

REPORT NUMBER: CAL-04-10

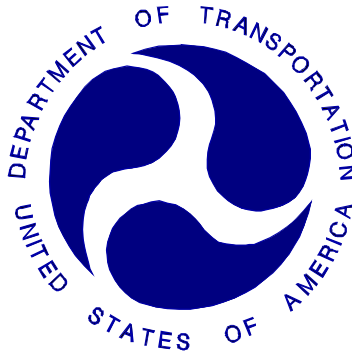
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

VOLKSWAGEN AG GERMANY
2004 VOLKSWAGEN TOUAREG
SUV

NHTSA NUMBER: M45800

GENERAL DYNAMICS TEST NUMBER: 8642-NCAP-46

GENERAL DYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
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March 04, 2004

FINAL REPORT

PREPARED FOR:

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

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FINAL REPORT ACCEPTANCE BY OCS:

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

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-04-10		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of NEW CAR ASSESSMENT PROGRAM (NCAP) Testing of a 2004 Volkswagen Touareg SUV NHTSA No. M45800				5. Report Date March 04, 2004	
				6. Performing Organization Code CAL	
7. Author(s) David J. Travale, Program Manager Lawrence Q. Valvo, Project Engineer				8. Performing Organization Report No. 8642-NCAP-46	
9. Performing Organization Name and Address General Dynamics Advanced Information Engineering Services 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: NVS-111 400 Seventh, SW, Room 5313 Washington, D.C. 20590				13. Type of Report and Period Covered Final Report March 2004	
				14. Sponsoring Agency Code NVS-111	
15. Supplementary Notes					
16. Abstract A frontal load cell barrier test of a 2004 Volkswagen Touareg SUV was performed at General Dynamics crash test facility in Buffalo, New York, on March 04, 2004. The impact velocity was 56.65 kph and the temperature at the barrier face was 21.1 °C. The maximum post-test vehicle crush was 563 mm. The test vehicle was equipped with 3-point restraint systems, knee bolsters, and airbags at both the driver and right outboard passenger seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements.					
ATD Position	HIC	Clip (g's)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)
Driver (061)	597.1	47.9	-32.2	-1234.1	-2777.6
Passenger (064)	403.0	51.5	-28.8	-3087.8	-971.8
17. Key Words 56 kph Frontal Barrier Impact test New Car Assessment Program (NCAP)			18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5111 Washington, DC 20590		
19. Security Classif. (of this report) UNCLASSIFIED		20. Security Classif. (of this page) UNCLASSIFIED		21. No. of Pages 309	22. Price

Form DOT F1700.7 (8-69)

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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.65 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 56.65 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 56.65 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated December 1999. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

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

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

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

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 196 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Appendix C contains the dummy calibration data and Appendix D contains the transducer calibration dates.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 36 load cells was impacted by a 2004 Volkswagen Touareg SUV at a velocity of 56.65 kph. The test was performed at General Dynamics on March 04, 2004. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The occupant data is summarized below.

	HIC	Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)	Belt Stretch (mm/50 mm)
Driver ATD	597.1	47.9	-32.2	-1234.1	-2777.6	N/A	0
Passenger ATD	403.0	51.5	-28.8	-3087.8	-971.8	N/A	0

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 563 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: Face to the upper half of the airbag, back of the head to the outboard half of the head restraint, and left and right knees to the knee bolster. The passenger's visible contact points were as follows: Face to the center of the airbag, left knee to the left quarter of the glove compartment door, right knee to the right third of the glove compartment door.

The 2004 Volkswagen Touareg SUV 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.:	M45800	Test Mode:	56.3 kph Frontal Barrier
Test Date:	March 04, 2004	Time:	15:06
		Temperature:	21.1 °C
Vehicle Make/Model/Body Style:	2004 Volkswagen Touareg SUV		
Vehicle Test Weight:	2599.5	kg	
Vehicle/Barrier Impact Angle:	0	°	
Impact Velocity:	56.65	kph	
Maximum Static Crush:	563	mm	
Vehicle Rebound:	1258	mm	
 <u>DUMMIES:</u>			
		<u>DRIVER</u>	<u>PASSENGER</u>
Type:		572E	572E
Restraint System:		Seatbelt, Airbag, Knee Bolster	Seatbelt, Airbag, Knee Bolster
Number of Data Channels:	196		
Number of Cameras:	1	Real Time	
	16	High Speed	
 <u>DOOR OPENING DATA:</u>			
	Door remained closed and latched, door opened without tools - Left Front		
	Door remained closed and latched, door opened without tools - Right Front		
 <u>Front Seat(s) Data:</u>			
		<u>DRIVER</u>	<u>PASSENGER</u>
Seat Track Failure: (mm of shift)		24 mm forward	14 mm forward
Seat Back Failure:		None	None
 <u>VISIBLE DUMMY CONTACT POINTS:</u>			
		<u>DRIVER</u>	<u>PASSENGER</u>
Head:		Face to upper half of the airbag; Back of head to outboard half of the head restraint	Face to center of the airbag
Abdomen:		None	None
Chest:		Airbag	Airbag
Knees:		Left and right knees to the knee bolster	Left knee to left quarter of the glove compartment door; Right knee to right third of the glove compartment door

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2004 Volkswagen Touareg SUV

NHTSA No. : M45800 ; VIN: WVGBC77L14D048755 ; Color: Red

Engine Data: 6 cylinders; 195 CID; 3.2 Liters; - cc

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

Transmission Data: 6 speeds; - Manual; X 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: 2/28/2004 ; Odometer Reading 188 km

Selling Dealer: Palisades Volkswagen

& Address: 175 Route 303 West Nyack, NY

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Volkswagen AG Germany

Date of Manufacture 12/03

GVWR: 2945.2 kg; GAWR: 1414.8 kg FRONT; 1609.8 kg REAR

DATA FROM TIRE PLACARD:

Recommended Tire Size: 255/60 R17

* Recommended Cold Tire Pressure: 250 kPa FRONT; 300 kPa REAR

DATA FROM TIRE SIDEWALL:

Size of Tires on Test Vehicle: P255/60R17 ; Manufacturer: Dunlop Grandtrek ST8000

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

Treadwear: 200 ; Traction: A ; Temperature: A

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) = 461 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 120.8 kg

*Tire pressure used for test

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

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

Right Front =	<u>612.0</u>	kg	Right Rear =	<u>561.0</u>	kg
Left Front =	<u>600.0</u>	kg	Left Rear =	<u>560.0</u>	kg
TOTAL FRONT =	<u>1212.0</u>	kg	TOTAL REAR =	<u>1121.0</u>	kg
TOTAL DELIVERED WEIGHT =	<u>2333.0</u>	kg			
% of Total Front of Vehicle Weight =	<u>52.0</u>		% of Total Rear Weight =	<u>48.0</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW) =	<u>2333.0</u>	kg
Rated Cargo/Luggage Weight (RCLW) =	<u>120.8</u>	kg
Weight of 2 p.572 Dummies @ 76 each =	<u>152</u>	kg
TARGET TEST WEIGHT =	<u>2605.8</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 114.5 KG OF CARGO WEIGHT:

Right Front =	<u>649.0</u>	kg	Right Rear =	<u>648.0</u>	kg
Left Front =	<u>639.0</u>	kg	Left Rear =	<u>663.5</u>	kg
TOTAL FRONT =	<u>1288.0</u>	kg	TOTAL REAR =	<u>1311.5</u>	kg
TOTAL TEST WEIGHT =	<u>2599.5</u>	kg			
% of Total Front Weight =	<u>49.5</u>	%	% of Total Rear Weight =	<u>50.5</u>	%
Weight of Ballast Secured in Vehicle Trunk Area =	<u>0</u>	kg			
Vehicle Components Removed for Weight Reduction:	<u>Trunk area trim.</u>				

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED:	RF	<u>879</u>	LF	<u>877</u>	RR	<u>886</u>	LR	<u>889</u>
FULLY LOADED:	RF	<u>864</u>	LF	<u>863</u>	RR	<u>858</u>	LR	<u>861</u>
AS TESTED:	RF	<u>866</u>	LF	<u>863</u>	RR	<u>863</u>	LR	<u>862</u>
Vehicle's Wheel Base:	<u>2855</u>	mm						
Location of Vehicle's C.G.:	<u>1440</u>	mm rearward of front wheel center.						

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual =	<u>100</u>	liters
Usable Capacity Figure Furnished by COTR =	<u>99.9</u>	liters
Test Volume Range (92 to 94% of Usable Capacity) =	<u>91.91</u>	to <u>93.91</u> liters
ACTUAL TEST VOLUME=	<u>92.0</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: Fuel tank is located on the vehicle underbody forward of the rear axle; Fuel filler is located on the right rear quarter panel above the rear wheel. Fuel lines are routed along the left half of the vehicle underbody.		

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°
Test Date: March 04, 2004 Time: 15:06 Temperature: 21.1 °C
Vehicle NHTSA No.: M45800
Required Impact Velocity Range: 55.5 to 57.1 kph

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

Trap No. 1 = 56.65 kph; Trap No. 2 = 56.65 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>4641</u> ; C/L = <u>4749</u> ; Right = <u>4641</u>
Post-Test	Left = <u>4220</u> ; C/L = <u>4186</u> ; Right = <u>4245</u>
Crush	Left = <u>421</u> ; C/L = <u>563</u> ; Right = <u>396</u>
AVERAGE	= <u>460</u> mm

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

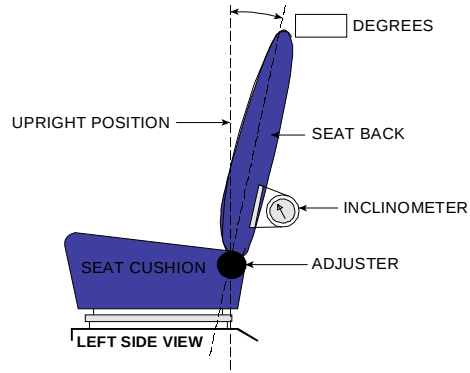
	Left = <u>1258</u> ; C/L = <u>1287</u> ; Right = <u>1230</u>
AVERAGE	= <u>1258</u> mm

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2004 Vehicle Model: Volkswagen Touareg Body Style : SUV

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: 24

Measurement instructions: The seatback is positioned such that the H-point machine back pan angle (torso angle) is 25 degrees with the sill level.

Seat back angle for passenger's seat: 24

Measurement instructions: The seatback is positioned such that the H-point machine back pan angle (torso angle) is 25 degrees with the sill level.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: Move the seat to its forward-most position (full up, full forward) and mark location. Move the seat to its rearward-most position (full down, full rear) and mark position. Place seat full down and at the midpoint of its maximum for-aft travel.

Positioning of the passenger's seat: Move the seat to its forward-most position (full up, full forward) and mark location. Move the seat to its rearward-most position (full down, full rear) and mark position. Place seat full down and at the midpoint of its maximum for-aft travel.

3. Fuel Tank Capacity Data

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 100 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 = 99.9 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 92.0 liters

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

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

The vehicle fuel pump operates briefly when the ignition is placed in the 'on' position and the engine is not started.

The vehicle fuel pump operates continuously while the engine is running.

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

4. STEERING COLUMN ADJUSTMENTS:

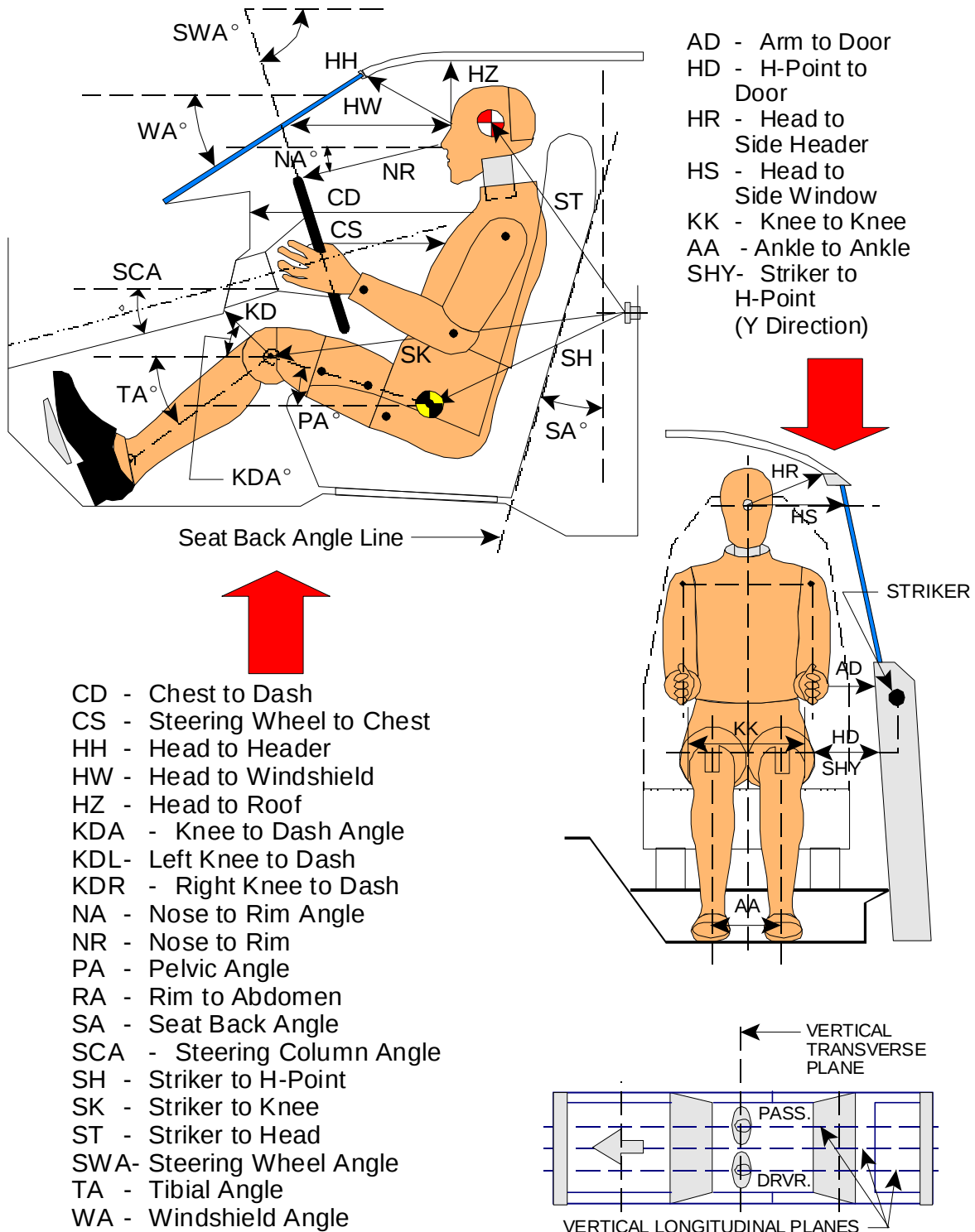
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine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

Operational Instructions: Placed in mid-tilt (69°) and telescope (10 mm).

5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: Placed in the upper-most of 5 possible positions.

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



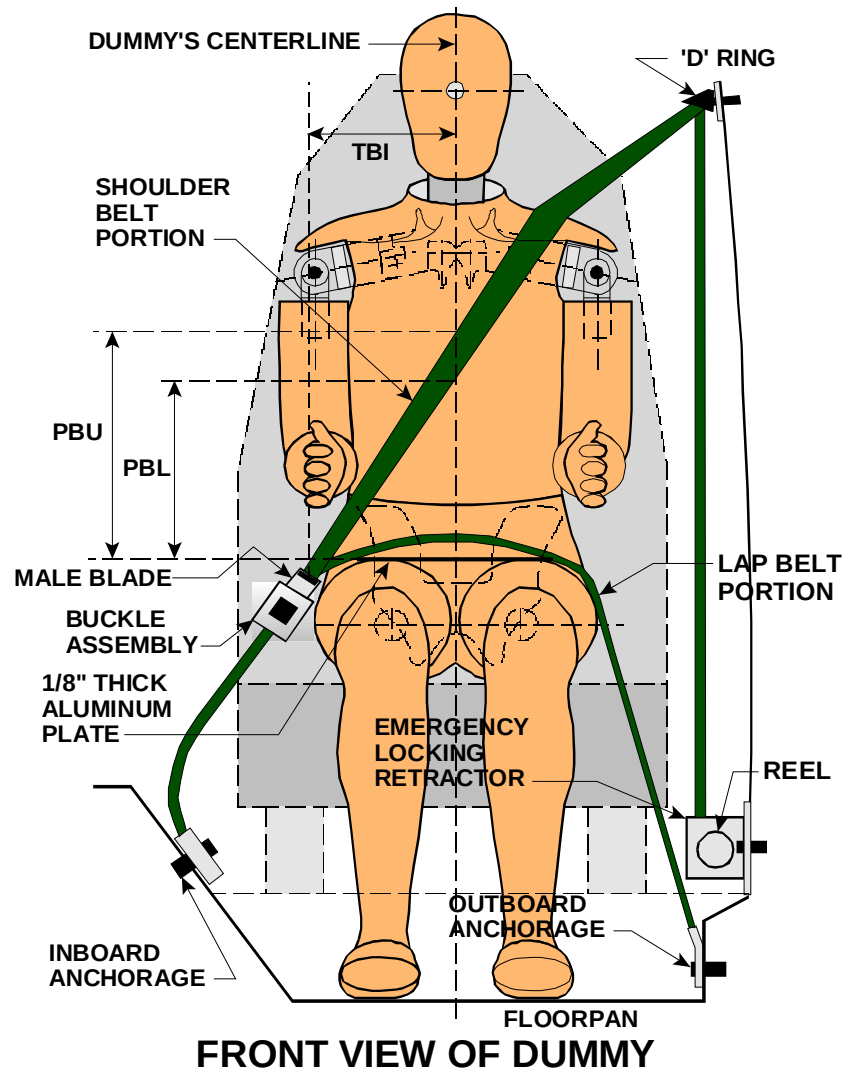
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #061)			PASS. (Serial #064)		
WA ^o	29 deg.			N/A		
SWA ^o	68.7 deg.			N/A		
SCA ^o	21.3 deg.			N/A		
SA ^o	24 deg.			24 deg.		
HZ	210			187		
HH	419			409		
HW	760			698		
HR	238			210		
NR	405	Angle	8 deg.	N/A		
CD	543			525		
CS	307			N/A		
RA	200			N/A		
KDL	178	Angle (KDA)	35 deg.	154		
KDR	149			167	Angle (KDA)	29 deg.
PA ^o	24.8 deg.			24.8 deg.		
TA ^o	44.5 deg.			39.2 deg.		
KK	420			315		
AA	370			205		
ST	465	Angle	10 deg.	469	Angle	10 deg.
SK	616	Angle	97 deg.	650	Angle	99 deg.
SH	301	Angle	126 deg.	285	Angle	125 deg.
SHY	252			245		
HS	370			350		
HD	210			193		
AD	92			75		

Dimensions in millimeters

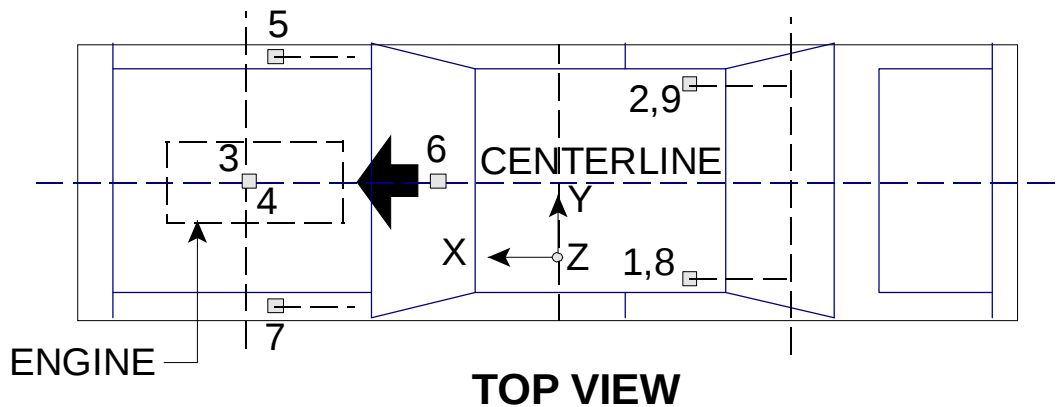
DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

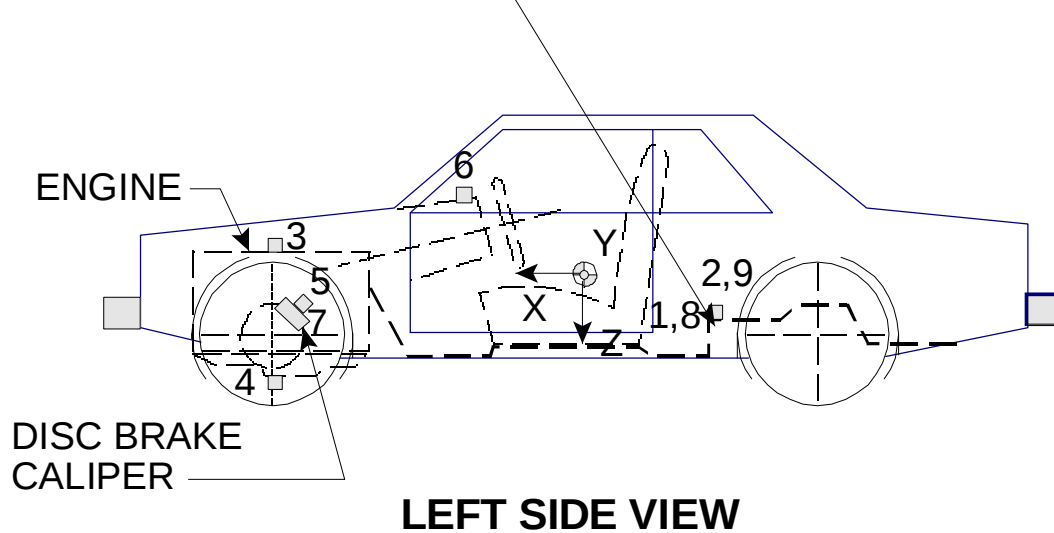


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	316	325
PBL-- Top surface of alum. plate to belt lower edge	241	240
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

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	1861	-776	-456
2	Right Rear Seat Cross Member X	1861	776	-456
3	Top of Engine Block	3803	286	-1011
4	Bottom of Engine	3077	-57	-372
5	Disc Brake Caliper @ Right Side	3962	911	-373
6	Instrument Panel	2822	31	-948
7	Disc Brake Caliper @Left Side	3961	-926	-360
8	Left Rear Seat Cross Member Z	1861	-776	-456
9	Right Rear Seat Cross Member Z	1861	776	-456

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Left Rear Seat Cross Member X	8.3	20.5	-52.1	46.6
2	Right Rear Seat Cross Member X	5.9	19.6	-74.3	46.2
3	Top of Engine Block	97.0	44.9	†	-
4	Bottom of Engine	35.4	51.1	-146.5	37.7
5	Disc Brake Caliper @ Right Side	55.9	63.9	-93.3	44.2
6	Instrument Panel	9.8	88.7	-71.0	60.5
7	Disc Brake Caliper @Left Side	49.6	65.5	-74.0	44.8
8	Left Rear Seat Cross Member Z	7.5	54.0	-17.4	62.5
9	Right Rear Seat Cross Member Z	8.9	54.3	-21.1	60.2

† Channel opened at 48 ms.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2004 Volkswagen Touareg SUV

NHTSA Test No.: M45800 Test Date: March 04, 2004

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head 9 Array X Arm Y	g	8.6	73.0	-2.2	115.4	6.0	107.4	-15.0	81.1
Head 9 Array X Arm Z	g	29.7	77.4	-4.2	123.1	21.1	61.5	-5.9	95.6
Head 9 Array Y Arm X	g	2.8	199.1	-54.6	88.0	0.7	118.5	-58.8	83.0
Head 9 Array Y Arm Z	g	22.2	77.5	-1.3	13.9	16.4	74.8	-12.5	98.0
Head 9 Array Z Arm X	g	3.5	199.3	-54.3	98.0	2.9	20.7	-56.7	83.9
Head 9 Array Z Arm Y	g	7.9	74.6	-2.5	66.1	8.2	103.7	-19.4	81.5
Head X	g	1.7	199.5	-54.2	88.1	0.8	20.6	-55.0	84.3
Head Y	g	5.6	73.4	-2.4	20.9	3.6	32.5	-13.2	84.5
Head Z	g	23.9	77.5	-1.9	14.7	†	-	-8.1	96.7
Head Resultant	g	58.2	79.6	0.0	-49.9	56.8	84.4	0.1	-39.4
Redundant Head X	g	2.2	199.5	-53.0	88.1	0.3	25.8	-55.5	83.2
Redundant Head Y	g	5.7	72.3	-2.5	22.8	7.8	50.6	-14.6	84.5
Redundant Head Z	g	24.2	77.6	-1.9	14.7	15.9	67.4	-8.0	97.7
Redundant Head Resultant	g	57.3	79.9	0.1	2.9	57.6	83.2	0.1	-38.2
Upper Neck Fx	N	1152.7	82.2	-263.2	122.4	664.0	72.6	-324.9	144.1
Upper Neck Fy	N	99.7	72.7	-88.4	93.2	205.2	97.0	-126.3	76.7
Upper Neck Fz	N	771.5	70.3	-173.6	90.6	631.2	58.4	-433.0	96.6
Upper Neck F Resultant	N	1153.3	82.2	2.4	-47.9	773.4	74.8	3.3	-36.6
Upper Neck Mx	N-m	3.2	118.0	-7.9	102.2	22.5	101.7	-10.8	137.8
Upper Neck My	N-m	80.6	83.7	-11.4	199.9	36.2	71.8	-17.1	105.6
Upper Neck Mz	N-m	3.7	199.7	-6.4	115.2	19.3	99.3	-9.2	156.0
Upper Neck M Resultant	N-m	80.7	83.7	0.0	-48.0	36.5	71.8	0.2	-30.7
Chest X	g	3.1	178.3	-48.7	81.1	3.2	166.7	-53.7	73.0
Chest Y	g	5.1	62.7	-3.9	20.9	3.8	42.0	-5.1	72.5
Chest Z	g	4.1	25.2	-4.5	62.0	6.5	89.4	-2.8	51.1
Chest Resultant	g	48.8	81.0	0.1	-20.8	53.9	73.0	0.0	-20.5

† Noise in data after 144 ms.

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

Vehicle Year/Make/Model/Body Style: 2004 Volkswagen Touareg SUV

NHTSA Test No.: M45800 Test Date: March 04, 2004

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Redundant Chest X	g	3.1	178.2	-48.2	81.0	3.1	166.1	-51.9	73.2
Redundant Chest Y	g	5.6	63.2	-3.8	20.8	4.3†	41.9	-4.7†	72.4
Redundant Chest Z	g	4.1	25.3	-4.2	70.3	6.4	89.5	-3.1	51.4
Redundant Chest Resultant	g	48.3	80.9	0.1	-19.9	52.1	73.3	0.0	-18.4
Chest Displacement	mm	0.0	-4.5	-32.2	77.6	0.0	1.8	-28.8	73.1
Pelvic X	g	6.9	87.9	-65.5	65.2	††	-	††	-
Pelvic Y	g	8.8	85.8	-4.9	18.8	8.7	61.1	-11.1	76.8
Pelvic Z	g	3.4	188.3	-42.3	71.2	2.9	136.2	-37.6	70.3
Pelvic Resultant	g	74.4	65.3	0.1	-46.1	89.1	78.6	0.0	-13.9
Left Femur	N	770.3	49.3	-1234.1	55.0	277.7	16.8	-3087.8	65.4
Right Femur	N	841.9	42.0	-2777.6	64.7	694.1	48.5	-971.8	81.7
Left Upper Tibia Mx	N-m	11.7	52.2	-13.5	92.5	26.5	73.1	-47.9	49.3
Left Upper Tibia My	N-m	9.0	191.1	-127.1	61.3	14.9	168.4	-99.4	54.9
Left Lower Tibia Fz	N	†	-	†	-	74.8	161.2	-3841.0	54.7
Left Lower Tibia Mx	N-m	23.4	66.9	-4.5	195.9	10.4	75.8	-12.5	54.2
Left Lower Tibia My	N-m	28.4	89.7	-41.2	57.4	33.8	93.3	-22.7	54.6
Right Upper Tibia Mx	N-m	24.9	57.8	-10.7	131.8	6.3	97.4	-21.2	70.5
Right Upper Tibia My	N-m	26.5	90.4	-92.8	69.7	15.1	199.9	-77.6	54.6
Right Lower Tibia Fz	N	96.4	29.2	-2596.1	56.6	277.4	136.0	-2072.9	38.9
Right Lower Tibia Mx	N-m	8.7	86.2	-9.4	70.9	8.6	55.1	-14.4	75.1
Right Lower Tibia My	N-m	21.9	81.4	-35.3	40.7	32.9	90.0	-30.2	57.1
Left Foot Aft Ax	g	15.3	95.7	-49.0	58.4	44.8	15.1	-73.8	53.6
Left Foot Aft Az	g	1.3	189.4	-30.0	54.7	‡	-	‡	-
Left Foot Fore Az	g	16.4	14.1	-49.1	32.1	66.7	15.0	-83.0	15.5
Right Foot Aft Ax	g	12.5	34.4	-65.0	40.0	12.0	91.9	-59.3	55.2
Right Foot Aft Az	g	4.9	190.2	-70.2	54.9	9.3	109.2	-42.5	53.0
Right Foot Fore Az	g	18.3	31.8	-193.4	34.4	18.6	108.2	-49.9	52.9
Lap Belt Load	N	7564.8	64.7	-11.5	8.1	8413.7	69.5	-13.9	8.0
Torso Belt	N	4059.7	75.2	-40.9	6.6	4723.8	41.3	-49.3	162.1

† Spikes in data.

†† Questionable data after 59 ms

‡ Transducer failed

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

Vehicle Year/Make/Model/Body Style: 2004 Volkswagen Touareg SUV

NHTSA Test No.: M45800 Test Date: March 04, 2004

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	597.1	69.8	104.7	49.4
Position #2 - Passenger	403.0	64.4	97.7	43.0

** 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	47.9	79.5	82.5	452.9
Position #2 - Passenger	51.5	71.6	74.6	403.9

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

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

Vehicle Year/Make/Model/Body Style: 2004 Volkswagen Touareg SUV

NHTSA Test No.: M45800 Test Date: March 04, 2004

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	570.3	69.9	104.6	48.6
Position #2 - Passenger	403.1	64.5	97.5	43.1

** 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	47.6	79.6	82.6	442.1
Position #2 - Passenger	49.9	71.6	74.6	373.6

* 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

1540

1446

Shoulder belt length as measured
on Part 572 Dummy.

908

868

Lap belt length as measured
on Part 572 Dummy.

632

578

BELT STRETCH DATA:

Measured mechanically.

0 mm/m

0 mm/m

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 0.0 mm molding.

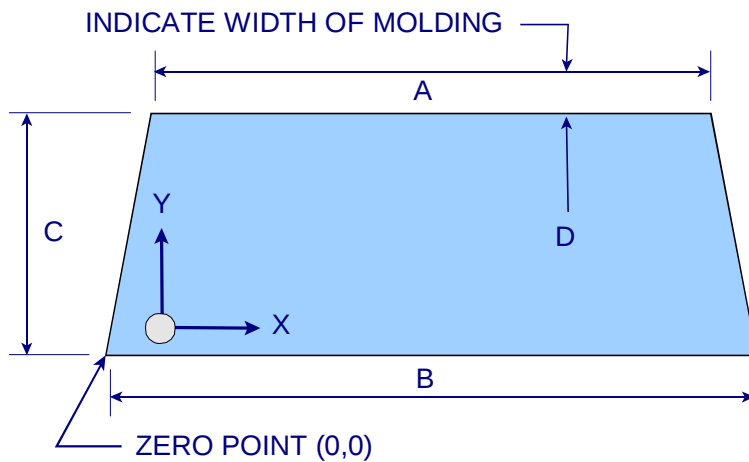
FMVSS 212 REQUIREMENTS:

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	2250	2250	100.0%
LEFT SIDE	2250	2250	100.0%
TOTAL	4500	4500	100.0%

AREA OF RETENTION FAILURE:



DIMENSIONS (mm)	
A	1300
B	1550
C	825
D	0

FRONT VIEW OF WINDSHIELD

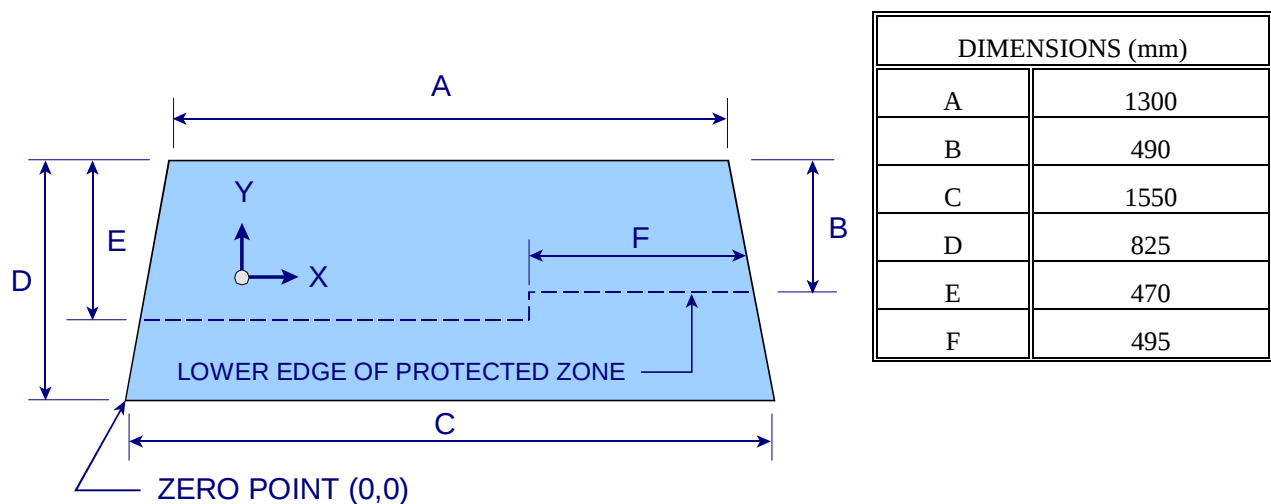
FAILURE DETAILS: None

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.: M45800 TEST DATE: March 04, 2004

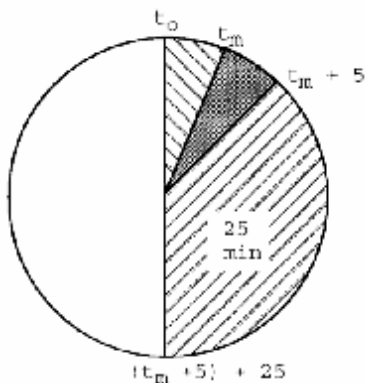
VEHICLE MAKE/MODEL: 2004 Volkswagen Touareg SUV

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

=====

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

FUEL SPILLAGE MEASUREMENT:



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

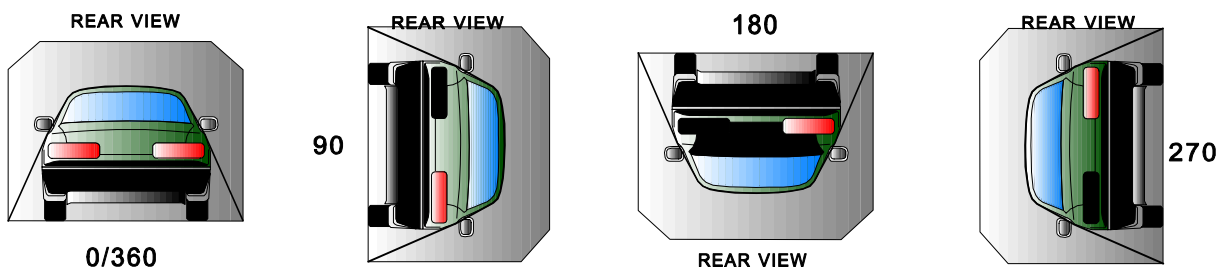
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

DATA SHEET NO. 13 - ROLLOVER DATA

Vehicle: 2004 Volkswagen Touareg SUV

NHTSA No.: M45800



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	14	seconds	5	minutes	6	minutes	14	seconds	7	minutes
90° - 180°	1	minutes	11	seconds	5	minutes	6	minutes	11	seconds	7	minutes
180°-270°	1	minutes	6	seconds	5	minutes	6	minutes	6	seconds	7	minutes
270°-360°	1	minutes	11	seconds	5	minutes	6	minutes	11	seconds	7	minutes

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

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

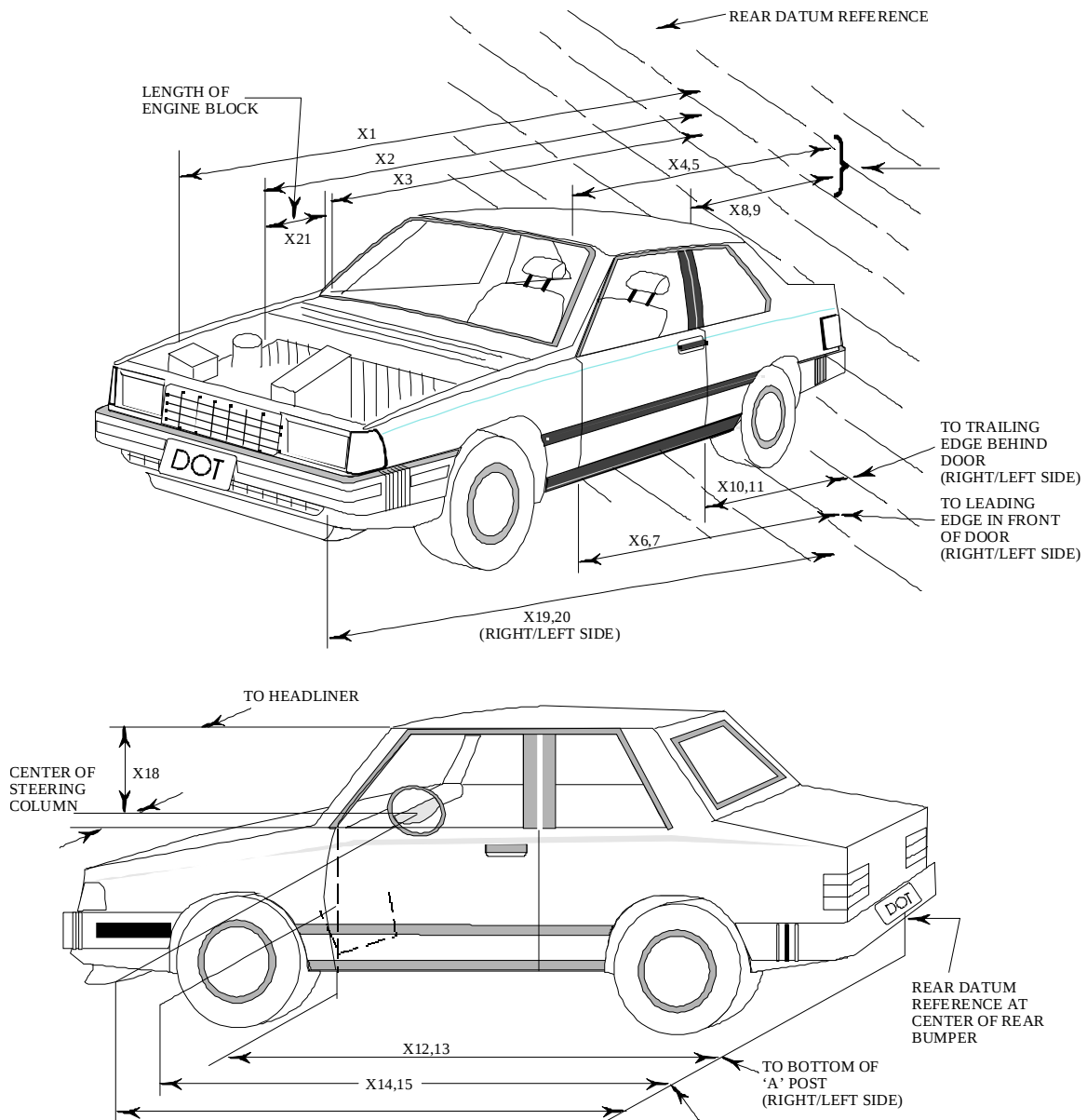
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	-
90° - 180°	0	0	0	-
180°-270°	0	0	0	-
270°-360°	0	0	0	-

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

IV. SOLVENT SPILLAGE LOCATION(S):

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

DATA SHEET NO. 14 TEST VEHICLE MEASUREMENTS

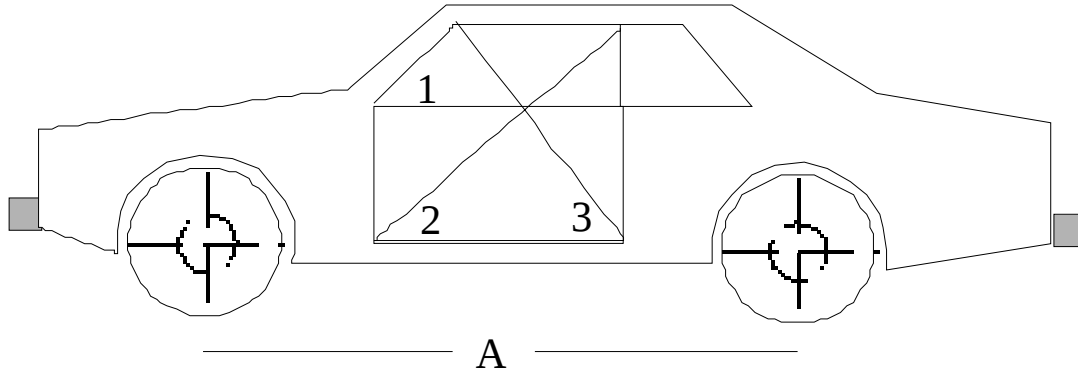


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4749	4186	563
X2	Rear Surface of Vehicle to Front of Engine	4176	4031	145
X3	Rear Surface of Vehicle to Firewall	3613	3567	46
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3180	3178	2
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3178	3178	0
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3214	3215	-1
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3214	3215	-1
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2047	2047	0
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2048	2046	2
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2106	2106	0
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2103	2106	-3
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3227	3228	-1
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3226	3226	0
X14	Rear Surface of Vehicle to Firewall, Right Side	3693	3647	46
X15	Rear Surface of Vehicle to Firewall, Left Side	3702	3674	28
X16	Rear Surface of Vehicle to Steering Column	2666	2701	-35
X17	Center of Steering Column to "A" Post	323	344	-21
X18	Center of Steering Column to Headliner	427	438	-11
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4641	4245	396
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4641	4220	421
X21	Length of Engine Block	535	535	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2879	2879	0
CD	Rear Surface of Vehicle to Center of Dash Panel	2904	2914	-10
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2884	2882	2

All Dimensions in mm

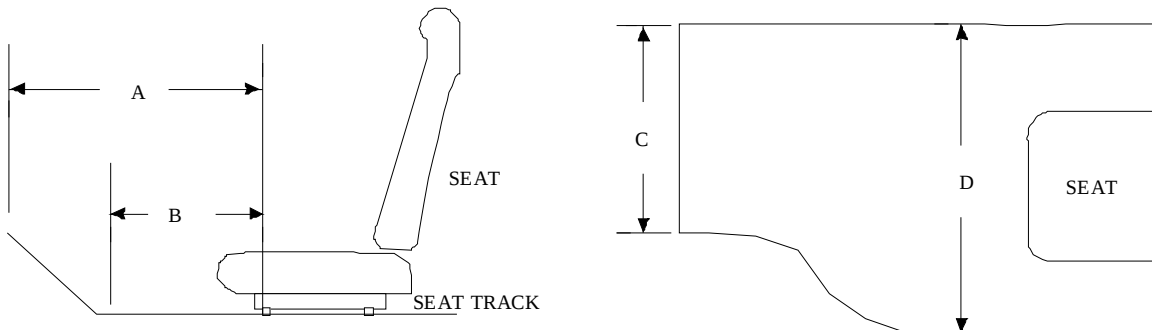
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	1038	1564	1058	1045	1571	1030
AFTER TEST	1041	1561	1060	1044	1565	1035
DIFFERENCE	-3	3	-2	1	6	-5

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2855	2855
AFTER TEST	2804	2821
DIFFERENCE	51	34

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



DRIVER

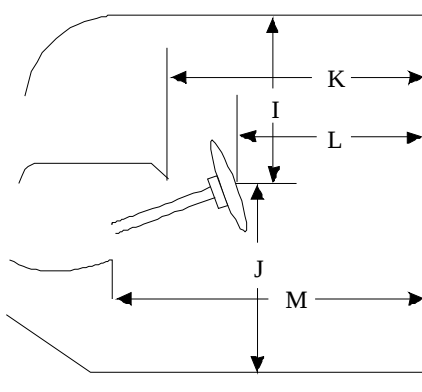
Measurement	Pre-Test	Post-Test	Difference
A	666	665	1
B	460	470	-10
C	384	377	7
D	509	509	0

PASSENGER

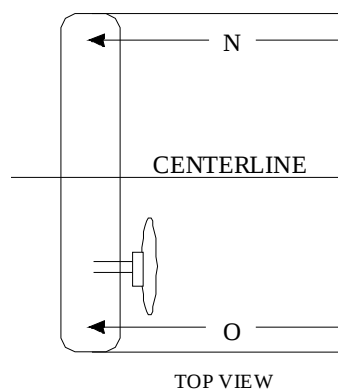
Measurement	Pre-Test	Post-Test	Difference
A	645	646	-1
B	443	458	-15
C	451	451	0
D	365	370	-5

Units = mm

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

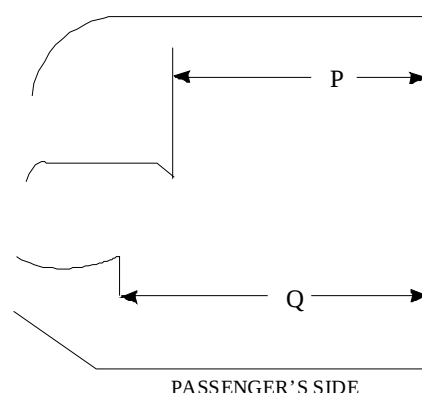


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE

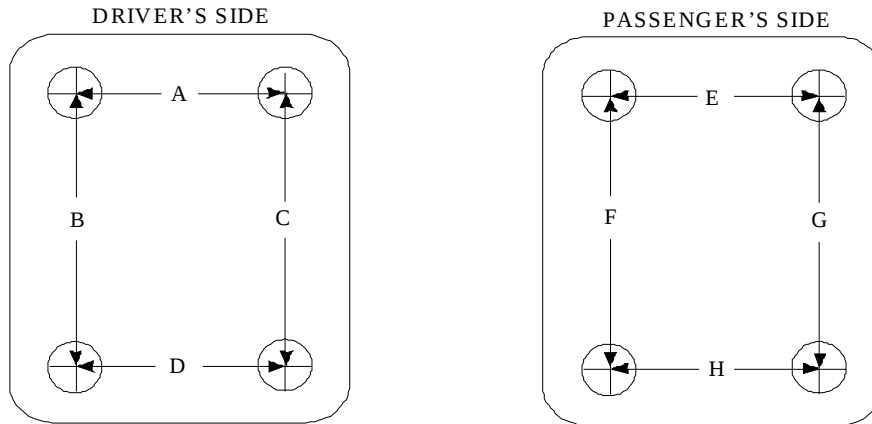


PASSENGER'S SIDE

Measurement	Pre-Test	Post-Test	Difference
I	427	438	-11
J	677	659	18
K	1720	1725	-5
L	1514	1550	-36
M	1800	1809	-9
N	1733	1737	-4
O	1733	1731	2
P = K (PASS.)	1725	1731	-6
Q = M (PASS.)	1792	1805	-13

Units = mm

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

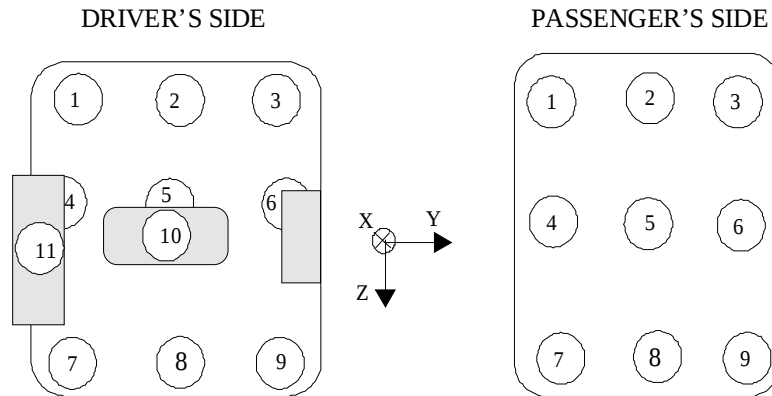


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	384	377	7
B	348	360	-12
C	294	300	-6
D	509	509	0
E	451	451	0
F	315	308	7
G	319	318	1
H	365	370	-5

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	3375	3384	-9	-656	-667	11
2	3383	3376	7	-642	-651	9
3	3377	3388	-11	-653	-657	4
4	3303	3314	-11	-520	-536	16
5	3301	3310	-9	-522	-536	14
6	3290	3254	36	-524	-524	0
7	3174	3181	-7	-463	-469	6
8	3178	3181	-3	-466	-467	1
9	3149	3158	-9	-462	-464	2
10	3162	3156	6	-643	-650	7
11	3158	3164	-6	-523	-535	12

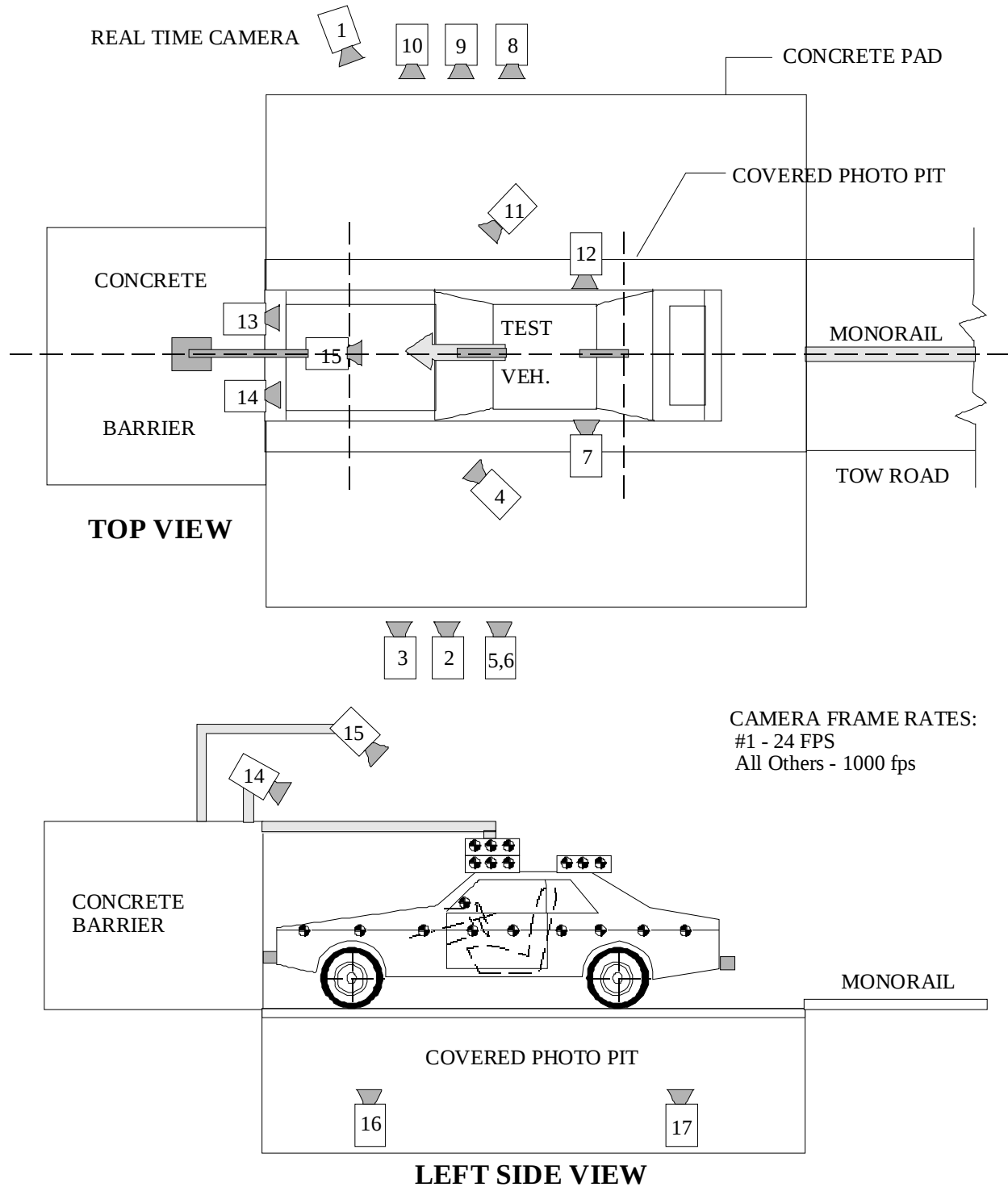
Passenger Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3370	3362	8	-692	-709	17
2	3364	3358	6	-674	-694	20
3	3361	3355	6	-689	-695	6
4	3257	3258	-1	-574	-573	-1
5	3266	3272	-6	-580	-576	-4
6	3258	3258	0	-574	-570	-4
7	3164	3170	-6	-458	-458	0
8	3162	3169	-7	-461	-456	-5
9	3156	3162	-6	-460	-453	-7

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.: M45800 Vehicle: 2004 Volkswagen Touareg SUV

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	6741	1585	1100	-4.7	6436	12.5	1025
3	Left Side View	8370	855	1085	-2.1	8065	25	1000
4	Driver and Interior View	7378	2483	1980	-7.1	-	25	1055
5	Steering Column (Bottom)	7495	1905	1170	-1.3	7190	25	1030
6	Steering Column (Top)	7495	1905	1875	-7.3	7190	25	1025
7	Left CRS View	3240	2668	2320	-24.2	-	28-70	1000
8	Overall Right Side	6795	2032	1104	-2.1	7136	12.5	1015
9	Right Side View	8185	1385	1056	-1.3	8526	25	1035
10	Right Passenger View	8095	1855	1462	-2.3	8436	35	1030
11	Passenger and Interior View	7642	2567	1987	-6.5	-	25	1010
12	Right CRS View	3240	-2672	2360	-24.8	-	28-70	1000
13	Passenger Front View	620	-92	1987	-28.5	-	13	1025
14	Driver Front View	620	-92	1987	-29.1	-	13	1015
15	Windshield View	0	-530	3374	-49.2	-	13	1025
16	Pit View of Engine	0	615	-3048	90	-	13	1005
17	Pit View of Fuel Tank	0	2825	-3048	90	-	13	990

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

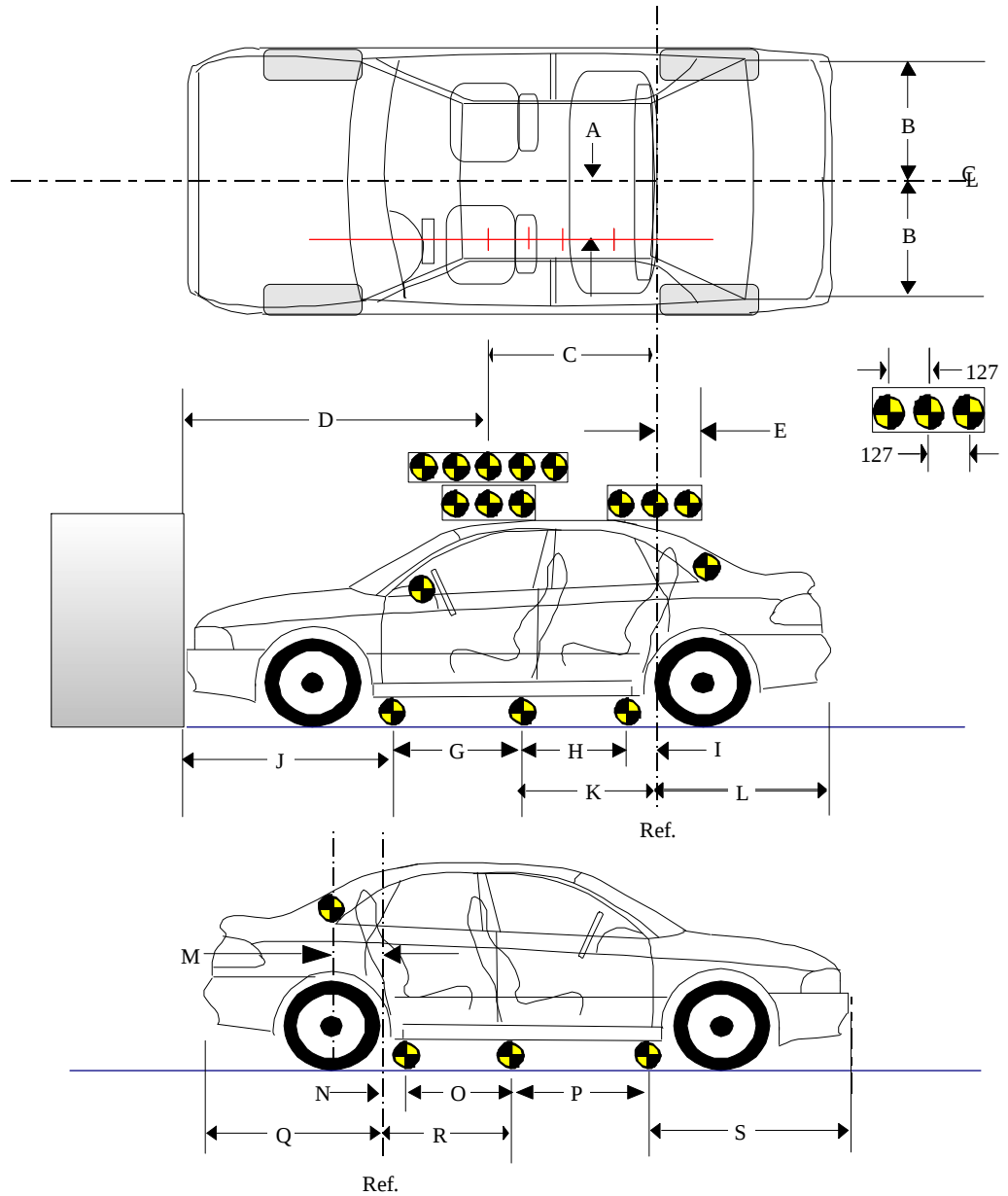
Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

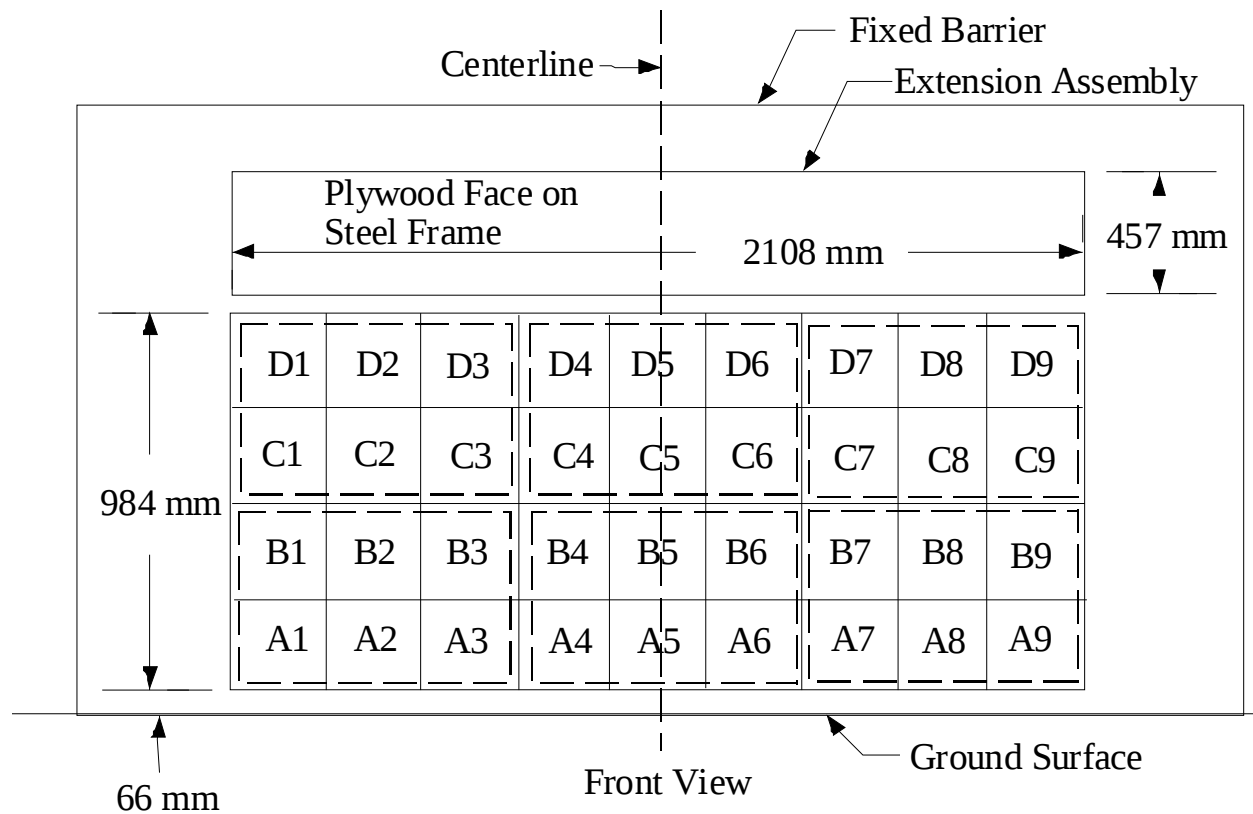
(Dimensions in millimeters)

A	417
B	646
C	1220
D	2196
E	185
F	1512
G	918
H	910
I	141
J	1433
K	1051
L	1346
M	191
N	140
O	922
P	915
Q	1340
R	1062
S	1434



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.: M45800; Test Date: March 04, 2004; Technician: Lawrence Q. Valvo

Vehicle Model Year/Make/Model: 2004 Volkswagen Touareg SUV

A. No. of vent holes: 1 -Driver 2 -Passenger

B. Size of vent holes: (mm²) 1963 -Driver 1590 -Passenger

C. Total vent area: (mm²) 1963 -Driver 3180 -Passenger

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

Driver: 580 -Height; 580 -Width; 170 -Depth

Passenger: 670 -Height; 340 -Width; 410 -Depth

E. Is the air bag tethered?

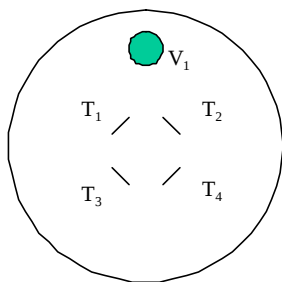
Driver: X -Yes; - -No; If yes, record length of tether- 200

Passenger: X -Yes; - -No; If yes, record length of tether- 450

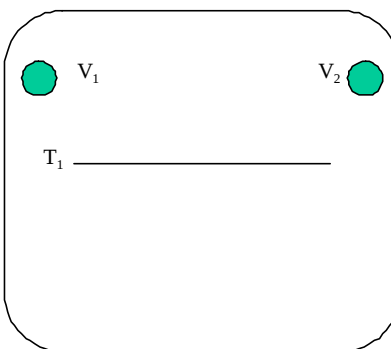
Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.

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

Driver



Passenger



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

Driver: Air bag: PA 6.6 0041010005343102

Generator: N/A

Passenger: Air bag: PA 6.6 0042000005458402

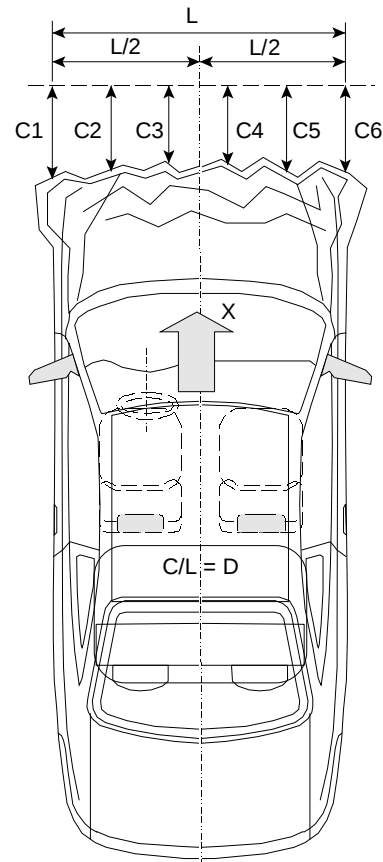
Generator: N/A

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

Vehicle Make/Model/Body Style: Volkswagen Touareg SUV
 NHTSA Test No.: M45800 VIN: WVGBC77L14D048755
 Model Year: 2004 Build Date: 12/03 Test Date: March 04, 2004
 Vehicle Size Category: MPV Test Weight: 2599.5 kg
 Vehicle Wheelbase: 2855 mm; Front Overhang: 921 mm; Overall Width: 1928 mm
 Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4475	4192	283
C2 =	4663	4198	465
C3 =	4742	4184	558
C4 =	4744	4186	558
C5 =	4676	4210	466
C6 =	4505	4248	257



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region: L1= 1588 mm
 L2= 794.0 mm
 L5= 317.6 mm

APPENDIX A
PHOTOGRAPHS

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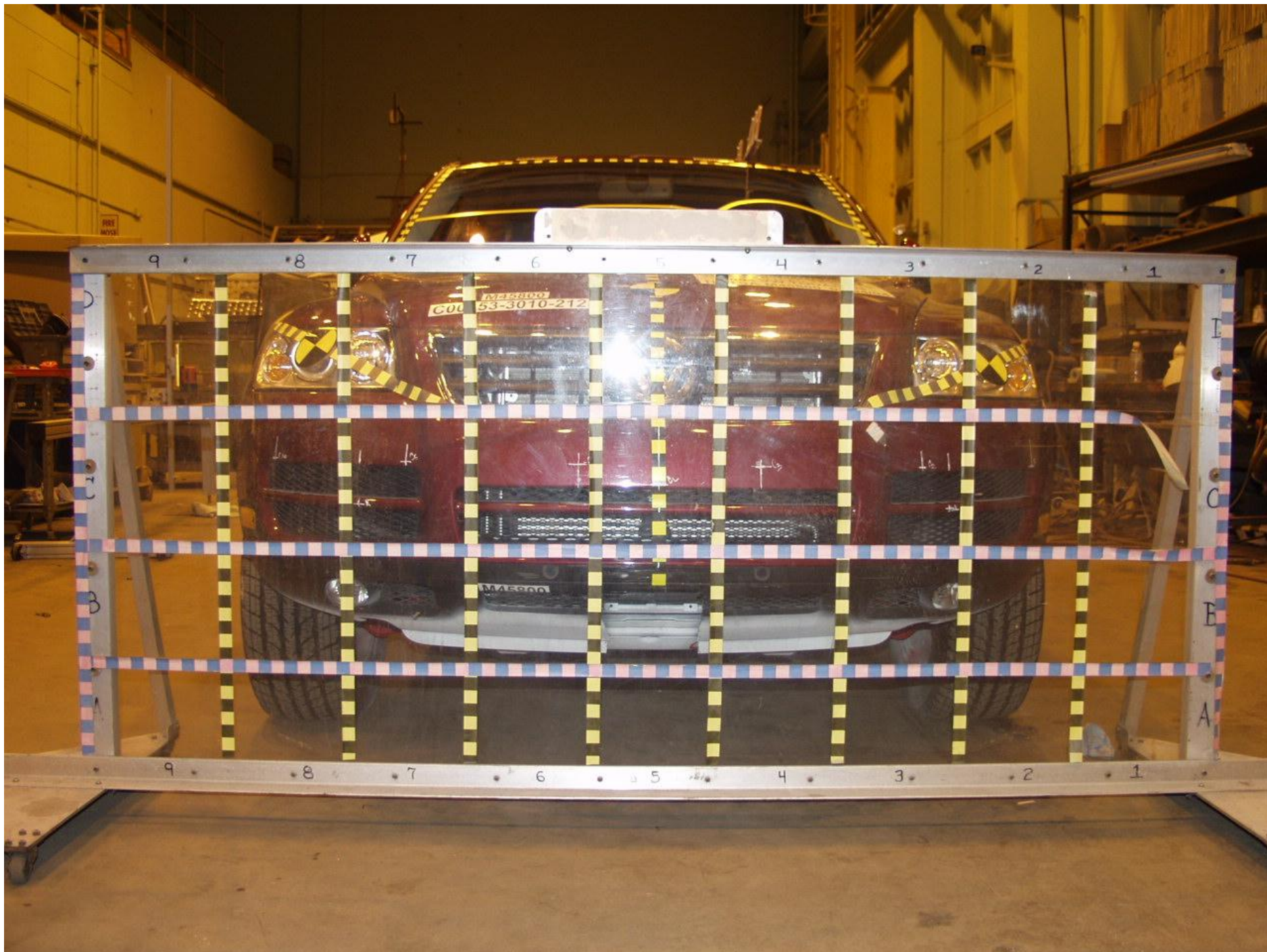


Figure A-1 LOAD CELL LOCATIONS

MFD BY VOLKSWAGEN AG GERMANY 12/03

GVWR 6493 GAWR FRONT 3119 /REAR 3549 LBS

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

WVGBC77L14D048755

TYPE: MPV



5147536 2003 37

Figure A-2 VEHICLE CERTIFICATION PLACARD

12/03
9 LBS
ABLE
ON
VE.
MPV
5147536 2003 37
716 010 378 C



TIRE AND LOADING INFORMATION

SEATING CAPACITY TOTAL 5 FRONT 2 REAR 3

THE COMBINED WEIGHT OF OCCUPANTS AND CARGO SHOULD NEVER EXCEED 461 KG OR 1017 LBS

ORIGINAL SIZE	COLD TIRE INFLATION PRESSURE	
255/60 R17	FRONT	250 KPA, 36 PSI
	REAR	300 KPA, 44 PSI
SPARE TIRE	COLD TIRE INFLATION PRESSURE	
195/80-17	350 KPA, 51 PSI	

**SEE OWNER'S
MANUAL FOR
ADDITIONAL
INFORMATION**

716 010 378 C

Figure A-3 VEHICLE TIRE PLACARD



Figure A-4 RIGHT FRONT, AS RECEIVED



Figure A-5 LEFT REAR, AS RECEIVED



Figure A-6 PRE-TEST FRONT VIEW



Figure A-7 POST-TEST FRONT VIEW



Figure A-8 PRE-TEST LEFT SIDE VIEW



Figure A-9 POST-TEST LEFT SIDE VIEW



Figure A-10 PRE-TEST RIGHT SIDE VIEW



Figure A-11 POST-TEST RIGHT SIDE VIEW



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



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



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



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



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



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



Figure A-18 PRE-TEST WINDSHIELD VIEW



Figure A-19 POST-TEST WINDSHIELDVIEW



Figure A-20 PRE-TEST ENGINE COMPARTMENT VIEW



Figure A-21 POST-TEST ENGINE COMPARTMENT VIEW



Figure A-22 PRE-TEST FUEL CAP VIEW



Figure A-23 POST-TEST FUEL CAP VIEW



Figure A-24 PRE-TEST FRONT UNDERBODY VIEW



Figure A-25 POST-TEST FRONT UNDERBODY VIEW



Figure A-26 PRE-TEST MID UNDERBODY VIEW



Figure A-27 POST-TEST MID UNDERBODY VIEW



Figure A-28 PRE-TEST REAR UNDERBODY VIEW



Figure A-29 POST-TEST REAR UNDERBODY VIEW



Figure A-30 PRE-TEST DRIVER HEAD LOCATION



Figure A-31 POST-TEST DRIVER HEAD LOCATION



A-35

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Figure A-32 PRE-TEST DRIVER POSITION VIEW



Figure A-33 POST-TEST DRIVER POSITION VIEW



Figure A-34 PRE-TEST DRIVER AND INTERIOR VIEW



Figure A-35 POST-TEST DRIVER AND INTERIOR VIEW



Figure A-36 PRE-TEST DRIVER FEET VIEW



Figure A-37 POST-TEST DRIVER FEET VIEW



Figure A-39 POST-TEST DRIVER KNEE BOLSTER VIEW



Figure A-40 PRE-TEST DRIVER FLOOR PAN VIEW



Figure A-41 POST-TEST DRIVER FLOOR PAN VIEW



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Figure A-42 POST-TEST DRIVER HEAD VIEW



Figure A-43 POST-TEST DRIVER CONTACT TO AIRBAG



A-47

8642-NCAP-46

Figure A-44 PRE-TEST PASSENGER HEAD LOCATION



Figure A-45 POST-TEST PASSENGER HEAD LOCATION



A-49

8642-NCAP-46

Figure A-46 PRE-TEST PASSENGER POSITION VIEW



Figure A-47 POST-TEST PASSENGER POSITION VIEW



Figure A-48 PRE-TEST PASSENGER AND INTERIOR VIEW



A-52

8642-NCAP-46

Figure A-49 POST-TEST PASSENGER AND INTERIOR VIEW



Figure A-50 PRE- TEST PASSENGER FEET VIEW



Figure A-51 POST-TEST PASSENGER FEET VIEW



Figure A-52 PRE-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-53 POST-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-54 PRE-TEST PASSENGER FLOOR PAN VIEW



Figure A-55 POST-TEST PASSENGER FLOOR PAN VIEW



Figure A-56 POST-TEST PASSENGER HEAD VIEW



Figure A-57 POST-TEST PASSENGER CONTACT TO AIRBAG

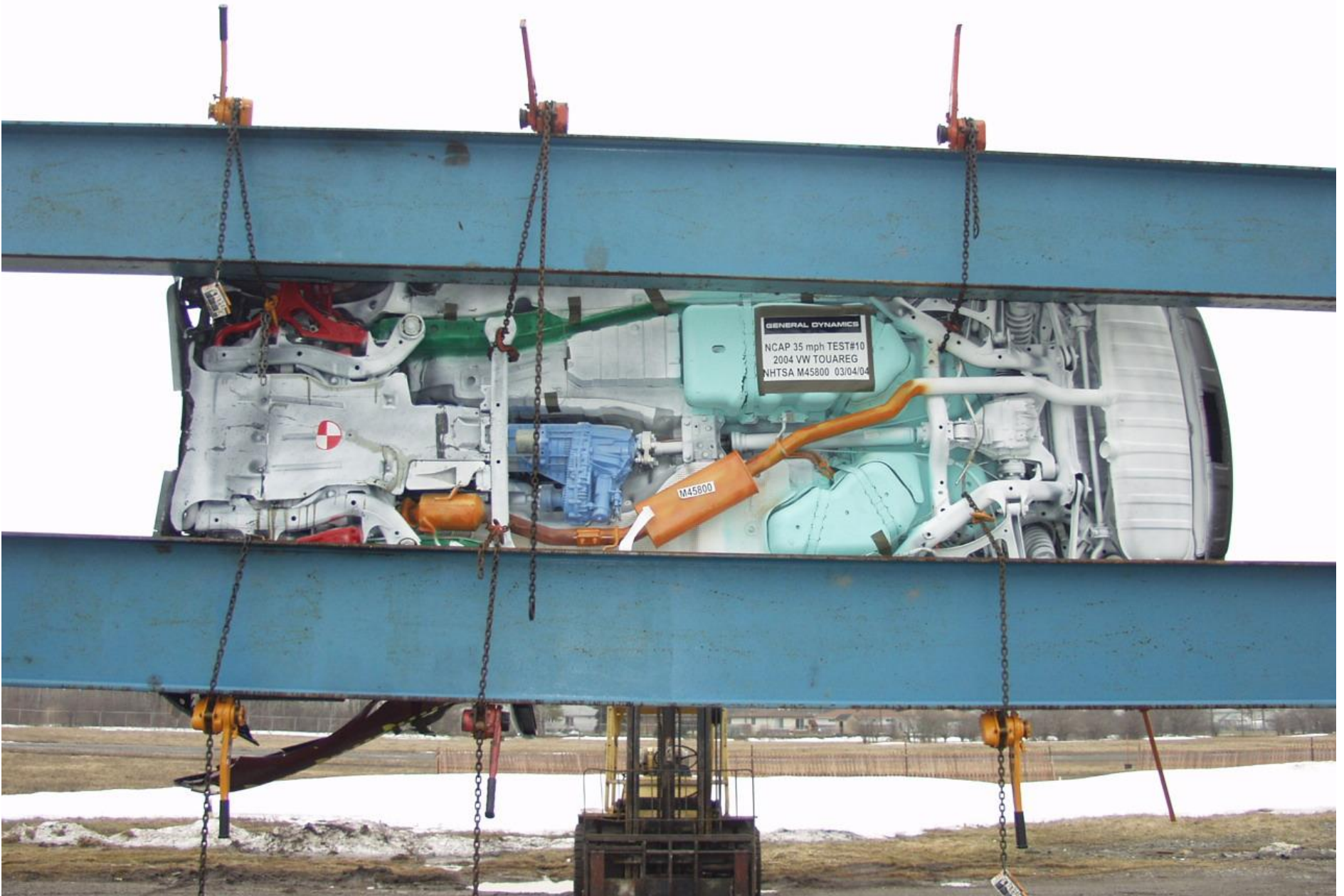


Figure A-58 ROLLOVER VIEW



Figure A-59 IMPACT VIEW

APPENDIX B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

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

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

DATA CHANNEL FILTER CLASS SUMMARY

NHTSA TEST NO. M45800

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

Table of Data Plots

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
1	V1P1 Head 9 Array X Arm Ay [g, CFC_1000]	B-8
2	V1P1 Head 9 Array X Arm Az [g, CFC_1000]	B-9
3	V1P1 Head 9 Array Y Arm Ax [g, CFC_1000]	B-10
4	V1P1 Head 9 Array Y Arm Az [g, CFC_1000]	B-11
5	V1P1 Head 9 Array Z Arm Ax [g, CFC_1000]	B-12
6	V1P1 Head 9 Array Z Arm Ay [g, CFC_1000]	B-13
7	V1P1 Head CG x [g, CFC_1000]	B-14
8	V1P1 Head CG y [g, CFC_1000]	B-15
9	V1P1 Head CG z [g, CFC_1000]	B-16
10	V1P1 Head CG Resultant [g, CFC_1000]	B-17
11	V1P1 Head CG Red x [g, CFC_1000]	B-18
12	V1P1 Head CG Red y [g, CFC_1000]	B-19
13	V1P1 Head CG Red z [g, CFC_1000]	B-20
14	V1P1 Head CG Red Resultant [g, CFC_1000]	B-21
15	V1P1 Upper Neck Fx [N, CFC_1000]	B-22
16	V1P1 Upper Neck Fy [N, CFC_1000]	B-23
17	V1P1 Upper Neck Fz [N, CFC_1000]	B-24
18	V1P1 Upper Neck F Resultant [N, CFC_1000]	B-25
19	V1P1 Upper Neck Mx [N-m, CFC_600]	B-26
20	V1P1 Upper Neck My [N-m, CFC_600]	B-27
21	V1P1 Upper Neck Mz [N-m, CFC_600]	B-28
22	V1P1 Upper Neck M Resultant [N-m, CFC_600]	B-29
23	V1P1 Chest x [g, CFC_180]	B-30
24	V1P1 Chest y [g, CFC_180]	B-31
25	V1P1 Chest z [g, CFC_180]	B-32
26	V1P1 Chest Resultant [g, CFC_180]	B-33
27	V1P1 Chest Red x [g, CFC_180]	B-34
28	V1P1 Chest Red y [g, CFC_180]	B-35
29	V1P1 Chest Red z [g, CFC_180]	B-36
30	V1P1 Chest Red Resultant [g, CFC_180]	B-37
31	V1P1 Chest Compression x [mm, CFC_600]	B-38
32	V1P1 Pelvic x [g, CFC_1000]	B-39
33	V1P1 Pelvic y [g, CFC_1000]	B-40
34	V1P1 Pelvic z [g, CFC_1000]	B-41
35	V1P1 Pelvic Resultant [g, CFC_1000]	B-42
36	V1P1 Left Femur z [N, CFC_600]	B-43
37	V1P1 Right Femur z [N, CFC_600]	B-44
38	V1P1 Left Upper Tibia Mx [N-m, CFC_600]	B-45
39	V1P1 Left Upper Tibia My [N-m, CFC_600]	B-46
40	V1P1 Left Lower Tibia Fz [N, CFC_600]	B-47
41	V1P1 Left Lower Tibia Mx [N-m, CFC_600]	B-48
42	V1P1 Left Lower Tibia My [N-m, CFC_600]	B-49
43	V1P1 Right Upper Tibia Mx [N-m, CFC_600]	B-50
44	V1P1 Right Upper Tibia My [N-m, CFC_600]	B-51
45	V1P1 Right Lower Tibia Fz [N, CFC_600]	B-52
46	V1P1 Right Lower Tibia Mx [N-m, CFC_600]	B-53

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PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
47	V1P1 Right Lower Tibia My [N-m, CFC_600]	B-54
48	V1P1 Left Foot Aft x [g, CFC_600]	B-55
49	V1P1 Left Foot Aft z [g, CFC_600]	B-56
50	V1P1 Left Foot Fore z [g, CFC_600]	B-57
51	V1P1 Right Foot Aft x [g, CFC_600]	B-58
52	V1P1 Right Foot Aft z [g, CFC_600]	B-59
53	V1P1 Right Foot Fore z [g, CFC_600]	B-60
54	V1 Driver Lap Belt [N, CFC_60]	B-61
55	V1 Driver Torso Belt [N, CFC_60]	B-62
56	V1P2 Head 9 Array X Arm Ay [g, CFC_1000]	B-63
57	V1P2 Head 9 Array X Arm Az [g, CFC_1000]	B-64
58	V1P2 Head 9 Array Y Arm Ax [g, CFC_1000]	B-65
59	V1P2 Head 9 Array Y Arm Az [g, CFC_1000]	B-66
60	V1P2 Head 9 Array Z Arm Ax [g, CFC_1000]	B-67
61	V1P2 Head 9 Array Z Arm Ay [g, CFC_1000]	B-68
62	V1P2 Head CG x [g, CFC_1000]	B-69
63	V1P2 Head CG y [g, CFC_1000]	B-70
64	V1P2 Head CG z [g, CFC_1000]	B-71
65	V1P2 Head CG Resultant [g, CFC_1000]	B-72
66	V1P2 Head CG Red x [g, CFC_1000]	B-73
67	V1P2 Head CG Red y [g, CFC_1000]	B-74
68	V1P2 Head CG Red z [g, CFC_1000]	B-75
69	V1P2 Head CG Red Resultant [g, CFC_1000]	B-76
70	V1P2 Upper Neck Fx [N, CFC_1000]	B-77
71	V1P2 Upper Neck Fy [N, CFC_1000]	B-78
72	V1P2 Upper Neck Fz [N, CFC_1000]	B-79
73	V1P2 Upper Neck F Resultant [N, CFC_1000]	B-80
74	V1P2 Upper Neck Mx [N-m, CFC_600]	B-81
75	V1P2 Upper Neck My [N-m, CFC_600]	B-82
76	V1P2 Upper Neck Mz [N-m, CFC_600]	B-83
77	V1P2 Upper Neck M Resultant [N-m, CFC_600]	B-84
78	V1P2 Chest x [g, CFC_180]	B-85
79	V1P2 Chest y [g, CFC_180]	B-86
80	V1P2 Chest z [g, CFC_180]	B-87
81	V1P2 Chest Resultant [g, CFC_180]	B-88
82	V1P2 Chest Red x [g, CFC_180]	B-89
83	V1P2 Chest Red y [g, CFC_180]	B-90
84	V1P2 Chest Red z [g, CFC_180]	B-91
85	V1P2 Chest Red Resultant [g, CFC_180]	B-92
86	V1P2 Chest Compression x [mm, CFC_600]	B-93
87	V1P2 Pelvic x [g, CFC_1000]	B-94
88	V1P2 Pelvic y [g, CFC_1000]	B-95
89	V1P2 Pelvic z [g, CFC_1000]	B-96
90	V1P2 Pelvic Resultant [g, CFC_1000]	B-97
91	V1P2 Left Femur z [N, CFC_600]	B-98
92	V1P2 Right Femur z [N, CFC_600]	B-99

Table of Data Plots (Continued)

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
93	V1P2 Left Upper Tibia Mx [N-m, CFC_600]	B-100
94	V1P2 Left Upper Tibia My [N-m, CFC_600]	B-101
95	V1P2 Left Lower Tibia Fz [N, CFC_600]	B-102
96	V1P2 Left Lower Tibia Mx [N-m, CFC_600]	B-103
97	V1P2 Left Lower Tibia My [N-m, CFC_600]	B-104
98	V1P2 Right Upper Tibia Mx [N-m, CFC_600]	B-105
99	V1P2 Right Upper Tibia My [N-m, CFC_600]	B-106
100	V1P2 Right Lower Tibia Fz [N, CFC_600]	B-107
101	V1P2 Right Lower Tibia Mx [N-m, CFC_600]	B-108
102	V1P2 Right Lower Tibia My [N-m, CFC_600]	B-109
103	V1P2 Left Foot Aft x [g, CFC_600]	B-110
104	V1P2 Left Foot Aft z [g, CFC_600]	B-111
105	V1P2 Left Foot Fore z [g, CFC_600]	B-112
106	V1P2 Right Foot Aft x [g, CFC_600]	B-113
107	V1P2 Right Foot Aft z [g, CFC_600]	B-114
108	V1P2 Right Foot Fore z [g, CFC_600]	B-115
109	V1 RFP Lap Belt [N, CFC_60]	B-116
110	V1 RFP Torso Belt [N, CFC_60]	B-117
111	V1 Left Rear #1x [g, CFC_60]	B-118
112	V1 Left Rear #1x Velocity [kph, CFC_180]	B-119
113	V1 Left Rear #1x Displacement [mm, CFC_180]	B-120
114	V1 Right Rear #2x [g, CFC_60]	B-121
115	V1 Right Rear #2x Velocity [kph, CFC_180]	B-122
116	V1 Right Rear #2x Displacement [mm, CFC_180]	B-123
117	V1 Engine Top #3x [g, CFC_60]	B-124
118	V1 Engine Top #3x Velocity [kph, CFC_180]	B-125
119	V1 Engine Top #3x Displacement [mm, CFC_180]	B-126
120	V1 Engine Bottom #4x [g, CFC_60]	B-127
121	V1 Engine Bottom #4x Velocity [kph, CFC_180]	B-128
122	V1 Engine Bottom #4x Displacement [mm, CFC_180]	B-129
123	V1 Right Caliper #5x [g, CFC_60]	B-130
124	V1 Right Caliper #5x Velocity [kph, CFC_180]	B-131
125	V1 Right Caliper #5x Displacement [mm, CFC_180]	B-132
126	V1 Instrument Panel #6x [g, CFC_60]	B-133
127	V1 Instrument Panel #6x Velocity [kph, CFC_180]	B-134
128	V1 Instrument Panel #6x Displacement [mm, CFC_180]	B-135
129	V1 Left Caliper #7x [g, CFC_60]	B-136
130	V1 Left Caliper #7x Velocity [kph, CFC_180]	B-137
131	V1 Left Caliper #7x Displacement [mm, CFC_180]	B-138
132	V1 Left Rear #8z [g, CFC_60]	B-139
133	V1 Left Rear #8z Velocity [kph, CFC_180]	B-140
134	V1 Left Rear #8z Displacement [mm, CFC_180]	B-141
135	V1 Right Rear #9z [g, CFC_60]	B-142
136	V1 Right Rear #9z Velocity [kph, CFC_180]	B-143
137	V1 Right Rear #9z Displacement [mm, CFC_180]	B-144

Table of Data Plots (Continued)

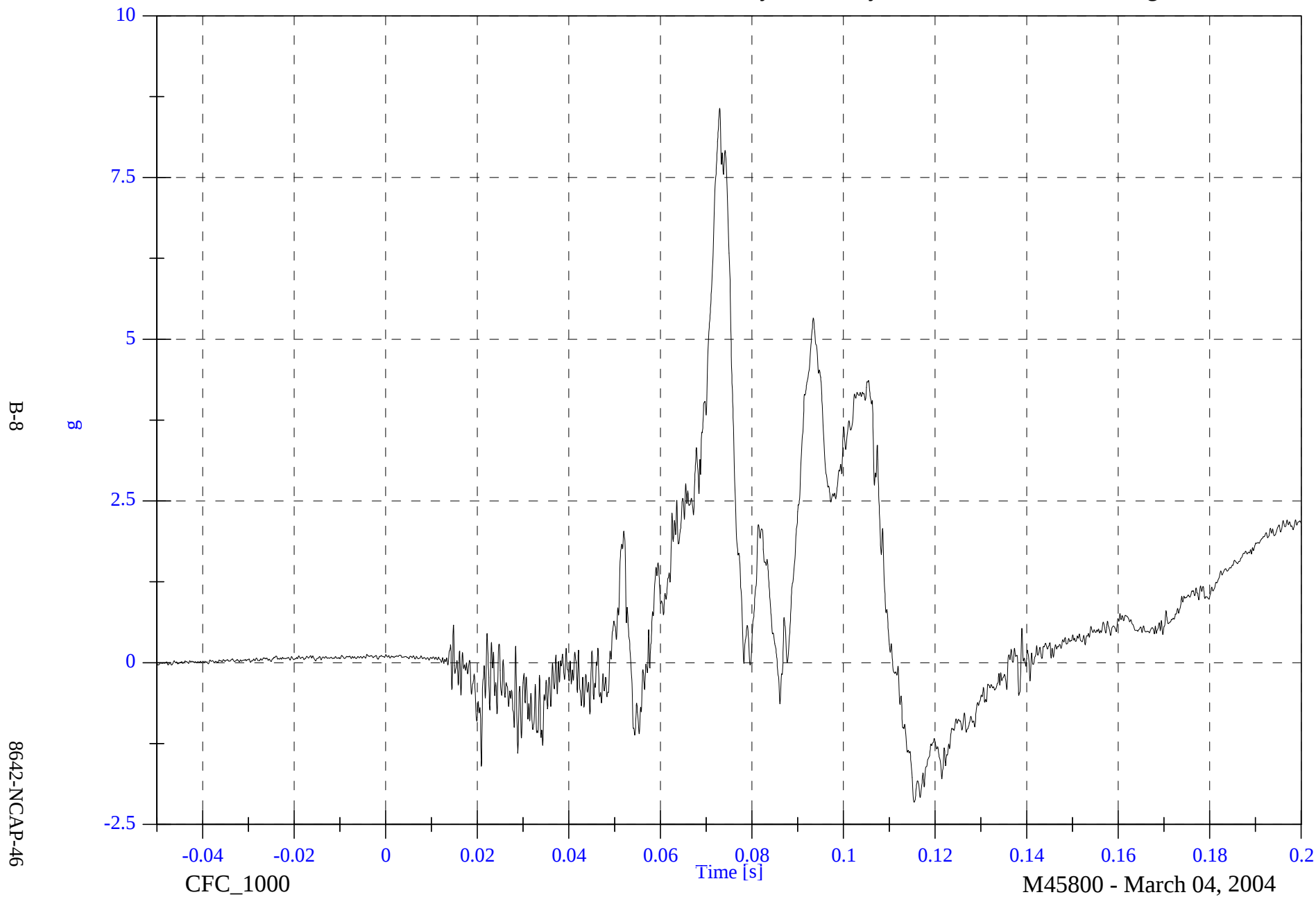
PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
138	Barrier Load Cell A1 Fx [N, CFC_60]	B-145
139	Barrier Load Cell A2 Fx [N, CFC_60]	B-146
140	Barrier Load Cell A3 Fx [N, CFC_60]	B-147
141	Barrier Load Cell A4 Fx [N, CFC_60]	B-148
142	Barrier Load Cell A5 Fx [N, CFC_60]	B-149
143	Barrier Load Cell A6 Fx [N, CFC_60]	B-150
144	Barrier Load Cell A7 Fx [N, CFC_60]	B-151
145	Barrier Load Cell A8 Fx [N, CFC_60]	B-152
146	Barrier Load Cell A9 Fx [N, CFC_60]	B-153
147	Barrier Load Cell B1 Fx [N, CFC_60]	B-154
148	Barrier Load Cell B2 Fx [N, CFC_60]	B-155
149	Barrier Load Cell B3 Fx [N, CFC_60]	B-156
150	Barrier Load Cell B4 Fx [N, CFC_60]	B-157
151	Barrier Load Cell B5 Fx [N, CFC_60]	B-158
152	Barrier Load Cell B6 Fx [N, CFC_60]	B-159
153	Barrier Load Cell B7 Fx [N, CFC_60]	B-160
154	Barrier Load Cell B8 Fx [N, CFC_60]	B-161
155	Barrier Load Cell B9 Fx [N, CFC_60]	B-162
156	Barrier Load Cell C1 Fx [N, CFC_60]	B-163
157	Barrier Load Cell C2 Fx [N, CFC_60]	B-164
158	Barrier Load Cell C3 Fx [N, CFC_60]	B-165
159	Barrier Load Cell C4 Fx [N, CFC_60]	B-166
160	Barrier Load Cell C5 Fx [N, CFC_60]	B-167
161	Barrier Load Cell C6 Fx [N, CFC_60]	B-168
162	Barrier Load Cell C7 Fx [N, CFC_60]	B-169
163	Barrier Load Cell C8 Fx [N, CFC_60]	B-170
164	Barrier Load Cell C9 Fx [N, CFC_60]	B-171
165	Barrier Load Cell D1 Fx [N, CFC_60]	B-172
166	Barrier Load Cell D2 Fx [N, CFC_60]	B-173
167	Barrier Load Cell D3 Fx [N, CFC_60]	B-174
168	Barrier Load Cell D4 Fx [N, CFC_60]	B-175
169	Barrier Load Cell D5 Fx [N, CFC_60]	B-176
170	Barrier Load Cell D6 Fx [N, CFC_60]	B-177
171	Barrier Load Cell D7 Fx [N, CFC_60]	B-178
172	Barrier Load Cell D8 Fx [N, CFC_60]	B-179
173	Barrier Load Cell D9 Fx [N, CFC_60]	B-180
174	Group 1 Load Cell Sum (A1,A2,A3,B1,B2,B3)	B-181
175	Group 2 Load Cell Sum (A4,A5,A6,B4,B5,B6)	B-182
176	Group 3 Load Cell Sum (A7,A8,A9,B7,B8,B9)	B-183
177	Group 4 Load Cell Sum (C1,C2,C3,D1,D2,D3)	B-184
178	Group 5 Load Cell Sum (C4,C5,C6,D4,D5,D6)	B-185
179	Group 6 Load Cell Sum (C7,C8,C9,D7,D8,D9)	B-186
180	Total Load Cell Sum (All 6 Groups)	B-187

2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Head 9 Array X Arm Ay

Max: 8.6 [g] at 0.073 [s]

Min: -2.2 [g] at 0.115 [s]

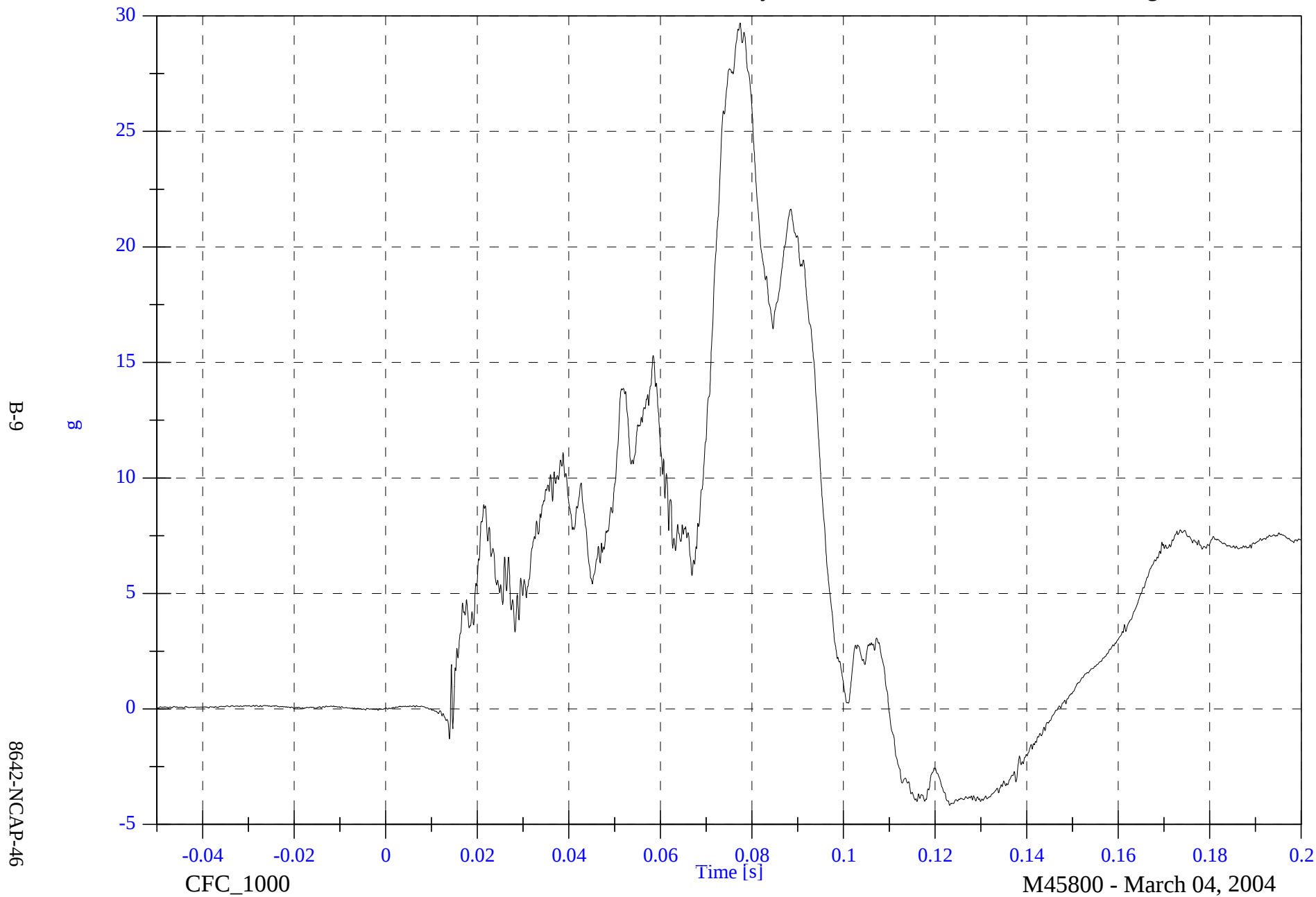


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Head 9 Array X Arm Az

Max: 29.7 [g] at 0.077 [s]

Min: -4.2 [g] at 0.123 [s]

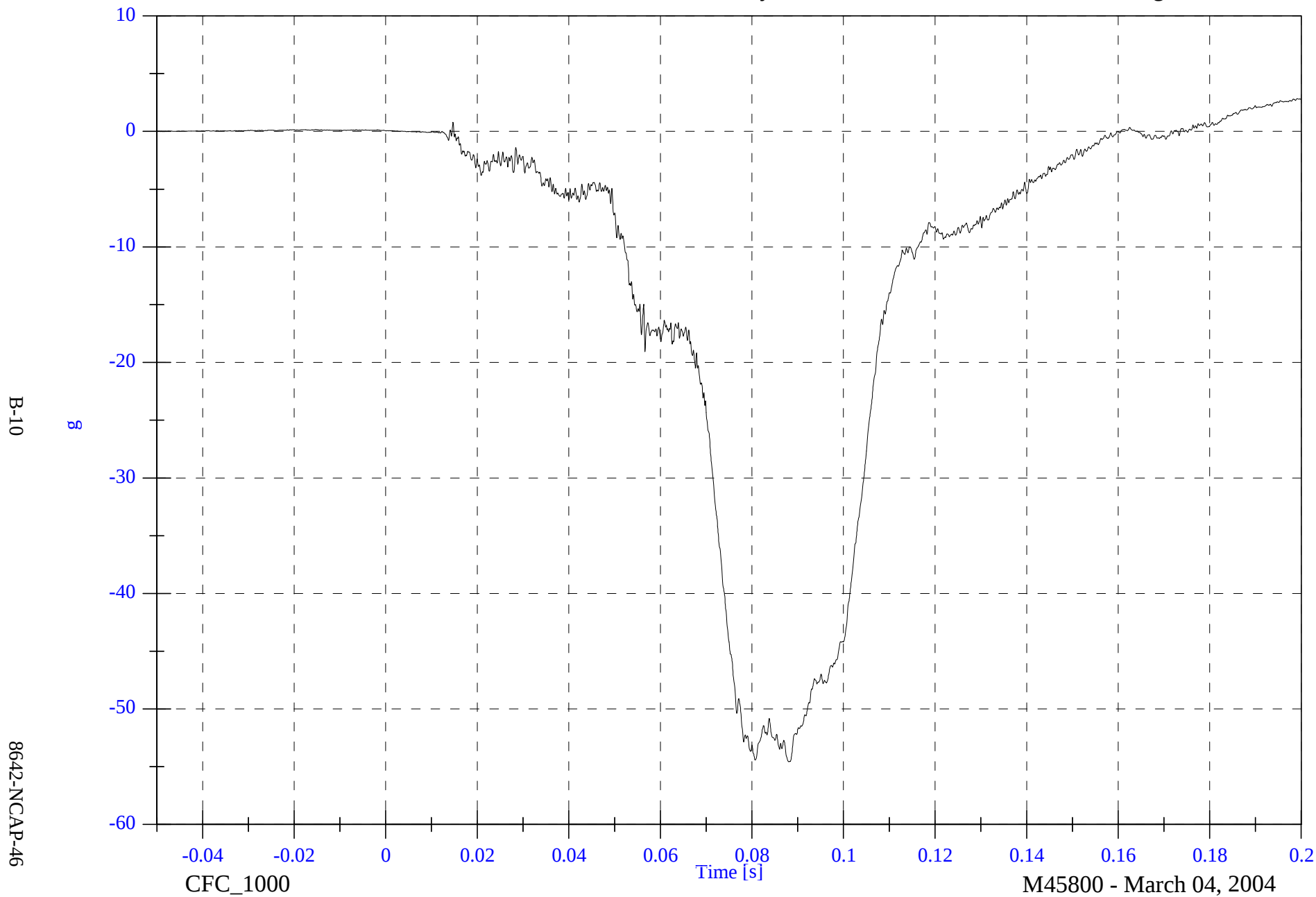


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Head 9 Array Y Arm Ax

Max: 2.8 [g] at 0.199 [s]

Min: -54.6 [g] at 0.088 [s]

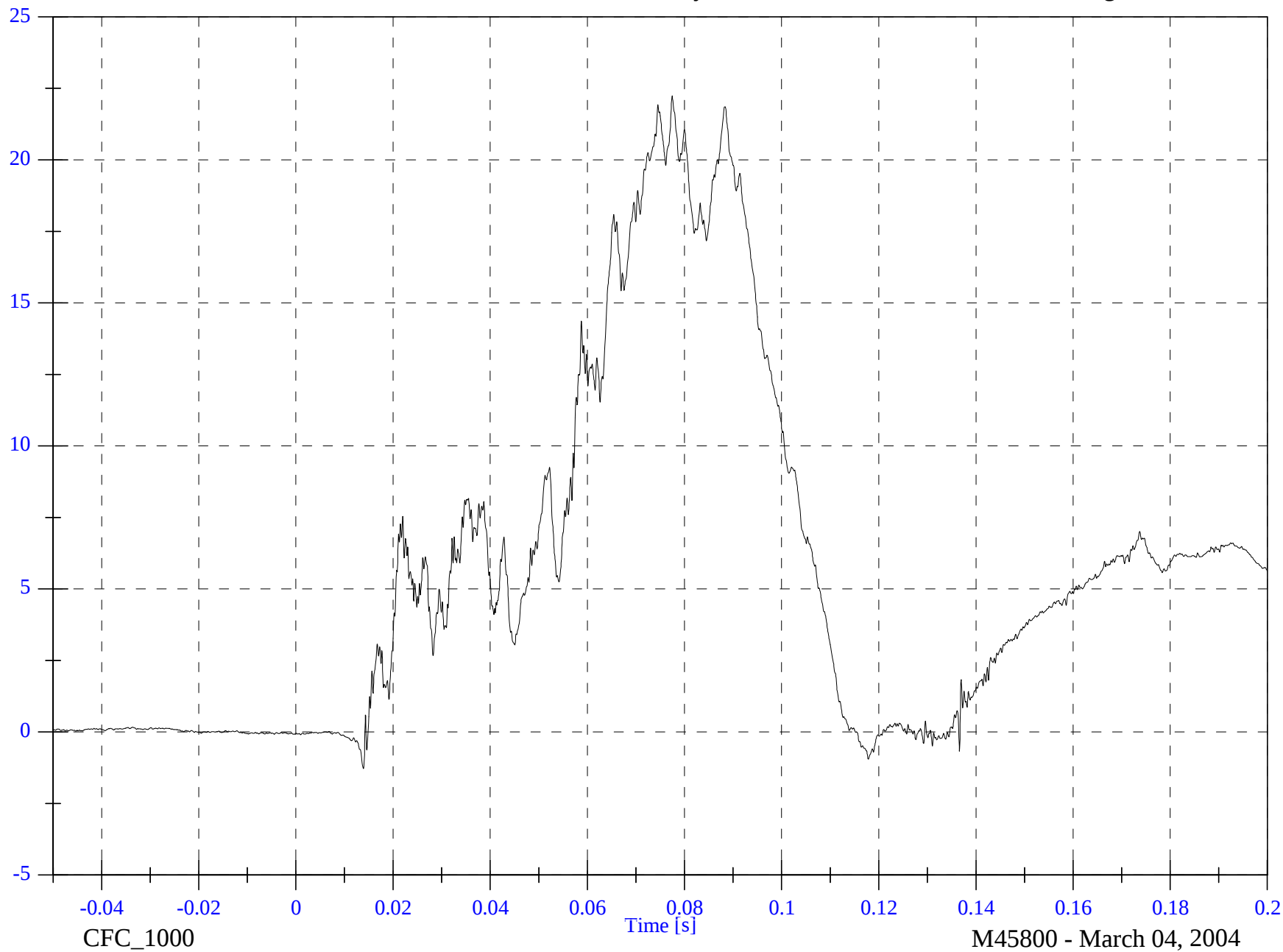


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Head 9 Array Y Arm Az

Max: 22.2 [g] at 0.077 [s]

