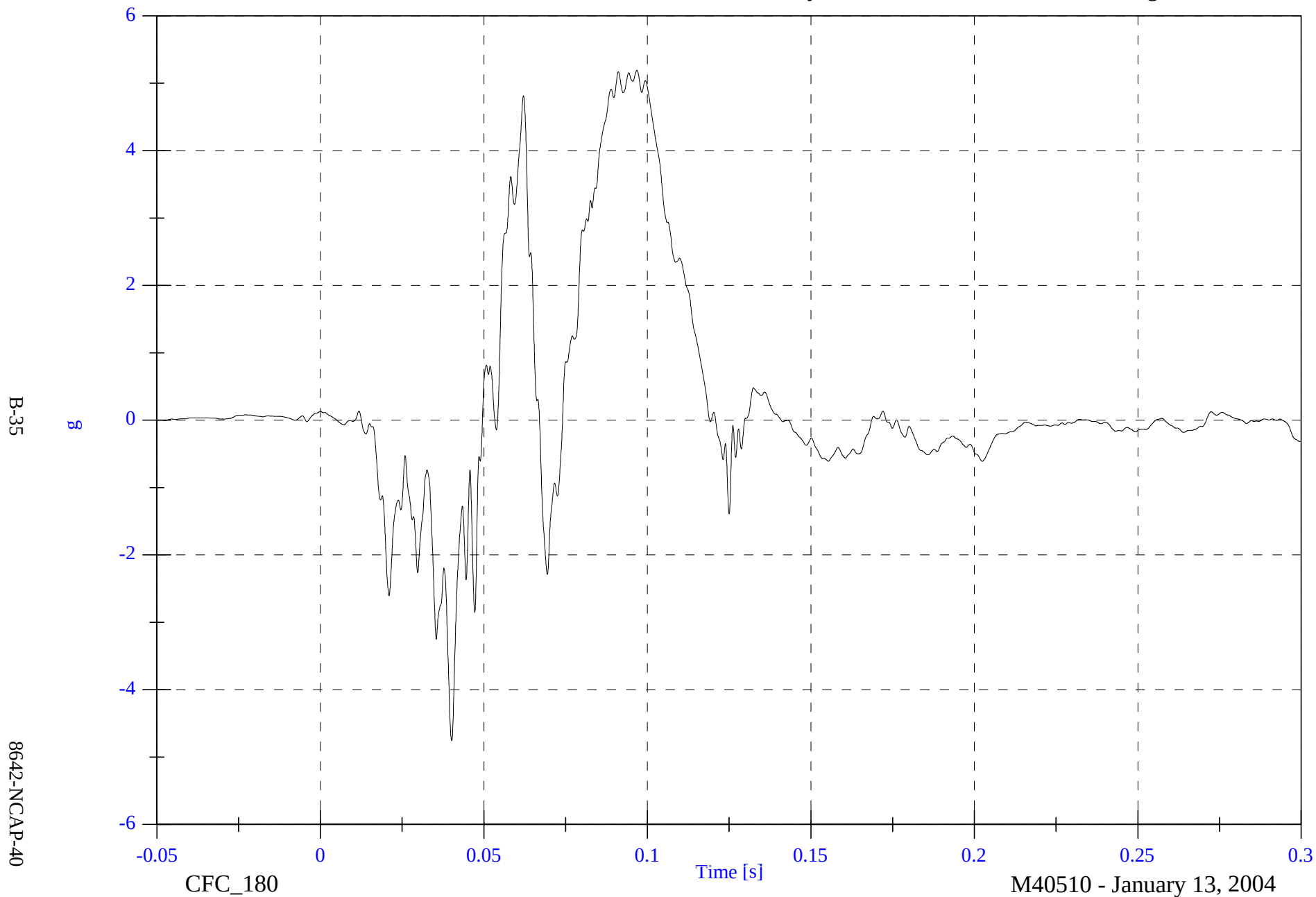


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 5.2 [g] at 0.097 [s]

Min: -4.8 [g] at 0.040 [s]

V1P1 Chest Red y

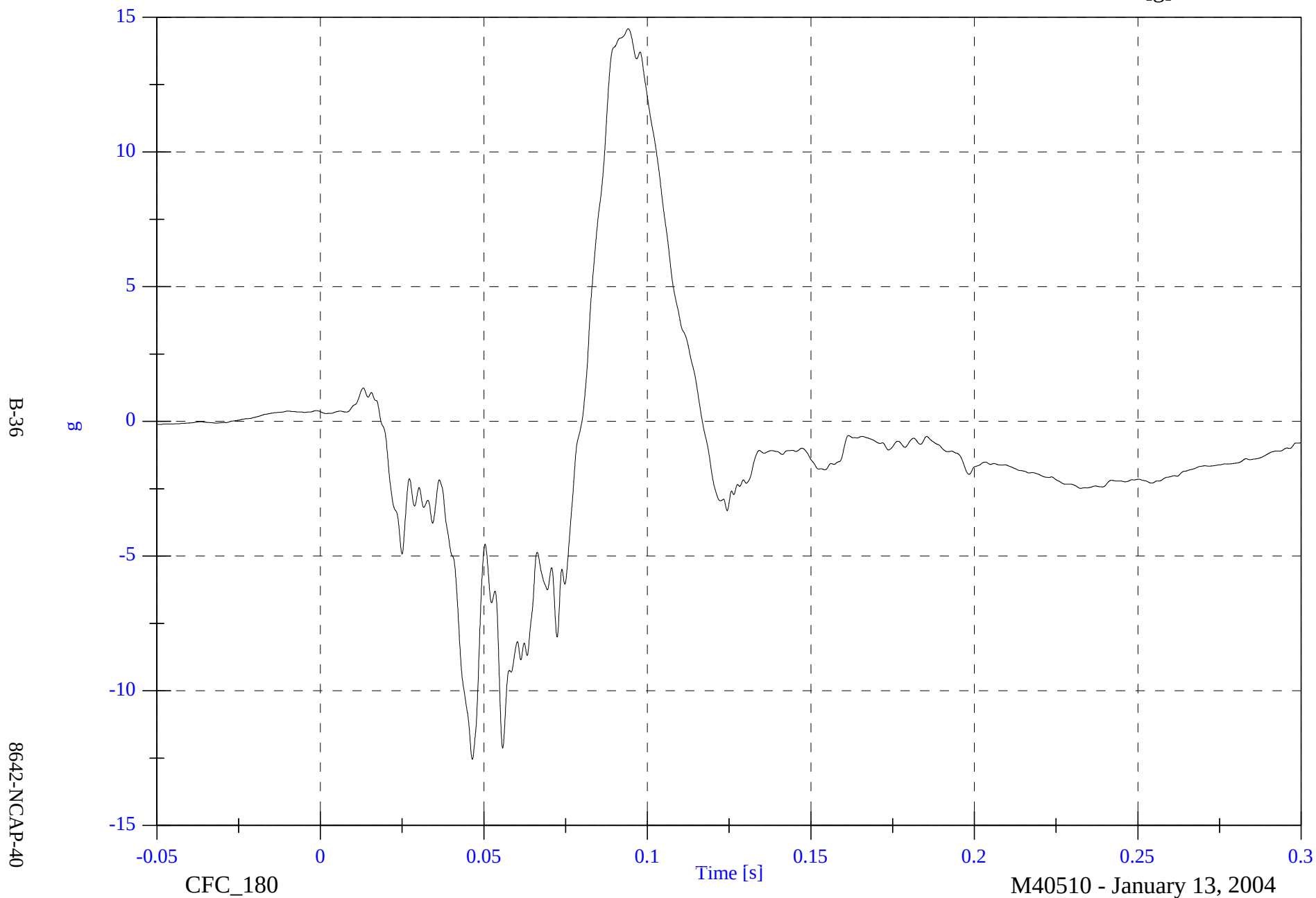


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 14.6 [g] at 0.094 [s]

Min: -12.5 [g] at 0.046 [s]

V1P1 Chest Red z



2004 NCAP Test 4 2004 Suzuki Forenza

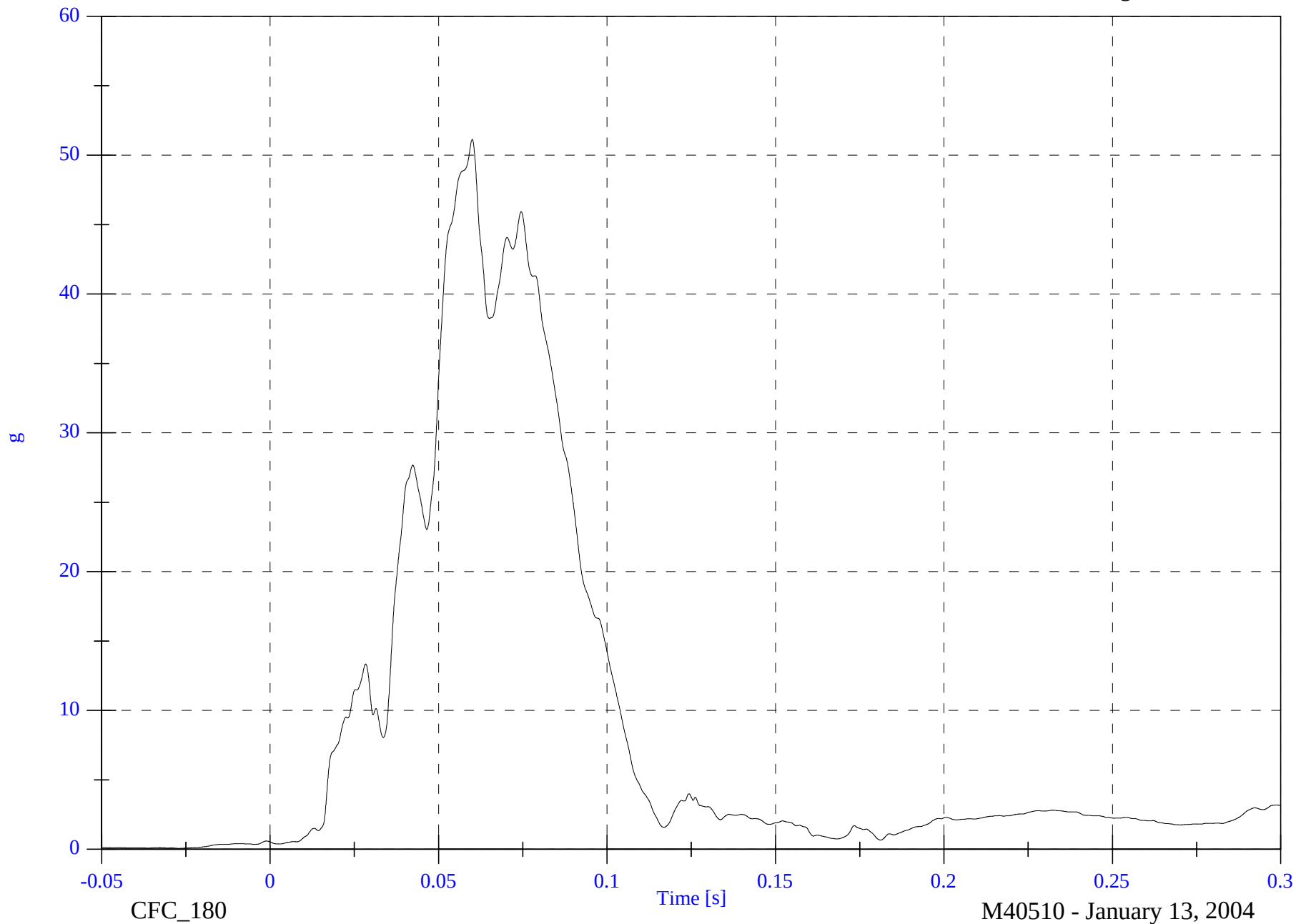
V1P1 Chest Red Resultant

Max: 51.1 [g] at 0.060 [s]

Min: 0.1 [g] at -0.027 [s]

B-37

8642-NCAP-40

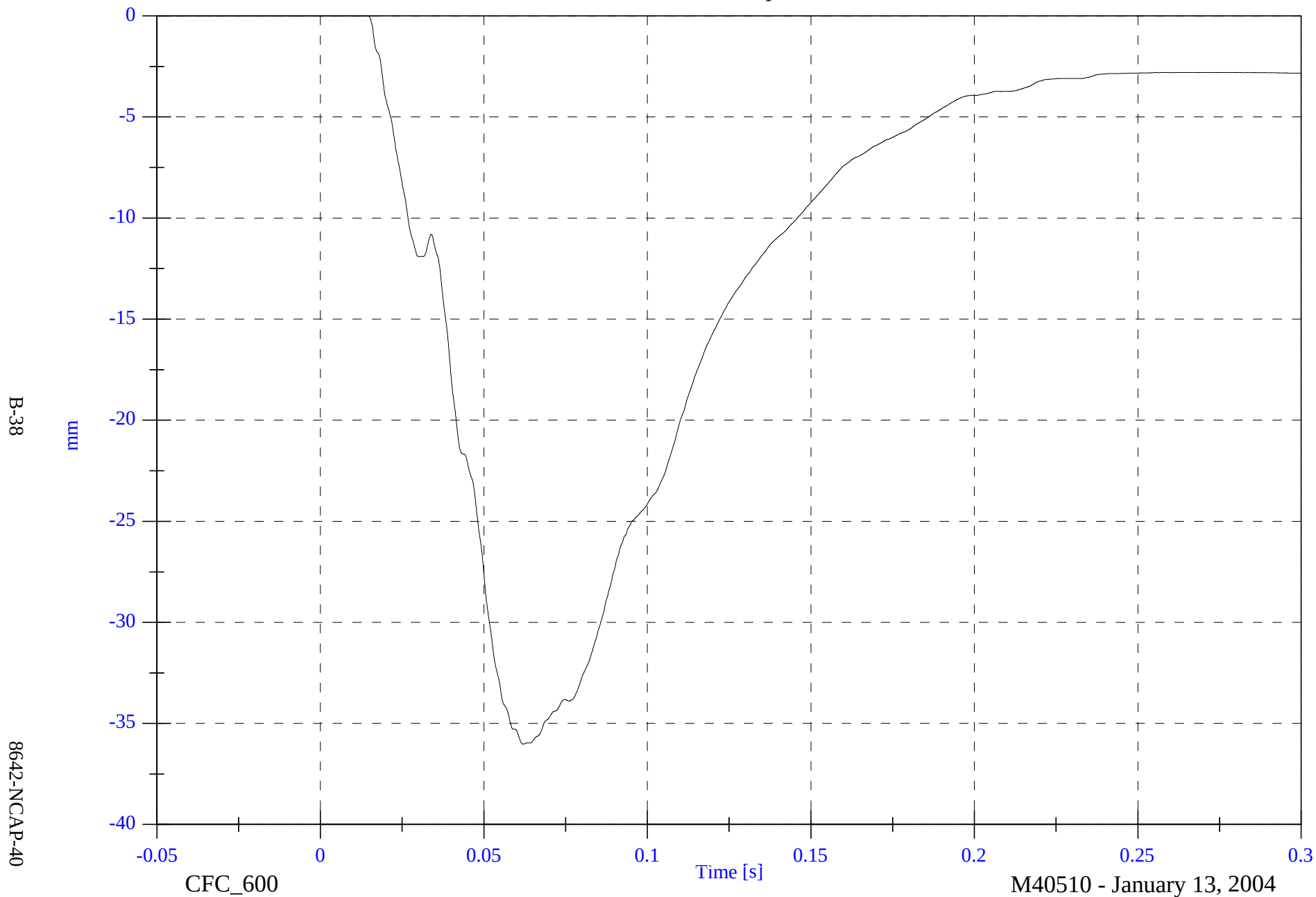


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Chest Compression x

Max: 0.0 [mm] at -0.039 [s]

Min: -36.0 [mm] at 0.062 [s]

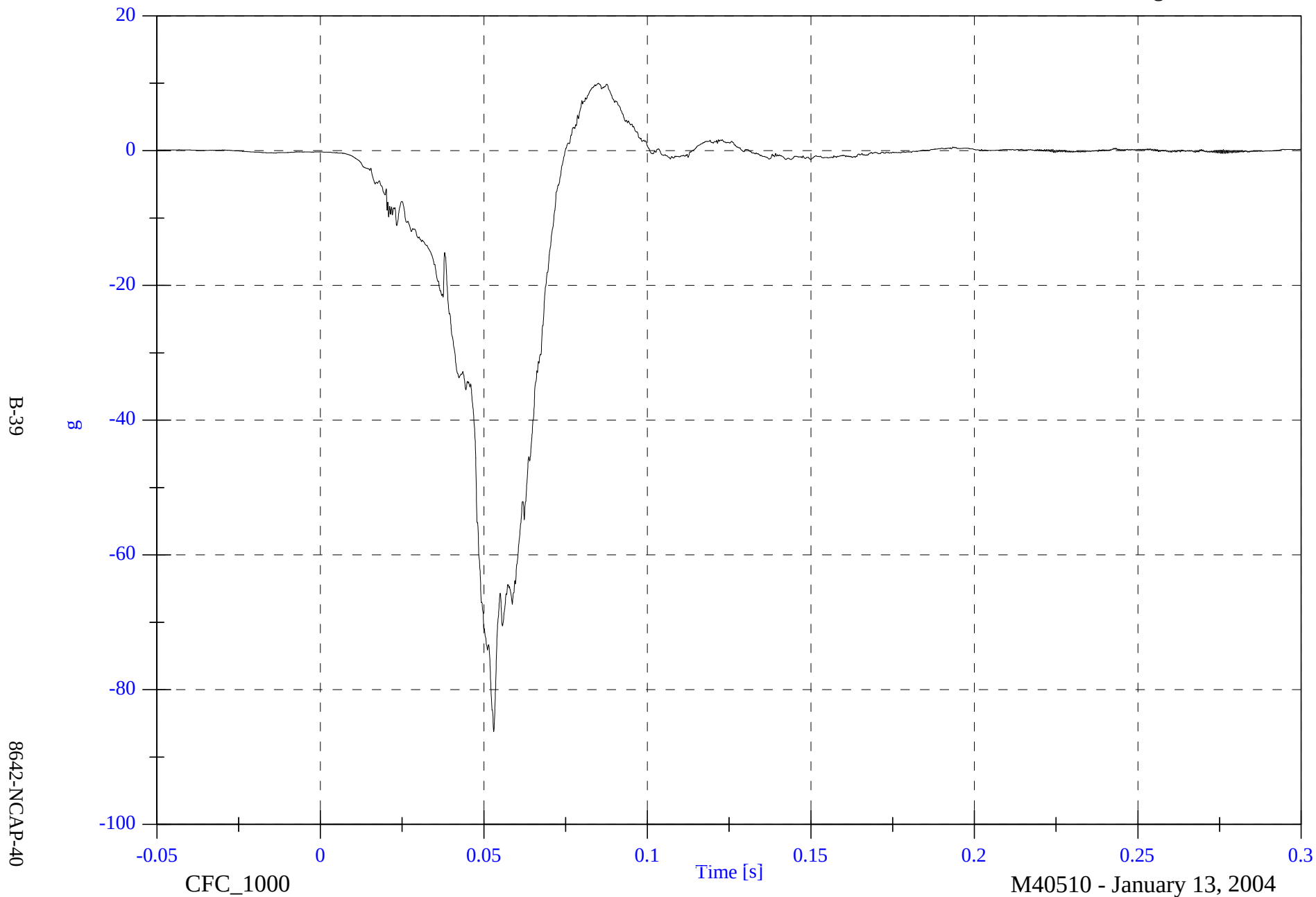


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 10.0 [g] at 0.085 [s]

Min: -86.2 [g] at 0.053 [s]

V1P1 Pelvic x

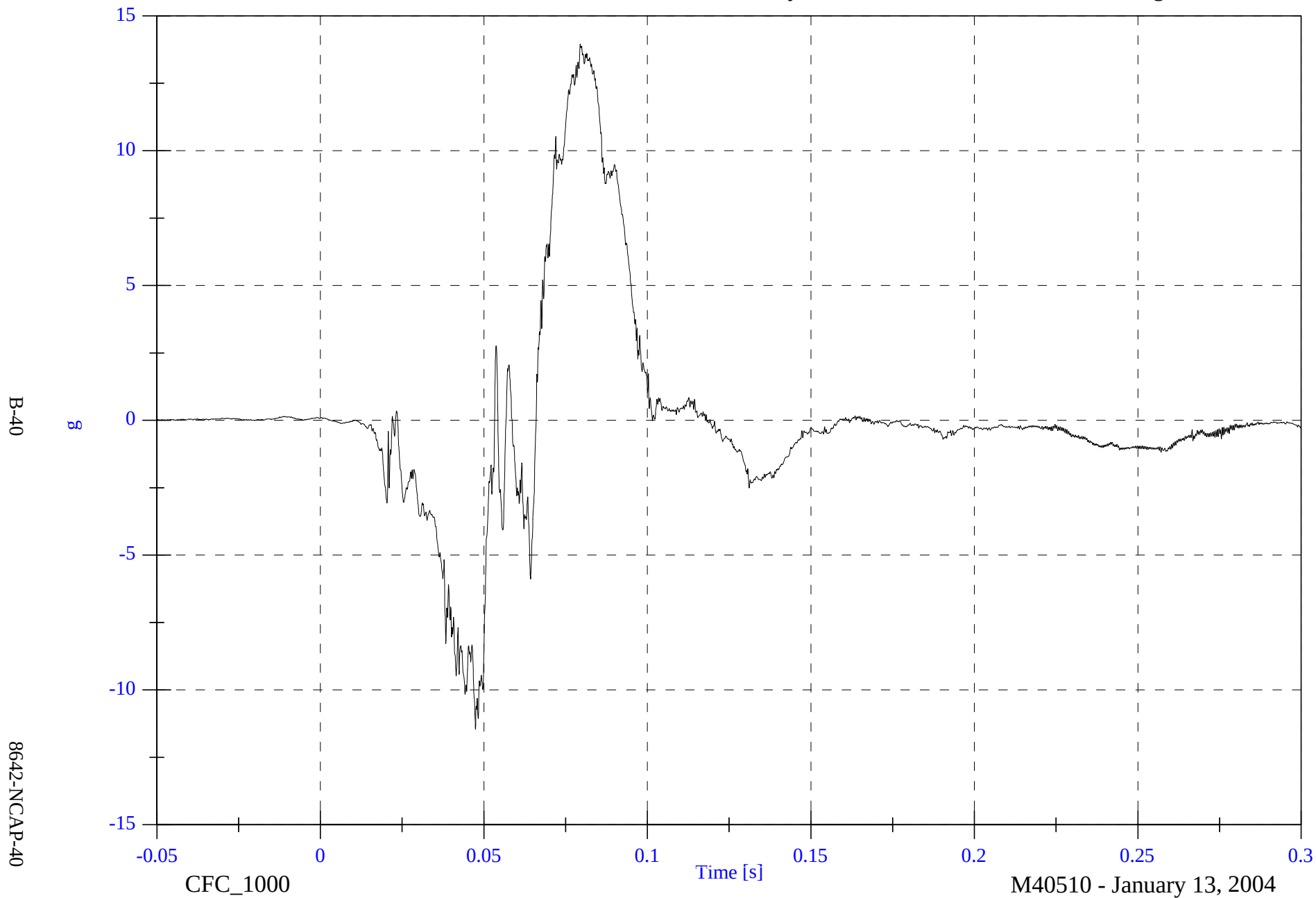


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 13.9 [g] at 0.079 [s]

Min: -11.5 [g] at 0.047 [s]

V1P1 Pelvic y

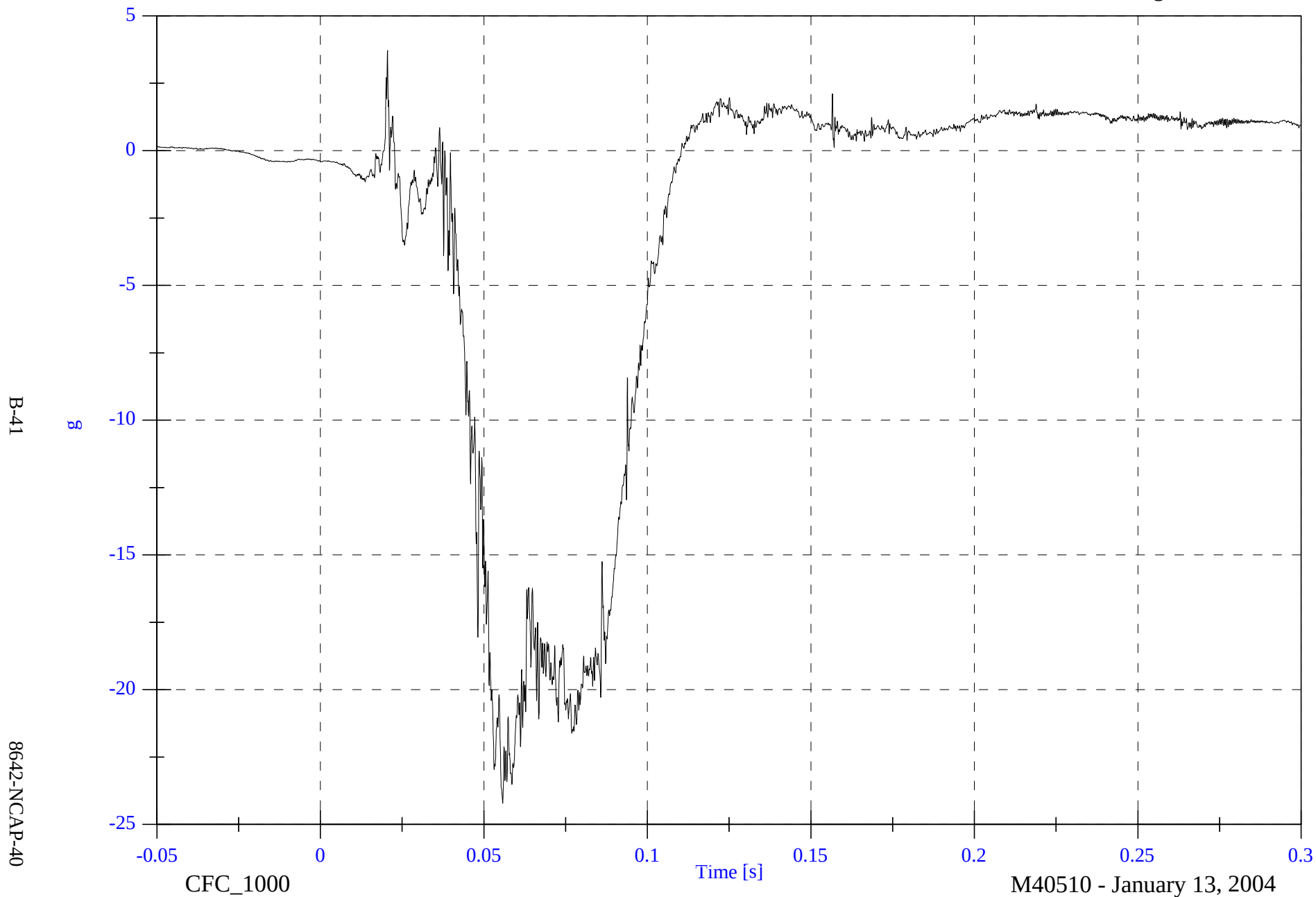


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Pelvic z

Max: 3.7 [g] at 0.021 [s]

Min: -24.2 [g] at 0.056 [s]

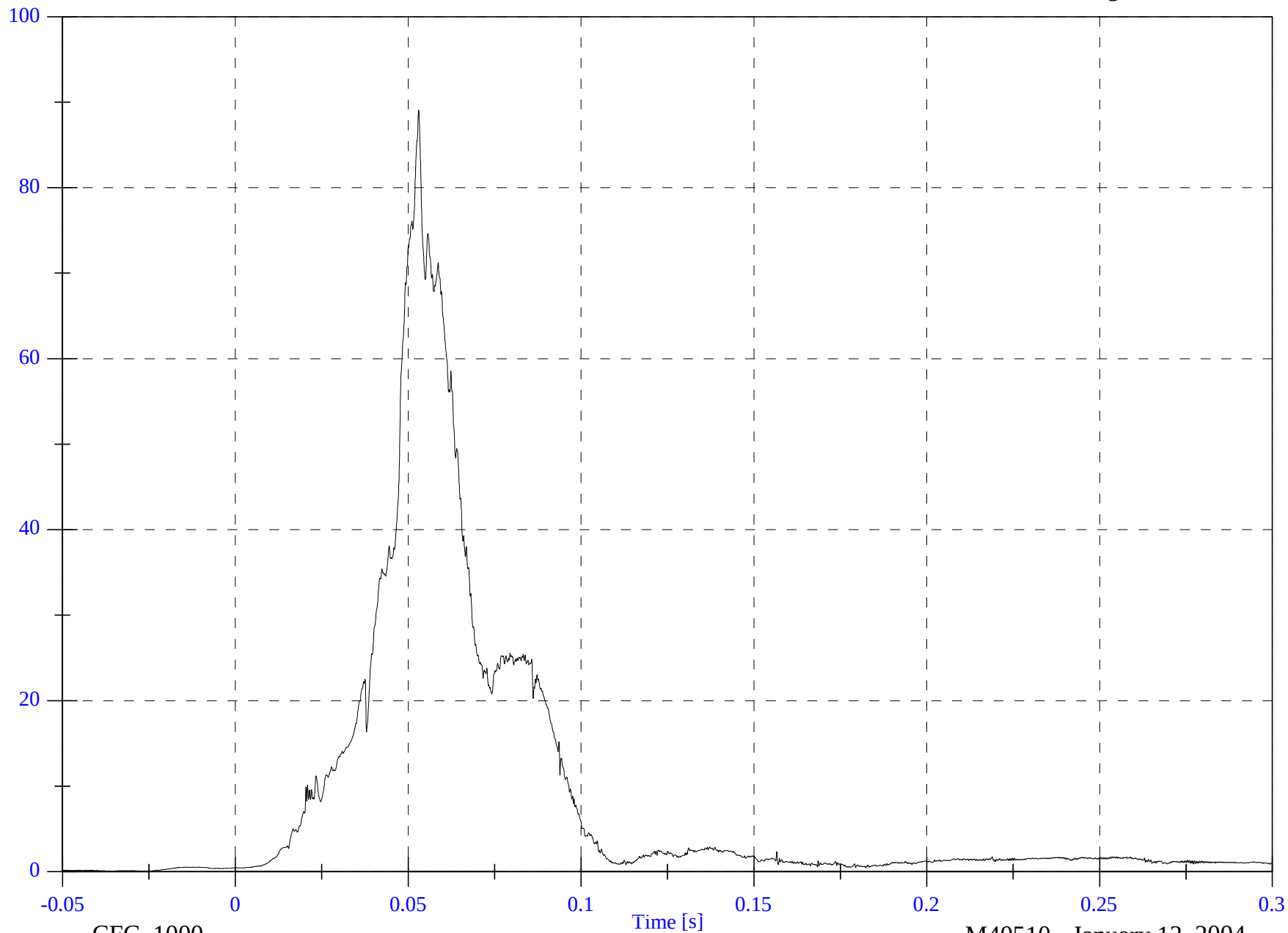


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Pelvic Resultant

Max: 89.1 [g] at 0.053 [s]

Min: 0.1 [g] at -0.027 [s]



B-42

8642-NCAP-40

CFC_1000

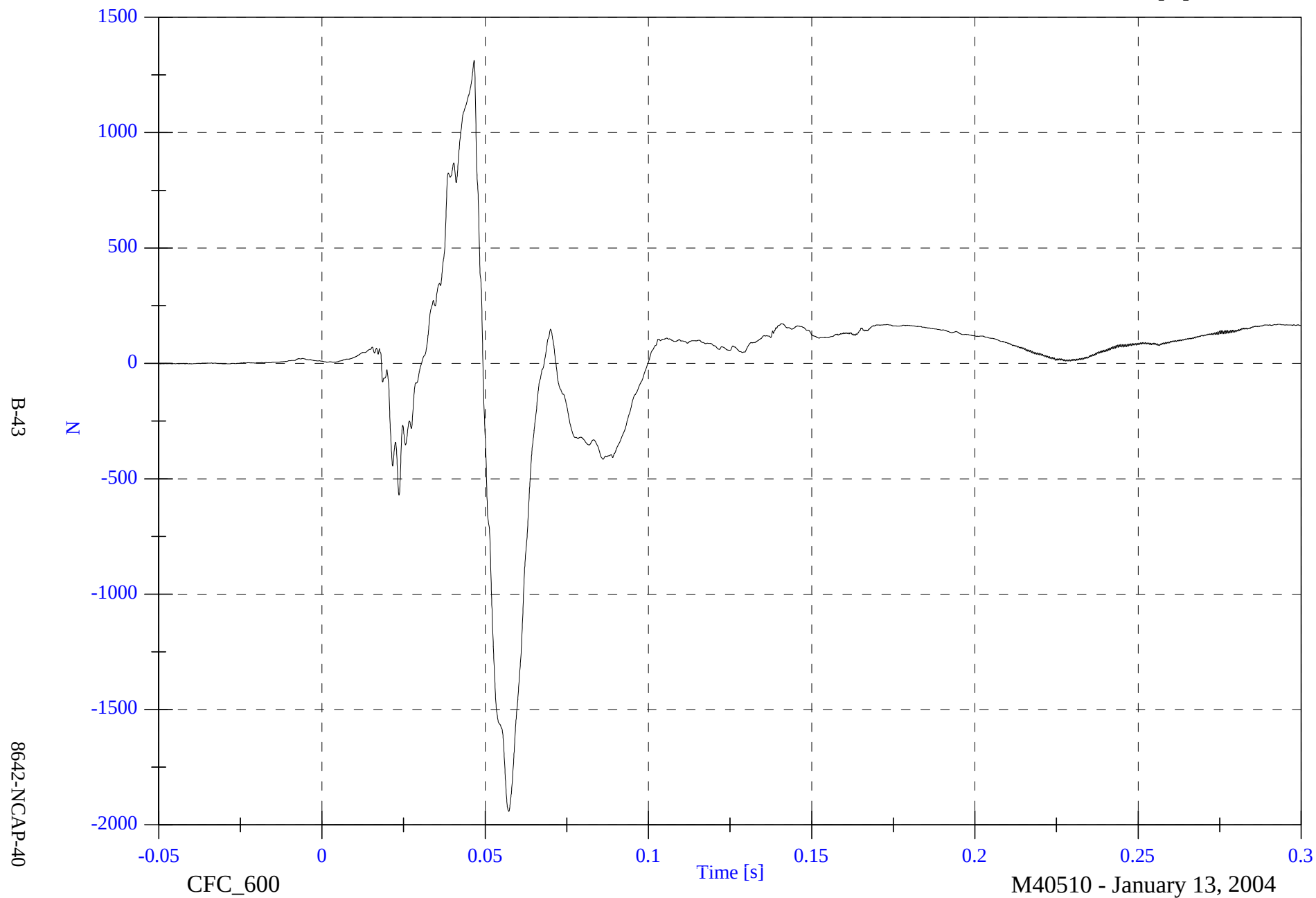
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

Max: 1312.4 [N] at 0.047 [s]

Min: -1941.9 [N] at 0.057 [s]

V1P1 Left Femur z

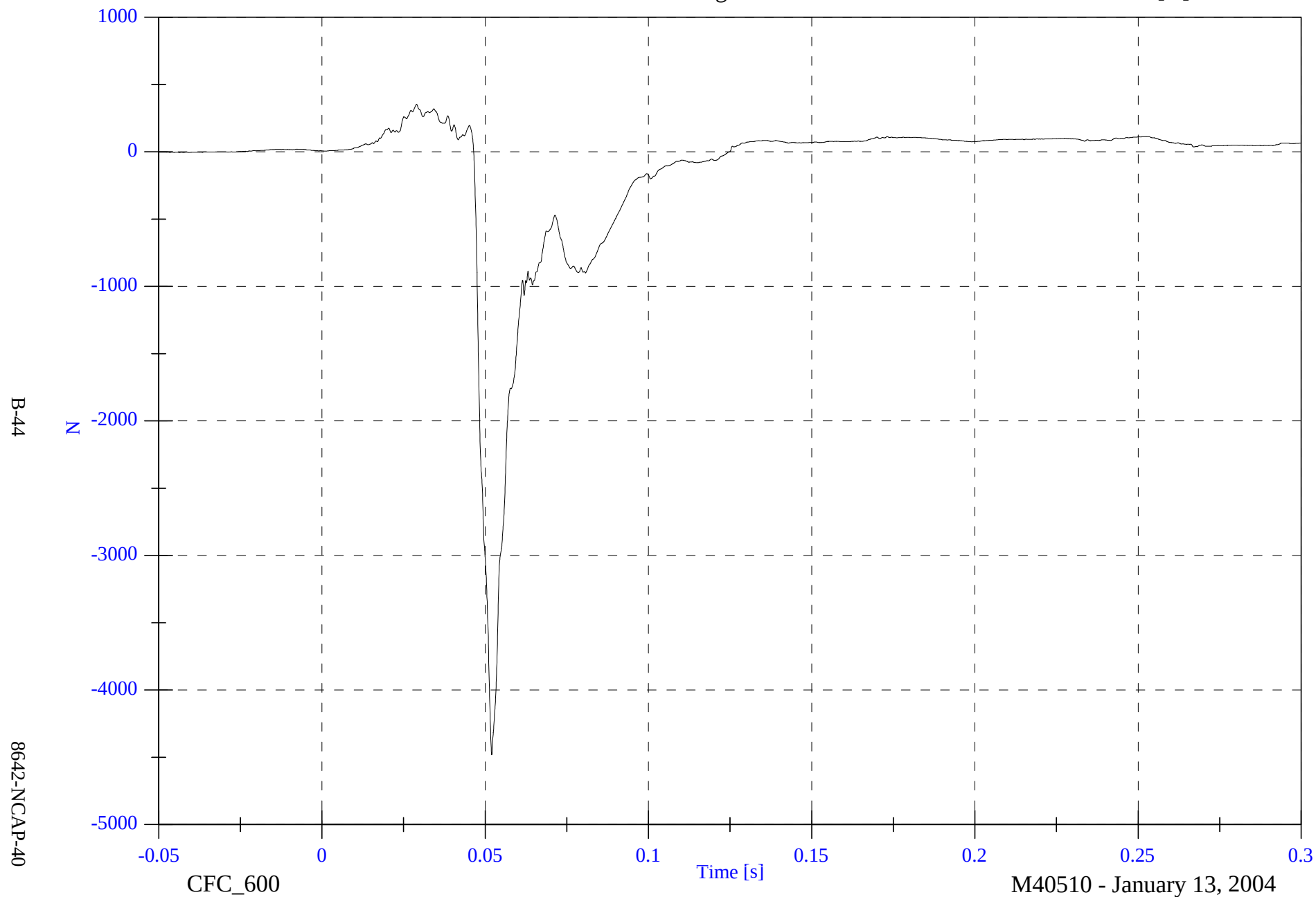


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 353.4 [N] at 0.029 [s]

Min: -4481.5 [N] at 0.052 [s]

V1P1 Right Femur z

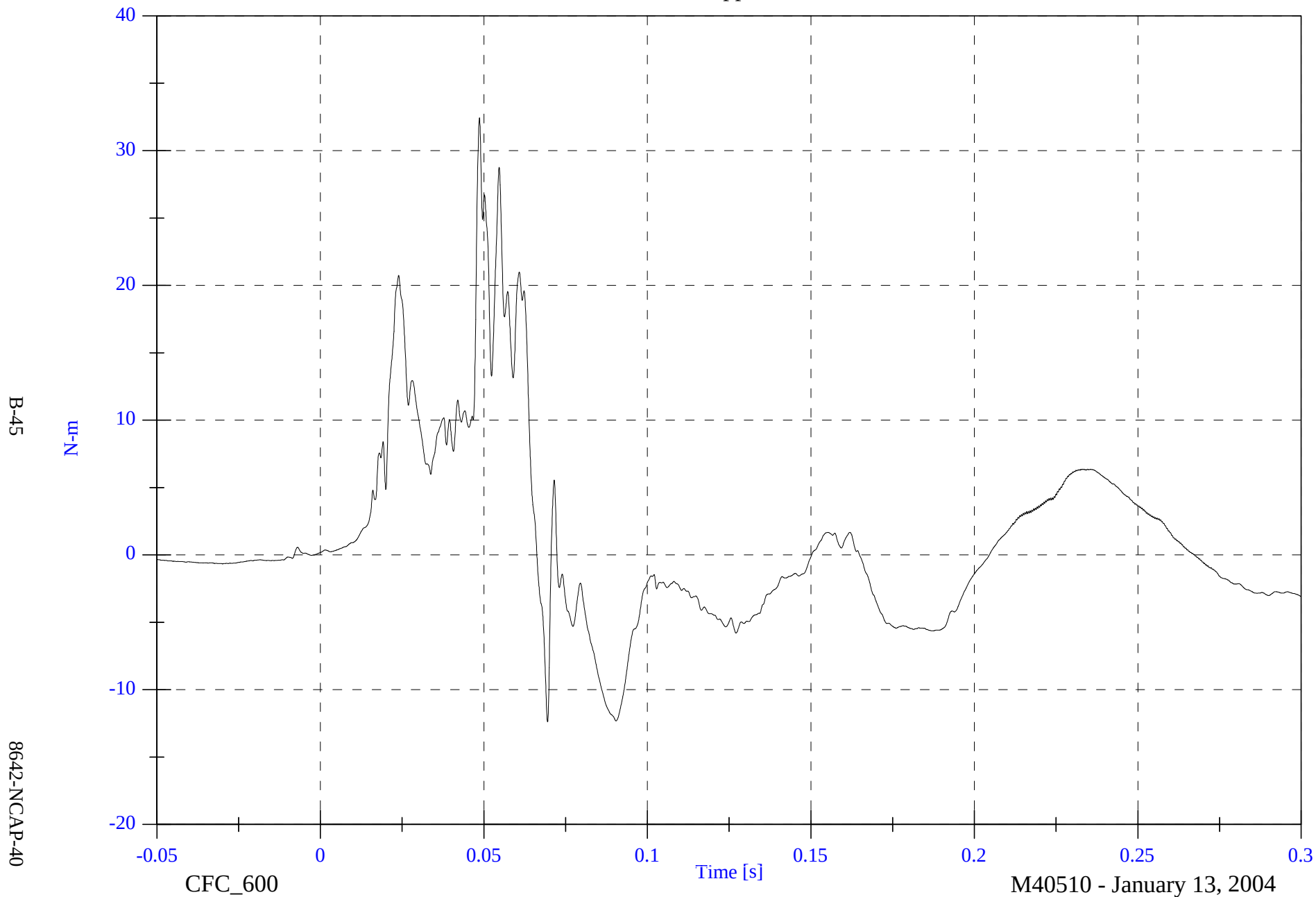


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Left Upper Tibia Mx

Max: 32.4 [N-m] at 0.049 [s]

Min: -12.4 [N-m] at 0.069 [s]

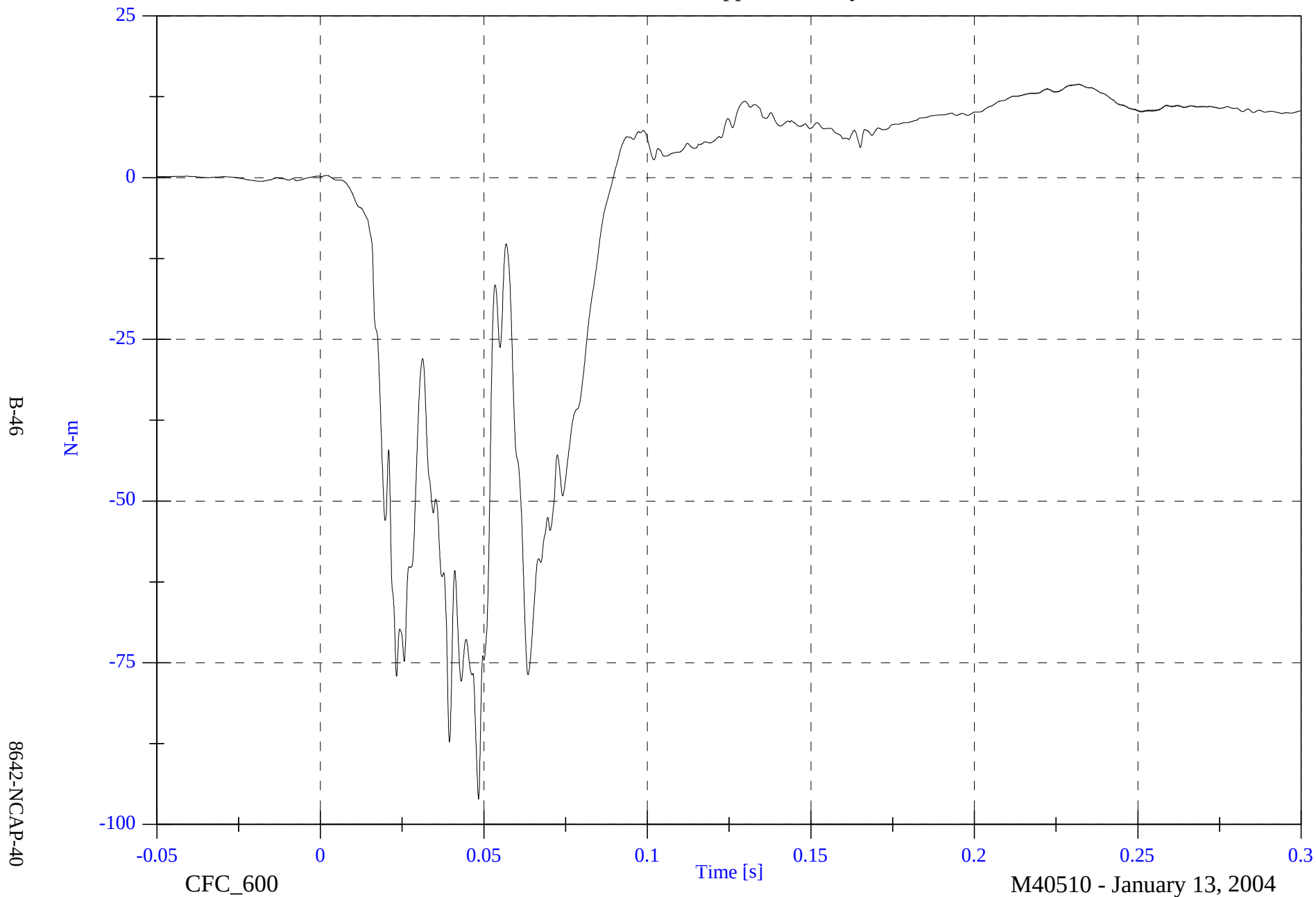


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Left Upper Tibia My

Max: 14.5 [N-m] at 0.232 [s]

Min: -96.1 [N-m] at 0.048 [s]

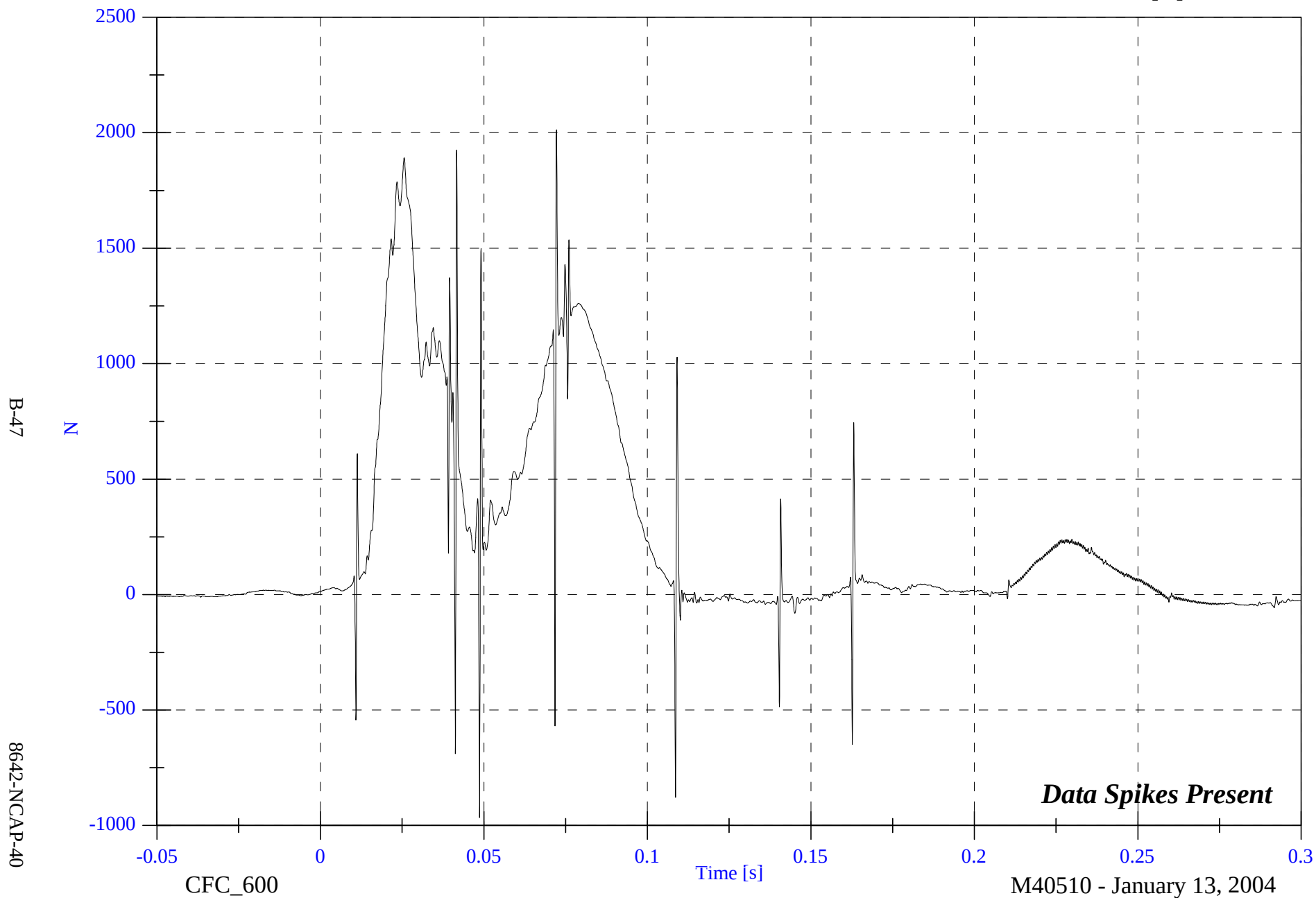


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 2013.3 [N] at 0.072 [s]

Min: -965.4 [N] at 0.049 [s]

V1P1 Left Lower Tibia Fz

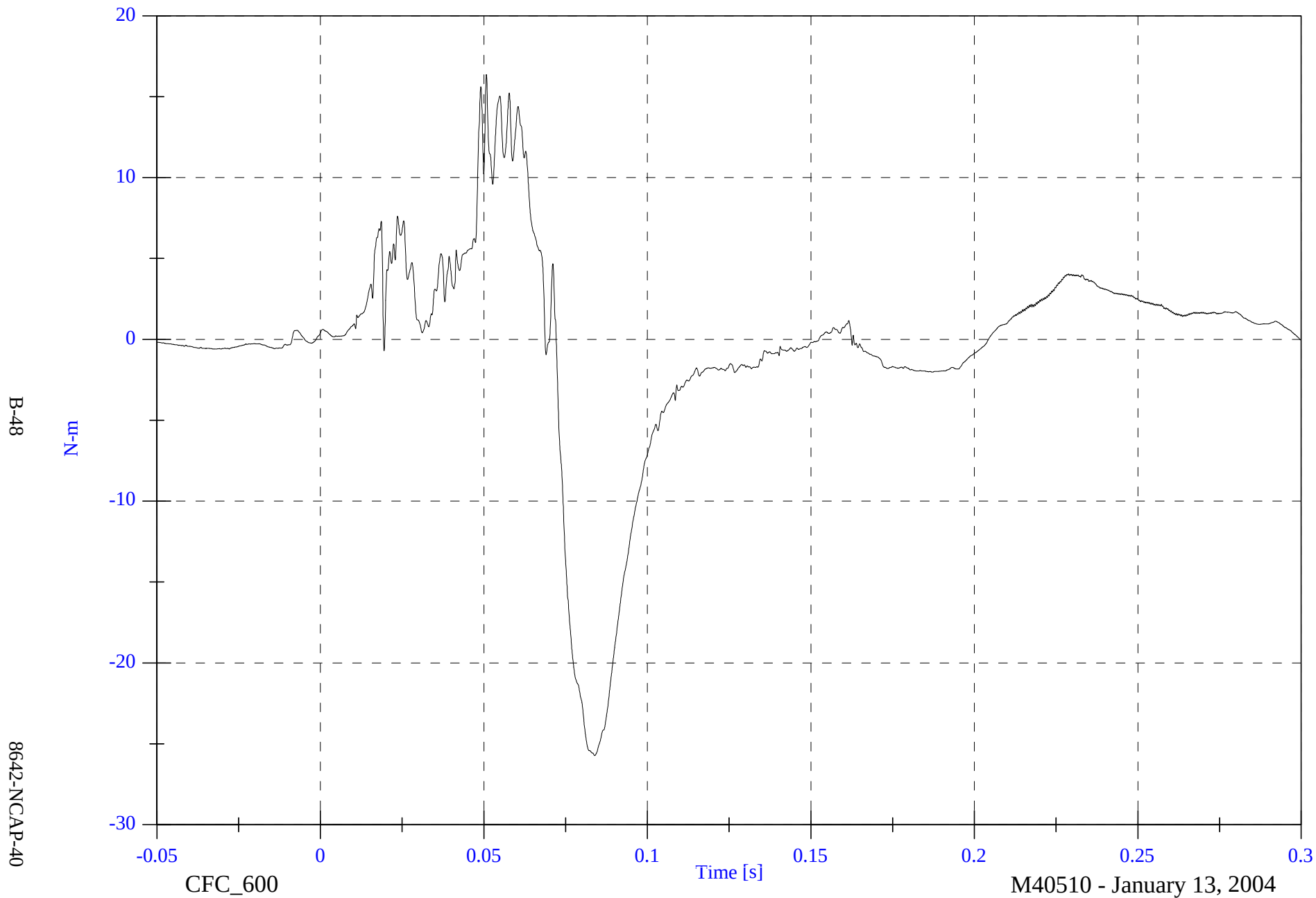


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Left Lower Tibia Mx

Max: 16.4 [N-m] at 0.051 [s]

Min: -25.7 [N-m] at 0.084 [s]

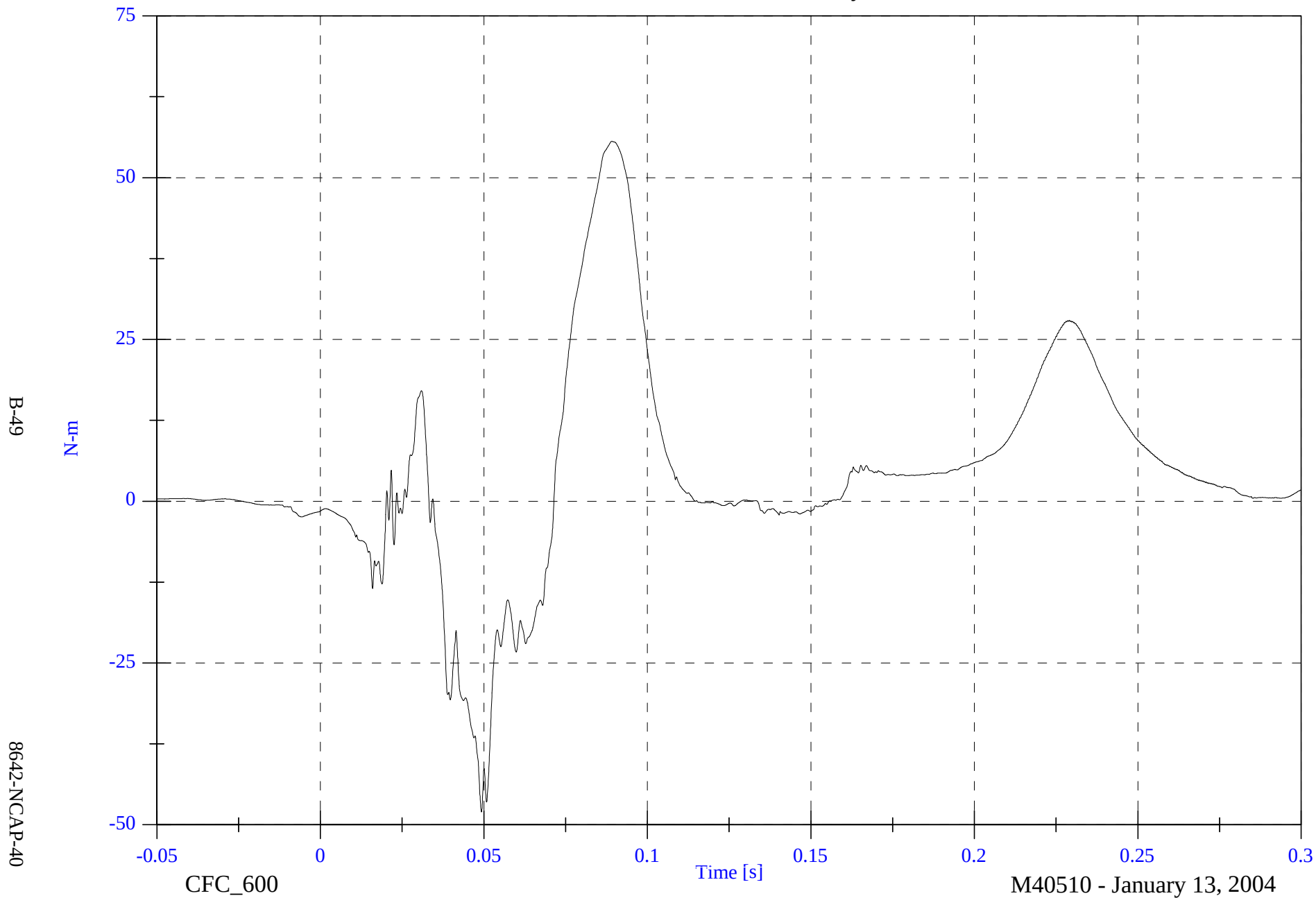


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Left Lower Tibia My

Max: 55.6 [N-m] at 0.089 [s]

Min: -48.0 [N-m] at 0.049 [s]

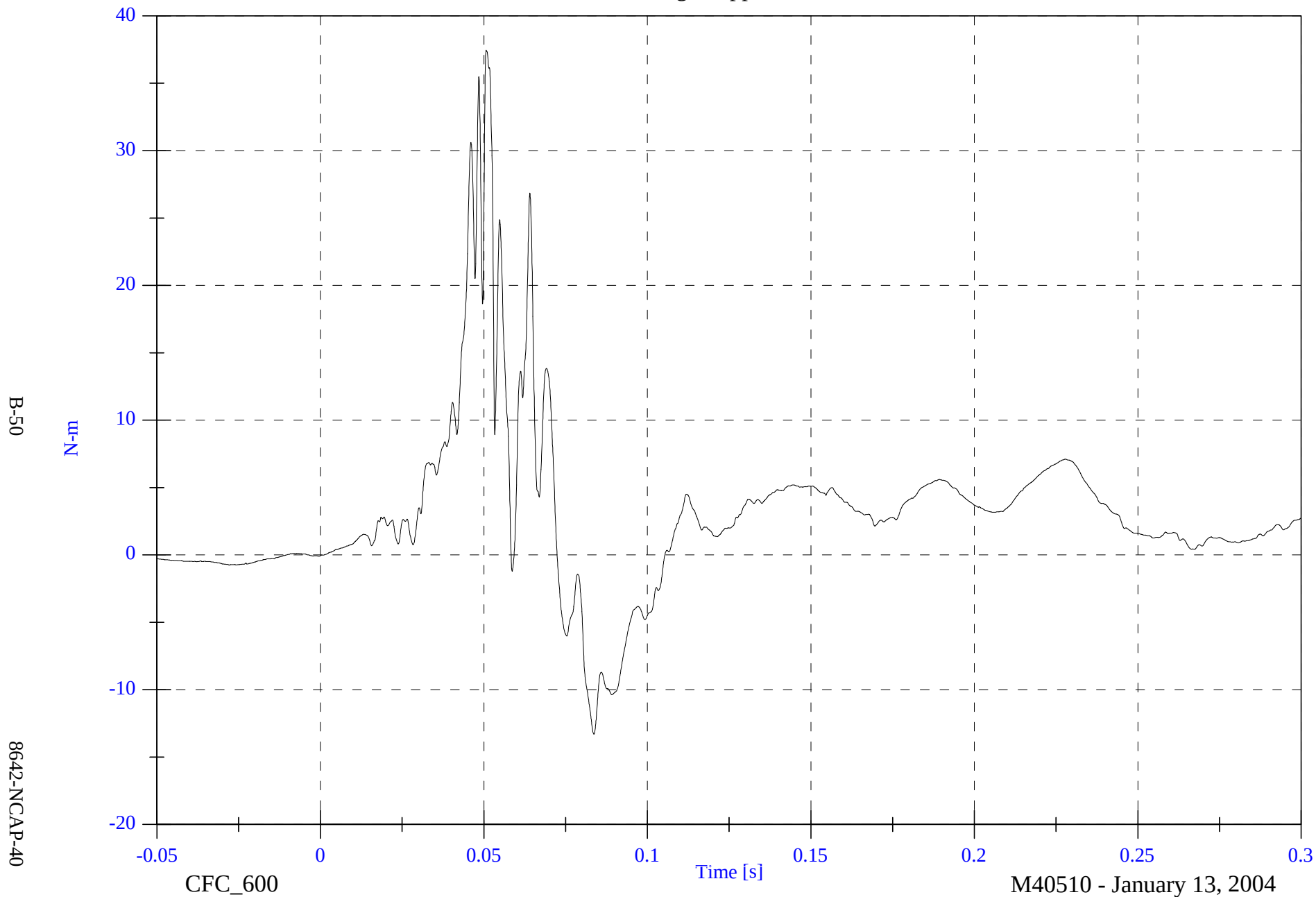


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Right Upper Tibia Mx

Max: 37.5 [N-m] at 0.051 [s]

Min: -13.3 [N-m] at 0.084 [s]

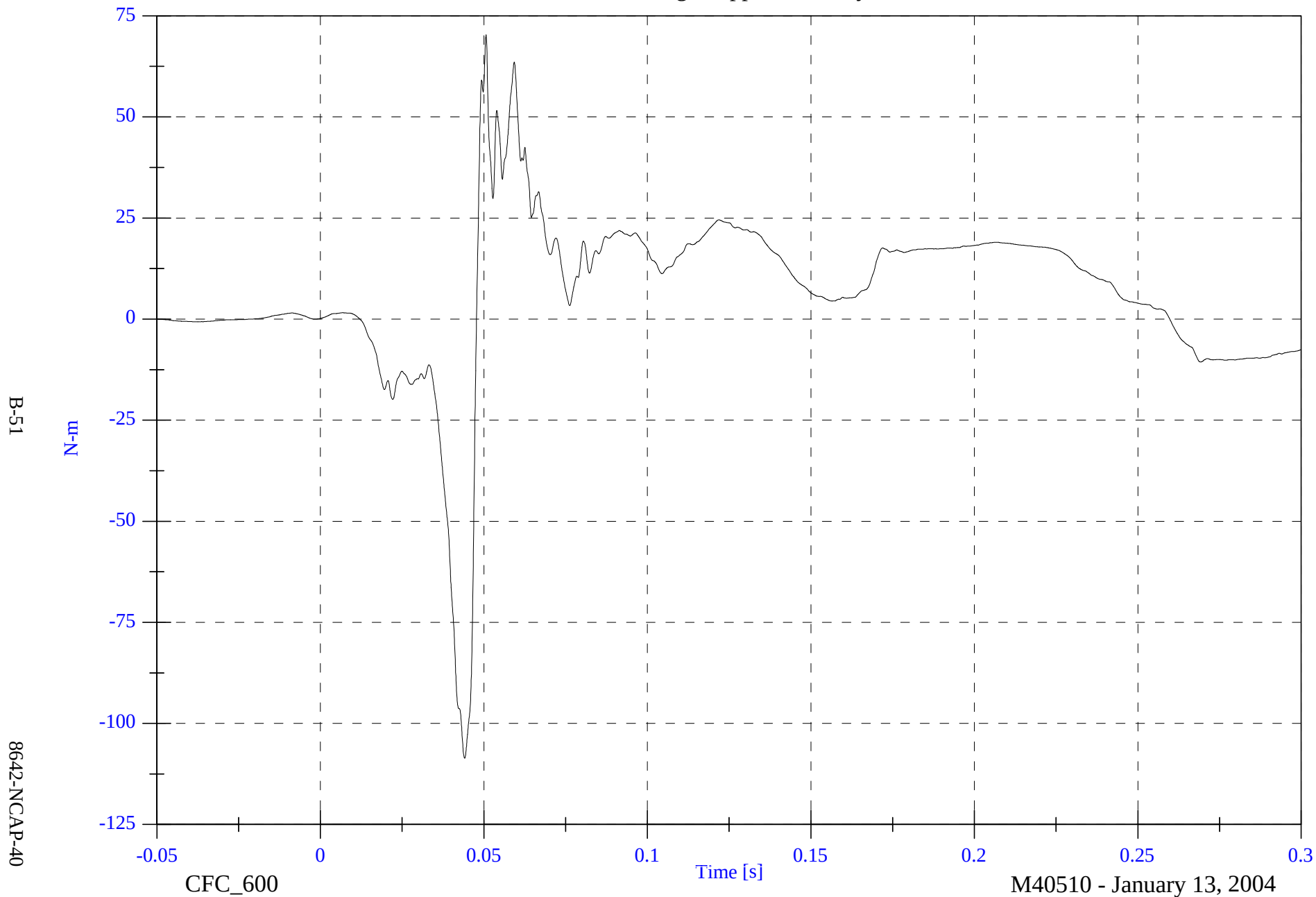


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Right Upper Tibia My

Max: 70.3 [N-m] at 0.051 [s]

Min: -108.6 [N-m] at 0.044 [s]

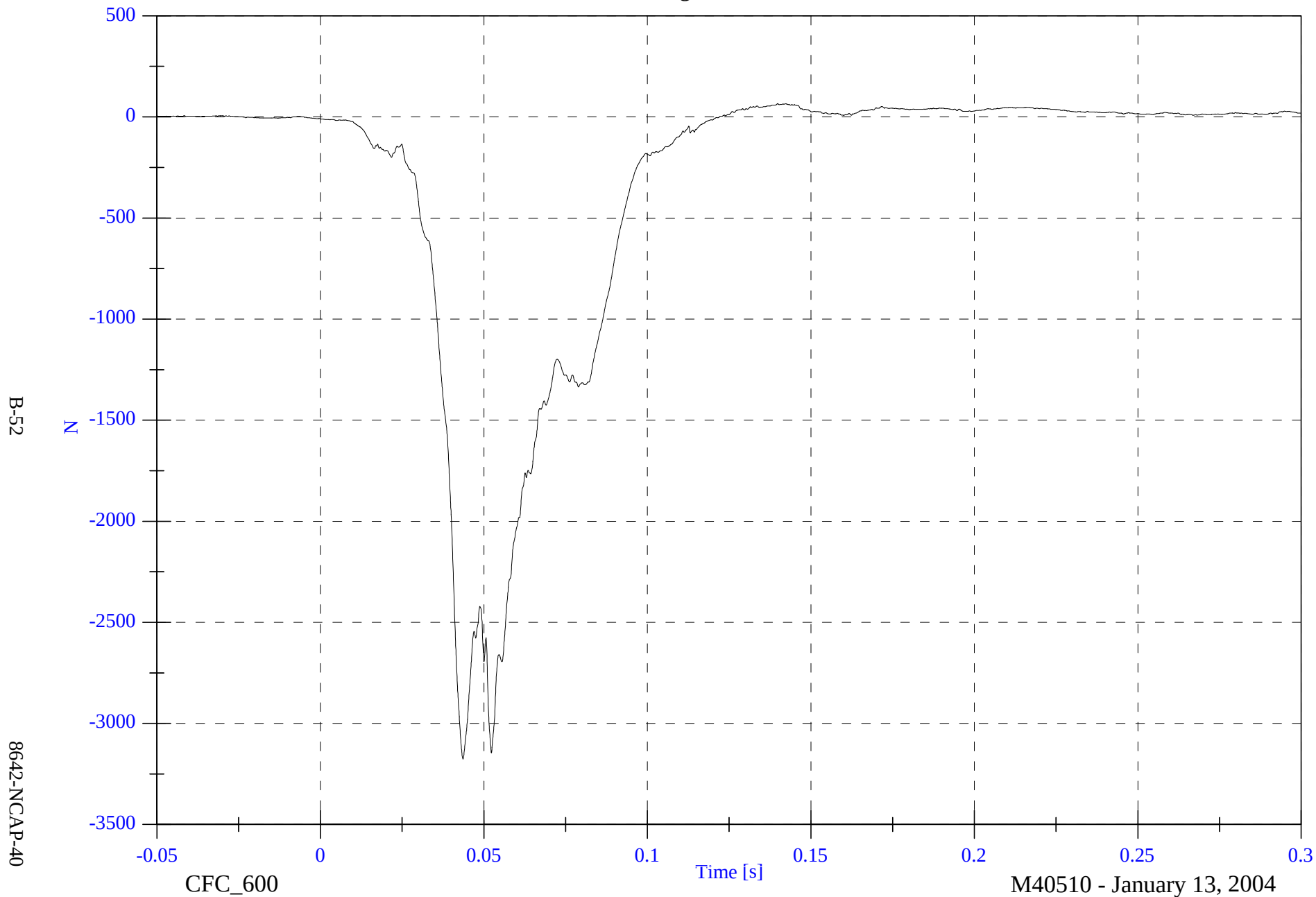


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Right Lower Tibia Fz

Max: 65.5 [N] at 0.140 [s]

Min: -3176.4 [N] at 0.044 [s]

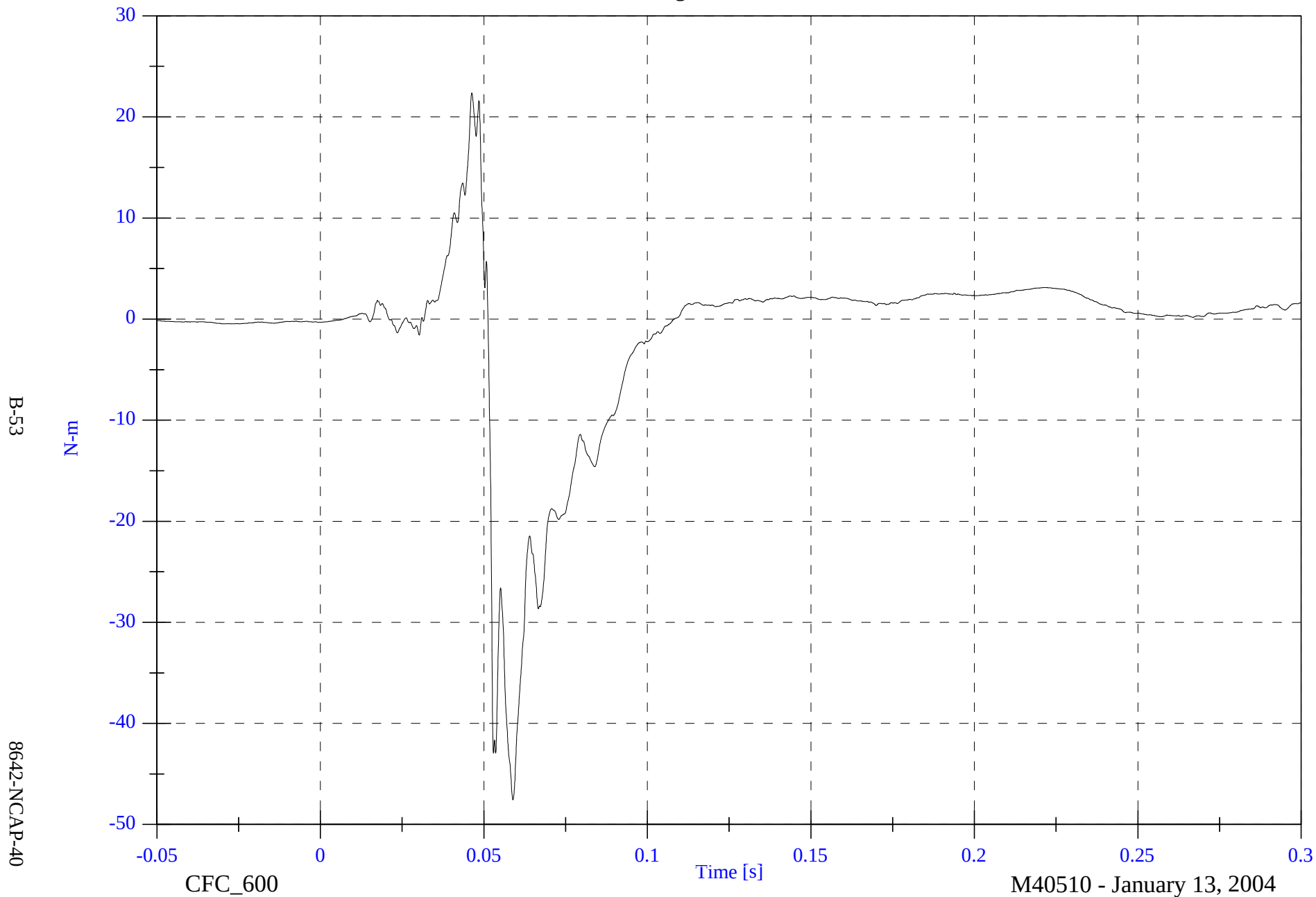


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Right Lower Tibia Mx

Max: 22.4 [N-m] at 0.046 [s]

Min: -47.6 [N-m] at 0.059 [s]

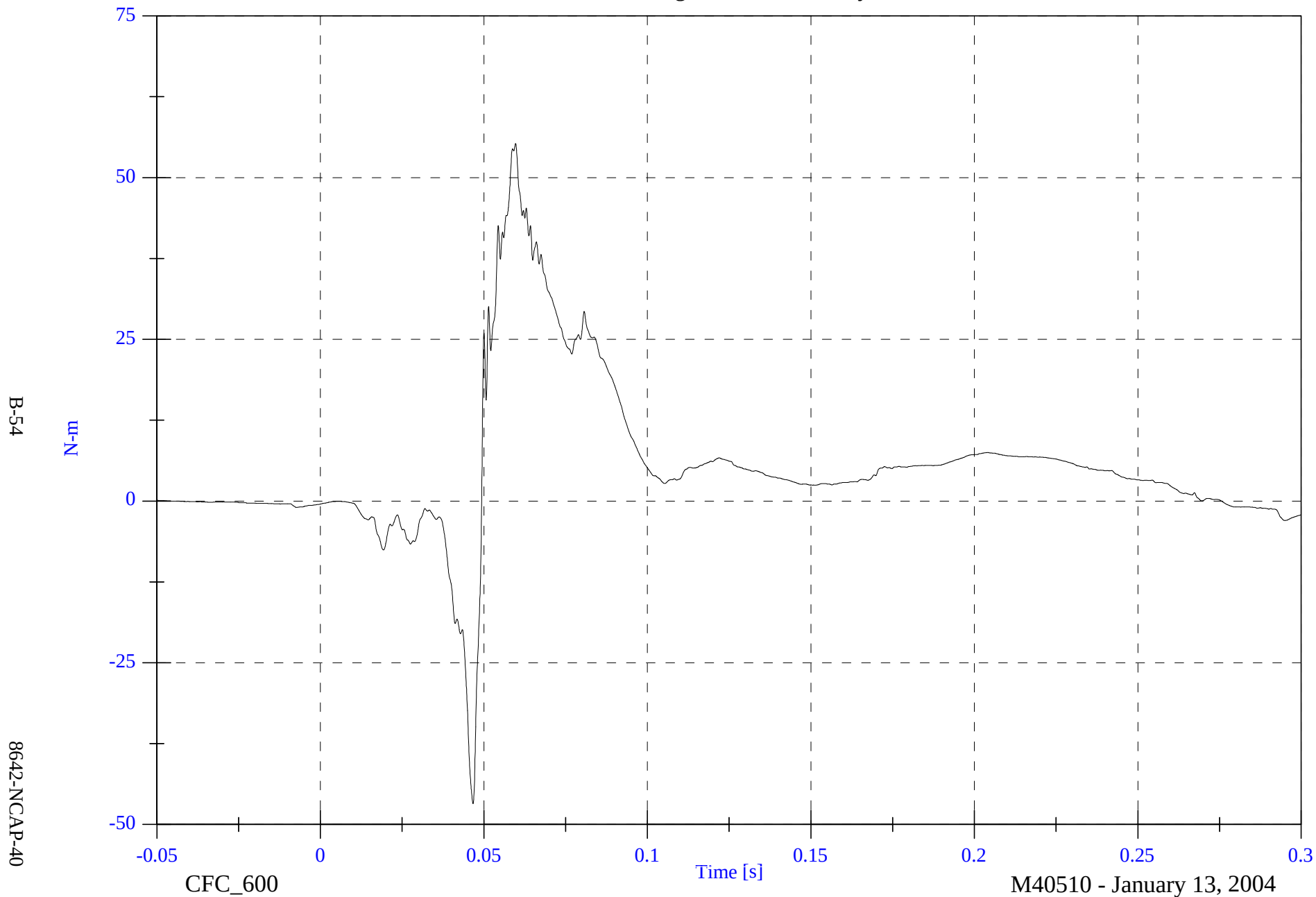


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Right Lower Tibia My

Max: 55.3 [N-m] at 0.060 [s]

Min: -46.8 [N-m] at 0.047 [s]

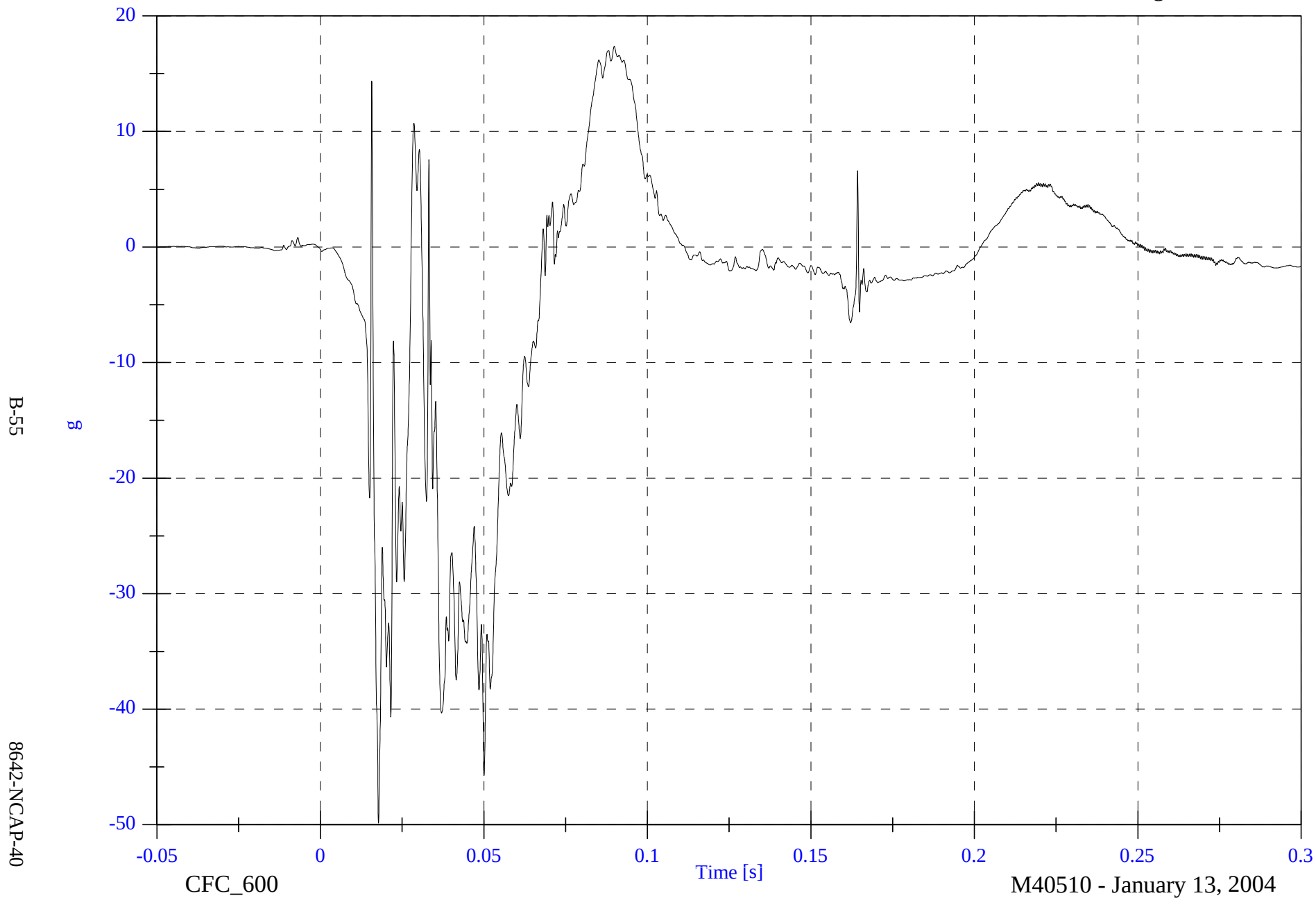


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Left Foot Aft x

Max: 17.4 [g] at 0.090 [s]

Min: -49.9 [g] at 0.018 [s]

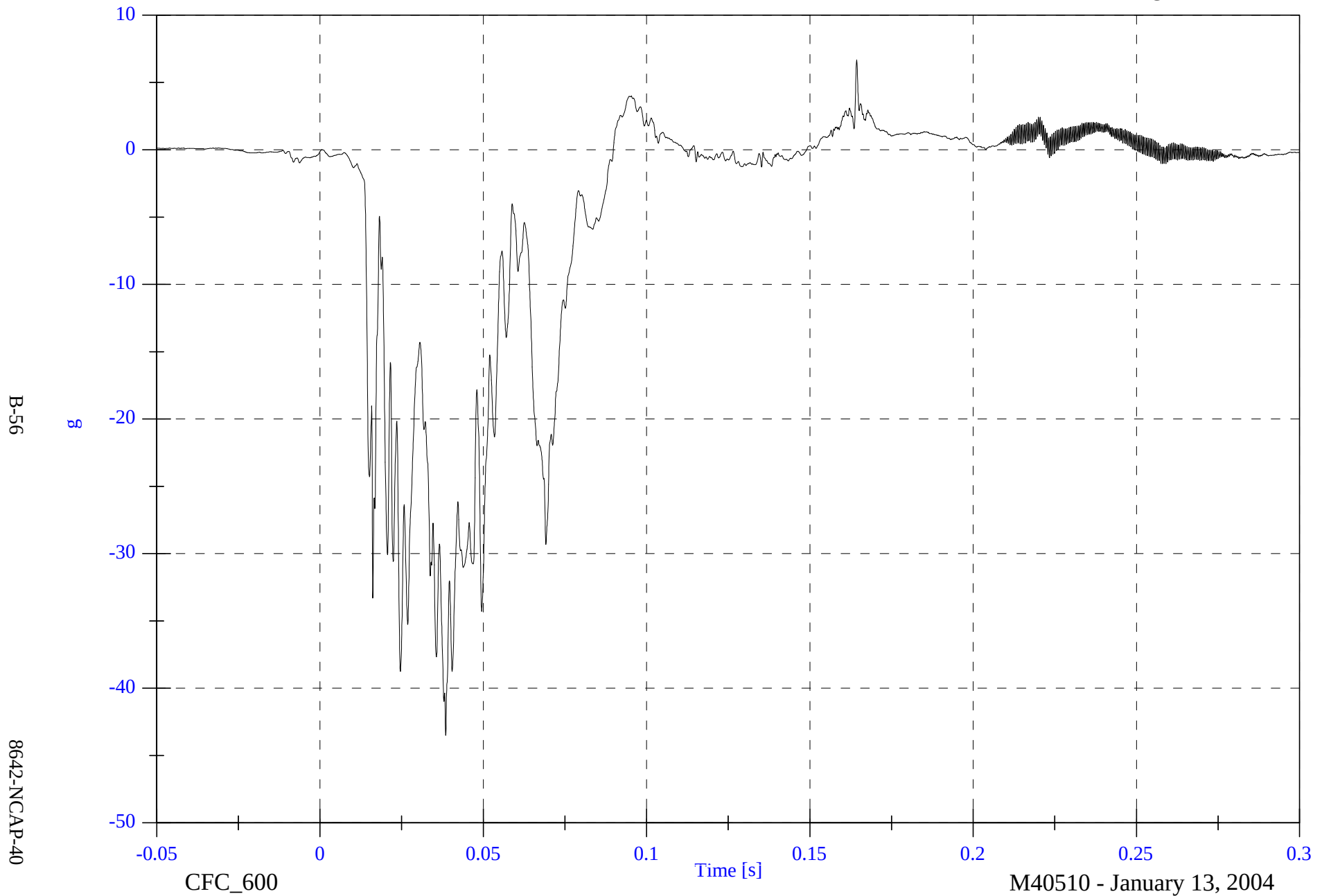


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Left Foot Aft z

Max: 6.7 [g] at 0.164 [s]

Min: -43.5 [g] at 0.038 [s]

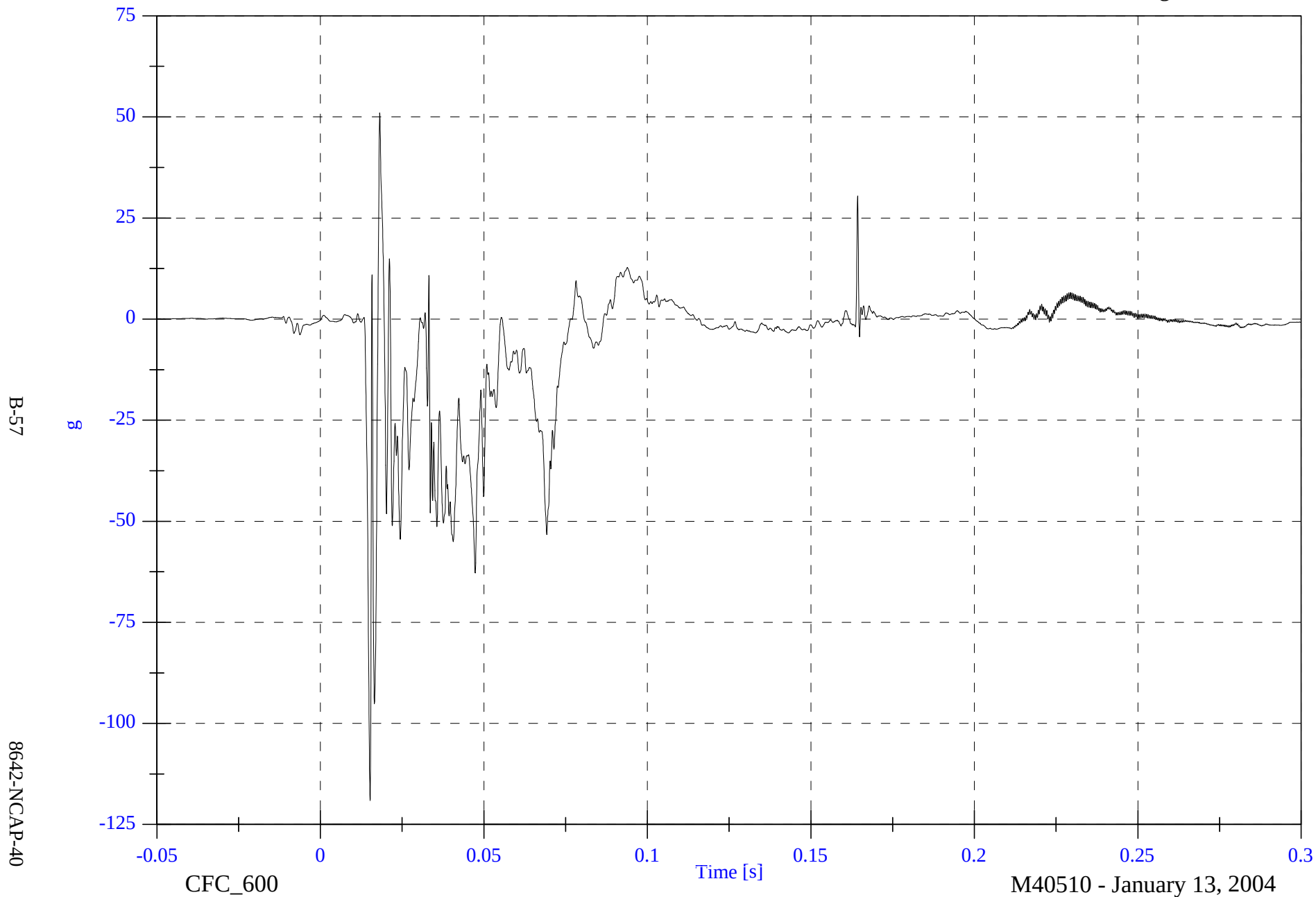


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Left Foot Fore z

Max: 51.0 [g] at 0.018 [s]

Min: -119.1 [g] at 0.015 [s]

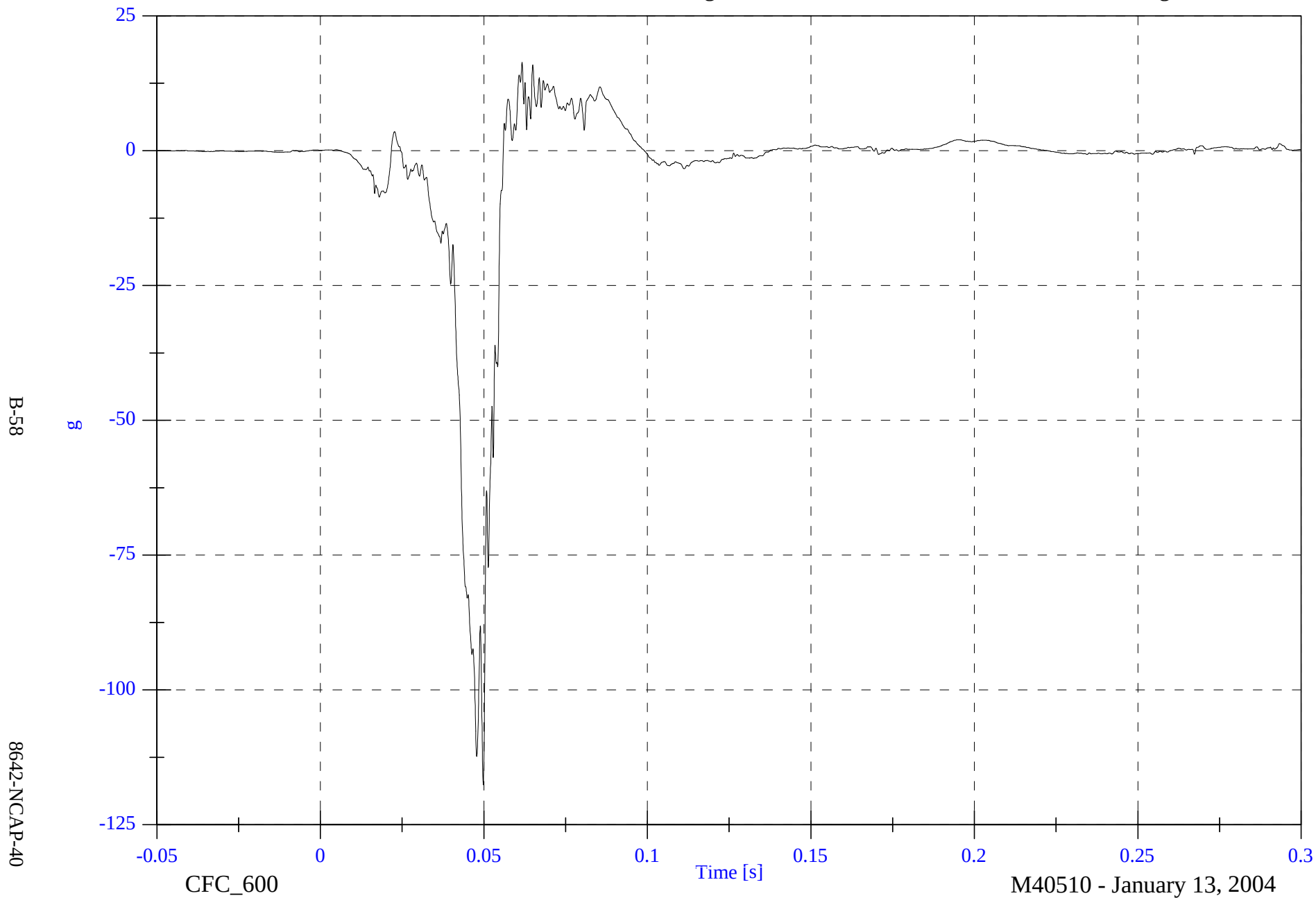


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Right Foot Aft x

Max: 16.4 [g] at 0.062 [s]

Min: -117.6 [g] at 0.050 [s]

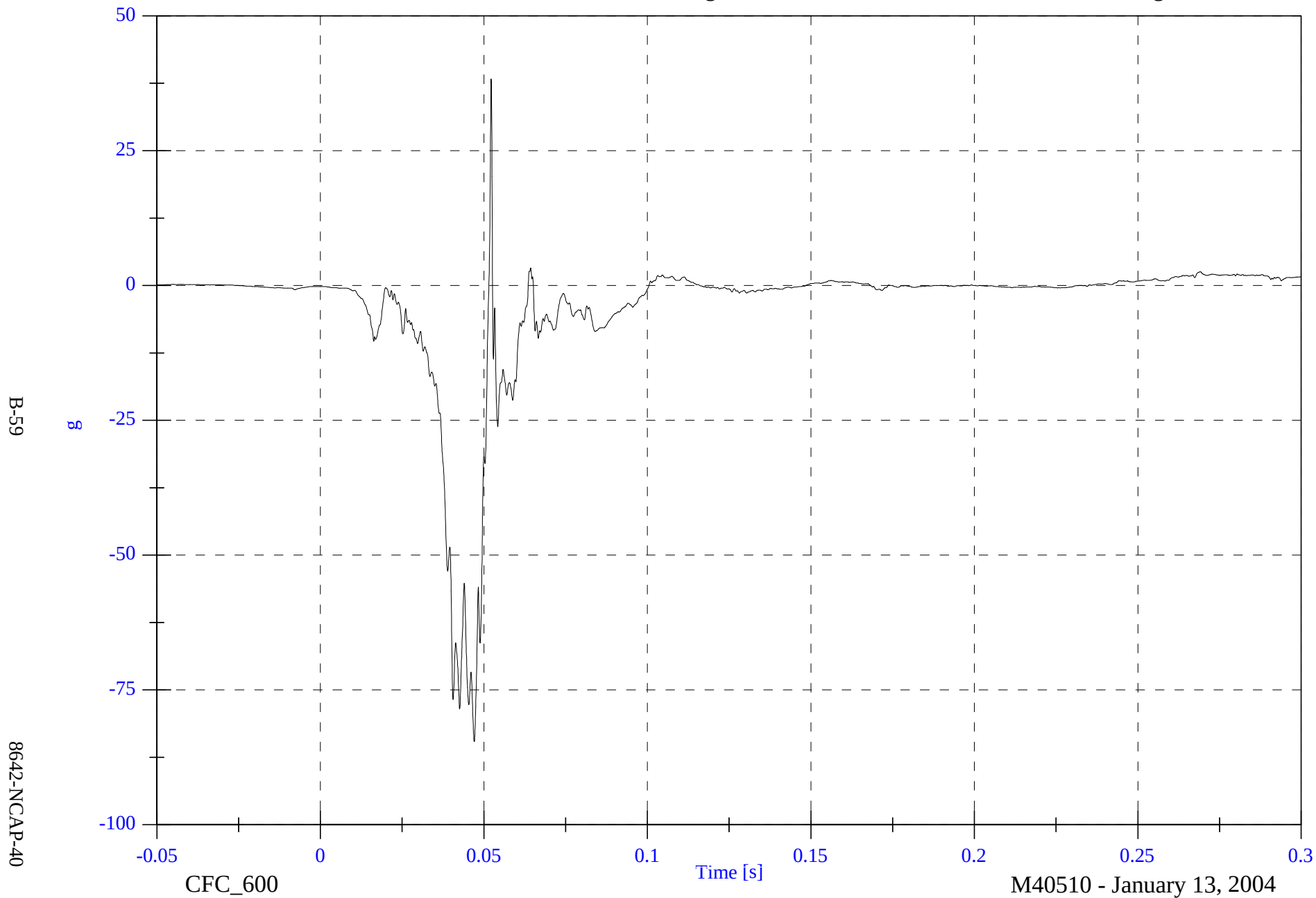


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Right Foot Aft z

Max: 38.3 [g] at 0.052 [s]

Min: -84.6 [g] at 0.047 [s]

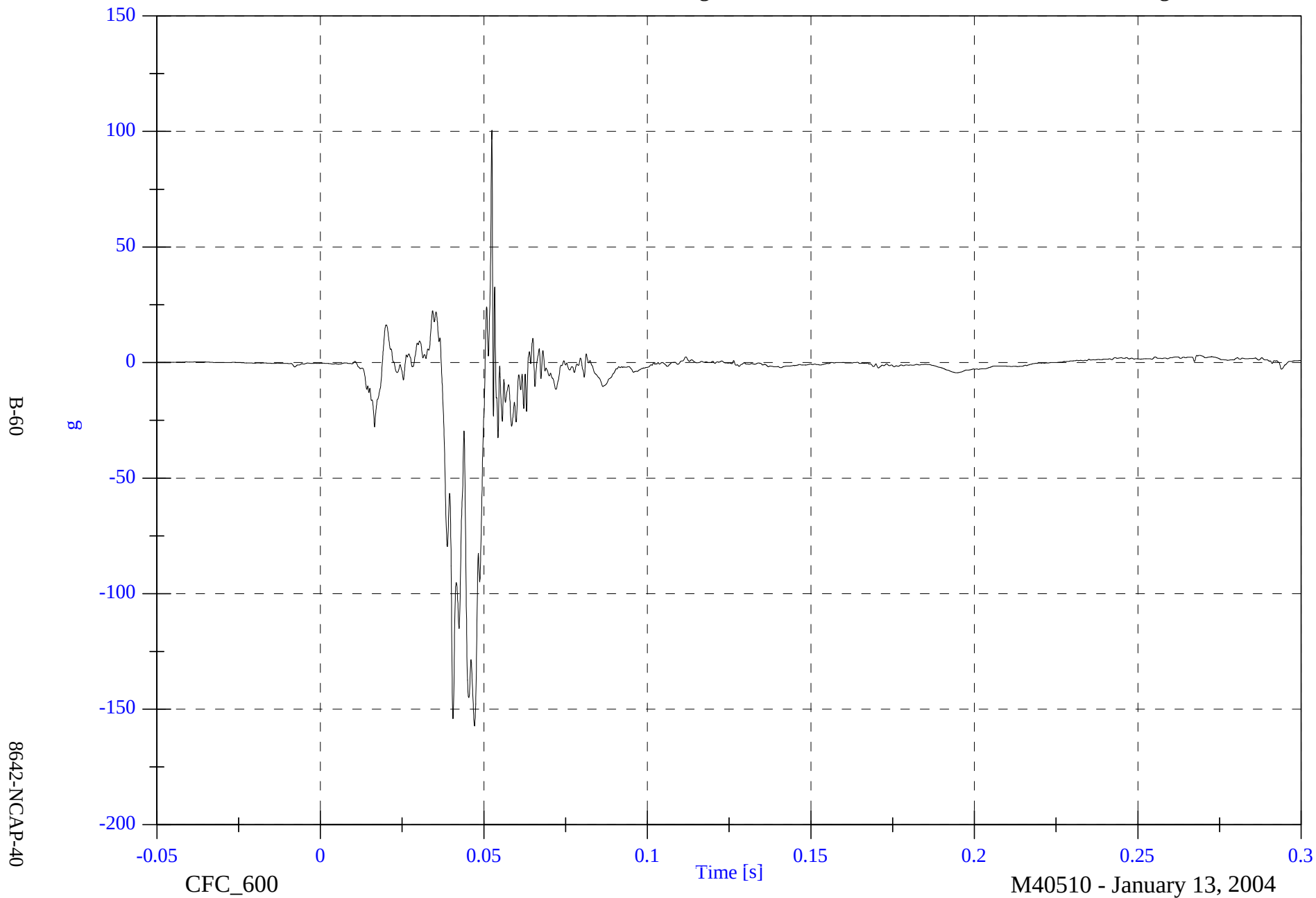


2004 NCAP Test 4 2004 Suzuki Forenza

V1P1 Right Foot Fore z

Max: 100.5 [g] at 0.052 [s]

Min: -157.3 [g] at 0.047 [s]

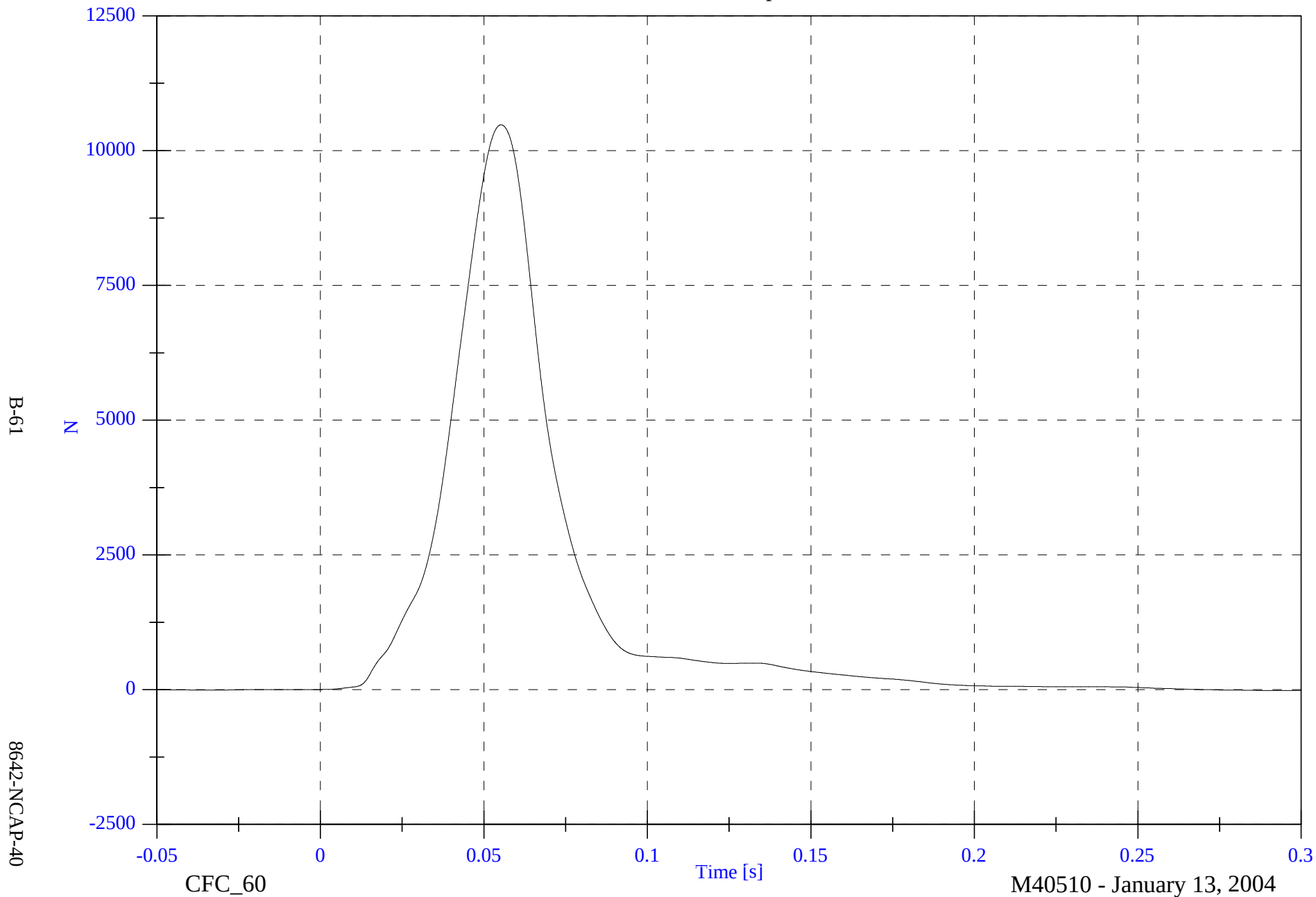


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Driver Lap Belt

Max: 10478.9 [N] at 0.055 [s]

