

REPORT NUMBER: CAL-02-19

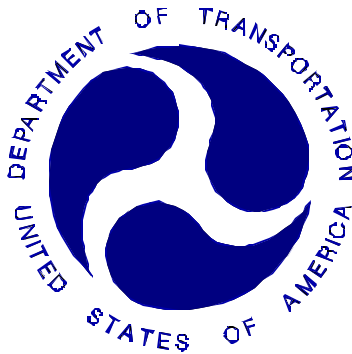
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

AUDI AG
2002 AUDI A4
4-DOOR SEDAN

NHTSA NUMBER: M25800

VERIDIAN TEST NUMBER: 8642-NCAP-19

VERIDIAN ENGINEERING
TRANSPORTATION SCIENCES CENTER
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June 5, 2002

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
Mail Code: NPS-10
400 Seventh Street, SW, Room No. 5313
Washington, DC 20590

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Date of Report Acceptance

COTR, New Car Assessment Program (NCAP)
NHTSA, Office of Crashworthiness Standards

Date of Report Acceptance

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. CAL-02-19		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of NEW CAR ASSESSMENT PROGRAM (NCAP) Testing of a 2002 Audi A4 4-Door Sedan NHTSA No. M25800				5. Report Date June 5, 2002	
				6. Performing Organization Code CAL	
7. Author(s) David J. Travale, Program Manager Patrick G. MacDiarmid, Jr., Project Engineer				8. Performing Organization Report No. 8642-NCAP-19	
9. Performing Organization Name and Address Veridian Engineering 4455 Genesee Street Buffalo, New York 14225				10. Work Unit No.	
				11. Contract or Grant No. DTNH22-01-D-32005	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards Mail Code: NPS-10 400 Seventh, SW, Room 5313 Washington, D.C. 20590				13. Type of Report and Period Covered Final Report June 2002	
				14. Sponsoring Agency Code NPS-10	
15. Supplementary Notes					
16. Abstract A frontal load cell barrier test of a 2002 Audi A4 4-Door Sedan was performed at Veridian Engineering crash test facility in Buffalo, New York, on June 5, 2002. The impact velocity was 56.33 kph and the temperature at the barrier face was 21°C. The maximum post-test vehicle crush was 514 mm. The test vehicle was equipped with 3-point restraint systems with torso belt pretensioners and force load limiters, knee bolsters, adjustable head restraints 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. Note: P1 Chest displacement data is not accurate – The sensor opened during the event. P2 Clip was calculated using the P2 Chest Redundant Y accelerometer.					
ATD Position	HIC	Clip (g's)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)
Driver (061)	574.9	50.5	*	5247.1	4086.9
Passenger (064)	681.1	51.4**	30.7	3135.3	2335.6
17. Key Words 56 kph Frontal Barrier Impact test New Car Assessment Program (NCAP)			18. Distribution Statement <u>Copies of this report are available from:</u> NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, DC 20590		
19. Security Classif. (of this report) UNCLASSIFIED		20. Security Classif. (of this page) UNCLASSIFIED		21. No. of Pages 292	22. Price

*Sensor opened during the event – data is not accurate

** Calculated using redundant chest y

Form DOT F1700.7 (8-69)

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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.33 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-01-D-32005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 56.33 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 56.33 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 14 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. The driver (position 1) ATD (Serial No. 061) and the right-front passenger (position 2) ATD (Serial No.064) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 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 2002 Audi A4 4-Door Sedan at a velocity of 56.33 kph. The test was performed at Veridian Engineering on June 5, 2002. 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	574.9	50.5	*	5247.1	4086.9	***	***
Passenger ATD	681.1	51.4**	30.7	3135.3	2335.6	***	***

NOTE:

* Sensor opened during the event – data is not accurate.

** Calculated using redundant chest Y

*** Not used to prevent seatbelt pretensioner interference.

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 514 mm and both the driver and passenger side doors remained closed and latched during the impact event and were operable without the use of tools after the impact.

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

The 2002 Audi A4 4-Door Sedan did not exceed the requirements of FMVSS 208, FMVSS 212, FMVSS 219, and FMVSS 301. Data pertaining to these standards are presented in the data sheets.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No.:	<u>M25800</u>	Test Mode:	<u>56.3 kph Frontal Barrier</u>
Test Date:	<u>June 5, 2002</u>	Time:	<u>11:35</u> Temperature: <u>21</u> °C
Vehicle Make/Model/Body Style:	<u>2002 Audi A4 4-Door Sedan</u>		
Vehicle Test Weight:	<u>1820.5</u>	kg	
Vehicle/Barrier Impact Angle:	<u>0</u>	°	
Impact Velocity:	<u>56.33</u>	kph	
Maximum Static Crush:	<u>514</u>	mm	
Vehicle Rebound:	<u>301</u>	mm	
<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Type:	<u>572E</u>	<u>572E</u>	
Restraint System:	<u>Seatbelt with pretensioner and load limiter, airbag, knee bolster and adjustable head restraint</u>	<u>Seatbelt with pretensioner and load limiter, airbag, knee bolster and adjustable head restraint</u>	
Number of Data Channels:	<u>139</u>		
Number of Cameras:	<u>1</u>	Real Time	
	<u>14</u>	High Speed	
<u>DOOR OPENING DATA:</u>	<u>Closed, latched and operable without tools</u> - Left Front		
	<u>Closed, latched and operable without tools</u> - Right Front		
Front Seat(s) Data:	<u>DRIVER</u>	<u>PASSENGER</u>	
Seat Track Failure: (mm of shift)	<u>93 (left track)</u>	<u>7</u>	
Seat Back Failure:	<u>None</u>	<u>None</u>	
<u>VISIBLE DUMMY CONTACT POINTS:</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Head:	<u>Face to the center of the airbag; back of the head to the left of center of the headrest</u>	<u>Face to the center of the airbag; The right side of the top of the head to the side header</u>	
Abdomen:	<u>None</u>	<u>None</u>	
Chest:	<u>Airbag</u>	<u>Airbag</u>	
Knees:	<u>Knee Bolster</u>	<u>Knee Bolster</u>	

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2002 Audi A4 4-Door Sedan

NHTSA No. : M25800 ; VIN: WAULC68E72A291694 ; Color: Silver

Engine Data: 4 cylinders; - CID; 1.8 Liters; - cc

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

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

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

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

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

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

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

Date Received: May 28, 2002 ; Odometer Reading 464 km

Selling Dealer: Schmitt's Garage, Inc.

& Address: 5255 Genesee Street Bowmansville, NY 14026

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Audi AG

Date of Manufacture 4/02

GVWR: 2085 kg; GAWR: 1050 kg FRONT; 1050 kg REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load: 300 kpa FRONT

300 kpa REAR

Recommended Tire Size: 205/65R15

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

Size of Tires on Test Vehicle: 205/65R15 ; Manufacturer: Pirelli

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) = 520 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 179.8 kg (136.1 kg maximum)

*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>445.5</u>	kg	Right Rear =	<u>323.0</u>	kg
Left Front =	<u>444.5</u>	kg	Left Rear =	<u>328.0</u>	kg
TOTAL FRONT =	<u>890.0</u>	kg	TOTAL REAR =	<u>651.0</u>	kg
TOTAL DELIVERED WEIGHT =	<u>1541.0</u>	kg			
% of Total Front of Vehicle Weight =	<u>57.8%</u>		% of Total Rear Weight =	<u>42.2%</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW) =	<u>1541.0</u>	kg
Rated Cargo/Luggage Weight (RCLW) =	<u>136.1</u>	kg (136.1 kg maximum)
Weight of 2 p.572 Dummies @ 76 each =	<u>152</u>	kg
TARGET TEST WEIGHT =	<u>1829.1</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 127.5 KG OF CARGO WEIGHT:

Right Front =	<u>478.0</u>	kg	Right Rear =	<u>423.5</u>	kg
Left Front =	<u>485.5</u>	kg	Left Rear =	<u>433.5</u>	kg
TOTAL FRONT =	<u>963.5</u>	kg	TOTAL REAR =	<u>857.0</u>	kg
TOTAL TEST WEIGHT =	<u>1820.5</u>	kg			
% of Total Front Weight =	<u>52.9%</u>	%	% of Total Rear Weight =	<u>47.1%</u>	%
Weight of Ballast Secured in Vehicle Trunk Area =	<u>41</u>	kg			
Vehicle Components Removed for Weight Reduction:	<u>None</u>				

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED:	RF	<u>695</u>	LF	<u>695</u>	RR	<u>702</u>	LR	<u>700</u>
FULLY LOADED:	RF	<u>684</u>	LF	<u>685</u>	RR	<u>667</u>	LR	<u>665</u>
AS TESTED:	RF	<u>690</u>	LF	<u>686</u>	RR	<u>668</u>	LR	<u>665</u>
Vehicle's Wheel Base:		<u>2645</u>	mm					
Location of Vehicle's C.G.:		<u>1245</u>	mm rearward of front wheel center.					

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual =	<u>66</u>	liters
Usable Capacity Figure Furnished by COTR =	<u>66</u>	liters
Test Volume Range (92 to 94% of Usable Capacity) =	<u>60.72</u>	to <u>62.04</u> liters
ACTUAL TEST VOLUME=	<u>61.1</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>
Details of Fuel System: The filler neck is located on the right side of the vehicle ahead of the rear axle; The fuel tank is located in the center of the vehicle ahead of the rear axle; The fuel lines run along the center tunnel.		

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°
Test Date: June 5, 2002 Time: 11:35 Temperature: 21 °C
Vehicle NHTSA No.: M25800
Required Impact Velocity Range: 55.5 to 57.1 kph

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

Trap No. 1 = 56.33 kph; Trap No. 2 = 56.33 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>4501</u>	; C/L =	<u>4571</u>	; Right =	<u>4493</u>
Post-Test	Left =	<u>4106</u>	; C/L =	<u>4057</u>	; Right =	<u>4067</u>
Crush	Left =	<u>395</u>	; C/L =	<u>514</u>	; Right =	<u>426</u>
AVERAGE	=	<u>445</u>	mm			

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

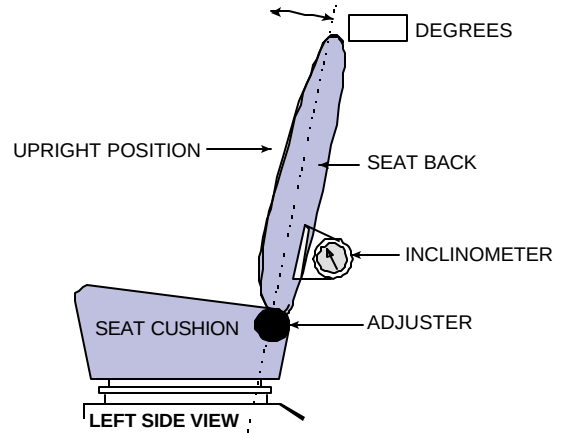
	Left =	<u>277</u>	; C/L =	<u>316</u>	; Right =	<u>309</u>
AVERAGE	=	<u>301</u>	mm			

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2002 Vehicle Model: Audi A4 Body Style : 4-Door Sedan

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



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat: 16

Measurement instructions: Using a straight edge along the seatback, recline seat until a 16 angle from the sill is reached.

Seat back angle for passenger's seat: 16

Measurement instructions: Same as the driver's seat

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: The seat was placed in mid-position (120 mm of 240 mm total travel)

Positioning of the passenger's seat: The seat was placed in mid-position (95 mm of 190 mm total travel)

3. Fuel Tank Capacity Data

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 66 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 = 66 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 60.7 liters

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

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

When the ignition is turned to the "On" position, the pump runs to pressurize the system and shuts off. The fuel pump run continuously only when the engine is running.

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

4. STEERING COLUMN ADJUSTMENTS:

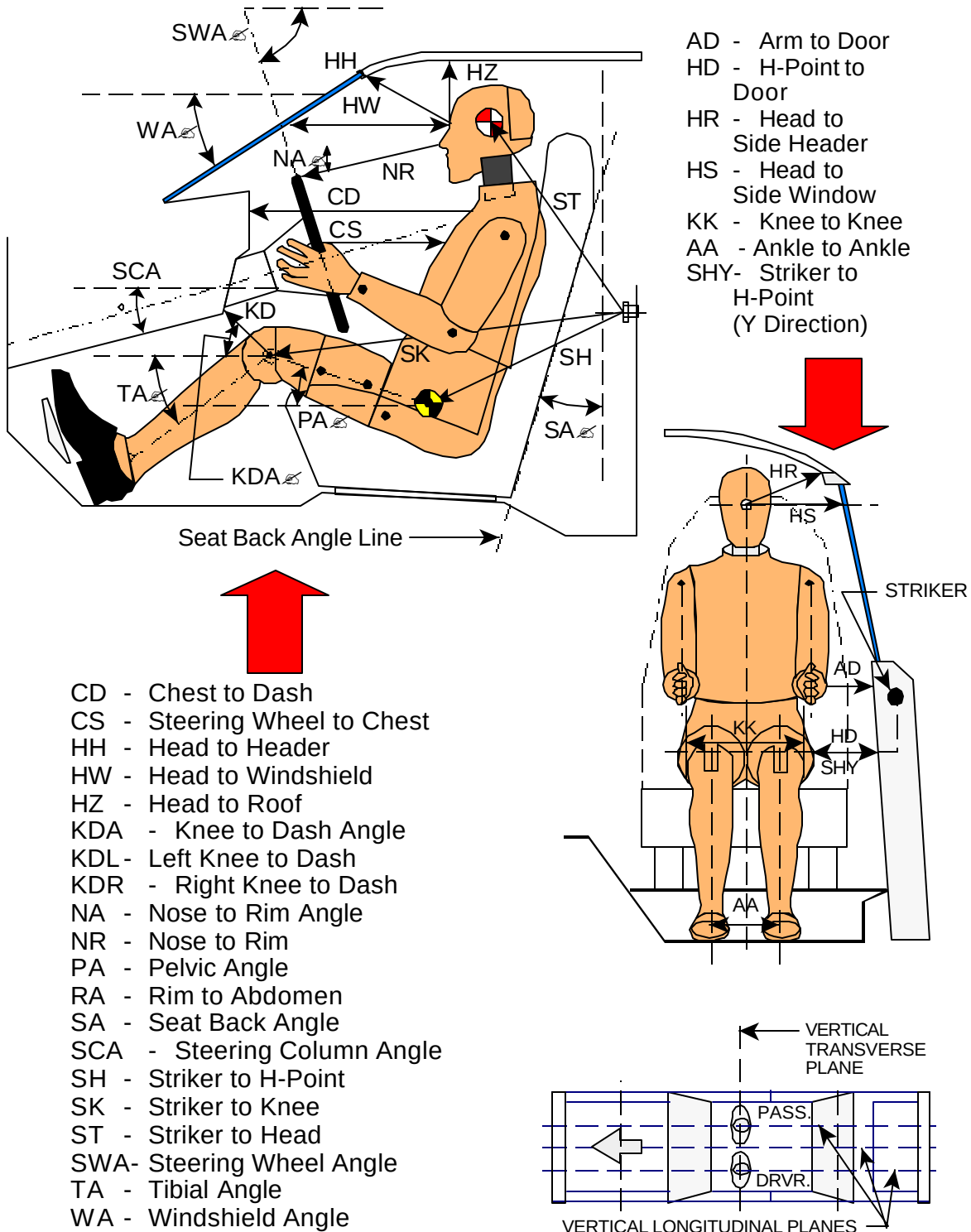
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine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

Operational Instructions: Steering wheel was adjusted to mid tilt and telescope position.

5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: Full Up

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



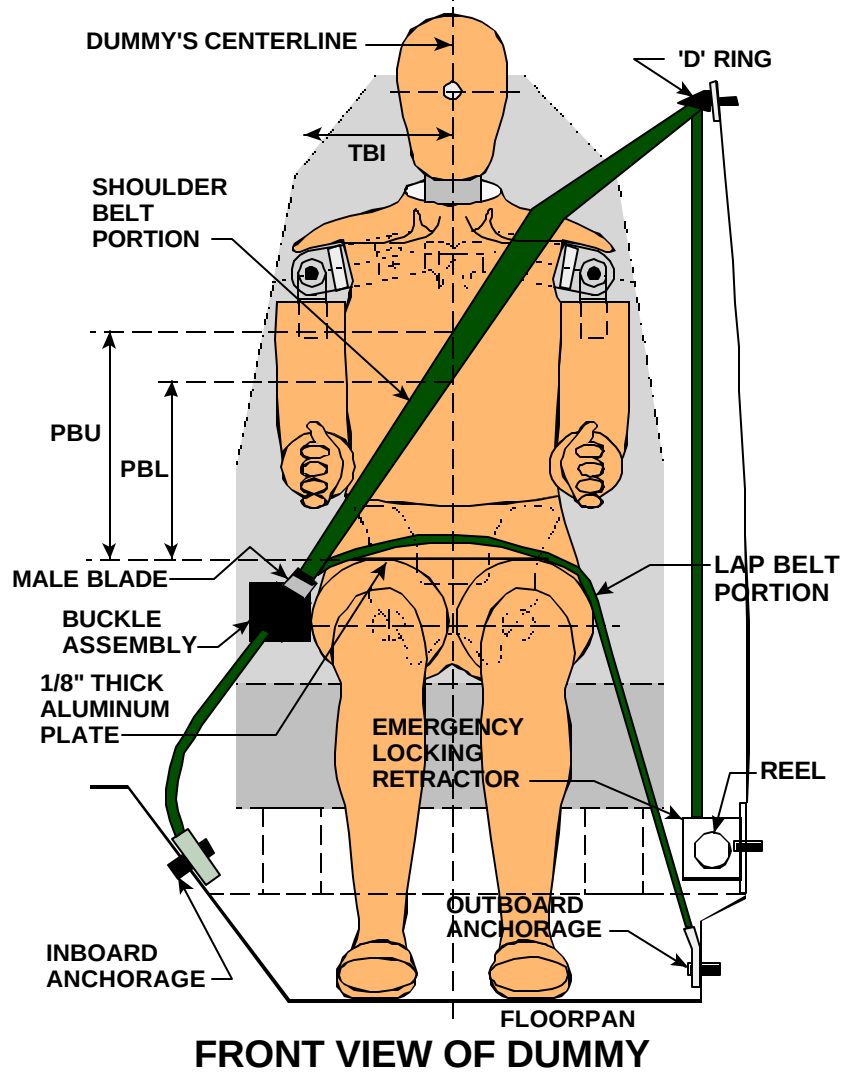
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #061)			PASS. (Serial #064)		
WA ⁰	25.3 deg.			N/A		
SWA ⁰	67.9deg.			N/A		
SCA ⁰	22.1 deg.			N/A		
SA ⁰	16 deg			16 deg.		
HZ	200			203		
HH	405			370		
HW	697			643		
HR	202			214		
NR	427	Angle	-5 deg.	N/A		
CD	541			515		
CS	345			N/A		
RA	233			N/A		
KDL	190	Angle (KDA)	32 deg.	183		
KDR	196			187	Angle (KDA)	38 deg.
PA ⁰	25.0 deg.			24.3 deg.		
TA ⁰	40.0 deg.			40.0 deg.		
KK	315			250		
AA	290			243		
ST	455	Angle	4 deg.	456	Angle	7 deg.
SK	550	Angle	97 deg.	547	Angle	100 deg.
SH	237	Angle	140 deg.	232	Angle	150 deg.
SHY	257			255		
HS	317			326		
HD	137			146		
AD	130			93		

Dimensions in millimeters

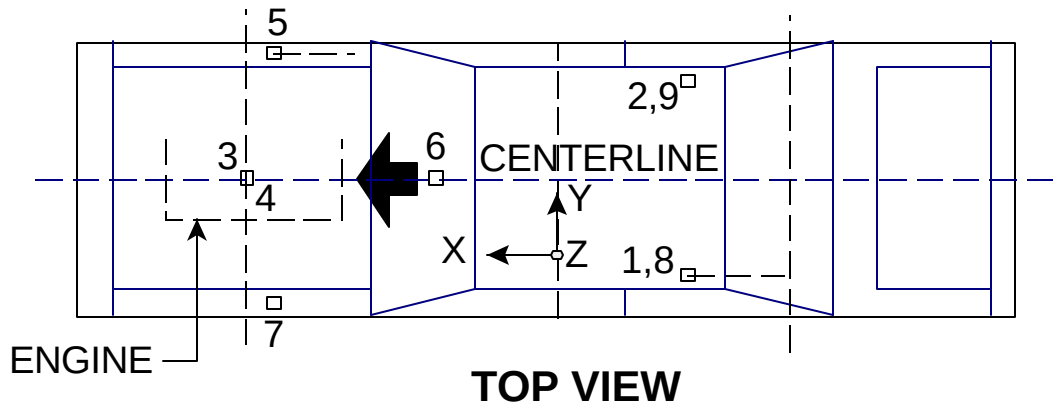
DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

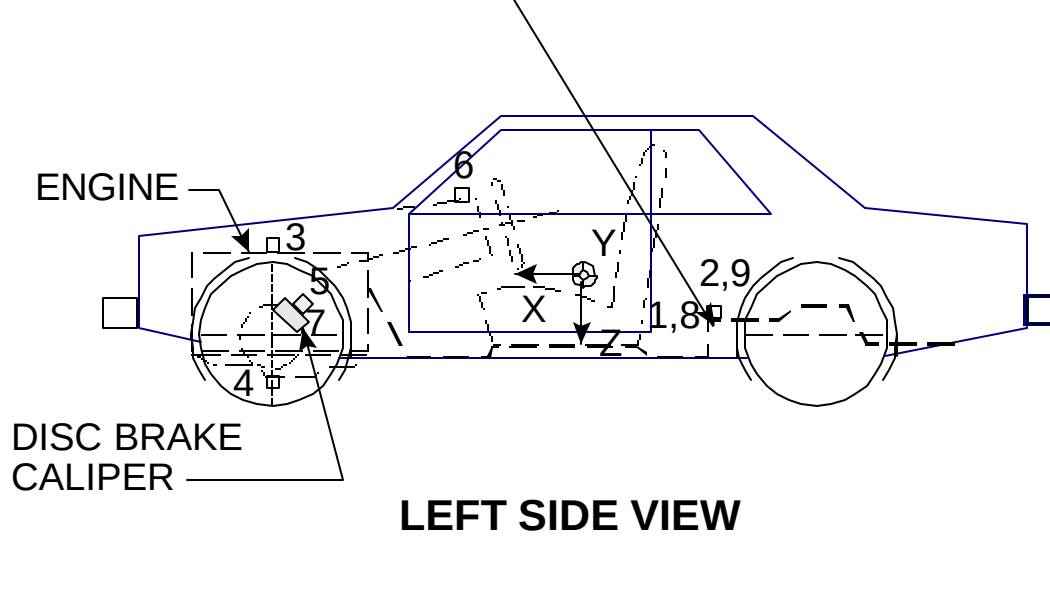


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	330	330
PBL-- Top surface of alum. plate to belt lower edge	230	230
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

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	1793	-685	-336
2	Right Rear Seat Cross Member X	1789	684	-349
3	Top of Engine Block	3809	-166	-816
4	Bottom of Engine	3247	200	-185
5	Disc Brake Caliper @ Right Side	3516	797	-355
6	Instrument Panel	2857	-13	-670
7	Disc Brake Caliper @Left Side	3513	-805	-291
8	Left Rear Seat Cross Member Z	1793	-685	-336
9	Right Rear Seat Cross Member Z	1789	684	-349

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Left Rear Seat Cross Member X	3.0	122.1	-36.6	48.0
2	Right Rear Seat Cross Member X	1.9	126.1	-39.5	39.6
3	Top of Engine Block	*	*	*	*
4	Bottom of Engine	53.2	27.8	-178.8	20.0
5	Disc Brake Caliper @ Right Side	9.9	64.6	-66.9	31.4
6	Instrument Panel	19.2	53.9	-73.4	42.8
7	Disc Brake Caliper @Left Side	46.1	59.5	-99.0	41.4
8	Left Rear Seat Cross Member Z	4.9	34.6	-5.3	39.5
9	Right Rear Seat Cross Member Z	**	**	**	**

* Data is not accurate – Wire cut at 61 ms; ** Data is not accurate – Sensor opened during the event

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2002 Audi A4 4-Door Sedan

NHTSA Test No.: M25800 Test Date: June 5, 2002

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head 9 Array X Arm Y	g	14.9	68.0	-5.7	54.2	9.8	81.8	-6.4	238.1
Head 9 Array X Arm Z	g	19.1	48.0	-24.9	89.0	30.6	55.9	-6.4	96.2
Head 9 Array Y Arm X	g	12.9	193.1	-58.1	71.4	20.8	238.5	-66.6	74.2
Head 9 Array Y Arm Z	g	19.3	47.0	-18.9	89.2	25.3	54.3	-7.2	95.8
Head 9 Array Z Arm X	g	16.8	189.7	-63.8	66.8	27.4	237.8	-60.8	76.7
Head 9 Array Z Arm Y	g	19.3	67.7	-6.3	92.6	12.3	82.0	-9.7	238.4
Head X	g	10.7	211.4	-61.9	70.9	22.3	237.8	-64.4	75.5
Head Y	g	28.7	71.3	-7.9	90.4	8.6	87.2	-7.6	238.9
Head Z	g	53.4	71.5	-21.0	90.3	24.1	54.6	-1.2	101.7
Head Resultant	g	70.7	71.6	0.0	-49.0	65.4	75.5	0.0	-21.2
Redundant Head X	g	36.2	71.3	-63.2	70.9	22.0	237.9	-62.7	76.5
Redundant Head Y	g	15.5	71.0	-39.8	71.4	9.4	84.9	-7.7	238.9
Redundant Head Z	g	28.1	71.9	-40.1	71.4	24.7	54.1	-1.1	12.4
Redundant Head Resultant	g	65.1	72.0	0.0	-18.7	64.0	77.2	0.0	-21.6
Upper Neck Fx	N	1015.3	66.0	-229.2	38.5	471.2	68.4	-405.4	111.4
Upper Neck Fy	N	81.7	54.7	-346.8	85.4	288.2	42.8	-198.3	132.1
Upper Neck Fz	N	1103.0	47.1	-334.6	91.0	1490.6	54.6	-398.1	242.6
Upper Neck F Resultant	N	1333.6	65.9	1.5	-4.7	1502.0	54.6	0.4	-22.3
Upper Neck Mx	N-m	25.2	64.8	-7.7	103.2	18.0	96.2	-14.8	135.8
Upper Neck My	N-m	52.4	65.9	-20.2	105.4	36.9	120.1	-28.4	253.4
Upper Neck Mz	N-m	6.3	67.6	-3.7	215.0	4.6	110.8	-6.3	56.6
Upper Neck M Resultant	N-m	58.0	64.8	0.0	11.6	39.0	121.7	0.0	-33.3
Chest X	g	6.4	169.3	-50.2	76.2	4.6	233.9	-53.9	69.0
Chest Y	g	10.1	78.9	-4.5	16.8	*	*	*	*
Chest Z	g	12.6	41.7	-11.7	90.3	19.6	41.6	-6.8	102.0
Chest Resultant	g	51.1	76.2	0.1	-45.0	537.1	42.9	0.1	-2.6

* Data is not accurate – Sensor opened during the event.

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

Vehicle Year/Make/Model/Body Style: 2002 Audi A4 4-Door Sedan

NHTSA Test No.: M25800 Test Date: June 5, 2002

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Redundant Chest X	g	6.3	169.5	-50.6	76.3	4.6	234.2	-54.2	69.0
Redundant Chest Y	g	9.9	75.5	-4.5	16.8	4.4	66.6	-10.2	86.8
Redundant Chest Z	g	12.3	41.4	-11.3	90.2	19.3	41.6	-6.5	102.0
Redundant Chest Resultant	g	51.5	76.3	0.1	-41.8	54.5	69.0	0.1	-40.4
Chest Displacement	mm	*	*	*	*	0.0	-8.3	-30.7	60.6
Pelvic X	g	2.9	127.1	-70.1	52.0	2.7	88.1	-69.3	49.6
Pelvic Y	g	20.6	67.7	-9.3	45.8	10.4	37.2	-15.9	77.4
Pelvic Z	g	3.5	222.4	-27.7	79.3	3.0	240.7	-32.9	62.3
Pelvic Resultant	g	72.3	52.0	0.1	-43.5	71.1	49.9	0.1	-41.4
Left Femur	N	1711.8	45.8	-5247.1	65.3	1278.8	41.8	-3135.3	51.1
Right Femur	N	1277.8	36.9	-4086.9	54.9	862.3	38.2	-2335.6	53.8
Left Upper Tibia Mx	N-m	47.7	37.5	-30.2	49.8	46.7	58.0	-60.9	41.7
Left Upper Tibia My	N-m	58.0	52.0	-113.4	37.8	12.1	211.4	-124.5	37.7
Left Lower Tibia Fz	N	267.8	69.1	-3120.4	36.7	149.0	138.1	-2830.5	37.5
Left Lower Tibia Mx	N-m	16.3	35.2	-50.0	40.8	81.4	50.5	-33.3	39.0
Left Lower Tibia My	N-m	29.7	33.0	-24.2	27.7	46.6	49.0	-39.1	38.0
Right Upper Tibia Mx	N-m	64.5	45.3	-88.8	46.3	12.9	65.2	-65.6	74.6
Right Upper Tibia My	N-m	22.5	53.0	-177.4	45.7	16.4	183.8	-140.4	41.6
Right Lower Tibia Fz	N	209.6	150.7	-6147.2	45.2	936.3	222.8	-4277.5	44.2
Right Lower Tibia Mx	N-m	32.9	43.8	-202.9	46.9	33.1	61.6	-29.5	45.0
Right Lower Tibia My	N-m	72.0	49.5	-58.8	40.0	44.1	77.9	-54.3	39.3
Left Foot Aft Ax	g	13.9	82.2	-100.6	33.0	49.6	54.2	-93.3	36.7
Left Foot Aft Az	g	5.8	230.6	-67.5	36.1	16.9	53.7	-84.2	43.9
Left Foot Fore Az	g	114.5	33.6	-130.3	25.5	64.9	54.2	-145.8	38.2
Right Foot Aft Ax	g	41.5	46.2	-129.1	41.5	20.5	81.6	-103.3	38.5
Right Foot Aft Az	g	103.1	45.1	-168.4	43.1	14.9	56.8	-103.6	43.8
Right Foot Fore Az	g	217.4	45.3	-373.2	45.7	40.8	52.6	-135.0	38.7

* Data is not accurate – Sensor opened during the event.

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

Vehicle Year/Make/Model/Body Style: 2002 Audi A4 4-Door Sedan

NHTSA Test No.: M25800 Test Date: June 5, 2002

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	574.9	54.1	88.7	48.8
Position #2 - Passenger	681.1	57.3	93.3	51.4

** 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	50.5	73.4	76.8	503.4
Position #2 - Passenger	51.4**	67.9	73.2	569.3

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

** Primary Chest Ay was damaged during the event, Clip calculated using Chest RAY.

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

Vehicle Year/Make/Model/Body Style: 2002 Audi A4 4-Door Sedan
 NHTSA Test No.: M25800 Test Date: June 5, 2002

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	578.4	52.8	88.8	48.1
Position #2 - Passenger	642.1	57.0	92.9	50.2

** 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	50.8	73.0	77.0	506.9
Position #2 - Passenger	51.6	67.9	73.1	582.7

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

DATA SHEET NO. 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

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

Driver

Passenger

1440

1440

Shoulder belt length as measured
on Part 572 Dummy.

830

830

Lap belt length as measured
on Part 572 Dummy.

610

610

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 4 mm molding.

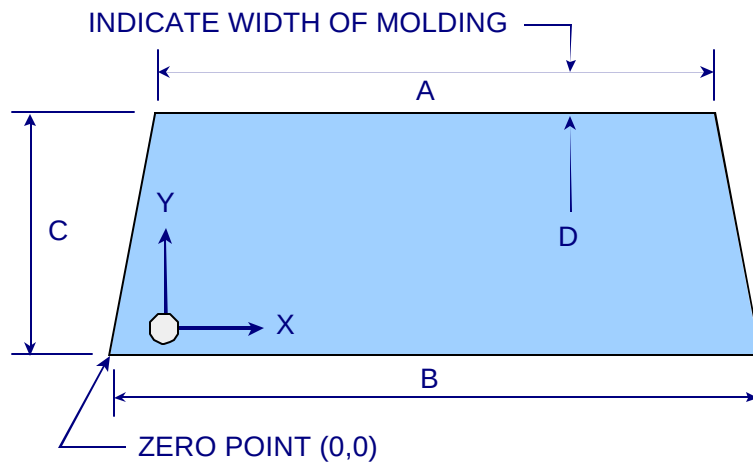
FMVSS 212 REQUIREMENTS:

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	2050	2050	100.0%
LEFT SIDE	2050	2050	100.0%
TOTAL	4100	4100	100.0%

AREA OF RETENTION FAILURE: None



DIMENSIONS (mm)	
A	1130
B	1430
C	770
D	4

FRONT VIEW OF WINDSHIELD

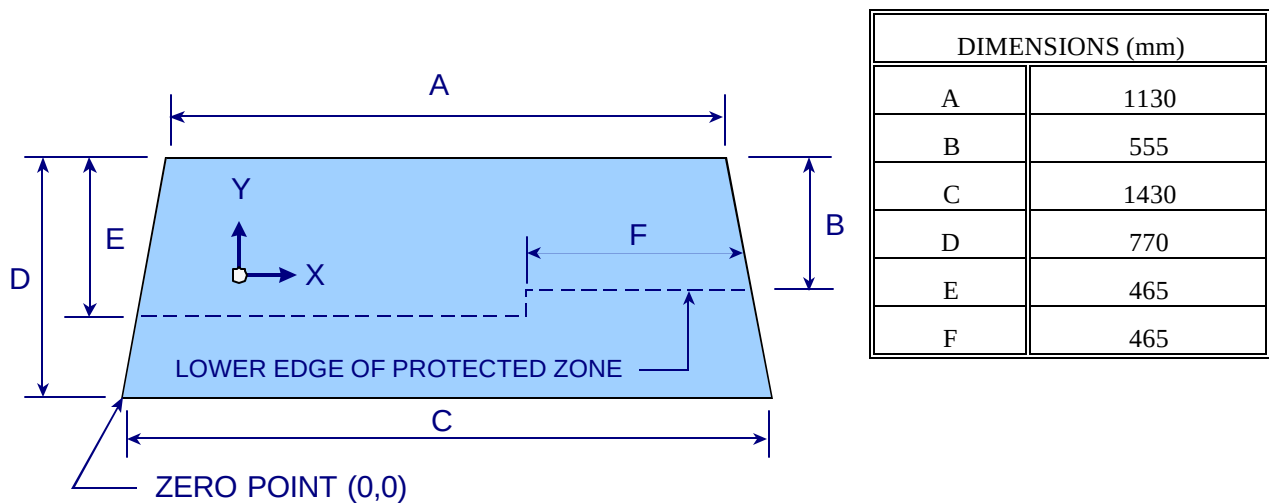
FAILURE DETAILS: None

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

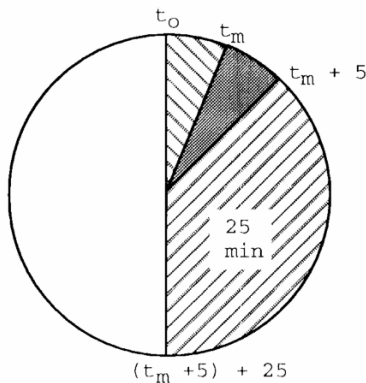
NHTSA TEST No.: M25800 TEST DATE: June 5, 2002
VEHICLE MAKE/MODEL: 2002 Audi A4 4-Door Sedan

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

=====

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

FUEL SPILLAGE MEASUREMENT:



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

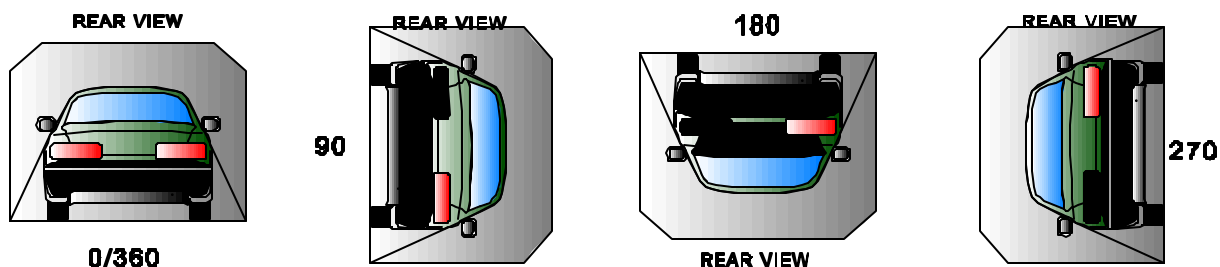
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

DATA SHEET NO. 13 - ROLLOVER DATA

Vehicle: 2002 Audi A4 4-Door Sedan

NHTSA No.: M25800



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	18	seconds	5	minutes	6	minutes	18	seconds	7	minutes
90° - 180°	1	minutes	03	seconds	5	minutes	6	minutes	3	seconds	7	minutes
180°-270°	1	minutes	01	seconds	5	minutes	6	minutes	1	seconds	7	minutes
270°-360°	1	minutes	13	seconds	5	minutes	6	minutes	13	seconds	7	minutes

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

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

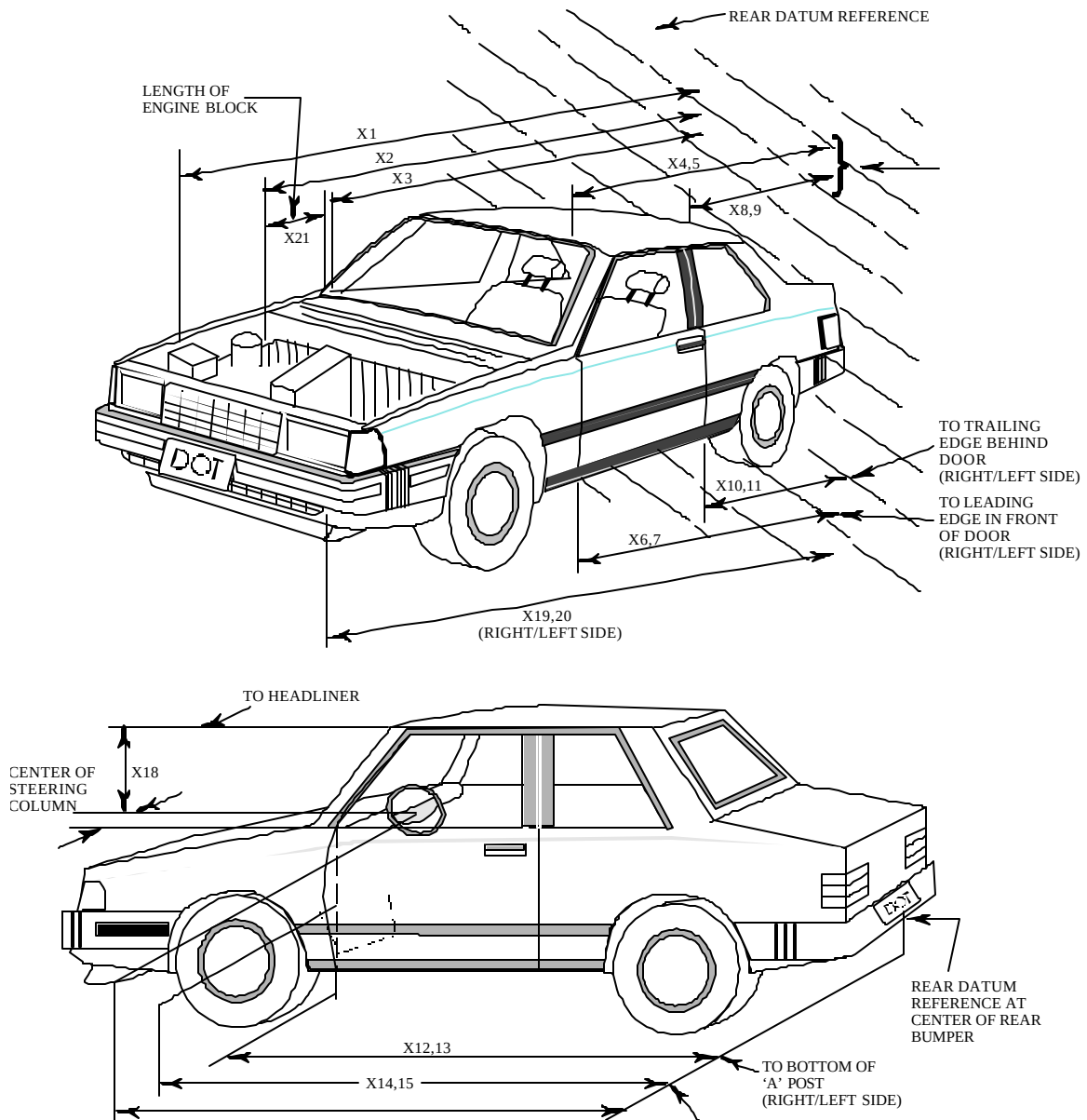
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	N/A
90° - 180°	0	0	0	N/A
180°-270°	0	0	0	N/A
270°-360°	0	0	0	N/A

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

IV. SOLVENT SPILLAGE LOCATION(S):

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

DATA SHEET NO. 14 TEST VEHICLE MEASUREMENTS

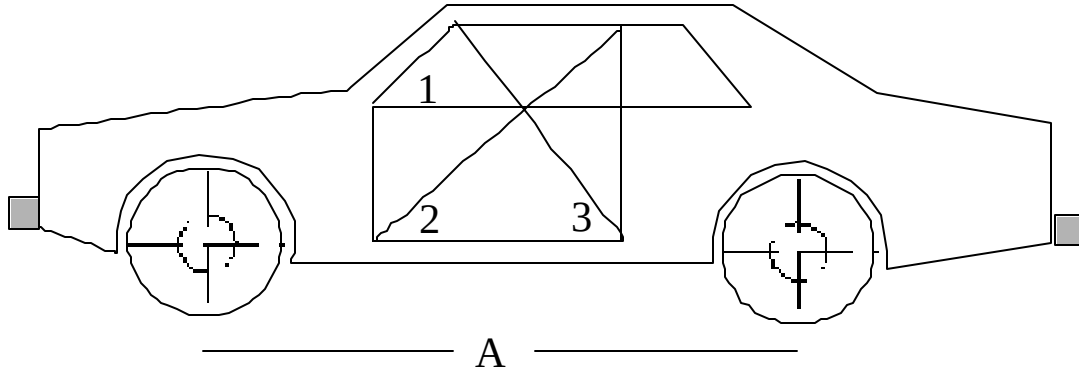


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4571	4057	514
X2	Rear Surface of Vehicle to Front of Engine	4206	3906	300
X3	Rear Surface of Vehicle to Firewall	3661	3444	217
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3156	3155	1
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3154	3154	0
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3183	3177	6
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3179	3173	6
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2091	2093	-2
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2096	2093	3
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2147	2142	5
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2146	2139	7
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3231	3234	-3
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3224	3222	2
X14	Rear Surface of Vehicle to Firewall, Right Side	3697	3575	122
X15	Rear Surface of Vehicle to Firewall, Left Side	3692	3593	99
X16	Rear Surface of Vehicle to Steering Column	2690	2671	19
X17	Center of Steering Column to "A" Post	282	257	25
X18	Center of Steering Column to Headliner	379	325	54
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4493	4067	426
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4501	4106	395
X21	Length of Engine Block	397	397	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2869	2866	3
CD	Rear Surface of Vehicle to Center of Dash Panel	2923	2896	27
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2868	2845	23

All Dimensions in mm

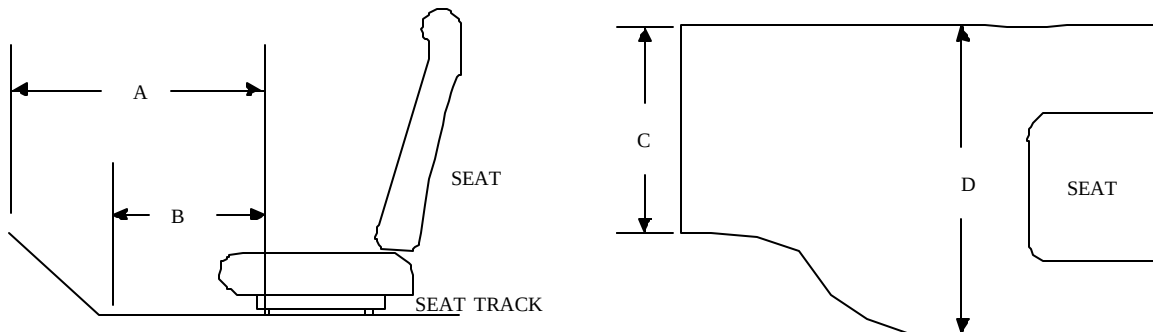
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	908	1422	932	894	1417	942
AFTER TEST	902	1418	945	892	1412	945
DIFFERENCE	6	4	-13	2	5	-3

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2645	2645
AFTER TEST	2565	2596
DIFFERENCE	80	49

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



DRIVER

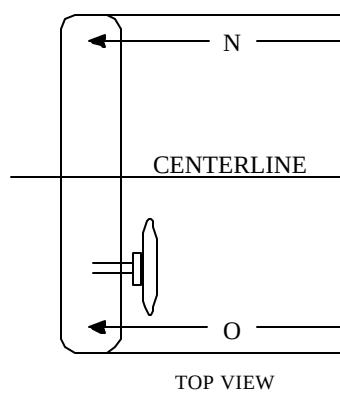
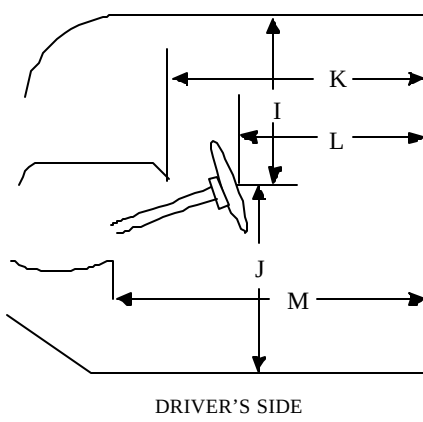
Measurement	Pre-Test	Post-Test	Difference
A	735	641	94
B	540	489	51
C	408	425	-17
D	413	425	-12

PASSENGER

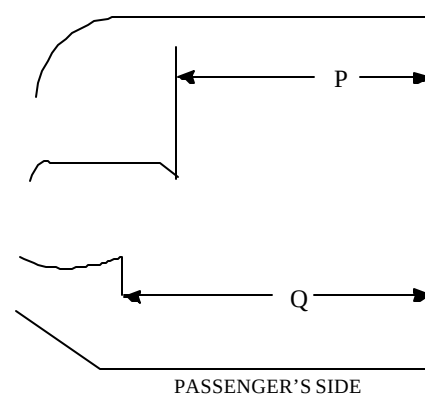
Measurement	Pre-Test	Post-Test	Difference
A	698	603	95
B	564	537	27
C	371	331	40
D	434	412	22

Units = mm

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



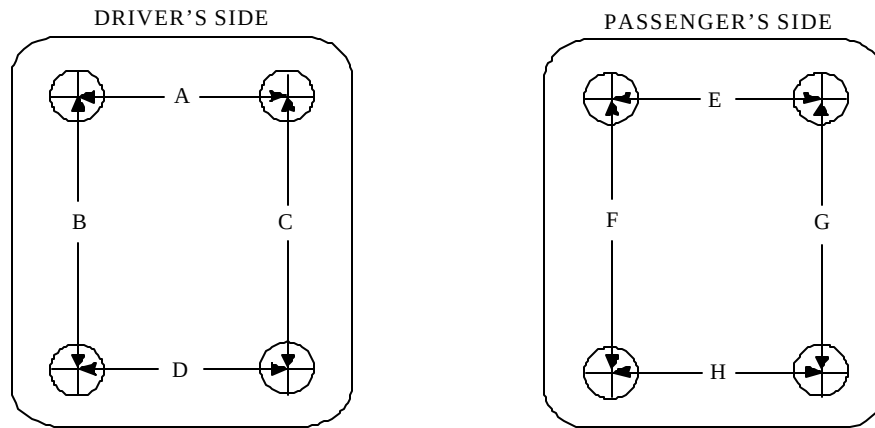
MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



Measurement	Pre-Test	Post-Test	Difference
I	379	325	54
J	619	697	-78
K	1834	1821	13
L	1651	1637	14
M	1928	1882	46
N	1790	1786	4
O	1830	1810	20
P = K (PASS.)	1838	1818	20
Q = M (PASS.)	1845	1809	36

Units = mm

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

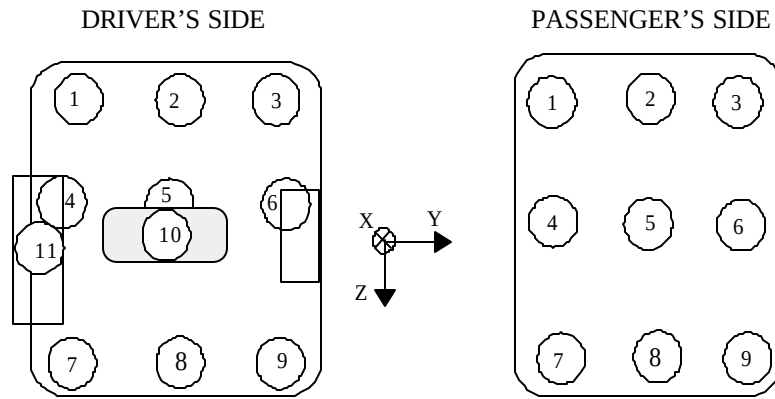


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	408	425	-17
B	437	440	-3
C	407	364	43
D	413	425	-12
E	371	331	40
F	470	465	5
G	375	407	-33
H	434	412	22

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	3413	3358	55	-463	-490	27
2	3423	3349	74	-448	-491	43
3	3378	3301	77	-483	-507	24
4	3335	3291	44	-369	-384	15
5	3337	3275	62	-366	-393	27
6	3289	3284	5	-394	-398	4
7	3238	3201	37	-285	-287	2
8	3228	3198	30	-285	-292	7
9	3215	3168	47	-311	-316	5
10	3215	3190	25	-447	-433	-14
11	3267	3233	34	-414	-410	-4

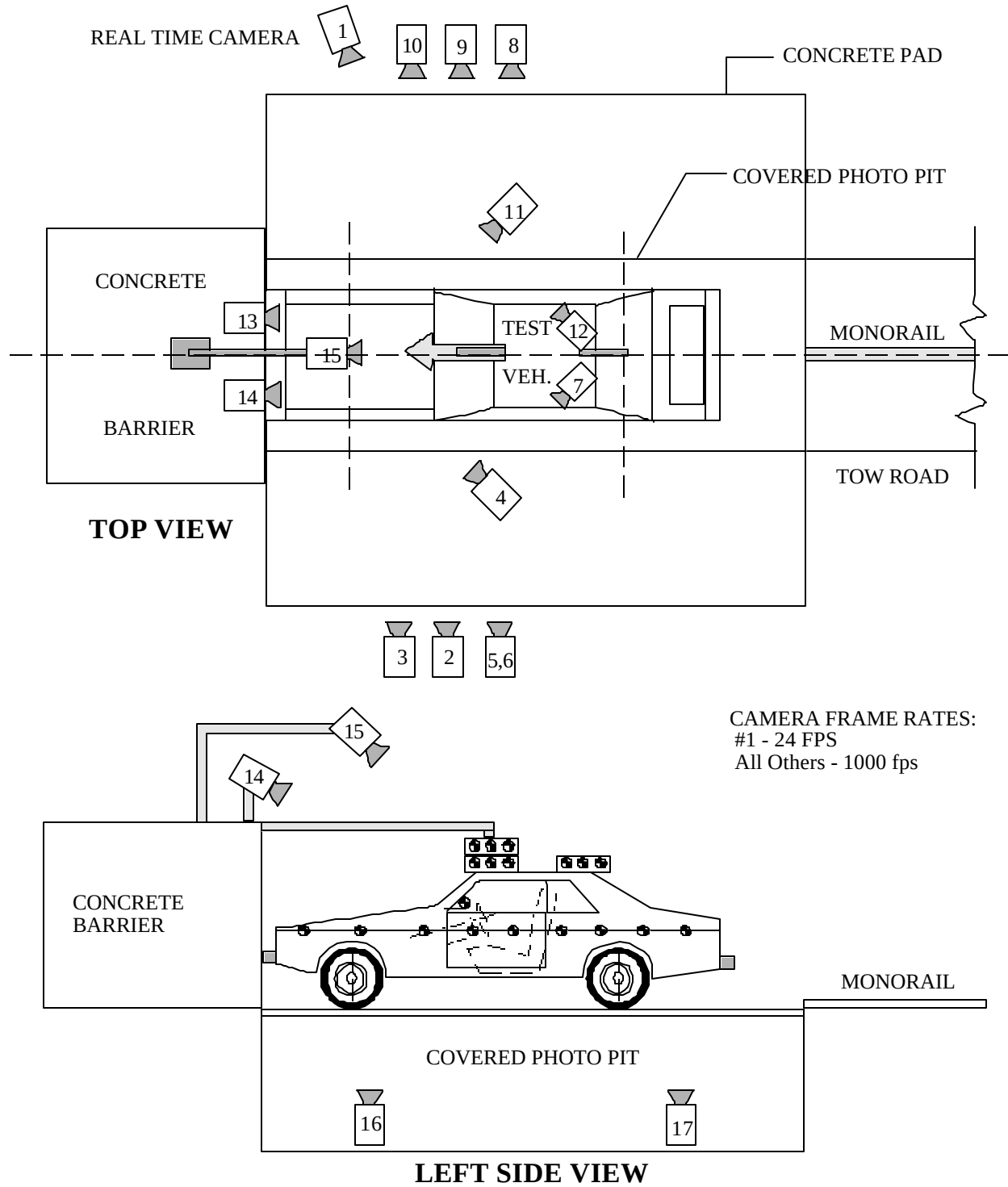
Passenger Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3361	3246	115	-512	-533	21
2	3366	3267	99	-496	-520	24
3	3336	3254	82	-508	-508	0
4	3298	3240	58	-384	-422	38
5	3299	3237	62	-387	-413	26
6	3268	3225	43	-403	-412	9
7	3223	3189	34	-287	-309	22
8	3233	3202	31	-288	-297	9
9	3226	3198	28	-289	-289	0

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

DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS

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



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

NHTSA Test No.: M25800 Vehicle: 2002 Audi A4 4-Door Sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)*			ANGLE (deg)**	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	6600	1620	1073	-2	6346	12.5	1010
3	Left Side View	7915	1047	1112	-4	7661	25	1000
4	Driver and Interior View	7620	2674	1995	-4	-	25	1050
5	Steering Column (Bottom)	7515	1960	1177	-5	7261	25	1005
6	Steering Column (Top)	7515	1960	1777	-8	7261	25	1005
7	Left Belt	-	-	-	-	-	-	-
8	Overall Right Side	6746	1916	1068	-1	7035	12.5	1005
9	Right Side View	7922	1280	1083	-2	8211	25	1010
10	Right Passenger View	7913	1804	1426	-2	8202	35	1000
11	Passenger and Interior View	7475	2528	1980	-6	-	25	1000
12	Right Belt	-	-	-	-	-	-	-
13	Passenger Front View	620	-92	1987	-35	-	13	1000
14	Driver Front View	620	-92	1987	-37	-	13	1000
15	Windshield View	0	-530	3374	-53	-	13	1000
16	Pit View of Engine	0	615	-3048	90	-	13	1040
17	Pit View of Fuel Tank	0	2692	-3048	90	-	13	1000

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

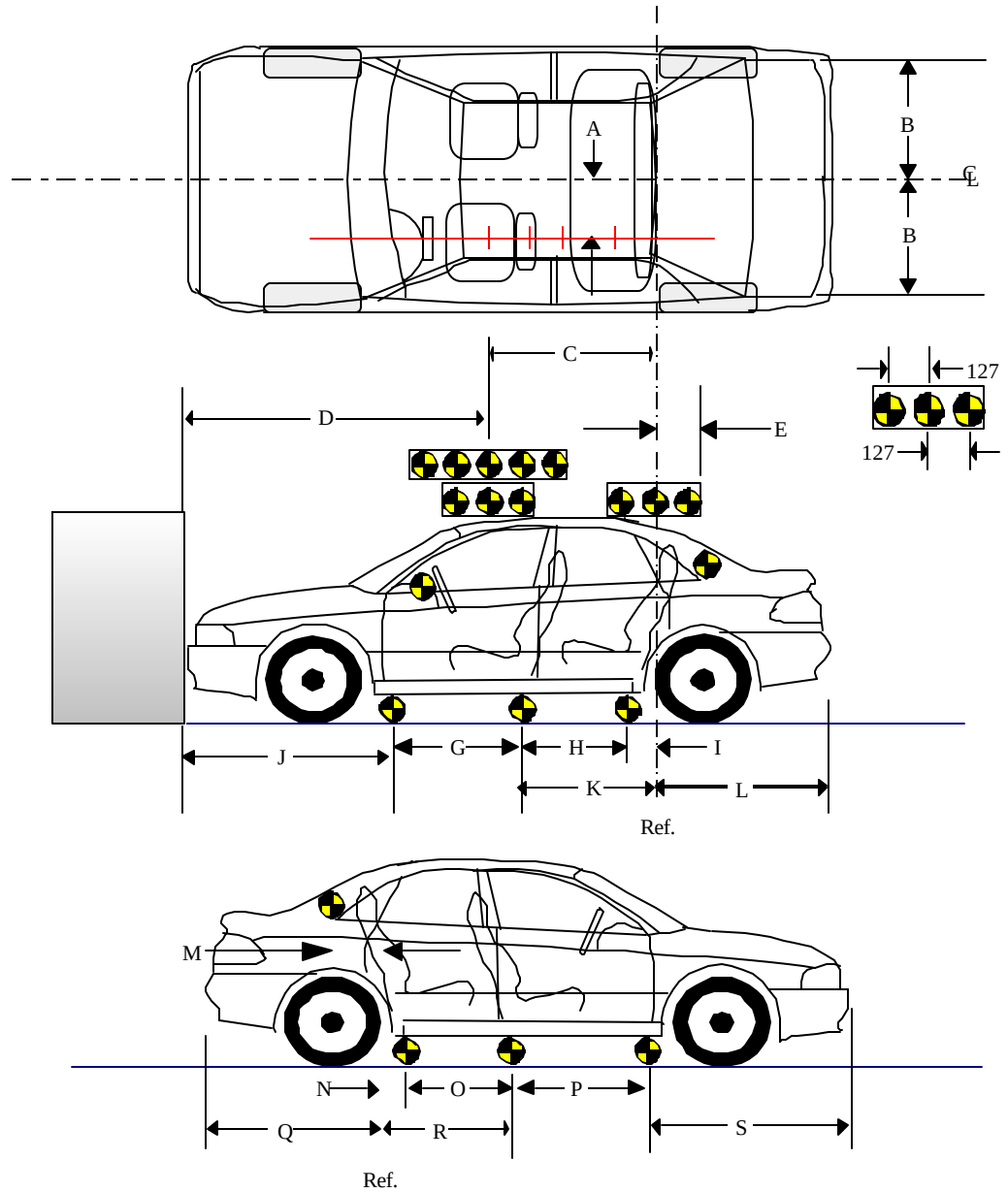
Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

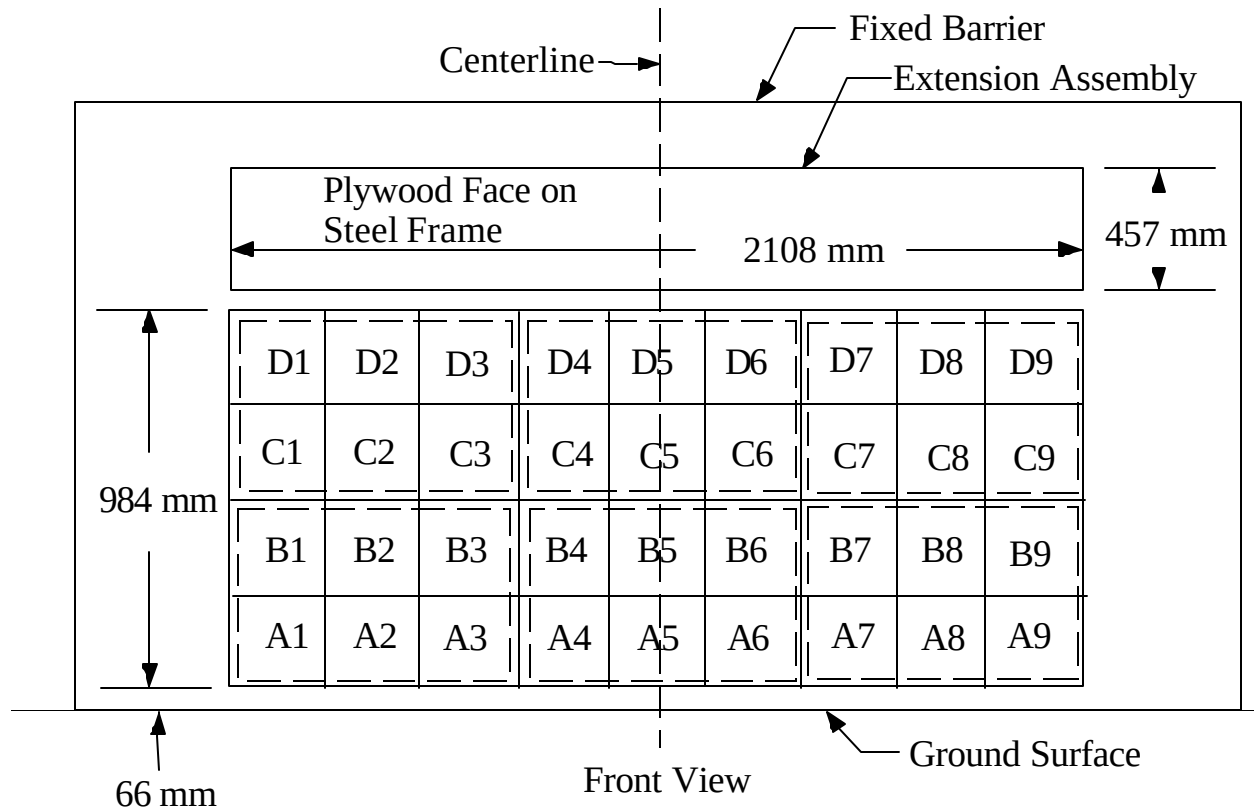
(Dimensions in millimeters)

A	365
B	543
C	1220
D	2032
E	287
F	1476
G	890
H	897
I	101
J	1353
K	998
L	1330
M	241
N	102
O	891
P	900
Q	1328
R	993
S	1350



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.: M25800; Test Date: June 5, 2002; Technician: Patrick MacDiarmid

Vehicle Model Year/Make/Model: 2002 Audi A4 4-Door Sedan

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

B. Size of vent holes: (mm²) 962.1 -Driver 962.1 -Passenger

C. Total vent area: (mm²) 1924.2 -Driver 1924.2 -Passenger

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

Driver: 560 -Height; 500 -Width; 400 -Depth

Passenger: 650 -Height; 540 -Width; 750 -Depth

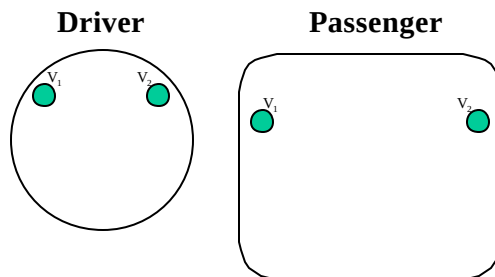
E. Is the air bag tethered?

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

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).



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

Driver: Air bag: 899403047723 PA6.6+VMQ

Generator: N/A

Passenger: Air bag: 888322005787 PA6.6 ASC1

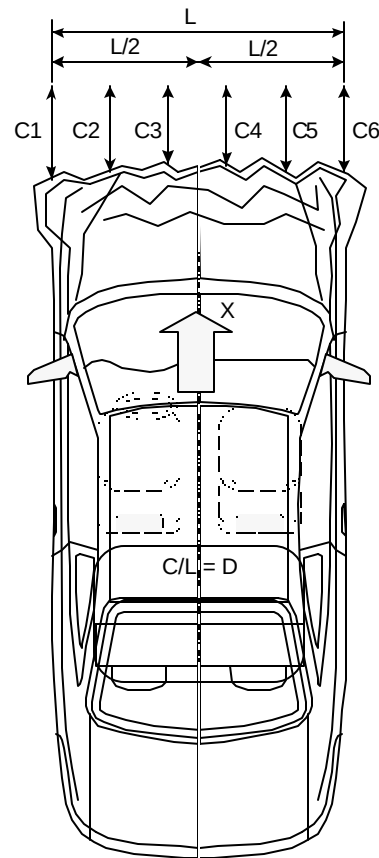
Generator:N/A

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

Vehicle Make/Model/Body Style: Audi A4 4-Door Sedan
 NHTSA Test No.: M25800 VIN: WAULC68E72A291694
 Model Year: 2002 Build Date: 4/02 Test Date: June 5, 2002
 Vehicle Size Category: Compact Test Weight: 1820.5 kg
 Vehicle Wheelbase: 2645 mm; Front Overhang: 926 mm; Overall Width: 1937 mm
 Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4358	4066	292
C2 =	4514	4106	408
C3 =	4562	4079	483
C4 =	4564	4075	489
C5 =	4510	4078	432
C6 =	4356	4042	314



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region: L1= 1391 mm
 L2= 695.5 mm
 L5= 278.2 mm

APPENDIX A
PHOTOGRAPHS

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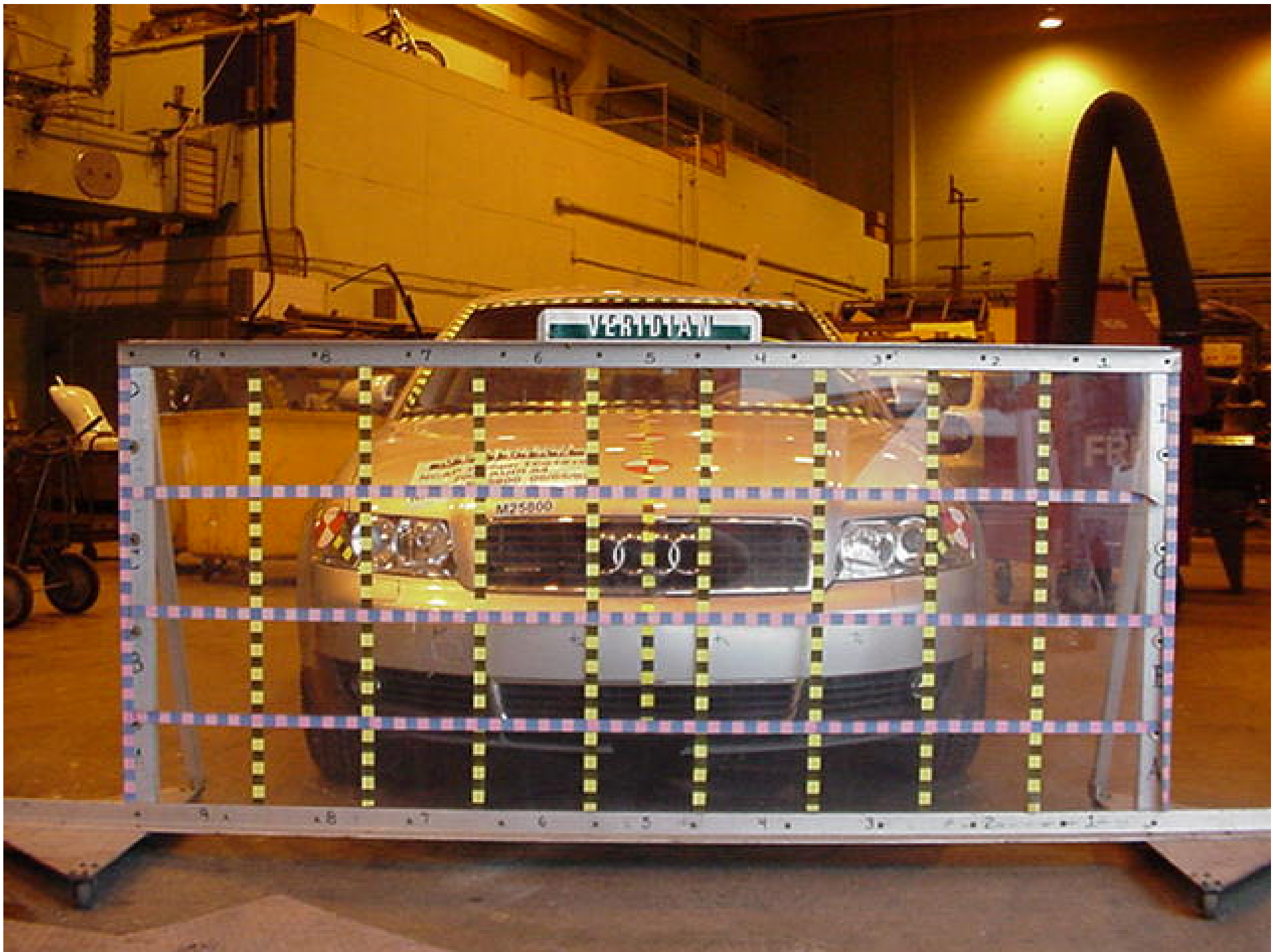


Figure A-1 LOAD CELL LOCATIONS



Figure A-2 PRE-TEST FRONT VIEW



Figure A-3 POST-TEST FRONT VIEW



Figure A-4 PRE-TEST LEFT SIDE VIEW



Figure A-5 POST-TEST LEFT SIDE VIEW



Figure A-6 PRE-TEST RIGHT SIDE VIEW



Figure A-7 POST-TEST RIGHT SIDE VIEW



Figure A-8 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW



Figure A-9 POST-TEST RIGHT FRONT THREE-QUARTER VIEW



Figure A-10 PRE-TEST LEFT REAR THREE-QUARTER VIEW



Figure A-11 POST-TEST LEFT REAR THREE-QUARTER VIEW



Figure A-12 PRE-TEST WINDSHIELD VIEW



Figure A-13 POST-TEST WINDSHIELD VIEW



Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW



Figure A-15 FUEL CAP VIEW

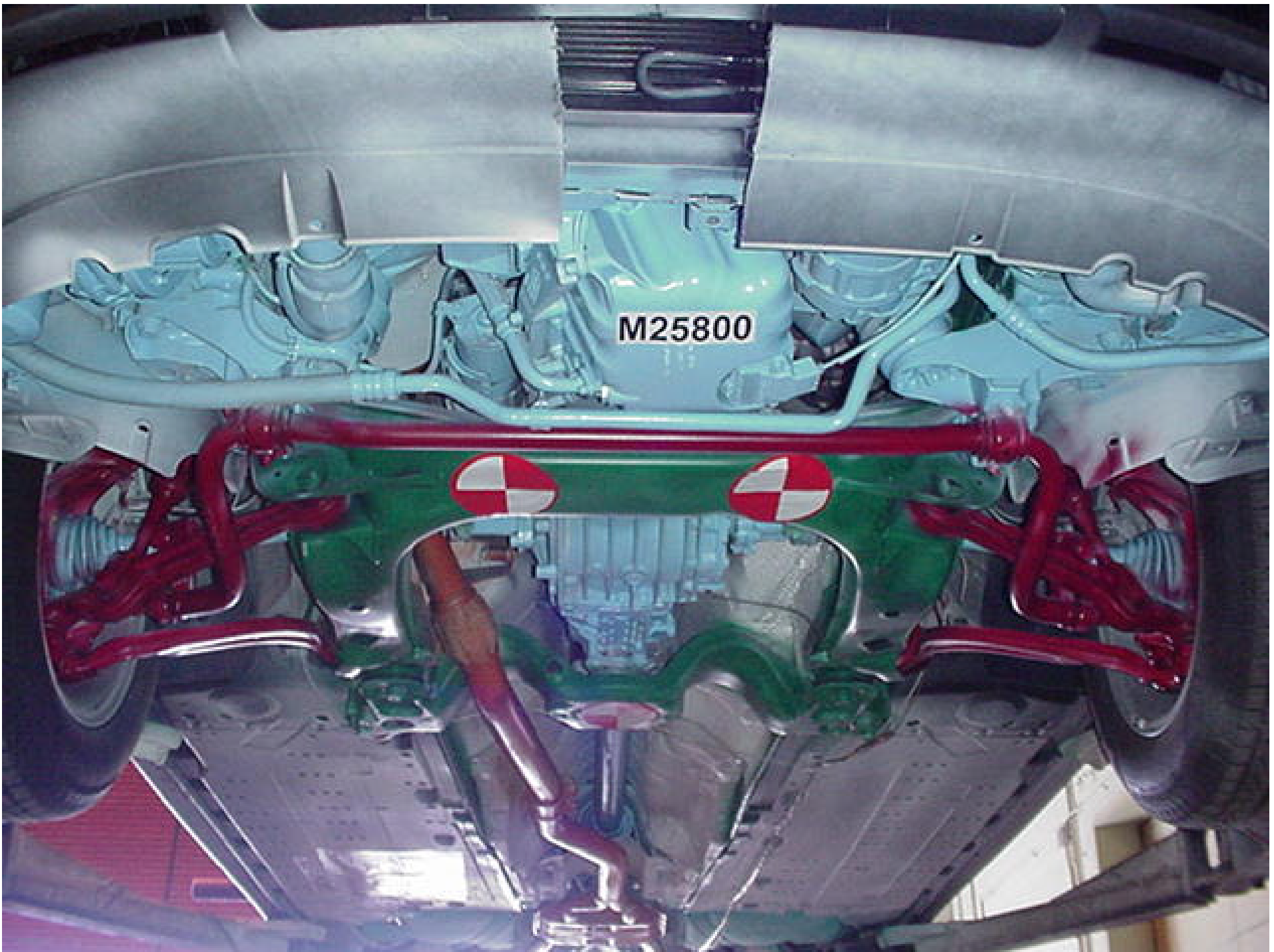


Figure A-16 PRE-TEST FRONT UNDERBODY VIEW

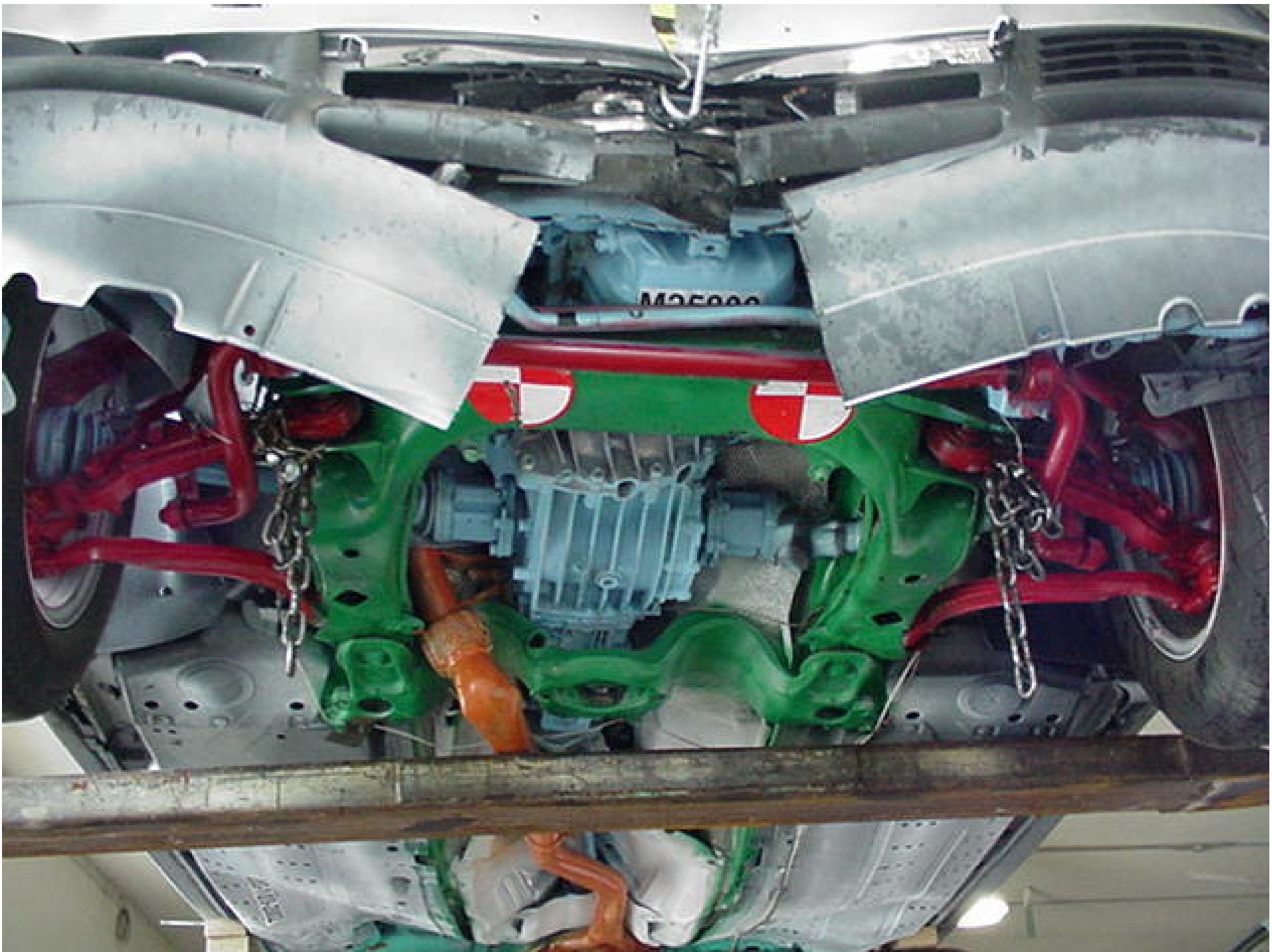


Figure A-17 POST-TEST FRONT UNDERBODY VIEW



Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW

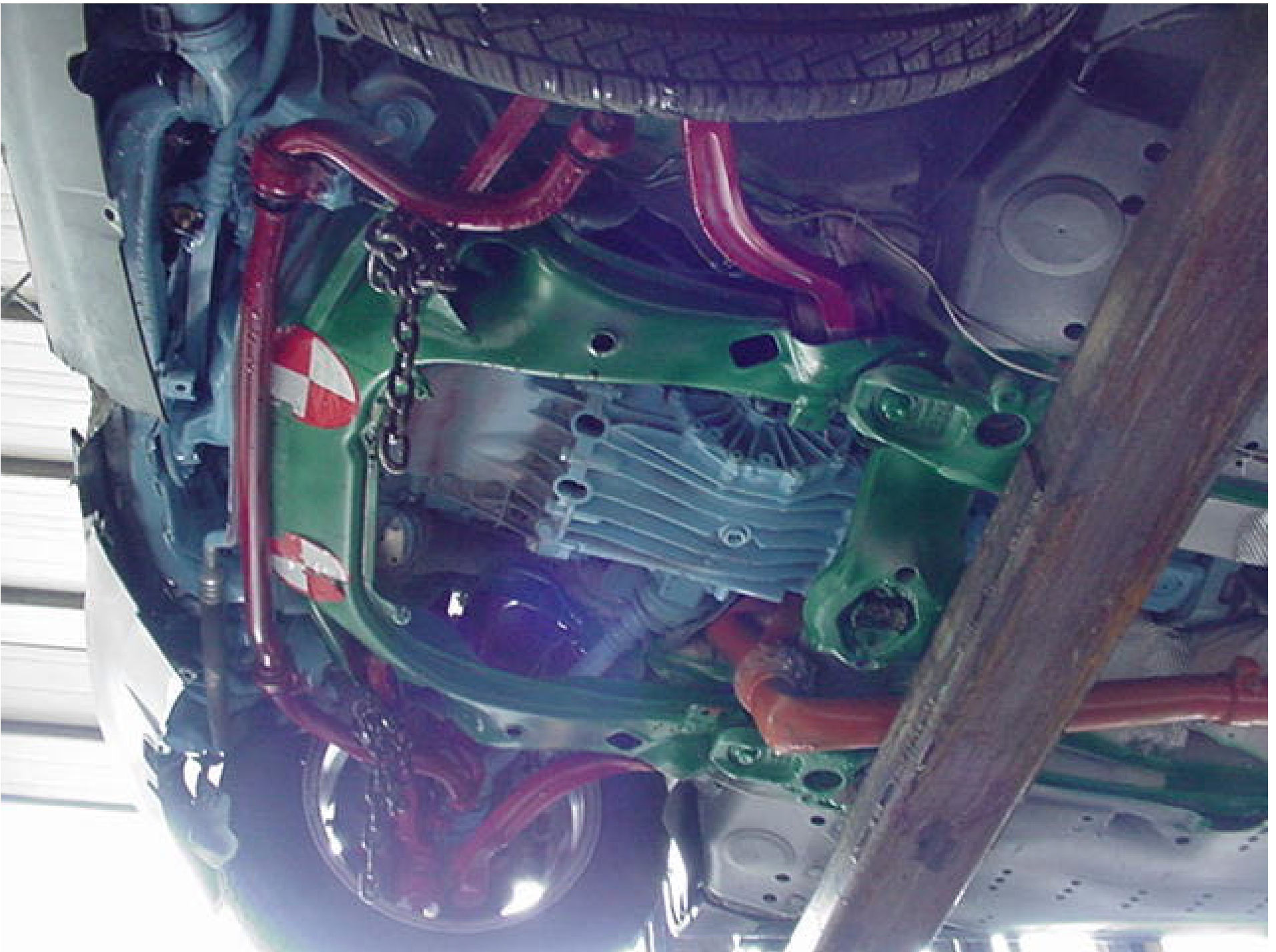


Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW



Figure A-20 PRE-TEST REAR UNDERBODY VIEW

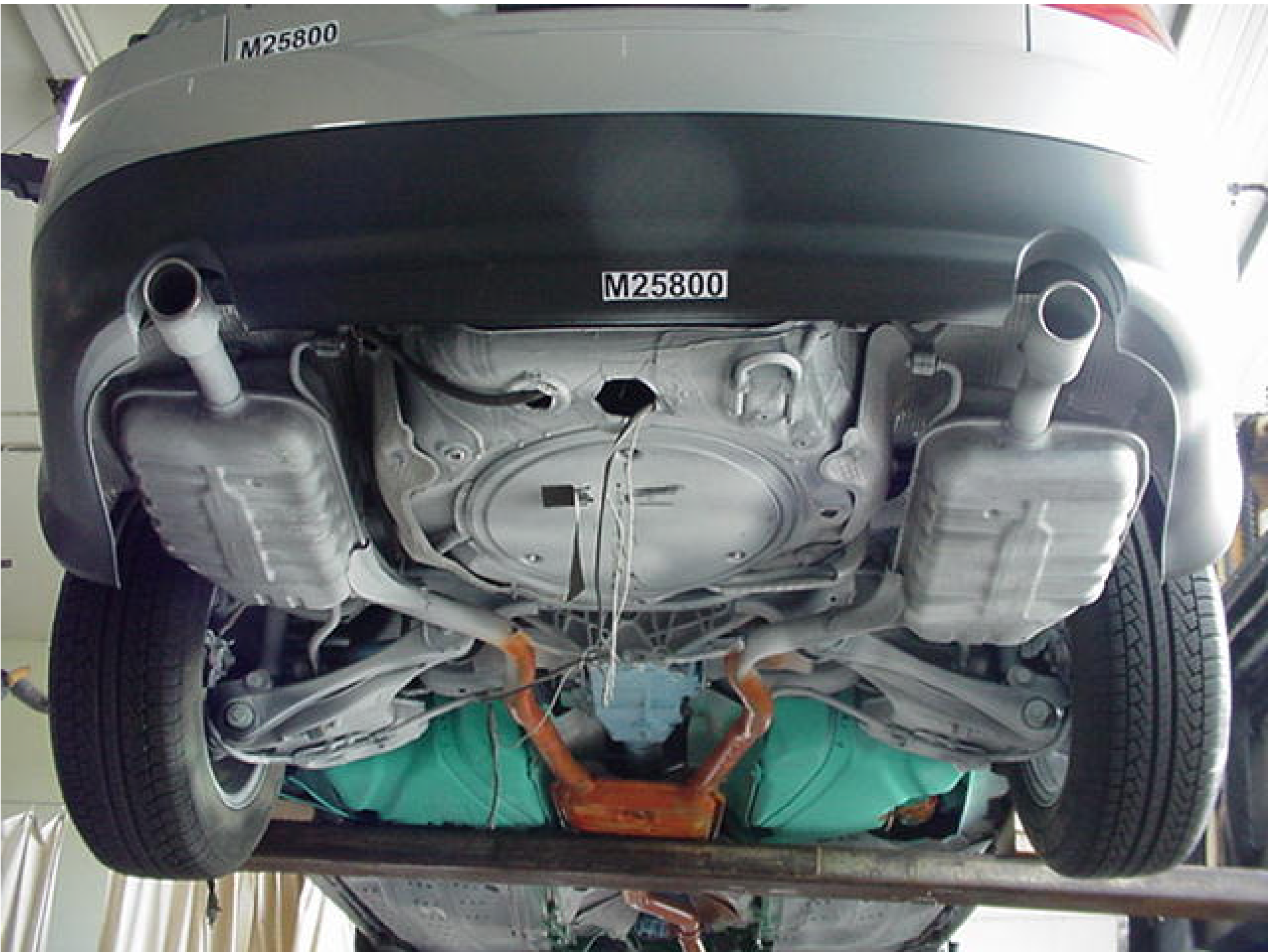


Figure A-21 POST-TEST REAR UNDERBODY VIEW



Figure A-22 PRE-TEST DRIVER POSITION VIEW



Figure A-23 POST-TEST DRIVER POSITION VIEW



Figure A-24 PRE-TEST PASSENGER POSITION VIEW



Figure A-25 POST-TEST PASSENGER POSITION VIEW



Figure A-26 PRE-TEST DRIVER AND INTERIOR VIEW



Figure A-27 POST-TEST DRIVER AND INTERIOR VIEW



Figure A-28 PRE-TEST PASSENGER AND INTERIOR VIEW



Figure A-29 POST-TEST PASSENGER AND INTERIOR VIEW



Figure A-30 PRE-TEST DRIVER HEAD LOCATION



A-33

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Figure A-31 POST-TEST DRIVER HEAD LOCATION



Figure A-32 PRE-TEST PASSENGER HEAD LOCATION



Figure A-33 POST-TEST PASSENGER HEAD LOCATION



Figure A-34 PRE-TEST DRIVER FLOOR PAN VIEW



Figure A-35 POST-TEST DRIVER FLOOR PAN VIEW



Figure A-36 PRE-TEST PASSENGER FLOOR PAN VIEW



A-39

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Figure A-37 POST-TEST PASSENGER FLOOR PAN VIEW



Figure A-38 ROLLOVER VIEW



Figure A-39 IMPACT VIEW



Figure A-40 VEHICLE PLACARD

DESIGNATED SEATING CAPACITY: 6
 2 FRONT/3 REAR
 SIÈGES POUR 6 PERSONNES
 2 AVANT/3 ARRIÈRE

VEHICLE CAPACITY WEIGHT/
 CHARGE UTILE
 MAX 1145 LB/520 KG

COLD TIRE INFLATION PRESSURE
 PRESSION DES PNEUS FROIDS


Audi



			KPA	PSI	KPA	PSI
	255/55 R 15 93H		210	32	210	32
	215/55 R 16 93H		280	42	280	42
	230/45 R 17 93H		210	32	210	32
	260/35 R 18 93H		260	38	260	38
	190/65 R 15 91H		220	32	220	32
	M+S		280	42	280	42
EMERGENCY SPARE WHEEL ROUE DE SECOURS T175/80 R17			420	60	(MSD16197)	

Figure A-41 TIRE PLACARD

APPENDIX B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

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

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

DATA CHANNEL FILTER CLASS SUMMARY

NHTSA TEST NO.