Min: -1.3 [g] at 0.014 [s]



B-11

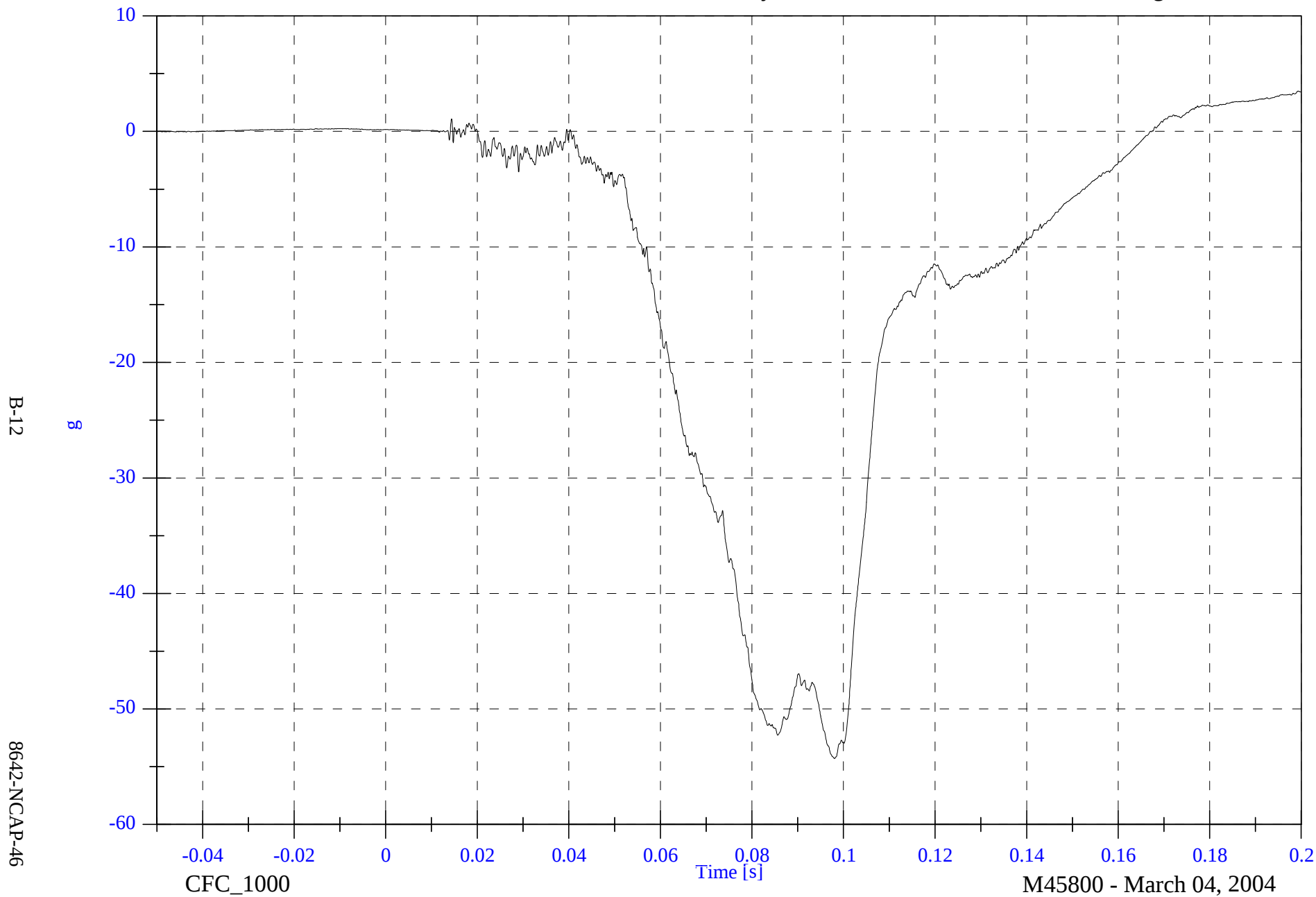
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Head 9 Array Z Arm Ax

Max: 3.5 [g] at 0.199 [s]

Min: -54.3 [g] at 0.098 [s]

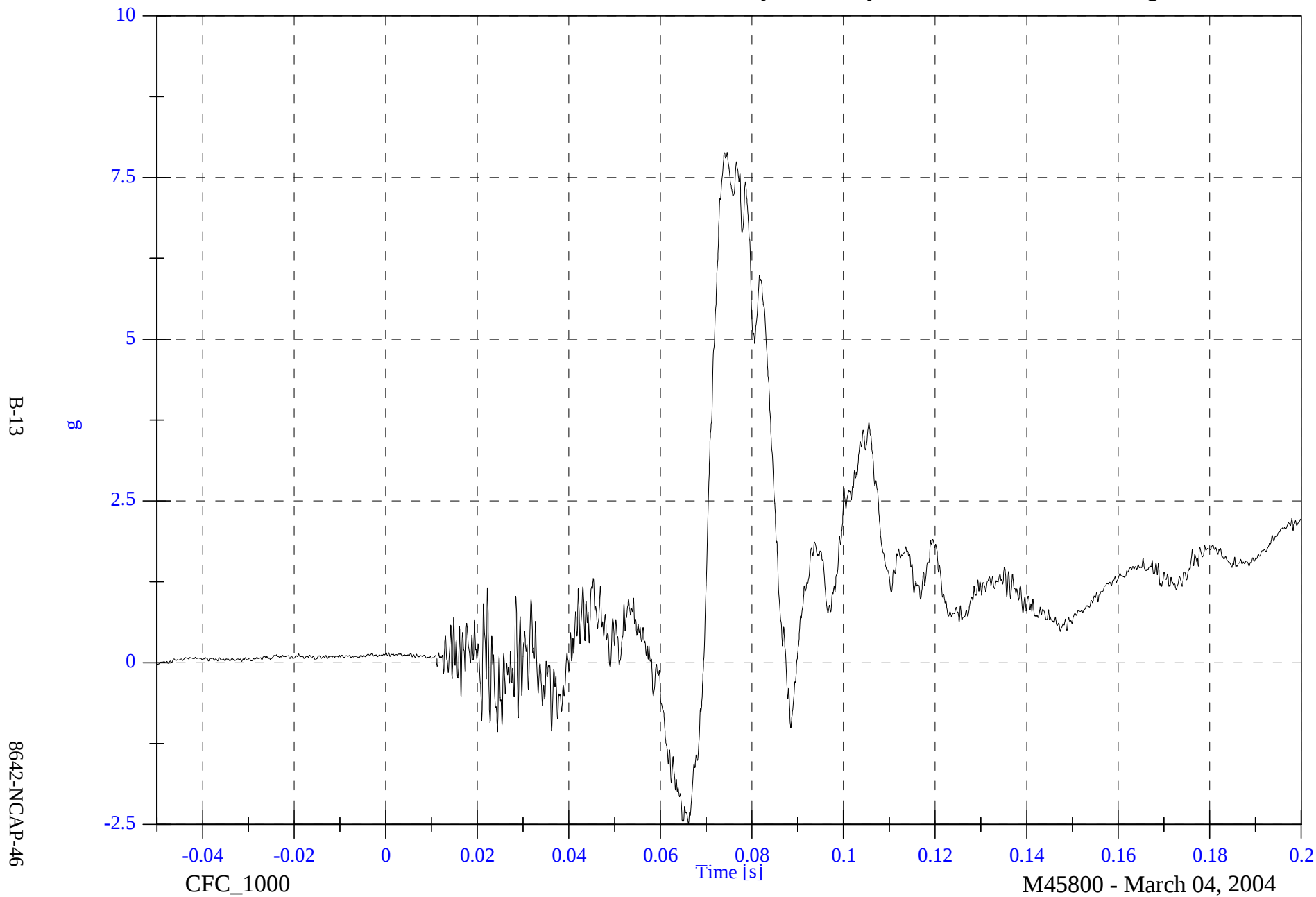


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Head 9 Array Z Arm Ay

Max: 7.9 [g] at 0.075 [s]

Min: -2.5 [g] at 0.066 [s]

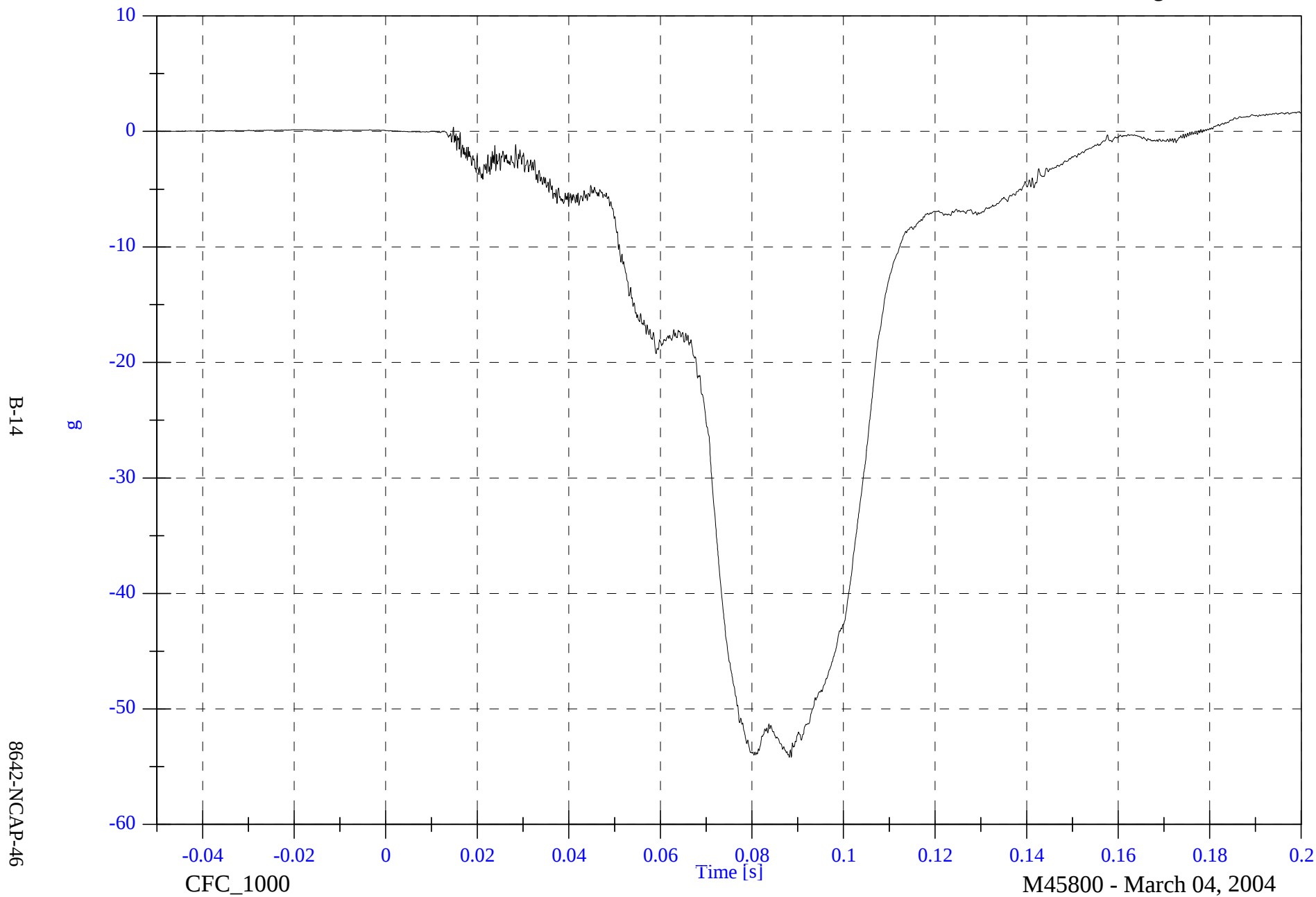


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Head CG x

Max: 1.7 [g] at 0.200 [s]

Min: -54.2 [g] at 0.088 [s]



2004 NCAP Test 10 - 2004 VW Touareg

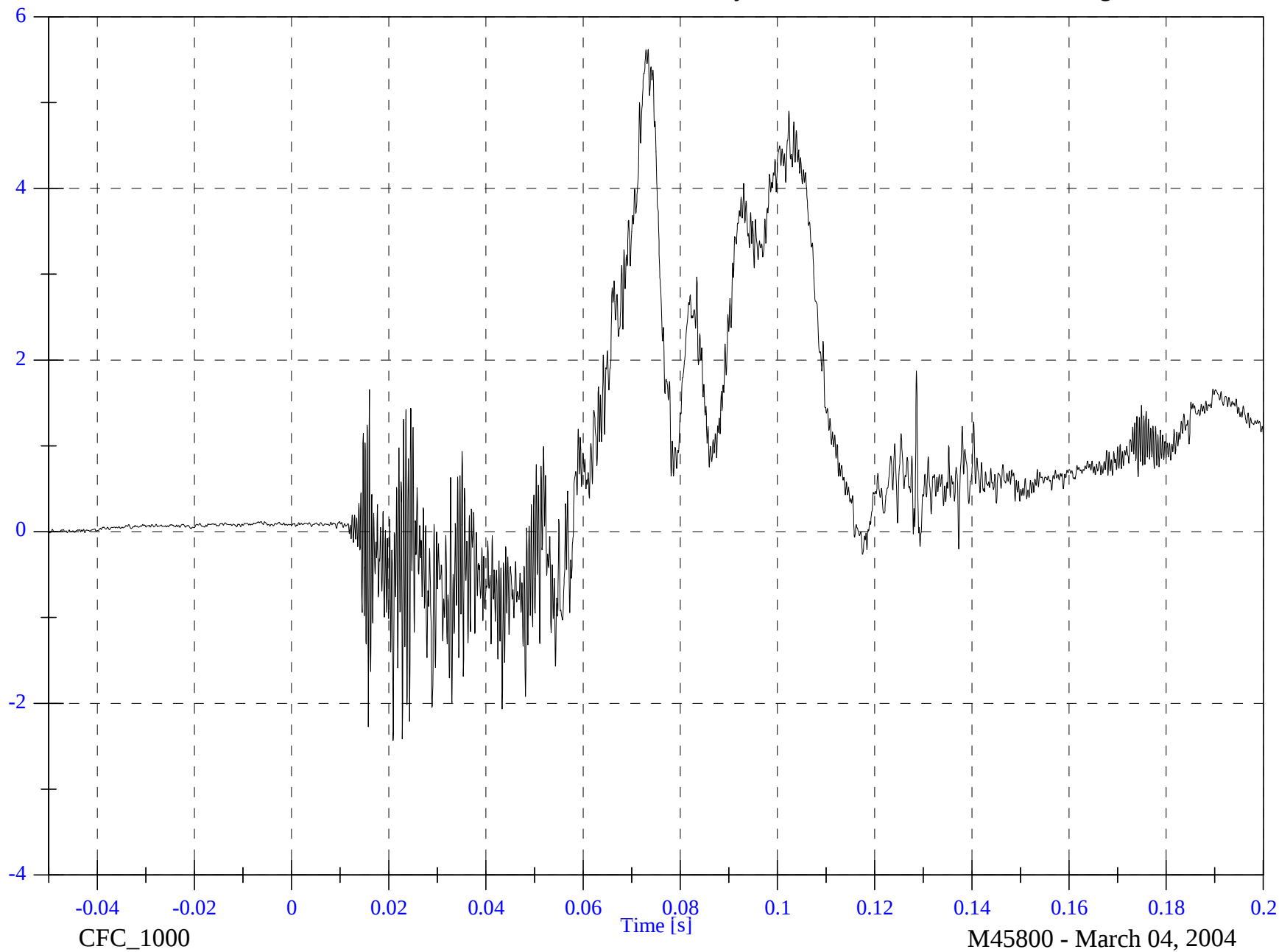
Max: 5.6 [g] at 0.073 [s]

Min: -2.4 [g] at 0.021 [s]

V1P1 Head CG y

B-15

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

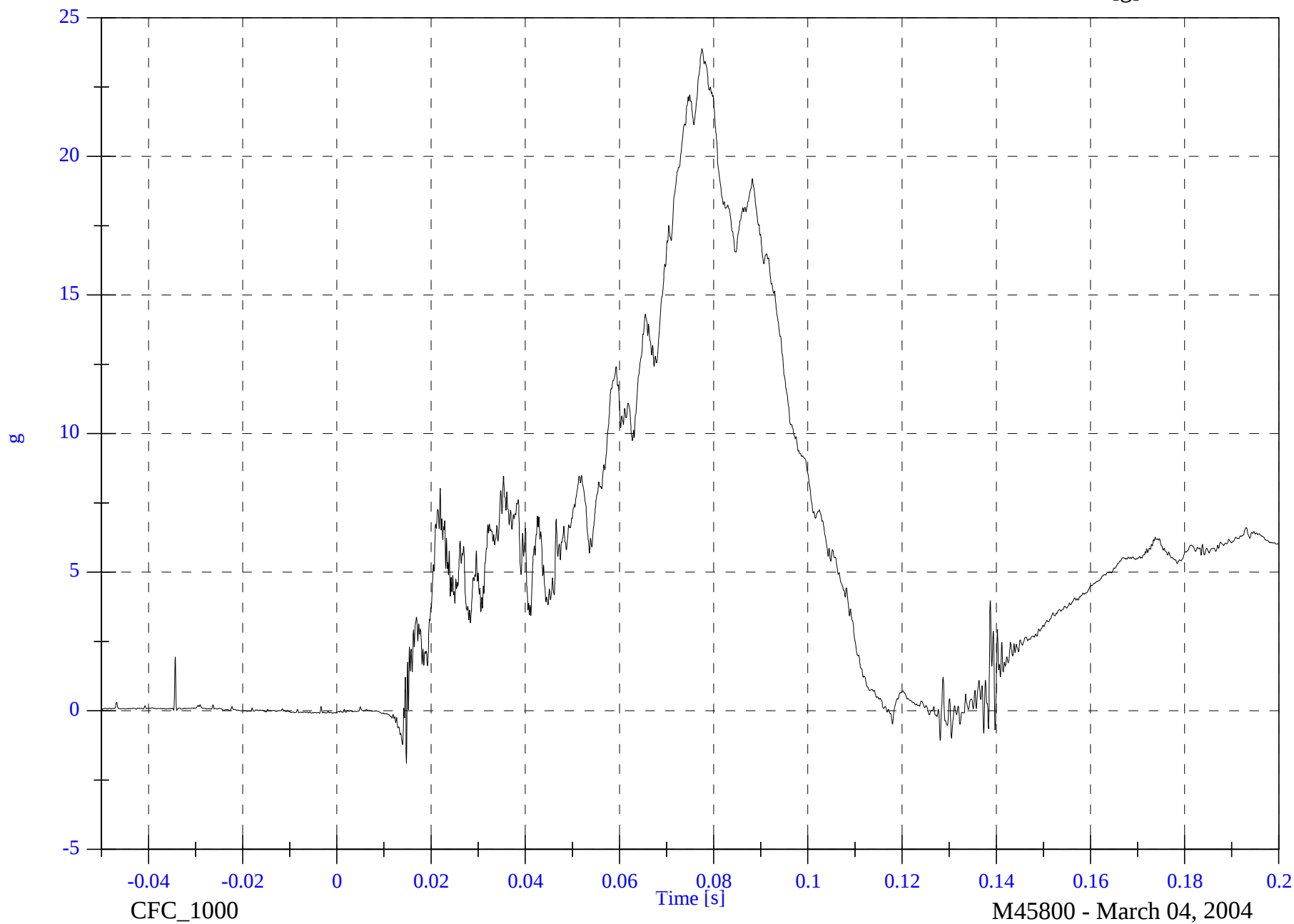
V1P1 Head CG z

Max: 23.9 [g] at 0.077 [s]

Min: -1.9 [g] at 0.015 [s]

B-16

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

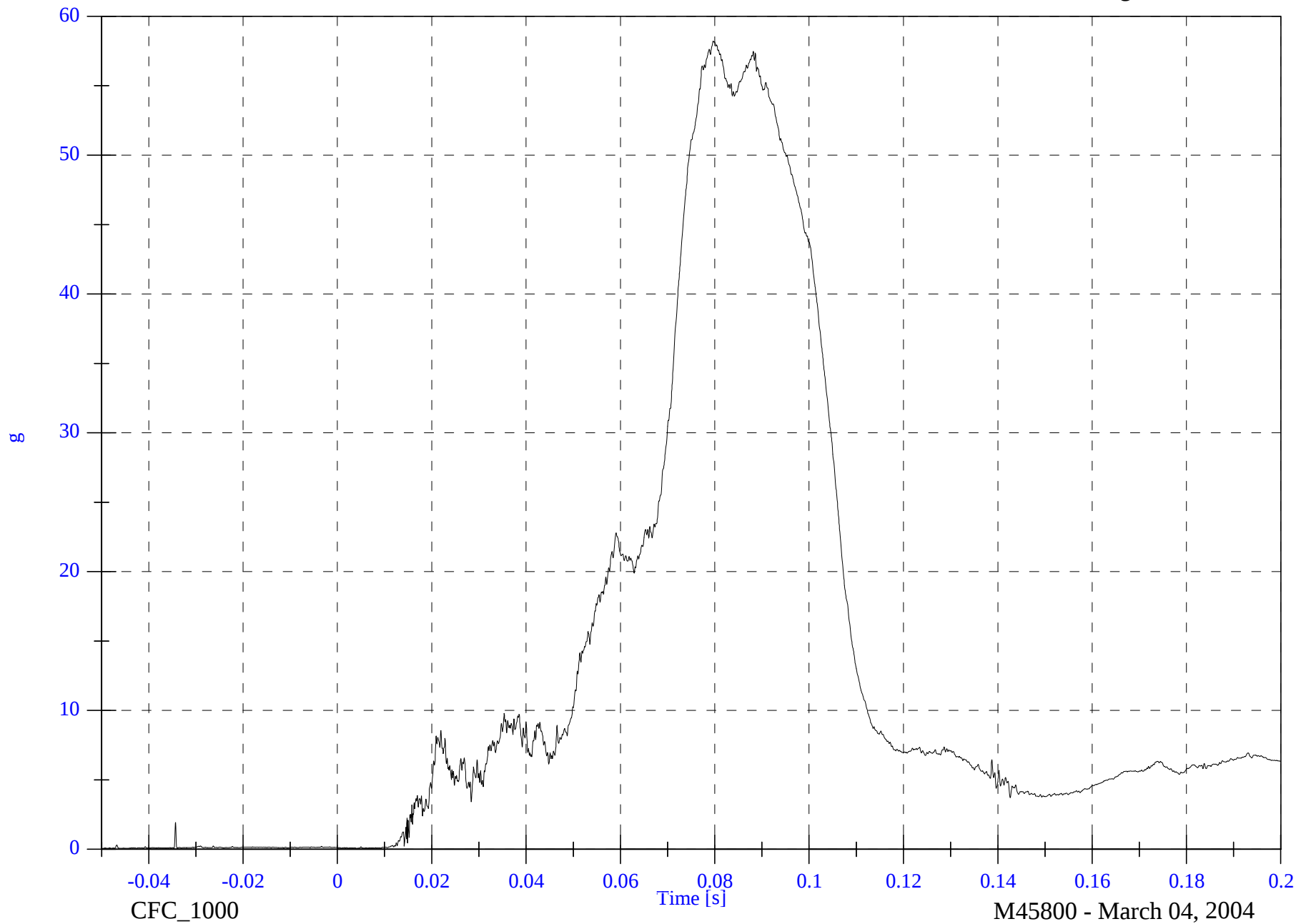
V1P1 Head CG Resultant

Max: 58.2 [g] at 0.080 [s]

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

B-17

8642-NCAP-46

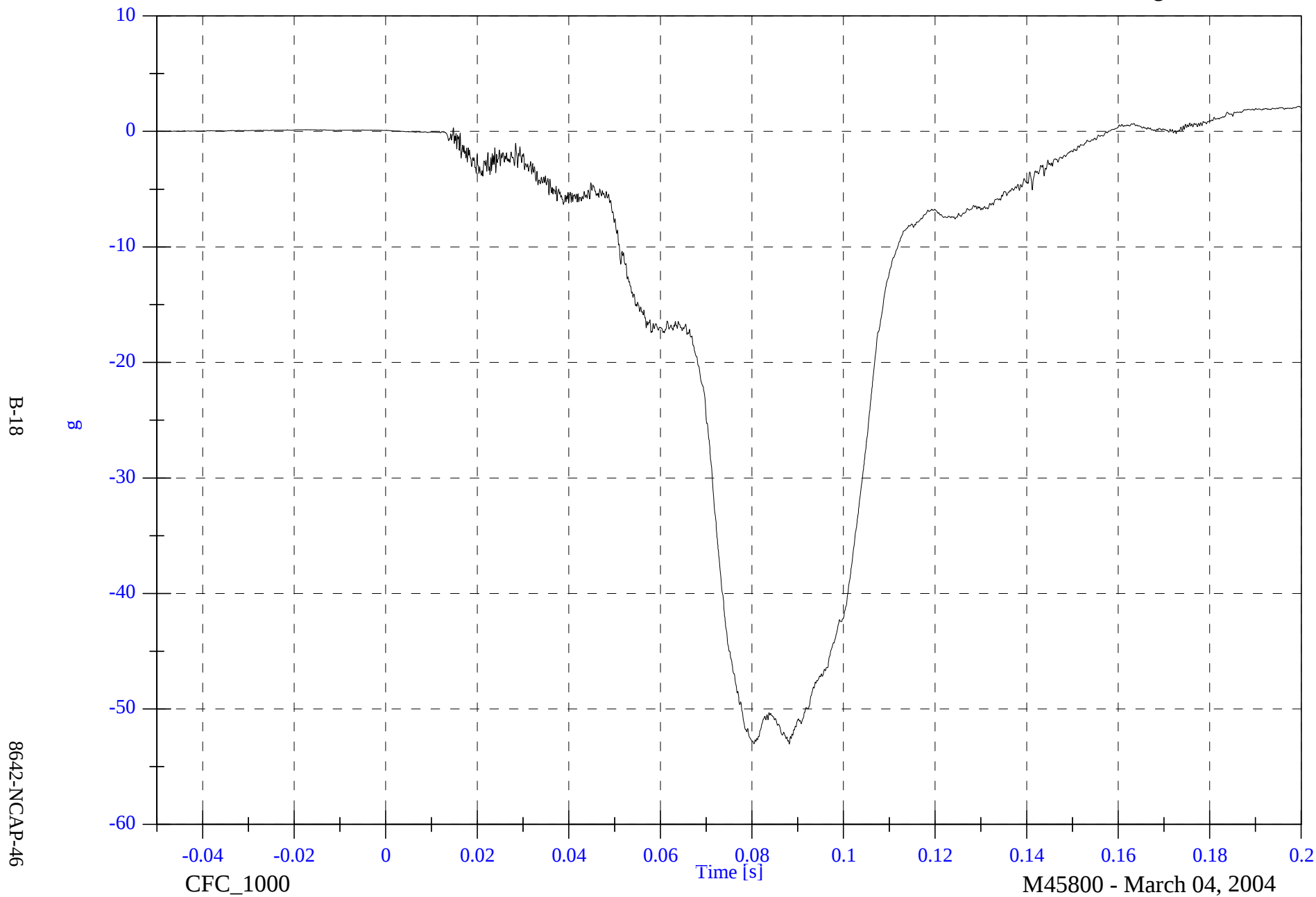


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Head CG Red x

Max: 2.2 [g] at 0.200 [s]

Min: -53.0 [g] at 0.088 [s]

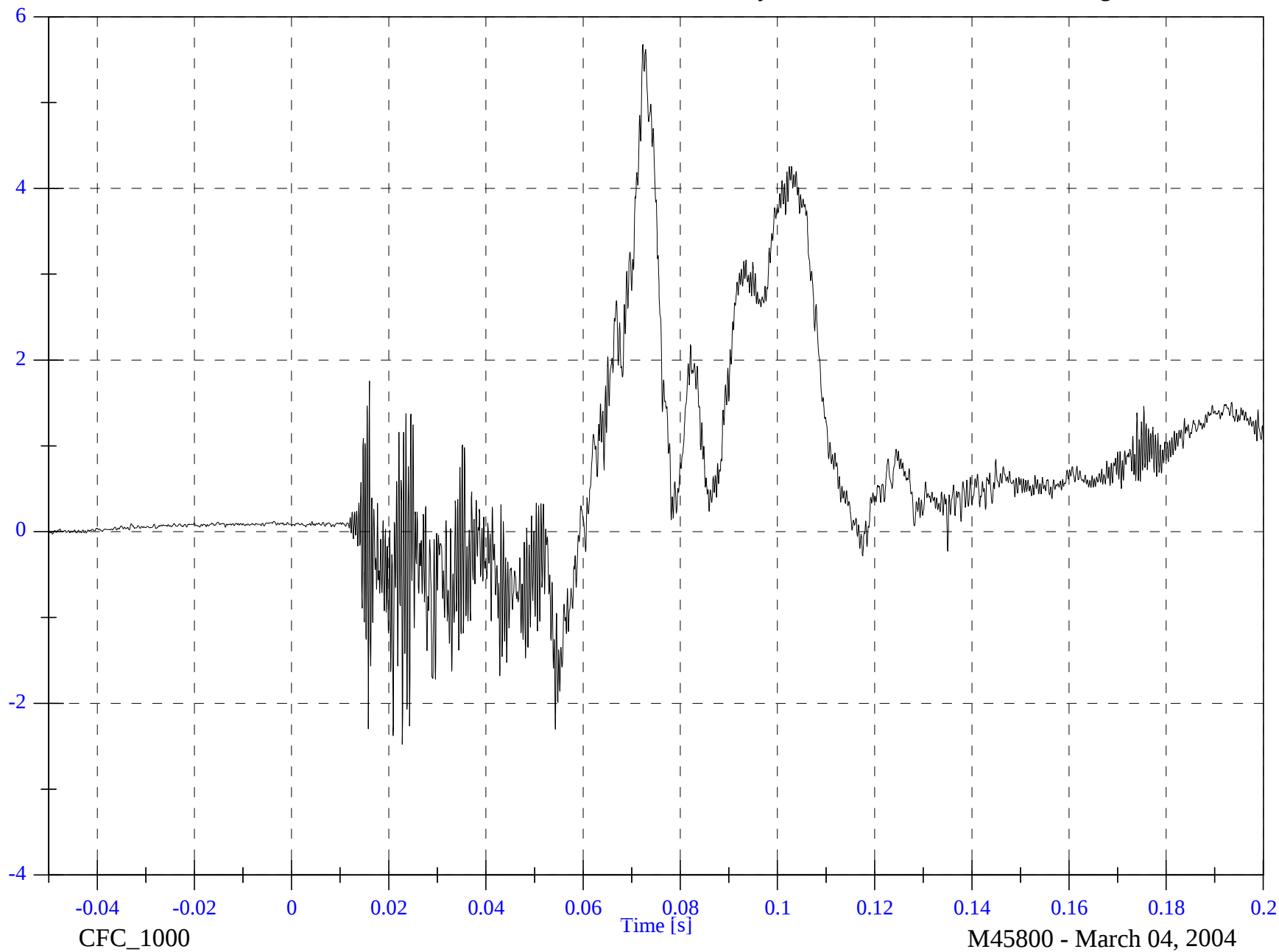


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Head CG Red y

Max: 5.7 [g] at 0.072 [s]

Min: -2.5 [g] at 0.023 [s]



B-19

8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

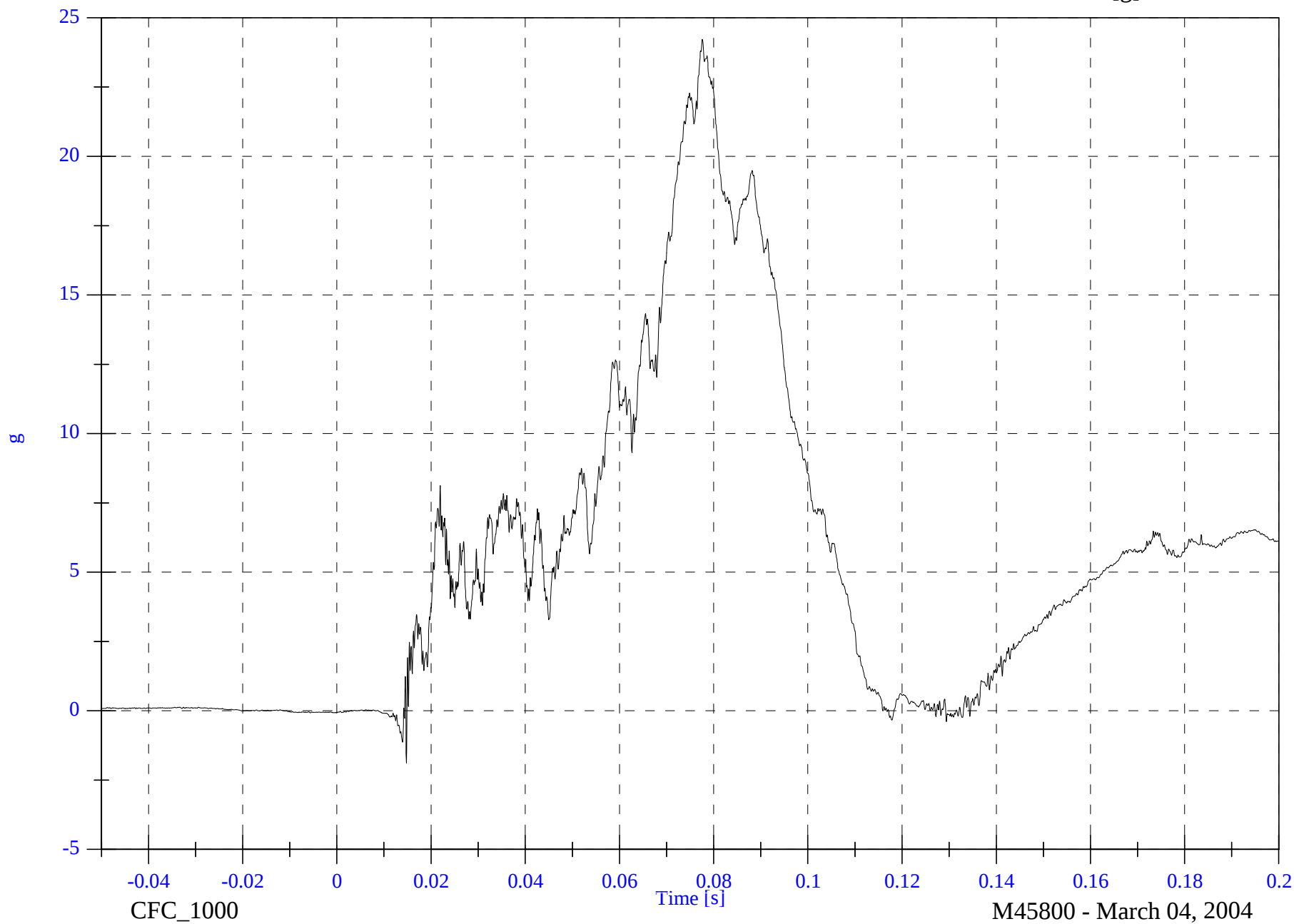
V1P1 Head CG Red z

Max: 24.2 [g] at 0.078 [s]

Min: -1.9 [g] at 0.015 [s]

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8642-NCAP-46

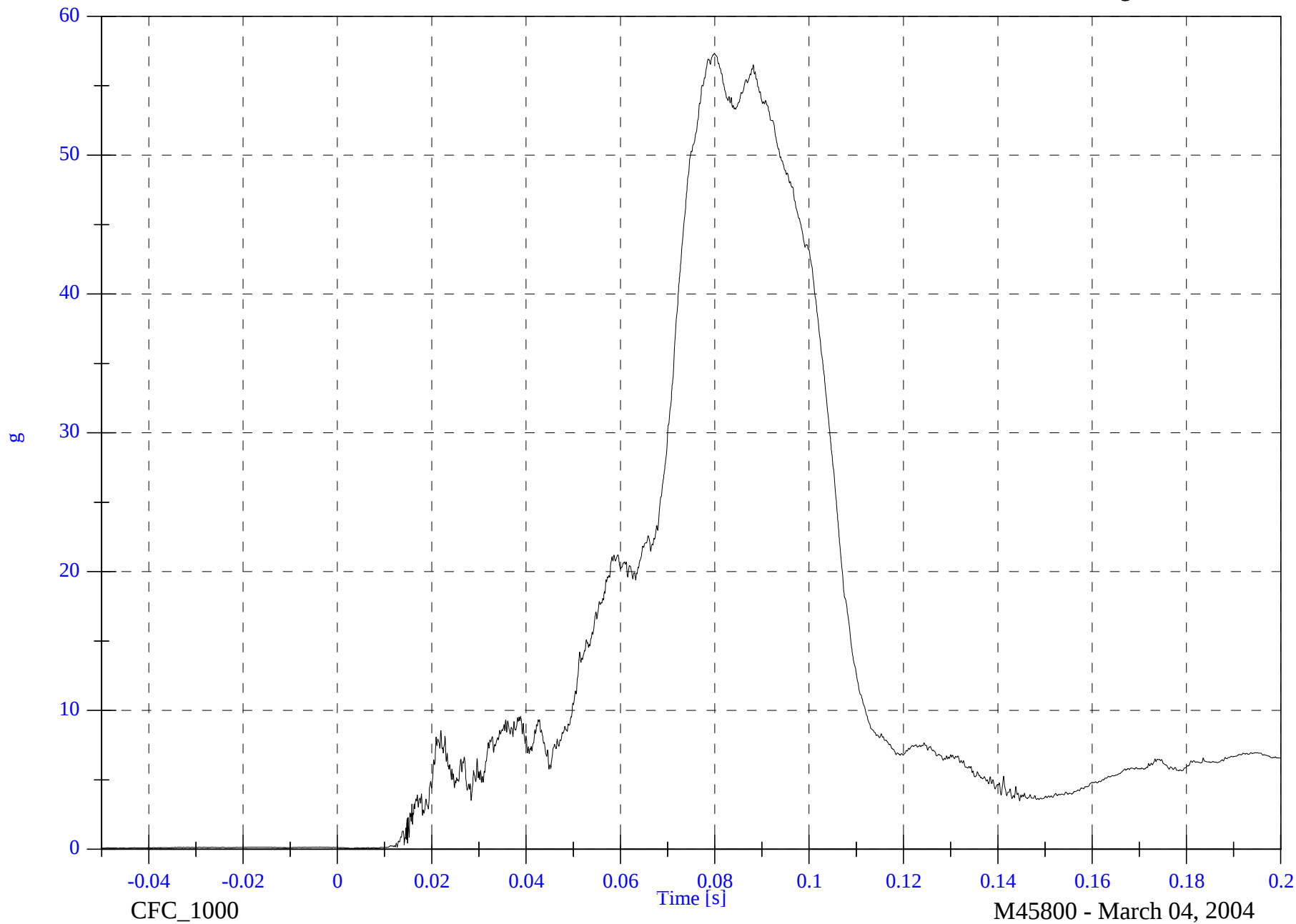


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Head CG Red Resultant

Max: 57.3 [g] at 0.080 [s]

Min: 0.1 [g] at 0.003 [s]

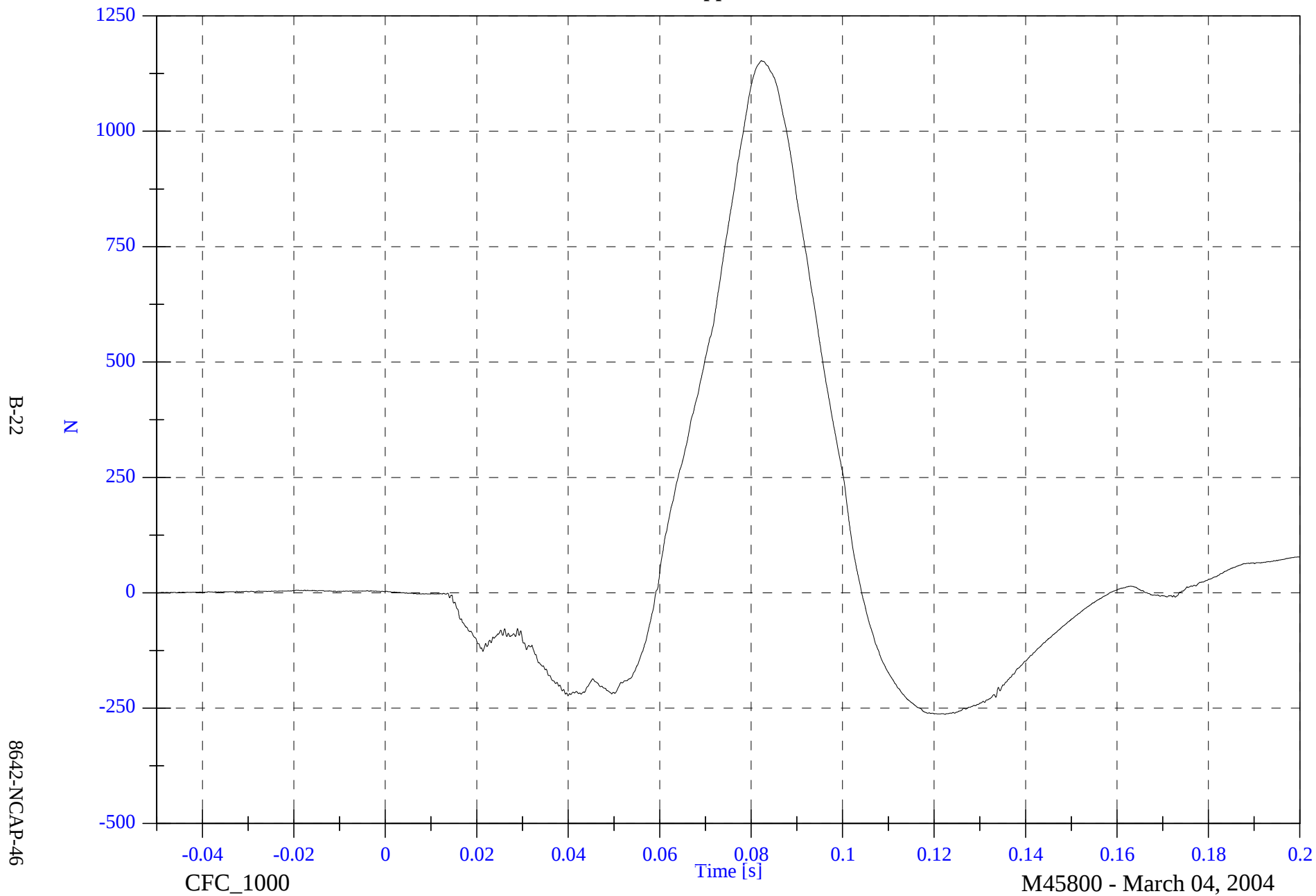


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Upper Neck Fx

Max: 1152.7 [N] at 0.082 [s]

Min: -263.2 [N] at 0.122 [s]

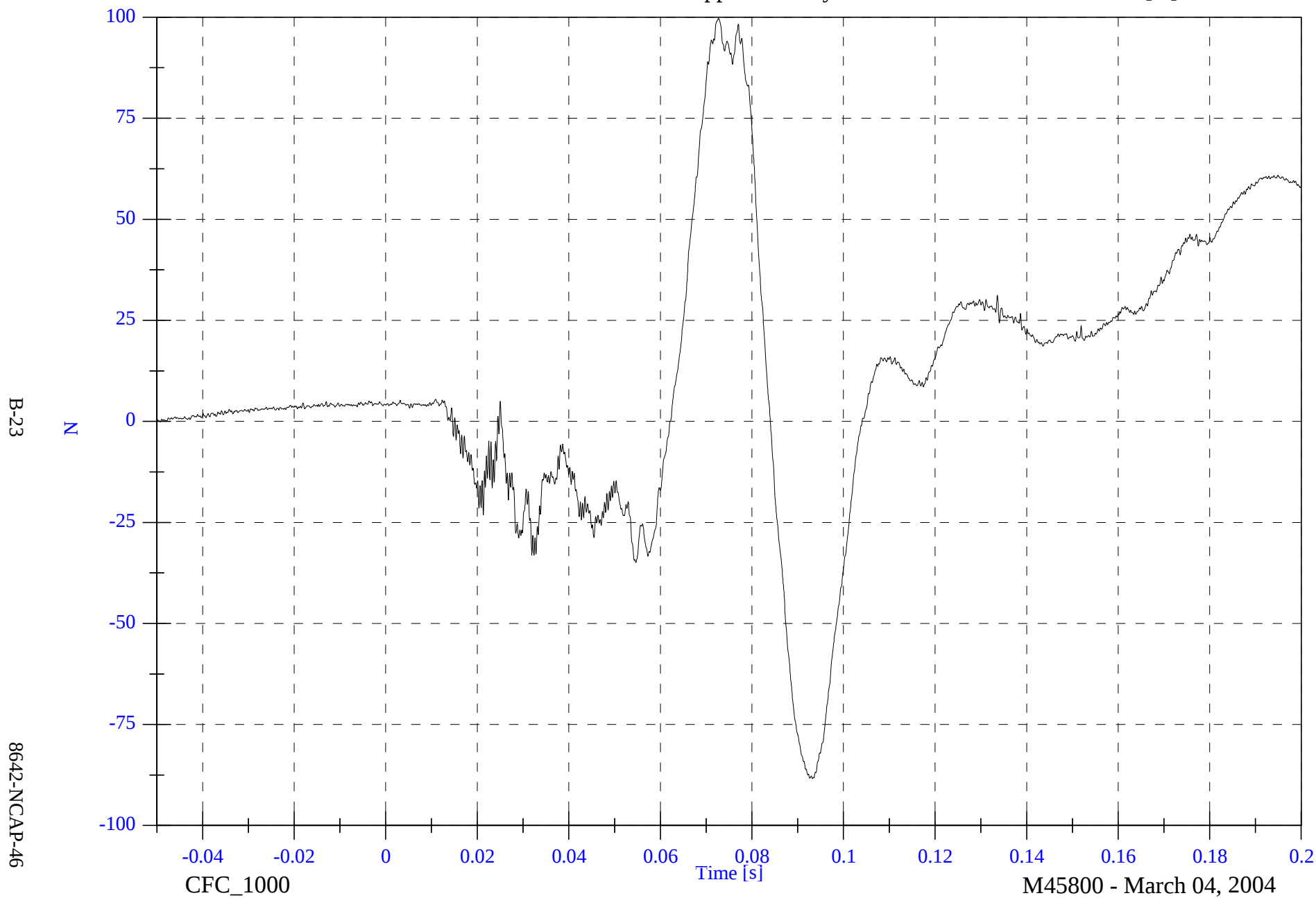


2004 NCAP Test 10 - 2004 VW Touareg

Max: 99.7 [N] at 0.073 [s]

Min: -88.4 [N] at 0.093 [s]

V1P1 Upper Neck Fy

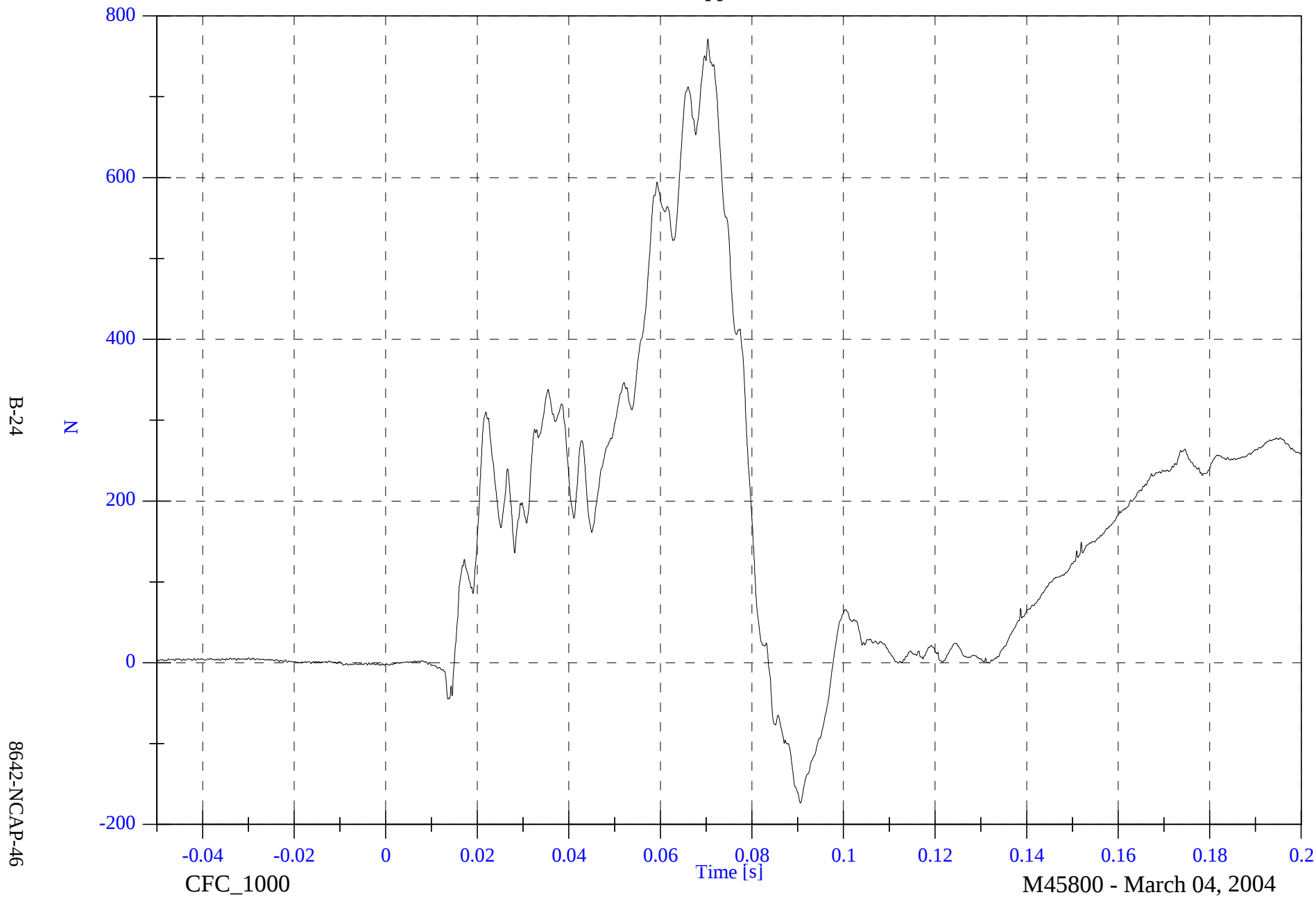


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Upper Neck Fz

Max: 771.5 [N] at 0.070 [s]

Min: -173.6 [N] at 0.091 [s]



2004 NCAP Test 10 - 2004 VW Touareg

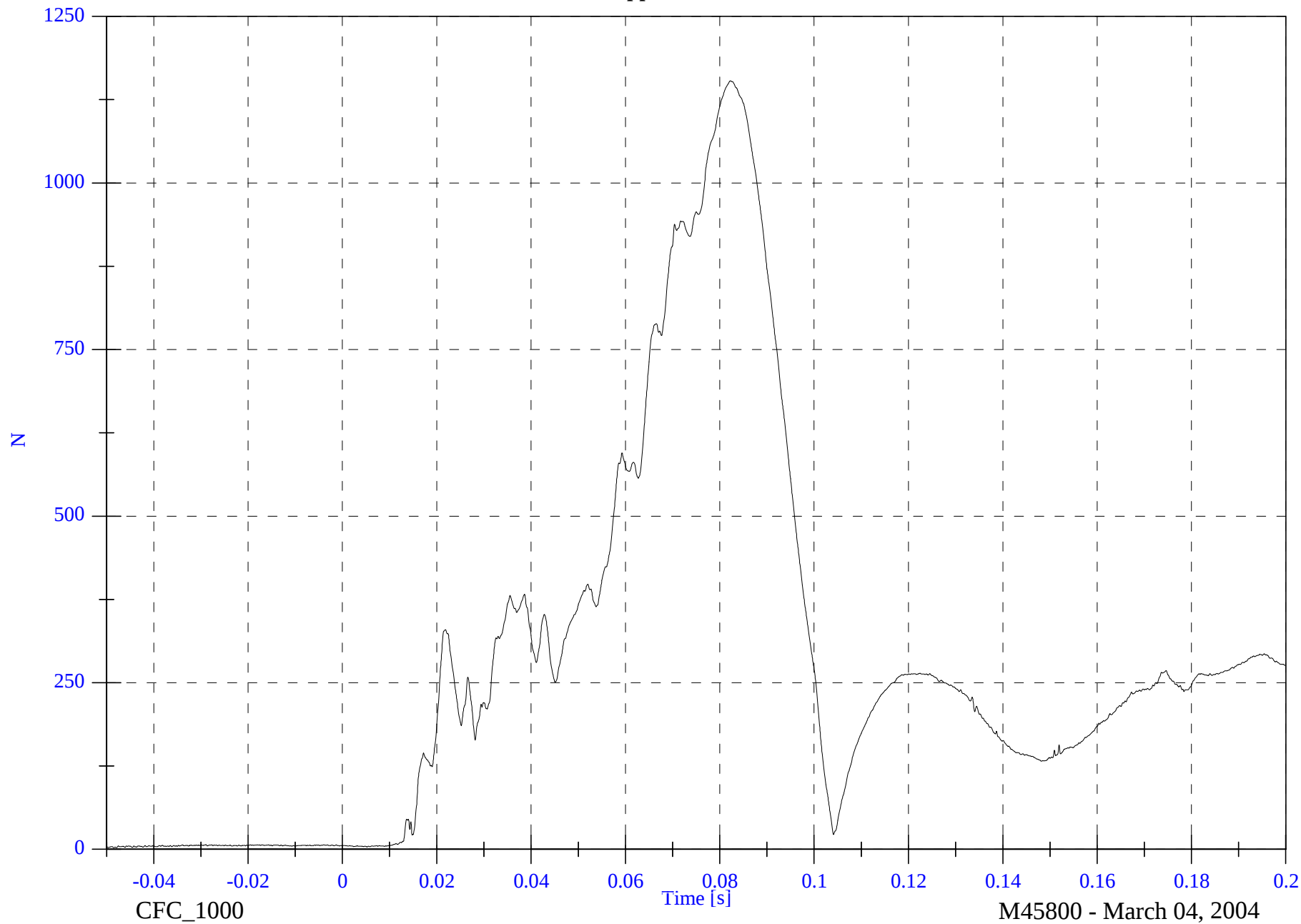
V1P1 Upper Neck F Resultant

Max: 1153.3 [N] at 0.082 [s]

Min: 2.4 [N] at -0.048 [s]

B-25

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

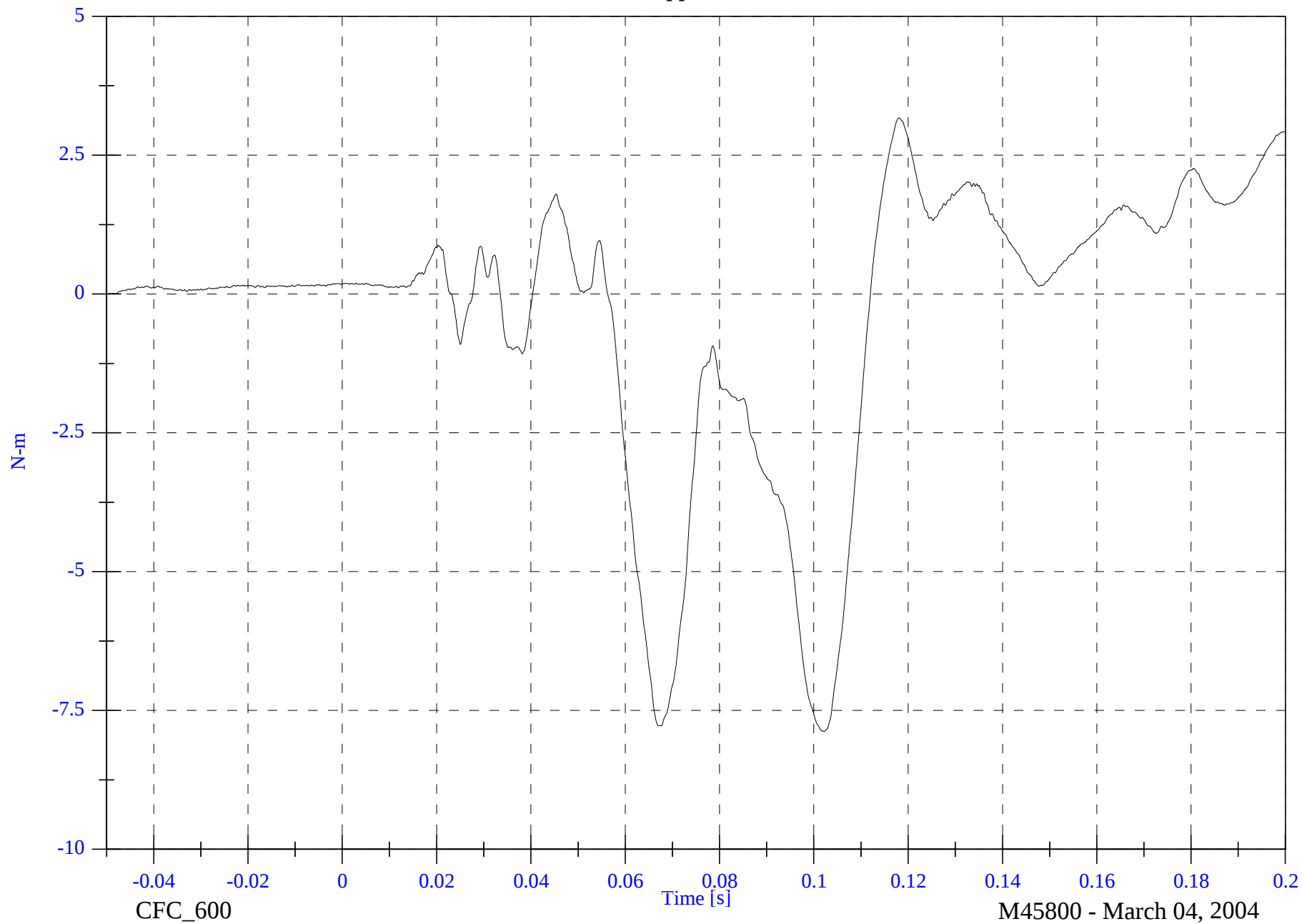
V1P1 Upper Neck Mx

Max: 3.2 [N-m] at 0.118 [s]

Min: -7.9 [N-m] at 0.102 [s]

B-26

8642-NCAP-46

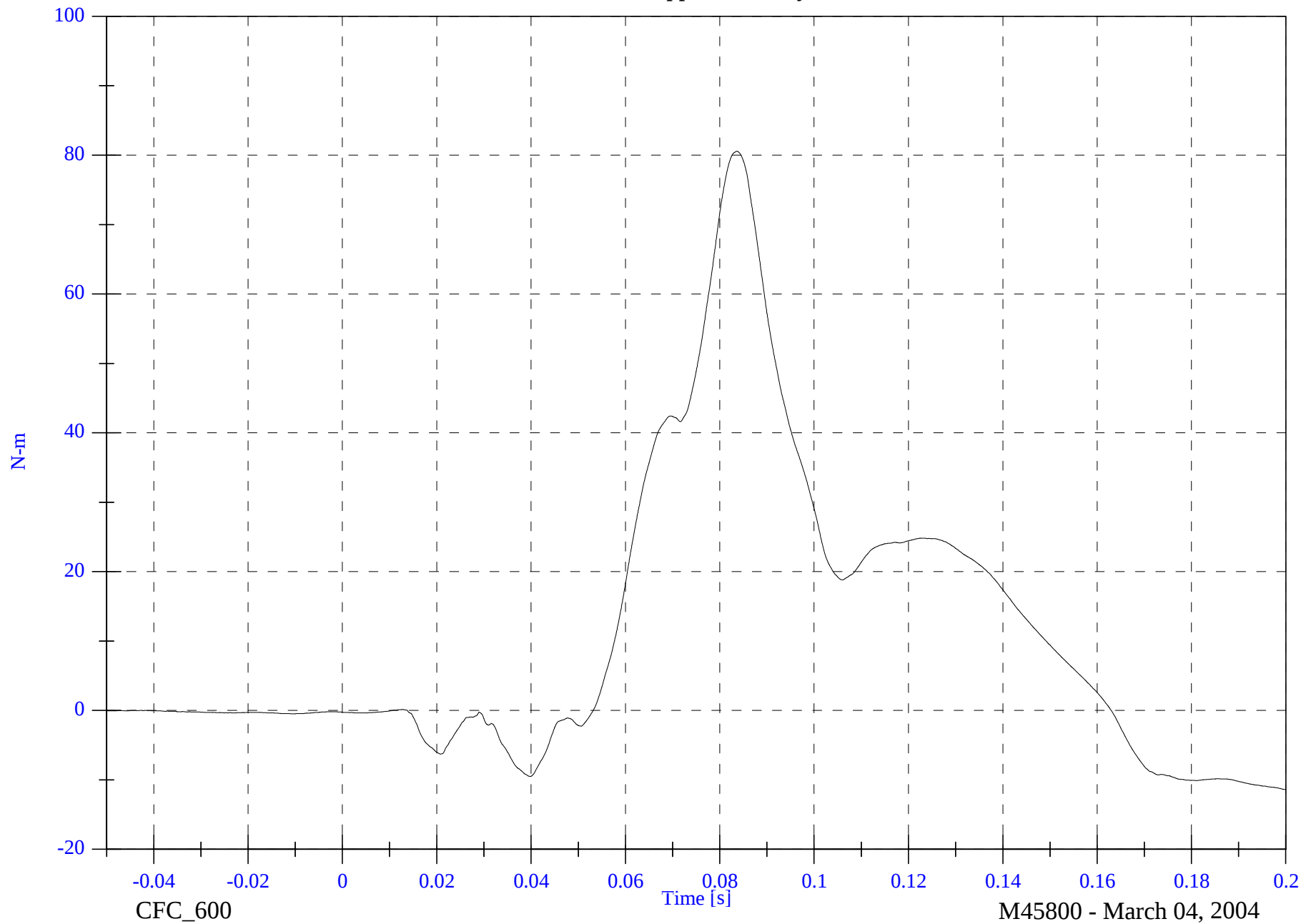


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Upper Neck My

Max: 80.6 [N-m] at 0.084 [s]

Min: -11.4 [N-m] at 0.200 [s]



B-27

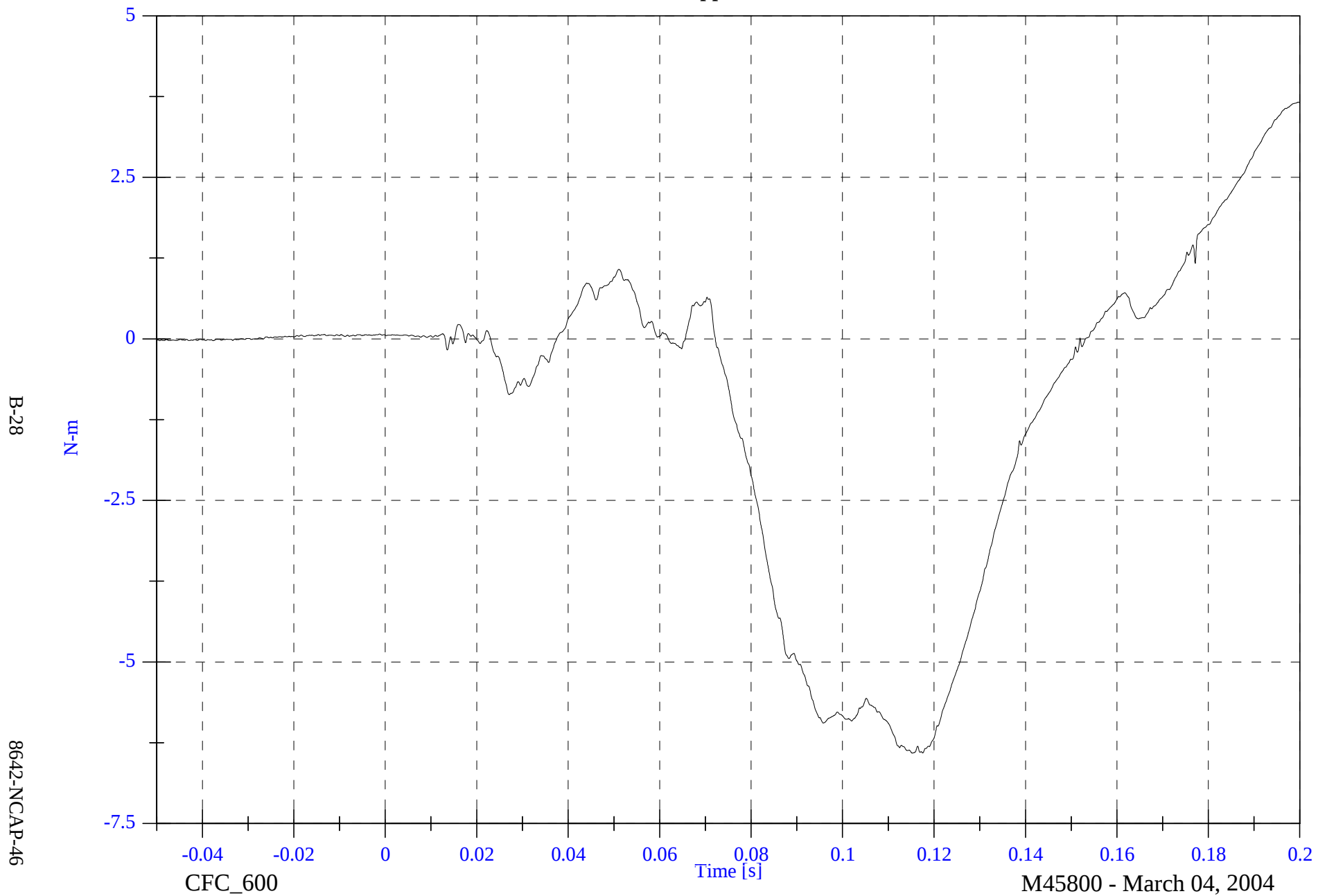
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Upper Neck Mz

Max: 3.7 [N-m] at 0.200 [s]

Min: -6.4 [N-m] at 0.115 [s]

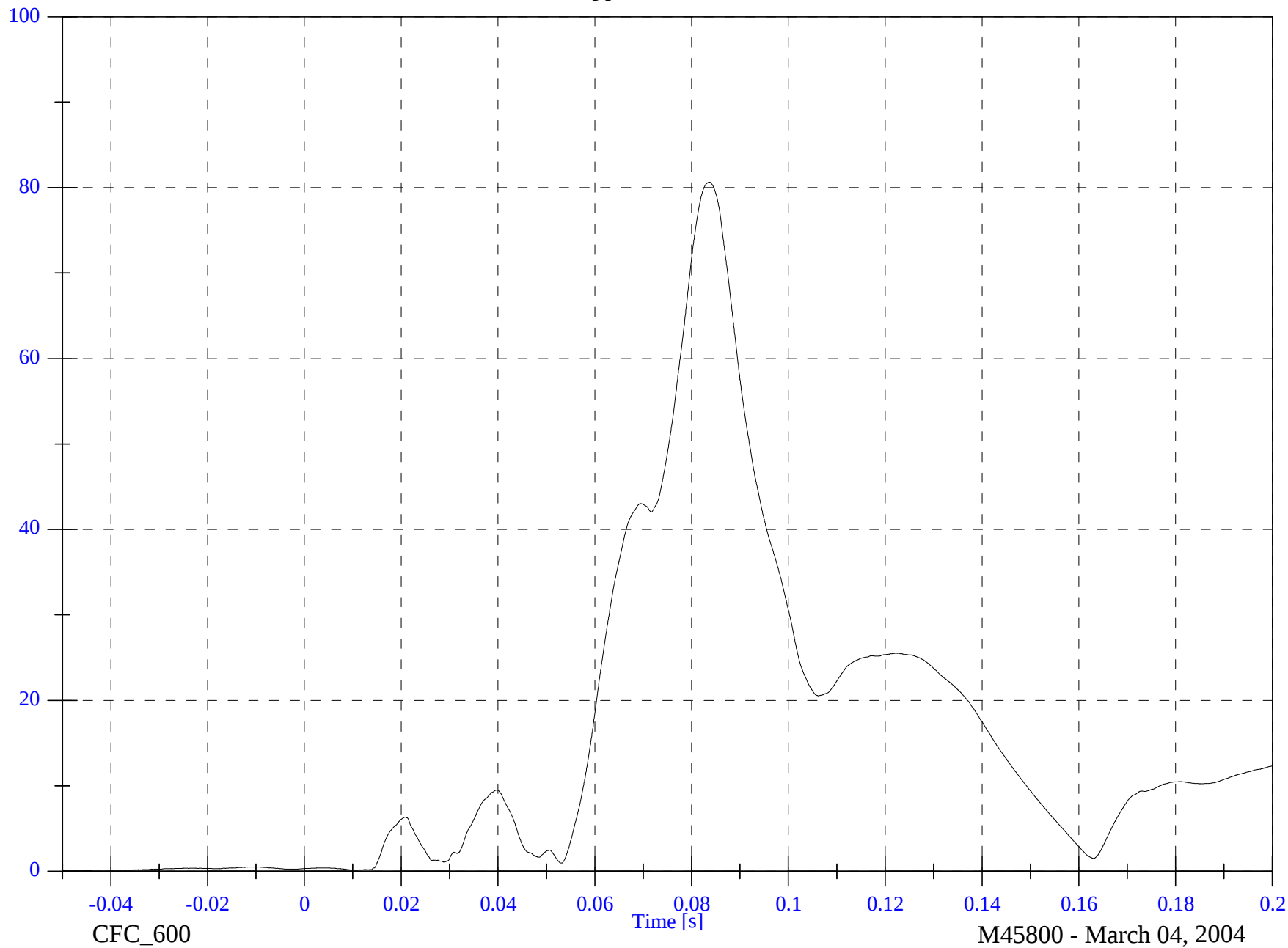


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Upper Neck M Resultant

Max: 80.7 [N-m] at 0.084 [s]

Min: 0.0 [N-m] at -0.048 [s]



B-29

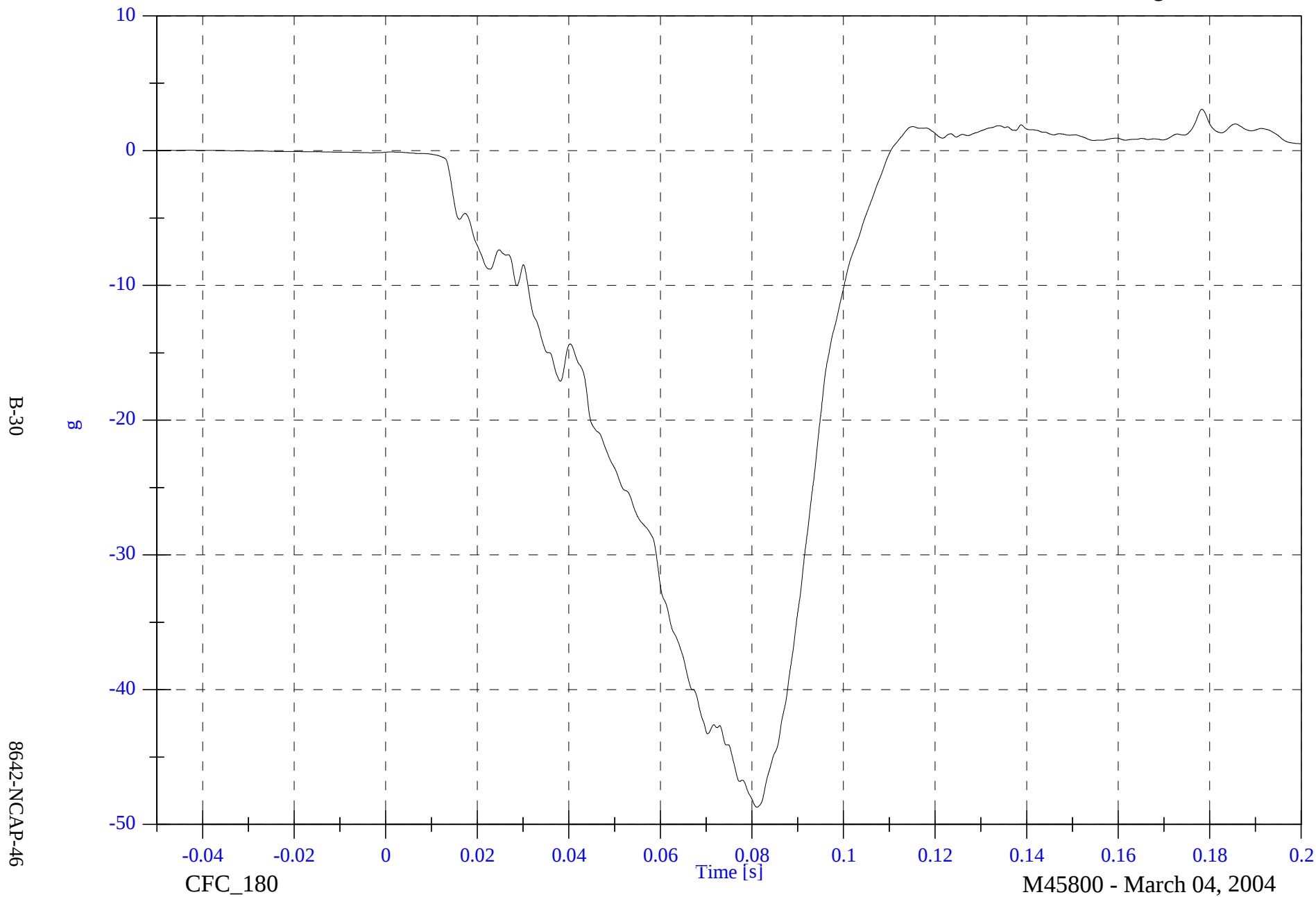
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Chest x

Max: 3.1 [g] at 0.178 [s]

Min: -48.7 [g] at 0.081 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Chest y

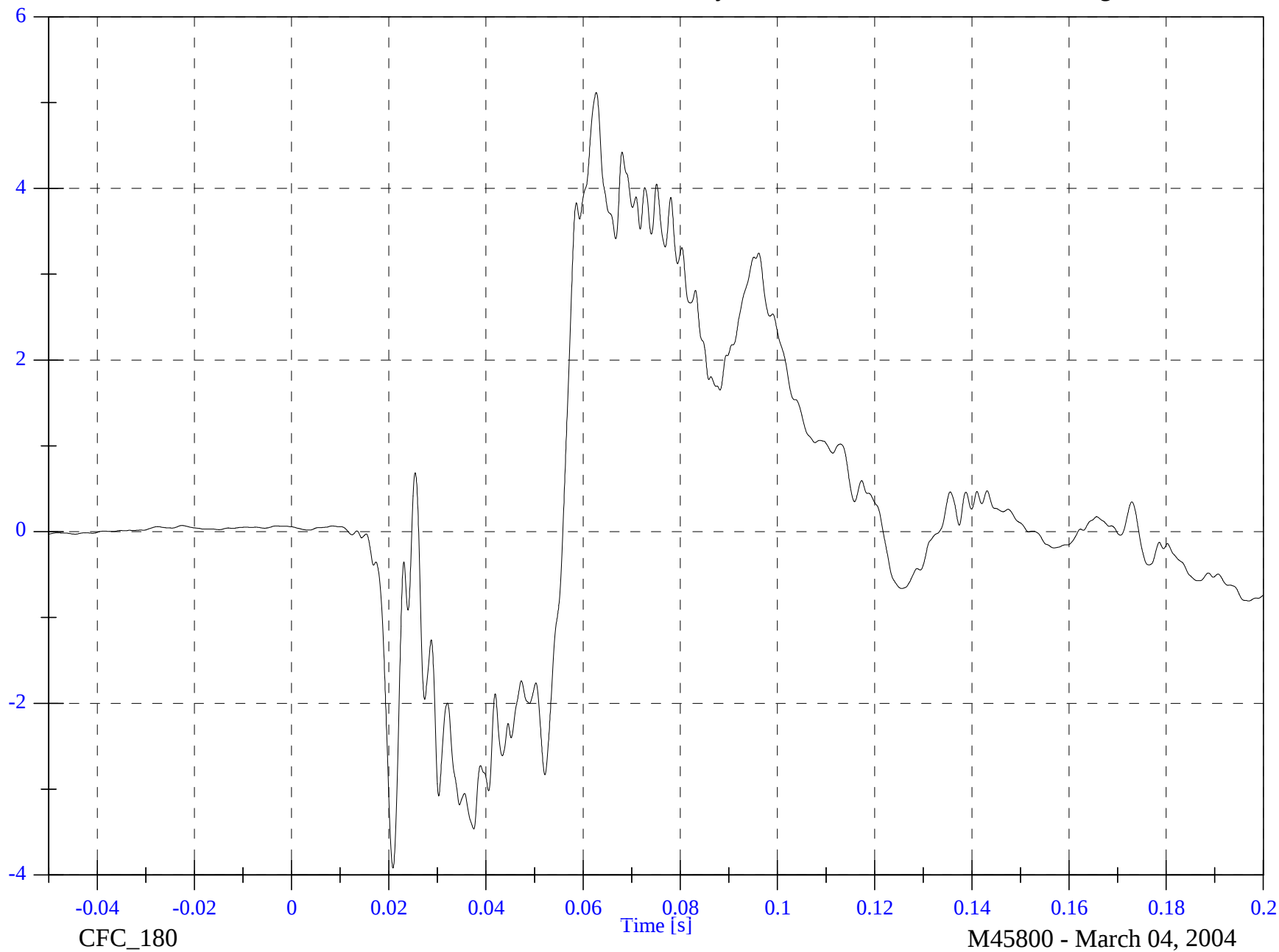
Max: 5.1 [g] at 0.063 [s]

Min: -3.9 [g] at 0.021 [s]

B-31

8642-NCAP-46

g



2004 NCAP Test 10 - 2004 VW Touareg

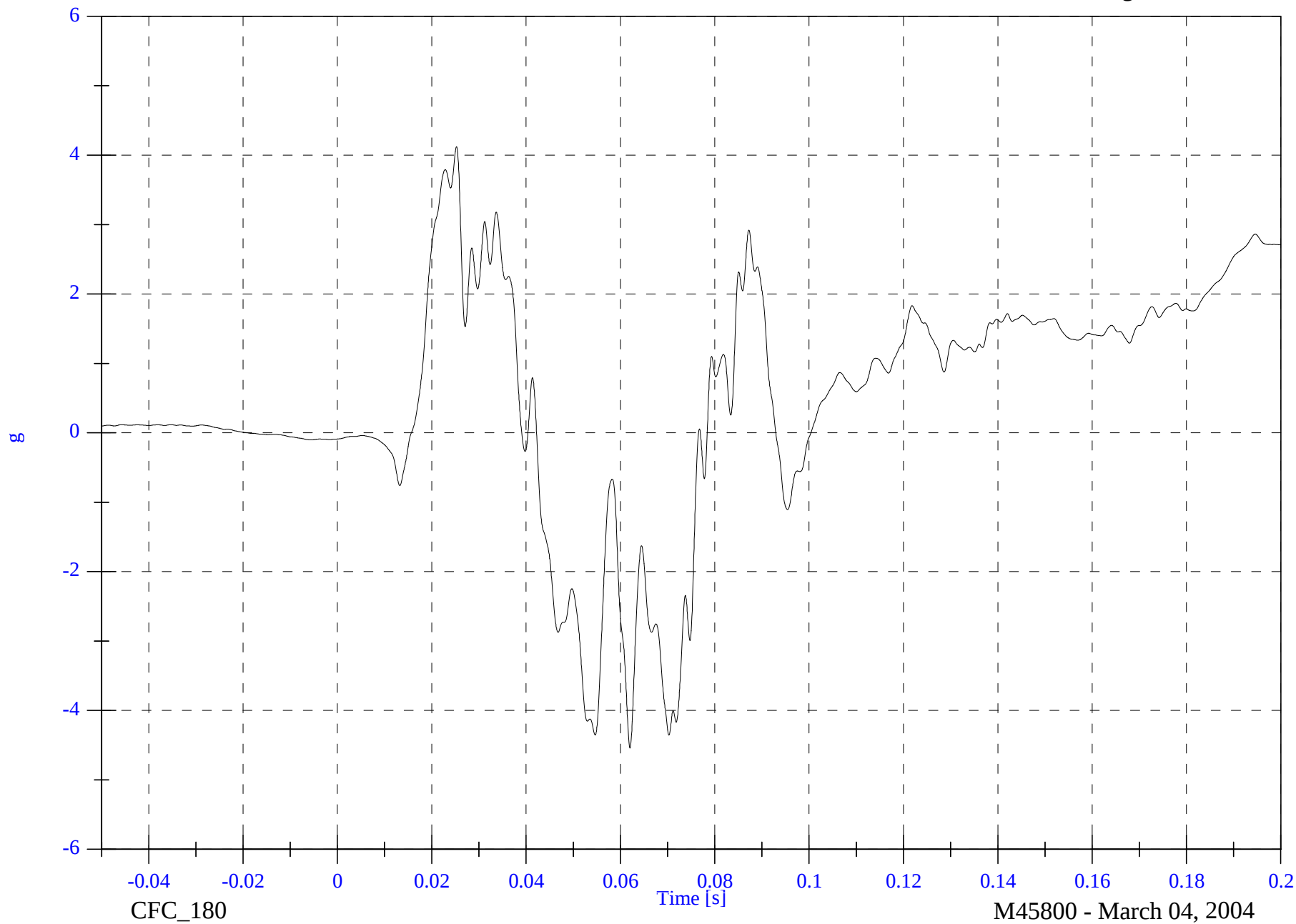
V1P1 Chest z

Max: 4.1 [g] at 0.025 [s]

Min: -4.5 [g] at 0.062 [s]

B-32

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

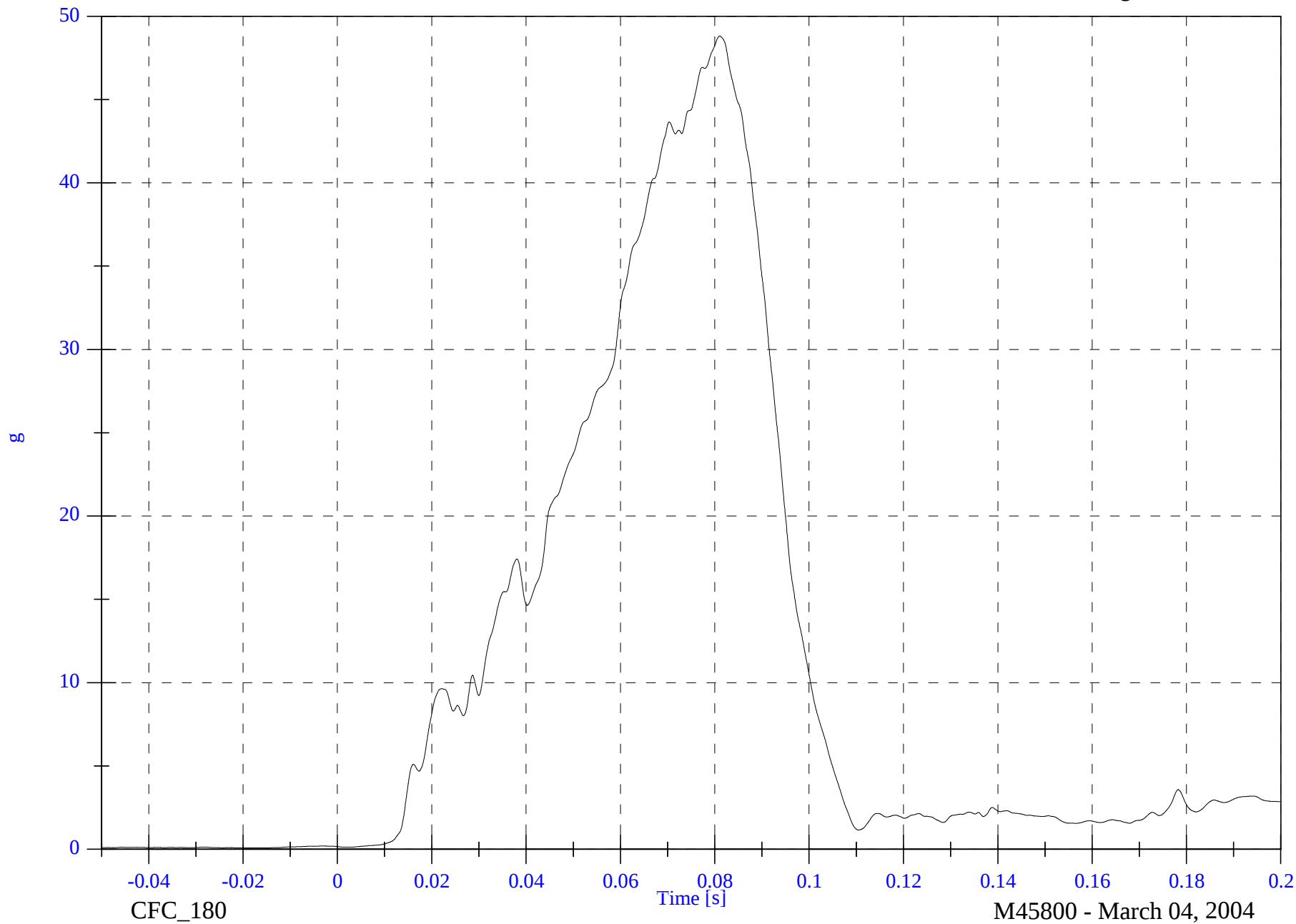
V1P1 Chest Resultant

Max: 48.8 [g] at 0.081 [s]

Min: 0.1 [g] at -0.021 [s]

B-33

8642-NCAP-46

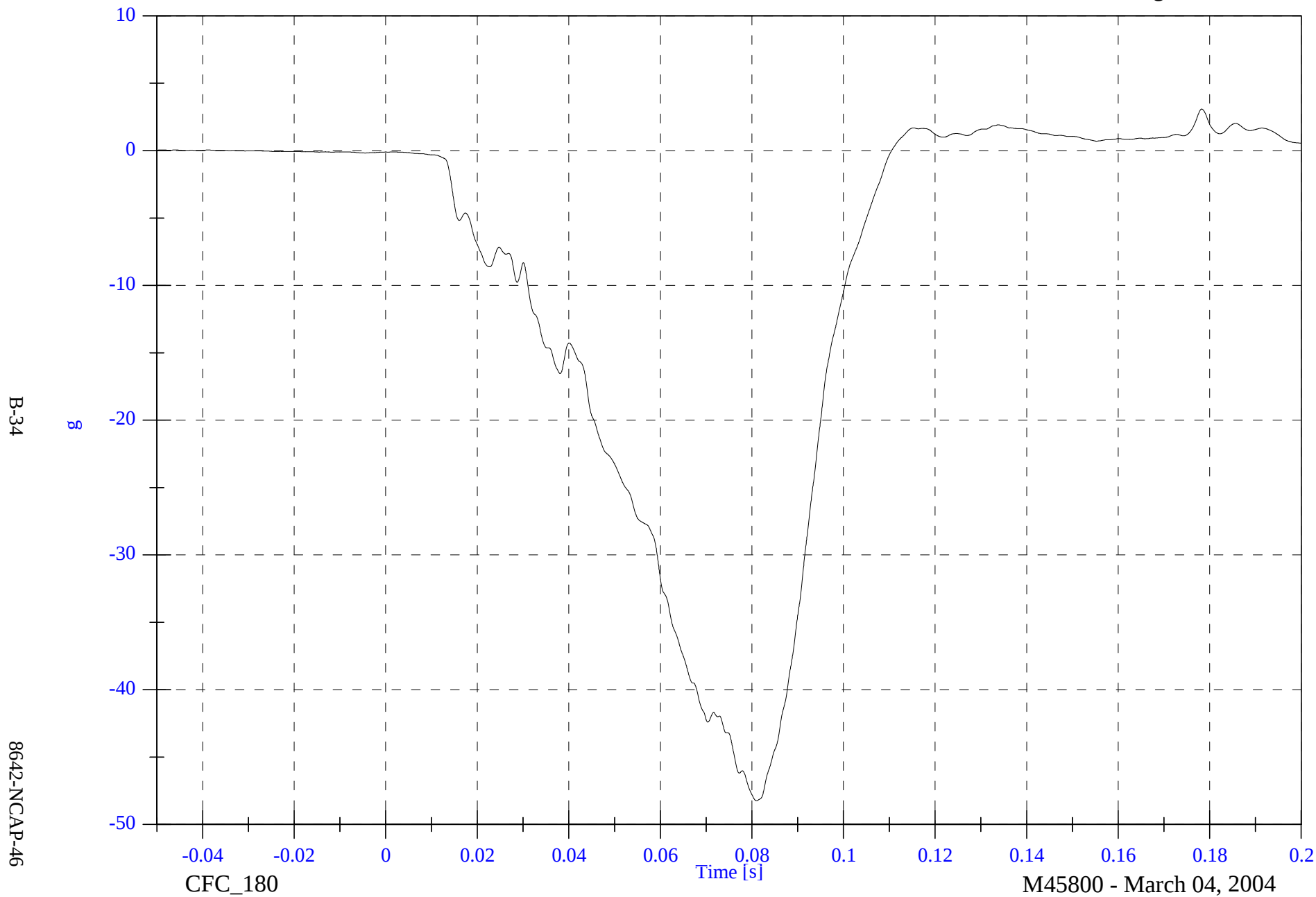


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Chest Red x

Max: 3.1 [g] at 0.178 [s]

Min: -48.2 [g] at 0.081 [s]

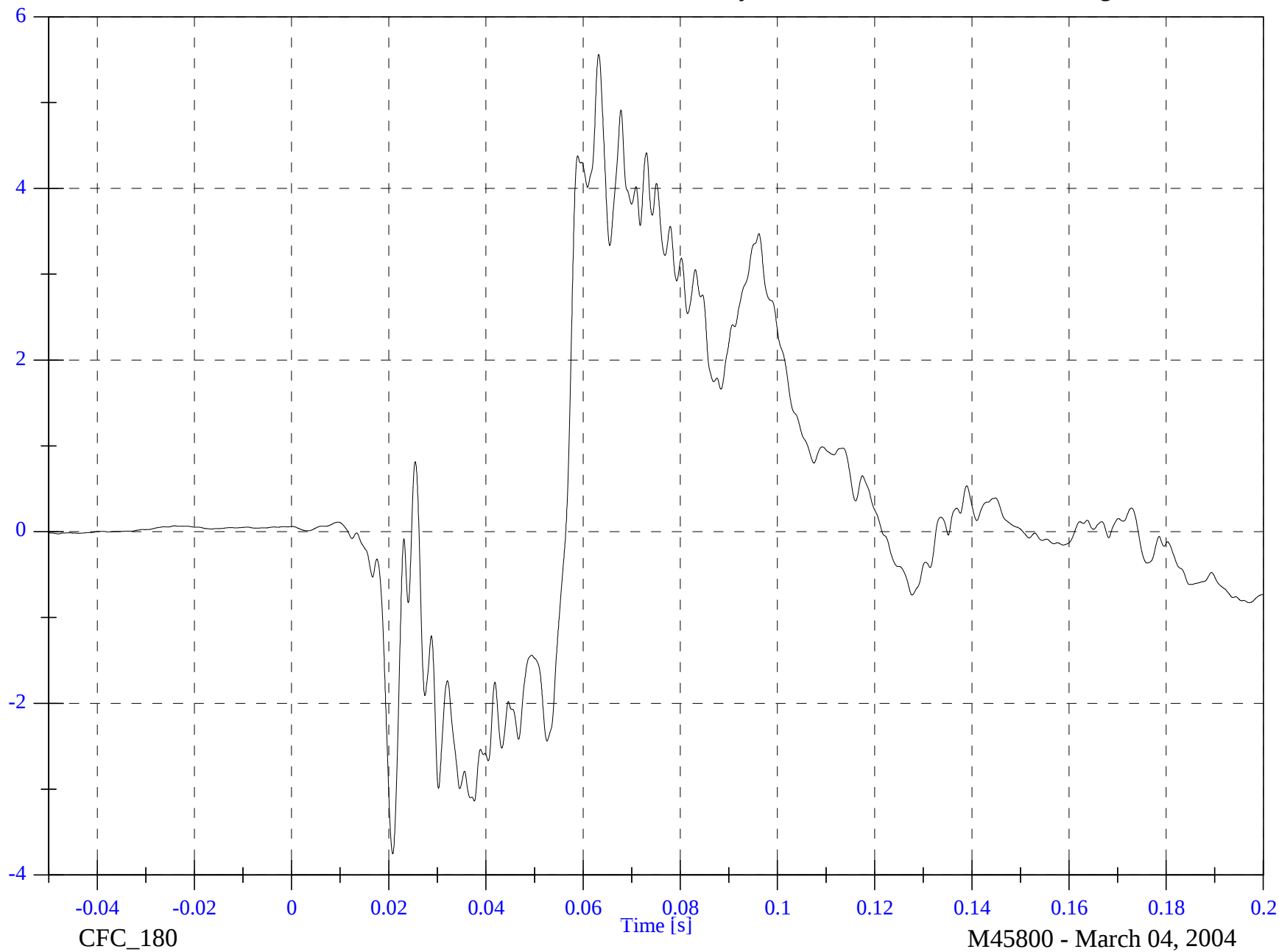


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Chest Red y

Max: 5.6 [g] at 0.063 [s]

Min: -3.8 [g] at 0.021 [s]



B-35

8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

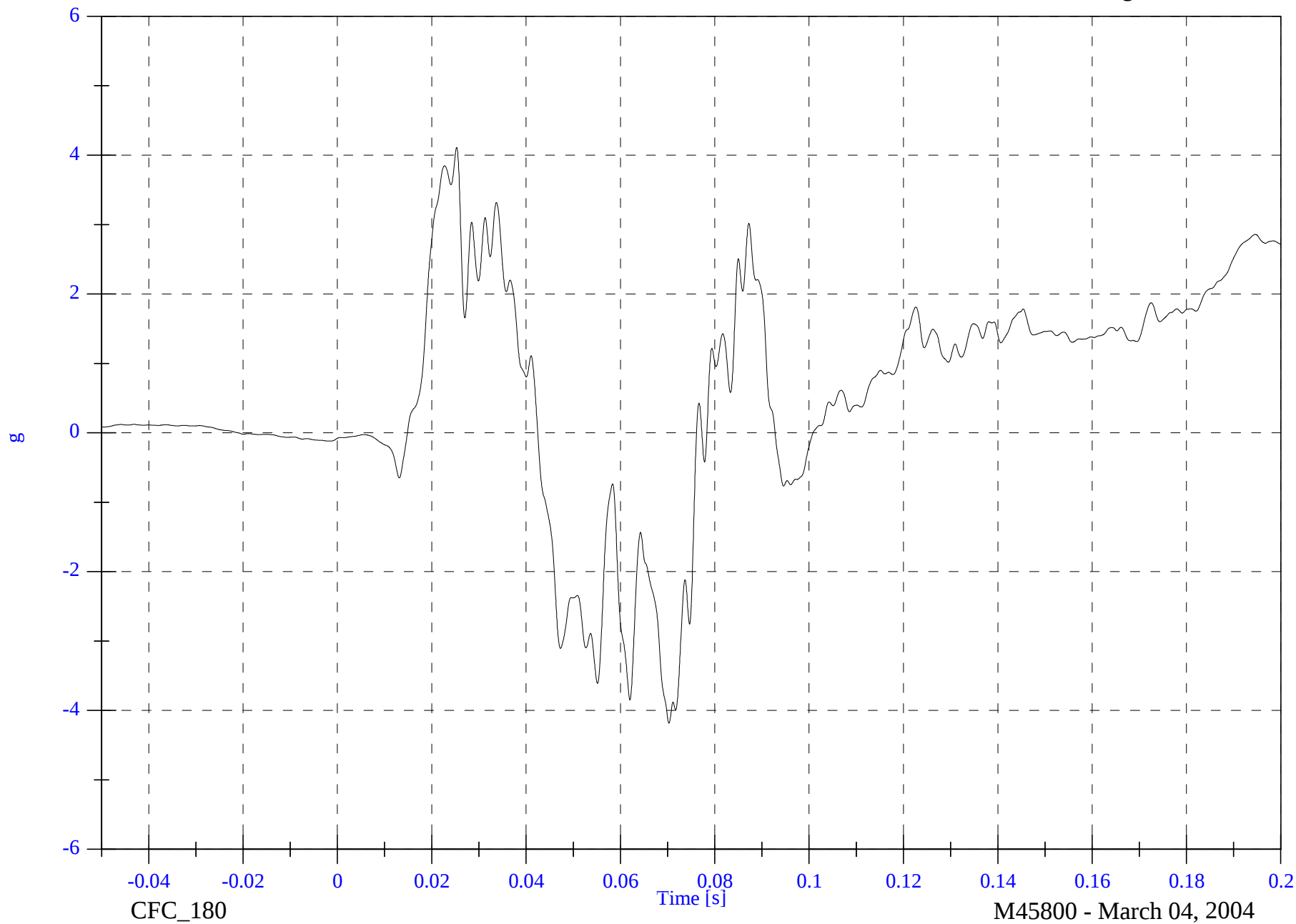
V1P1 Chest Red z

Max: 4.1 [g] at 0.025 [s]

Min: -4.2 [g] at 0.070 [s]

B-36

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Chest Red Resultant

Max: 48.3 [g] at 0.081 [s]

Min: 0.1 [g] at -0.020 [s]

B-37

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

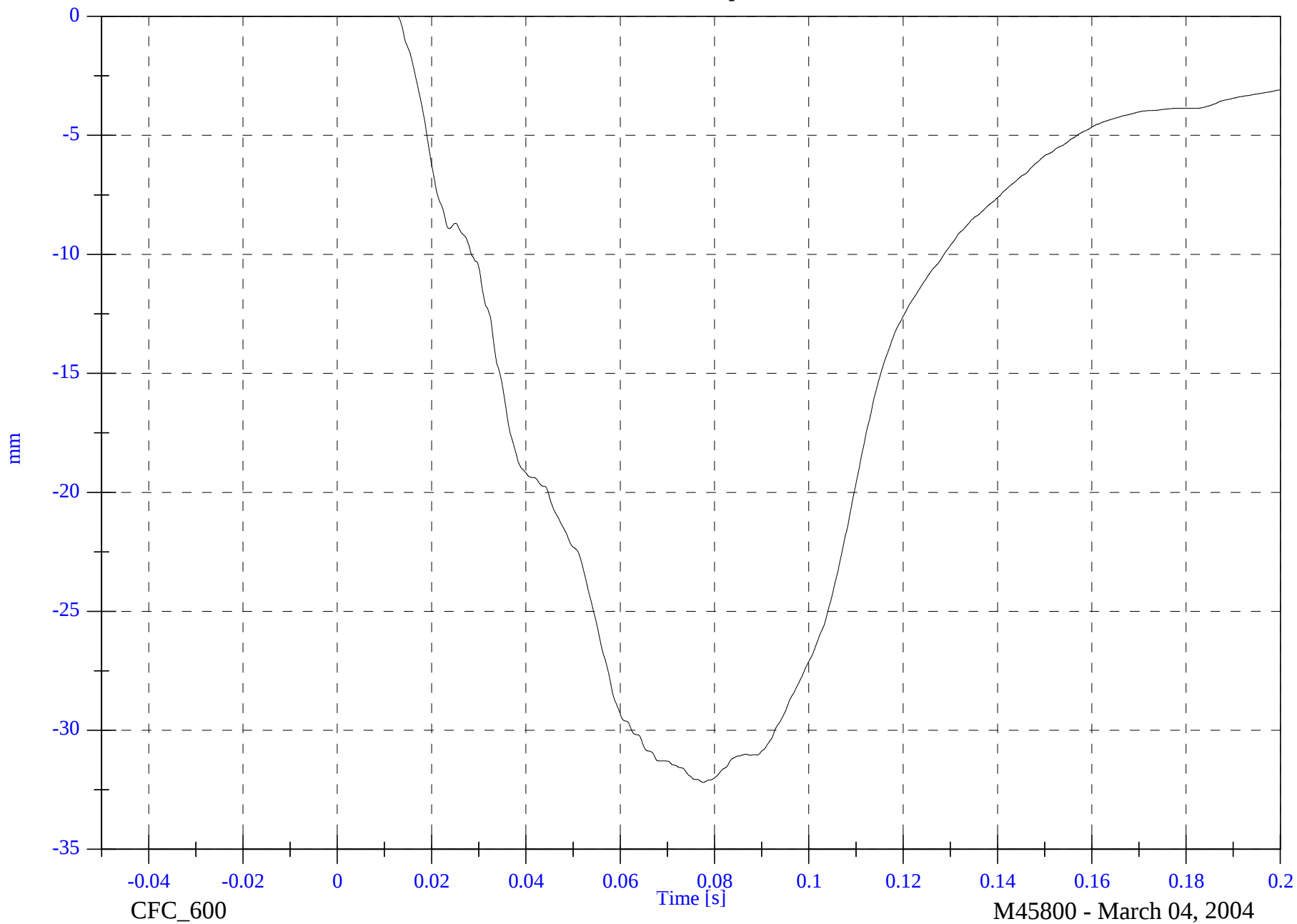
V1P1 Chest Compression x

Max: 0.0 [mm] at -0.005 [s]

Min: -32.2 [mm] at 0.078 [s]

B-38

8642-NCAP-46

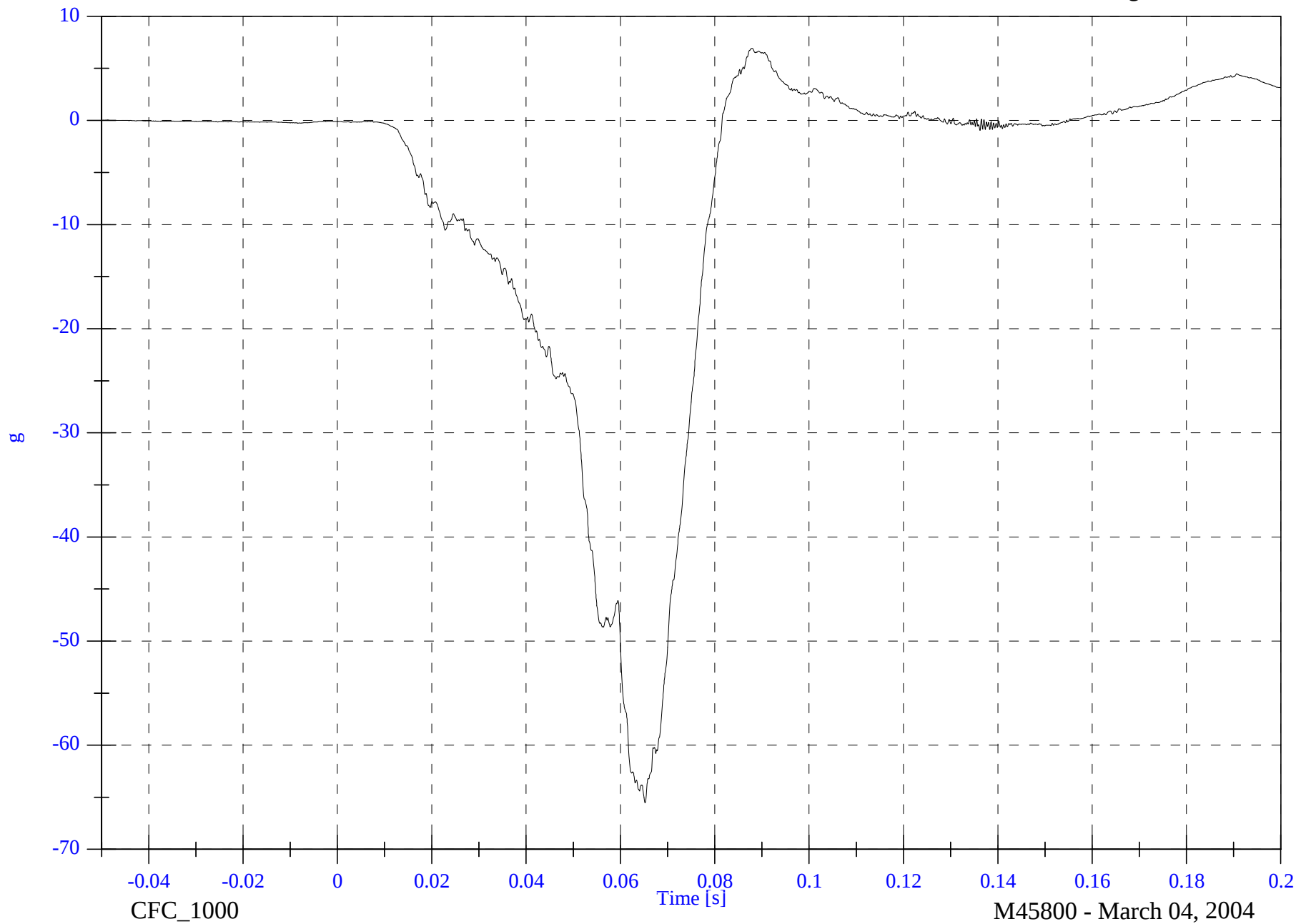


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Pelvic x

Max: 6.9 [g] at 0.088 [s]

Min: -65.5 [g] at 0.065 [s]