Min: -16.9 [N] at 0.300 [s]

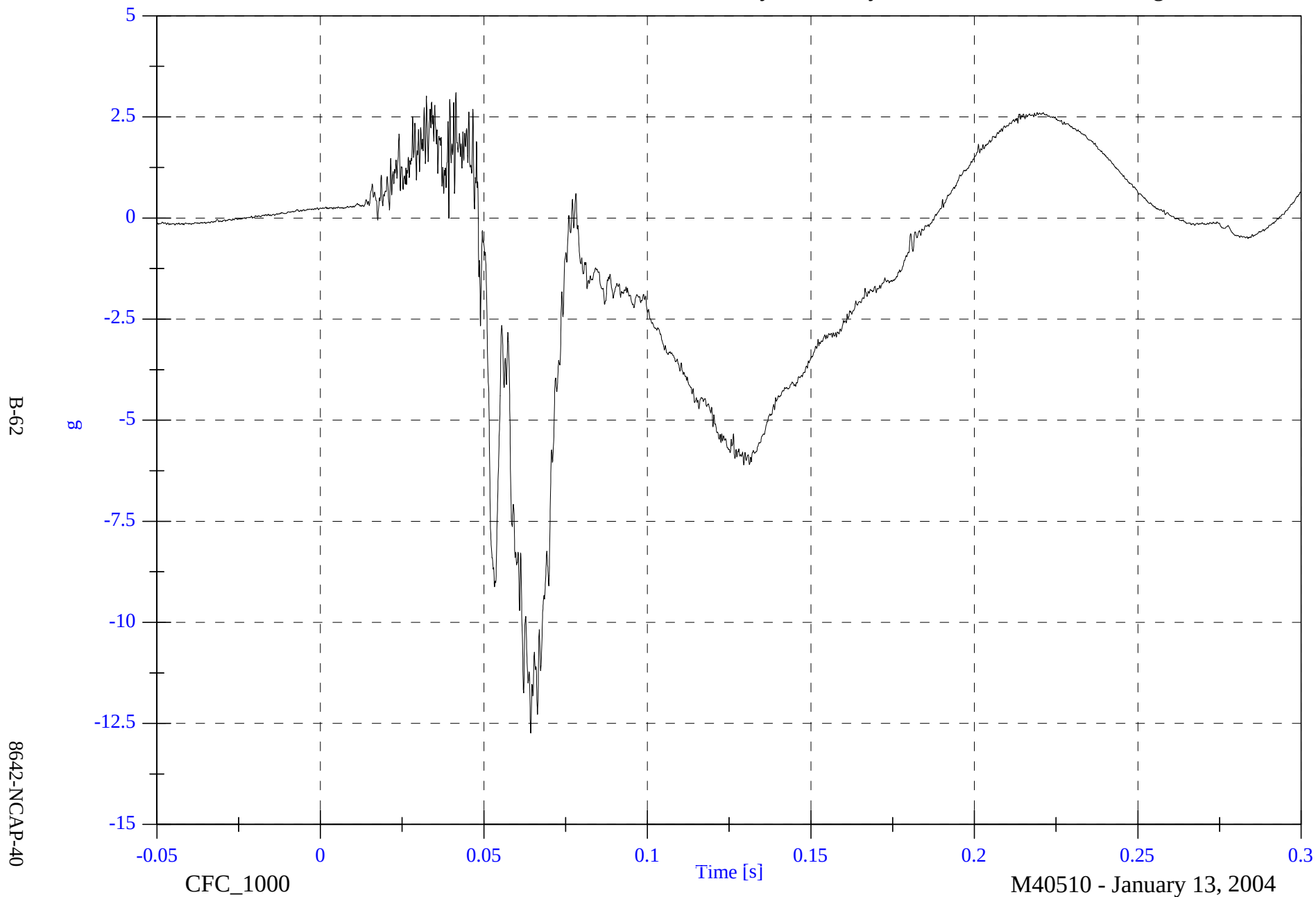


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Head 9 Array X Arm Ay

Max: 3.1 [g] at 0.041 [s]

Min: -12.7 [g] at 0.064 [s]

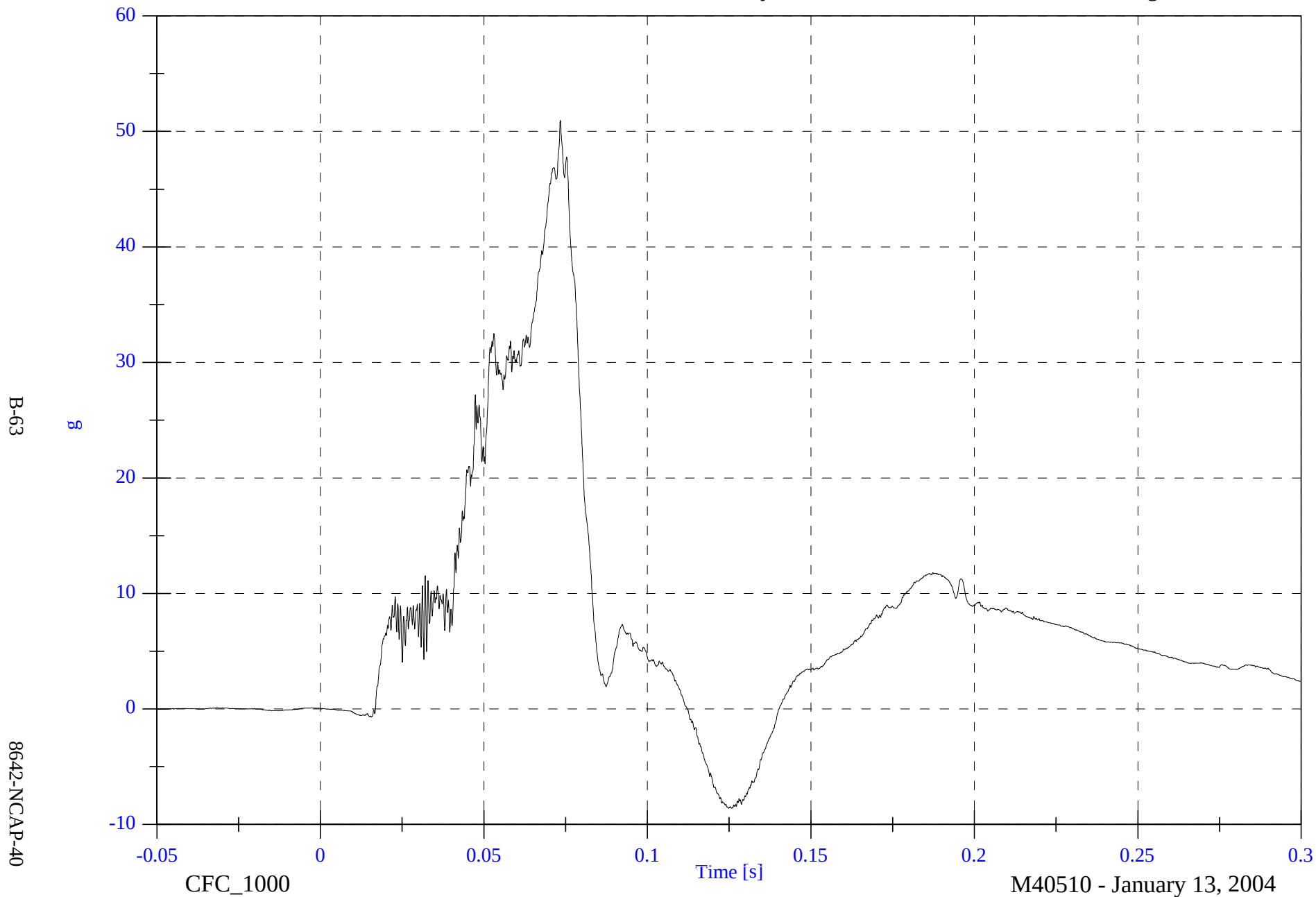


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Head 9 Array X Arm Az

Max: 50.9 [g] at 0.073 [s]

Min: -8.6 [g] at 0.125 [s]

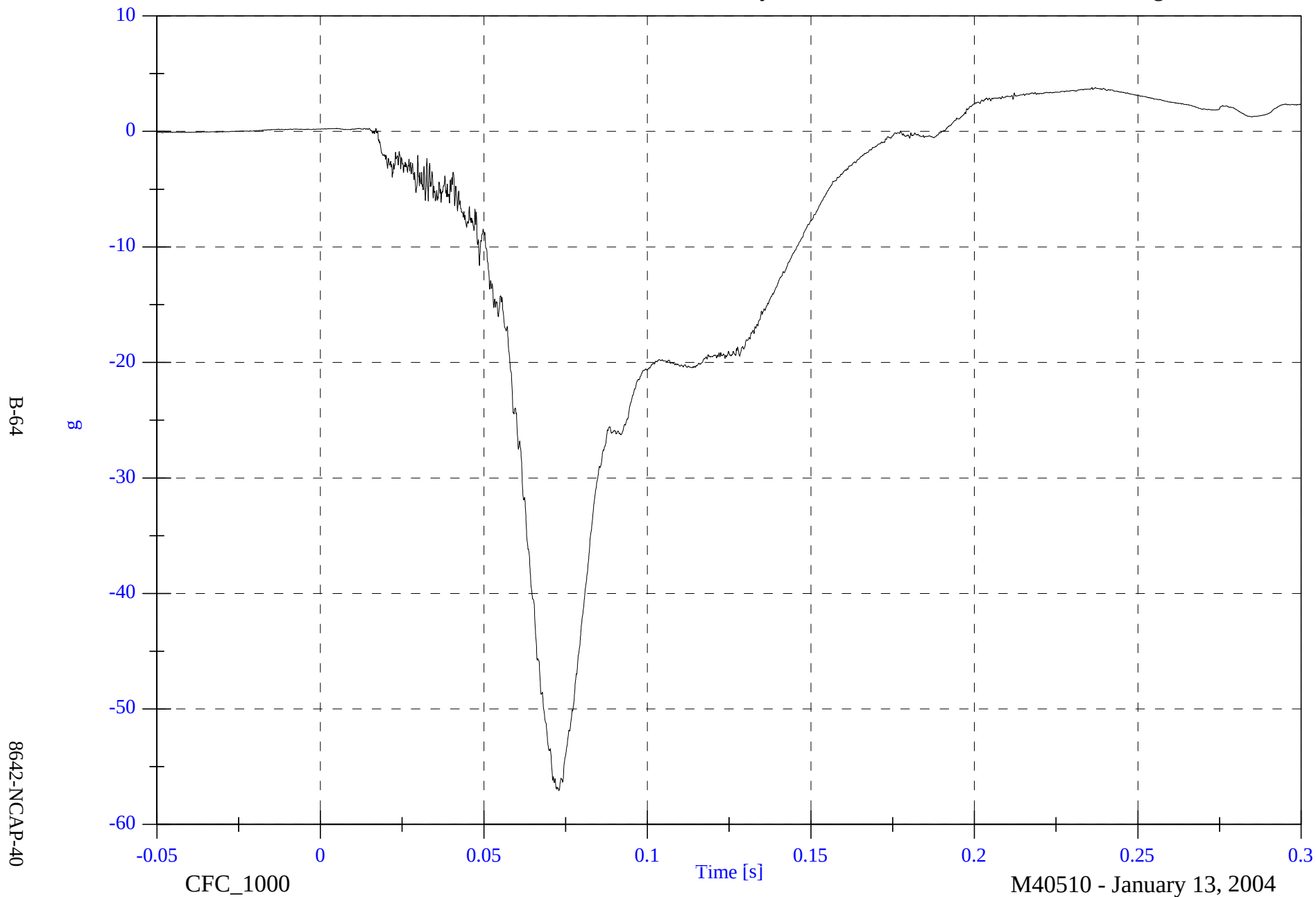


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Head 9 Array Y Arm Ax

Max: 3.8 [g] at 0.236 [s]

Min: -57.1 [g] at 0.073 [s]

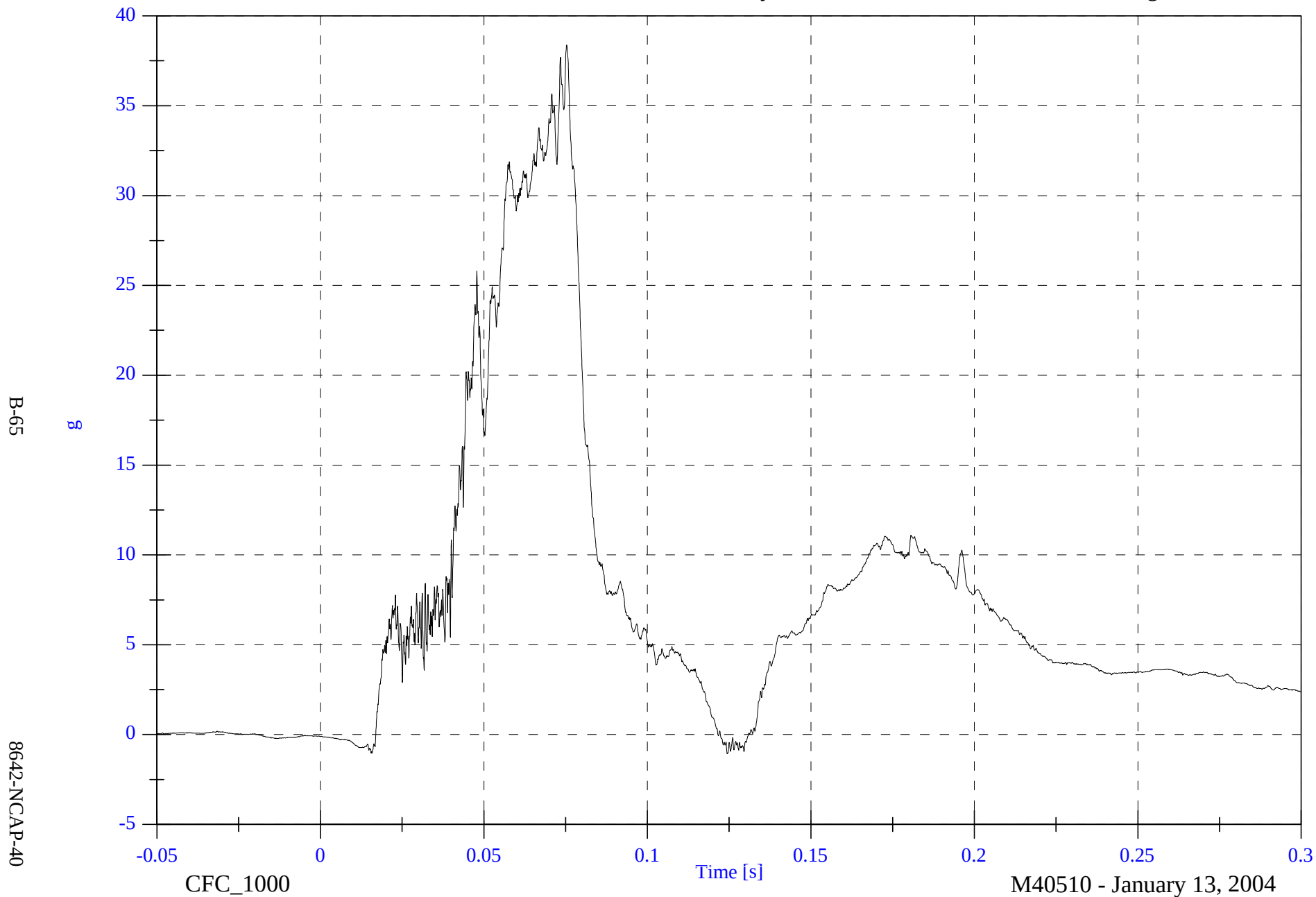


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Head 9 Array Y Arm Az

Max: 38.4 [g] at 0.075 [s]

Min: -1.1 [g] at 0.124 [s]

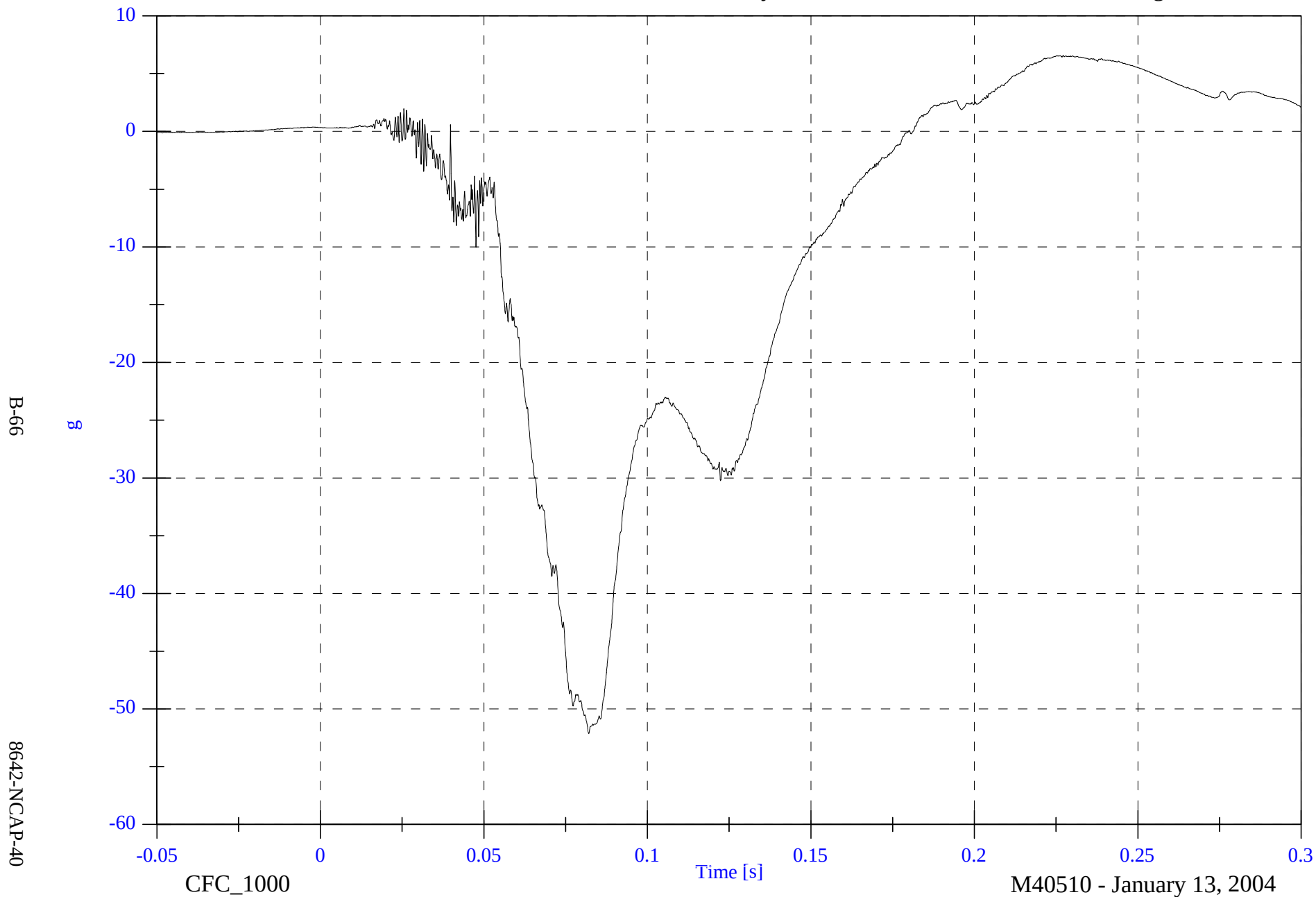


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Head 9 Array Z Arm Ax

Max: 6.6 [g] at 0.227 [s]

Min: -52.1 [g] at 0.082 [s]

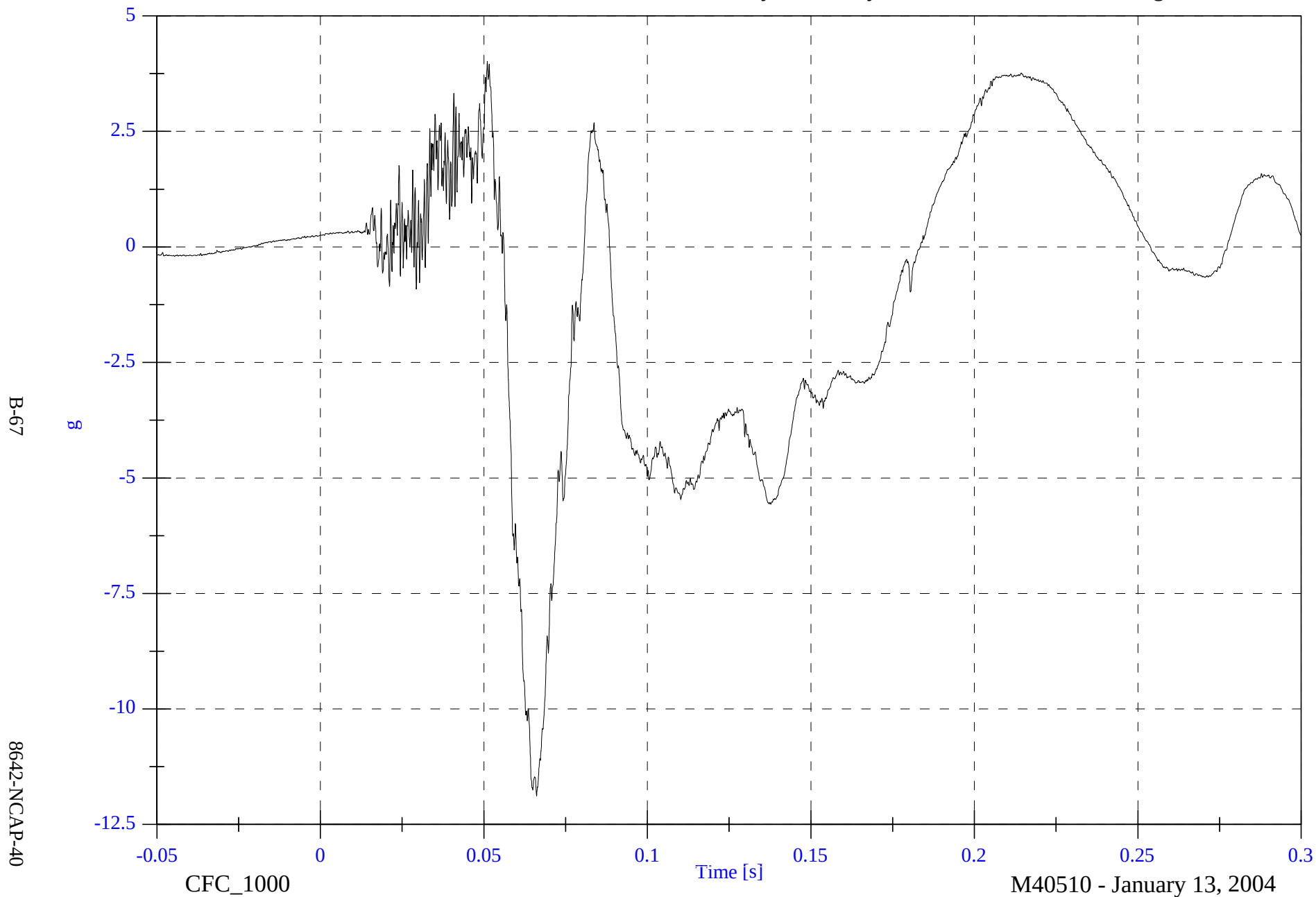


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Head 9 Array Z Arm Ay

Max: 4.0 [g] at 0.051 [s]

Min: -11.9 [g] at 0.066 [s]

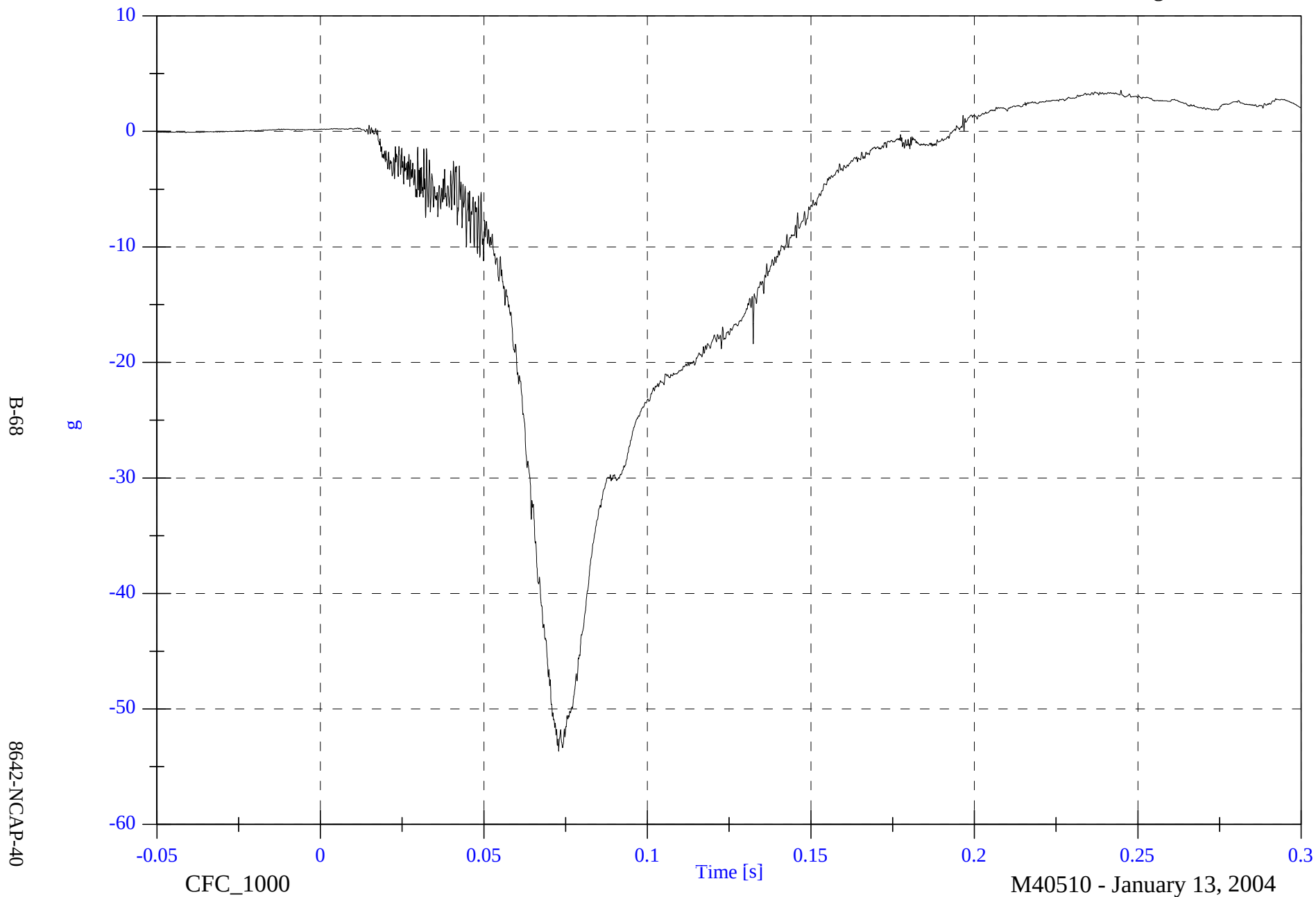


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Head CG x

Max: 3.6 [g] at 0.245 [s]

Min: -53.7 [g] at 0.073 [s]

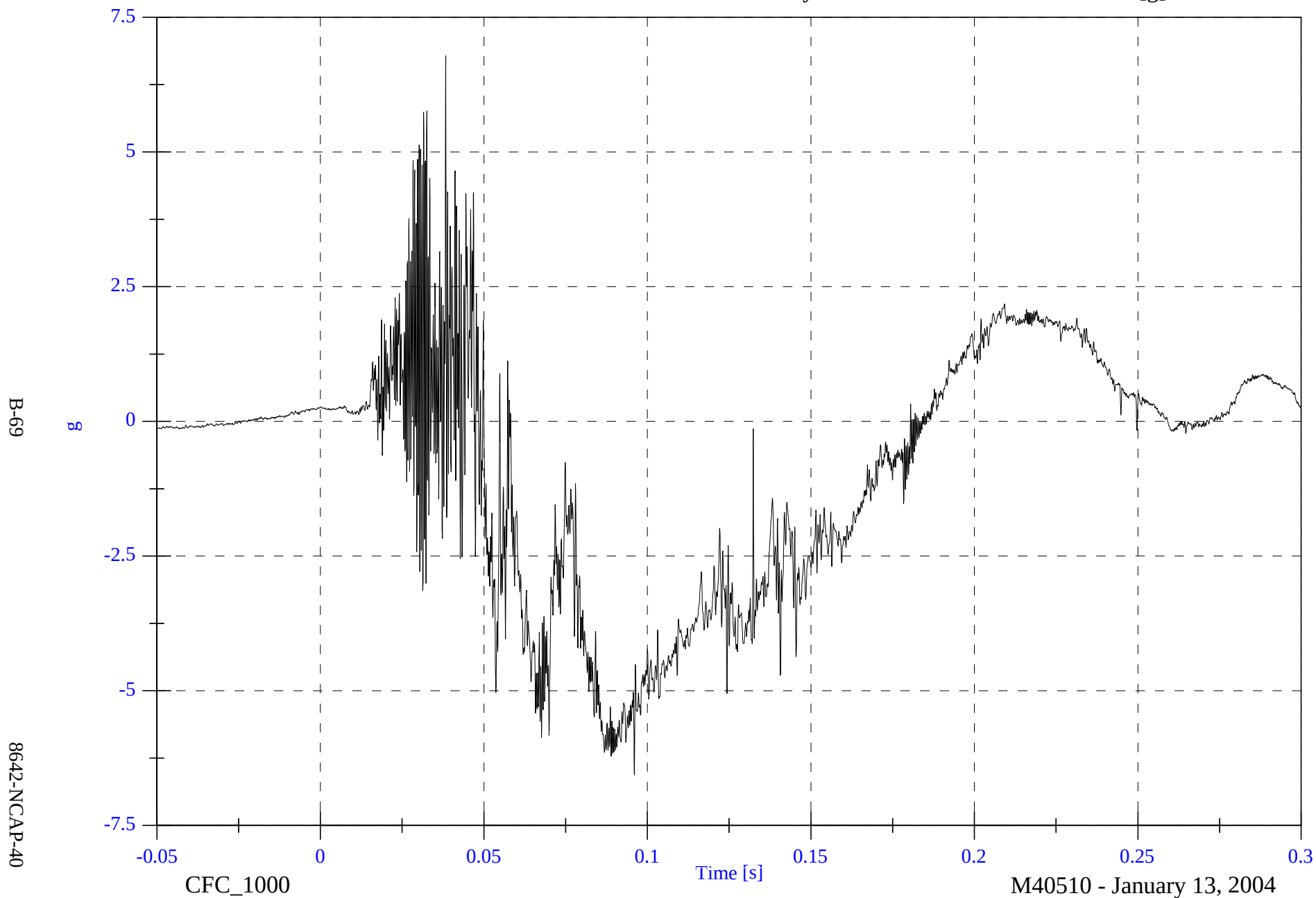


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Head CG y

Max: 6.8 [g] at 0.038 [s]

Min: -6.6 [g] at 0.096 [s]

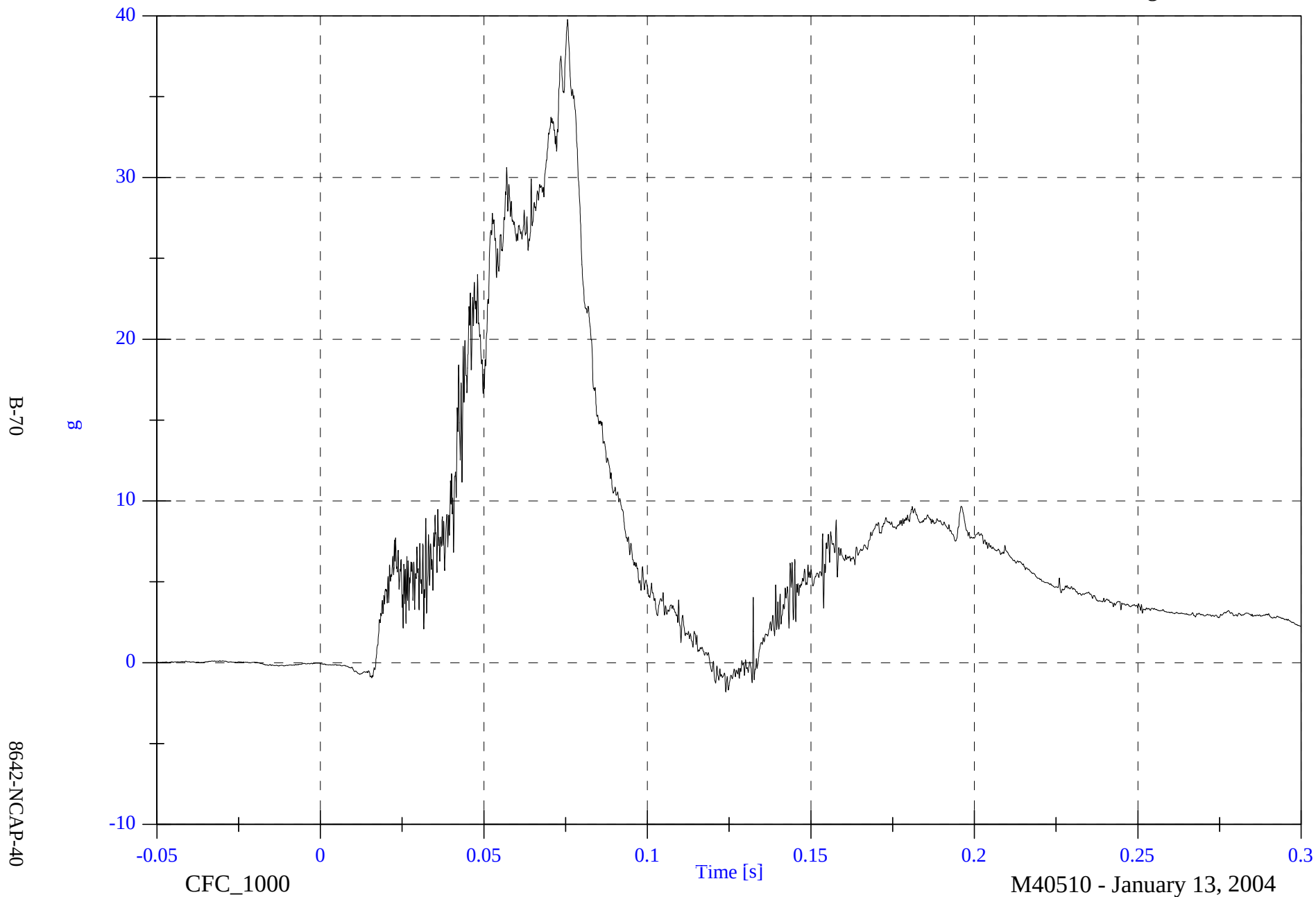


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Head CG z

Max: 39.8 [g] at 0.076 [s]

Min: -1.8 [g] at 0.124 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

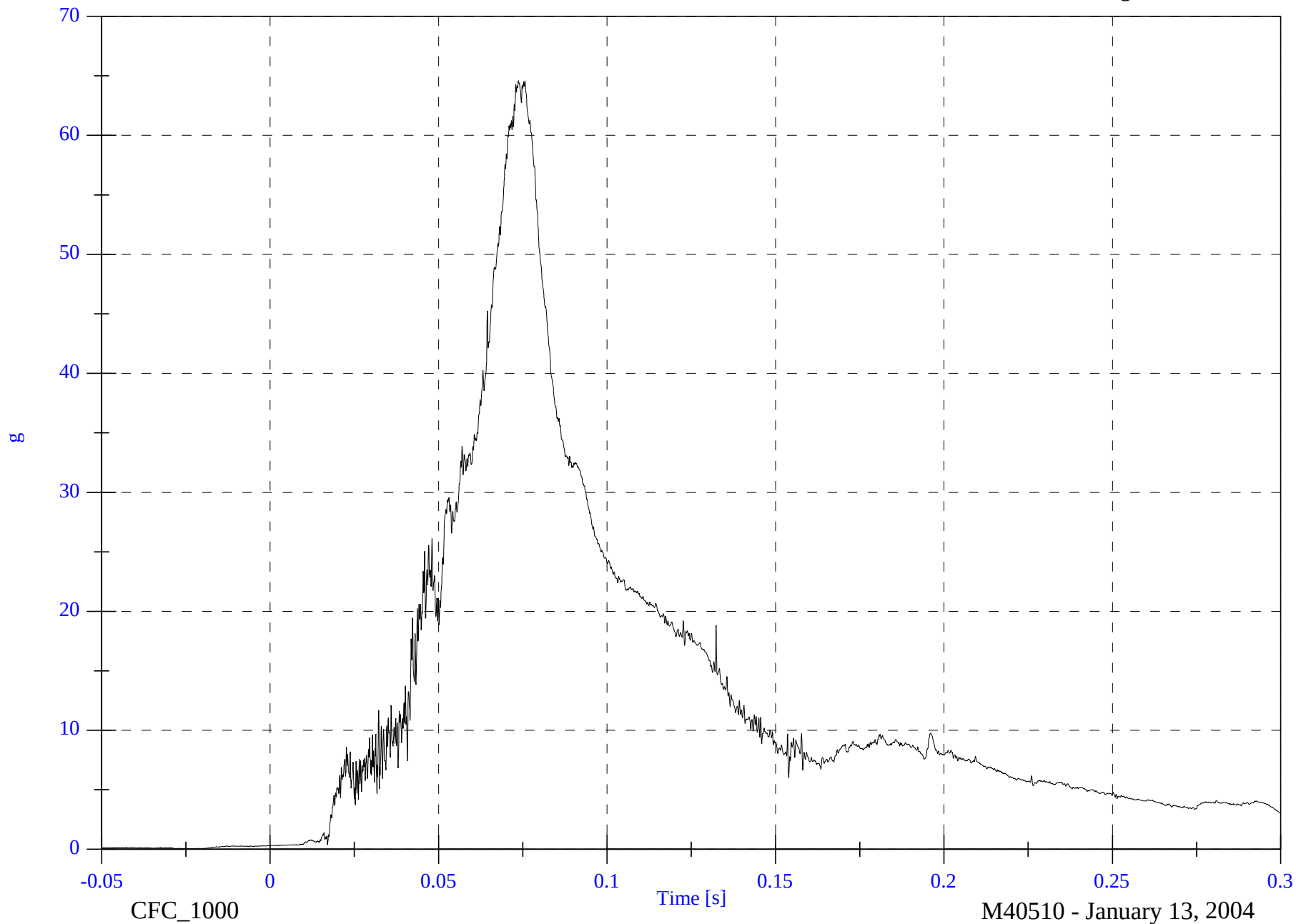
V1P2 Head CG Resultant

Max: 64.6 [g] at 0.074 [s]

Min: 0.0 [g] at -0.026 [s]

B-71

8642-NCAP-40

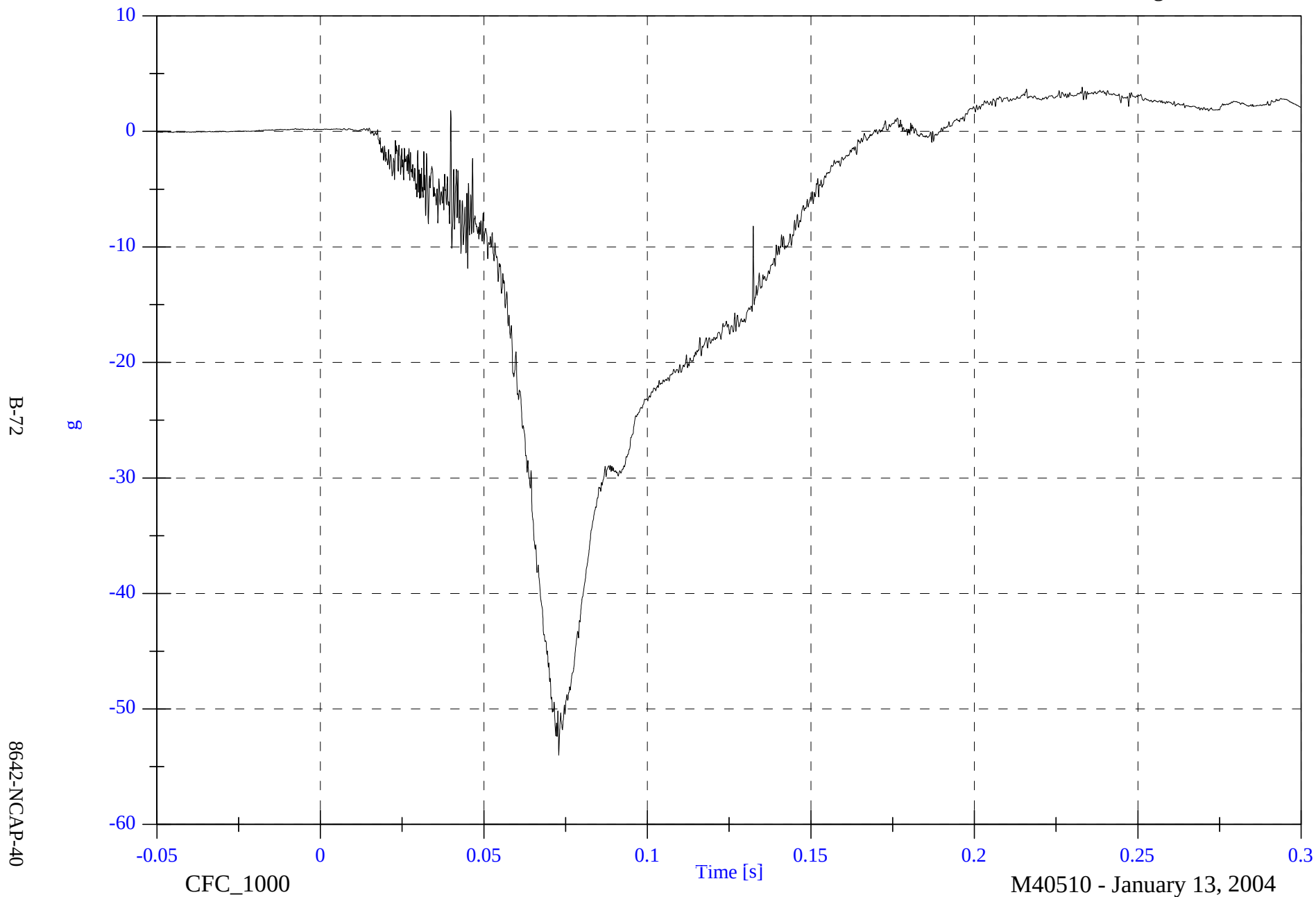


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Head CG Red x

Max: 3.8 [g] at 0.233 [s]

Min: -54.0 [g] at 0.073 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

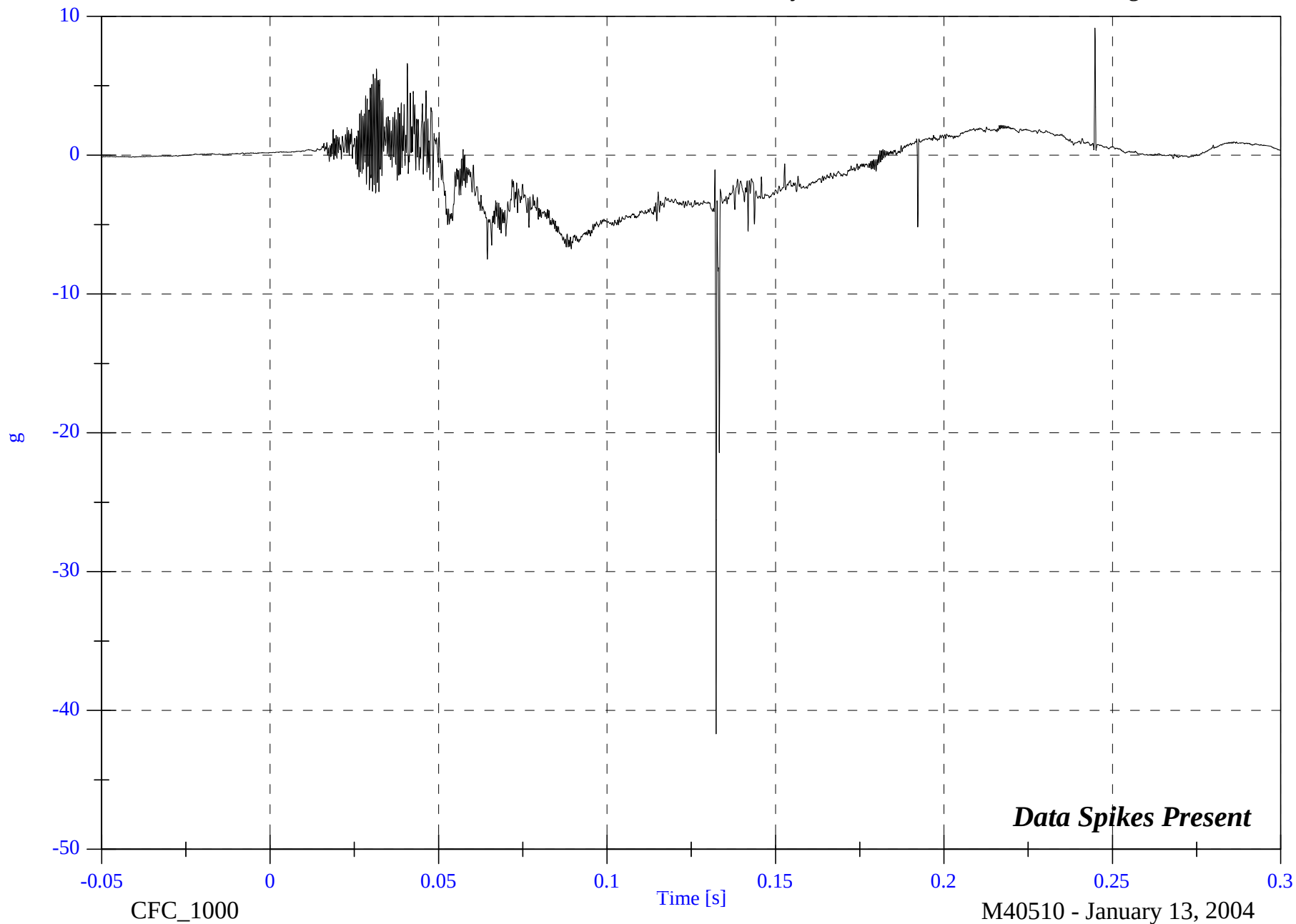
V1P2 Head CG Red y

Max: 9.2 [g] at 0.245 [s]

Min: -41.7 [g] at 0.132 [s]

B-73

8642-NCAP-40



M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

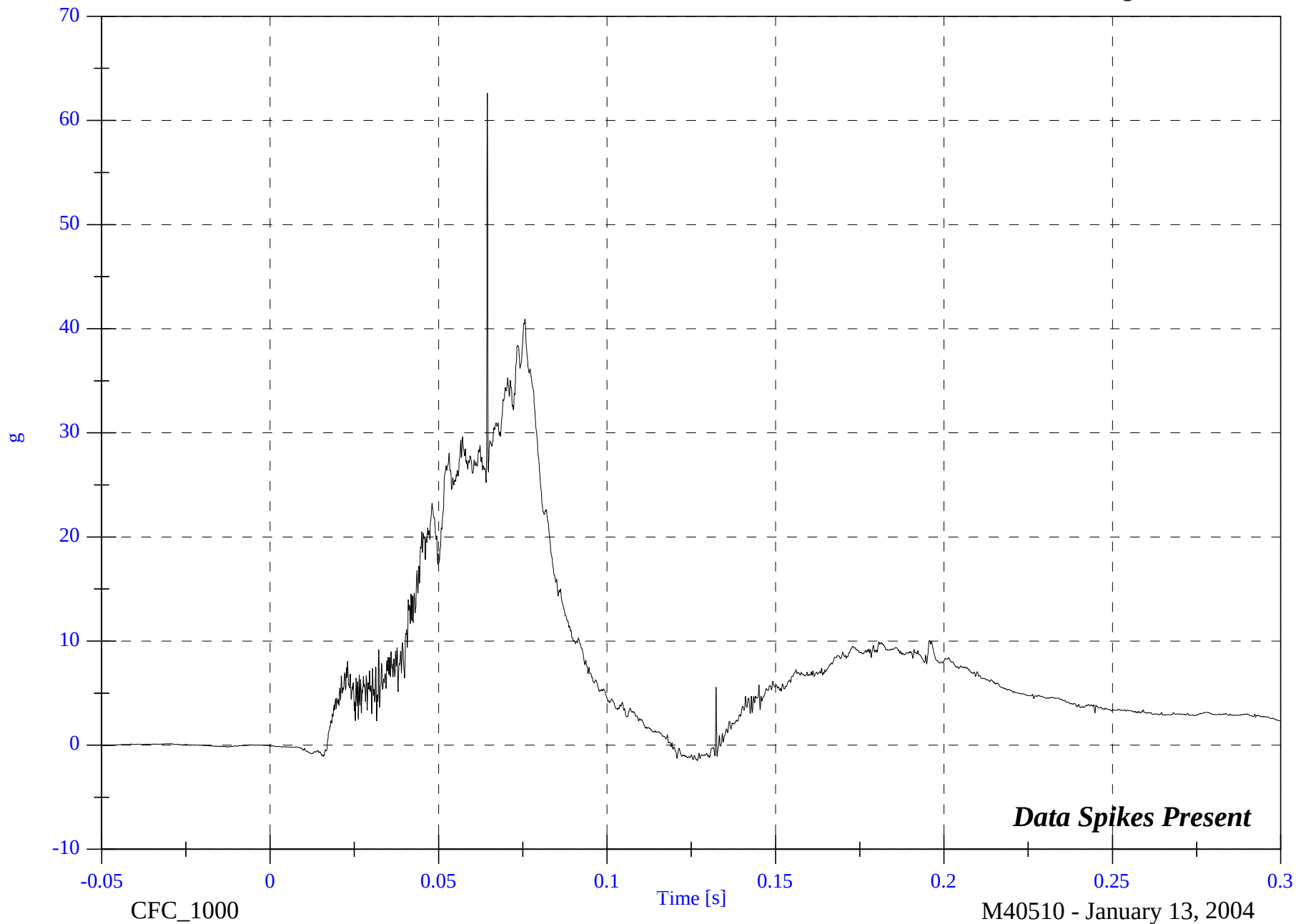
V1P2 Head CG Red z

Max: 62.6 [g] at 0.064 [s]

Min: -1.5 [g] at 0.127 [s]

B-74

8642-NCAP-40



2004 NCAP Test 4 2004 Suzuki Forenza

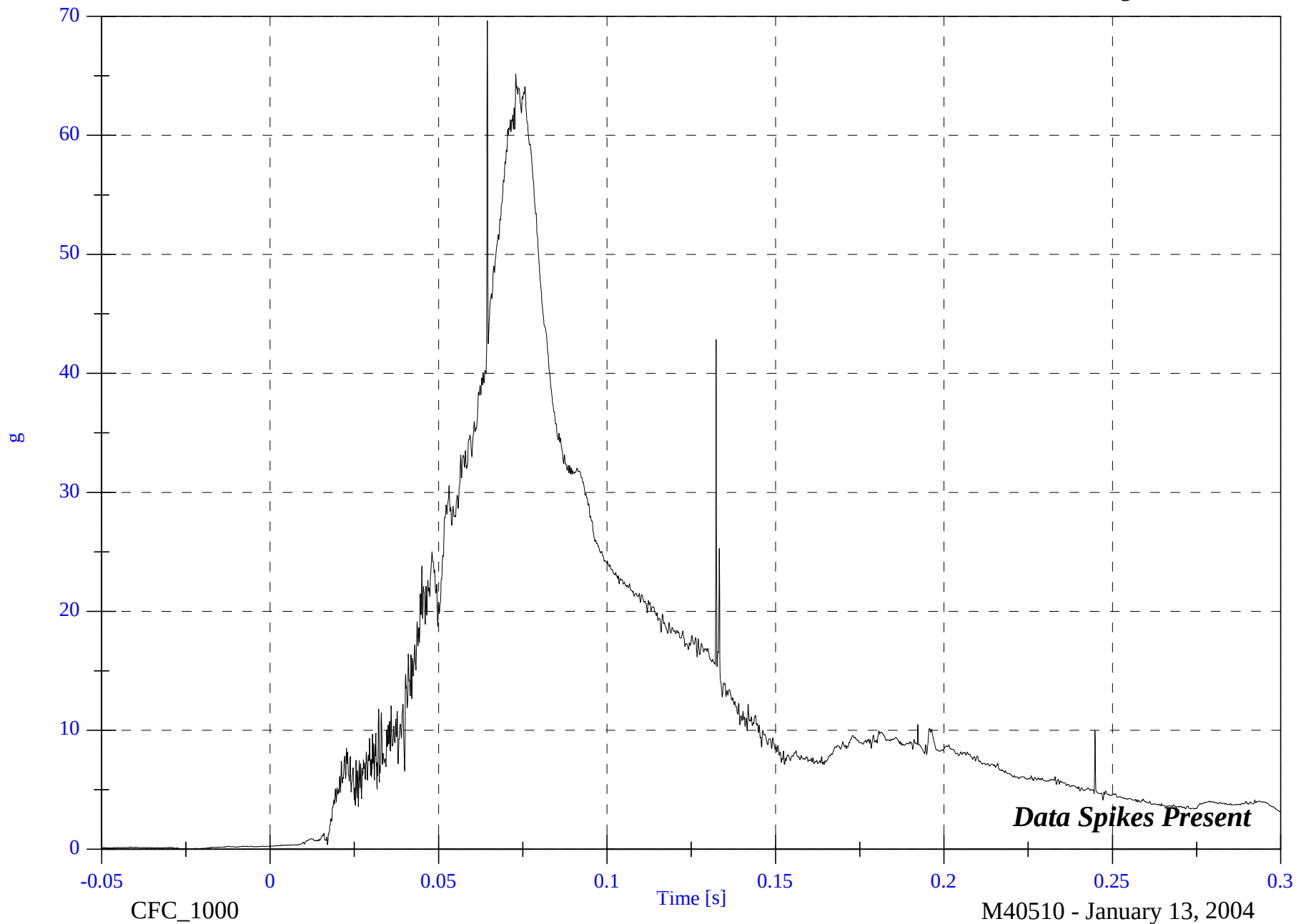
V1P2 Head CG Red Resultant

Max: 69.6 [g] at 0.064 [s]

Min: 0.0 [g] at -0.024 [s]

B-75

8642-NCAP-40



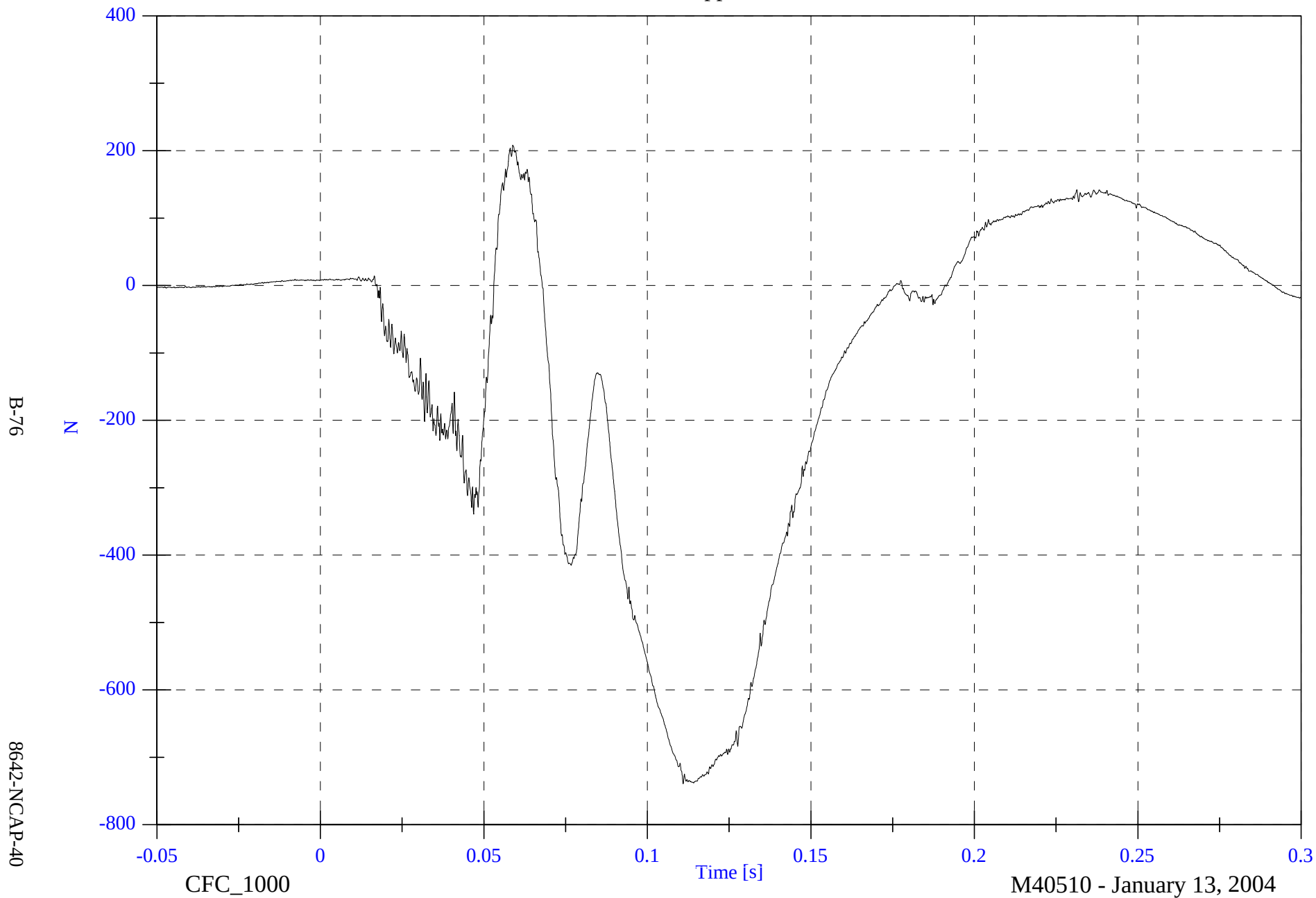
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

Max: 208.1 [N] at 0.059 [s]

Min: -739.2 [N] at 0.111 [s]

V1P2 Upper Neck Fx

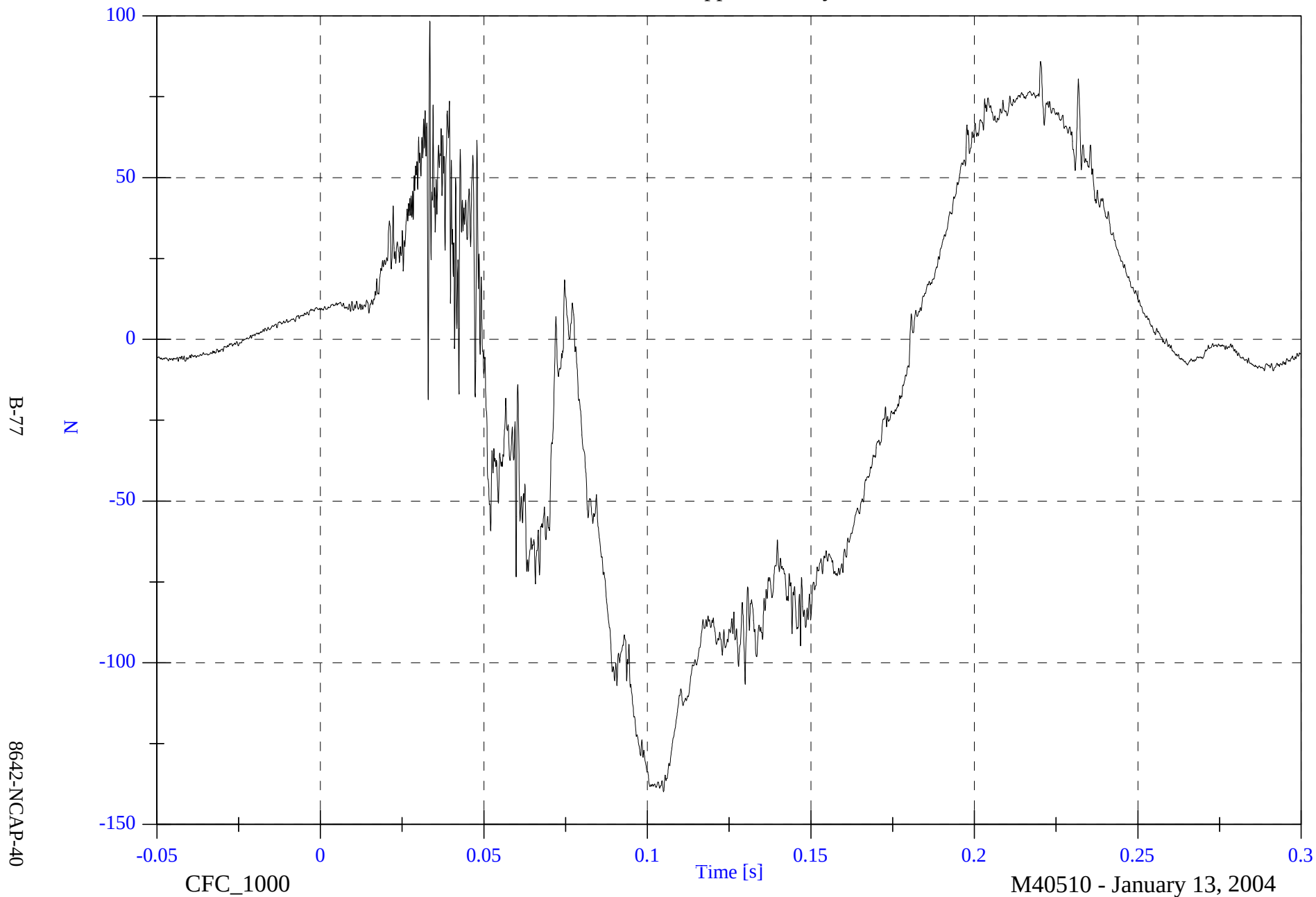


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Upper Neck Fy

Max: 98.4 [N] at 0.033 [s]

Min: -139.9 [N] at 0.105 [s]

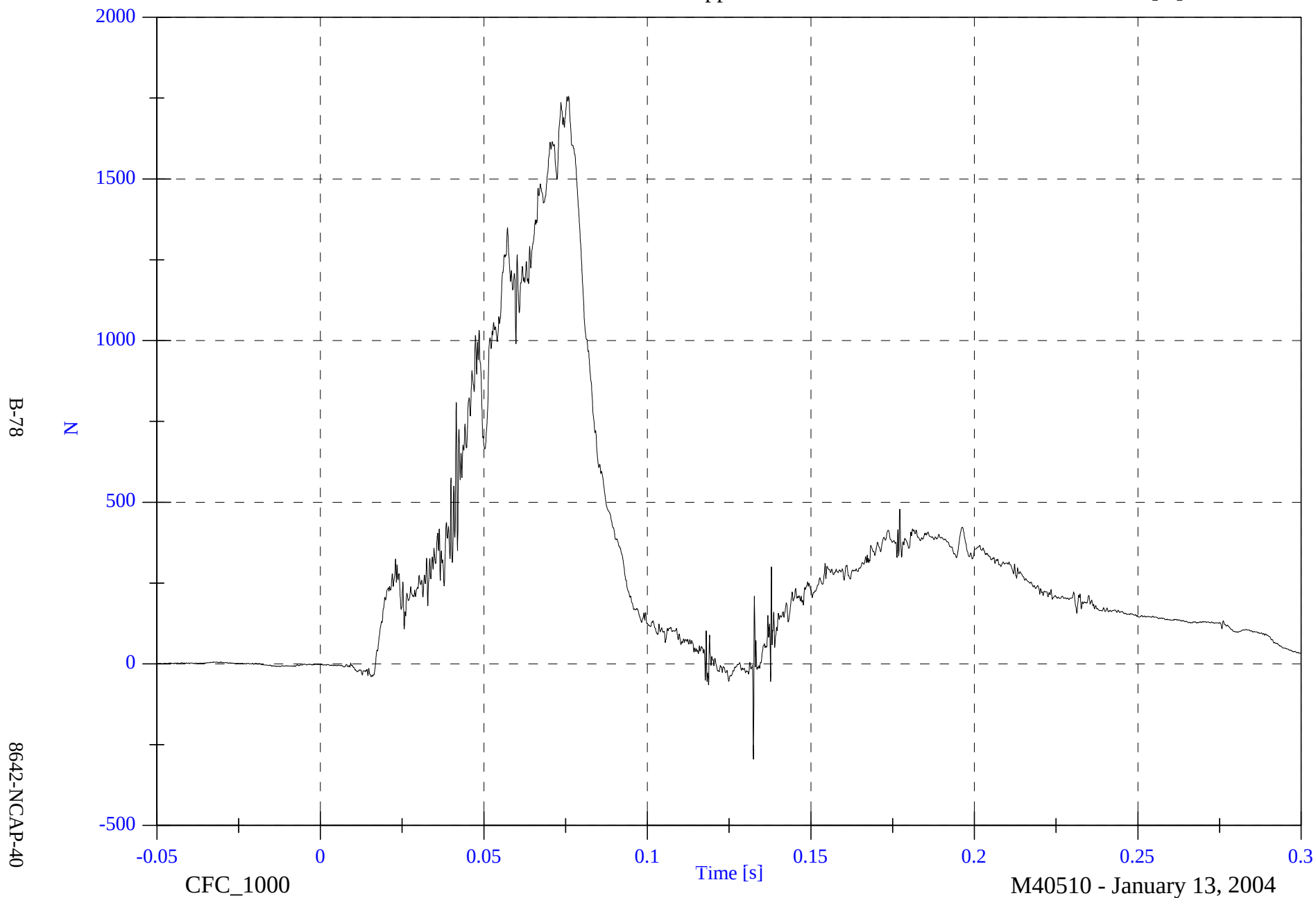


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 1755.7 [N] at 0.076 [s]

Min: -295.2 [N] at 0.132 [s]

V1P2 Upper Neck Fz

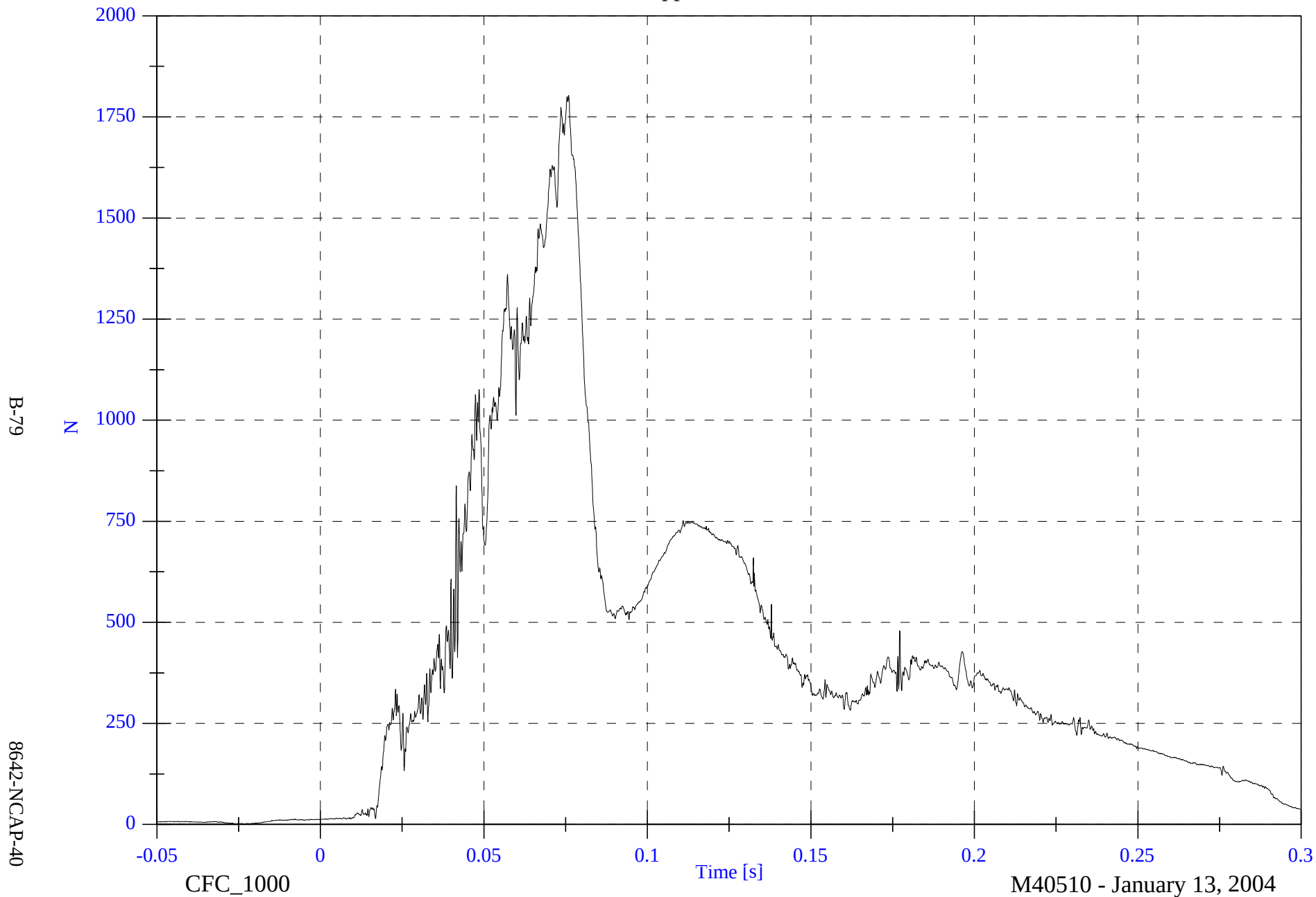


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Upper Neck F Resultant

Max: 1803.5 [N] at 0.076 [s]

Min: 0.9 [N] at -0.023 [s]

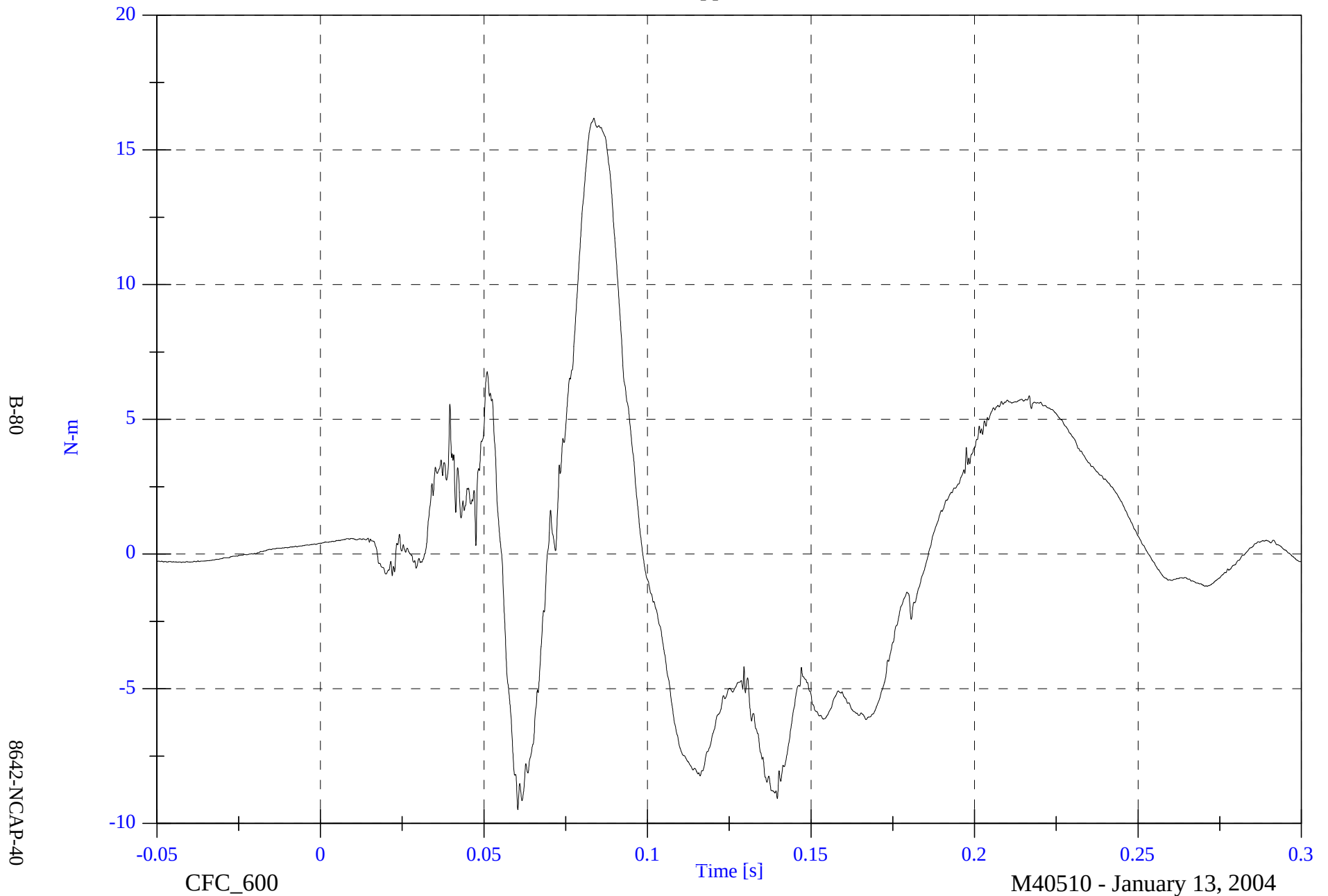


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Upper Neck Mx

Max: 16.2 [N-m] at 0.084 [s]

Min: -9.5 [N-m] at 0.060 [s]

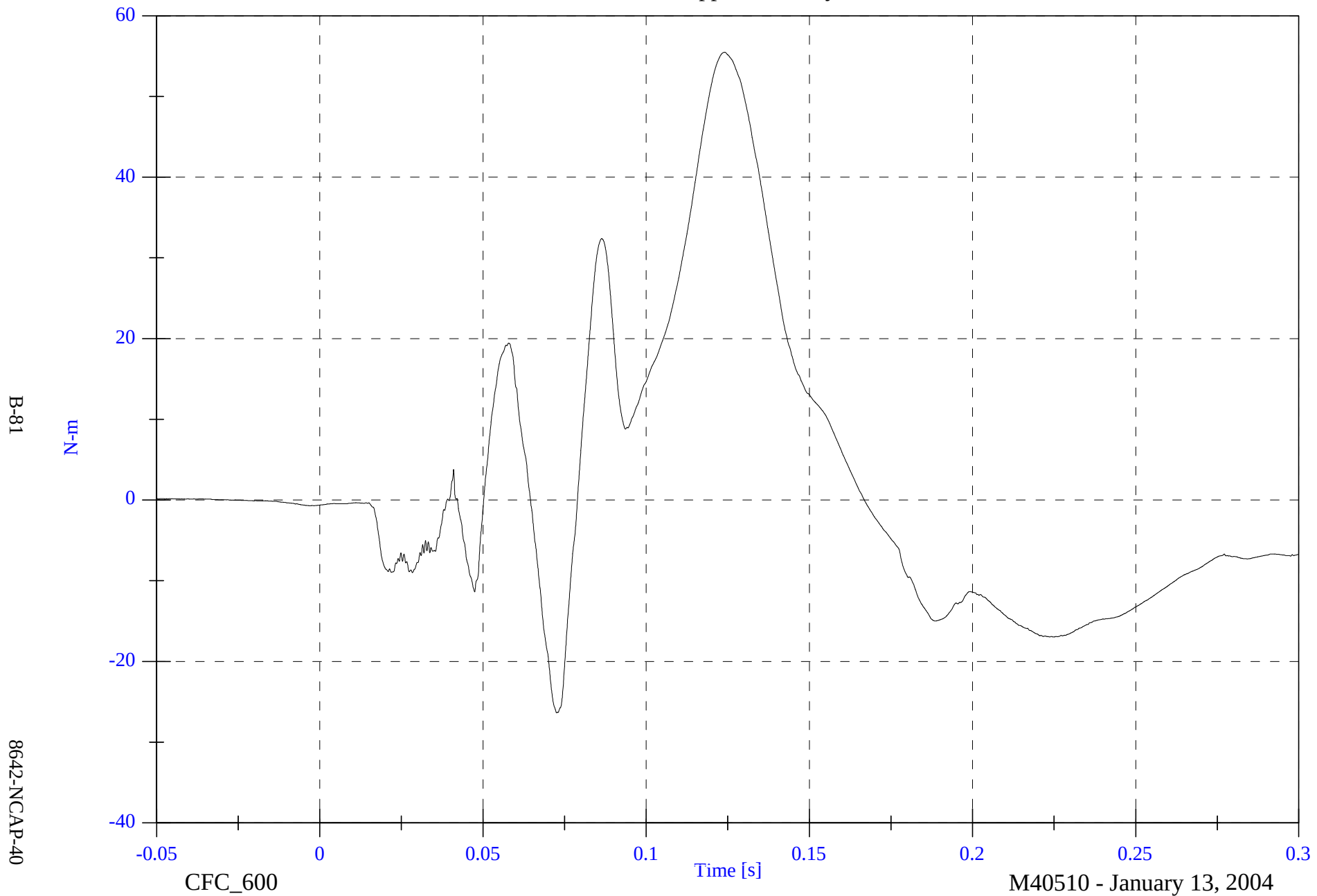


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 55.5 [N-m] at 0.124 [s]

Min: -26.4 [N-m] at 0.073 [s]

V1P2 Upper Neck My



2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Upper Neck Mz

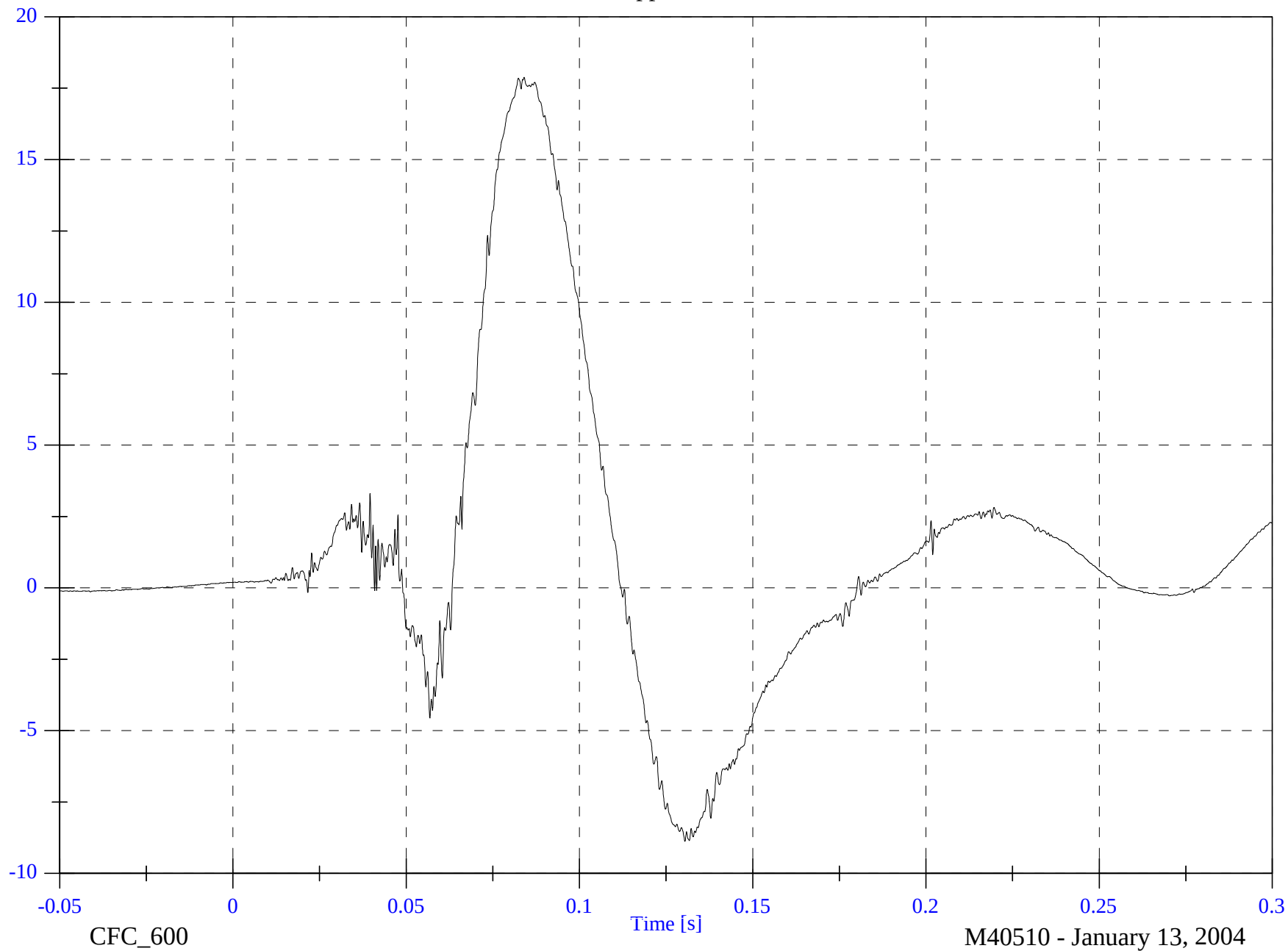
Max: 17.9 [N-m] at 0.084 [s]

Min: -8.9 [N-m] at 0.130 [s]

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N-m

8642-NCAP-40



CFC_600

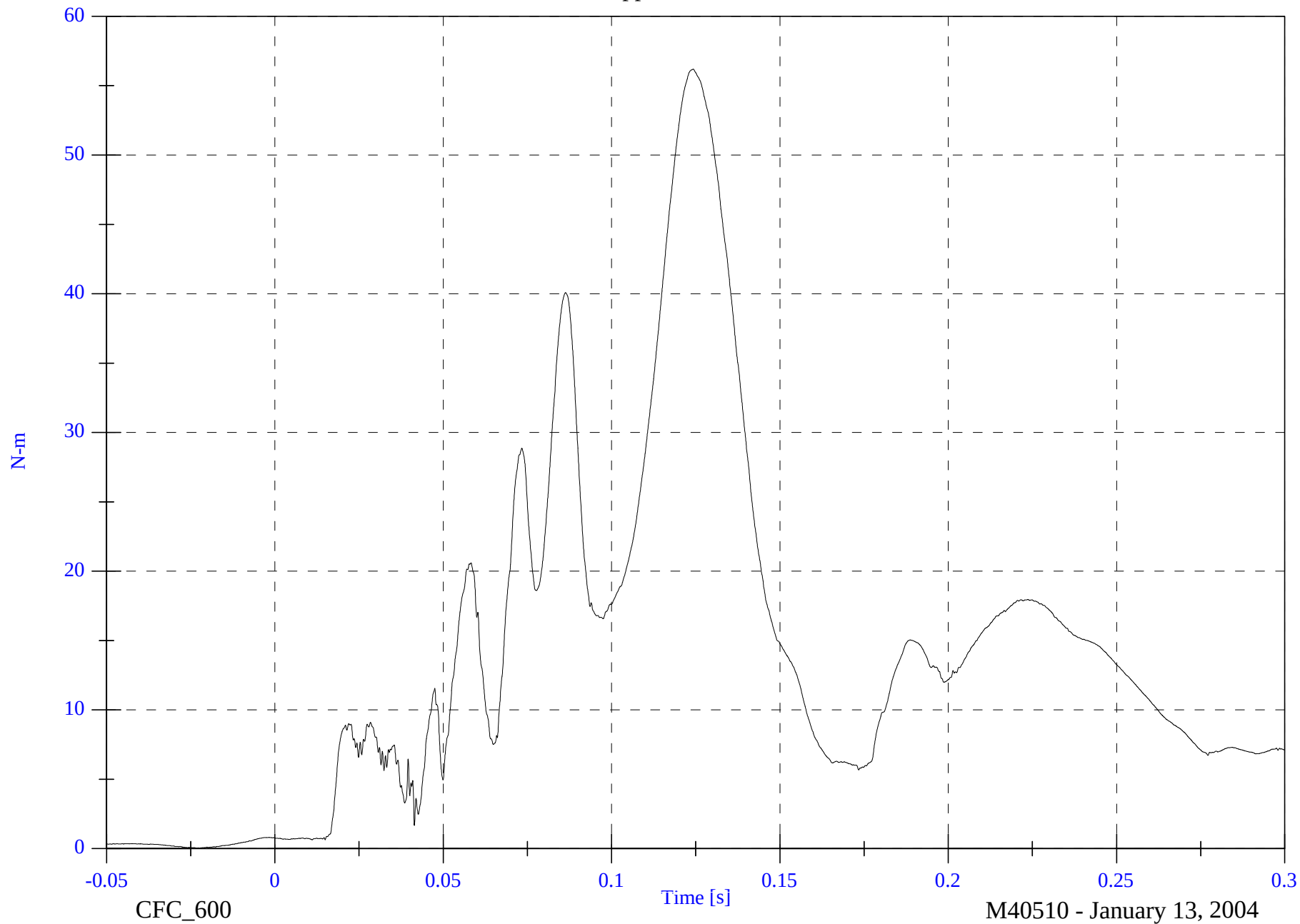
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Upper Neck M Resultant

Max: 56.2 [N-m] at 0.124 [s]

Min: 0.0 [N-m] at -0.022 [s]

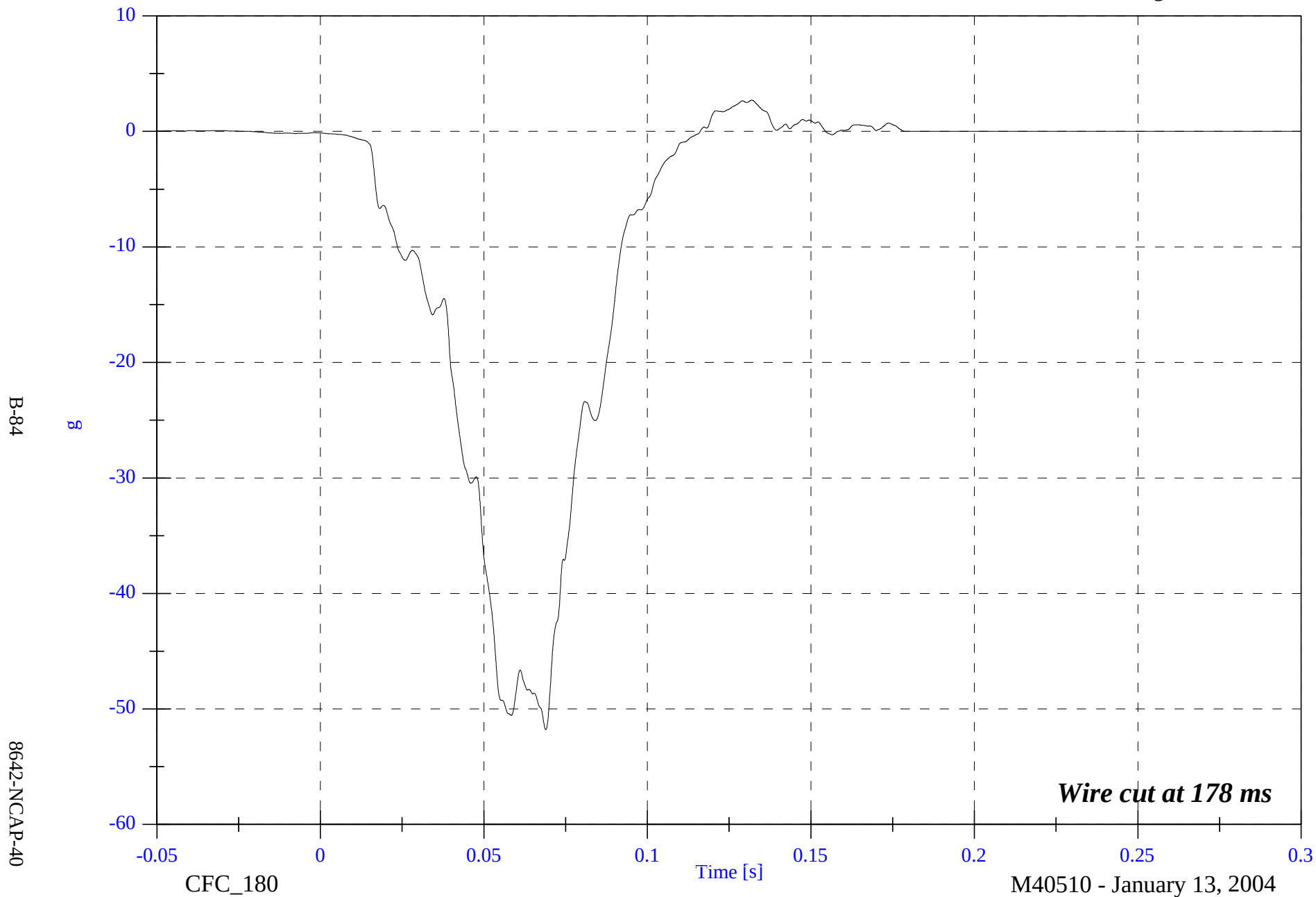


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Chest x

Max: 2.7 [g] at 0.132 [s]

Min: -51.8 [g] at 0.069 [s]

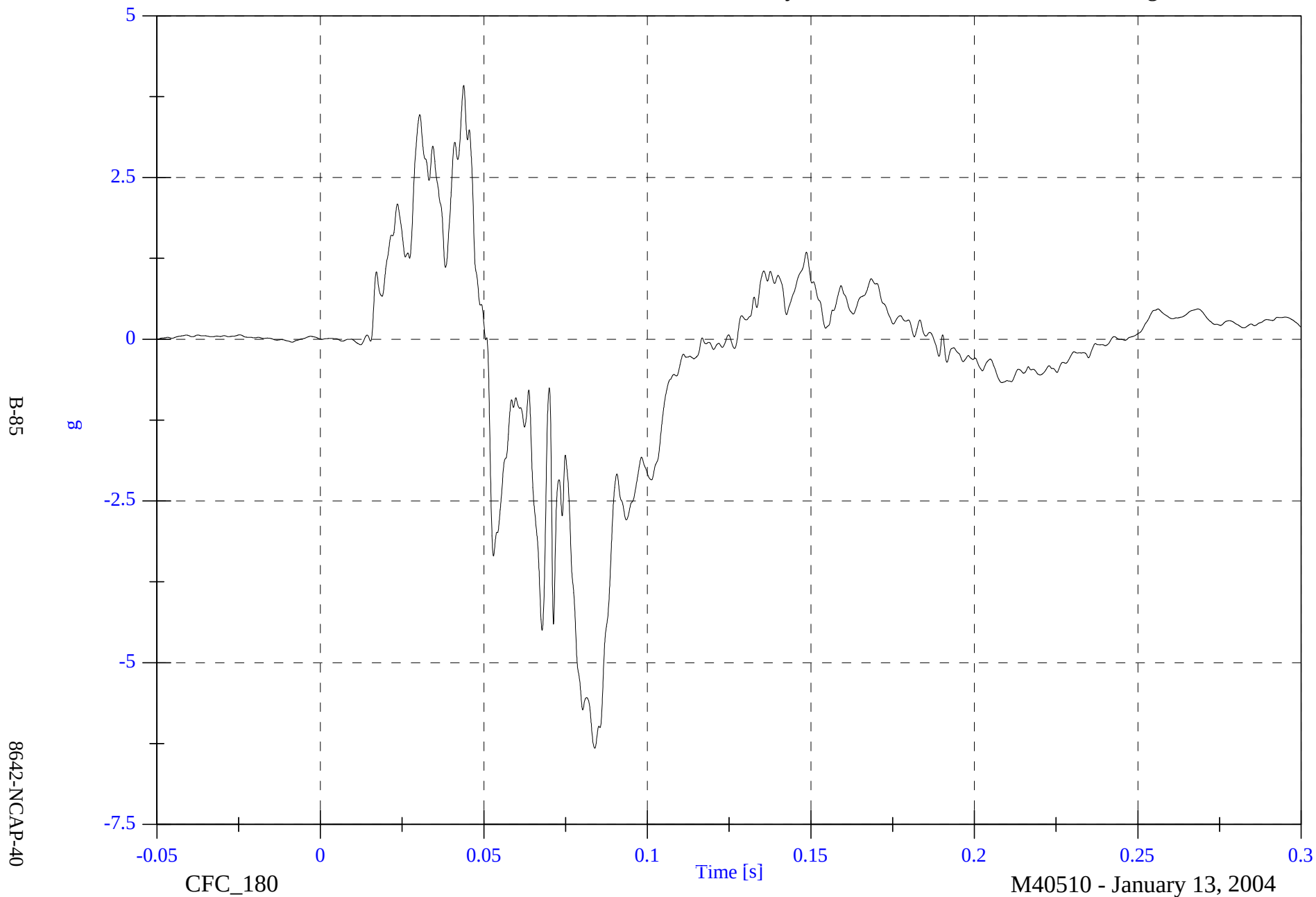


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Chest y

Max: 3.9 [g] at 0.044 [s]

Min: -6.3 [g] at 0.084 [s]

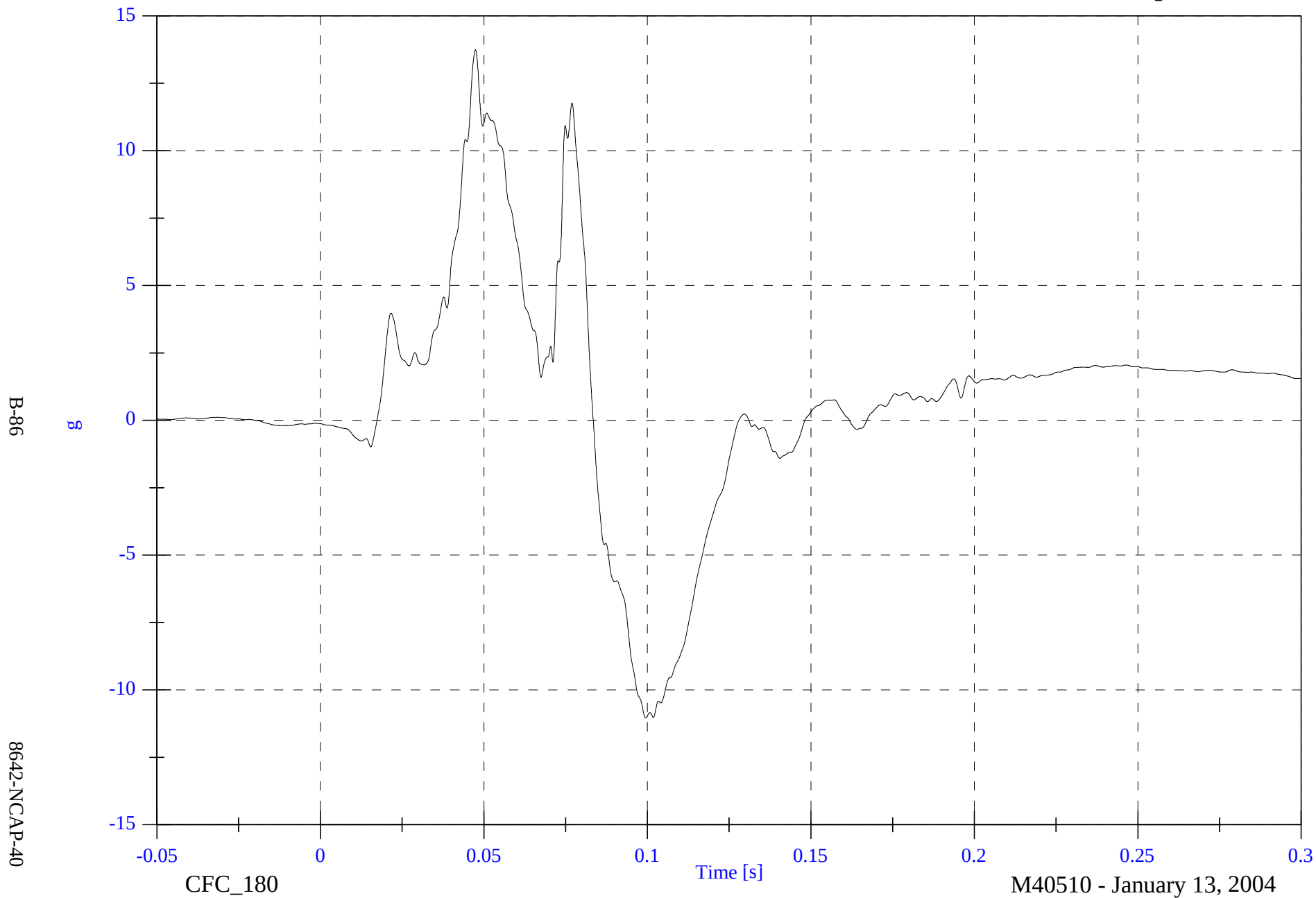


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Chest z

Max: 13.7 [g] at 0.047 [s]

Min: -11.0 [g] at 0.100 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

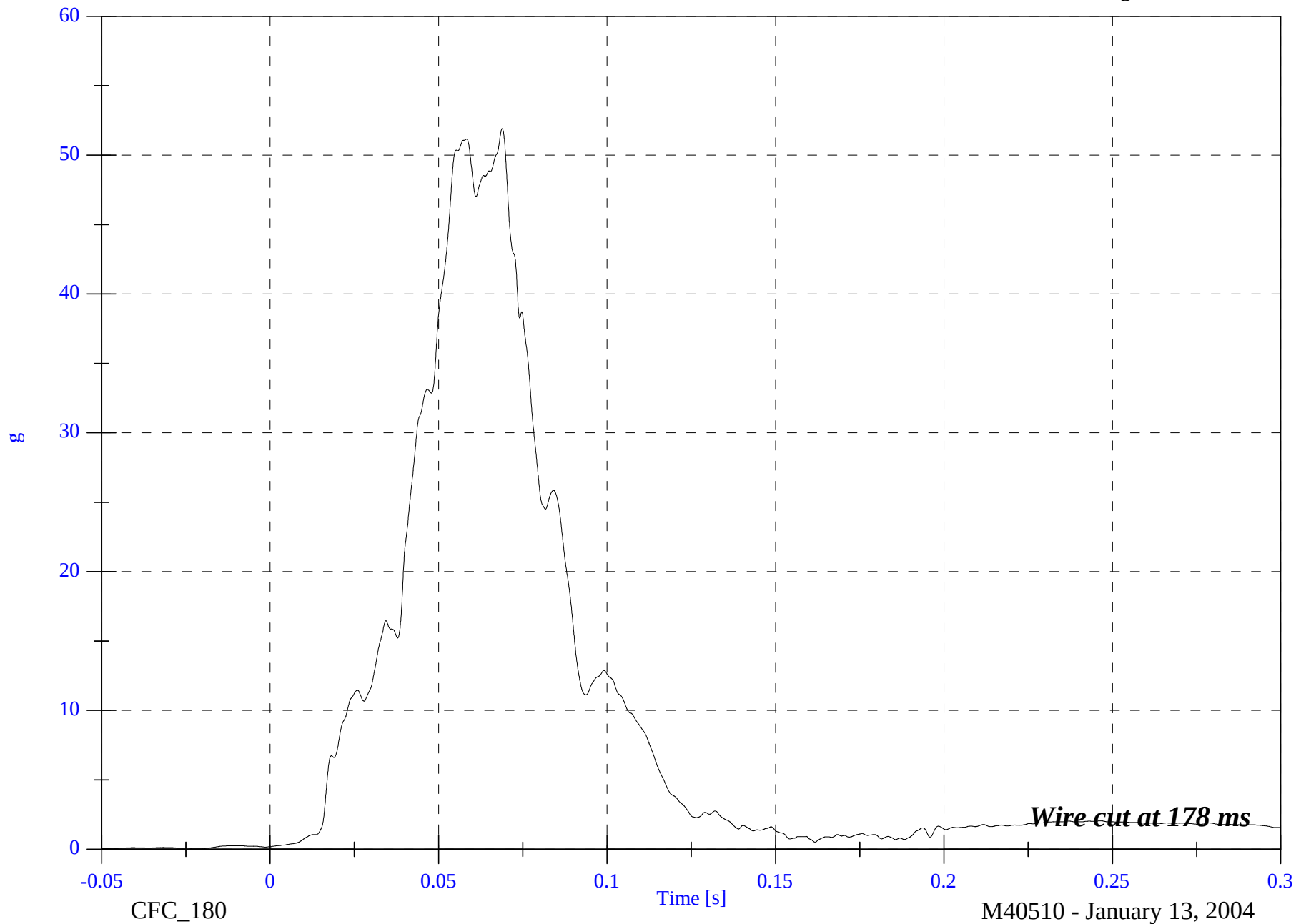
V1P2 Chest Resultant

Max: 51.9 [g] at 0.069 [s]

Min: 0.0 [g] at -0.021 [s]