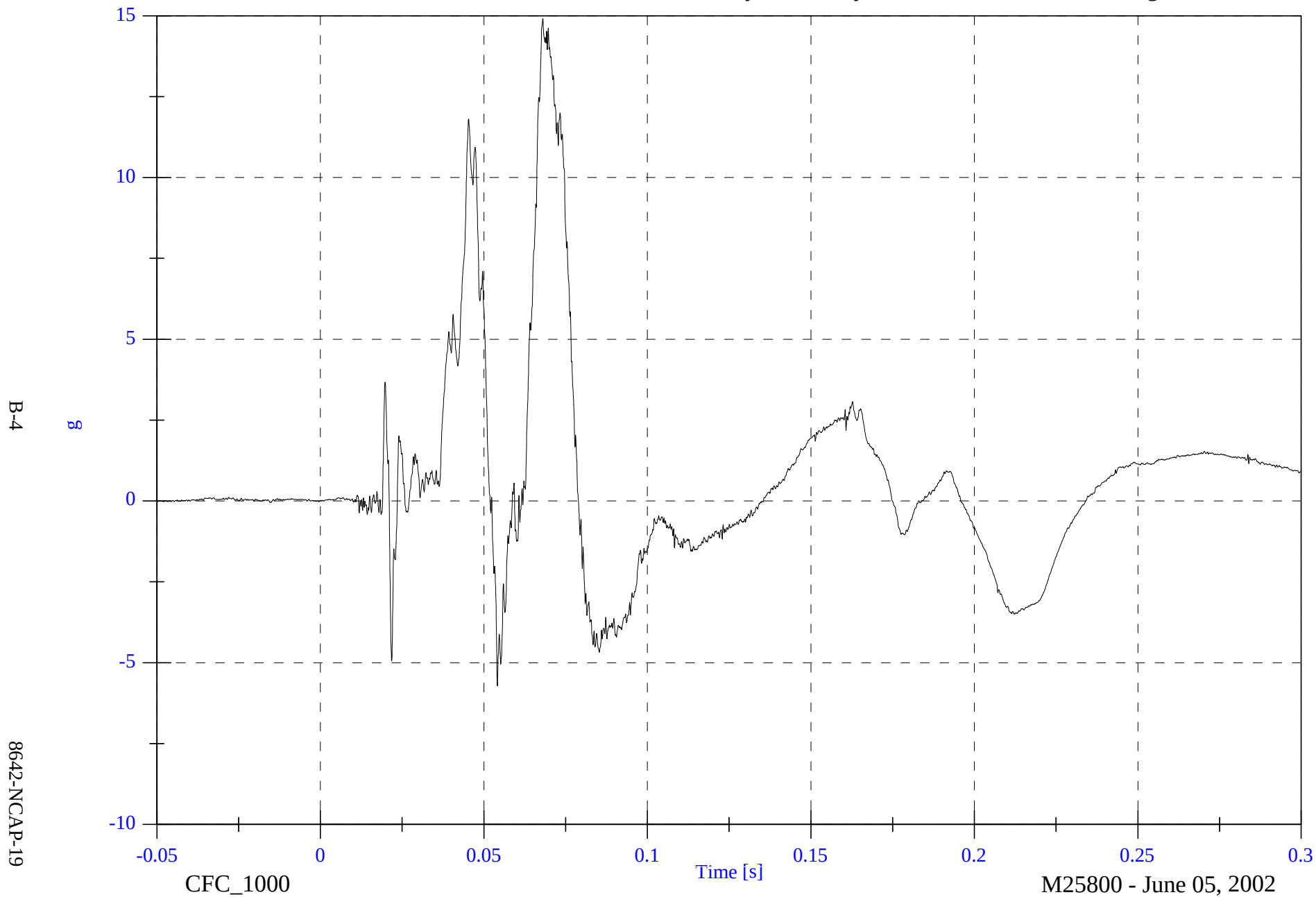
DATA TYPE	SAE FILTER CLASS (Hz)
Dummy Head Accelerations	1000
Dummy Chest Accelerations	180
Dummy Chest Displacements	600
Dummy Femur Forces	600
Dummy Belt Loads	60
Dummy Belt Displacements	180
Dummy Neck Forces	1000
Dummy Neck Moments	600
Vehicle Accelerations	60
Vehicle Velocity Integrations	180
Vehicle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

2002 NCAP Test 19 - 2002 Audi A4

P1 Head 9 Array X Arm Ay

Max: 14.9 [g] at 0.068 [s]

Min: -5.7 [g] at 0.054 [s]

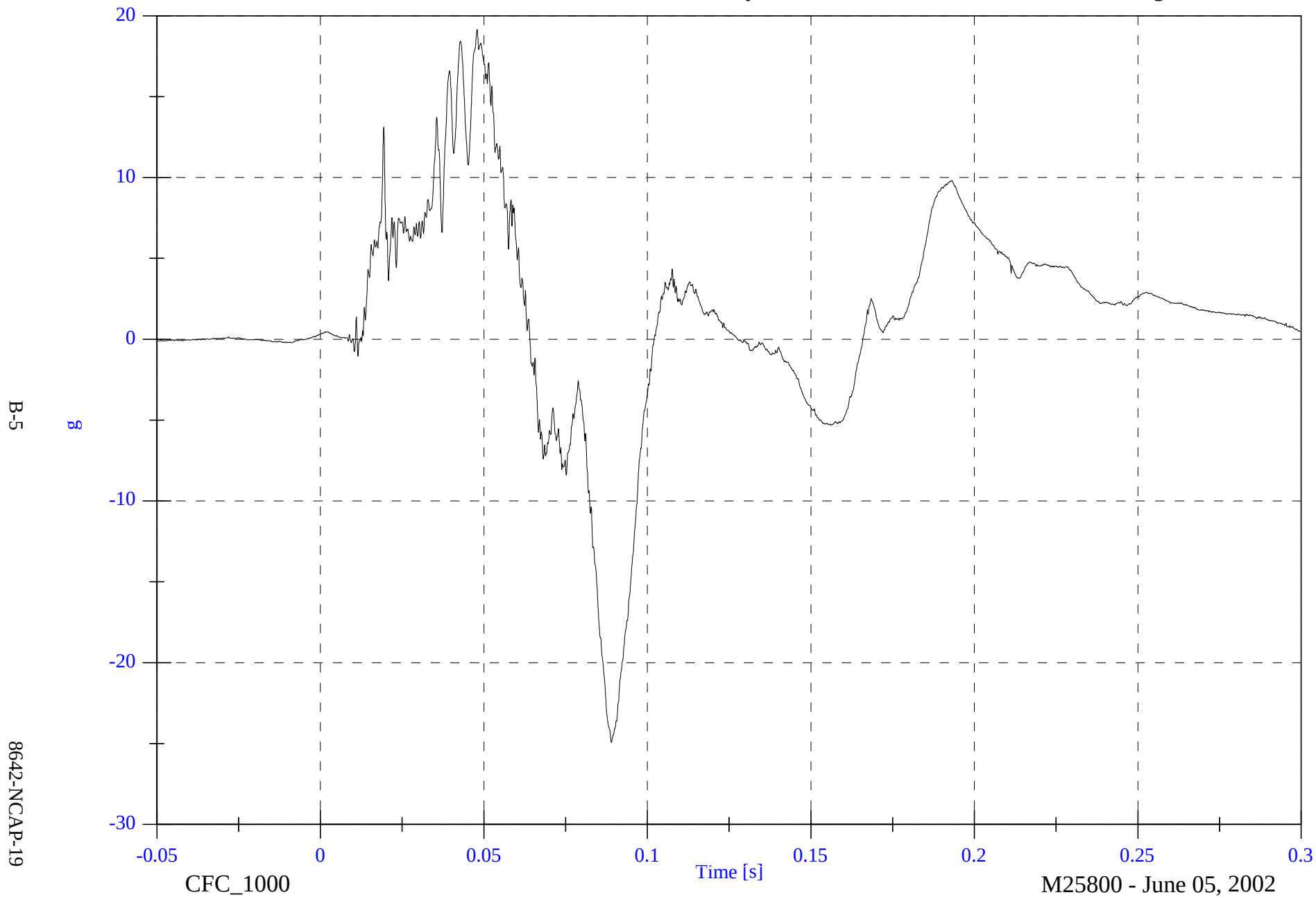


2002 NCAP Test 19 - 2002 Audi A4

P1 Head 9 Array X Arm Az

Max: 19.1 [g] at 0.048 [s]

Min: -24.9 [g] at 0.089 [s]

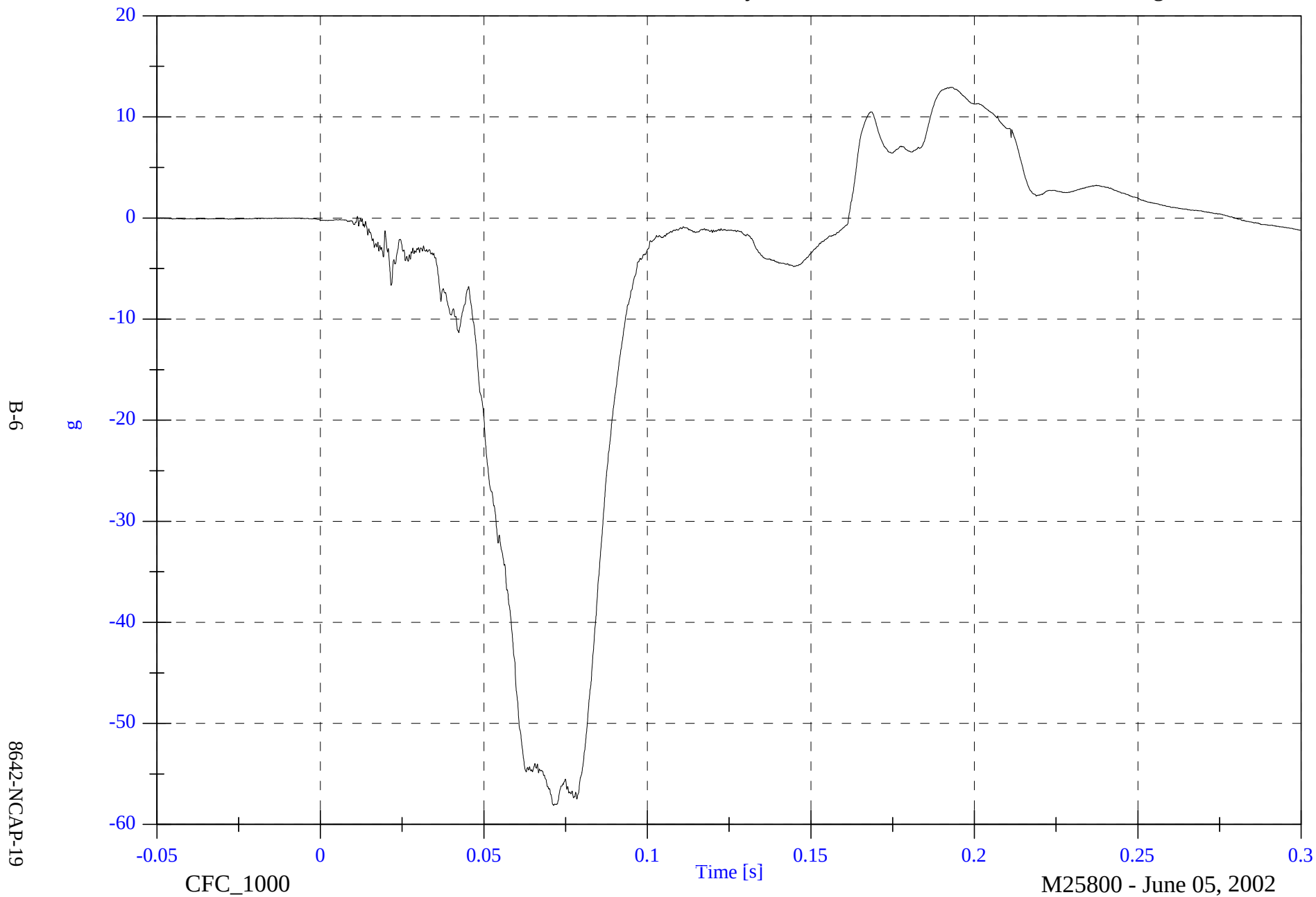


2002 NCAP Test 19 - 2002 Audi A4

P1 Head 9 Array Y Arm Ax

Max: 12.9 [g] at 0.193 [s]

Min: -58.1 [g] at 0.071 [s]

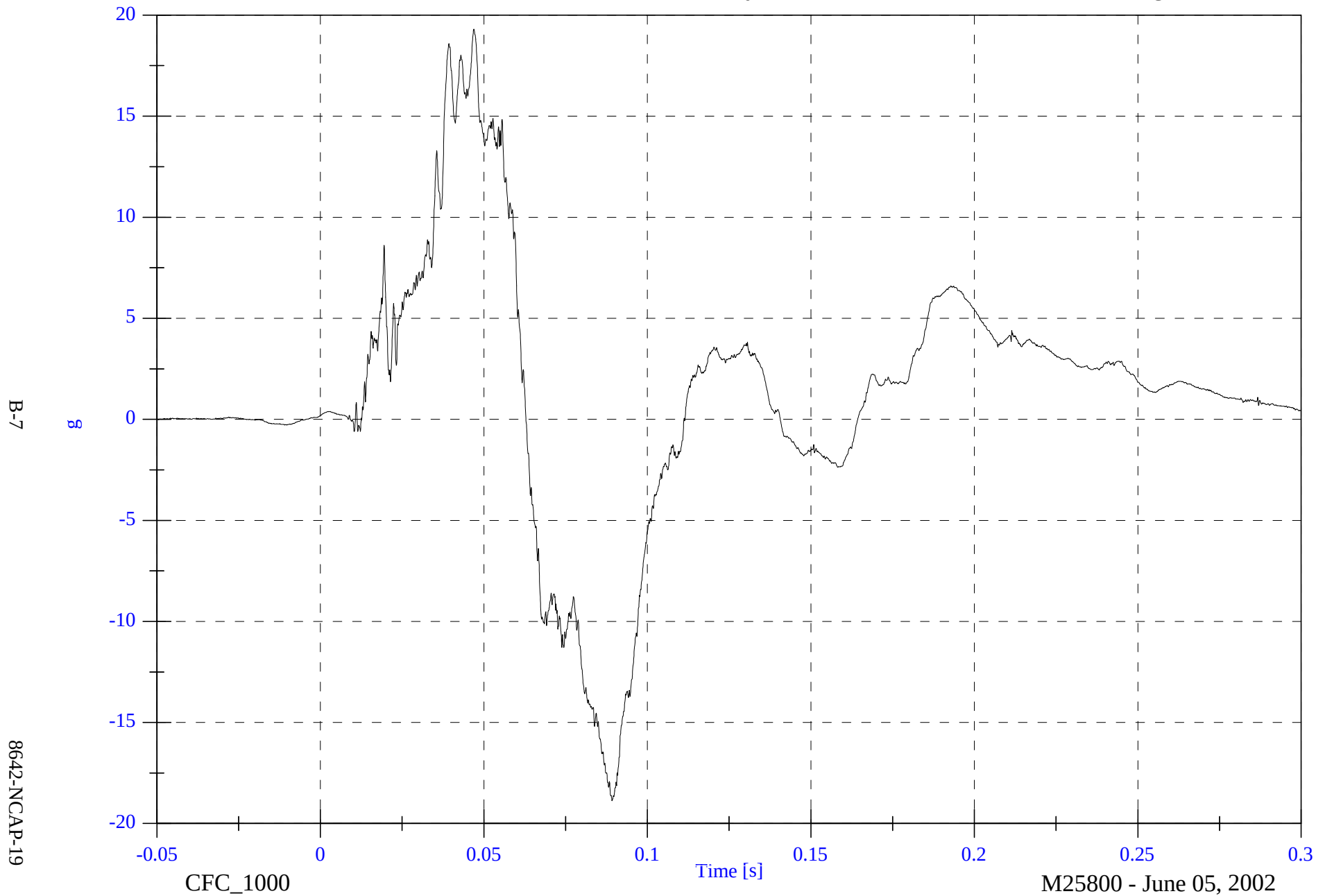


2002 NCAP Test 19 - 2002 Audi A4

P1 Head 9 Array Y Arm Az

Max: 19.3 [g] at 0.047 [s]

Min: -18.9 [g] at 0.089 [s]

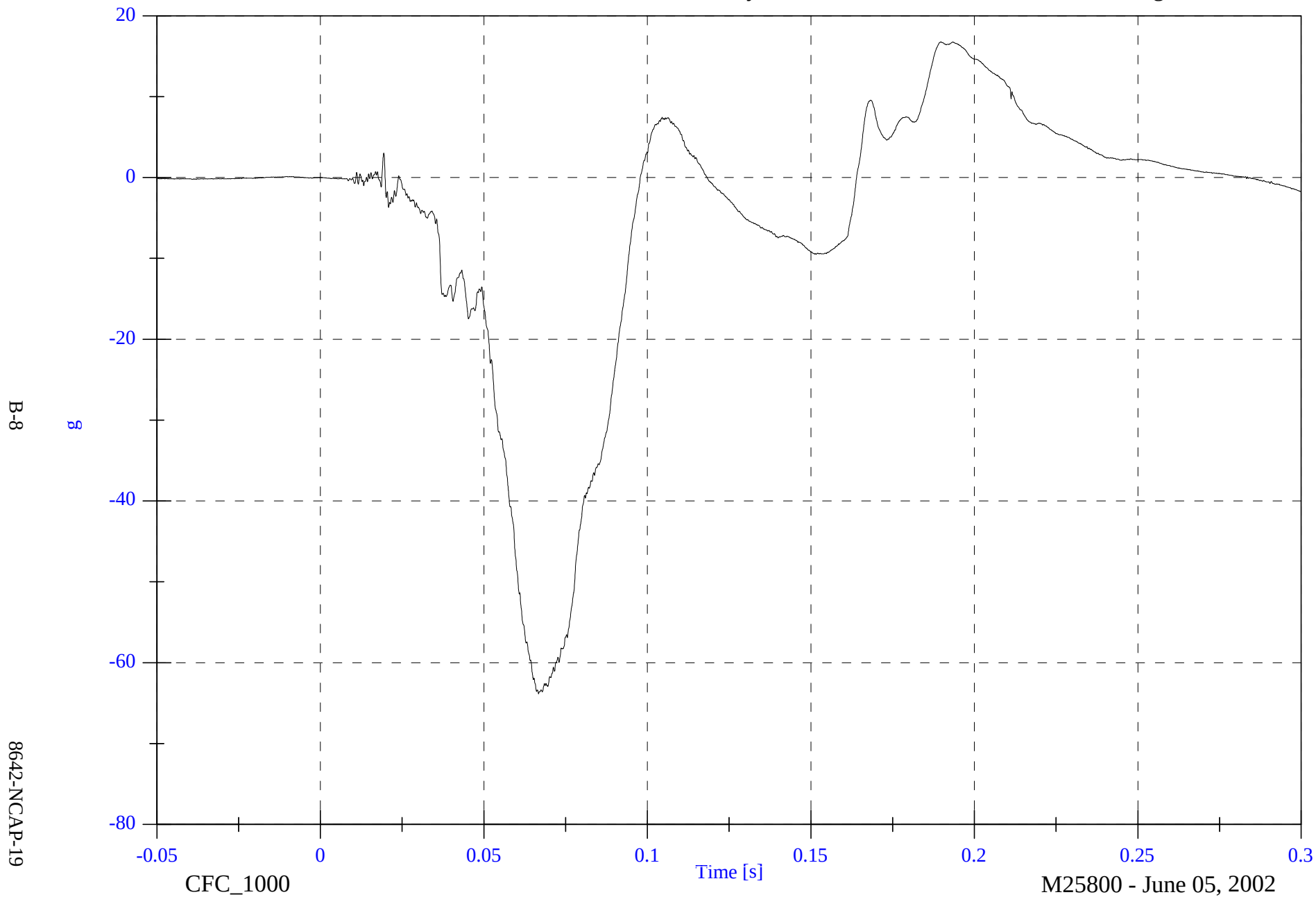


2002 NCAP Test 19 - 2002 Audi A4

P1 Head 9 Array Z Arm Ax

Max: 16.8 [g] at 0.190 [s]

Min: -63.8 [g] at 0.067 [s]



2002 NCAP Test 19 - 2002 Audi A4

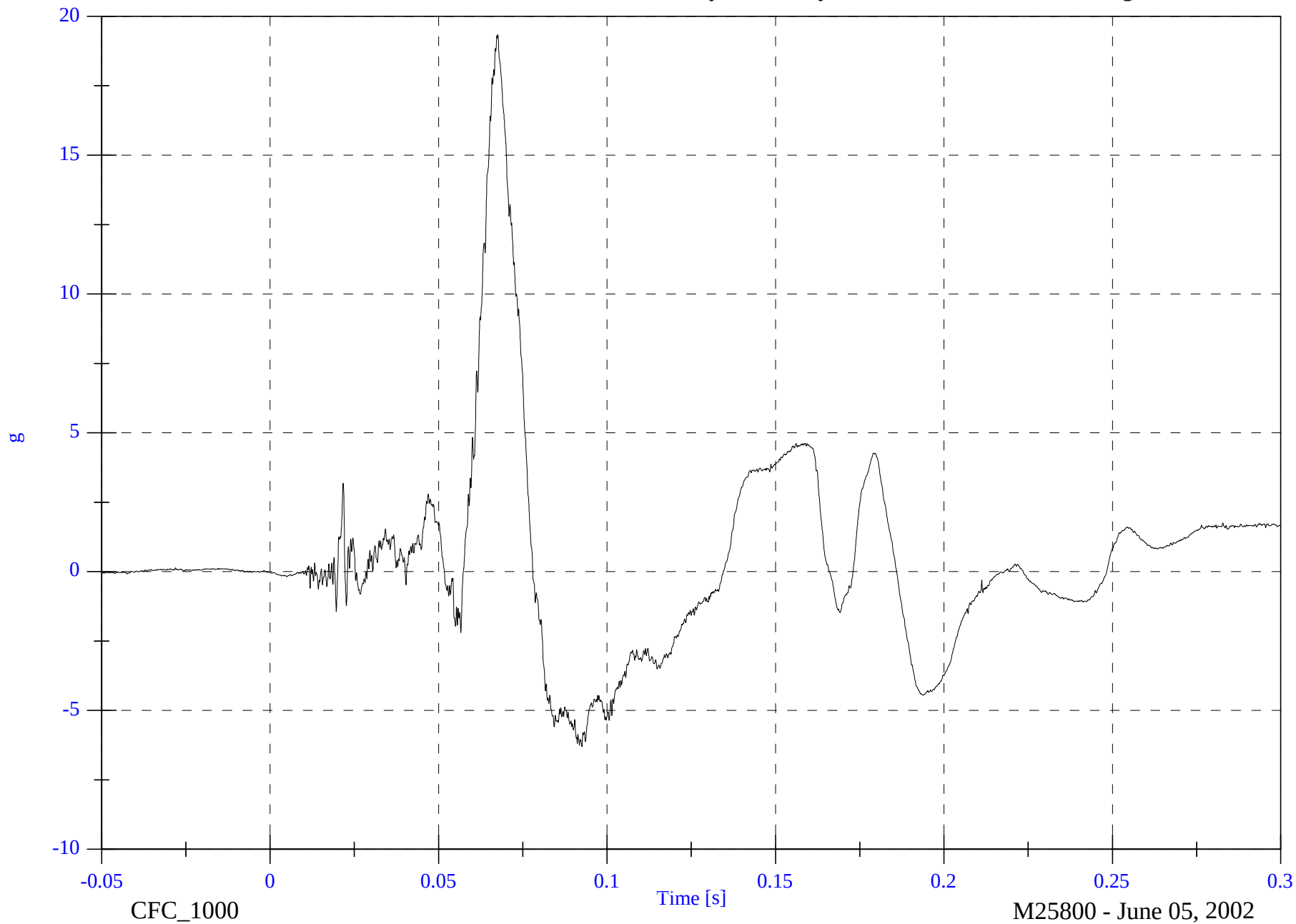
P1 Head 9 Array Z Arm Ay

Max: 19.3 [g] at 0.068 [s]

Min: -6.3 [g] at 0.093 [s]

B-9

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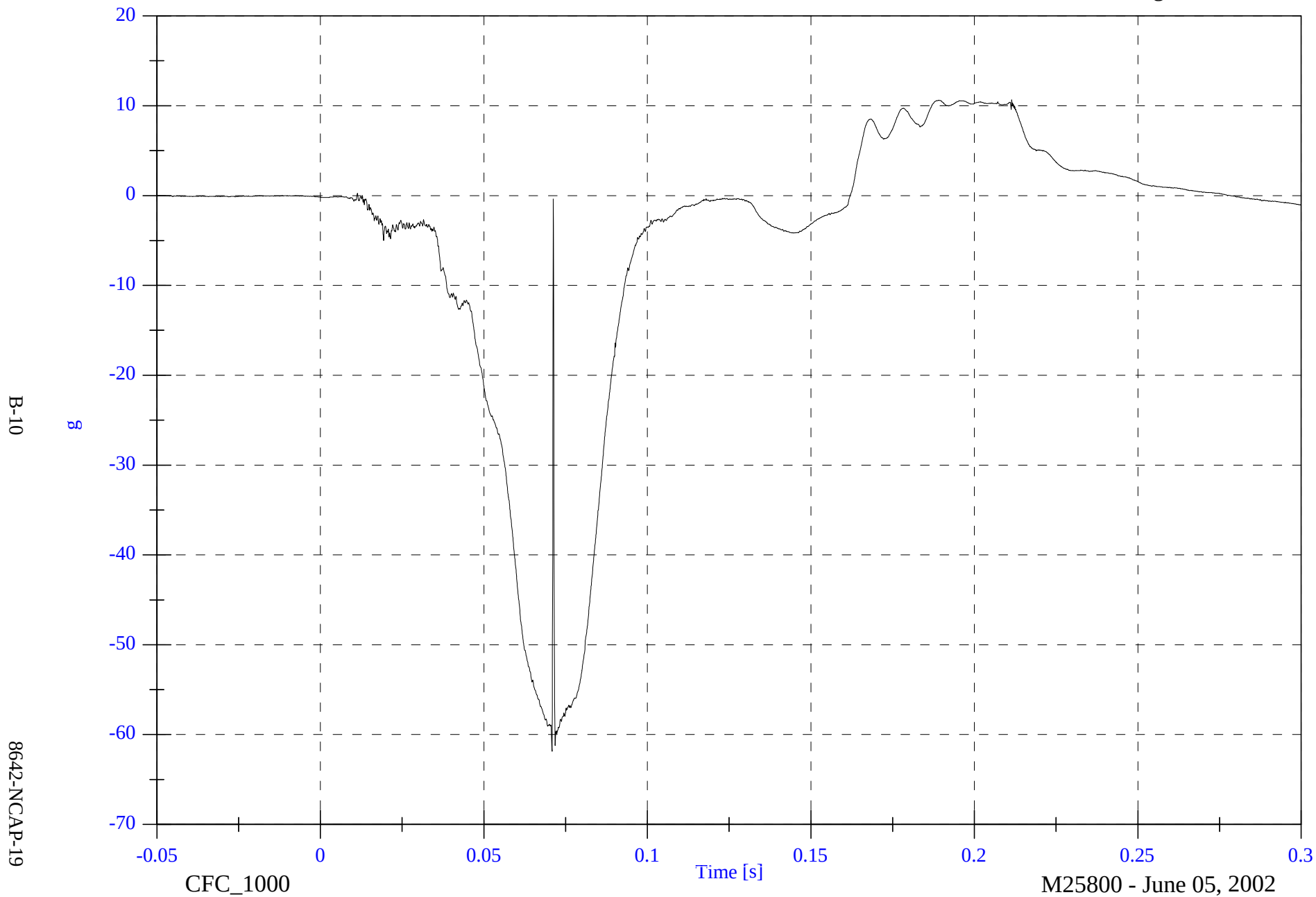


2002 NCAP Test 19 - 2002 Audi A4

P1 Head CG x

Max: 10.7 [g] at 0.211 [s]

Min: -61.9 [g] at 0.071 [s]



2002 NCAP Test 19 - 2002 Audi A4

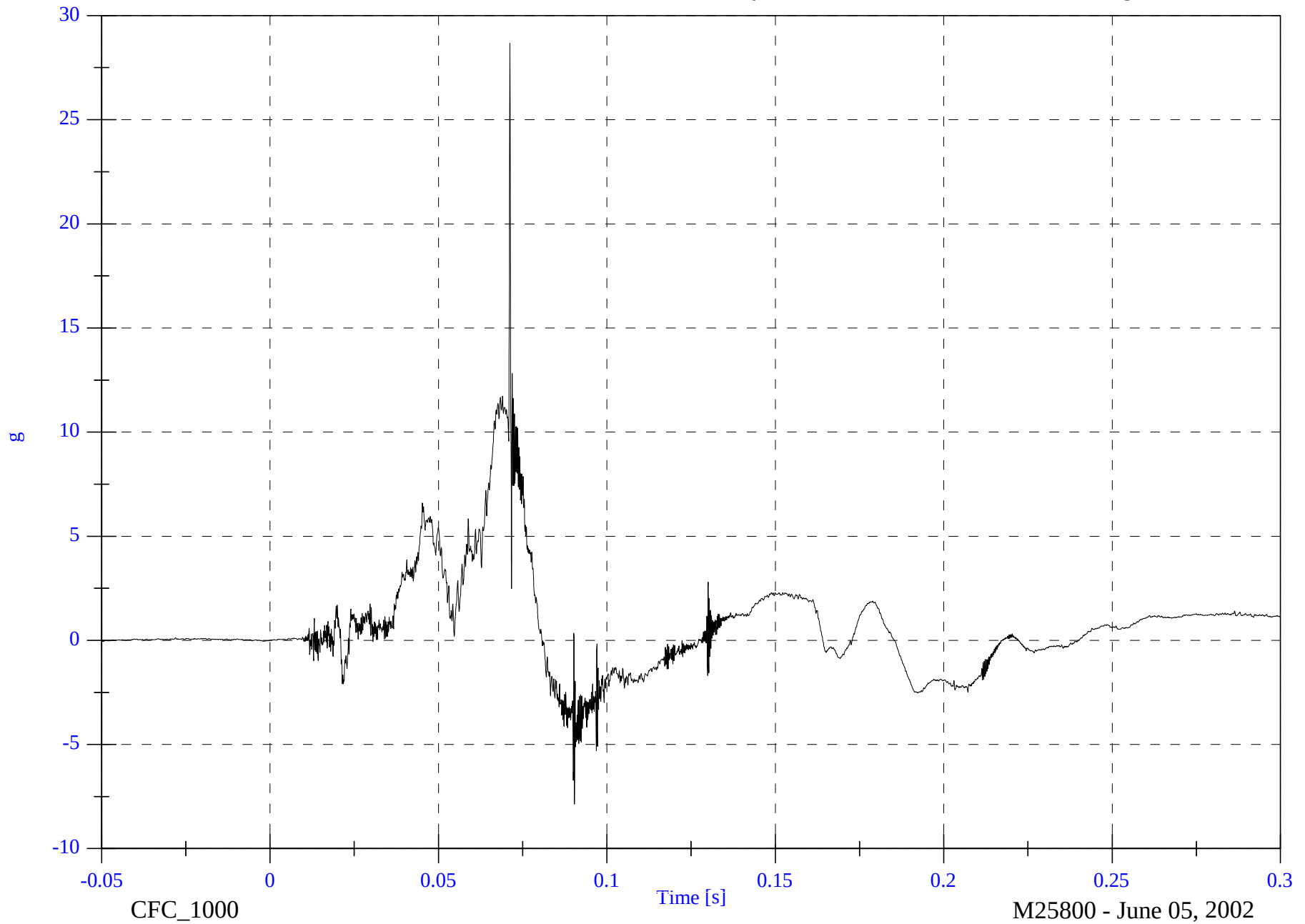
P1 Head CG y

Max: 28.7 [g] at 0.071 [s]

Min: -7.9 [g] at 0.090 [s]

B-11

8642-NCAP-19



2002 NCAP Test 19 - 2002 Audi A4

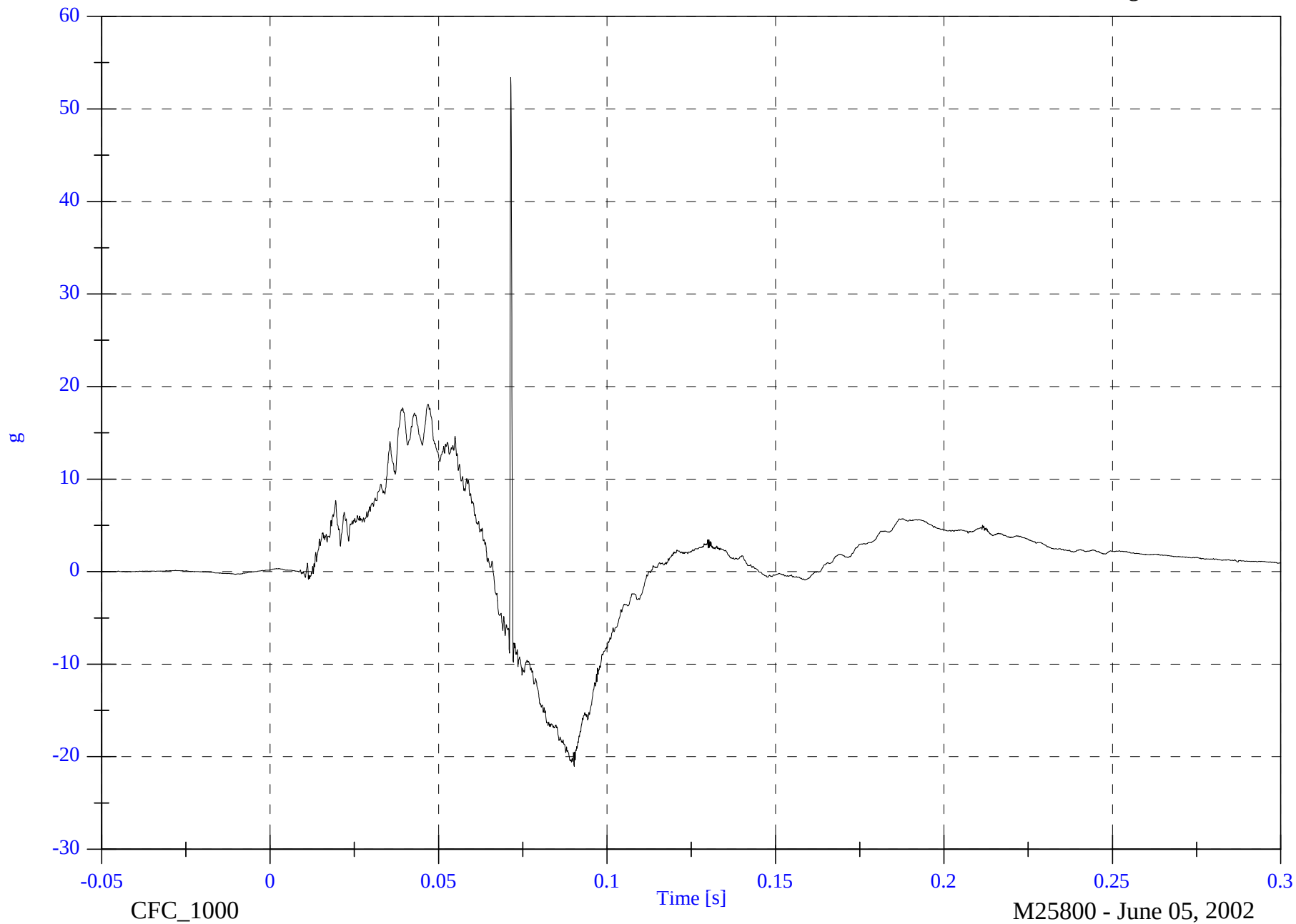
P1 Head CG z

Max: 53.4 [g] at 0.071 [s]

Min: -21.0 [g] at 0.090 [s]

B-12

8642-NCAP-19



2002 NCAP Test 19 - 2002 Audi A4

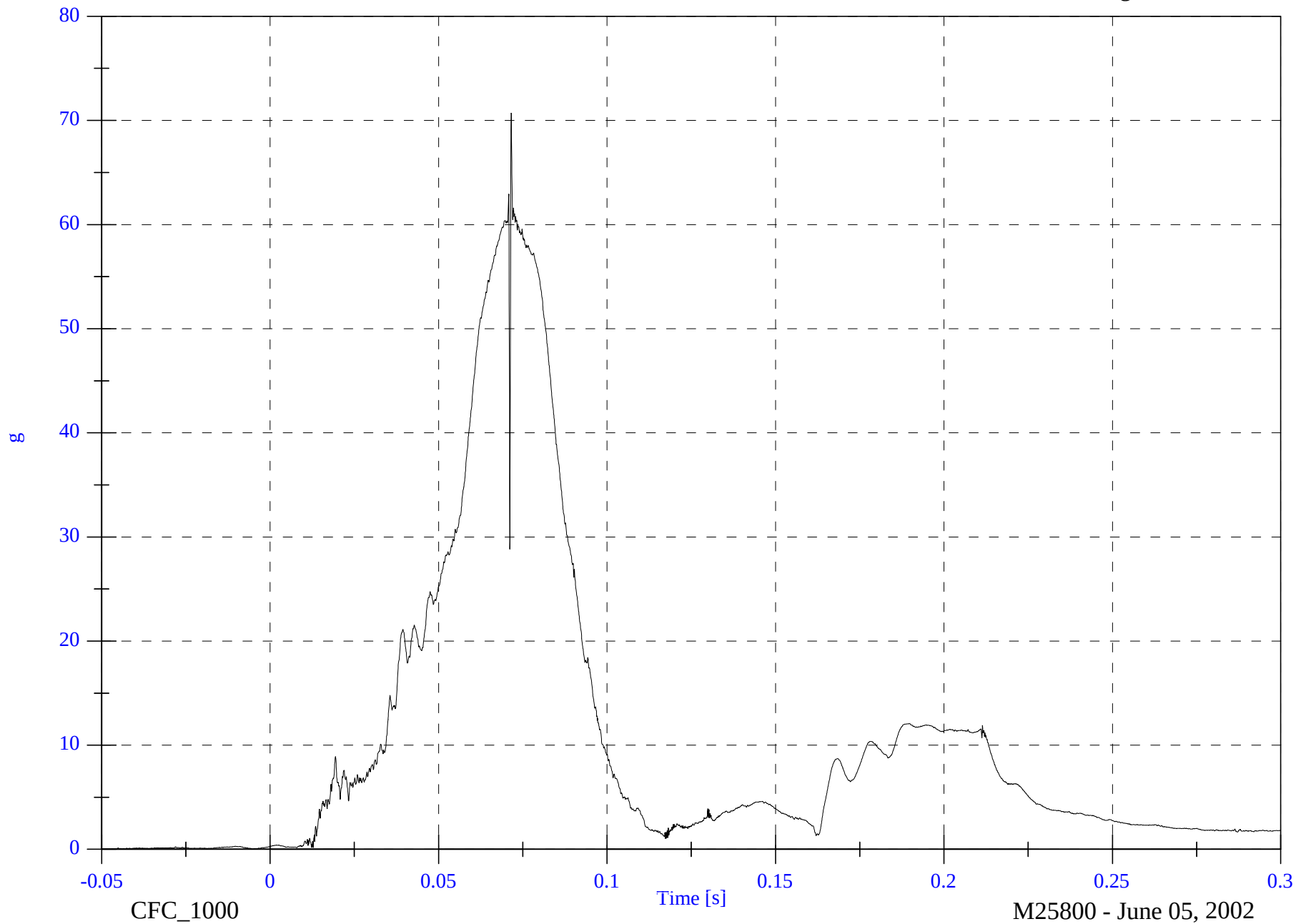
P1 Head CG Resultant

Max: 70.7 [g] at 0.072 [s]

Min: 0.0 [g] at -0.049 [s]

B-13

8642-NCAP-19



2002 NCAP Test 19 - 2002 Audi A4

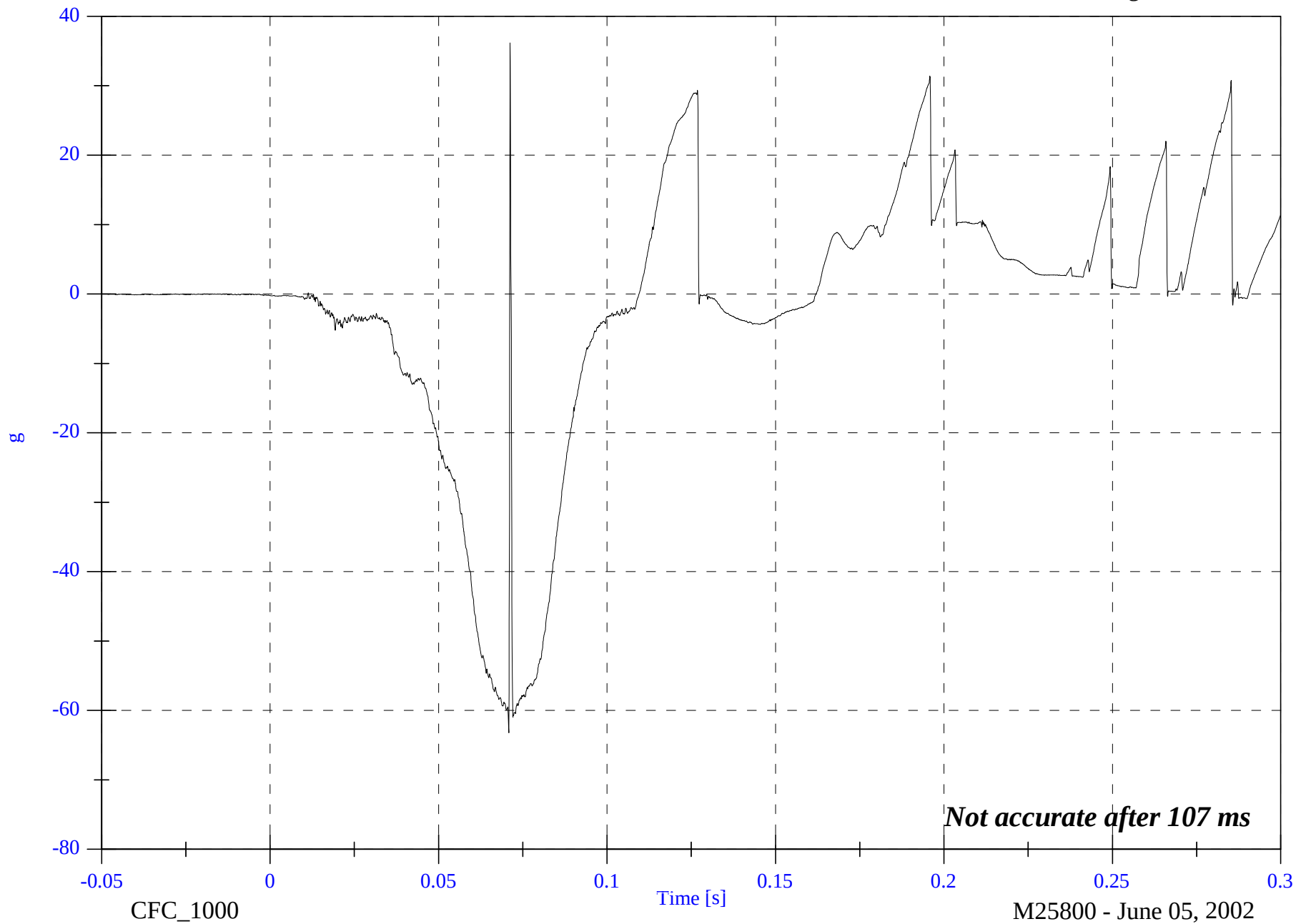
P1 Head CG Red x

Max: 36.2 [g] at 0.071 [s]

Min: -63.2 [g] at 0.071 [s]

B-14

8642-NCAP-19

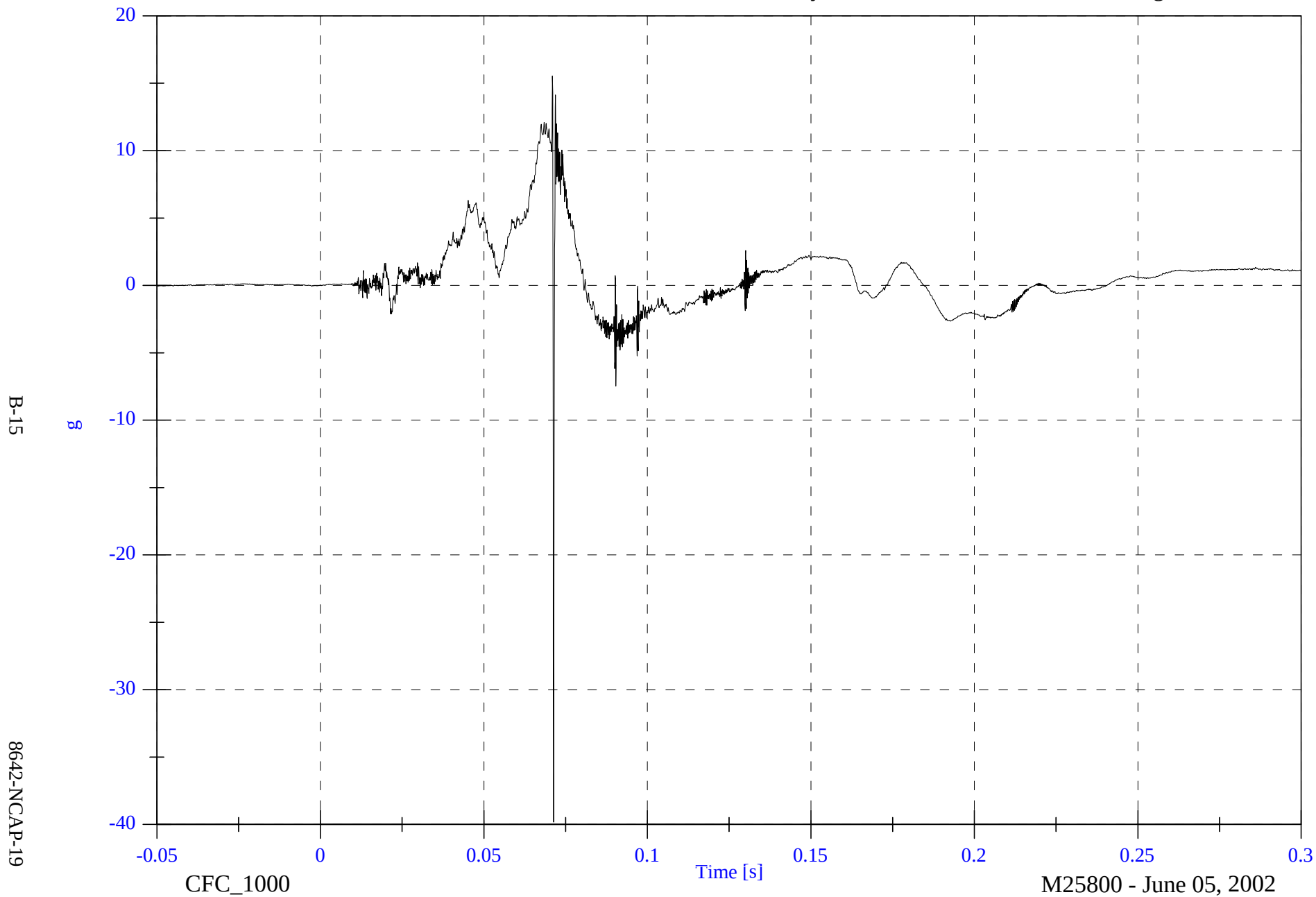


2002 NCAP Test 19 - 2002 Audi A4

P1 Head CG Red y

Max: 15.5 [g] at 0.071 [s]

Min: -39.8 [g] at 0.071 [s]



B-15

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CFC_1000

M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

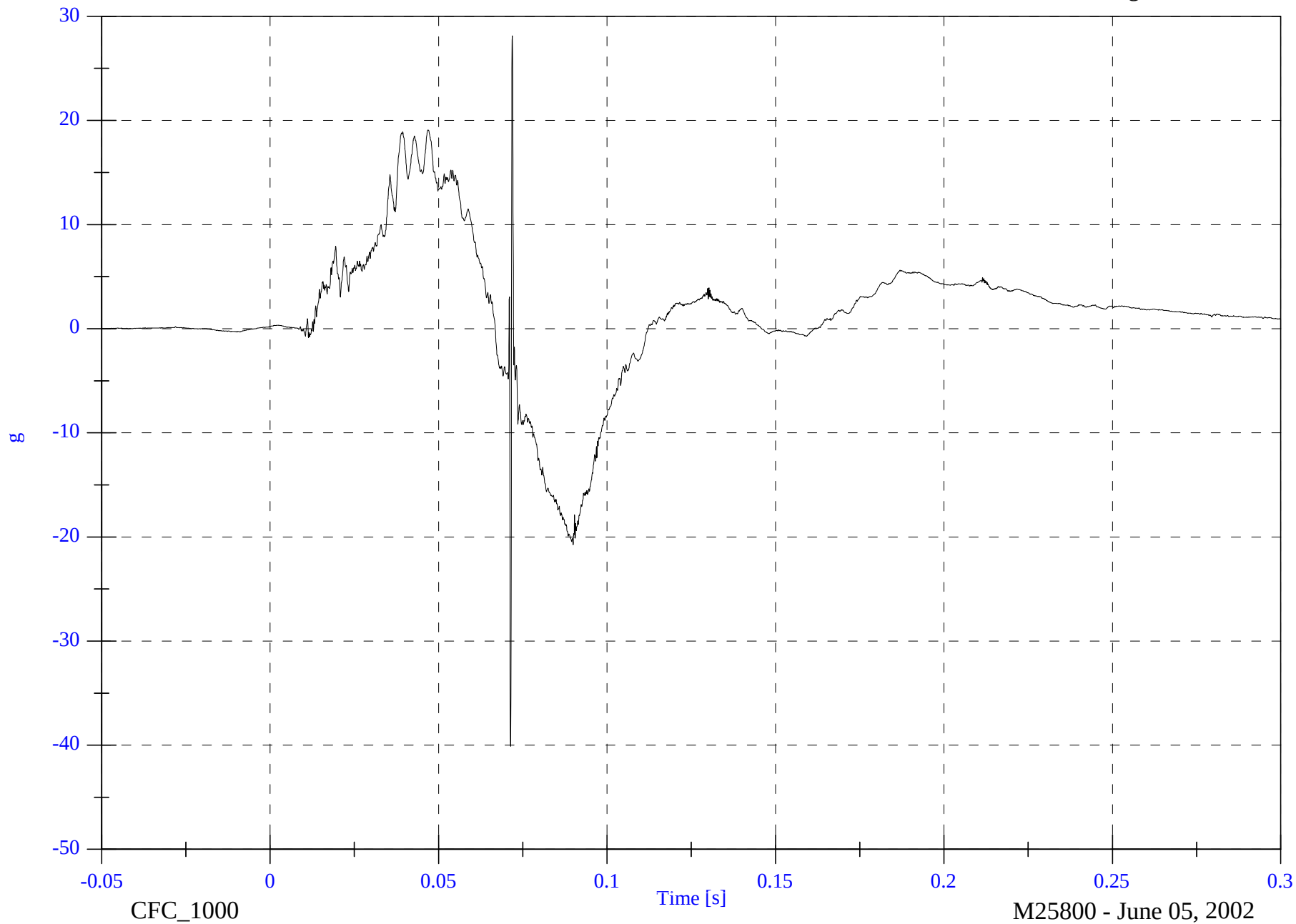
P1 Head CG Red z

Max: 28.1 [g] at 0.072 [s]

Min: -40.1 [g] at 0.071 [s]

B-16

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2002 NCAP Test 19 - 2002 Audi A4

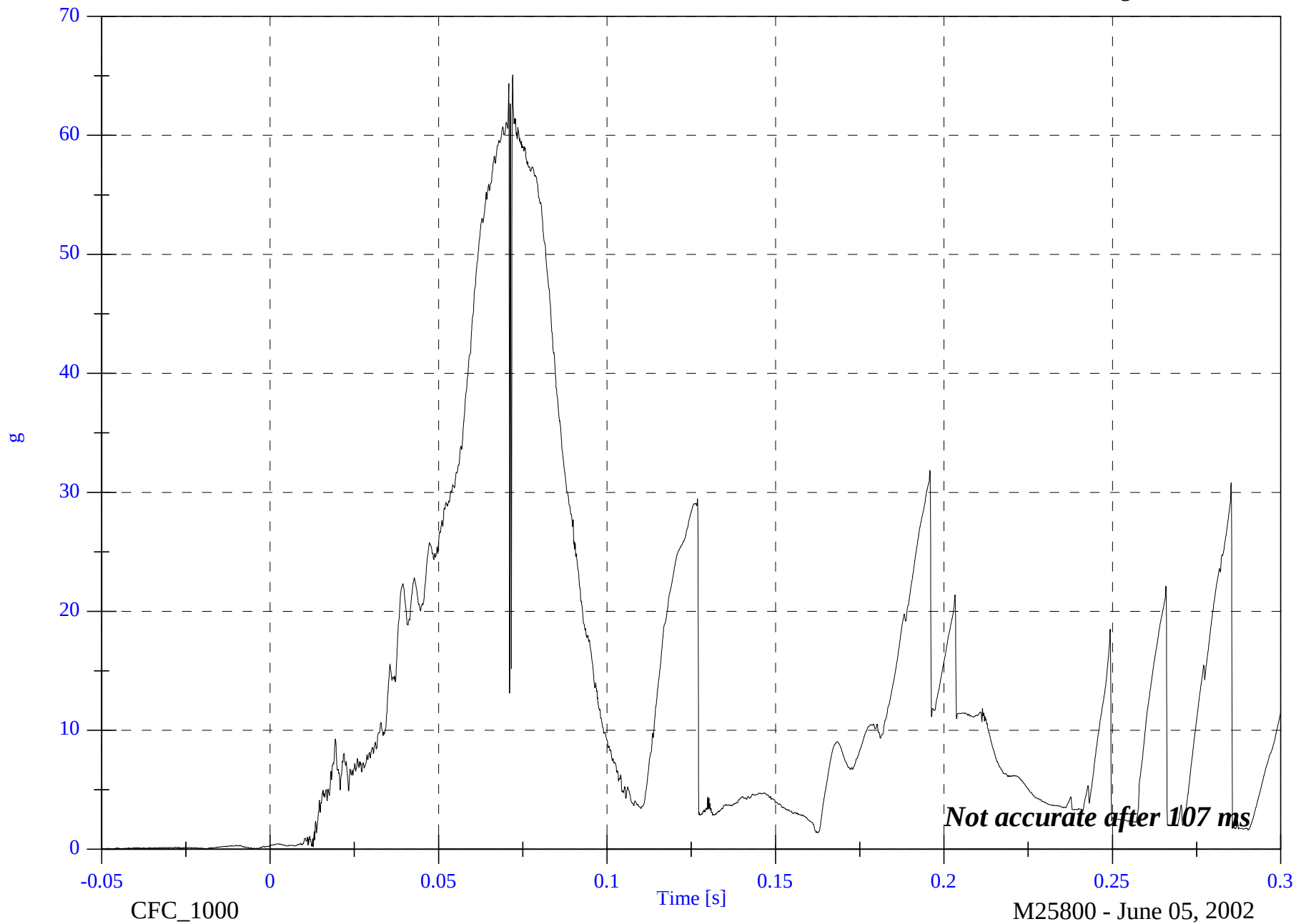
P1 Head CG Red Resultant

Max: 65.1 [g] at 0.072 [s]

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

B-17

8642-NCAP-19

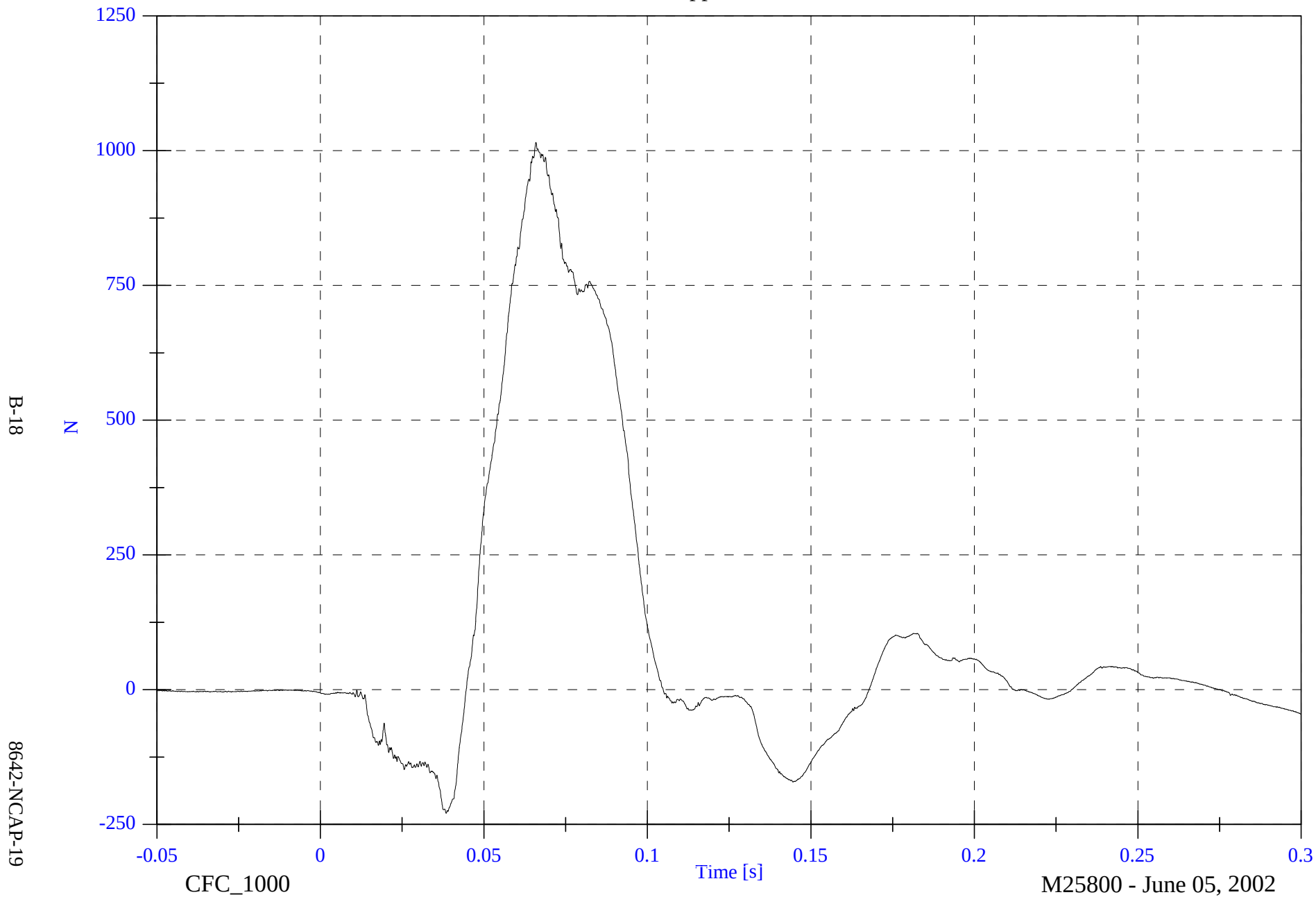


2002 NCAP Test 19 - 2002 Audi A4

P1 Upper Neck Fx

Max: 1015.3 [N] at 0.066 [s]

Min: -229.2 [N] at 0.039 [s]

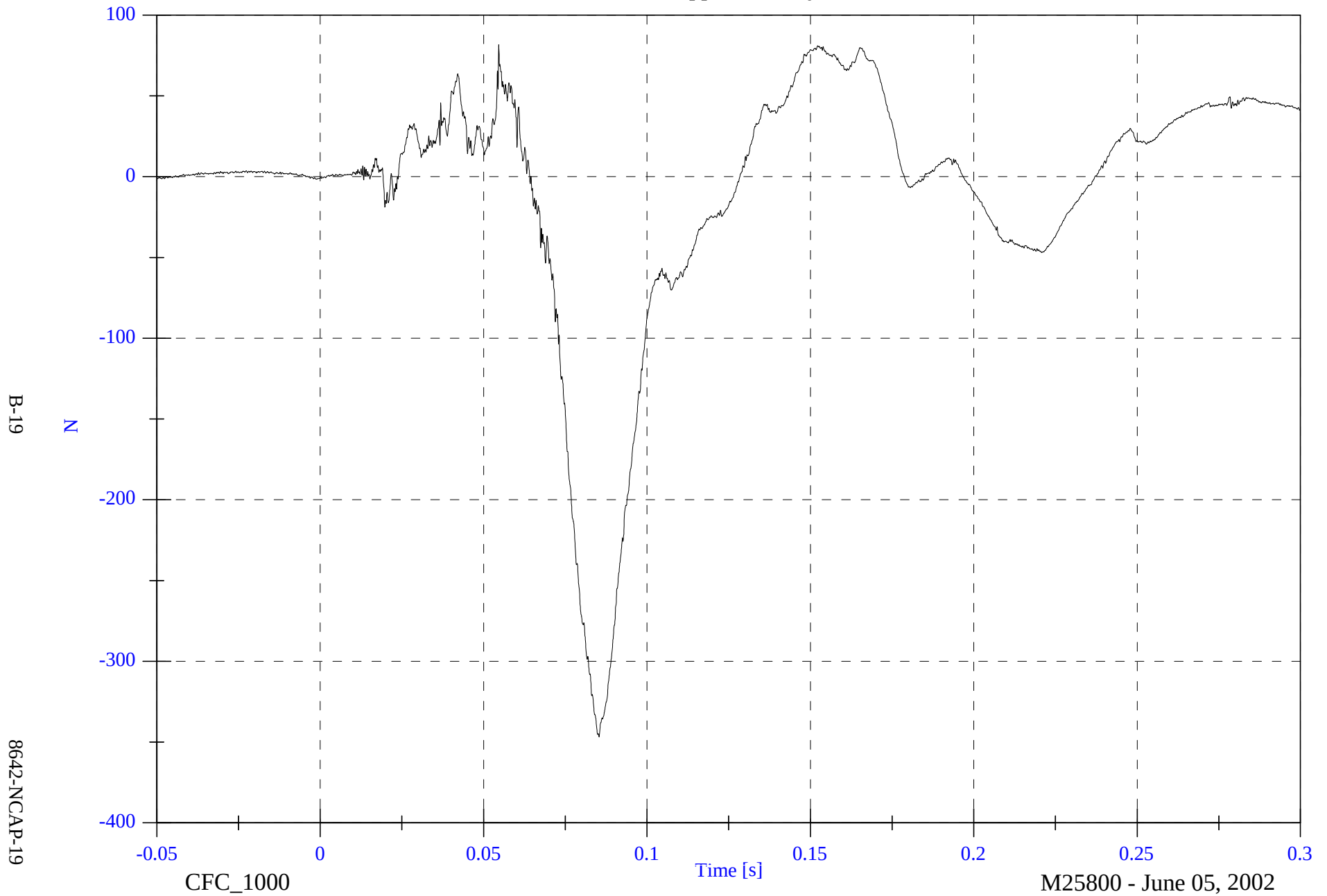


2002 NCAP Test 19 - 2002 Audi A4

P1 Upper Neck Fy

Max: 81.7 [N] at 0.055 [s]

Min: -346.8 [N] at 0.085 [s]

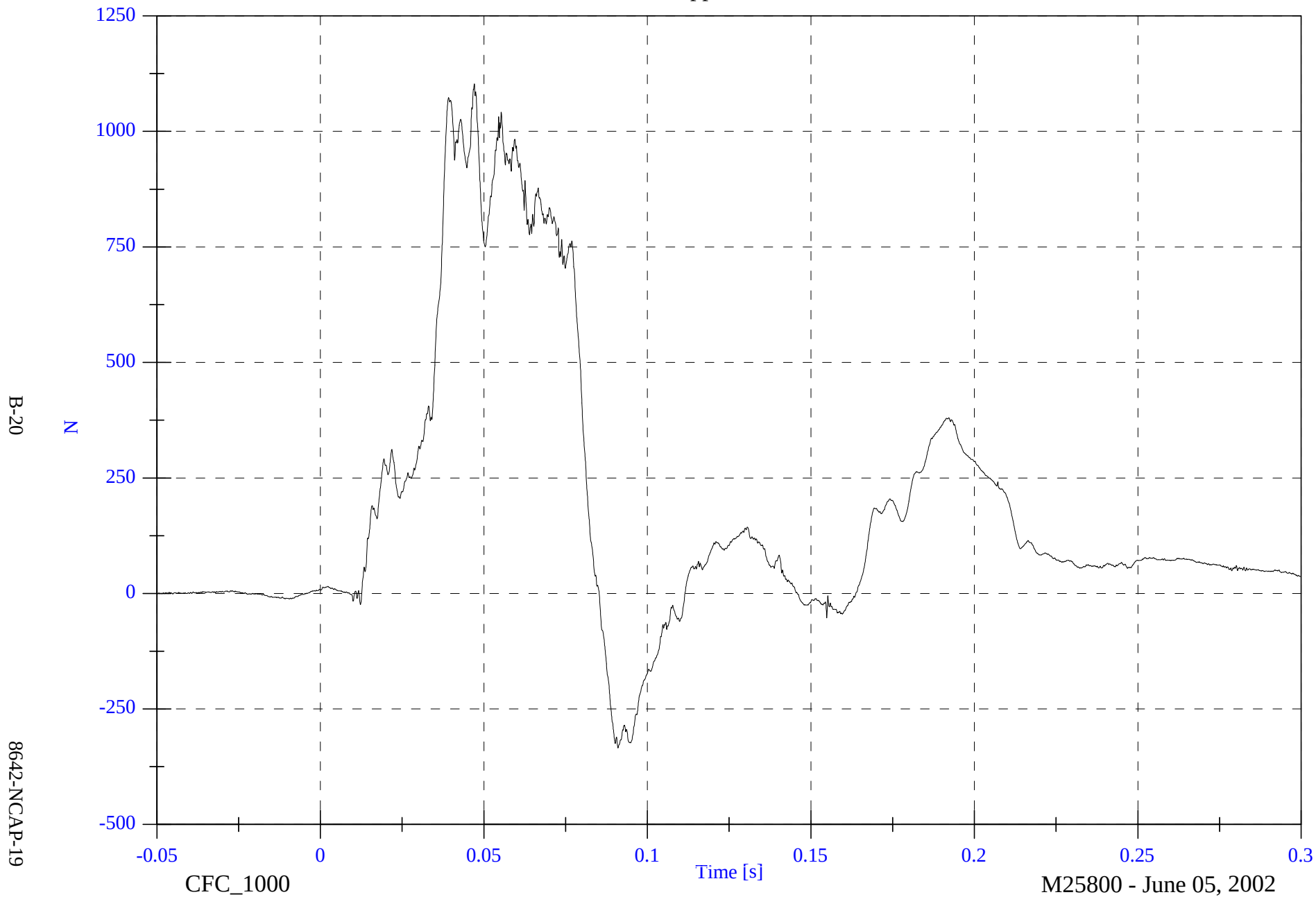


2002 NCAP Test 19 - 2002 Audi A4

P1 Upper Neck Fz

Max: 1103.0 [N] at 0.047 [s]

Min: -334.6 [N] at 0.091 [s]

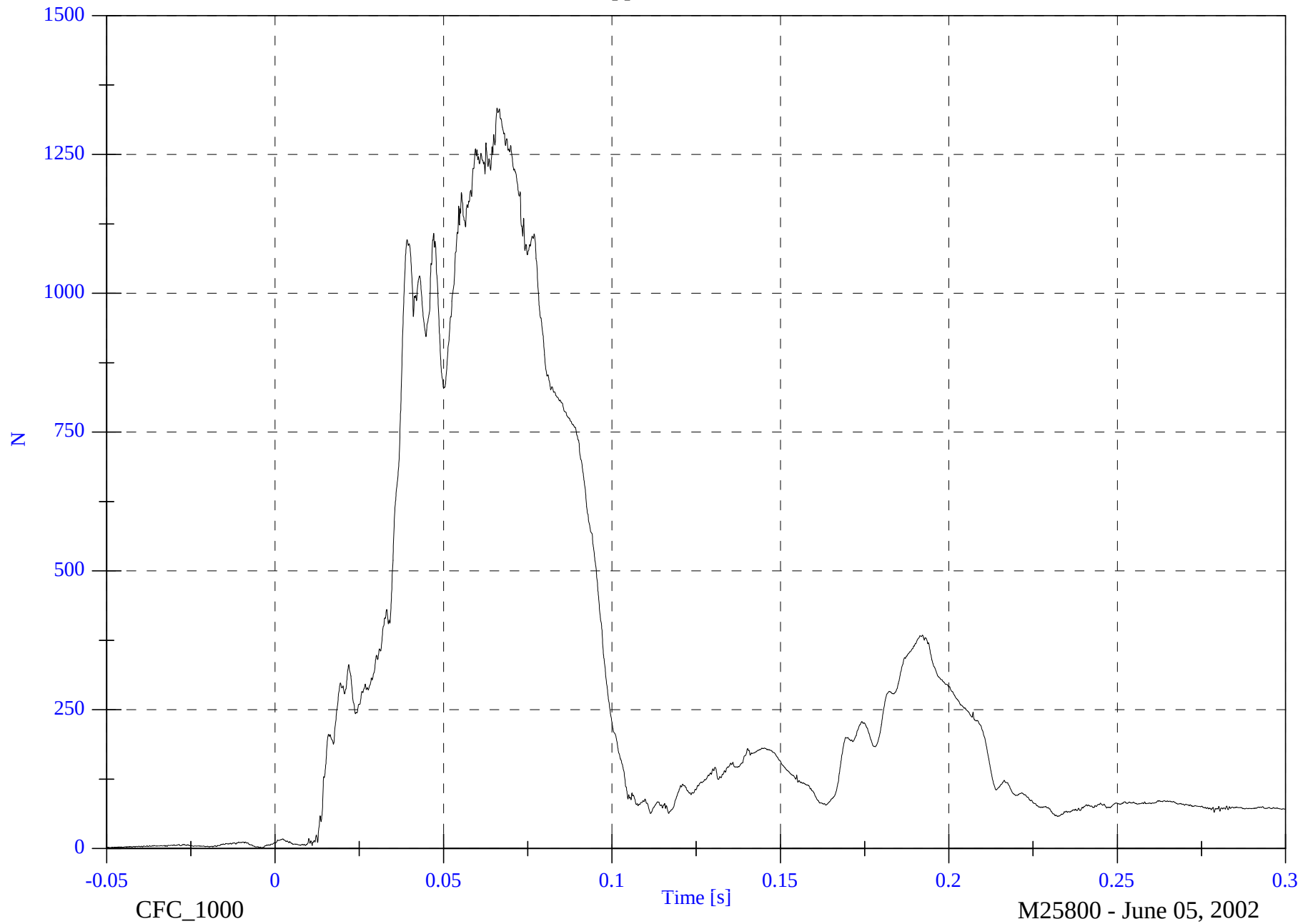


2002 NCAP Test 19 - 2002 Audi A4

P1 Upper Neck F Resultant

Max: 1333.6 [N] at 0.066 [s]

Min: 1.5 [N] at -0.005 [s]



2002 NCAP Test 19 - 2002 Audi A4

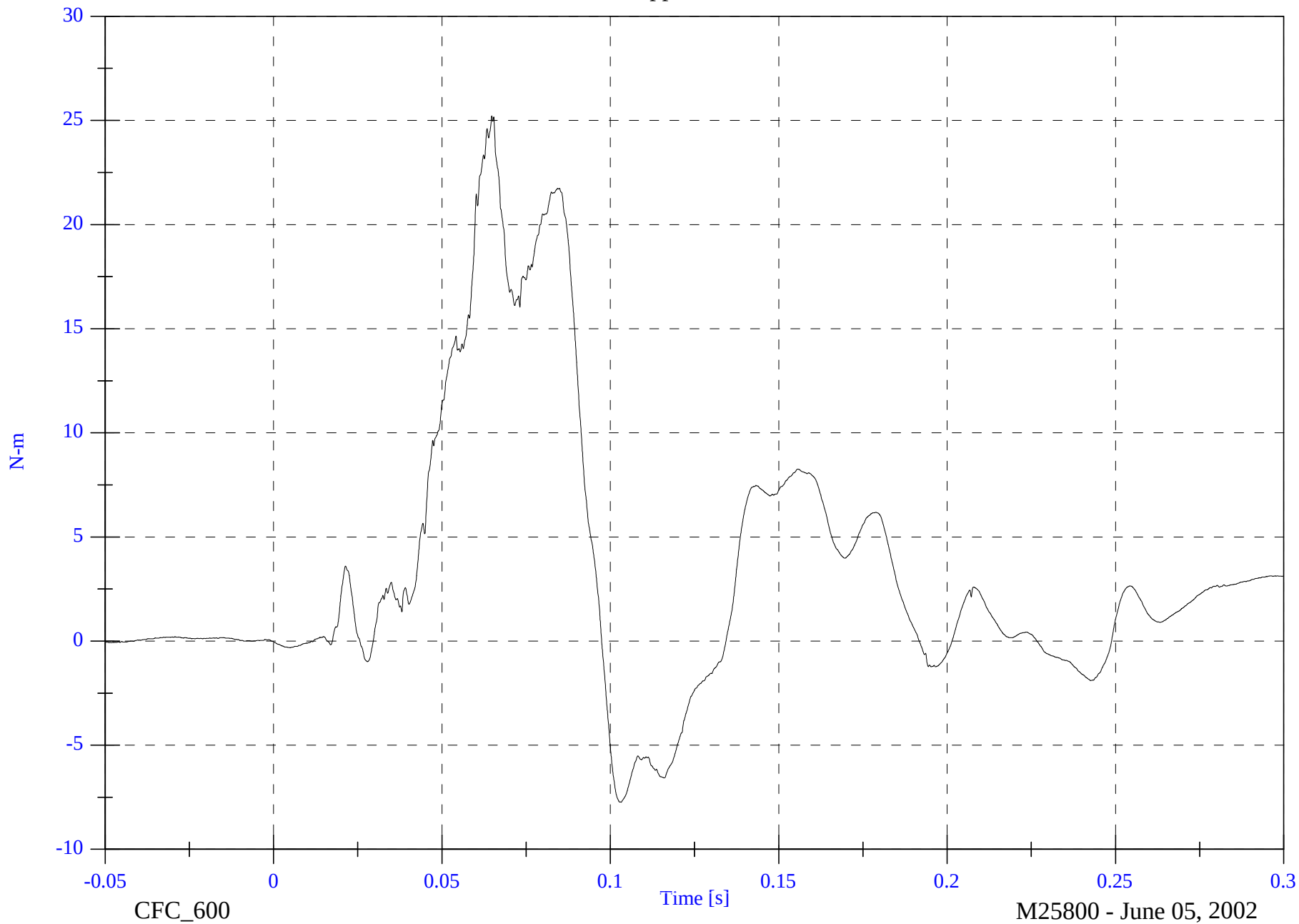
P1 Upper Neck Mx

Max: 25.2 [N-m] at 0.065 [s]

Min: -7.7 [N-m] at 0.103 [s]

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2002 NCAP Test 19 - 2002 Audi A4

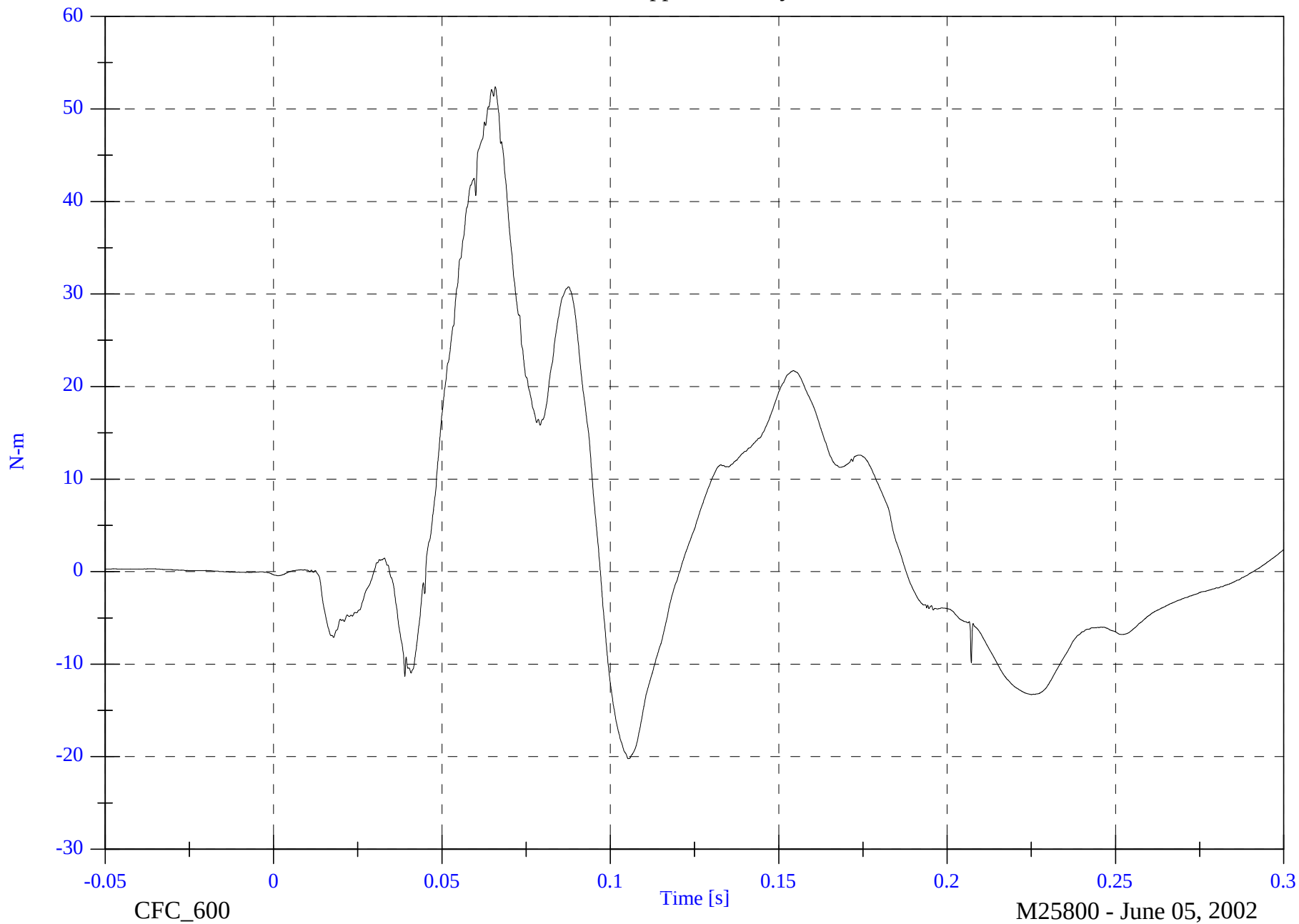
P1 Upper Neck My

Max: 52.4 [N-m] at 0.066 [s]

Min: -20.2 [N-m] at 0.105 [s]

B-23

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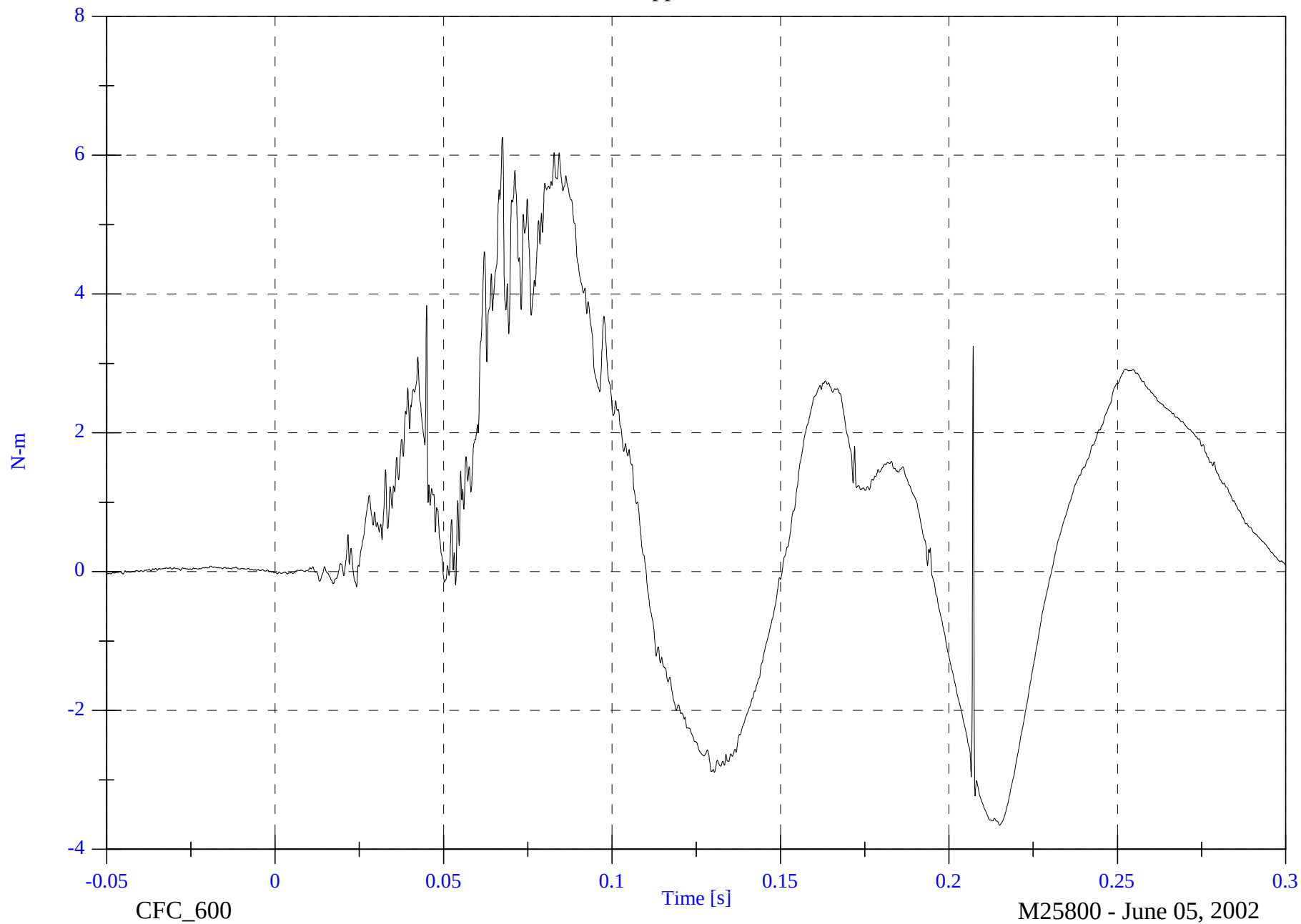


2002 NCAP Test 19 - 2002 Audi A4

Max: 6.3 [N-m] at 0.068 [s]

Min: -3.7 [N-m] at 0.215 [s]

P1 Upper Neck Mz



B-24

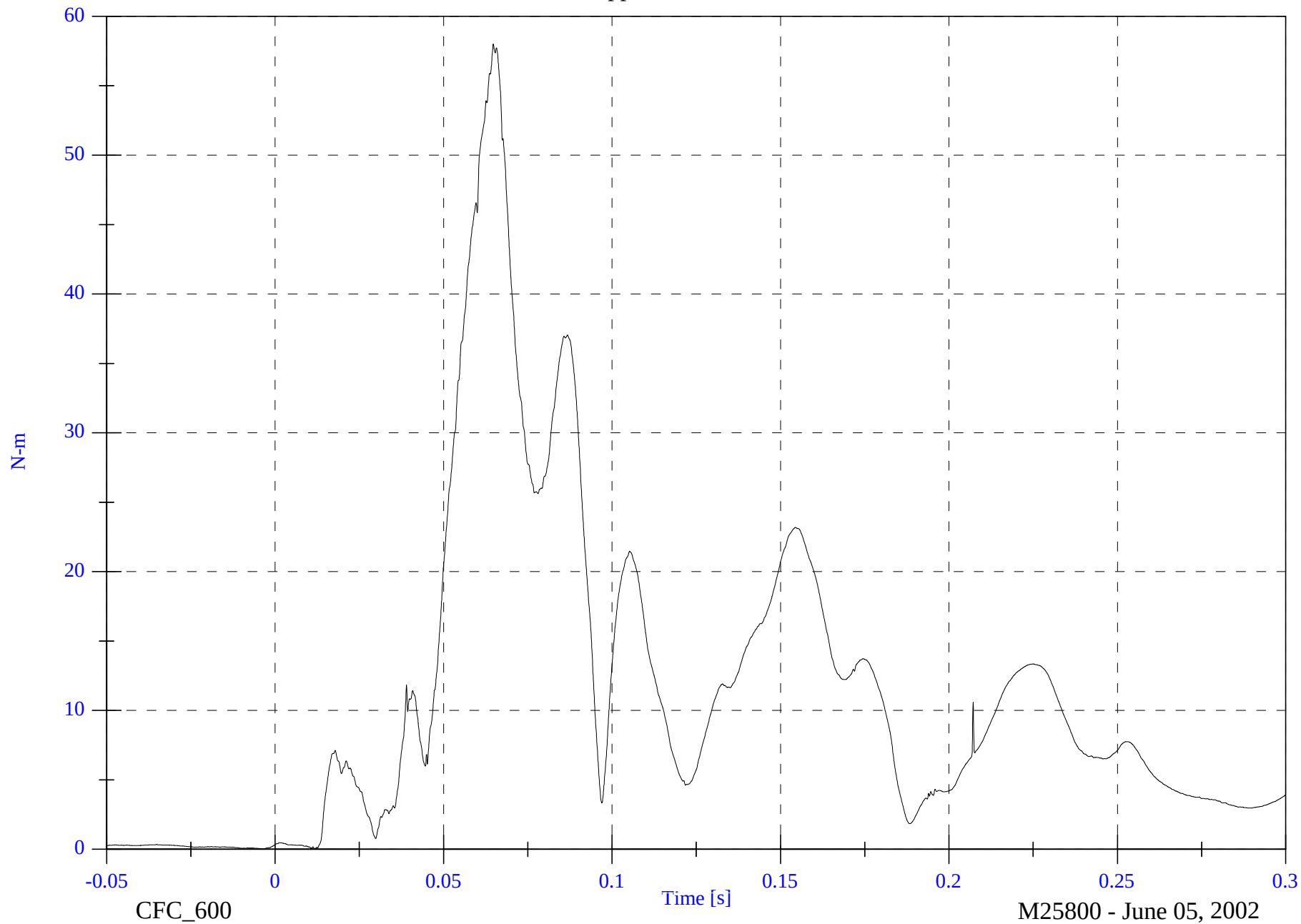
8642-NCAP-19

2002 NCAP Test 19 - 2002 Audi A4

P1 Upper Neck M Resultant

Max: 58.0 [N-m] at 0.065 [s]

Min: 0.0 [N-m] at 0.012 [s]



B-25

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CFC_600

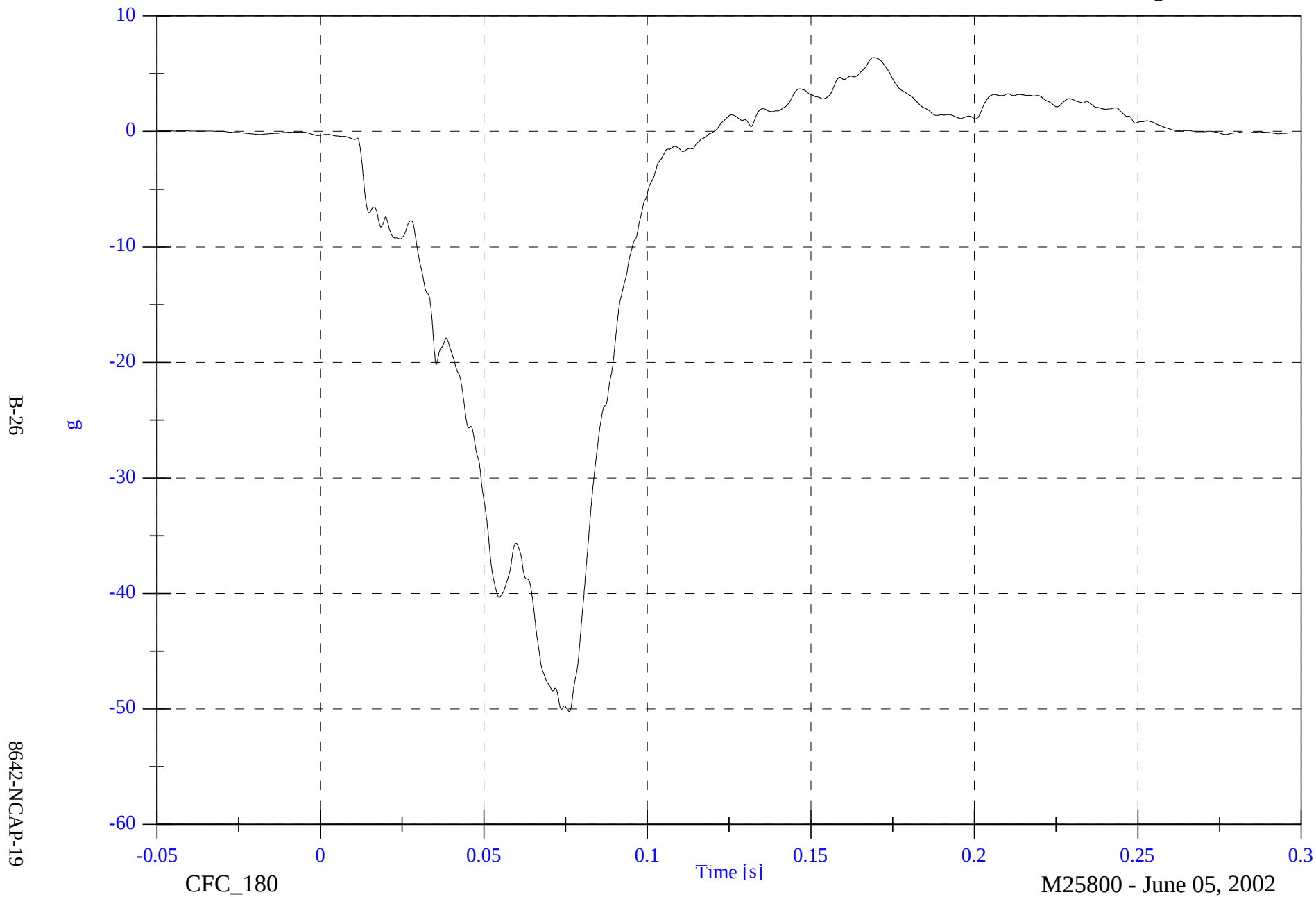
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

Max: 6.4 [g] at 0.169 [s]

Min: -50.2 [g] at 0.076 [s]

P1 Chest x

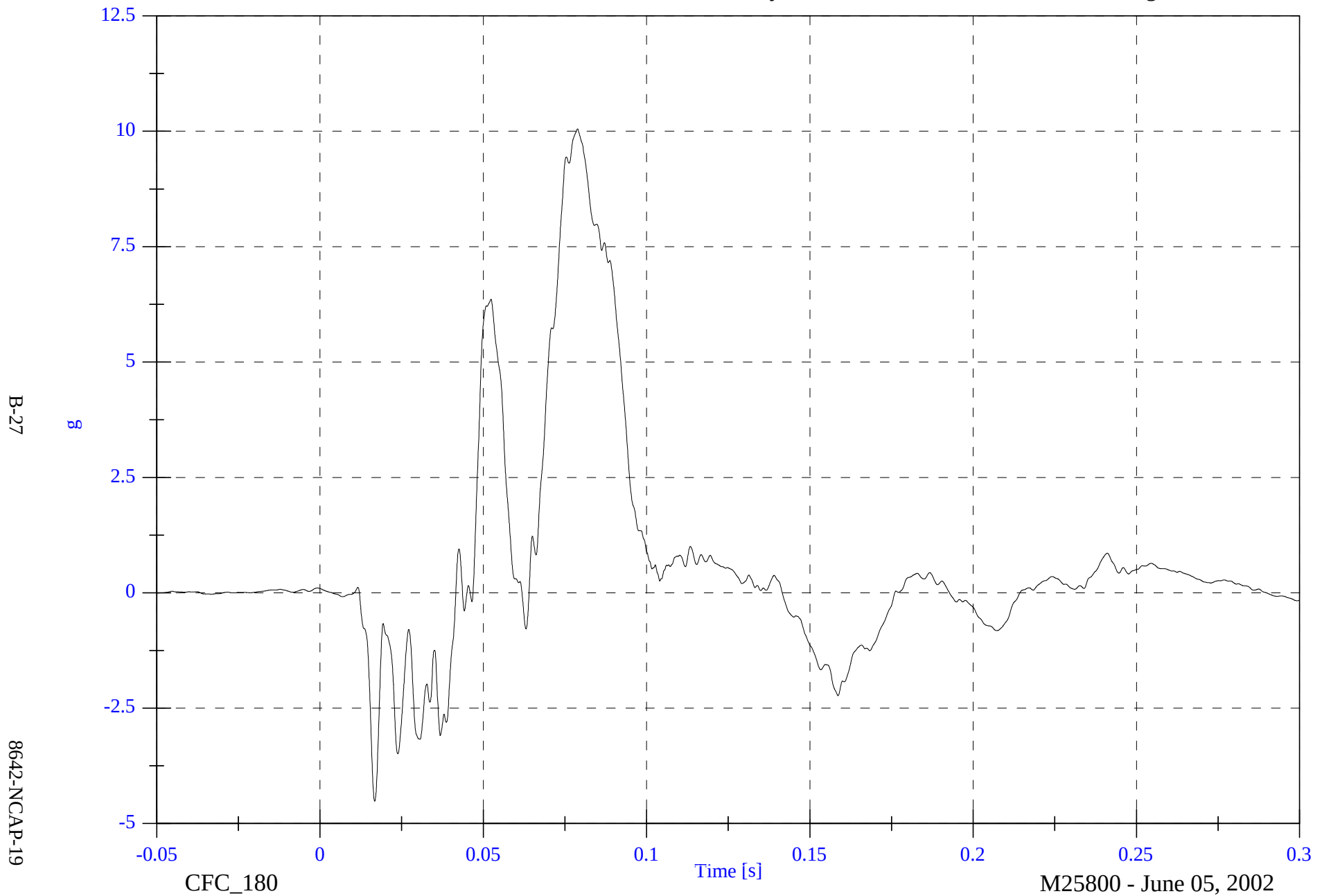


2002 NCAP Test 19 - 2002 Audi A4

Max: 10.1 [g] at 0.079 [s]

Min: -4.5 [g] at 0.017 [s]

P1 Chest y

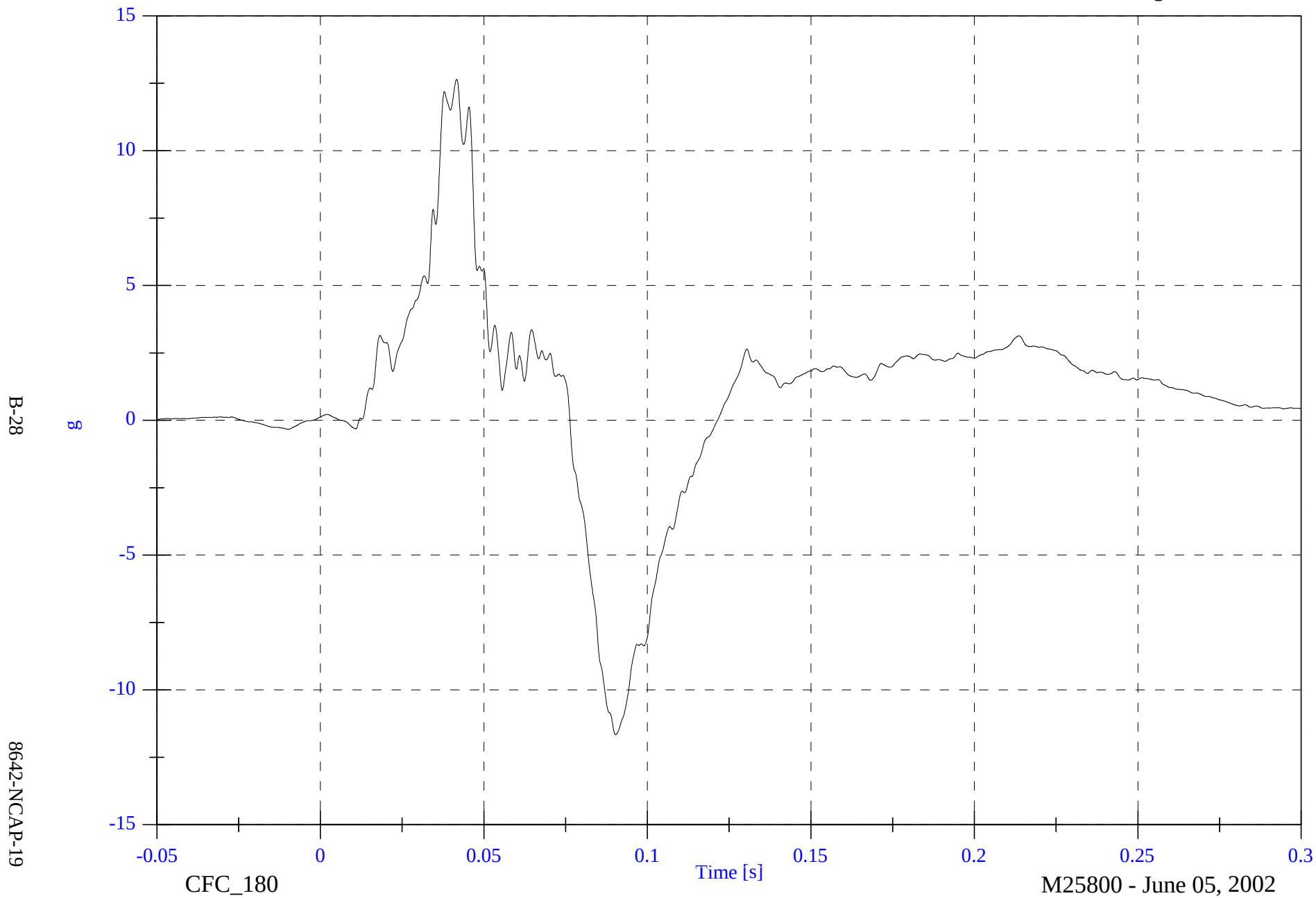


2002 NCAP Test 19 - 2002 Audi A4

P1 Chest z

Max: 12.6 [g] at 0.042 [s]

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



2002 NCAP Test 19 - 2002 Audi A4

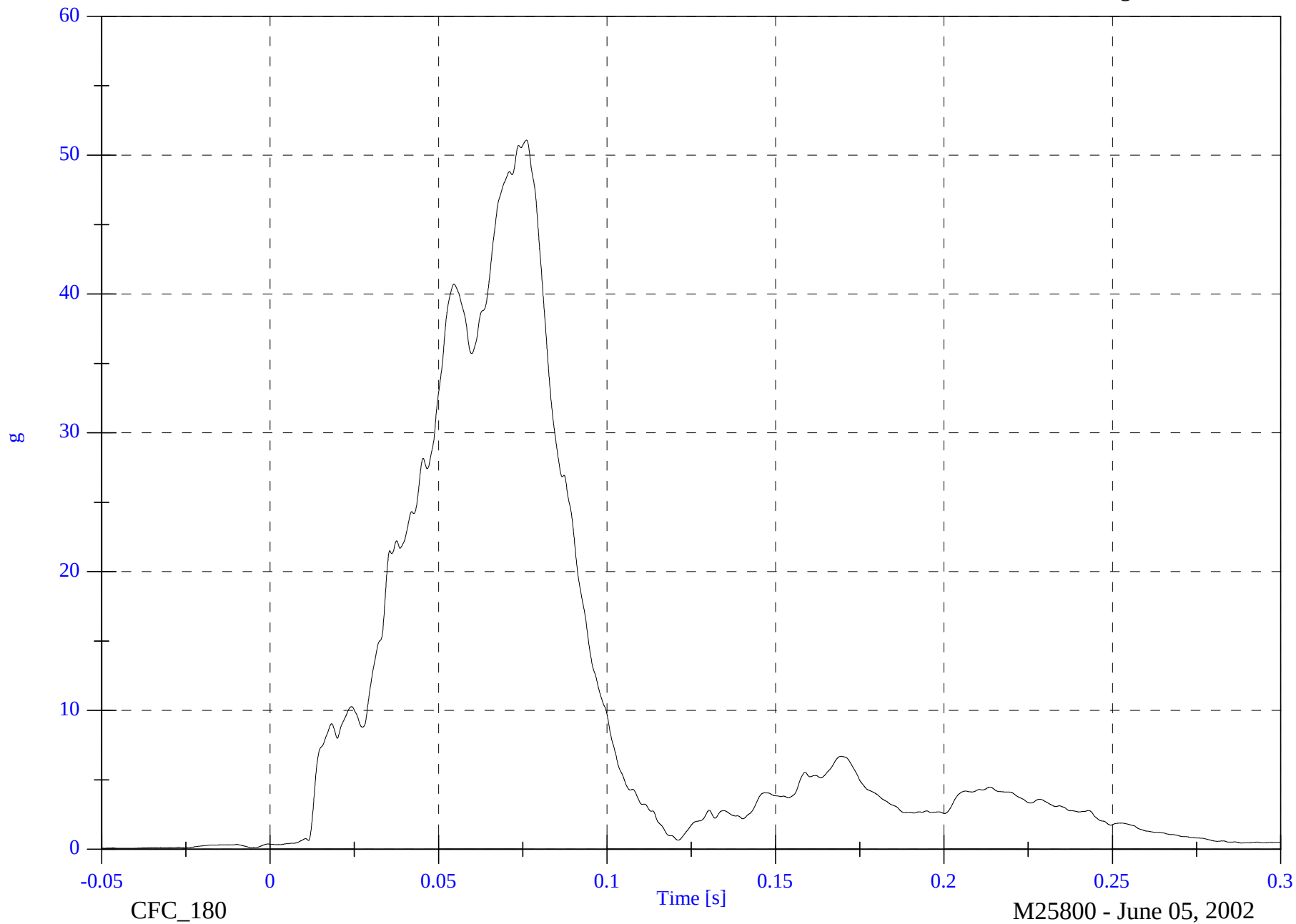
P1 Chest Resultant

Max: 51.1 [g] at 0.076 [s]

Min: 0.1 [g] at -0.045 [s]

B-29

8642-NCAP-19

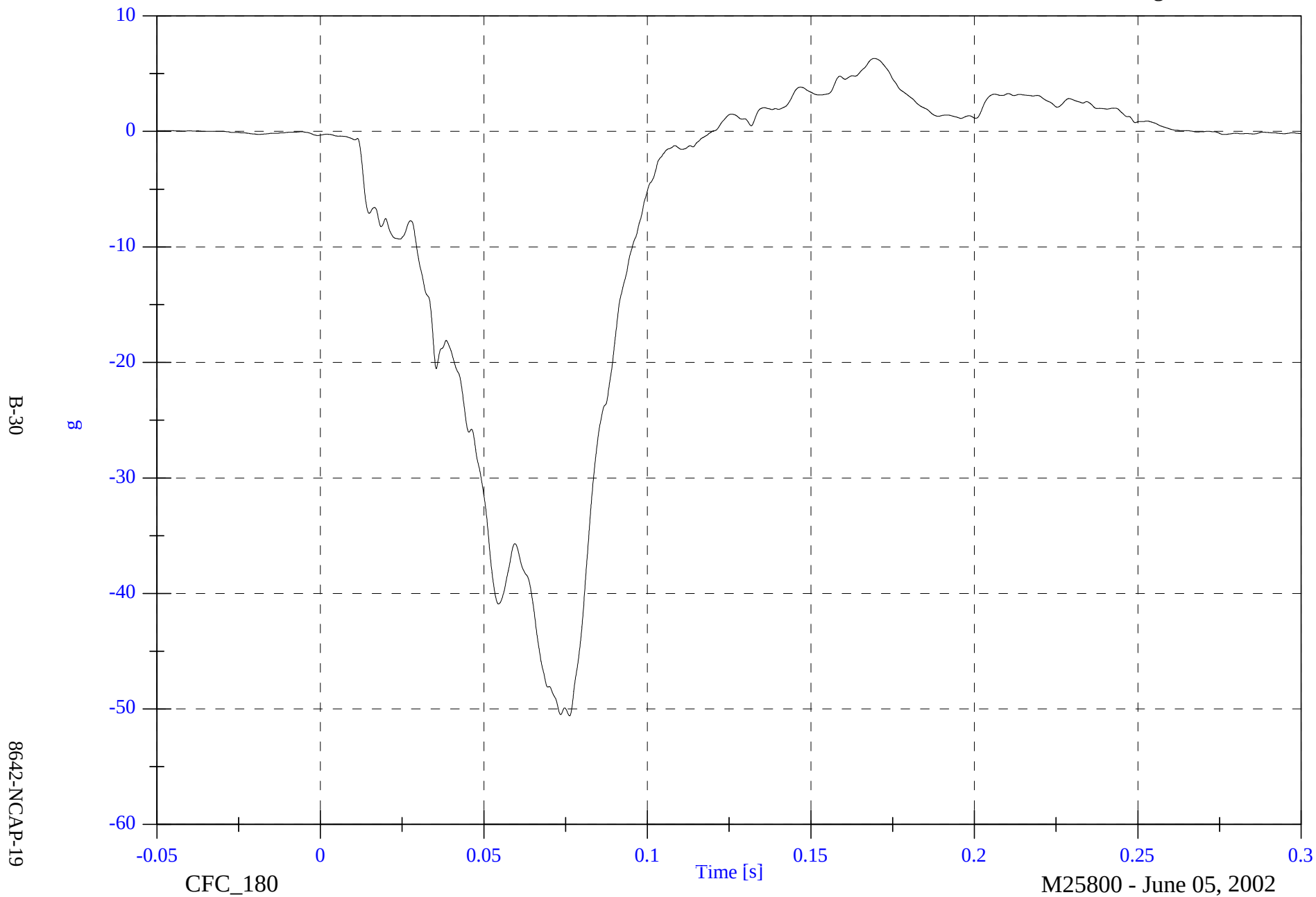


2002 NCAP Test 19 - 2002 Audi A4

P1 Chest Red x

Max: 6.3 [g] at 0.169 [s]

Min: -50.6 [g] at 0.076 [s]

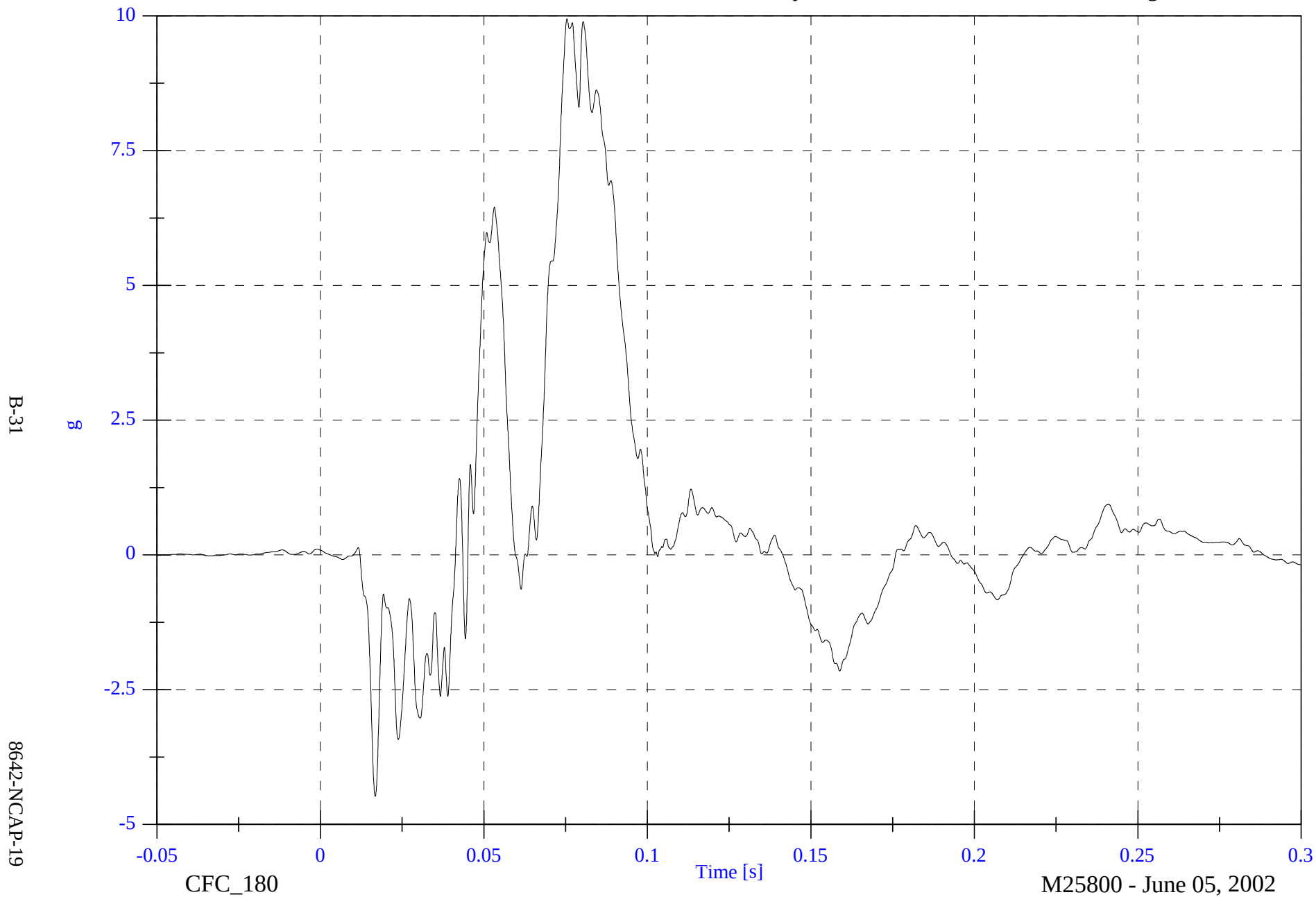


2002 NCAP Test 19 - 2002 Audi A4

Max: 9.9 [g] at 0.075 [s]

Min: -4.5 [g] at 0.017 [s]

