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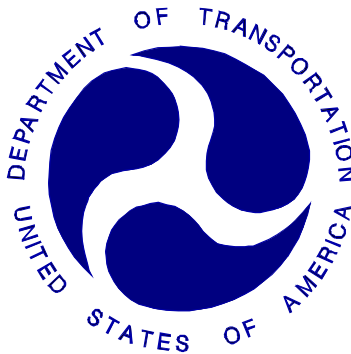
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

HYUNDAI MOTOR COMPANY
2003 HYUNDAI ACCENT GL
4-DOOR

NHTSA NUMBER: M30505

VERIDIAN TEST NUMBER: 8642-NCAP-27

VERIDIAN ENGINEERING
TRANSPORTATION SCIENCES CENTER
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January 17, 2003

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
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16. Abstract A frontal load cell barrier test of a 2003 Hyundai Accent GL 4-Door was performed at Veridian Engineering crash test facility in Buffalo, New York, on January 17, 2003. The impact velocity was 55.84 kph and the temperature at the barrier face was 21.1°C. The maximum post-test vehicle crush was 508 mm. The test vehicle was equipped with pretensioning 3-point restraint systems, knee bolsters, and airbags at both the driver and right outboard passenger seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements.					
ATD Position	HIC	Clip (g's)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)
Driver (150)	326.6	46.6	32.4	1959.5	5061.4
Passenger (245)	647.5	44.7	32.2	1931.1	359.2
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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 55.84 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 55.84 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 55.84 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 installed on the driver's and passenger's lap belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 150) and the right-front passenger (position 2) ATD (Serial No.245) 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 139 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 2003 Hyundai Accent GL 4-Door at a velocity of 55.84 kph. The test was performed at Veridian Engineering on January 17, 2003. 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	326.6	46.6	32.4	1959.5	5061.4	-	-
Passenger ATD	647.5	44.7	32.2	1931.1	359.2	-	-

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 508 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: Face to center of airbag, back of head to head restraint, left knee to left knee bolster, and right knee to right knee bolster. The passenger's visible contact points were as follows: Face to center of airbag, back of head to head restraint, left knee to left edge of the glove compartment door, and right knee to center of glove compartment door.

The 2003 Hyundai Accent GL 4-Door 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.:	M30505	Test Mode:	56.3 kph Frontal Barrier
Test Date:	January 17, 2003	Time:	14:21
		Temperature:	21.1 °C
Vehicle Make/Model/Body Style:	2003 Hyundai Accent GL 4-Door		
Vehicle Test Weight:	1322.0	kg	
Vehicle/Barrier Impact Angle:	0	°	
Impact Velocity:	55.84	kph	
Maximum Static Crush:	508	mm	
Vehicle Rebound:	830	mm	
 <u>DUMMIES:</u>			
		<u>DRIVER</u>	<u>PASSENGER</u>
Type:		572E	572E
Restraint System:		Seatbelt, Airbag, Knee Bolster	Seatbelt, Airbag, Knee Bolster
Number of Data Channels:	139		
Number of Cameras:	1	Real Time	
	16	High Speed	
 <u>DOOR OPENING DATA:</u>			
	Door remained closed and latched, door opened without tools - Left Front		
	Door remained closed and latched, door opened without tools - Right Front		
 <u>Front Seat(s) Data:</u>			
		<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:		Face to center of airbag; Back of head to head rest	Face to center of airbag; Back of head to head rest
Abdomen:		Airbag	Airbag
Chest:		None	None
Knees:		Left knee to left bolster; Right knee to right bolster	Left knee to left edge of glove compartment door; Right knee to center of glove compartment door

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2003 Hyundai Accent GL 4-Door

NHTSA No. : M30505 ; VIN: KMHCG45C03U426962 ; Color: Green

Engine Data: 4 cylinders; - CID; 1.6 Liters; - cc

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

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

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

Date Received: 10/20/2002 ; Odometer Reading 11.3 km

Selling Dealer: Northtown Hyundai

& Address: 3675 Sheridan Drive Amherst, NY 14226

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Hyundai Motor Company

Date of Manufacture OCT/07/02

GVWR: 1554.9 kg; GAWR: 820.1 kg FRONT; 850.0 kg REAR

DATA FROM TIRE PLACARD:

Recommended Tire Size: P175/70R13

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

DATA FROM TIRE SIDEWALL:

Size of Tires on Test Vehicle: P175/70R13 82T ; Manufacturer: Kumho

Tire Pressure with Maximum Capacity Vehicle Load: Front: 230 kPa; Rear: 230 kPa

Treadwear: 380 ; Traction: A ; Temperature: B

VEHICLE CAPACITY DATA:

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

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

Vehicle Capacity Weight (VCW) = 385.5 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 45.3 kg

*Tire pressure used for test

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

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

Right Front	=	<u>350.0</u>	kg	Right Rear	=	<u>205.5</u>	kg
Left Front	=	<u>353.5</u>	kg	Left Rear	=	<u>222.0</u>	kg
TOTAL FRONT	=	<u>703.5</u>	kg	TOTAL REAR	=	<u>427.5</u>	kg
TOTAL DELIVERED WEIGHT	=	<u>1131.0</u>	kg				
% of Total Front of Vehicle Weight	=	<u>62.2</u>		% of Total Rear Weight	=	<u>37.8</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW)	=	<u>1131.0</u>	kg
Rated Cargo/Luggage Weight (RCLW)	=	<u>45.3</u>	kg
Weight of 2 p.572 Dummies @ 76 each	=	<u>152</u>	kg
TARGET TEST WEIGHT	=	<u>1328.3</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND

39.0

KG OF CARGO WEIGHT:

Right Front	=	<u>388.0</u>	kg	Right Rear	=	<u>261.5</u>	kg
Left Front	=	<u>392.5</u>	kg	Left Rear	=	<u>280.0</u>	kg
TOTAL FRONT	=	<u>780.5</u>	kg	TOTAL REAR	=	<u>541.5</u>	kg
TOTAL TEST WEIGHT	=	<u>1322.0</u>	kg				
% of Total Front Weight	=	<u>59.0</u>	%	% of Total Rear Weight	=	<u>41.0</u>	%
Weight of Ballast Secured in Vehicle Trunk Area	=	<u>0</u>	kg				
Vehicle Components Removed for Weight Reduction:				<u>Trunk lid, tail lights, side mirrors, rear door glass, rear compartment trim, bumper and cover, muffler</u>			

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED:	RF	<u>637</u>	LF	<u>633</u>	RR	<u>634</u>	LR	<u>627</u>
FULLY LOADED:	RF	<u>623</u>	LF	<u>618</u>	RR	<u>607</u>	LR	<u>600</u>
AS TESTED:	RF	<u>625</u>	LF	<u>623</u>	RR	<u>607</u>	LR	<u>604</u>
Vehicle's Wheel Base:		<u>2448</u>	mm					
Location of Vehicle's C.G.:		<u>0</u>	mm rearward of front wheel center.					

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual	=	<u>45.0</u>	liters
Usable Capacity Figure Furnished by COTR	=	<u>45.0</u>	liters
Test Volume Range (92 to 94% of Usable Capacity)	=	<u>41.4</u>	to <u>42.3</u> liters
ACTUAL TEST VOLUME	=	<u>15.1H</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 – Located on the vehicle underbody between the rear wheels; Fuel Lines - Routed along the vehicle underbody inboard of the left body stiffener; Fuel Filler – Located on the left rear quarter panel rear of the rear wheel.</u>			

H Stoddard volume was reduced to achieve target test weight and was approved by the COTR.

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°
Test Date: January 17, 2003 Time: 14:21 Temperature: 21.1 °C
Vehicle NHTSA No.: M30505
Required Impact Velocity Range: 55.5 to 57.1 kph

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

Trap No. 1 = 55.84 kph; Trap No. 2 = 55.84 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>4211</u> ; C/L = <u>4262</u> ; Right = <u>4206</u>
Post-Test	Left = <u>3738</u> ; C/L = <u>3756</u> ; Right = <u>3732</u>
Crush	Left = <u>473</u> ; C/L = <u>506</u> ; Right = <u>474</u>
AVERAGE	= <u>484</u> mm

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

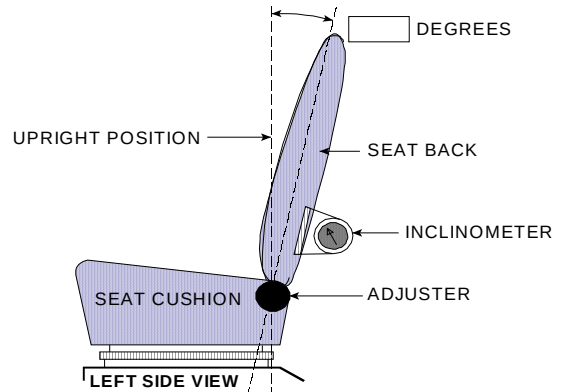
	Left = <u>872</u> ; C/L = <u>820</u> ; Right = <u>798</u>
AVERAGE	= <u>830</u> mm

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2003 Vehicle Model: Hyundai Accent GL Body Style : 4-Door

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: 25.5 degrees

Measurement instructions: Where the initial locking position is defined as 0, recline the seat back to detent 5.

The seat back angle as measured on the seat frame should be 25.5 degrees.

Seat back angle for passenger's seat: 25.5 degrees

Measurement instructions: Where the initial locking position is defined as 0, recline the seat back to detent 5.

The seat back angle as measured on the seat frame should be 25.5 degrees.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: Where the forward-most position is defined as detent 0, place the seat in detent 9 (mid-travel).

Positioning of the passenger's seat: Where the forward-most position is defined as detent 0, place the seat in detent 9 (mid-travel).

3. Fuel Tank Capacity Data

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 45 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 = 45 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 15.1 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.

The fuel pump operates briefly when the ignition is turned on and the engine is not started. The fuel pump operates continuously while the engine is running.

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

4. STEERING COLUMN ADJUSTMENTS:

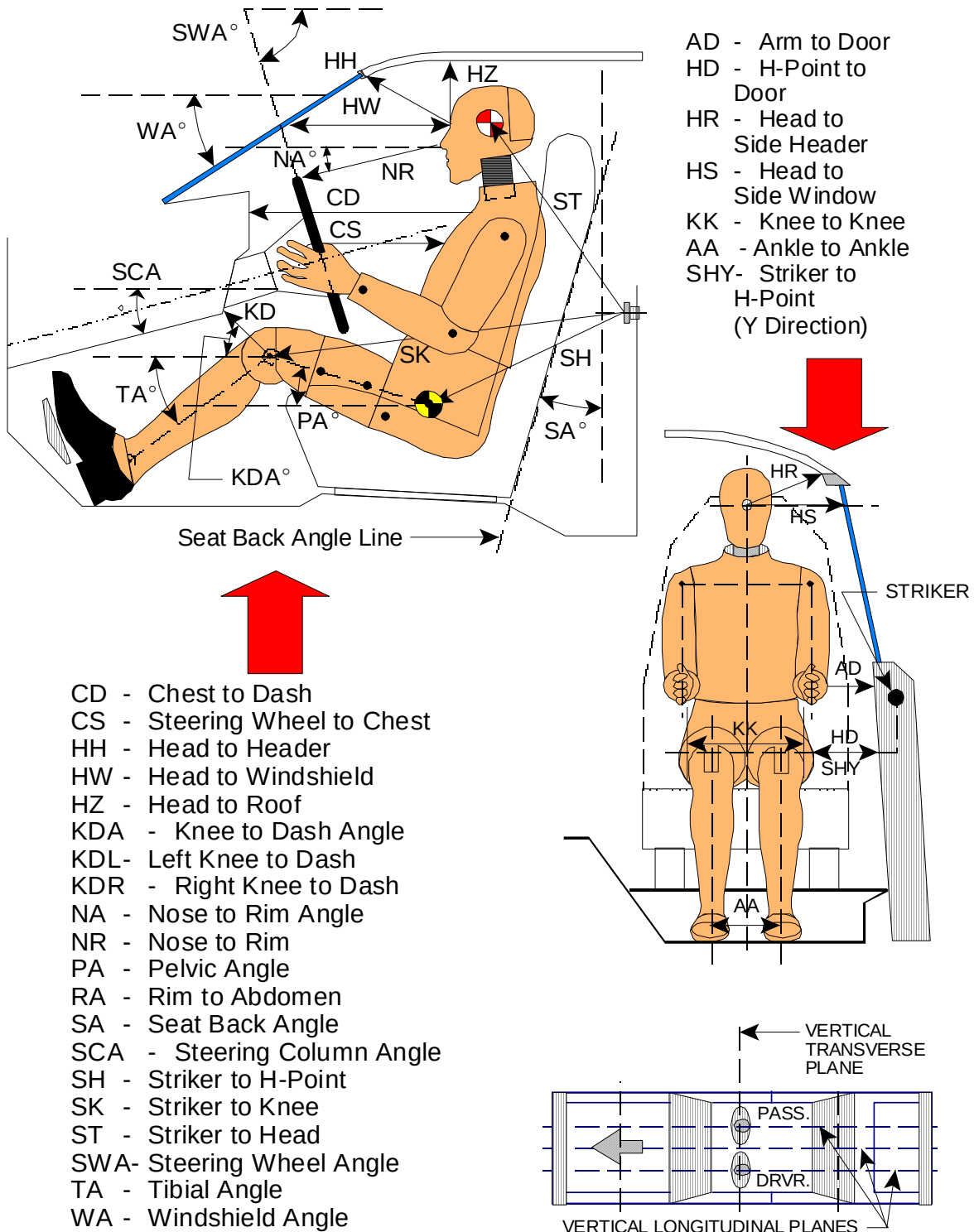
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine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

Operational Instructions: Fixed

5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: Where the upper-most position is defined as detent 0, place the adjustable anchorage in detent 1.

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



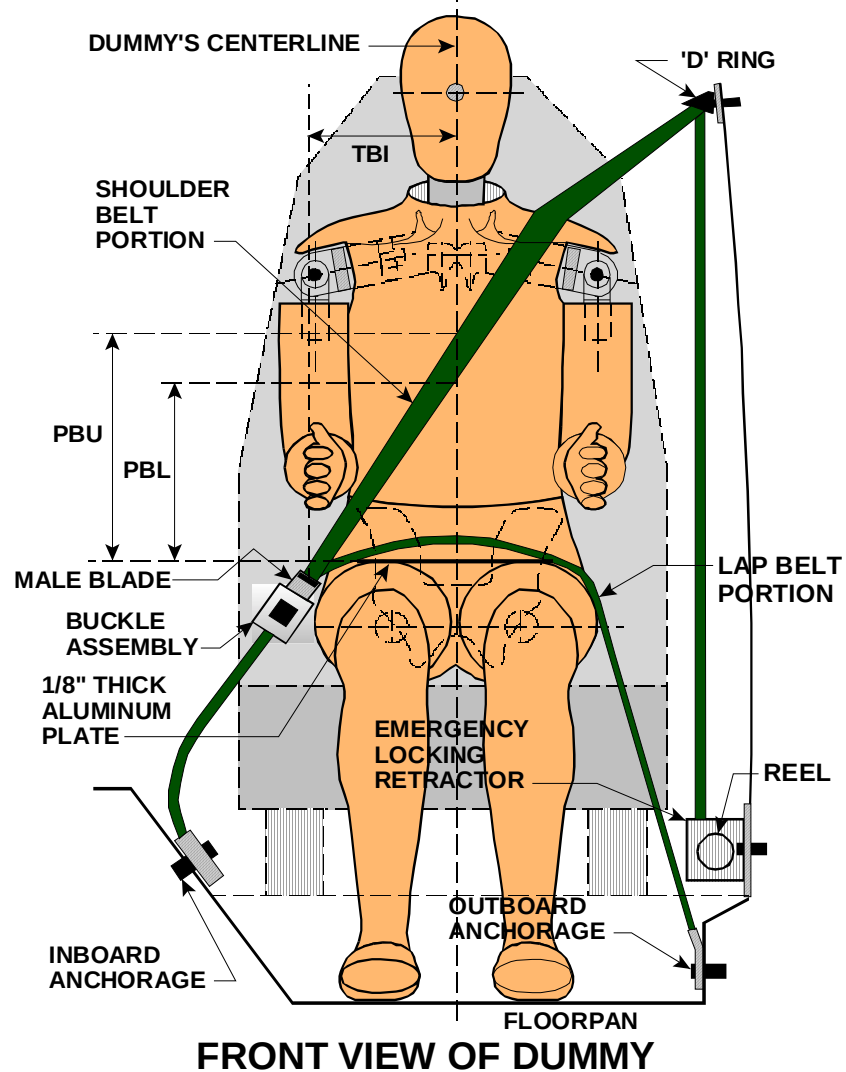
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #150)			PASS. (Serial #245)		
WA ⁰	33.5 deg.			N/A		
SWA ⁰	64.9 deg.			N/A		
SCA ⁰	25.1 deg.			N/A		
SA ⁰	25.5 deg.			25.5 deg.		
HZ	185			185		
HH	363			350		
HW	562			560		
HR	185			195		
NR	425	Angle	10 deg.	N/A		
CD	524			588		
CS	306			N/A		
RA	197			N/A		
KDL	173	Angle (KDA)	23 deg.	150		
KDR	160			165	Angle (KDA)	16 deg.
PA ⁰	23.5 deg.			25.0 deg.		
TA ⁰	44.0 deg.			42.0 deg.		
KK	345			280		
AA	320			215		
ST	505	Angle	2 deg.	508	Angle	2 deg.
SK	563	Angle	90 deg.	571	Angle	89 deg.
SH	220	Angle	124 deg.	201	Angle	120 deg.
SHY	218			218		
HS	320			318		
HD	136			125		
AD	118			118		

Dimensions in millimeters

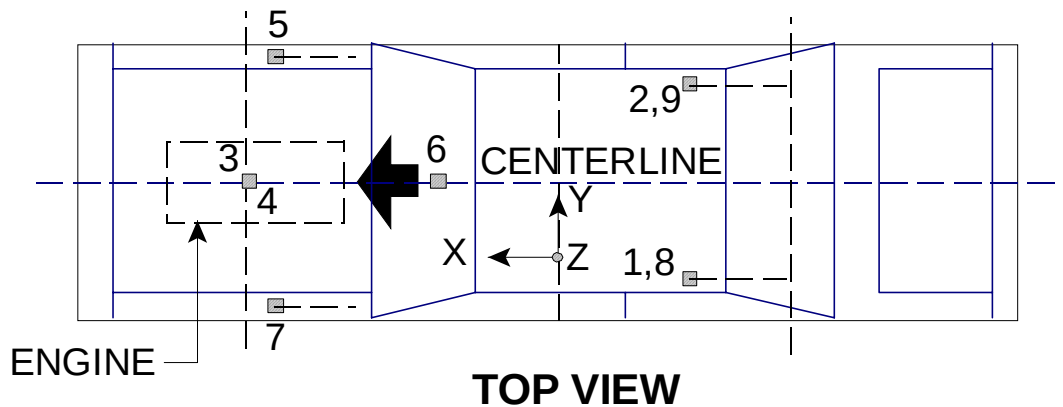
DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

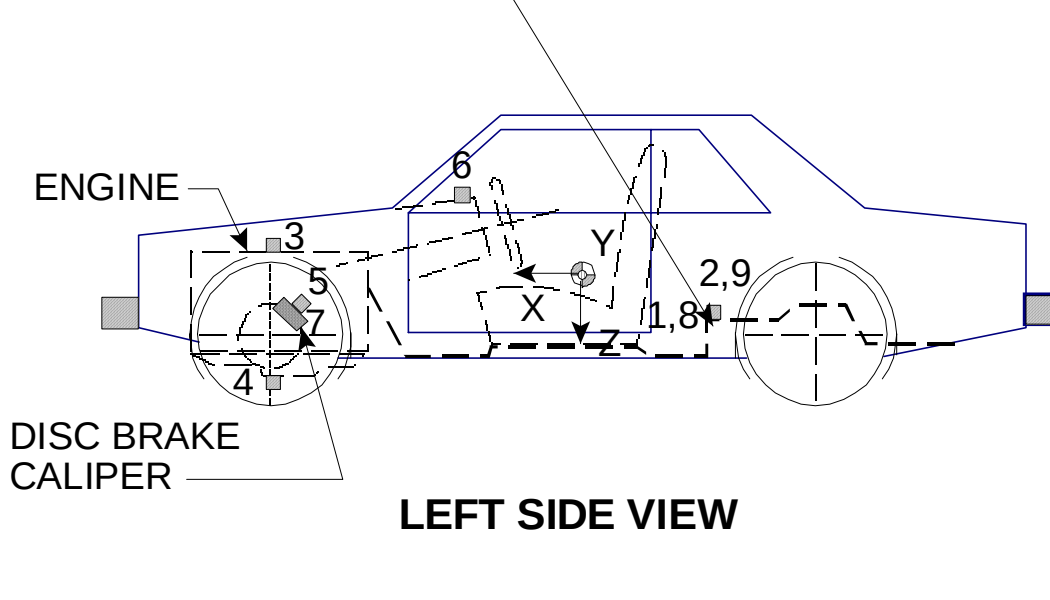


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	348	354
PBL-- Top surface of alum. plate to belt lower edge	270	270
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

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	1620	-641	-319
2	Right Rear Seat Cross Member X	1605	627	-317
3	Top of Engine Block	3520	269	-737
4	Bottom of Engine	3668	3	-179
5	Disc Brake Caliper @ Right Side	3430	697	-377
6	Instrument Panel	2699	98	-789
7	Disc Brake Caliper @Left Side	3419	-686	-384
8	Left Rear Seat Cross Member Z	1620	-641	-319
9	Right Rear Seat Cross Member Z	1605	627	-317

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Left Rear Seat Cross Member X	2.0	142.2	-41.8	59.9
2	Right Rear Seat Cross Member X	2.1	141.1	-41.5	58.9
3	Top of Engine Block	45.3	67.9	-143.5	51.9
4	Bottom of Engine	27.4	64.5	-108.5	52.8
5	Disc Brake Caliper @ Right Side	76.8	53.1	-99.5	59.5
6	Instrument Panel	36.5	54.7	-73.7	60.8
7	Disc Brake Caliper @Left Side	48.4	66.9	-121.4	60.1
8	Left Rear Seat Cross Member Z	6.6	58.1	-15.5	63.7
9	Right Rear Seat Cross Member Z	9.9	58.7	-10.9	53.3

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2003 Hyundai Accent GL 4-Door

NHTSA Test No.: M30505 Test Date: January 17, 2003

DESCRIPTION	Unit	MAXIMUM VALUE							
		Driver				Passenger			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head 9 Array X Arm Y	g	6.1	117.4	-16.3	66.7	5.1	128.1	-26.7	96.8
Head 9 Array X Arm Z	g	28.7	67.4	-7.3	137.0	24.9	81.3	-5.2	160.4
Head 9 Array Y Arm X	g	9.5	286.5	-46.8	94.7	12.5	248.5	-65.2	96.9
Head 9 Array Y Arm Z	g	24.1	70.0	-3.1	148.5	25.0	85.9	-9.2	117.0
Head 9 Array Z Arm X	g	12.1	290.8	-48.5	98.1	20.9	252.1	-72.7	97.7
Head 9 Array Z Arm Y	g	10.1	147.3	-16.8	97.3	5.6	261.0	-28.2	104.7
Head X	g	9.3	289.4	-49.0	96.3	13.7	254.3	-60.9	97.7
Head Y	g	6.0	139.6	-11.4	89.0	3.3	58.4	-27.9	104.6
Head Z	g	20.5	70.0	-0.8	39.8	21.1	96.2	-3.4	121.6
Head Resultant	g	51.4	96.3	-	-	67.9	98.6	-	-
Redundant Head X	g	9.4	289.5	-49.0	96.4	13.6	254.8	-57.8	97.7
Redundant Head Y	g	5.8	139.6	-11.7	89.8	3.5	57.0	-30.1	104.6
Redundant Head Z	g	20.5	69.9	-0.8	39.8	21.4	96.1	-3.4	121.5
Redundant Head Resultant	g	51.6	94.7	-	-	65.7	98.7	-	-
Upper Neck Fx	N	599.6	84.9	-439.3	146.2	516.1	96.1	-256.0	68.5
Upper Neck Fy	N	253.3	140.7	-79.3	65.0	255.0	107.2	-196.5	153.6
Upper Neck Fz	N	1139.2	70.7	-36.7	153.8	718.4	85.7	-285.5	112.1
Upper Neck F Resultant	N	1142.0	70.7	-	-	828.3	94.6	-	-
Upper Neck Mx	N-m	20.5	147.0	-17.1	97.1	30.7	114.8	-18.4	147.6
Upper Neck My	N-m	49.9	83.3	-22.7	116.7	33.4	96.1	-13.0	290.8
Upper Neck Mz	N-m	12.5	93.0	-8.0	299.9	36.0	118.7	-14.3	167.6
Upper Neck M Resultant	N-m	50.6	83.3	-	-	47.1	115.1	-	-
Chest X	g	2.0	144.6	-46.9	81.1	4.0	277.5	-44.8	97.2
Chest Y	g	9.0	104.3	-7.4	78.3	2.5	63.2	-8.4	97.1
Chest Z	g	5.3	69.7	-6.4	83.1	7.4	99.8	-4.0	123.1
Chest Resultant	g	47.1	81.3	-	-	46.1	97.3	-	-

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

Vehicle Year/Make/Model/Body Style: 2003 Hyundai Accent GL 4-Door

NHTSA Test No.: M30505 Test Date: January 17, 2003

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Redundant Chest X	g	H	-	H	-	3.6	277.2	-43.4	97.3
Redundant Chest Y	g	9.3	104.4	-7.1	78.3	2.8	64.8	-7.7	97.1
Redundant Chest Z	g	4.9	68.9	-6.9	83.2	7.8	99.8	-4.0	123.2
Redundant Chest Resultant	g	H	-	-	-	44.6	97.3	-	-
Chest Displacement	mm	0.1	34.1	-32.4	85.4	0.0	33.2	-32.2	96.6
Pelvic X	g	3.1	210.8	-65.3	74.7	HH	-	HH	-
Pelvic Y	g	11.7	82.4	-14.2	66.6	6.5	60.4	-4.5	98.0
Pelvic Z	g	2.9	214.8	-29.3	77.4	2.2	227.4	-25.6	96.9
Pelvic Resultant	g	69.9	77.6	-	-	HH	-	-	-
Left Femur	N	1102.0	69.8	-1959.5	77.9	537.8	53.8	-1931.1	79.6
Right Femur	N	566.2	55.6	-5061.4	75.1	921.3	93.4	-359.2	63.6
Left Upper Tibia Mx	N-m	28.4	65.1	-11.7	63.8	22.3	84.3	-61.7	66.0
Left Upper Tibia My	N-m	17.4	221.0	-86.8	51.5	86.9	89.3	-97.2	68.3
Left Lower Tibia Fz	N	69.6	299.1	-3460.4	51.2	51.0	164.2	-4697.7	67.0
Left Lower Tibia Mx	N-m	74.1	86.4	-8.8	108.8	78.7	68.3	-22.5	64.2
Left Lower Tibia My	N-m	20.4	88.2	-17.3	60.9	81.5	87.6	-20.1	59.1
Right Upper Tibia Mx	N-m	22.5	103.9	-66.7	82.7	22.7	84.4	-9.3	155.3
Right Upper Tibia My	N-m	26.2	87.5	-186.4	68.7	37.2	71.5	-102.4	93.8
Right Lower Tibia Fz	N	156.2	193.4	-6792.1	66.1	77.5	198.0	-3381.3	63.3
Right Lower Tibia Mx	N-m	34.9	78.7	-27.9	69.8	3.4	107.8	-23.9	93.3
Right Lower Tibia My	N-m	60.3	79.2	-20.2	69.0	23.4	65.1	-39.3	74.8
Left Foot Aft Ax	g	5.0	124.5	-85.2	60.4	12.1	91.8	-76.2	64.4
Left Foot Aft Az	g	10.9	64.0	-59.3	49.5	14.4	96.1	-63.2	64.6
Left Foot Fore Az	g	34.4	64.1	-72.3	52.5	30.9	64.3	-132.0	57.7
Right Foot Aft Ax	g	14.9	90.9	-121.5	65.6	15.9	89.4	-63.7	71.7
Right Foot Aft Az	g	10.9	94.1	-173.2	64.9	16.1	93.7	-50.2	64.5
Right Foot Fore Az	g	242.9	63.7	-243.6	64.7	I	-	I	-
Lap Belt Load	N	7458.0	77.5	-12.7	33.9	7337.4	82.9	-6.0	33.9
Torso Belt	N	II	-	II	-	II	-	II	-

H Wire cut at 71 ms.

HH Data is questionable.

I Transducer failed.

II Vehicle was equipped with pretensioning seat belts, transducer was not installed.

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

Vehicle Year/Make/Model/Body Style: 2003 Hyundai Accent GL 4-Door

NHTSA Test No.: M30505 Test Date: January 17, 2003

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	326.6	76.5	112.5	38.3
Position #2 - Passenger	647.5	84.6	115.2	53.7

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

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	46.6	79.4	82.4	435.3
Position #2 - Passenger	44.7	95.6	98.6	410.0

* 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: 2003 Hyundai Accent GL 4-Door

NHTSA Test No.: M30505 Test Date: January 17, 2003

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	328.8	76.5	112.5	38.4
Position #2 - Passenger	599.2	84.5	115.4	51.9

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

CLIP SUMMARY* REDUNDANT				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	46.6H	79.4	82.4	435.8
Position #2 - Passenger	43.4	95.8	98.8	388.3

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

H The redundant P1 Chest Redundant X accelerometer cable was damaged at approximately 71 ms. The primary P1 Chest X accelerometer data was used for the CLIP calculation

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

1857

1840

Shoulder belt length as measured
on Part 572 Dummy.

832

825

Lap belt length as measured
on Part 572 Dummy.

825

815

SHOULDER BELT SPOOL-OFF DATA:

As determined by film analysis.

H

H

As determined mechanically.

HH

HH

As determined electronically.

HH

HH

BELT STRETCH DATA:

Measured electronically between shoulder
belt load cell and the "D" ring.

HH mm/m

HH mm/m

Measured mechanically.

0 mm/m

0 mm/m

H Onboard camera was used for CRS view. Close-up high speed camera view of shoulder belts is not available.
HH Vehicle was equipped with pretensioning seatbelts. Device was not installed to prevent potential interference with system.

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 17 mm molding.

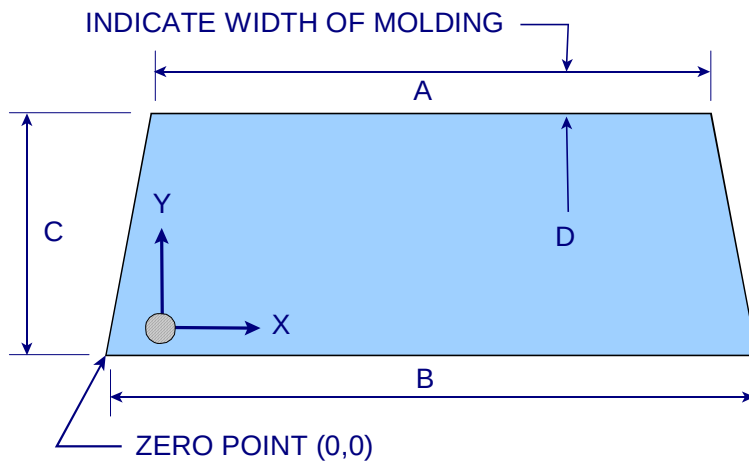
FMVSS 212 REQUIREMENTS:

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	1968.5	1968.5	100.0%
LEFT SIDE	1968.5	1968.5	100.0%
TOTAL	3937	3937	100.0%

AREA OF RETENTION FAILURE:



DIMENSIONS (mm)	
A	1090
B	1423
C	712
D	17

FRONT VIEW OF WINDSHIELD

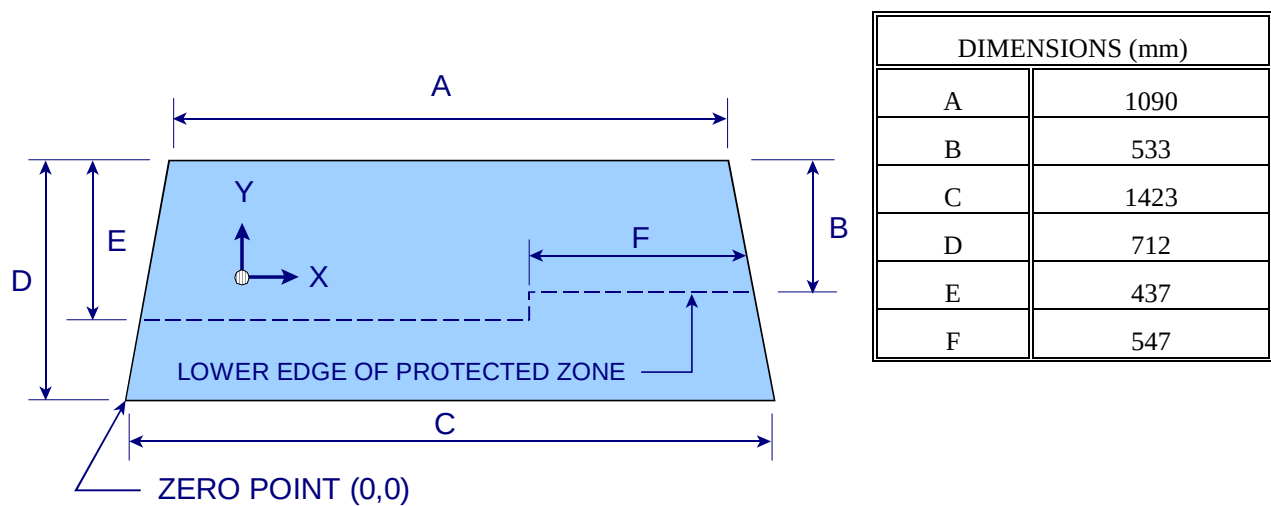
FAILURE DETAILS: None

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.: M30505 TEST DATE: January 17, 2003

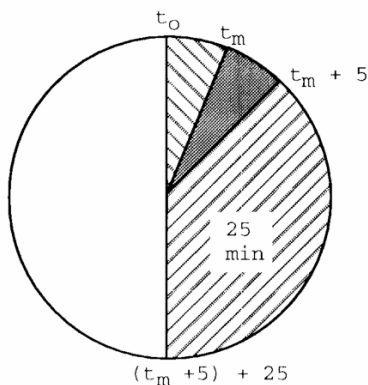
VEHICLE MAKE/MODEL: 2003 Hyundai Accent GL 4-Door

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

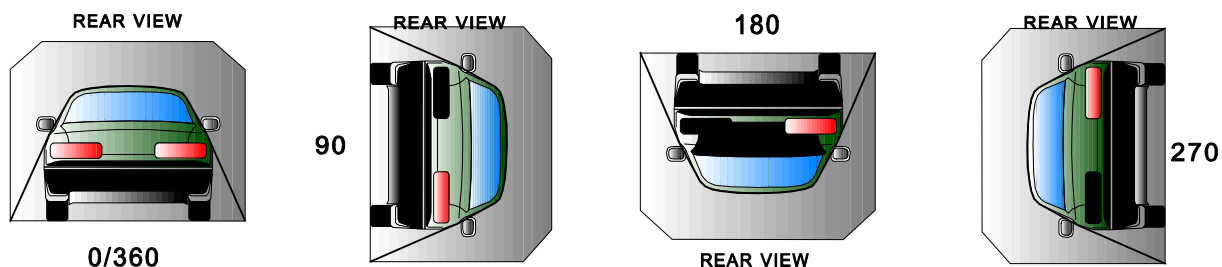
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

DATA SHEET NO. 13 - ROLLOVER DATA

Vehicle: 2003 Hyundai Accent GL 4-Door

NHTSA No.: M30505



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	38	seconds	5	minutes	6	minutes	38	seconds	7	minutes
90° - 180°	1	minutes	10	seconds	5	minutes	6	minutes	10	seconds	7	minutes
180°-270°	1	minutes	10	seconds	5	minutes	6	minutes	10	seconds	7	minutes
270°-360°	1	minutes	14	seconds	5	minutes	6	minutes	14	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:

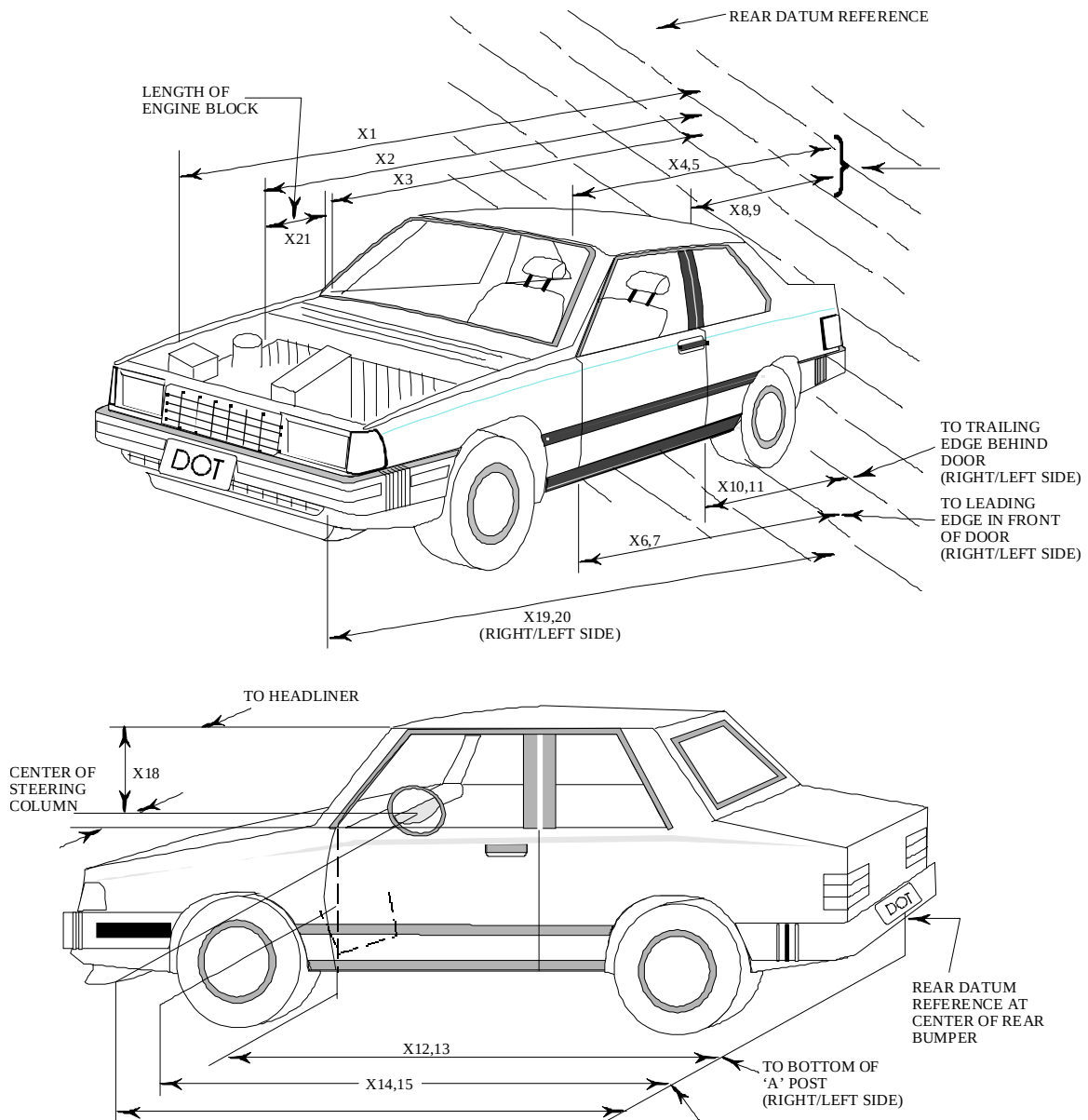
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	-
90° - 180°	0	0	0	-
180°-270°	0	0	0	-
270°-360°	0	0	0	-

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

IV. SOLVENT SPILLAGE LOCATION(S):

Rollover Stage	Spillage Location
0° - 90°	-
90° - 180°	-
180°-270°	-
270°-360°	-

DATA SHEET NO. 14 TEST VEHICLE MEASUREMENTS

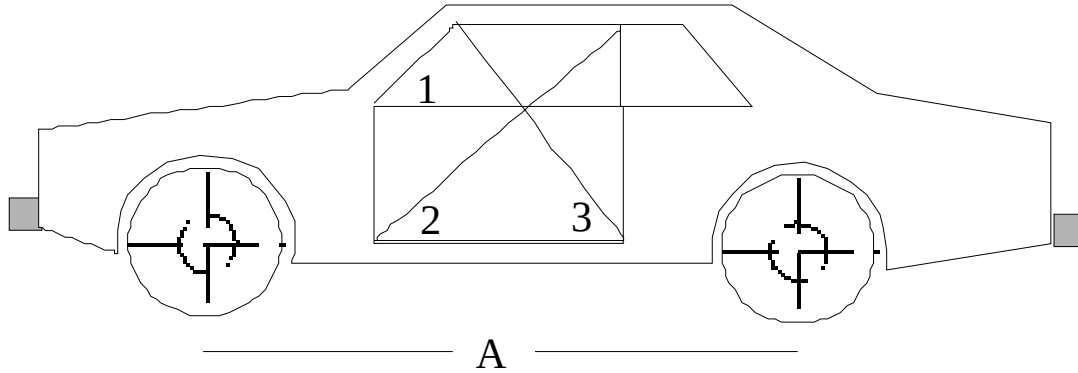


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4262	3756	506
X2	Rear Surface of Vehicle to Front of Engine	3737	3513	224
X3	Rear Surface of Vehicle to Firewall	3229	3134	95
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	2879	2866	13
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	2894	2905	-11
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	2915	2896	19
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	2930	2931	-1
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	1902	1889	13
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	1913	1922	-9
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	1926	1904	22
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	1930	1940	-10
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	2886	2876	10
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	2911	2916	-5
X14	Rear Surface of Vehicle to Firewall, Right Side	3217	3163	54
X15	Rear Surface of Vehicle to Firewall, Left Side	3223	3151	72
X16	Rear Surface of Vehicle to Steering Column	2492	2510	-18
X17	Center of Steering Column to "A" Post	310	292	18
X18	Center of Steering Column to Headliner	431	419	12
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4206	3732	474
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4211	3738	473
X21	Length of Engine Block	204	201	3
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2682	2668	14
CD	Rear Surface of Vehicle to Center of Dash Panel	2766	2743	23
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2698	2700	-2

All Dimensions in mm

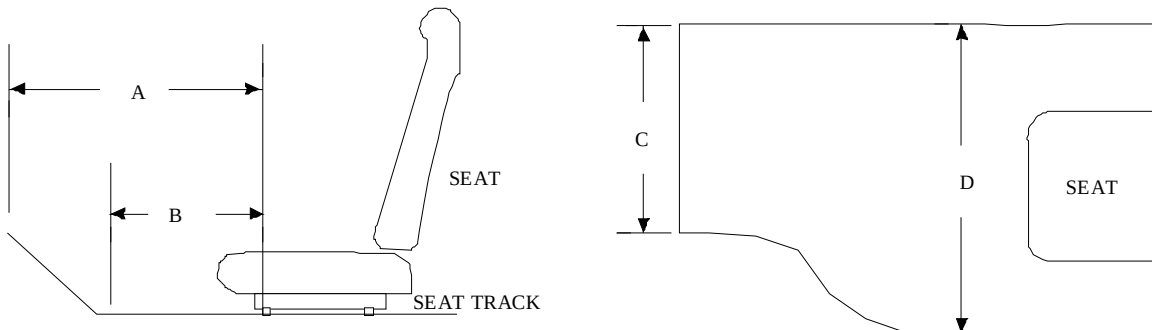
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	919	1347	950	925	1345	948
AFTER TEST	920	1342	950	916	1347	948
DIFFERENCE	-1	5	0	9	-2	0

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2448	2447
AFTER TEST	2408	2409
DIFFERENCE	40	38

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



DRIVER

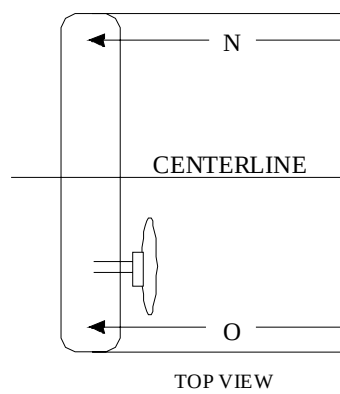
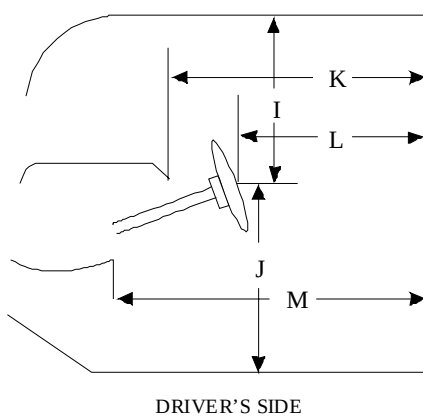
Measurement	Pre-Test	Post-Test	Difference
A	786	638	148
B	568	533	35
C	390	372	18
D	389	341	48

PASSENGER

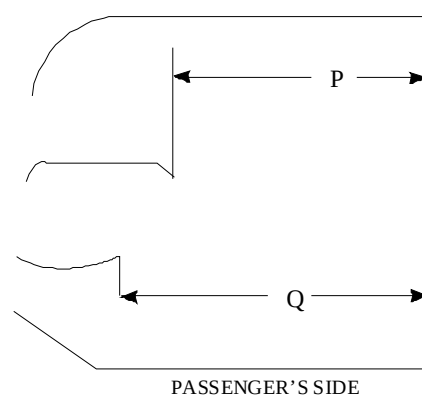
Measurement	Pre-Test	Post-Test	Difference
A	747	652	95
B	512	498	14
C	413	400	13
D	344	343	1

Units = mm

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



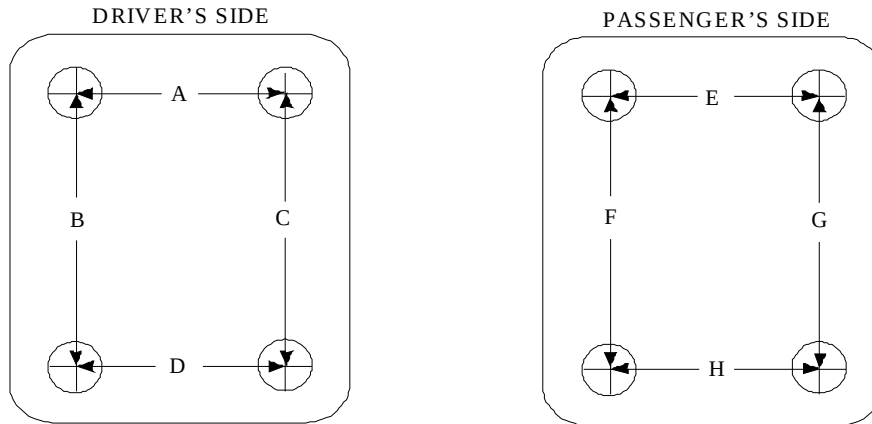
MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



Measurement	Pre-Test	Post-Test	Difference
I	431	419	12
J	622	676	-54
K	1736	1714	22
L	1559	1558	1
M	1793	1777	16
N	1747	1739	8
O	1765	1748	17
P = K (PASS.)	1809	1783	26
Q = M (PASS.)	1805	1776	29

Units = mm

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

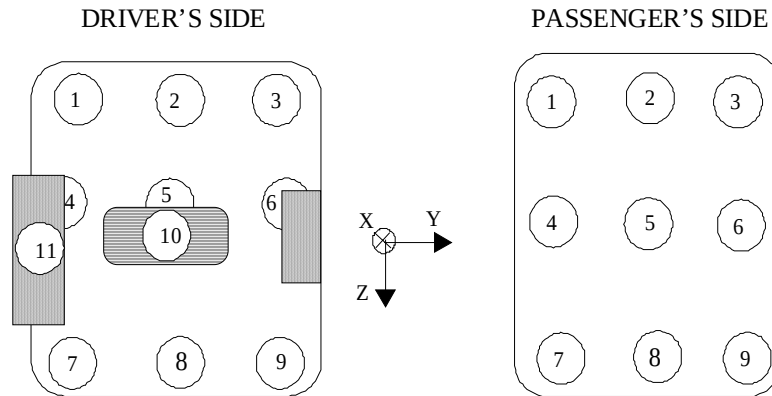


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	390	372	18
B	428	430	-2
C	427	410	17
D	389	341	48
E	413	400	13
F	432	430	2
G	471	456	15
H	344	343	1

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	3164	3050	114	-467	-514	47
2	3193	3062	131	-428	-498	70
3	3209	3089	120	-371	-440	69
4	3087	3046	41	-332	-370	38
5	3106	3023	83	-317	-312	-5
6	3106	3051	55	-282	-330	48
7	2985	2957	28	-246	-240	-6
8	2975	2957	18	-224	-216	-8
9	2992	2951	41	-224	-224	0
10	2988	2996	-8	-380	-377	-3
11	3046	3016	30	-382	-380	-2

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	3146	3085	61	-372	-390	18
2	3158	3056	102	-403	-419	16
3	3149	3014	135	-437	-441	4
4	3052	2875	177	-281	-276	-5
5	3062	2999	63	-287	-313	26
6	3043	3005	38	-311	-312	1
7	2906	2855	51	-230	-205	-25
8	2922	2901	21	-232	-206	-26
9	2926	2901	25	-231	-201	-30

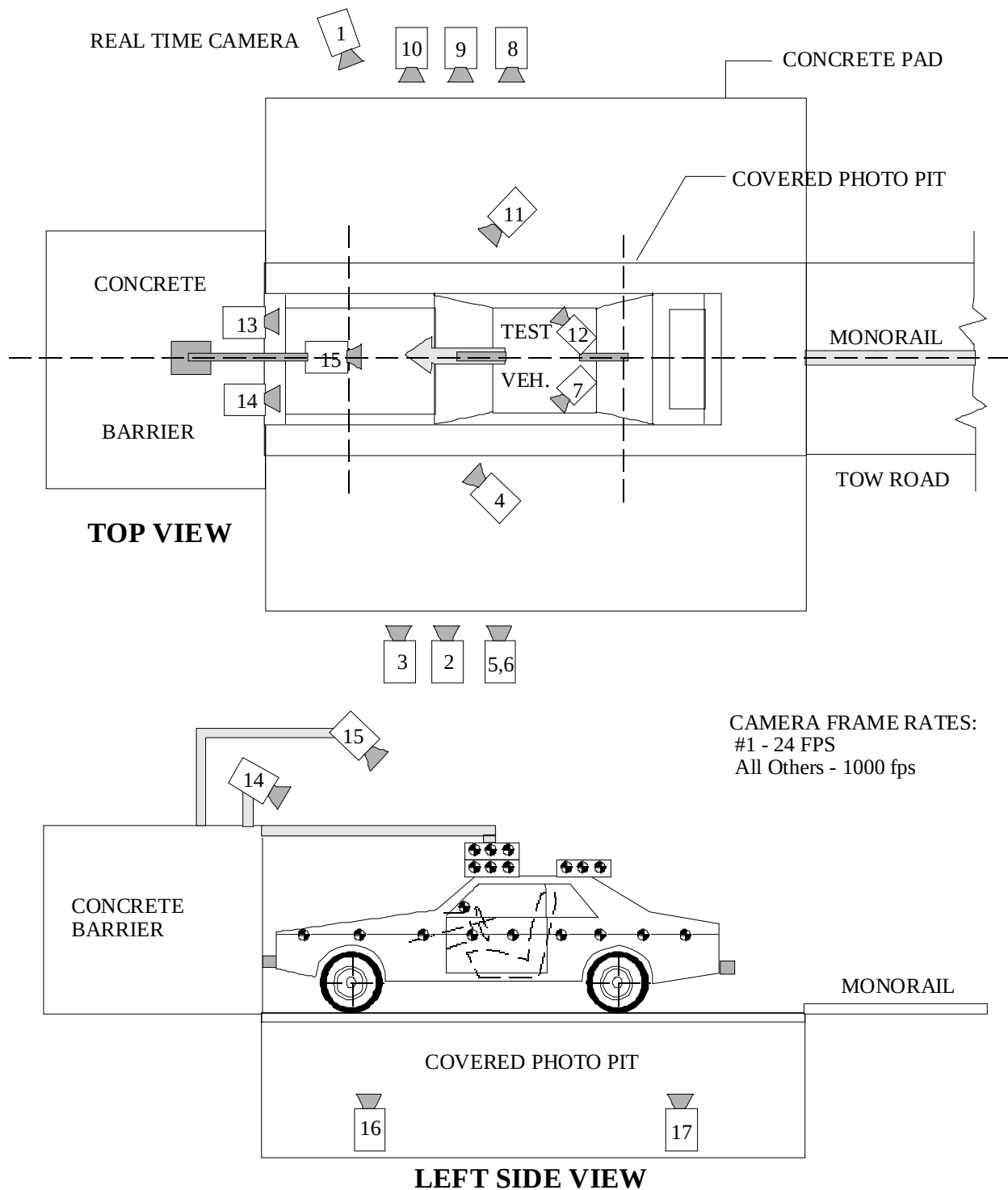
Reference: SAE: X = Rear Bumper (Positive: forward); Z = Ground (Positive: down)

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
TARGET VEHICLE STRUCTURAL MEASUREMENTS

	Elements	Pre-Test (mm)
1	Total length	4262
2	Total Width	1674
3	Bumper Top Height	530
4	Bumper Bottom Height	390
5	Longitudinal Member Top Height	538
6	Distance Between Longitudinal Members	1056
7	Longitudinal Member Width	80
8	Engine top height	768
9	Engine bottom height	176
10	Engine and gearbox width	800
11	Front bumper-engine distance	435
12	Front shock absorber fixing height	816
13	Bonnet leading edge height	110
14	Front shock absorber fixing width	1112
15	Front bumper – front axle distance	853
16	Front axle – a pillar distance	410
17	A-pillar – B pillar distance	1072
18	B-pillar – rear axle distance	958
19	B-pillar – C Pillar distance	1075
20	Roof sill bottom height	1268
21	Roof sill top height	1368
22	Floor sill bottom height	176
23	Floor sill top height	344

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.: M30505 Vehicle: 2003 Hyundai Accent GL 4-Door

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	6176	2008	1088	-5.5	5837	12.5	1025
3	Left Side View	7717	1308	1070	-2.5	7378	25	1000
4	Driver and Interior View	6626	2935	1980	-11.0	-	25	1055
5	Steering Column (Bottom)	6828	2285	1163	-4.0	6489	25	1025
6	Steering Column (Top)	6828	2285	1768	-9.5	6489	25	1010
7	CRS View Left	3280	2920	2535	-29.0	-	13	1025
8	Overall Right Side	6268	1760	1090	-5.0	6522	12.5	1010
9	Right Side View	7701	1195	1092	-3.0	7955	25	1010
10	Right Passenger View	7422	1643	1307	-4.0	7676	35	1015
11	Passenger and Interior View	7061	2355	1973	-16.5	-	25	1010
12	CRS View Right	3390	2930	2500	-29.0	-	13	1025
13	Passenger Front View	620	-92	1987	-40.0	-	13	1005
14	Driver Front View	620	-92	1987	-40.0	-	13	1020
15	Windshield View	0	-530	3374	-52.0	-	13	1005
16	Pit View of Engine	0	615	-3048	90	-	13	1005
17	Pit View of Fuel Tank	0	1567	-3048	90	-	13	1055

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

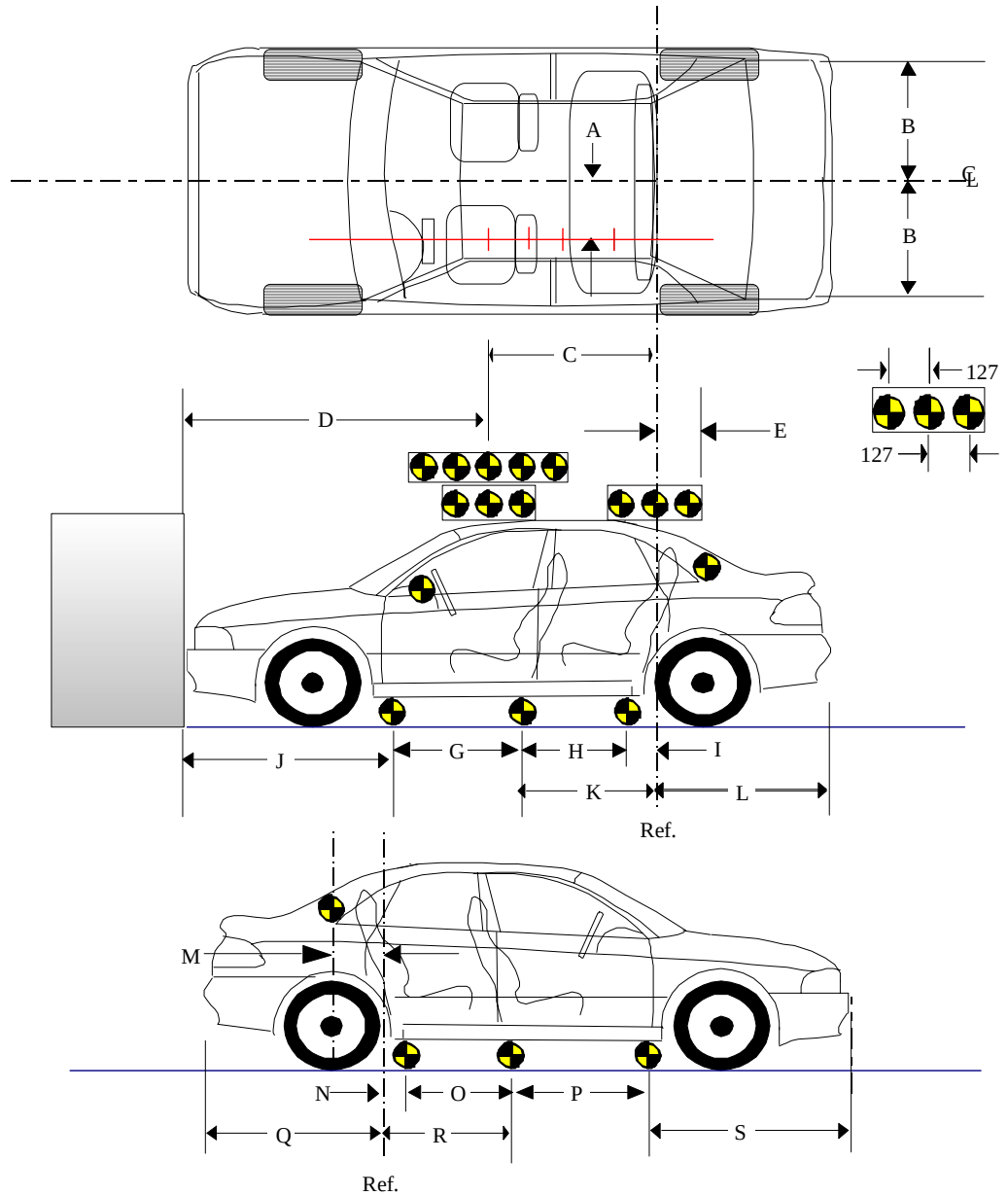
Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

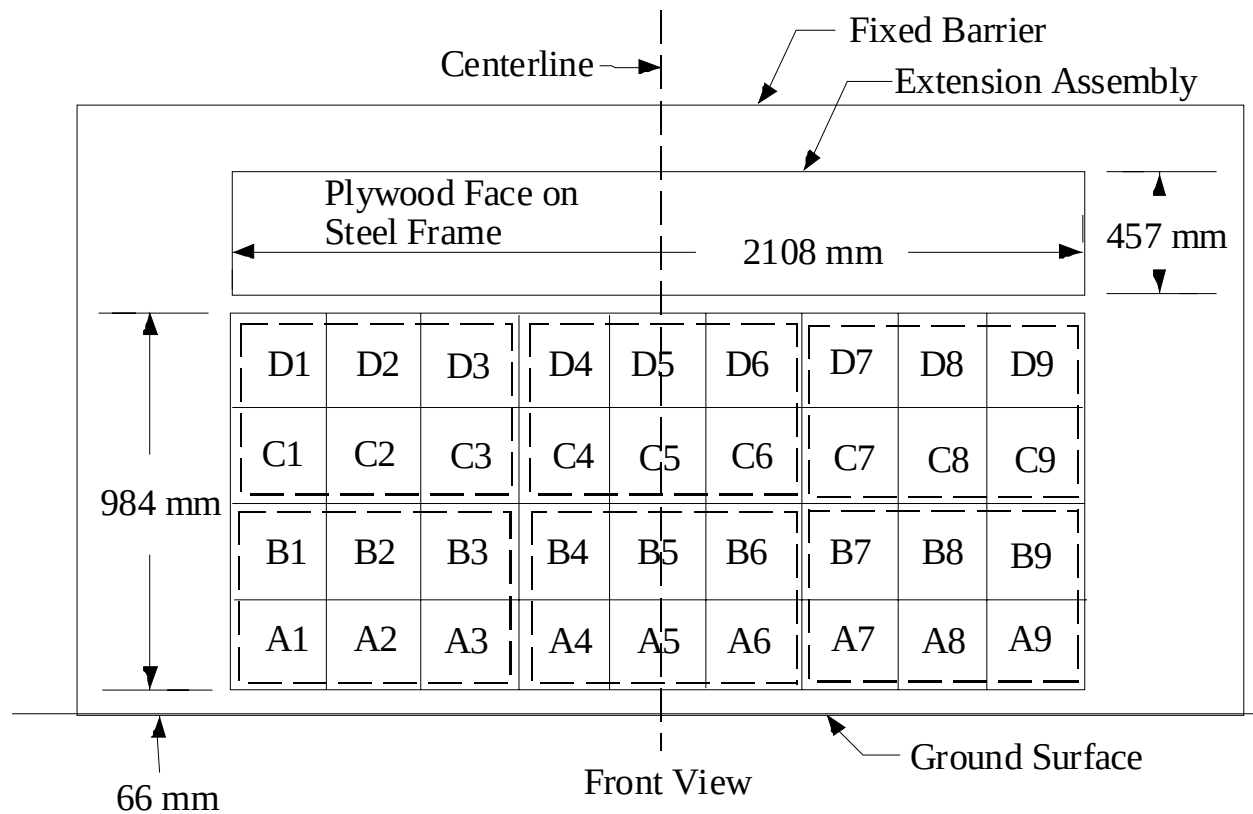
(Dimensions in millimeters)

A	330
B	593
C	1222
D	1804
E	313
F	1398
G	817
H	804
I	131
J	1259
K	935
L	1250
M	304
N	72
O	799
P	823
Q	1297
R	871
S	1271



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.: M30505; Test Date: January 17, 2003; Technician: Lawrence Q. Valvo

Vehicle Model Year/Make/Model: 2003 Hyundai Accent GL 4-Door

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

B. Size of vent holes: (mm²) 1257 -Driver 1964 -Passenger

C. Total vent area: (mm²) 2514 -Driver 3928 -Passenger

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

Driver: 580 -Height; 580 -Width; 210 -Depth

Passenger: 760 -Height; 490 -Width; 450 -Depth

E. Is the air bag tethered?

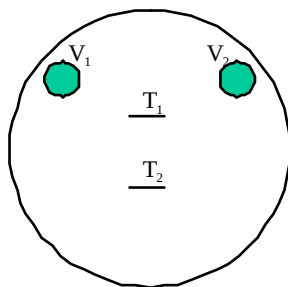
Driver: X -Yes; - -No; If yes, record length of tether- 220

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

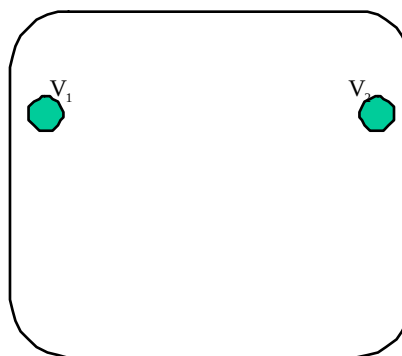
Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.

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

Driver



Passenger



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

Driver: Air bag: -

Generator: 029A1250LC56232B; HDDMN100130124

Passenger: Air bag: -

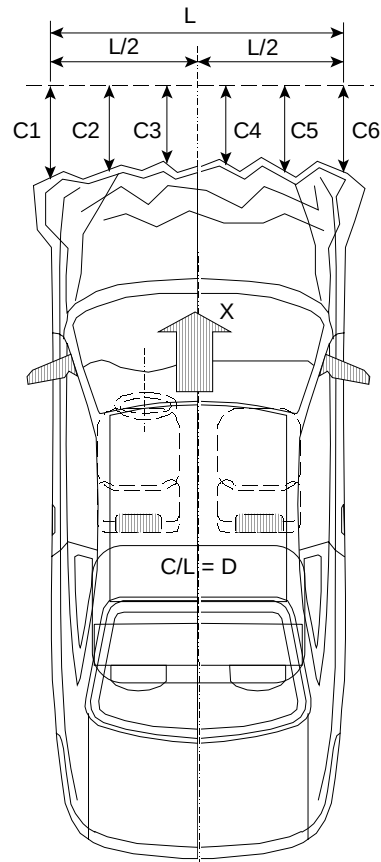
Generator: HEPMN100230Z26

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

Vehicle Make/Model/Body Style: Hyundai Accent GL 4-Door
 NHTSA Test No.: M30505 VIN: KMHCG45C03U426962
 Model Year: 2003 Build Date: OCT/07/02 Test Date: January 17, 2003
 Vehicle Size Category: Subcompact Test Weight: 1322.0 kg
 Vehicle Wheelbase: 2448 mm; Front Overhang: 846 mm; Overall Width: 1674 mm
 Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4111	3800	311
C2 =	4219	3737	482
C3 =	4260	3766	494
C4 =	4260	3752	508
C5 =	4224	3732	492
C6 =	4116	3699	417



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region: L1= 1388 mm
 L2= 694.0 mm
 L5= 277.6 mm

APPENDIX A
PHOTOGRAPHS

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Figure A-1 LOAD CELL LOCATIONS



MANUFACTURED IN KOREA BY
HYUNDAI MOTOR COMPANY

OCT/07/02

GVWR 3428 lbs

PAINT ZG

GAWR
FRONT 1808 lbs

GAWR
REAR 1874 lbs

TRIM LT

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

V.I.N. KMHCG45C03U426962
PASSENGER CAR

Figure A-2 VEHICLE CERTIFICATION PLACARD

11

TIRE INFLATION PRESSURE La Pression De Gonflage Des Pneus

VEHICLE CAPACITY WEIGHT, LBS: 850

Poids en lb de la capacite du vehicule, 850

SEATING CAPACITY: TOTAL 5 FRONT 2 REAR 3

Capacite de transport ; total 5 ; 2 a l'avant
3 a l'arriere

TIRE PRESSURES-COLD, KPA(PSI) :

Pression de gonflage a froid kPa(lb/po2)

TIRE SIZE Dimension du pneu	UP TO 2 PERSONS Jusqu'a 2 Personnes		UP TO MAX. LOAD Pour charge maximum	
	FRONT Avant	REAR Arriere	FRONT Avant	REAR Arriere
P175/70 R13	207(30)	207(30)	230(33)	230(33)
P185/60 R14	207(30)	207(30)	230(33)	230(33)
T105/70 R14	414(60)	414(60)	414(60)	414(60)
T105/70 D14	414(60)	414(60)	414(60)	414(60)

Figure A-3 VEHICLE TIRE PLACARD



Figure A-4 RIGHT FRONT, AS RECEIVED



Figure A-5 LEFT REAR, AS RECEIVED



Figure A-6 PRE-TEST FRONT VIEW



Figure A-7 POST-TEST FRONT VIEW



Figure A-8 PRE-TEST LEFT SIDE VIEW



Figure A-9 POST-TEST LEFT SIDE VIEW



Figure A-10 PRE-TEST RIGHT SIDE VIEW



Figure A-11 POST-TEST RIGHT SIDE VIEW



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



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



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



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



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



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



Figure A-18 PRE-TEST WINDSHIELD VIEW



A-23

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Figure A-20 PRE-TEST ENGINE COMPARTMENT VIEW



Figure A-21 POST-TEST ENGINE COMPARTMENT VIEW



Figure A-22 PRE-TEST FUEL CAP VIEW



Figure A-23 POST-TEST FUEL CAP VIEW

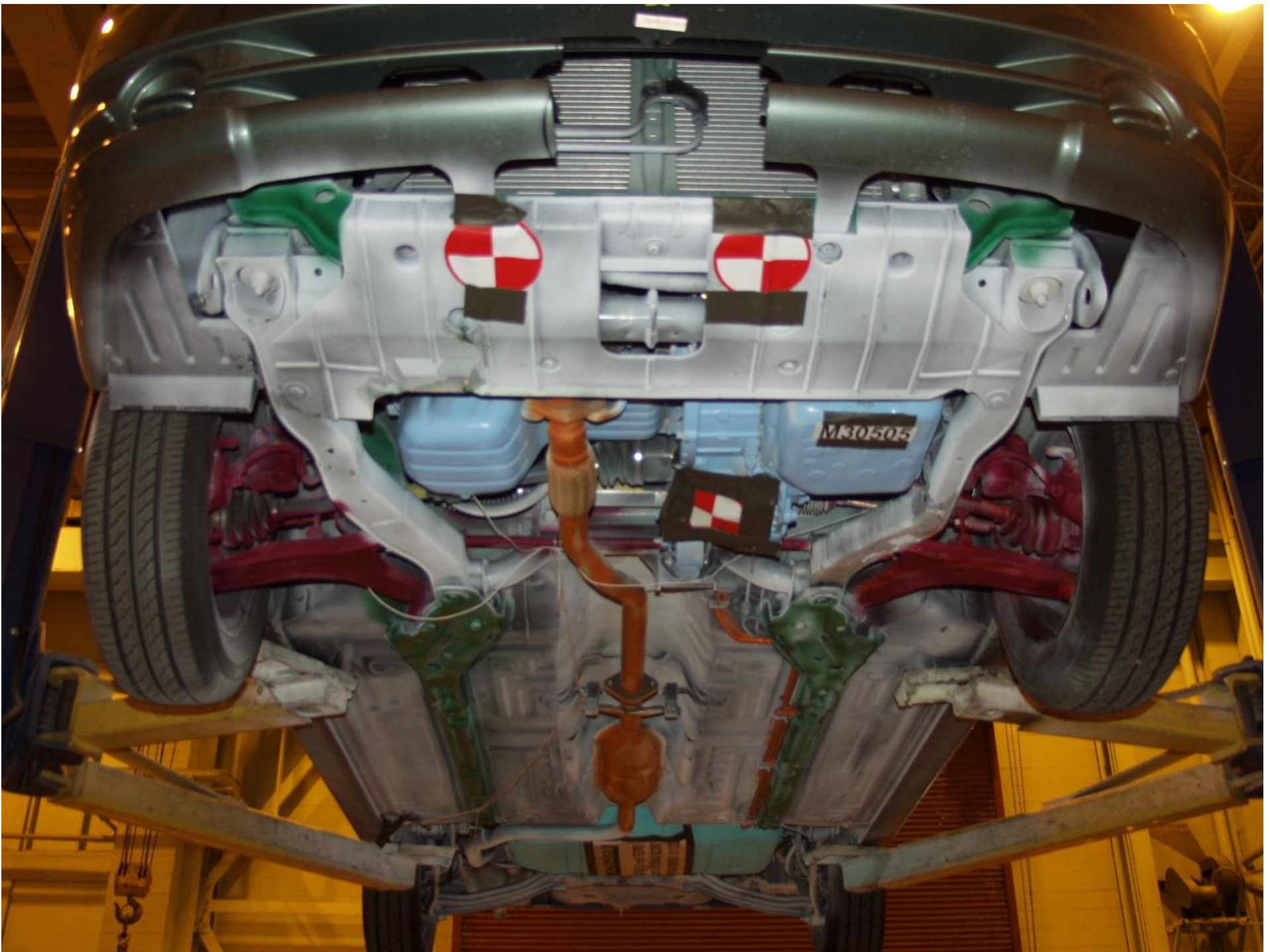


Figure A-24 PRE-TEST FRONT UNDERBODY VIEW



Figure A-25 POST-TEST FRONT UNDERBODY VIEW

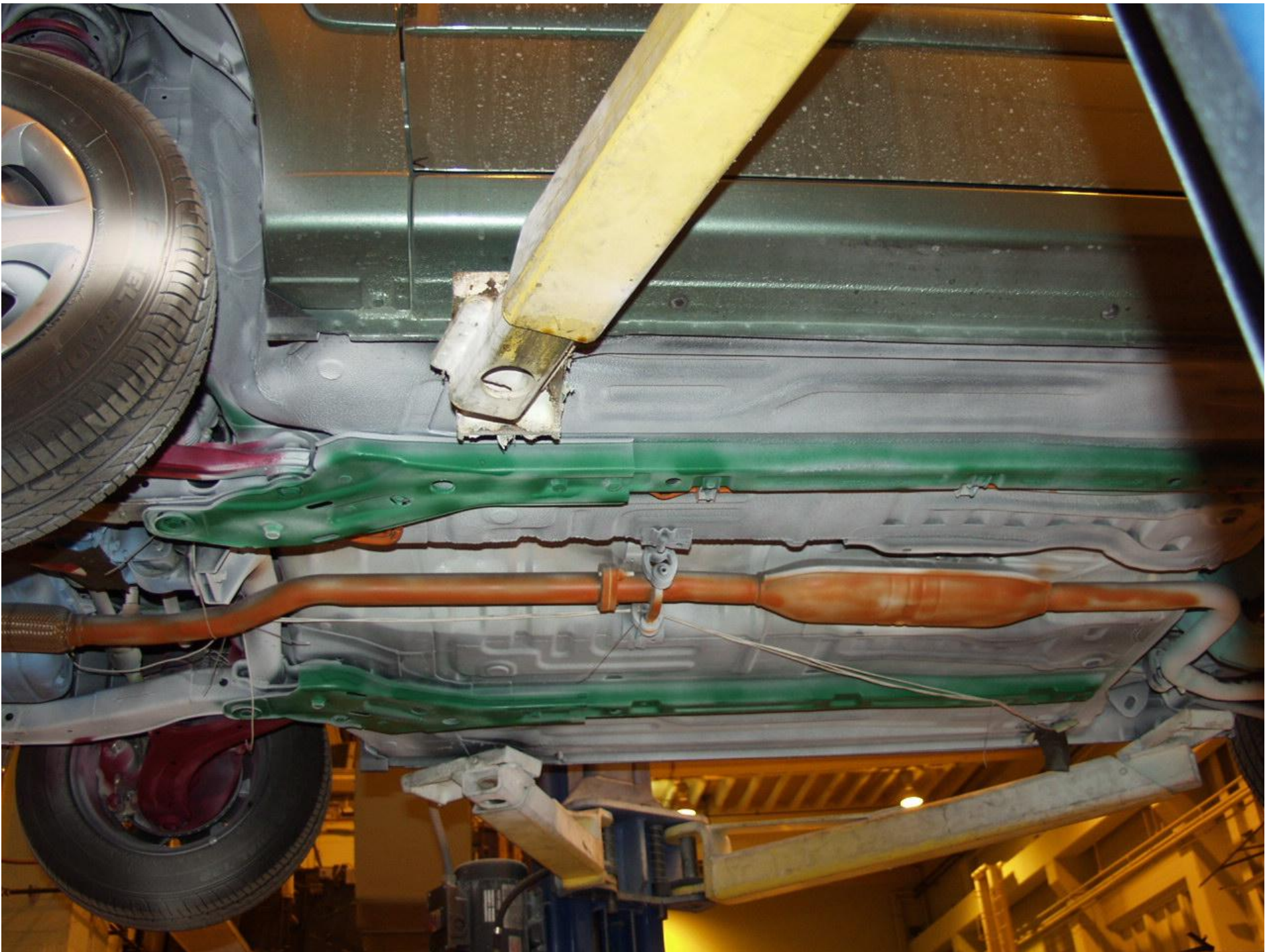


Figure A-26 PRE-TEST MID UNDERBODY VIEW



Figure A-27 POST-TEST MID UNDERBODY VIEW



Figure A-28 PRE-TEST REAR UNDERBODY VIEW

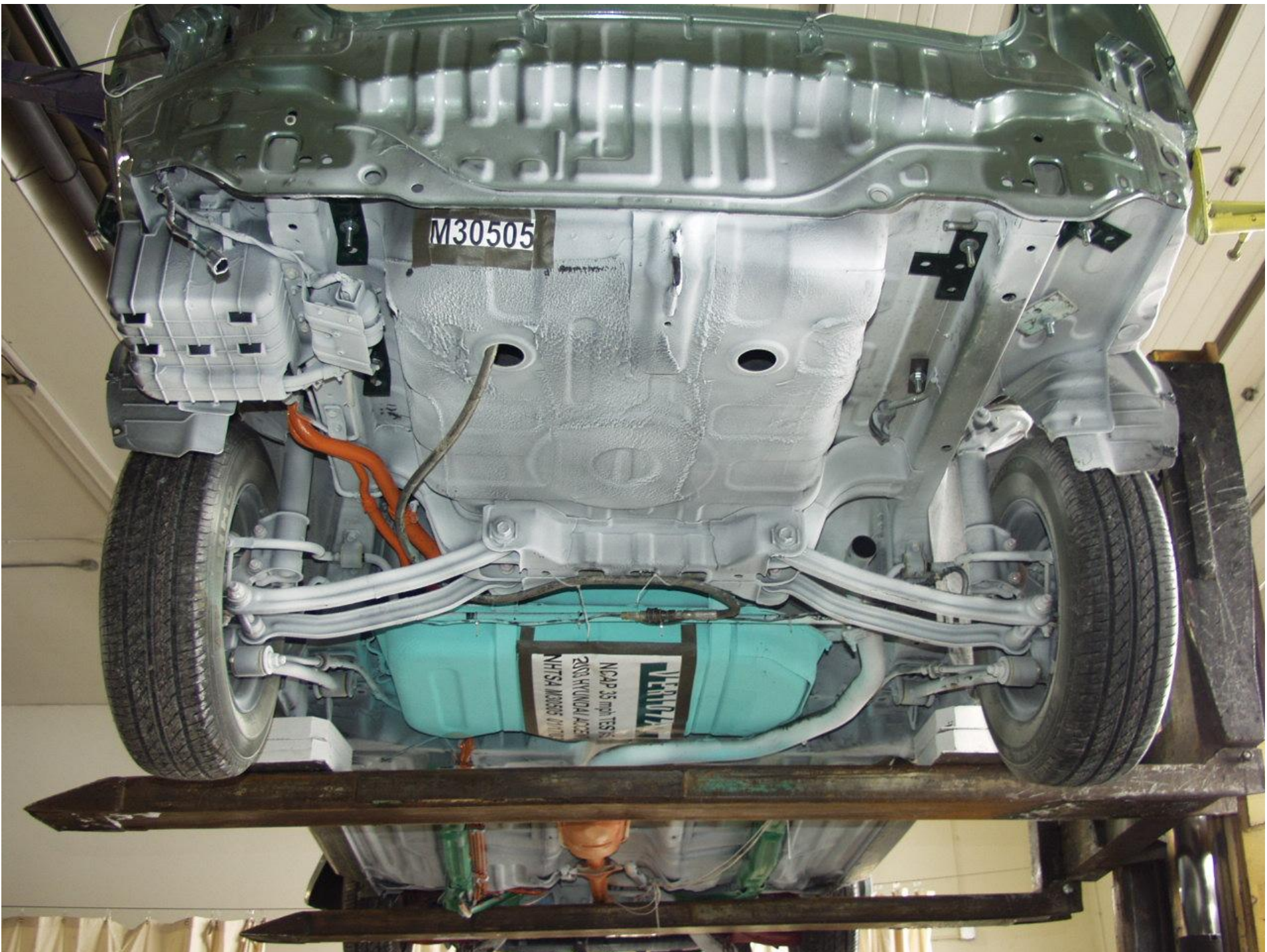


Figure A-29 POST-TEST REAR UNDERBODY VIEW



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-42 POST-TEST DRIVER HEAD VIEW

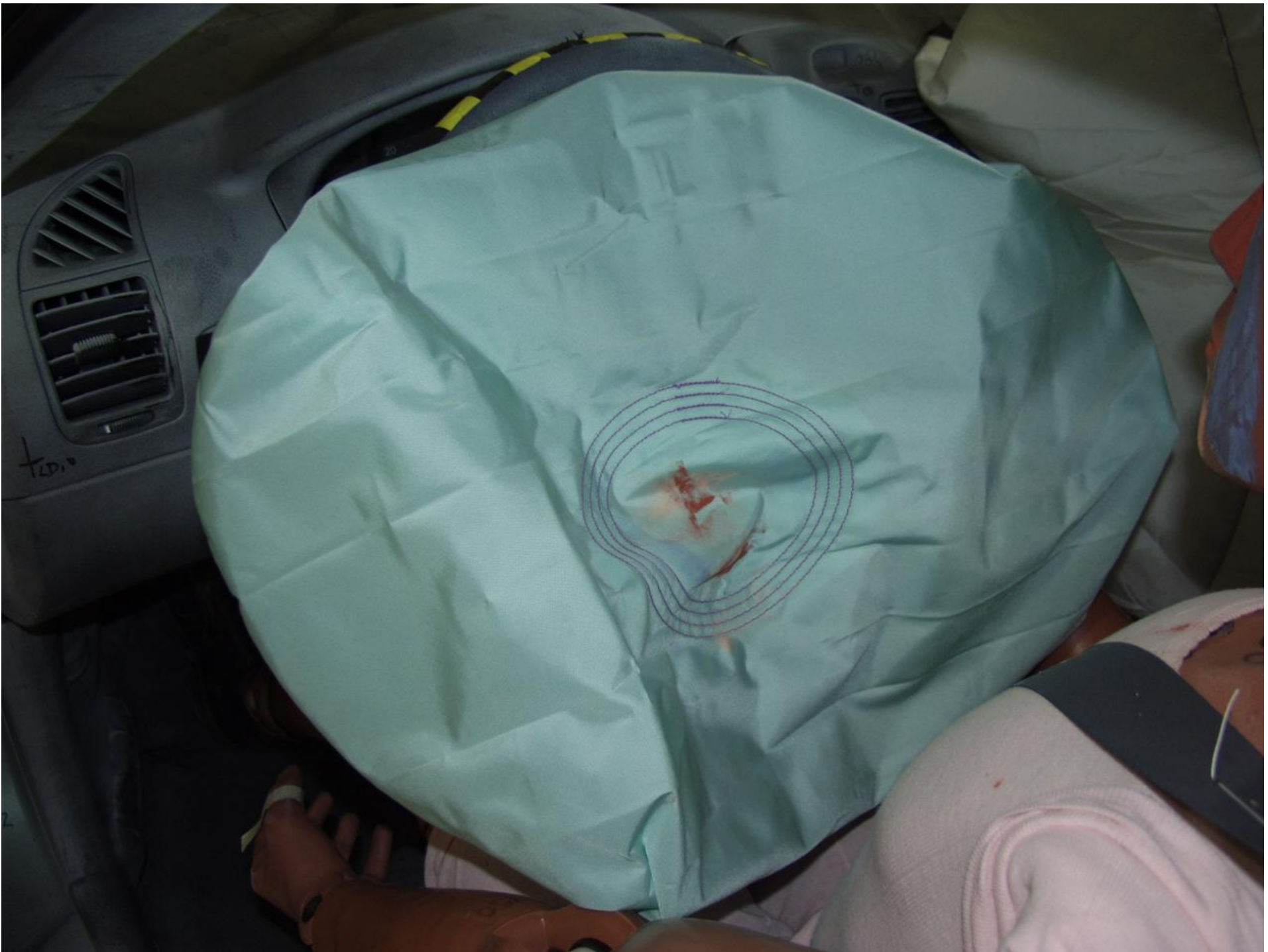


Figure A-43 POST-TEST DRIVER CONTACT TO AIRBAG



Figure A-44 PRE-TEST PASSENGER HEAD LOCATION



Figure A-45 POST-TEST PASSENGER HEAD LOCATION



Figure A-46 PRE-TEST PASSENGER POSITION VIEW



A-50

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Figure A-47 POST-TEST PASSENGER POSITION VIEW



Figure A-48 PRE-TEST PASSENGER AND INTERIOR VIEW



Figure A-49 POST-TEST PASSENGER AND INTERIOR VIEW



Figure A-50 PRE- TEST PASSENGER FEET VIEW



Figure A-51 POST-TEST PASSENGER FEET VIEW



Figure A-52 PRE-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-53 POST-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-54 PRE-TEST PASSENGER FLOOR PAN VIEW



Figure A-55 POST-TEST PASSENGER FLOOR PAN VIEW



Figure A-56 POST-TEST PASSENGER HEAD VIEW



Figure A-57 POST-TEST PASSENGER CONTACT TO AIRBAG



Figure A-58 ROLLOVER VIEW



Figure A-59 IMPACT VIEW

APPENDIX B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

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

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

DATA CHANNEL FILTER CLASS SUMMARY

NHTSA TEST NO. M30505

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

TABLE OF DATA PLOTS

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
1	V1P1 Head 9 Array X Arm Ay [g, CFC_1000]	B-8
2	V1P1 Head 9 Array X Arm Az [g, CFC_1000]	B-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
15	V1P1 Upper Neck Fx [N, CFC_1000]	B-22
16	V1P1 Upper Neck Fy [N, CFC_1000]	B-23
17	V1P1 Upper Neck Fz [N, CFC_1000]	B-24
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 [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 [N, CFC_600]	B-43
37	V1P1 Right Femur [N, CFC_600]	B-44
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
45	V1P1 Right Lower Tibia Fz [N, CFC_600]	B-52
46	V1P1 Right Lower tibia Mx [N-m, CFC_600]	B-53
47	V1P1 Right Lower Tibia My [N-m, CFC_600]	B-54
48	V1P1 Left Foot Aft Ax [g, CFC_600]	B-55
49	V1P1 Left Foot Aft Az [g, CFC_600]	B-56
50	V1P1 Left Foot Fore Az [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	V1 Driver Lap Belt [N, CFC_60]	B-61
55	V1P2 Head 9 Array X Arm y [g, CFC_1000]	B-62
56	V1P2 Head 9 Array X Arm z [g, CFC_1000]	B-63
57	V1P2 Head 9 Array Y Arm x [g, CFC_1000]	B-64
58	V1P2 Head 9 Array Y Arm z [g, CFC_1000]	B-65
59	V1P2 Head 9 Array Z Arm x [g, CFC_1000]	B-66
60	V1P2 Head 9 Array Z Arm y [g, CFC_1000]	B-67
61	V1P2 Head CG x [g, CFC_1000]	B-68
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
66	V1P2 Head CG Red y [g, CFC_1000]	B-73
67	V1P2 Head CG Red z [g, CFC_1000]	B-74
68	V1P2 Head CG Red Resultant [g, CFC_1000]	B-75
69	V1P2 Upper Neck Fx [N, CFC_1000]	B-76
70	V1P2 Upper Neck Fy [N, CFC_1000]	B-77
71	V1P2 Upper Neck Fz [N, CFC_1000]	B-78
72	V1P2 Upper Neck F Resultant [N, CFC_1000]	B-79
73	V1P2 Upper Neck Mx [N-m, CFC_600]	B-80
74	V1P2 Upper Neck My [N-m, CFC_600]	B-81
75	V1P2 Upper Neck Mz [N-m, CFC_600]	B-82
76	V1P2 Upper Neck M Resultant [N-m, CFC_600]	B-83
77	V1P2 Chest x [g, CFC_180]	B-84
78	V1P2 Chest y [g, CFC_180]	B-85
79	V1P2 Chest z [g, CFC_180]	B-86
80	V1P2 Chest Resultant [g, CFC_180]	B-87
81	V1P2 Chest Red x [g, CFC_180]	B-88
82	V1P2 Chest Red y [g, CFC_180]	B-89
83	V1P2 Chest Red z [g, CFC_180]	B-90
84	V1P2 Chest Red Resultant [g, CFC_180]	B-91
85	V1P2 Chest Compression [mm, CFC_600]	B-92
86	V1P2 Pelvic x [g, CFC_1000]	B-93
87	V1P2 Pelvic y [g, CFC_1000]	B-94
88	V1P2 Pelvic z [g, CFC_1000]	B-95
89	V1P2 Pelvic Resultant [g, CFC_1000]	B-96

90	V1P2 Left Femur [N, CFC_600]	B-97
91	V1P2 Right Femur [N, CFC_600]	B-98
92	V1P2 Left Upper Tibia Mx [N-m, CFC_600]	B-99
93	V1P2 Left Upper Tibia My [N-m, CFC_600]	B-100
94	V1P2 Left Lower Tibia Fz [N, CFC_600]	B-101
95	V1P2 Left Lower Tibia Mx [N-m, CFC_600]	B-102
96	V1P2 Left Lower Tibia My [N-m, CFC_600]	B-103
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	V1 Pass 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
136	Barrier Load Cell A1 Fx [N, CFC_60]	B-143

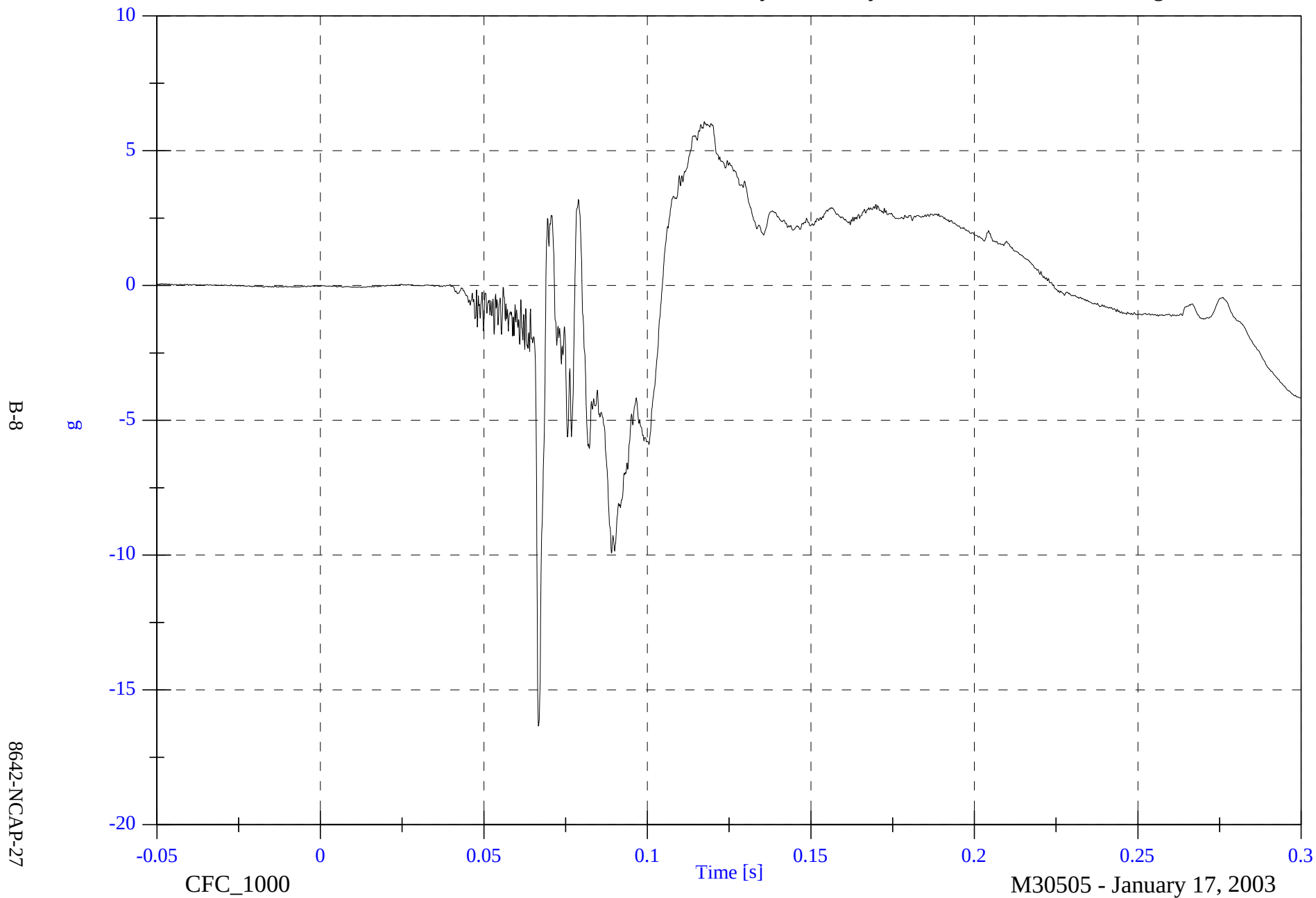
137	Barrier Load Cell A2 Fx [N, CFC_60]	B-144
138	Barrier Load Cell A3 Fx [N, CFC_60]	B-145
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141	Barrier Load Cell A6 Fx [N, CFC_60]	B-148
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159	Barrier Load Cell C6 Fx [N, CFC_60]	B-166
160	Barrier Load Cell C7 Fx [N, CFC_60]	B-167
161	Barrier Load Cell C8 Fx [N, CFC_60]	B-168
162	Barrier Load Cell C9 Fx [N, CFC_60]	B-169
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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
169	Barrier Load Cell D7 Fx [N, CFC_60]	B-176
170	Barrier Load Cell D8 Fx [N, CFC_60]	B-177
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NCAP Test #5 - 2003 Hyundai Accent

V1P1 Head 9 Array X Arm Ay

Max: 6.1 [g] at 0.117 [s]

Min: -16.3 [g] at 0.067 [s]



NCAP Test #5 - 2003 Hyundai Accent

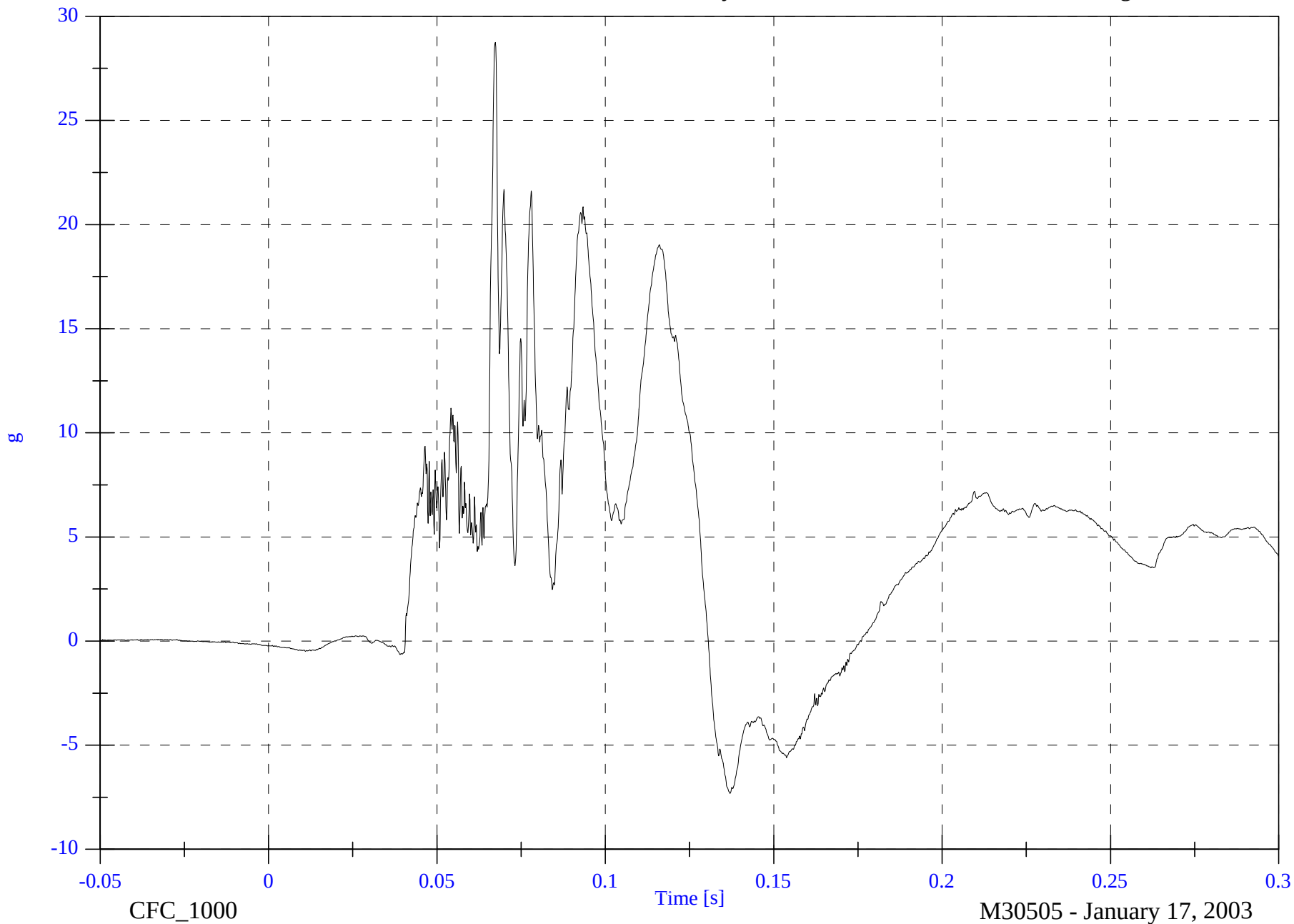
V1P1 Head 9 Array X Arm Az

Max: 28.7 [g] at 0.067 [s]

Min: -7.3 [g] at 0.137 [s]

B-9

8642-NCAP-27

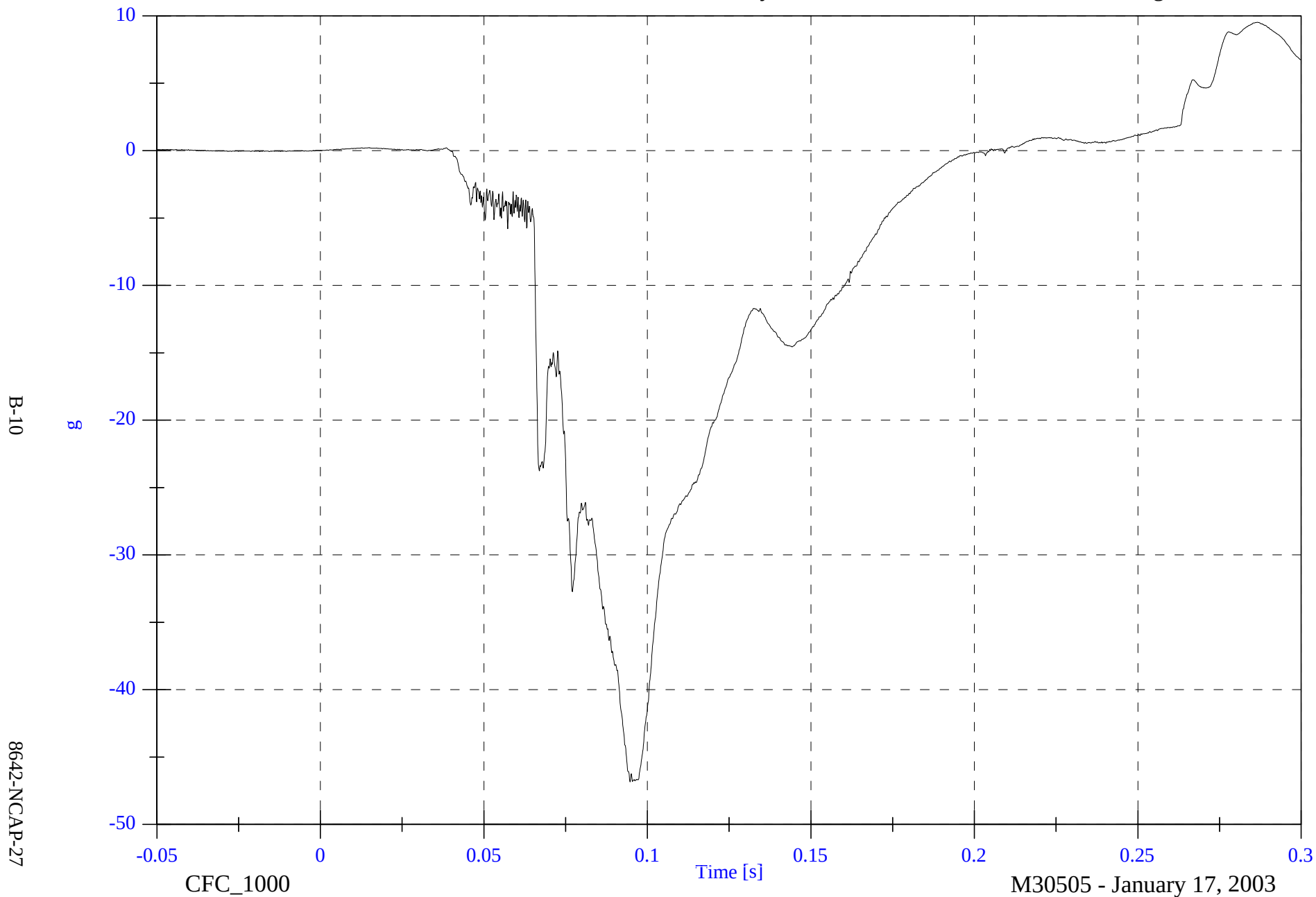


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Head 9 Array Y Arm Ax

Max: 9.5 [g] at 0.286 [s]

Min: -46.8 [g] at 0.095 [s]



NCAP Test #5 - 2003 Hyundai Accent

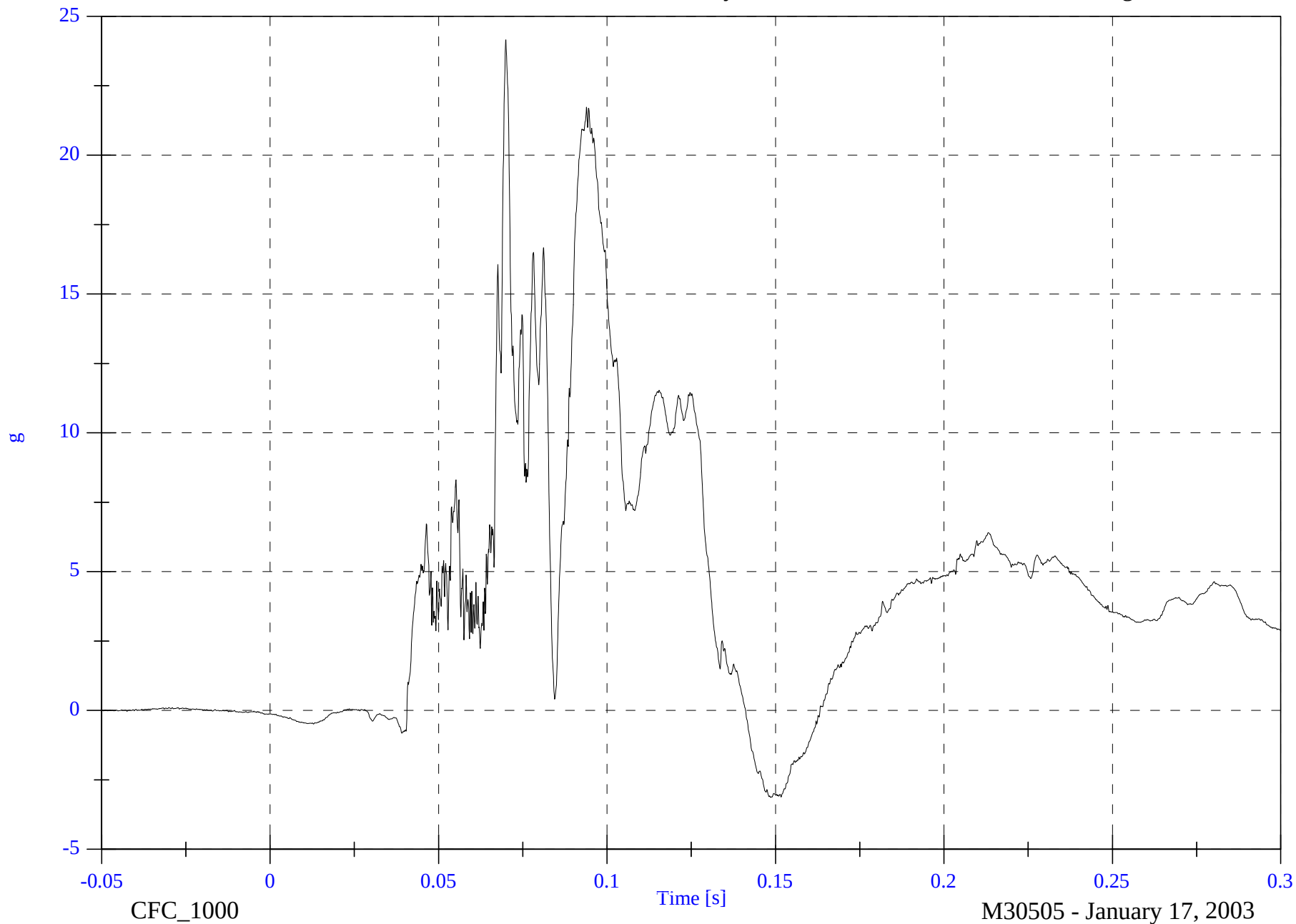
V1P1 Head 9 Array Y Arm Az

Max: 24.1 [g] at 0.070 [s]

Min: -3.1 [g] at 0.148 [s]

B-11

8642-NCAP-27

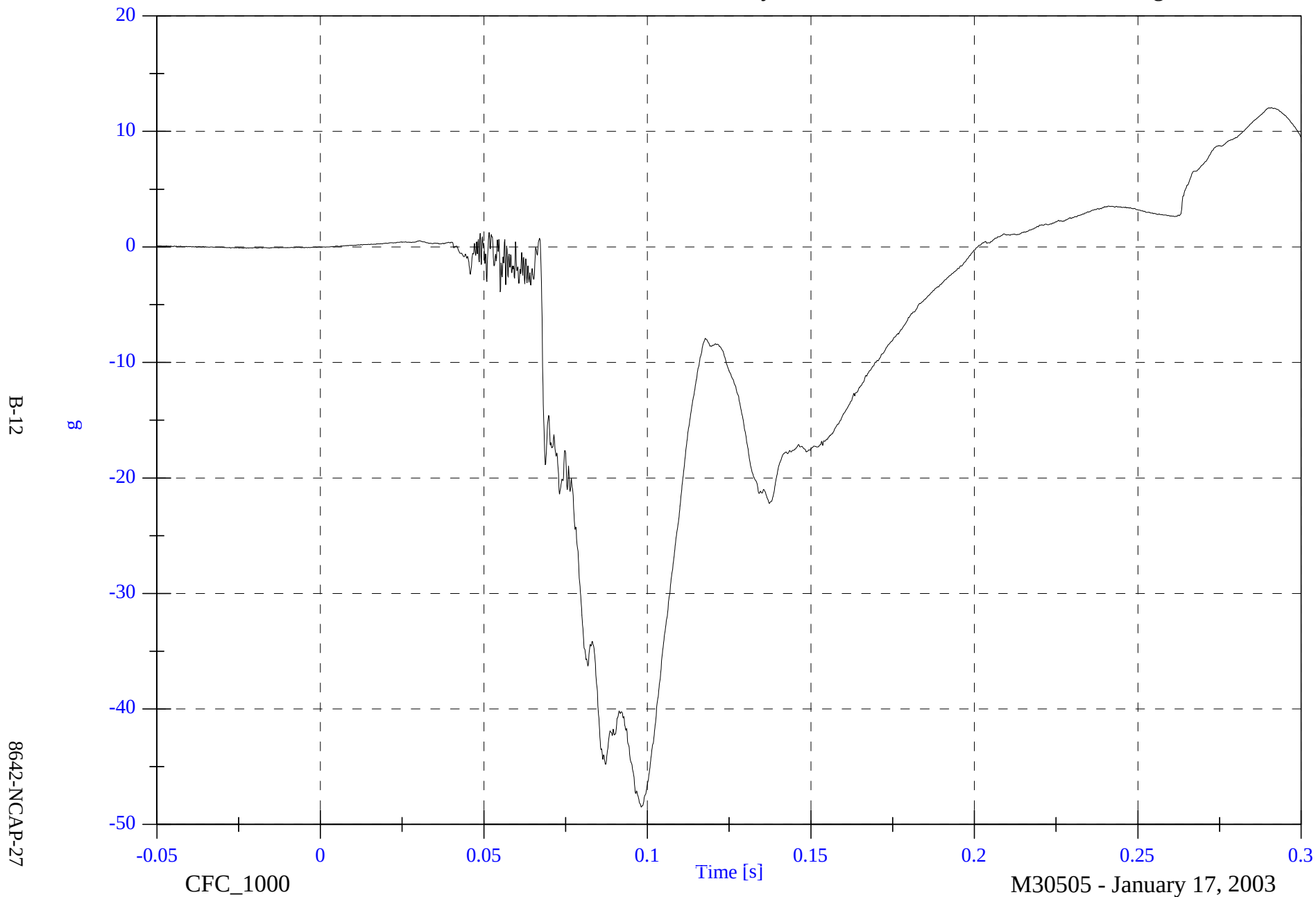


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Head 9 Array Z Arm Ax

Max: 12.1 [g] at 0.291 [s]

Min: -48.5 [g] at 0.098 [s]

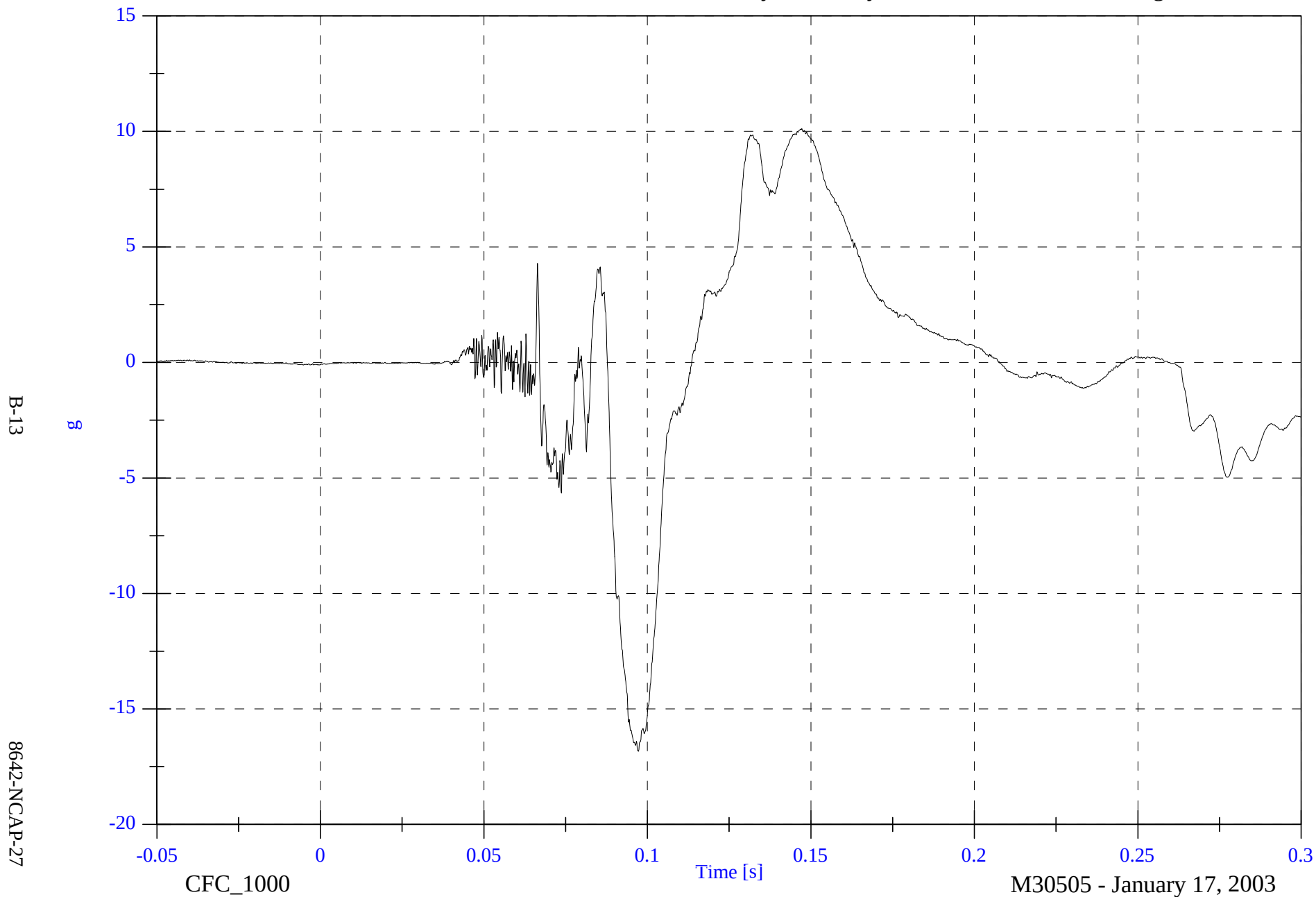


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Head 9 Array Z Arm Ay

Max: 10.1 [g] at 0.147 [s]

Min: -16.8 [g] at 0.097 [s]

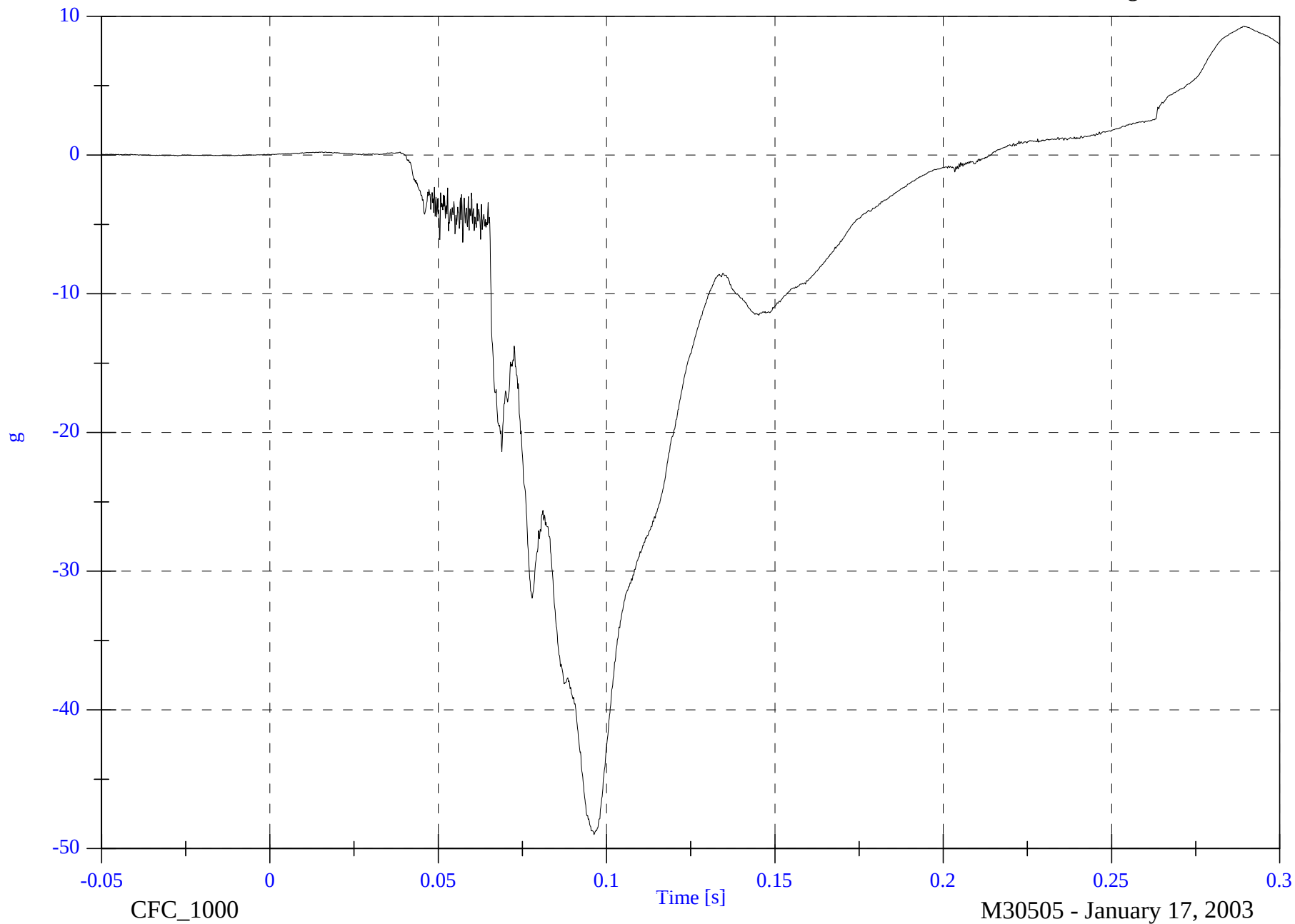


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Head CG x

Max: 9.3 [g] at 0.289 [s]

Min: -49.0 [g] at 0.096 [s]



B-14

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

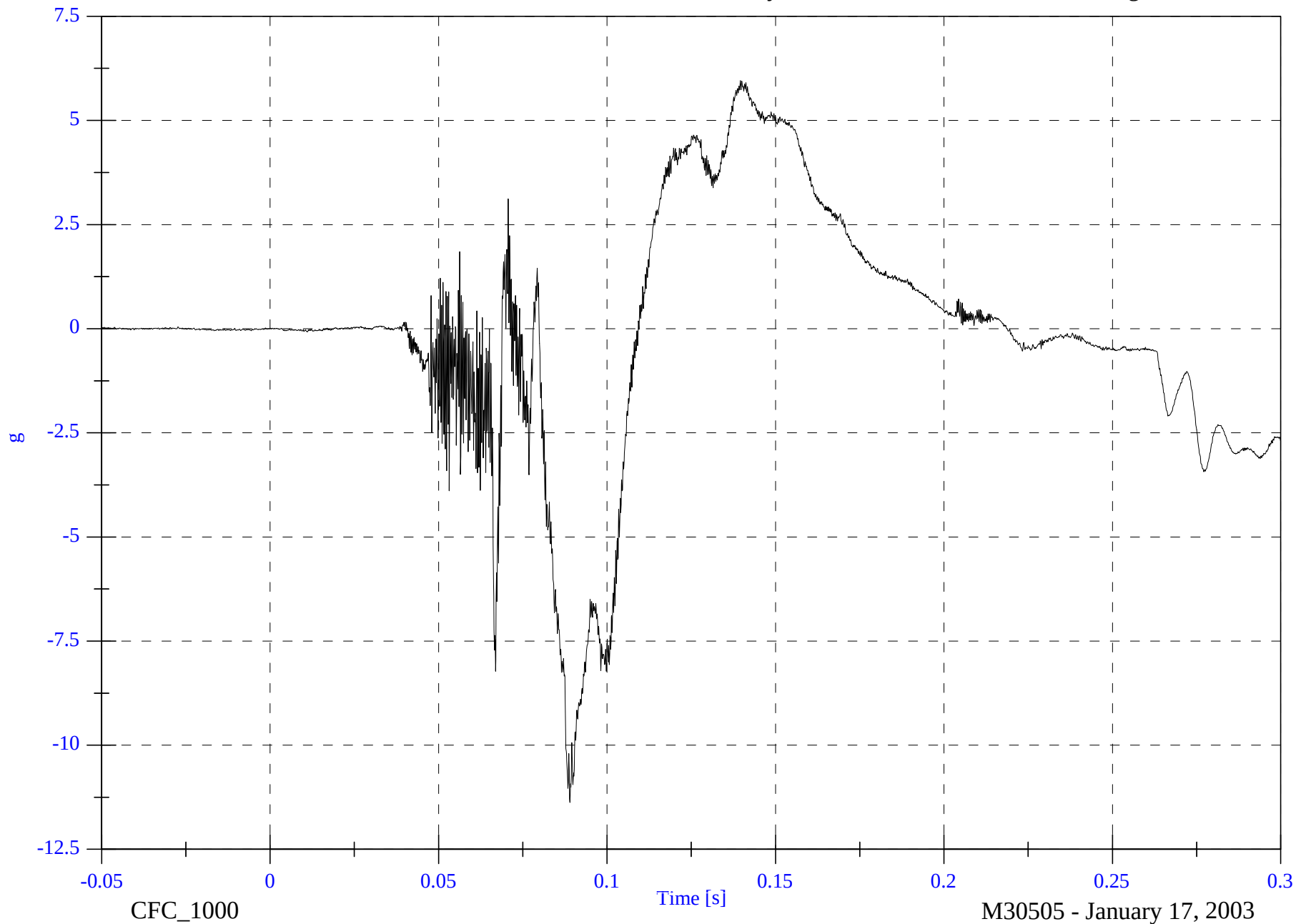
V1P1 Head CG y

Max: 6.0 [g] at 0.140 [s]

Min: -11.4 [g] at 0.089 [s]