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8642-NCAP-40



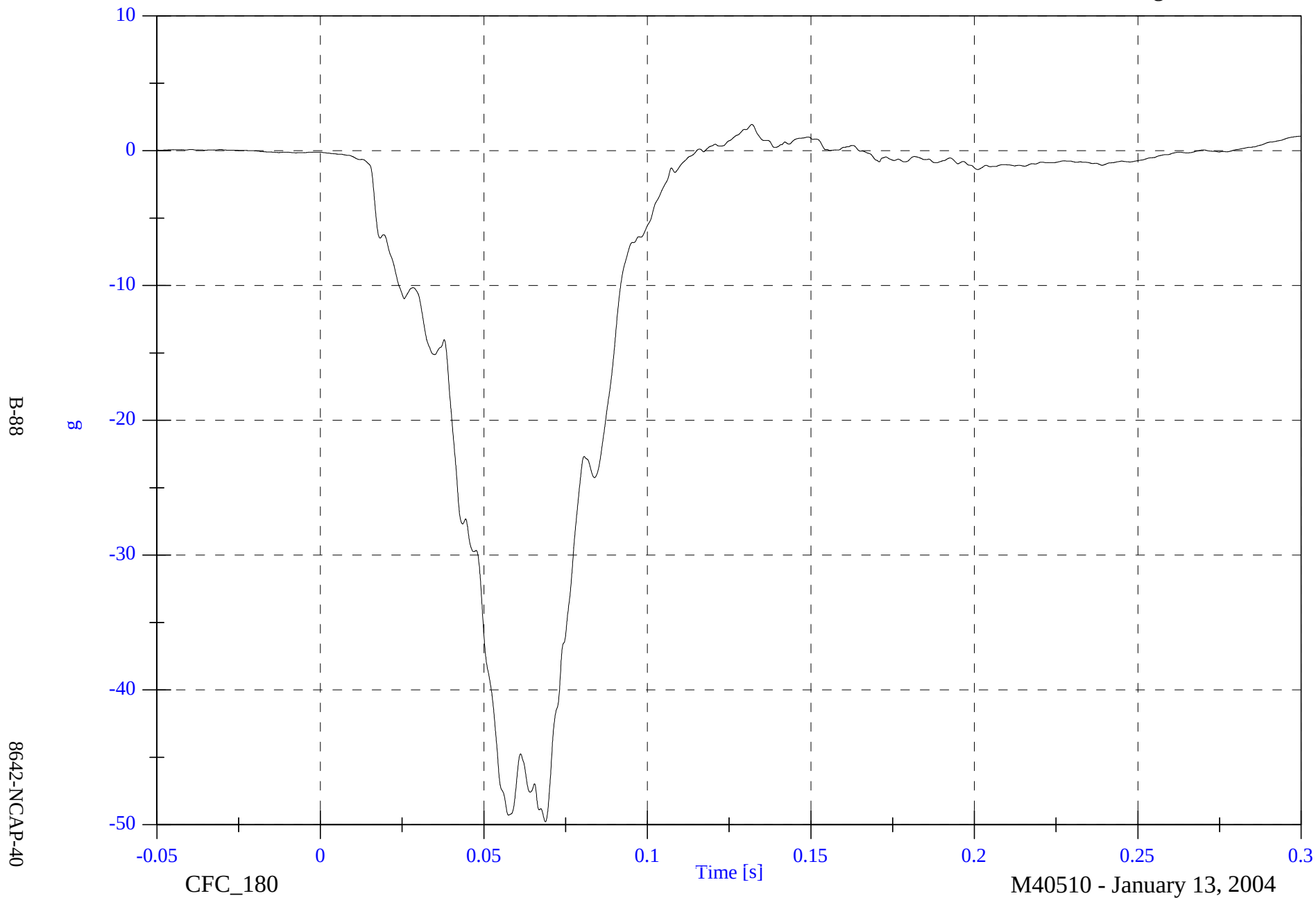
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Chest Red x

Max: 1.9 [g] at 0.132 [s]

Min: -49.8 [g] at 0.069 [s]

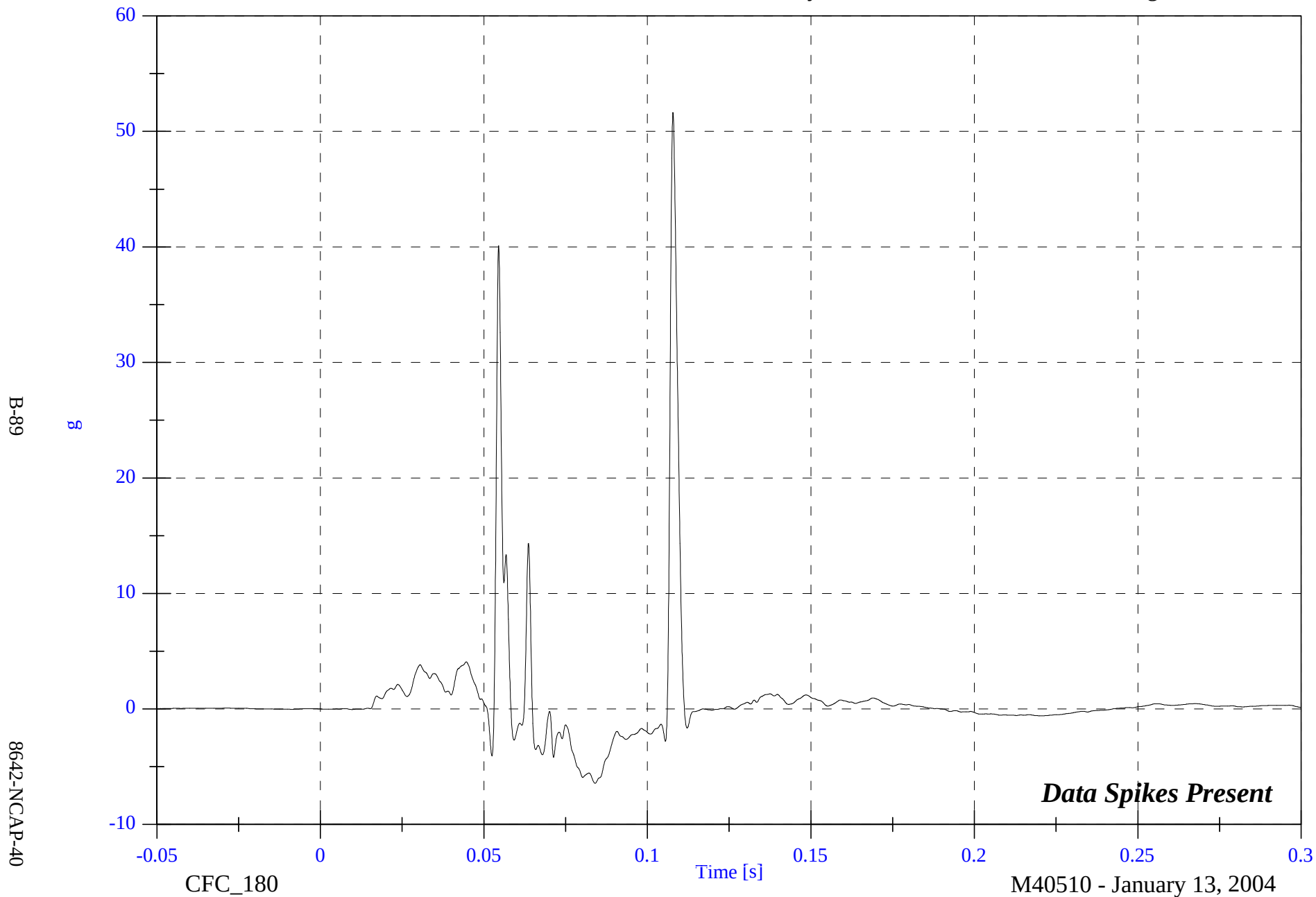


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Chest Red y

Max: 51.6 [g] at 0.108 [s]

Min: -6.4 [g] at 0.084 [s]

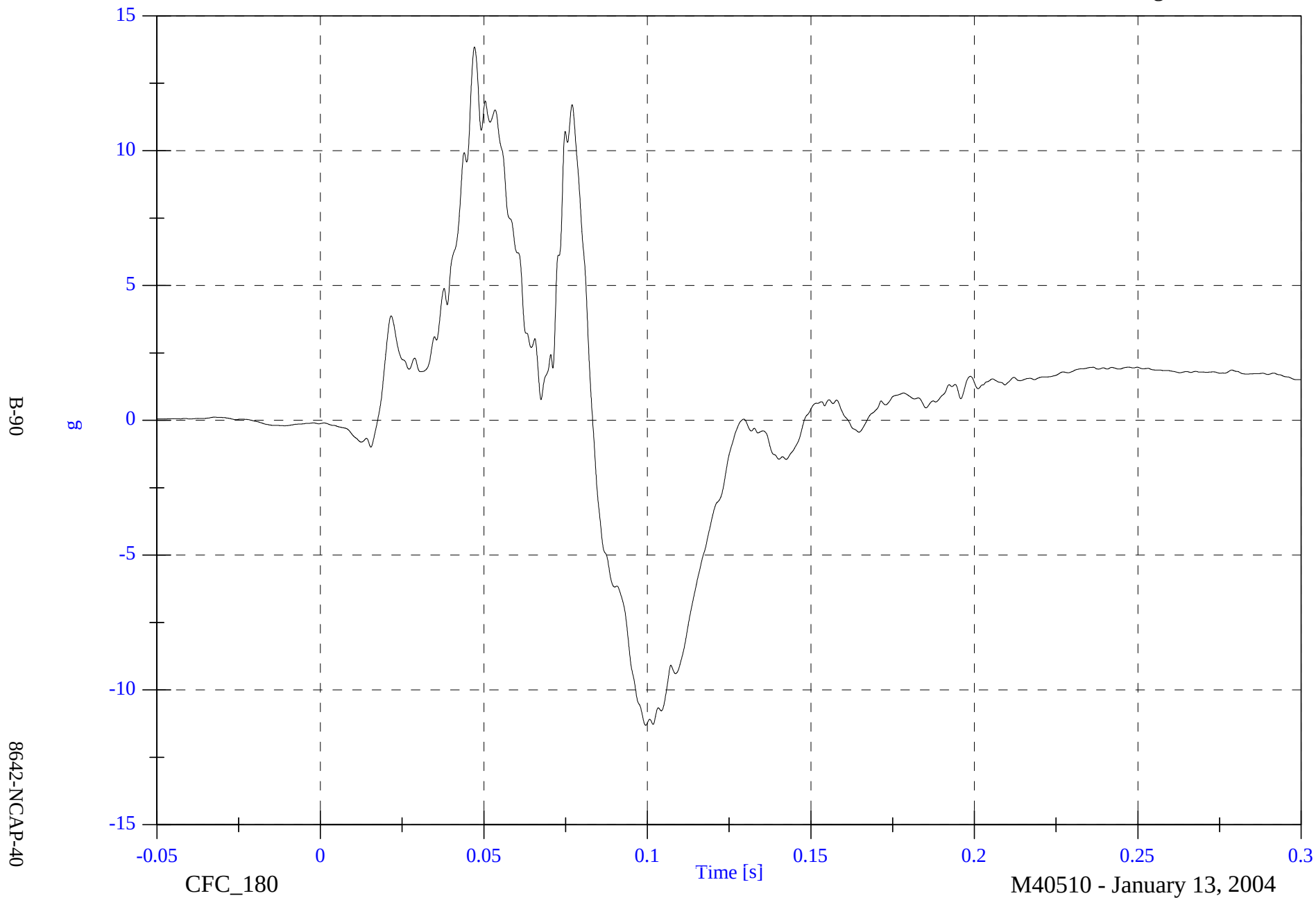


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Chest Red z

Max: 13.8 [g] at 0.047 [s]

Min: -11.3 [g] at 0.100 [s]

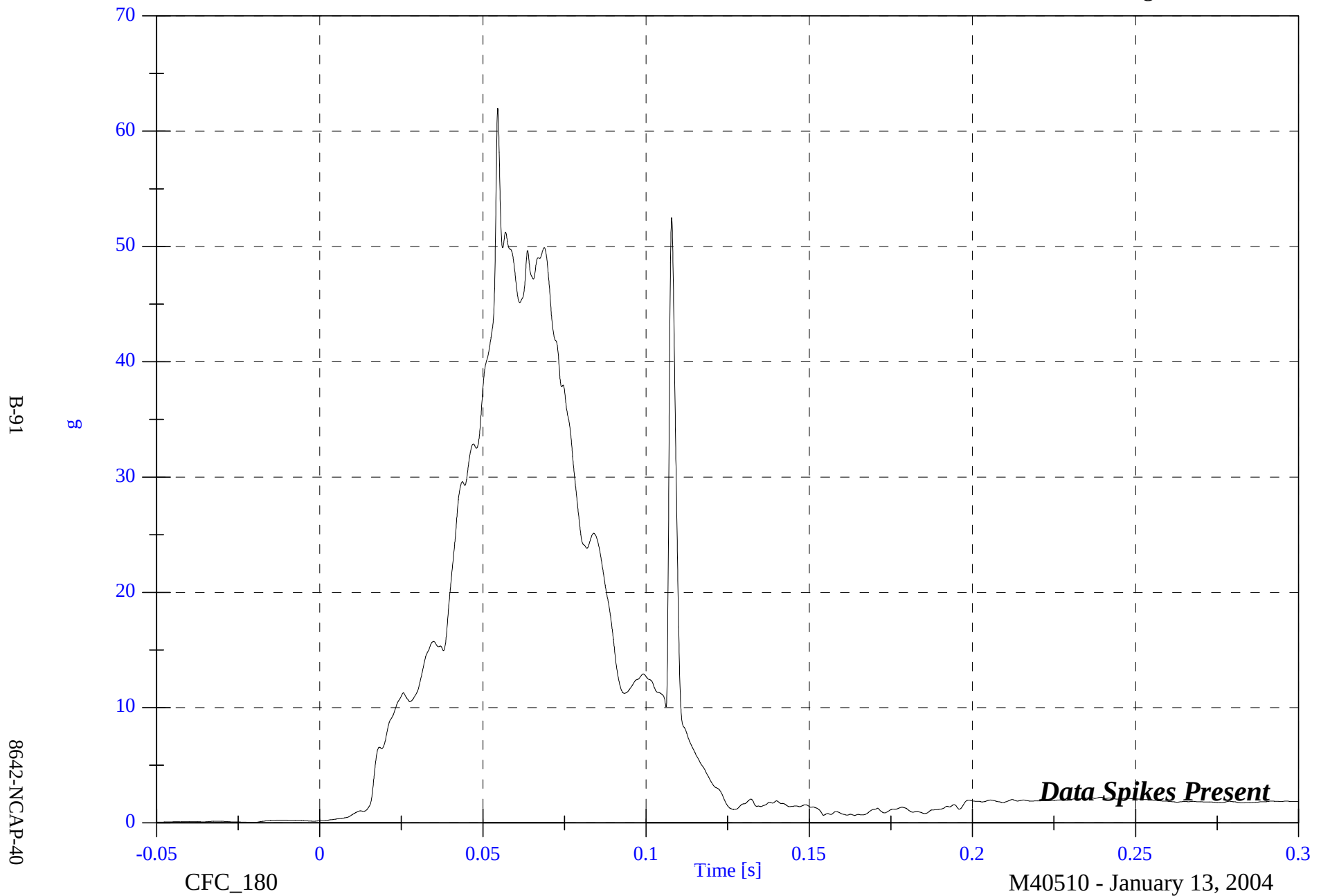


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Chest Red Resultant

Max: 62.0 [g] at 0.055 [s]

Min: 0.0 [g] at -0.021 [s]

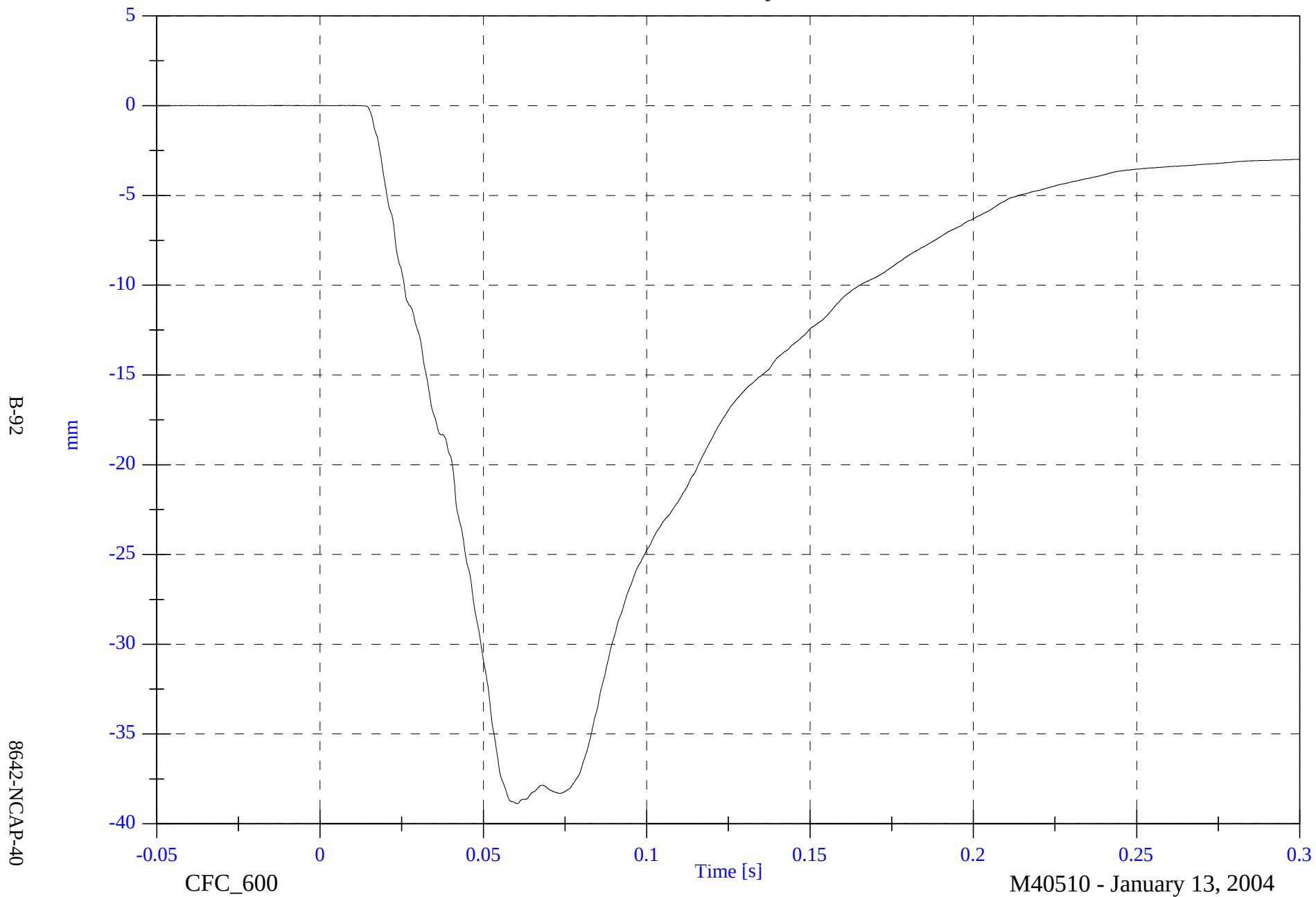


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Chest Compression x

Max: 0.0 [mm] at -0.015 [s]

Min: -38.9 [mm] at 0.060 [s]

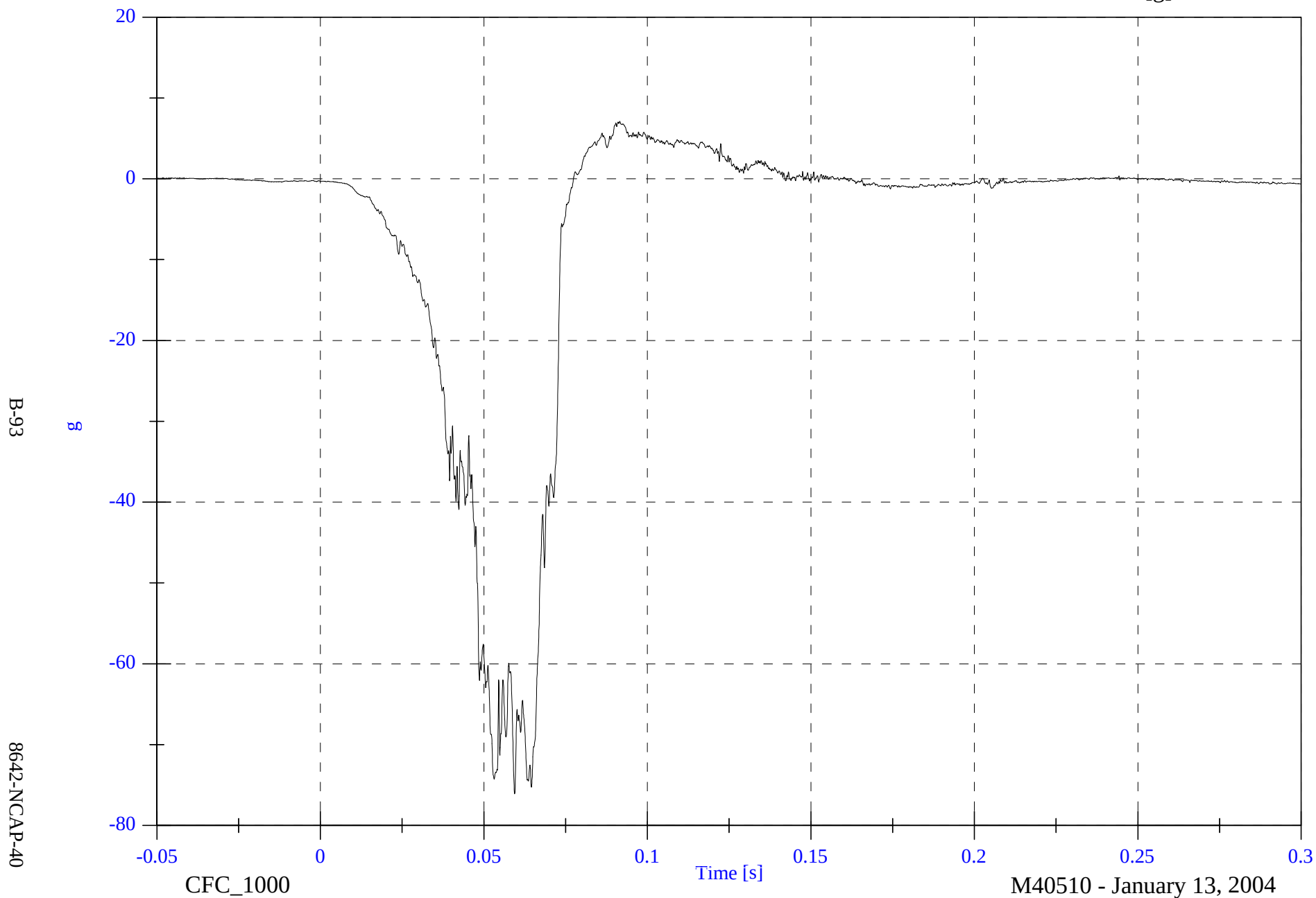


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 7.1 [g] at 0.092 [s]

Min: -76.1 [g] at 0.059 [s]

V1P2 Pelvic x

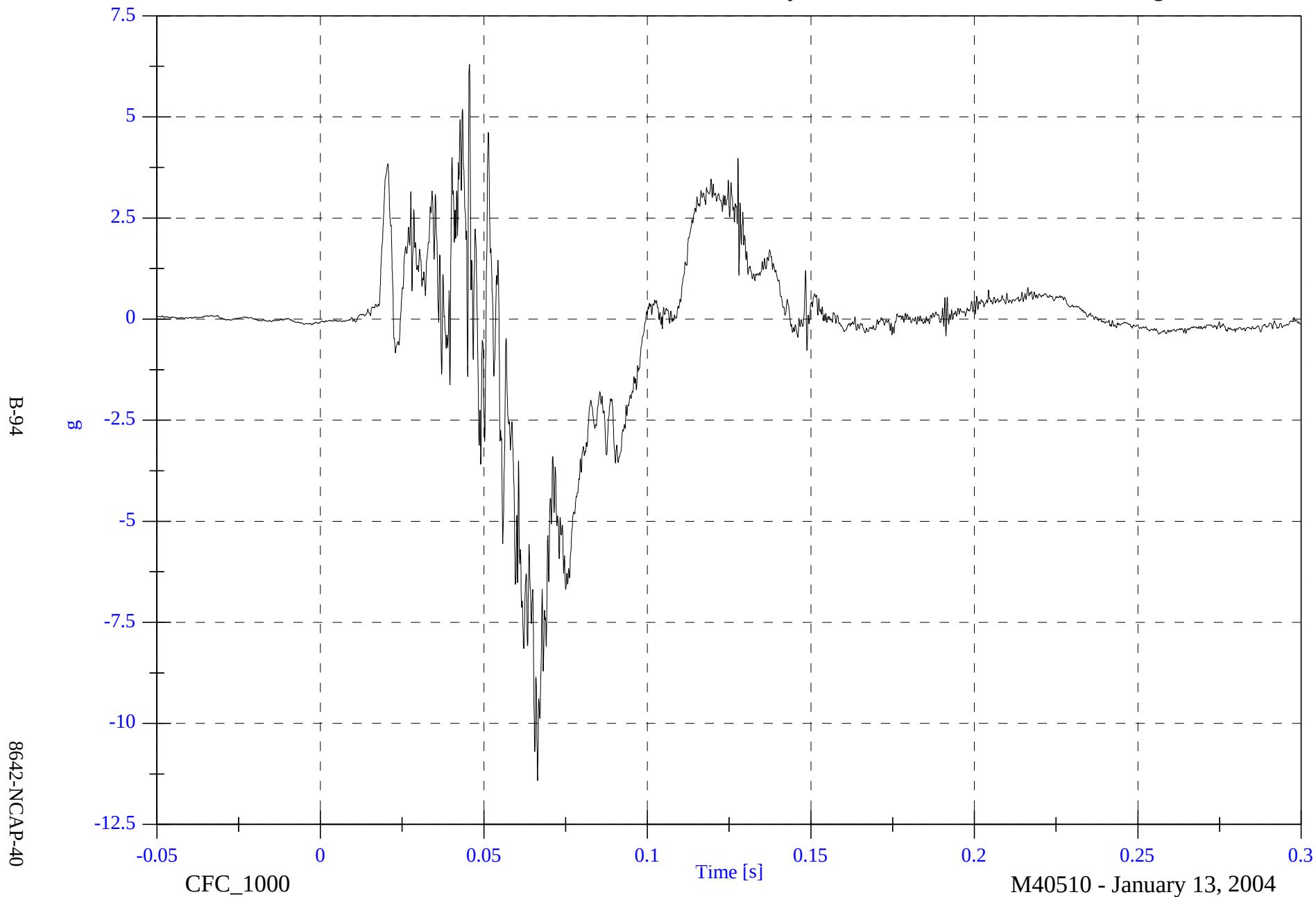


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Pelvic y

Max: 6.3 [g] at 0.046 [s]

Min: -11.4 [g] at 0.066 [s]

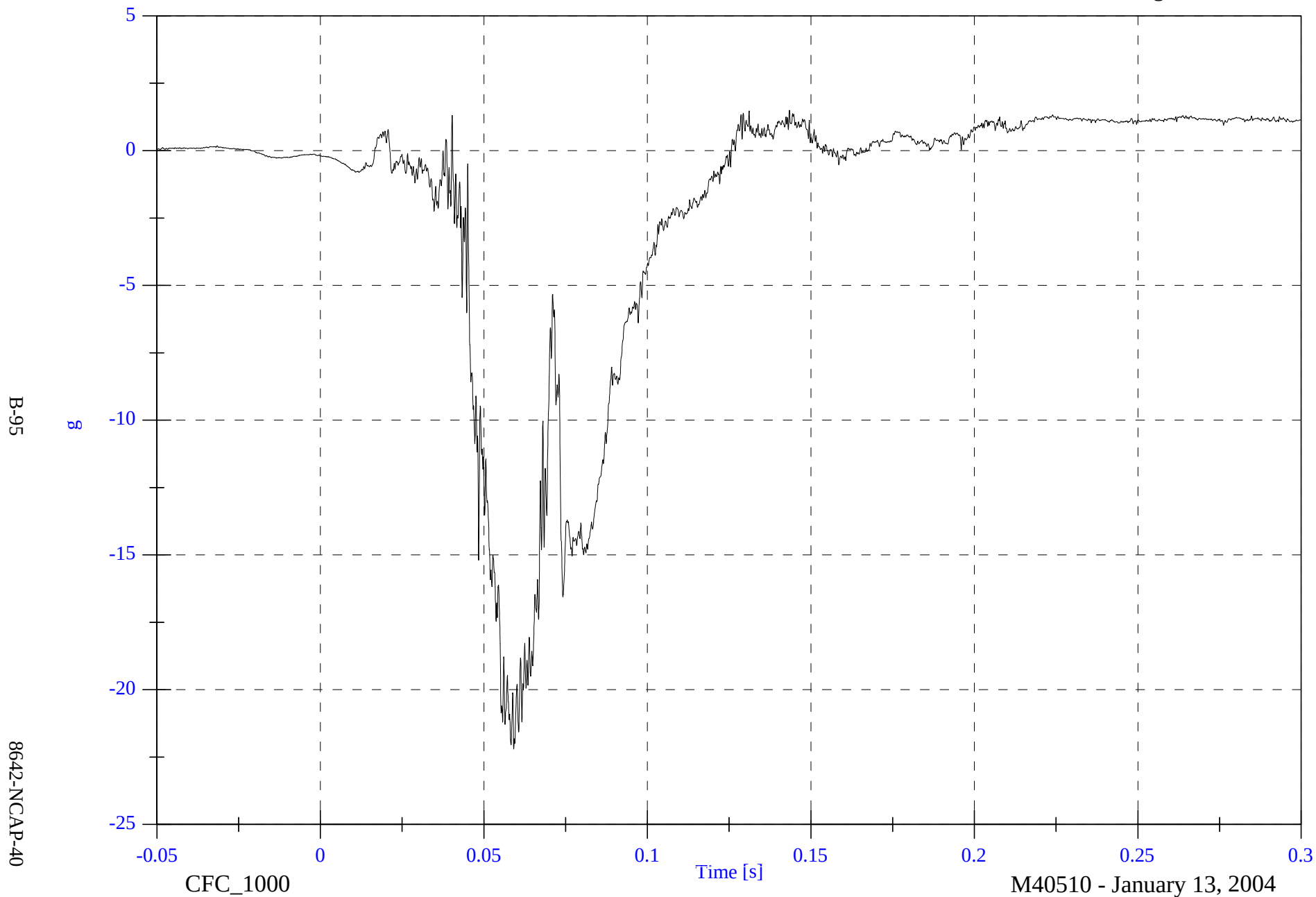


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Pelvic z

Max: 1.5 [g] at 0.143 [s]

Min: -22.2 [g] at 0.059 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

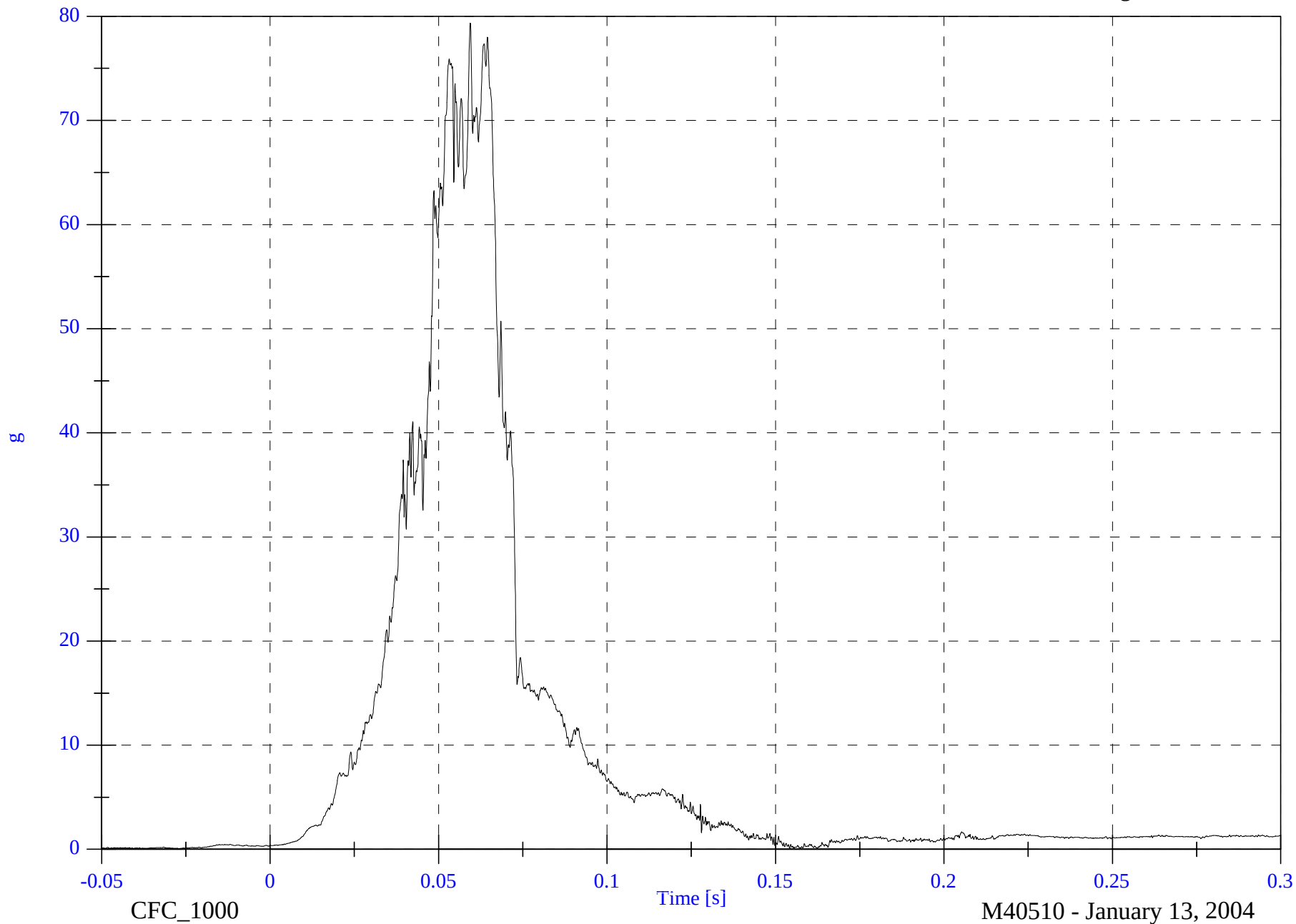
V1P2 Pelvic Resultant

Max: 79.4 [g] at 0.059 [s]

Min: 0.1 [g] at -0.027 [s]

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8642-NCAP-40

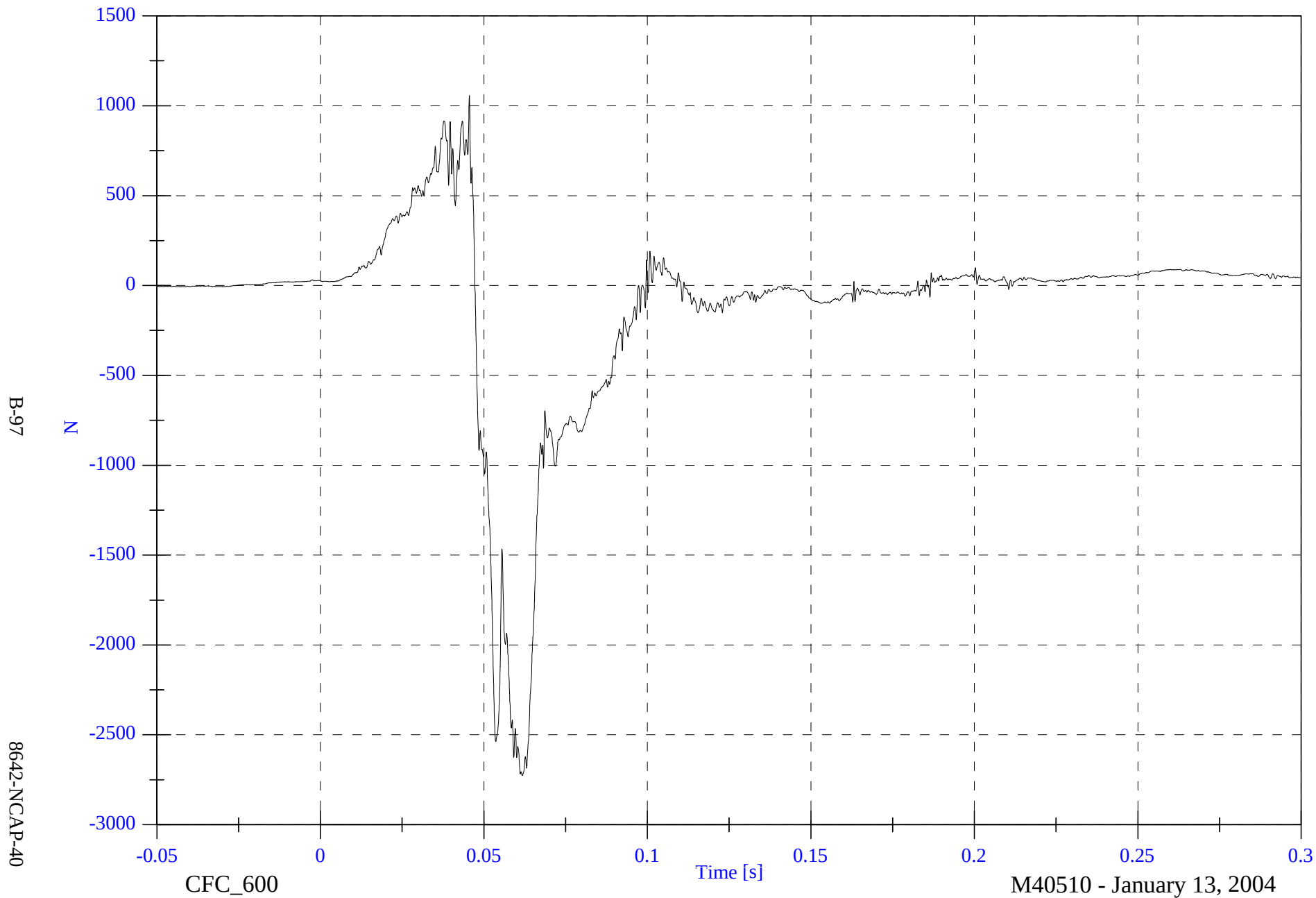


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 1056.5 [N] at 0.046 [s]

Min: -2726.9 [N] at 0.062 [s]

V1P2 Left Femur z

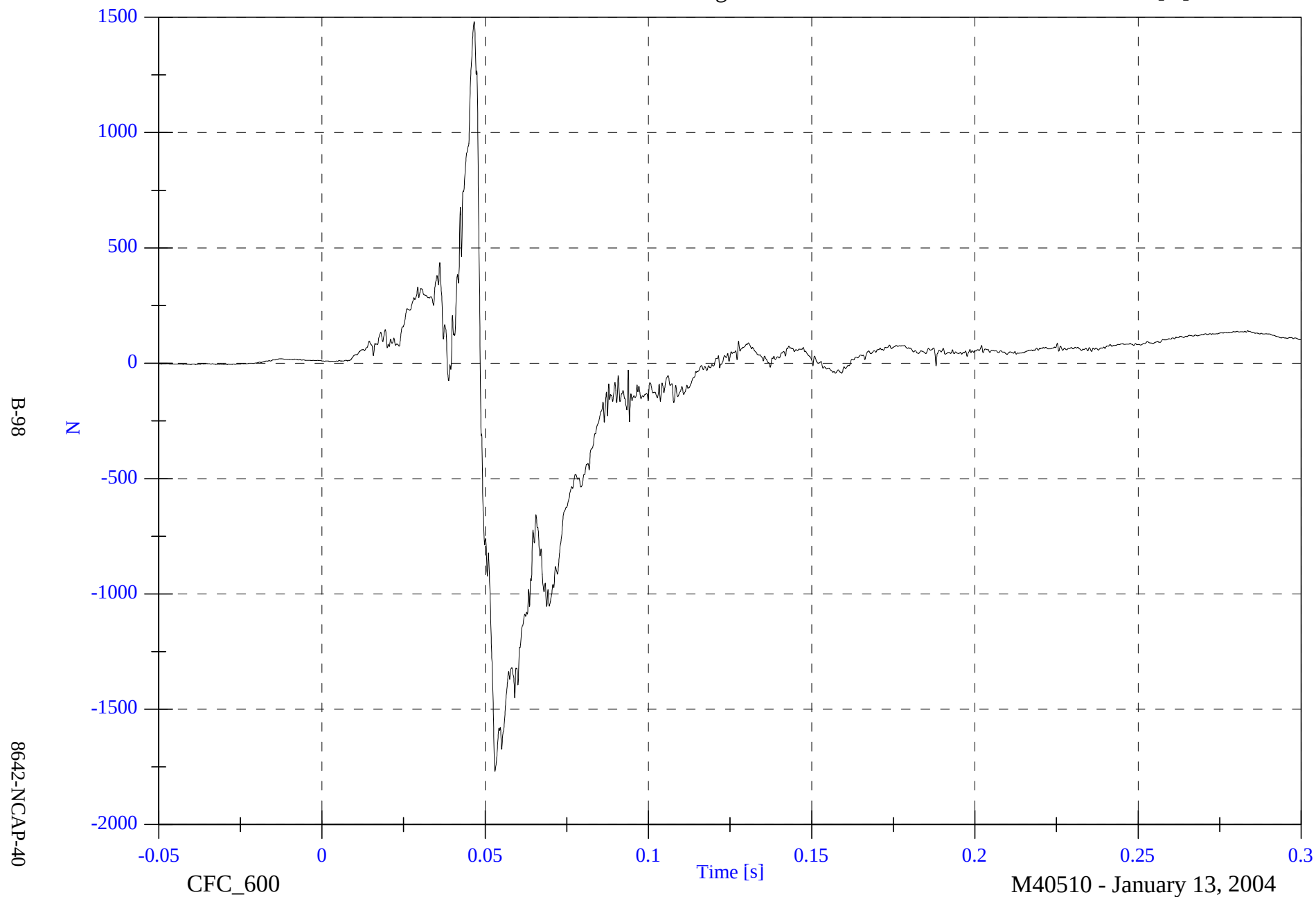


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 1480.4 [N] at 0.047 [s]

Min: -1769.3 [N] at 0.053 [s]

V1P2 Right Femur z

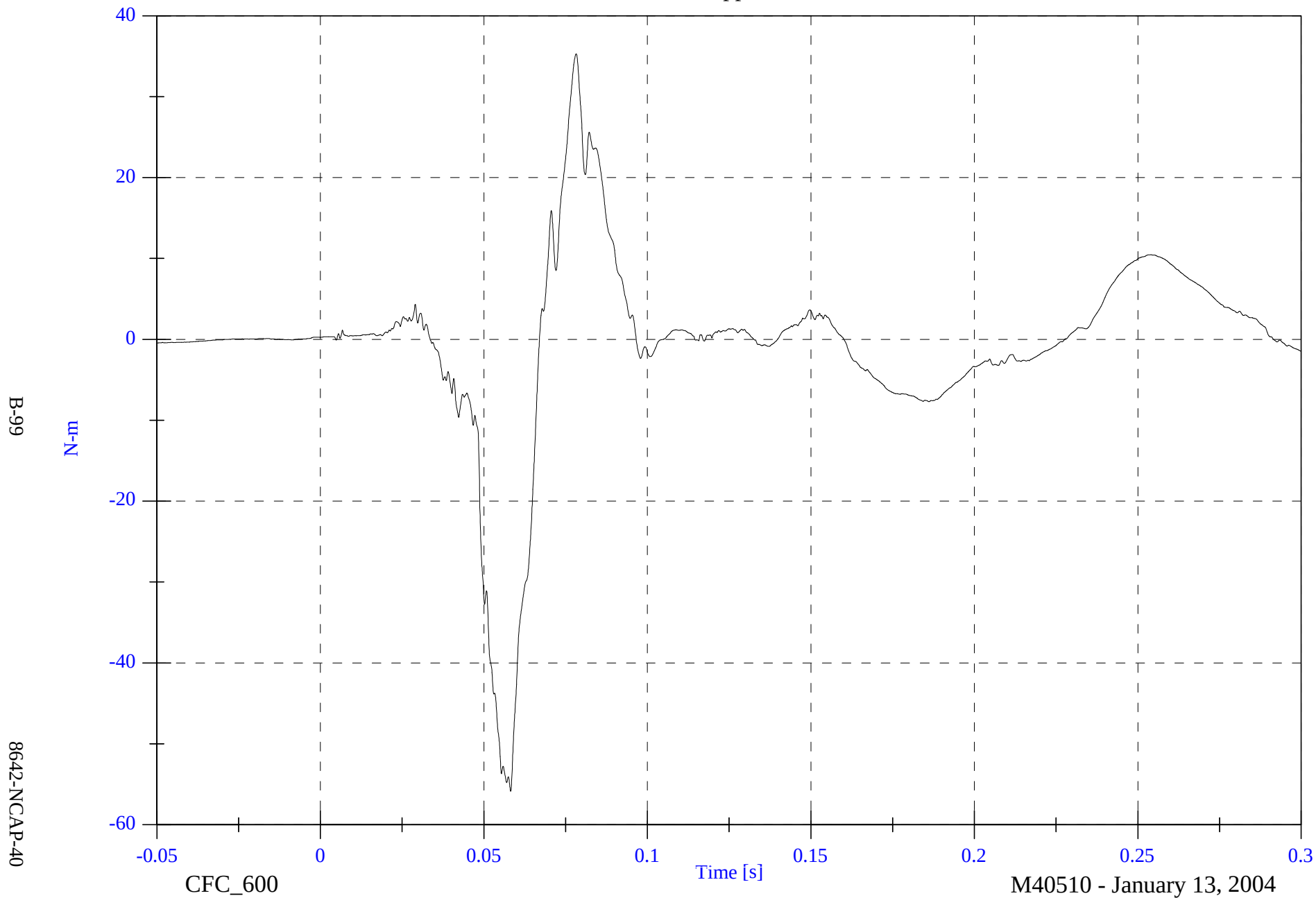


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Left Upper Tibia Mx

Max: 35.3 [N-m] at 0.078 [s]

Min: -55.9 [N-m] at 0.058 [s]

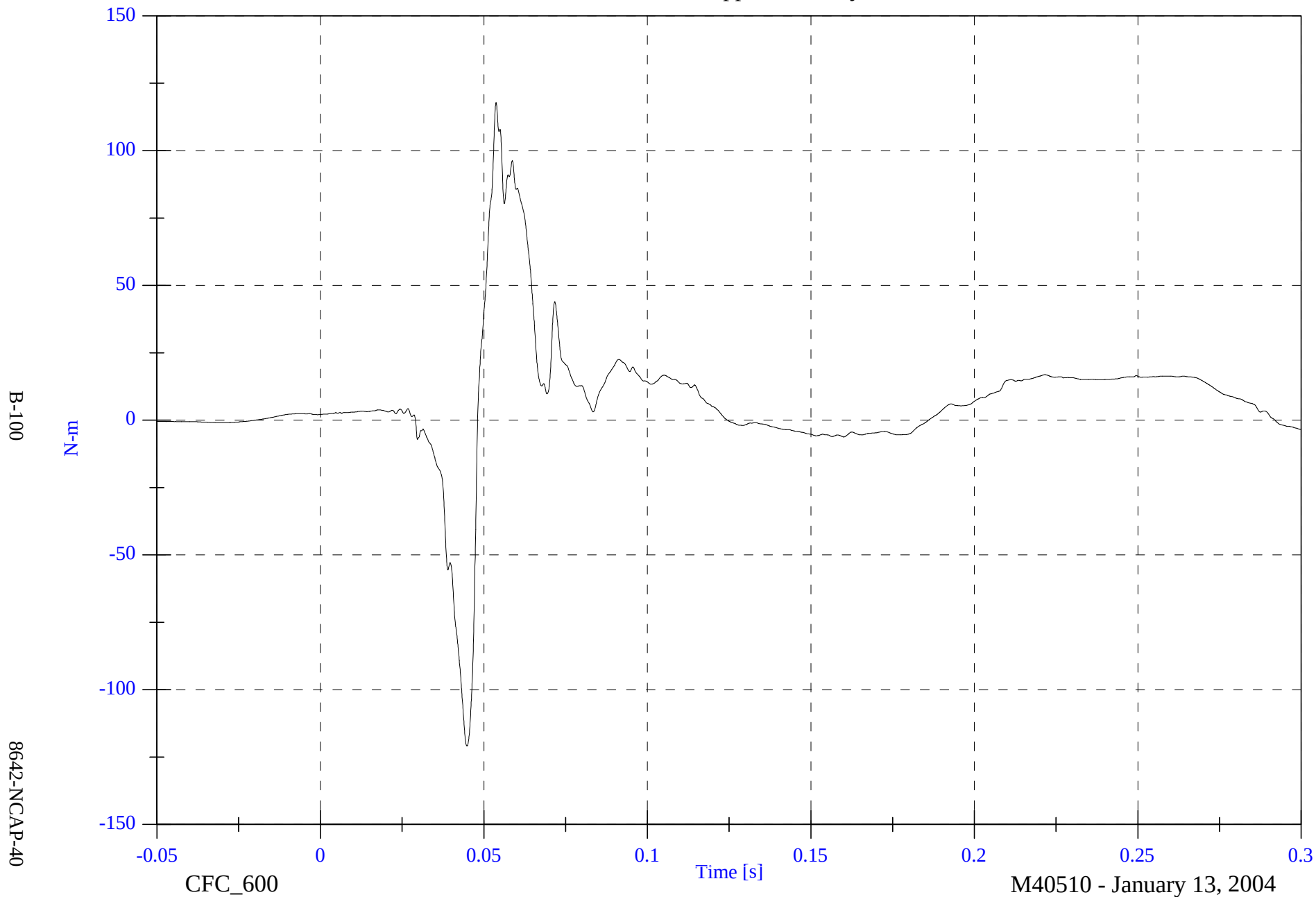


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Left Upper Tibia My

Max: 117.8 [N-m] at 0.054 [s]

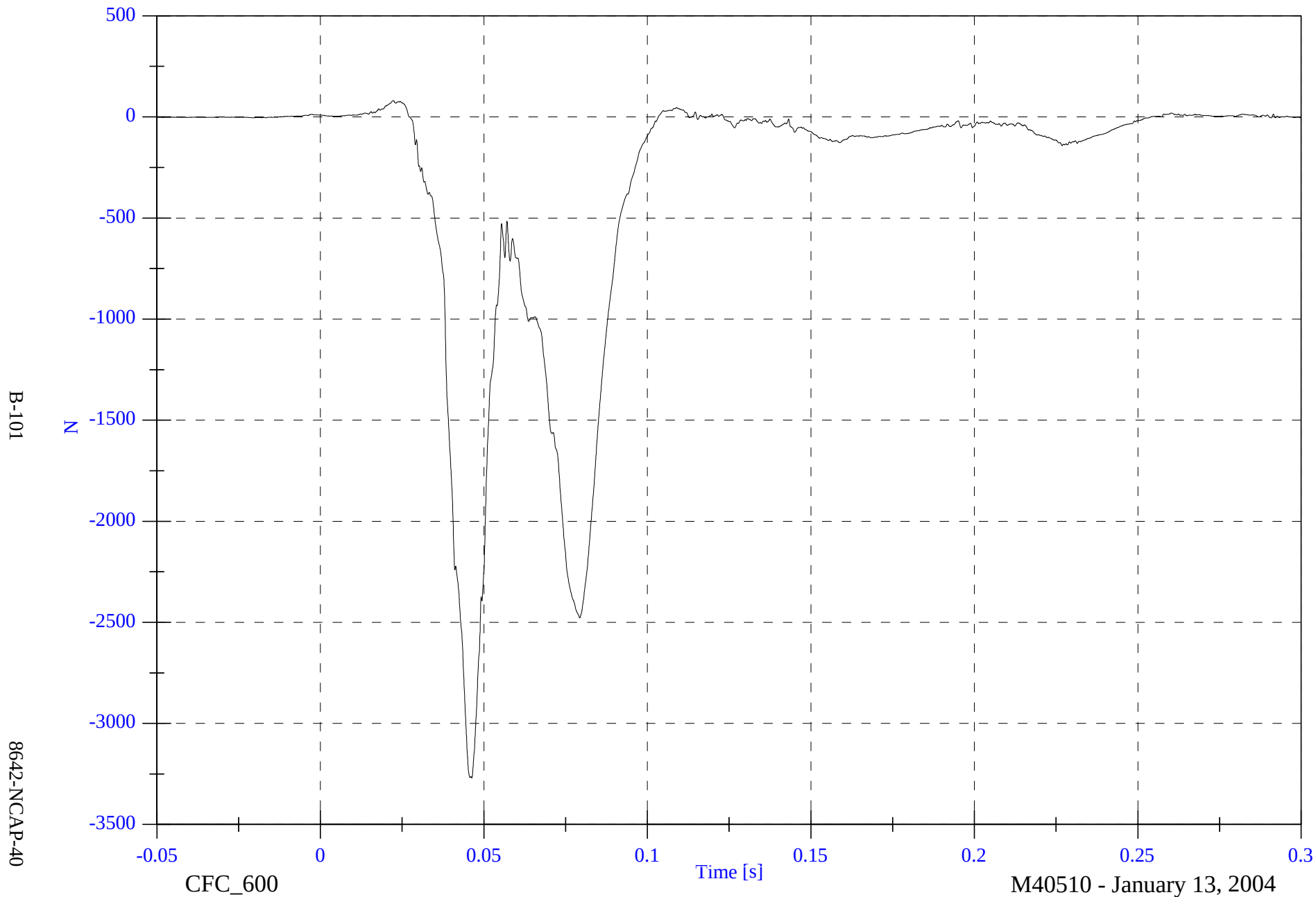
Min: -120.9 [N-m] at 0.045 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Left Lower Tibia Fz

Max: 80.7 [N] at 0.022 [s]
Min: -3270.3 [N] at 0.046 [s]

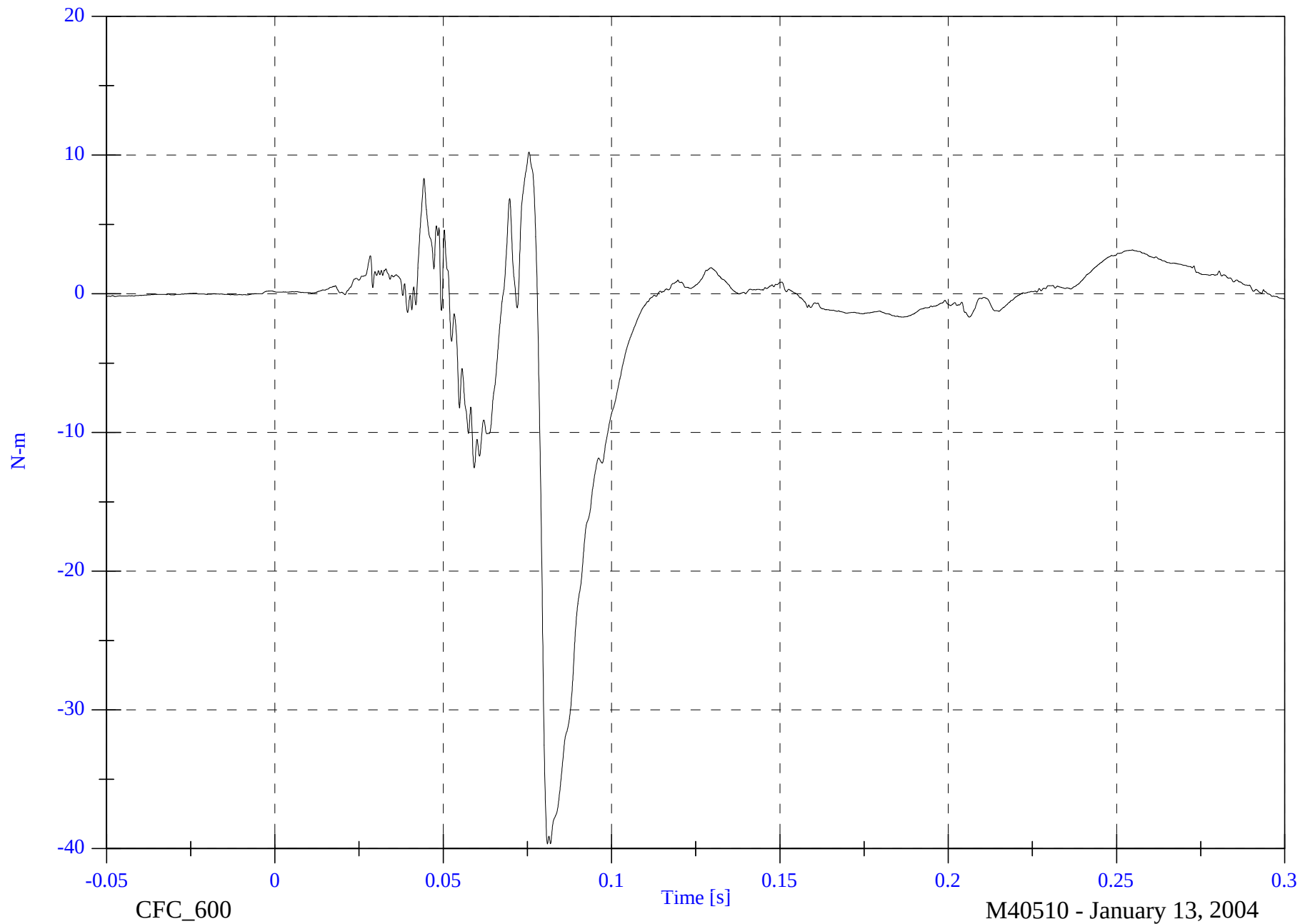


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Left Lower Tibia Mx

Max: 10.2 [N-m] at 0.076 [s]

Min: -39.7 [N-m] at 0.081 [s]

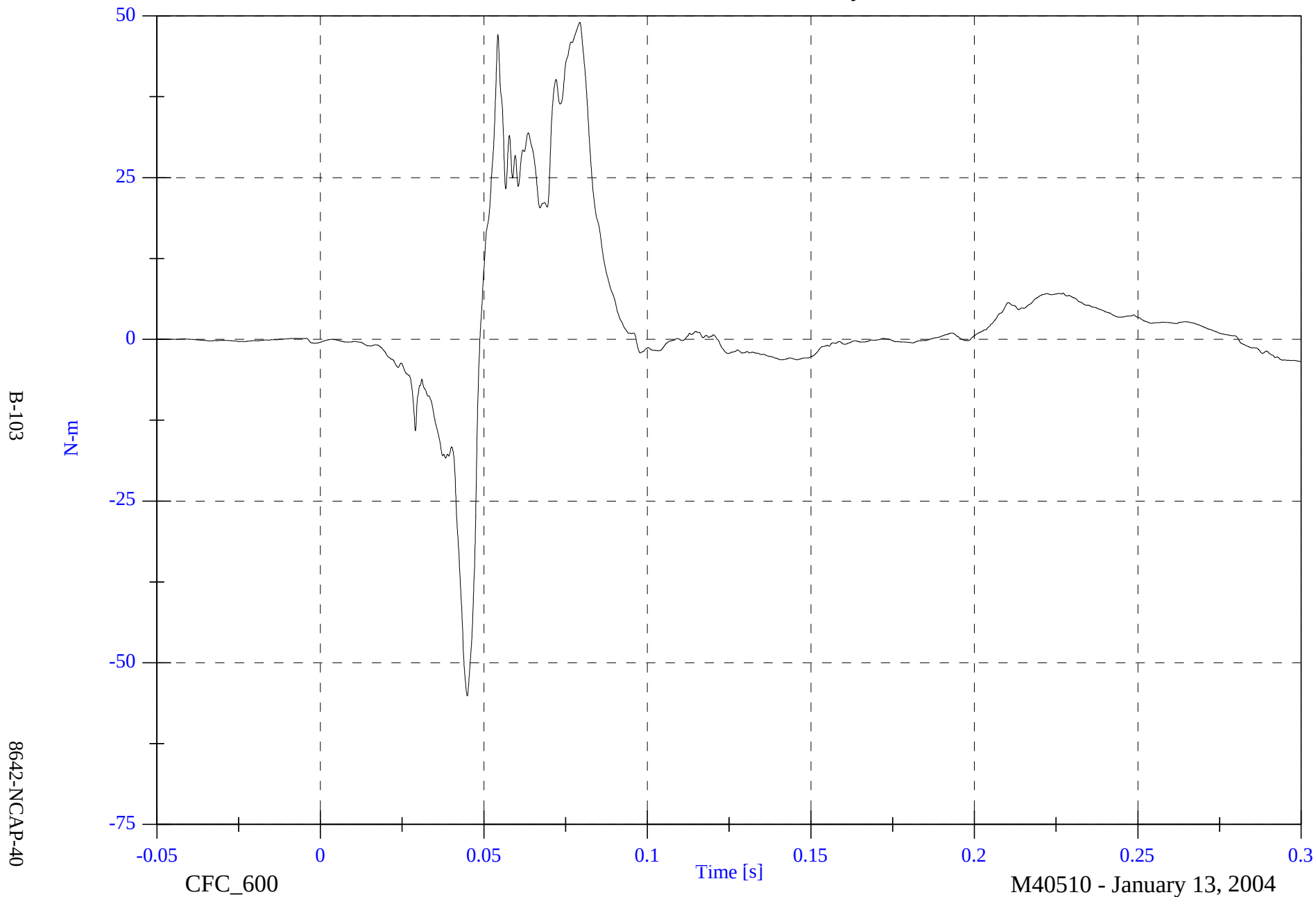


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 49.0 [N-m] at 0.079 [s]

Min: -55.1 [N-m] at 0.045 [s]

V1P2 Left Lower Tibia My

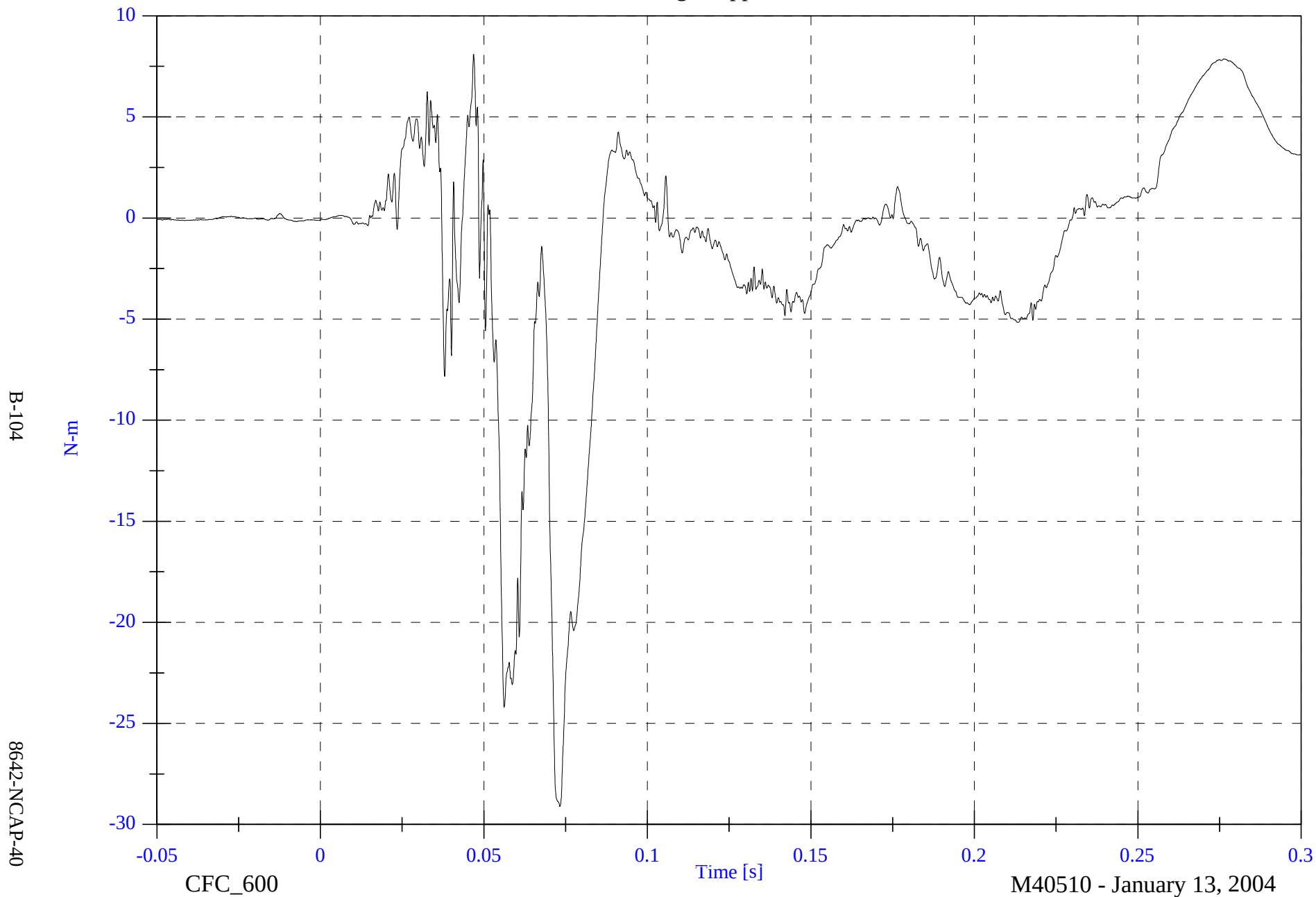


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Right Upper Tibia Mx

Max: 8.1 [N-m] at 0.047 [s]

Min: -29.1 [N-m] at 0.073 [s]

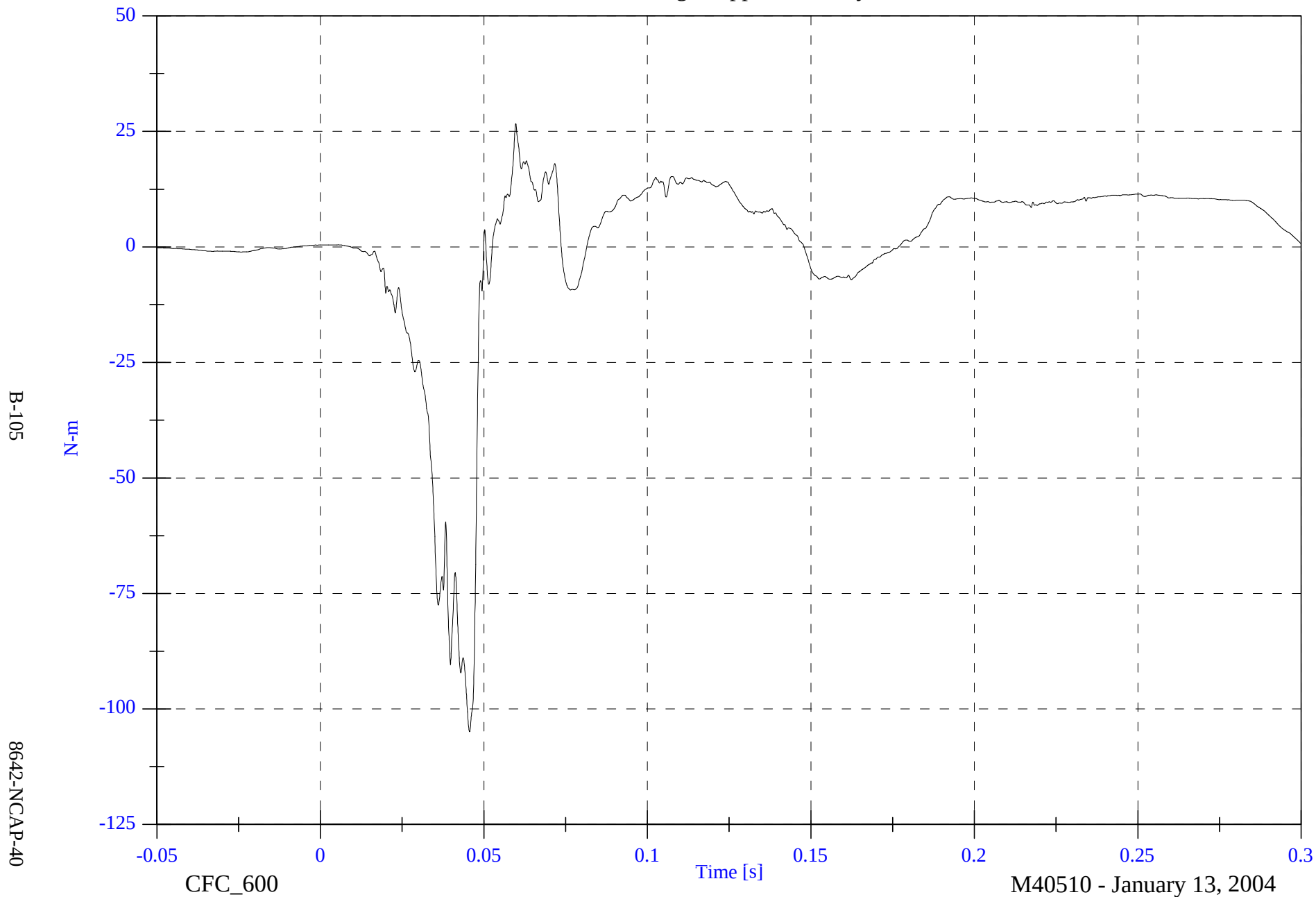


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Right Upper Tibia My

Max: 26.7 [N-m] at 0.060 [s]

Min: -105.0 [N-m] at 0.046 [s]

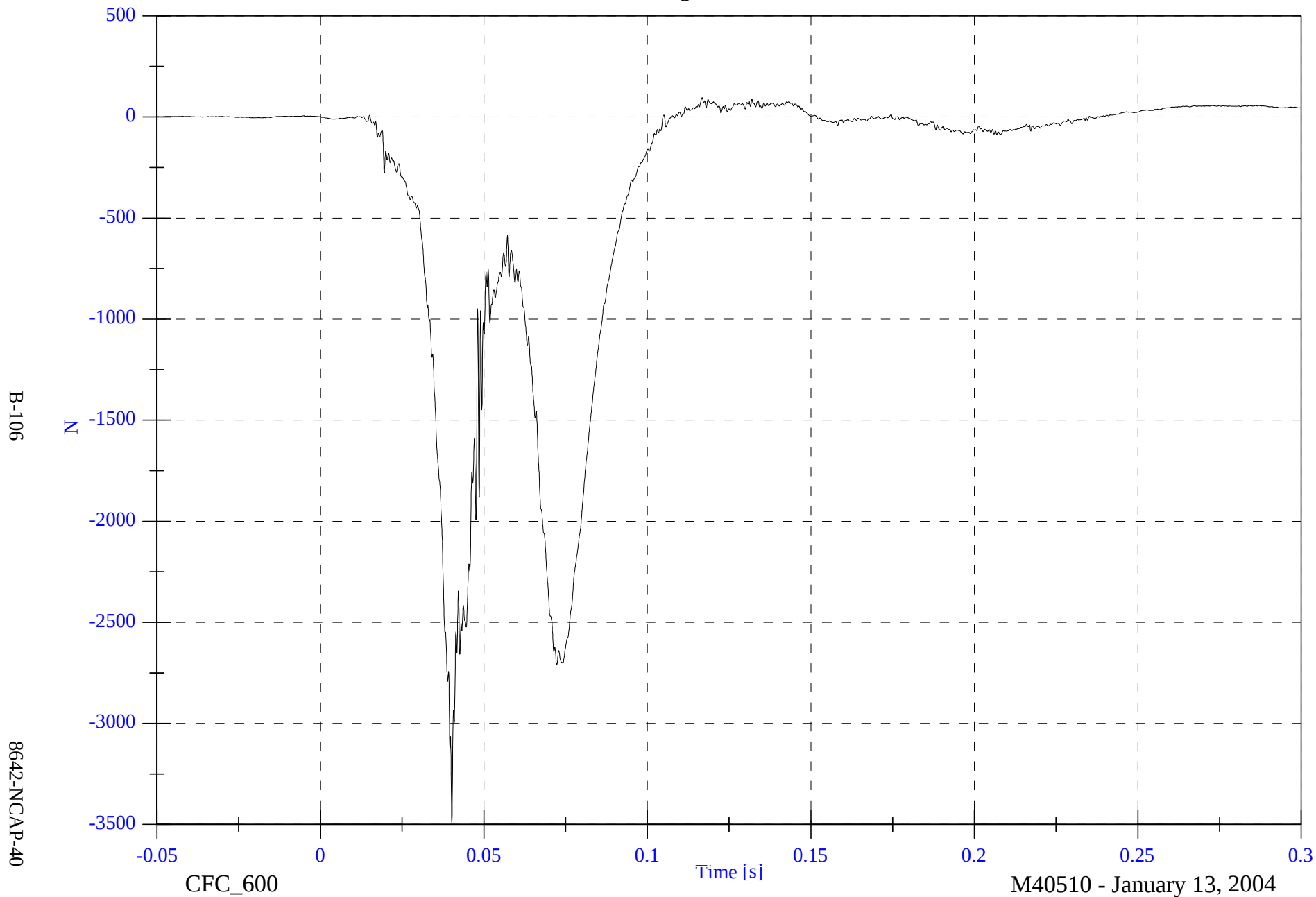


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Right Lower Tibia Fz

Max: 95.4 [N] at 0.117 [s]

Min: -3489.2 [N] at 0.040 [s]

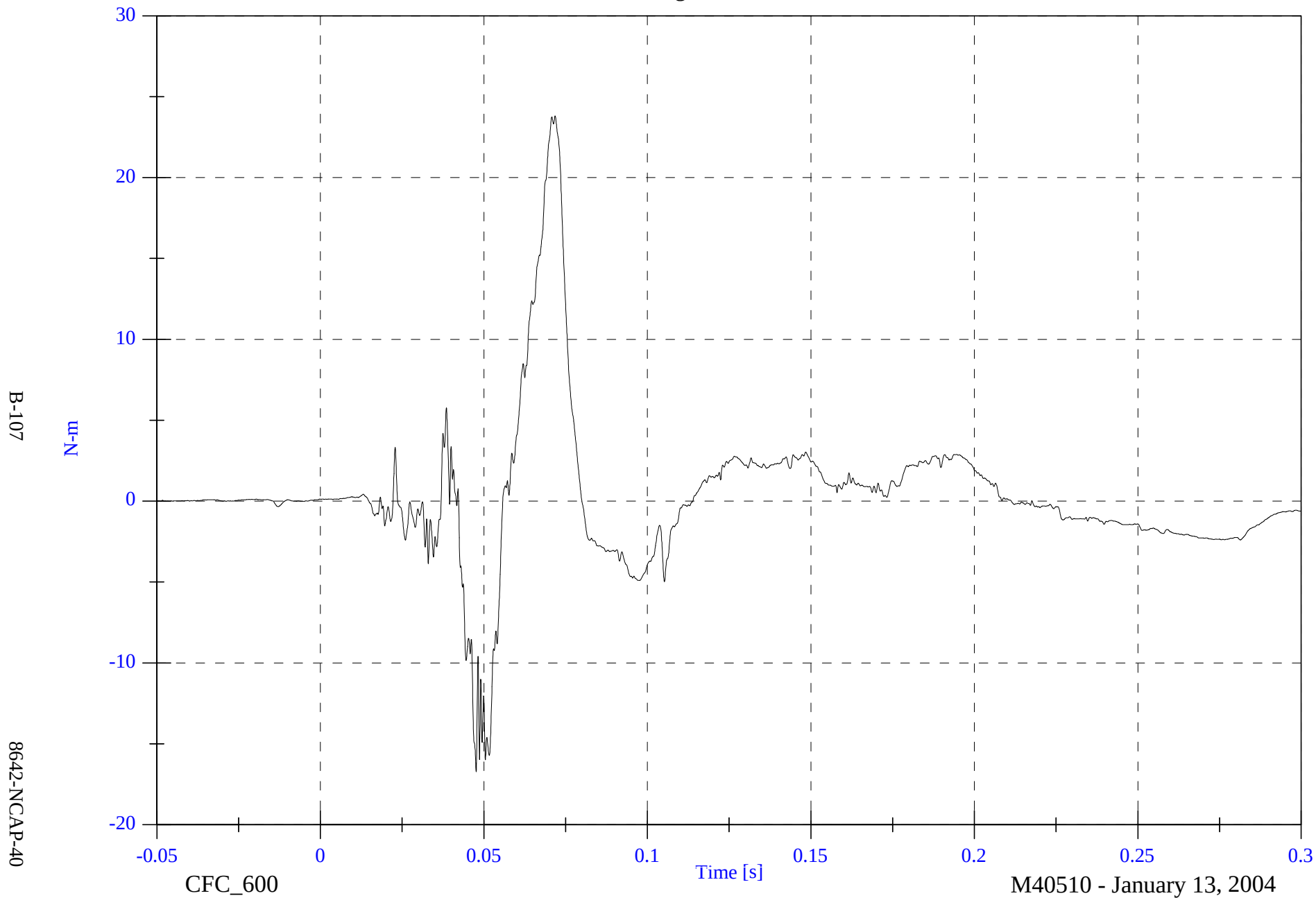


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Right Lower Tibia Mx

Max: 23.8 [N-m] at 0.072 [s]

Min: -16.7 [N-m] at 0.048 [s]

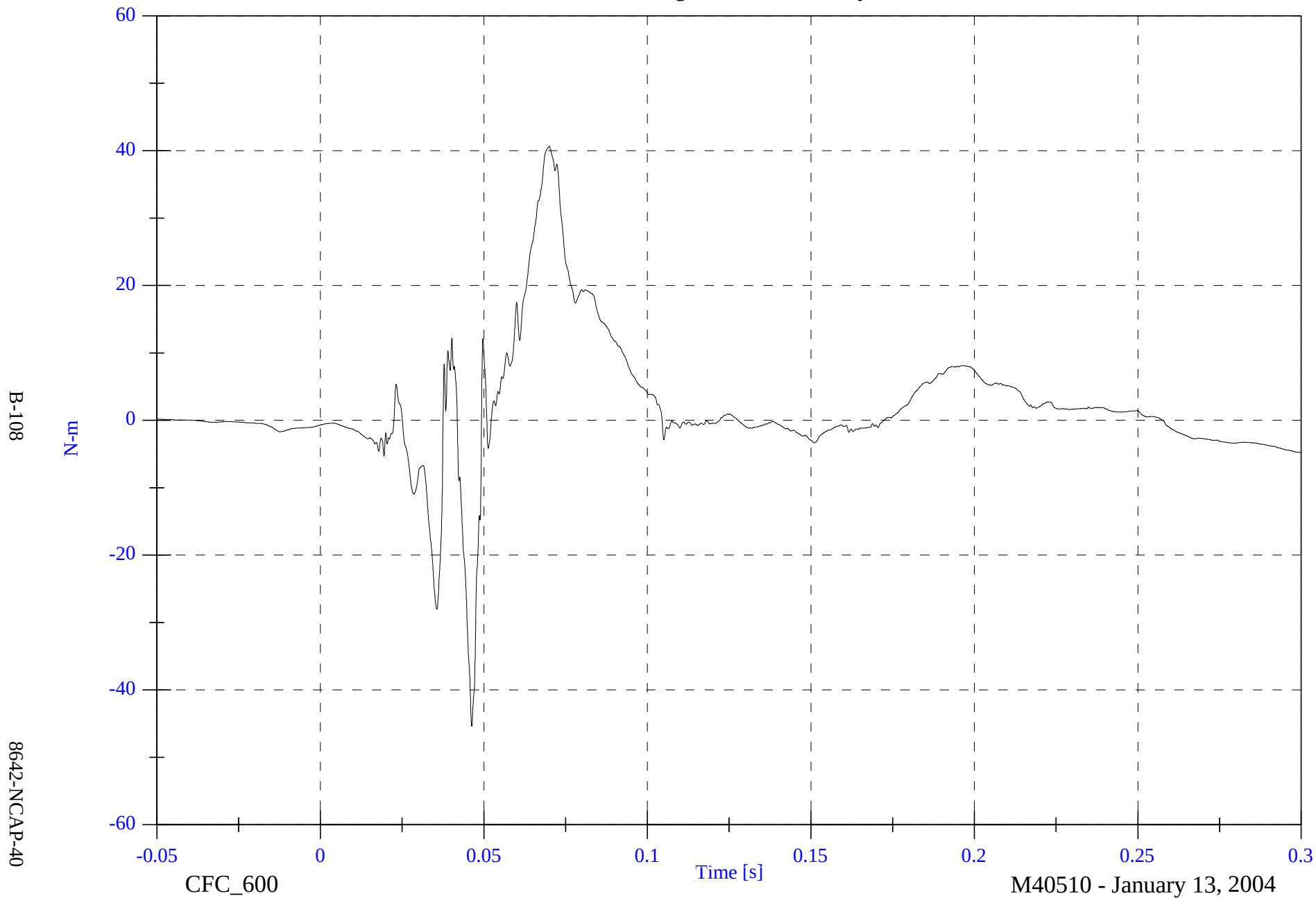


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Right Lower Tibia My

Max: 40.7 [N-m] at 0.070 [s]

Min: -45.4 [N-m] at 0.046 [s]

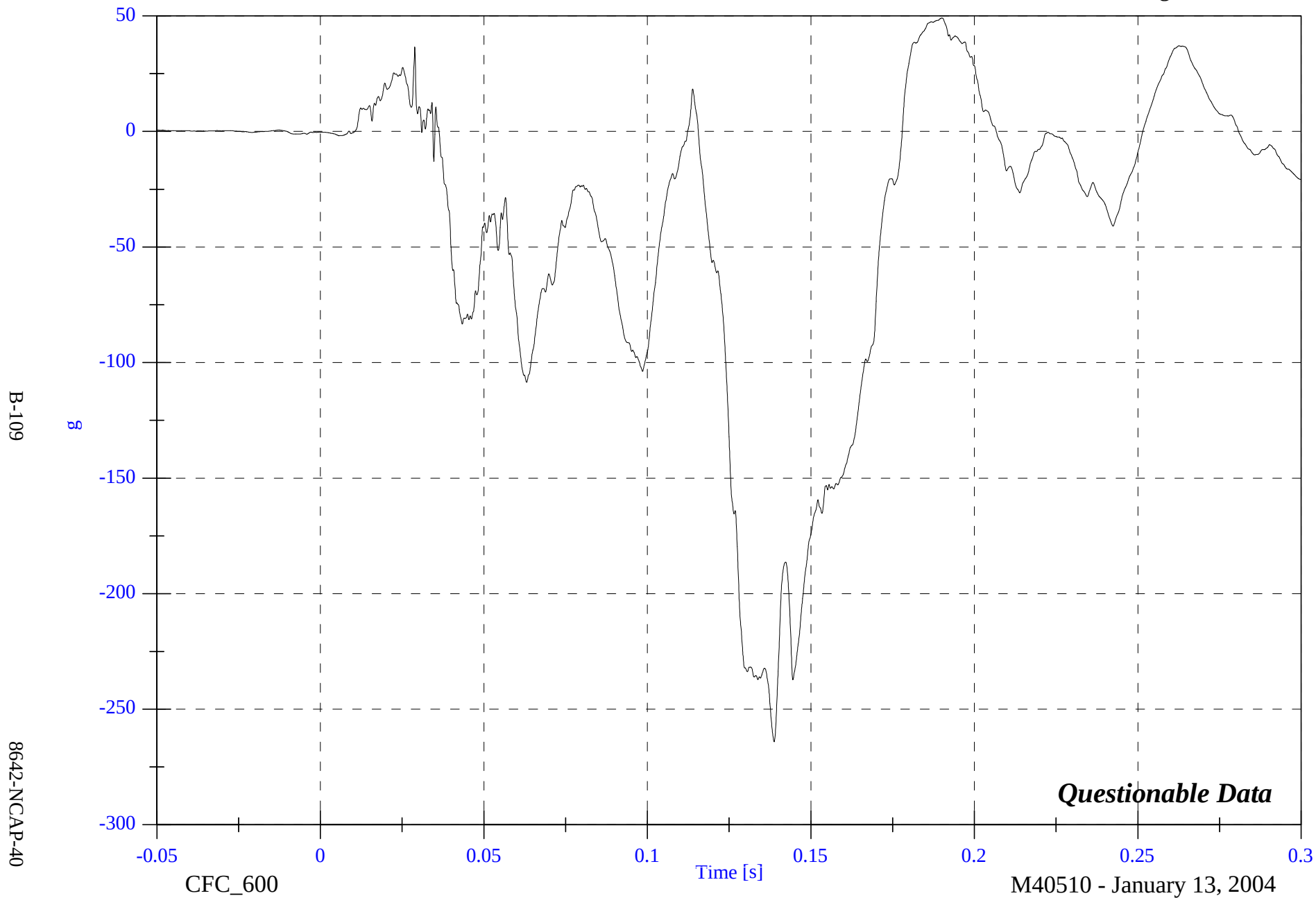


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Left Foot Aft x

Max: 49.1 [g] at 0.190 [s]

Min: -264.1 [g] at 0.139 [s]

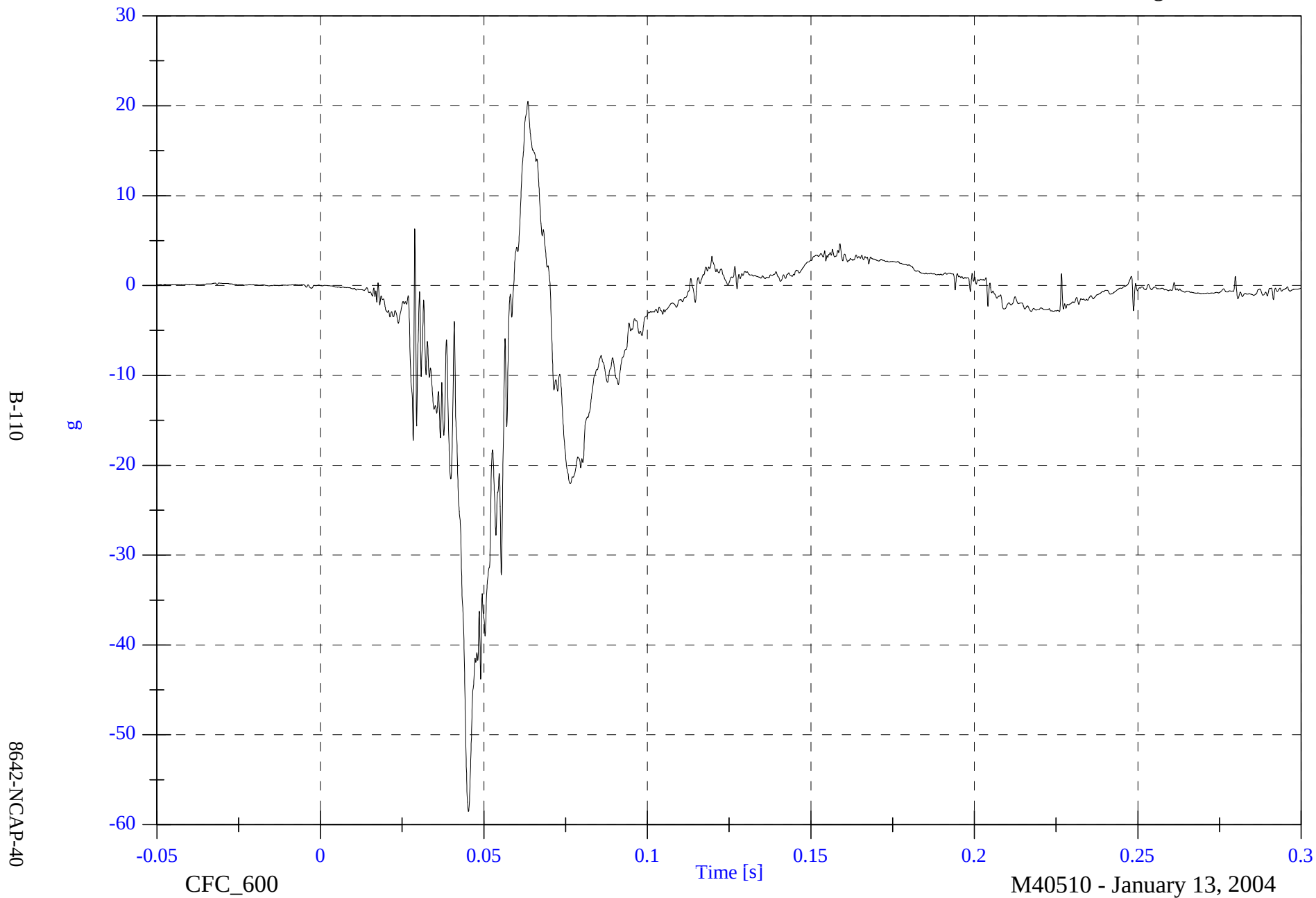


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Left Foot Aft z

Max: 20.5 [g] at 0.063 [s]

Min: -58.5 [g] at 0.045 [s]

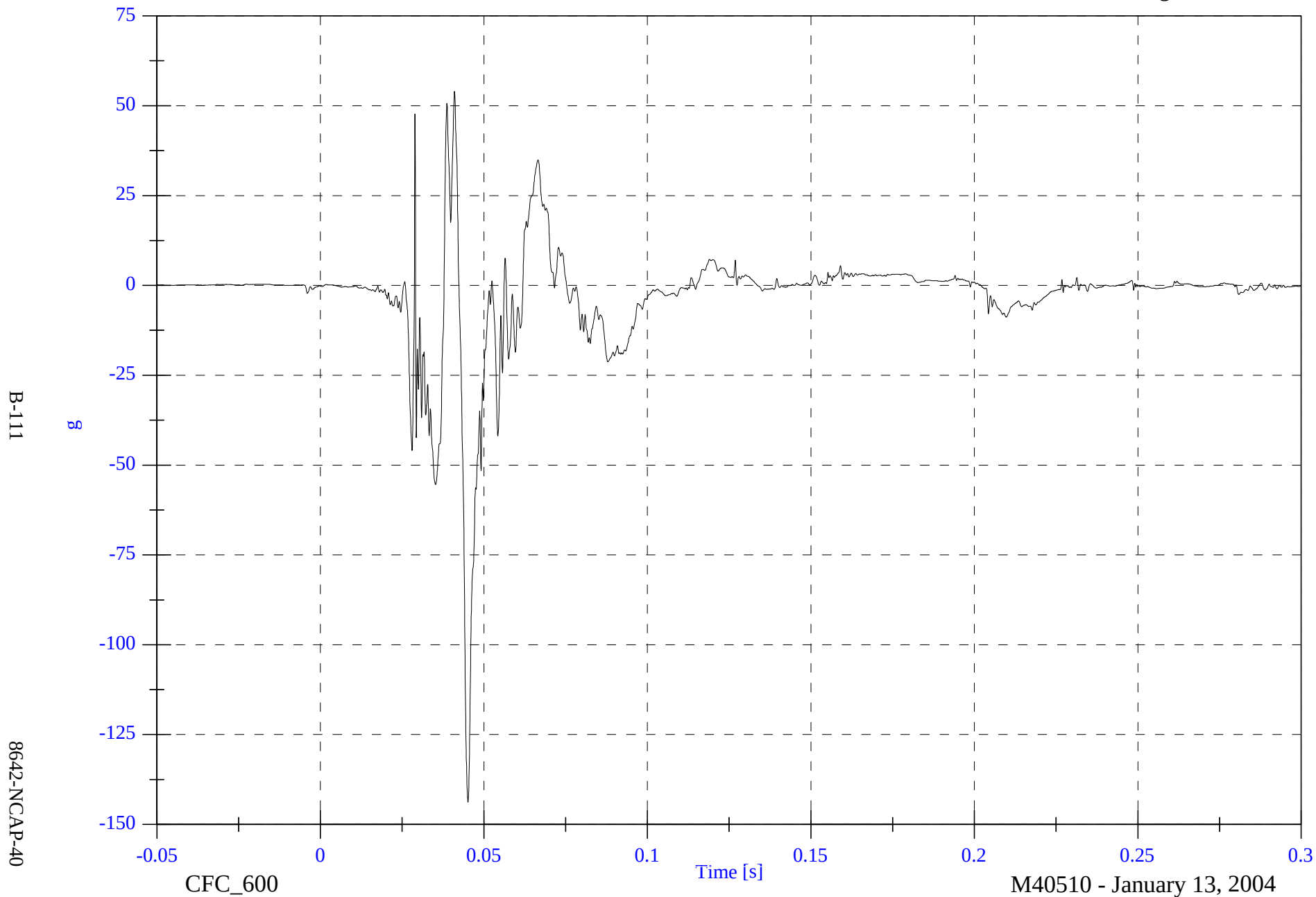


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Left Foot Fore z

Max: 54.0 [g] at 0.041 [s]

Min: -143.8 [g] at 0.045 [s]

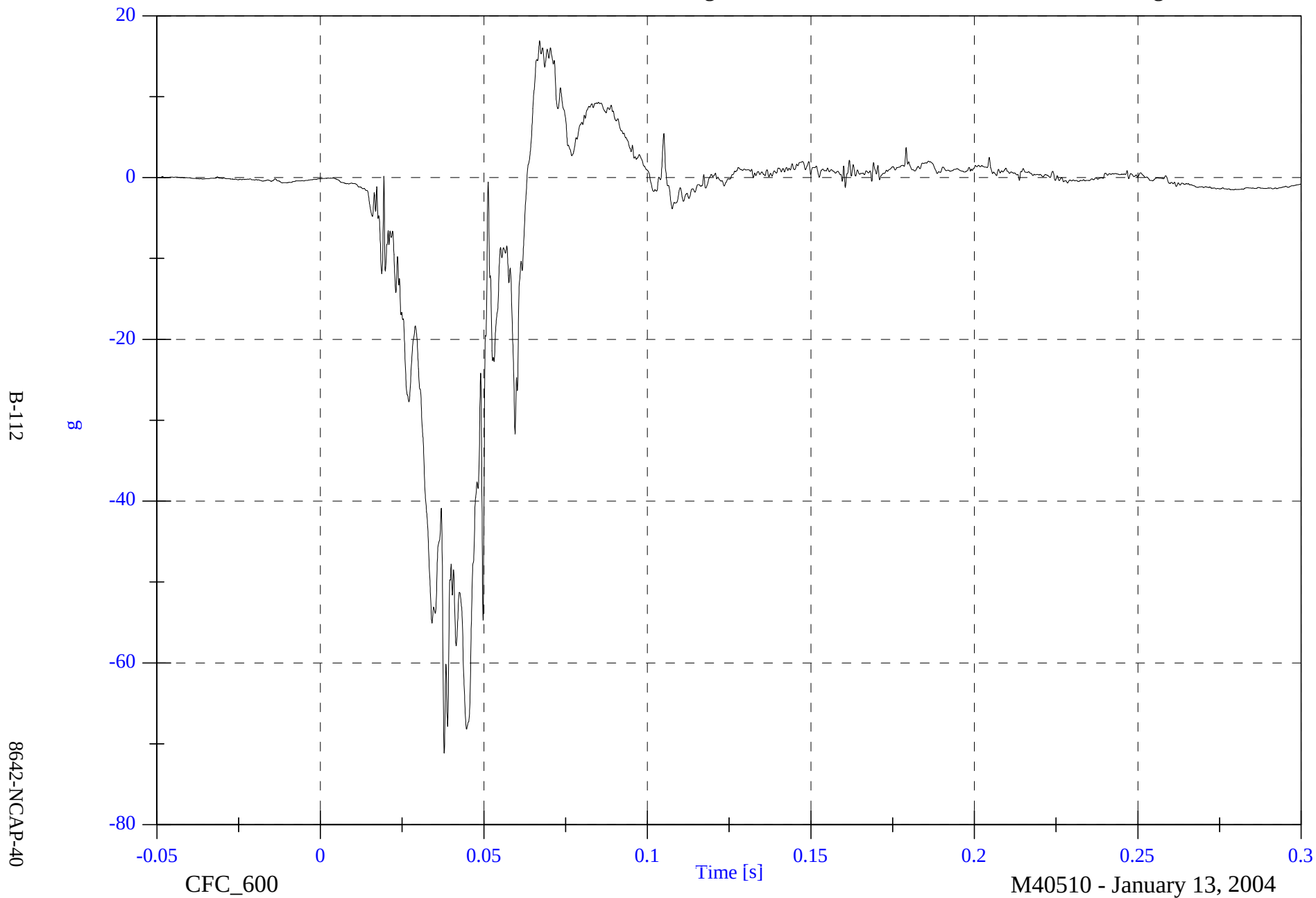


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Right Foot Aft x

Max: 16.9 [g] at 0.067 [s]

Min: -71.1 [g] at 0.038 [s]

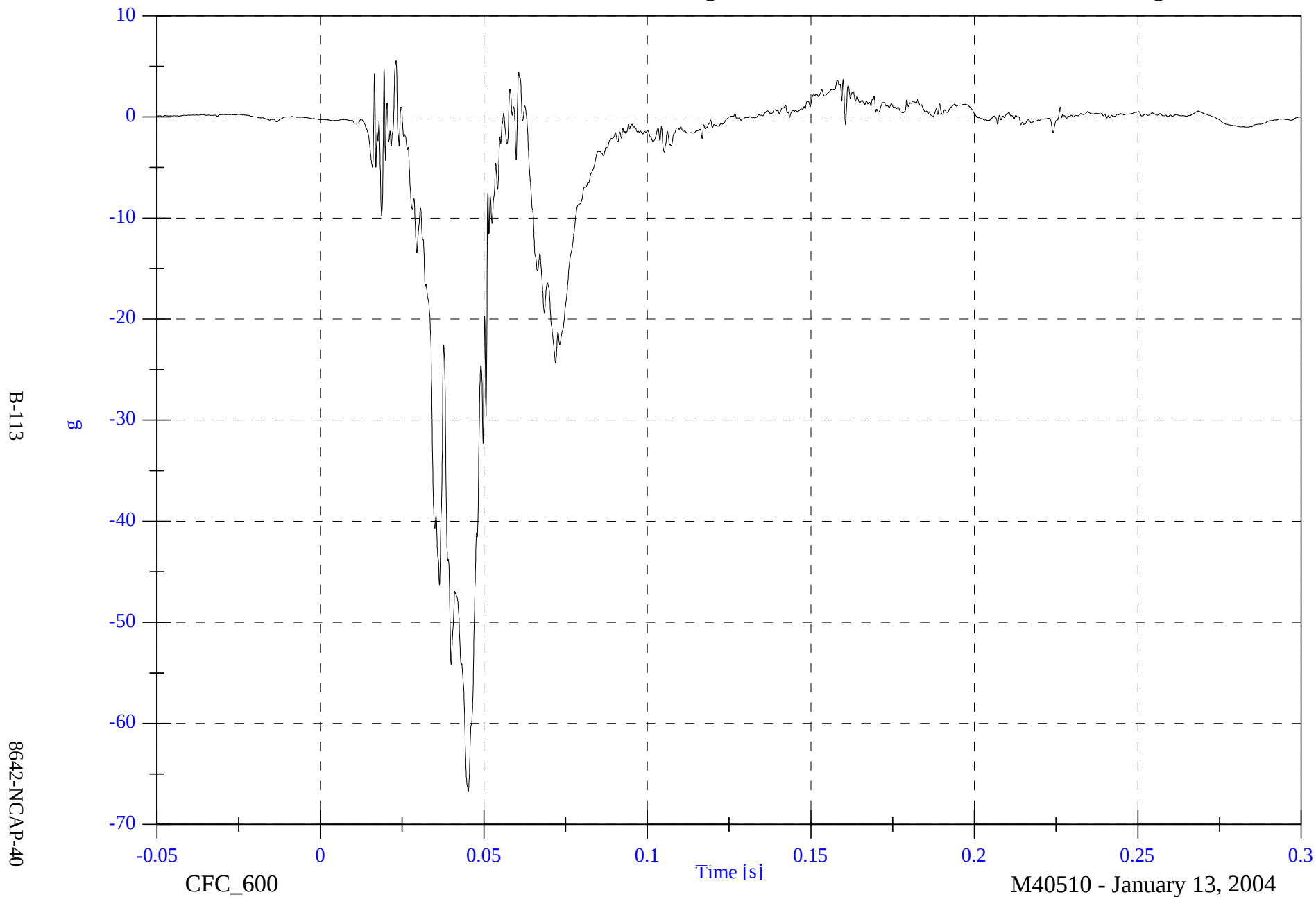


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Right Foot Aft z

Max: 5.6 [g] at 0.023 [s]

Min: -66.7 [g] at 0.045 [s]

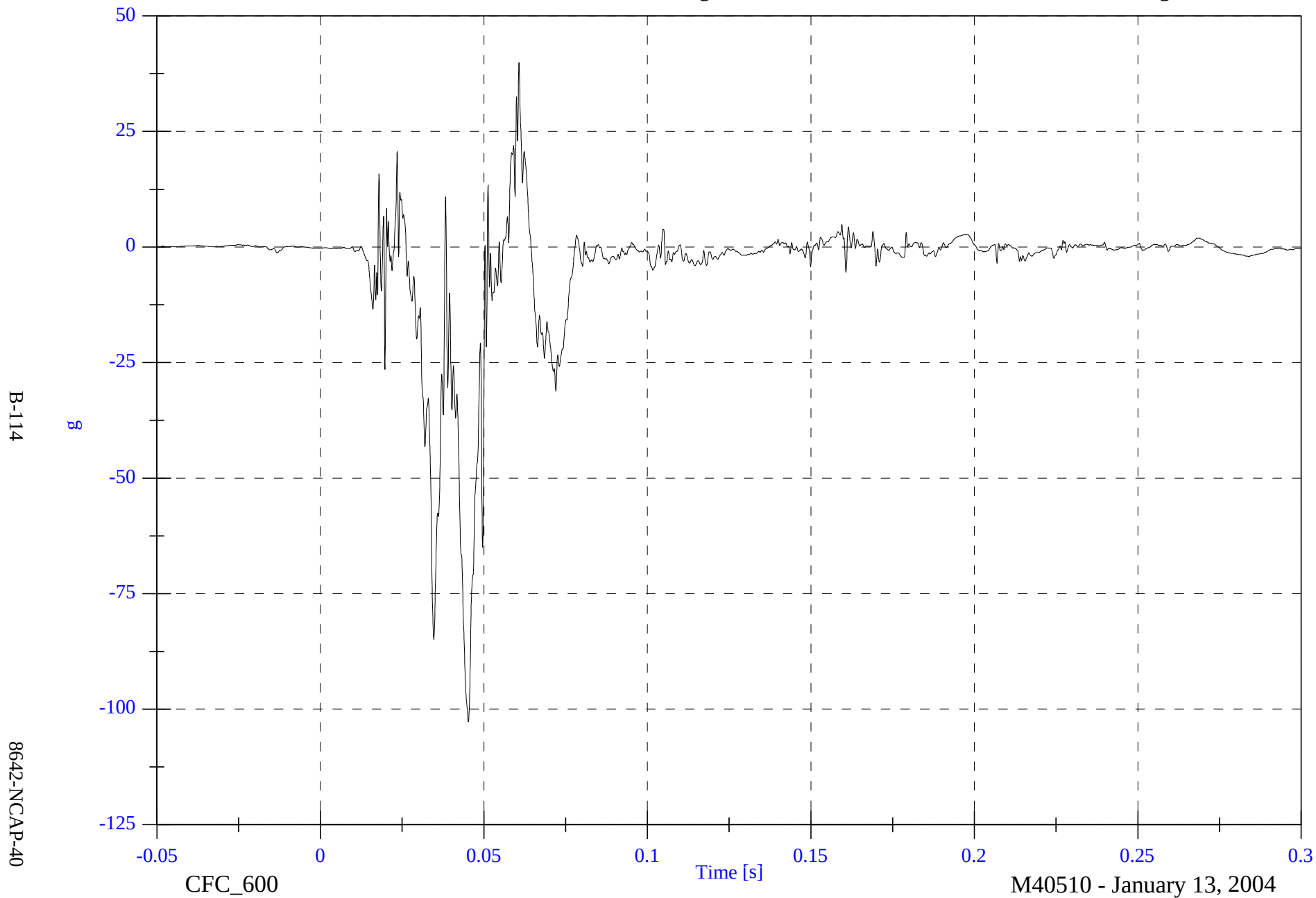


2004 NCAP Test 4 2004 Suzuki Forenza

V1P2 Right Foot Fore z

Max: 39.9 [g] at 0.061 [s]