B-39

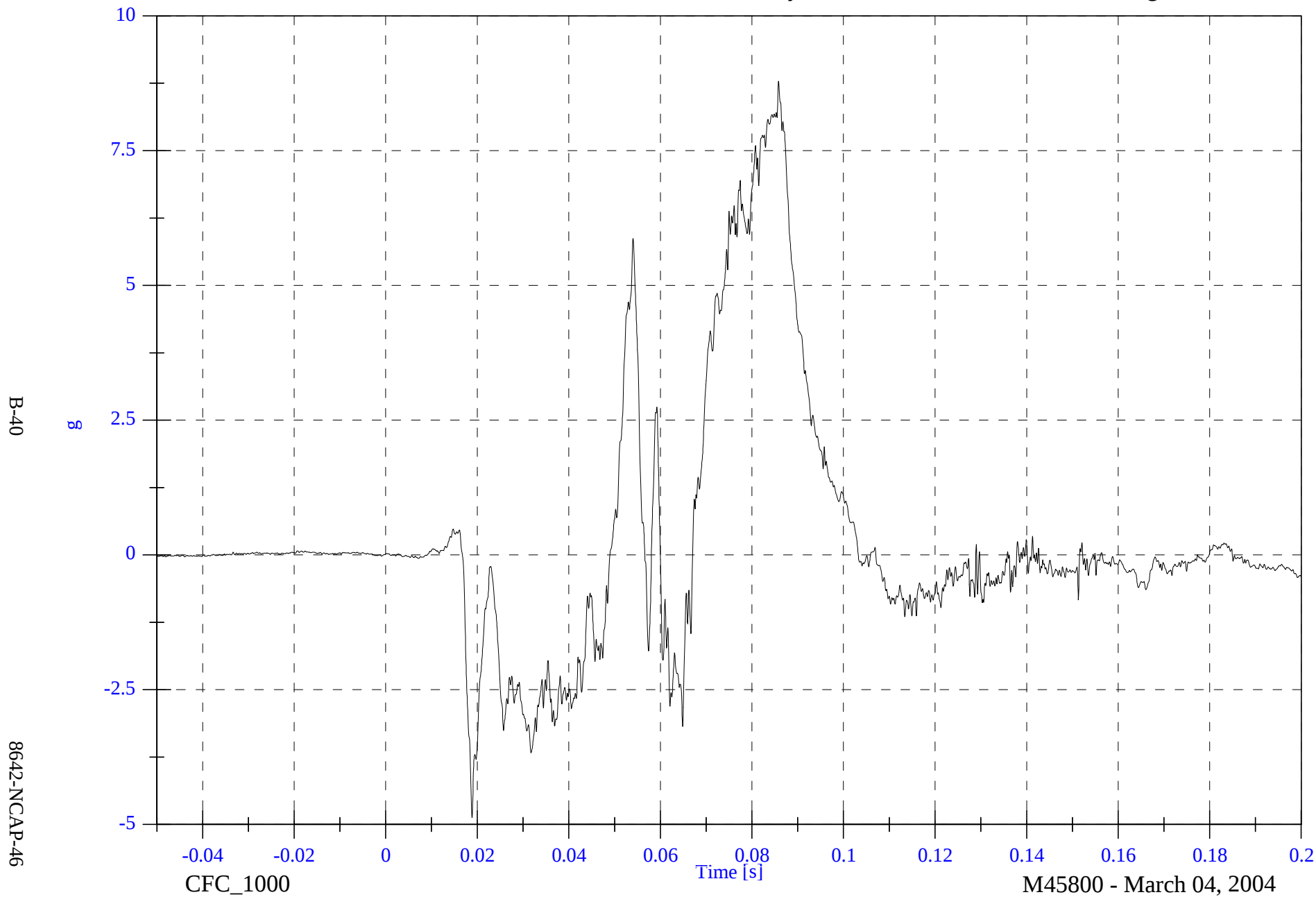
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Pelvic y

Max: 8.8 [g] at 0.086 [s]

Min: -4.9 [g] at 0.019 [s]

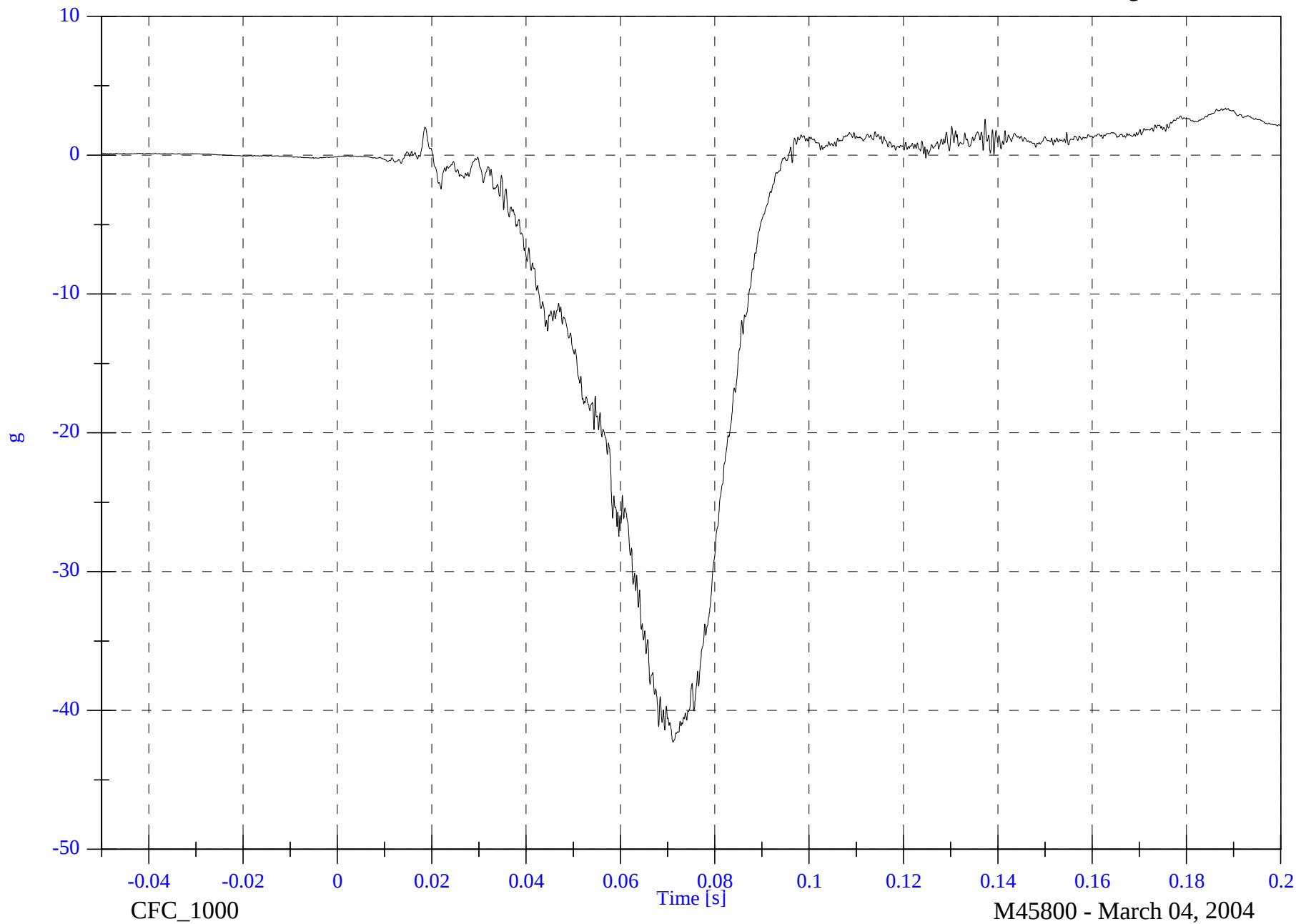


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Pelvic z

Max: 3.4 [g] at 0.188 [s]

Min: -42.3 [g] at 0.071 [s]



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8642-NCAP-46

CFC_1000

Time [s]

M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

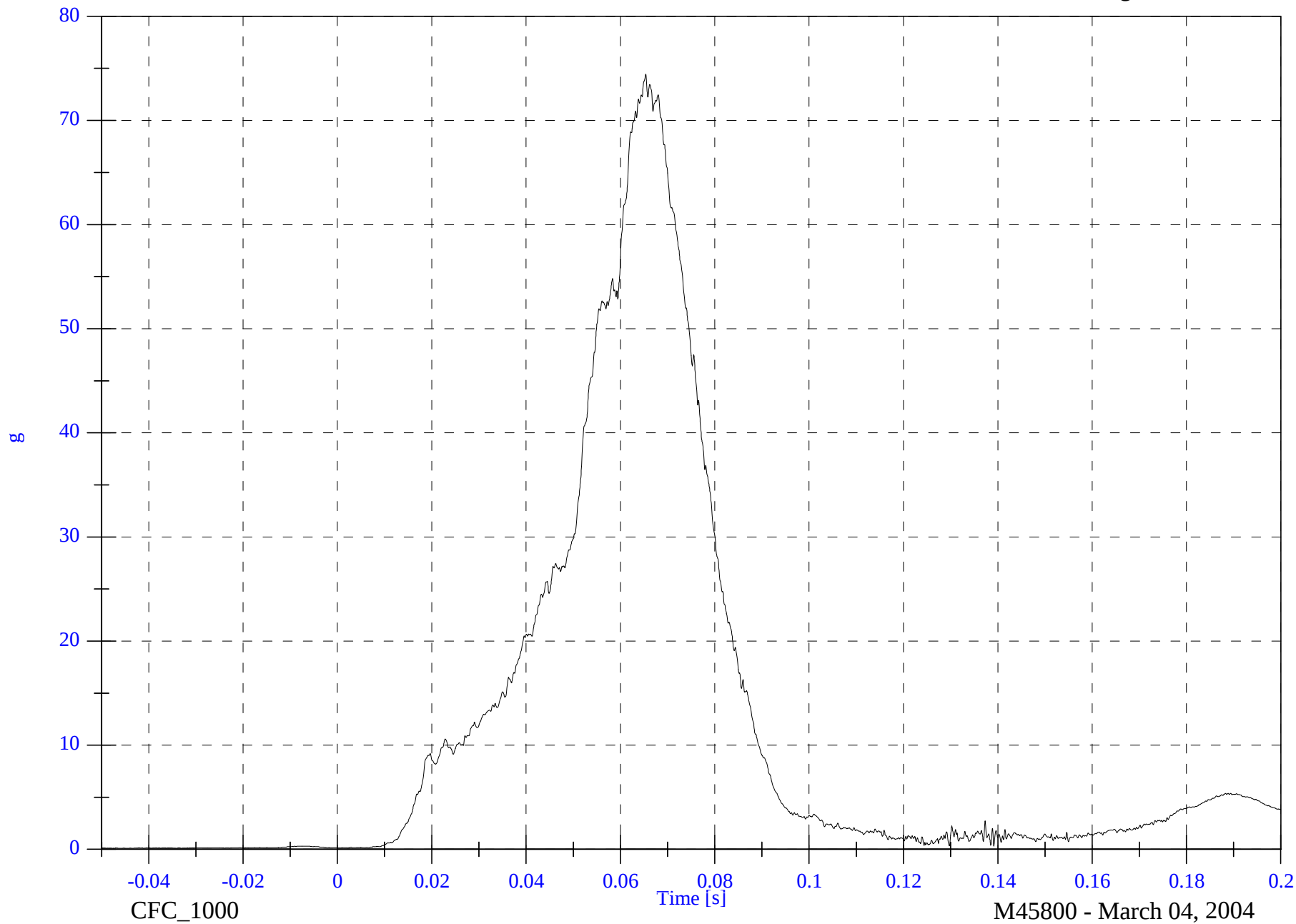
V1P1 Pelvic Resultant

Max: 74.4 [g] at 0.065 [s]

Min: 0.1 [g] at -0.046 [s]

B-42

8642-NCAP-46

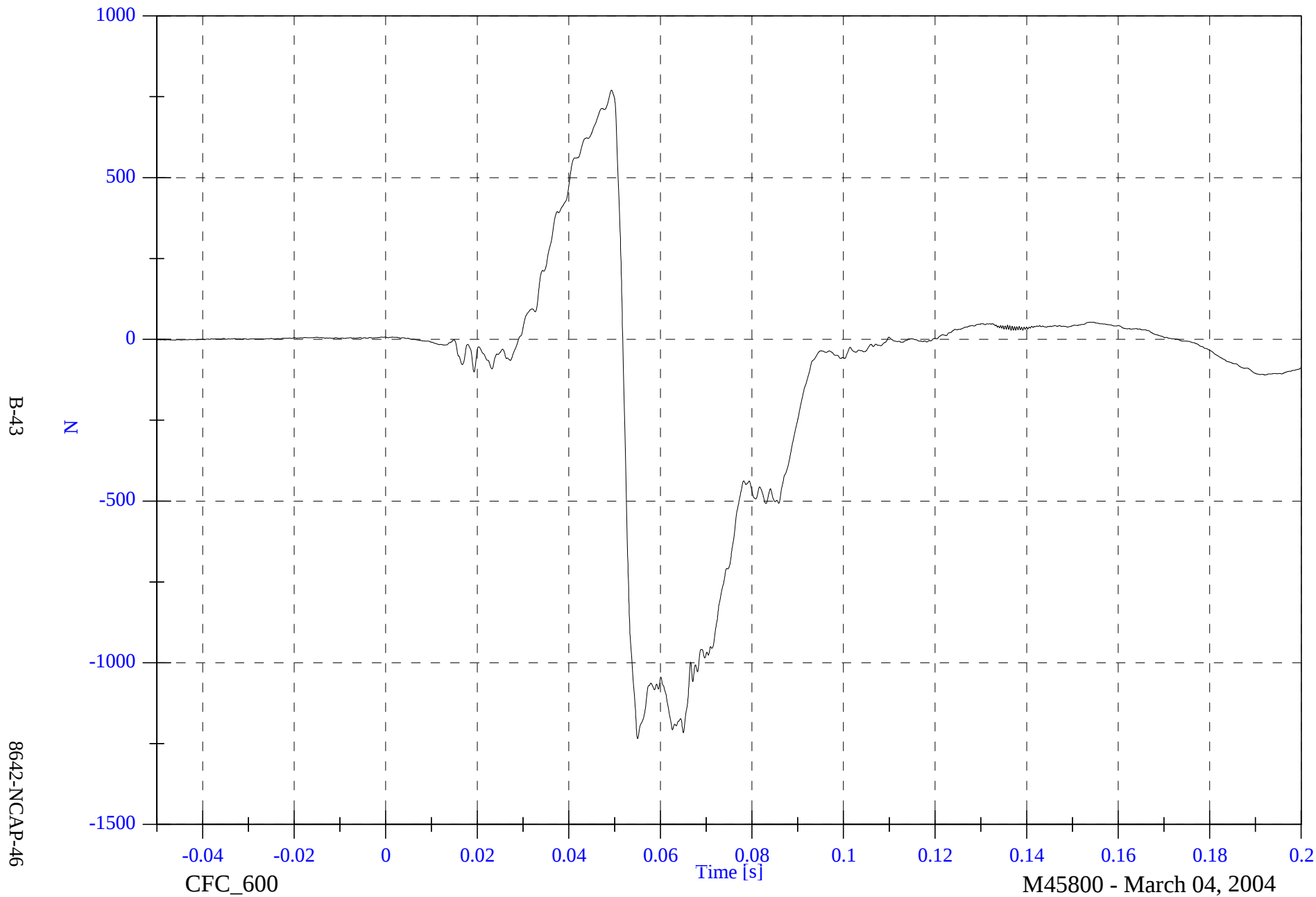


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Left Femur z

Max: 770.3 [N] at 0.049 [s]

Min: -1234.1 [N] at 0.055 [s]

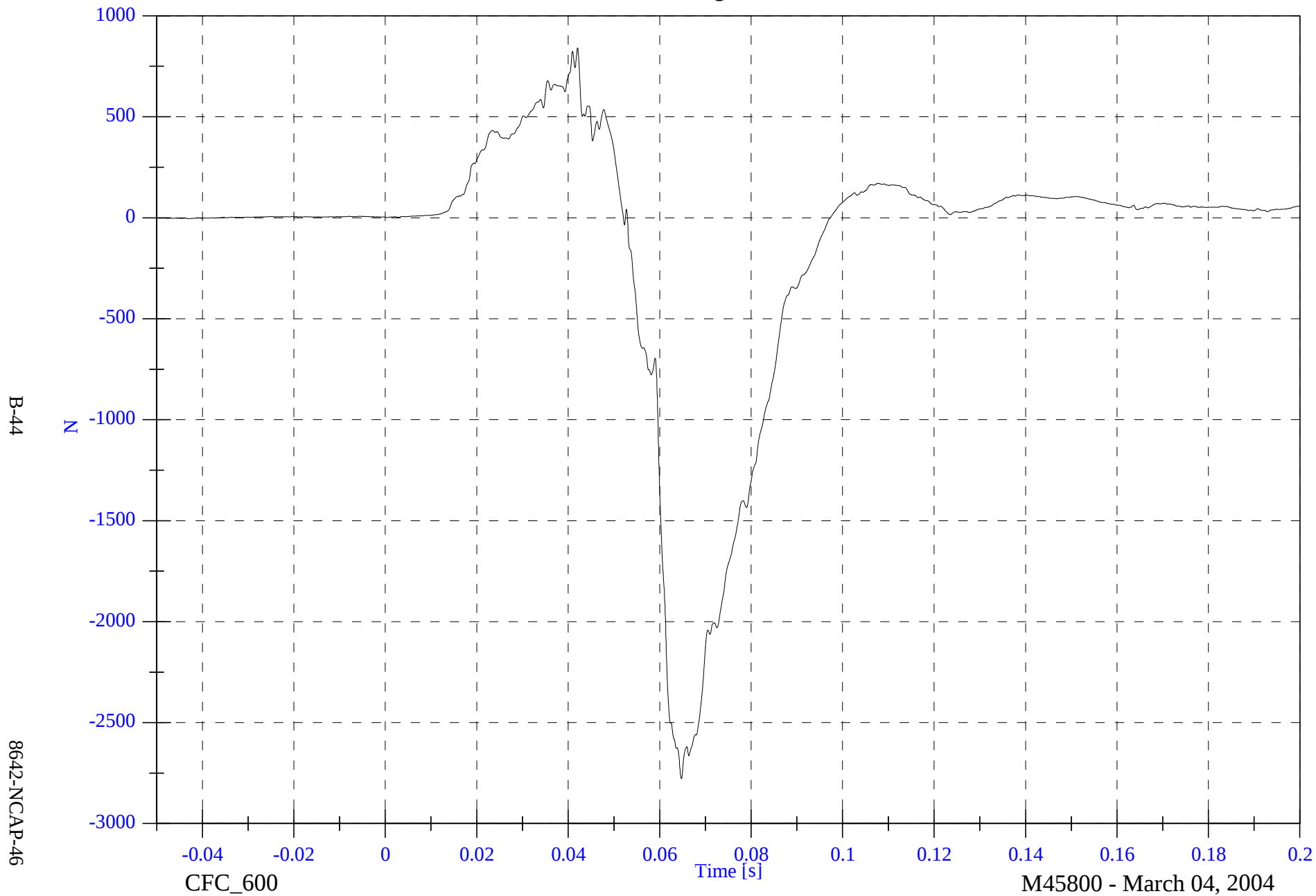


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Right Femur z

Max: 841.9 [N] at 0.042 [s]

Min: -2777.6 [N] at 0.065 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Left Upper Tibia Mx

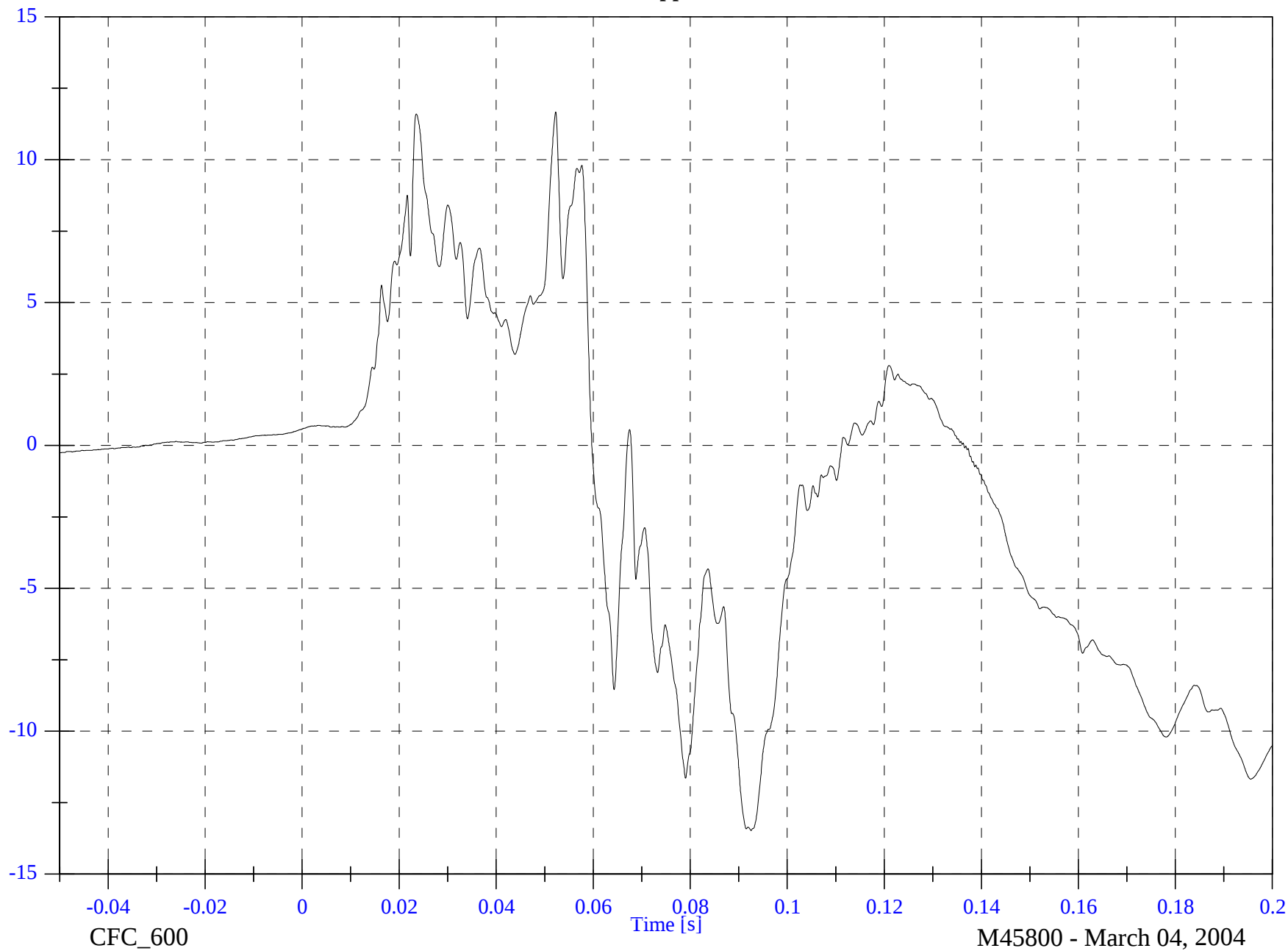
Max: 11.7 [N-m] at 0.052 [s]

Min: -13.5 [N-m] at 0.093 [s]

B-45

N-m

8642-NCAP-46

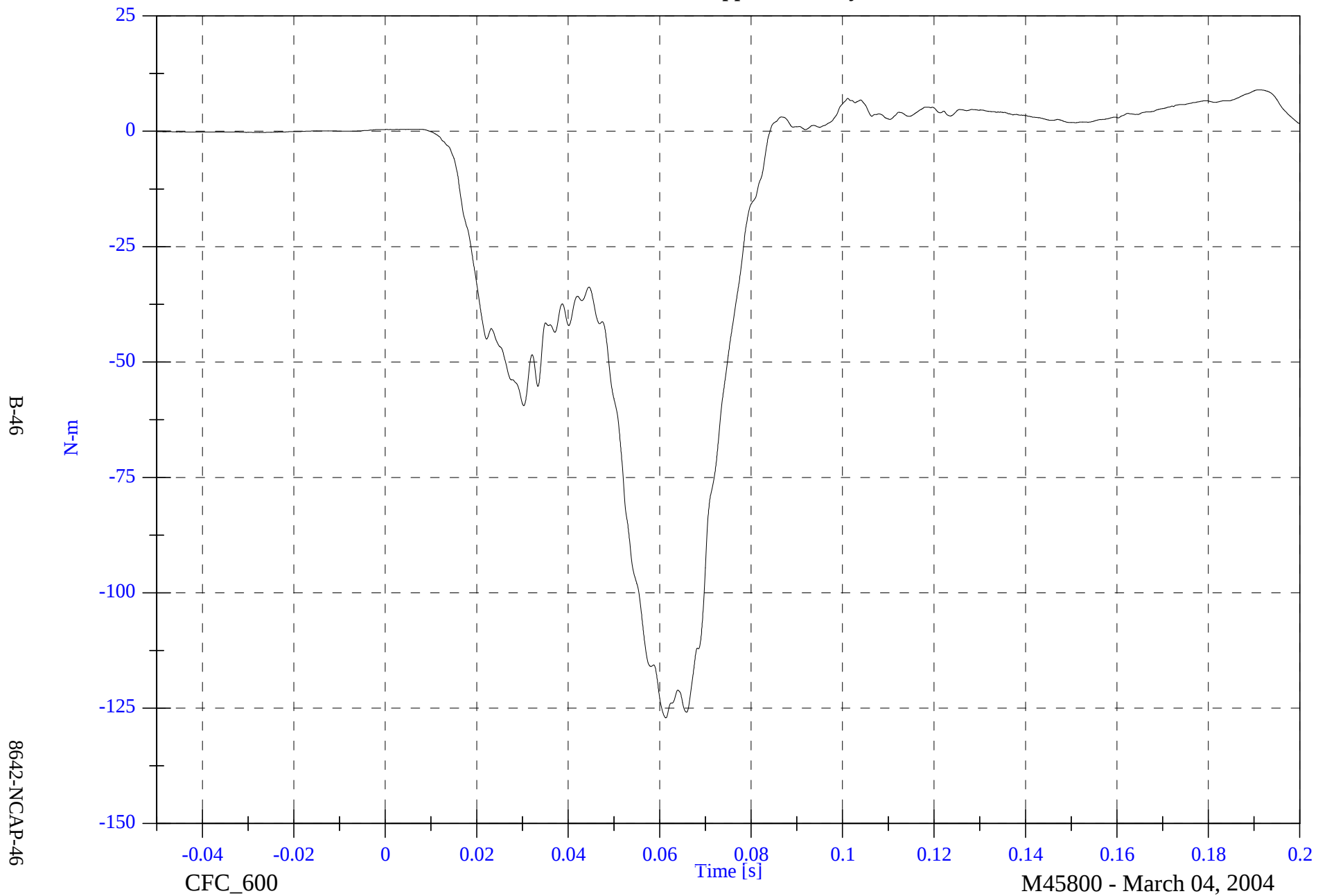


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Left Upper Tibia My

Max: 9.0 [N-m] at 0.191 [s]

Min: -127.1 [N-m] at 0.061 [s]

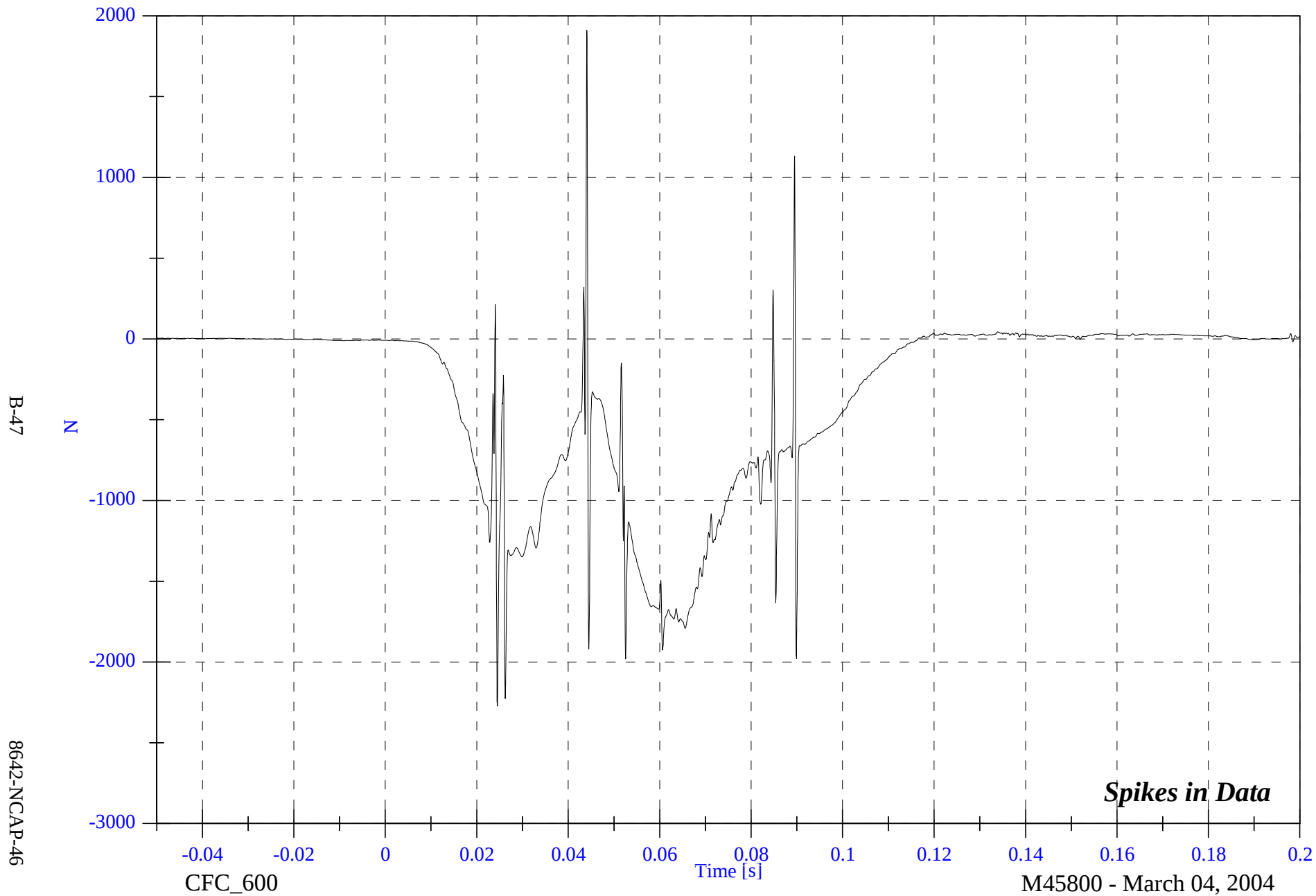


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Left Lower Tibia Fz

Max: 1911.6 [N] at 0.044 [s]

Min: -2273.7 [N] at 0.025 [s]

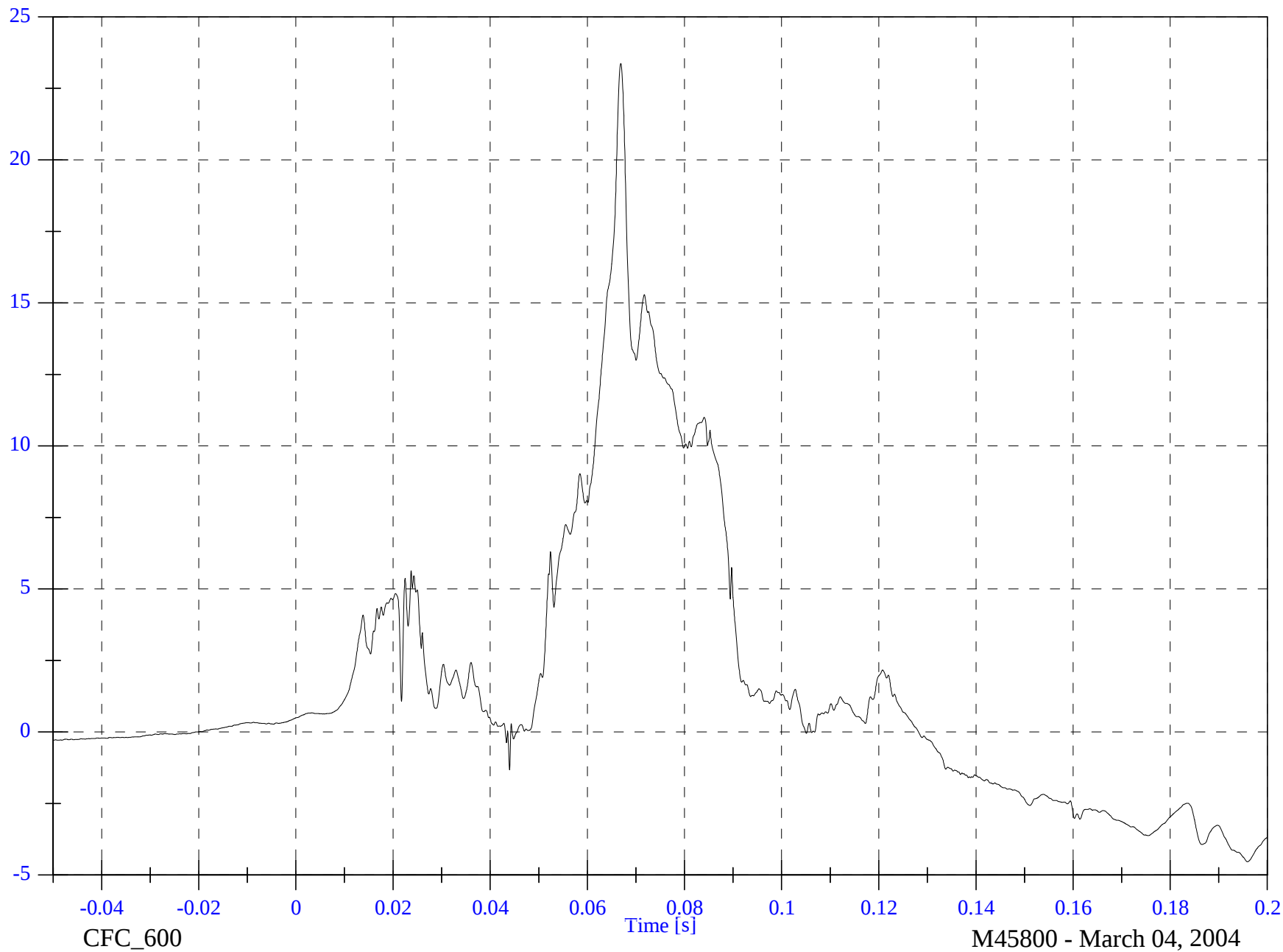


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Left Lower Tibia Mx

Max: 23.4 [N-m] at 0.067 [s]

Min: -4.5 [N-m] at 0.196 [s]



B-48

8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

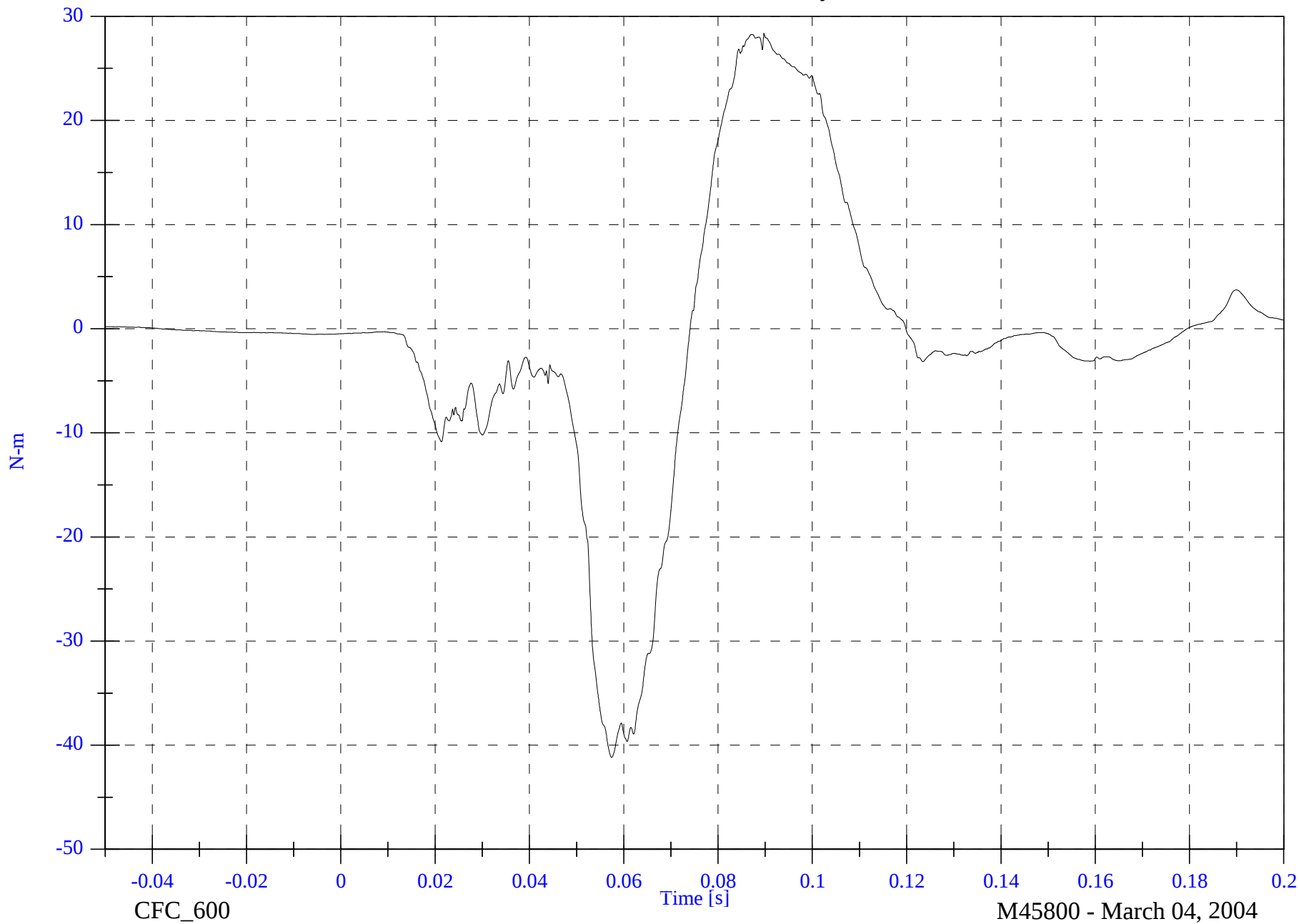
V1P1 Left Lower Tibia My

Max: 28.4 [N-m] at 0.090 [s]

Min: -41.2 [N-m] at 0.057 [s]

B-49

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Right Upper Tibia Mx

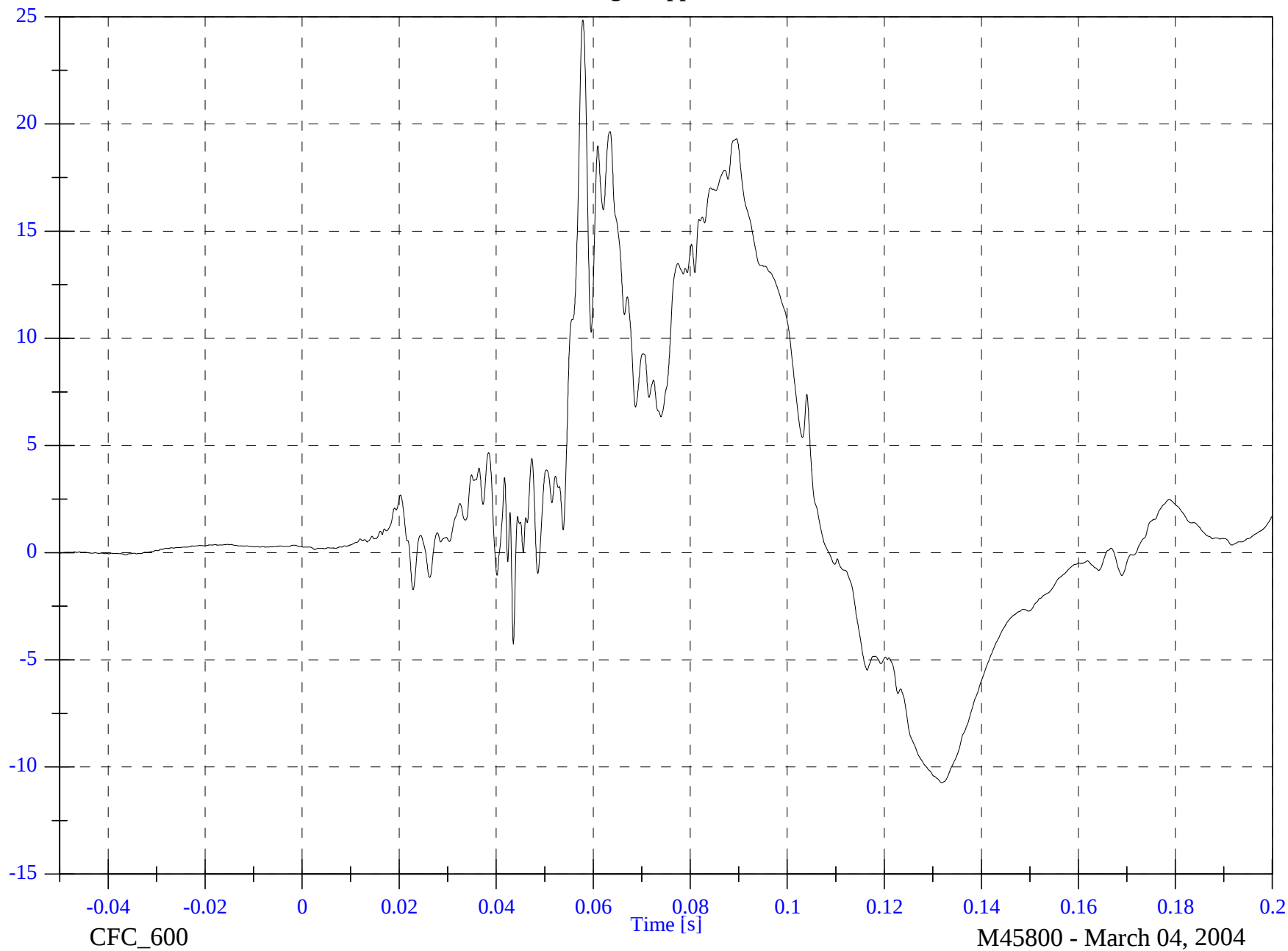
Max: 24.9 [N-m] at 0.058 [s]

Min: -10.7 [N-m] at 0.132 [s]

B-50

N-m

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

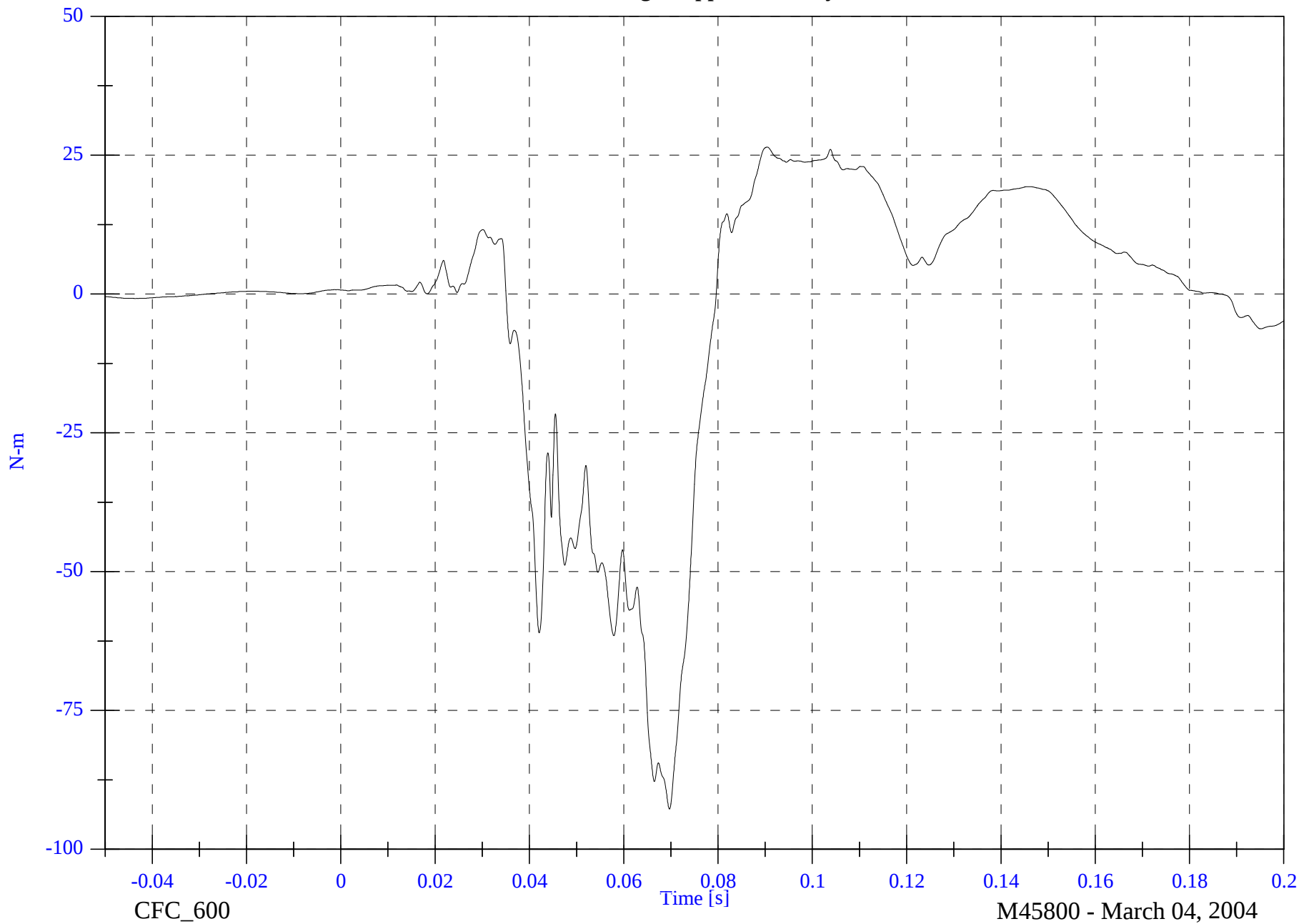
V1P1 Right Upper Tibia My

Max: 26.5 [N-m] at 0.090 [s]

Min: -92.8 [N-m] at 0.070 [s]

B-51

8642-NCAP-46

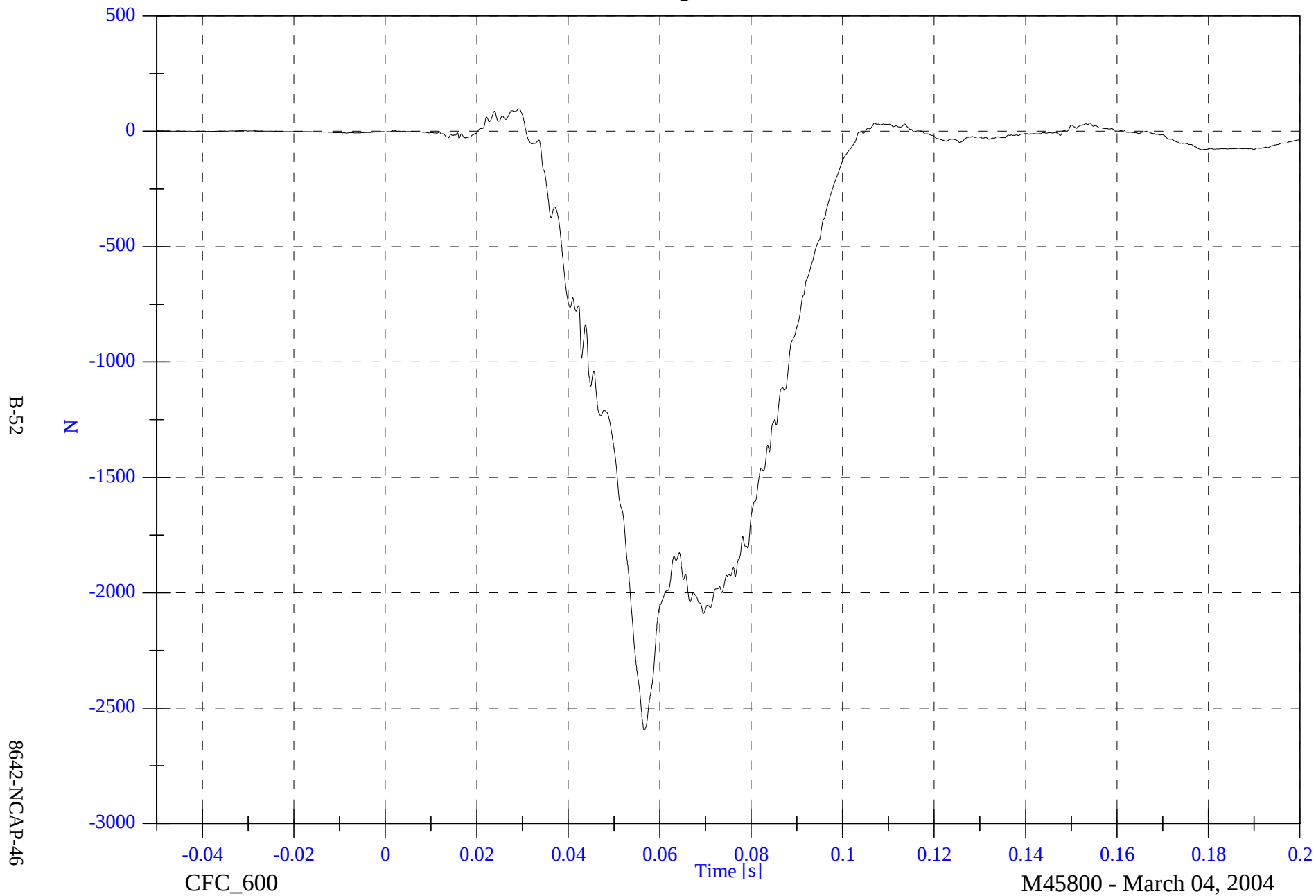


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Right Lower Tibia Fz

Max: 96.4 [N] at 0.029 [s]

Min: -2596.1 [N] at 0.057 [s]

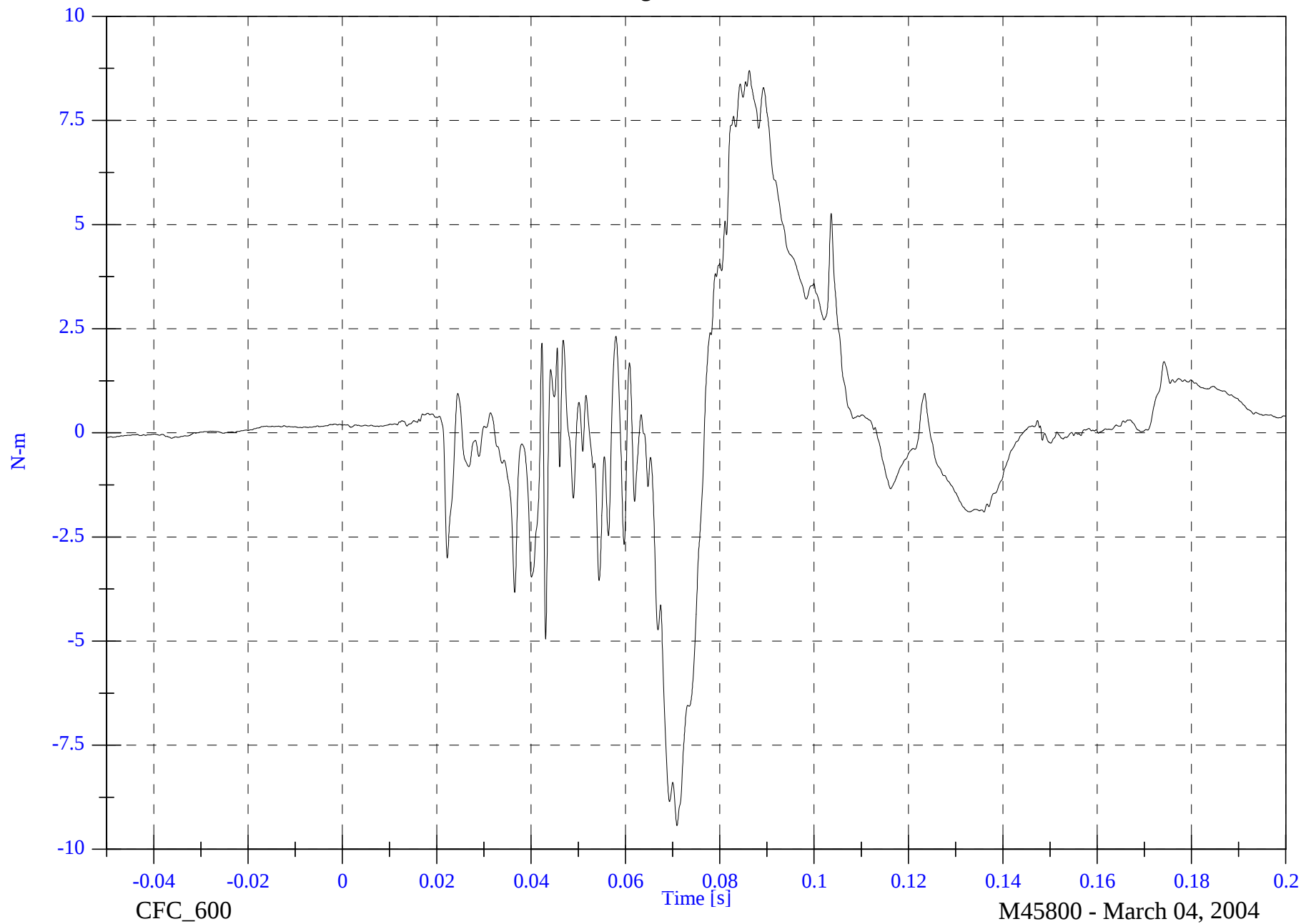


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Right Lower Tibia Mx

Max: 8.7 [N-m] at 0.086 [s]

Min: -9.4 [N-m] at 0.071 [s]

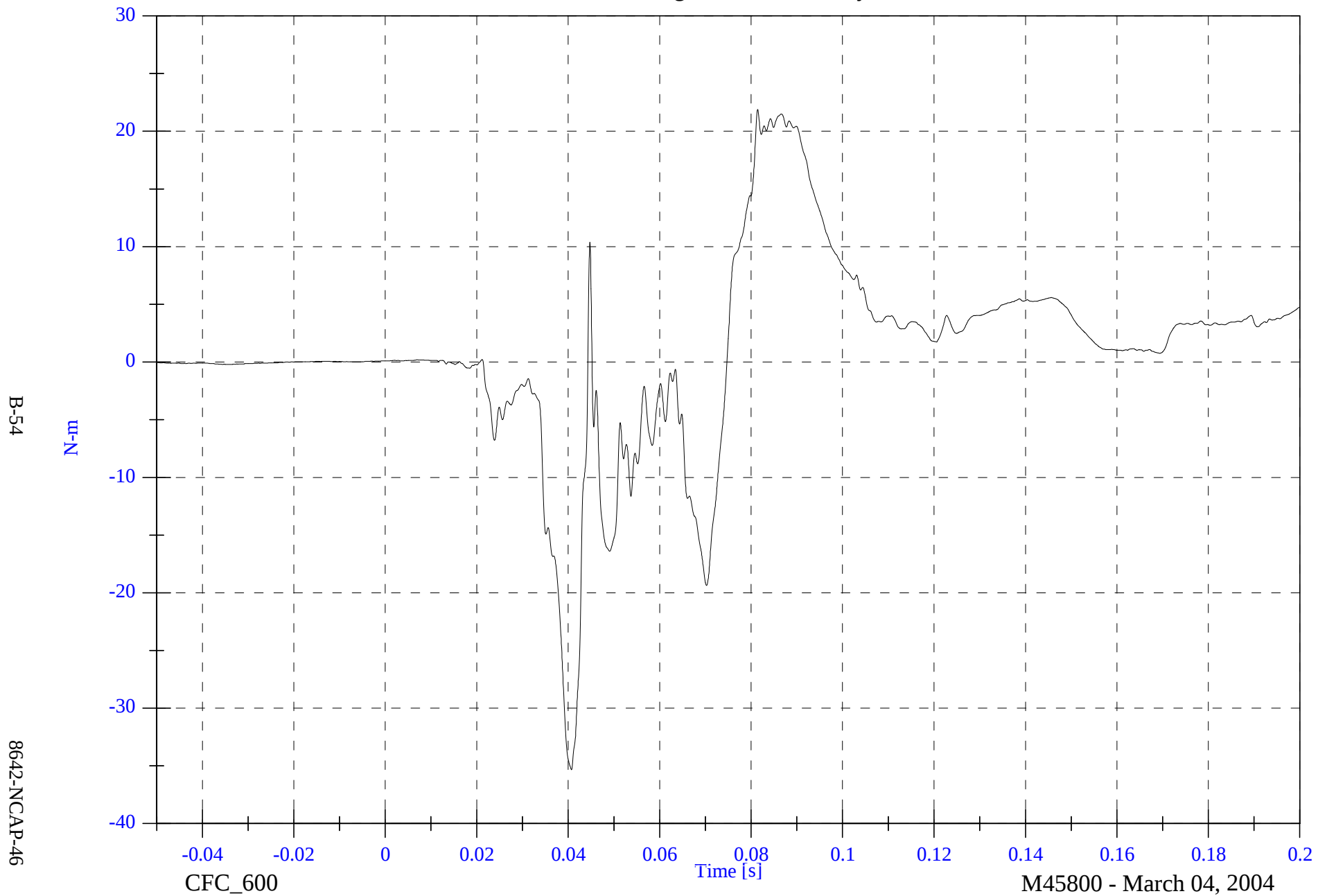


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Right Lower Tibia My

Max: 21.9 [N-m] at 0.081 [s]

Min: -35.3 [N-m] at 0.041 [s]

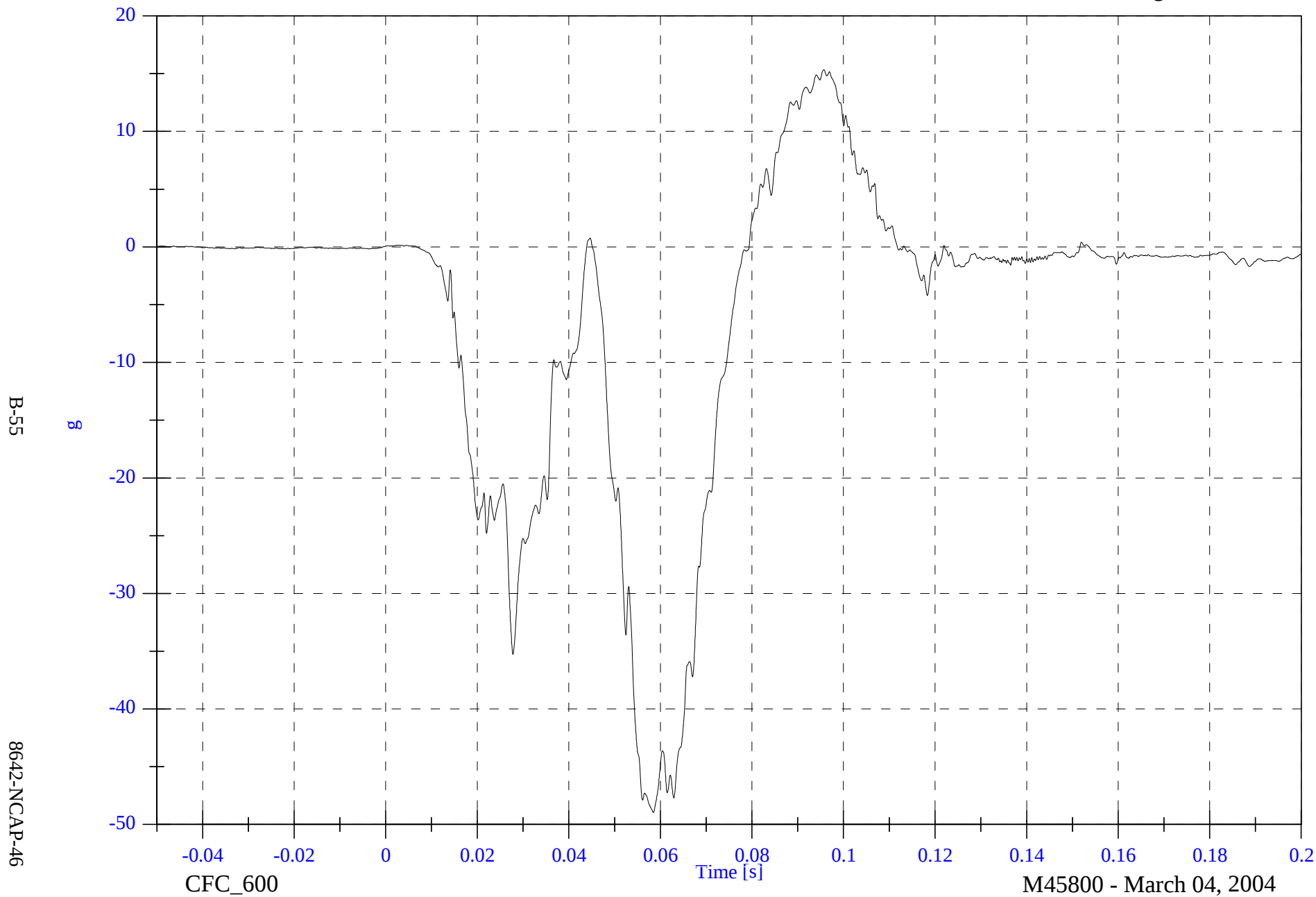


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Left Foot Aft x

Max: 15.3 [g] at 0.096 [s]

Min: -49.0 [g] at 0.058 [s]

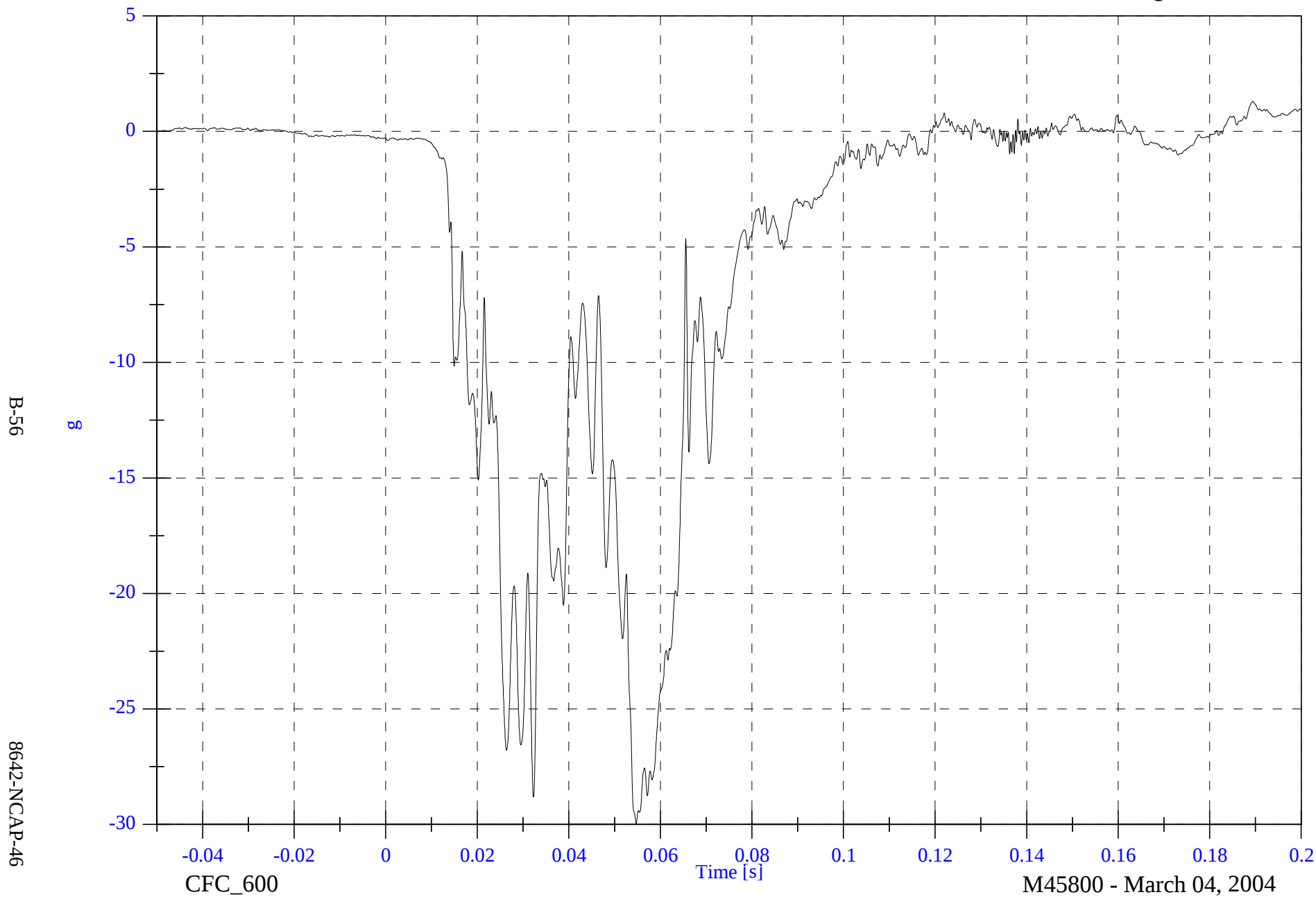


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Left Foot Aft z

Max: 1.3 [g] at 0.189 [s]

Min: -30.0 [g] at 0.055 [s]

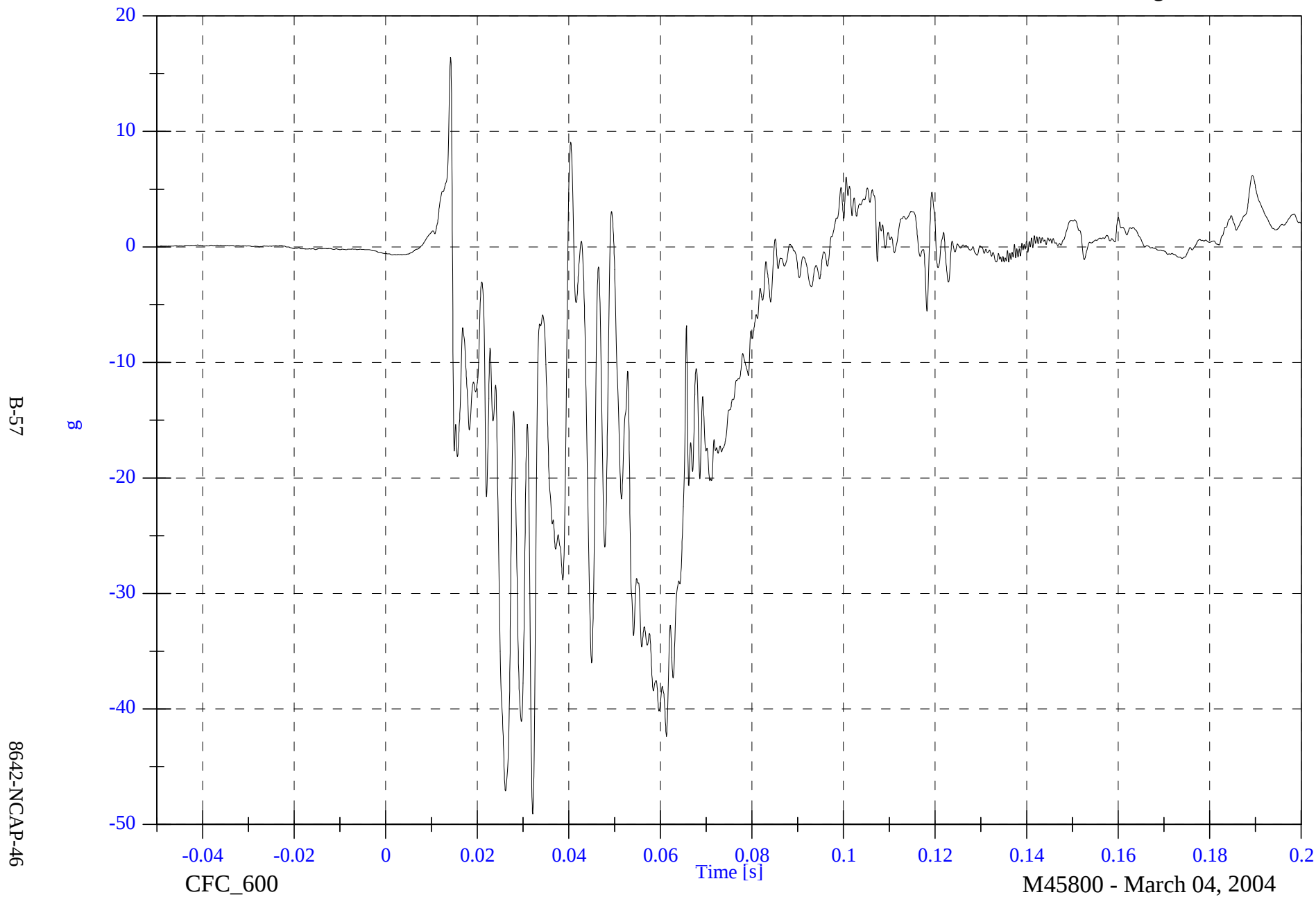


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Left Foot Fore z

Max: 16.4 [g] at 0.014 [s]

Min: -49.1 [g] at 0.032 [s]

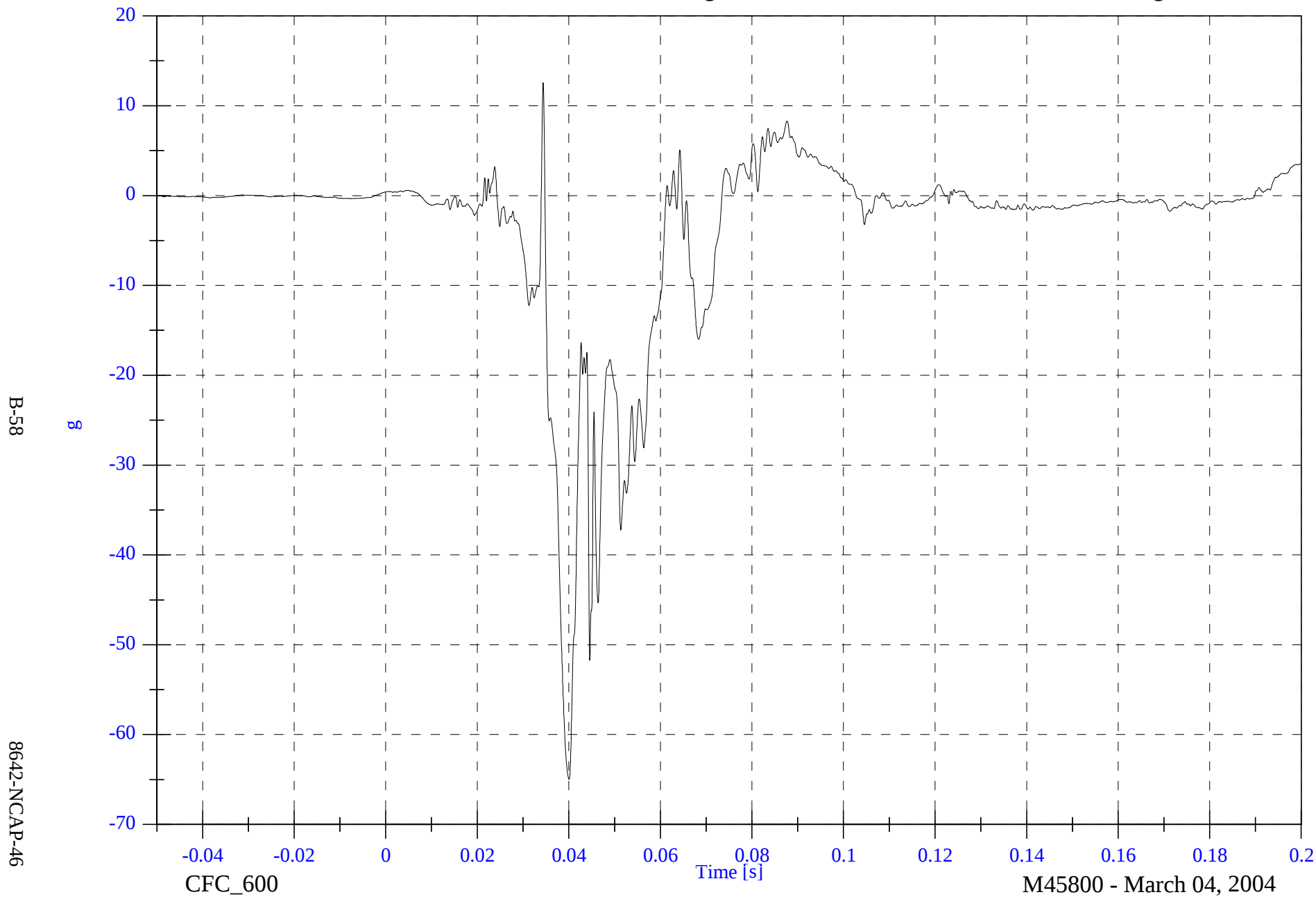


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Right Foot Aft x

Max: 12.5 [g] at 0.034 [s]

Min: -65.0 [g] at 0.040 [s]



2004 NCAP Test 10 - 2004 VW Touareg

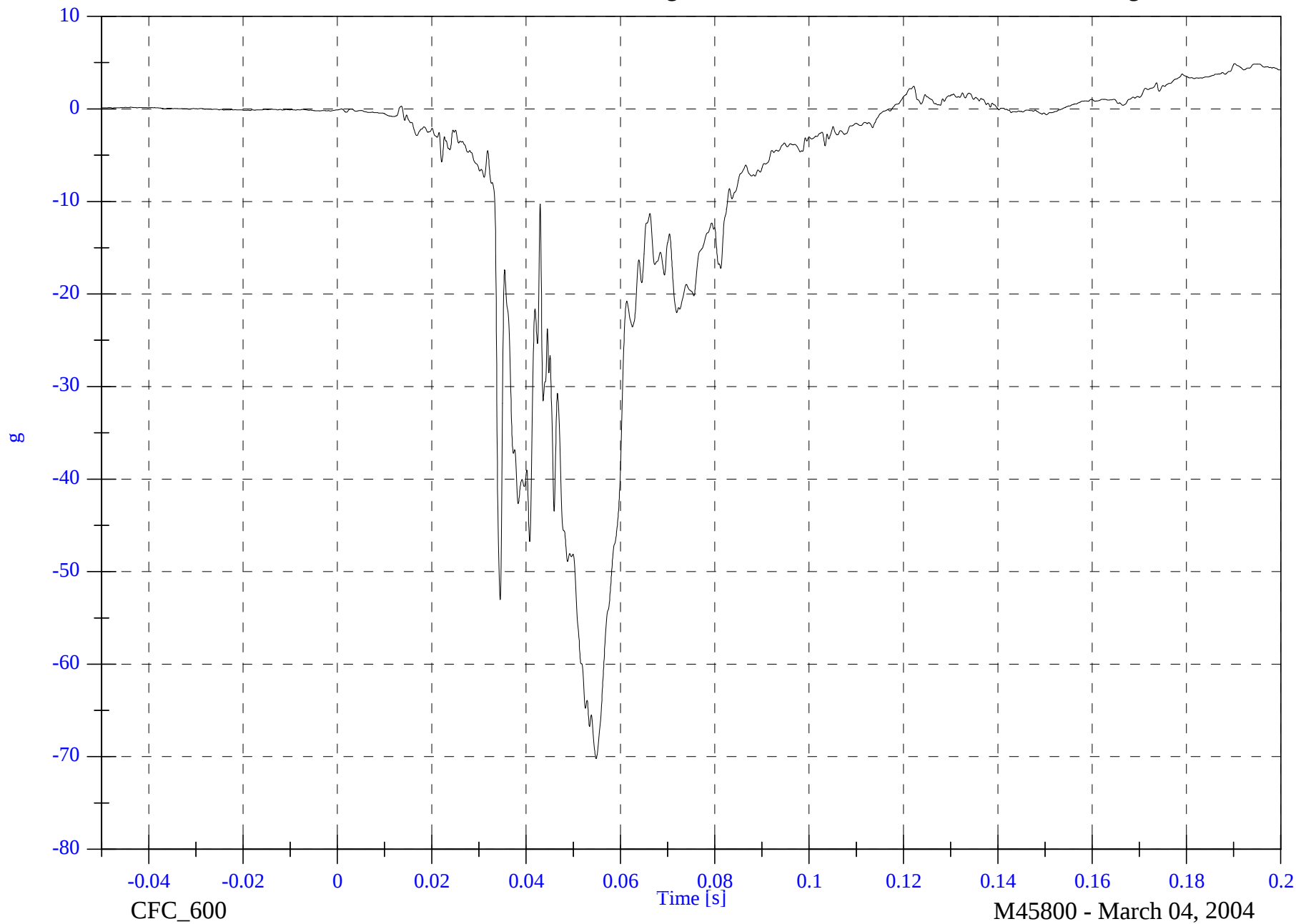
V1P1 Right Foot Aft z

Max: 4.9 [g] at 0.190 [s]

Min: -70.2 [g] at 0.055 [s]

B-59

8642-NCAP-46

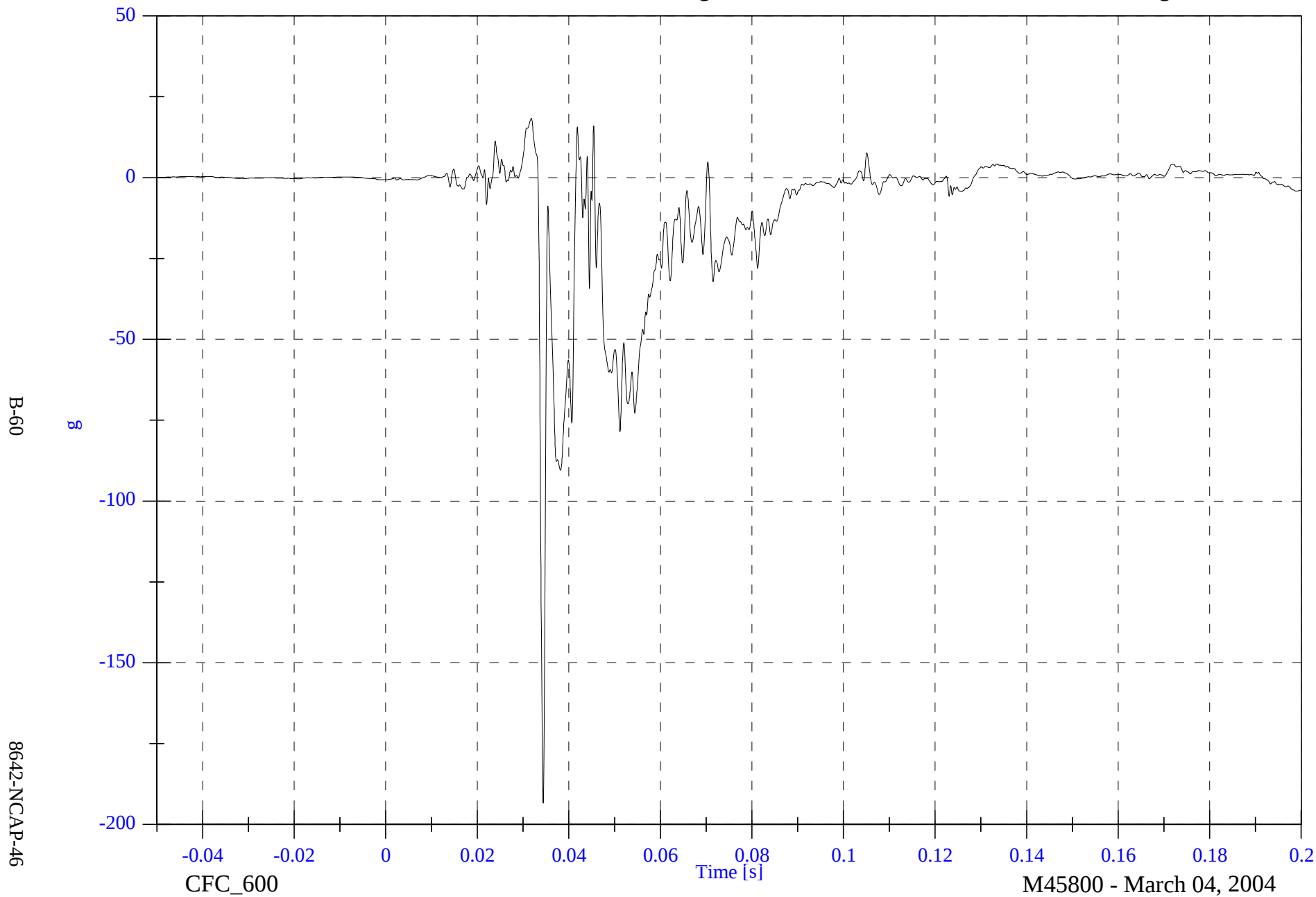


2004 NCAP Test 10 - 2004 VW Touareg

V1P1 Right Foot Fore z

Max: 18.3 [g] at 0.032 [s]

Min: -193.4 [g] at 0.034 [s]



2004 NCAP Test 10 - 2004 VW Touareg

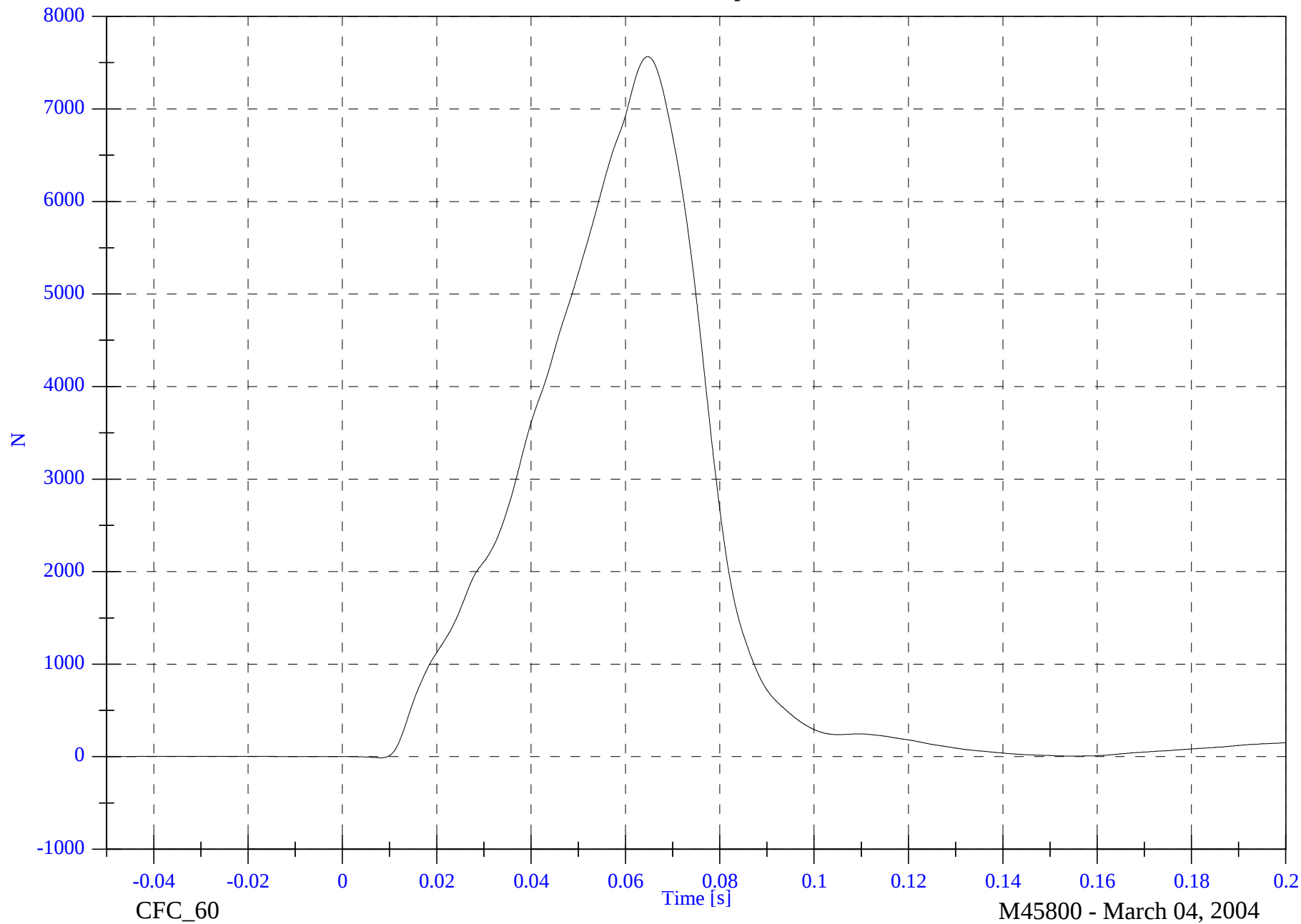
V1 Driver Lap Belt

Max: 7564.8 [N] at 0.065 [s]

Min: -11.5 [N] at 0.008 [s]

B-61

8642-NCAP-46

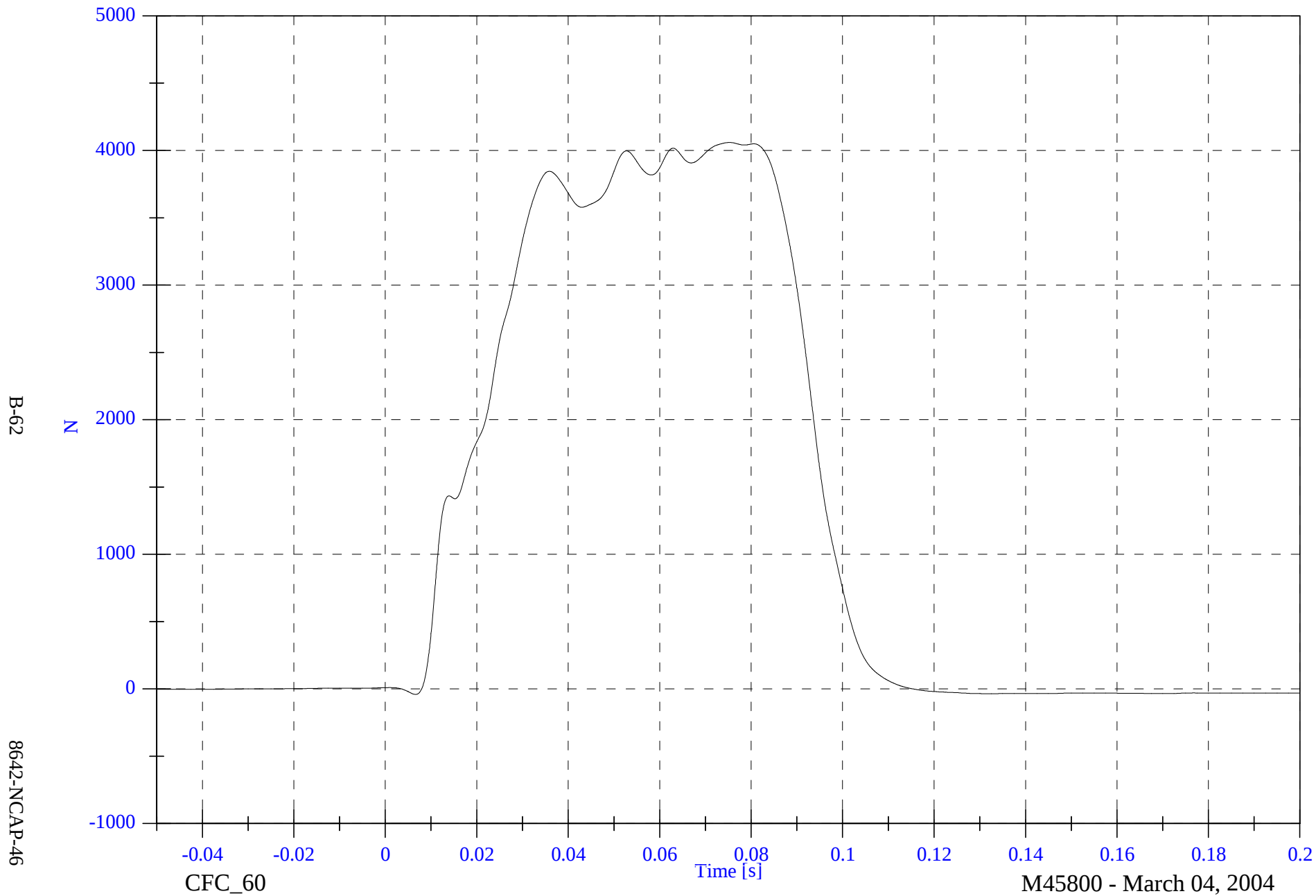


2004 NCAP Test 10 - 2004 VW Touareg

V1 Driver Torso Belt

Max: 4059.7 [N] at 0.075 [s]

Min: -40.9 [N] at 0.007 [s]



2004 NCAP Test 10 - 2004 VW Touareg

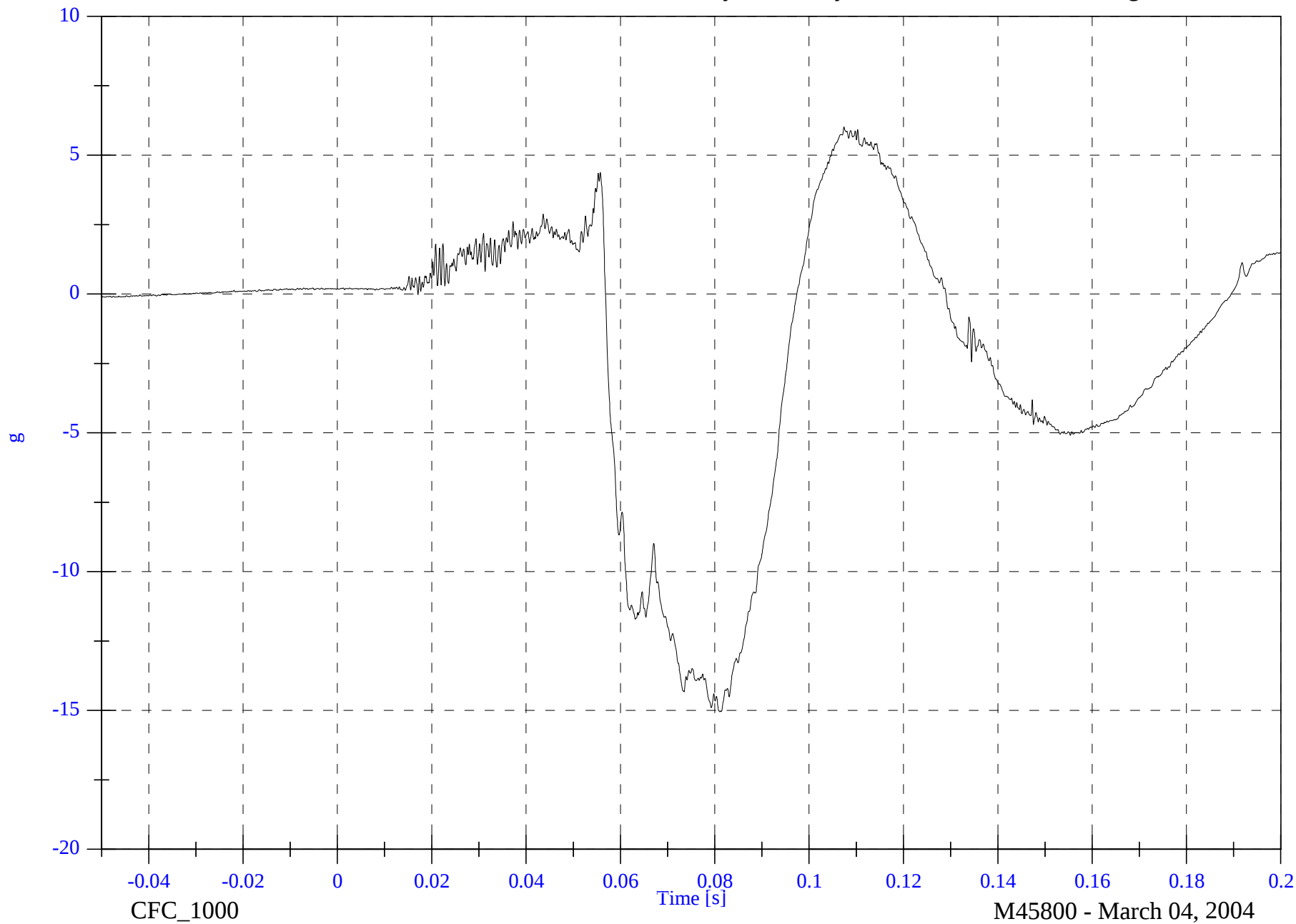
V1P2 Head 9 Array X Arm Ay

Max: 6.0 [g] at 0.107 [s]

Min: -15.0 [g] at 0.081 [s]

B-63

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

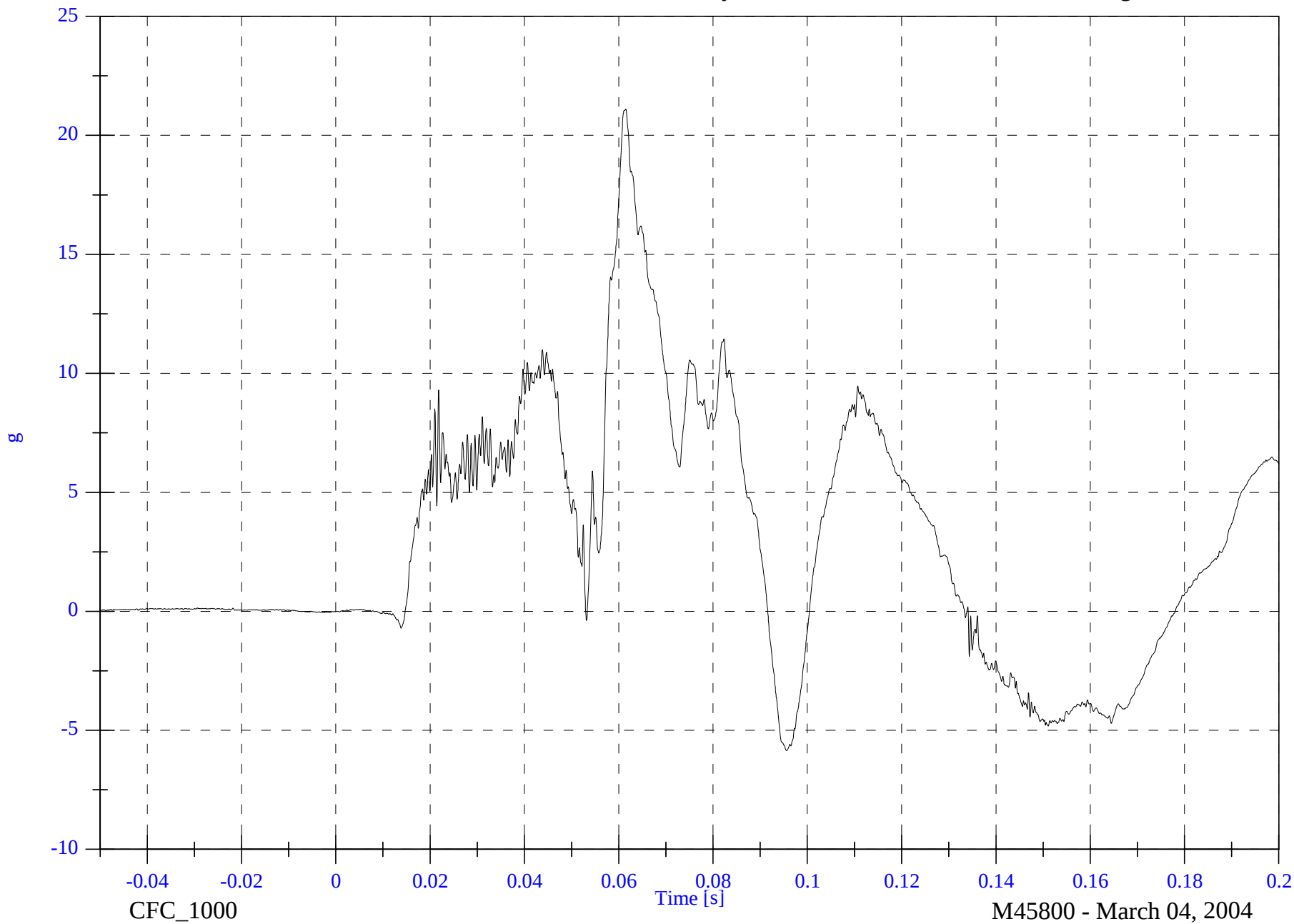
V1P2 Head 9 Array X Arm Az

Max: 21.1 [g] at 0.061 [s]

Min: -5.9 [g] at 0.096 [s]

B-64

8642-NCAP-46

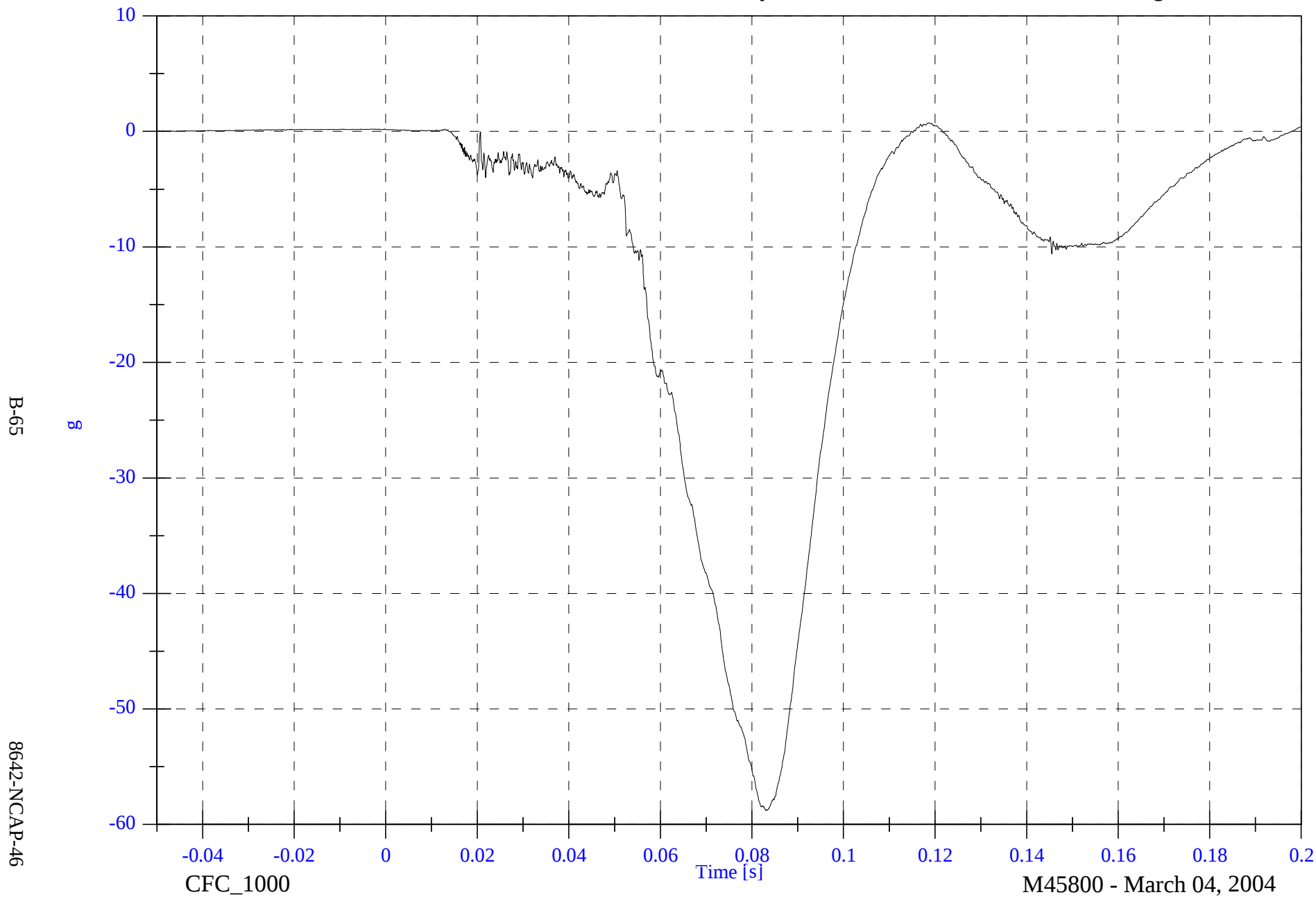


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Head 9 Array Y Arm Ax

Max: 0.7 [g] at 0.119 [s]

Min: -58.8 [g] at 0.083 [s]

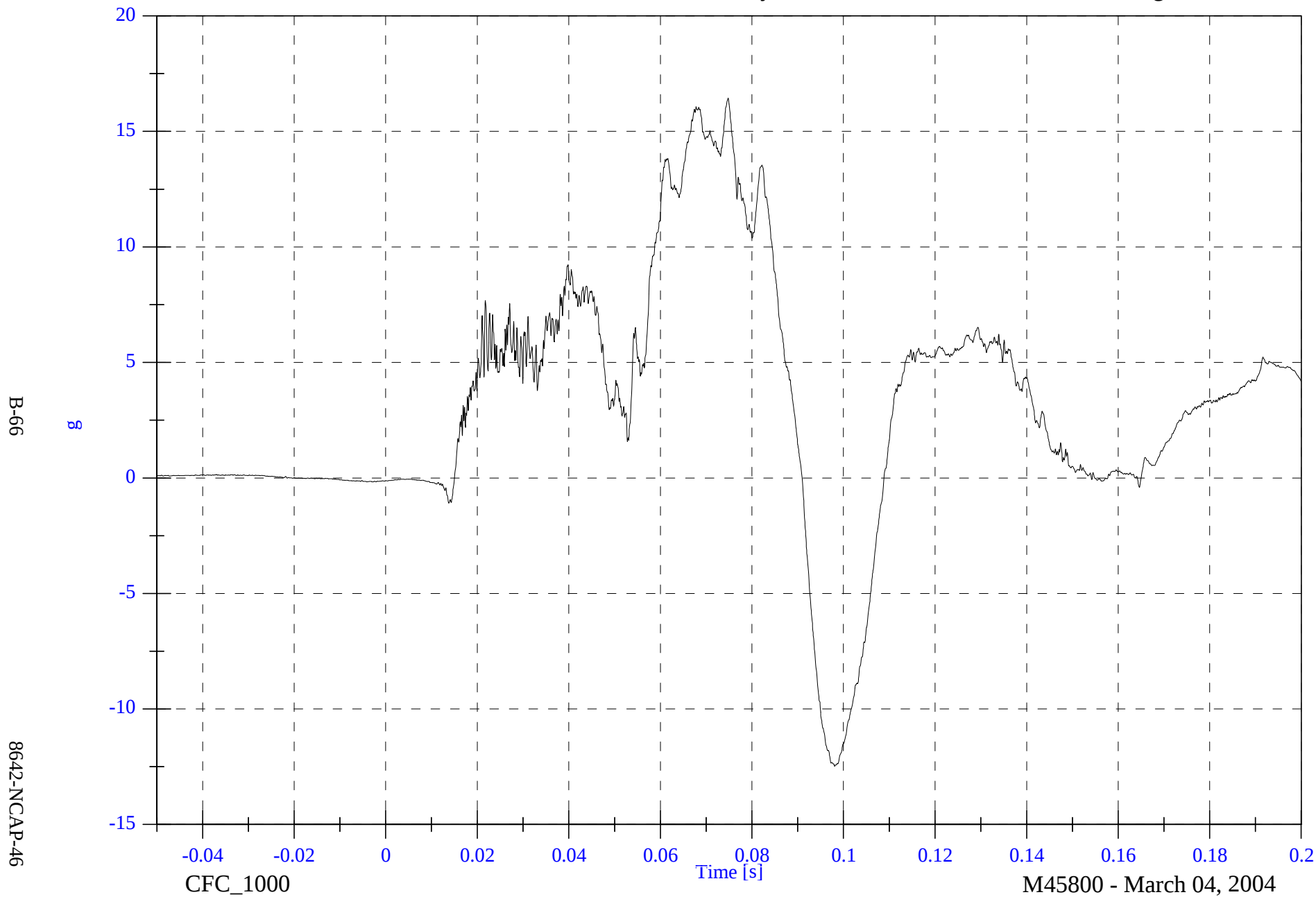


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Head 9 Array Y Arm Az

Max: 16.4 [g] at 0.075 [s]

Min: -12.5 [g] at 0.098 [s]