B-15

8642-NCAP-27

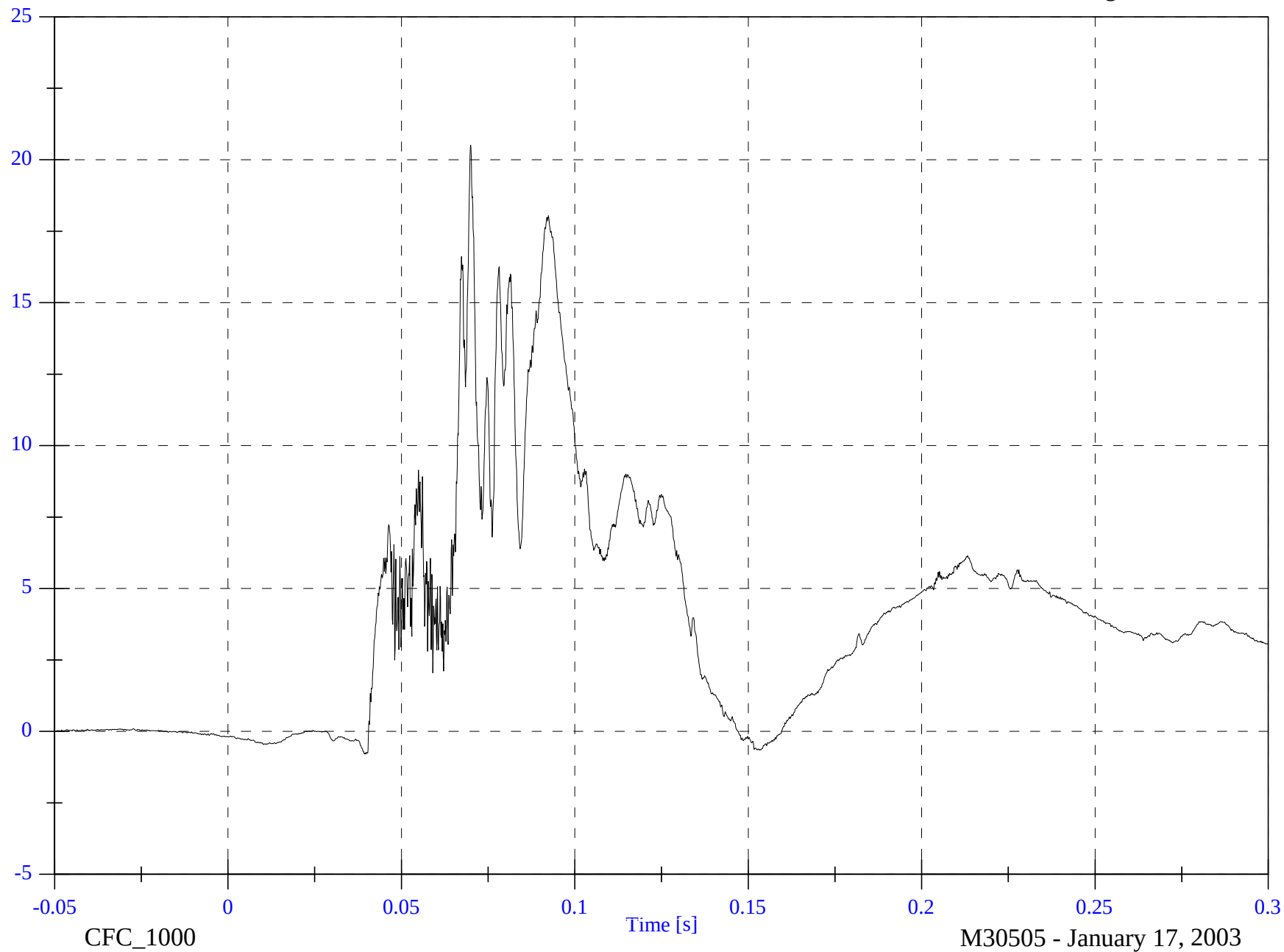


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Head CG z

Max: 20.5 [g] at 0.070 [s]

Min: -0.8 [g] at 0.040 [s]



B-16

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

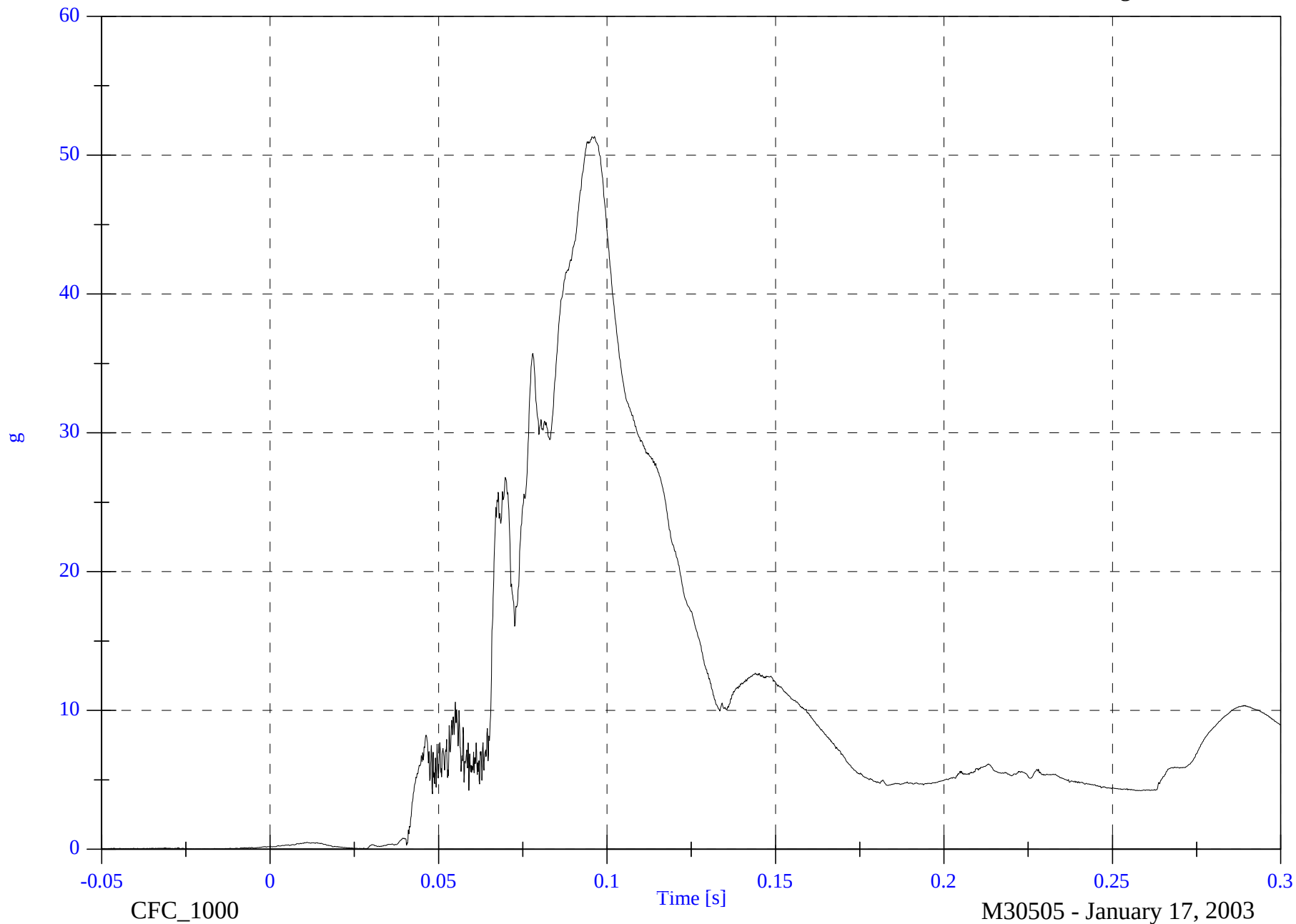
V1P1 Head CG Resultant

Max: 51.4 [g] at 0.096 [s]

Min: 0.0 [g] at -0.022 [s]

B-17

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

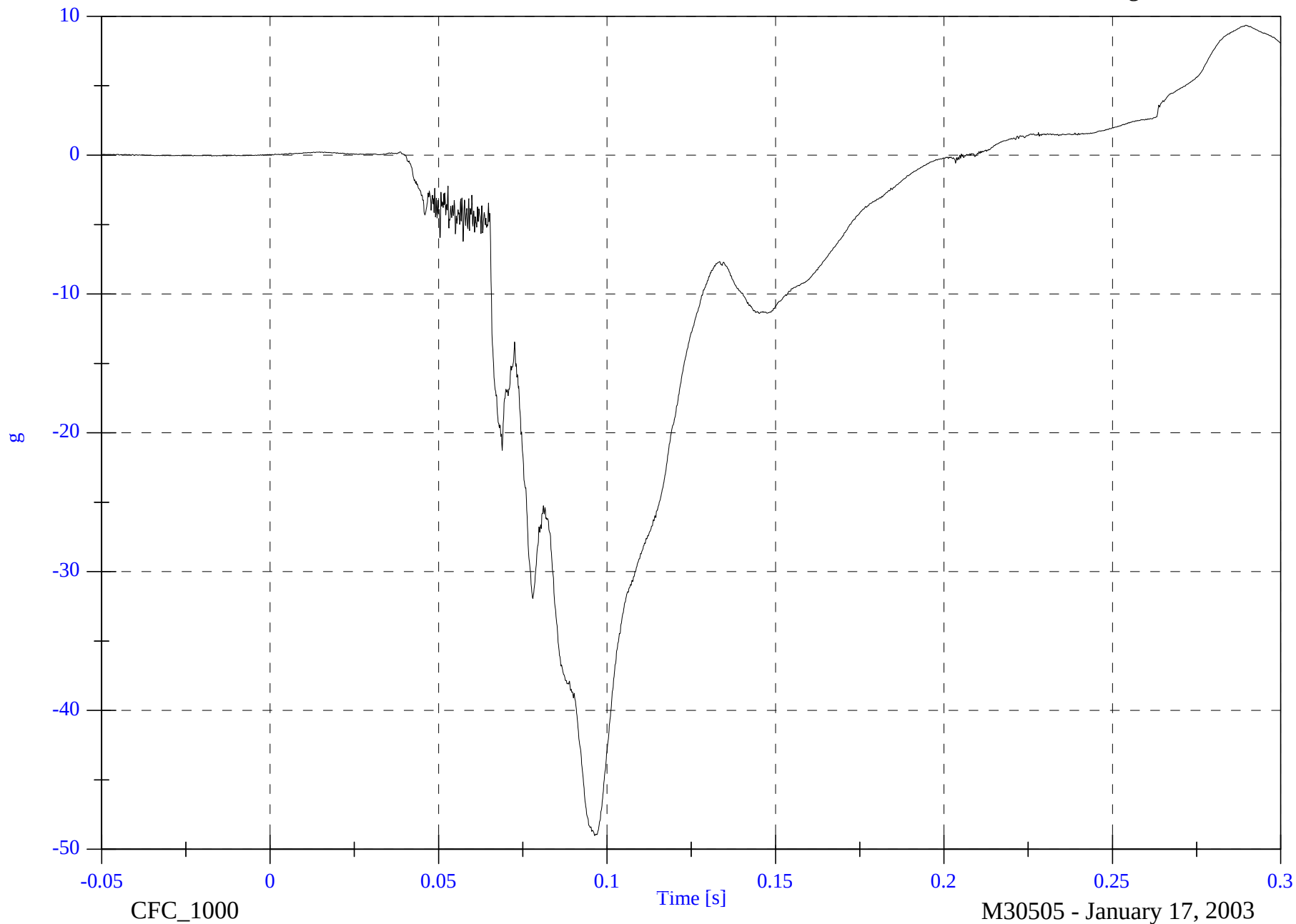
V1P1 Head CG Red x

Max: 9.4 [g] at 0.289 [s]

Min: -49.0 [g] at 0.096 [s]

B-18

8642-NCAP-27

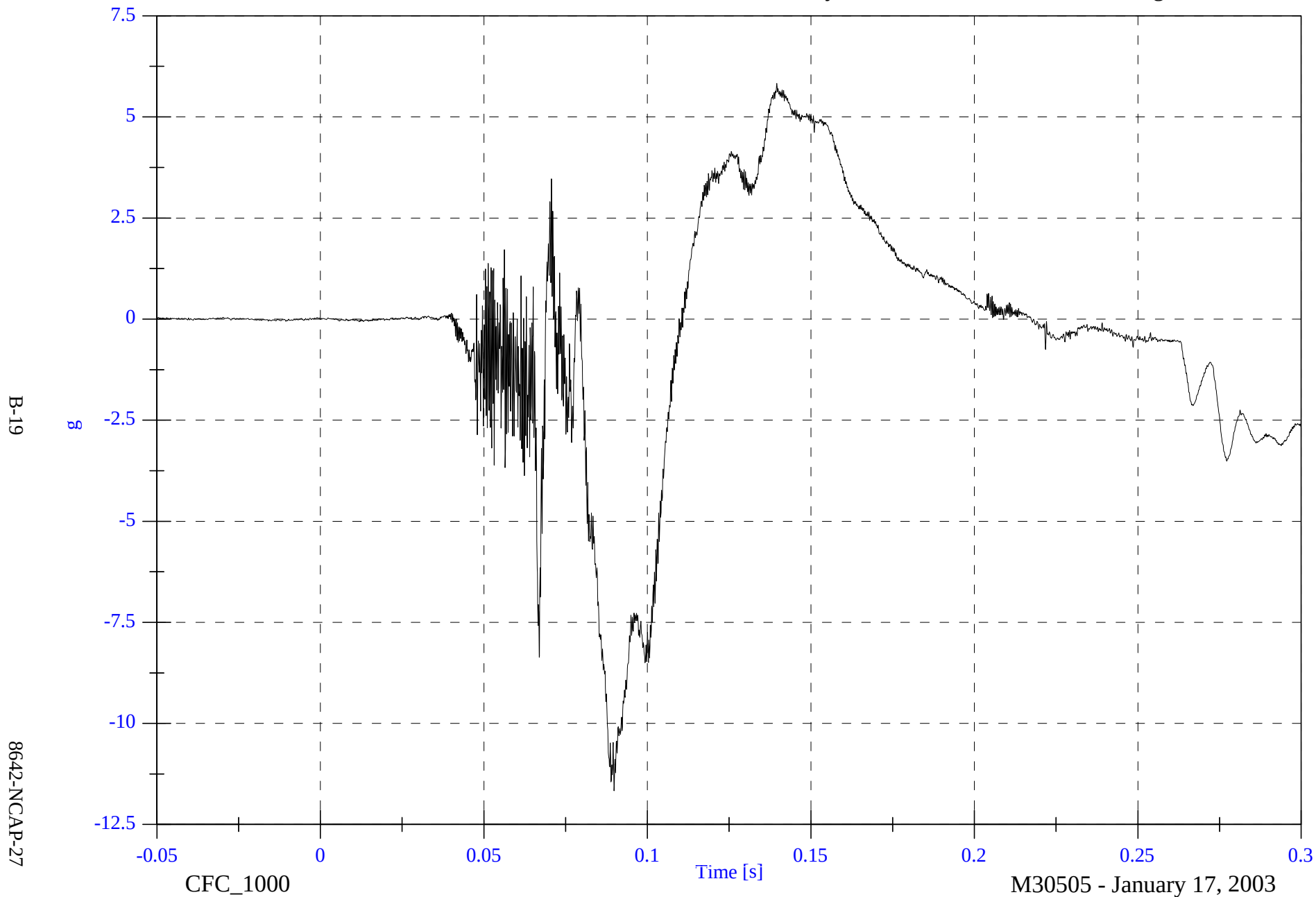


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Head CG Red y

Max: 5.8 [g] at 0.140 [s]

Min: -11.7 [g] at 0.090 [s]



NCAP Test #5 - 2003 Hyundai Accent

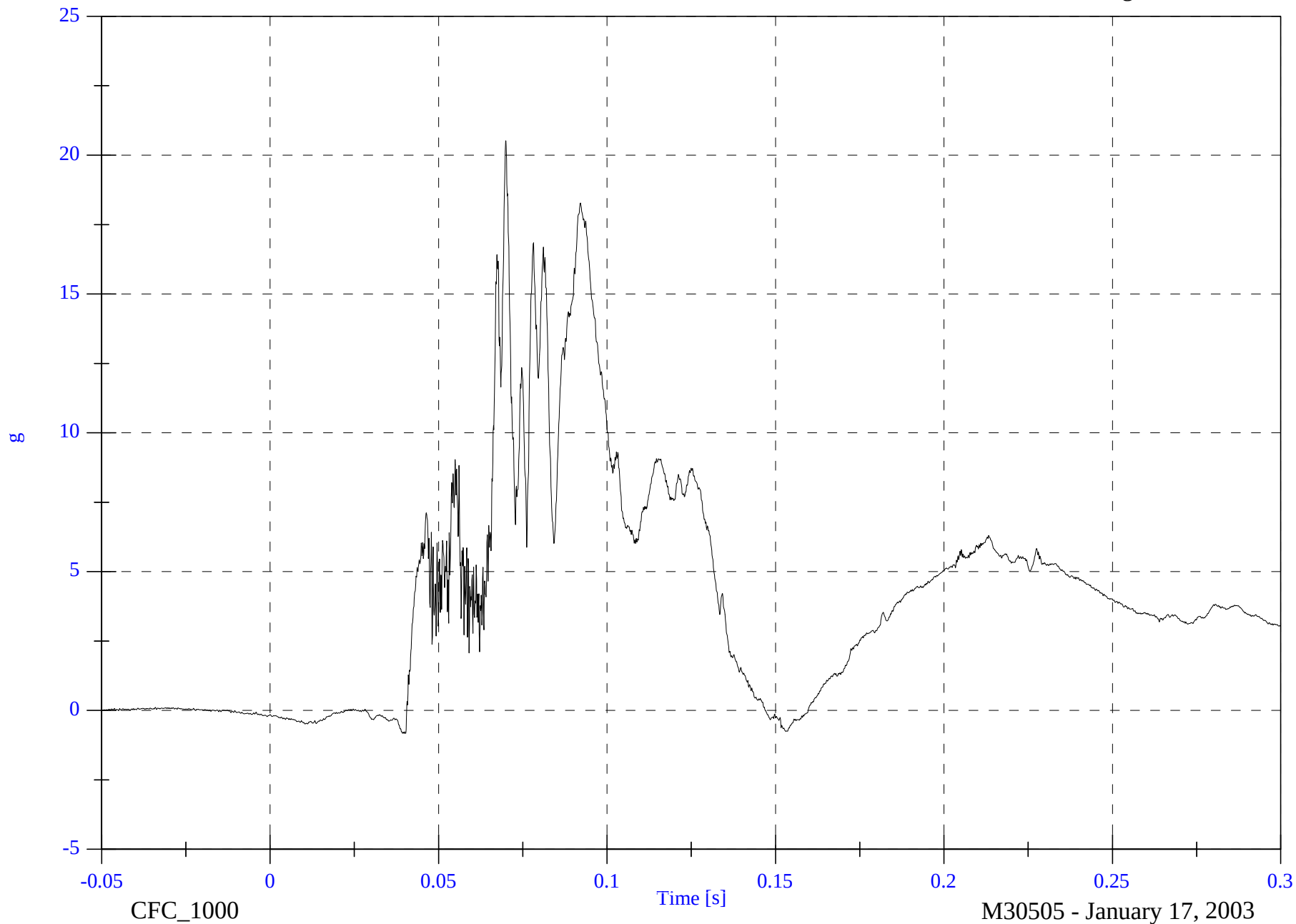
V1P1 Head CG Red z

Max: 20.5 [g] at 0.070 [s]

Min: -0.8 [g] at 0.040 [s]

B-20

8642-NCAP-27

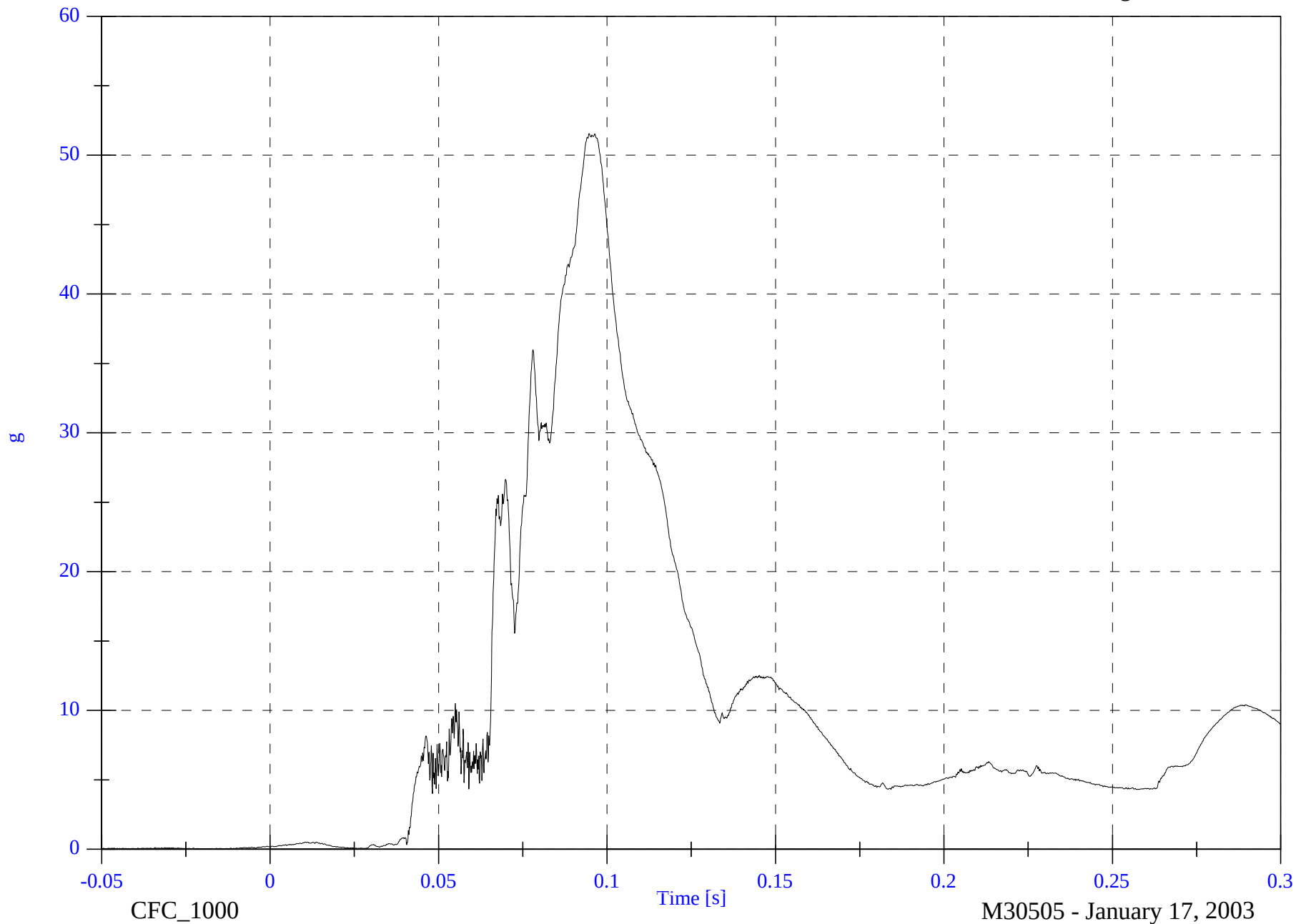


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Head CG Red Resultant

Max: 51.6 [g] at 0.095 [s]

Min: 0.0 [g] at -0.045 [s]



B-21

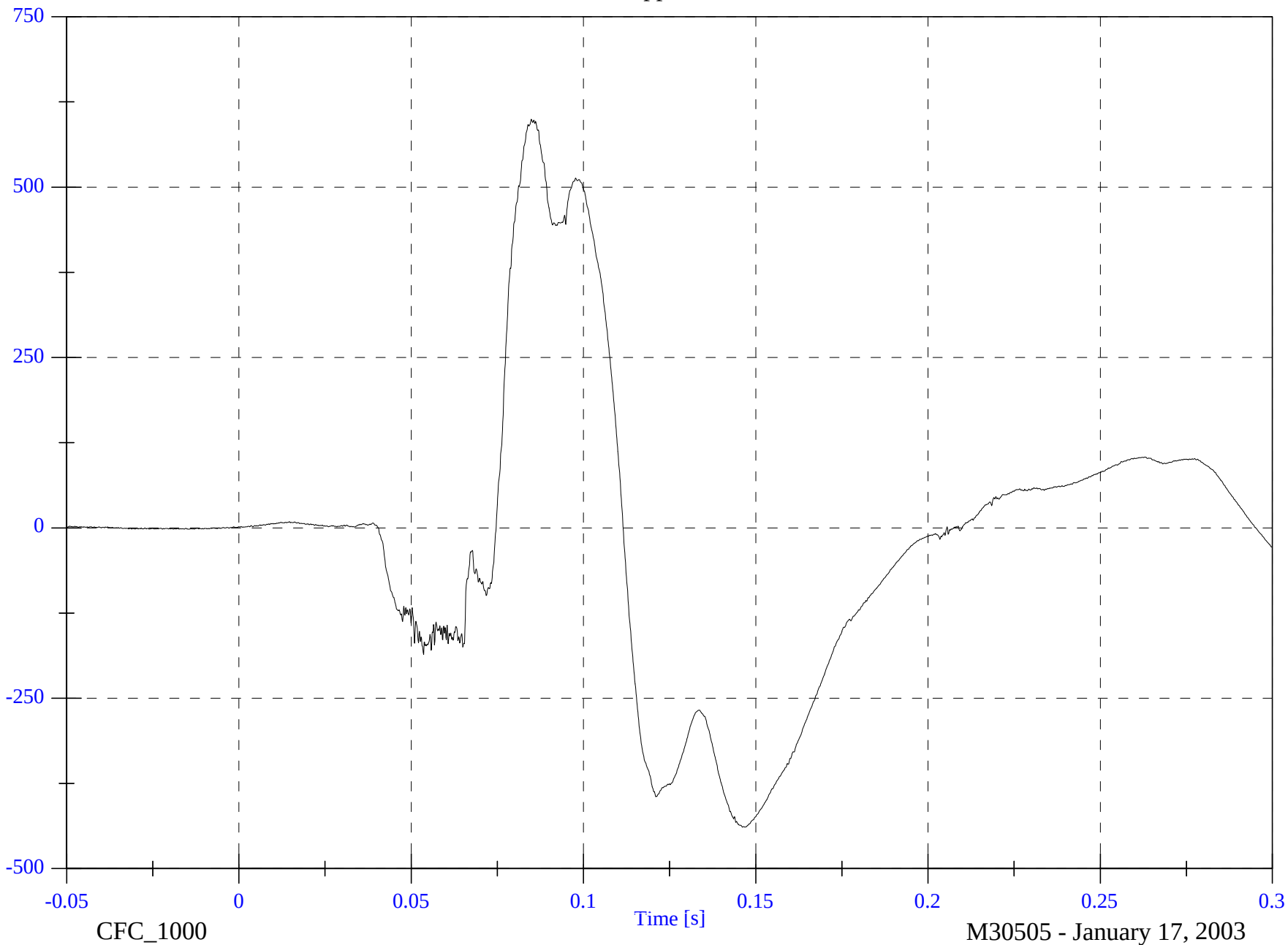
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P1 Upper Neck Fx

Max: 599.6 [N] at 0.085 [s]

Min: -439.3 [N] at 0.146 [s]



B-22

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

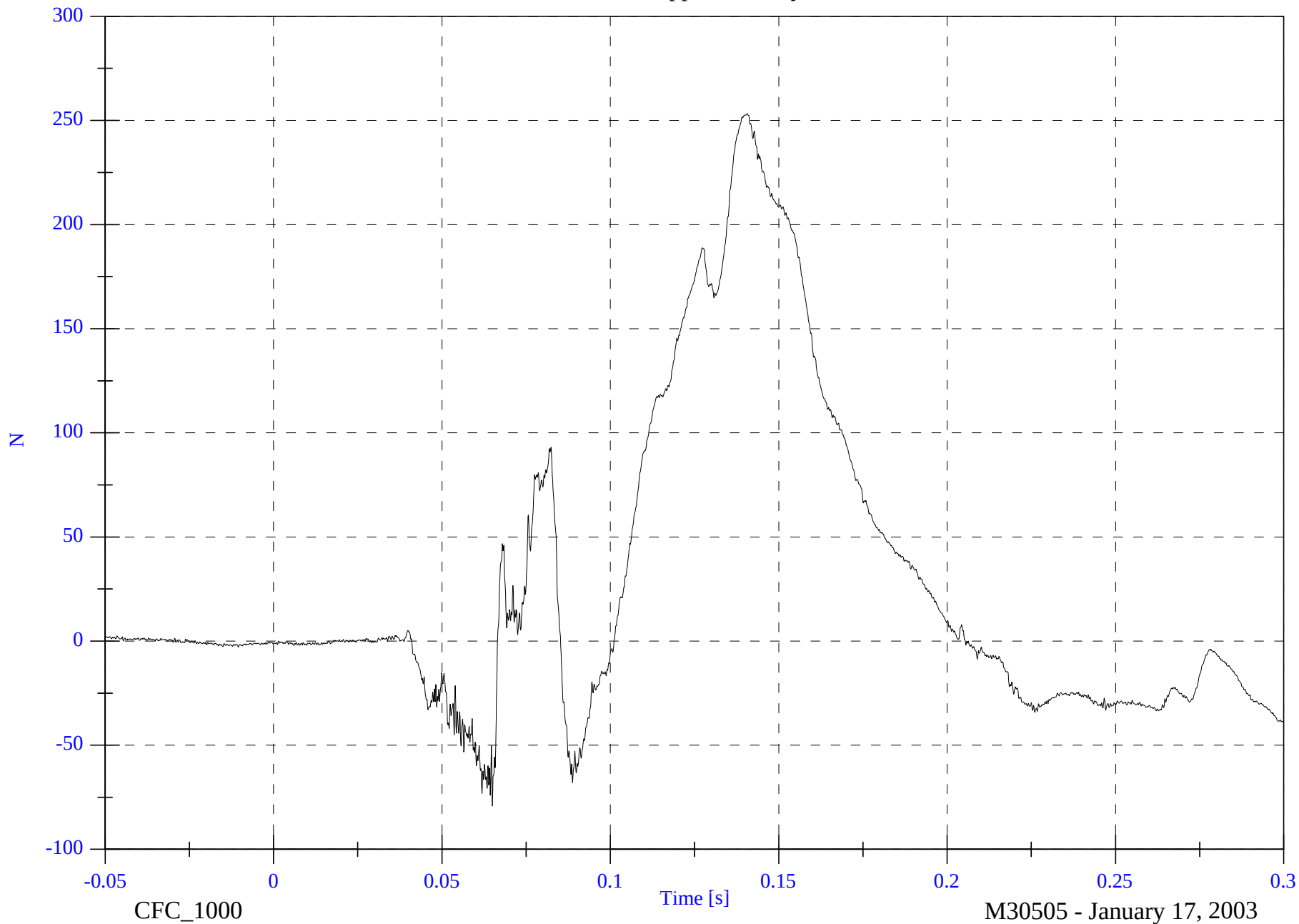
V1P1 Upper Neck Fy

Max: 253.3 [N] at 0.141 [s]

Min: -79.3 [N] at 0.065 [s]

B-23

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

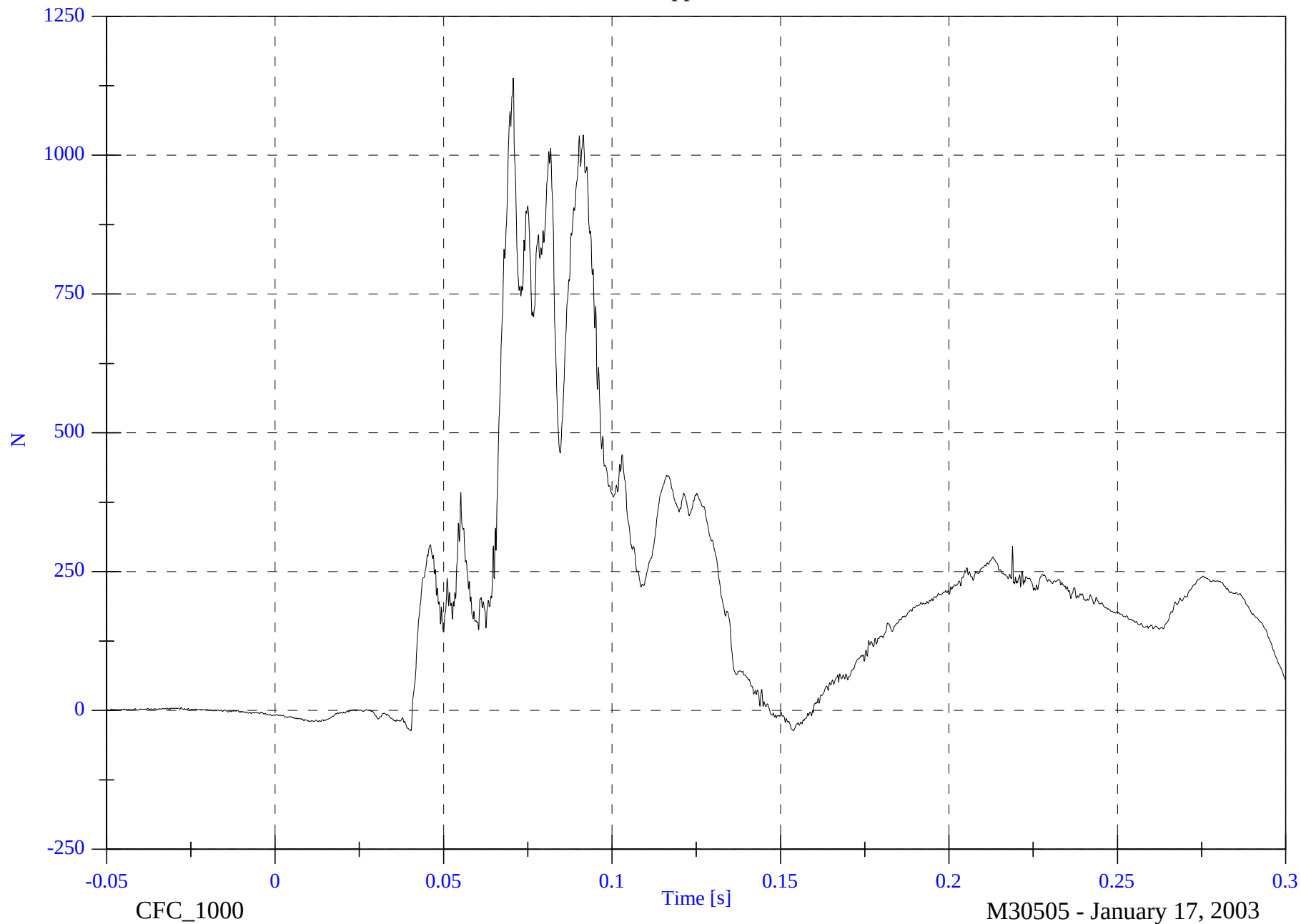
V1P1 Upper Neck Fz

Max: 1139.2 [N] at 0.071 [s]

Min: -36.7 [N] at 0.154 [s]

B-24

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

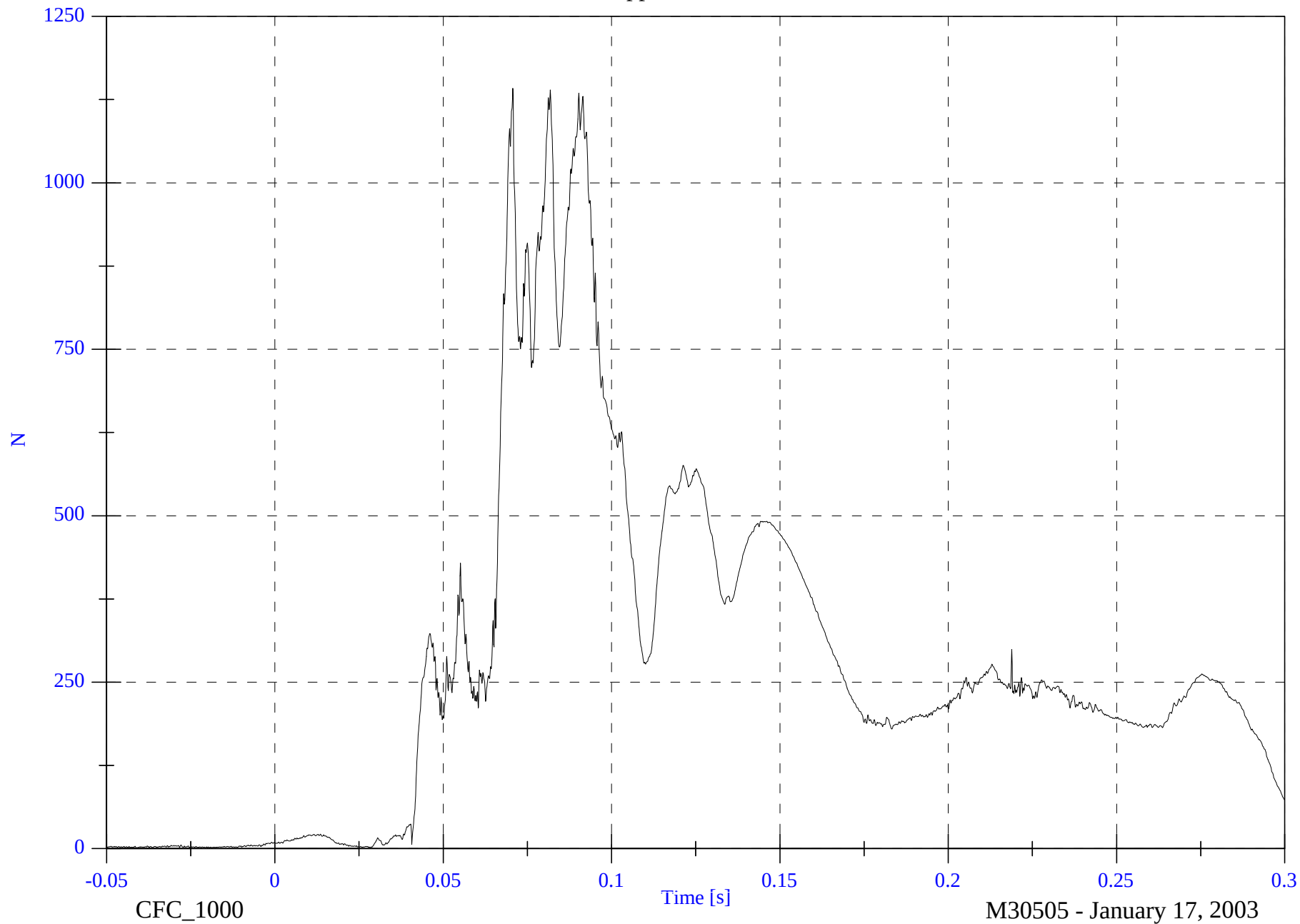
V1P1 Upper Neck F Resultant

Max: 1142.0 [N] at 0.071 [s]

Min: 1.0 [N] at -0.022 [s]

B-25

8642-NCAP-27

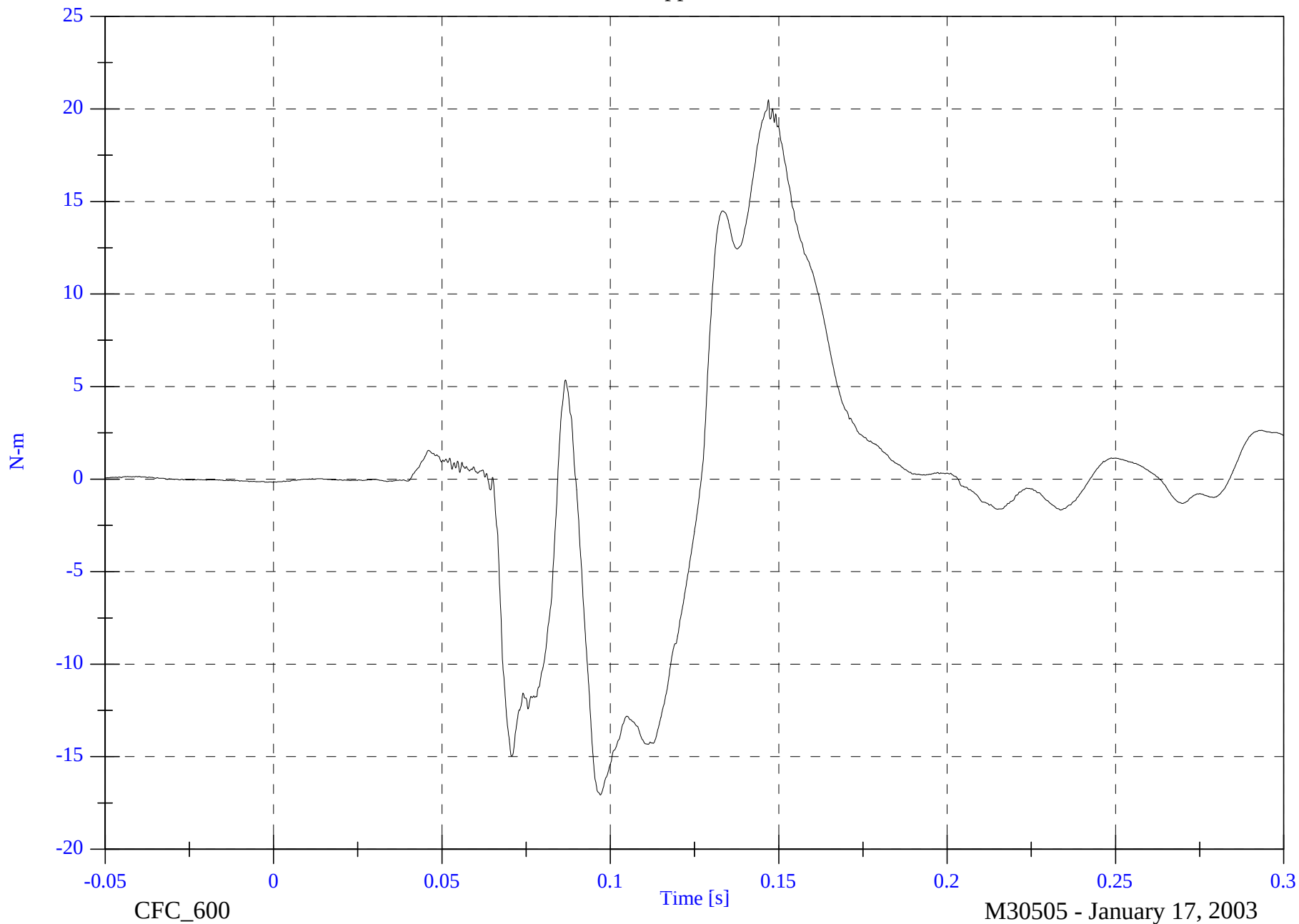


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Upper Neck Mx

Max: 20.5 [N-m] at 0.147 [s]

Min: -17.1 [N-m] at 0.097 [s]



B-26

8642-NCAP-27

CFC_600

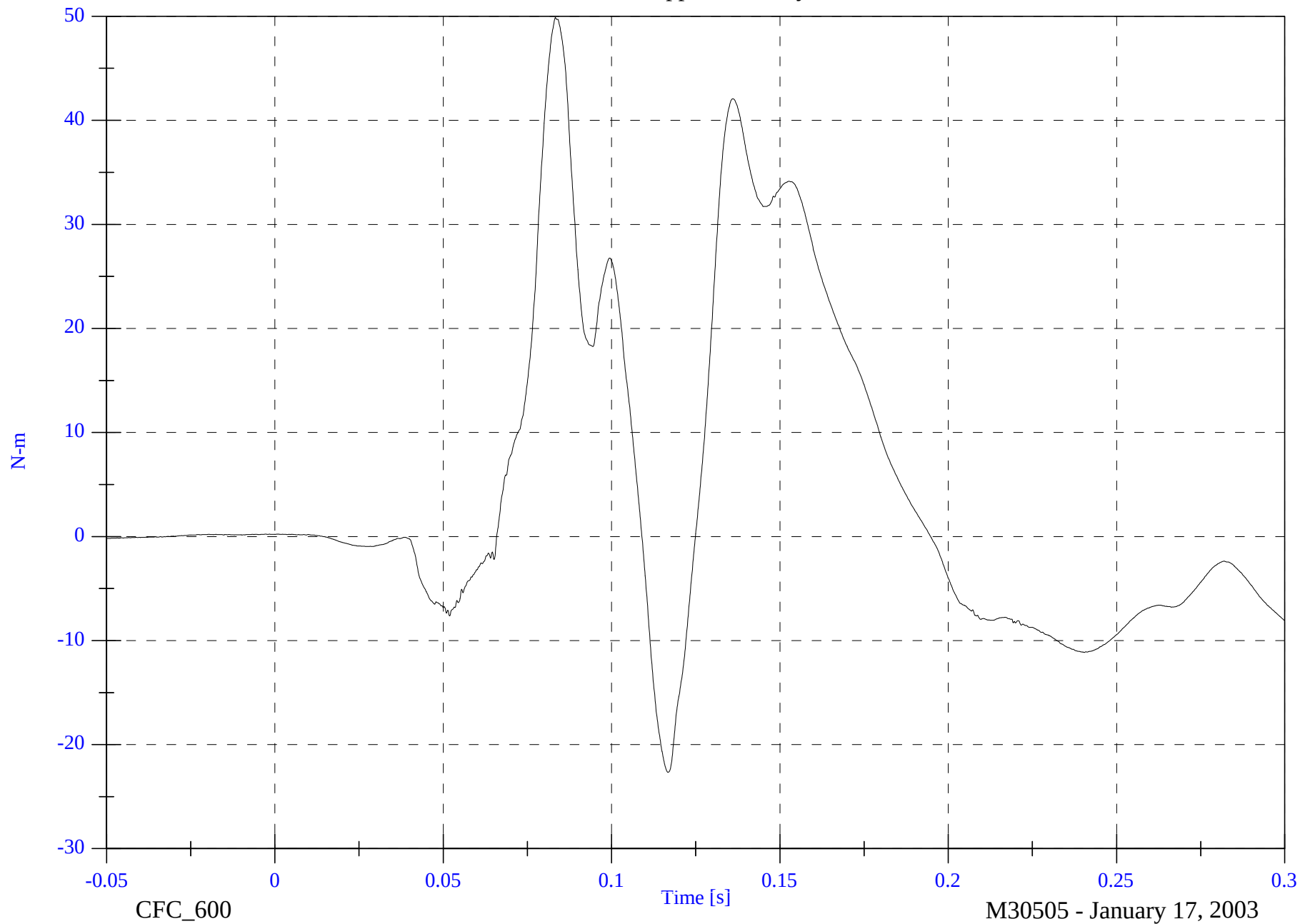
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P1 Upper Neck My

Max: 49.9 [N-m] at 0.083 [s]

Min: -22.7 [N-m] at 0.117 [s]



B-27

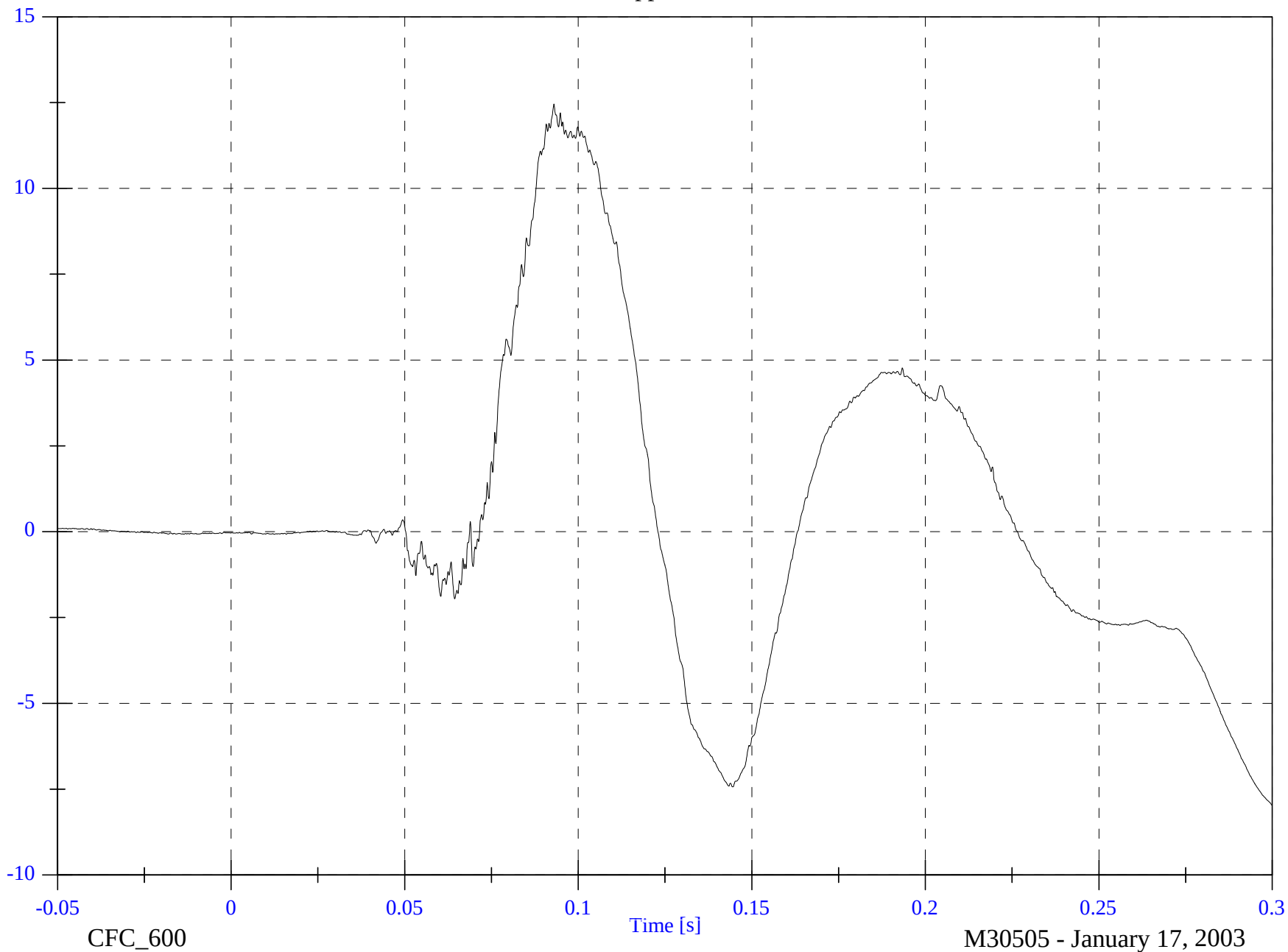
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P1 Upper Neck Mz

Max: 12.5 [N-m] at 0.093 [s]

Min: -8.0 [N-m] at 0.300 [s]



B-28

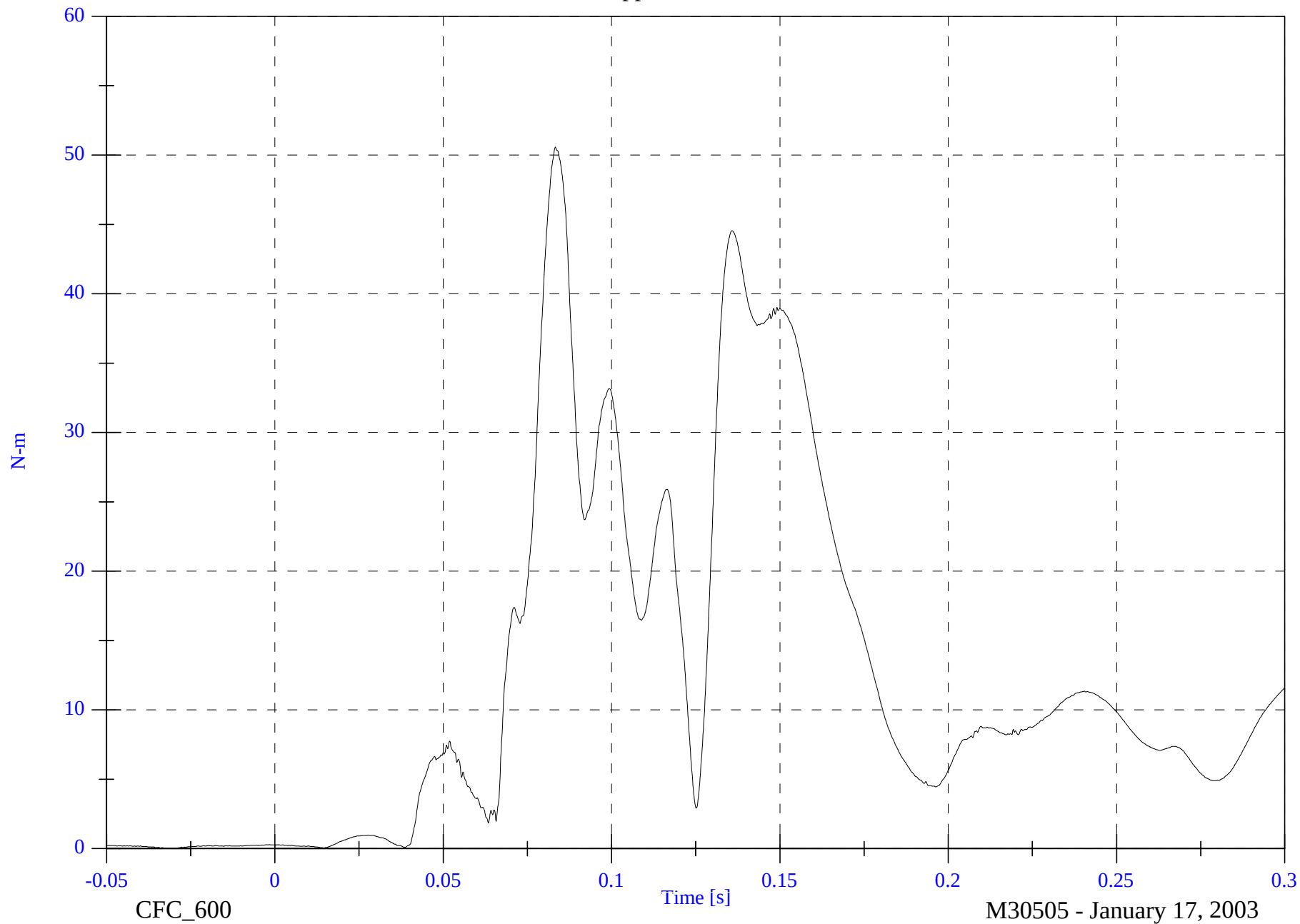
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P1 Upper Neck M Resultant

Max: 50.6 [N-m] at 0.083 [s]

Min: 0.0 [N-m] at -0.032 [s]



B-29

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

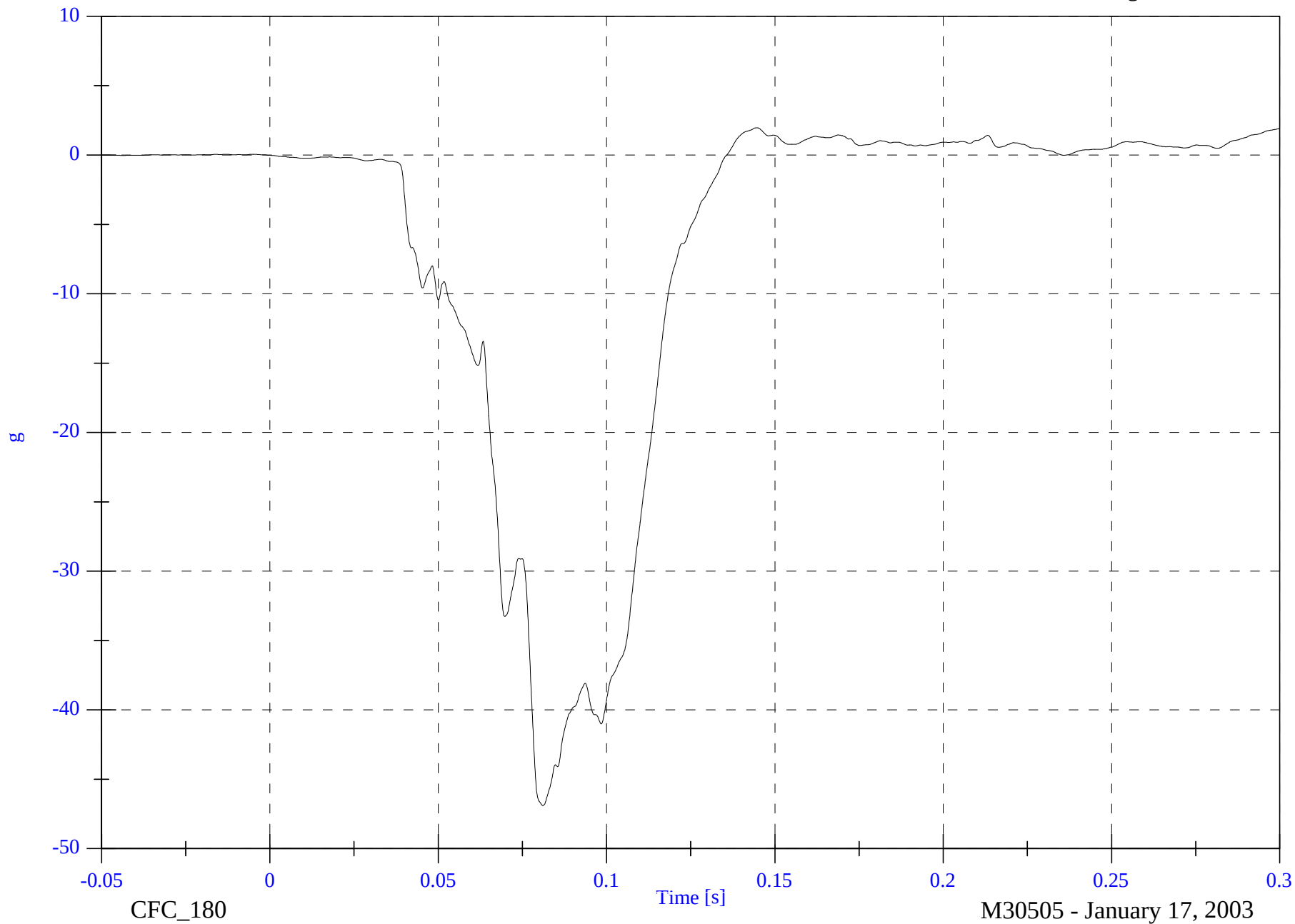
V1P1 Chest x

Max: 2.0 [g] at 0.145 [s]

Min: -46.9 [g] at 0.081 [s]

B-30

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

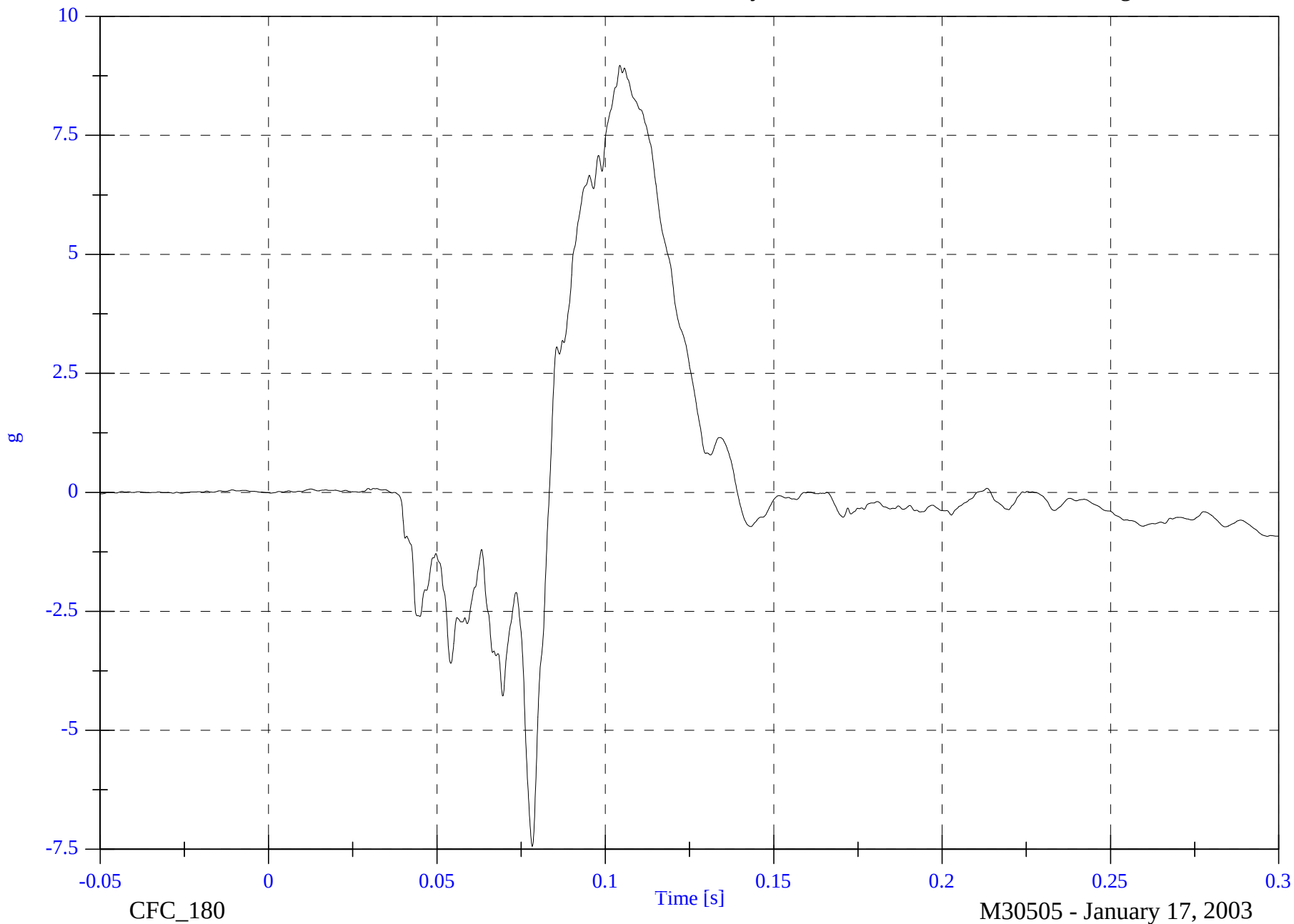
V1P1 Chest y

Max: 9.0 [g] at 0.104 [s]

Min: -7.4 [g] at 0.078 [s]

B-31

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

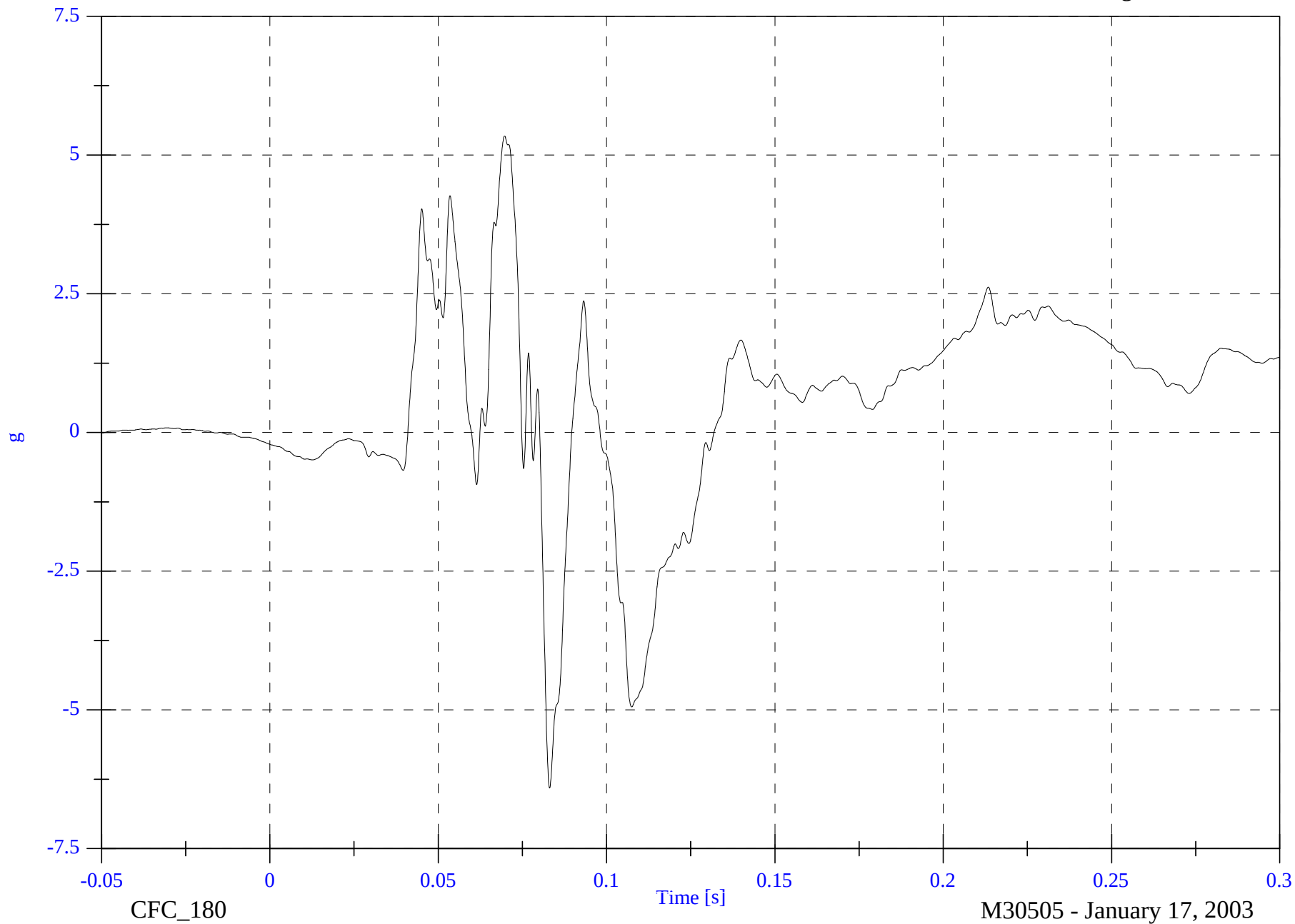
V1P1 Chest z

Max: 5.3 [g] at 0.070 [s]

Min: -6.4 [g] at 0.083 [s]

B-32

8642-NCAP-27

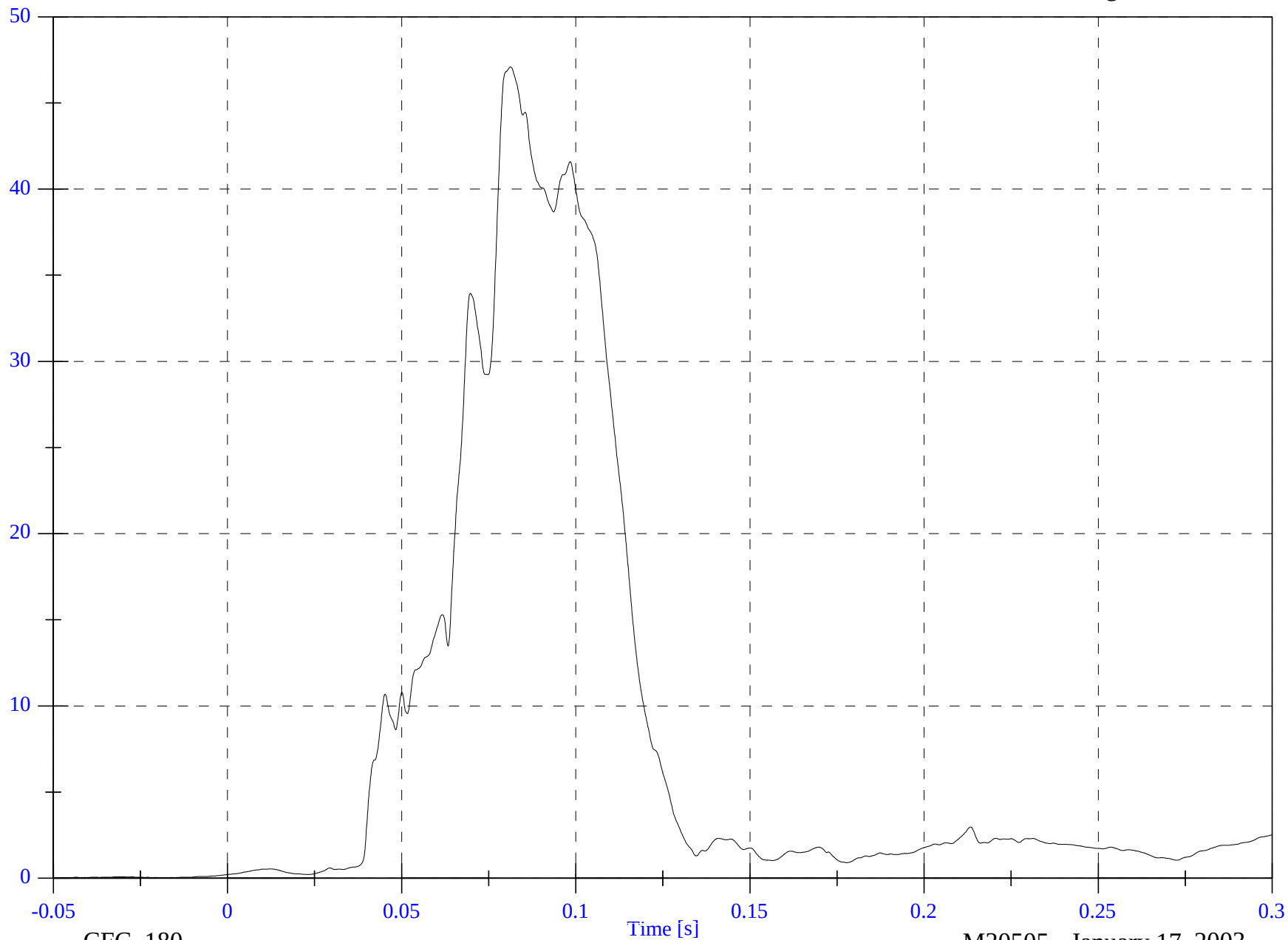


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Chest Resultant

Max: 47.1 [g] at 0.081 [s]

Min: 0.0 [g] at -0.048 [s]



B-33

8642-NCAP-27

CFC_180

M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

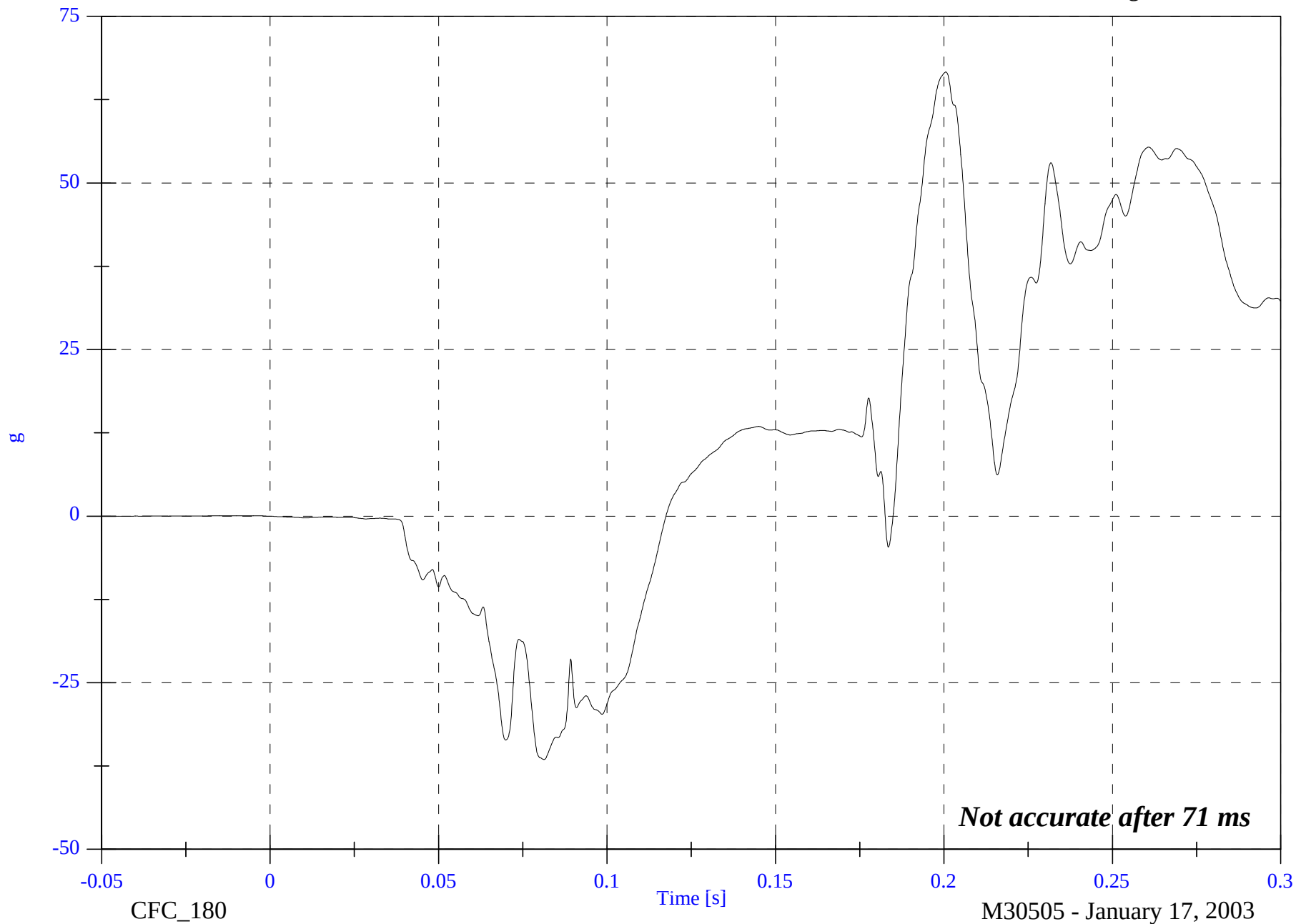
V1P1 Chest Red x

Max: 66.6 [g] at 0.200 [s]

Min: -36.5 [g] at 0.081 [s]

B-34

8642-NCAP-27

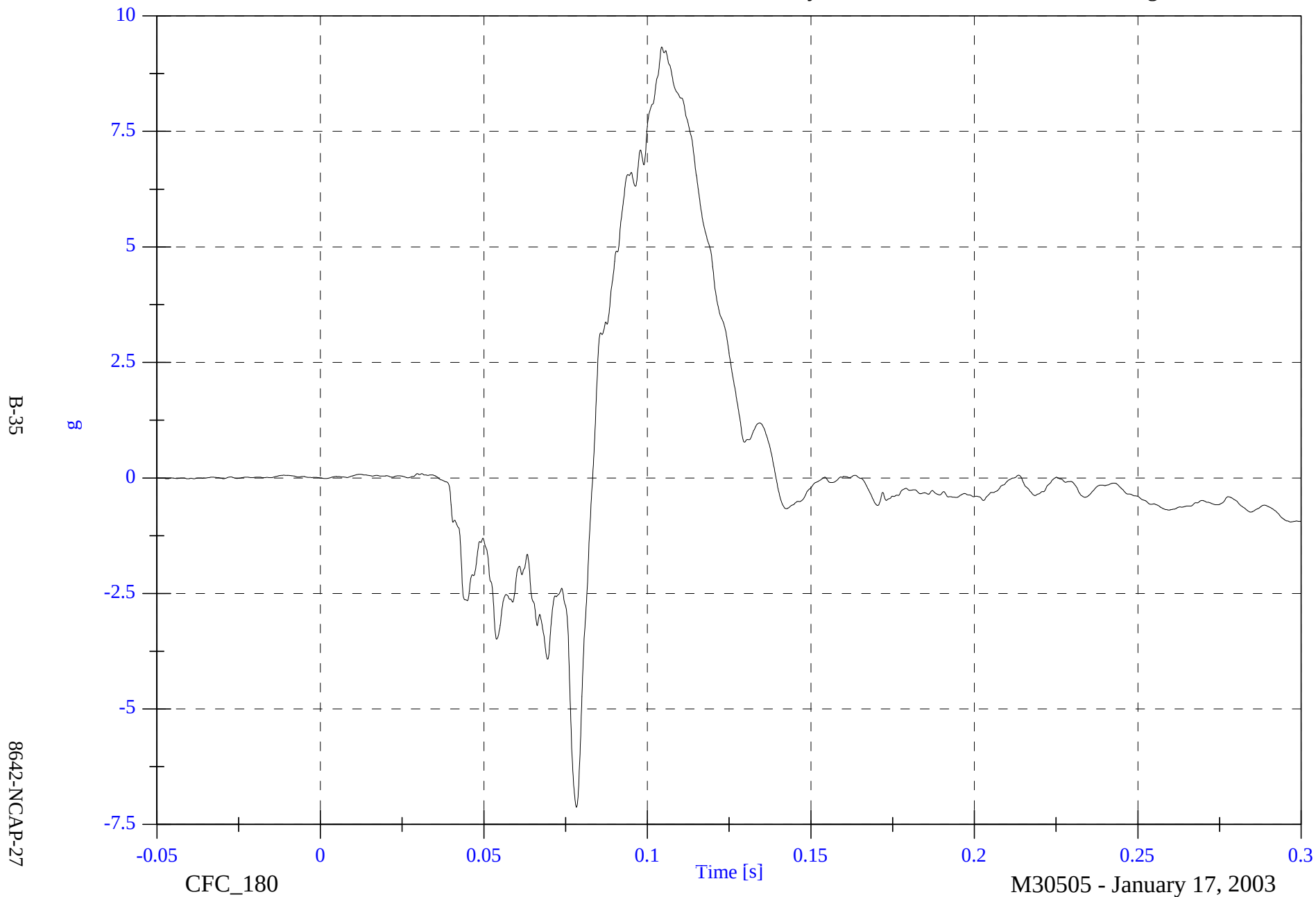


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Chest Red y

Max: 9.3 [g] at 0.104 [s]

Min: -7.1 [g] at 0.078 [s]

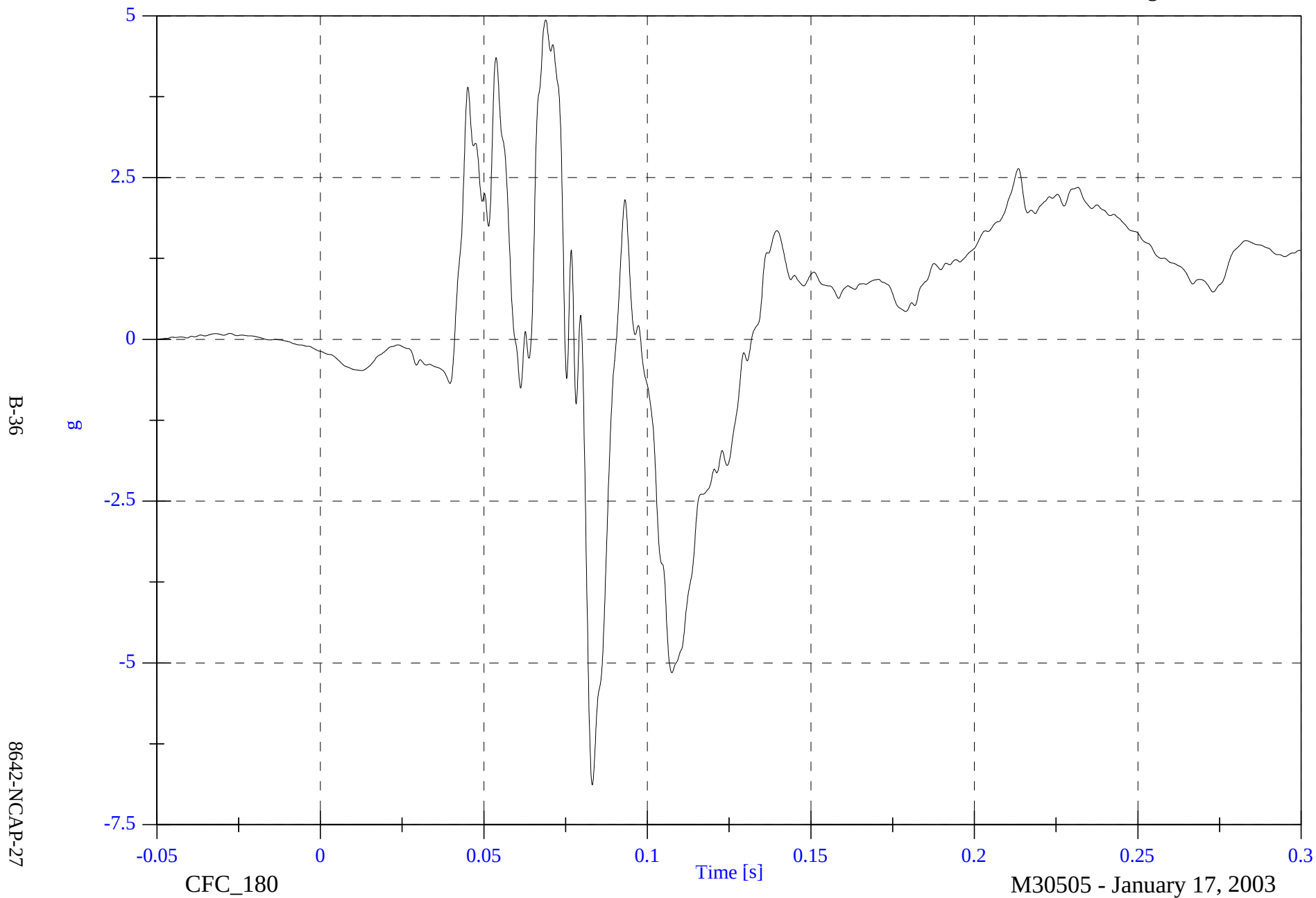


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Chest Red z

Max: 4.9 [g] at 0.069 [s]

Min: -6.9 [g] at 0.083 [s]



NCAP Test #5 - 2003 Hyundai Accent

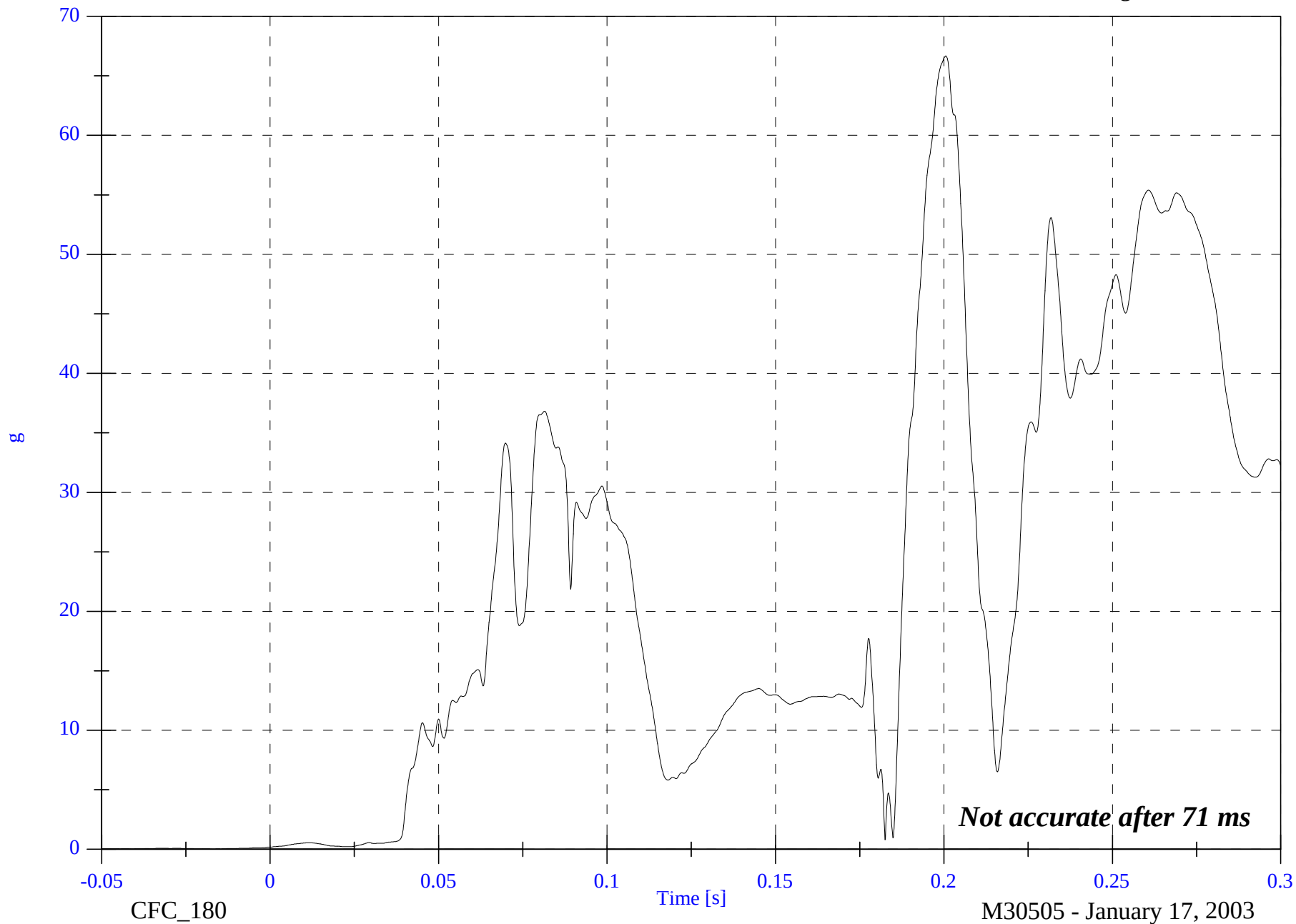
V1P1 Chest Red Resultant

Max: 66.7 [g] at 0.200 [s]

Min: 0.0 [g] at -0.050 [s]

B-37

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

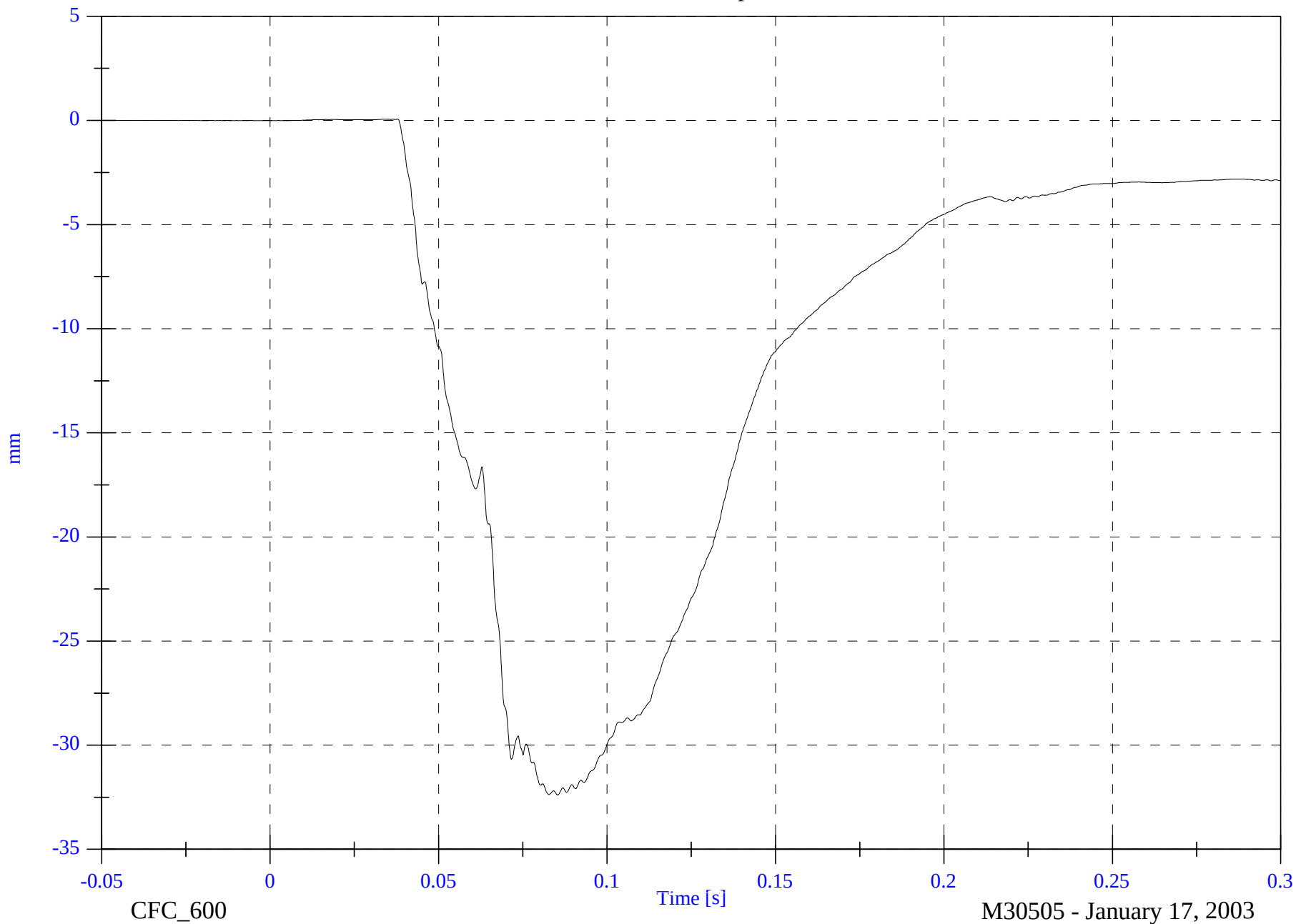
V1P1 Chest Compression

Max: 0.1 [mm] at 0.034 [s]

Min: -32.4 [mm] at 0.085 [s]

B-38

8642-NCAP-27

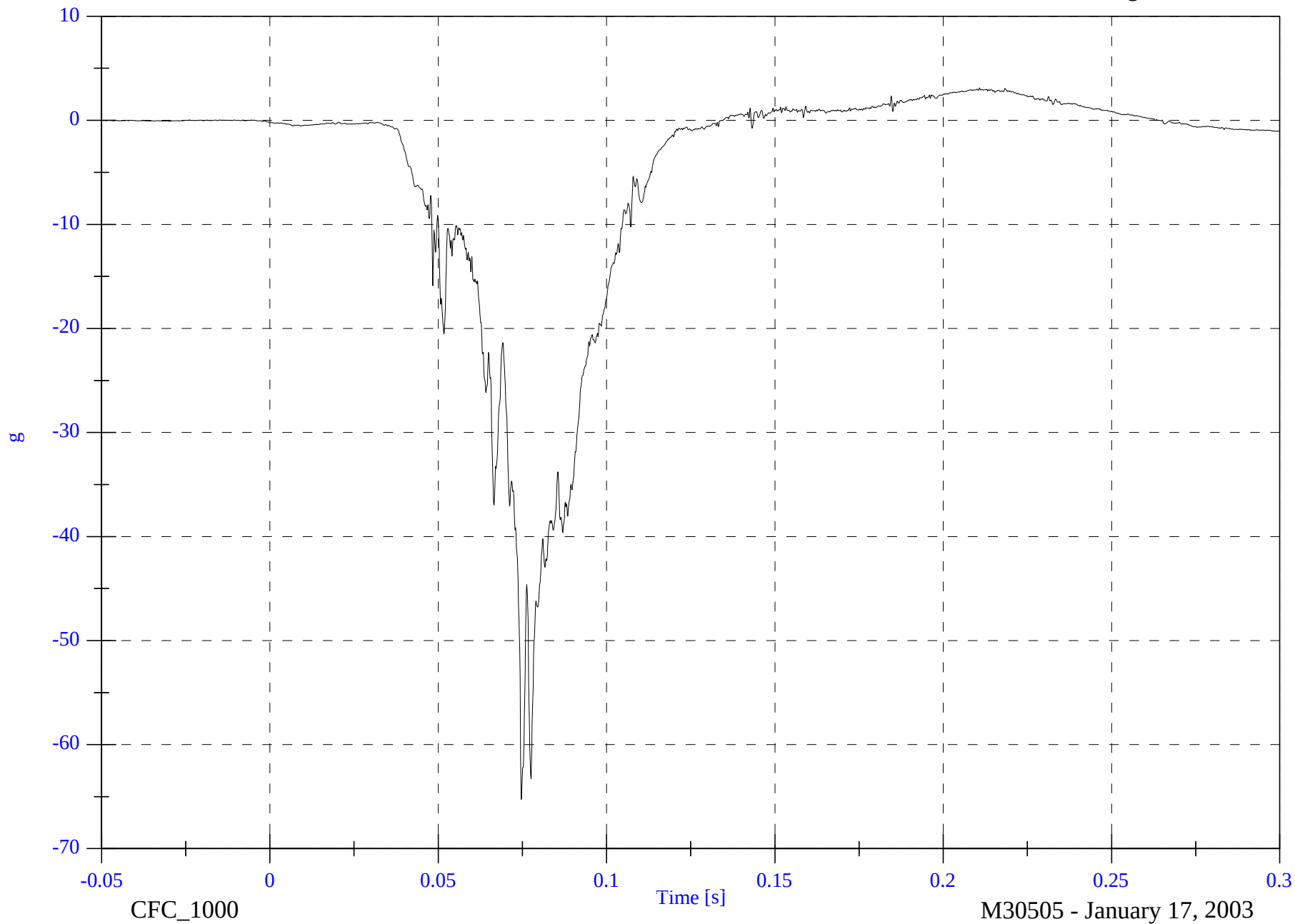


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Pelvic x

Max: 3.1 [g] at 0.211 [s]

Min: -65.3 [g] at 0.075 [s]



B-39

8642-NCAP-27

CFC_1000

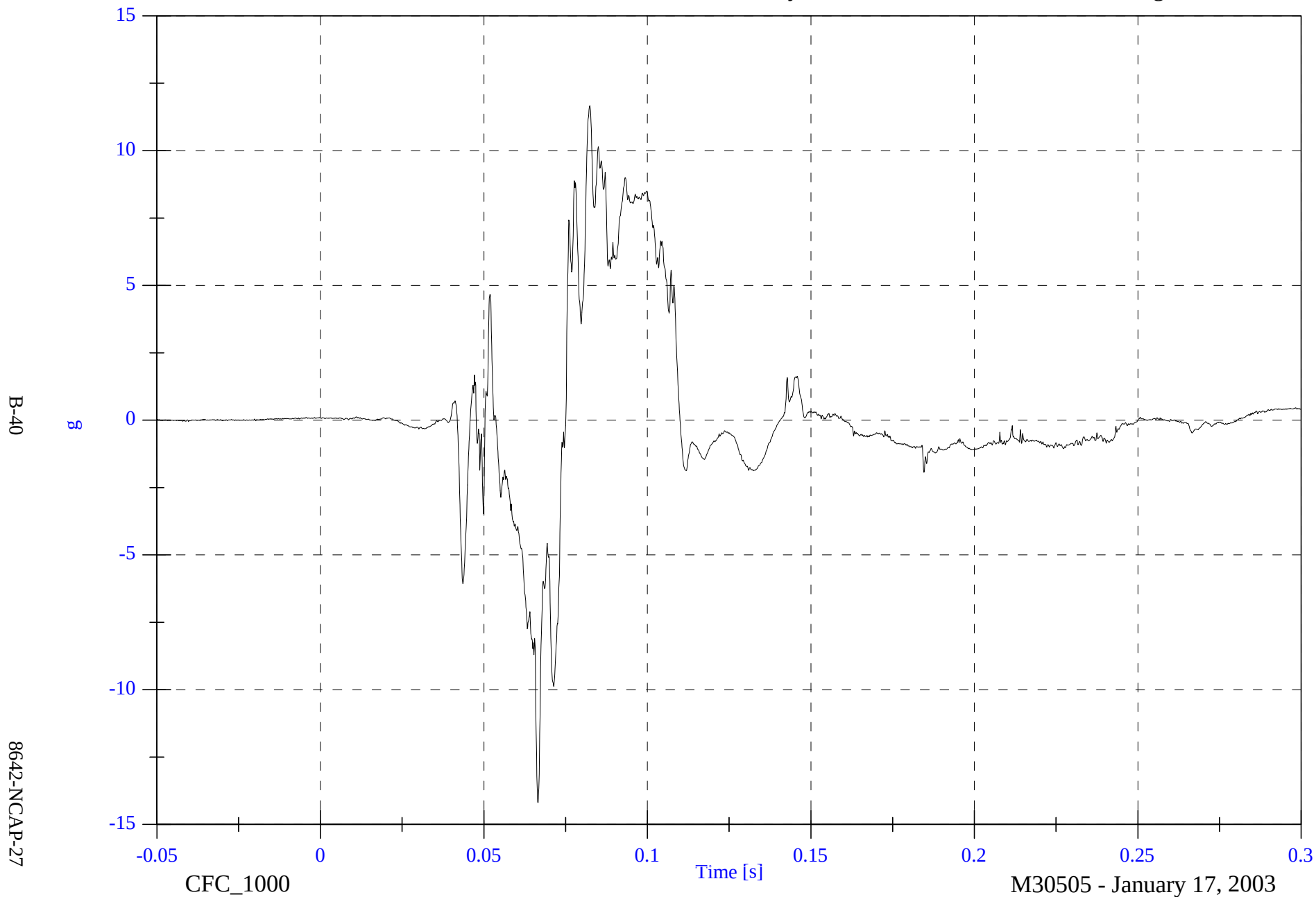
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P1 Pelvic y

Max: 11.7 [g] at 0.082 [s]

Min: -14.2 [g] at 0.067 [s]



NCAP Test #5 - 2003 Hyundai Accent

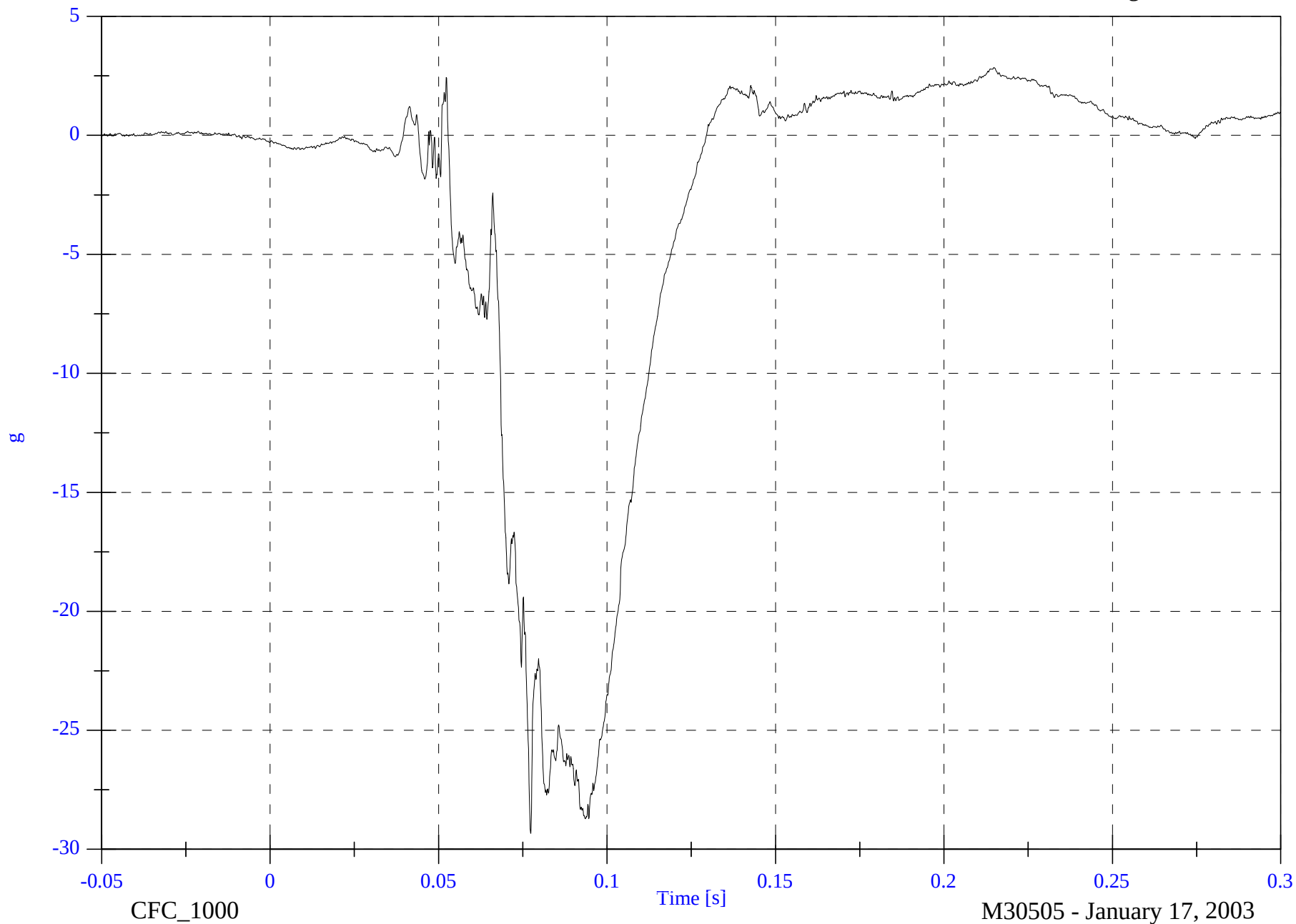
V1P1 Pelvic z

Max: 2.9 [g] at 0.215 [s]

Min: -29.3 [g] at 0.077 [s]

B-41

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

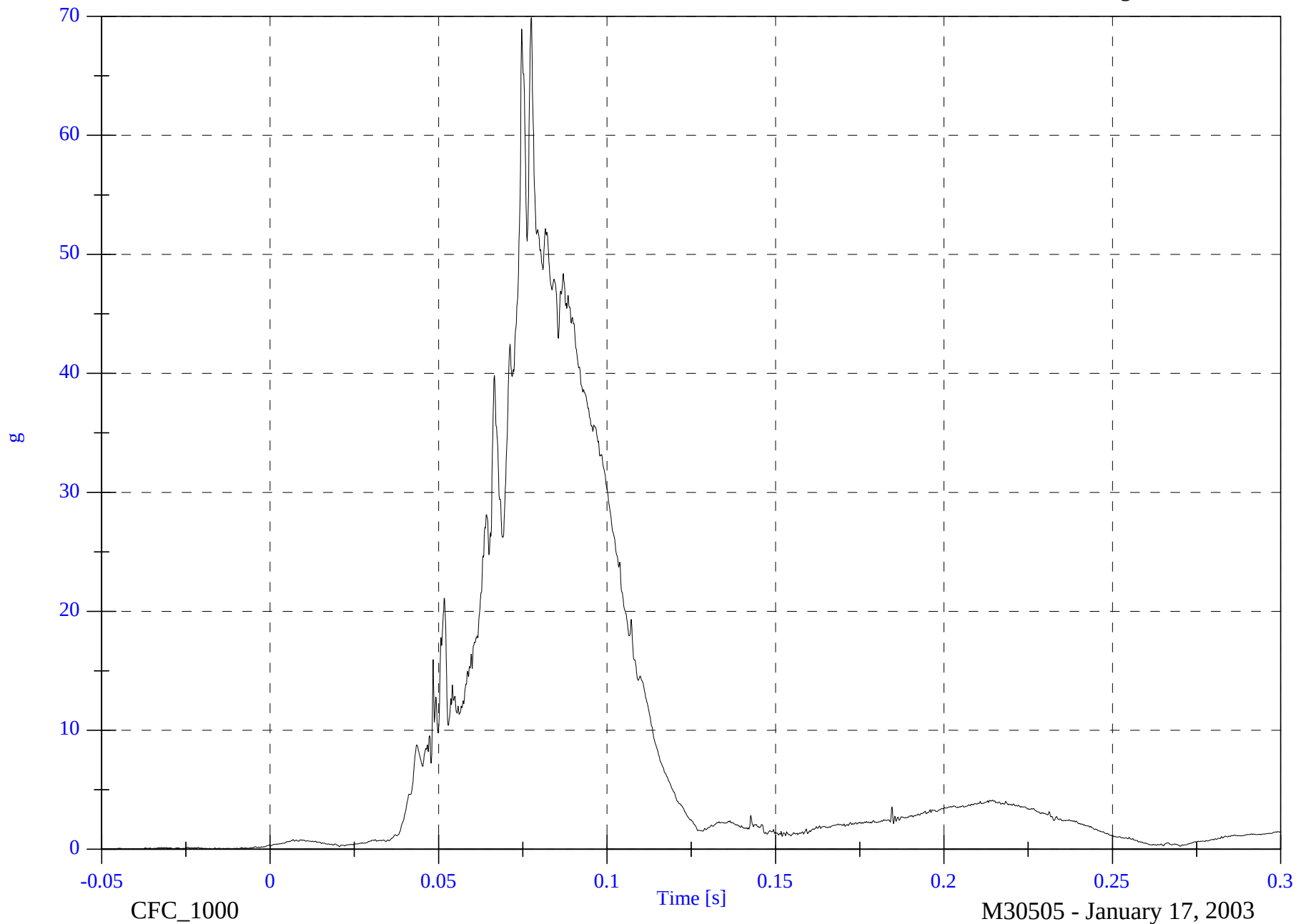
V1P1 Pelvic Resultant

Max: 69.9 [g] at 0.078 [s]

Min: 0.0 [g] at -0.047 [s]

B-42

8642-NCAP-27

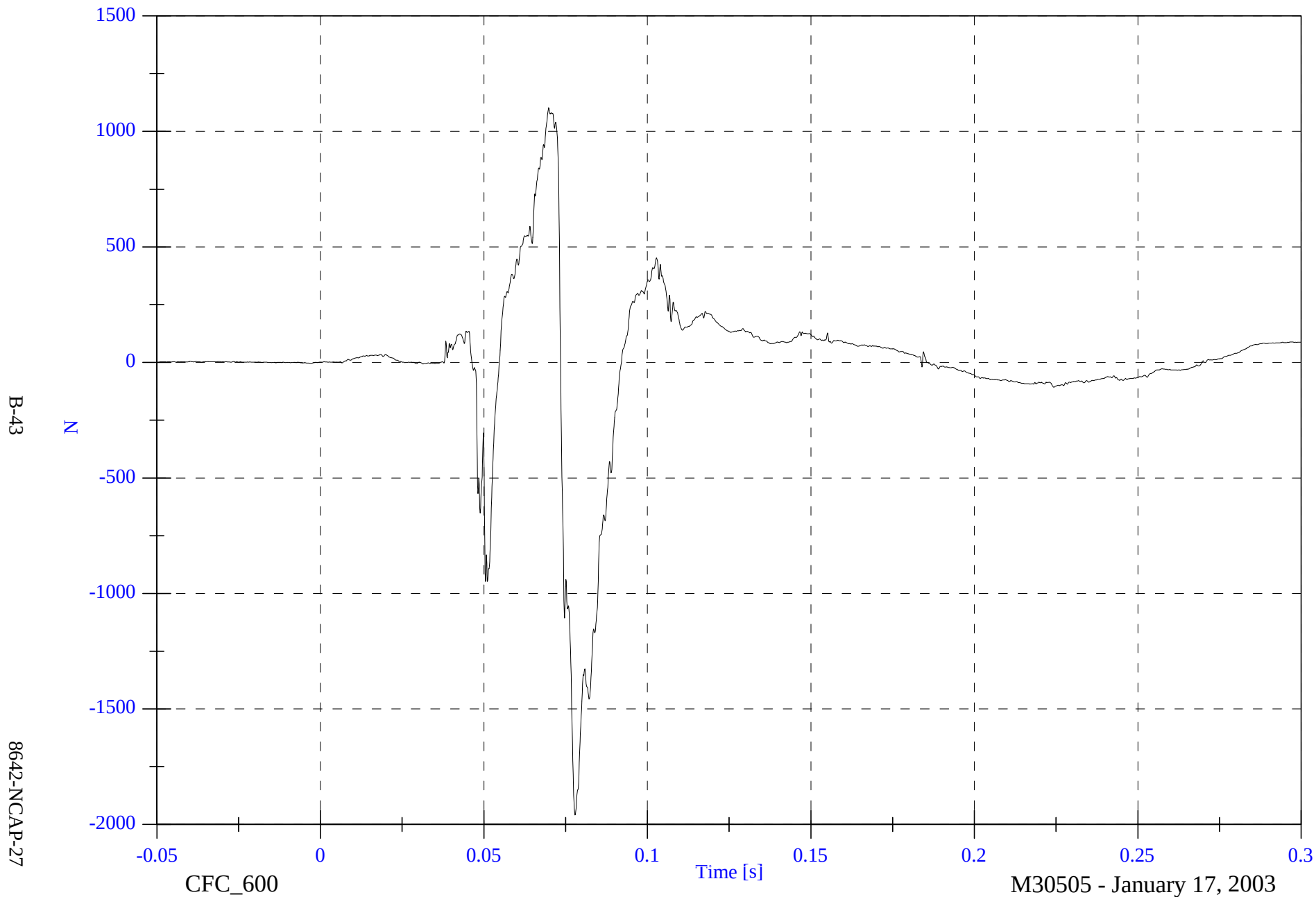


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Left Femur

Max: 1102.0 [N] at 0.070 [s]

Min: -1959.5 [N] at 0.078 [s]

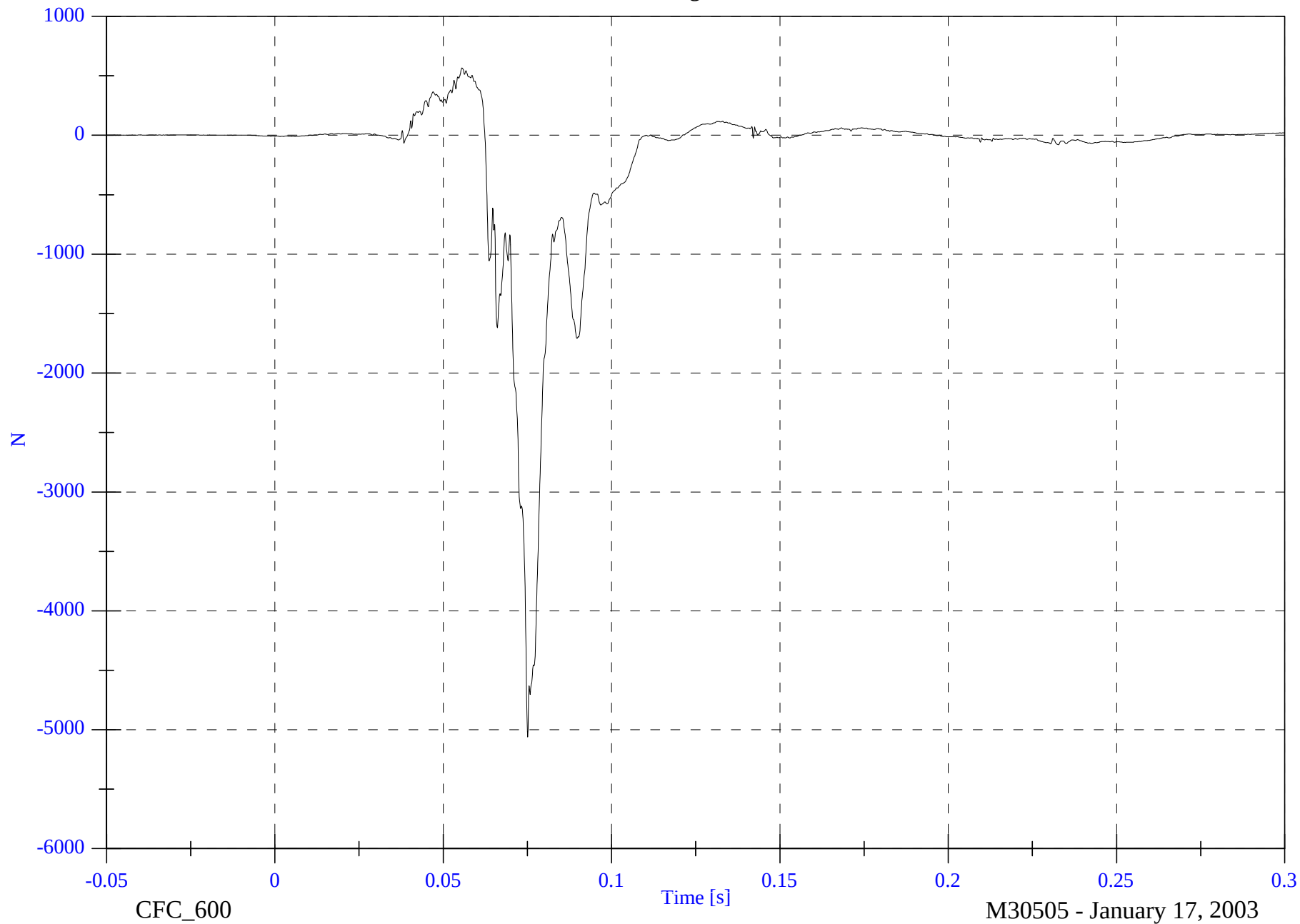


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Right Femur

Max: 566.2 [N] at 0.056 [s]

Min: -5061.4 [N] at 0.075 [s]

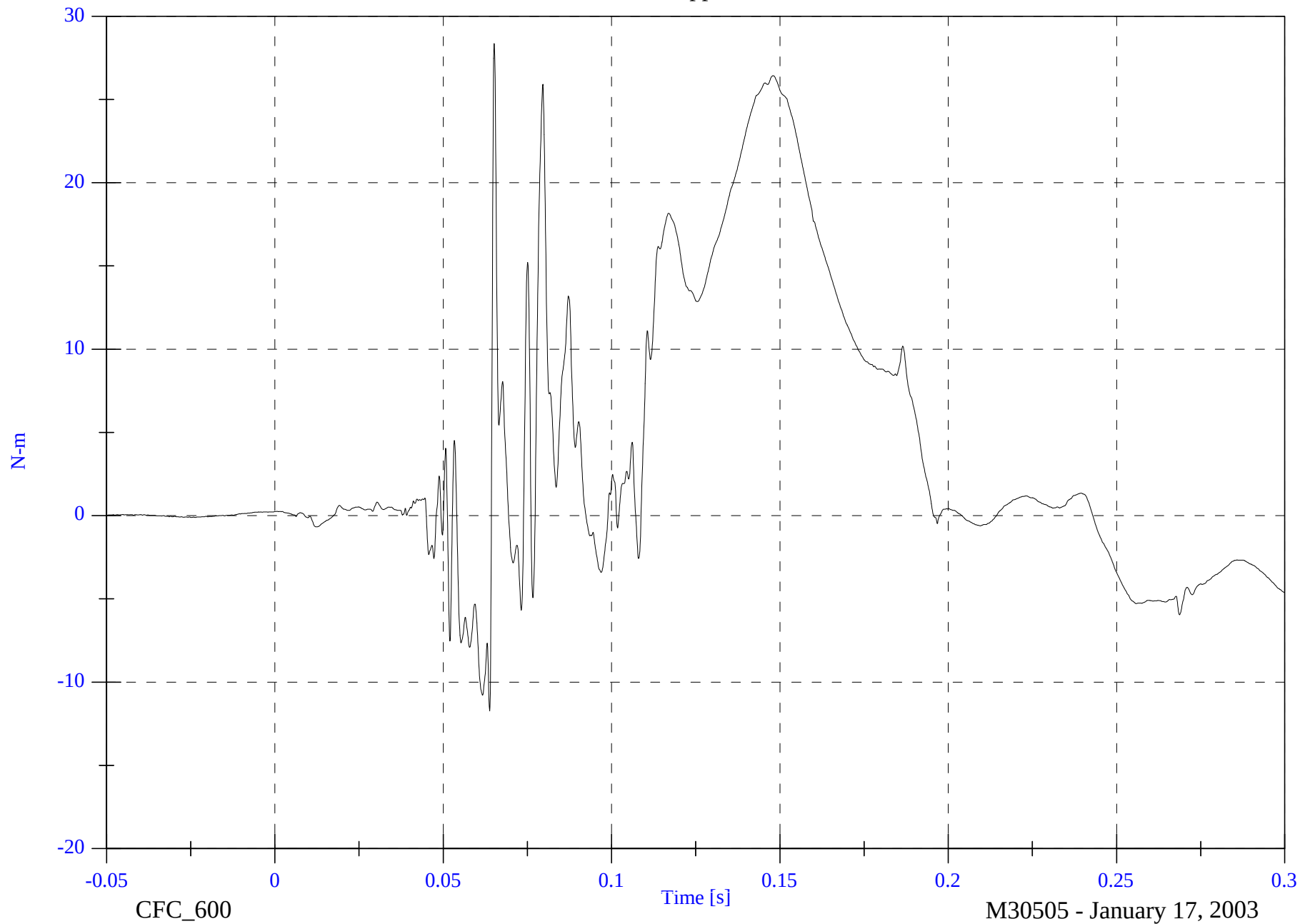


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Left Upper Tibia Mx

Max: 28.4 [N-m] at 0.065 [s]

Min: -11.7 [N-m] at 0.064 [s]



B-45

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

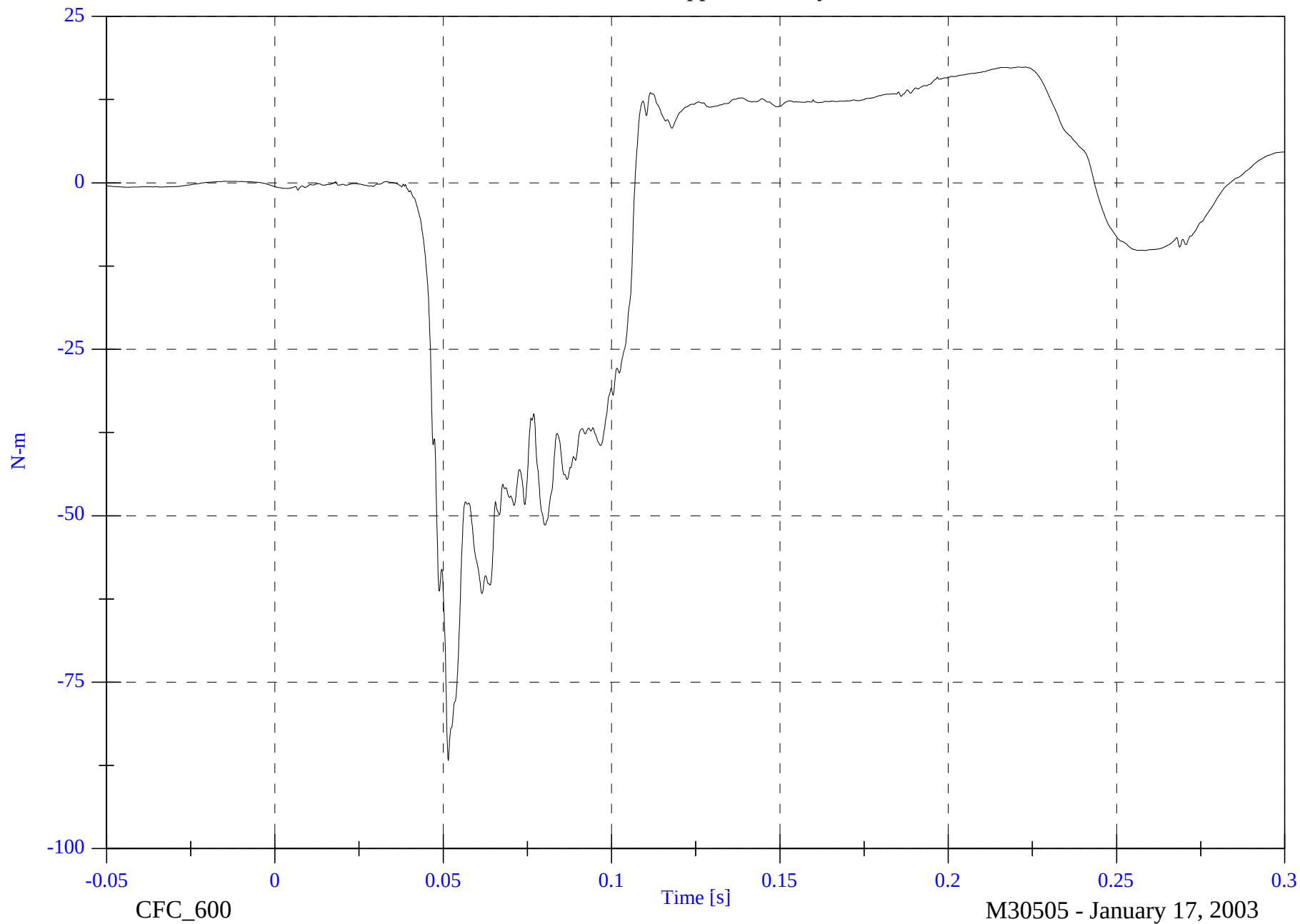
V1P1 Left upper Tibia My

Max: 17.4 [N-m] at 0.221 [s]

Min: -86.8 [N-m] at 0.051 [s]