Min: -102.7 [g] at 0.045 [s]

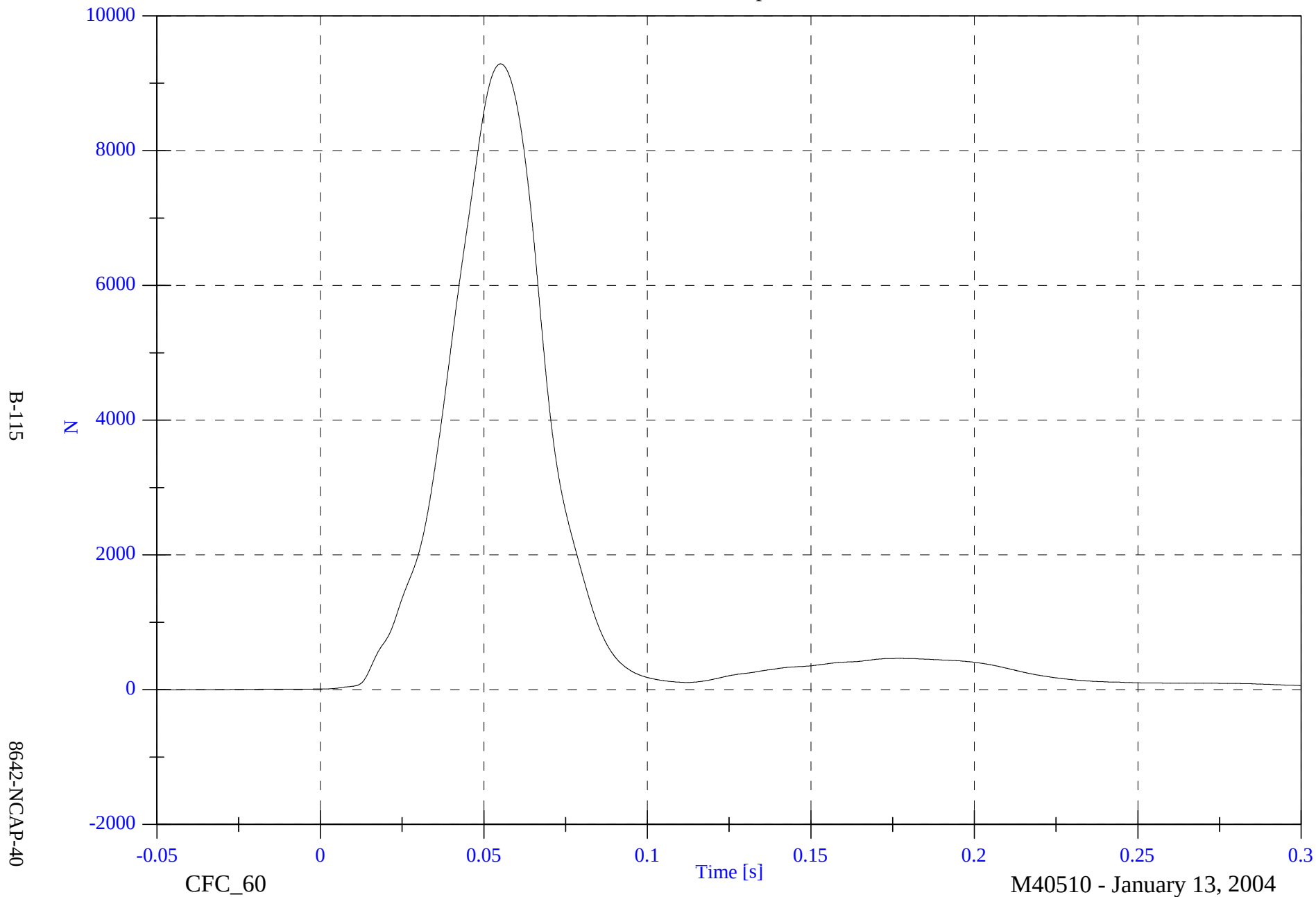


2004 NCAP Test 4 2004 Suzuki Forenza

V1 RFP Lap Belt

Max: 9287.6 [N] at 0.055 [s]

Min: -2.4 [N] at -0.050 [s]

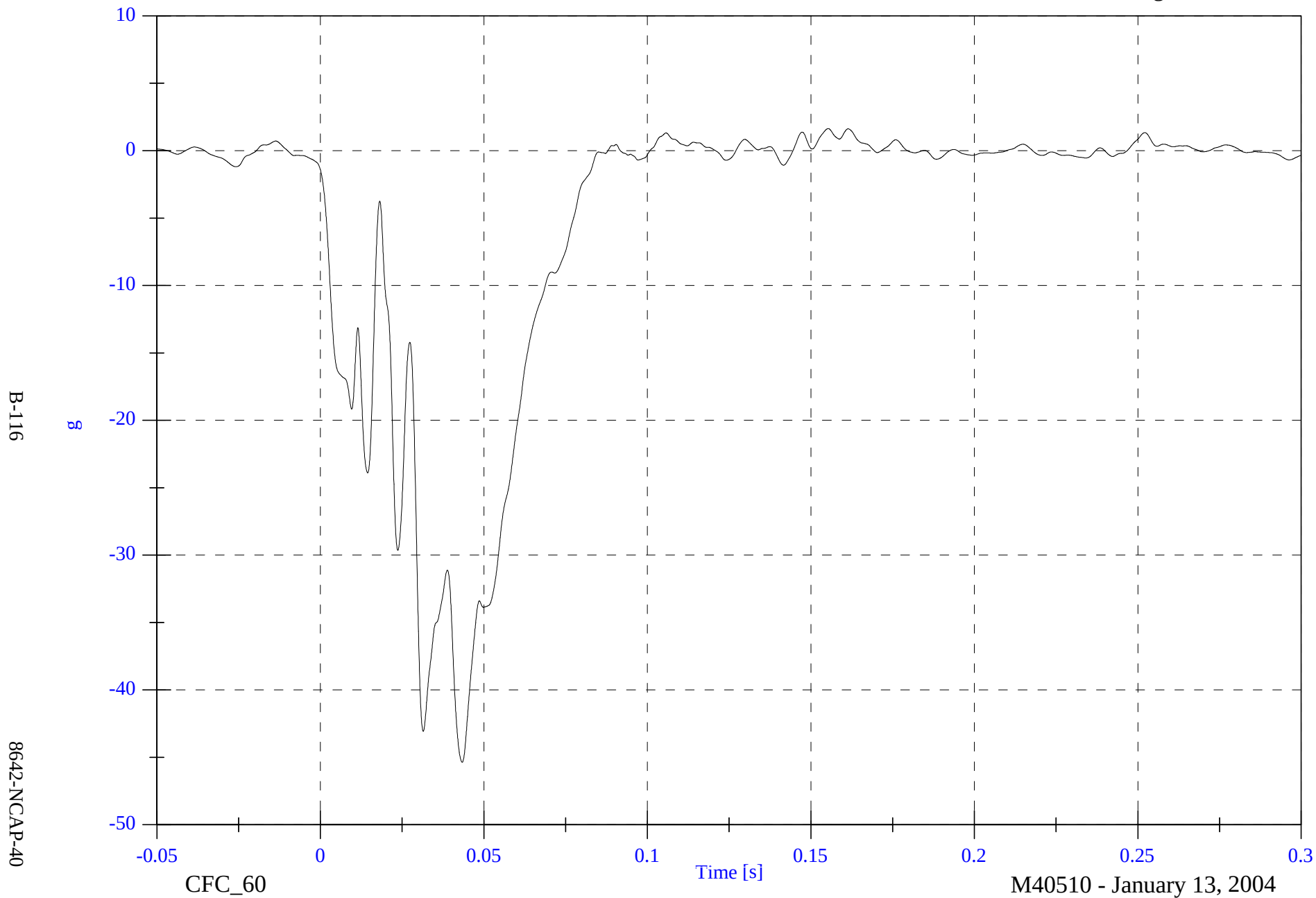


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Left Rear #1x

Max: 1.6 [g] at 0.155 [s]

Min: -45.4 [g] at 0.043 [s]

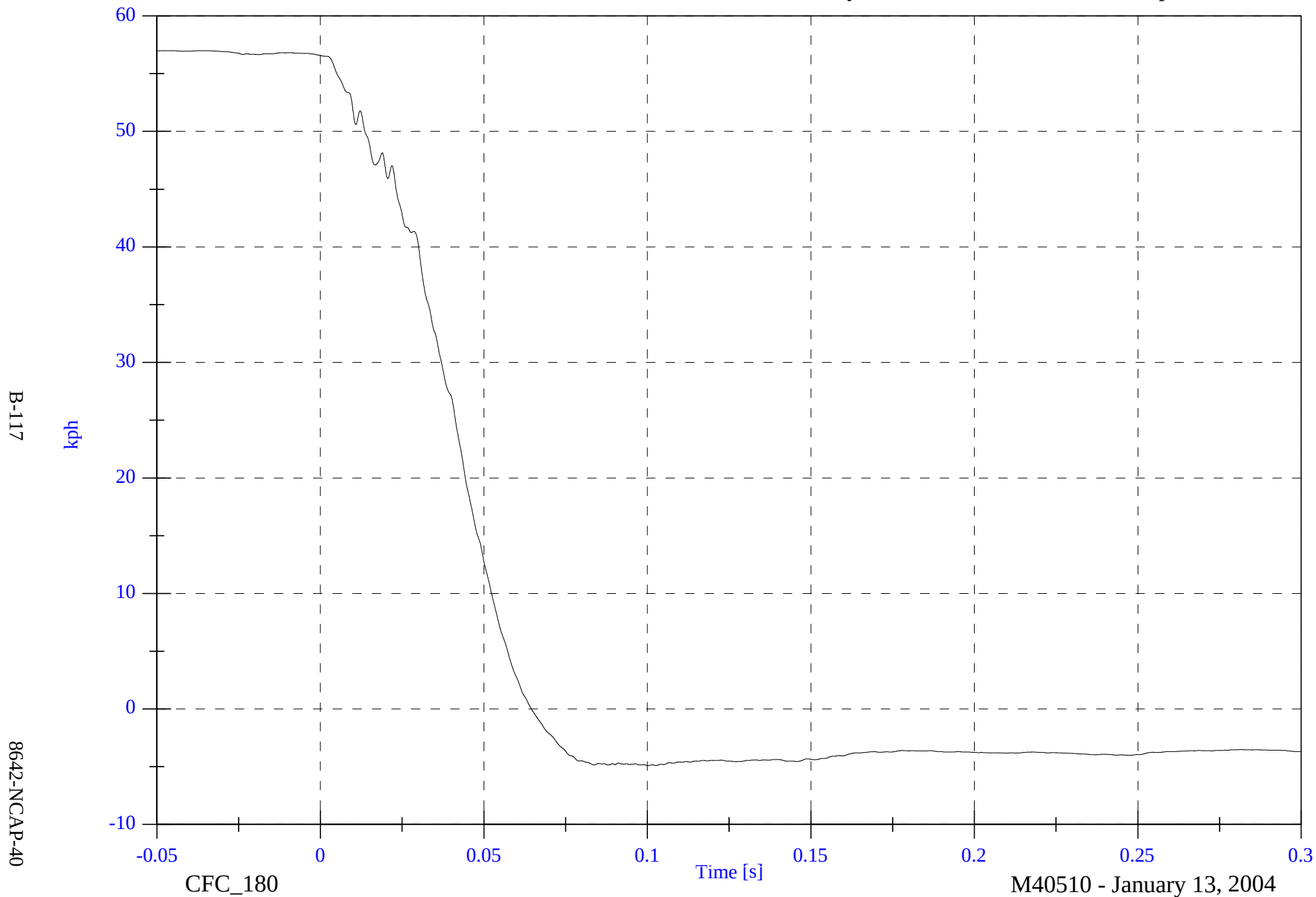


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 57.0 [kph] at -0.035 [s]

Min: -4.9 [kph] at 0.100 [s]

V1 Left Rear #1x Velocity

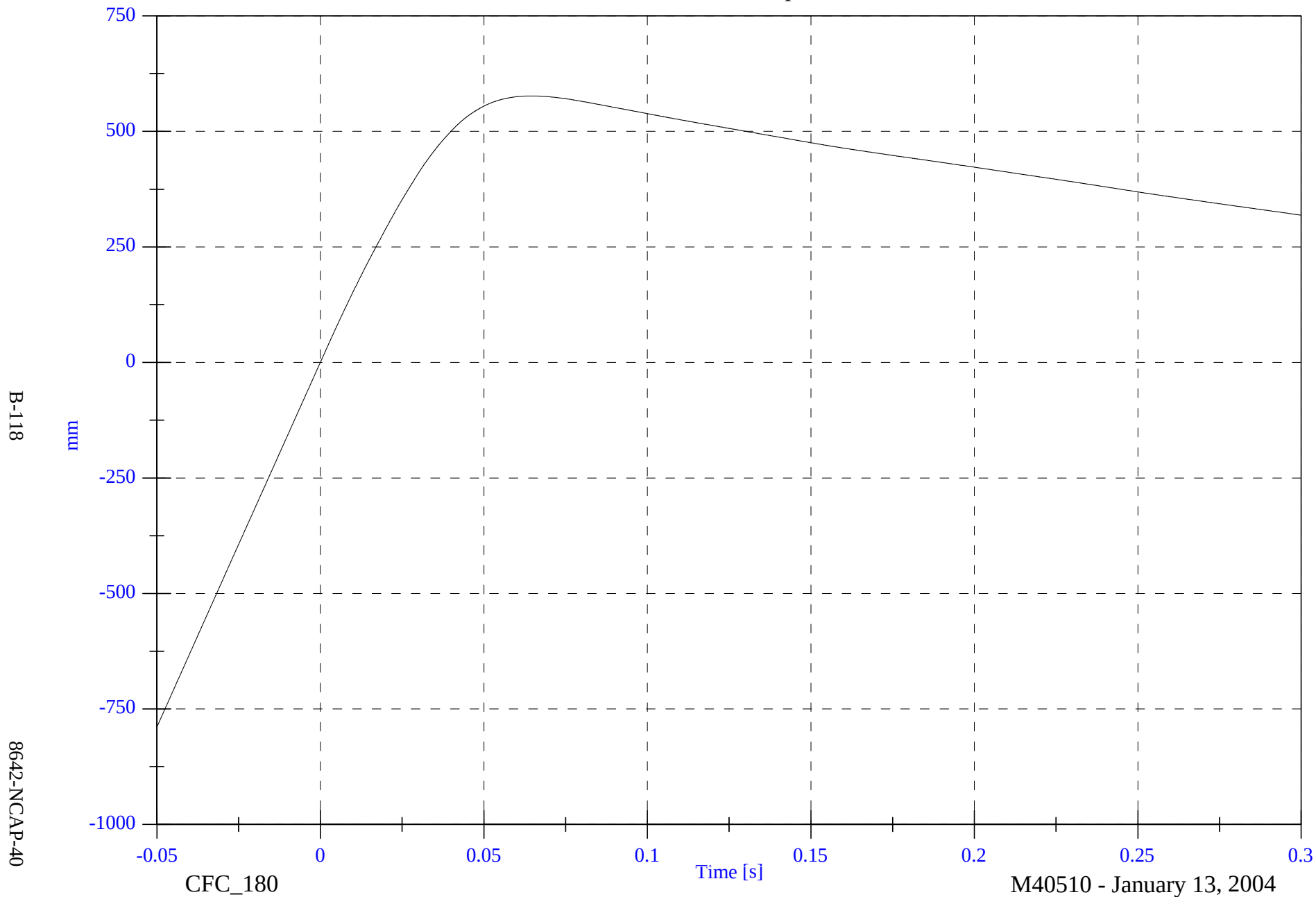


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Left Rear #1x Displacement

Max: 576.5 [mm] at 0.065 [s]

Min: -789.3 [mm] at -0.050 [s]

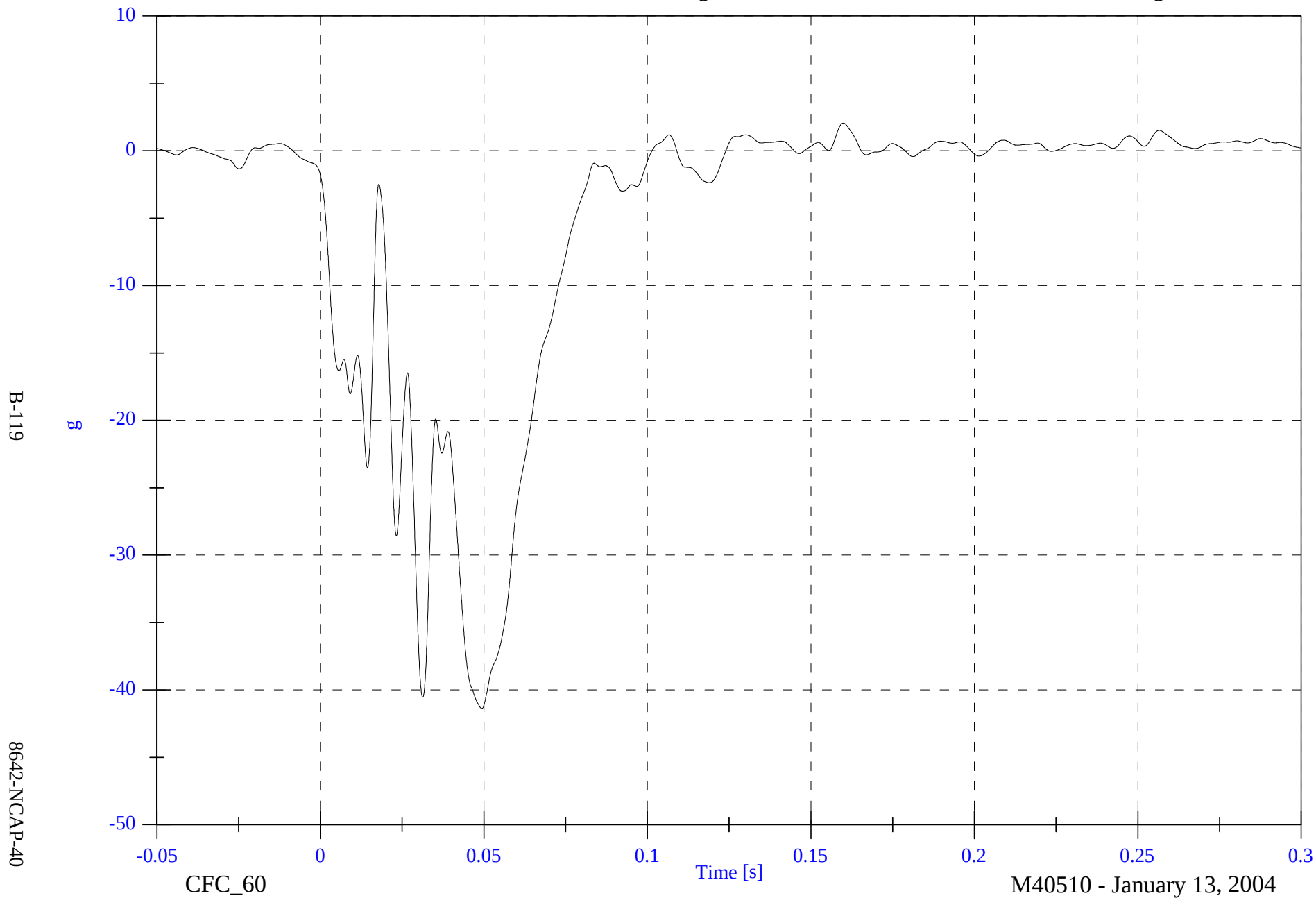


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Right Rear #2x

Max: 2.0 [g] at 0.160 [s]

Min: -41.4 [g] at 0.049 [s]

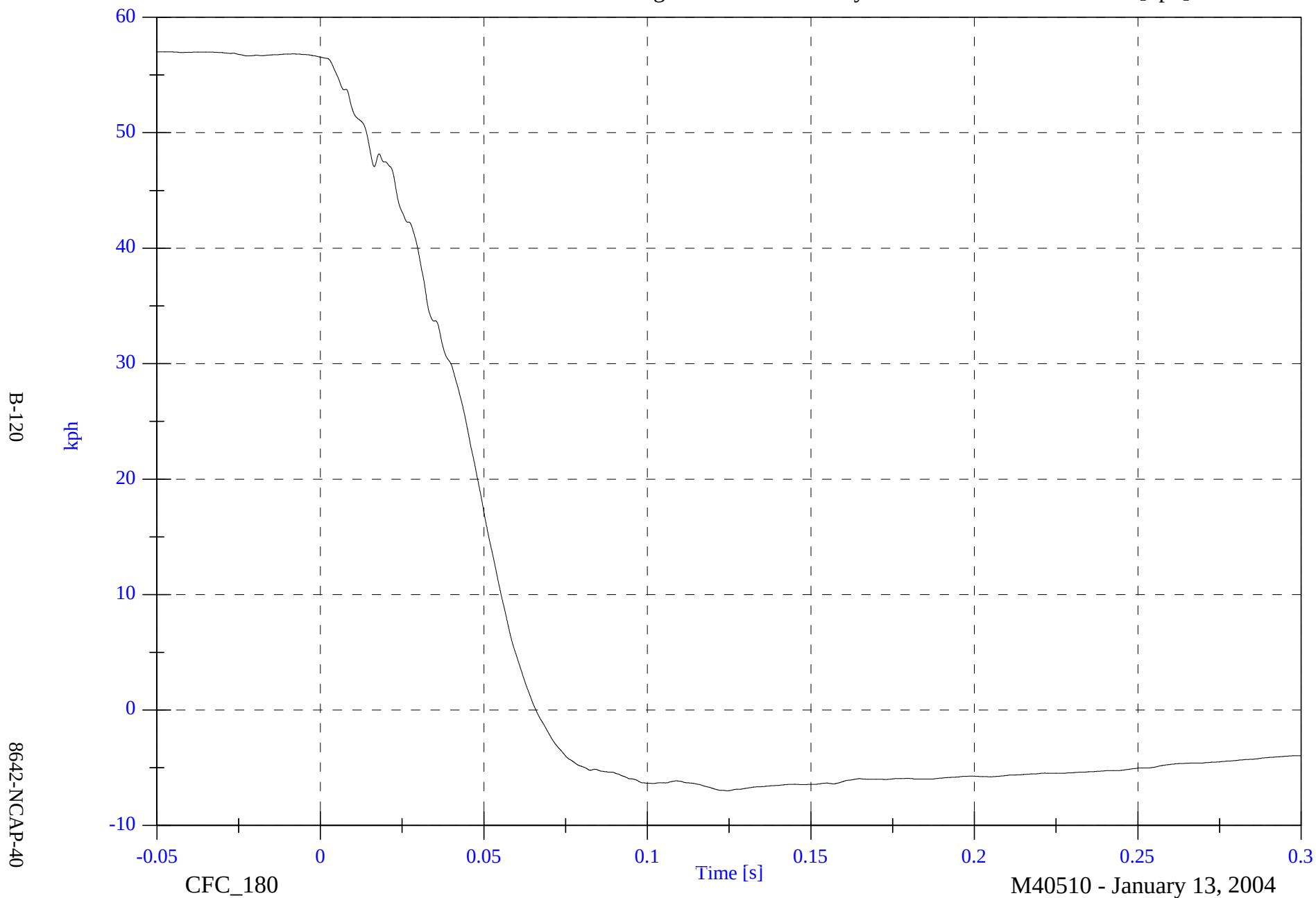


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 57.0 [kph] at -0.048 [s]

Min: -7.0 [kph] at 0.125 [s]

V1 Right Rear #2x Velocity

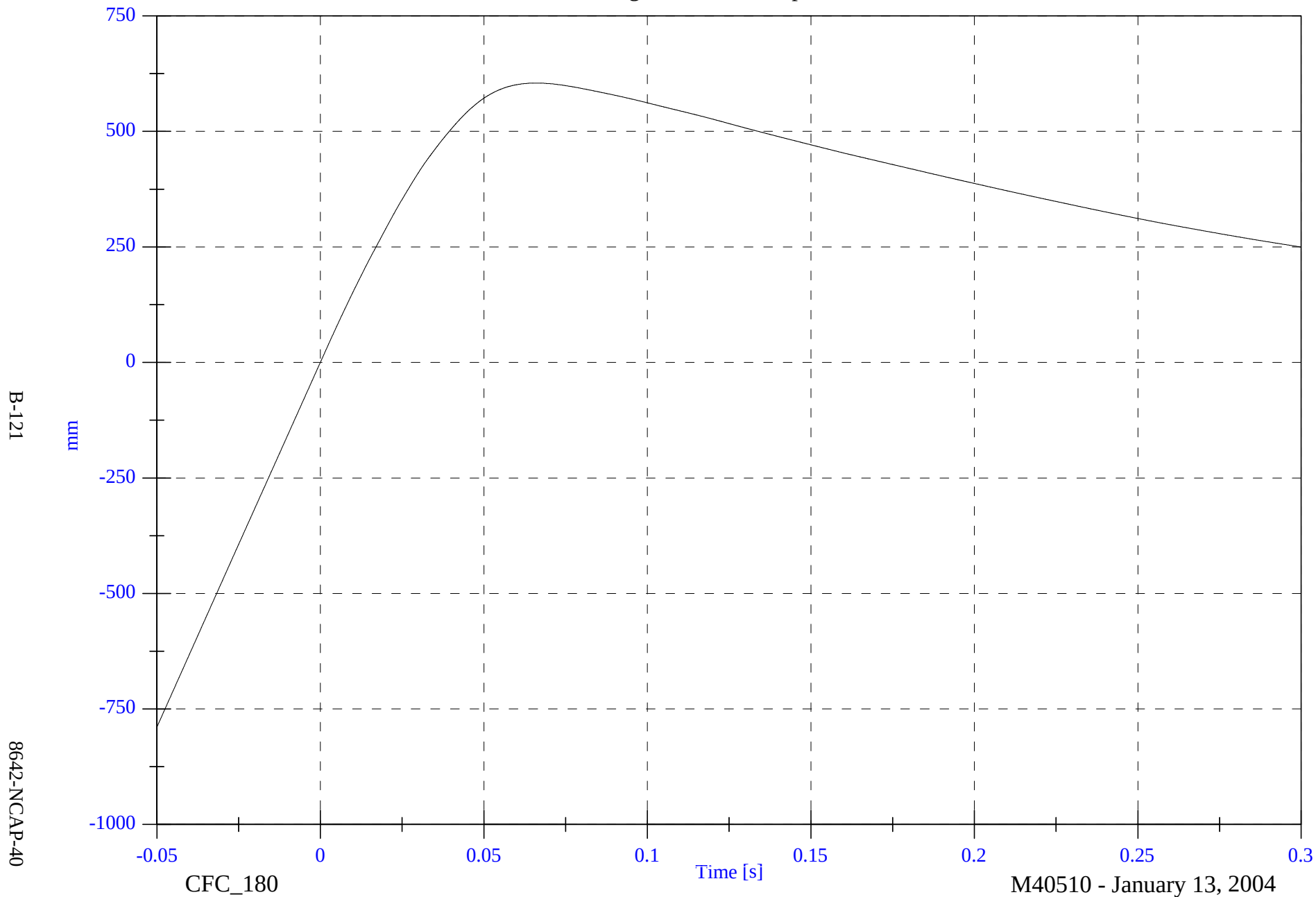


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Right Rear #2x Displacement

Max: 604.6 [mm] at 0.066 [s]

Min: -789.5 [mm] at -0.050 [s]

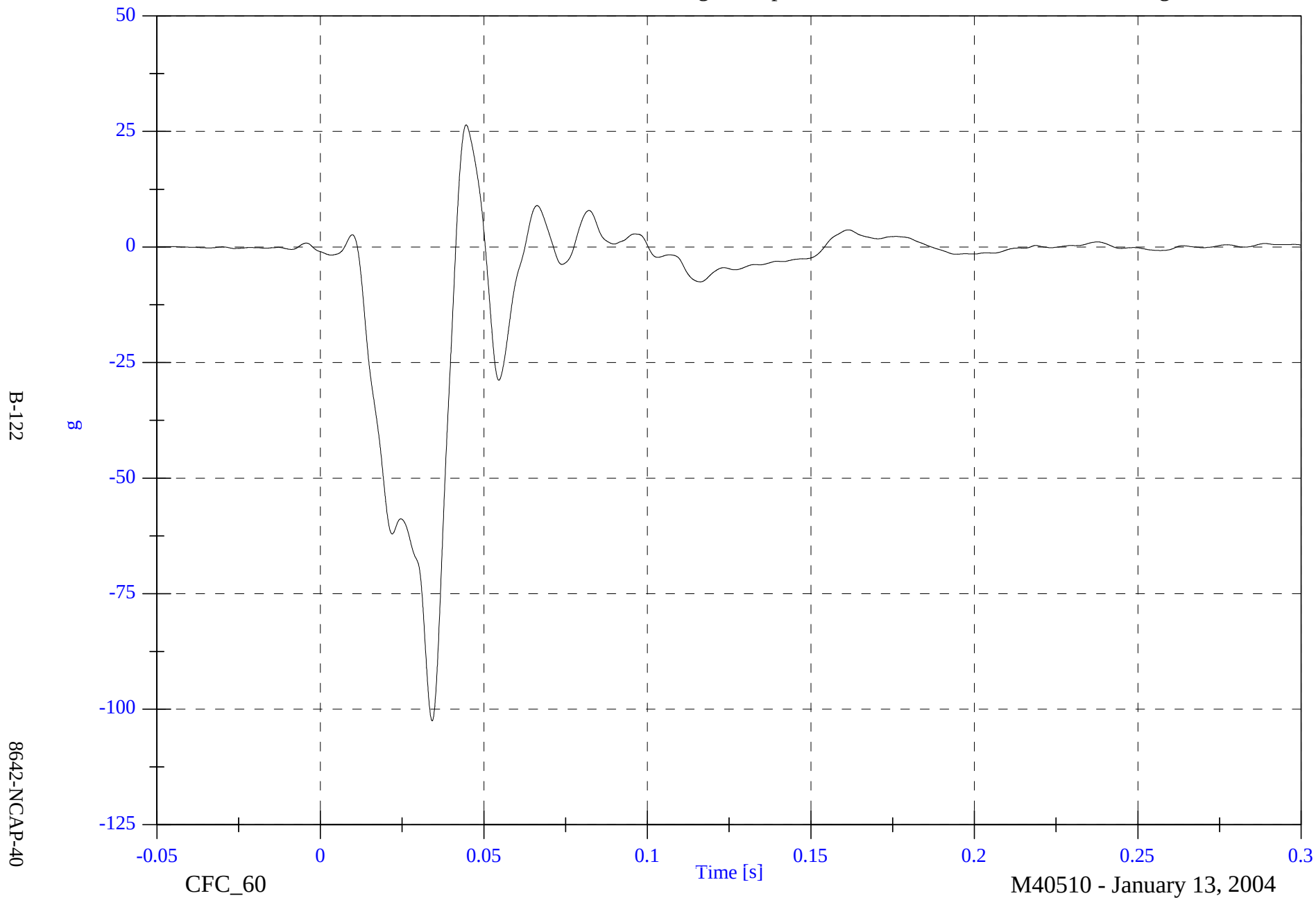


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Engine Top #3x

Max: 26.4 [g] at 0.045 [s]

Min: -102.5 [g] at 0.034 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

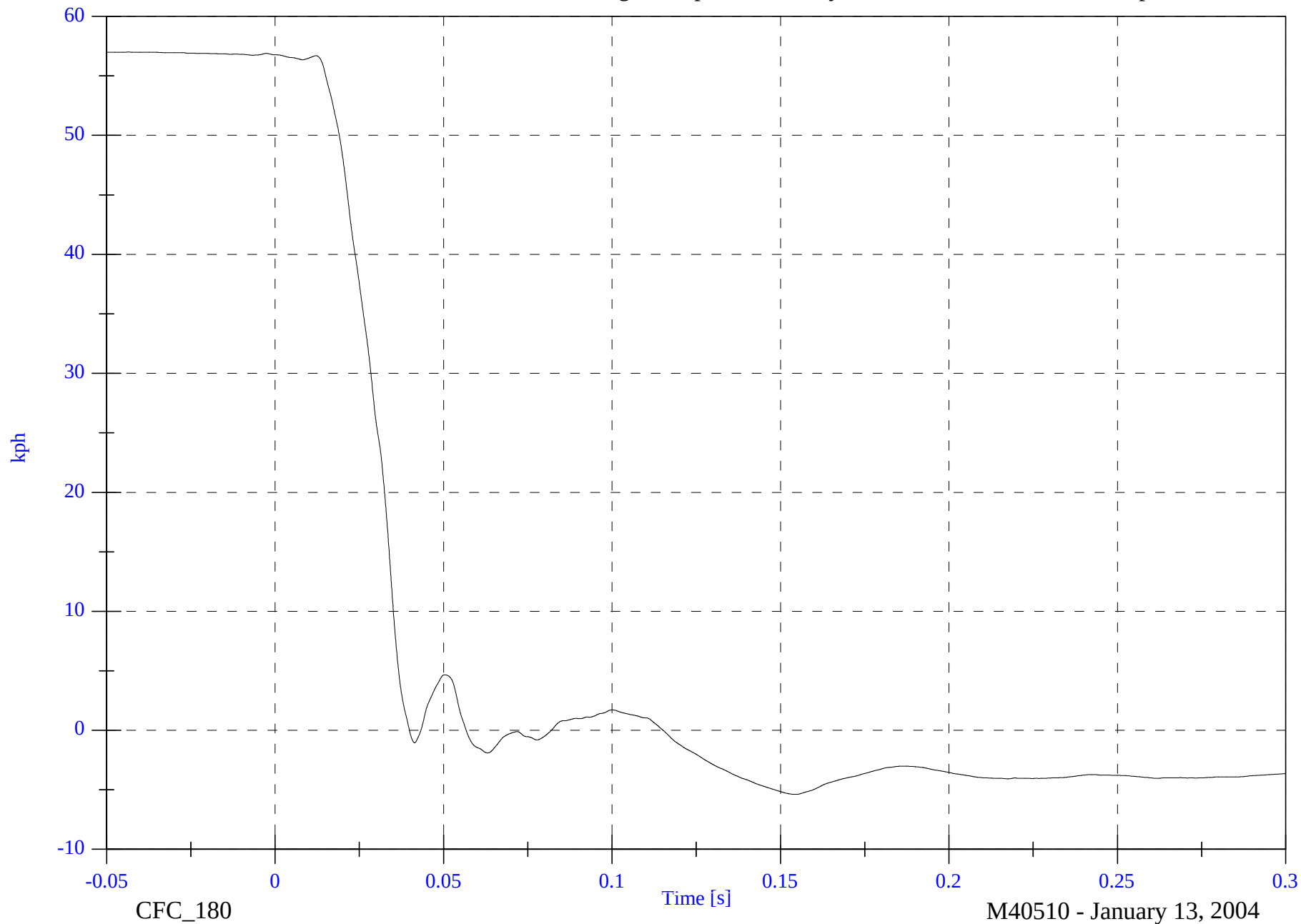
V1 Engine Top #3x Velocity

Max: 57.0 [kph] at -0.044 [s]

Min: -5.4 [kph] at 0.154 [s]

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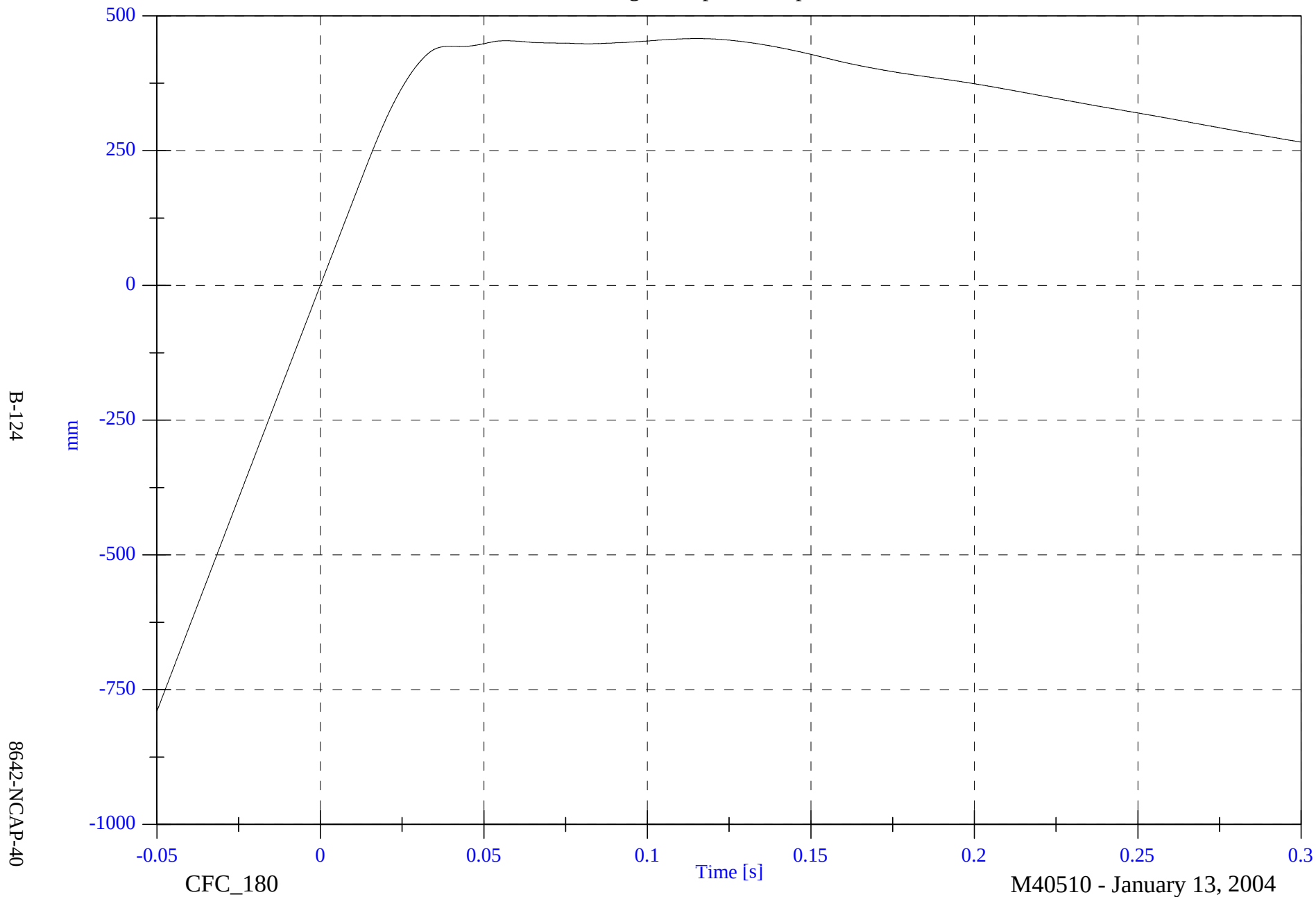


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Engine Top #3x Displacement

Max: 458.0 [mm] at 0.115 [s]

Min: -790.3 [mm] at -0.050 [s]

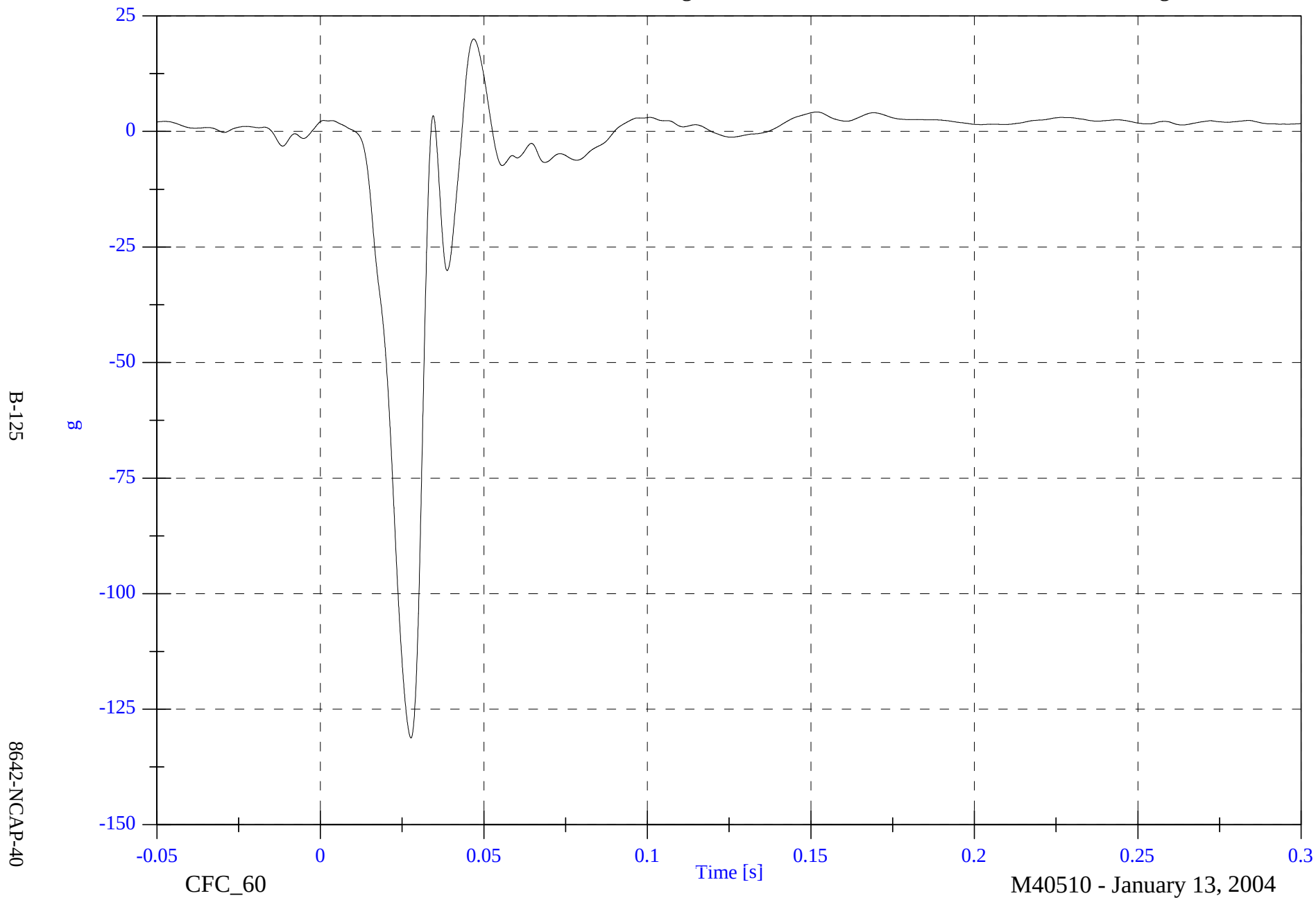


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Engine Bottom #4x

Max: 20.0 [g] at 0.047 [s]

Min: -131.2 [g] at 0.028 [s]

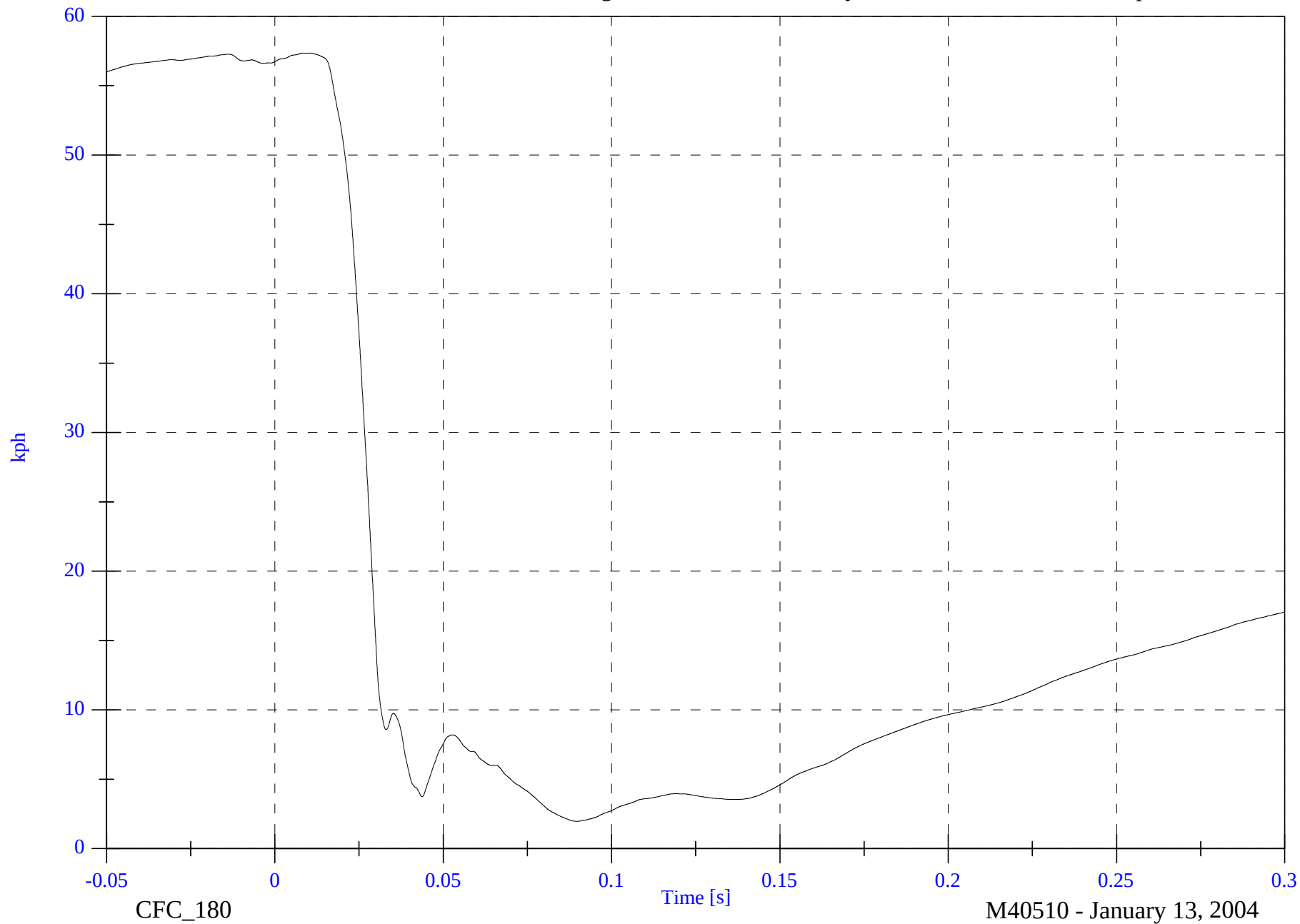


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Engine Bottom #4x Velocity

Max: 57.3 [kph] at 0.010 [s]

Min: 2.0 [kph] at 0.090 [s]



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CFC_180

Time [s]

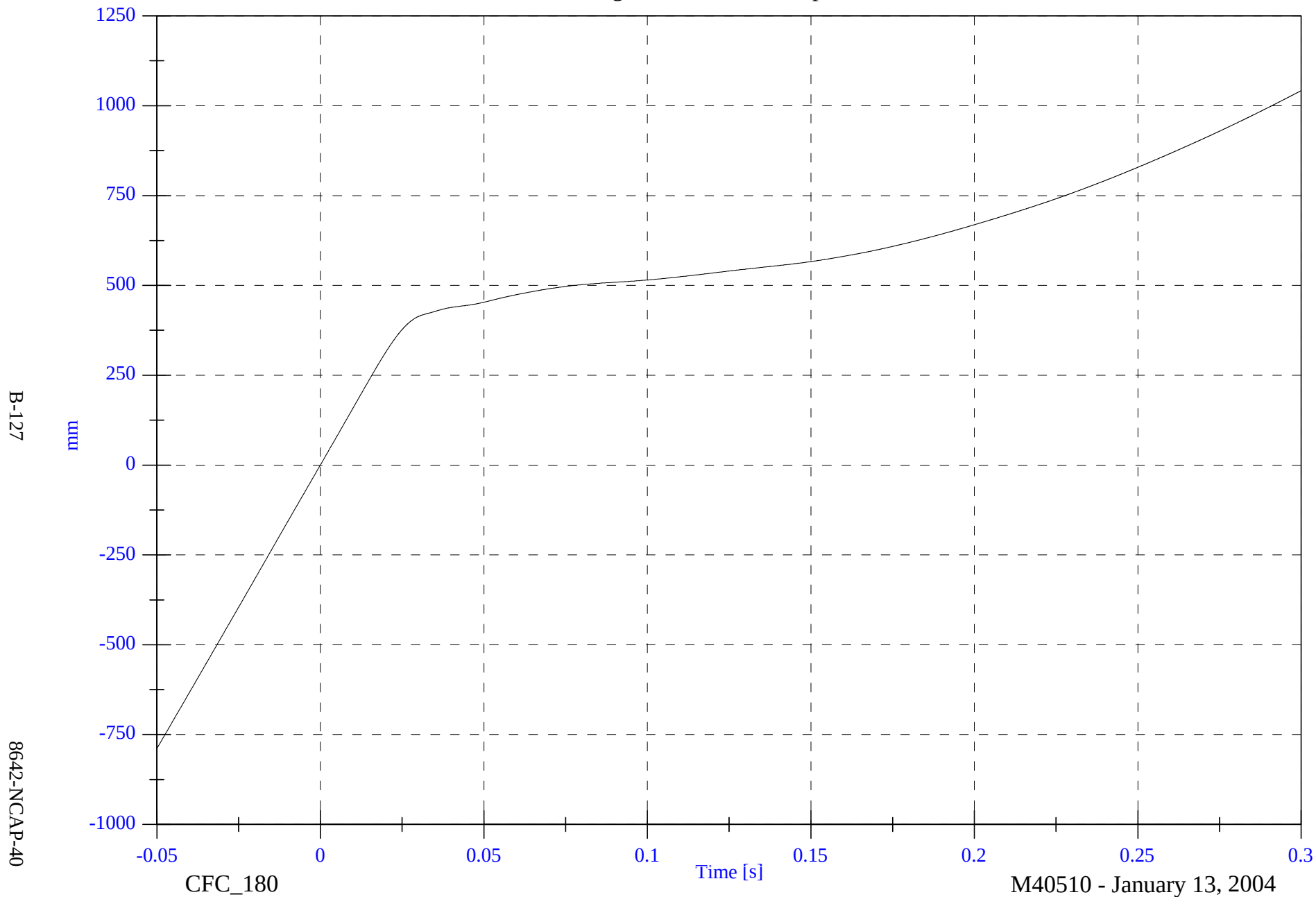
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

Max: 1041.8 [mm] at 0.300 [s]

V1 Engine Bottom #4x Displacement

Min: -788.7 [mm] at -0.050 [s]



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8642-NCAP-40

CFC_180

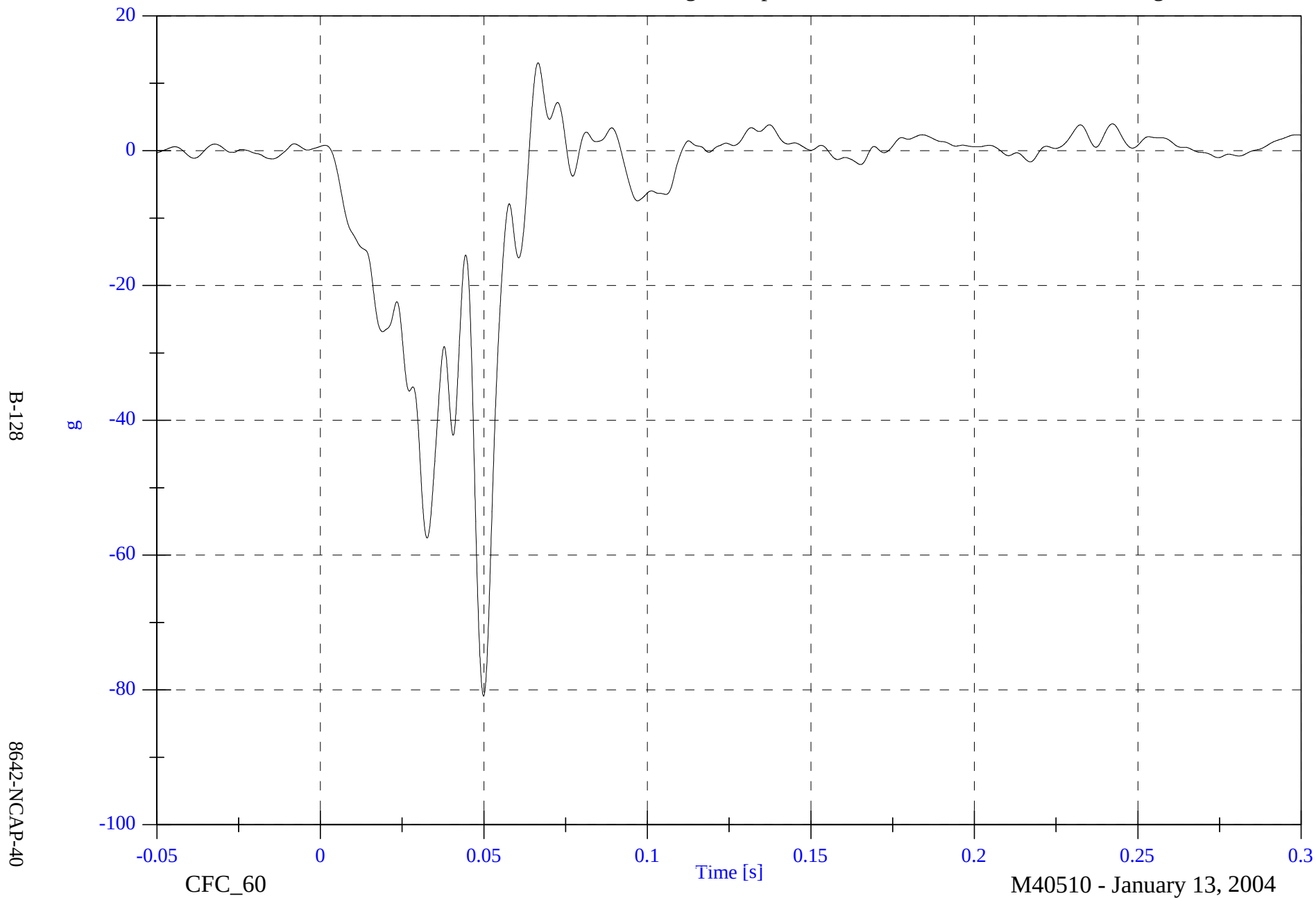
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1 Right Caliper #5x

Max: 13.0 [g] at 0.067 [s]

Min: -80.9 [g] at 0.050 [s]

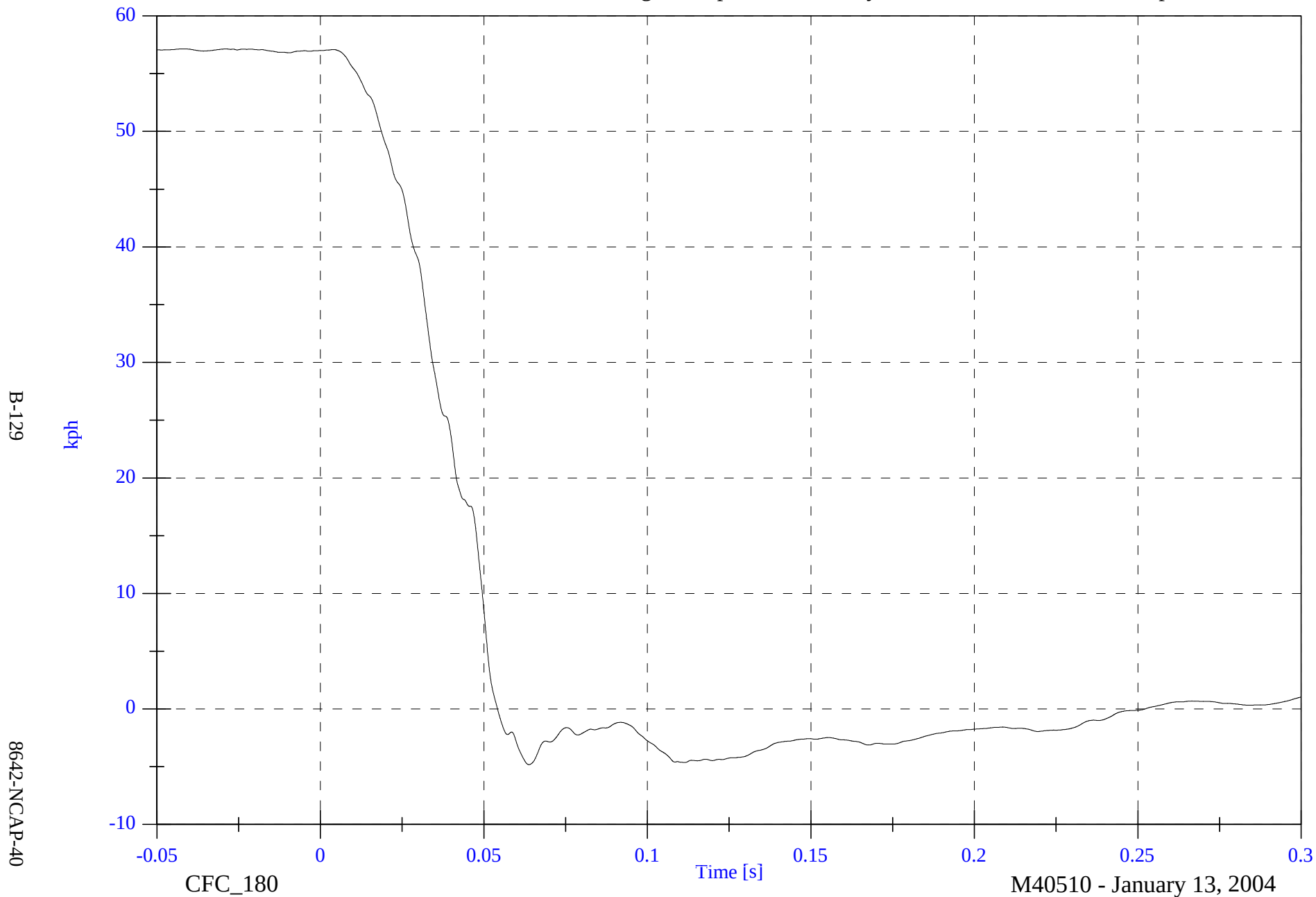


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Right Caliper #5x Velocity

Max: 57.1 [kph] at -0.042 [s]

Min: -4.8 [kph] at 0.064 [s]

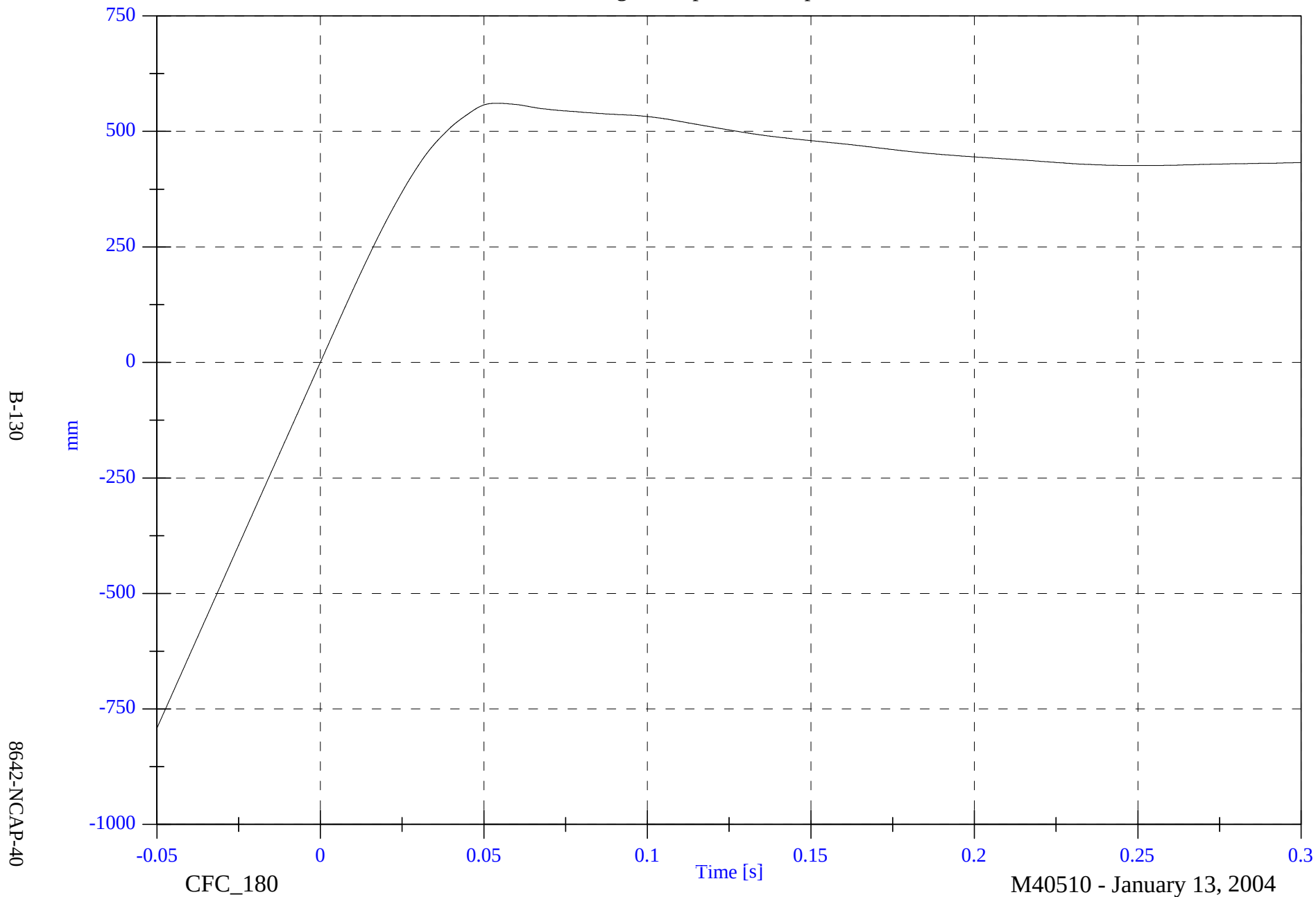


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Right Caliper #5x Displacement

Max: 560.9 [mm] at 0.054 [s]

Min: -791.9 [mm] at -0.050 [s]

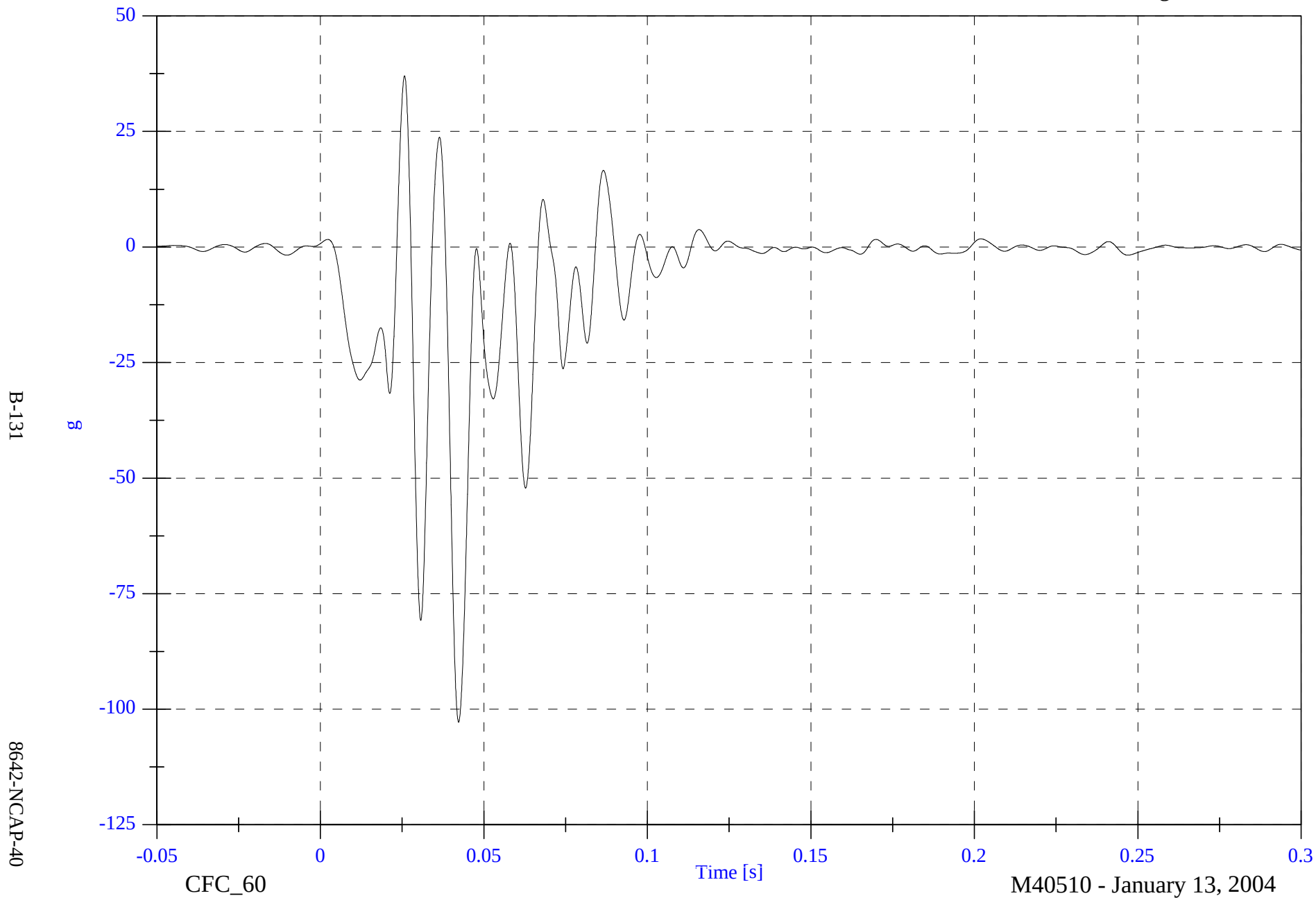


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Instrument Panel #6x

Max: 37.0 [g] at 0.026 [s]

Min: -102.8 [g] at 0.042 [s]

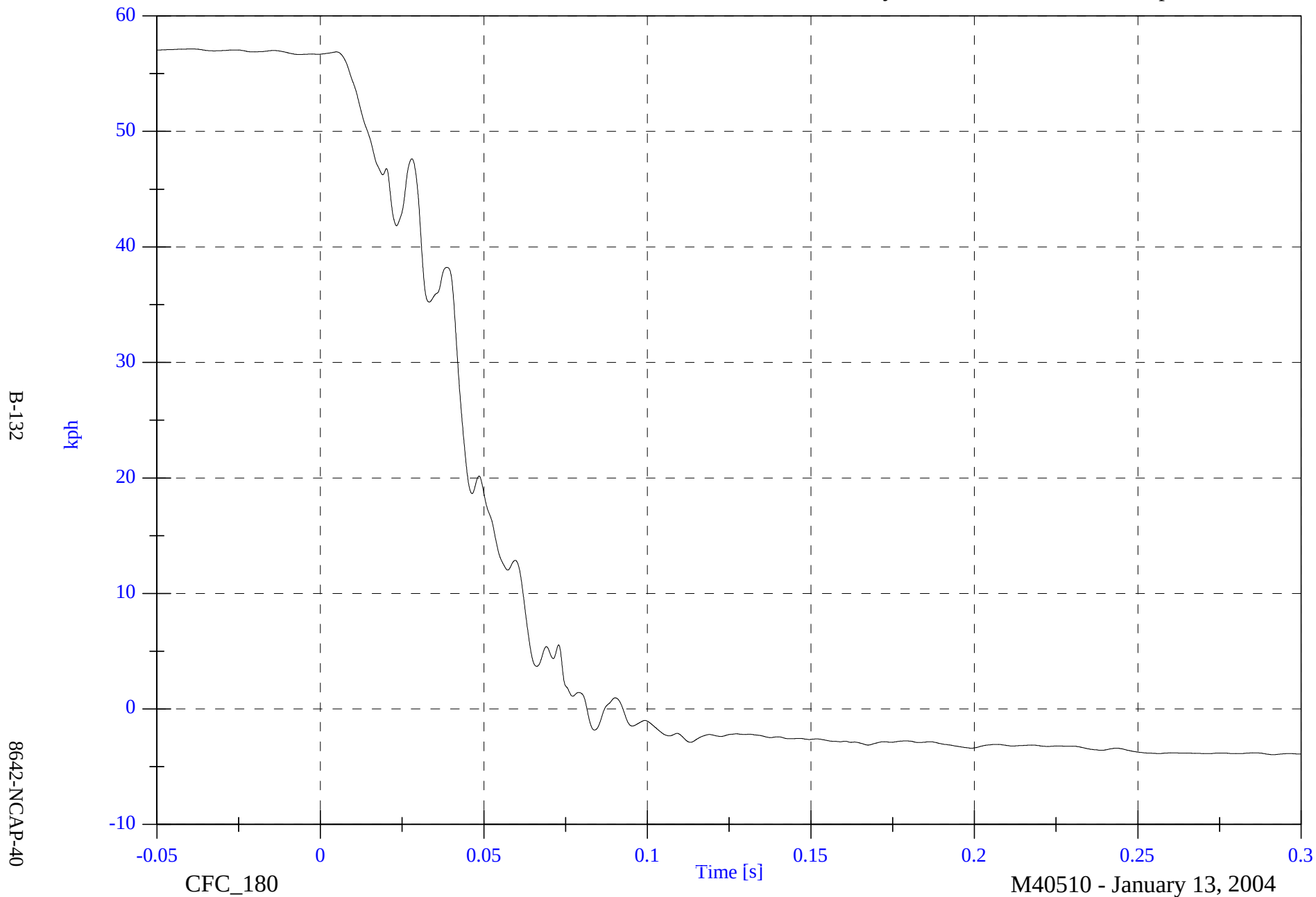


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 57.1 [kph] at -0.039 [s]

V1 Instrument Panel #6x Velocity

Min: -4.0 [kph] at 0.291 [s]

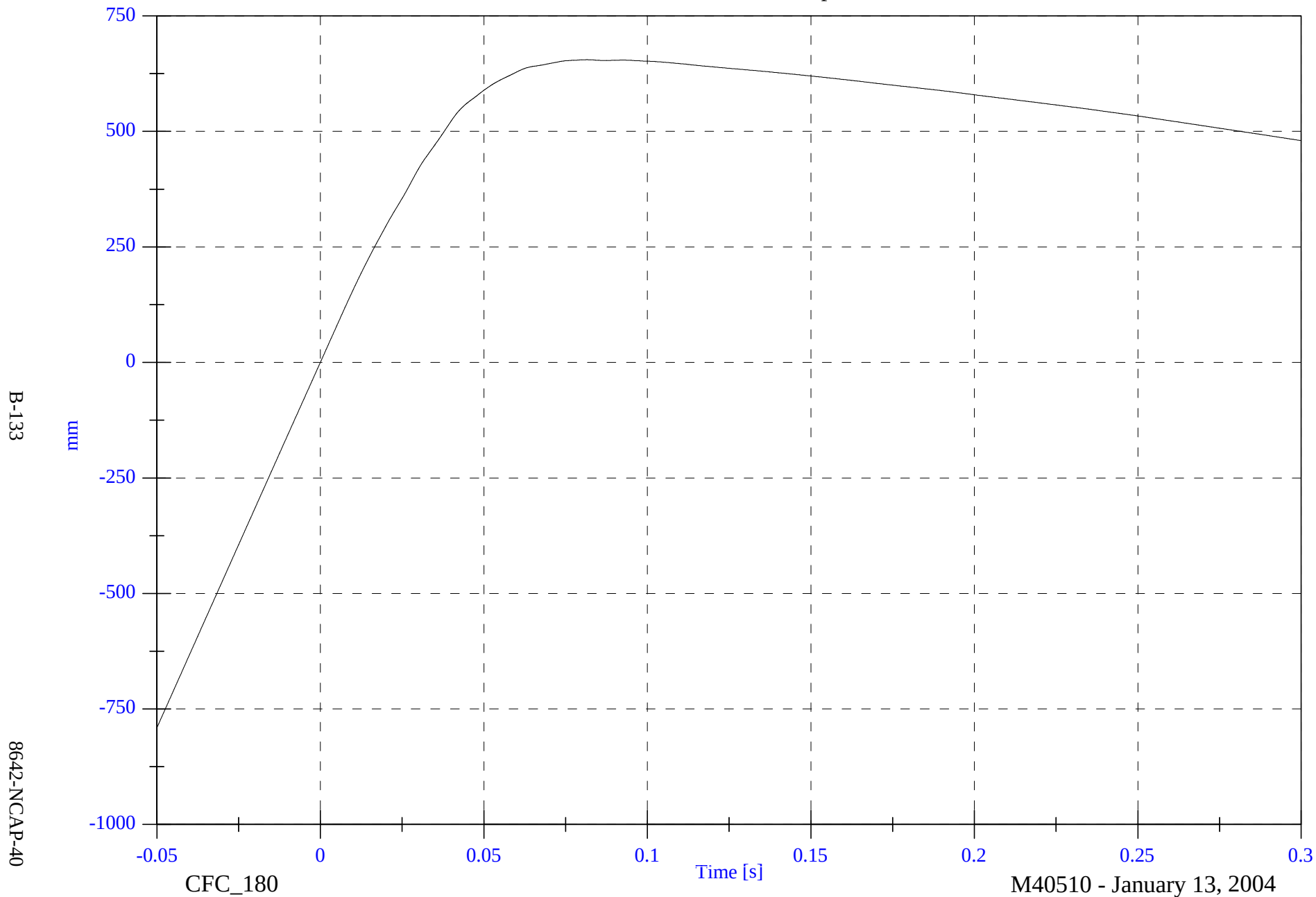


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Instrument Panel #6x Displacement

Max: 655.1 [mm] at 0.082 [s]

Min: -790.9 [mm] at -0.050 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

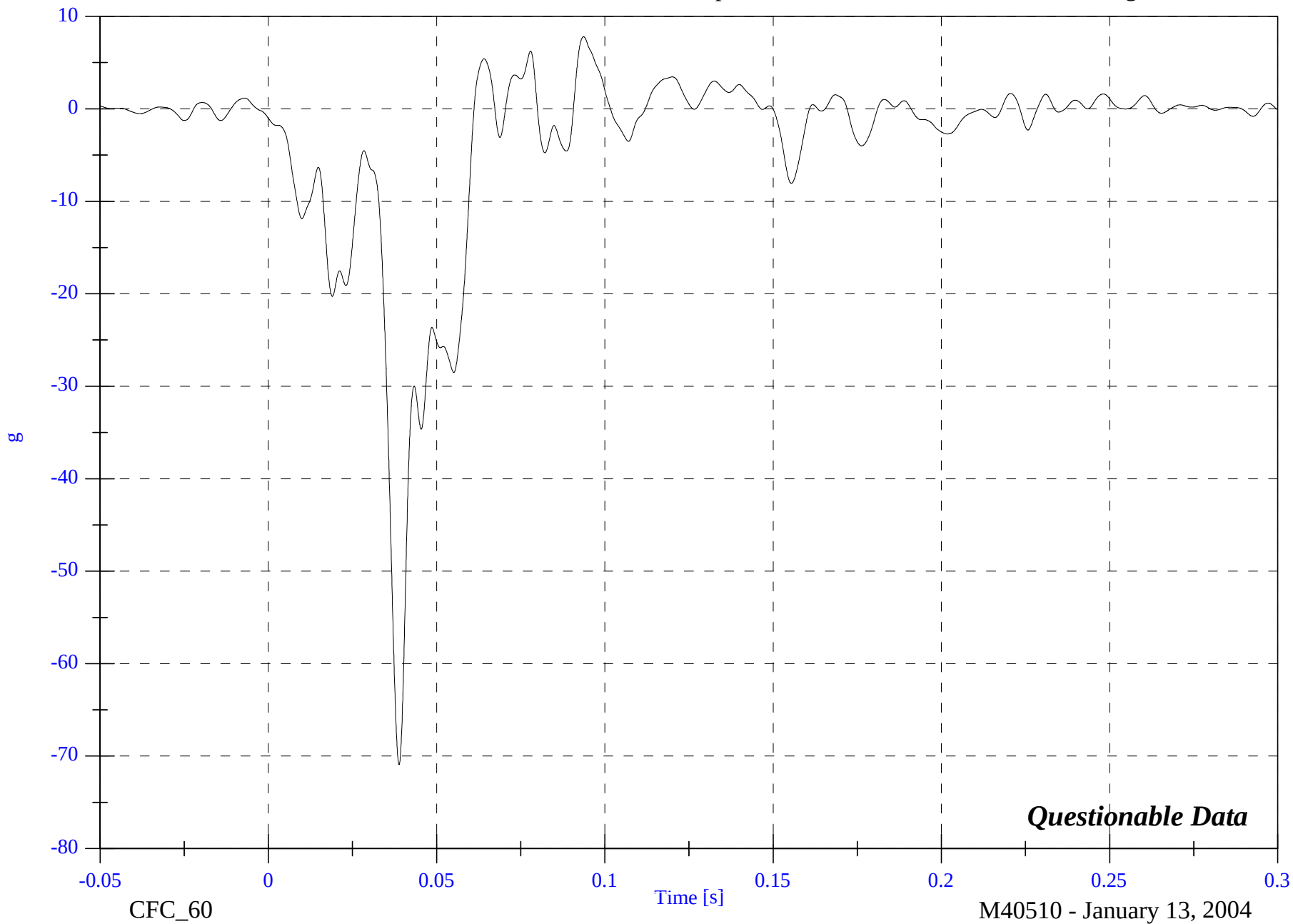
V1 Left Caliper #7x

Max: 7.8 [g] at 0.094 [s]

Min: -70.9 [g] at 0.039 [s]

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Questionable Data

2004 NCAP Test 4 2004 Suzuki Forenza

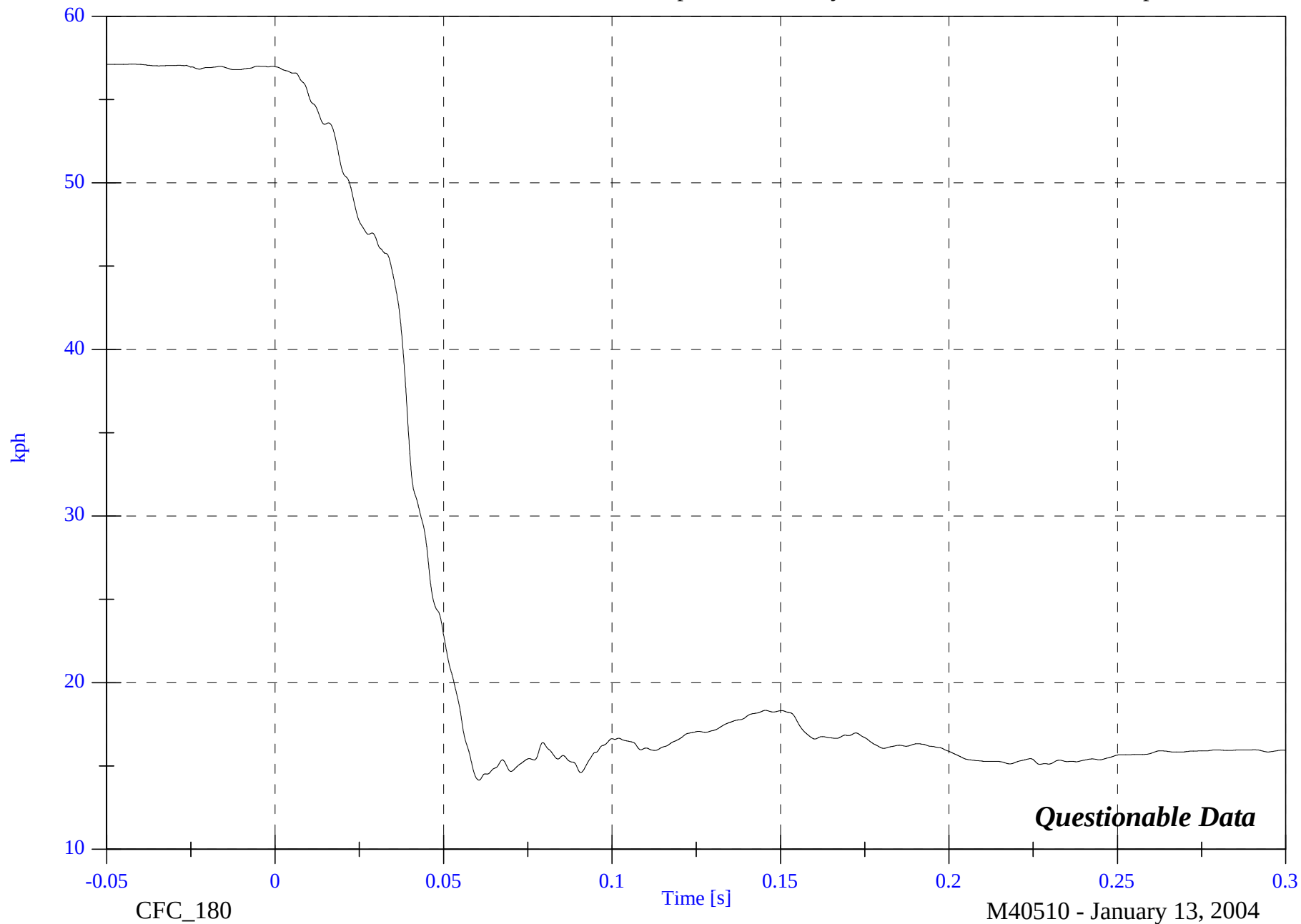
V1 Left Caliper #7x Velocity

Max: 57.1 [kph] at -0.042 [s]

Min: 14.2 [kph] at 0.060 [s]

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2004 NCAP Test 4 2004 Suzuki Forenza

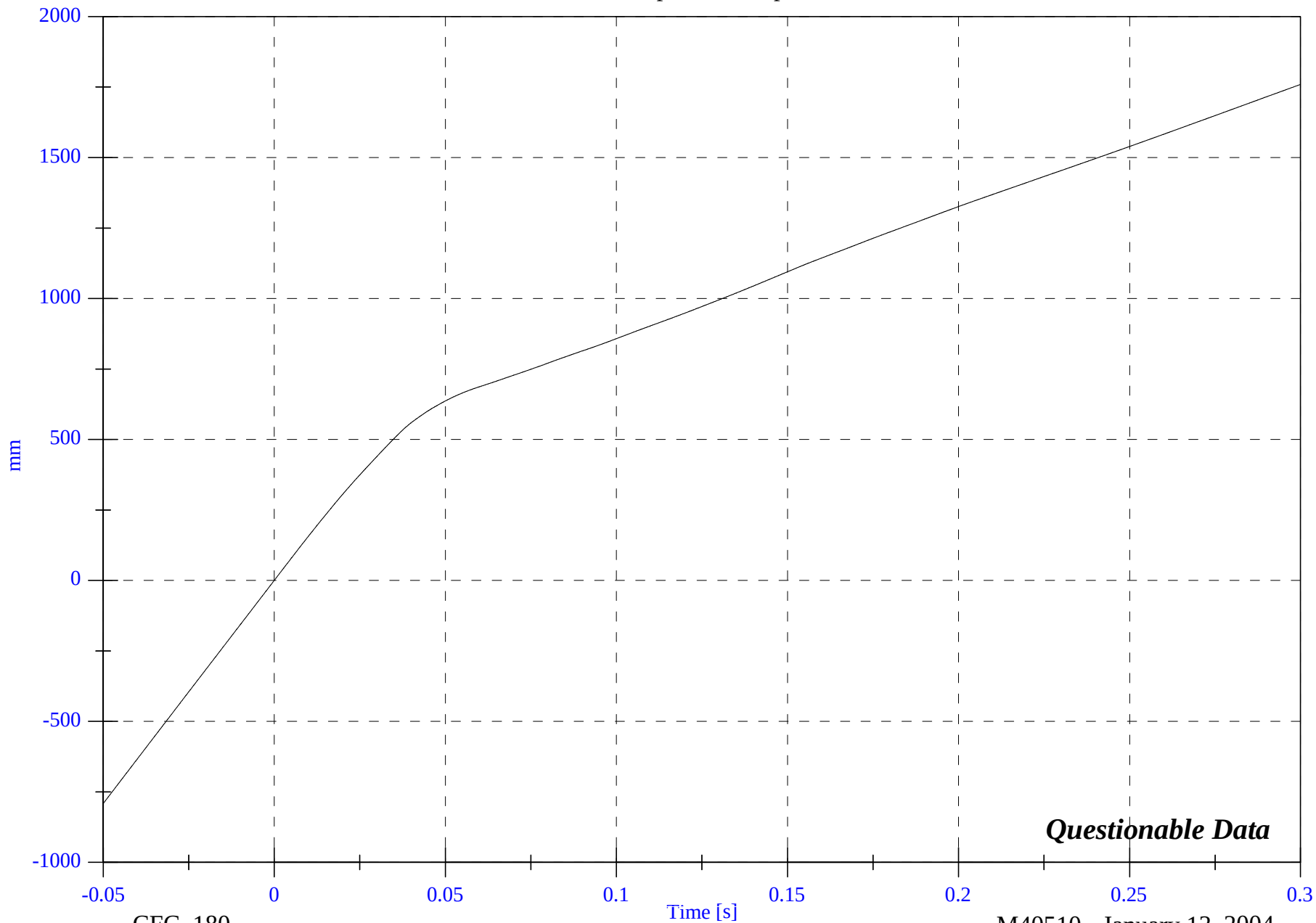
V1 Left Caliper #7x Displacement

Max: 1759.3 [mm] at 0.300 [s]

Min: -791.6 [mm] at -0.050 [s]

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8642-NCAP-40



CFC_180

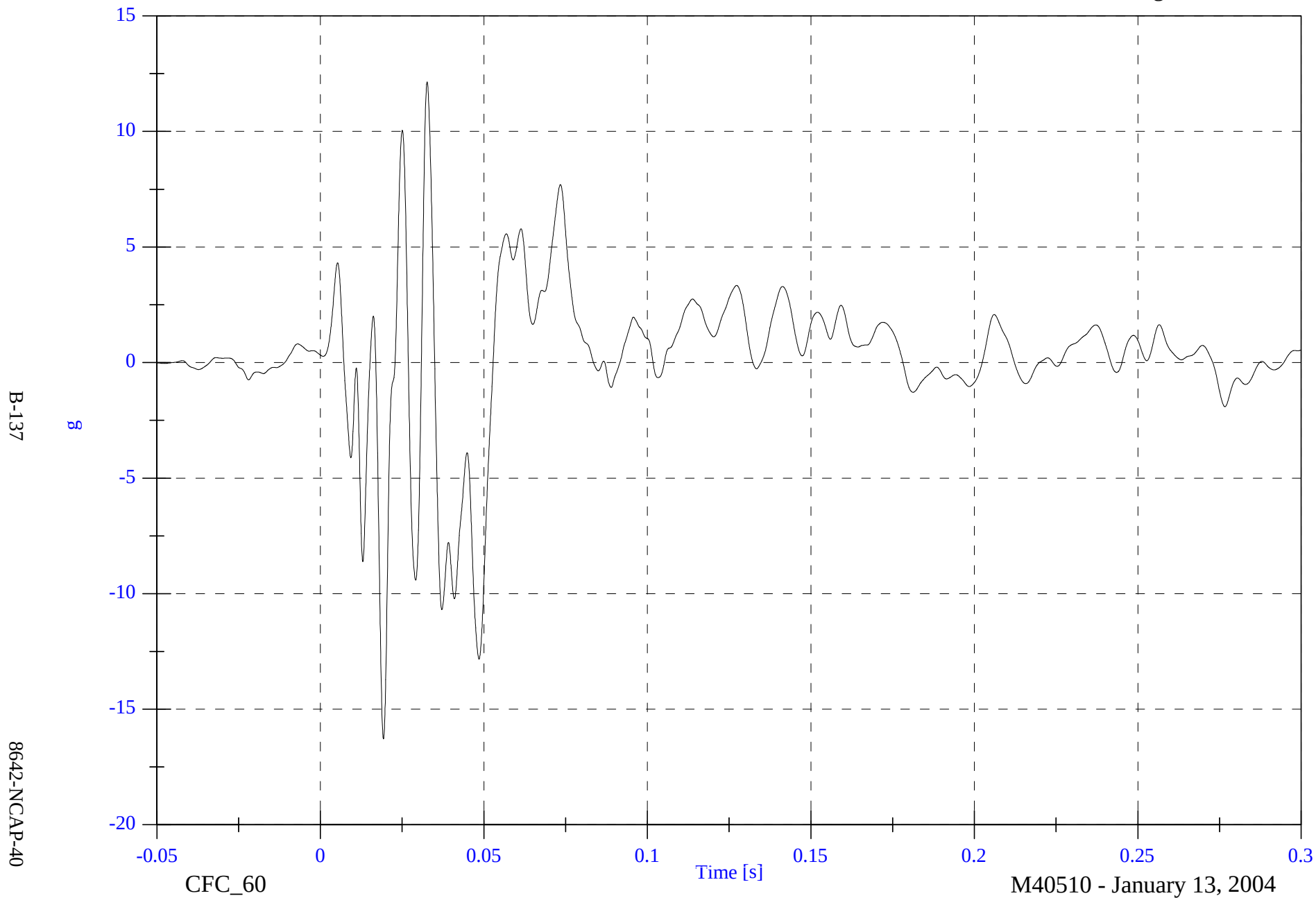
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1 Left Rear #8z

Max: 12.1 [g] at 0.033 [s]

Min: -16.3 [g] at 0.019 [s]

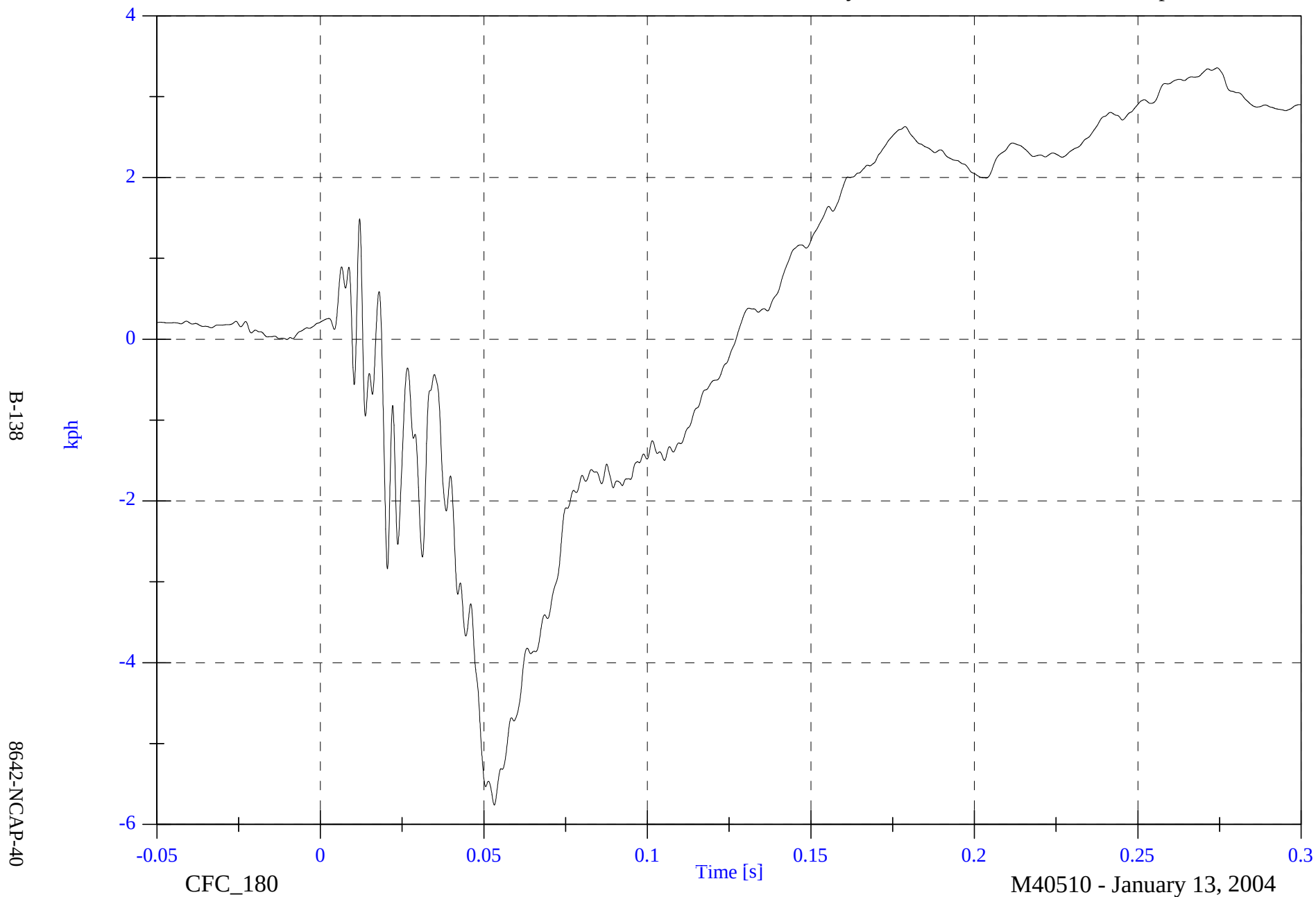


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 3.4 [kph] at 0.274 [s]

Min: -5.8 [kph] at 0.053 [s]

V1 Left Rear #8z Velocity

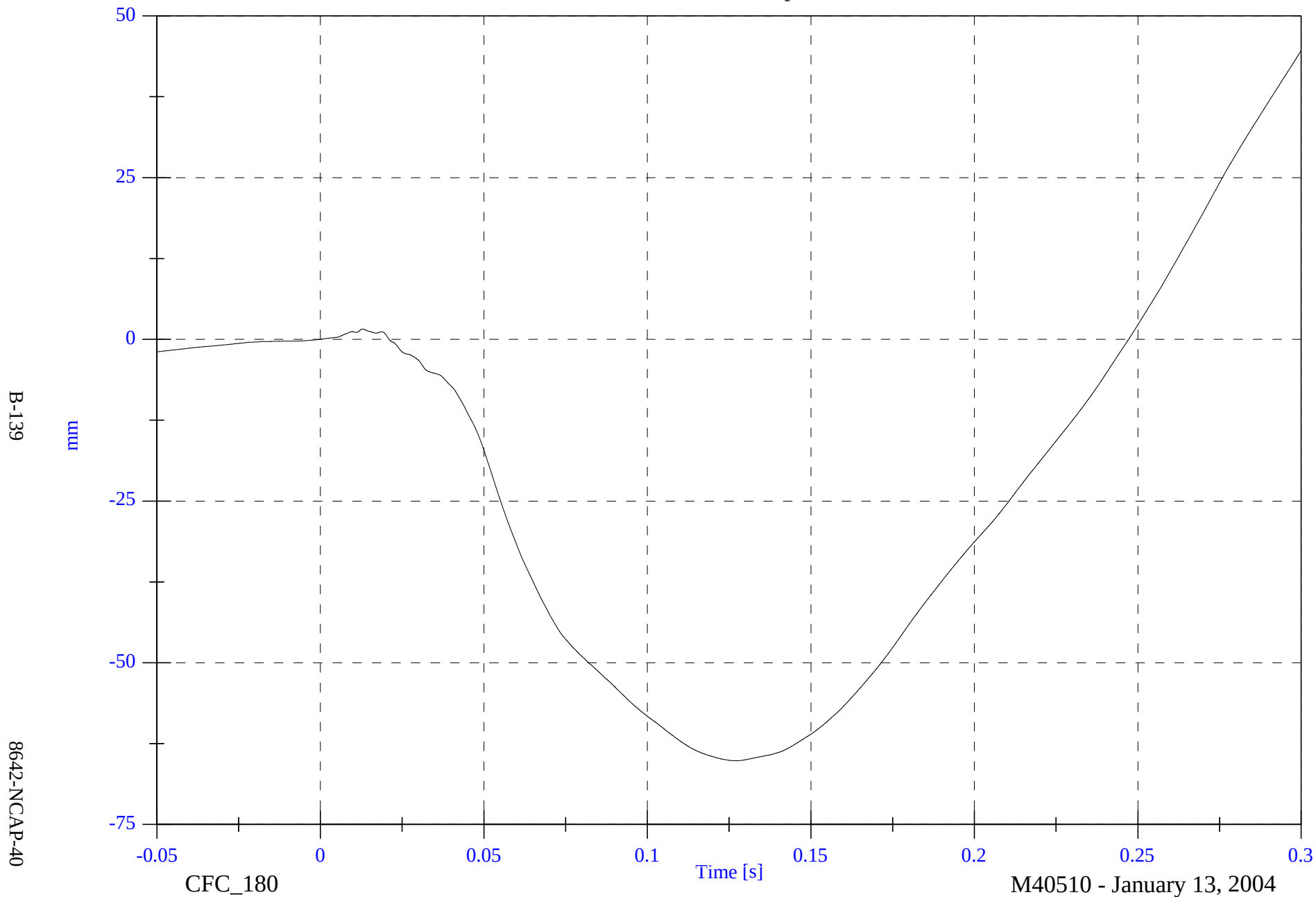


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Left Rear #8z Displacement

Max: 44.6 [mm] at 0.300 [s]

Min: -65.1 [mm] at 0.127 [s]

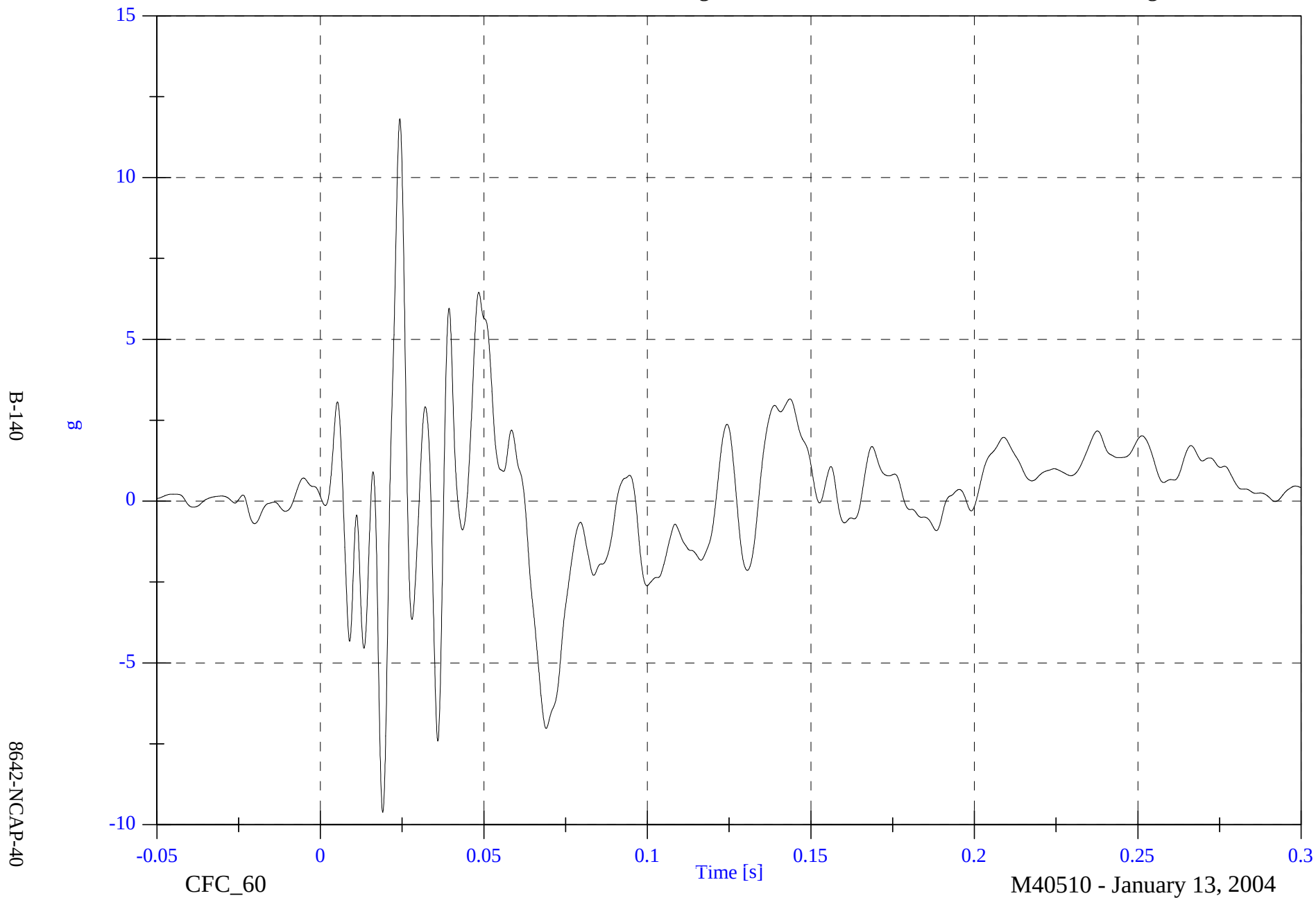


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Right Rear #9z

Max: 11.8 [g] at 0.024 [s]