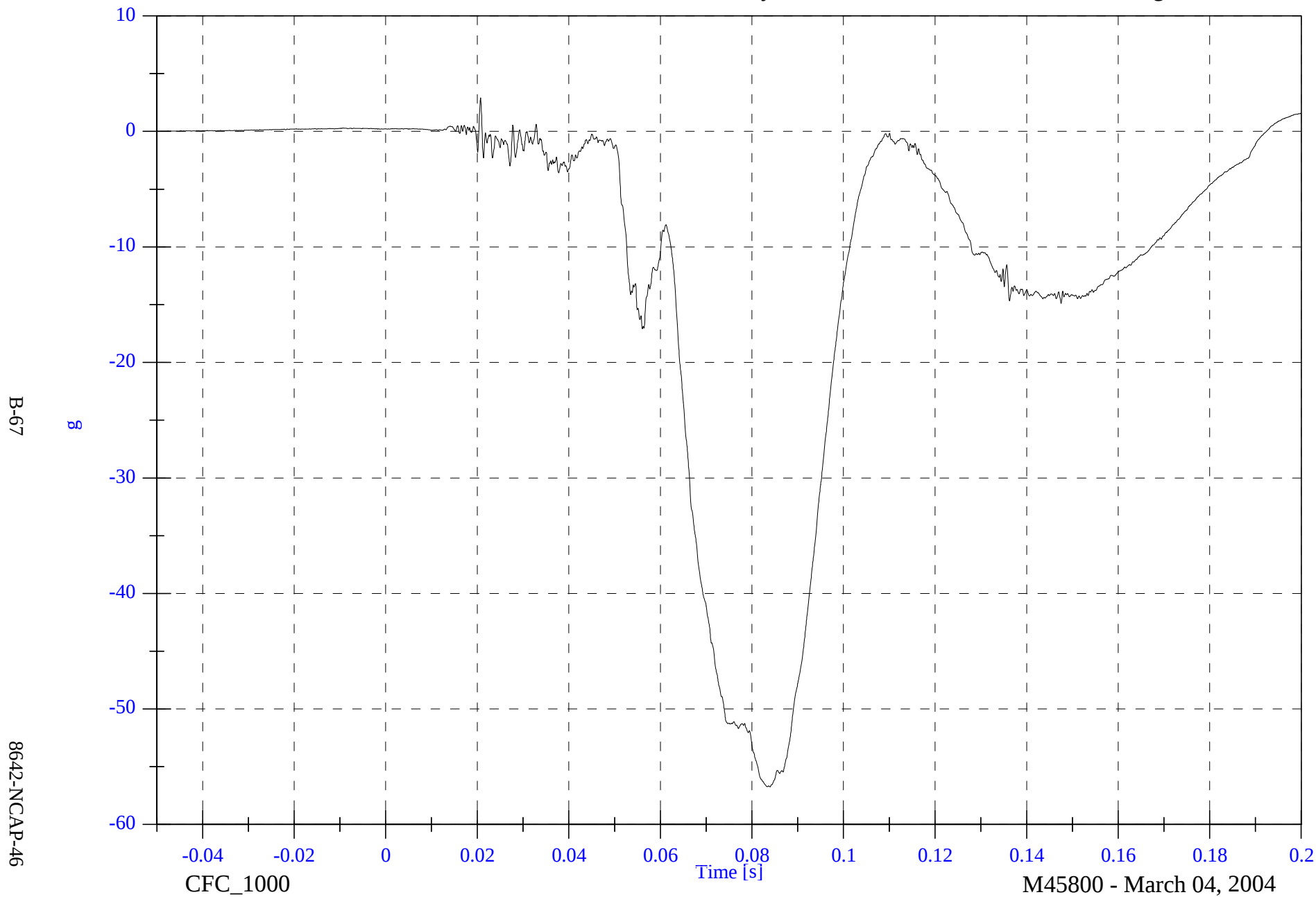


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Head 9 Array Z Arm Ax

Max: 2.9 [g] at 0.021 [s]

Min: -56.7 [g] at 0.084 [s]

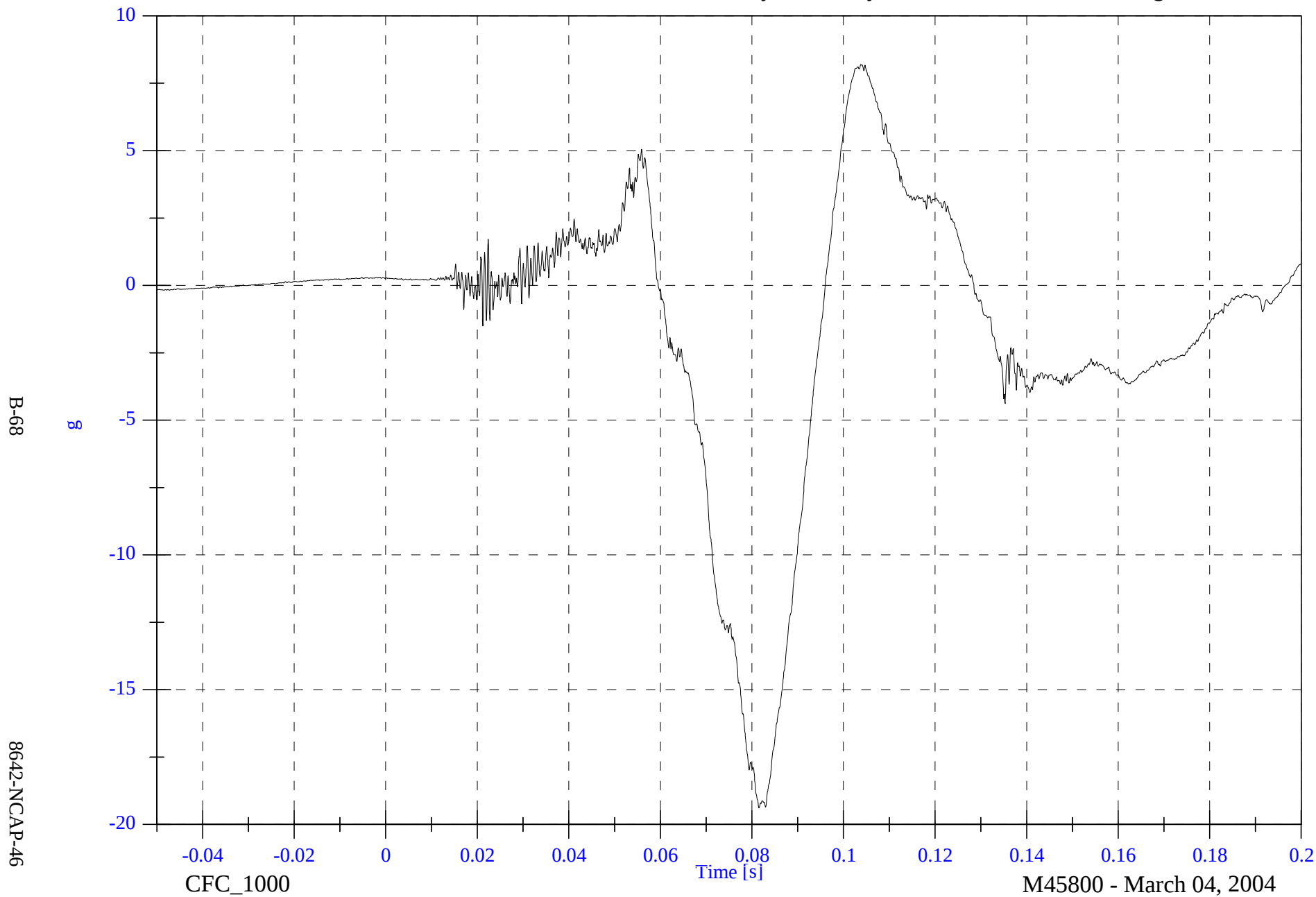


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Head 9 Array Z Arm Ay

Max: 8.2 [g] at 0.104 [s]

Min: -19.4 [g] at 0.081 [s]

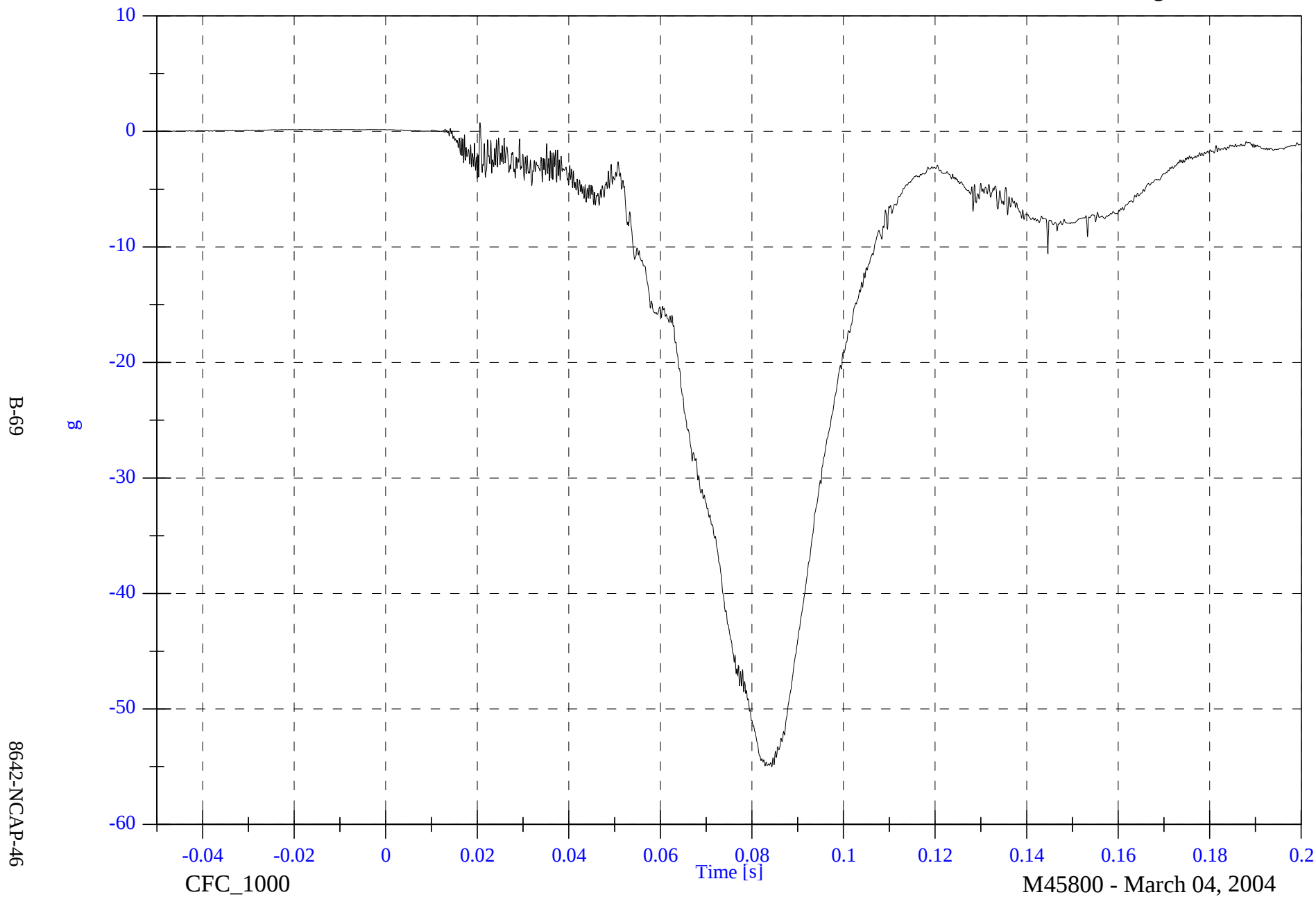


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Head CG x

Max: 0.8 [g] at 0.021 [s]

Min: -55.0 [g] at 0.084 [s]

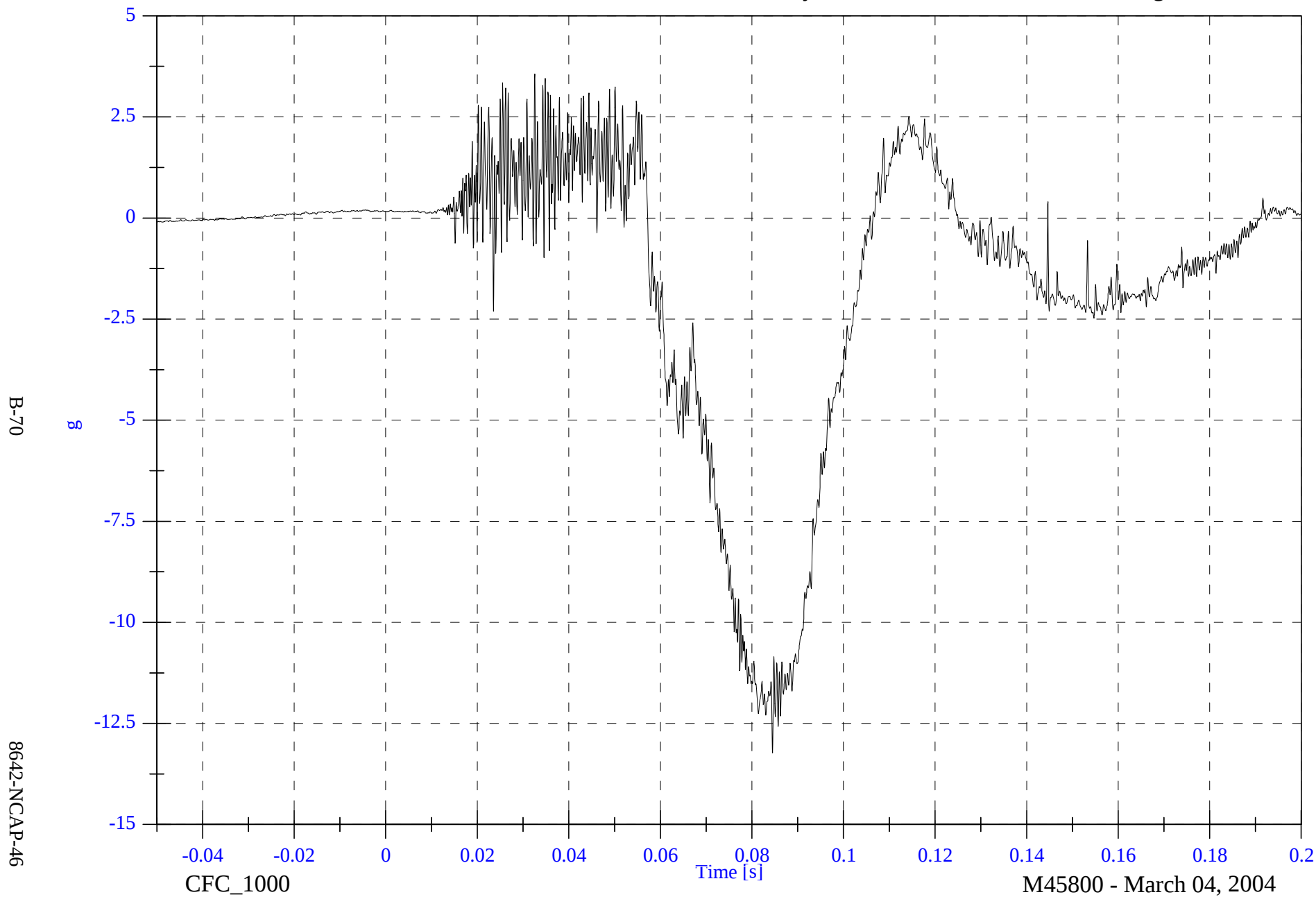


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Head CG y

Max: 3.6 [g] at 0.033 [s]

Min: -13.2 [g] at 0.084 [s]



2004 NCAP Test 10 - 2004 VW Touareg

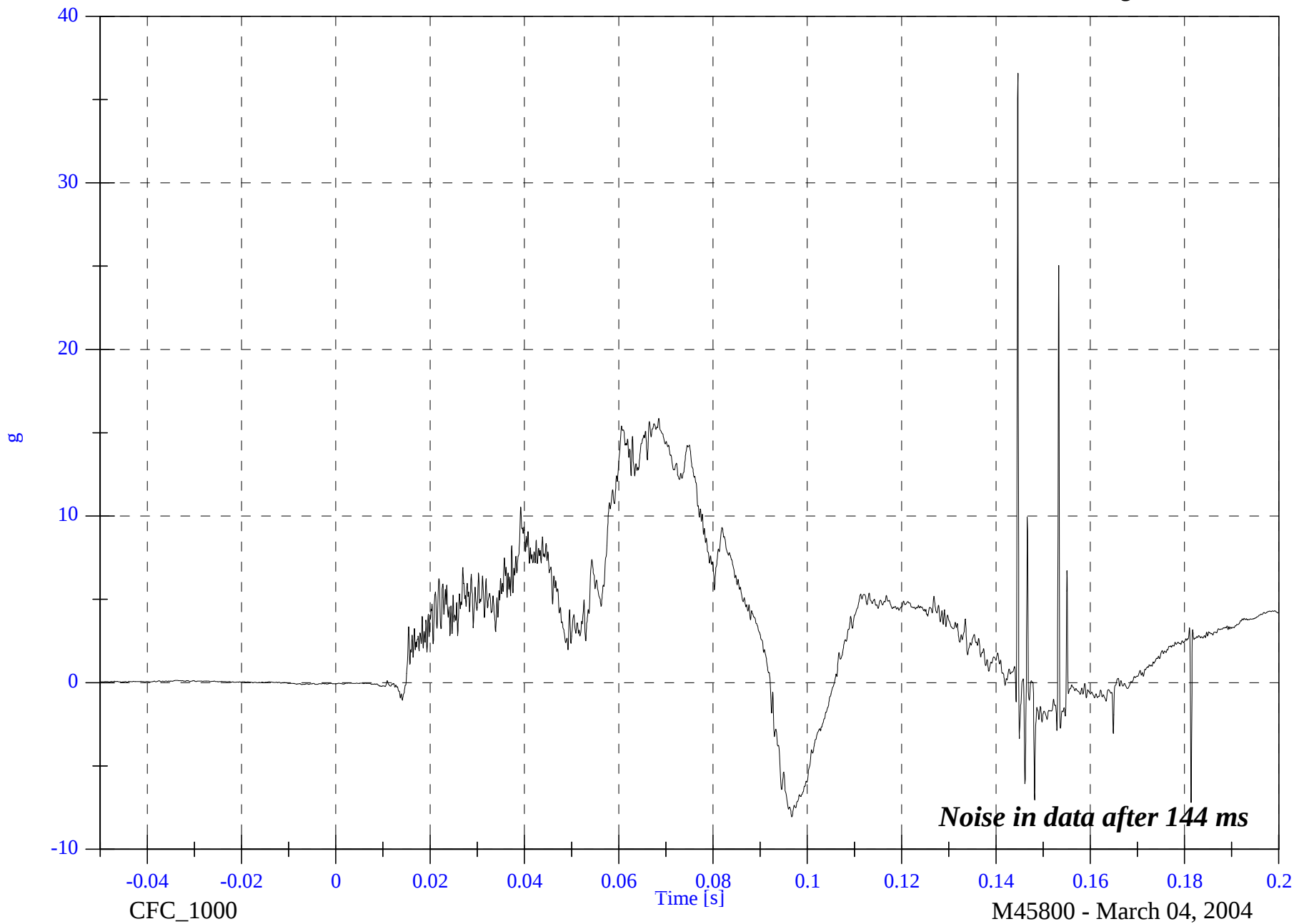
V1P2 Head CG z

Max: 36.6 [g] at 0.145 [s]

Min: -8.1 [g] at 0.097 [s]

B-71

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

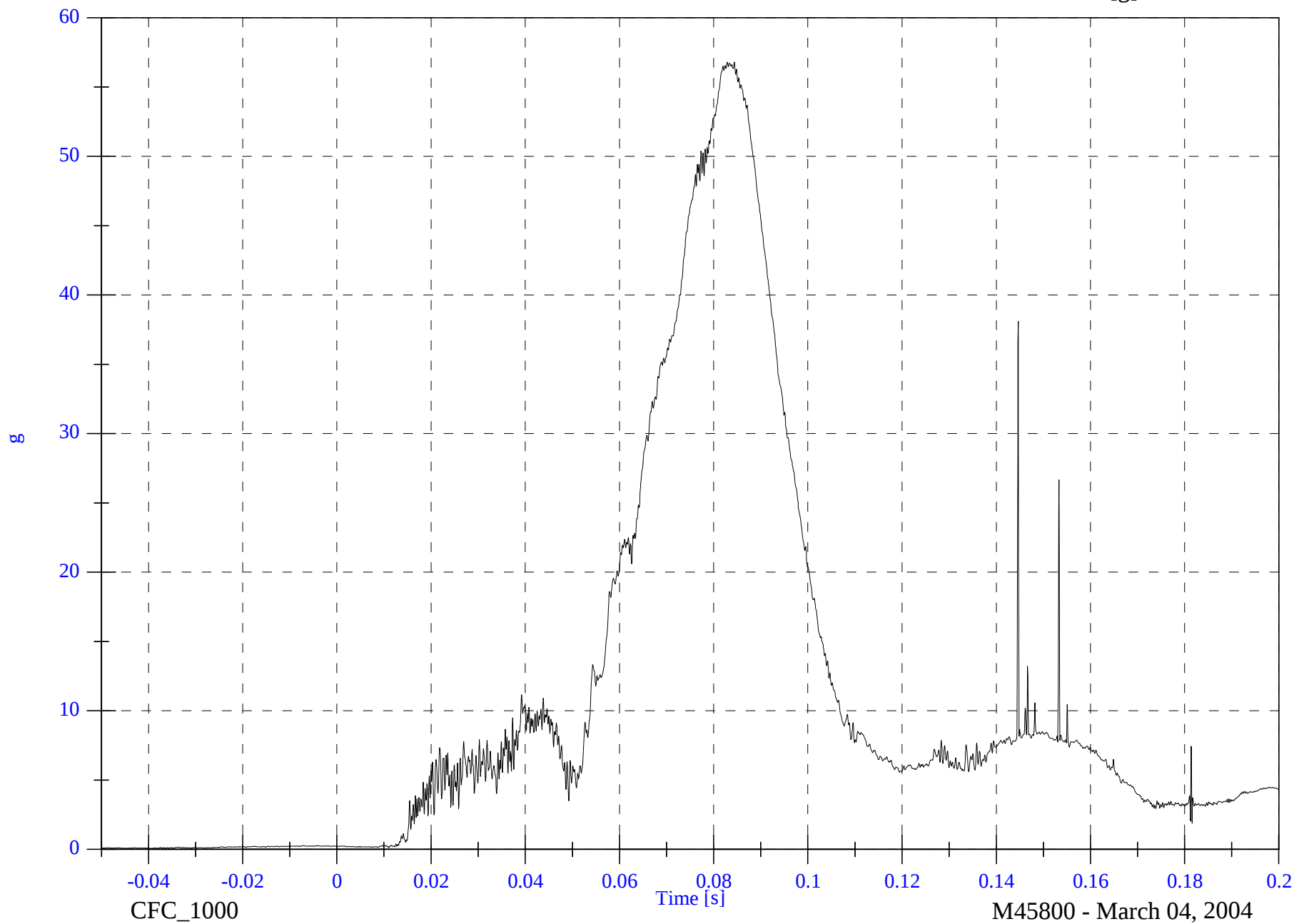
V1P2 Head CG Resultant

Max: 56.8 [g] at 0.084 [s]

Min: 0.1 [g] at -0.039 [s]

B-72

8642-NCAP-46

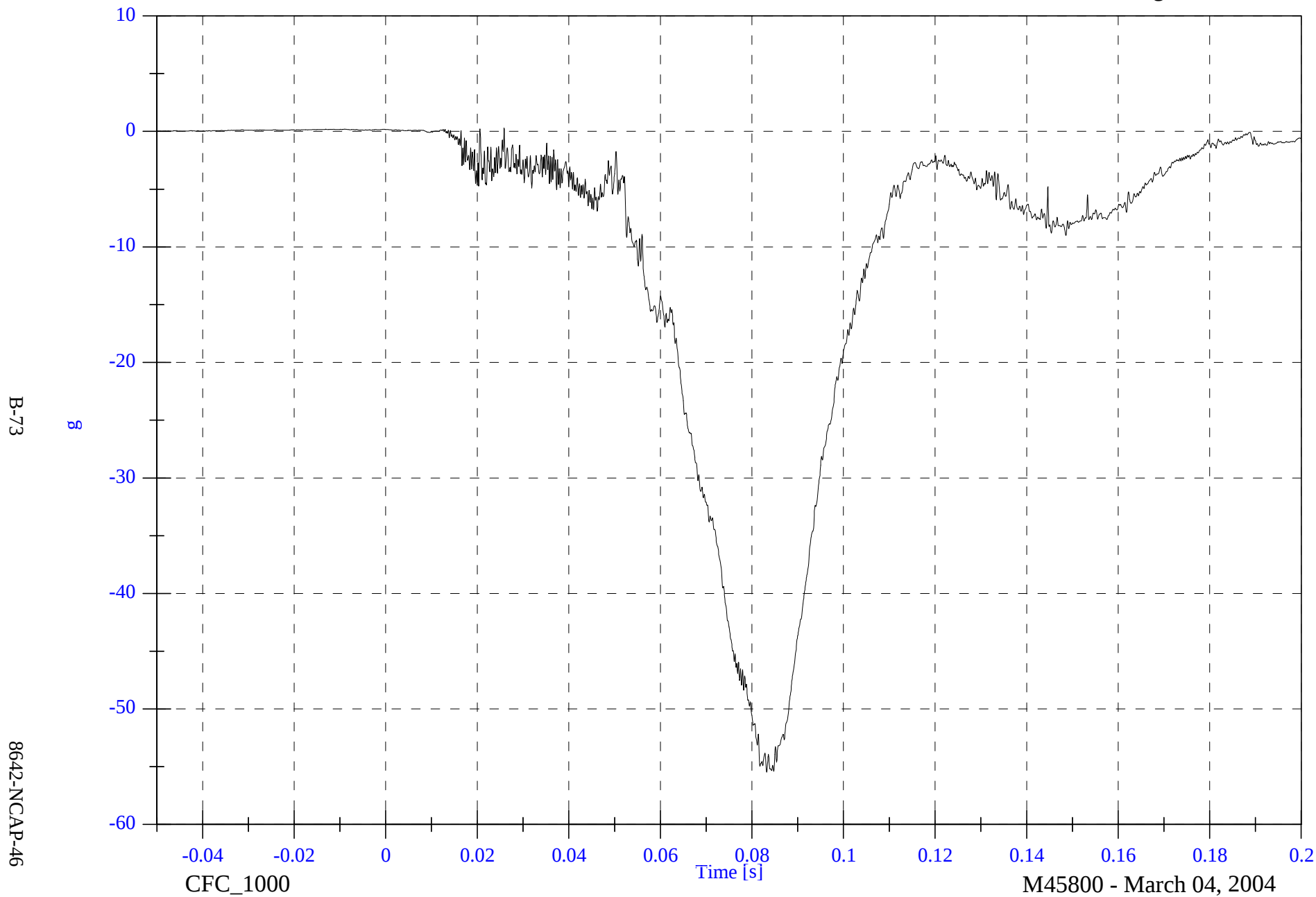


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Head CG Red x

Max: 0.3 [g] at 0.026 [s]

Min: -55.5 [g] at 0.083 [s]

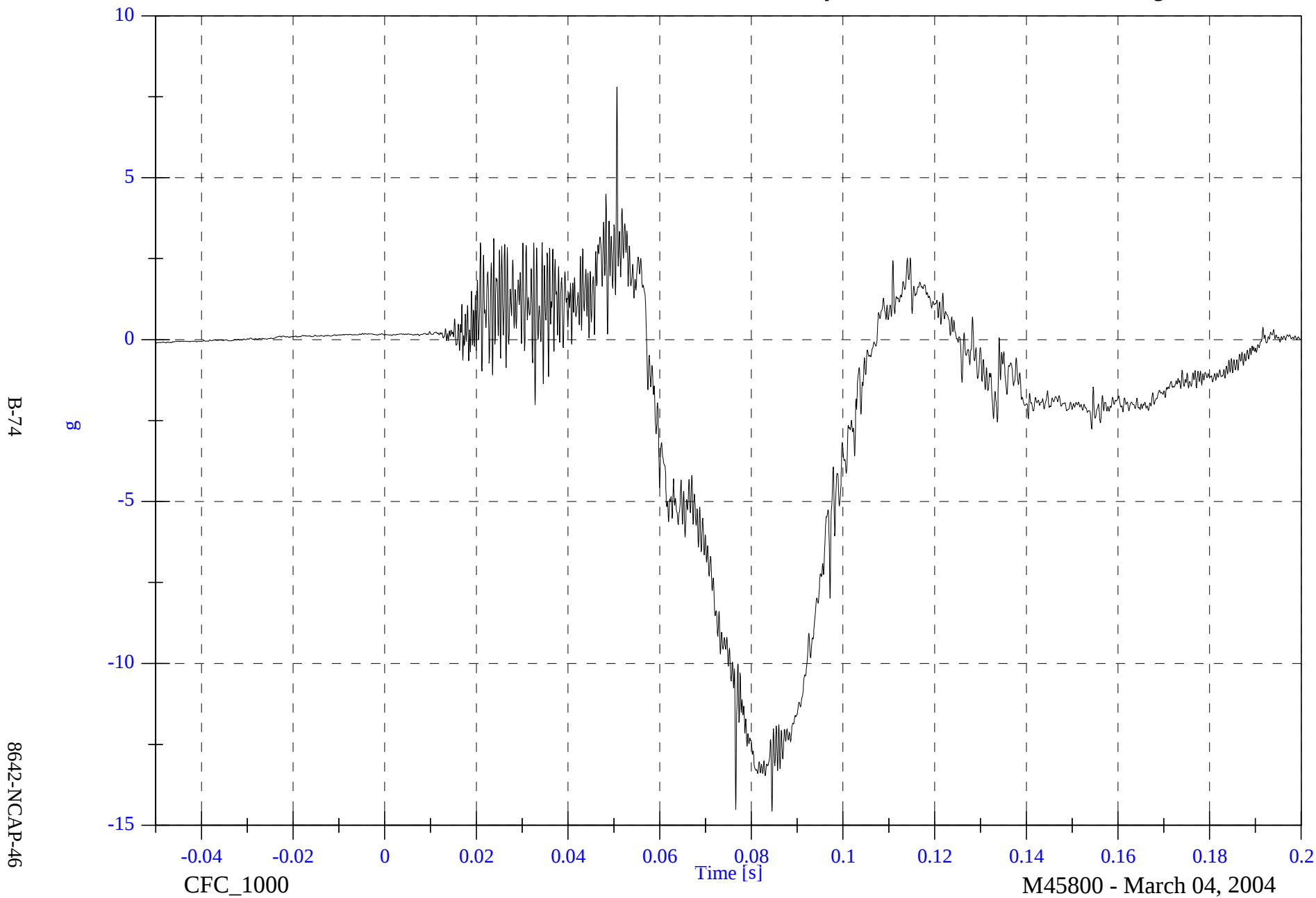


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Head CG Red y

Max: 7.8 [g] at 0.051 [s]

Min: -14.6 [g] at 0.084 [s]



2004 NCAP Test 10 - 2004 VW Touareg

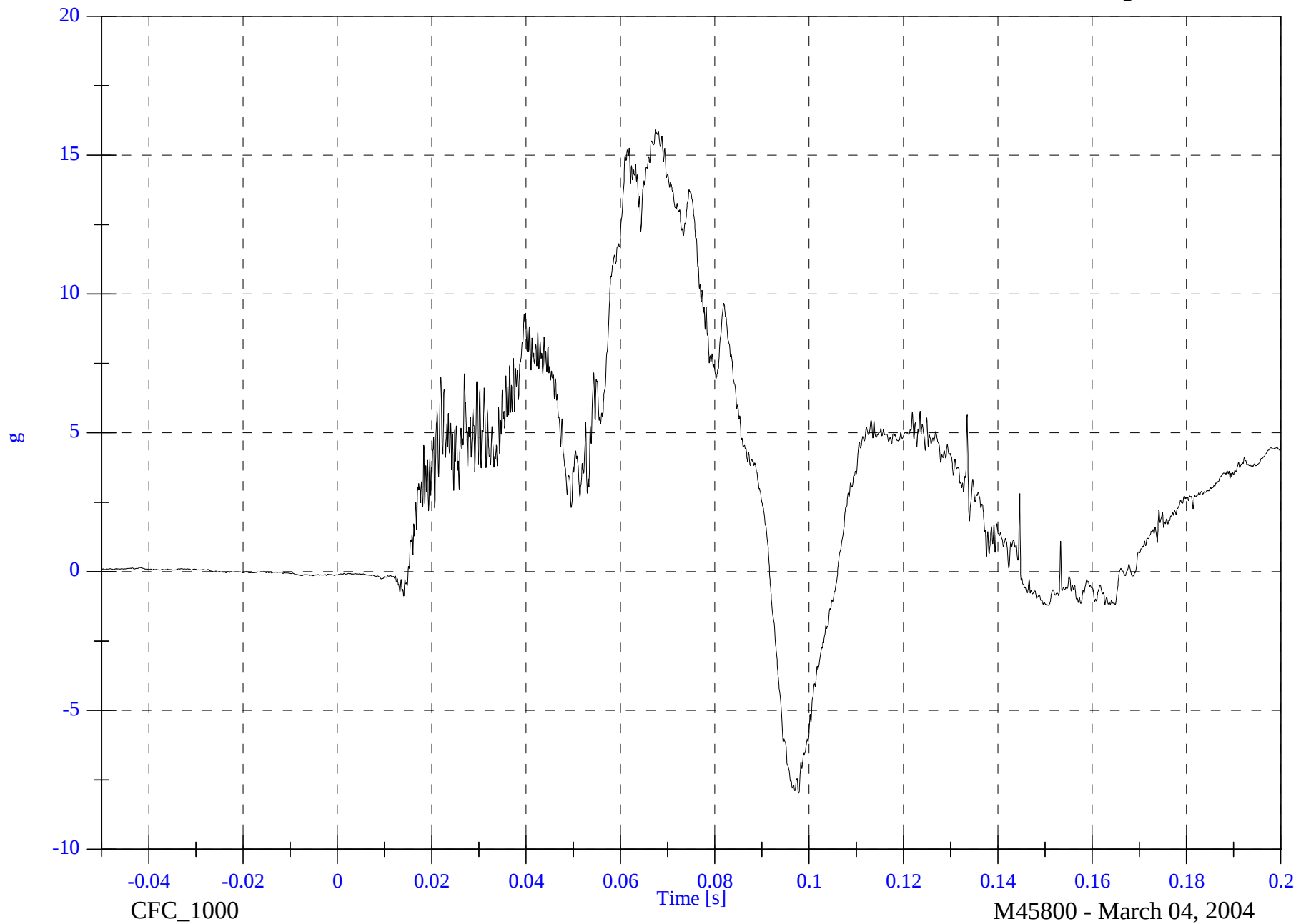
V1P2 Head CG Red z

Max: 15.9 [g] at 0.067 [s]

Min: -8.0 [g] at 0.098 [s]

B-75

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

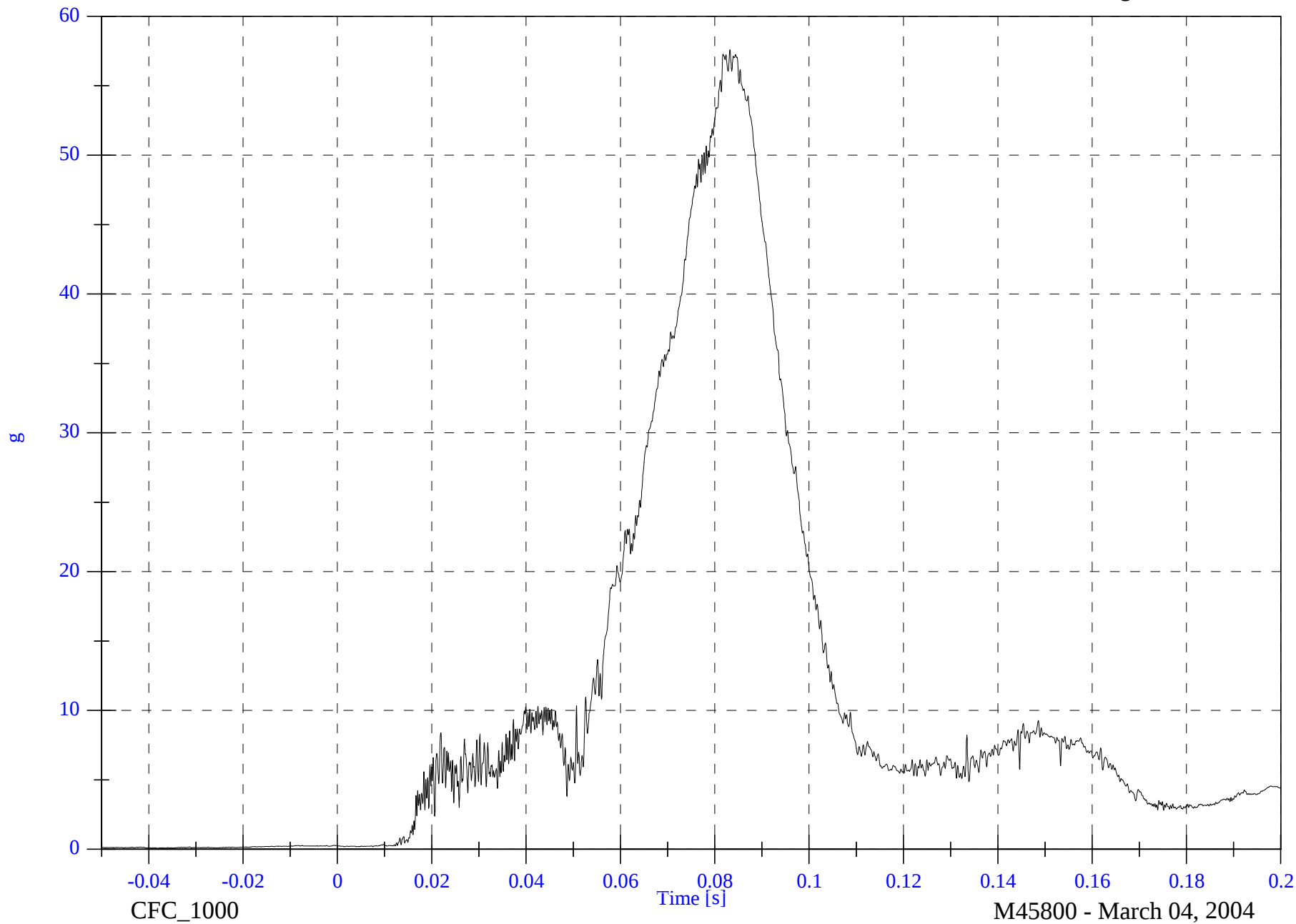
V1P2 Head CG Red Resultant

Max: 57.6 [g] at 0.083 [s]

Min: 0.1 [g] at -0.038 [s]

B-76

8642-NCAP-46

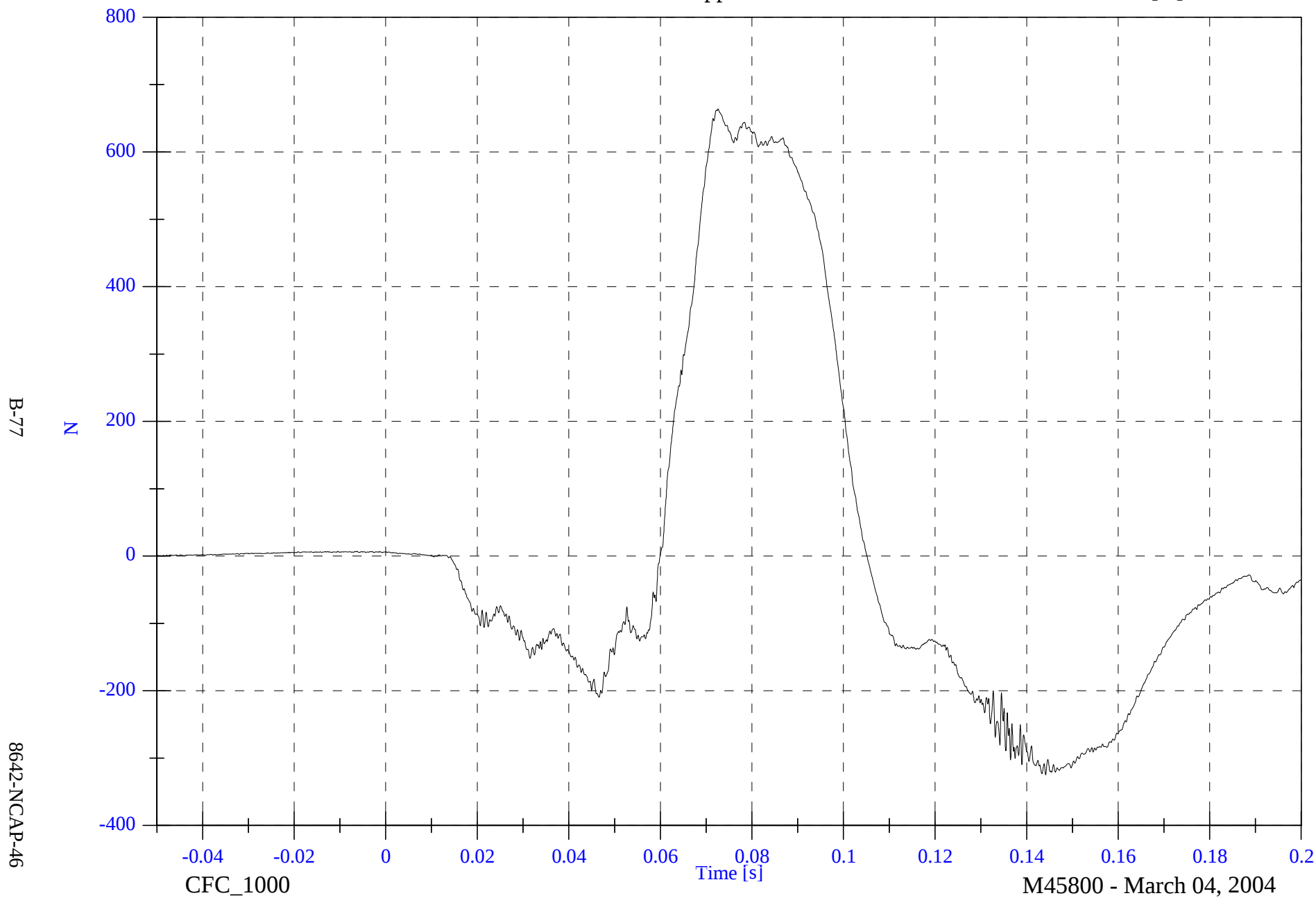


2004 NCAP Test 10 - 2004 VW Touareg

Max: 664.0 [N] at 0.073 [s]

Min: -324.9 [N] at 0.144 [s]

V1P2 Upper Neck Fx

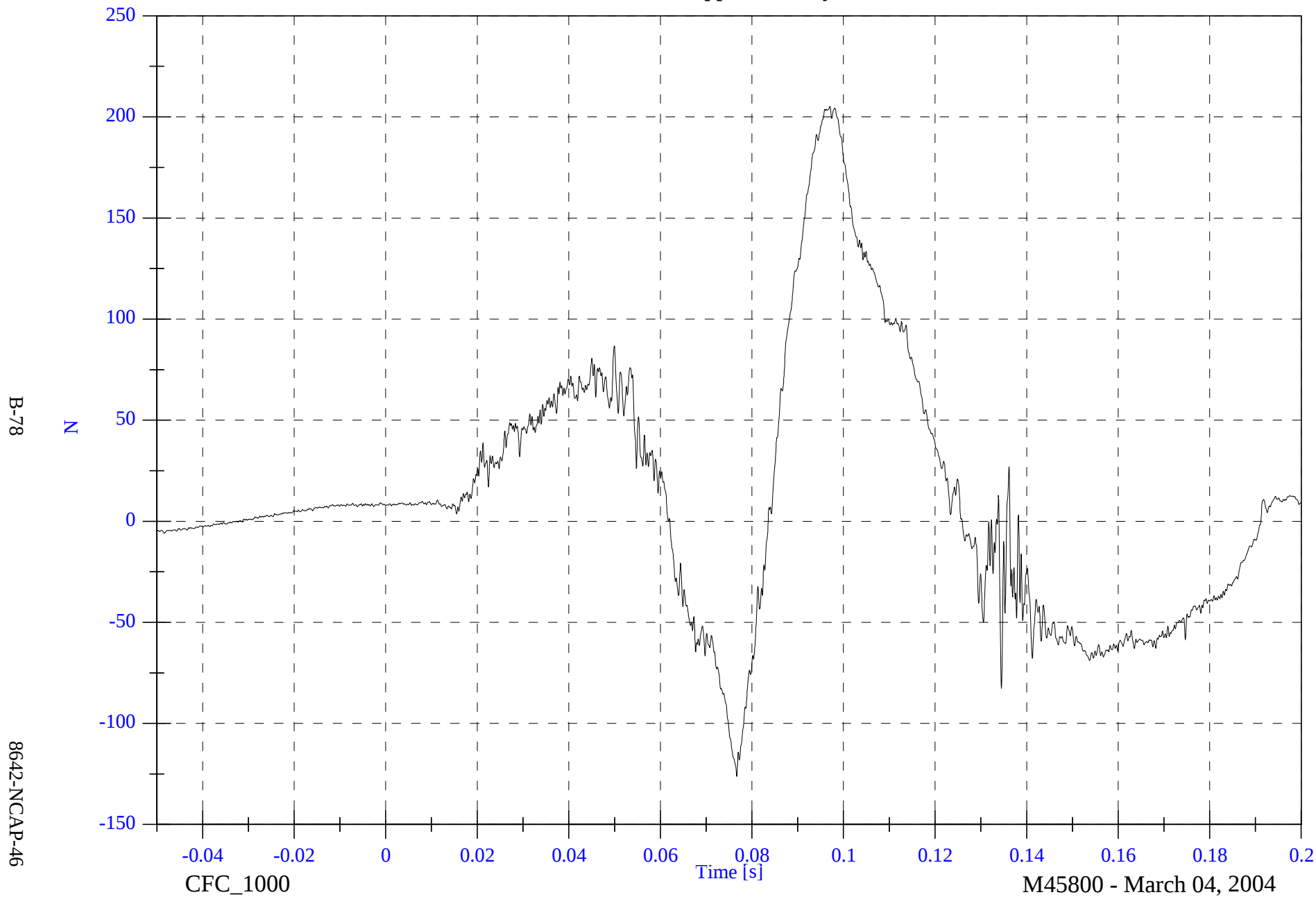


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Upper Neck Fy

Max: 205.2 [N] at 0.097 [s]

Min: -126.3 [N] at 0.077 [s]

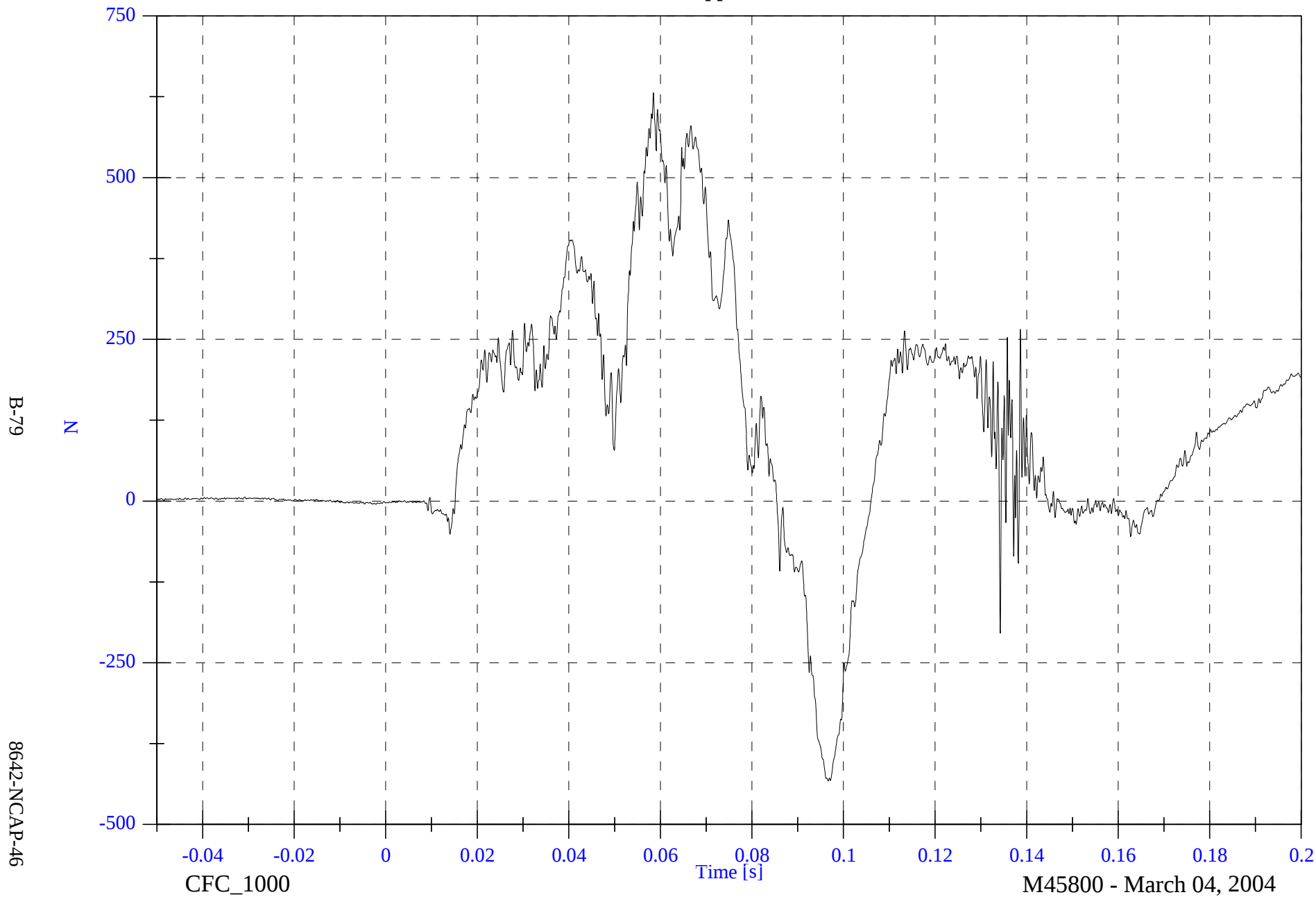


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Upper Neck Fz

Max: 631.2 [N] at 0.058 [s]

Min: -433.0 [N] at 0.097 [s]

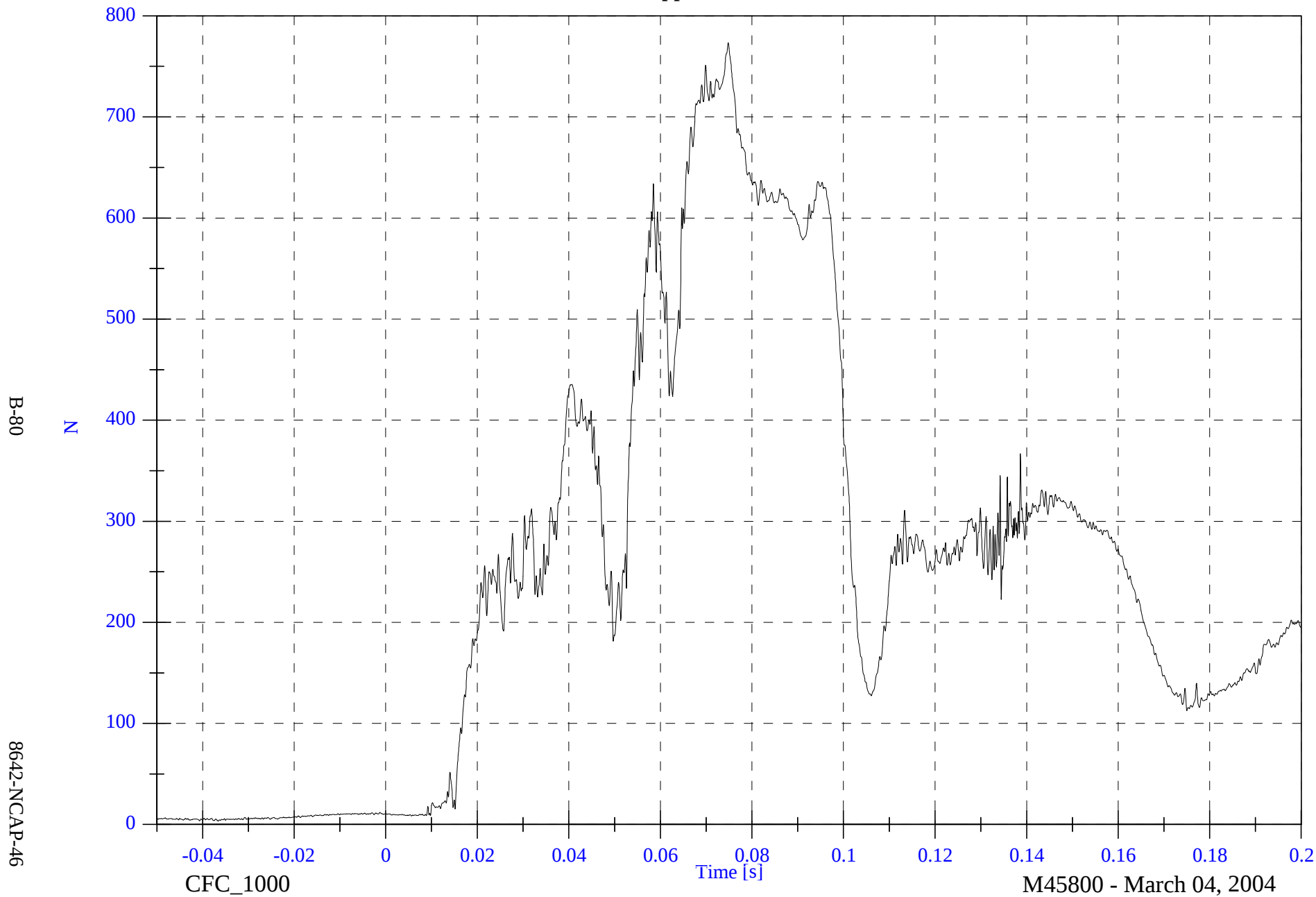


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Upper Neck F Resultant

Max: 773.4 [N] at 0.075 [s]

Min: 3.3 [N] at -0.037 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Upper Neck Mx

Max: 22.5 [N-m] at 0.102 [s]

Min: -10.8 [N-m] at 0.138 [s]

B-81

N-m

8642-NCAP-46

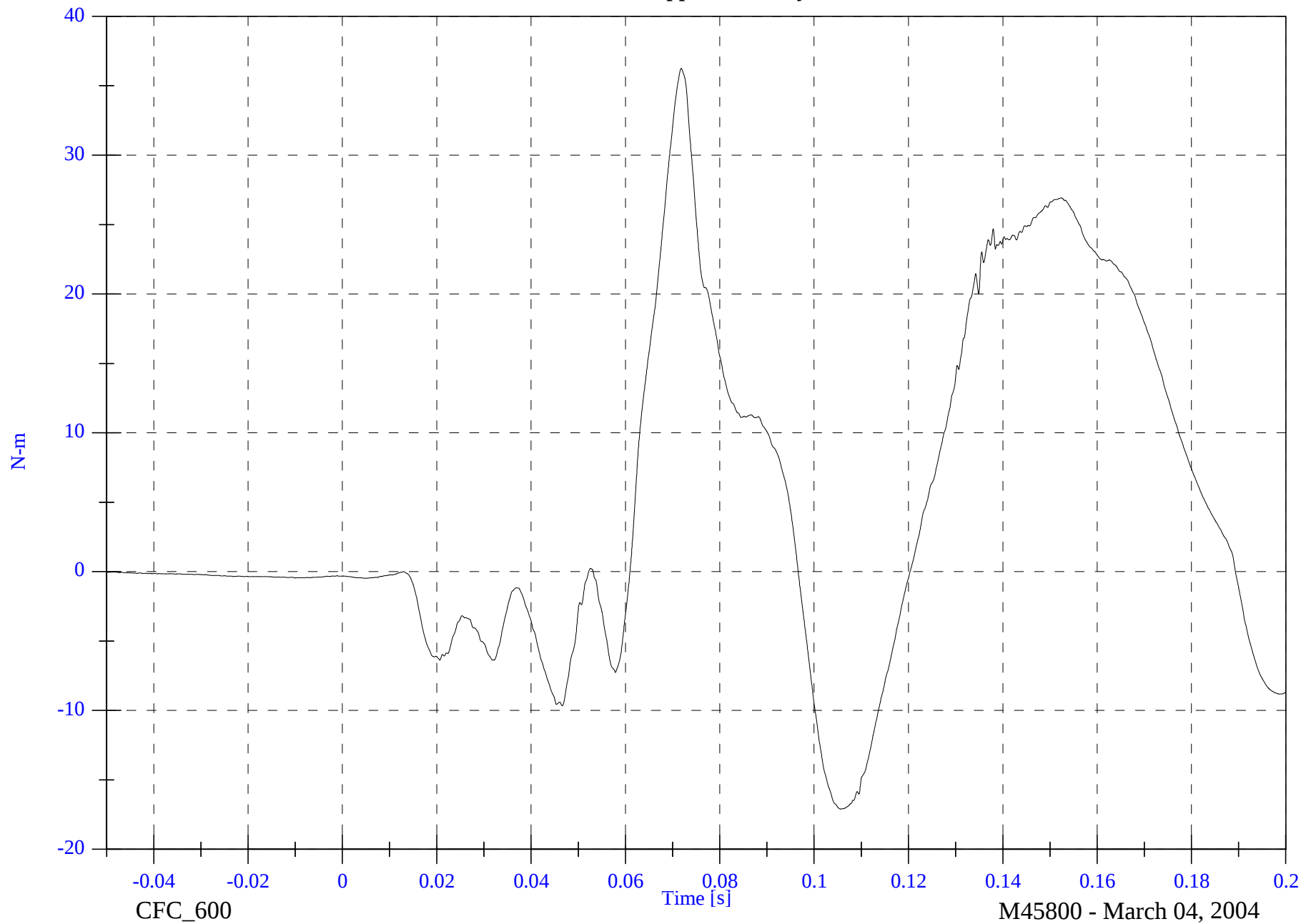


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Upper Neck My

Max: 36.2 [N-m] at 0.072 [s]

Min: -17.1 [N-m] at 0.106 [s]



B-82

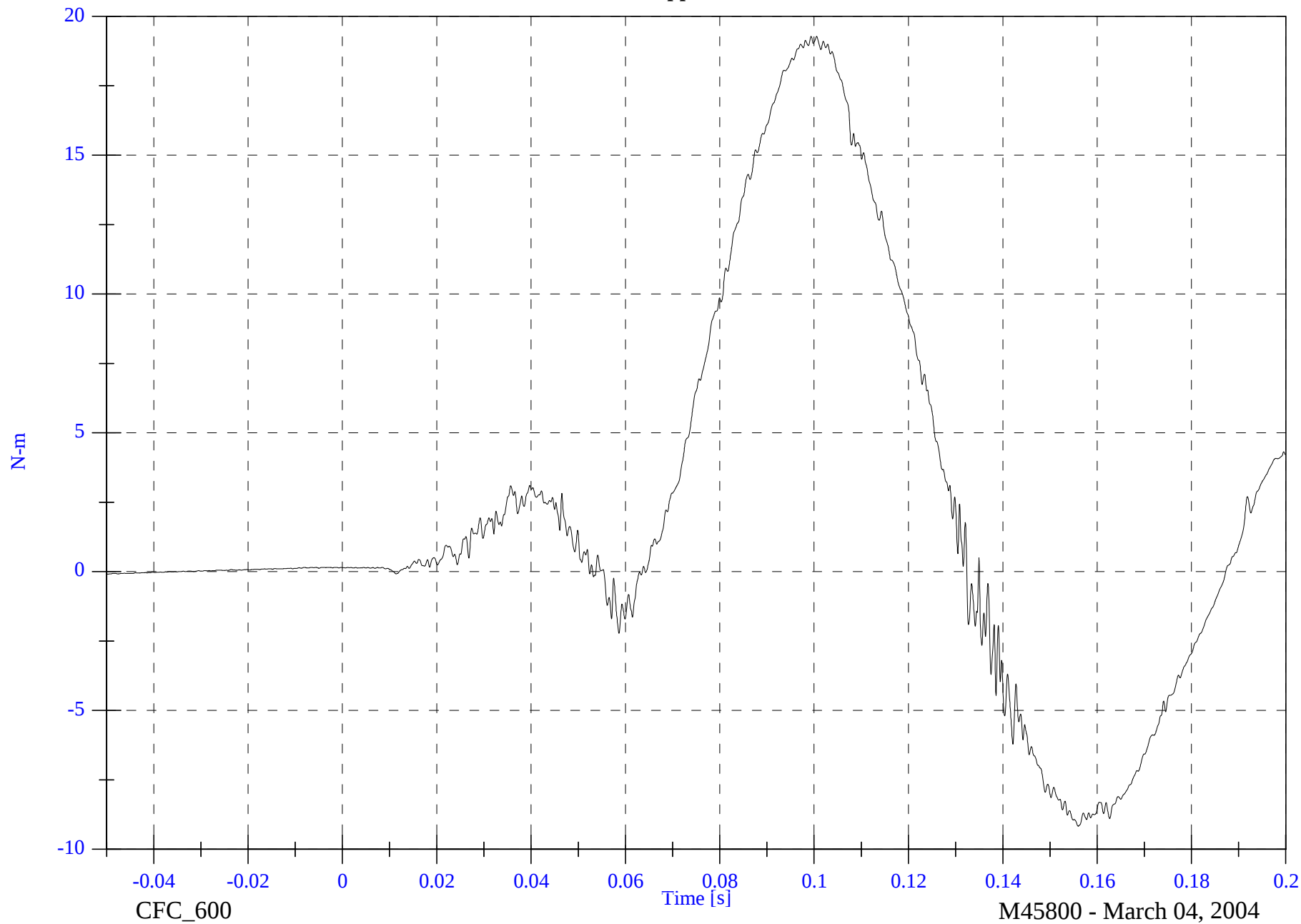
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Upper Neck Mz

Max: 19.3 [N-m] at 0.099 [s]

Min: -9.2 [N-m] at 0.156 [s]



B-83

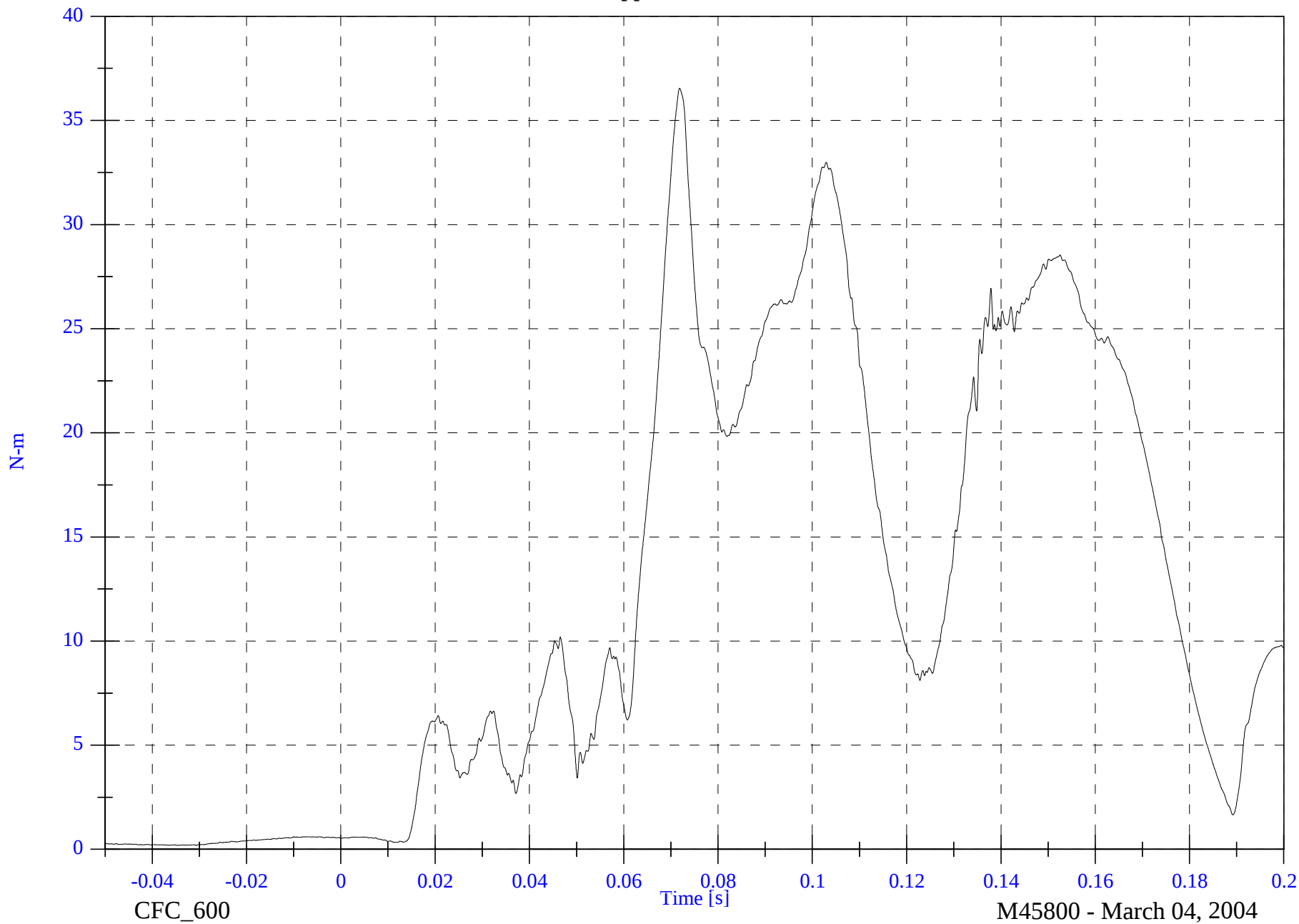
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Upper Neck M Resultant

Max: 36.5 [N-m] at 0.072 [s]

Min: 0.2 [N-m] at -0.031 [s]



B-84

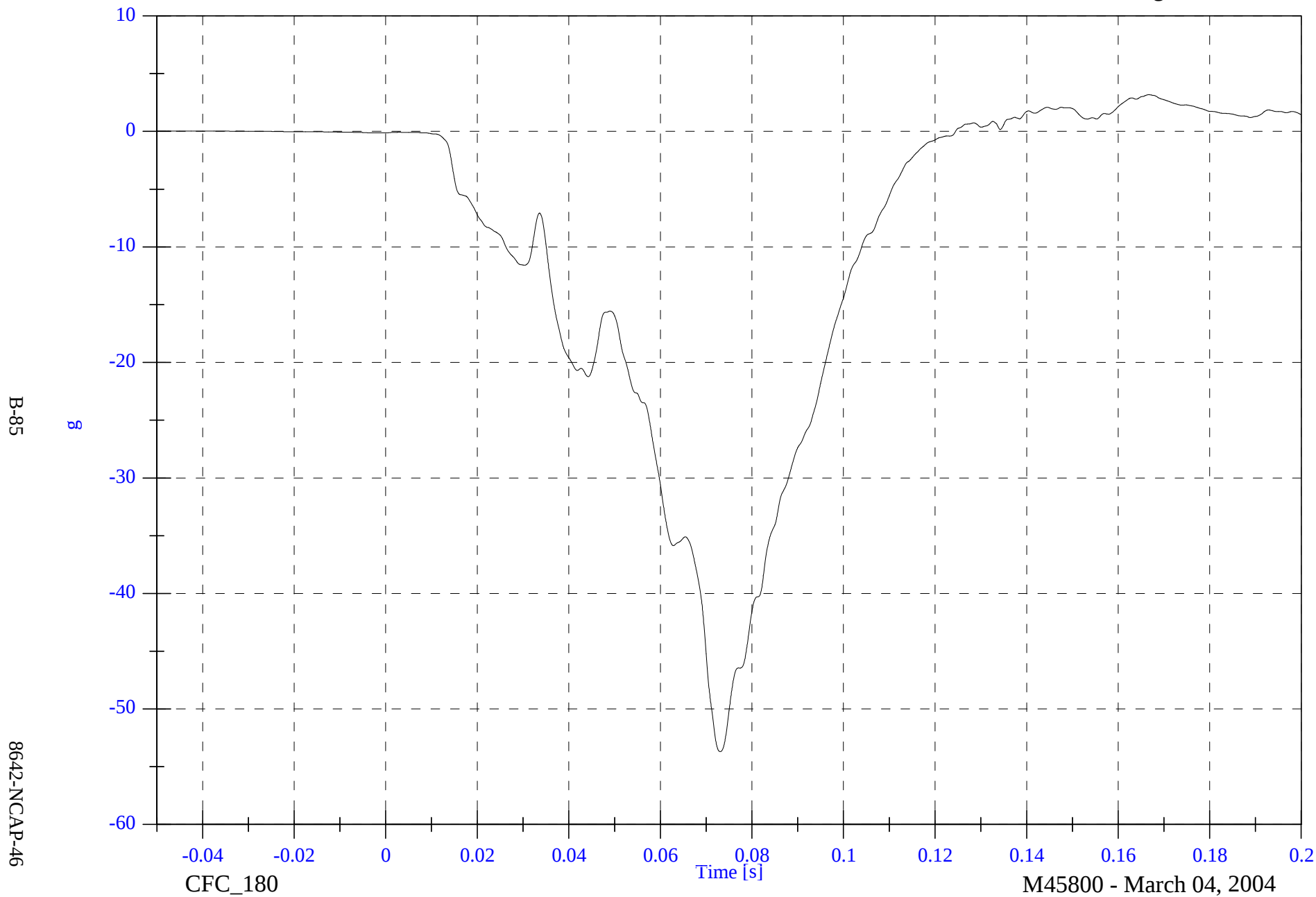
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Chest x

Max: 3.2 [g] at 0.167 [s]

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



2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Chest y

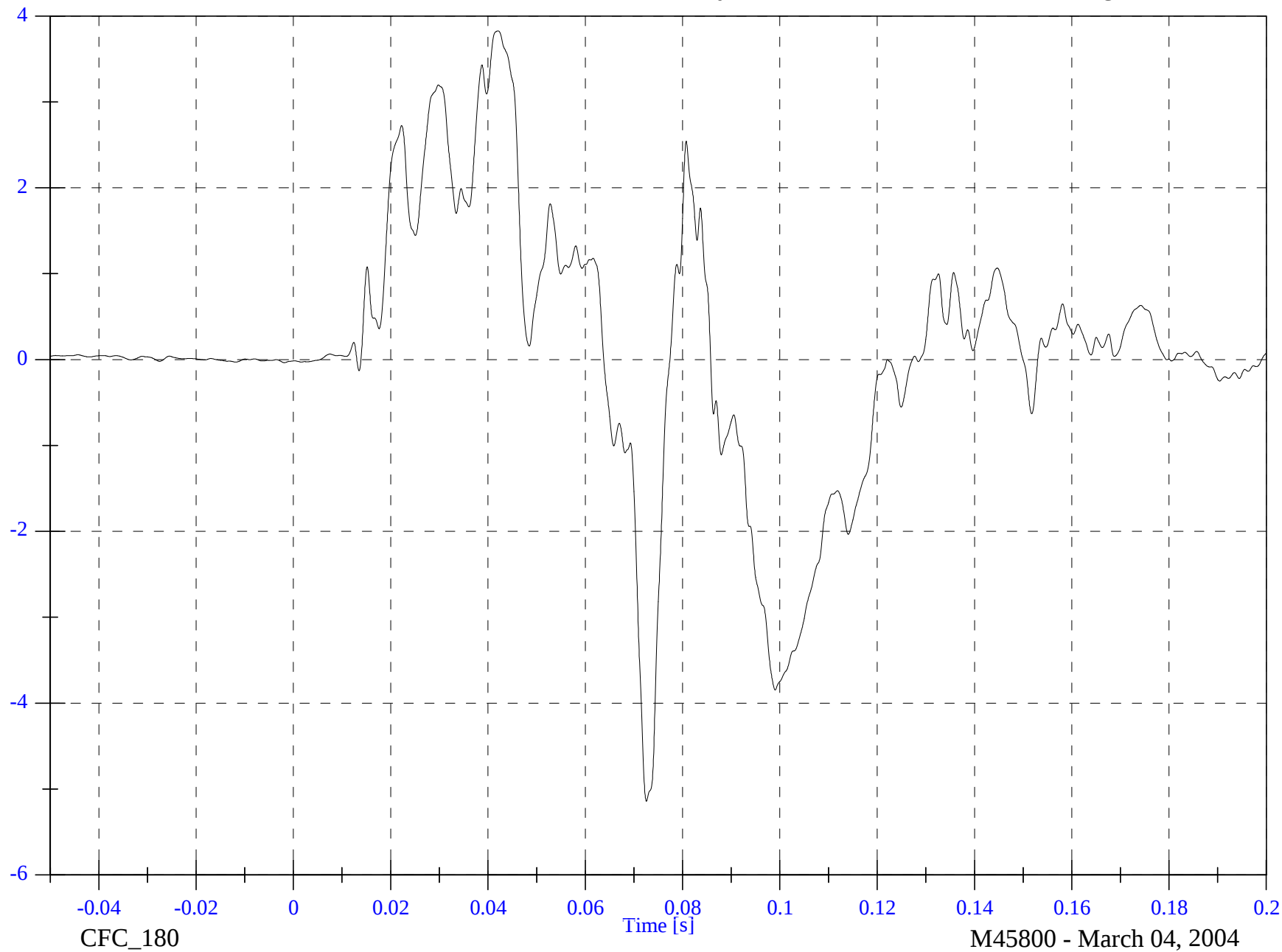
Max: 3.8 [g] at 0.042 [s]

Min: -5.1 [g] at 0.073 [s]

B-86

8642-NCAP-46

g

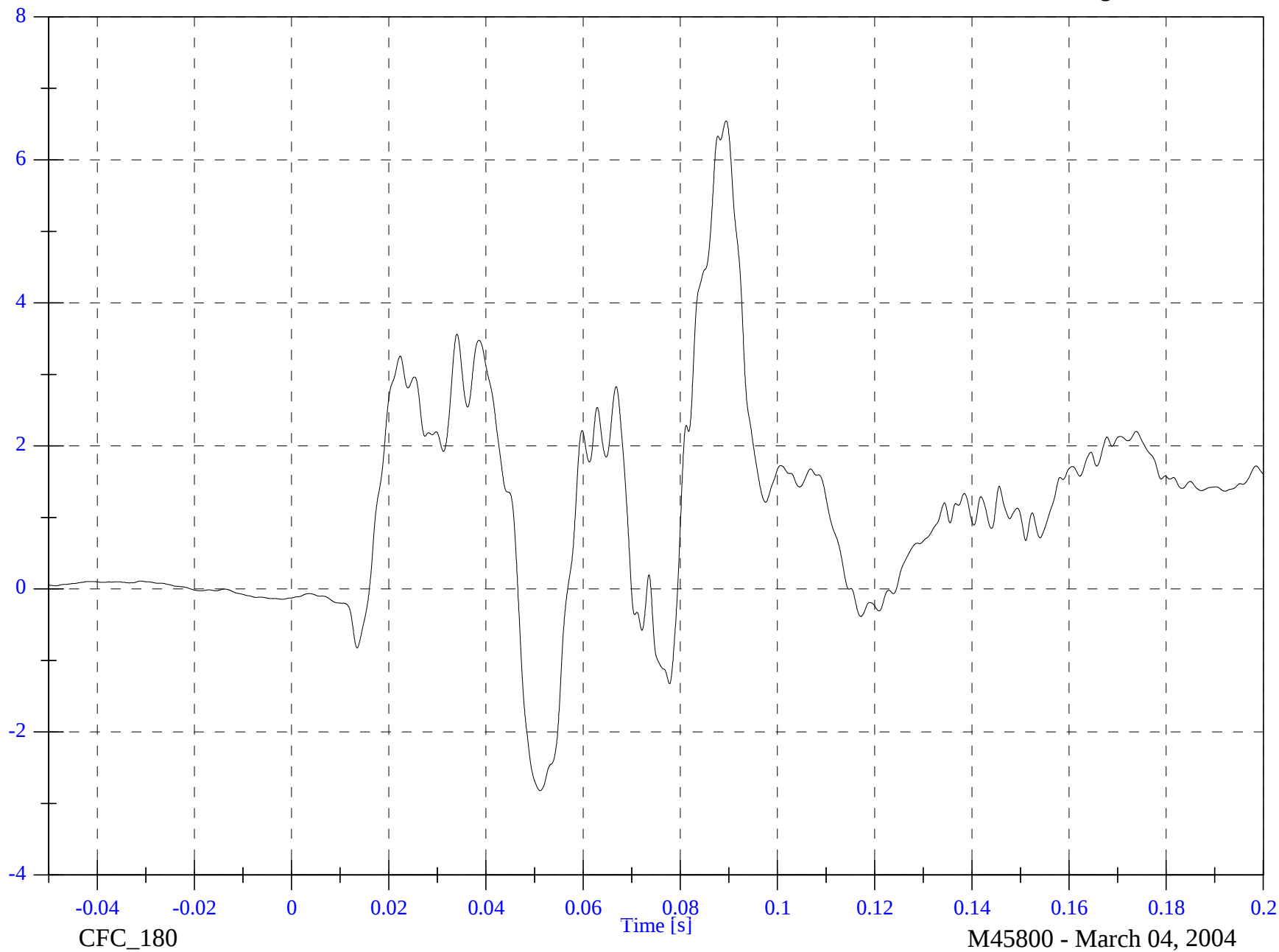


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Chest z

Max: 6.5 [g] at 0.089 [s]

Min: -2.8 [g] at 0.051 [s]



B-87

8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Chest Resultant

Max: 53.9 [g] at 0.073 [s]

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

B-88

8642-NCAP-46

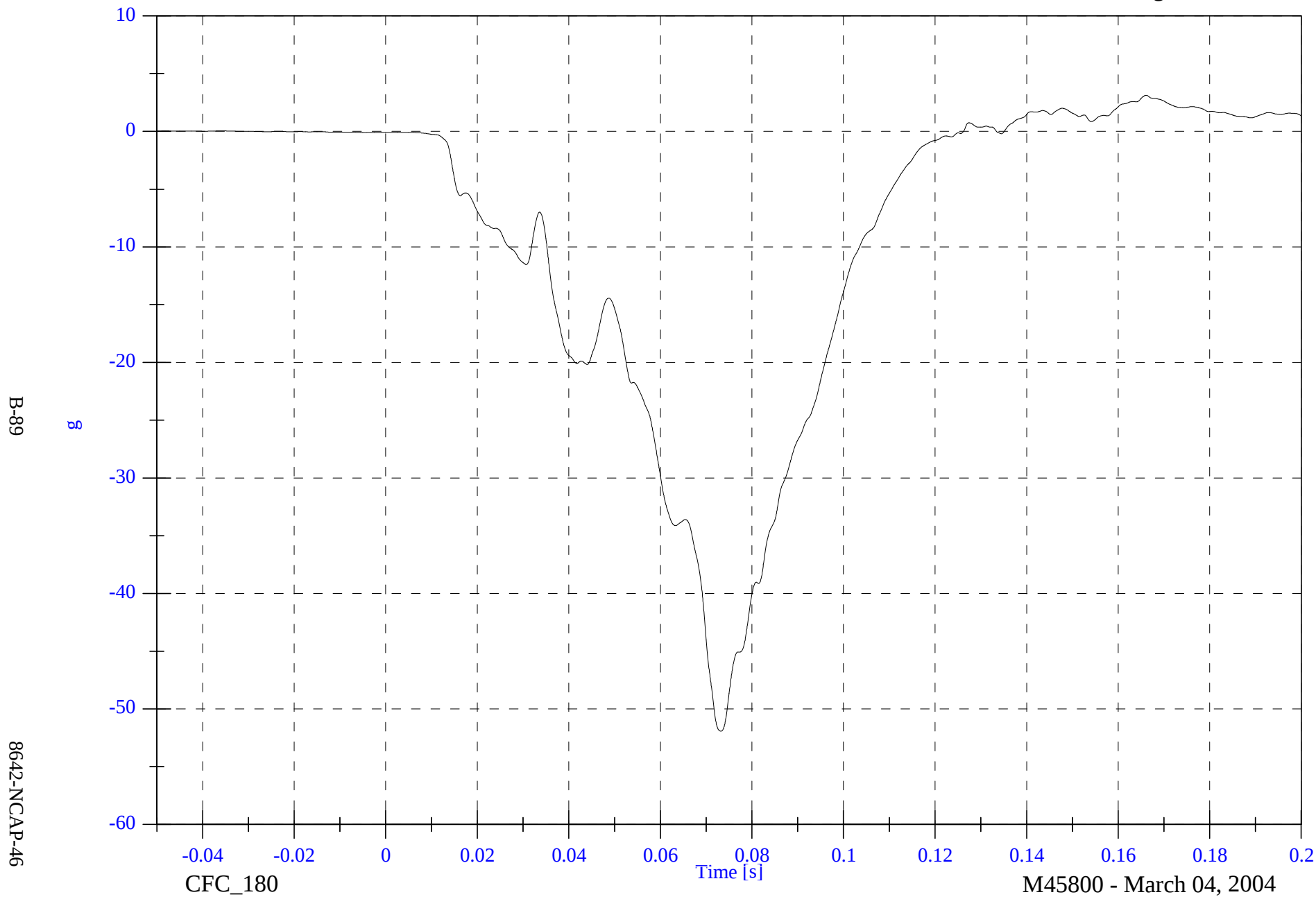


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Chest Red x

Max: 3.1 [g] at 0.166 [s]

Min: -51.9 [g] at 0.073 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Chest Red y

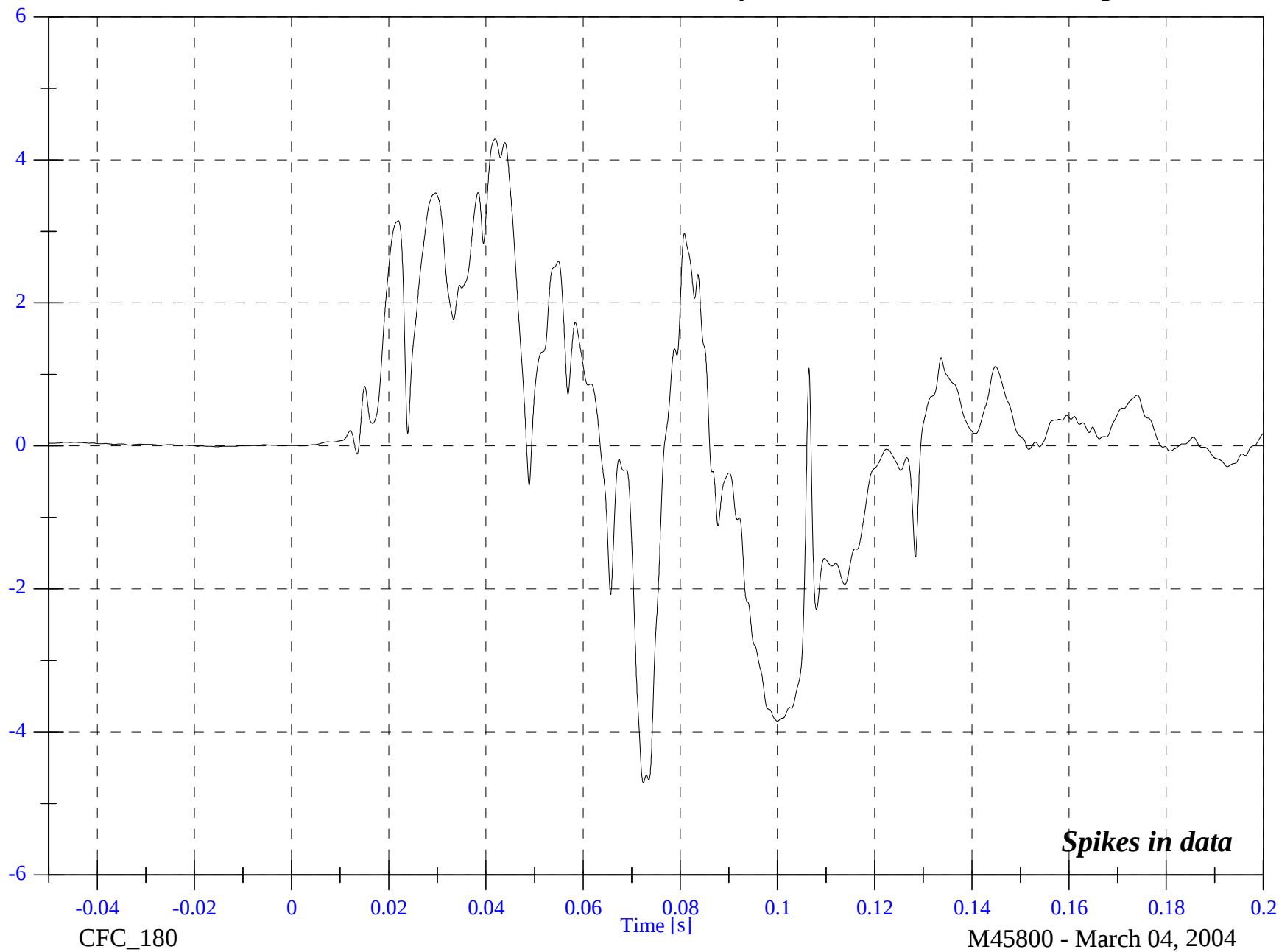
Max: 4.3 [g] at 0.042 [s]

Min: -4.7 [g] at 0.072 [s]

B-90

8642-NCAP-46

g



2004 NCAP Test 10 - 2004 VW Touareg

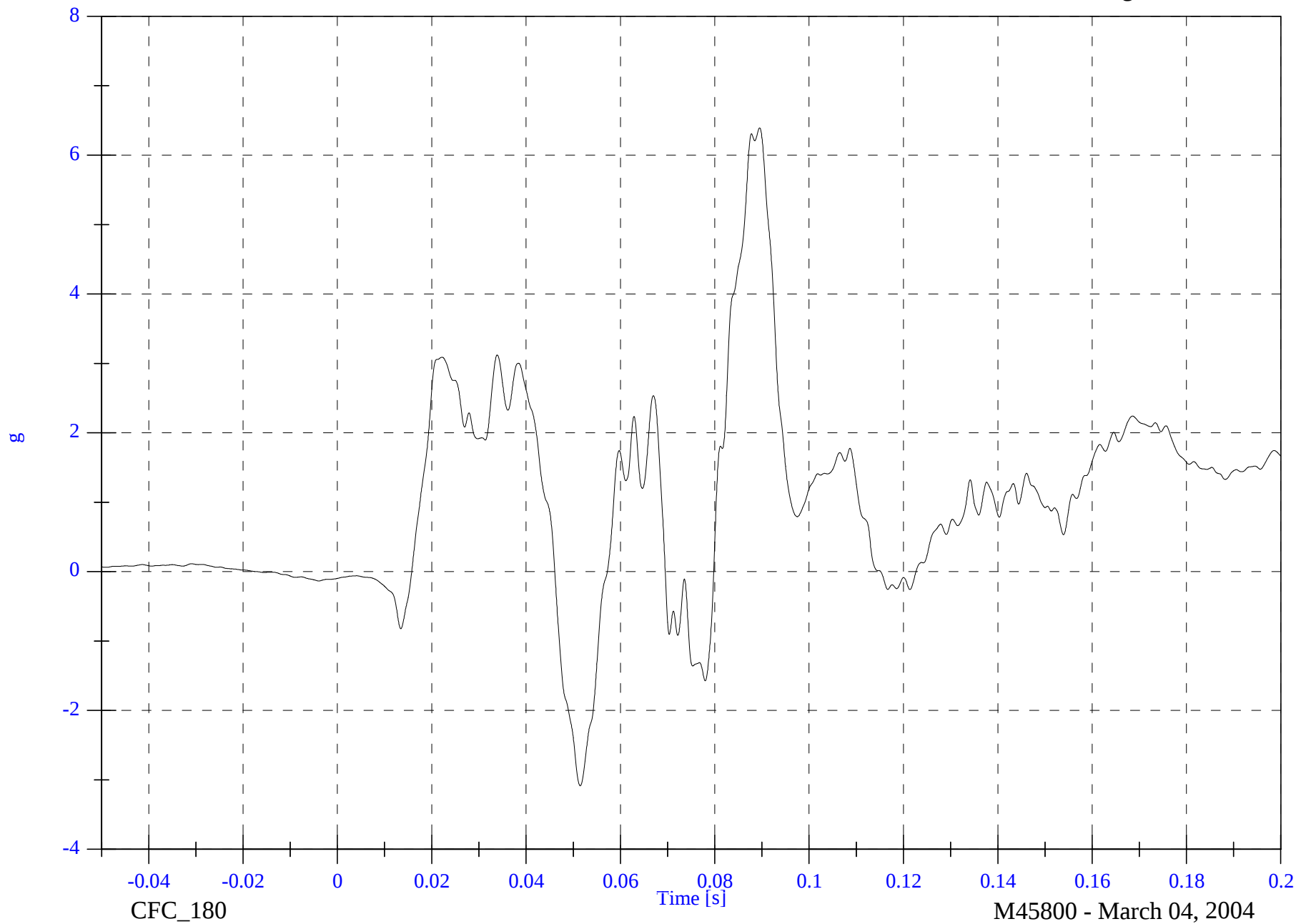
V1P2 Chest Red z

Max: 6.4 [g] at 0.089 [s]

Min: -3.1 [g] at 0.051 [s]

B-91

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

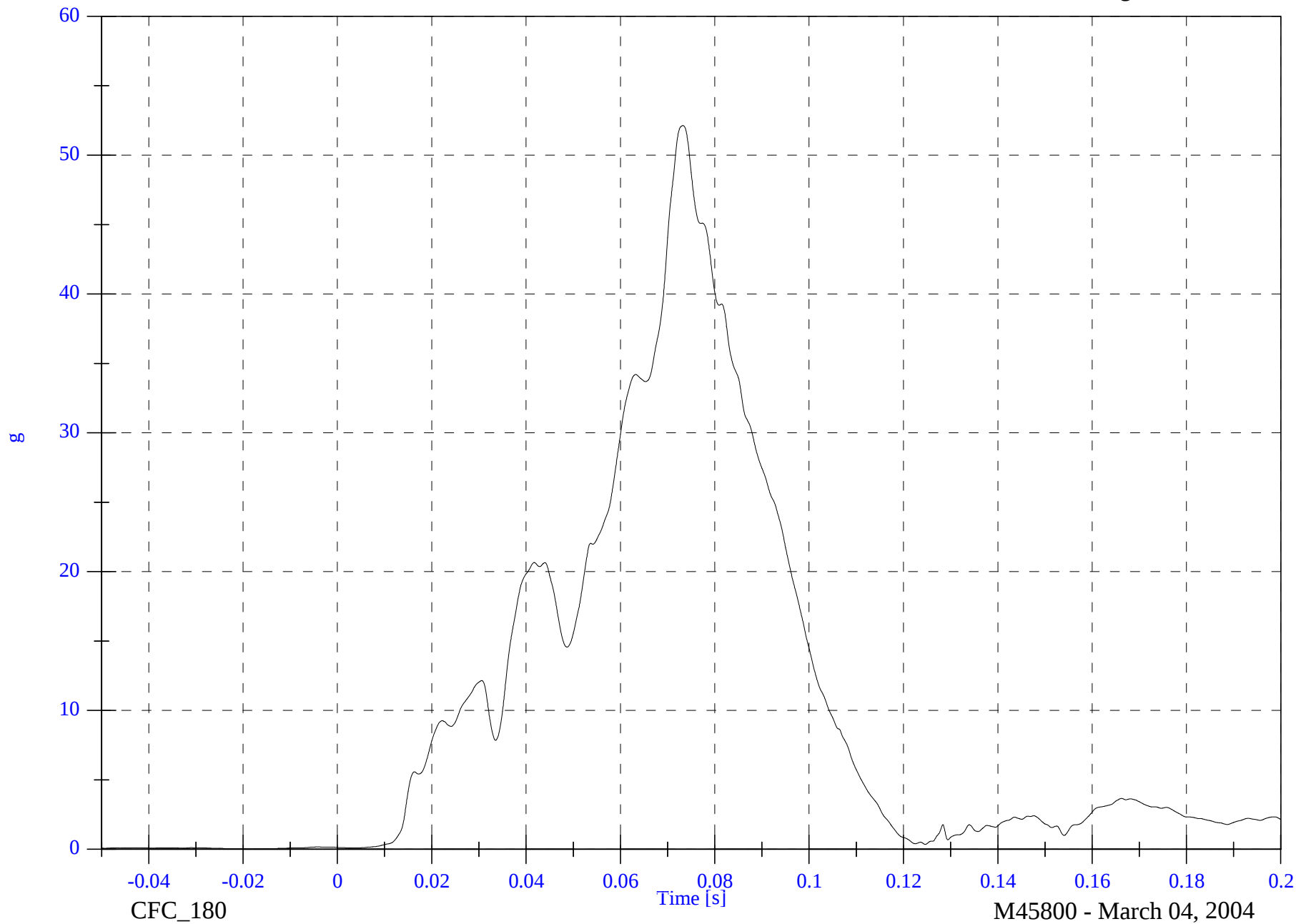
V1P2 Chest Red Resultant

Max: 52.1 [g] at 0.073 [s]

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

B-92

8642-NCAP-46

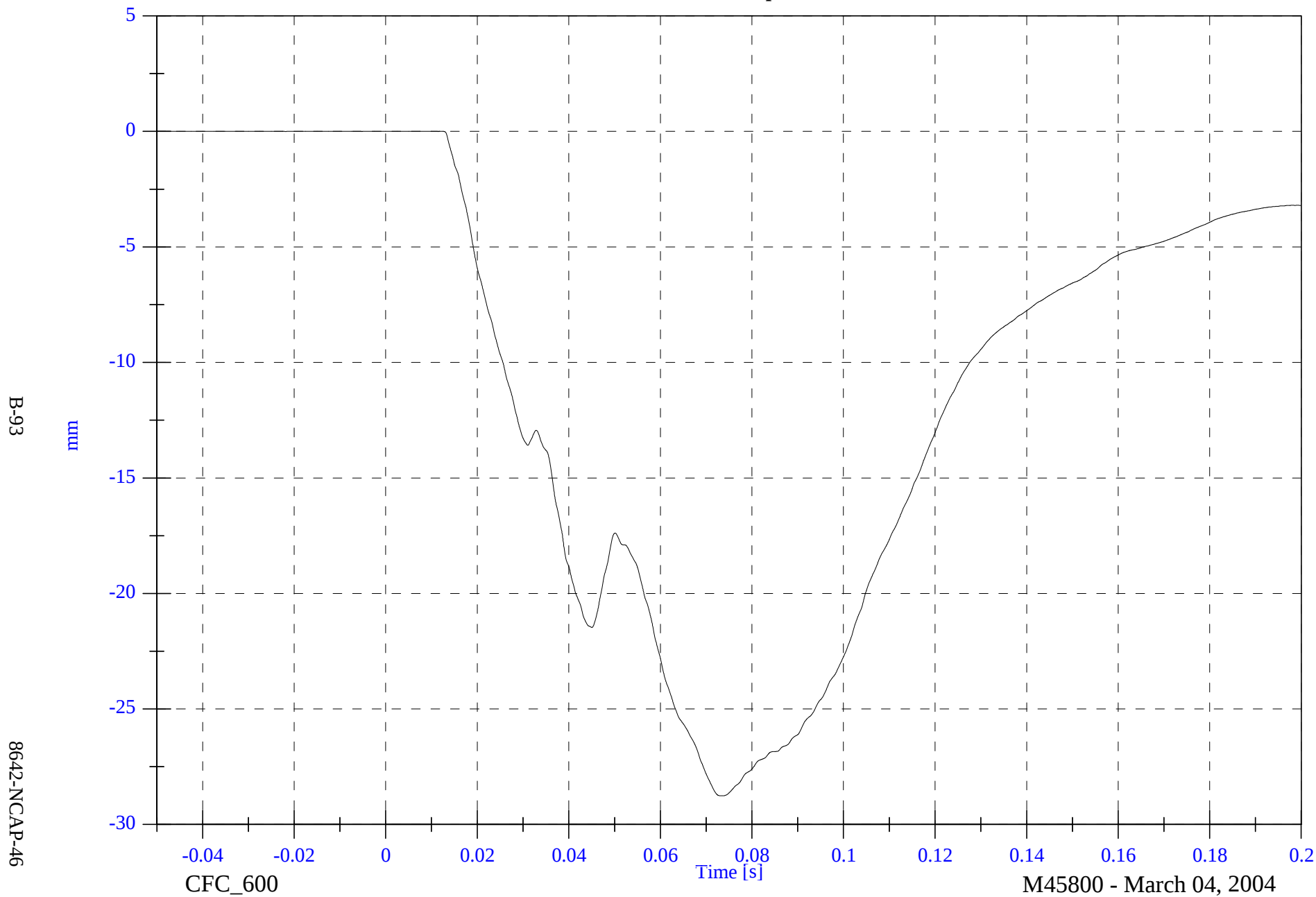


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Chest Compression x

Max: 0.0 [mm] at 0.002 [s]

Min: -28.8 [mm] at 0.073 [s]



2004 NCAP Test 10 - 2004 VW Touareg

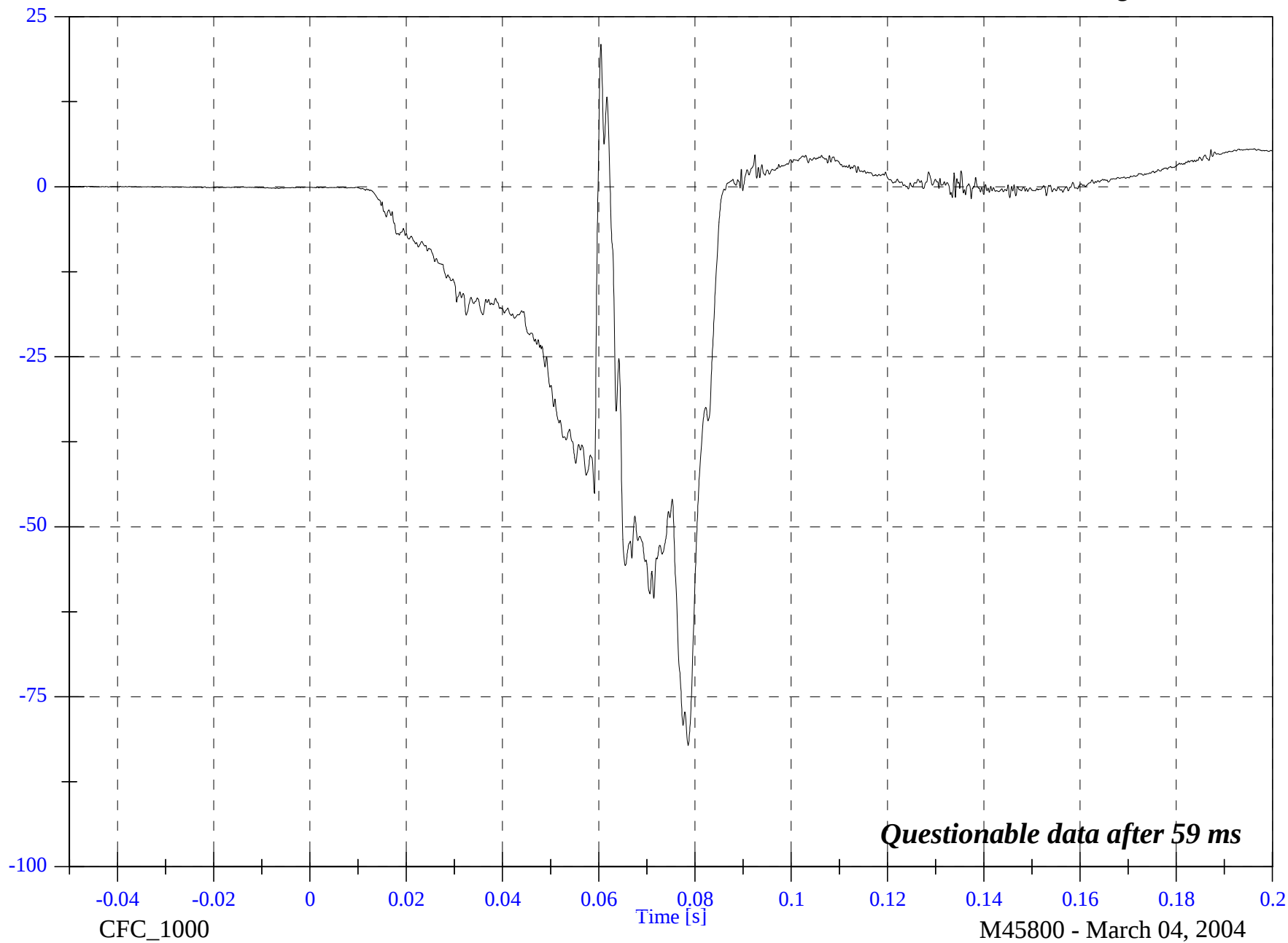
V1P2 Pelvic x

Max: 20.9 [g] at 0.060 [s]

Min: -82.2 [g] at 0.079 [s]

B-94

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

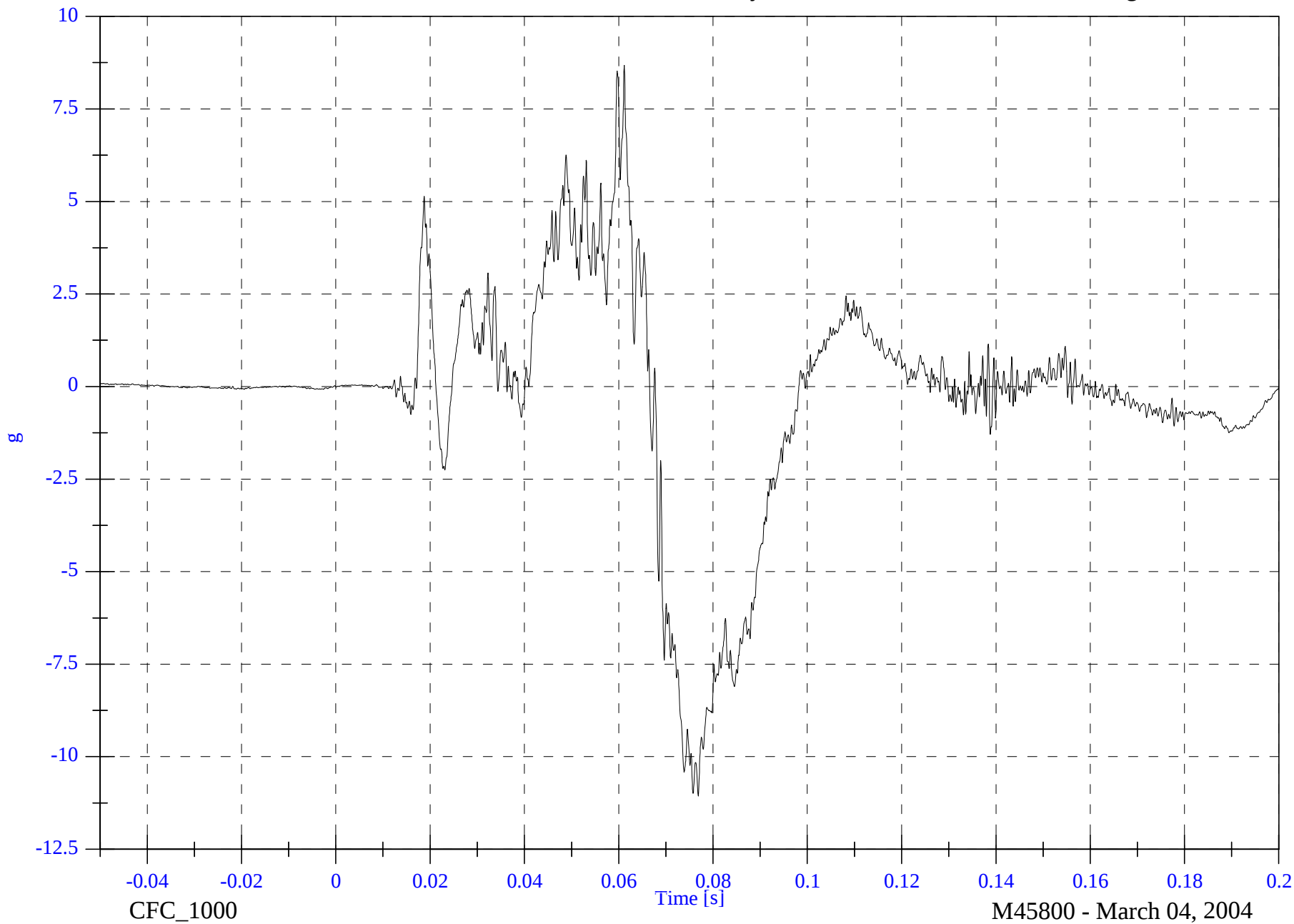
V1P2 Pelvic y

Max: 8.7 [g] at 0.061 [s]

Min: -11.1 [g] at 0.077 [s]

B-95

8642-NCAP-46

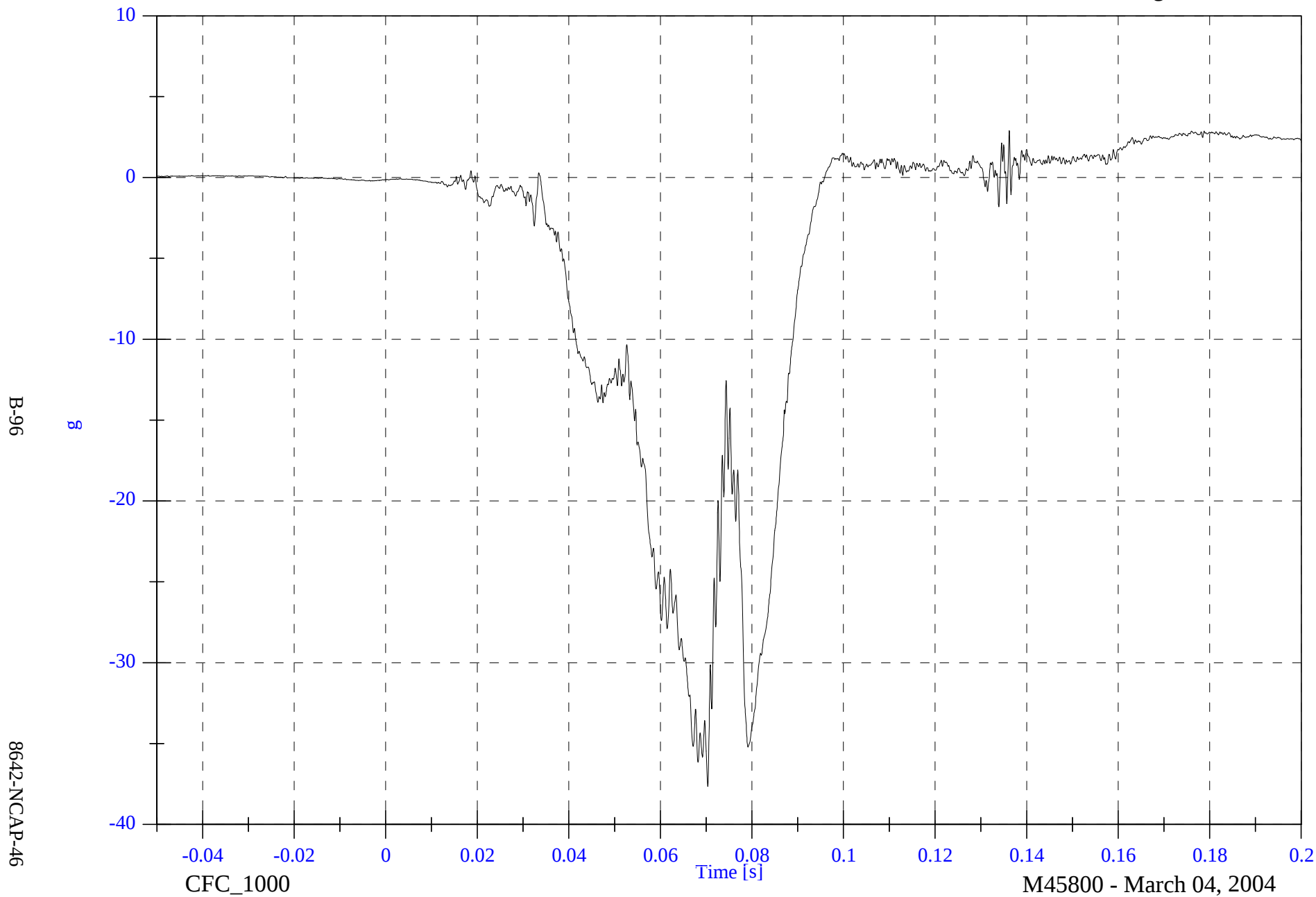


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Pelvic z

Max: 2.9 [g] at 0.136 [s]