P1 Chest Red y

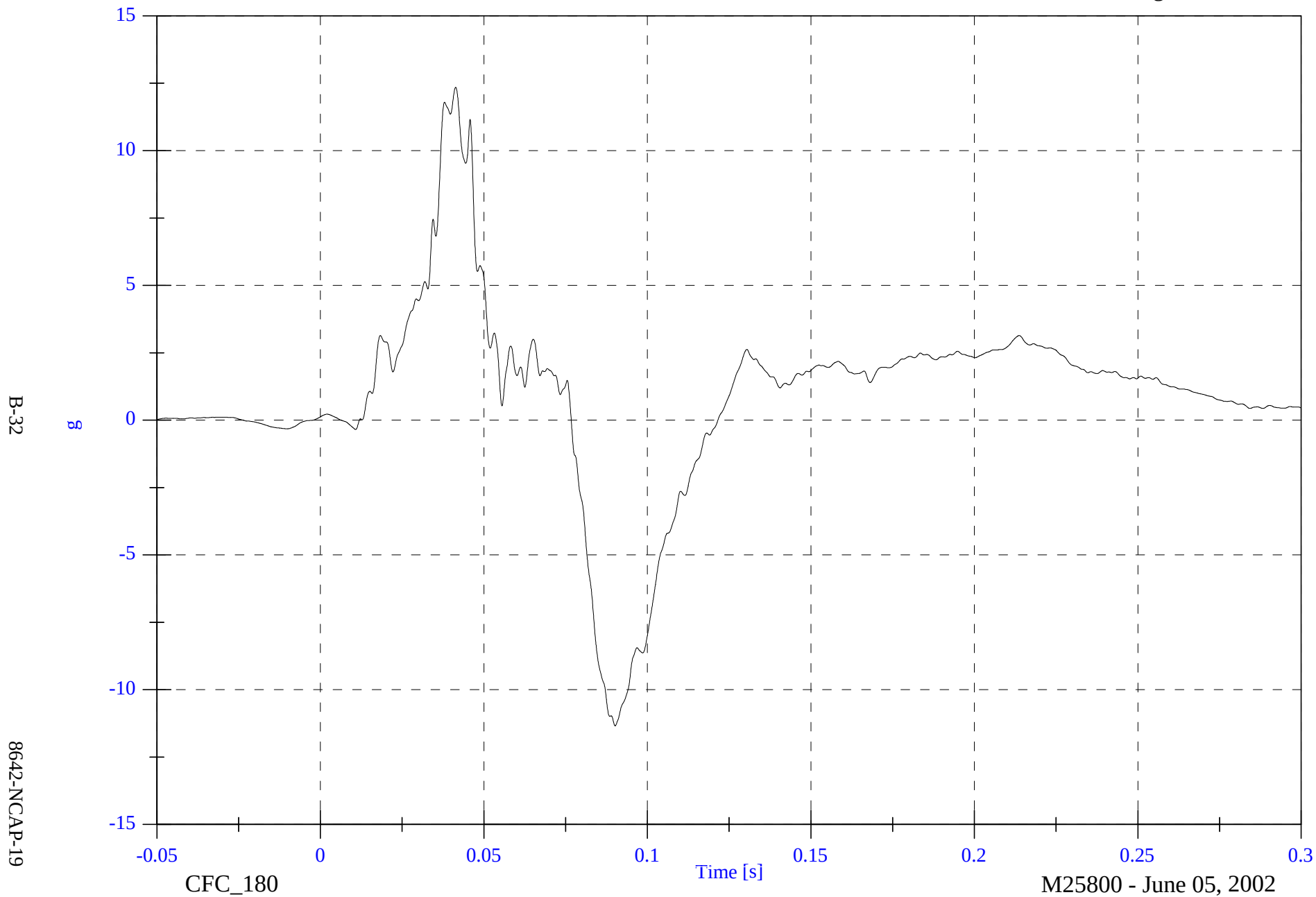


2002 NCAP Test 19 - 2002 Audi A4

P1 Chest Red z

Max: 12.3 [g] at 0.041 [s]

Min: -11.3 [g] at 0.090 [s]



2002 NCAP Test 19 - 2002 Audi A4

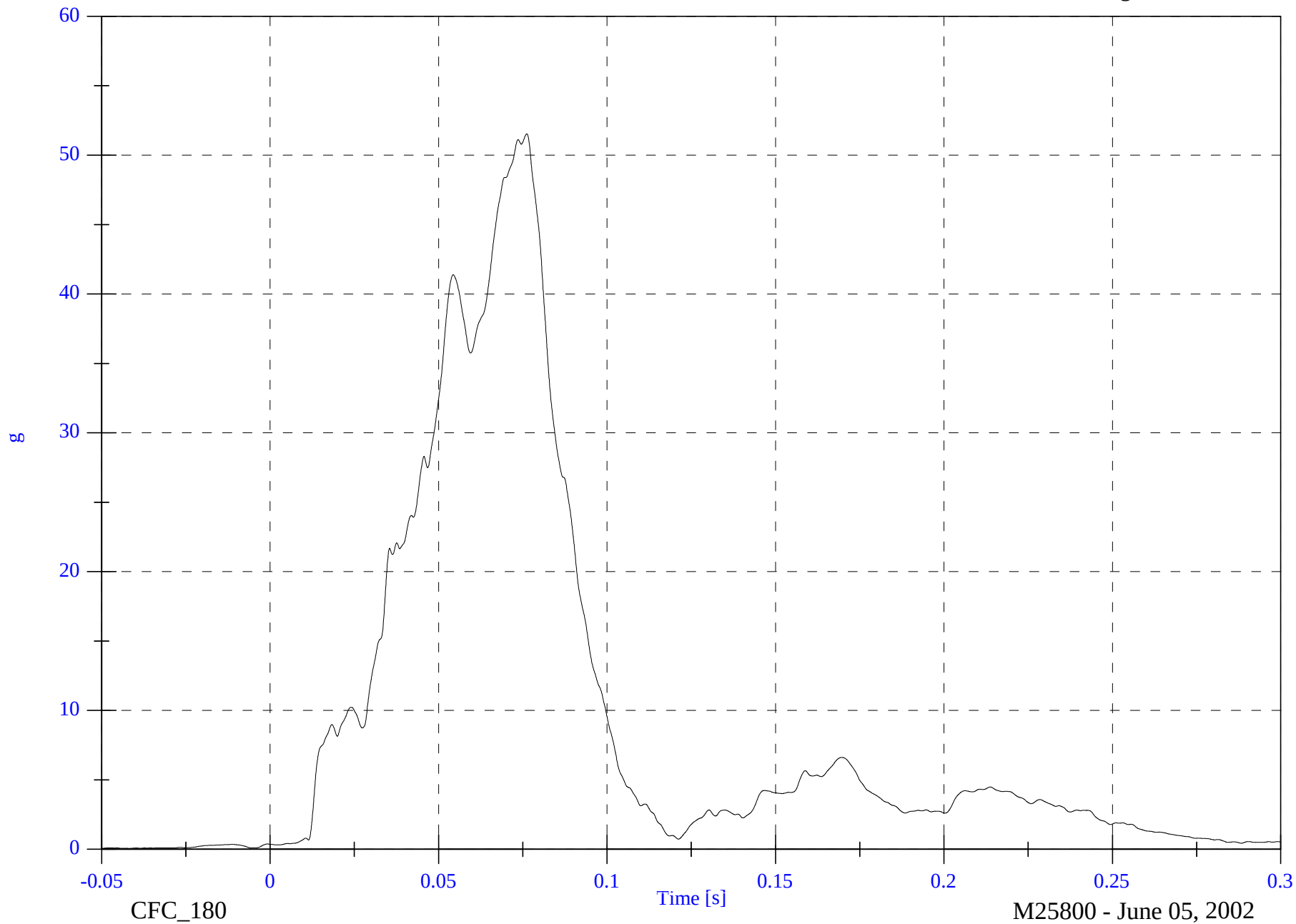
P1 Chest Red Resultant

Max: 51.5 [g] at 0.076 [s]

Min: 0.1 [g] at -0.042 [s]

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2002 NCAP Test 19 - 2002 Audi A4

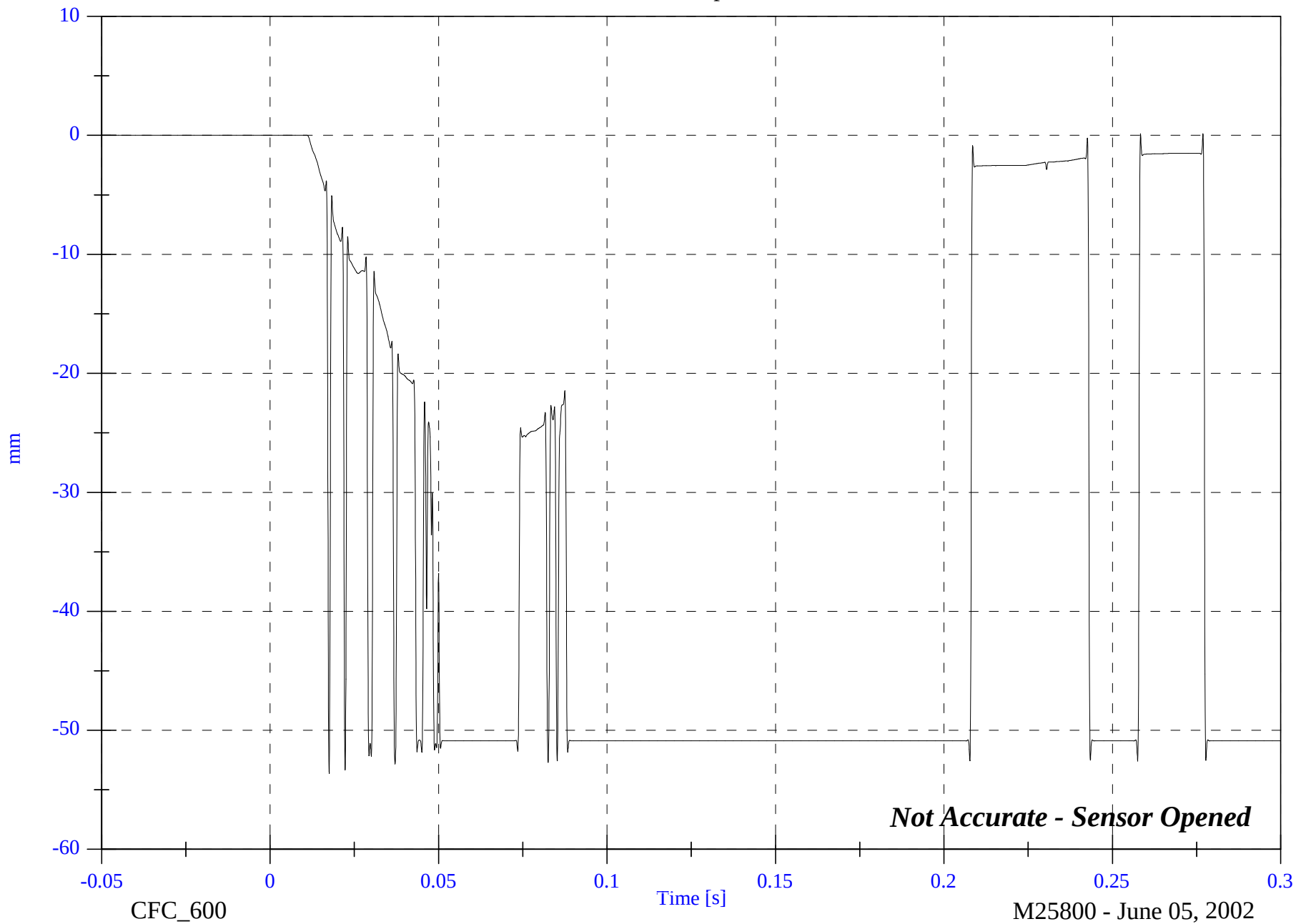
P1 Chest Compression x

Max: 0.1 [mm] at 0.258 [s]

Min: -53.6 [mm] at 0.018 [s]

B-34

8642-NCAP-19

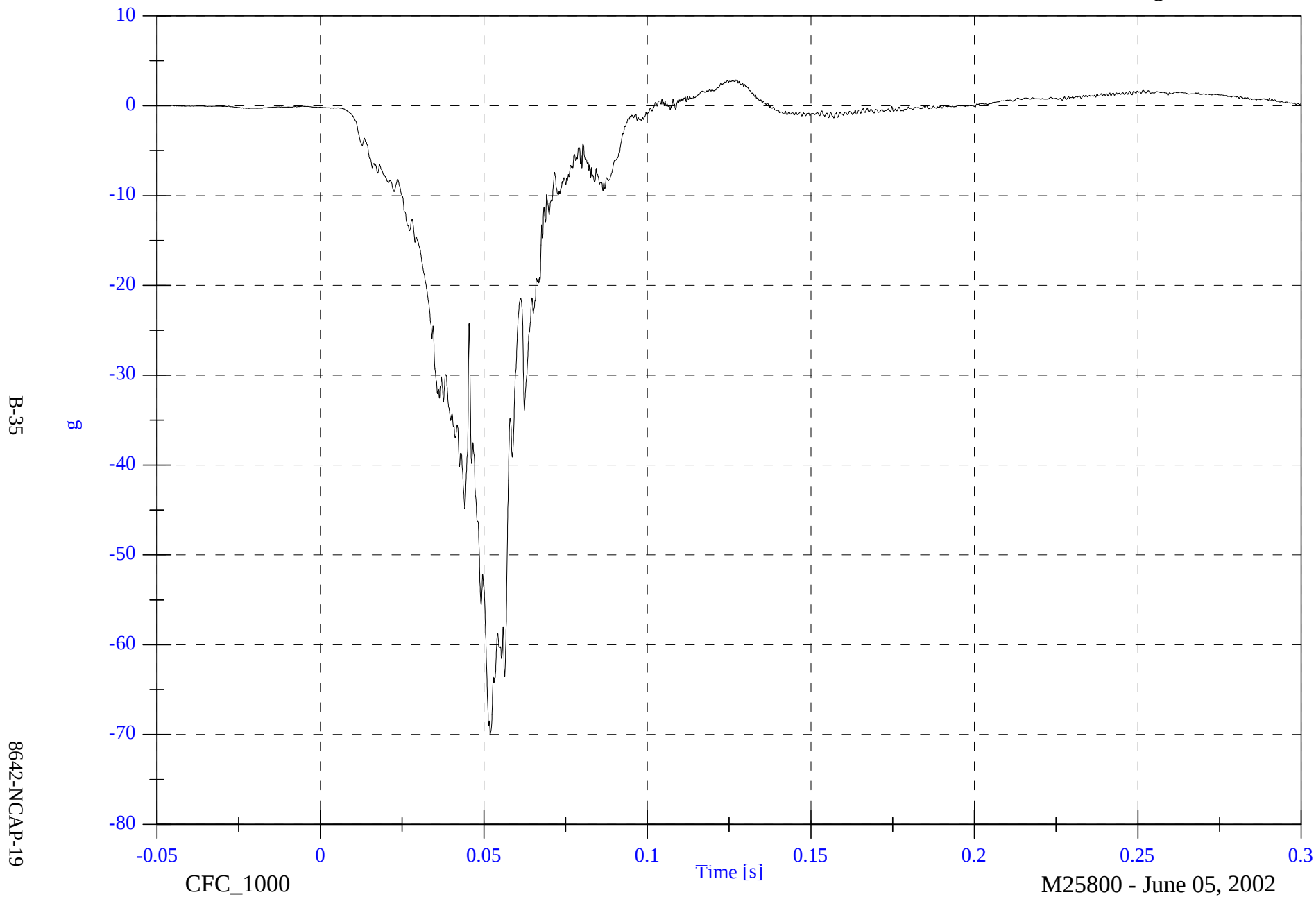


2002 NCAP Test 19 - 2002 Audi A4

Max: 2.9 [g] at 0.127 [s]

Min: -70.1 [g] at 0.052 [s]

P1 Pelvic x



2002 NCAP Test 19 - 2002 Audi A4

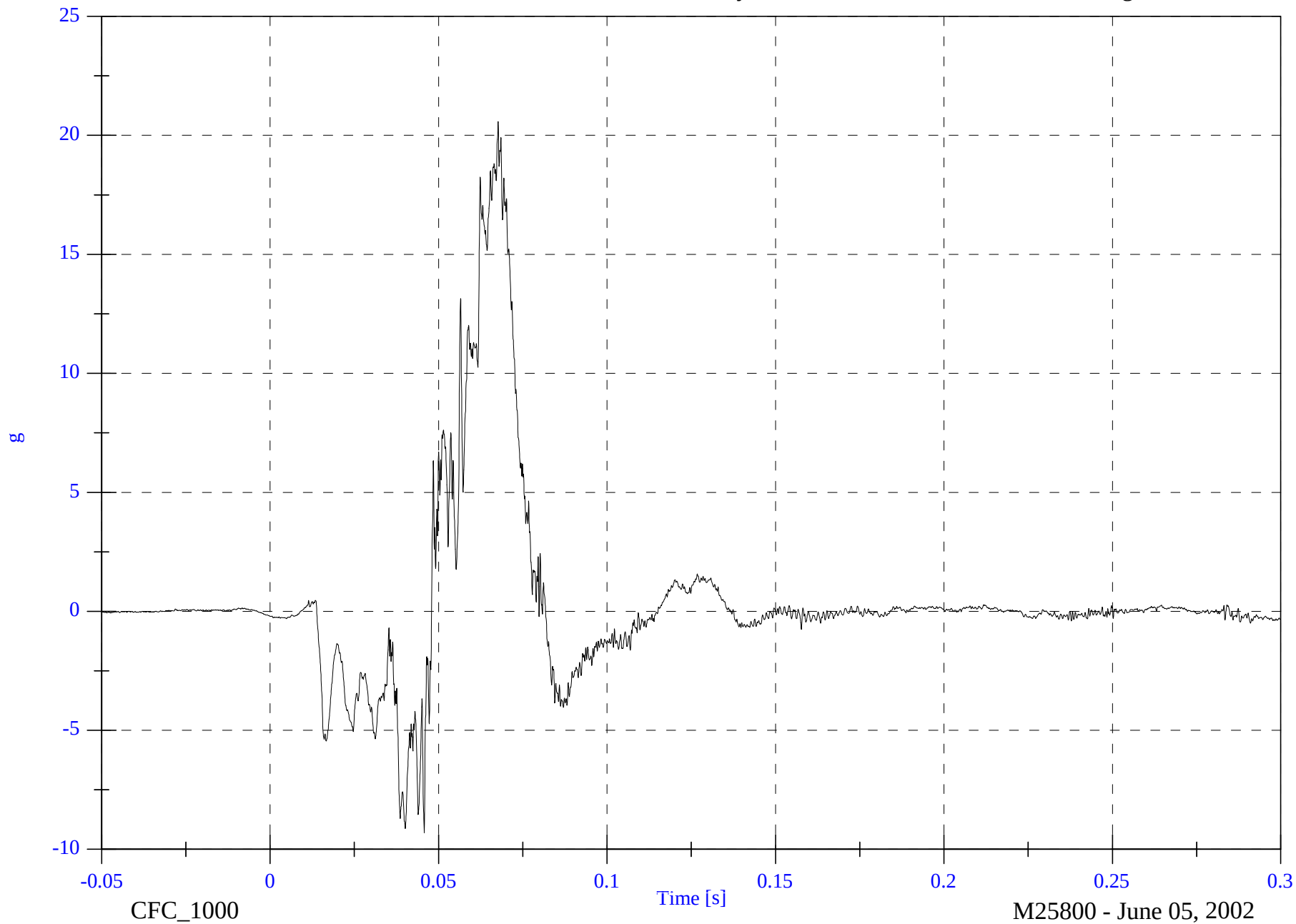
Max: 20.6 [g] at 0.068 [s]

Min: -9.3 [g] at 0.046 [s]

P1 Pelvic y

B-36

8642-NCAP-19



2002 NCAP Test 19 - 2002 Audi A4

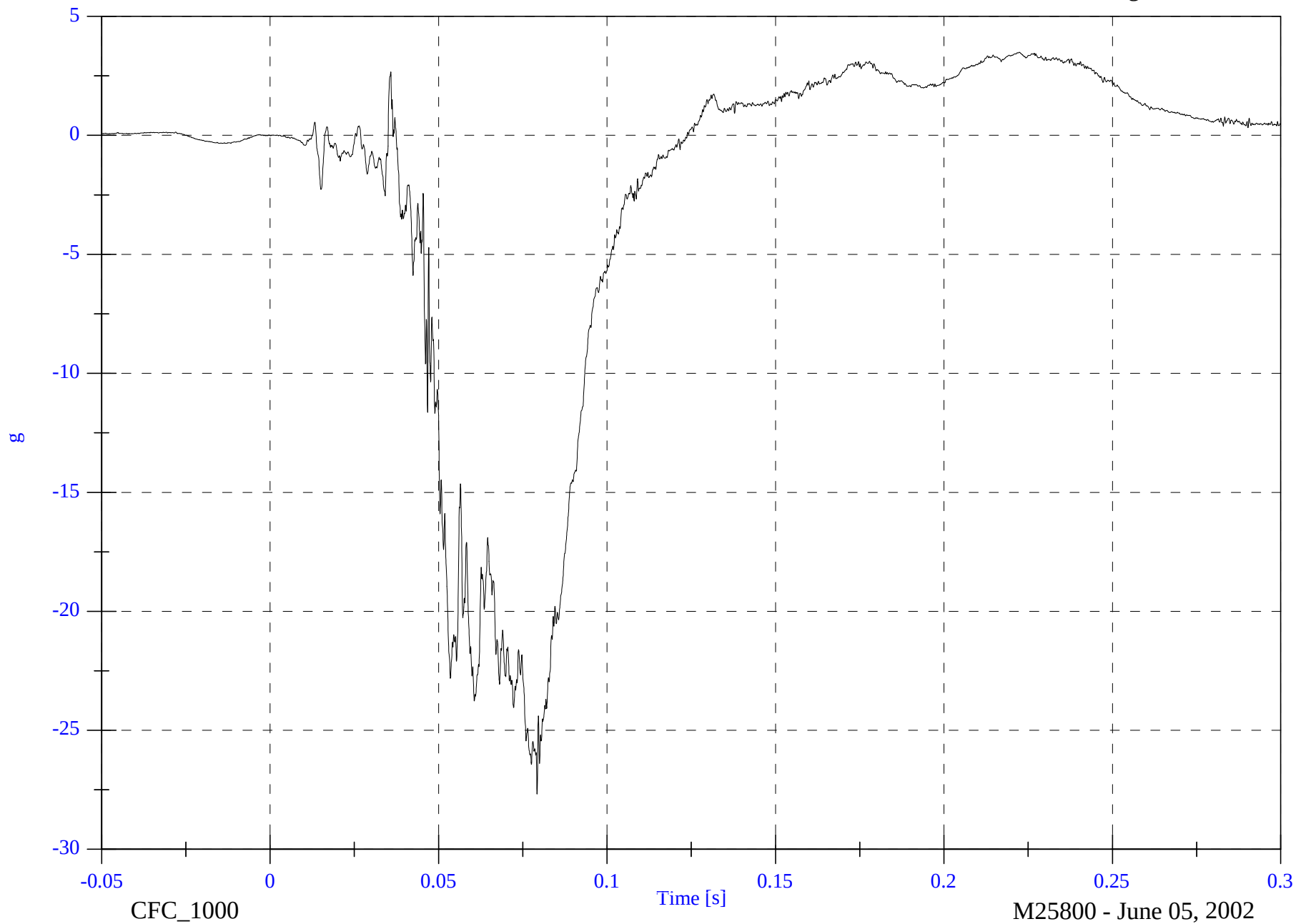
P1 Pelvic z

Max: 3.5 [g] at 0.222 [s]

Min: -27.7 [g] at 0.079 [s]

B-37

8642-NCAP-19



2002 NCAP Test 19 - 2002 Audi A4

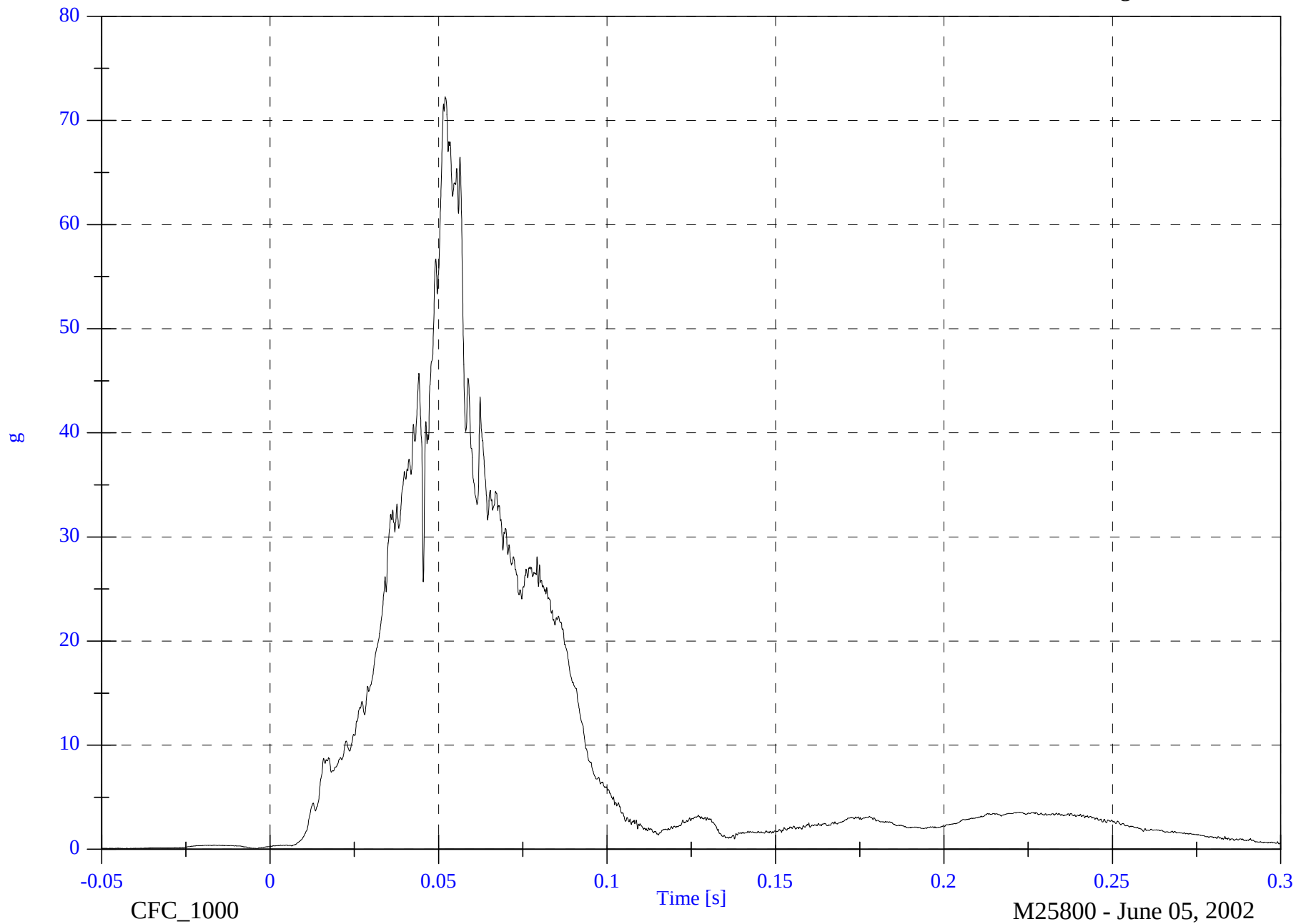
P1 Pelvic Resultant

Max: 72.3 [g] at 0.052 [s]

Min: 0.1 [g] at -0.044 [s]

B-38

8642-NCAP-19

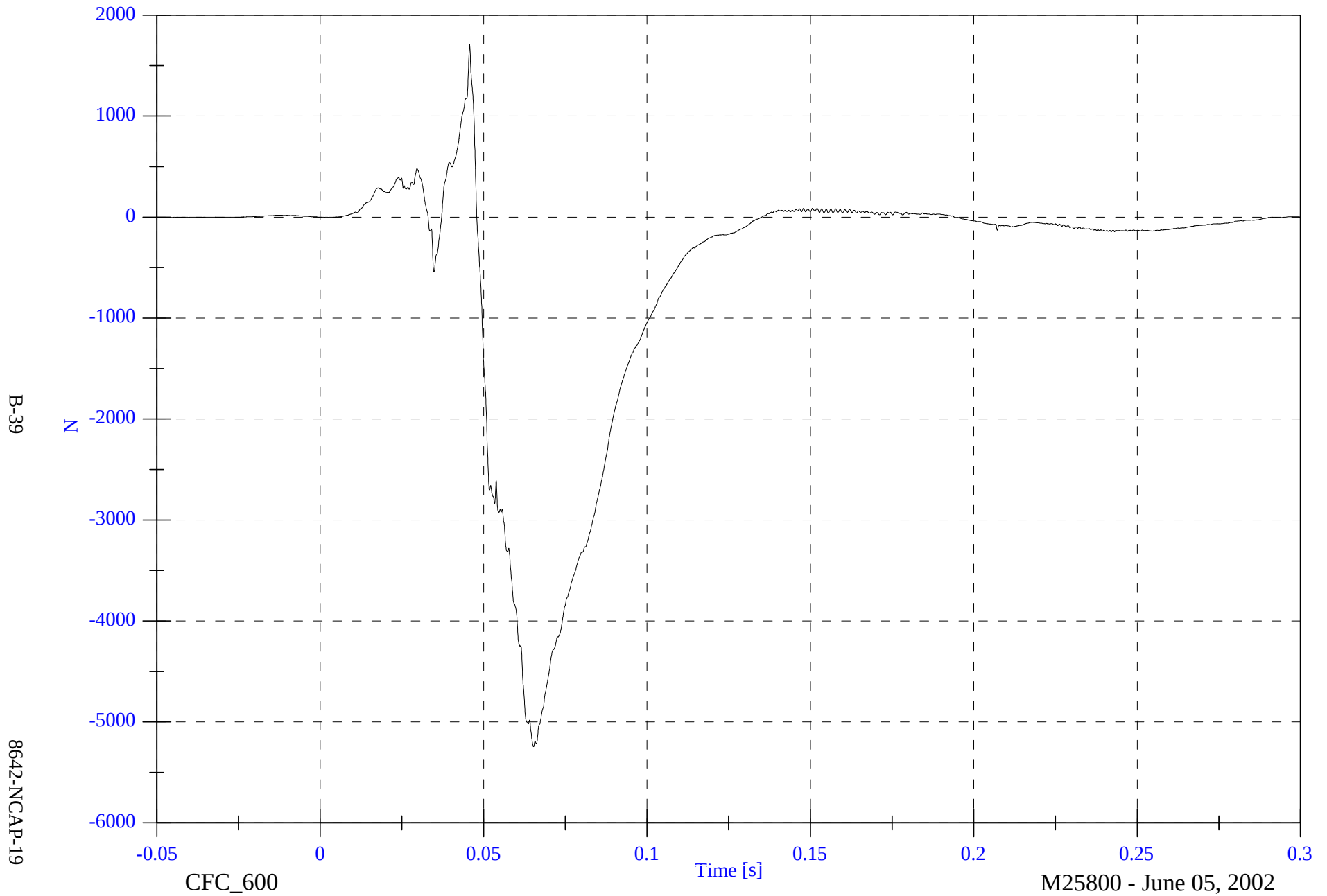


2002 NCAP Test 19 - 2002 Audi A4

P1 Left Femur z

Max: 1711.8 [N] at 0.046 [s]

Min: -5247.1 [N] at 0.065 [s]

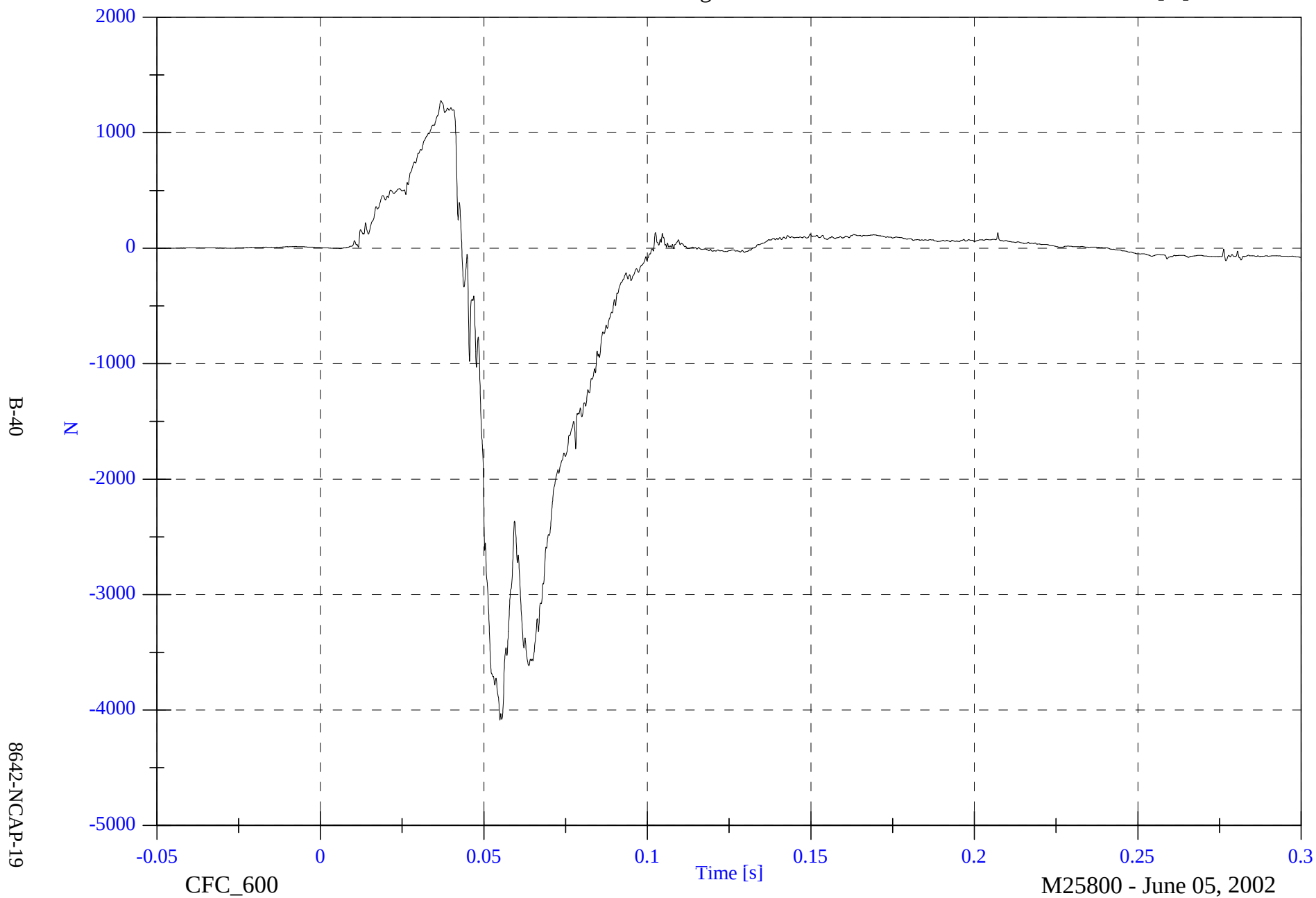


2002 NCAP Test 19 - 2002 Audi A4

P1 Right Femur z

Max: 1277.8 [N] at 0.037 [s]

Min: -4086.9 [N] at 0.055 [s]



2002 NCAP Test 19 - 2002 Audi A4

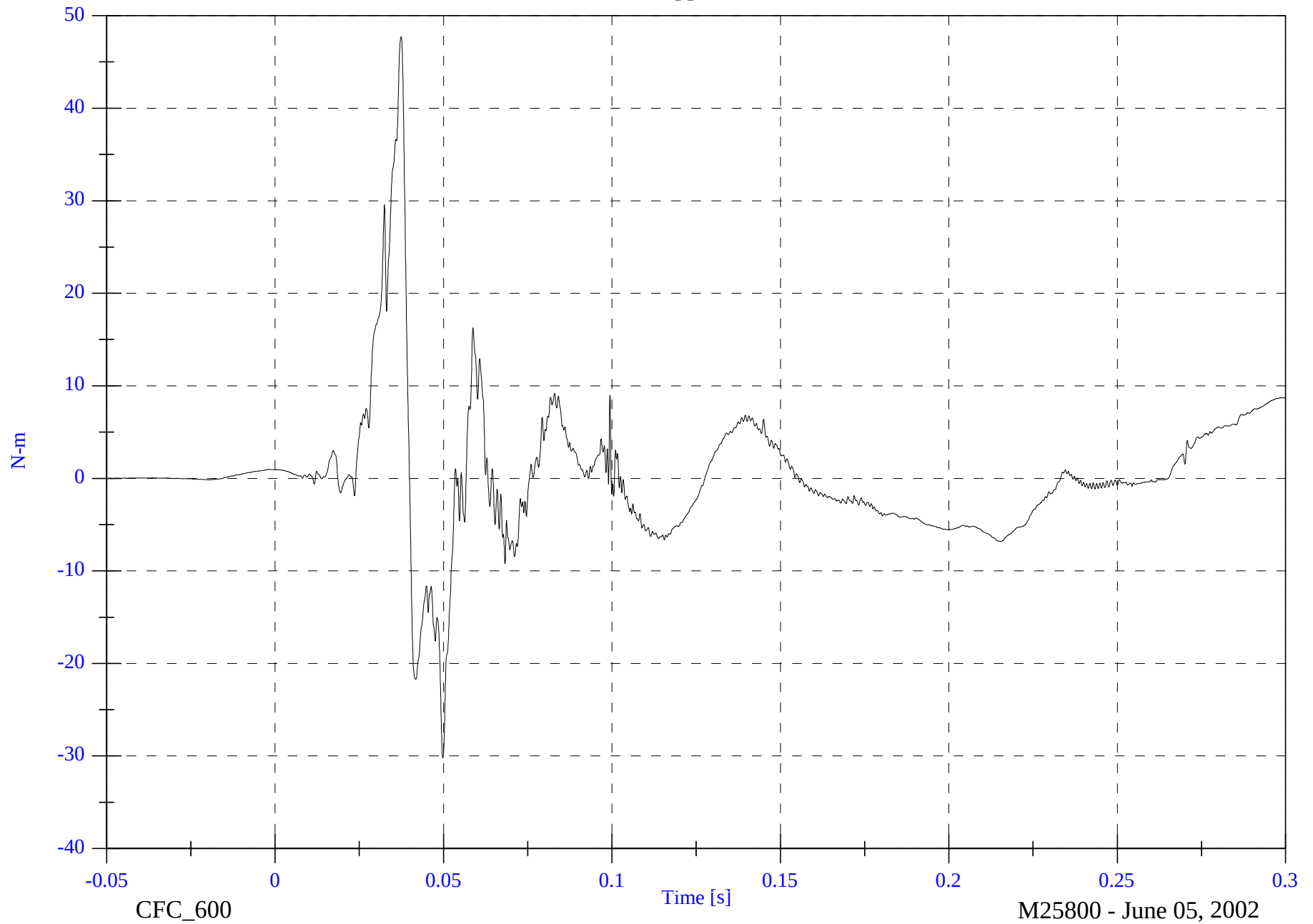
P1 Left Upper Tibia Mx

Max: 47.7 [N-m] at 0.037 [s]

Min: -30.2 [N-m] at 0.050 [s]

B-41

8642-NCAP-19



2002 NCAP Test 19 - 2002 Audi A4

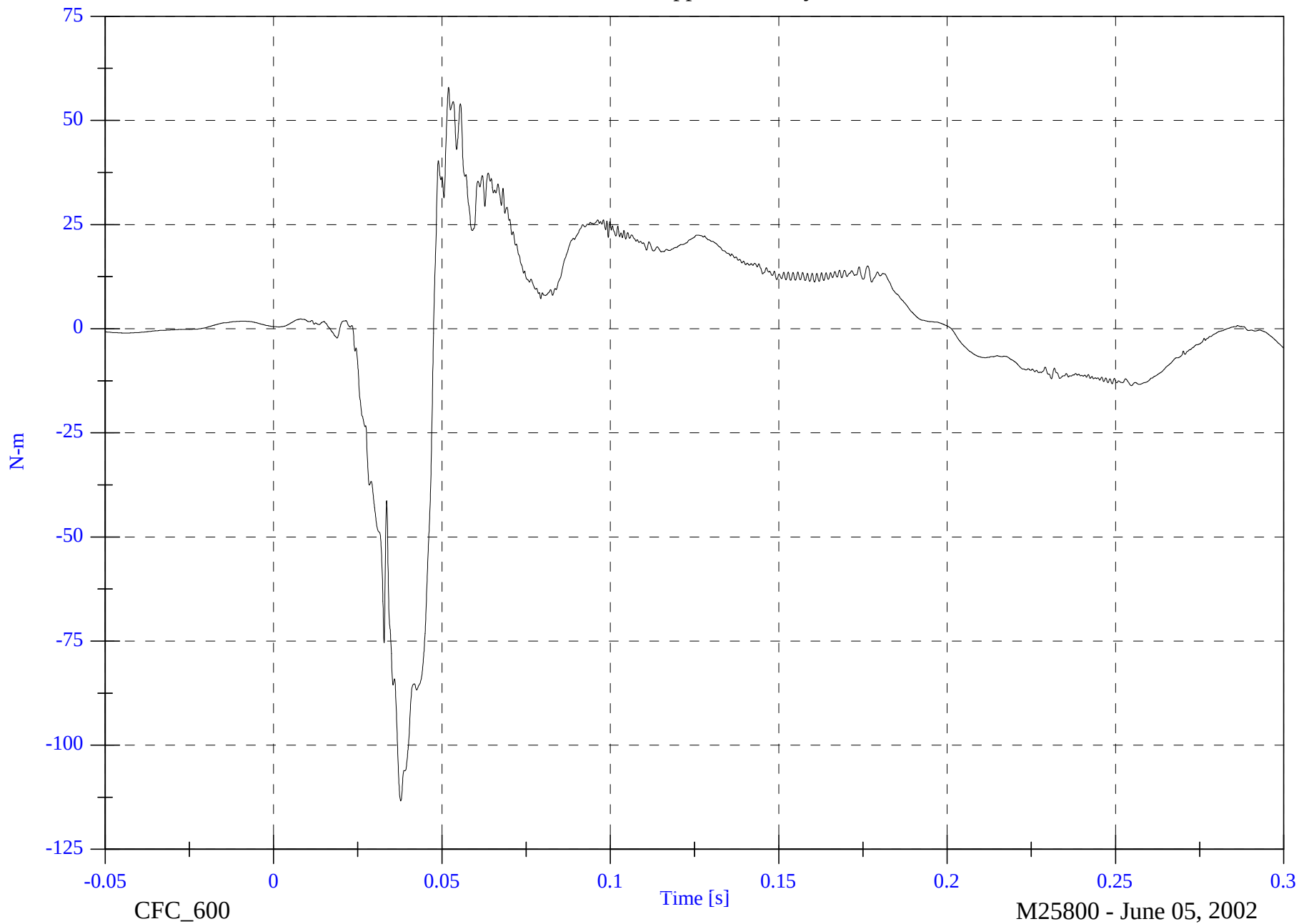
P1 Left Upper Tibia My

Max: 58.0 [N-m] at 0.052 [s]

Min: -113.4 [N-m] at 0.038 [s]

B-42

8642-NCAP-19

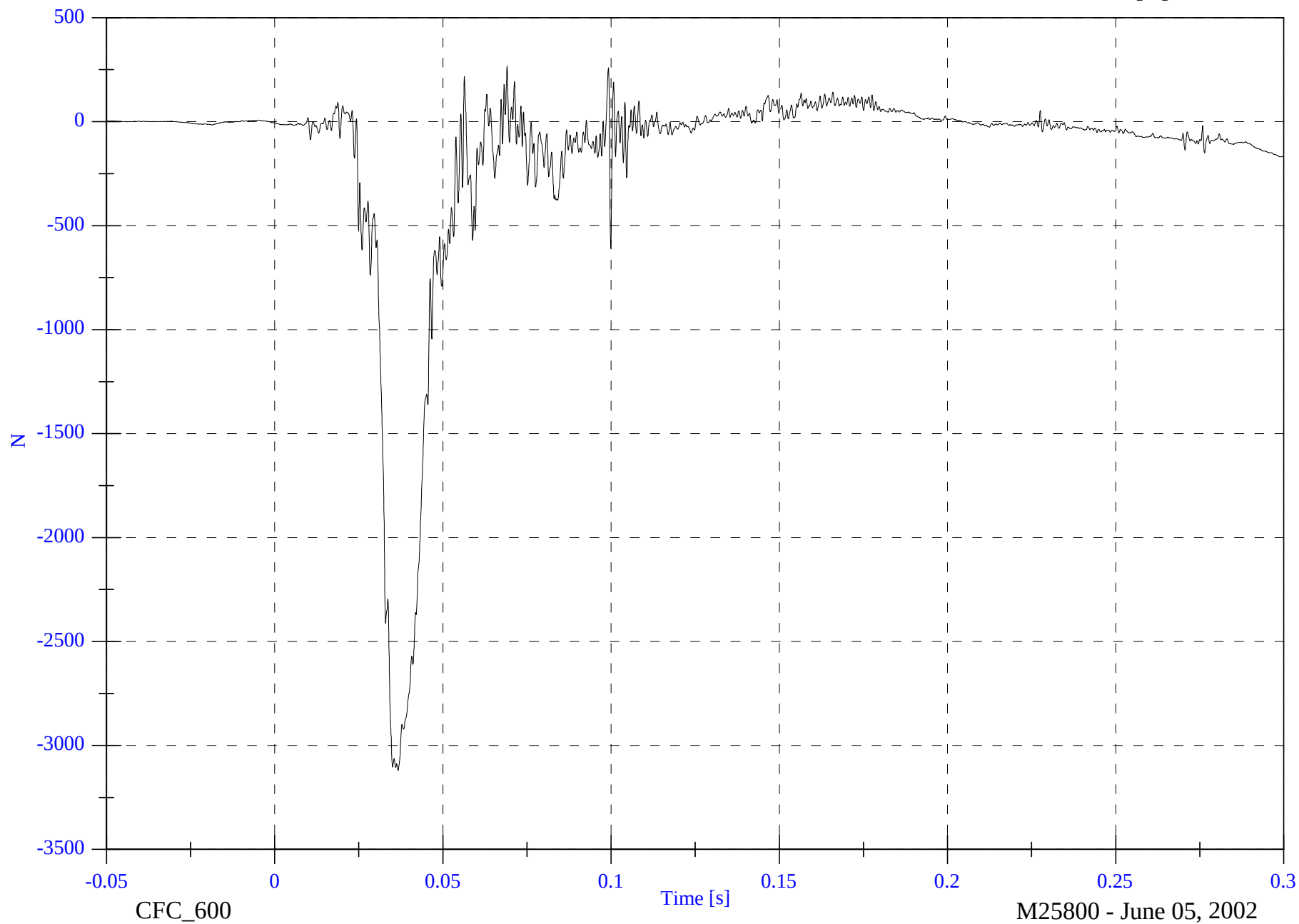


2002 NCAP Test 19 - 2002 Audi A4

Max: 267.8 [N] at 0.069 [s]

Min: -3120.4 [N] at 0.037 [s]

P1 Left Lower Tibia Fz



2002 NCAP Test 19 - 2002 Audi A4

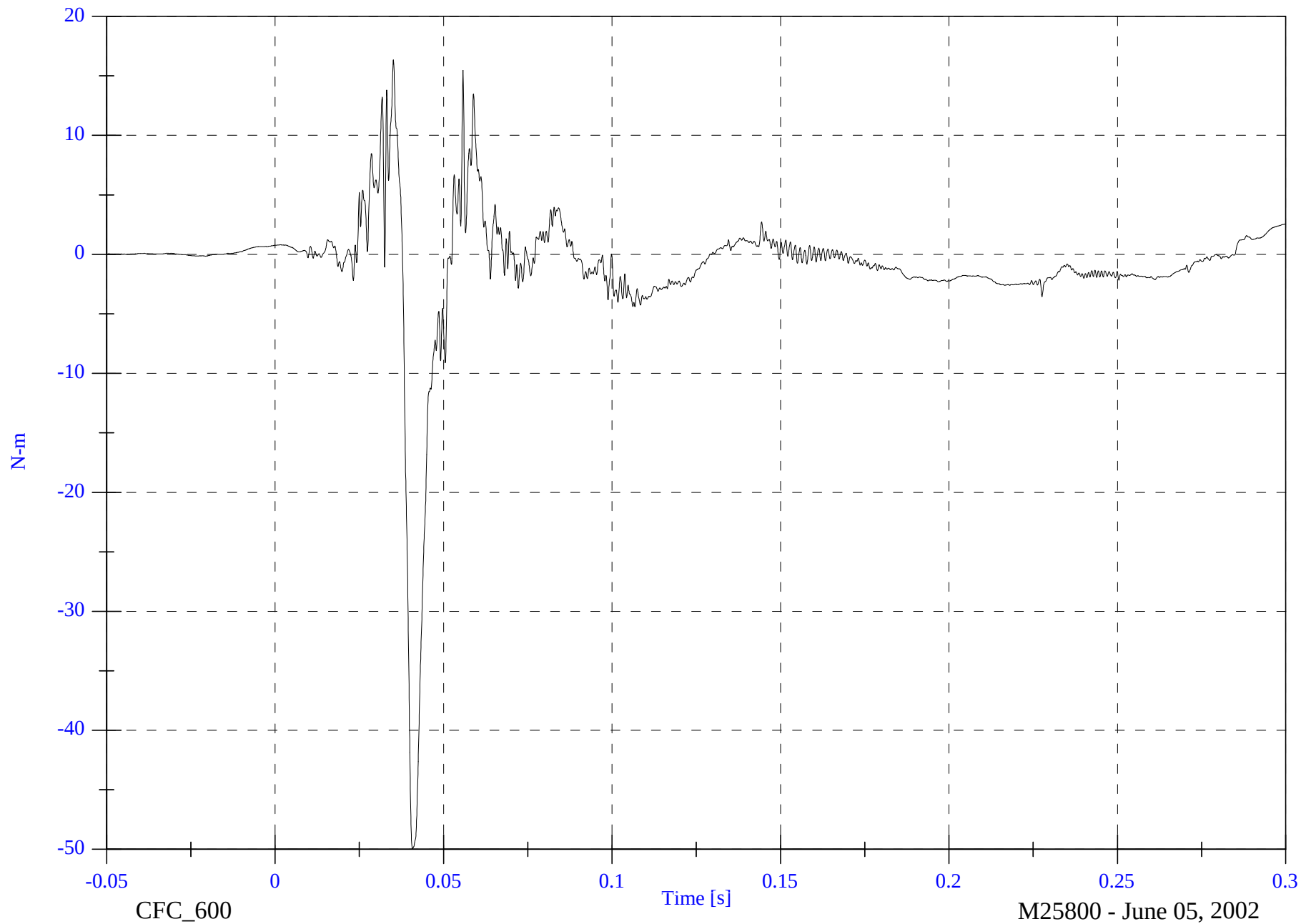
P1 Left Lower Tibia Mx

Max: 16.3 [N-m] at 0.035 [s]

Min: -50.0 [N-m] at 0.041 [s]

B-44

8642-NCAP-19

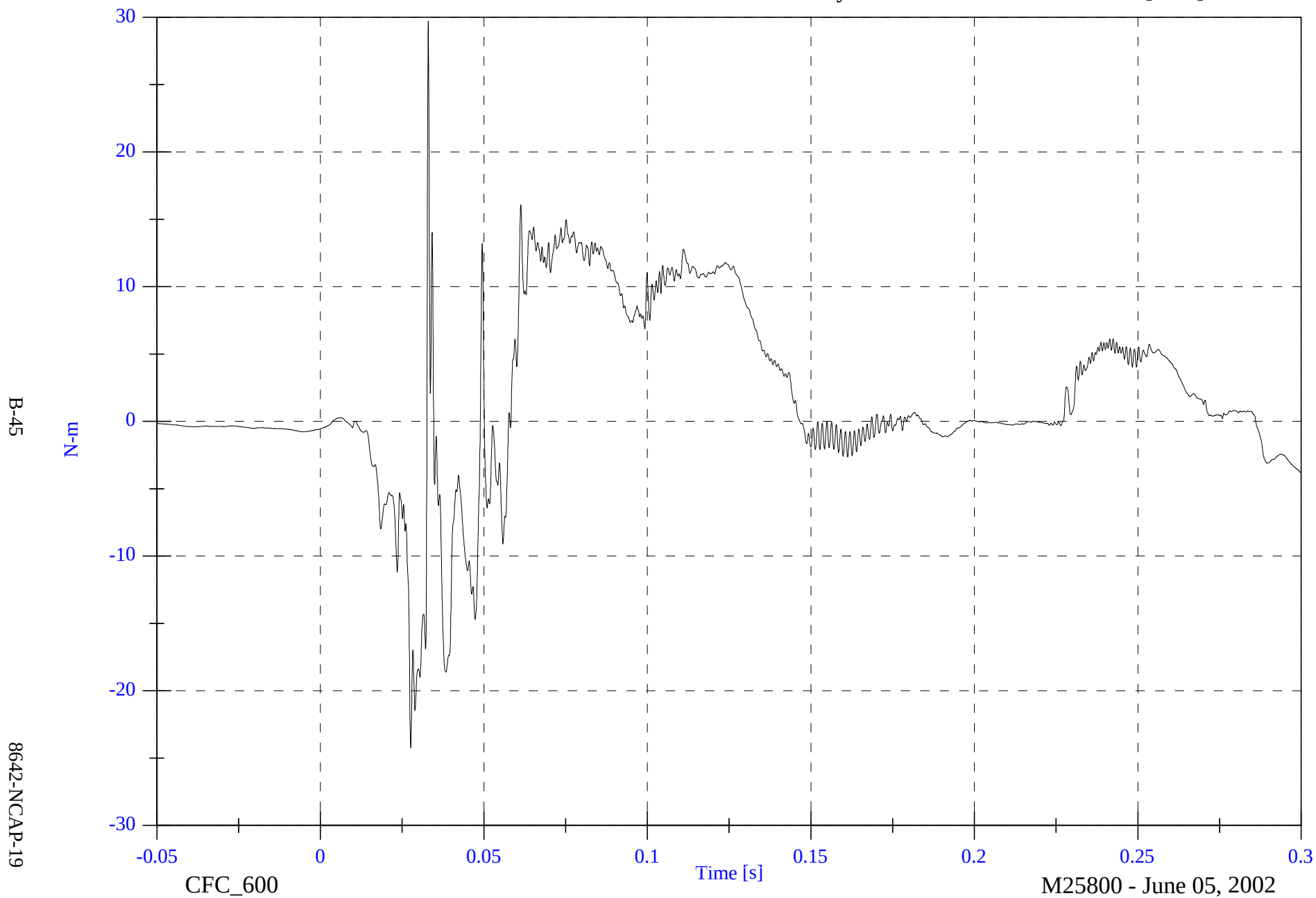


2002 NCAP Test 19 - 2002 Audi A4

Max: 29.7 [N-m] at 0.033 [s]

Min: -24.2 [N-m] at 0.028 [s]

P1 Left Lower Tibia My

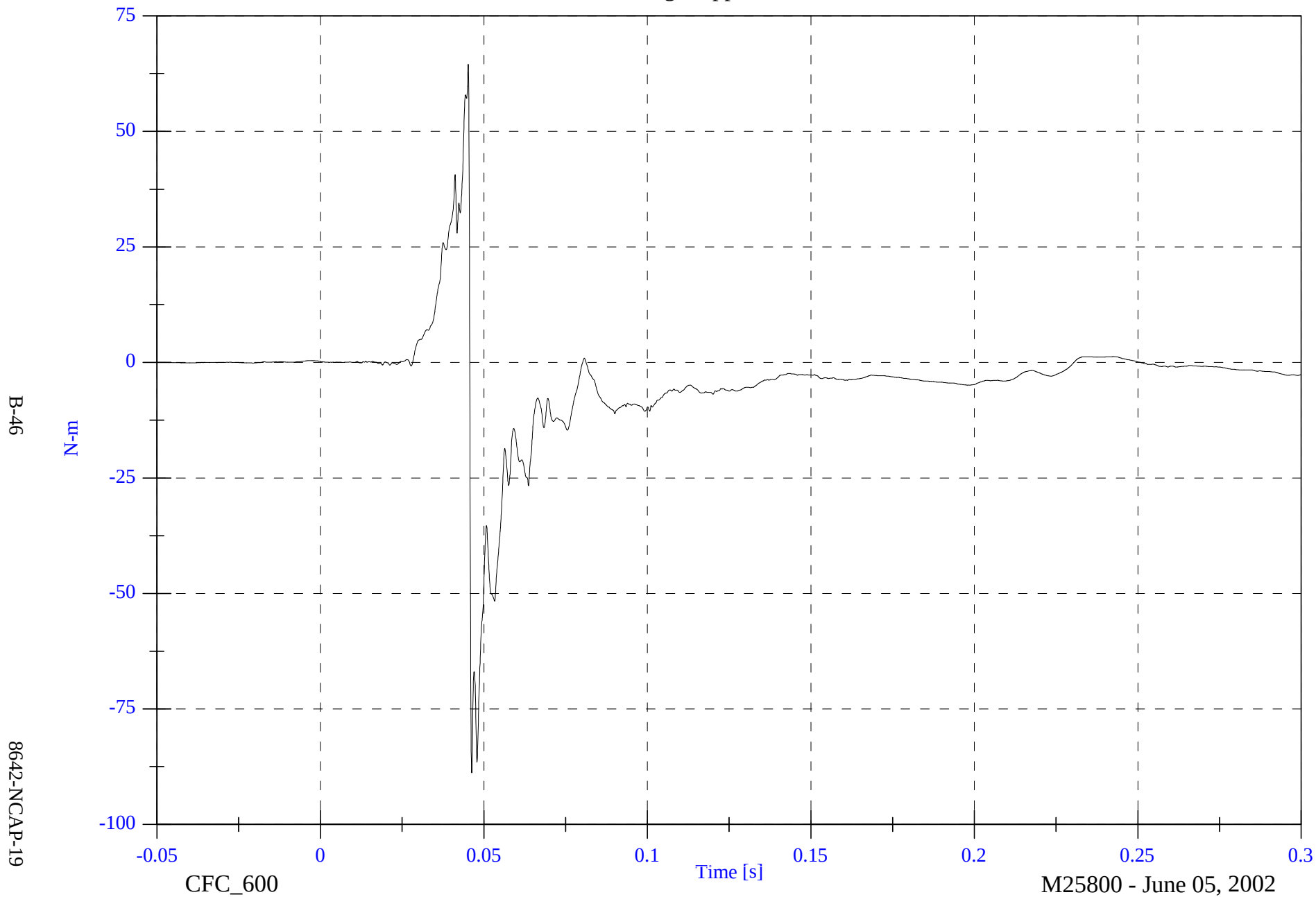


2002 NCAP Test 19 - 2002 Audi A4

P1 Right upper Tibia Mx

Max: 64.5 [N-m] at 0.045 [s]

Min: -88.8 [N-m] at 0.046 [s]

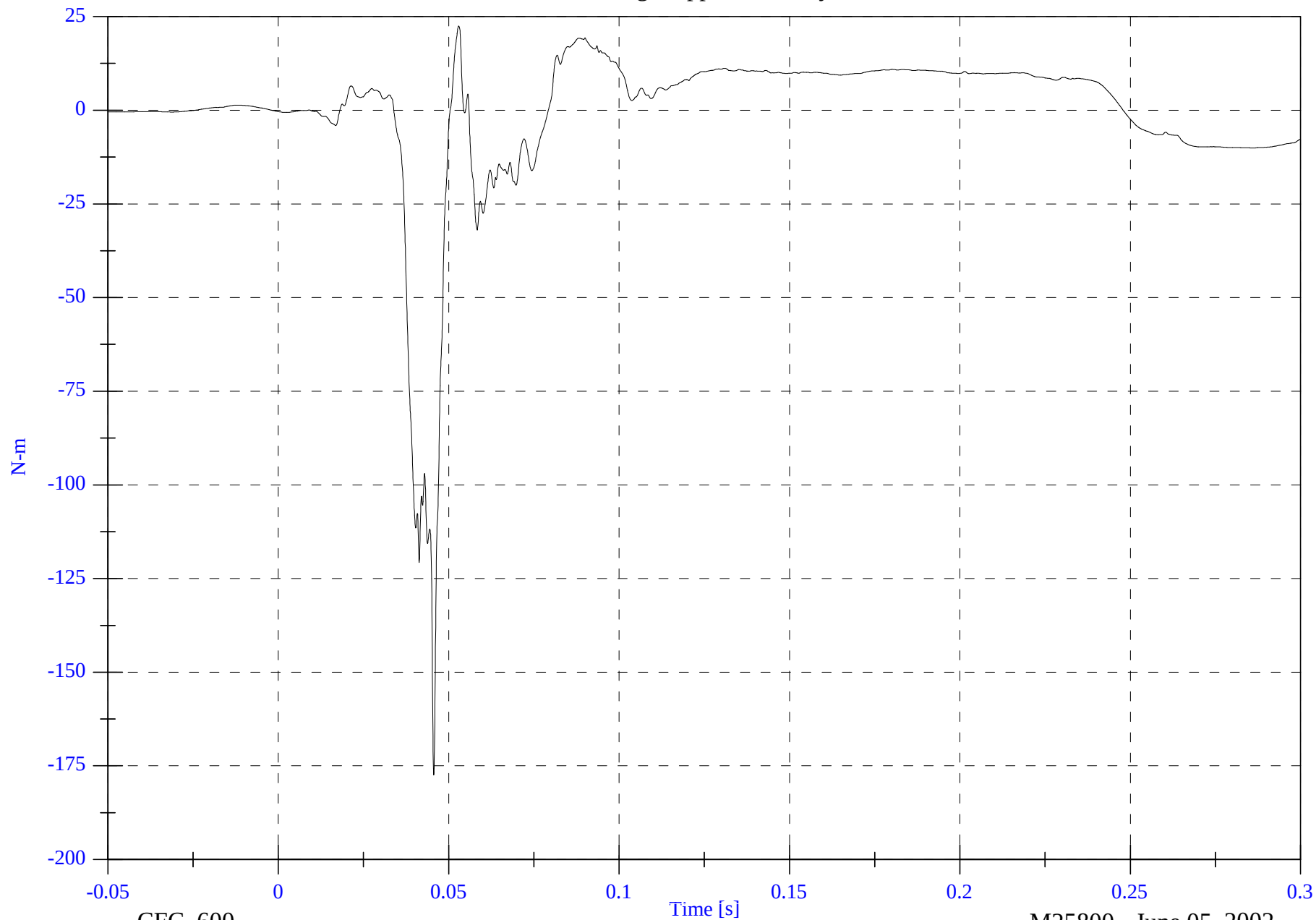


2002 NCAP Test 19 - 2002 Audi A4

Max: 22.5 [N-m] at 0.053 [s]

Min: -177.4 [N-m] at 0.046 [s]

P1 Right upper Tibia My



B-47

8642-NCAP-19

CFC_600

Time [s]

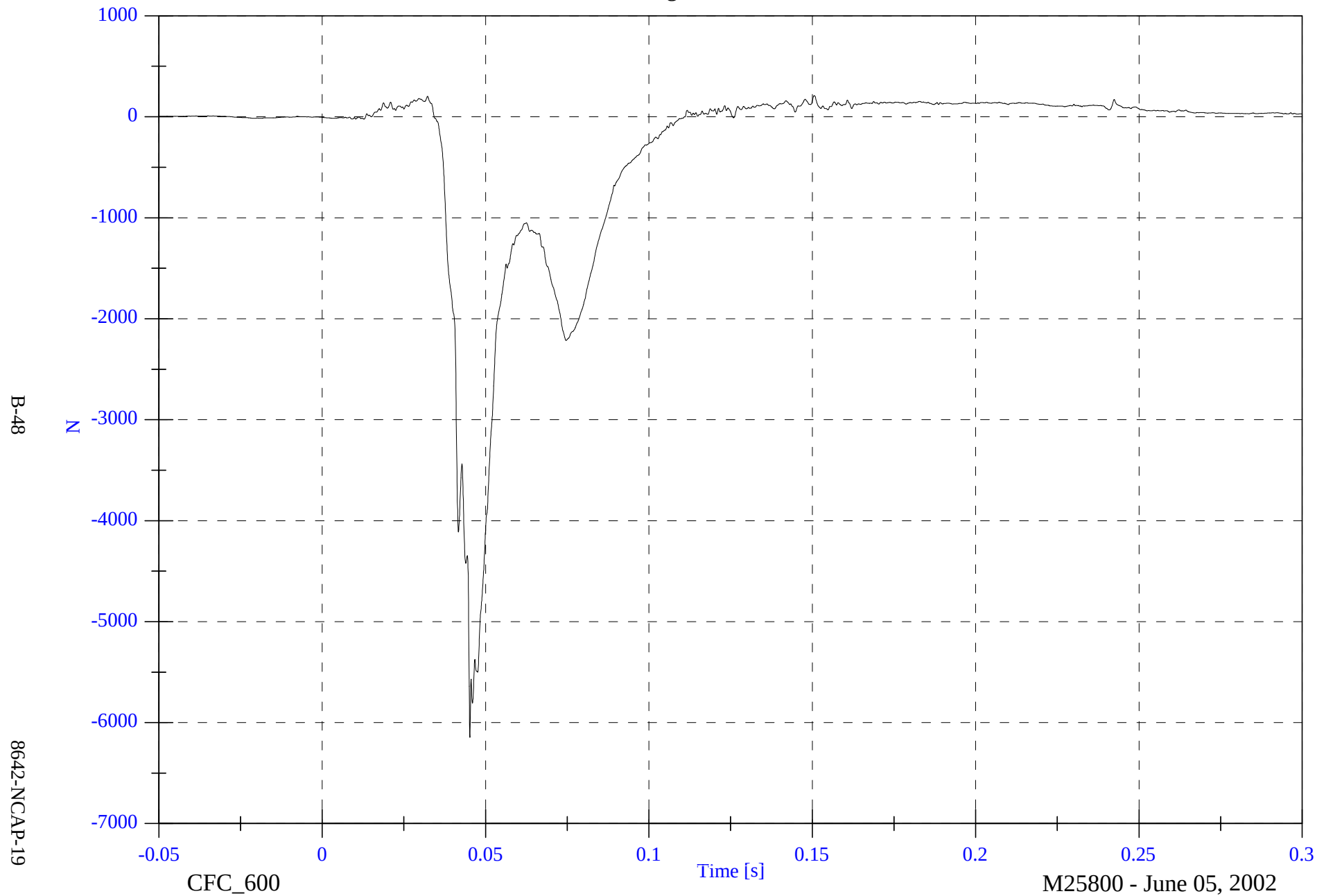
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

P1 Right Lower Tibia Fz

Max: 209.6 [N] at 0.151 [s]

Min: -6147.2 [N] at 0.045 [s]

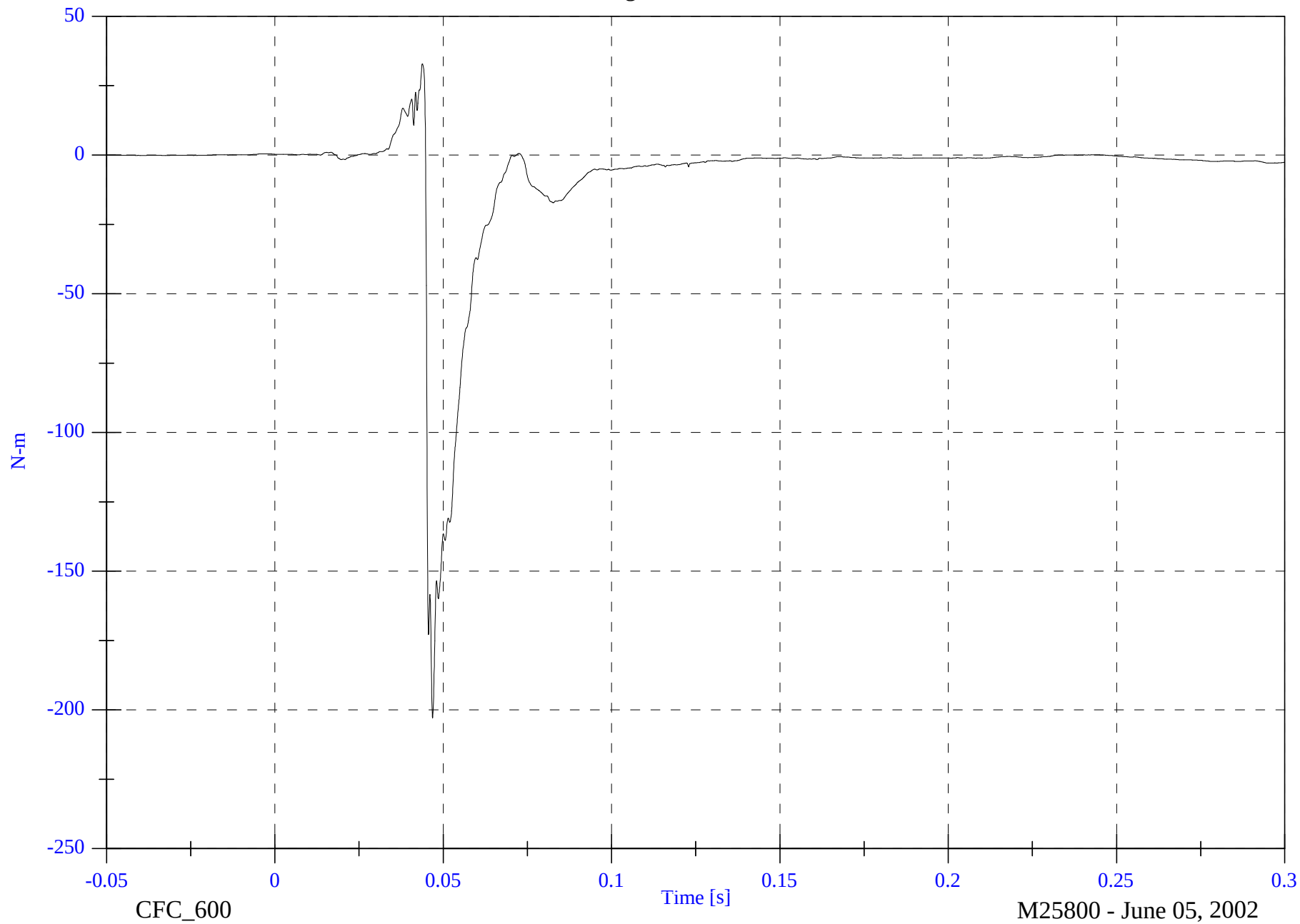


2002 NCAP Test 19 - 2002 Audi A4

P1 Right Lower Tibia Mx

Max: 32.9 [N-m] at 0.044 [s]

Min: -202.9 [N-m] at 0.047 [s]



2002 NCAP Test 19 - 2002 Audi A4

P1 Right Lower Tibia My

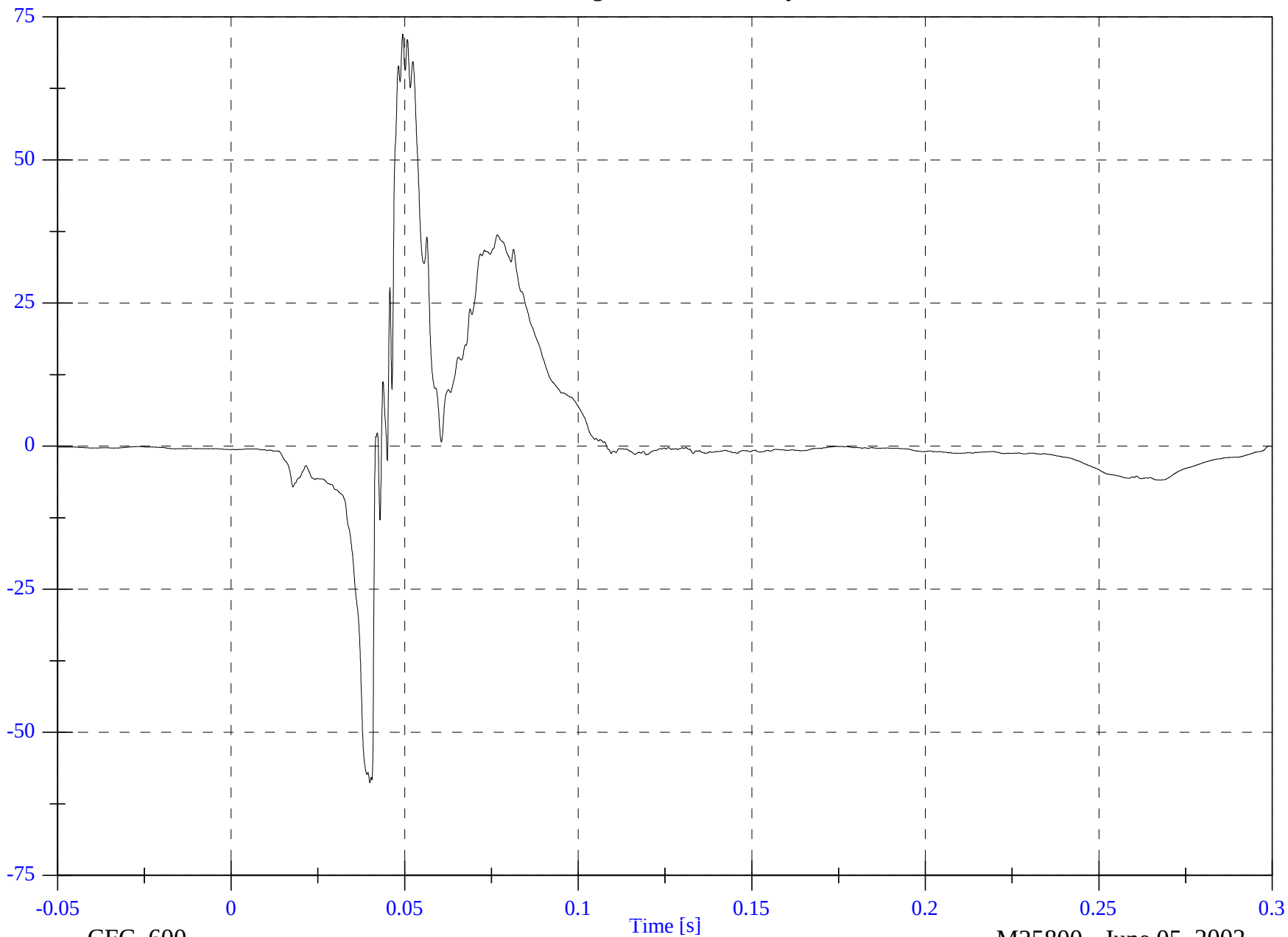
Max: 72.0 [N-m] at 0.049 [s]

Min: -58.8 [N-m] at 0.040 [s]

B-50

N-m

8642-NCAP-19



CFC_600

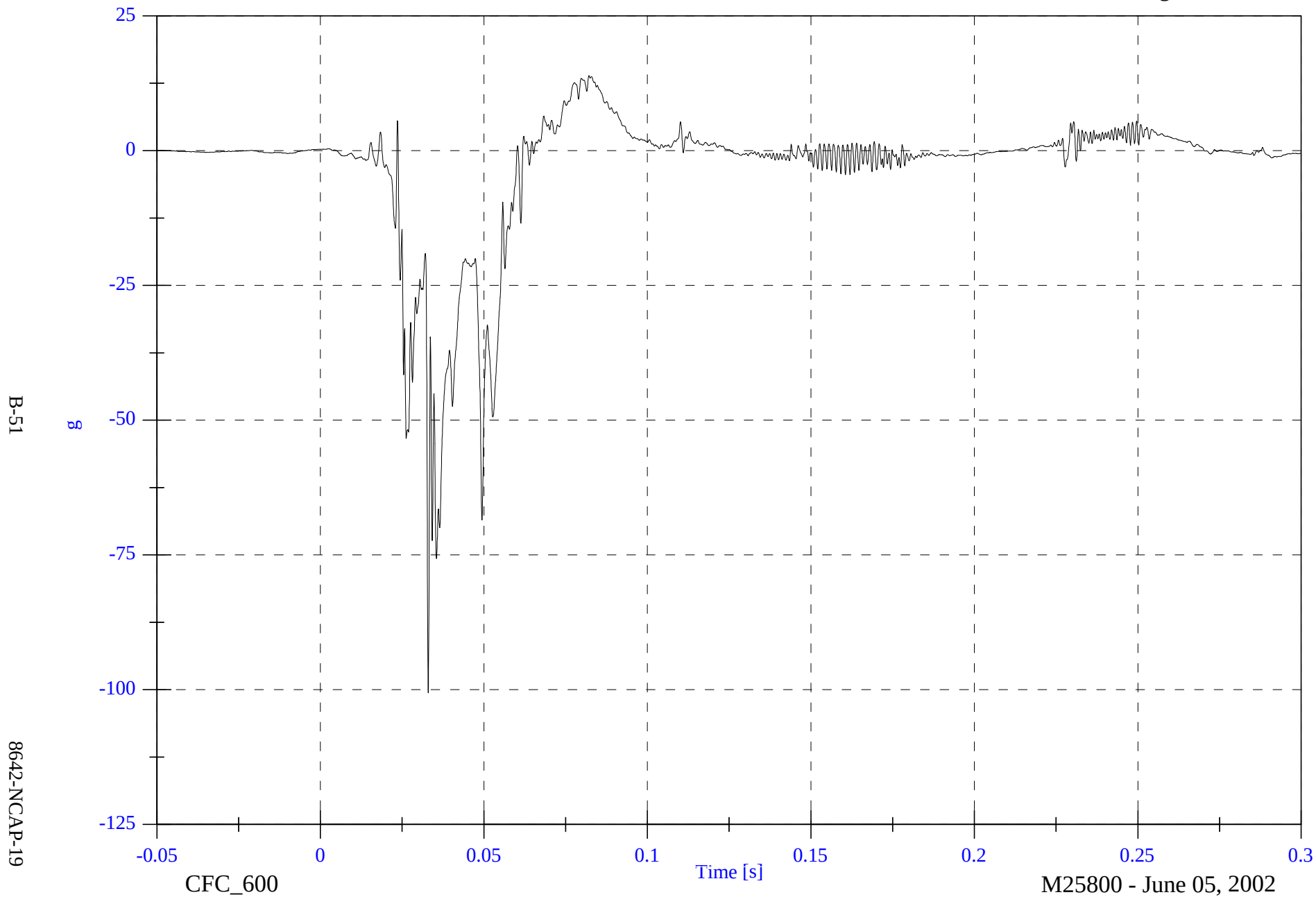
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

P1 Left Foot Aft x

Max: 13.9 [g] at 0.082 [s]

Min: -100.6 [g] at 0.033 [s]

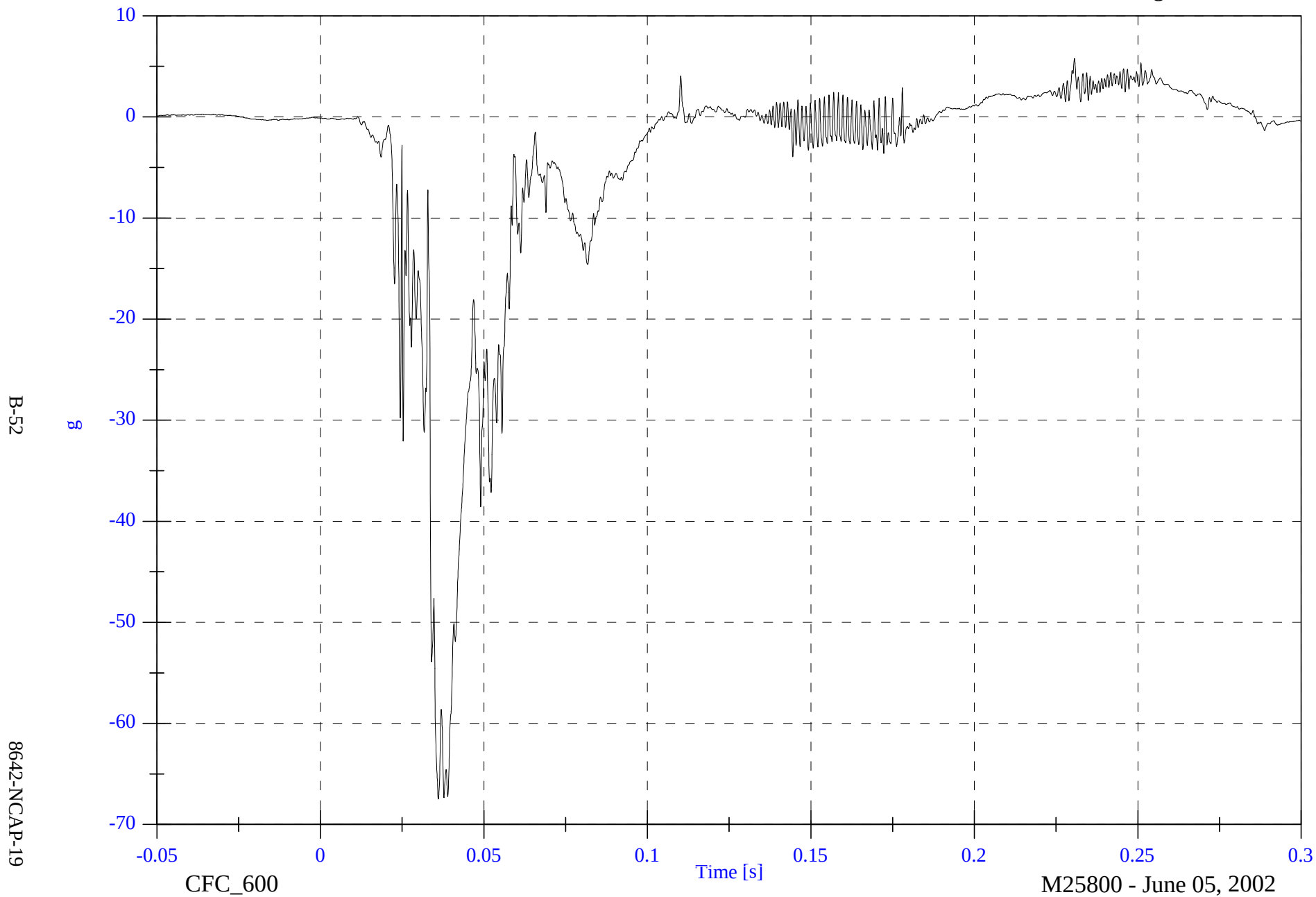


2002 NCAP Test 19 - 2002 Audi A4

Max: 5.8 [g] at 0.231 [s]

Min: -67.5 [g] at 0.036 [s]

P1 Left Foot Aft z

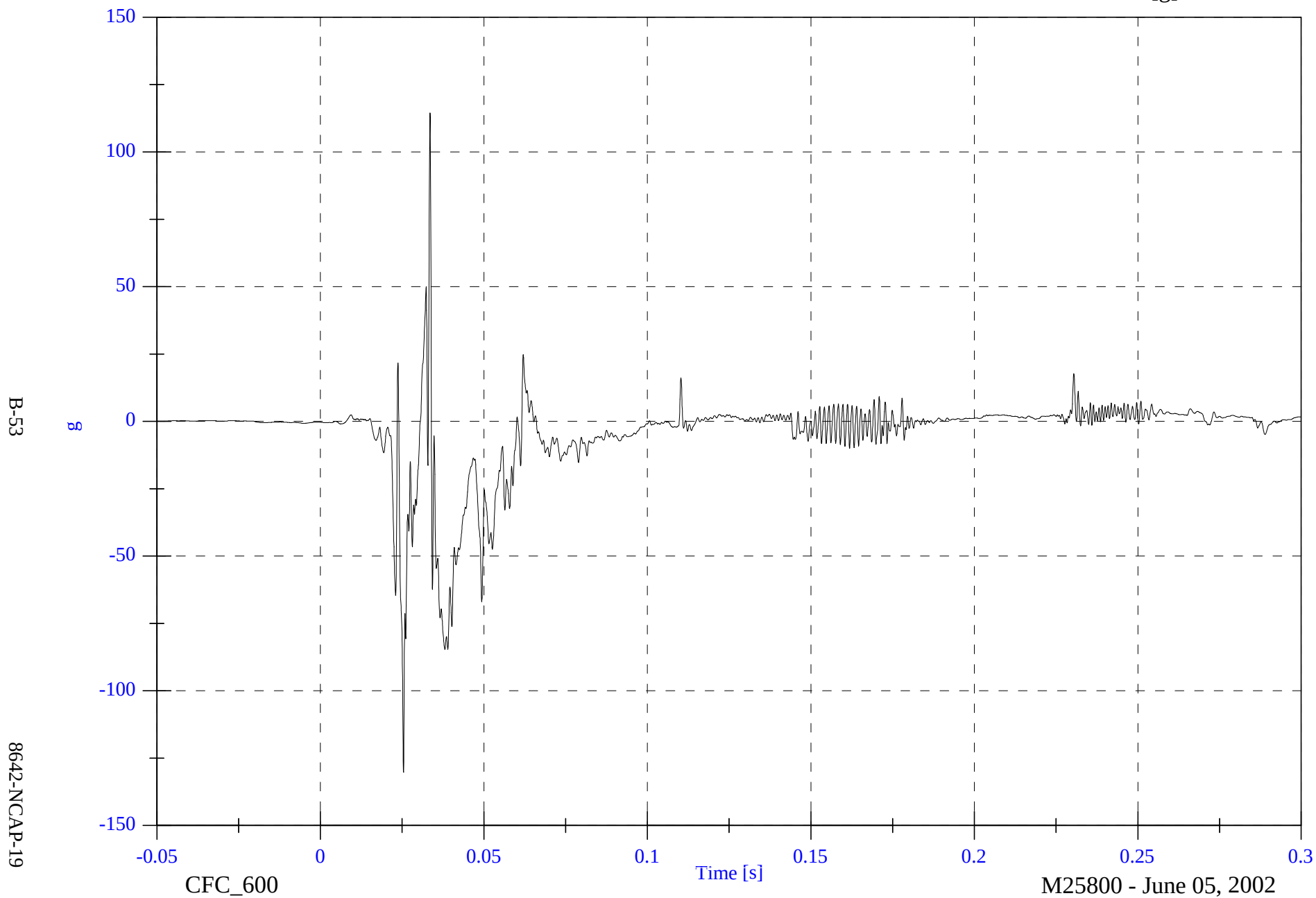


2002 NCAP Test 19 - 2002 Audi A4

Max: 114.5 [g] at 0.034 [s]

Min: -130.3 [g] at 0.025 [s]

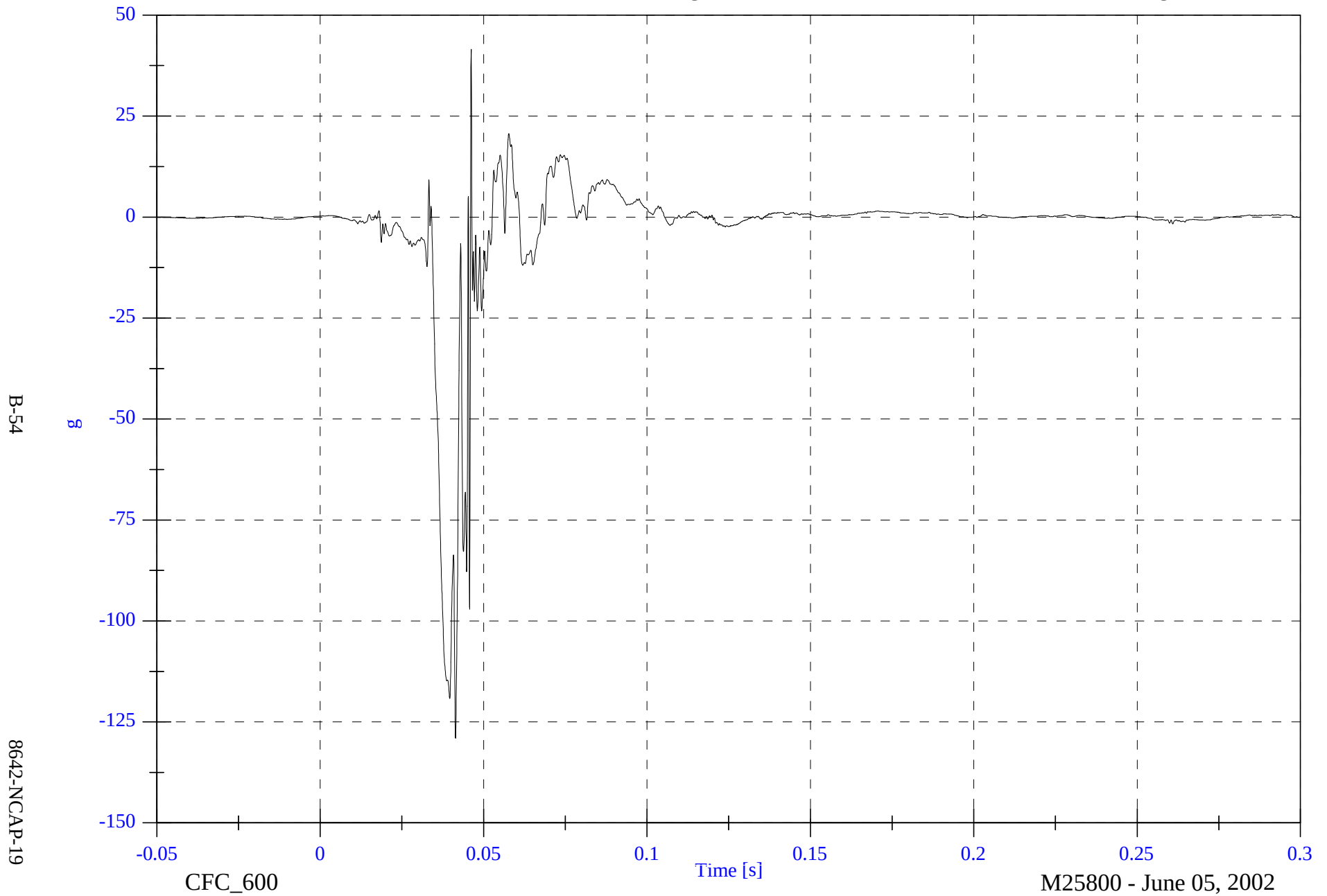
P1 Left Foot Fore z



2002 NCAP Test 19 - 2002 Audi A4

Max: 41.5 [g] at 0.046 [s]
Min: -129.1 [g] at 0.041 [s]

P1 Right Foot Aft x

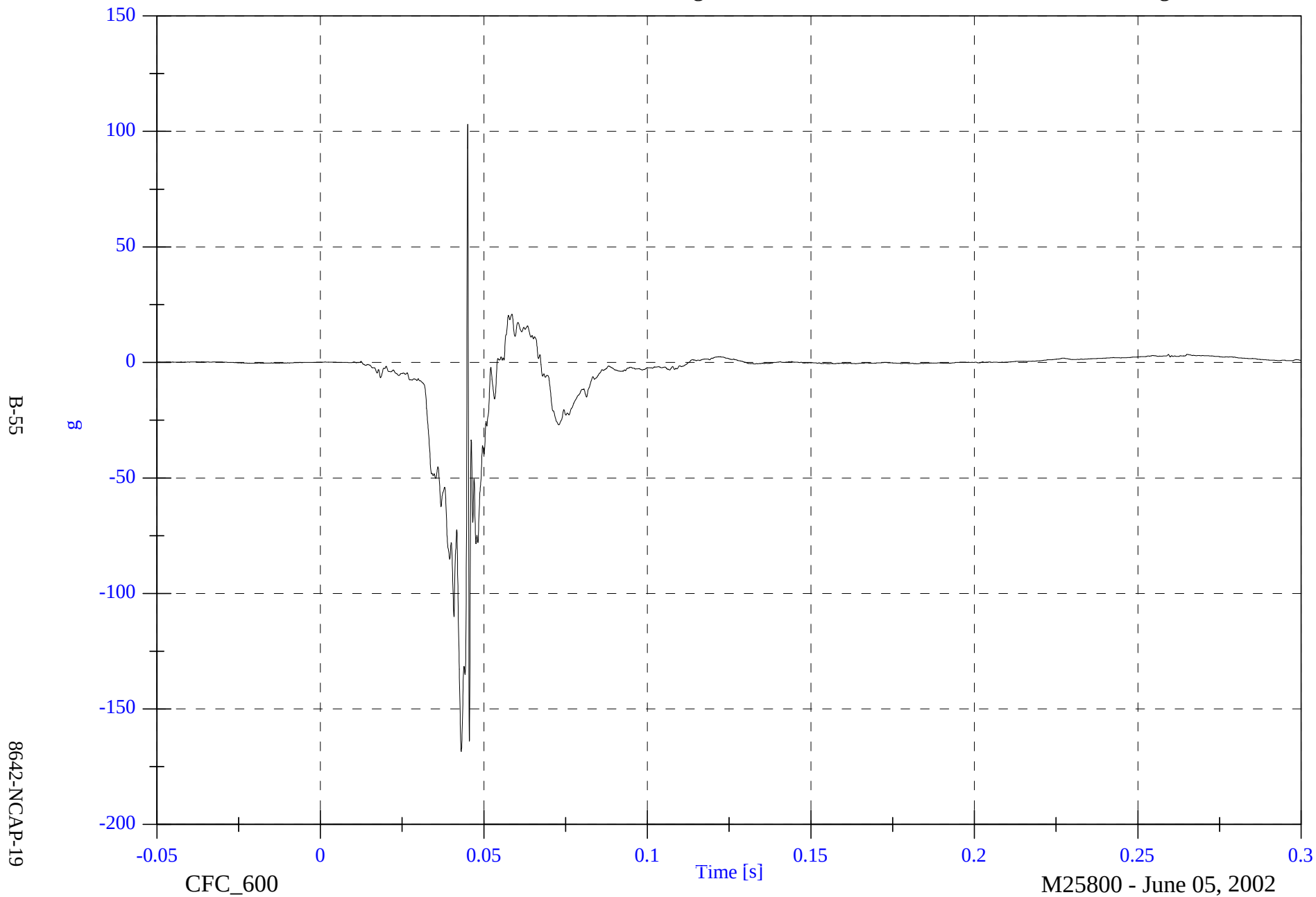


2002 NCAP Test 19 - 2002 Audi A4

P1 Right foot Aft z

Max: 103.1 [g] at 0.045 [s]

Min: -168.4 [g] at 0.043 [s]

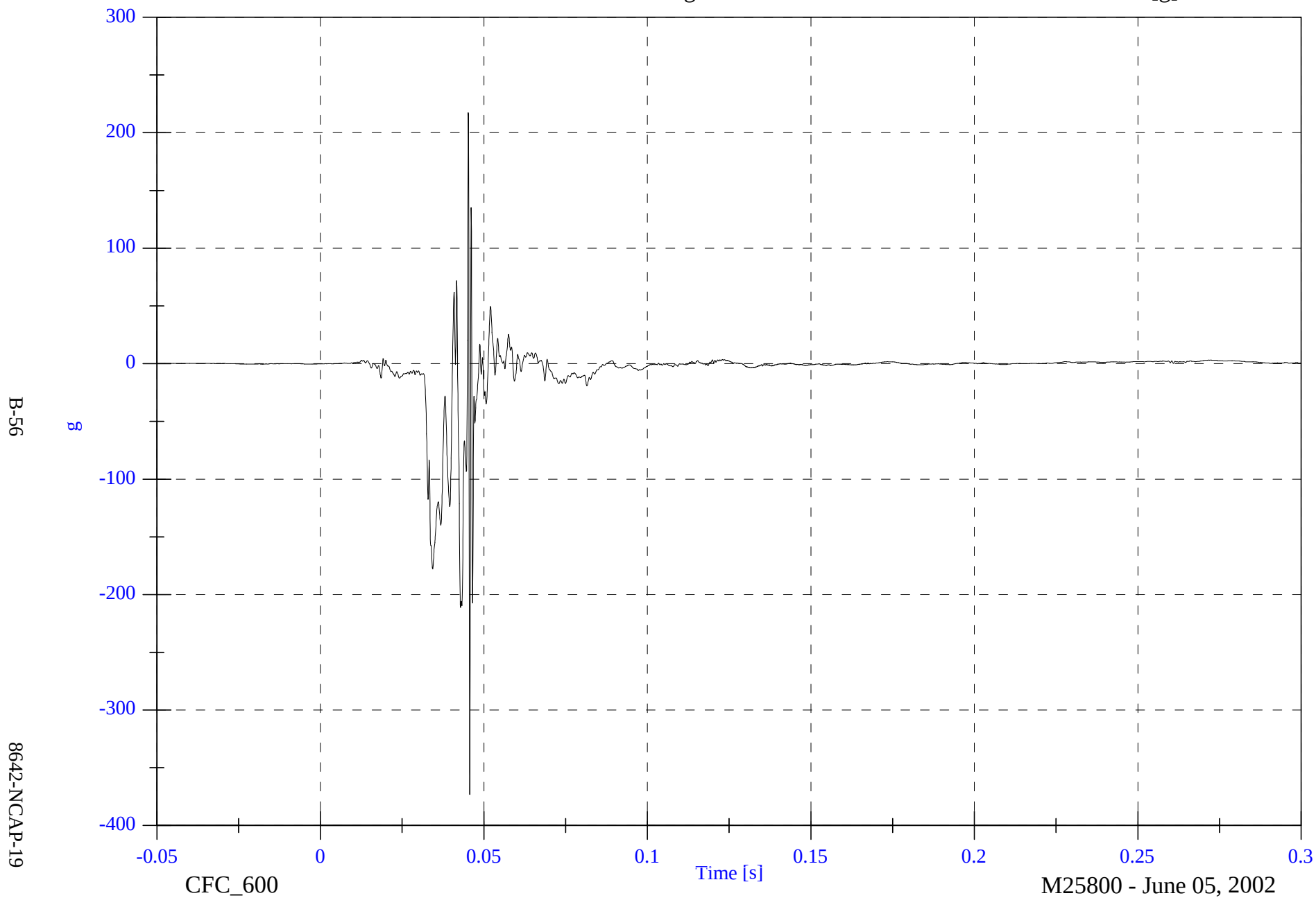


2002 NCAP Test 19 - 2002 Audi A4

Max: 217.4 [g] at 0.045 [s]

Min: -373.2 [g] at 0.046 [s]