Min: -9.6 [g] at 0.019 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

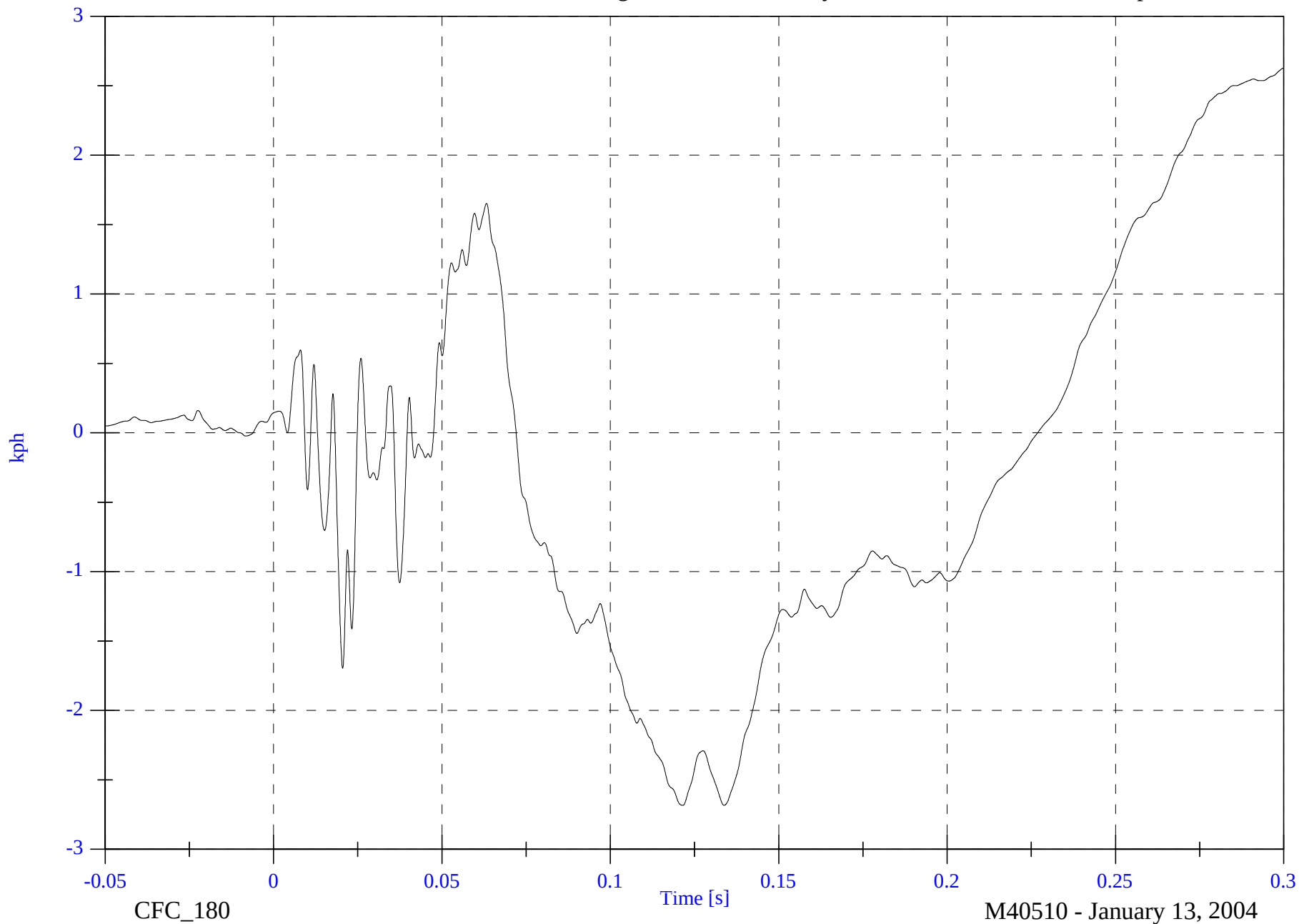
V1 Right Rear #9z Velocity

Max: 2.6 [kph] at 0.300 [s]

Min: -2.7 [kph] at 0.121 [s]

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8642-NCAP-40

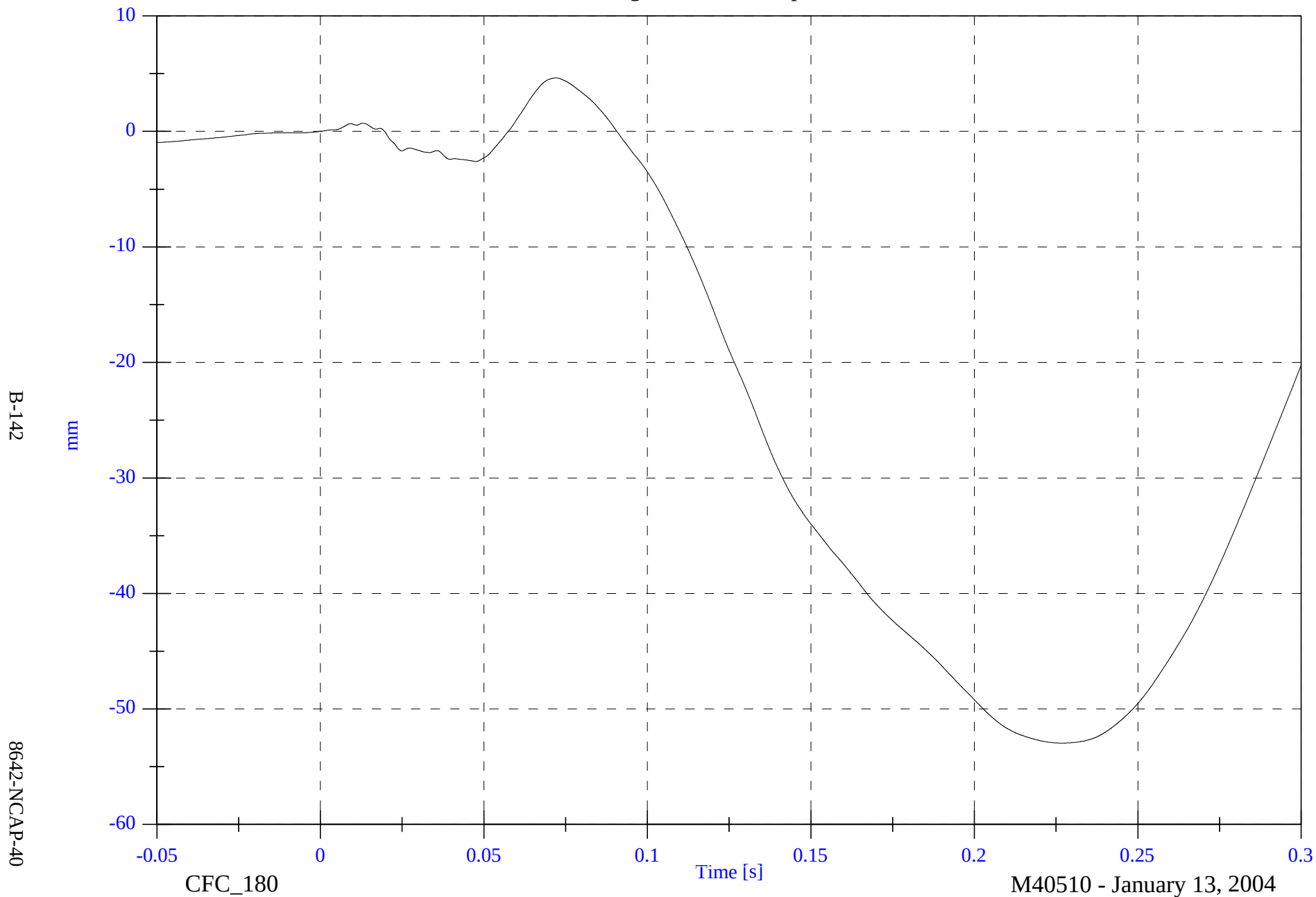


2004 NCAP Test 4 2004 Suzuki Forenza

V1 Right Rear #9z Displacement

Max: 4.6 [mm] at 0.072 [s]

Min: -53.0 [mm] at 0.227 [s]

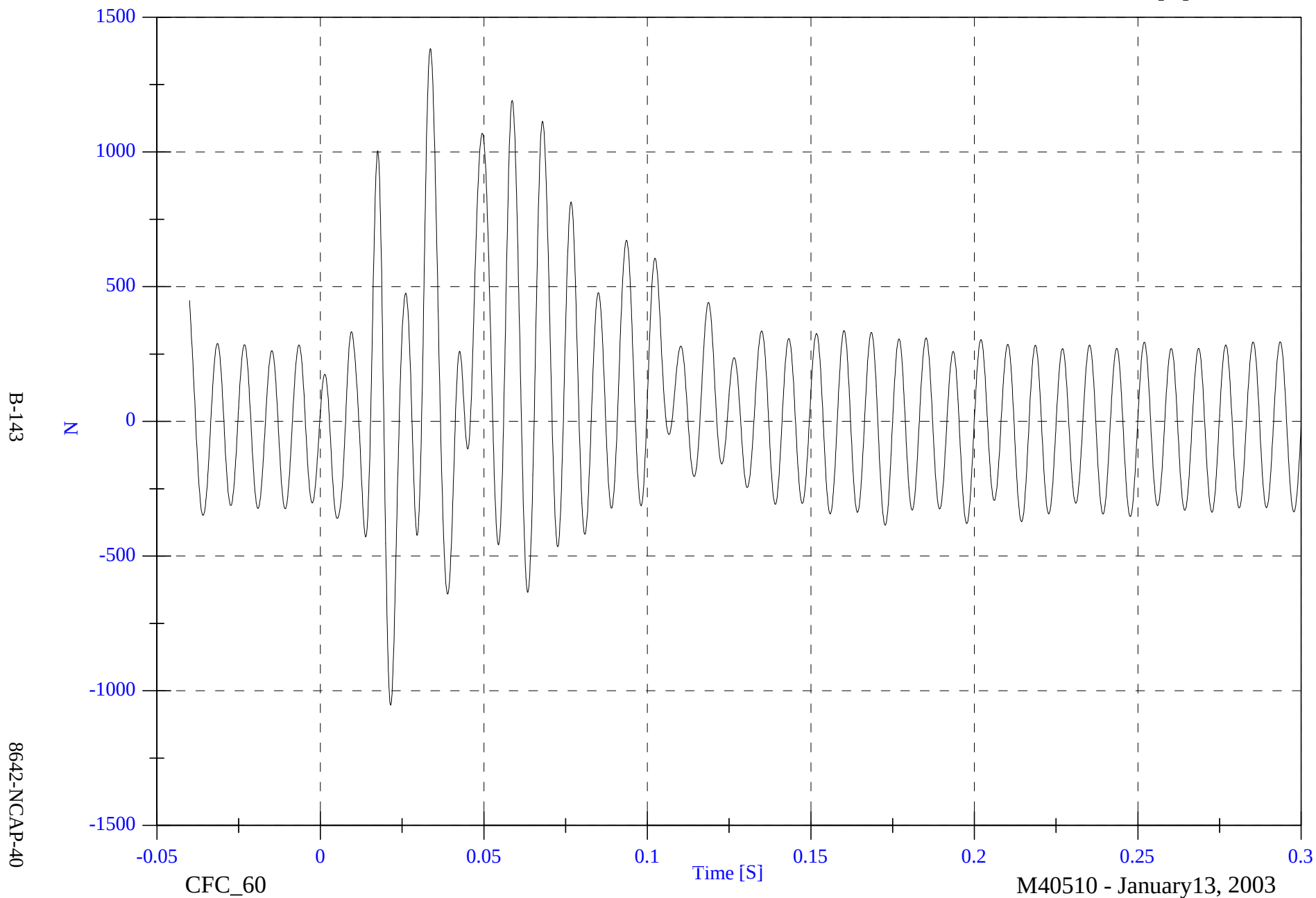


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 1383.8 [N] at 0.034 [S]

Min: -1052.9 [N] at 0.021 [S]

Barrier Load Cell A1 Fx

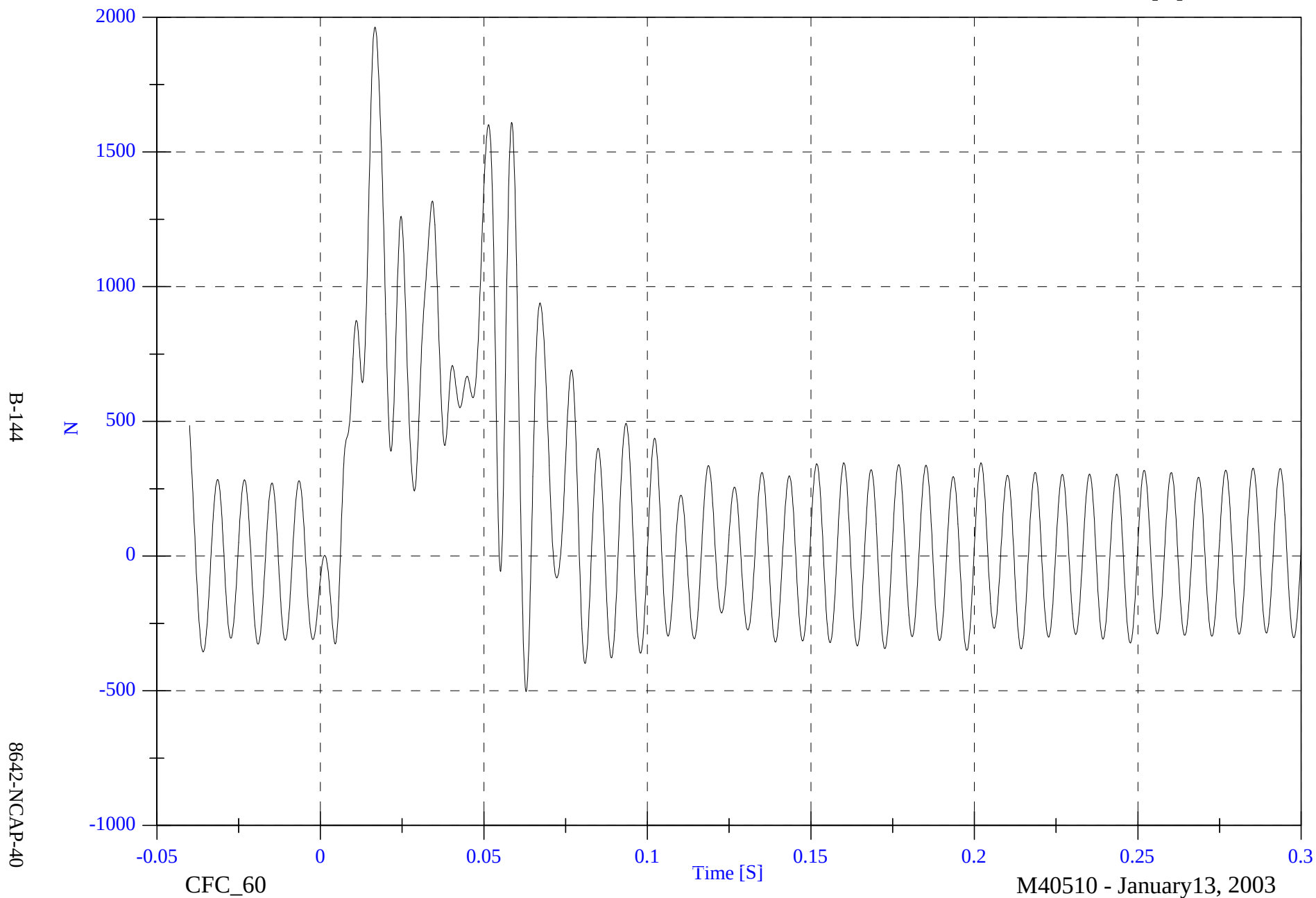


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 1964.0 [N] at 0.017 [S]

Min: -502.7 [N] at 0.063 [S]

Barrier Load Cell A2 Fx

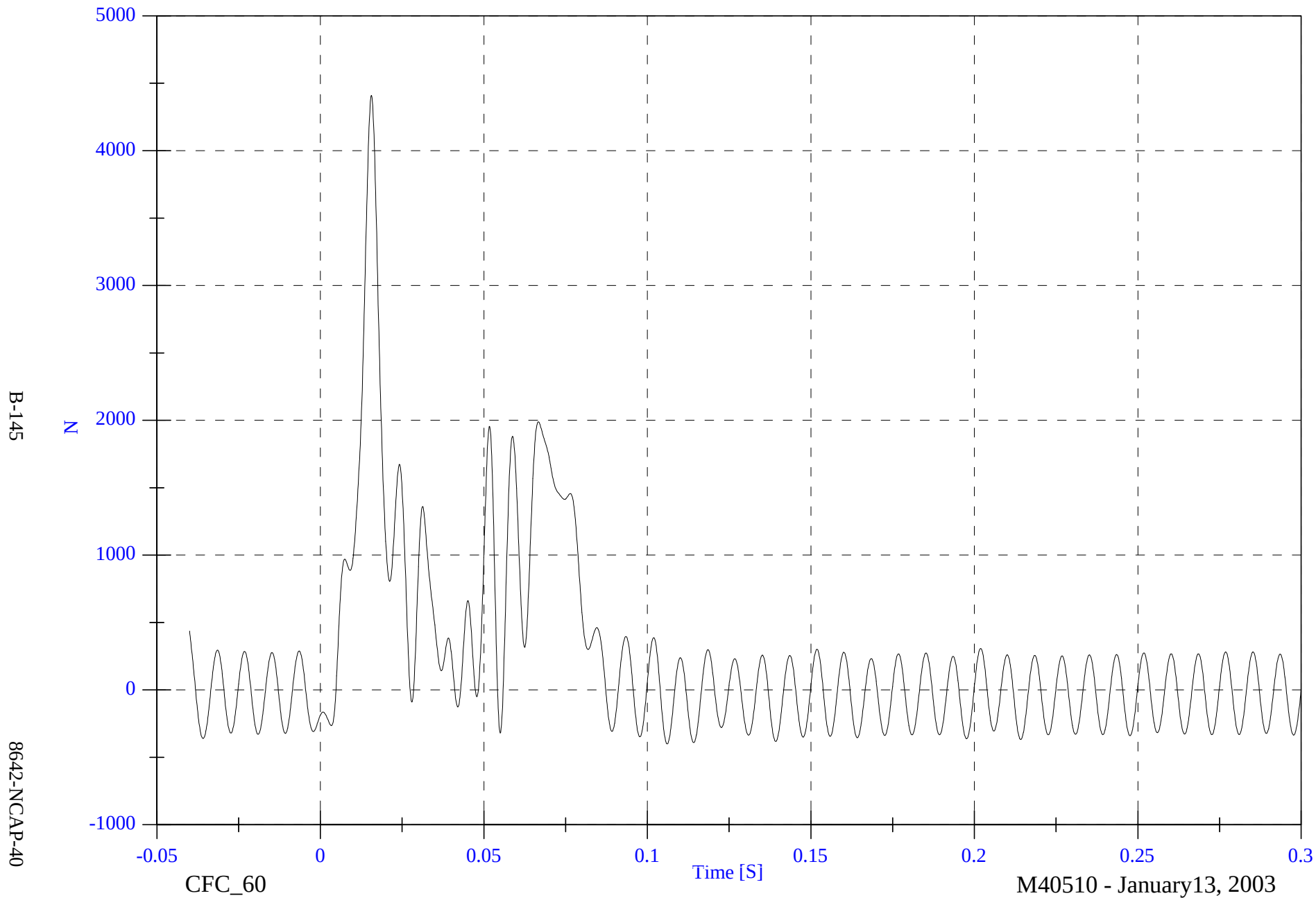


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell A3 Fx

Max: 4411.4 [N] at 0.016 [S]

Min: -400.9 [N] at 0.106 [S]

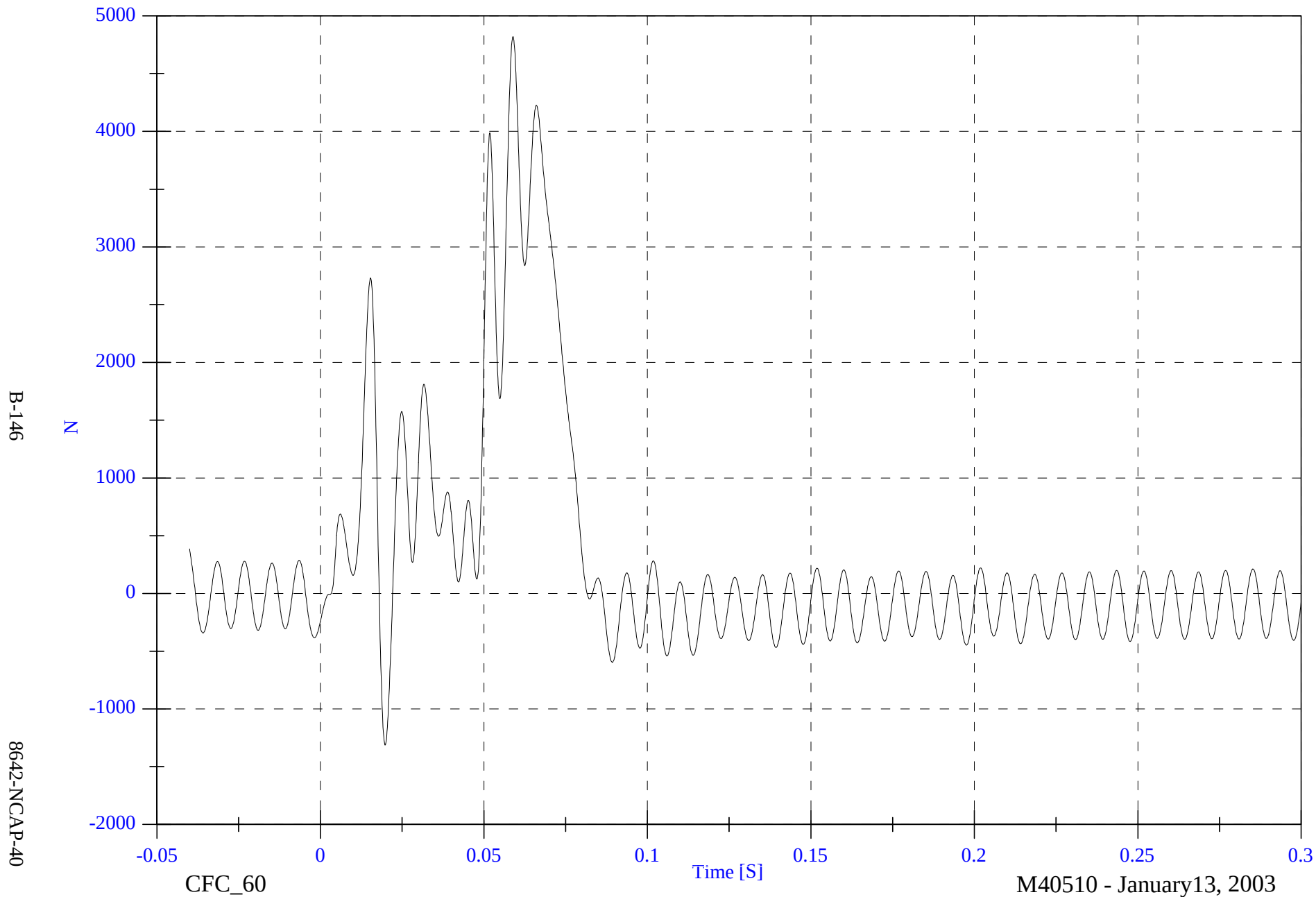


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell A4 Fx

Max: 4820.5 [N] at 0.059 [S]

Min: -1312.9 [N] at 0.020 [S]

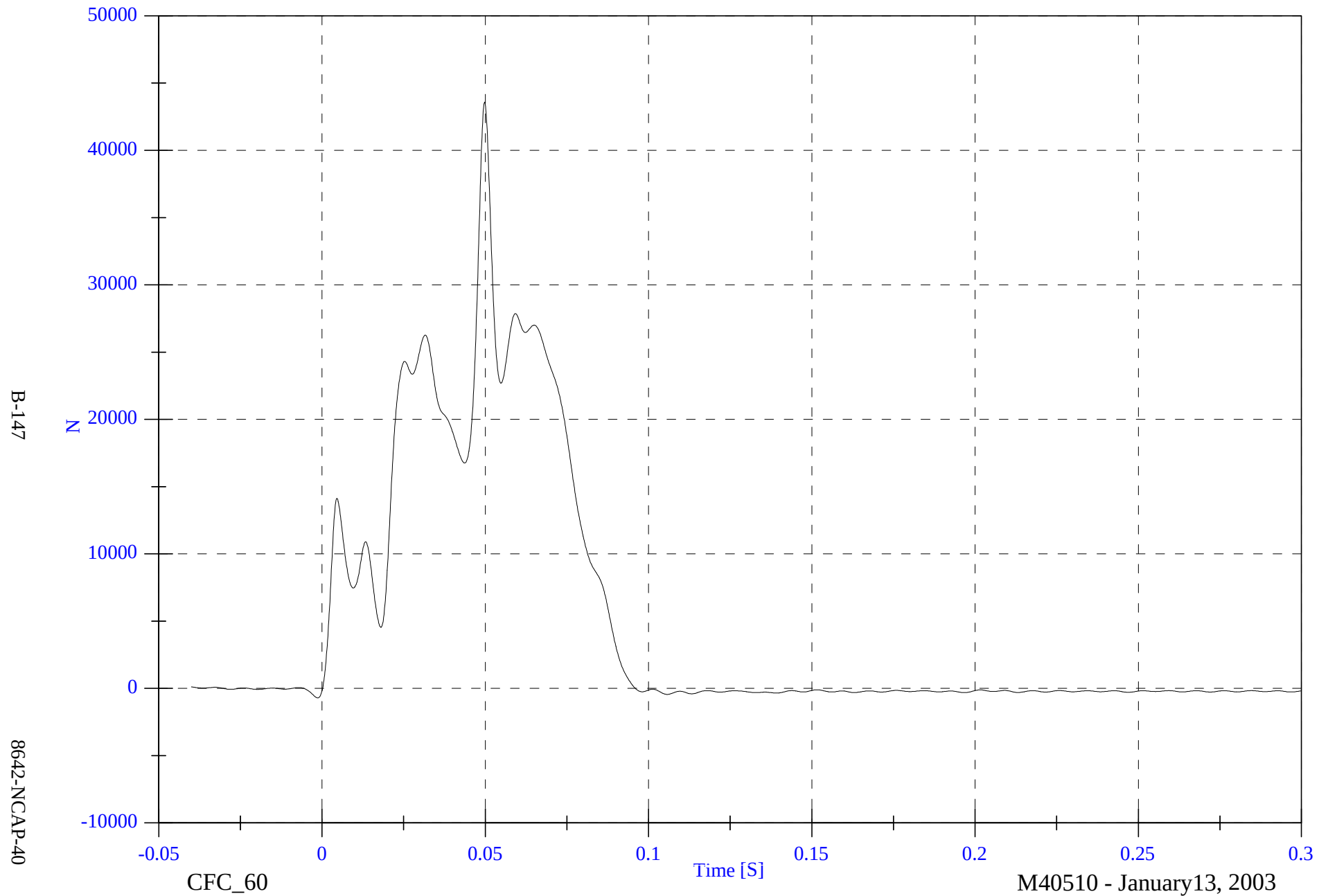


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 43586.2 [N] at 0.050 [S]

Min: -705.5 [N] at -0.001 [S]

Barrier Load Cell A5 Fx

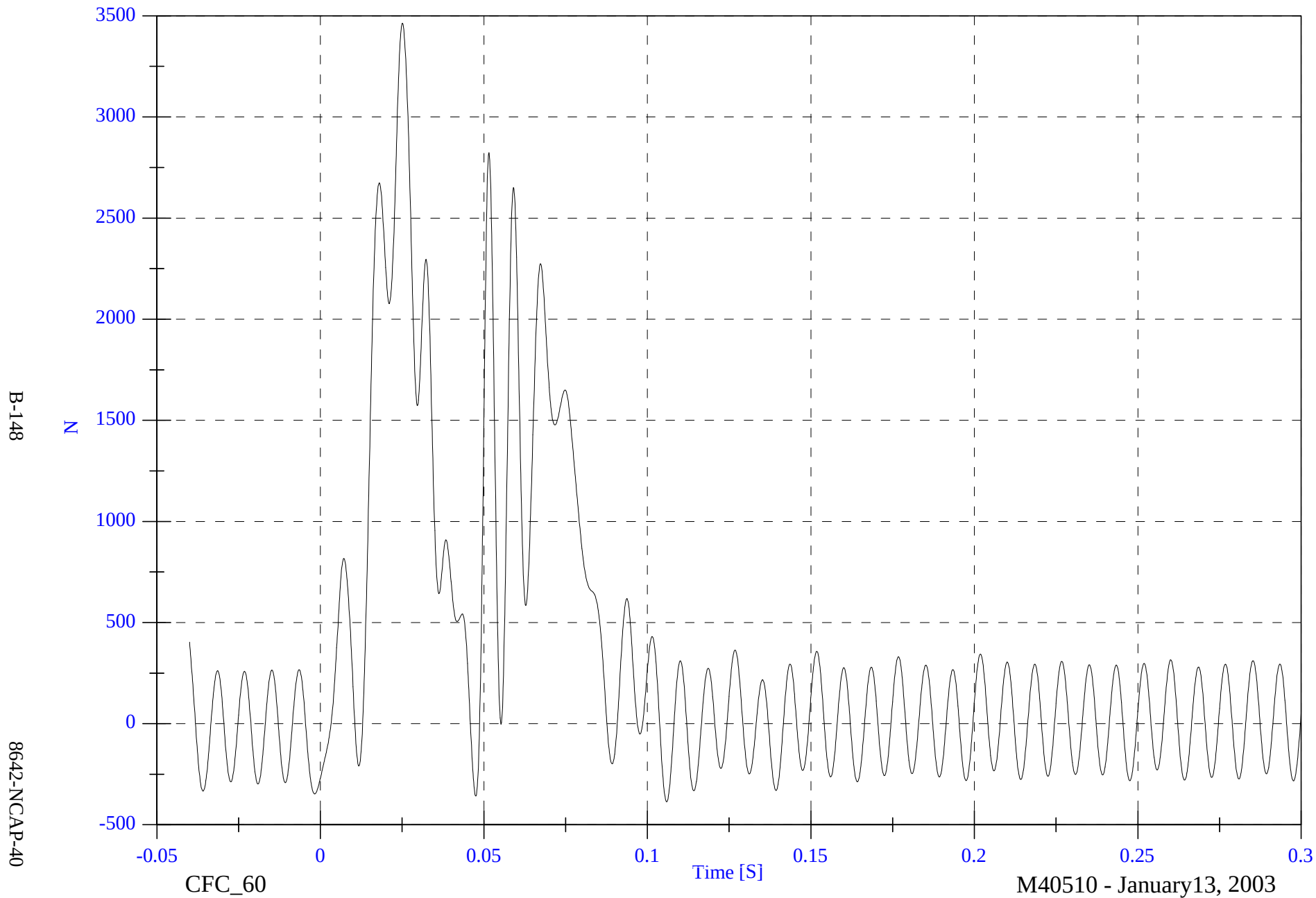


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell A6 Fx

Max: 3463.9 [N] at 0.025 [S]

Min: -386.6 [N] at 0.106 [S]

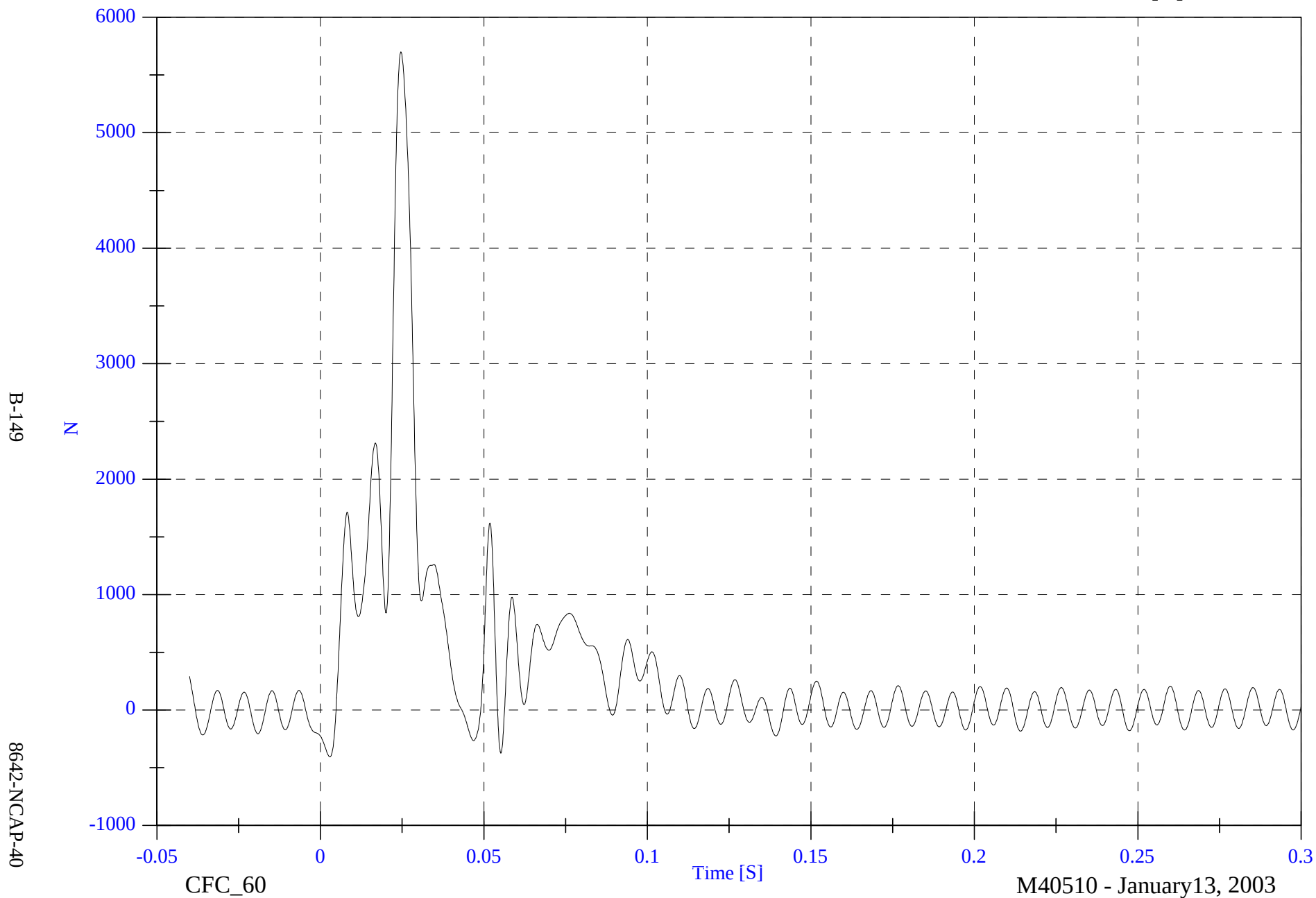


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell A7 Fx

Max: 5699.2 [N] at 0.025 [S]

Min: -404.9 [N] at 0.003 [S]

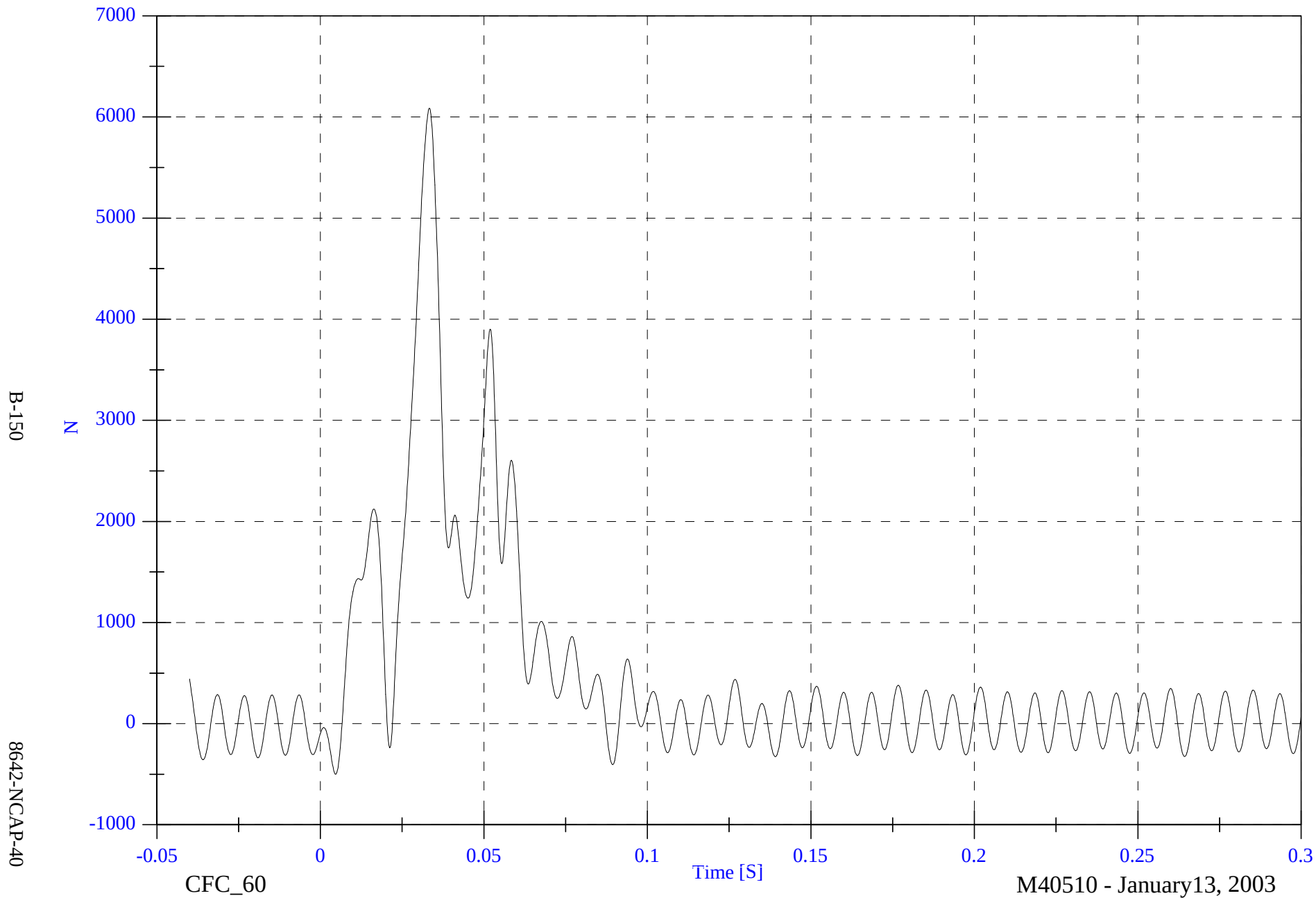


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell A8 Fx

Max: 6086.9 [N] at 0.033 [S]

Min: -500.9 [N] at 0.005 [S]

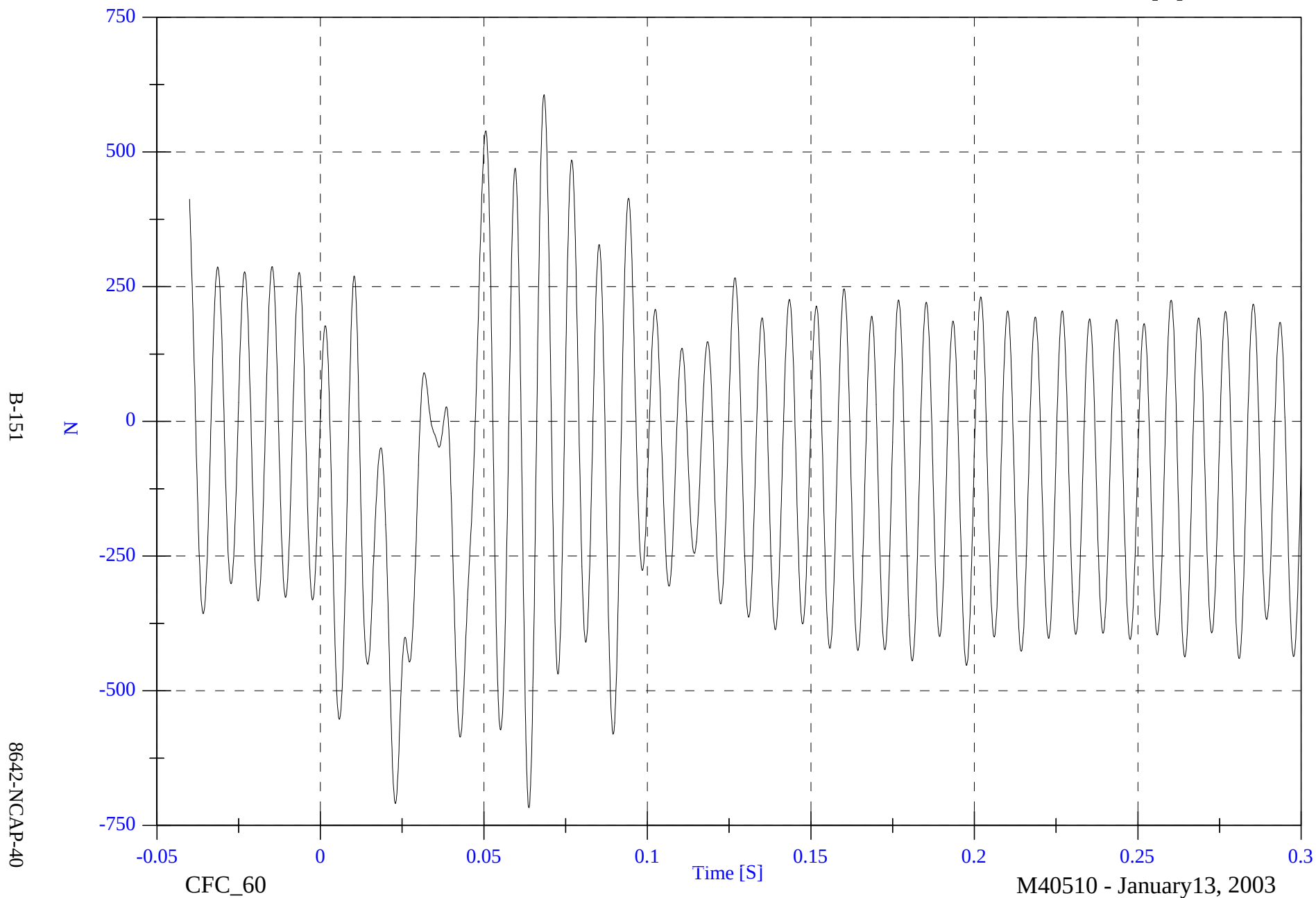


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 606.2 [N] at 0.068 [S]

Min: -717.3 [N] at 0.064 [S]

Barrier Load Cell A9 Fx

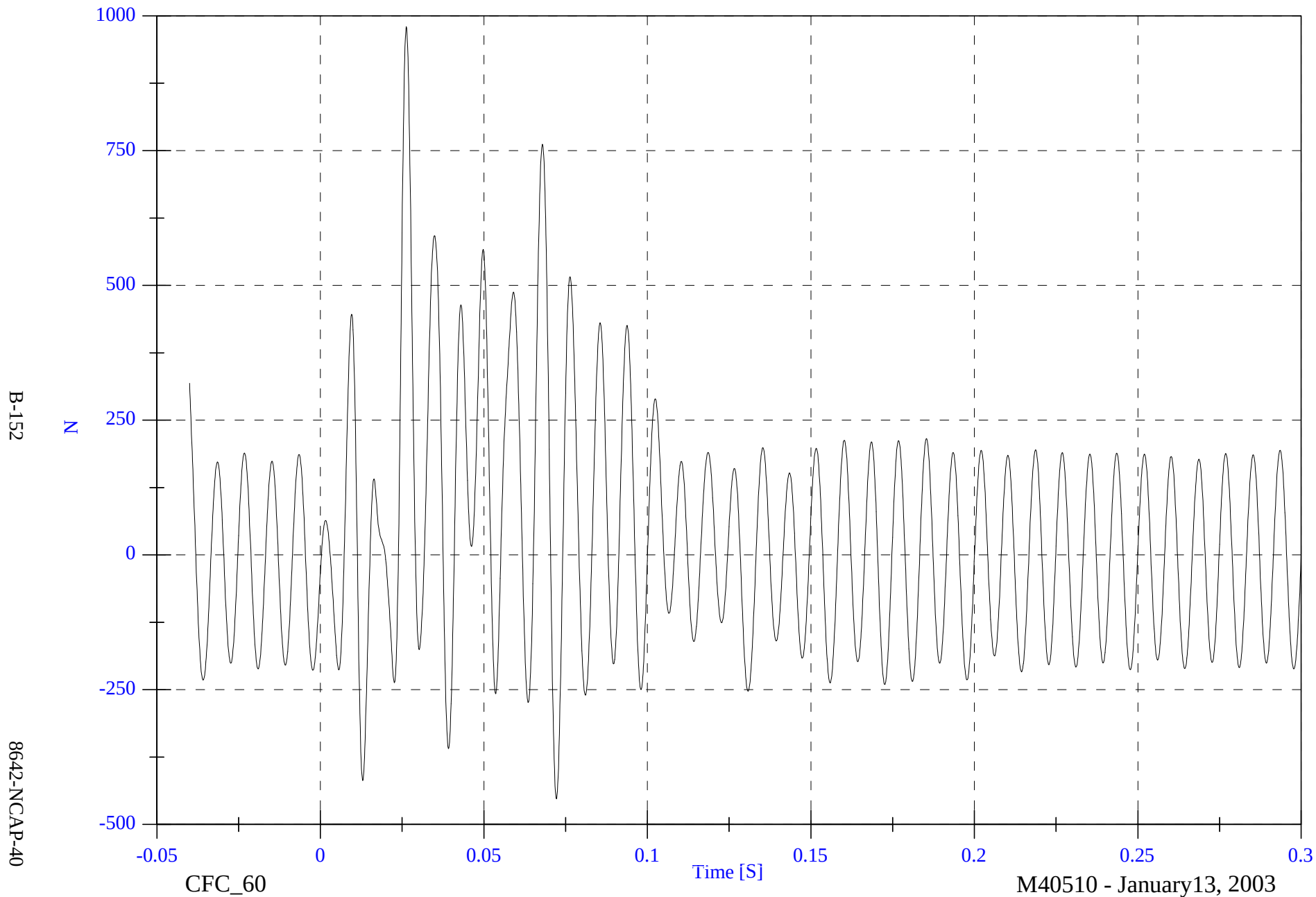


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 979.8 [N] at 0.026 [S]

Min: -452.6 [N] at 0.072 [S]

Barrier Load Cell B1 Fx

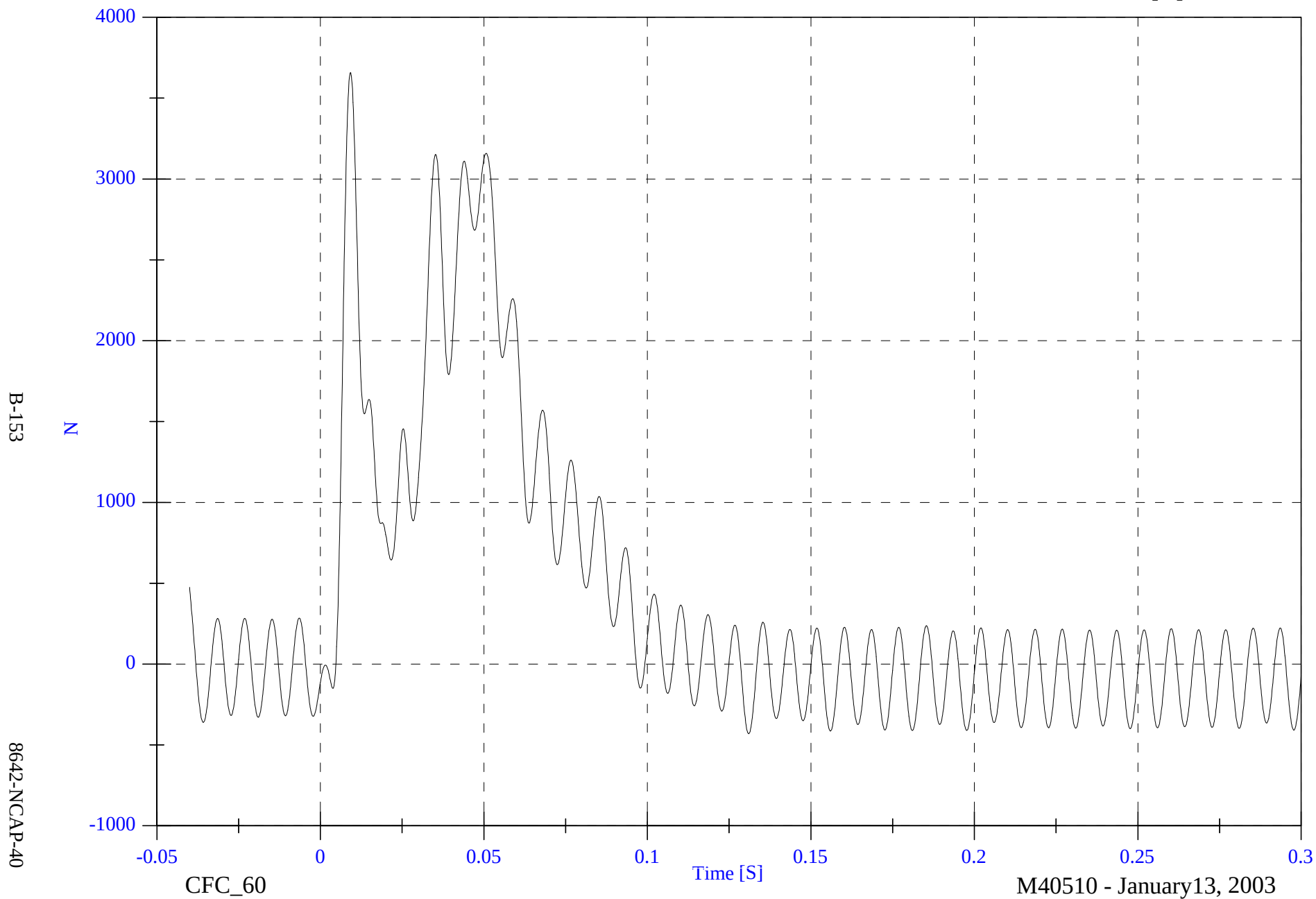


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 3658.4 [N] at 0.009 [S]

Min: -431.2 [N] at 0.131 [S]

Barrier Load Cell B2 Fx

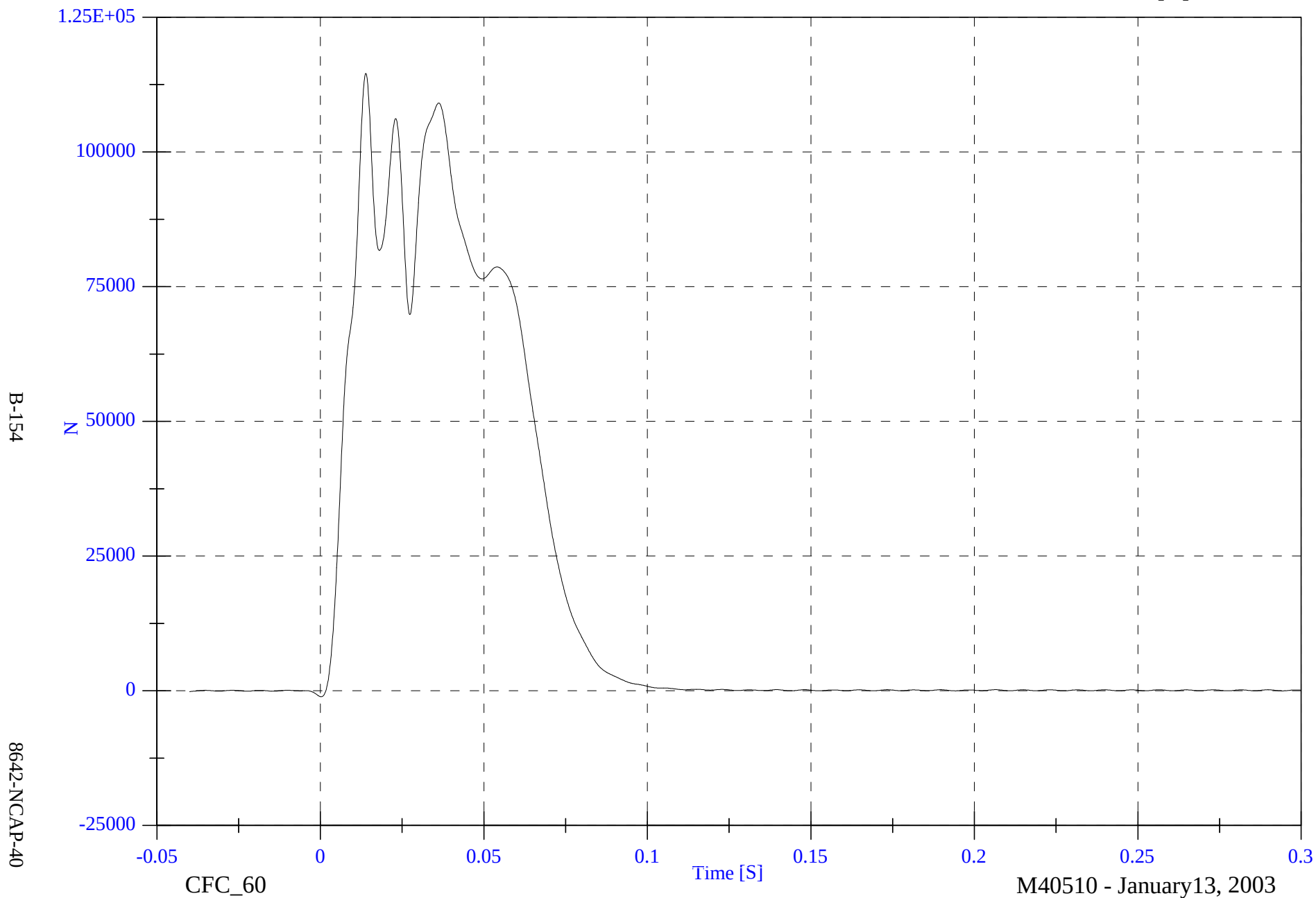


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 114592.3 [N] at 0.014 [S]

Min: -1108.6 [N] at 0.000 [S]

Barrier Load Cell B3 Fx

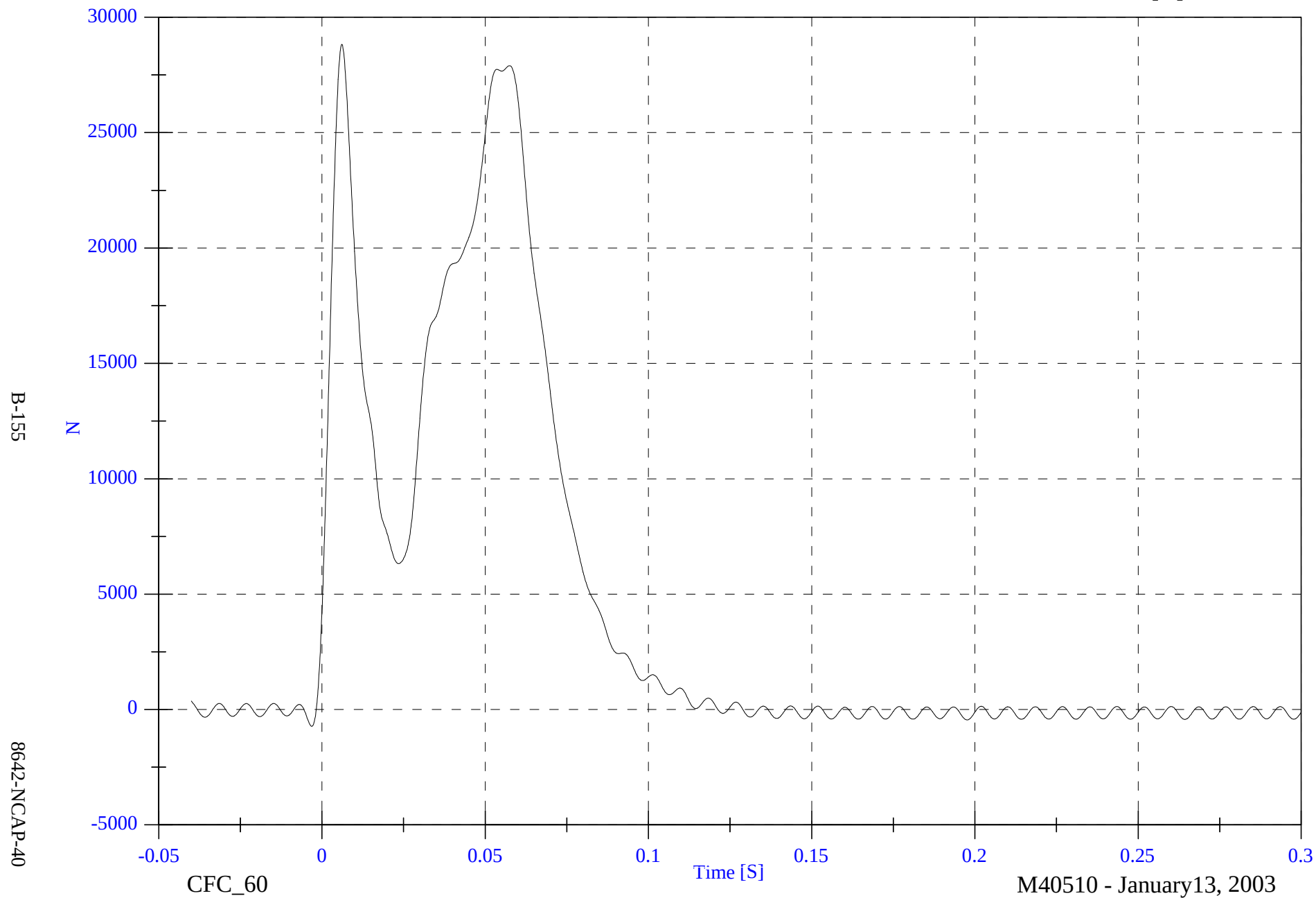


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 28825.3 [N] at 0.006 [S]

Min: -727.1 [N] at -0.003 [S]

Barrier Load Cell B4 Fx

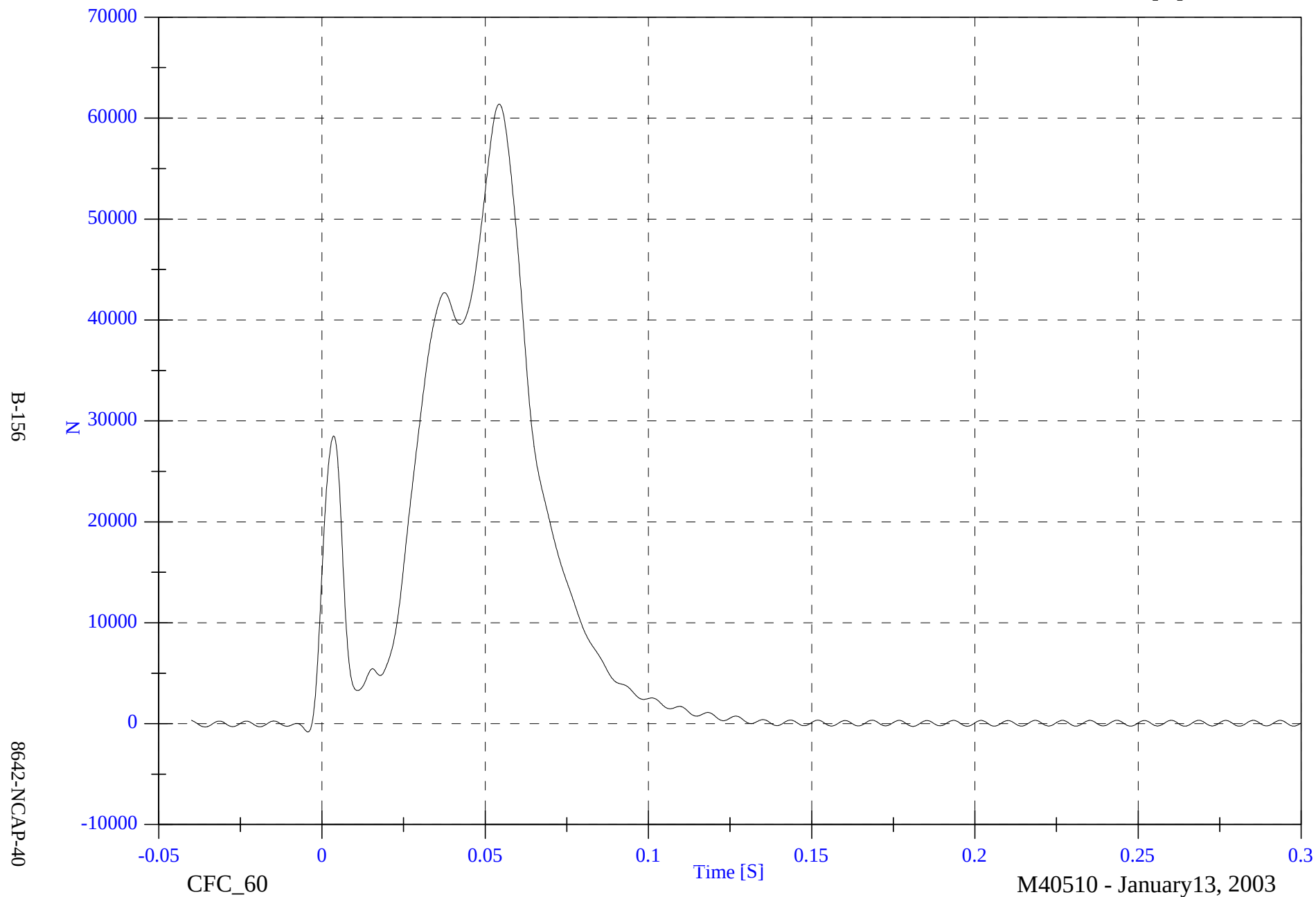


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 61390.4 [N] at 0.054 [S]

Min: -822.2 [N] at -0.004 [S]

Barrier Load Cell B5 Fx

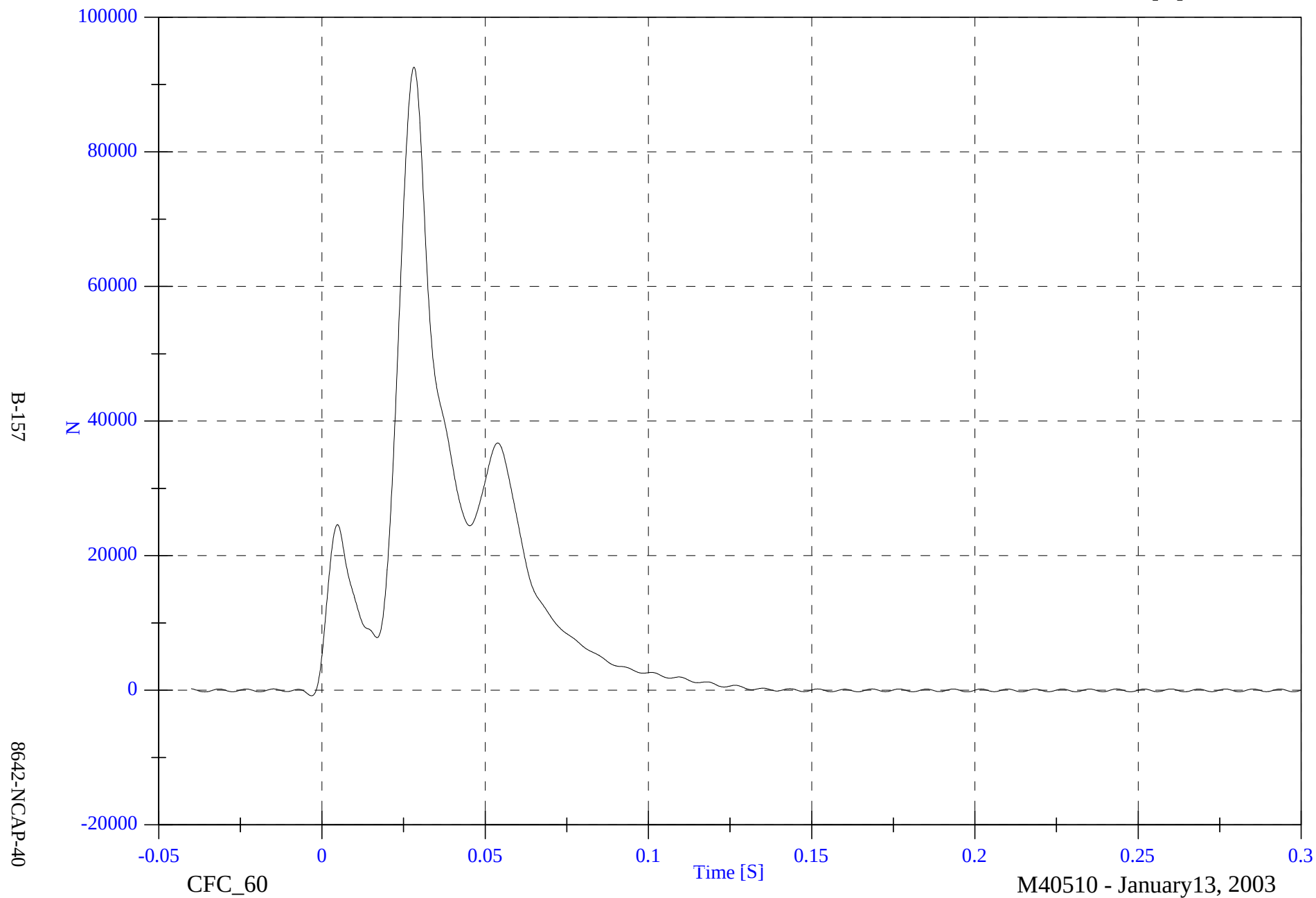


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 92584.4 [N] at 0.028 [S]

Min: -819.8 [N] at -0.003 [S]

Barrier Load Cell B6 Fx

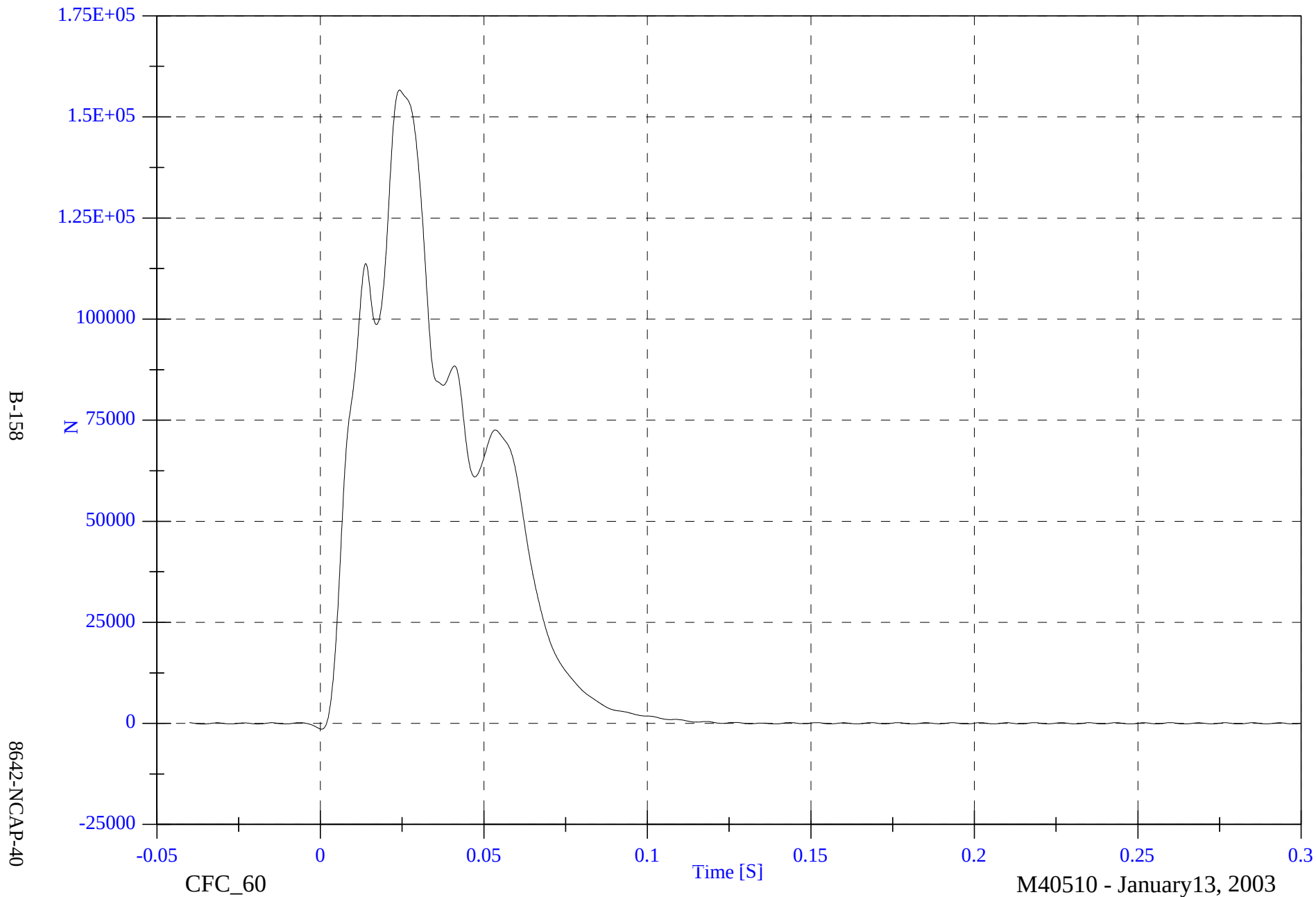


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell B7 Fx

Max: 156647.3 [N] at 0.024 [S]

Min: -1425.6 [N] at 0.000 [S]

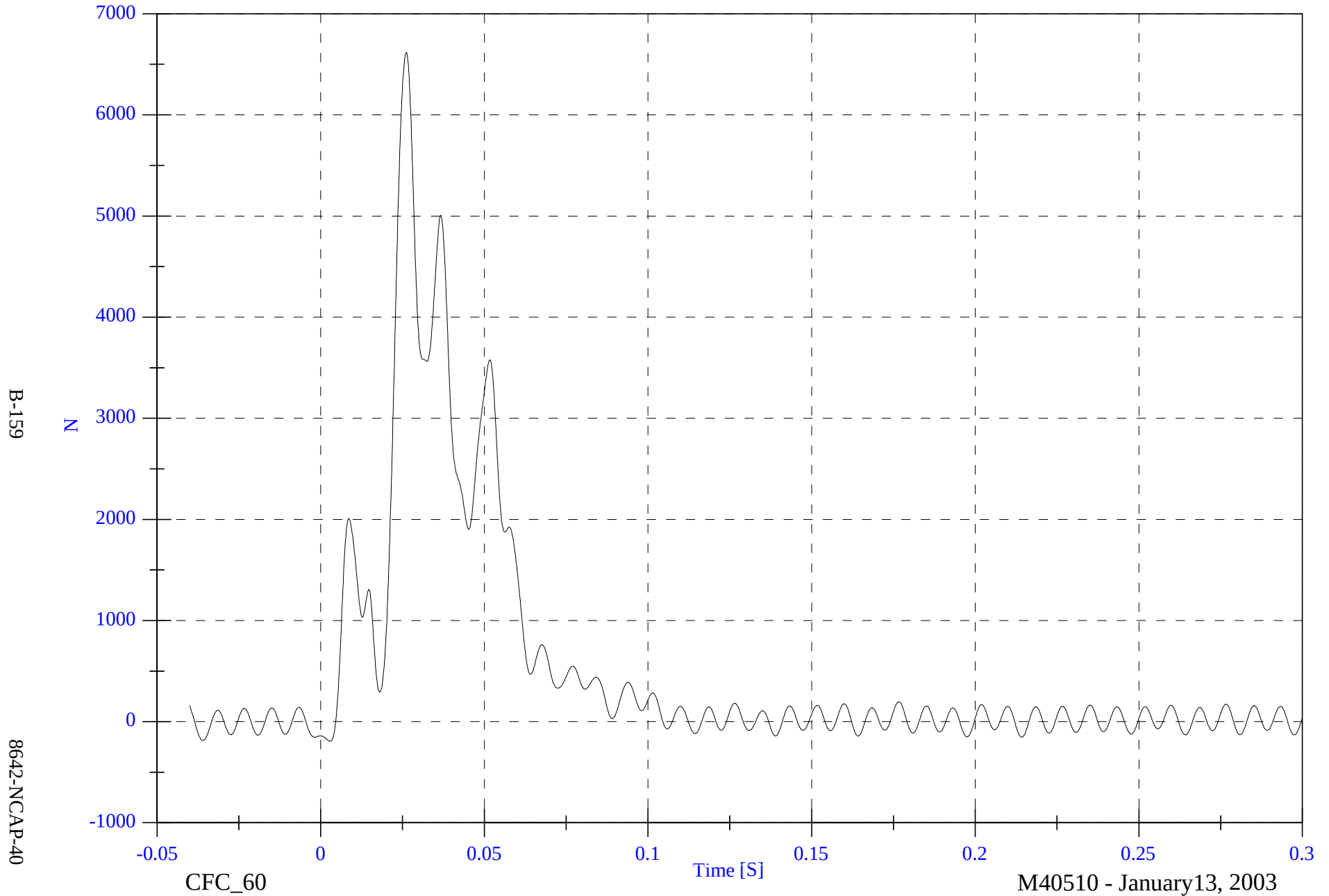


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 6618.9 [N] at 0.026 [S]

Min: -194.1 [N] at 0.003 [S]

Barrier Load Cell B8 Fx

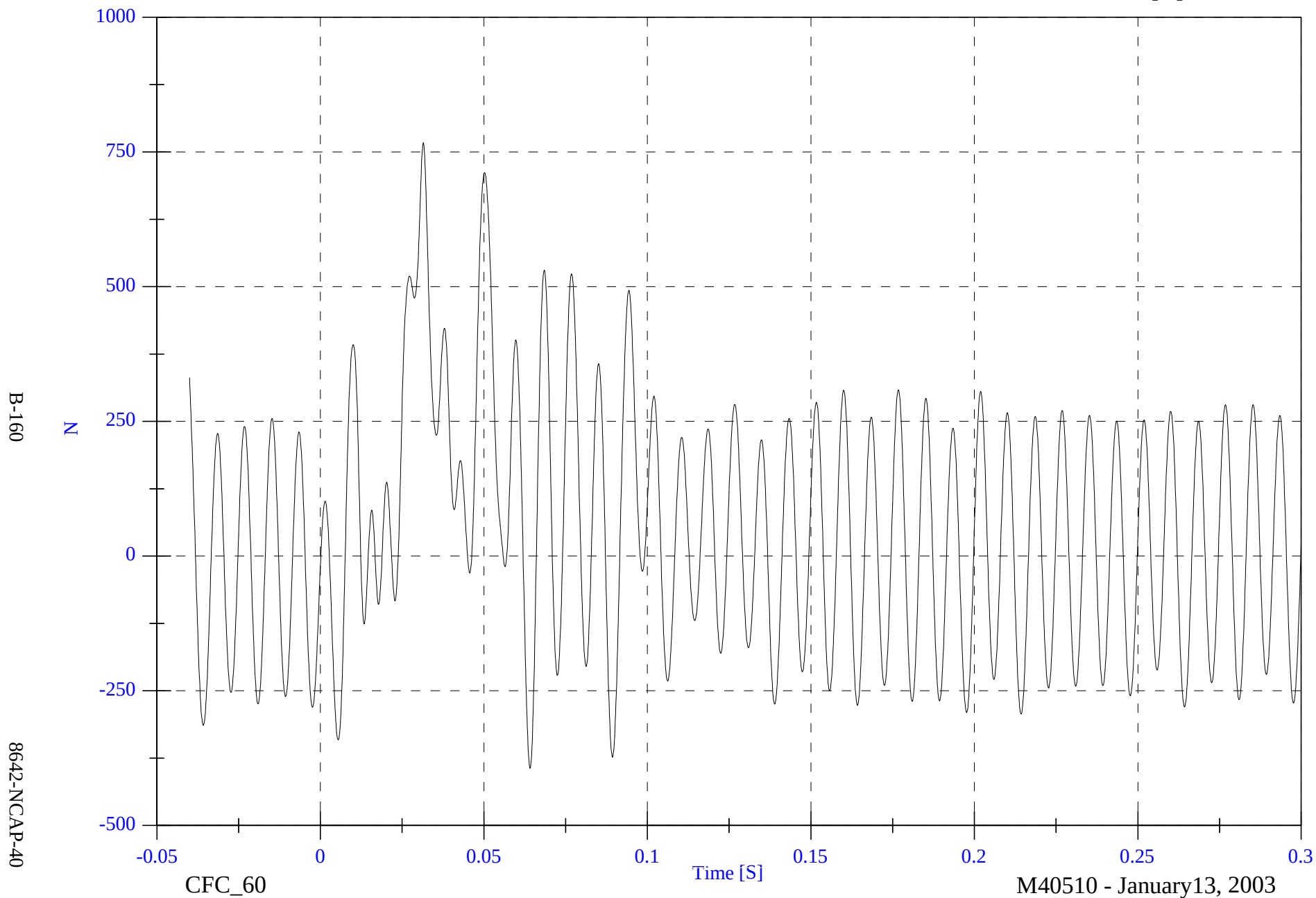


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 767.3 [N] at 0.031 [S]

Min: -393.7 [N] at 0.064 [S]

Barrier Load Cell B9 Fx

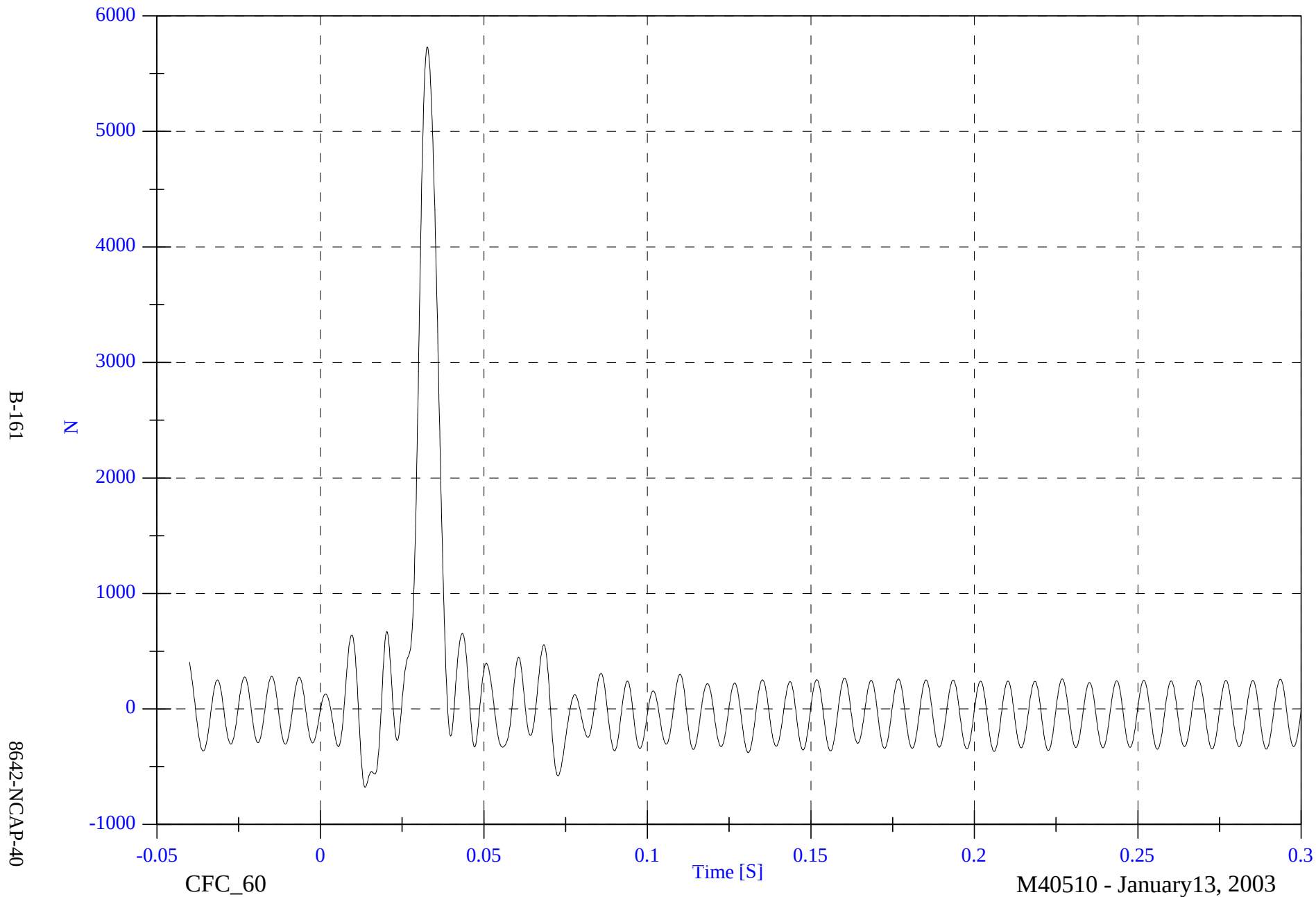


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell C1 Fx

Max: 5730.3 [N] at 0.033 [S]

Min: -679.2 [N] at 0.014 [S]

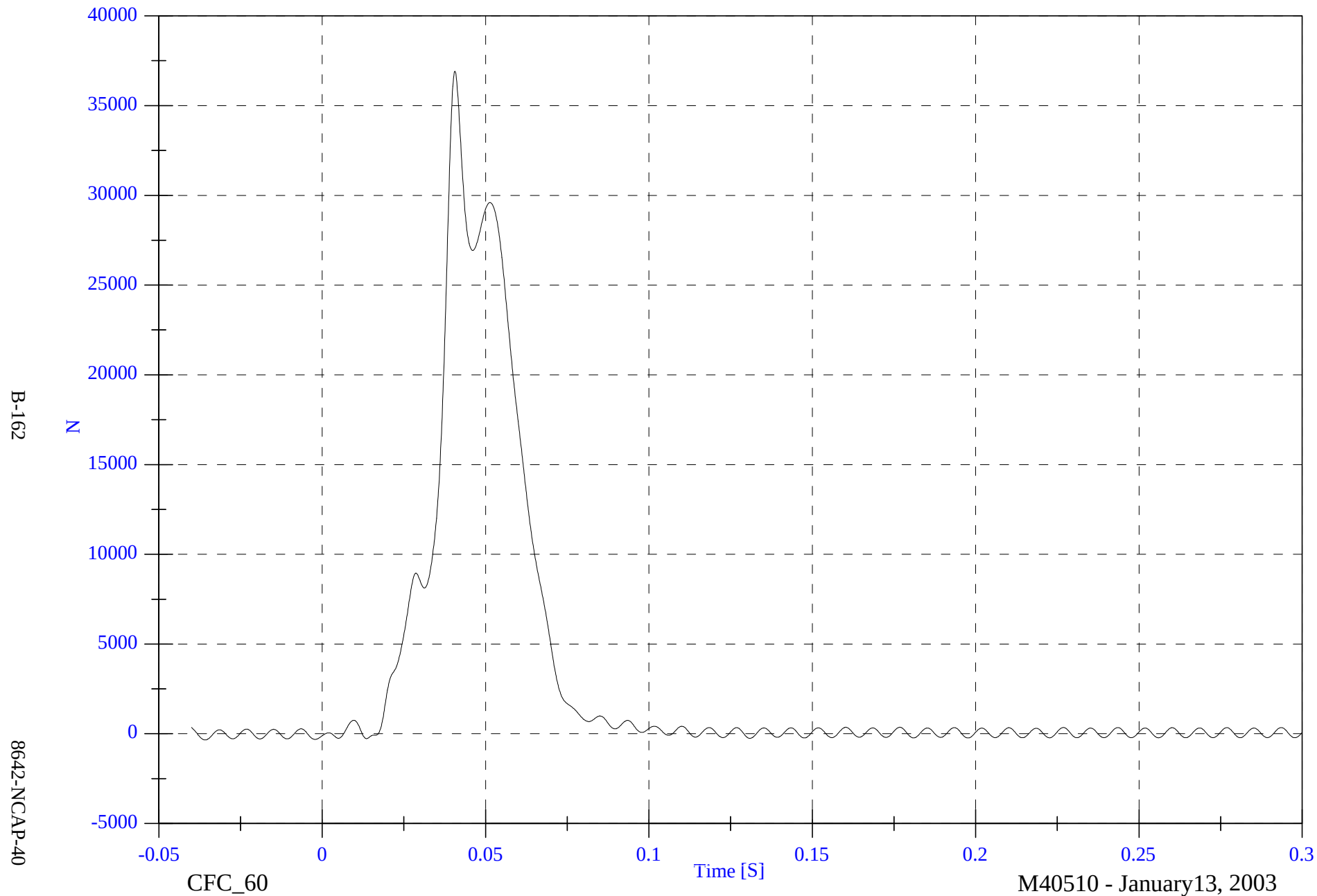


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell C2 Fx

Max: 36916.2 [N] at 0.041 [S]

Min: -340.6 [N] at -0.036 [S]

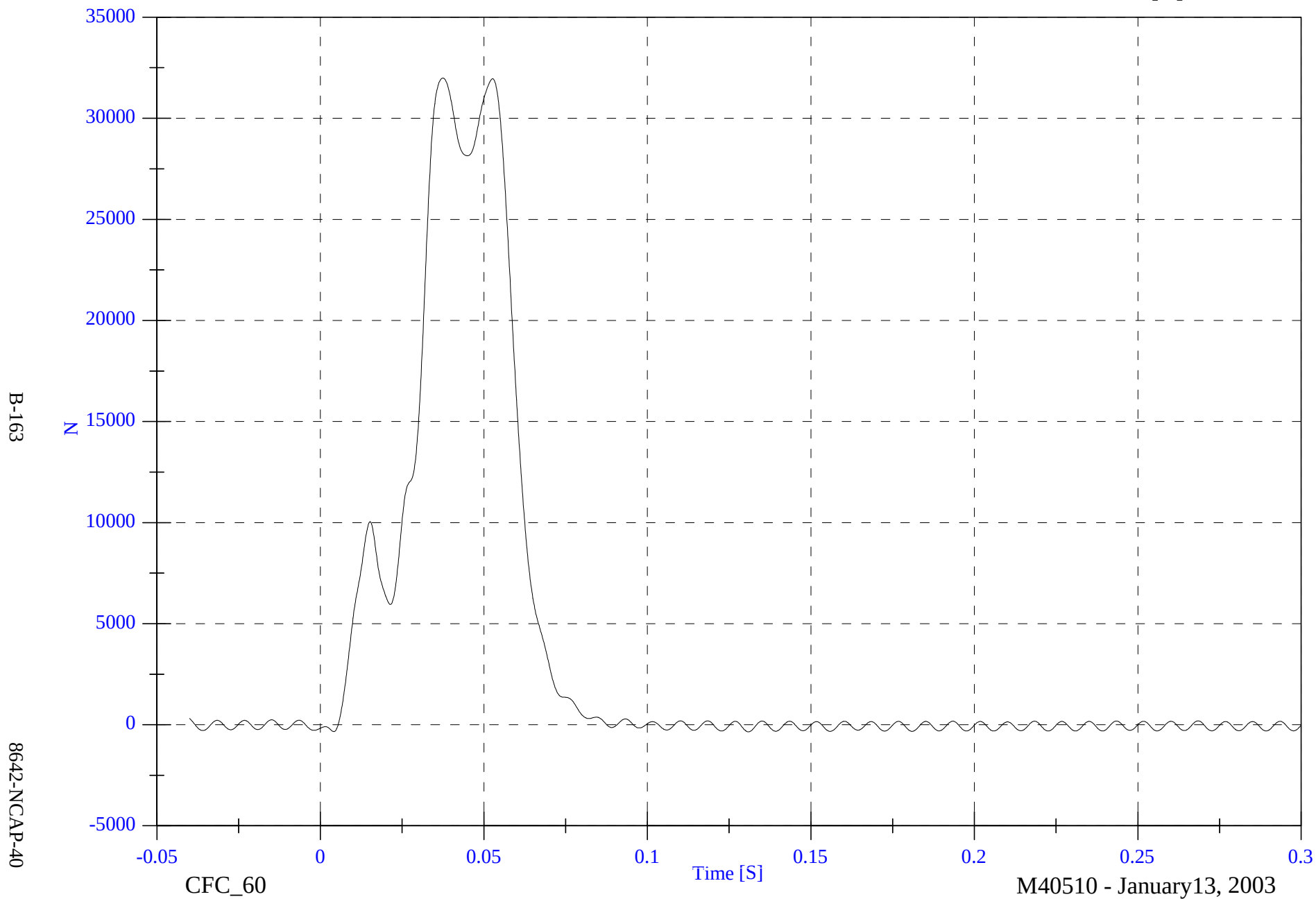


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell C3 Fx

Max: 31989.9 [N] at 0.037 [S]

Min: -348.6 [N] at 0.131 [S]

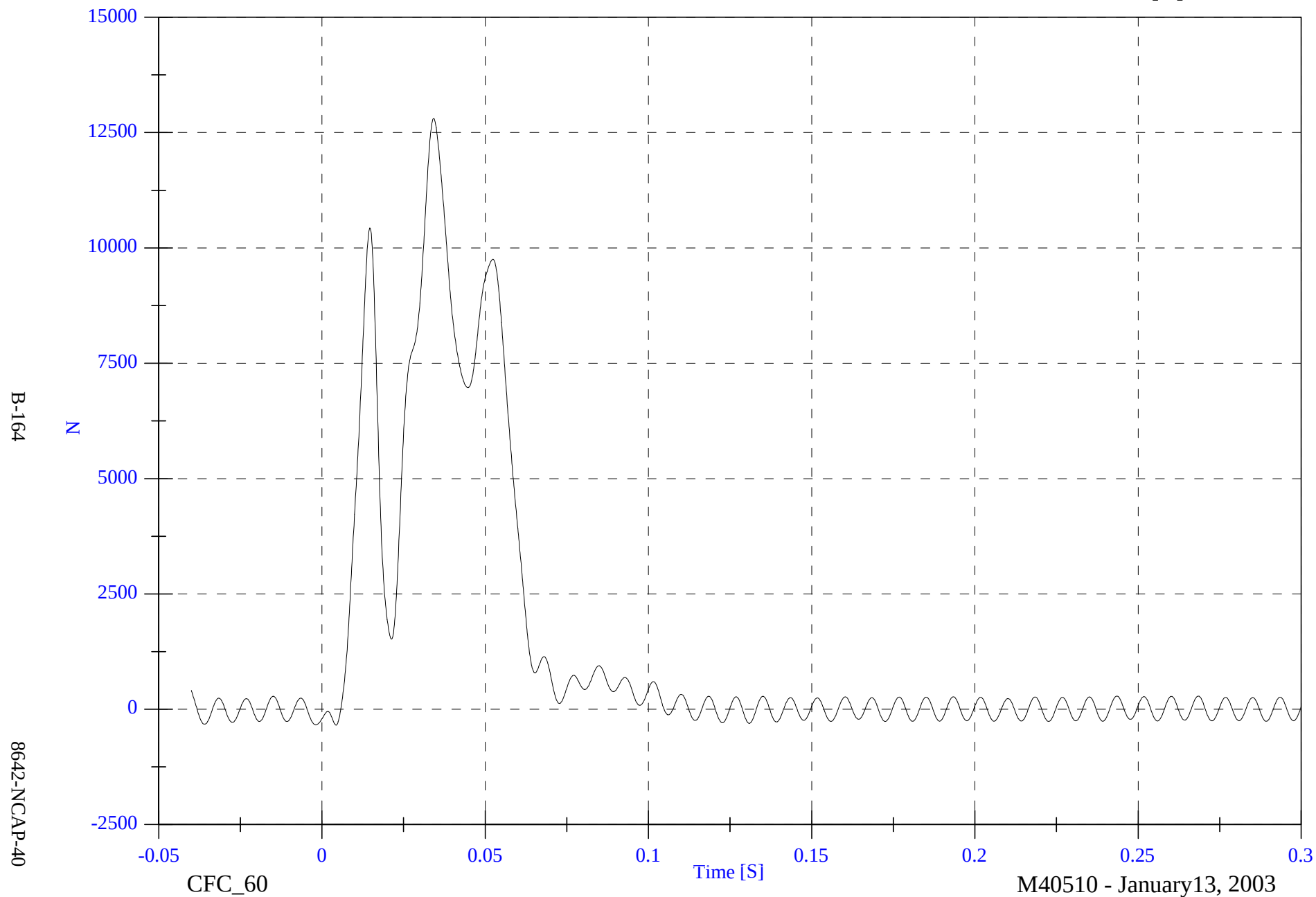


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 12804.2 [N] at 0.034 [S]

Min: -344.3 [N] at 0.004 [S]

Barrier Load Cell C4 Fx

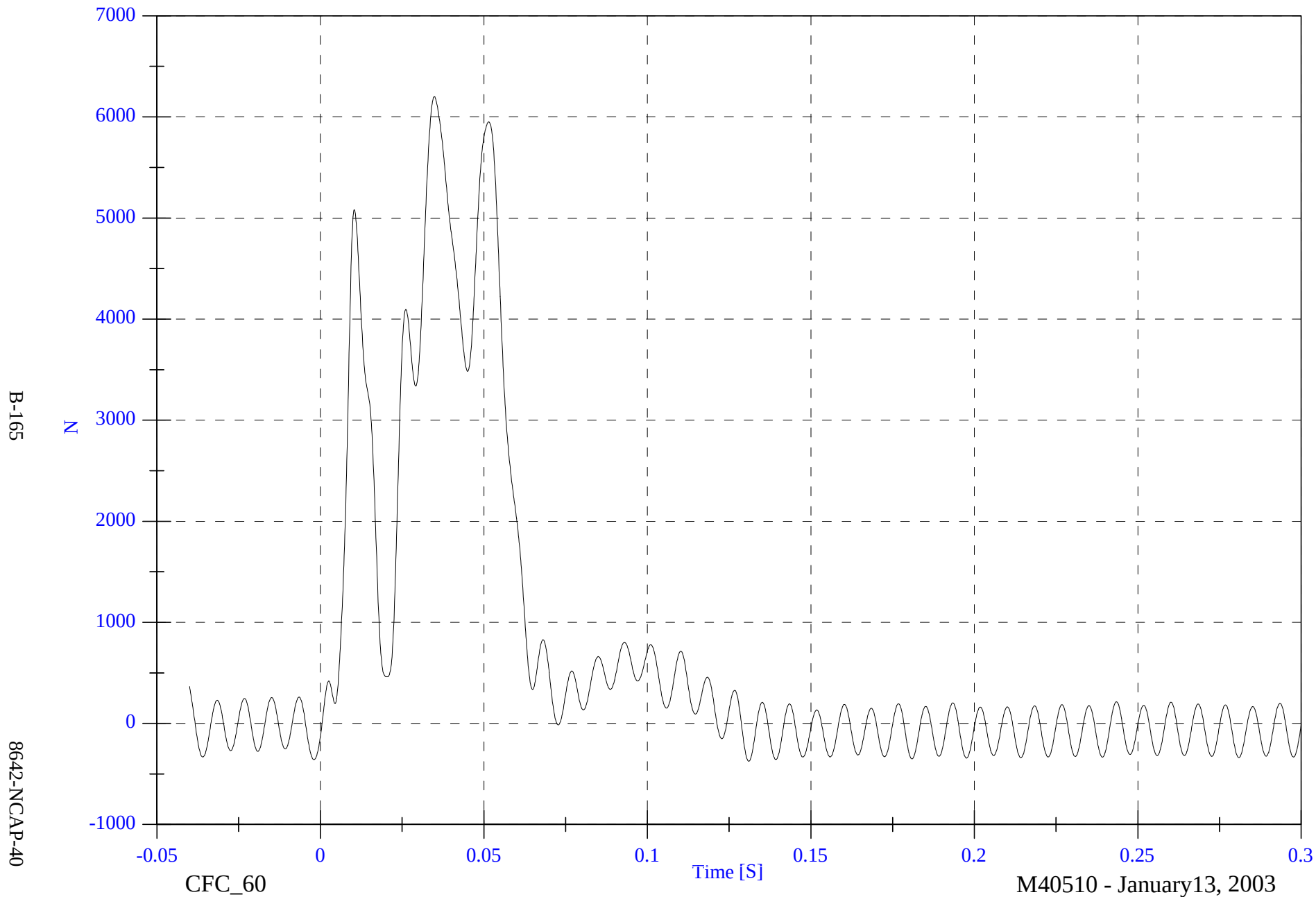


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell C5 Fx

Max: 6200.3 [N] at 0.035 [S]

Min: -375.1 [N] at 0.131 [S]

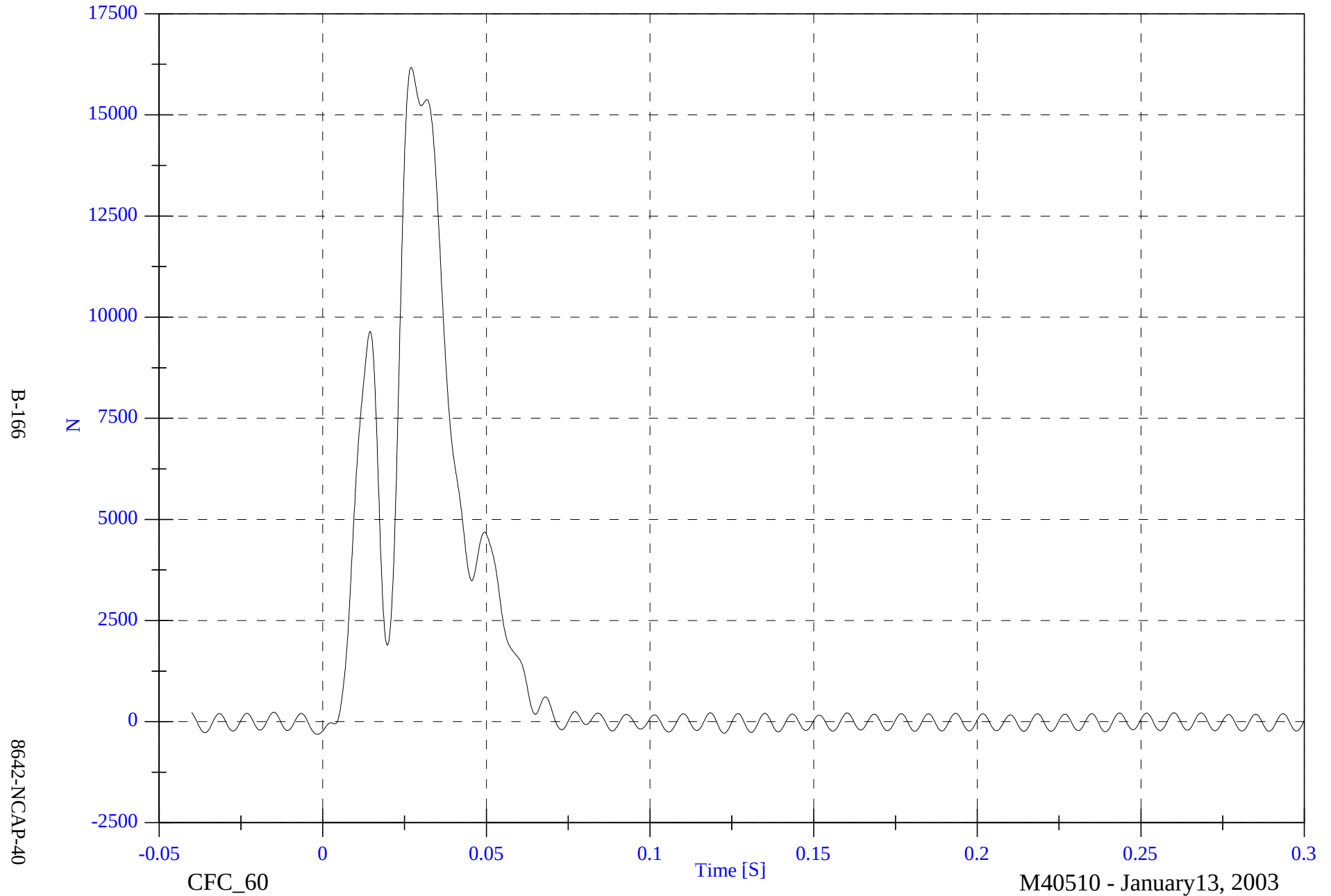


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 16175.4 [N] at 0.027 [S]

Min: -313.7 [N] at -0.002 [S]

Barrier Load Cell C6 Fx

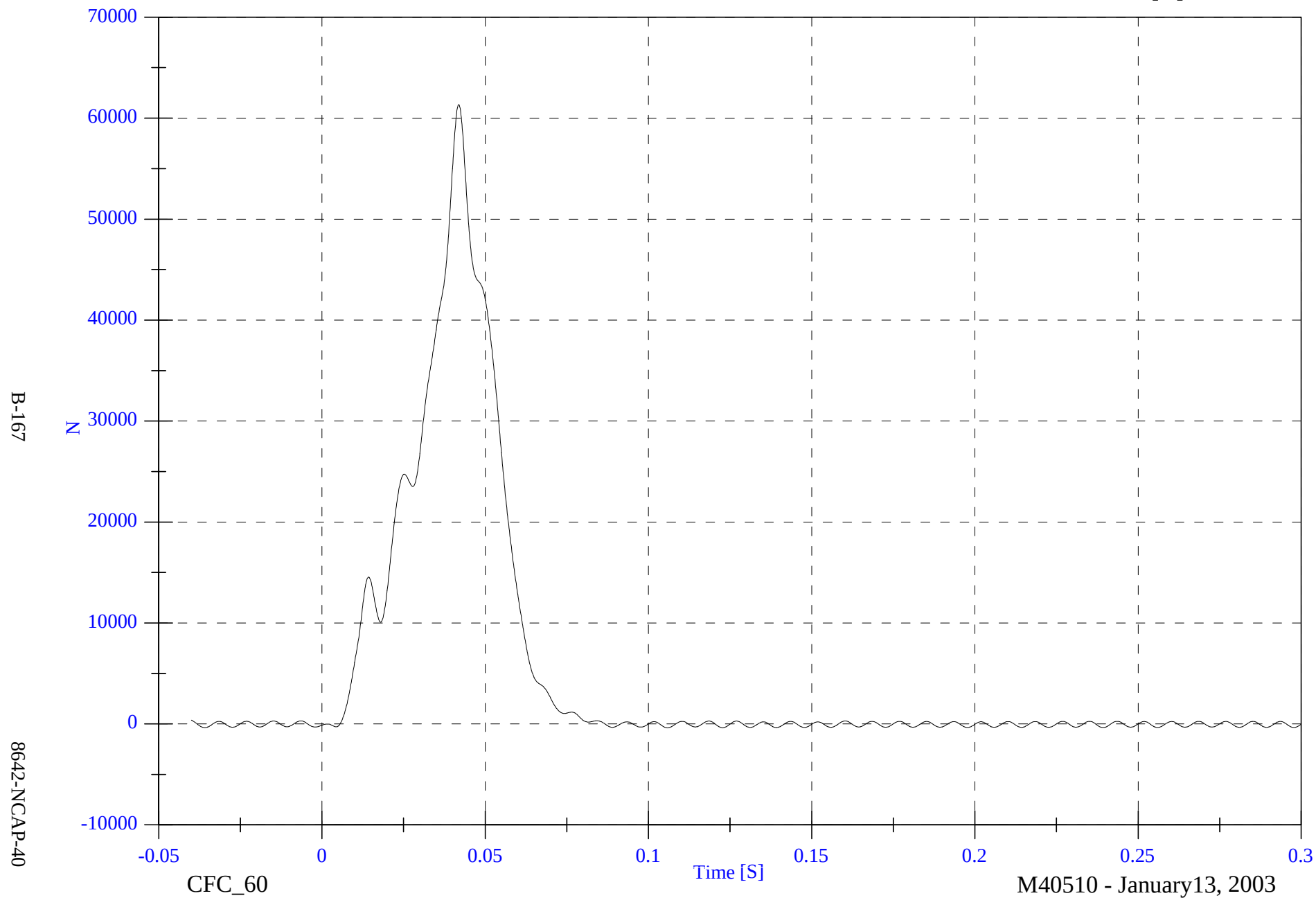


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell C7 Fx

Max: 61352.1 [N] at 0.042 [S]

Min: -381.3 [N] at 0.106 [S]