Min: -37.6 [g] at 0.070 [s]

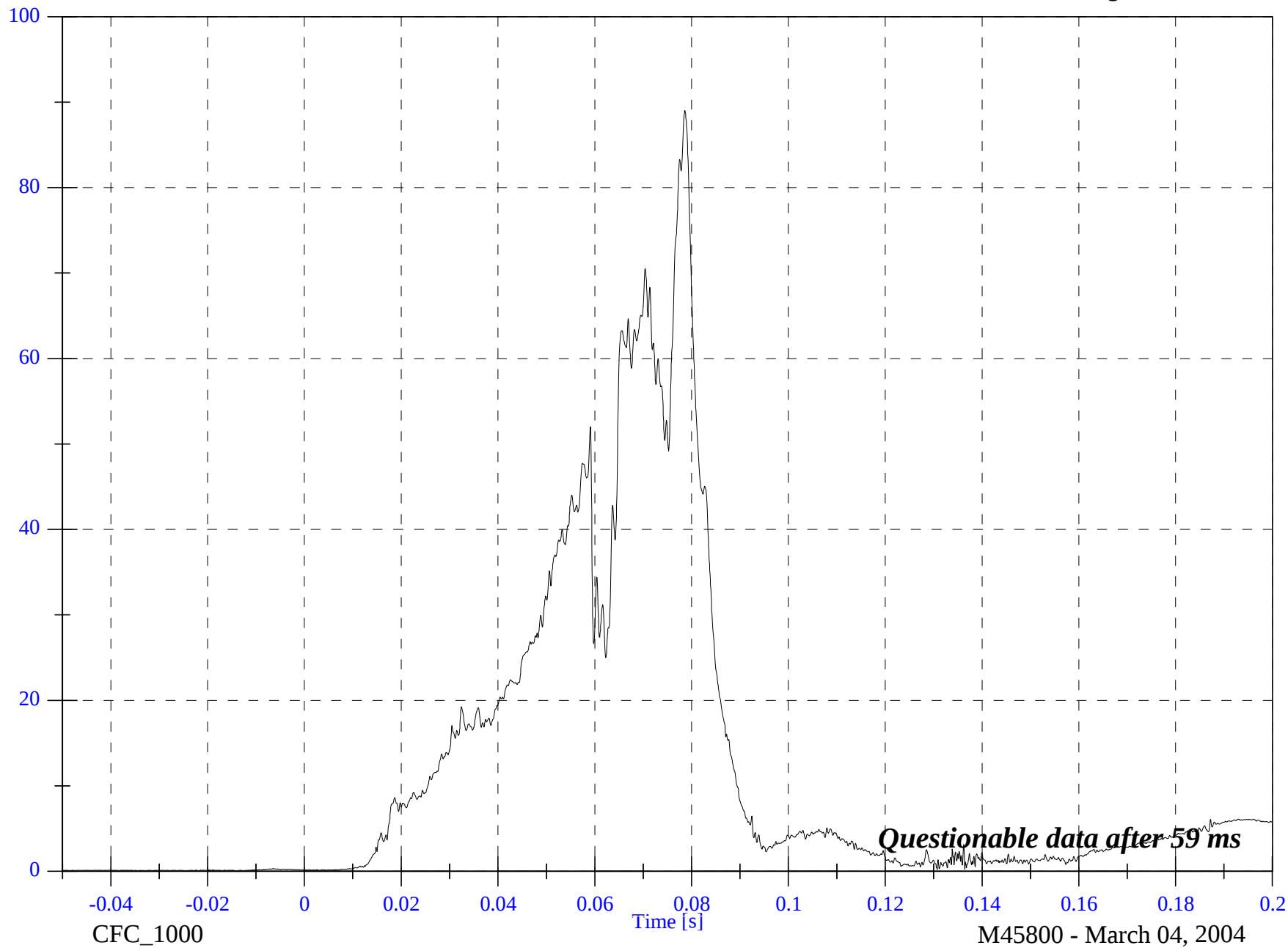


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Pelvic Resultant

Max: 89.1 [g] at 0.079 [s]

Min: 0.0 [g] at -0.014 [s]



B-97

8642-NCAP-46

CFC_1000

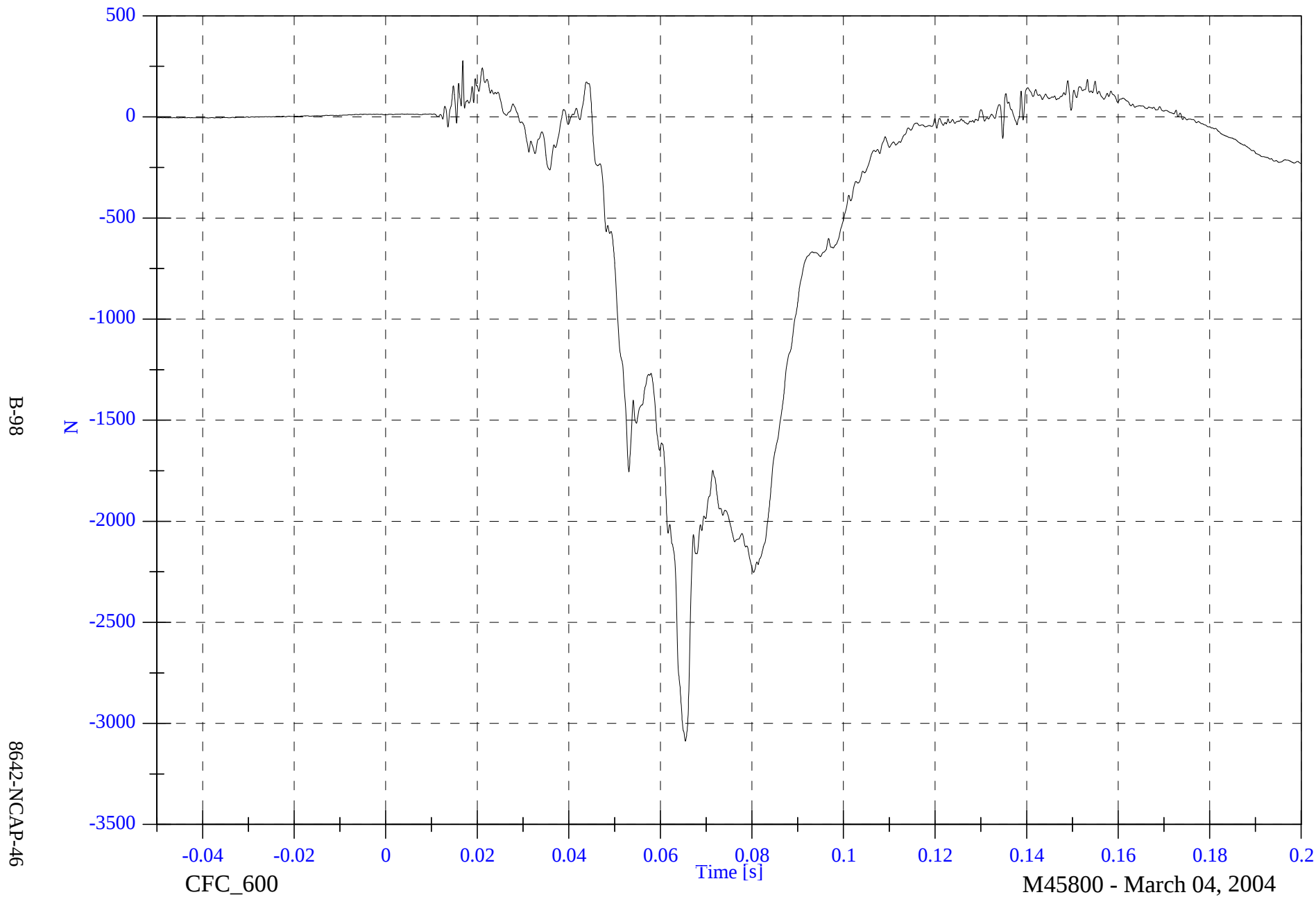
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Left Femur z

Max: 277.7 [N] at 0.017 [s]

Min: -3087.8 [N] at 0.065 [s]

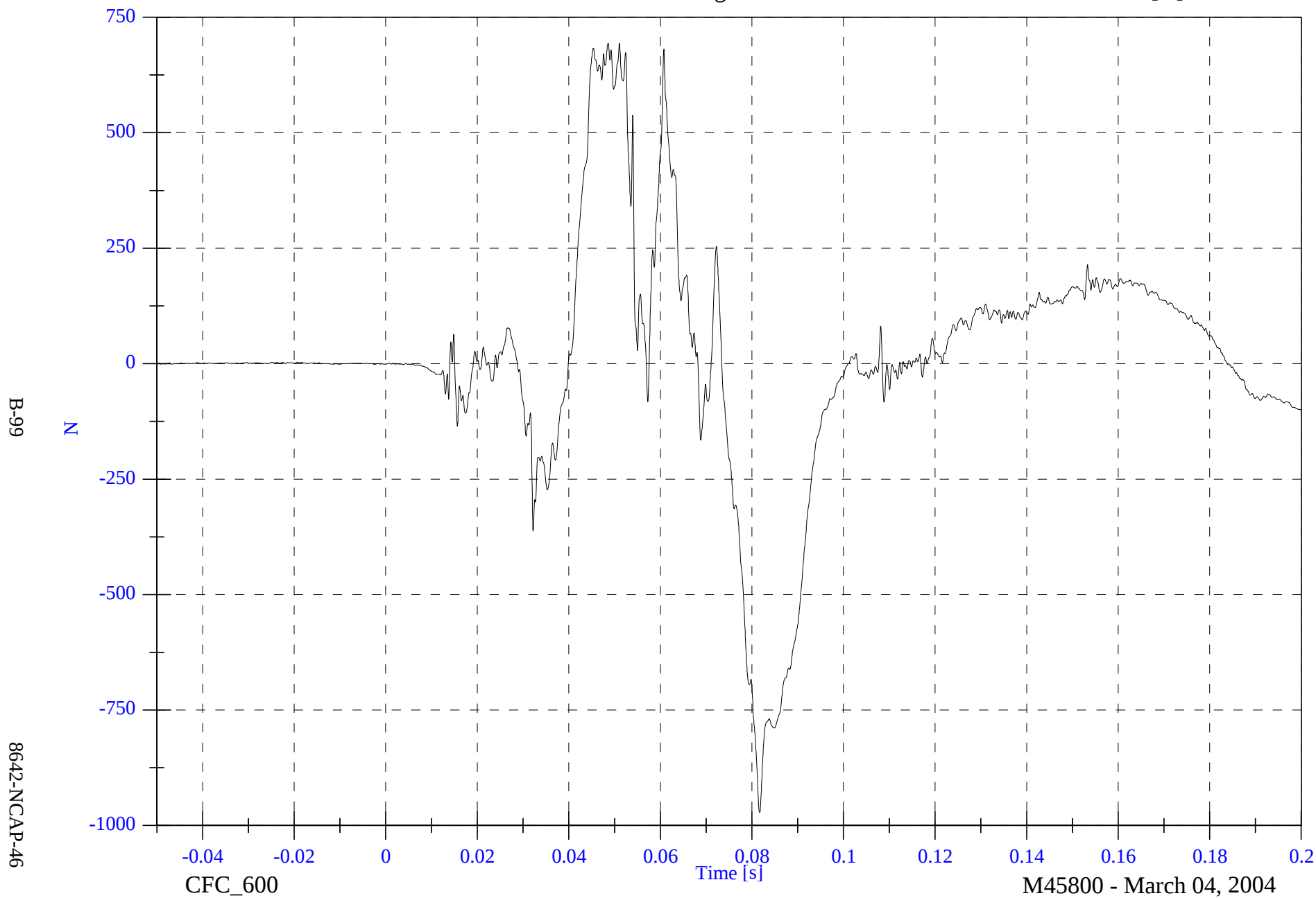


2004 NCAP Test 10 - 2004 VW Touareg

Max: 694.1 [N] at 0.049 [s]

Min: -971.8 [N] at 0.082 [s]

V1P2 Right Femur z

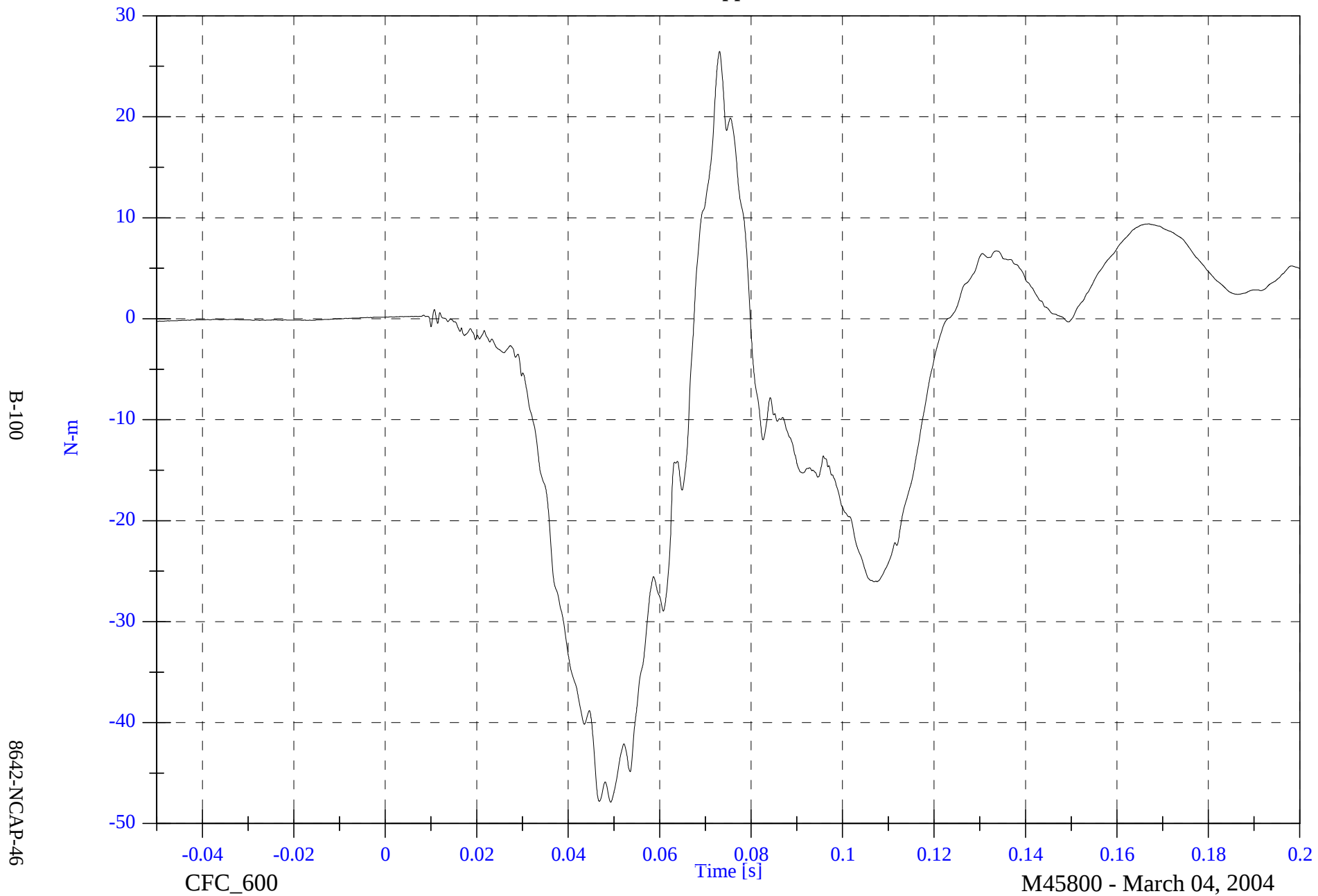


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Left Upper Tibia Mx

Max: 26.5 [N-m] at 0.073 [s]

Min: -47.9 [N-m] at 0.049 [s]



2004 NCAP Test 10 - 2004 VW Touareg

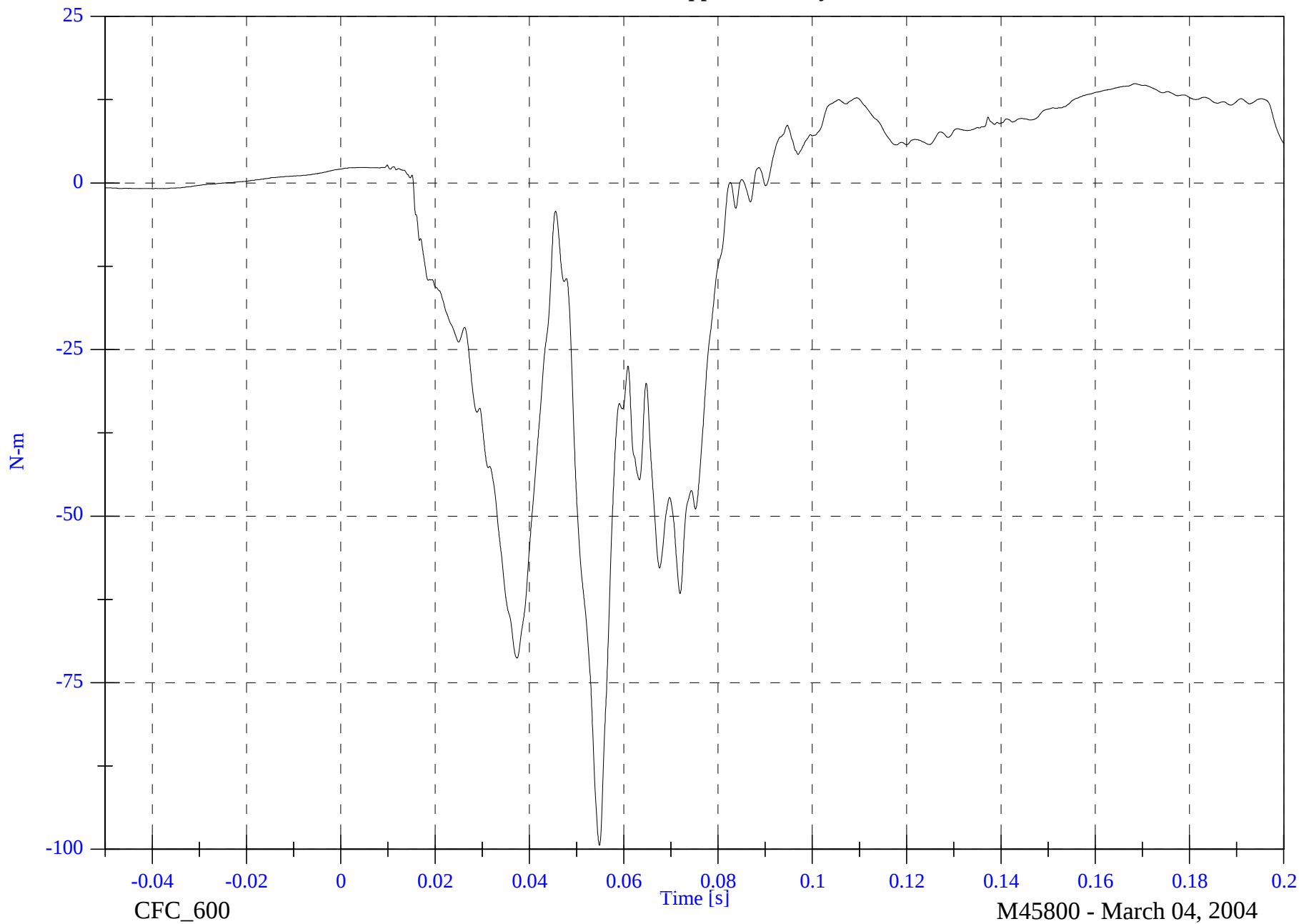
V1P2 Left Upper Tibia My

Max: 14.9 [N-m] at 0.168 [s]

Min: -99.4 [N-m] at 0.055 [s]

B-101

8642-NCAP-46

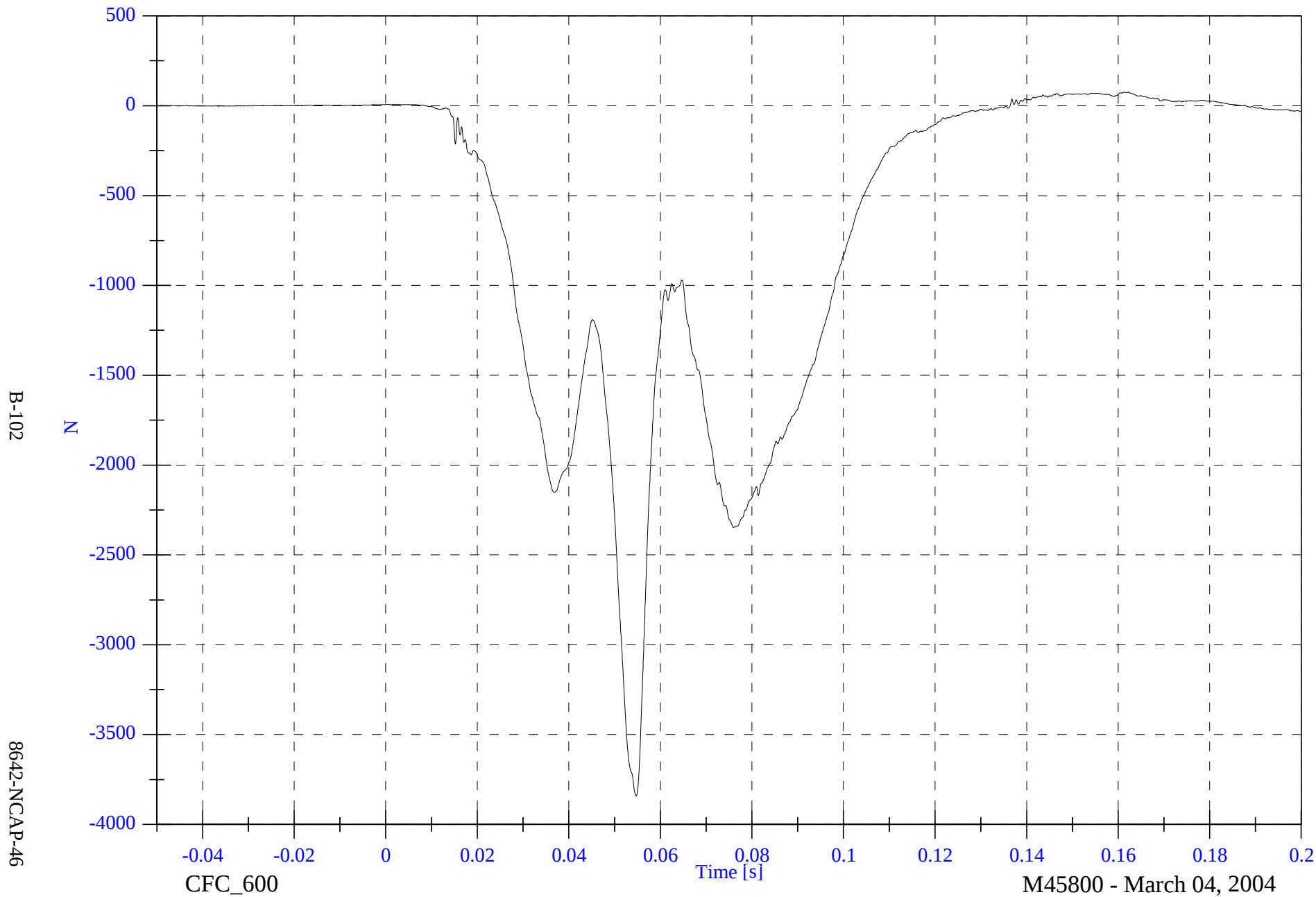


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Left Lower Tibia Fz

Max: 74.8 [N] at 0.161 [s]

Min: -3841.0 [N] at 0.055 [s]

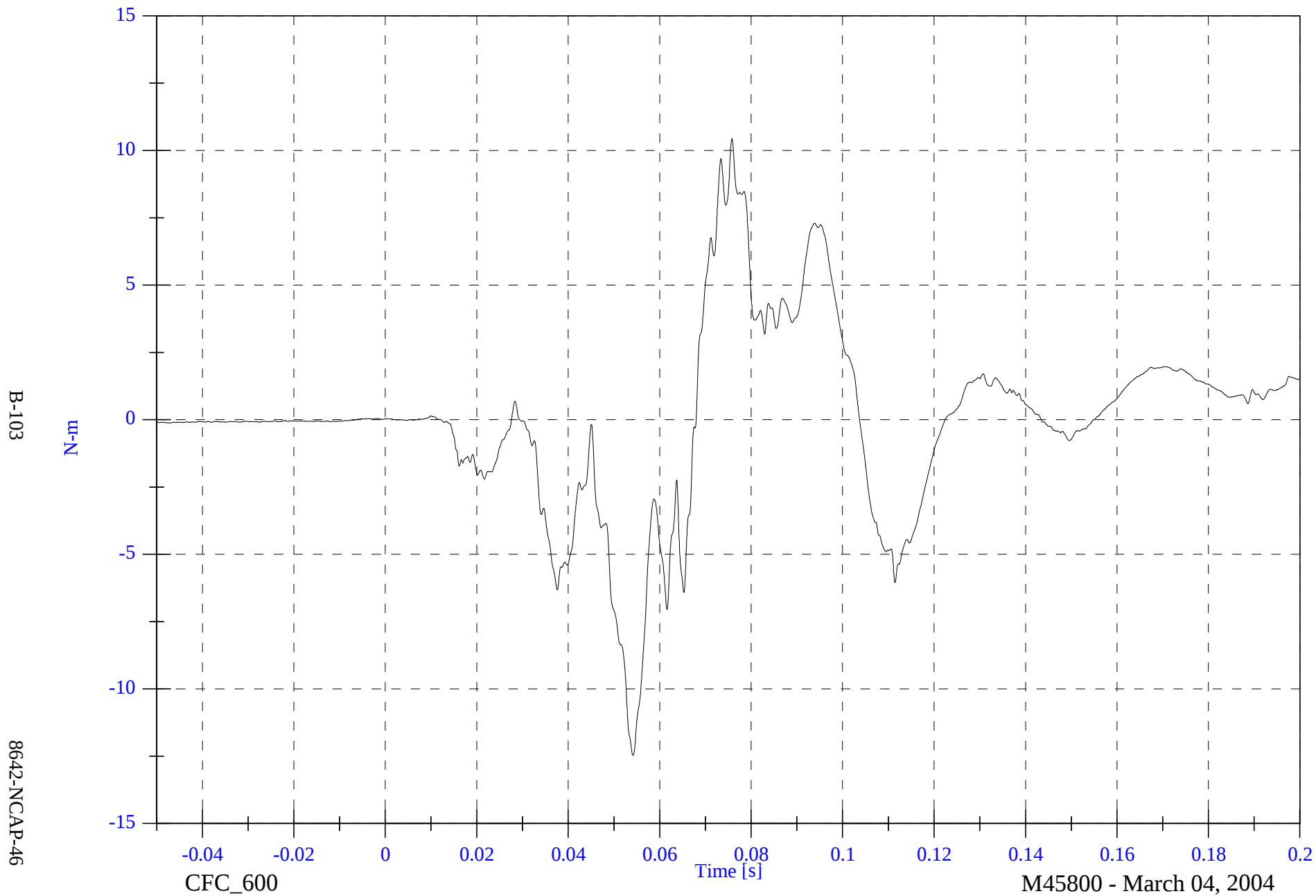


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Left Lower Tibia Mx

Max: 10.4 [N-m] at 0.076 [s]

Min: -12.5 [N-m] at 0.054 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Left Lower Tibia My

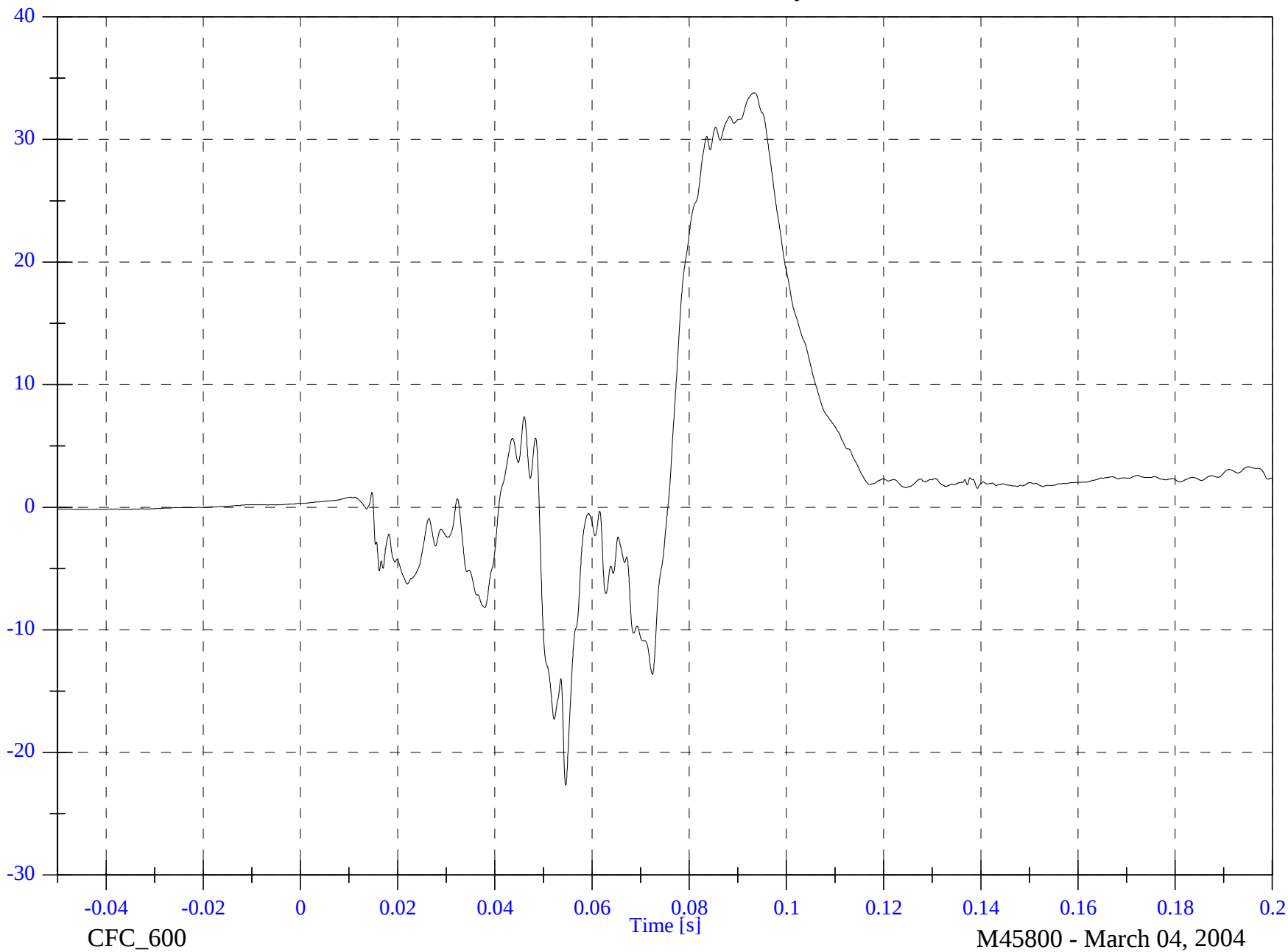
Max: 33.8 [N-m] at 0.093 [s]

Min: -22.7 [N-m] at 0.055 [s]

B-104

N-m

8642-NCAP-46

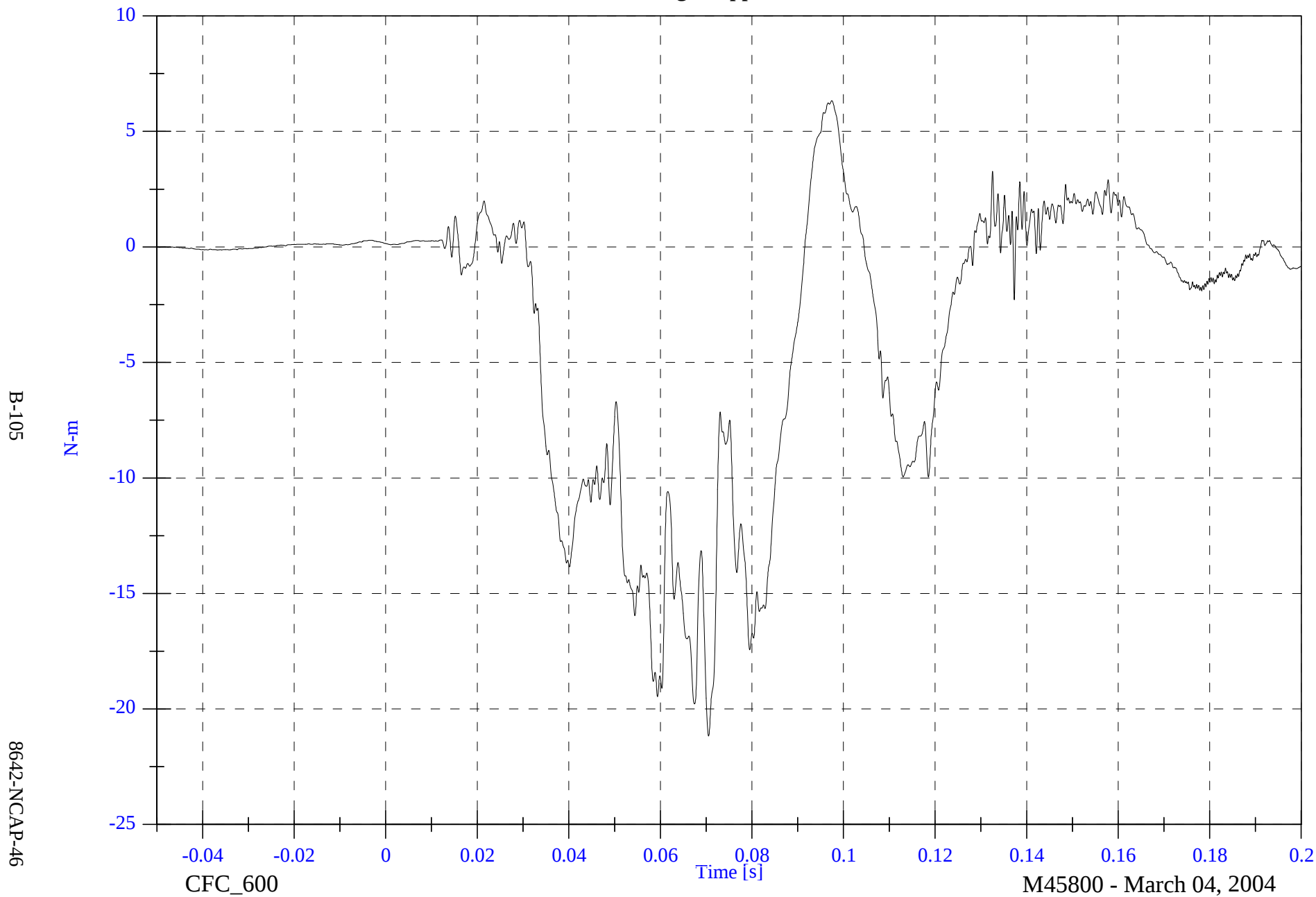


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Right Upper Tibia Mx

Max: 6.3 [N-m] at 0.097 [s]

Min: -21.2 [N-m] at 0.071 [s]

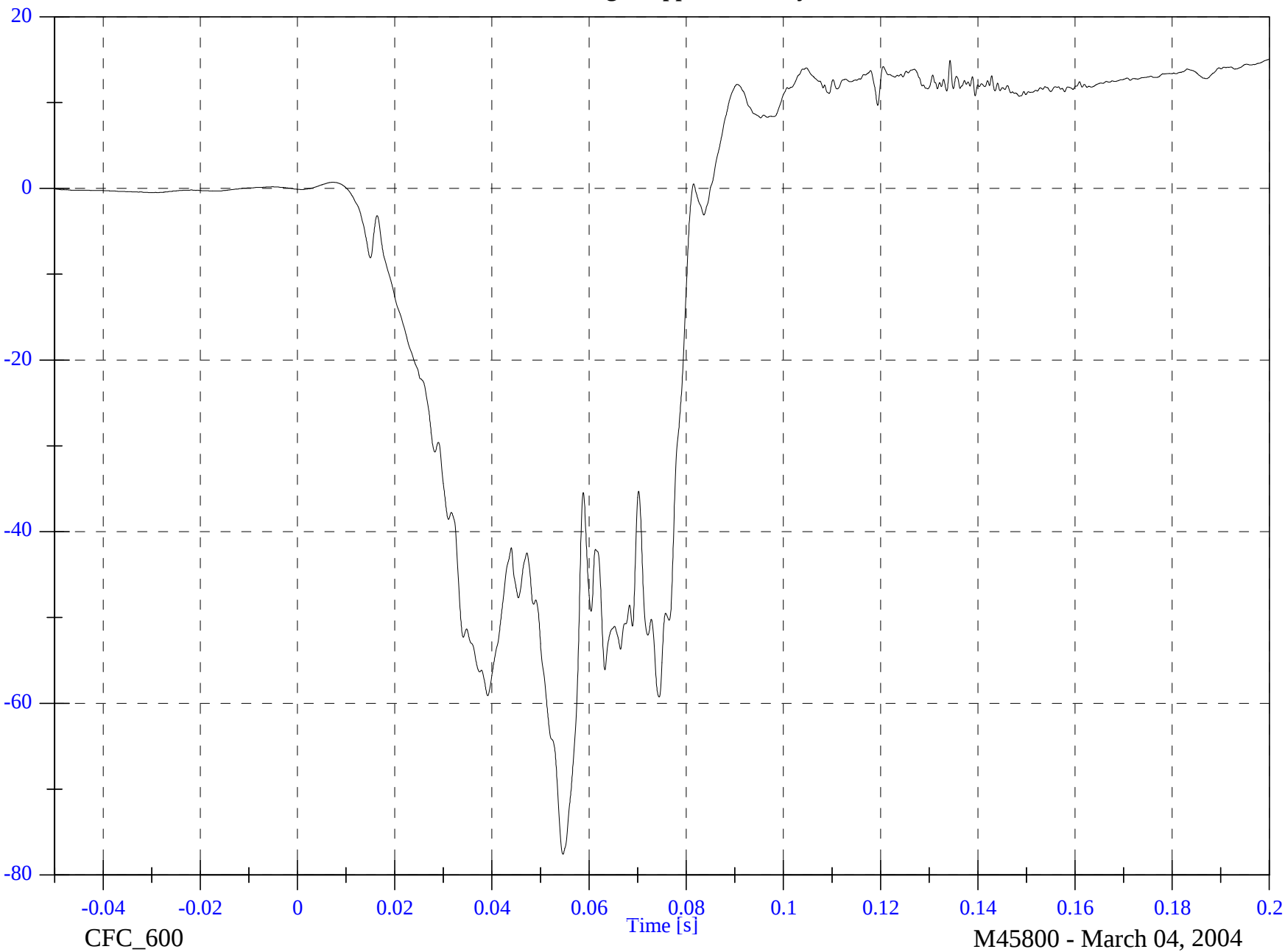


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Right Upper Tibia My

Max: 15.1 [N-m] at 0.200 [s]

Min: -77.6 [N-m] at 0.055 [s]



B-106

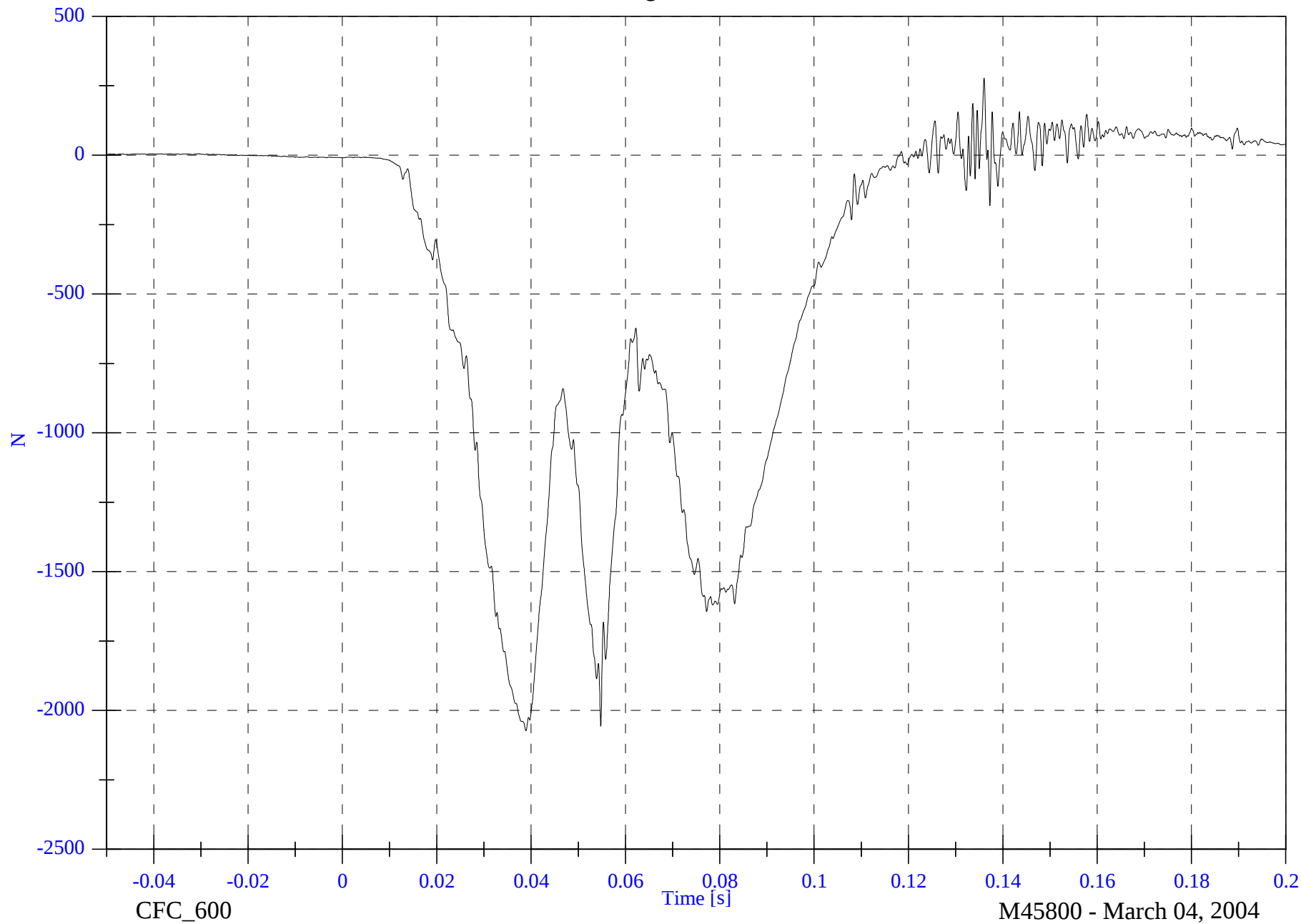
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Right Lower Tibia Fz

Max: 277.4 [N] at 0.136 [s]

Min: -2072.9 [N] at 0.039 [s]



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8642-NCAP-46

CFC_600

Time [s]

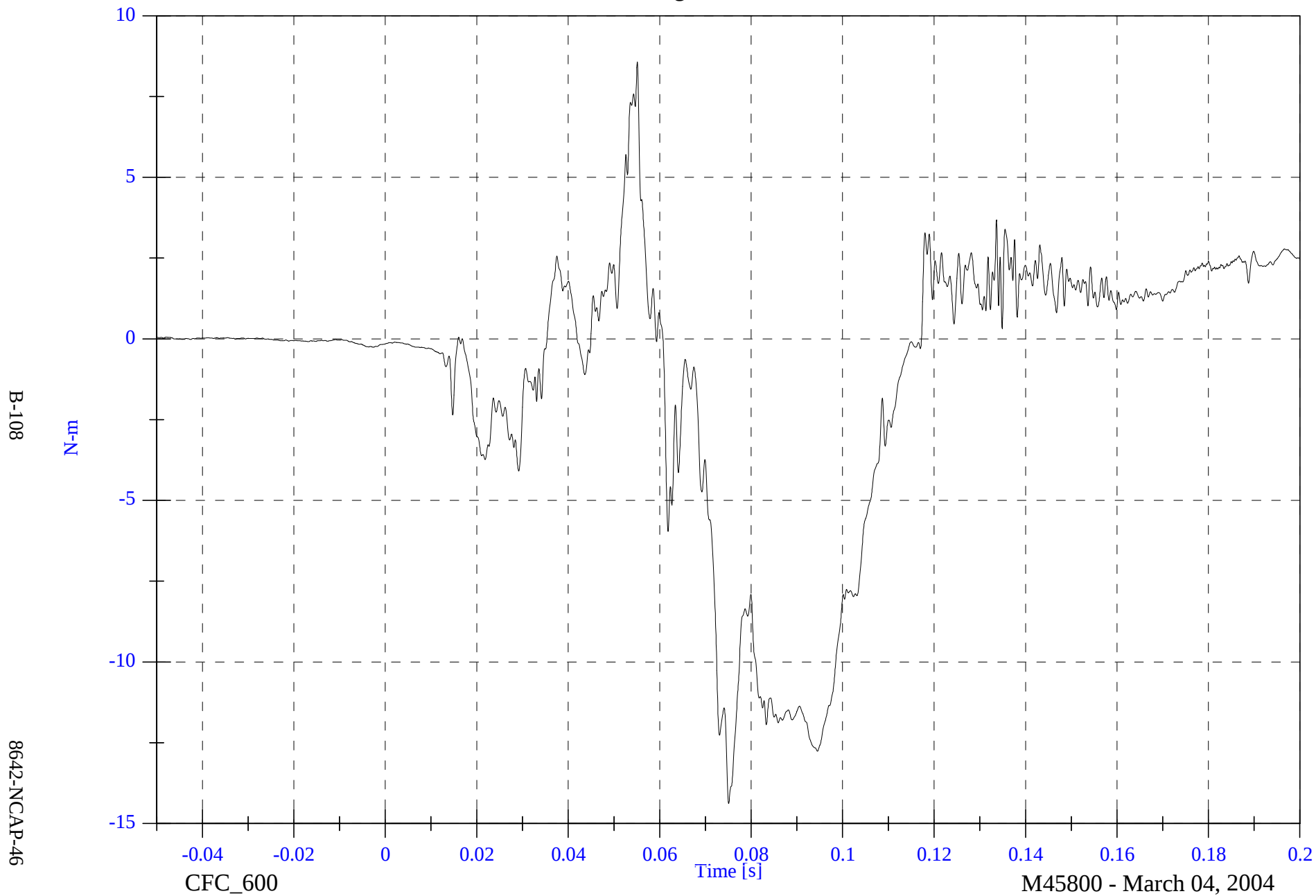
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Right Lower Tibia Mx

Max: 8.6 [N-m] at 0.055 [s]

Min: -14.4 [N-m] at 0.075 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Right Lower Tibia My

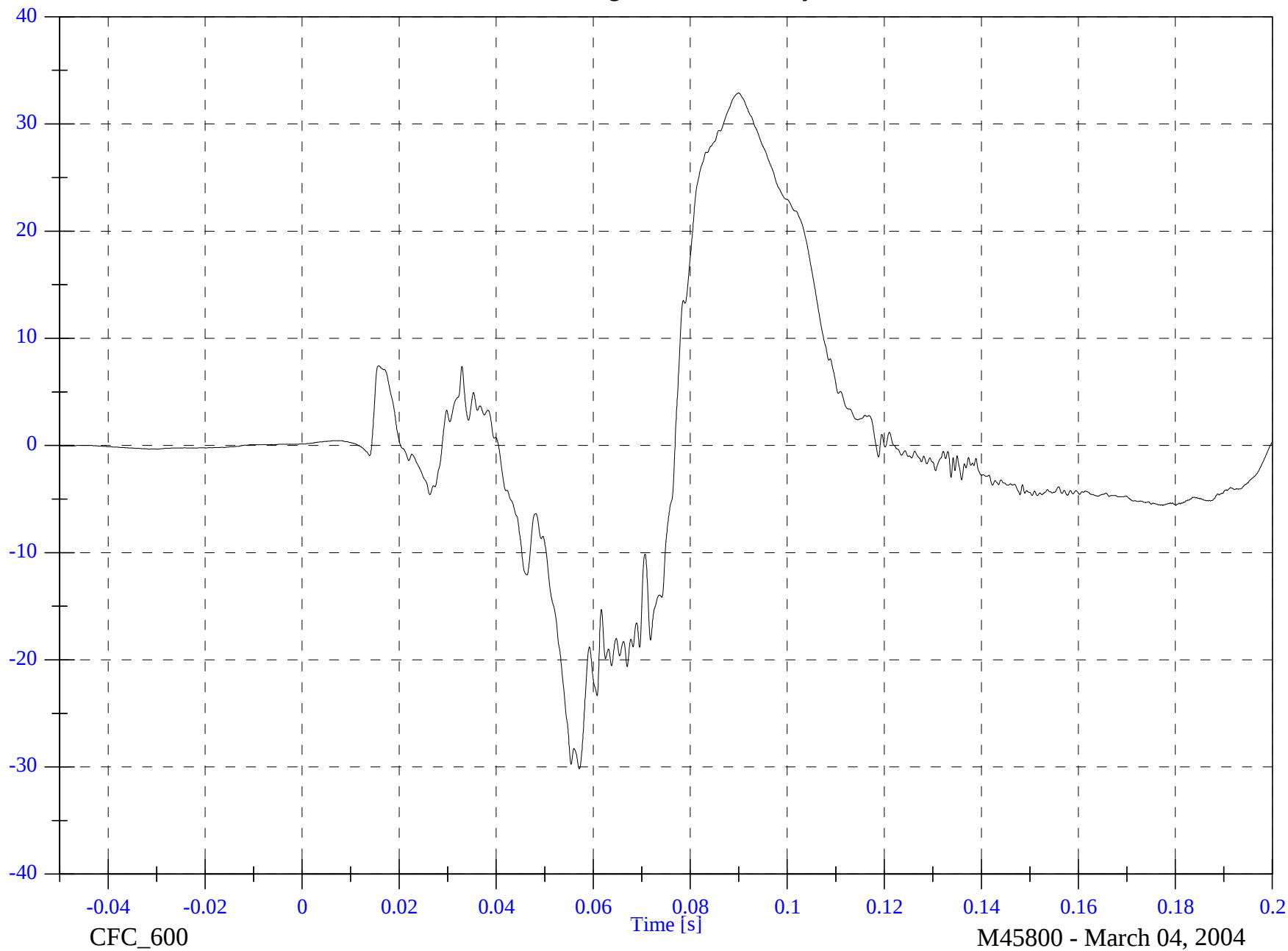
Max: 32.9 [N-m] at 0.090 [s]

Min: -30.2 [N-m] at 0.057 [s]

B-109

N-m

8642-NCAP-46

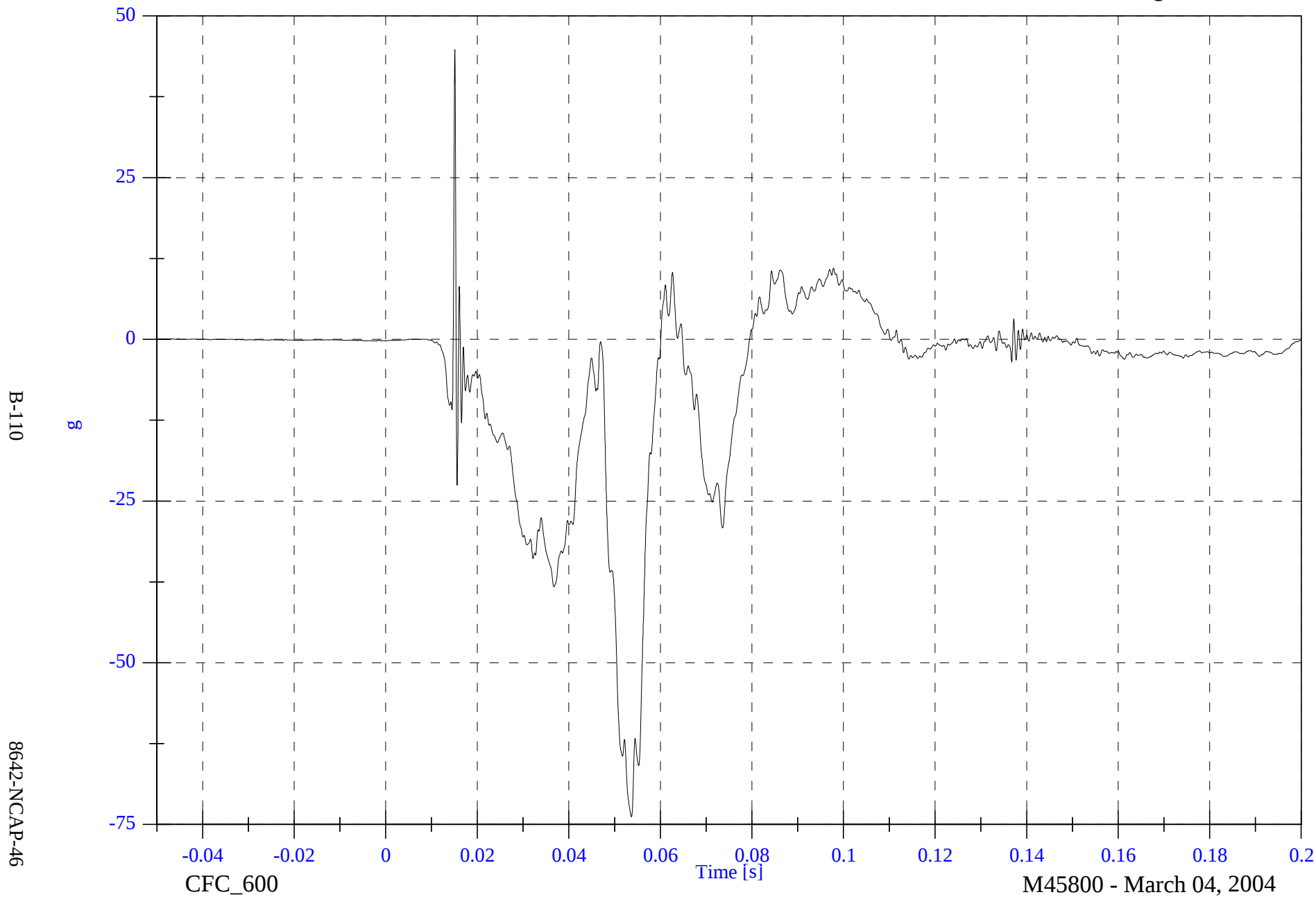


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Left Foot Aft x

Max: 44.8 [g] at 0.015 [s]

Min: -73.8 [g] at 0.054 [s]



2004 NCAP Test 10 - 2004 VW Touareg

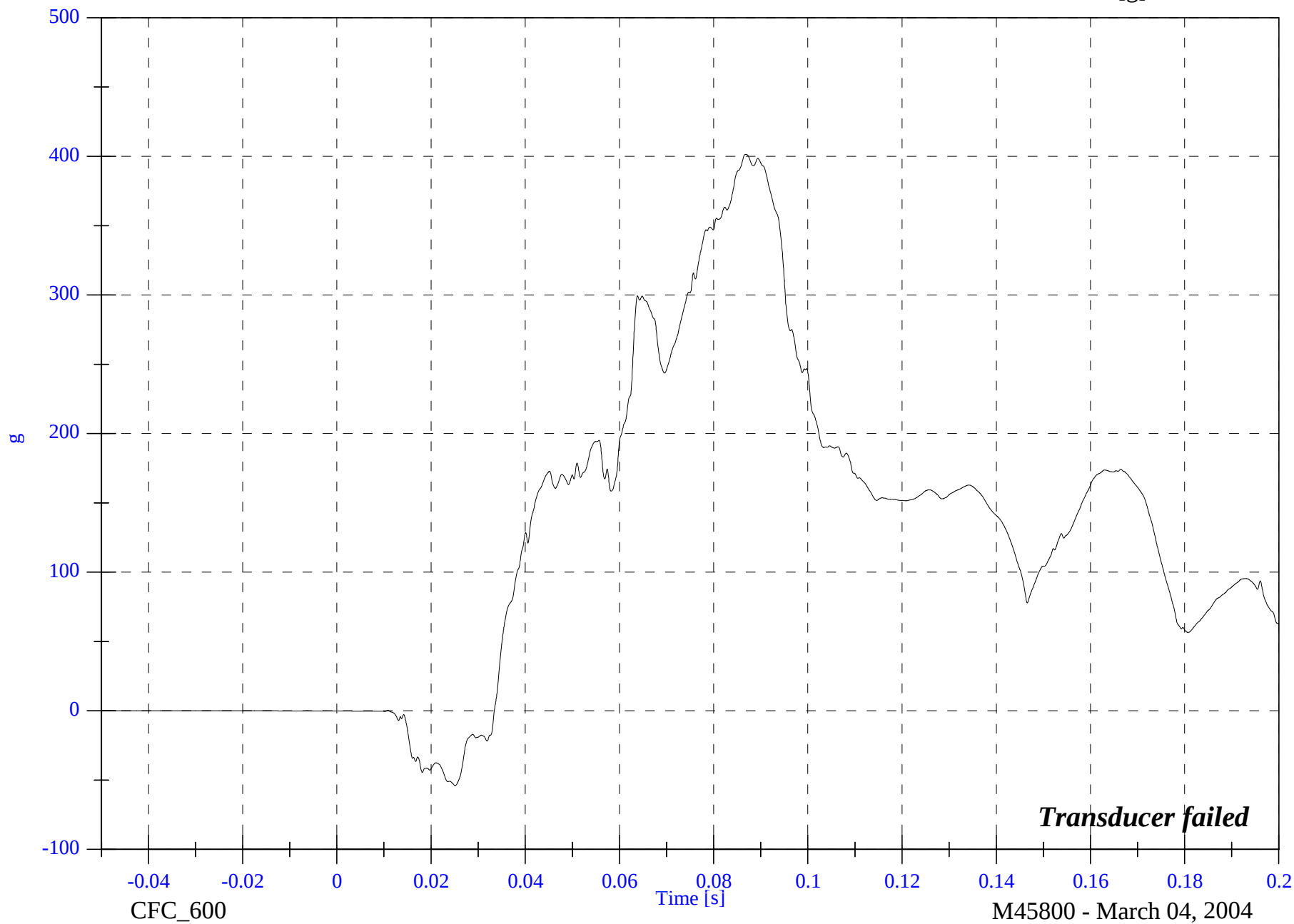
V1P2 Left Foot Aft z

Max: 401.4 [g] at 0.087 [s]

Min: -53.9 [g] at 0.025 [s]

B-111

8642-NCAP-46

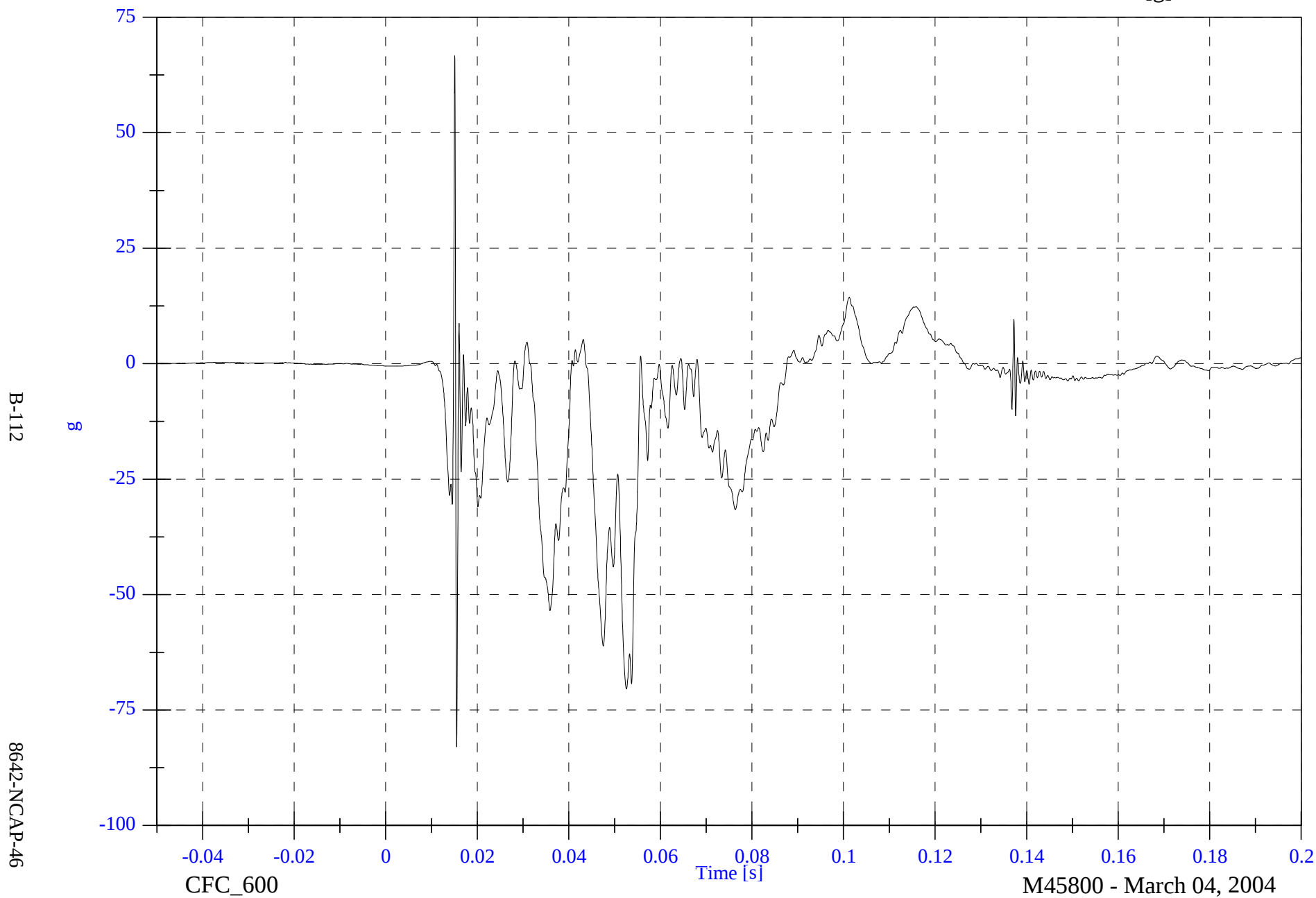


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Left Foot Fore z

Max: 66.7 [g] at 0.015 [s]

Min: -83.0 [g] at 0.015 [s]



2004 NCAP Test 10 - 2004 VW Touareg

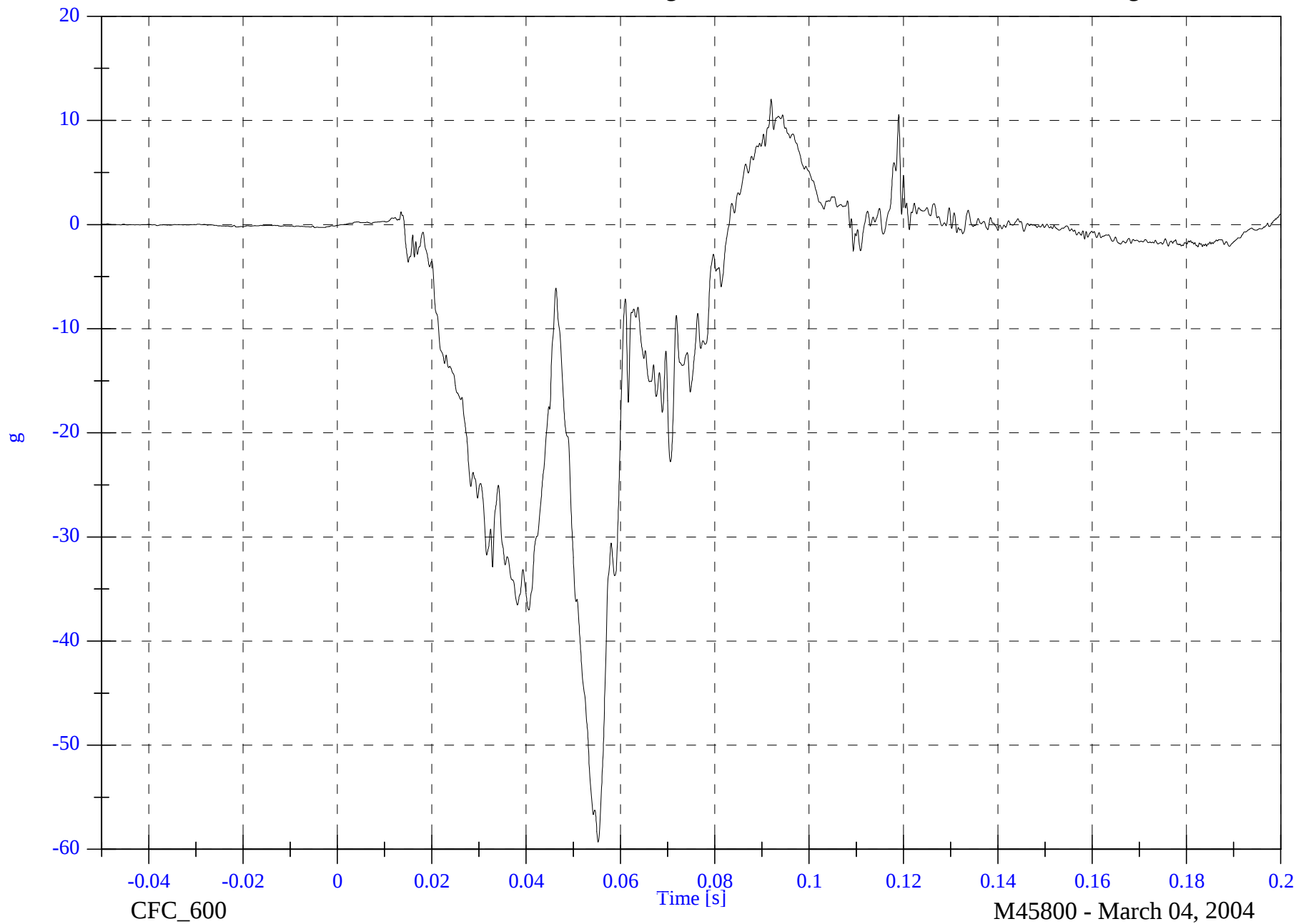
V1P2 Right Foot Aft x

Max: 12.0 [g] at 0.092 [s]

Min: -59.3 [g] at 0.055 [s]

B-113

8642-NCAP-46

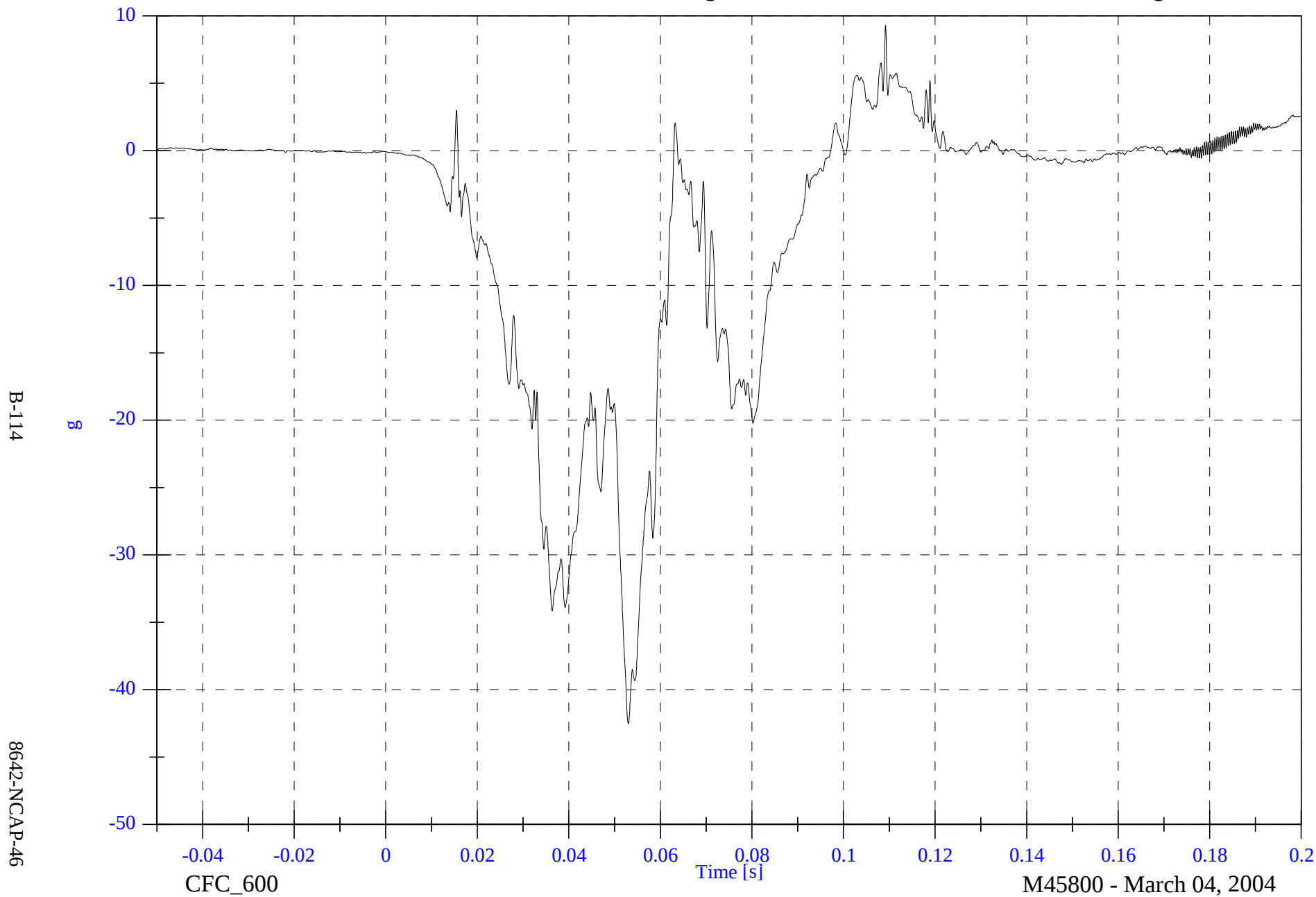


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Right Foot Aft z

Max: 9.3 [g] at 0.109 [s]

Min: -42.5 [g] at 0.053 [s]

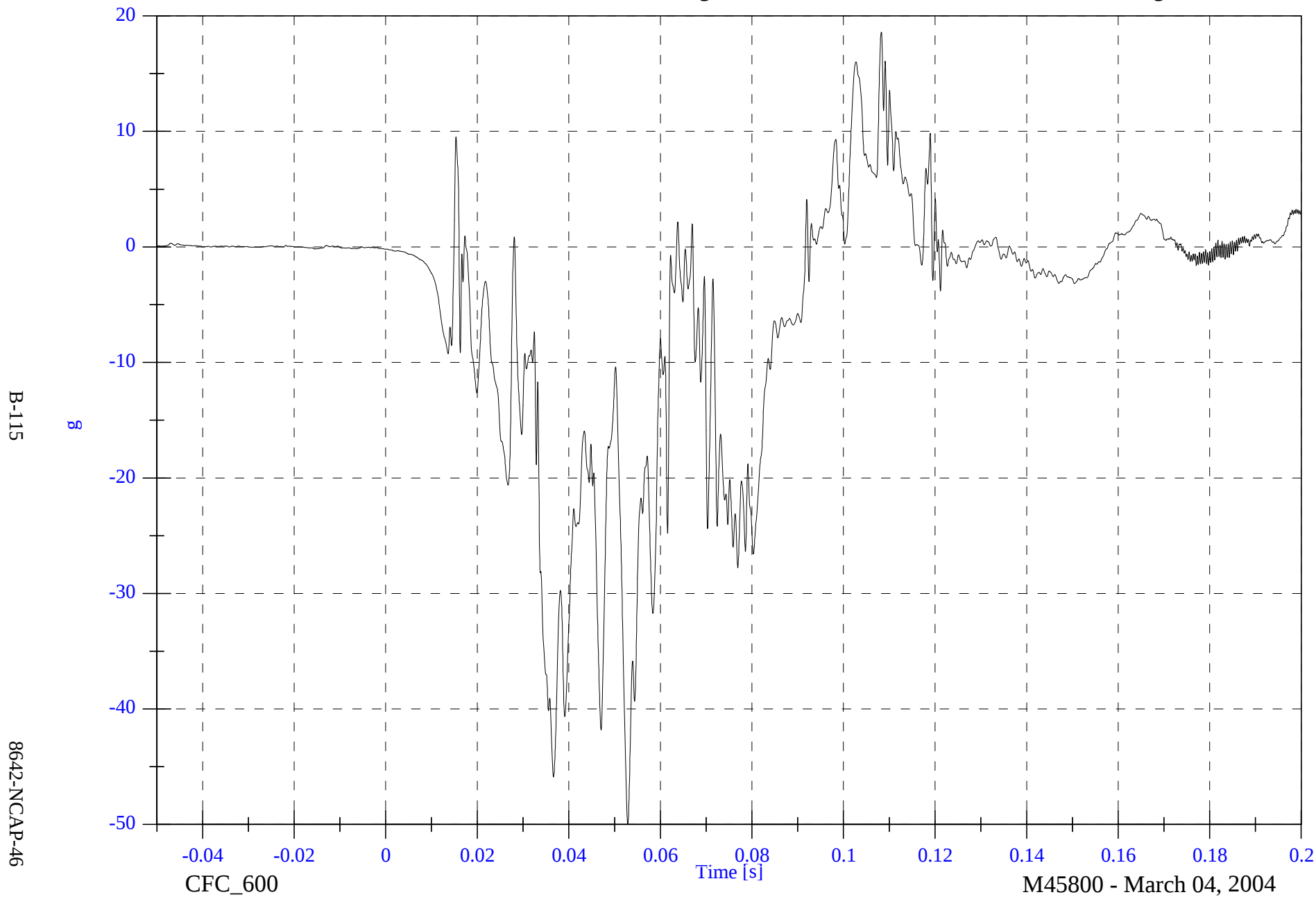


2004 NCAP Test 10 - 2004 VW Touareg

V1P2 Right Foot Fore z

Max: 18.6 [g] at 0.108 [s]

Min: -49.9 [g] at 0.053 [s]

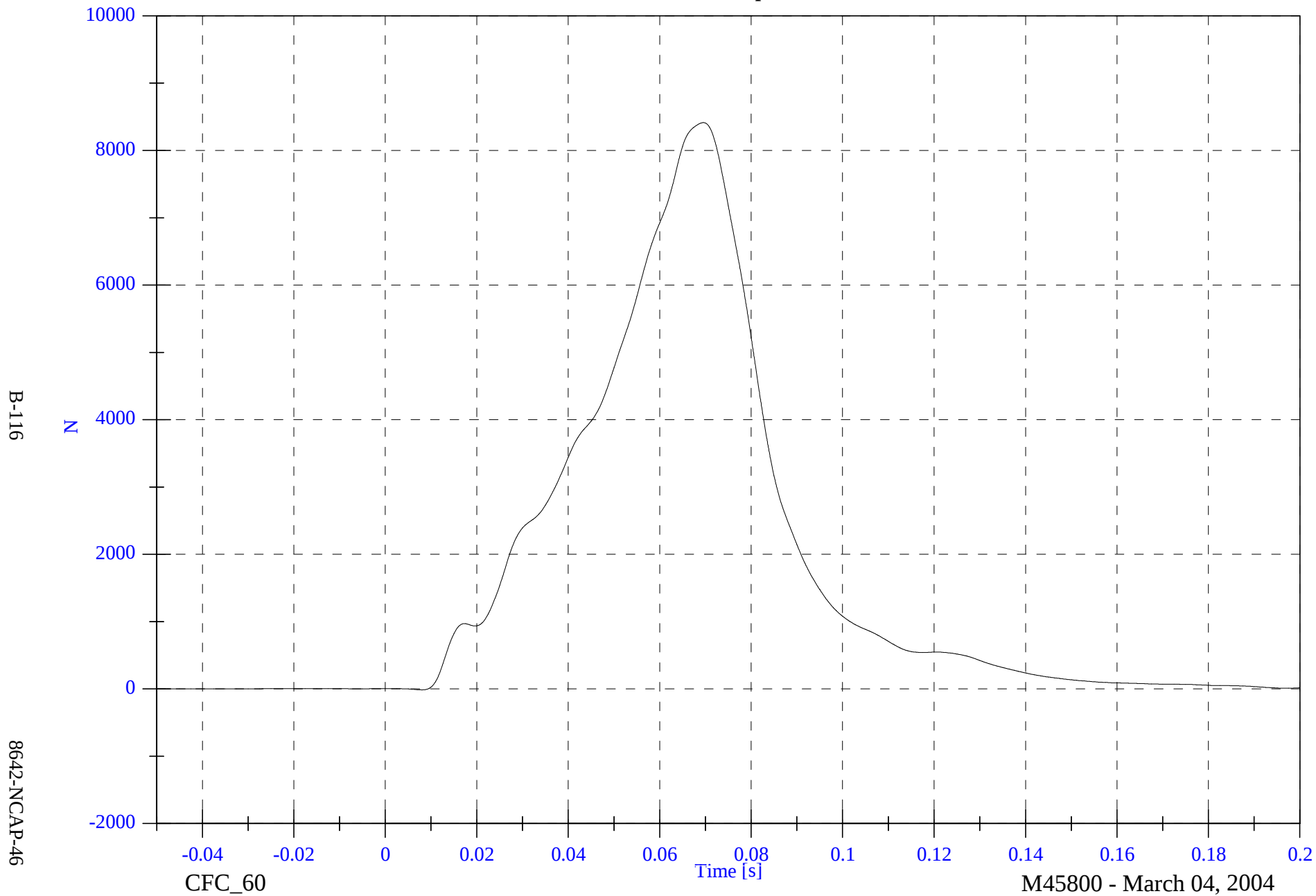


2004 NCAP Test 10 - 2004 VW Touareg

V1 RFP Lap Belt

Max: 8413.7 [N] at 0.070 [s]

Min: -13.9 [N] at 0.008 [s]

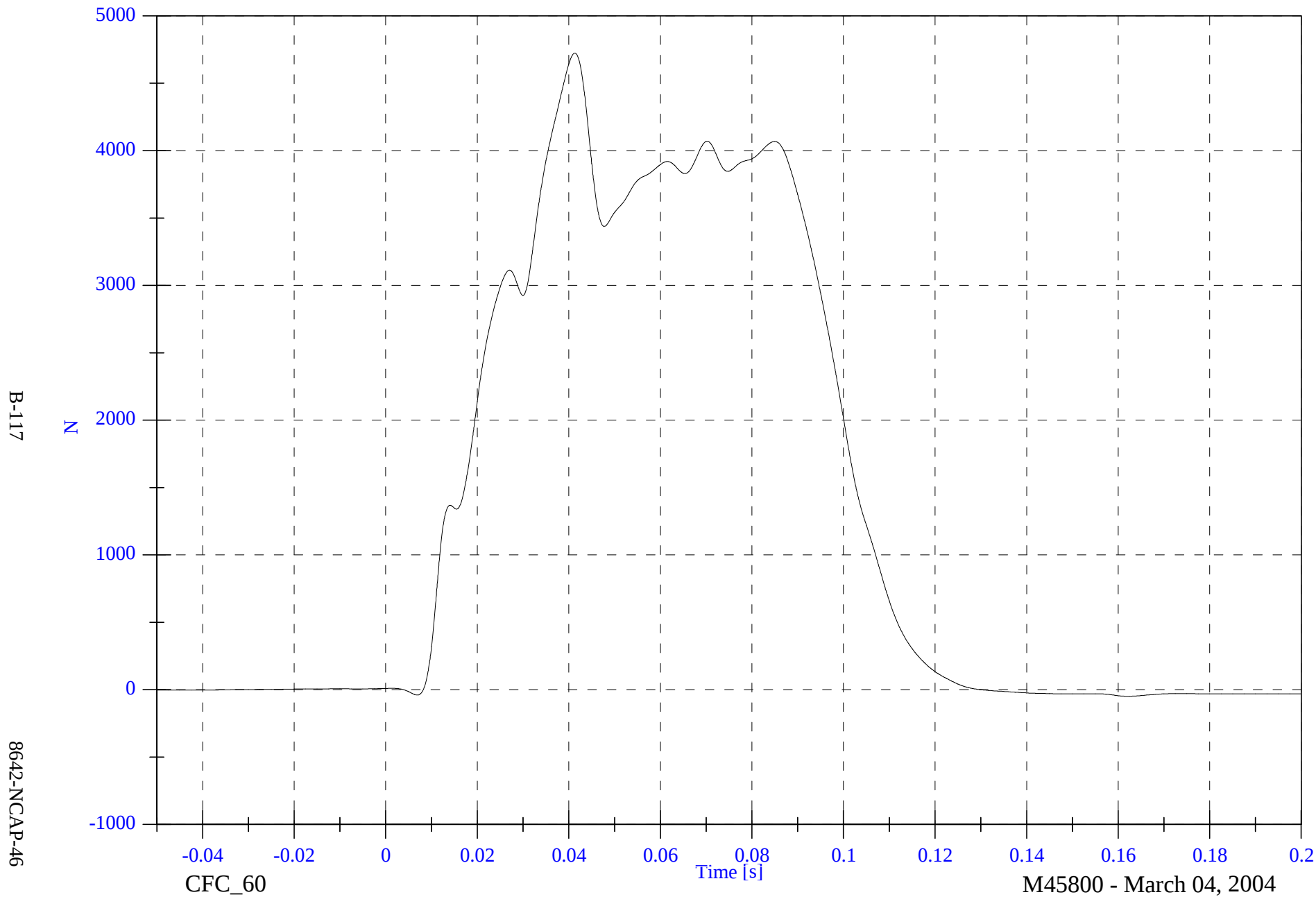


2004 NCAP Test 10 - 2004 VW Touareg

V1 RFP Torso Belt

Max: 4723.8 [N] at 0.041 [s]

Min: -49.3 [N] at 0.162 [s]

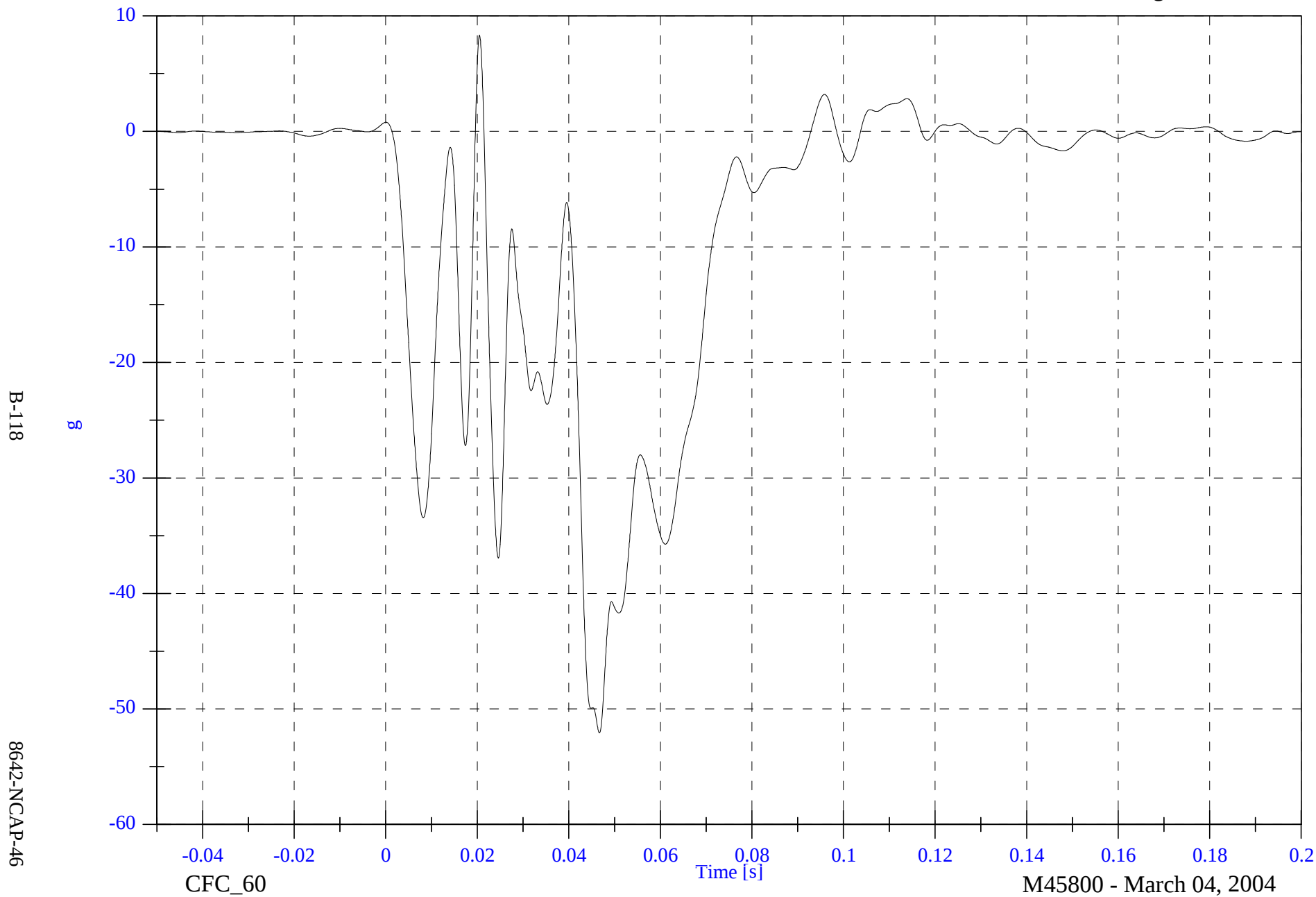


2004 NCAP Test 10 - 2004 VW Touareg

V1 Left Rear #1x

Max: 8.3 [g] at 0.020 [s]

Min: -52.1 [g] at 0.047 [s]



2004 NCAP Test 10 - 2004 VW Touareg

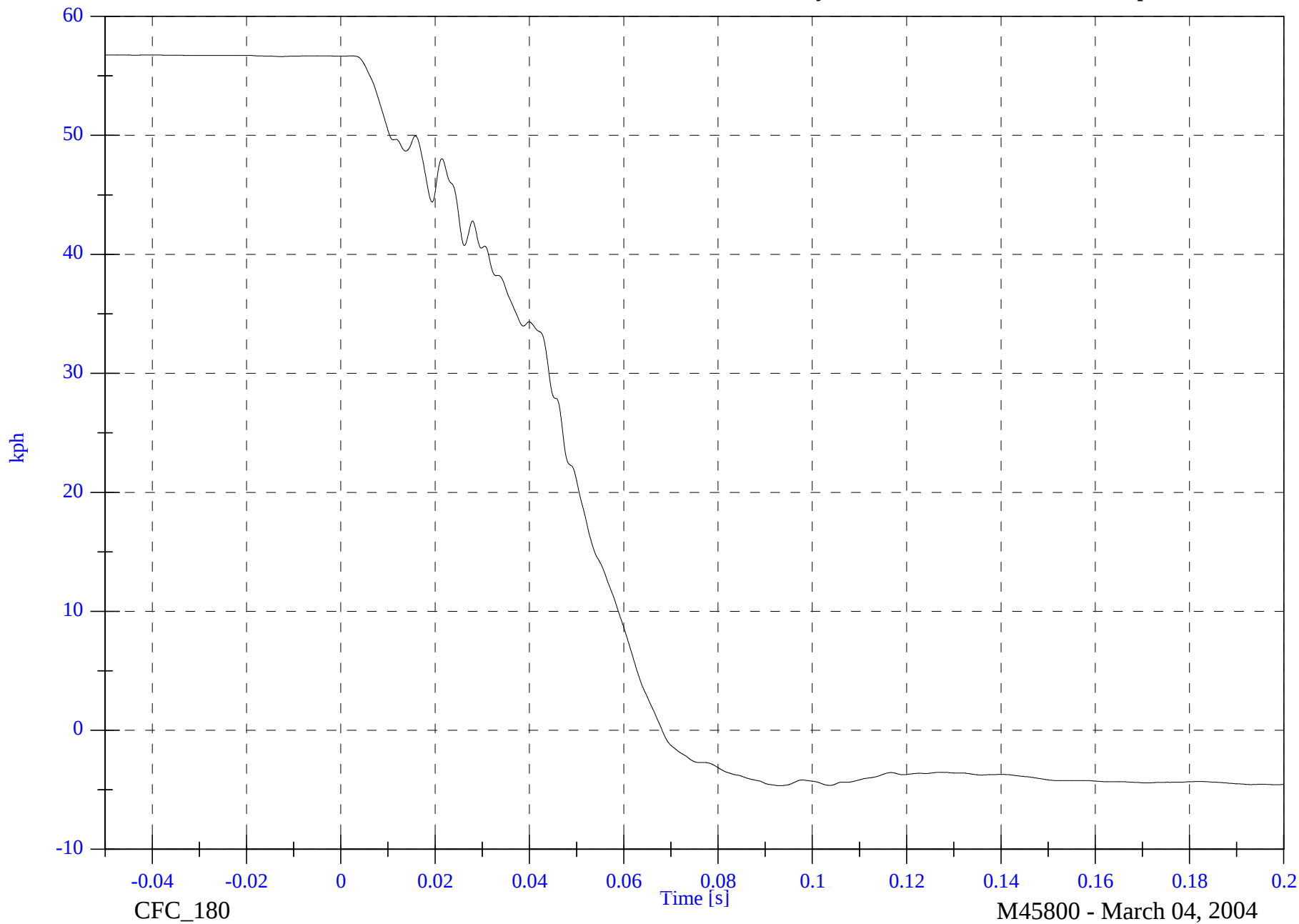
V1 Left Rear #1x Velocity

Max: 56.8 [kph] at -0.050 [s]

Min: -4.6 [kph] at 0.093 [s]

B-119

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

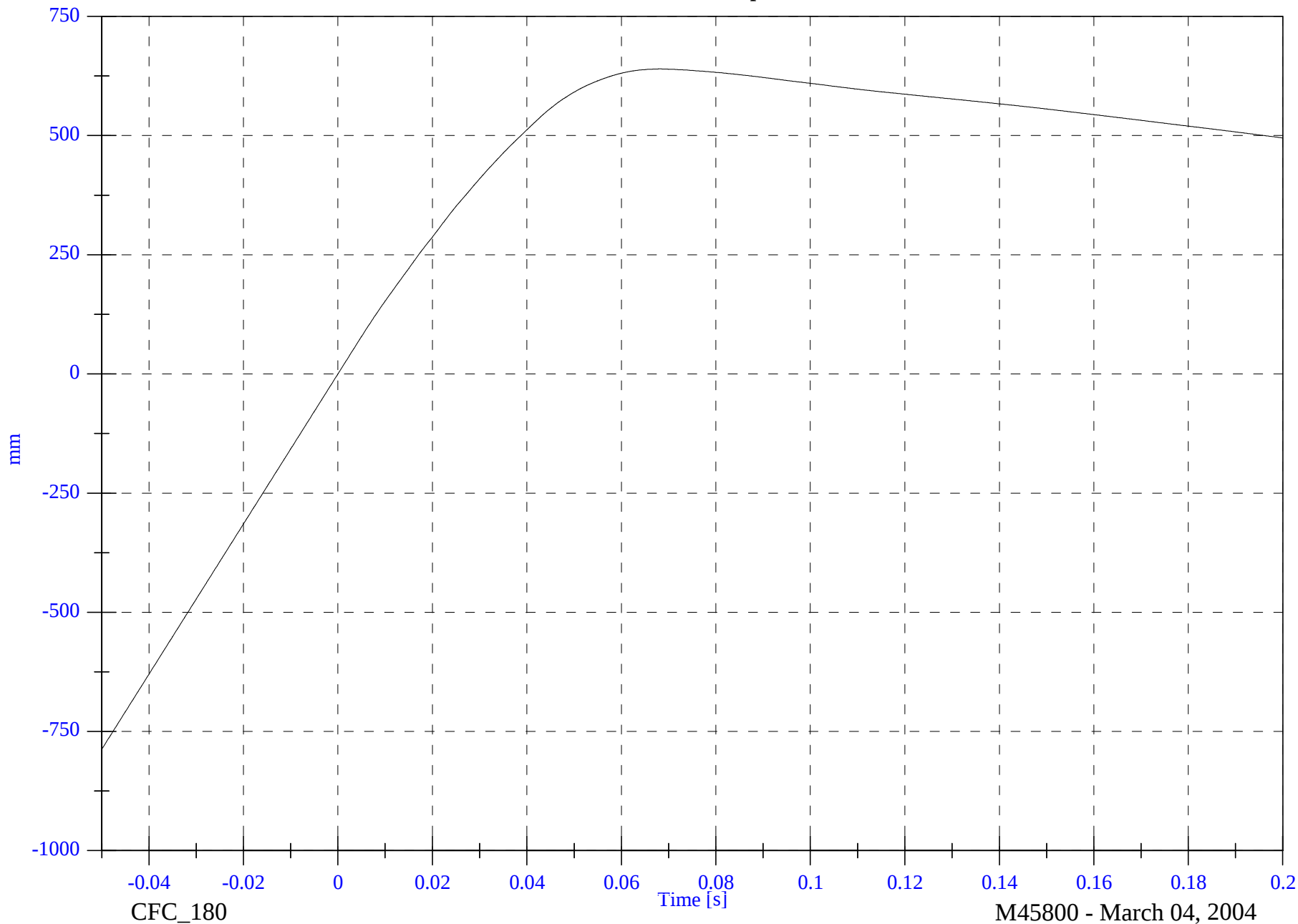
V1 Left Rear #1x Displacement

Max: 639.6 [mm] at 0.068 [s]

Min: -787.5 [mm] at -0.050 [s]

B-120

8642-NCAP-46



CFC_180

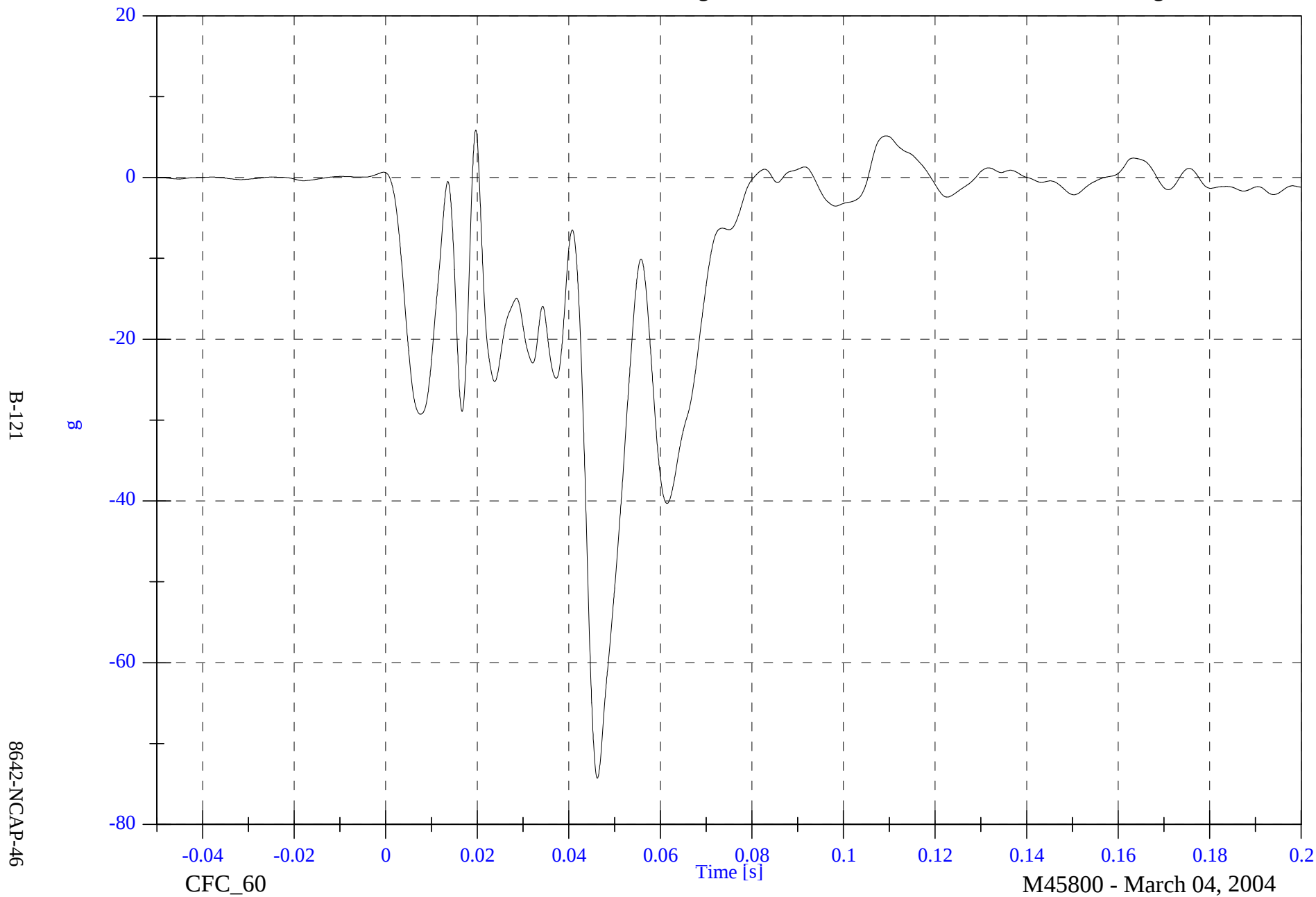
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1 Right Rear #2x

Max: 5.9 [g] at 0.020 [s]

Min: -74.3 [g] at 0.046 [s]

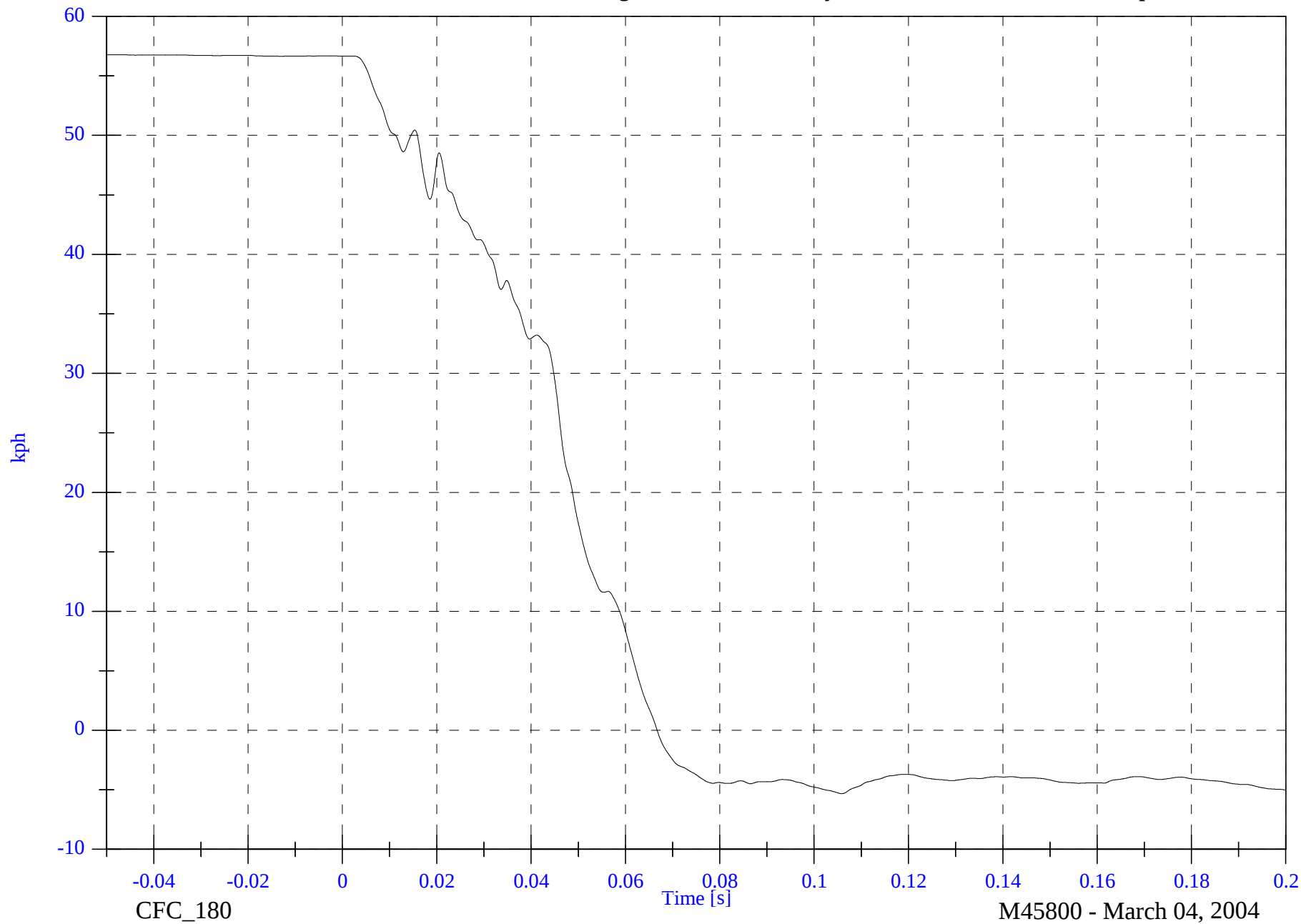


2004 NCAP Test 10 - 2004 VW Touareg

V1 Right Rear #2x Velocity

Max: 56.8 [kph] at -0.050 [s]

Min: -5.3 [kph] at 0.106 [s]



B-122

8642-NCAP-46

CFC_180

Time [s]

M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

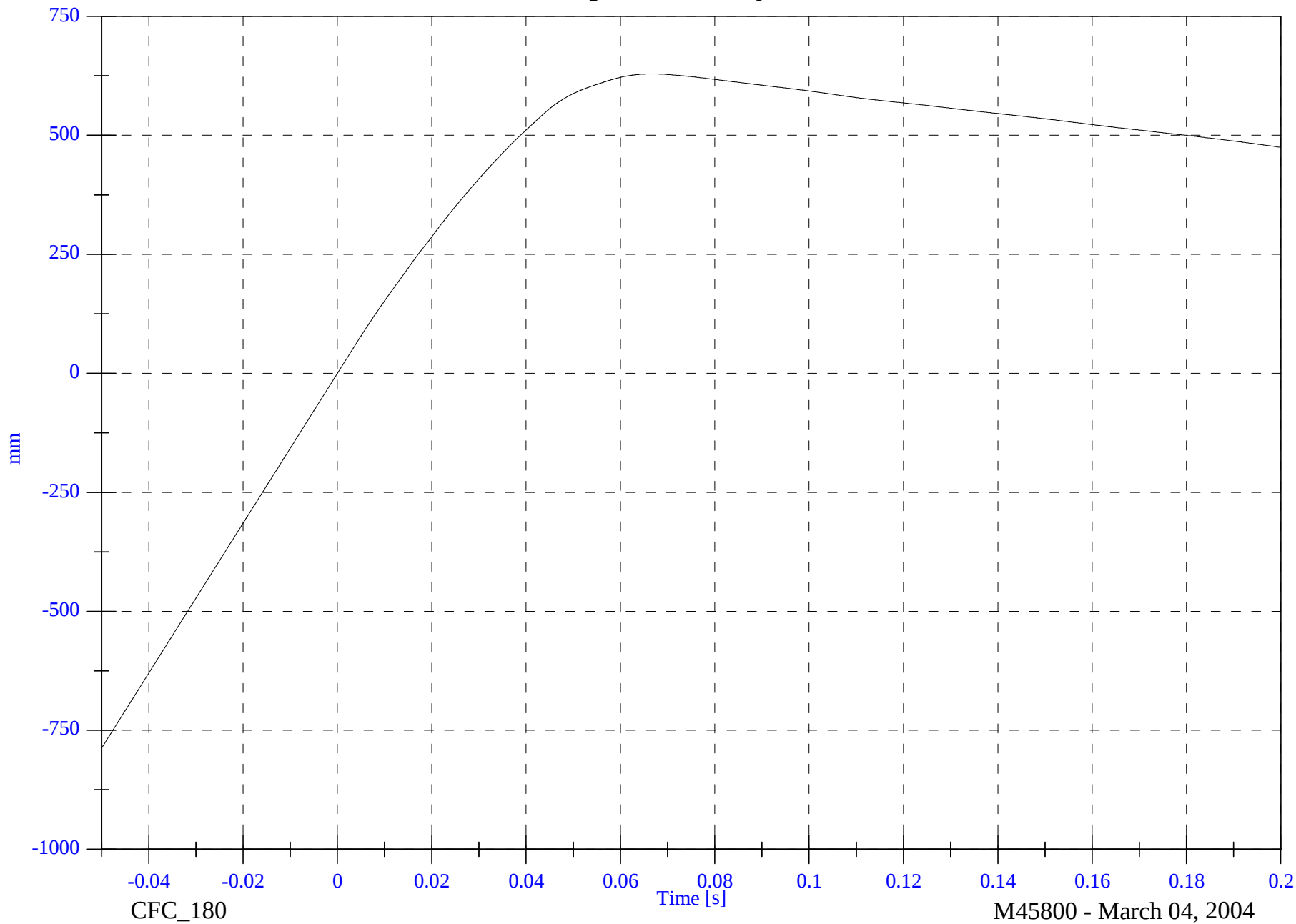
V1 Right Rear #2x Displacement

Max: 629.0 [mm] at 0.067 [s]