P1 Right Foot Fore z

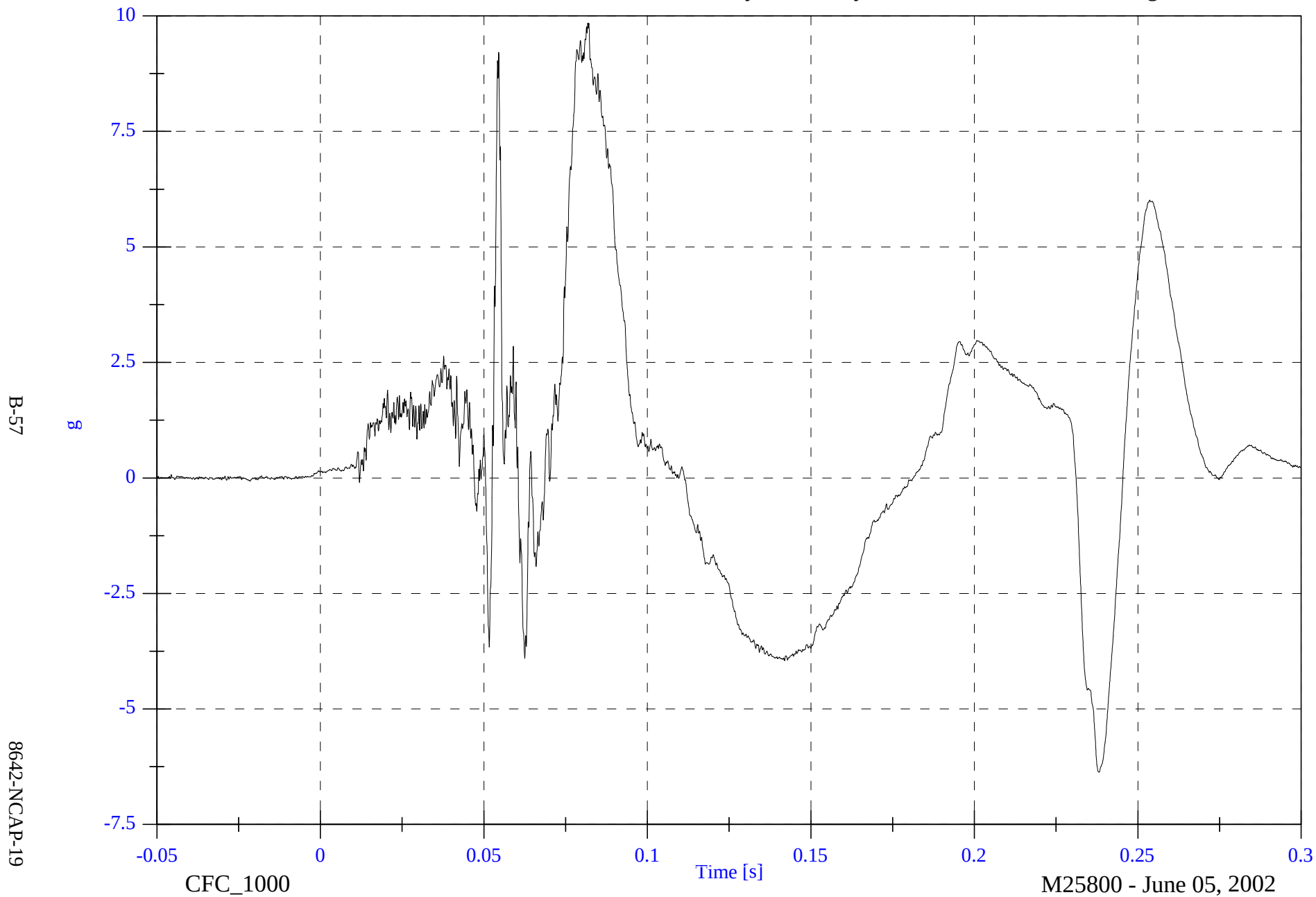


2002 NCAP Test 19 - 2002 Audi A4

P2 Head 9 Array X Arm Ay

Max: 9.8 [g] at 0.082 [s]

Min: -6.4 [g] at 0.238 [s]

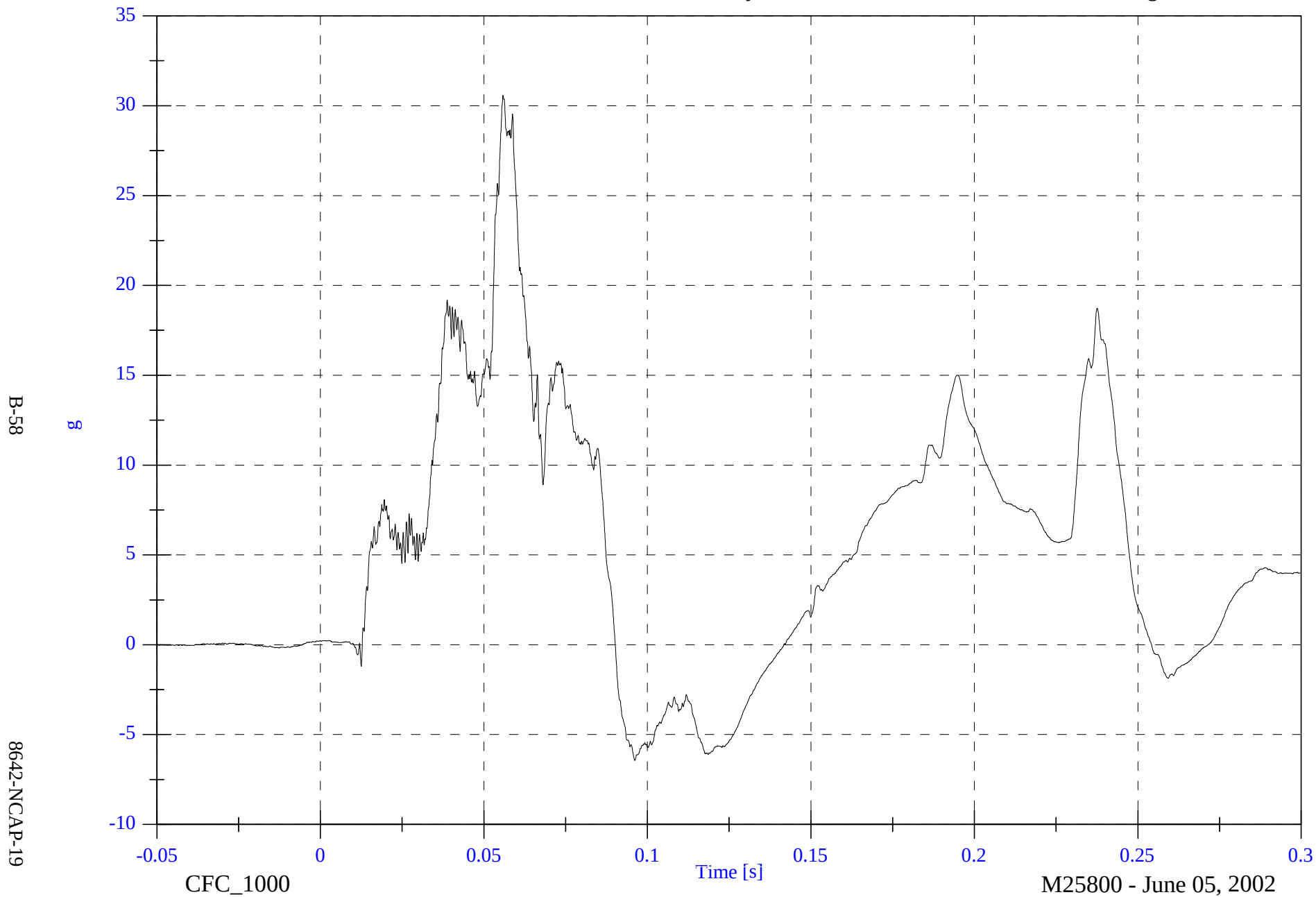


2002 NCAP Test 19 - 2002 Audi A4

P2 Head 9 Array X Arm Az

Max: 30.6 [g] at 0.056 [s]

Min: -6.4 [g] at 0.096 [s]

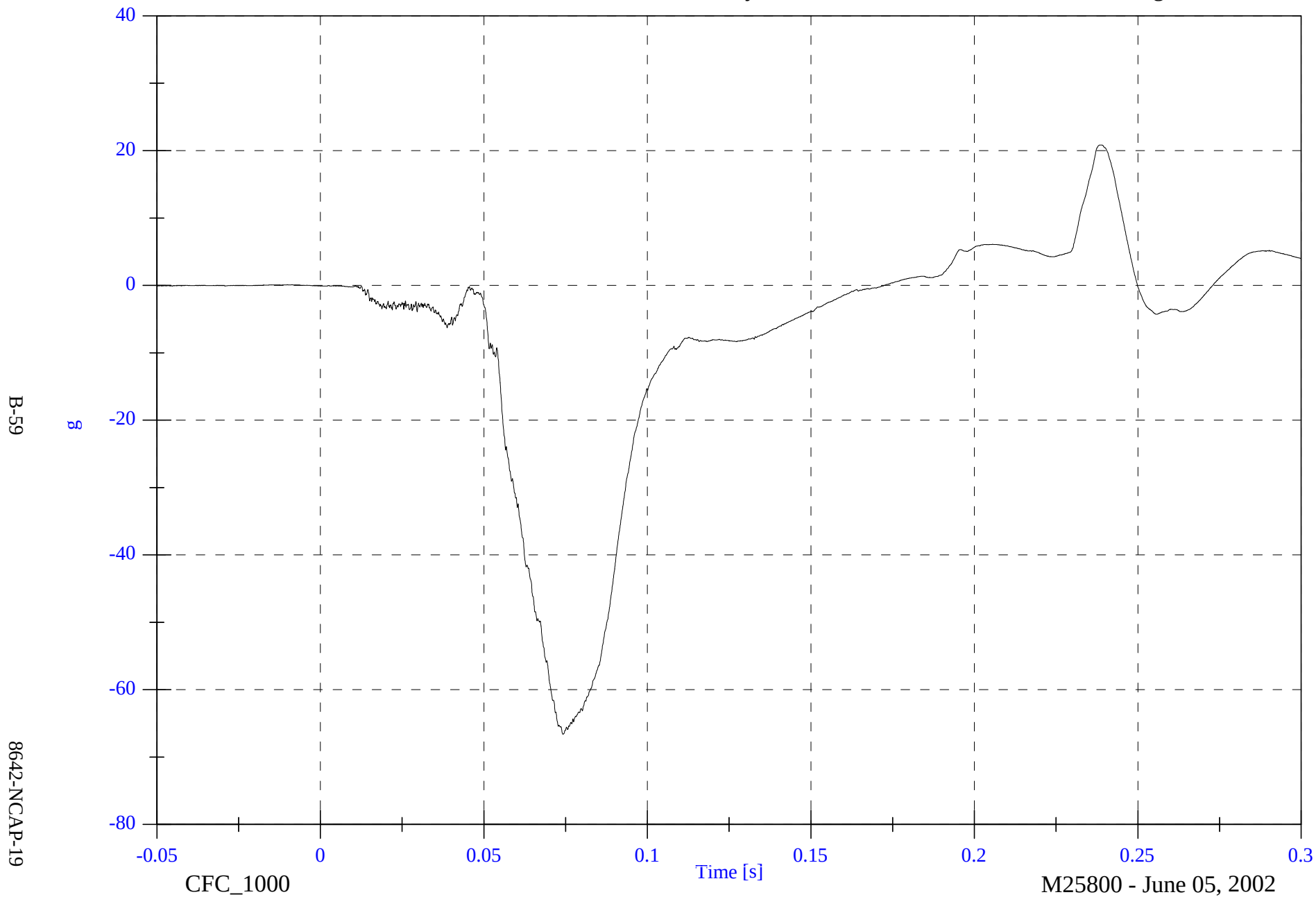


2002 NCAP Test 19 - 2002 Audi A4

P2 Head 9 Array Y Arm Ax

Max: 20.8 [g] at 0.238 [s]

Min: -66.6 [g] at 0.074 [s]

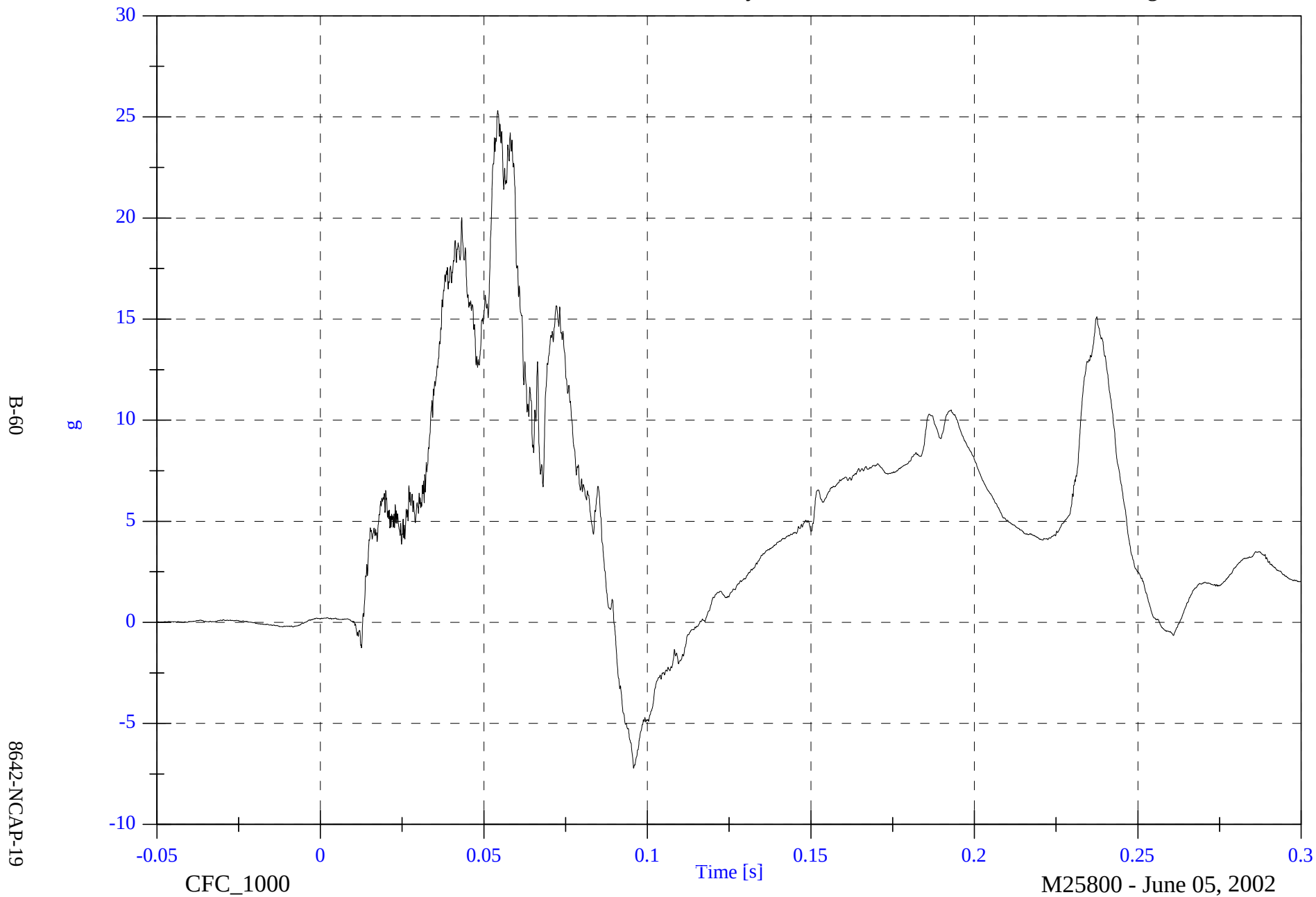


2002 NCAP Test 19 - 2002 Audi A4

P2 Head 9 Array Y Arm Az

Max: 25.3 [g] at 0.054 [s]

Min: -7.2 [g] at 0.096 [s]

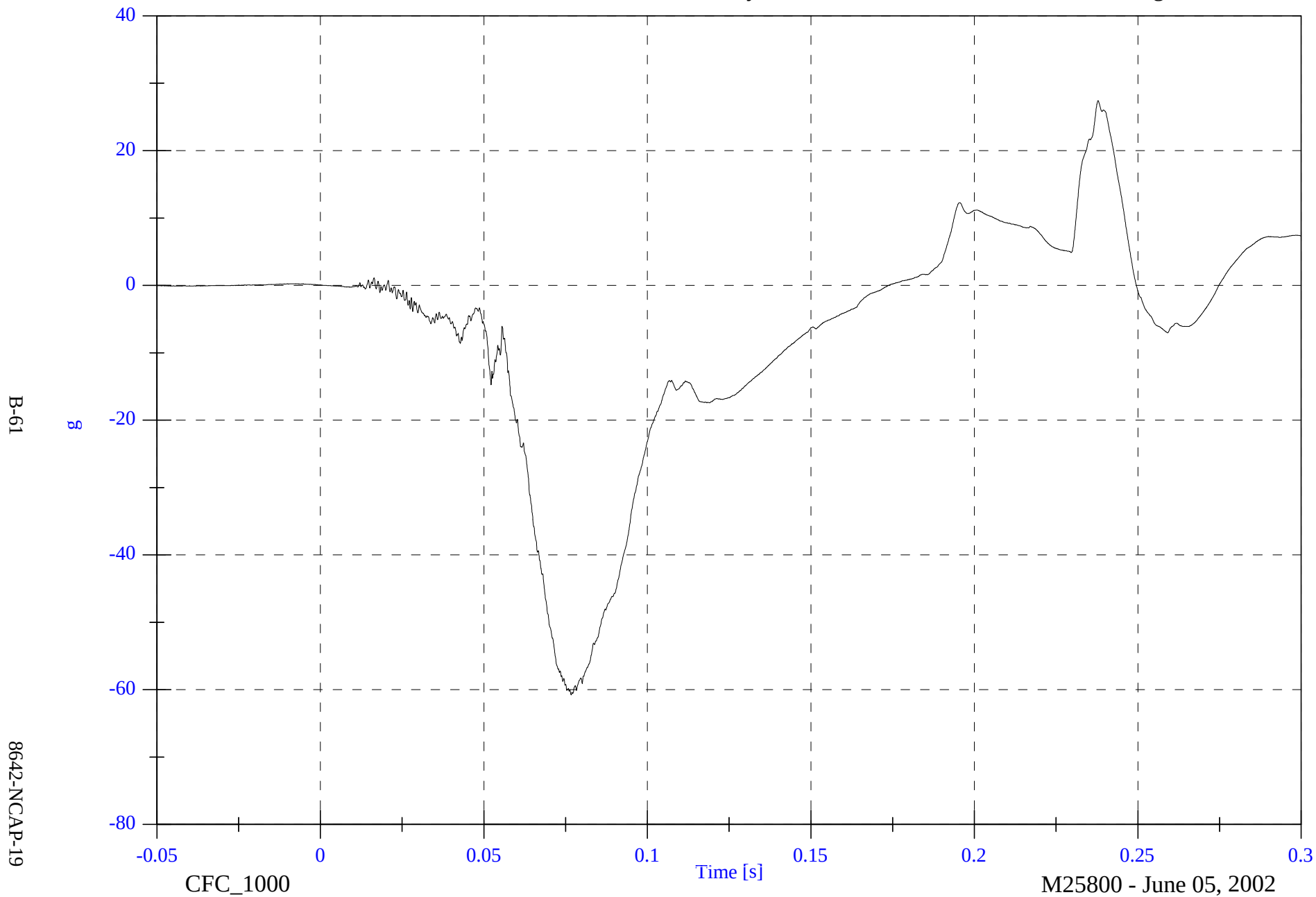


2002 NCAP Test 19 - 2002 Audi A4

P2 Head 9 Array Z Arm Ax

Max: 27.4 [g] at 0.238 [s]

Min: -60.8 [g] at 0.077 [s]

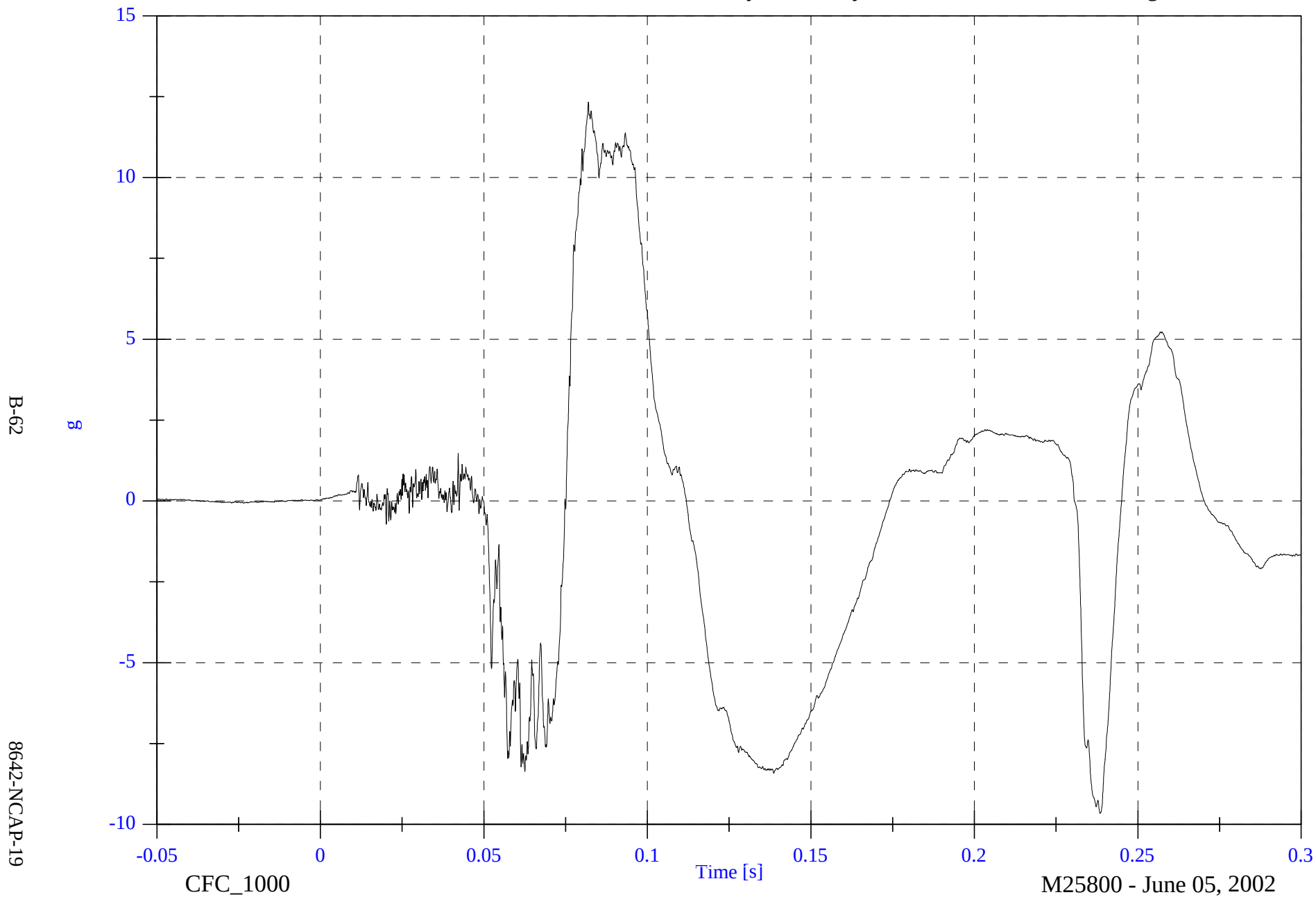


2002 NCAP Test 19 - 2002 Audi A4

P2 Head 9 Array Z Arm Ay

Max: 12.3 [g] at 0.082 [s]

Min: -9.7 [g] at 0.238 [s]



2002 NCAP Test 19 - 2002 Audi A4

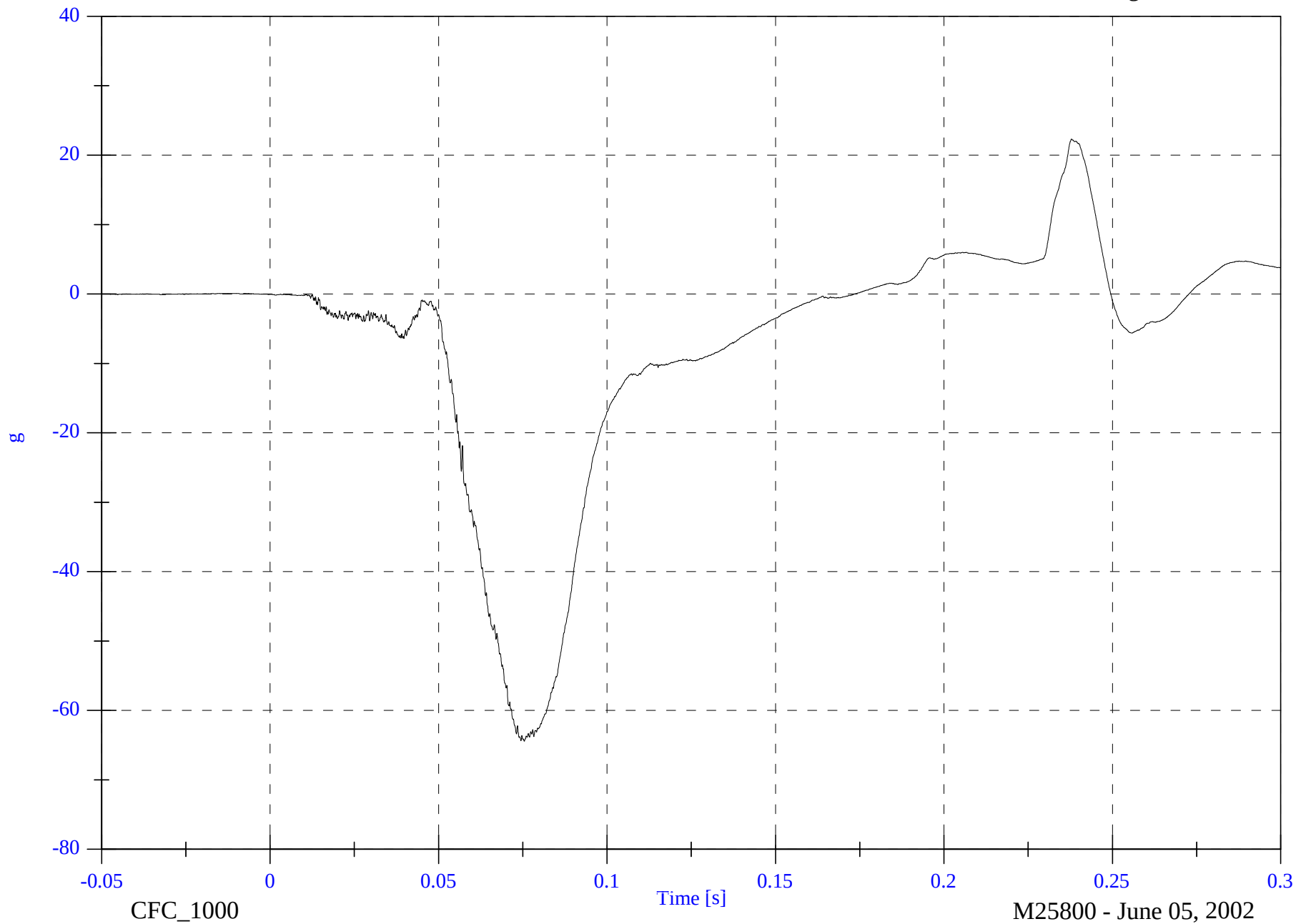
P2 Head CG x

Max: 22.3 [g] at 0.238 [s]

Min: -64.4 [g] at 0.075 [s]

B-63

8642-NCAP-19

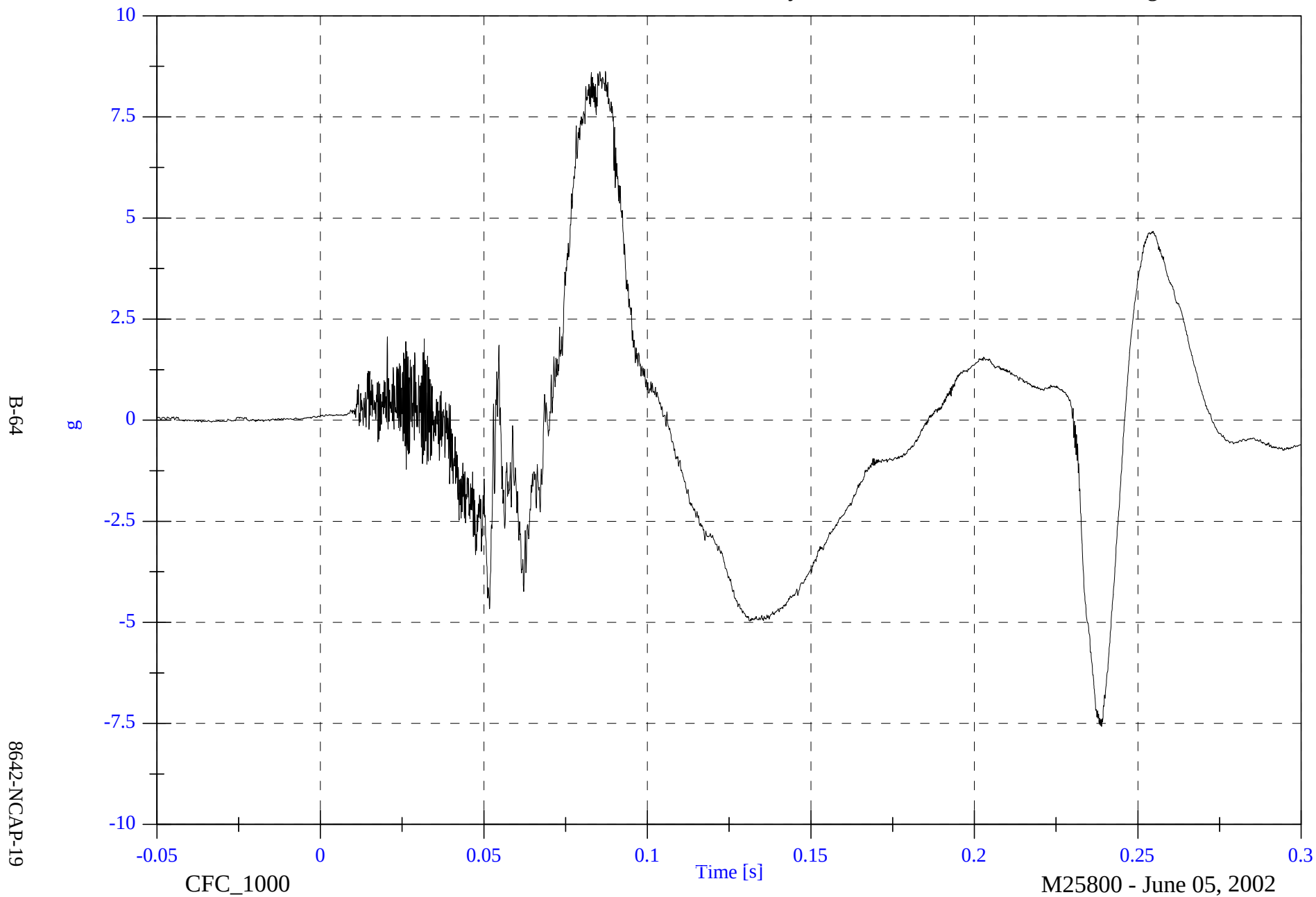


2002 NCAP Test 19 - 2002 Audi A4

P2 Head CG y

Max: 8.6 [g] at 0.087 [s]

Min: -7.6 [g] at 0.239 [s]



2002 NCAP Test 19 - 2002 Audi A4

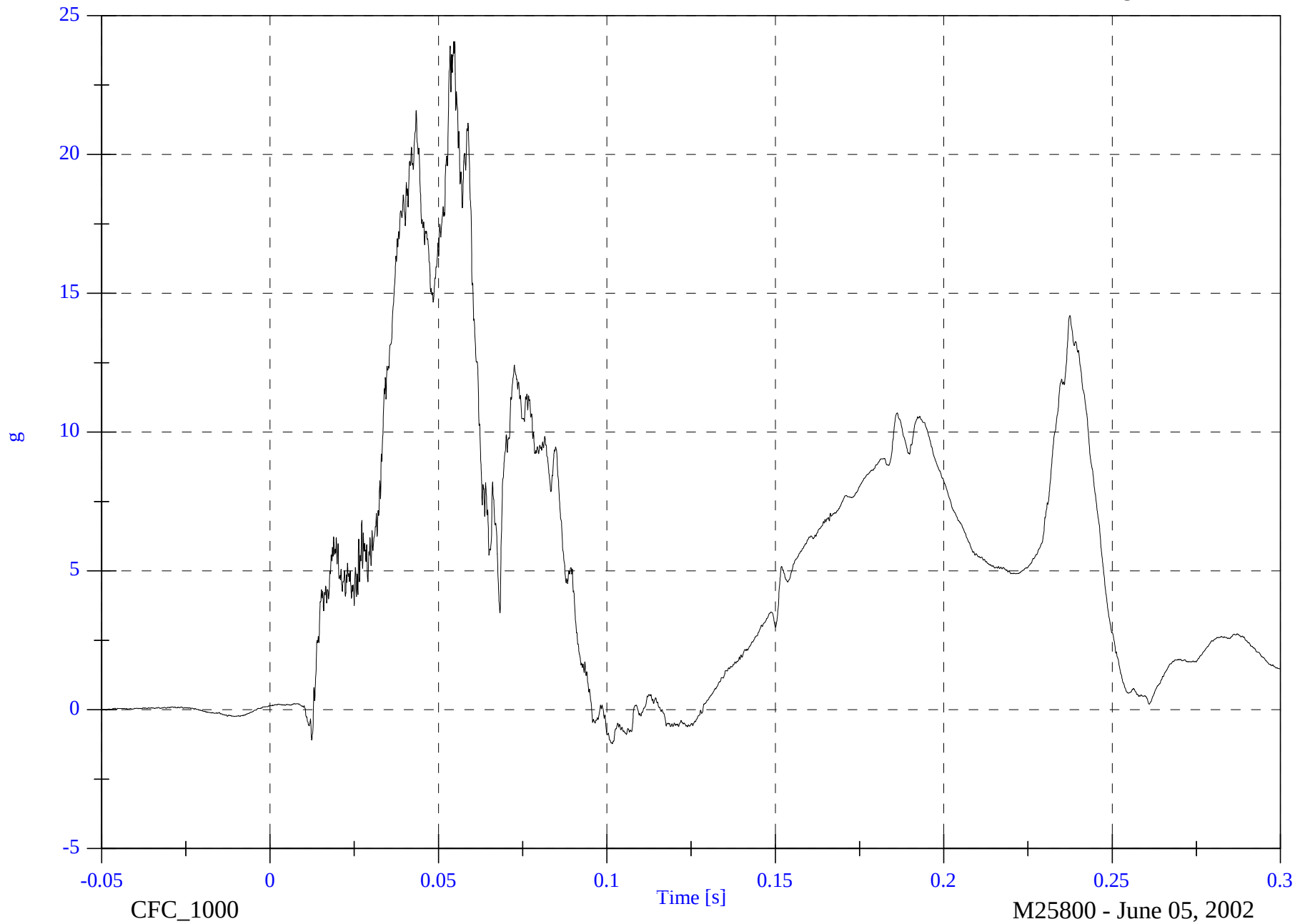
P2 Head CG z

Max: 24.1 [g] at 0.055 [s]

Min: -1.2 [g] at 0.102 [s]

B-65

8642-NCAP-19



2002 NCAP Test 19 - 2002 Audi A4

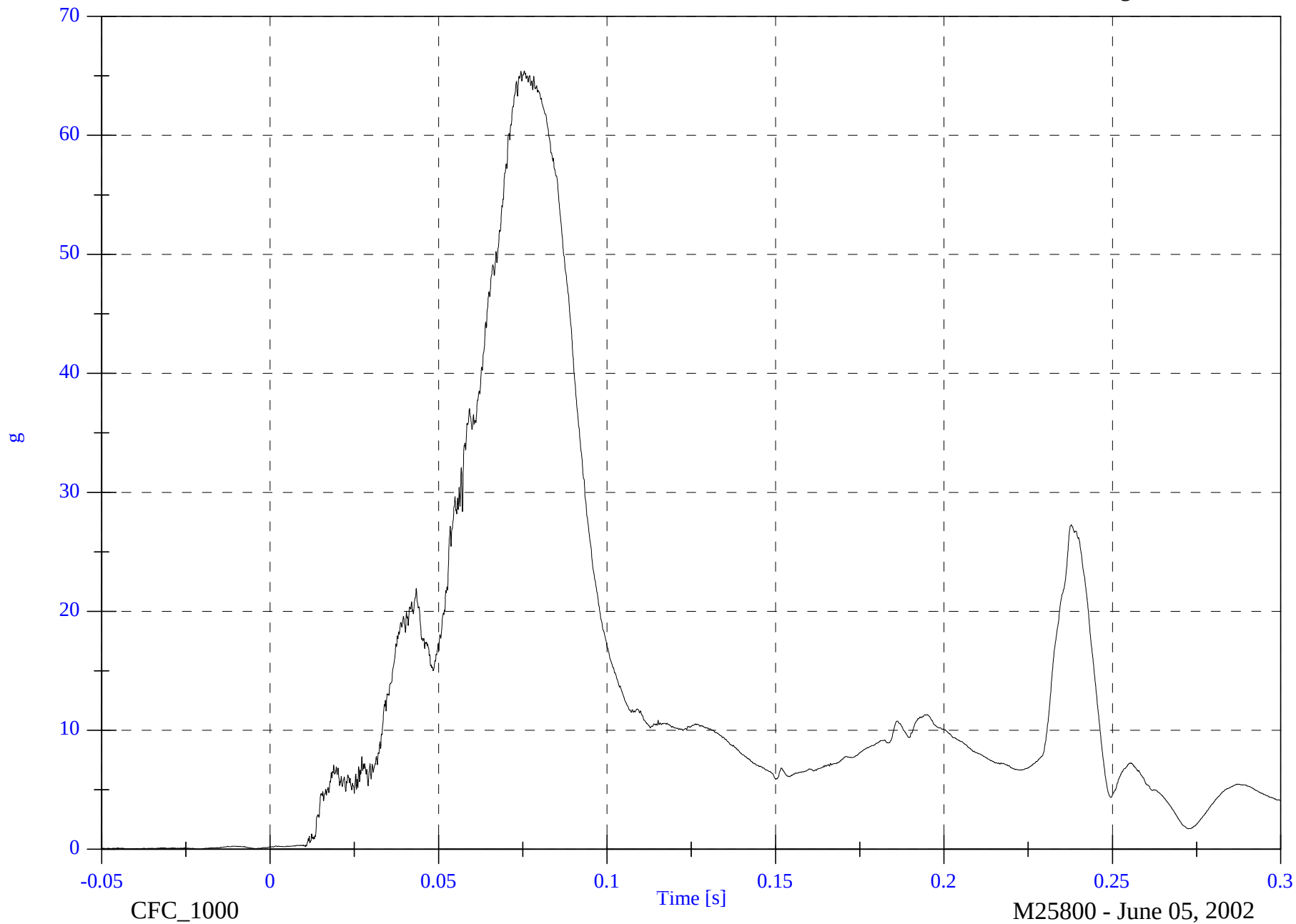
P2 Head CG Resultant

Max: 65.4 [g] at 0.075 [s]

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

B-66

8642-NCAP-19

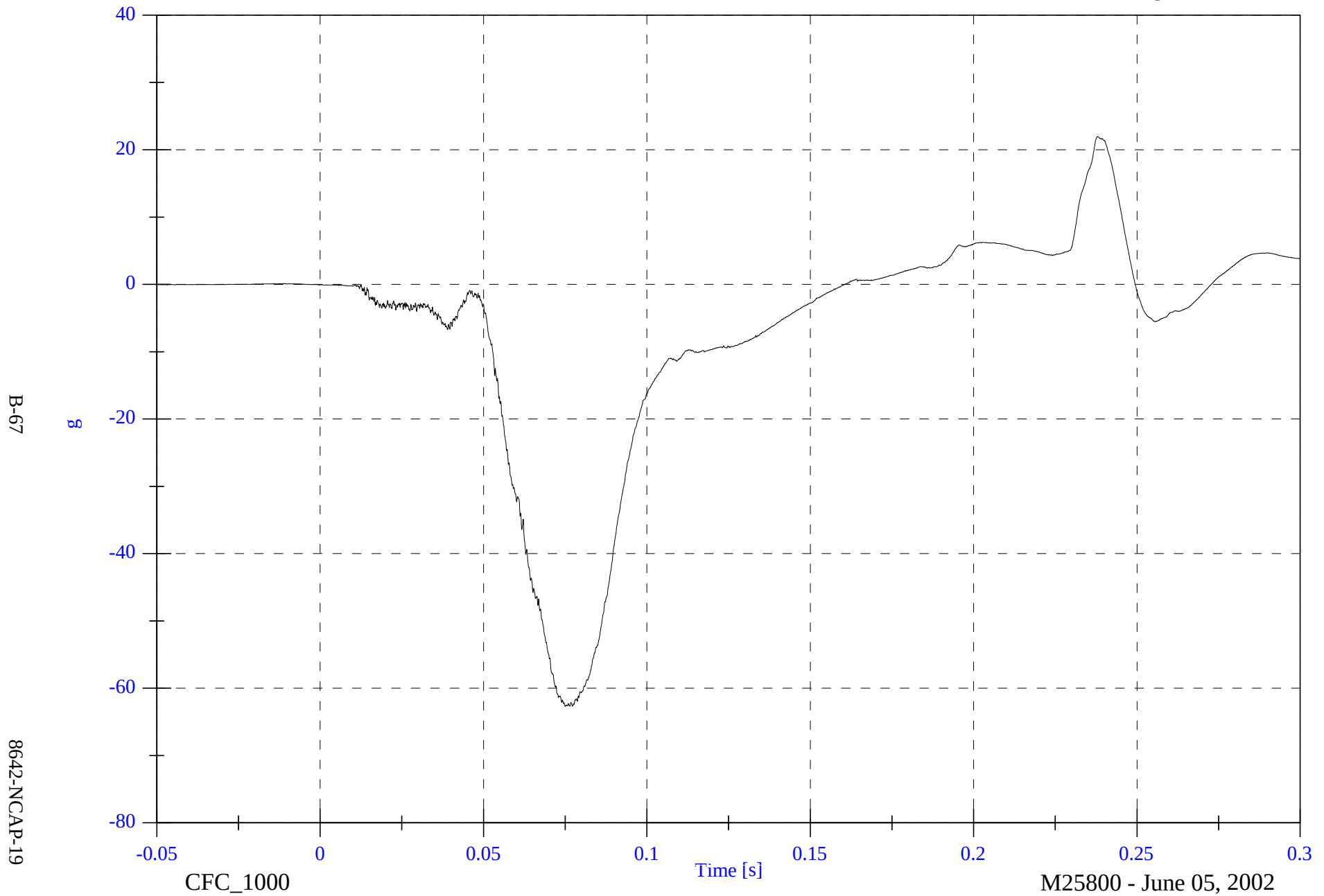


2002 NCAP Test 19 - 2002 Audi A4

P2 Head CG Red x

Max: 22.0 [g] at 0.238 [s]

Min: -62.7 [g] at 0.076 [s]

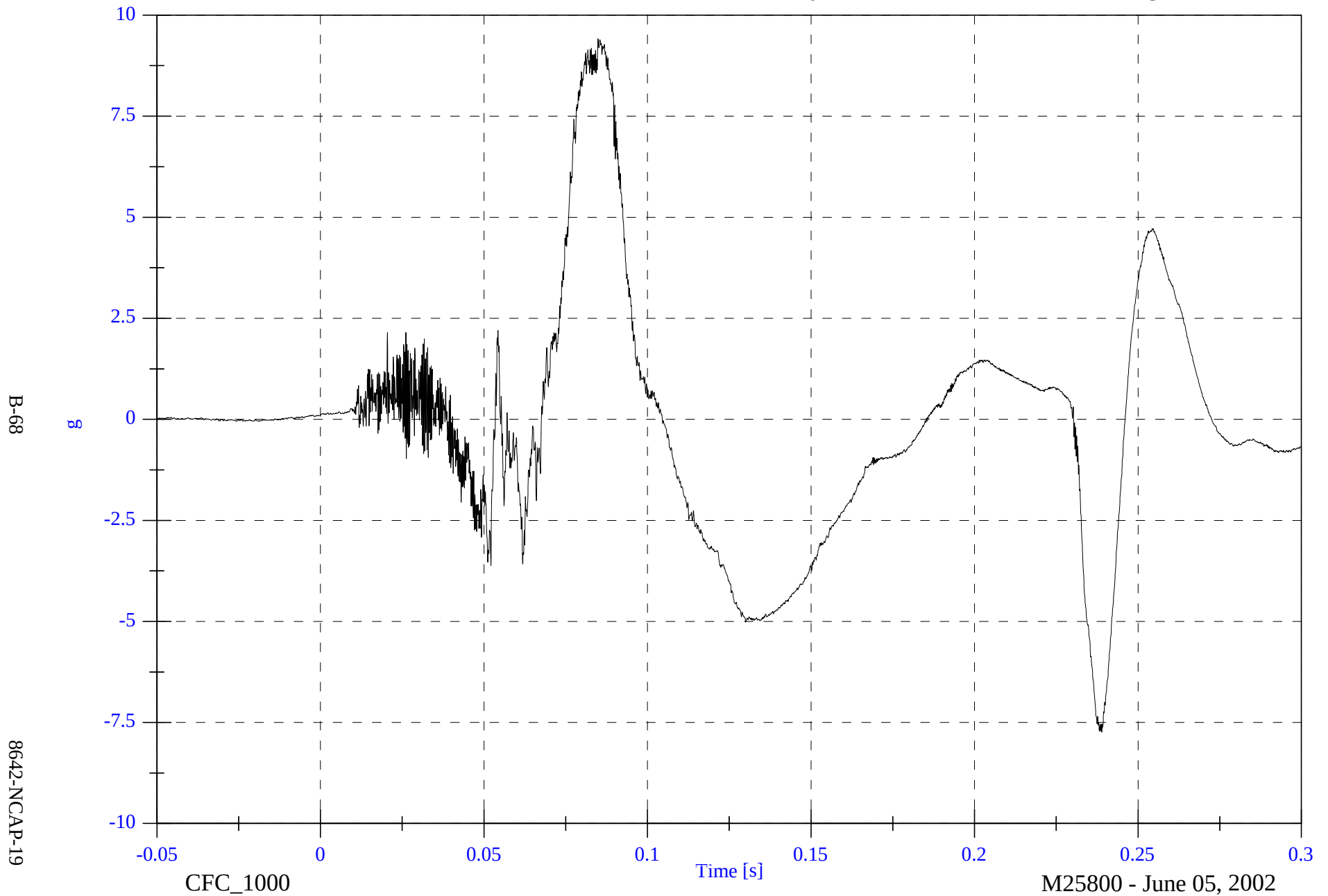


2002 NCAP Test 19 - 2002 Audi A4

P2 Head CG Red y

Max: 9.4 [g] at 0.085 [s]

Min: -7.7 [g] at 0.239 [s]



2002 NCAP Test 19 - 2002 Audi A4

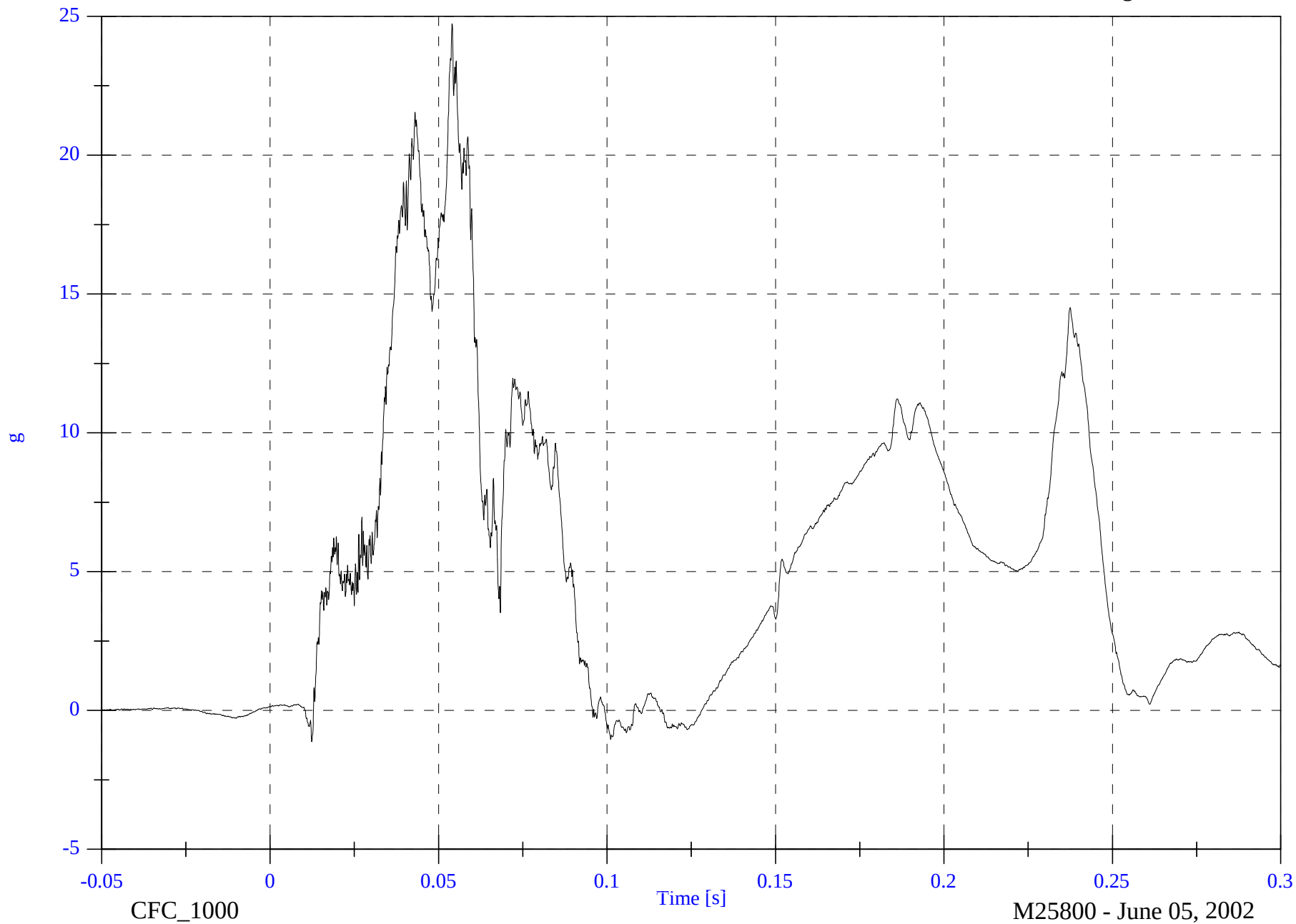
P2 Head CG Red z

Max: 24.7 [g] at 0.054 [s]

Min: -1.1 [g] at 0.012 [s]

B-69

8642-NCAP-19

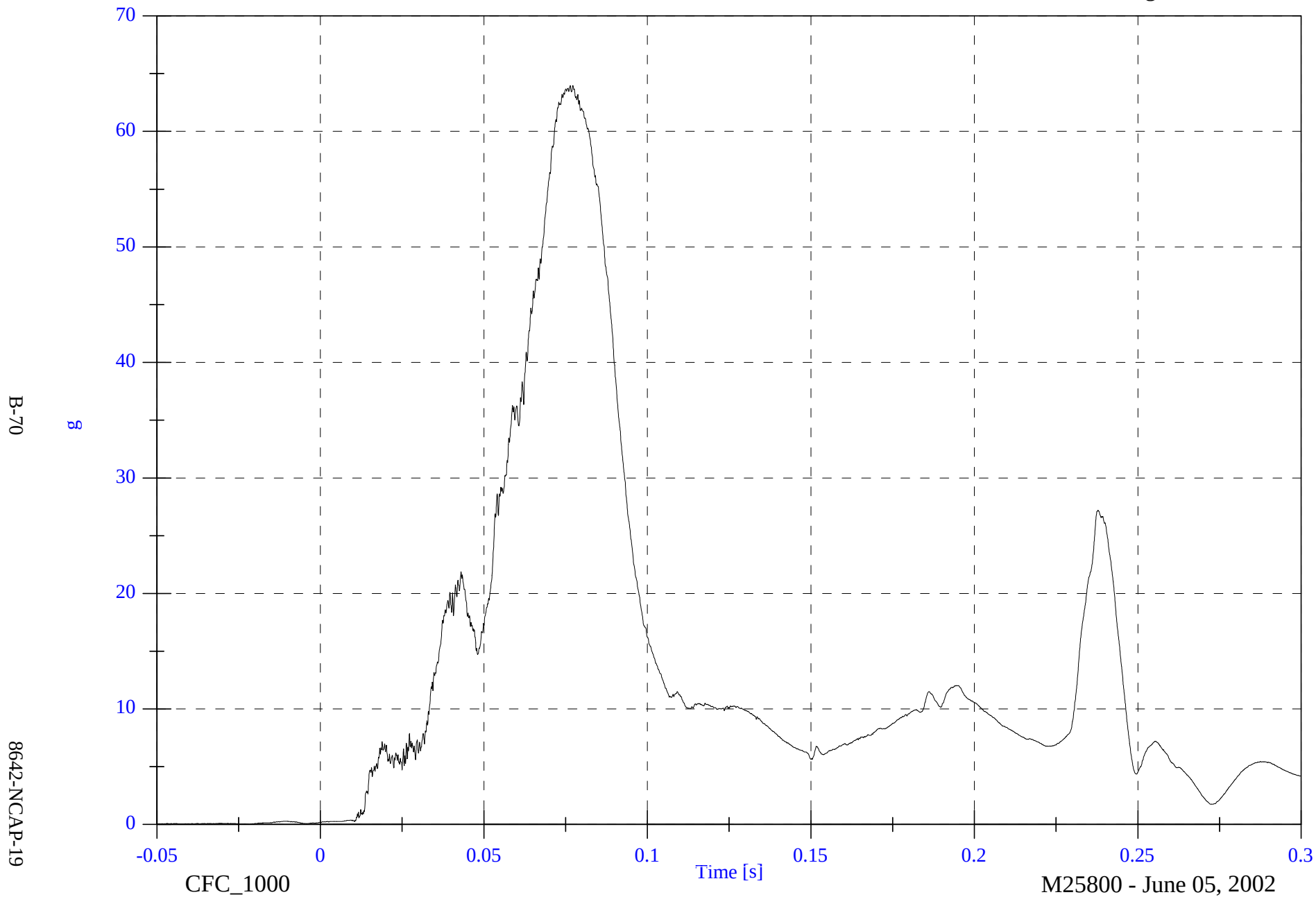


2002 NCAP Test 19 - 2002 Audi A4

P2 Head CG Red Resultant

Max: 64.0 [g] at 0.077 [s]

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

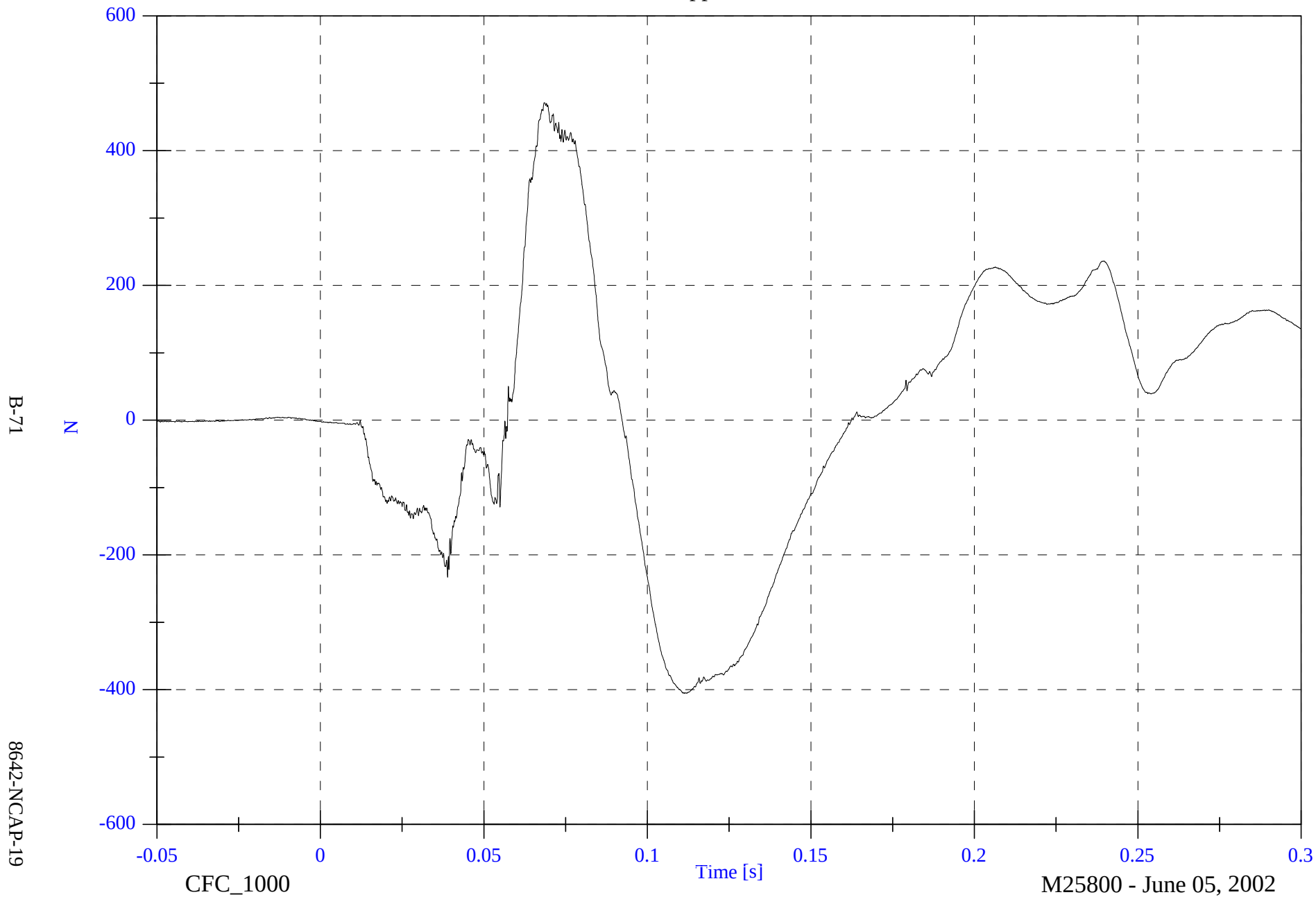


2002 NCAP Test 19 - 2002 Audi A4

P2 Upper Neck Fx

Max: 471.2 [N] at 0.068 [s]

Min: -405.4 [N] at 0.111 [s]

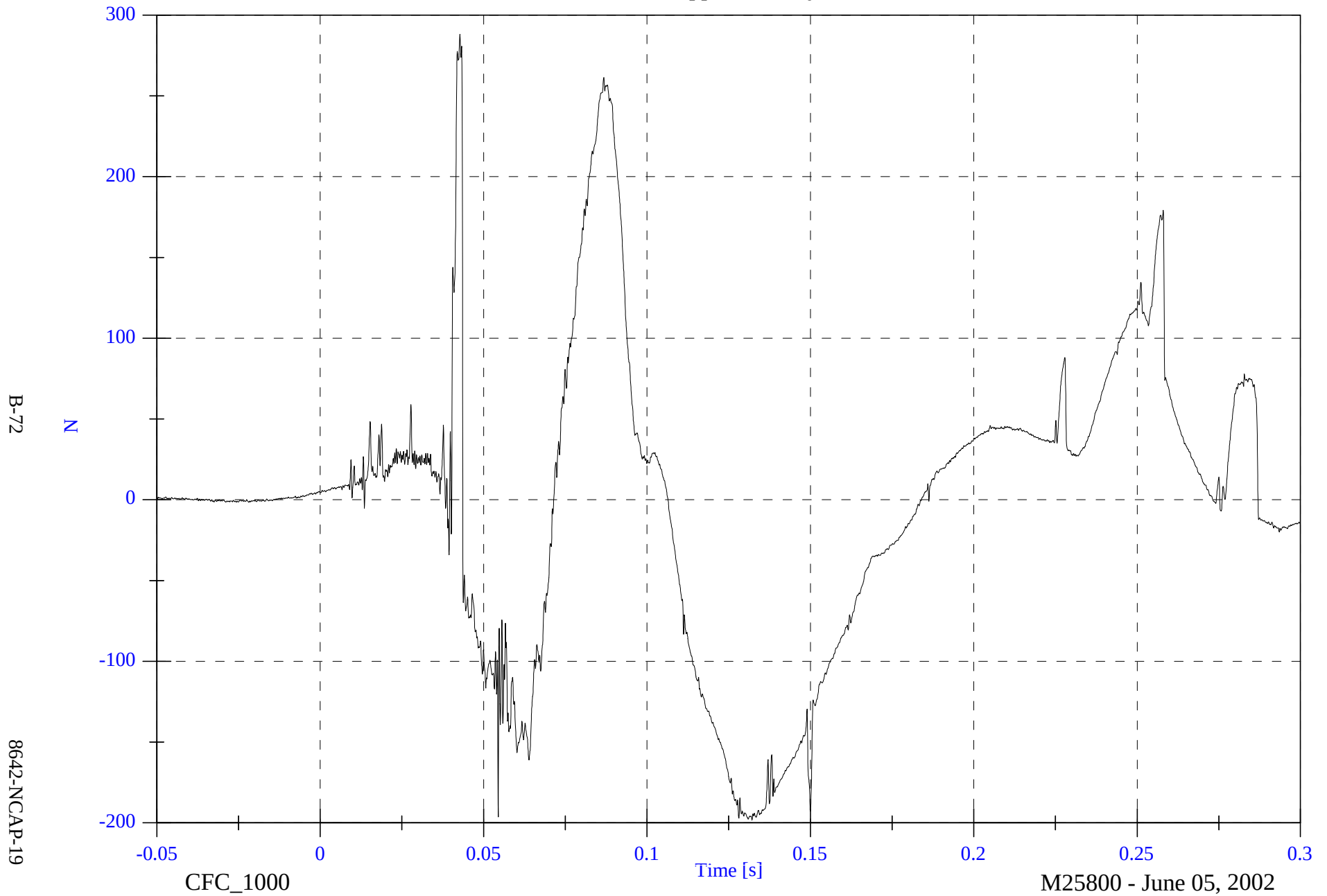


2002 NCAP Test 19 - 2002 Audi A4

P2 Upper Neck Fy

Max: 288.2 [N] at 0.043 [s]

Min: -198.3 [N] at 0.132 [s]

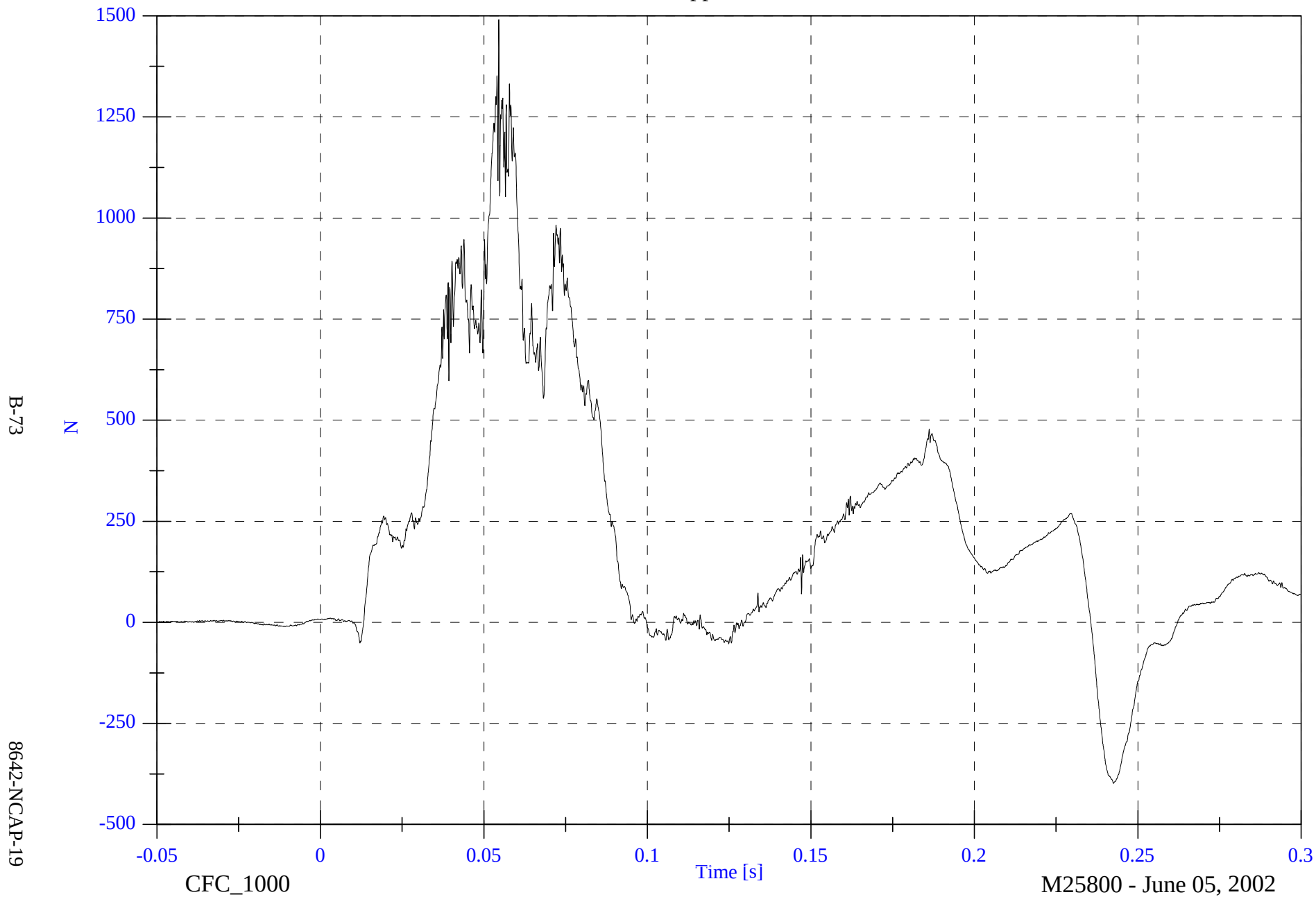


2002 NCAP Test 19 - 2002 Audi A4

P2 Upper Neck Fz

Max: 1490.6 [N] at 0.055 [s]

Min: -398.1 [N] at 0.243 [s]

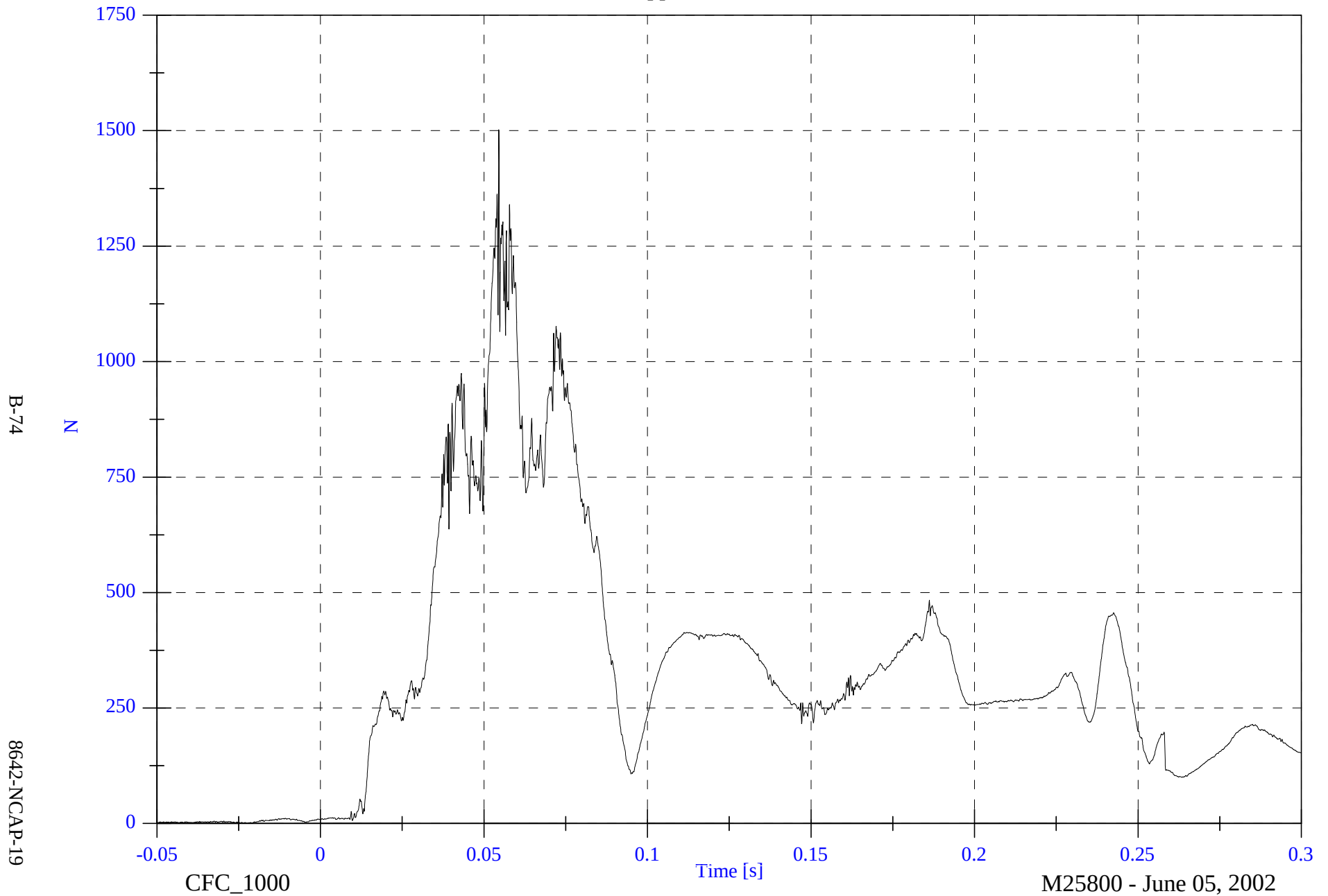


2002 NCAP Test 19 - 2002 Audi A4

P2 Upper Neck F Resultant

Max: 1502.0 [N] at 0.055 [s]

Min: 0.4 [N] at -0.022 [s]

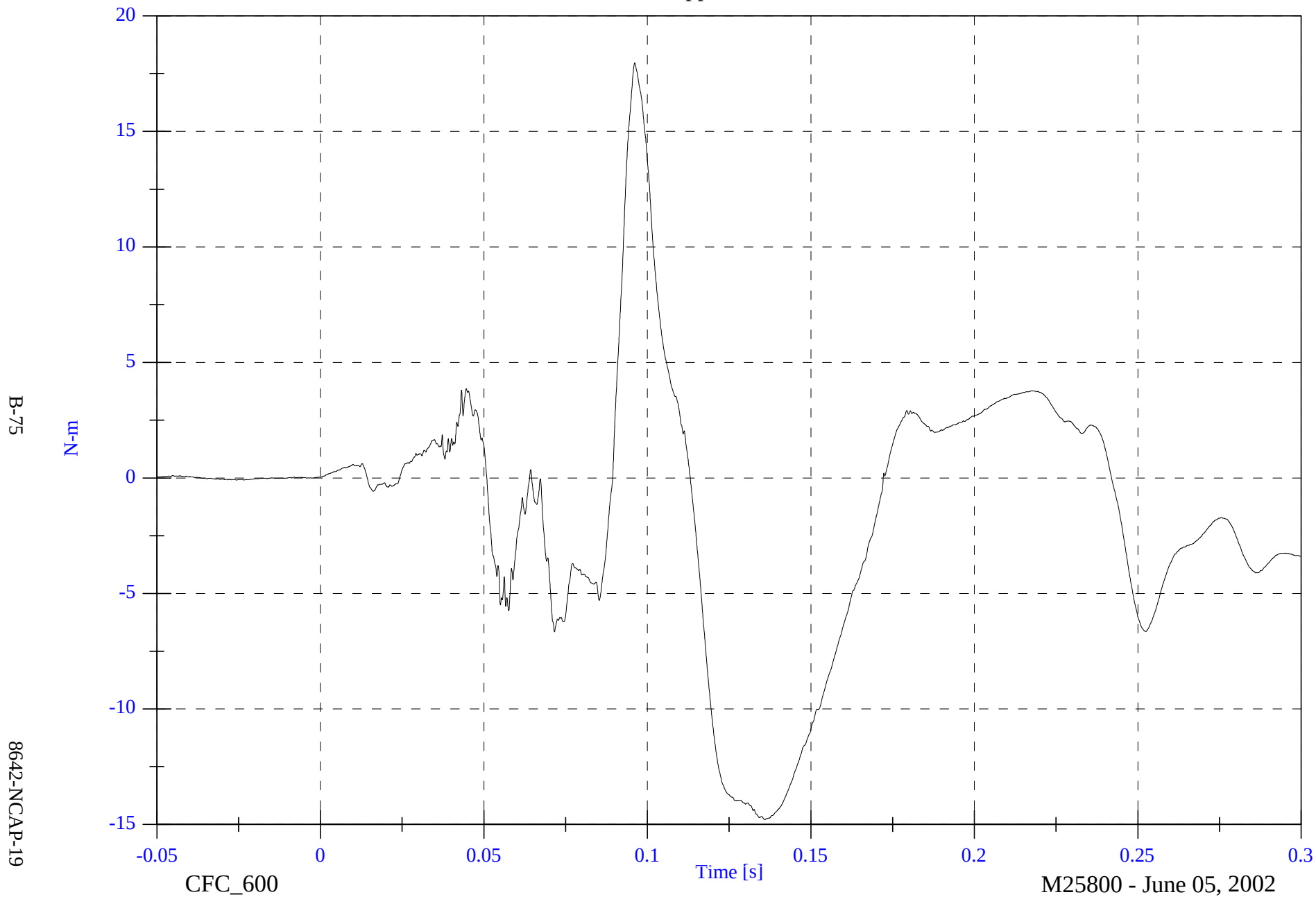


2002 NCAP Test 19 - 2002 Audi A4

P2 Upper Neck Mx

Max: 18.0 [N-m] at 0.096 [s]

Min: -14.8 [N-m] at 0.136 [s]

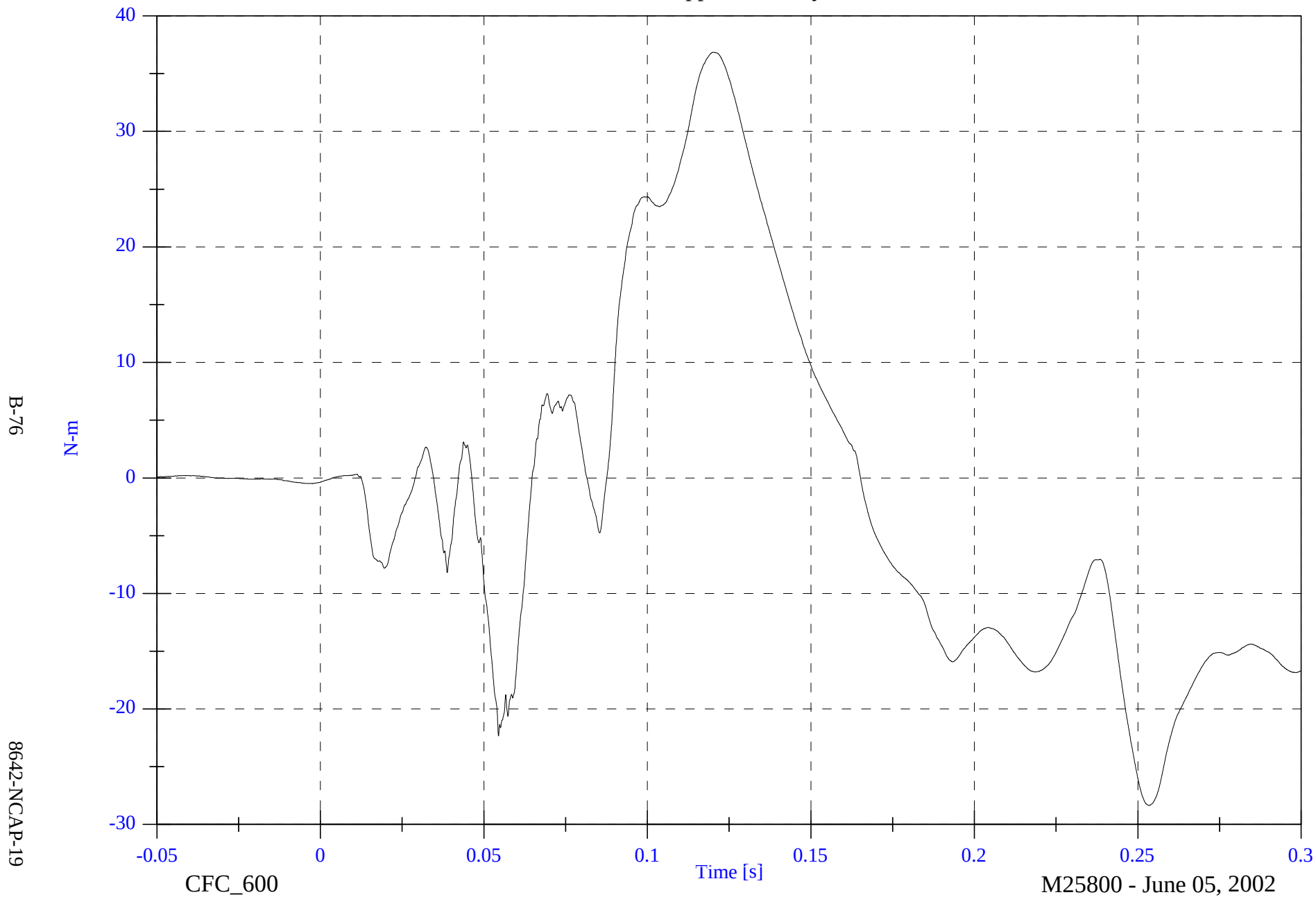


2002 NCAP Test 19 - 2002 Audi A4

P2 Upper Neck My

Max: 36.9 [N-m] at 0.120 [s]

Min: -28.4 [N-m] at 0.253 [s]

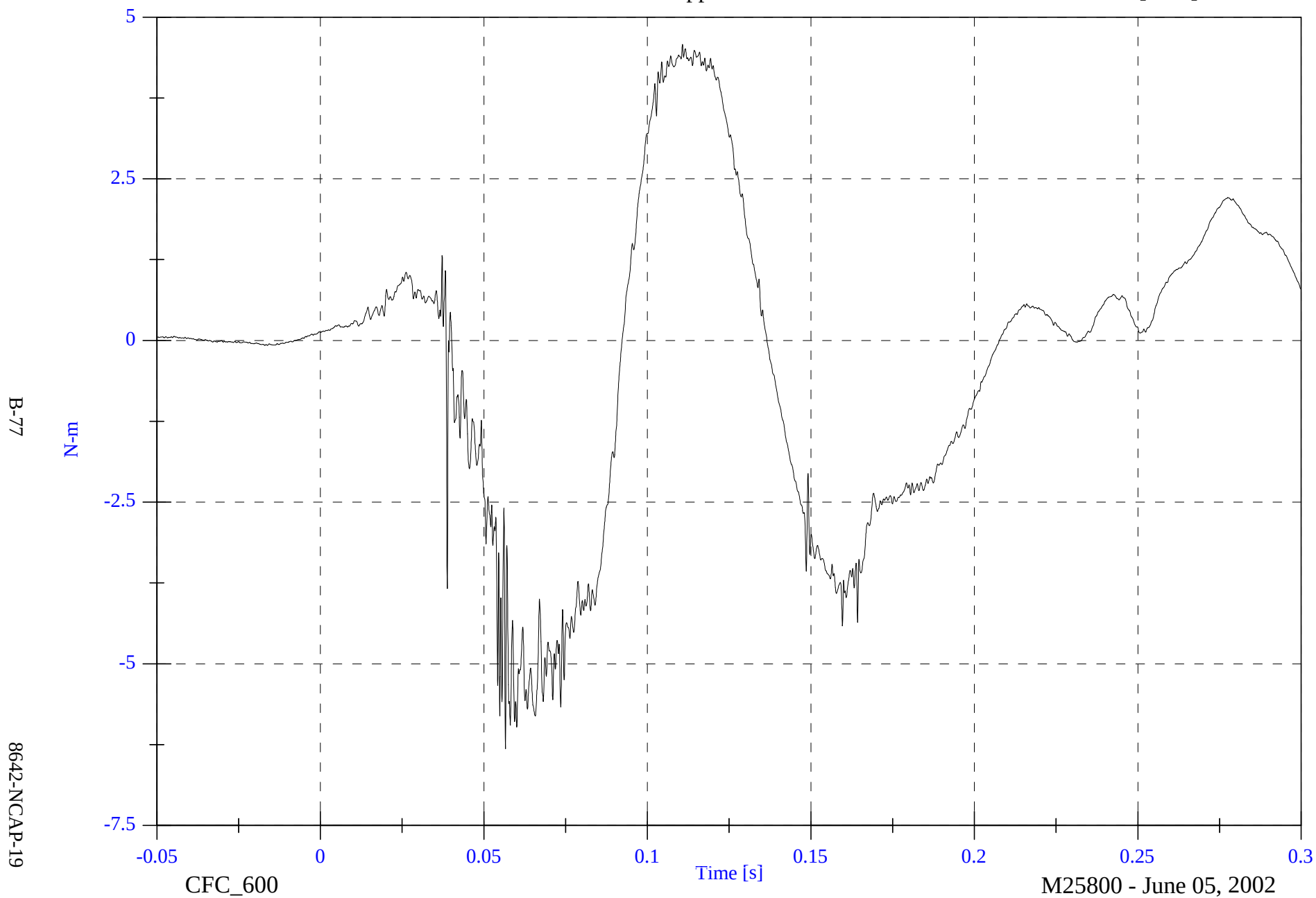


2002 NCAP Test 19 - 2002 Audi A4

Max: 4.6 [N-m] at 0.111 [s]

Min: -6.3 [N-m] at 0.057 [s]

P2 Upper Neck Mz



2002 NCAP Test 19 - 2002 Audi A4

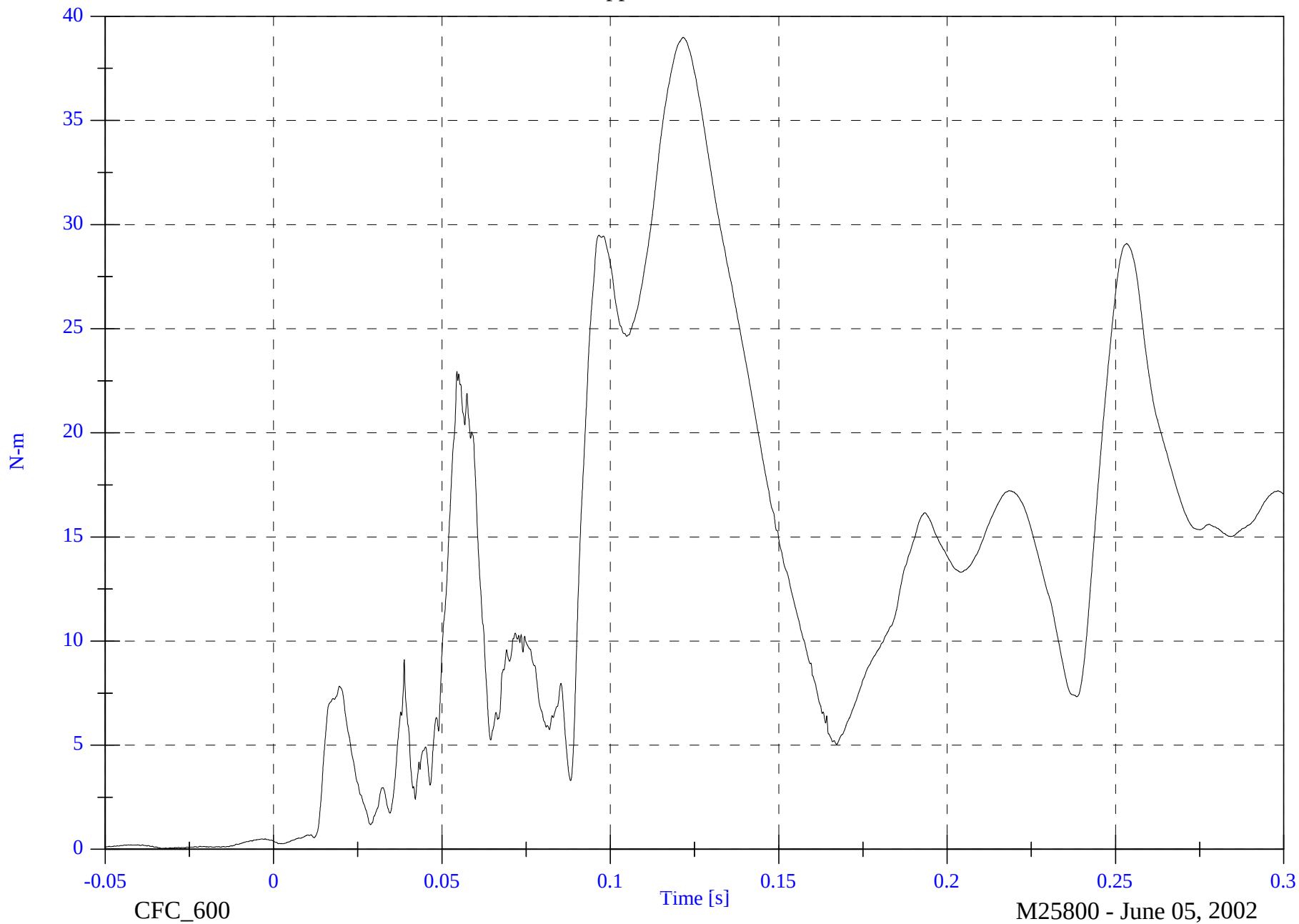
P2 Upper Neck M Resultant

Max: 39.0 [N-m] at 0.122 [s]

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

B-78

8642-NCAP-19

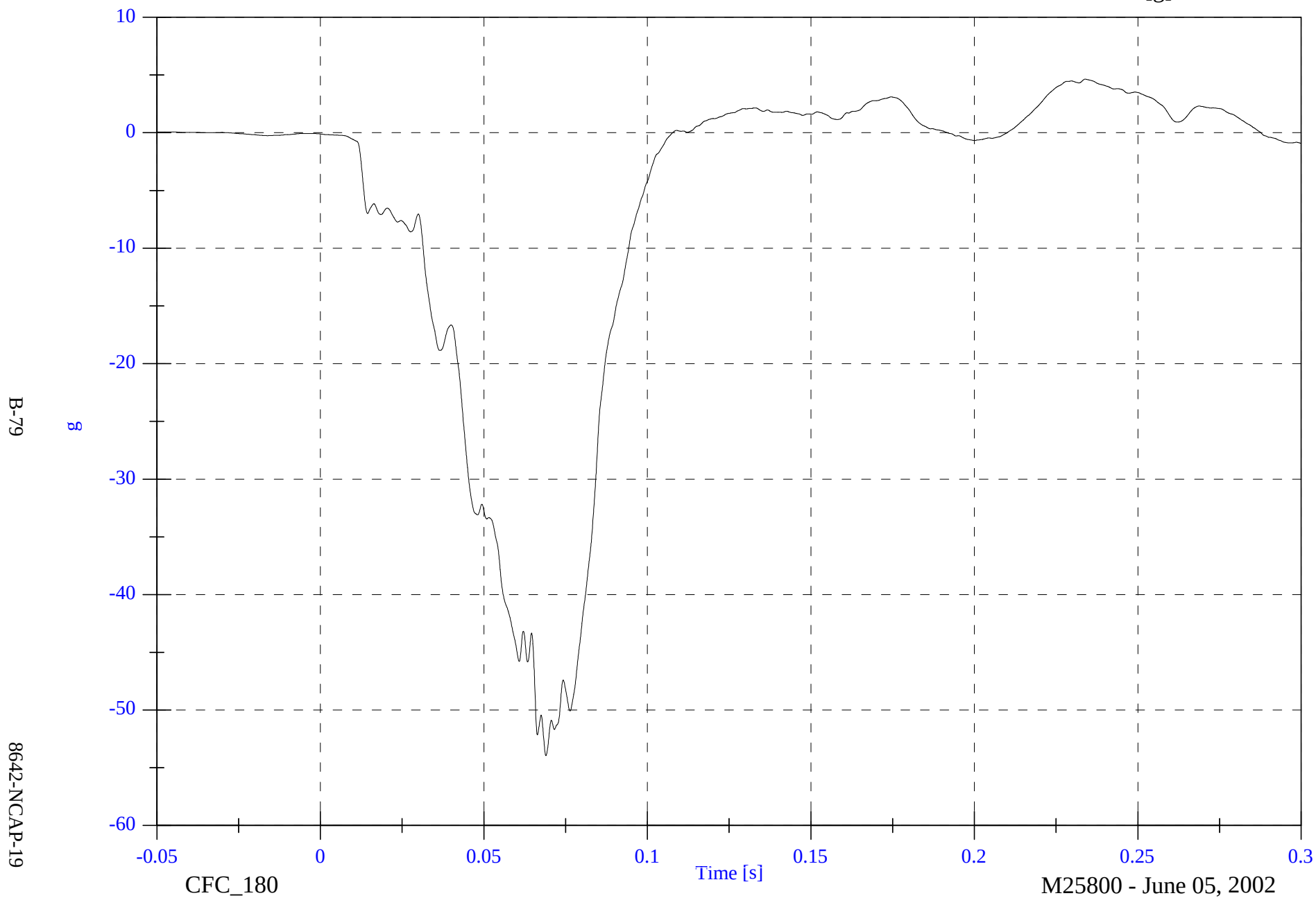


2002 NCAP Test 19 - 2002 Audi A4

Max: 4.6 [g] at 0.234 [s]

Min: -53.9 [g] at 0.069 [s]

P2 Chest x



2002 NCAP Test 19 - 2002 Audi A4

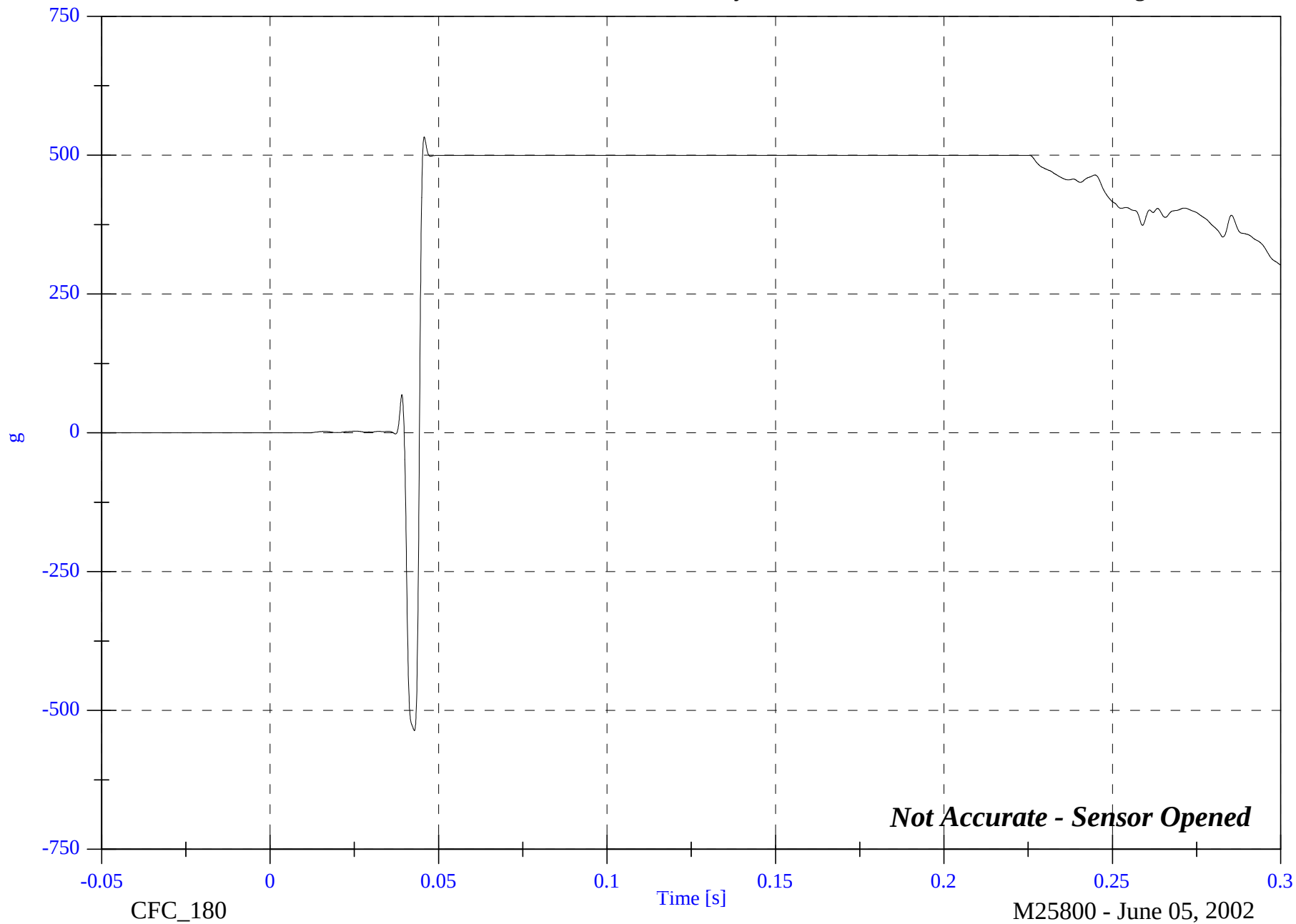
P2 Chest y

Max: 532.9 [g] at 0.046 [s]

Min: -536.4 [g] at 0.043 [s]

B-80

8642-NCAP-19

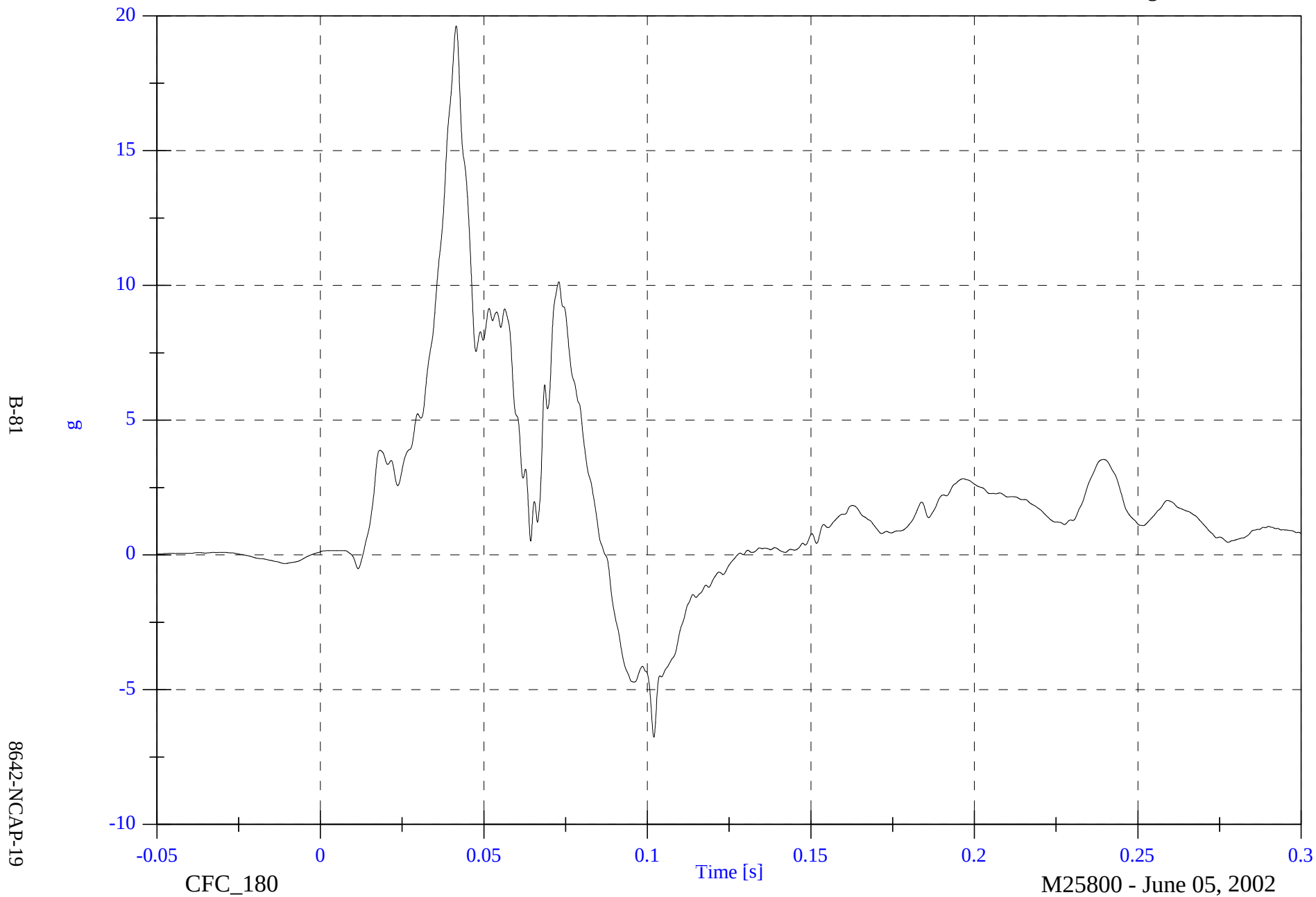


2002 NCAP Test 19 - 2002 Audi A4

P2 Chest z

Max: 19.6 [g] at 0.042 [s]

Min: -6.8 [g] at 0.102 [s]



2002 NCAP Test 19 - 2002 Audi A4

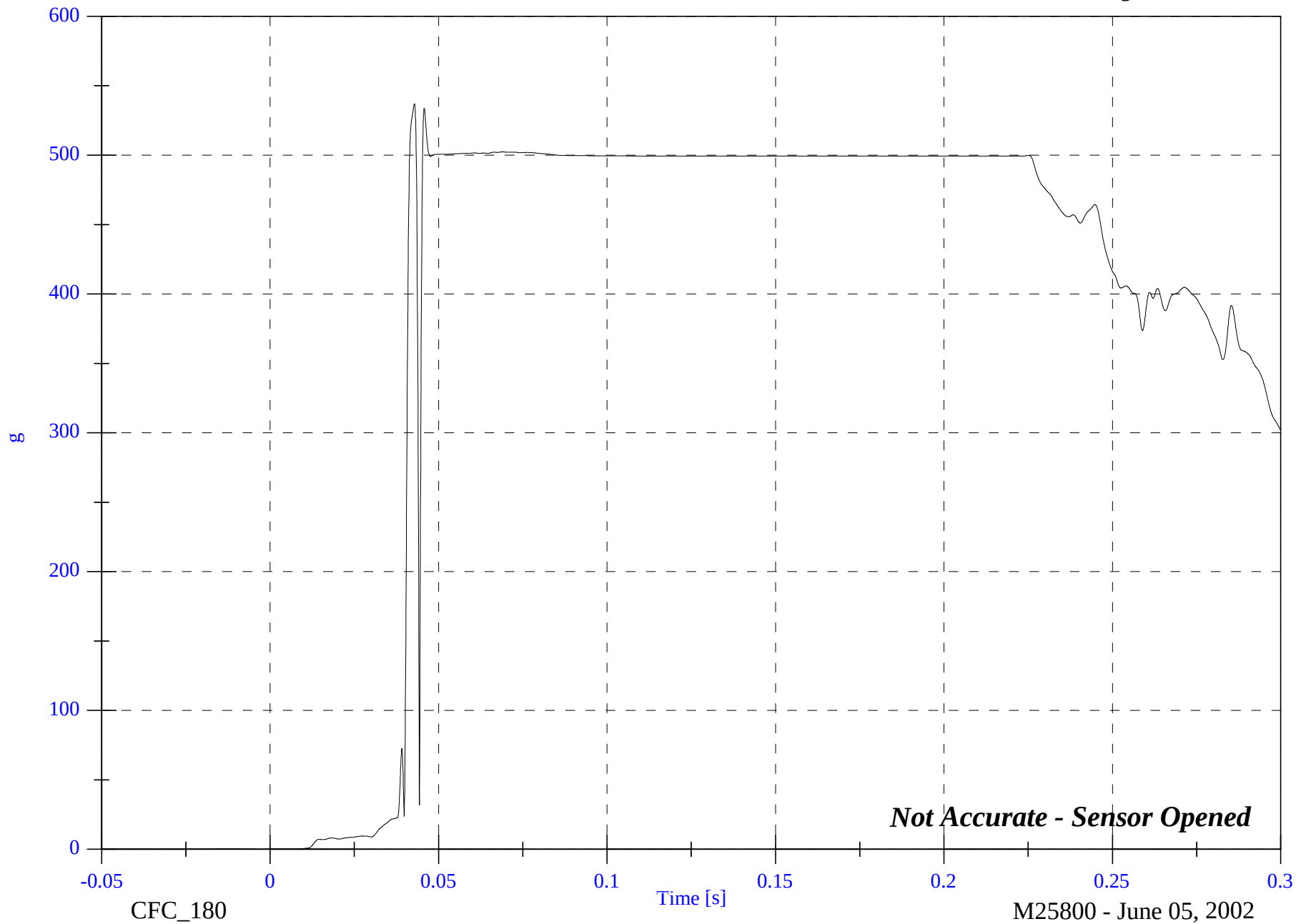
P2 Chest Resultant

Max: 537.1 [g] at 0.043 [s]