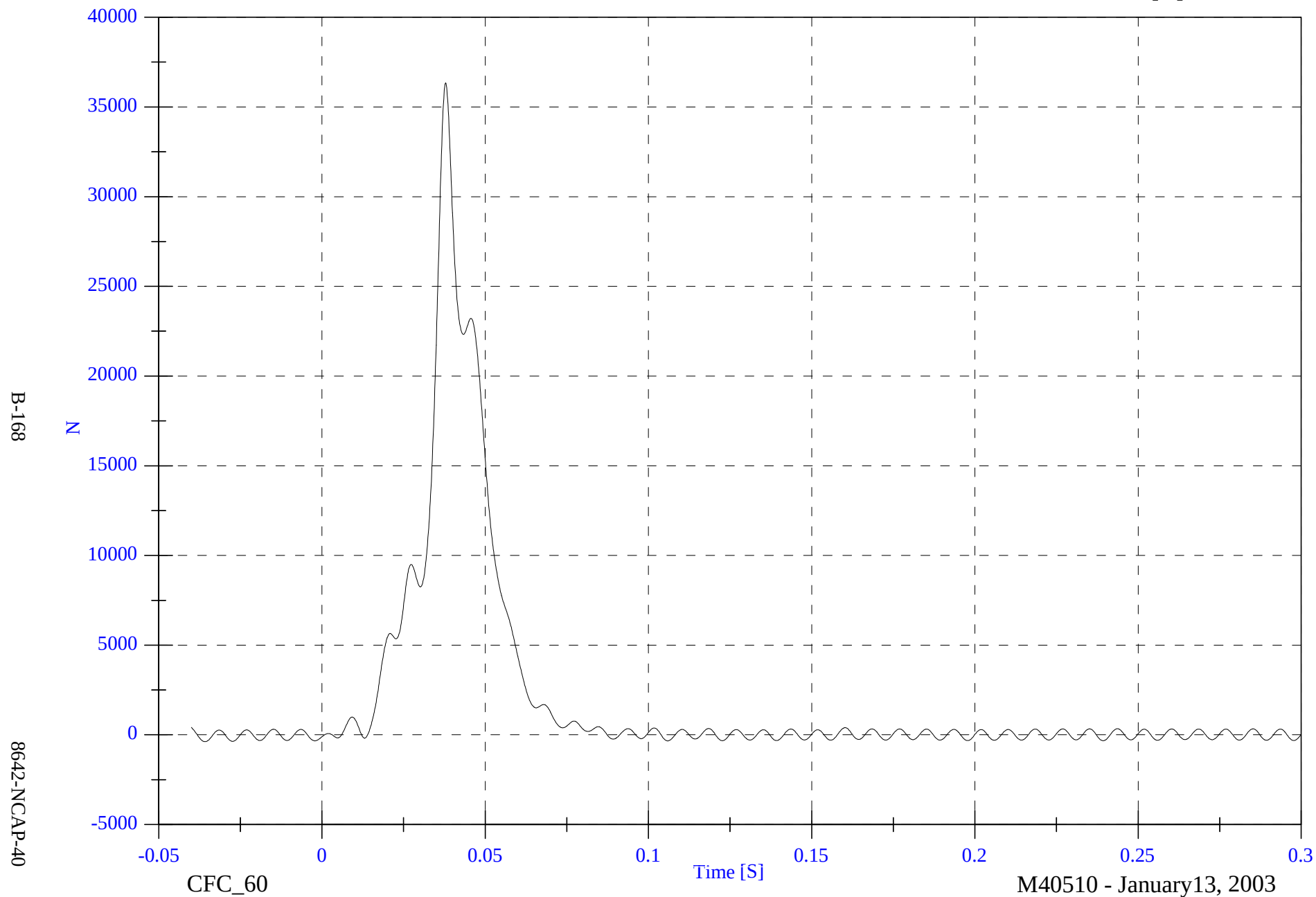


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell C8 Fx

Max: 36339.3 [N] at 0.038 [S]

Min: -377.4 [N] at -0.036 [S]

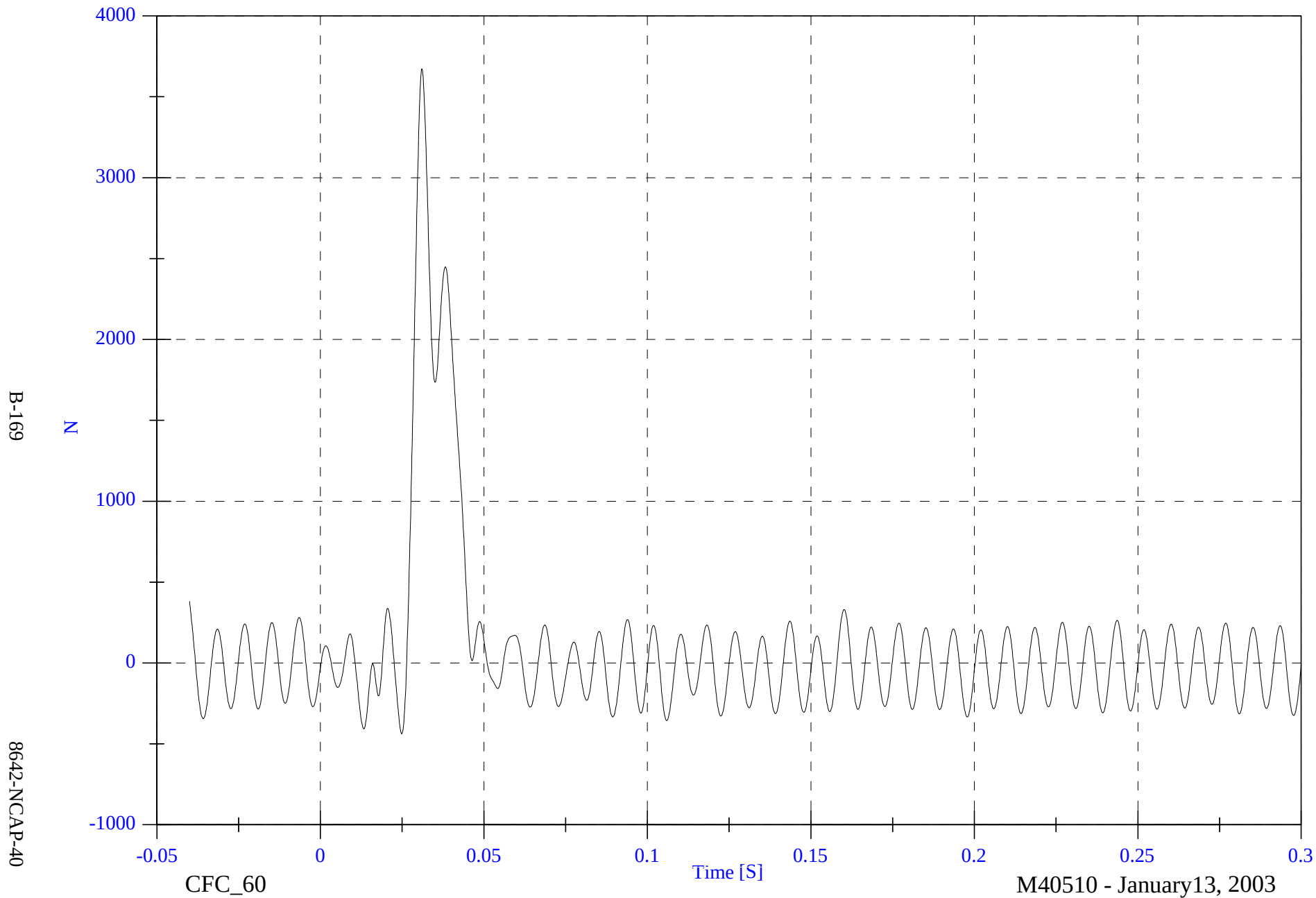


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell C9 Fx

Max: 3671.6 [N] at 0.031 [S]

Min: -437.8 [N] at 0.025 [S]

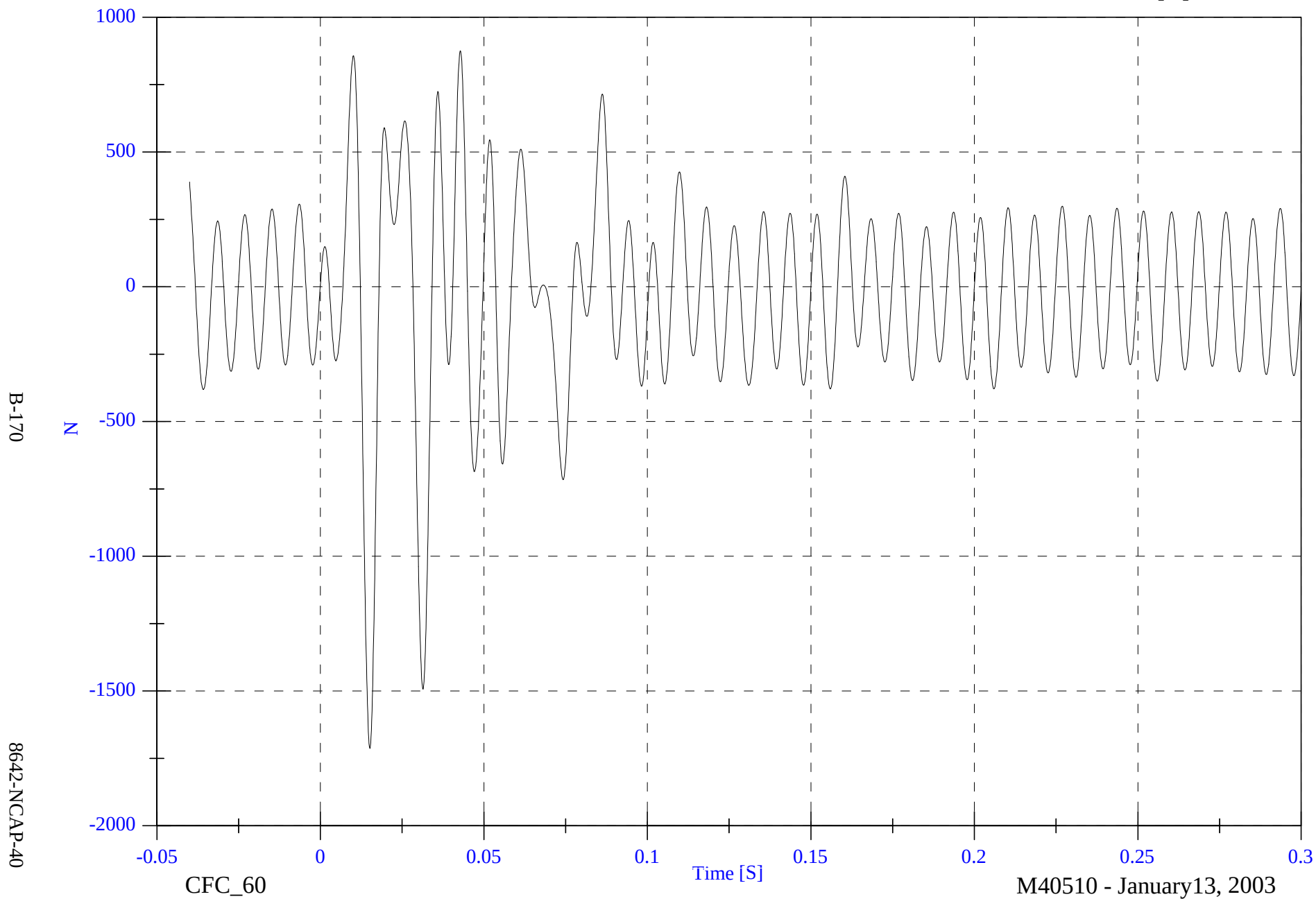


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 875.6 [N] at 0.043 [S]

Min: -1713.4 [N] at 0.015 [S]

Barrier Load Cell D1 Fx

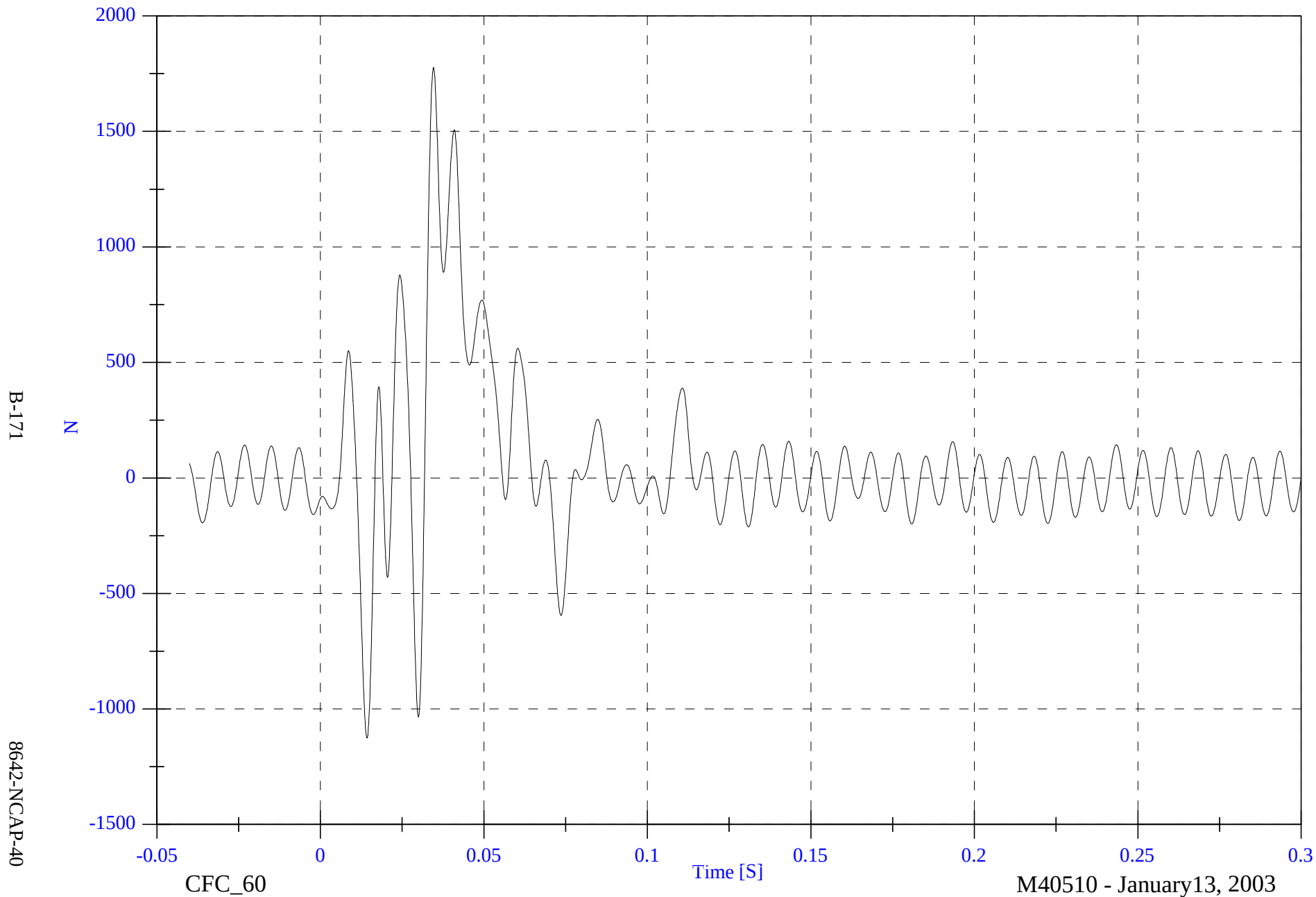


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell D2 Fx

Max: 1776.8 [N] at 0.035 [S]

Min: -1126.2 [N] at 0.014 [S]

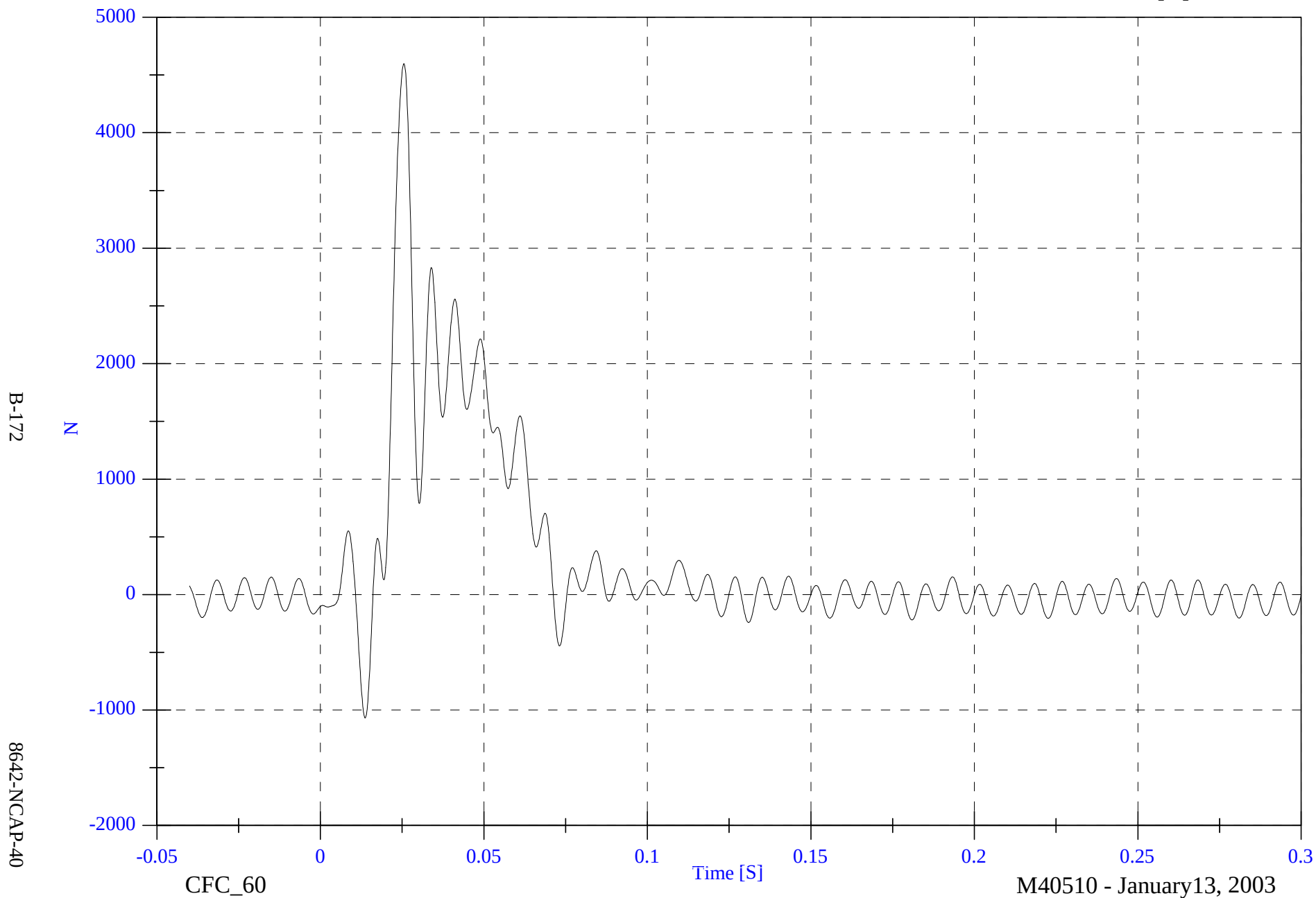


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell D3 Fx

Max: 4597.6 [N] at 0.026 [S]

Min: -1068.8 [N] at 0.014 [S]

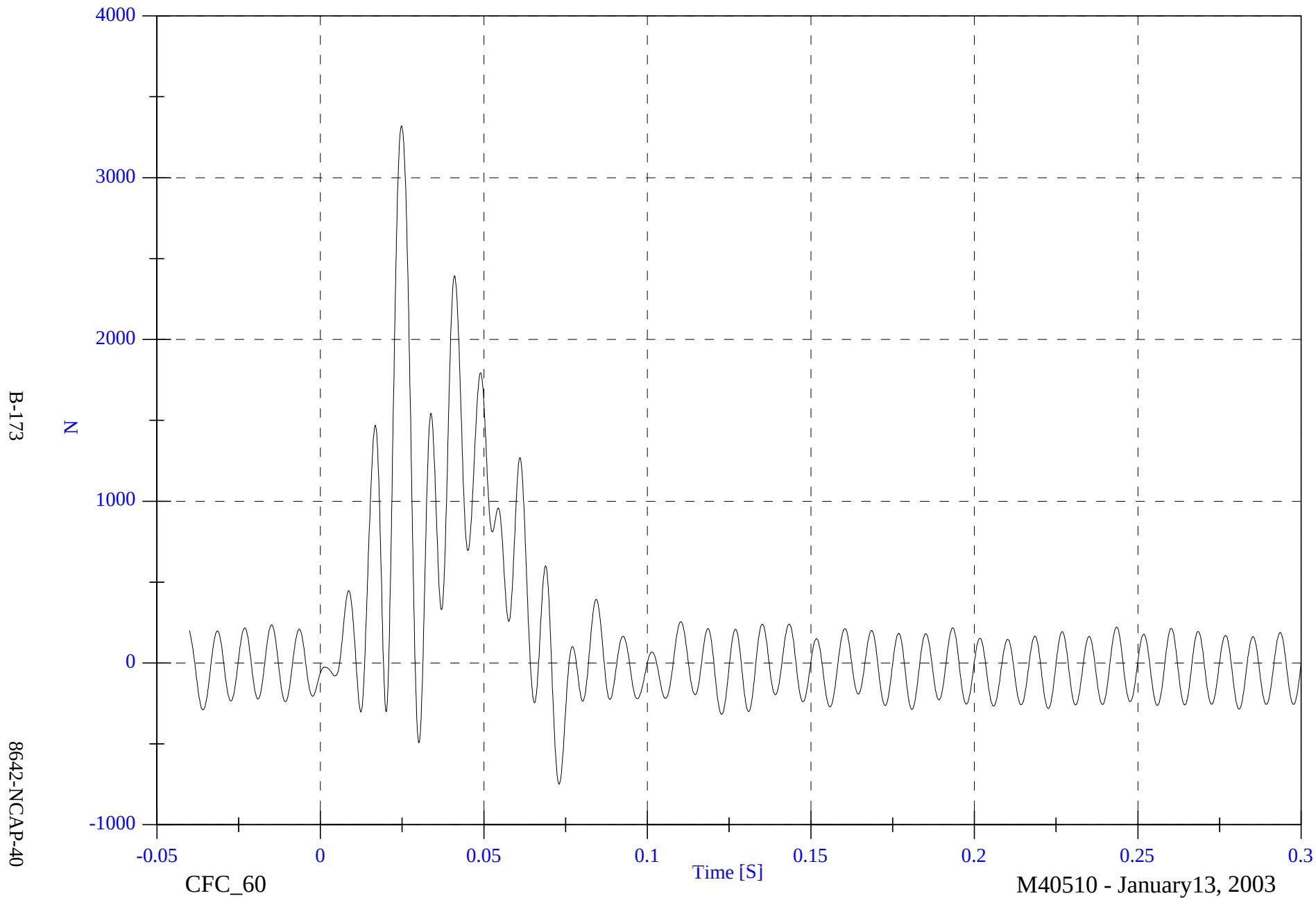


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 3320.3 [N] at 0.025 [S]

Min: -749.3 [N] at 0.073 [S]

Barrier Load Cell D4 Fx

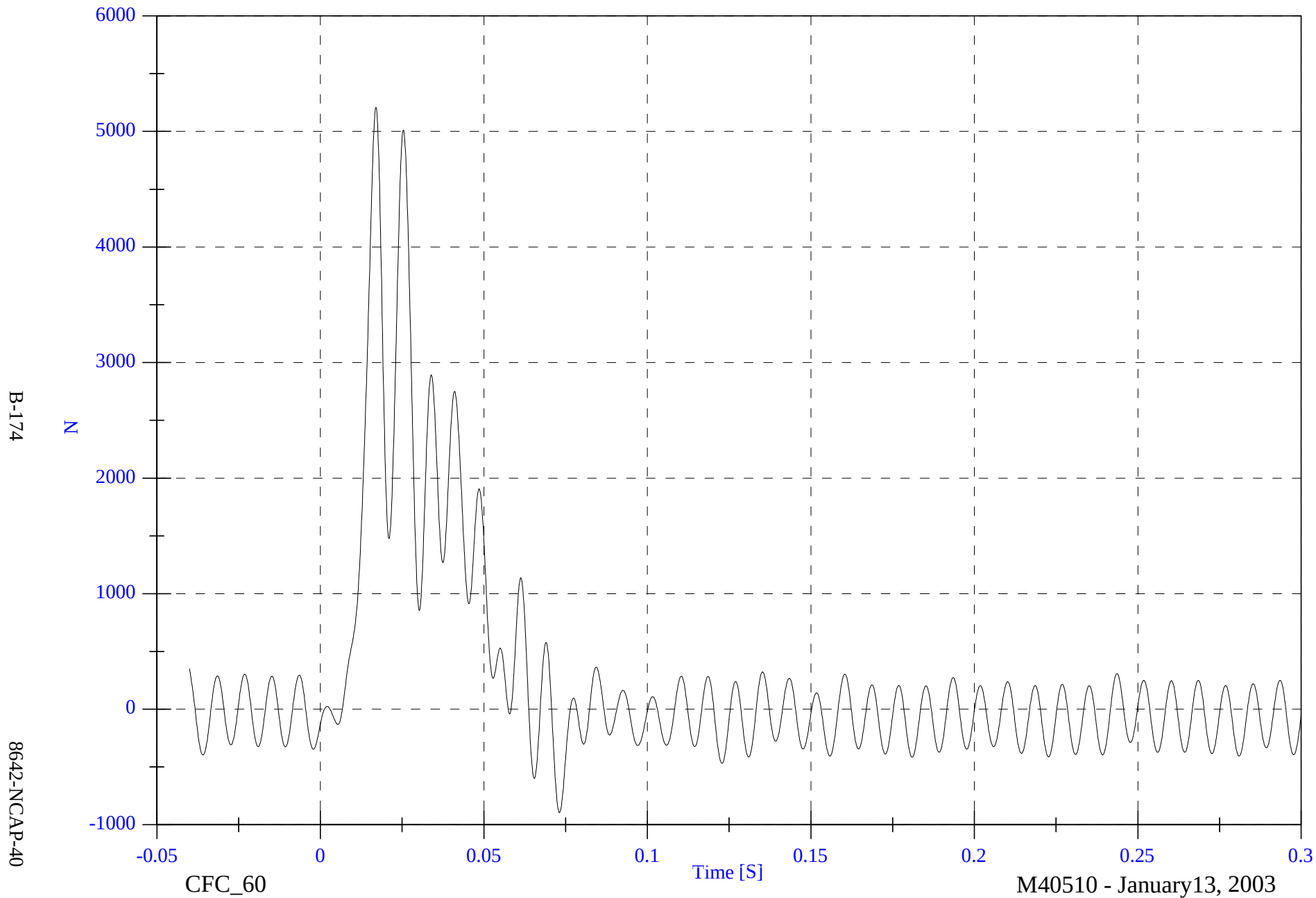


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell D5 Fx

Max: 5207.8 [N] at 0.017 [S]

Min: -895.8 [N] at 0.073 [S]

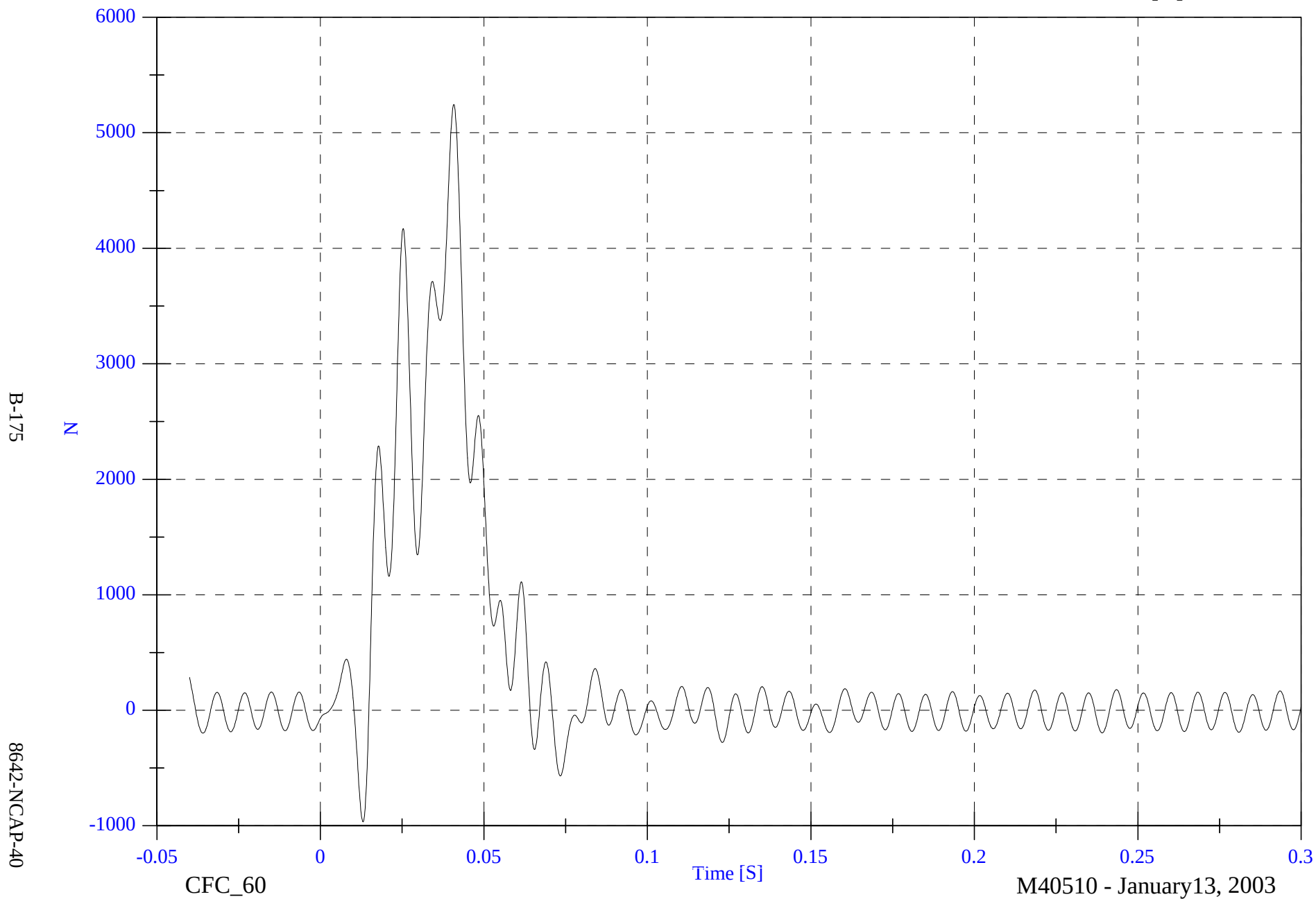


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell D6 Fx

Max: 5245.2 [N] at 0.041 [S]

Min: -966.3 [N] at 0.013 [S]

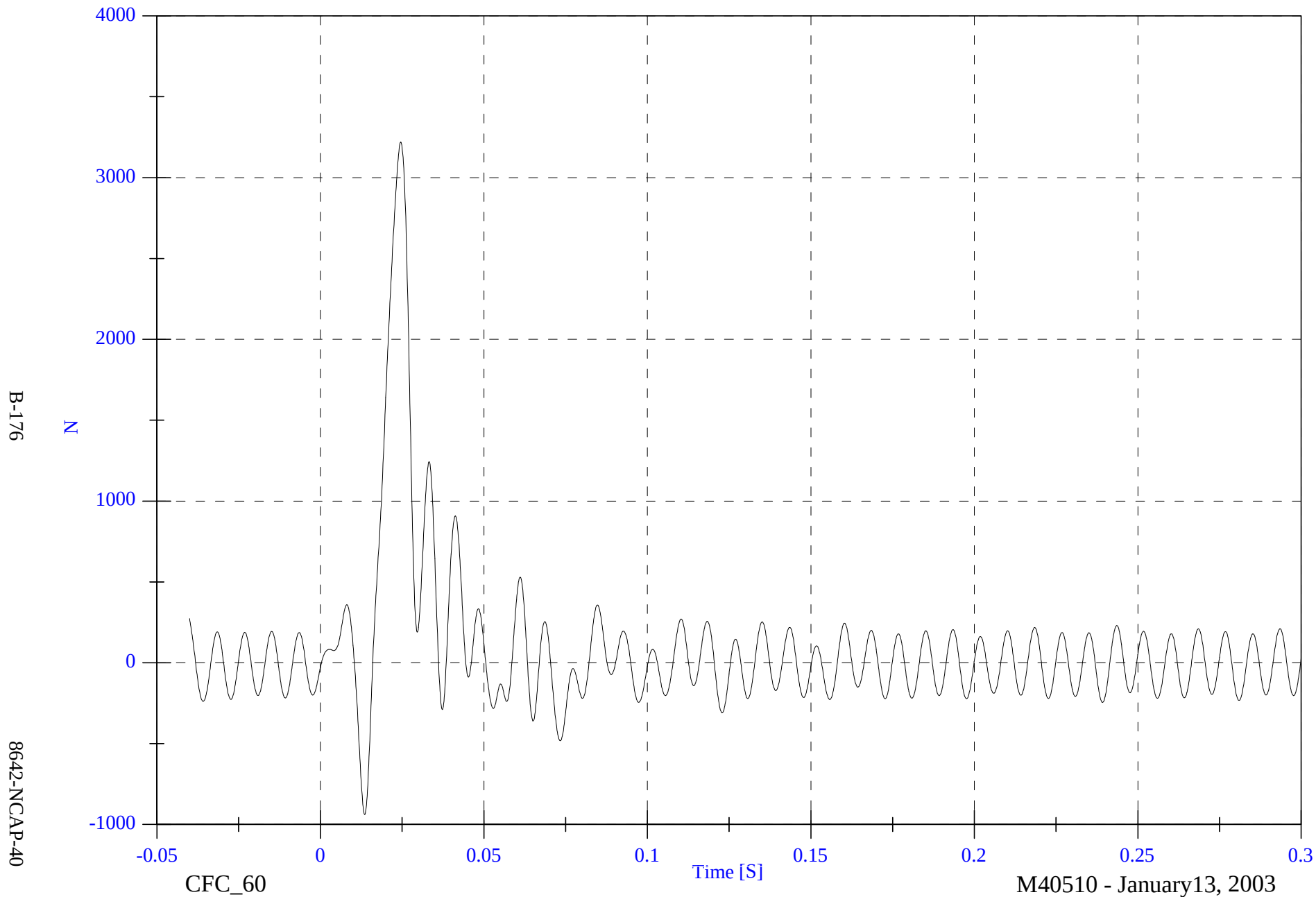


2004 NCAP Test 4 2004 Suzuki Forenza

Barrier Load Cell D7 Fx

Max: 3219.7 [N] at 0.025 [S]

Min: -938.8 [N] at 0.014 [S]

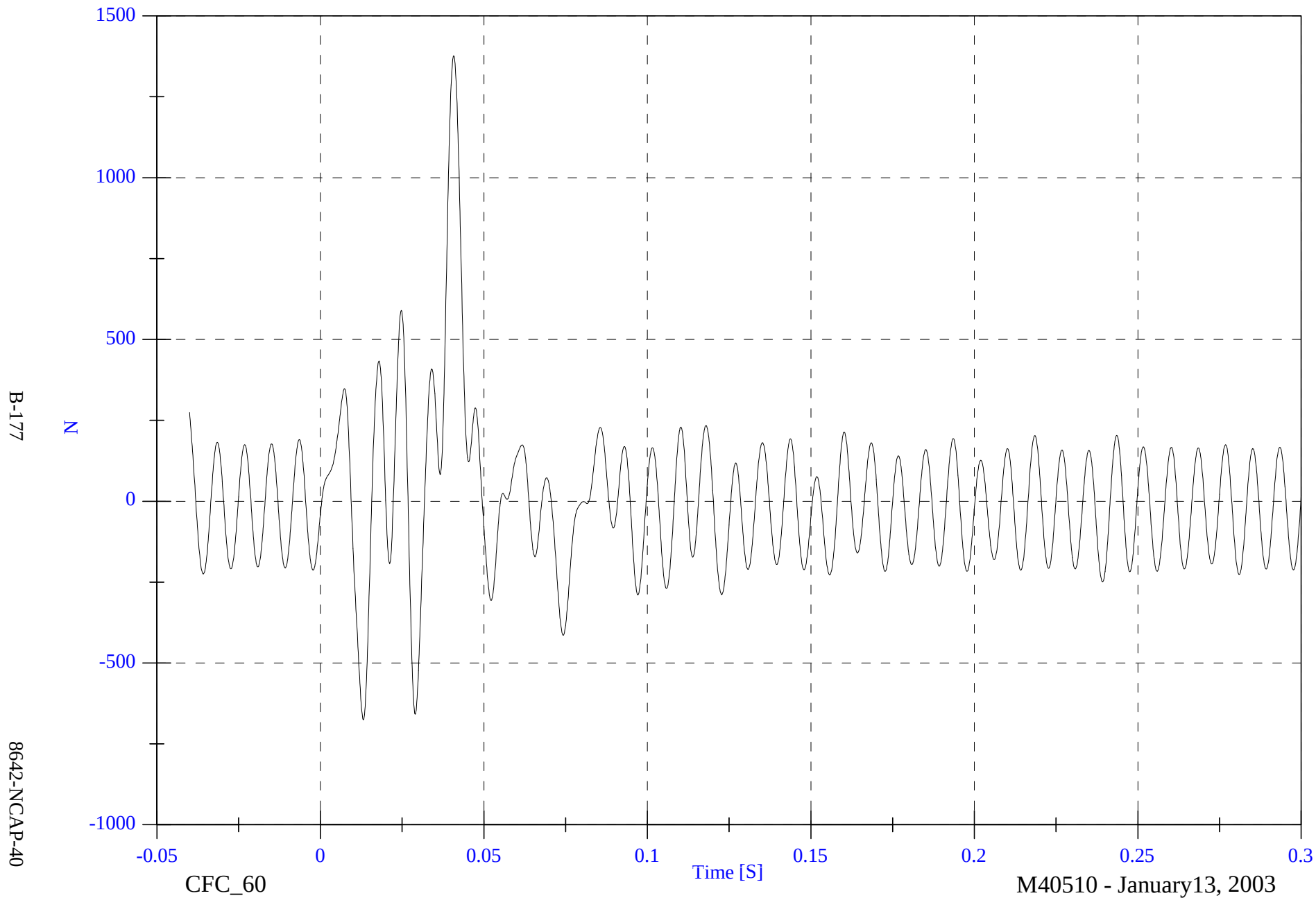


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 1376.4 [N] at 0.041 [S]

Min: -675.7 [N] at 0.013 [S]

Barrier Load Cell D8 Fx

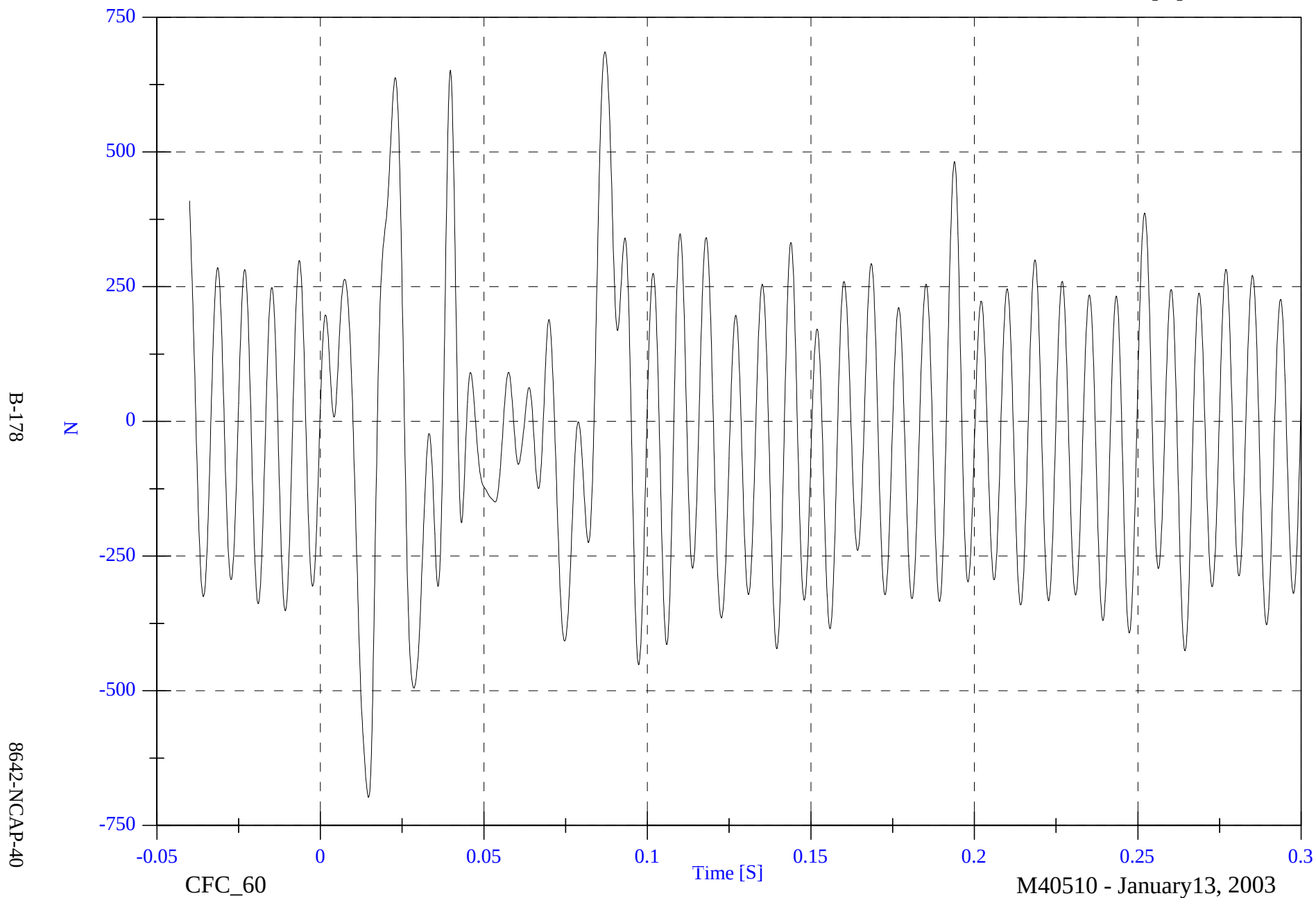


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 685.7 [N] at 0.087 [S]

Min: -697.8 [N] at 0.015 [S]

Barrier Load Cell D9 Fx

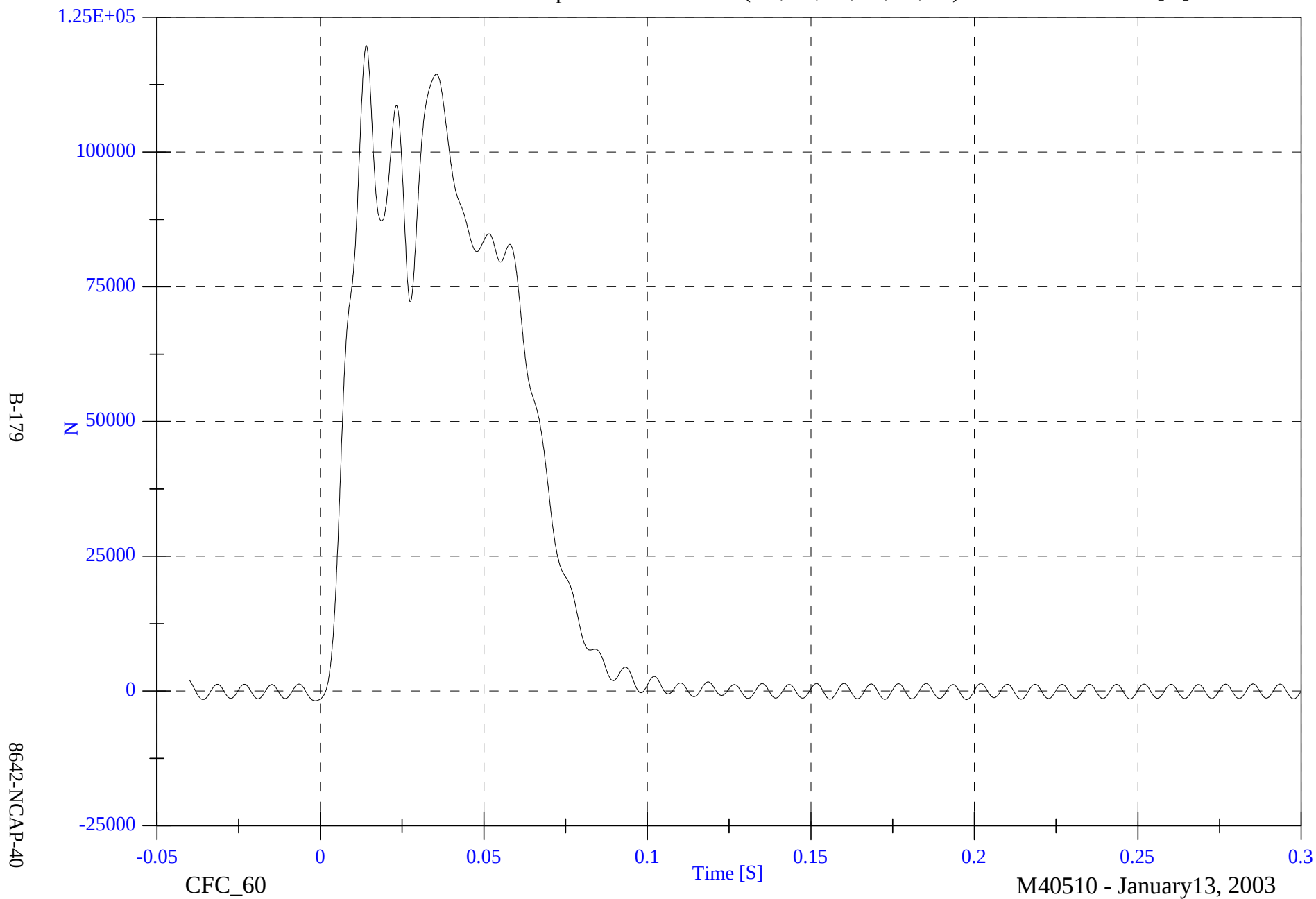


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 119698.8 [N] at 0.014 [S]

Group 1 Load Cell Sum (A1,A2,A3,B1,B2,B3)

Min: -1806.8 [N] at -0.002 [S]

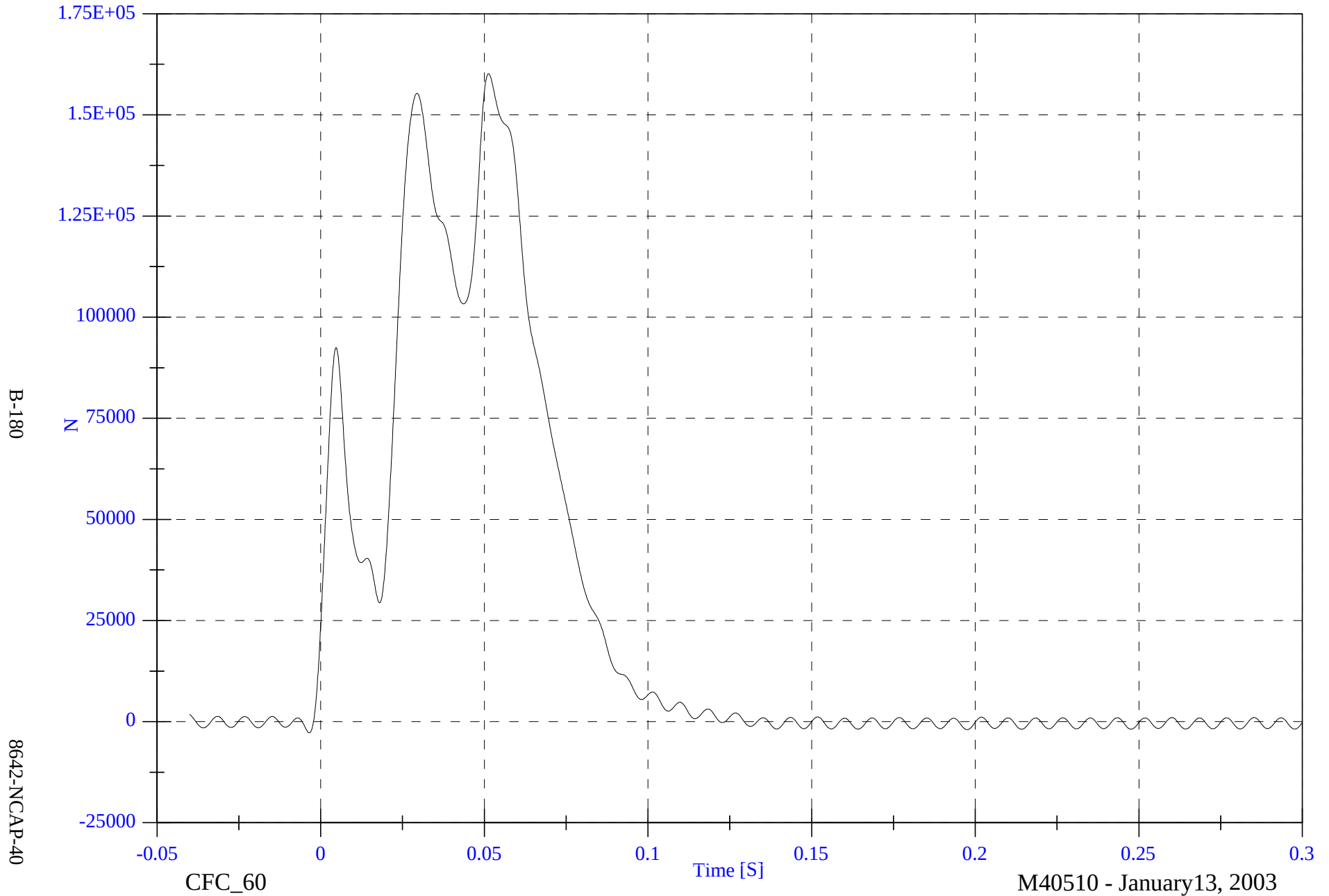


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 160174.6 [N] at 0.051 [S]

Group 2 Load Cell Sum (A4,A5,A6,B4,B5,B6)

Min: -2740.8 [N] at -0.004 [S]

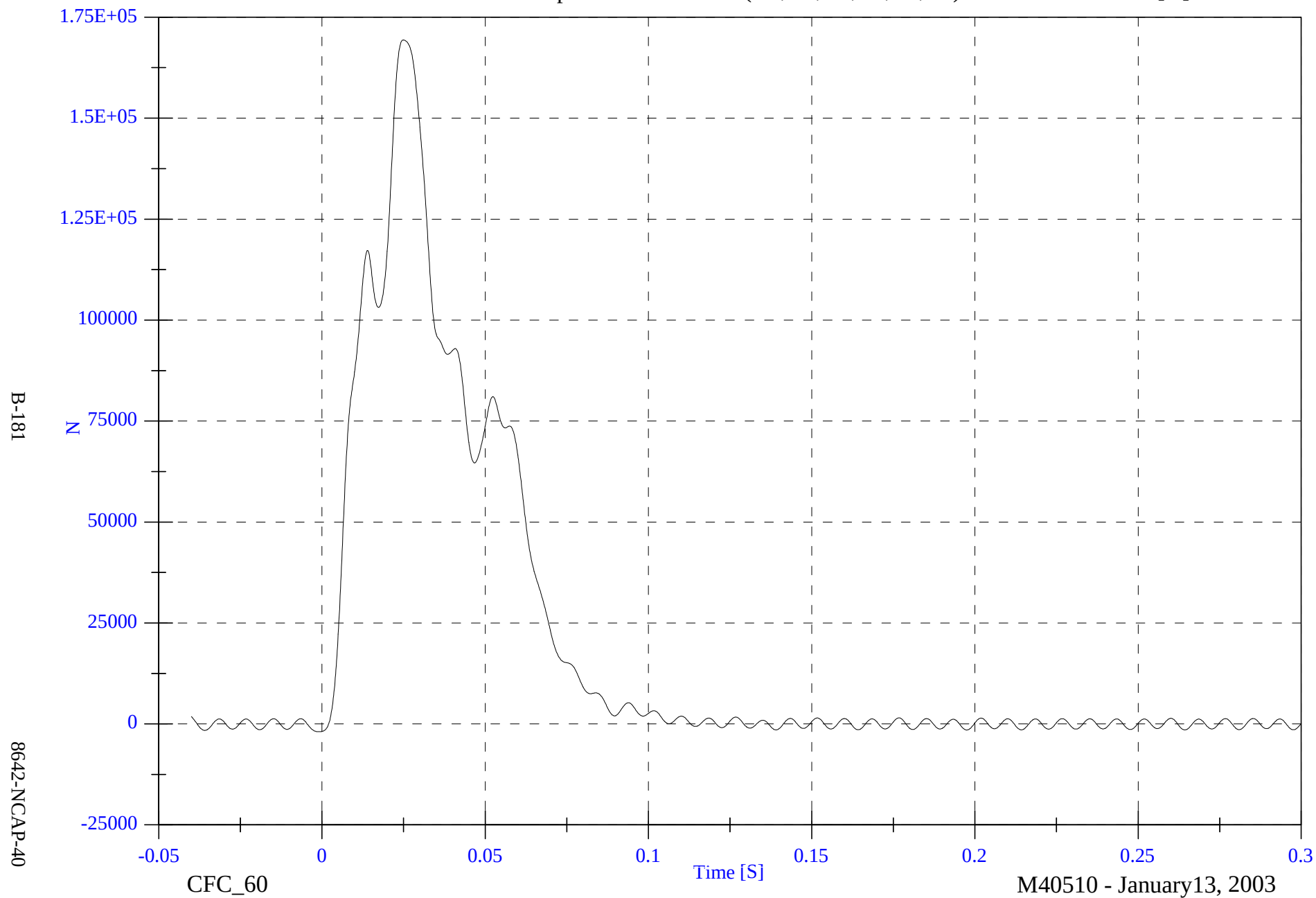


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 169382.7 [N] at 0.025 [S]

Group 3 Load Cell Sum (A7,A8,A9,B7,B8,B9)

Min: -1941.4 [N] at -0.001 [S]

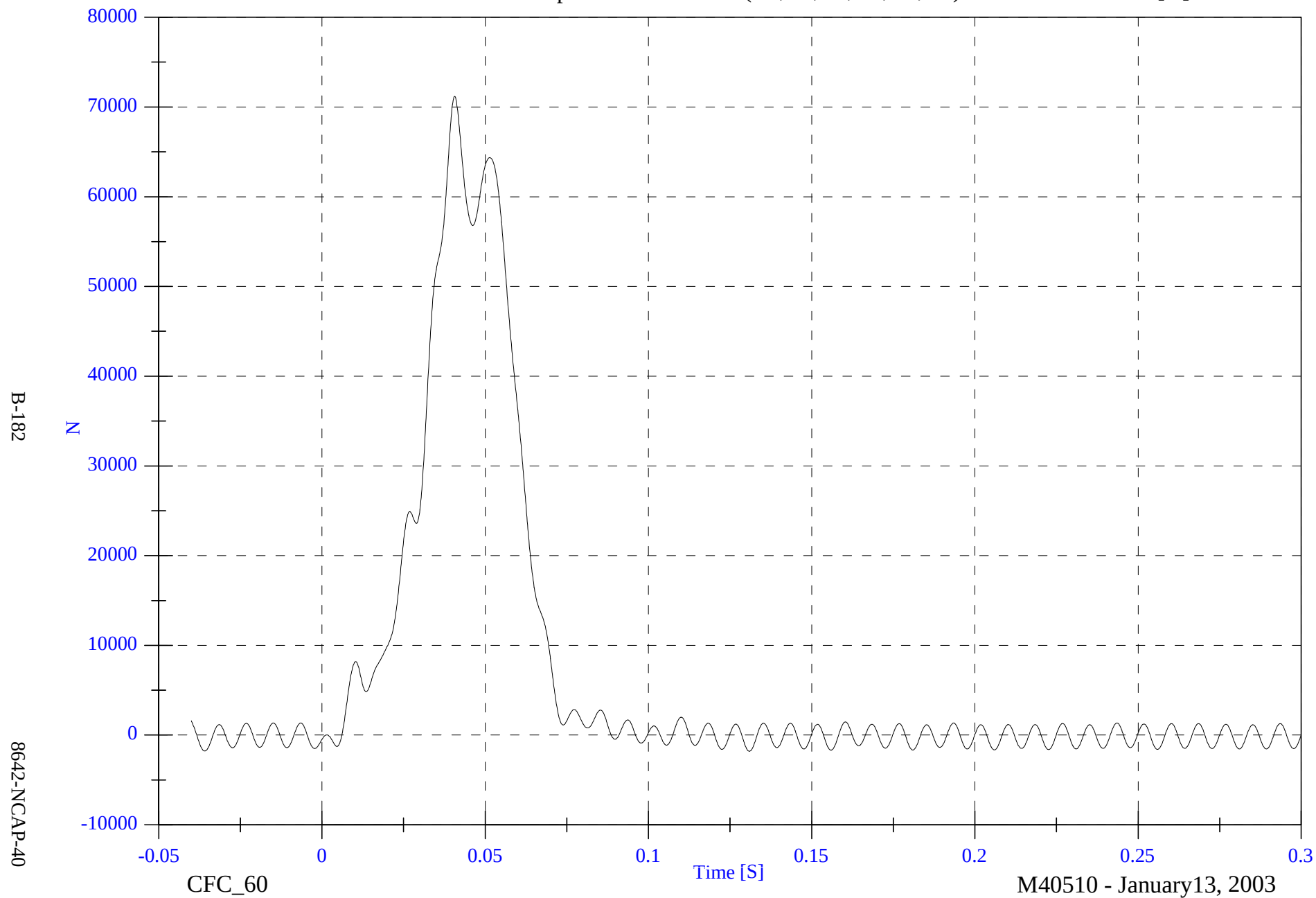


2004 NCAP Test 4 2004 Suzuki Forenza

Group 4 Load Cell Sum (C1,C2,C3,D1,D2,D3)

Max: 71181.6 [N] at 0.041 [S]

Min: -1797.3 [N] at 0.131 [S]

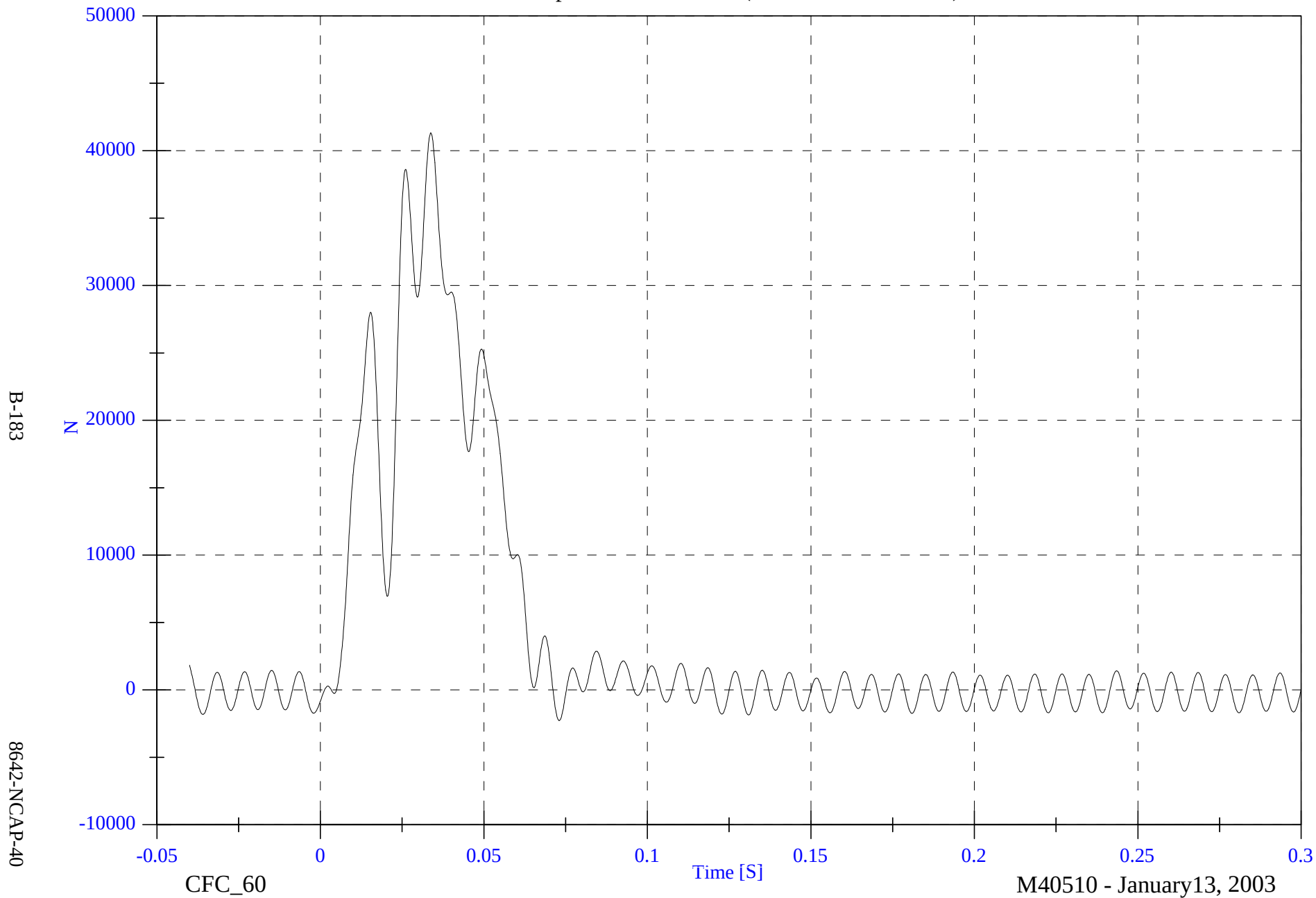


2004 NCAP Test 4 2004 Suzuki Forenza

Group 5 Load Cell Sum (C4,C5,C6,D4,D5,D6)

Max: 41321.0 [N] at 0.034 [S]

Min: -2273.9 [N] at 0.073 [S]

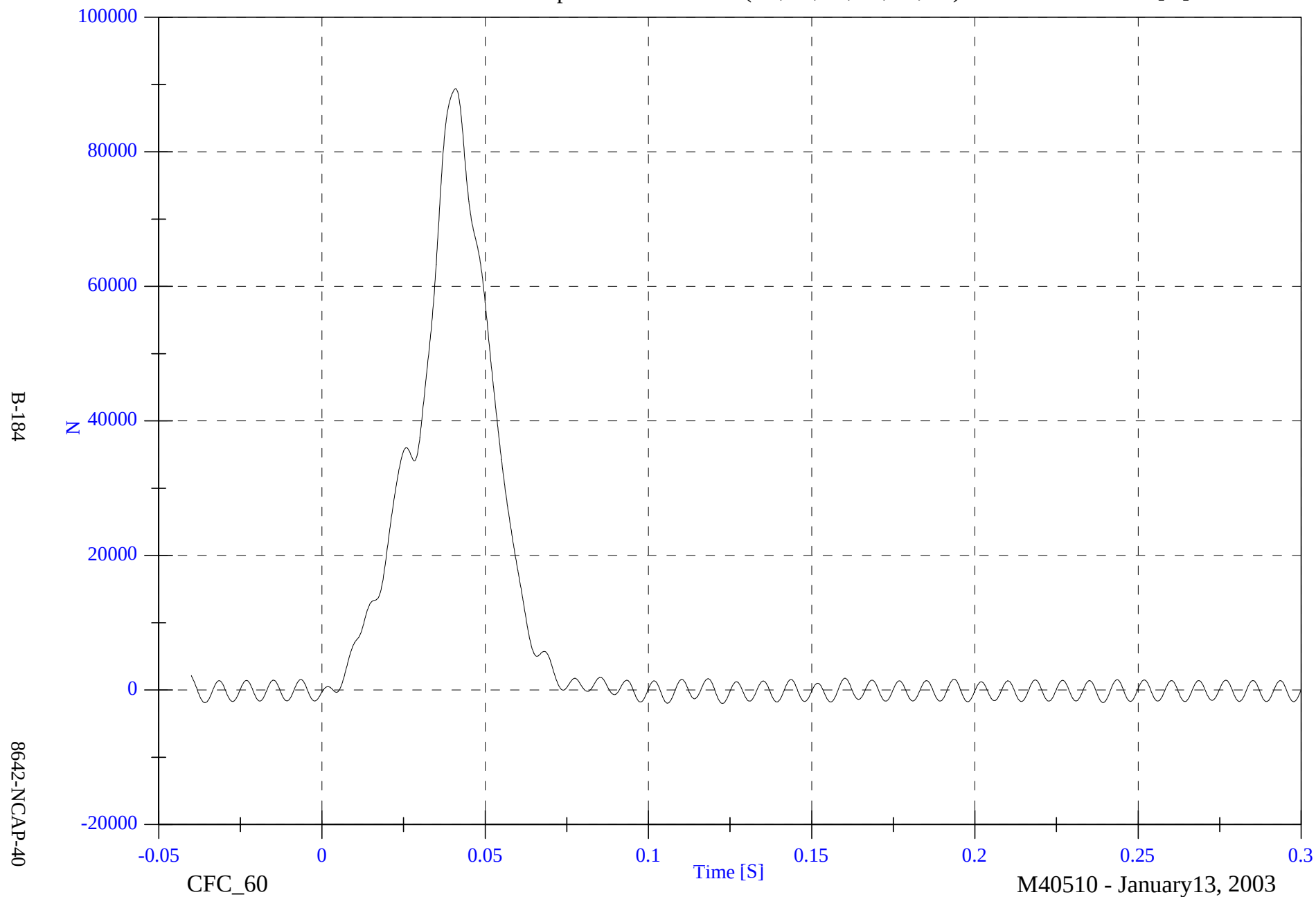


2004 NCAP Test 4 2004 Suzuki Forenza

Group 6 Load Cell Sum (C7,C8,C9,D7,D8,D9)

Max: 89377.9 [N] at 0.041 [S]

Min: -1991.0 [N] at 0.123 [S]

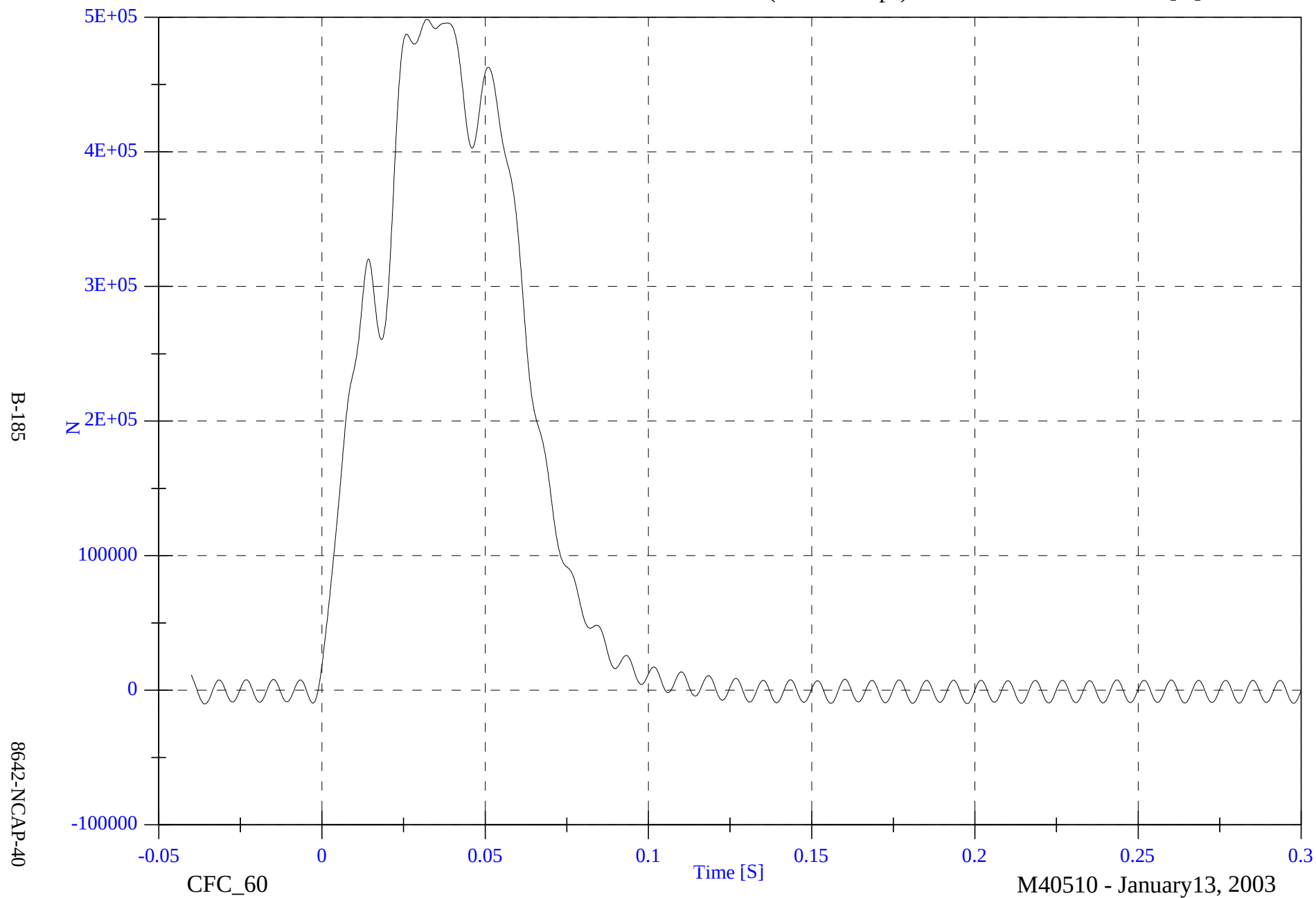


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 498433.1 [N] at 0.032 [S]

Total Load Cell Sum (All 6 Groups)

Min: -10187.6 [N] at -0.036 [S]



APPENDIX C

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

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

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

Dummy serial numbers and certification dates are:

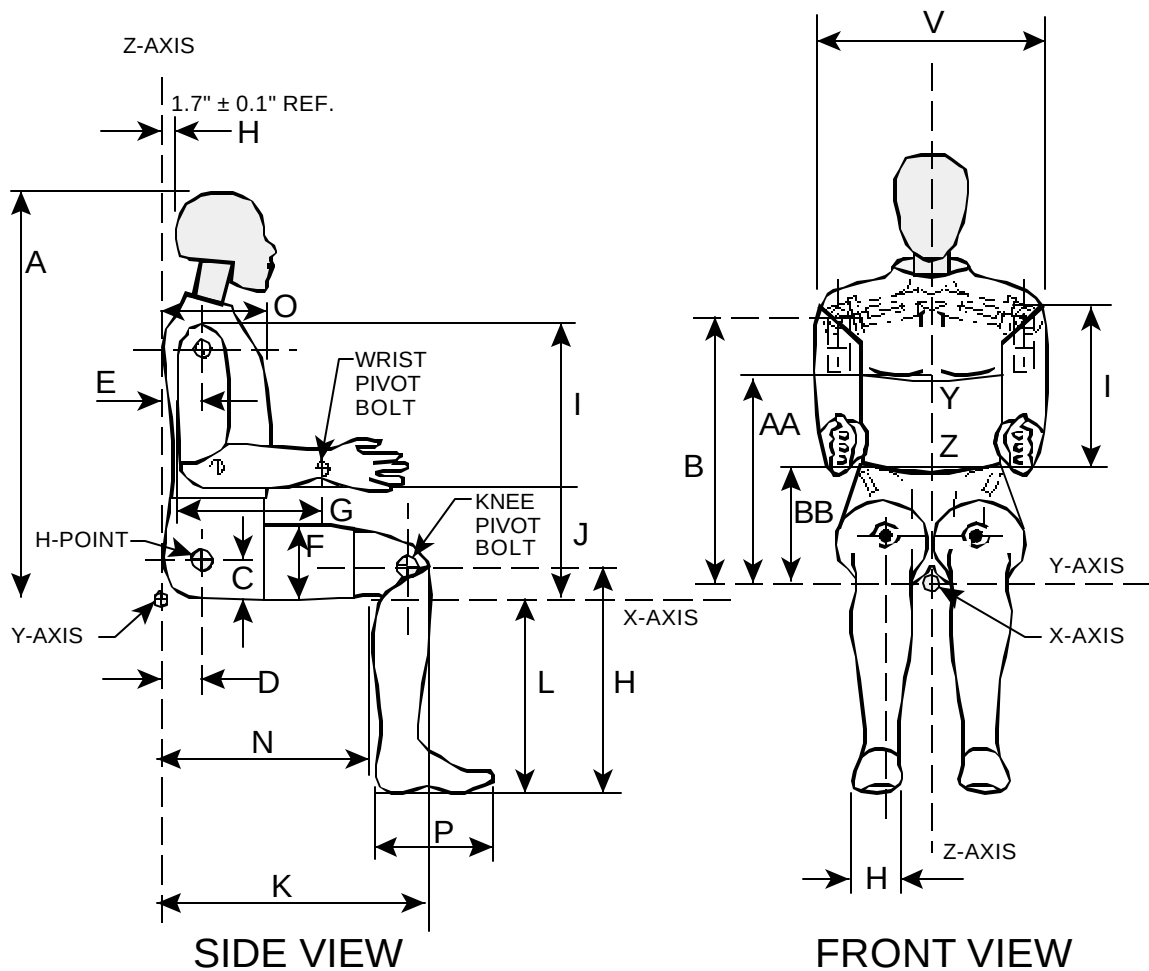
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	061	1/9/2004
#2/Right Front Passenger	064	1/9/2004

Electronic Test Equipment

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

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS SPECIFICATIONS



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

PART 572E
HEAD DROP TEST

Dummy Serial Number 061
Sequential Test Number 1
Date 01-07-04
Workfile 061H 01-07-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	35.0
Peak Resultant Acceleration	225-275 G's	273.83
Peak Lateral Acceleration	15 G's Max	12.42
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	01-08-04	6 Axis Neck Transducer
Workfile	061NF1 01-08-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6-22.2 Deg C	21.11
Relative Humidity		10% - 70%	37.0
Impact Velocity		6.89 - 7.13 m/s	6.96
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.92
	20 ms	17.60 - 22.60 G's	22.28
	30 ms	12.50 - 18.50 G's	16.01
Max Pendulum G's Above 30 ms		29 G's Max	16.01
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	41.90
D Plane Rotation	Max	64 - 78 Deg	65.59
	Time	57 - 64 ms	49.54
Moment About Occipital Condyle	Max	88.13 – 108.47 N-m	104.89
	Time	47 - 58 ms	53.40
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	115.0
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	100.7

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061	
Sequential Test Number	3	
Date	01-08-04	6 Axis Neck Transducer
Workfile	061NE3 01-08-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	37.00
Impact Velocity		5.94 – 6.19 m/s	5.99
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	17.23
	20 ms	14.00 - 19.00 G's	15.23
	30 ms	11.00 - 16.00 G's	11.98
Max Pendulum G's Above 30 ms		22 G's Max	12.01
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	45.60
D Plane Rotation	Max	81 - 106 Deg	88.13
	Time	72 - 82 ms	77.10
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-61.68
	Time	65 - 79 ms	73.80
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	155.40
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	138.30

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 1
Date 01-08-04
Workfile 061T 01-08-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	37.0
Pendulum Velocity	21.6 - 22.4 Ft/s	22.06
Maximum Deflection	2.50 - 2.86 in	2.51
Maximum Resistive Force	1160 - 1325 Lbs	1315.38
Internal Hysteresis	69 - 85 %	76.30

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 1
Date 01-09-04
Workfile 061LF 01-09-04/061RF 01-09-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	34.0
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1170.41
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	34.0
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1164.39

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Sequential Test Number 1
Date 01-09-04

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70.0
Relative Humidity			34.0
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.9
Waist Circumference	Z	32.9 - 34.1 in	33.5
Chest Depth	O	8.4 - 9.0 in	8.5
H-Point Height	C	3.3 - 3.5 in	3.5
H-Point from Backline	D	5.3 - 5.5 in	5.3
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.6
Thigh Clearance	F	5.5 - 6.1 in	6.1
Buttock Knee Length	K	22.8 - 23.8 in	23.7
Buttock Popliteal Length	N	17.8 - 18.8 in	18.0
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.3
Foot Length	P	9.9 - 10.5 in	10.3
Foot Breadth	W	3.6 - 4.2 in	14.6
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.4
Shoulder Breadth	V	16.6 - 17.2 in	16.5
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
Elbow Rest Height	J	7.5 - 8.3 in	8.3
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.1
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number 064
Sequential Test Number 1
Date 01-07-04
Workfile 064H1 01-07-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	34.0
Peak Resultant Acceleration	225-275 G's	245.44
Peak Lateral Acceleration	15 G's Max	14.99
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	01-08-04	6 Axis Neck Transducer
Workfile	064NF1 01-08-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 - 22.22 Deg C	21.11
Relative Humidity		10% - 70%	37.00
Impact Velocity		6.89 – 7.13 m/s	7.04
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.40
	20 ms	17.60 - 22.60 G's	20.16
	30 ms	12.50 - 18.50 G's	13.96
Max Pendulum G's Above 30 ms		29 G's Max	13.96
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	39.00
D Plane Rotation	Max	64 - 78 Deg	64.38
	Time	57 - 64 ms	57.30
Moment About Occipital Condyle	Max	88.13 – 108.47 N-m	106.31
	Time	47 - 58 ms	52.80
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	116.80
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	101.20

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	01-08-04	6 Axis Neck Transducer
Workfile	064NE 01-08-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	37.00
Impact Velocity		5.94 – 6.19 m/s	5.99
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	20.90
	20 ms	14.00 - 19.00 G's	18.43
	30 ms	11.00 - 16.00 G's	13.85
Max Pendulum G's Above 30 ms		22 G's Max	13.85
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	38.10
D Plane Rotation	Max	81 - 106 Deg	94.99
	Time	72 - 82 ms	74.70
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-74.94
	Time	65 - 79 ms	69.70
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	153.90
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	132.80

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 1
Date 01-09-04
Workfile 064T 01-09-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	33.0
Pendulum Velocity	21.6 - 22.4 Ft/s	22.33
Maximum Deflection	2.50 - 2.86 in	2.53
Maximum Resistive Force	1160 - 1325 Lbs	1320.11
Internal Hysteresis	69 - 85 %	75.30

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 1
Date 01-09-04
Workfile 064LF 01-09-04/064RF 01-09-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	34.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1142.42
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	34.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1130.84

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 1
Date 01-09-2004

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70.00
Relative Humidity			34.00
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.9
Waist Circumference	Z	32.9 - 34.1 in	33.7
Chest Depth	O	8.4 - 9.0 in	8.9
H-Point Height	C	3.3 - 3.5 in	3.5
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.6
Thigh Clearance	F	5.5 - 6.1 in	5.9
Buttock Knee Length	K	22.8 - 23.8 in	23.0
Buttock Popliteal Length	N	17.8 - 18.8 in	18.5
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	14.2
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Shoulder Breadth	V	16.6 - 17.2 in	16.6
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.2
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.5
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.5

Remarks:

Laboratory Technician:

B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P21399	06-Nov-03	06-May-04
	X Arm Z	ENDEVCO	AC-P23282	11-Nov-03	11-May-04
	Y Arm X	ENDEVCO	AC-P23155	11-Nov-03	11-May-04
	Y Arm Z	ENDEVCO	AC-P23358	06-Nov-03	06-May-04
	Z Arm X	ENDEVCO	AC-P18731	11-Nov-03	11-May-04
	Z Arm Y	ENDEVCO	AC-P23885	11-Nov-03	11-May-04
Head	X	ENDEVCO	AC-P18516	11-Nov-03	11-May-04
	Y	ENDEVCO	AC-P19222	11-Nov-03	11-May-04
	Z	ENDEVCO	AC-P18785	11-Nov-03	11-May-04
Head	X (R)	ENDEVCO	AC-P18663	11-Nov-03	11-May-04
	Y (R)	ENDEVCO	AC-P18639	11-Nov-03	11-May-04
	Z (R)	ENDEVCO	AC-P18537	11-Nov-03	11-May-04
Neck Load Cell	X	DENTON	LC-076Fx	24-Sep-03	24-Mar-04
	Y	DENTON	LC-076Fy	24-Sep-03	24-Mar-04
	Z	DENTON	LC-076Fz	24-Sep-03	24-Mar-04
Neck Moment	X	DENTON	LC-076Mx	24-Sep-03	24-Mar-04
	Y	DENTON	LC-076My	24-Sep-03	24-Mar-04
	Z	DENTON	LC-076Mz	24-Sep-03	24-Mar-04
Chest	X	ENDEVCO	AC-P21373	30-Oct-03	30-Apr-04
	Y	ENDEVCO	AC-P22639	30-Oct-03	30-Apr-04
	Z	ENDEVCO	AC-P21297	30-Oct-03	30-Apr-04
Chest	X (R)	ENDEVCO	AC-P21171	30-Oct-03	30-Apr-04
	Y (R)	ENDEVCO	AC-P23136	30-Oct-03	30-Apr-04
	Z (R)	ENDEVCO	AC-P23128	30-Oct-03	30-Apr-04
Chest Deflection	X	SERVO	DS-061	11-Nov-03	11-May-04
Pelvic	X	ENDEVCO	AC-P18792	11-Nov-03	11-May-04
	Y	ENDEVCO	AC-P17535	11-Nov-03	11-May-04
	Z	ENDEVCO	AC-P23134	11-Nov-03	11-May-04

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	LC-231	03-Dec-03	03-Jun-04
Right Femur Load Cell	Fz	DENTON	LC-232	03-Dec-03	03-Jun-04
Left Upper Tibia	Mx	DENTON	LC-038Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-038My	26-Sep-03	26-Mar-04
Left Lower Tibia	Fz	DENTON	LC-124Fz	26-Sep-03	26-Mar-04
	Mx	DENTON	LC-124Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-124My	26-Sep-03	26-Mar-04
Right Upper Tibia	Mx	DENTON	LC-023Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-023My	26-Sep-03	26-Mar-04
Right Lower Tibia	Fz	DENTON	LC-111Fz	26-Sep-03	26-Mar-04
	Mx	DENTON	LC-111Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-111My	26-Sep-03	26-Mar-04
Left Foot Rear	X	ENTRAN	AC-00L13-F04	14-Nov-03	14-May-04
	Z	ENTRAN	AC-01G18-F15	14-Nov-03	14-May-04
Left Foot Front	Z	ENTRAN	AC-01G18-F14	14-Nov-03	14-May-04
Right Foot Rear	X	ENTRAN	AC-01G18-F05	14-Nov-03	14-May-04
	Z	ENTRAN	AC-01G18-F03	14-Nov-03	14-May-04
Right Foot Front	Z	ENTRAN	AC-01J02-F09	14-Nov-03	14-May-04
Lap Belt Load Cell		First Technology	LC-173	10-Oct-03	10-Apr-04

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P18532	20-Nov-03	20-May-04
	X Arm Z	ENDEVCO	AC-P17237	20-Nov-03	20-May-04
	Y Arm X	ENDEVCO	AC-P16662	20-Nov-03	20-May-04
	Y Arm Z	ENDEVCO	AC-P17299	20-Nov-03	20-May-04
	Z Arm X	ENDEVCO	AC-P21441	20-Nov-03	20-May-04
	Z Arm Y	ENDEVCO	AC-P19197	26-Nov-03	26-May-04
Head	X	ENDEVCO	AC-J32184	03-Nov-03	03-May-04
	Y	ENDEVCO	AC-J32185	30-Oct-03	30-Apr-04
	Z	ENDEVCO	AC-J31011	03-Nov-03	03-May-04
Head	X (R)	ENDEVCO	AC-J31020	03-Nov-03	03-May-04
	Y (R)	ENDEVCO	AC-J31101	03-Nov-03	03-May-04
	Z (R)	ENDEVCO	AC-J31059	03-Nov-03	03-May-04
Neck Load Cell	X	DENTON	LC-441Fx	25-Sep-03	25-Mar-04
	Y	DENTON	LC-441Fy	25-Sep-03	25-Mar-04
	Z	DENTON	LC-441Fz	25-Sep-03	25-Mar-04
Neck Moment	X	DENTON	LC-441Mx	25-Sep-03	25-Mar-04
	Y	DENTON	LC-441My	25-Sep-03	25-Mar-04
	Z	DENTON	LC-441Mz	25-Sep-03	25-Mar-04
Chest	X	ENDEVCO	AC-P18948	21-Jul-03	21-Feb-04
	Y	ENDEVCO	AC-J33018	03-Nov-03	03-May-04
	Z	ENDEVCO	AC-J32783	03-Nov-03	03-May-04
Chest	X (R)	ENDEVCO	AC-J31066	03-Nov-03	03-May-04
	Y (R)	ENDEVCO	AC-P16979	03-Nov-03	03-May-04
	Z (R)	ENDEVCO	AC-J31022	03-Nov-03	03-May-04
Chest Deflection	X	SERVO	DS-064	20-Nov-03	20-May-04
Pelvic	X	ENDEVCO	AC-P23174	30-Oct-03	30-Apr-04
	Y	ENDEVCO	AC-P23164	30-Oct-03	30-Apr-04
	Z	ENDEVCO	AC-P23137	30-Oct-03	30-Apr-04

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	GSE	LC-723	03-Dec-03	03-Jun-04
Right Femur Load Cell	Fz	GSE	LC-955	03-Dec-03	03-Jun-04
Left Upper Tibia	Mx	DENTON	LC-045Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-045My	26-Sep-03	26-Mar-04
Left Lower Tibia	Fz	DENTON	LC-125Fz	26-Sep-03	26-Mar-04
	Mx	DENTON	LC-125Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-125My	26-Sep-03	26-Mar-04
Right Upper Tibia	Mx	DENTON	LC-016Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-016My	26-Sep-03	26-Mar-04
Right Lower Tibia	Fz	DENTON	LC-123Fz	26-Sep-03	26-Mar-04
	Mx	DENTON	LC-123Mx	26-Sep-03	26-Mar-04
	My	DENTON	LC-123My	26-Sep-03	26-Mar-04
Left Foot Rear	X	ENDEVCO	AC-J18059	04-Dec-03	04-Jun-04
	Z	ENDEVCO	AC-J36176	04-Dec-03	04-Jun-04
Left Foot Front	Z	ENDEVCO	AC-J18662	04-Dec-03	04-Jun-04
Right Foot Rear	X	ENDEVCO	AC-AJ8C0	04-Dec-03	04-Jun-04
	Z	ENDEVCO	AC-J19868	04-Dec-03	04-Jun-04
Right Foot Front	Z	ENDEVCO	AC-J34378	04-Dec-03	04-Jun-04
Lap Belt Load Cell		First Technology	LC-174	10-Oct-03	10-Apr-04

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	GS SENSORS	AC-9444-038	03-Dec-03	03-Jun-04
Right Rear Seat Crossmember X	GS SENSORS	AC-9440-023	03-Dec-03	03-Jun-04
Top of Engine	GS SENSORS	AC-9440-039	03-Dec-03	03-Jun-04
Bottom of Engine	ICS	AC-8084-023	11-Dec-03	11-Jun-04
Right Disc Brake Caliper	ICS	AC-8084-045	11-Dec-03	11-Jun-04
Instrument Panel	GS SENSORS	AC-9440-036	03-Dec-03	03-Jun-04
Left Disc Brake Caliper	ICS	AC-8084-010	11-Dec-03	11-Jun-04
Left Seat Rear Crossmember Z	GS SENSORS	AC-9440-029	03-Dec-03	03-Jun-04
Right Seat Rear Crossmember Z	GS SENSORS	AC-9440-046	03-Dec-03	03-Jun-04

REPORT NUMBER: CAL-04-4

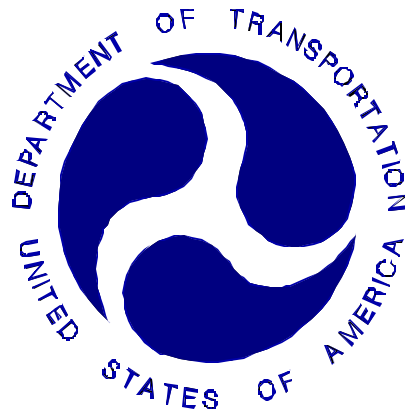
NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

EVENFLO VANGUARD 5 LATCH AND TOP TETHER

NHTSA NUMBER: M40510

GENERAL DYNAMICS REPORT NUMBER: 8642-NCAP-40

GENERAL DYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225



January 13, 2004

FINAL REPORT

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

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

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				6. Performing Organization Code CAL	
7. Author(s) Patrick G. MacDiarmid, Jr., Project Engineer David J. Travale, Program Manager				8. Performing Organization Report No. 8642-NCAP-40	
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15. Supplementary Notes					
16. Abstract This CRS test was performed in conjunction with a New Car Assessment Program (NCAP) load cell barrier test. An Evenflo Vanguard 5 LATCH and Top Tether forward facing convertible was secured in Position 3 (P3) with the LATCH system and top tether. This test was conducted at the General Dynamics Crash Test Facility in Buffalo, New York, on January 13, 2004.					
ATD Position		HIC 15		HIC 36	
P3 (Right Rear) (044)		640.9		915.7	
				Clip (3 ms)	
				56.0 g	
17. Key Words New Car Assessment Program (NCAP)				18. Distribution Statement	
				Copies of this report are available from: National Highway Traffic Safety Administration Technical Reference Division Room 5111 (NAD-52) 400 Seventh St., S.W. Washington, D.C. 20590 Telephone No. (202) 366-4946 ATTN: Robert Hornicle	
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SECTION 1

PURPOSE AND SUMMARY OF TEST M40510

The purpose of this test was to obtain CRS performance data in a frontal impact NCAP condition. The 56.81 kph NCAP frontal impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

A forward facing convertible 5-point belt CRS and a 3 year old child dummy (serial no. 044) was secured in the right rear occupant position (Position 3 or P3). The 3 Year Old Hybrid III (P572 P) child dummy was instrumented with head, chest, and pelvic triaxial accelerometers, a head rear Z-direction accelerometer, a chest displacement sensor, and upper and lower six axial neck load cells. The dummy was calibrated previous to this test and the certification information is found in section 5.

The right rear child dummy's HIC (15 ms) was 640.9, the HIC over 36 ms was 915.7 and the maximum chest deceleration over 3 ms was 56.0 g's.