Min: -787.5 [mm] at -0.050 [s]

B-123

8642-NCAP-46



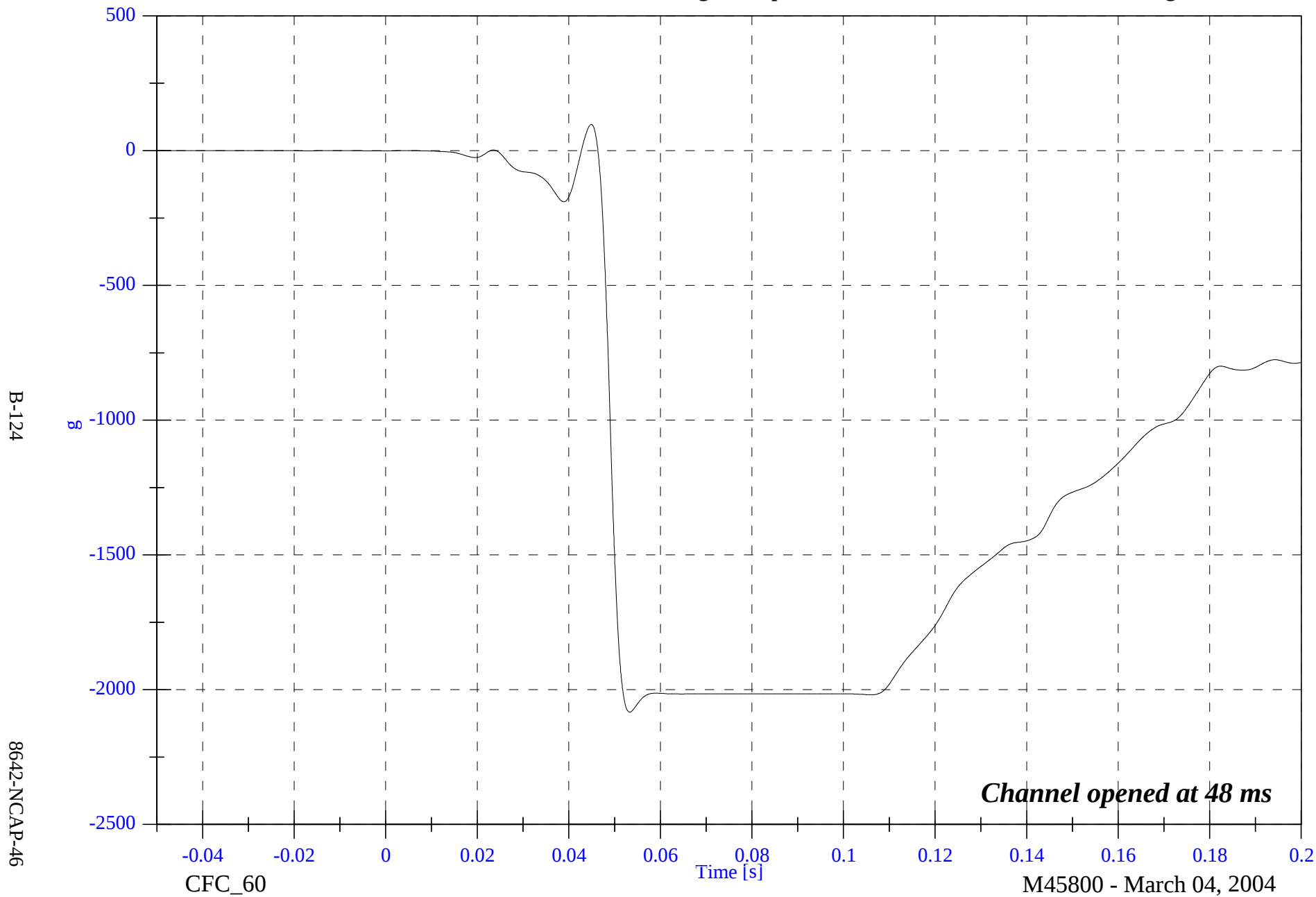
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1 Engine Top #3x

Max: 97.0 [g] at 0.045 [s]

Min: -2083.0 [g] at 0.053 [s]

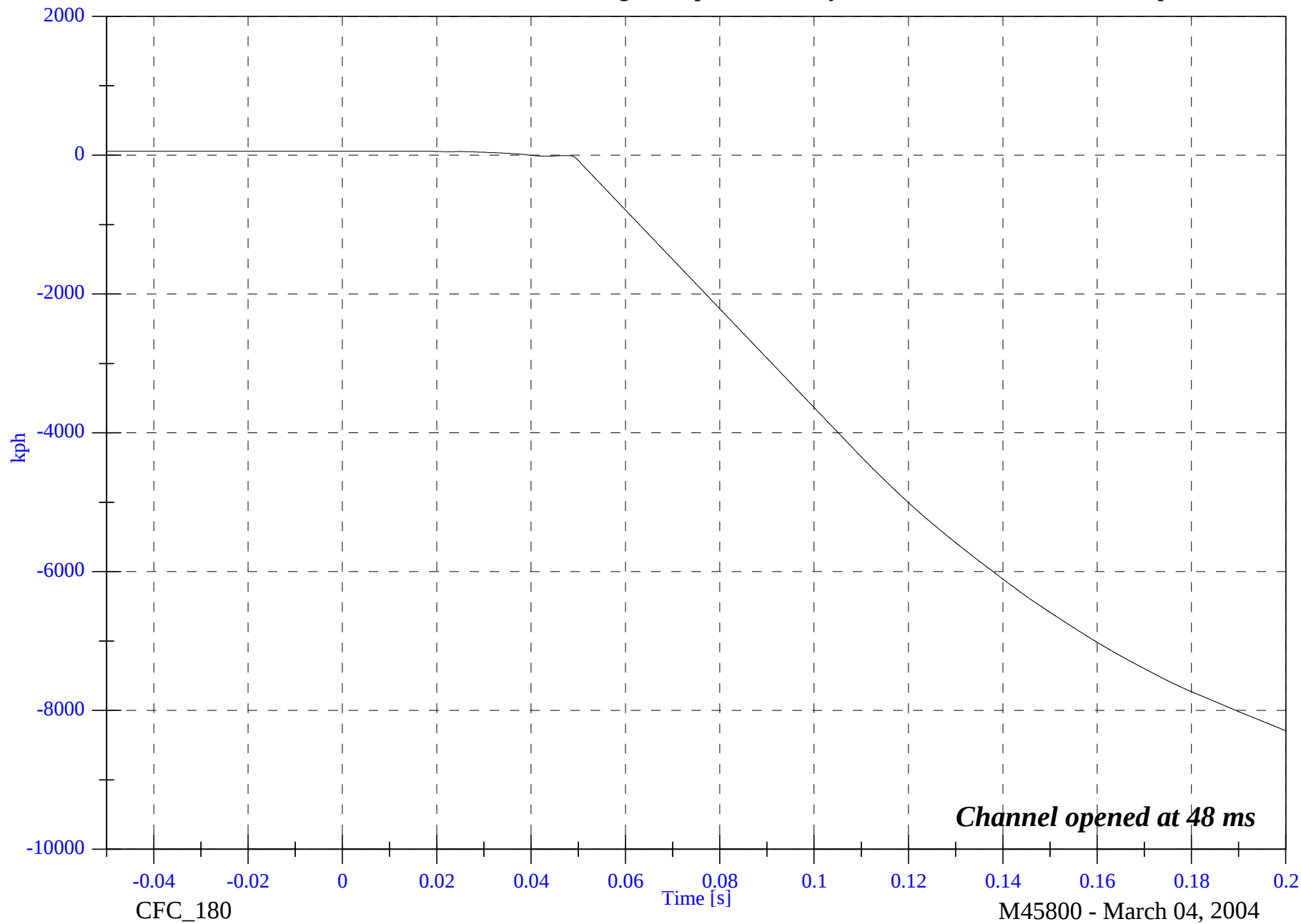


2004 NCAP Test 10 - 2004 VW Touareg

V1 Engine Top #3x Velocity

Max: 56.7 [kph] at -0.021 [s]

Min: -8291.7 [kph] at 0.200 [s]



B-125

8642-NCAP-46

CFC_180

Time [s]

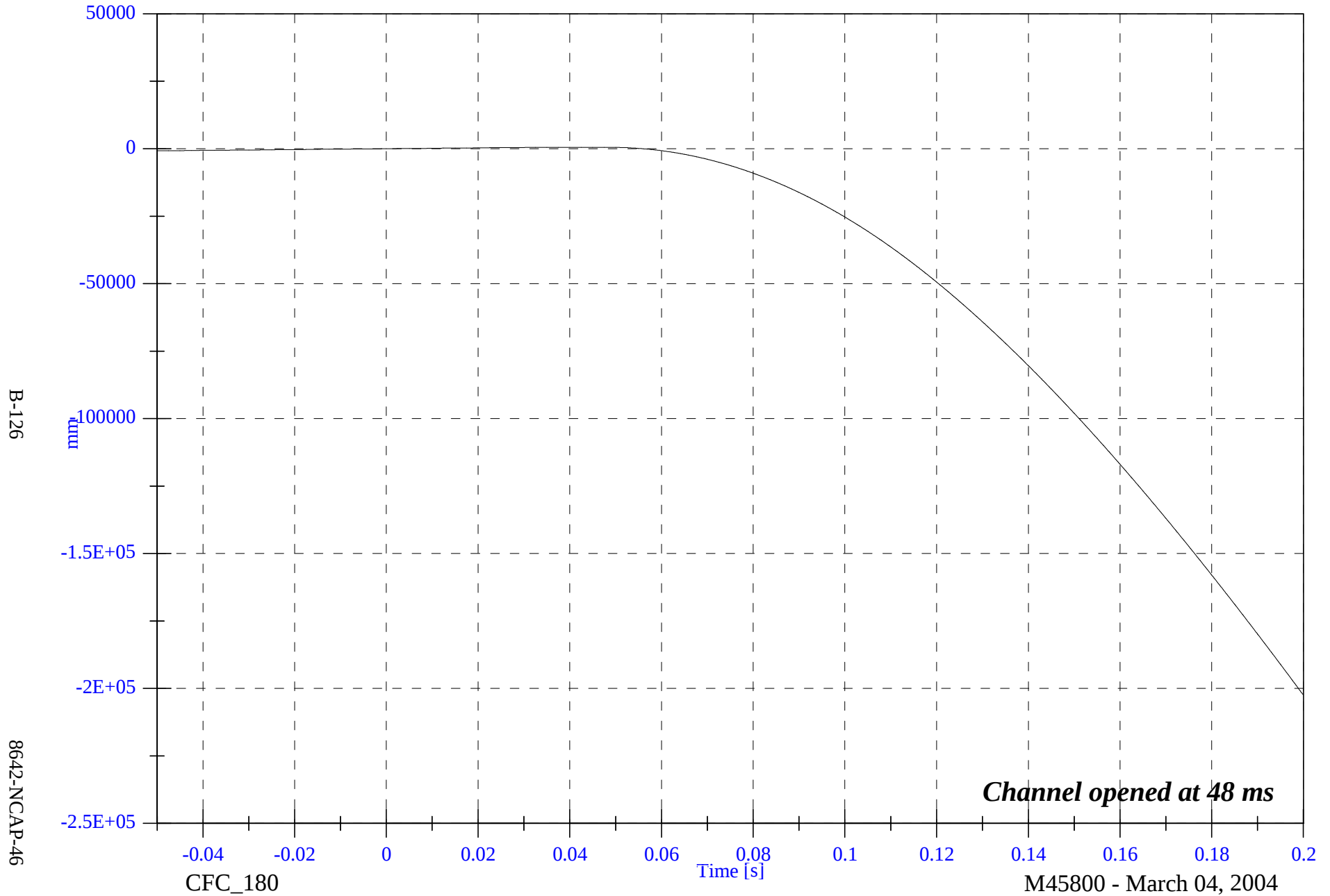
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1 Engine Top #3x Displacement

Max: 515.7 [mm] at 0.040 [s]

Min: -202397.0 [mm] at 0.200 [s]



2004 NCAP Test 10 - 2004 VW Touareg

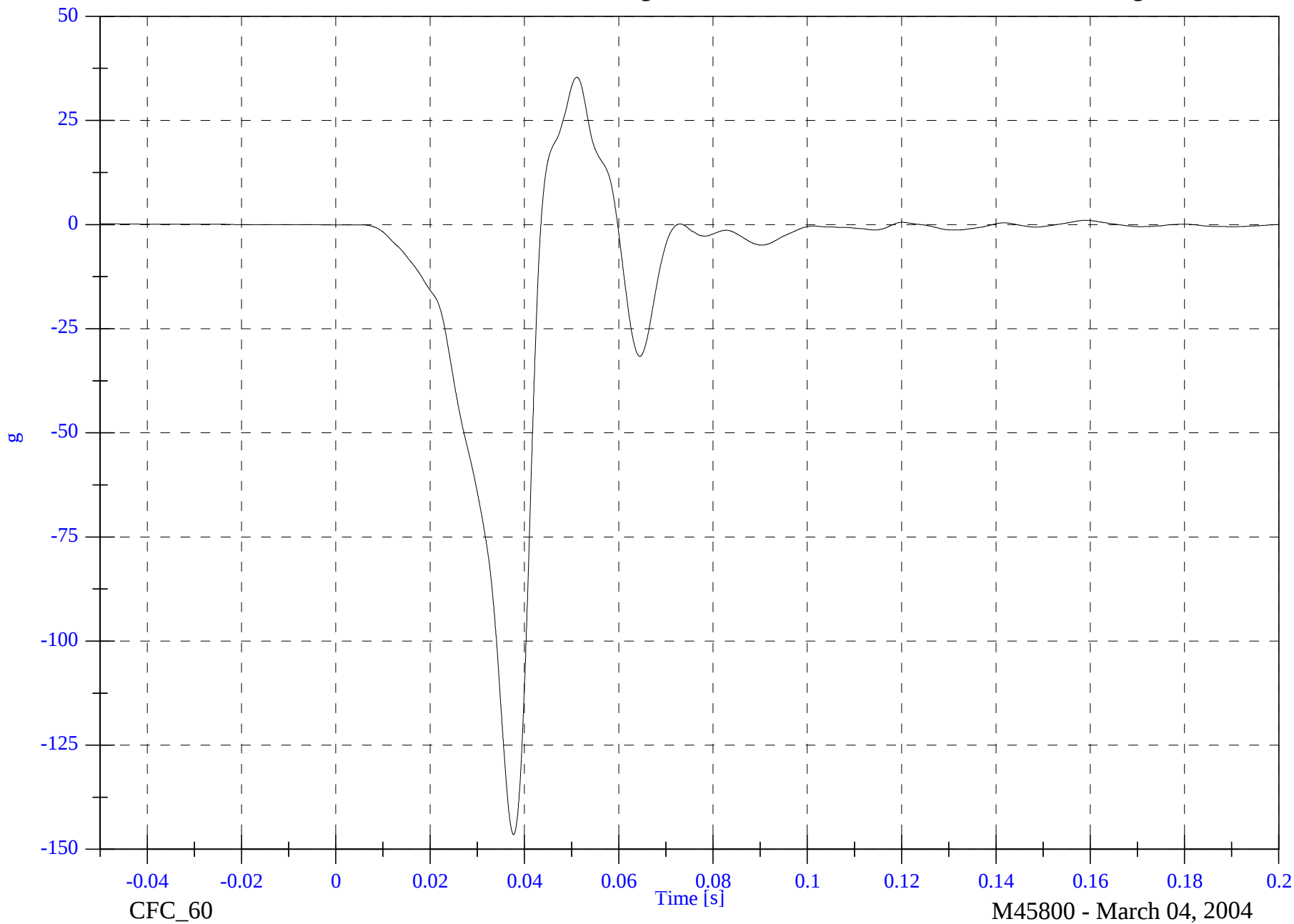
V1 Engine Bottom #4x

Max: 35.4 [g] at 0.051 [s]

Min: -146.5 [g] at 0.038 [s]

B-127

8642-NCAP-46

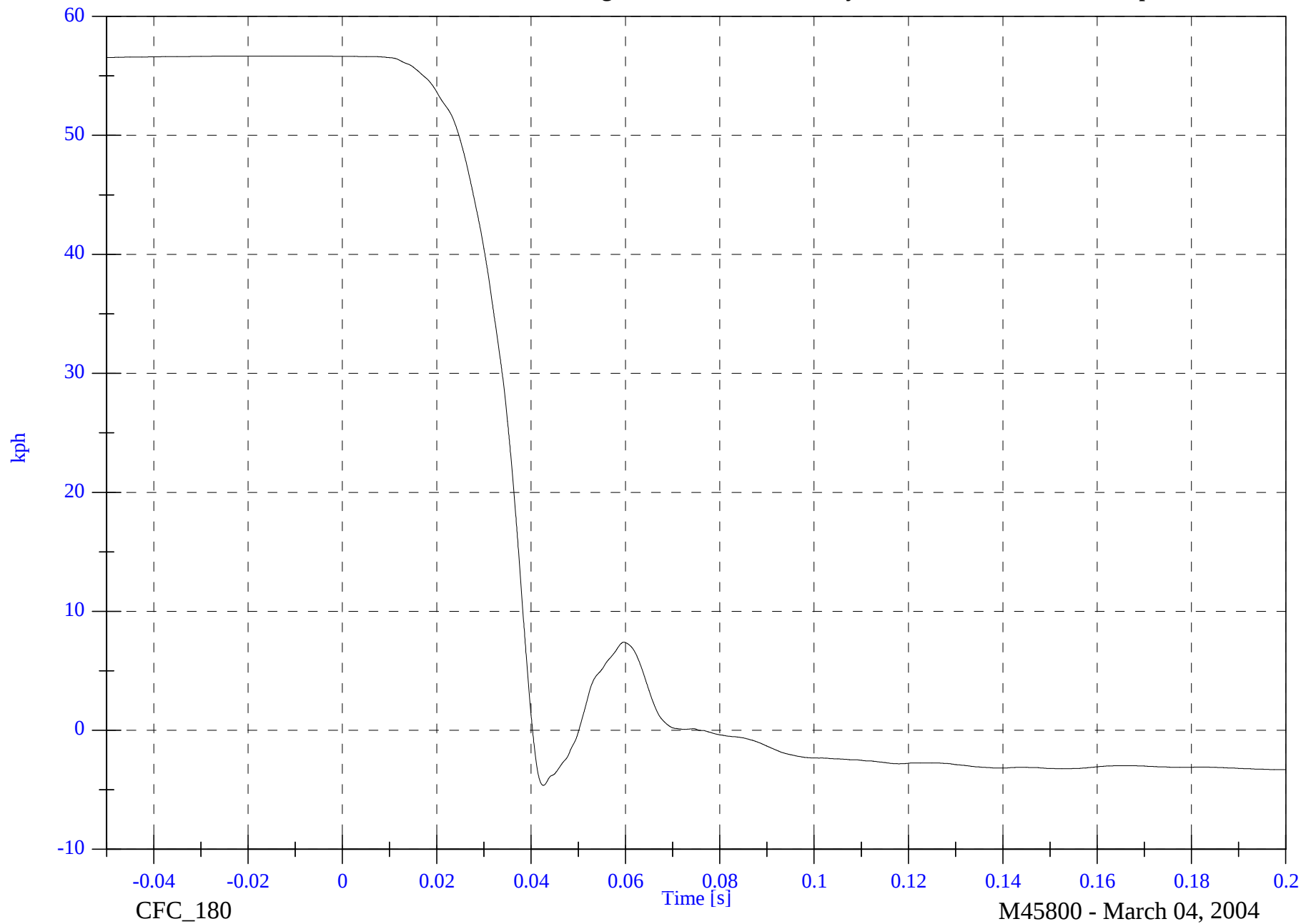


2004 NCAP Test 10 - 2004 VW Touareg

V1 Engine Bottom #4x Velocity

Max: 56.7 [kph] at -0.021 [s]

Min: -4.6 [kph] at 0.043 [s]



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8642-NCAP-46

CFC_180

Time [s]

M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

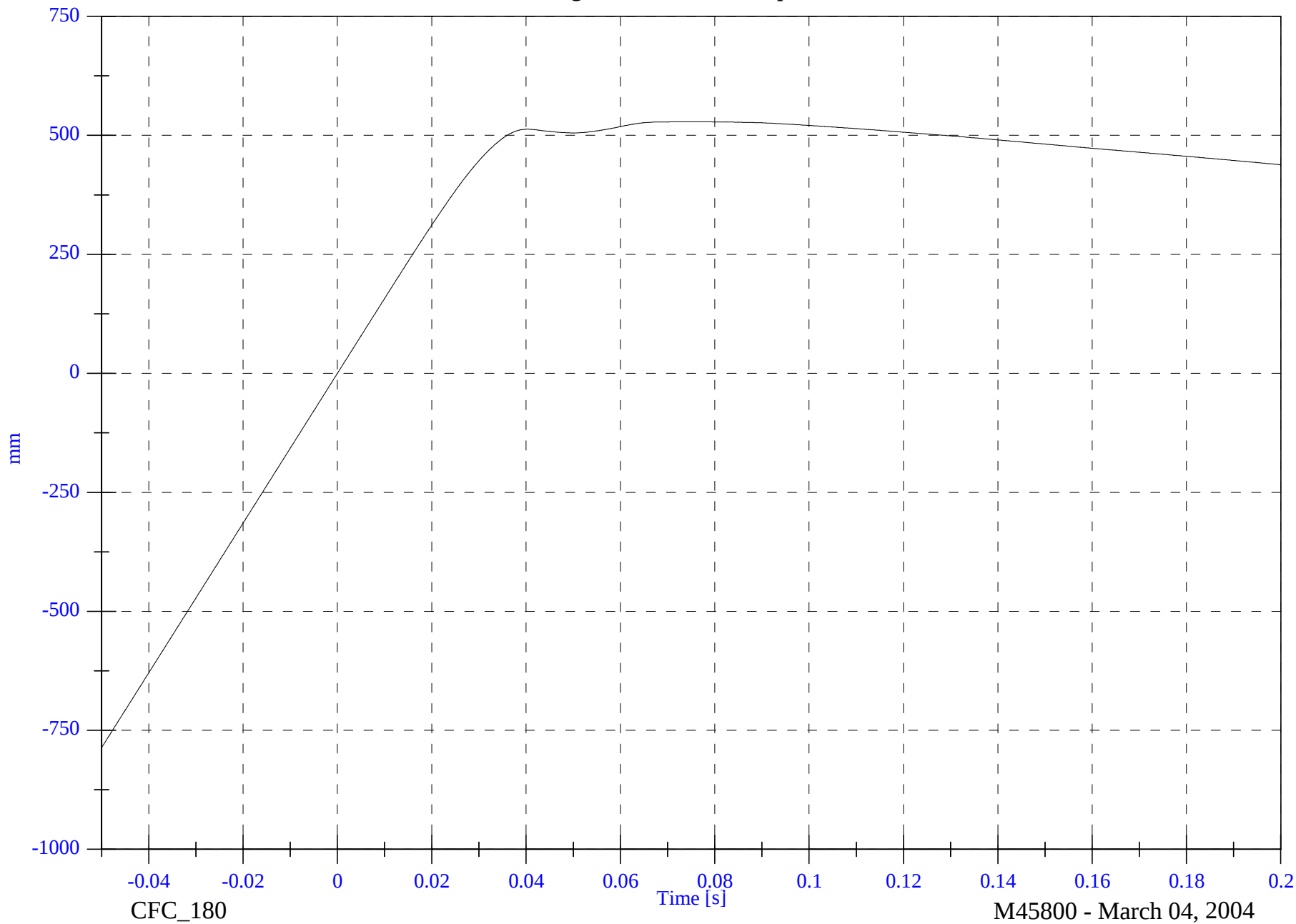
V1 Engine Bottom #4x Displacement

Max: 528.4 [mm] at 0.076 [s]

Min: -786.5 [mm] at -0.050 [s]

B-129

8642-NCAP-46



CFC_180

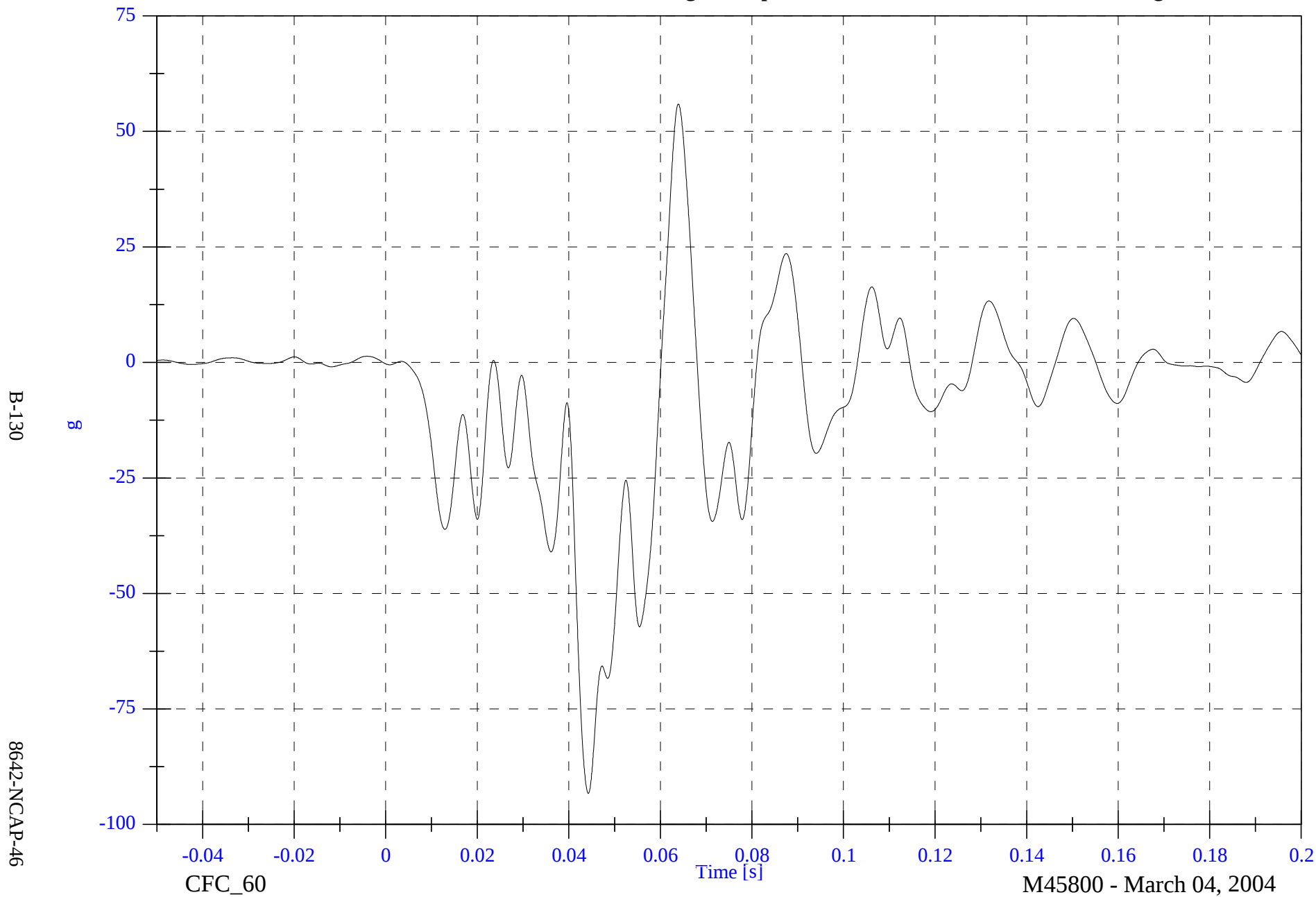
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1 Right Caliper #5x

Max: 55.9 [g] at 0.064 [s]

Min: -93.3 [g] at 0.044 [s]

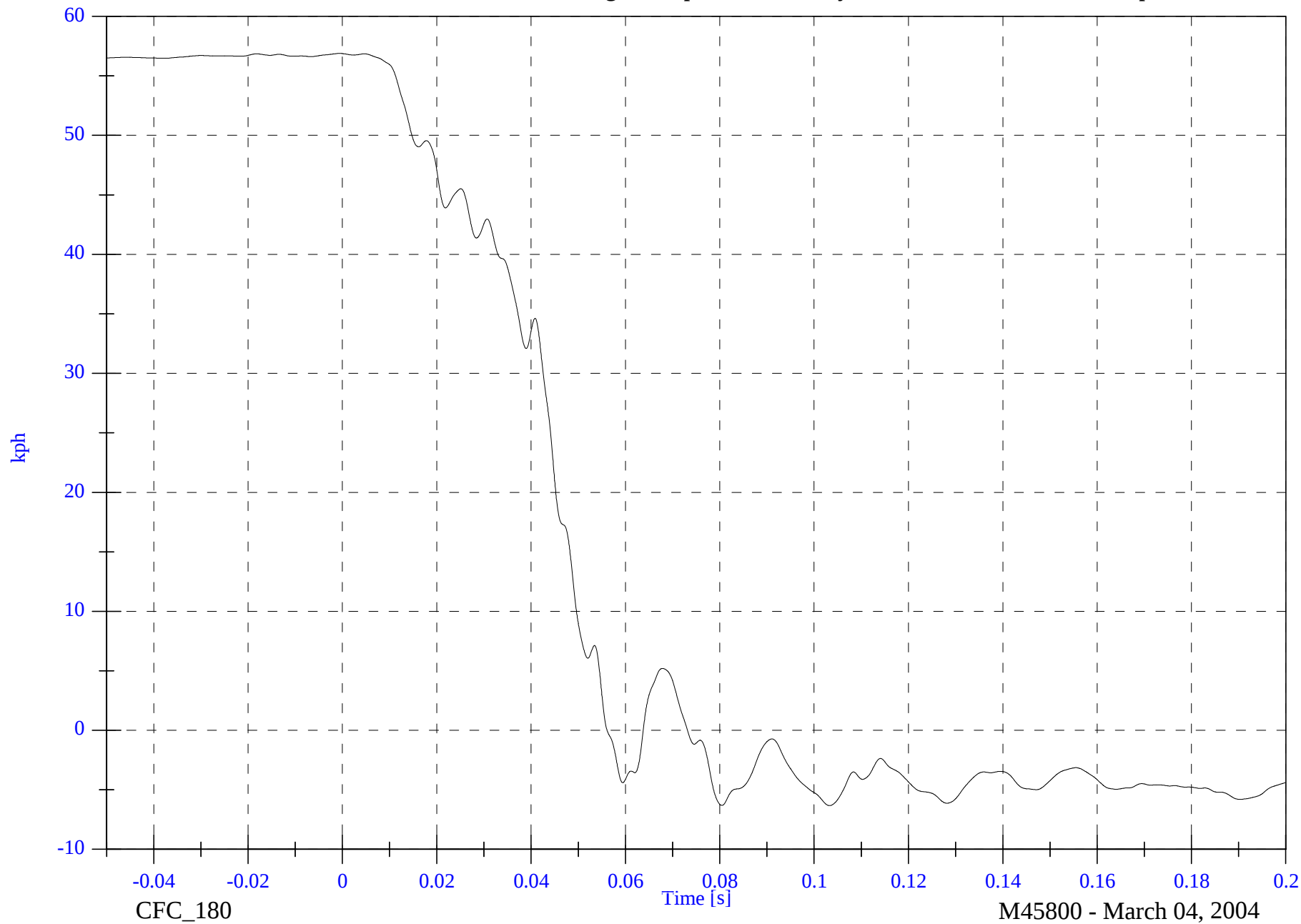


2004 NCAP Test 10 - 2004 VW Touareg

V1 Right Caliper #5x Velocity

Max: 56.9 [kph] at -0.001 [s]

Min: -6.3 [kph] at 0.103 [s]



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8642-NCAP-46

CFC_180

Time [s]

M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

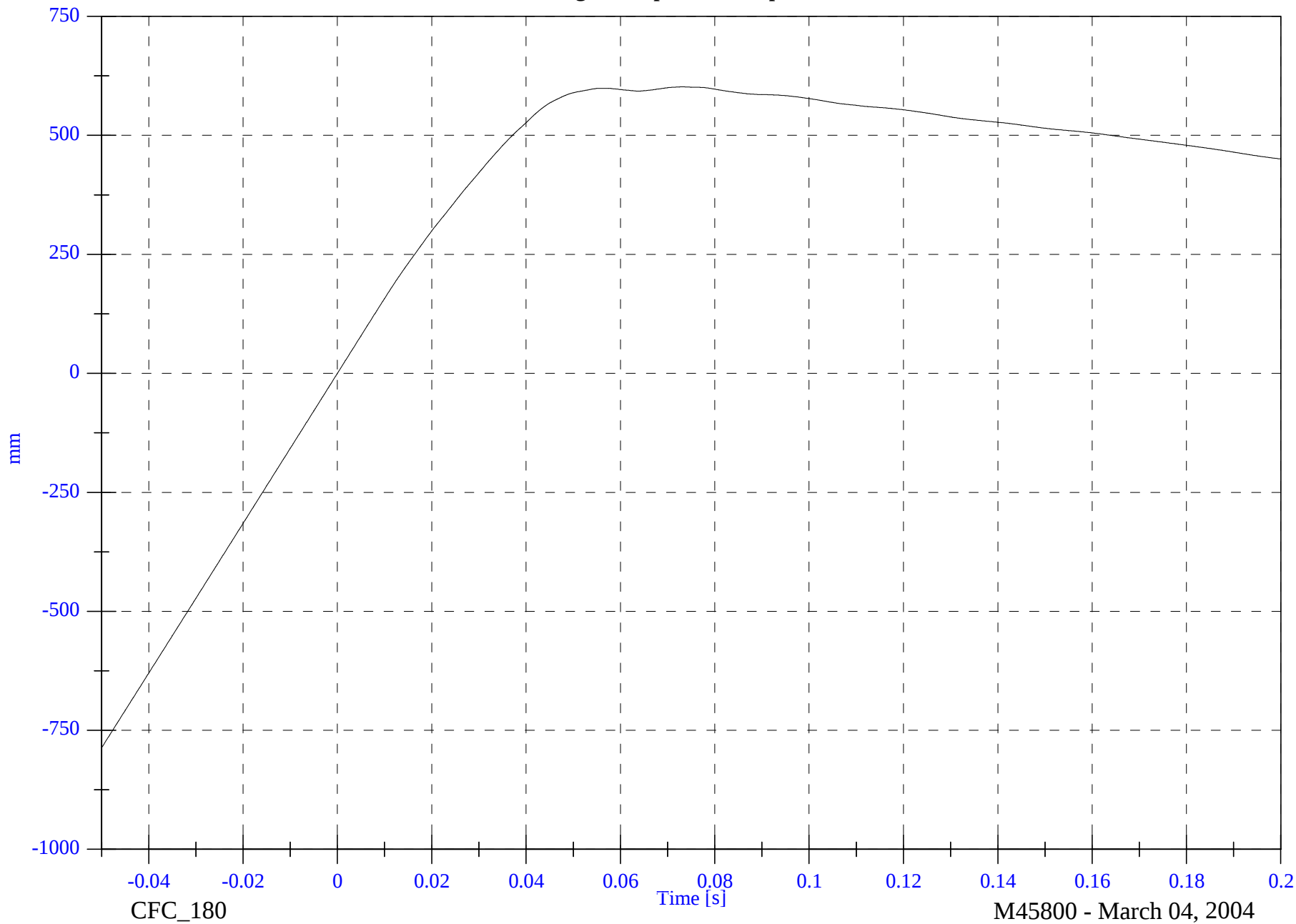
V1 Right Caliper #5x Displacement

Max: 601.7 [mm] at 0.073 [s]

Min: -786.8 [mm] at -0.050 [s]

B-132

8642-NCAP-46



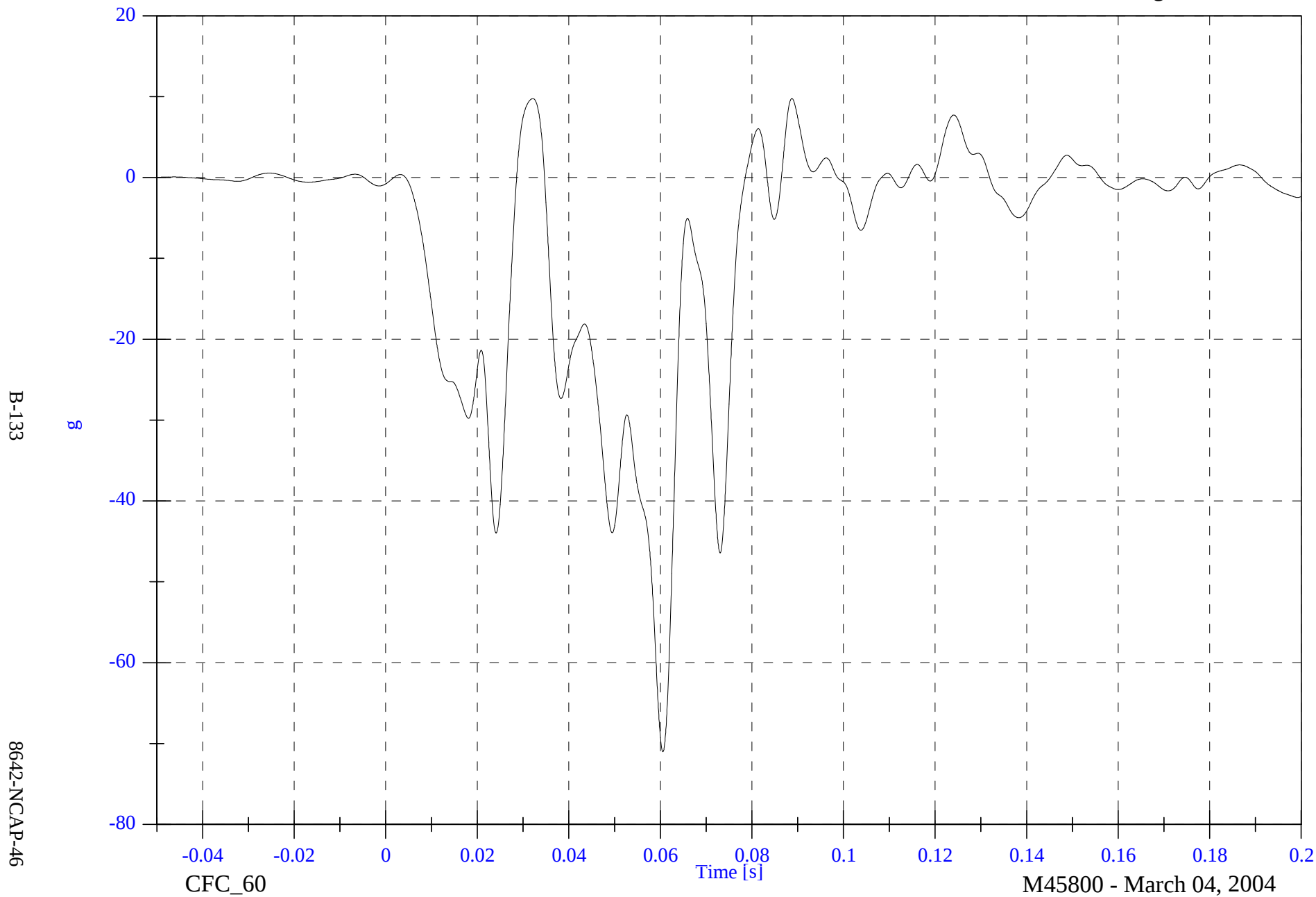
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1 Instrument Panel #6x

Max: 9.8 [g] at 0.089 [s]

Min: -71.0 [g] at 0.061 [s]

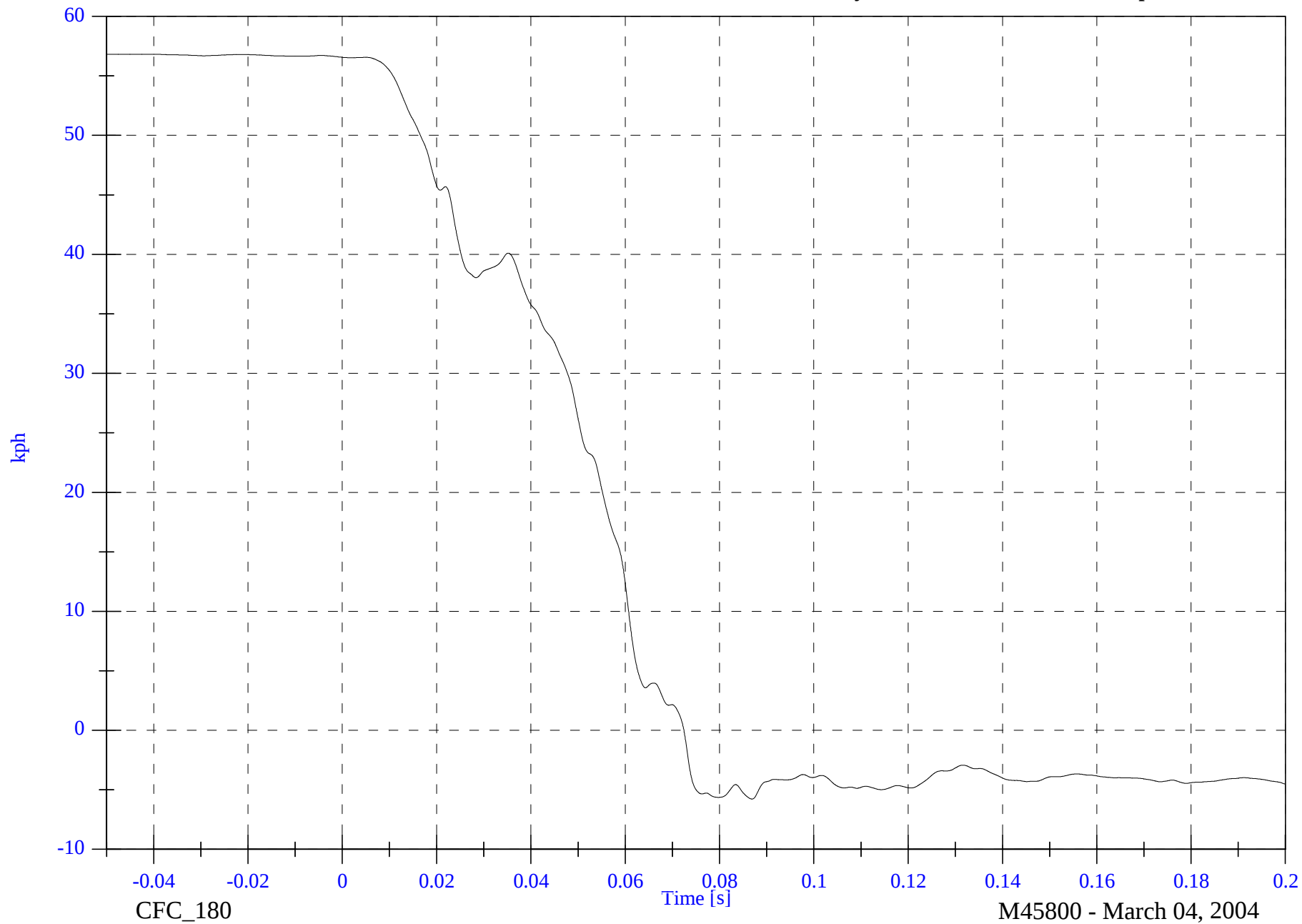


2004 NCAP Test 10 - 2004 VW Touareg

V1 Instrument Panel #6x Velocity

Max: 56.8 [kph] at -0.044 [s]

Min: -5.8 [kph] at 0.087 [s]



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8642-NCAP-46

CFC_180

M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

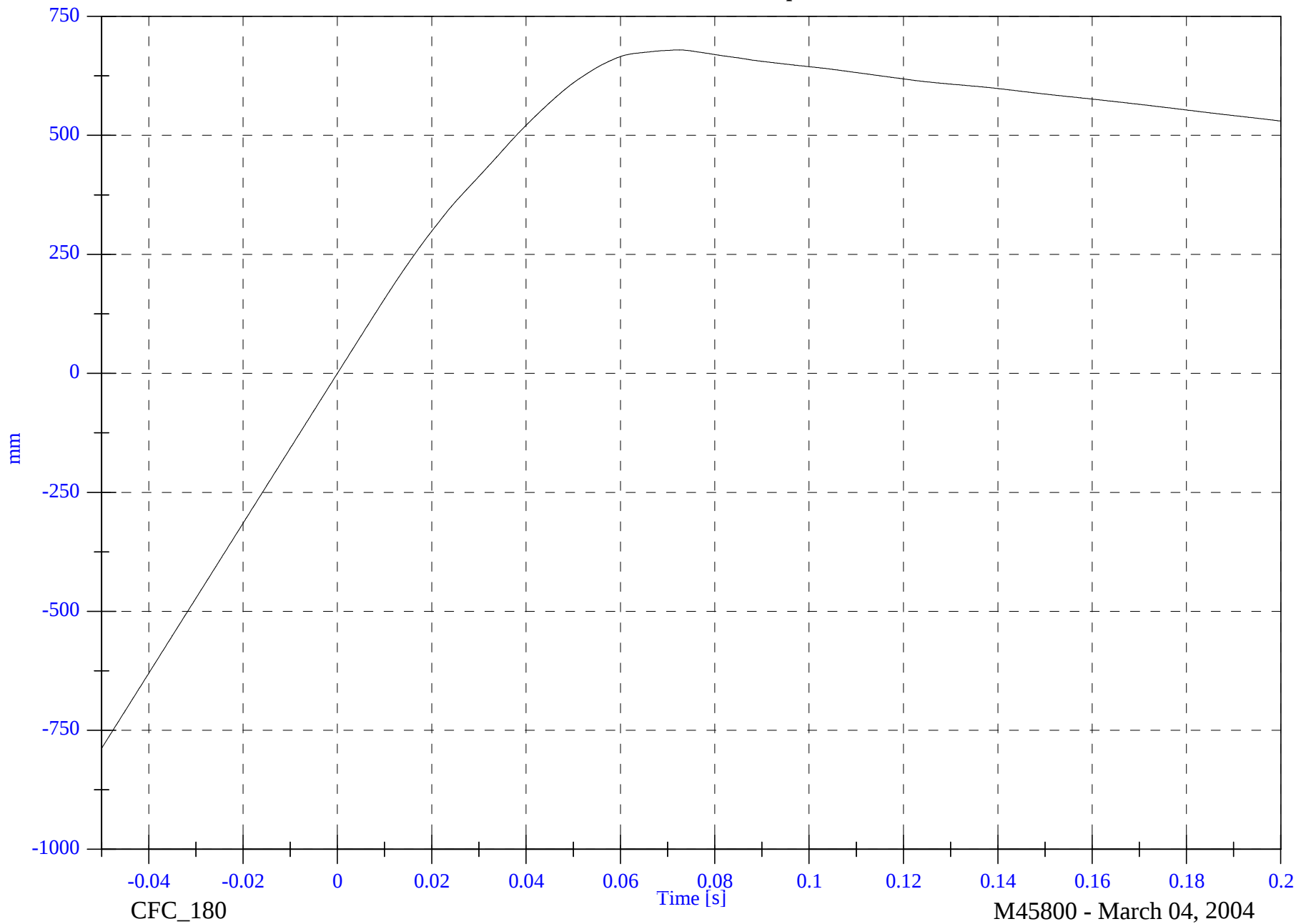
V1 Instrument Panel #6x Displacement

Max: 679.4 [mm] at 0.072 [s]

Min: -788.0 [mm] at -0.050 [s]

B-135

8642-NCAP-46



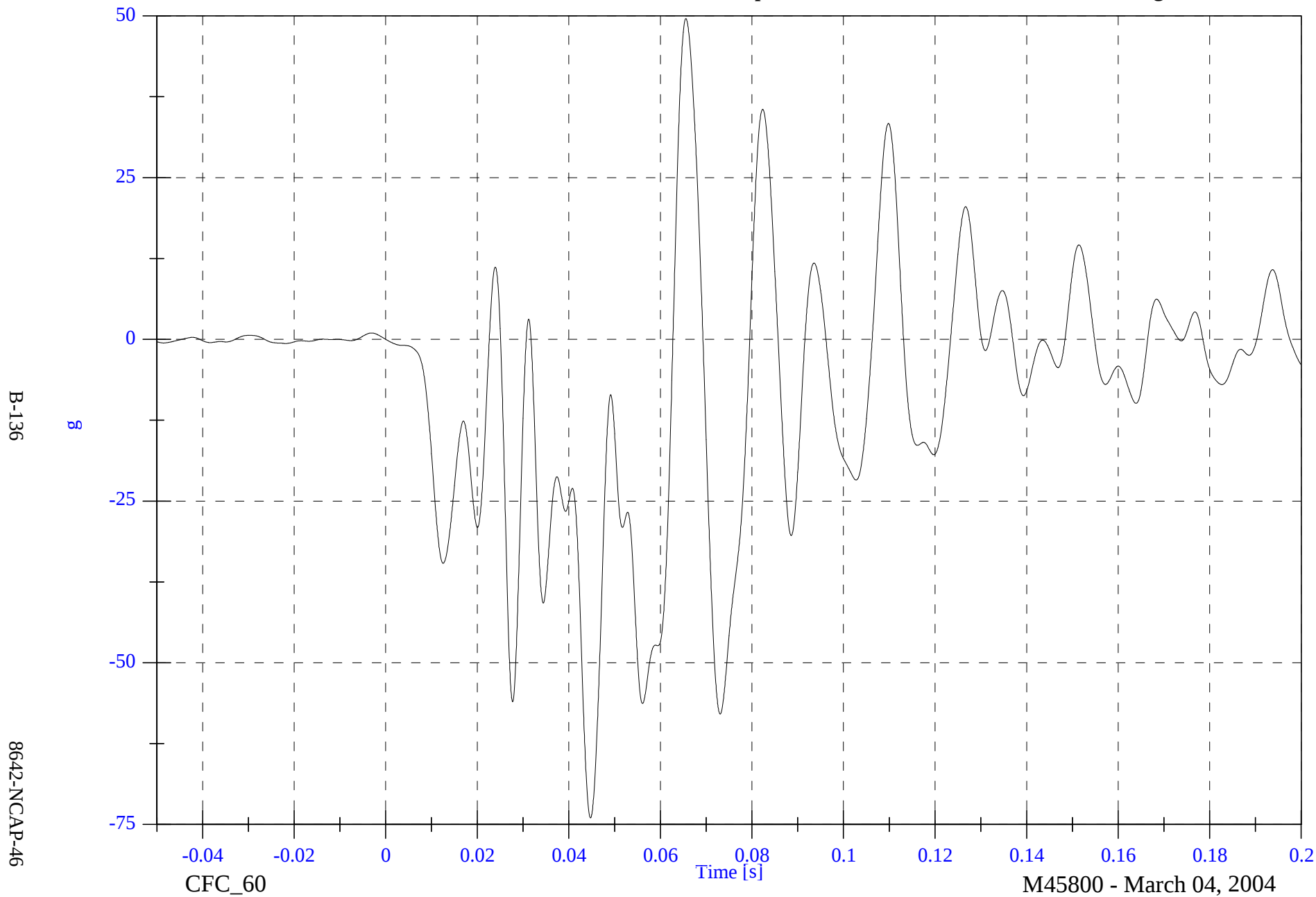
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1 Left Caliper #7x

Max: 49.6 [g] at 0.066 [s]

Min: -74.0 [g] at 0.045 [s]



2004 NCAP Test 10 - 2004 VW Touareg

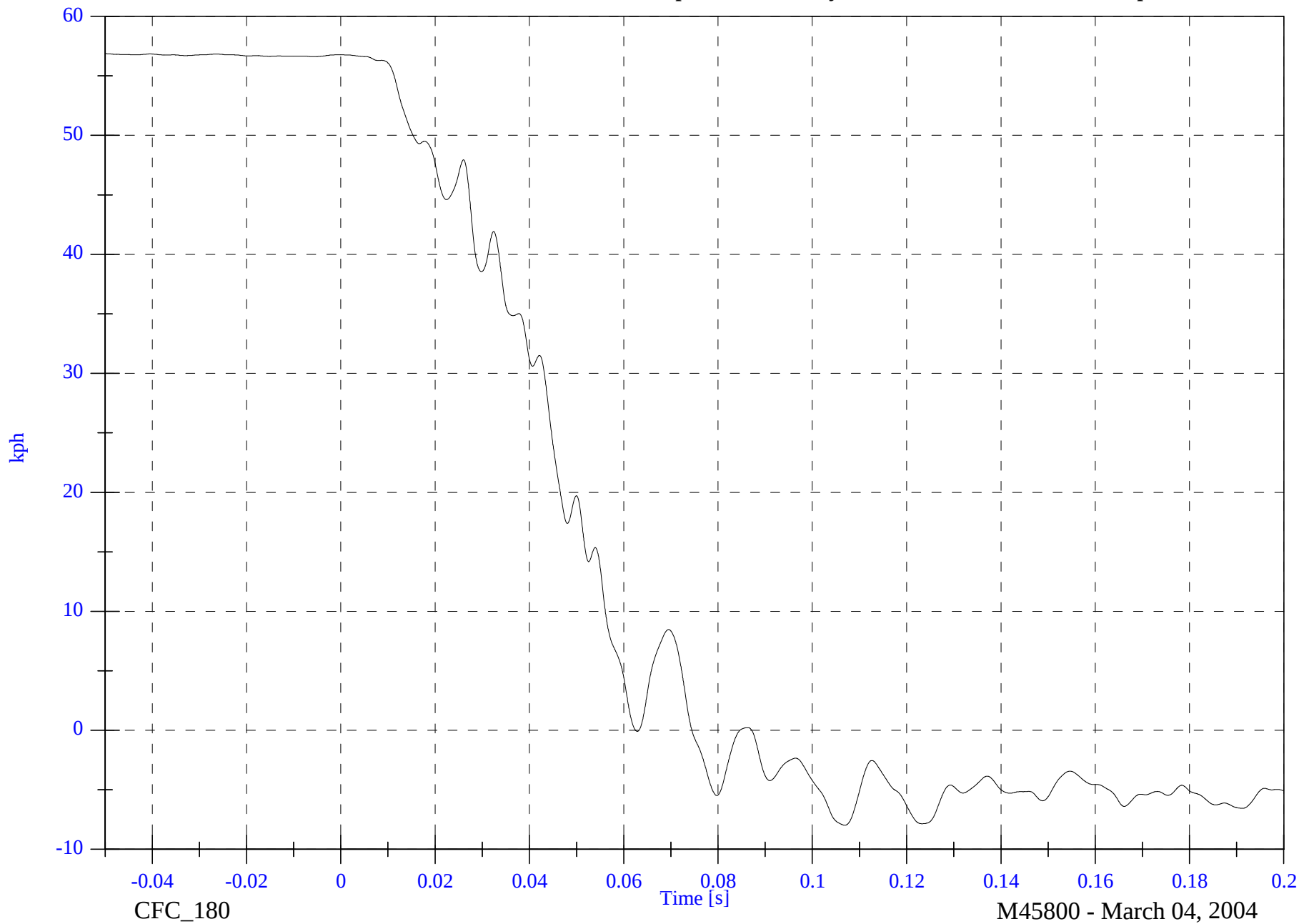
V1 Left Caliper #7x Velocity

Max: 56.9 [kph] at -0.050 [s]

Min: -8.0 [kph] at 0.107 [s]

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8642-NCAP-46

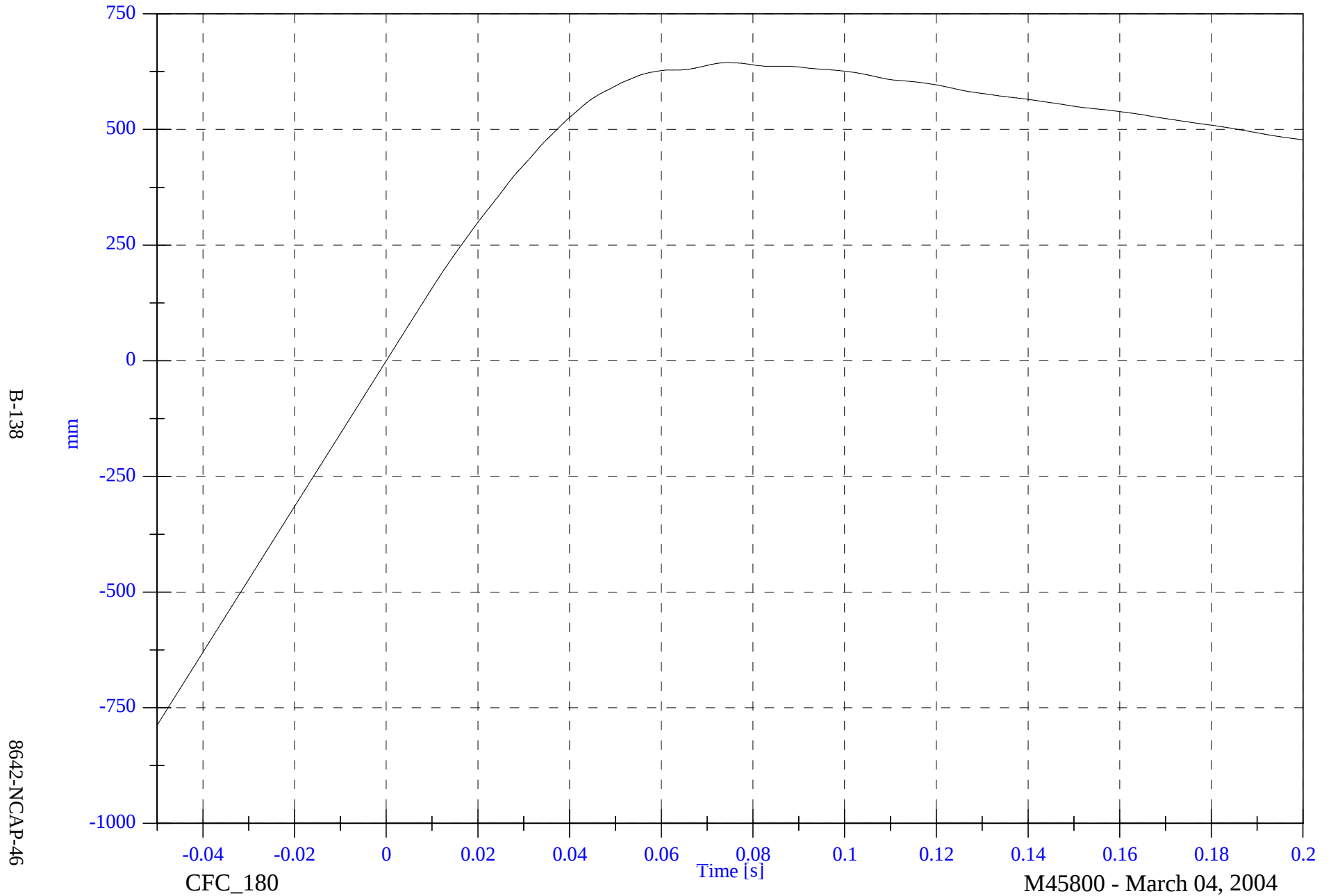


2004 NCAP Test 10 - 2004 VW Touareg

V1 Left Caliper #7x Displacement

Max: 644.3 [mm] at 0.074 [s]

Min: -788.0 [mm] at -0.050 [s]

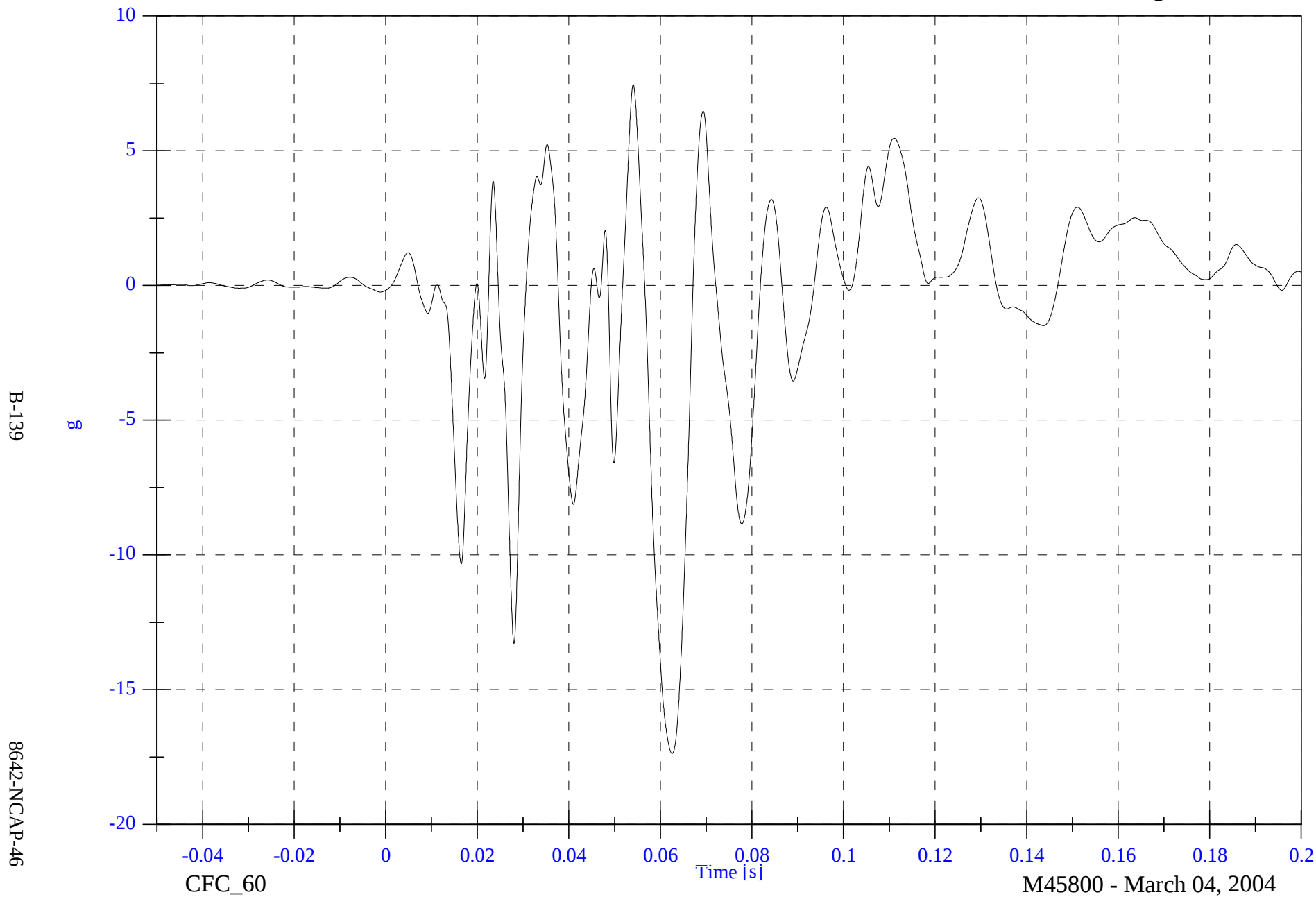


2004 NCAP Test 10 - 2004 VW Touareg

V1 Left Rear #8z

Max: 7.5 [g] at 0.054 [s]

Min: -17.4 [g] at 0.063 [s]

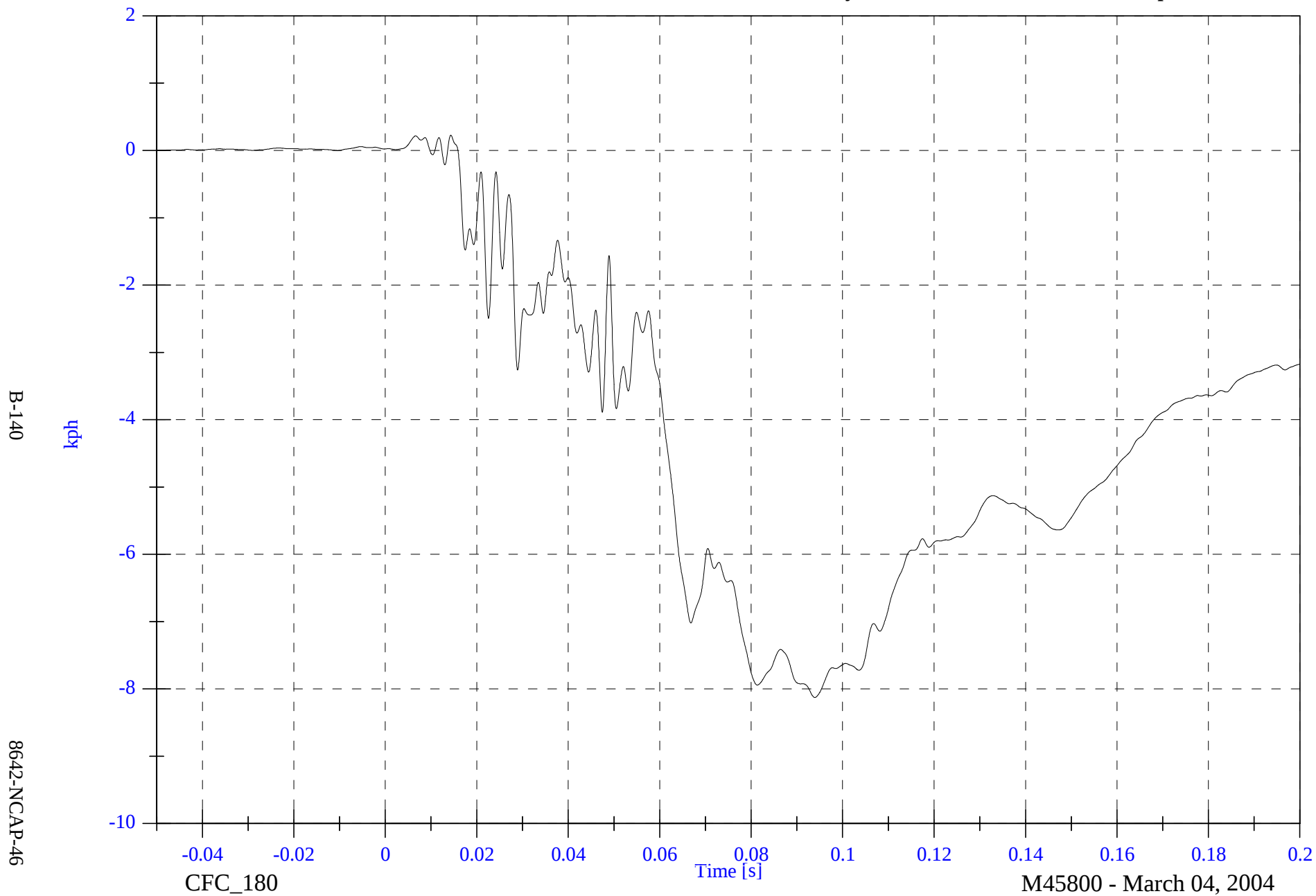


2004 NCAP Test 10 - 2004 VW Touareg

V1 Left Rear #8z Velocity

Max: 0.2 [kph] at 0.014 [s]

Min: -8.1 [kph] at 0.094 [s]



2004 NCAP Test 10 - 2004 VW Touareg

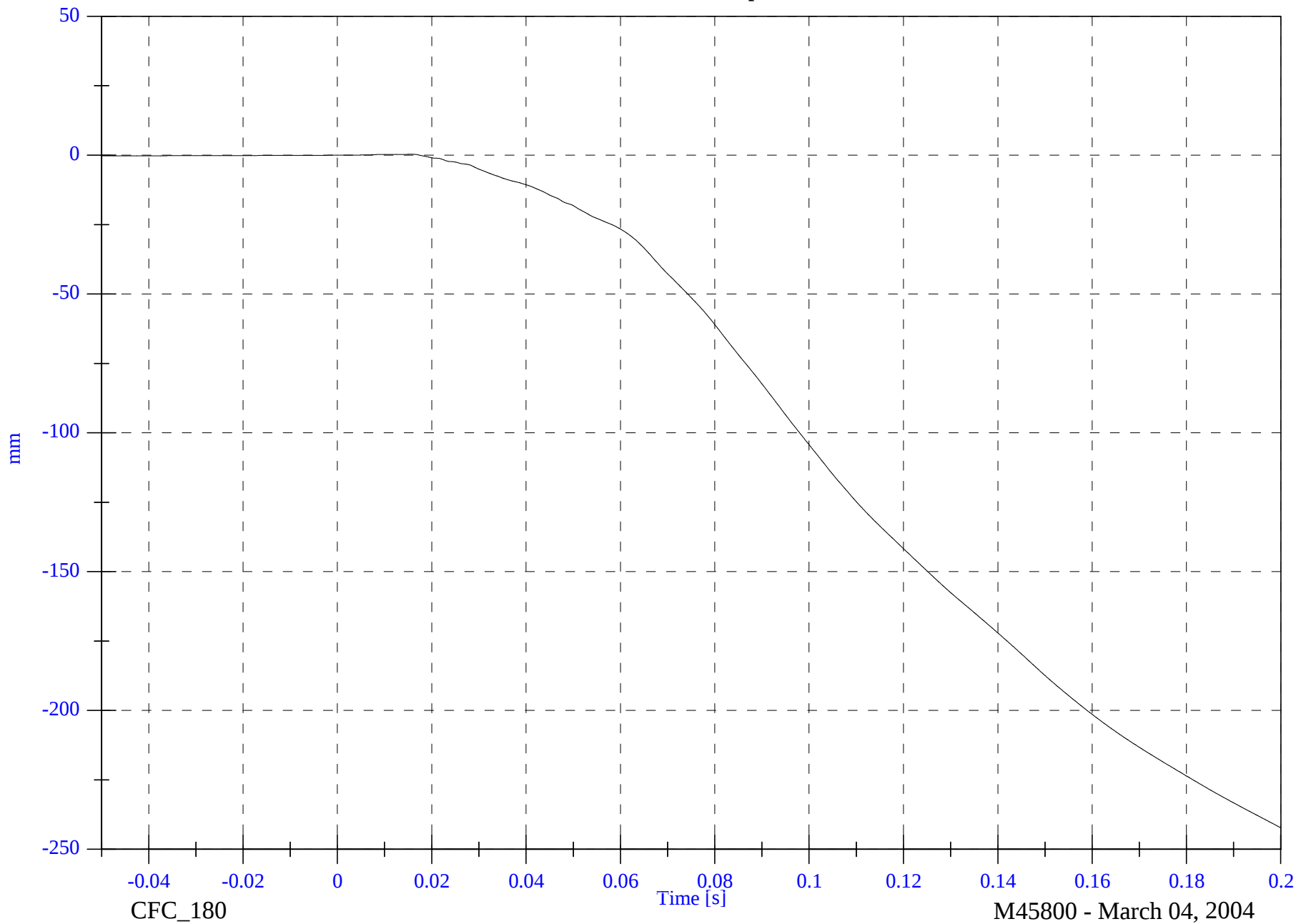
V1 Left Rear #8z Displacement

Max: 0.3 [mm] at 0.016 [s]

Min: -242.2 [mm] at 0.200 [s]

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8642-NCAP-46

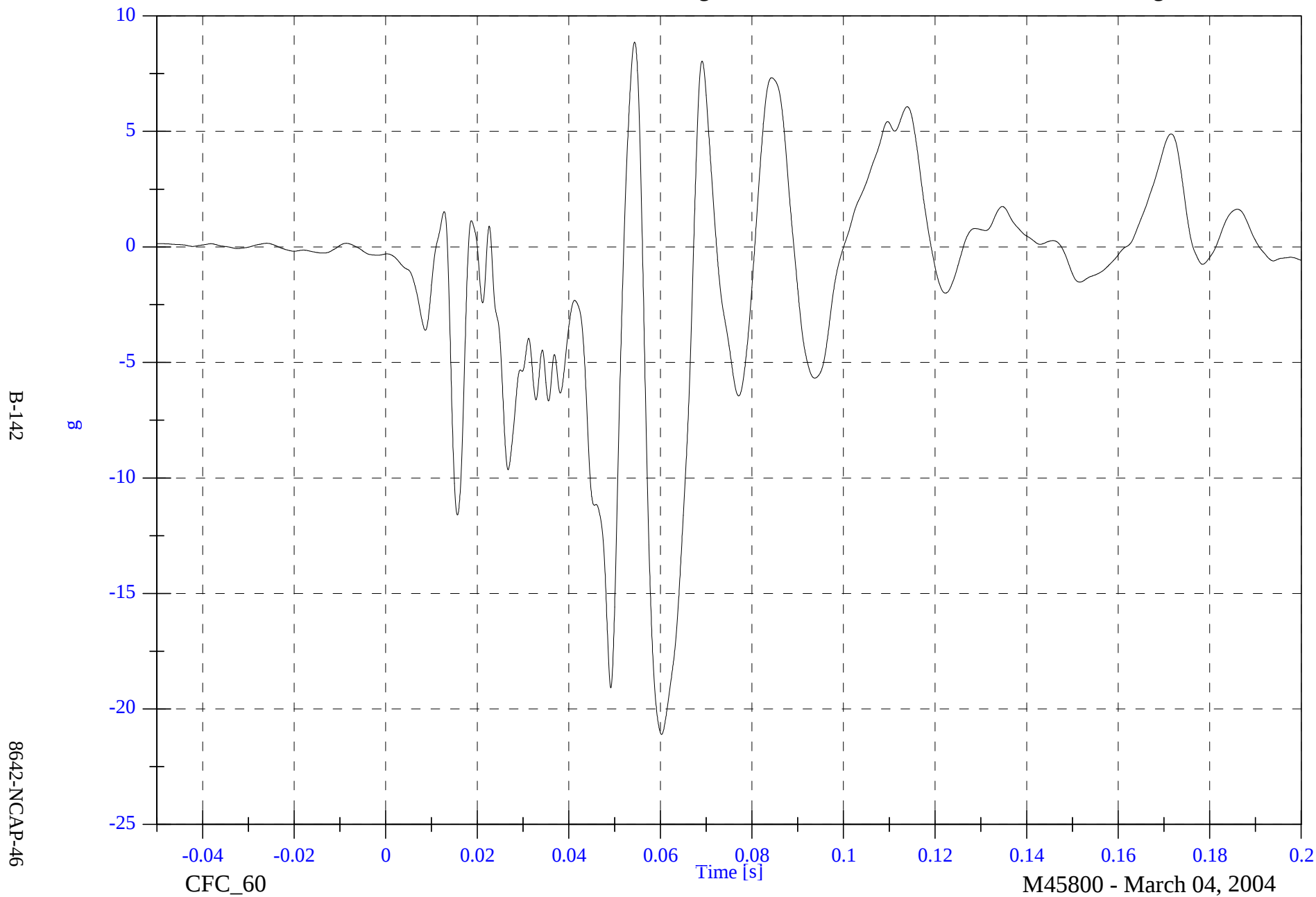


2004 NCAP Test 10 - 2004 VW Touareg

V1 Right Rear #9z

Max: 8.9 [g] at 0.054 [s]

Min: -21.1 [g] at 0.060 [s]

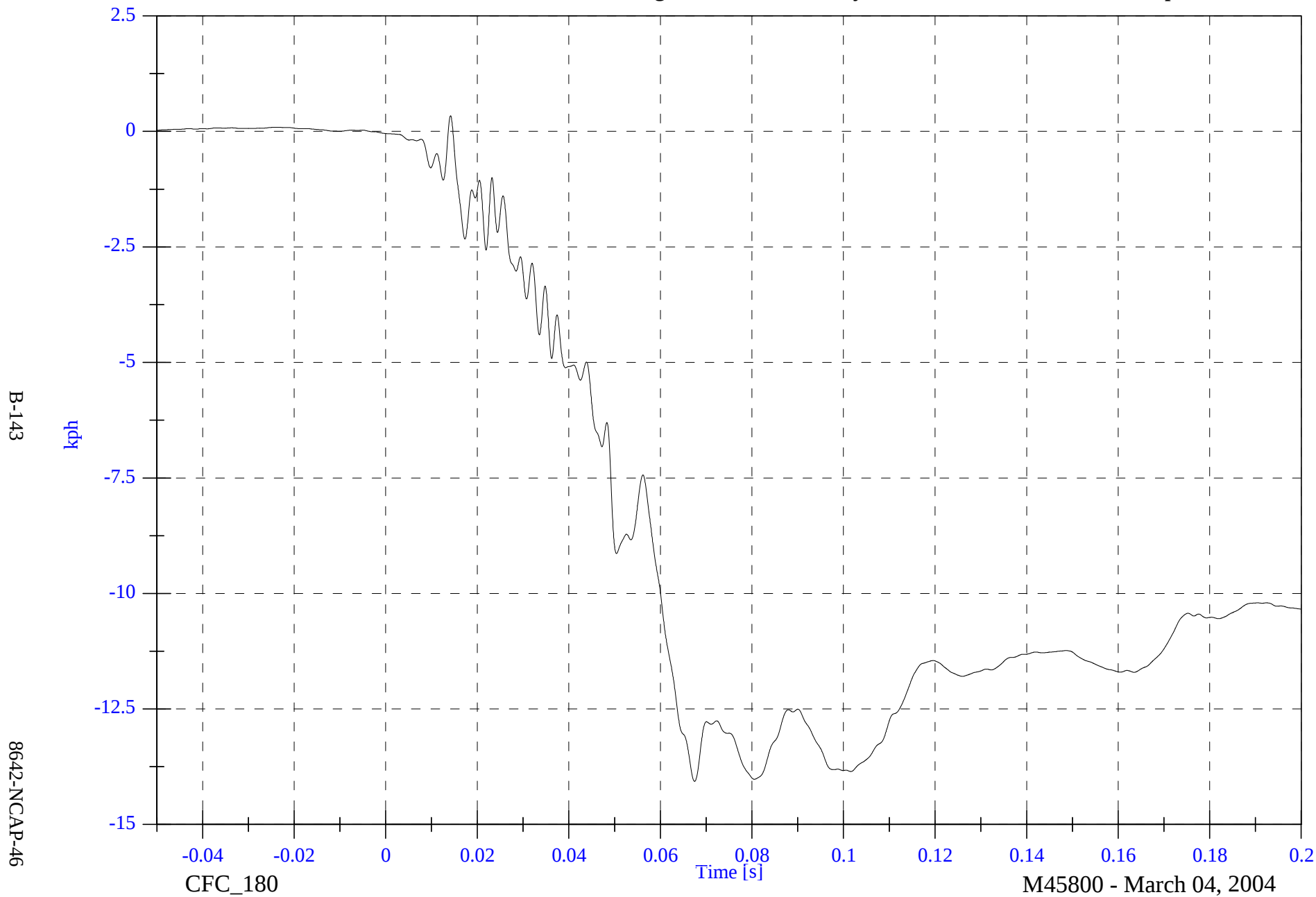


2004 NCAP Test 10 - 2004 VW Touareg

V1 Right Rear #9z Velocity

Max: 0.3 [kph] at 0.014 [s]

Min: -14.1 [kph] at 0.067 [s]

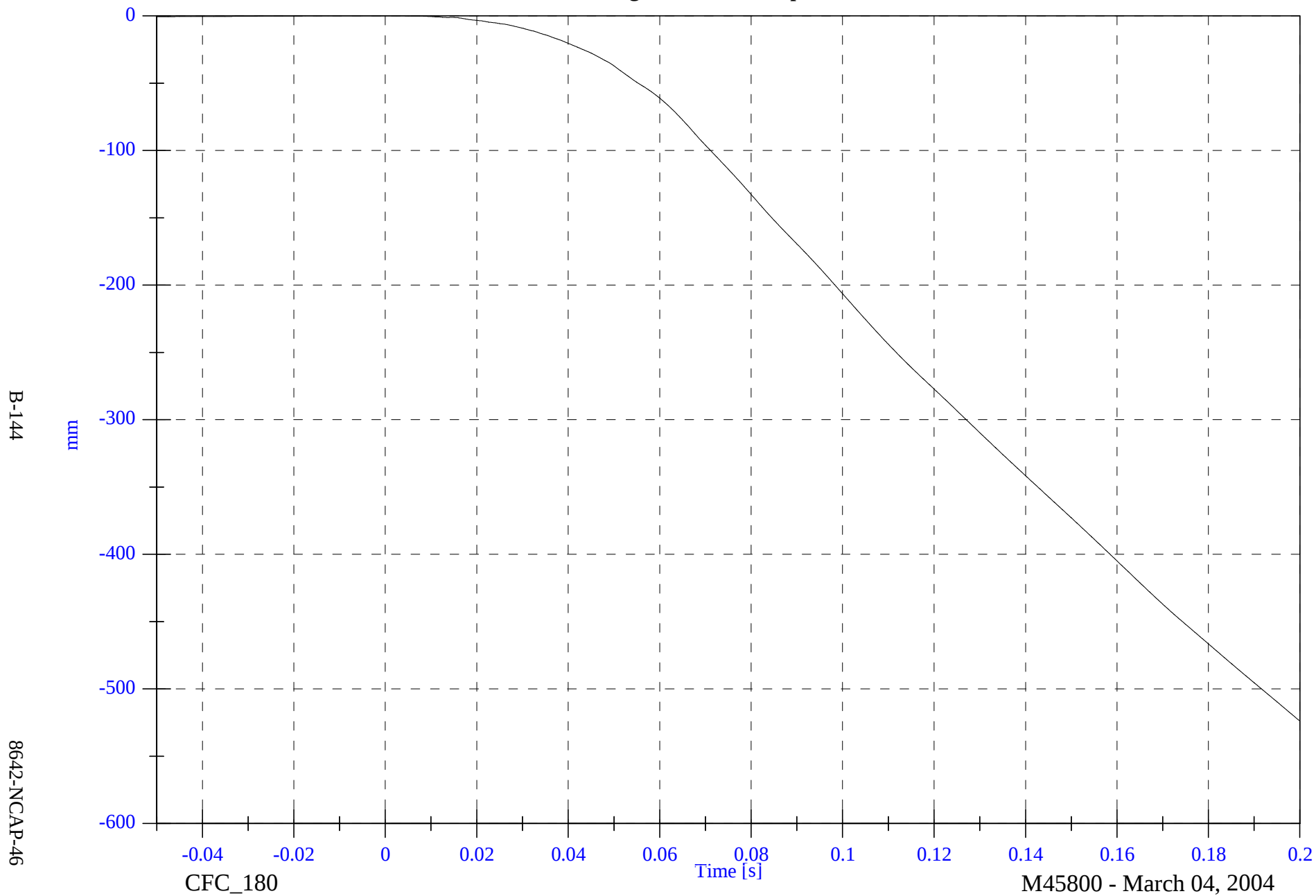


2004 NCAP Test 10 - 2004 VW Touareg

V1 Right Rear #9z Displacement

Max: 0.0 [mm] at -0.004 [s]

Min: -523.8 [mm] at 0.200 [s]

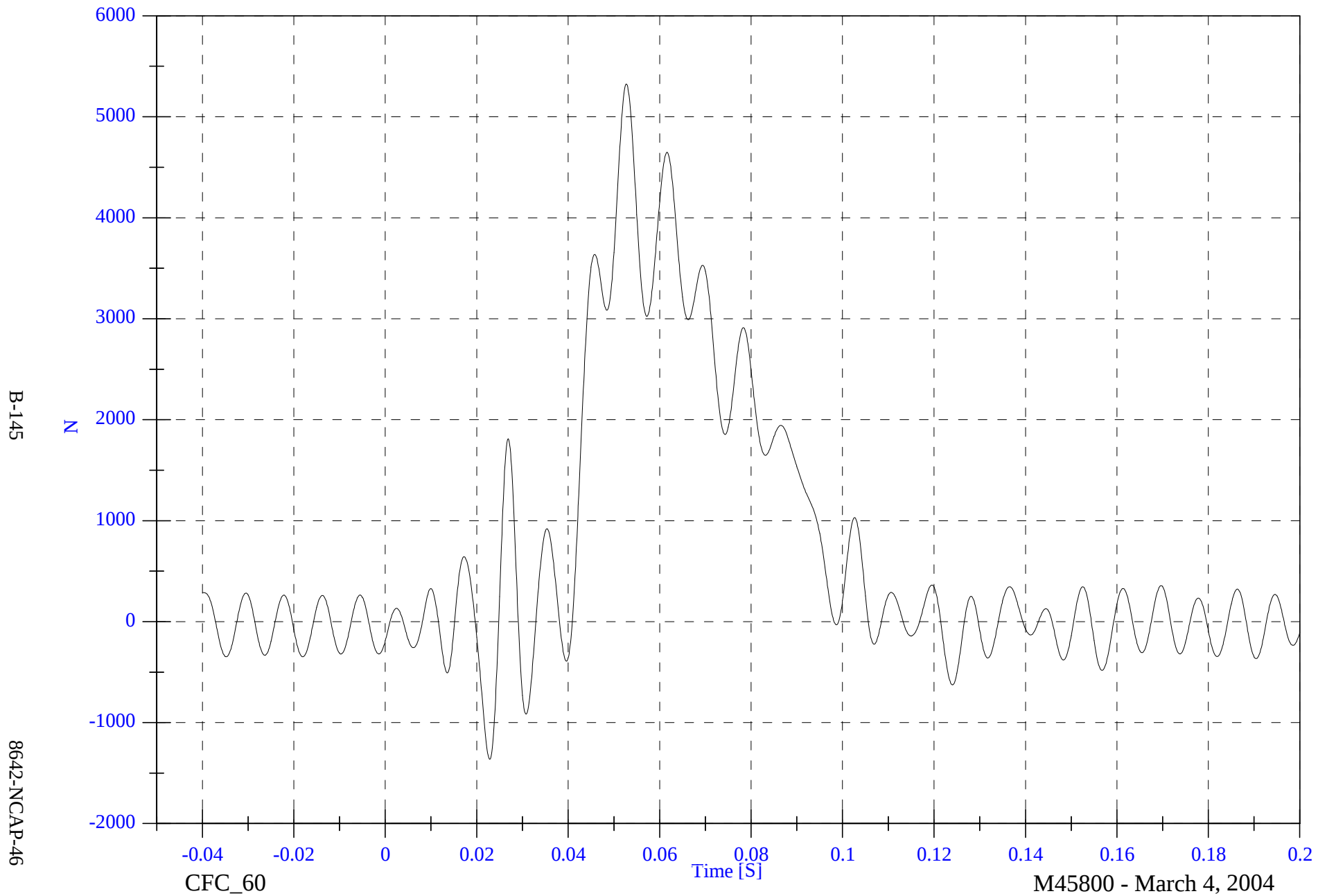


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell A1 Fx

Max: 5325.0 [N] at 0.053 [S]

Min: -1362.9 [N] at 0.023 [S]

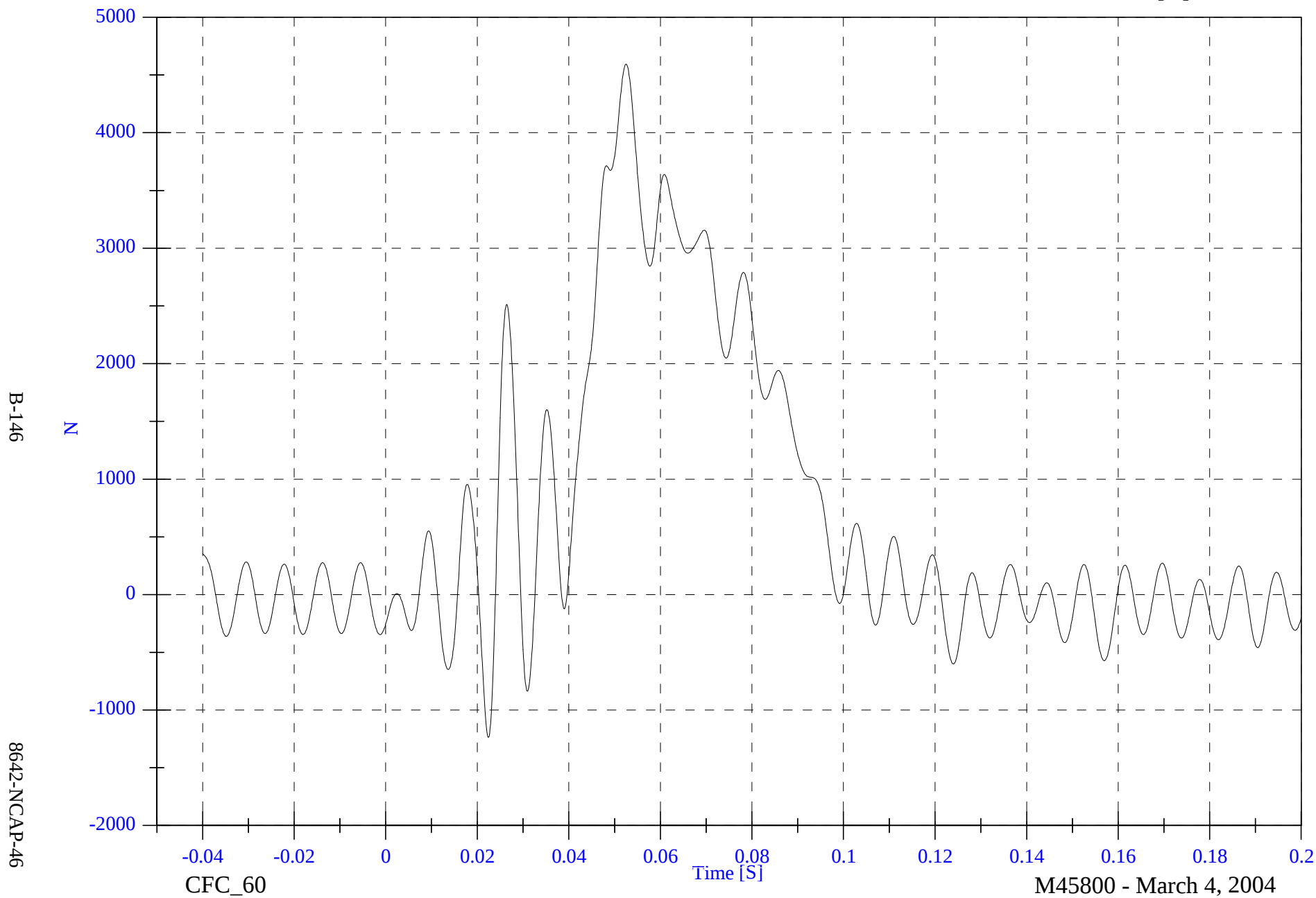


2004 NCAP Test 10 - 2004 VW Touareg

Max: 4594.7 [N] at 0.052 [S]

Min: -1236.8 [N] at 0.022 [S]

Barrier Load Cell A2 Fx

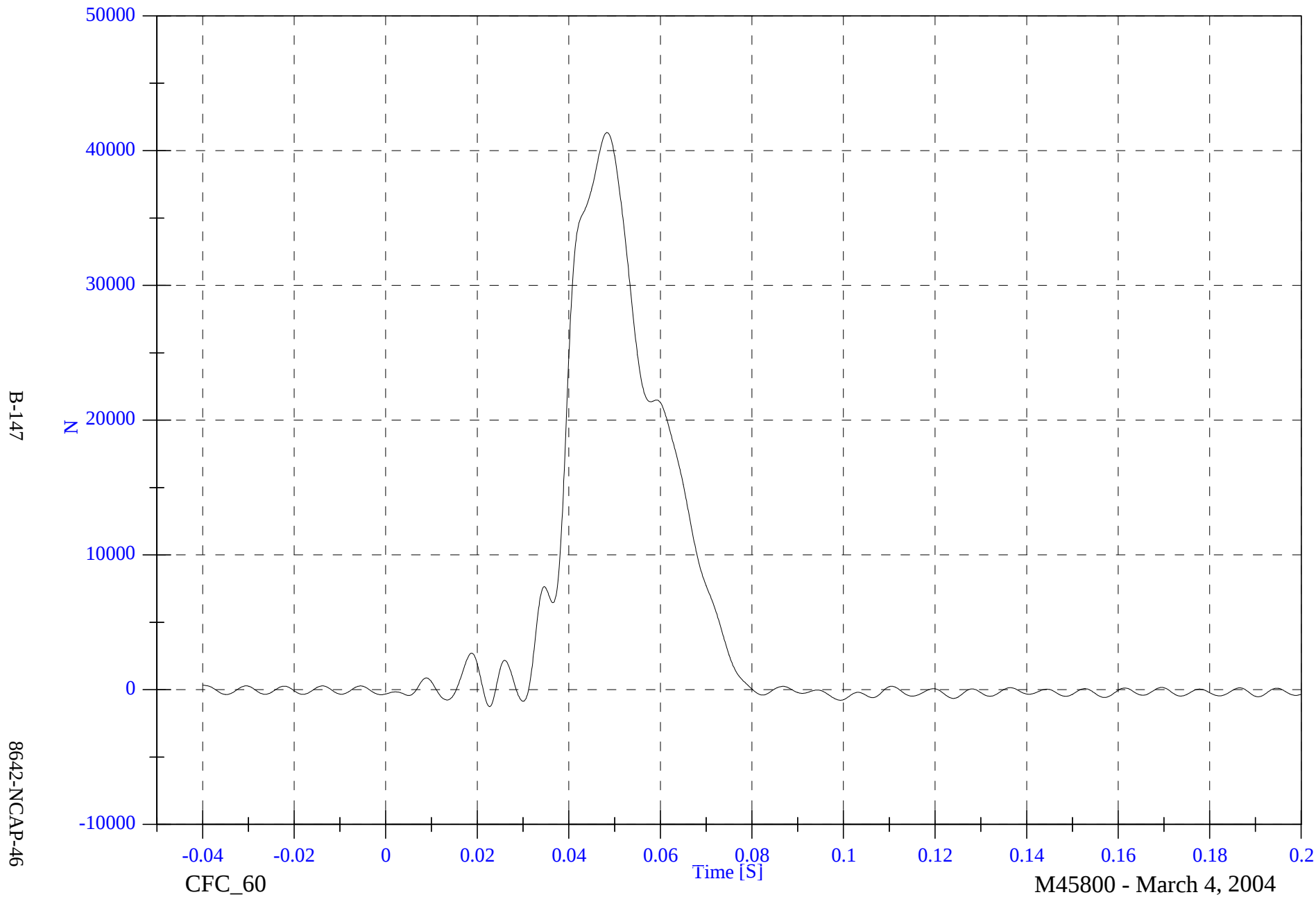


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell A3 Fx

Max: 41338.4 [N] at 0.048 [S]

Min: -1257.2 [N] at 0.023 [S]

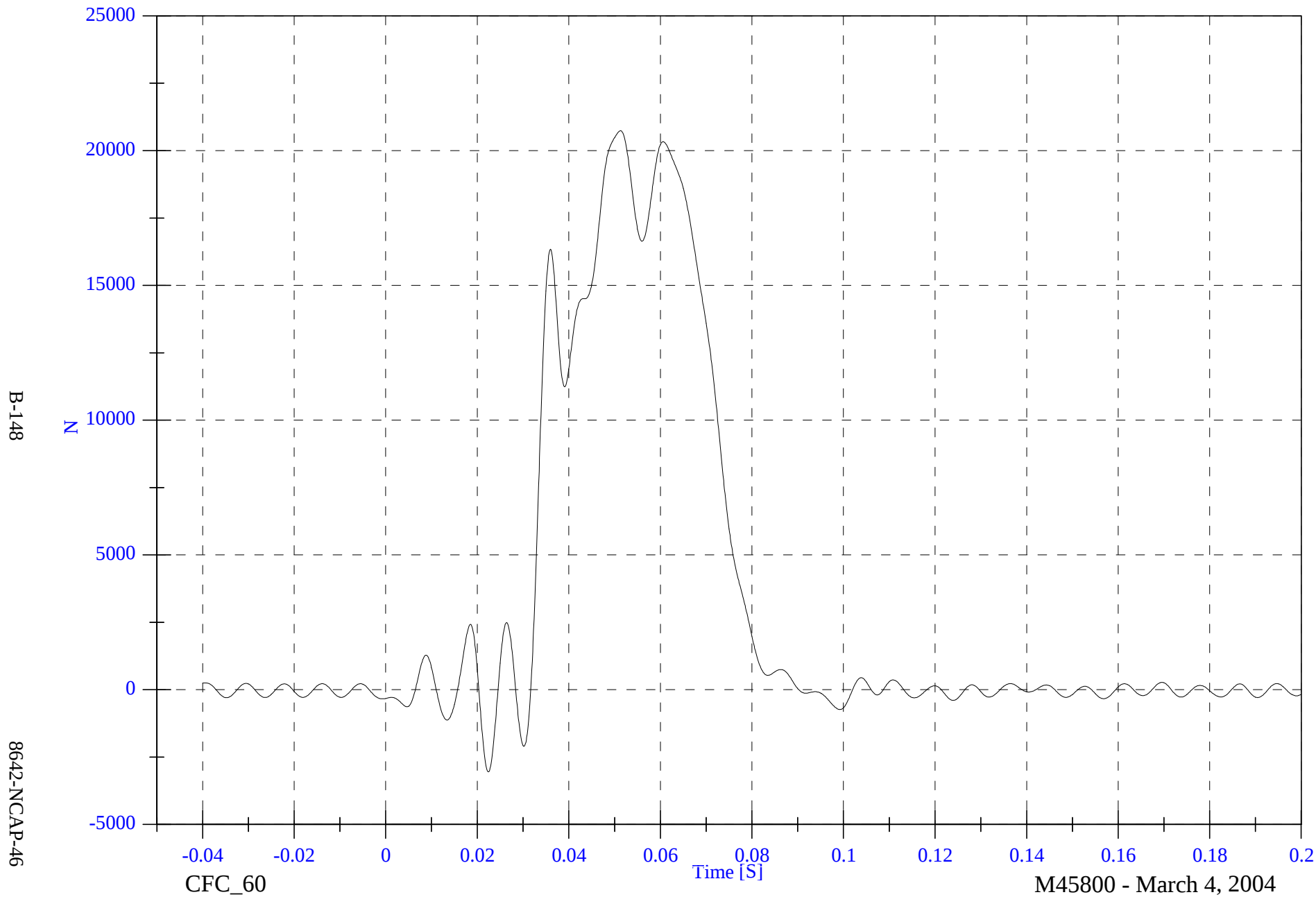


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell A4 Fx

Max: 20737.2 [N] at 0.051 [S]

Min: -3049.5 [N] at 0.022 [S]

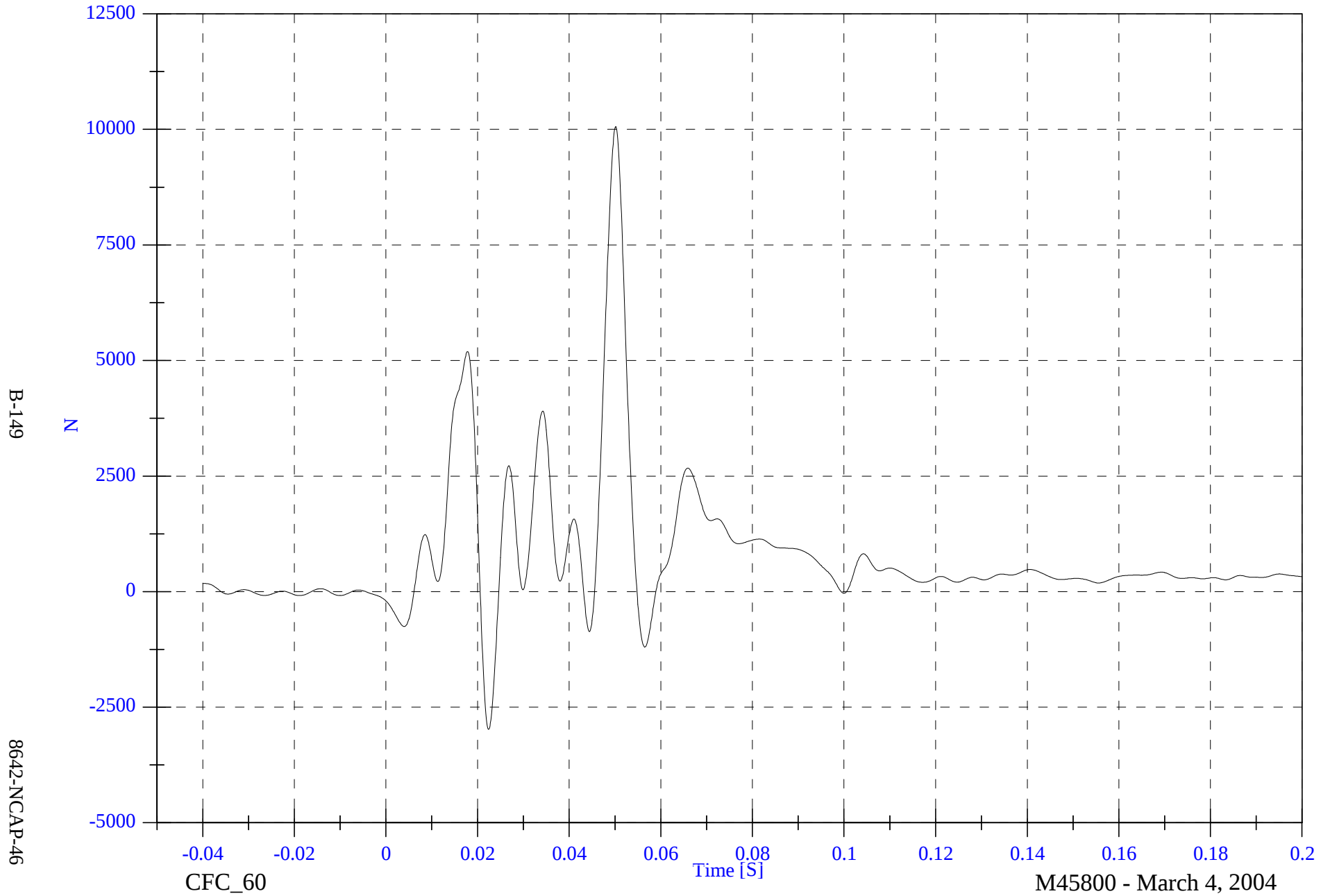


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell A5 Fx

Max: 10058.3 [N] at 0.050 [S]

Min: -2981.2 [N] at 0.022 [S]

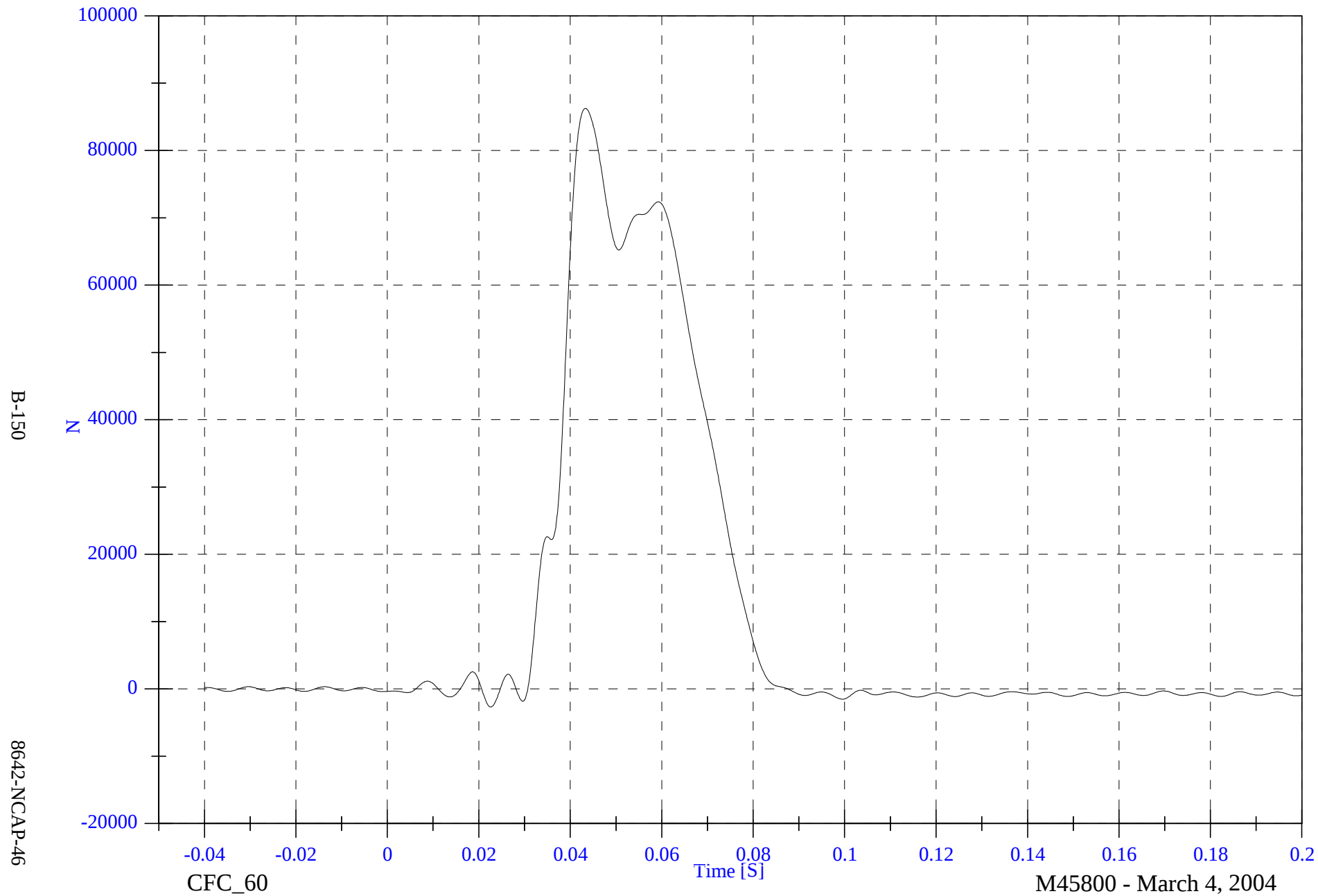


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell A6 Fx

Max: 86254.9 [N] at 0.043 [S]

Min: -2683.5 [N] at 0.023 [S]