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

B-82

8642-NCAP-19

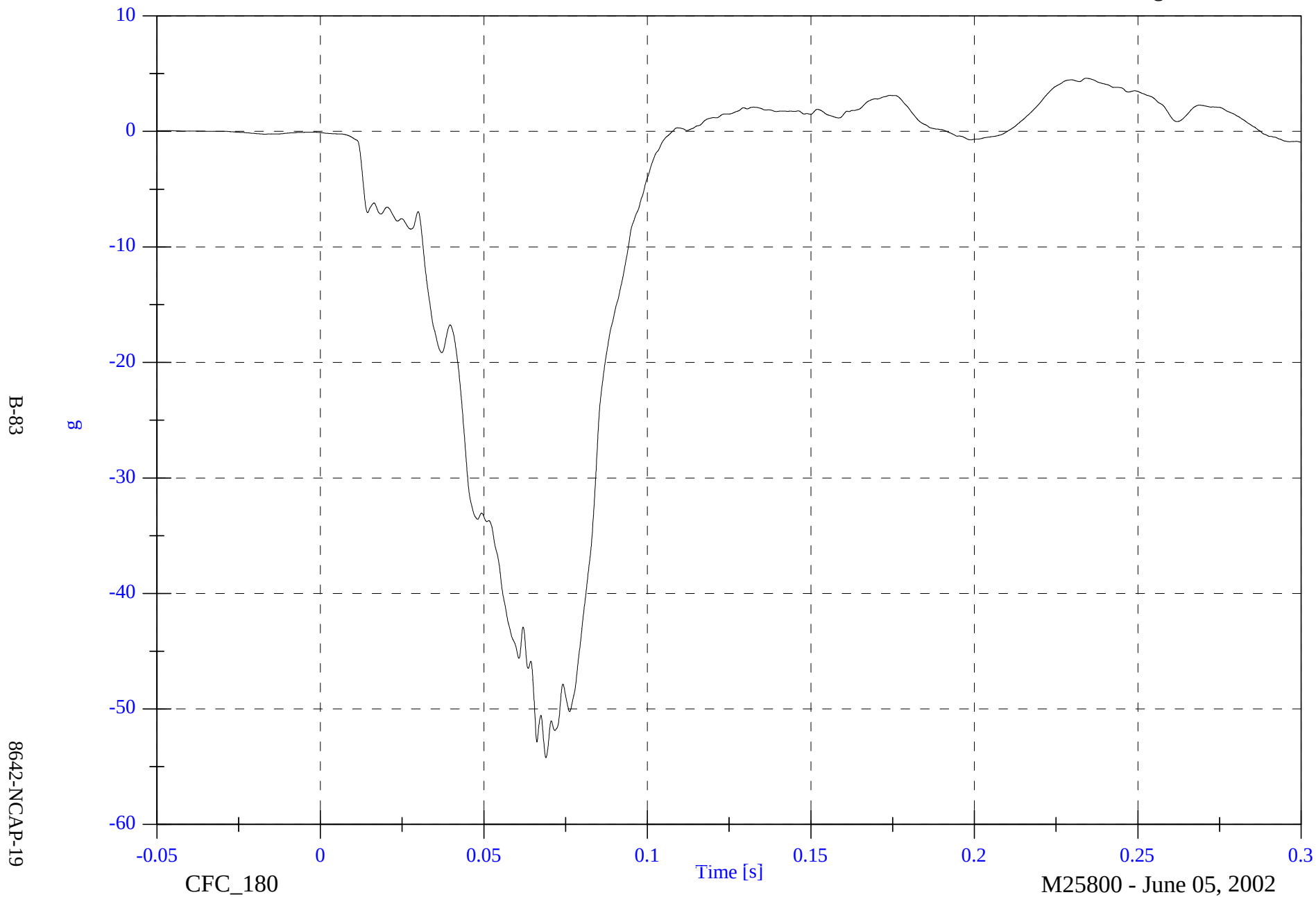


2002 NCAP Test 19 - 2002 Audi A4

P2 Chest Red x

Max: 4.6 [g] at 0.234 [s]

Min: -54.2 [g] at 0.069 [s]

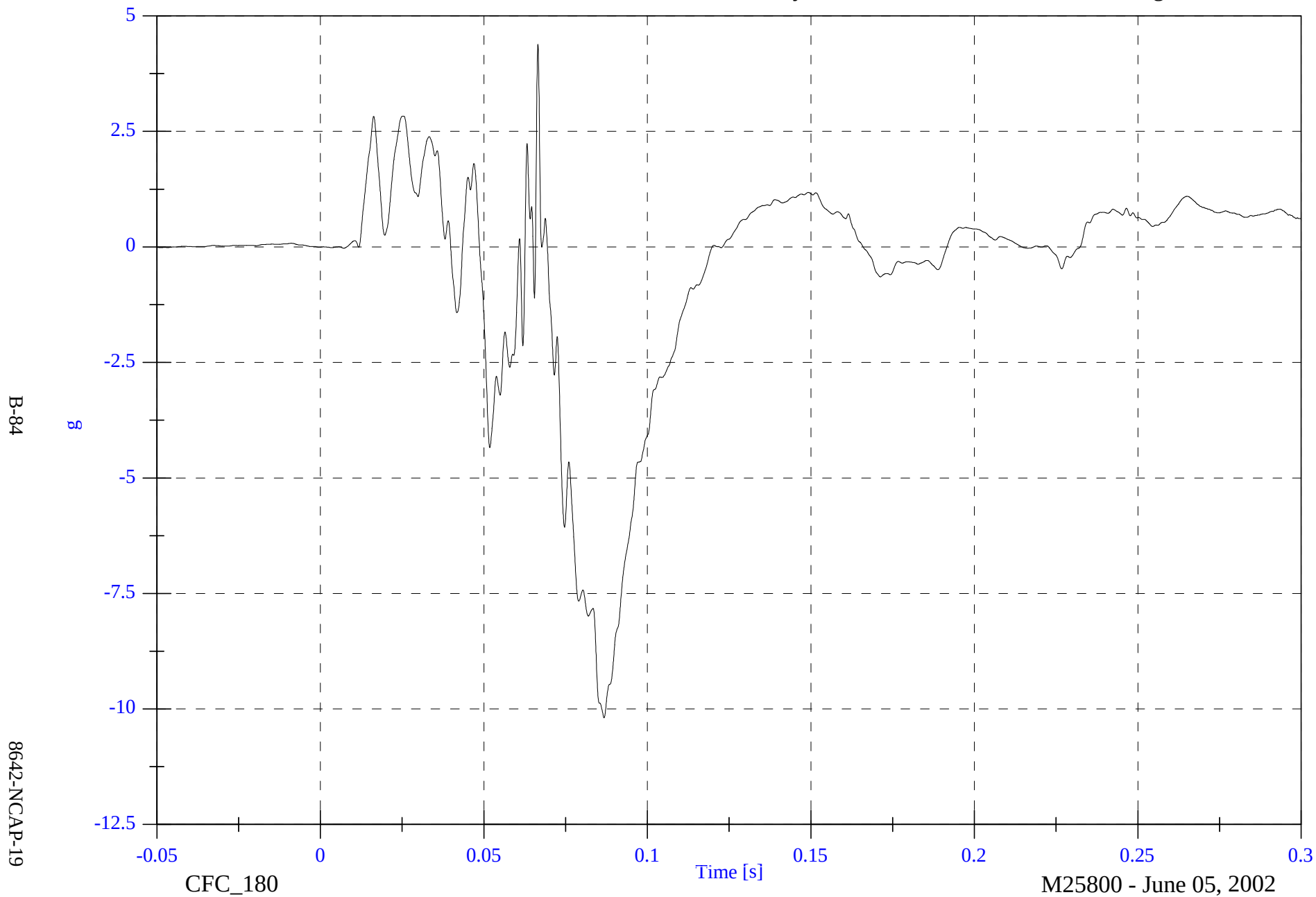


2002 NCAP Test 19 - 2002 Audi A4

P2 Chest Red y

Max: 4.4 [g] at 0.067 [s]

Min: -10.2 [g] at 0.087 [s]

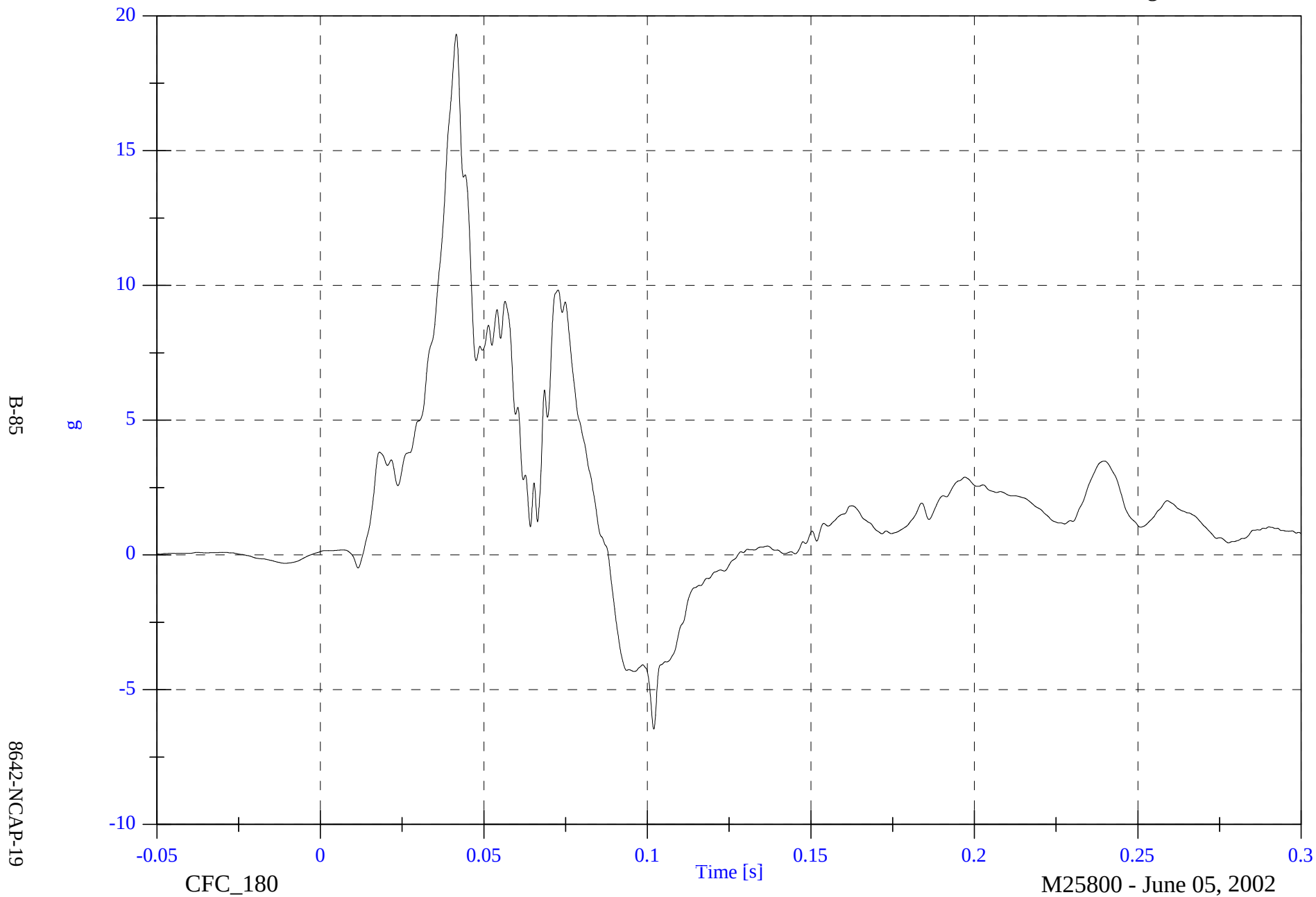


2002 NCAP Test 19 - 2002 Audi A4

P2 Chest Red z

Max: 19.3 [g] at 0.042 [s]

Min: -6.5 [g] at 0.102 [s]



2002 NCAP Test 19 - 2002 Audi A4

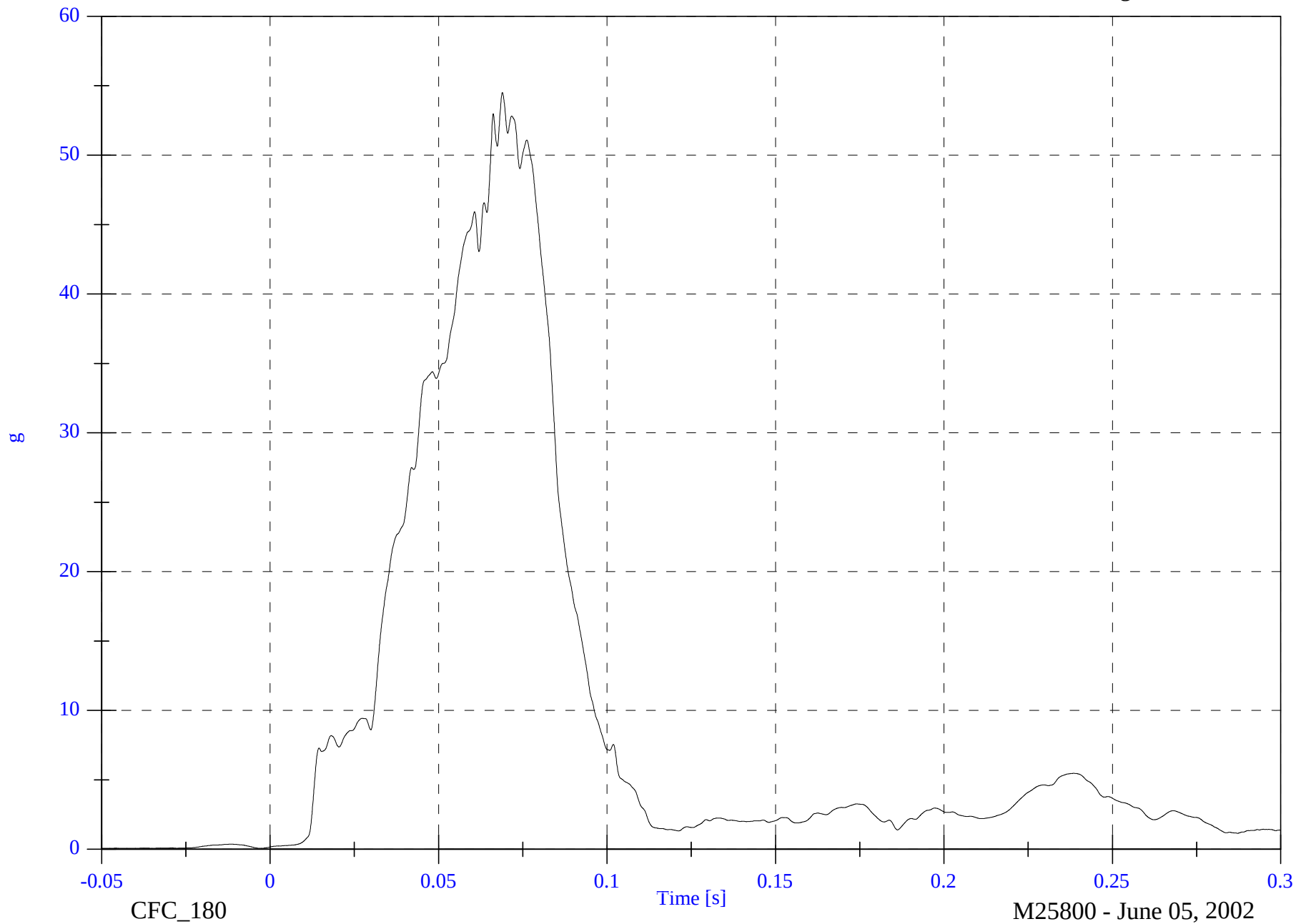
P2 Chest Red Resultant

Max: 54.5 [g] at 0.069 [s]

Min: 0.1 [g] at -0.040 [s]

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8642-NCAP-19



2002 NCAP Test 19 - 2002 Audi A4

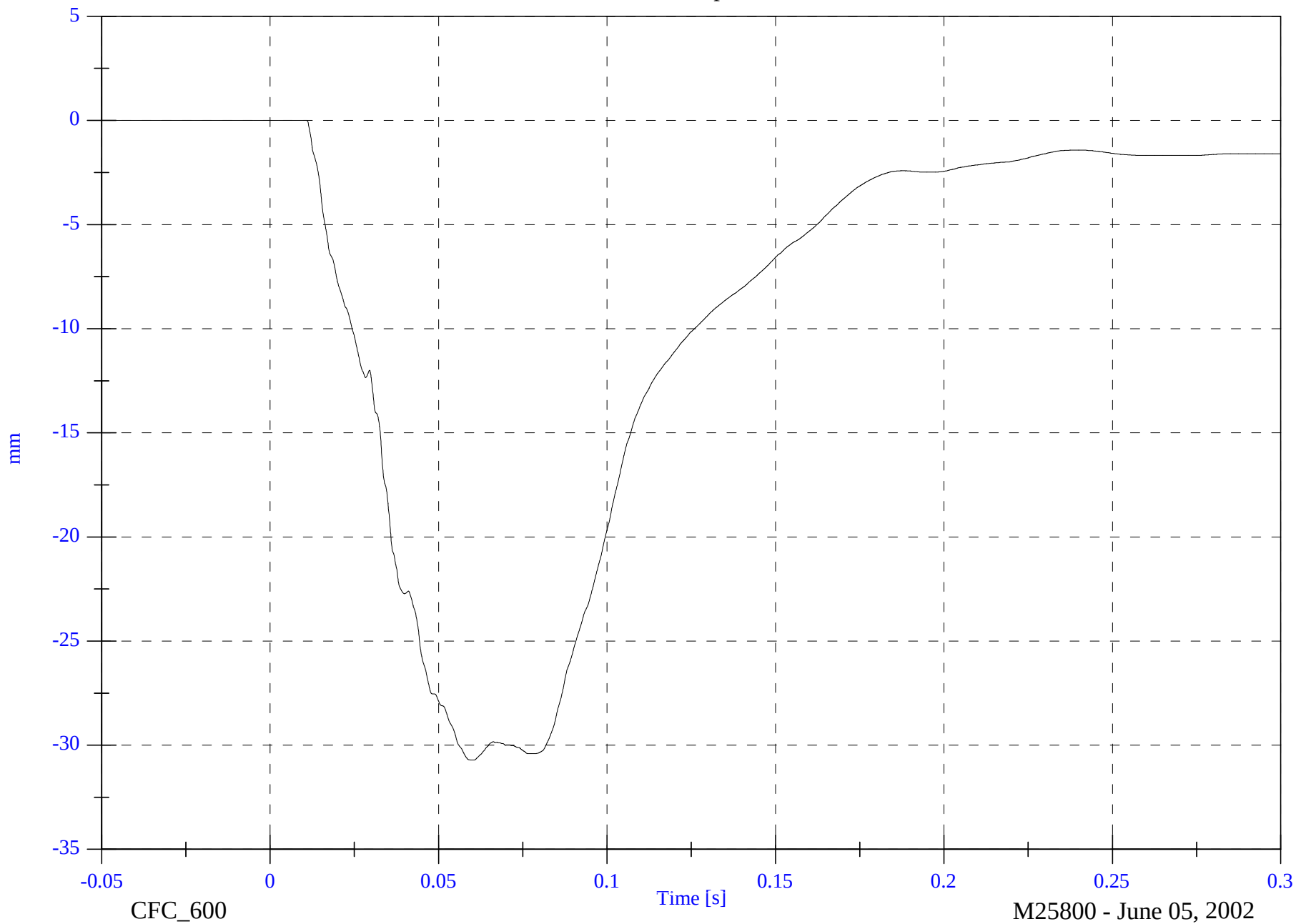
P2 Chest Compression x

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

Min: -30.7 [mm] at 0.061 [s]

B-87

8642-NCAP-19

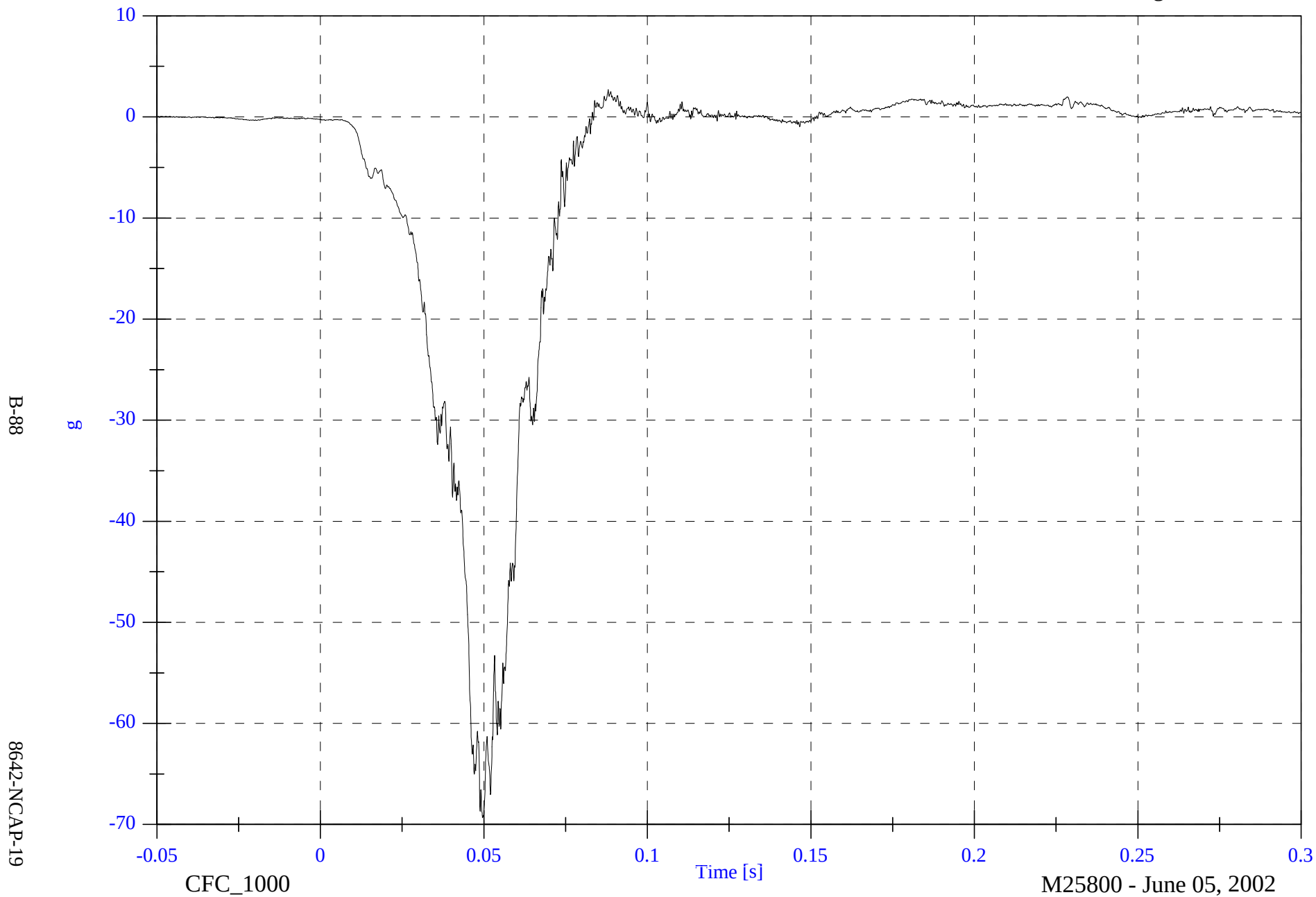


2002 NCAP Test 19 - 2002 Audi A4

Max: 2.7 [g] at 0.088 [s]

Min: -69.3 [g] at 0.050 [s]

P2 Pelvic x



B-88

8642-NCAP-19

CFC_1000

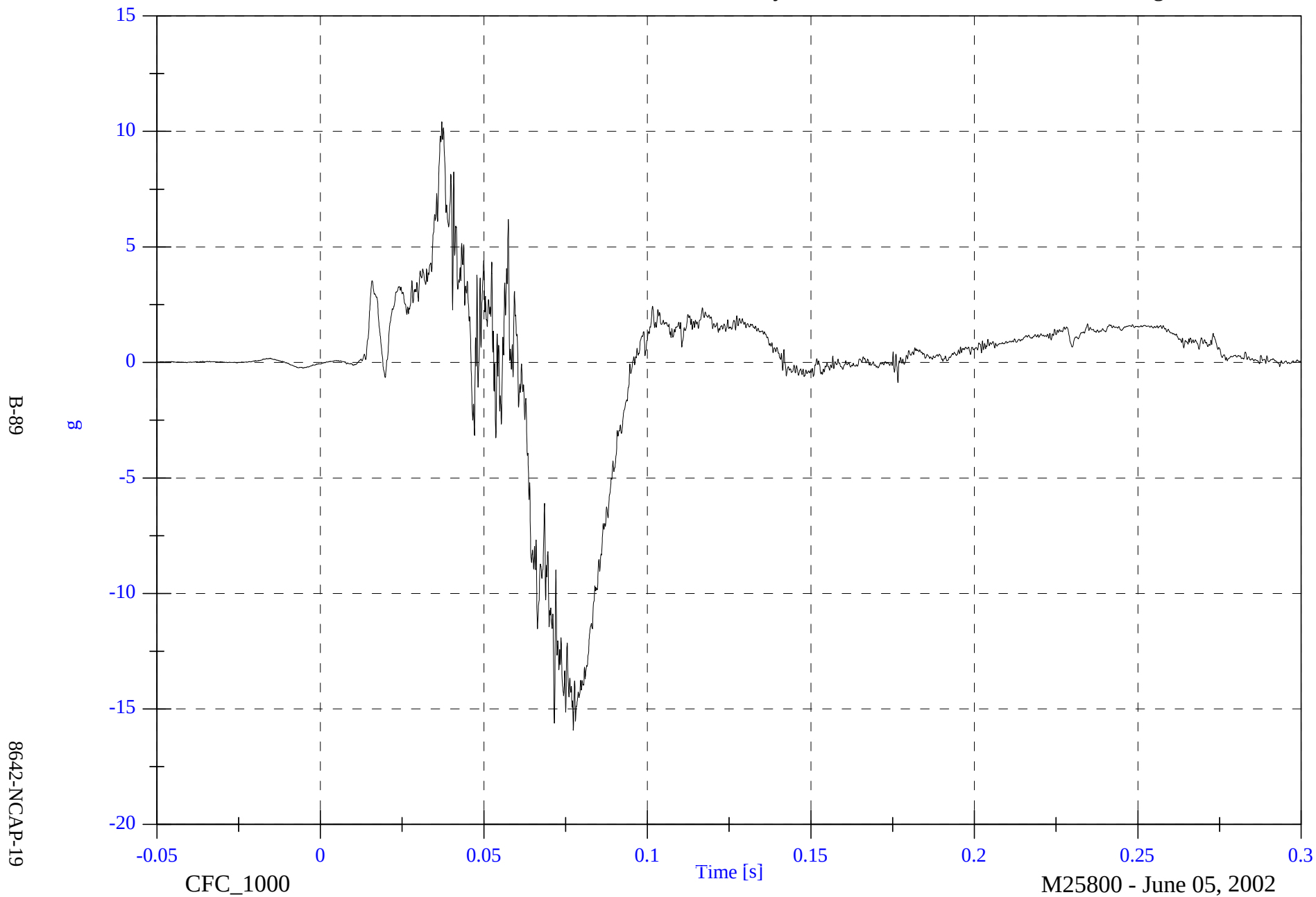
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

P2 Pelvic y

Max: 10.4 [g] at 0.037 [s]

Min: -15.9 [g] at 0.077 [s]

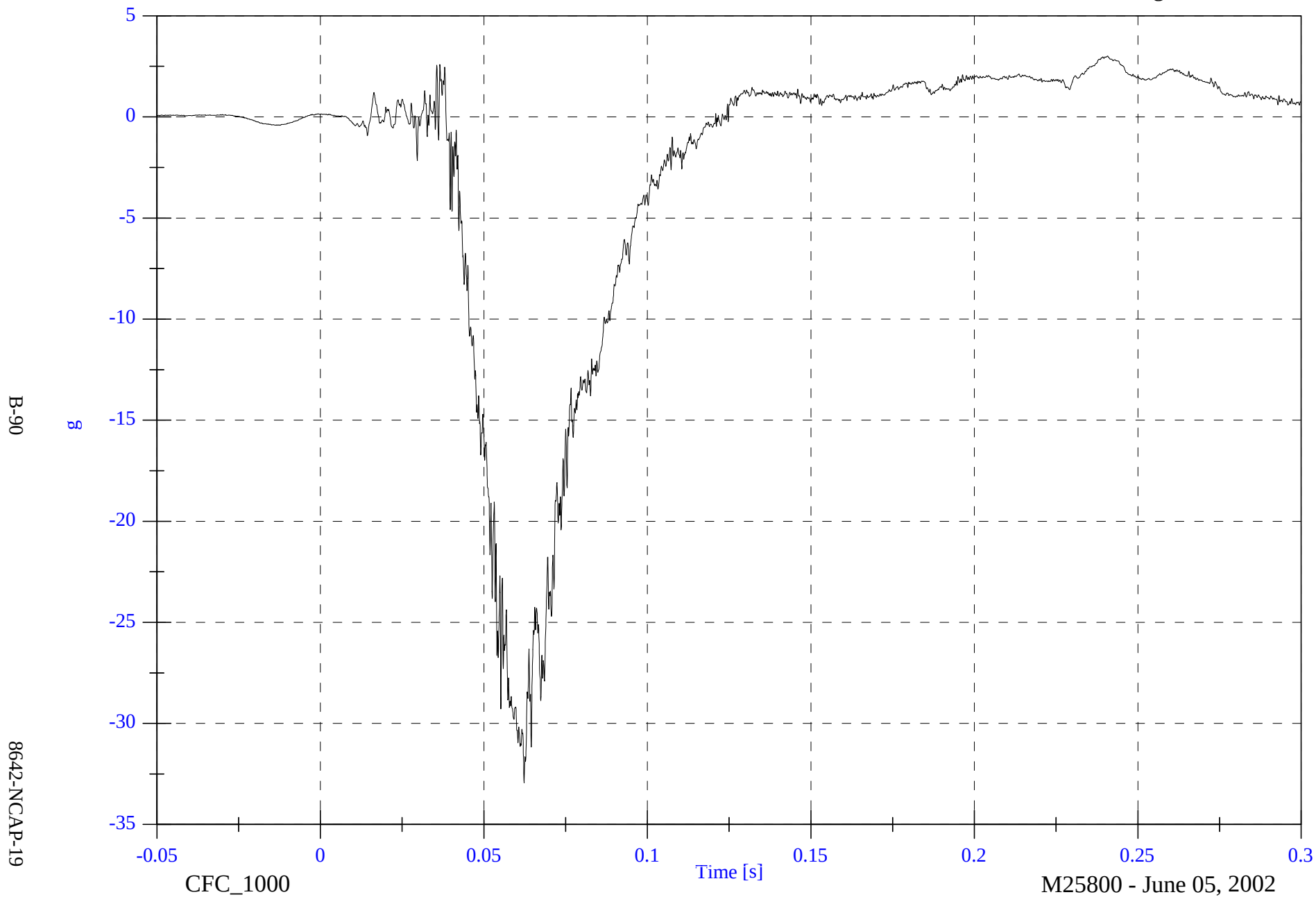


2002 NCAP Test 19 - 2002 Audi A4

Max: 3.0 [g] at 0.241 [s]

Min: -32.9 [g] at 0.062 [s]

P2 Pelvic z



2002 NCAP Test 19 - 2002 Audi A4

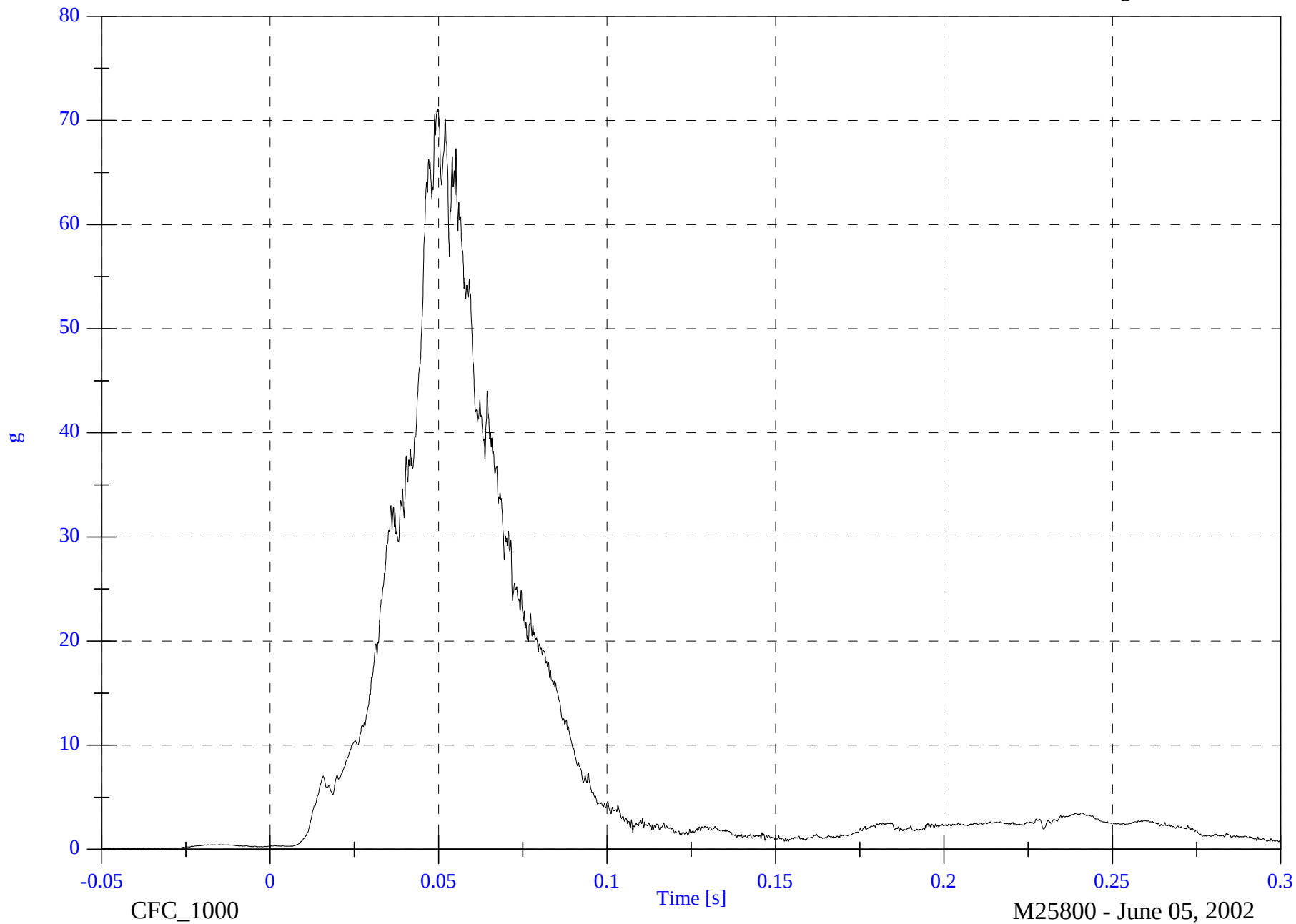
P2 Pelvic Resultant

Max: 71.1 [g] at 0.050 [s]

Min: 0.1 [g] at -0.041 [s]

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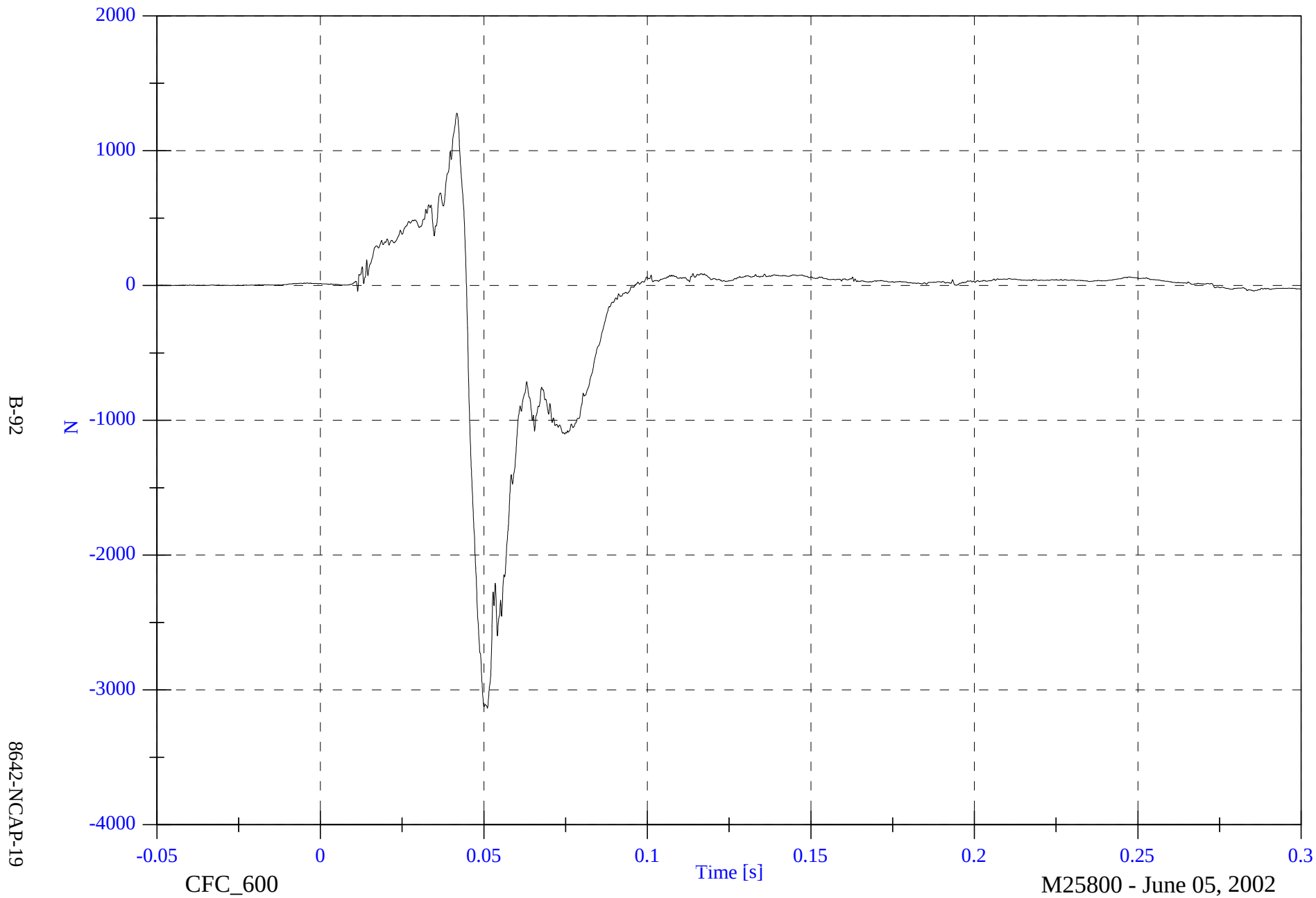


2002 NCAP Test 19 - 2002 Audi A4

P2 Left Femur z

Max: 1278.8 [N] at 0.042 [s]

Min: -3135.3 [N] at 0.051 [s]

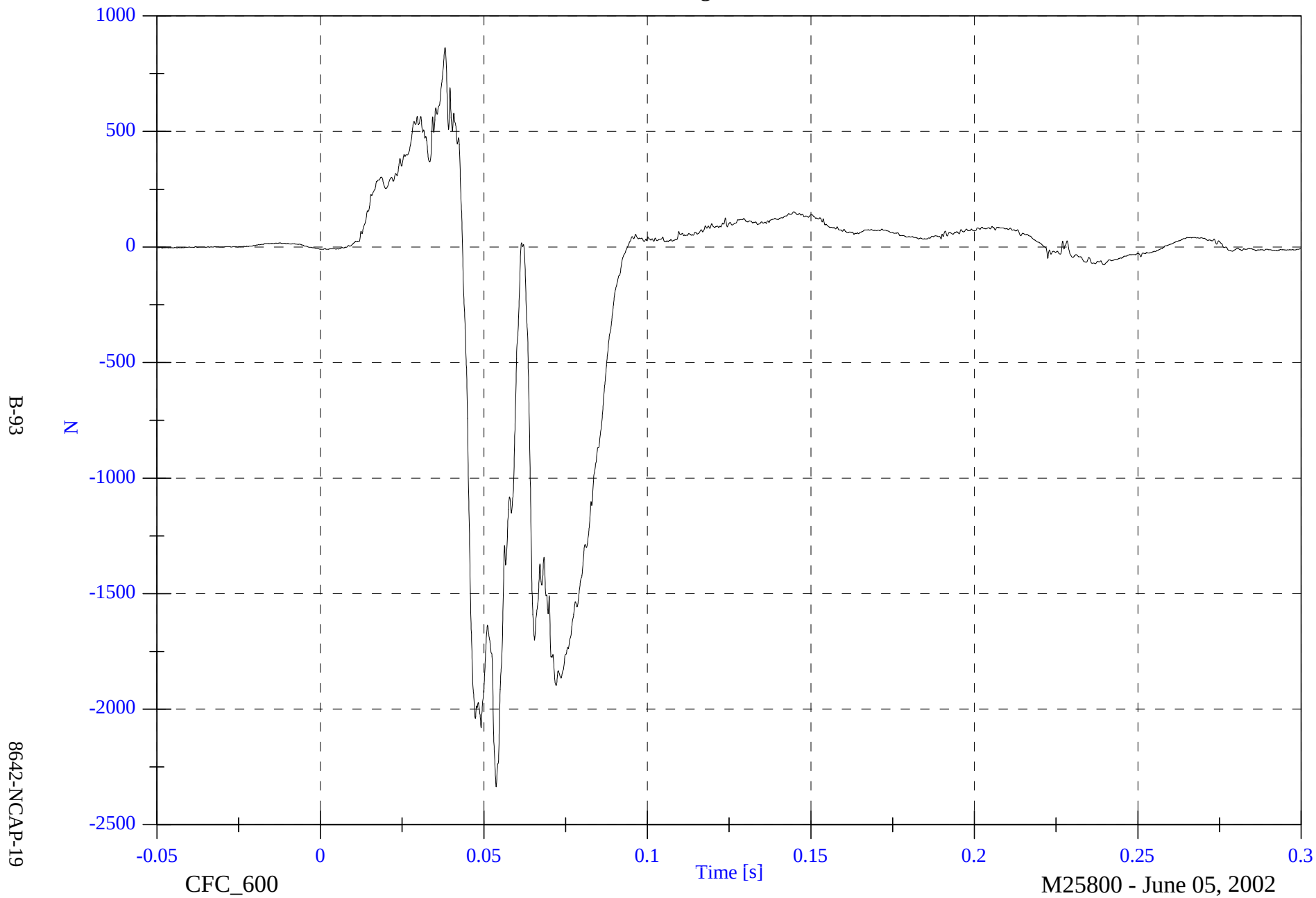


2002 NCAP Test 19 - 2002 Audi A4

P2 Right Femur z

Max: 862.3 [N] at 0.038 [s]

Min: -2335.6 [N] at 0.054 [s]

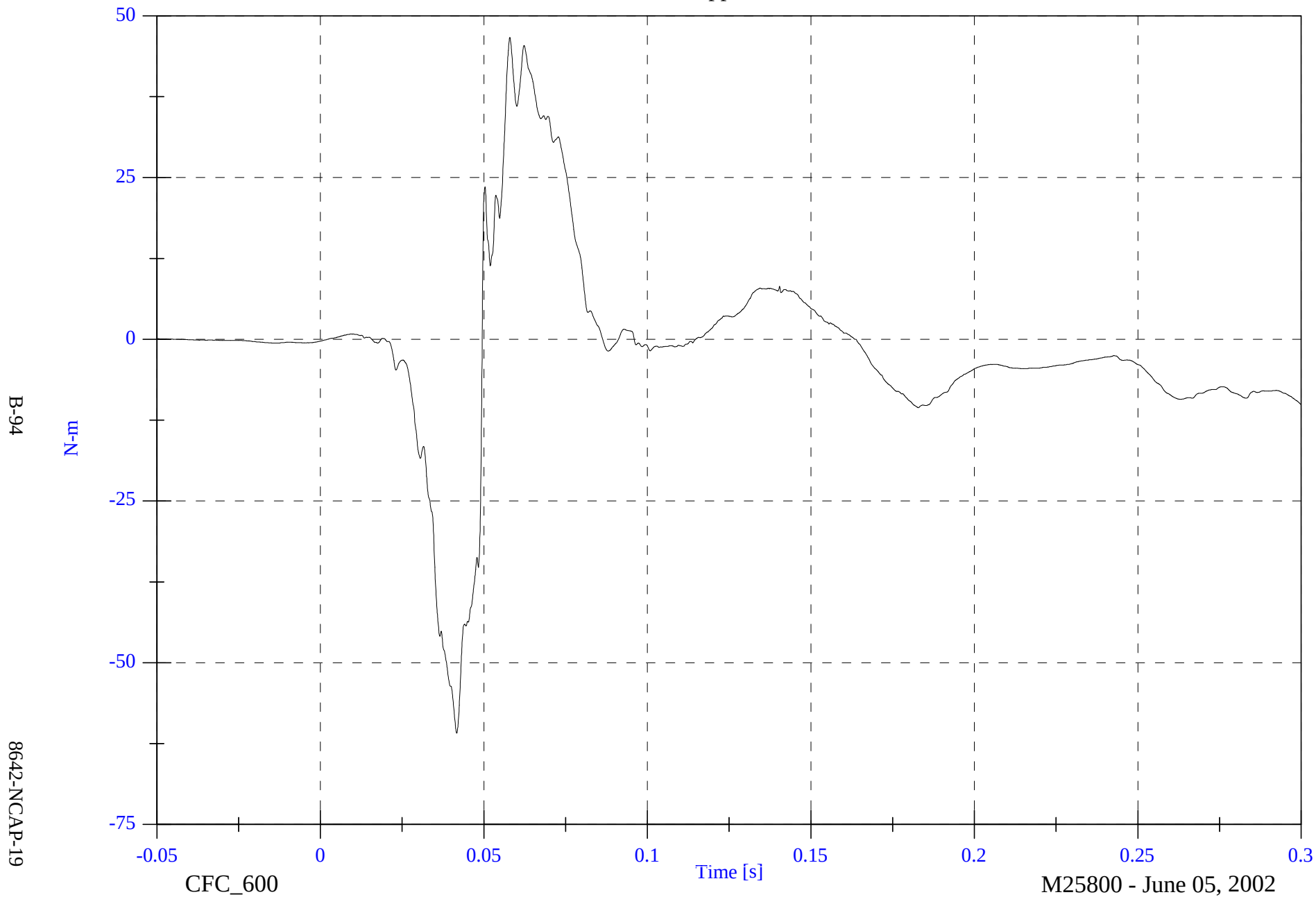


2002 NCAP Test 19 - 2002 Audi A4

P2 Left Upper Tibia Mx

Max: 46.7 [N-m] at 0.058 [s]

Min: -60.9 [N-m] at 0.042 [s]

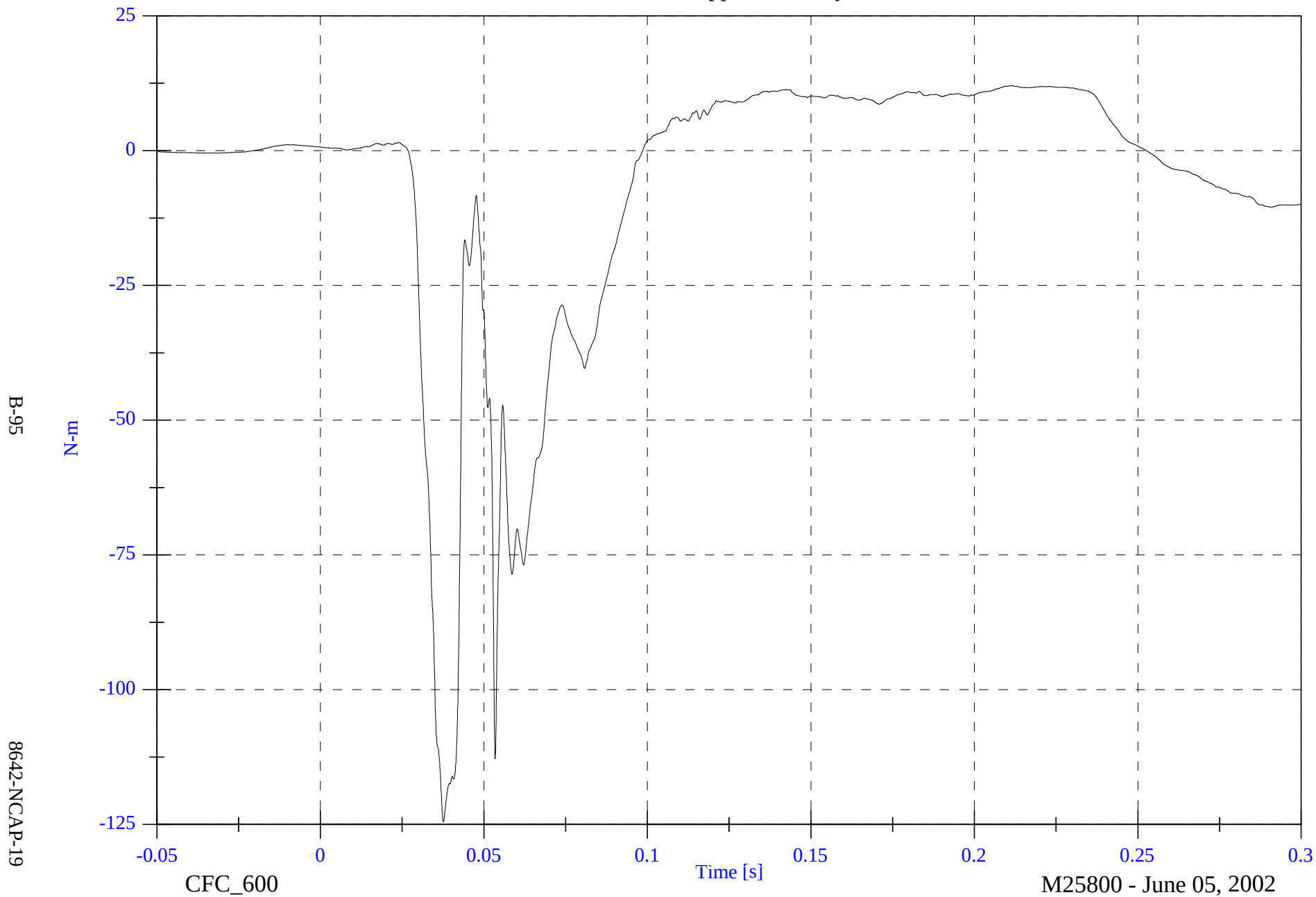


2002 NCAP Test 19 - 2002 Audi A4

P2 Left Upper Tibia My

Max: 12.1 [N-m] at 0.211 [s]

Min: -124.5 [N-m] at 0.038 [s]

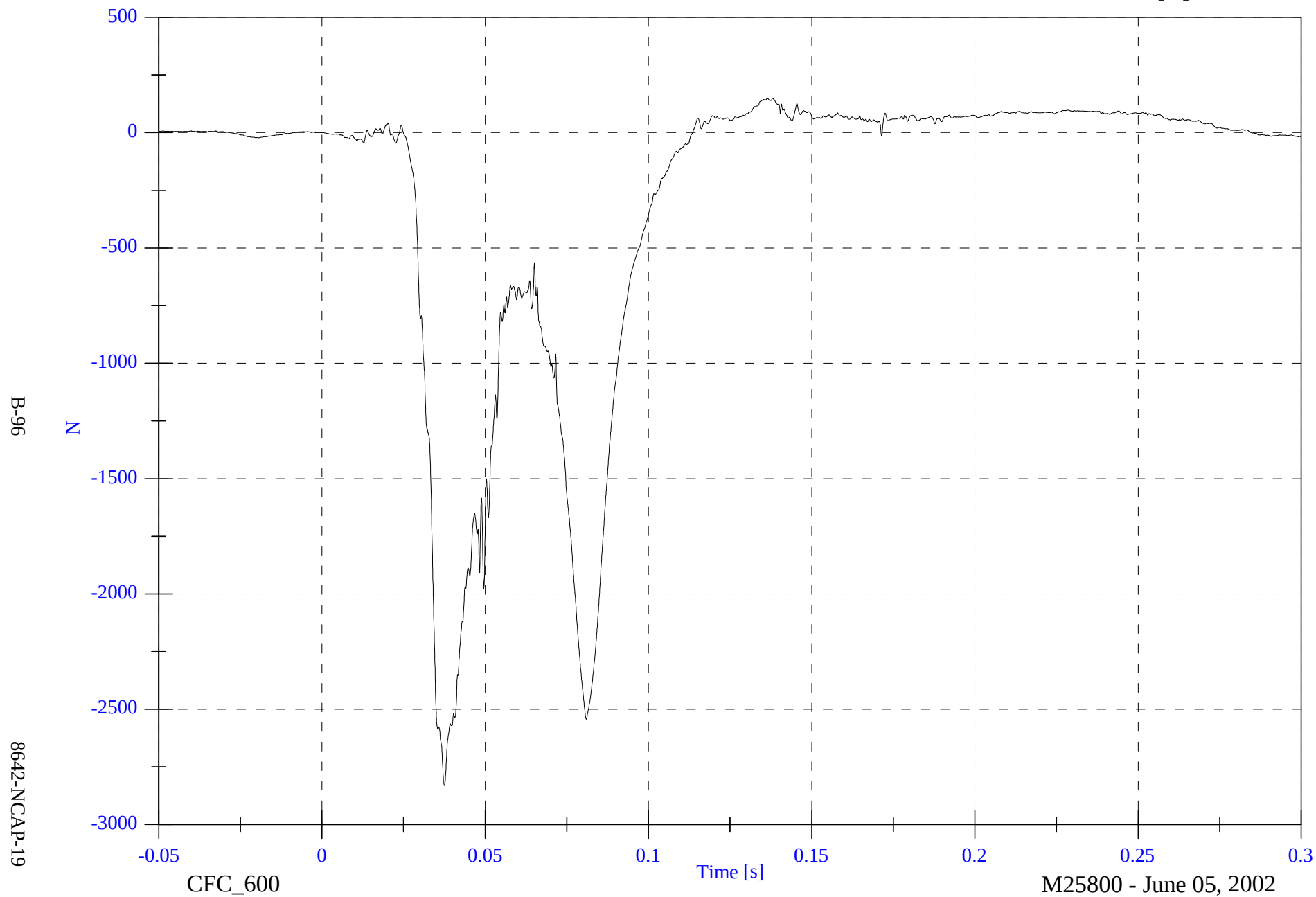


2002 NCAP Test 19 - 2002 Audi A4

Max: 149.0 [N] at 0.138 [s]

Min: -2830.5 [N] at 0.038 [s]

P2 Left Lower Tibia Fz

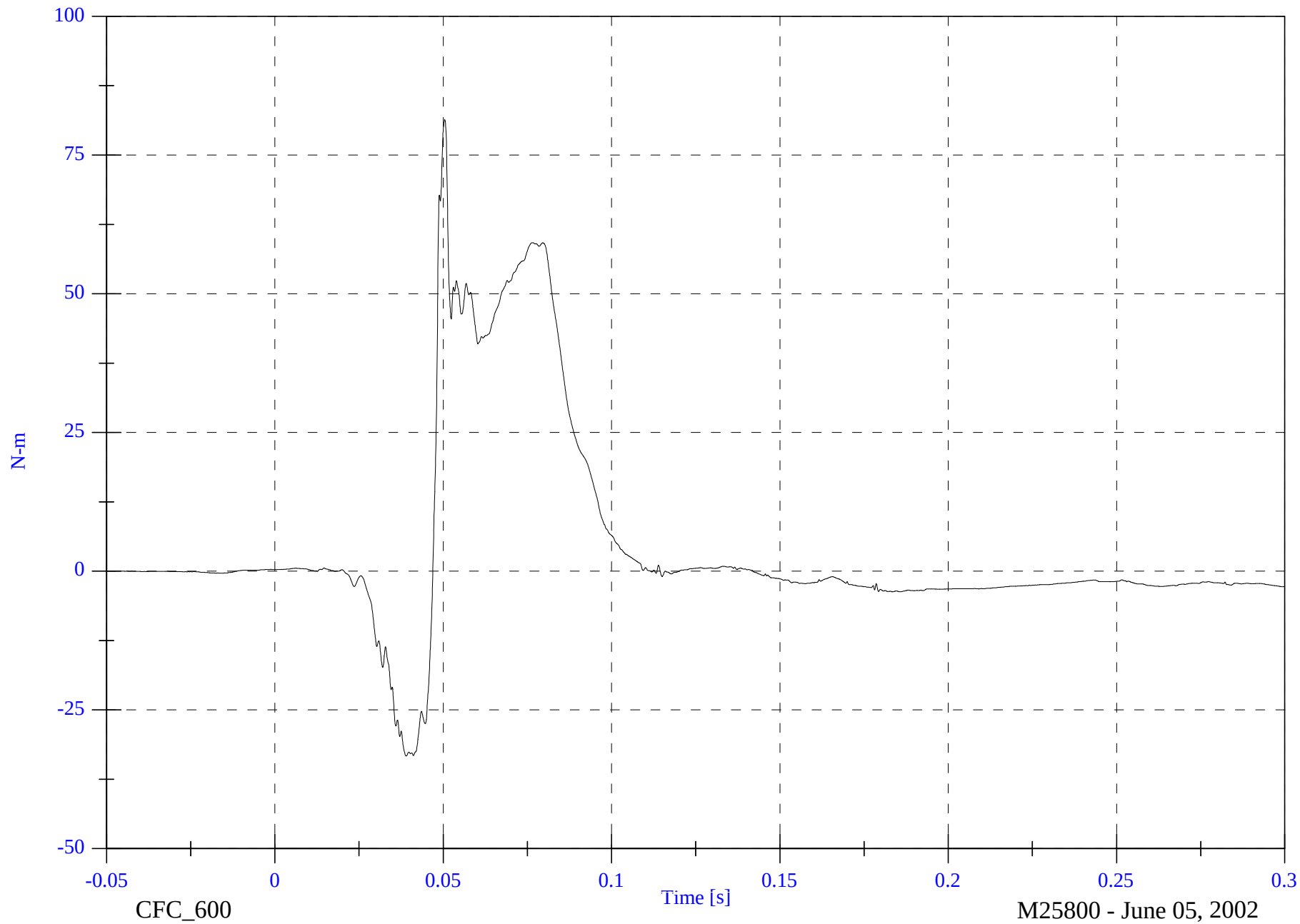


2002 NCAP Test 19 - 2002 Audi A4

Max: 81.4 [N-m] at 0.050 [s]

Min: -33.3 [N-m] at 0.039 [s]

P2 Left Lower Tibia Mx



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CFC_600

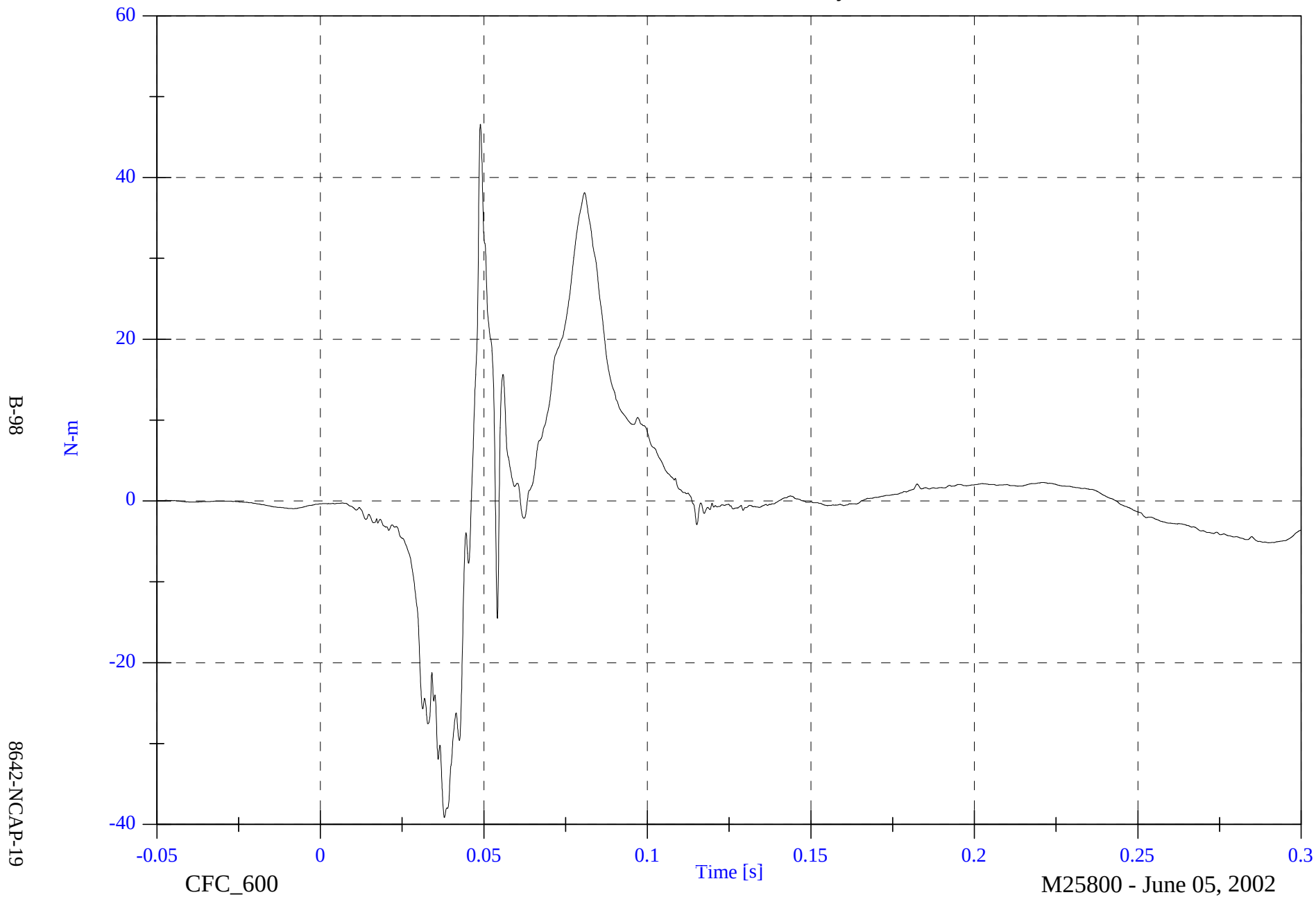
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

Max: 46.6 [N-m] at 0.049 [s]

Min: -39.1 [N-m] at 0.038 [s]

P2 Left Lower Tibia My

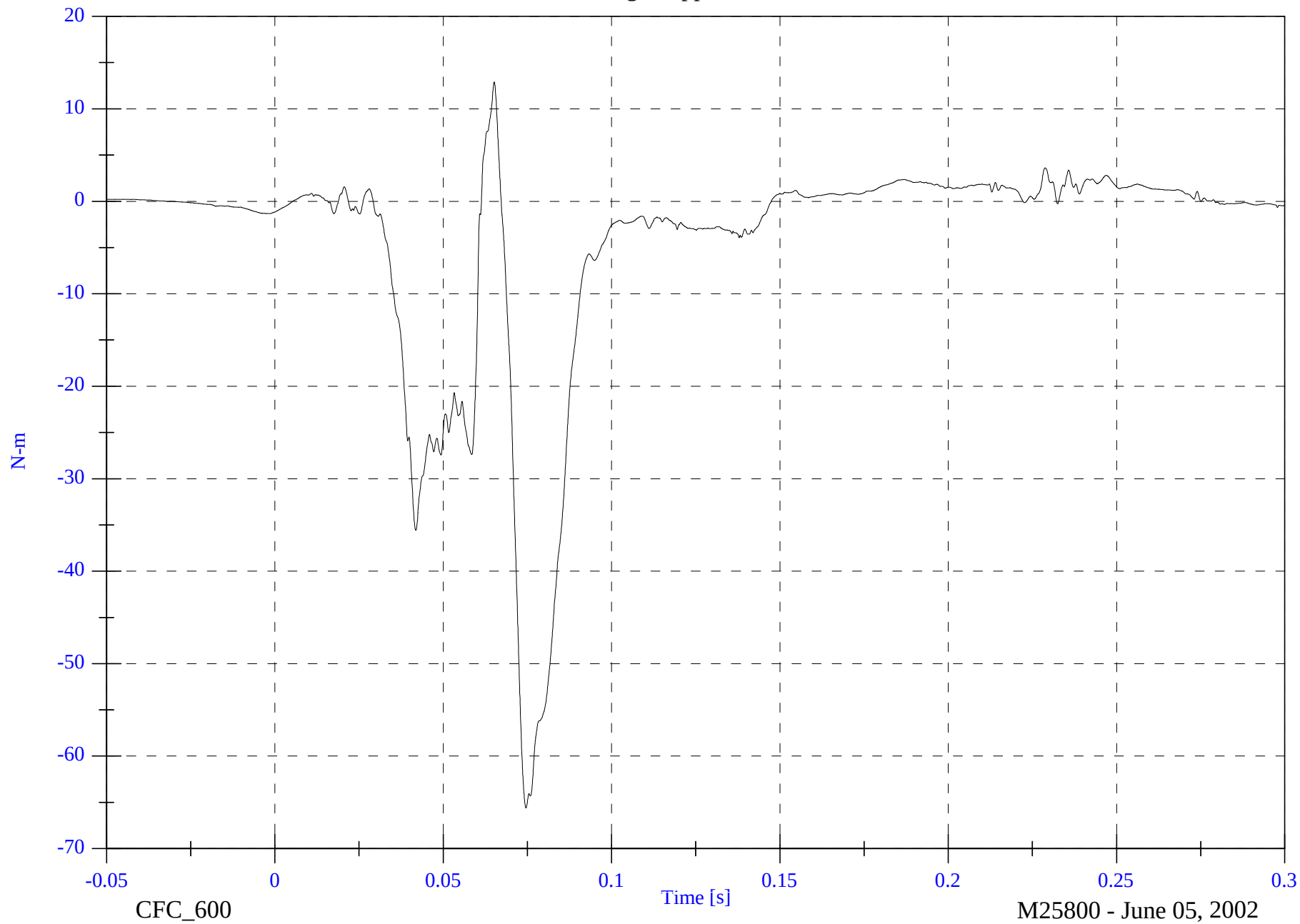


2002 NCAP Test 19 - 2002 Audi A4

P2 Right Upper Tibia Mx

Max: 12.9 [N-m] at 0.065 [s]

Min: -65.6 [N-m] at 0.075 [s]



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8642-NCAP-19

CFC_600

Time [s]

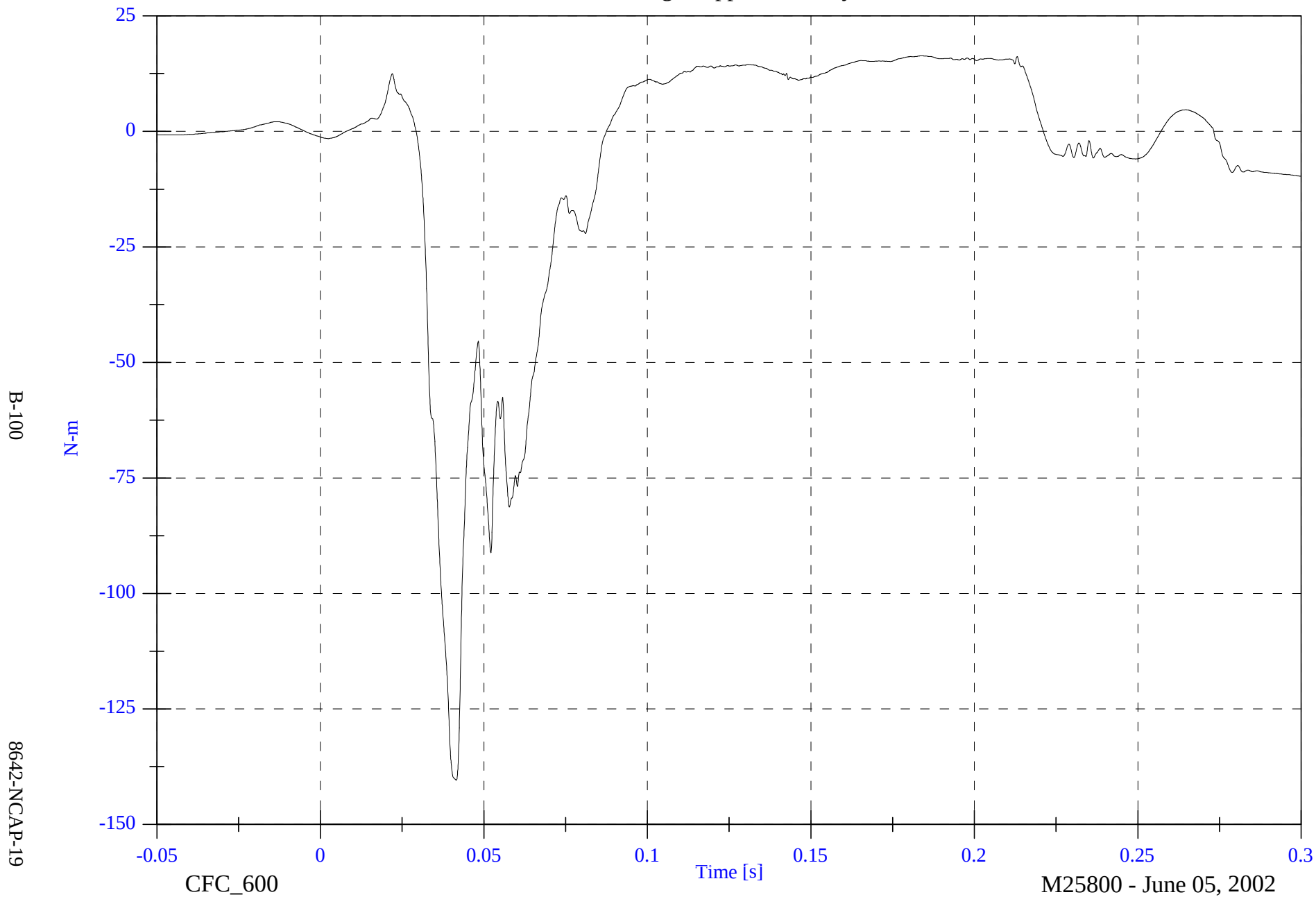
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

P2 Right Upper Tibia My

Max: 16.4 [N-m] at 0.184 [s]

Min: -140.4 [N-m] at 0.042 [s]

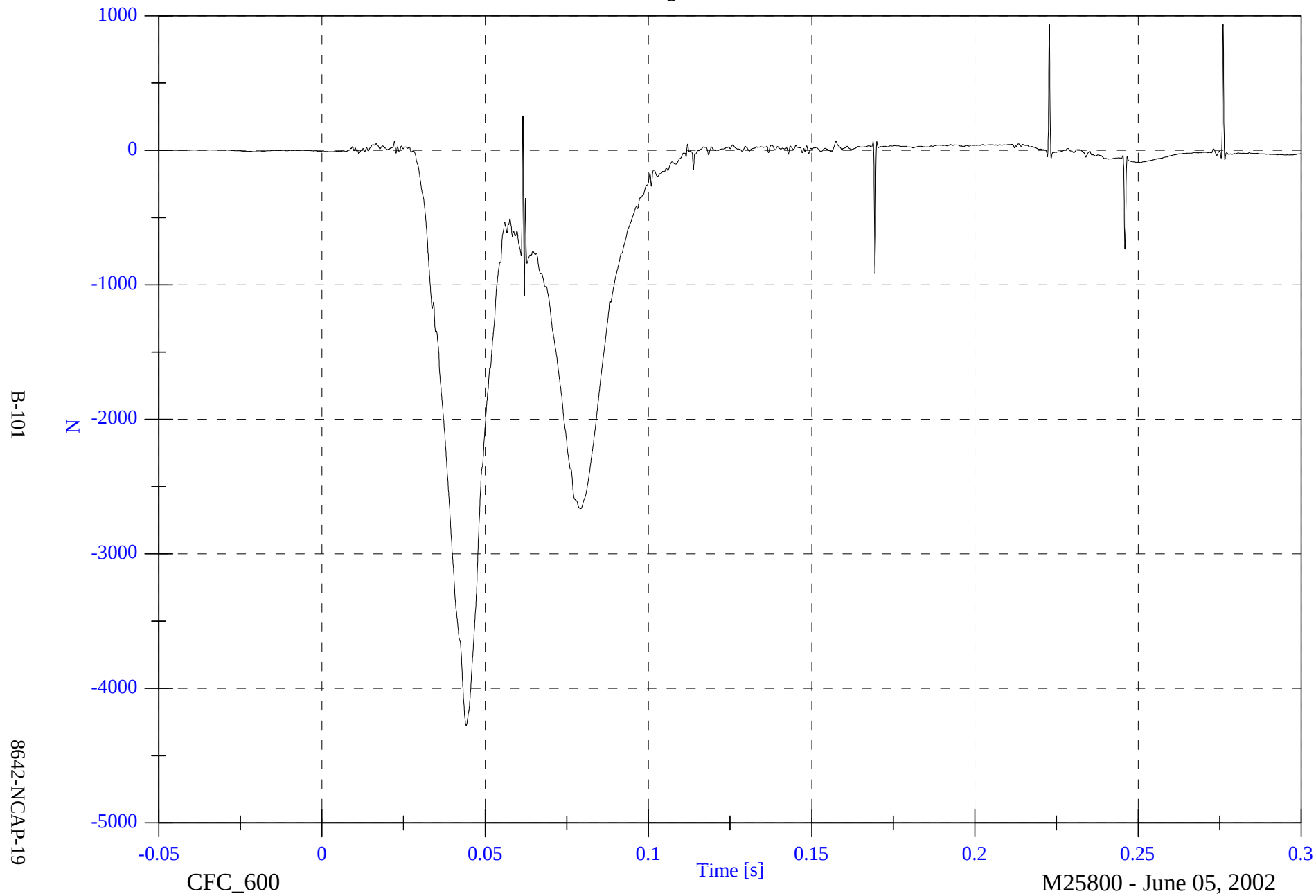


2002 NCAP Test 19 - 2002 Audi A4

P2 Right Lower Tibia Fz

Max: 936.3 [N] at 0.223 [s]

Min: -4277.5 [N] at 0.044 [s]

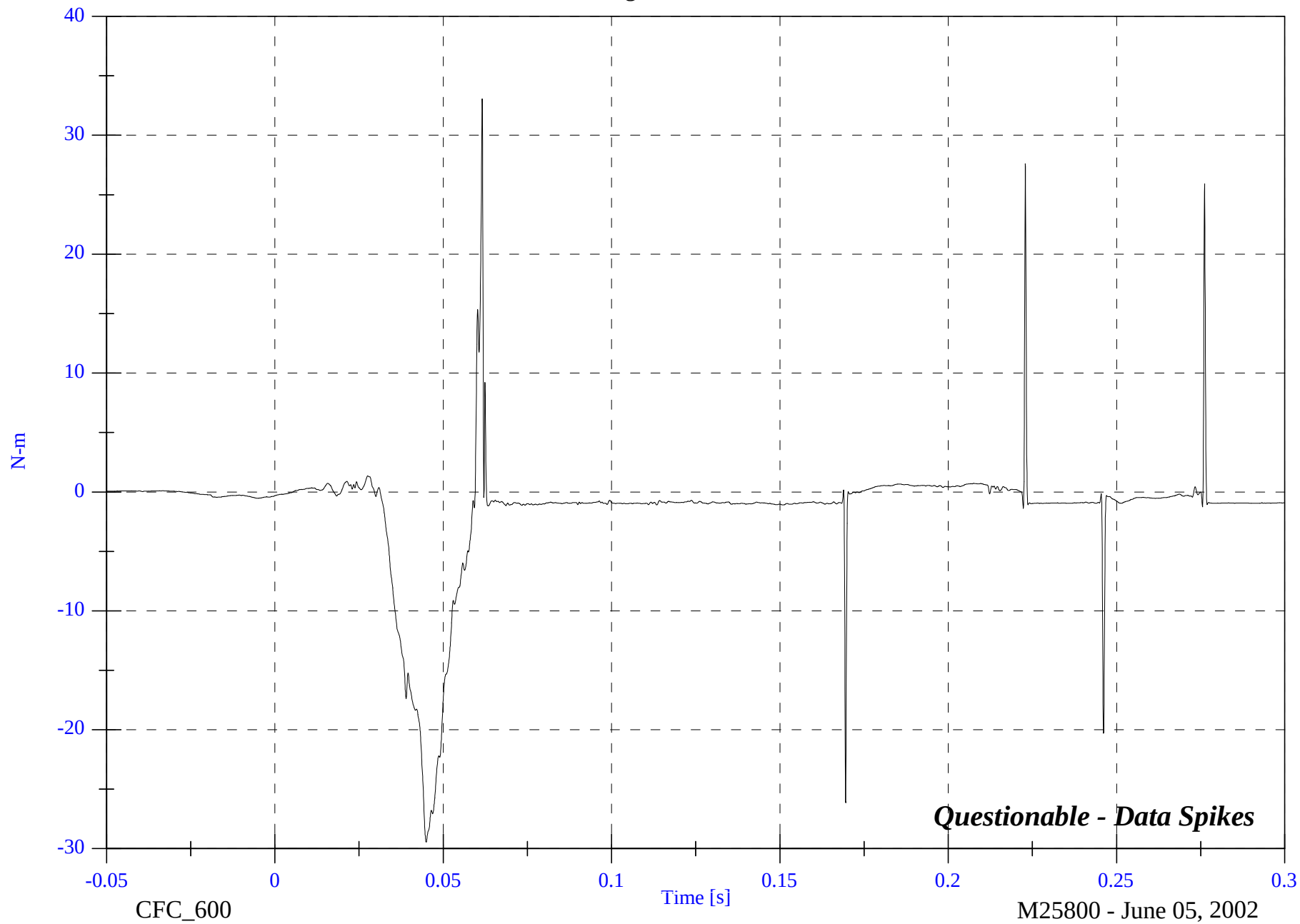


2002 NCAP Test 19 - 2002 Audi A4

P2 Right Lower Tibia Mx

Max: 33.1 [N-m] at 0.062 [s]

Min: -29.5 [N-m] at 0.045 [s]



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CFC_600

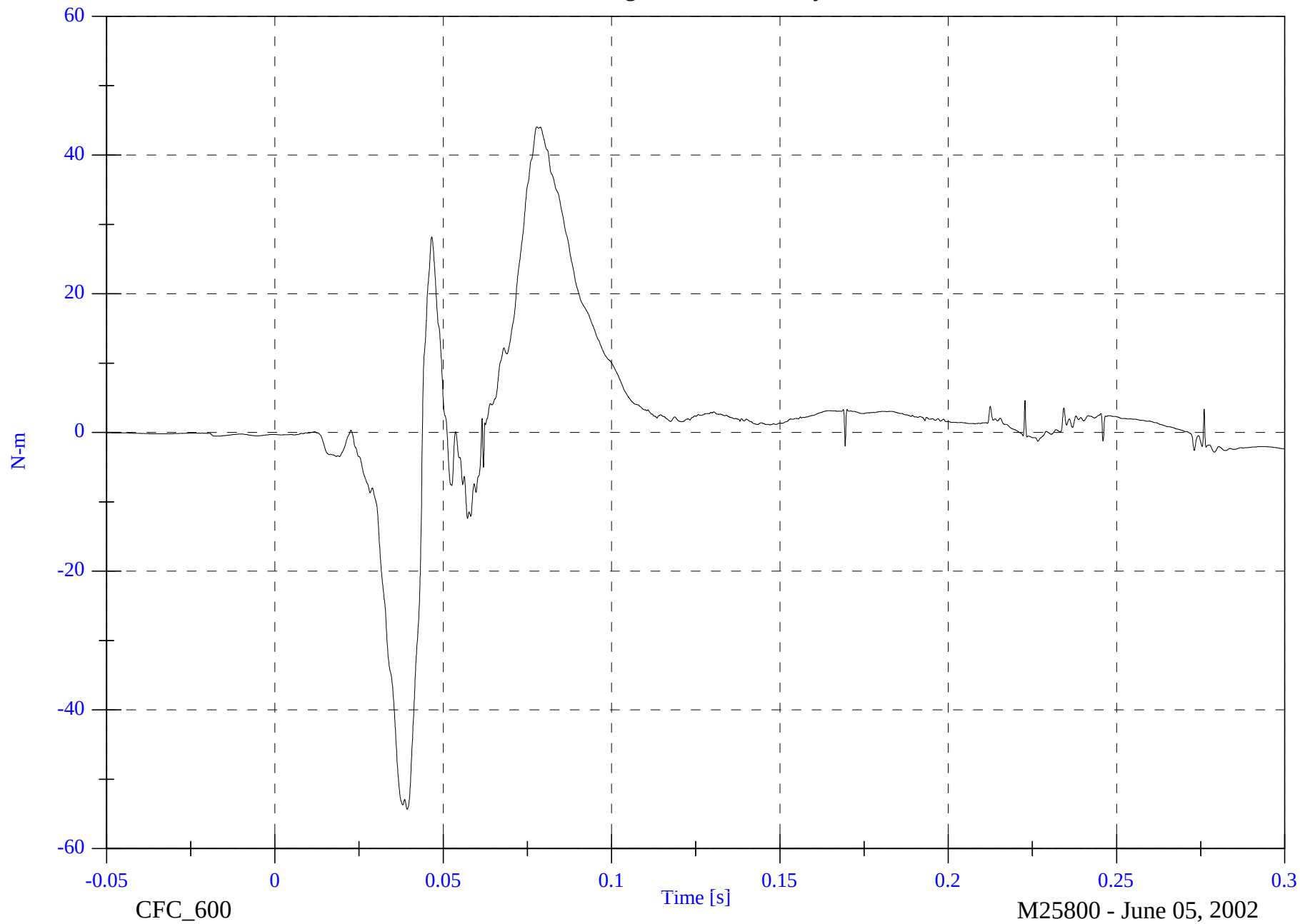
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

P2 Right Lower Tibia My

Max: 44.1 [N-m] at 0.078 [s]

Min: -54.3 [N-m] at 0.039 [s]



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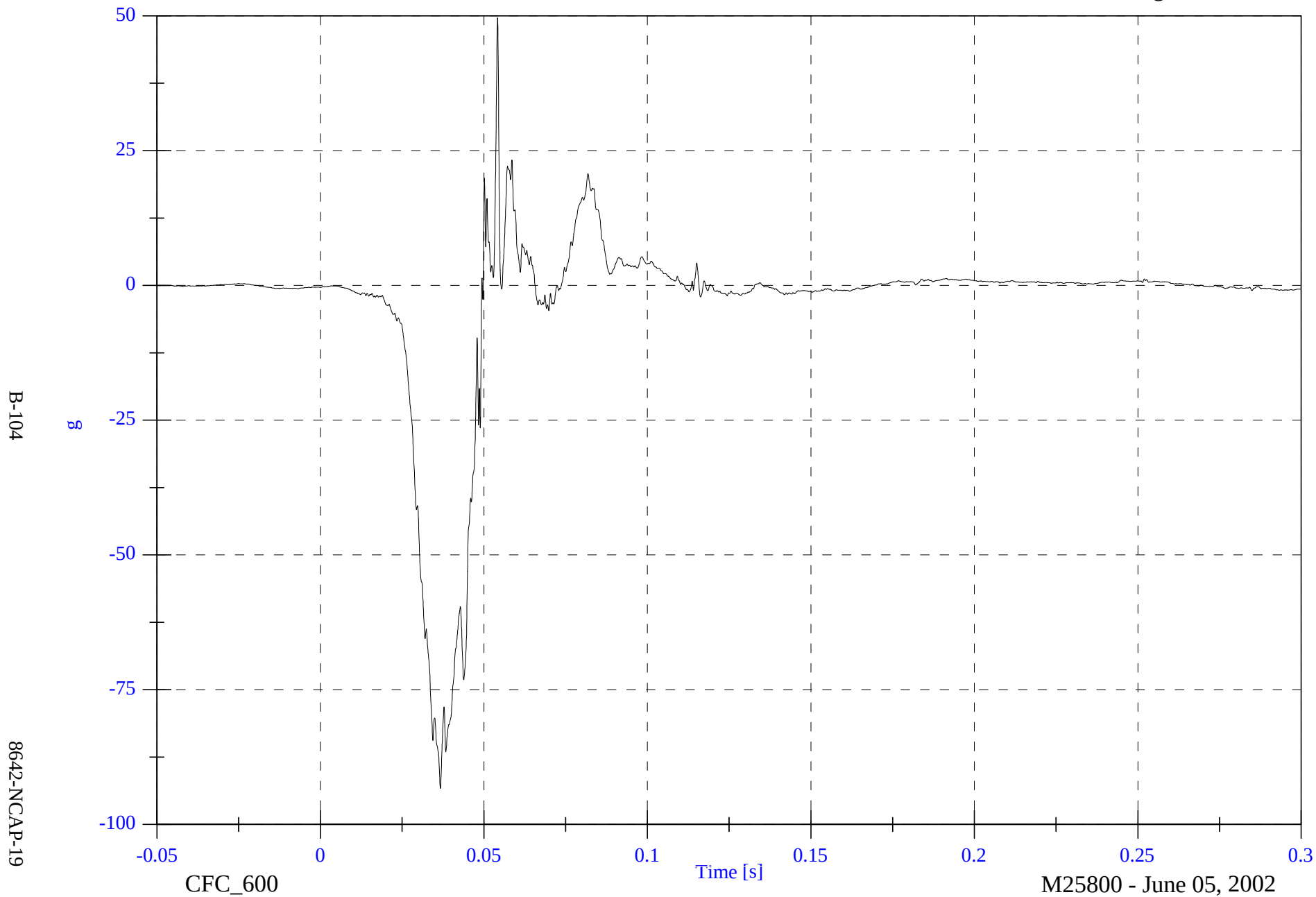
8642-NCAP-19

2002 NCAP Test 19 - 2002 Audi A4

Max: 49.6 [g] at 0.054 [s]

Min: -93.3 [g] at 0.037 [s]

P2 Left Foot Aft x

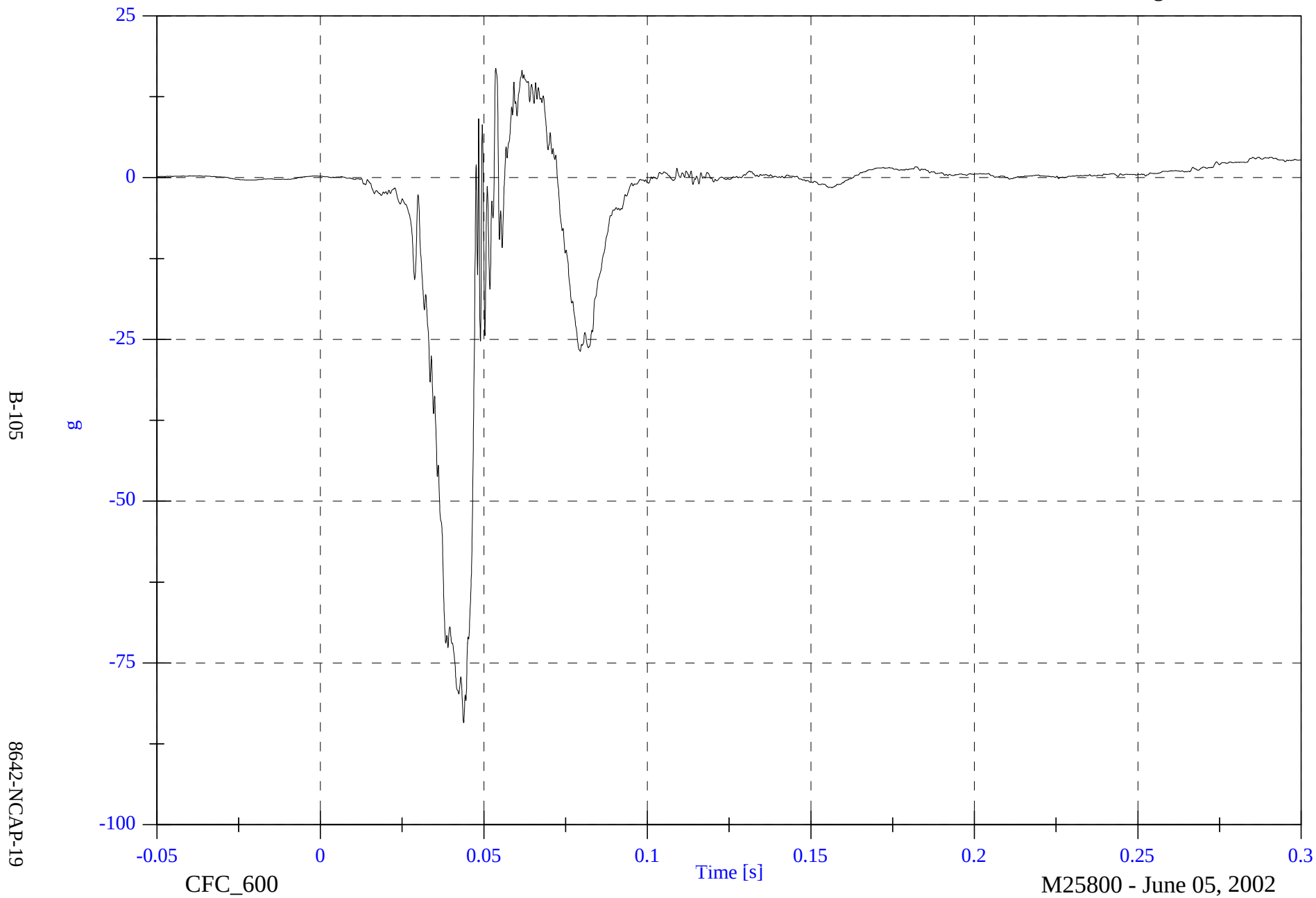


2002 NCAP Test 19 - 2002 Audi A4

P2 Left Foot Aft z

Max: 16.9 [g] at 0.054 [s]

Min: -84.2 [g] at 0.044 [s]

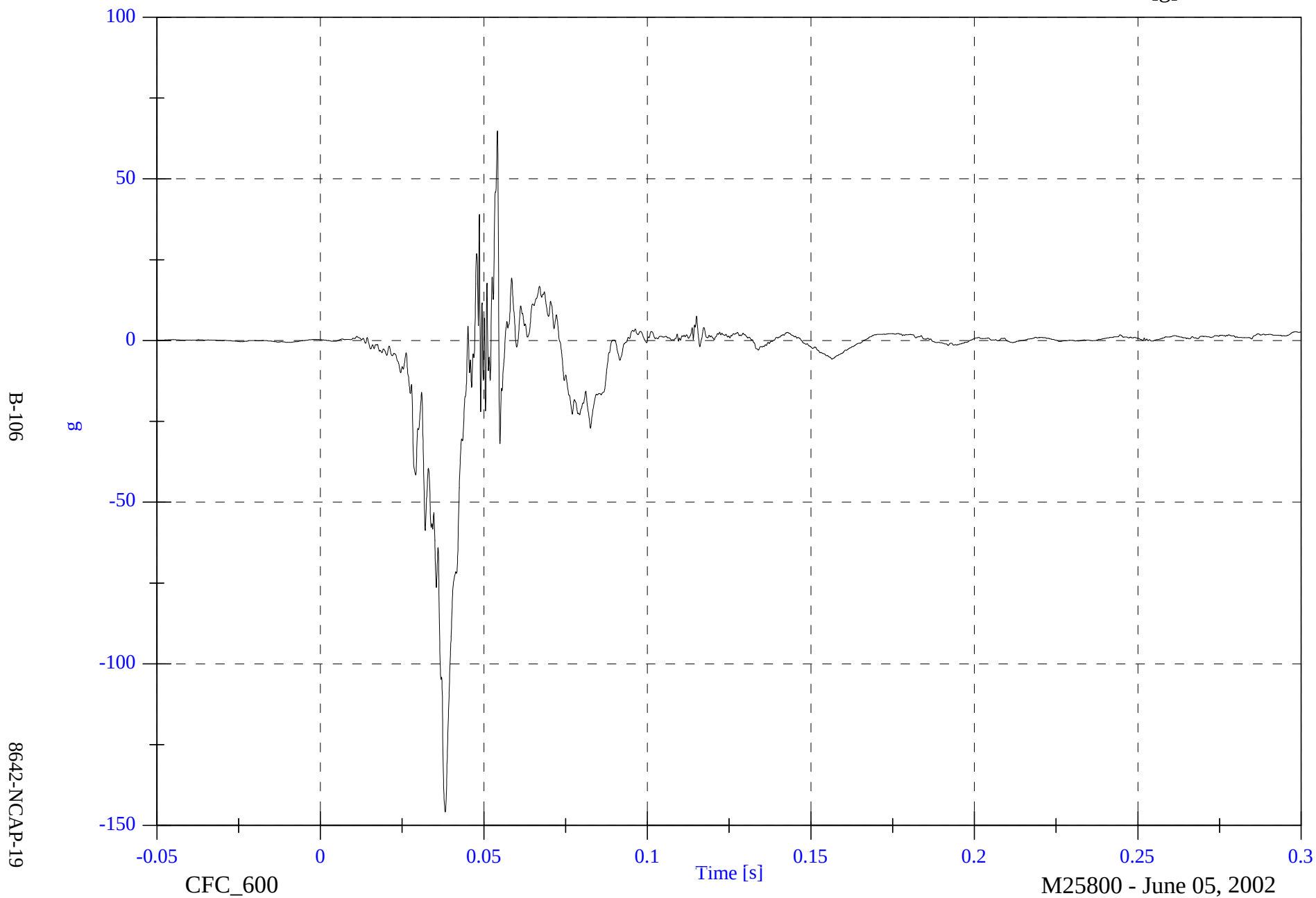


2002 NCAP Test 19 - 2002 Audi A4

Max: 64.9 [g] at 0.054 [s]

Min: -145.8 [g] at 0.038 [s]

P2 Left Foot Fore z

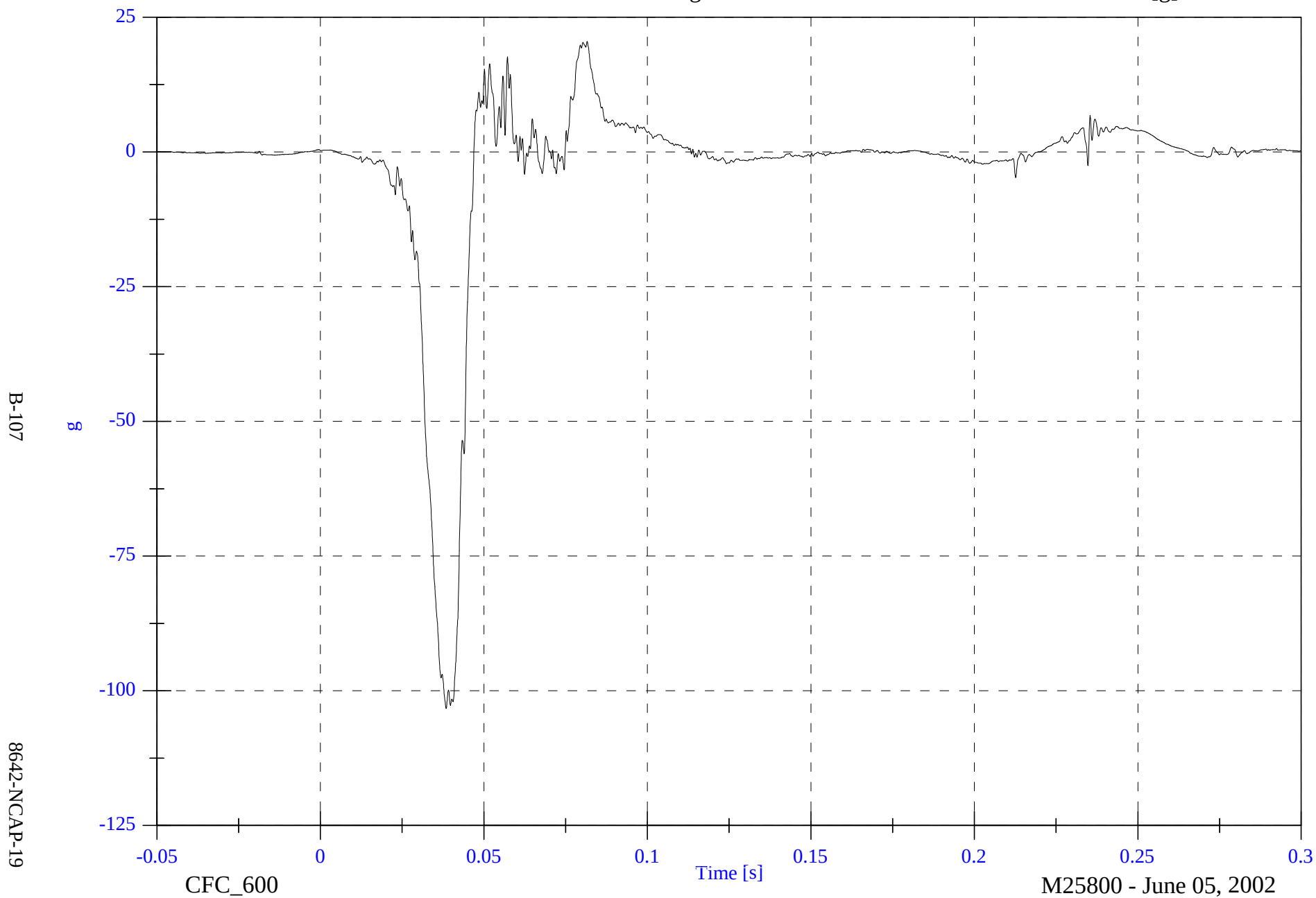


2002 NCAP Test 19 - 2002 Audi A4

Max: 20.5 [g] at 0.082 [s]

Min: -103.3 [g] at 0.039 [s]