TEST DUMMY INFORMATION:

<u>Number of Data Channels</u>	30	
<u>Number of Cameras:</u>	1	<u>Real Time</u>
	2	<u>High Speed</u>

POST TEST SEAT DATA

VISIBLE DUMMY CONTACT POINTS

8642-NCAP-40

DATA SHEET NO. 2

CRS PARAMETER DATA

CRS: Evenflo Vanguard 5 LATCH and Top Tether

NHTSA No. M40510

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Delivered Weight of Vehicle with Maximum Fluids = 1270.5 kg (A)

AS TESTED WEIGHT OF VEHICLE

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

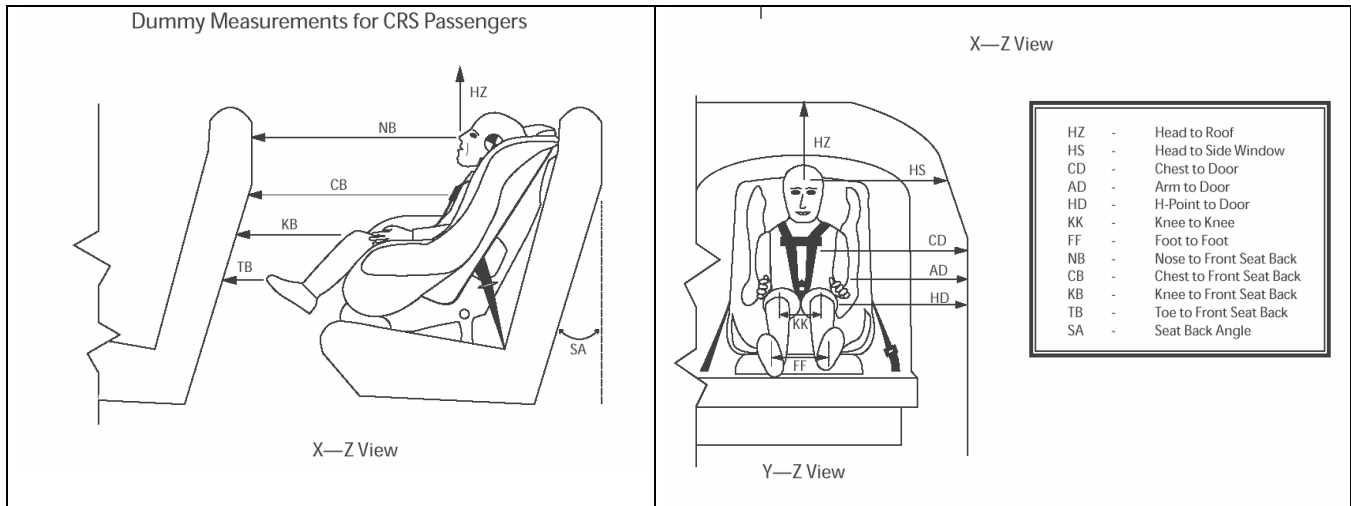
Left Front	=	<u>420.0</u>	kg	Left Rear	=	<u>309.5</u>	kg
Right Front	=	<u>432.0</u>	kg	Right Rear	=	<u>312.0</u>	kg
TOTAL FRONT	=	<u>420.0</u>	kg	TOTAL REAR	=	<u>309.5</u>	kg
TOTAL TEST WEIGHT =		<u>744.0</u>	kg				

DATA SHEET NO. 3

CHILD DUMMY POSITIONING IN VEHICLE

CRS: Evenflo Vanguard 5 LATCH and Top Tether

NHTSA No. M40510



Measurement	P3 CRS (044)
SA	25.7
HS	360
CD	345
AD	213
HD	273
HZ	340
NB	536
CB	492
KK	155
FF	140
KB – LEFT	365
KB – RIGHT	350
TB – LEFT	90
TB – RIGHT	90

All dimensions in mm (unless noted)

P3 – Right Rear Passenger (CRS #1)

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES

CRS: Evenflo Vanguard 5 LATCH and Top Tether

NHTSA No. M40510

		MAXIMUM VALUE			
		Position #3			
DESCRIPTION	Unit	Pos	msec	Neg	msec
Head X	g	51.8	191.5	-32.9	70.6
Head Y	g	2.7	123.5	-8.9	71.0
Head Z	g	68.8	68.8	-6.5	38.7
Head Resultant	g	74.8	75.4	0.0	-24.1
Head Rear Z	g	90.4	75.3	-13.2	47.0
Upper Neck Fx	N	22.9	177.7	-747.2	78.1
Upper Neck Fy	N	45.7	123.3	-181.9	70.1
Upper Neck Fz	N	2427.6	75.4	-180.0	196.6
Upper Neck F Resultant	N	2529.7	75.5	0.2	-23.5
Upper Neck Mx	N-m	4.7	109.4	-14.2	78.2
Upper Neck My	N-m	5.8	146.3	-14.2	201.0
Upper Neck Mz	N-m	2.1	90.1	-1.2	104.2
Upper Neck M Resultant	N-m	18.0	78.8	0.0	-30.7
Lower Neck Fx	N	102.9	184.9	-1187.3	77.3
Lower Neck Fy	N	70.6	61.2	-222.6	82.7
Lower Neck Fz	N	1423.5	75.6	-196.0	36.9
Lower Neck F Resultant	N	1844.9	75.9	0.5	-25.0
Lower Neck Mx	N-m	7.3	126.1	-35.0	77.9
Lower Neck My	N-m	119.8	76.2	-7.9	184.4
Lower Neck Mz	N-m	4.2	102.3	-20.3	75.9
Lower Neck M Resultant	N-m	126.2	76.3	0.0	-23.5
Chest X	g	7.7	202.4	-44.4	65.6
Chest Y	g	3.1	83.8	-14.1	62.5
Chest Z	g	18.4	85.1	-37.5	60.6
Chest Resultant	g	57.4	65.4	0.1	-31.3
Chest Displacement	mm	0.0	-29.8	-20.1	92.7

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 LATCH and Top Tether

NHTSA No. M40510

		MAXIMUM VALUE			
		Position #3			
DESCRIPTION	Unit	Pos	msec	Neg	msec
Pelvic X	g	14.0	113.4	-67.4	55.7
Pelvic Y	g	6.8	122.6	-13.2	51.2
Pelvic Z	g	15.5	195.6	-35.4	53.0
Pelvic Resultant	g	76.7	55.6	0.0	-30.9
LATCH Belt Load	N	6240.9	62.4	-108.0	131.8

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 LATCH and Top Tether

NHTSA No. M40510

	HEAD INJURY CRITERIA (HIC)							
	HIC15				HIC36			
	HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂	HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #3 - Right	640.9	66.1	81.1	71.2 g	915.7	57.6	93.6	57.8 g

	CLIP SUMMARY*			
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #3 - Right	56.0	63.7	66.7	620.2

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

DATA SHEET NO. 5

CRS PERFORMANCE DATA

CRS: Evenflo Vanguard 5 LATCH and Top Tether

NHTSA No. M40510

		MAXIMUM VALUE			
DESCRIPTION	Unit	Positive	Time (ms)	Negative	Time (ms)
P3 CRS X	g	10.6	117.2	-70.9	52.6
P3 CRS Y	g	8.4	117.3	-7.8	109.8
P3 CRS Z	g	19.2	70.6	-21.5	200.5
P3 CRS Resultant	g	71.4	52.5	0.1	-28.9
P3 CRS Red X	g	10.2	117.2	-70.9	52.6
P3 CRS Red Y	g	9.2	117.6	-9.2	109.8
P3 CRS Red Z	g	20.8	70.6	-24.2	200.7
P3 CRS Red Resultant	g	71.8	52.5	0.1	-29.0

DATA SHEET NO. 5**CRS PERFORMANCE DATA (CONTINUED)**CRS: Evenflo Vanguard 5 LATCH and Top TetherNHTSA No. M40510**POSITION #3 CRS POST-TEST INSPECTION (Serial No. 0443691261 P1)**

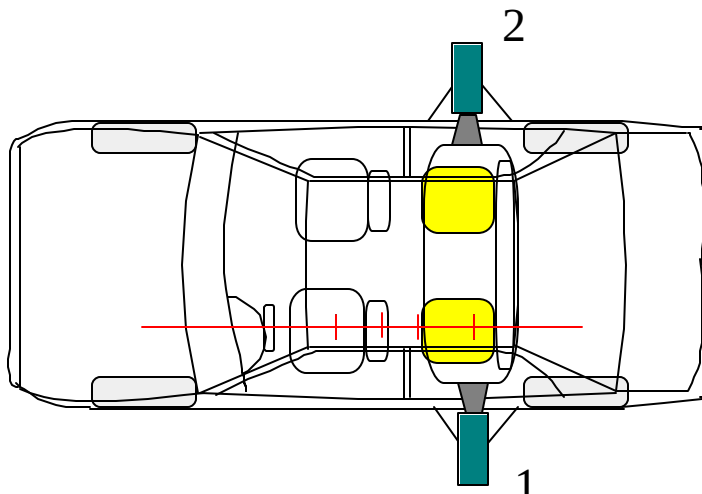
LOCATION	DAMAGE	REMARKS
Upper Tether Strap	No	None
Upper Tether Buckle	No	None
Upper Tether Hook	No	None
Vehicle Upper Tether Anchor	No	None
Lower Anchor Strap	No	None
Lower Anchor Buckle	No	None
Lower Anchor Hooks	No	None
Vehicle Lower CRS Anchors	No	None
Five Point Harness Connections	No	None
Cracks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

DATA SHEET NO. 6

CRS CAMERA DATA

CRS: Evenflo Vanguard 5 LATCH and Top Tether

NHTSA No. M40510



Camera No.	View	Coordinates (millimeters)			Angle** (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Left side CRS lateral view	3658	2708	2555	-20	24-70	1000
2	Right side CRS lateral view	3642	2642	2567	-24	24-70	1000

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

X = film plane to monorail centerline

Y = film plane to impact location

Z = film plane to ground

** = referenced to horizontal plane

SECTION 3

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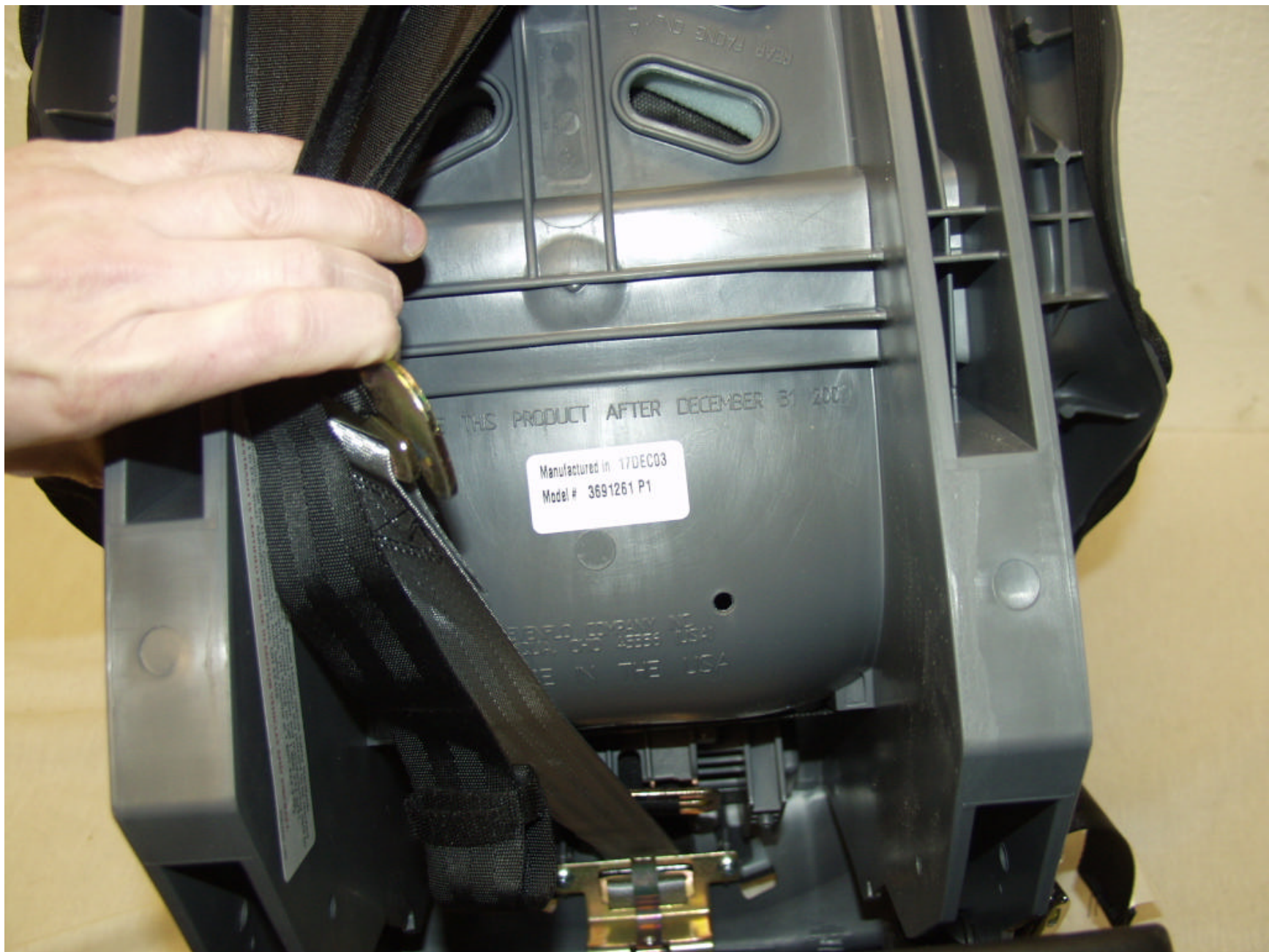


Figure 3-1: CLOSE-UP VIEW OF POSITION 3CRS LABEL



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



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



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



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



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



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



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



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



Figure 3-10: PRE-TEST POSITION 3 LEFT SIDE VIEW



Figure 3-11: POST-TEST POSITION 3 LEFT SIDE VIEW



Figure 3-12: PRE-TEST POSITION 3 RIGHT SIDE VIEW



Figure 3-13: POST-TEST POSITION 3 RIGHT SIDE VIEW



Figure 3-14: PRE-TEST POSITION 3 FRONT VIEW



Figure 3-15: POST-TEST POSITION 3 FRONT VIEW

SECTION 4

CHILD DUMMY RESPONSE AND CRS DATA TRACES

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14	V1P3 Lower Neck Fx [N, CFC_1000]	4-17
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18	V1P3 Lower Neck Mx [N-m, CFC_600]	4-21
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20	V1P3 Lower Neck Mz [N-m, CFC_600]	4-23
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23	V1P3 Chest y [g, CFC_180]	4-26
24	V1P3 Chest z [g, CFC_180]	4-27
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31	V1P3 Latch Belt [N, CFC_60]	4-34

TABLE OF DATA PLOTS (Continued)

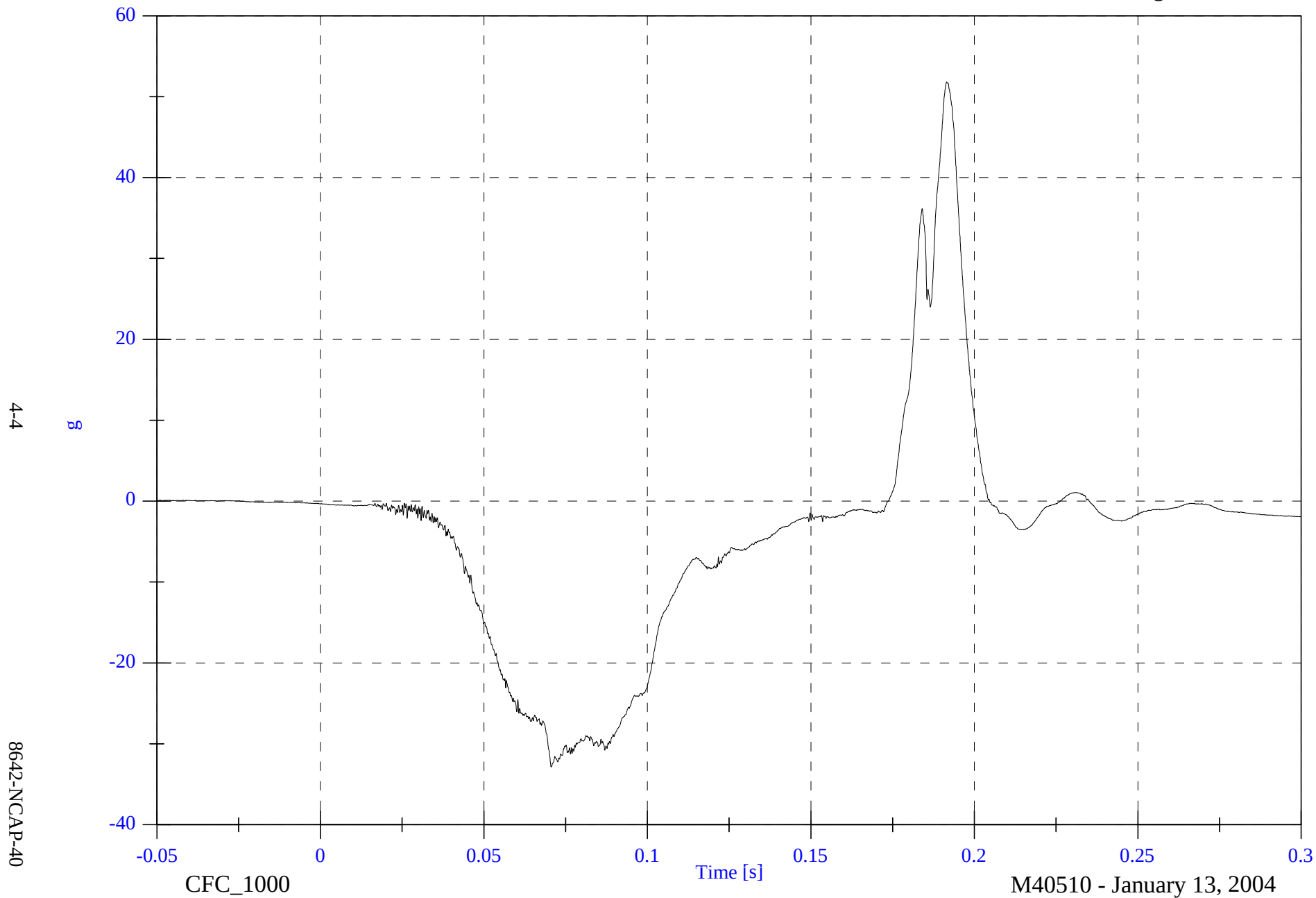
PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
32	V1P3 Seat x [g, CFC_60]	4-35
33	V1P3 Seat x Velocity [kph, CFC_180]	4-36
34	V1P3 Seat x Displacement [mm, CFC_180]	4-37
35	V1P3 Seat y [g, CFC_60]	4-38
36	V1P3 Seat y Velocity [kph, CFC_180]	4-39
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38	V1P3 Seat z [g, CFC_60]	4-41
39	V1P3 Seat z Velocity [kph, CFC_180]	4-42
40	V1P3 Seat z Displacement [mm, CFC_180]	4-43
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2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Head x

Max: 51.8 [g] at 0.192 [s]

Min: -32.9 [g] at 0.071 [s]

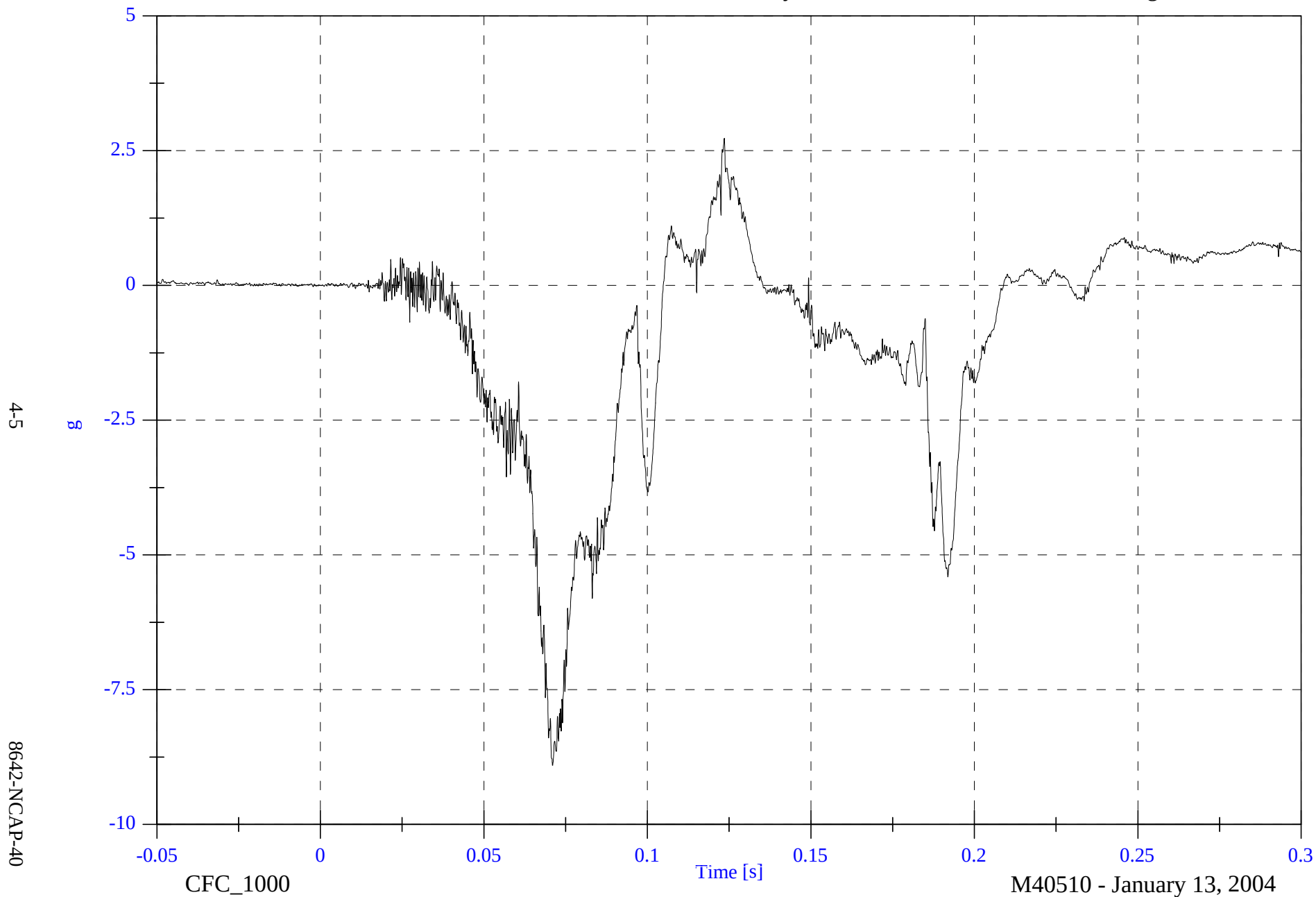


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Head y

Max: 2.7 [g] at 0.124 [s]

Min: -8.9 [g] at 0.071 [s]

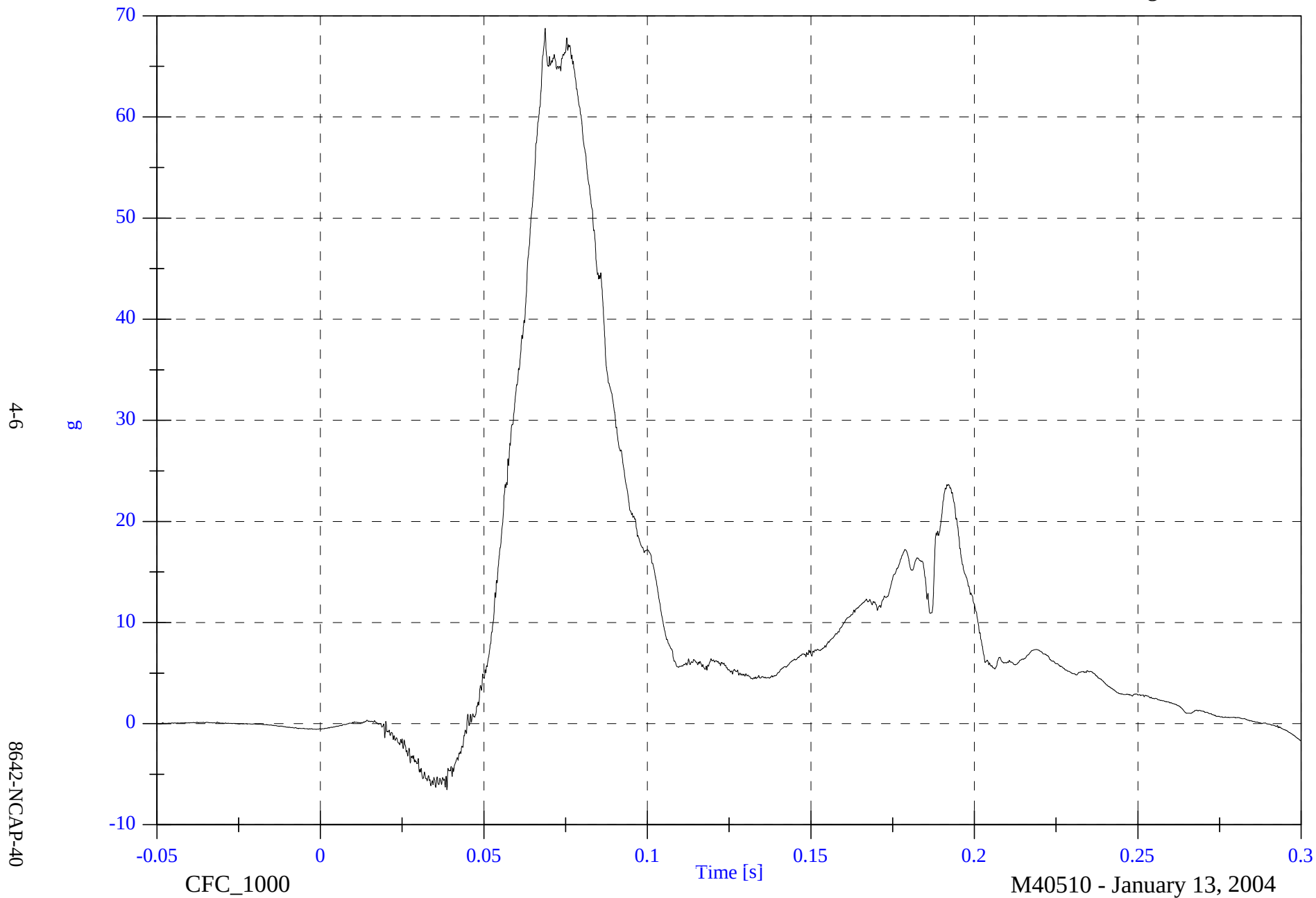


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Head z

Max: 68.8 [g] at 0.069 [s]

Min: -6.5 [g] at 0.039 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

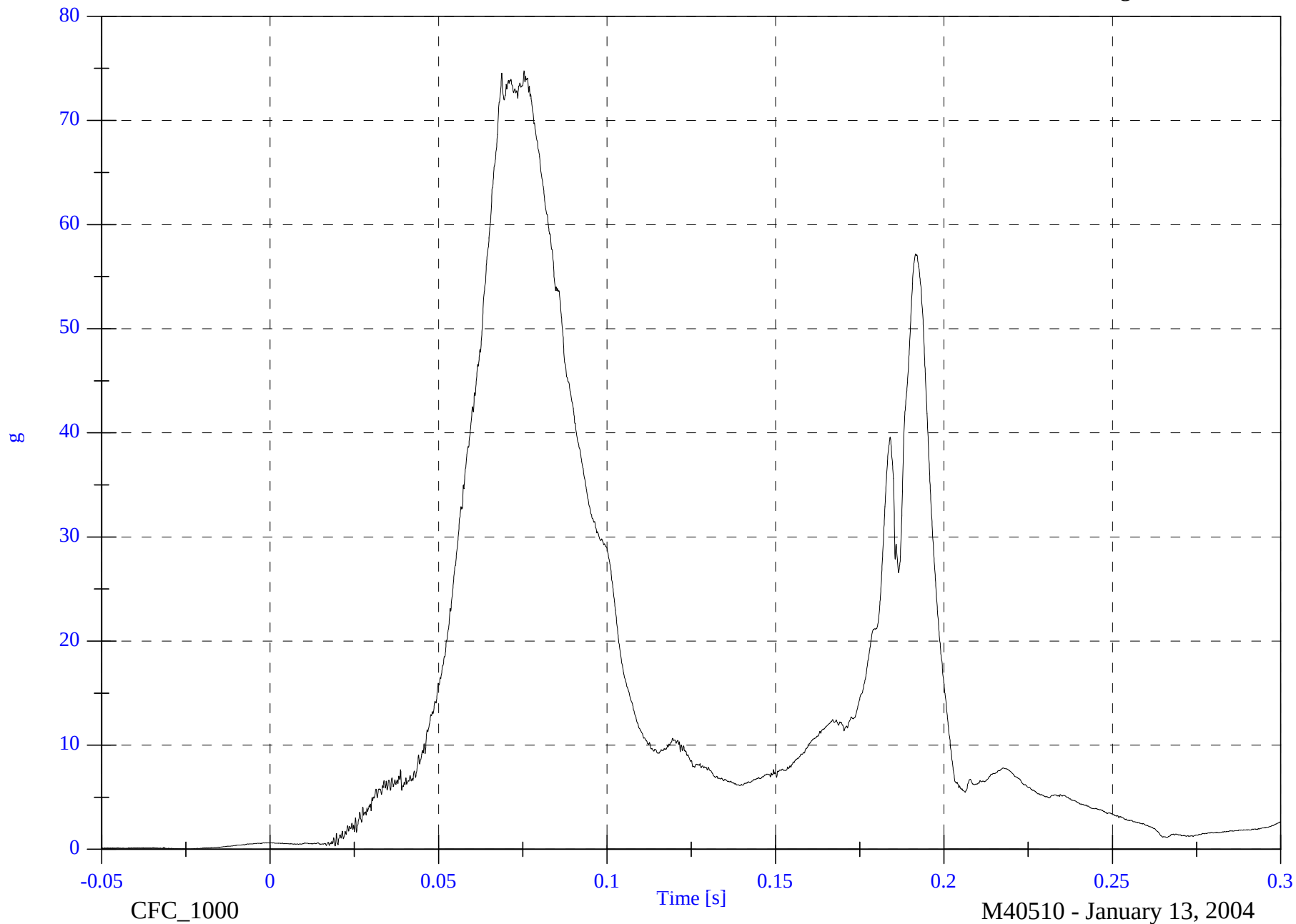
V1P3 Head Resultant

Max: 74.8 [g] at 0.075 [s]

Min: 0.0 [g] at -0.024 [s]

4-7

8642-NCAP-40

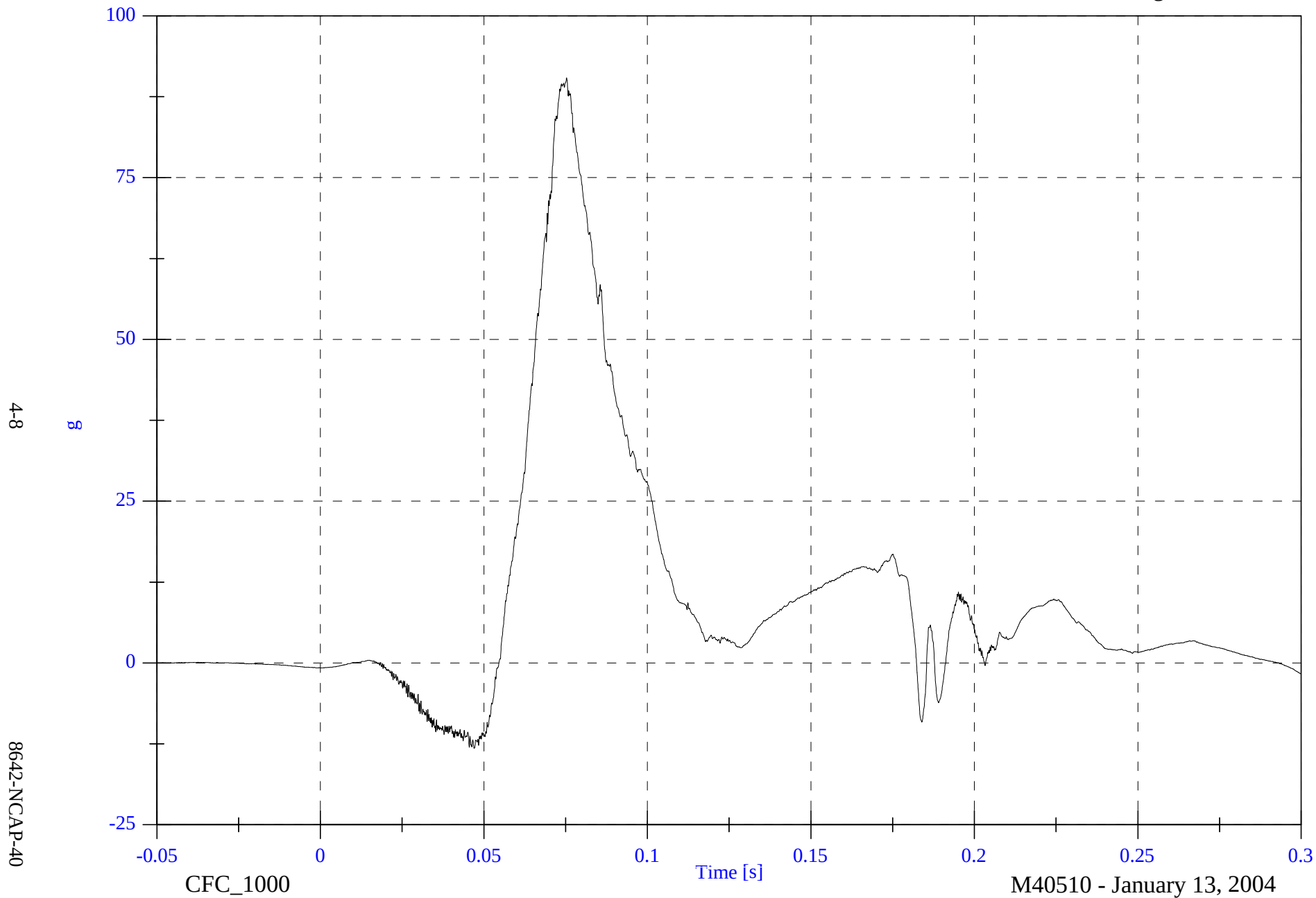


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Head Red z

Max: 90.4 [g] at 0.075 [s]

Min: -13.2 [g] at 0.047 [s]

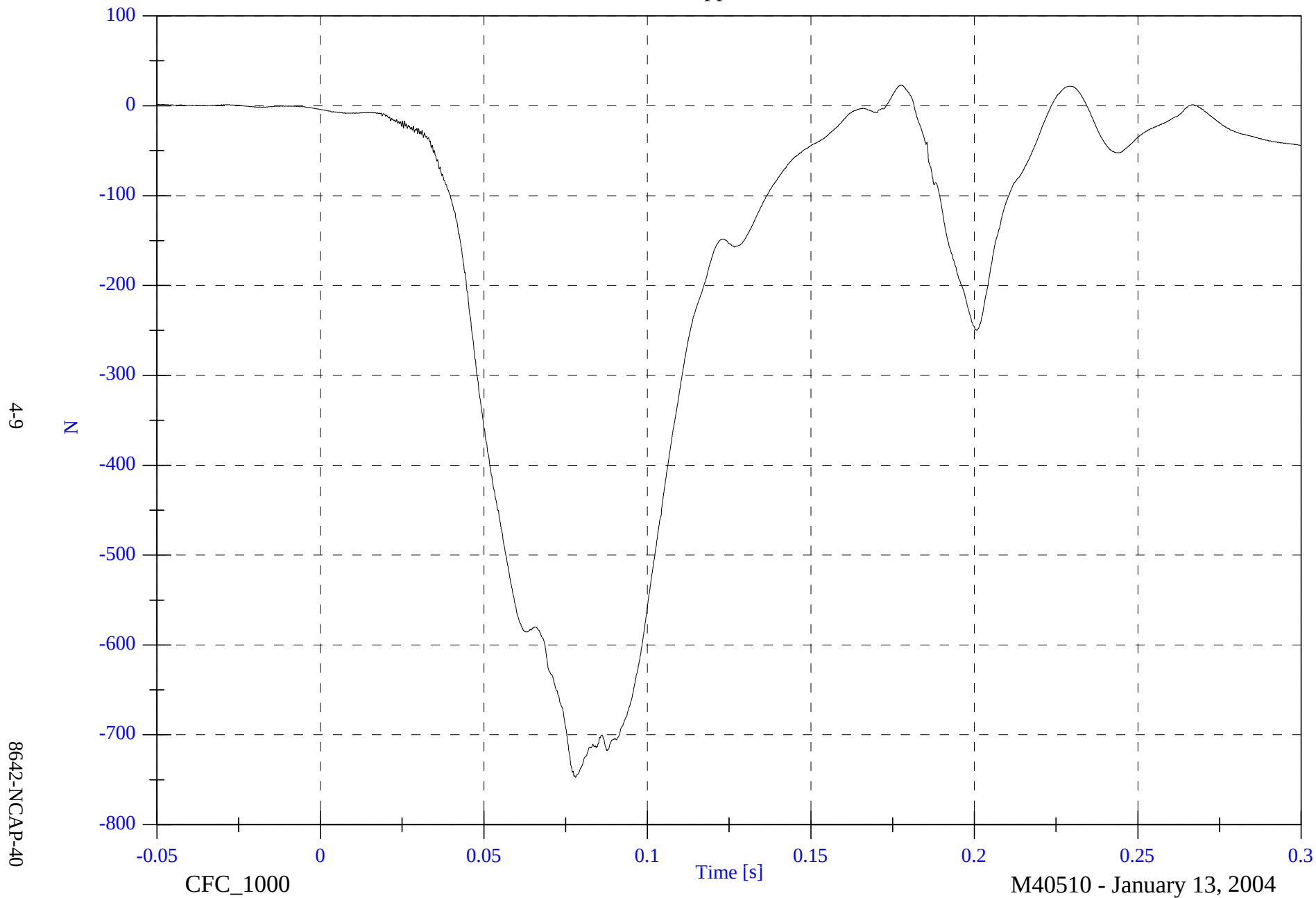


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Upper Neck Fx

Max: 22.9 [N] at 0.178 [s]

Min: -747.2 [N] at 0.078 [s]

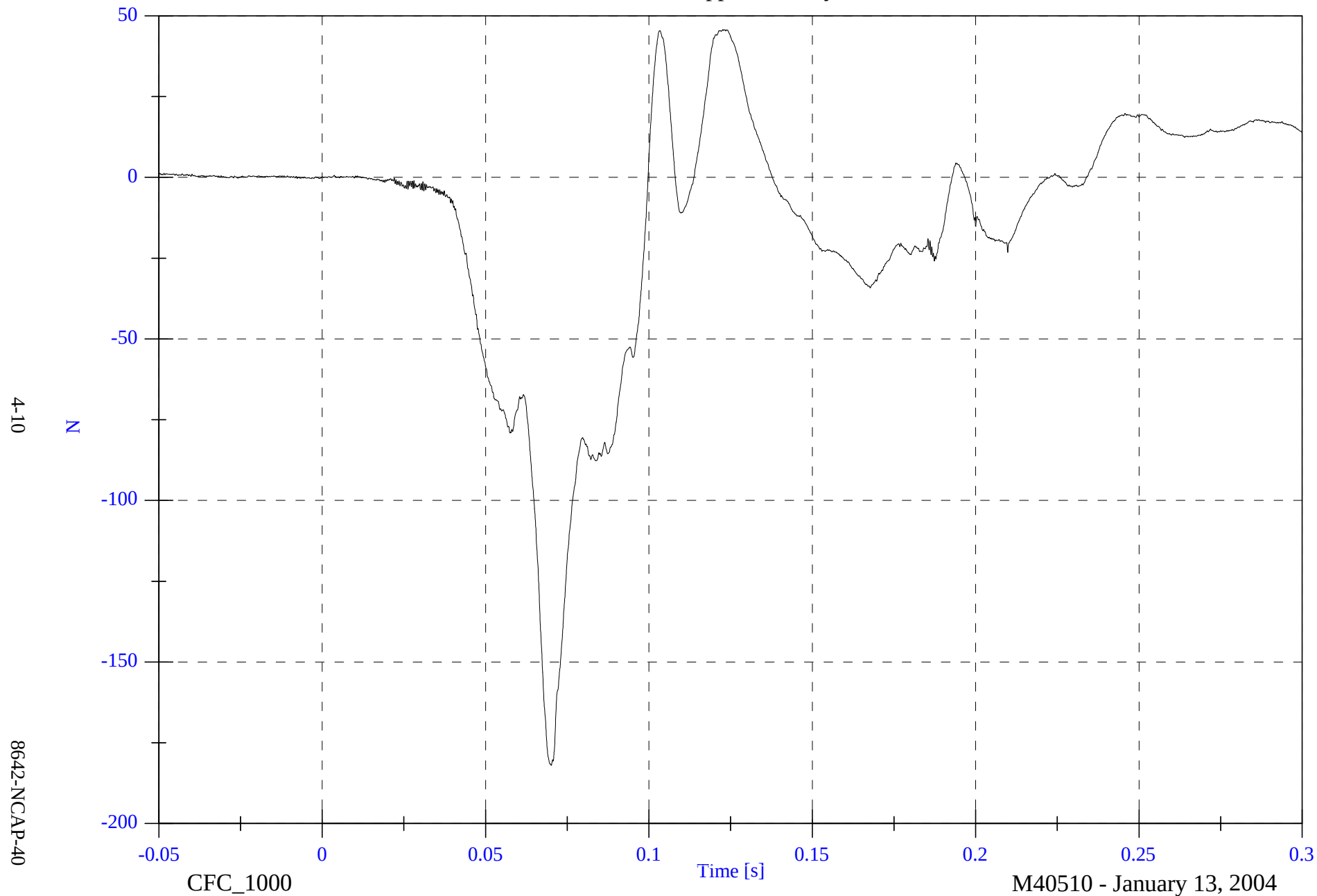


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Upper Neck Fy

Max: 45.7 [N] at 0.123 [s]

Min: -181.9 [N] at 0.070 [s]

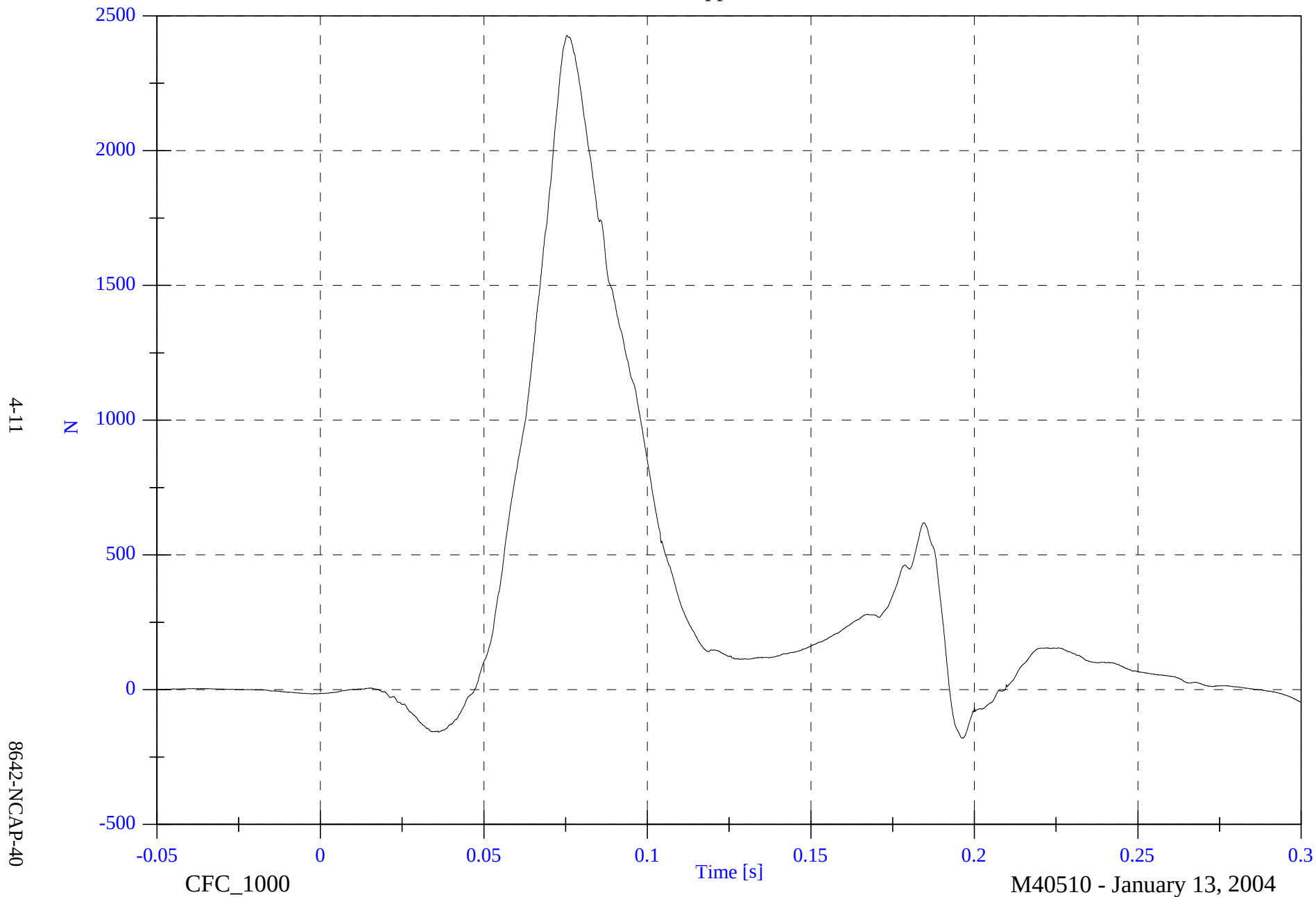


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 2427.6 [N] at 0.075 [s]

Min: -180.0 [N] at 0.197 [s]

V1P3 Upper Neck Fz

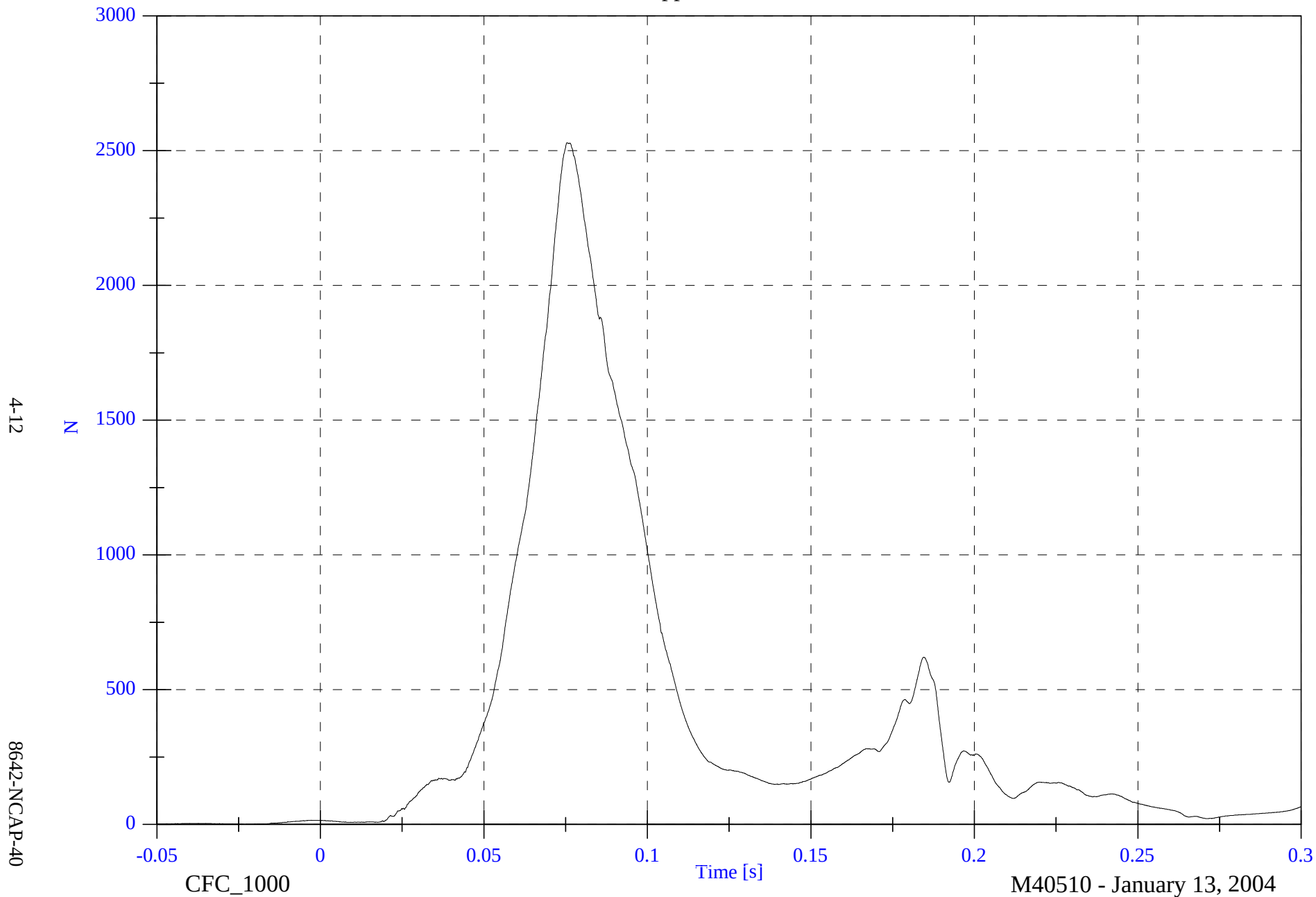


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Upper Neck F Resultant

Max: 2529.7 [N] at 0.076 [s]

Min: 0.2 [N] at -0.024 [s]

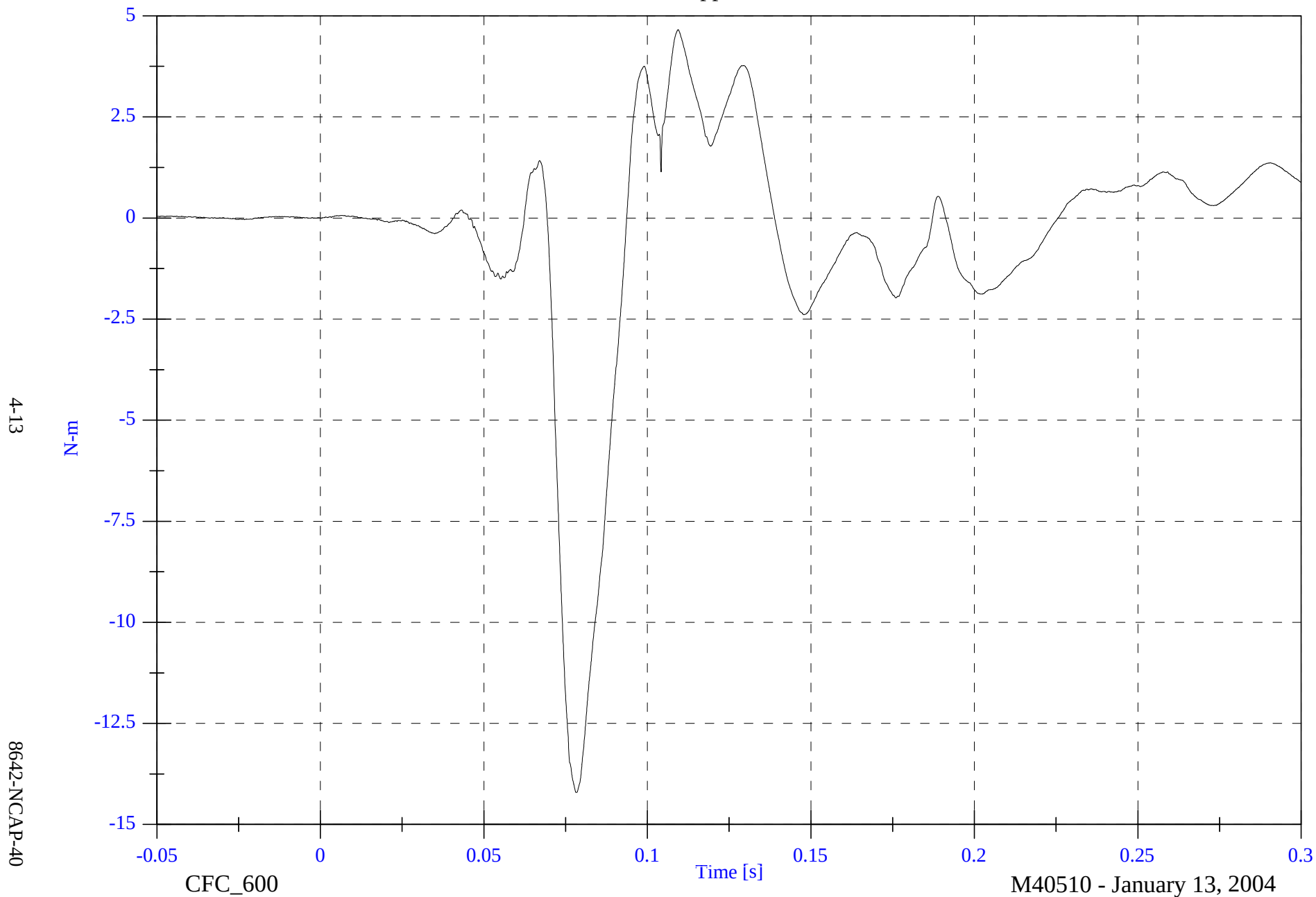


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Upper Neck Mx

Max: 4.7 [N-m] at 0.109 [s]

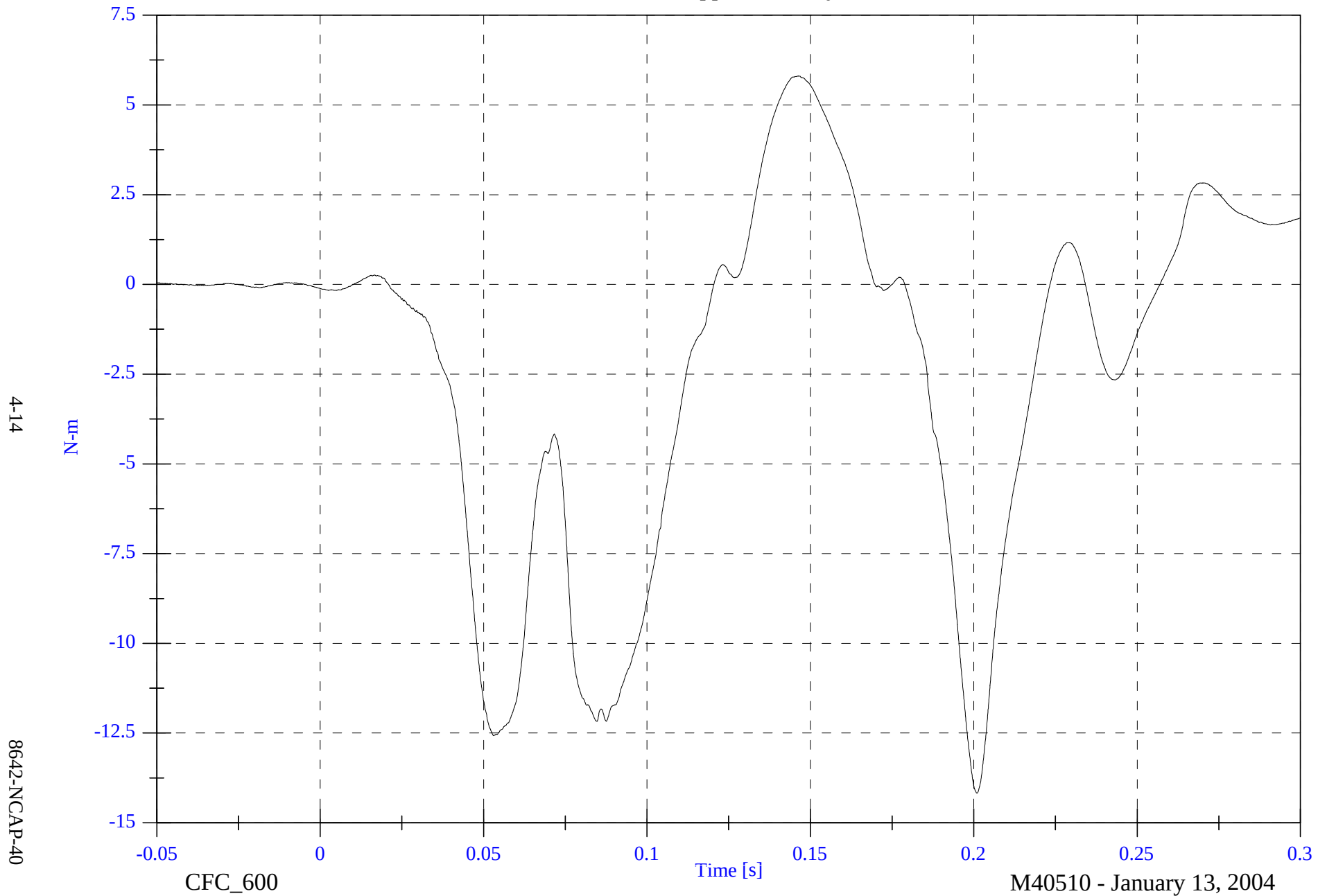
Min: -14.2 [N-m] at 0.078 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Upper Neck My

Max: 5.8 [N-m] at 0.146 [s]
Min: -14.2 [N-m] at 0.201 [s]

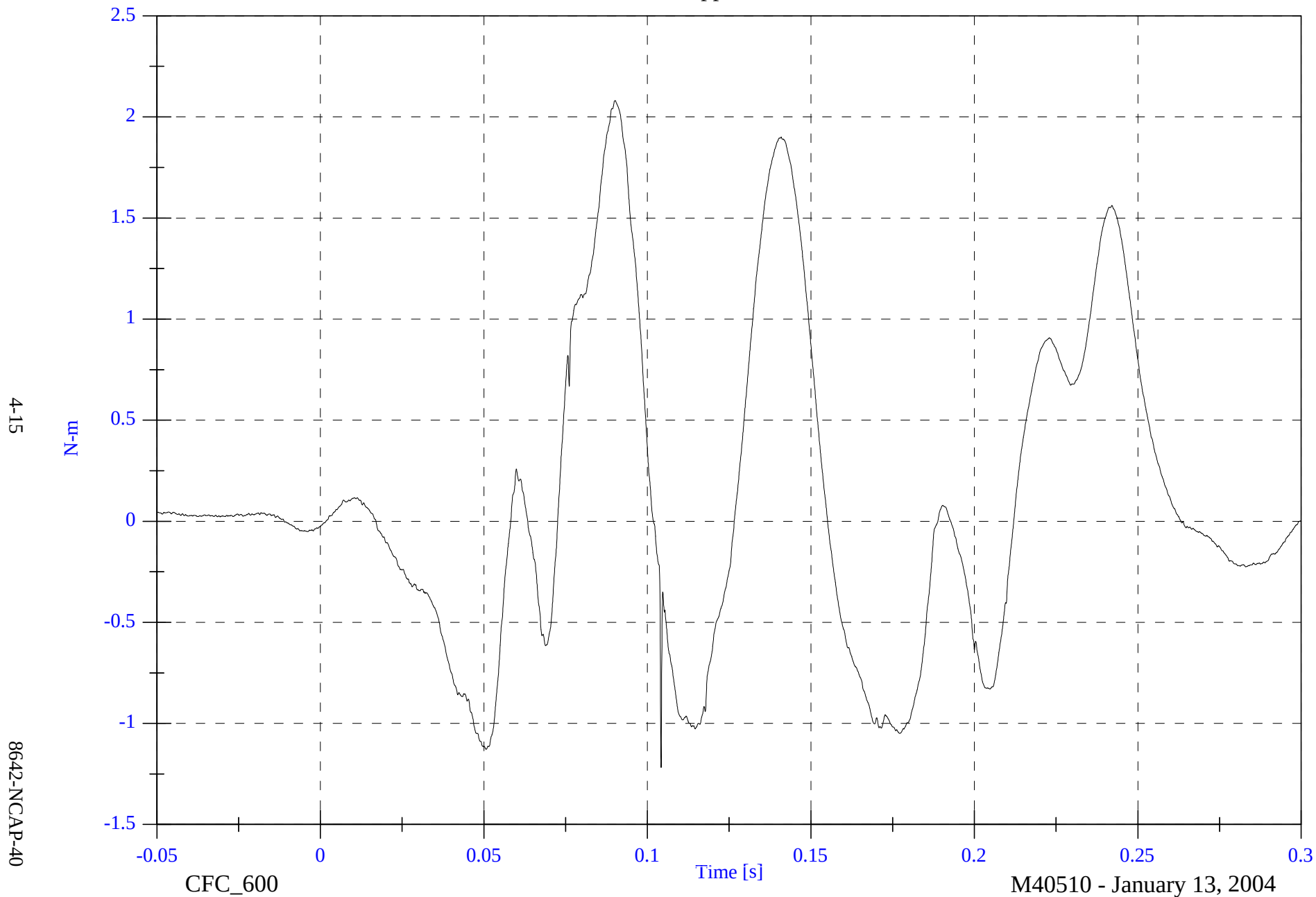


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Upper Neck Mz

Max: 2.1 [N-m] at 0.090 [s]

Min: -1.2 [N-m] at 0.104 [s]

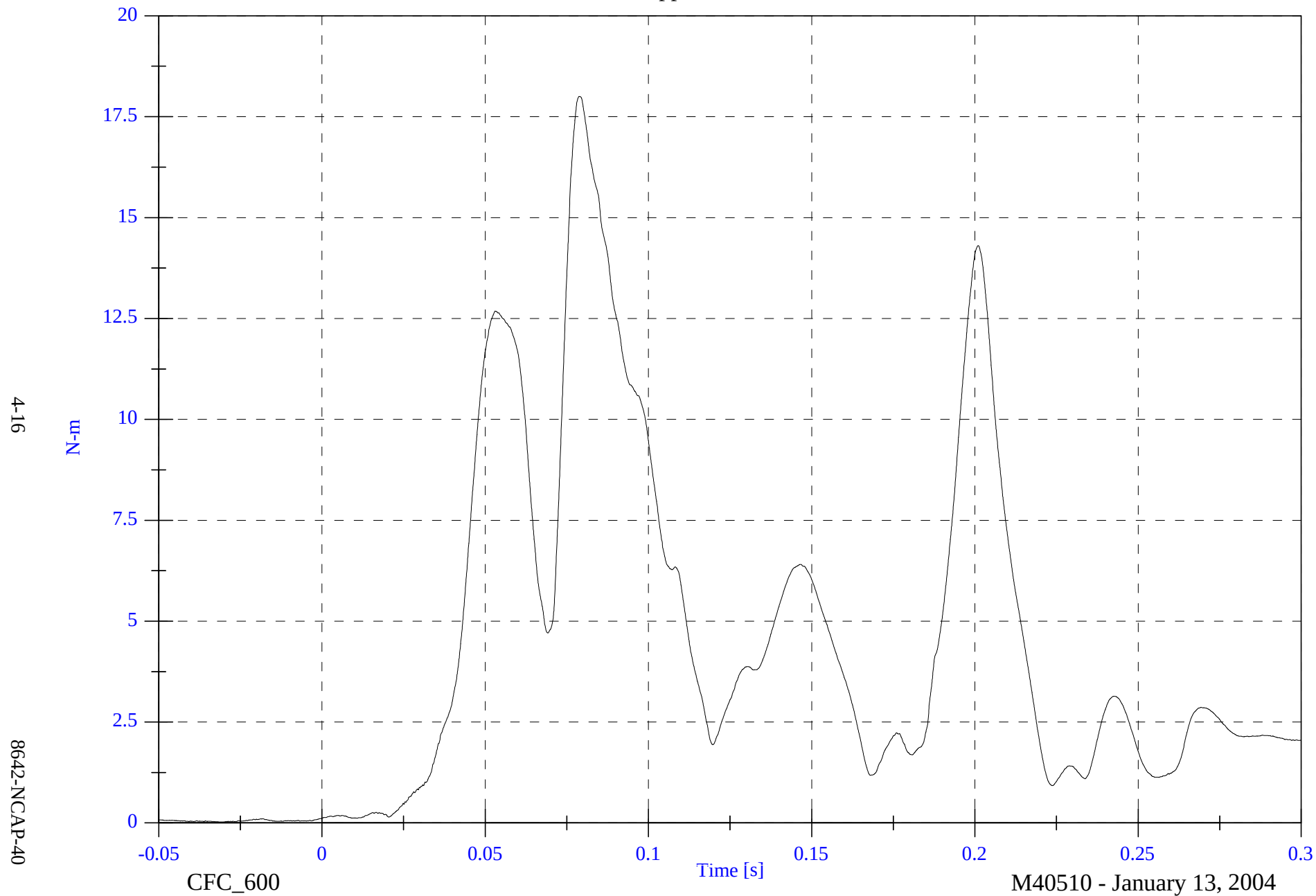


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Upper Neck M Resultant

Max: 18.0 [N-m] at 0.079 [s]

Min: 0.0 [N-m] at -0.031 [s]

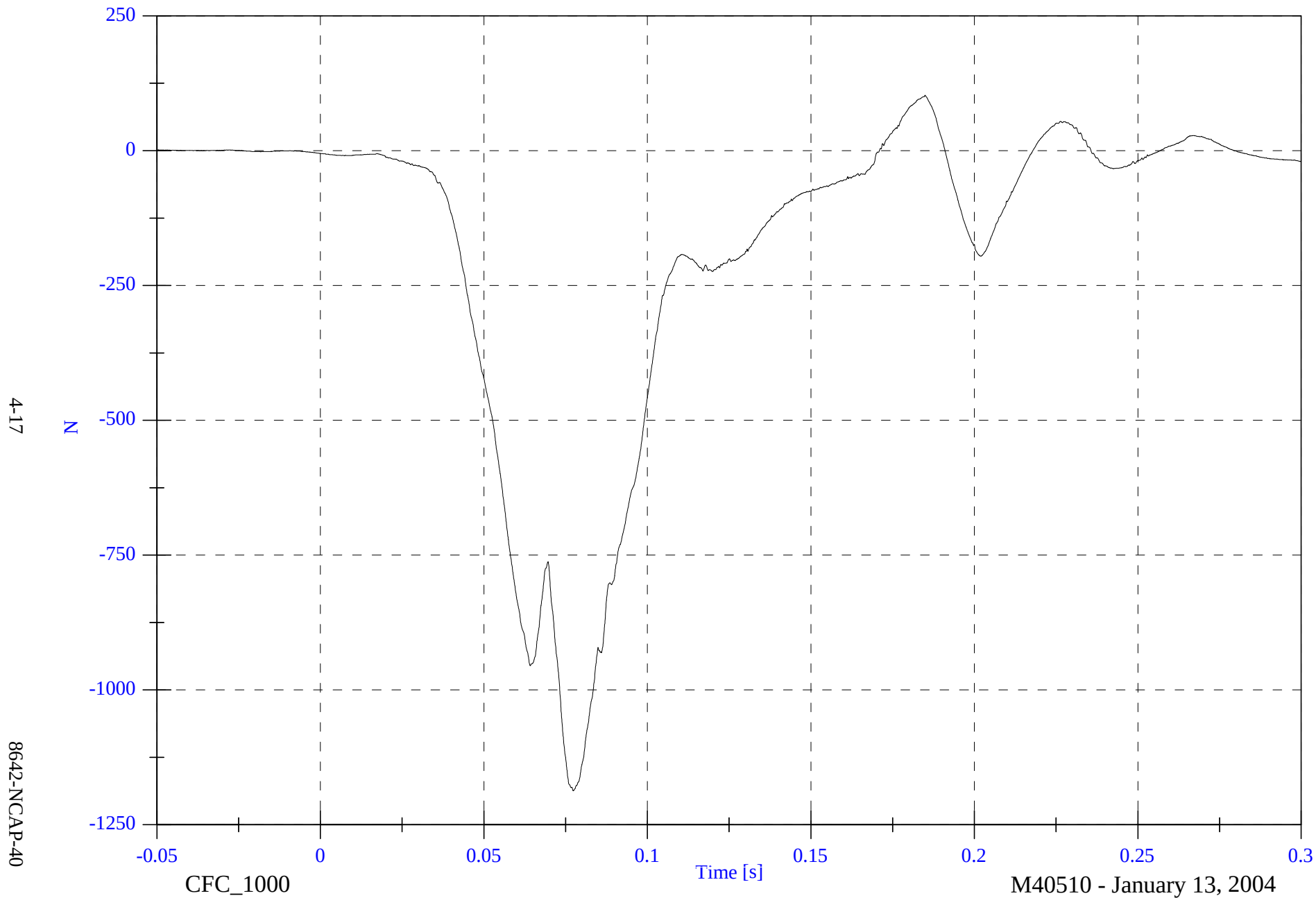


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Lower Neck Fx

Max: 102.9 [N] at 0.185 [s]

Min: -1187.3 [N] at 0.077 [s]

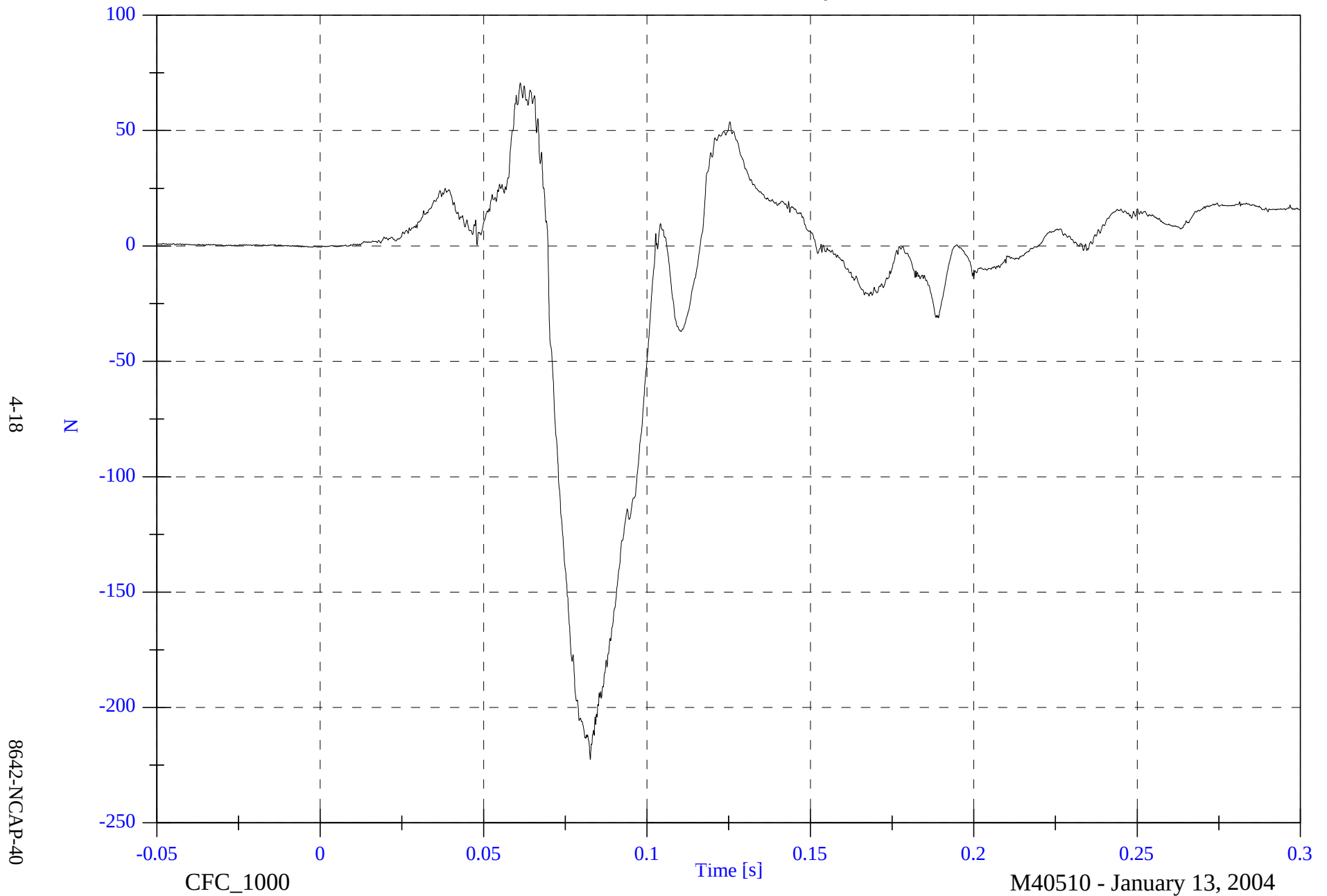


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Lower Neck Fy

Max: 70.6 [N] at 0.061 [s]

Min: -222.6 [N] at 0.083 [s]

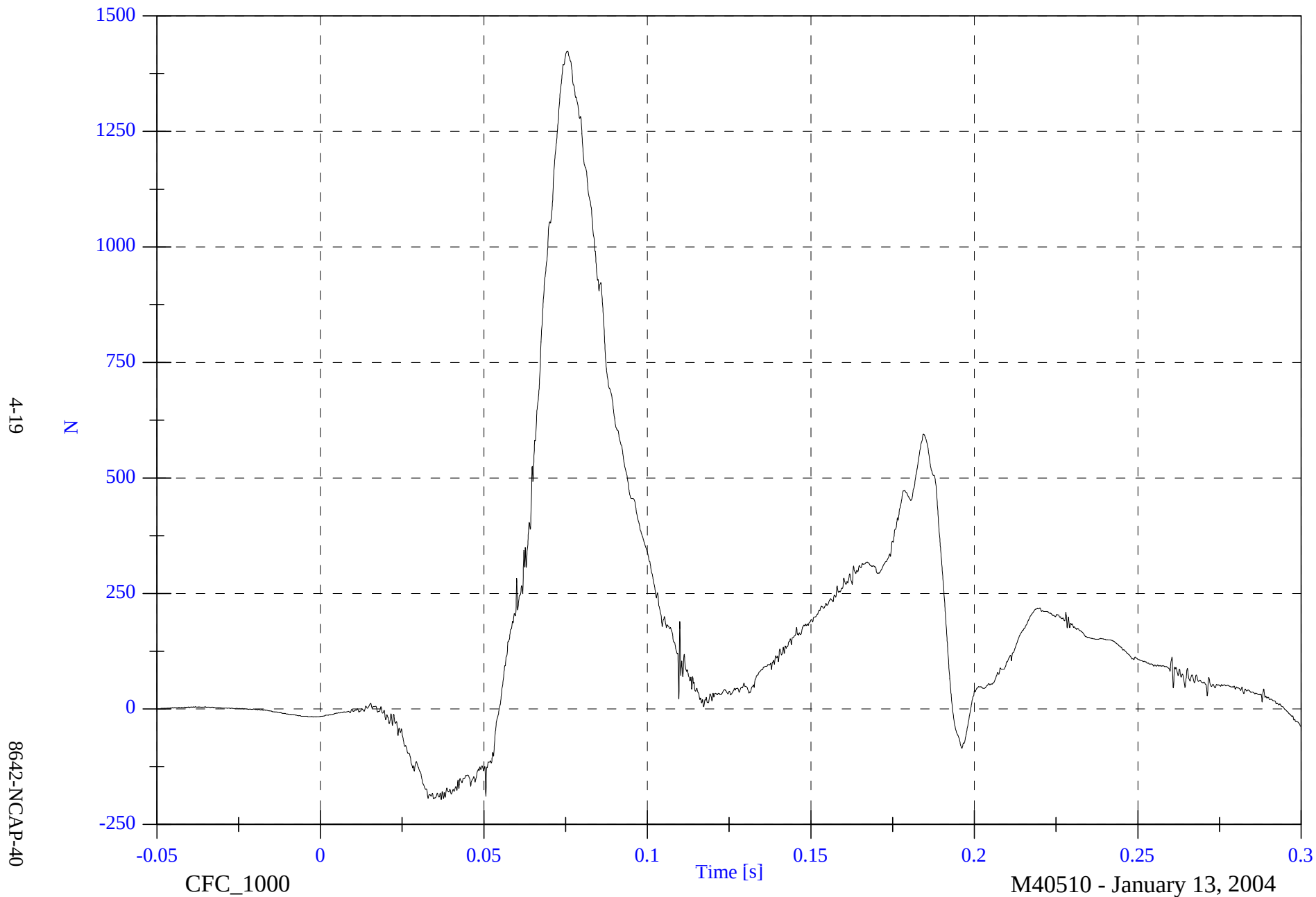


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Lower Neck Fz

Max: 1423.5 [N] at 0.076 [s]

Min: -196.0 [N] at 0.037 [s]

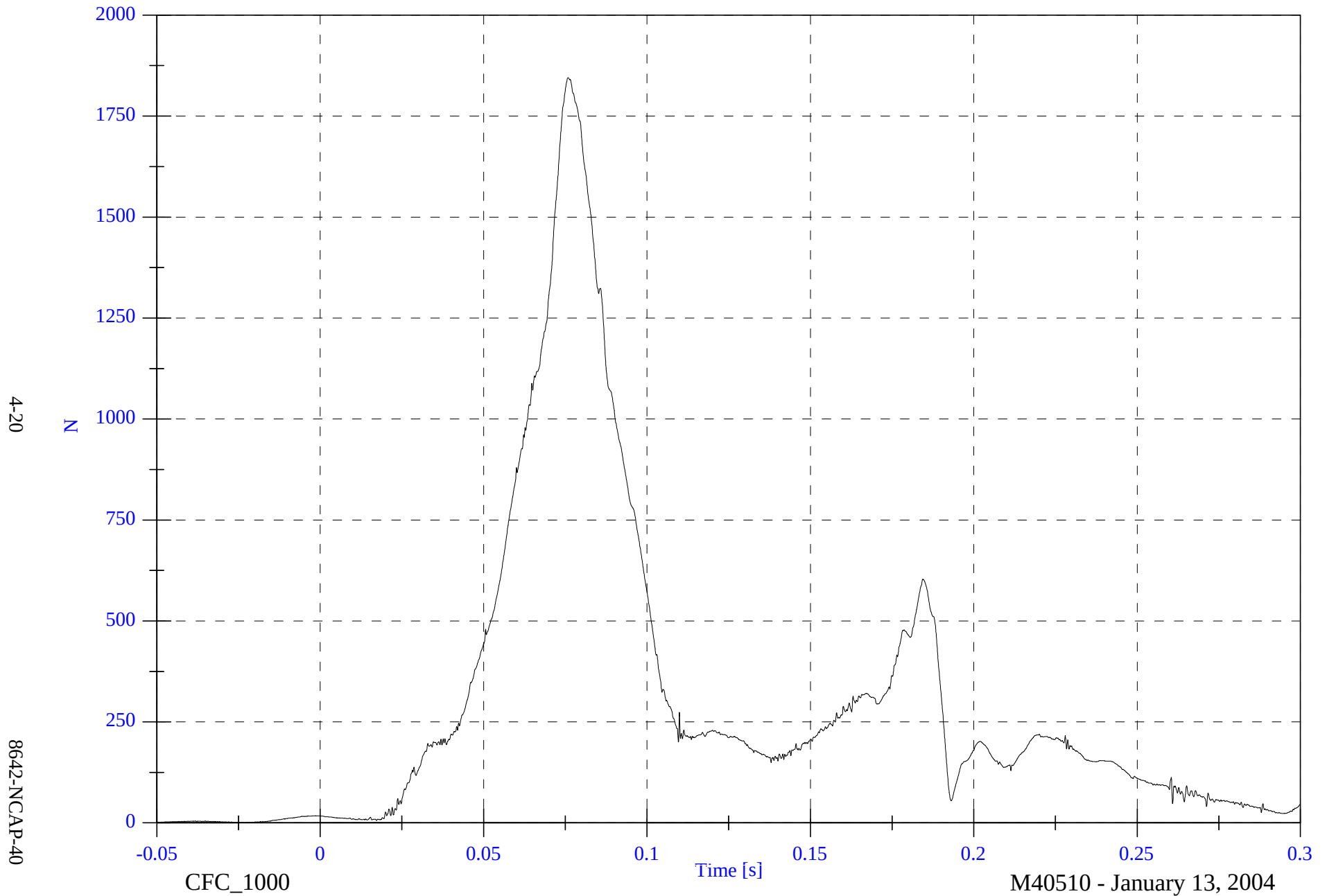


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Lower Neck F Resultant

Max: 1844.9 [N] at 0.076 [s]

Min: 0.5 [N] at -0.025 [s]

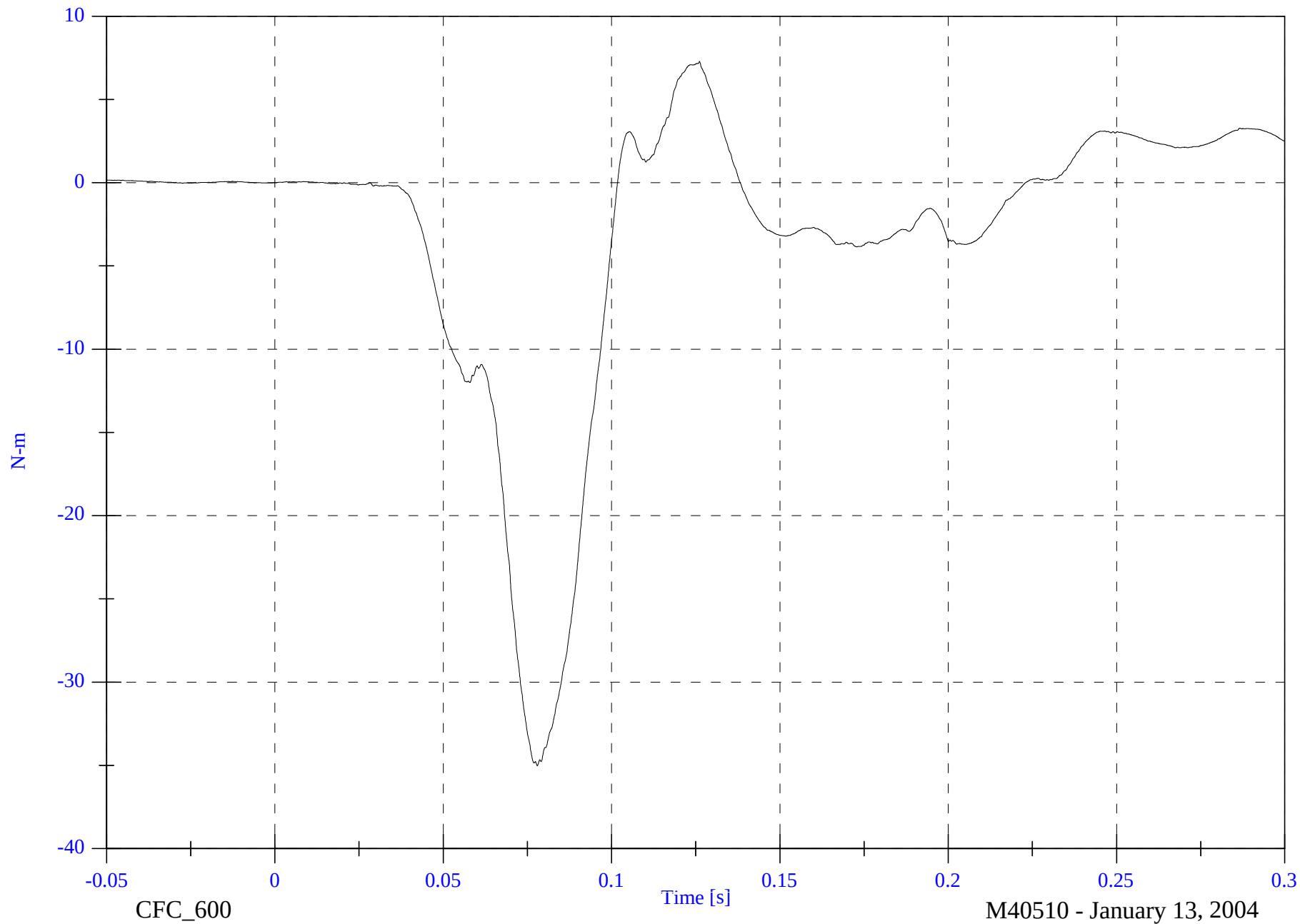


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Lower Neck Mx

Max: 7.3 [N-m] at 0.126 [s]

Min: -35.0 [N-m] at 0.078 [s]



4-21

8642-NCAP-40

CFC_600

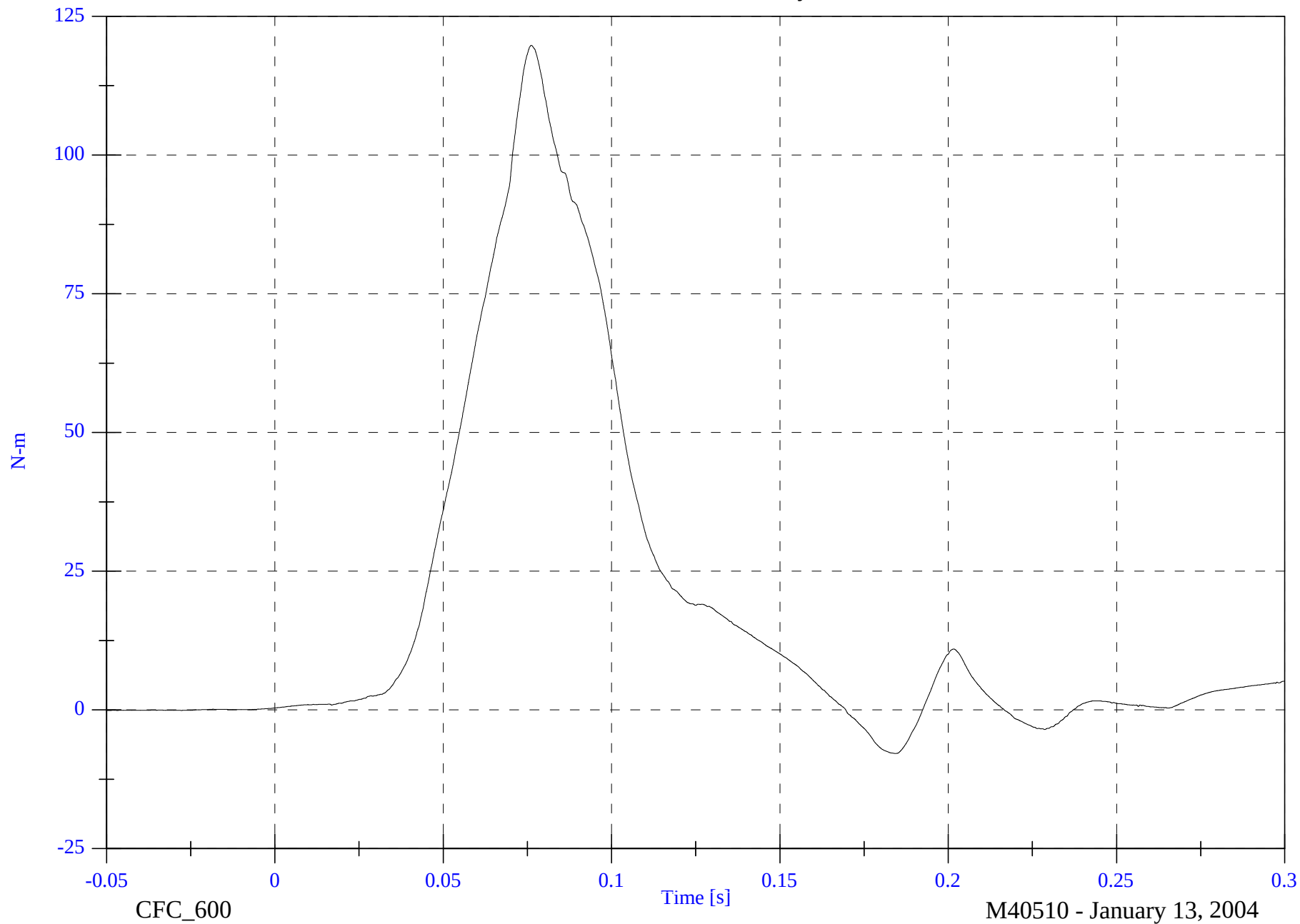
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Lower Neck My

Max: 119.8 [N-m] at 0.076 [s]

Min: -7.9 [N-m] at 0.184 [s]



4-22

8642-NCAP-40

CFC_600

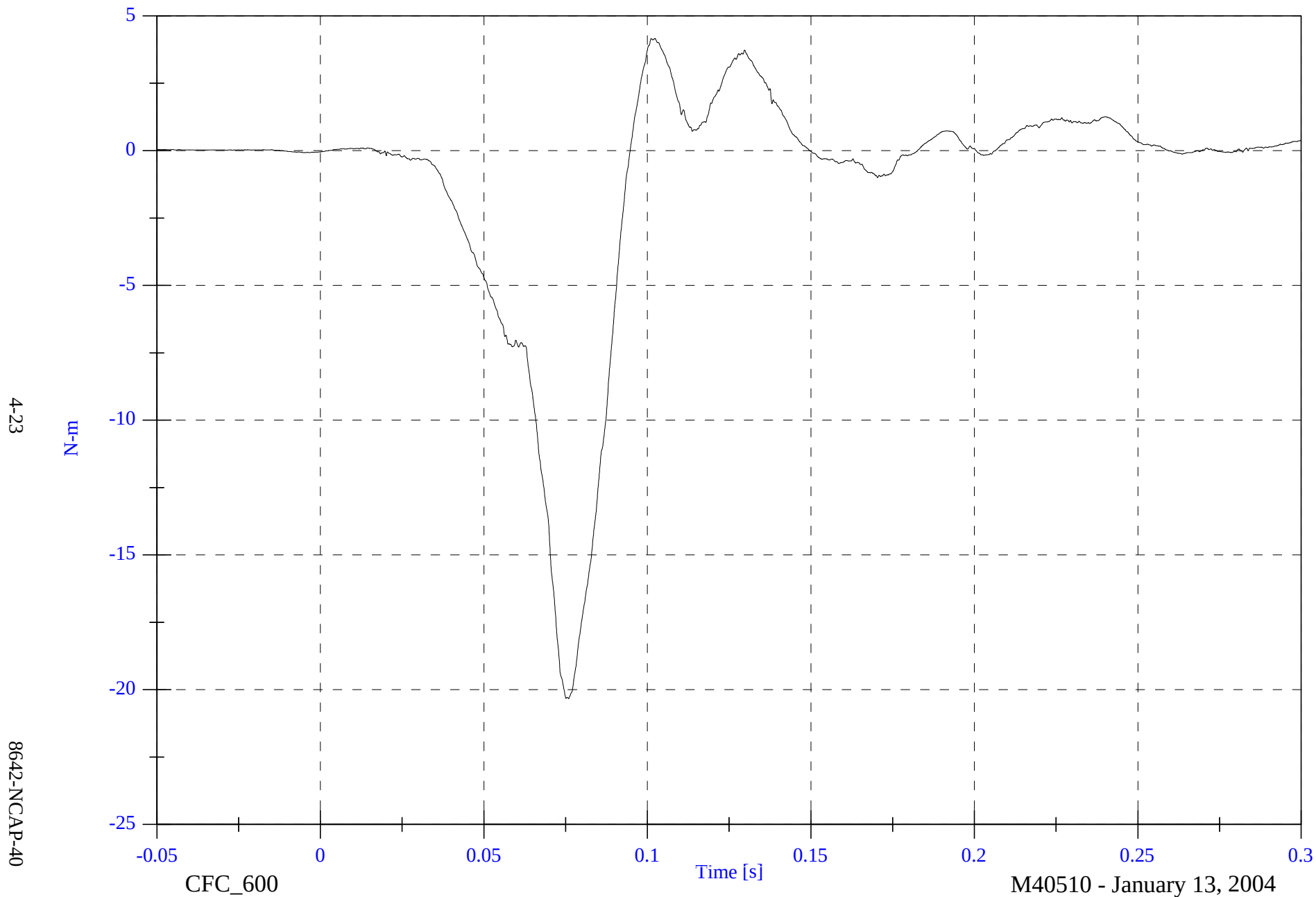
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Lower Neck Mz

Max: 4.2 [N-m] at 0.102 [s]

Min: -20.3 [N-m] at 0.076 [s]

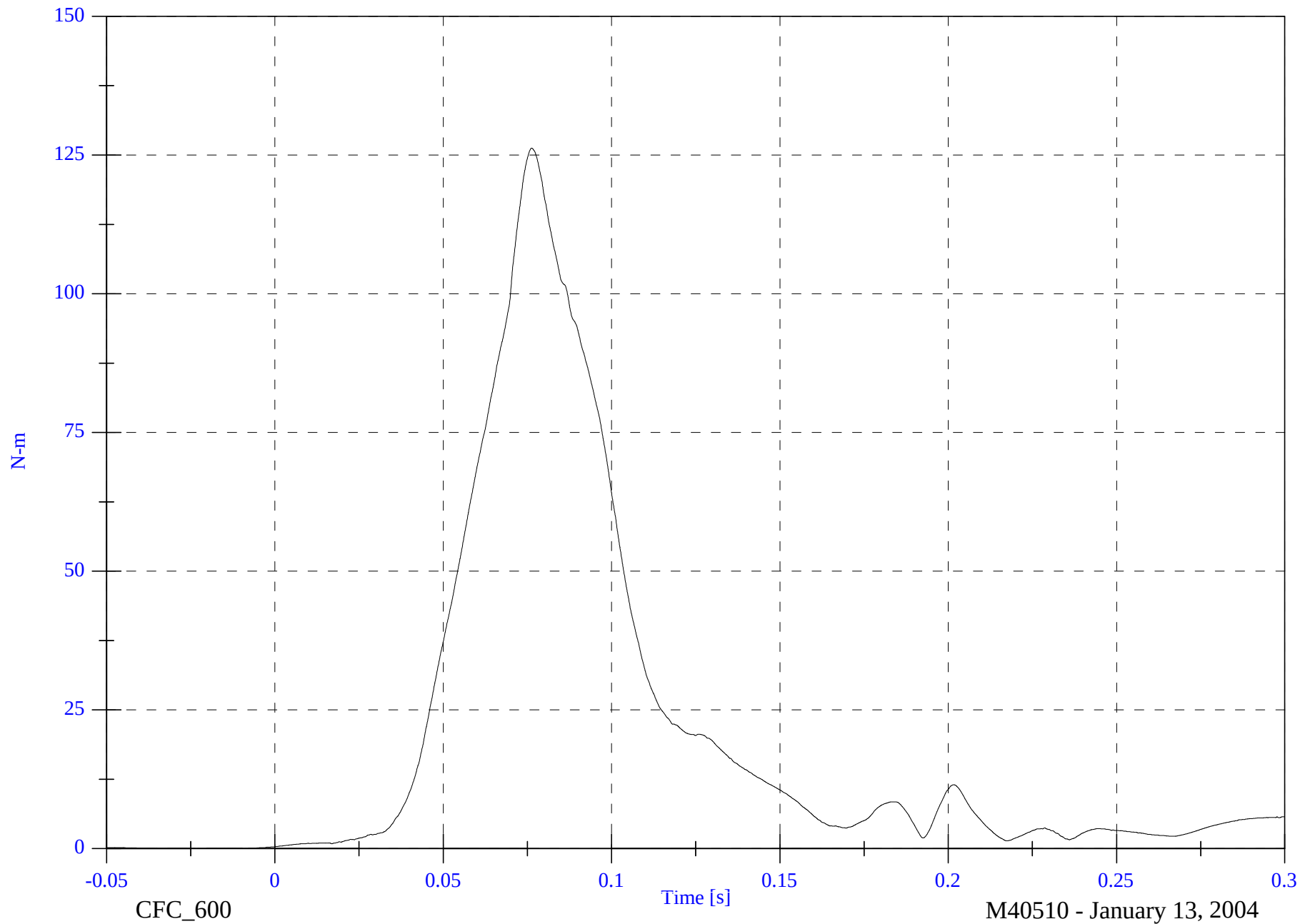


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Lower Neck M Resultant

Max: 126.2 [N-m] at 0.076 [s]

Min: 0.0 [N-m] at -0.024 [s]



4-24

8642-NCAP-40

CFC_600

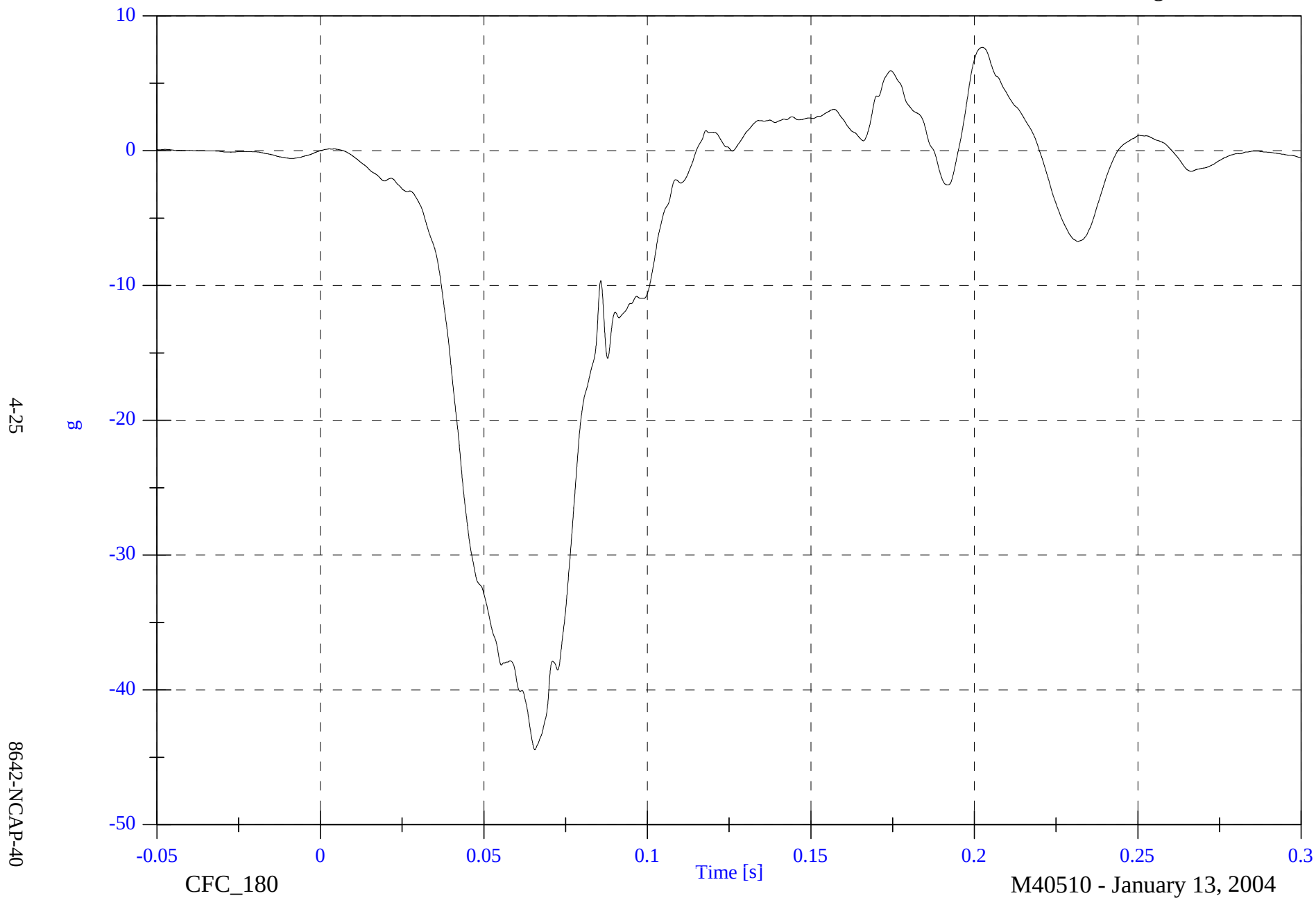
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Chest x

Max: 7.7 [g] at 0.202 [s]

Min: -44.4 [g] at 0.066 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

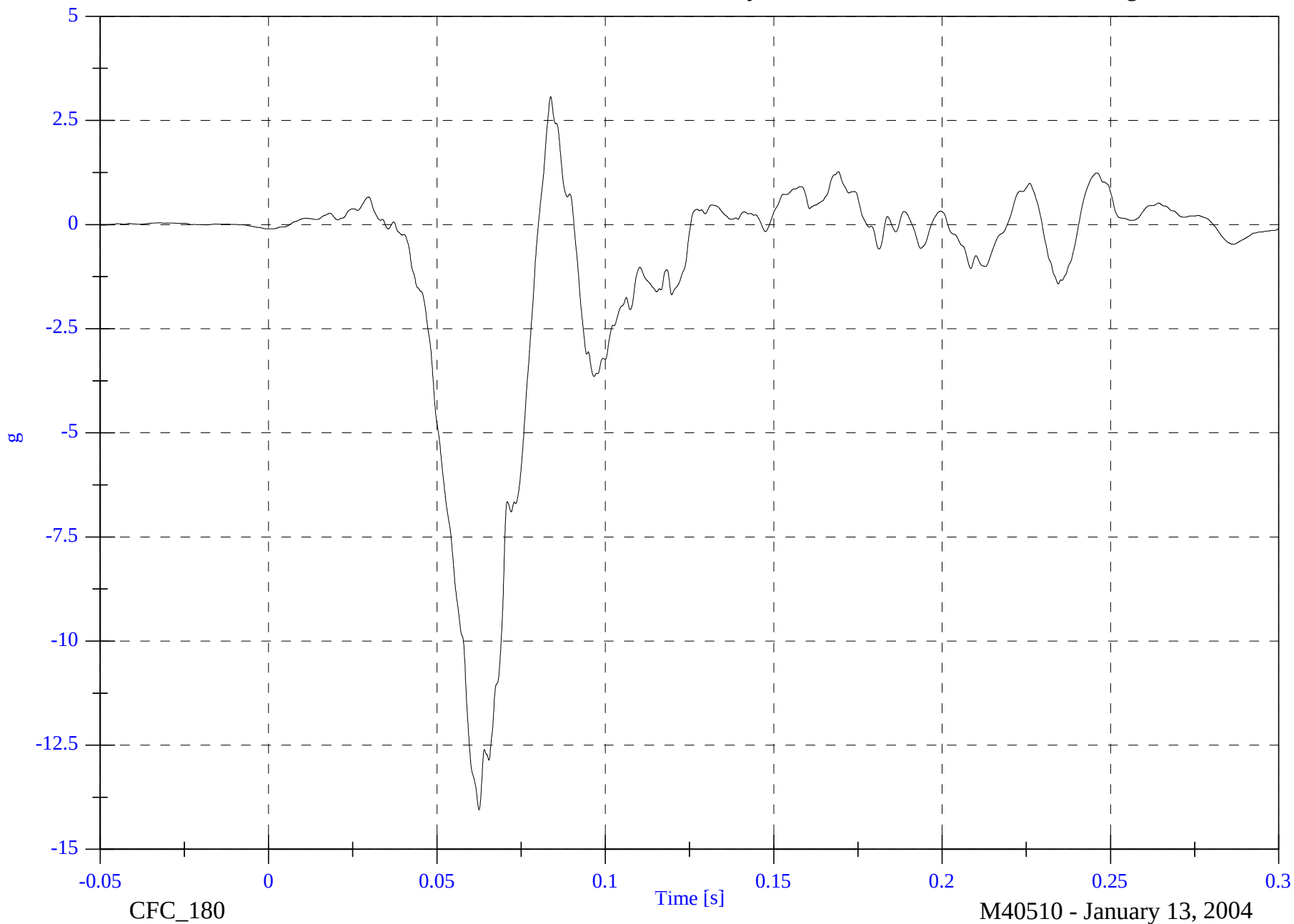
V1P3 Chest y

Max: 3.1 [g] at 0.084 [s]

Min: -14.1 [g] at 0.062 [s]

4-26

8642-NCAP-40

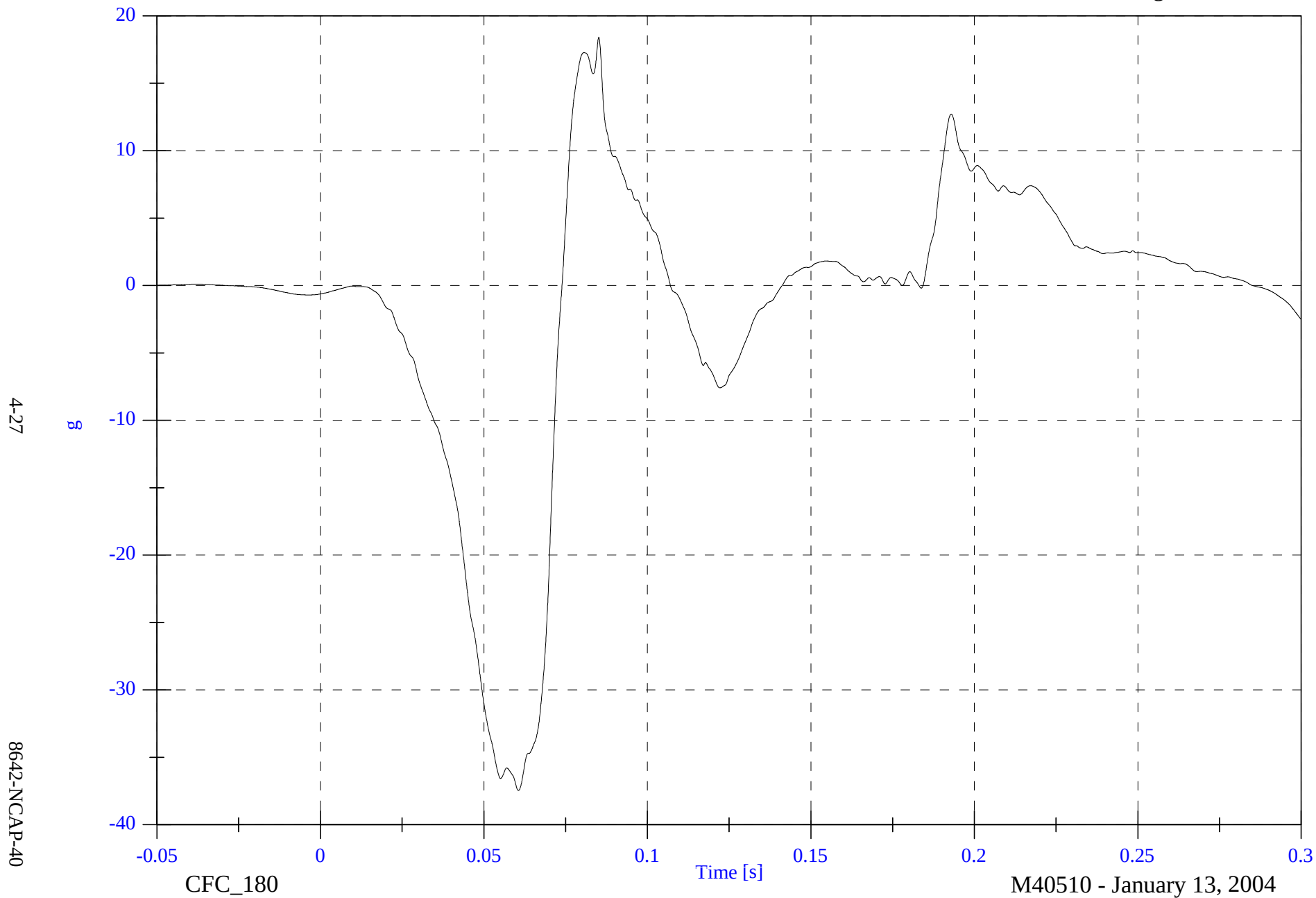


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Chest z

Max: 18.4 [g] at 0.085 [s]

Min: -37.5 [g] at 0.061 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

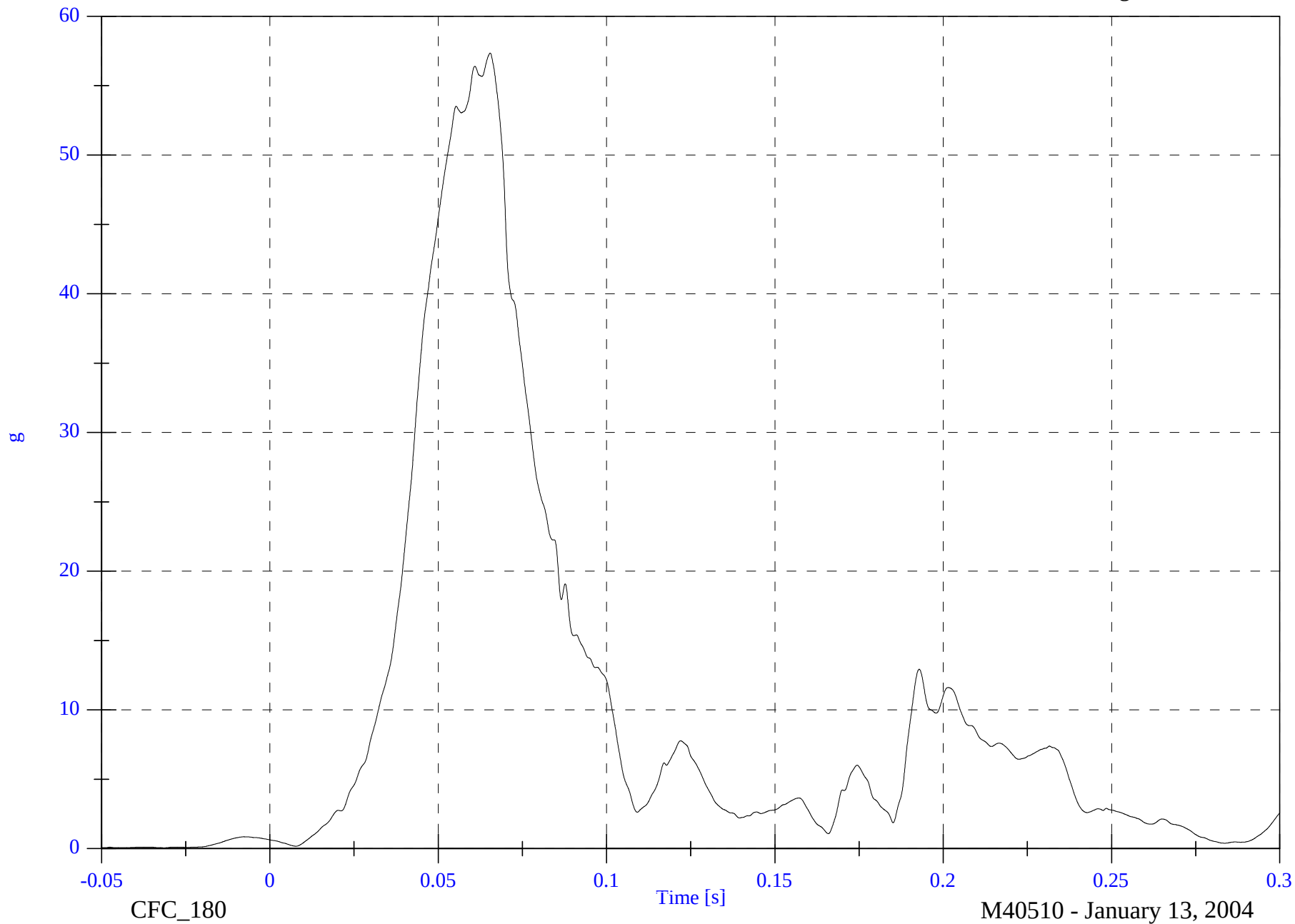
V1P3 Chest Resultant

Max: 57.4 [g] at 0.065 [s]

Min: 0.1 [g] at -0.031 [s]

4-28

8642-NCAP-40

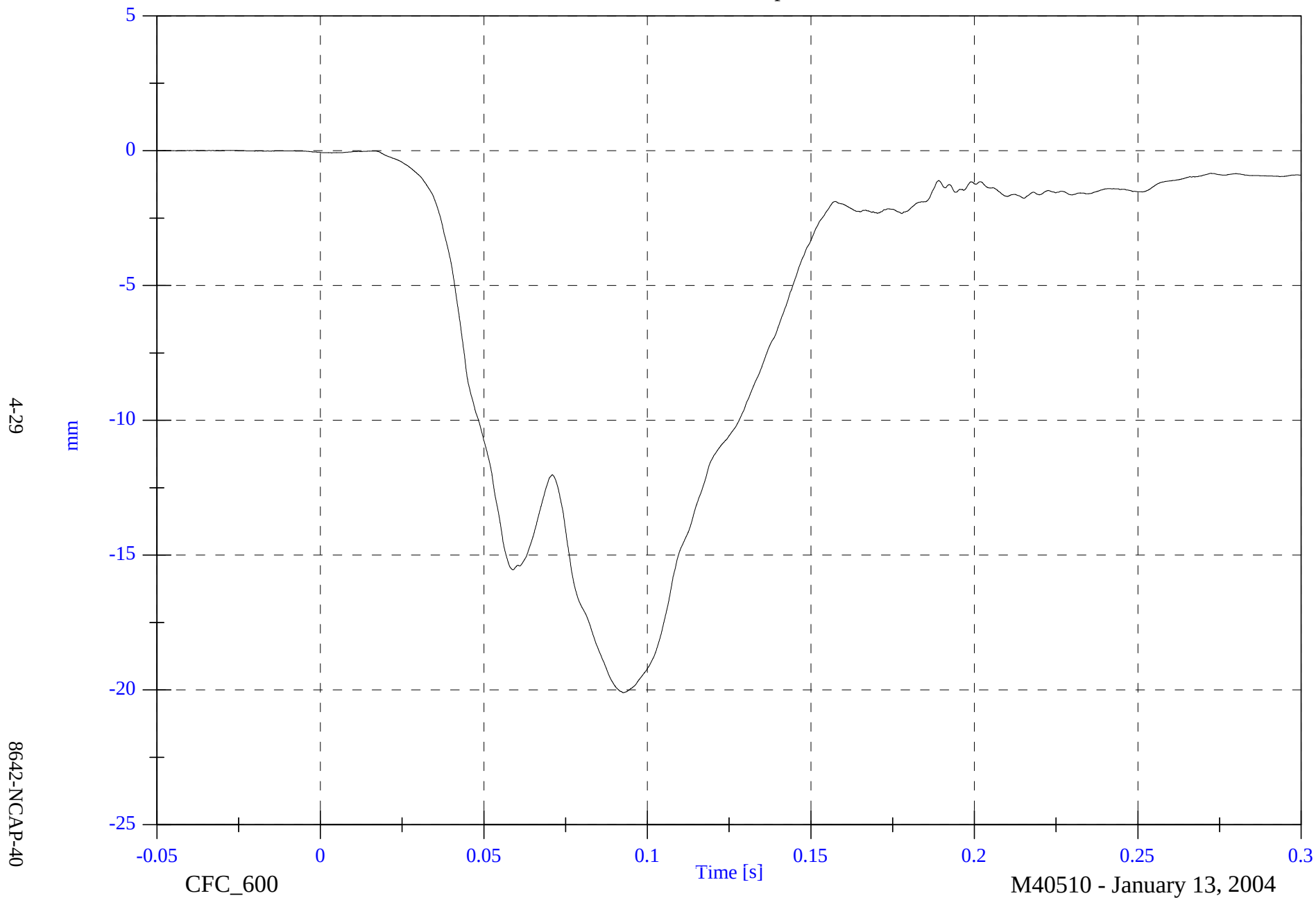


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Chest Compression

Max: 0.0 [mm] at -0.030 [s]

Min: -20.1 [mm] at 0.093 [s]