B-46

8642-NCAP-27

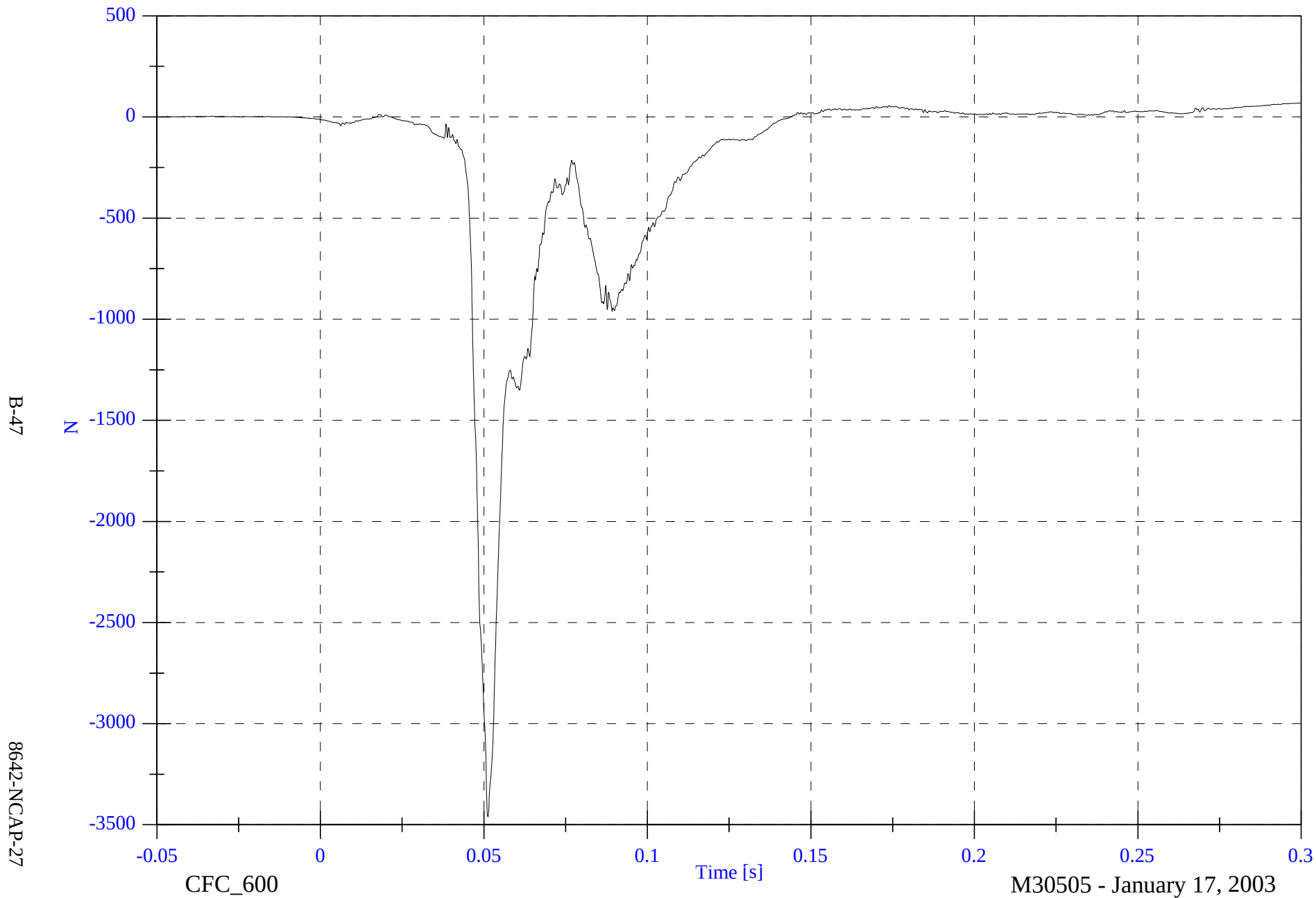


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Left Lower Tibia Fz

Max: 69.6 [N] at 0.299 [s]

Min: -3460.4 [N] at 0.051 [s]

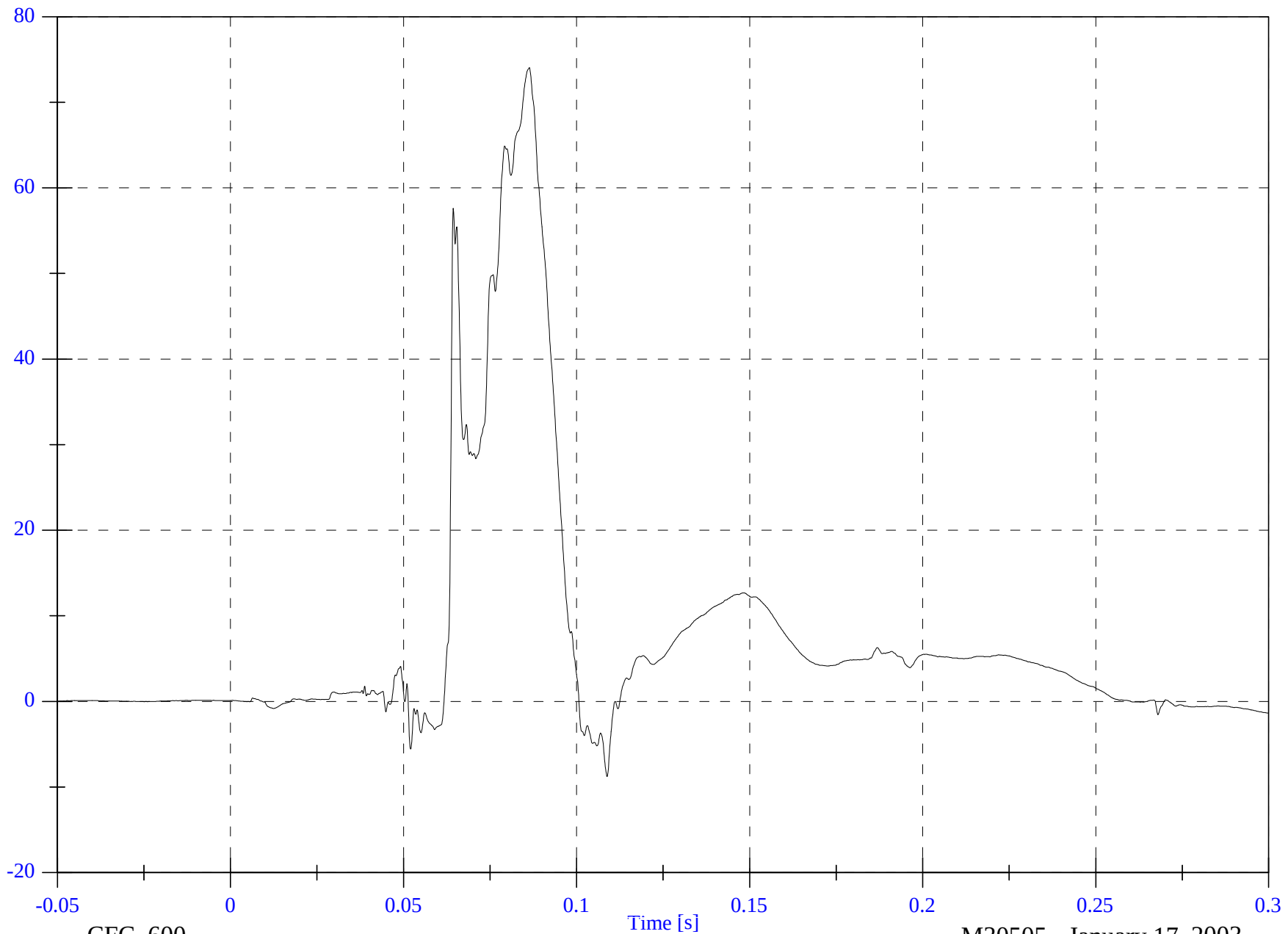


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Left Lower Tibia Mx

Max: 74.1 [N-m] at 0.086 [s]

Min: -8.8 [N-m] at 0.109 [s]



B-48

8642-NCAP-27

CFC_600

M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

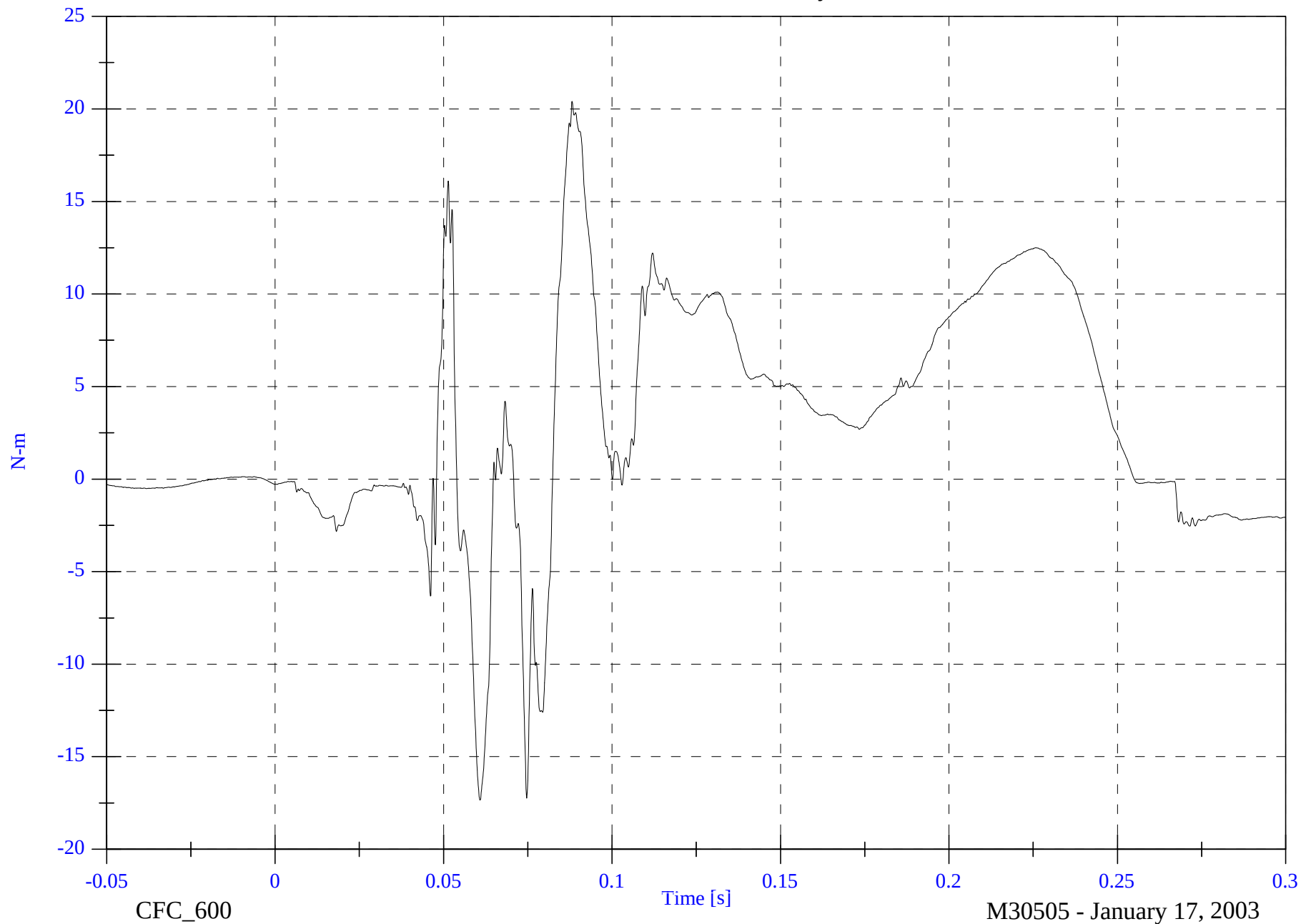
V1P1 Left Lower tibia My

Max: 20.4 [N-m] at 0.088 [s]

Min: -17.3 [N-m] at 0.061 [s]

B-49

8642-NCAP-27

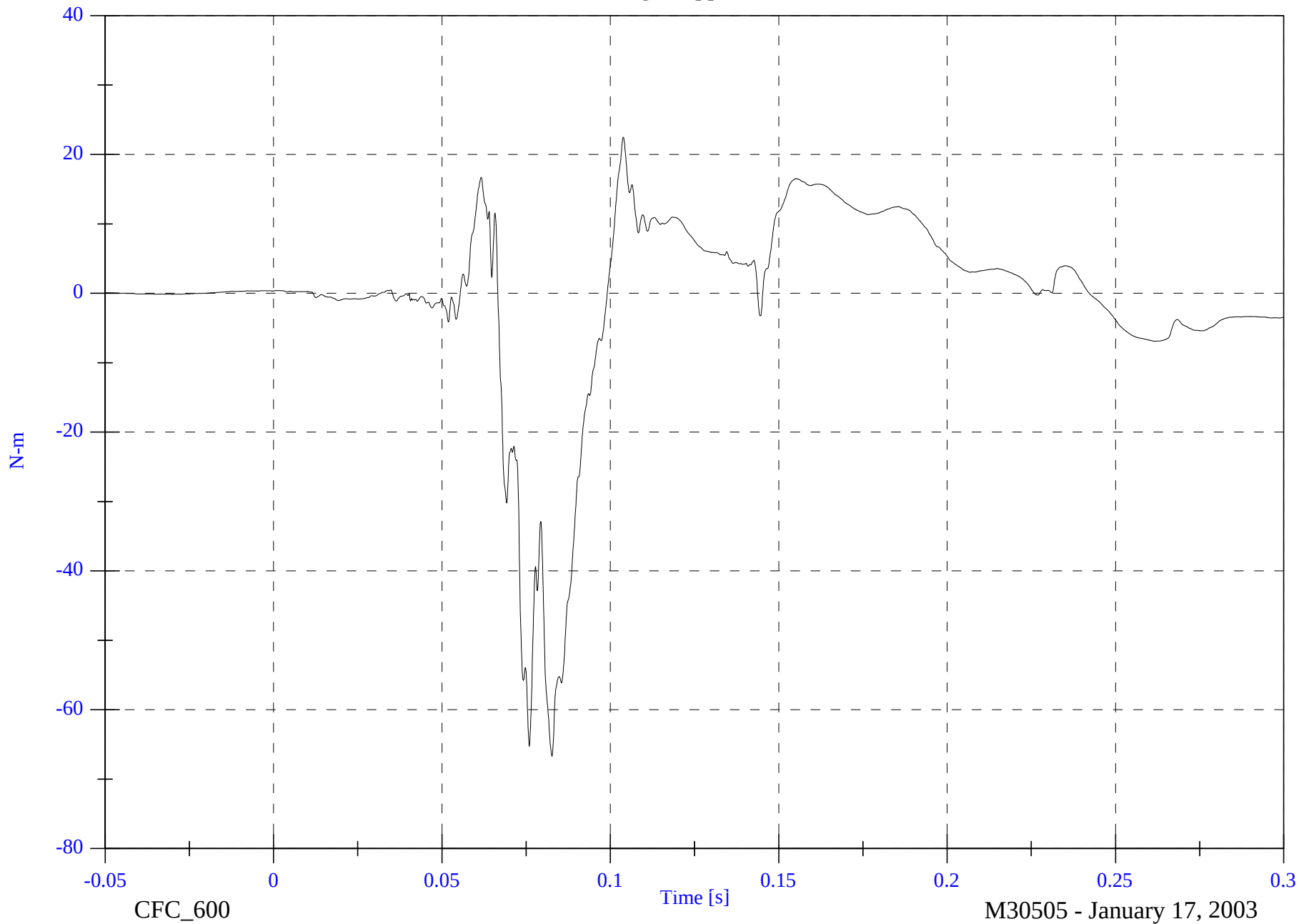


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Right Upper Tibia Mx

Max: 22.5 [N-m] at 0.104 [s]

Min: -66.7 [N-m] at 0.083 [s]



B-50

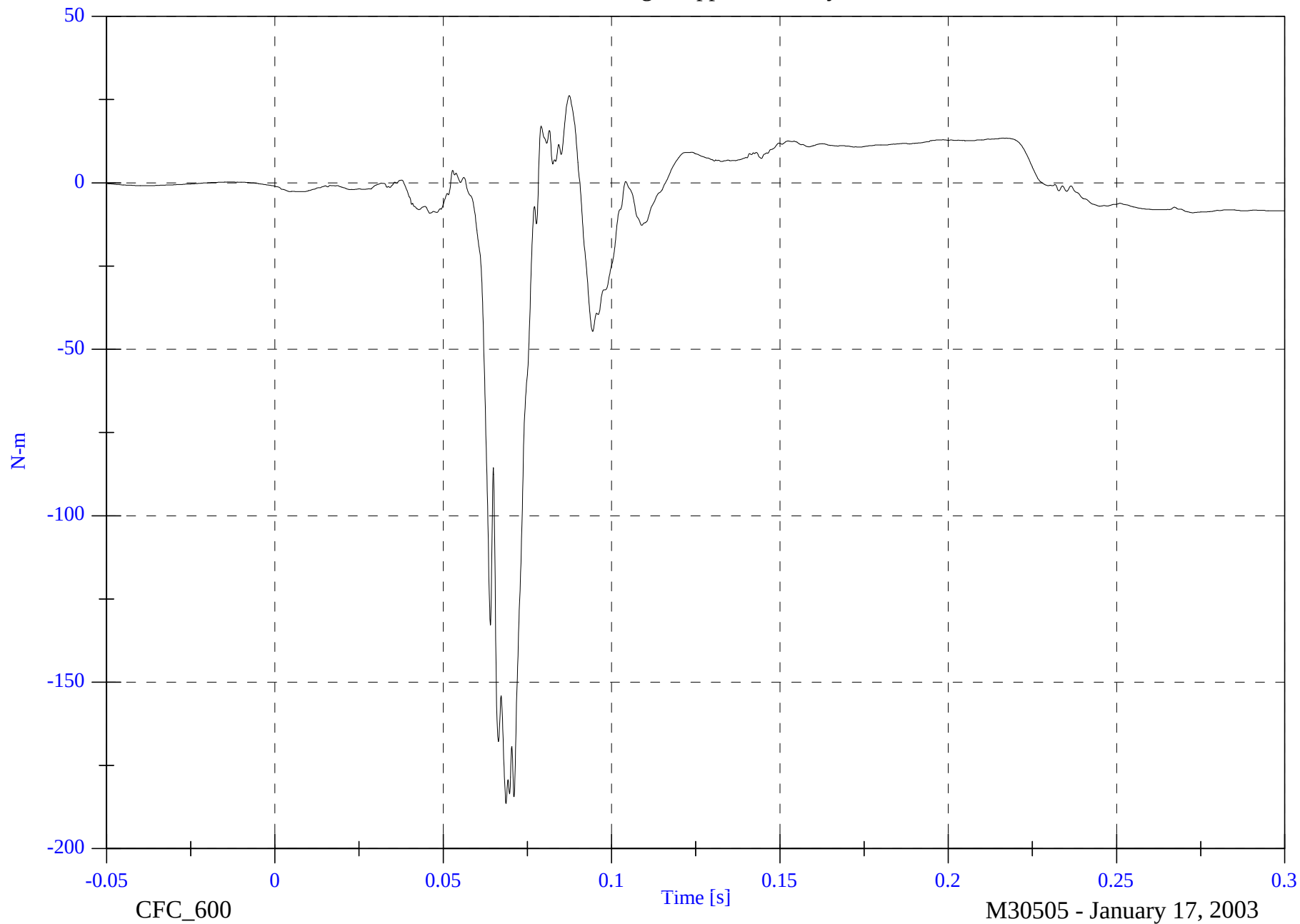
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P1 Right Upper Tibia My

Max: 26.2 [N-m] at 0.087 [s]

Min: -186.4 [N-m] at 0.069 [s]



B-51

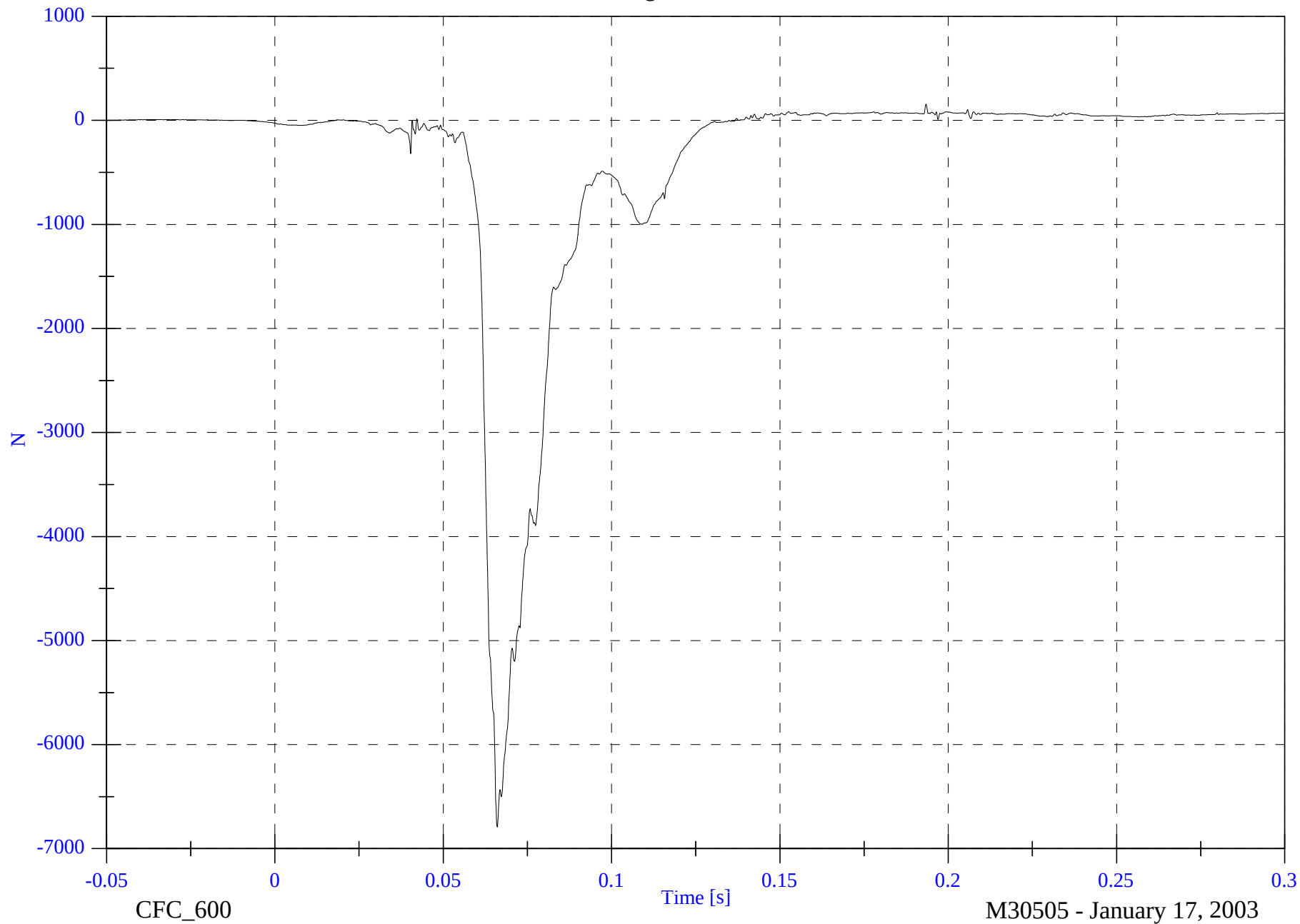
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P1 Right Lower Tibia Fz

Max: 156.2 [N] at 0.193 [s]

Min: -6792.1 [N] at 0.066 [s]



B-52

8642-NCAP-27

CFC_600

Time [s]

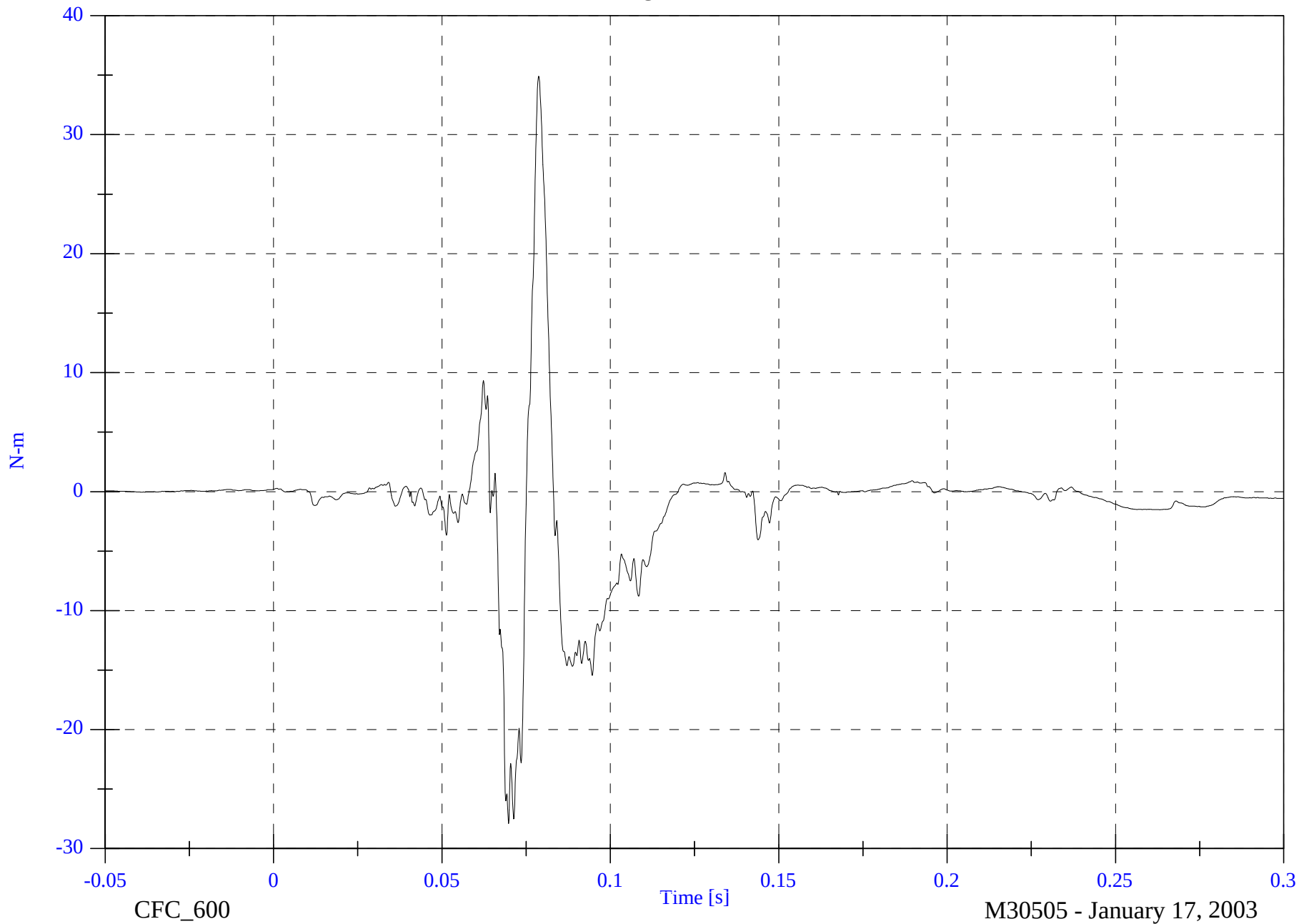
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P1 Right Lower tibia Mx

Max: 34.9 [N-m] at 0.079 [s]

Min: -27.9 [N-m] at 0.070 [s]



B-53

8642-NCAP-27

CFC_600

Time [s]

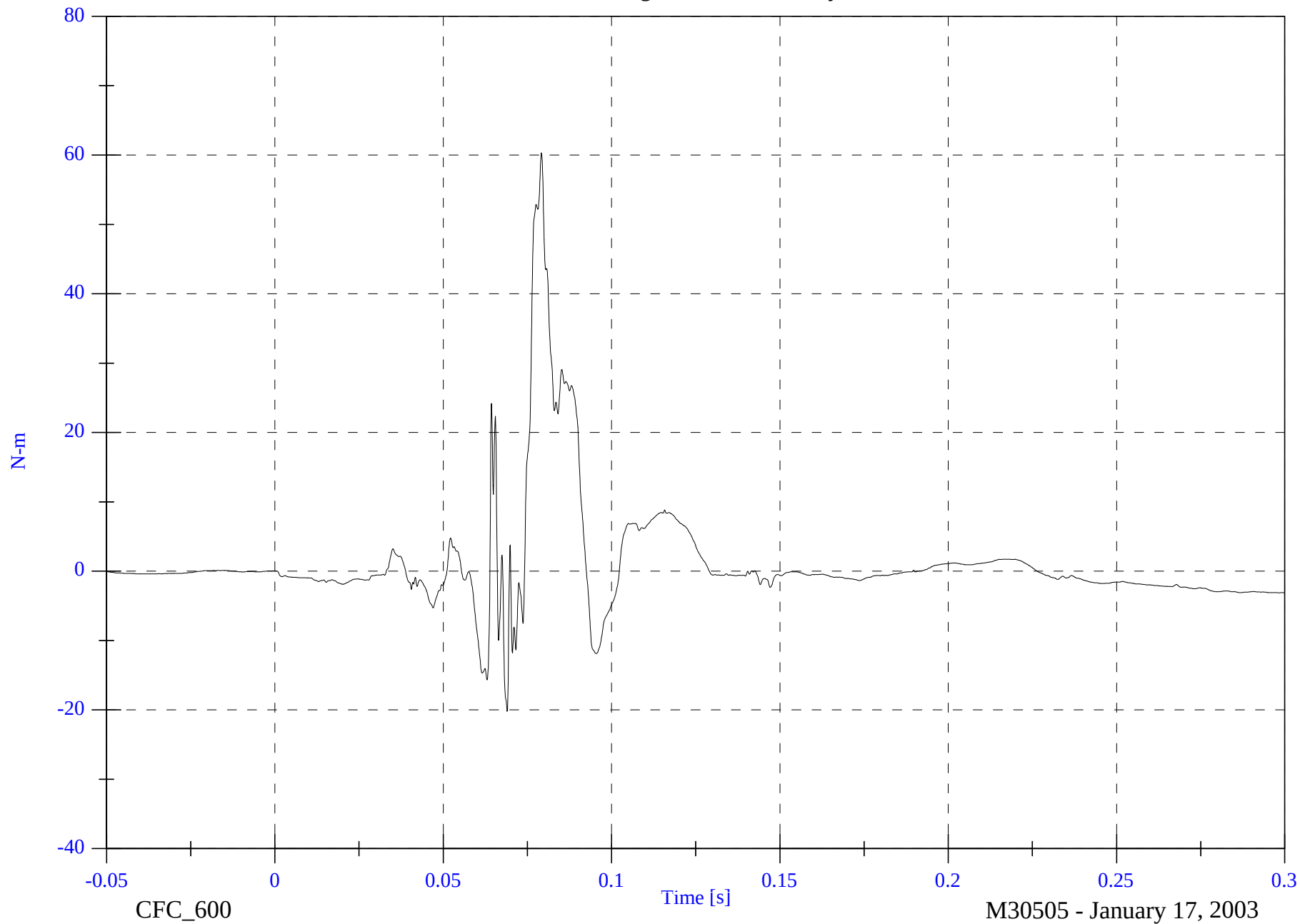
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P1 Right Lower Tibia My

Max: 60.3 [N-m] at 0.079 [s]

Min: -20.2 [N-m] at 0.069 [s]



B-54

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

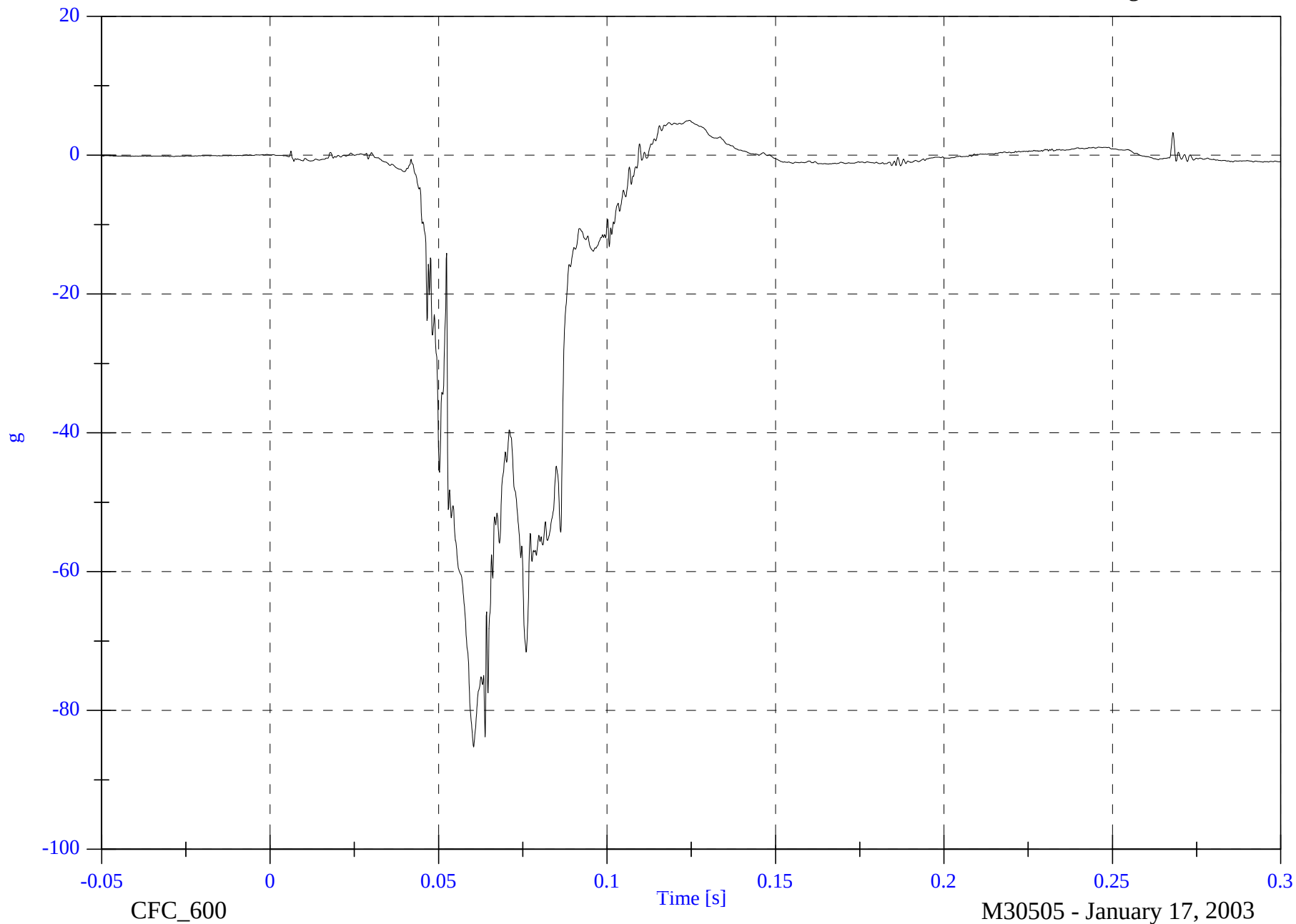
V1P1 Left Foot Aft Ax

Max: 5.0 [g] at 0.124 [s]

Min: -85.2 [g] at 0.060 [s]

B-55

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

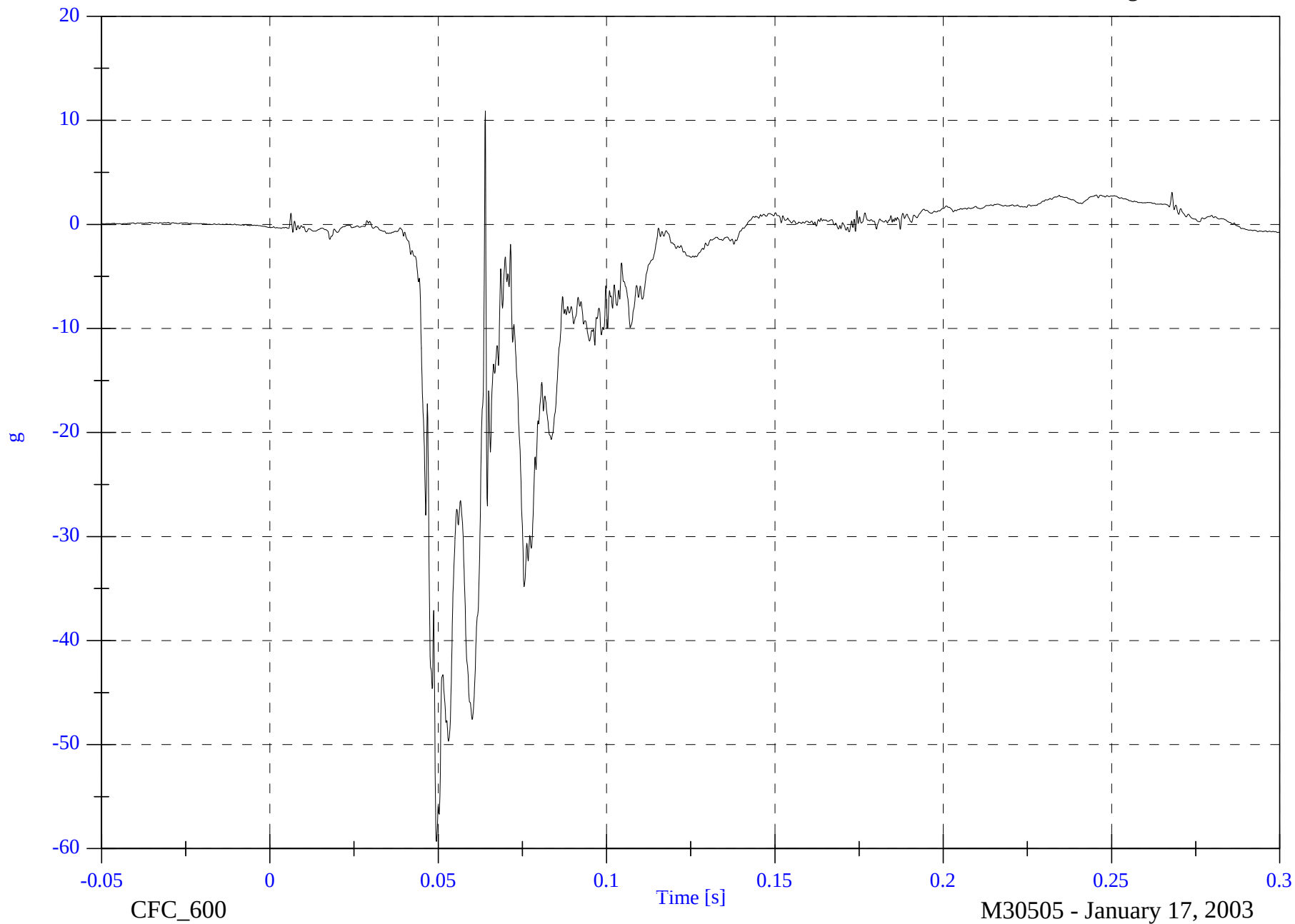
V1P1 Left Foot Aft Az

Max: 10.9 [g] at 0.064 [s]

Min: -59.3 [g] at 0.049 [s]

B-56

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

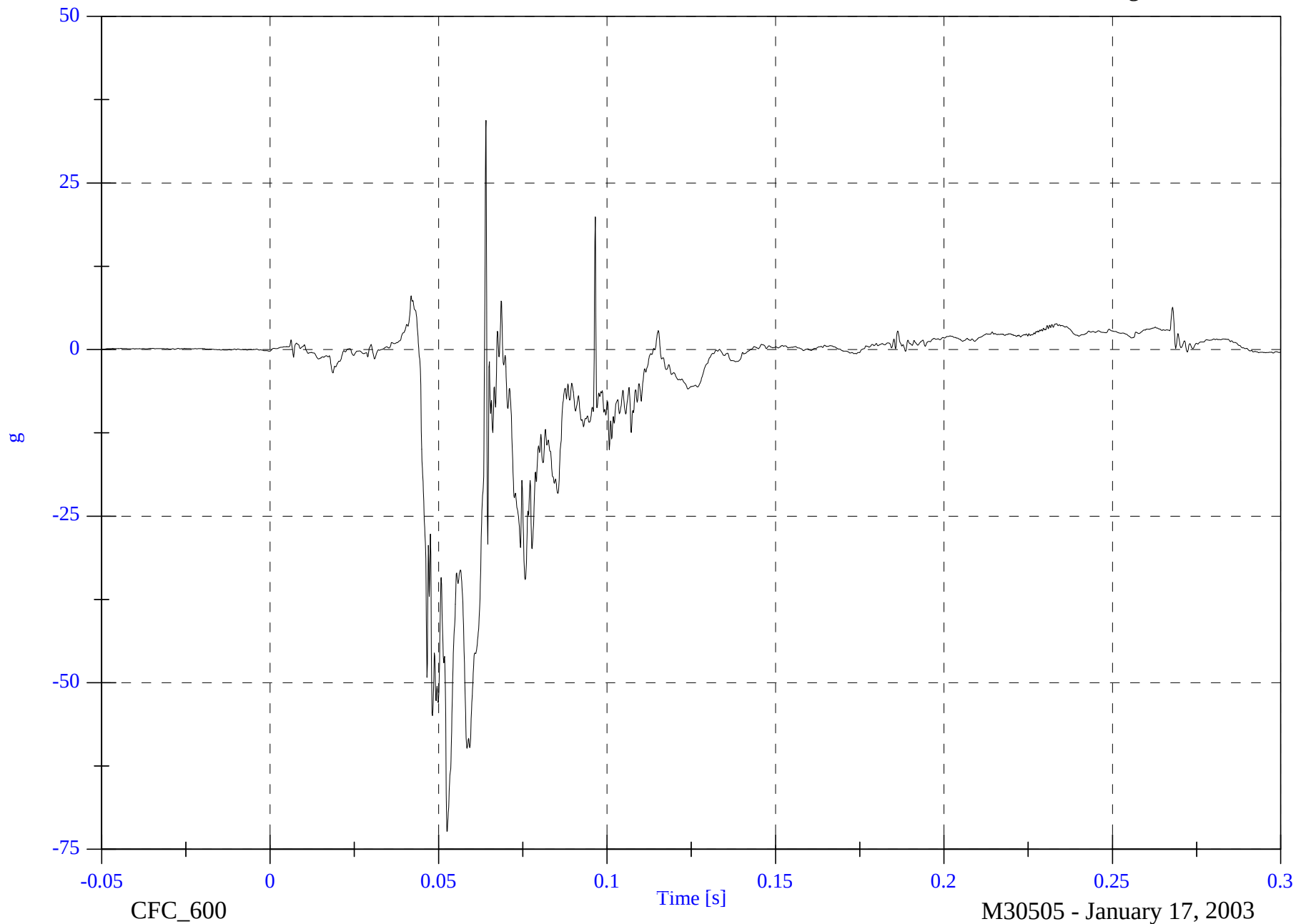
V1P1 Left Foot Fore Az

Max: 34.4 [g] at 0.064 [s]

Min: -72.3 [g] at 0.053 [s]

B-57

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

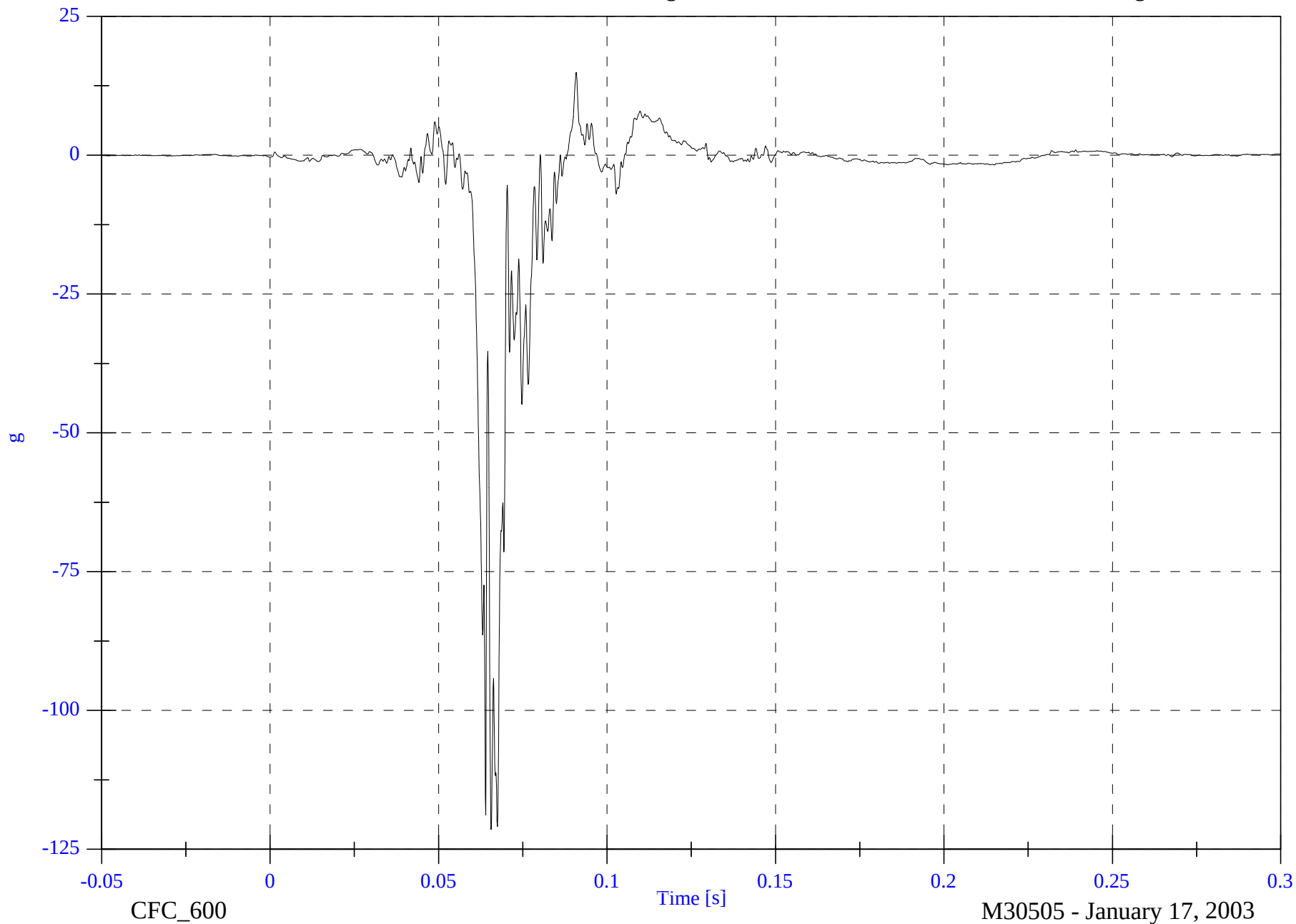
V1P1 Right Foot Aft x

Max: 14.9 [g] at 0.091 [s]

Min: -121.5 [g] at 0.066 [s]

B-58

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

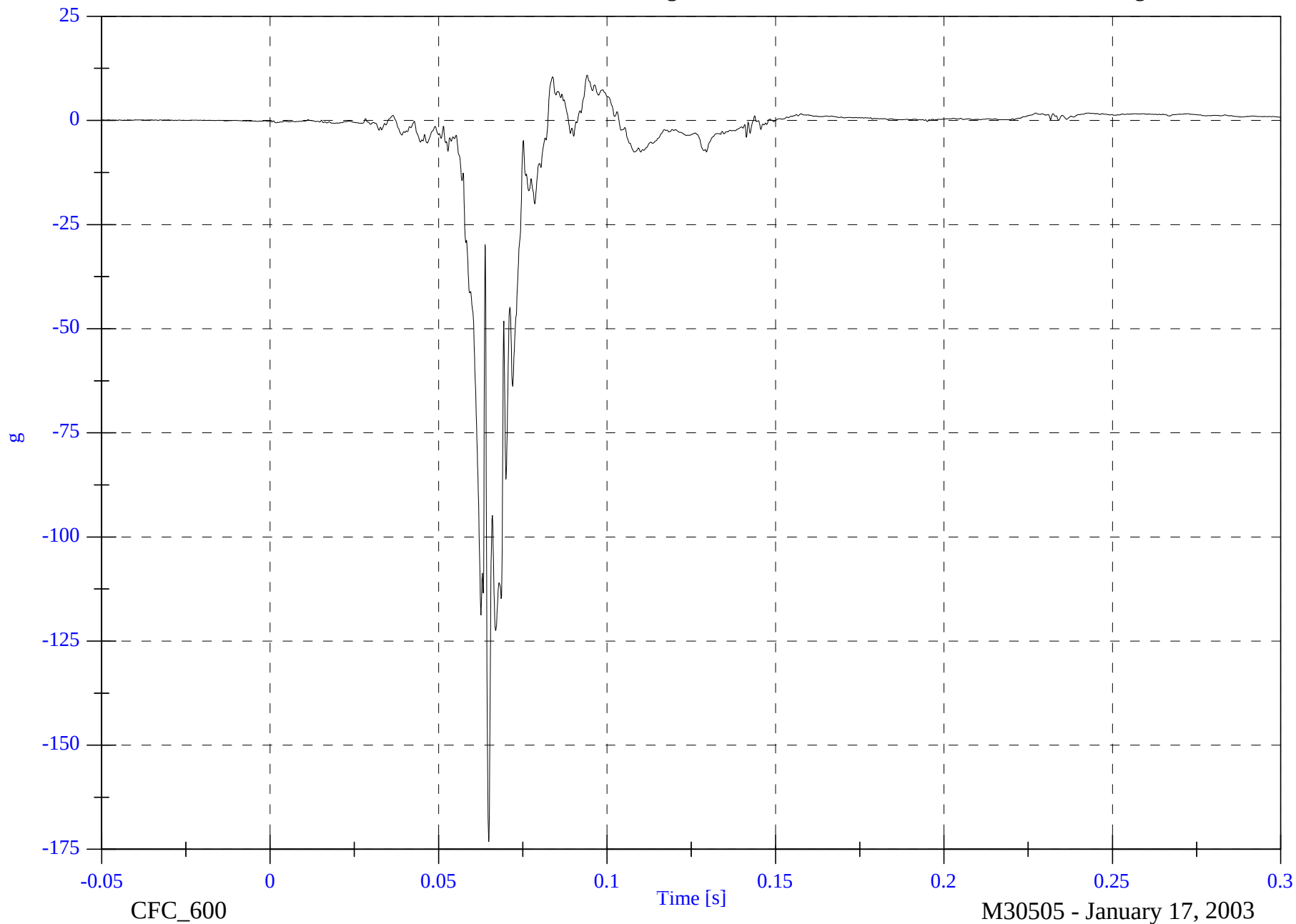
V1P1 Right Foot Aft z

Max: 10.9 [g] at 0.094 [s]

Min: -173.2 [g] at 0.065 [s]

B-59

8642-NCAP-27

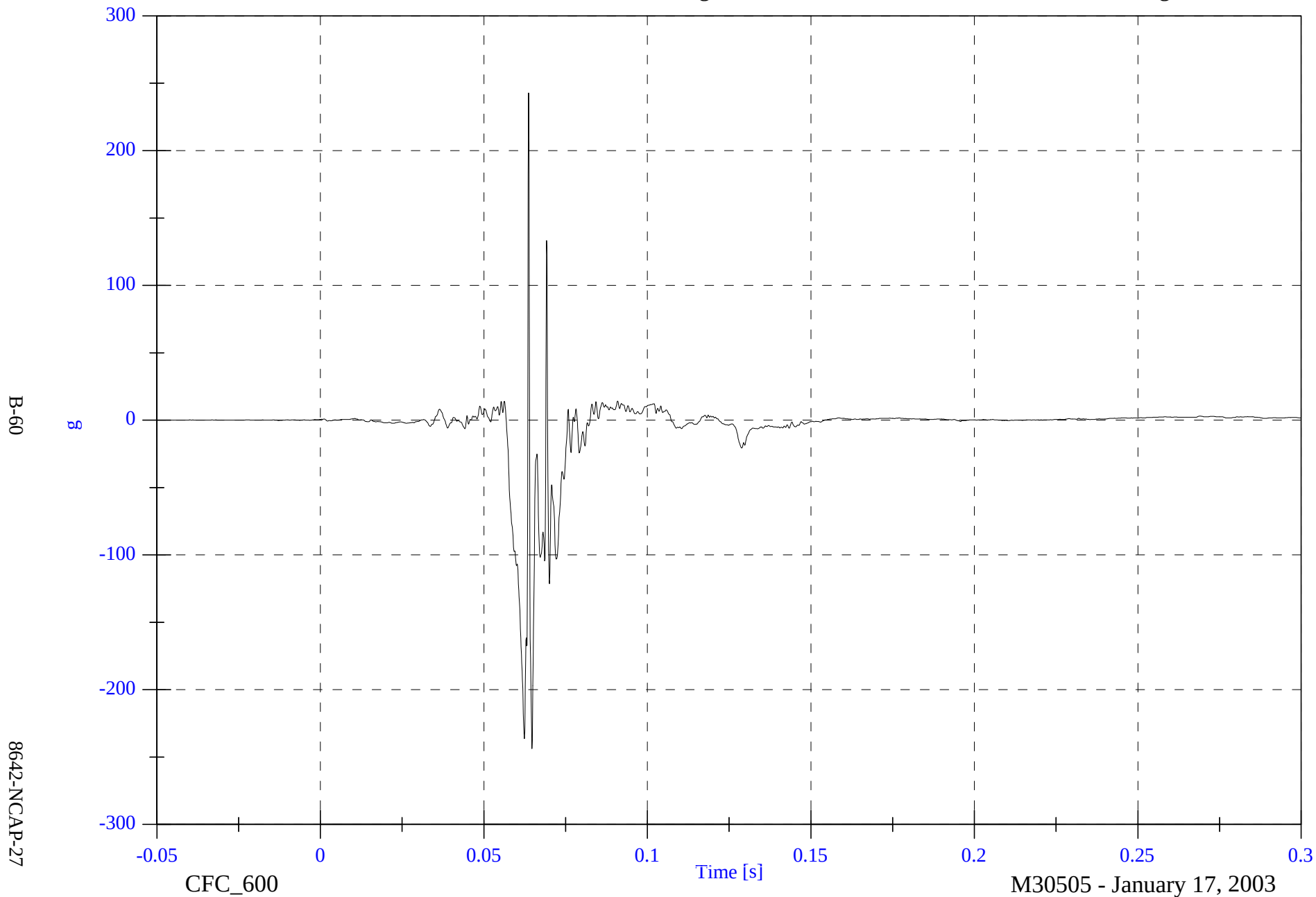


NCAP Test #5 - 2003 Hyundai Accent

V1P1 Right Foot Fore z

Max: 242.9 [g] at 0.064 [s]

Min: -243.6 [g] at 0.065 [s]



NCAP Test #5 - 2003 Hyundai Accent

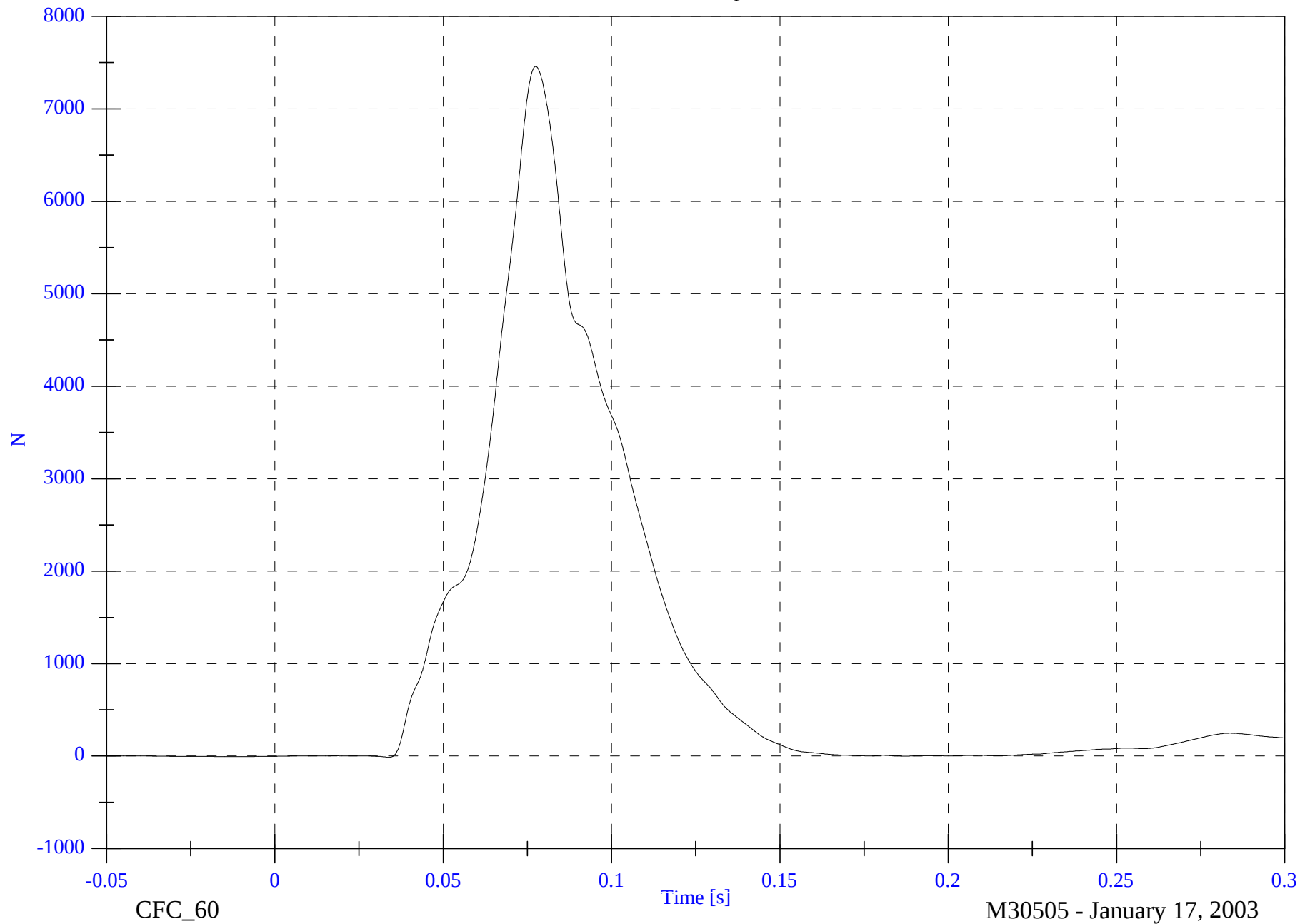
V1 Driver Lap Belt

Max: 7458.0 [N] at 0.077 [s]

Min: -12.7 [N] at 0.034 [s]

B-61

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

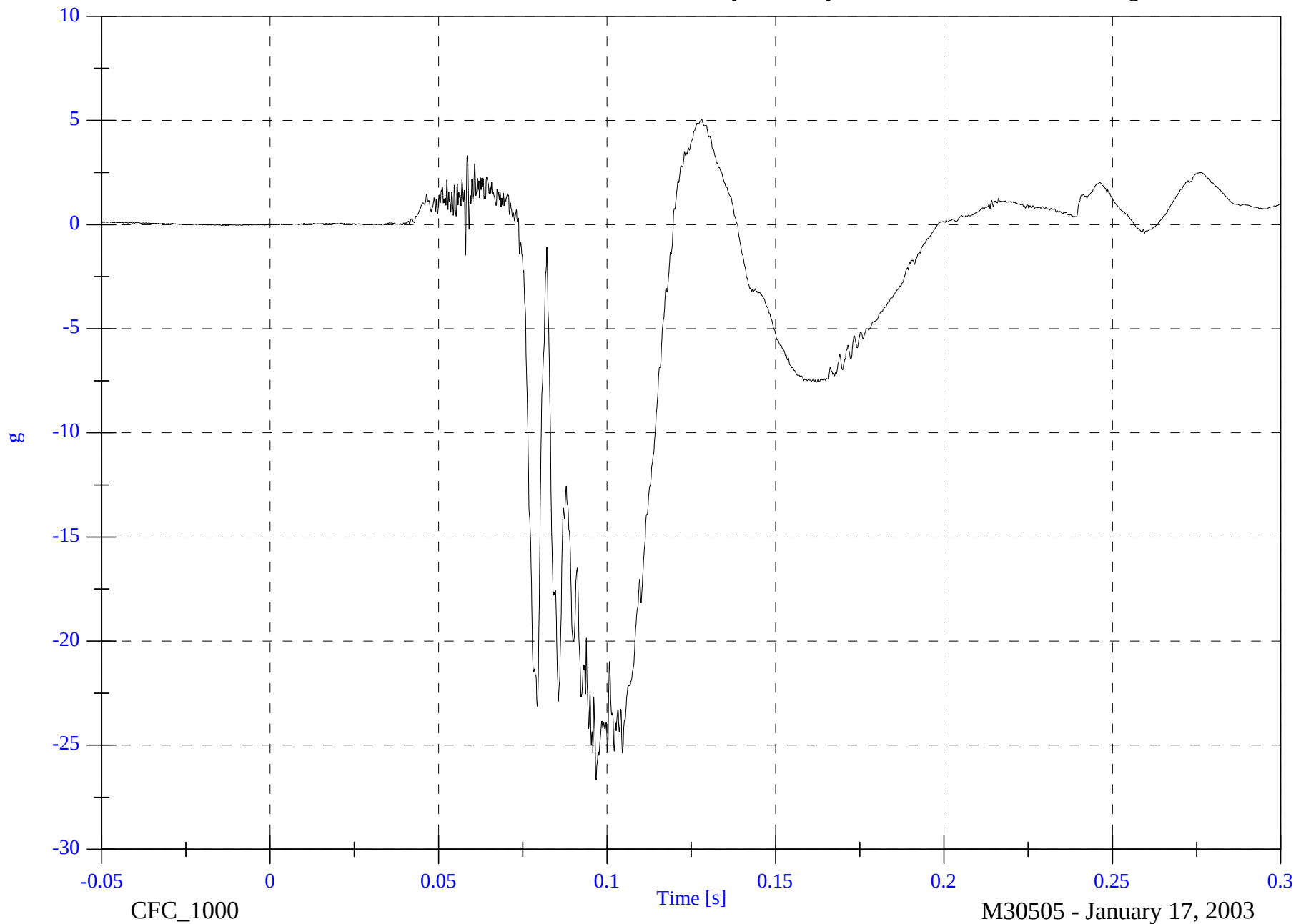
V1P2 Head 9 Array X Arm y

Max: 5.1 [g] at 0.128 [s]

Min: -26.7 [g] at 0.097 [s]

B-62

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

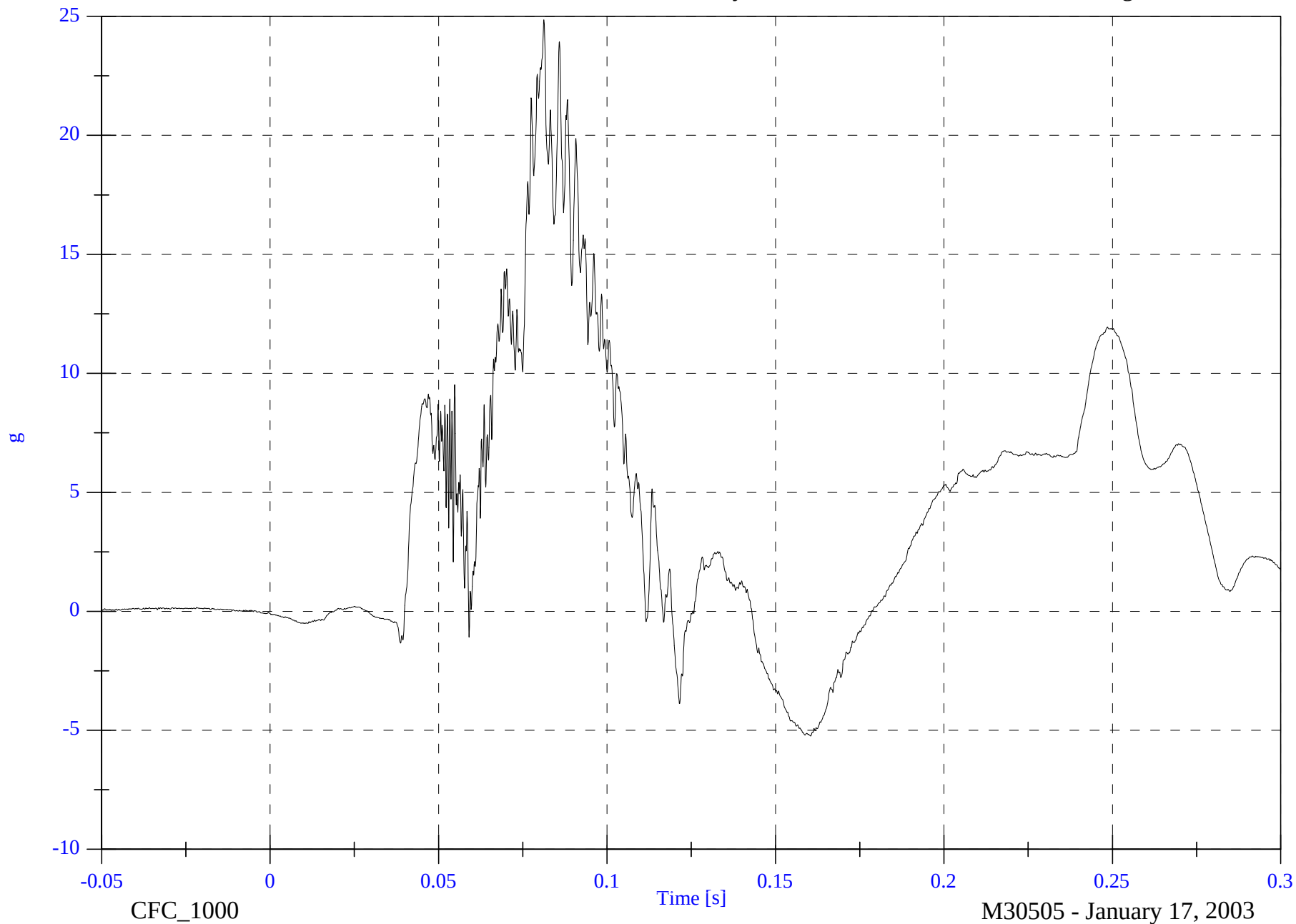
V1P2 Head 9 Array X Arm z

Max: 24.9 [g] at 0.081 [s]

Min: -5.2 [g] at 0.160 [s]

B-63

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

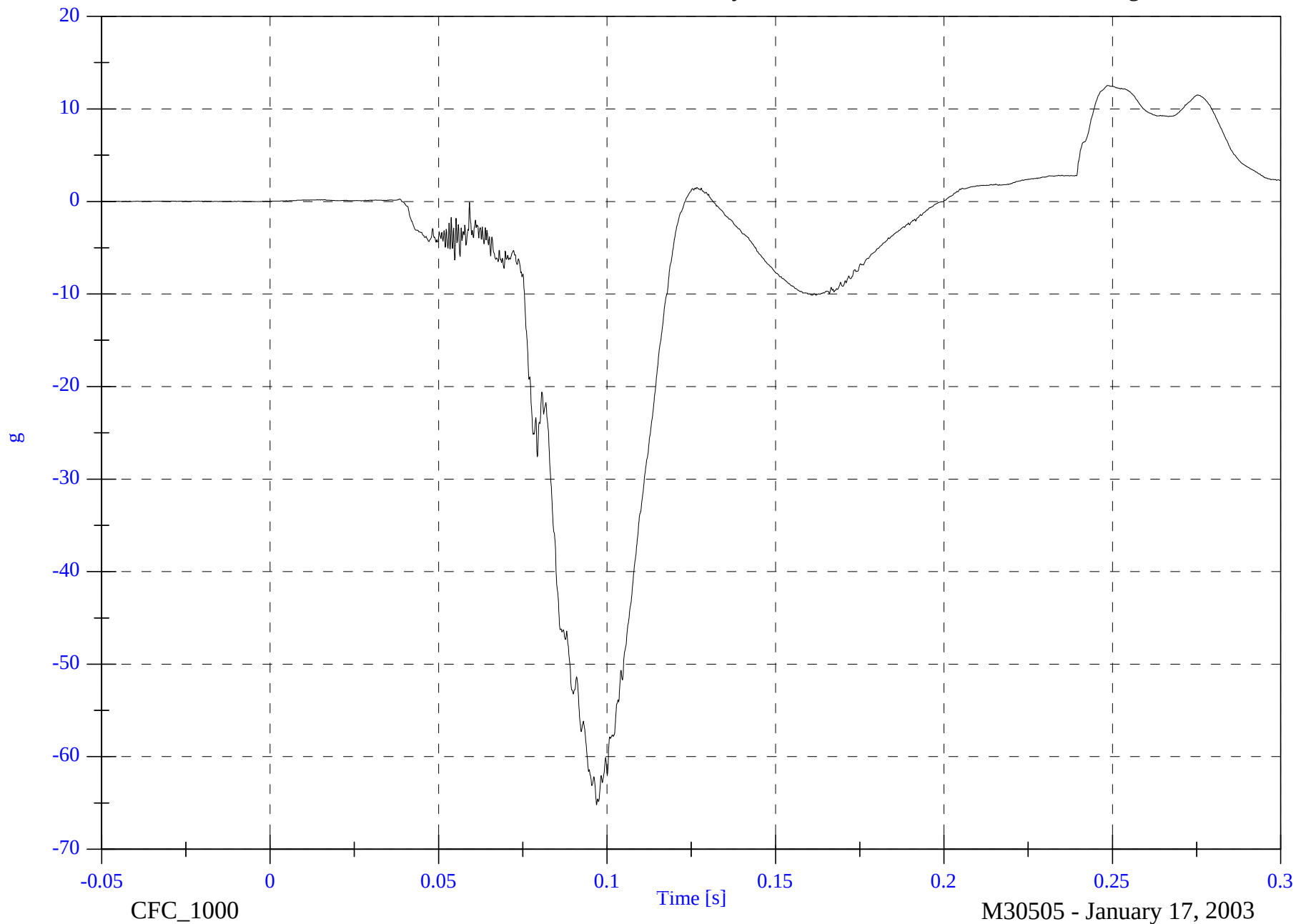
V1P2 Head 9 Array Y Arm x

Max: 12.5 [g] at 0.248 [s]

Min: -65.2 [g] at 0.097 [s]

B-64

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

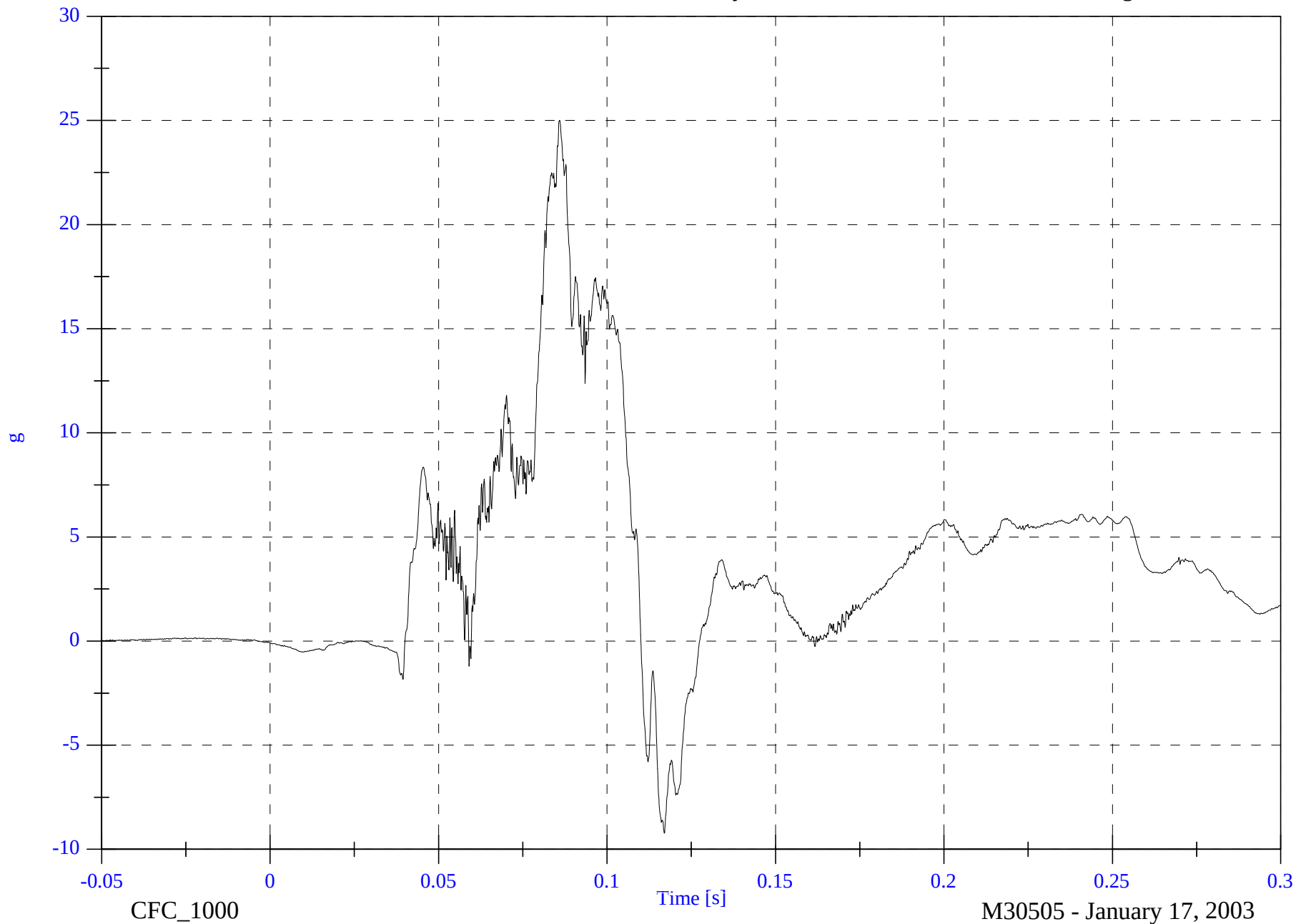
V1P2 Head 9 Array Y Arm z

Max: 25.0 [g] at 0.086 [s]

Min: -9.2 [g] at 0.117 [s]

B-65

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

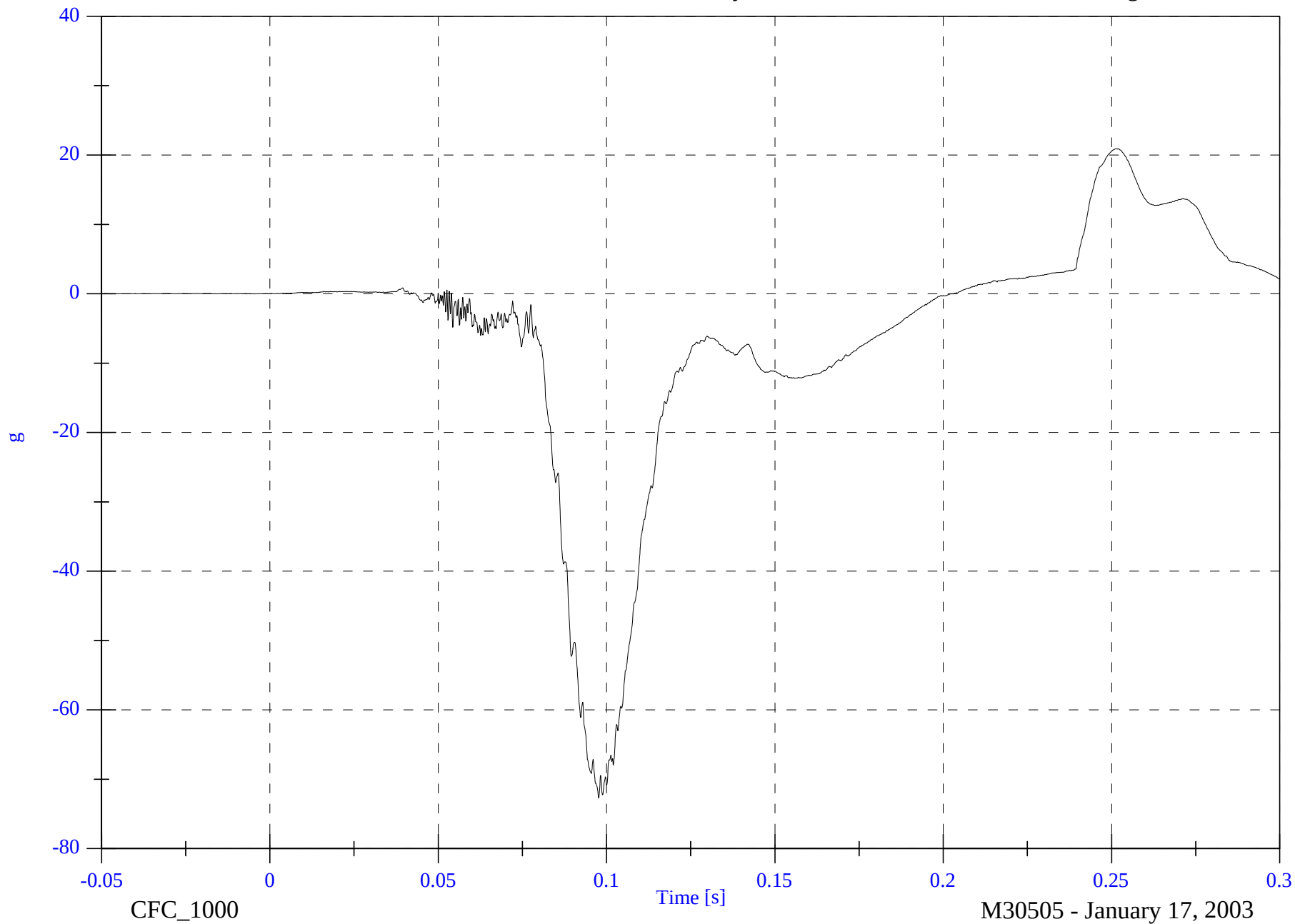
V1P2 Head 9 Array Z Arm x

Max: 20.9 [g] at 0.252 [s]

Min: -72.7 [g] at 0.098 [s]

B-66

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

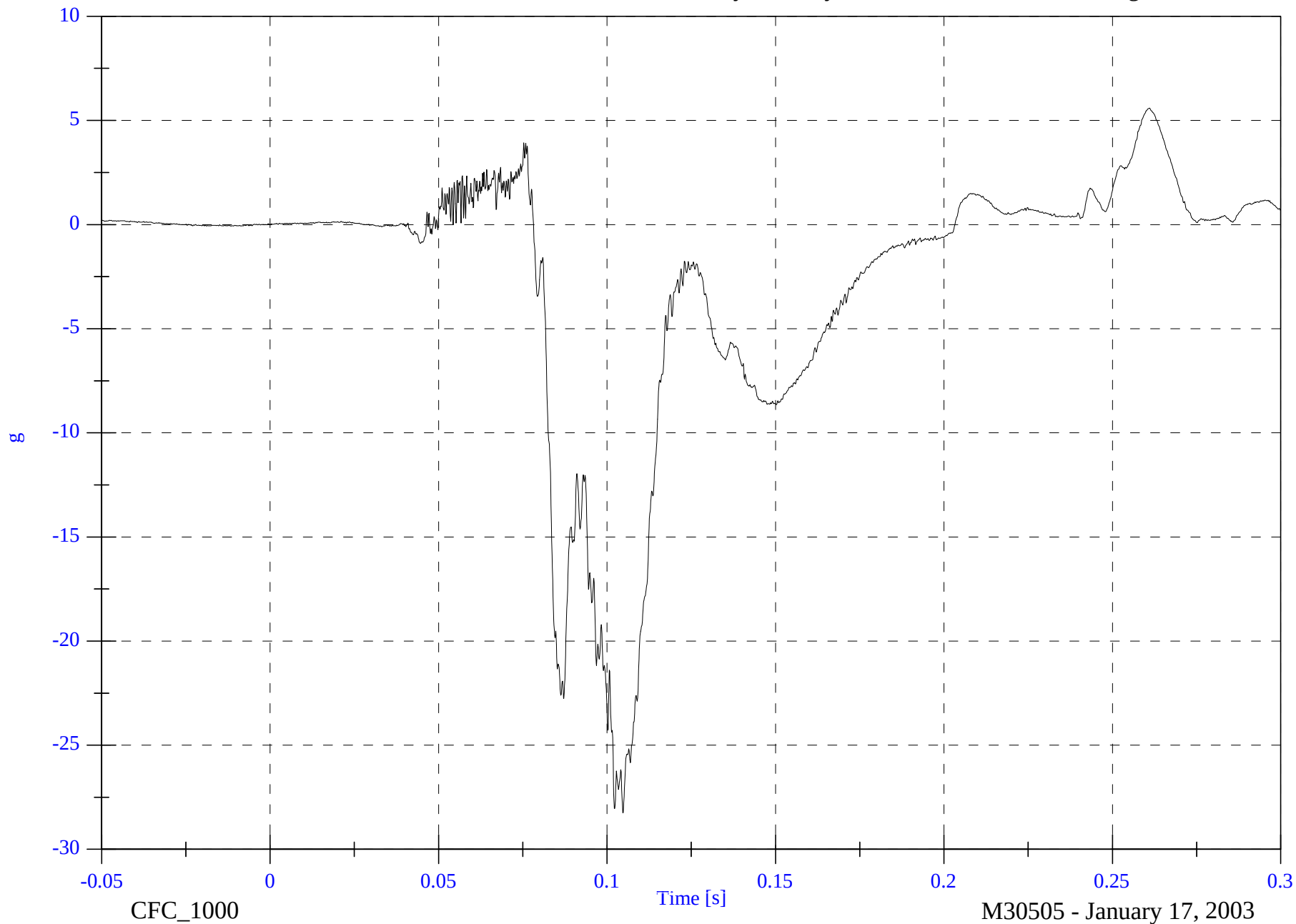
V1P2 Head 9 Array Z Arm y

Max: 5.6 [g] at 0.261 [s]

Min: -28.2 [g] at 0.105 [s]

B-67

8642-NCAP-27

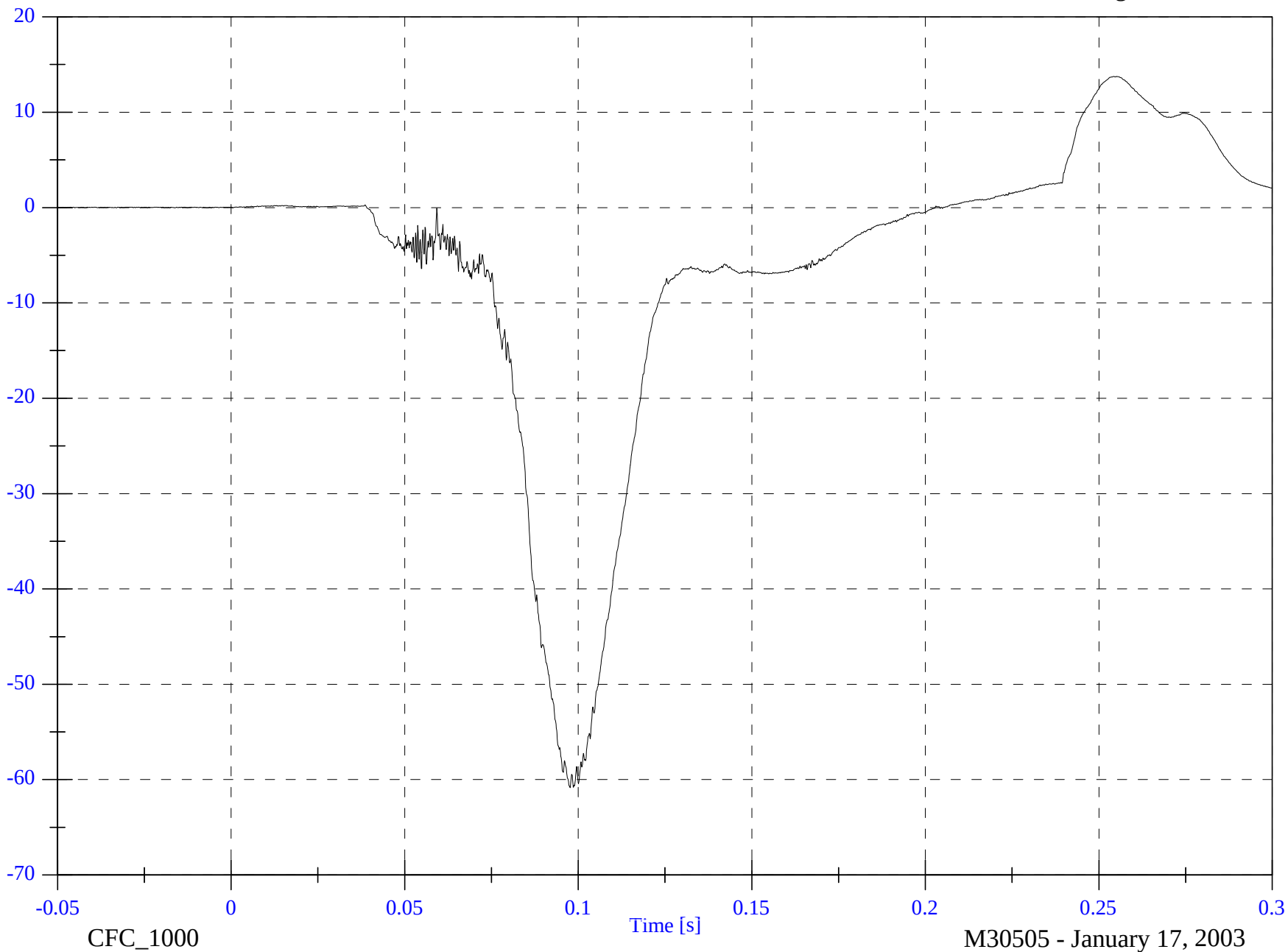


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Head CG x

Max: 13.7 [g] at 0.254 [s]

Min: -60.9 [g] at 0.098 [s]



B-68

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

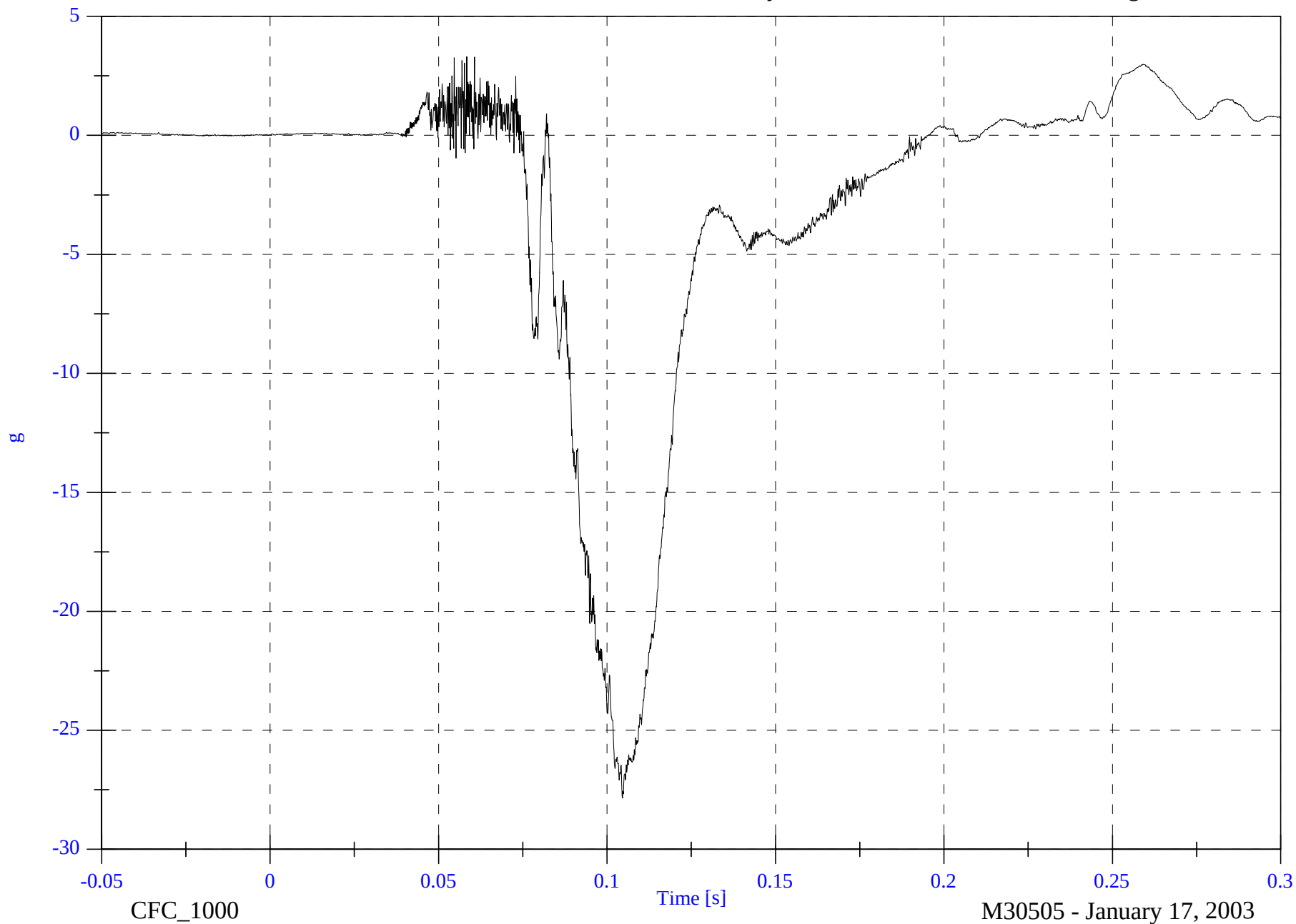
V1P2 Head CG y

Max: 3.3 [g] at 0.058 [s]

Min: -27.9 [g] at 0.105 [s]

B-69

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

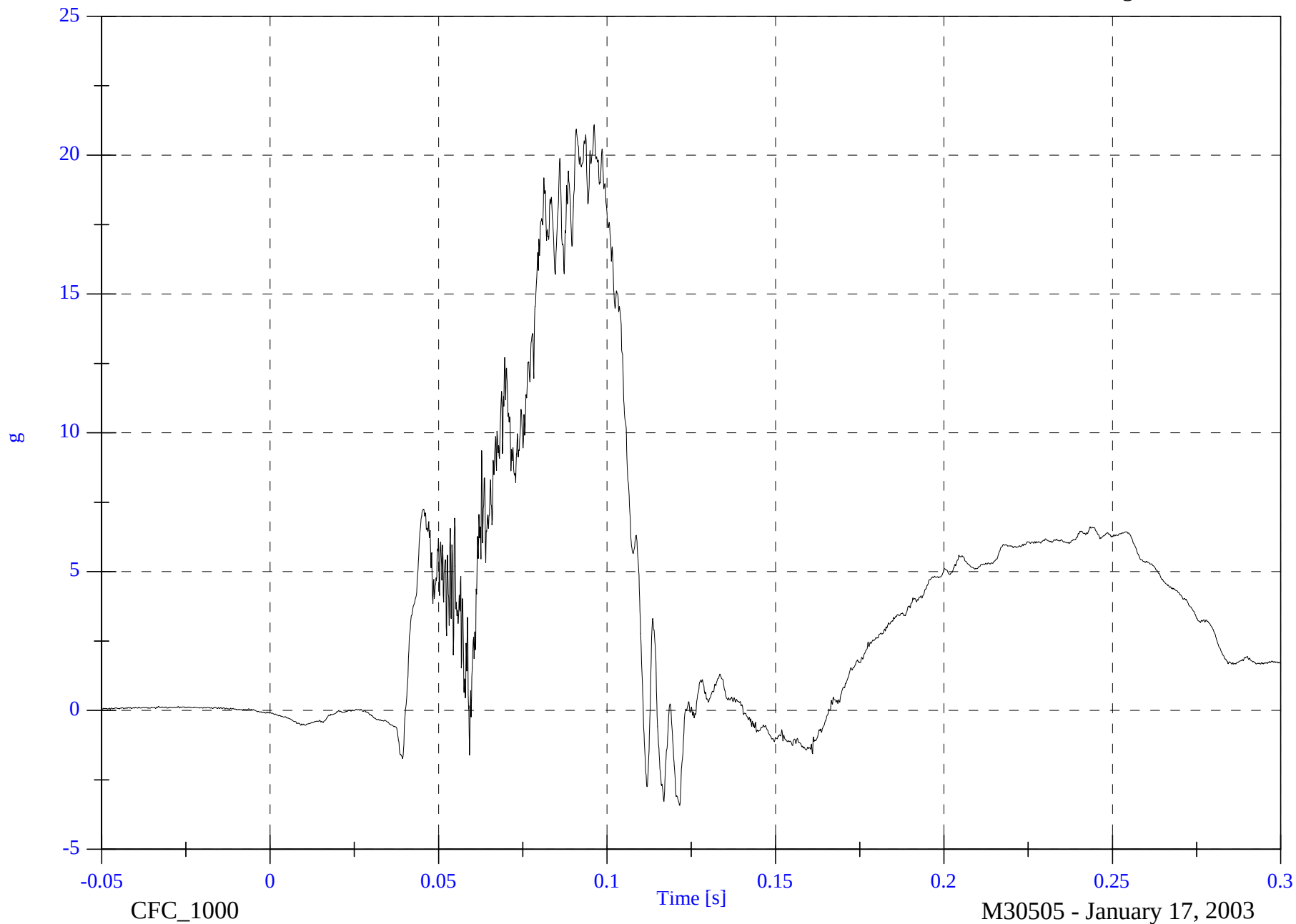
V1P2 Head CG z

Max: 21.1 [g] at 0.096 [s]

Min: -3.4 [g] at 0.122 [s]

B-70

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

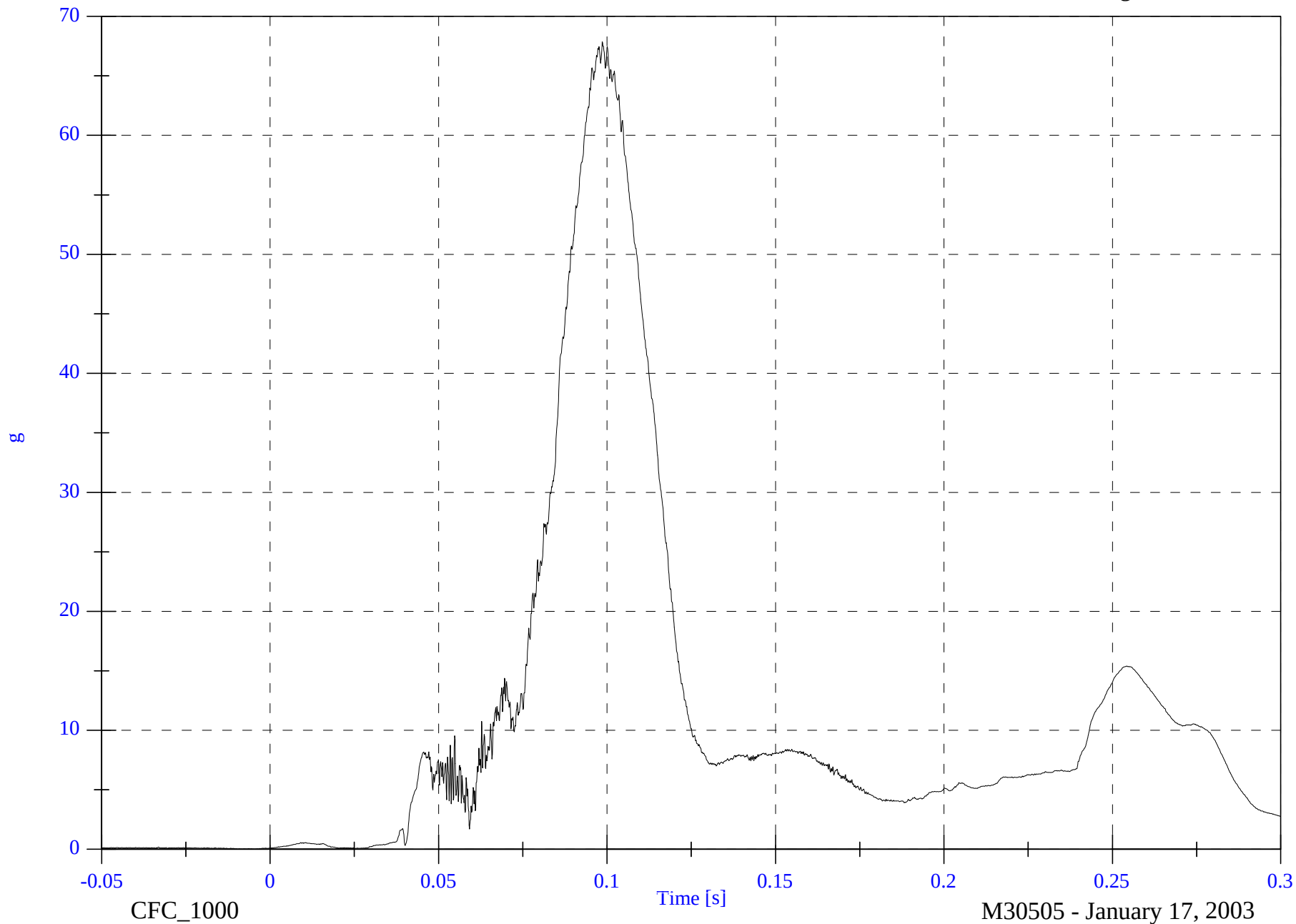
V1P2 Head CG Resultant

Max: 67.9 [g] at 0.099 [s]

Min: 0.0 [g] at -0.007 [s]

B-71

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

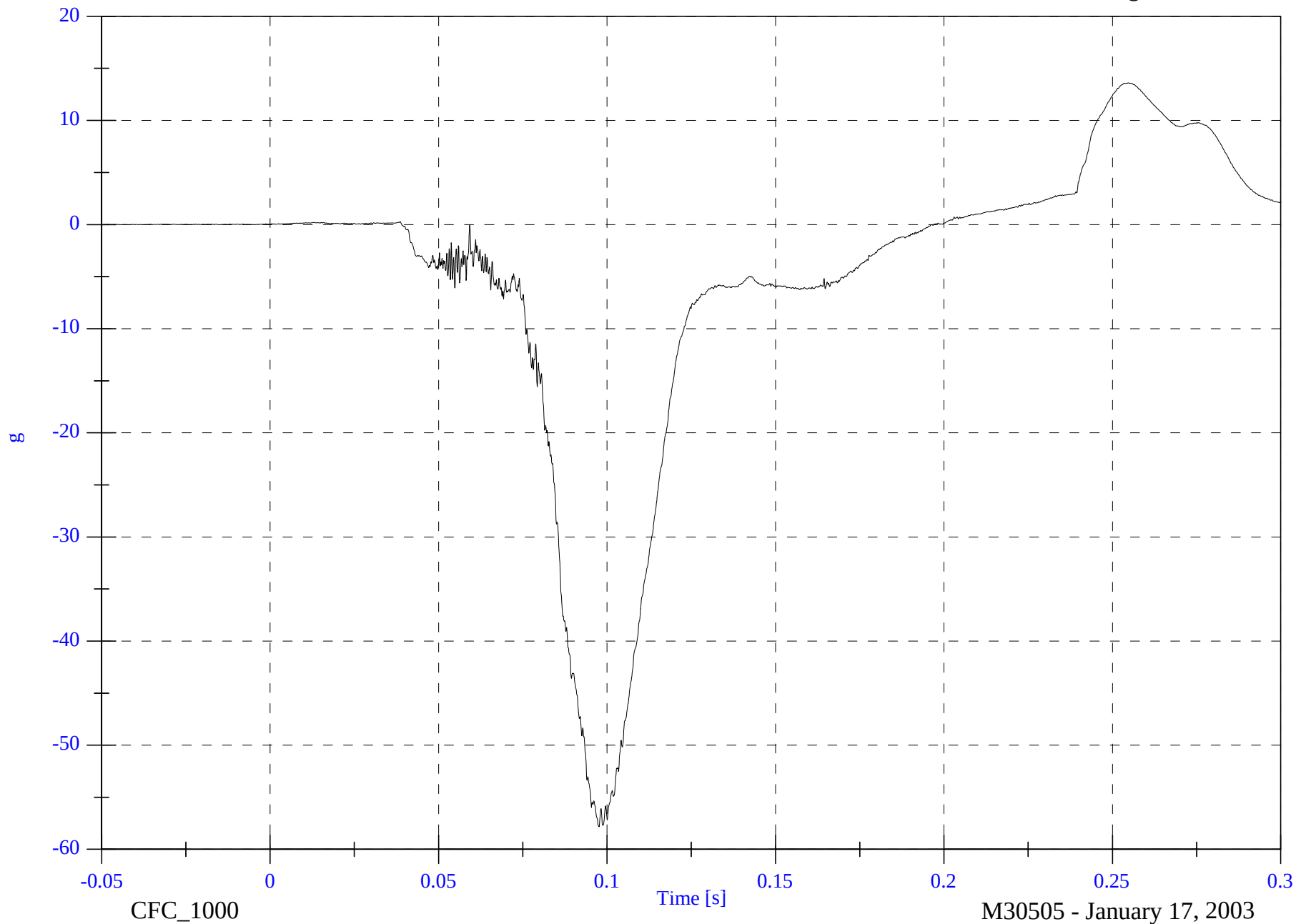
V1P2 Head CG Red x

Max: 13.6 [g] at 0.255 [s]

Min: -57.8 [g] at 0.098 [s]

B-72

8642-NCAP-27

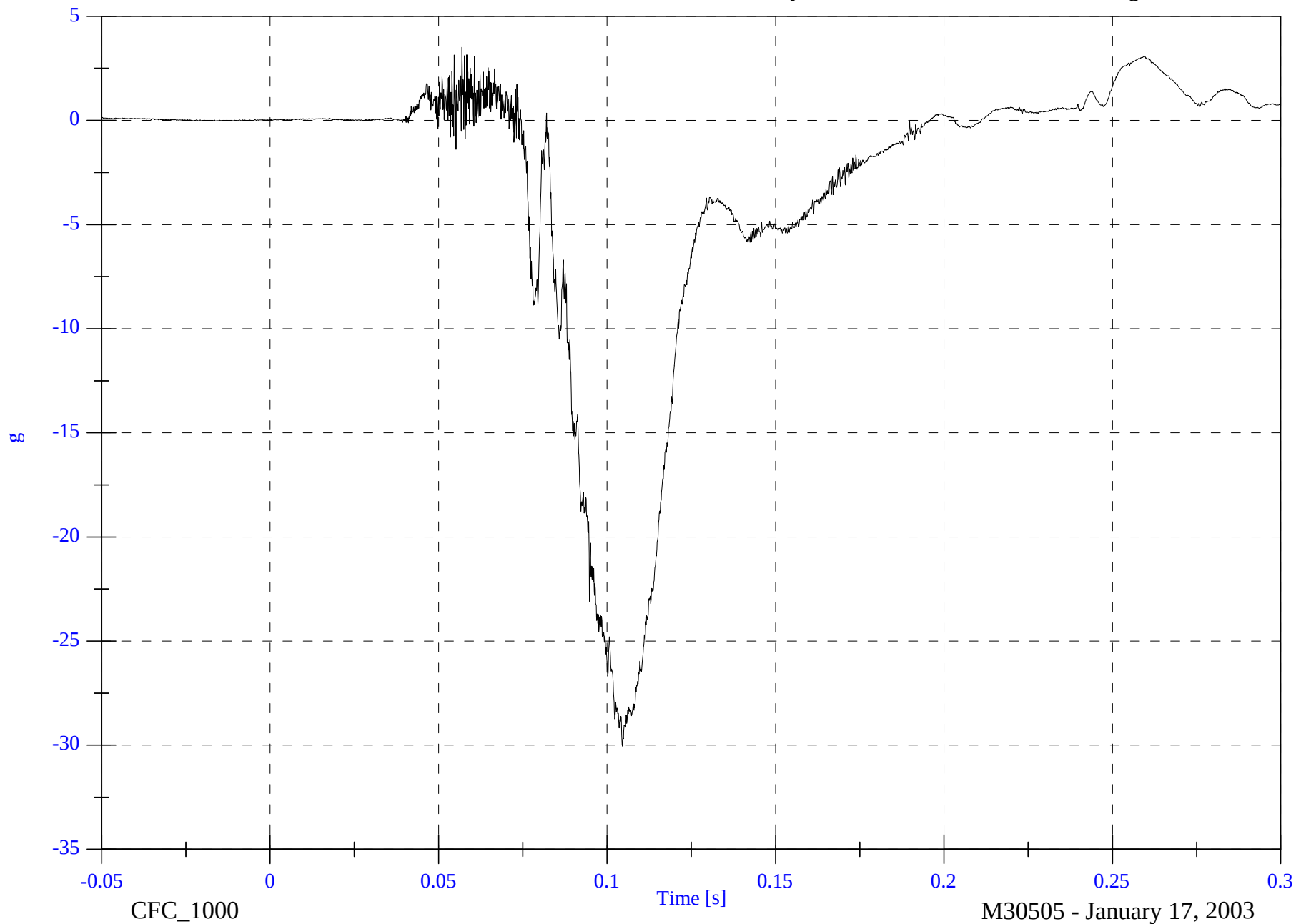


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Head CG Red y

Max: 3.5 [g] at 0.057 [s]

Min: -30.1 [g] at 0.105 [s]



B-73

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

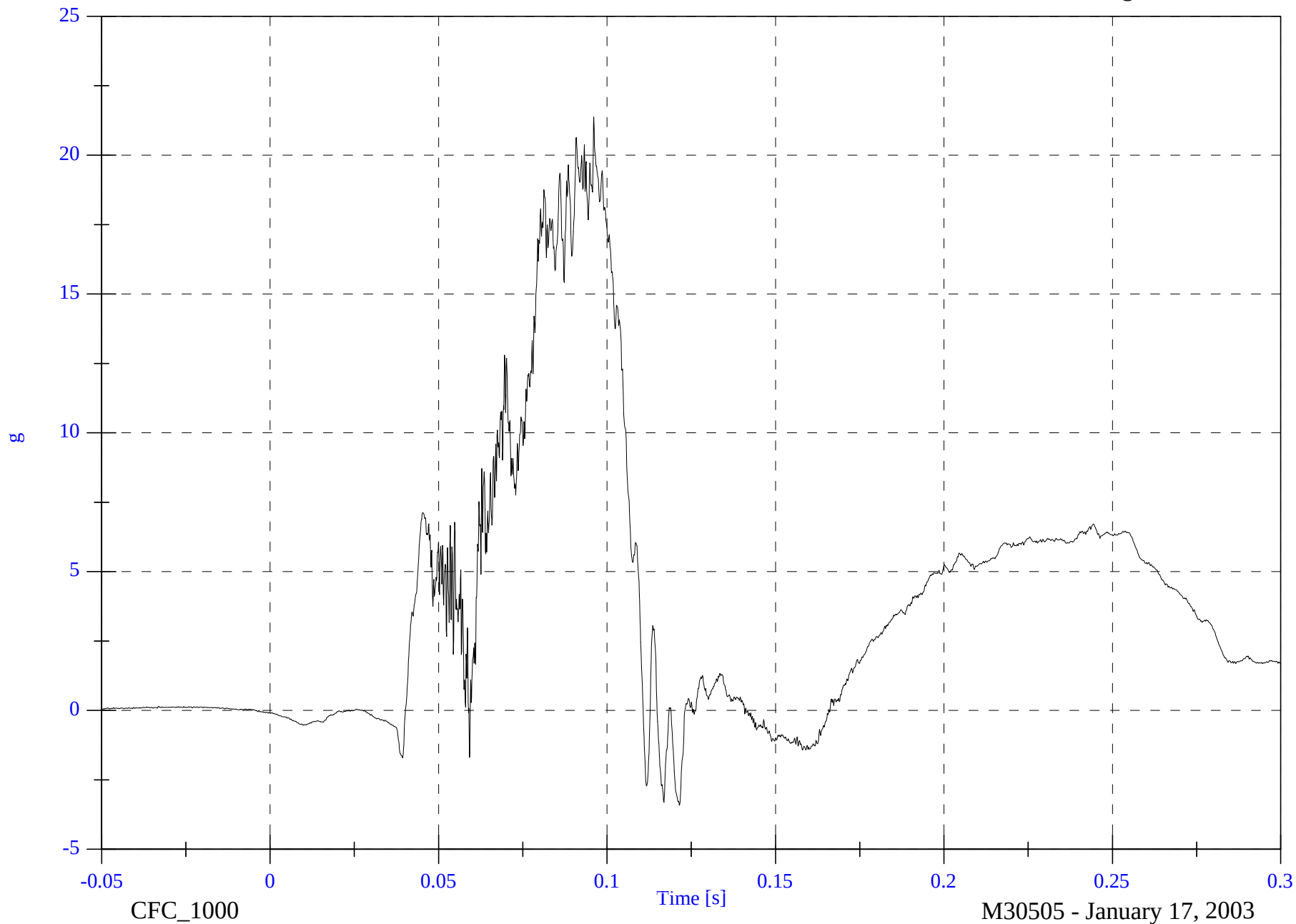
V1P2 Head CG Red z

Max: 21.4 [g] at 0.096 [s]

Min: -3.4 [g] at 0.121 [s]

B-74

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

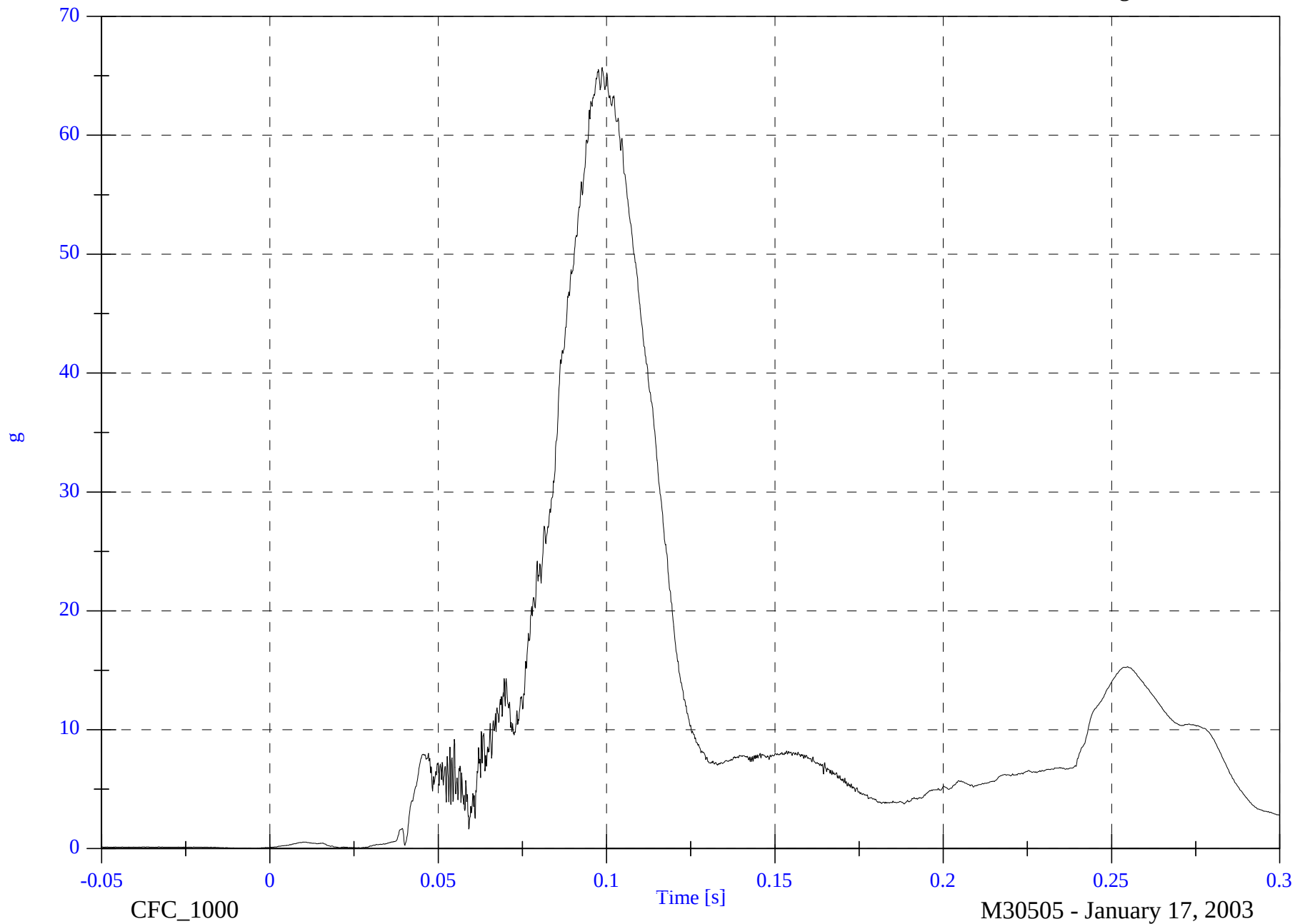
V1P2 Head CG Red Resultant

Max: 65.7 [g] at 0.099 [s]

Min: 0.0 [g] at -0.004 [s]

B-75

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

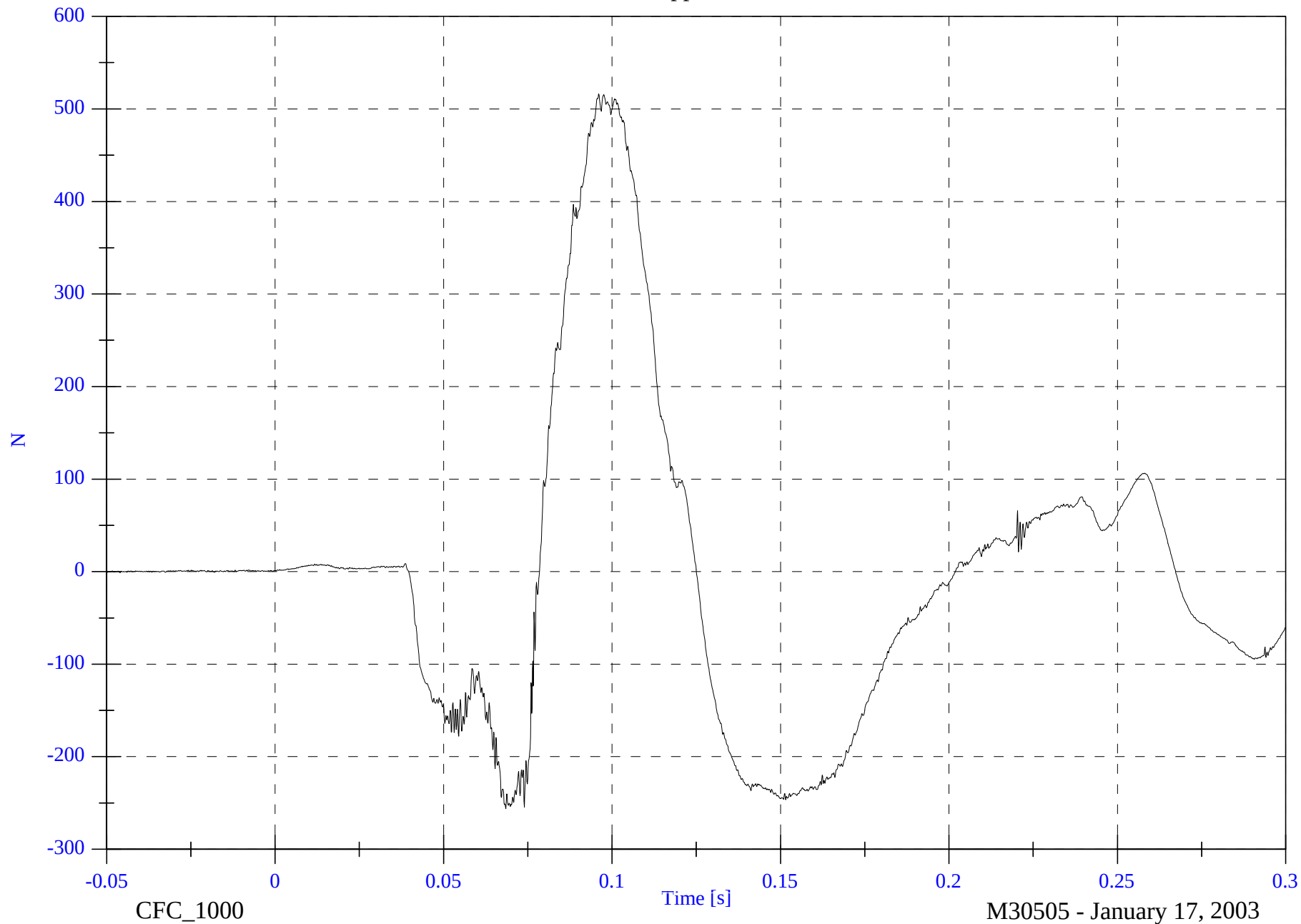
V1P2 Upper Neck Fx

Max: 516.1 [N] at 0.096 [s]

Min: -256.0 [N] at 0.068 [s]

B-76

8642-NCAP-27

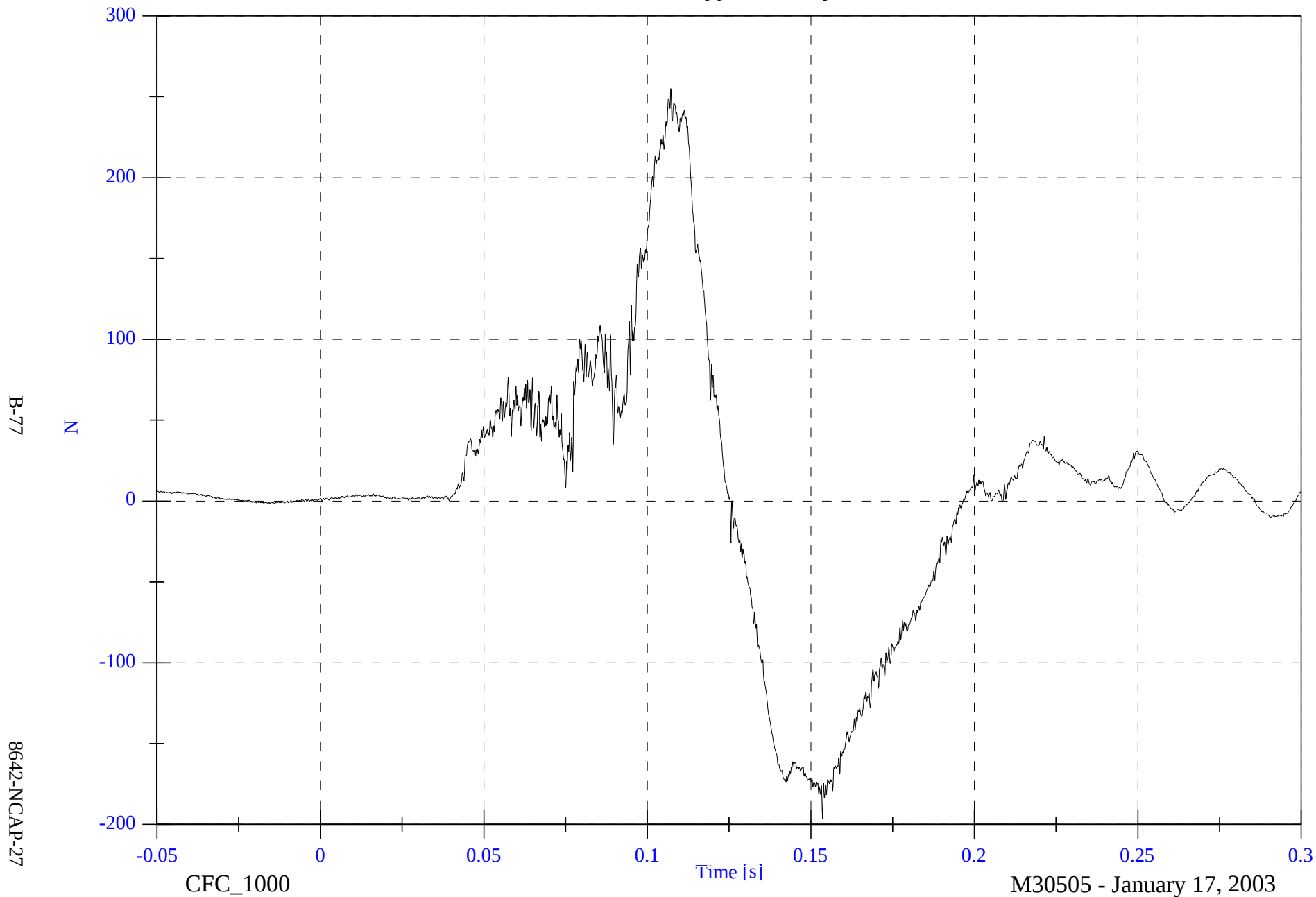


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Upper Neck Fy

Max: 255.0 [N] at 0.107 [s]

Min: -196.5 [N] at 0.154 [s]