P2 Right Foot Aft x

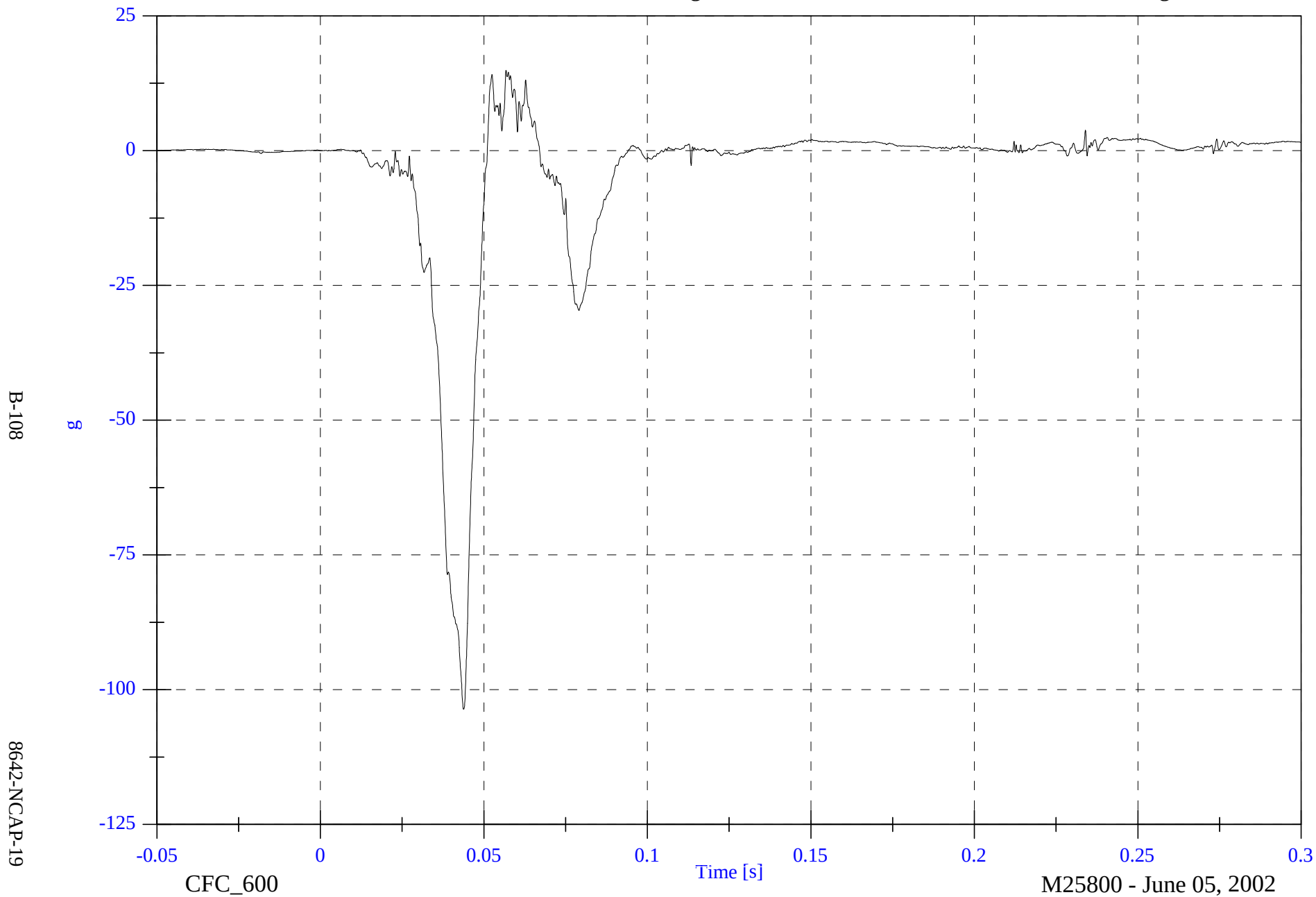


2002 NCAP Test 19 - 2002 Audi A4

P2 Right Foot Aft z

Max: 14.9 [g] at 0.057 [s]

Min: -103.6 [g] at 0.044 [s]

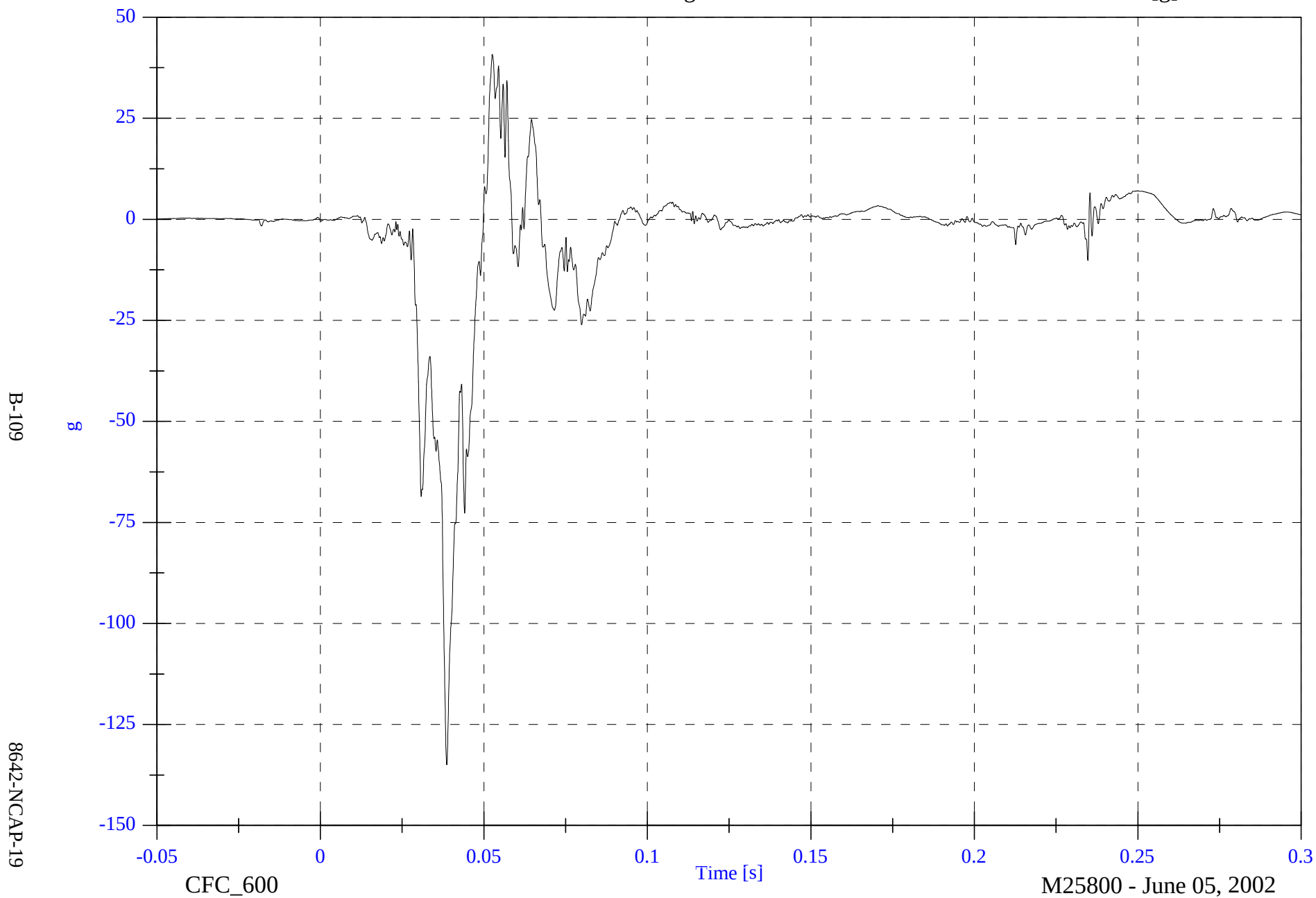


2002 NCAP Test 19 - 2002 Audi A4

Max: 40.8 [g] at 0.053 [s]

Min: -135.0 [g] at 0.039 [s]

P2 Right Foot Fore z

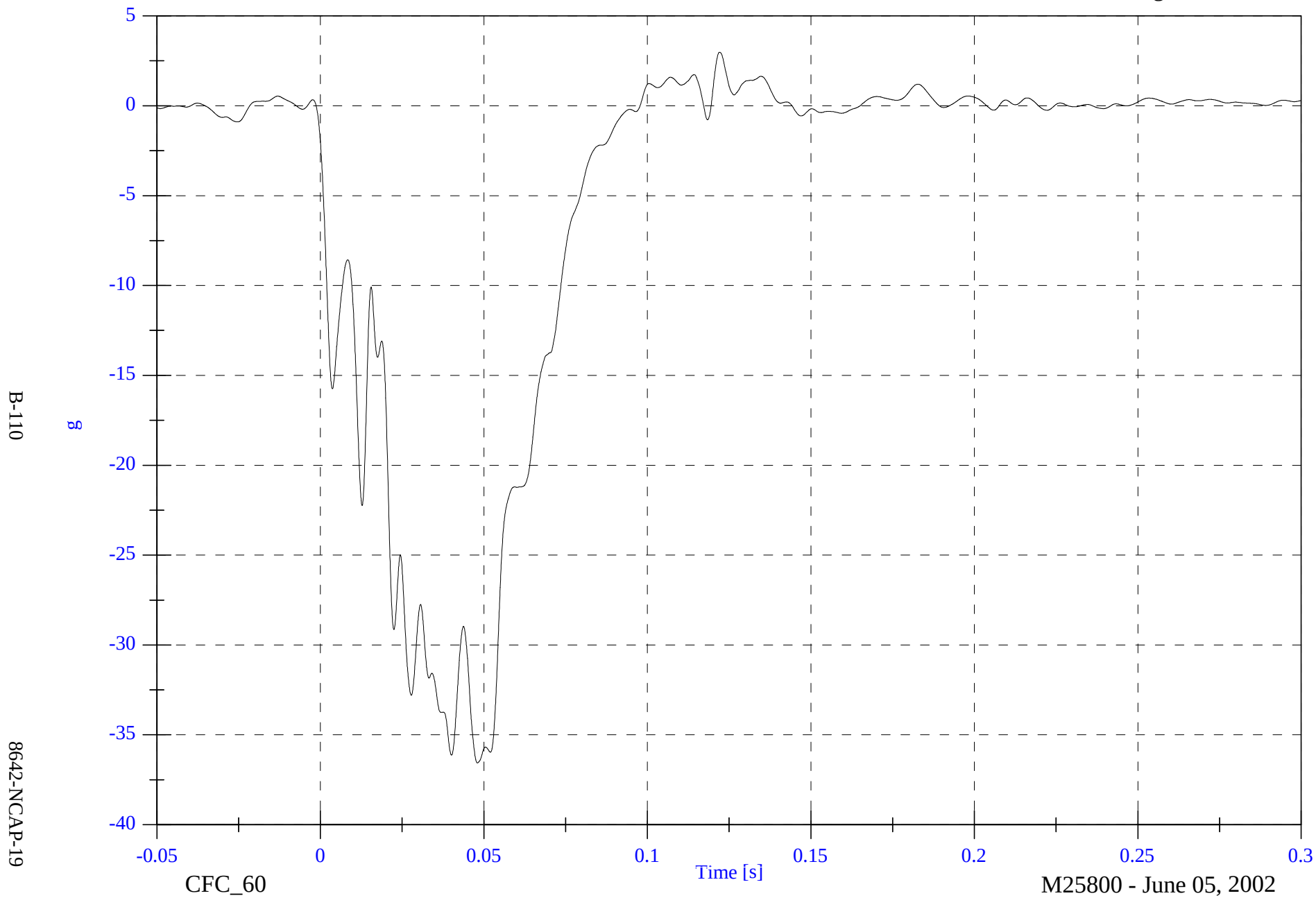


2002 NCAP Test 19 - 2002 Audi A4

Left Rear #1x

Max: 3.0 [g] at 0.122 [s]

Min: -36.6 [g] at 0.048 [s]

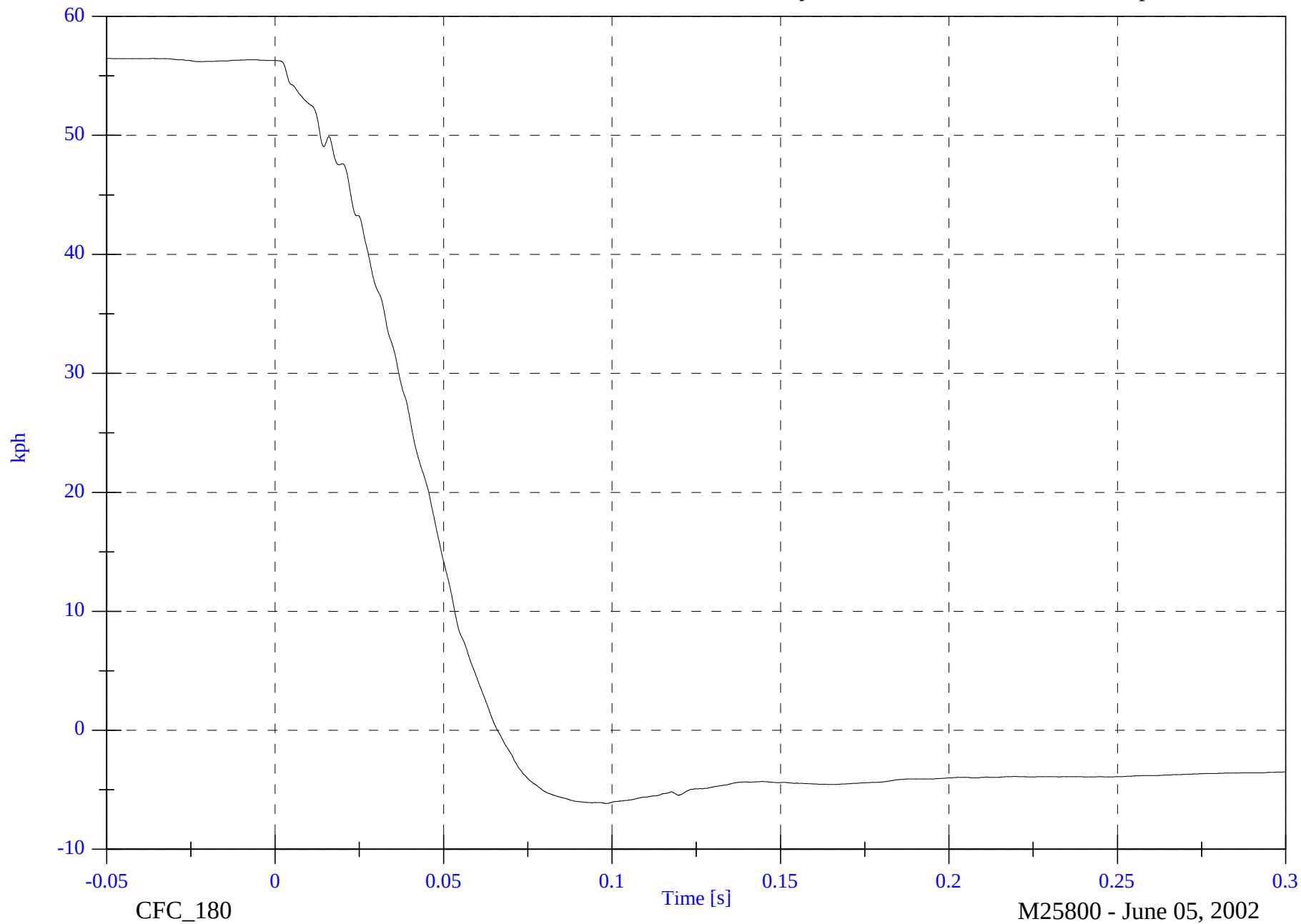


2002 NCAP Test 19 - 2002 Audi A4

Max: 56.5 [kph] at -0.050 [s]

Min: -6.2 [kph] at 0.098 [s]

Left Rear #1x Velocity



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CFC_180

Time [s]

M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

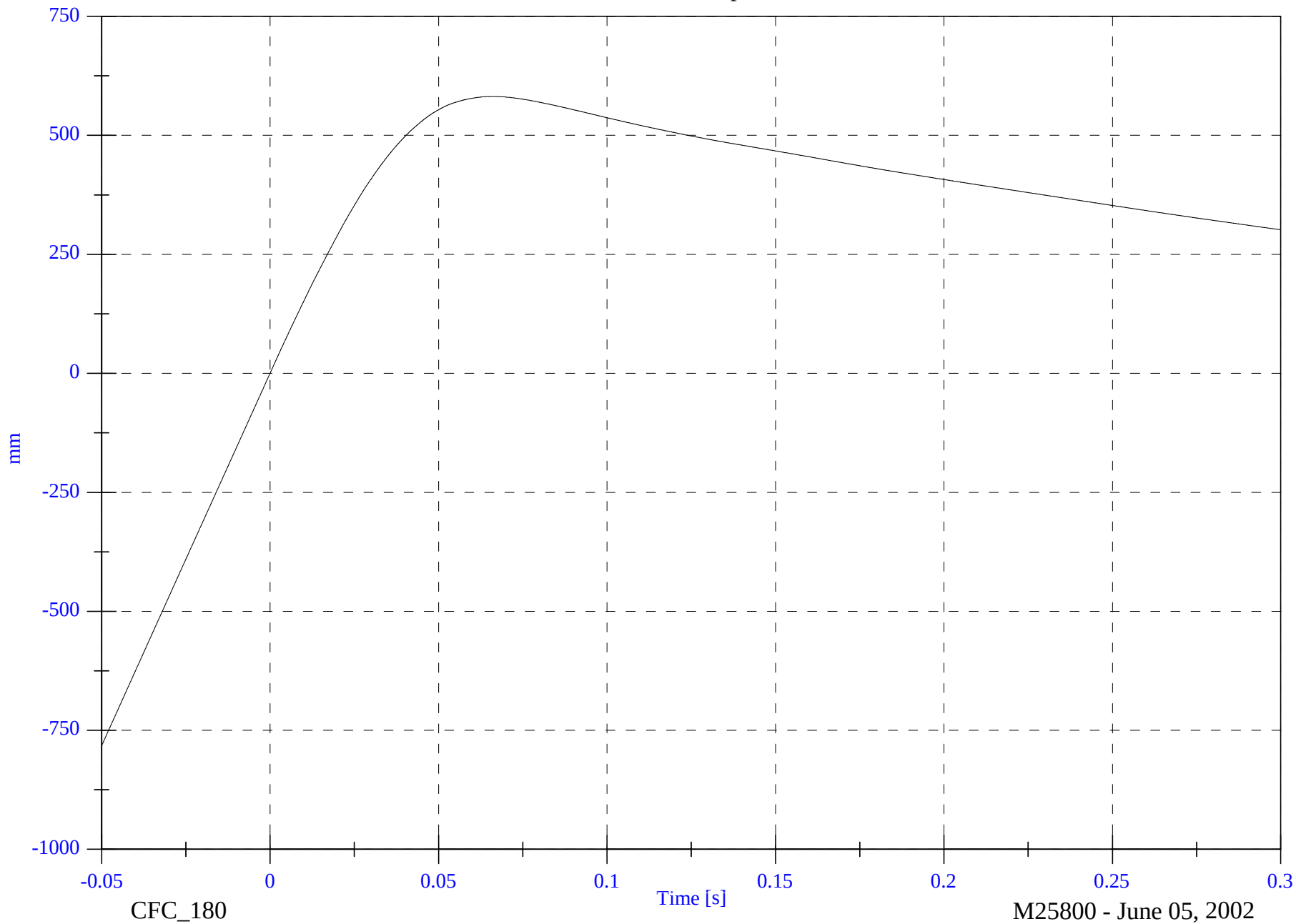
Left Rear #1x Displacement

Max: 581.4 [mm] at 0.066 [s]

Min: -782.6 [mm] at -0.050 [s]

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CFC_180

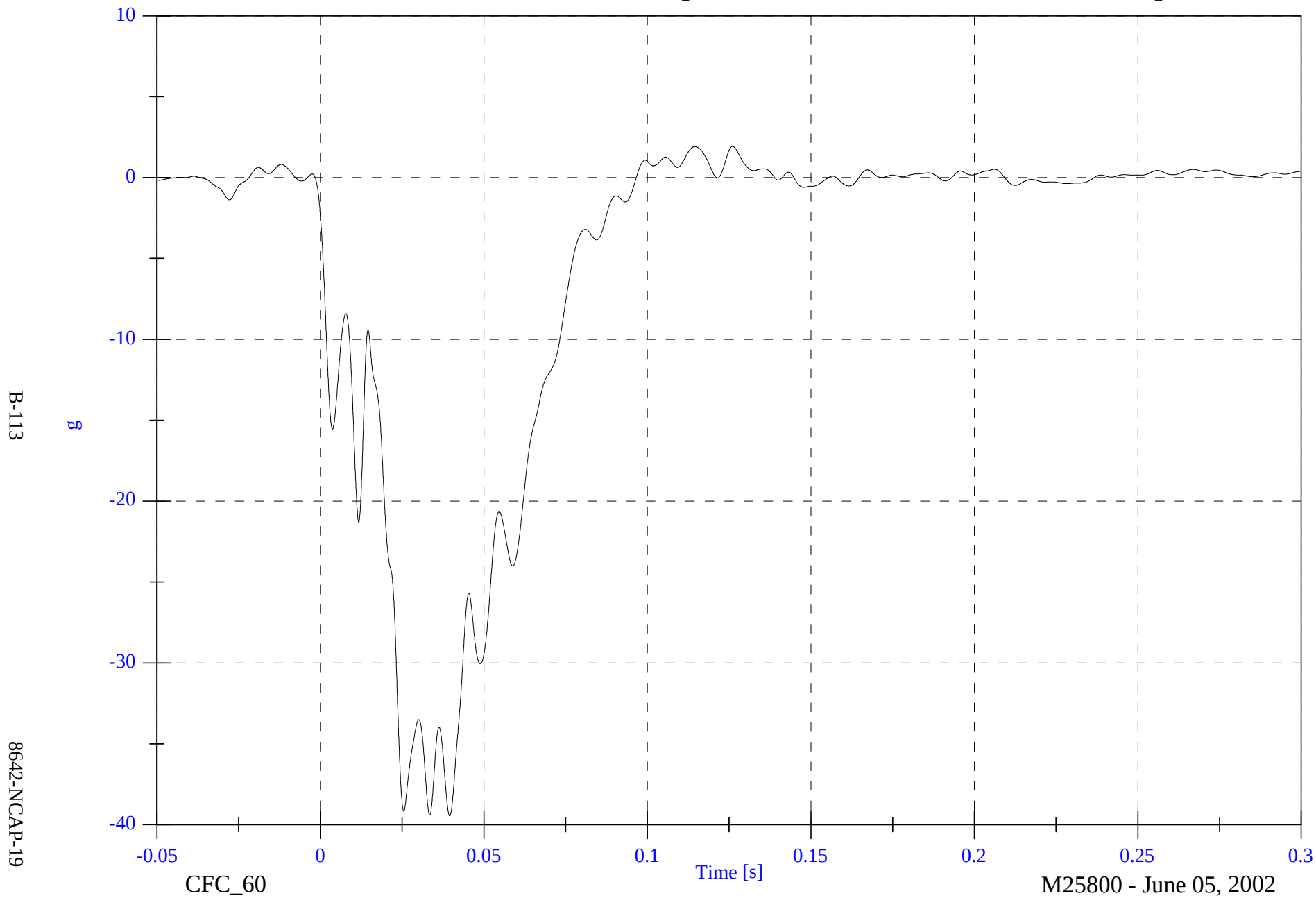
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

Right Rear #2x

Max: 1.9 [g] at 0.126 [s]

Min: -39.5 [g] at 0.040 [s]

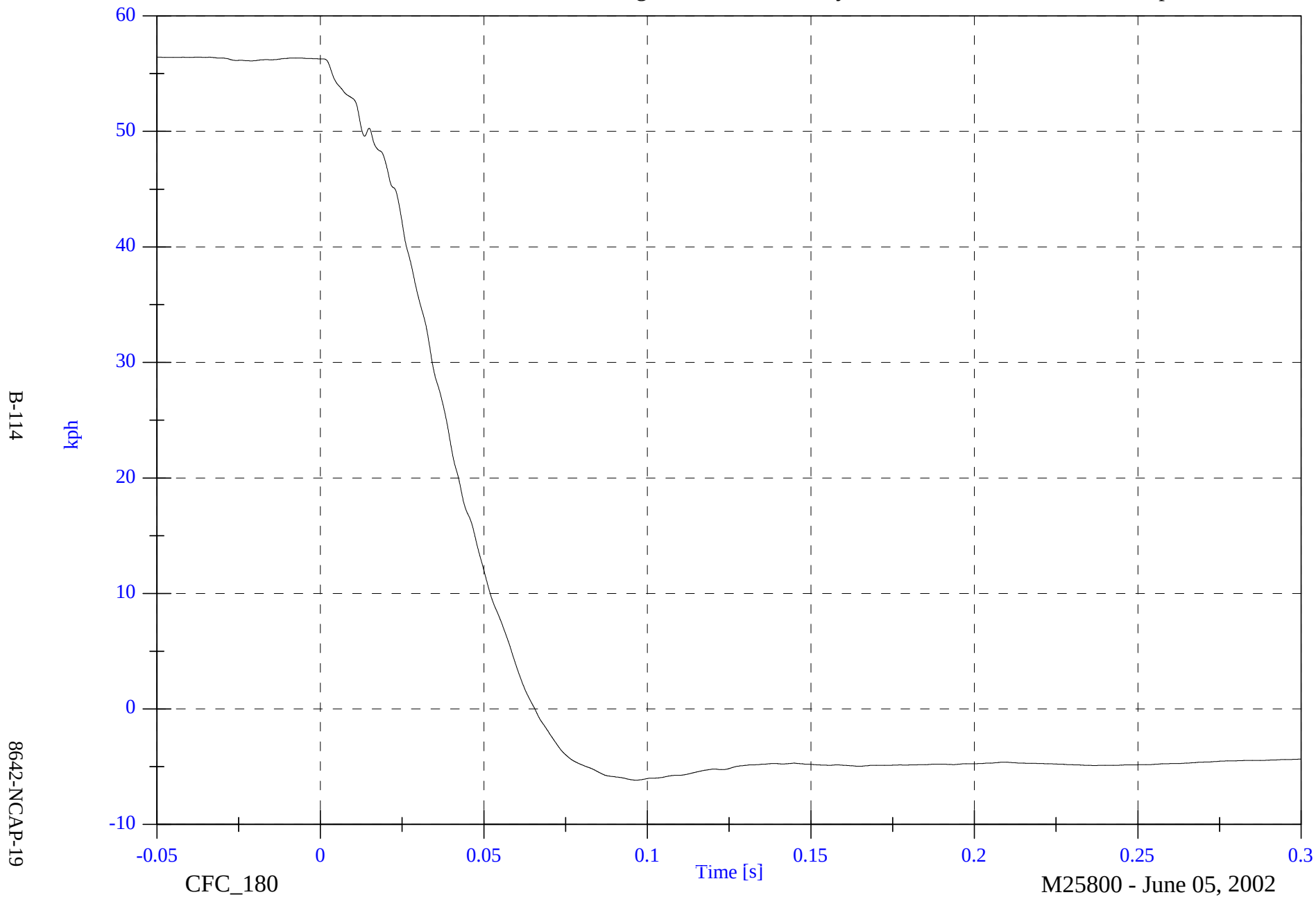


2002 NCAP Test 19 - 2002 Audi A4

Max: 56.4 [kph] at -0.050 [s]

Min: -6.2 [kph] at 0.097 [s]

Right Rear #2x Velocity



2002 NCAP Test 19 - 2002 Audi A4

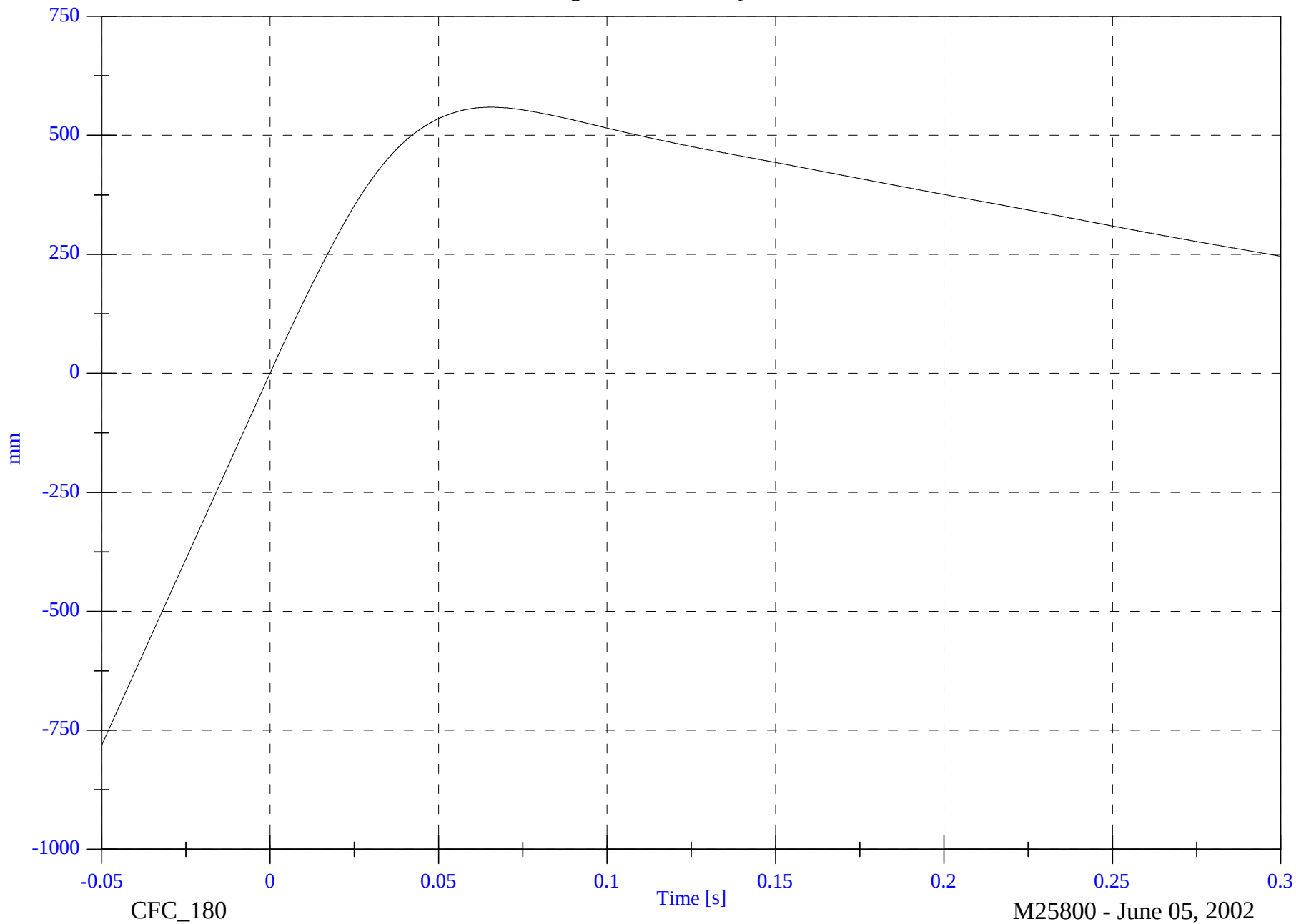
Right Rear #2x Displacement

Max: 559.0 [mm] at 0.066 [s]

Min: -782.0 [mm] at -0.050 [s]

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CFC_180

M25800 - June 05, 2002

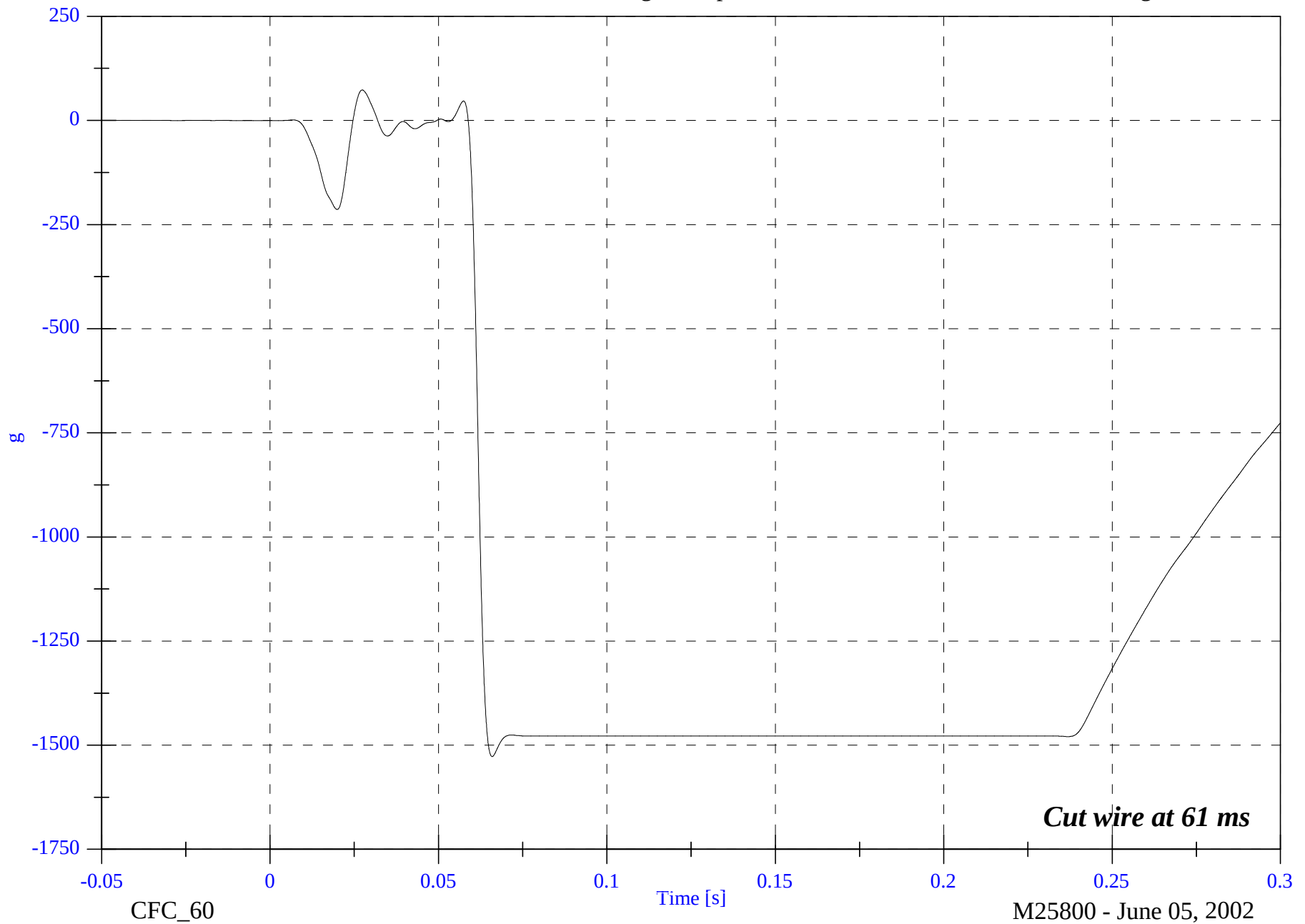
2002 NCAP Test 19 - 2002 Audi A4

Engine Top #3x

Max: 73.1 [g] at 0.027 [s]
Min: -1527.4 [g] at 0.066 [s]

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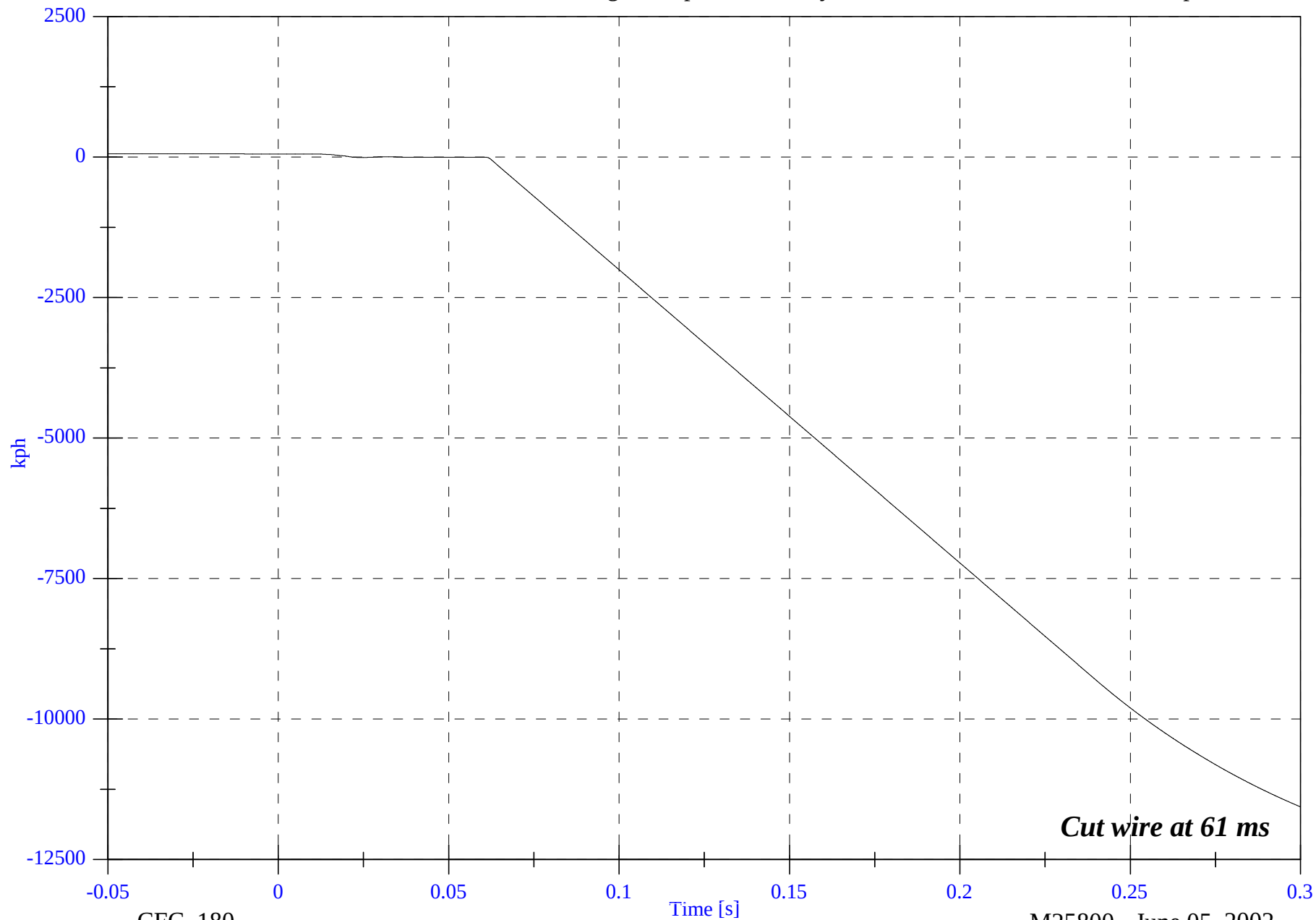


M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

Engine Top #3x Velocity

Max: 56.6 [kph] at -0.044 [s]
Min: -11562.2 [kph] at 0.300 [s]



Cut wire at 61 ms

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CFC_180

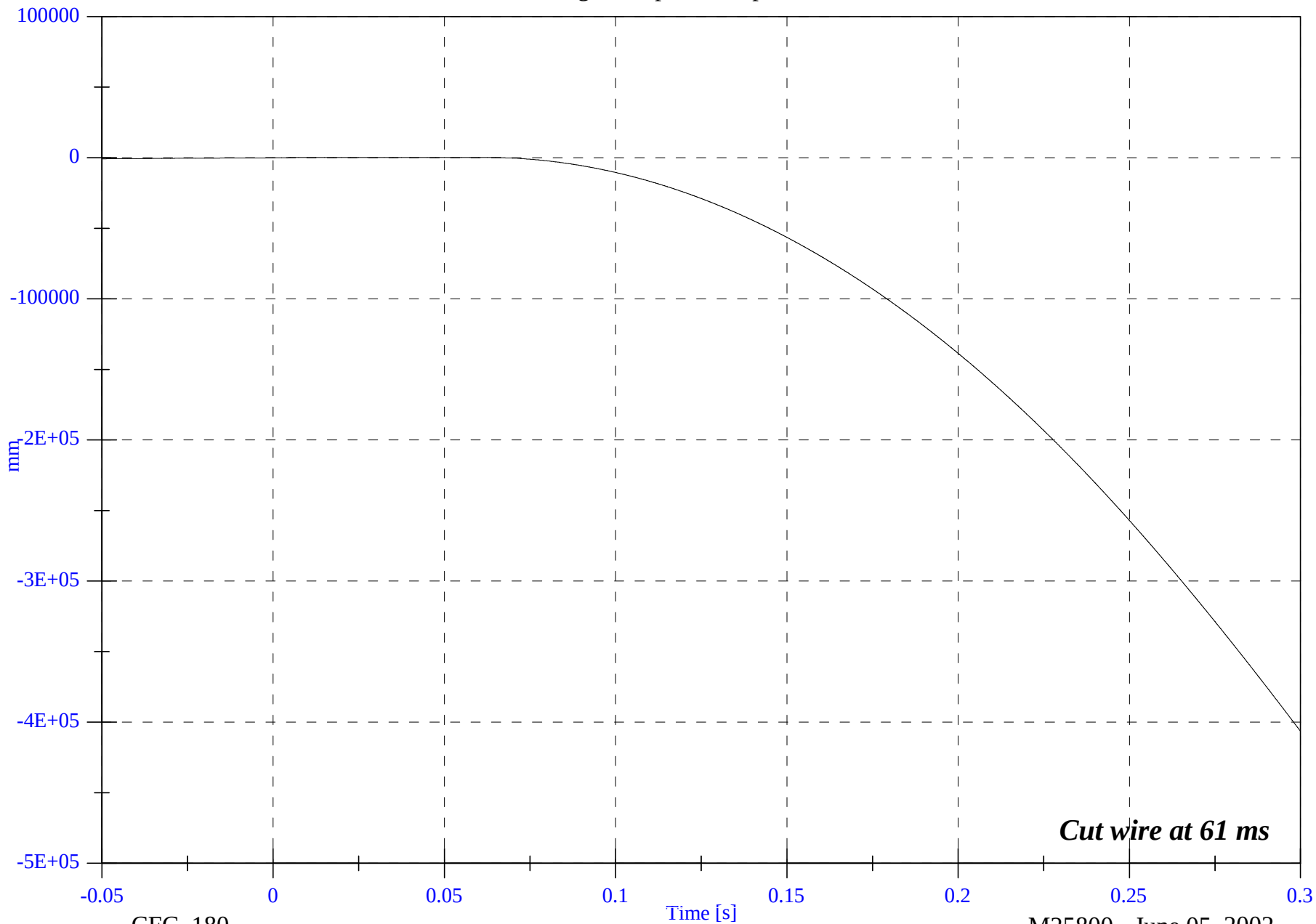
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

Engine Top #3x Displacement

Max: 273.7 [mm] at 0.022 [s]

Min: -406367.0 [mm] at 0.300 [s]



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CFC_180

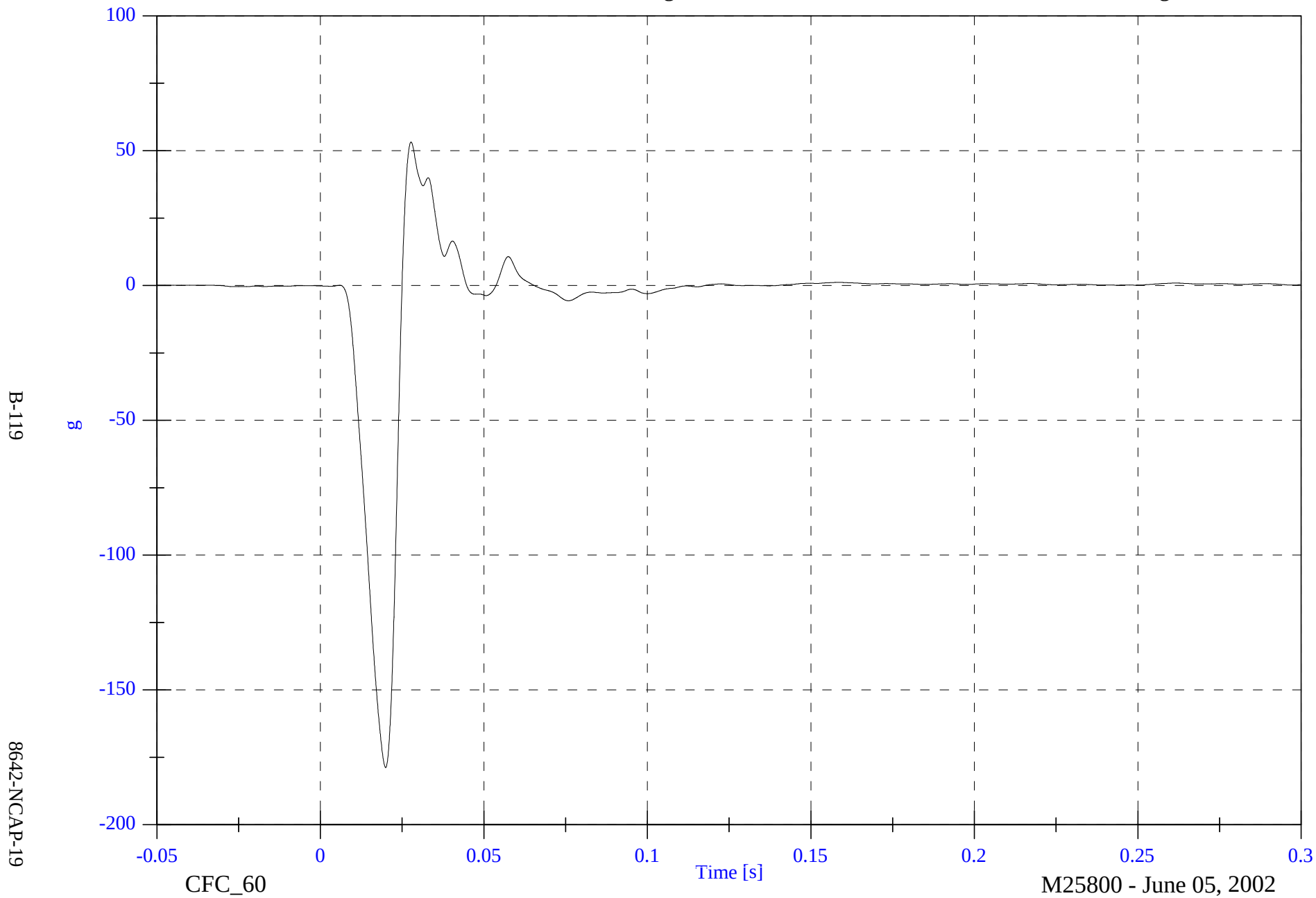
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

Engine Bottom #4x

Max: 53.2 [g] at 0.028 [s]

Min: -178.8 [g] at 0.020 [s]



2002 NCAP Test 19 - 2002 Audi A4

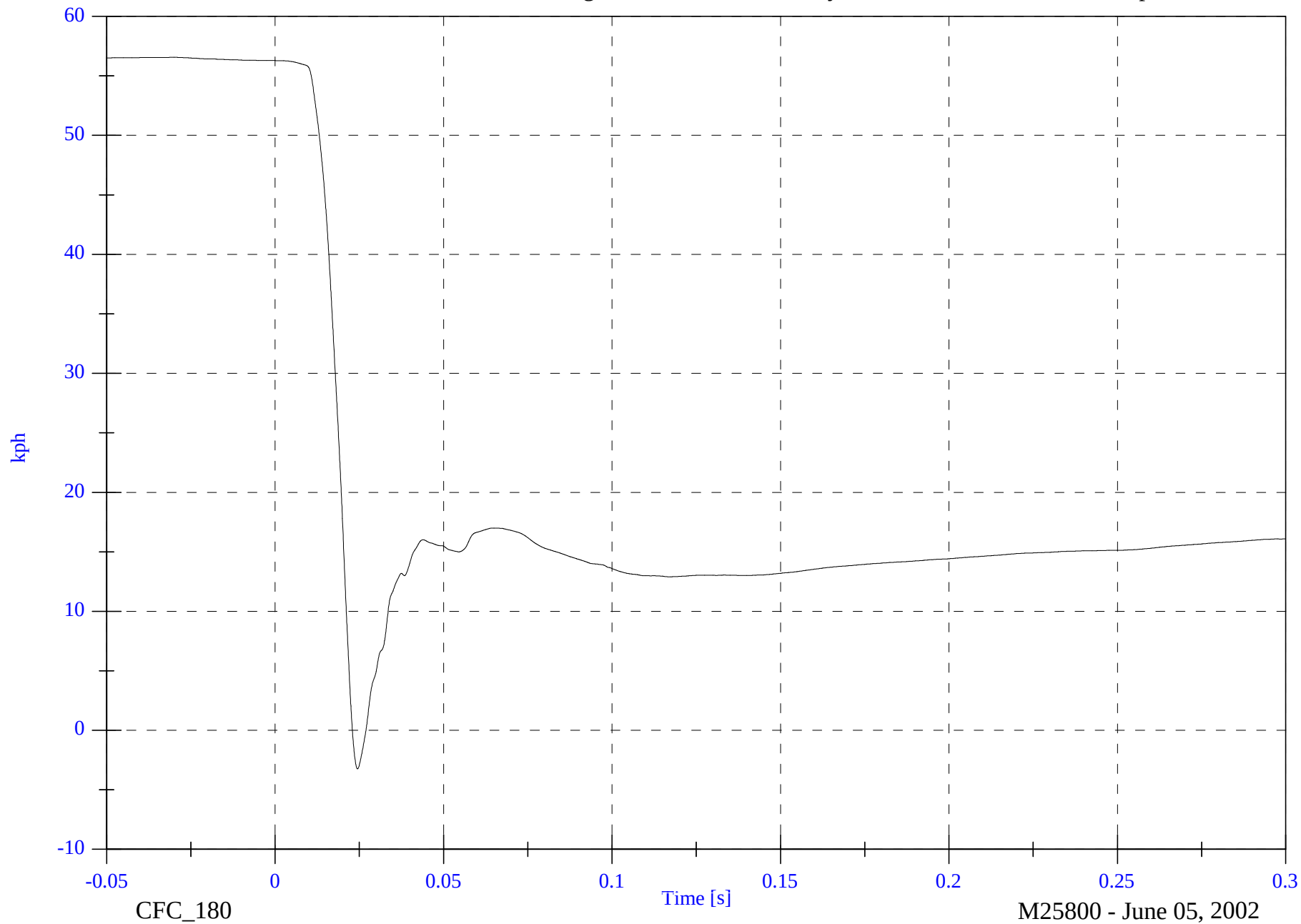
Engine Bottom #4x Velocity

Max: 56.6 [kph] at -0.030 [s]

Min: -3.2 [kph] at 0.025 [s]

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2002 NCAP Test 19 - 2002 Audi A4

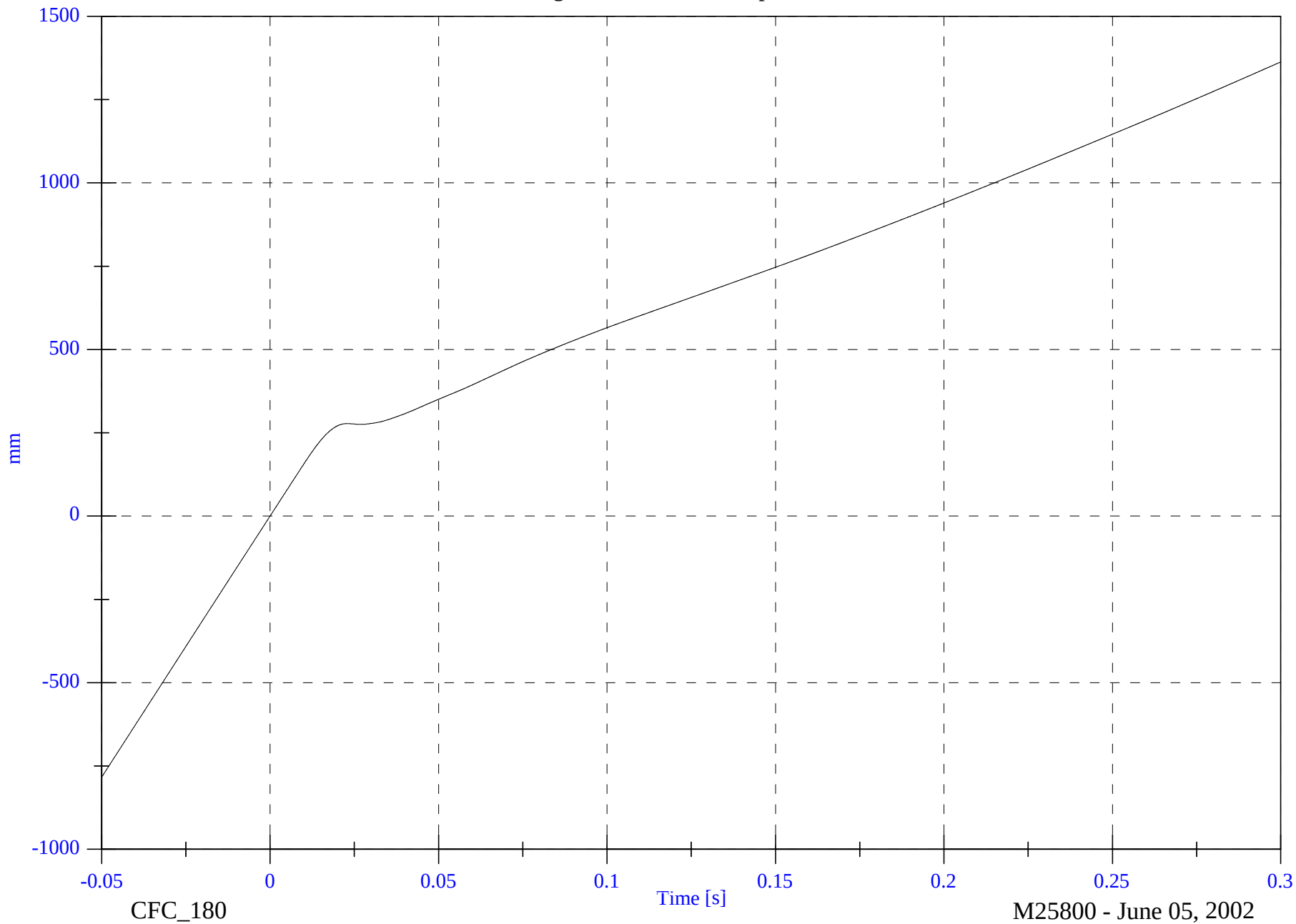
Engine Bottom #4x Displacement

Max: 1363.1 [mm] at 0.300 [s]

Min: -784.0 [mm] at -0.050 [s]

B-121

8642-NCAP-19



2002 NCAP Test 19 - 2002 Audi A4

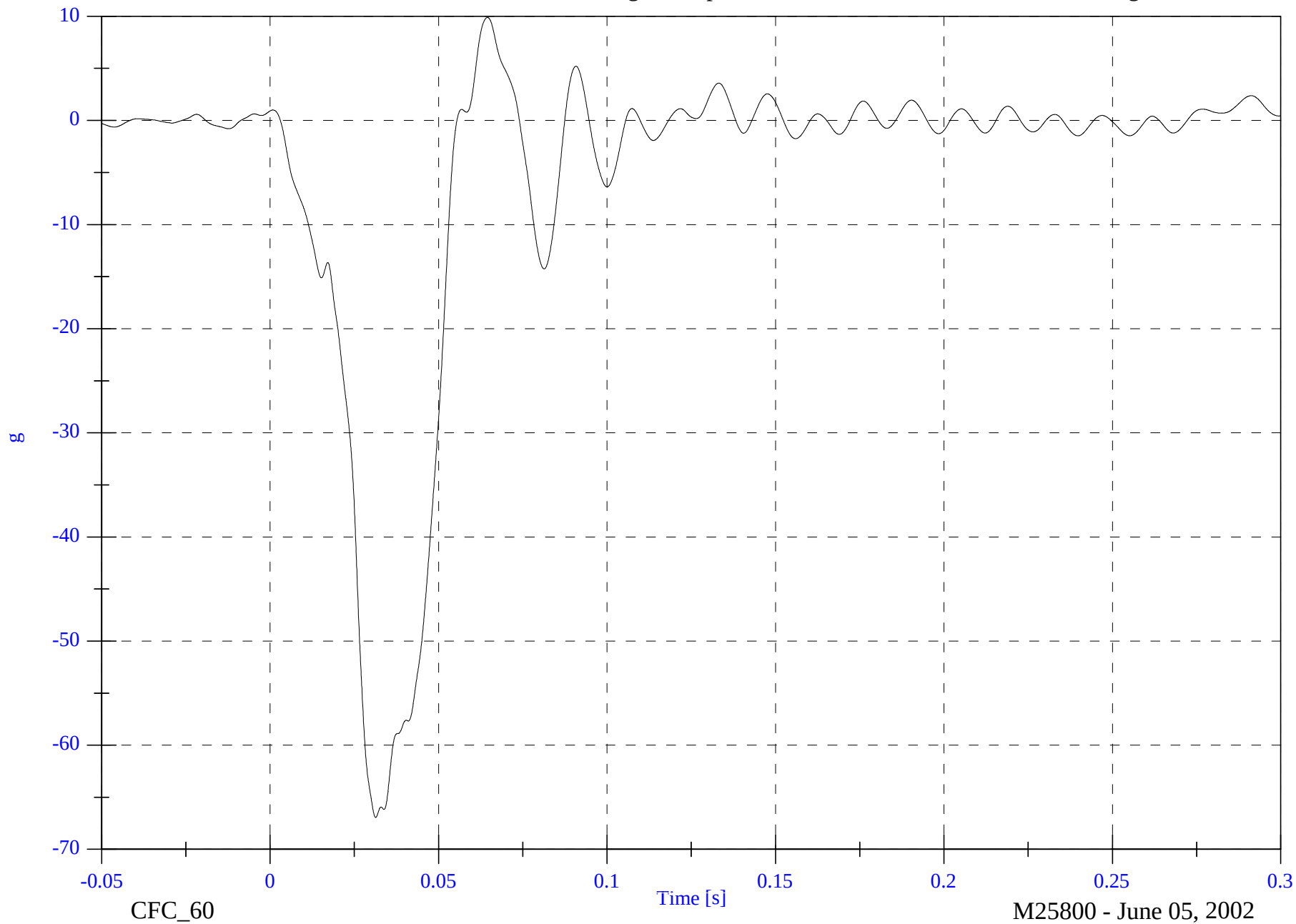
Right Caliper #5x

Max: 9.9 [g] at 0.065 [s]

Min: -66.9 [g] at 0.031 [s]

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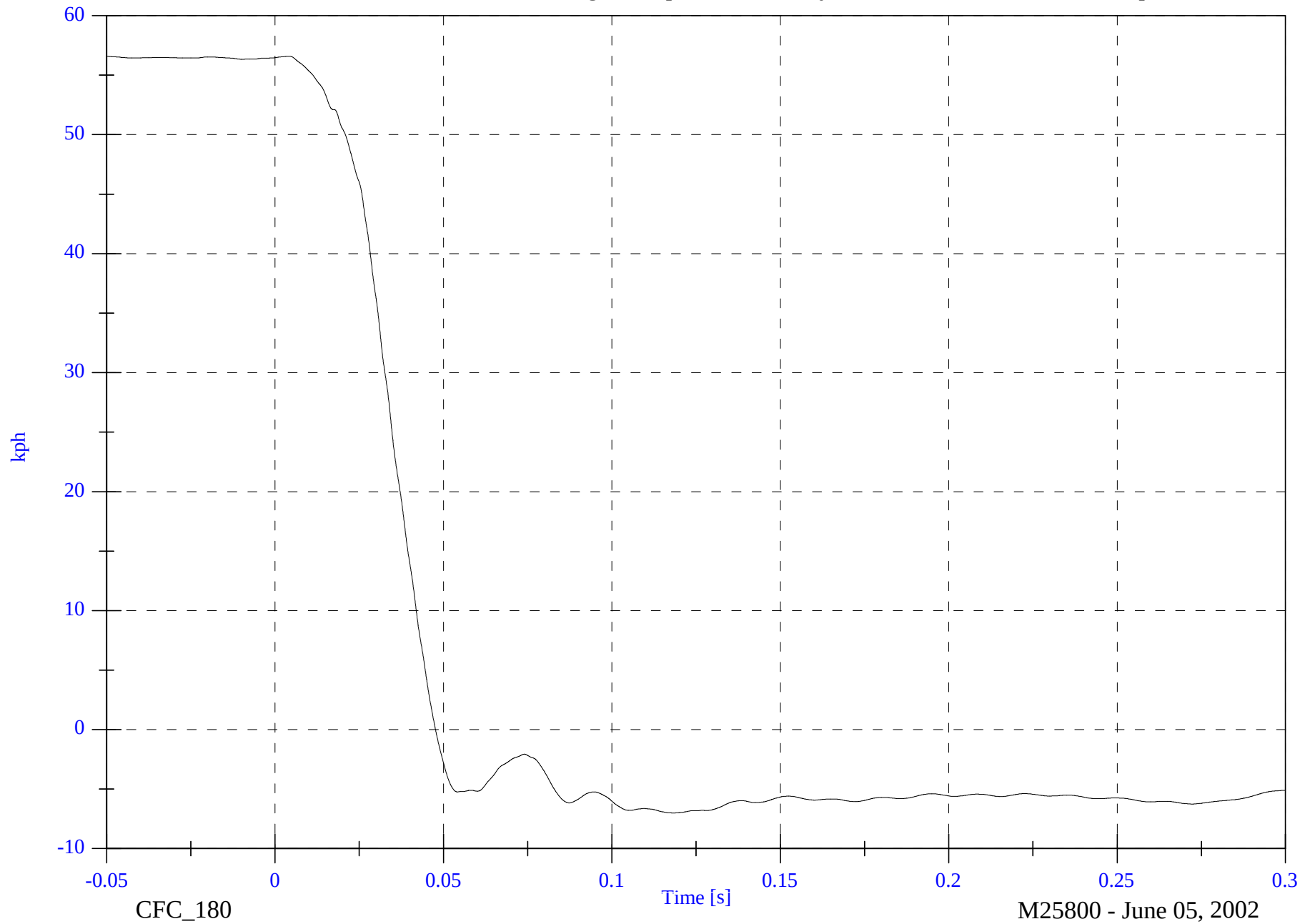


2002 NCAP Test 19 - 2002 Audi A4

Right Caliper #5x Velocity

Max: 56.6 [kph] at 0.004 [s]

Min: -7.0 [kph] at 0.118 [s]



B-123

8642-NCAP-19

CFC_180

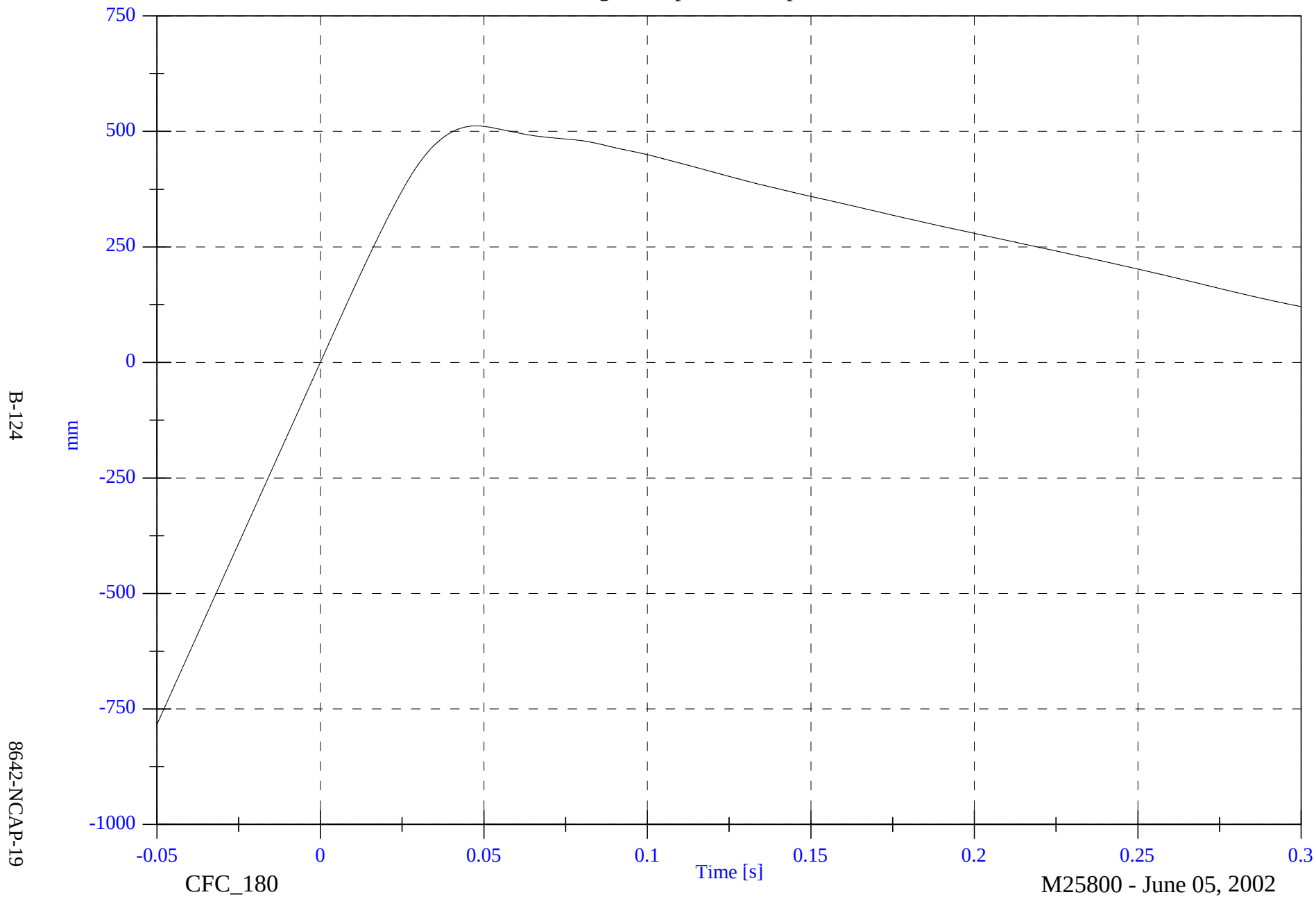
M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

Right Caliper #5x Displacement

Max: 511.8 [mm] at 0.048 [s]

Min: -784.1 [mm] at -0.050 [s]

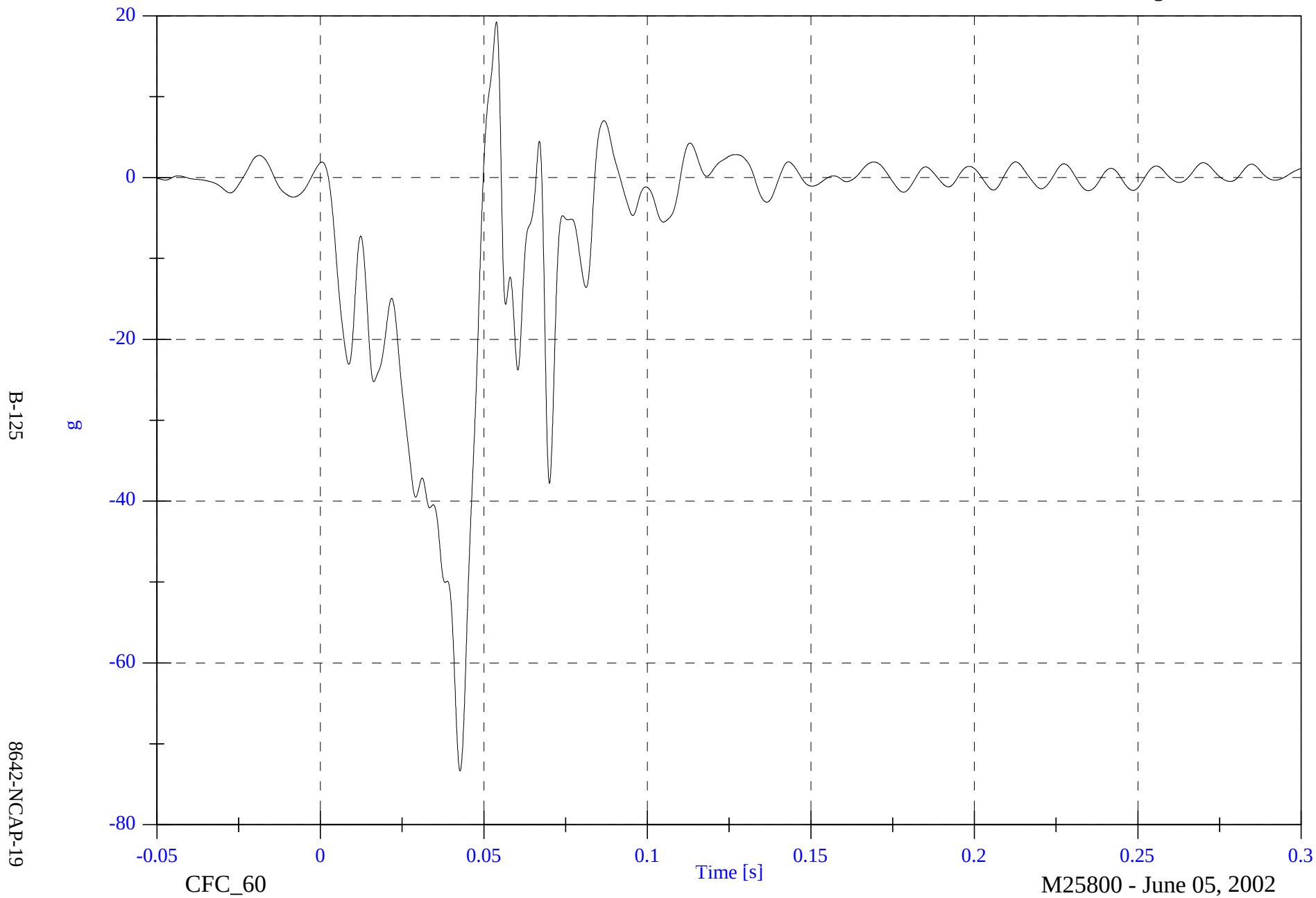


2002 NCAP Test 19 - 2002 Audi A4

Instrument Panel #6x

Max: 19.2 [g] at 0.054 [s]

Min: -73.4 [g] at 0.043 [s]

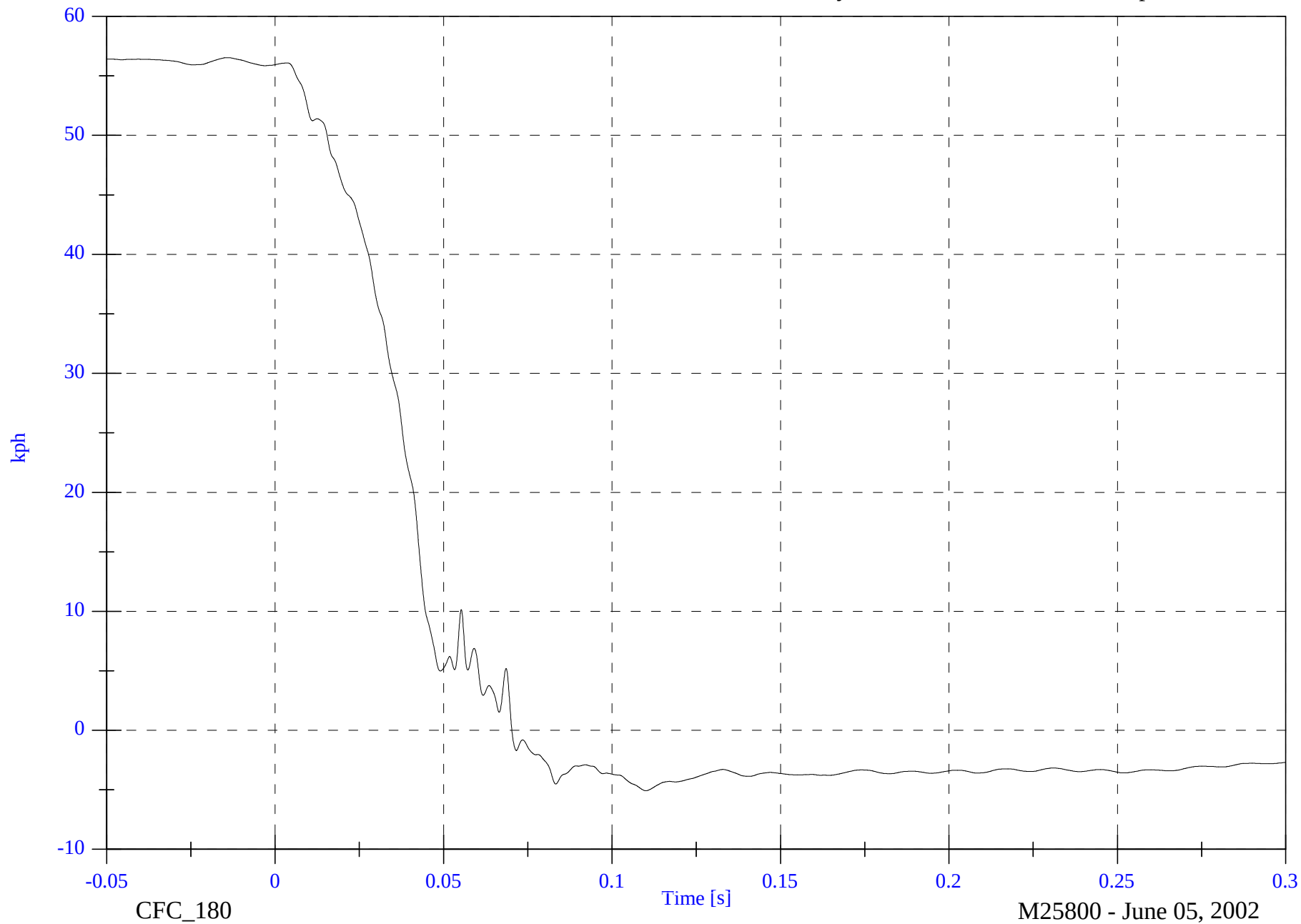


2002 NCAP Test 19 - 2002 Audi A4

Instrument Panel #6x Velocity

Max: 56.5 [kph] at -0.014 [s]

Min: -5.1 [kph] at 0.110 [s]



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2002 NCAP Test 19 - 2002 Audi A4

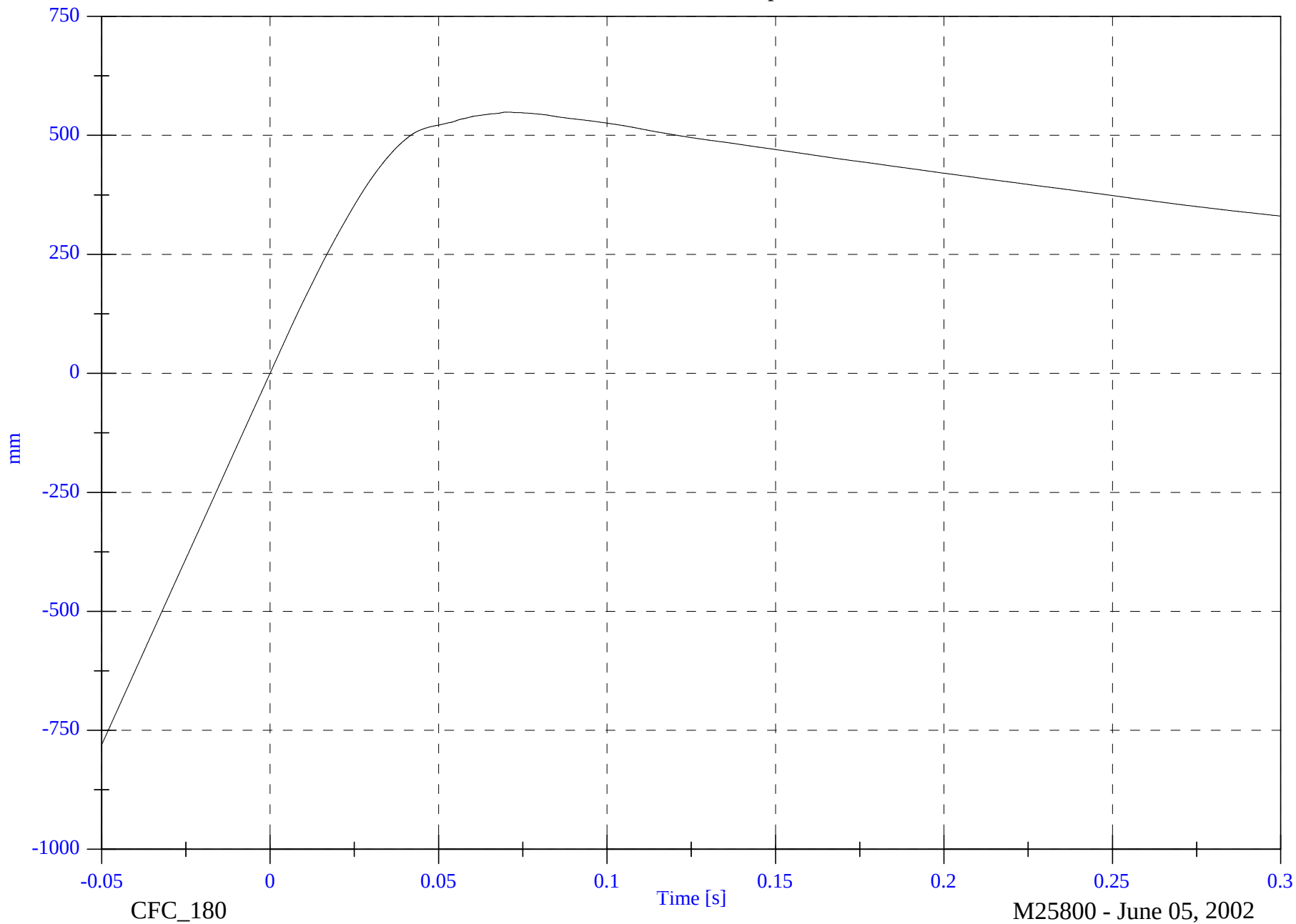
Instrument Panel #6x Displacement

Max: 548.7 [mm] at 0.070 [s]

Min: -780.9 [mm] at -0.050 [s]

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CFC_180

M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

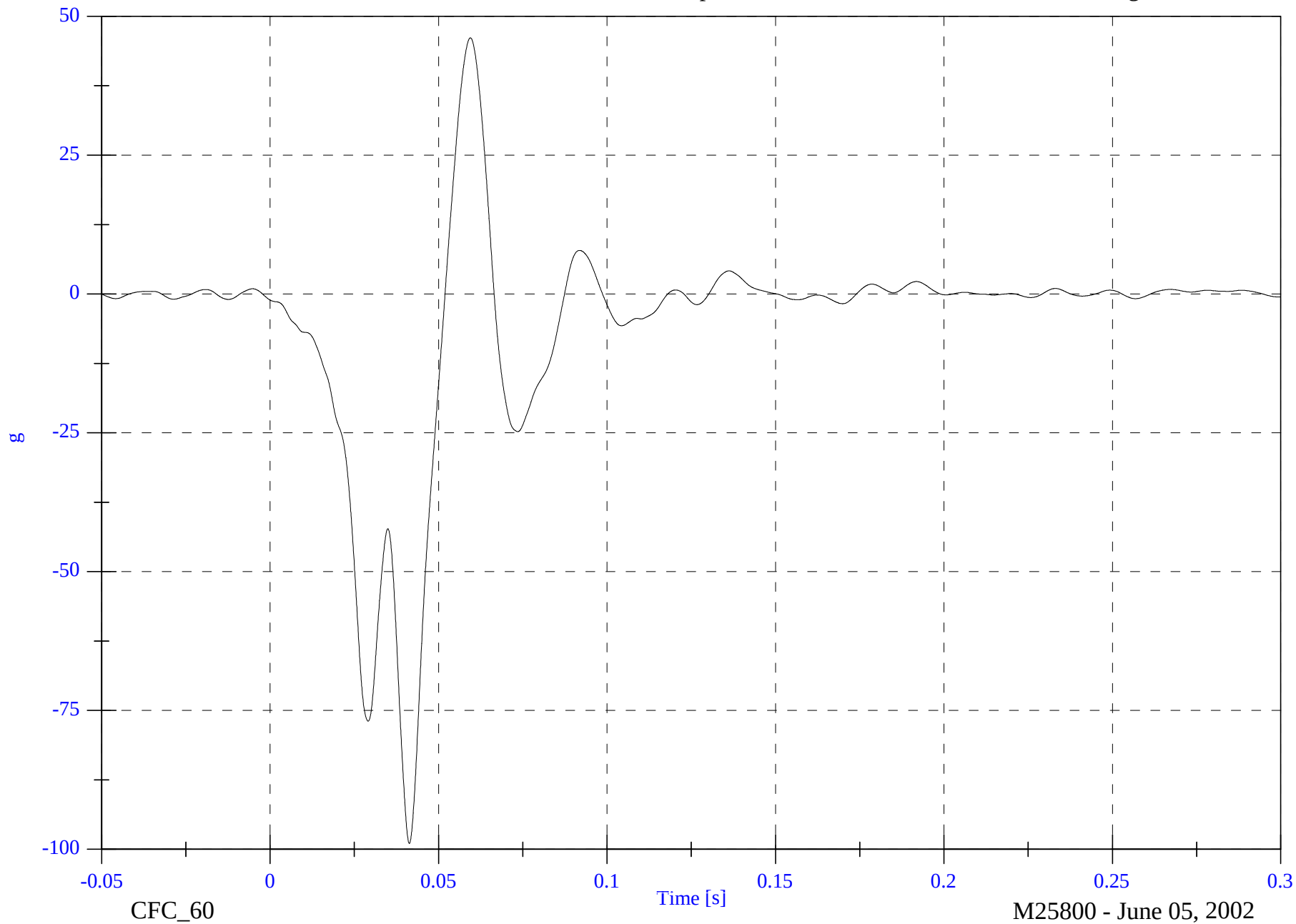
Left Caliper #7x

Max: 46.1 [g] at 0.059 [s]

Min: -99.0 [g] at 0.041 [s]

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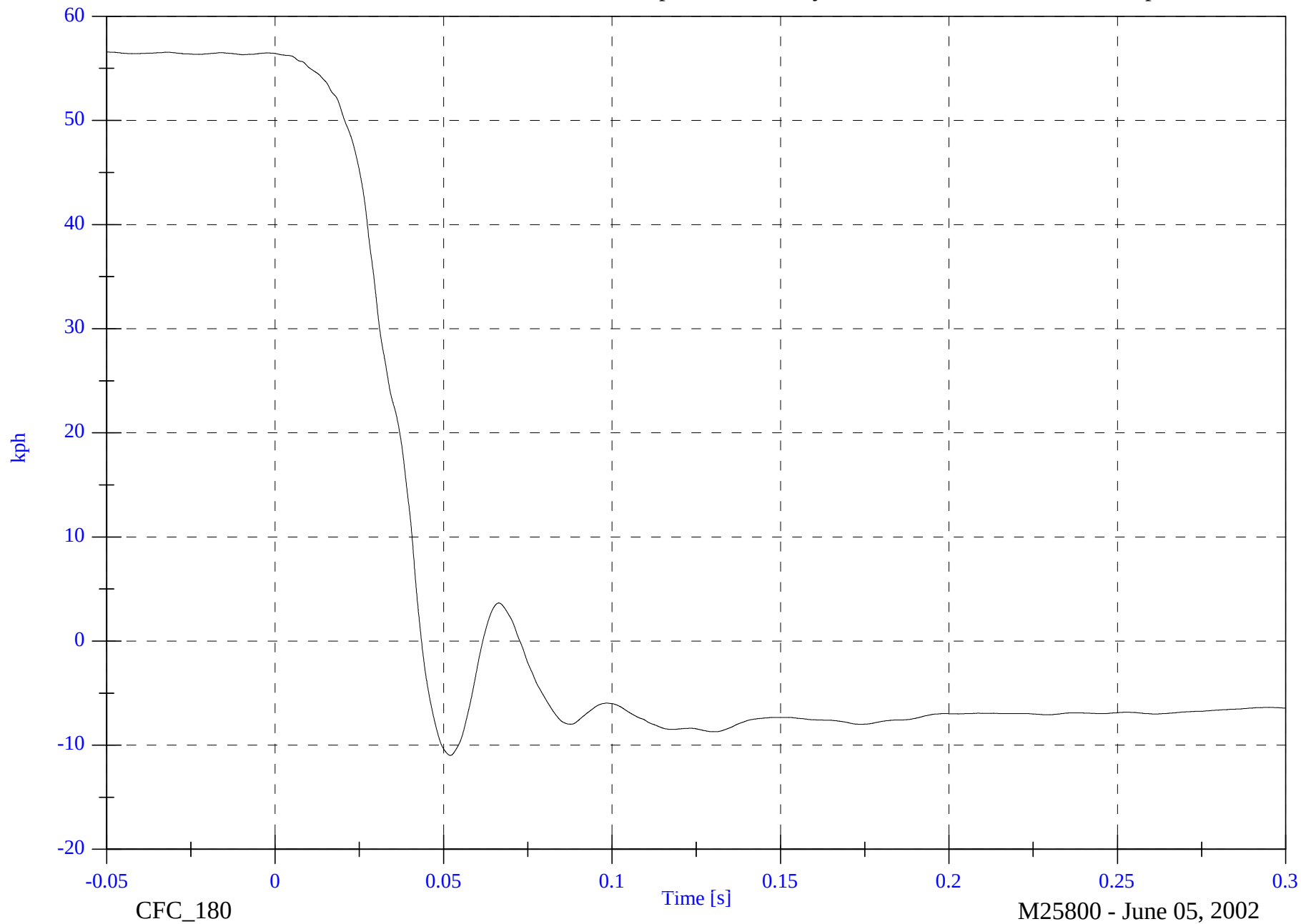


2002 NCAP Test 19 - 2002 Audi A4

Left Caliper #7x Velocity

Max: 56.6 [kph] at -0.050 [s]

Min: -11.0 [kph] at 0.052 [s]



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8642-NCAP-19

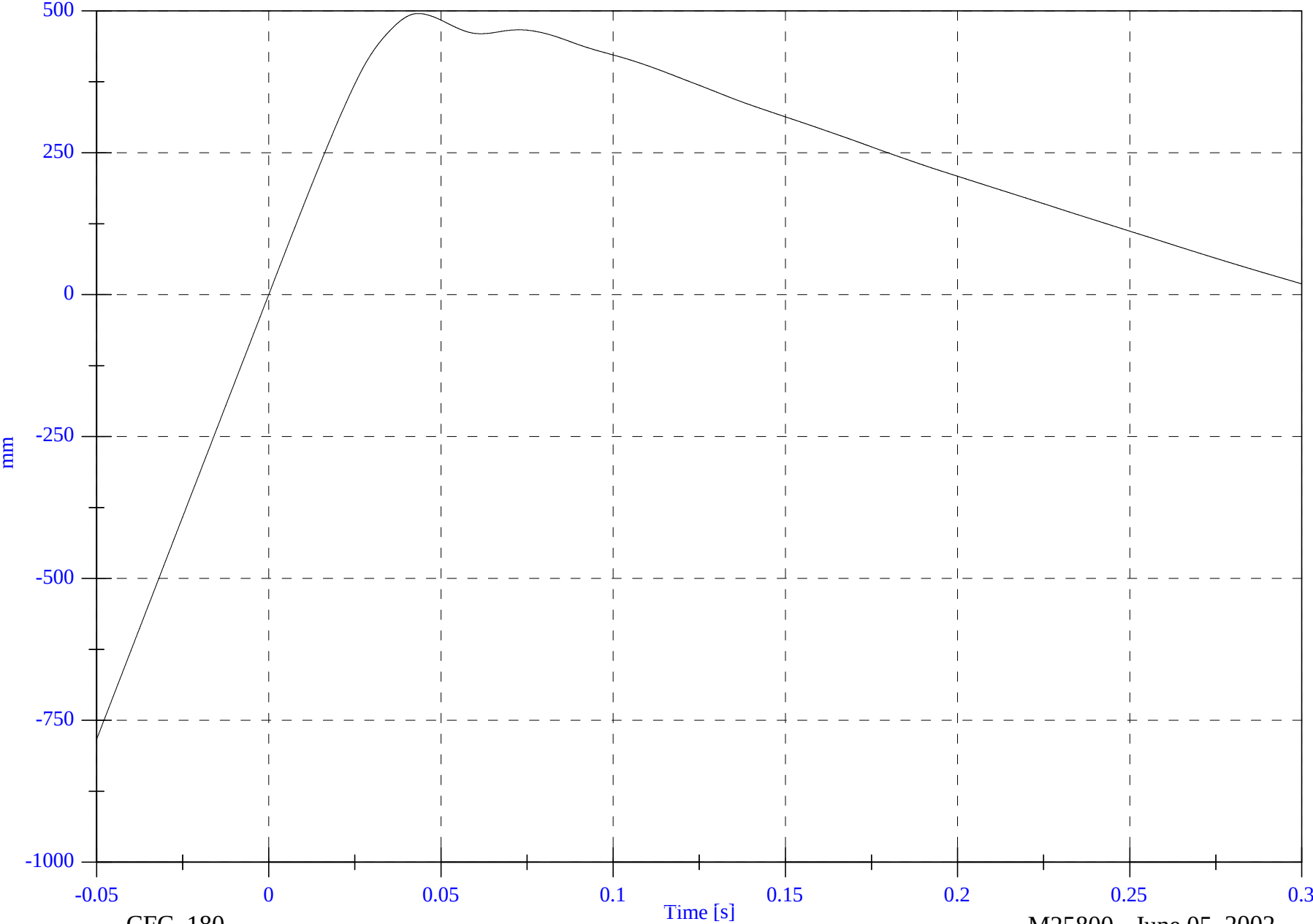
CFC_180

Time [s]

M25800 - June 05, 2002

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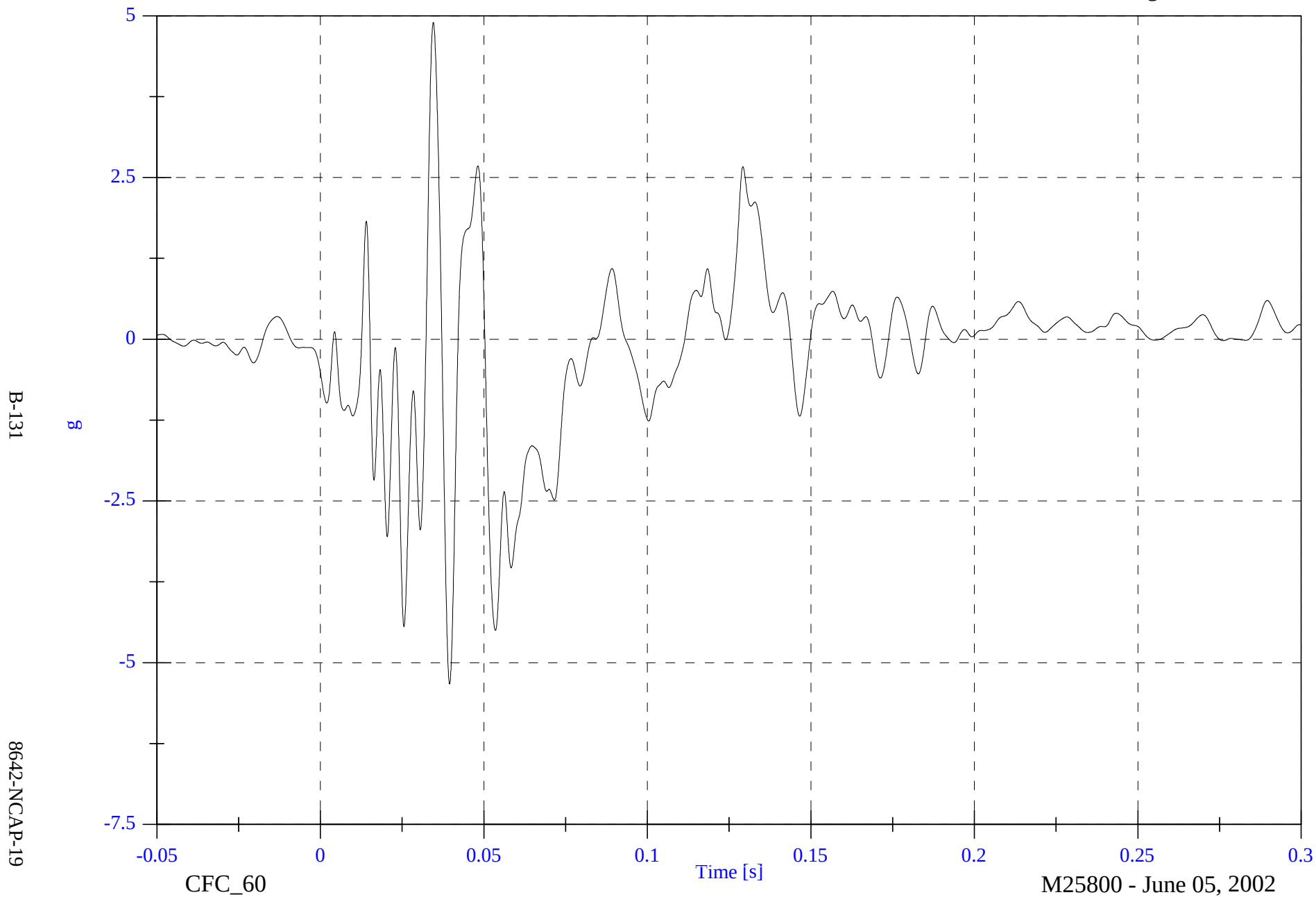


2002 NCAP Test 19 - 2002 Audi A4

Left Rear #8z

Max: 4.9 [g] at 0.035 [s]

Min: -5.3 [g] at 0.040 [s]

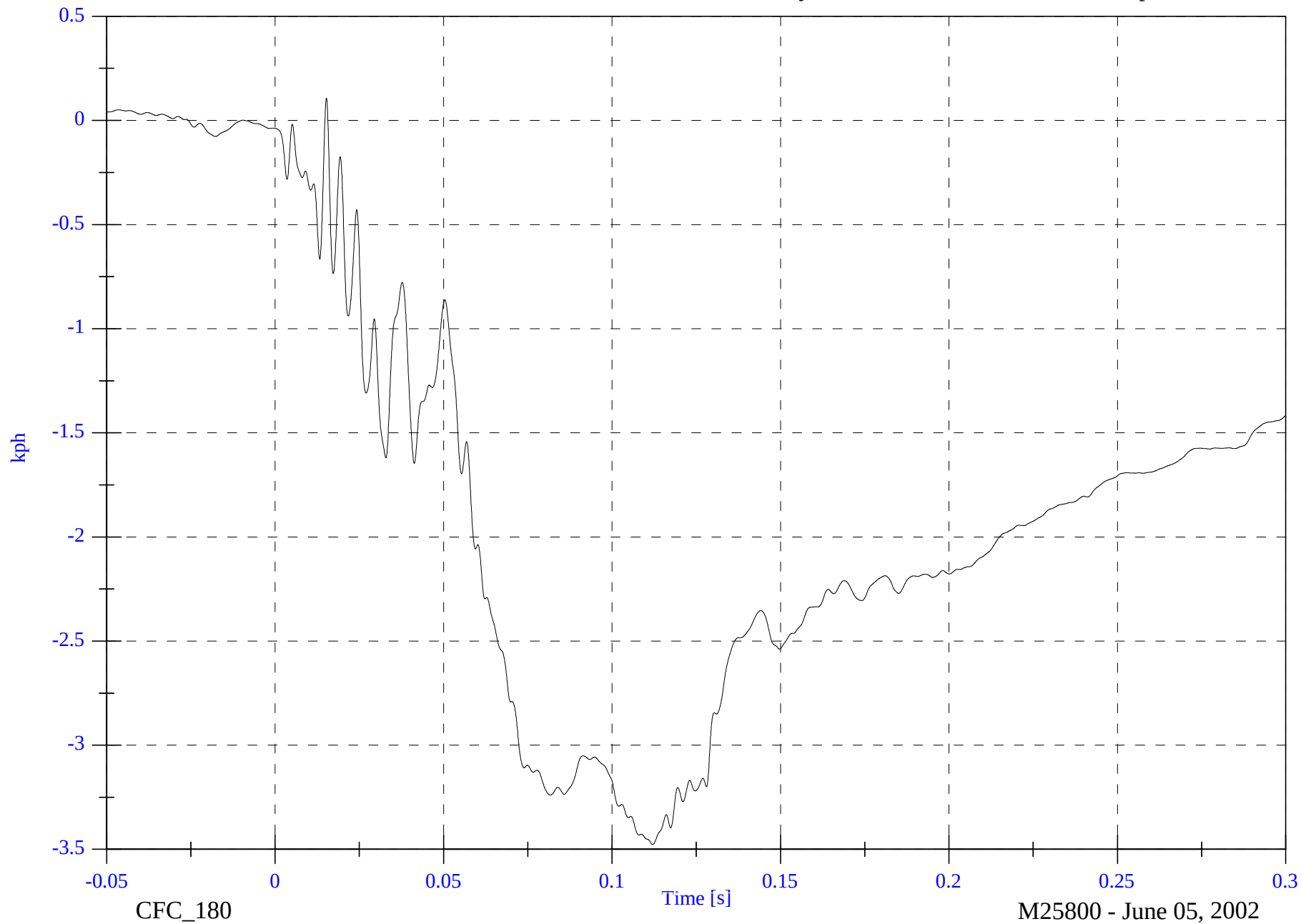


2002 NCAP Test 19 - 2002 Audi A4

Left Rear #8z Velocity

Max: 0.1 [kph] at 0.015 [s]

Min: -3.5 [kph] at 0.112 [s]



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2002 NCAP Test 19 - 2002 Audi A4

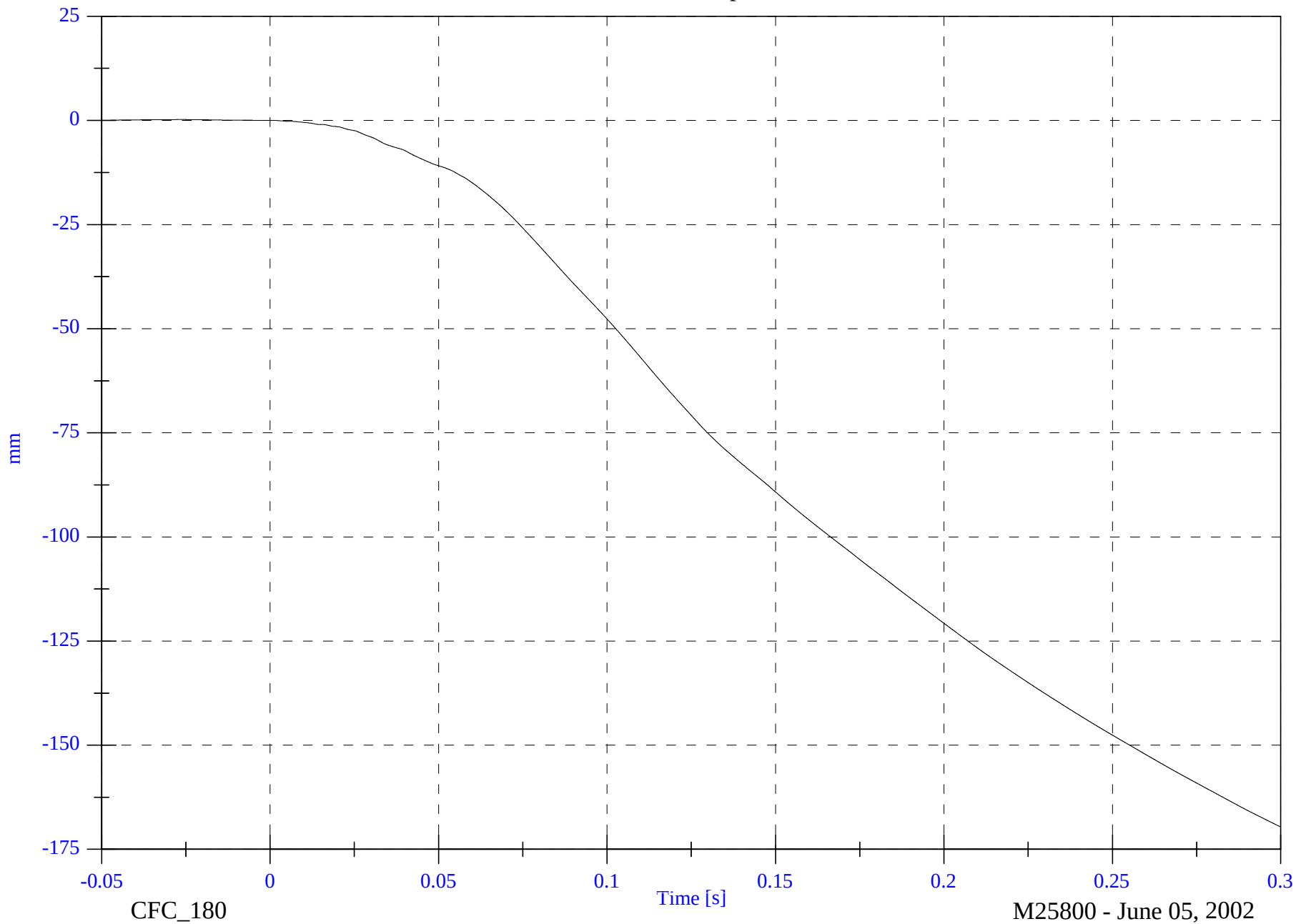
Left Rear #8z Displacement

Max: 0.2 [mm] at -0.026 [s]