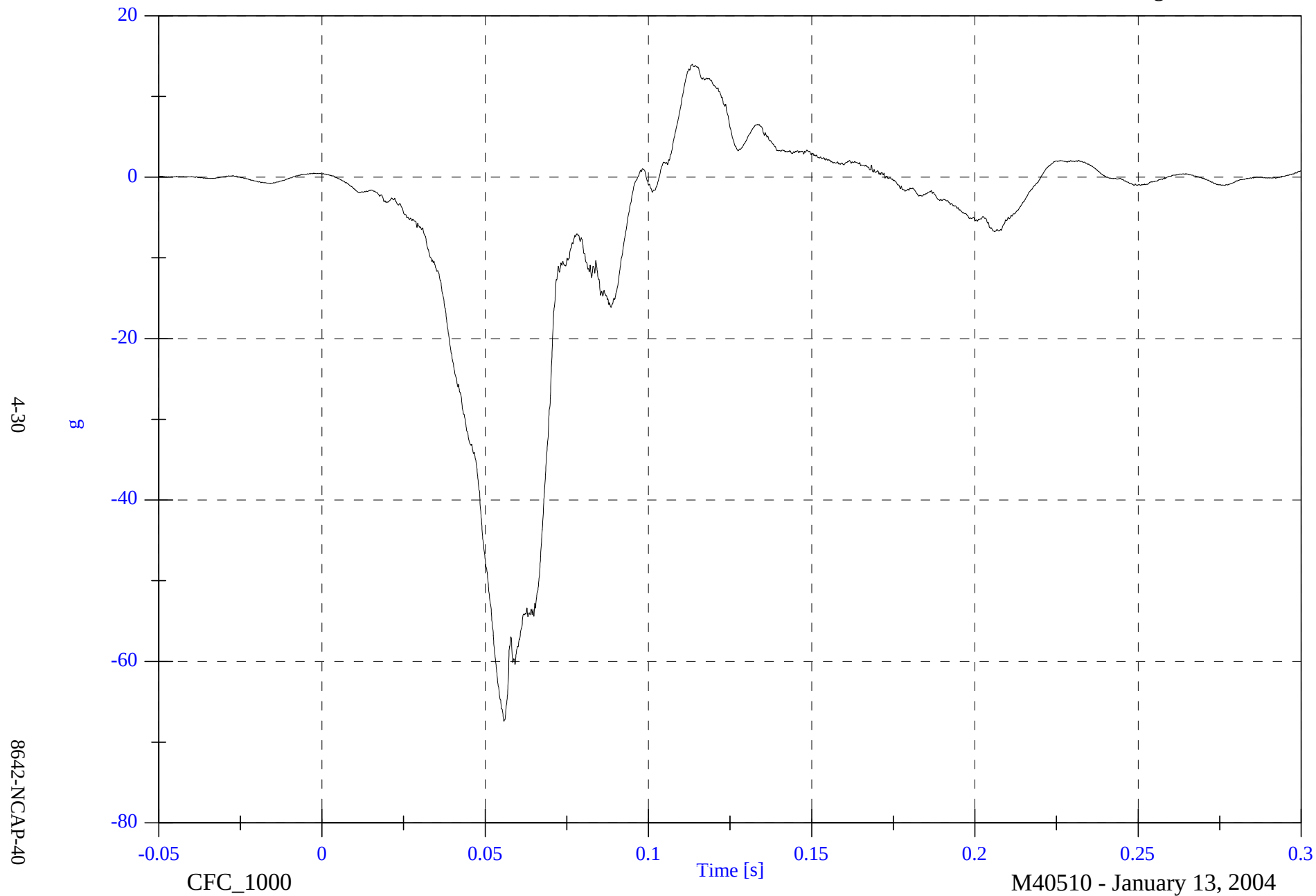


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Pelvic x

Max: 14.0 [g] at 0.113 [s]

Min: -67.4 [g] at 0.056 [s]

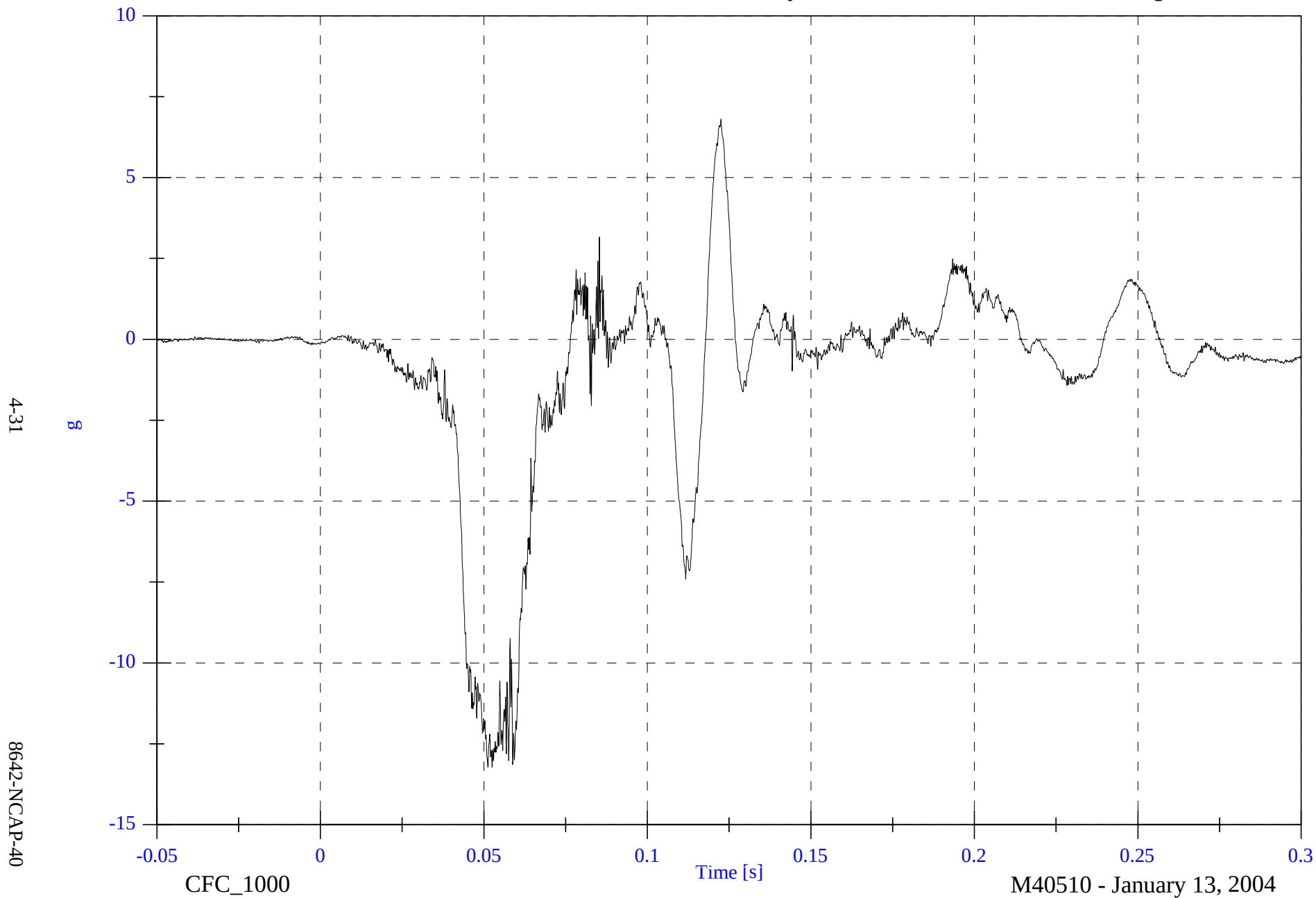


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 6.8 [g] at 0.123 [s]

Min: -13.2 [g] at 0.051 [s]

V1P3 Pelvic y



2004 NCAP Test 4 2004 Suzuki Forenza

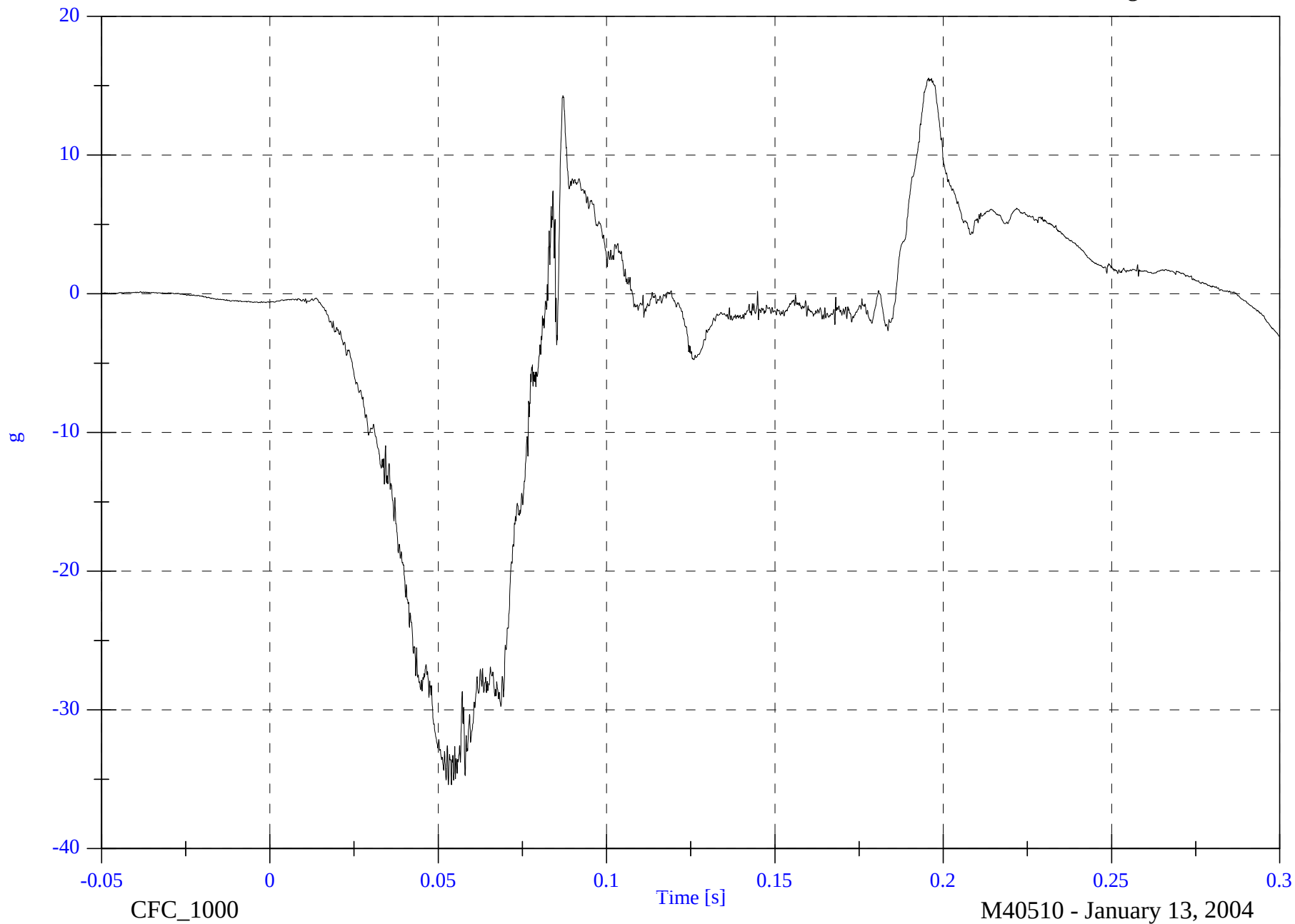
V1P3 Pelvic z

Max: 15.5 [g] at 0.196 [s]

Min: -35.4 [g] at 0.053 [s]

4-32

8642-NCAP-40



2004 NCAP Test 4 2004 Suzuki Forenza

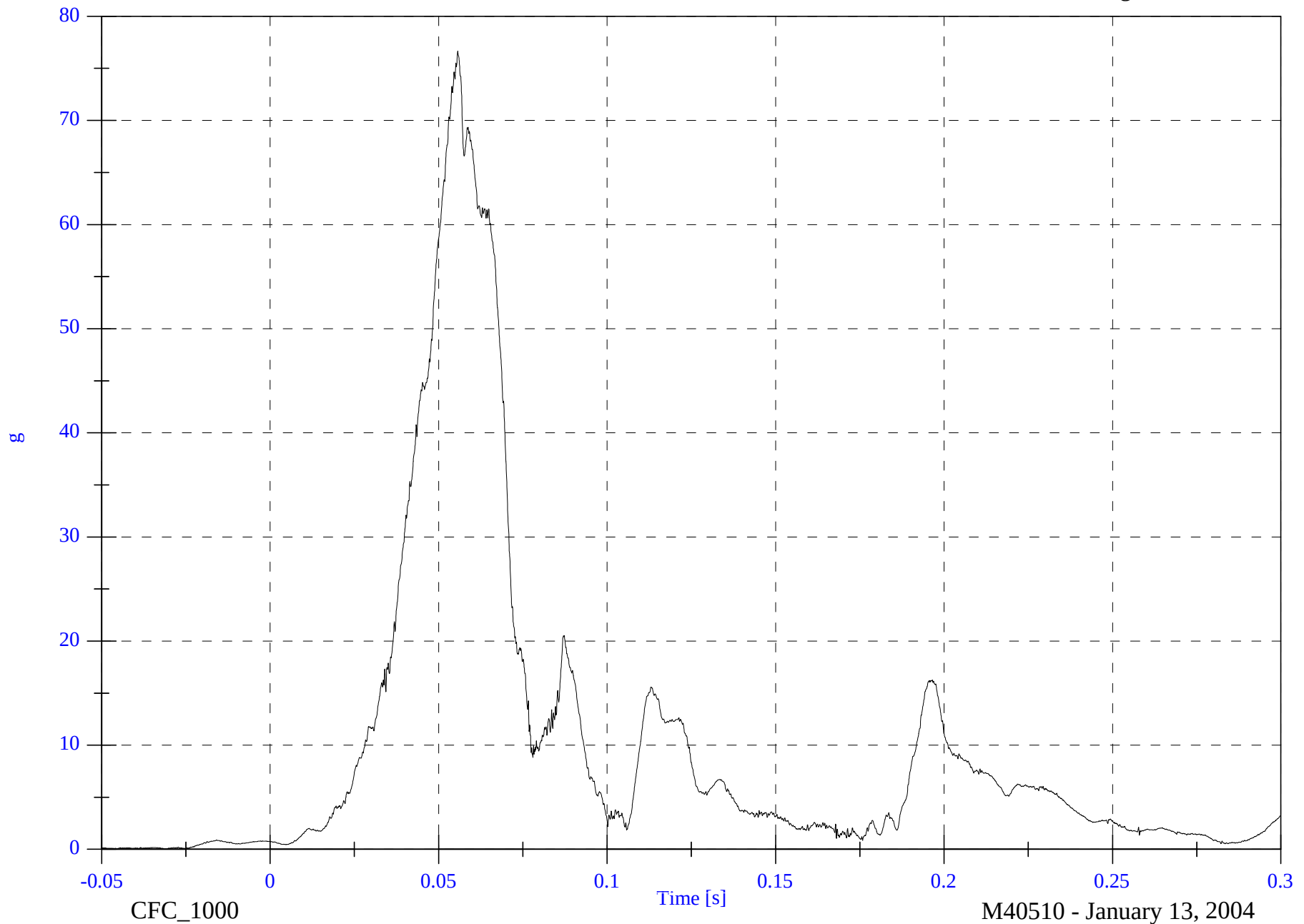
V1P3 Pelvic Resultant

Max: 76.7 [g] at 0.056 [s]

Min: 0.0 [g] at -0.031 [s]

4-33

8642-NCAP-40



CFC_1000

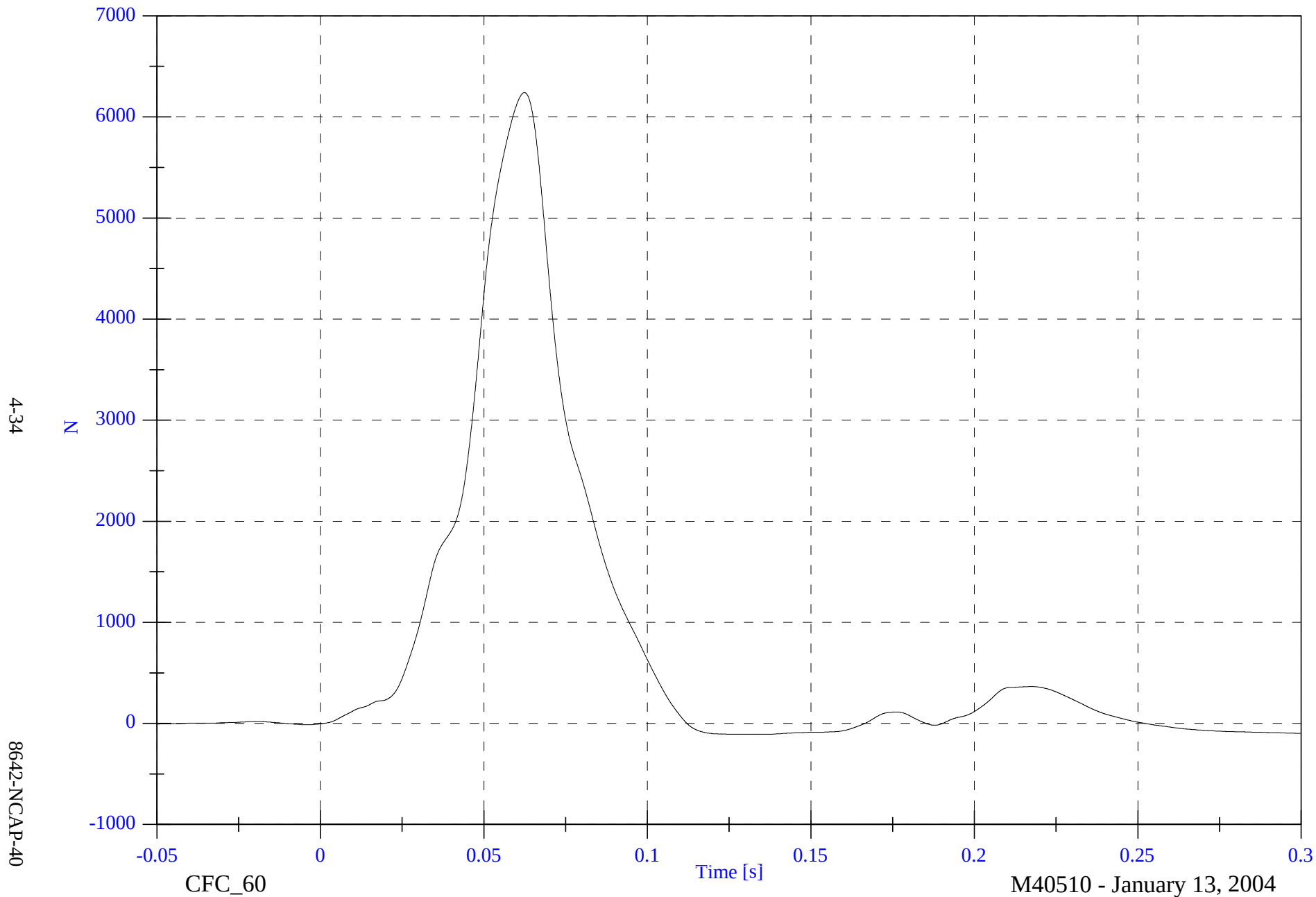
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Latch Belt

Max: 6240.9 [N] at 0.062 [s]

Min: -108.0 [N] at 0.132 [s]

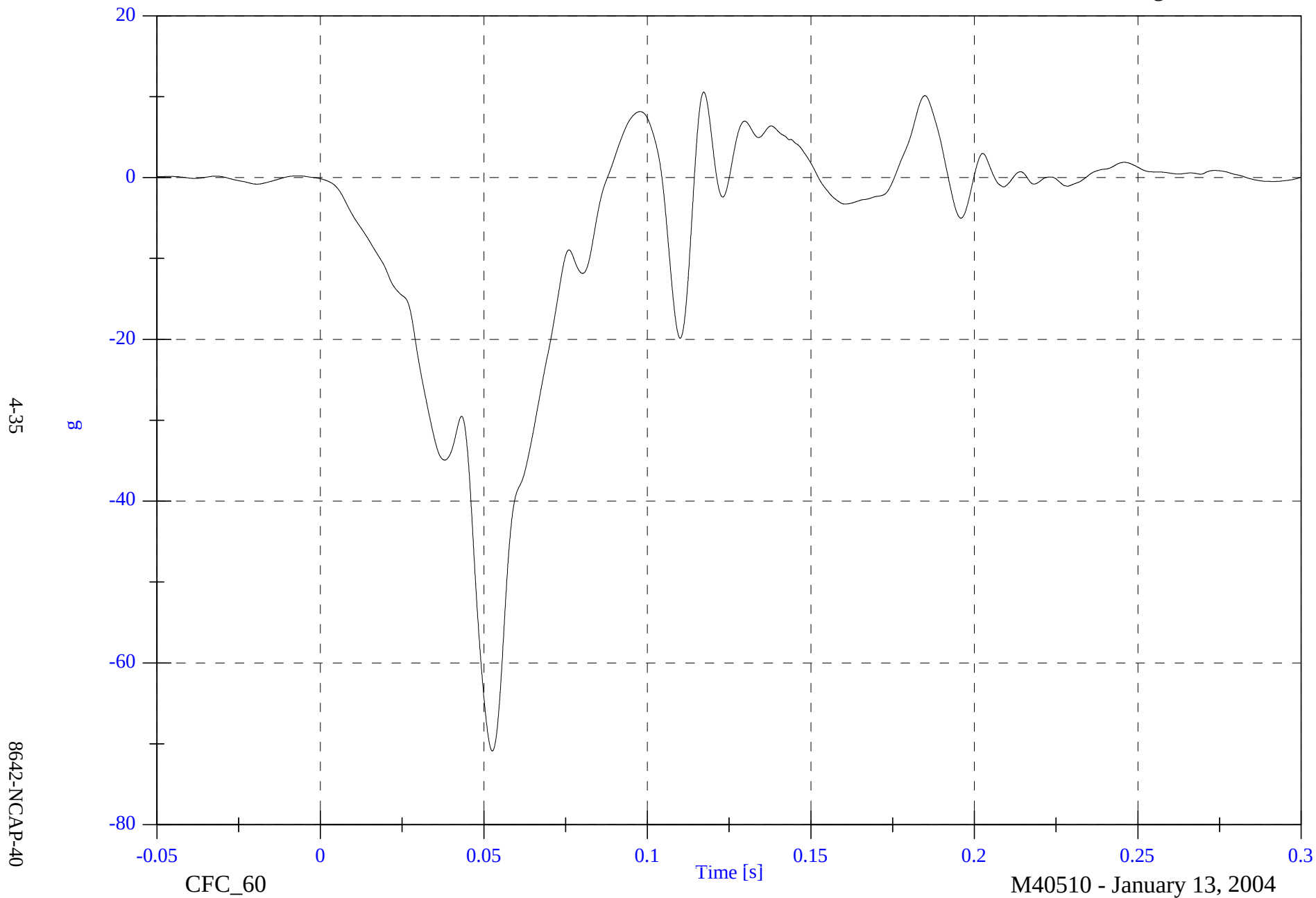


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat x

Max: 10.6 [g] at 0.117 [s]

Min: -70.9 [g] at 0.053 [s]

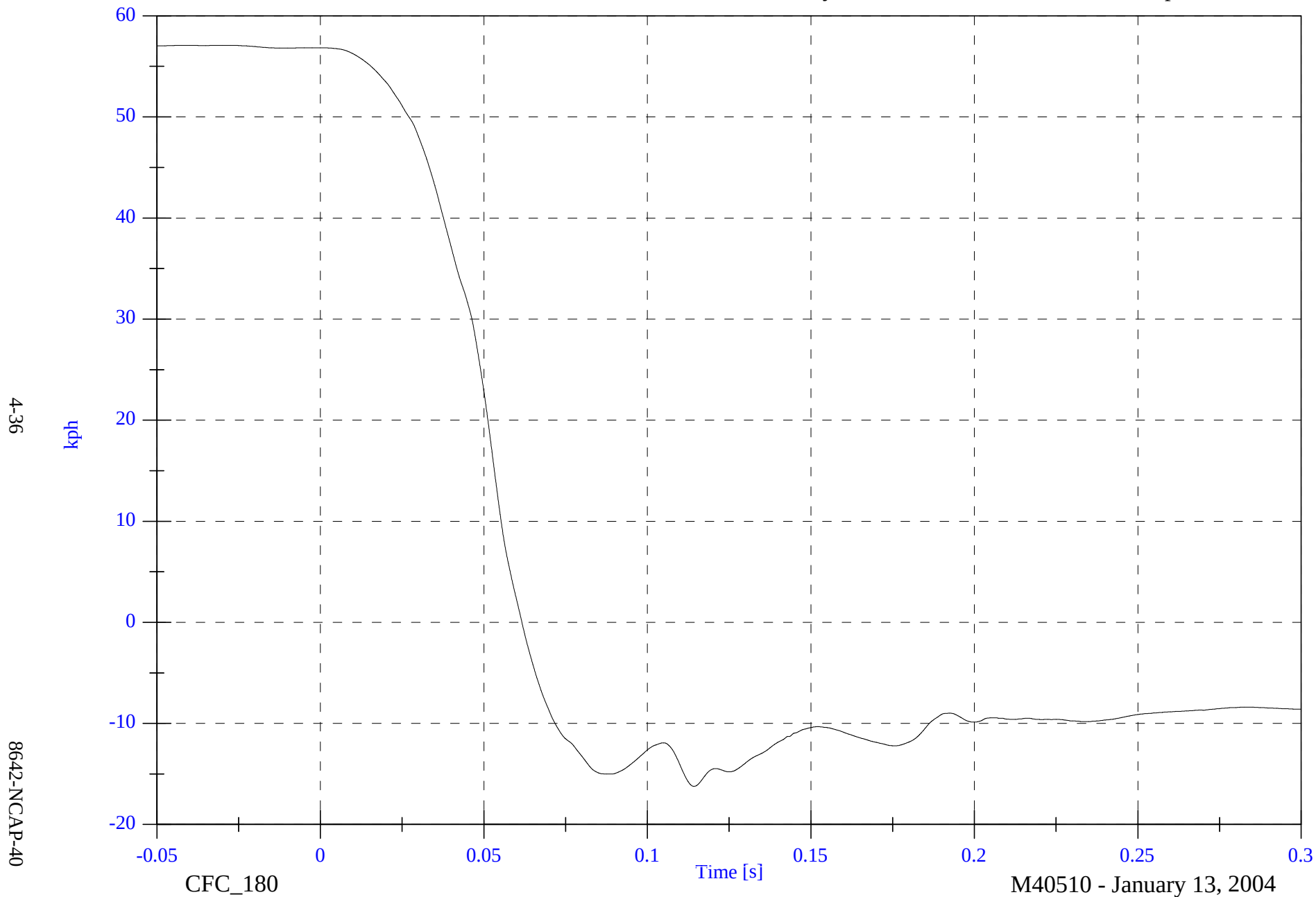


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 57.1 [kph] at -0.029 [s]

Min: -16.2 [kph] at 0.114 [s]

V1P3 Seat x Velocity

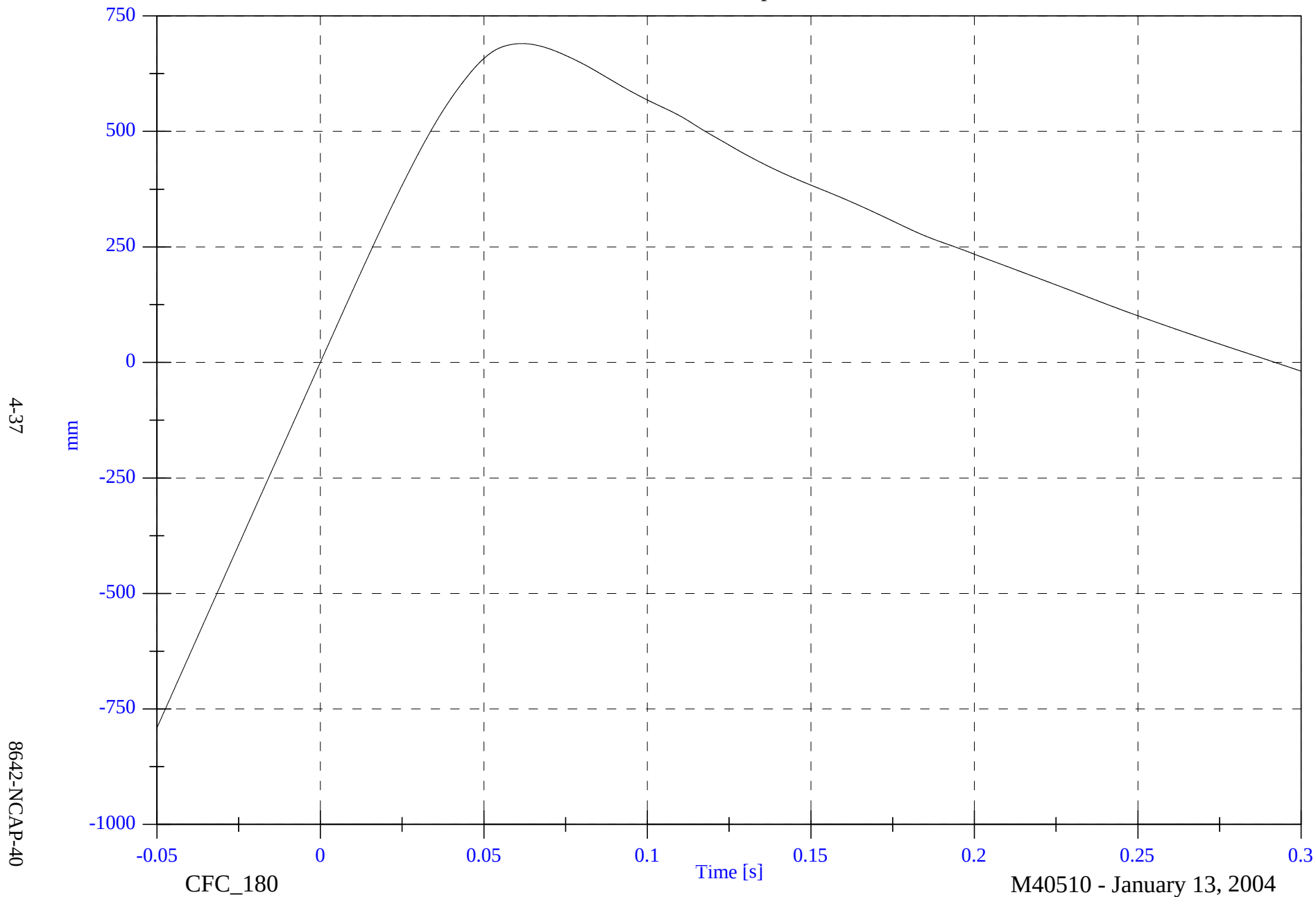


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat x Displacement

Max: 690.0 [mm] at 0.062 [s]

Min: -791.3 [mm] at -0.050 [s]

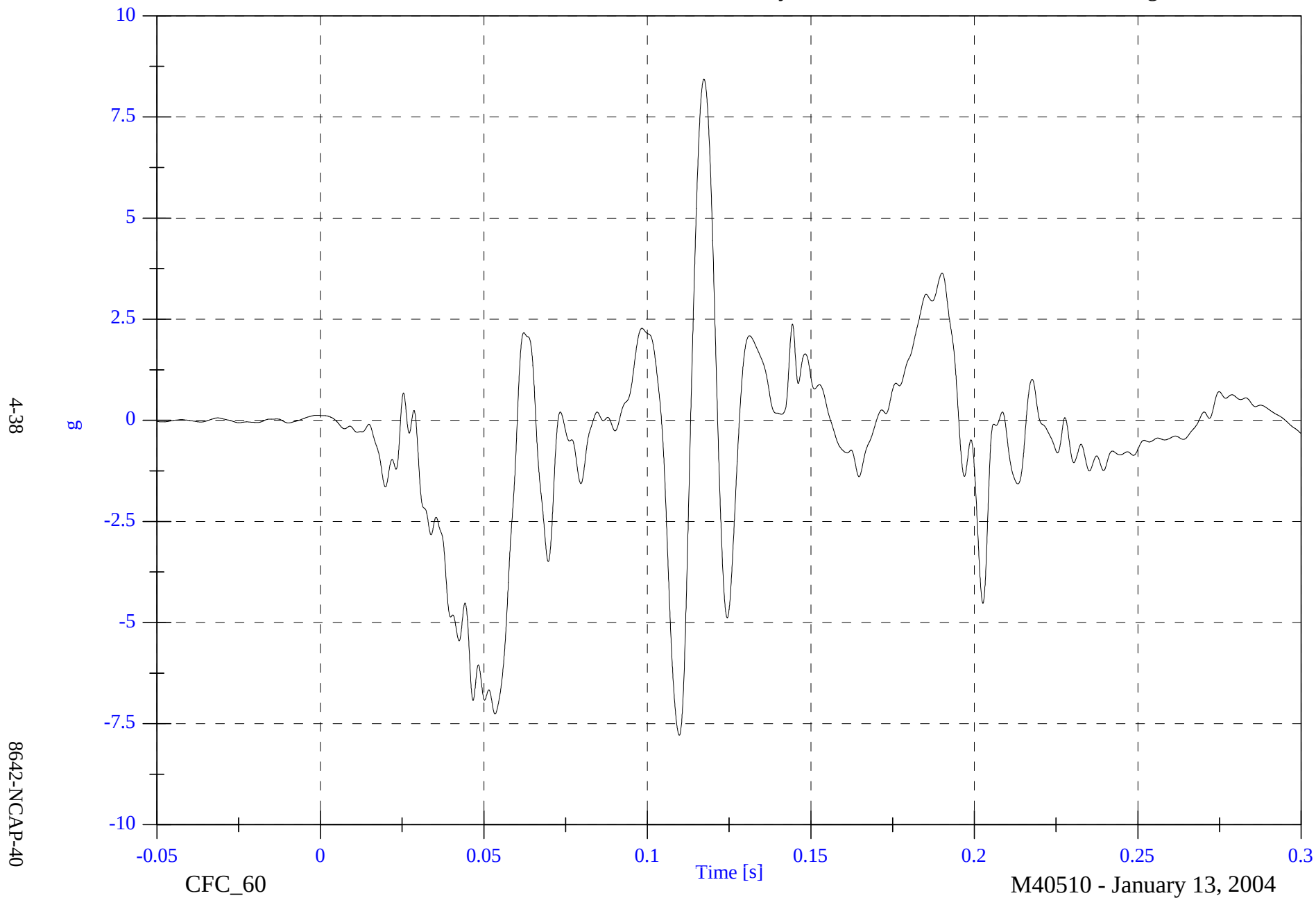


2004 NCAP Test 4 2004 Suzuki Forenza

Max: 8.4 [g] at 0.117 [s]

Min: -7.8 [g] at 0.110 [s]

V1P3 Seat y



2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat y Velocity

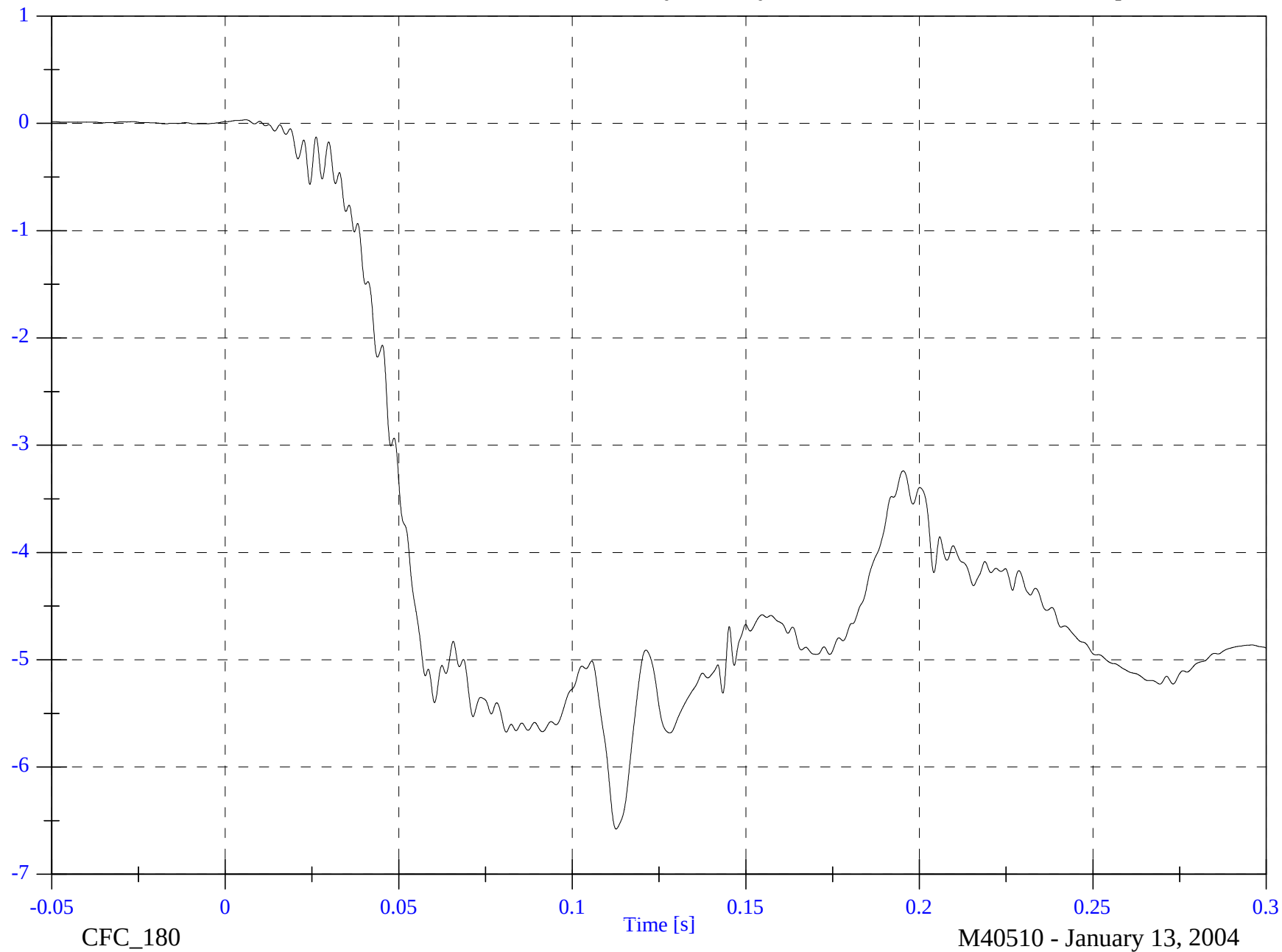
Max: 0.0 [kph] at 0.006 [s]

Min: -6.6 [kph] at 0.113 [s]

4-39

kph

8642-NCAP-40

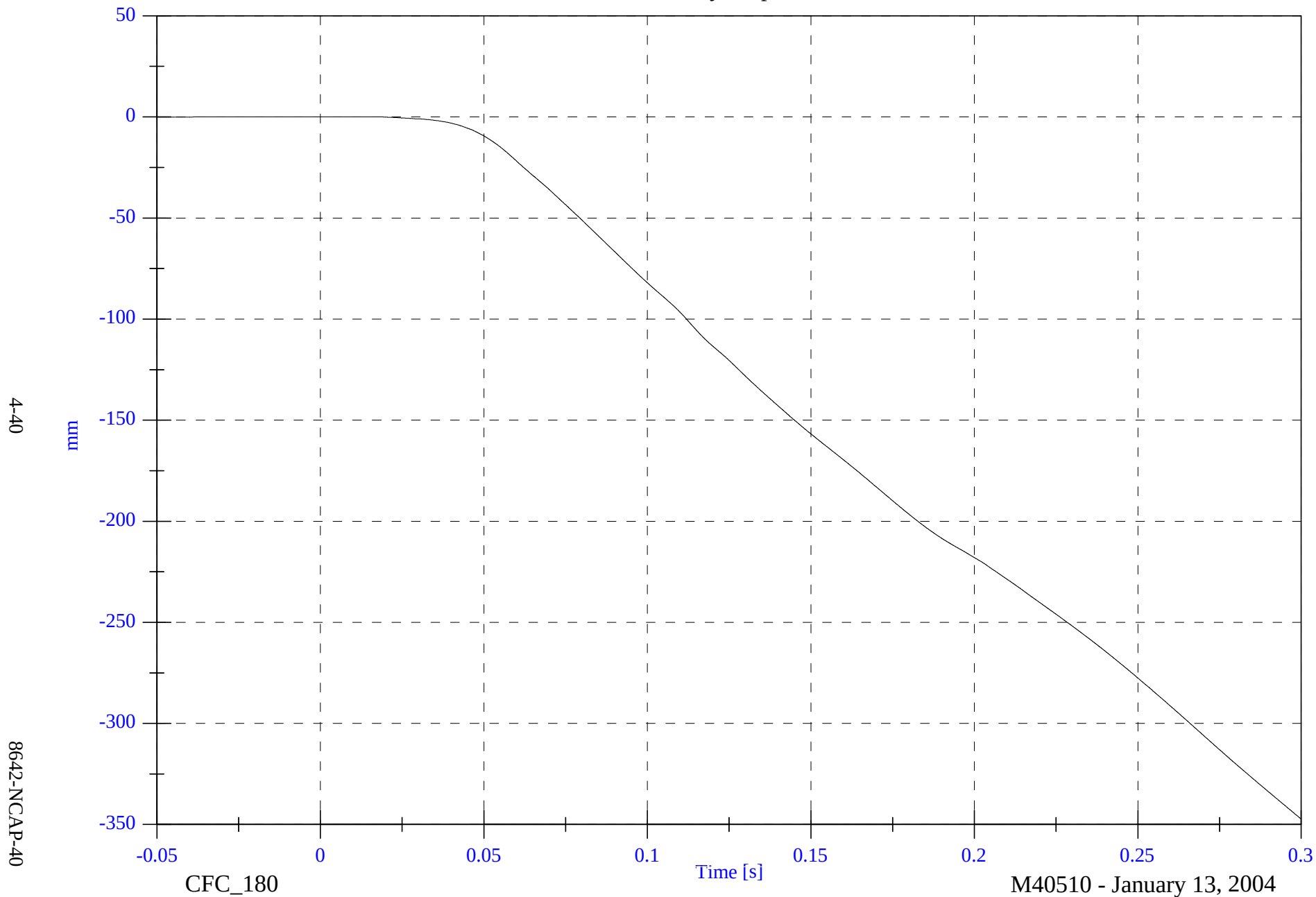


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat y Displacement

Max: 0.1 [mm] at 0.011 [s]

Min: -347.3 [mm] at 0.300 [s]



4-40

8642-NCAP-40

CFC_180

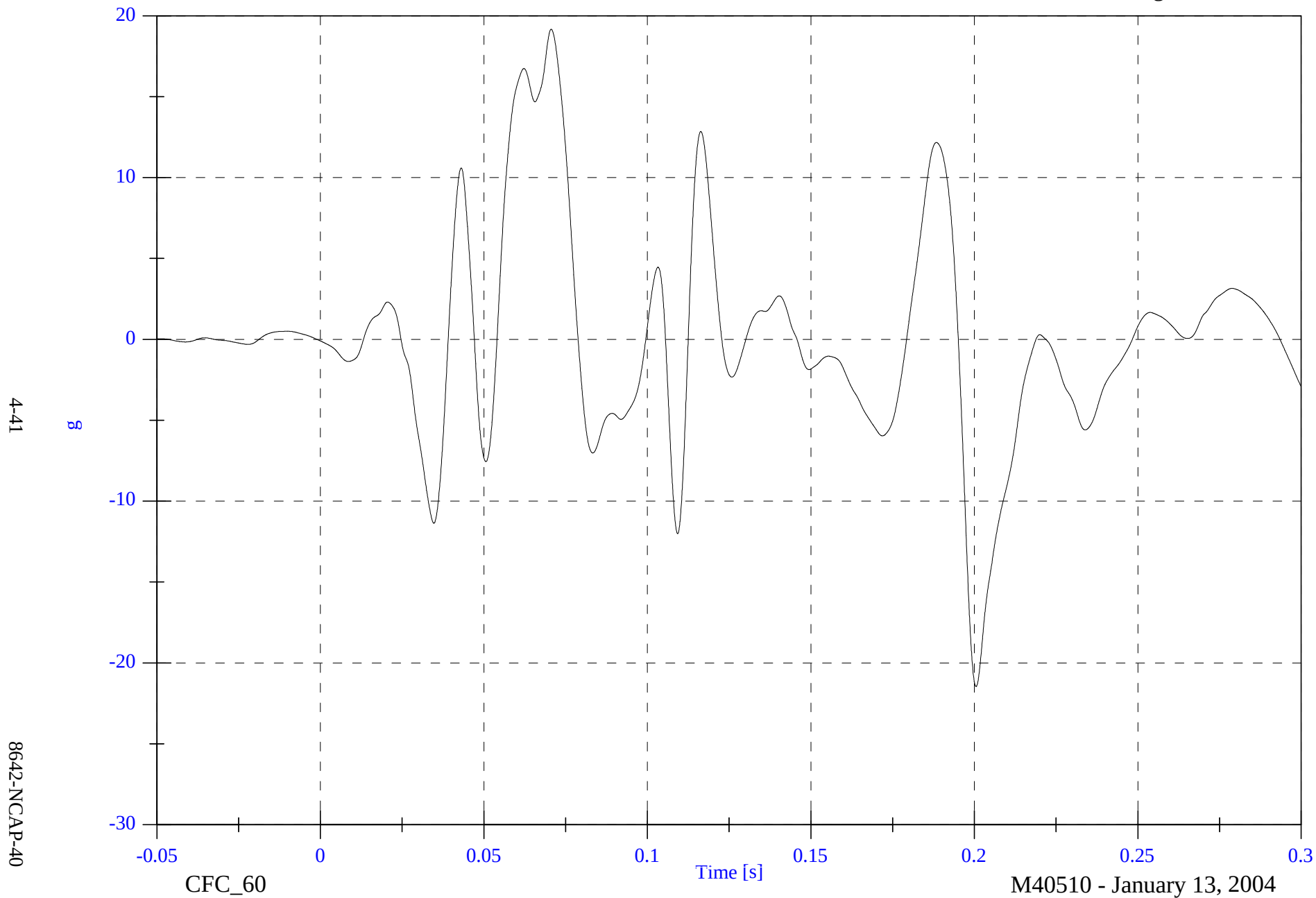
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat z

Max: 19.2 [g] at 0.071 [s]

Min: -21.5 [g] at 0.201 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

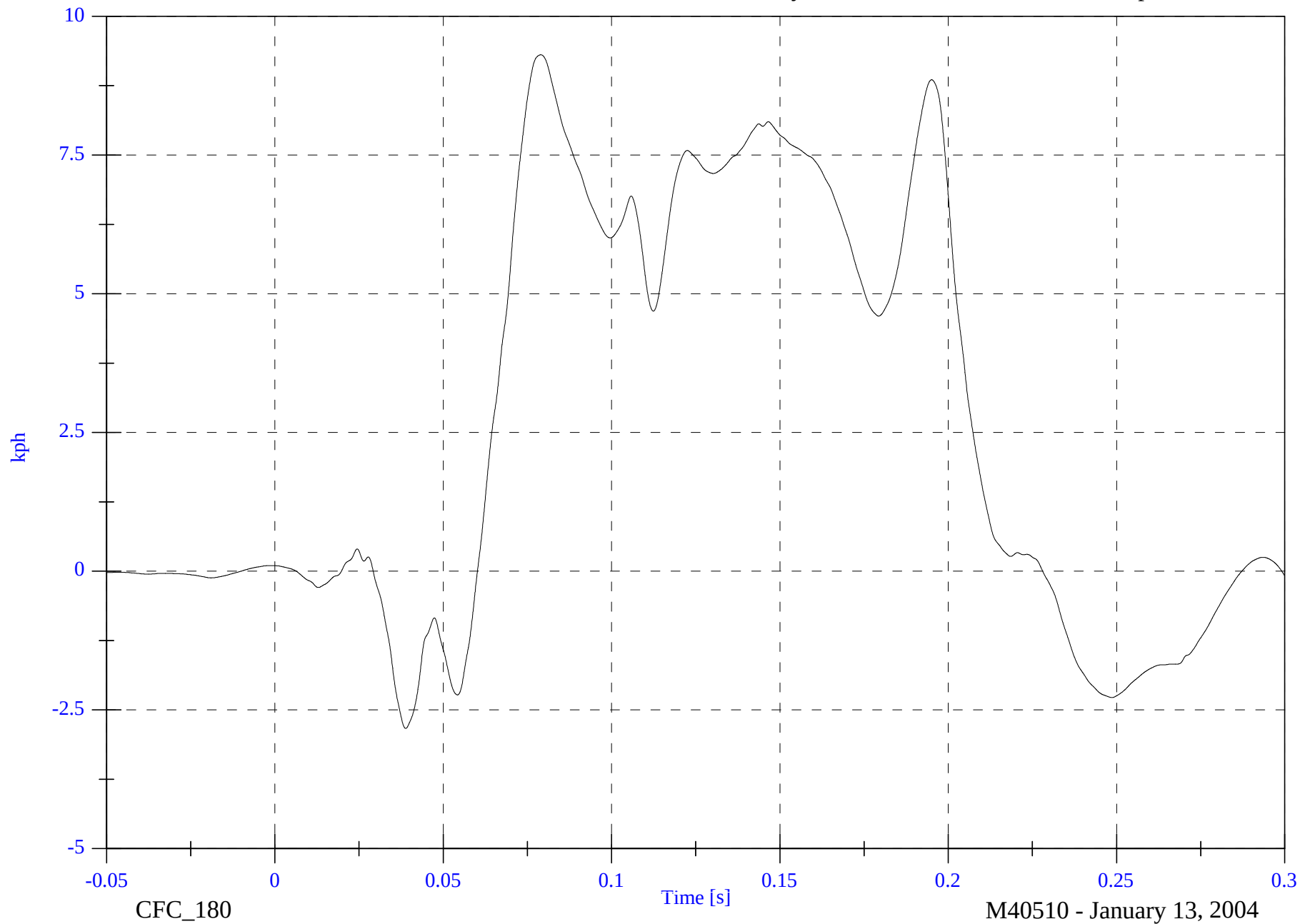
V1P3 Seat z Velocity

Max: 9.3 [kph] at 0.079 [s]

Min: -2.8 [kph] at 0.039 [s]

4-42

8642-NCAP-40

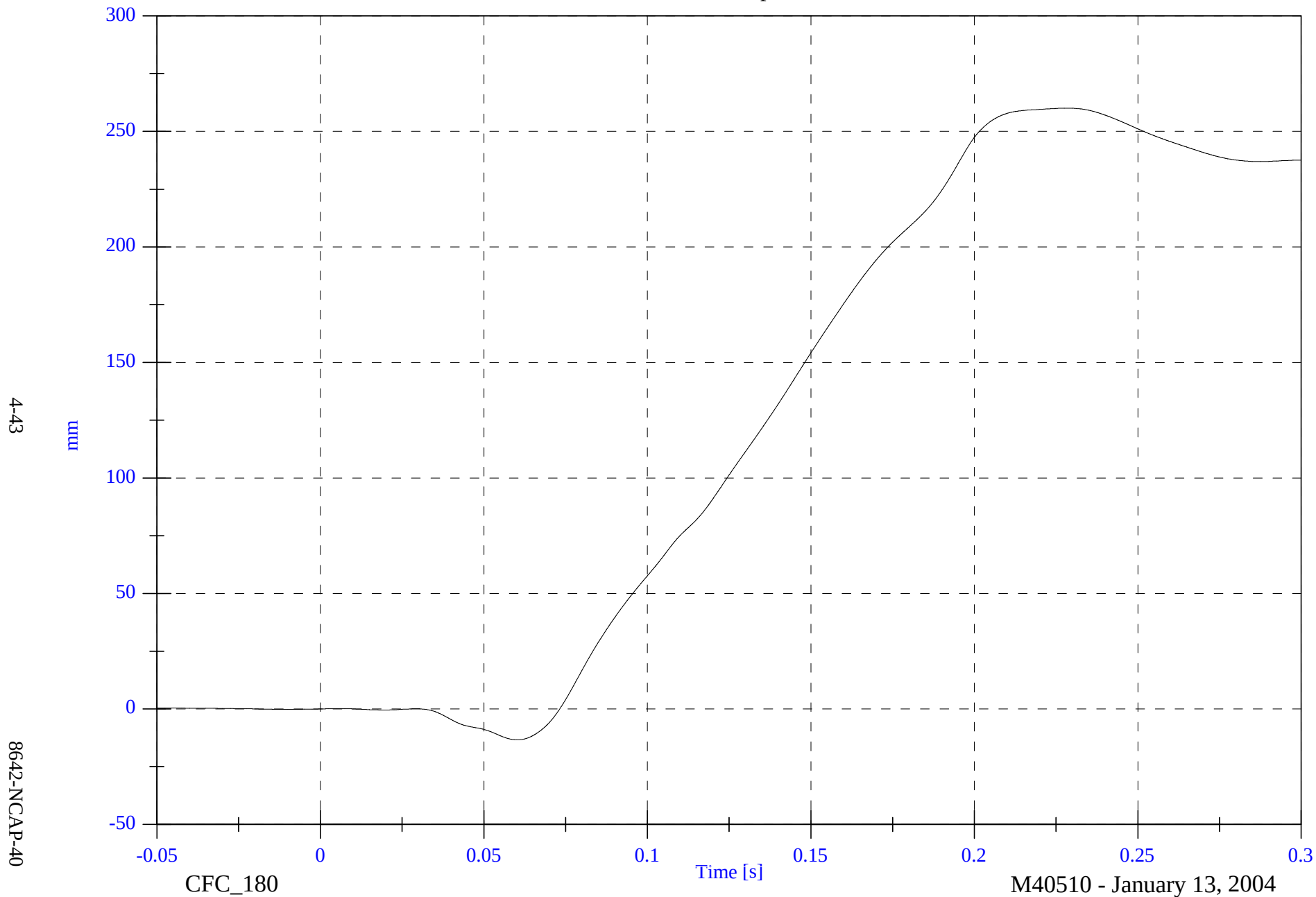


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat z Displacement

Max: 260.1 [mm] at 0.228 [s]

Min: -13.4 [mm] at 0.060 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

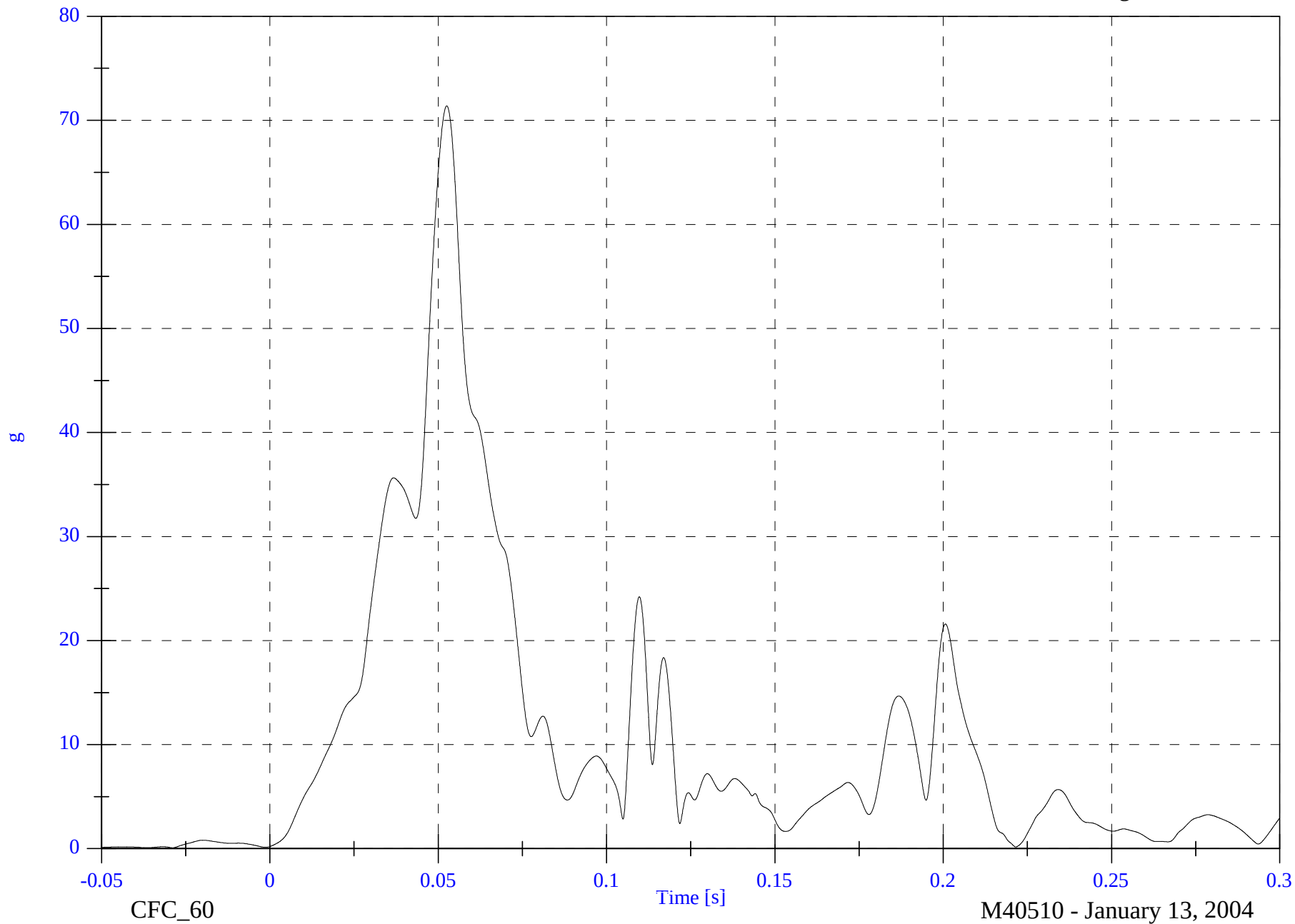
V1P3 Seat Resultant

Max: 71.4 [g] at 0.053 [s]

Min: 0.1 [g] at -0.029 [s]

4-44

8642-NCAP-40

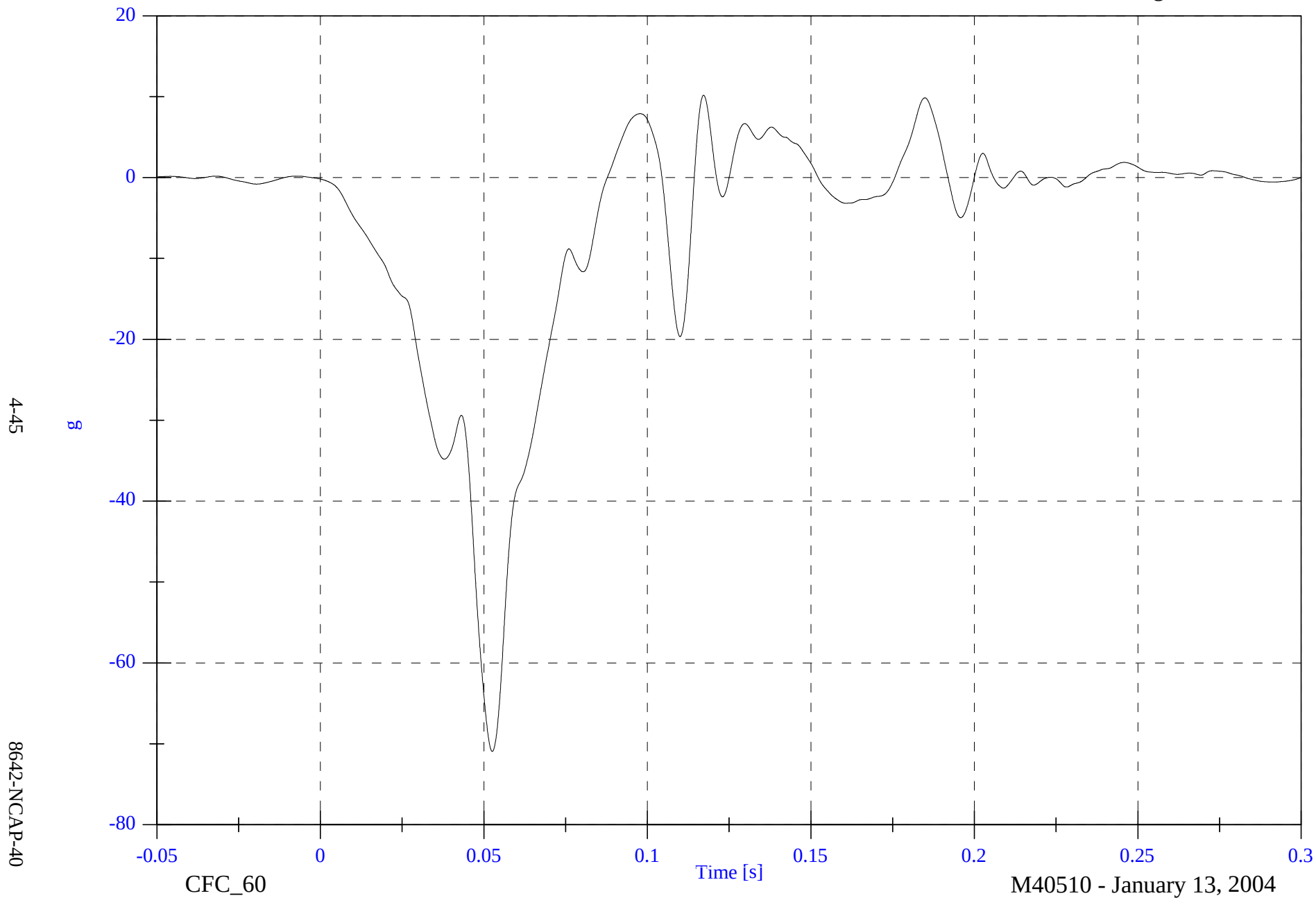


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat Redundant x

Max: 10.2 [g] at 0.117 [s]

Min: -70.9 [g] at 0.053 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

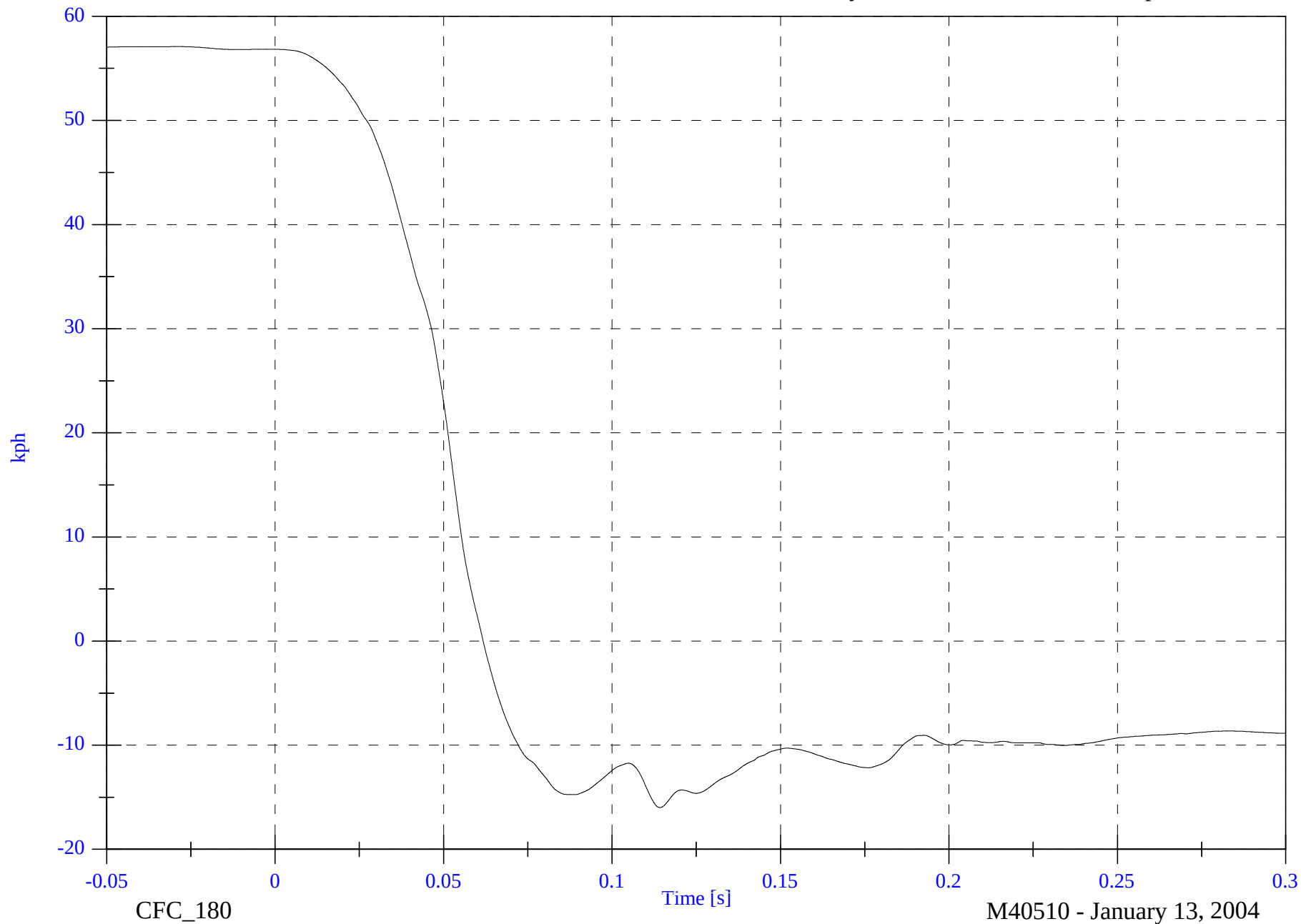
V1P3 Seat Redundant x Velocity

Max: 57.1 [kph] at -0.029 [s]

Min: -16.0 [kph] at 0.114 [s]

4-46

8642-NCAP-40

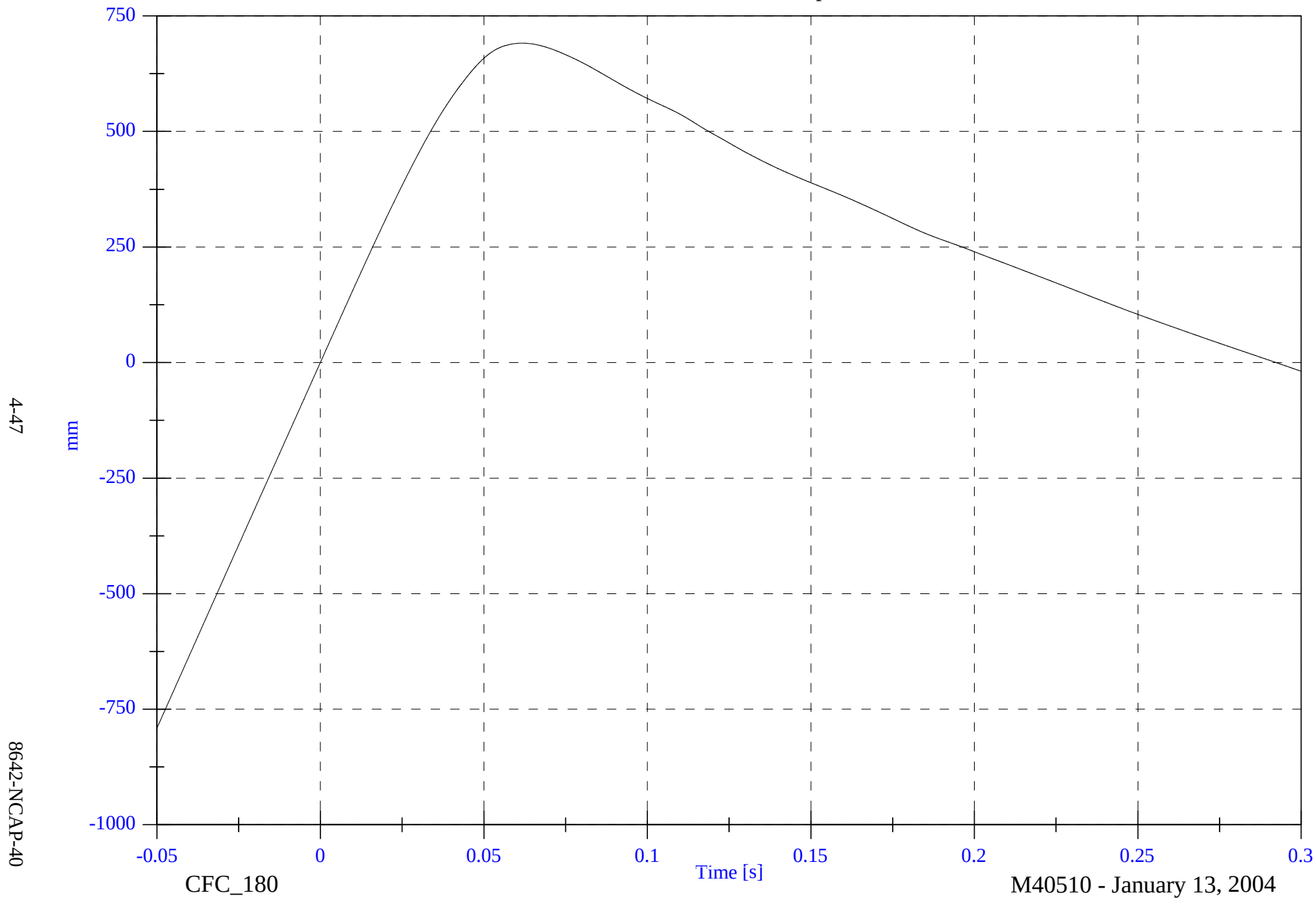


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat Redundant x Displacement

Max: 690.9 [mm] at 0.062 [s]

Min: -791.3 [mm] at -0.050 [s]

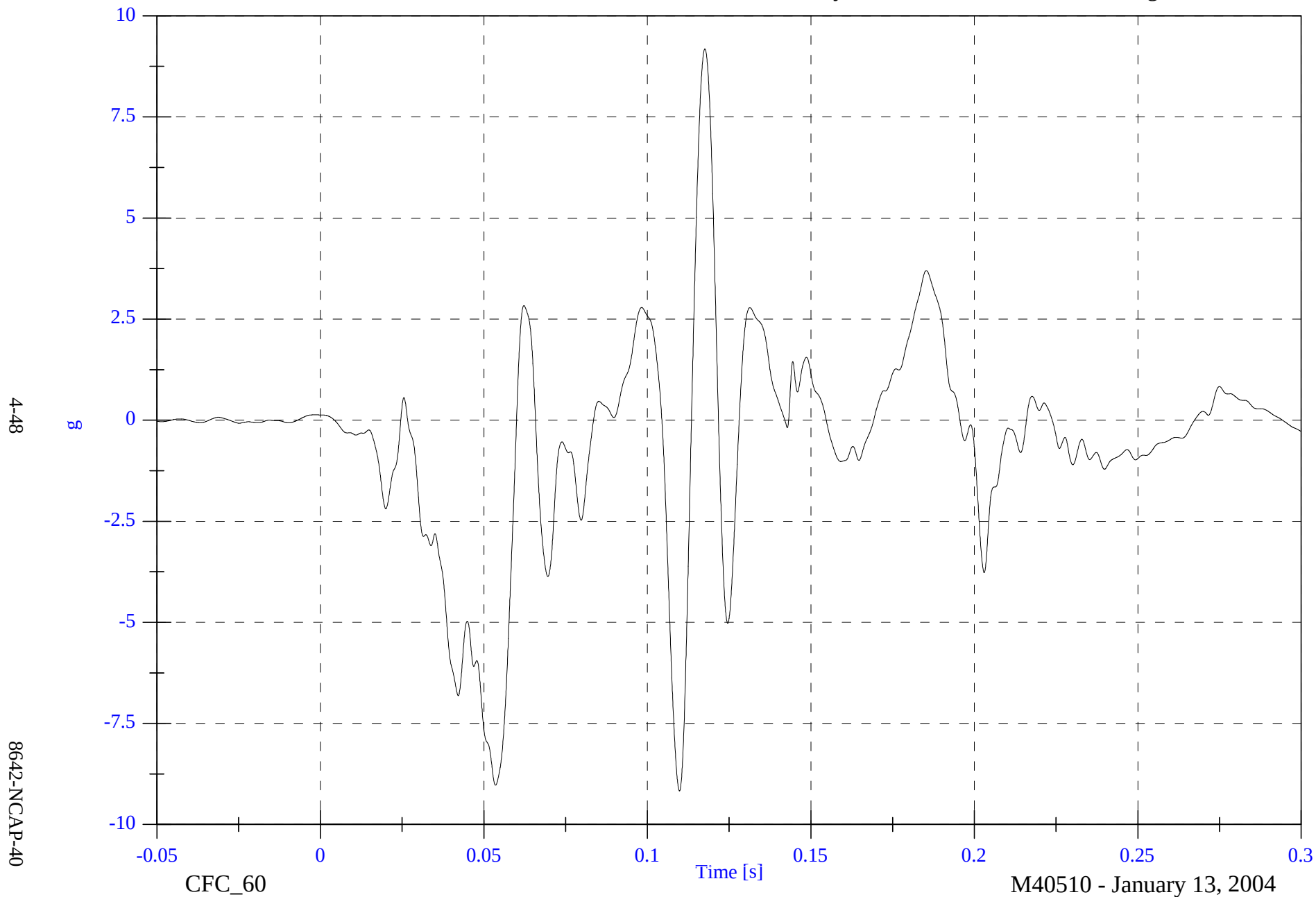


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat Redundant y

Max: 9.2 [g] at 0.118 [s]

Min: -9.2 [g] at 0.110 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat Redundant y Velocity

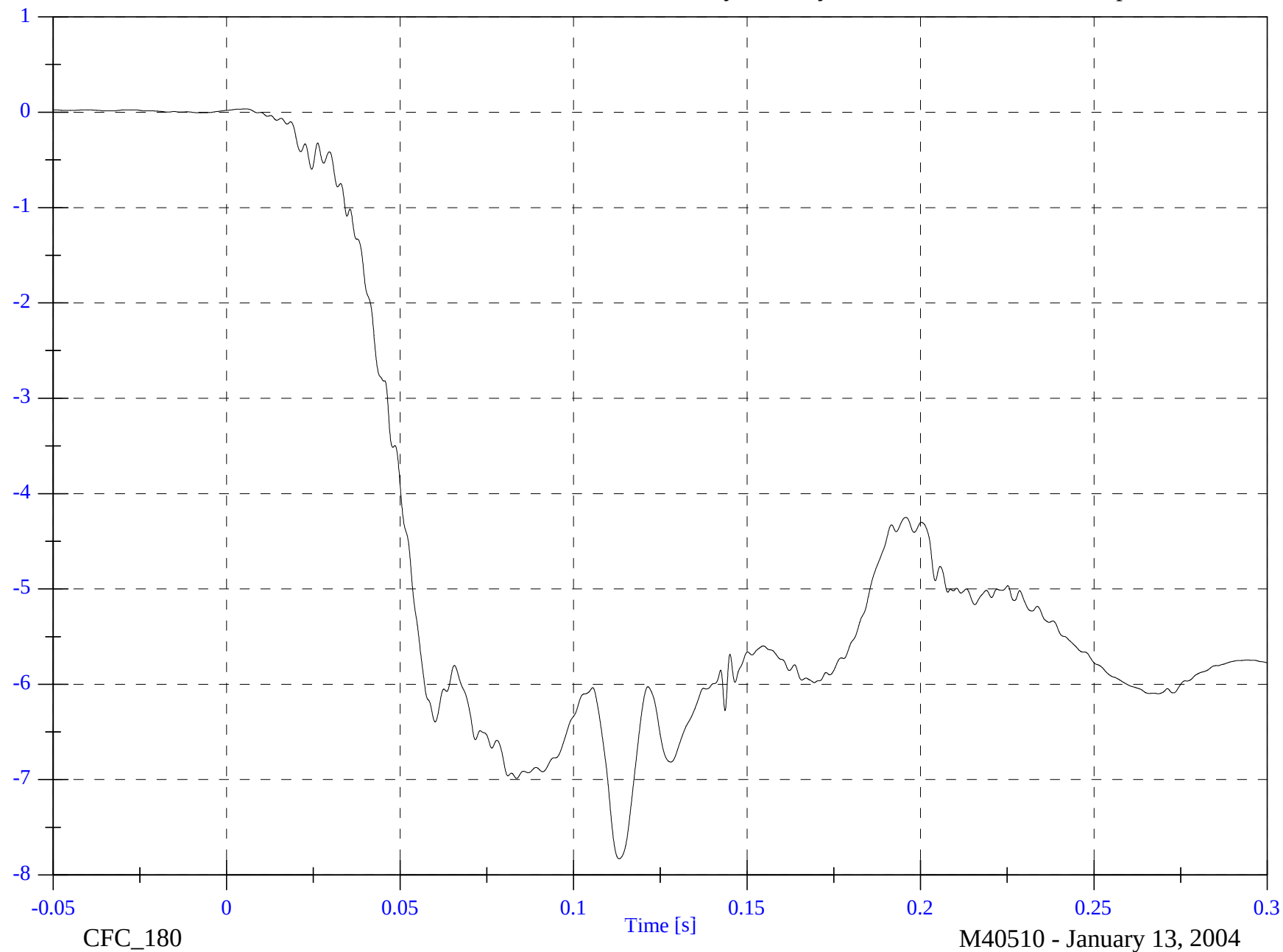
Max: 0.0 [kph] at 0.006 [s]

Min: -7.8 [kph] at 0.113 [s]

4-49

kph

8642-NCAP-40



CFC_180

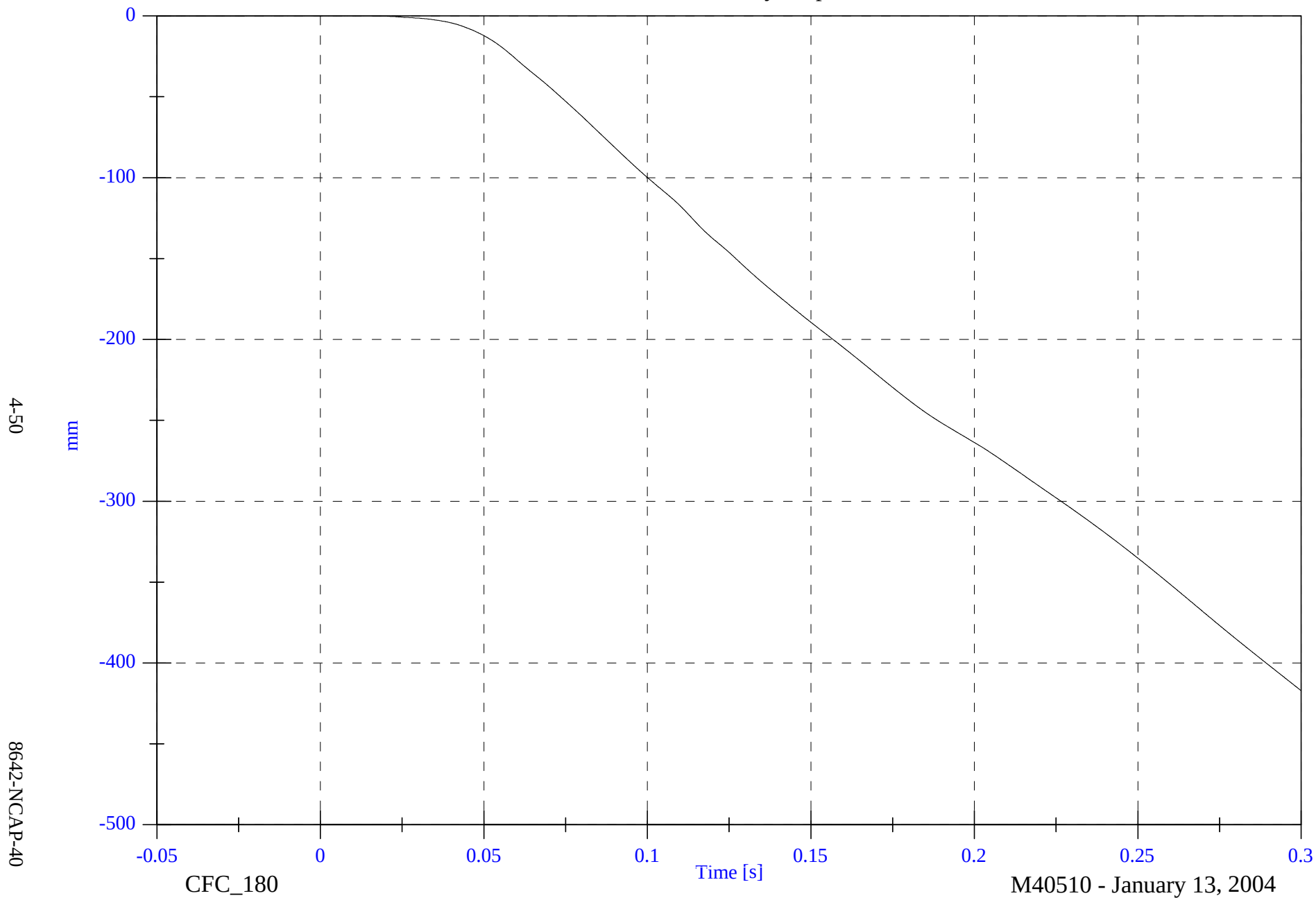
M40510 - January 13, 2004

2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat Redundant y Displacement

Max: 0.1 [mm] at 0.008 [s]

Min: -417.1 [mm] at 0.300 [s]

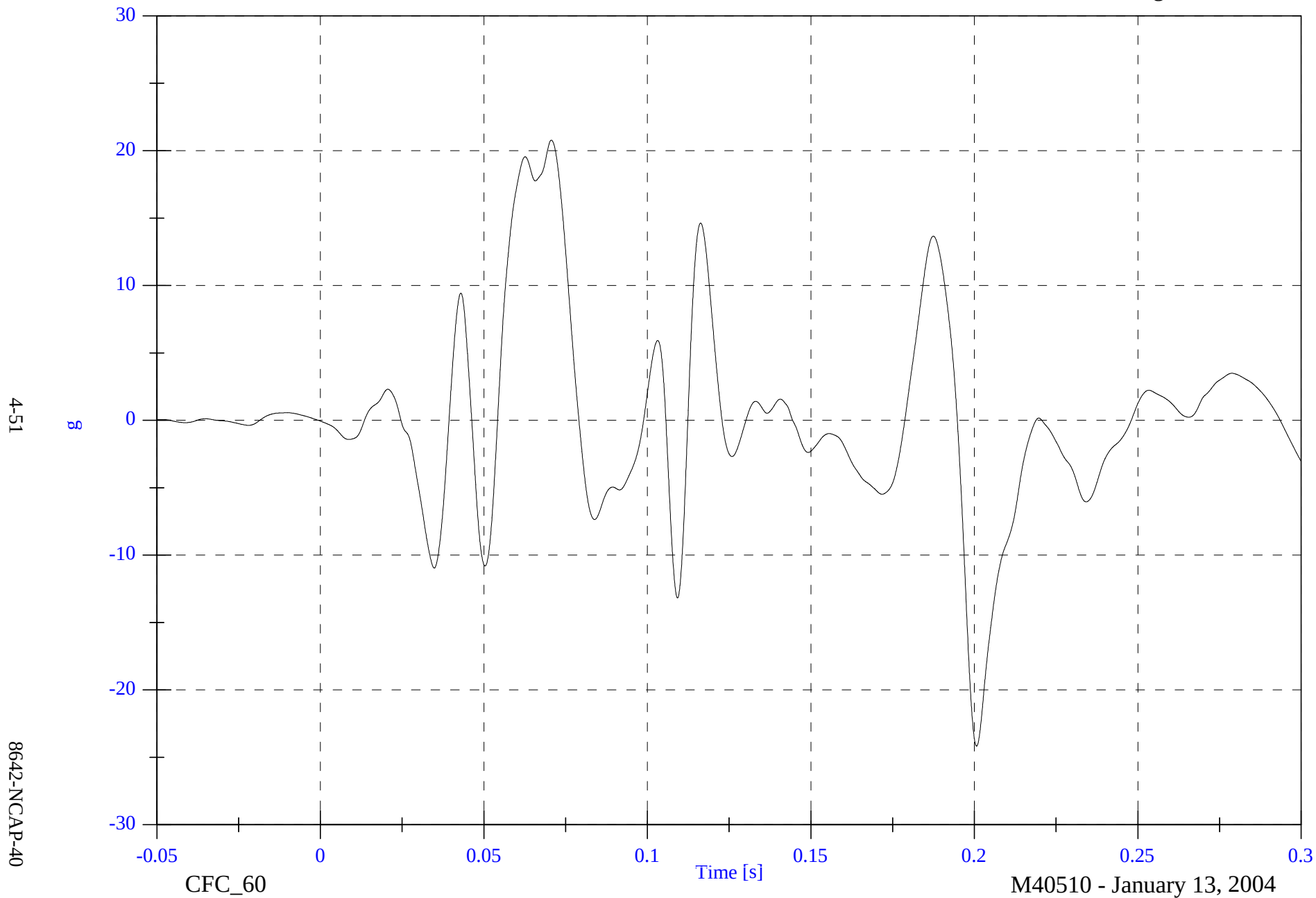


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat Redundant z

Max: 20.8 [g] at 0.071 [s]

Min: -24.2 [g] at 0.201 [s]

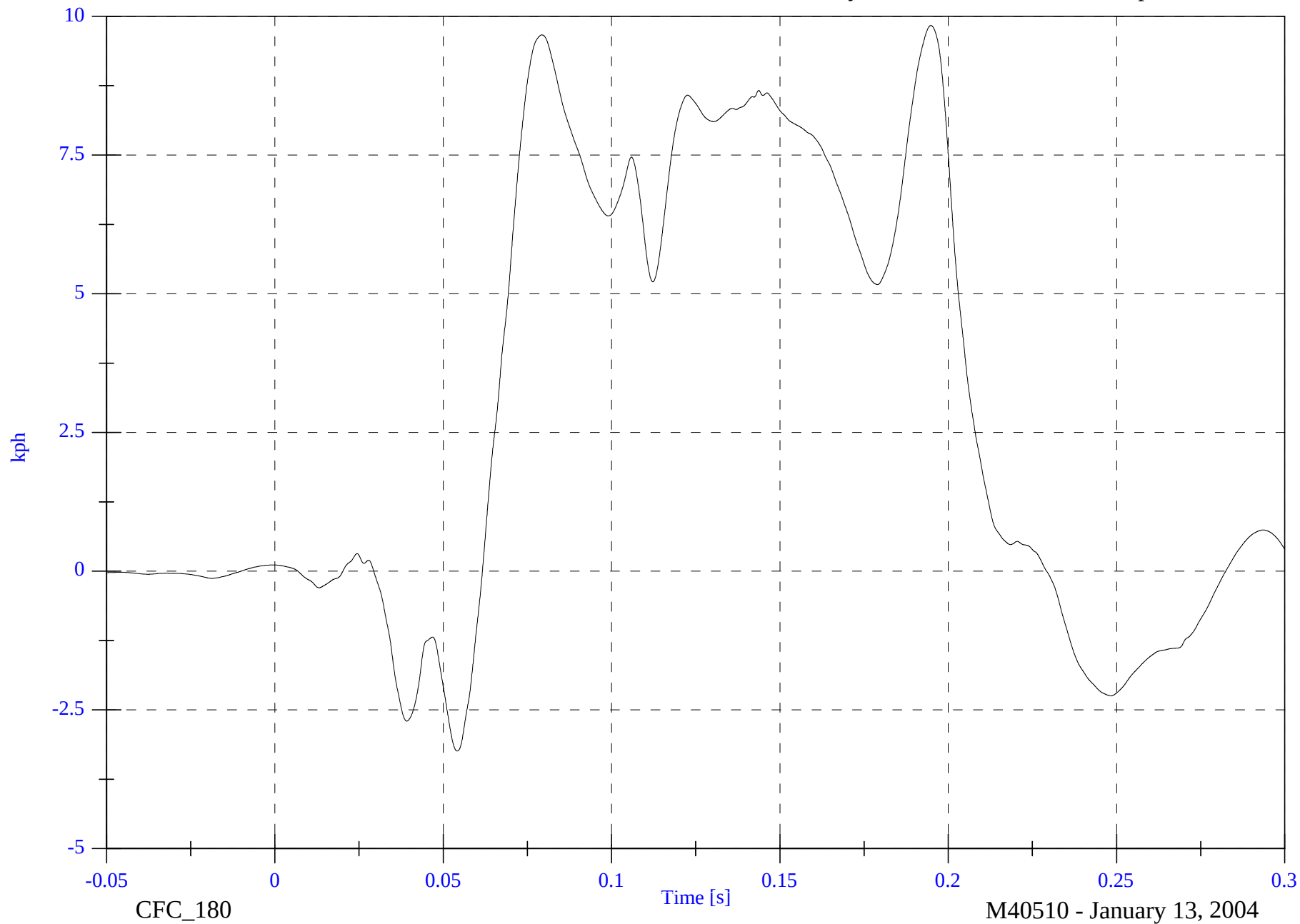


2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat Redundant z Velocity

Max: 9.8 [kph] at 0.195 [s]

Min: -3.2 [kph] at 0.054 [s]



4-52

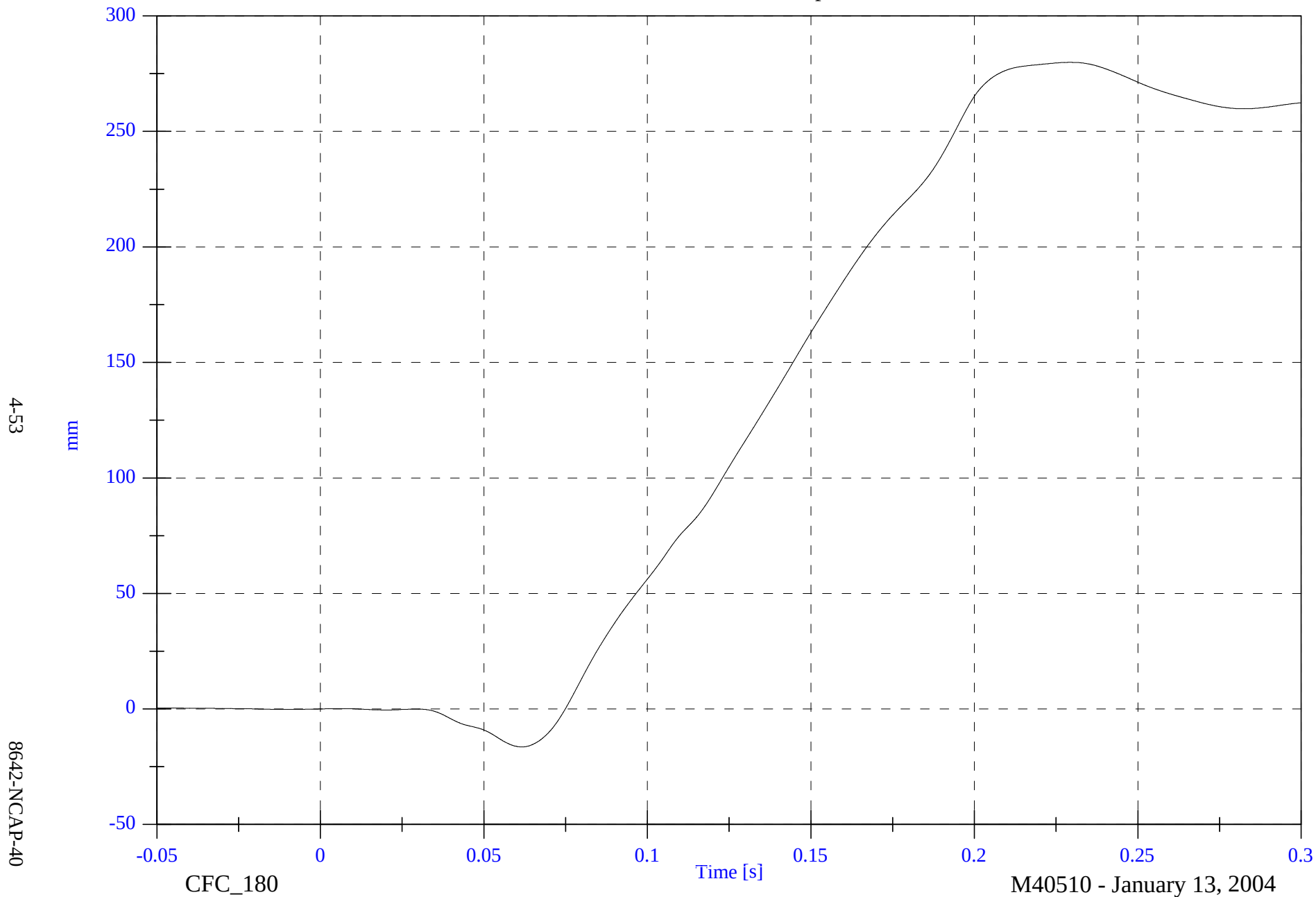
8642-NCAP-40

2004 NCAP Test 4 2004 Suzuki Forenza

V1P3 Seat Redundant z Displacement

Max: 279.9 [mm] at 0.229 [s]

Min: -16.5 [mm] at 0.062 [s]



2004 NCAP Test 4 2004 Suzuki Forenza

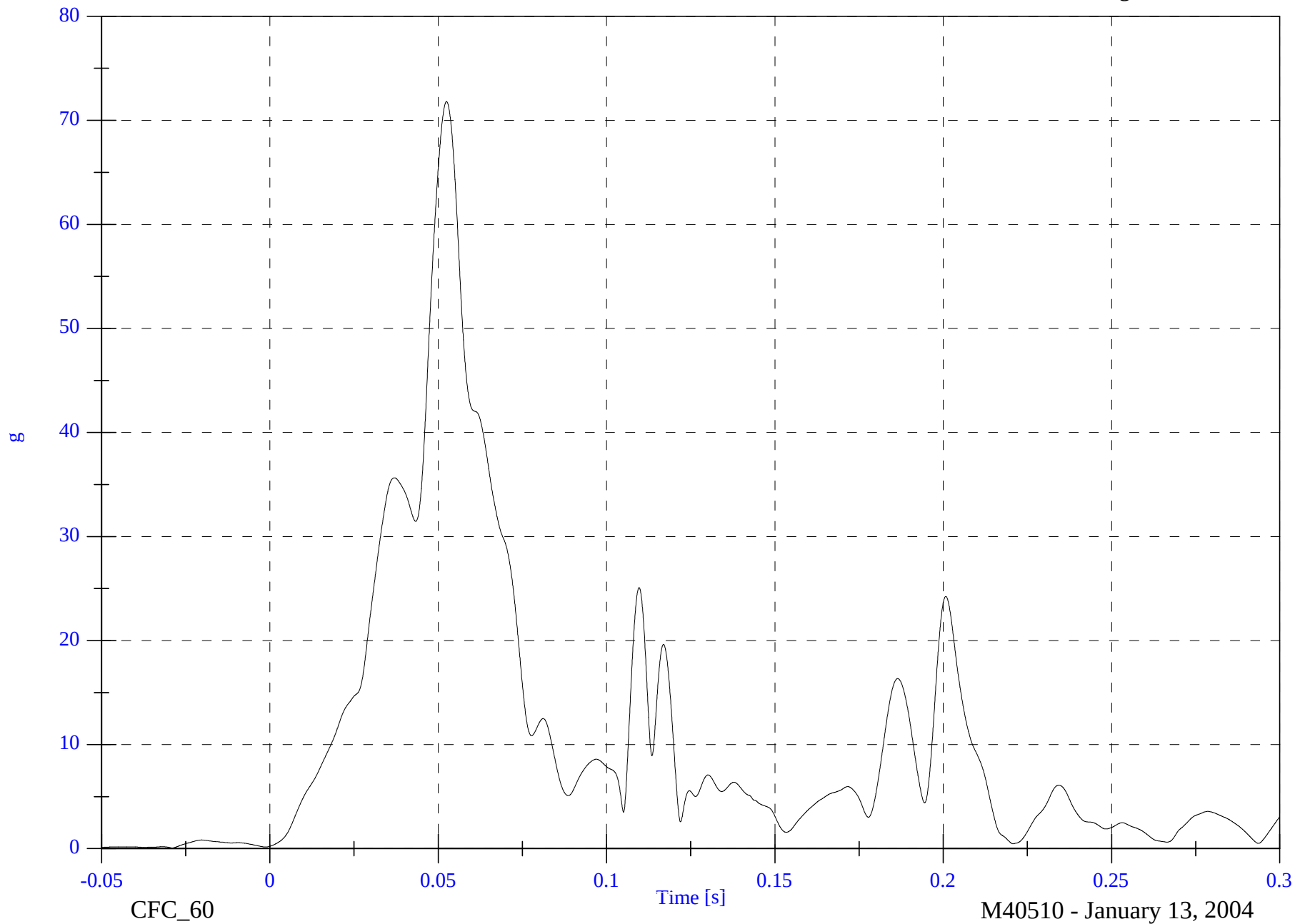
V1P3 Seat Redundant Resultant

Max: 71.8 [g] at 0.052 [s]

Min: 0.1 [g] at -0.029 [s]

4-54

8642-NCAP-40



SECTION 5

CHILD DUMMY CALIBRATION INFORMATION

PART 572P
HEAD DROP TEST

Dummy Serial Number 044
Sequential Test Number 1
Date 12/16/03
Workfile 044H 12-16-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	33.0
Peak Resultant Acceleration	250-280 G's	266.77
Peak Lateral Acceleration	15 G's Max	13.80
Is Acceleration Curve Unimodal?	<10%	4.79

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK FLEXION TEST

Dummy Serial Number 044
 Sequential Test Number 2
 Date 10/22/2003
 Workfile 044NF 10-22-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	38.0
Pendulum Speed		5.40-5.60 m/s	5.46
Pendulum Pulse	10 ms	2.00 – 2.70 m/s	2.14
	15 ms	3.00 – 4.00 m/s	3.13
	20 ms	4.00 – 5.10 m/s	4.30
D Plane Rotation	Max	70.0 – 82.0 Deg	75.72
Maximum Occipital Moment		42.00 - 53.00 N-m	52.40
Occipital Moment Decay		60.0 - 80.0 ms	74.60

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK EXTENSION TEST

Dummy Serial Number 044
Sequential Test Number 2
Date 10/22/2003
Workfile 044NE2 10-22-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	38.0
Pendulum Speed		3.55 – 3.75 m/s	3.72
Pendulum Pulse	10 ms	1.00 – 1.40 m/s	1.05
	15 ms	1.90 – 2.50 m/s	1.98
	20 ms	2.80 – 3.50 m/s	2.82
D Plane Rotation	Max	83.0 – 93.0 Deg	85.02
Maximum Occipital Moment		-53.30 - -43.70 N-m	-45.28
Occipital Moment Decay		60.0 - 80.0 ms	67.60

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
THORAX IMPACT TEST

Dummy Serial Number 044
Sequential Test Number 2
Date 10/23/03
Workfile 044T 10-23-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	21.1
Relative Humidity	10% - 70%	37.0
Pendulum Velocity	19.40 – 20.00 Ft/s	19.98
Maximum Deflection	1.30 – 1.50 in	1.41
Maximum Resistive Force	152.90 – 182.10 Lbs	176.02
Internal Hysteresis	65 - 85 %	72.12
Sternum Force Criteria	193.30 lbf	188.61

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
EXTERNAL DIMENSIONS

Dummy Serial Number 044
Sequential Test Number 2
Date 10/23/03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Total Sitting Height	A	21.2 – 21.8 in	21.38
Shoulder Pivot Height	B	12.1 - 12.7 in	12.40
H-Point Height	C	1.35 – 1.75 in	1.57
H-Point from Backline	D	2.24 – 2.64 in	2.76
Shoulder Pivot from Backline	E	2.40 – 2.80 in	2.76
Thigh Clearance	F	3.19 – 3.59 in	3.27
Back of Elbow to Fingertip	G	9.74 – 10.34 in	10.04
Head back from Backline	H	1.9 – 2.3 in	2.17
Shoulder - Elbow Length	I	7.3 – 7.9 in	7.87
Elbow Rest Height	J	5.26 – 5.86 in	5.31
Buttock to Knee Length	K	11.21 – 11.81 in	11.42
Popliteal Height	L	8.60 – 9.20 in	8.86
Knee Pivot Height	M	9.51 – 10.11 in	9.84
Buttock Popliteal Length	N	8.58 - 9.18 in	8.86
Chest Depth with Jacket	O	5.45 - 6.05 in	5.98
Foot Length	P	5.42 – 5.82 in	5.47
Stature	Q	36.7 – 37.7 in	37.00
Buttock to Knee Pivot Length	R	9.9 - 10.3 in	10.04
Head Breadth	S	5.15 – 5.55 in	5.16
Head Depth	T	6.59 -7.19 in	6.81
Hip Breadth	U	7.9 – 8.5 in	8.14
Shoulder Breadth	V	9.31 – 9.91in	9.49
Foot Breadth	W	2.11 – 2.51 in	2.32
Head Circumference	X	19.7 – 20.3 in	20.00
Chest Circumference (With Jacket)	Y	20.75 – 21.75 in	21.65
Waist Circumference	Z	20.75 – 21.75 in	21.69
Location for Chest Circumference	AA	9.8 – 10.2 in	10.04
Location for Waist Circumference	BB	6.3 – 6.7 in	6.50

Remarks:

Laboratory Technician:

B. Swiecicki

SECTION 6

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III INSTRUMENTATION

	POSITION #3 (RIGHT) SERIAL NO.: 044		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD A X	AC-P17912	ENDEVCO	21-Oct-03
HEAD A Y	AC-P17743	ENDEVCO	21-Oct-03
HEAD A Z	AC-P15319	ENDEVCO	21-Oct-03
HEAD REAR A Z	AC-02I02I10-N06	ENTRAN	08-Dec-03
UPPER NECK F X	LC-248-FX	DENTON	01-Oct-03
UPPER NECK F Y	LC-248-FY	DENTON	01-Oct-03
UPPER NECK F Z	LC-248-Fz	DENTON	01-Oct-03
UPPER NECK M X	LC-248-Mx	DENTON	01-Oct-03
UPPER NECK M Y	LC-248-My	DENTON	01-Oct-03
UPPER NECK M Z	LC-248-Mz	DENTON	01-Oct-03
LOWER NECK F X	LC-249Fx	DENTON	01-Oct-03
LOWER NECK F Y	LC-249Fy	DENTON	01-Oct-03
LOWER NECK F Z	LC-249Fz	DENTON	01-Oct-03
LOWER NECK M X	LC-249Mx	DENTON	01-Oct-03
LOWER NECK M Y	LC-249My	DENTON	01-Oct-03
LOWER NECK M Z	LC-249Mz	DENTON	01-Oct-03
CHEST A X	AC-P15334	ENDEVCO	21-Oct-03
CHEST A Y	AC-P15321	ENDEVCO	21-Oct-03
CHEST A Z	AC-P17758	ENDEVCO	21-Oct-03
CHEST DISPLACEMENT X	DS-044	SERVO	22-Jul-03
PELVIS A X	AC-P16755	ENDEVCO	21-Oct-03
PELVIS A Y	AC-P15591	ENDEVCO	21-Oct-03
PELVIS A Z	AC-P16155	ENDEVCO	21-Oct-03
LATCH BELT LOAD	LC-170	First Technology	10-Oct-03

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

CRS INSTRUMENTATION

	CRS ACCELEROMETERS		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
P3 CRS AX	AC-P23873	ENDEVCO	25-Aug-03
P3 CRS AY	AC-P18682	ENDEVCO	24-Sep-03
P3 CRS AZ	AC-P19246	ENDEVCO	7-Aug-03
P3 CRS Red AX	AC-P15747	ENDEVCO	24-Sep-03
P3 CRS Red AY	AC-P14438	ENDEVCO	24-Sep-03
P3 CRS Red AZ	AC-P16585	ENDEVCO	24-Sep-03