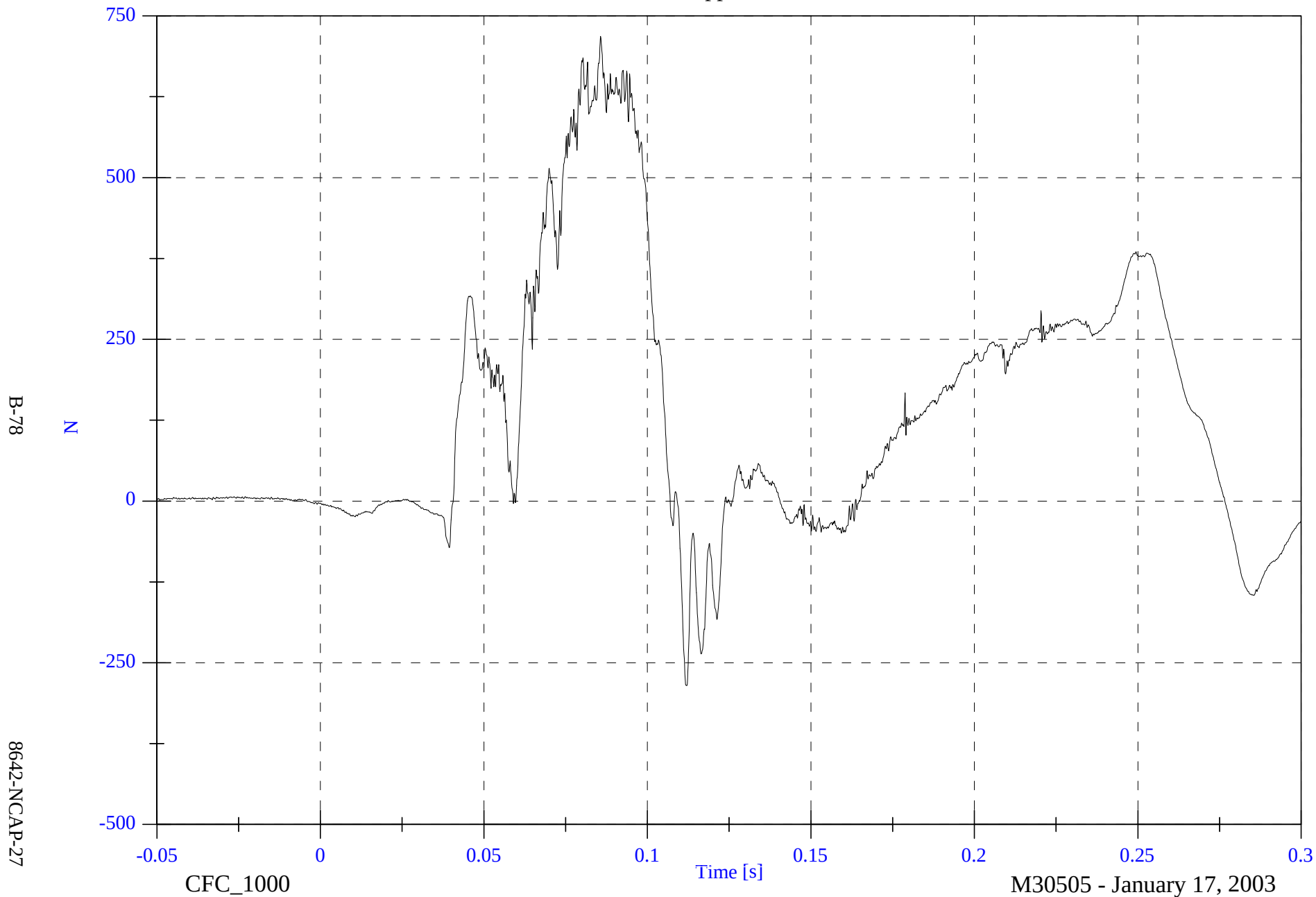


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Upper Neck Fz

Max: 718.4 [N] at 0.086 [s]

Min: -285.5 [N] at 0.112 [s]



NCAP Test #5 - 2003 Hyundai Accent

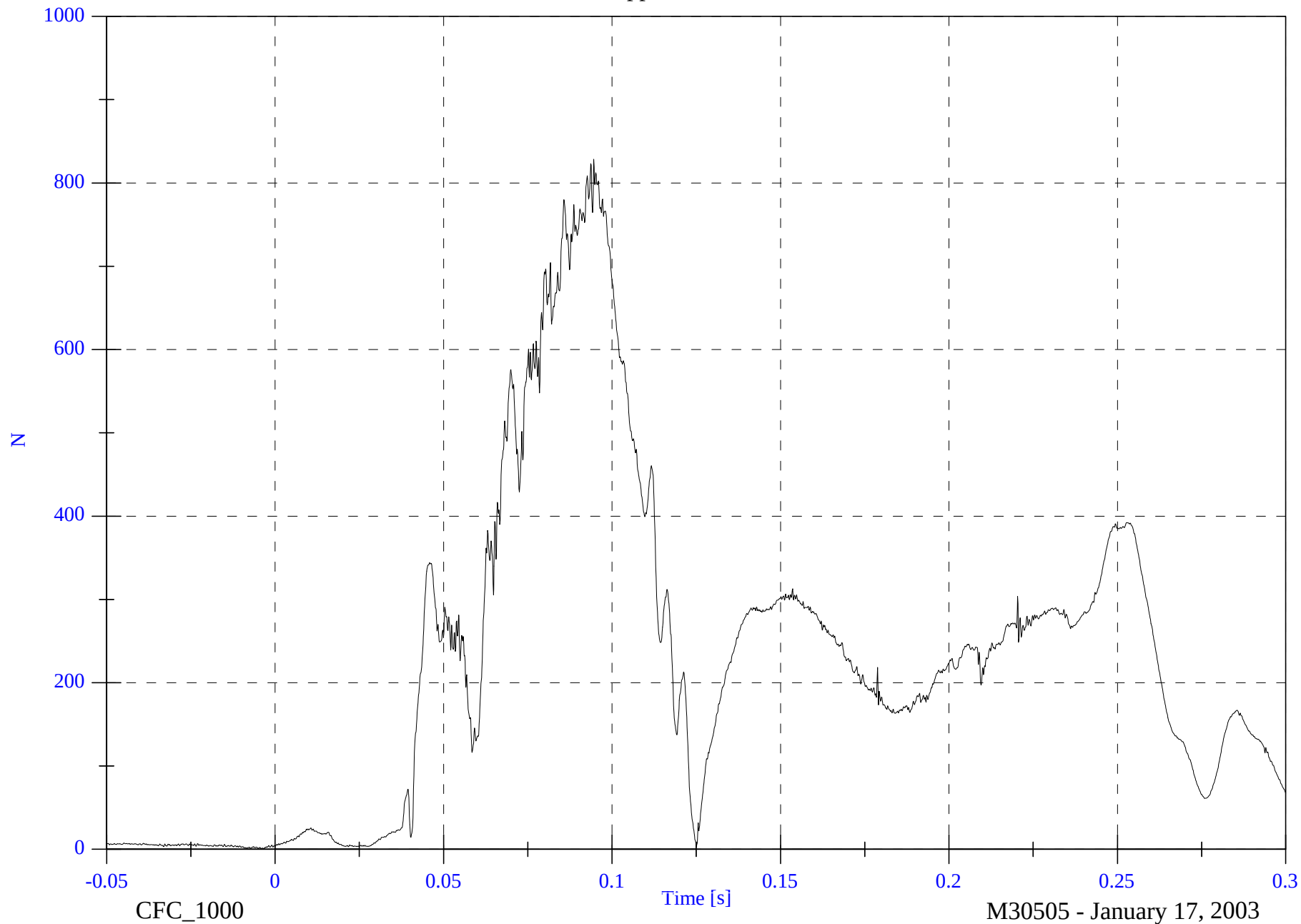
V1P2 Upper Neck F Resultant

Max: 828.3 [N] at 0.095 [s]

Min: 0.6 [N] at -0.004 [s]

B-79

8642-NCAP-27

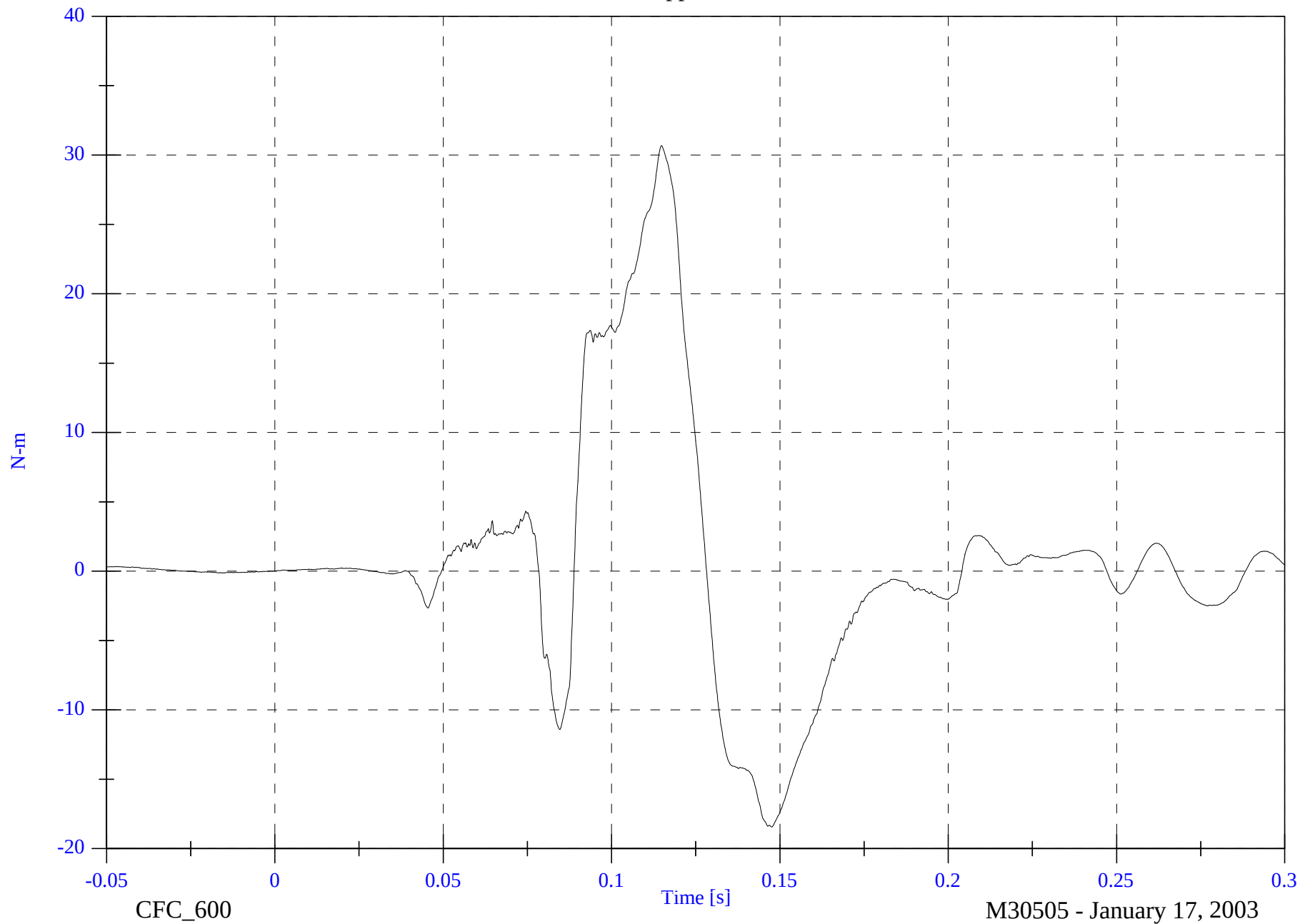


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Upper Neck Mx

Max: 30.7 [N-m] at 0.115 [s]

Min: -18.4 [N-m] at 0.148 [s]



B-80

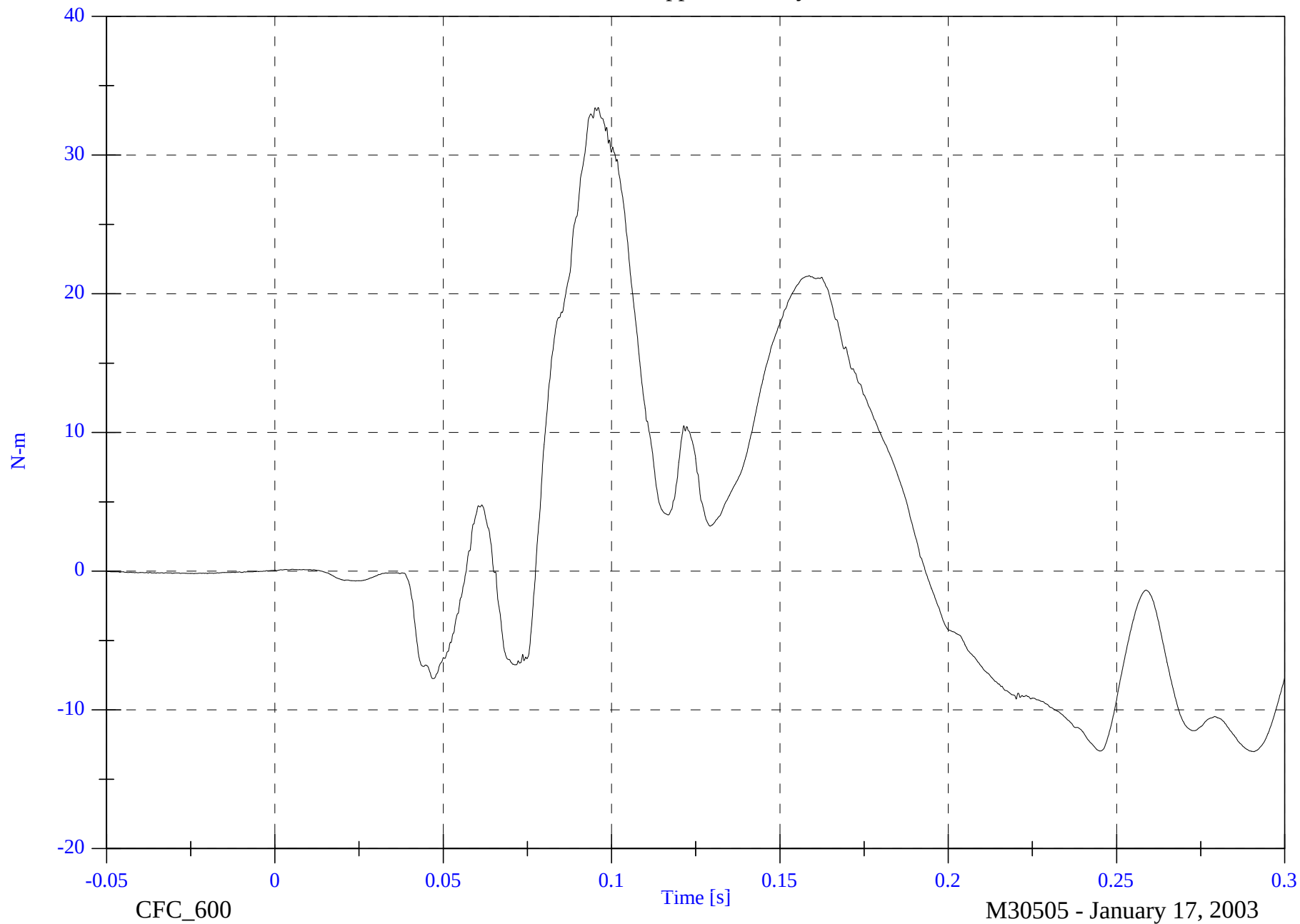
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P2 Upper Neck My

Max: 33.4 [N-m] at 0.096 [s]

Min: -13.0 [N-m] at 0.291 [s]



B-81

8642-NCAP-27

CFC_600

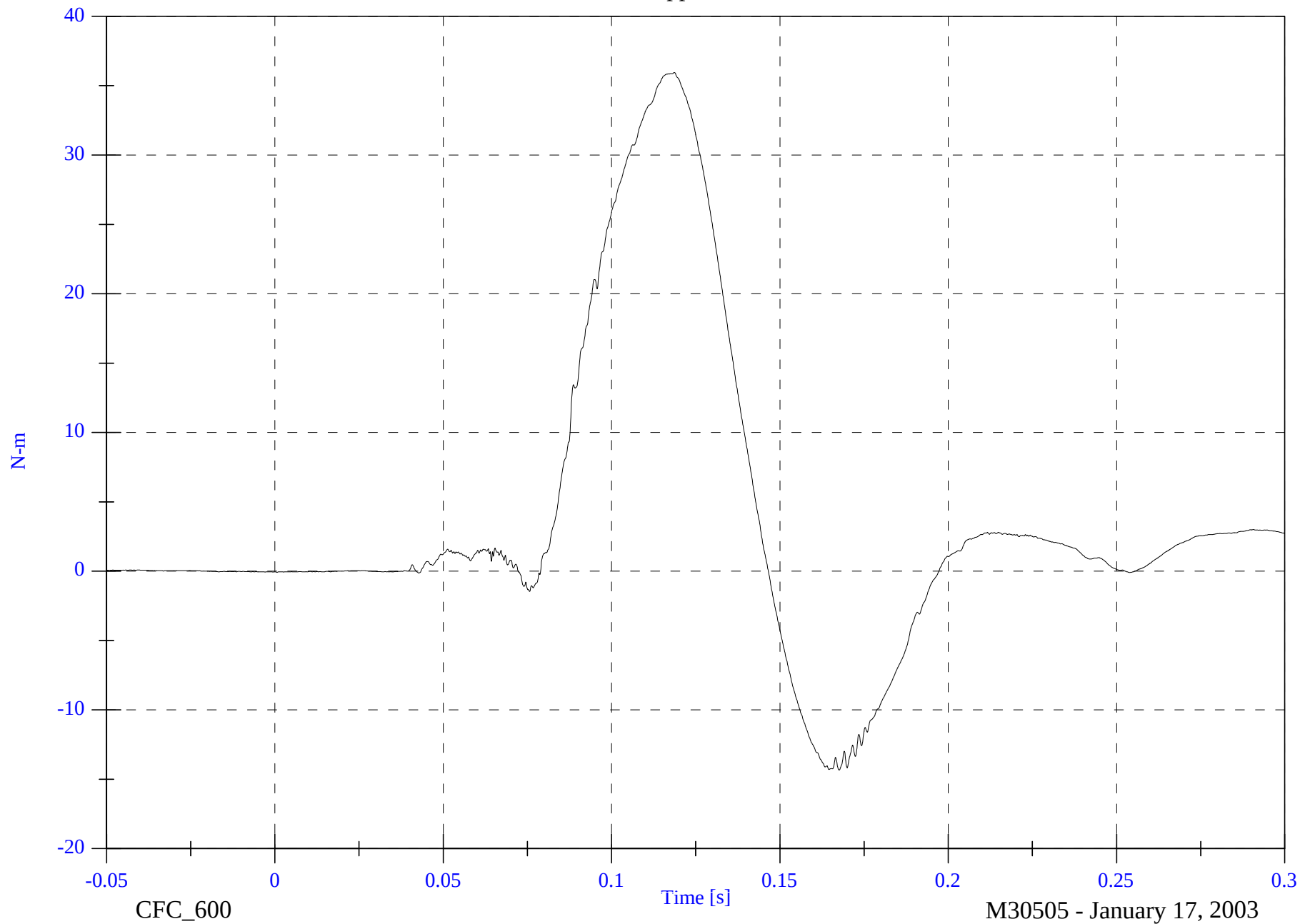
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P2 Upper Neck Mz

Max: 36.0 [N-m] at 0.119 [s]

Min: -14.3 [N-m] at 0.168 [s]



B-82

8642-NCAP-27

CFC_600

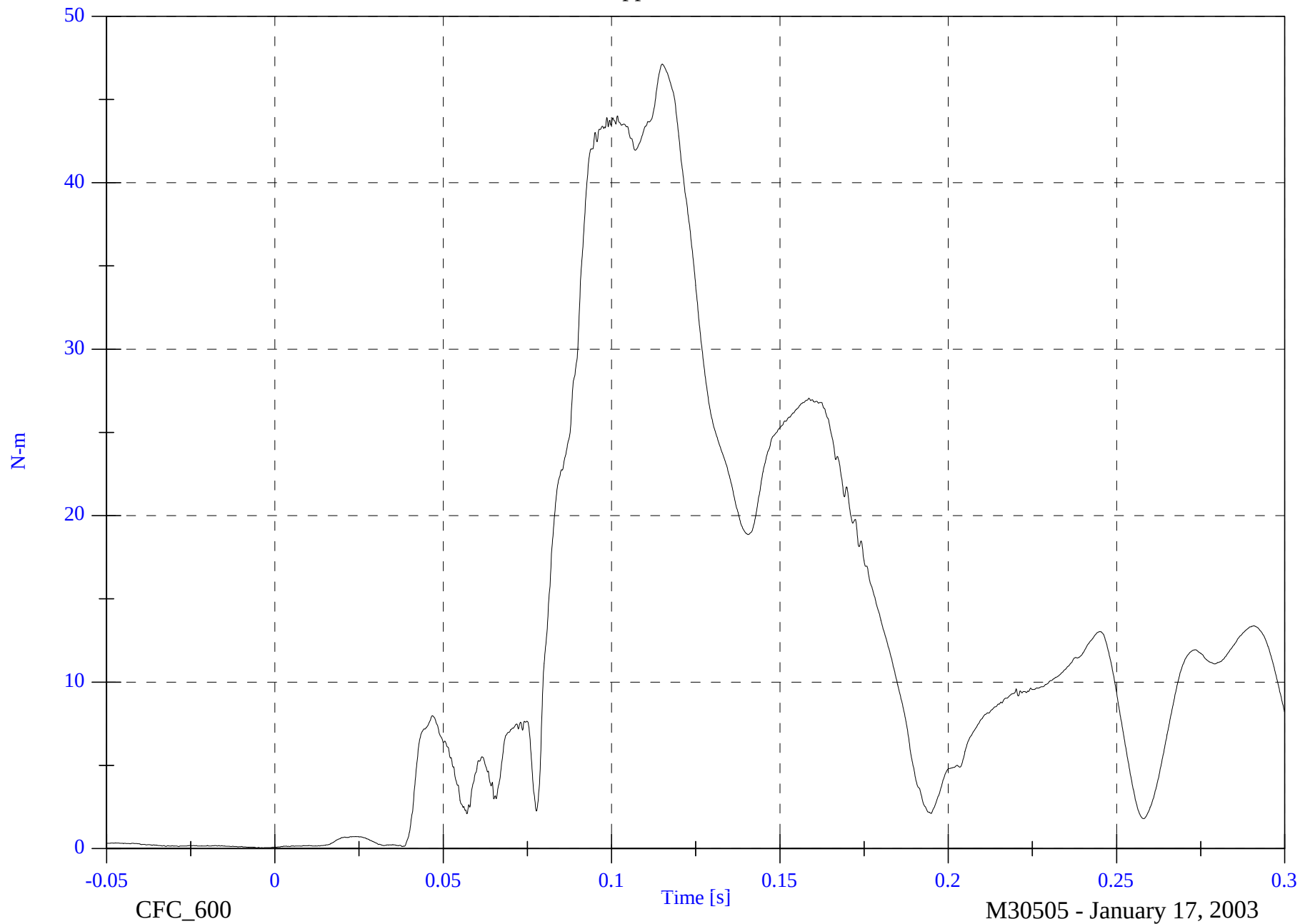
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P2 Upper Neck M Resultant

Max: 47.1 [N-m] at 0.115 [s]

Min: 0.0 [N-m] at -0.004 [s]



B-83

8642-NCAP-27

CFC_600

M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

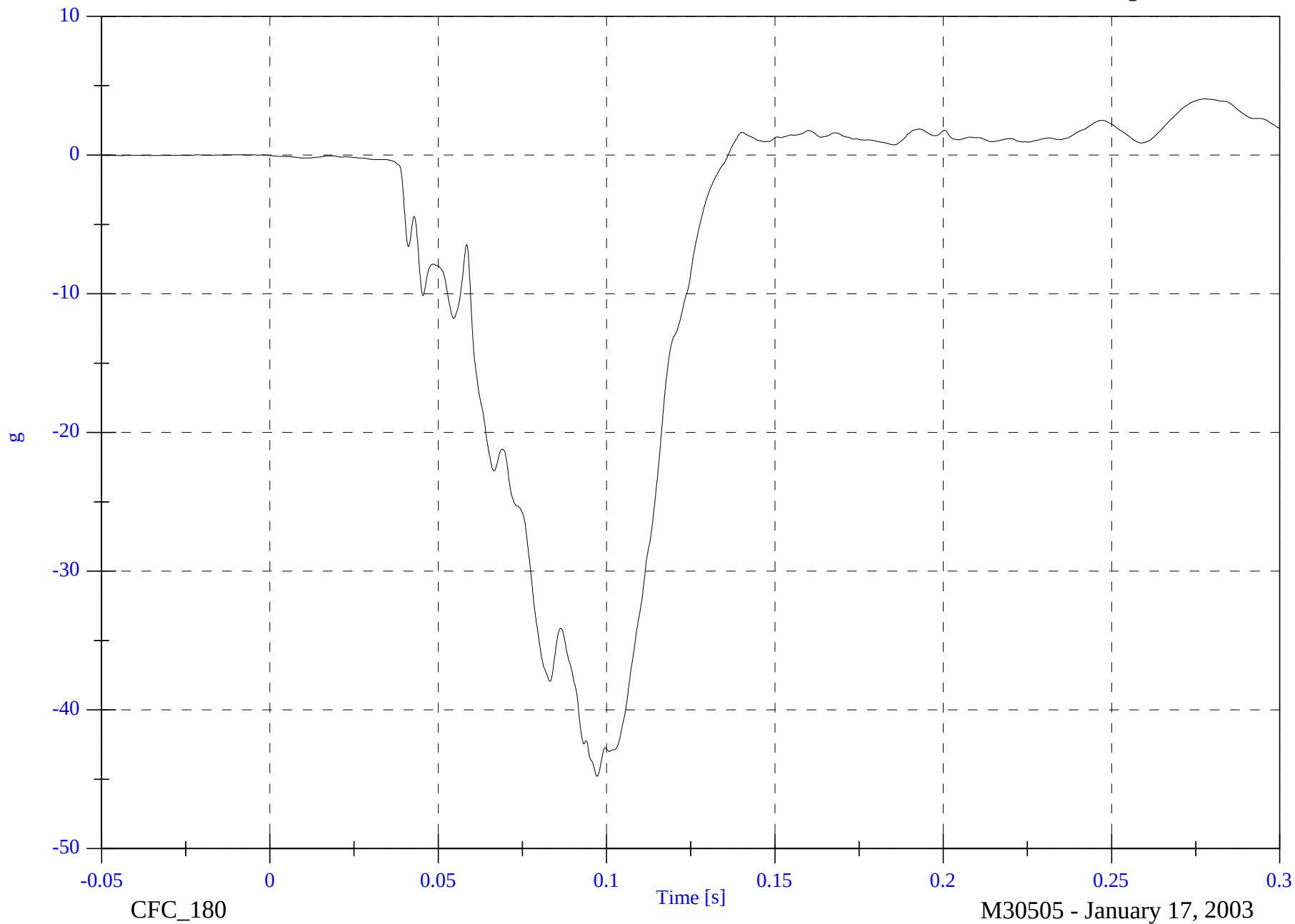
V1P2 Chest x

Max: 4.0 [g] at 0.278 [s]

Min: -44.8 [g] at 0.097 [s]

B-84

8642-NCAP-27

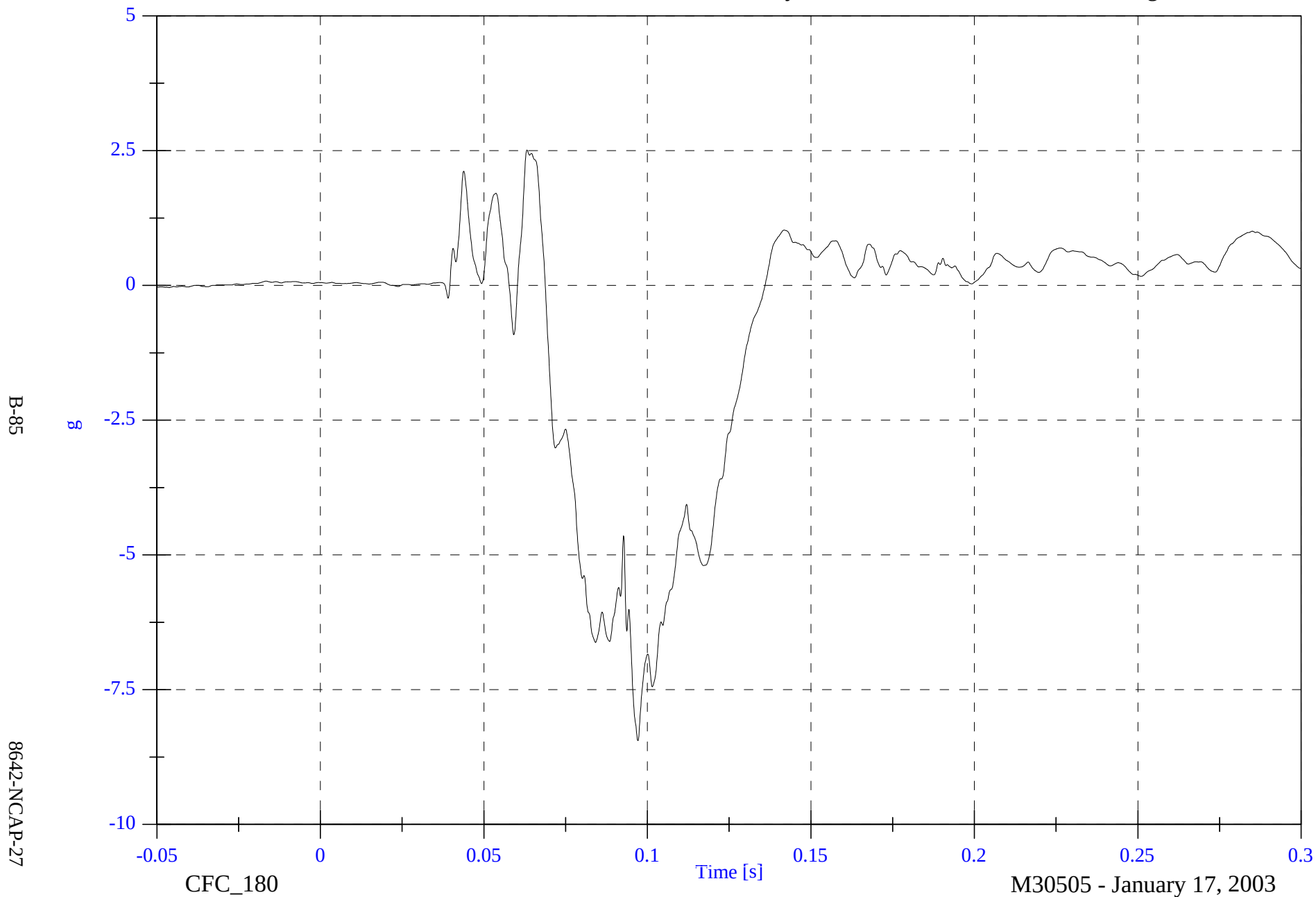


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Chest y

Max: 2.5 [g] at 0.063 [s]

Min: -8.4 [g] at 0.097 [s]



NCAP Test #5 - 2003 Hyundai Accent

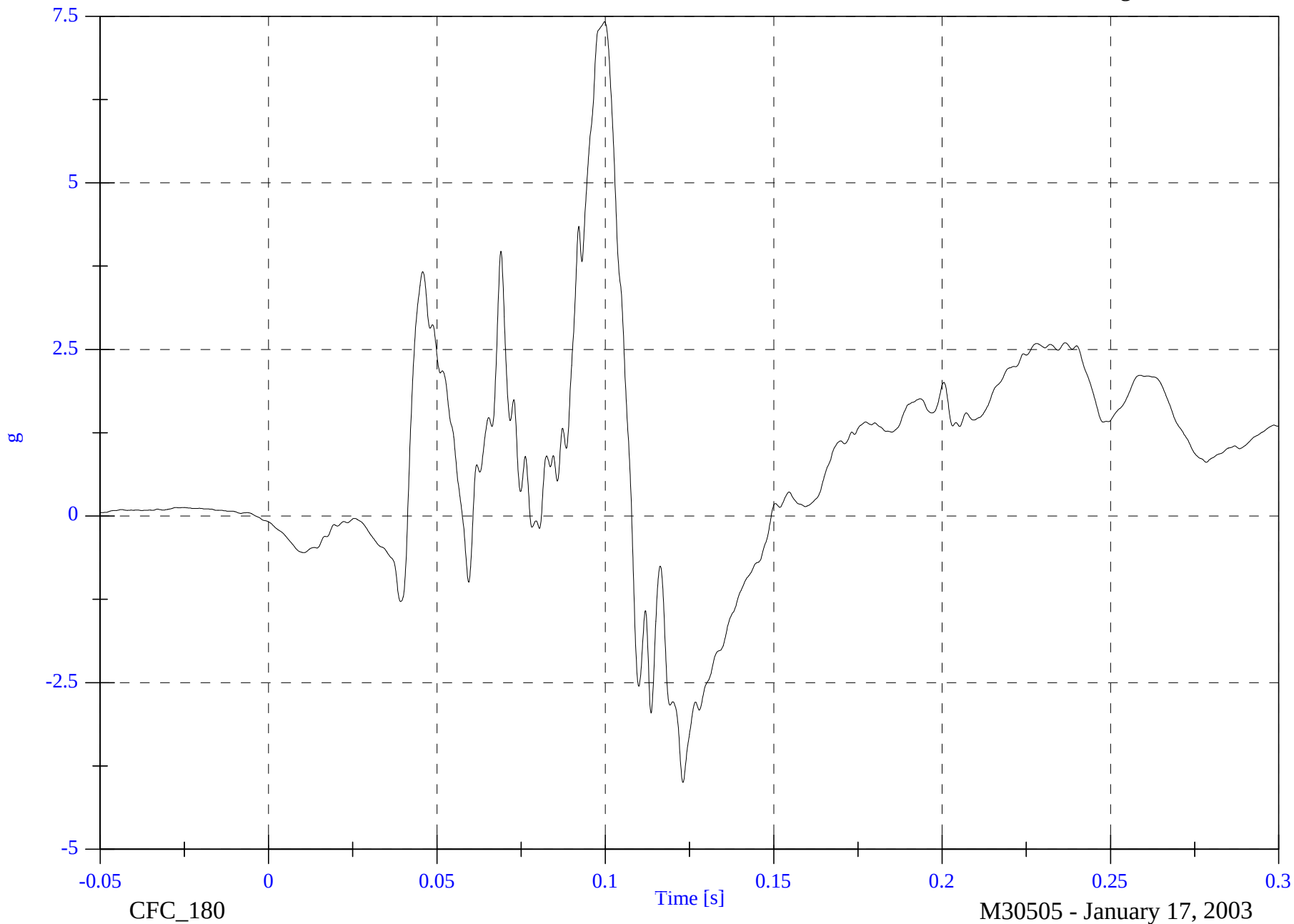
V1P2 Chest z

Max: 7.4 [g] at 0.100 [s]

Min: -4.0 [g] at 0.123 [s]

B-86

8642-NCAP-27

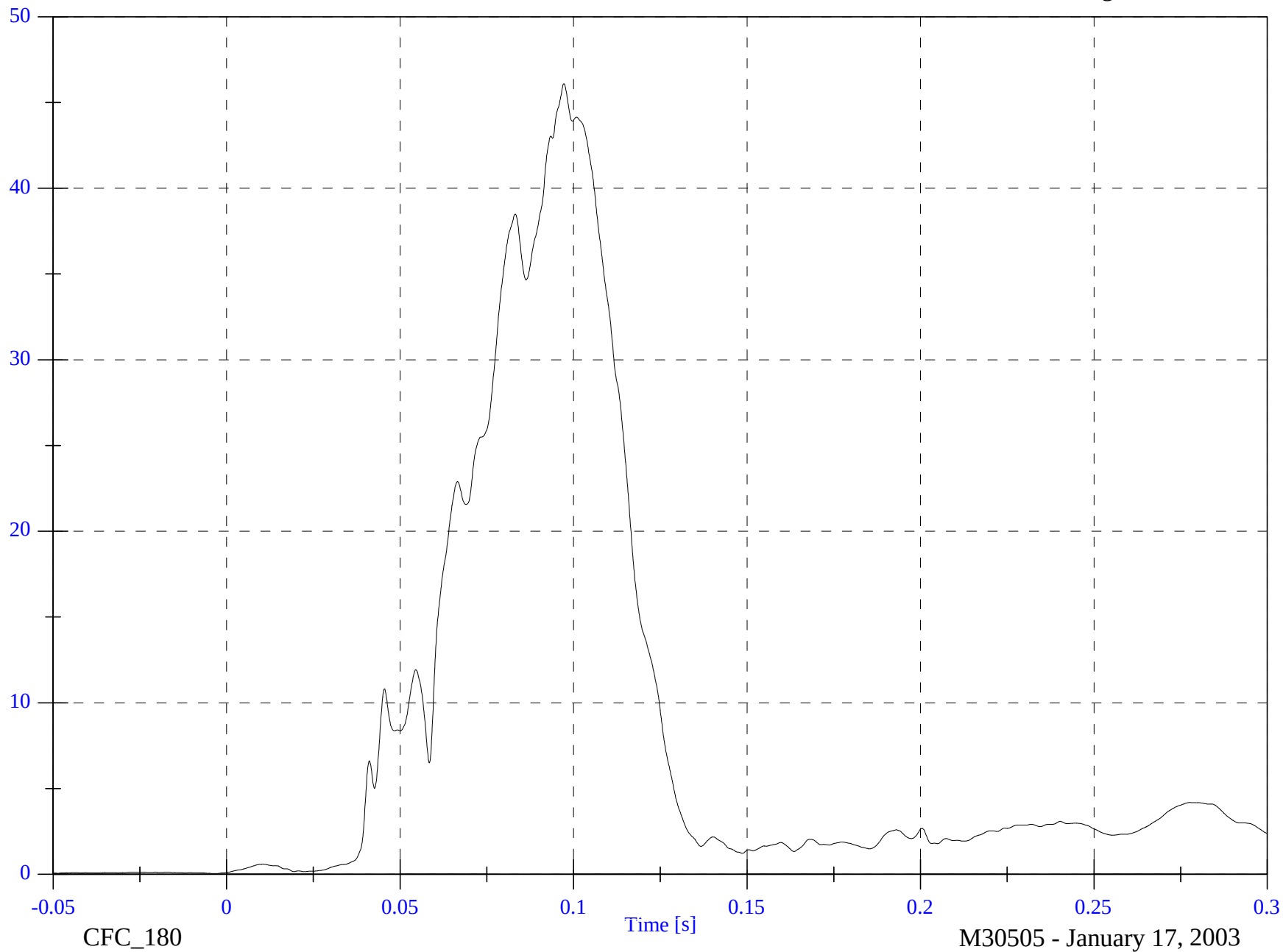


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Chest Resultant

Max: 46.1 [g] at 0.097 [s]

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



B-87

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

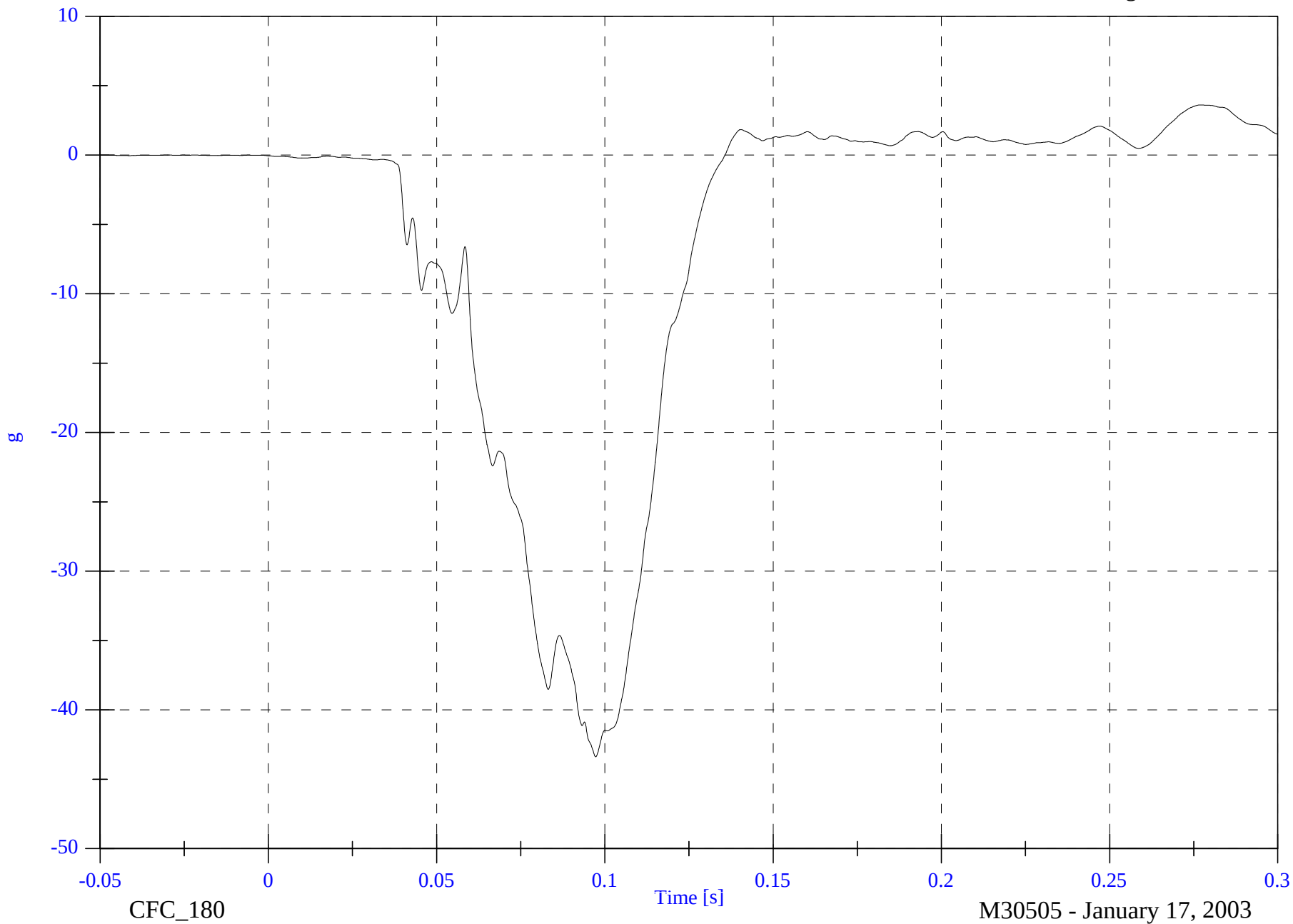
V1P2 Chest Red x

Max: 3.6 [g] at 0.277 [s]

Min: -43.4 [g] at 0.097 [s]

B-88

8642-NCAP-27

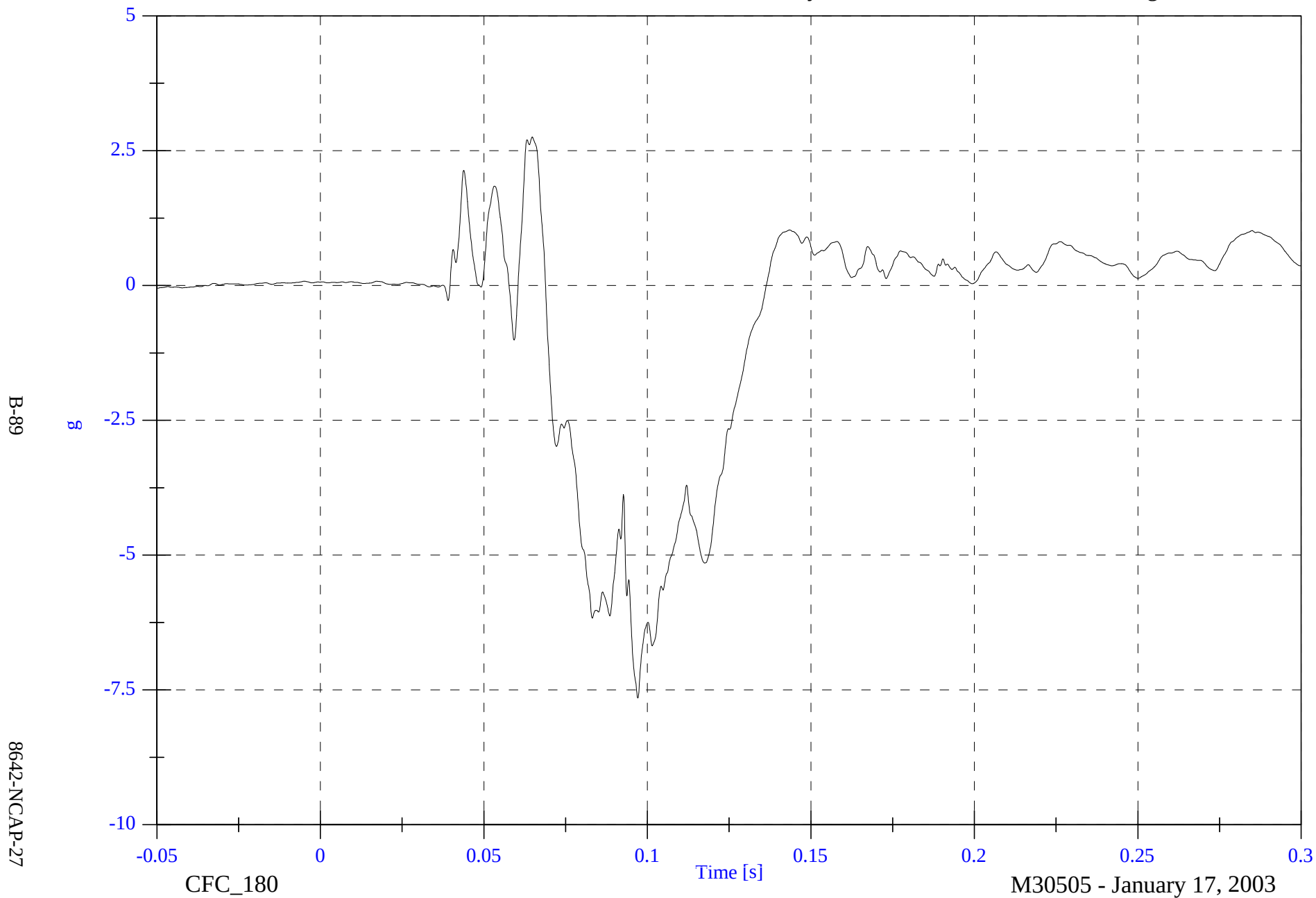


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Chest Red y

Max: 2.8 [g] at 0.065 [s]

Min: -7.7 [g] at 0.097 [s]

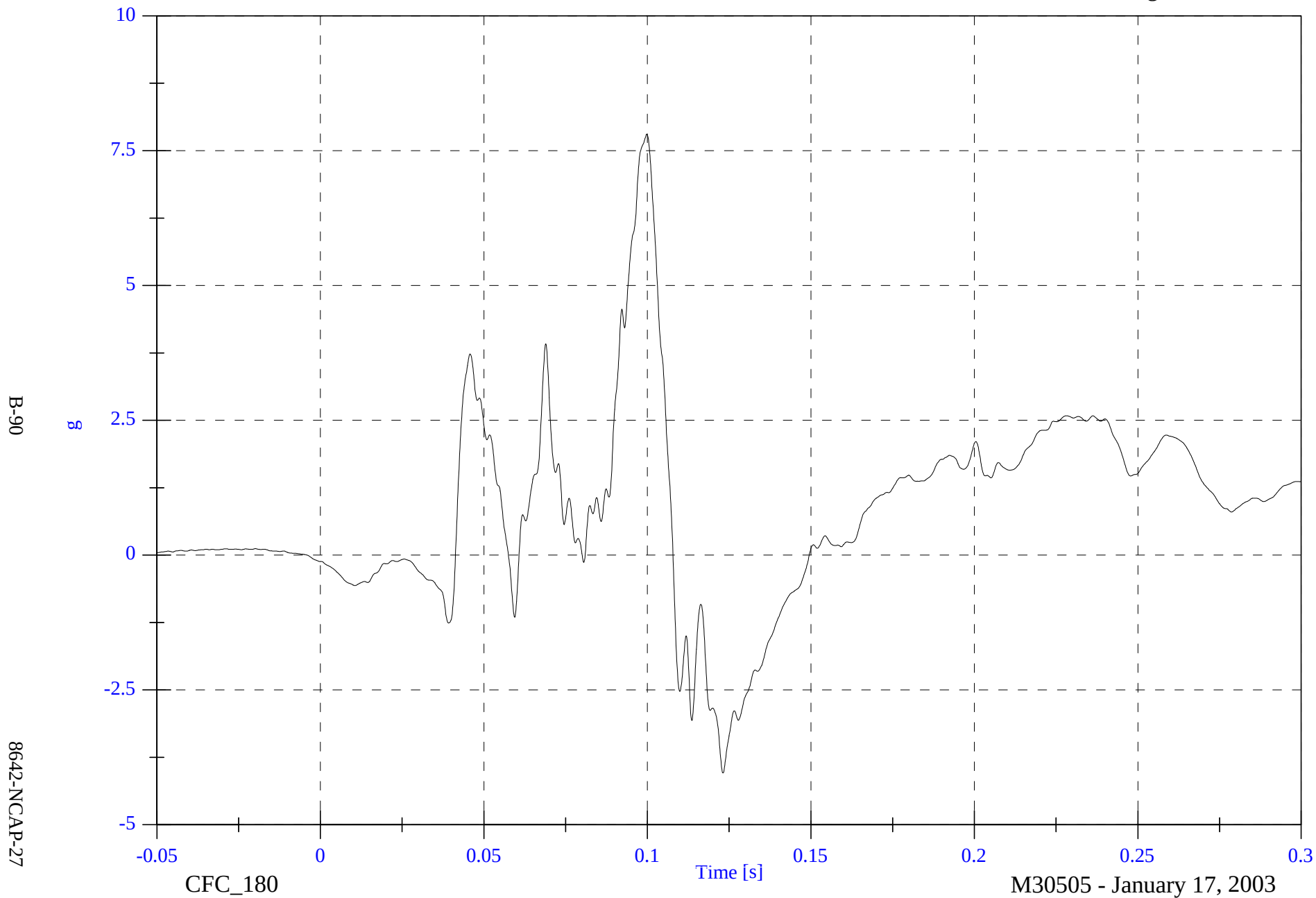


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Chest Red z

Max: 7.8 [g] at 0.100 [s]

Min: -4.0 [g] at 0.123 [s]



NCAP Test #5 - 2003 Hyundai Accent

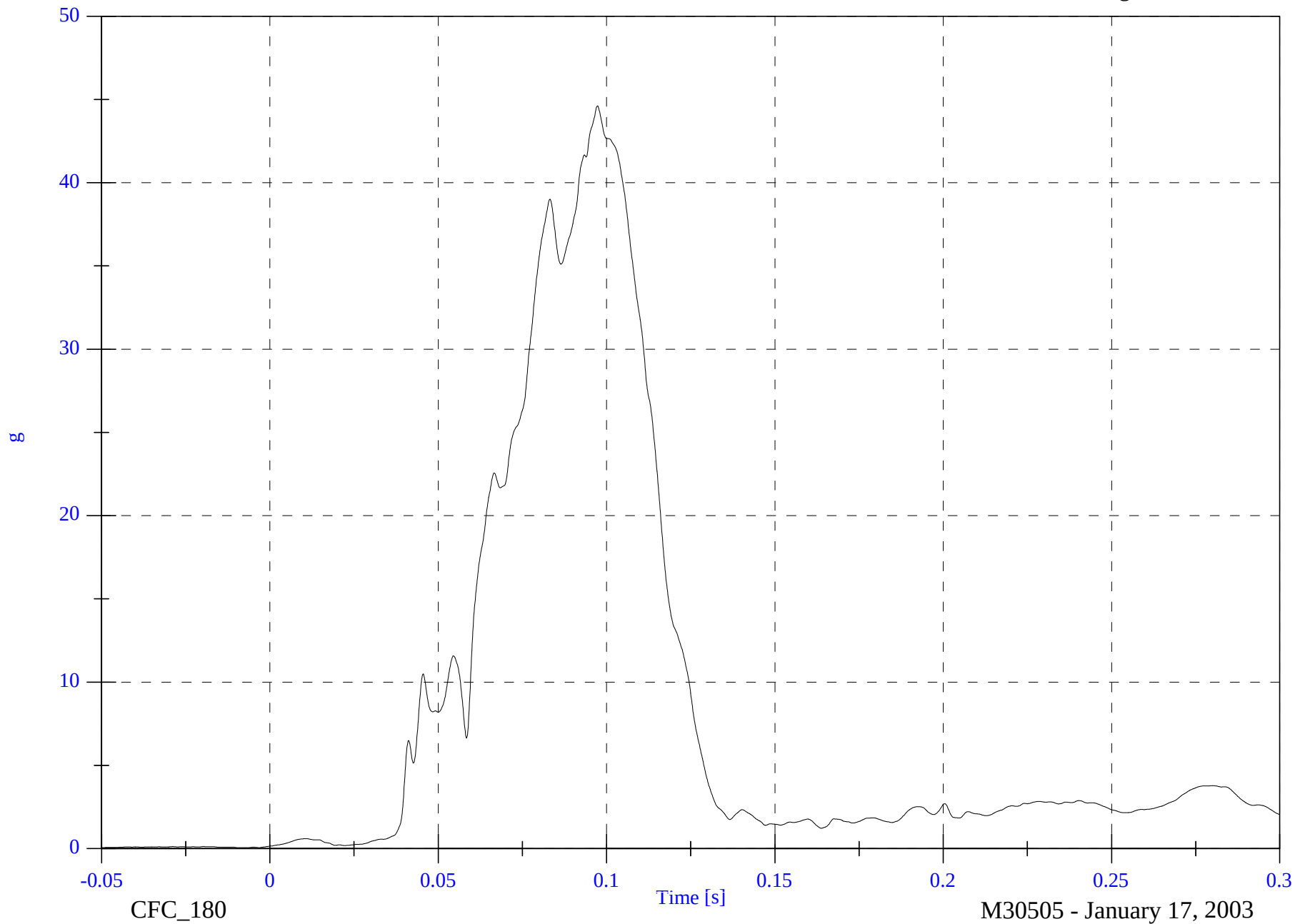
V1P2 Chest Red Resultant

Max: 44.6 [g] at 0.097 [s]

Min: 0.1 [g] at -0.009 [s]

B-91

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

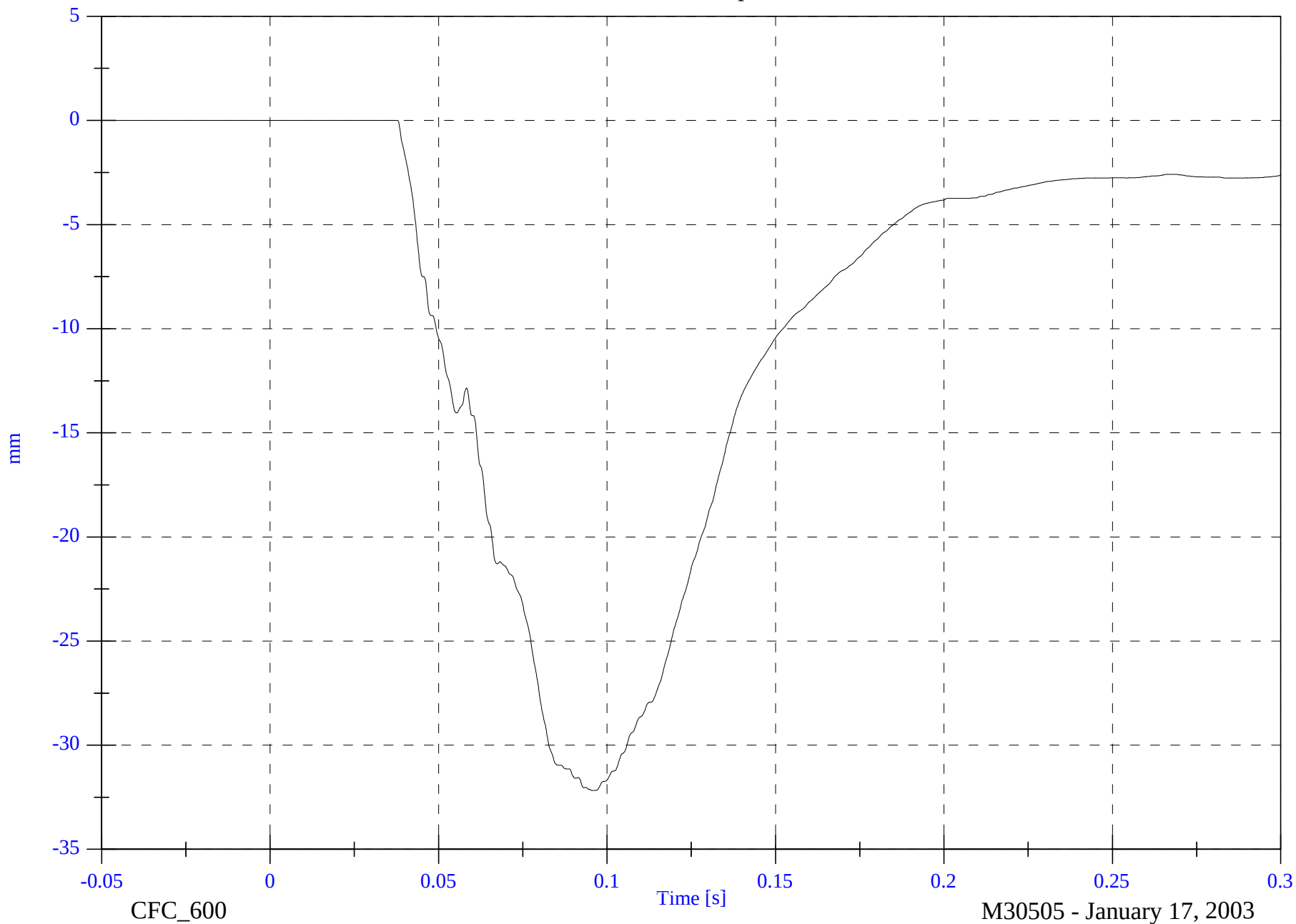
V1P2 Chest Compression

Max: 0.0 [mm] at 0.033 [s]

Min: -32.2 [mm] at 0.097 [s]

B-92

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

V1P2 Pelvic x

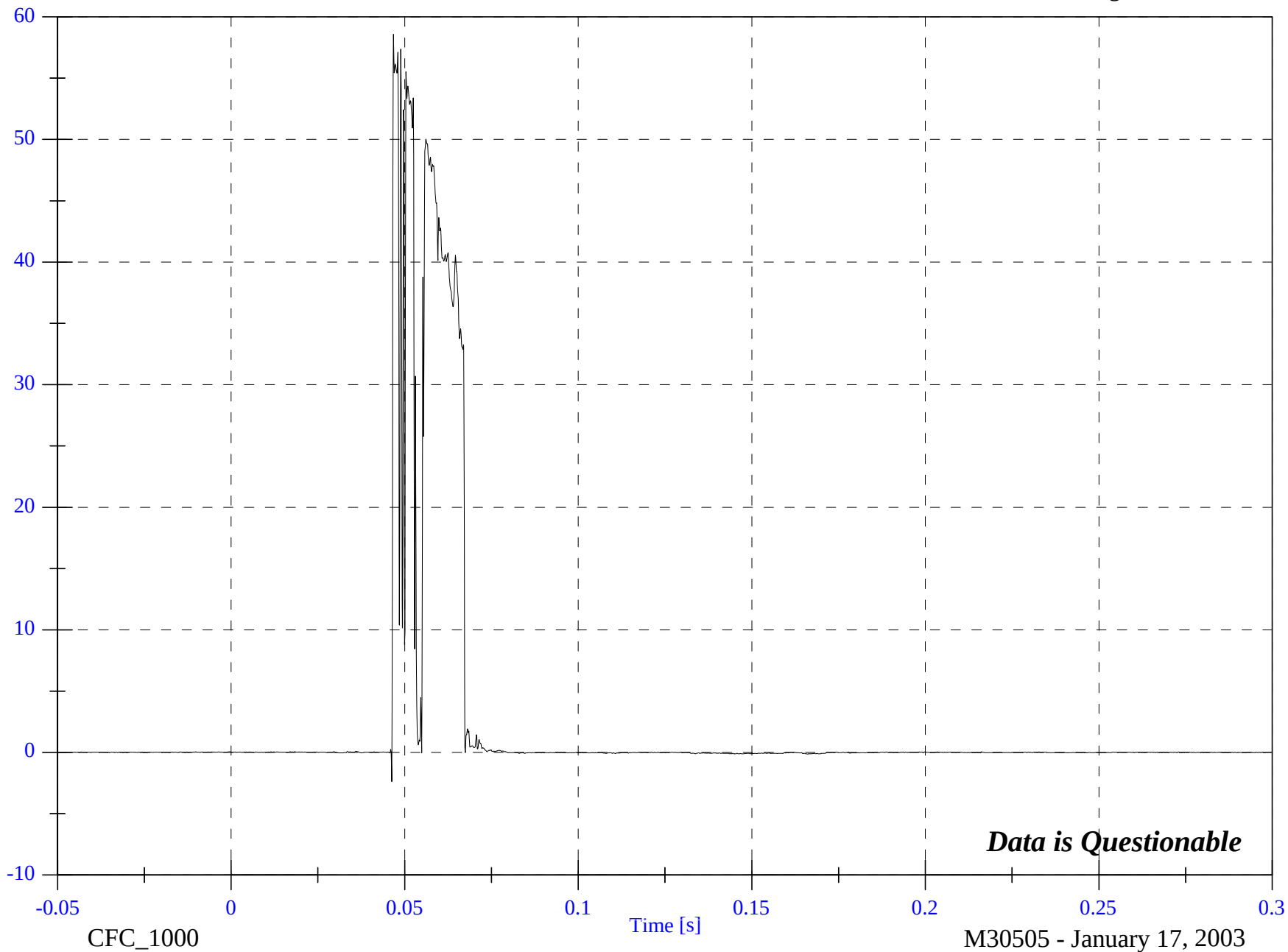
Max: 58.6 [g] at 0.047 [s]

Min: -2.4 [g] at 0.046 [s]

B-93

8642-NCAP-27

g



Data is Questionable

CFC_1000

Time [s]

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NCAP Test #5 - 2003 Hyundai Accent

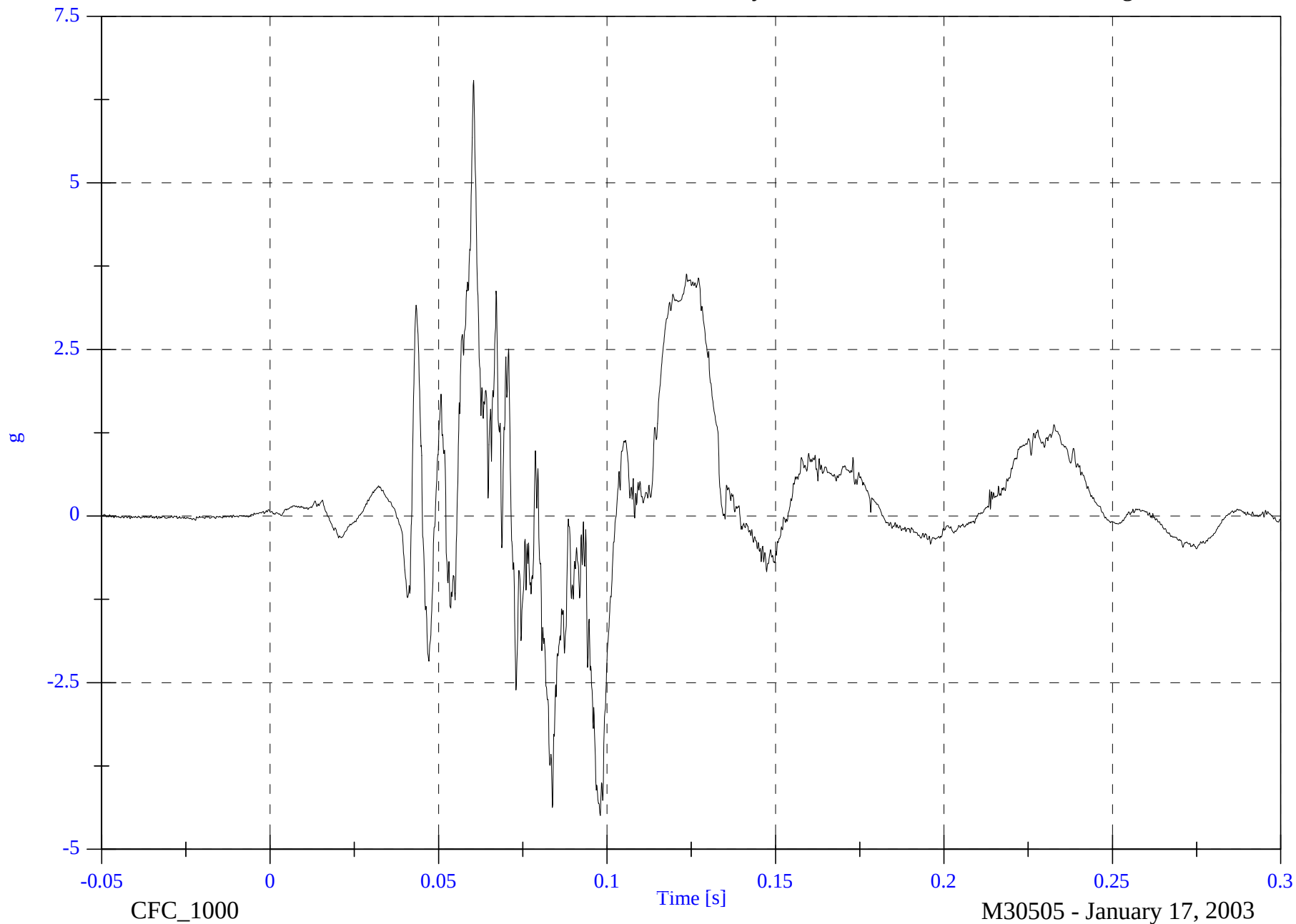
V1P2 Pelvic y

Max: 6.5 [g] at 0.060 [s]

Min: -4.5 [g] at 0.098 [s]

B-94

8642-NCAP-27

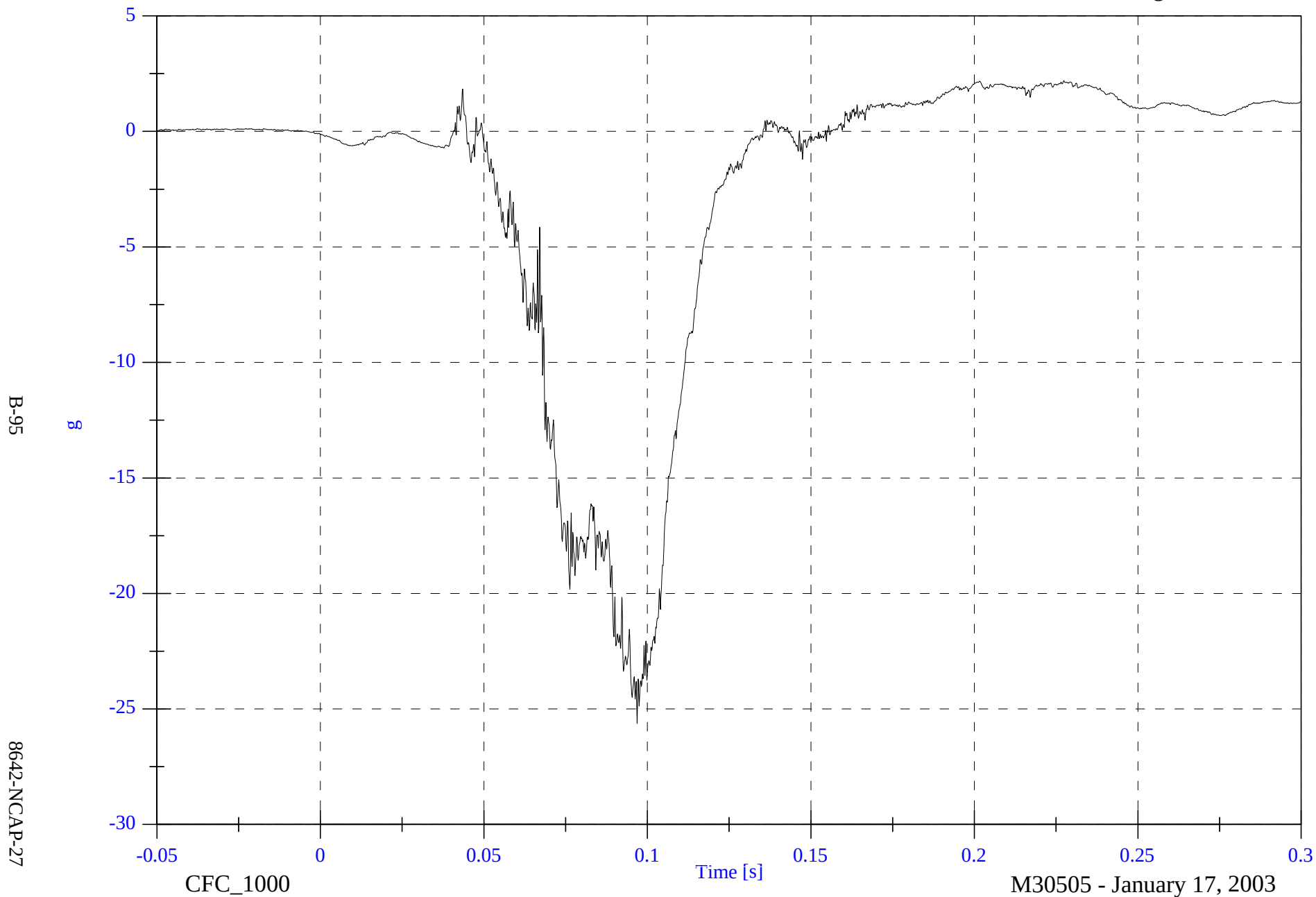


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Pelvic z

Max: 2.2 [g] at 0.227 [s]

Min: -25.6 [g] at 0.097 [s]



NCAP Test #5 - 2003 Hyundai Accent

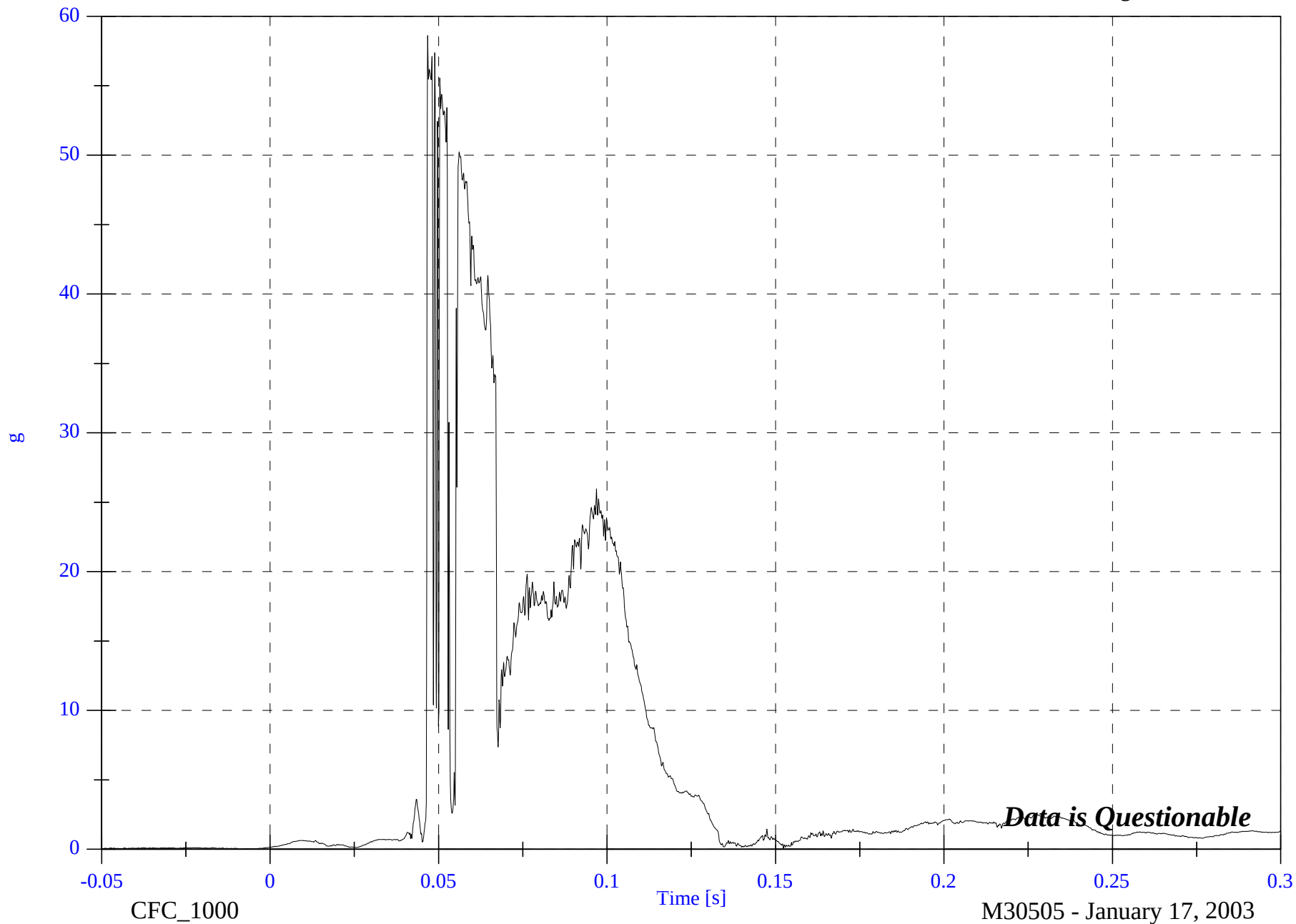
V1P2 Pelvic Resultant

Max: 58.6 [g] at 0.047 [s]

Min: 0.0 [g] at -0.009 [s]

B-96

8642-NCAP-27



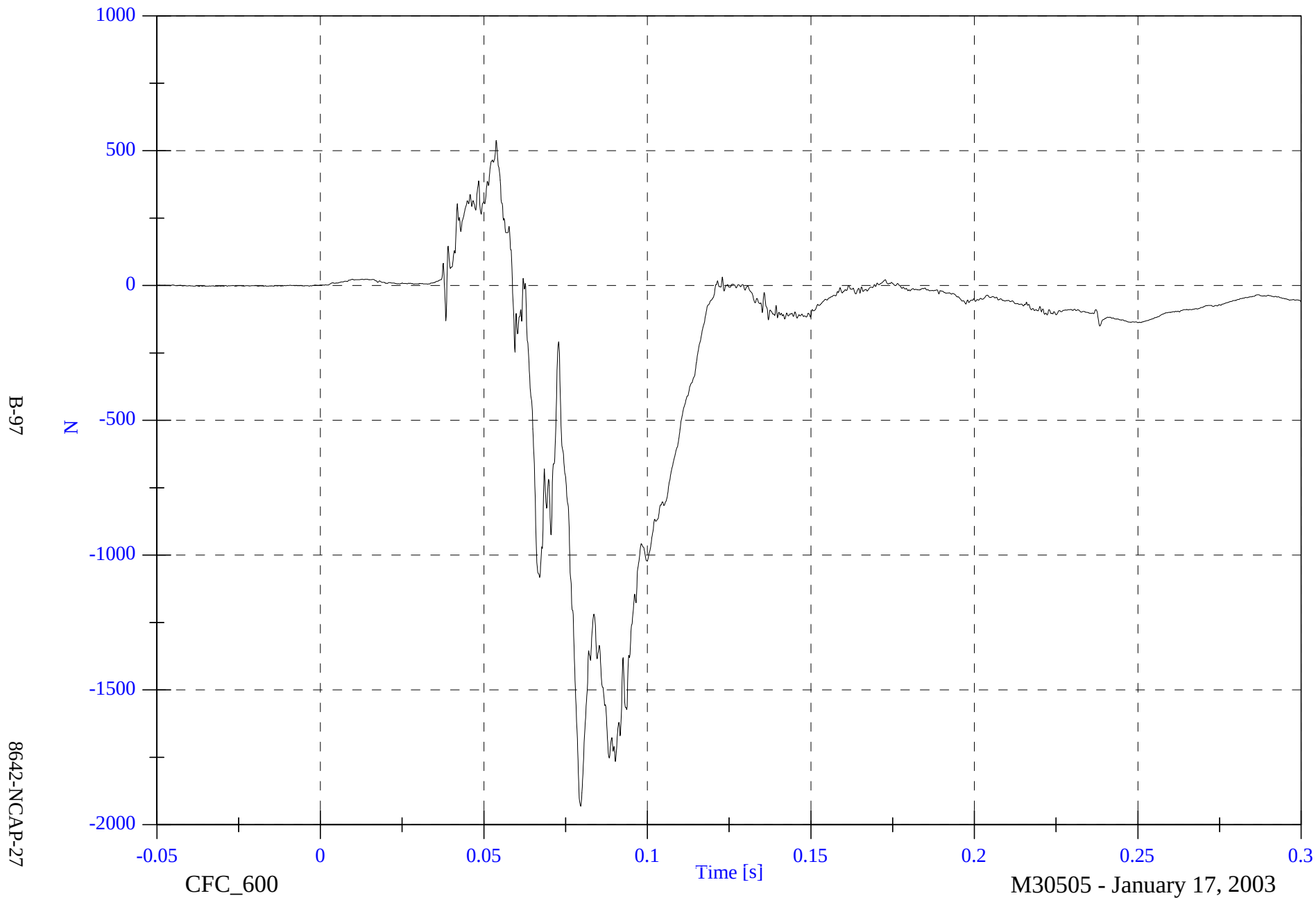
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P2 Left Femur

Max: 537.8 [N] at 0.054 [s]

Min: -1931.1 [N] at 0.080 [s]

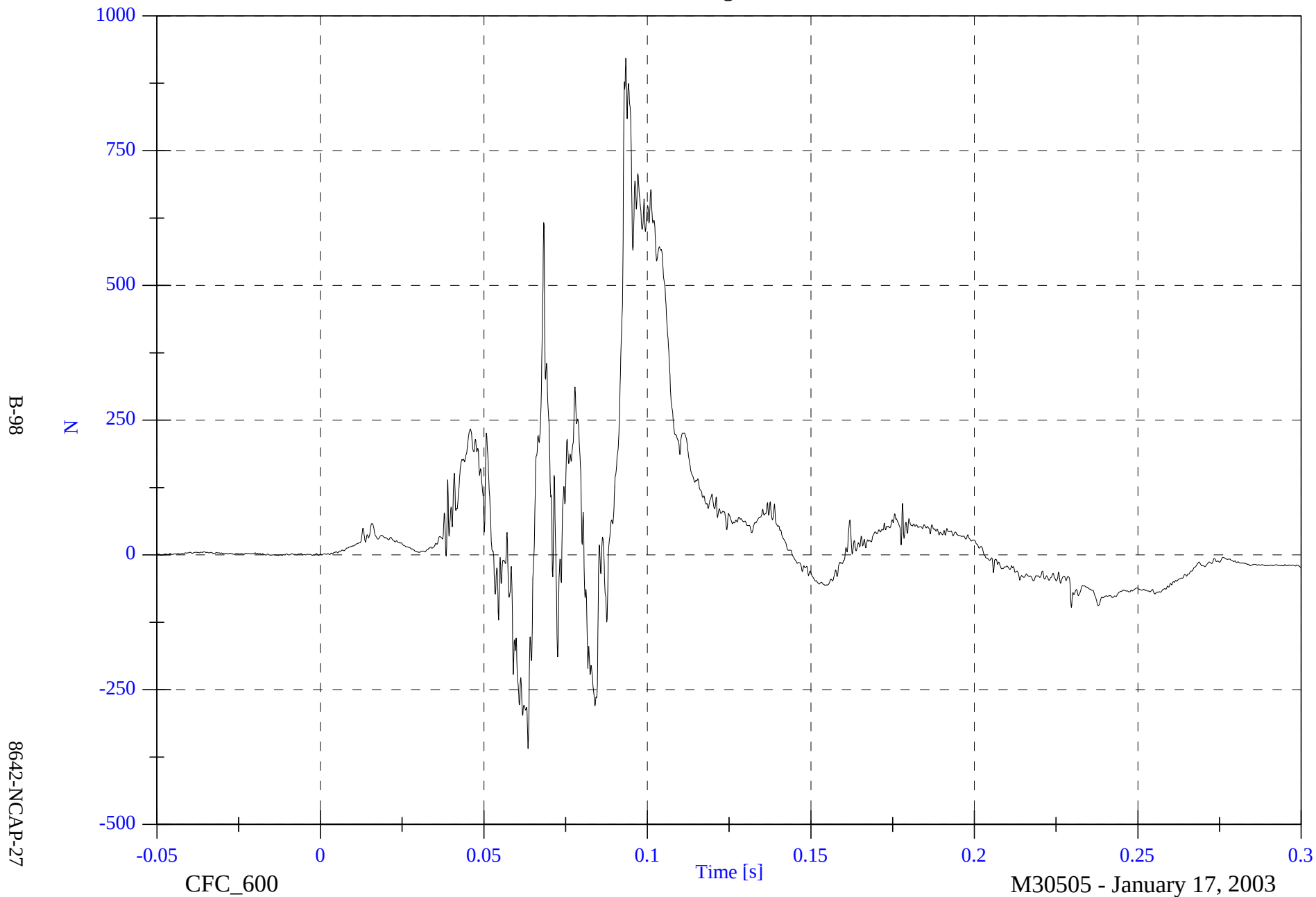


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Right Femur

Max: 921.3 [N] at 0.093 [s]

Min: -359.2 [N] at 0.064 [s]

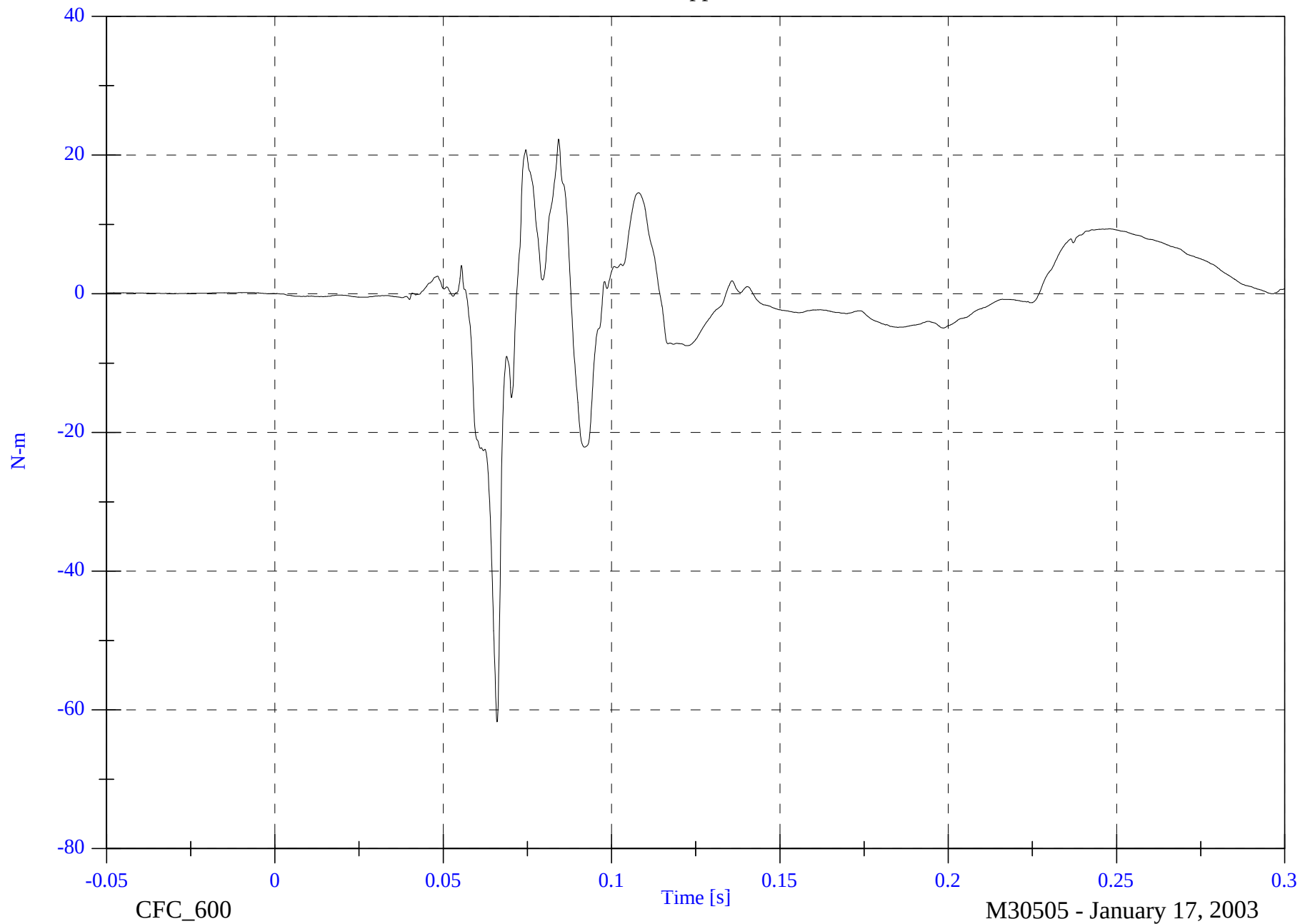


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Left Upper Tibia Mx

Max: 22.3 [N-m] at 0.084 [s]

Min: -61.7 [N-m] at 0.066 [s]



B-99

8642-NCAP-27

CFC_600

Time [s]

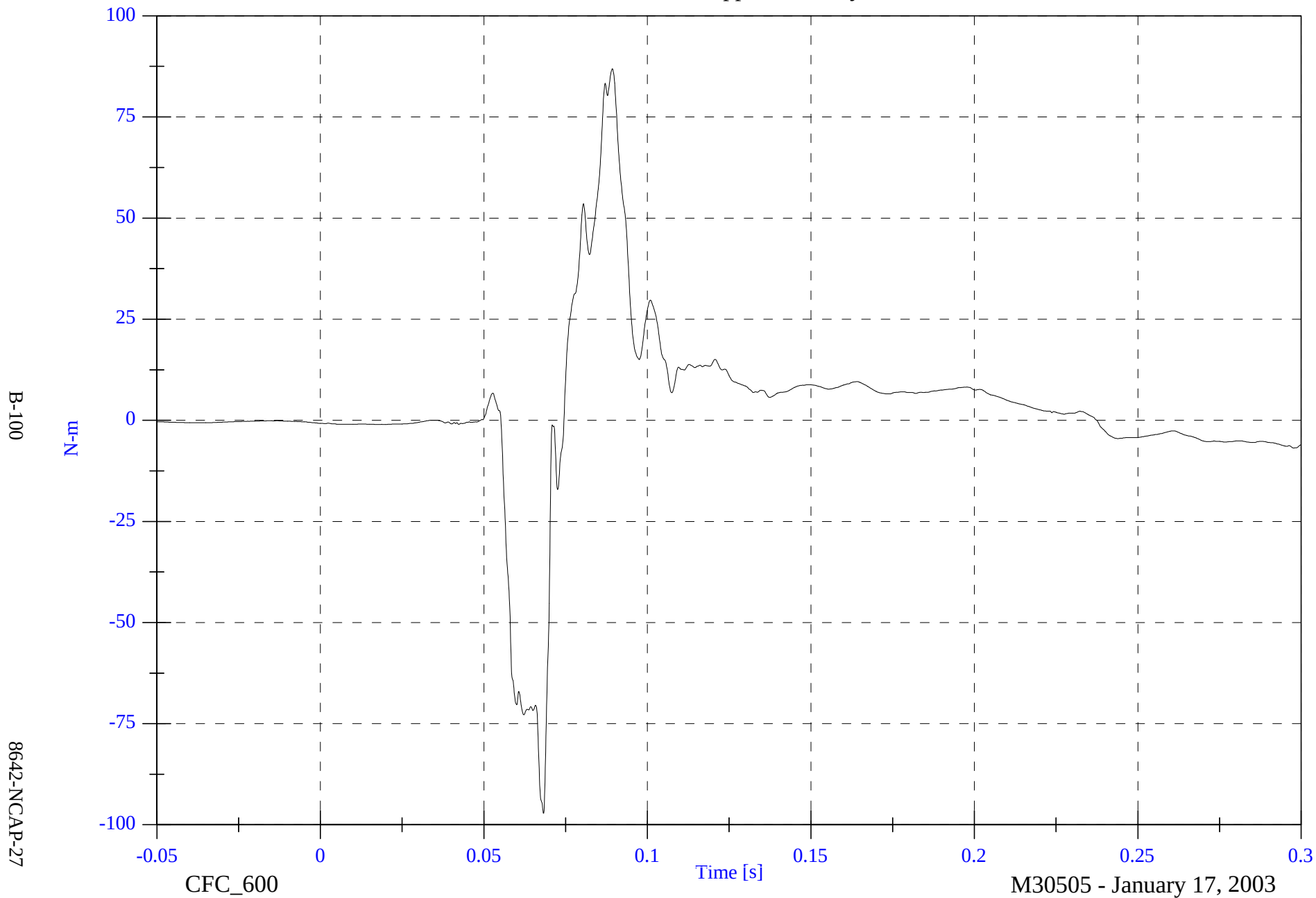
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P2 Left Upper Tibia My

Max: 86.9 [N-m] at 0.089 [s]

Min: -97.2 [N-m] at 0.068 [s]

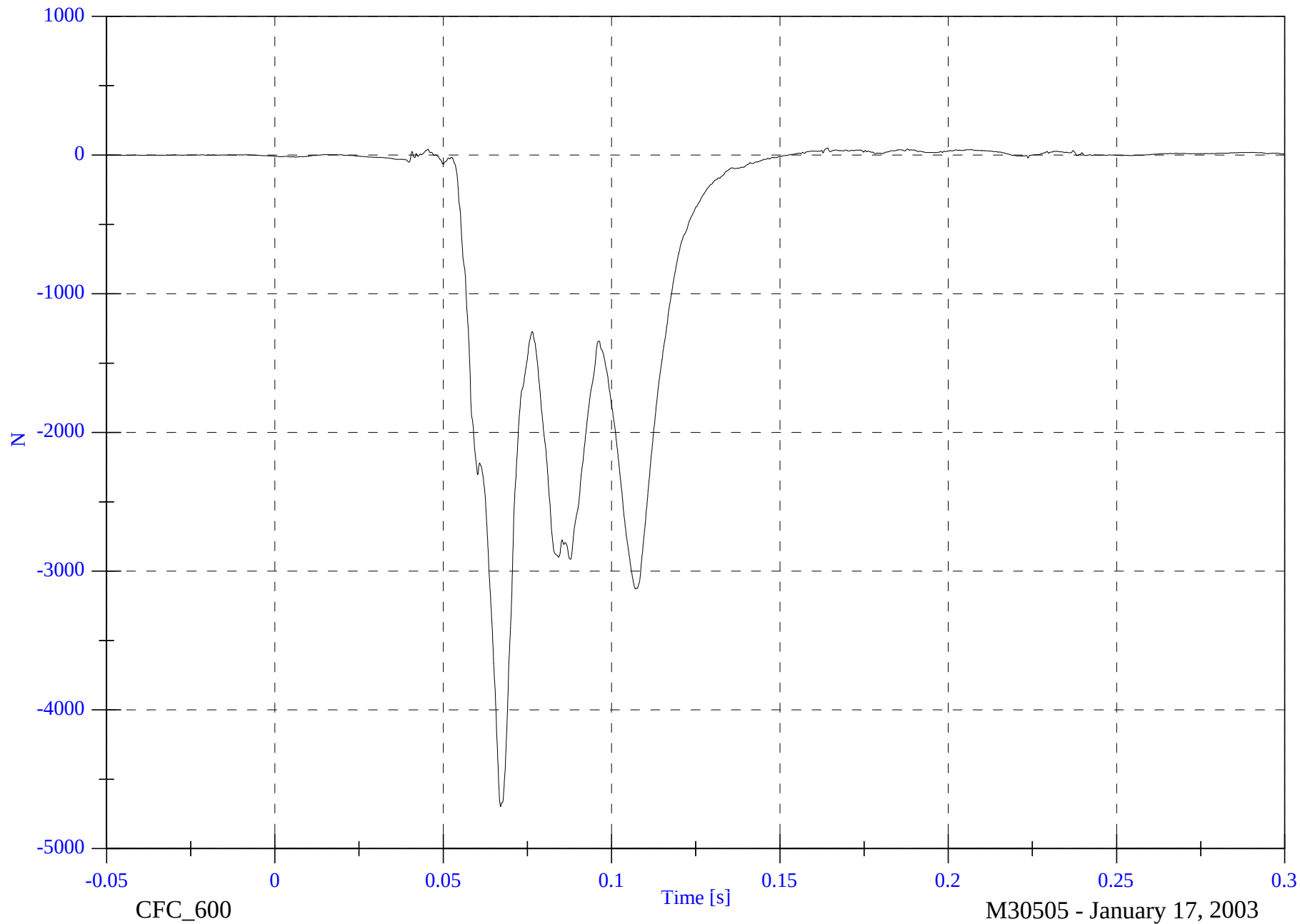


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Left Lower Tibia Fz

Max: 51.0 [N] at 0.164 [s]

Min: -4697.7 [N] at 0.067 [s]



B-101

8642-NCAP-27

CFC_600

Time [s]

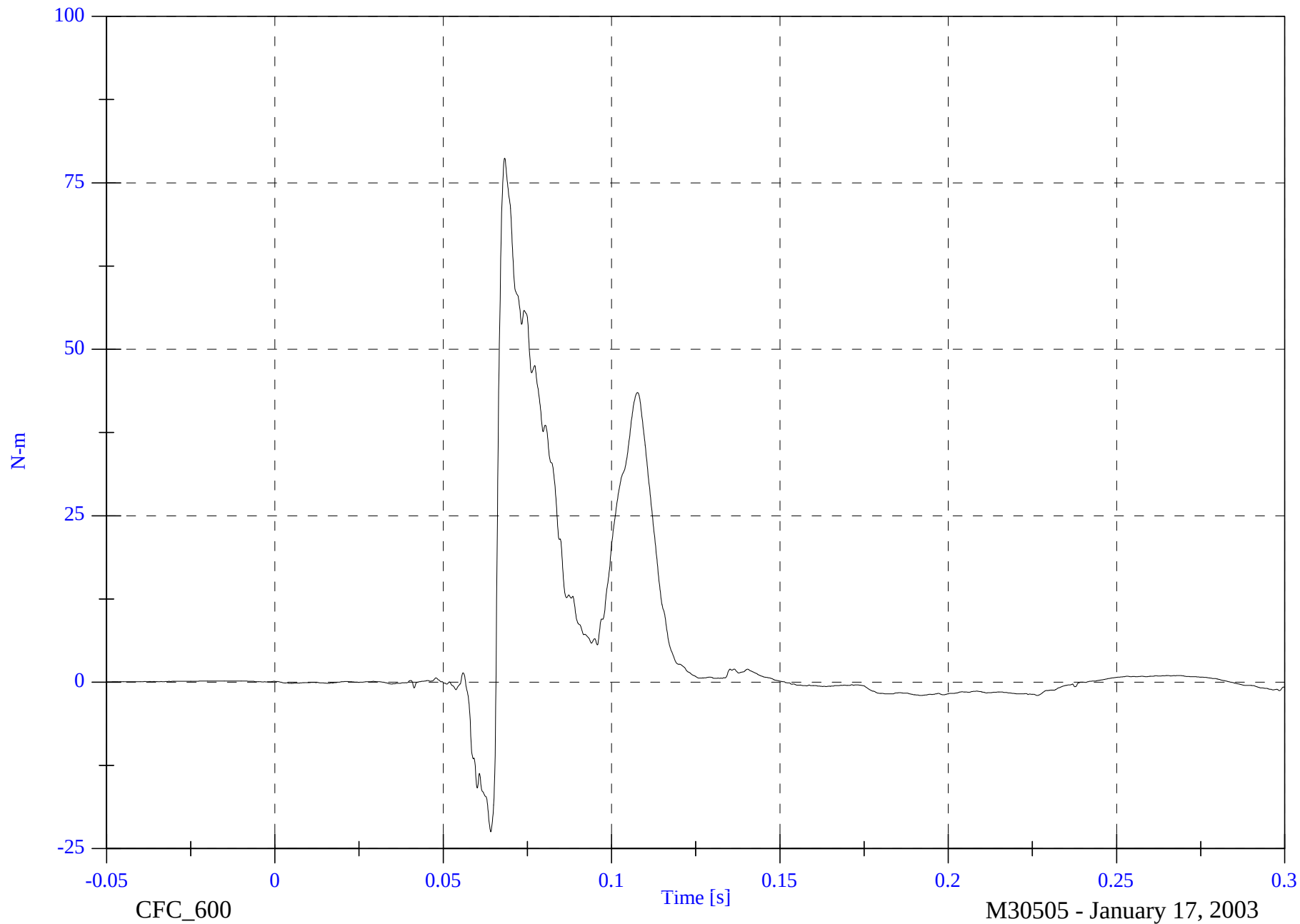
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P2 Left Lower Tibia Mx

Max: 78.7 [N-m] at 0.068 [s]

Min: -22.5 [N-m] at 0.064 [s]



B-102

8642-NCAP-27

CFC_600

Time [s]

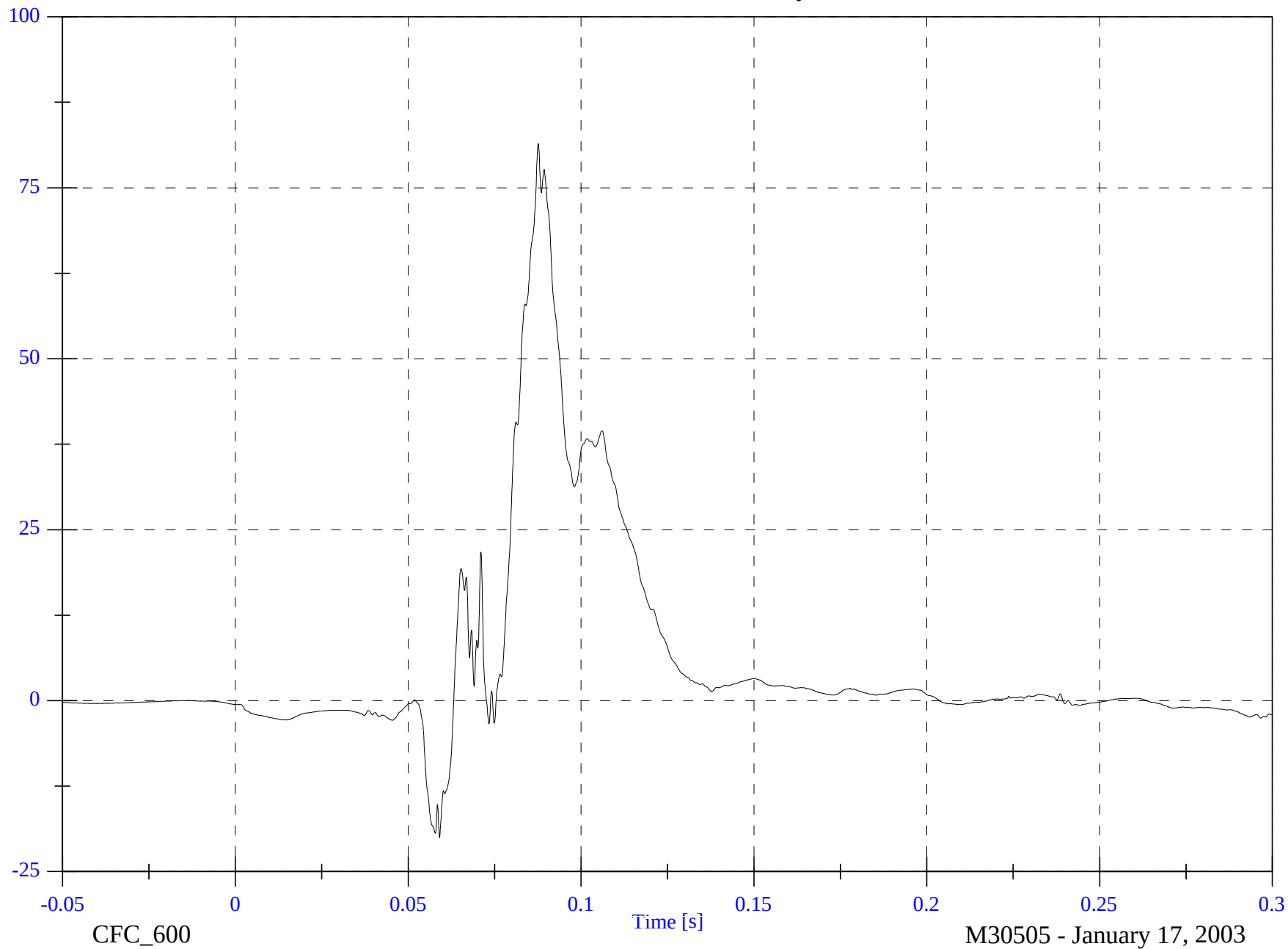
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P2 Left Lower Tibia My

Max: 81.5 [N-m] at 0.088 [s]

Min: -20.1 [N-m] at 0.059 [s]



B-103

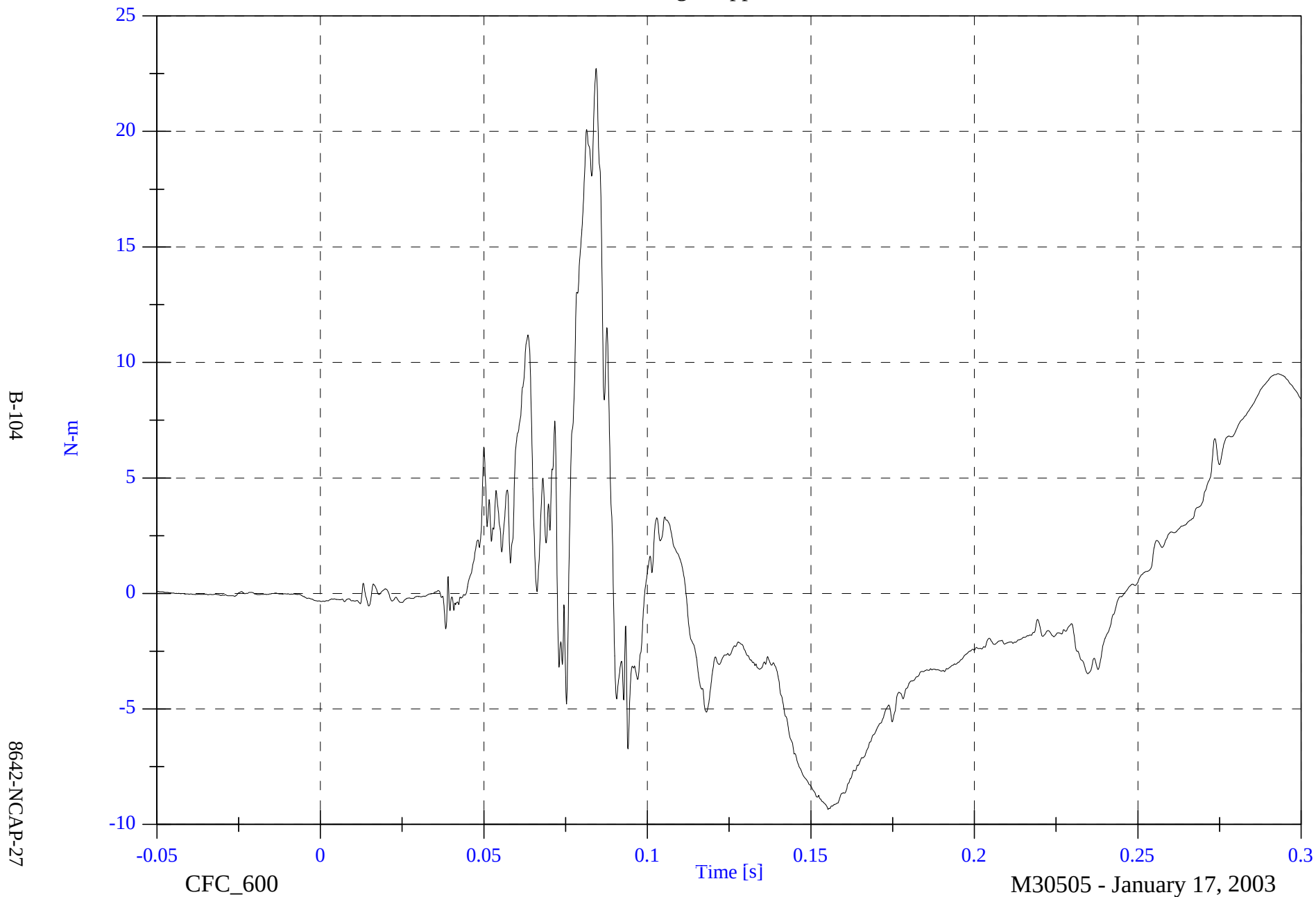
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P2 Right Upper Tibia Mx

Max: 22.7 [N-m] at 0.084 [s]

Min: -9.3 [N-m] at 0.155 [s]

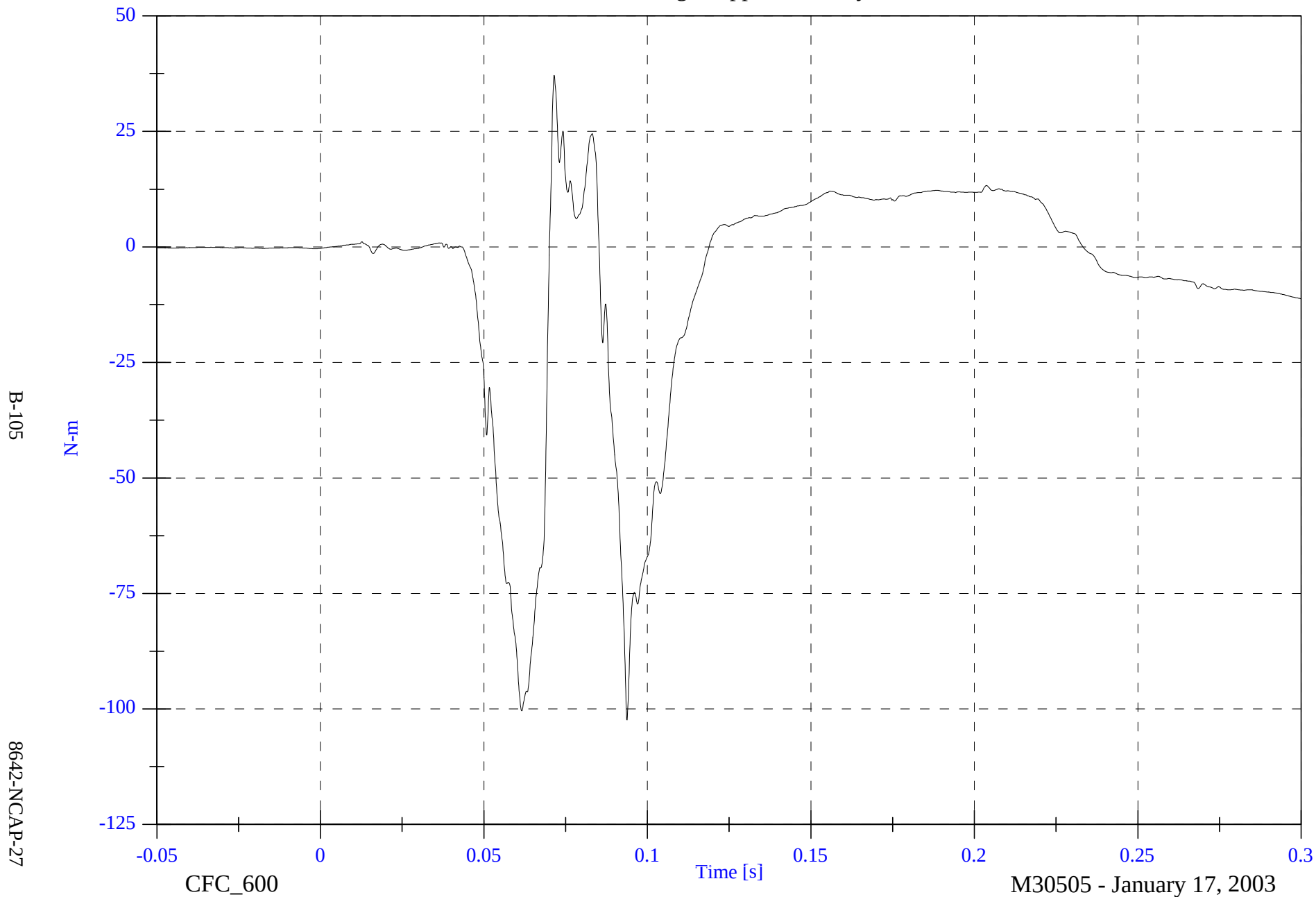


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Right Upper Tibia My

Max: 37.2 [N-m] at 0.072 [s]

Min: -102.4 [N-m] at 0.094 [s]

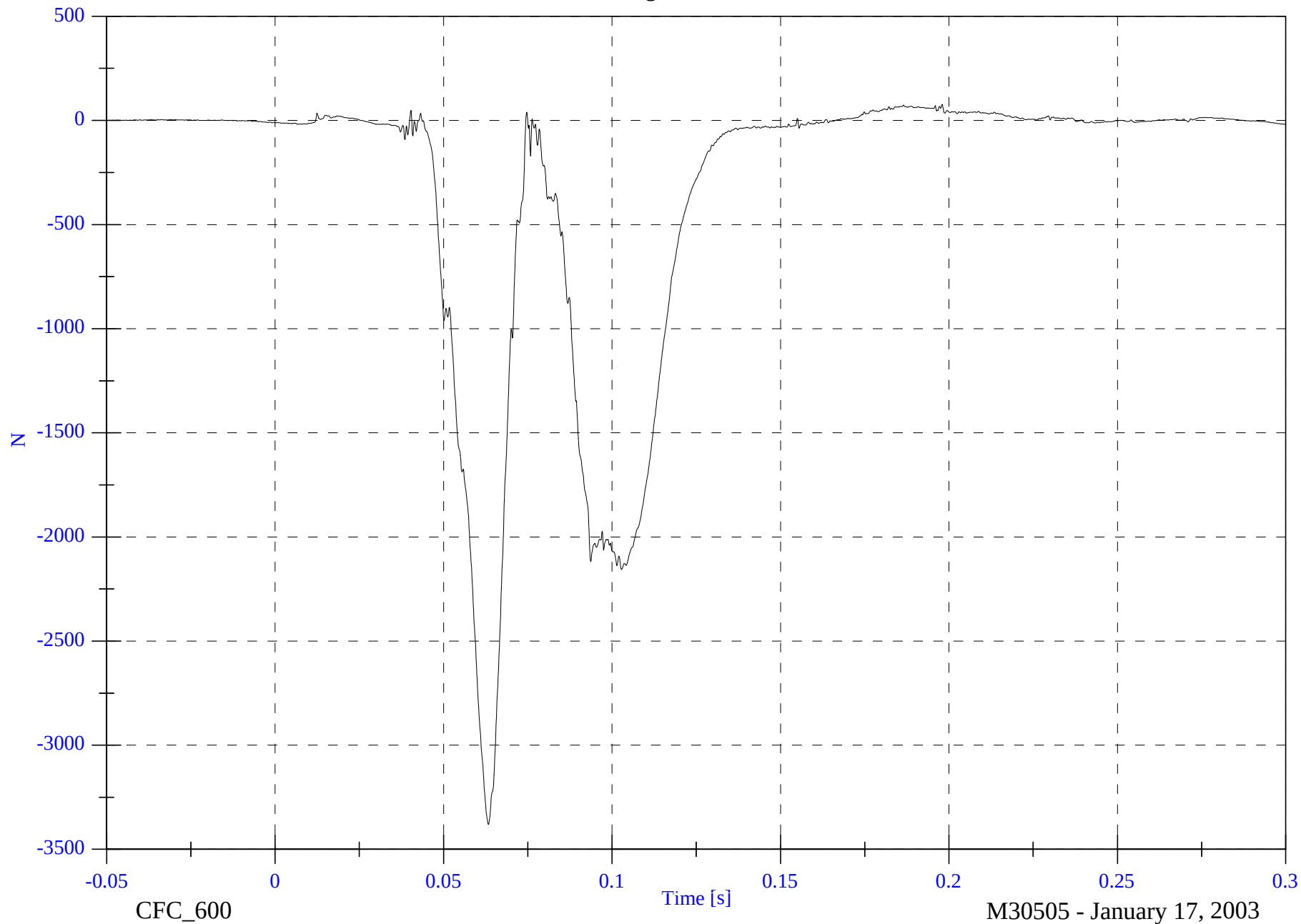


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Right Lower Tibia Fz

Max: 77.5 [N] at 0.198 [s]

Min: -3381.3 [N] at 0.063 [s]



B-106

8642-NCAP-27

CFC_600

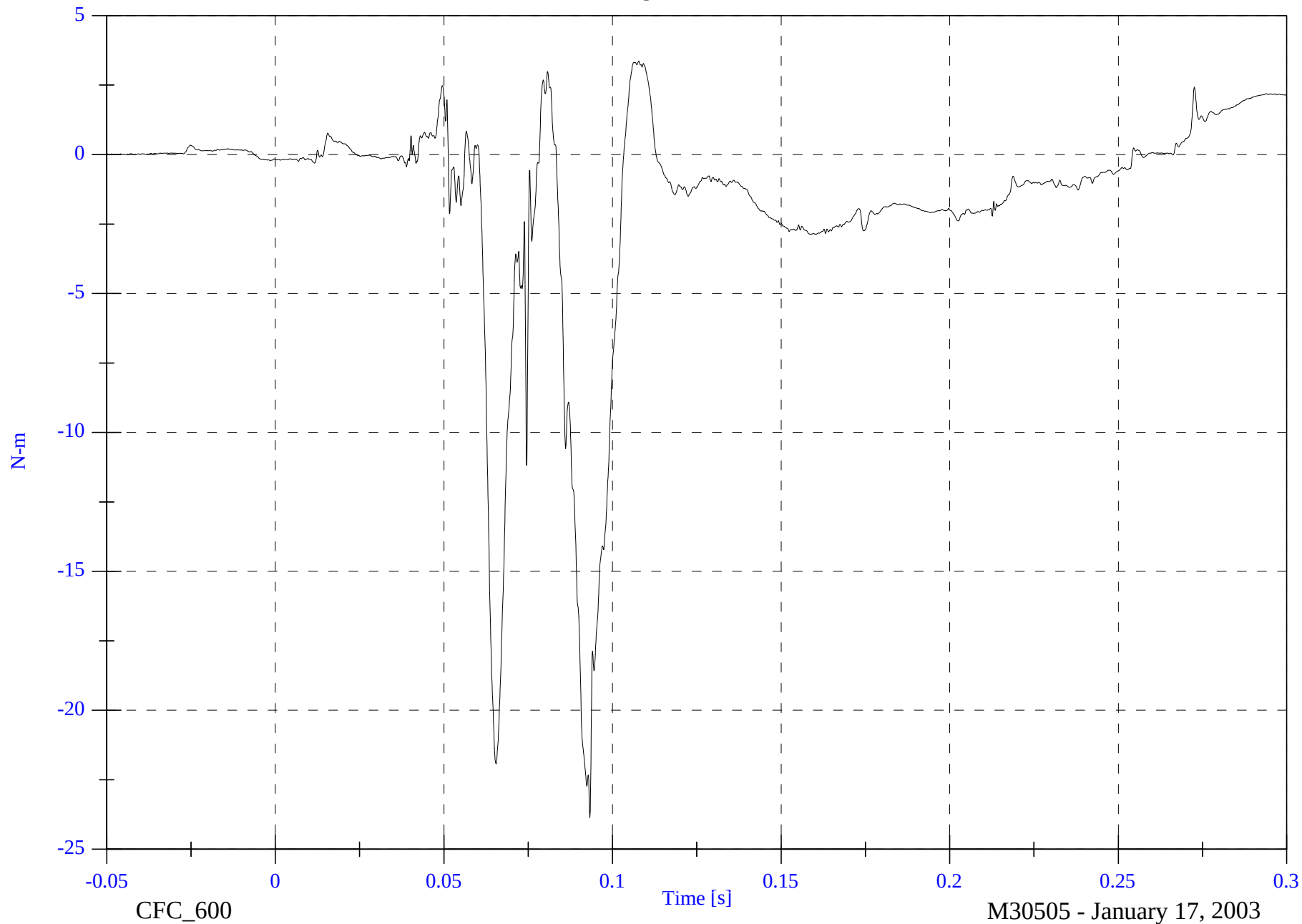
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P2 Right Lower Tibia Mx

Max: 3.4 [N-m] at 0.108 [s]

Min: -23.9 [N-m] at 0.093 [s]



B-107

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

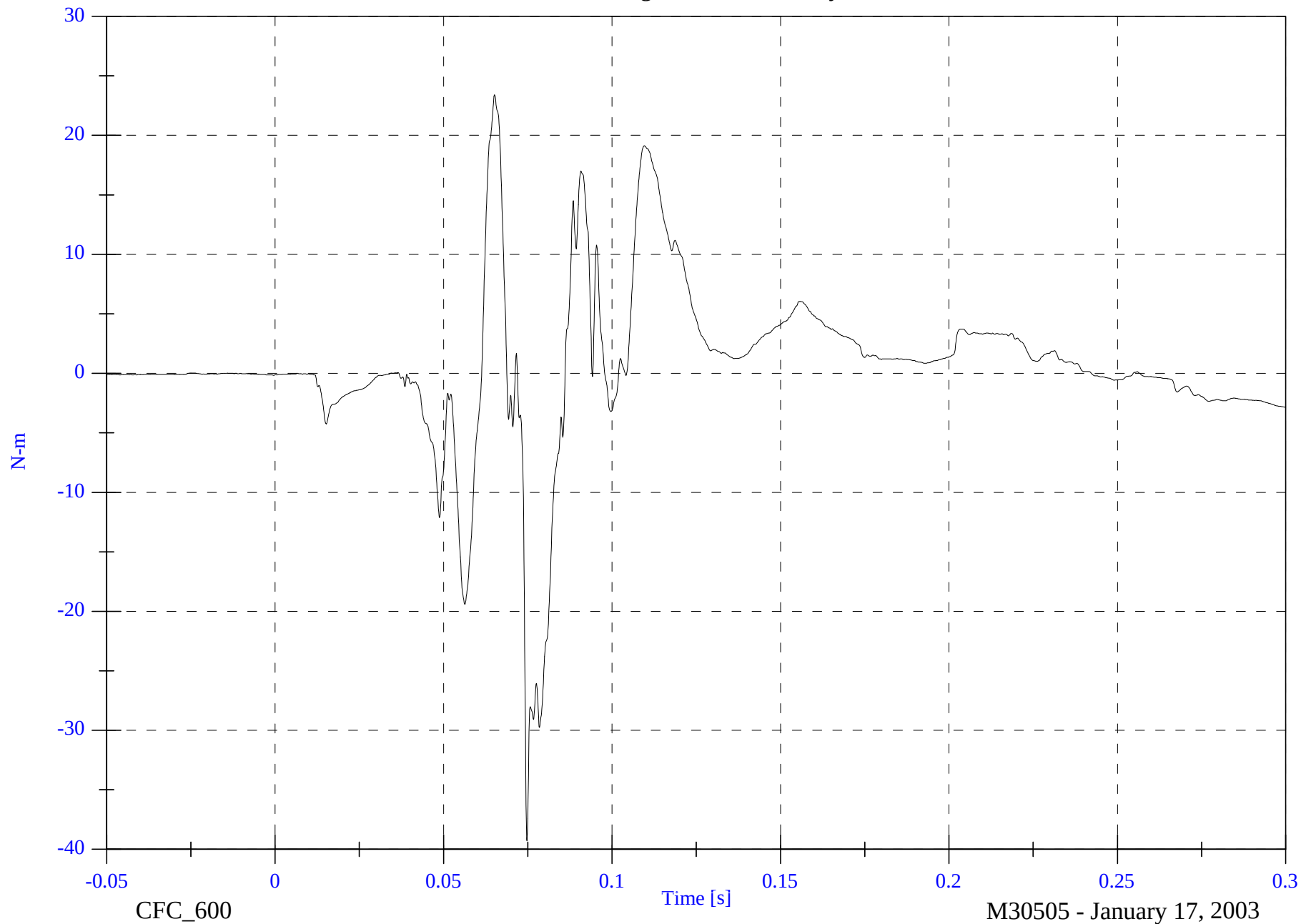
V1P2 Right Lower Tibia My

Max: 23.4 [N-m] at 0.065 [s]

Min: -39.3 [N-m] at 0.075 [s]