Min: -169.6 [mm] at 0.300 [s]

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CFC_180

M25800 - June 05, 2002

2002 NCAP Test 19 - 2002 Audi A4

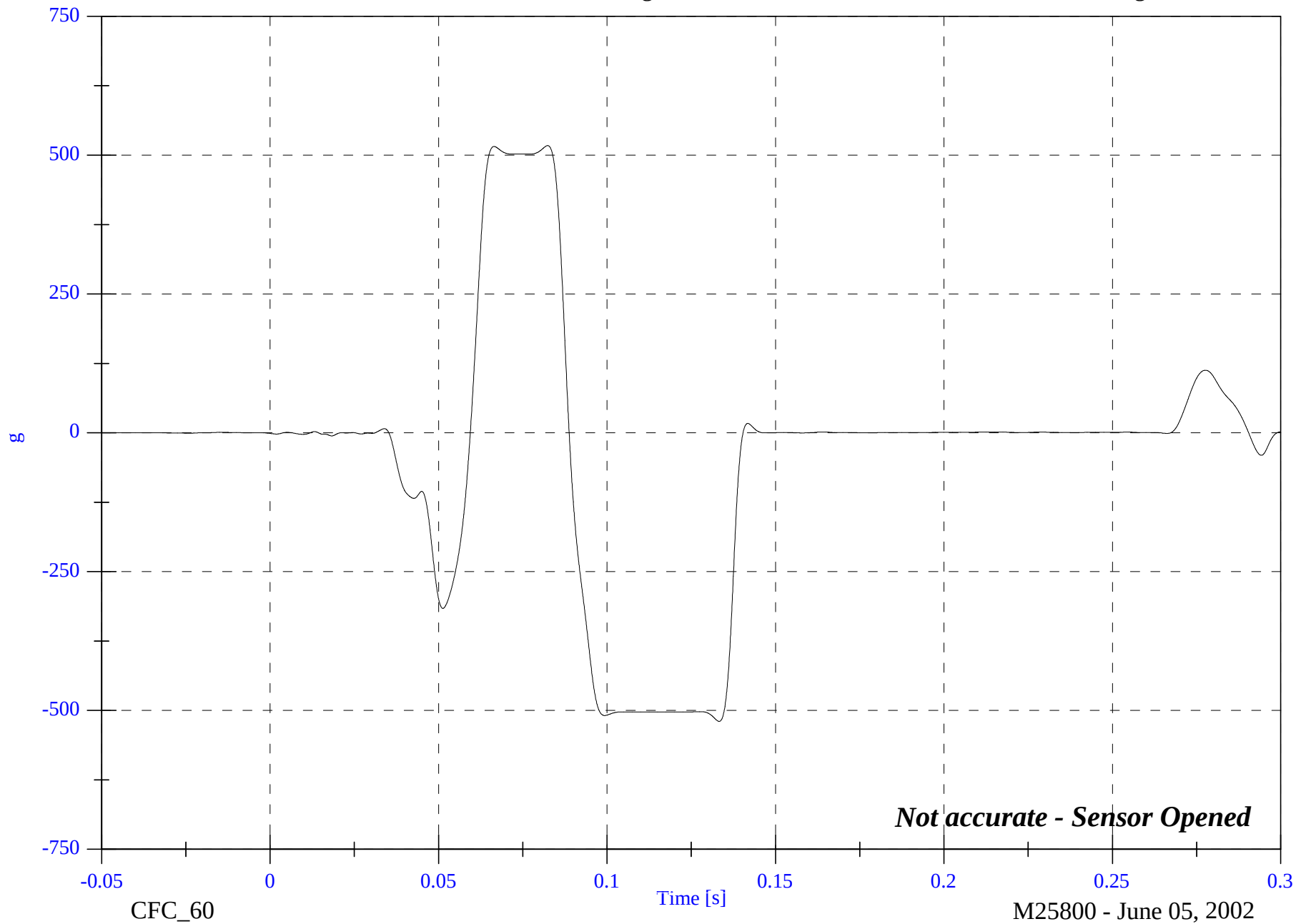
Right Rear #9z

Max: 517.2 [g] at 0.082 [s]

Min: -519.7 [g] at 0.133 [s]

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8642-NCAP-19

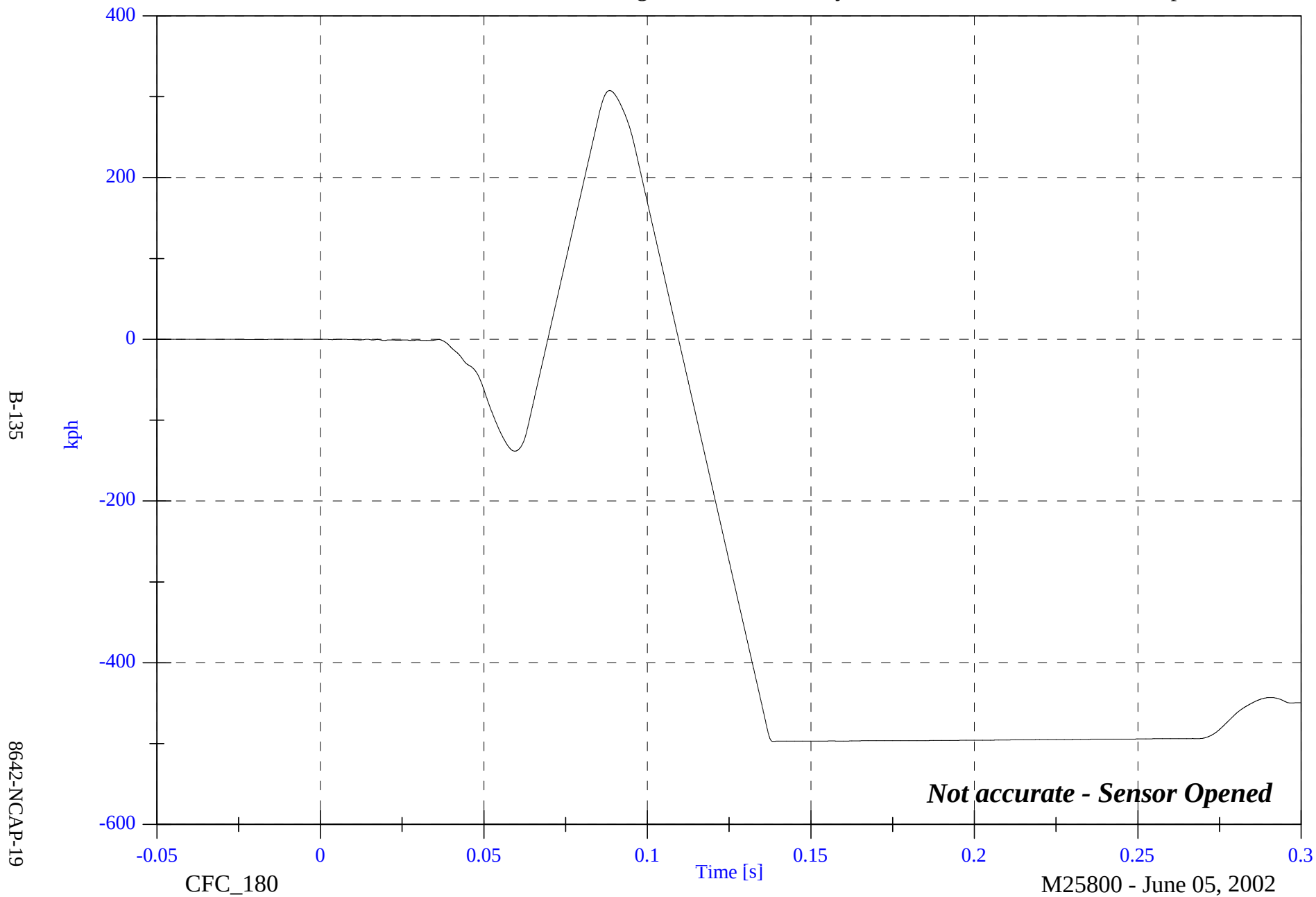


2002 NCAP Test 19 - 2002 Audi A4

Max: 307.6 [kph] at 0.089 [s]

Min: -497.4 [kph] at 0.138 [s]

Right Rear #9z Velocity



2002 NCAP Test 19 - 2002 Audi A4

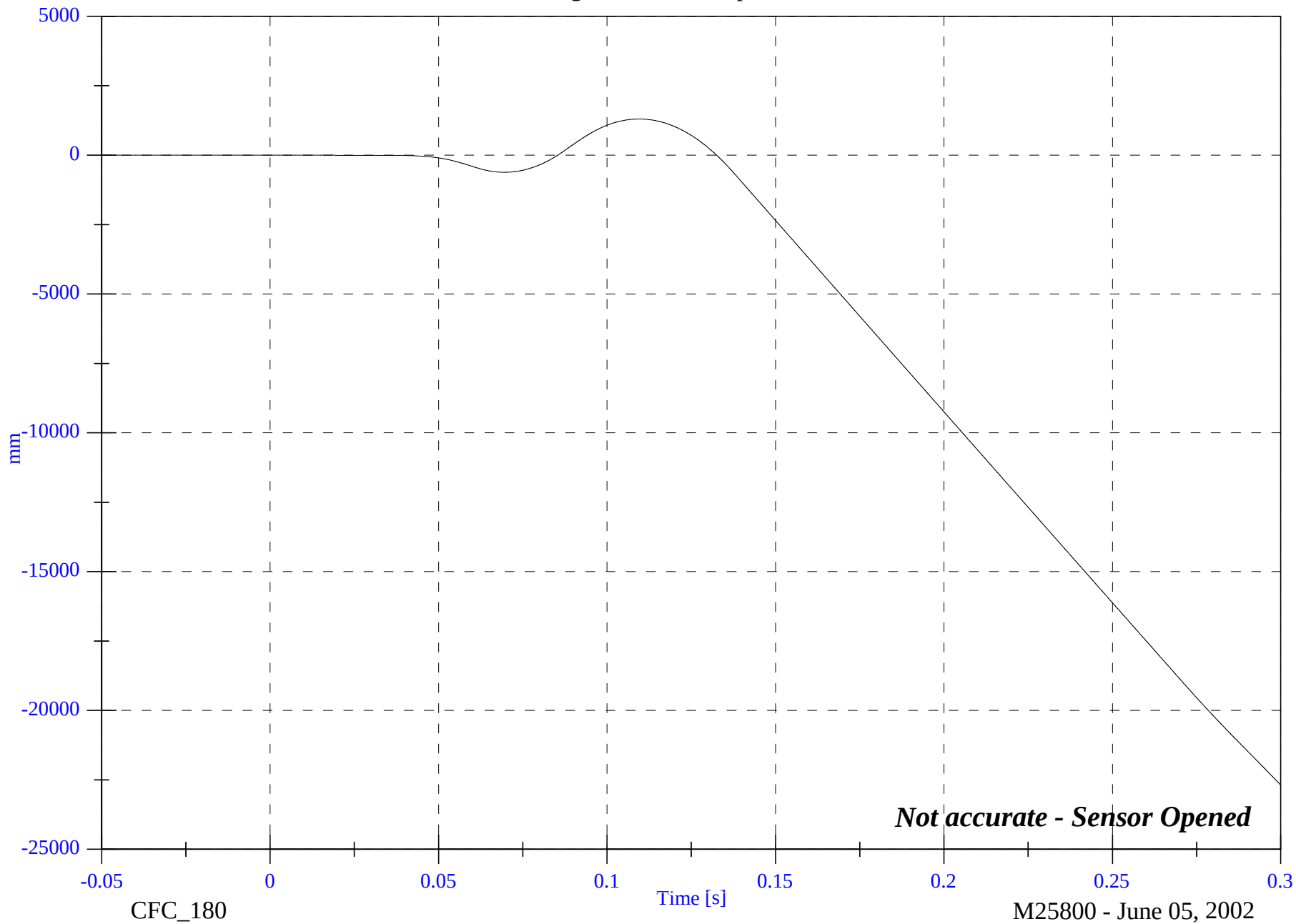
Right Rear #9z Displacement

Max: 1301.7 [mm] at 0.110 [s]

Min: -22684.5 [mm] at 0.300 [s]

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8642-NCAP-19

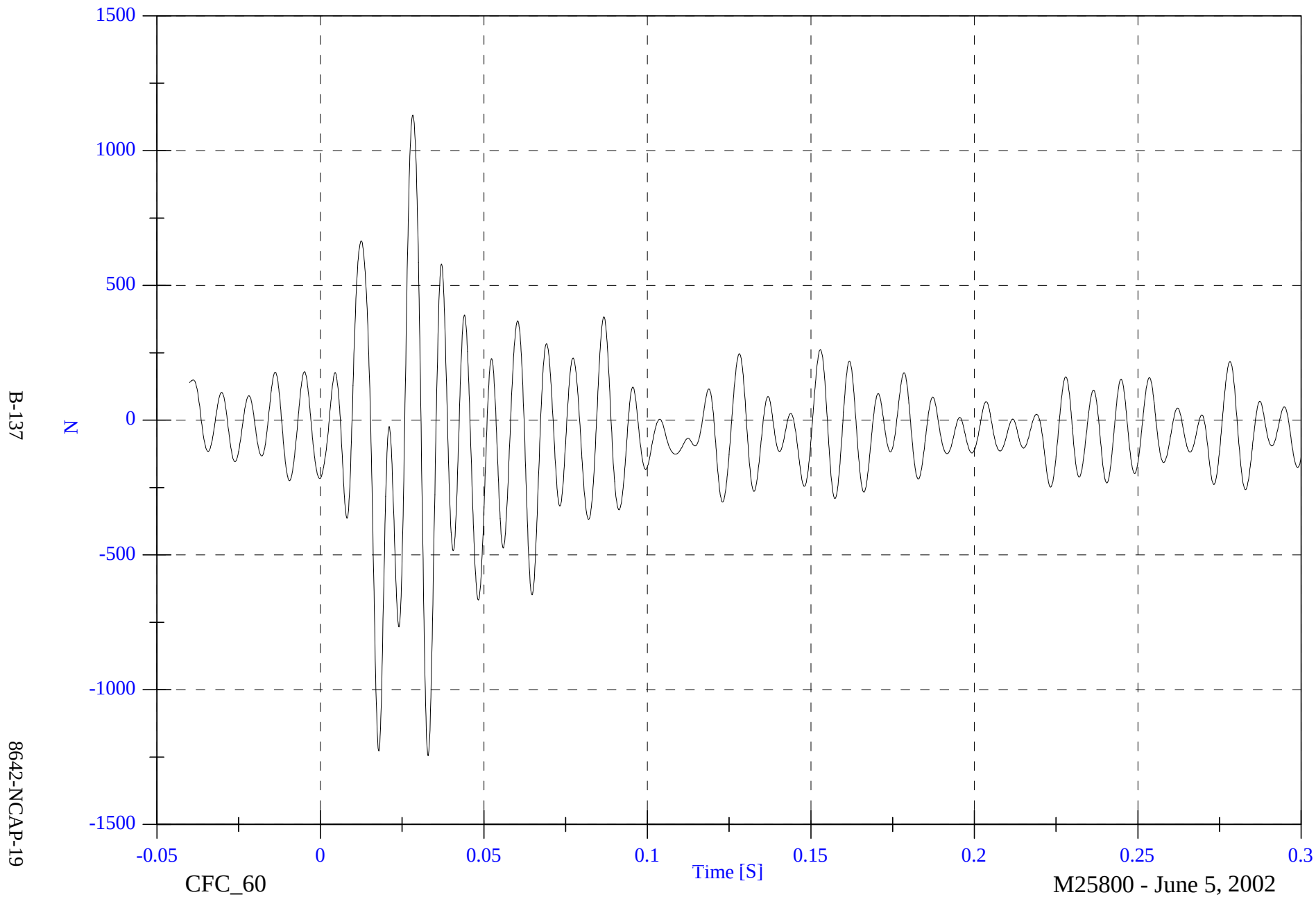


NCAP Test 19- 2002 Audi A4

Barrier Load Cell A1 Fx

Max: 1132.0 [N] at 0.028 [S]

Min: -1245.1 [N] at 0.033 [S]

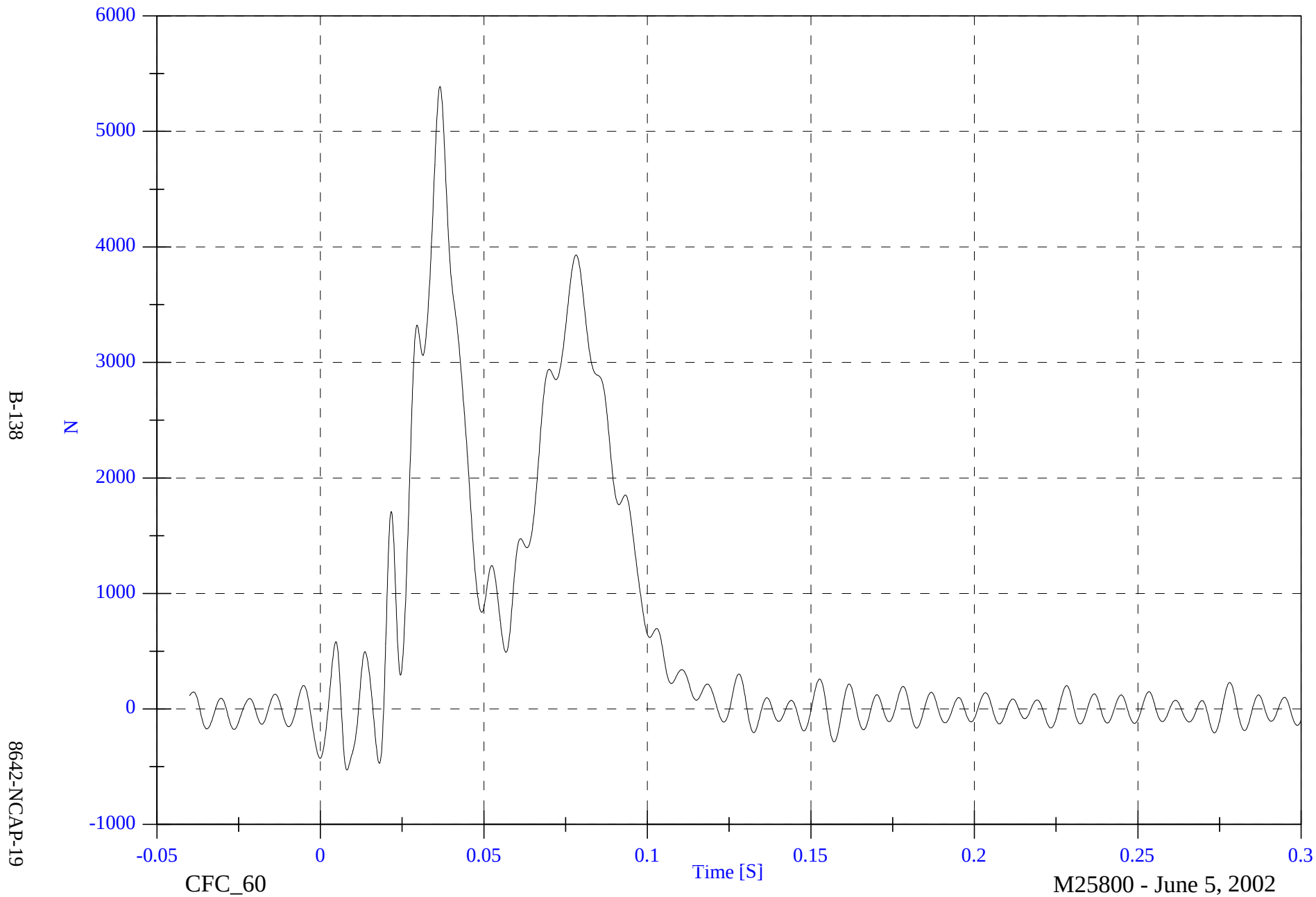


NCAP Test 19- 2002 Audi A4

Barrier Load Cell A2 Fx

Max: 5388.6 [N] at 0.037 [S]

Min: -529.0 [N] at 0.008 [S]

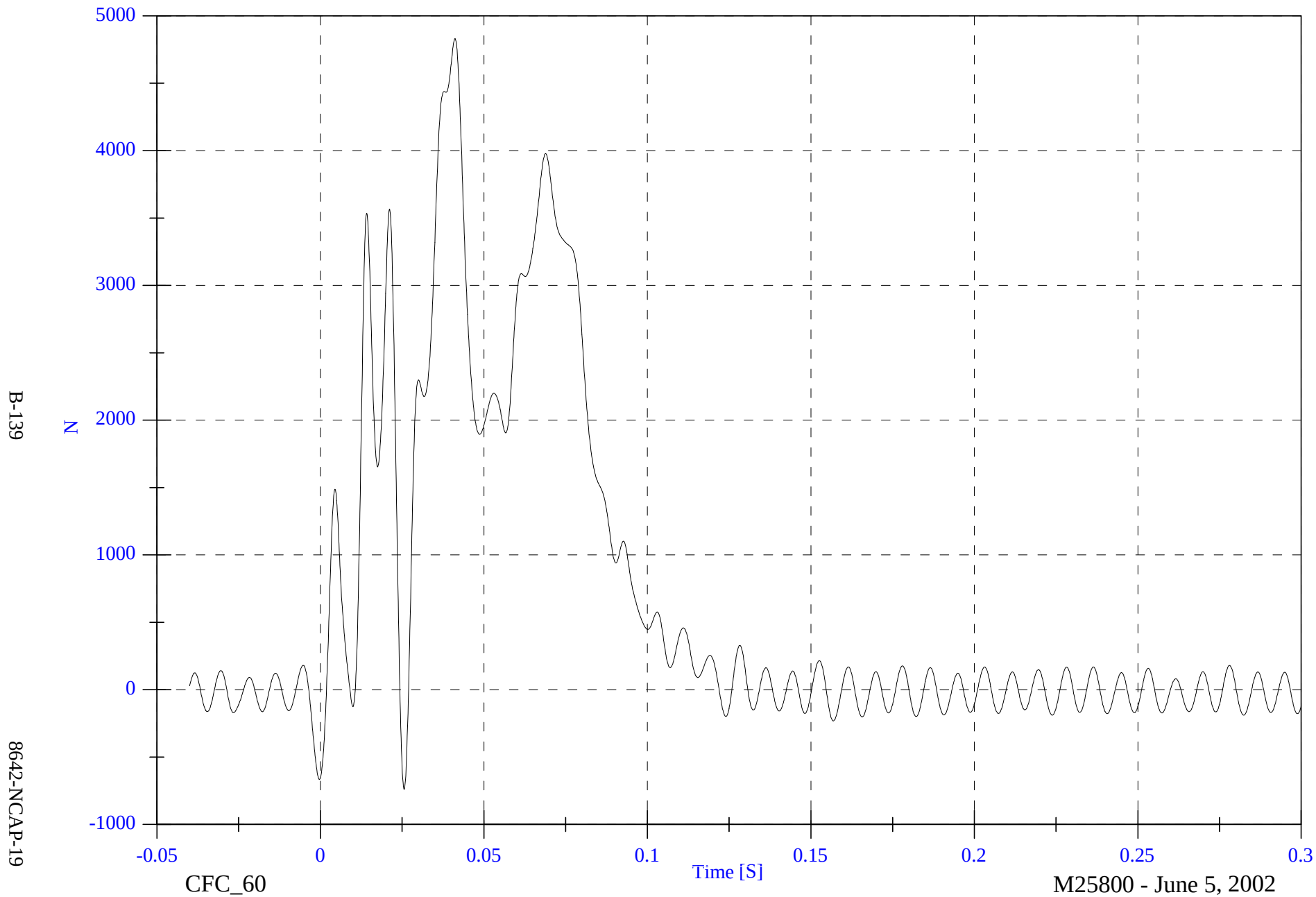


NCAP Test 19- 2002 Audi A4

Barrier Load Cell A3 Fx

Max: 4832.1 [N] at 0.041 [S]

Min: -740.6 [N] at 0.026 [S]

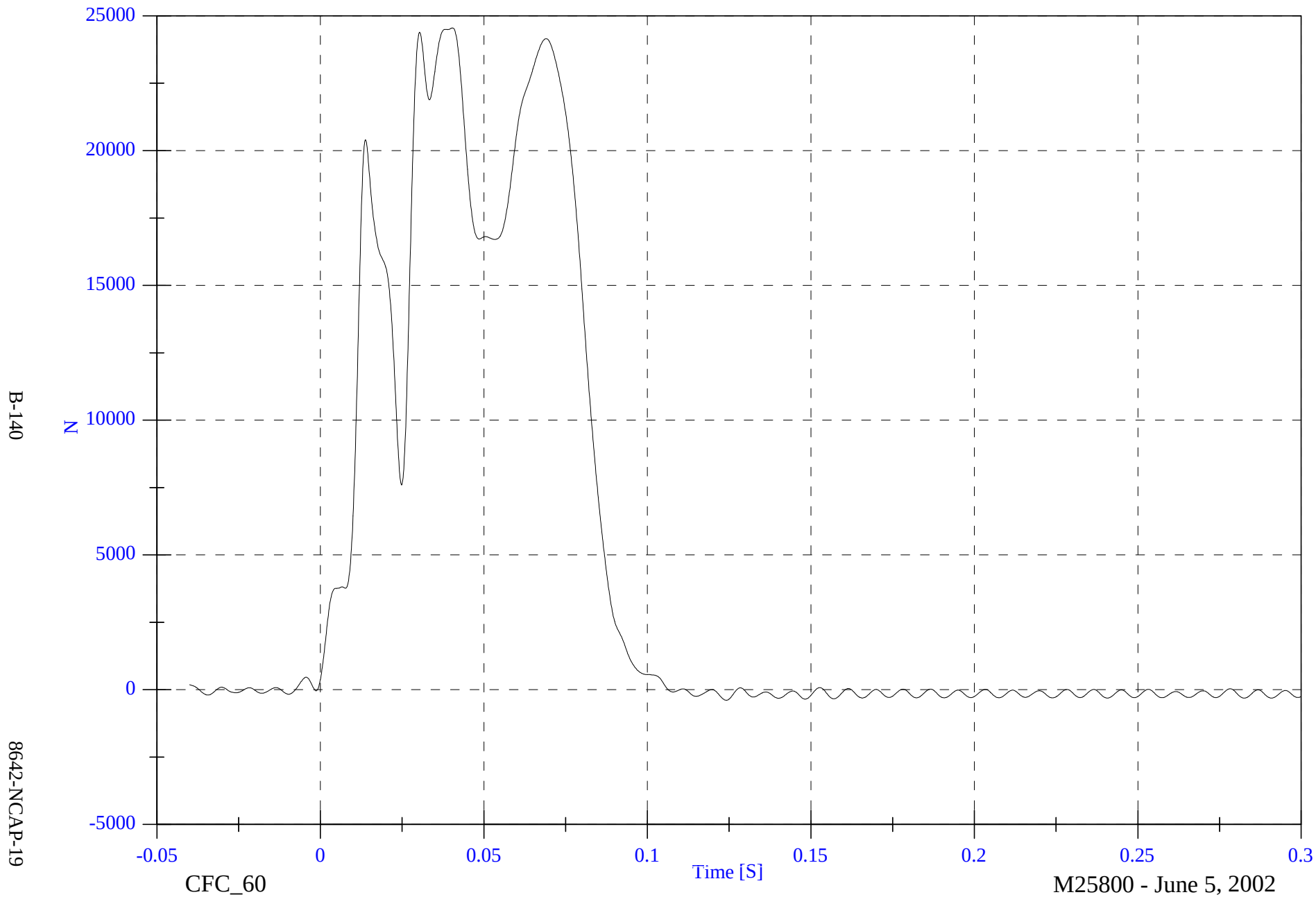


NCAP Test 19- 2002 Audi A4

Barrier Load Cell A4 Fx

Max: 24553.2 [N] at 0.040 [S]

Min: -390.3 [N] at 0.124 [S]

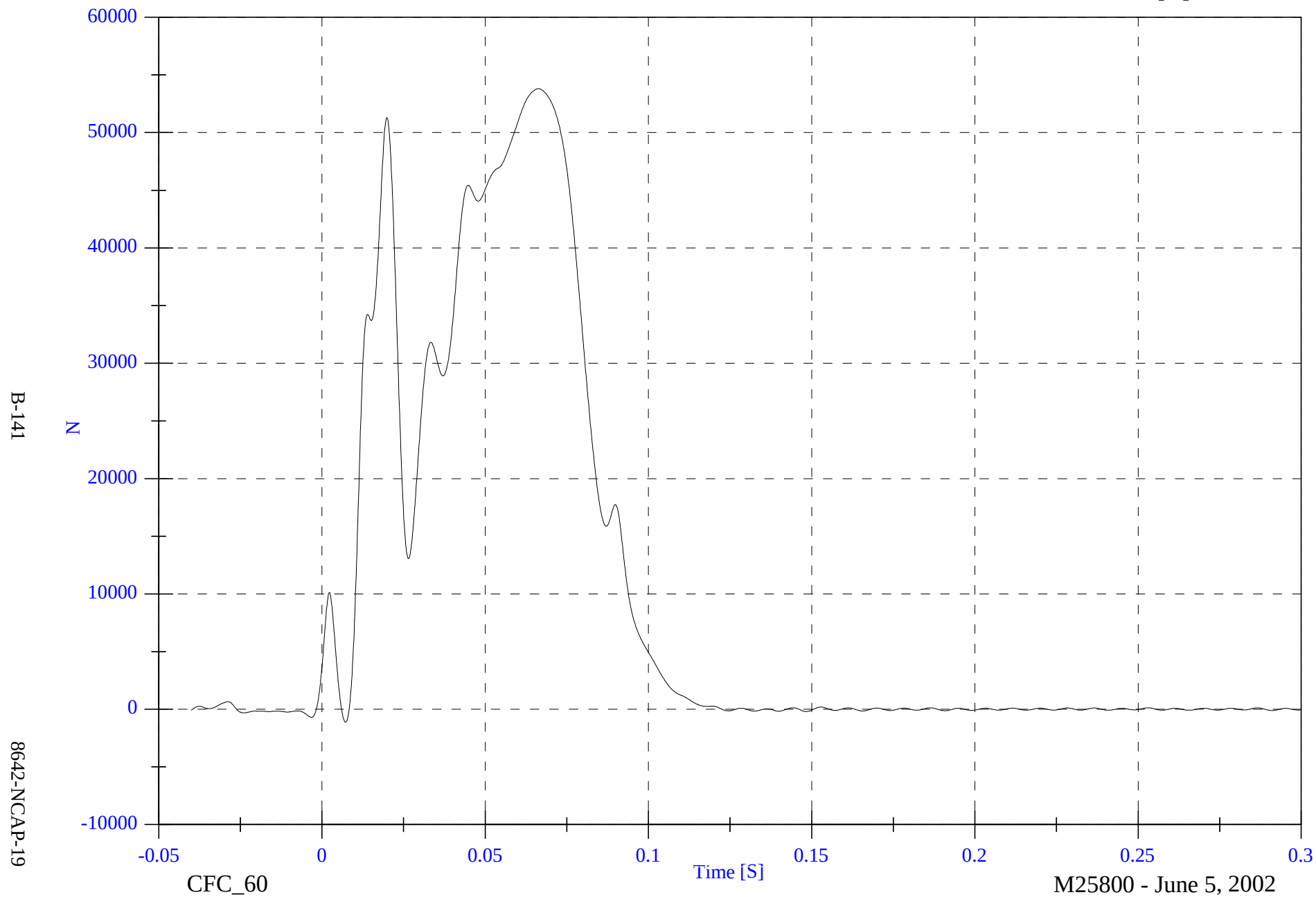


NCAP Test 19- 2002 Audi A4

Barrier Load Cell A5 Fx

Max: 53803.5 [N] at 0.066 [S]

Min: -1122.3 [N] at 0.007 [S]

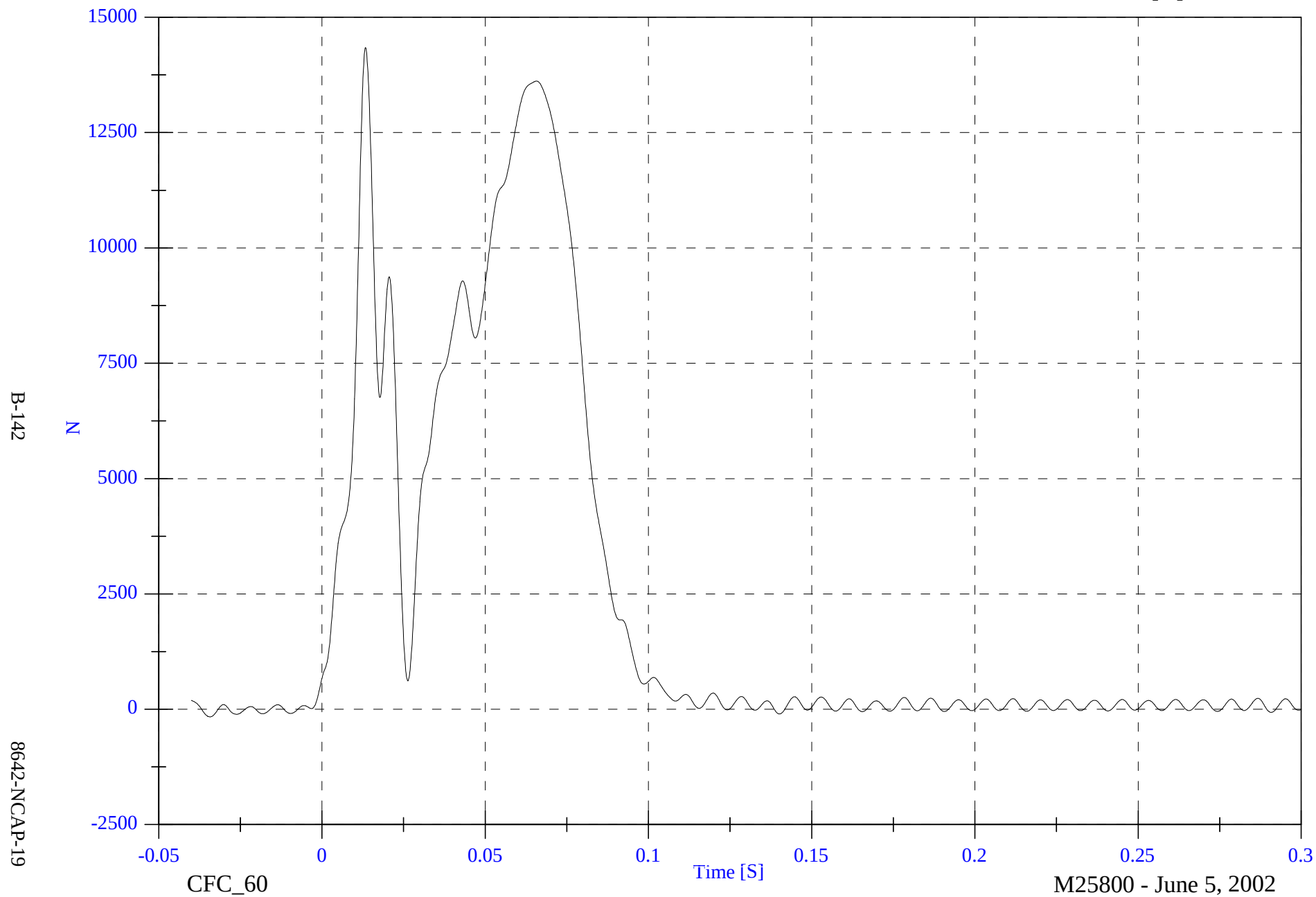


NCAP Test 19- 2002 Audi A4

Barrier Load Cell A6 Fx

Max: 14342.2 [N] at 0.013 [S]

Min: -165.1 [N] at -0.034 [S]



NCAP Test 19- 2002 Audi A4

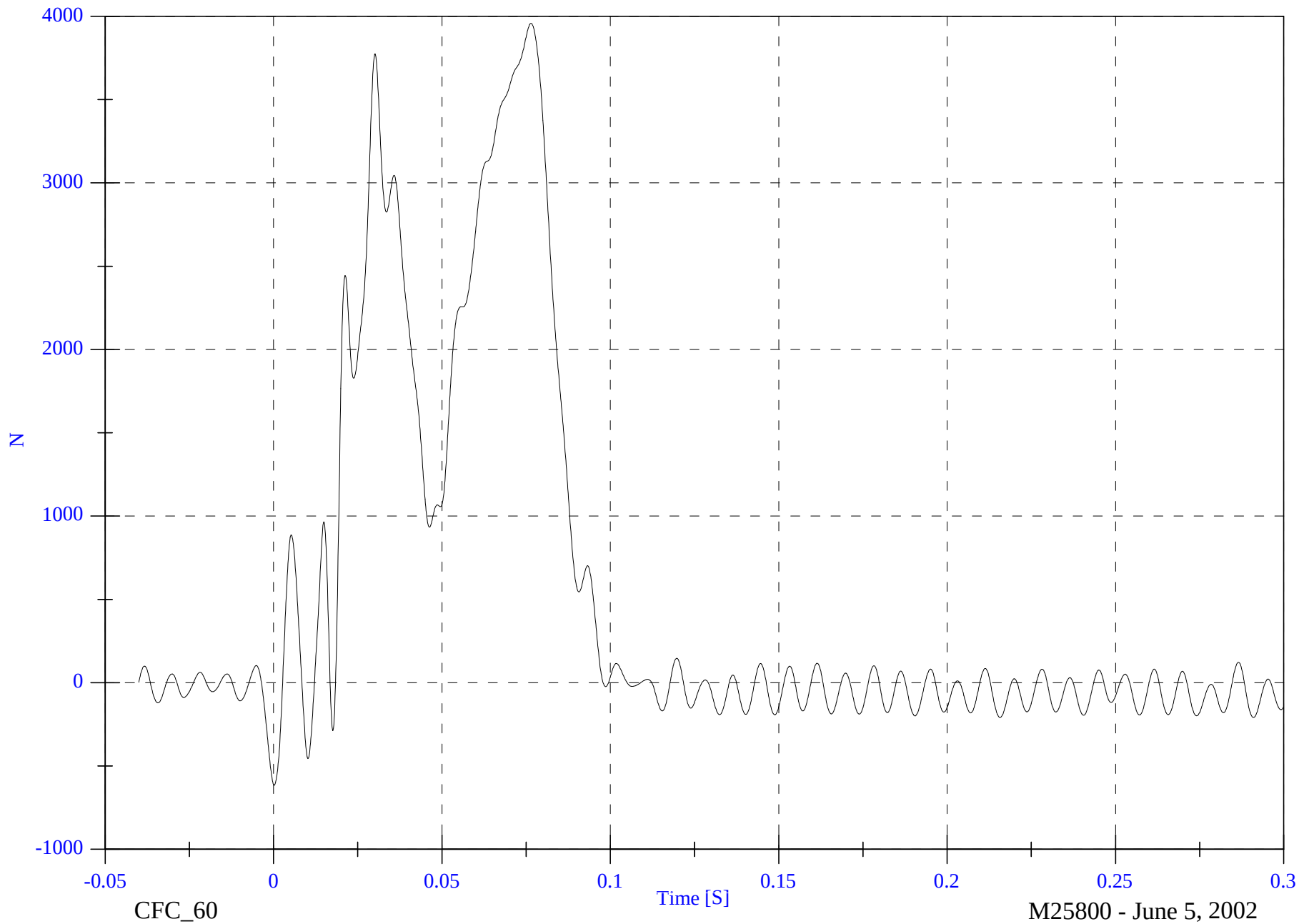
Barrier Load Cell A7 Fx

Max: 3958.3 [N] at 0.076 [S]

Min: -615.8 [N] at 0.000 [S]

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8642-NCAP-19

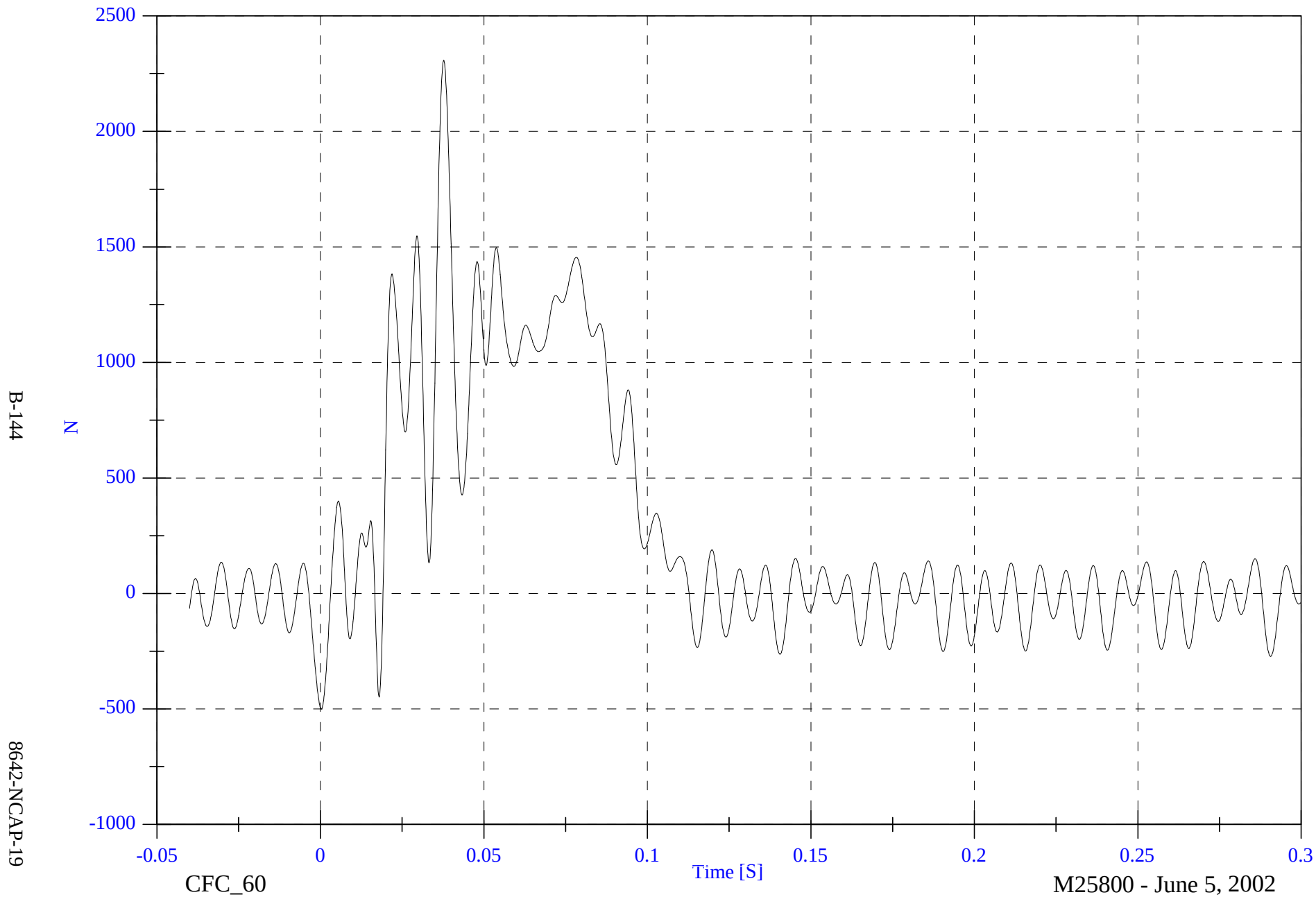


NCAP Test 19- 2002 Audi A4

Barrier Load Cell A8 Fx

Max: 2307.9 [N] at 0.038 [S]

Min: -500.5 [N] at 0.000 [S]

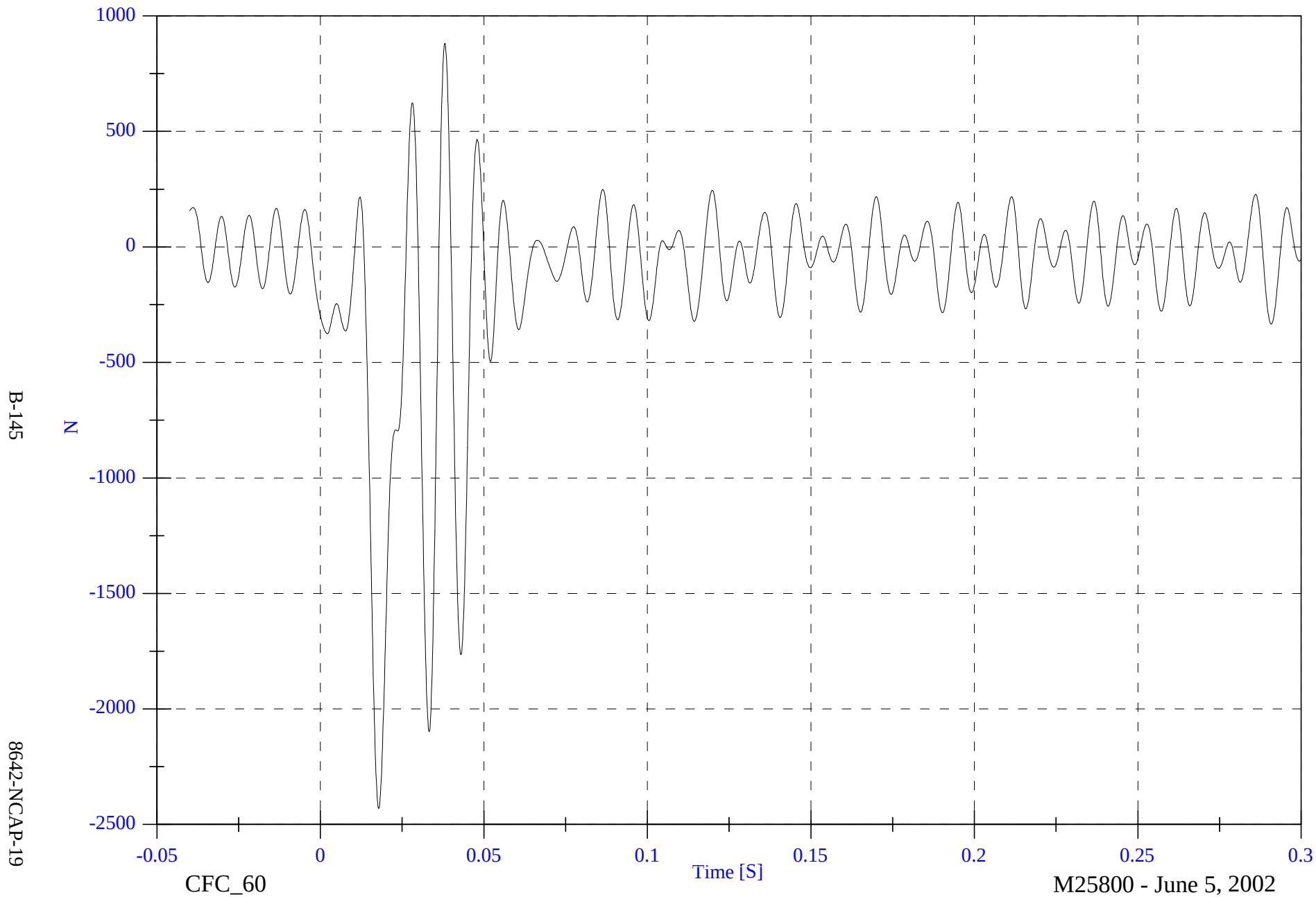


NCAP Test 19- 2002 Audi A4

Barrier Load Cell A9 Fx

Max: 882.1 [N] at 0.038 [S]

Min: -2430.7 [N] at 0.018 [S]

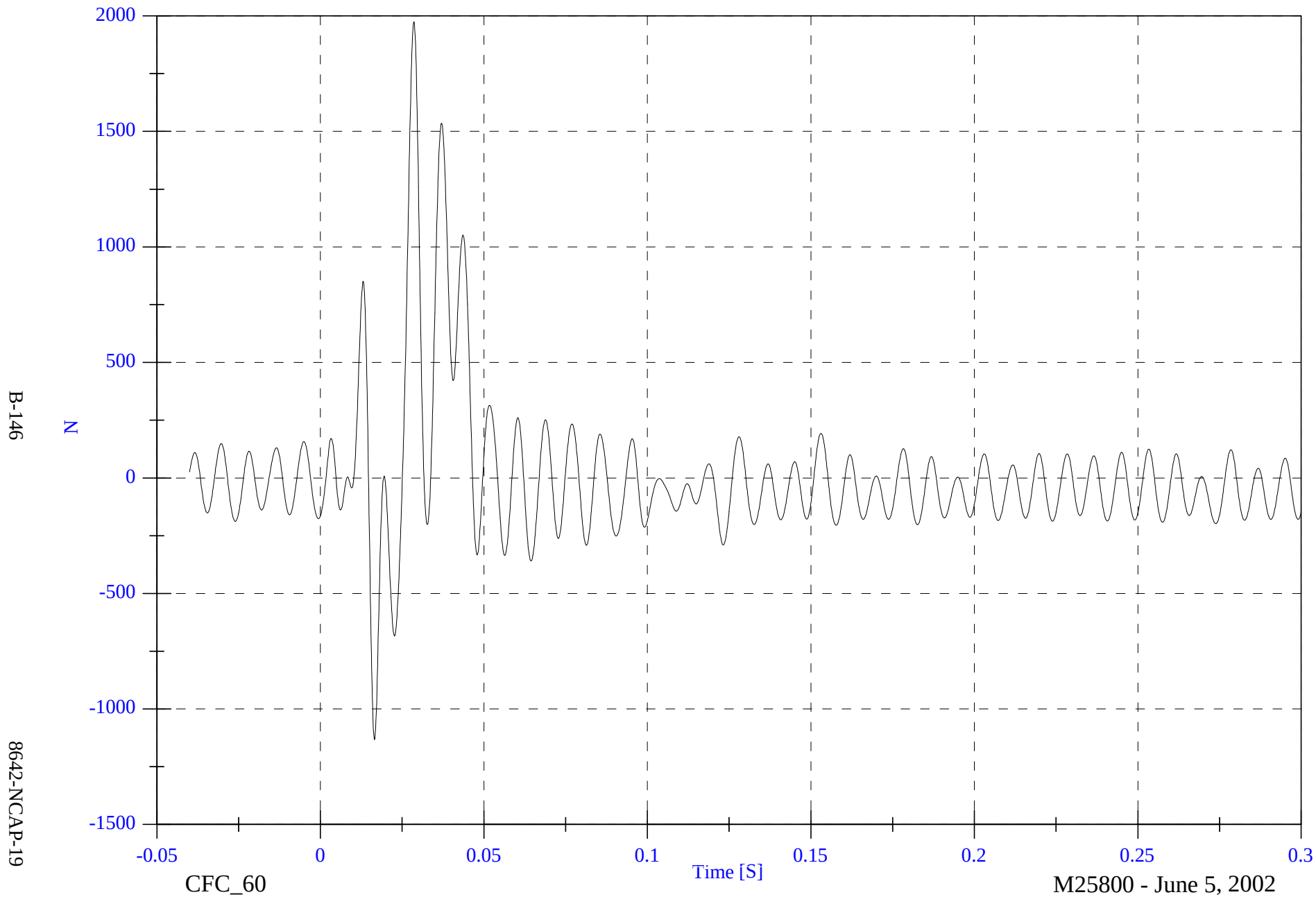


NCAP Test 19- 2002 Audi A4

Barrier Load Cell B1 Fx

Max: 1974.8 [N] at 0.029 [S]

Min: -1132.4 [N] at 0.017 [S]

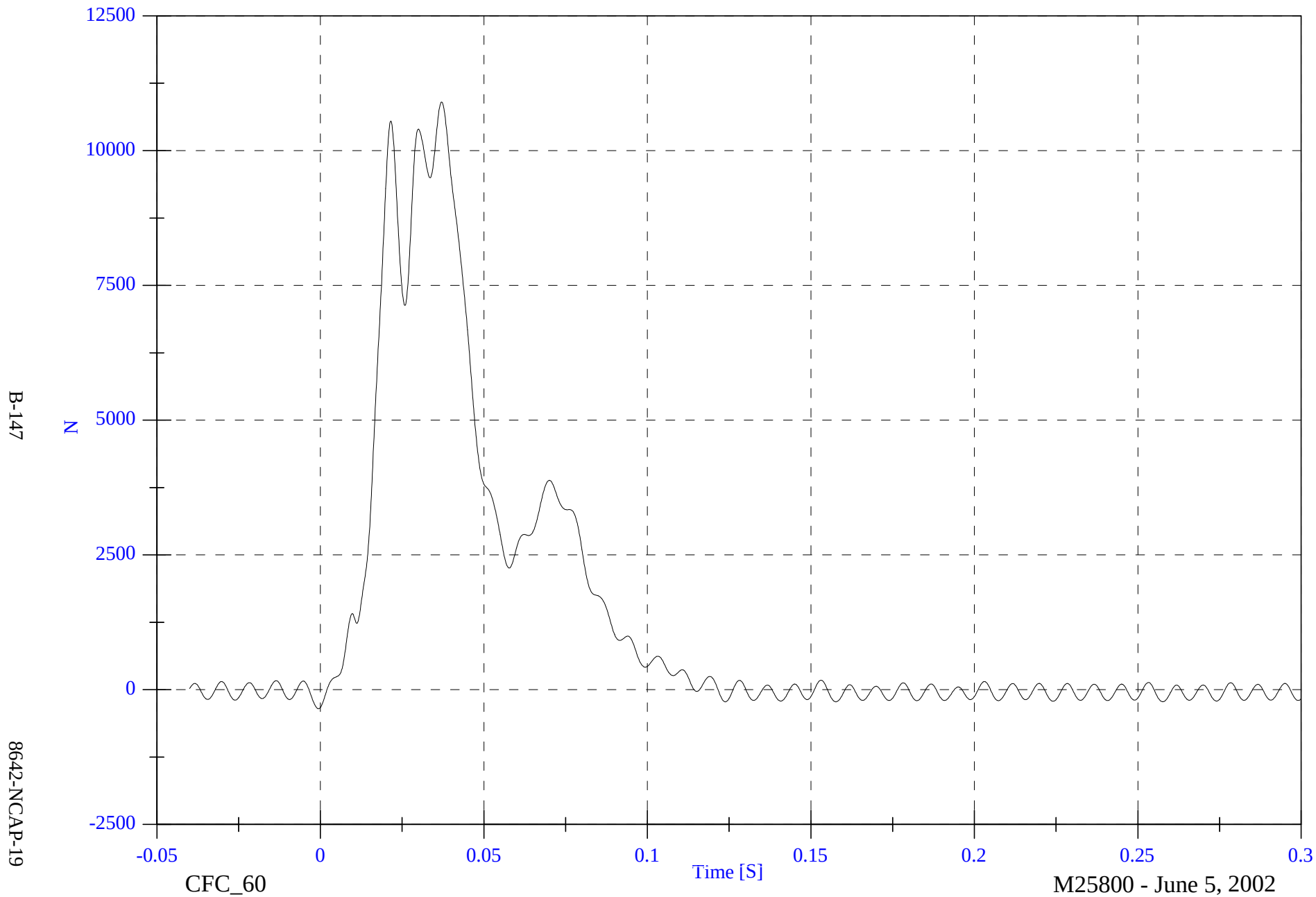


NCAP Test 19- 2002 Audi A4

Barrier Load Cell B2 Fx

Max: 10900.5 [N] at 0.037 [S]

Min: -354.0 [N] at -0.001 [S]

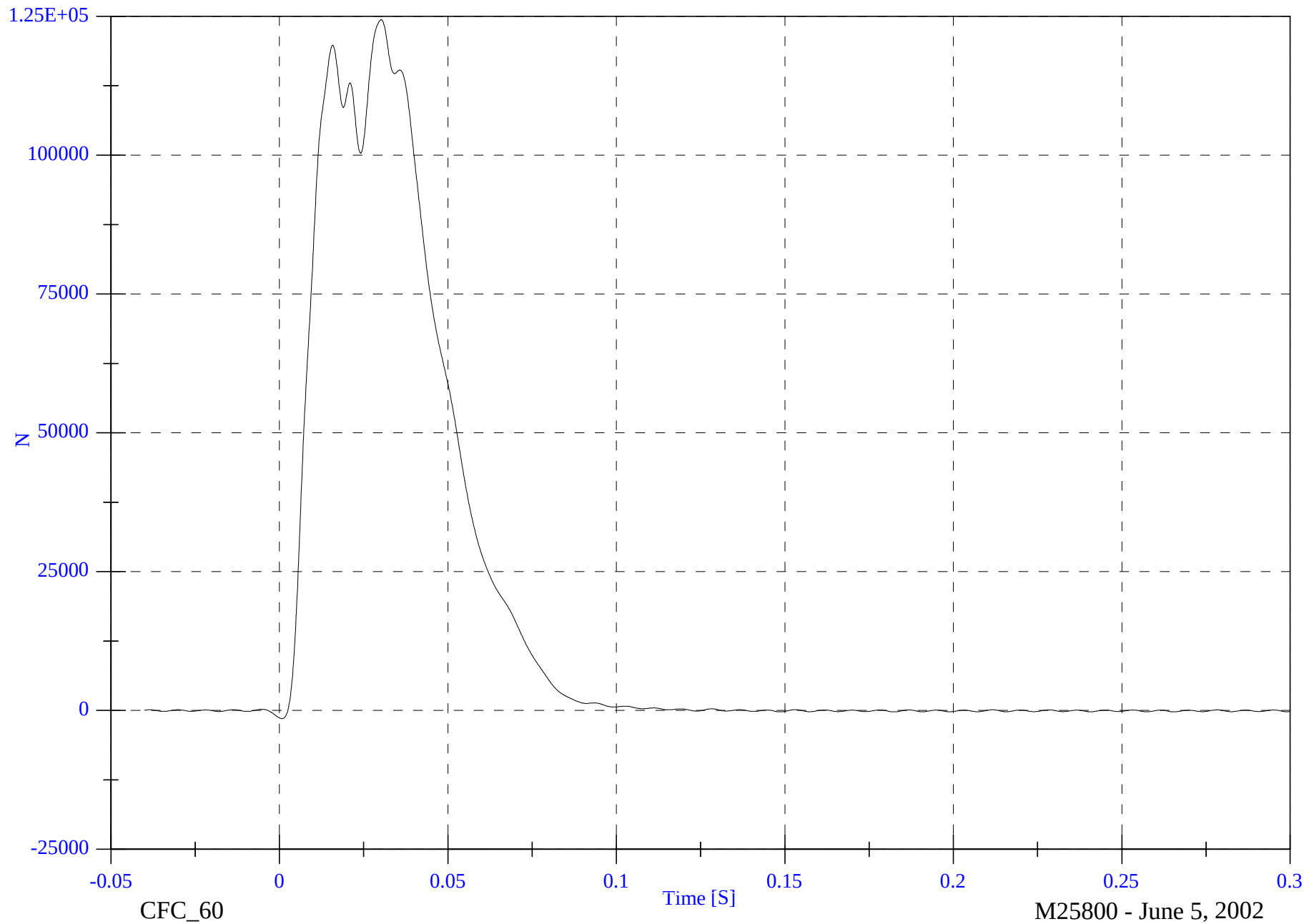


NCAP Test 19- 2002 Audi A4

Barrier Load Cell B3 Fx

Max: 124386.7 [N] at 0.030 [S]

Min: -1466.5 [N] at 0.001 [S]

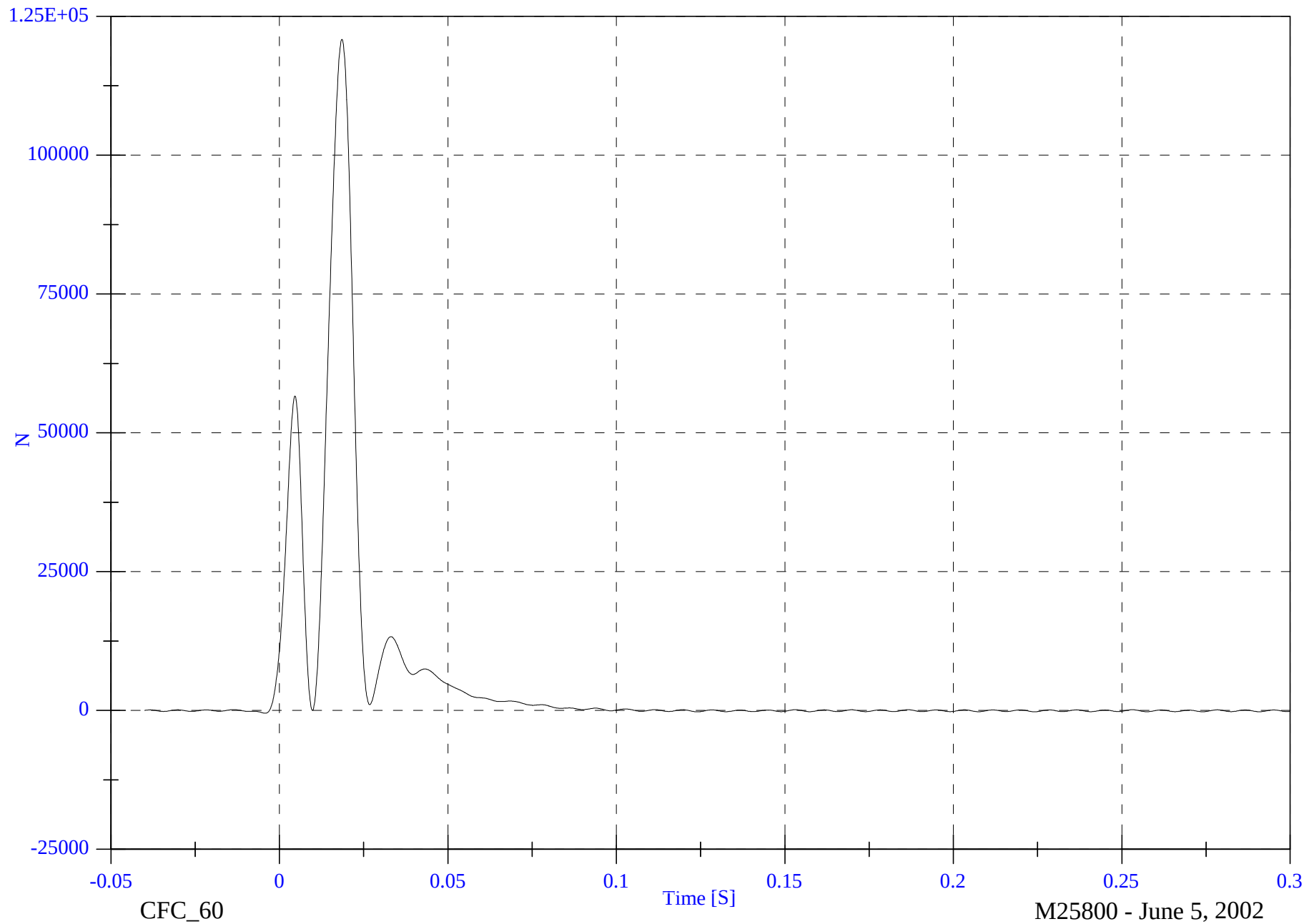


NCAP Test 19- 2002 Audi A4

Barrier Load Cell B4 Fx

Max: 120858.9 [N] at 0.019 [S]

Min: -500.4 [N] at -0.004 [S]

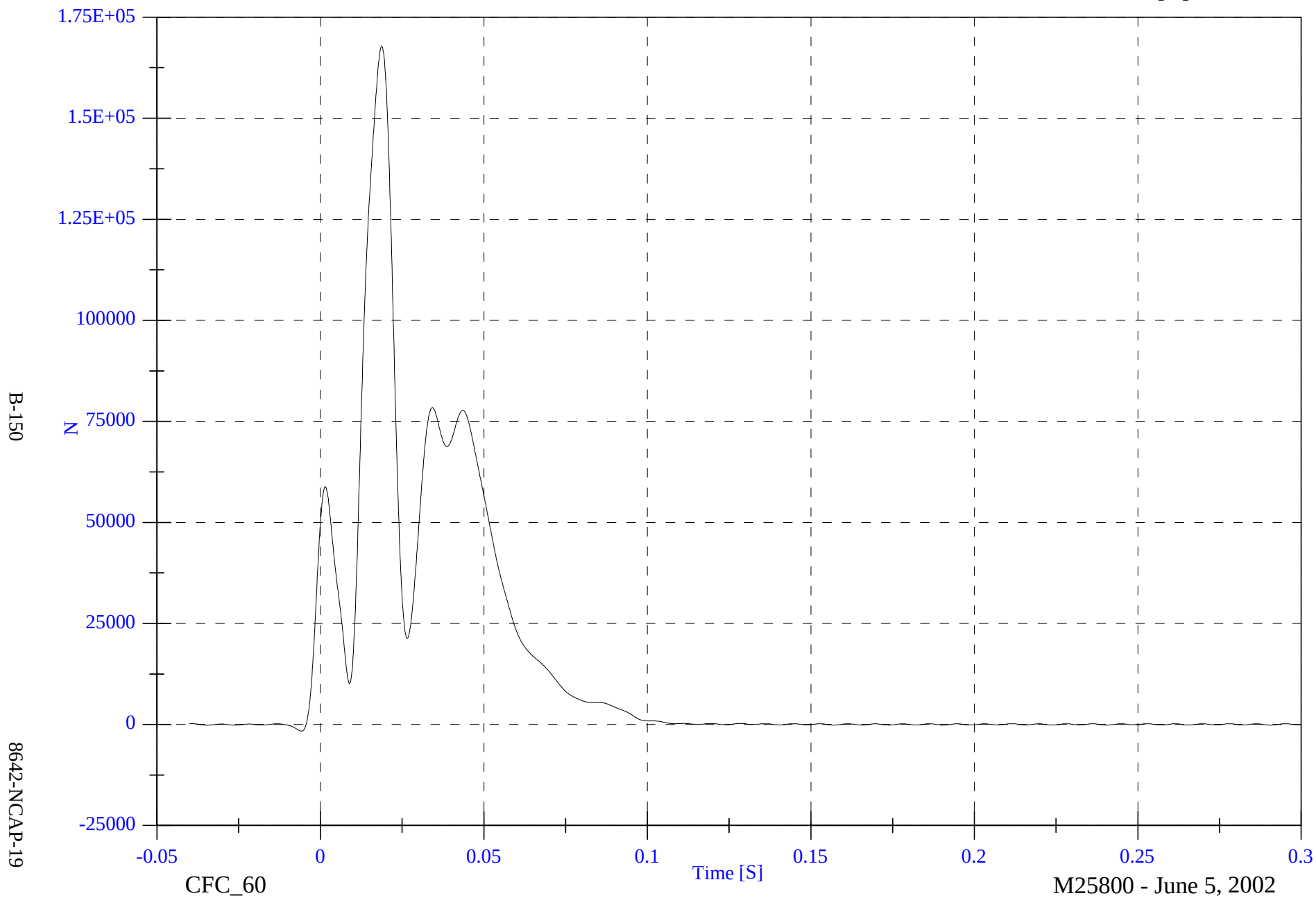


NCAP Test 19- 2002 Audi A4

Barrier Load Cell B5 Fx

Max: 167820.6 [N] at 0.019 [S]

Min: -1650.2 [N] at -0.006 [S]

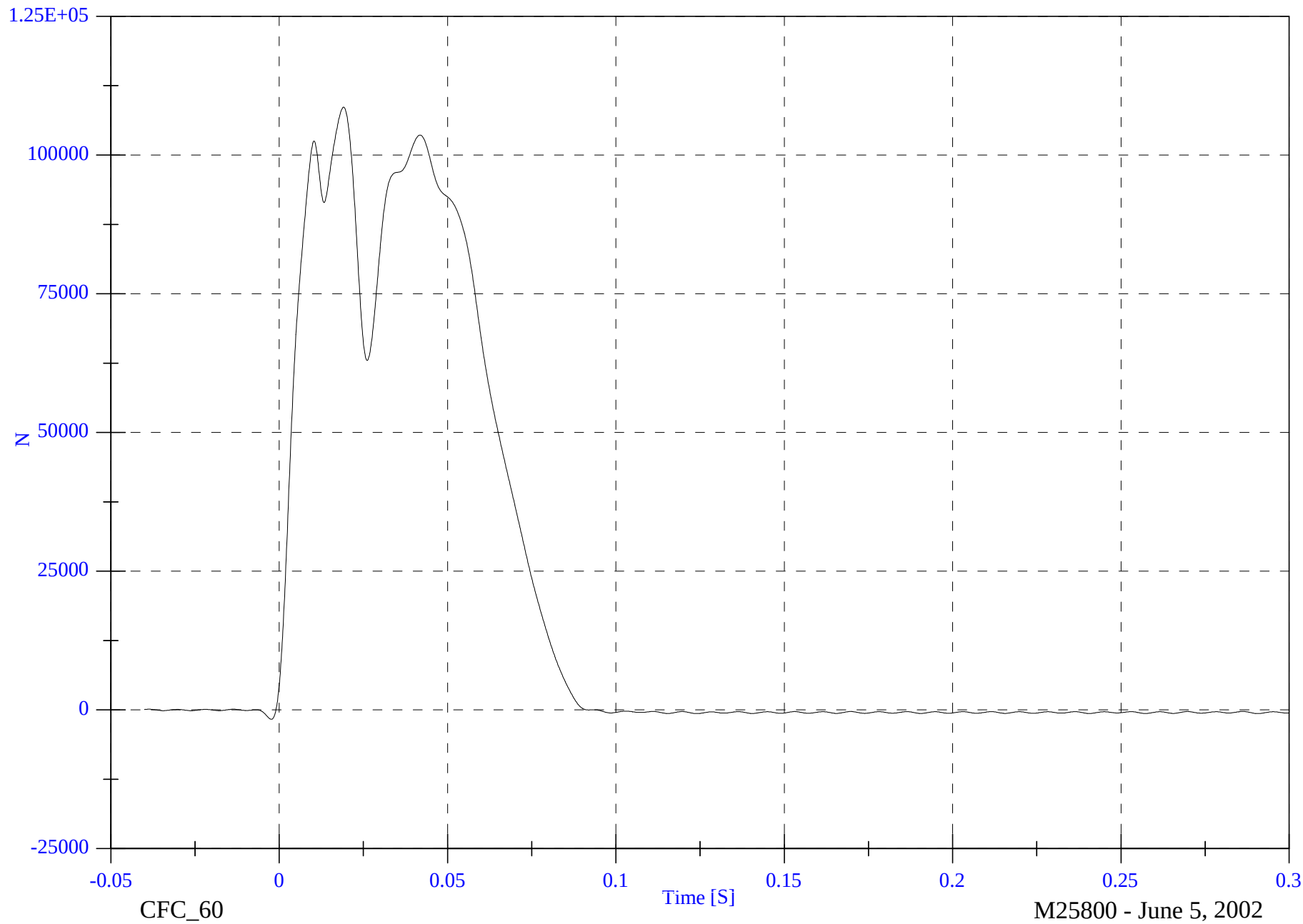


NCAP Test 19- 2002 Audi A4

Barrier Load Cell B6 Fx

Max: 108630.5 [N] at 0.019 [S]

Min: -1689.4 [N] at -0.002 [S]

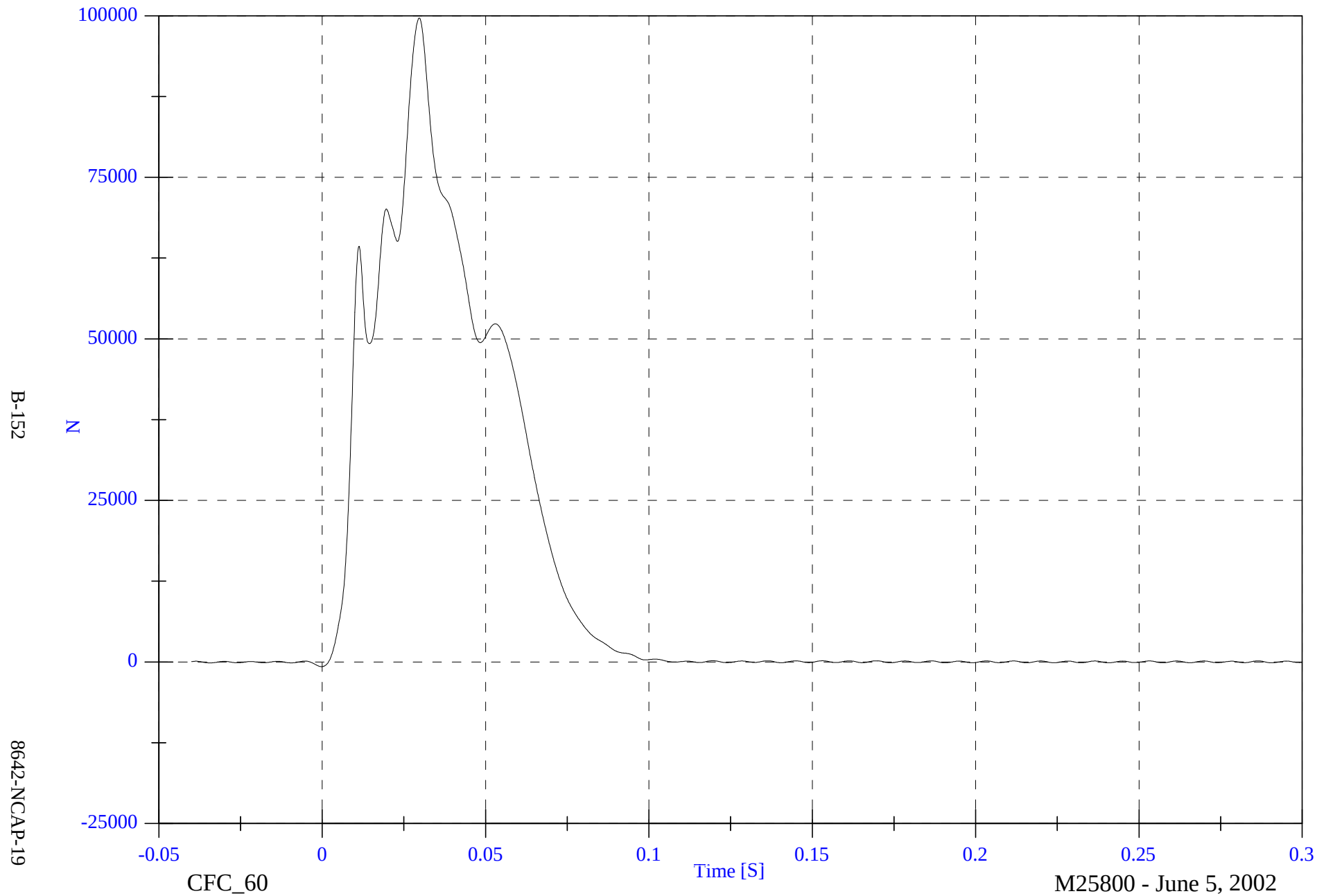


NCAP Test 19- 2002 Audi A4

Barrier Load Cell B7 Fx

Max: 99670.6 [N] at 0.030 [S]

Min: -725.9 [N] at -0.000 [S]

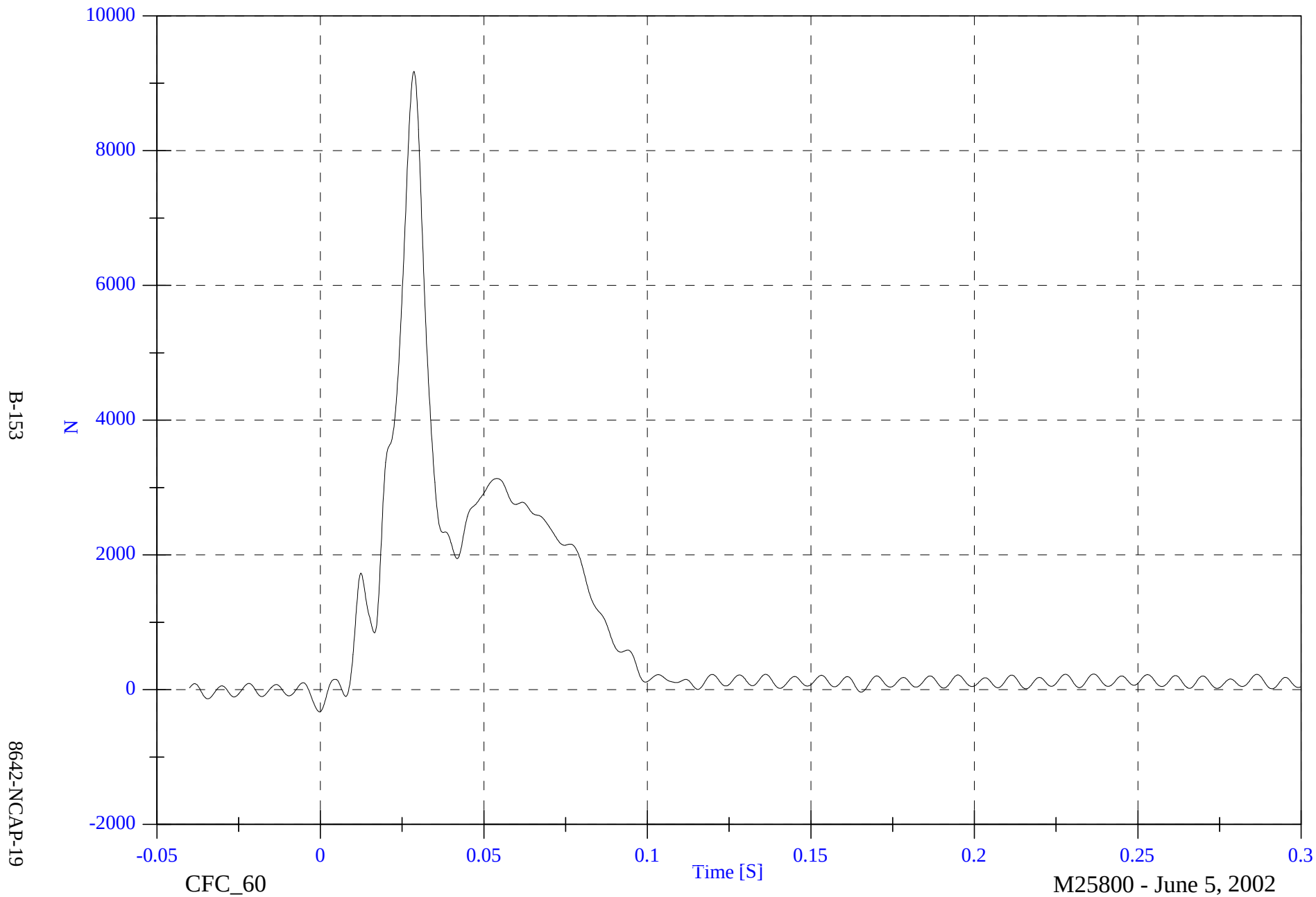


NCAP Test 19- 2002 Audi A4

Barrier Load Cell B8 Fx

Max: 9175.7 [N] at 0.029 [S]

Min: -329.1 [N] at -0.000 [S]

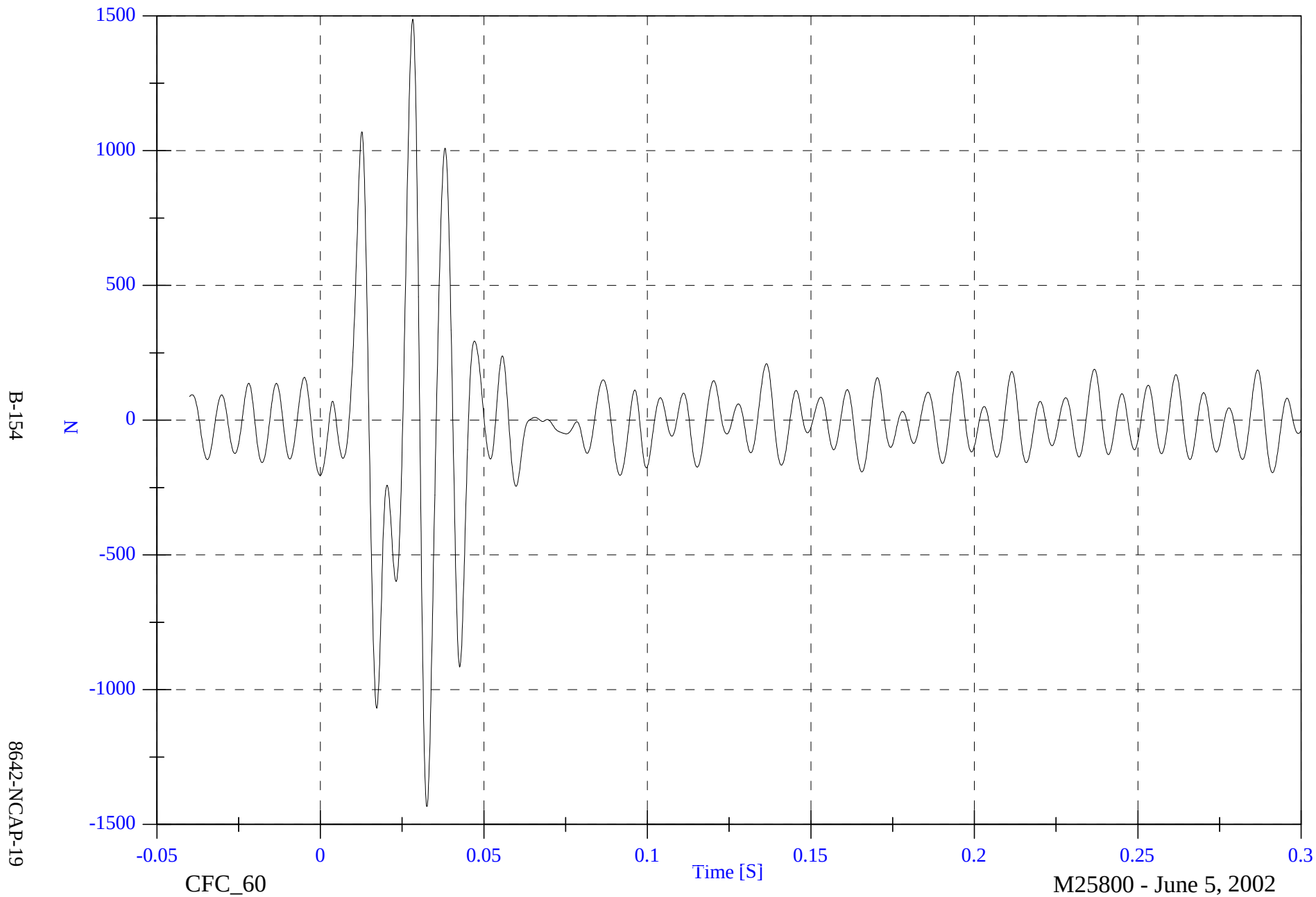


NCAP Test 19- 2002 Audi A4

Barrier Load Cell B9 Fx

Max: 1487.4 [N] at 0.028 [S]

Min: -1433.9 [N] at 0.033 [S]

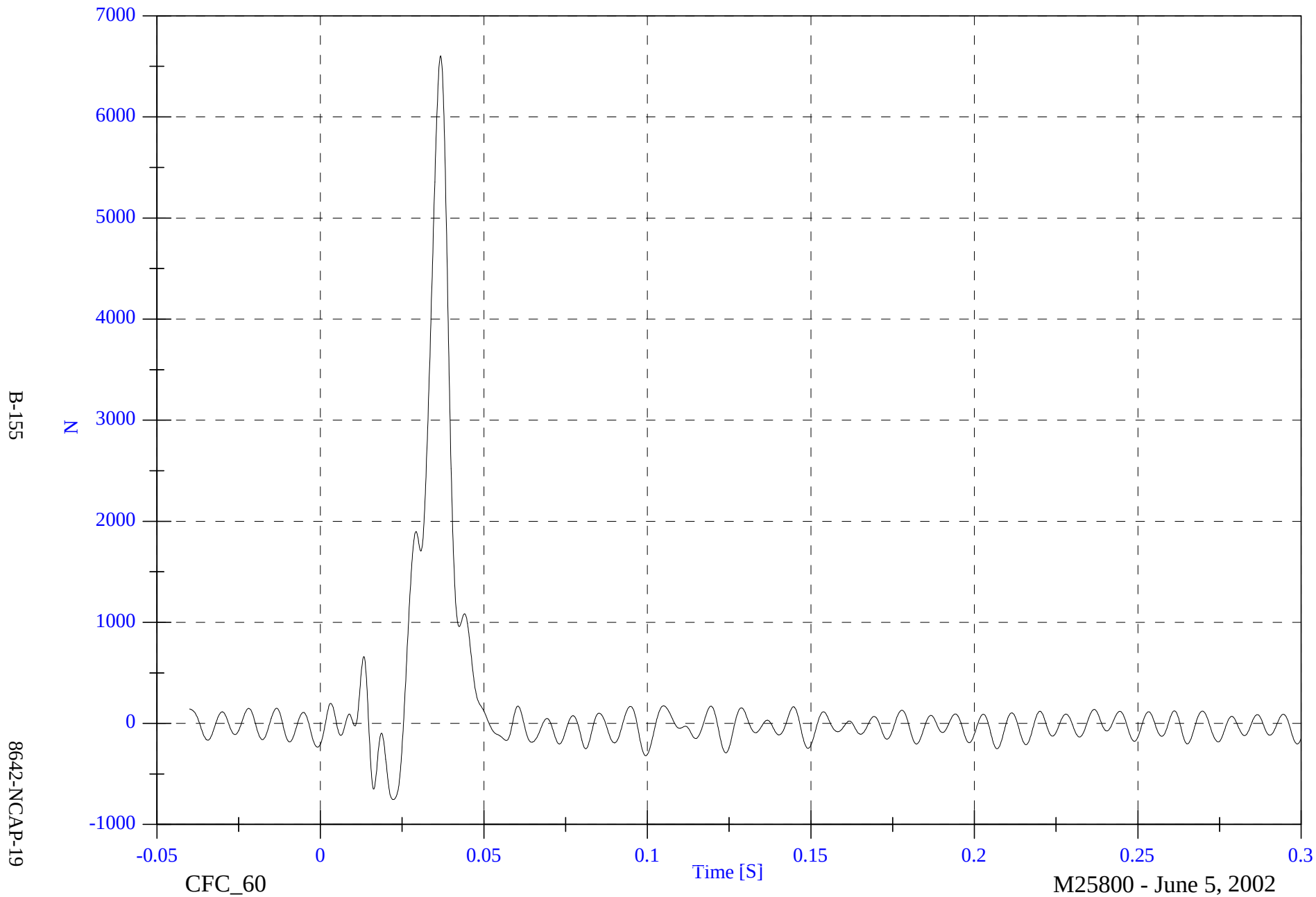


NCAP Test 19- 2002 Audi A4

Barrier Load Cell C1 Fx

Max: 6603.7 [N] at 0.037 [S]

Min: -754.5 [N] at 0.022 [S]

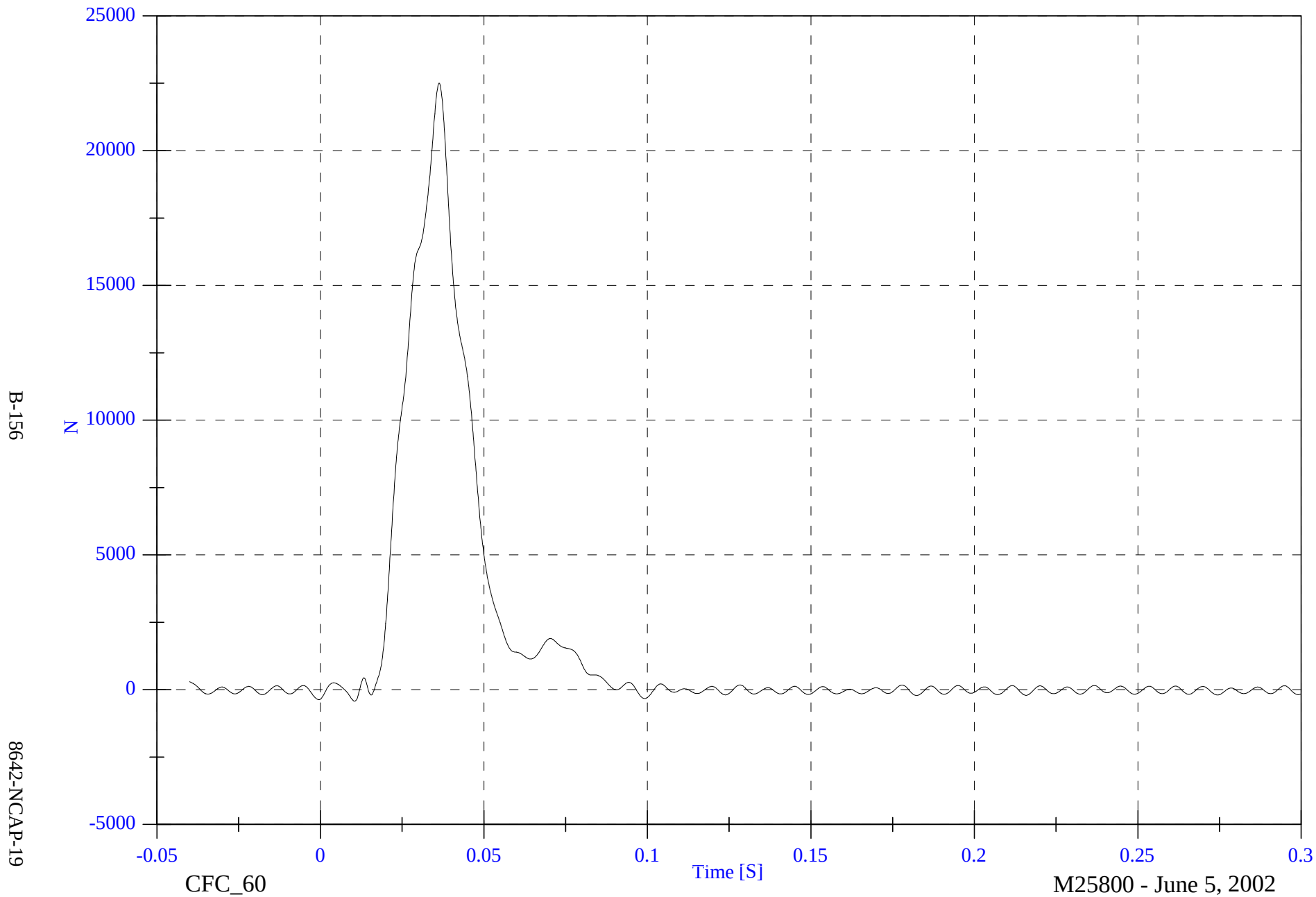


NCAP Test 19- 2002 Audi A4

Barrier Load Cell C2 Fx

Max: 22502.8 [N] at 0.036 [S]

Min: -424.8 [N] at 0.010 [S]

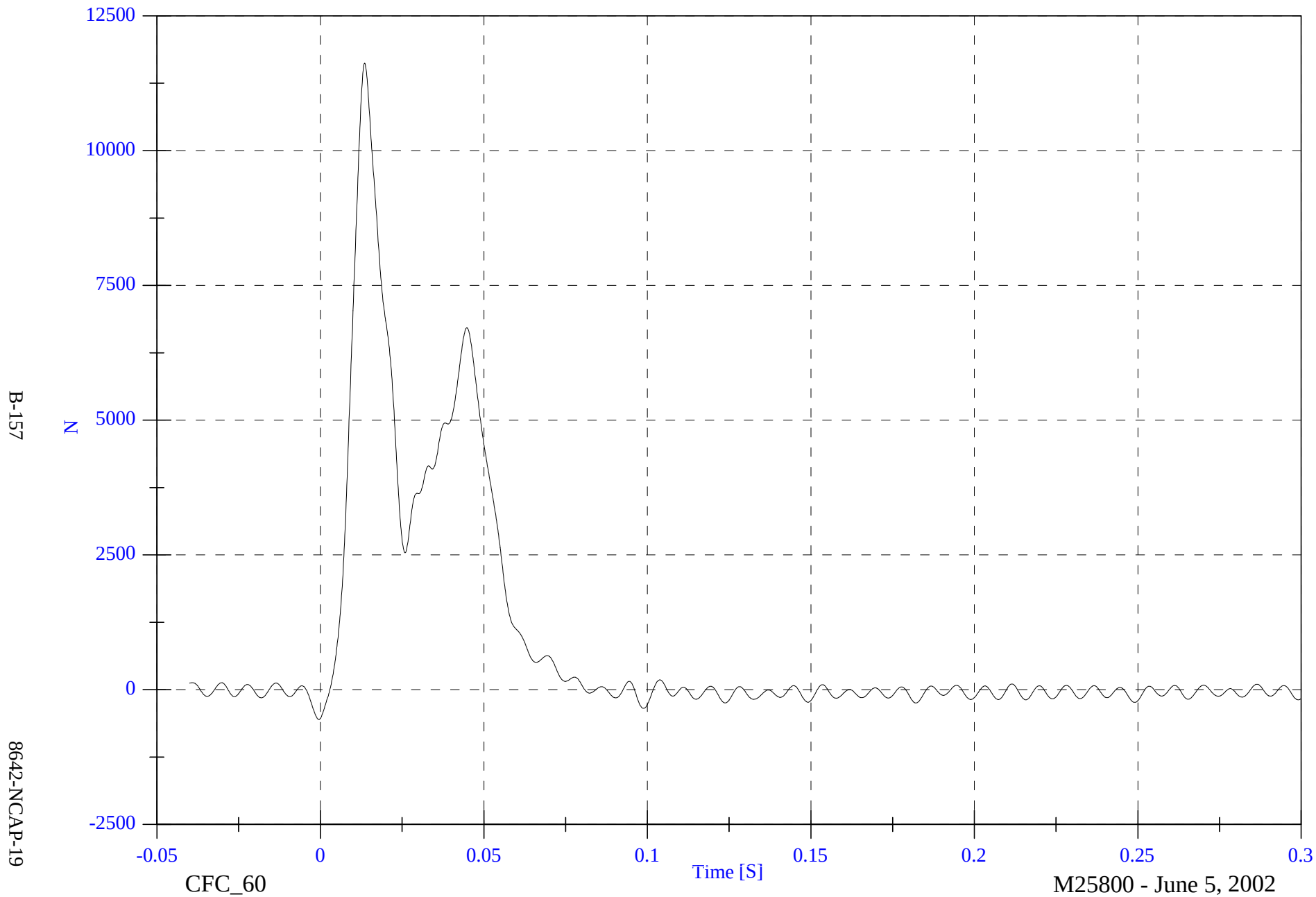


NCAP Test 19- 2002 Audi A4

Barrier Load Cell C3 Fx

Max: 11622.2 [N] at 0.013 [S]

Min: -553.4 [N] at -0.000 [S]

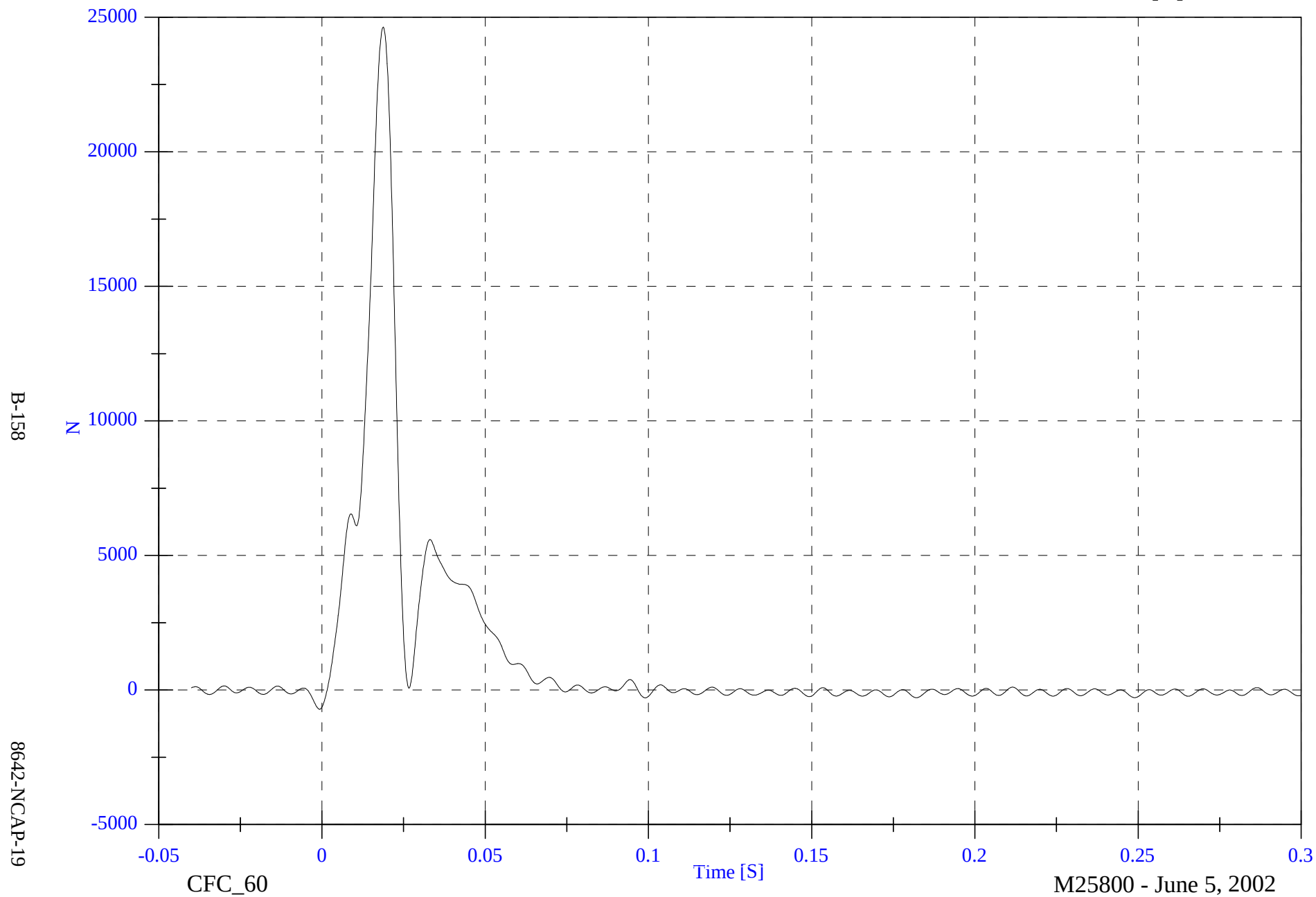


NCAP Test 19- 2002 Audi A4

Barrier Load Cell C4 Fx

Max: 24632.3 [N] at 0.019 [S]