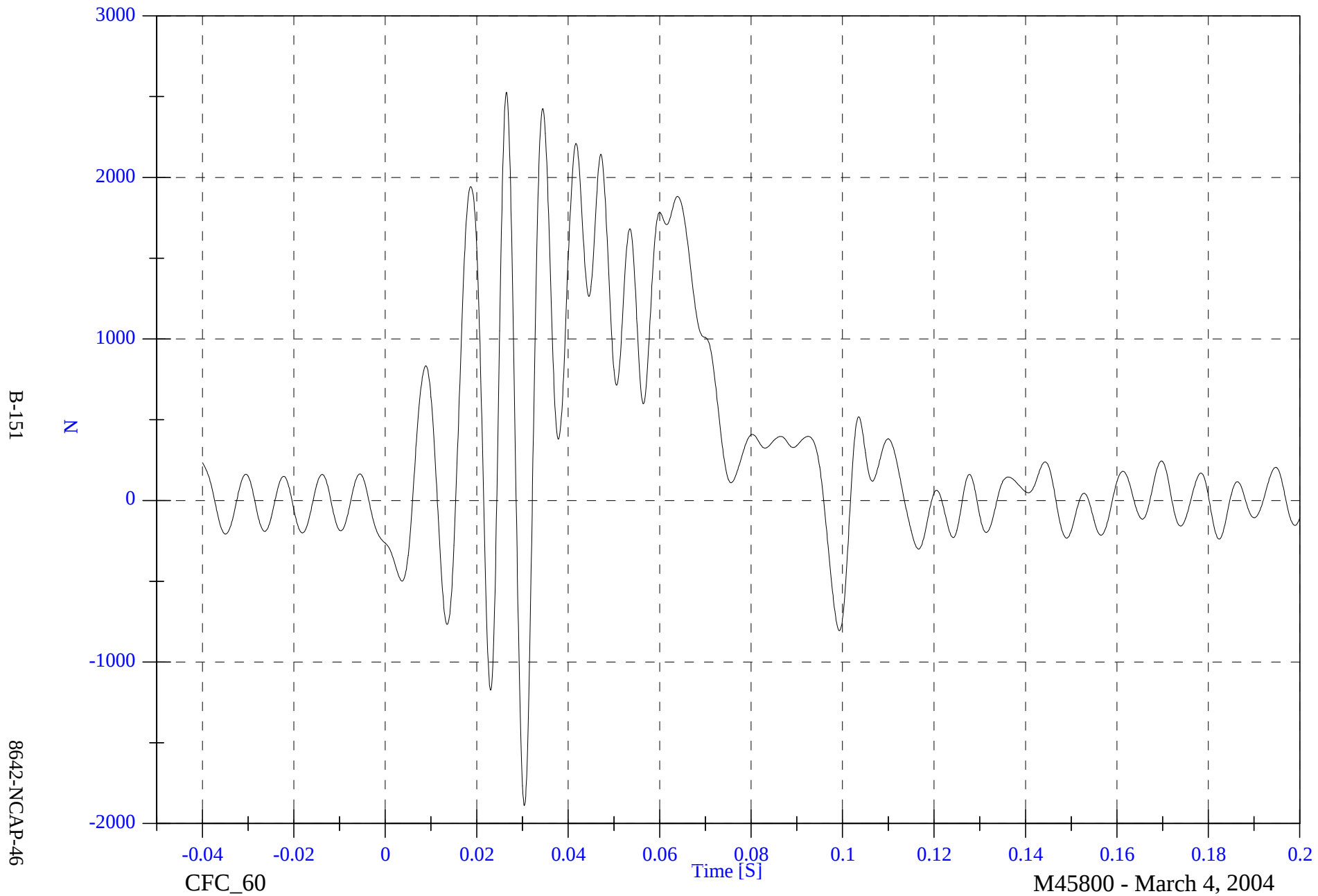


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell A7 Fx

Max: 2527.4 [N] at 0.026 [S]

Min: -1889.1 [N] at 0.030 [S]

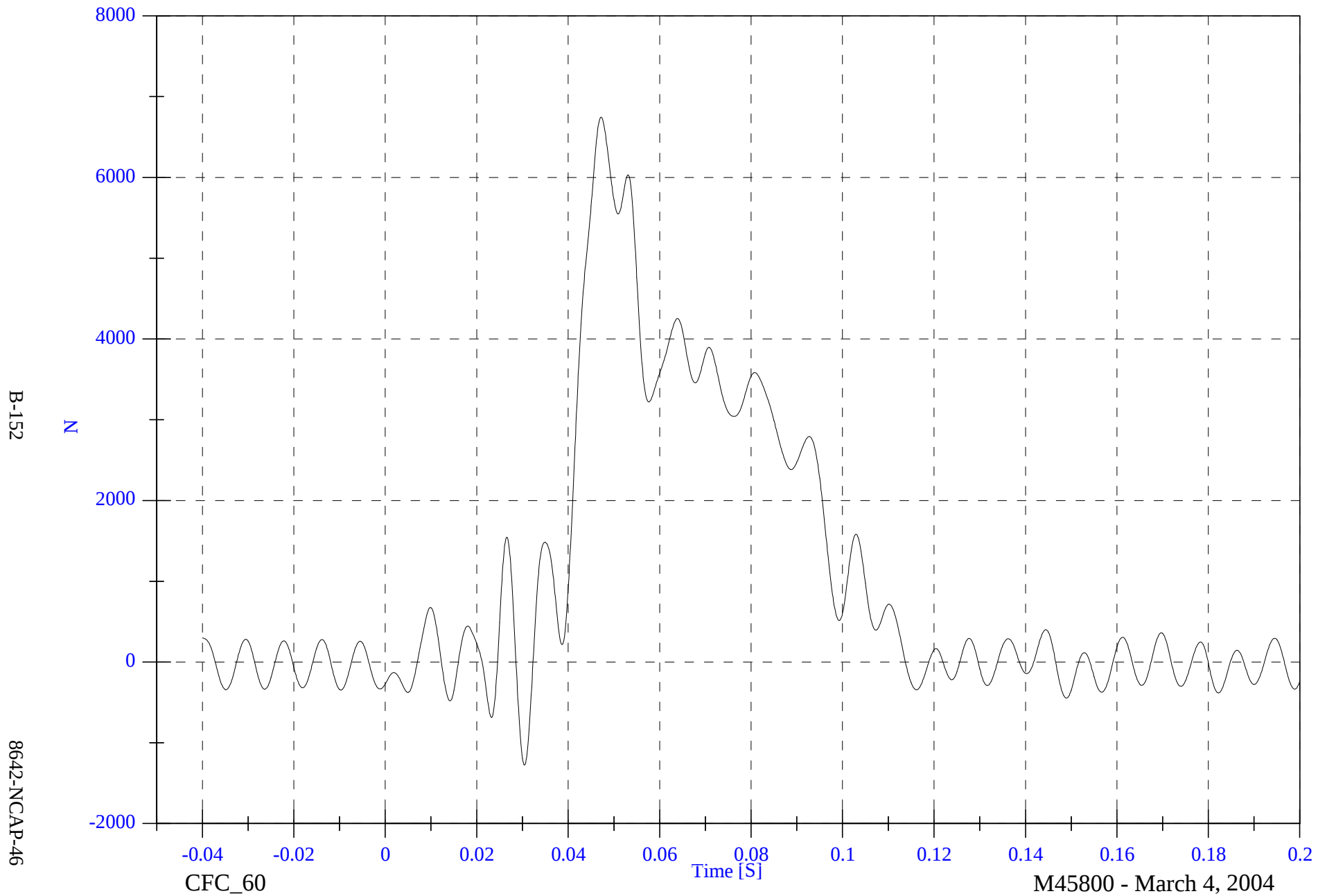


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell A8 Fx

Max: 6746.5 [N] at 0.047 [S]

Min: -1276.4 [N] at 0.030 [S]

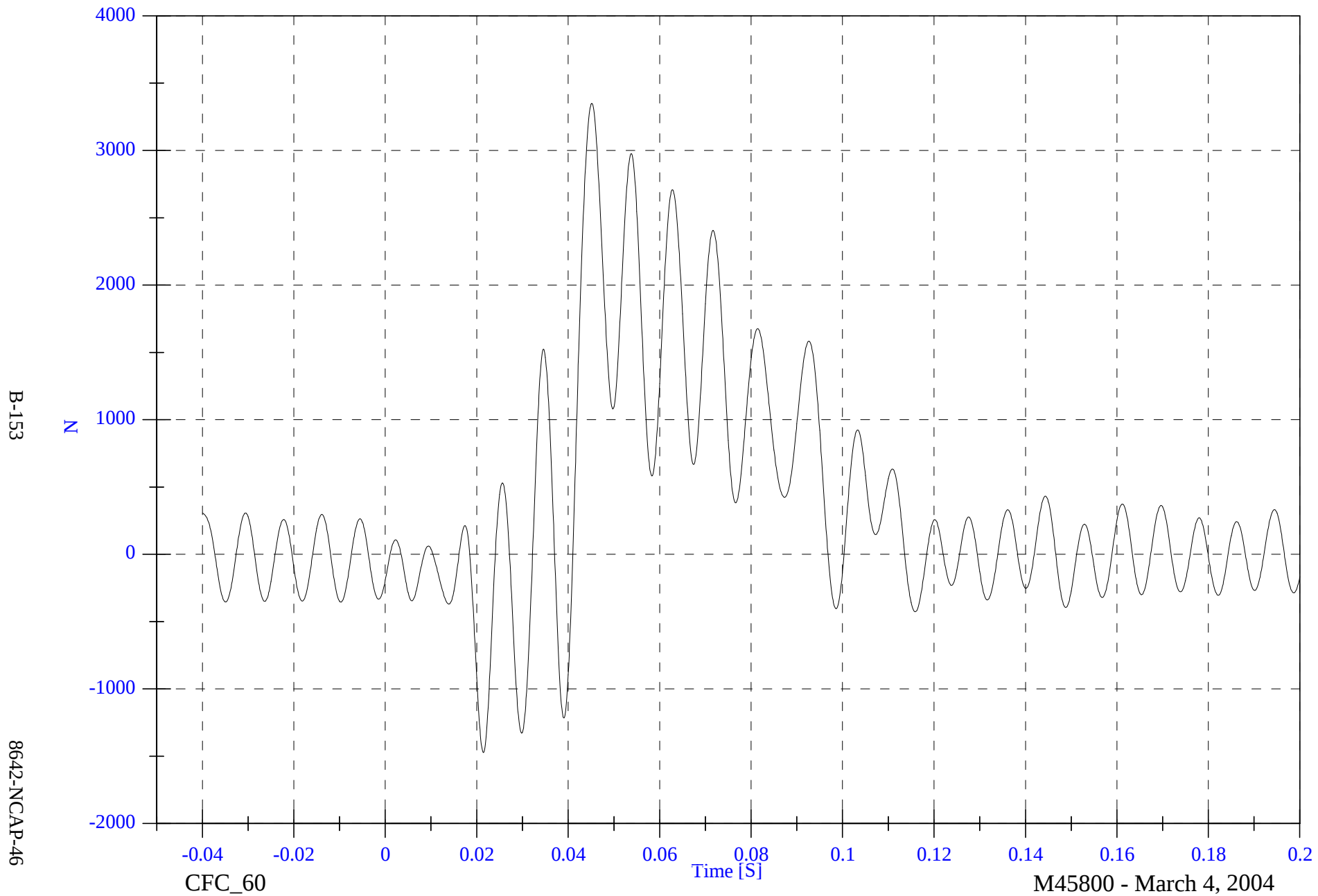


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell A9 Fx

Max: 3349.2 [N] at 0.045 [S]

Min: -1472.0 [N] at 0.021 [S]

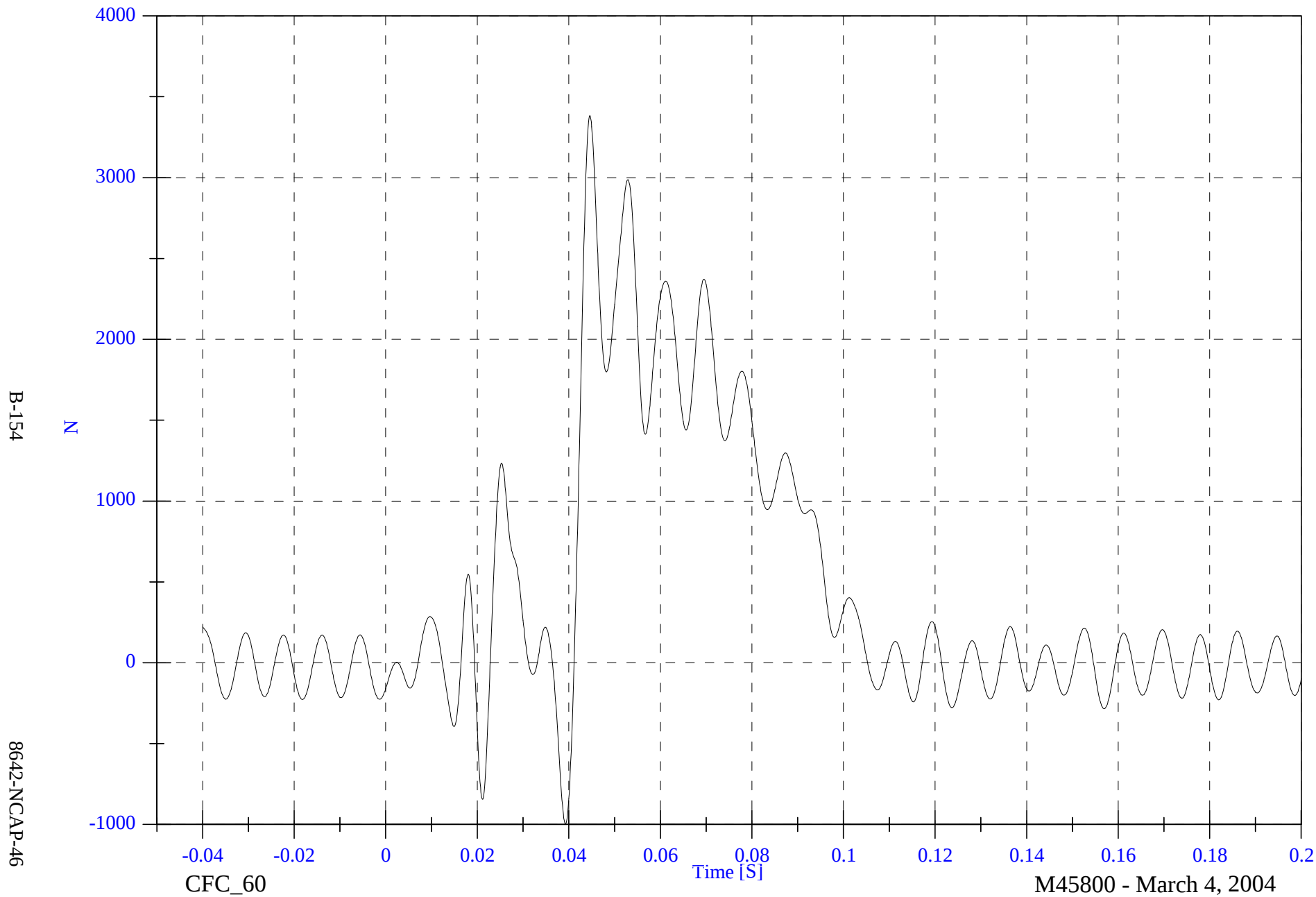


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell B1 Fx

Max: 3383.1 [N] at 0.045 [S]

Min: -996.6 [N] at 0.039 [S]

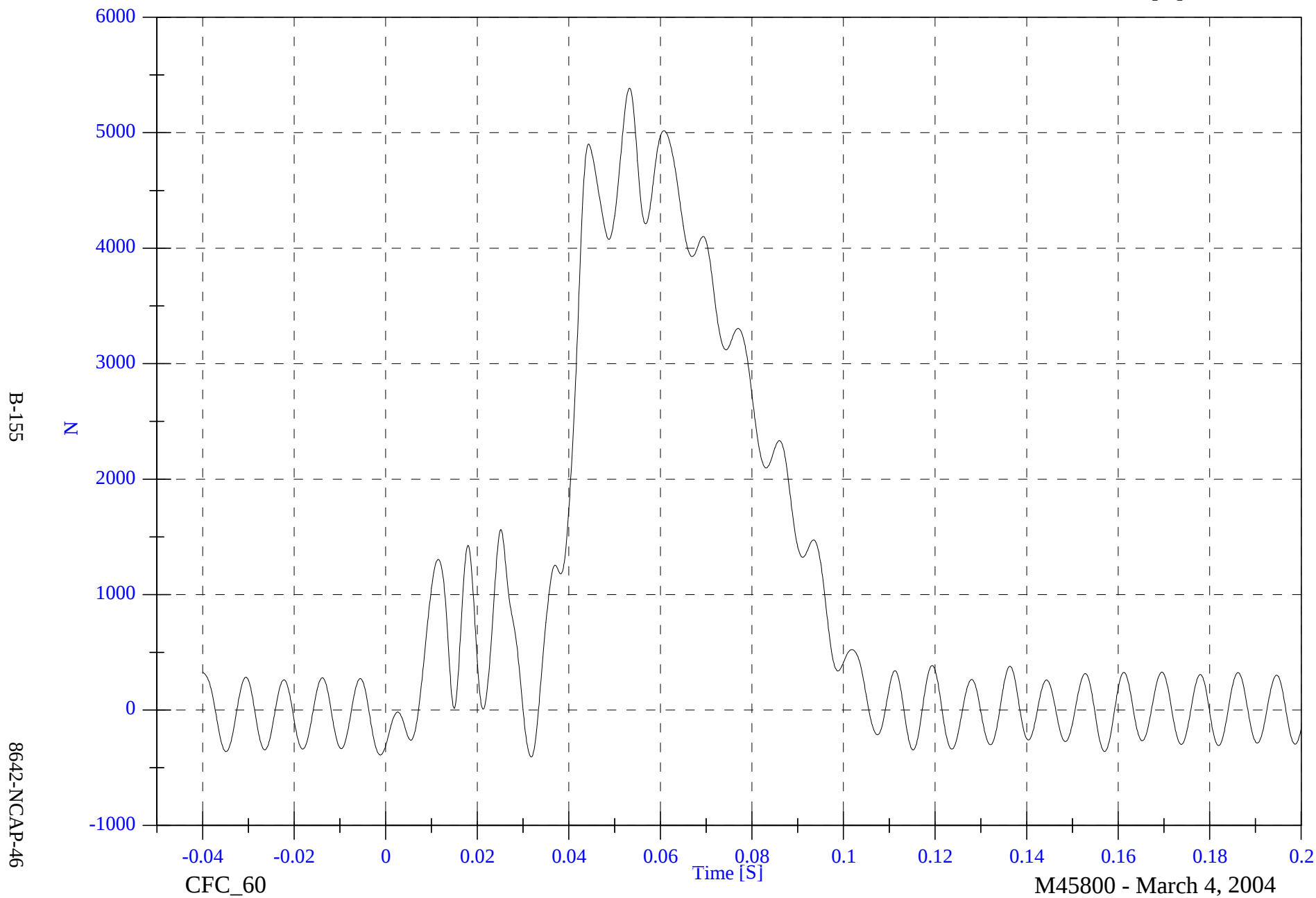


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell B2 Fx

Max: 5385.2 [N] at 0.053 [S]

Min: -406.7 [N] at 0.032 [S]

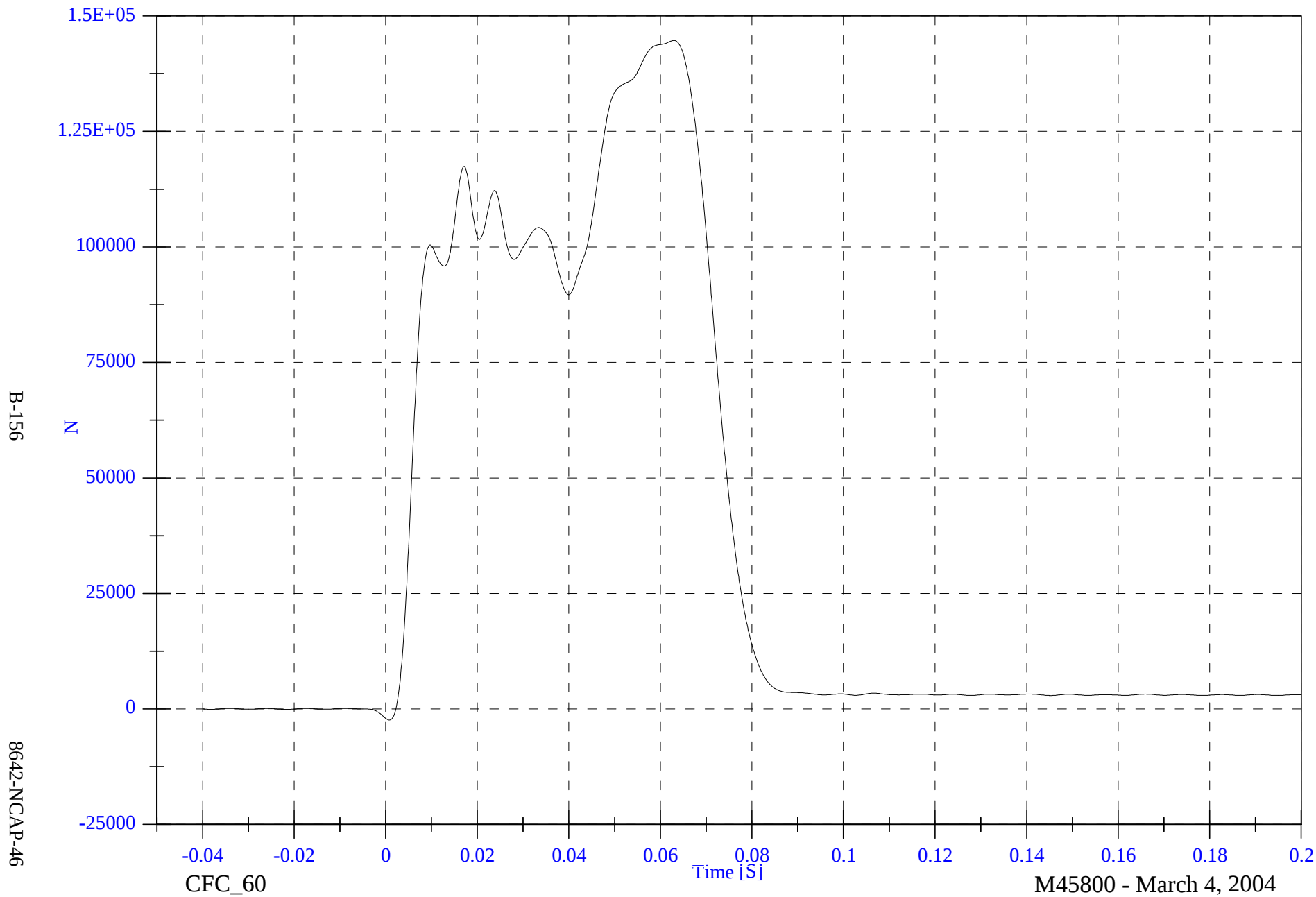


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell B3 Fx

Max: 144670.5 [N] at 0.063 [S]

Min: -2402.2 [N] at 0.001 [S]

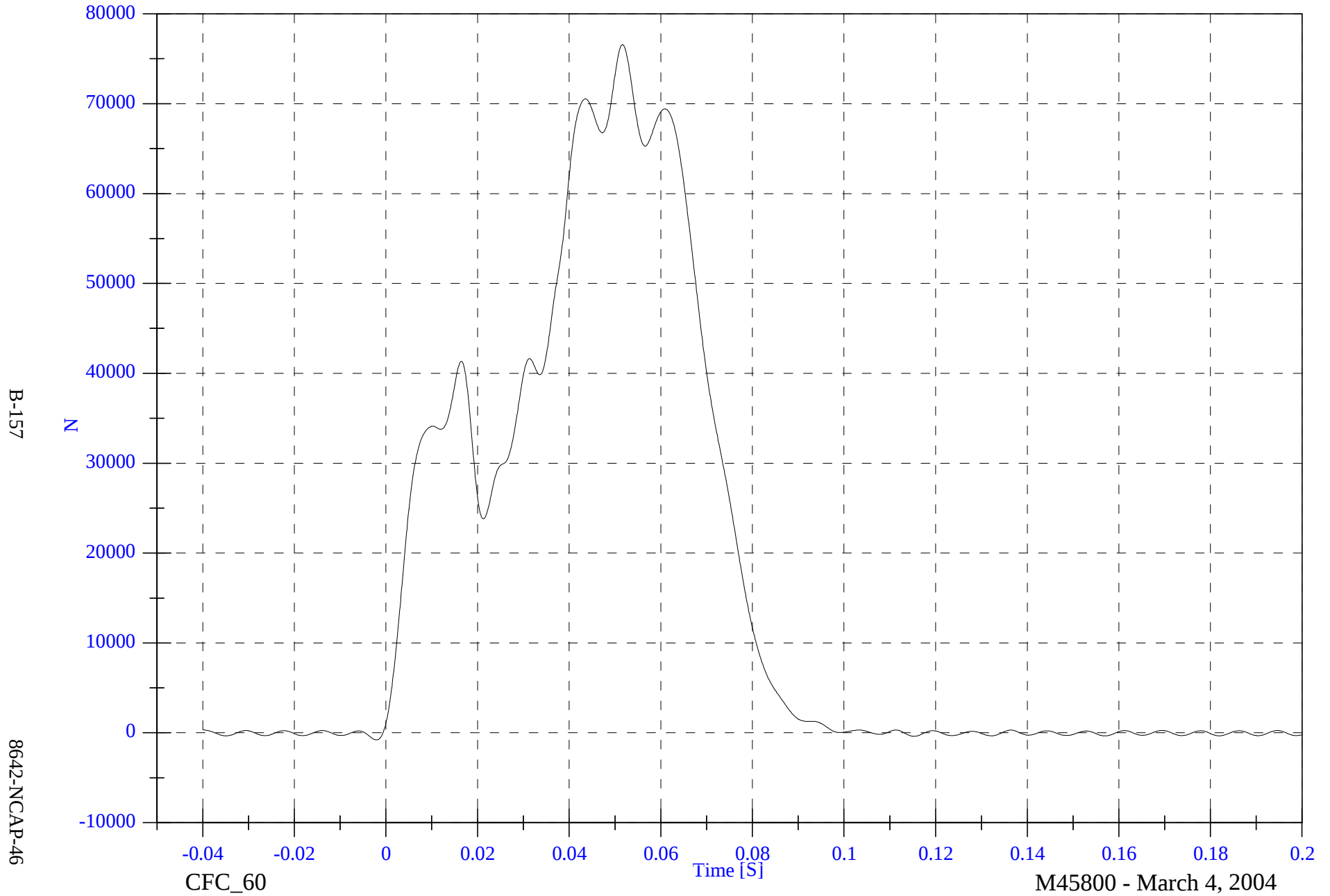


2004 NCAP Test 10 - 2004 VW Touareg

Max: 76571.9 [N] at 0.052 [S]

Min: -780.6 [N] at -0.002 [S]

Barrier Load Cell B4 Fx

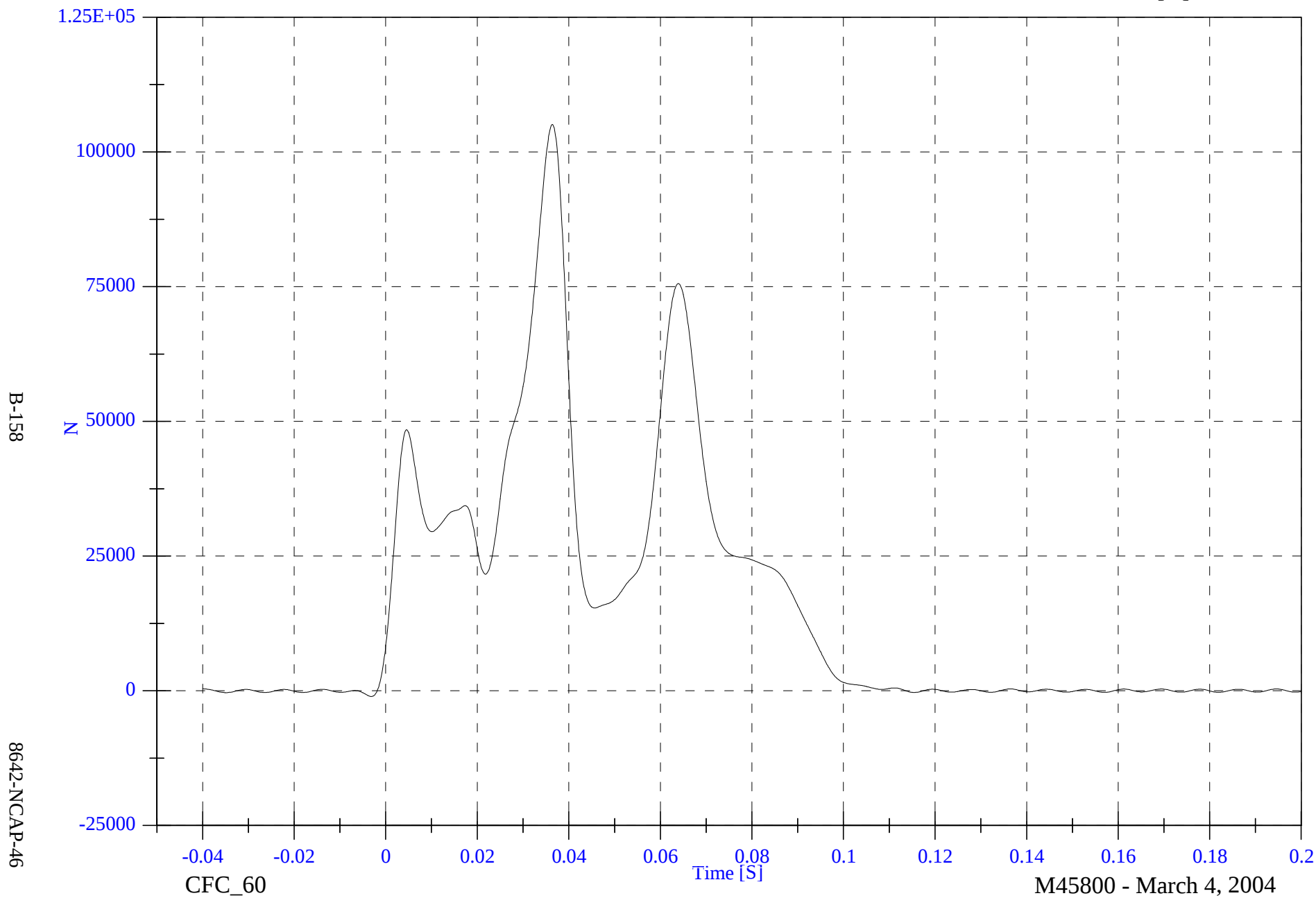


2004 NCAP Test 10 - 2004 VW Touareg

Max: 105098.1 [N] at 0.036 [S]

Min: -1058.2 [N] at -0.003 [S]

Barrier Load Cell B5 Fx

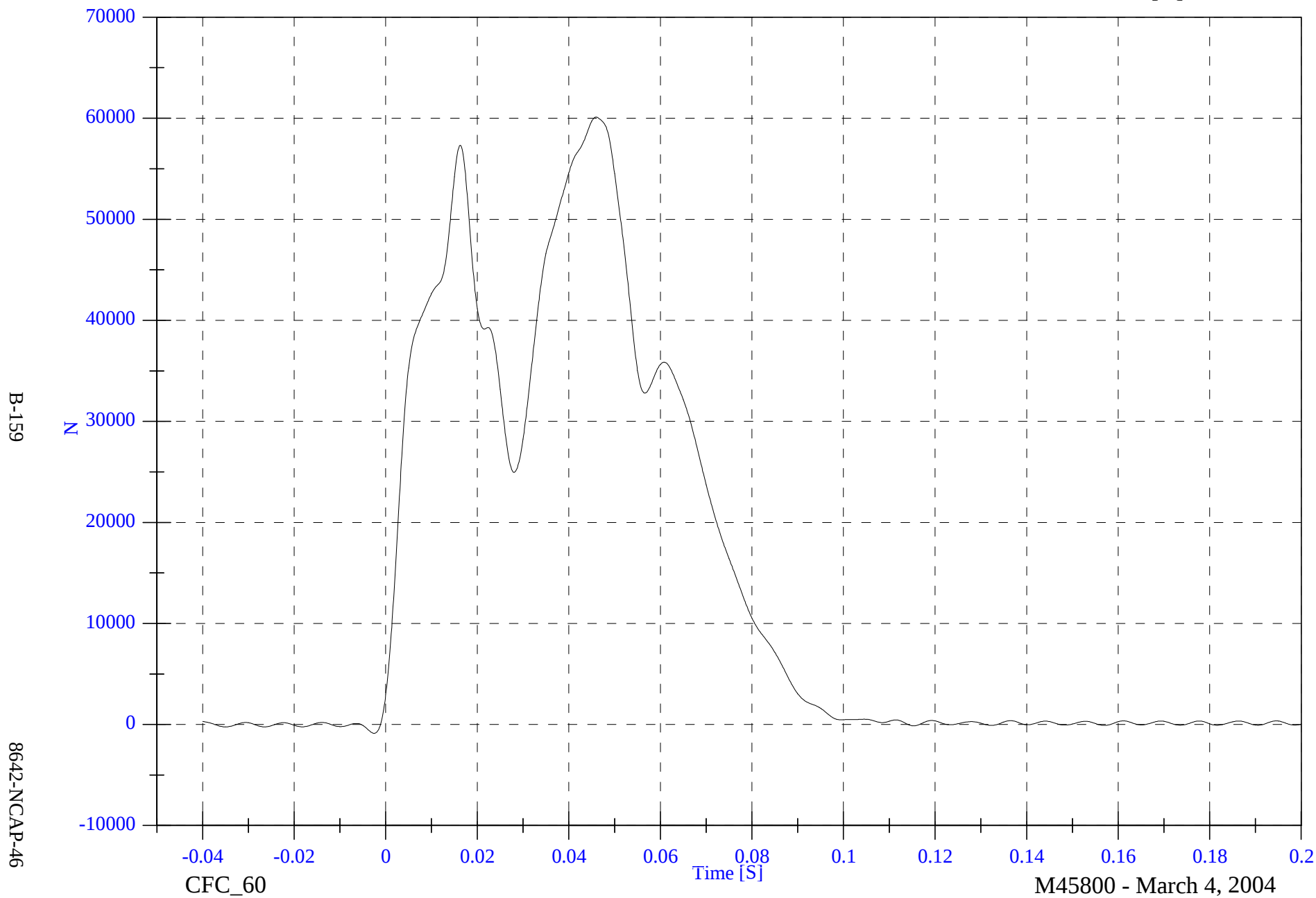


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell B6 Fx

Max: 60117.3 [N] at 0.046 [S]

Min: -879.0 [N] at -0.003 [S]

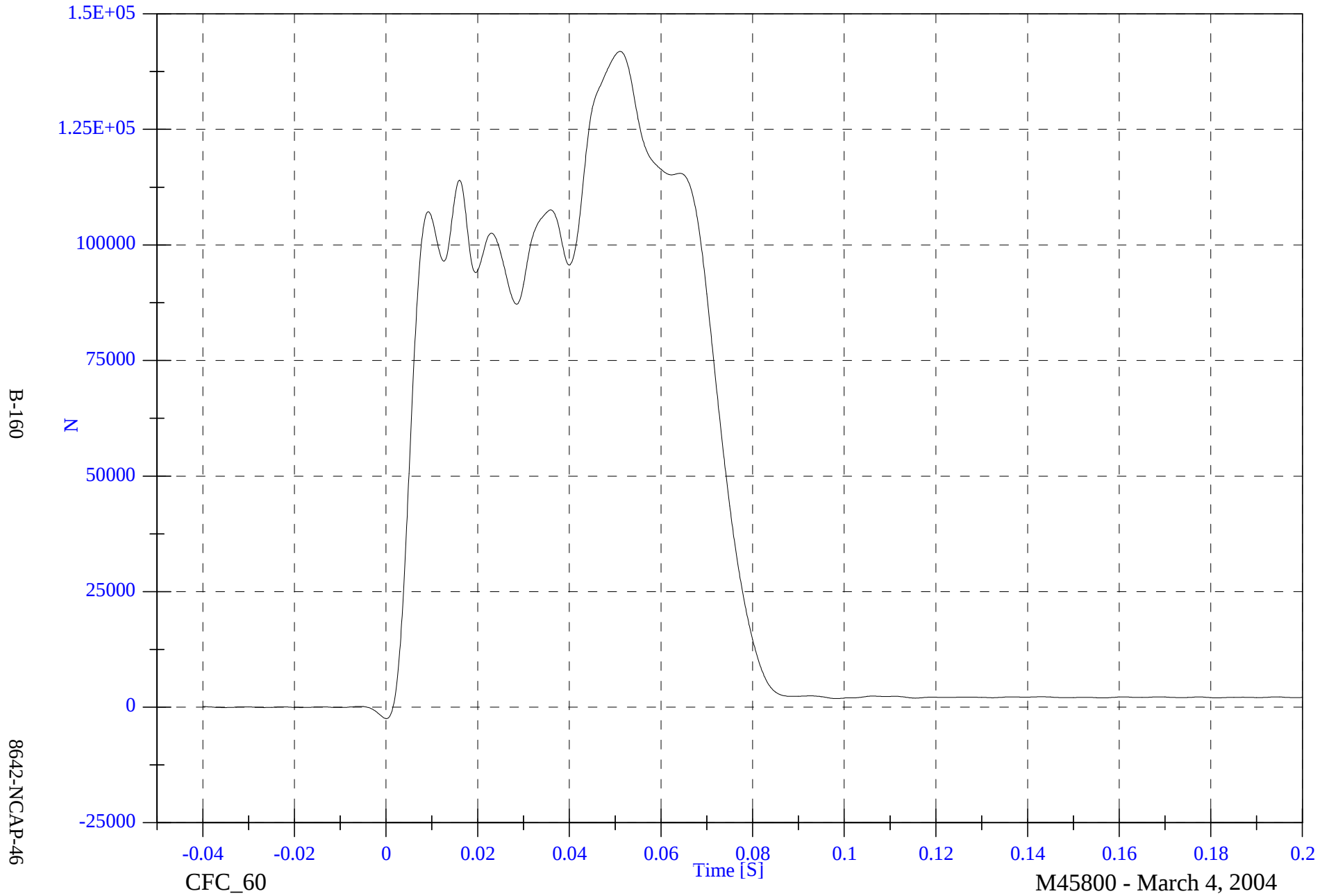


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell B7 Fx

Max: 141853.6 [N] at 0.051 [S]

Min: -2473.0 [N] at 0.000 [S]

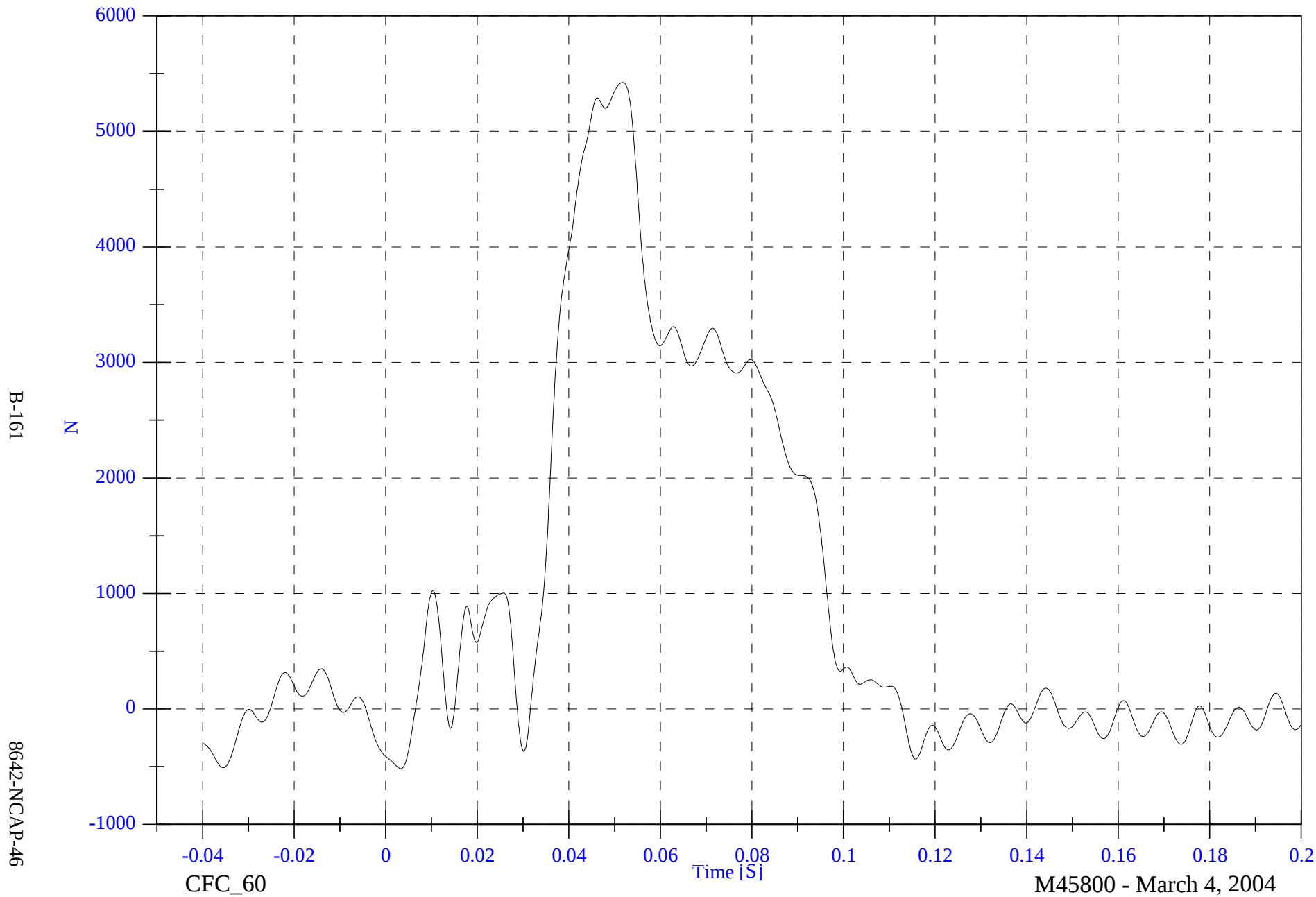


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell B8 Fx

Max: 5423.5 [N] at 0.052 [S]

Min: -516.8 [N] at 0.003 [S]

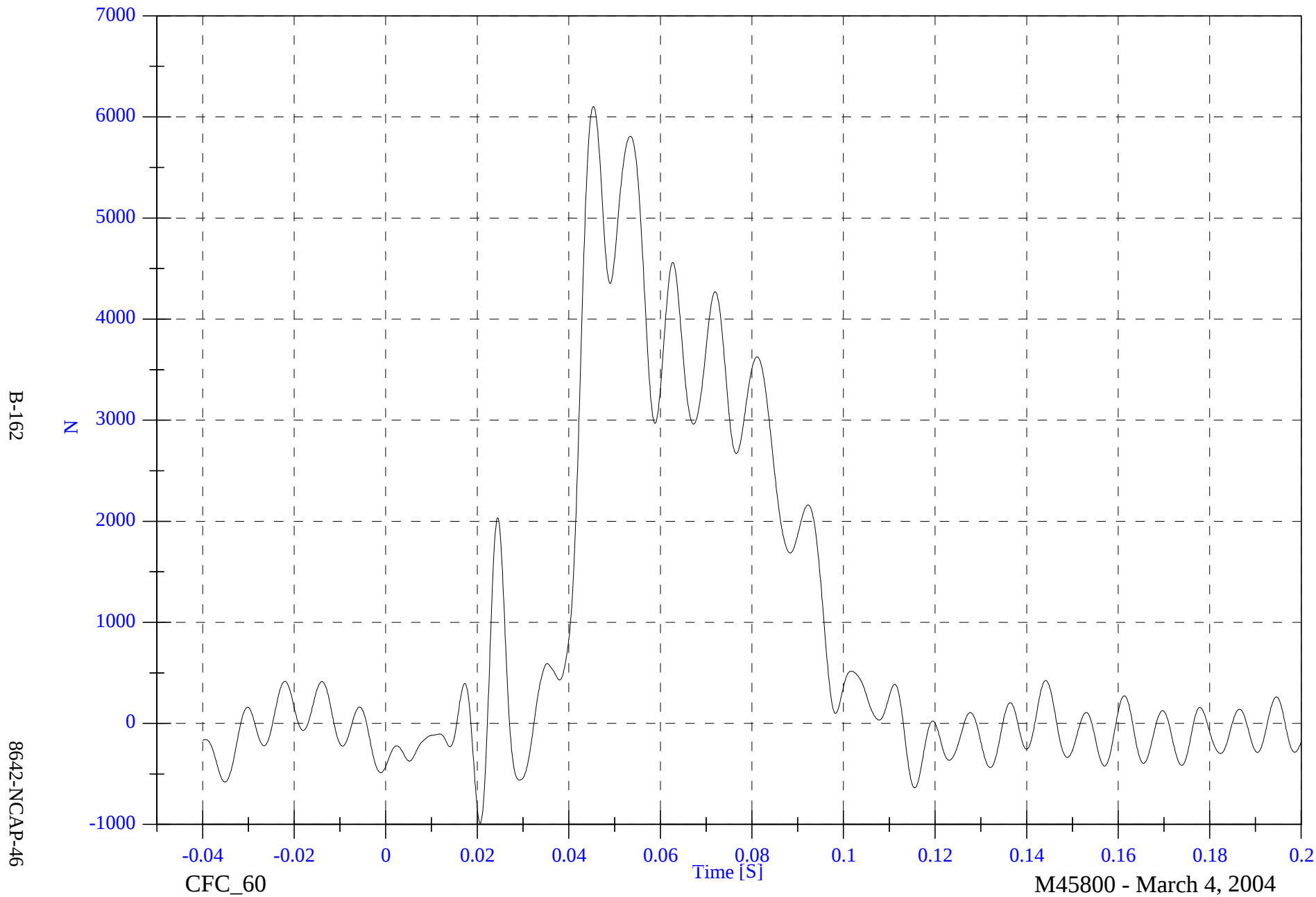


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell B9 Fx

Max: 6103.0 [N] at 0.045 [S]

Min: -986.5 [N] at 0.021 [S]

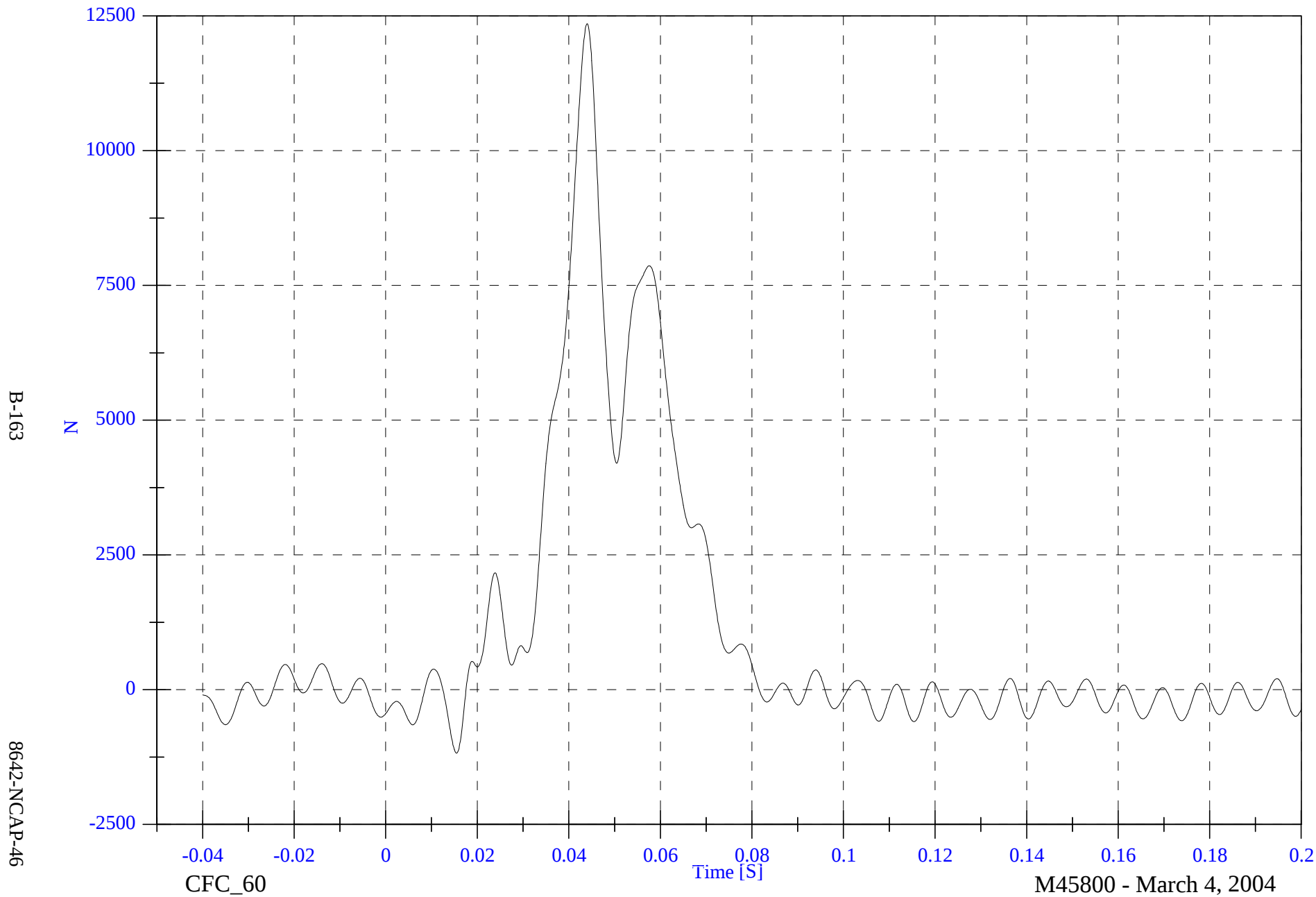


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell C1 Fx

Max: 12354.5 [N] at 0.044 [S]

Min: -1176.8 [N] at 0.015 [S]

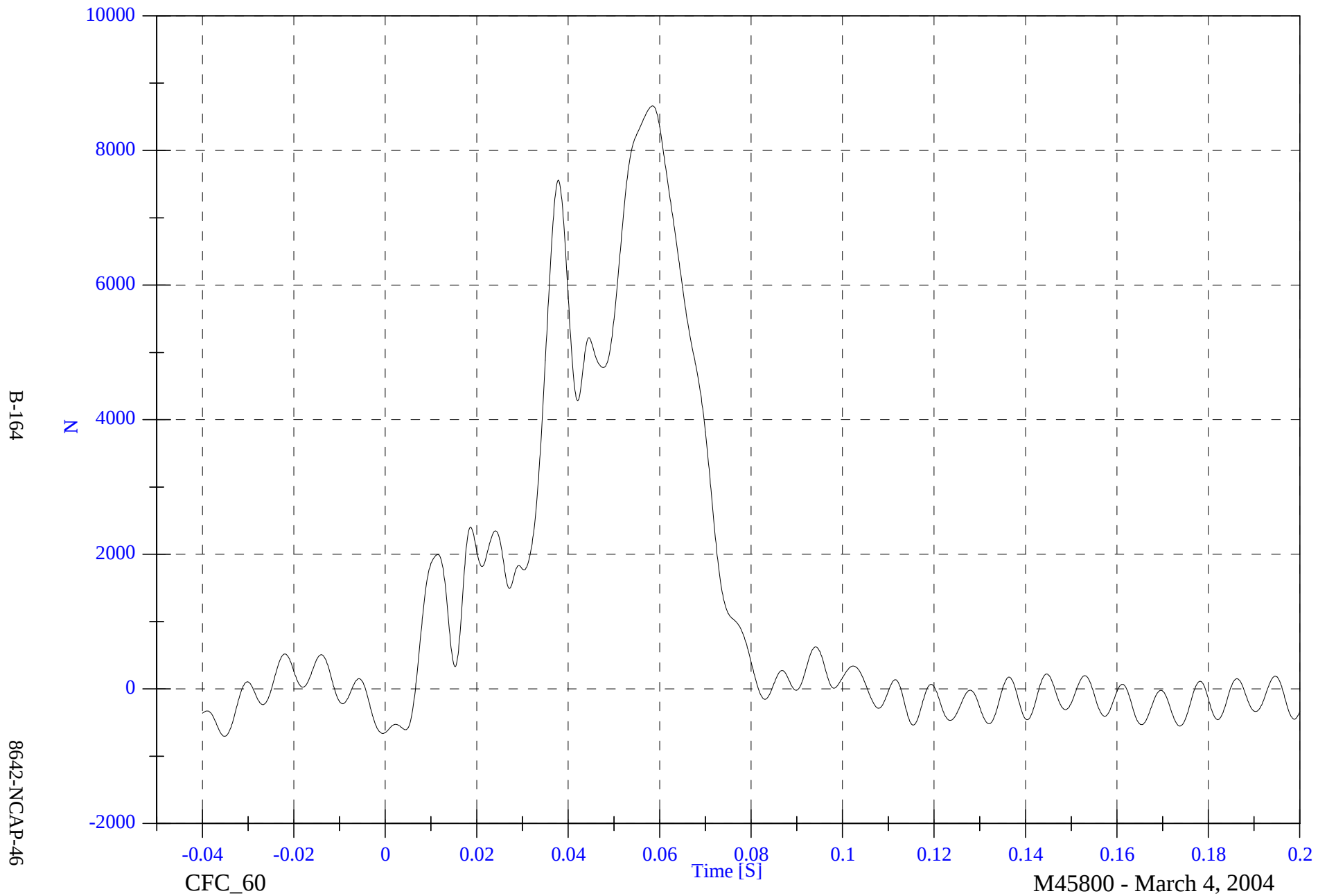


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell C2 Fx

Max: 8661.8 [N] at 0.058 [S]

Min: -703.4 [N] at -0.035 [S]

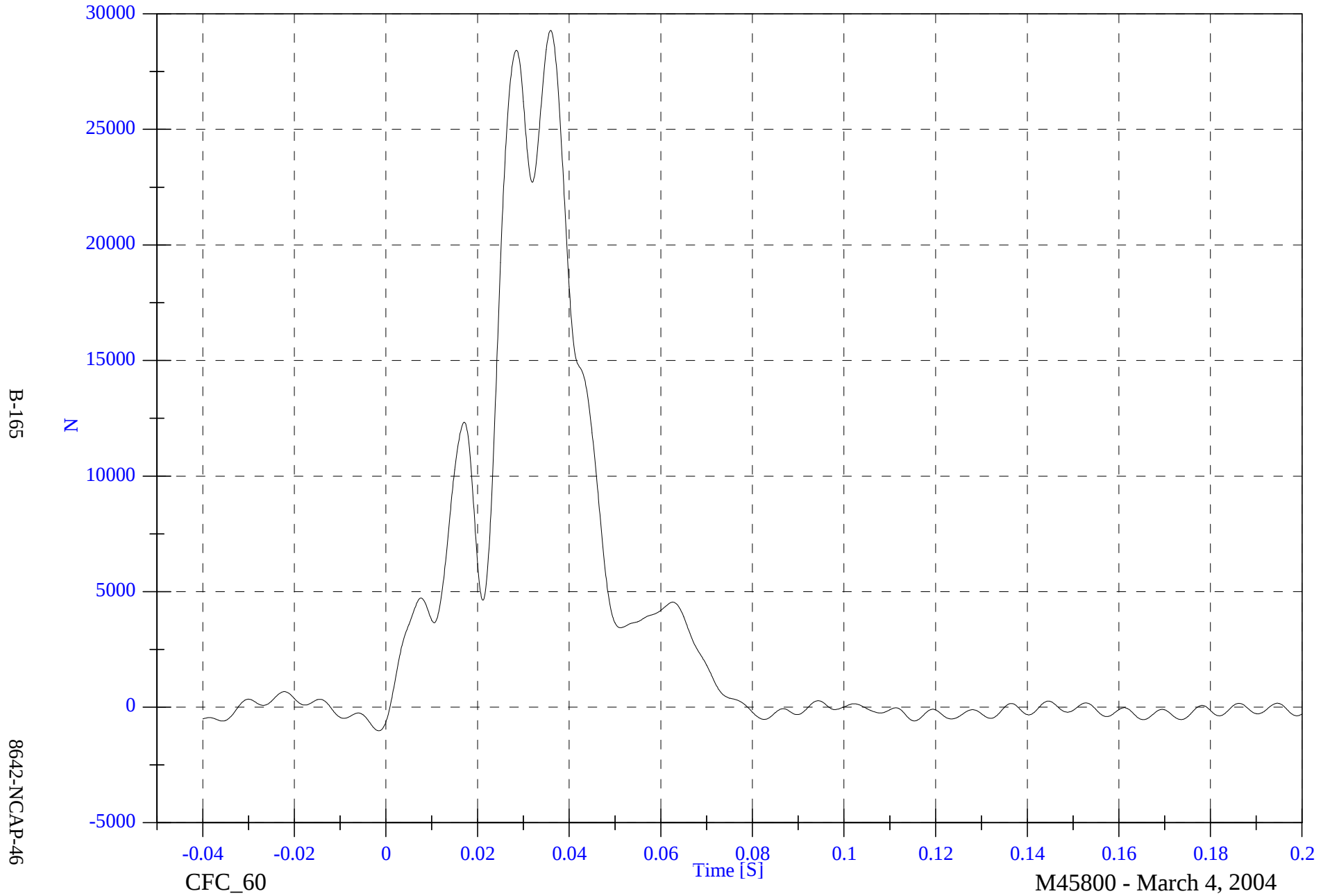


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell C3 Fx

Max: 29278.6 [N] at 0.036 [S]

Min: -1020.6 [N] at -0.002 [S]

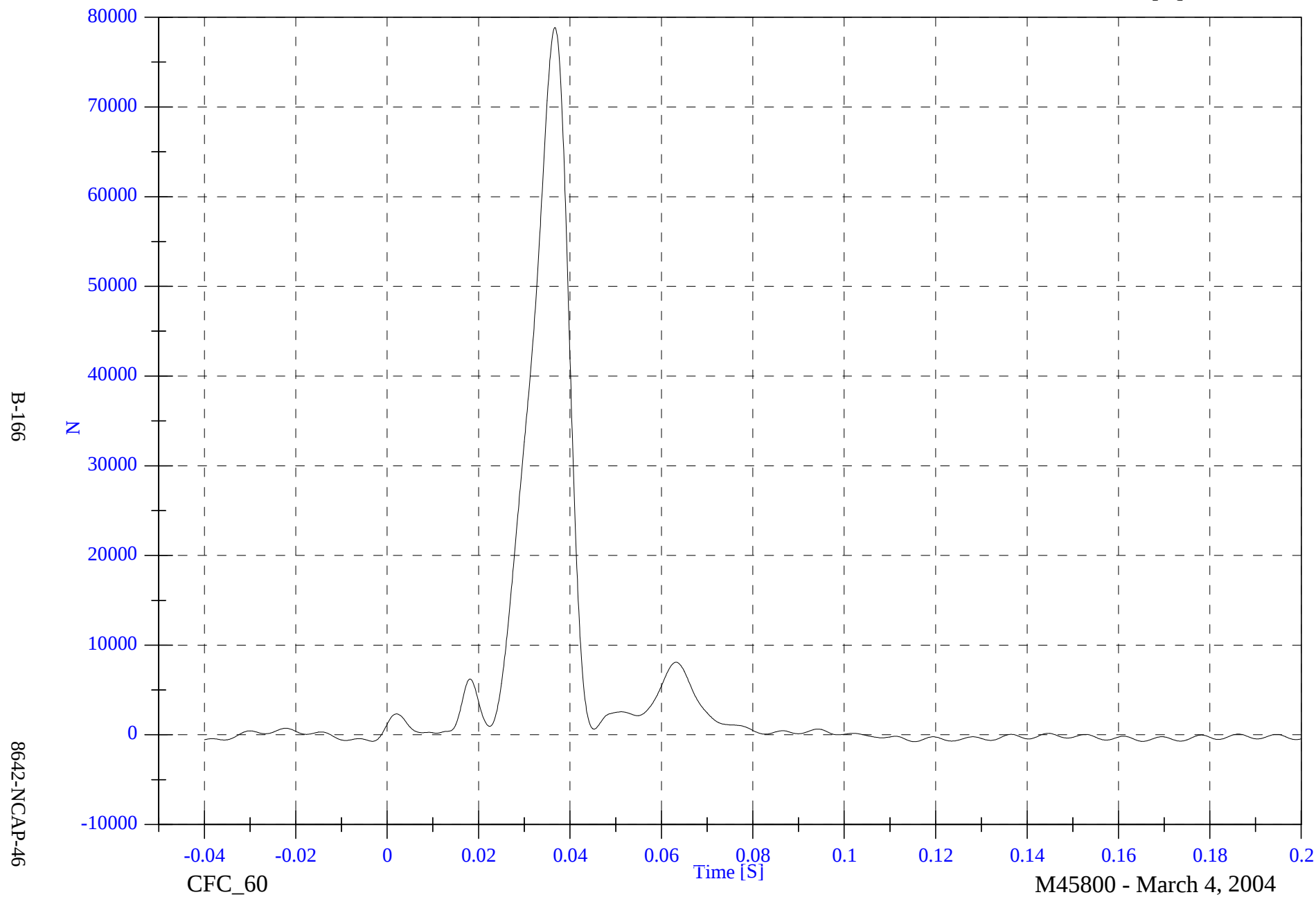


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell C4 Fx

Max: 78848.3 [N] at 0.037 [S]

Min: -755.9 [N] at 0.115 [S]

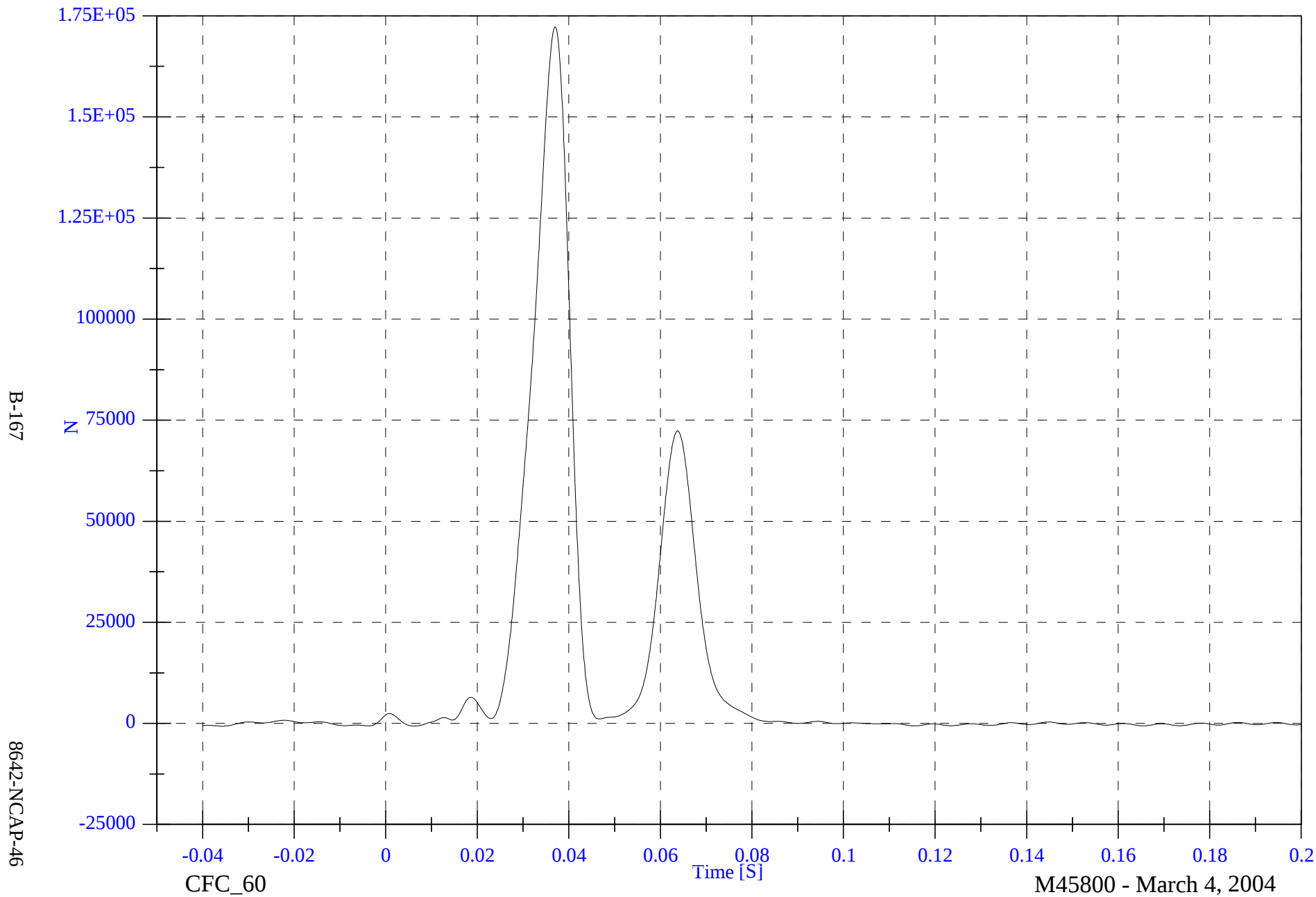


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell C5 Fx

Max: 172244.9 [N] at 0.037 [S]

Min: -678.7 [N] at -0.036 [S]

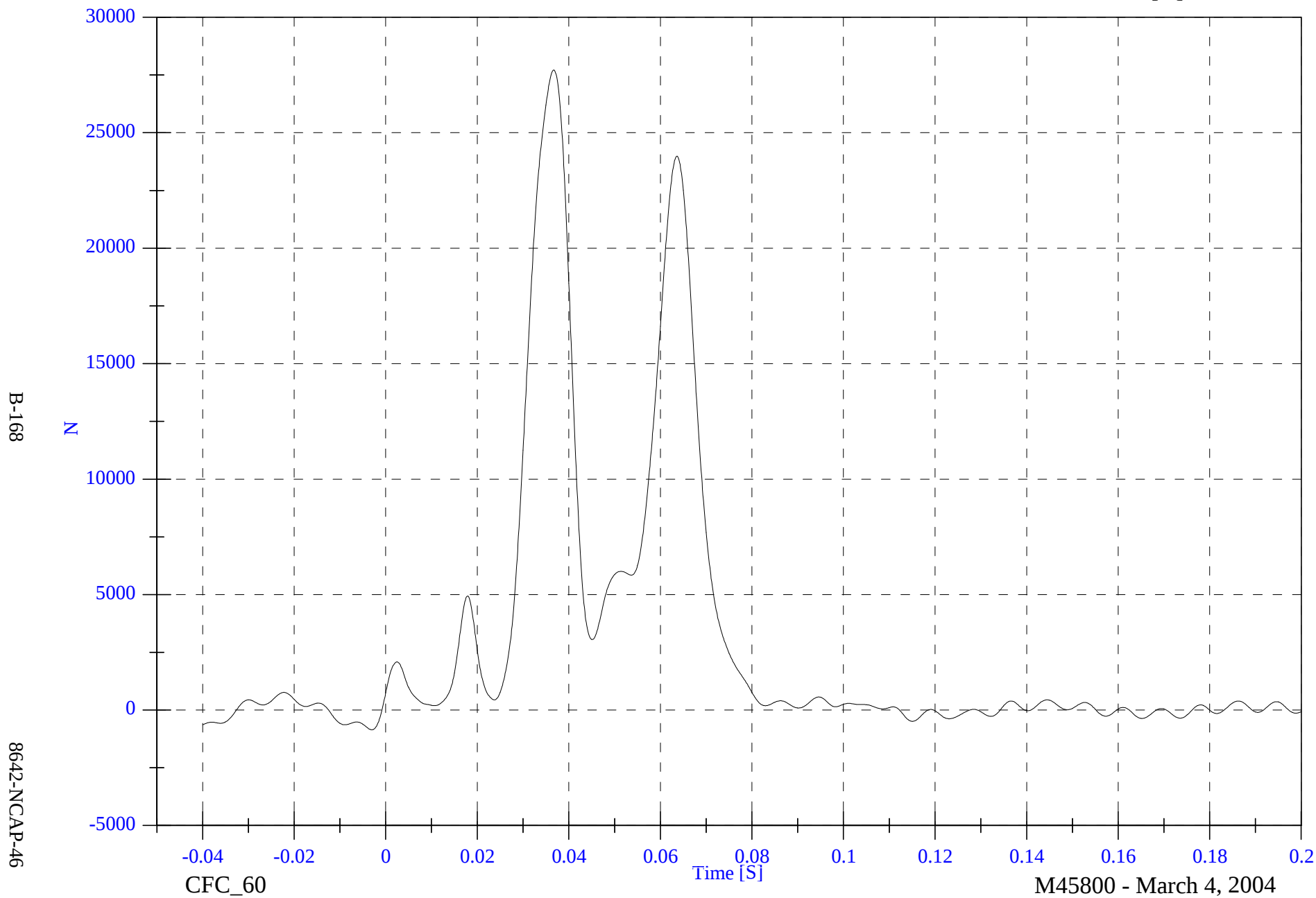


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell C6 Fx

Max: 27714.7 [N] at 0.037 [S]

Min: -856.5 [N] at -0.003 [S]

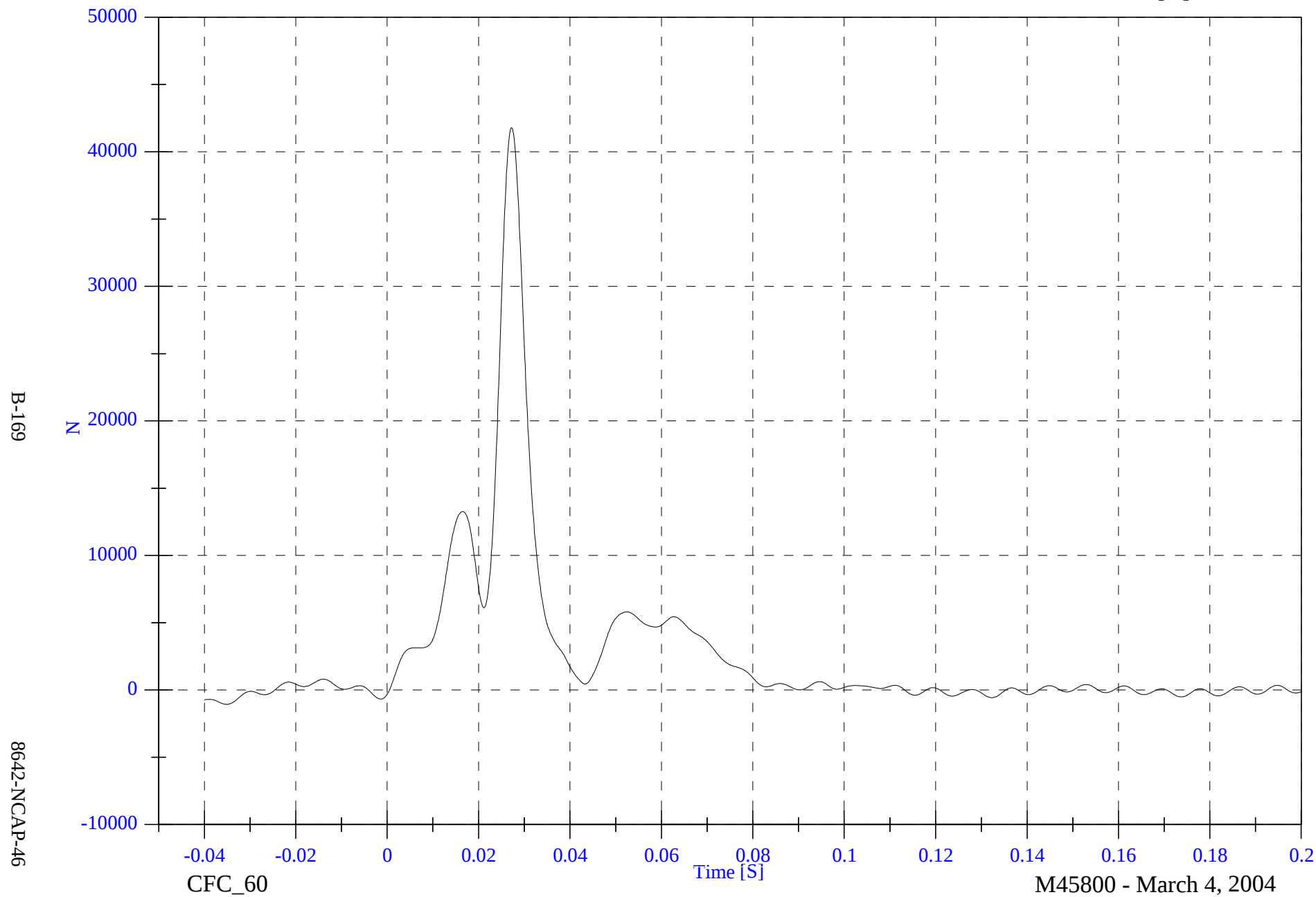


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell C7 Fx

Max: 41793.3 [N] at 0.027 [S]

Min: -1061.6 [N] at -0.035 [S]

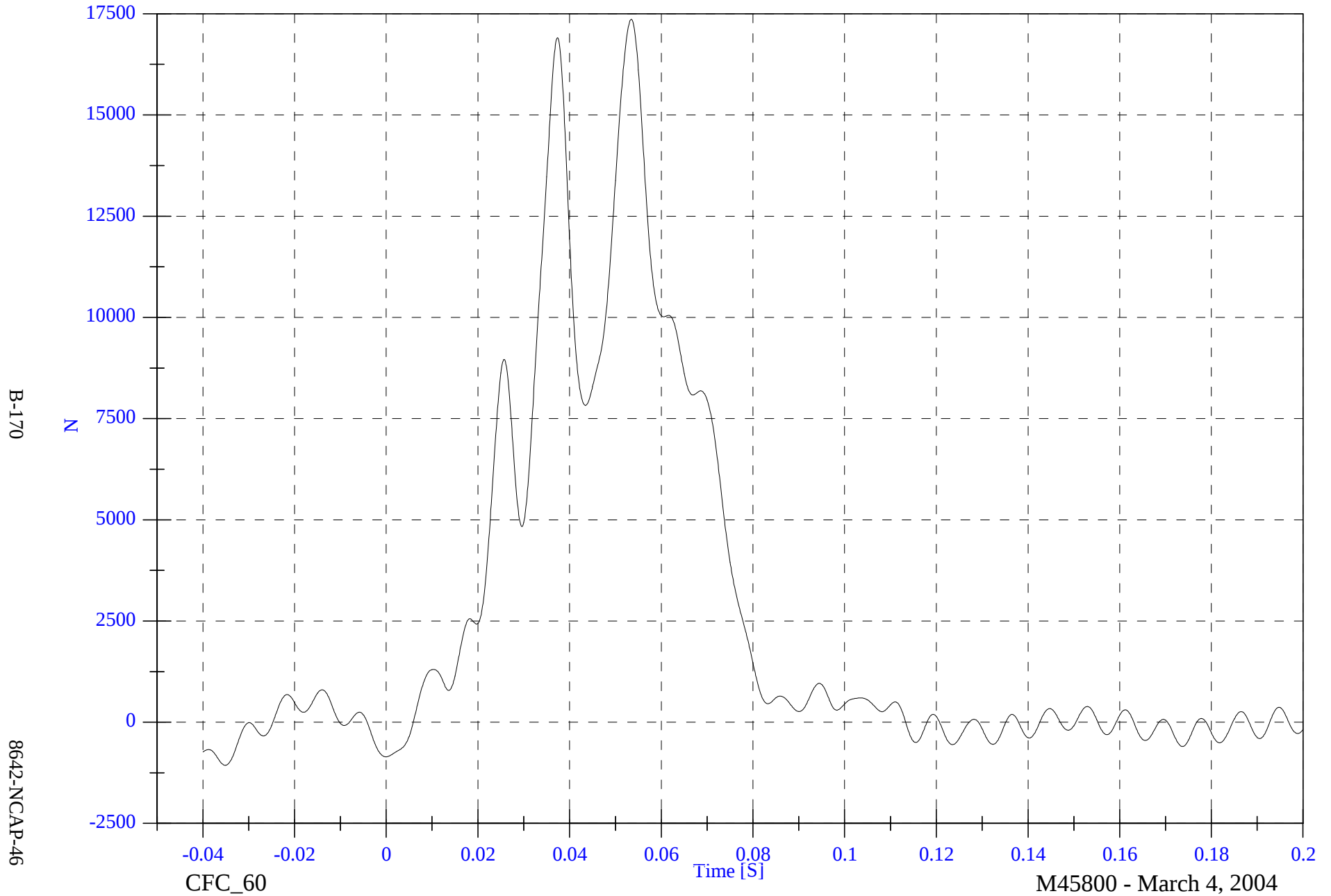


2004 NCAP Test 10 - 2004 VW Touareg

Max: 17362.2 [N] at 0.053 [S]

Min: -1064.3 [N] at -0.035 [S]

Barrier Load Cell C8 Fx

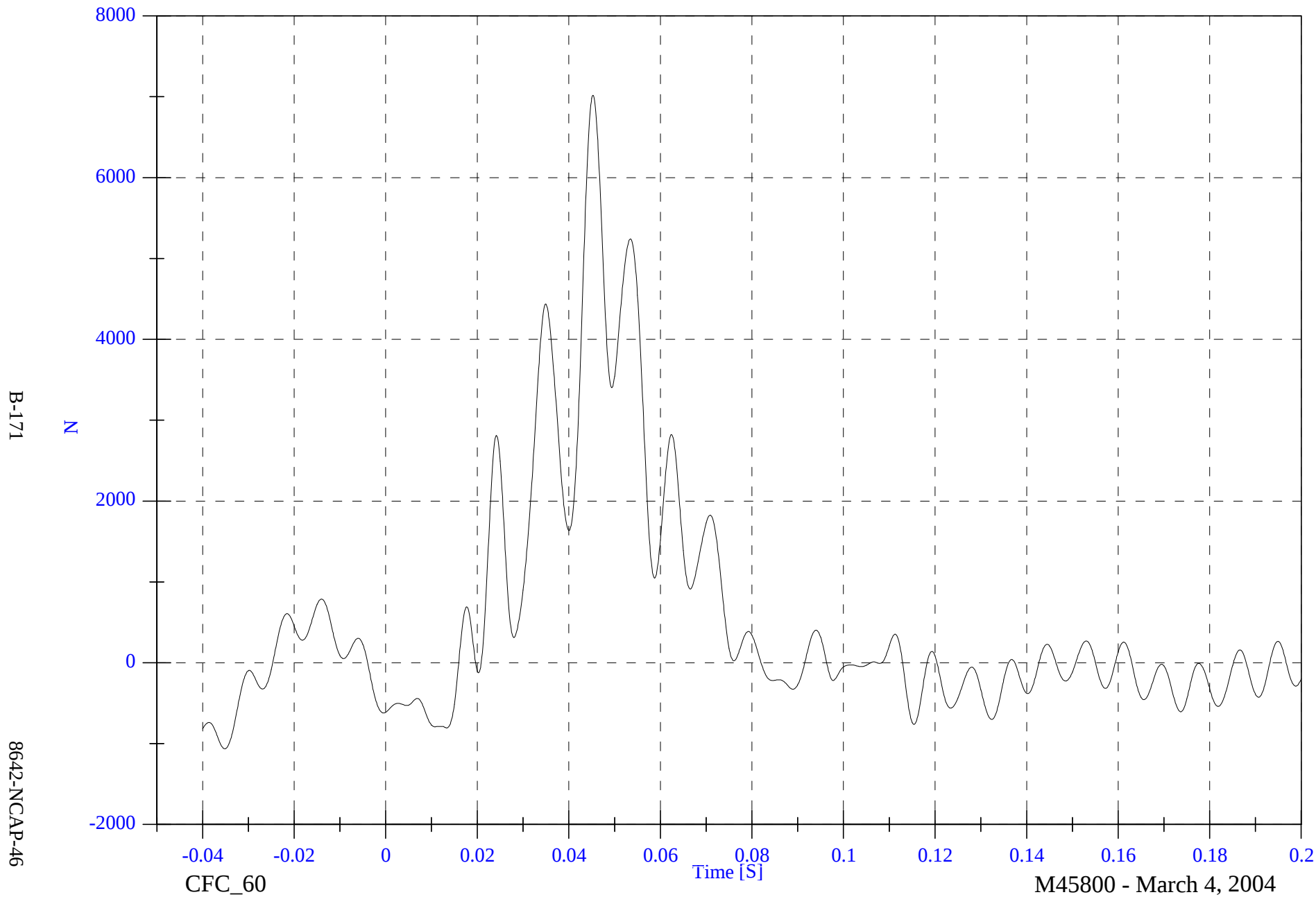


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell C9 Fx

Max: 7017.6 [N] at 0.045 [S]

Min: -1064.0 [N] at -0.035 [S]

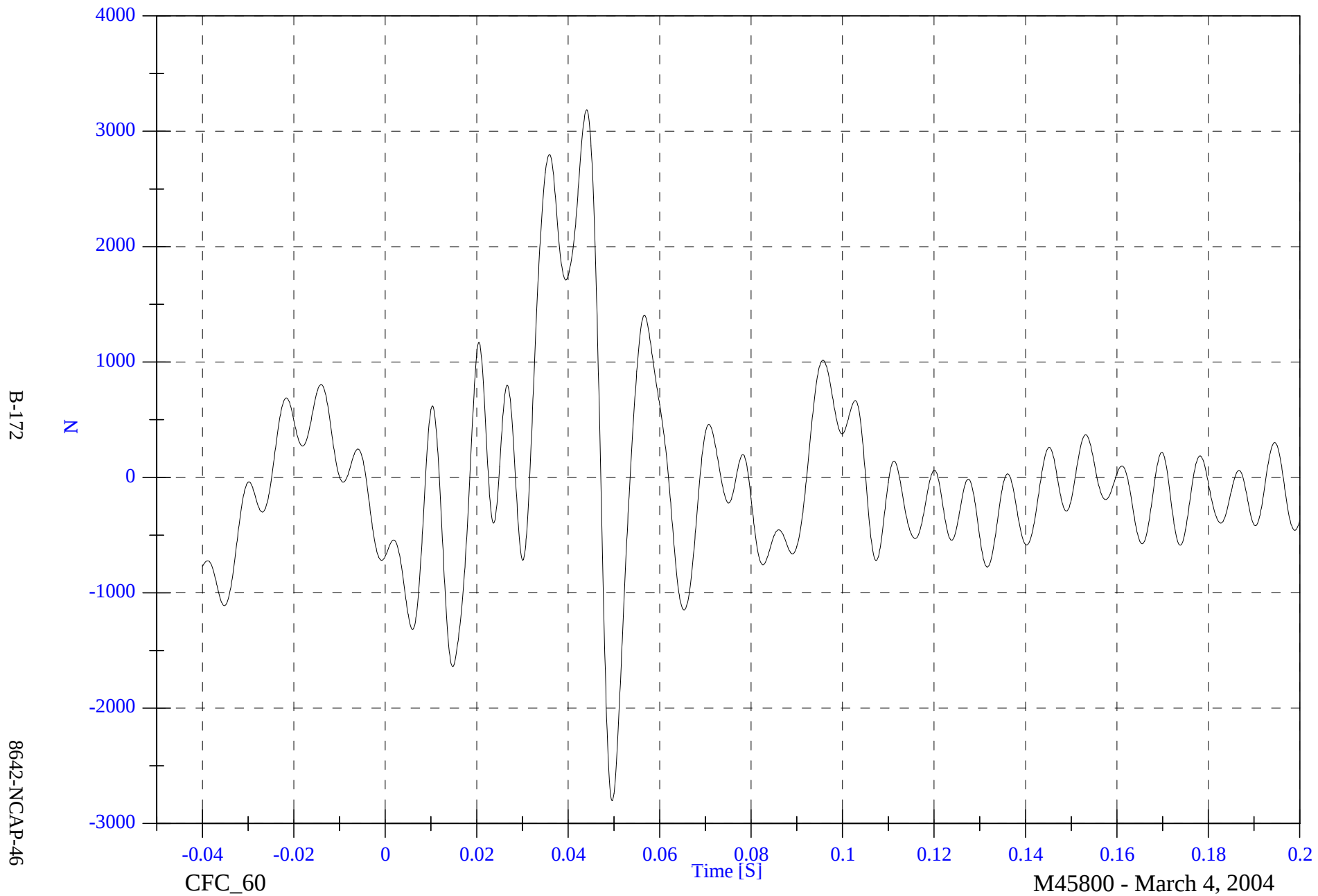


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell D1 Fx

Max: 3184.5 [N] at 0.044 [S]

Min: -2804.1 [N] at 0.050 [S]

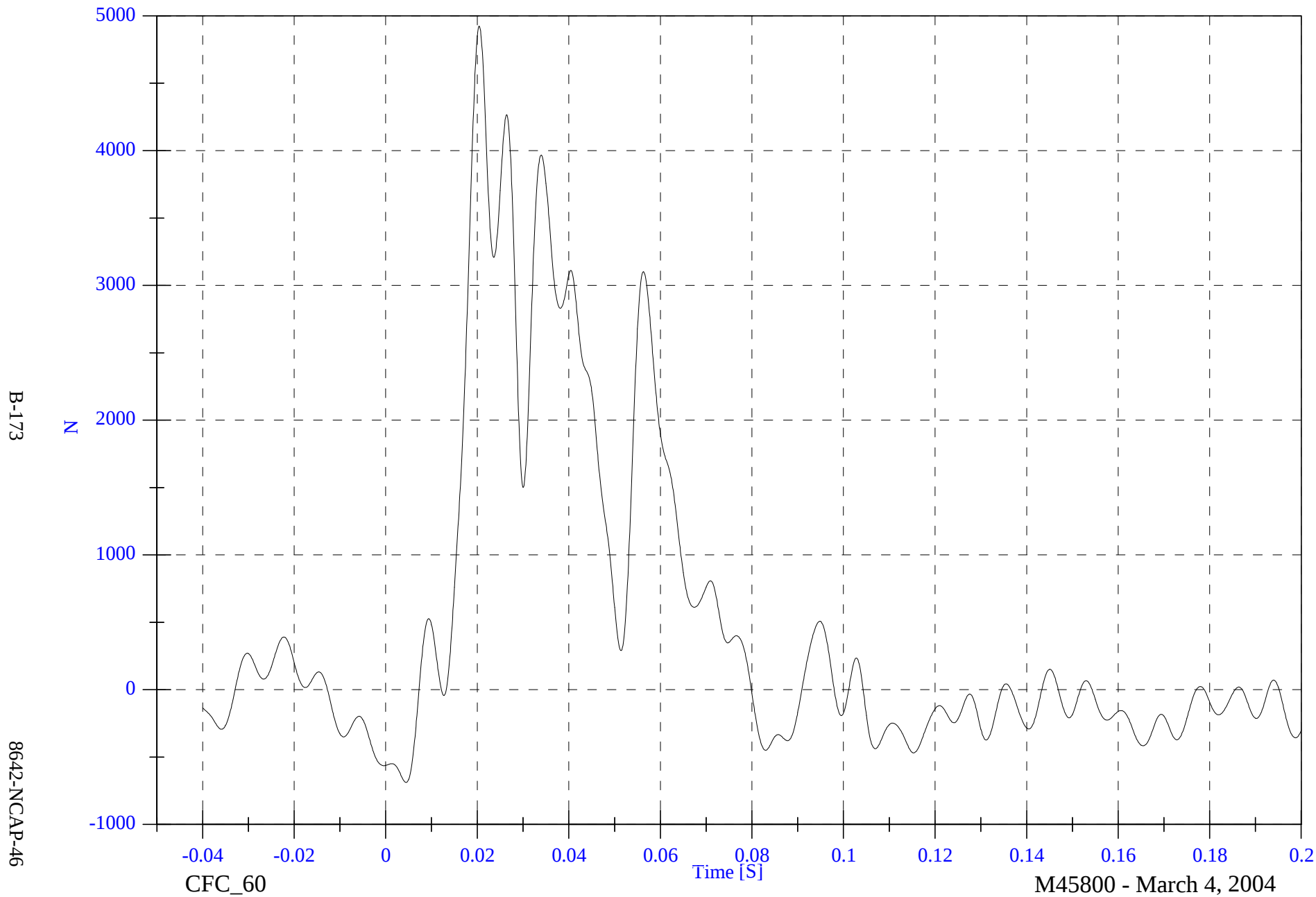


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell D2 Fx

Max: 4923.8 [N] at 0.020 [S]

Min: -688.3 [N] at 0.004 [S]

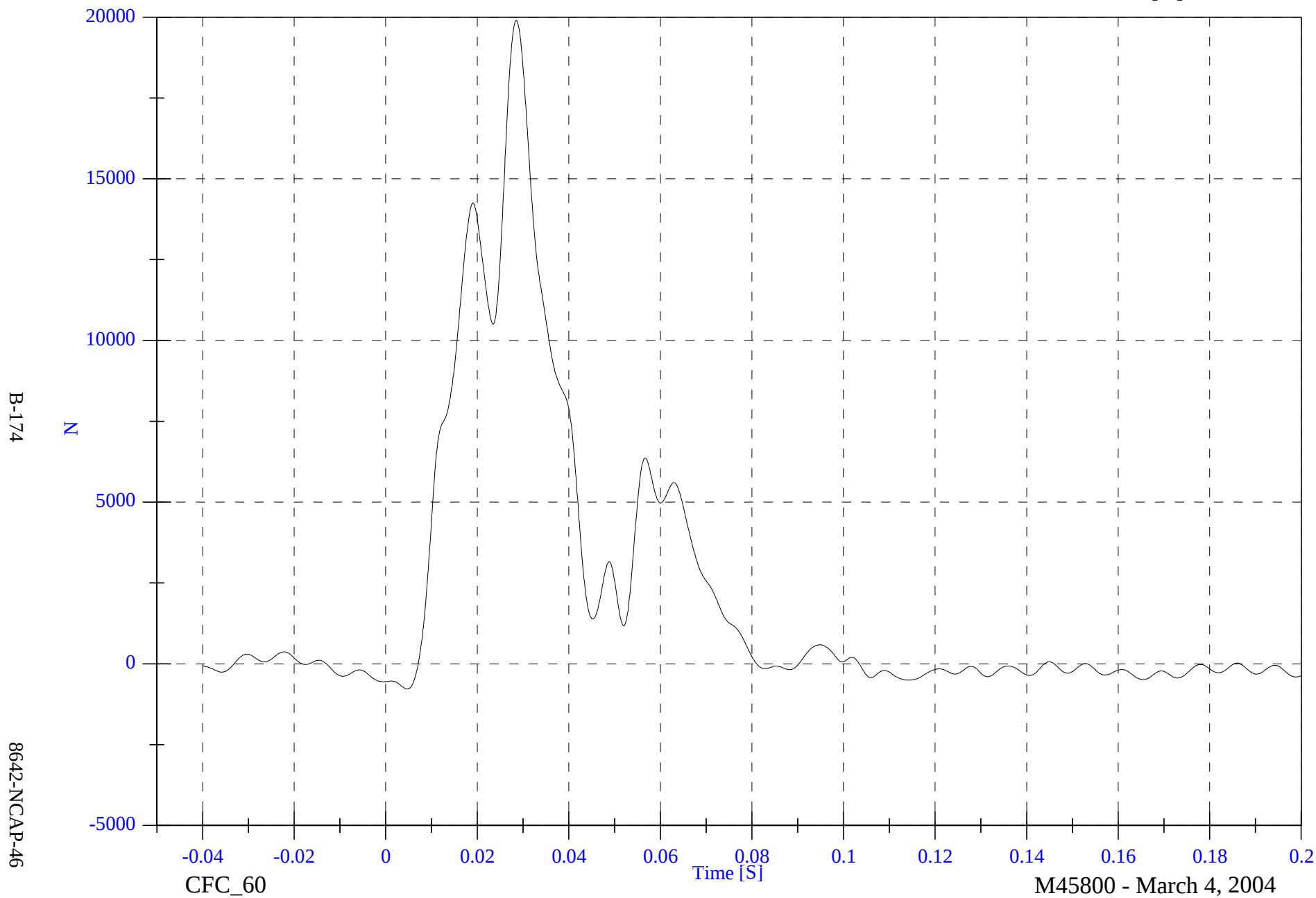


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell D3 Fx

Max: 19901.3 [N] at 0.028 [S]

Min: -777.8 [N] at 0.005 [S]

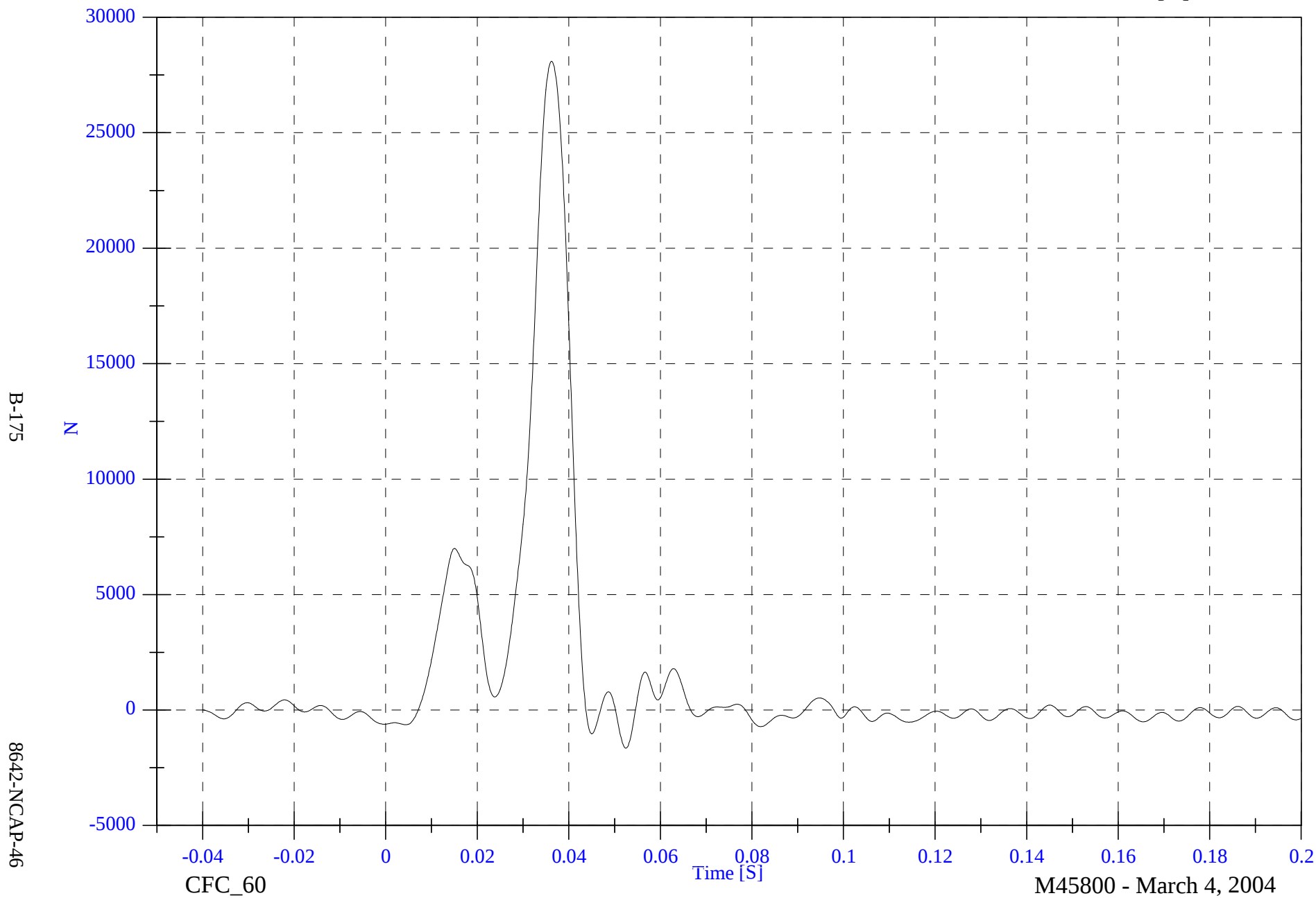


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell D4 Fx

Max: 28092.2 [N] at 0.036 [S]

Min: -1651.1 [N] at 0.052 [S]

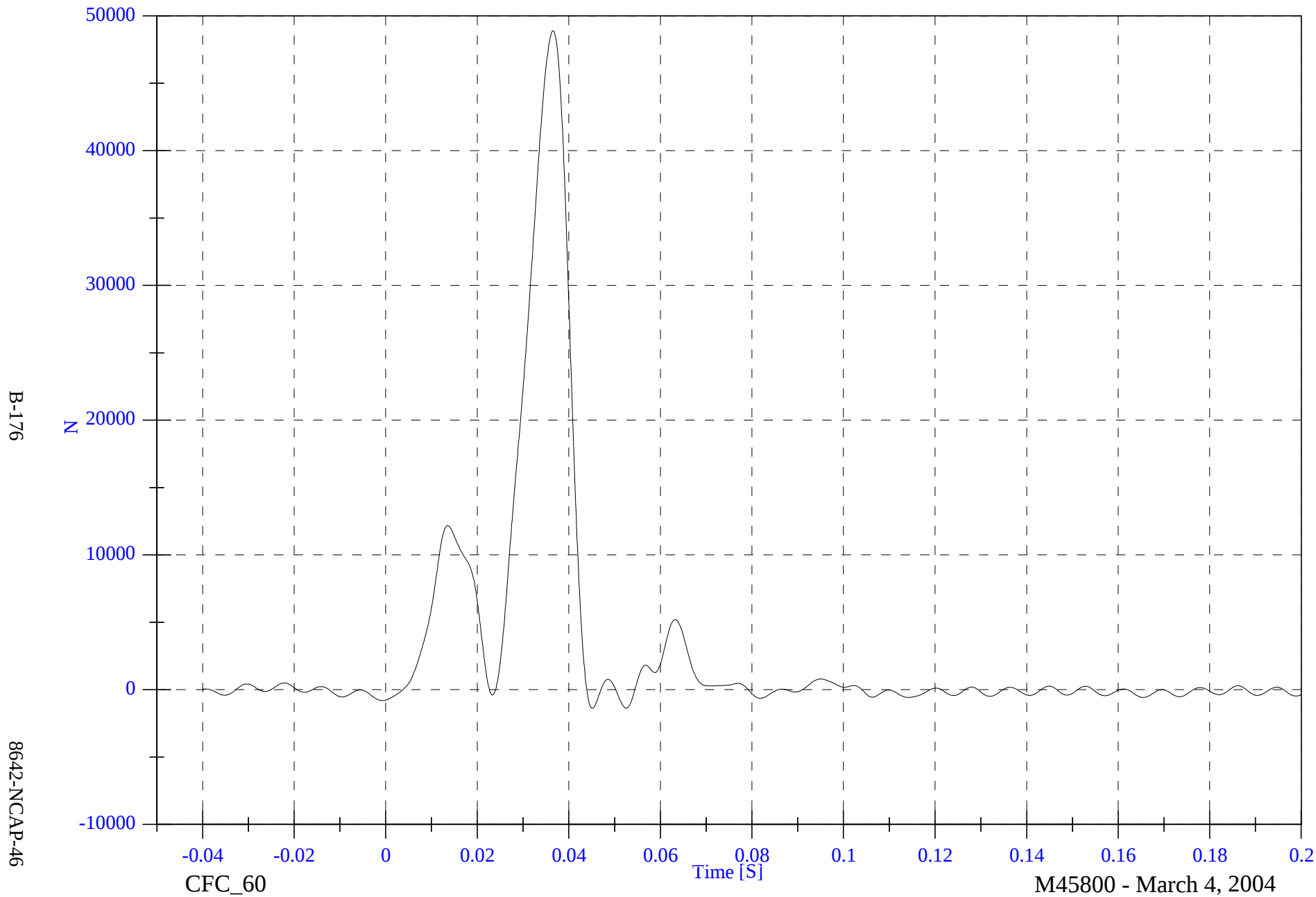


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell D5 Fx

Max: 48888.9 [N] at 0.036 [S]

Min: -1376.0 [N] at 0.045 [S]

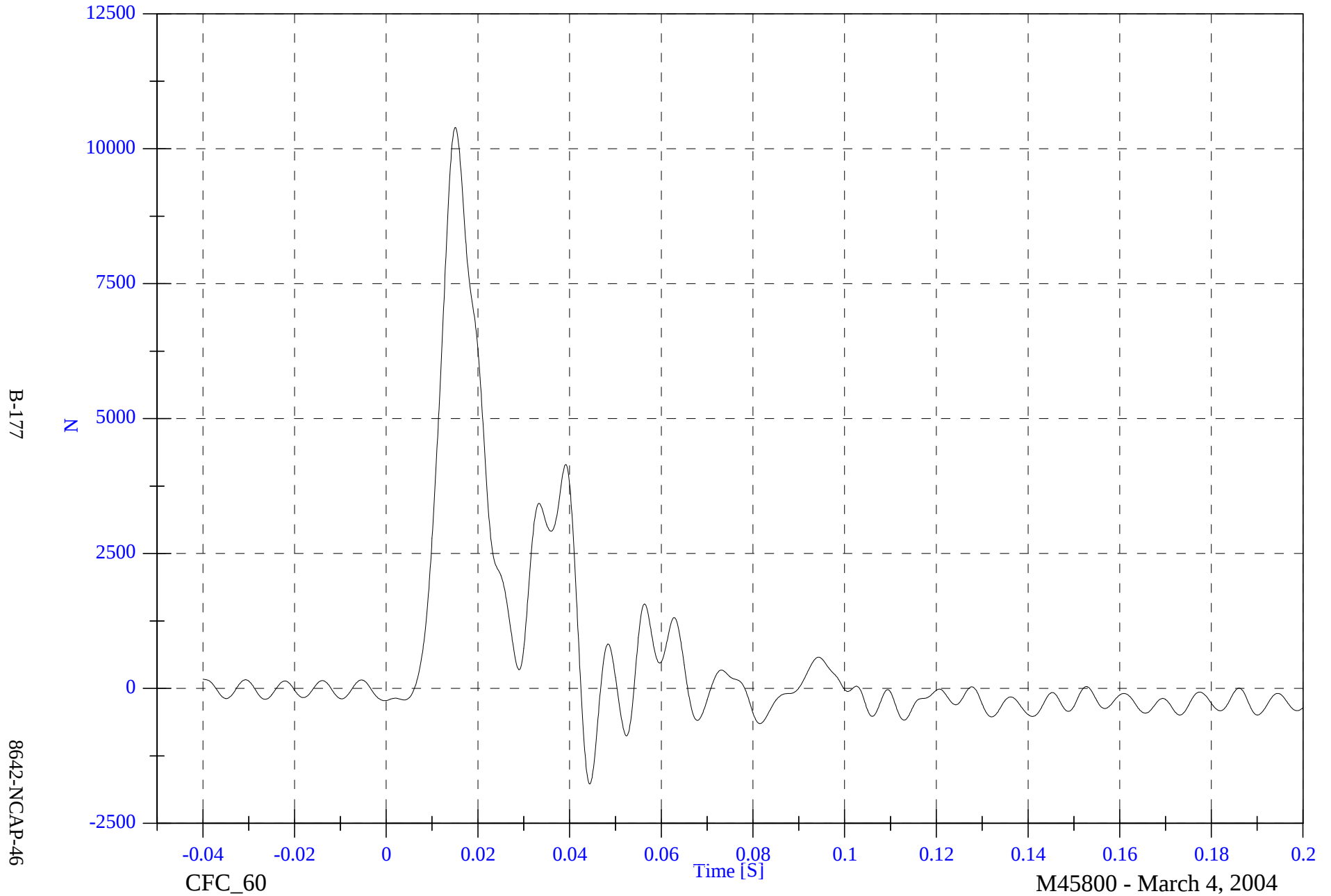


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell D6 Fx

Max: 10395.5 [N] at 0.015 [S]

Min: -1771.8 [N] at 0.044 [S]

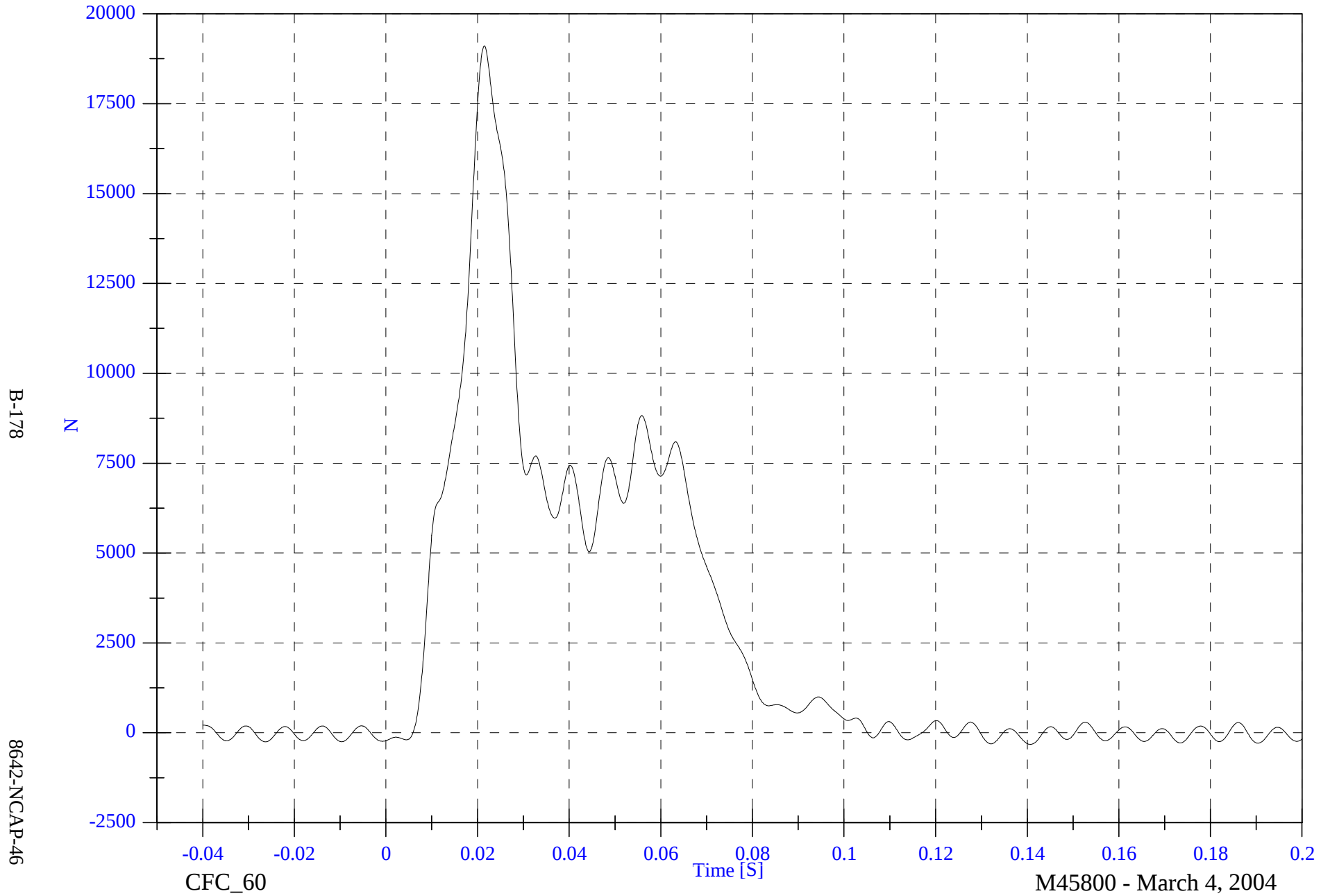


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell D7 Fx

Max: 19108.6 [N] at 0.021 [S]