B-108

8642-NCAP-27

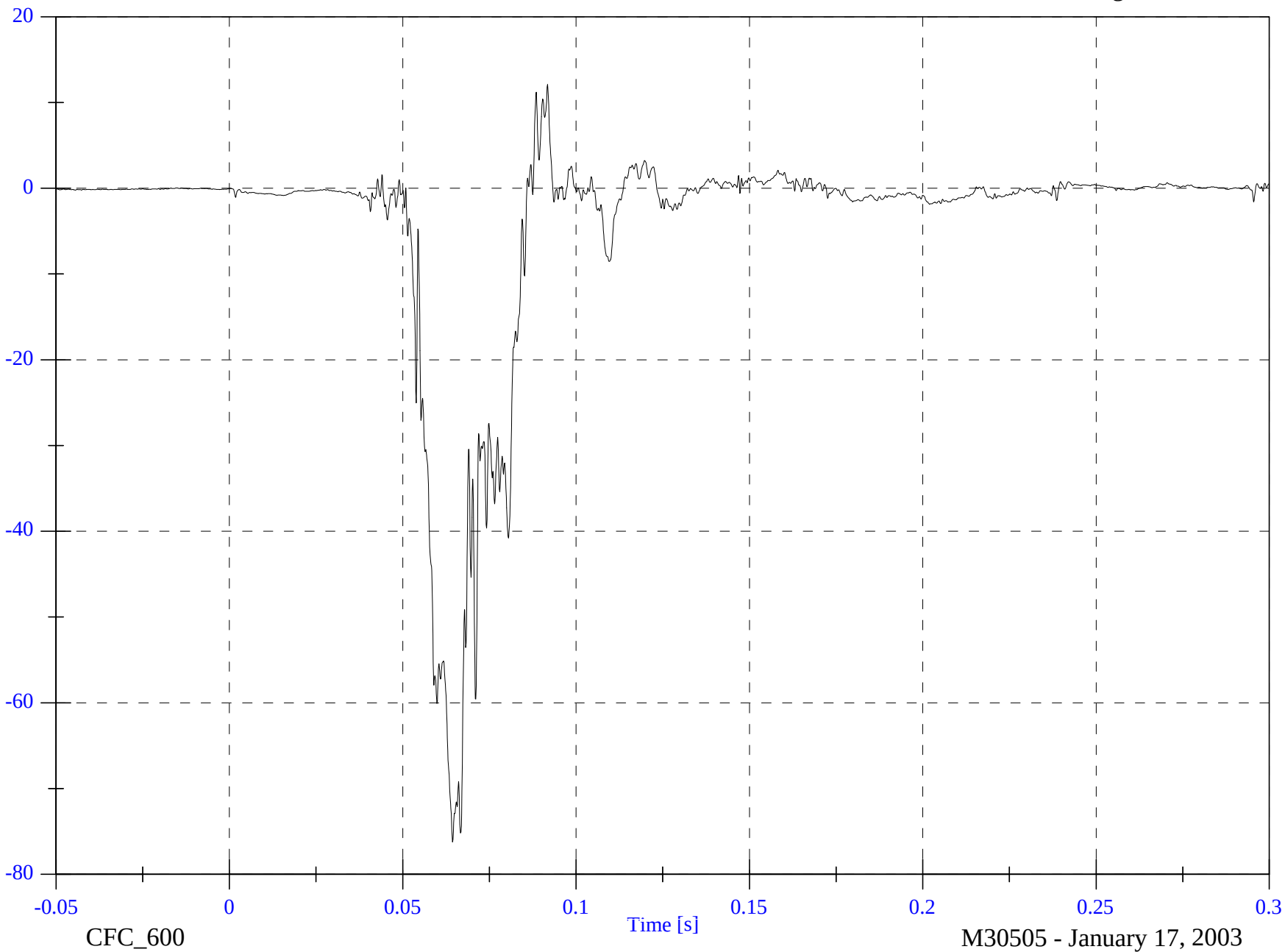


NCAP Test #5 - 2003 Hyundai Accent

V1P2 Left Foot Aft x

Max: 12.1 [g] at 0.092 [s]

Min: -76.2 [g] at 0.064 [s]



B-109

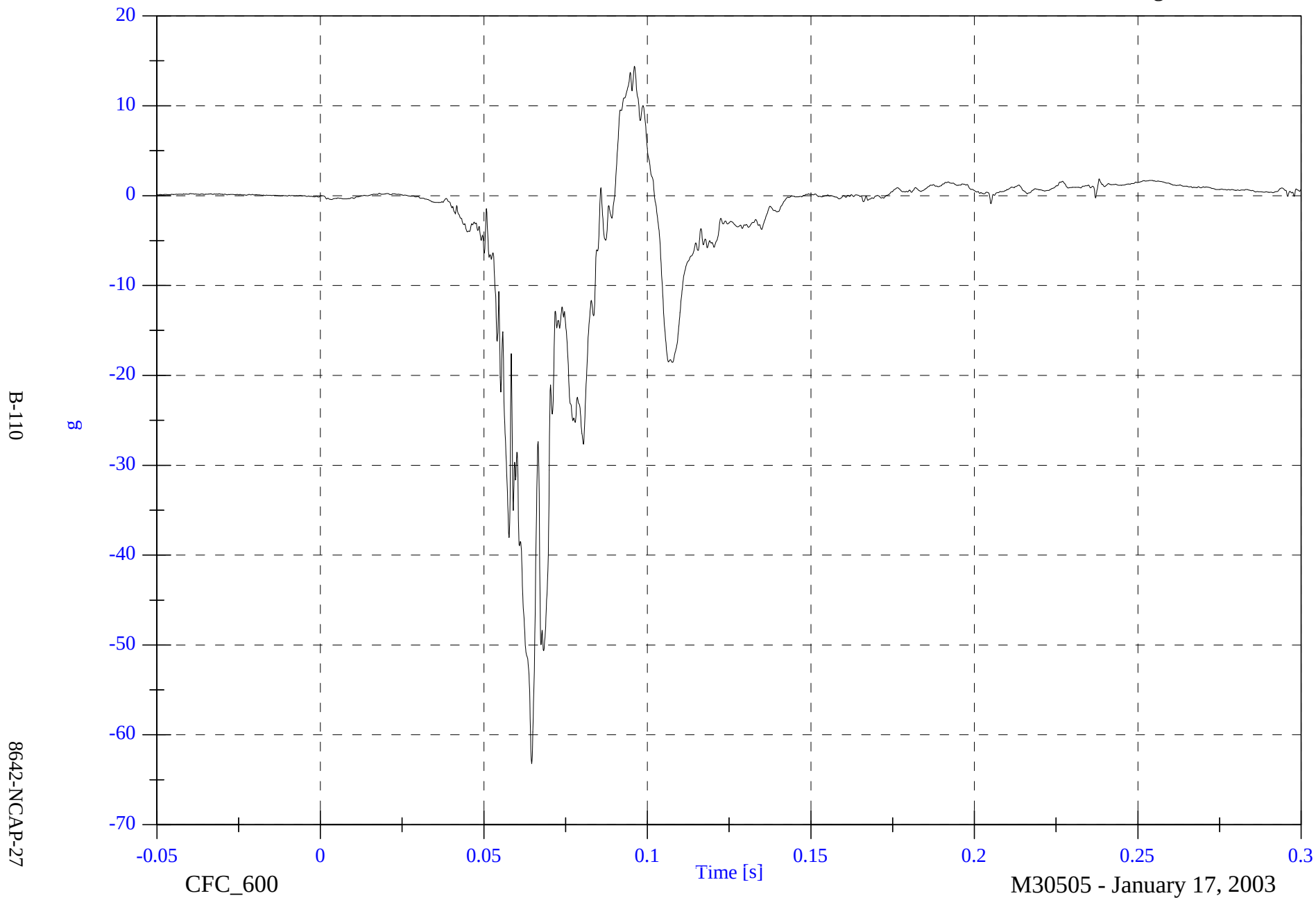
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P2 Left Foot Aft z

Max: 14.4 [g] at 0.096 [s]

Min: -63.2 [g] at 0.065 [s]



NCAP Test #5 - 2003 Hyundai Accent

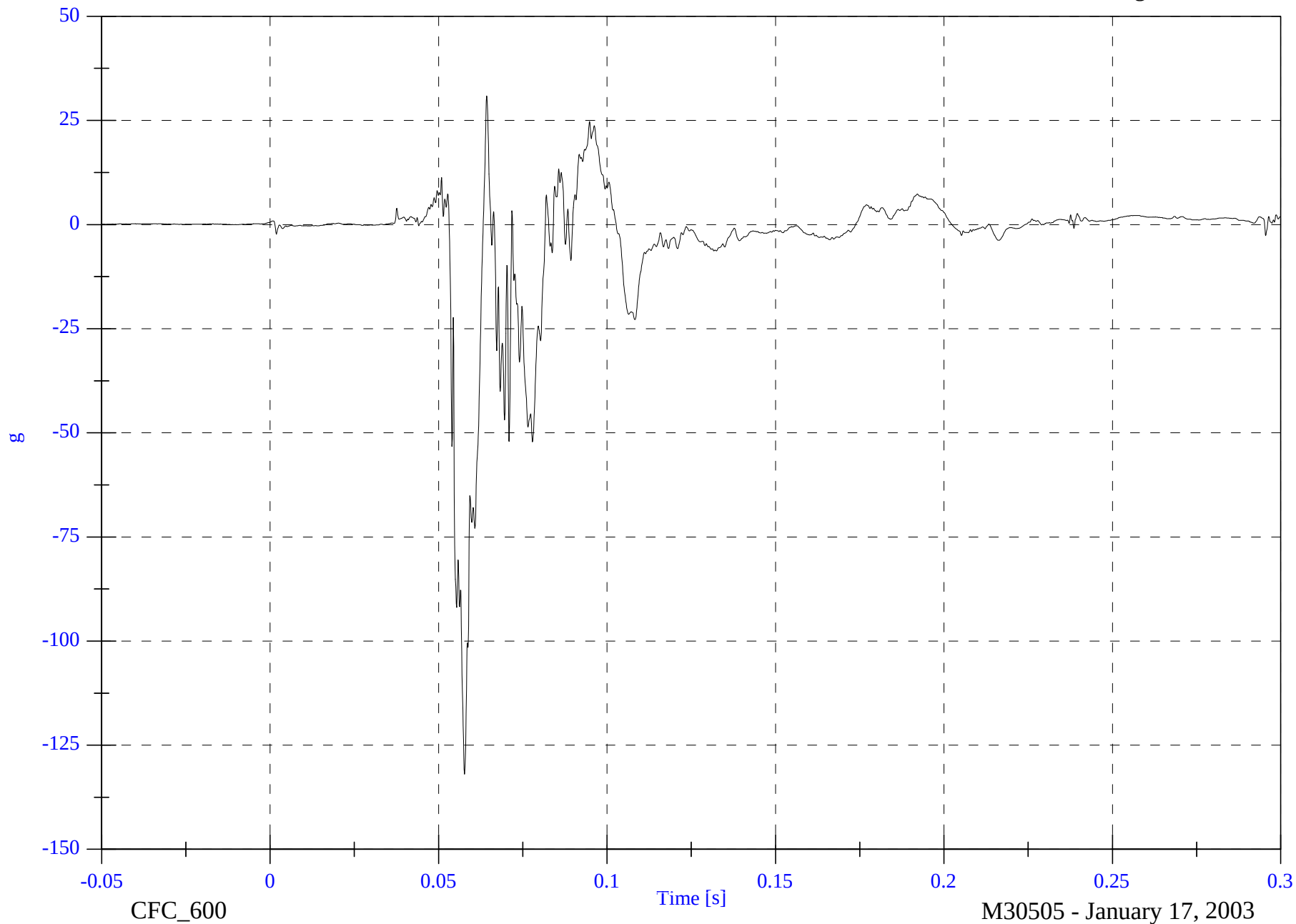
V1P2 Left Foot Fore z

Max: 30.9 [g] at 0.064 [s]

Min: -132.0 [g] at 0.058 [s]

B-111

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

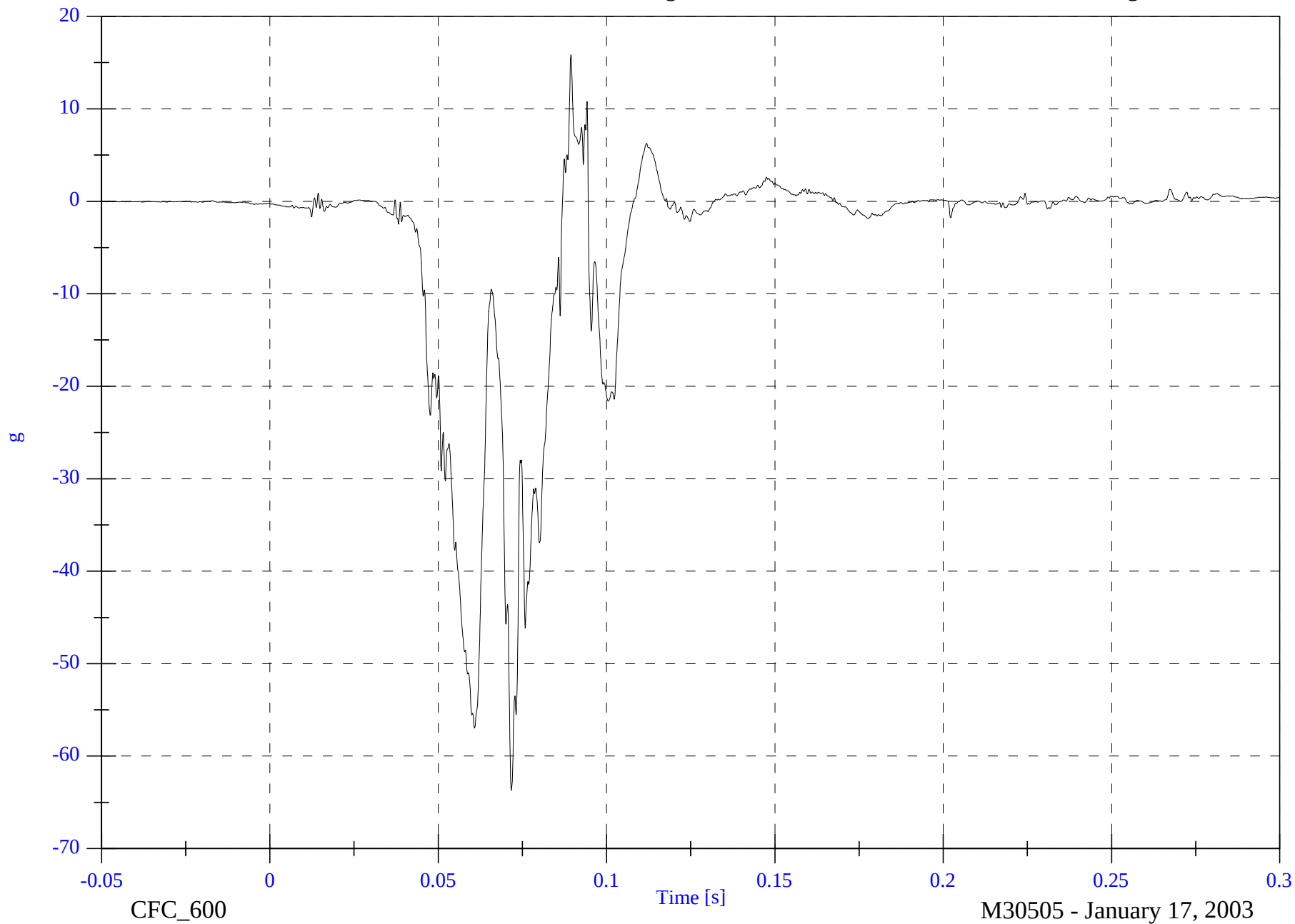
V1P2 Right Foot Aft x

Max: 15.9 [g] at 0.089 [s]

Min: -63.7 [g] at 0.072 [s]

B-112

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

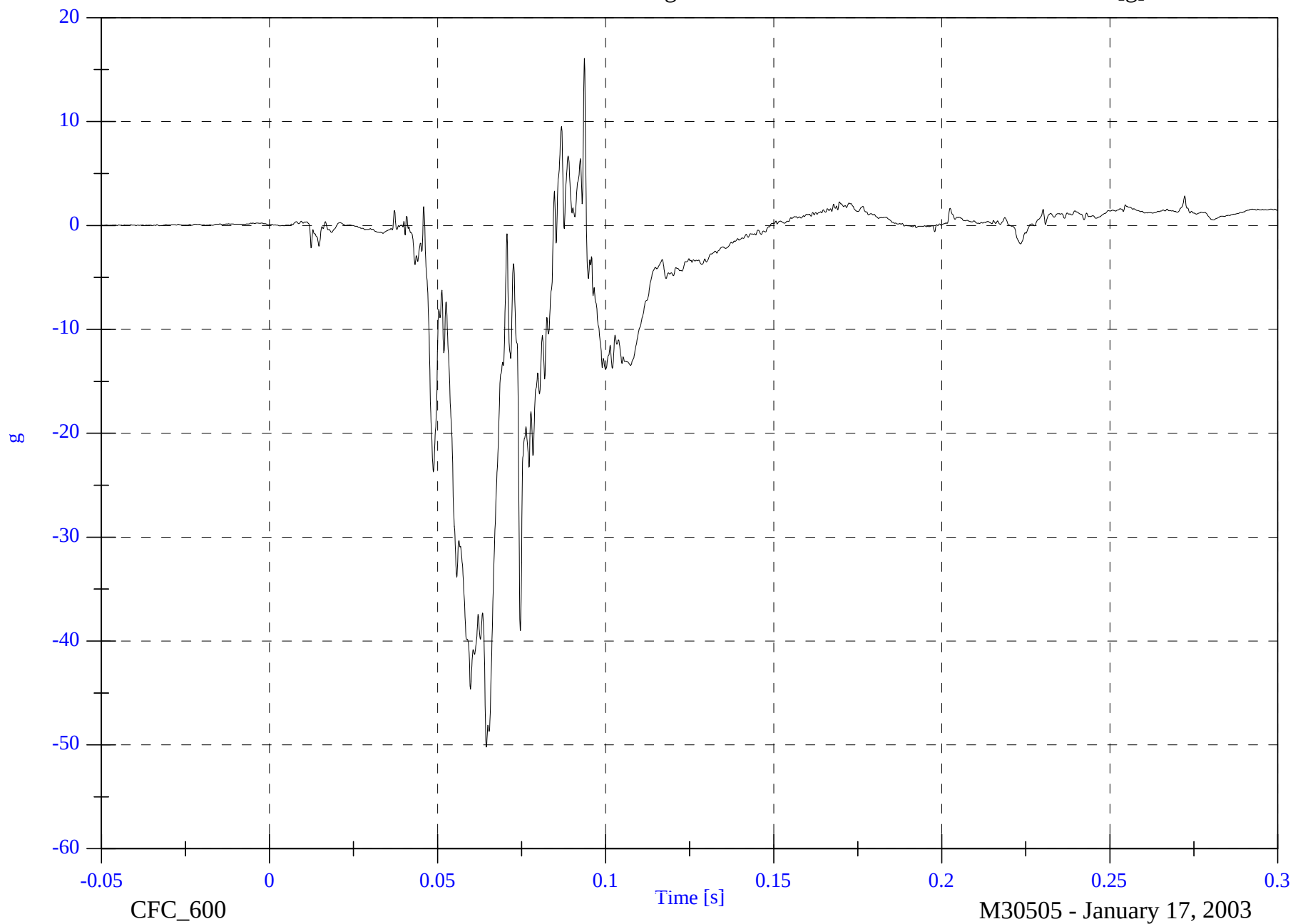
V1P2 Right Foot Aft z

Max: 16.1 [g] at 0.094 [s]

Min: -50.2 [g] at 0.064 [s]

B-113

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

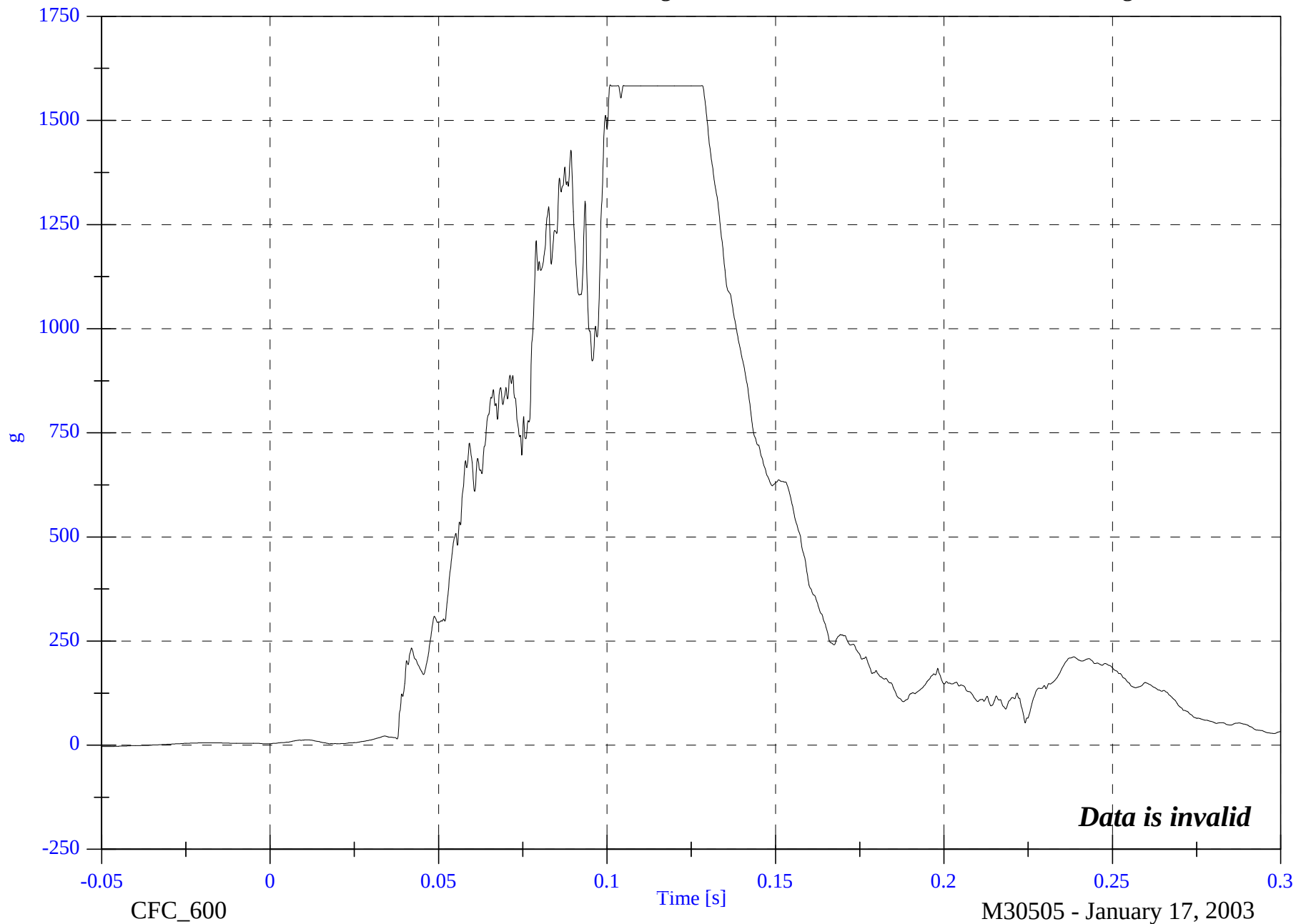
V1P2 Right Foot Fore z

Max: 1585.1 [g] at 0.101 [s]

Min: -3.5 [g] at -0.050 [s]

B-114

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

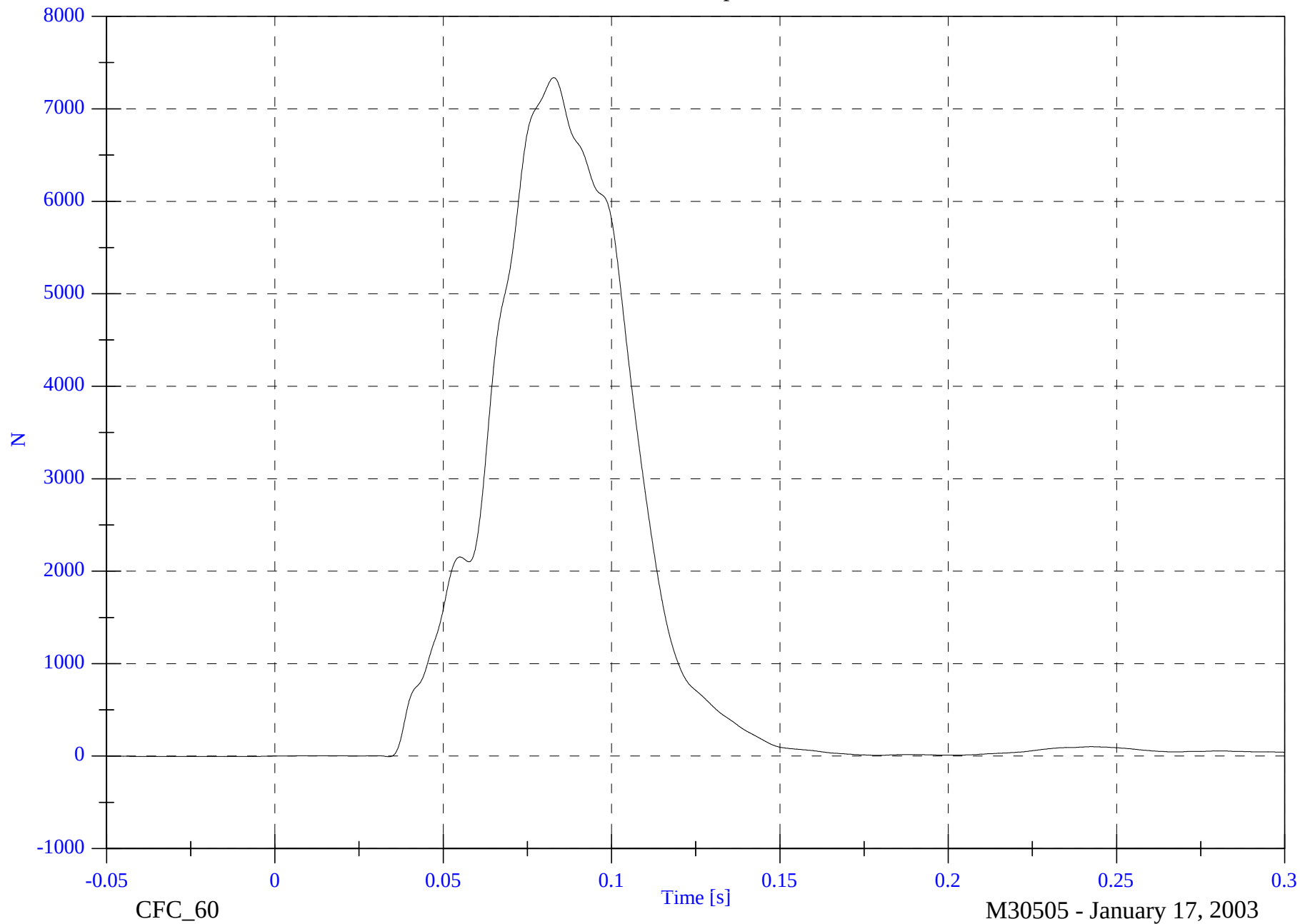
V1 Pass Lap Belt

Max: 7337.4 [N] at 0.083 [s]

Min: -6.0 [N] at 0.034 [s]

B-115

8642-NCAP-27

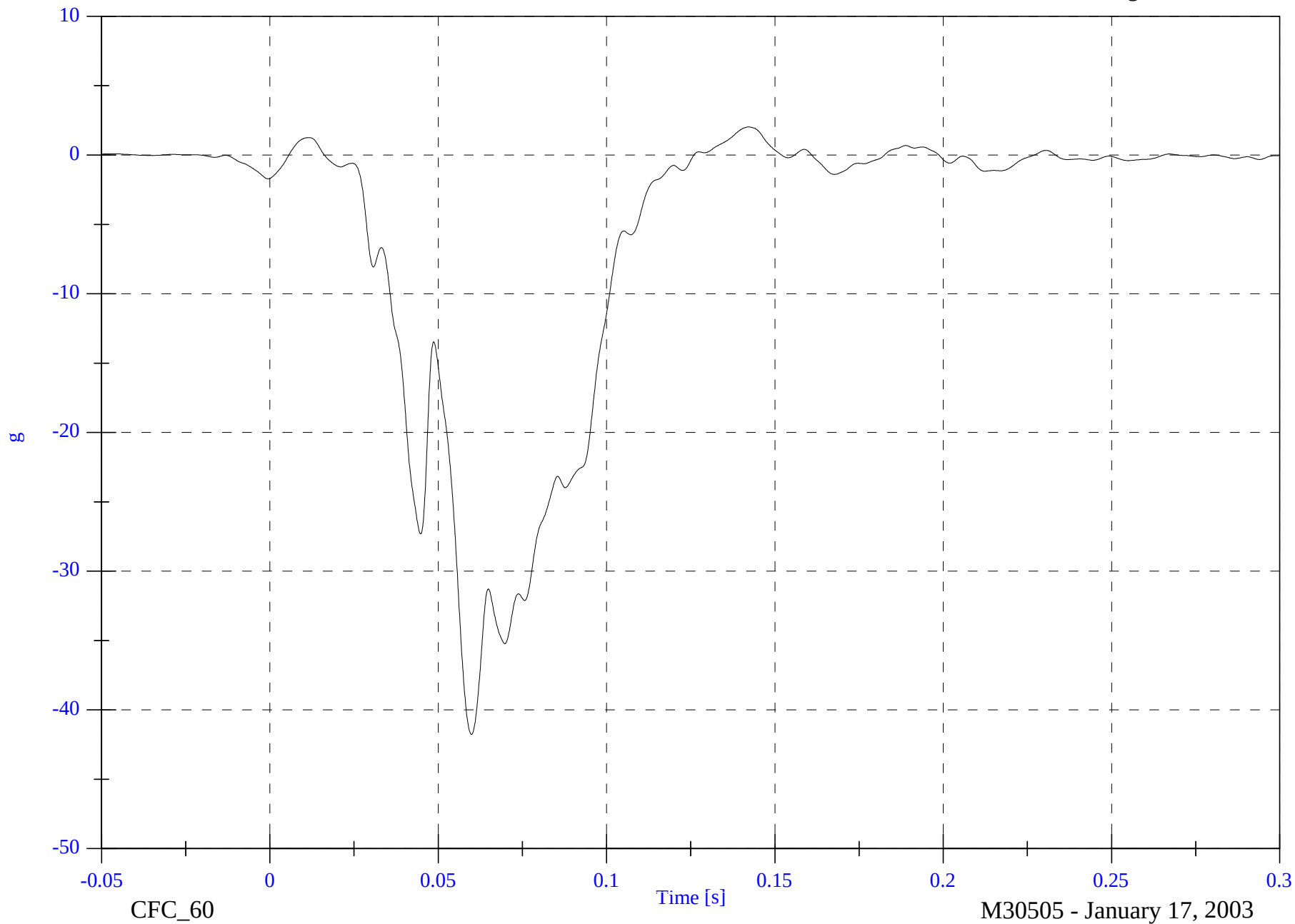


NCAP Test #5 - 2003 Hyundai Accent

V1 Left Rear #1x

Max: 2.0 [g] at 0.142 [s]

Min: -41.8 [g] at 0.060 [s]



B-116

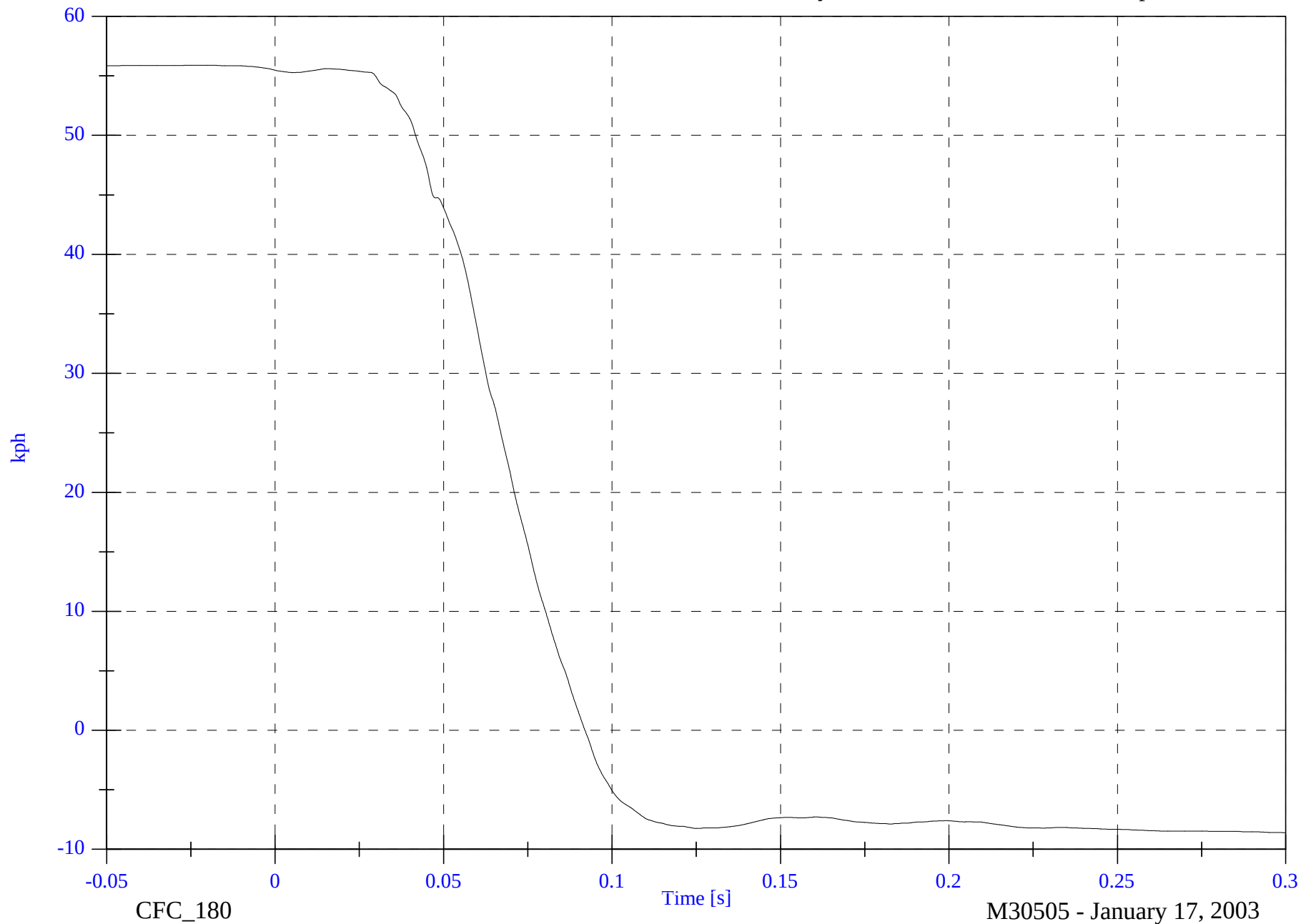
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1 Left Rear #1x Velocity

Max: 55.9 [kph] at -0.020 [s]

Min: -8.6 [kph] at 0.300 [s]



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8642-NCAP-27

CFC_180

Time [s]

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NCAP Test #5 - 2003 Hyundai Accent

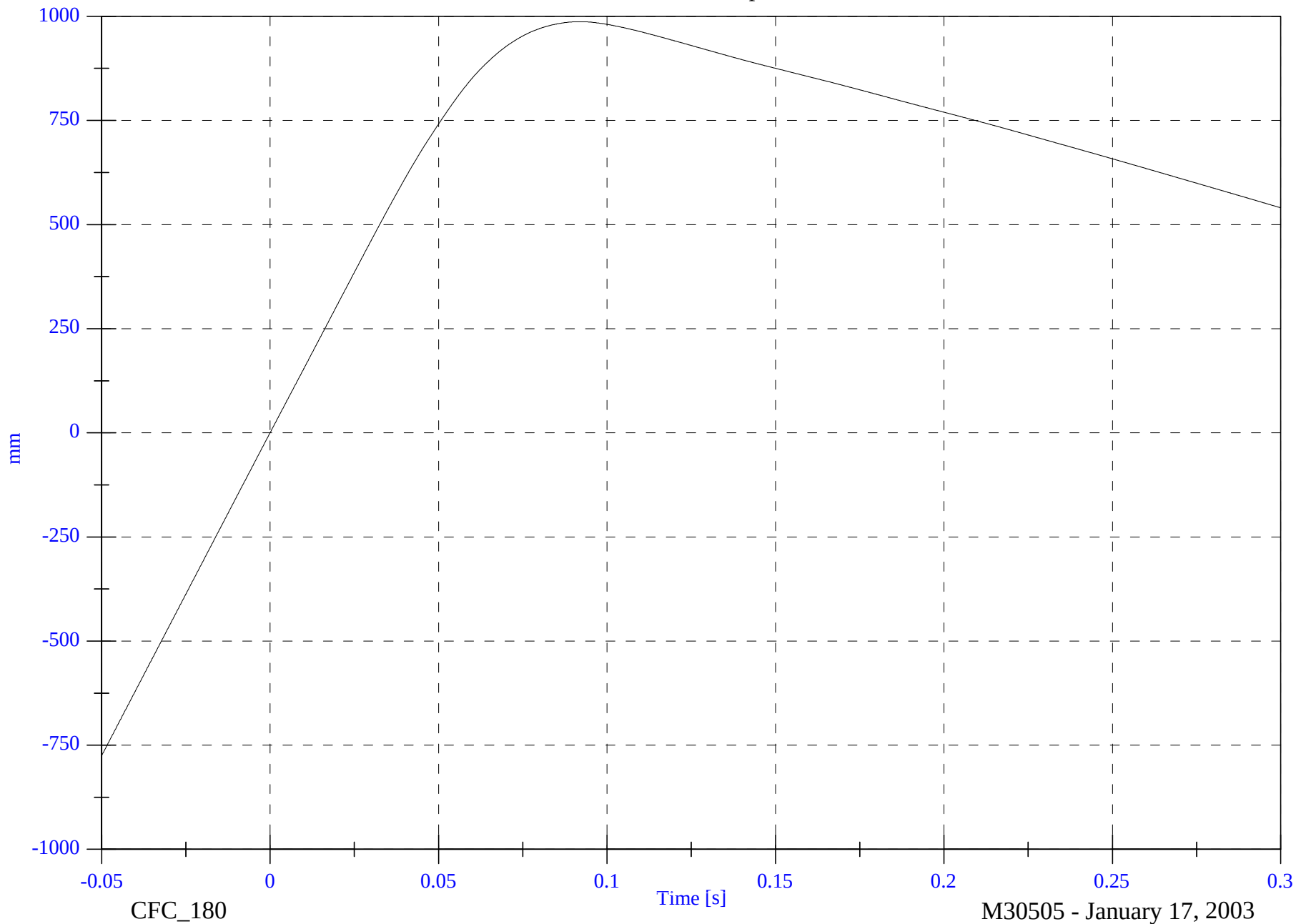
V1 Left Rear #1x Displacement

Max: 987.1 [mm] at 0.092 [s]

Min: -775.5 [mm] at -0.050 [s]

B-118

8642-NCAP-27



CFC_180

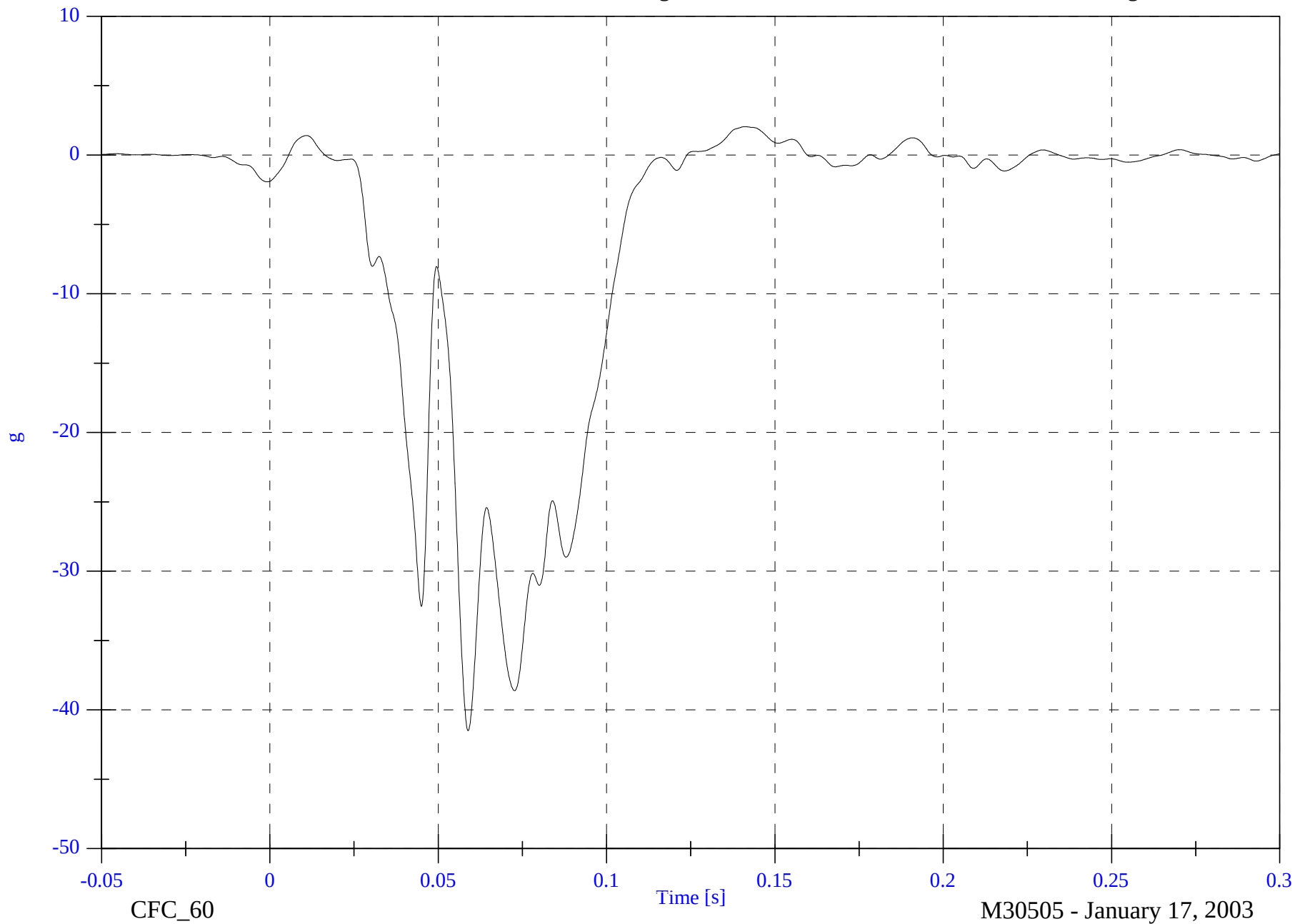
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1 Right Rear #2x

Max: 2.1 [g] at 0.141 [s]

Min: -41.5 [g] at 0.059 [s]



B-119

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

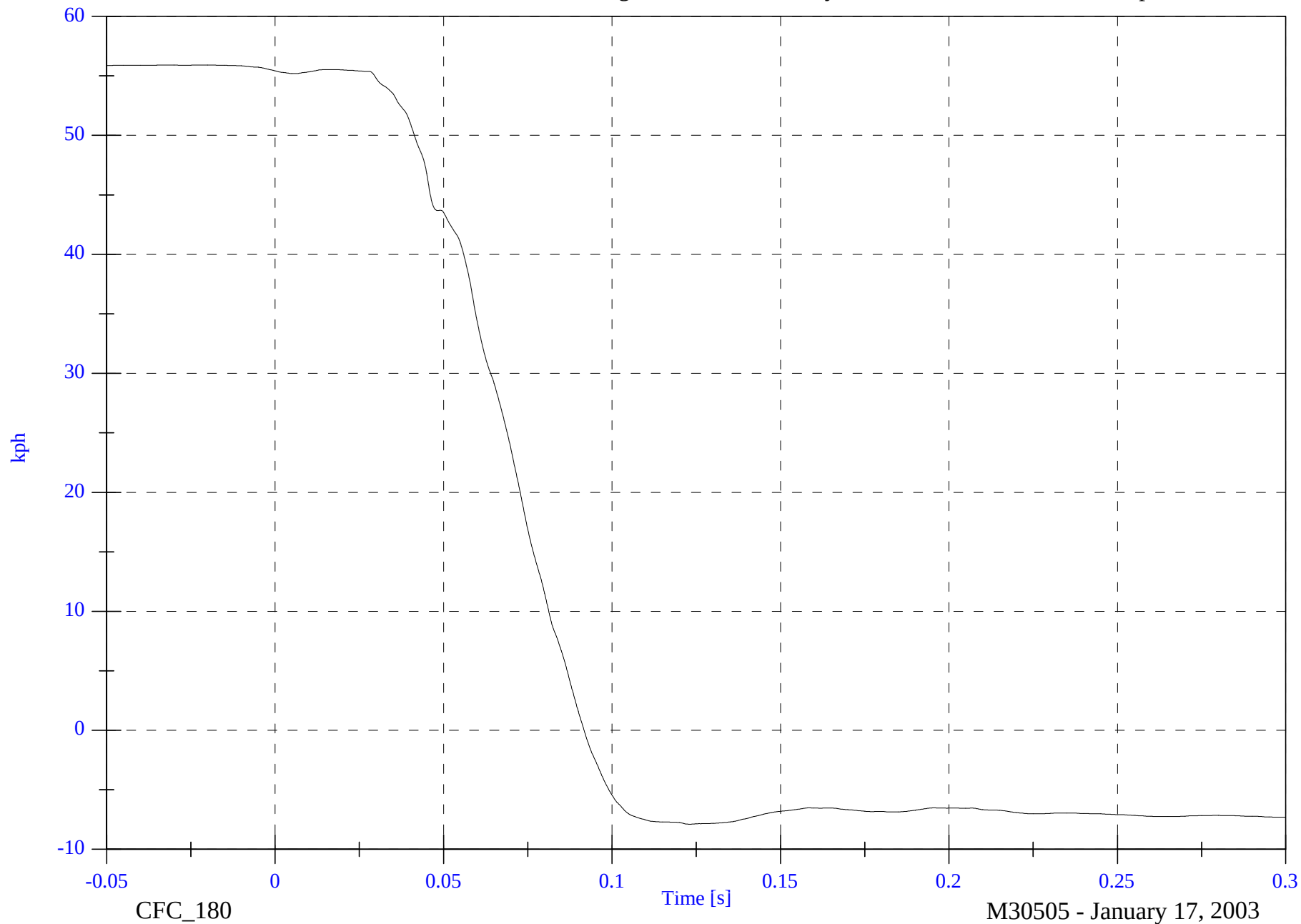
V1 Right Rear #2x Velocity

Max: 55.9 [kph] at -0.033 [s]

Min: -7.9 [kph] at 0.123 [s]

B-120

8642-NCAP-27

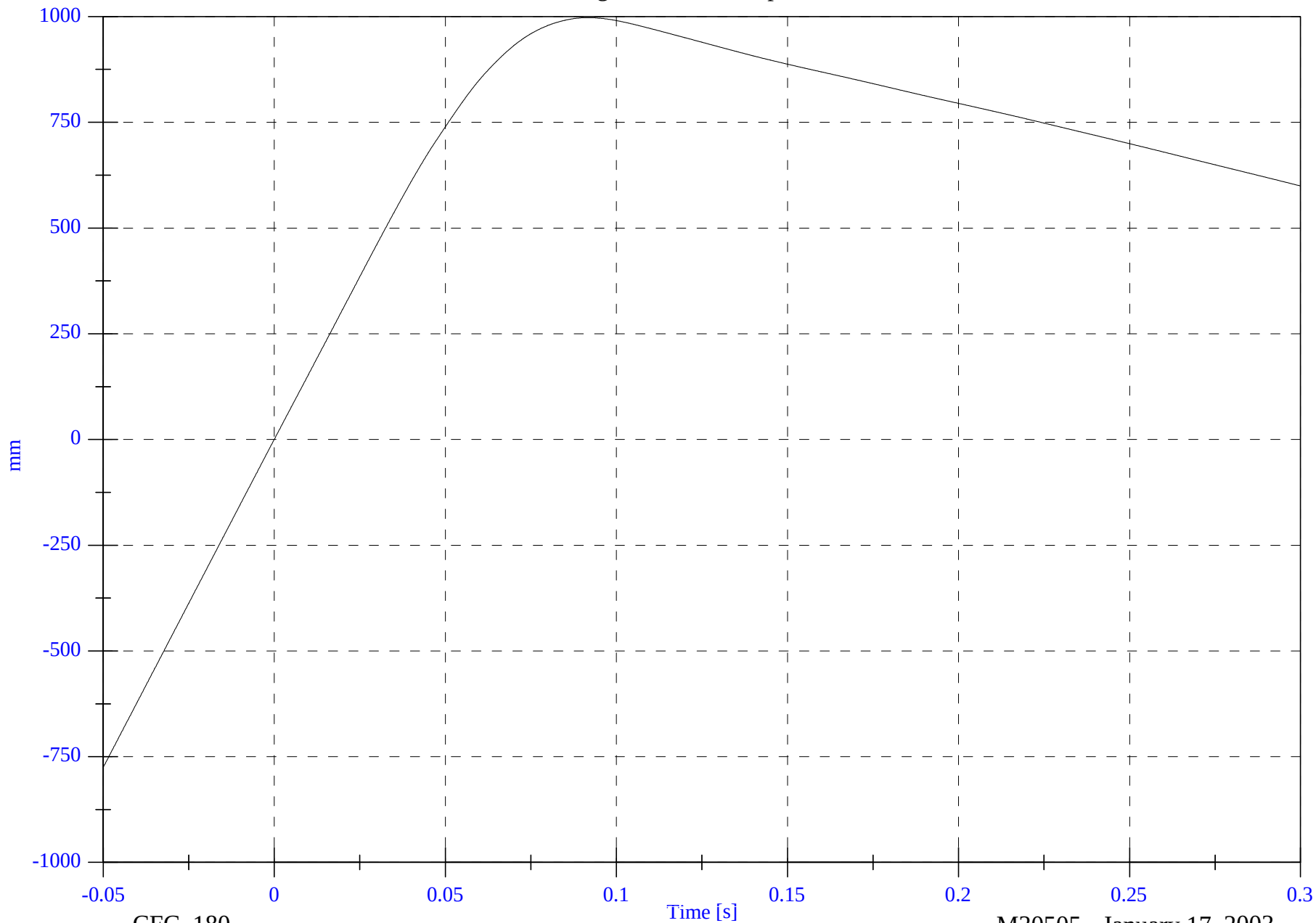


NCAP Test #5 - 2003 Hyundai Accent

V1 Right Rear #2x Displacement

Max: 997.4 [mm] at 0.092 [s]

Min: -775.7 [mm] at -0.050 [s]



B-121

8642-NCAP-27

CFC_180

M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

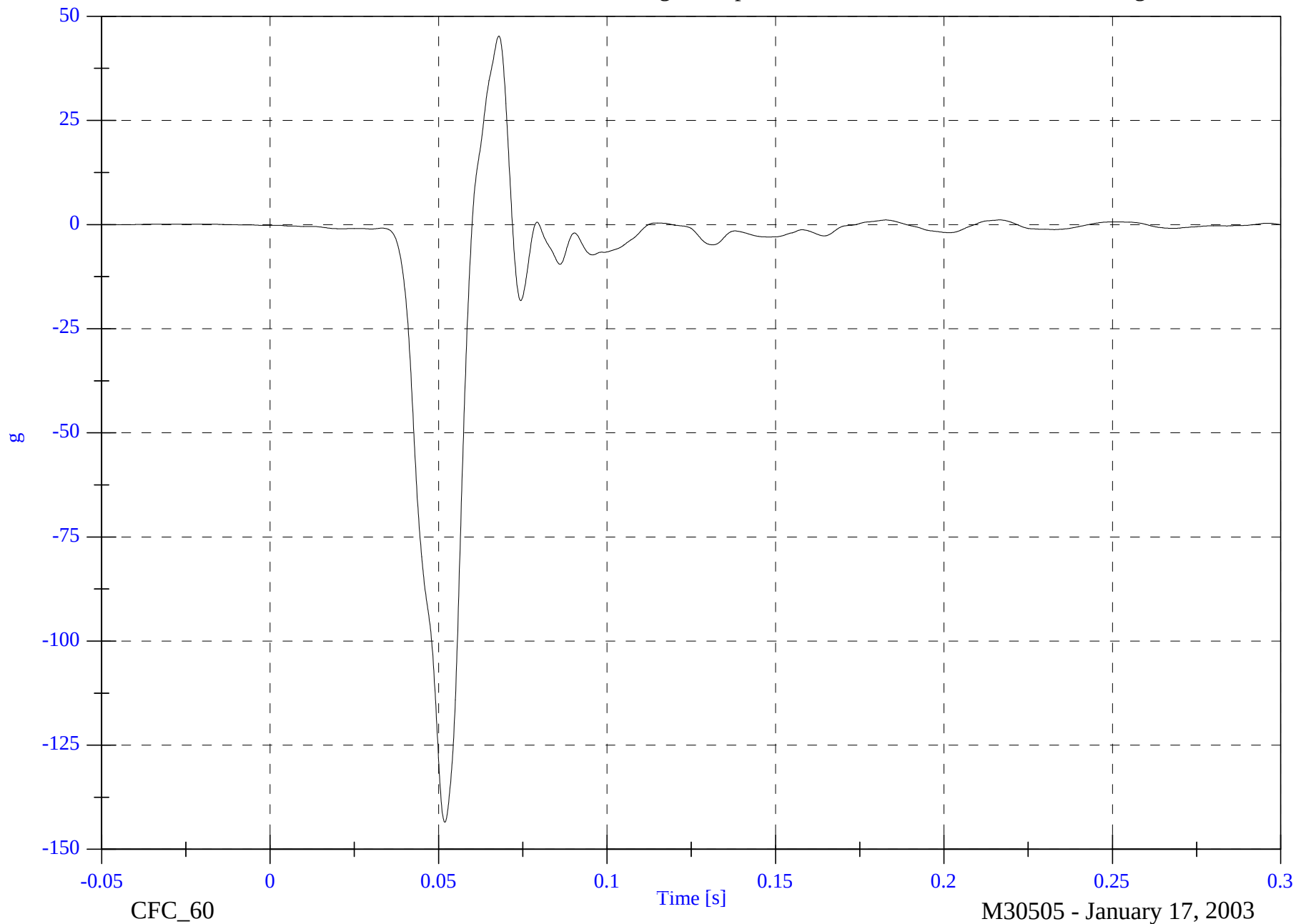
V1 Engine Top #3x

Max: 45.3 [g] at 0.068 [s]

Min: -143.5 [g] at 0.052 [s]

B-122

8642-NCAP-27

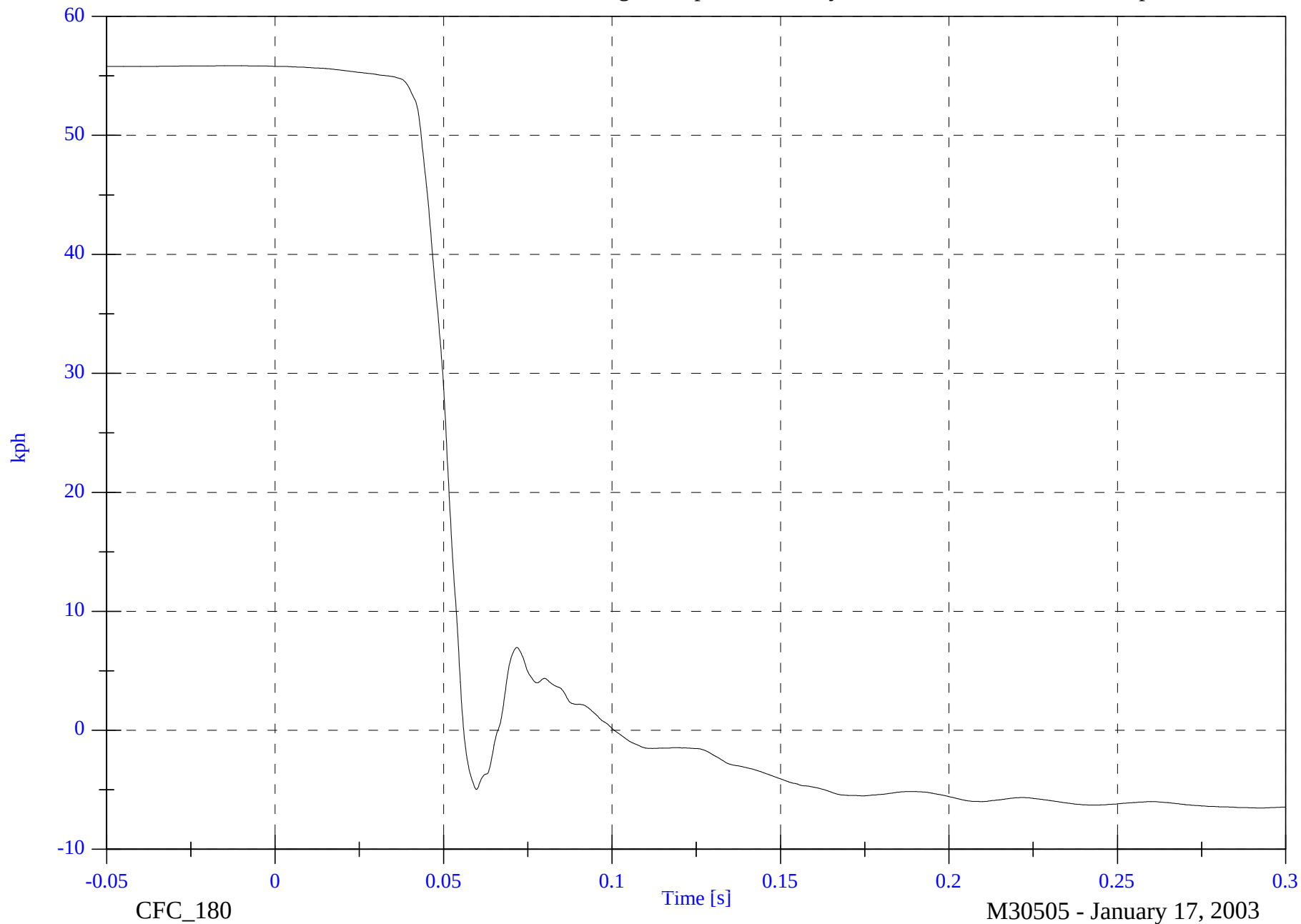


NCAP Test #5 - 2003 Hyundai Accent

V1 Engine Top #3x Velocity

Max: 55.8 [kph] at -0.014 [s]

Min: -6.5 [kph] at 0.292 [s]



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8642-NCAP-27

CFC_180

Time [s]

M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

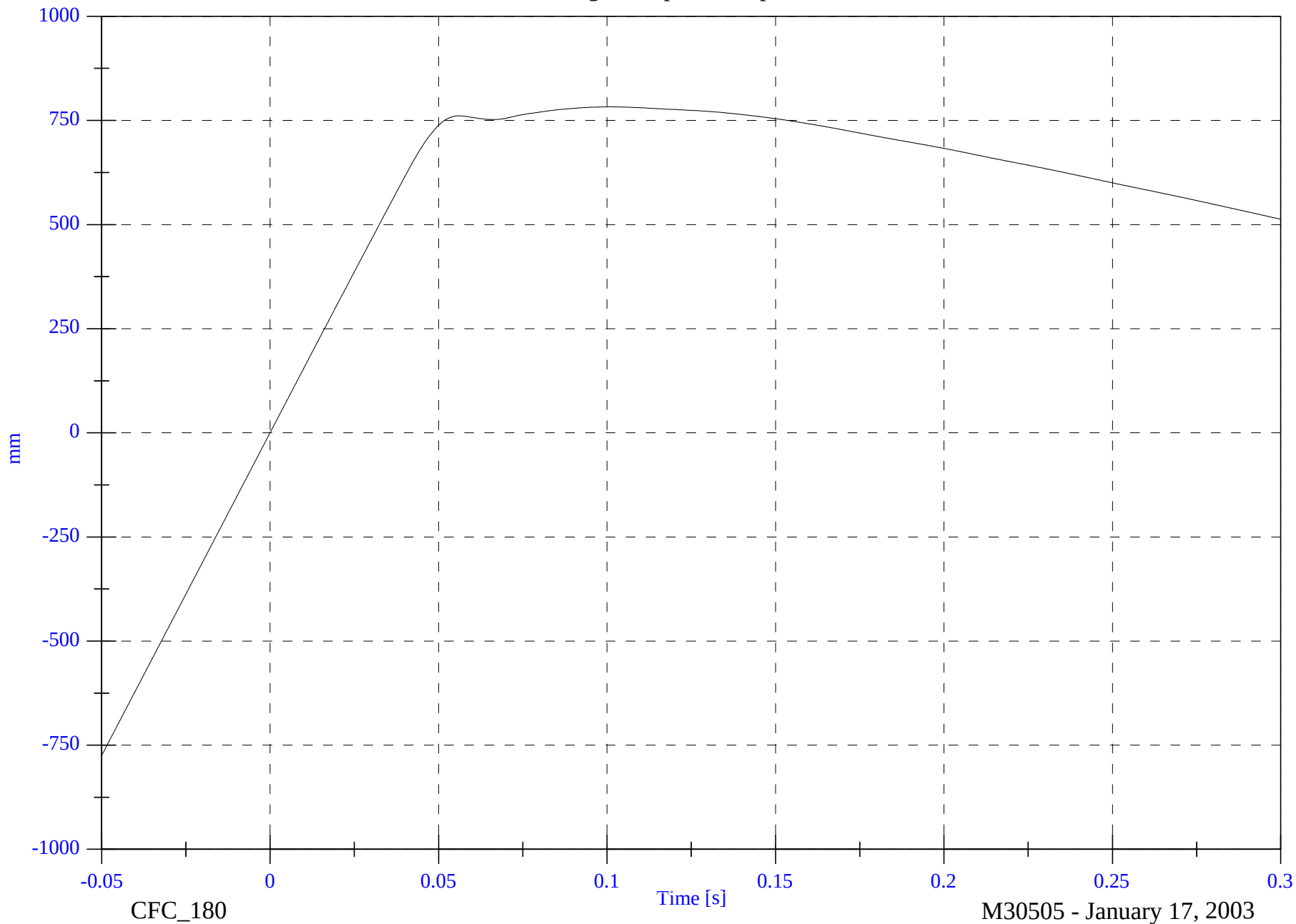
V1 Engine Top #3x Displacement

Max: 782.7 [mm] at 0.101 [s]

Min: -775.2 [mm] at -0.050 [s]

B-124

8642-NCAP-27



CFC_180

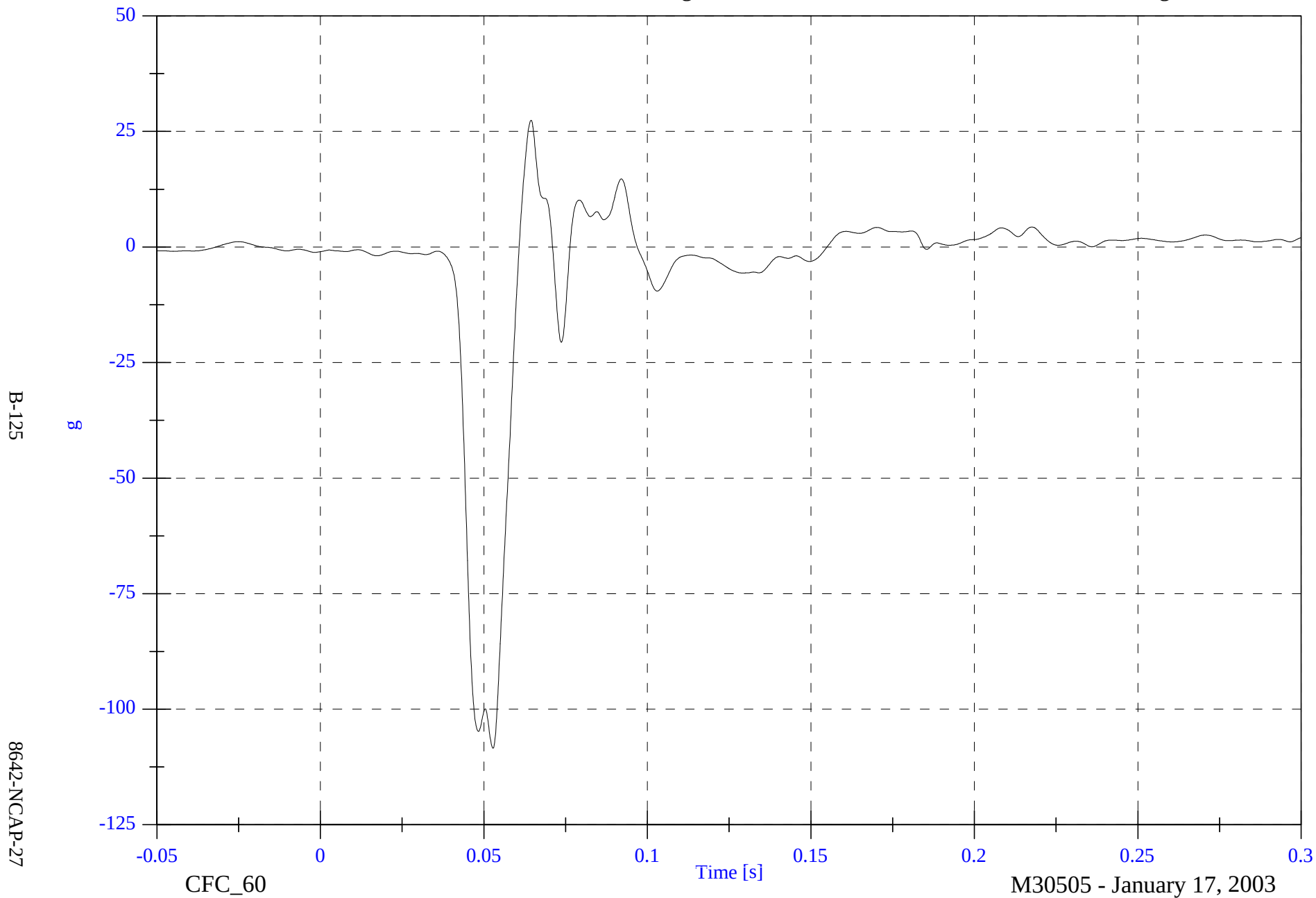
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1 Engine Bottom #4x

Max: 27.4 [g] at 0.064 [s]

Min: -108.5 [g] at 0.053 [s]

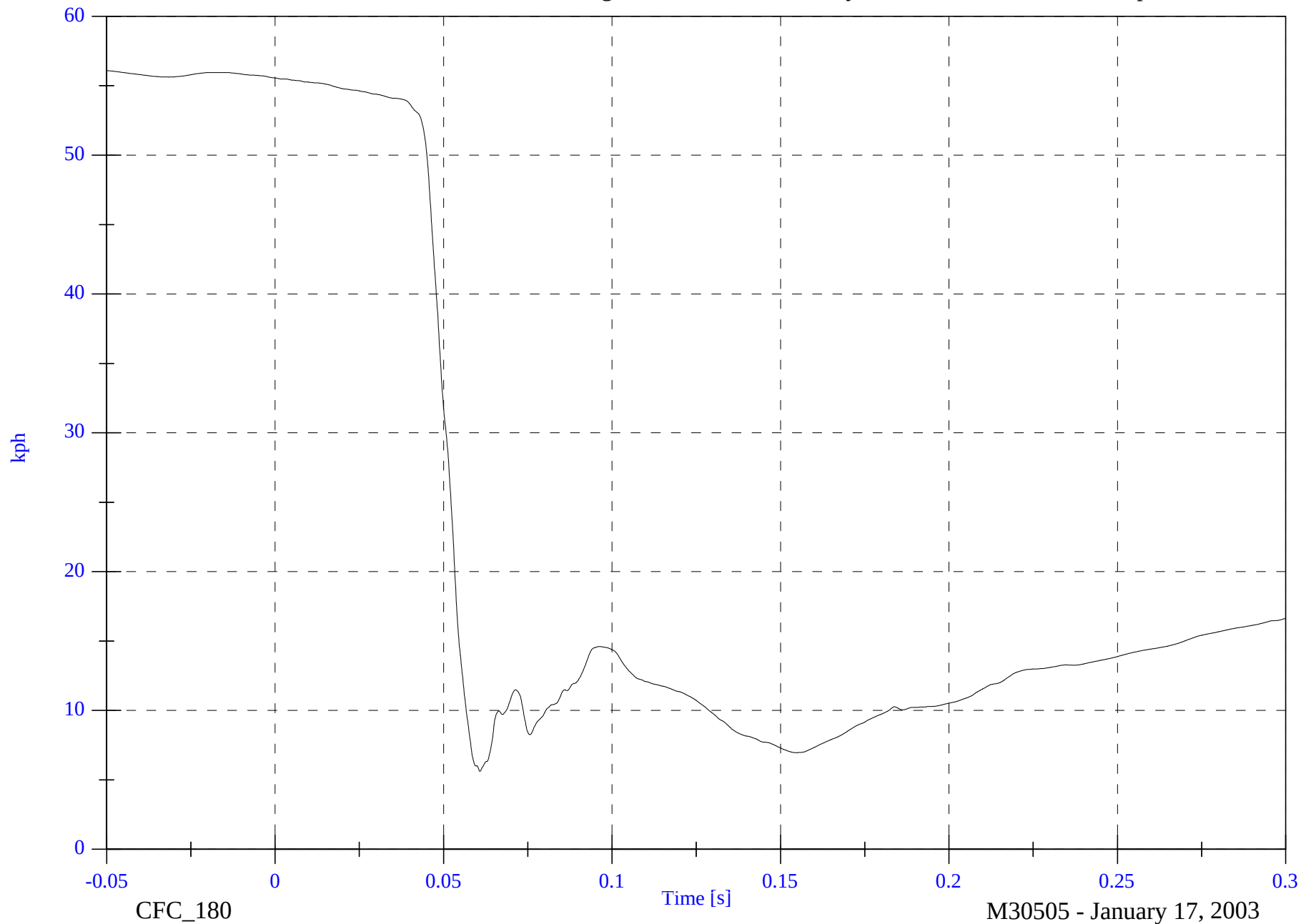


NCAP Test #5 - 2003 Hyundai Accent

V1 Engine Bottom #4x Velocity

Max: 56.1 [kph] at -0.050 [s]

Min: 5.6 [kph] at 0.061 [s]



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8642-NCAP-27

CFC_180

Time [s]

M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

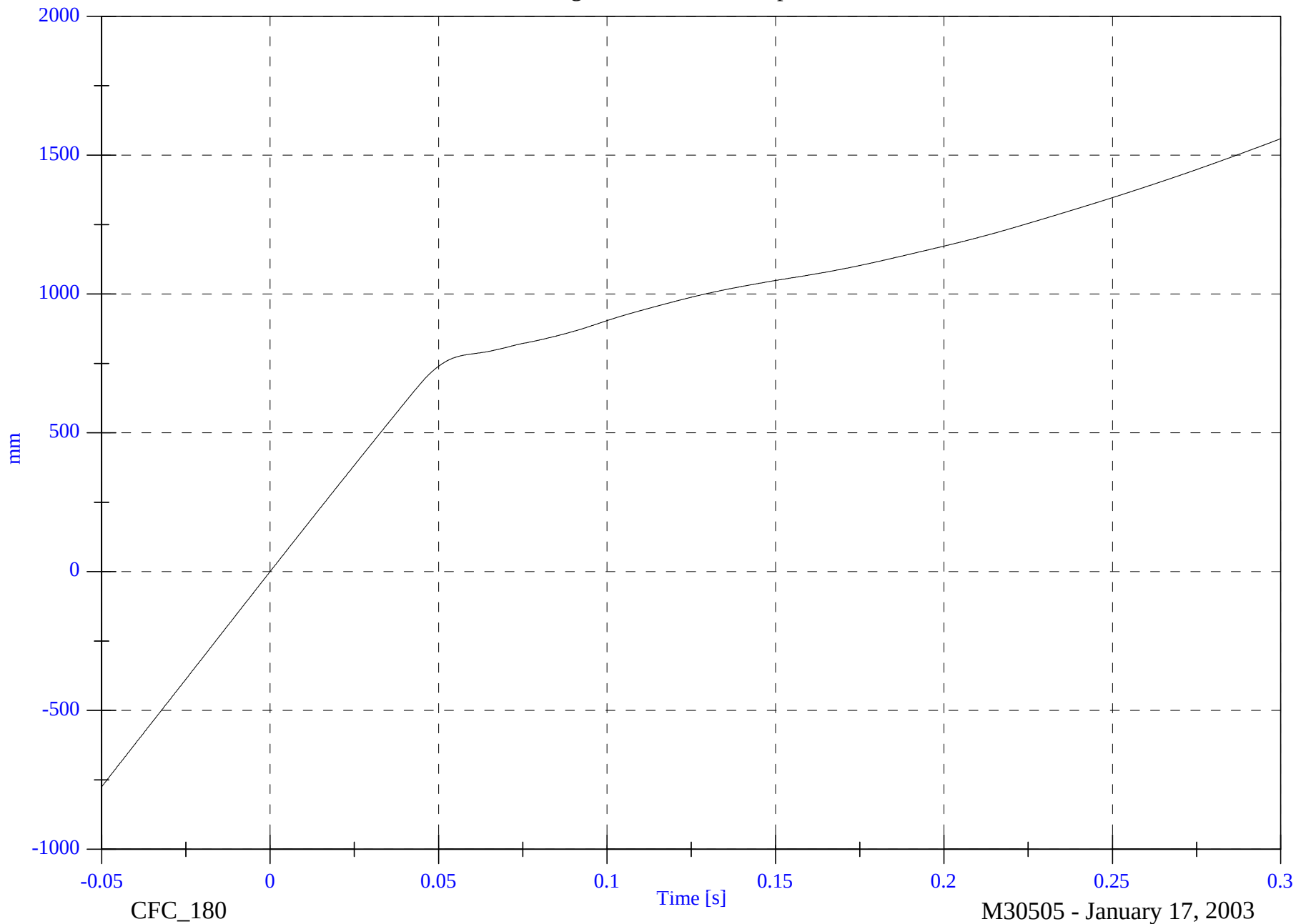
V1 Engine Bottom #4x Displacement

Max: 1559.0 [mm] at 0.300 [s]

Min: -775.2 [mm] at -0.050 [s]

B-127

8642-NCAP-27



CFC_180

M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

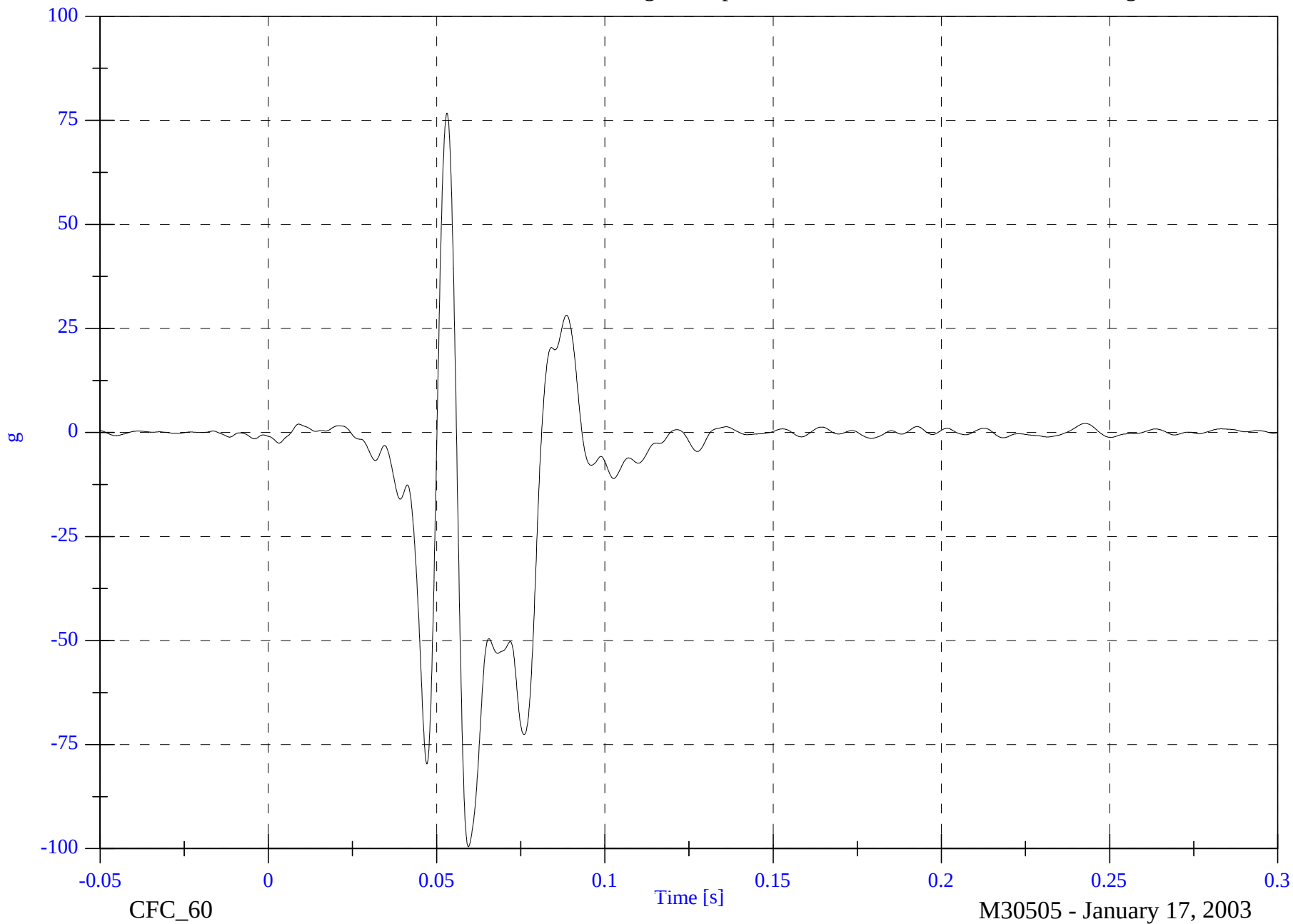
V1 Right Caliper #5x

Max: 76.8 [g] at 0.053 [s]

Min: -99.5 [g] at 0.059 [s]

B-128

8642-NCAP-27

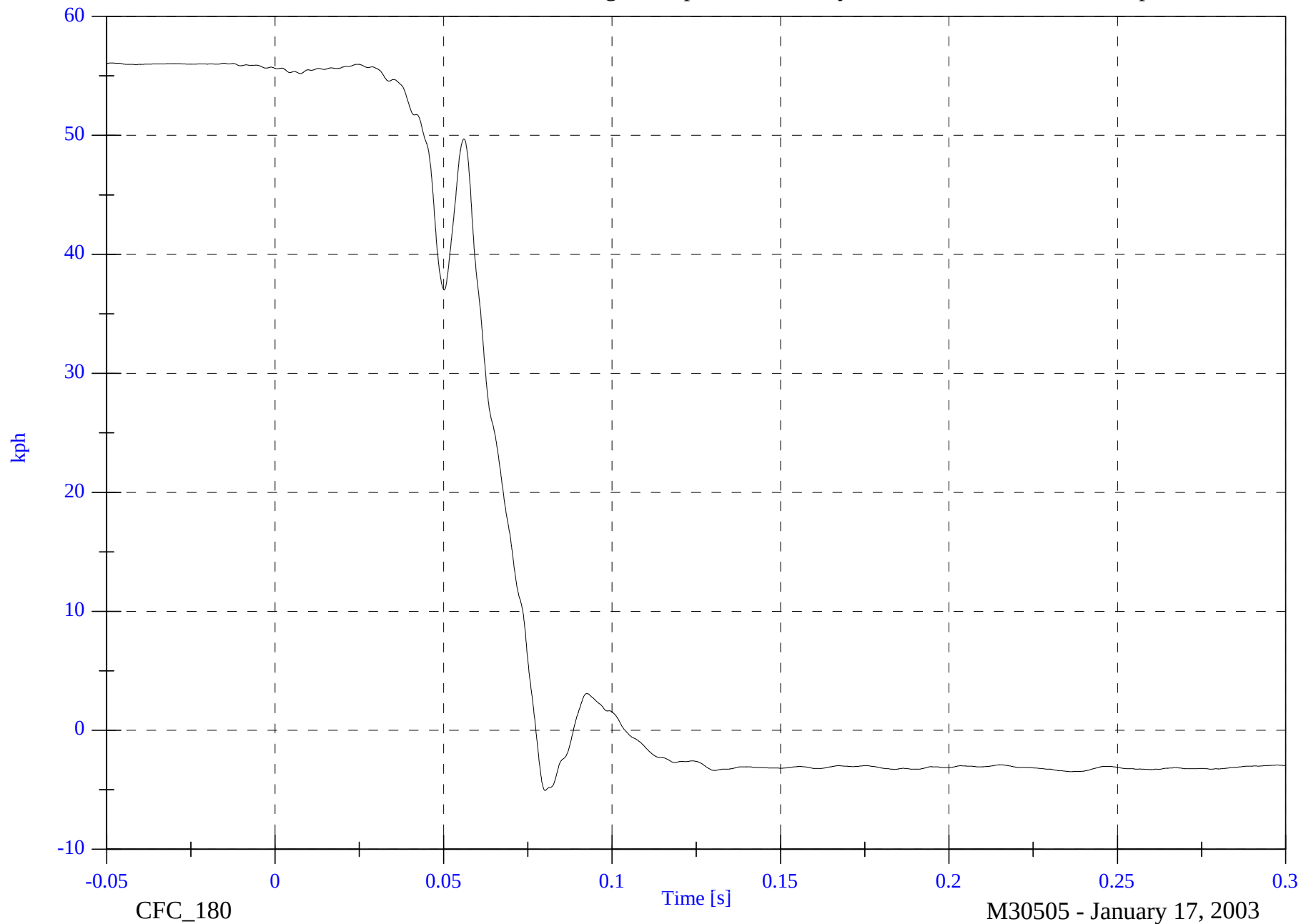


NCAP Test #5 - 2003 Hyundai Accent

V1 Right Caliper #5x Velocity

Max: 56.1 [kph] at -0.049 [s]

Min: -5.0 [kph] at 0.080 [s]



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8642-NCAP-27

CFC_180

Time [s]

M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

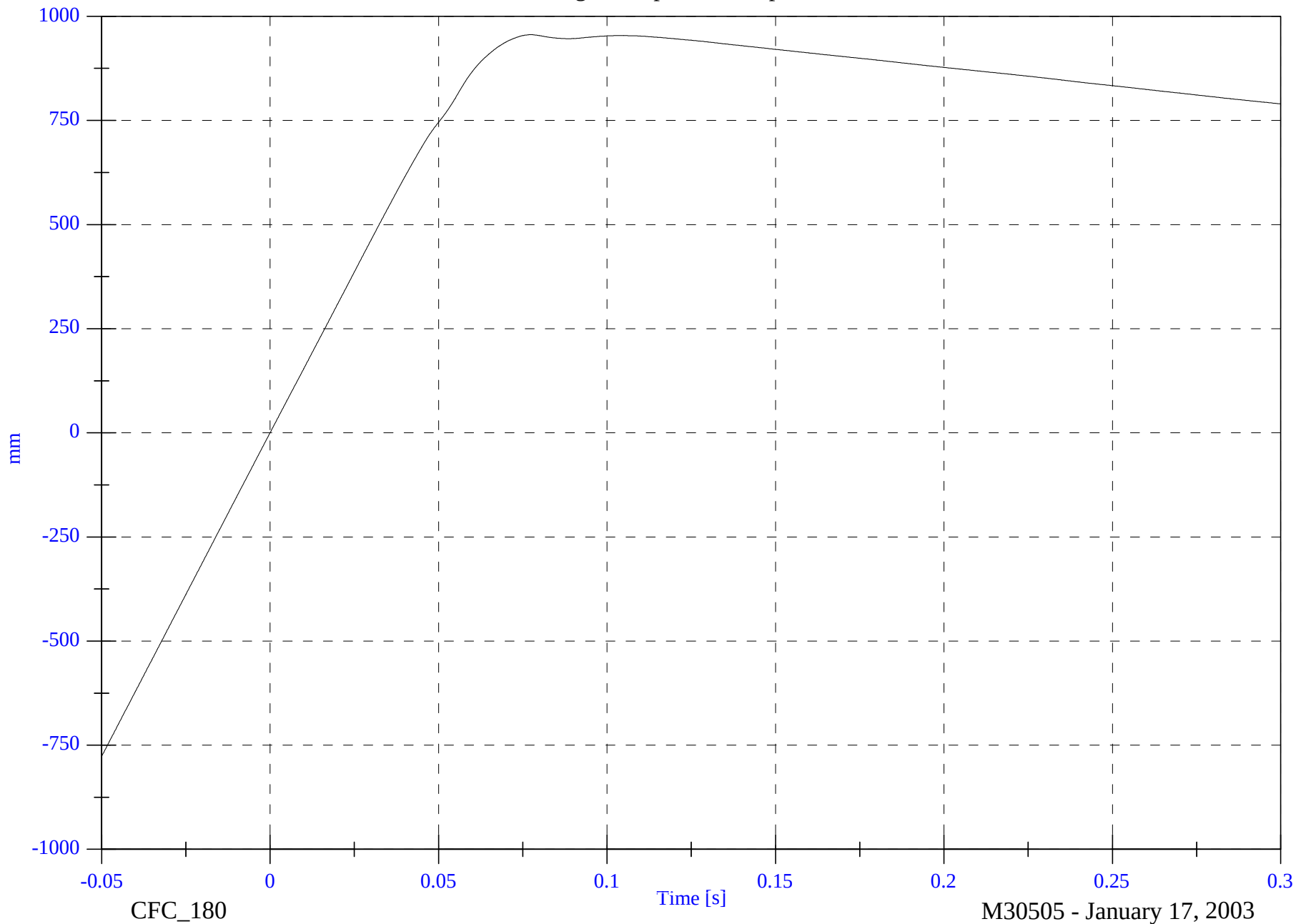
V1 Right Caliper #5x Displacement

Max: 955.8 [mm] at 0.077 [s]

Min: -777.2 [mm] at -0.050 [s]

B-130

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CFC_180

M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

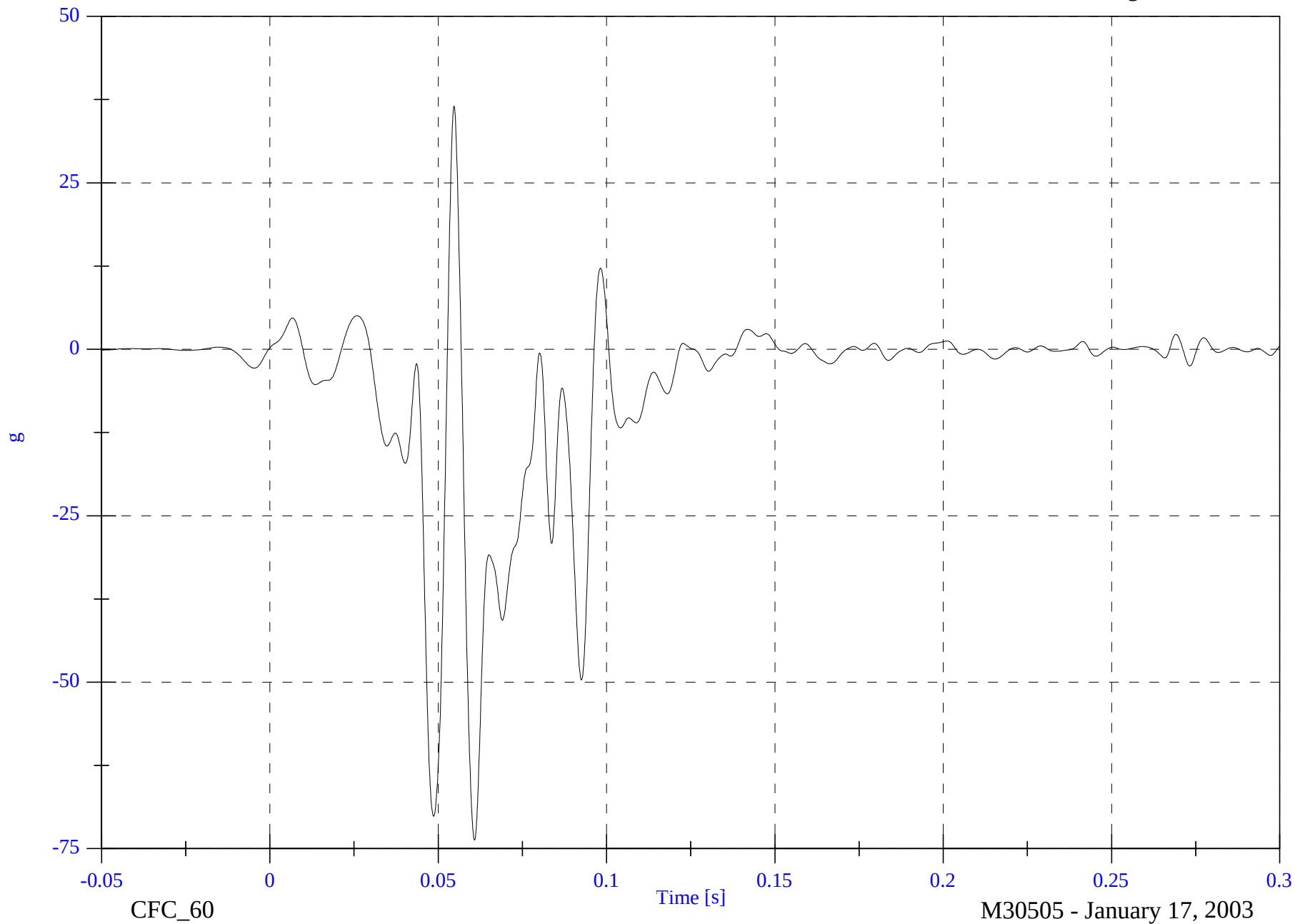
V1 Instrument Panel #6x

Max: 36.5 [g] at 0.055 [s]

Min: -73.7 [g] at 0.061 [s]

B-131

8642-NCAP-27

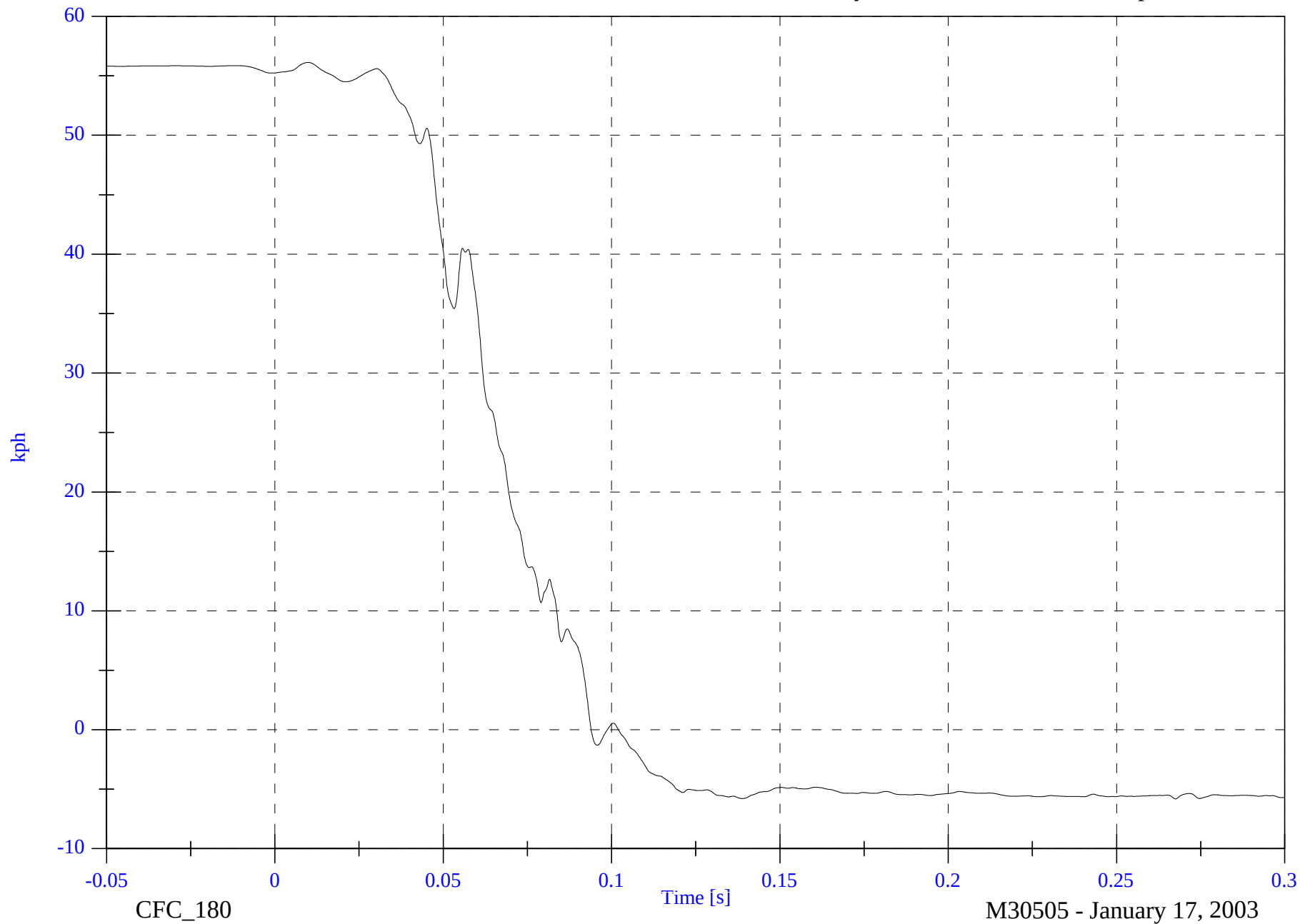


NCAP Test #5 - 2003 Hyundai Accent

V1 Instrument Panel #6x Velocity

Max: 56.1 [kph] at 0.010 [s]

Min: -5.8 [kph] at 0.267 [s]



B-132

8642-NCAP-27

CFC_180

Time [s]

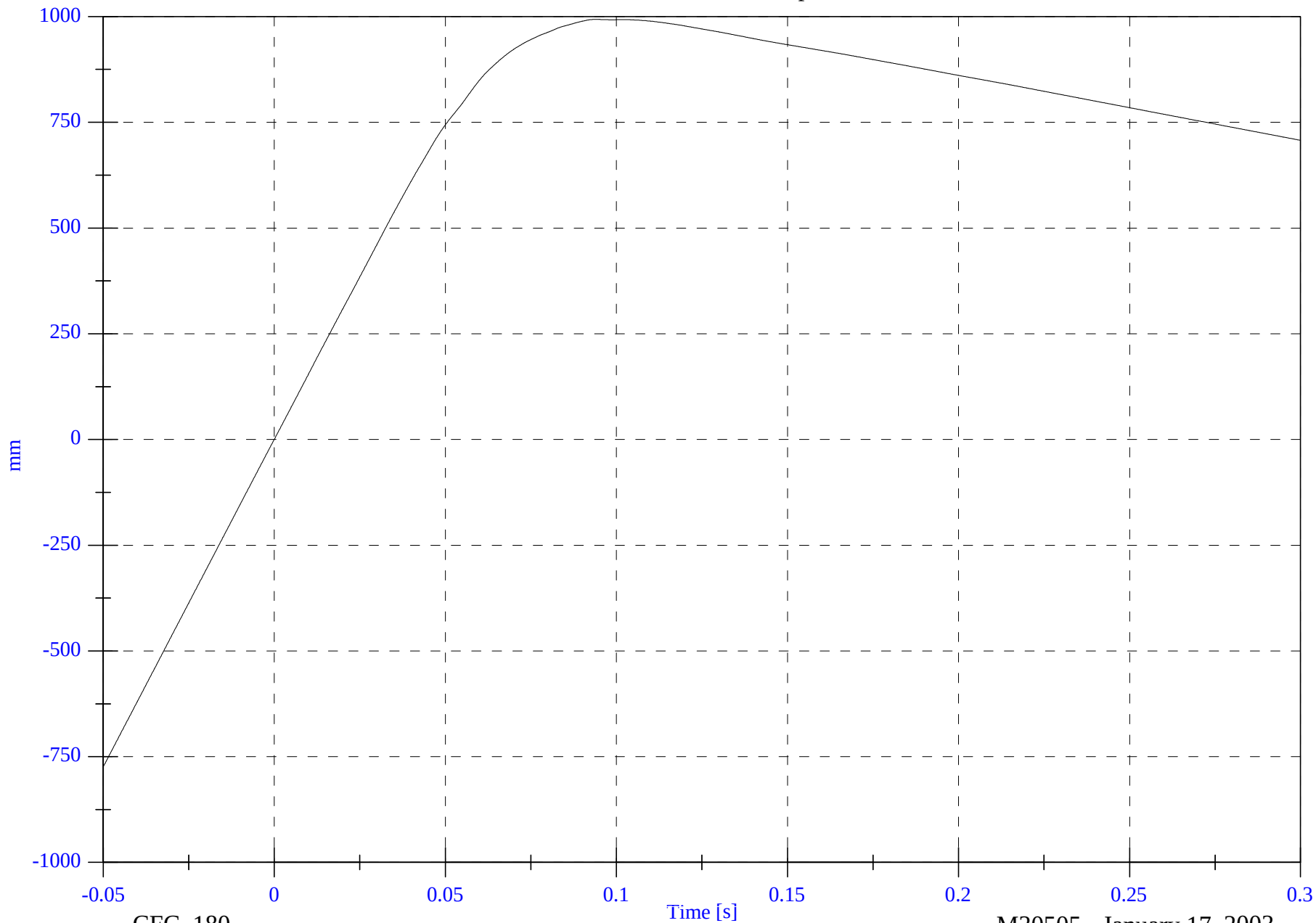
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1 Instrument Panel #6x Displacement

Max: 993.4 [mm] at 0.094 [s]

Min: -774.5 [mm] at -0.050 [s]



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8642-NCAP-27

CFC_180

M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

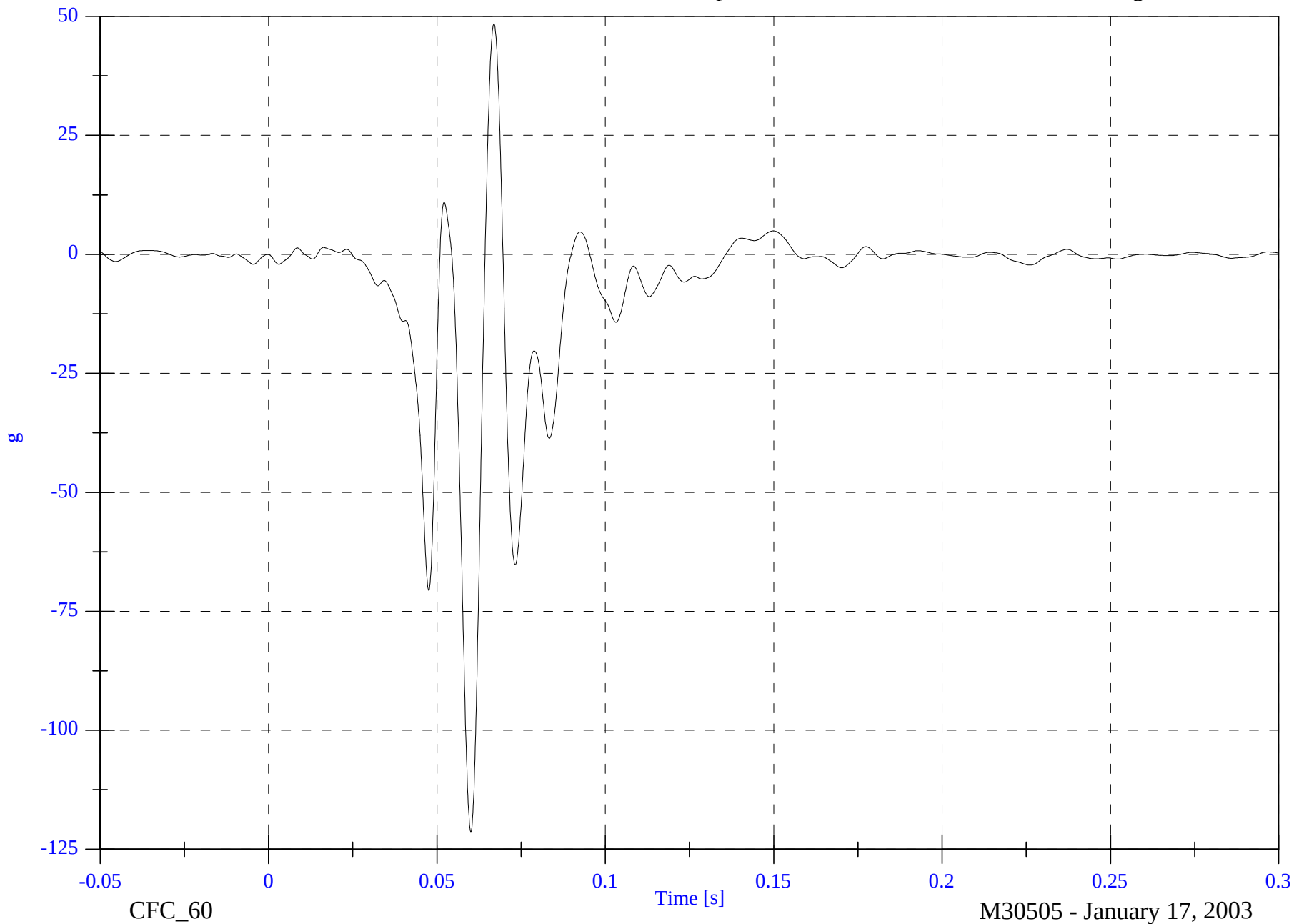
V1 Left Caliper #7x

Max: 48.4 [g] at 0.067 [s]

Min: -121.4 [g] at 0.060 [s]

B-134

8642-NCAP-27

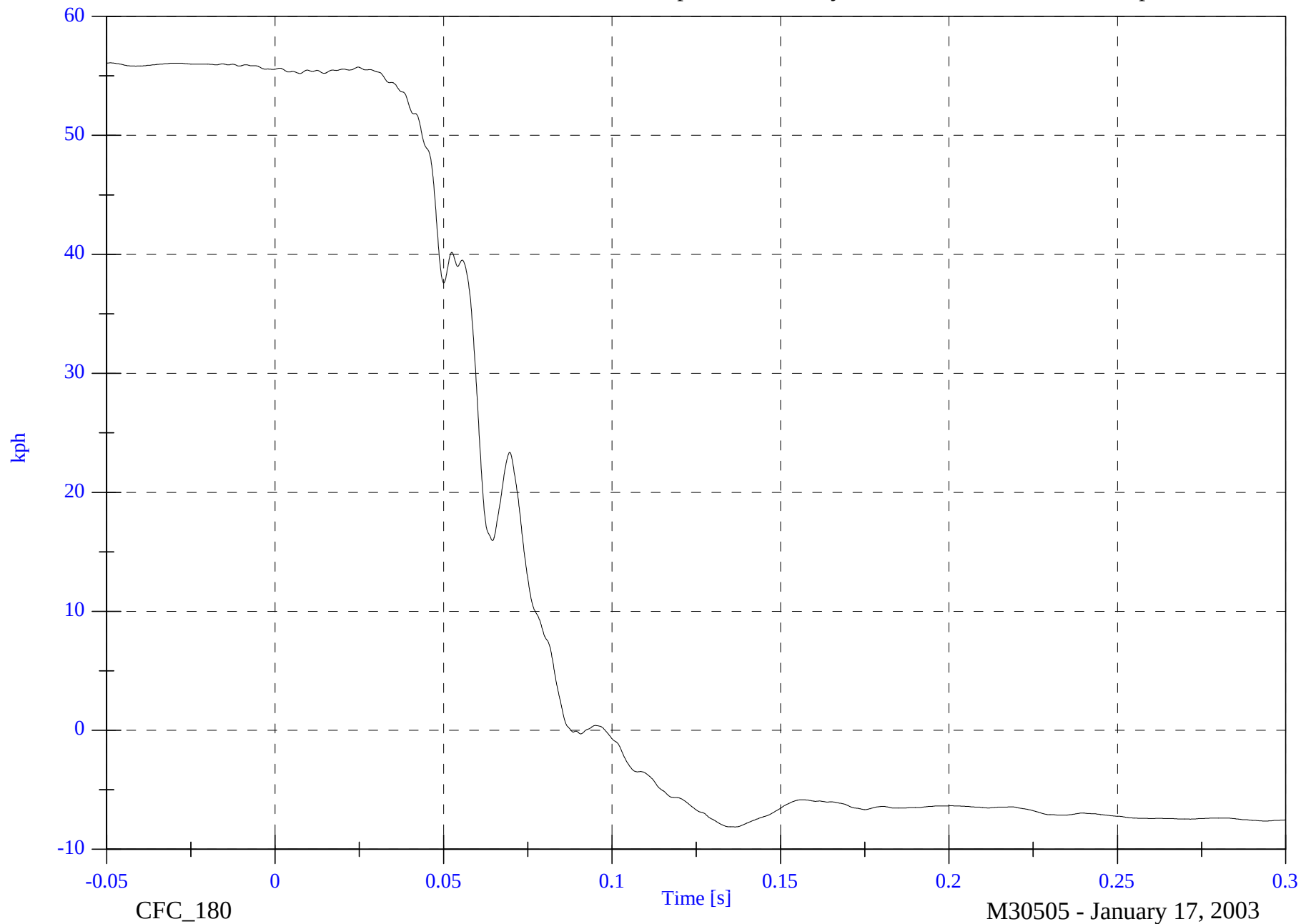


NCAP Test #5 - 2003 Hyundai Accent

V1 Left Caliper #7x Velocity

Max: 56.1 [kph] at -0.049 [s]

Min: -8.1 [kph] at 0.137 [s]



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8642-NCAP-27

CFC_180

Time [s]

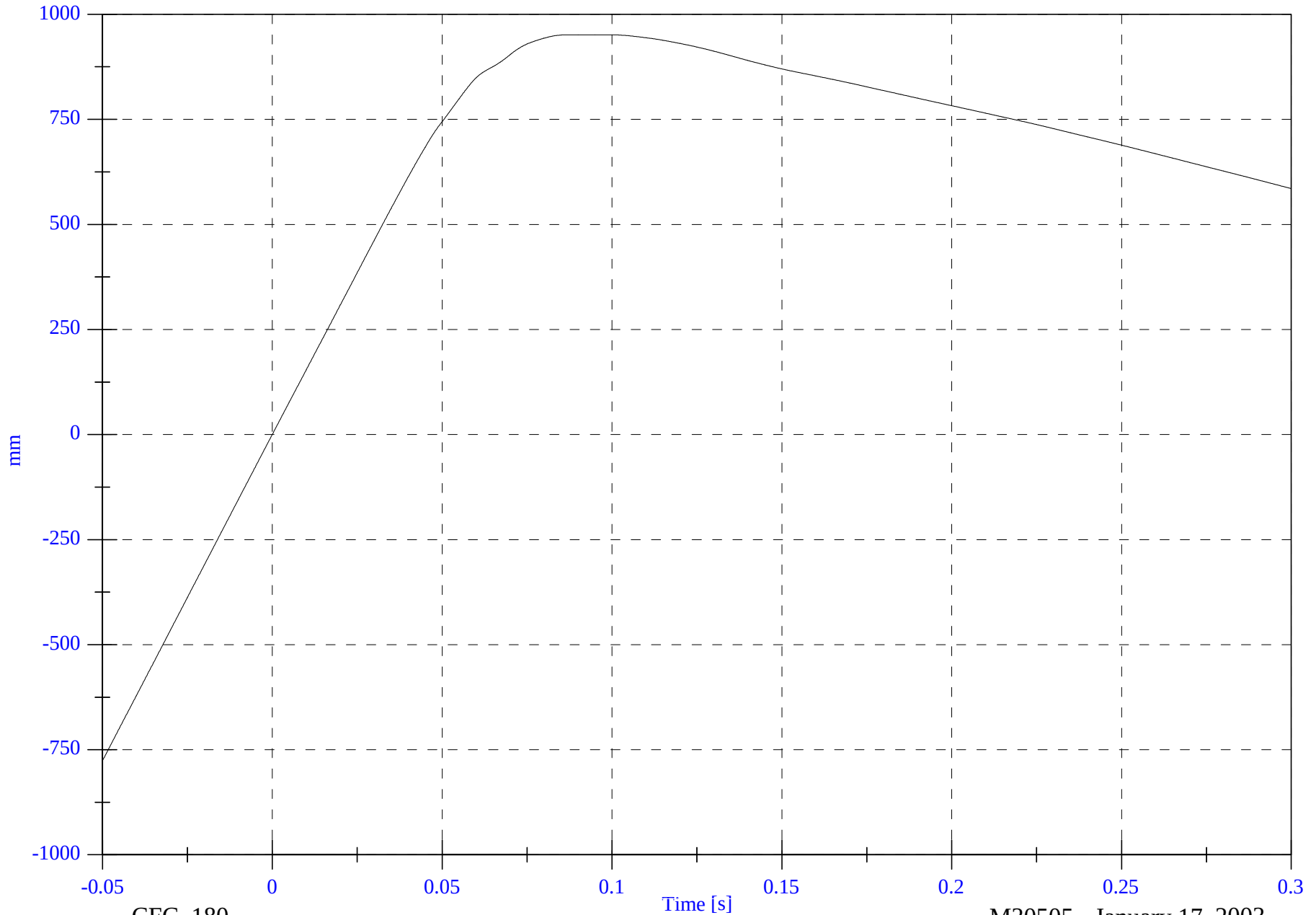
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1 Left Caliper #7x Displacement

Max: 951.5 [mm] at 0.098 [s]

Min: -776.6 [mm] at -0.050 [s]



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8642-NCAP-27

CFC_180

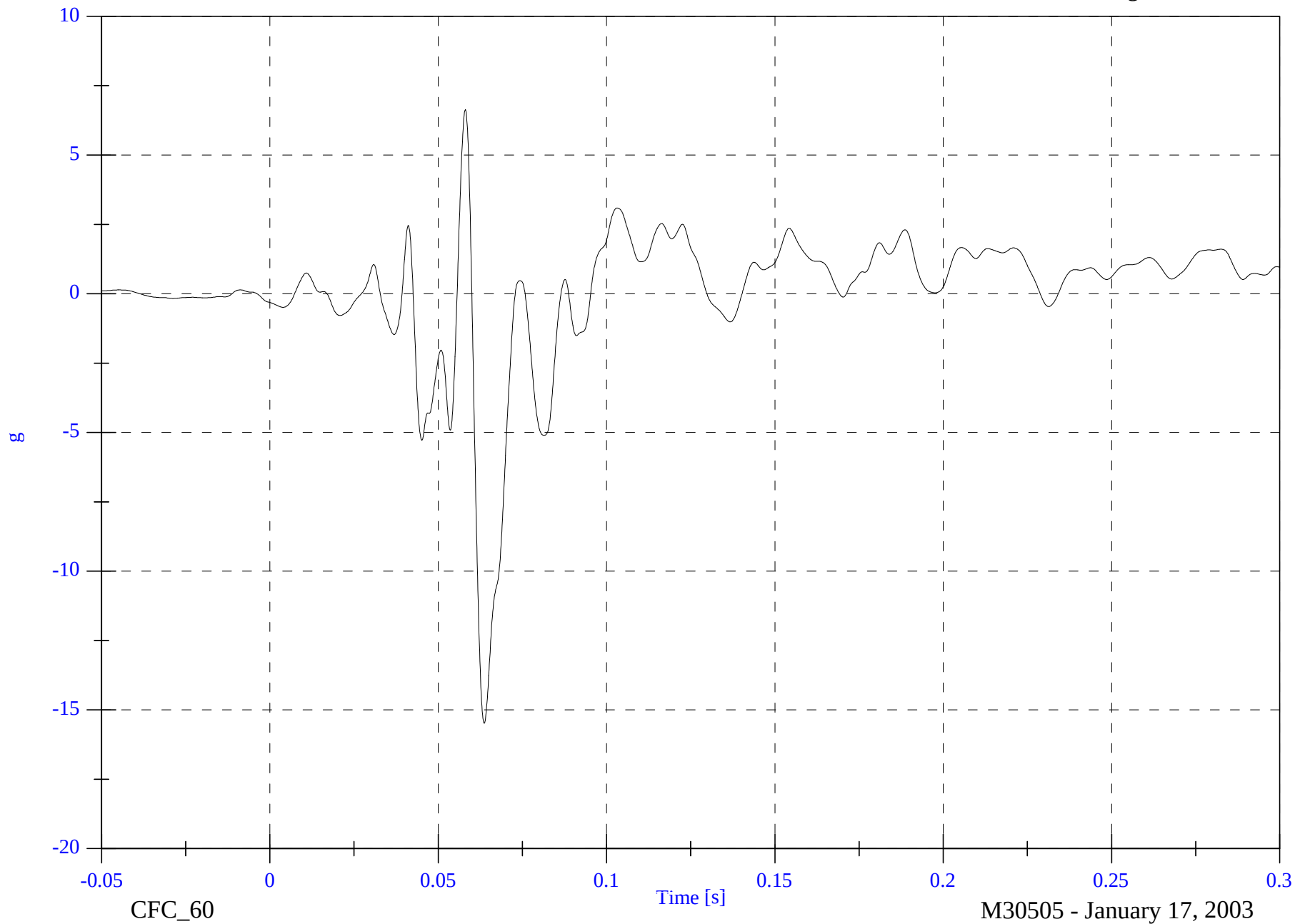
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1 Left Rear #8z

Max: 6.6 [g] at 0.058 [s]

Min: -15.5 [g] at 0.064 [s]



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8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1 Left Rear #8z Velocity

Max: 1.3 [kph] at 0.300 [s]

Min: -6.5 [kph] at 0.095 [s]



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8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

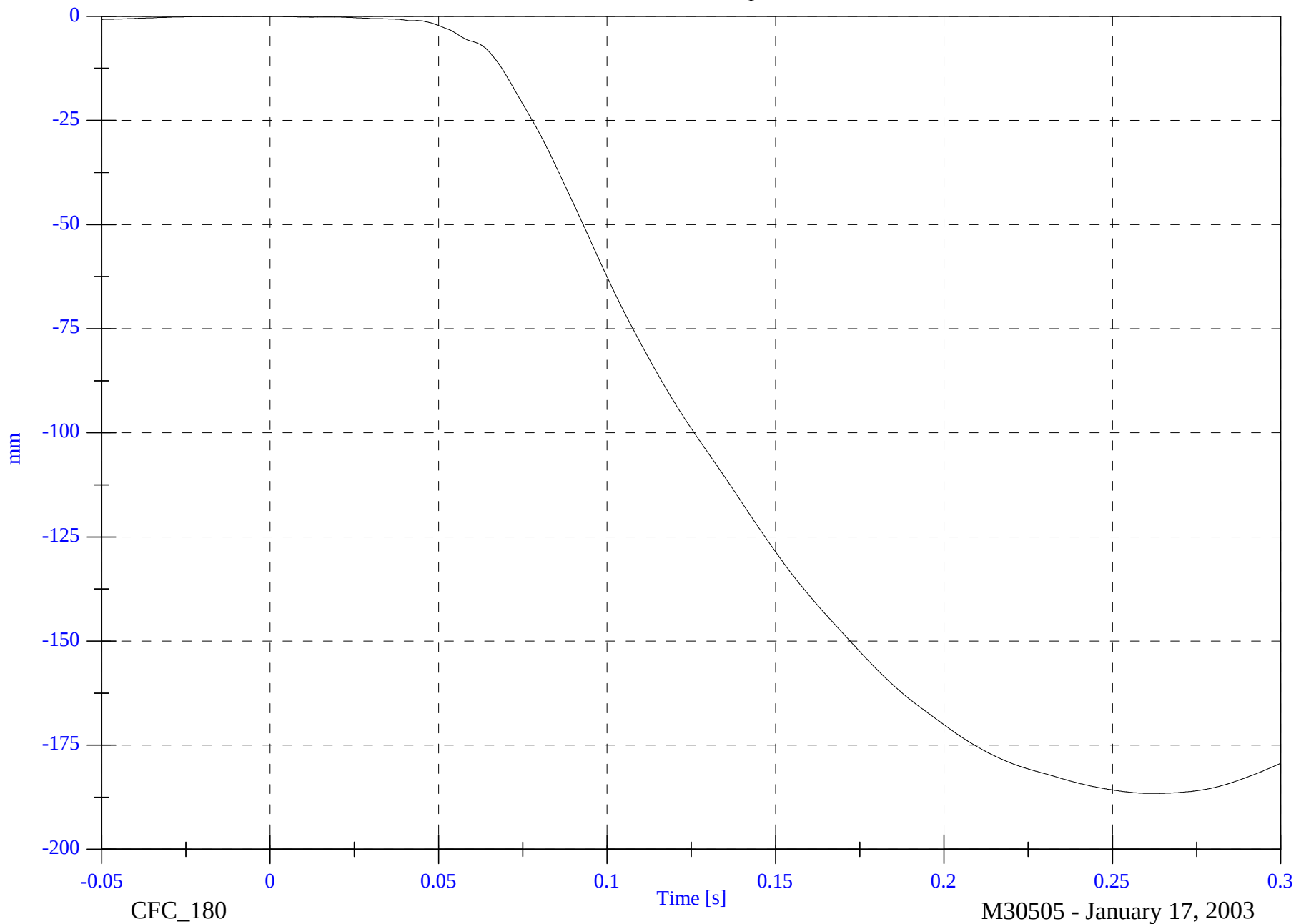
V1 Left Rear #8z Displacement

Max: 0.0 [mm] at -0.001 [s]

Min: -186.6 [mm] at 0.262 [s]

B-139

8642-NCAP-27



CFC_180

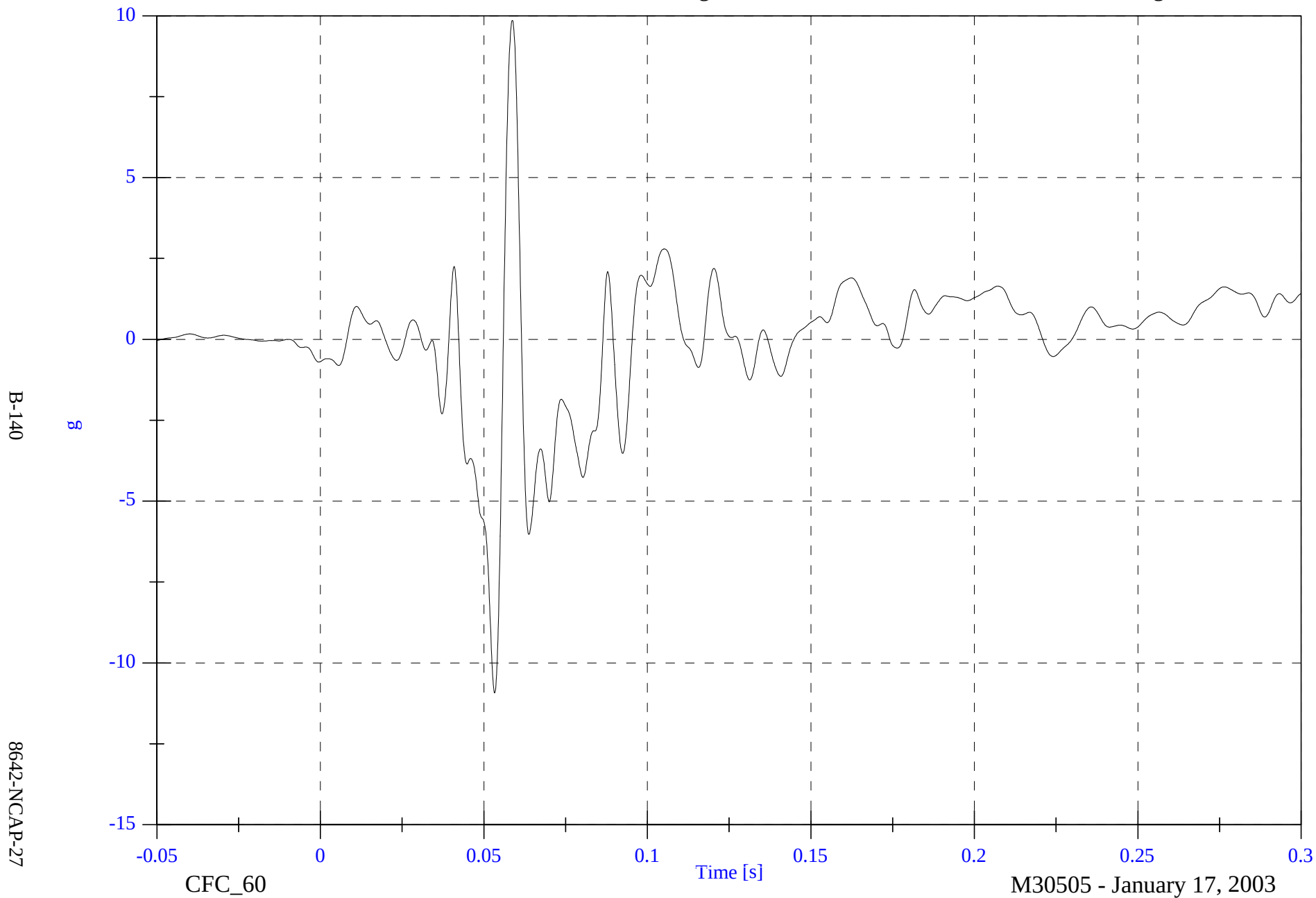
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1 Right Rear #9z

Max: 9.9 [g] at 0.059 [s]

Min: -10.9 [g] at 0.053 [s]