Min: -716.3 [N] at -0.001 [S]

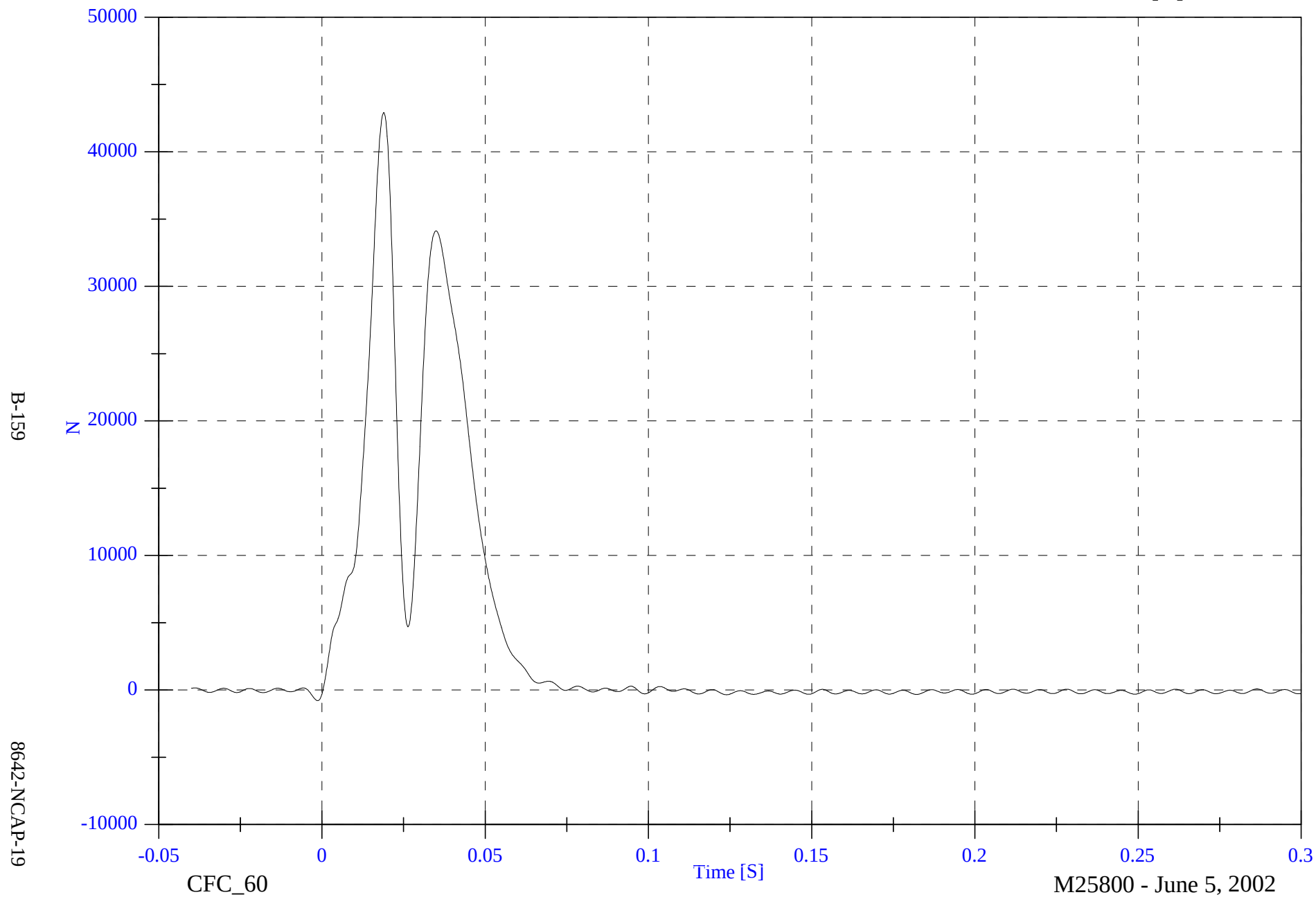


NCAP Test 19- 2002 Audi A4

Barrier Load Cell C5 Fx

Max: 42912.1 [N] at 0.019 [S]

Min: -787.4 [N] at -0.001 [S]

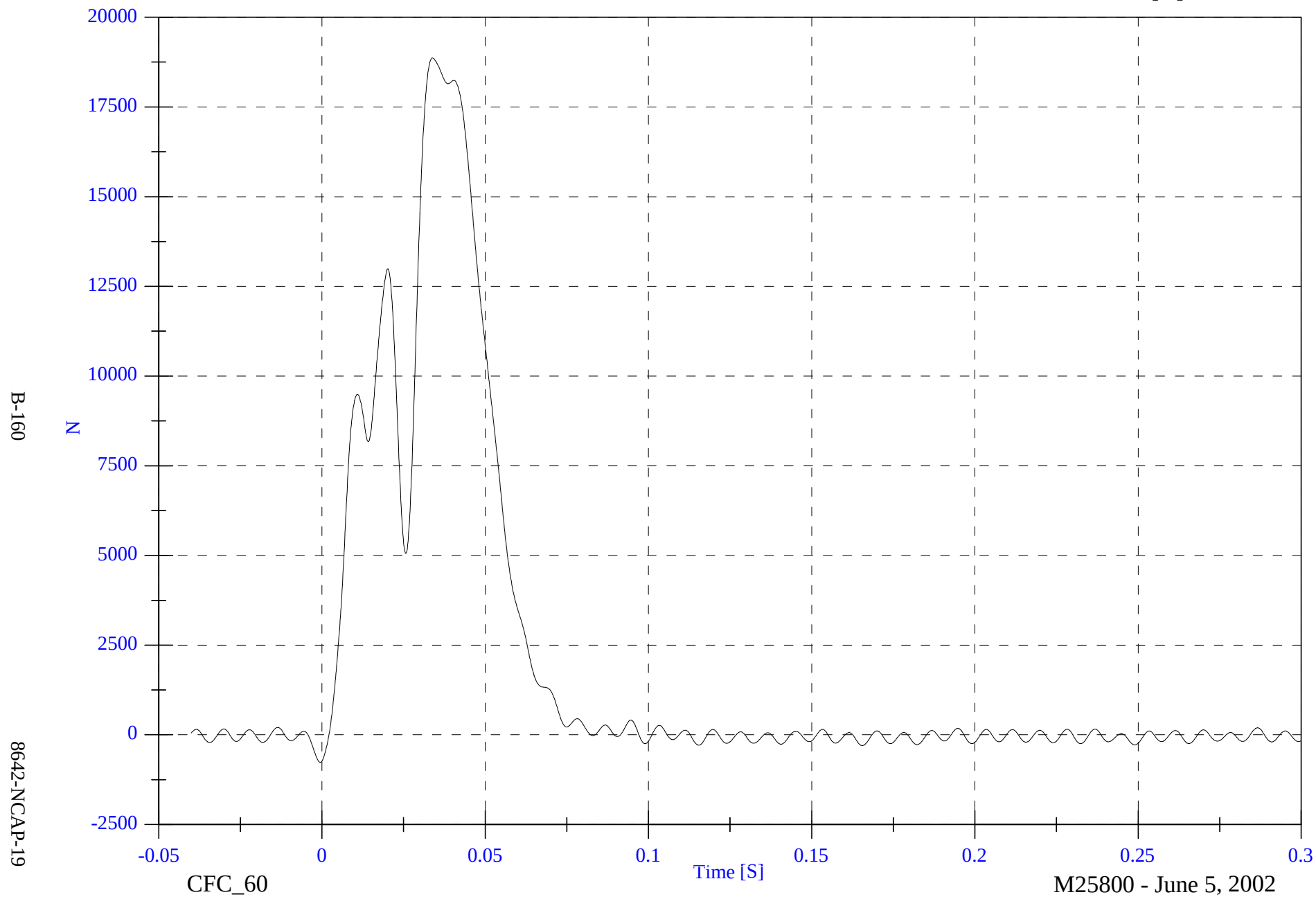


NCAP Test 19- 2002 Audi A4

Barrier Load Cell C6 Fx

Max: 18865.1 [N] at 0.034 [S]

Min: -770.1 [N] at -0.001 [S]

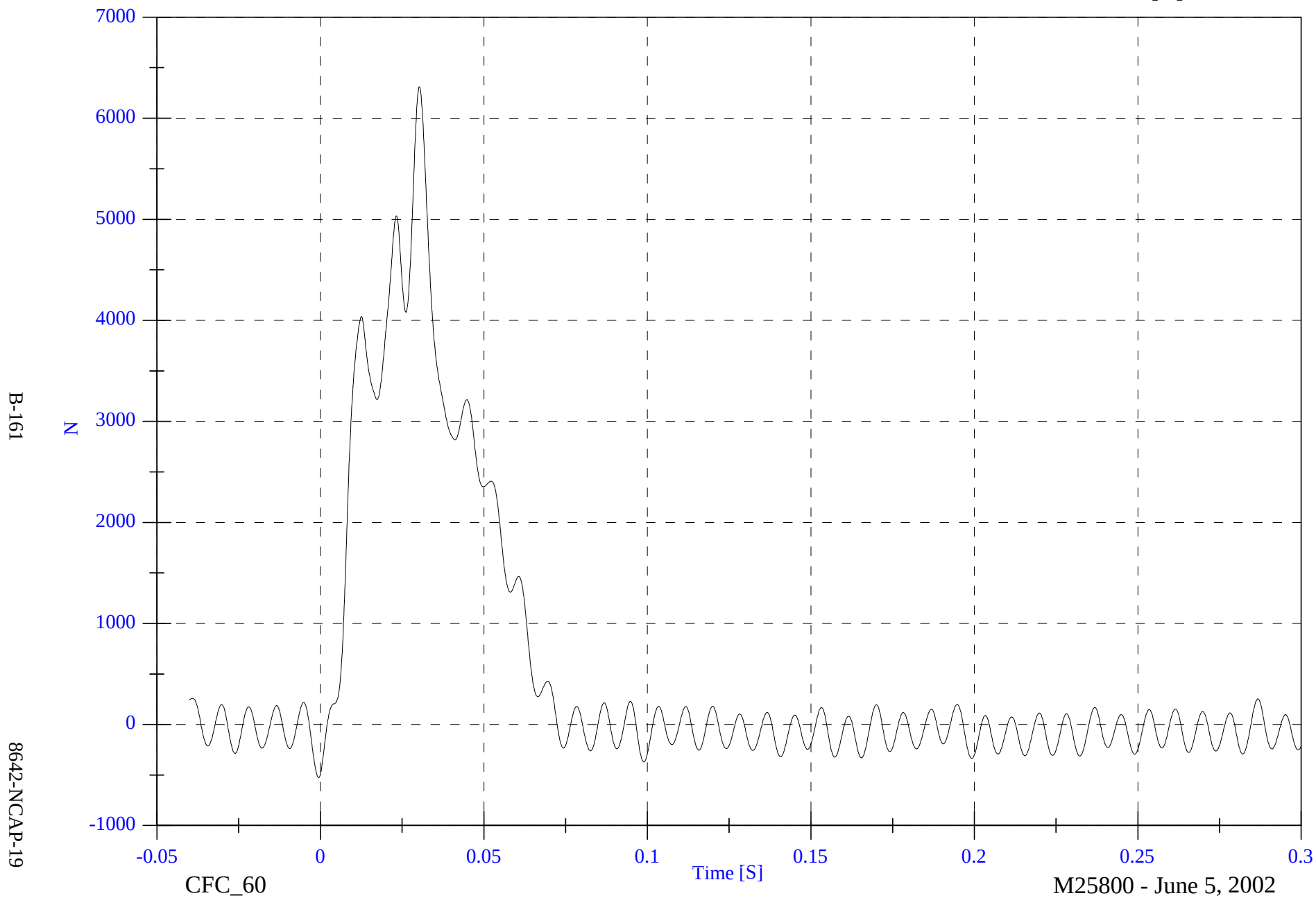


NCAP Test 19- 2002 Audi A4

Barrier Load Cell C7 Fx

Max: 6313.3 [N] at 0.030 [S]

Min: -526.8 [N] at -0.001 [S]

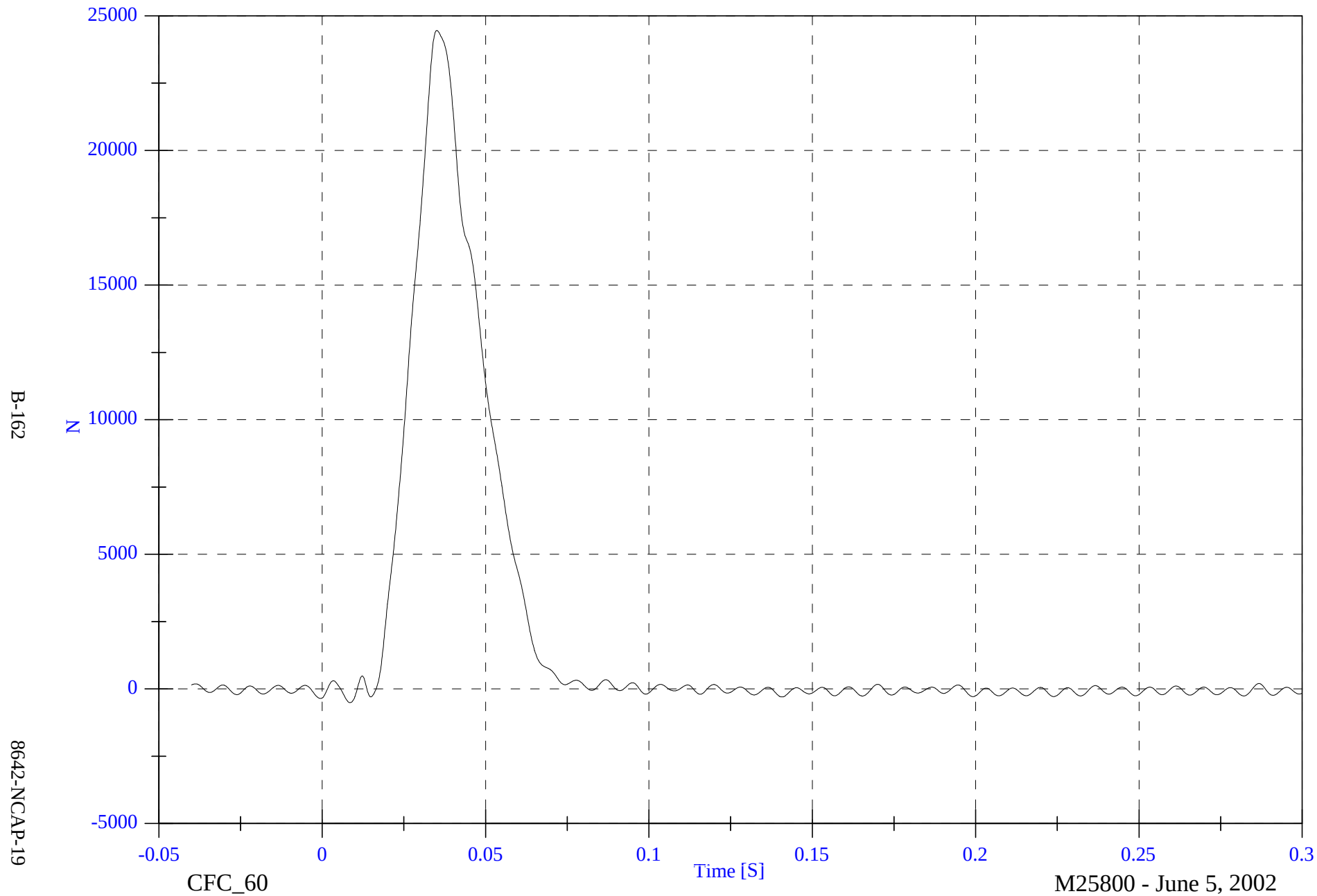


NCAP Test 19- 2002 Audi A4

Barrier Load Cell C8 Fx

Max: 24455.9 [N] at 0.035 [S]

Min: -509.7 [N] at 0.008 [S]

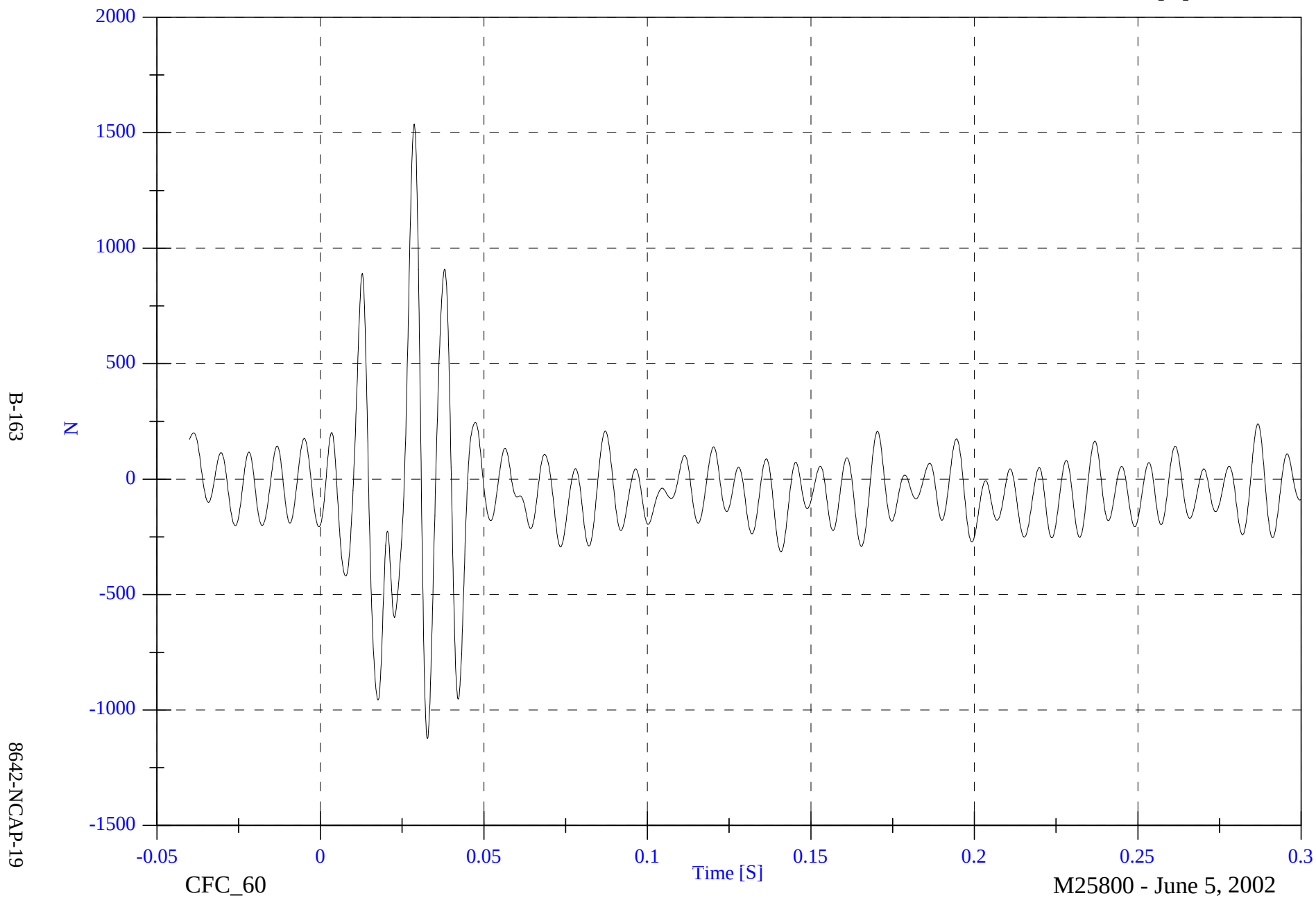


NCAP Test 19- 2002 Audi A4

Barrier Load Cell C9 Fx

Max: 1538.1 [N] at 0.029 [S]

Min: -1124.4 [N] at 0.033 [S]

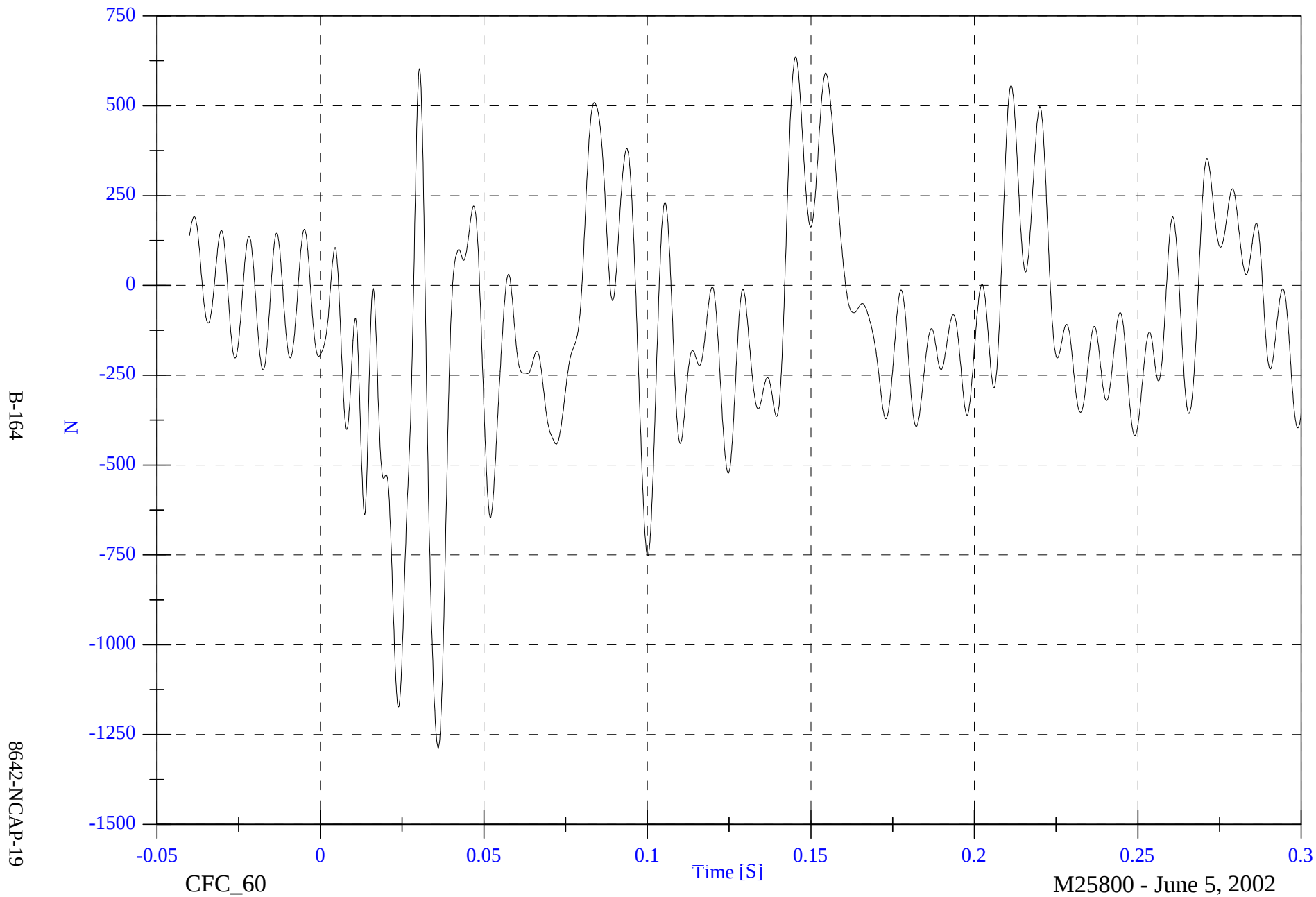


NCAP Test 19- 2002 Audi A4

Barrier Load Cell D1 Fx

Max: 636.0 [N] at 0.145 [S]

Min: -1287.2 [N] at 0.036 [S]

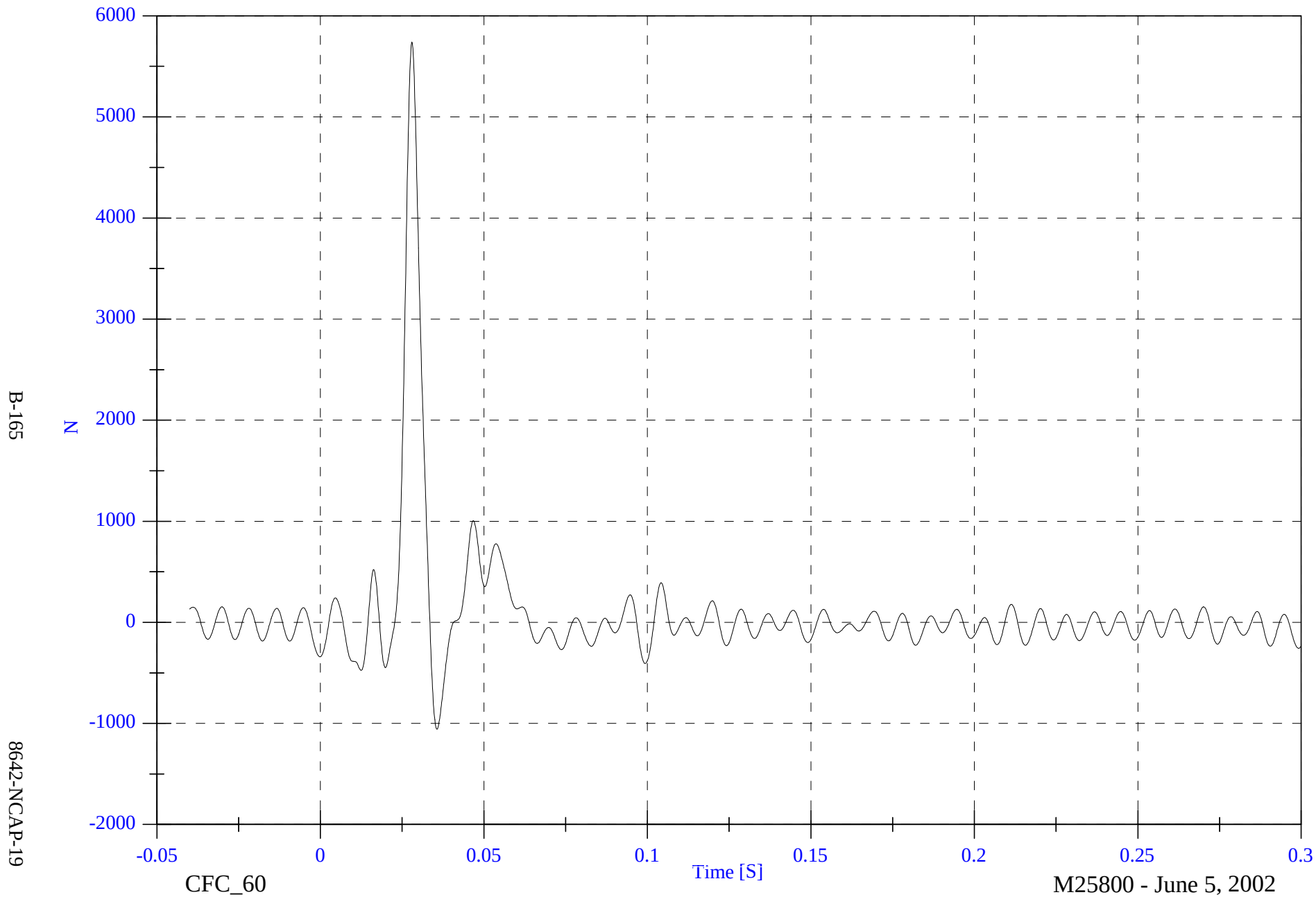


NCAP Test 19- 2002 Audi A4

Barrier Load Cell D2 Fx

Max: 5740.9 [N] at 0.028 [S]

Min: -1057.2 [N] at 0.036 [S]



NCAP Test 19- 2002 Audi A4

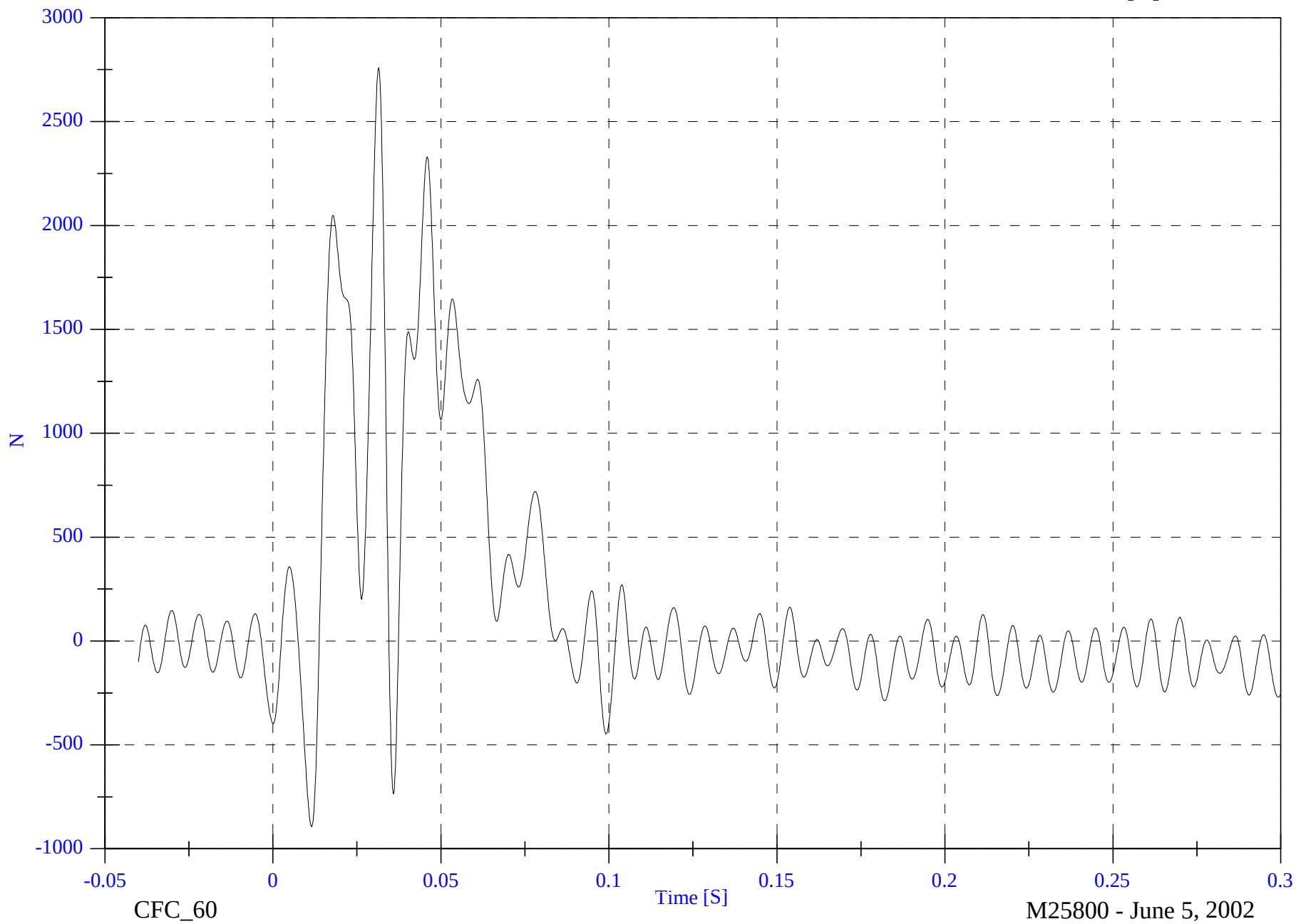
Barrier Load Cell D3 Fx

Max: 2759.0 [N] at 0.031 [S]

Min: -894.5 [N] at 0.011 [S]

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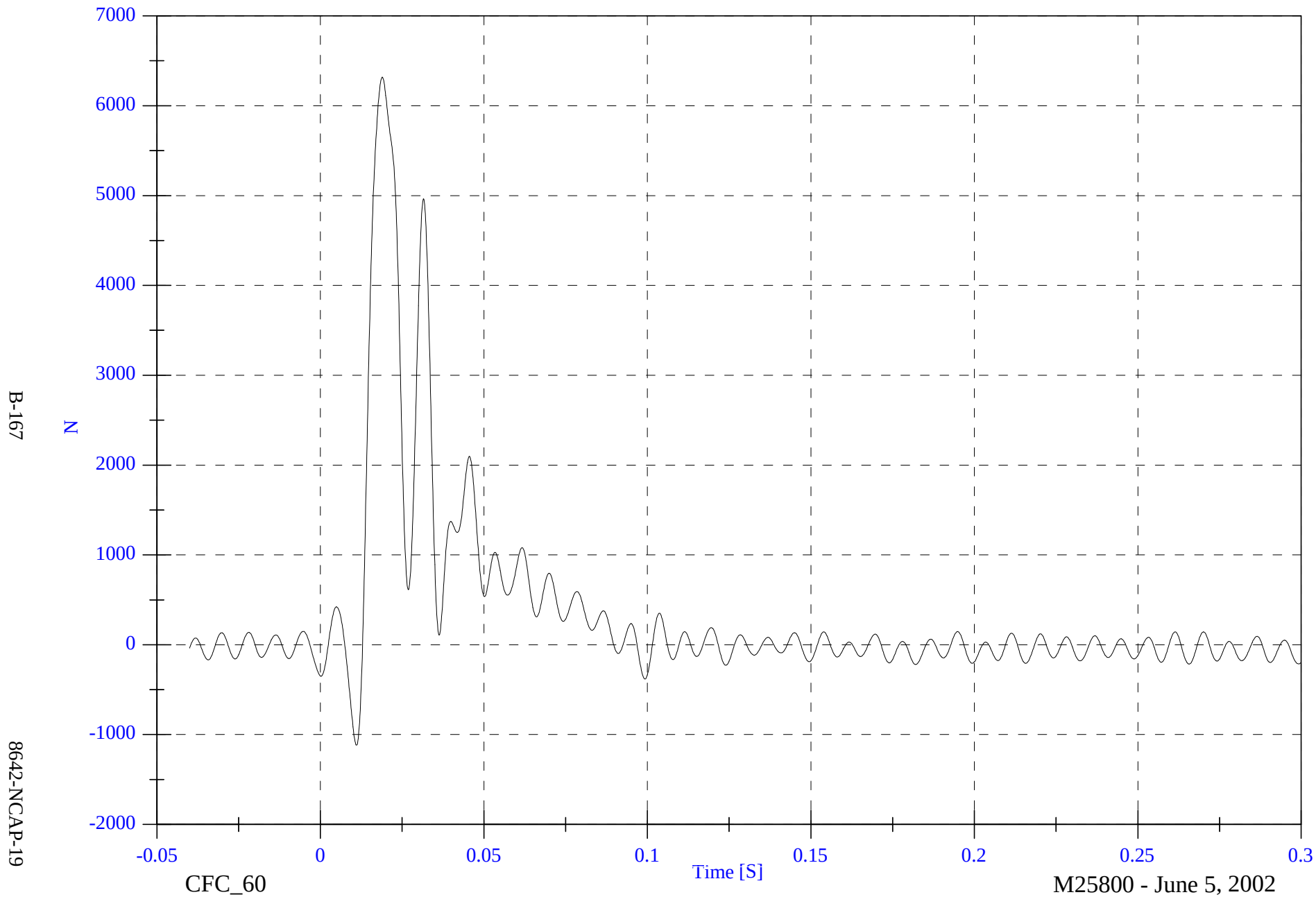


NCAP Test 19- 2002 Audi A4

Barrier Load Cell D4 Fx

Max: 6317.1 [N] at 0.019 [S]

Min: -1118.7 [N] at 0.011 [S]

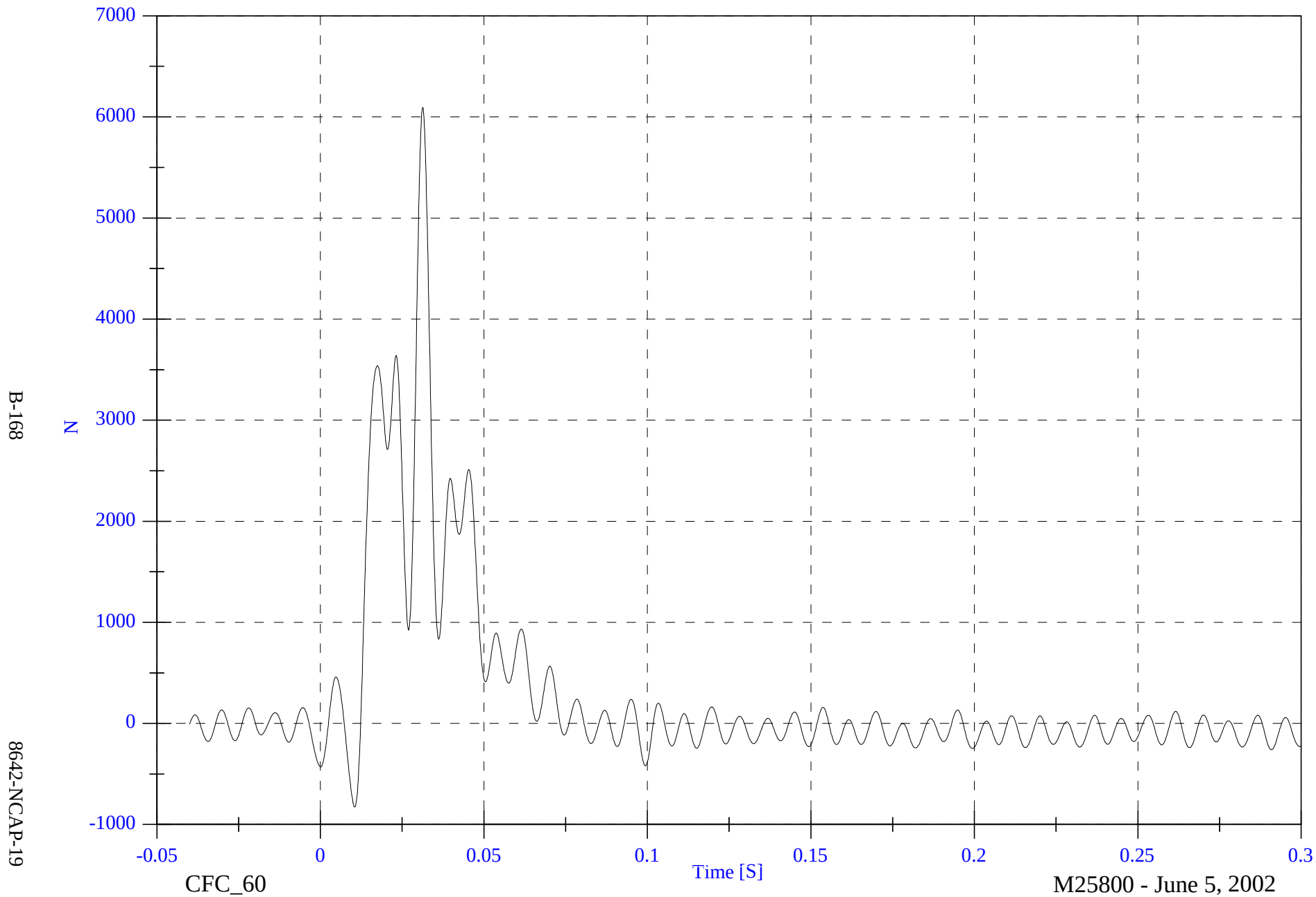


NCAP Test 19- 2002 Audi A4

Barrier Load Cell D5 Fx

Max: 6093.6 [N] at 0.031 [S]

Min: -828.2 [N] at 0.010 [S]

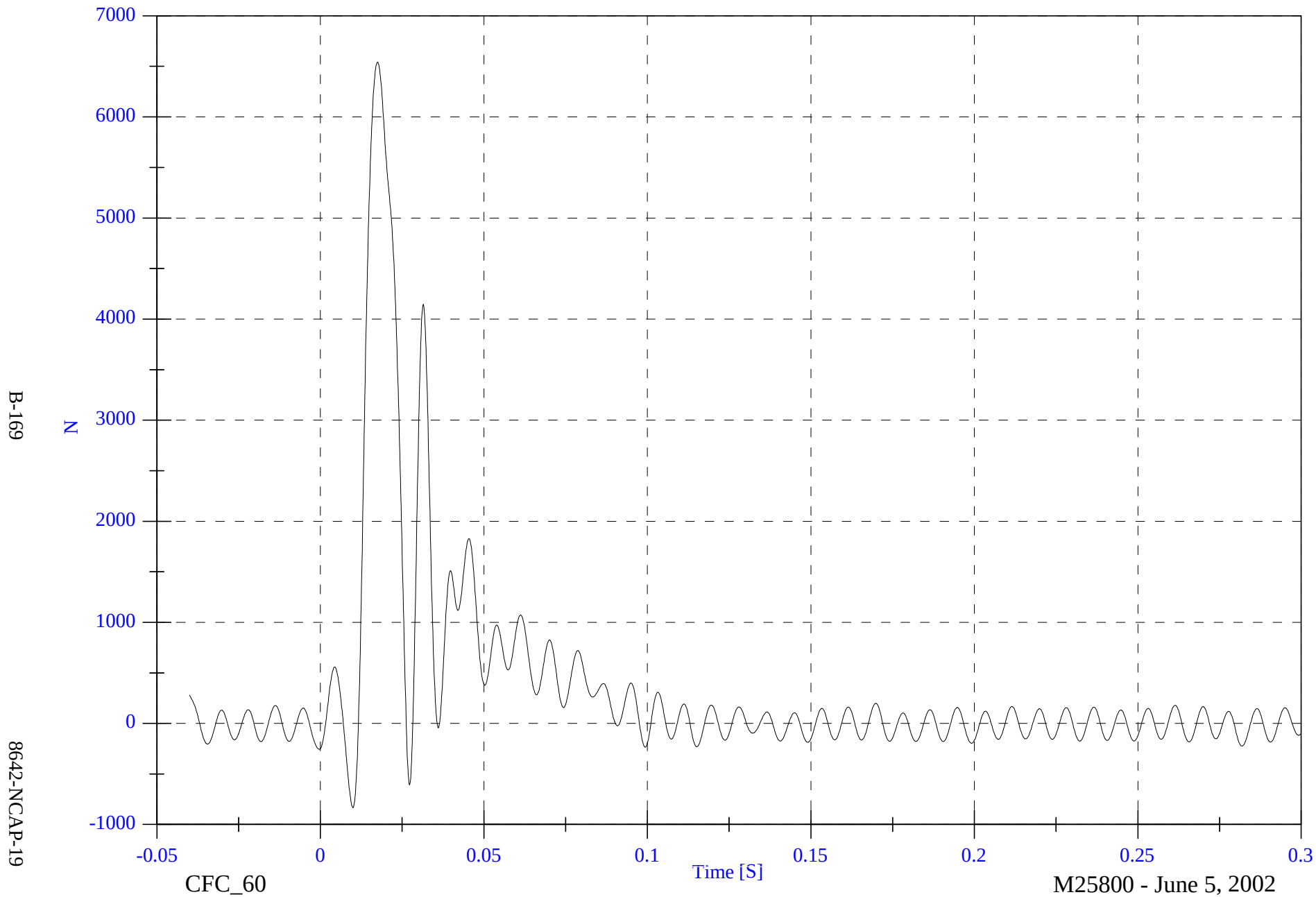


NCAP Test 19- 2002 Audi A4

Barrier Load Cell D6 Fx

Max: 6543.1 [N] at 0.017 [S]

Min: -834.2 [N] at 0.010 [S]

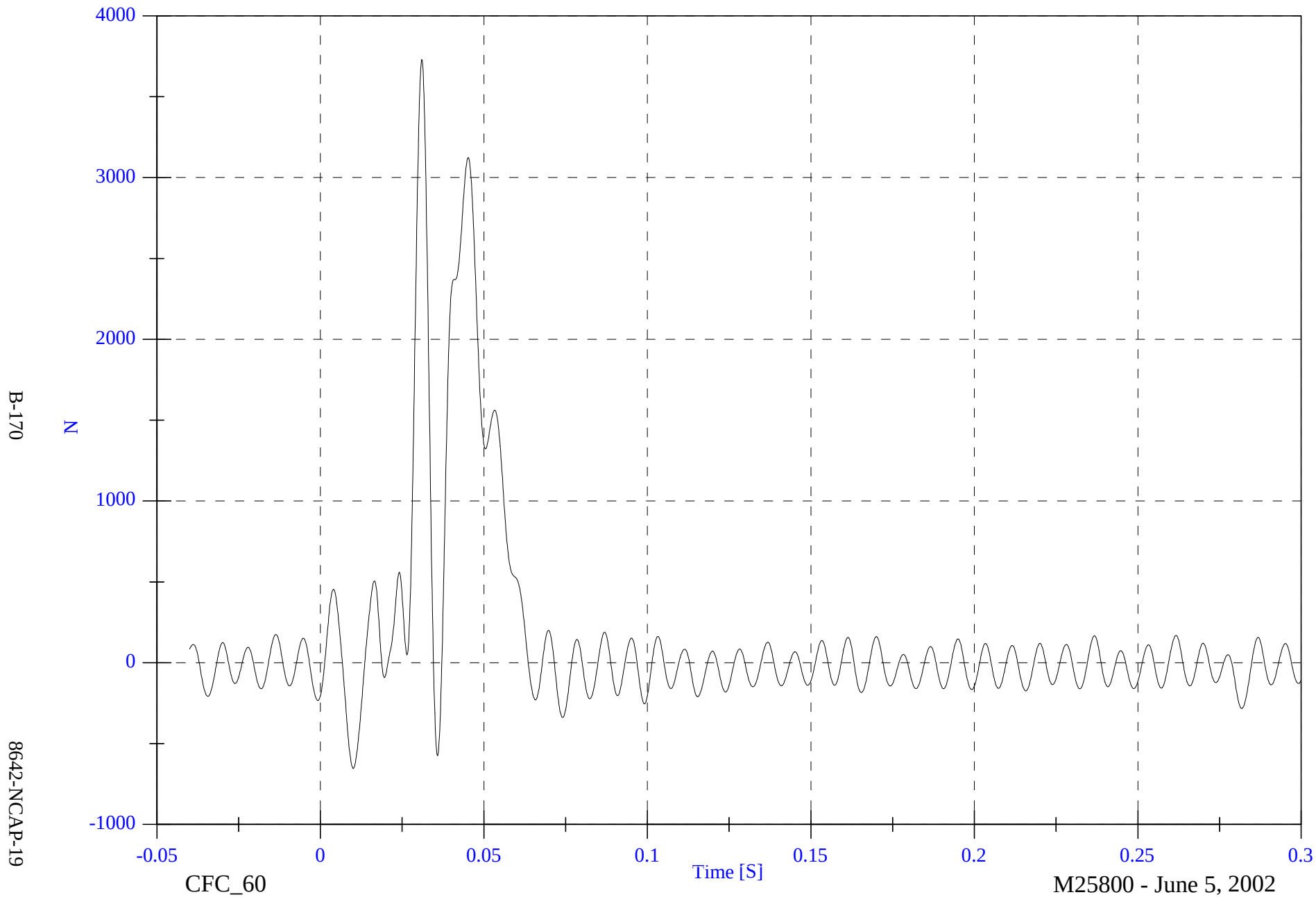


NCAP Test 19- 2002 Audi A4

Barrier Load Cell D7 Fx

Max: 3729.1 [N] at 0.031 [S]

Min: -653.2 [N] at 0.010 [S]

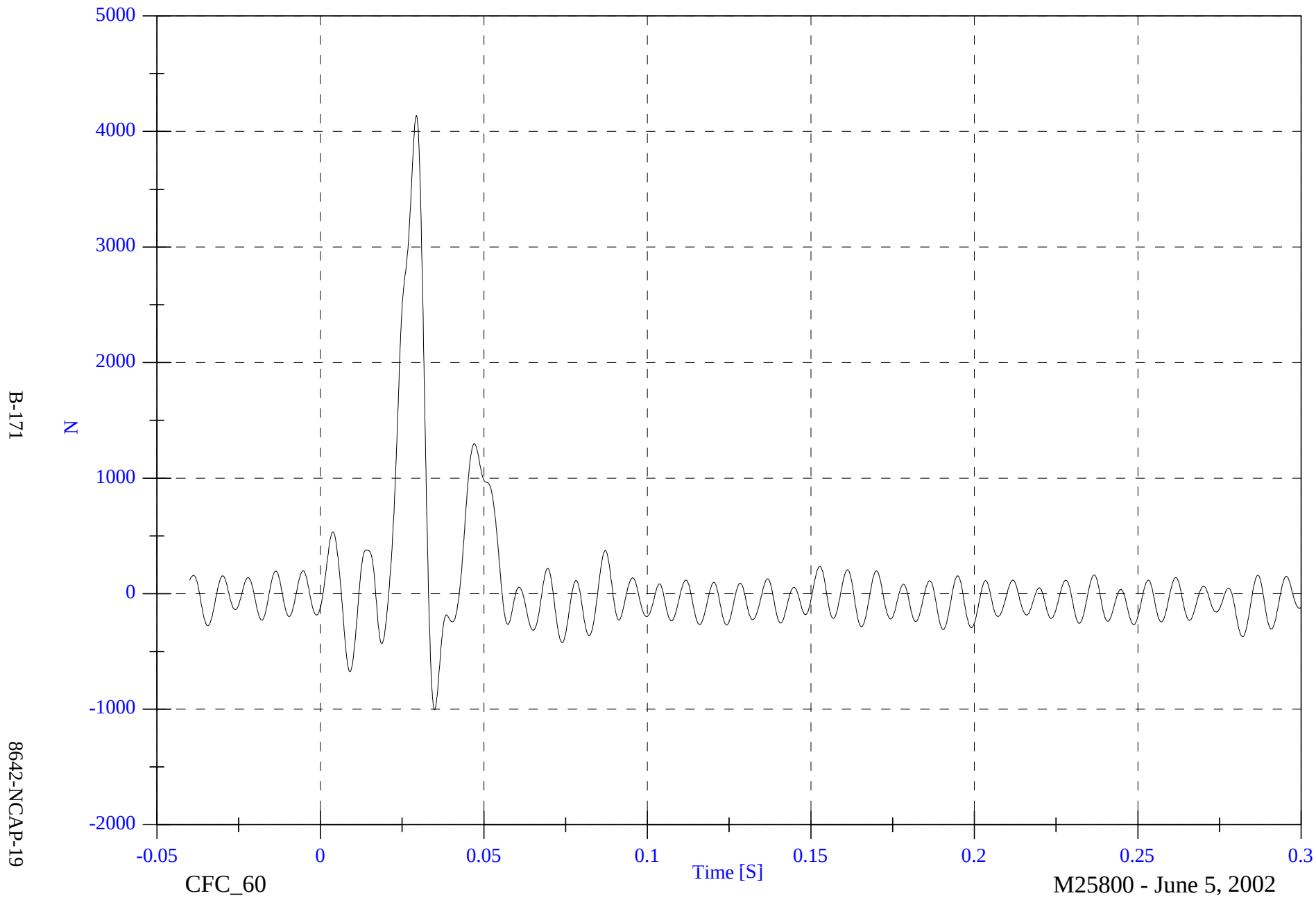


NCAP Test 19- 2002 Audi A4

Barrier Load Cell D8 Fx

Max: 4138.5 [N] at 0.029 [S]

Min: -1004.9 [N] at 0.035 [S]

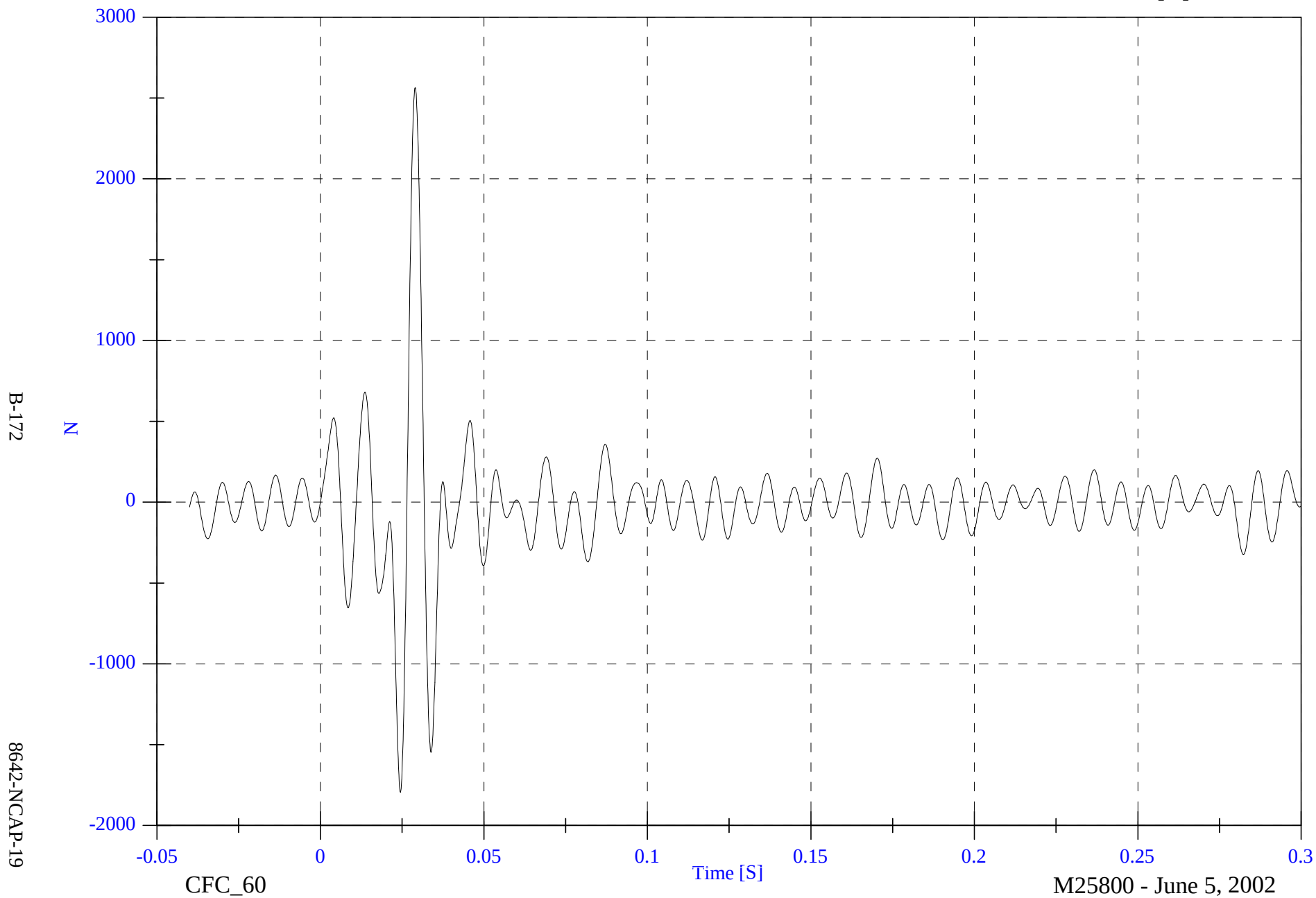


NCAP Test 19- 2002 Audi A4

Barrier Load Cell D9 Fx

Max: 2564.5 [N] at 0.029 [S]

Min: -1794.6 [N] at 0.024 [S]

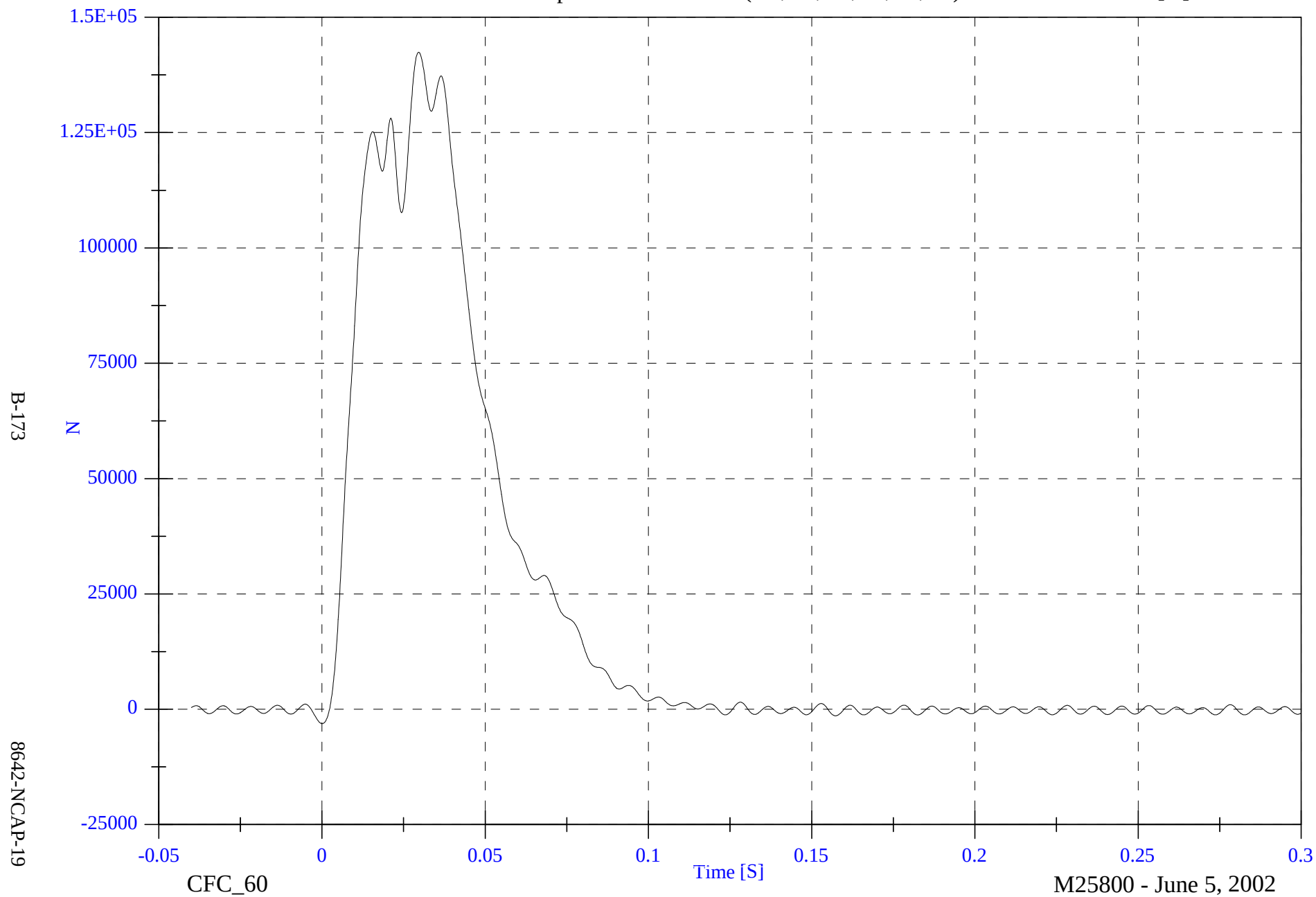


NCAP Test 19- 2002 Audi A4

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

Max: 142409.3 [N] at 0.030 [S]

Min: -3123.1 [N] at 0.000 [S]

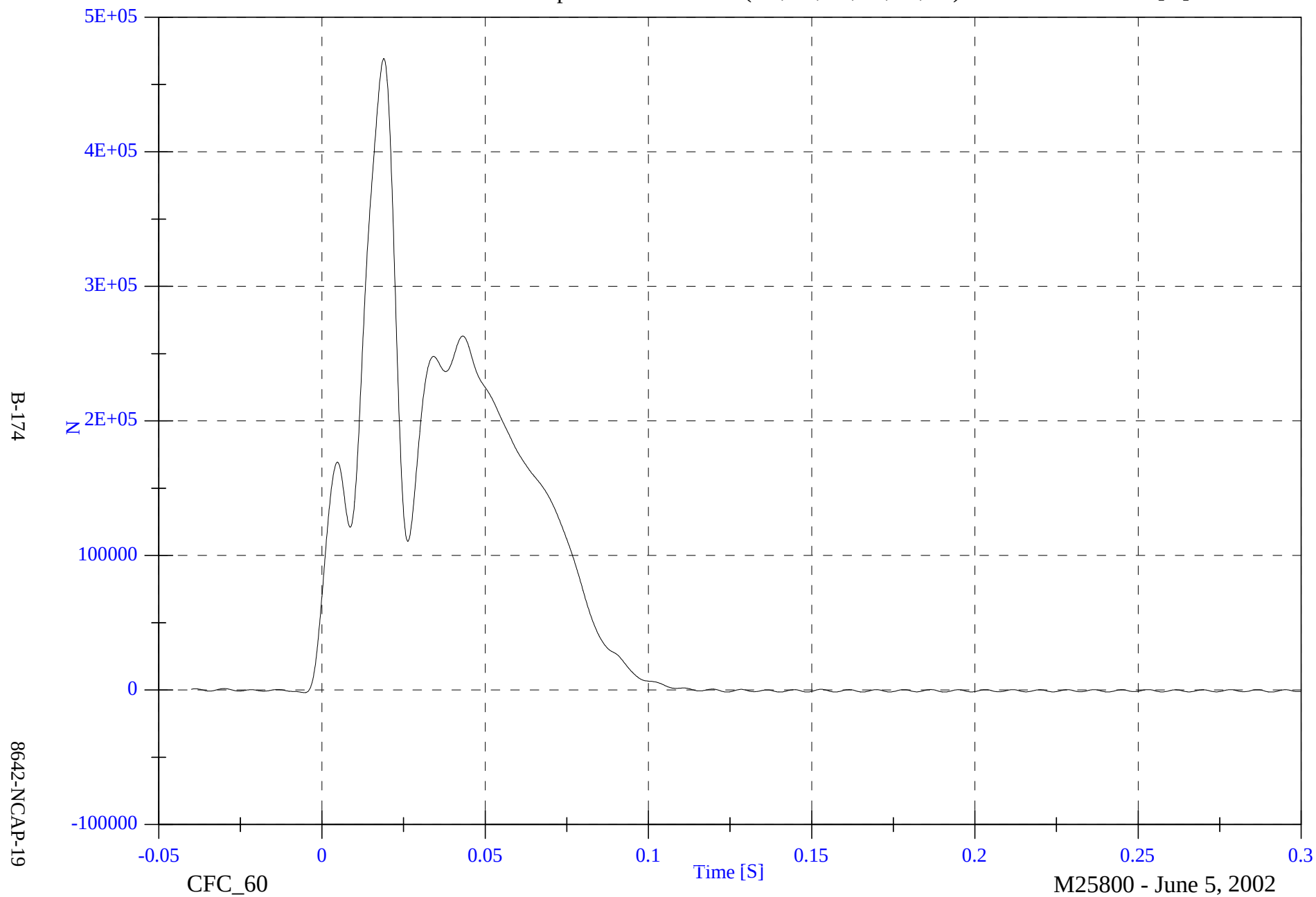


NCAP Test 19- 2002 Audi A4

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

Max: 469295.6 [N] at 0.019 [S]

Min: -1946.7 [N] at -0.005 [S]

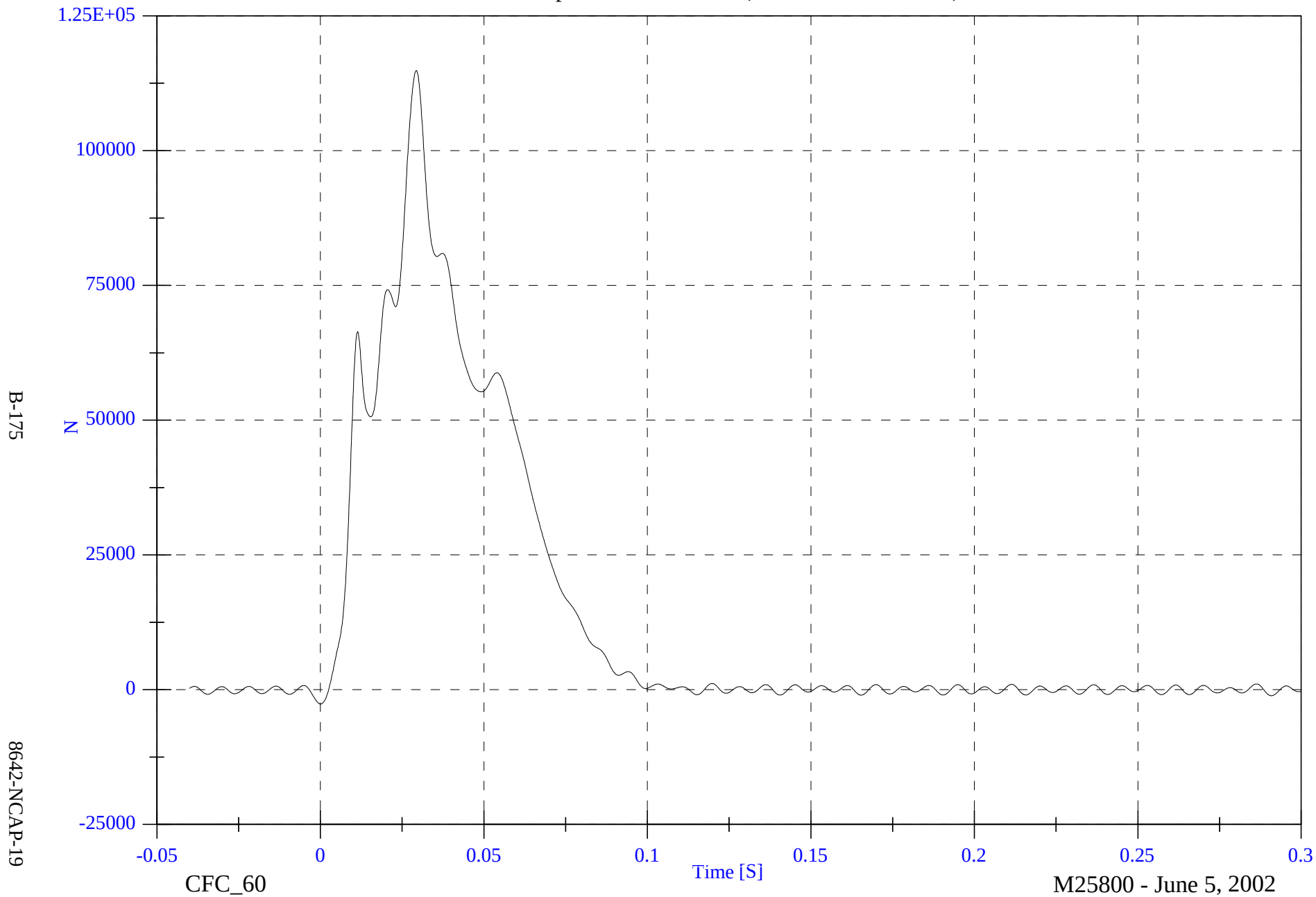


NCAP Test 19- 2002 Audi A4

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

Max: 114857.4 [N] at 0.029 [S]

Min: -2656.4 [N] at 0.000 [S]

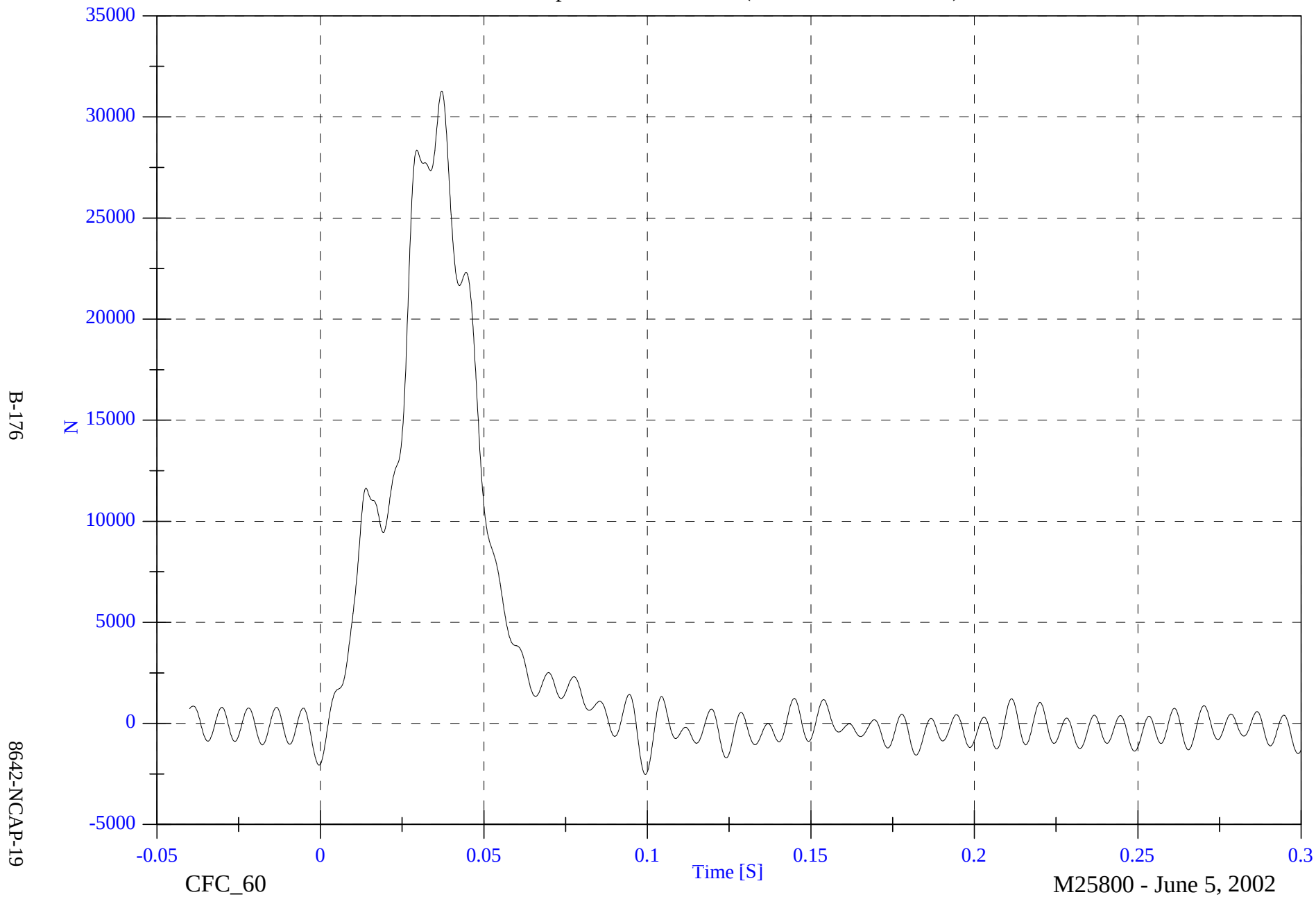


NCAP Test 19- 2002 Audi A4

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

Max: 31280.3 [N] at 0.037 [S]

Min: -2528.1 [N] at 0.099 [S]

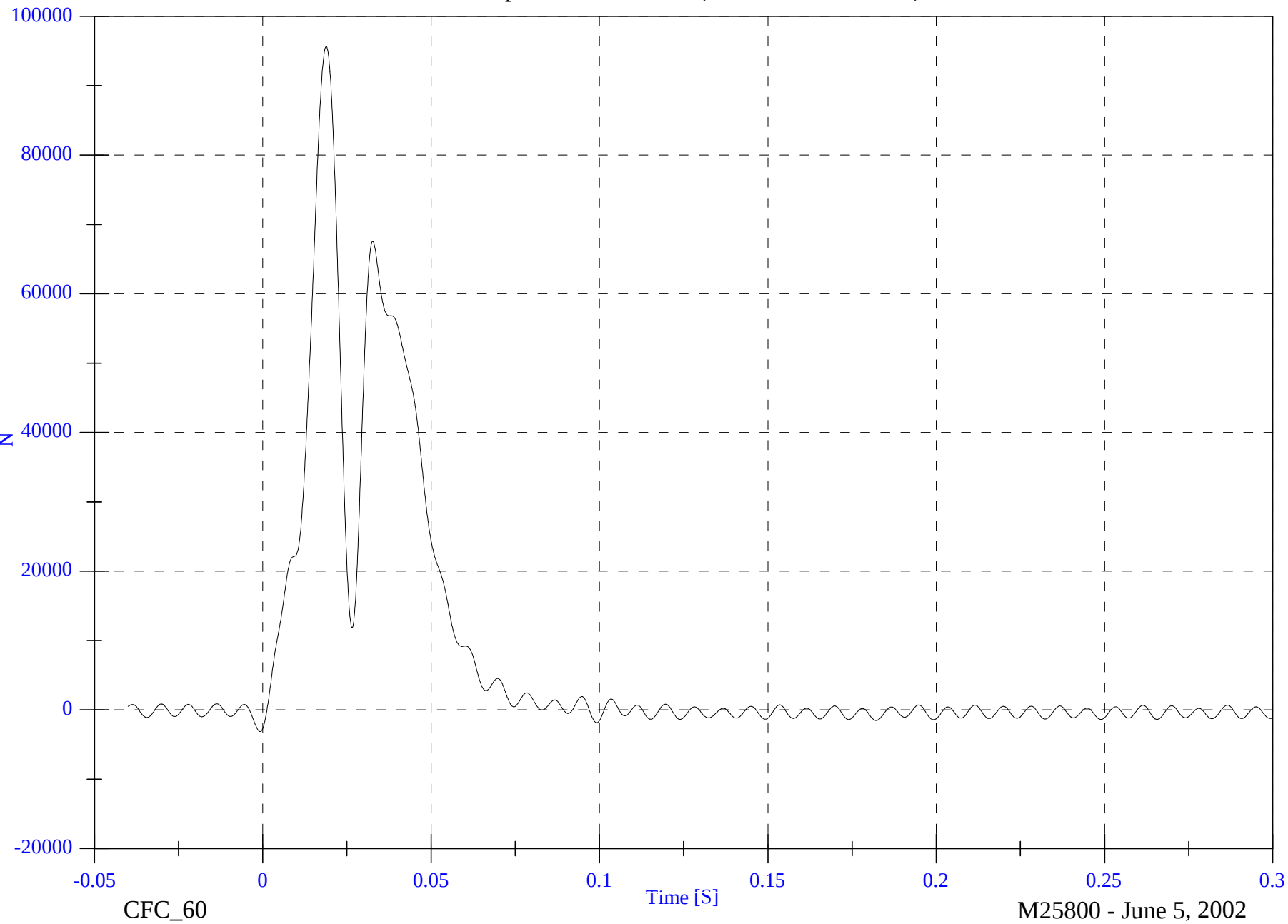


NCAP Test 19- 2002 Audi A4

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

Max: 95676.6 [N] at 0.019 [S]

Min: -3130.7 [N] at -0.001 [S]

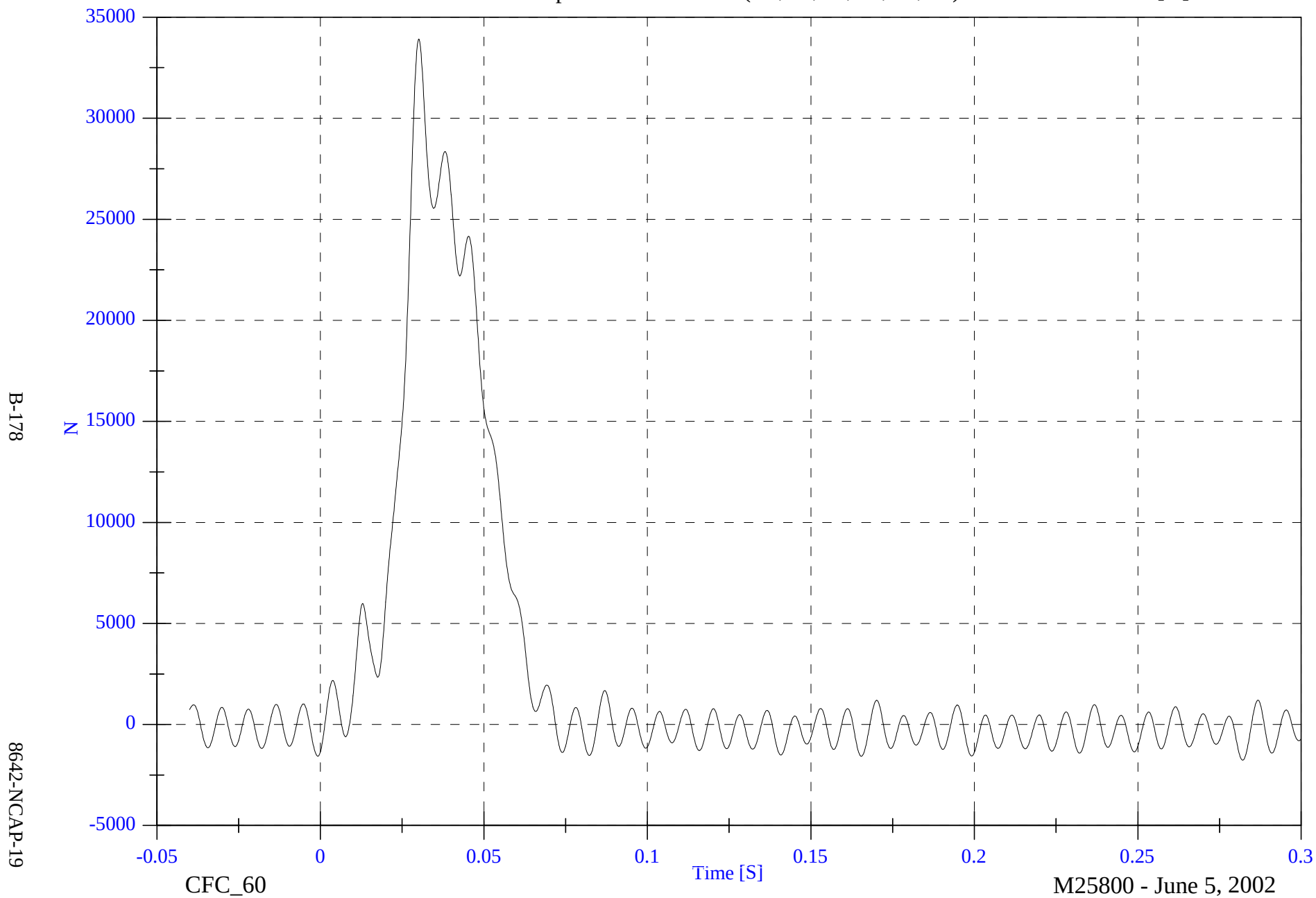


NCAP Test 19- 2002 Audi A4

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

Max: 33920.9 [N] at 0.030 [S]

Min: -1766.5 [N] at 0.282 [S]

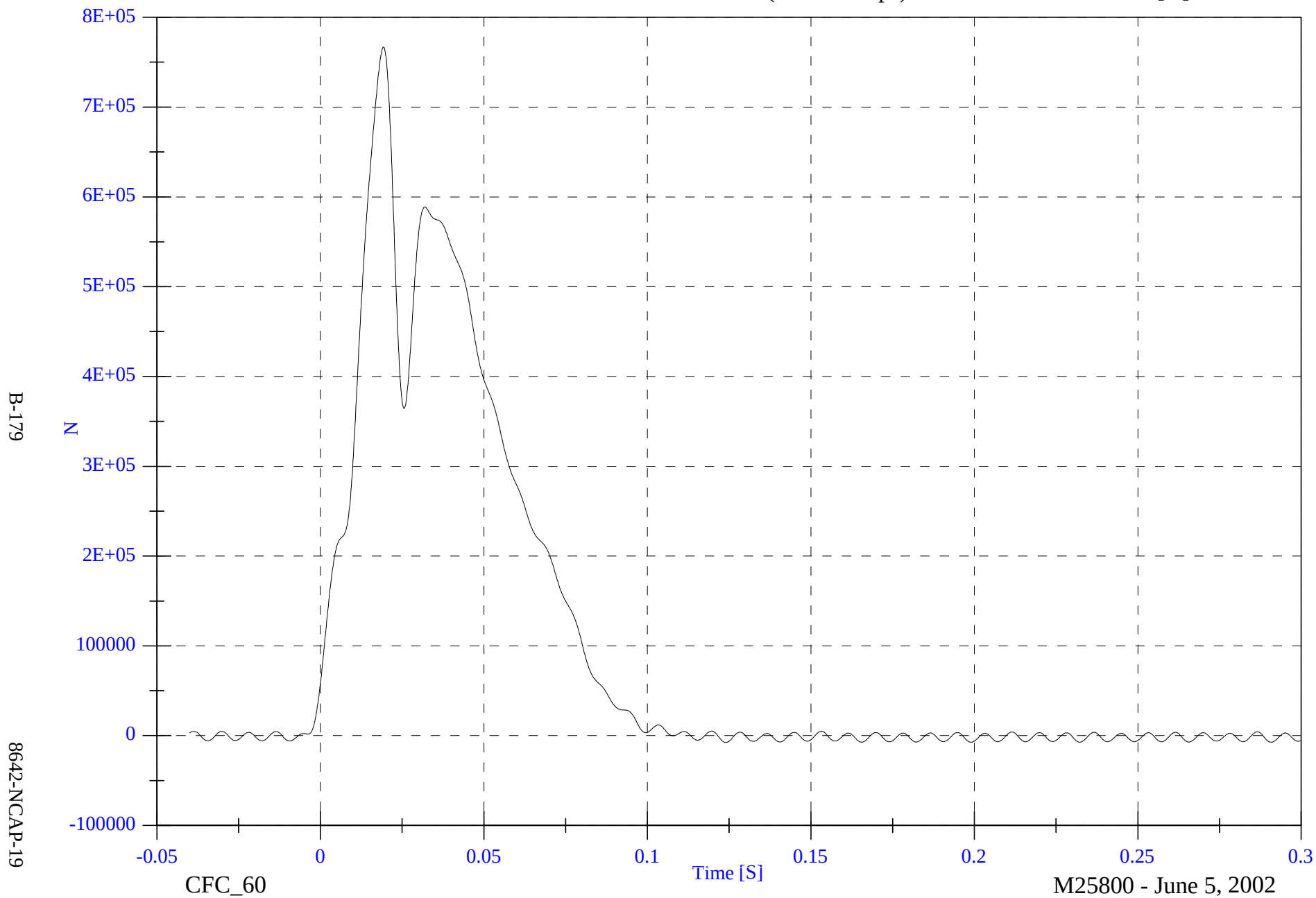


NCAP Test 19- 2002 Audi A4

Total Load Cell Sum (All 6 Groups)

Max: 766811.7 [N] at 0.019 [S]

Min: -7553.8 [N] at 0.124 [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:

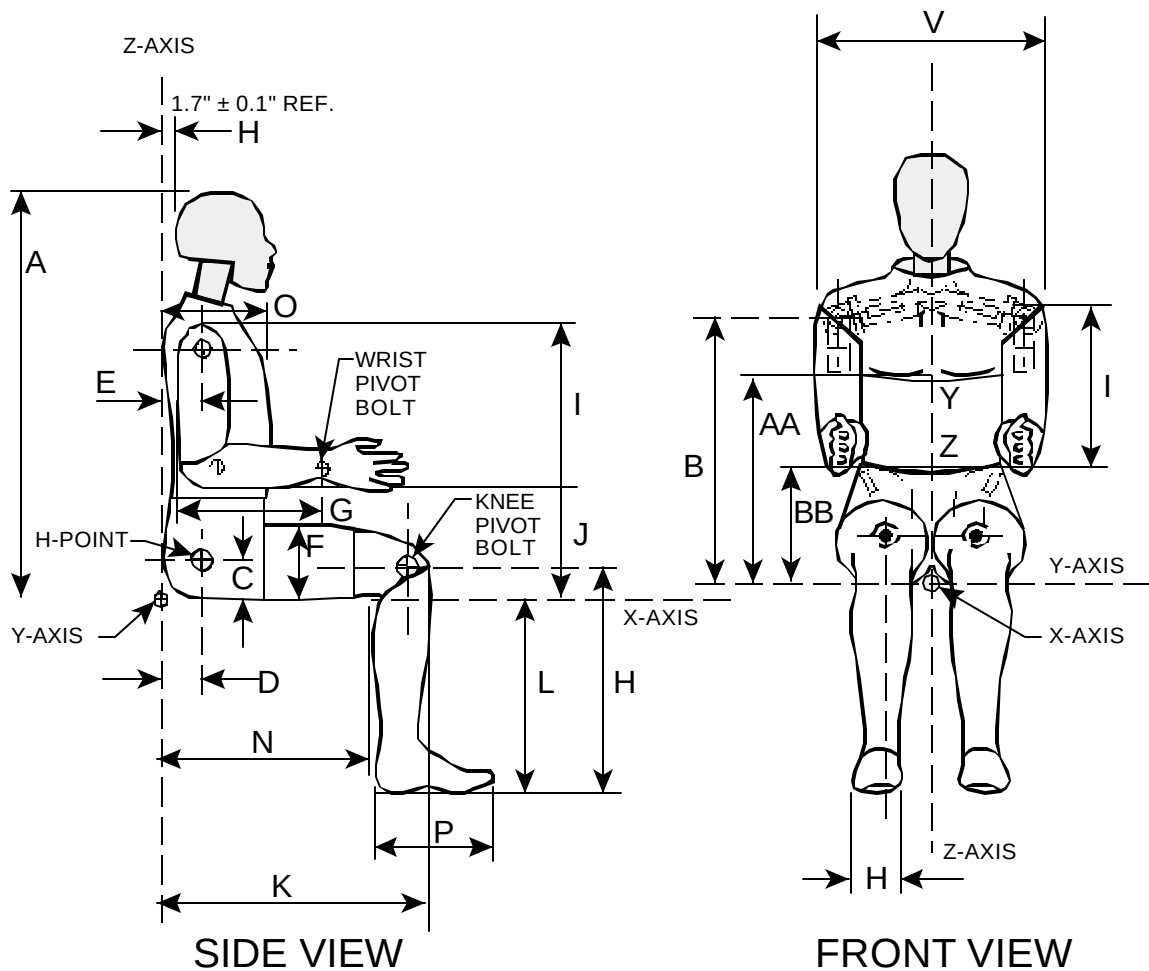
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	061	May 31, 2002
#2/Right Front Passenger	064	May 31, 2002

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 061
Sequential Test Number 1
Date May 28, 2002
Workfile 061H1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	72.0
Relative Humidity	10% - 70%	35.0
Peak Resultant Acceleration	225-275 G's	252.24
Peak Lateral Acceleration	15 G's Max	1.09
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	May 30, 2002	6 Axis Neck Transducer
Workfile	061Flx	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	36.0
Impact Velocity		22.60 - 23.40 Ft/s	23.05
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.37
	20 ms	17.60 - 22.60 G's	20.60
	30 ms	12.50 - 18.50 G's	15.44
Max Pendulum G's Above 30 ms		29 G's Max	15.44
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	37.40
D Plane Rotation	Max	64 - 78 Deg	72.12
	Time	57 - 64 ms	58.30
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	78.62
	Time	47 - 58 ms	50.60
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	116.60
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.90

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	May 30, 2002	6 Axis Neck Transducer
Workfile	061Ext	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	36.0
Impact Velocity		19.50 - 20.30 Ft/s	19.8
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.01
	20 ms	14.00 - 19.00 G's	16.2
	30 ms	11.00 - 16.00 G's	13.87
Max Pendulum G's Above 30 ms		22 G's Max	13.87
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	40.7
D Plane Rotation	Max	81 - 106 Deg	92.59
	Time	72 - 82 ms	76.3
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-40.01
	Time	65 - 79 ms	72.4
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	154.0
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	143.0

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 1
Date May 31, 2002
Workfile 061T

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	71.0
Relative Humidity	10% - 70%	46.0
Pendulum Velocity	21.6 - 22.4 Ft/s	21.89
Maximum Deflection	2.50 - 2.86 in	2.75
Maximum Resistive Force	1160 - 1325 Lbs	1236.27
Internal Hysteresis	69 - 85 %	73.92

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 1
Date May 31, 2002
Workfile 061LF/061RF

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	71.0
Relative Humidity	10% - 70%	45.0
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1197.05
RIGHT KNEE		
Temperature	66 - 78 Deg F	71.0
Relative Humidity	10% - 70%	45.0
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1198.25

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Sequential Test Number 1
Date May 31, 2002

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			71
Relative Humidity			44
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	33.5
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	34.9
Thigh Clearance	F	5.5 - 6.1 in	6.1
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.7
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
Elbow Rest Height	J	7.5 - 8.3 in	7.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.4
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number 064
Sequential Test Number 1
Date May 28, 2002
Workfile 064H

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	71.0
Relative Humidity	10% - 70%	34.0
Peak Resultant Acceleration	225-275 G's	261.34
Peak Lateral Acceleration	15 G's Max	9.05
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	May 29, 2002	6 Axis Neck Transducer
Workfile	064Flx	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	45.0
Impact Velocity		22.60 - 23.40 Ft/s	23.05
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.70
	20 ms	17.60 - 22.60 G's	22.29
	30 ms	12.50 - 18.50 G's	16.83
Max Pendulum G's Above 30 ms		29 G's Max	16.83
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.60
D Plane Rotation	Max	64 - 78 Deg	69.71
	Time	57 - 64 ms	57.40
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	78.66
	Time	47 - 58 ms	50.80
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	114.10
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.60

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	May 29, 2002	6 Axis Neck Transducer
Workfile	064Ext	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	45.0
Impact Velocity		19.50 - 20.30 Ft/s	19.68
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	17.78
	20 ms	14.00 - 19.00 G's	14.85
	30 ms	11.00 - 16.00 G's	12.62
Max Pendulum G's Above 30 ms		22 G's Max	12.90
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	43.00
D Plane Rotation	Max	81 - 106 Deg	92.56
	Time	72 - 82 ms	77.30
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-41.78
	Time	65 - 79 ms	73.90
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	157.00
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	146.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 1
Date May 30, 2002
Workfile 064T

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	35.0
Pendulum Velocity	21.6 - 22.4 Ft/s	22.28
Maximum Deflection	2.50 - 2.86 in	2.61
Maximum Resistive Force	1160 - 1325 Lbs	1257.46
Internal Hysteresis	69 - 85 %	73.56

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 1
Date May 31, 2002
Workfile 064LF/064RF

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	71.0
Relative Humidity	10% - 70%	45.0
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1128.57
RIGHT KNEE		
Temperature	66 - 78 Deg F	71.0
Relative Humidity	10% - 70%	45.0
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1180.53

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 1
Date May 31, 2002

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			71
Relative Humidity			44
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	33.6
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	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	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	20.4
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.4
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 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	AC-01G18-F06	ENTRAN	21-Jan-02	21-Jul-02
	X Arm Z	AC-00L13-F39	ENTRAN	22-Jan-02	22-Jul-02
	Y Arm X	AC-00L13-F14	ENTRAN	21-Jan-02	21-Jul-02
	Y Arm Z	AC-01G18-F16	ENTRAN	22-Jan-02	22-Jul-02
	Z Arm X	AC-00L13-F72	ENTRAN	21-Jan-02	21-Jul-02
	Z Arm Y	AC-01G18-F12	ENTRAN	21-Jan-02	21-Jul-02
	Z Arm Z	AC-00L13-F04	ENTRAN	22-Jan-02	22-Jul-02
Head	X	AC-00L13-F04	ENTRAN	22-Jan-02	22-Jul-02
	Y	AC-01G18-F15	ENTRAN	21-Jan-02	21-Jul-02
	Z	AC-01G18-F14	ENTRAN	22-Jan-02	22-Jul-02
Head	X (R)	AC-01G18-F20	ENTRAN	21-Jan-02	21-Jul-02
	Y (R)	AC-01G18-F05	ENTRAN	22-Jan-02	22-Jul-02
	Z (R)	AC-P18532	ENDEVCO	27-Feb-02	27-Aug-02
Neck Load Cell	X	LC-205Fx	DENTON	22-Jan-02	22-Jul-02
	Y	LC-205Fy	DENTON	22-Jan-02	22-Jul-02
	Z	LC-205Fz	DENTON	22-Jan-02	22-Jul-02
Neck Moment	X	LC-205Mx	DENTON	22-Jan-02	22-Jul-02
	Y	LC-205My	DENTON	22-Jan-02	22-Jul-02
	Z	LC-205Mz	DENTON	22-Jan-02	22-Jul-02
Chest	X	AC-P21373	ENDEVCO	14-Mar-02	14-Sep-02
	Y	AC-P22639	ENDEVCO	14-Mar-02	14-Sep-02
	Z	AC-P21297	ENDEVCO	14-Mar-02	14-Sep-02
Chest	X (R)	AC-P21171	ENDEVCO	14-Mar-02	14-Sep-02
	Y (R)	AC-P23136	ENDEVCO	14-Mar-02	14-Sep-02
	Z (R)	AC-P23128	ENDEVCO	14-Mar-02	14-Sep-02
Chest Deflection	X	DS-061	SERVO	14-Mar-02	14-Sep-02
Pelvic	X	AC-P21441	ENDEVCO	14-Mar-02	14-Sep-02
	Y	AC-P19246	ENDEVCO	14-Mar-02	14-Sep-02
	Z	AC-P21516	ENDEVCO	14-Mar-02	14-Sep-02

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	LC-659	GSE	12-Feb-02	12-Aug-02
Right Femur Load Cell	Fz	LC-723	GSE	12-Feb-02	12-Aug-02
Left Upper Tibia	Mx	LC-016Mx	DENTON	08-Apr-02	08-Oct-02
	My	LC-016My	DENTON	08-Apr-02	08-Oct-02
Left Lower Tibia	Fz	LC-123Fz	DENTON	08-Apr-02	08-Oct-02
	Mx	LC-123Mx	DENTON	08-Apr-02	08-Oct-02
	My	LC-123My	DENTON	08-Apr-02	08-Oct-02
Right Upper Tibia	Mx	LC-023Mx	DENTON	08-Apr-02	08-Oct-02
	My	LC-023My	DENTON	08-Apr-02	08-Oct-02
Right Lower Tibia	Fz	LC-111Fz	DENTON	08-Apr-02	08-Oct-02
	Mx	LC-111Mx	DENTON	08-Apr-02	08-Oct-02
	My	LC-111My	DENTON	08-Apr-02	08-Oct-02
Left Foot Rear	X	AC-P19343	ENDEVCO	04-Apr-02	04-Oct-02
	Z	AC-P16583	ENDEVCO	04-Apr-02	04-Oct-02
Left Foot Front	Z	AC-P18525	ENDEVCO	27-Feb-02	27-Aug-02
Right Foot Rear	X	AC-P18628	ENDEVCO	04-Apr-02	04-Oct-02
	Z	AC-P18741	ENDEVCO	04-Apr-02	04-Oct-02
Right Foot Front	Z	AC-P23276	ENDEVCO	25-Apr-02	25-Oct-02

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	AC-01G18-F08	ENTRAN	22-Jan-02	22-Jul-02
	X Arm Z	AC-00L20-A13	ENTRAN	22-Jan-02	22-Jul-02
	Y Arm X	AC-00L20-A08	ENTRAN	21-Jan-02	21-Jul-02
	Y Arm Z	AC-01G18-F13	ENTRAN	22-Jan-02	22-Jul-02
	Z Arm X	AC-01J02-F18	ENTRAN	22-Jan-02	22-Jul-02
	Z Arm Y	AC-01G25-N11	ENTRAN	21-Jan-02	21-Jul-02
Head	X	AC-01G18-F18	ENTRAN	22-Jan-02	22-Jul-02
	Y	AC-01G18-F07	ENTRAN	21-Jan-02	21-Jul-02
	Z	AC-01G18-F10	ENTRAN	21-Jan-02	21-Jul-02
Head	X (R)	AC-01J02-F09	ENTRAN	21-Jan-02	21-Jul-02
	Y (R)	AC-01G18-F03	ENTRAN	22-Jan-02	22-Jul-02
	Z (R)	AC-01G18-F09	ENTRAN	22-Jan-02	22-Jul-02
Neck Load Cell	X	LC-440Fx	DENTON	22-Jan-02	22-Jul-02
	Y	LC-440Fy	DENTON	22-Jan-02	22-Jul-02
	Z	LC-440Fz	DENTON	22-Jan-02	22-Jul-02
Neck Moment	X	LC-440Mx	DENTON	22-Jan-02	22-Jul-02
	Y	LC-440My	DENTON	22-Jan-02	22-Jul-02
	Z	LC-440Mz	DENTON	22-Jan-02	22-Jul-02
Chest	X	AC-P23155	ENDEVCO	15-Mar-02	15-Sep-02
	Y	AC-P23358	ENDEVCO	15-Mar-02	15-Sep-02
	Z	AC-P23282	ENDEVCO	15-Mar-02	15-Sep-02
Chest	X (R)	AC-P21484	ENDEVCO	15-Mar-02	15-Sep-02
	Y (R)	AC-P16951	ENDEVCO	15-Mar-02	15-Sep-02
	Z (R)	AC-P21399	ENDEVCO	15-Mar-02	15-Sep-02
Chest Deflection	X	DS-064	SERVO	20-Mar-02	20-Sep-02
Pelvic	X	AC-P23174	ENDEVCO	15-Mar-02	15-Sep-02
	Y	AC-P23164	ENDEVCO	15-Mar-02	15-Sep-02
	Z	AC-P23137	ENDEVCO	15-Mar-02	15-Sep-02

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	LC-954	GSE	12-Feb-02	12-Aug-02
Right Femur Load Cell	Fz	LC-955	GSE	12-Feb-02	12-Aug-02
Left Upper Tibia	Mx	LC-045Mx	DENTON	08-Apr-02	08-Oct-02
	My	LC-045My	DENTON	08-Apr-02	08-Oct-02
Left Lower Tibia	Fz	LC-125Fz	DENTON	08-Apr-02	08-Oct-02
	Mx	LC-125Mx	DENTON	08-Apr-02	08-Oct-02
	My	LC-125My	DENTON	08-Apr-02	08-Oct-02
Right Upper Tibia	Mx	LC-038Mx	DENTON	08-Apr-02	08-Oct-02
	My	LC-038My	DENTON	08-Apr-02	08-Oct-02
Right Lower Tibia	Fz	LC-124Fz	DENTON	08-Apr-02	08-Oct-02
	Mx	LC-124Mx	DENTON	08-Apr-02	08-Oct-02
	My	LC-124My	DENTON	08-Apr-02	08-Oct-02
Left Foot Rear	X	AC-J30491	ENDEVCO	21-Mar-02	21-Sep-02
	Z	AC-J31026	ENDEVCO	21-Mar-02	21-Sep-02
Left Foot Front	Z	AC-J32831	ENDEVCO	21-Mar-02	21-Sep-02
Right Foot Rear	X	AC-J33376	ENDEVCO	21-Mar-02	21-Sep-02
	Z	AC-J32832	ENDEVCO	21-Mar-02	21-Sep-02
Right Foot Front	Z	AC-J31095	ENDEVCO	21-Mar-02	21-Sep-02

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	AC-X83	ICS	15-Jan-02	15-Jul-02
Right Rear Seat Crossmember X	AC-D84	ICS	15-Jan-02	15-Jul-02
Top of Engine	AC-J26604	ENDEVCO	25-Apr-02	25-Oct-02
Bottom of Engine	AC-A13883	ENDEVCO	11-Feb-02	11-Aug-02
Right Disc Brake Caliper	AC-P16665	ENDEVCO	15-Jan-02	15-Jul-02
Instrument Panel	AC-P18792	ENDEVCO	27-Feb-02	27-Aug-02
Left Disc Brake Caliper	AC-P18536	ENDEVCO	27-Feb-02	27-Aug-02
Left Seat Rear Crossmember Z	AC-D82	ICS	04-Apr-02	04-Oct-02
Right Seat Rear Crossmember Z	AC-Y13	ICS	11-Feb-02	11-Aug-02