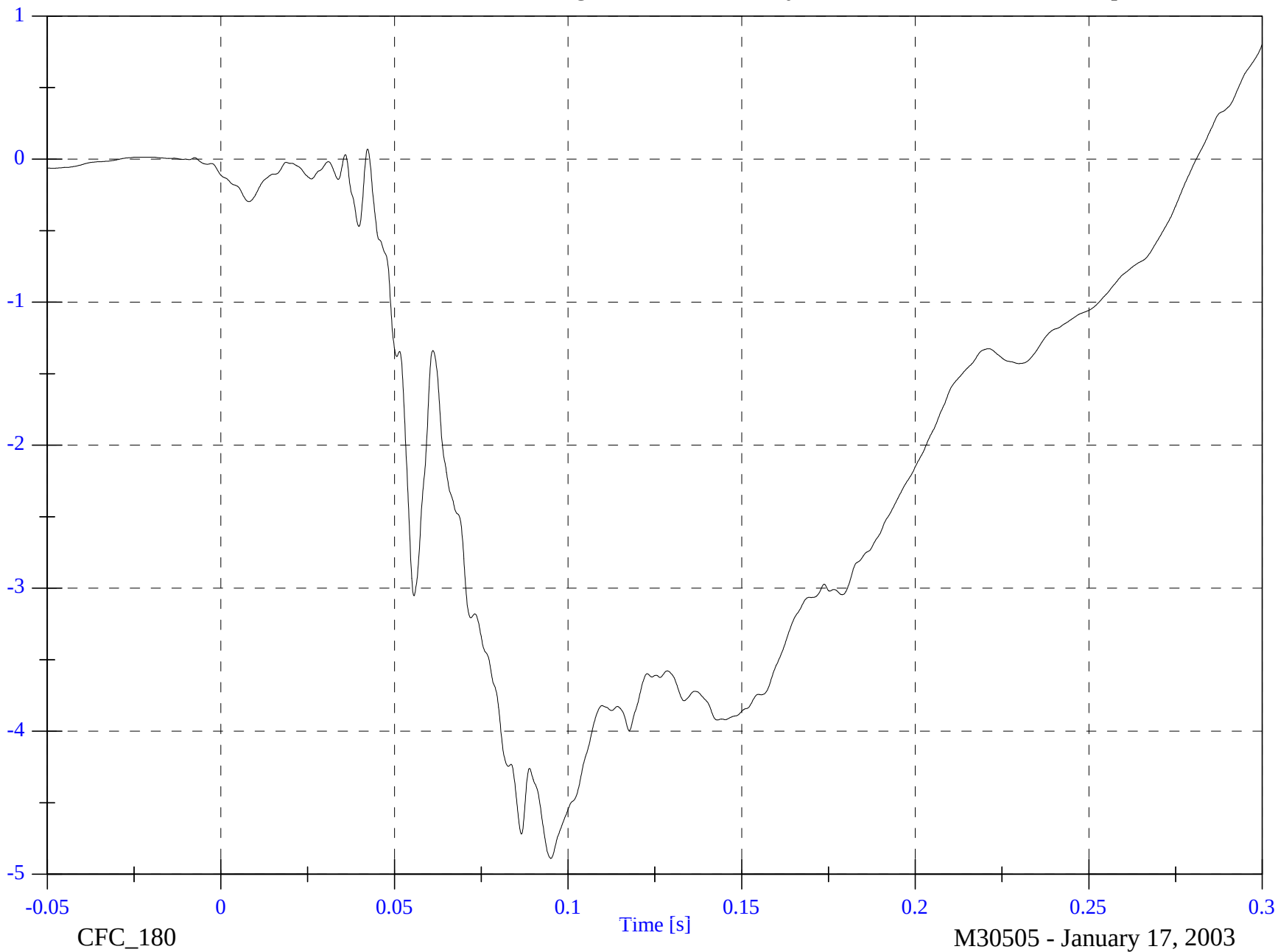


NCAP Test #5 - 2003 Hyundai Accent

V1 Right Rear #9z Velocity

Max: 0.8 [kph] at 0.300 [s]

Min: -4.9 [kph] at 0.095 [s]



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8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

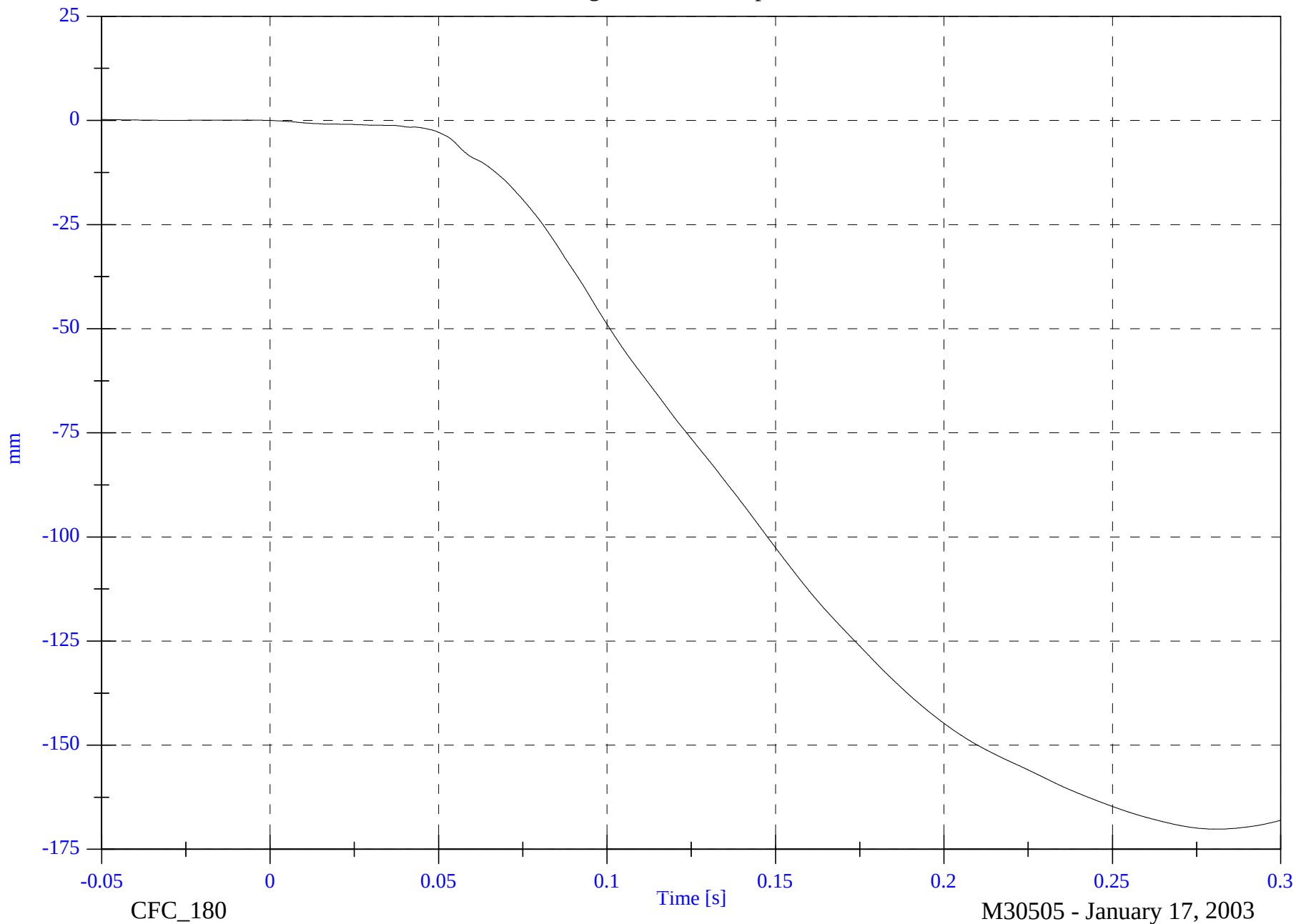
V1 Right Rear #9z Displacement

Max: 0.2 [mm] at -0.050 [s]

Min: -170.2 [mm] at 0.281 [s]

B-142

8642-NCAP-27



CFC_180

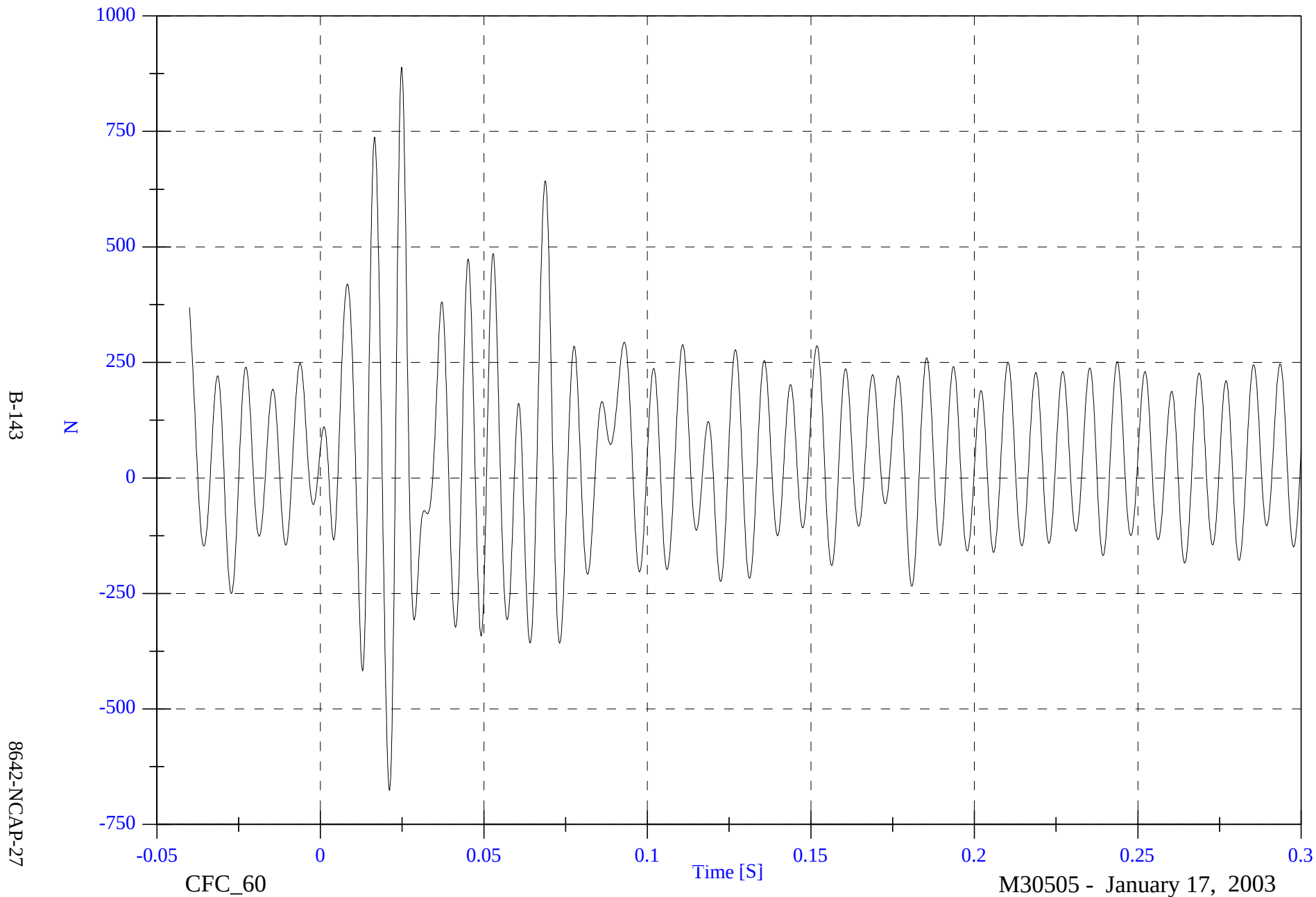
M30505 - January 17, 2003

NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell A1 Fx

Max: 888.9 [N] at 0.025 [S]

Min: -676.5 [N] at 0.021 [S]



B-143

8642-NCAP-27

CFC_60

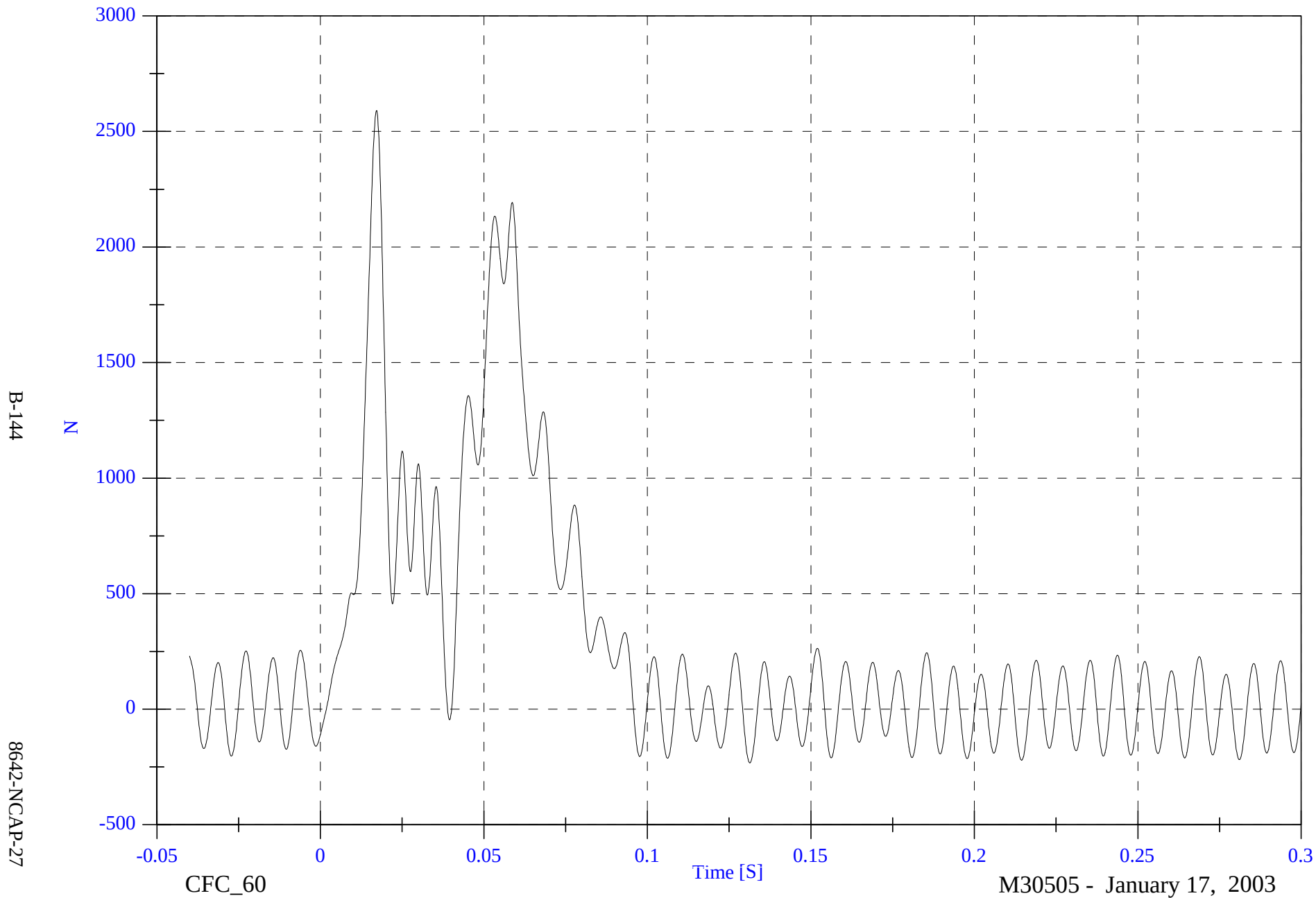
M30505 - January 17, 2003

NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell A2 Fx

Max: 2590.6 [N] at 0.017 [S]

Min: -232.0 [N] at 0.131 [S]

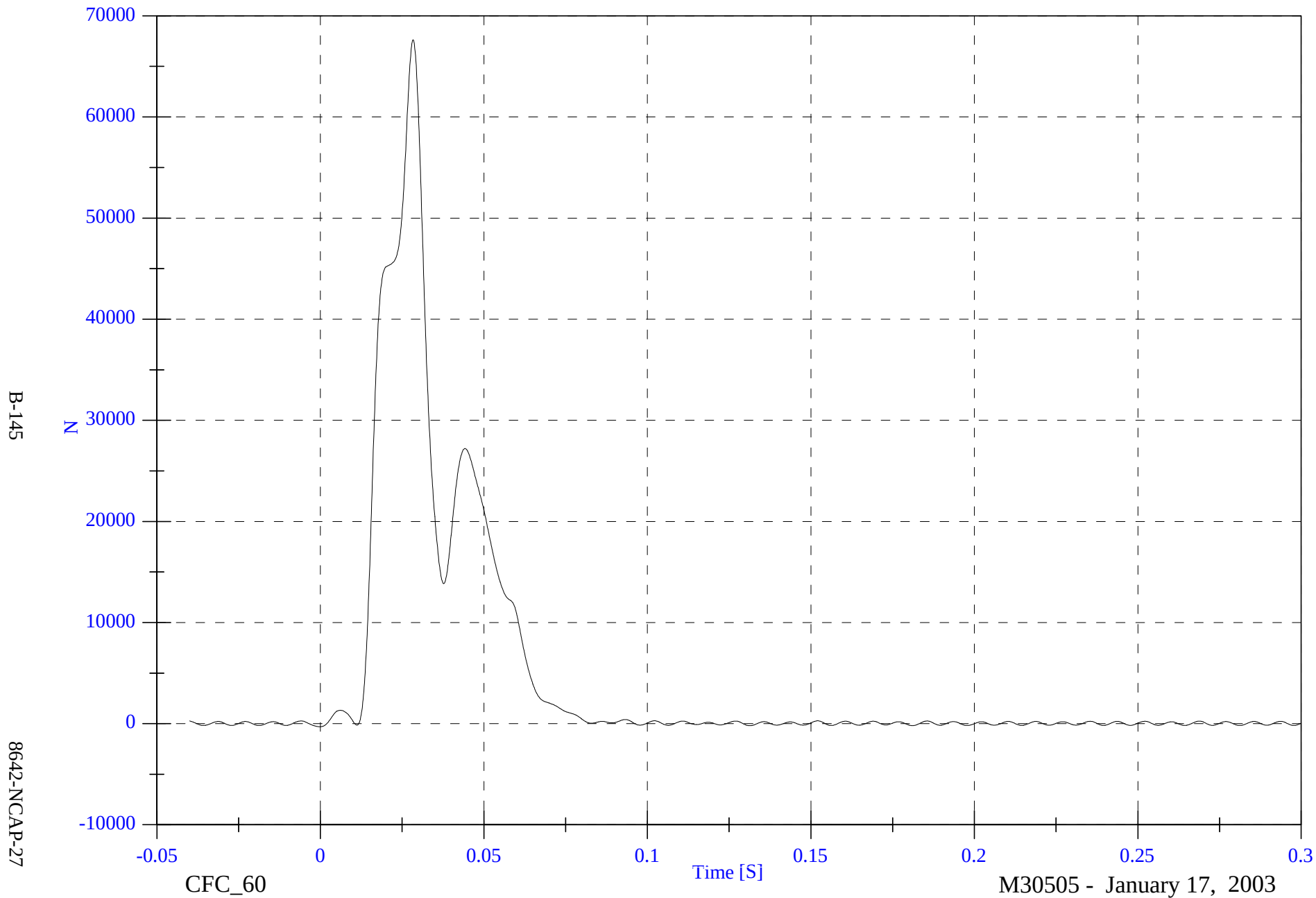


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell A3 Fx

Max: 67628.1 [N] at 0.028 [S]

Min: -304.7 [N] at -0.000 [S]

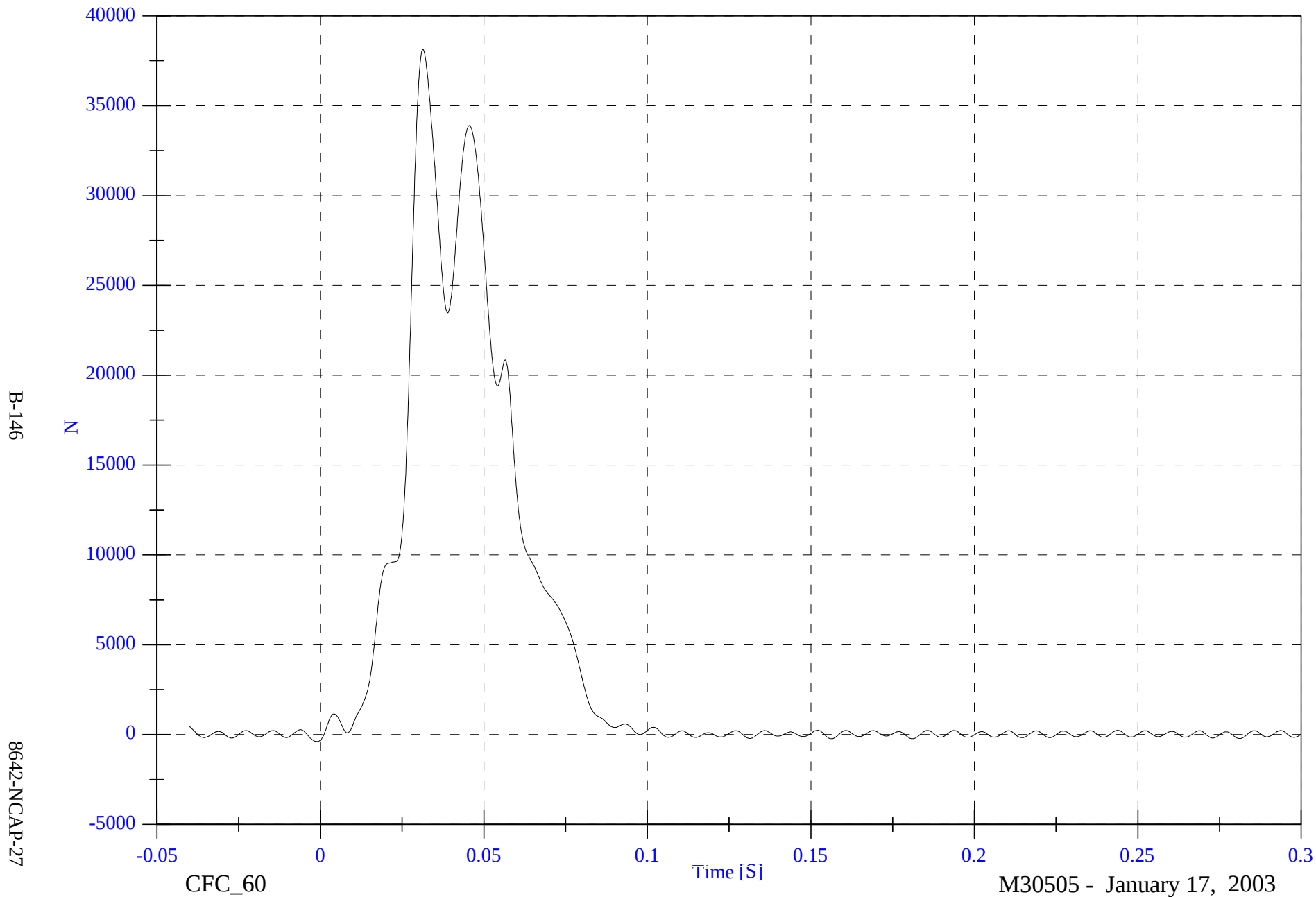


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell A4 Fx

Max: 38139.1 [N] at 0.031 [S]

Min: -384.4 [N] at -0.001 [S]

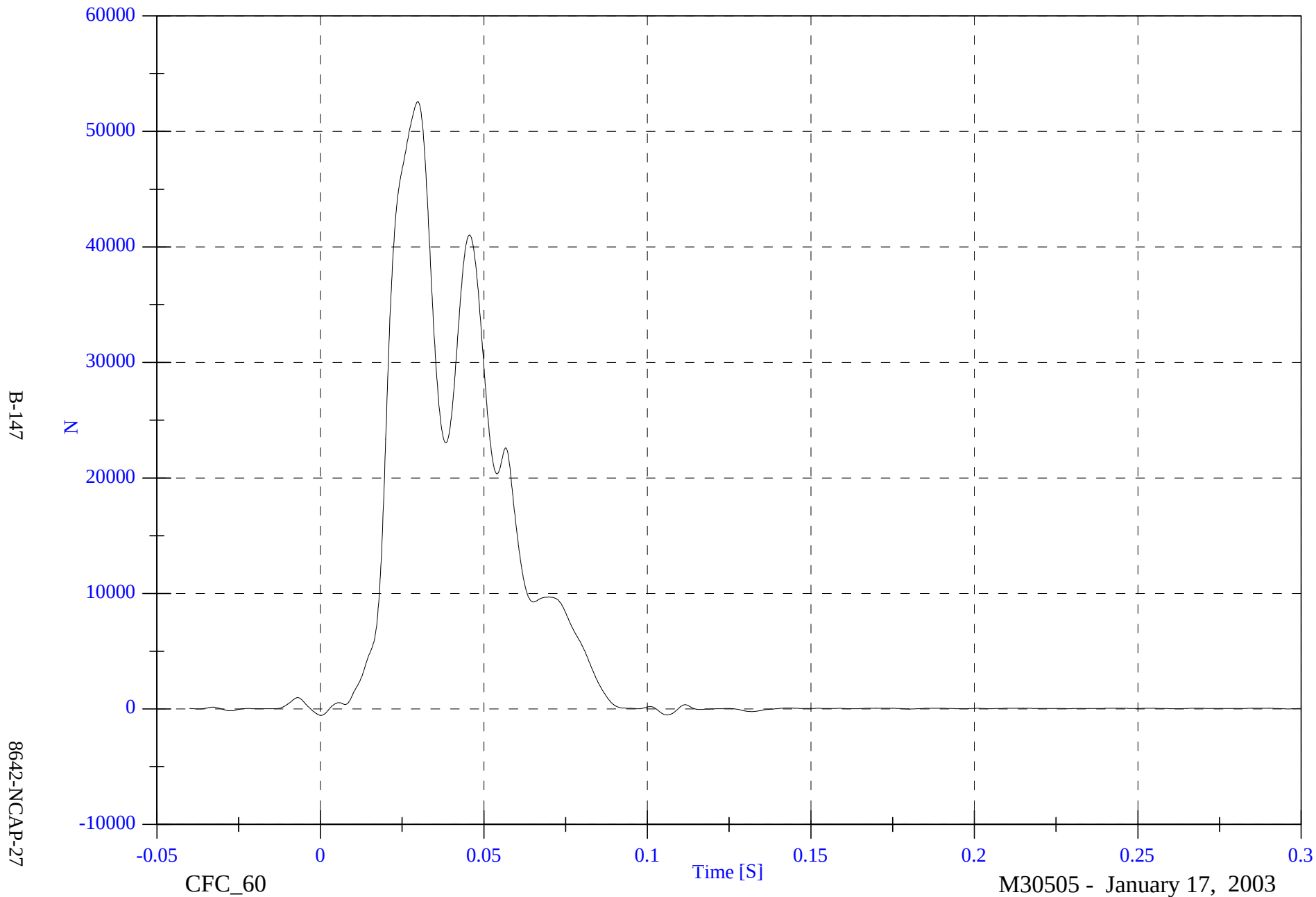


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell A5 Fx

Max: 52561.8 [N] at 0.030 [S]

Min: -554.8 [N] at 0.000 [S]

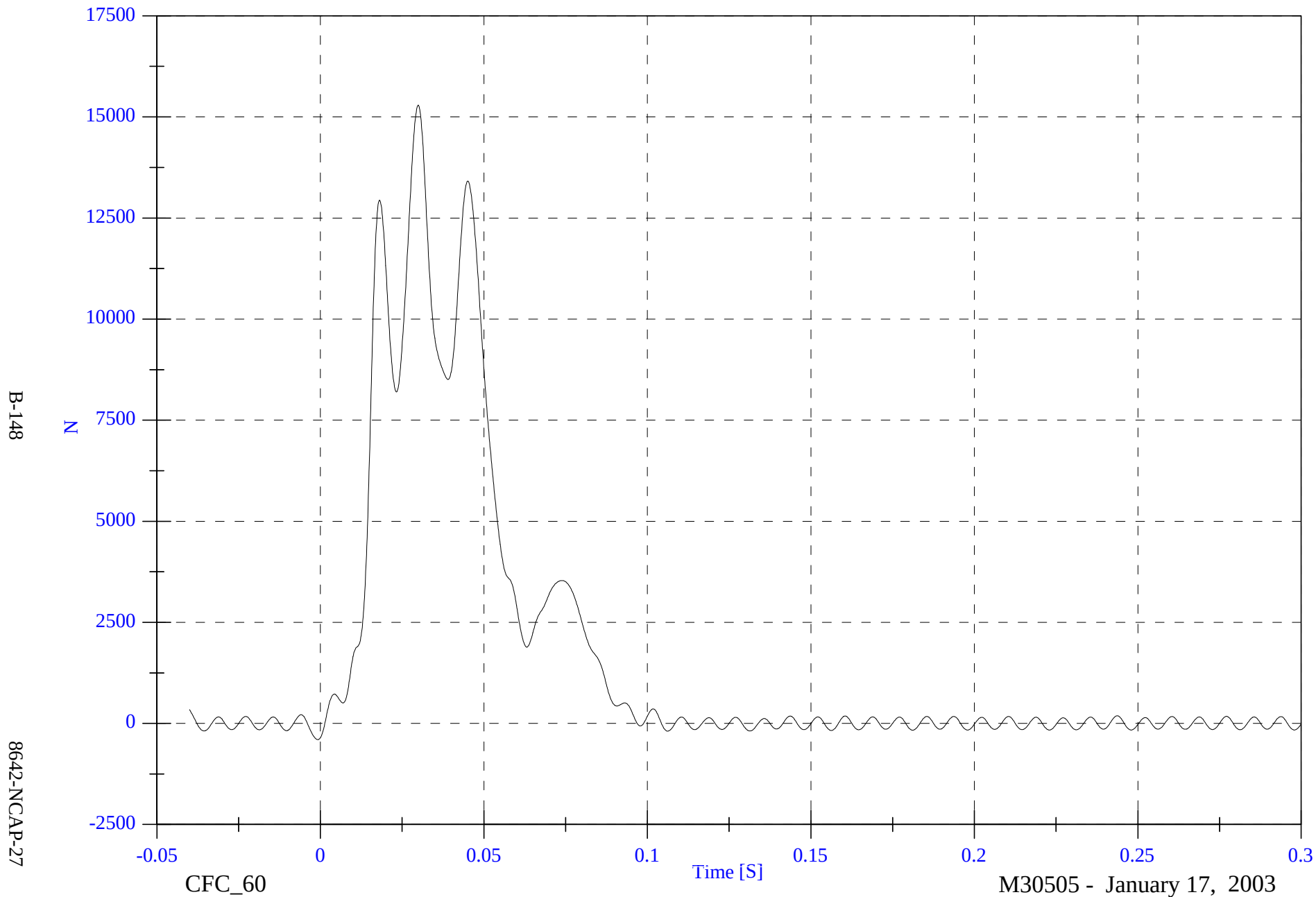


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell A6 Fx

Max: 15289.6 [N] at 0.030 [S]

Min: -401.6 [N] at -0.001 [S]

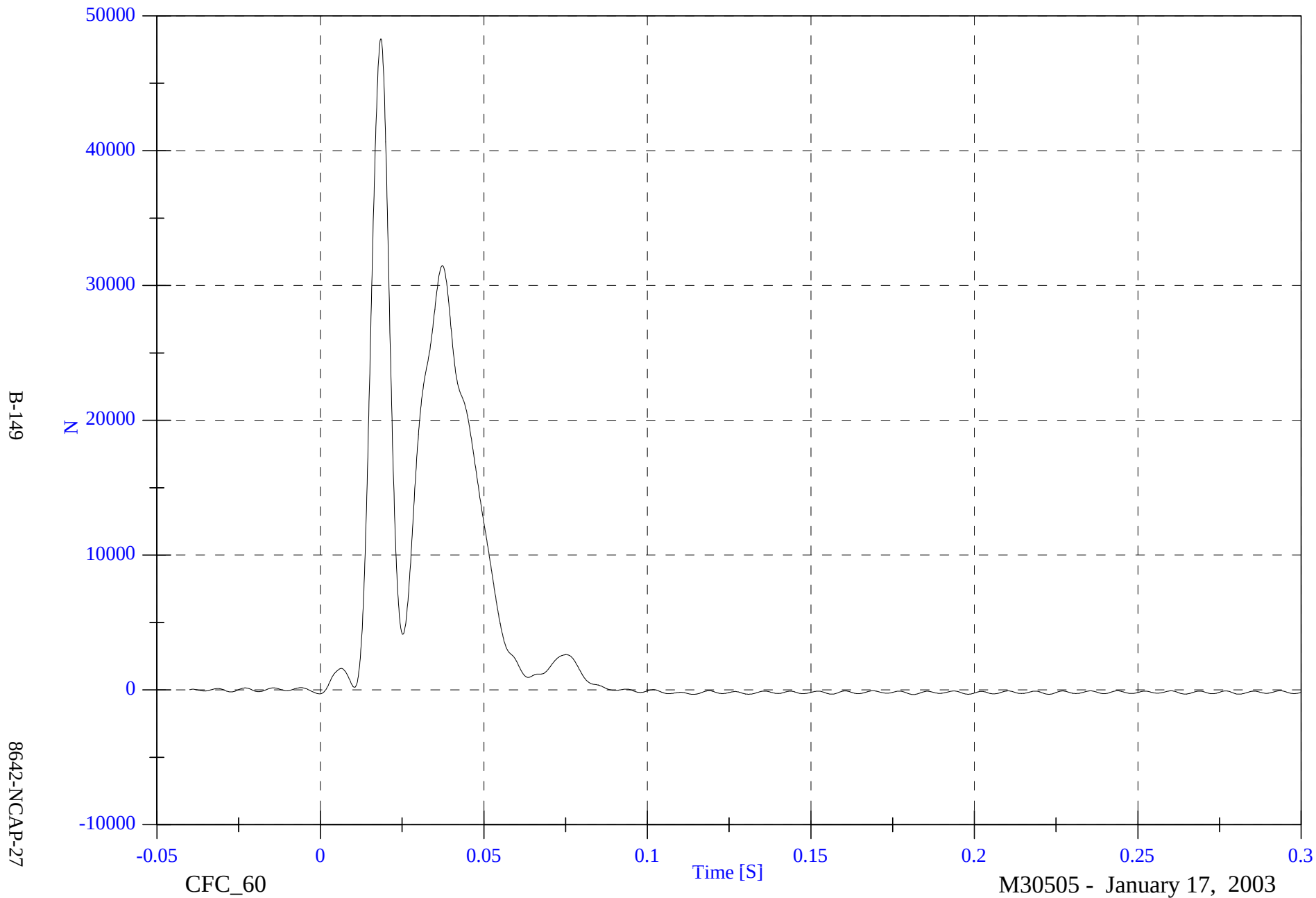


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell A7 Fx

Max: 48313.8 [N] at 0.018 [S]

Min: -340.1 [N] at 0.181 [S]



NCAP Test #5- 2003 Hyundai Accent

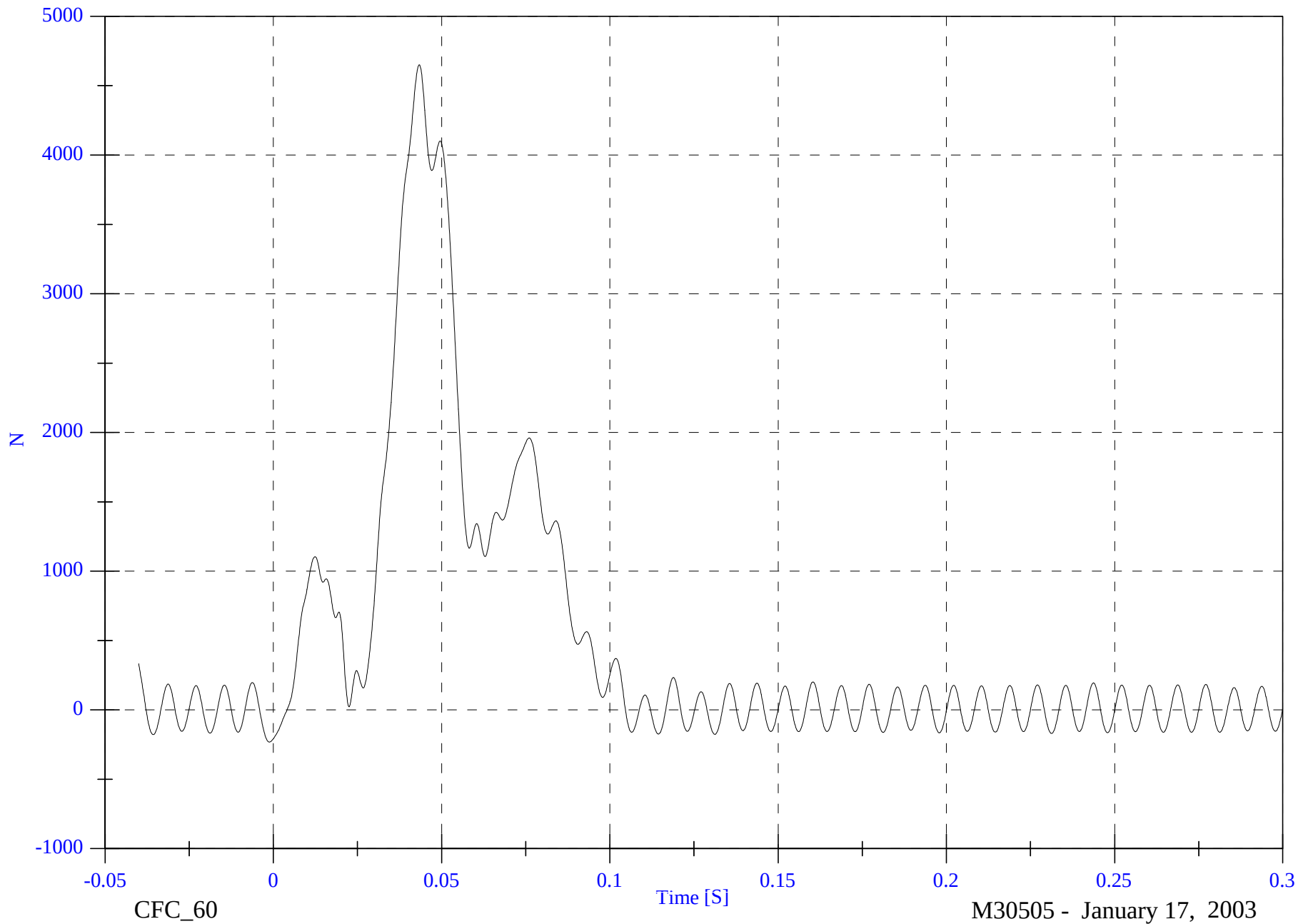
Barrier Load Cell A8 Fx

Max: 4651.1 [N] at 0.043 [S]

Min: -231.6 [N] at -0.001 [S]

B-150

8642-NCAP-27

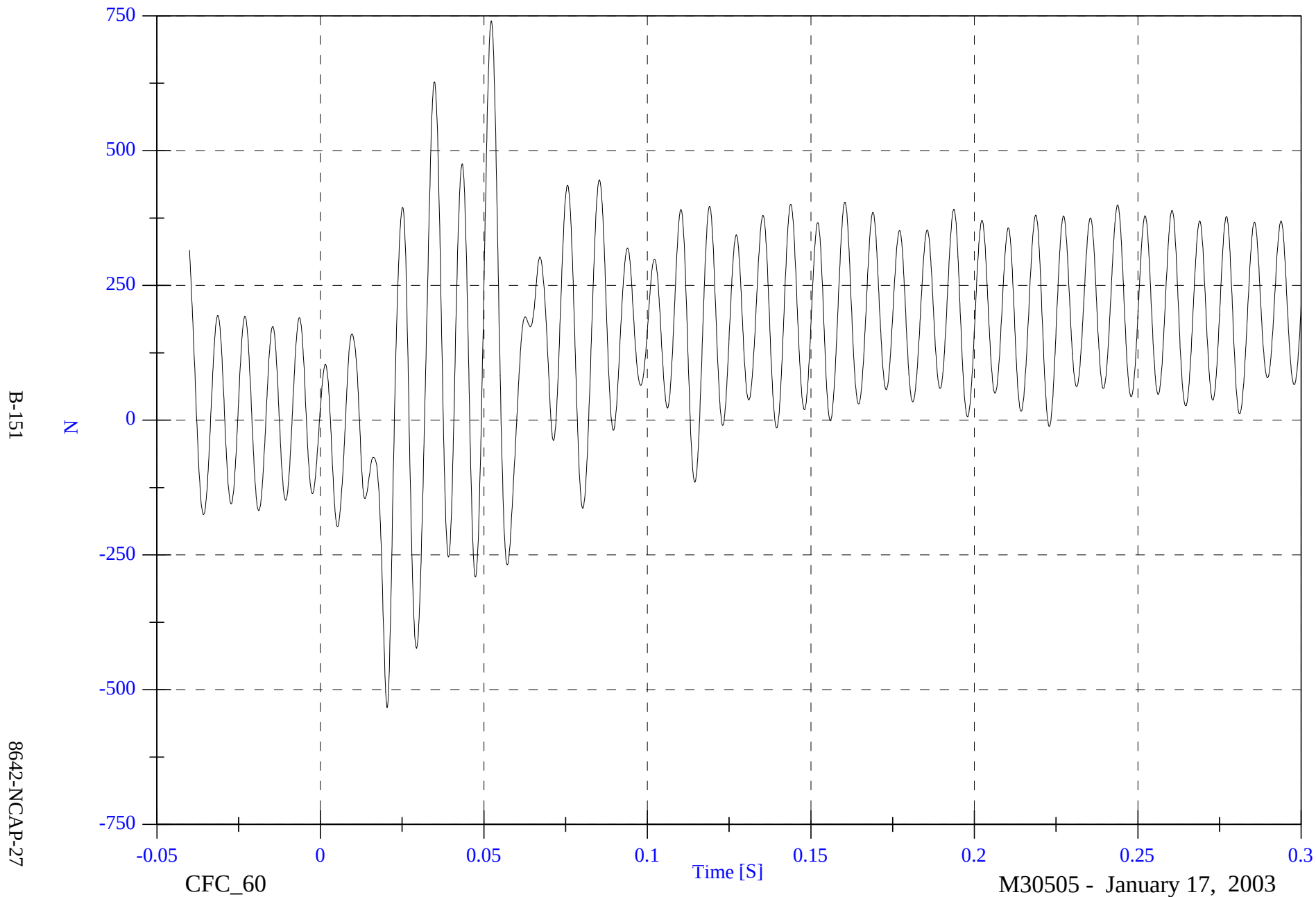


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell A9 Fx

Max: 740.9 [N] at 0.052 [S]

Min: -533.1 [N] at 0.020 [S]

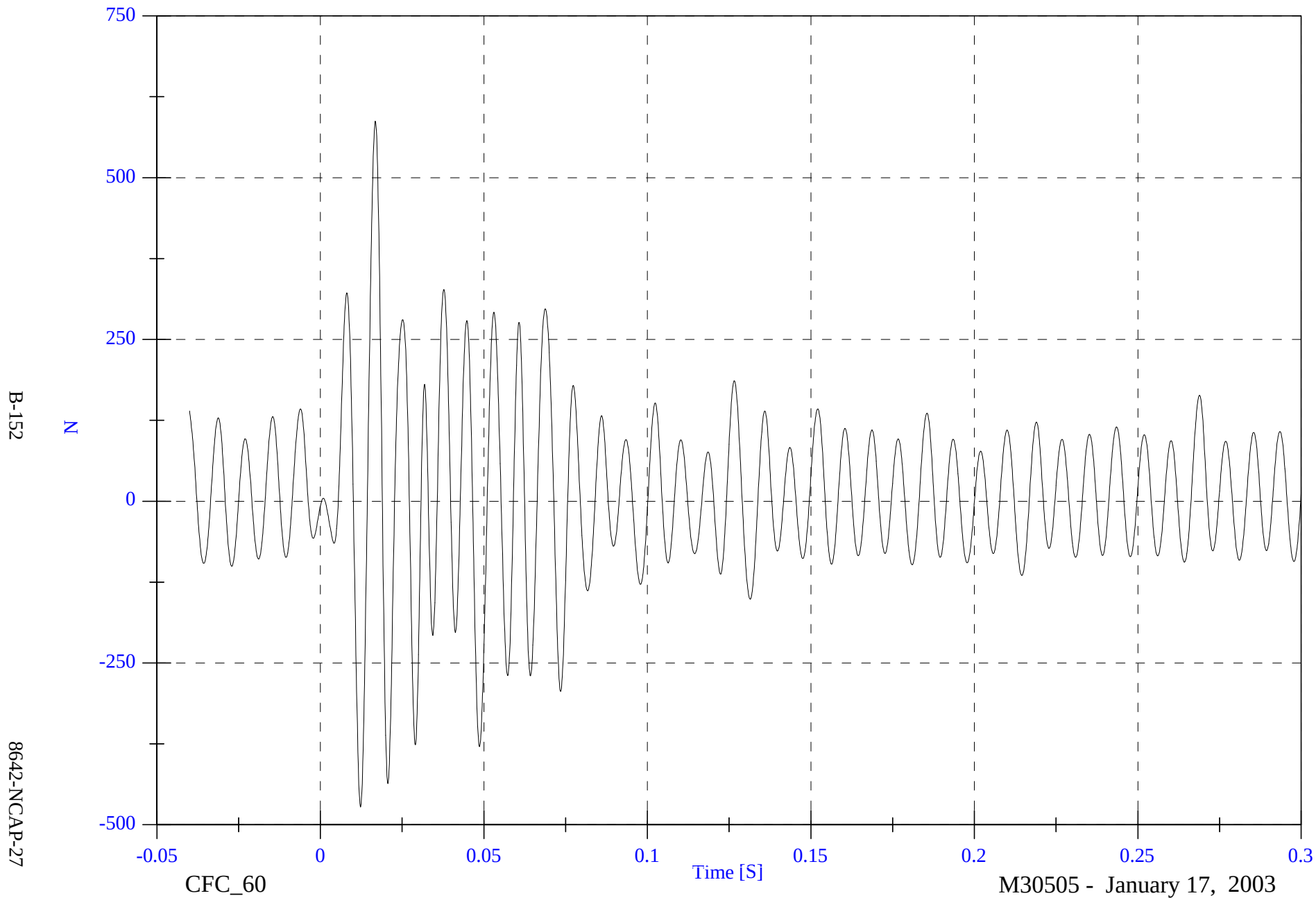


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell B1 Fx

Max: 587.3 [N] at 0.017 [S]

Min: -472.8 [N] at 0.012 [S]

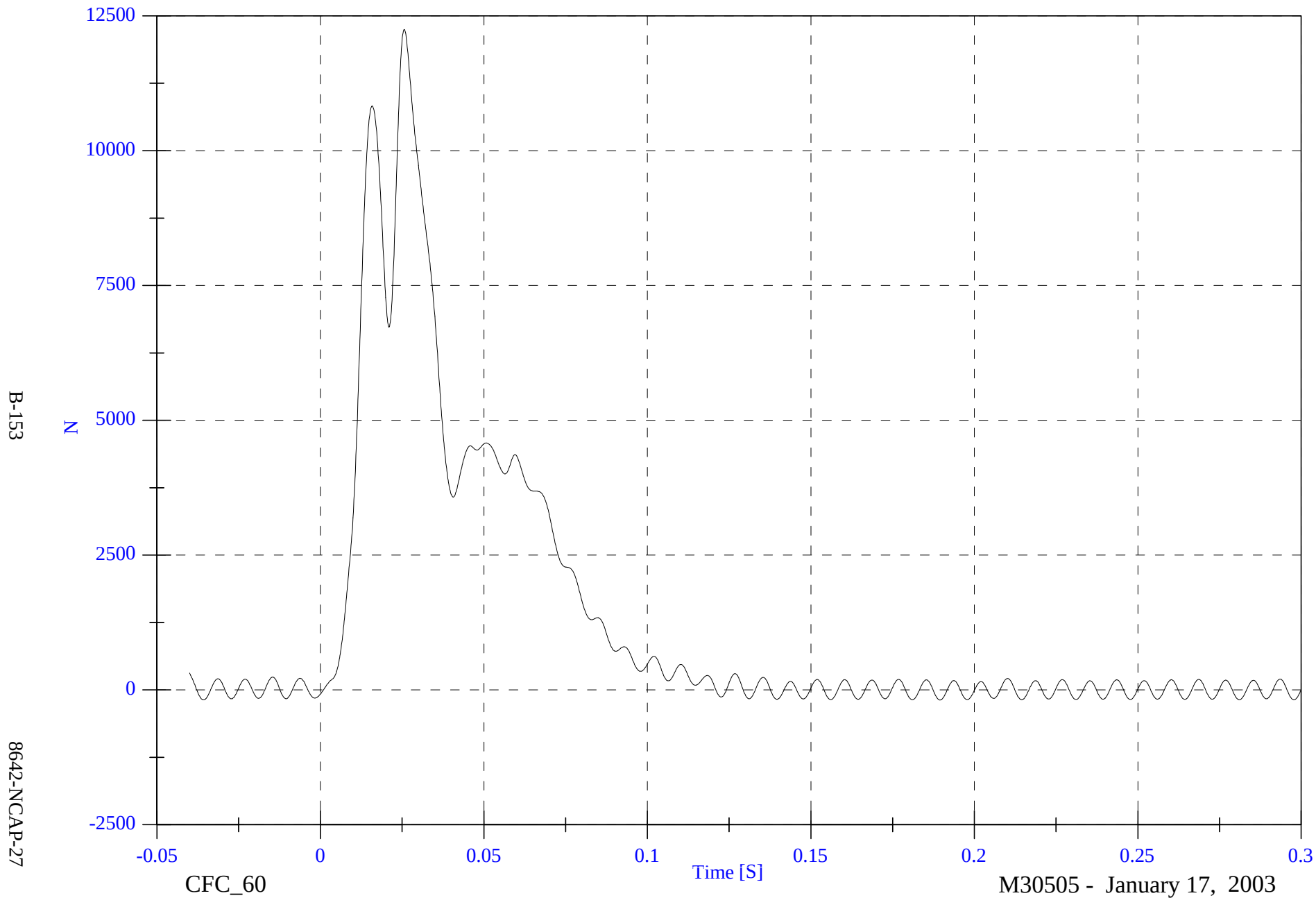


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell B2 Fx

Max: 12249.1 [N] at 0.026 [S]

Min: -187.2 [N] at 0.189 [S]

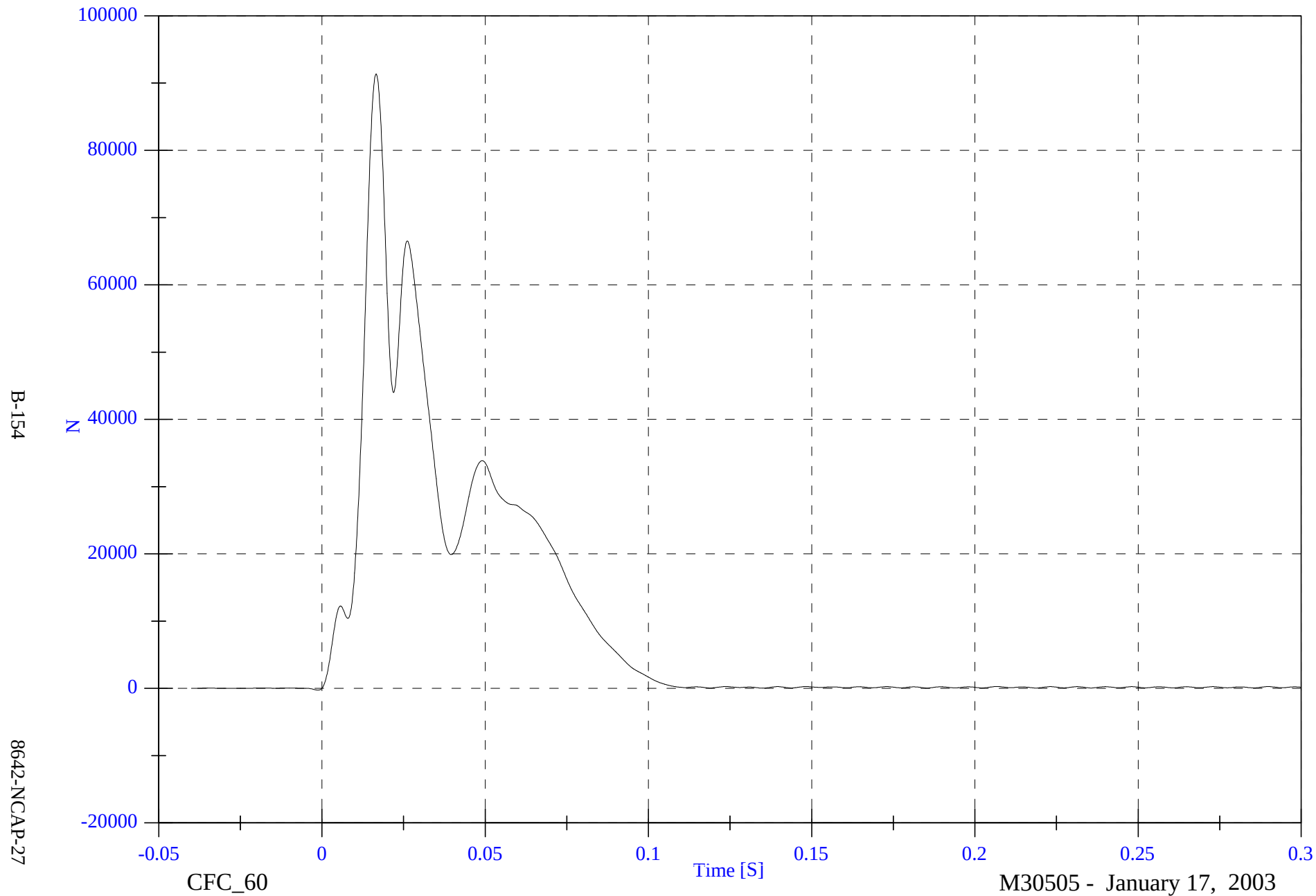


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell B3 Fx

Max: 91371.3 [N] at 0.017 [S]

Min: -262.1 [N] at -0.001 [S]

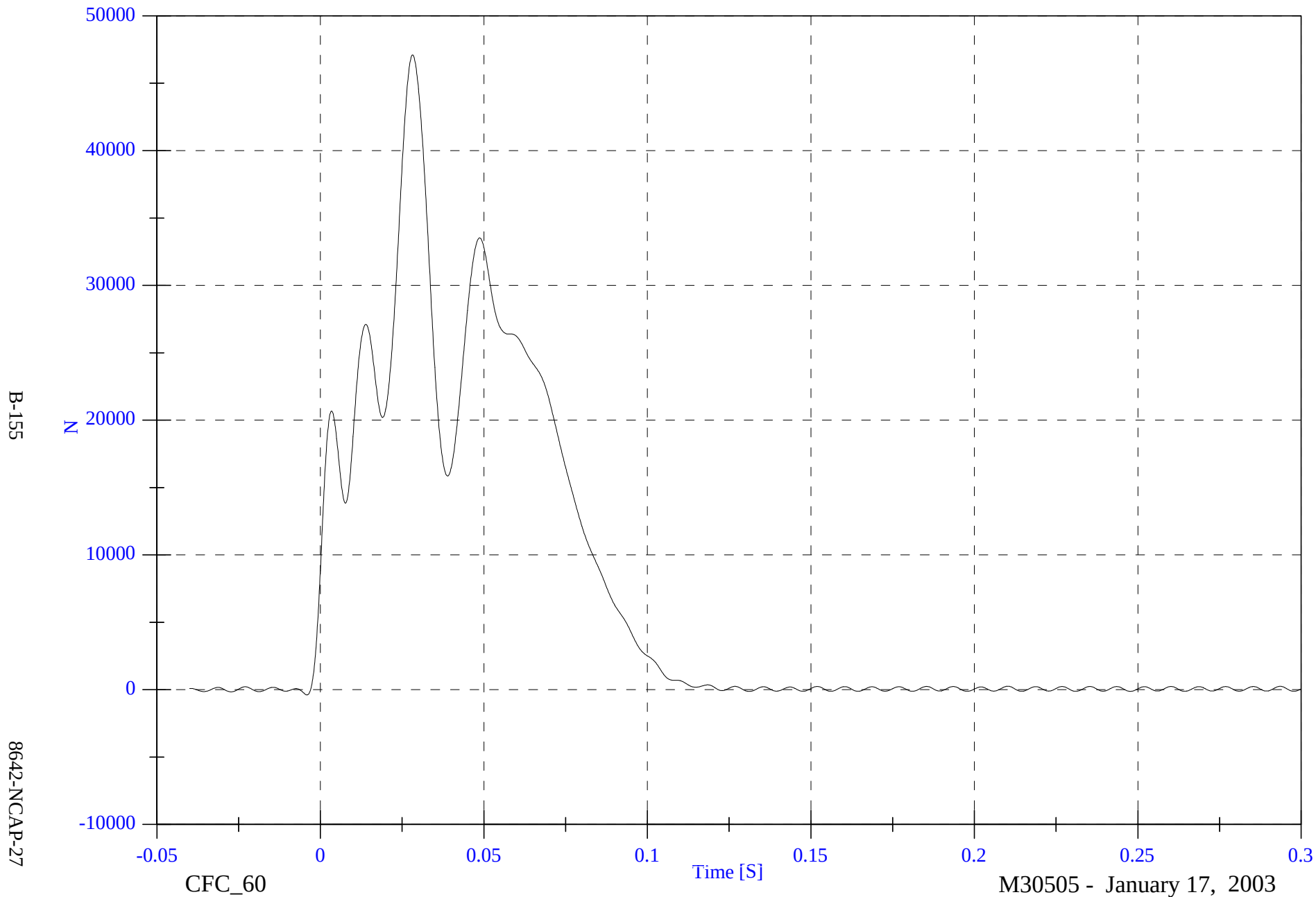


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell B4 Fx

Max: 47107.0 [N] at 0.028 [S]

Min: -387.6 [N] at -0.004 [S]

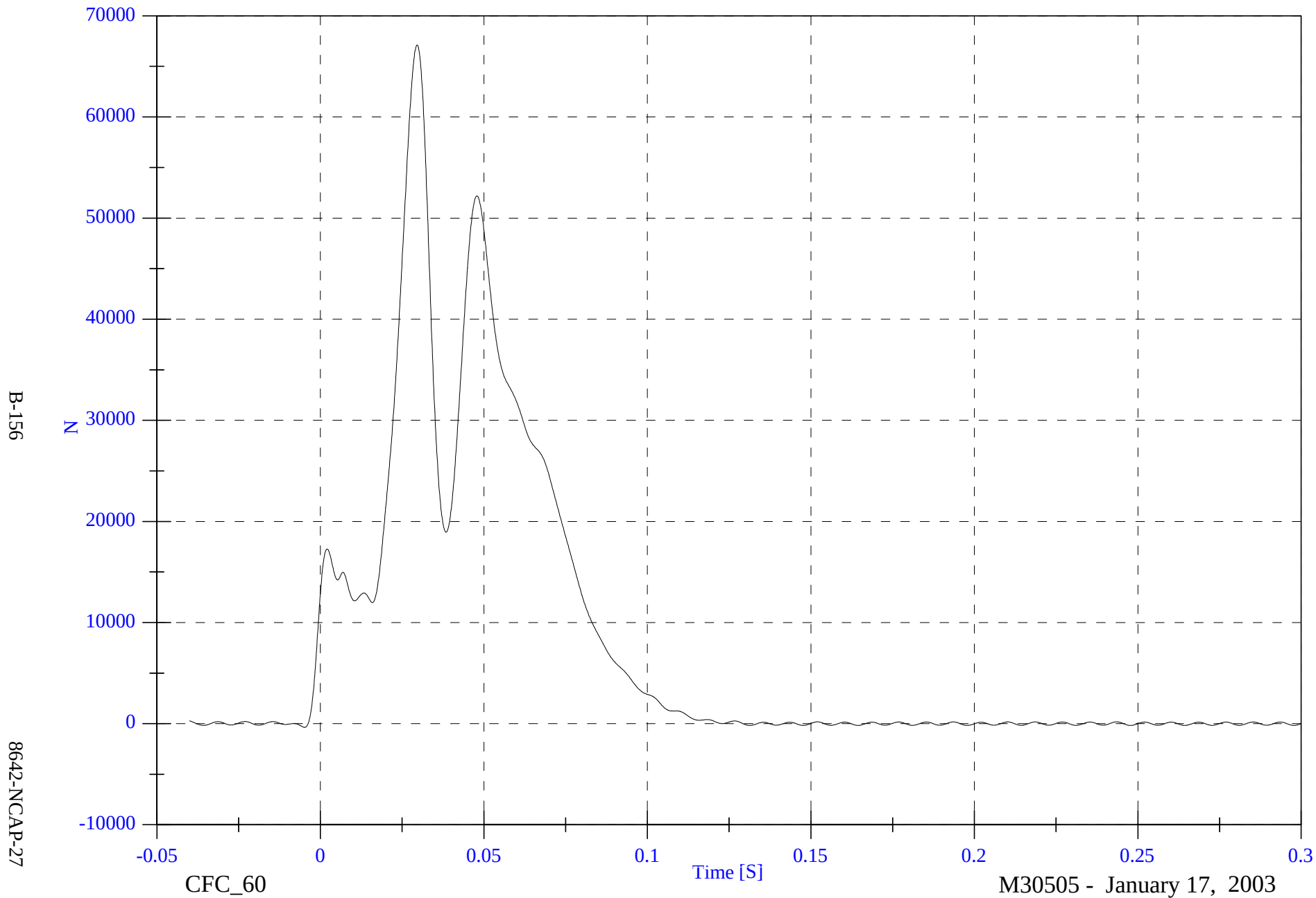


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell B5 Fx

Max: 67122.9 [N] at 0.030 [S]

Min: -370.4 [N] at -0.005 [S]

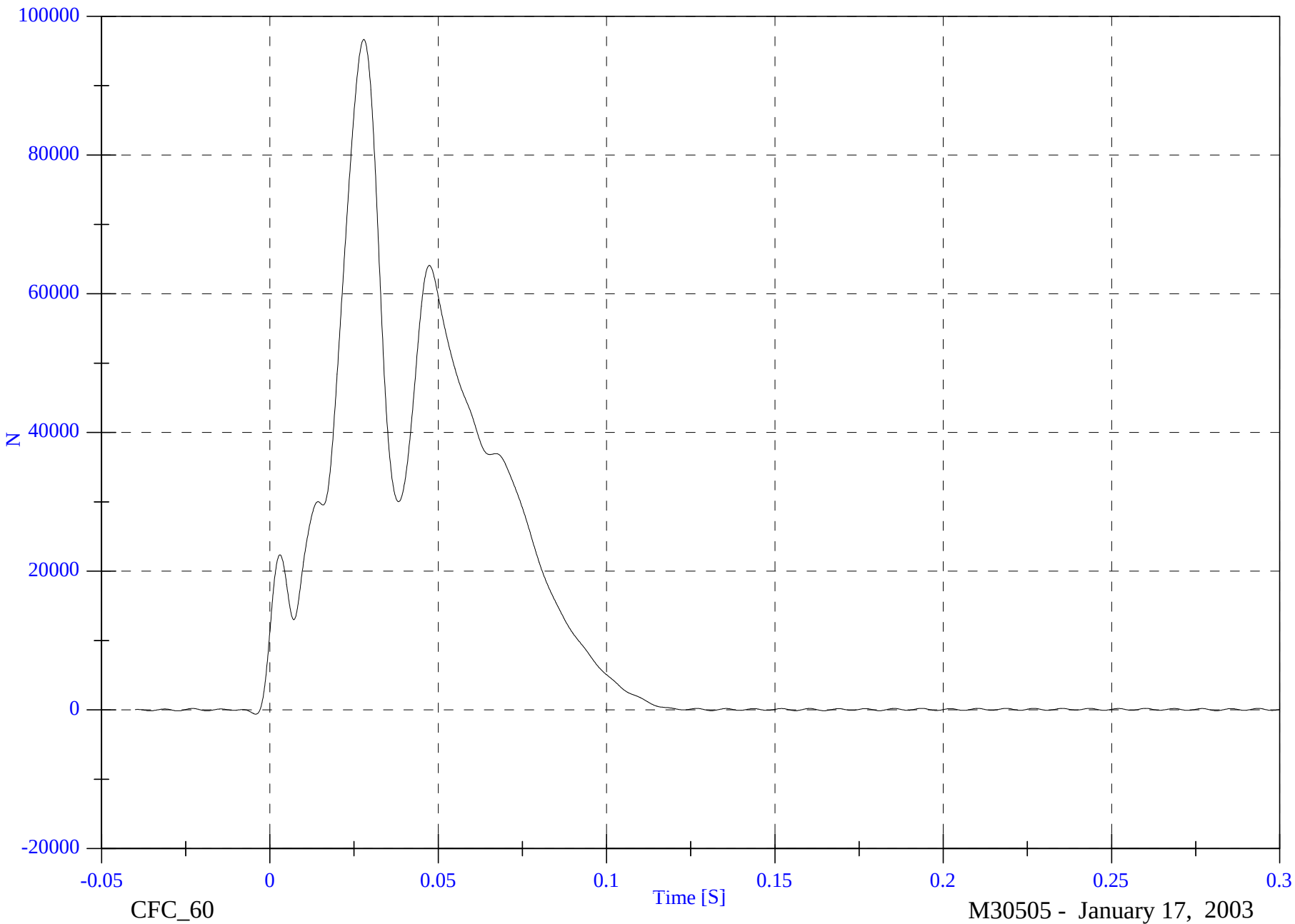


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell B6 Fx

Max: 96666.8 [N] at 0.028 [S]

Min: -615.0 [N] at -0.004 [S]



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8642-NCAP-27

CFC_60

Time [S]

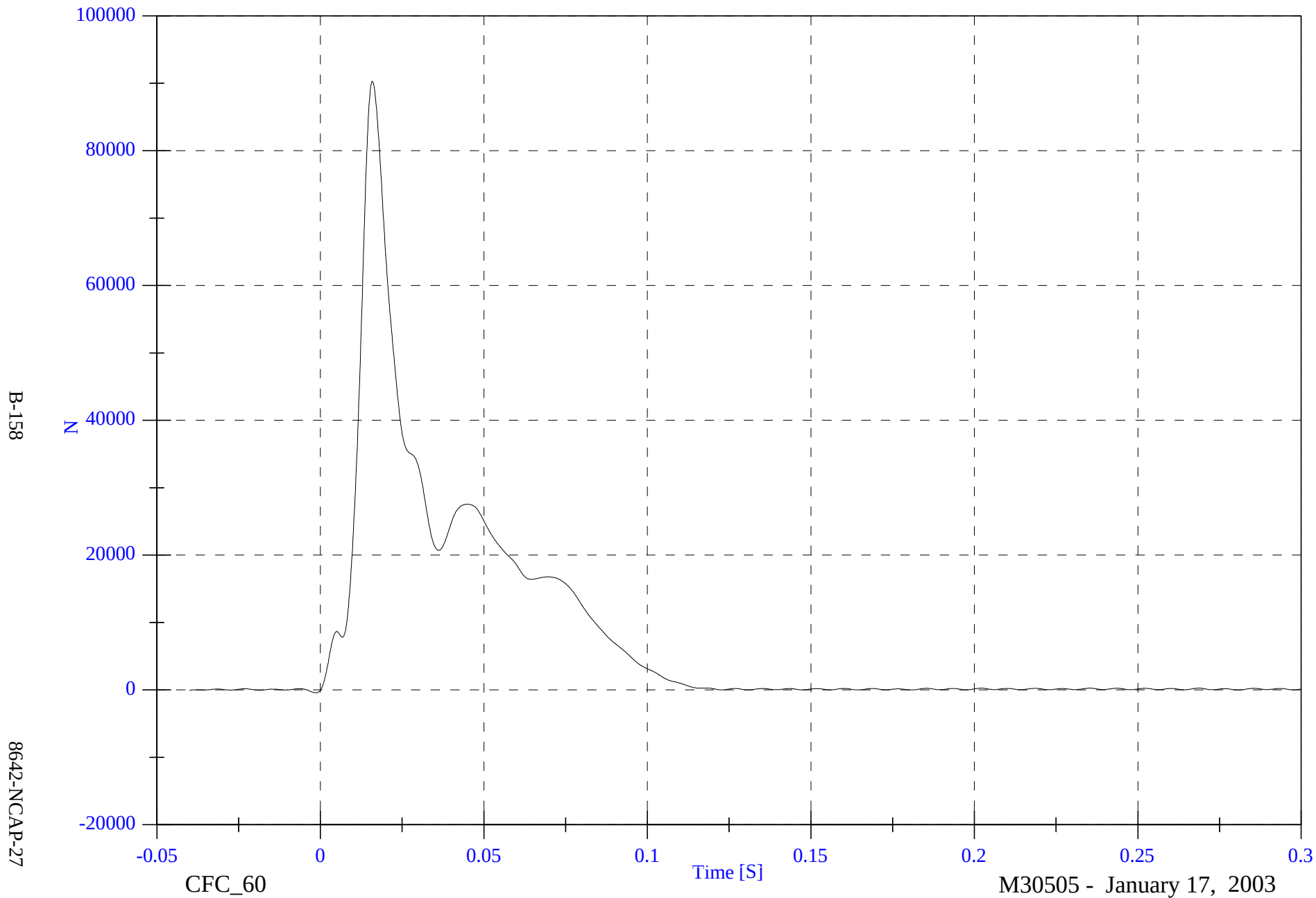
M30505 - January 17, 2003

NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell B7 Fx

Max: 90293.1 [N] at 0.016 [S]

Min: -427.8 [N] at -0.001 [S]

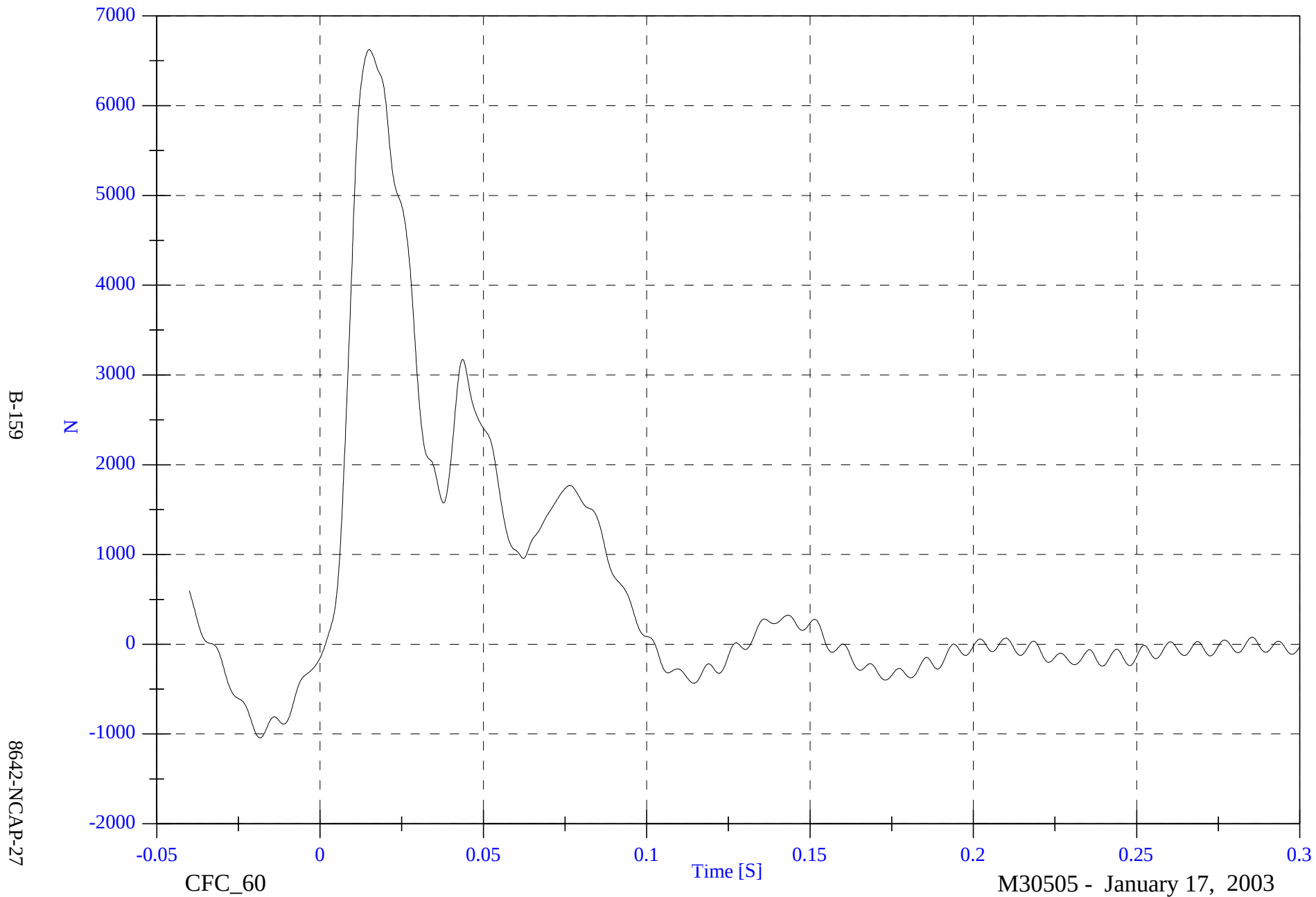


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell B8 Fx

Max: 6624.0 [N] at 0.015 [S]

Min: -1042.8 [N] at -0.018 [S]

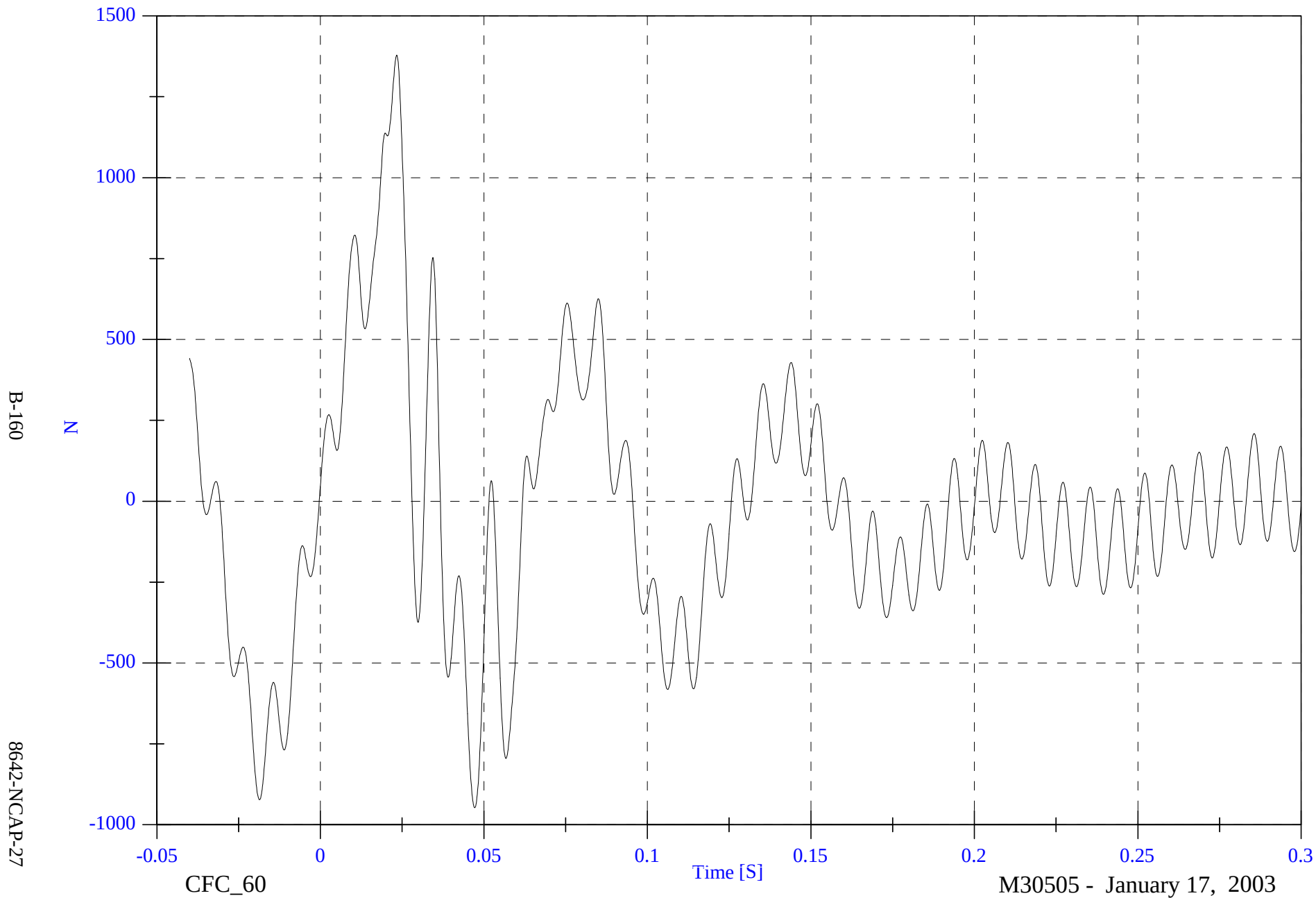


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell B9 Fx

Max: 1378.6 [N] at 0.023 [S]

Min: -947.6 [N] at 0.047 [S]



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8642-NCAP-27

CFC_60

M30505 - January 17, 2003

NCAP Test #5- 2003 Hyundai Accent

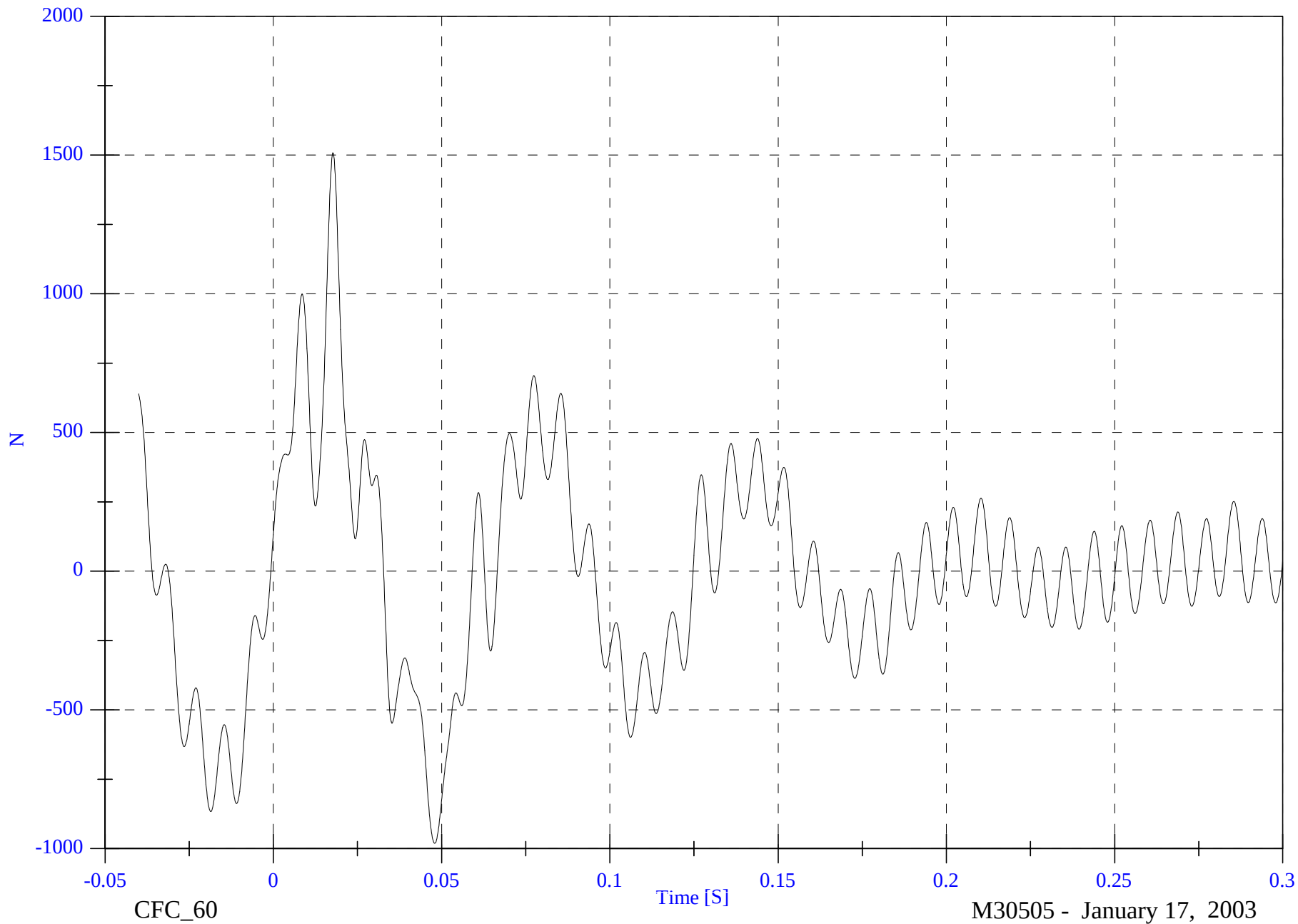
Barrier Load Cell C1 Fx

Max: 1508.1 [N] at 0.018 [S]

Min: -980.9 [N] at 0.048 [S]

B-161

8642-NCAP-27

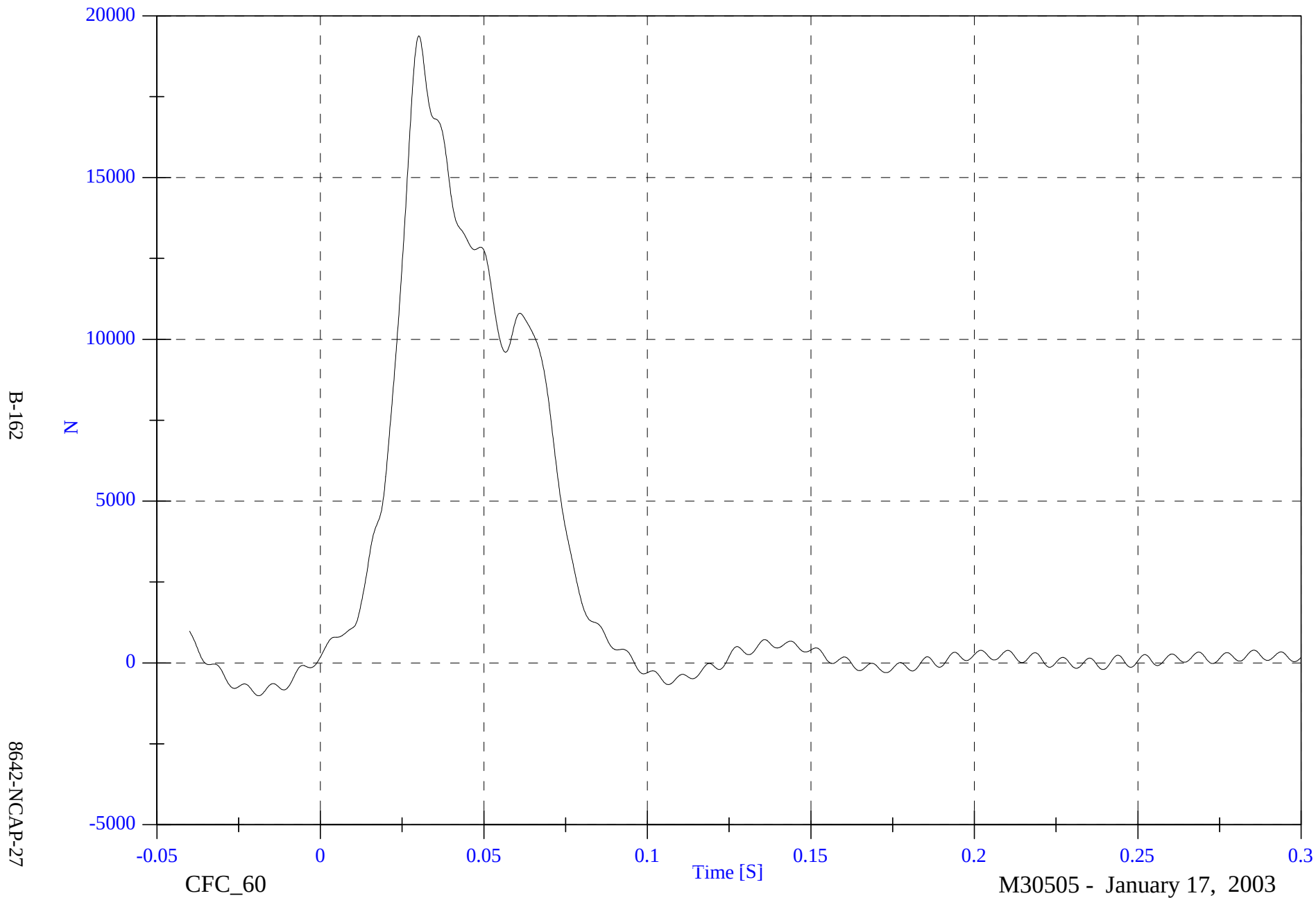


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell C2 Fx

Max: 19381.1 [N] at 0.030 [S]

Min: -1011.8 [N] at -0.019 [S]

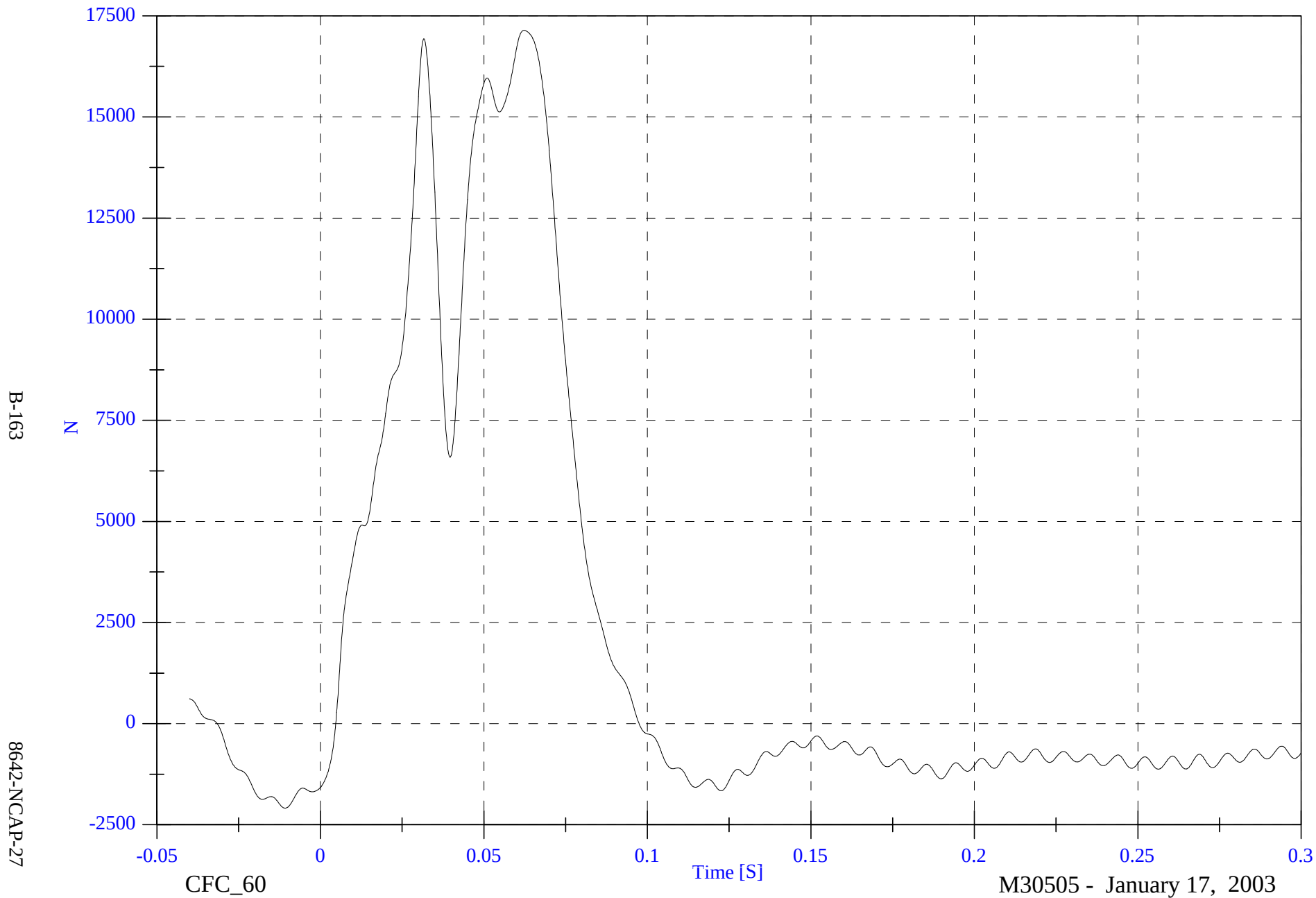


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell C3 Fx

Max: 17141.3 [N] at 0.062 [S]

Min: -2088.9 [N] at -0.011 [S]

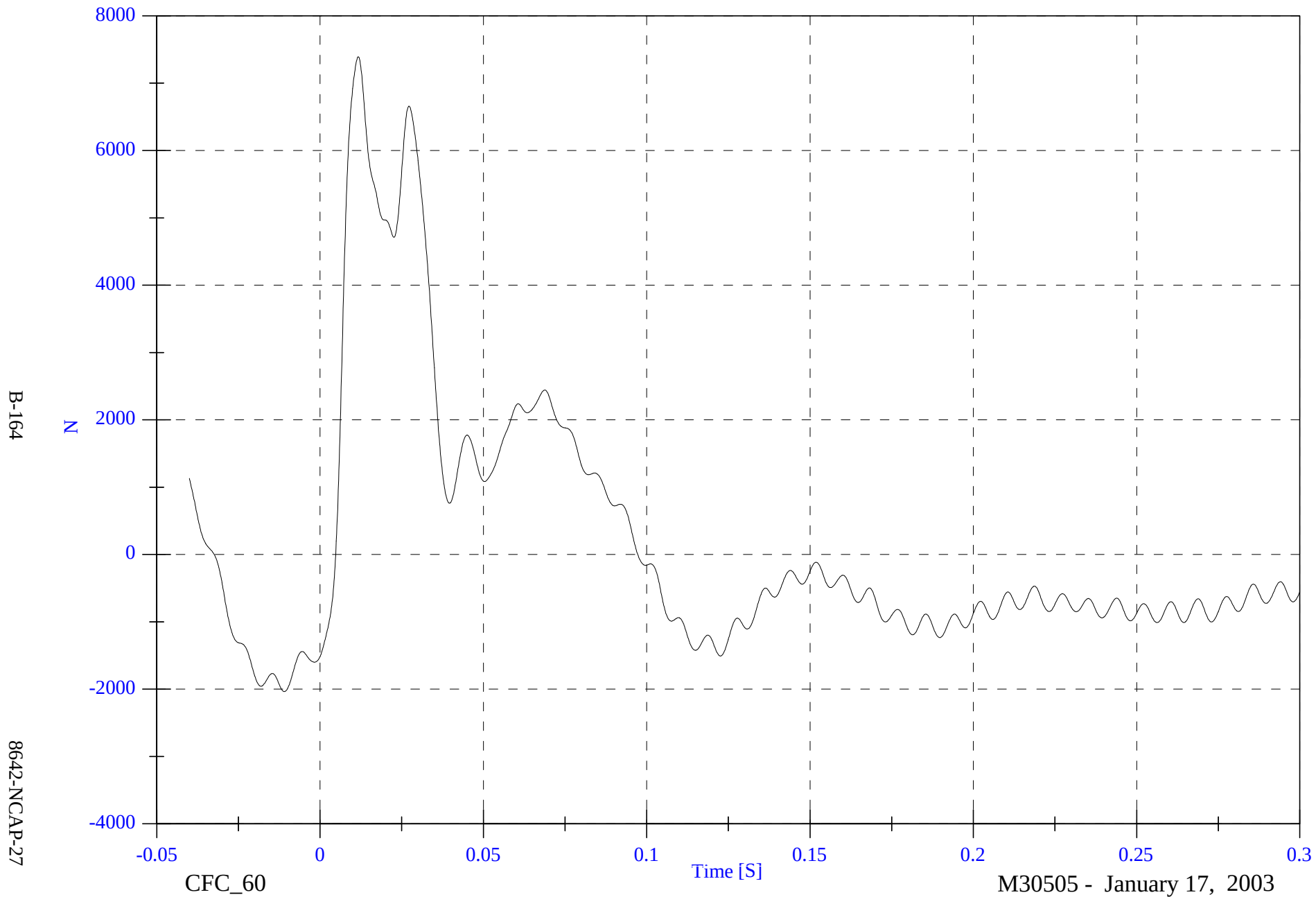


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell C4 Fx

Max: 7393.6 [N] at 0.012 [S]

Min: -2035.4 [N] at -0.011 [S]

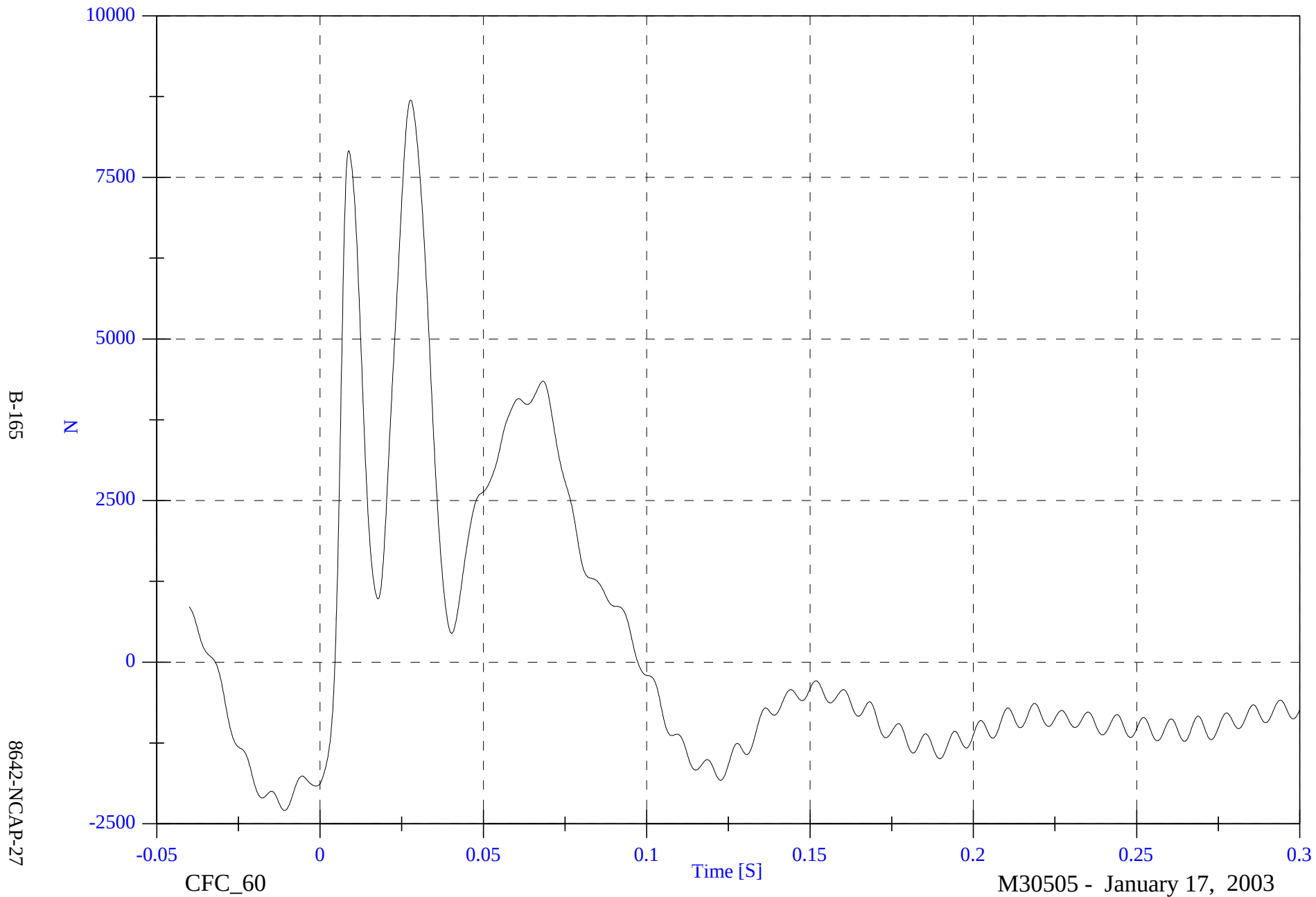


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell C5 Fx

Max: 8697.0 [N] at 0.028 [S]

Min: -2293.6 [N] at -0.011 [S]



NCAP Test #5- 2003 Hyundai Accent

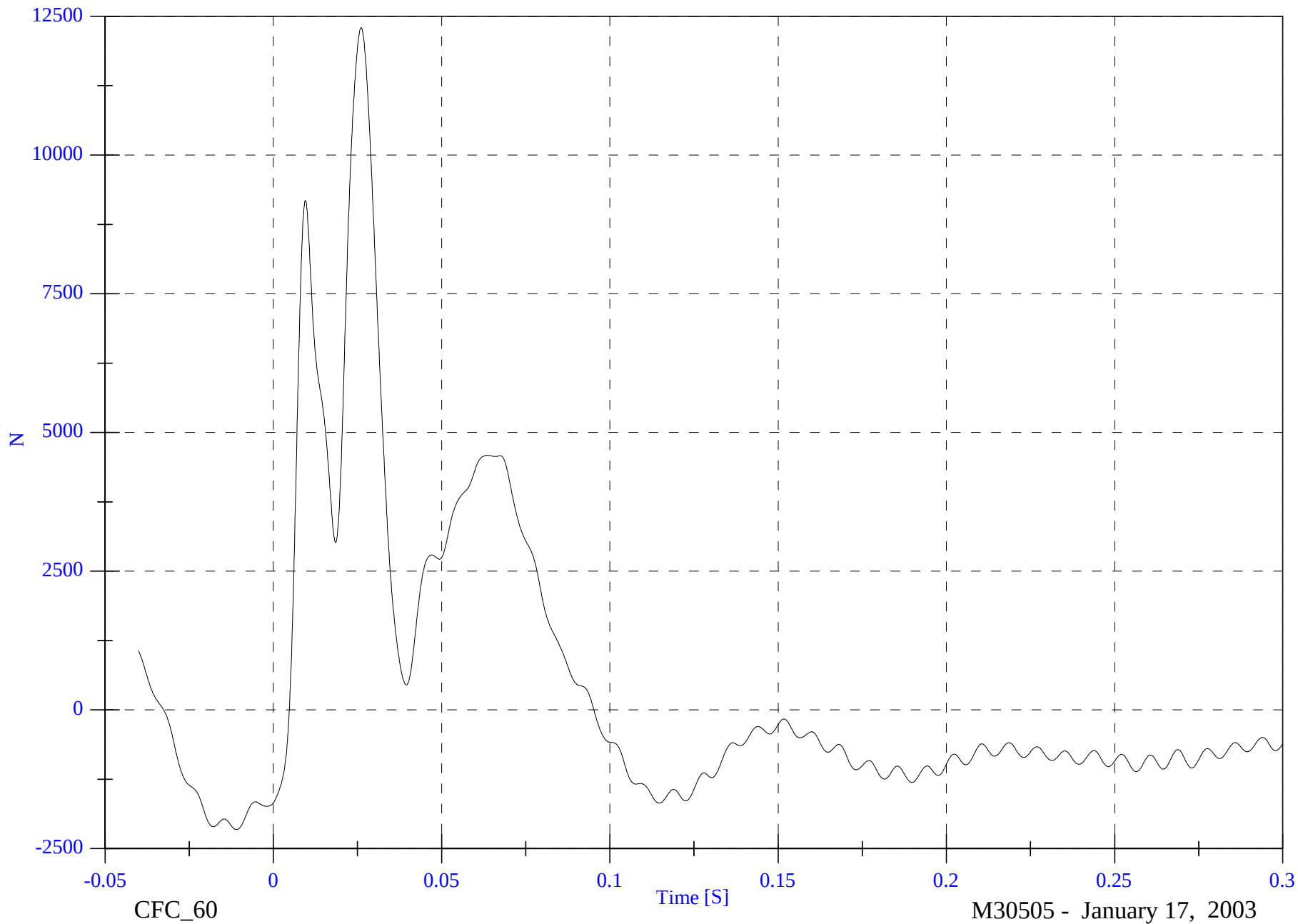
Barrier Load Cell C6 Fx

Max: 12296.8 [N] at 0.026 [S]

Min: -2155.6 [N] at -0.011 [S]

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8642-NCAP-27

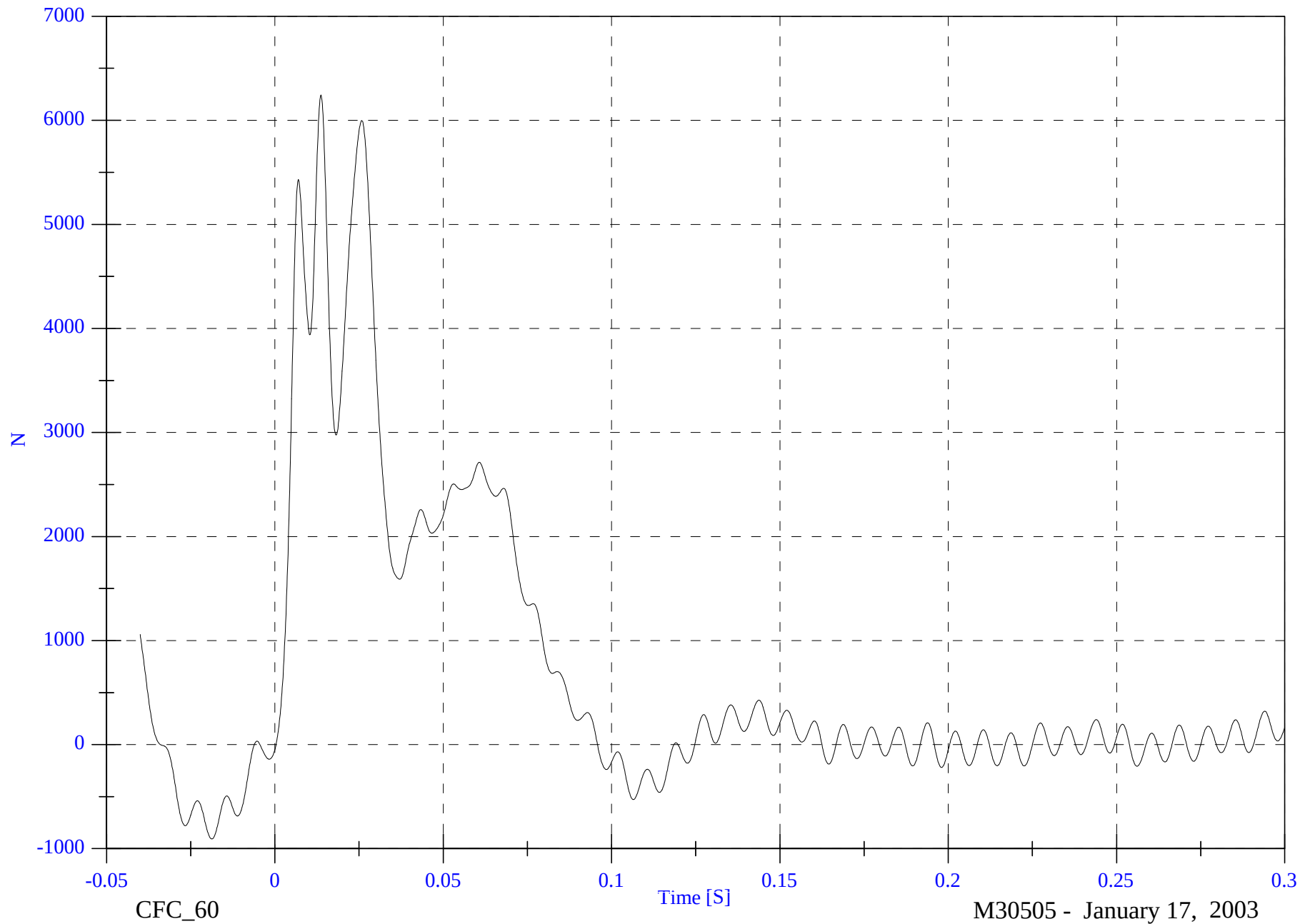


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell C7 Fx

Max: 6243.2 [N] at 0.014 [S]

Min: -907.3 [N] at -0.019 [S]

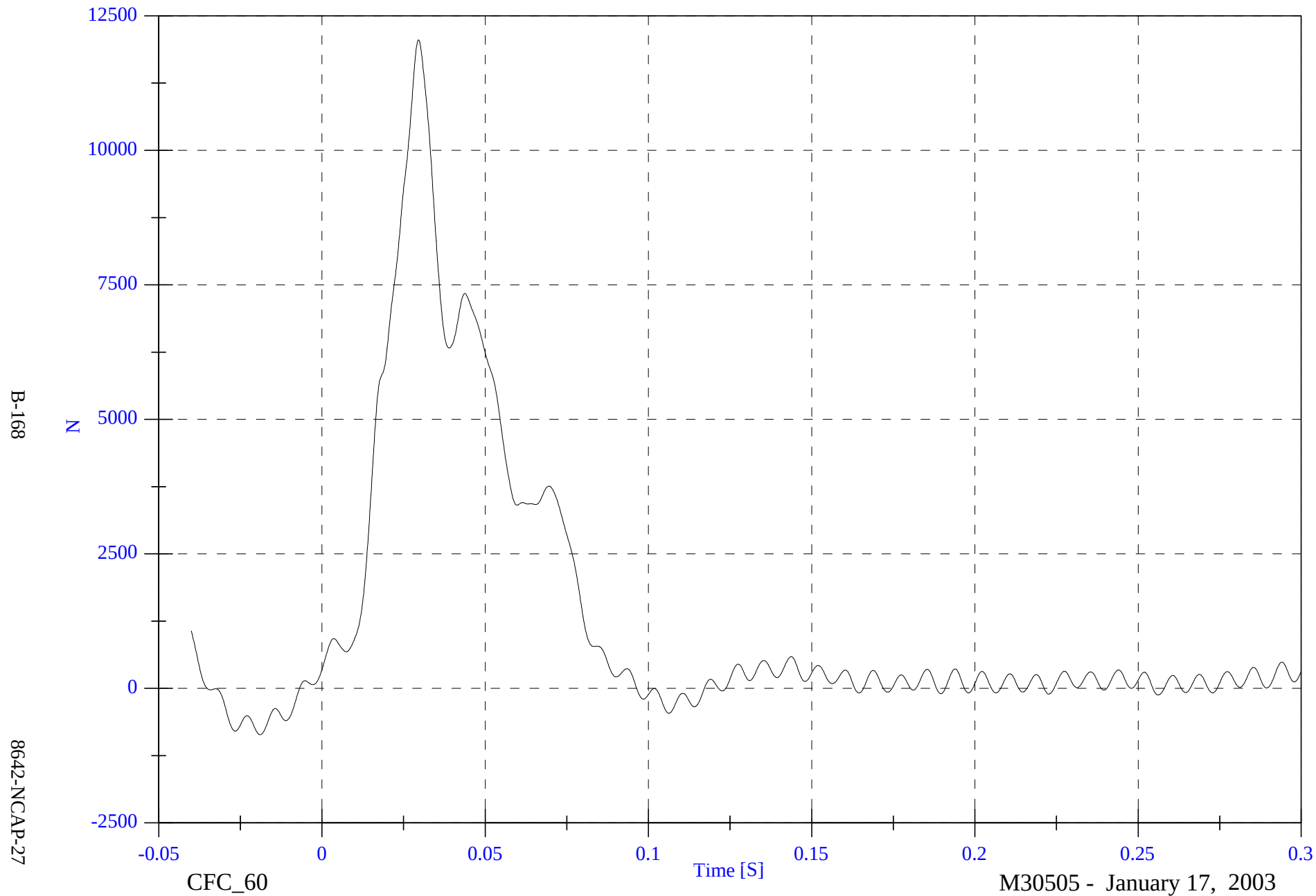


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell C8 Fx

Max: 12051.8 [N] at 0.030 [S]

Min: -859.6 [N] at -0.019 [S]

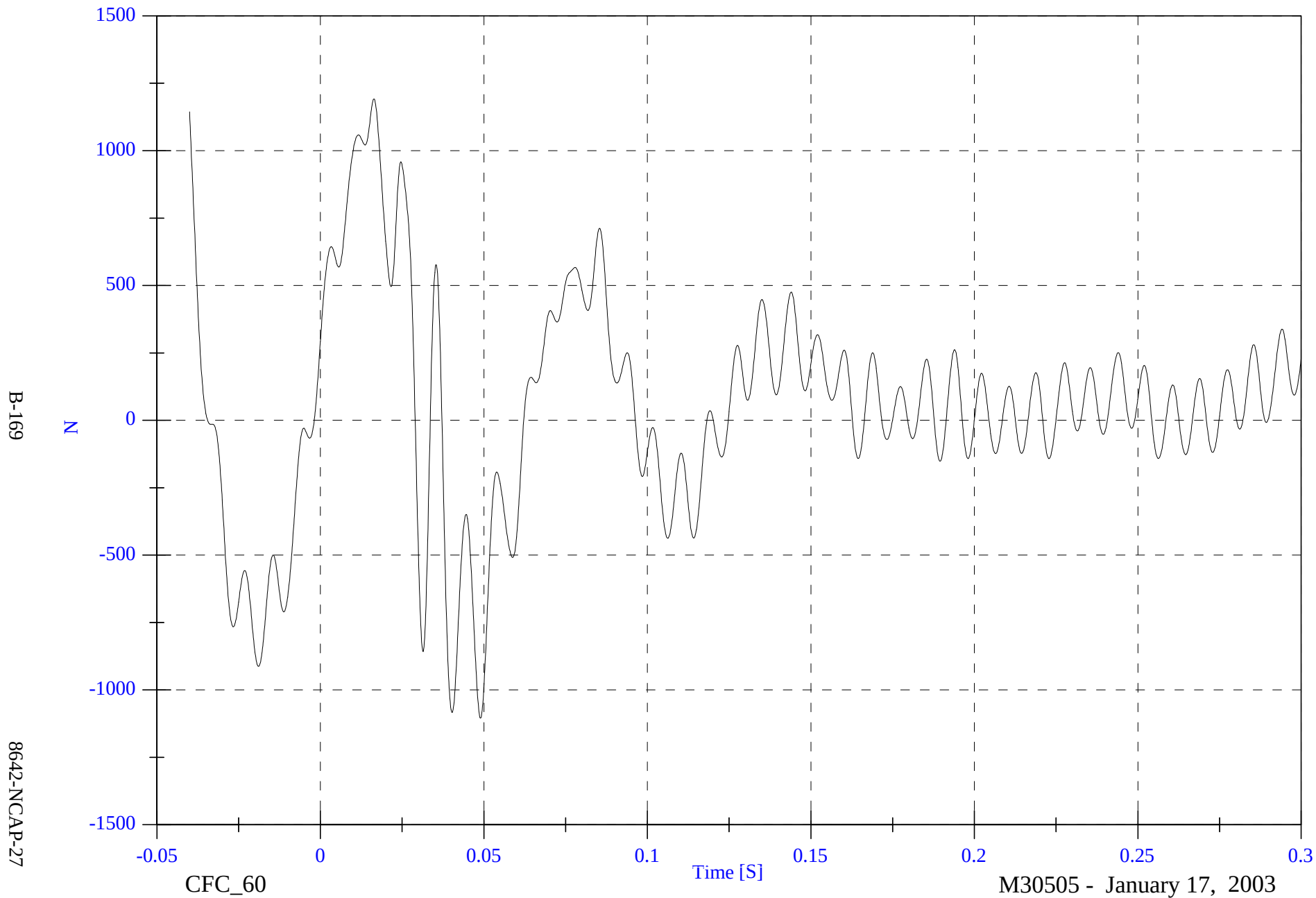


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell C9 Fx

Max: 1191.9 [N] at 0.016 [S]

Min: -1104.8 [N] at 0.049 [S]

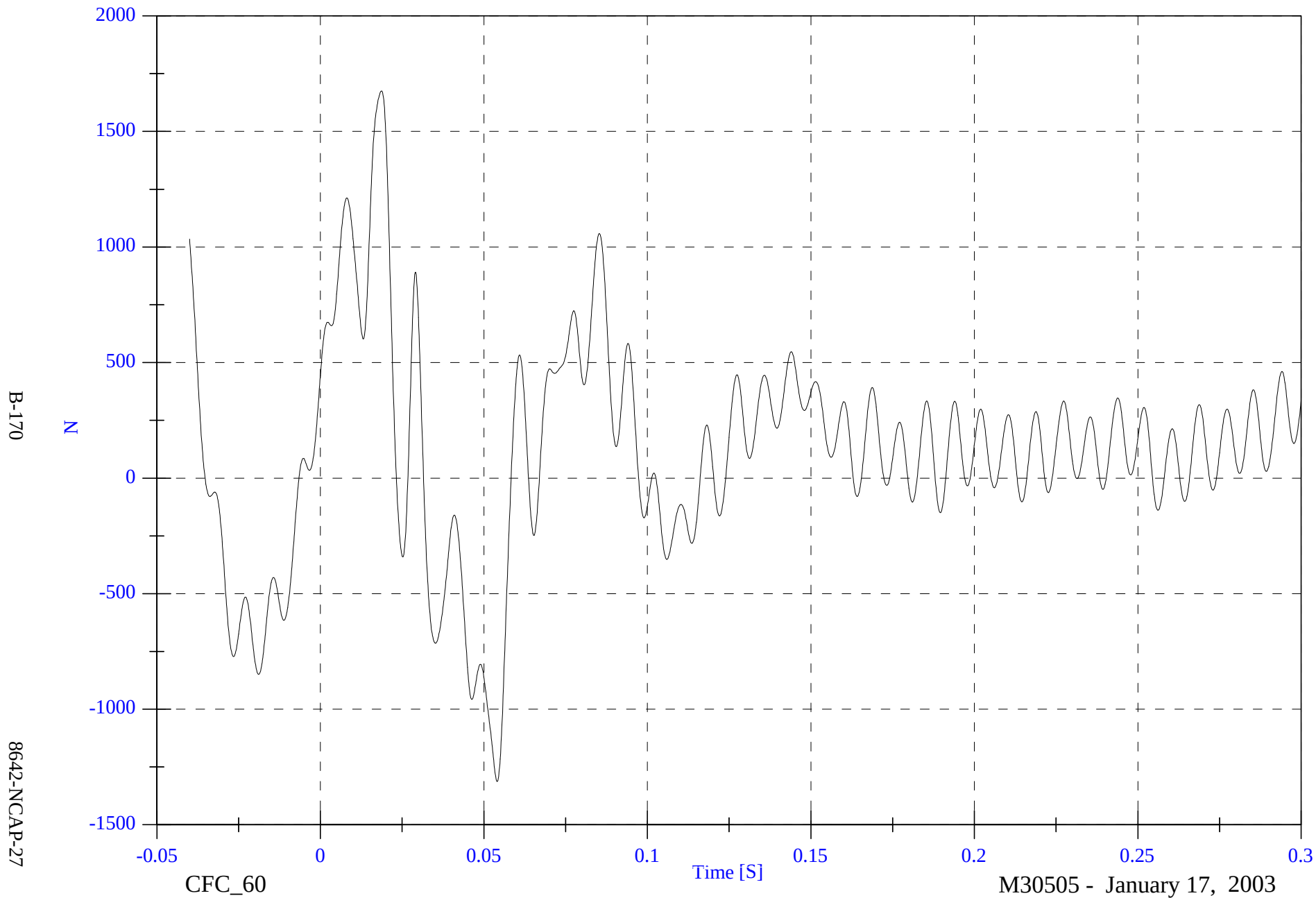


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell D1 Fx

Max: 1675.5 [N] at 0.019 [S]

Min: -1313.1 [N] at 0.054 [S]

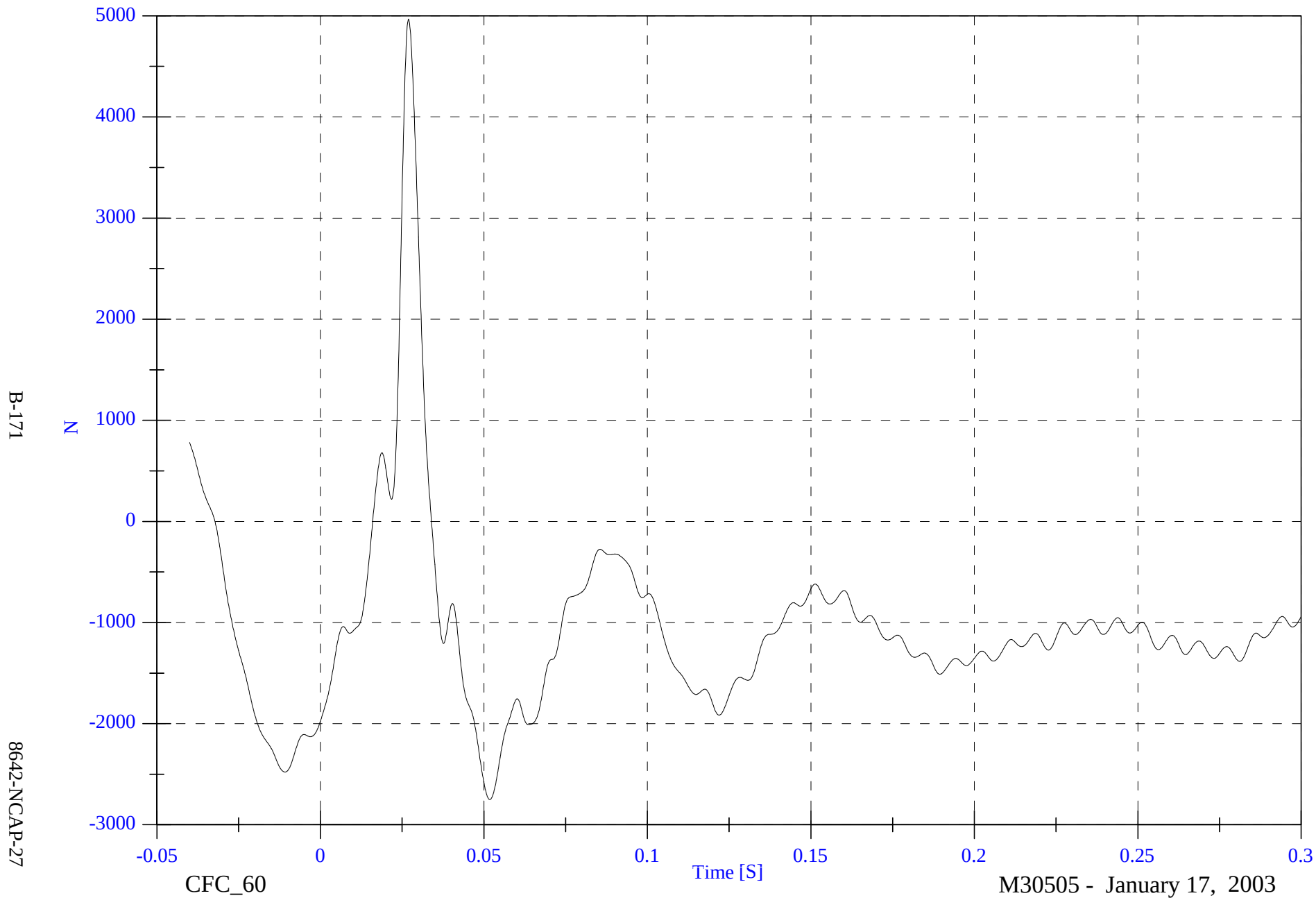


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell D2 Fx

Max: 4966.6 [N] at 0.027 [S]

Min: -2751.1 [N] at 0.052 [S]

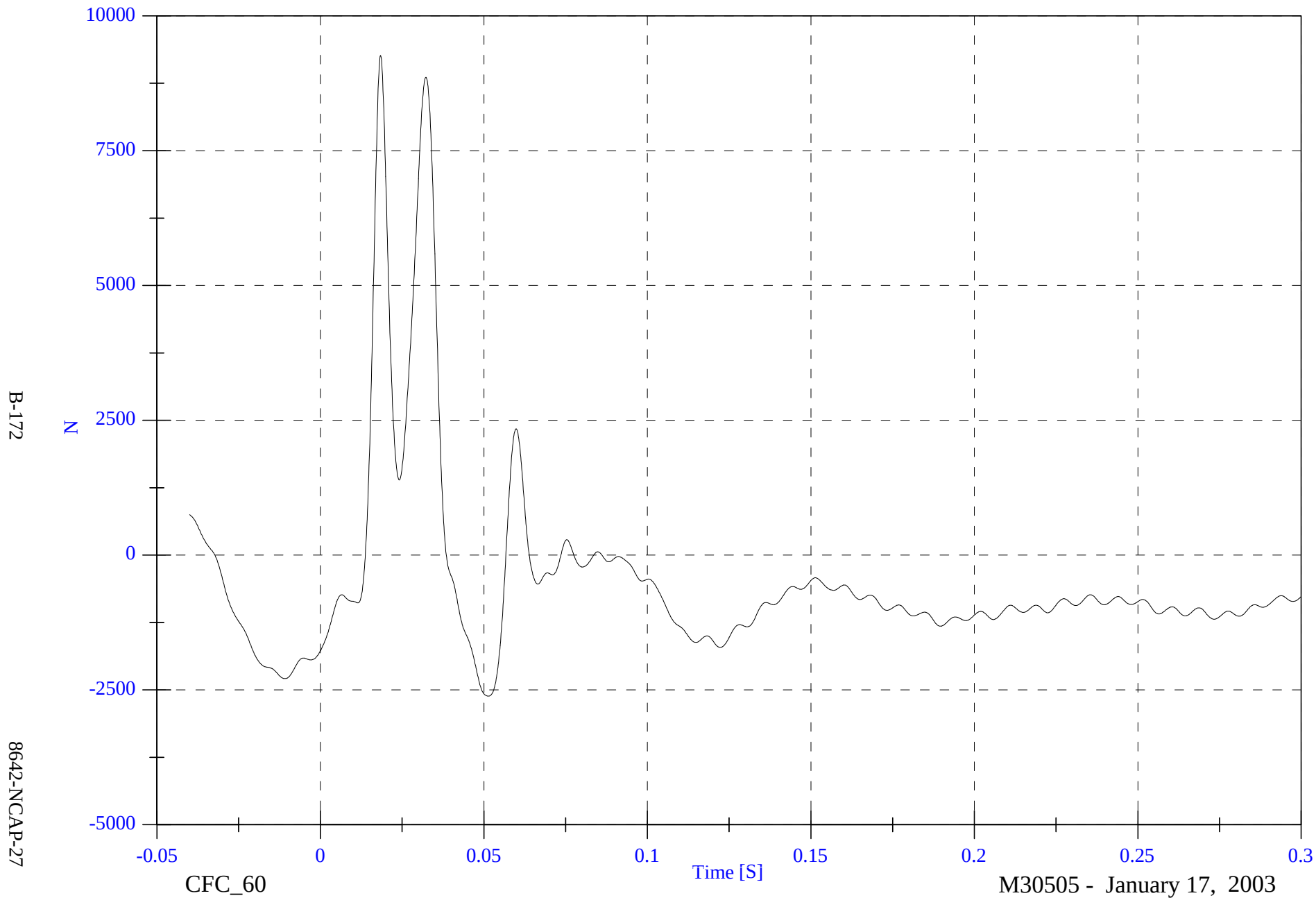


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell D3 Fx

Max: 9266.2 [N] at 0.018 [S]

Min: -2613.6 [N] at 0.051 [S]

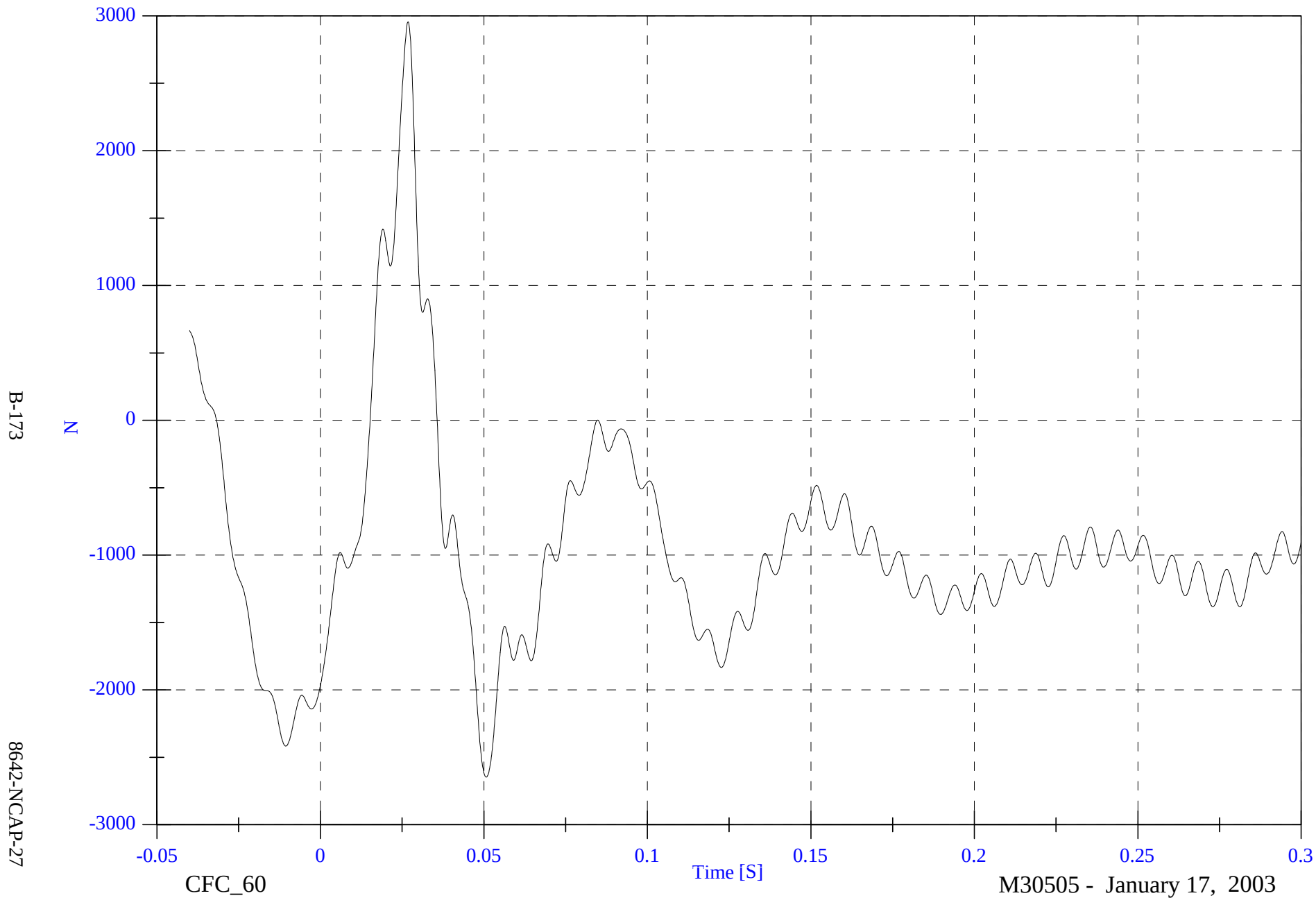


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell D4 Fx

Max: 2955.7 [N] at 0.027 [S]

Min: -2646.8 [N] at 0.051 [S]

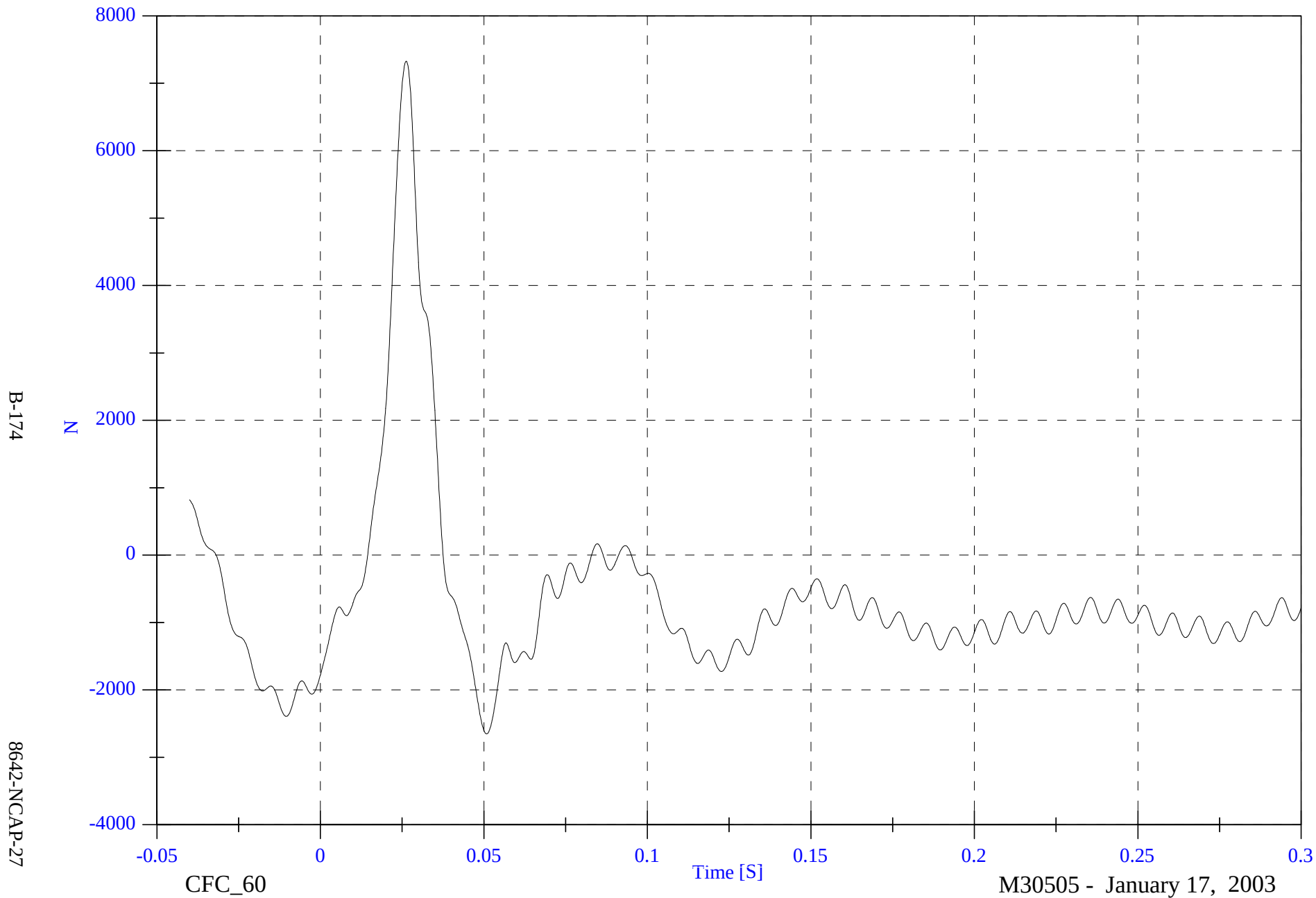


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell D5 Fx

Max: 7328.7 [N] at 0.026 [S]

Min: -2651.8 [N] at 0.051 [S]

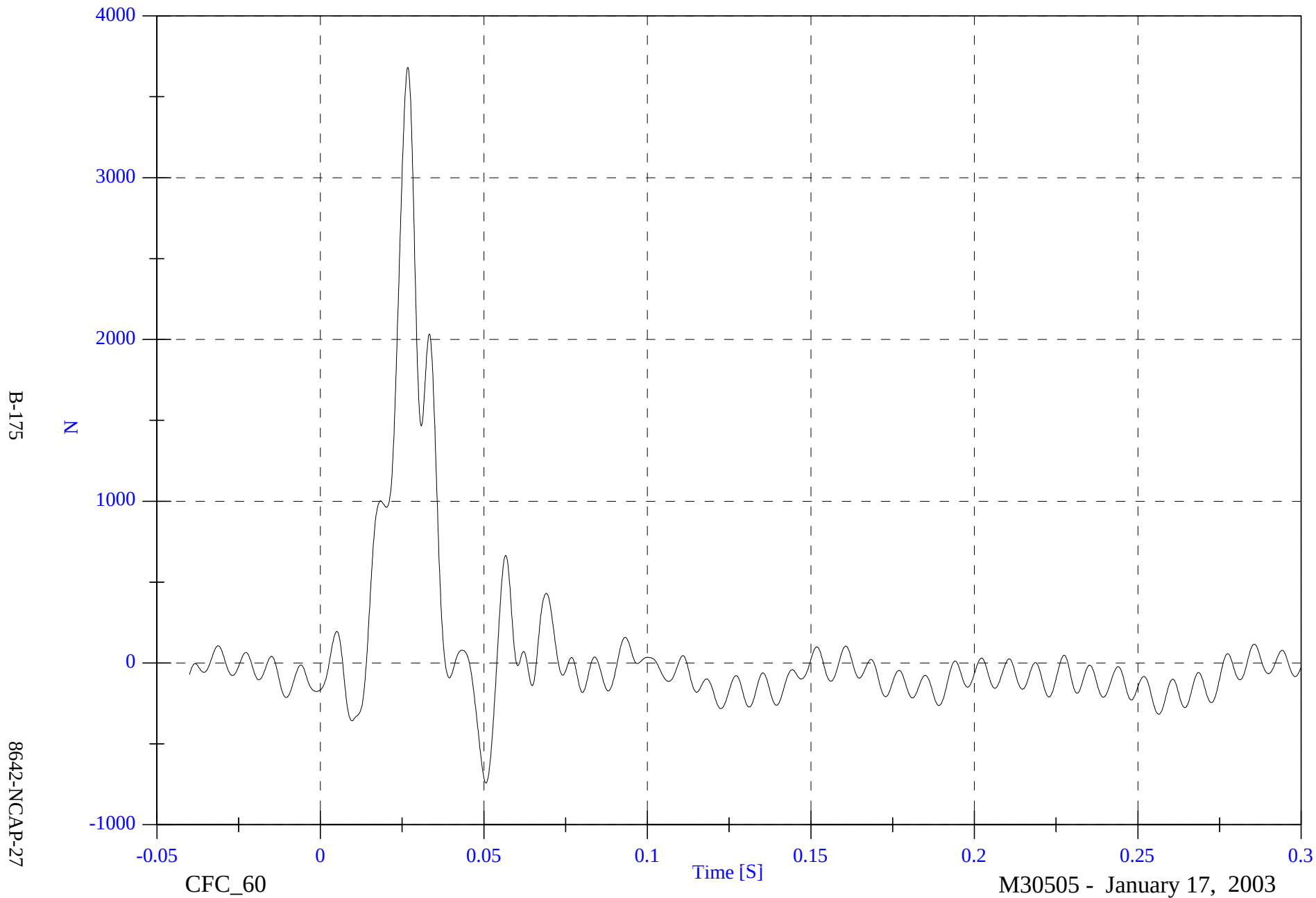


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell D6 Fx

Max: 3681.4 [N] at 0.027 [S]

Min: -742.7 [N] at 0.051 [S]

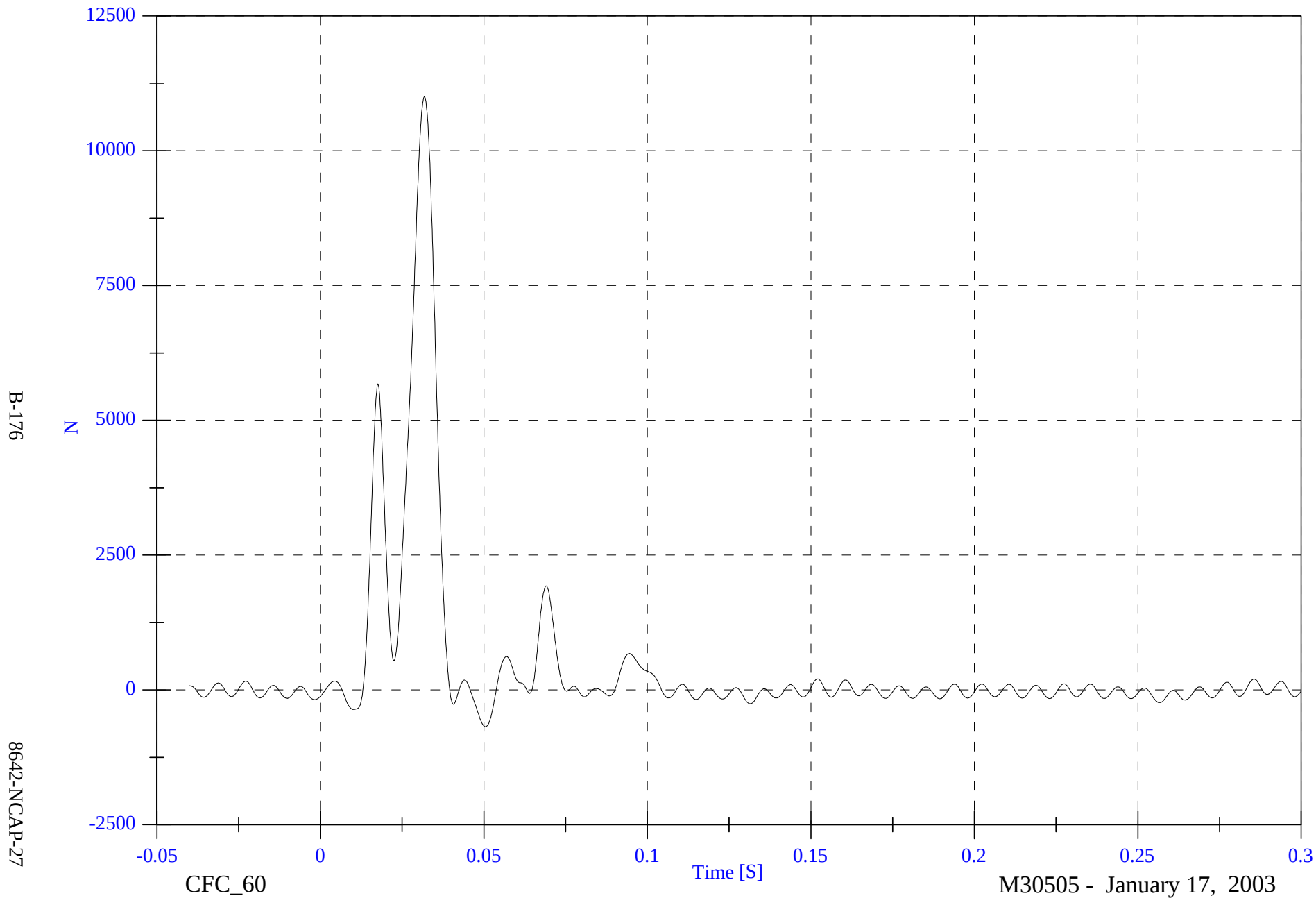


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell D7 Fx

Max: 11000.3 [N] at 0.032 [S]

Min: -681.4 [N] at 0.050 [S]

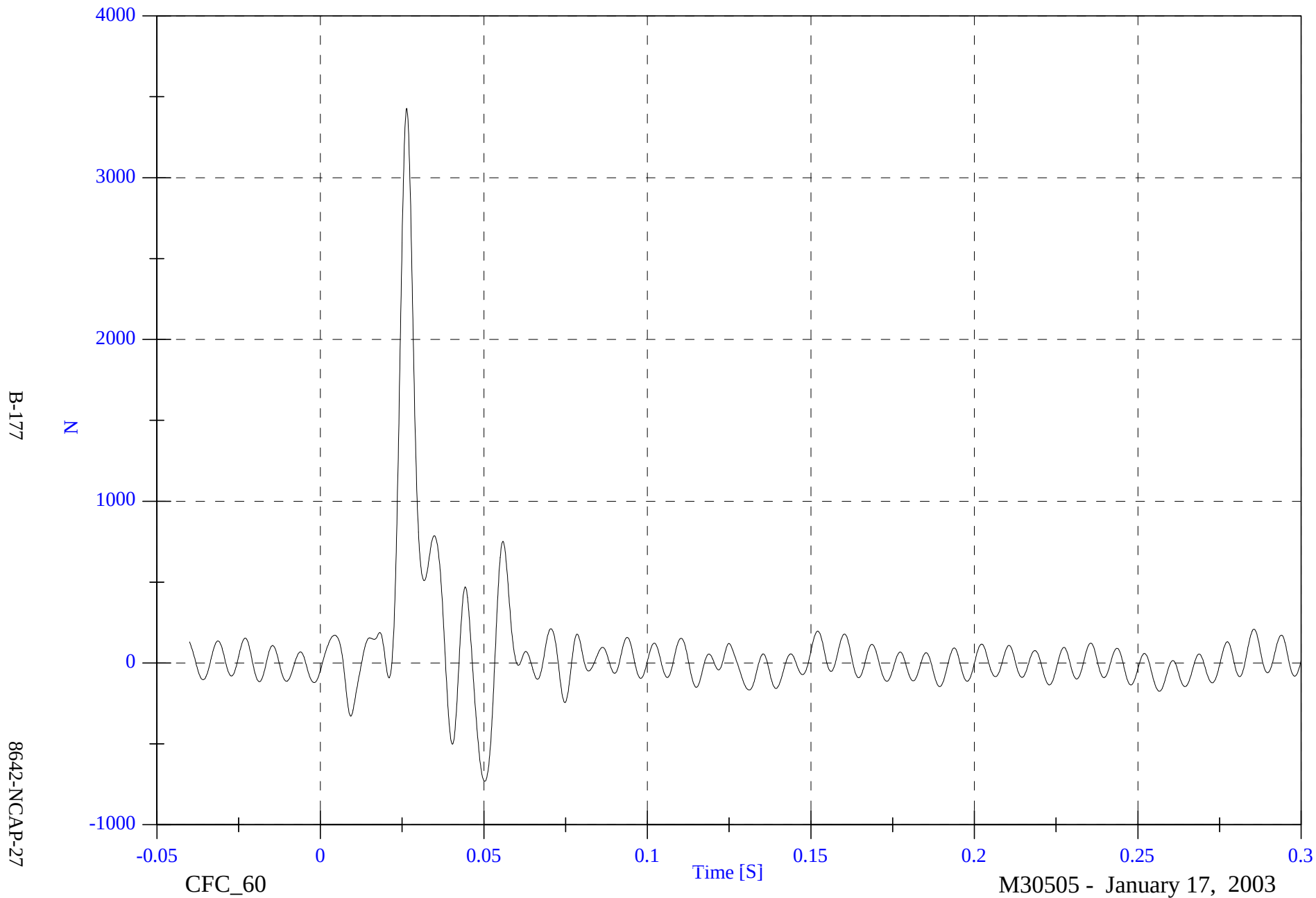


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell D8 Fx

Max: 3429.7 [N] at 0.026 [S]

Min: -731.1 [N] at 0.050 [S]

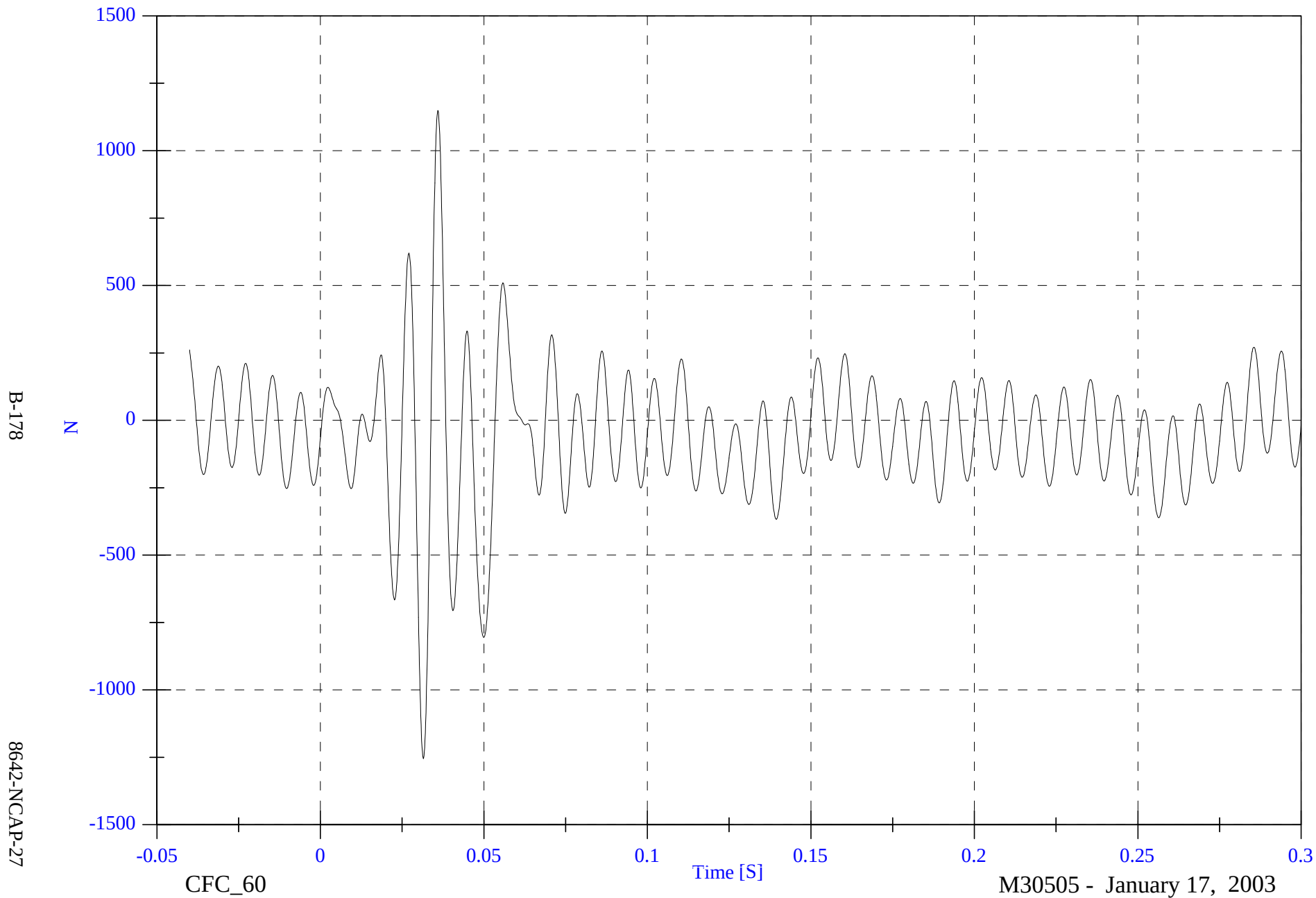


NCAP Test #5- 2003 Hyundai Accent

Barrier Load Cell D9 Fx

Max: 1148.8 [N] at 0.036 [S]

Min: -1254.6 [N] at 0.031 [S]

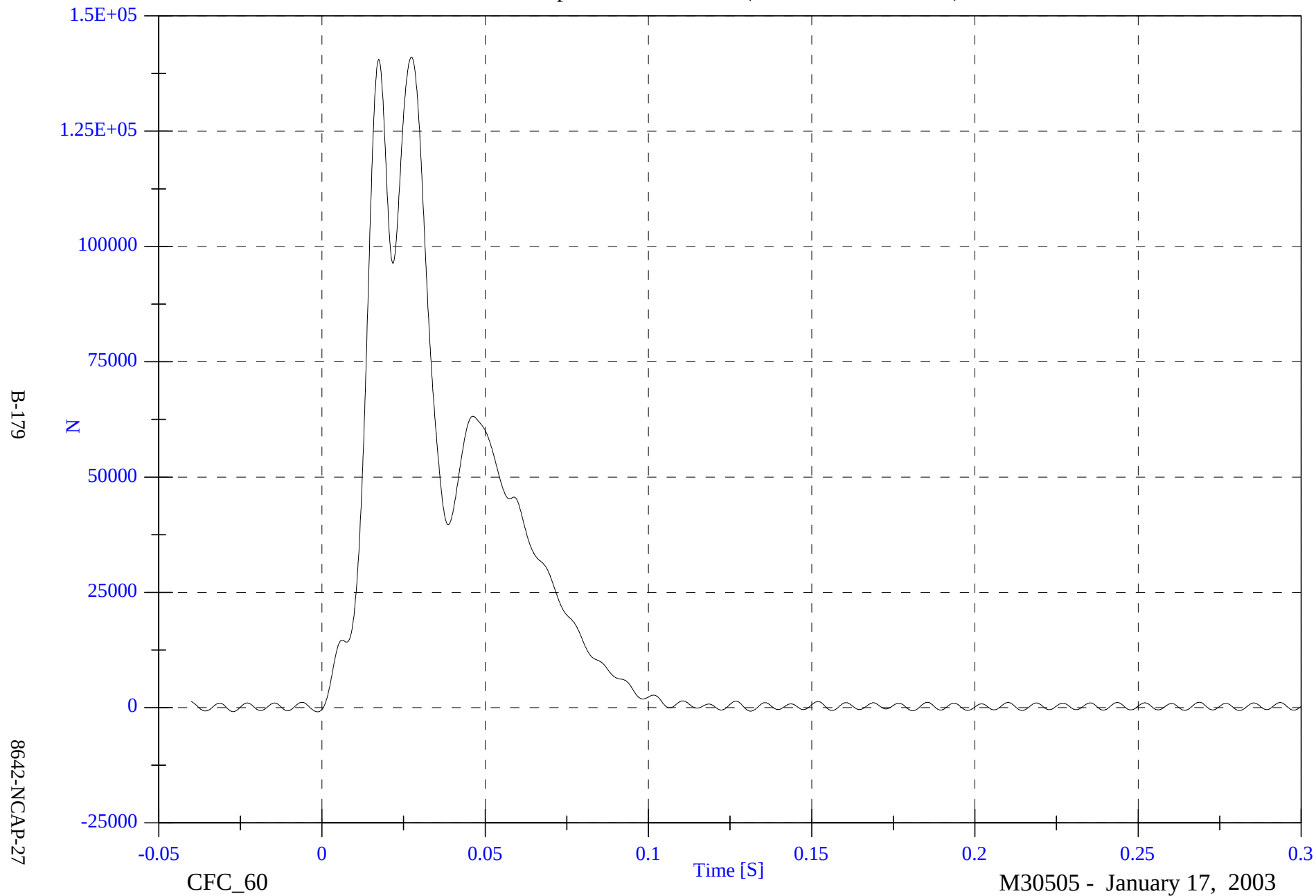


NCAP Test #5- 2003 Hyundai Accent

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

Max: 141053.0 [N] at 0.027 [S]

Min: -903.1 [N] at -0.001 [S]

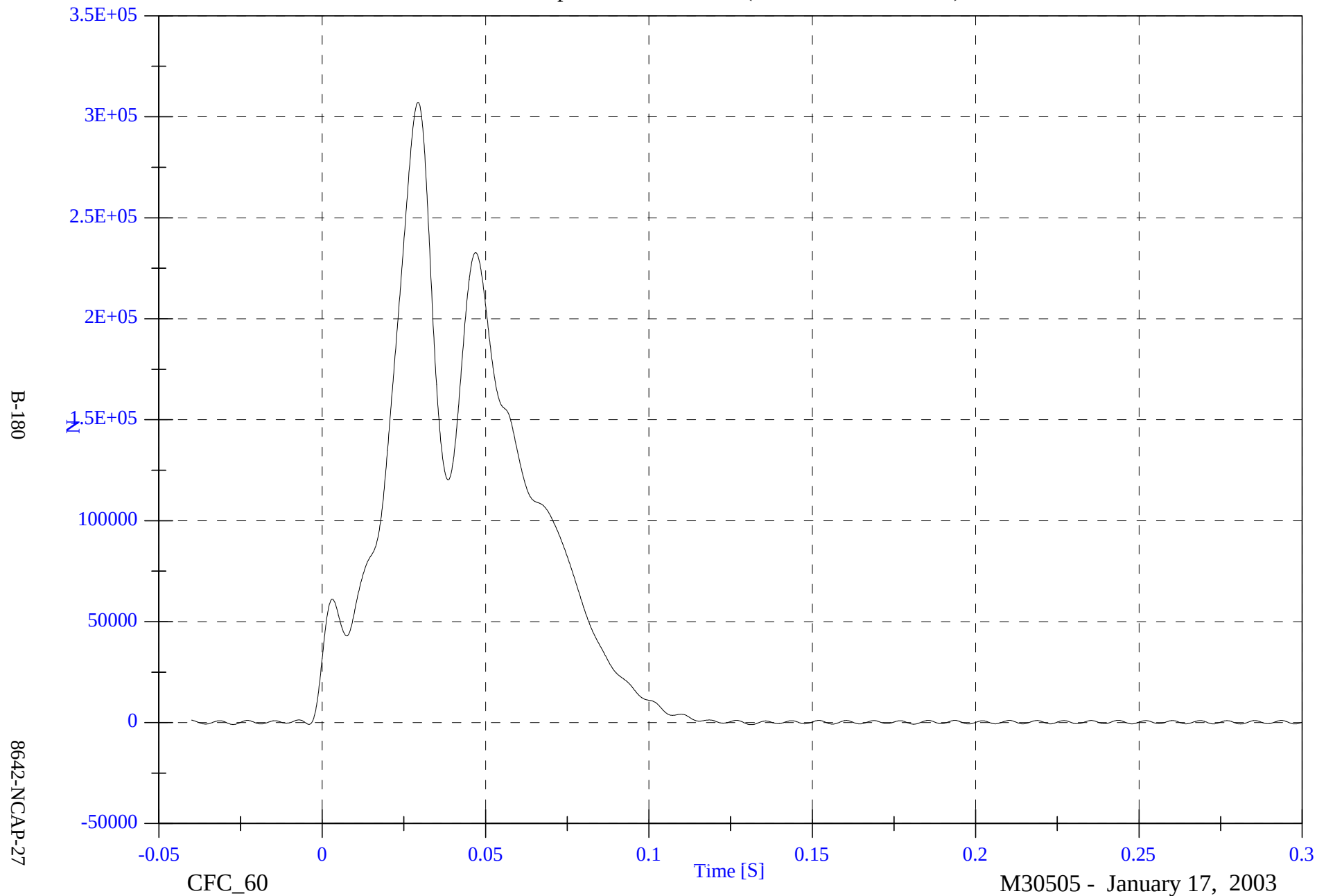


NCAP Test #5- 2003 Hyundai Accent

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

Max: 307206.6 [N] at 0.029 [S]

Min: -1027.8 [N] at 0.131 [S]

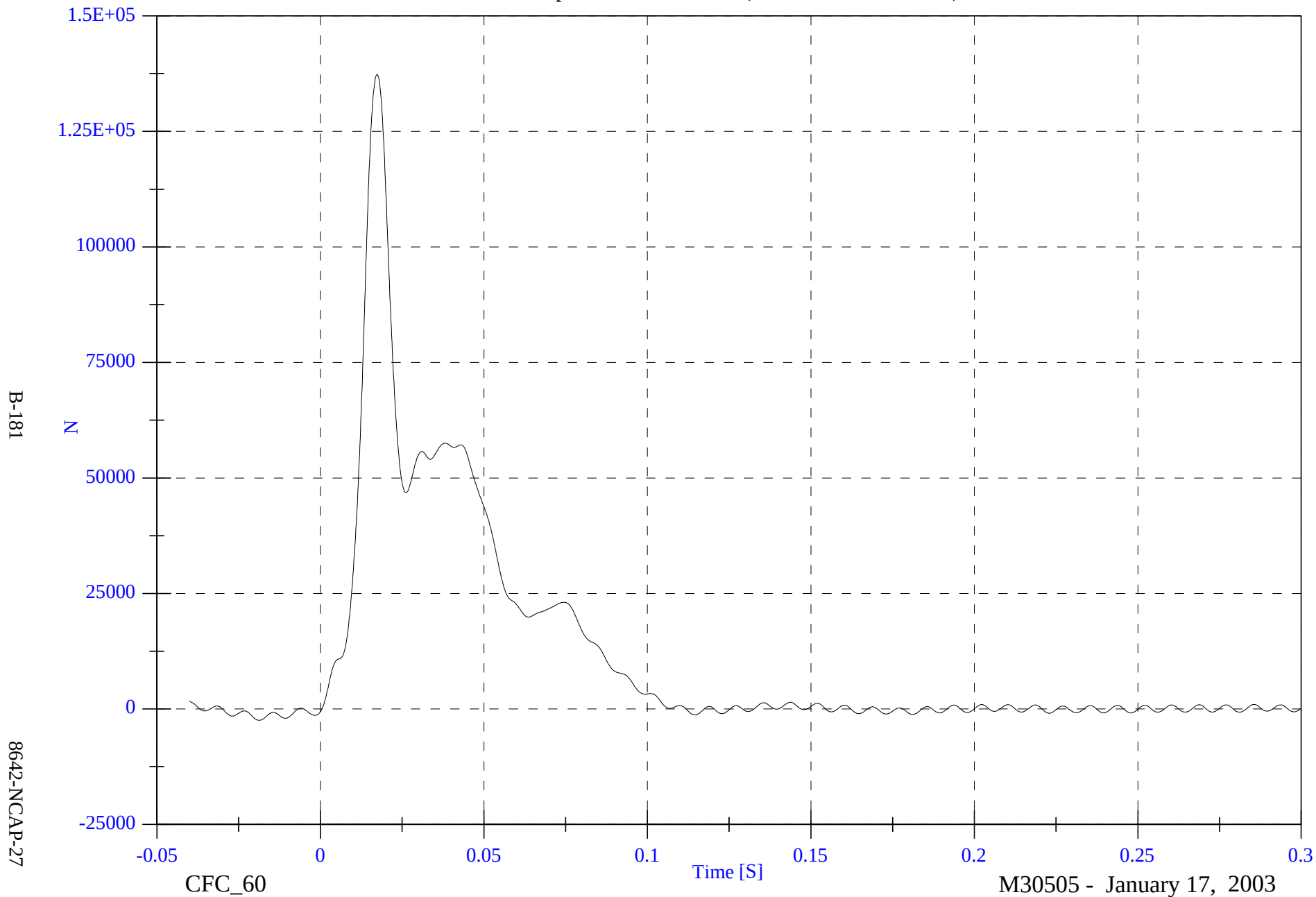


NCAP Test #5- 2003 Hyundai Accent

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

Max: 137320.6 [N] at 0.017 [S]

Min: -2460.2 [N] at -0.019 [S]

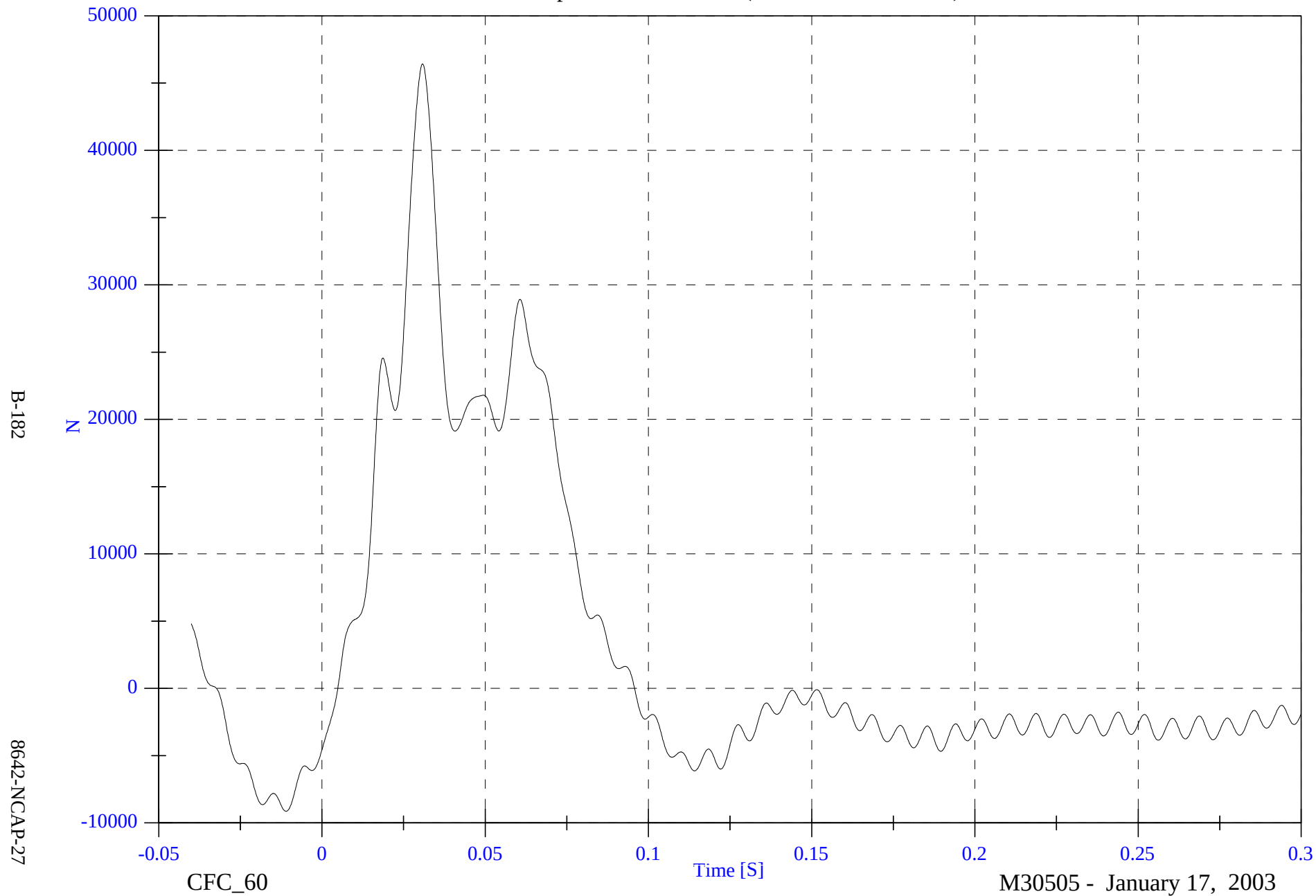


NCAP Test #5- 2003 Hyundai Accent

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

Max: 46431.9 [N] at 0.031 [S]

Min: -9135.5 [N] at -0.011 [S]

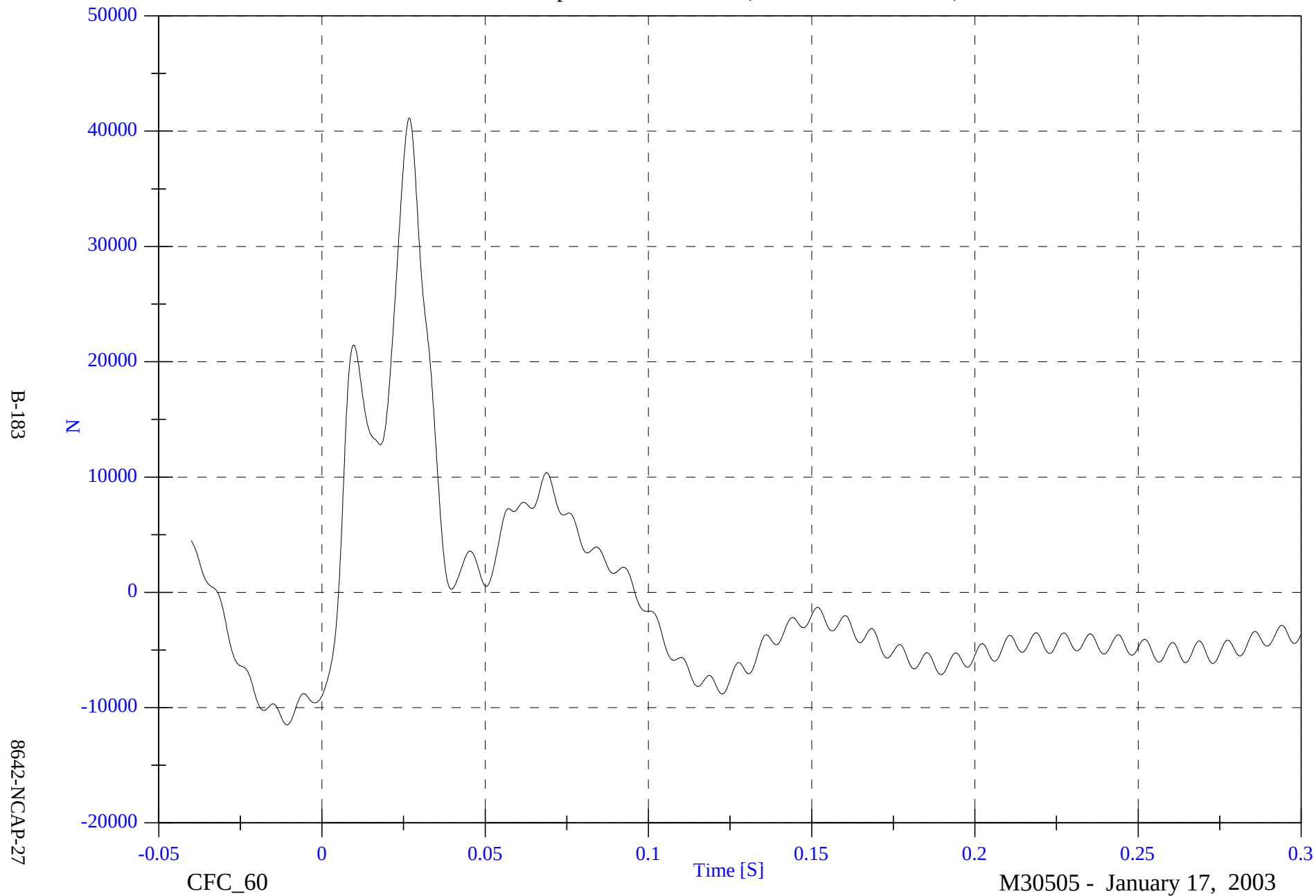


NCAP Test #5- 2003 Hyundai Accent

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

Max: 41135.0 [N] at 0.027 [S]

Min: -11495.4 [N] at -0.011 [S]

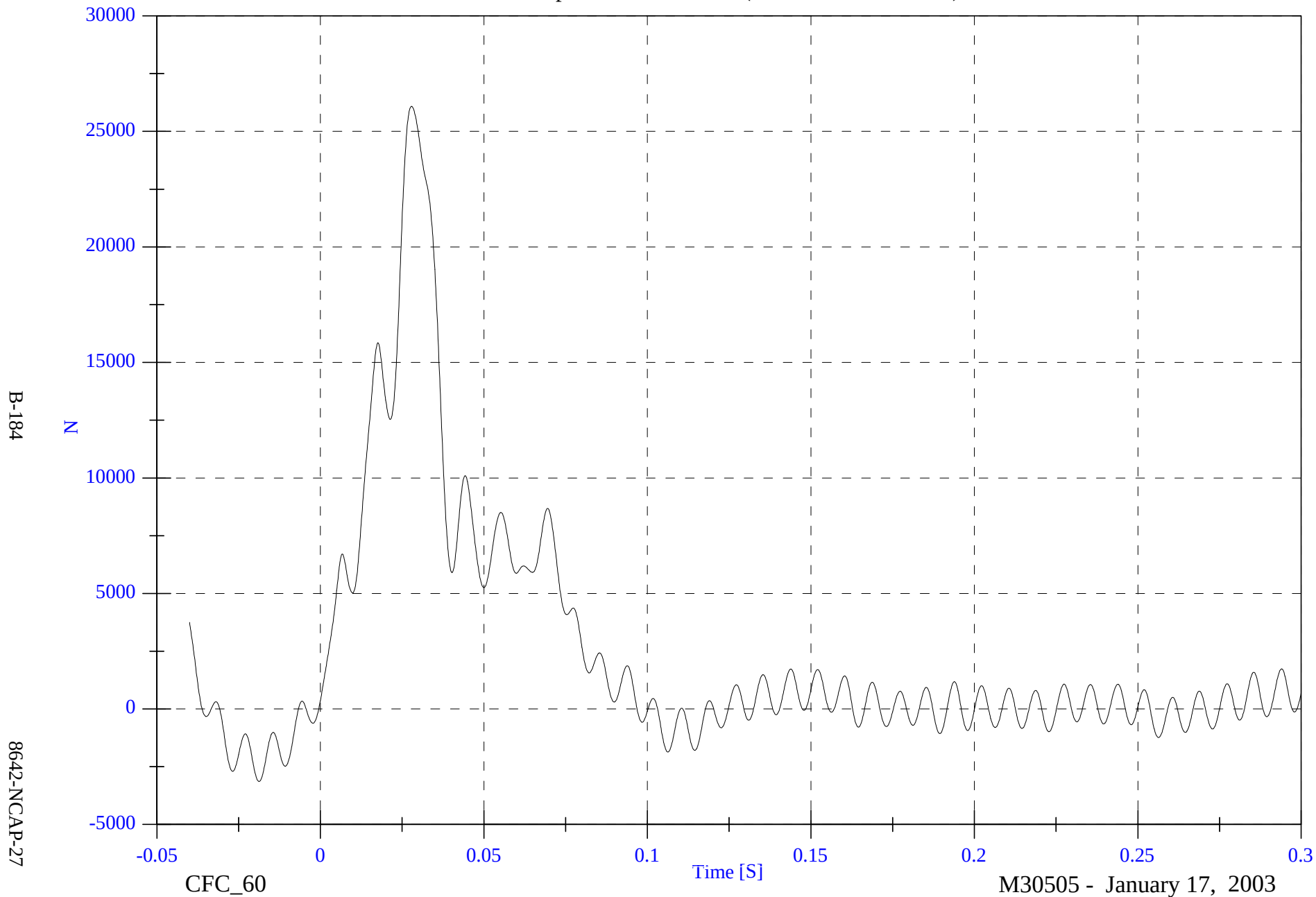


NCAP Test #5- 2003 Hyundai Accent

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

Max: 26083.6 [N] at 0.028 [S]

Min: -3138.5 [N] at -0.019 [S]

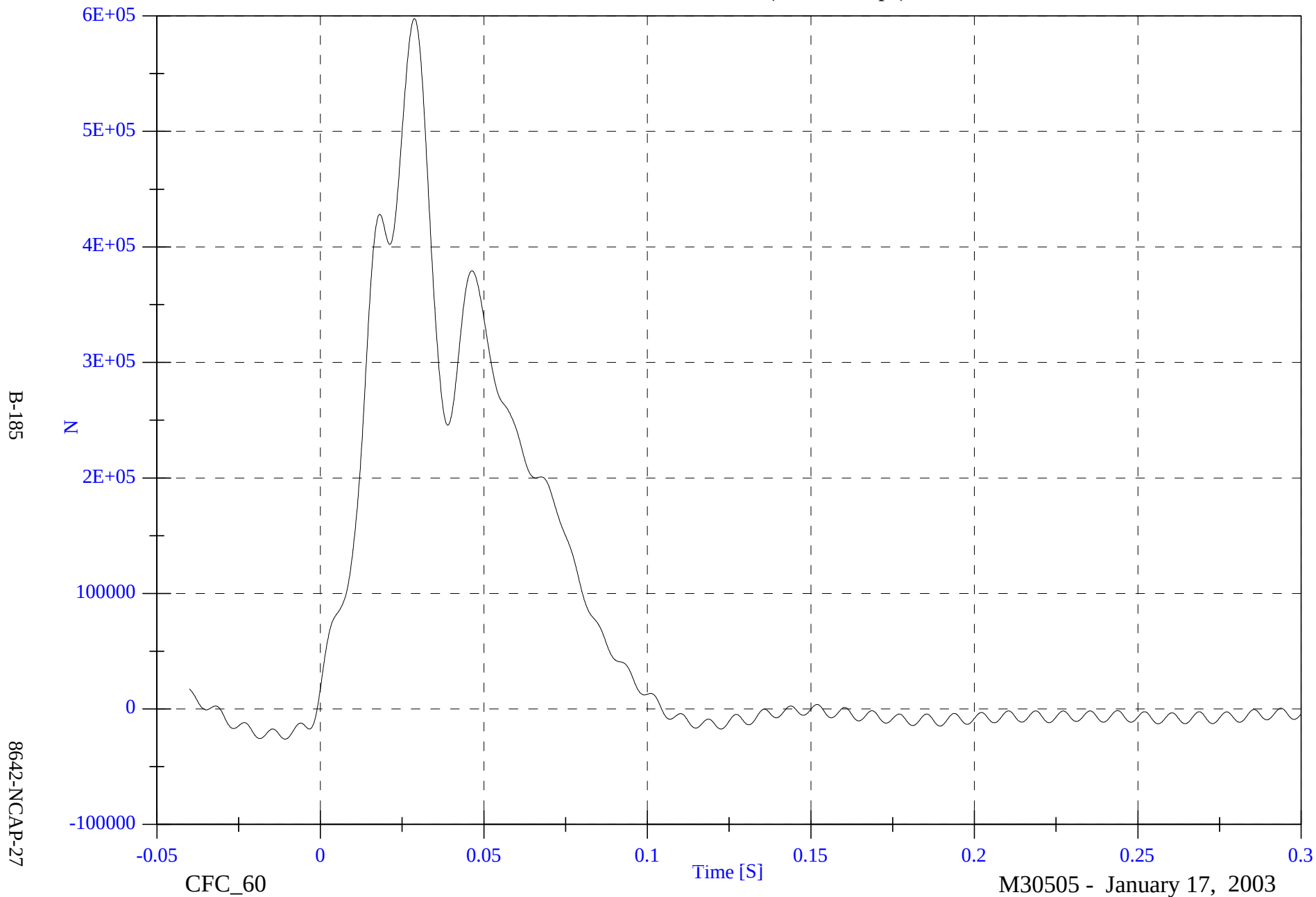


NCAP Test #5- 2003 Hyundai Accent

Total Load Cell Sum (All 6 Groups)

Max: 597698.3 [N] at 0.029 [S]

Min: -26079.4 [N] at -0.011 [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 Veridian Engineering. A summary of the test results, and Part 572 specifications are included in this Appendix.

Dummy serial numbers and certification dates are:

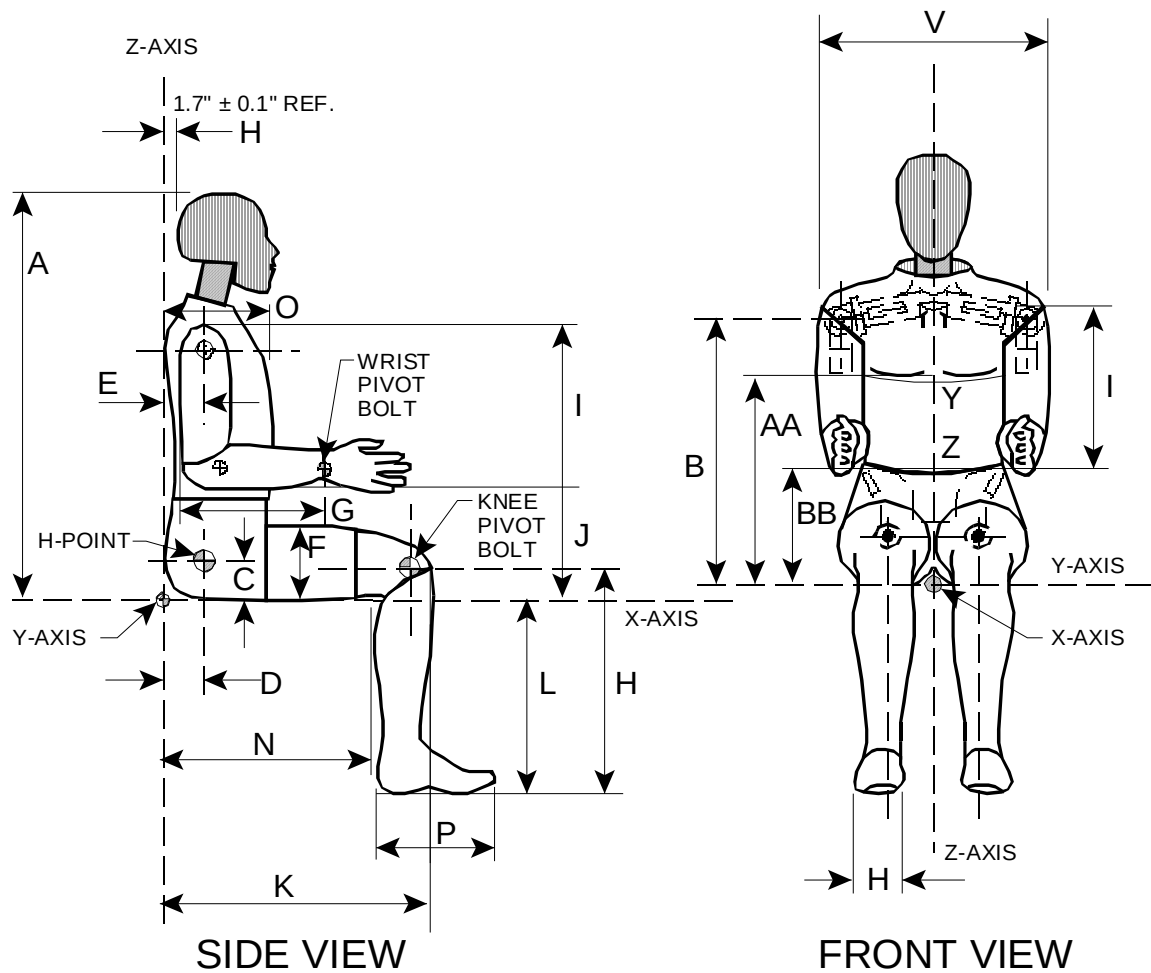
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	150	December 11, 2002
#2/Right Front Passenger	245	December 11, 2002

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 150
Sequential Test Number 3
Date December 5, 2002
Workfile 150H2 12-05-02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	69.0
Relative Humidity	10% - 70%	33.00
Peak Resultant Acceleration	225-275 G's	236.06
Peak Lateral Acceleration	15 G's Max	6.77
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	150	
Sequential Test Number	3	
Date	December 6, 2002	6 Axis Neck Transducer
Workfile	150Flx13 12-06-02	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	71.00
Relative Humidity		10% - 70%	35.00
Impact Velocity		22.60 - 23.40 Ft/s	22.63
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.31
	20 ms	17.60 - 22.60 G's	21.34
	30 ms	12.50 - 18.50 G's	15.65
Max Pendulum G's Above 30 ms		29 G's Max	15.65
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.10
D Plane Rotation	Max	64 - 78 Deg	64.10
	Time	57 - 64 ms	58.20
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	69.66
	Time	47 - 58 ms	51.20
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	113.10
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	102.80

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	150	
Sequential Test Number	3	
Date	December 6, 2002	6 Axis Neck Transducer
Workfile	150Flx13 12-06-02	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	71.00
Relative Humidity		10% - 70%	35.00
Impact Velocity		19.50 - 20.30 Ft/s	22.63
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	24.31
	20 ms	14.00 - 19.00 G's	21.34
	30 ms	11.00 - 16.00 G's	15.65
Max Pendulum G's Above 30 ms		22 G's Max	15.65
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	38.10
D Plane Rotation	Max	81 - 106 Deg	64.10
	Time	72 - 82 ms	58.20
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	69.66
	Time	65 - 79 ms	51.20
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	113.10
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	102.80

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 150
Sequential Test Number 3
Date December 11, 2002
Workfile 150T 12-11-02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	38.00
Pendulum Velocity	21.6 - 22.4 Ft/s	22.29
Maximum Deflection	2.50 - 2.86 in	2.56
Maximum Resistive Force	1160 - 1325 Lbs	1321.69
Internal Hysteresis	69 - 85 %	71.98

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 150
Sequential Test Number 3, 3
Date December 11, 2002
Workfile 150LF2 12-11-02; 150RF 12-11-02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	68.0
Relative Humidity	10% - 70%	35.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1242.79
RIGHT KNEE		
Temperature	66 - 78 Deg F	68.0
Relative Humidity	10% - 70%	35.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1205.93

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 150
Sequential Test Number 3
Date December 11, 2002

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			39
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	34.0
Chest Depth	O	8.4 - 9.0 in	8.4
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	5.8
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.8
Knee Pivot Height	M	19.1 - 19.7 in	19.6
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.7
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.1
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.5

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number 245
Sequential Test Number 3
Date December 9, 2002
Workfile 245H1 12-9-02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	69.0
Relative Humidity	10% - 70%	35.00
Peak Resultant Acceleration	225-275 G's	236.36
Peak Lateral Acceleration	15 G's Max	6.67
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	245	
Sequential Test Number	3	
Date	December 9, 2002	6 Axis Neck Transducer
Workfile	245Flx2 12-09-02	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	69.00
Relative Humidity		10% - 70%	35.00
Impact Velocity		22.60 - 23.40 Ft/s	23.13
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.71
	20 ms	17.60 - 22.60 G's	22.46
	30 ms	12.50 - 18.50 G's	17.69
Max Pendulum G's Above 30 ms		29 G's Max	17.69
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	39.40
D Plane Rotation	Max	64 - 78 Deg	74.63
	Time	57 - 64 ms	63.40
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	66.29
	Time	47 - 58 ms	52.70
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	125.20
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	245	
Sequential Test Number	3	
Date	December 9, 2002	6 Axis Neck Transducer
Workfile	245Ext1 12-09-02	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.00
Relative Humidity		10% - 70%	35.00
Impact Velocity		19.50 - 20.30 Ft/s	19.67
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	17.70
	20 ms	14.00 - 19.00 G's	15.86
	30 ms	11.00 - 16.00 G's	12.78
Max Pendulum G's Above 30 ms		22 G's Max	12.78
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	43.50
D Plane Rotation	Max	81 - 106 Deg	84.72
	Time	72 - 82 ms	76.00
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-46.11
	Time	65 - 79 ms	67.20
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	150.90
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	133.70

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 245
Sequential Test Number 3
Date December 11, 2002
Workfile 245T 12-11-02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	38.00
Pendulum Velocity	21.6 - 22.4 Ft/s	22.23
Maximum Deflection	2.50 - 2.86 in	2.58
Maximum Resistive Force	1160 - 1325 Lbs	1259.15
Internal Hysteresis	69 - 85 %	73.65

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 245
Sequential Test Number 3; 3
Date December 11, 2002
Workfile 245LF 12-11-02; 245RF 12-11-02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	68.0
Relative Humidity	10% - 70%	32.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1207.03
RIGHT KNEE		
Temperature	66 - 78 Deg F	68.0
Relative Humidity	10% - 70%	35.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1091.07

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 245
Sequential Test Number 3
Date December 11, 2002

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			39
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.4
Waist Circumference	Z	32.9 - 34.1 in	33.8
Chest Depth	O	8.4 - 9.0 in	8.4
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.2
Foot Length	P	9.9 - 10.5 in	10.2
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 150)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P17531	08/22/02	02/20/03
	X Arm Z	ENDEVCO	AC-P14965	08/22/02	02/20/03
	Y Arm X	ENDEVCO	AC-P17563	08/22/02	02/20/03
	Y Arm Z	ENDEVCO	AC-P18551	08/22/02	02/20/03
	Z Arm X	ENDEVCO	AC-P17539	08/22/02	02/20/03
	Z Arm Y	ENDEVCO	AC-P18718	08/22/02	02/20/03
Head	X	ENDEVCO	AC-P16832	08/22/02	02/20/03
	Y	ENDEVCO	AC-P16591	08/22/02	02/20/03
	Z	ENDEVCO	AC-P16286	08/22/02	02/20/03
Head	X (R)	ENDEVCO	AC-P17141	08/22/02	02/20/03
	Y (R)	ENDEVCO	AC-P17242	08/22/02	02/20/03
	Z (R)	ENDEVCO	AC-P17152	08/22/02	02/20/03
Neck Load Cell	X	DENTON	LC-441FX	10/14/02	04/14/03
	Y	DENTON	LC-441FY	10/14/02	04/14/03
	Z	DENTON	LC-441FZ	10/14/02	04/14/03
Neck Moment	X	DENTON	LC-441MX	10/14/02	04/14/03
	Y	DENTON	LC-441MY	10/14/02	04/14/03
	Z	DENTON	LC-441MZ	10/14/02	04/14/03
Chest	X	ENDEVCO	AC-P17235	08/22/02	02/20/03
	Y	ENDEVCO	AC-P14393	08/22/02	02/20/03
	Z	ENDEVCO	AC-P17285	08/22/02	02/20/03
Chest	X (R)	ENDEVCO	AC-P16863	08/22/02	02/20/03
	Y (R)	ENDEVCO	AC-P17248	08/22/02	02/20/03
	Z (R)	ENDEVCO	AC-P17283	08/22/02	02/20/03
Chest Deflection	X	SERVO	DS-150	09/24/02	03/25/03
Pelvic	X	ENDEVCO	AC-J30041	08/22/02	02/20/03
	Y	ENDEVCO	AC-P13355	08/22/02	02/20/03
	Z	ENDEVCO	AC-P13329	08/22/02	02/20/03

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 150)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	GSE	LC-418	09/25/02	03/26/03
Right Femur Load Cell	Fz	GSE	LC-419	09/25/02	03/26/03
Left Upper Tibia	Mx	DENTON	LC-265MX	10/24/02	04/24/03
	My	DENTON	LC-265MY	10/24/02	04/24/03
Left Lower Tibia	Fz	DENTON	LC-178FZ	10/24/02	04/24/03
	Mx	DENTON	LC-178MX	10/24/02	04/24/03
	My	DENTON	LC-178MY	10/24/02	04/24/03
Right Upper Tibia	Mx	DENTON	LC-199MX	10/24/02	04/24/03
	My	DENTON	LC-199MY	10/24/02	04/24/03
Right Lower Tibia	Fz	DENTON	LC-128FZ	10/24/02	04/24/03
	Mx	DENTON	LC-128MX	10/24/02	04/24/03
	My	DENTON	LC-128MY	10/24/02	04/24/03
Left Foot Rear	X	ENDEVCO	AC-J19868	08/22/02	02/20/03
	Z	ENDEVCO	AC-AJ8C0	08/22/02	02/20/03
Left Foot Front	Z	ENDEVCO	AC-J34378	08/22/02	02/20/03
Right Foot Rear	X	ENDEVCO	AC-AJ7F6	08/22/02	02/20/03
	Z	ENDEVCO	AC-J27079	08/22/02	02/20/03
Right Foot Front	Z	ENDEVCO	AC-J23997	08/22/02	02/20/03
Lap Belt Load Cell		LEBOW	LC-706	11/12/02	05/13/03

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 245)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P18558	08/27/02	02/25/03
	X Arm Z	ENDEVCO	AC-P19212	08/27/02	02/25/03
	Y Arm X	ENDEVCO	AC-P19197	08/27/02	02/25/03
	Y Arm Z	ENDEVCO	AC-P18738	08/27/02	02/25/03
	Z Arm X	ENDEVCO	AC-P19217	08/27/02	02/25/03
	Z Arm Y	ENDEVCO	AC-P18739	08/27/02	02/25/03
Head	X	ENDEVCO	AC-P19216	08/06/02	02/04/03
	Y	ENDEVCO	AC-P15534	08/06/02	02/04/03
	Z	ENDEVCO	AC-P23303	08/06/02	02/04/03
Head	X (R)	ENDEVCO	AC-P16576	08/06/02	02/04/03
	Y (R)	ENDEVCO	AC-P15526	08/06/02	02/04/03
	Z (R)	ENDEVCO	AC-P19255	08/06/02	02/04/03
Neck Load Cell	X	DENTON	LC-076FX	10/15/02	04/15/03
	Y	DENTON	LC-076FY	10/15/02	04/15/03
	Z	DENTON	LC-076FZ	10/15/02	04/15/03
Neck Moment	X	DENTON	LC-076MX	10/15/02	04/15/03
	Y	DENTON	LC-076MY	10/15/02	04/15/03
	Z	DENTON	LC-076MZ	10/15/02	04/15/03
Chest	X	ENTRAN	AC-01G18-F03	08/23/02	02/21/03
	Y	ENTRAN	AC-01G18-F07	08/23/02	02/21/03
	Z	ENTRAN	AC-01J02-F09	08/23/02	02/21/03
Chest	X (R)	ENTRAN	AC-01G18-F18	08/23/02	02/21/03
	Y (R)	ENTRAN	AC-01G18-F10	08/23/02	02/21/03
	Z (R)	ENTRAN	AC-01G18-F09	08/23/02	02/21/03
Chest Deflection	X	SERVO	DS-245	10/11/02	04/11/03
Pelvic	X	ENDEVCO	AC-J31034	08/28/02	02/26/03
	Y	ENDEVCO	AC-P17258	08/28/02	02/26/03
	Z	ENDEVCO	AC-J31010	08/28/02	02/26/03

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 245)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	GSE	LC-551	09/25/02	03/26/03
Right Femur Load Cell	Fz	GSE	LC-951	09/25/02	03/26/03
Left Upper Tibia	Mx	DENTON	LC-200MX	10/24/02	04/24/03
	My	DENTON	LC-200MY	10/24/02	04/24/03
Left Lower Tibia	Fz	DENTON	LC-129FZ	10/24/02	04/24/03
	Mx	DENTON	LC-129MX	10/24/02	04/24/03
	My	DENTON	LC-129MY	10/24/02	04/24/03
Right Upper Tibia	Mx	DENTON	LC-264MX	10/24/02	04/24/03
	My	DENTON	LC-264MY	10/24/02	04/24/03
Right Lower Tibia	Fz	DENTON	LC-177FZ	10/24/02	04/24/03
	Mx	DENTON	LC-177MX	10/24/02	04/24/03
	My	DENTON	LC-177MY	10/24/02	04/24/03
Left Foot Rear	X	ENDEVCO	AC-J18059	08/27/02	02/25/03
	Z	ENDEVCO	AC-J18662	08/27/02	02/25/03
Left Foot Front	Z	ENDEVCO	AC-J36176	08/27/02	02/25/03
Right Foot Rear	X	ENDEVCO	AC-AGRP4	01/16/03	07/17/03
	Z	ENDEVCO	AC-J20084	08/27/02	02/25/03
Right Foot Front	Z	ENDEVCO	AC-J18738	08/27/02	02/25/03
Lap Belt Load Cell		LEBOW	LC-707	11/12/02	05/13/03

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	ICS	AC-8062-003	11/11/02	05/12/03
Right Rear Seat Crossmember X	ICS	AC-8084-006	11/20/02	05/21/03
Top of Engine	ICS	AC-8084-024	11/11/02	05/12/03
Bottom of Engine	ICS	AC-8084-035	11/11/02	05/12/03
Right Disc Brake Caliper	ICS	AC-9026-036	11/11/02	05/12/03
Instrument Panel	ICS	AC-8086-044	11/21/02	05/22/03
Left Disc Brake Caliper	ICS	AC-8086-042	11/21/02	05/22/03
Left Seat Rear Crossmember Z	ICS	AC-8083-028	11/11/02	05/12/03
Right Seat Rear Crossmember Z	ICS	AC-8084-041	11/20/02	05/21/03

REPORT NUMBER: CAL-03-05

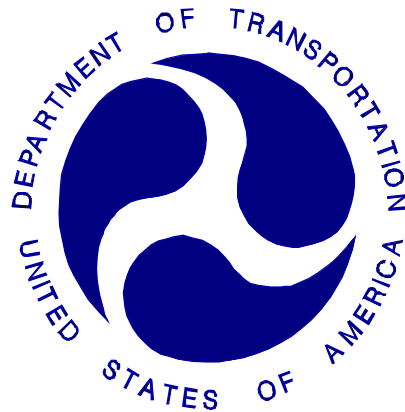
NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

EVENFLO VANGUARD 5
FORWARD FACING CONVERTIBLE
SECURED WITH THE LATCH SYSTEM AND THE TOP TETHER

NHTSA NUMBER: M30505

VERIDIAN ENGINEERING TEST NUMBER: 8642-NCAP-27

VERIDIAN ENGINEERING
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225



January 17, 2003

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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16. Abstract This CRS test was performed in conjunction with a New Car Assessment Program (NCAP) frontal load cell barrier test. An Evenflo Vanguard 5 forward facing convertible CRS was secured in Position 3 (P3) with the LATCH system and top tether. This test was conducted at the Veridian Engineering Crash Test Facility in Buffalo, New York, on January 17, 2003.					
ATD Position		HIC 15		HIC 36	
P3 (Right Rear) (142)		684.8		934.5	
P4 (Left Rear) (-)		-		-	
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 5108 (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 M30505

The purpose of this test was to obtain CRS performance data in a frontal impact NCAP condition. The 55.84 kph NCAP frontal impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

An Evenflo Vanguard 5 forward facing convertible CRS and a 3 year old child dummy (serial no. 142) were installed in the right rear occupant position (P3). The child dummy was instrumented with head, chest, and pelvic triaxial accelerometers, a head rear z accelerometer, a chest displacement potentiometer and upper and lower six axial neck force and moment load cells. The dummy was certified previous to this test and is documented in section 5.

The child dummy HIC was 684.8 and maximum chest deceleration over 3 ms was 59.7 g's.

SECTION 2
DATA SHEET NO. 1
CRASH TEST SUMMARY

TEST DUMMY INFORMATION:

DESCRIPTION	Position #3 CRS	Position #4 CRS
ATD Type/Serial No.	Hybrid III P572P/142	None
Restraint System:	Evenflo Vanguard 5 Forward Facing Convertible Secured with LATCH and Top Tether	None

Number of Data Channels 23
Number of Cameras: 1 Real Time
2 High Speed

POST TEST DOOR OPENING

DESCRIPTION	FRONT	REAR
Left Side Doors	Door remained closed and latched, door opened without tools	Door remained closed and latched, door opened without tools
Right Side Doors	Door remained closed and latched, door opened without tools	Door remained closed and latched, door opened without tools
Hatch/Other Door	-	-

POST TEST SEAT DATA

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

VISIBLE DUMMY CONTACT POINTS

	Position #3 CRS	Position #4 CRS
Head Contact:	Chin to chest, back of head to child restraint seat back, top of head to left elbow	-
Upper Torso Contact:	None	-
Lower Torso Contact:	None	-
Left Knee Contact:	Left foot to P2 seat back	-
Right Knee Contact:	Right foot to P2 seat back	-

DATA SHEET NO. 2

CRS PARAMETER DATA

CRS: Evenflo Vanguard 5 Forward Facing Convertible Secured with LATCH and Top Tether

NHTSA No. M30505

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Delivered Weight of Vehicle with Maximum Fluids = 1131.0 kg (A)

AS TESTED WEIGHT OF VEHICLE (2 P572E + 1 P572P w/ CRS +CARGO + EQUIPMENT & INSTRUMENTATION):

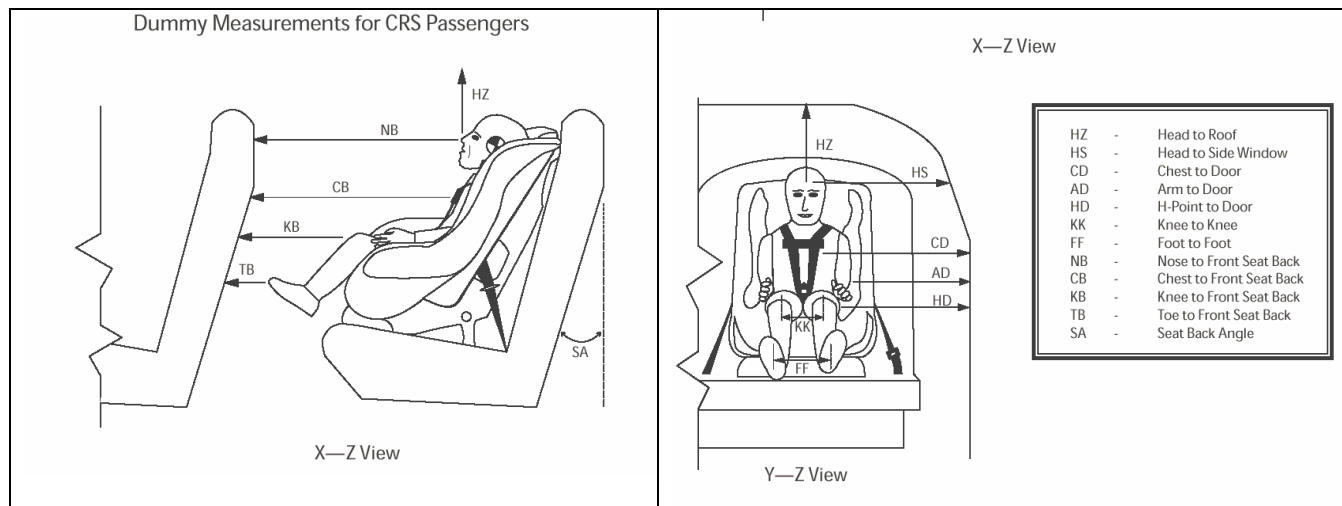
Left Front	=	<u>392.5</u>	kg	Left Rear	=	<u>280.0</u>	kg
Right Front	=	<u>388.0</u>	kg	Right Rear	=	<u>261.5</u>	kg
TOTAL FRONT	=	<u>780.5</u>	kg	TOTAL REAR	=	<u>541.5</u>	kg
TOTAL TEST WEIGHT =		<u>1322.0</u>	kg				

DATA SHEET NO. 3

CHILD DUMMY POSITIONING IN VEHICLE

CRS: Evenflo Vanguard 5 Forward Facing Convertible Secured with LATCH and Top Tether

NHTSA No. M30505



Measurement	Pre-Test (mm)		Post Test (mm)	
	P3 CRS (142)	P4 CRS (-)	P3 CRS (142)	P4 CRS (-)
SA	23.0°	-	22.0°	-
HS	360	-	372	-
CD	344	-	365	-
AD	222	-	218	-
HD	270	-	262	-
HZ	320	-	323	-
NB	472	-	522	-
CB	455	-	508	-
KK	158	-	150	-
FF	145	-	185	-
KB – LEFT	298	-	335	-
KB – RIGHT	290	-	354	-
TB – LEFT	15	-	42	-
TB – RIGHT	10	-	54	-

All dimensions in mm (unless noted)

P3 – Right Rear Passenger (CRS #1)

P4 – Left Rear Passenger (CRS #2)

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES

CRS: Evenflo Vanguard 5 Forward Facing Convertible Secured with LATCH and Top Tether

NHTSA No. M30505

DESCRIPTION	Unit	MAXIMUM VALUE							
		Position #3				Position #4			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head X	g	54.5	200.6	-50.8	117.5	-	-	-	-
Head Y	g	29.2	117.4	-14.9	123.9	-	-	-	-
Head Z	g	74.5	101.0	-13.1	68.8	-	-	-	-
Head Resultant	g	77.9	100.9	-	-	-	-	-	-
Head Rear Z	g	92.8	104.5	-30.0	200.5	-	-	-	-
Upper Neck Fx	N	160.4	196.2	-671.3	116.0	-	-	-	-
Upper Neck Fy	N	90.6	111.6	-49.0	122.6	-	-	-	-
Upper Neck Fz	N	2054.1	105.0	-475.8	68.5	-	-	-	-
Upper Neck F Resultant	N	2127.8	105.0	-	-	-	-	-	-
Upper Neck Mx	N-m	8.1	113.9	-4.0	95.8	-	-	-	-
Upper Neck My	N-m	6.9	186.5	-11.6	87.3	-	-	-	-
Upper Neck Mz	N-m	5.2	122.3	-2.4	139.1	-	-	-	-
Upper Neck M Resultant	N-m	11.7	87.6	-	-	-	-	-	-
Lower Neck Fx	N	269.1	201.7	-789.2	106.8	-	-	-	-
Lower Neck Fy	N	62.5	85.0	-87.5	119.3	-	-	-	-
Lower Neck Fz	N	1676.6	101.3	-547.3	71.7	-	-	-	-
Lower Neck F Resultant	N	1825.9	104.9	-	-	-	-	-	-
Lower Neck Mx	N-m	19.0	111.7	-4.9	91.8	-	-	-	-
Lower Neck My	N-m	93.5	108.0	-15.0	201.7	-	-	-	-
Lower Neck Mz	N-m	8.6	112.0	-2.8	224.2	-	-	-	-
Lower Neck M Resultant	N-m	95.1	108.1	-	-	-	-	-	-

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 Forward Facing Convertible Secured with LATCH and Top Tether

NHTSA No. M30505

		MAXIMUM VALUE							
		Position #3				Position #4			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Chest X	g	14.8	191.8	-45.0	86.9	-	-	-	-
Chest Y	g	9.1	95.7	-2.7	78.3	-	-	-	-
Chest Z	g	29.1	110.2	-40.4	87.4	-	-	-	-
Chest Resultant	g	60.5	87.2	-	-	-	-	-	-
Chest Displacement	g	0.3	21.5	-19.0	122.8	-	-	-	-
Pelvic X	g	27.1	144.9	-59.4	81.3	-	-	-	-
Pelvic Y	g	7.0	85.7	-7.3	107.3	-	-	-	-
Pelvic Z	g	36.3	120.0	-51.0	84.7	-	-	-	-
Pelvic Resultant	g	77.9	81.3	-	-	-	-	-	-

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 Forward Facing Convertible Secured with LATCH and Top Tether

NHTSA No. M30505

HEAD INJURY CRITERIA (HIC)								
HIC15					HIC36			
	HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂ (g's)	HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂ (g's)
Position #3 - Right	684.8	95.0	110.0	73.1	934.5	88.8	124.8	58.3
Position #4 - Left	-	-	-	-	-	-	-	-

** HIC is as defined in FMVSS 208. The maximum time interval from t₁ to t₂ is 15 milliseconds.

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #3 - Right	59.7	85.0	88.0	622.0
Position #4 - Left	-	-	-	-

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

Position 3 Neck Injury Summary (3 Year Old Hybrid III (P572 P) – In Position)

Nij V10	Nij	Time (ms)	Z Force (N)	X Force (N)	Y Moment (N-m)
Ntf	0.87	105.0	2033.7	-551.7	0.2
Nte	0.89	100.2	1919.0	-549.5	-2.1
Ncf	0.02	46.0	-31.4	-7.8	0.2
Nce	0.36	79.3	-75.8	-346.3	-9.8

Peak Tension (CFC1000) 2054.1 N

Peak Compression (CFC1000) 475.8 N

Critical Values

Nij Intercepts	Peak Limits				
Tension (CVt)	2340 N	Extension (mCVe)	30 N-m	Tension	1430 N
Compression (CVc)	2120 N	Flexion (mCVf)	68 N-m	Compression	-1380 N
Condyle Offset	-0.0000				

DATA SHEET NO. 5

CRS PERFORMANCE DATA

CRS: Evenflo Vanguard 5 Forward Facing Convertible Secured with LATCH and Top Tether

NHTSA No. M30505

		MAXIMUM VALUE			
DESCRIPTION	Unit	Positive	Time (ms)	Negative	Time (ms)
P3 CRS X	g	-	-	-	-
P4 CRS X	g	-	-	-	-

DATA SHEET NO. 5**CRS PERFORMANCE DATA (CONTINUED)**CRS: Evenflo Vanguard 5 Forward Facing Convertible Secured with LATCH and Top TetherNHTSA No. M30505**POSITION #3 CRS POST-TEST INSPECTION (Serial No. 369126 P1)**

LOCATION	DAMAGE	REMARKS
Upper Tether Strap	No	-
Upper Tether Buckle	No	-
Upper Tether Hook	No	-
Vehicle Upper Tether Anchor	No	-
Lower Anchor Strap	No	-
Lower Anchor Buckle	No	-
Lower Anchor Hooks	No	-
Vehicle Lower CRS Anchors	No	-
Five Point Harness Connections	No	-
Cracks on CRS	No	-
Fabric Tears on CRS	No	-
Vehicle Seat Structure	No	-
Vehicle Seat Fabric Tears	No	-
Child Dummy	No	-

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

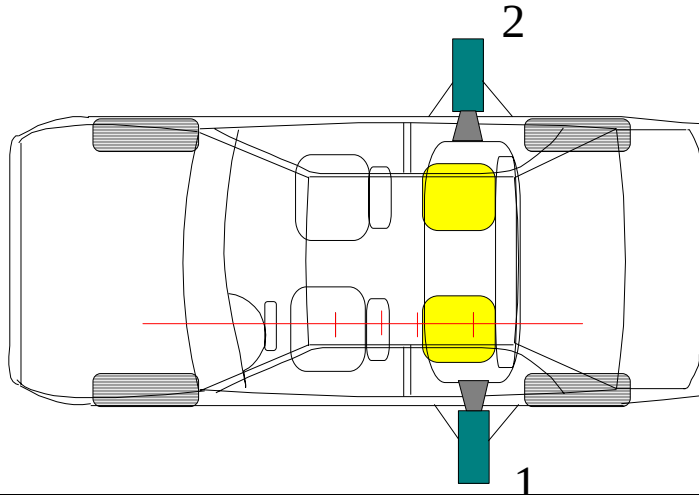
LOCATION	DAMAGE	REMARKS
Upper Tether Strap	-	-
Upper Tether Buckle	-	-
Upper Tether Hook	-	-
Vehicle Upper Tether Anchor	-	-
Lower Anchor Strap	-	-
Lower Anchor Buckle	-	-
Lower Anchor Hooks	-	-
Vehicle Lower CRS Anchors	-	-
Five Point Harness Connections	-	-
Cracks on CRS	-	-
Fabric Tears on CRS	-	-
Vehicle Seat Structure	-	-
Vehicle Seat Fabric Tears	-	-
Child Dummy	-	-

DATA SHEET NO. 6

CRS CAMERA DATA

CRS: Evenflo Vanguard 5 Forward Facing Convertible Secured with LATCH and Top Tether

NHTSA No. M30505



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Left side CRS lateral view	3280	2920	2535	-29.0	25	1025
2	Right side CRS lateral view	3390	2930	2500	-29.0	25	1025

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

X = + Forward

Y = + To Right

Z = + Down

SECTION 3

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



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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27	V1P3 Pelvic x [g, CFC_1000]	4-29
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NCAP Test #5 - 2003 Hyundai Accent

V1P3 Head x

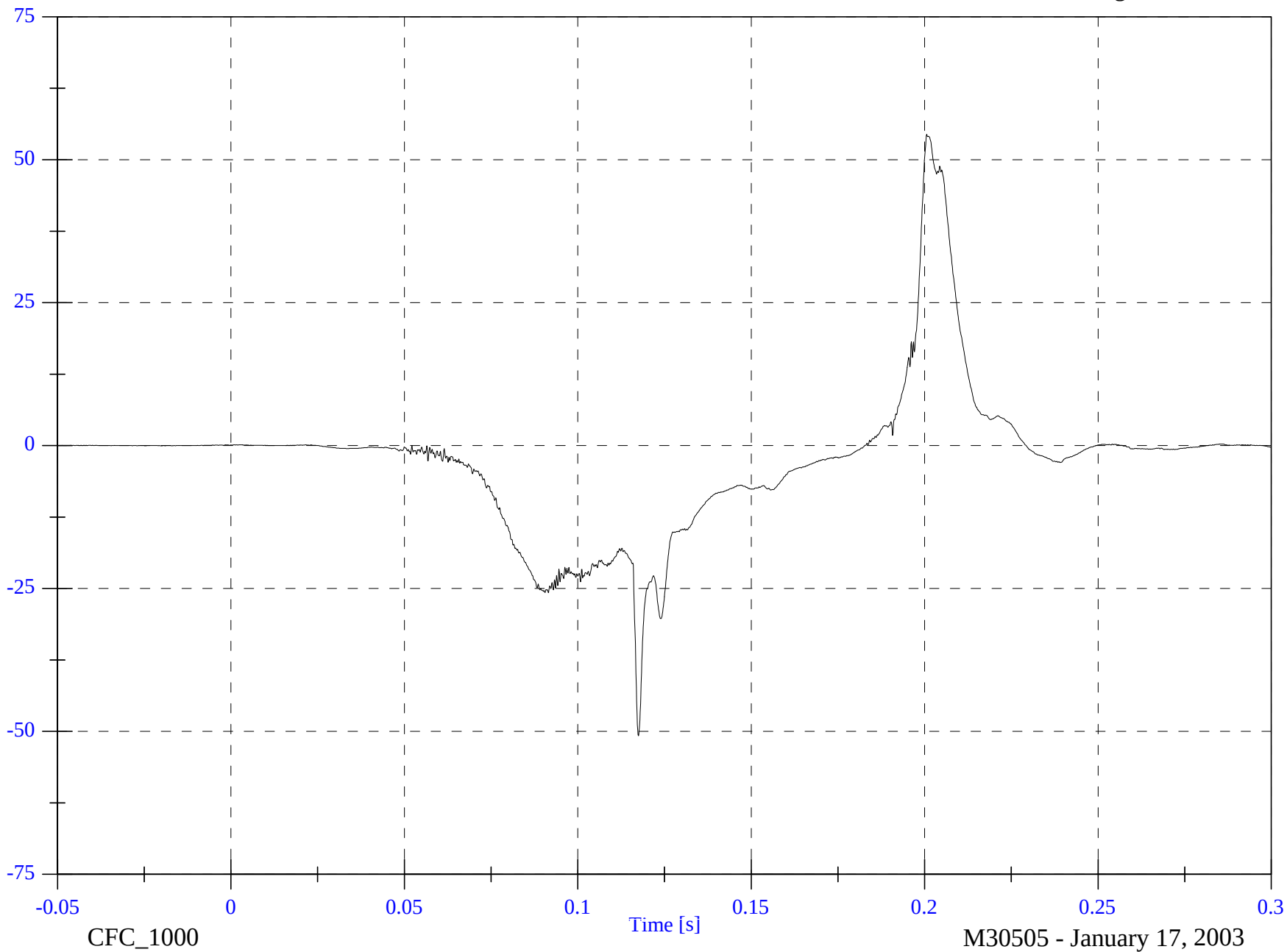
Max: 54.5 [g] at 0.201 [s]

Min: -50.8 [g] at 0.117 [s]

4-3

g

8642-NCAP-27

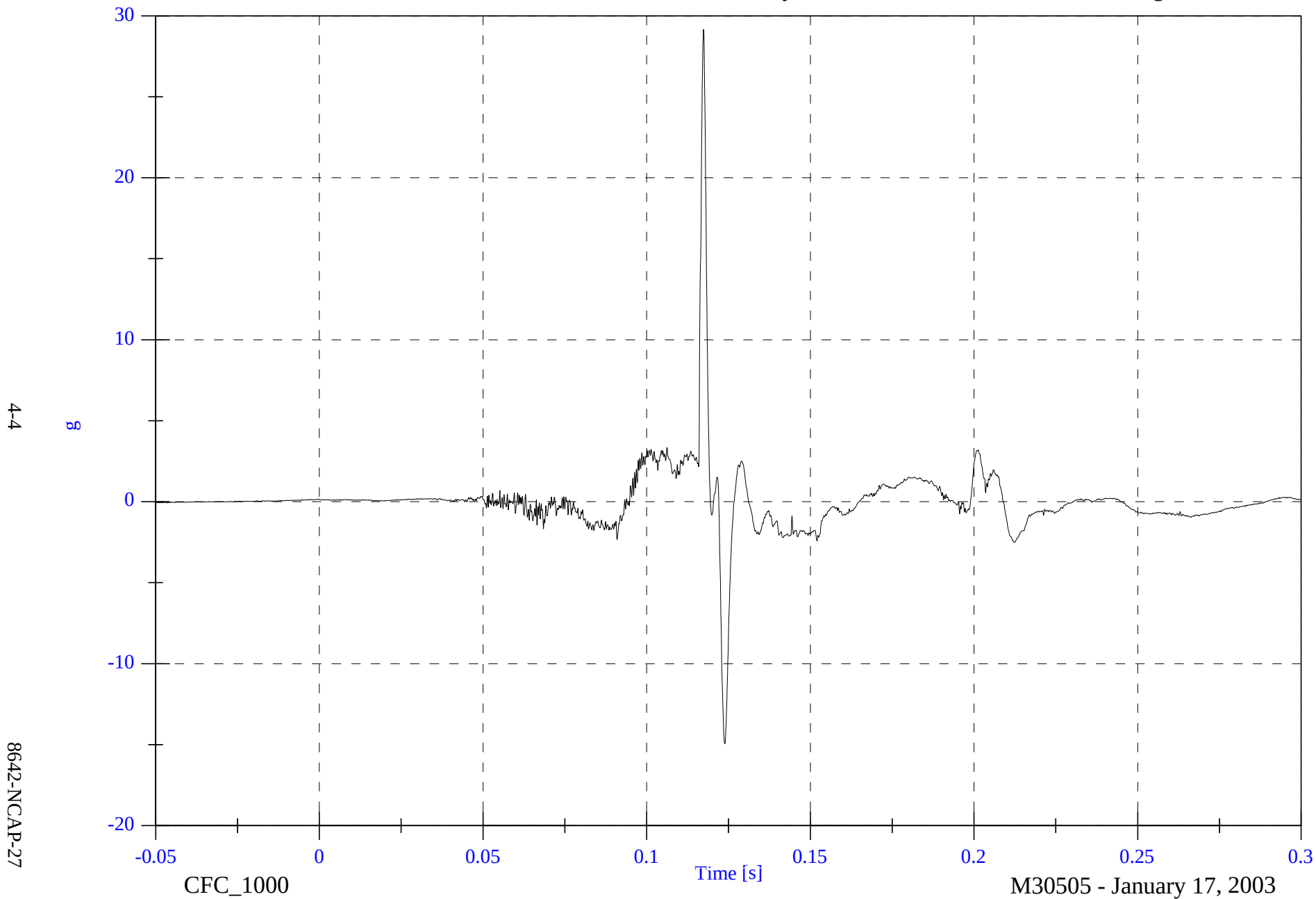


NCAP Test #5 - 2003 Hyundai Accent

Max: 29.2 [g] at 0.117 [s]

Min: -14.9 [g] at 0.124 [s]

V1P3 Head y

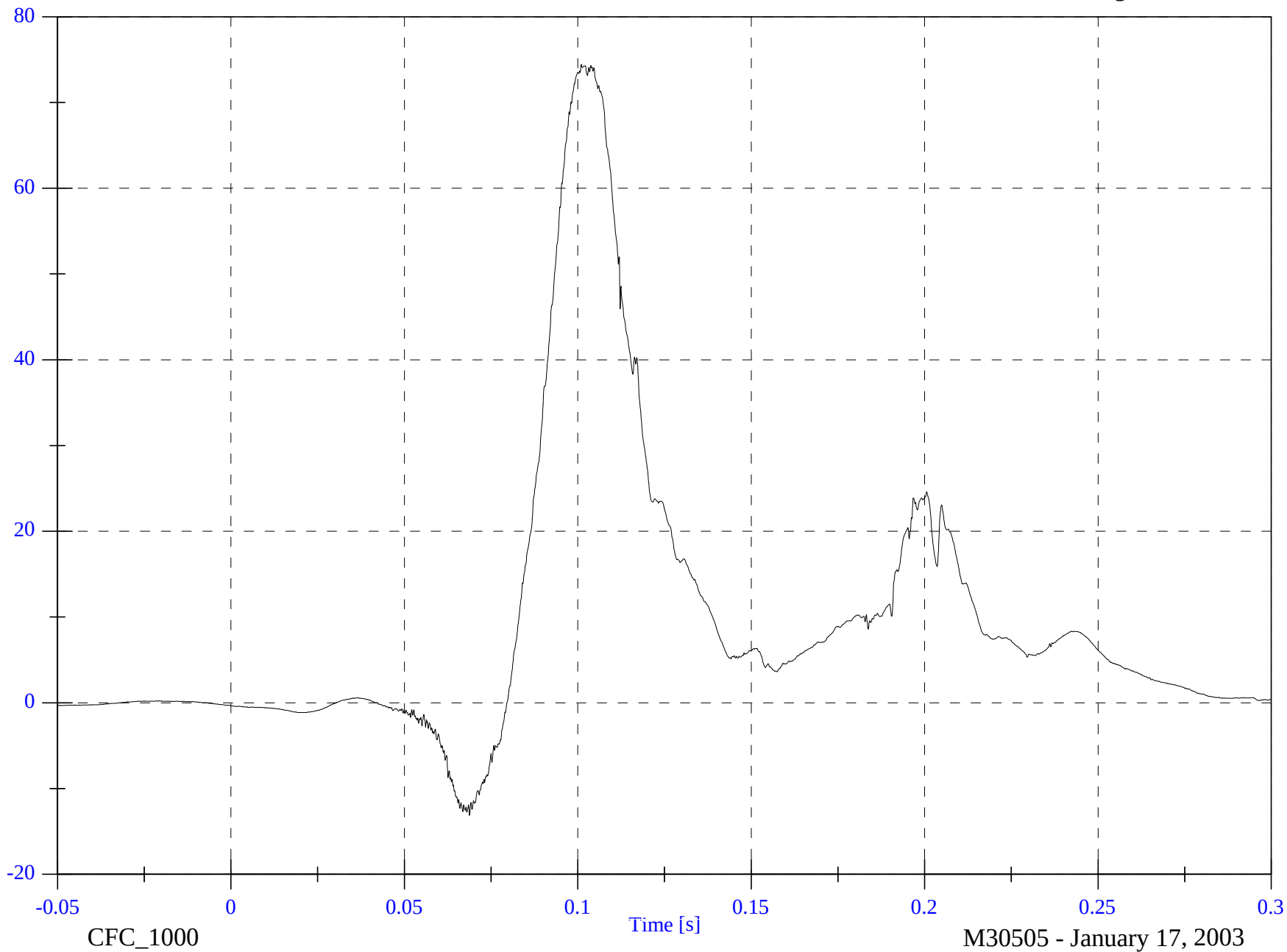


NCAP Test #5 - 2003 Hyundai Accent

V1P3 Head z

Max: 74.5 [g] at 0.101 [s]

Min: -13.1 [g] at 0.069 [s]



4-5

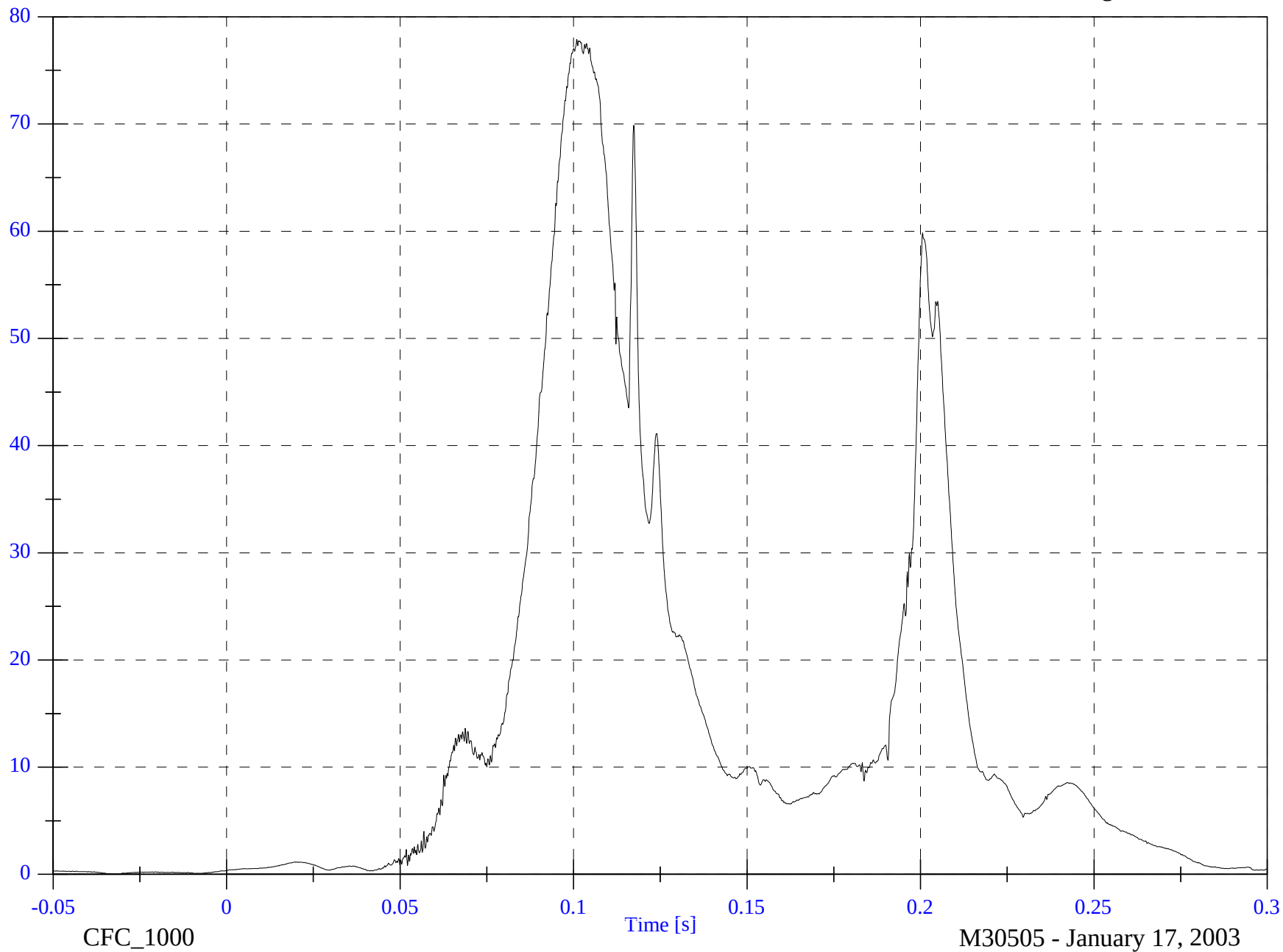
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P3 Head Resultant

Max: 77.9 [g] at 0.101 [s]

Min: 0.0 [g] at -0.032 [s]



4-6

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

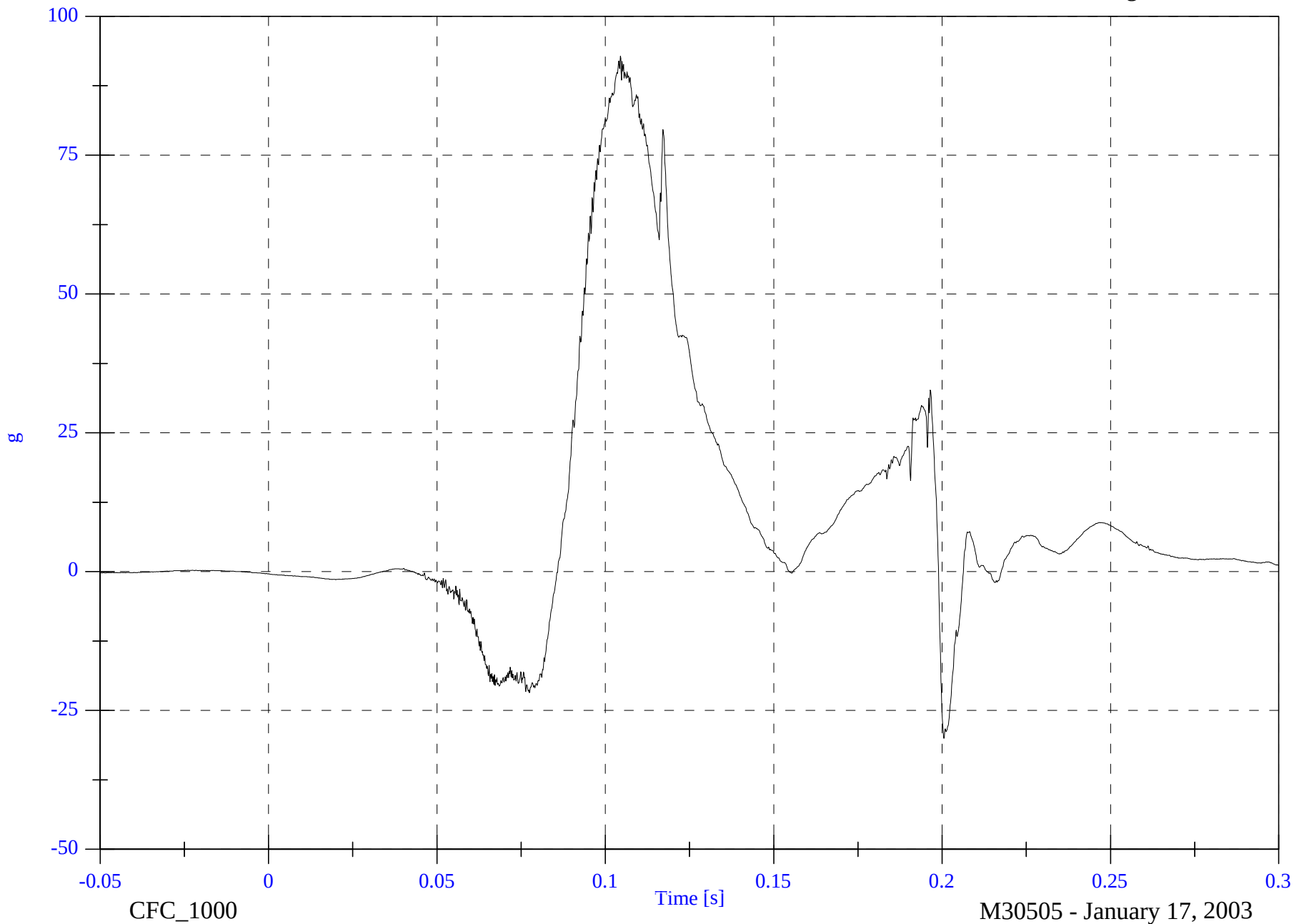
V1P3 Head Rear z

Max: 92.8 [g] at 0.105 [s]

Min: -30.0 [g] at 0.200 [s]

4-7

8642-NCAP-27

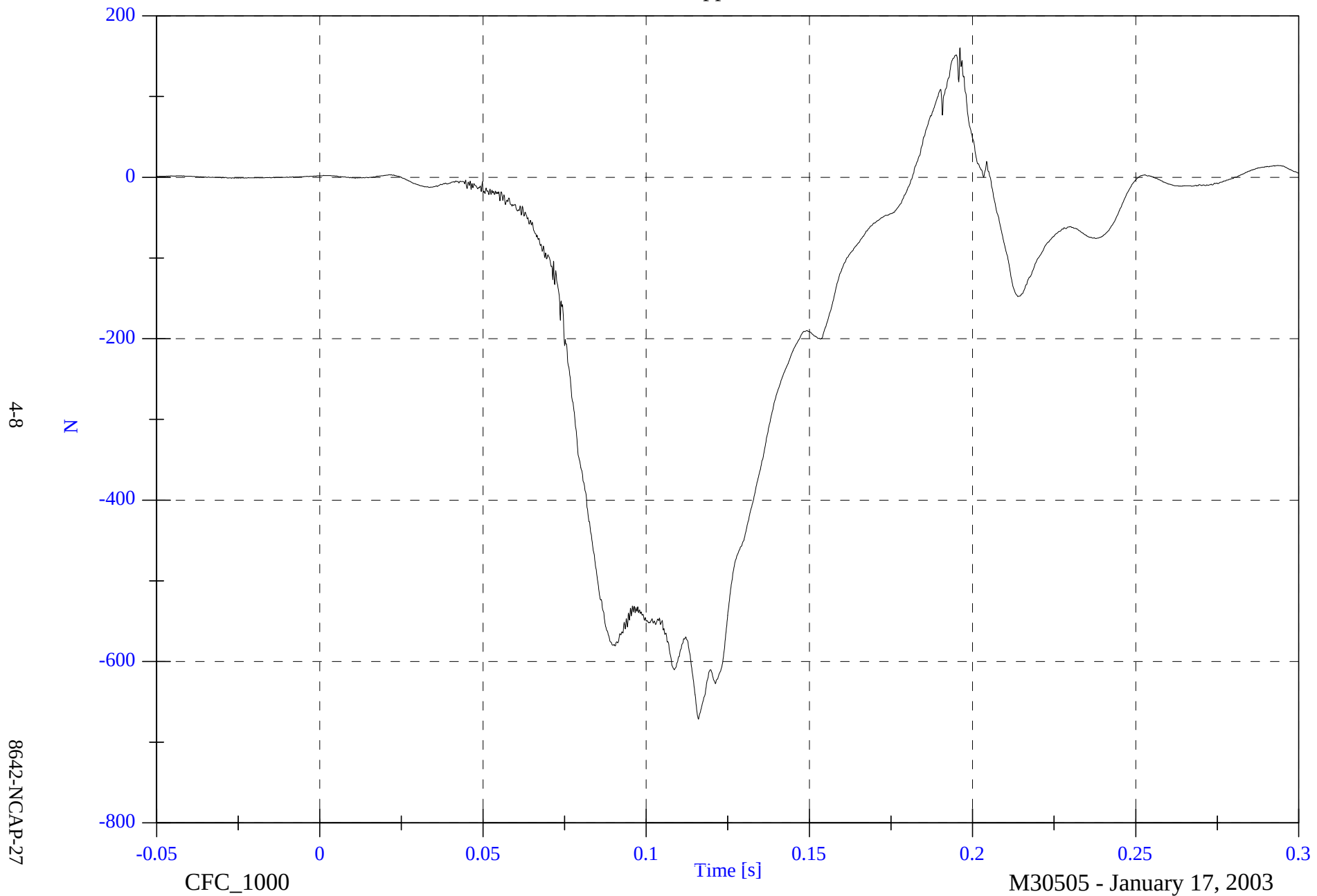


NCAP Test #5 - 2003 Hyundai Accent

V1P3 Upper Neck Fx

Max: 160.4 [N] at 0.196 [s]

Min: -671.3 [N] at 0.116 [s]



NCAP Test #5 - 2003 Hyundai Accent

V1P3 Upper Neck Fy

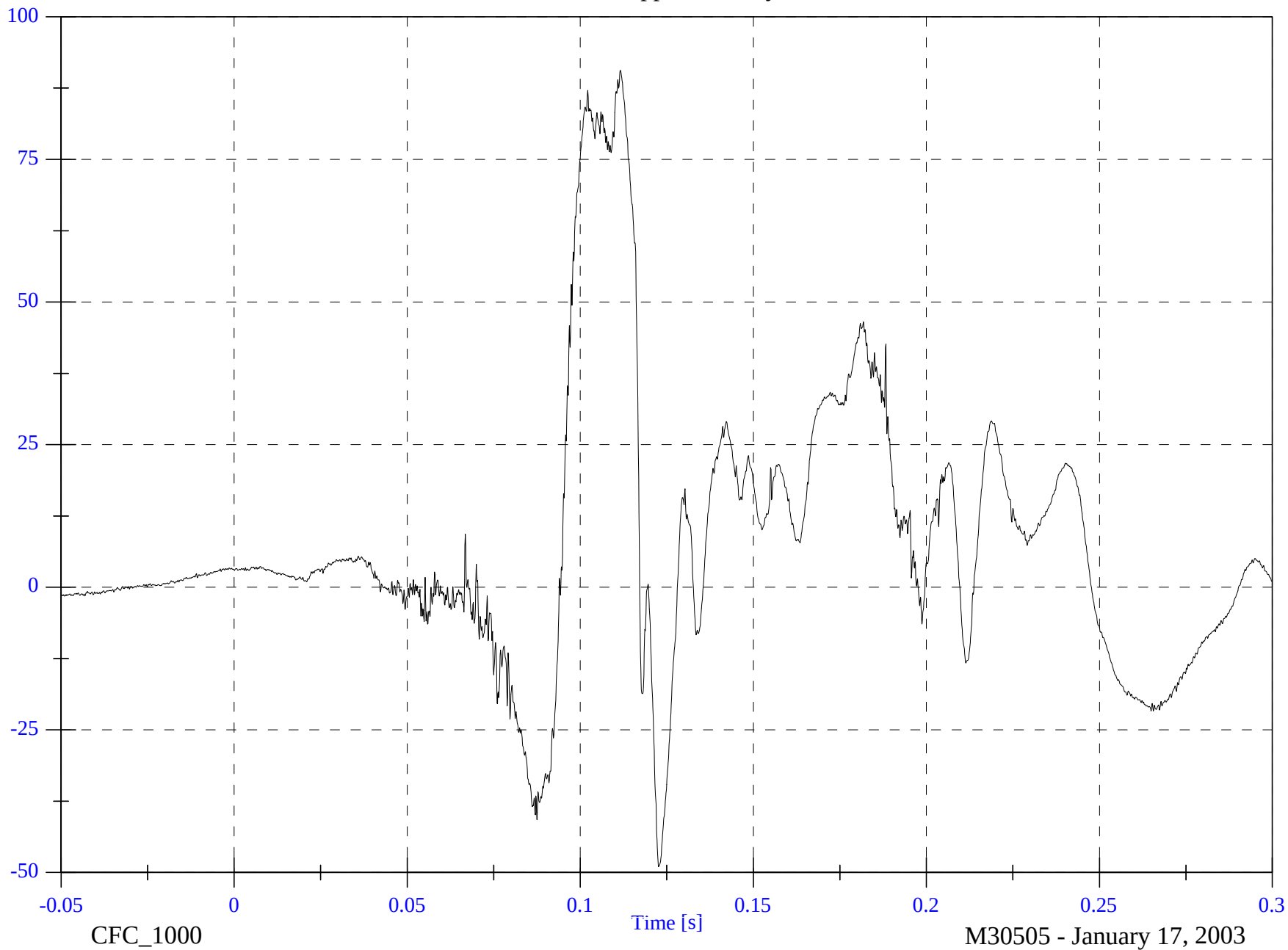
Max: 90.6 [N] at 0.112 [s]

Min: -49.0 [N] at 0.123 [s]

4-9

N

8642-NCAP-27

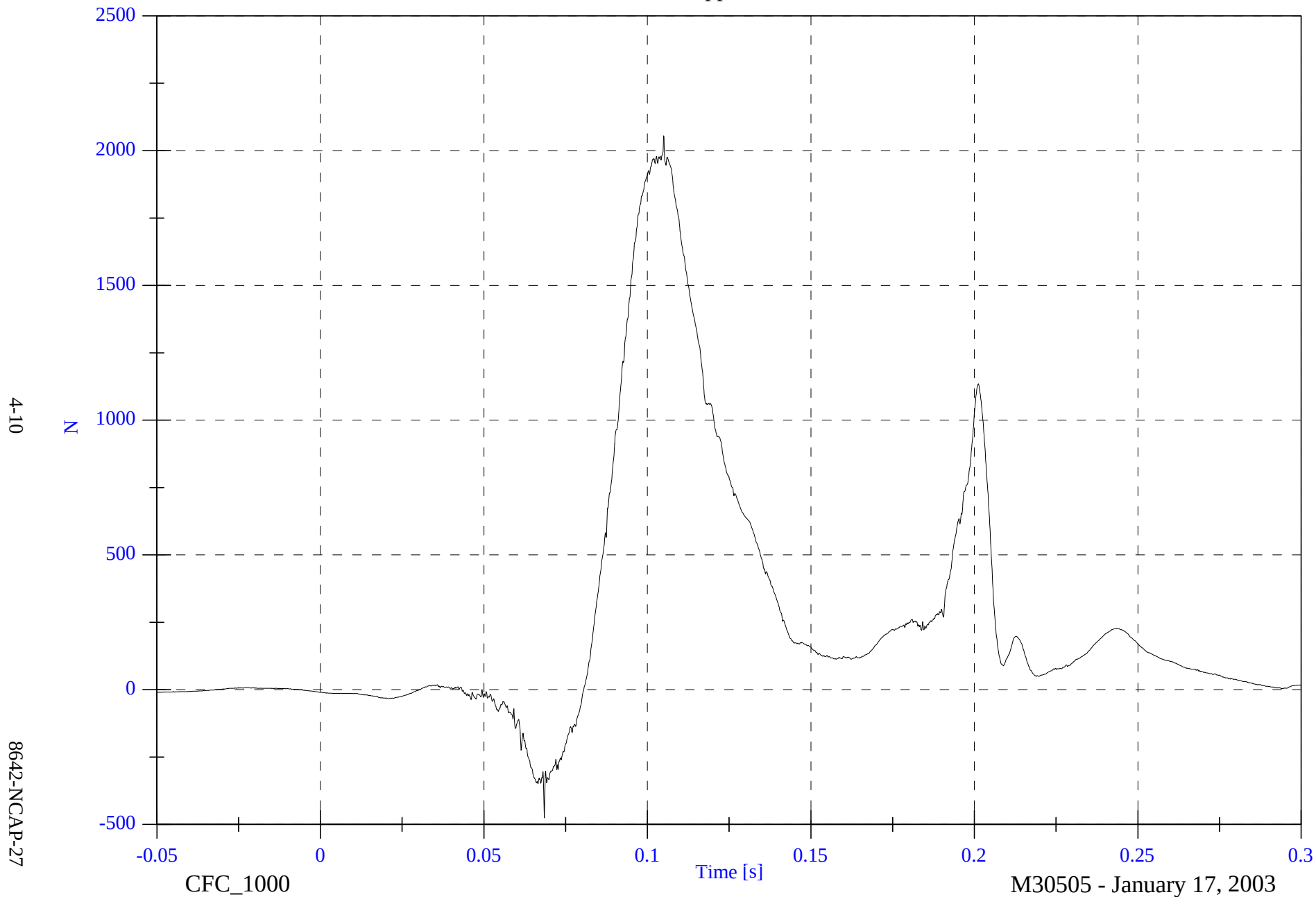


NCAP Test #5 - 2003 Hyundai Accent

V1P3 Upper Neck Fz

Max: 2054.1 [N] at 0.105 [s]

Min: -475.8 [N] at 0.068 [s]



NCAP Test #5 - 2003 Hyundai Accent

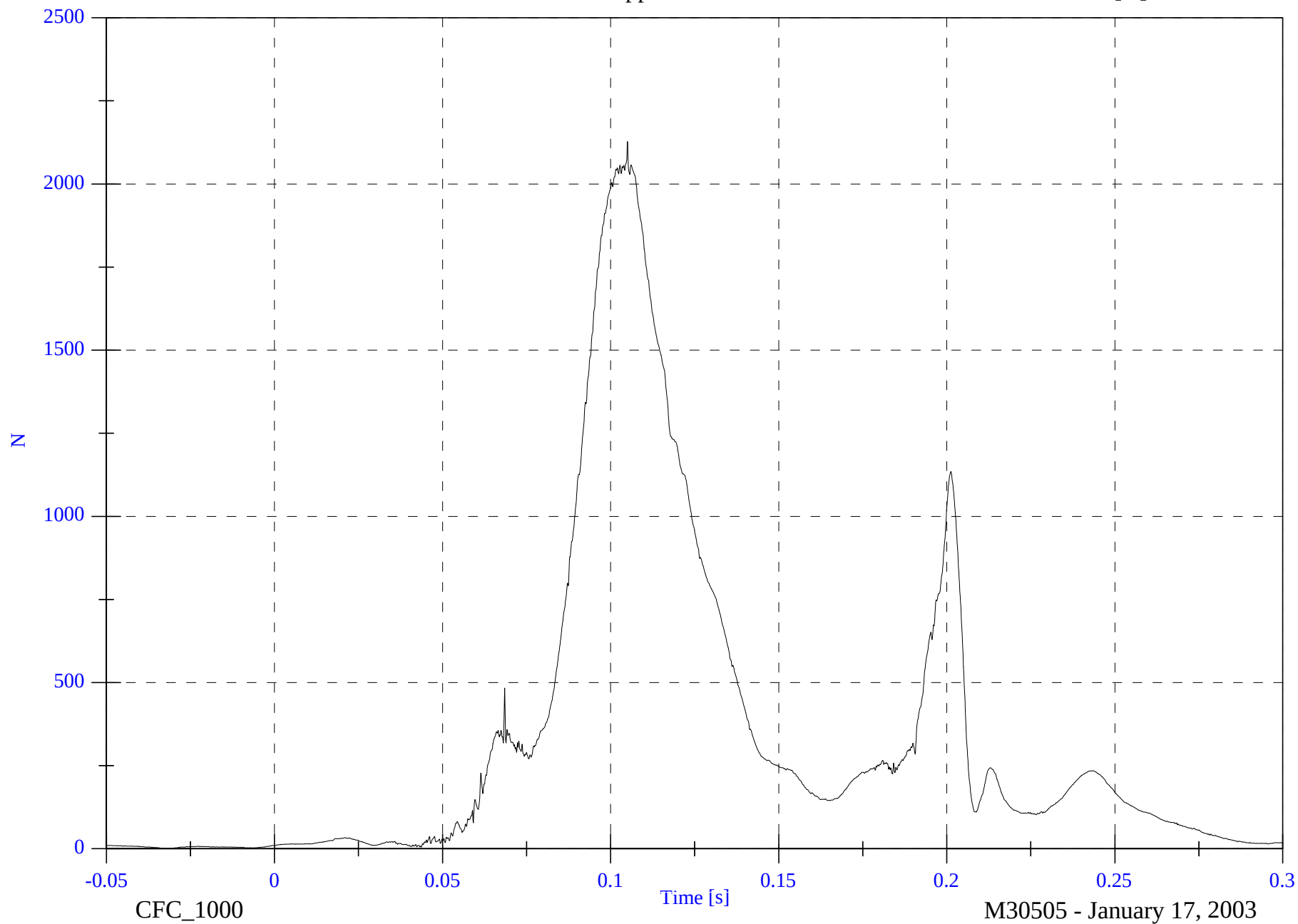
V1P3 Upper Neck F Resultant

Max: 2127.8 [N] at 0.105 [s]

Min: 0.4 [N] at -0.032 [s]

4-11

8642-NCAP-27

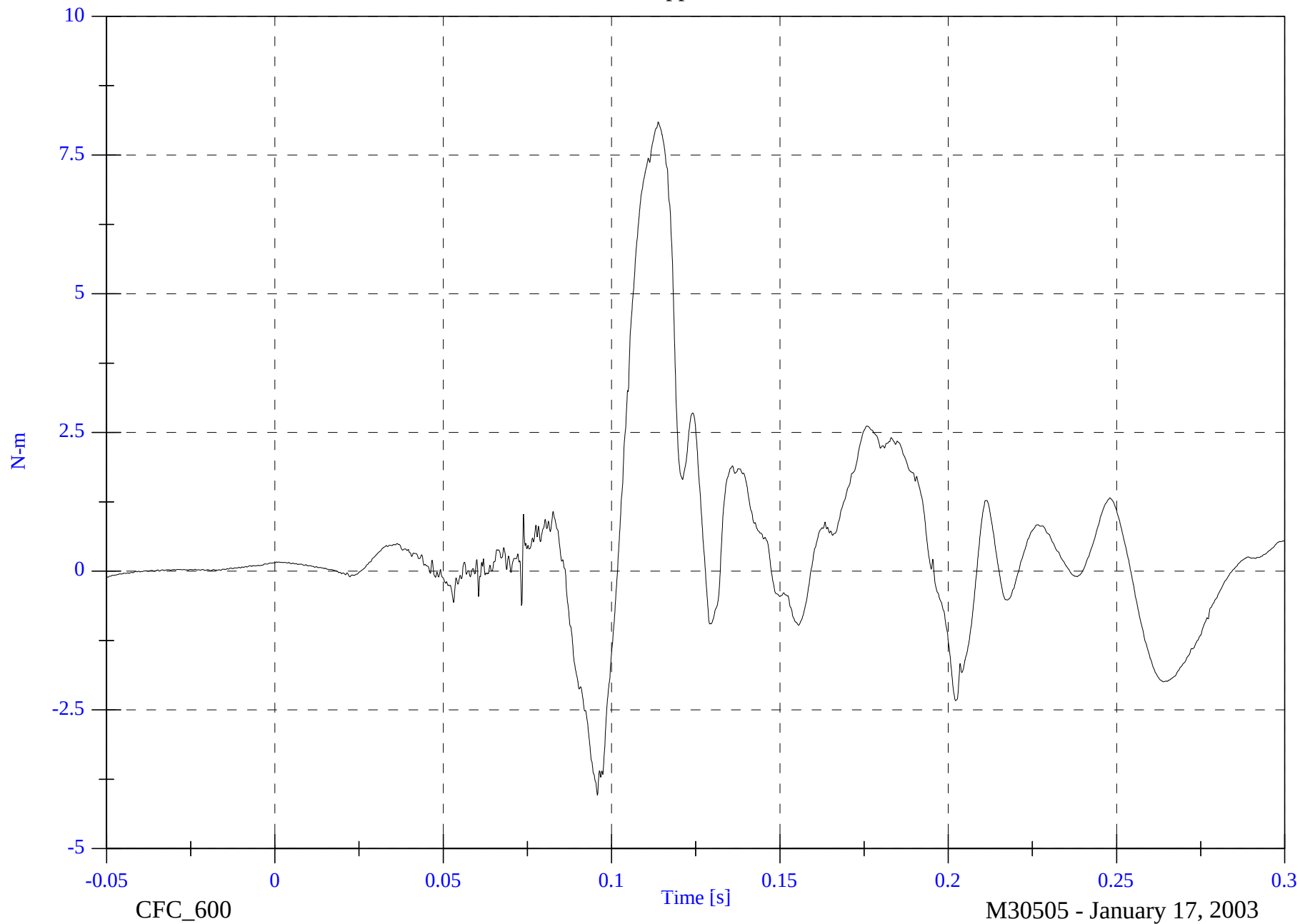


NCAP Test #5 - 2003 Hyundai Accent

V1P3 Upper Neck Mx

Max: 8.1 [N-m] at 0.114 [s]

Min: -4.0 [N-m] at 0.096 [s]



4-12

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

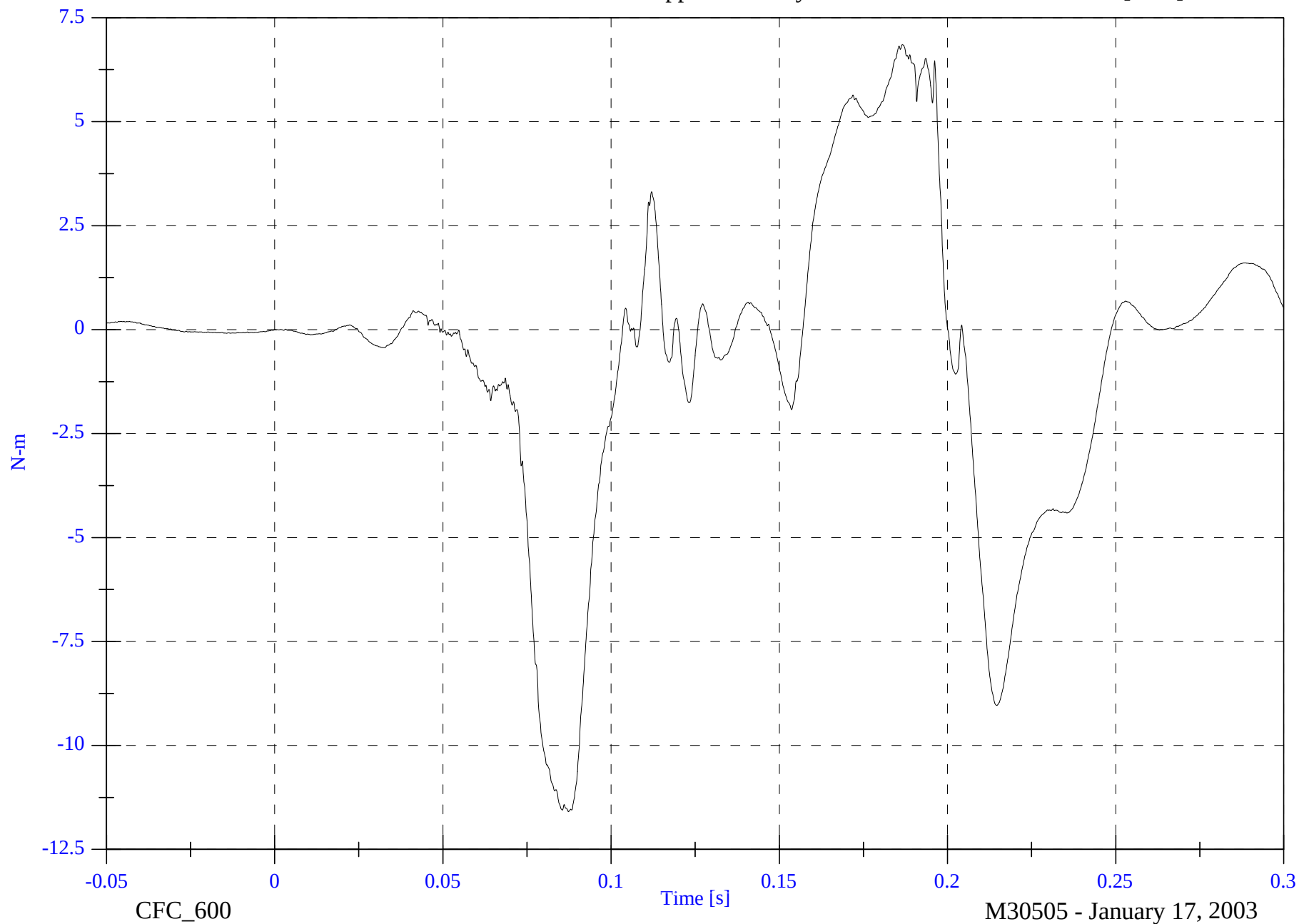
V1P3 Upper Neck My

Max: 6.9 [N-m] at 0.186 [s]

Min: -11.6 [N-m] at 0.087 [s]

4-13

8642-NCAP-27

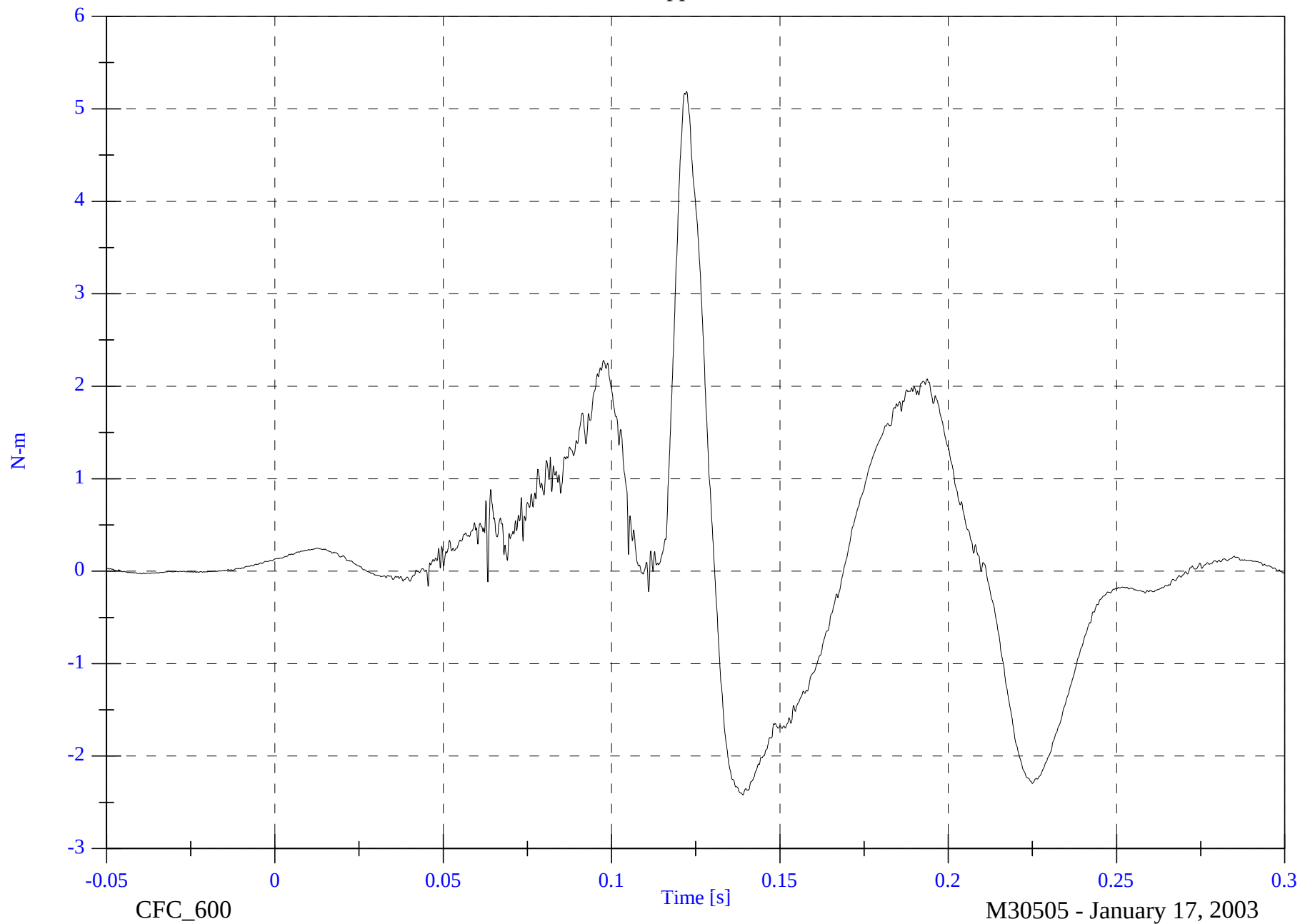


NCAP Test #5 - 2003 Hyundai Accent

V1P3 Upper Neck Mz

Max: 5.2 [N-m] at 0.122 [s]

Min: -2.4 [N-m] at 0.139 [s]



4-14

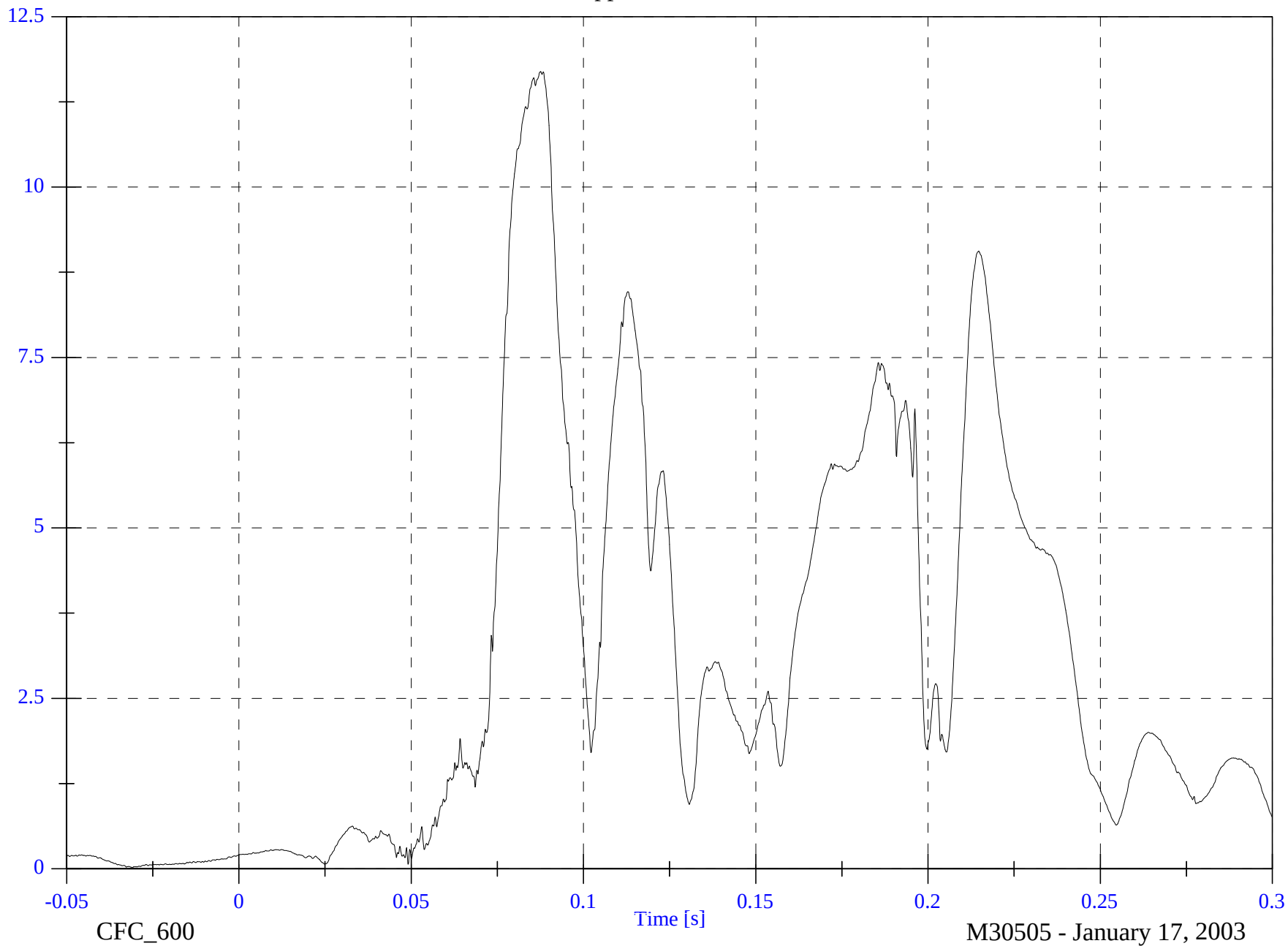
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P3 Upper Neck M Resultant

Max: 11.7 [N-m] at 0.088 [s]

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



4-15

8642-NCAP-27

CFC_600

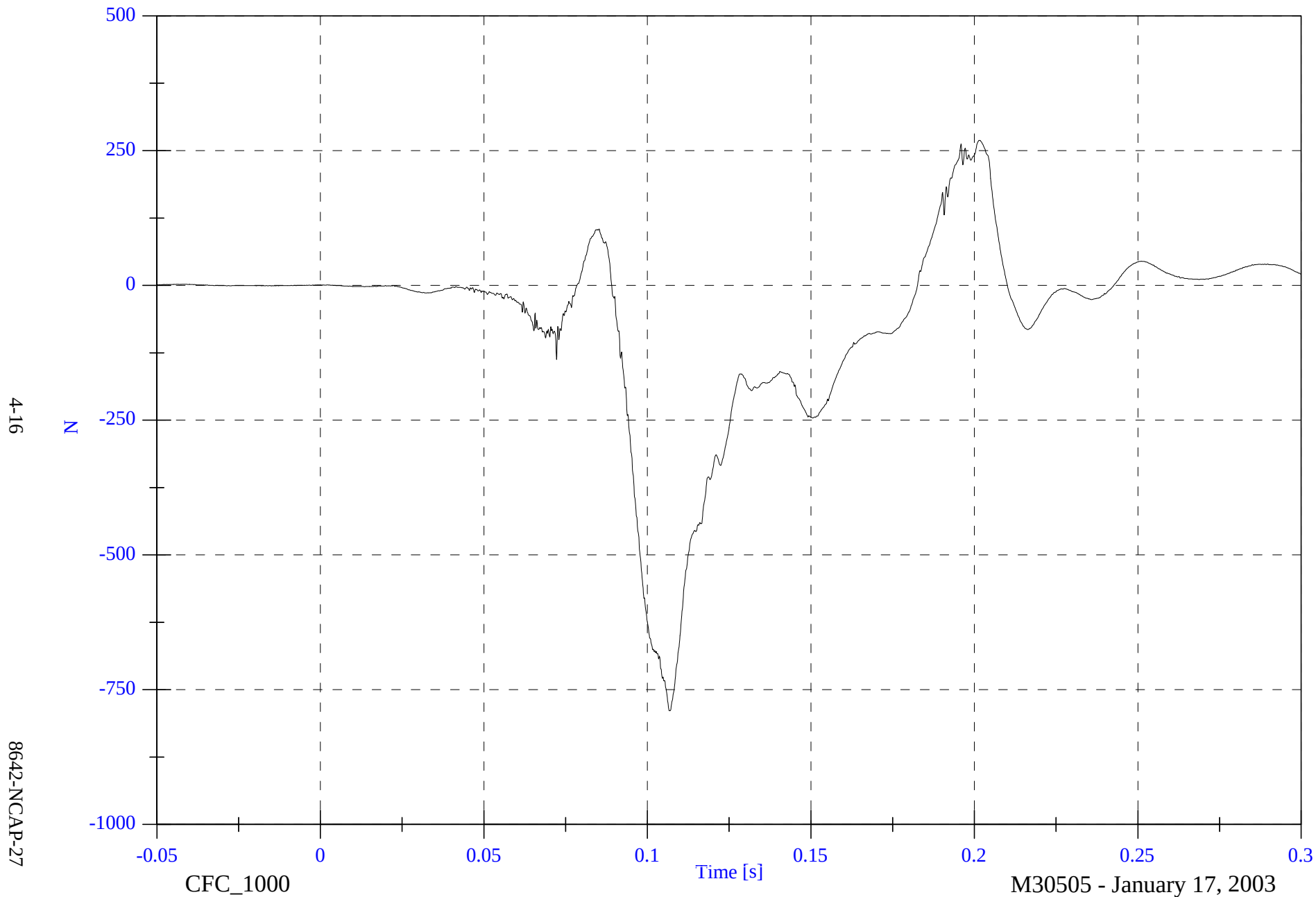
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P3 Lower Neck Fx

Max: 269.1 [N] at 0.202 [s]

Min: -789.2 [N] at 0.107 [s]

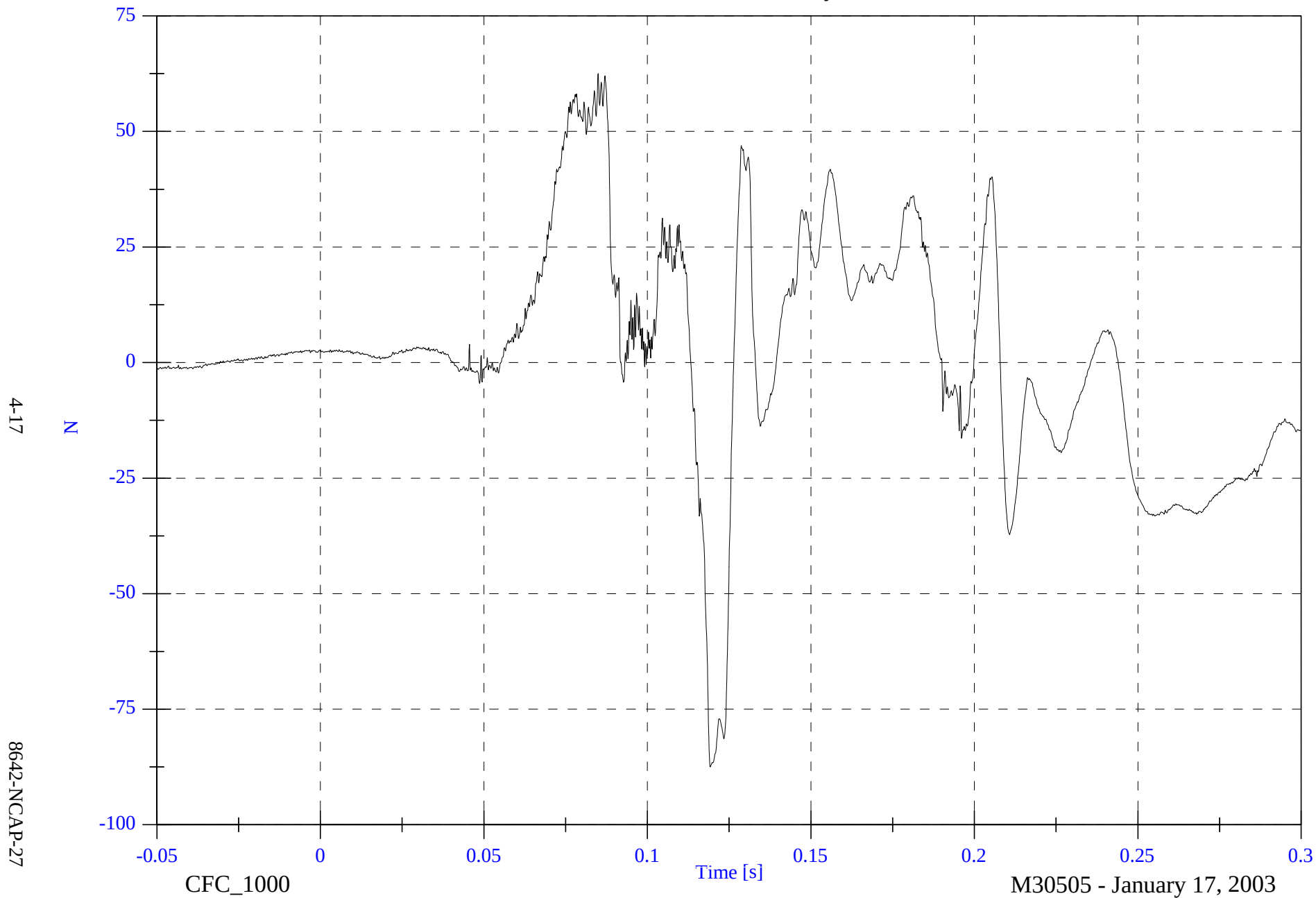


NCAP Test #5 - 2003 Hyundai Accent

V1P3 Lower Neck Fy

Max: 62.5 [N] at 0.085 [s]

Min: -87.5 [N] at 0.119 [s]



NCAP Test #5 - 2003 Hyundai Accent

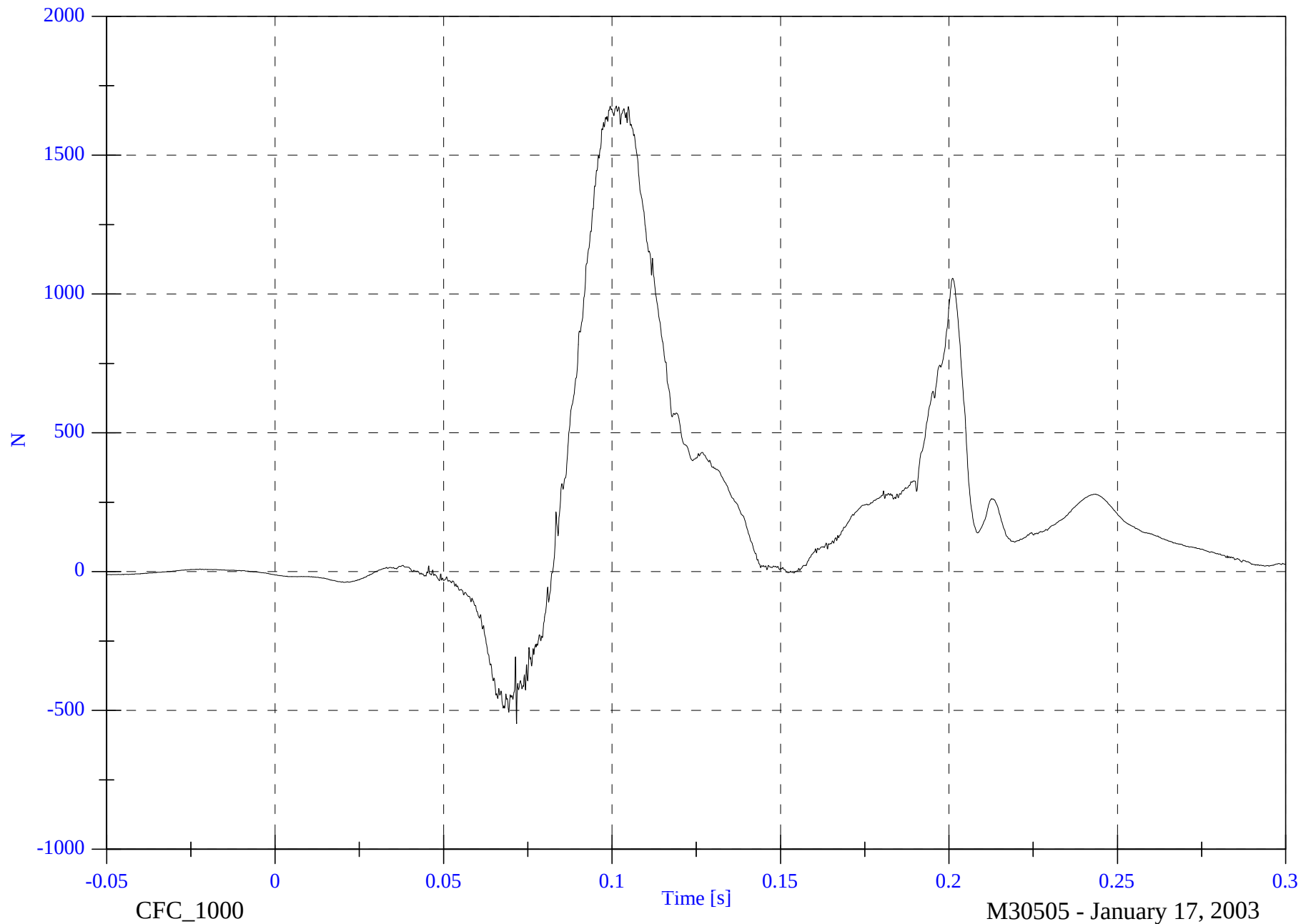
V1P3 Lower Neck Fz

Max: 1676.6 [N] at 0.101 [s]

Min: -547.3 [N] at 0.072 [s]

4-18

8642-NCAP-27



NCAP Test #5 - 2003 Hyundai Accent

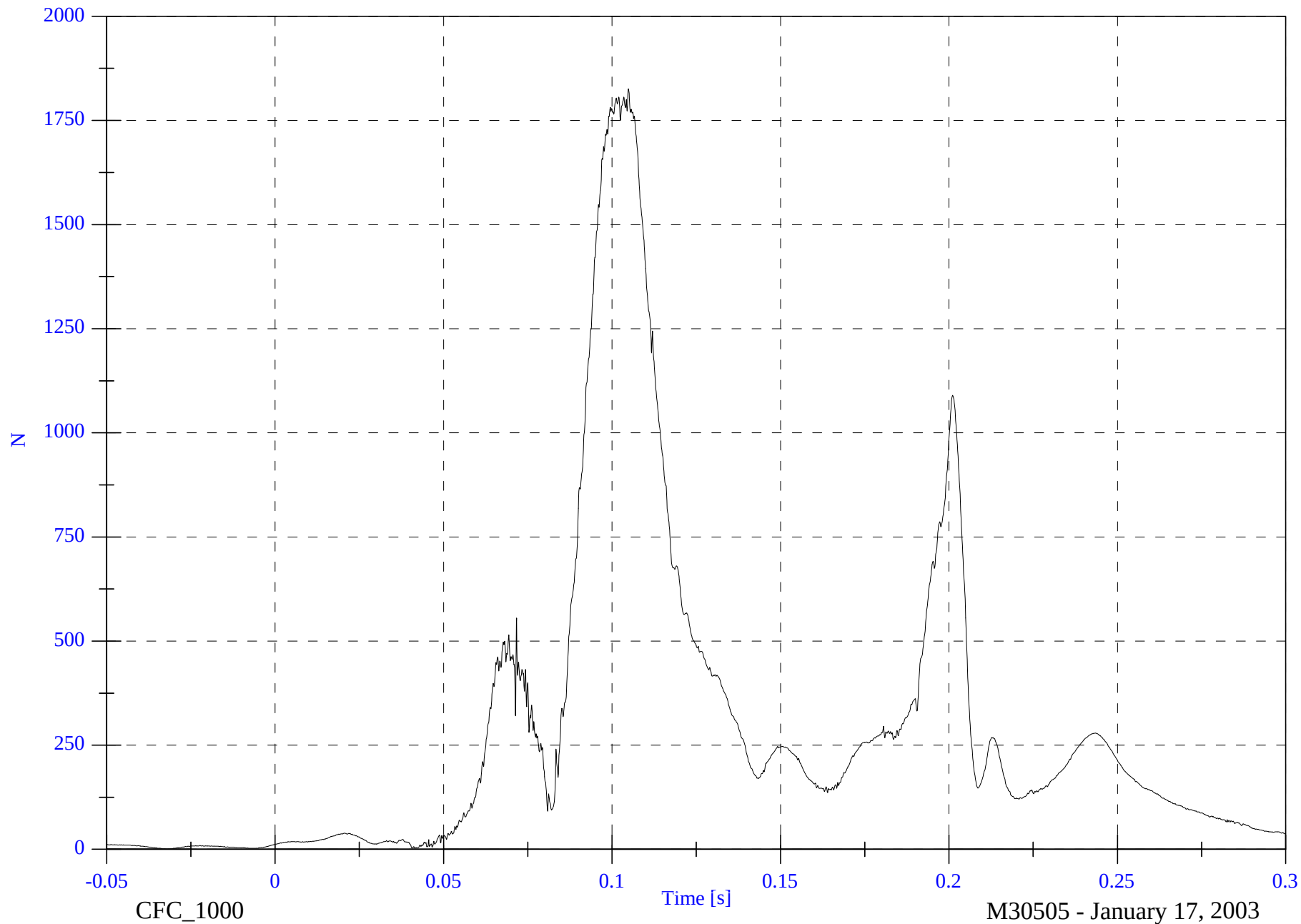
V1P3 Lower Neck F Resultant

Max: 1825.9 [N] at 0.105 [s]

Min: 0.3 [N] at -0.032 [s]

4-19

8642-NCAP-27

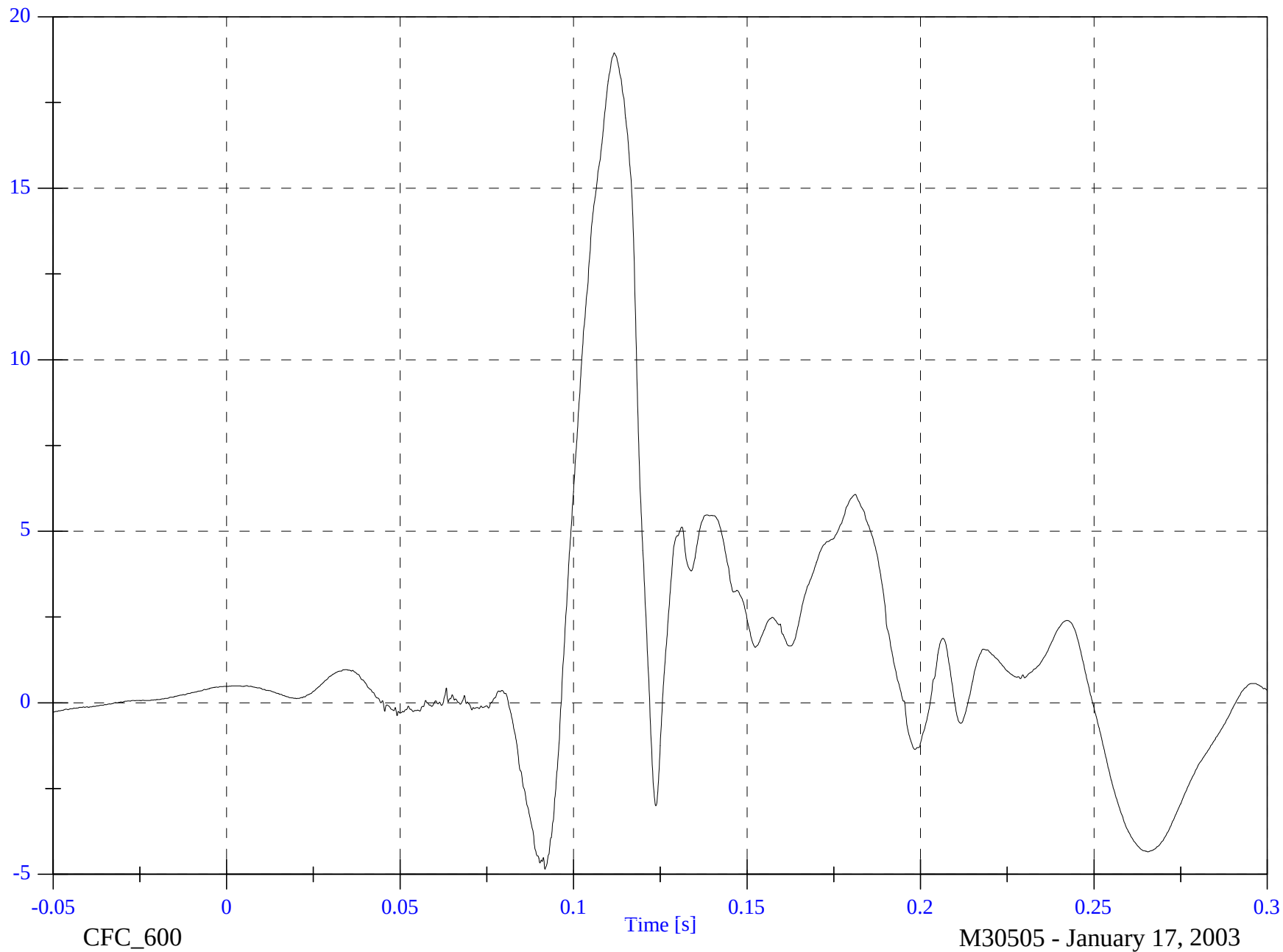


NCAP Test #5 - 2003 Hyundai Accent

V1P3 Lower Neck Mx

Max: 19.0 [N-m] at 0.112 [s]

Min: -4.9 [N-m] at 0.092 [s]



4-20

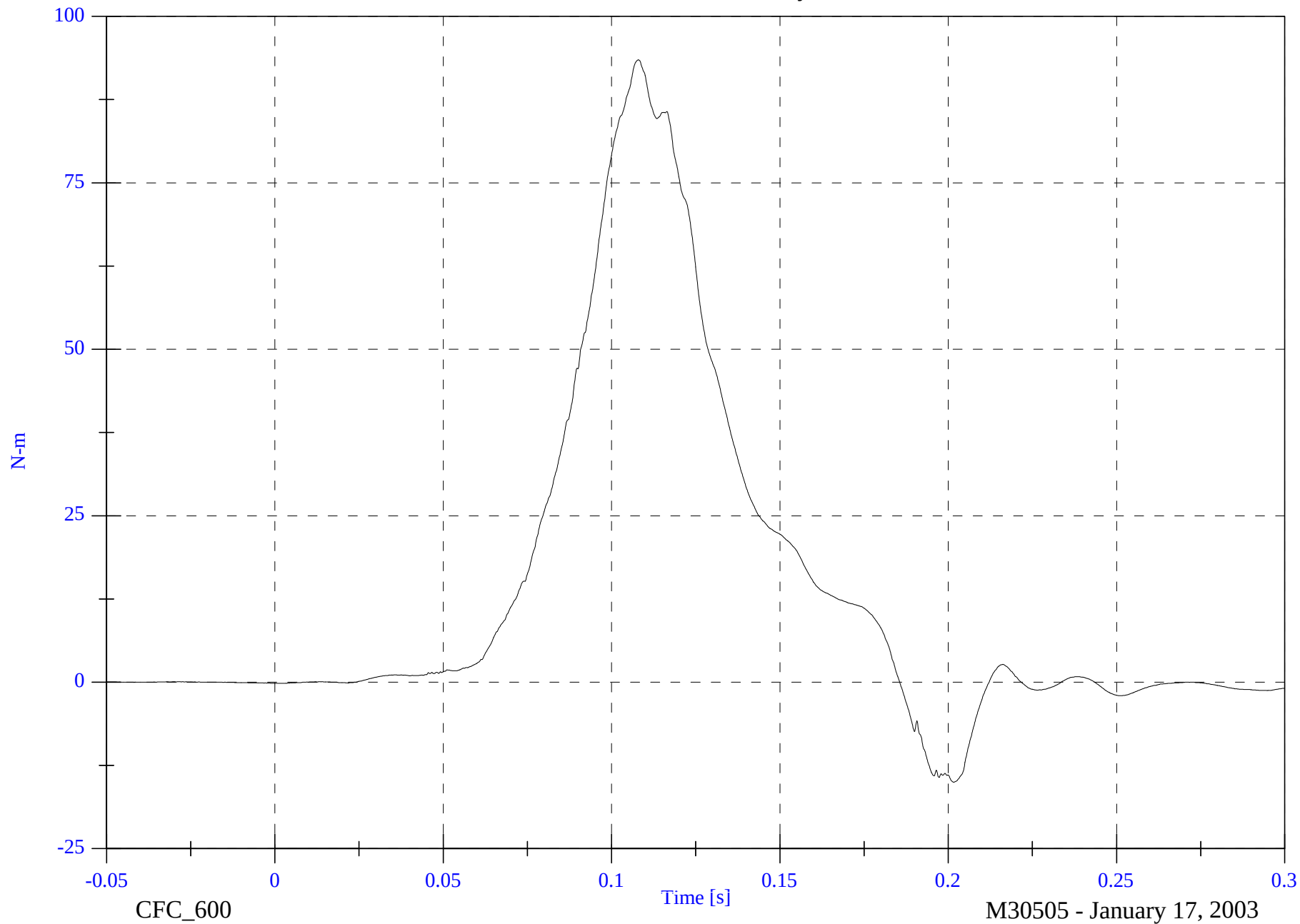
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P3 Lower Neck My

Max: 93.5 [N-m] at 0.108 [s]

Min: -15.0 [N-m] at 0.202 [s]



4-21

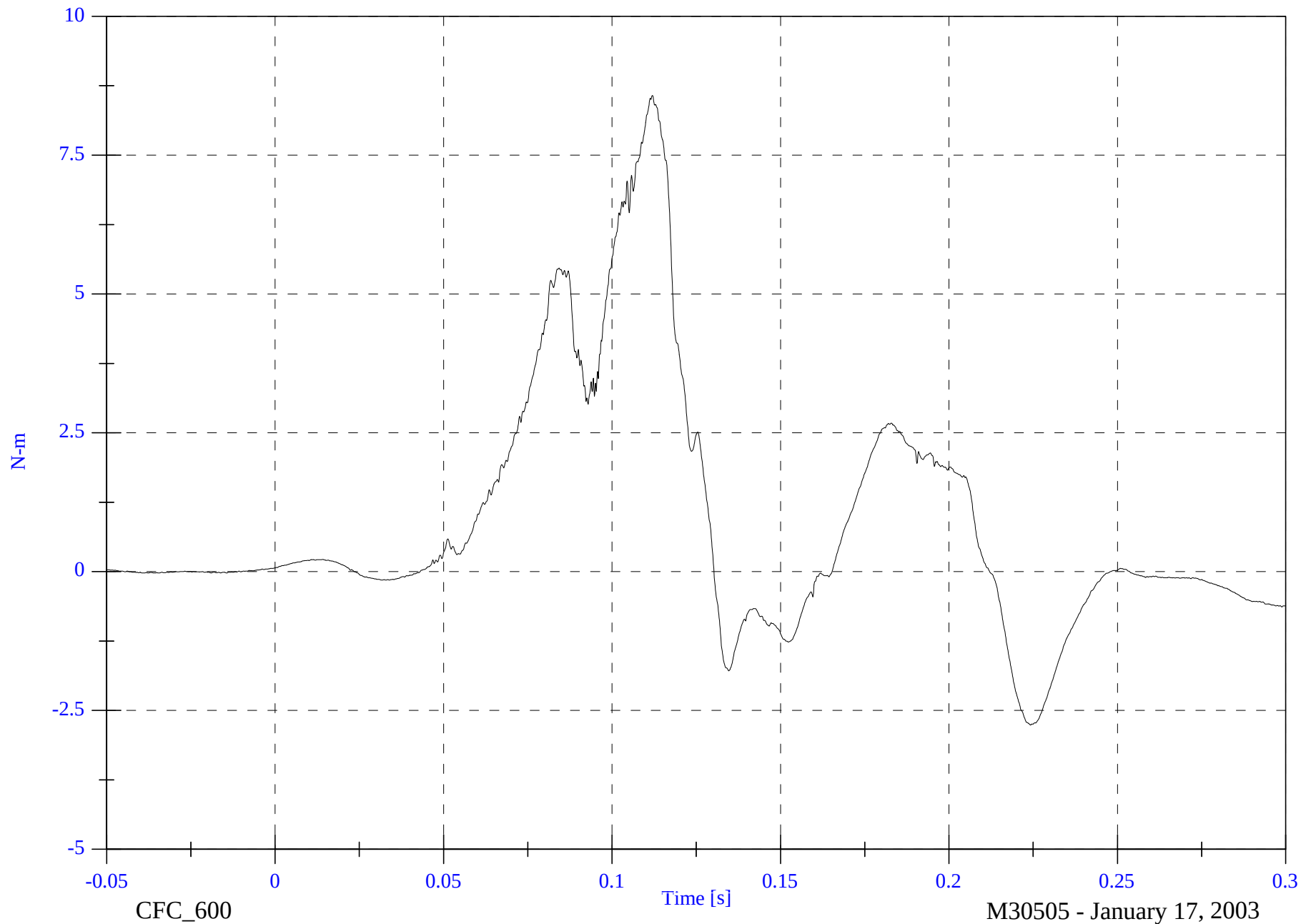
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P3 Lower Neck Mz

Max: 8.6 [N-m] at 0.112 [s]

Min: -2.8 [N-m] at 0.224 [s]



4-22

8642-NCAP-27

CFC_600

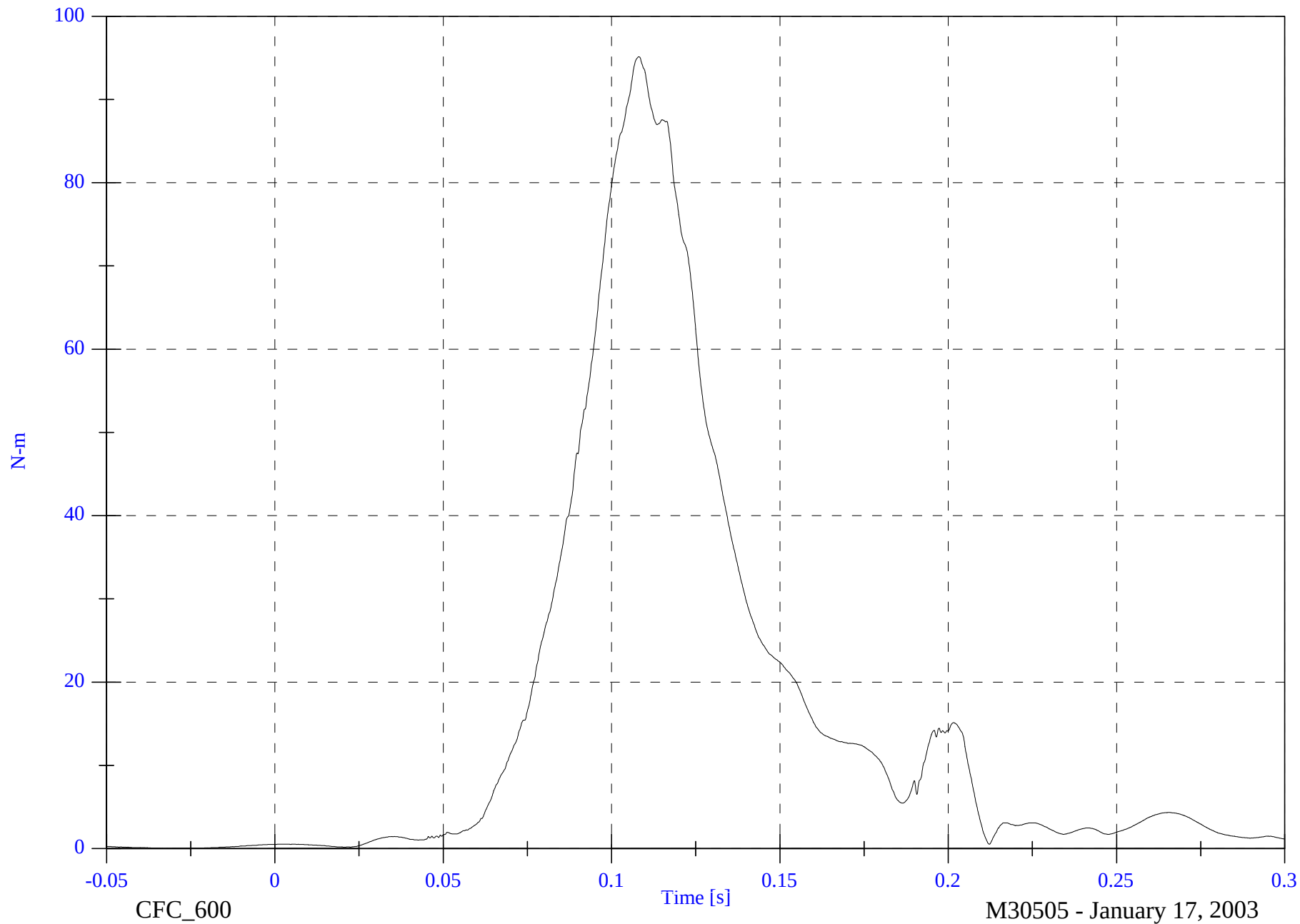
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P3 Lower Neck M Resultant

Max: 95.1 [N-m] at 0.108 [s]

Min: 0.0 [N-m] at -0.033 [s]



4-23

8642-NCAP-27

CFC_600

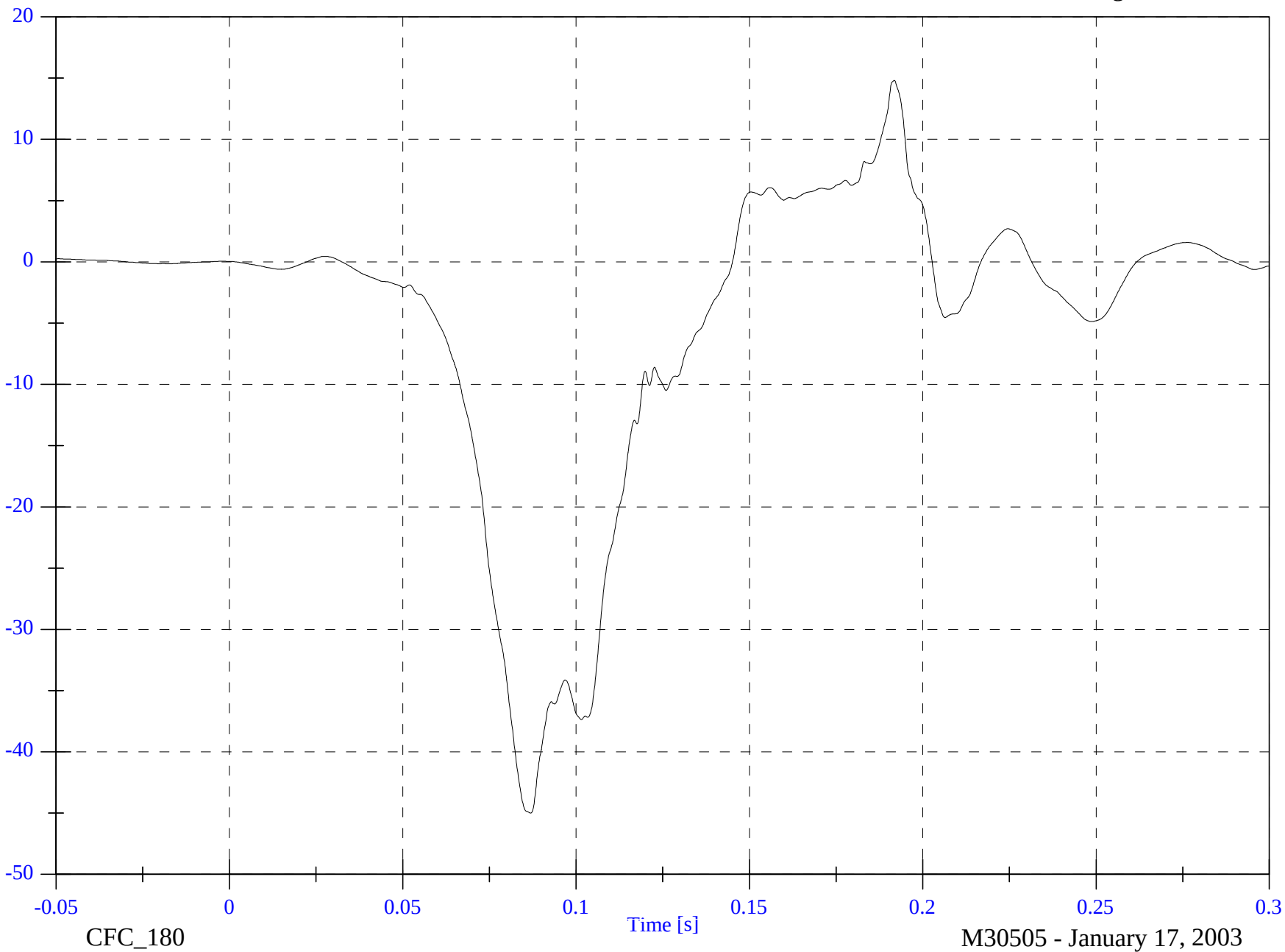
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P3 Chest x

Max: 14.8 [g] at 0.192 [s]

Min: -45.0 [g] at 0.087 [s]



4-24

8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

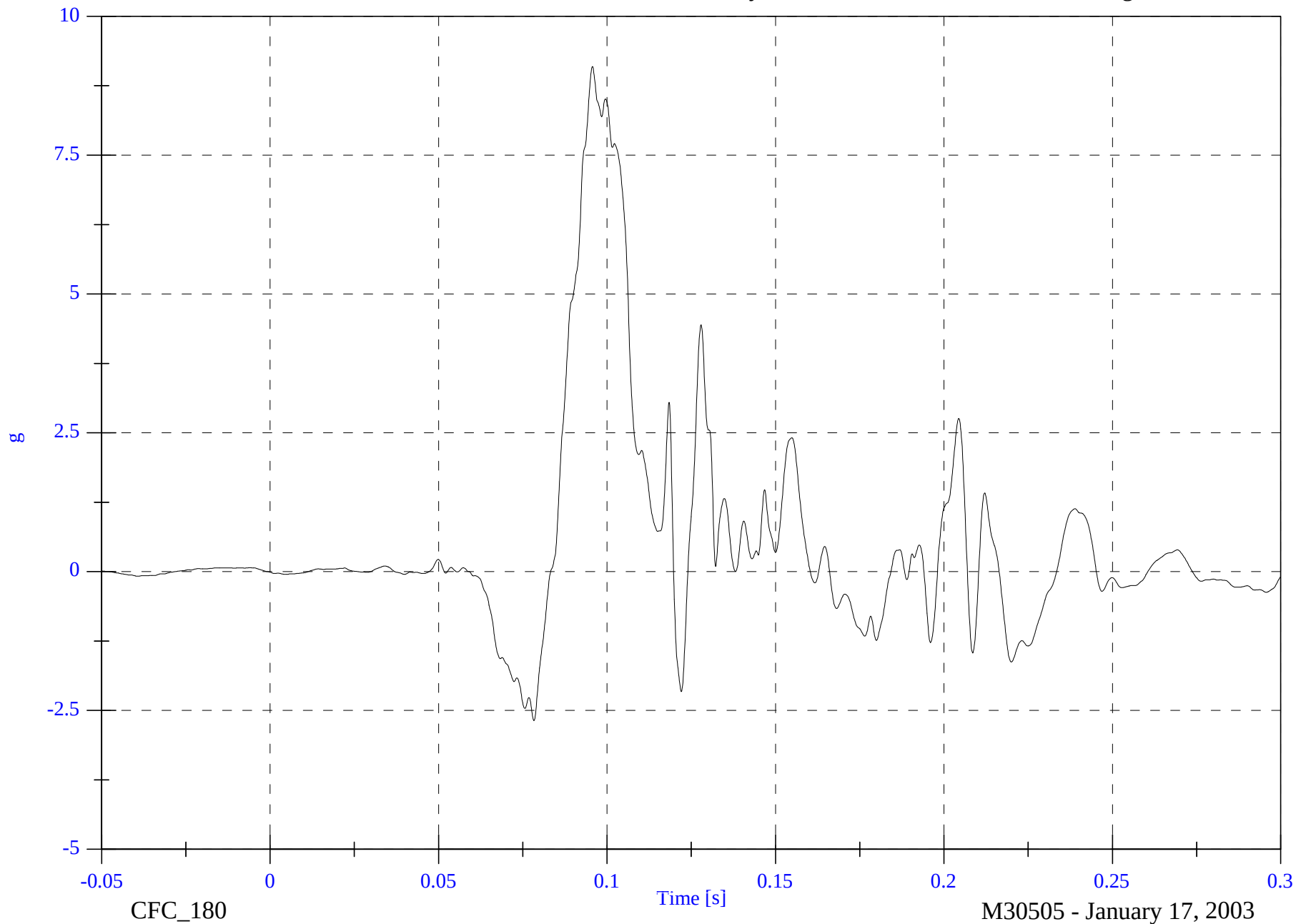
V1P3 Chest y

Max: 9.1 [g] at 0.096 [s]

Min: -2.7 [g] at 0.078 [s]

4-25

8642-NCAP-27

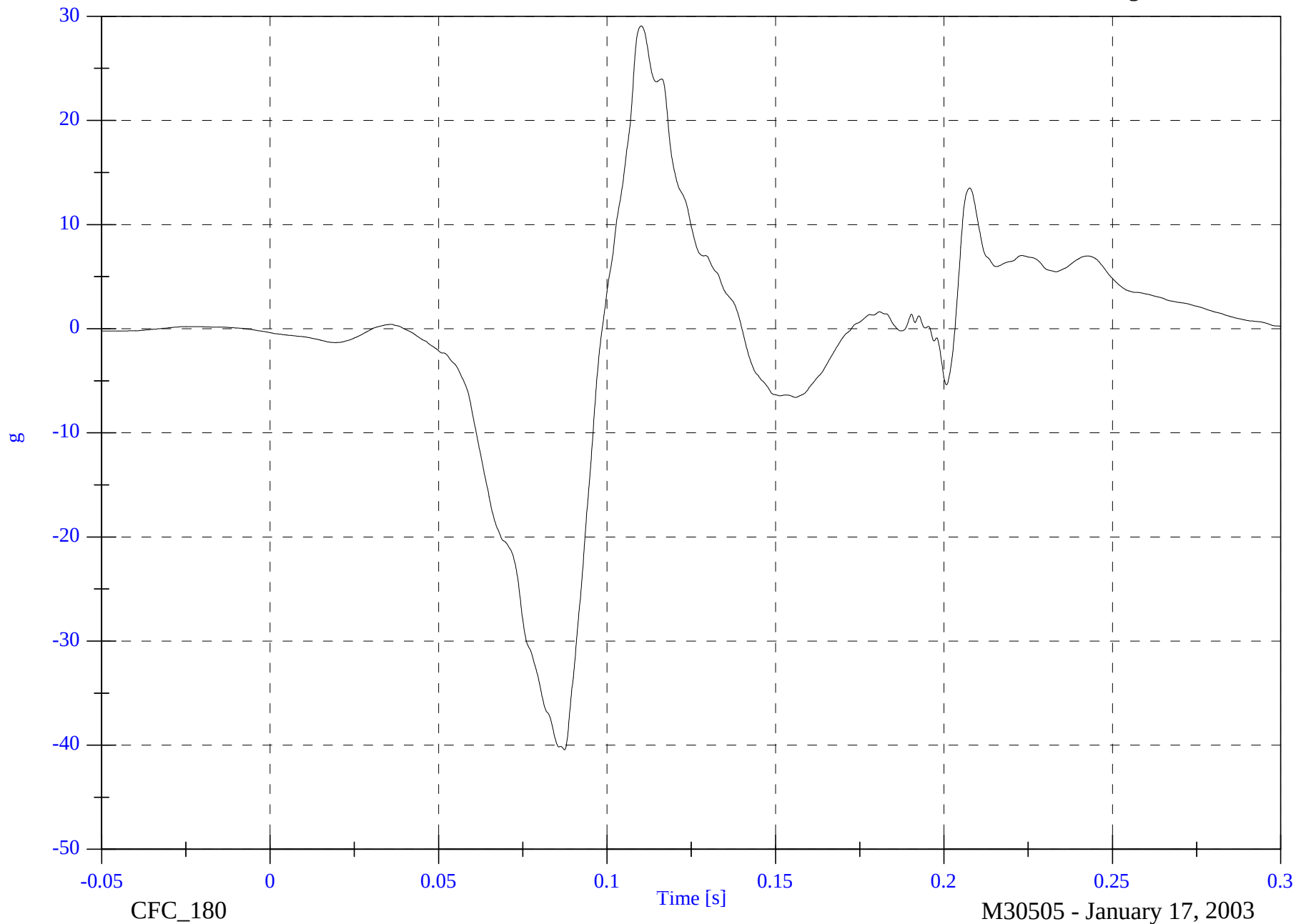


NCAP Test #5 - 2003 Hyundai Accent

V1P3 Chest z

Max: 29.1 [g] at 0.110 [s]

Min: -40.4 [g] at 0.087 [s]



4-26

8642-NCAP-27

CFC_180

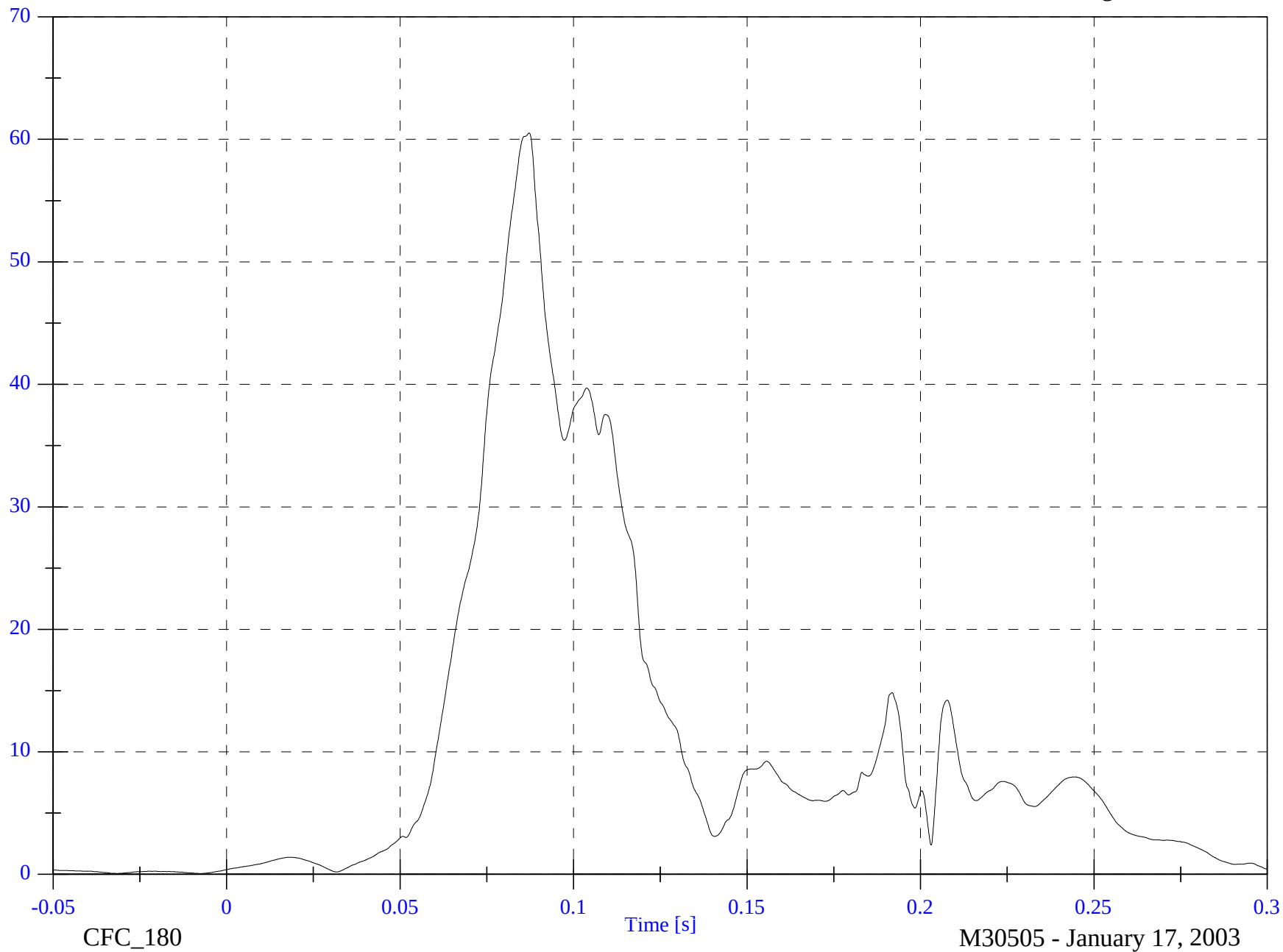
M30505 - January 17, 2003

NCAP Test #5 - 2003 Hyundai Accent

V1P3 Chest Resultant

Max: 60.5 [g] at 0.087 [s]

Min: 0.1 [g] at -0.008 [s]



4-27

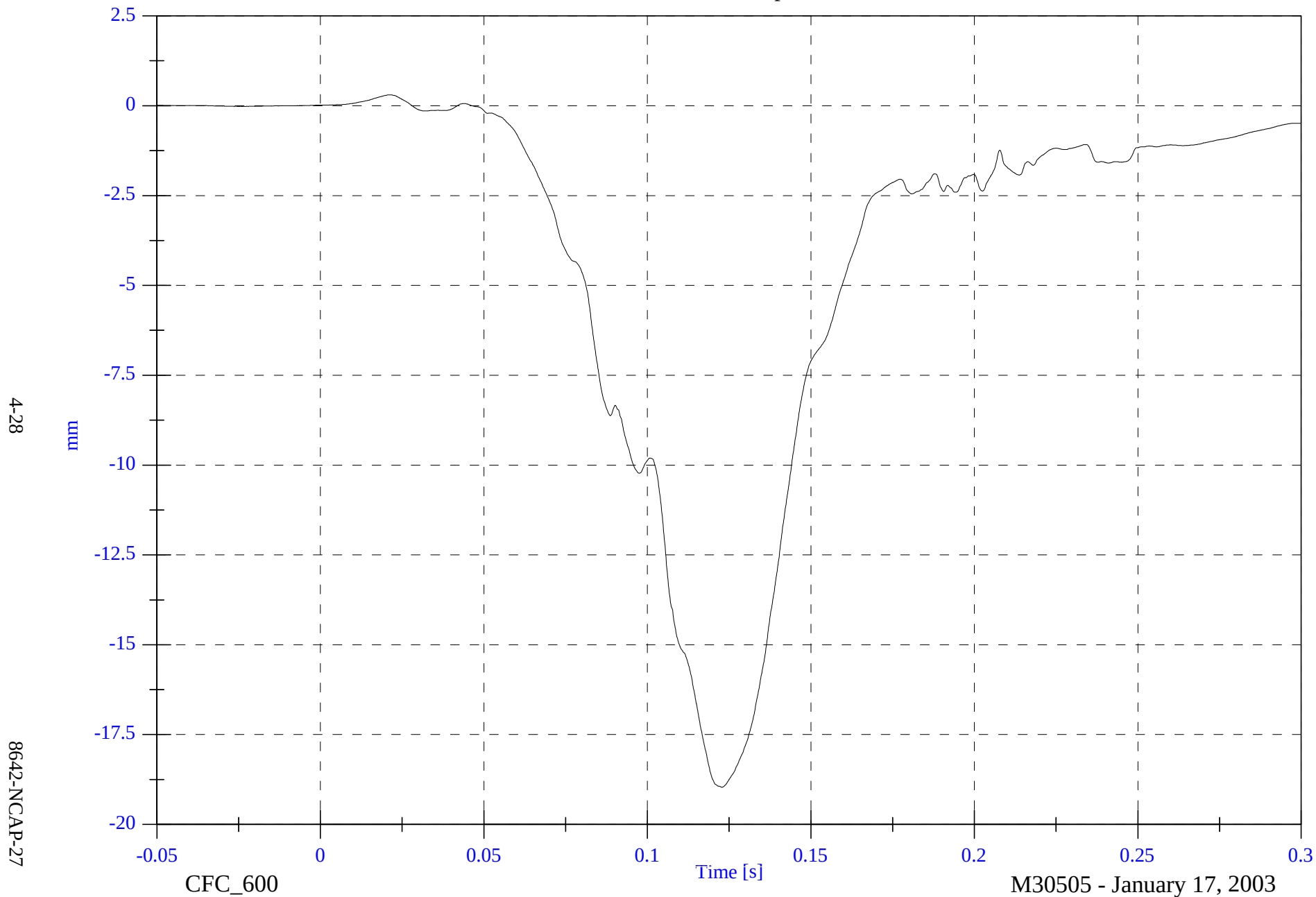
8642-NCAP-27

NCAP Test #5 - 2003 Hyundai Accent

V1P3 Chest Compression

Max: 0.3 [mm] at 0.021 [s]

Min: -19.0 [mm] at 0.123 [s]



NCAP Test #5 - 2003 Hyundai Accent

V1P3 Pelvic x

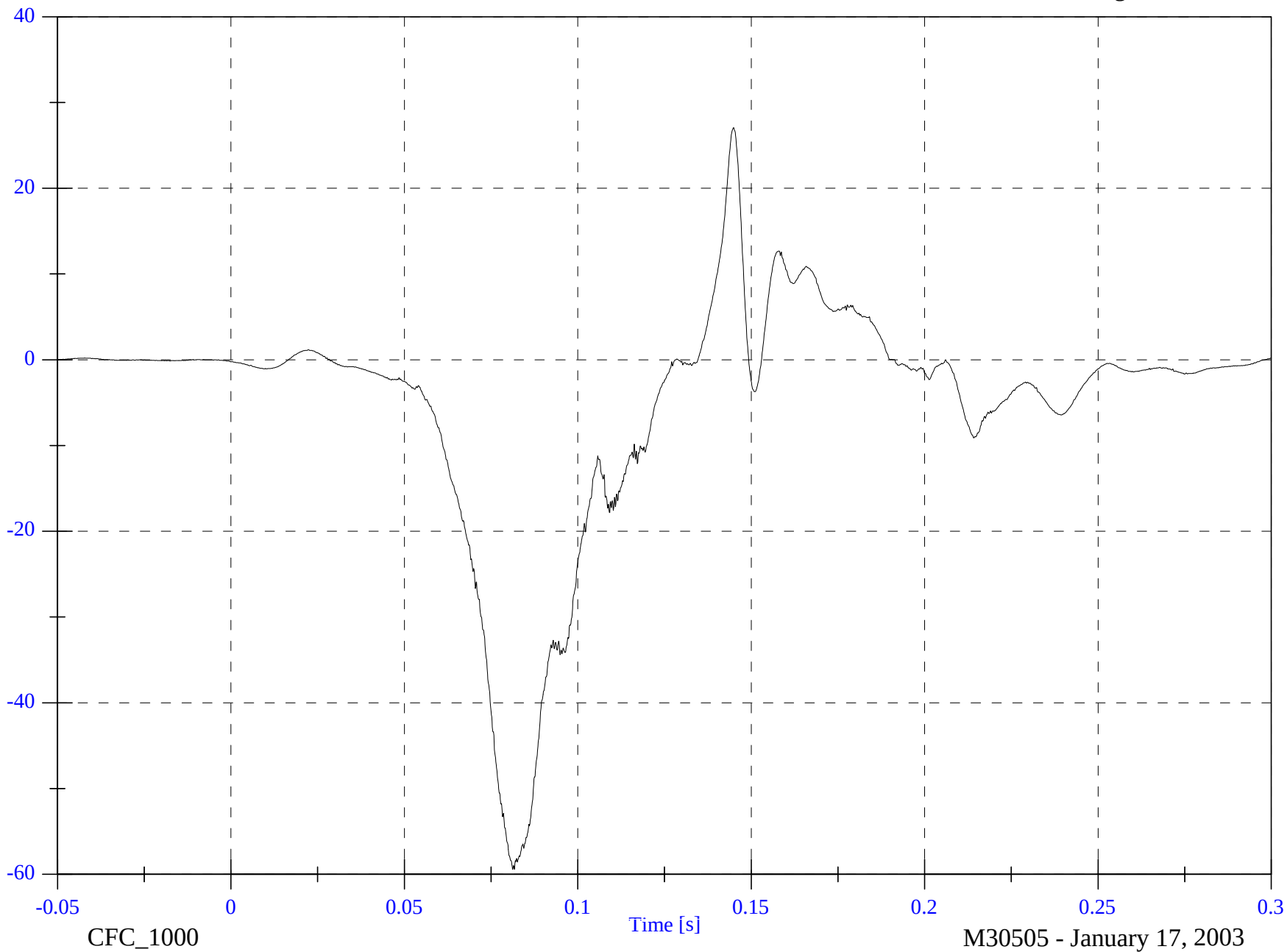
Max: 27.1 [g] at 0.145 [s]

Min: -59.4 [g] at 0.081 [s]

4-29

8642-NCAP-27

g

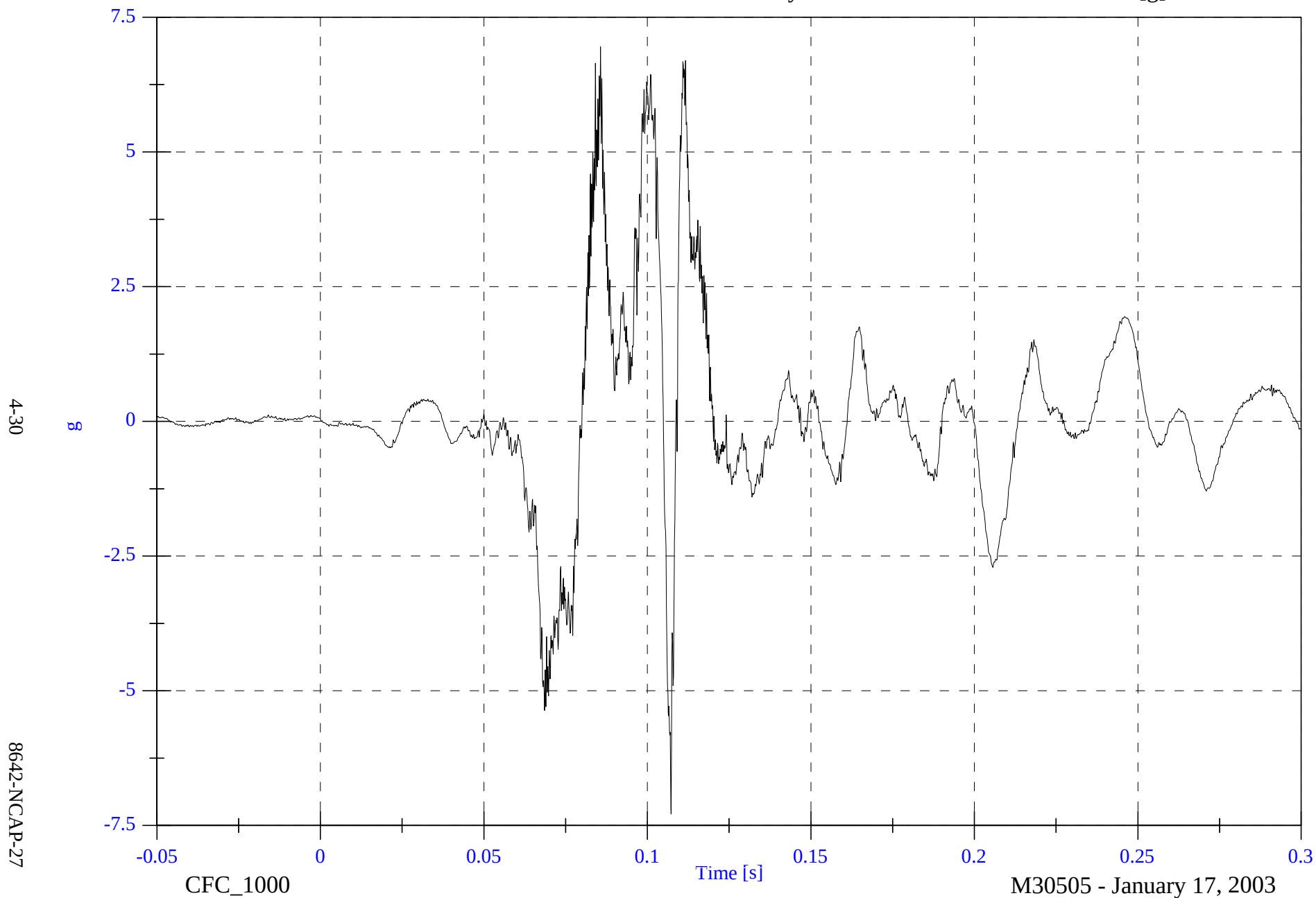


NCAP Test #5 - 2003 Hyundai Accent

Max: 7.0 [g] at 0.086 [s]

Min: -7.3 [g] at 0.107 [s]

V1P3 Pelvic y



NCAP Test #5 - 2003 Hyundai Accent

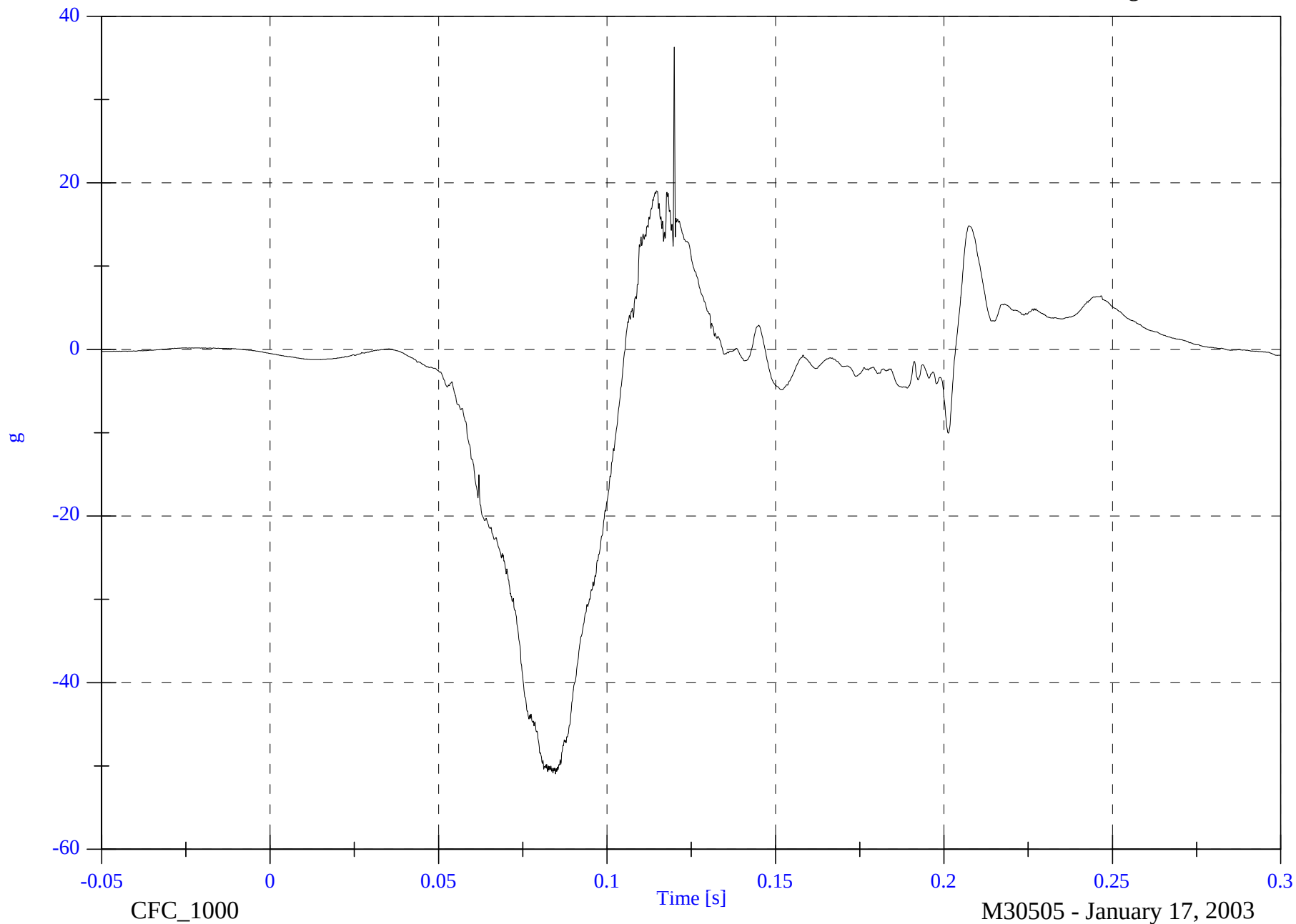
Max: 36.3 [g] at 0.120 [s]

Min: -51.0 [g] at 0.085 [s]

V1P3 Pelvic z

4-31

8642-NCAP-27

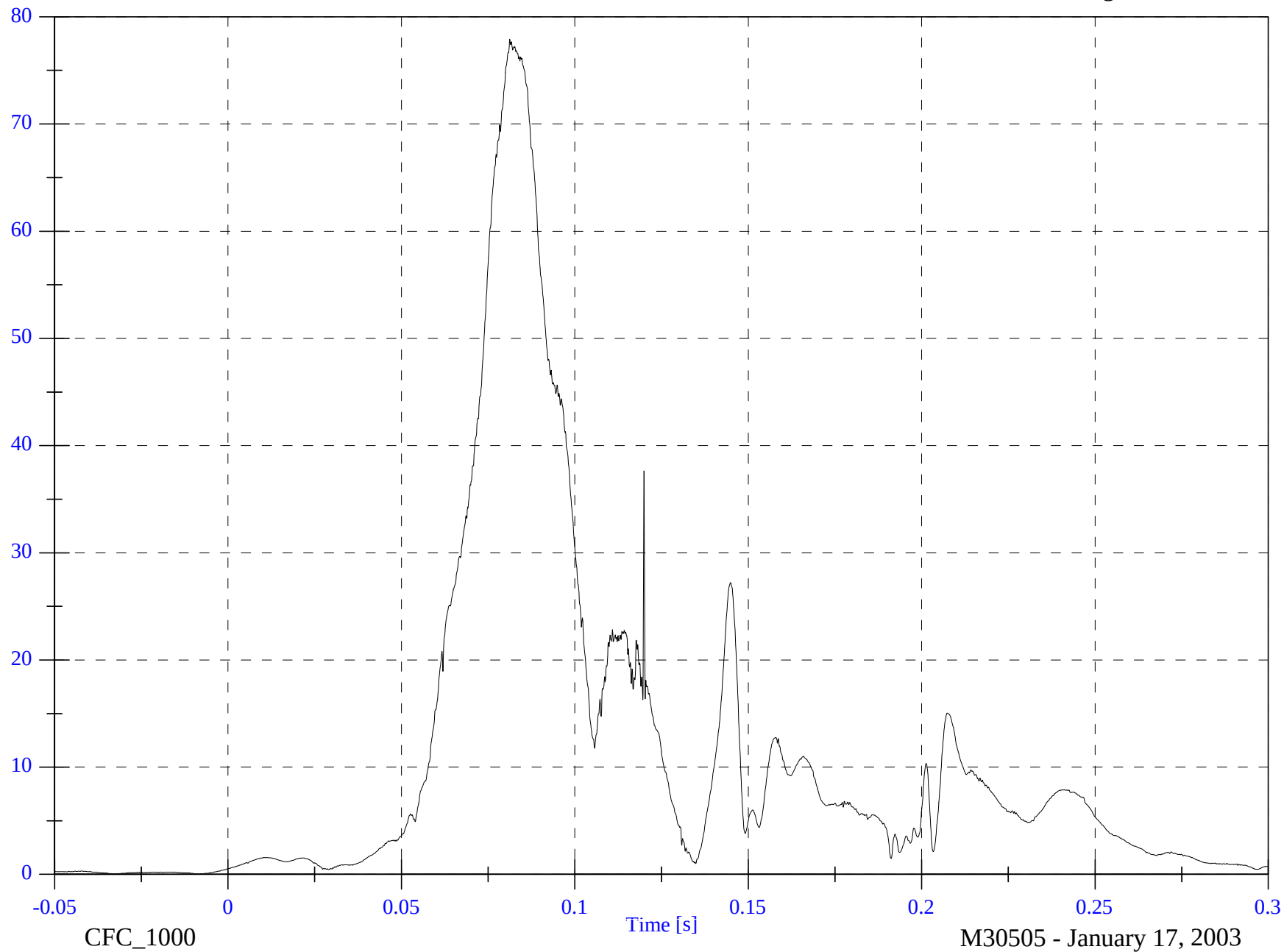


NCAP Test #5 - 2003 Hyundai Accent

V1P3 Pelvic Resultant

Max: 77.9 [g] at 0.081 [s]

Min: 0.0 [g] at -0.008 [s]



4-32

8642-NCAP-27

SECTION 5

CHILD DUMMY CALIBRATION INFORMATION

142 Head Drop

Part 572P Head Drop

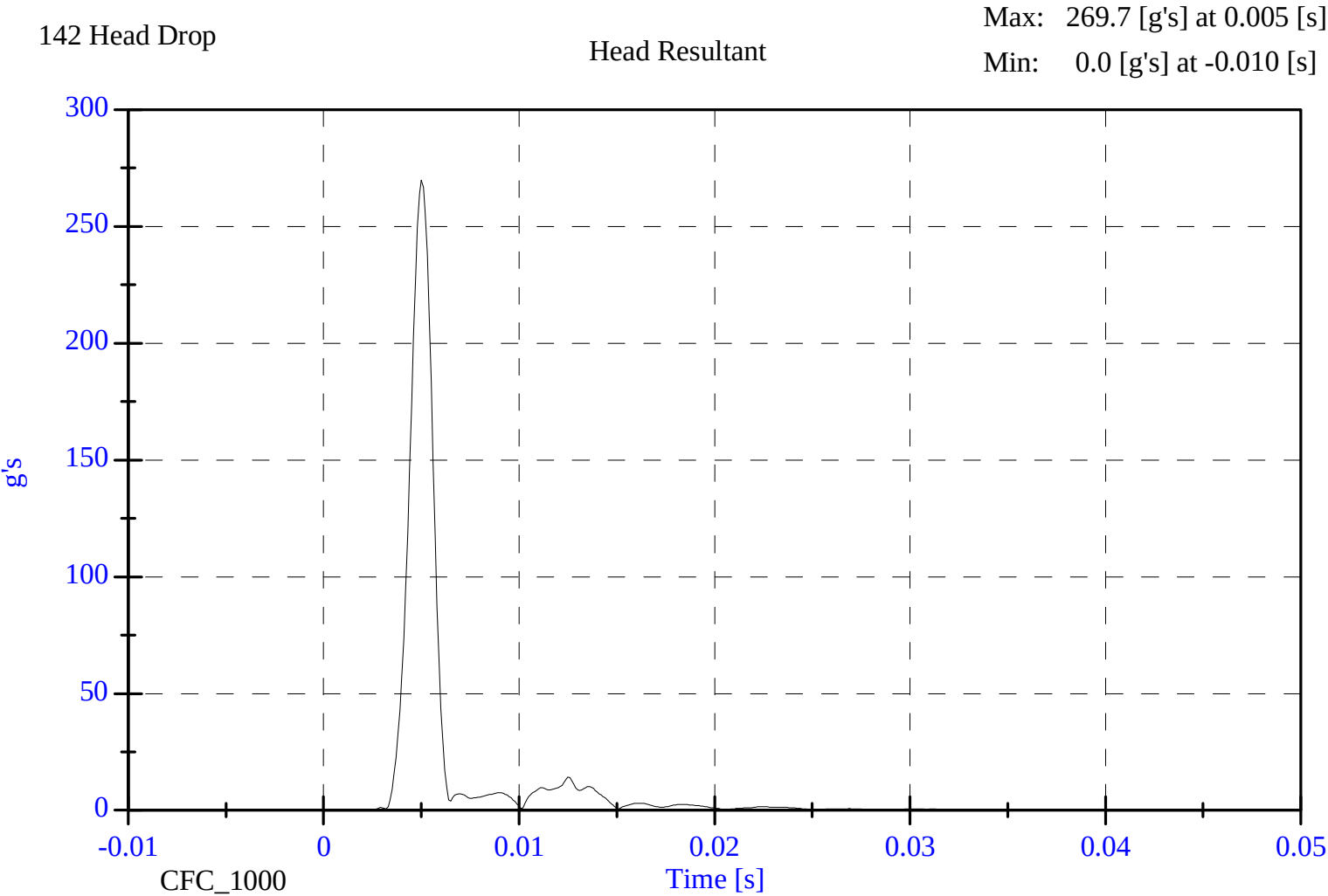
Calibration Date:11-15-02

Serial No:142

Work File:142H1 11-15-02

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

<u>TEST CONDITION</u>	<u>PARAMETERS</u>	<u>RESULTS</u>	<u>STATUS</u>
Lab Temperature:	66.0-78.0 F	69.0 F	Passed
Lab Humidity:	10-70 %	33.00 %	Passed
Peak Resultant Accel.:	250-280 Gs	269.74 Gs	Passed
Peak Lateral Accel.:	15 Gs Max	8.65 Gs	Passed
Curve PerCent NonModal:	< 10%	5.27 %	Passed



142 Chest Impact

Part 572P Thorax Impact

Calibration Date: 11-21-02

Serial No: 142

Work File: 142T 11-21-02

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

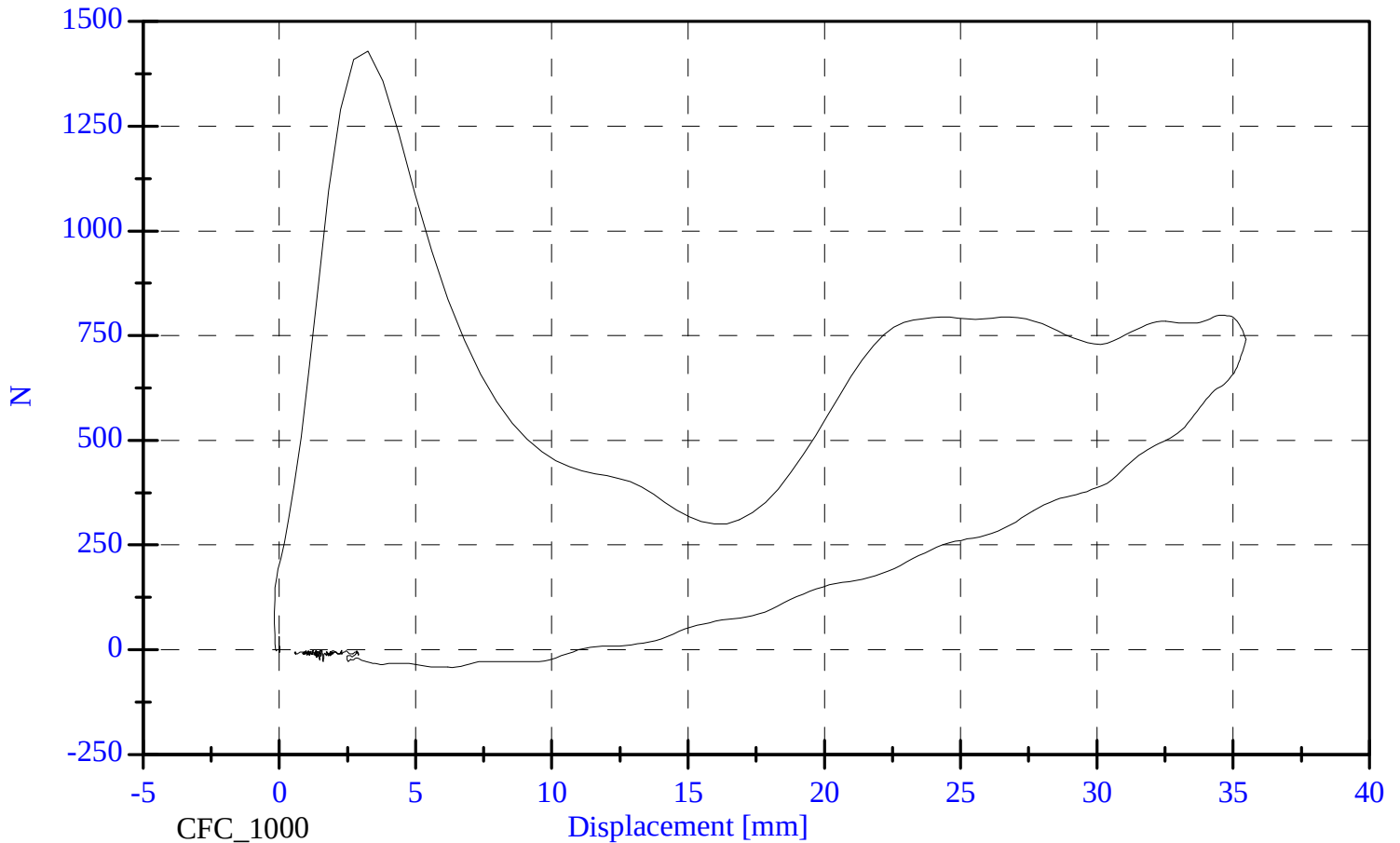
<u>TEST CONDITION</u>	<u>PARAMETERS</u>	<u>RESULTS</u>	<u>STATUS</u>
Lab Temperature:	20.6-22.2 C	21.1 C	Passed
Lab Humidity:	10-70 %	35.00 %	Passed
Pendulum Velocity:	5.90- 6.10 m/s	6.03 m/s	Passed
Maximum Deflection:	32.00-38.00 mm	35.46 mm	Passed
Maximum Res. Force:	680.00- 810.00 N	798.56 N	Passed
Internal Hysteresis:	65-85 %	75.17 %	Passed
Pass Sternum Force Criteria?:	860.00 N	798.56	Passed

142 Chest Impact

Probe Force vs. Displacement

Max: 1429.2 [N] at 3.251 [mm]

Min: -42.0 [N] at 6.333 [mm]



142FLX1 11-20-02.TXT

142 Neck Flex
Part 572P Neck Flexion Test
Part 572P Serial No: 142
Calibration Date: 11-20-02
Work File: 142Flx1 11-20-02

-----Neck Test Results-----

TEST CONDITION	PARAMETERS	RESULTS	STATUS
Lab Temperature:	20.6-22.2 C	21.11 C	Passed
Lab Humidity:	10-70 %	33.00 %	Passed
Test Pendulum Speed:	5.40- 5.60 m/s	5.55 m/s	Passed

-----Pendulum Pulse-----

Pulse at 10 ms:	2.00- 2.70 m/s	2.09 m/s	Passed
Pulse at 15 ms:	3.00- 4.00 m/s	3.13 m/s	Passed
Deceleration at 20 ms:	4.00- 5.10 m/s	4.33 m/s	Passed

-----D Plane Rotation-----

Maximum Rotation:	70.0-82.0 Deg	77.98 Deg	Passed
-------------------	---------------	-----------	--------

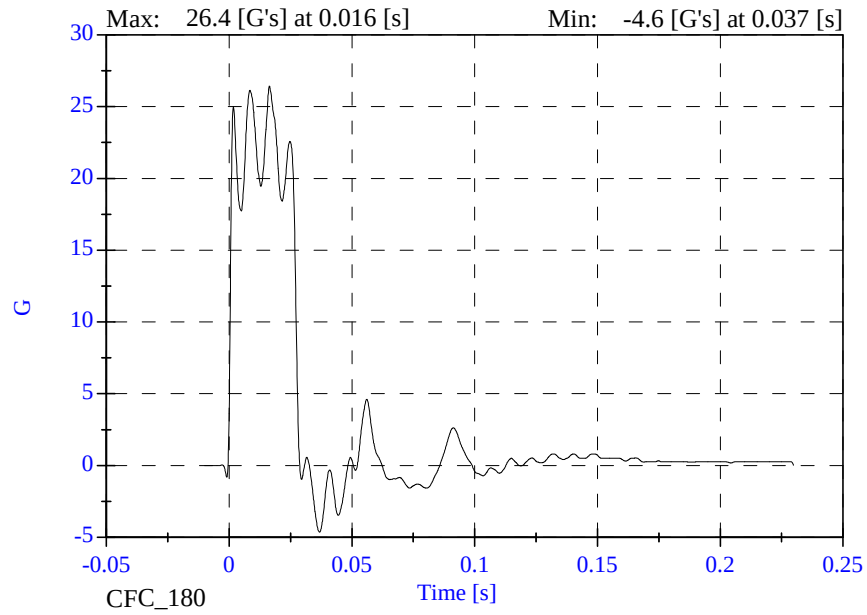
-----Moment About the Occipital Condyle-----

Max Occipital Moment:	42.00- 53.00 N-M	44.98 N-M	Passed
Occipital Moment Decay:	60.0-80.0 ms	71.10 ms	Passed

Certified By: B.Swiecicki Date: 11-20-02

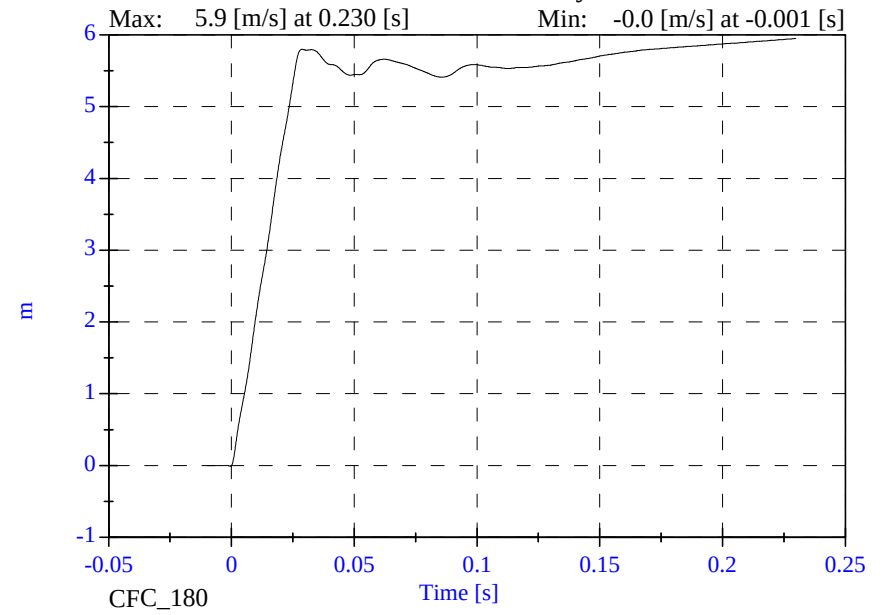
142 Neck Flex

Pendulum Acceleration

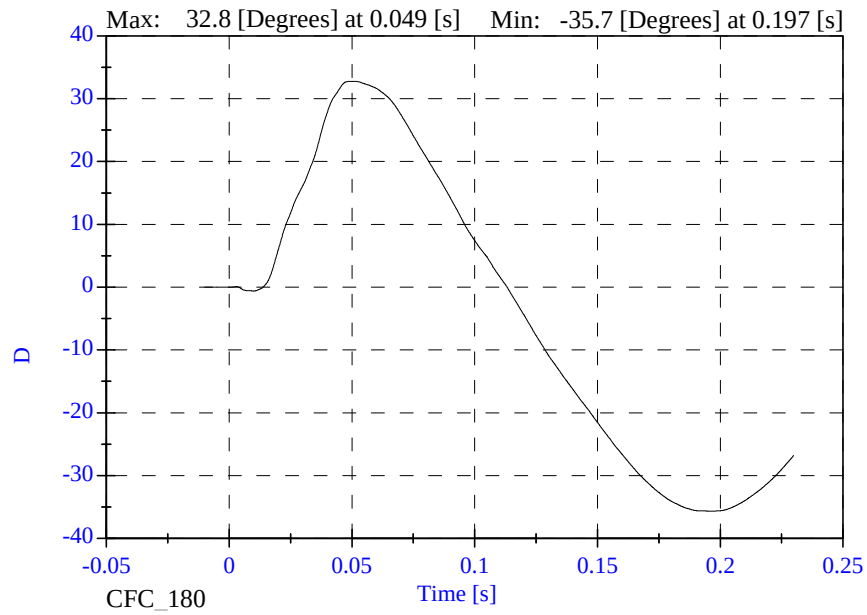


11-20-02

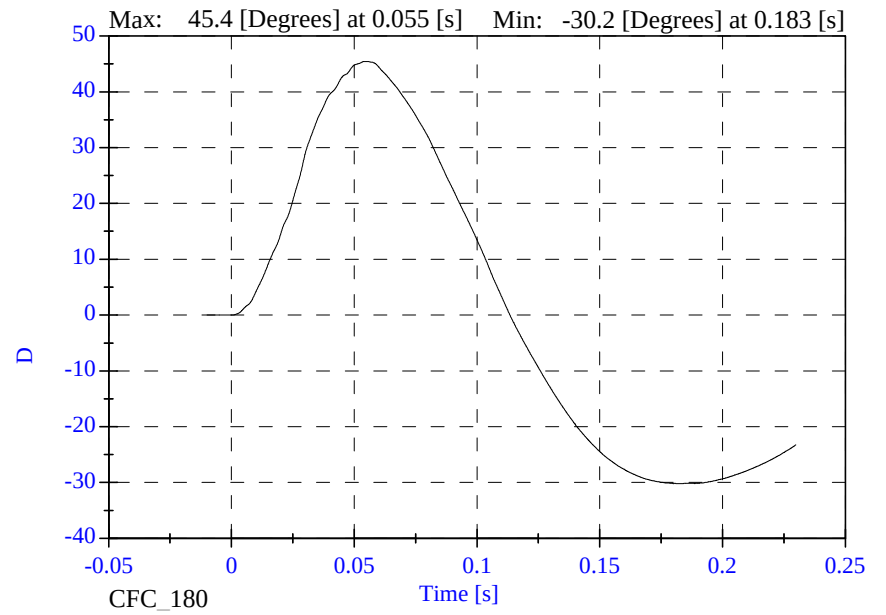
Pendulum Velocity



Head Rotation

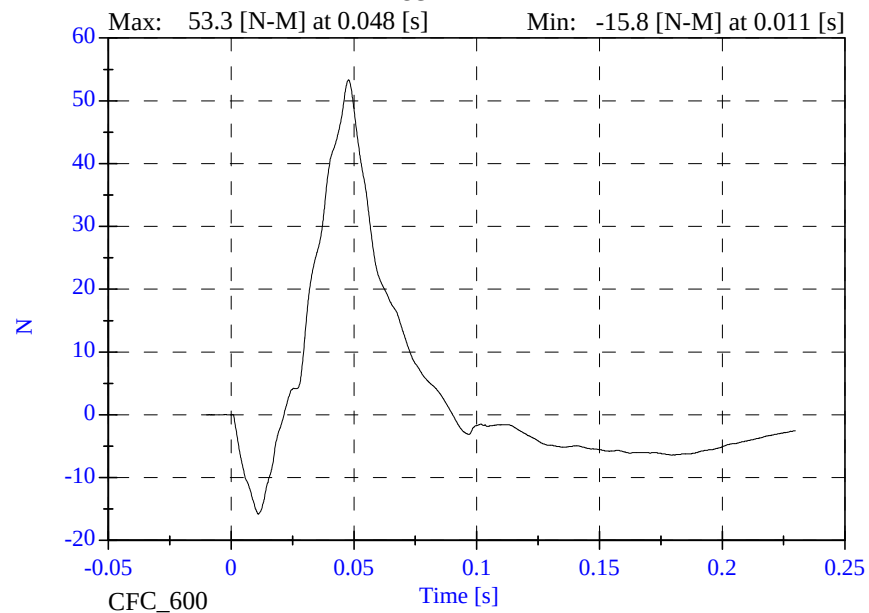


Arm Rotation



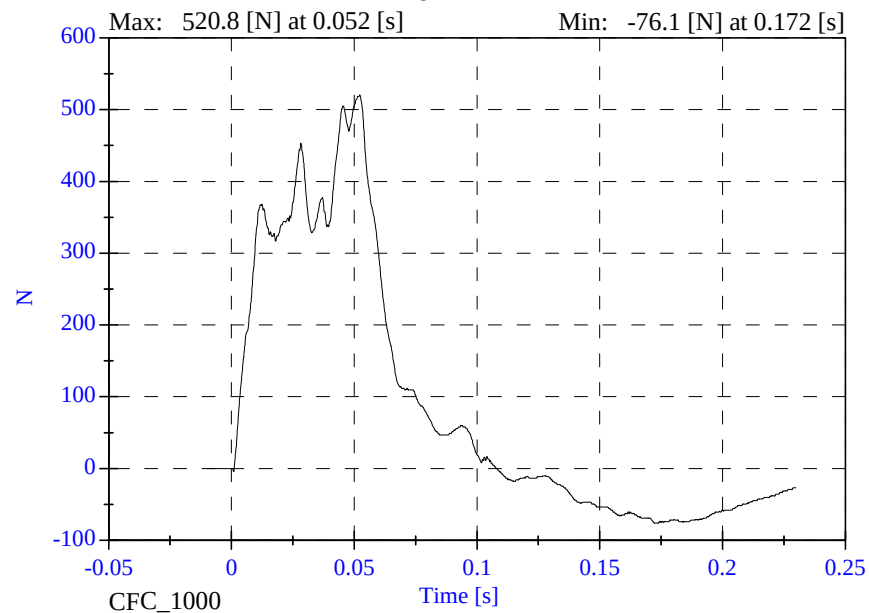
142 Neck Flex

Neck Moment Y

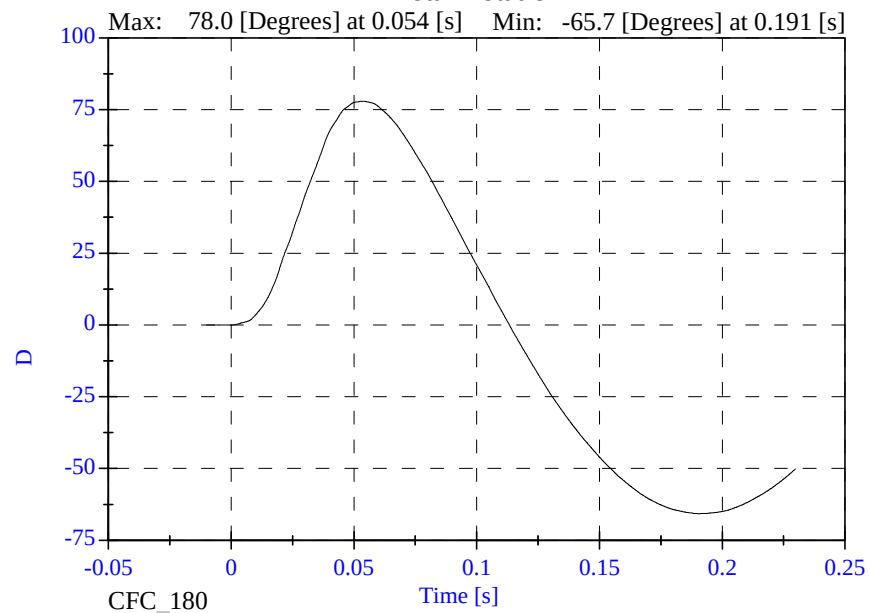


11-20-02

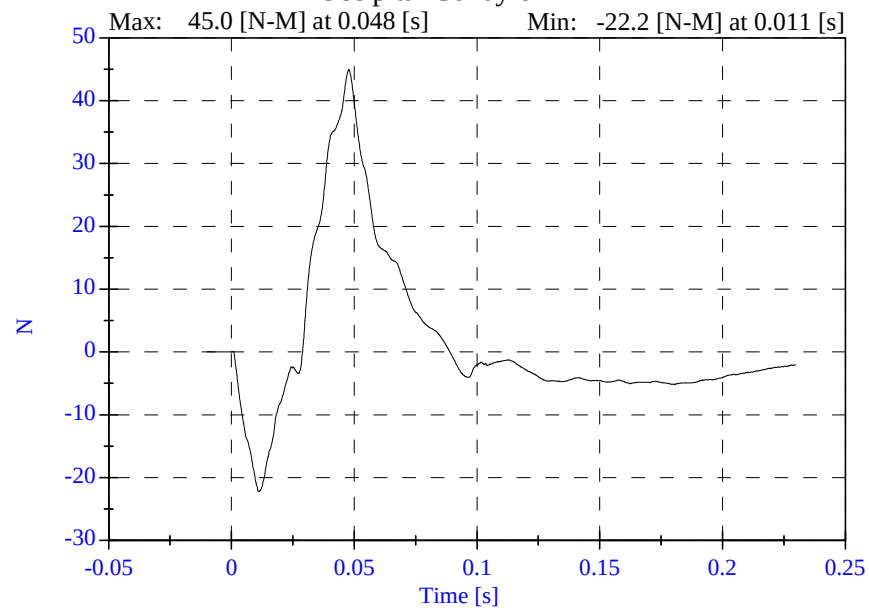
Neck Force X



Total Rotation



Occipital Condyle Moment



142 Neck Ext.
Part 572P Neck Extension Test
Part 572P Serial No: 142
Calibration Date: 11-20-02
Work File: 142Ext9 11-20-02

-----Neck Test Results-----

TEST CONDITION	PARAMETERS	RESULTS	STATUS
Lab Temperature:	20.6-22.2 C	21.11 F	Passed
Lab Humidity:	10-70 %	33.00 %	Passed
Test Pendulum Speed:	3.55- 3.75 m/s	3.66 m/s	Passed

-----Pendulum Pulse-----

Pulse at 6 ms:	1.00- 1.40 m/s	1.20 m/s	Passed
Pulse at 10 ms:	1.90- 2.50 m/s	2.12 m/s	Passed
Deceleration at 14 ms:	2.80- 3.50 m/s	2.83 m/s	Passed

-----D Plane Rotation-----

Maximum Rotation:	83.0-93.0 Deg	84.61 Deg	Passed
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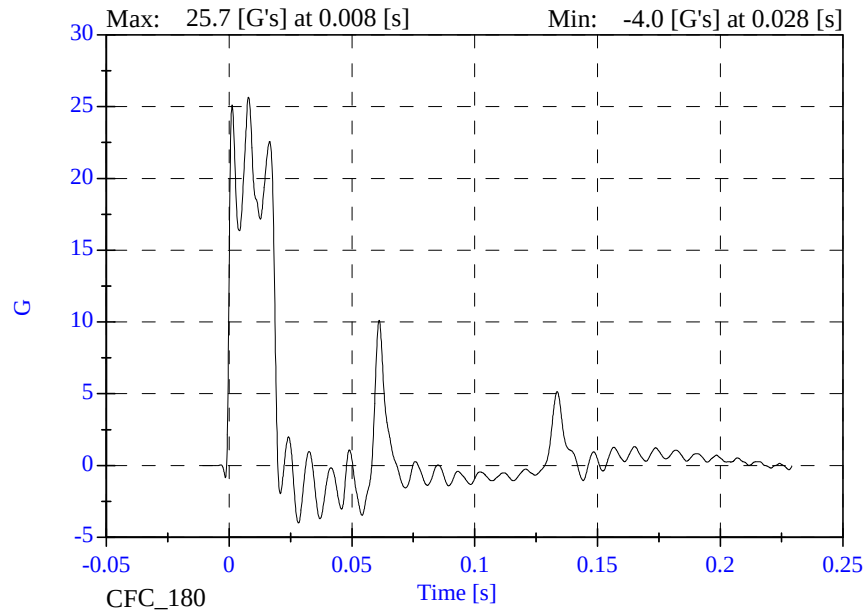
-----Moment About the Occipital Condyle-----

Max Occipital Moment:	-53.30--43.70 N-m	-49.03 N	Passed
Occipital Moment Decay:	60.0-80.0 ms	67.70 ms	Passed

Certified By: B.Swiecicki Date: 11-20-02

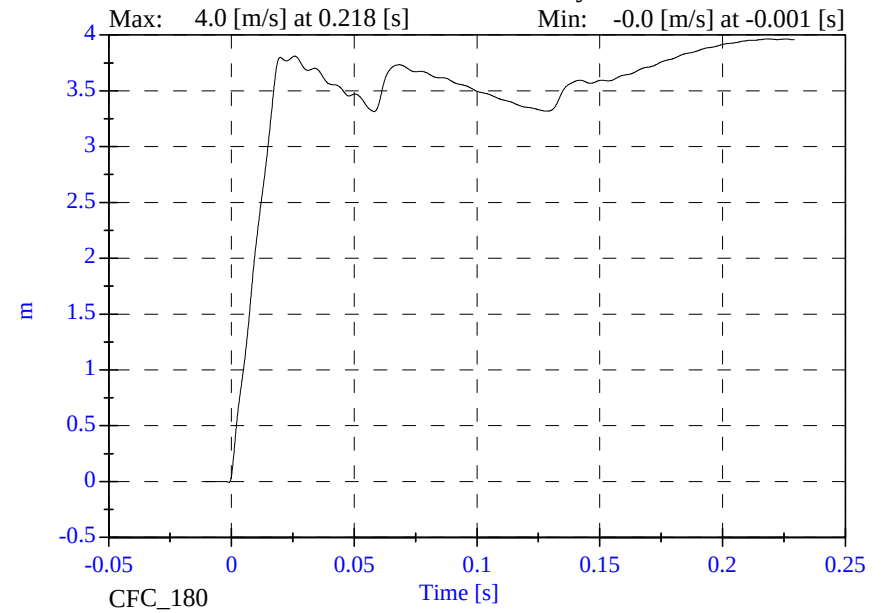
142 Neck Ext.

Pendulum Acceleration

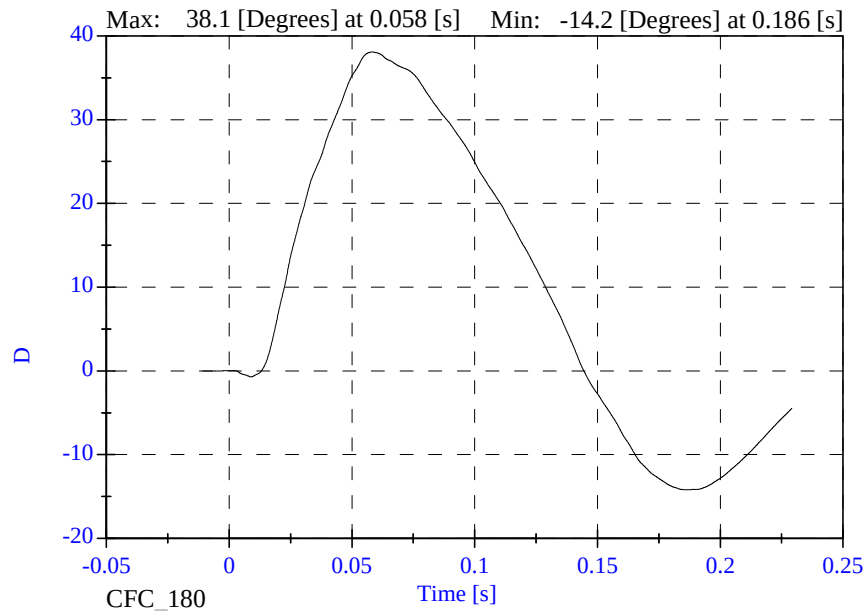


11-20-02

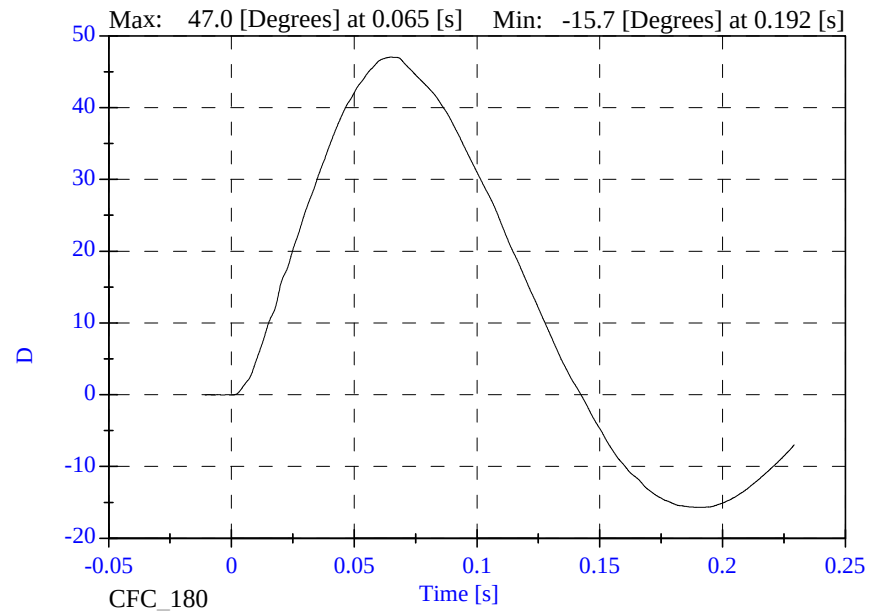
Pendulum Velocity



Head Rotation

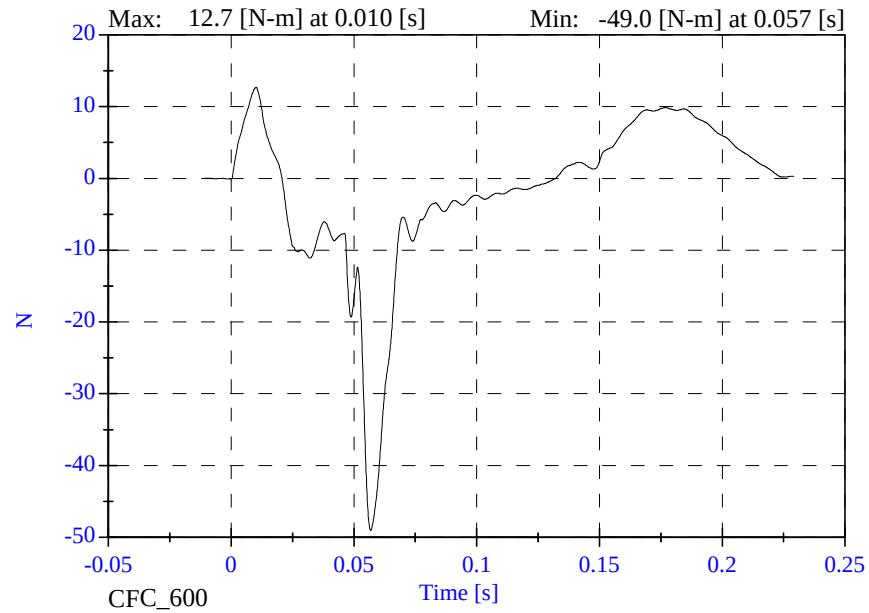


Arm Rotation



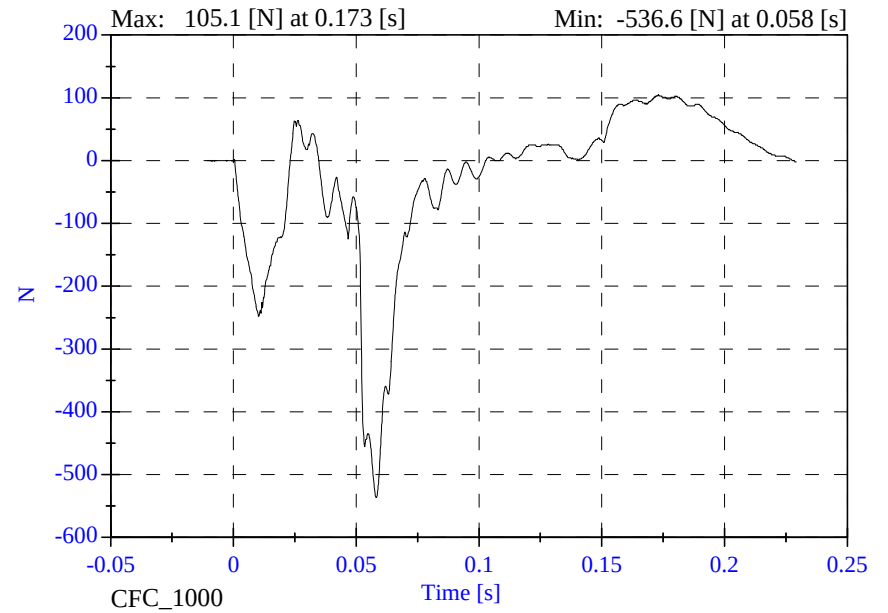
142 Neck Ext.

Neck Moment Y

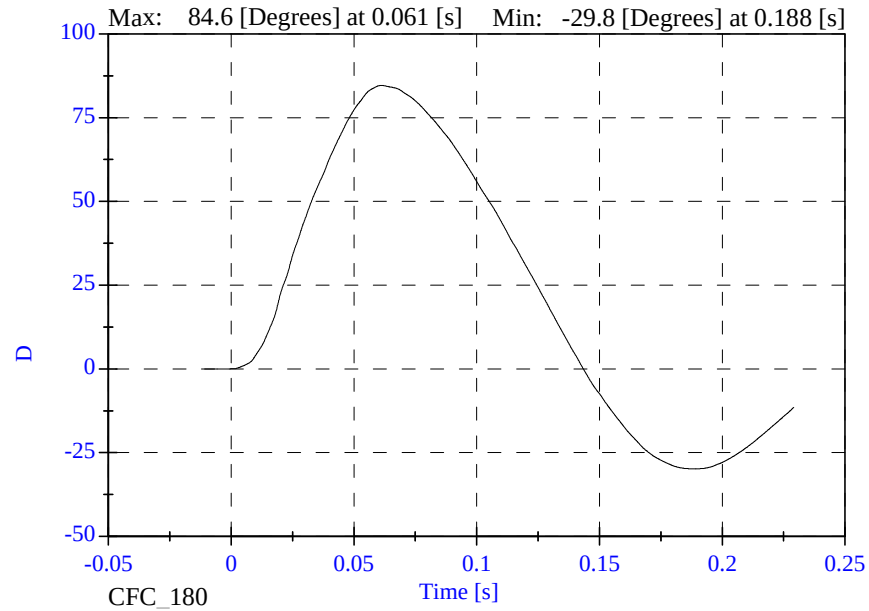


11-20-02

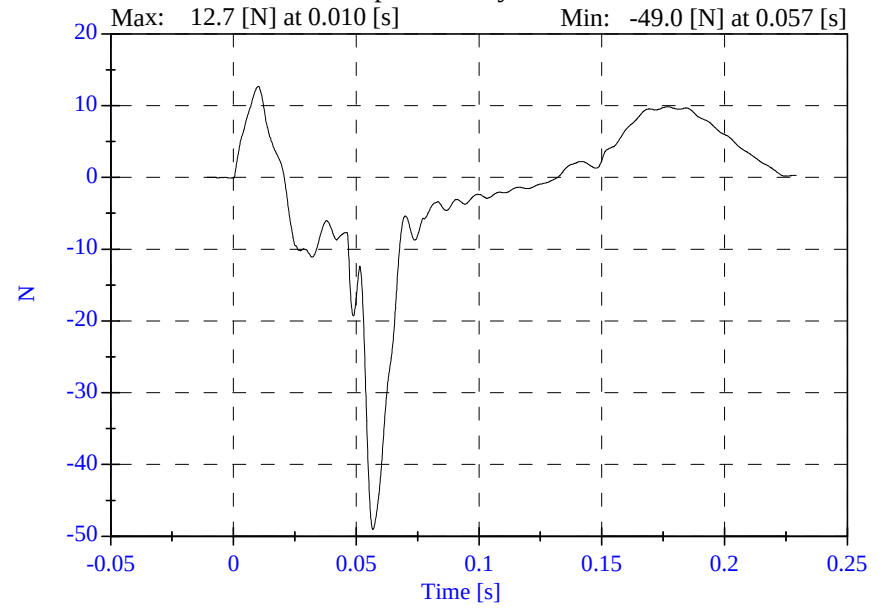
Neck Force X



Total Rotation



Occipital Condyle Moment



Spine_Flexion_test.txt

142 Lumbar Spine Flexion

Date: 11-21-02

Result: 45 degrees - 40.8 lbf

Certified By: B.Swiecicki Date: 11-21-02

SECTION 6

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

P572P INSTRUMENTATION

	POSITION #3 (RIGHT) SERIAL NO.: 142		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-99108-F29	ENTRAN	11/11/02
HEAD AY	AC-99102-F12	ENTRAN	11/11/02
HEAD AZ	AC-00L13-F03	ENTRAN	11/11/02
HEAD REAR AZ	AC-98G18-F18	ENTRAN	11/11/02
UPPER NECK FX	LC-213-FX	DENTON	10/14/02
UPPER NECK FY	LC-213-FY	DENTON	10/14/02
UPPER NECK FZ	LC-213-FZ	DENTON	10/14/02
UPPER NECK MX	LC-213-MX	DENTON	10/14/02
UPPER NECK MY	LC-213-MY	DENTON	10/14/02
UPPER NECK MZ	LC-213-MZ	DENTON	10/14/02
LOWER NECK FX	LC-214FX	DENTON	10/14/02
LOWER NECK FY	LC-214-FY	DENTON	10/14/02
LOWER NECK FZ	LC-214-FZ	DENTON	10/15/02
LOWER NECK MX	LC-214-MX	DENTON	10/15/02
LOWER NECK MY	LC-214-MY	DENTON	10/15/02
LOWER NECK MZ	LC-214-MZ	DENTON	10/15/02
CHEST AX	AC-99108-F30	ENTRAN	11/11/02
CHEST AY	AC-99108-F28	ENTRAN	11/11/02
CHEST AZ	AC-99H30-Z04	ENTRAN	11/11/02
CHEST DISPLACEMENT X	DS-142	SERVO	11/13/02
PELVIS AX	AC-99102-F06	ENTRAN	11/11/02
PELVIS AY	AC-99102-F15	ENTRAN	11/11/02
PELVIS AZ	AC-99G29-Q13	ENTRAN	11/11/02