Min: -320.3 [N] at 0.141 [S]

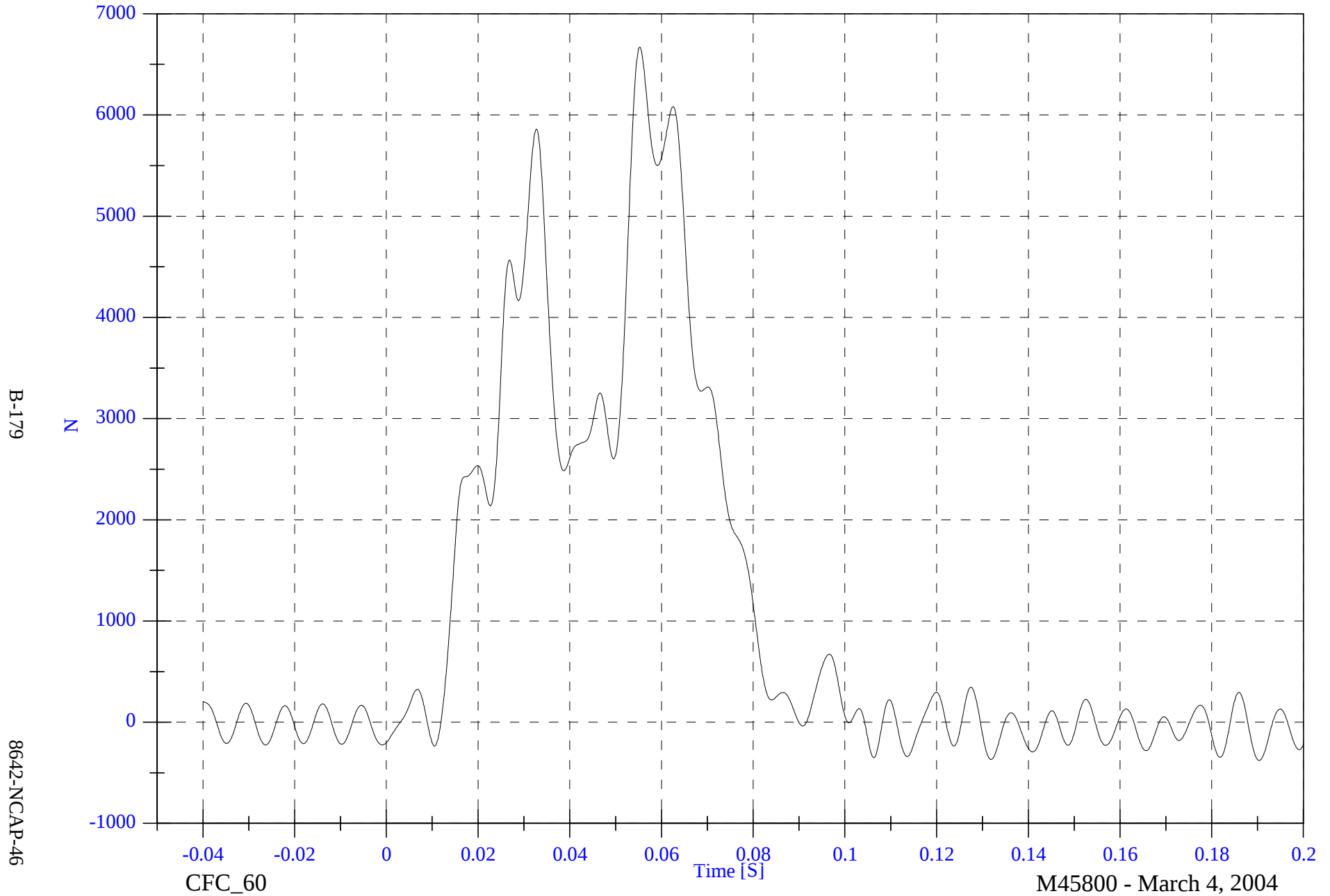


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell D8 Fx

Max: 6671.3 [N] at 0.055 [S]

Min: -377.6 [N] at 0.190 [S]

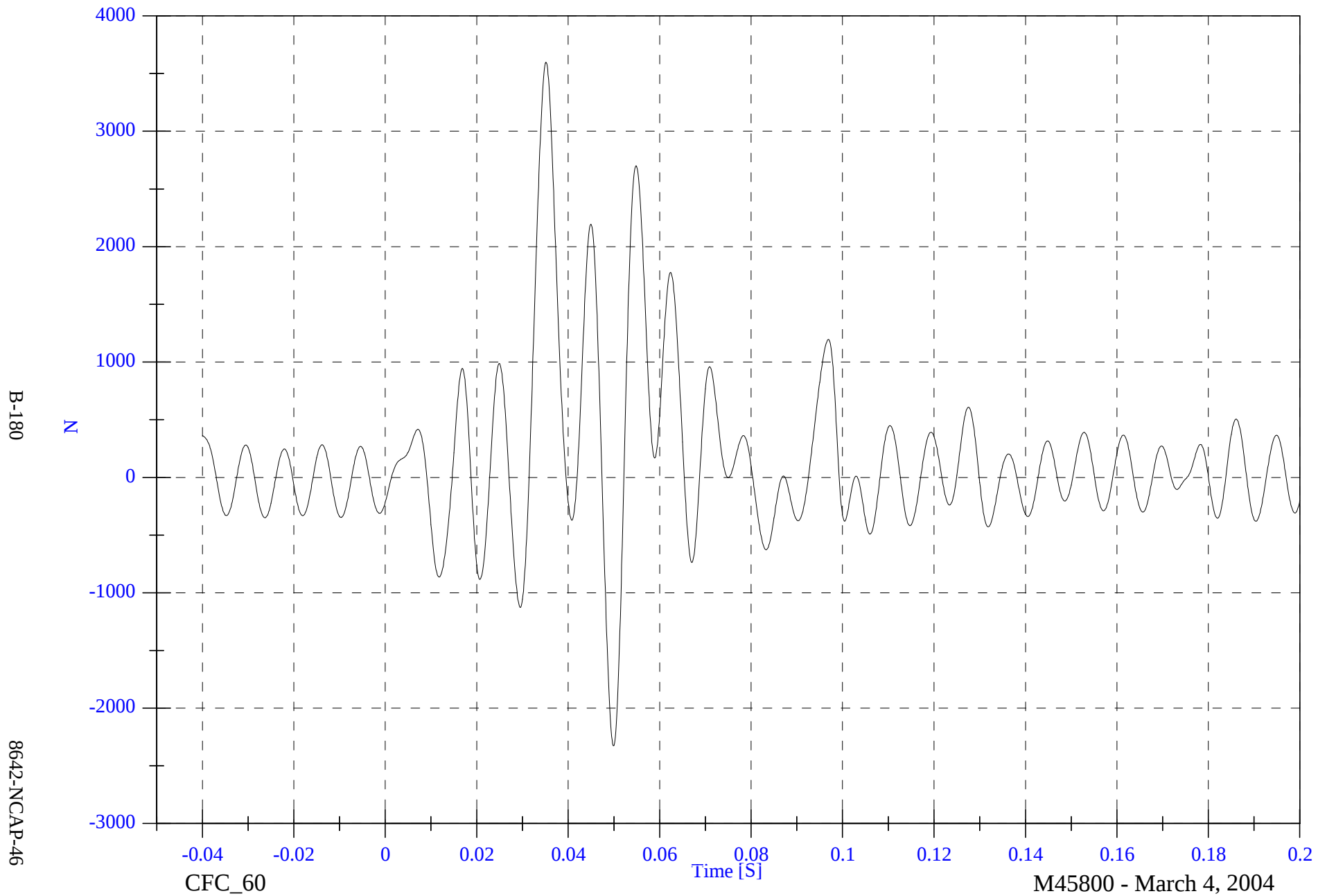


2004 NCAP Test 10 - 2004 VW Touareg

Barrier Load Cell D9 Fx

Max: 3597.5 [N] at 0.035 [S]

Min: -2327.7 [N] at 0.050 [S]

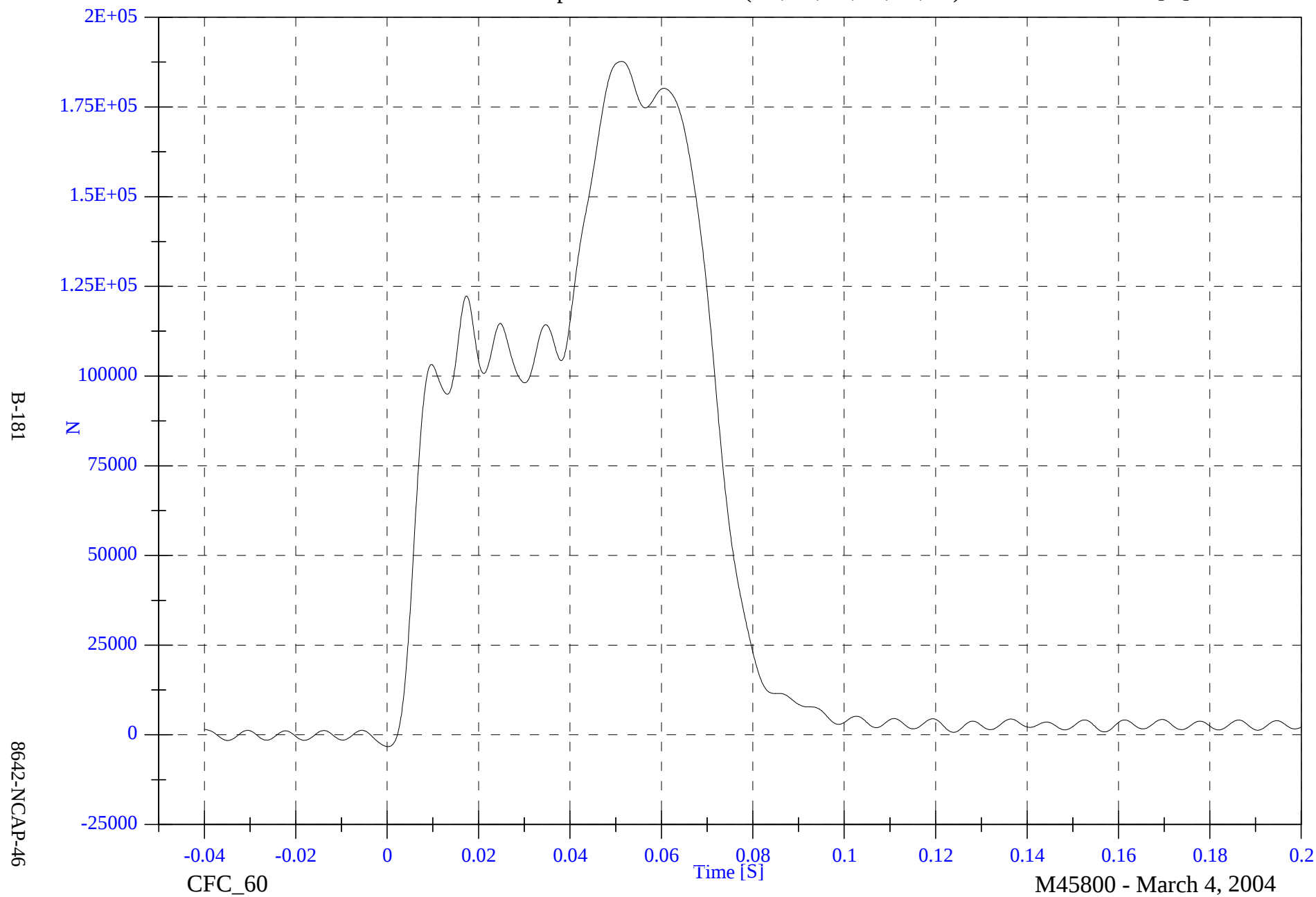


2004 NCAP Test 10 - 2004 VW Touareg

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

Max: 187677.7 [N] at 0.051 [S]

Min: -3286.8 [N] at 0.000 [S]

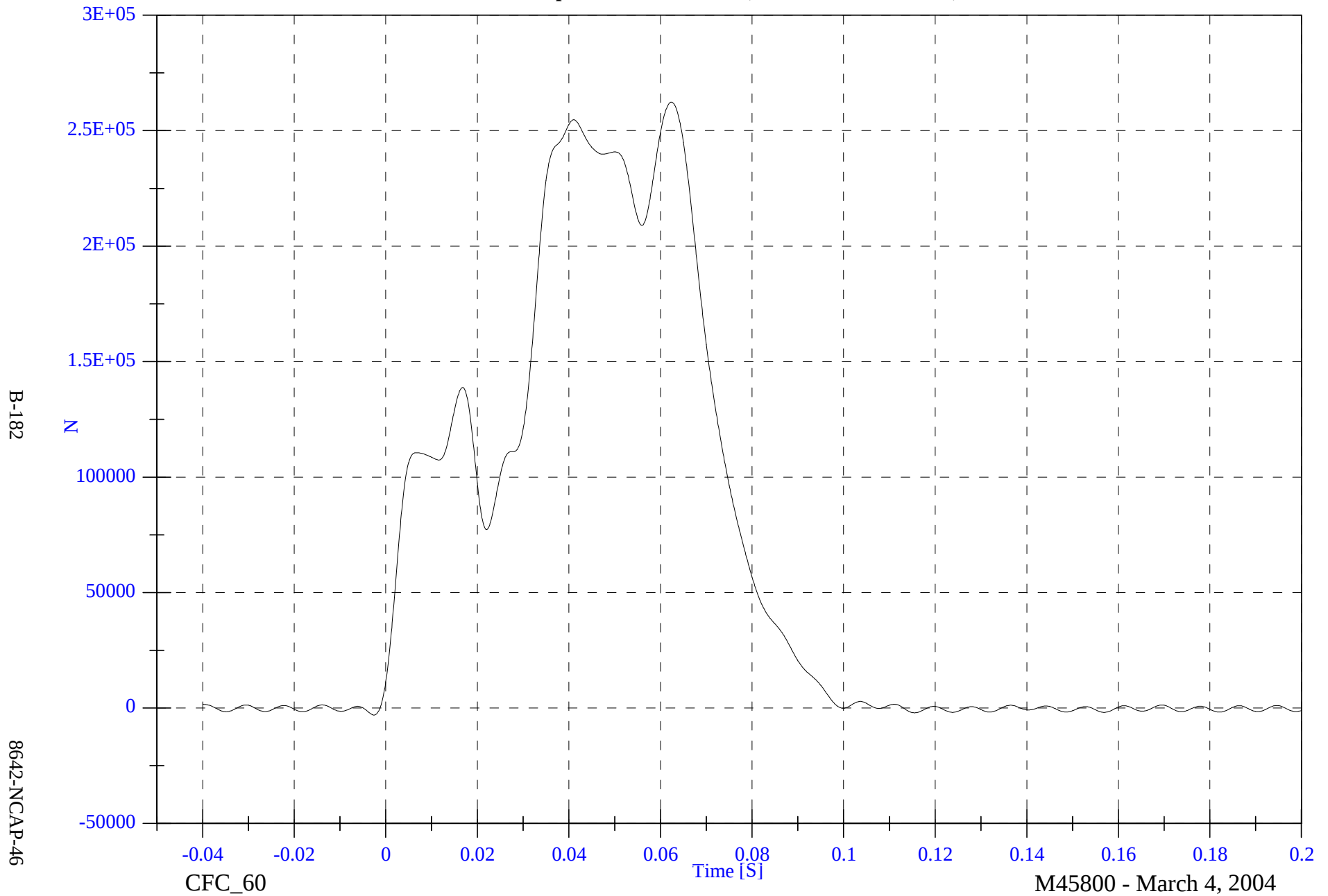


2004 NCAP Test 10 - 2004 VW Touareg

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

Max: 262342.9 [N] at 0.062 [S]

Min: -3008.1 [N] at -0.003 [S]

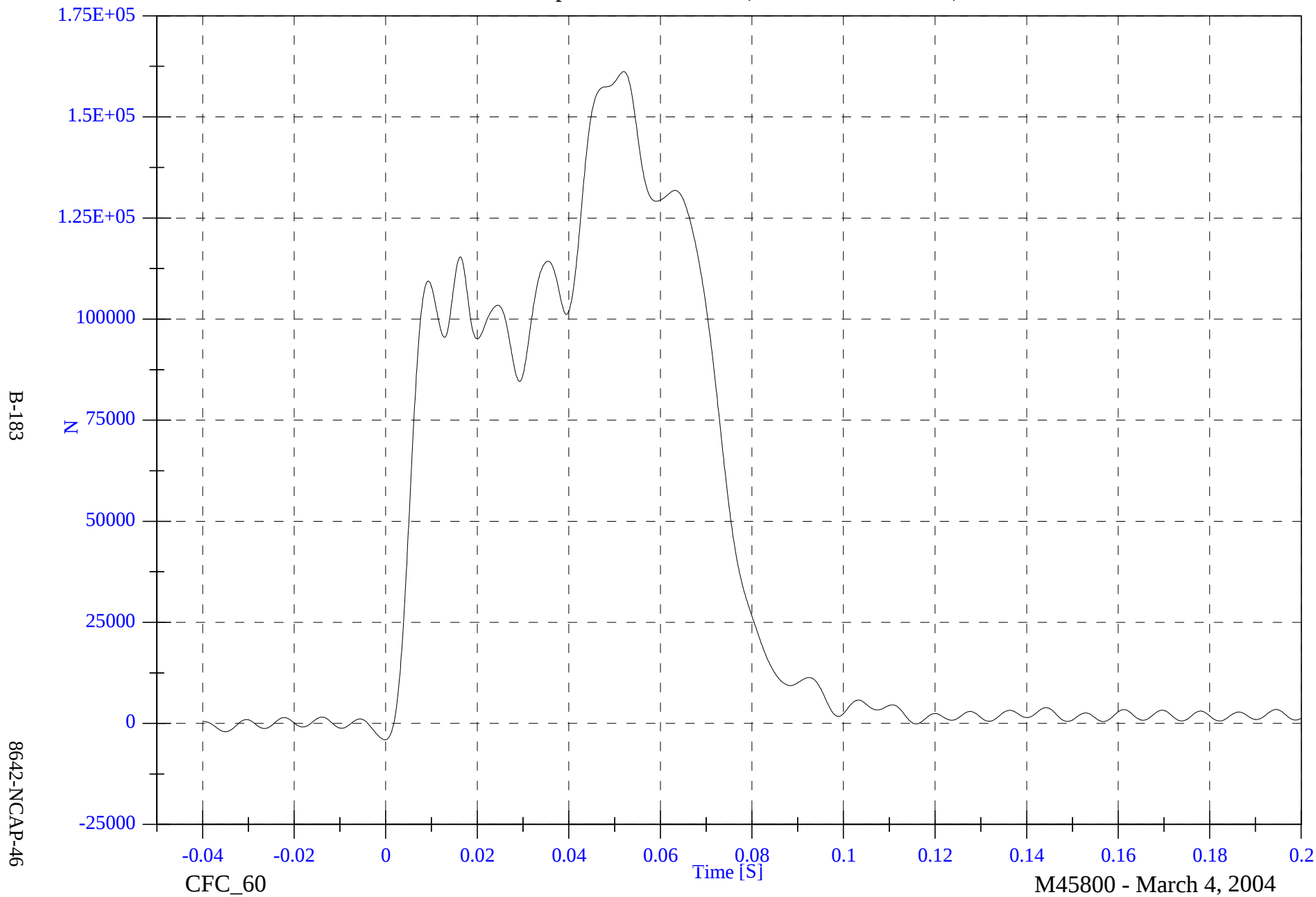


2004 NCAP Test 10 - 2004 VW Touareg

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

Max: 161195.8 [N] at 0.052 [S]

Min: -4049.3 [N] at -0.000 [S]

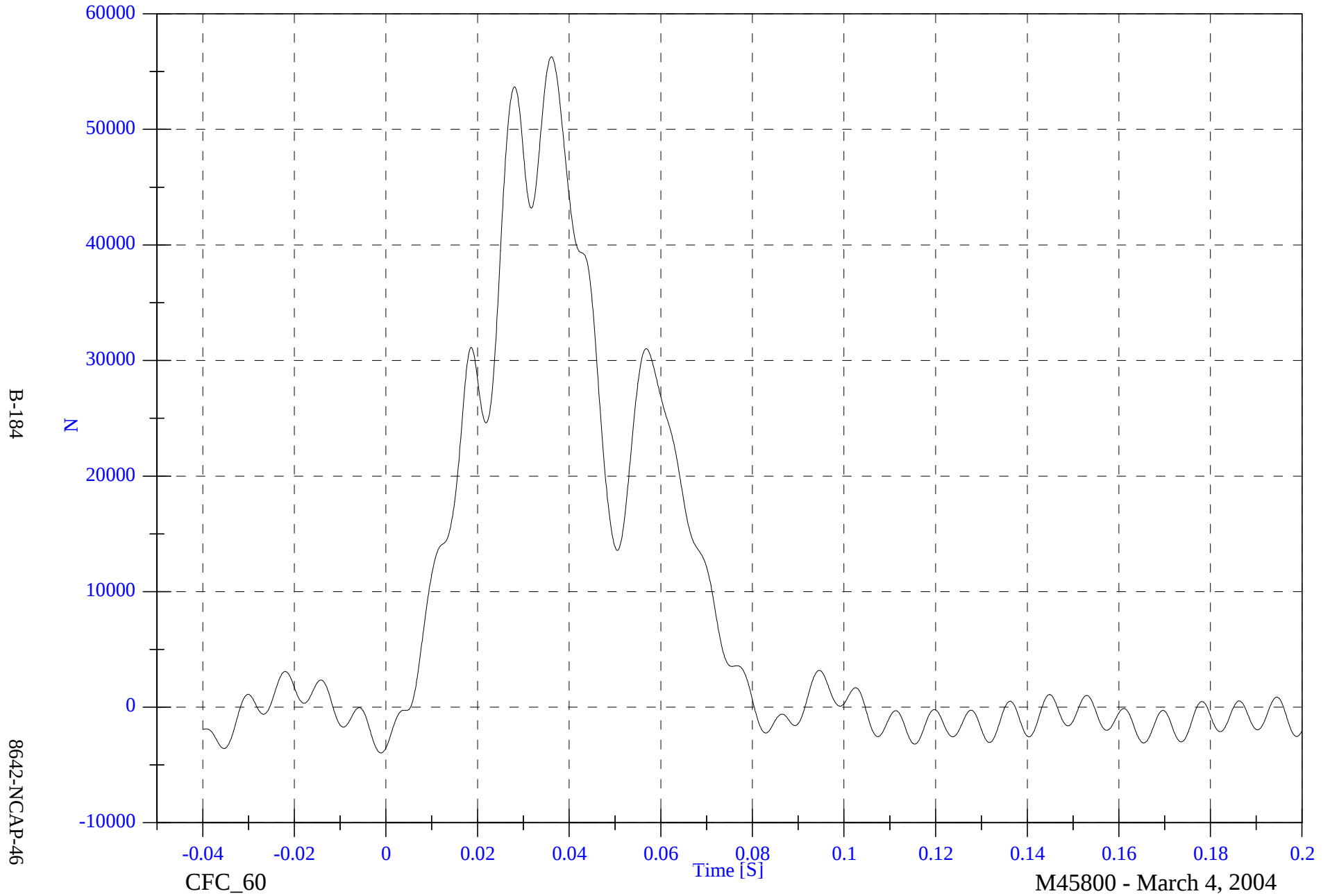


2004 NCAP Test 10 - 2004 VW Touareg

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

Max: 56278.8 [N] at 0.036 [S]

Min: -3962.4 [N] at -0.001 [S]

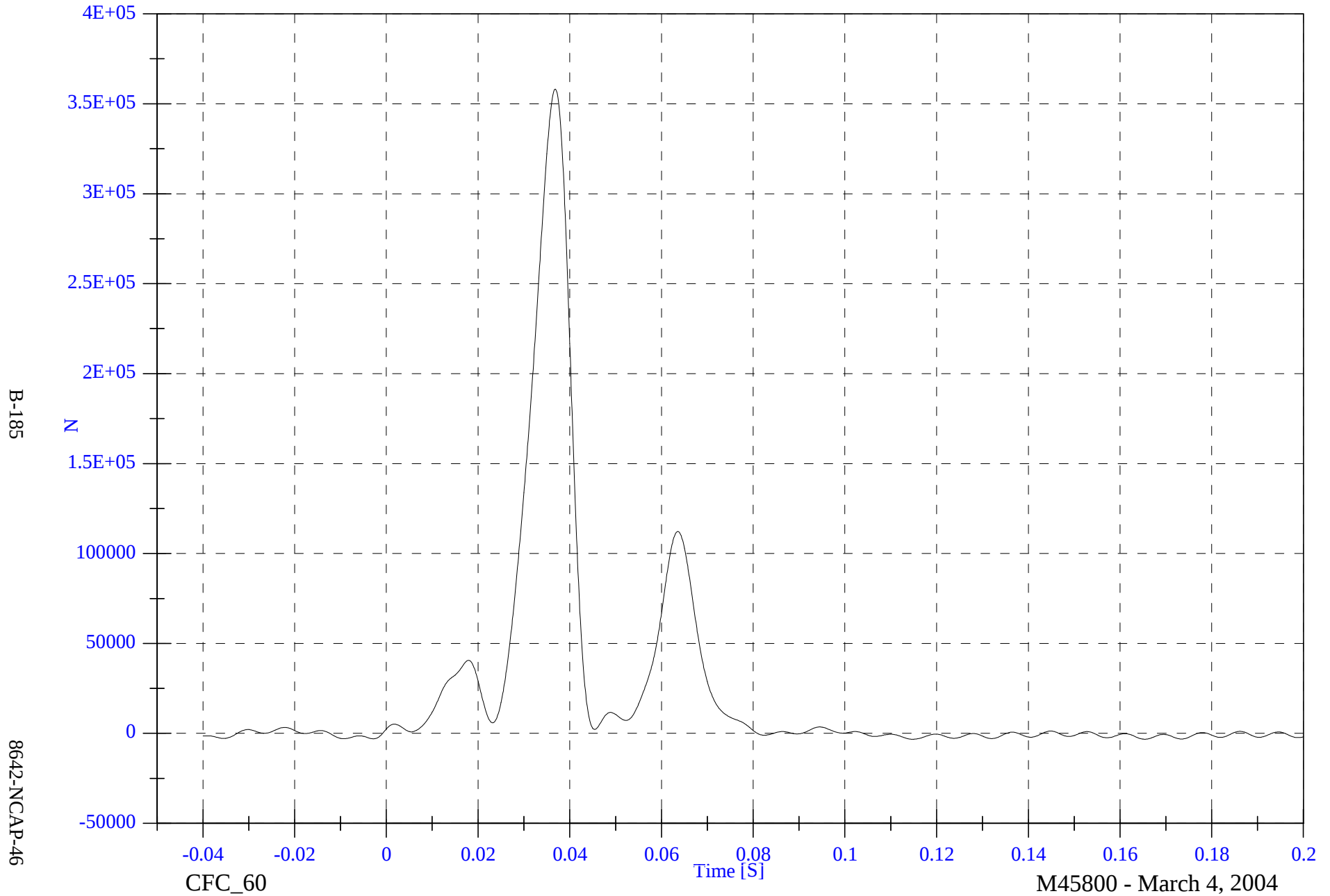


2004 NCAP Test 10 - 2004 VW Touareg

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

Max: 358151.1 [N] at 0.037 [S]

Min: -3244.2 [N] at 0.115 [S]

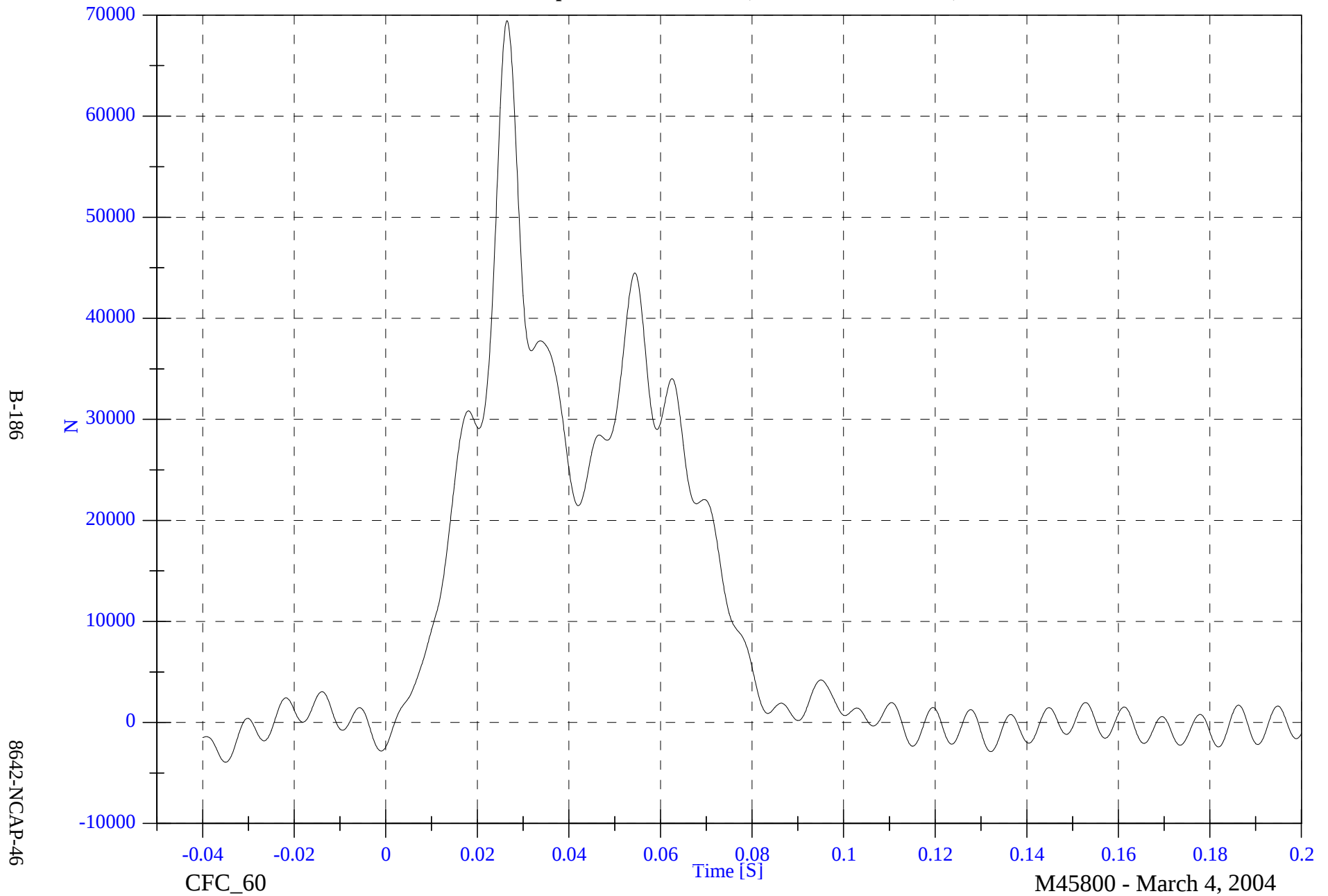


2004 NCAP Test 10 - 2004 VW Touareg

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

Max: 69458.0 [N] at 0.026 [S]

Min: -3940.6 [N] at -0.035 [S]

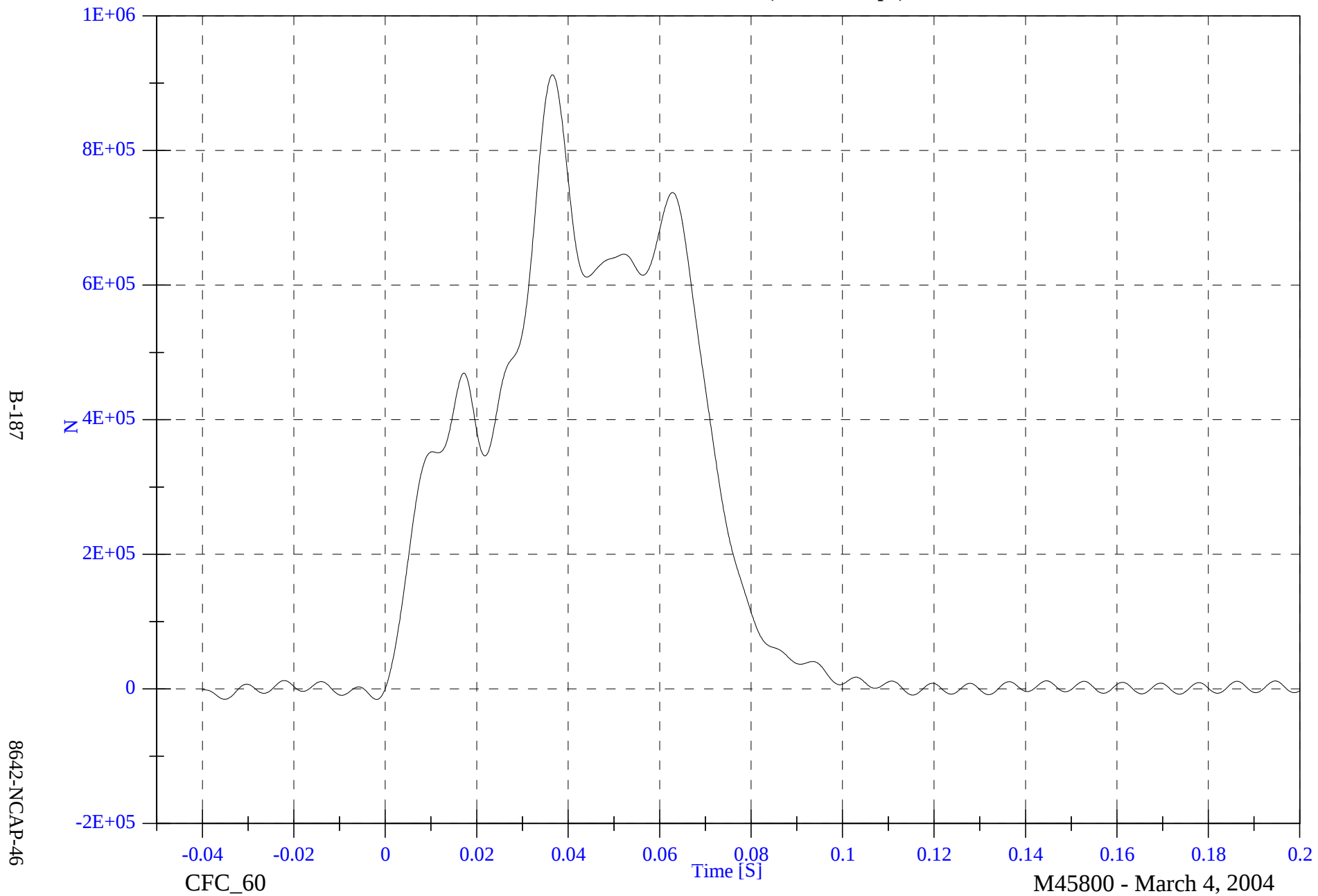


2004 NCAP Test 10 - 2004 VW Touareg

Max: 912429.2 [N] at 0.037 [S]

Total Load Cell Sum (All 6 Groups)

Min: -15622.6 [N] at -0.002 [S]



APPENDIX C

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

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

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

Dummy serial numbers and certification dates are:

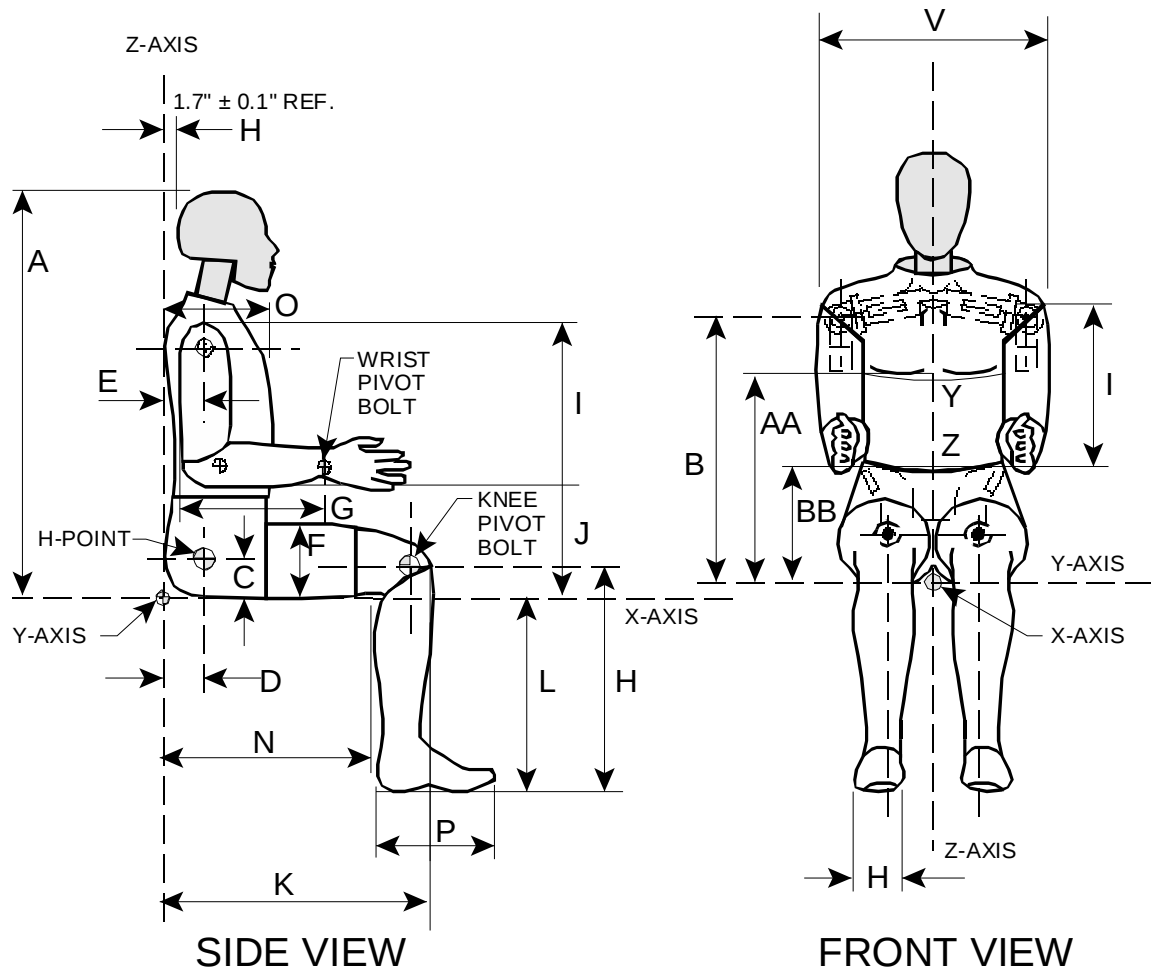
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	061	2/14/2004
#2/Right Front Passenger	064	2/14/2004

Electronic Test Equipment

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

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS SPECIFICATIONS



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

PART 572E
HEAD DROP TEST

Dummy Serial Number 061
Sequential Test Number 2
Date 2-10-2004
Workfile 061H 02-10-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	36.00
Peak Resultant Acceleration	225-275 G's	254.88
Peak Lateral Acceleration	15 G's Max	10.97
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061	
Sequential Test Number	2	
Date	02-11-2004	6 Axis Neck Transducer
Workfile	016NF 02-11-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	33
Impact Velocity		22.60 - 23.40 Ft/s	22.67
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.60
	20 ms	17.60 - 22.60 G's	20.92
	30 ms	12.50 - 18.50 G's	13.30
Max Pendulum G's Above 30 ms		29 G's Max	13.30
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	40.40
D Plane Rotation	Max	64 - 78 Deg	66.20
	Time	57 - 64 ms	58.90
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	104.20
	Time	47 - 58 ms	52.80
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	117.20
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.80

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061	
Sequential Test Number	2	
Date	02-11-2004	6 Axis Neck Transducer
Workfile	061NE2 02-11-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	33
Impact Velocity		19.50 - 20.30 Ft/s	19.65
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.20
	20 ms	14.00 - 19.00 G's	16.58
	30 ms	11.00 - 16.00 G's	13.70
Max Pendulum G's Above 30 ms		22 G's Max	14.14
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	40.10
D Plane Rotation	Max	81 - 106 Deg	91.15
	Time	72 - 82 ms	75.90
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-69.34
	Time	65 - 79 ms	71.10
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	151.70
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	138.90

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 2
Date 02-12-2004
Workfile 061T 02-12-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	35
Pendulum Velocity	21.6 - 22.4 Ft/s	22.00
Maximum Deflection	2.50 - 2.86 in	2.56
Maximum Resistive Force	1160 - 1325 Lbs	1296.85
Internal Hysteresis	69 - 85 %	76.03

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 2
Date 02-13-2004
Workfile 061LF 02-13-04/061RF 02-13-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	33
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1254.82
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	33
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1238.75

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Sequential Test Number 2
Date 02-14-2004

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			35
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.3
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	17.7
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	3.6
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	7.8
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 2
Date 02-10-2004
Workfile 064H 02-10-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	36.0
Peak Resultant Acceleration	225-275 G's	259.11
Peak Lateral Acceleration	15 G's Max	5.09
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	2	
Date	02-11-2004	6 Axis Neck Transducer
Workfile	064NF 02-11-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	33.0
Impact Velocity		22.60 - 23.40 Ft/s	22.65
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.61
	20 ms	17.60 - 22.60 G's	18.90
	30 ms	12.50 - 18.50 G's	14.73
Max Pendulum G's Above 30 ms		29 G's Max	14.84
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	39.30
D Plane Rotation	Max	64 - 78 Deg	65.70
	Time	57 - 64 ms	59.80
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	104.17
	Time	47 - 58 ms	51.80
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	118.70
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	99.10

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Sequential Test Number	2	
Date	02-11-2004	6 Axis Neck Transducer
Workfile	064NE 02-11-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	33
Impact Velocity		19.50 - 20.30 Ft/s	19.79
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.88
	20 ms	14.00 - 19.00 G's	17.33
	30 ms	11.00 - 16.00 G's	15.15
Max Pendulum G's Above 30 ms		22 G's Max	15.39
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	38.20
D Plane Rotation	Max	81 - 106 Deg	85.48
	Time	72 - 82 ms	75.90
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-63.94
	Time	65 - 79 ms	69.90
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	154.20
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	135.90

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 2
Date 02-13-2004
Workfile 064T 02-13-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	31.0
Pendulum Velocity	21.6 - 22.4 Ft/s	22.30
Maximum Deflection	2.50 - 2.86 in	2.57
Maximum Resistive Force	1160 - 1325 Lbs	1288.35
Internal Hysteresis	69 - 85 %	75.00

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 2
Date 02-13-2004
Workfile 064LF 02-13-04/064RF 02-13-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	33.0
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1180.95
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	33.0
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1178.84

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 2
Date 02-14-2004

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			35
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.3
Waist Circumference	Z	32.9 - 34.1 in	34.0
Chest Depth	O	8.4 - 9.0 in	8.5
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	17.4
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.2
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
Elbow Rest Height	J	7.5 - 8.3 in	7.8
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	ENDEVCO	AC-P21399	11/06/03	05/06/04
	X Arm Z	ENDEVCO	AC-P23282	11/11/03	05/11/04
	Y Arm X	ENDEVCO	AC-P23155	11/11/03	05/11/04
	Y Arm Z	ENDEVCO	AC-P23358	11/06/03	05/06/04
	Z Arm X	ENDEVCO	AC-P18731	11/11/03	05/11/04
	Z Arm Y	ENDEVCO	AC-P19217	11/26/03	05/26/04
Head	X	ENDEVCO	AC-P18516	11/11/03	05/11/04
	Y	ENDEVCO	AC-P19222	11/11/03	05/11/04
	Z	ENDEVCO	AC-P18558	11/26/03	05/26/04
Head	X (R)	ENDEVCO	AC-P18663	11/11/03	05/11/04
	Y (R)	ENDEVCO	AC-P18639	11/11/03	05/11/04
	Z (R)	ENDEVCO	AC-P18537	11/11/03	05/11/04
Neck Load Cell	X	DENTON	LC-076FX	09/24/03	03/24/04
	Y	DENTON	LC-076FY	09/24/03	03/24/04
	Z	DENTON	LC-076FZ	09/24/03	03/24/04
Neck Moment	X	DENTON	LC-076MX	09/24/03	03/24/04
	Y	DENTON	LC-076MY	09/24/03	03/24/04
	Z	DENTON	LC-076MZ	09/24/03	03/24/04
Chest	X	ENDEVCO	AC-P21373	10/30/03	04/29/04
	Y	ENDEVCO	AC-P22639	10/30/03	04/29/04
	Z	ENDEVCO	AC-P21297	10/30/03	04/29/04
Chest	X (R)	ENDEVCO	AC-P21171	10/30/03	04/29/04
	Y (R)	ENDEVCO	AC-P23136	10/30/03	04/29/04
	Z (R)	ENDEVCO	AC-P23128	10/30/03	04/29/04
Chest Deflection	X	SERVO	DS-061	11/11/03	05/11/04
Pelvic	X	ENDEVCO	AC-P18792	11/11/03	05/11/04
	Y	ENDEVCO	AC-P17535	11/11/03	05/11/04
	Z	ENDEVCO	AC-P23134	11/11/03	05/11/04

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	LC-231	12/03/03	06/02/04
Right Femur Load Cell	Fz	DENTON	LC-232	12/03/03	06/02/04
Left Upper Tibia	Mx	DENTON	LC-038MX	09/26/03	03/26/04
	My	DENTON	LC-038MY	09/26/03	03/26/04
Left Lower Tibia	Fz	DENTON	LC-124FZ	09/26/03	03/26/04
	Mx	DENTON	LC-124MX	09/26/03	03/26/04
	My	DENTON	LC-124MY	09/26/03	03/26/04
Right Upper Tibia	Mx	DENTON	LC-023MX	09/26/03	03/26/04
	My	DENTON	LC-023MY	09/26/03	03/26/04
Right Lower Tibia	Fz	DENTON	LC-111FZ	09/26/03	03/26/04
	Mx	DENTON	LC-111MX	09/26/03	03/26/04
	My	DENTON	LC-111MY	09/26/03	03/26/04
Left Foot Rear	X	ENTRAN	AC-00L13-F04	11/14/03	05/14/04
	Z	ENTRAN	AC-01G18-F15	11/14/03	05/14/04
Left Foot Front	Z	ENTRAN	AC-01G18-F14	11/14/03	05/14/04
Right Foot Rear	X	ENTRAN	AC-01G18-F05	11/14/03	05/14/04
	Z	ENTRAN	AC-01G18-F03	11/14/03	05/14/04
Right Foot Front	Z	ENTRAN	AC-01J02-F09	11/14/03	05/14/04
Lap Belt Load Cell		FIRST TECHNOLOGY	LC-170	10/10/03	04/09/04
Shoulder Belt Load Cell		FIRST TECHNOLOGY	LC-175	10/10/03	04/09/04

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P18532	11/20/03	05/20/04
	X Arm Z	ENDEVCO	AC-P17237	11/20/03	05/20/04
	Y Arm X	ENDEVCO	AC-P16662	11/20/03	05/20/04
	Y Arm Z	ENDEVCO	AC-P17299	11/20/03	05/20/04
	Z Arm X	ENDEVCO	AC-P21441	11/20/03	05/20/04
	Z Arm Y	ENDEVCO	AC-P19197	11/26/03	05/26/04
Head	X	ENDEVCO	AC-J32184	11/03/03	05/03/04
	Y	ENDEVCO	AC-J32185	10/30/03	04/29/04
	Z	ENDEVCO	AC-J31011	11/03/03	05/03/04
Head	X (R)	ENDEVCO	AC-J31020	11/03/03	05/03/04
	Y (R)	ENDEVCO	AC-J31101	11/03/03	05/03/04
	Z (R)	ENDEVCO	AC-J31059	11/03/03	05/03/04
Neck Load Cell	X	DENTON	LC-441FX	09/25/03	03/25/04
	Y	DENTON	LC-441FY	09/25/03	03/25/04
	Z	DENTON	LC-441FZ	09/25/03	03/25/04
Neck Moment	X	DENTON	LC-441MX	09/25/03	03/25/04
	Y	DENTON	LC-441MY	09/25/03	03/25/04
	Z	DENTON	LC-441MZ	09/25/03	03/25/04
Chest	X	ENDEVCO	AC-P18948	11/21/03	05/21/04
	Y	ENDEVCO	AC-J33018	11/03/03	05/03/04
	Z	ENDEVCO	AC-J32783	11/03/03	05/03/04
Chest	X (R)	ENDEVCO	AC-J31066	11/03/03	05/03/04
	Y (R)	ENDEVCO	AC-P16979	11/03/03	05/03/04
	Z (R)	ENDEVCO	AC-J31022	11/03/03	05/03/04
Chest Deflection	X	SERVO	DS-064	11/20/03	05/20/04
Pelvic	X	ENDEVCO	AC-P23174	10/30/03	04/29/04
	Y	ENDEVCO	AC-P23164	10/30/03	04/29/04
	Z	ENDEVCO	AC-P23137	10/30/03	04/29/04

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	GSE	LC-723	12/03/03	06/02/04
Right Femur Load Cell	Fz	GSE	LC-955	12/03/03	06/02/04
Left Upper Tibia	Mx	DENTON	LC-045MX	09/26/03	03/26/04
	My	DENTON	LC-045MY	09/26/03	03/26/04
Left Lower Tibia	Fz	DENTON	LC-125FZ	09/26/03	03/26/04
	Mx	DENTON	LC-125MX	09/26/03	03/26/04
	My	DENTON	LC-125MY	09/26/03	03/26/04
Right Upper Tibia	Mx	DENTON	LC-016MX	09/26/03	03/26/04
	My	DENTON	LC-016MY	09/26/03	03/26/04
Right Lower Tibia	Fz	DENTON	LC-123FZ	09/26/03	03/26/04
	Mx	DENTON	LC-123MX	09/26/03	03/26/04
	My	DENTON	LC-123MY	09/26/03	03/26/04
Left Foot Rear	X	ENDEVCO	AC-J18059	12/04/03	06/03/04
	Z	ENDEVCO	AC-J36176	12/04/03	06/03/04
Left Foot Front	Z	ENDEVCO	AC-J18662	12/04/03	06/03/04
Right Foot Rear	X	ENDEVCO	AC-AJ8C0	12/04/03	06/03/04
	Z	ENDEVCO	AC-J19868	12/04/03	06/03/04
Right Foot Front	Z	ENDEVCO	AC-J34378	12/04/03	06/03/04
Lap Belt Load Cell		LEBOW	LC-706	10/08/03	04/07/04
Shoulder Belt Load Cell		FIRST TECHNOLOGY	LC-180	10/10/03	04/09/04

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	GS SENSORS	AC-9444-038	12/03/03	06/02/04
Right Rear Seat Crossmember X	GS SENSORS	AC-9440-023	12/03/03	06/02/04
Top of Engine	ICS	AC-8062-003	12/11/03	06/10/04
Bottom of Engine	ICS	AC-8083-028	12/11/03	06/10/04
Right Disc Brake Caliper	ICS	AC-8084-010	12/11/03	06/10/04
Instrument Panel	GS SENSORS	AC-9440-034	12/03/03	06/02/04
Left Disc Brake Caliper	ICS	AC-8084-041	12/11/03	06/10/04
Left Seat Rear Crossmember Z	GS SENSORS	AC-9440-029	12/03/03	06/02/04
Right Seat Rear Crossmember Z	GS SENSORS	AC-9440-046	12/03/03	06/02/04

REPORT NUMBER: CAL-04-10

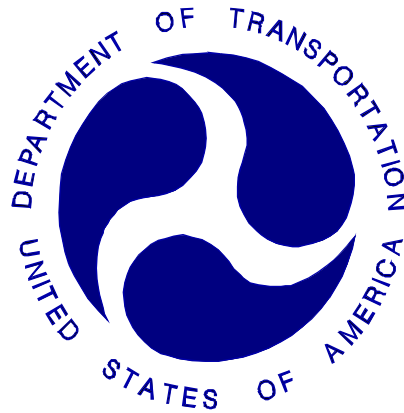
NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

EVENFLO VANGUARD 5 LATCH AND TOP TETHER CONVERTIBLE
SAFETY 1ST COMFORT RIDE 5 LATCH AND TOP TETHER CONVERTIBLE

NHTSA NUMBER: M45800

GENERAL DYNAMICS REPORT NUMBER: 8642-NCAP-46

GENERAL DYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
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March 04, 2004

FINAL REPORT

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

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

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Acceptance Date:

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. CAL-04-10		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of Evenflo Vanguard 5 Foward Facing Convertible NHTSA No.: M45800				5. Report Date March 04, 2004	
				6. Performing Organization Code CAL	
7. Author(s) Lawrence Q. Valvo, Project Engineer David J. Travale, Program Manager				8. Performing Organization Report No. 8642-NCAP-46	
9. Performing Organization Name and Address General Dynamics Advance Information Engineering Services Transportation Sciences Center P.O. Box 400 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: NVS-111 400 Seventh SW, Room 5313 Washington, D.C. 20590				13. Type of Report and Period Covered Final Report March 2004	
				14. Sponsoring Agency Code NVS-111	
15. Supplementary Notes					
16. Abstract This CRS test was performed in conjunction with a New Car Assessment Program (NCAP) load cell barrier test. An Evenflo Vanguard 5 foward facing convertible CRS was secured in Position 3 (P3) with the LATCH system and top tether. A Safety 1 st Comfort Ride 5 forward facing convertible CRS was secured in Position 4 (P4) with the LATCH system and top tether. This test was conducted at the General Dynamics Crash Test Facility in Buffalo, New York, on March 04, 2004.					
ATD Position		HIC 15		HIC 36	
P3 (Right Rear) (044)		1188.3		1188.3	
P4 (Left Rear) (142)		445.8		785.7	
				Clip (3 ms)	
				57.2	
				45.0	
17. Key Words New Car Assessment Program (NCAP)				18. Distribution Statement	
				<u>Copies of this report are available from:</u> National Highway Traffic Safety Administration Technical Reference Division Room 5111 (NAD-52) 400 Seventh St., S.W. Washington, D.C. 20590 Telephone No. (202) 366-4946 ATTN: Robert Hornicle	
19. Security Classification of Report UNCLASSIFIED		20. Security Classification of Page UNCLASSIFIED		21. No. of Pages 147	
22. Price					

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SECTION 1

PURPOSE AND SUMMARY OF TEST M45800

The purpose of this test was to obtain CRS performance data in a frontal impact NCAP condition. The 56.65 kph NCAP frontal impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

A forward facing convertible 5-point belt CRS and a 3 year old child dummy (serial no. 044) was secured in the right rear occupant position (Position 3 or P3). A forward facing convertible 5-point belt CRS and a 3 year old child dummy (serial no. 142) was secured in the left rear occupant position (Position 4 or P4). Both 3 Year Old Hybrid III (P572 P) child dummies were instrumented with head, chest, and pelvic triaxial accelerometers, a head rear Z-direction accelerometer, a chest displacement sensor, and upper and lower six axial neck load cells. The dummies were calibrated previous to this test and the certification information is found in section 5.

The right rear child dummy's HIC (15 ms) was 1188.3, maximum chest deceleration over 3 ms was 57.2 g's. The left rear child dummy's HIC (15 ms) was 445.8, maximum chest deceleration over 3 ms was 45.0 g's.

SECTION 2
DATA SHEET NO. 1
CRASH TEST SUMMARY

TEST DUMMY INFORMATION:

DESCRIPTION	Position #3 CRS	Position #4 CRS
ATD Type/Serial No.	Hybrid III 3C/044	Hybrid III 3C /142
Restraint System:	Evenflo Vanguard 5 LATCH and Top Tether Convertible	Safety 1 st Comfort Ride 5 LATCH and Top Tether Convertible

Number of Data Channels 55

Number of Cameras: 1 Real Time

2 High Speed

POST TEST DOOR OPENING

DESCRIPTION	FRONT	REAR
Left Side Doors	Closed, Latched and Operable without tools	Closed, Latched and Operable without tools
Right Side Doors	Closed, Latched and Operable without tools	Closed, Latched and Operable without tools
Hatch/Other Door	N/A	Closed, Latched and Operable without tools

POST TEST SEAT DATA

LOCATION	SEAT MOVEMENT (mm)	SEAT BACK FAILURE
P1 (Left Front)	24	None
P2 (Right Front)	14	None
P3 (Right Rear)	0	None
P4 (Left Rear)	0	None

VISIBLE DUMMY CONTACT POINTS

	Position #3 CRS	Position #4 CRS
Head Contact:	The face and chin to the chest, the back of the head to the top of the child restraint at to the P3 head restraint	The face and chin to the chest, the back of the head to the top of the child restraint at to the P4 head restraint
Upper Torso Contact:	None	None
Lower Torso Contact:	None	None
Left Knee Contact:	No knee contact; Left foot to P2 seat back	None
Right Knee Contact:	No knee contact; Right foot to P2 seat back	None

DATA SHEET NO. 2

CRS PARAMETER DATA

CRS: Evenflo Vanguard 5 and Safety 1st Comfort Ride 5 with LATCH and Top Tether

NHTSA No. M45800

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Delivered Weight of Vehicle with Maximum Fluids = 2333.0 kg (A)

AS TESTED WEIGHT OF VEHICLE

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

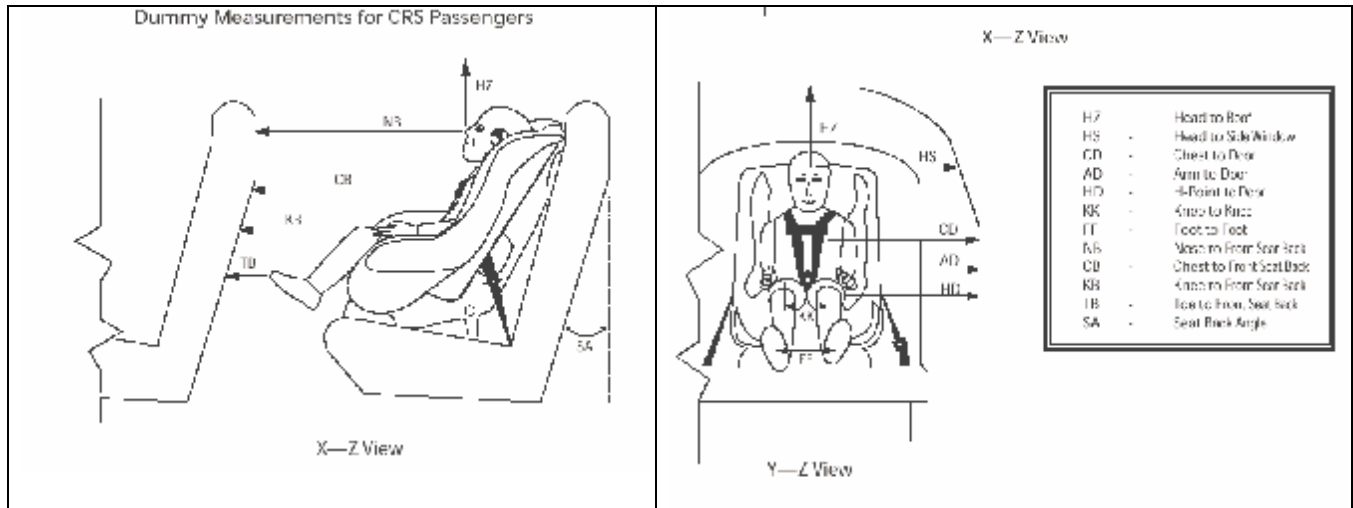
Left Front	=	<u>639.0</u>	kg	Left Rear	=	<u>663.5</u>	kg
Right Front	=	<u>649.0</u>	kg	Right Rear	=	<u>648.0</u>	kg
TOTAL FRONT	=	<u>1288.0</u>	kg	TOTAL REAR	=	<u>1311.5</u>	kg
TOTAL TEST WEIGHT =		<u>2599.5</u>	kg				

DATA SHEET NO. 3

CHILD DUMMY POSITIONING IN VEHICLE

CRS: Evenflo Vanguard 5 and Safety 1st Comfort Ride 5 with LATCH and Top Tether

NHTSA No. M45800



Measurement	P3 CRS (044)	P4 CRS (142)
SA	21.5	21.5
HS	386	384
CD	349	335
AD	175	158
HD	212	196
HZ	379	385
NB	573	554
CB	562	553
KK	152	125
FF	152	125
KB – LEFT	372	365
KB – RIGHT	368	364
TB – LEFT	95	95
TB – RIGHT	90	94

All dimensions in mm (unless noted)

P3 – Right Rear Passenger (CRS #1)

P4 – Left Rear Passenger (CRS #2)

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES

CRS: Evenflo Vanguard 5 and Safety 1st Comfort Ride 5 with LATCH and Top Tether

NHTSA No. M45800

DESCRIPTION	Unit	MAXIMUM VALUE							
		Position #3				Position #4			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head X	g	224.8	166.7	-37.5	81.9	132.7	180.2	-36.9	82.3
Head Y	g	32.3	176.4	-19.7	166.7	3.6	95.1	-3.0	65.2
Head Z	g	65.1	86.5	-10.0	34.9	56.1	73.1	-9.7	32.7
Head Resultant	g	226.8	166.7	-	-	138.6	180.2	-	-
Head Rear Z	g	81.1	86.6	-48.8	166.4	78.9	76.8	-74.7	180.2
Upper Neck Fx	N	90.7	163.5	-629.9	75.0	16.7	176.1	-848.0	82.6
Upper Neck Fy	N	150.6	86.6	-43.5	163.9	78.7	95.0	-52.0	65.2
Upper Neck Fz	N	1979.2	86.5	-262.2	35.1	2058.5	82.0	-265.7	41.9
Upper Neck F Resultant	N	2049.6	86.5	-	-	2225.5	82.0	-	-
Upper Neck Mx	N-m	4.4	149.5	-5.8	179.7	10.7	89.5	-4.1	120.2
Upper Neck My	N-m	6.1	163.8	-18.1	172.4	2.3	129.6	-13.2	94.8
Upper Neck Mz	N-m	1.9	186.8	-1.3	199.9	1.7	71.6	-1.9	88.5
Upper Neck M Resultant	N-m	18.1	172.4	-	-	16.3	94.6	-	-
Lower Neck Fx	N	316.6	163.7	-1596.9	85.9	437.5	180.5	-1416.5	82.5
Lower Neck Fy	N	250.2	94.5	-87.8	162.4	150.7	77.4	-25.0	173.9
Lower Neck Fz	N	1088.4	88.2	-338.8	35.3	906.9	77.1	-360.3	44.9
Lower Neck F Resultant	N	1912.9	86.8	-	-	1621.5	81.9	-	-
Lower Neck Mx	N-m	25.0	90.0	-3.3	199.9	17.7	94.4	-7.6	67.4
Lower Neck My	N-m	111.4	82.1	-19.3	164.1	143.0	82.0	-24.0	180.5
Lower Neck Mz	N-m	10.4	72.3	-1.6	164.5	6.7	95.0	-5.1	64.4
Lower Neck M Resultant	N-m	114.0	82.4	-	-	143.3	82.0	-	-
Chest X	g	26.6	161.1	-44.4	78.6	14.1	194.2	-45.4	80.0
Chest Y	g	8.6	78.2	-10.2	180.4	5.7	75.9	-5.3	89.3
Chest Z	g	23.1	93.4	-39.8	74.5	9.5	184.4	-25.7	47.1
Chest Resultant	g	58.6	78.4	-	-	45.8	80.1	-	-
Chest Displacement	mm	0.0	5.1	-20.9	102.3	0.0	-49.8	-20.0	104.5

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 and Safety 1st Comfort Ride 5 with LATCH and Top Tether

NHTSA No. M45800

		MAXIMUM VALUE							
		Position #3				Position #4			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Pelvic X	g	11.0	162.4	-56.2	67.3	11.9	159.4	†	-
Pelvic Y	g	8.0	70.5	-3.2	193.4	6.5	64.2	-4.7	172.9
Pelvic Z	g	26.0	170.3	-41.0	74.3	14.6	185.2	-31.9	60.1
Pelvic Resultant	g	65.1	67.0	-	-	47.2	66.2	-	-
Tether Belt Load	N	6558.0	68.6	-256.5	175.1	3474.8	73.3	-167.1	125.4
LATCH Belt Load	N	3356.3	78.2	-241.2	167.0	-	-	-	-

† Channel Opened: 10 – 21 ms.

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 and Safety 1st Comfort Ride 5 with LATCH and Top Tether

NHTSA No. M45800

HEAD INJURY CRITERIA (HIC)								
HIC15					HIC36			
HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂		HIC	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #3 - Right	1188.3	163.8	168.8	141.9	1188.3	163.8	168.8	141.9
Position #4 - Left	445.8	70.7	85.7	61.6	785.7	62.2	98.2	54.4

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #3 - Right	57.2	74.5	79.3	620.5
Position #4 - Left	45.0	78.3	81.3	462.4

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

DATA SHEET NO. 5

CRS PERFORMANCE DATA

CRS: Evenflo Vanguard 5 and Safety 1st Comfort Ride 5 with LATCH and Top Tether

NHTSA No. M45800

		MAXIMUM VALUE			
DESCRIPTION	Unit	Positive	Time (ms)	Negative	Time (ms)
P3 CRS X	g	21.2	176.2	-55.2	57.9
P3 CRS Y	g	9.8	168.7	-10.7	184.3
P3 CRS Z	g	20.7	175.4	-15.6	182.7
P3 CRS Resultant	g	57.1	58.4	-	-
P4 CRS X	g	16.4	156.0	-57.9	57.5
P4 CRS Y	g	4.6	58.6	-5.6	77.1
P4 CRS Z	g	18.1	193.0	-14.4	183.8
P4 CRS Resultant	g	58.1	57.5	-	-

DATA SHEET NO. 5**CRS PERFORMANCE DATA (CONTINUED)**CRS: Evenflo Vanguard 5 and Safety 1st Comfort Ride 5 with LATCH and Top TetherNHTSA No. M45800**POSITION #3 CRS POST-TEST INSPECTION (Serial No. 3691261 P1 17DEC03)**

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

POSITION #4 CRS POST-TEST INSPECTION (Serial No. 22-400-BRD 12/19/2003 TO2C)

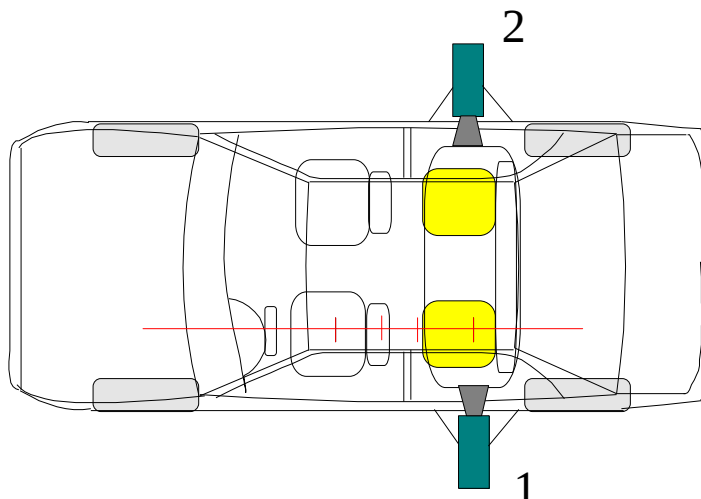
LOCATION	DAMAGE	REMARKS
Upper Tether Strap	No	None
Upper Tether Buckle	No	None
Upper Tether Hook	No	None
Vehicle Upper Tether Anchor	No	None
Lower Anchor Strap	No	None
Lower Anchor Buckle	No	None
Lower Anchor Hooks	No	None
Vehicle Lower CRS Anchors	No	None
Five Point Harness Connections	No	None
Cracks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

DATA SHEET NO. 6

CRS CAMERA DATA

CRS: Evenflo Vanguard 5 and Safety 1st Comfort Ride 5 with LATCH and Top Tether

NHTSA No. M45800



Camera No.	View	Coordinates (millimeters)			Angle** (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Left side CRS lateral view	3240	2668	2320	-24.2	28-70	1000
2	Right side CRS lateral view	3240	-2672	2360	-24.8	28-70	1000

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

** = referenced to horizontal plane

X = film plane to monorail centerline

Y = film plane to impact location

Z = film plane to ground

SECTION 3

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Manufactured in 17DEC03
Model # 3691261 P1

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



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



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



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



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



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



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



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



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

aint with the vehicle's child restraint anchorage system
vehicle belt.
is on this child restraint and in the written instructions
stand.
restraint with the manufacturer.

, Inc.

-800-544-1108

Manufactured in

22-400-BRD

12/09/2003 TO2C

Figure 3-10: CLOSE-UP VIEW OF POSITION 4 CRS LABEL



Figure 3-11: PRE-TEST FRONTAL VIEW OF POSITION 4 CRS



Figure 3-12: POST-TEST FRONTAL VIEW OF POSITION 4 CRS



Figure 3-13: PRE-TEST REAR VIEW OF POSITION 4 CRS



Figure 3-14: POST-TEST REAR VIEW OF POSITION 4 CRS



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Figure 3-19: PRE-TEST POSITION 3 LEFT SIDE VIEW



Figure 3-20: POST-TEST POSITION 3 LEFT SIDE VIEW



Figure 3-21: PRE-TEST POSITION 4 LEFT SIDE VIEW



Figure 3-22: POST-TEST POSITION 4 LEFT SIDE VIEW



Figure 3-23: PRE-TEST POSITION 3 RIGHT SIDE VIEW



Figure 3-24: POST-TEST POSITION 3 RIGHT SIDE VIEW



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Figure 3-26: POST-TEST POSITION 4 RIGHT SIDE VIEW



Figure 3-27: PRE-TEST POSITION 3 FRONT VIEW



Figure 3-28: POST-TEST POSITION 3 FRONT VIEW



Figure 3-29: PRE-TEST POSITION 4 FRONT VIEW



Figure 3-30: POST-TEST POSITION 4 FRONT VIEW

SECTION 4

CHILD DUMMY RESPONSE AND CRS DATA TRACES

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2004 NCAP Test 10 - 2004 VW Touareg

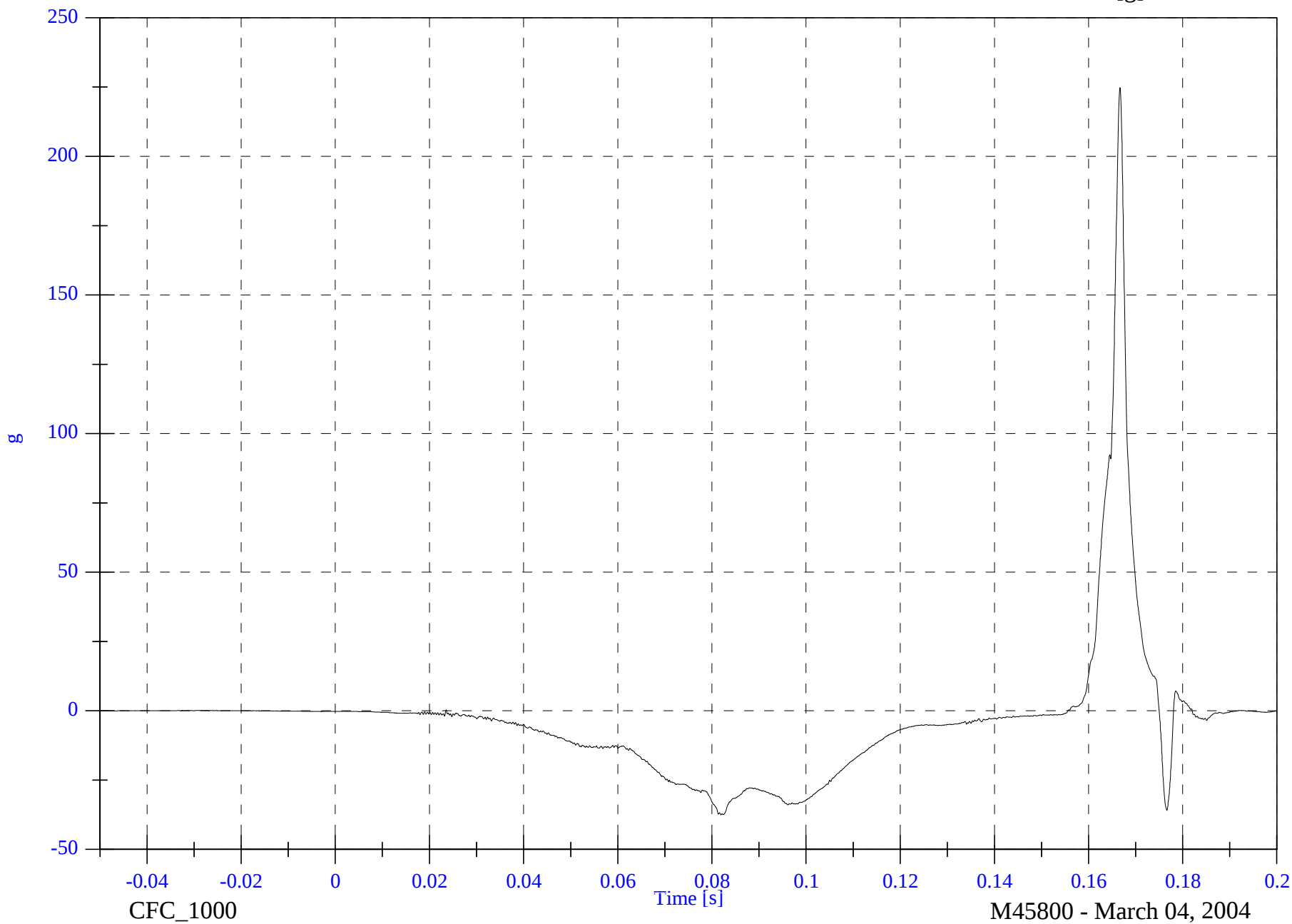
V1P3 Head x

Max: 224.8 [g] at 0.167 [s]

Min: -37.5 [g] at 0.082 [s]

4-4

8642-NCAP-46

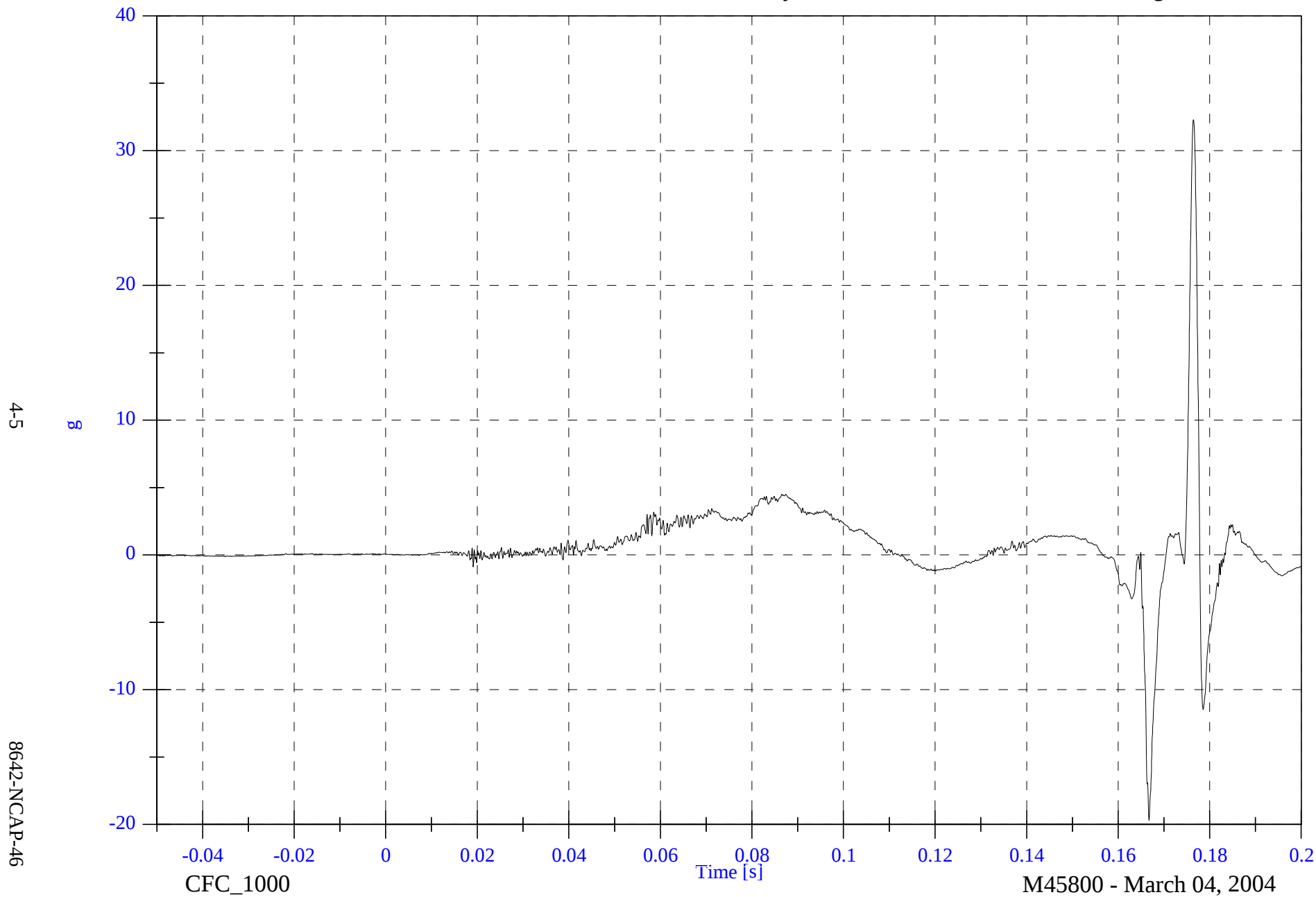


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Head y

Max: 32.3 [g] at 0.176 [s]

Min: -19.7 [g] at 0.167 [s]

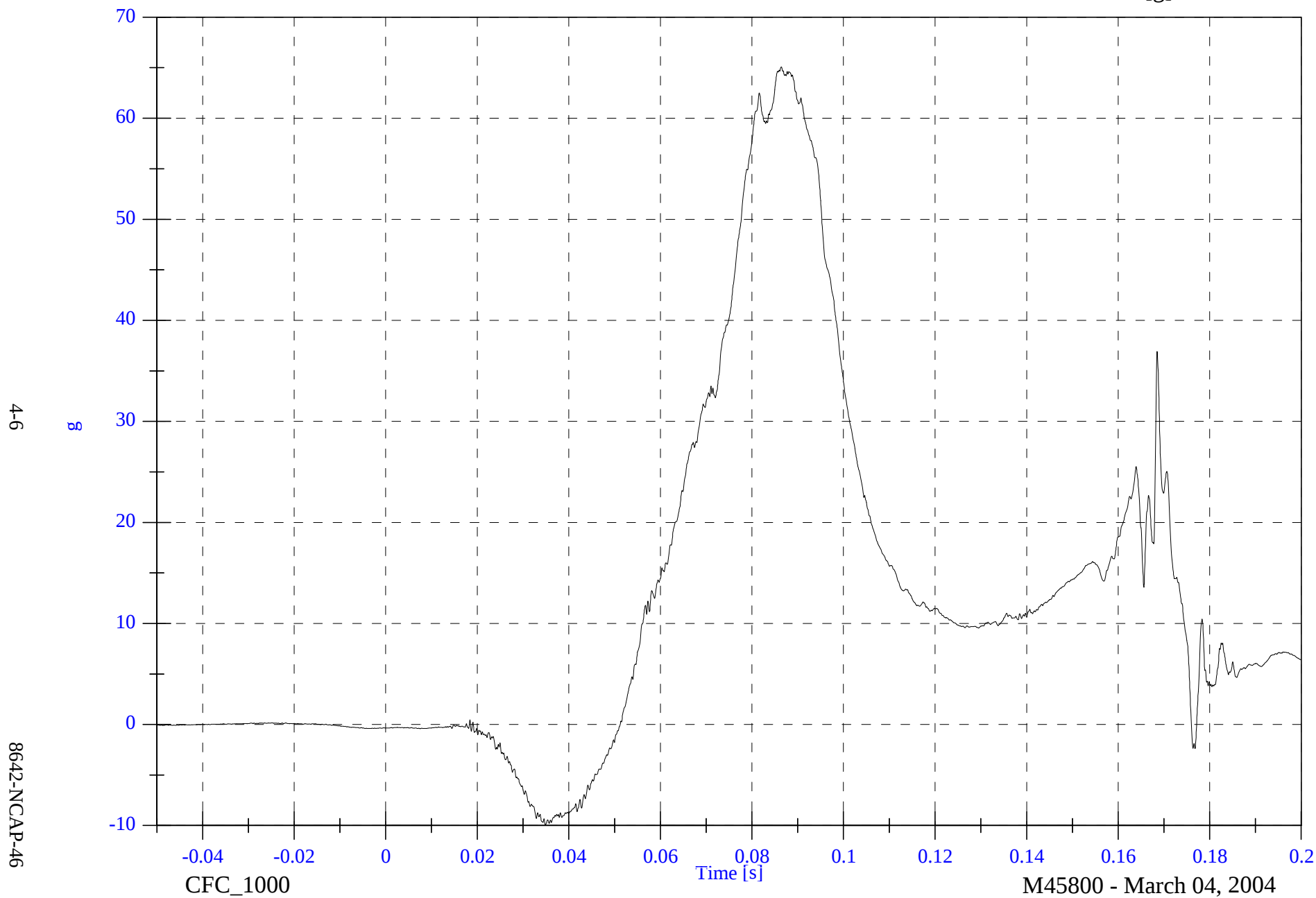


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Head z

Max: 65.1 [g] at 0.086 [s]

Min: -10.0 [g] at 0.035 [s]

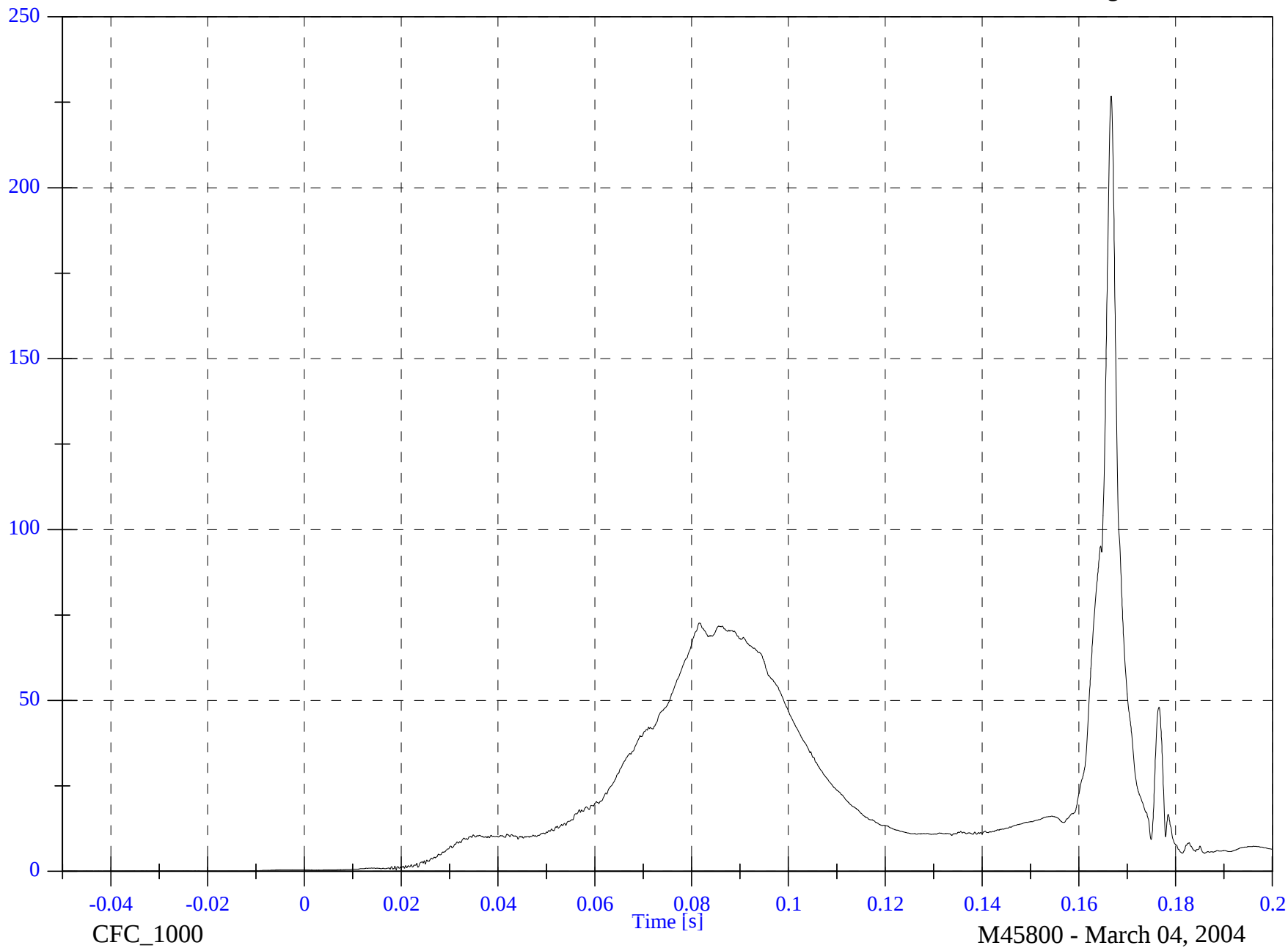


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Head Resultant

Max: 226.8 [g] at 0.167 [s]

Min: 0.0 [g] at -0.044 [s]



4-7

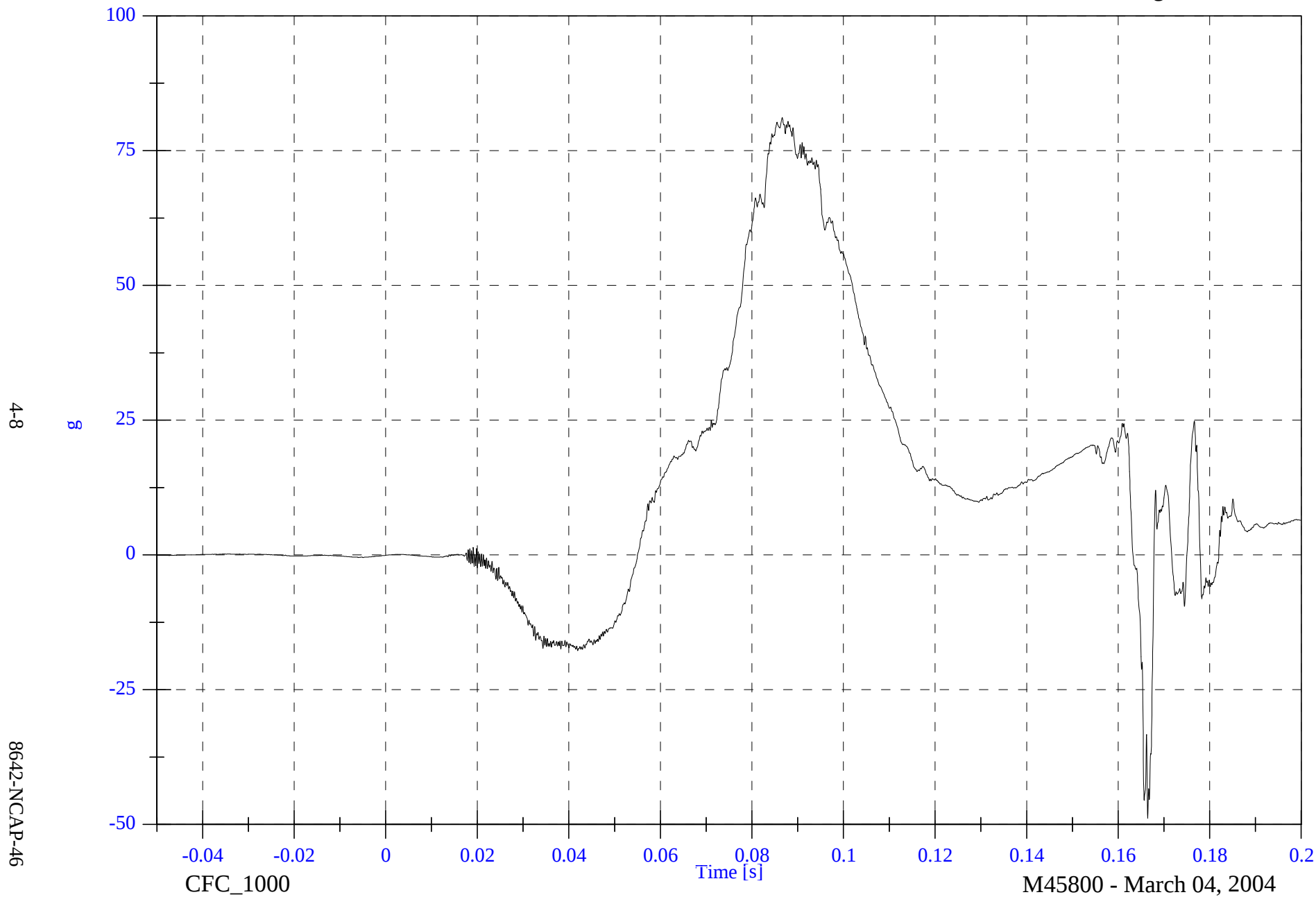
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Head Rear z

Max: 81.1 [g] at 0.087 [s]

Min: -48.8 [g] at 0.166 [s]



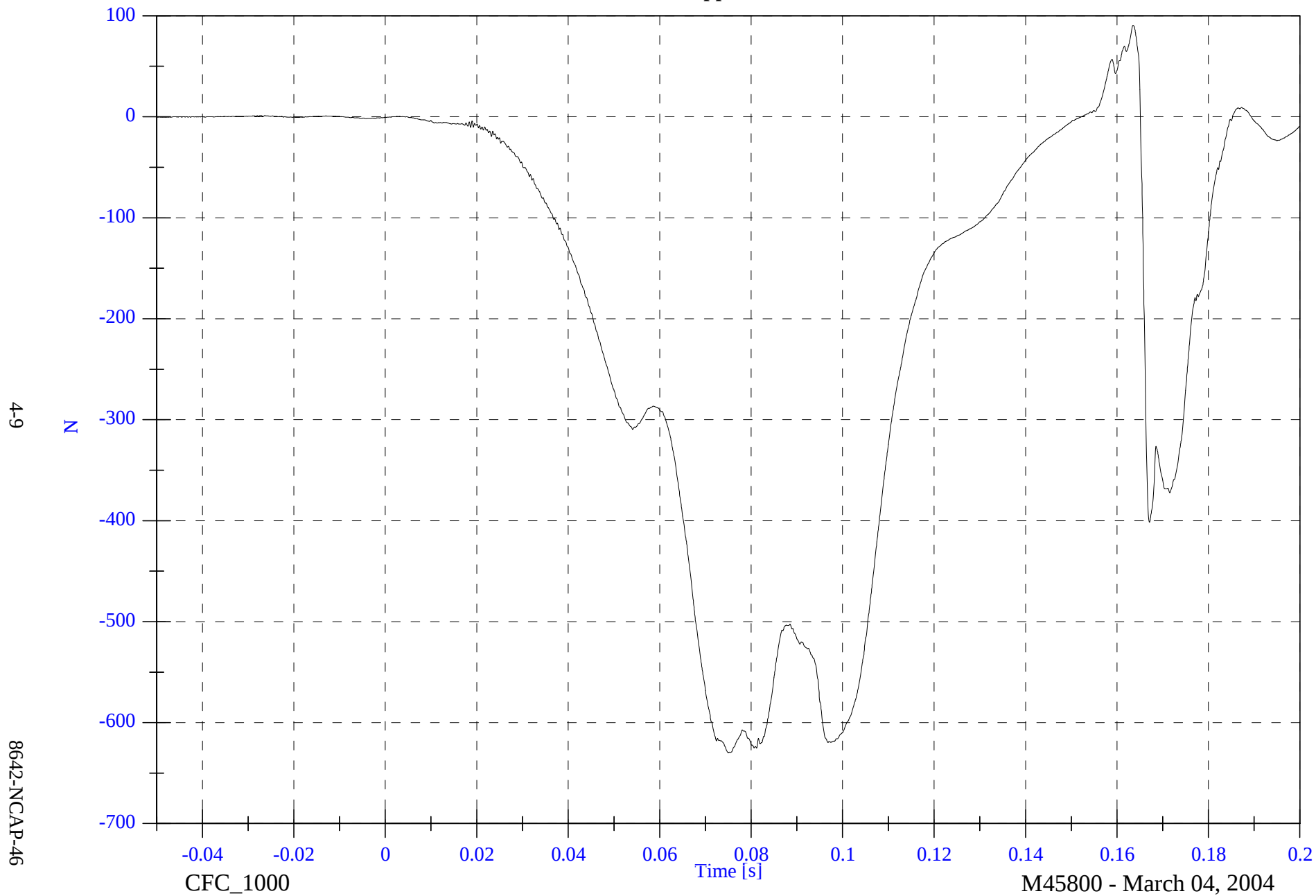
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Upper Neck Fx

Max: 90.7 [N] at 0.163 [s]

Min: -629.9 [N] at 0.075 [s]

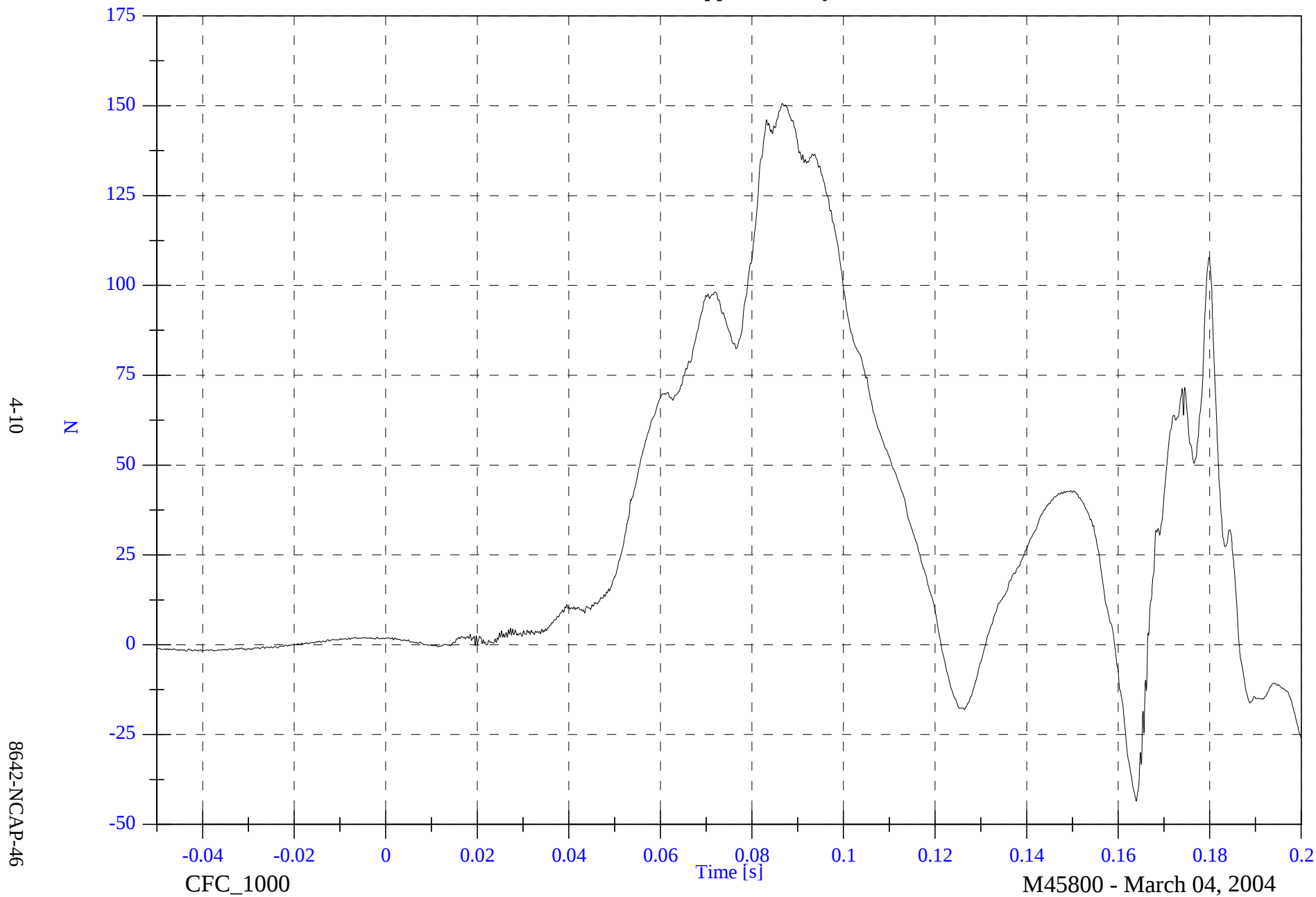


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Upper Neck Fy

Max: 150.6 [N] at 0.087 [s]

Min: -43.5 [N] at 0.164 [s]

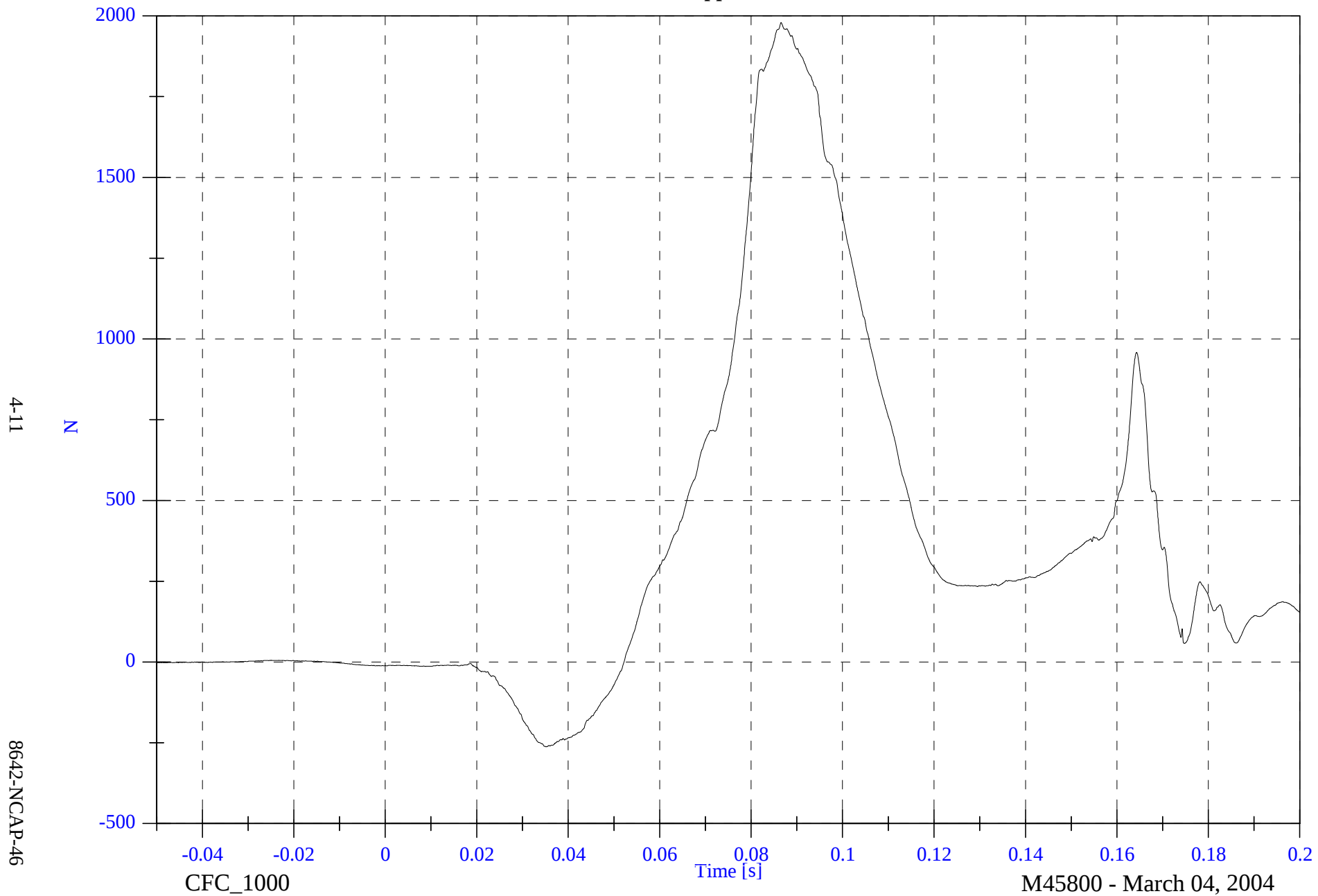


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Upper Neck Fz

Max: 1979.2 [N] at 0.087 [s]

Min: -262.2 [N] at 0.035 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Upper Neck F Resultant

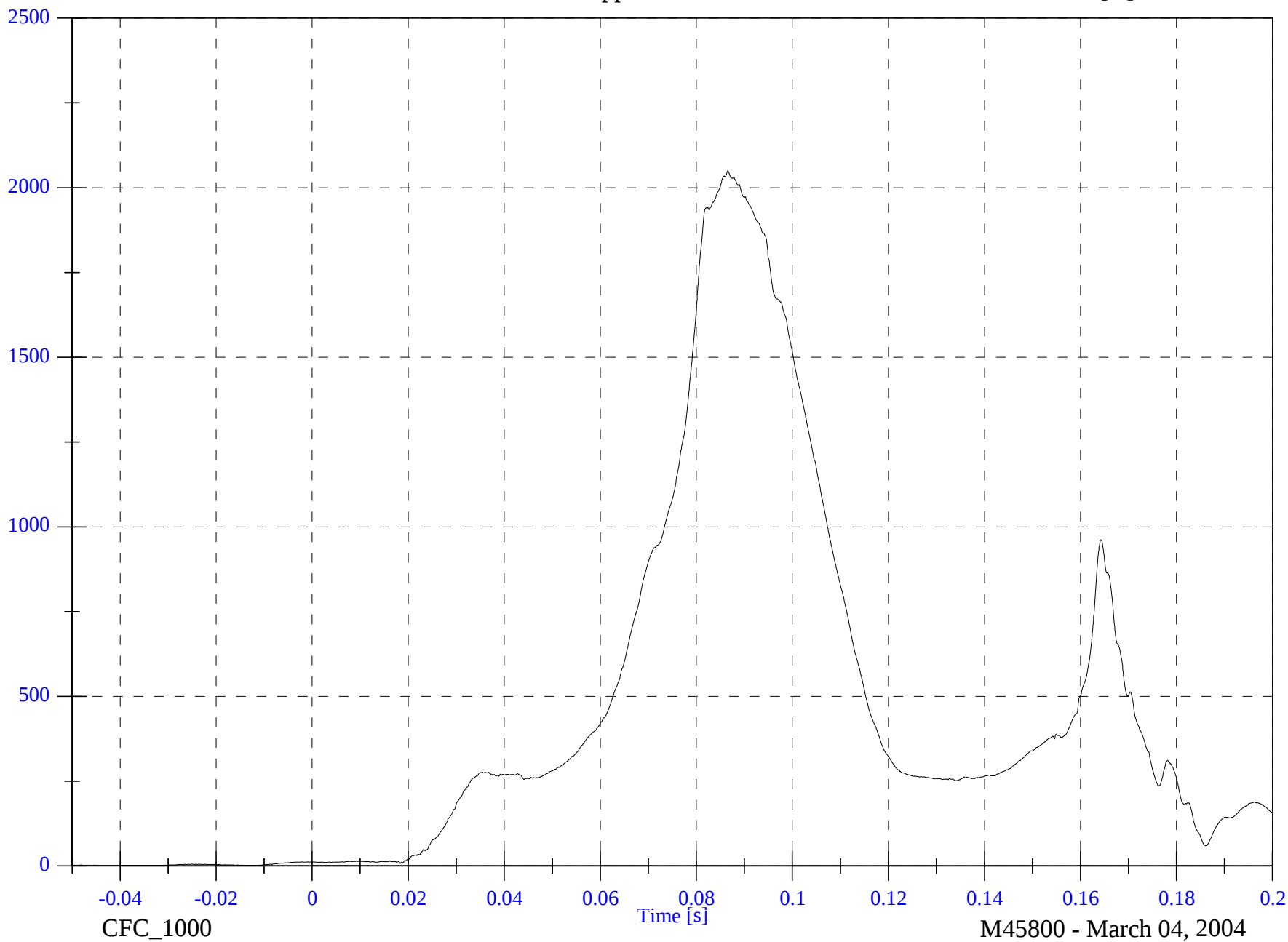
Max: 2049.6 [N] at 0.087 [s]

Min: 1.2 [N] at -0.032 [s]

4-12

N

8642-NCAP-46

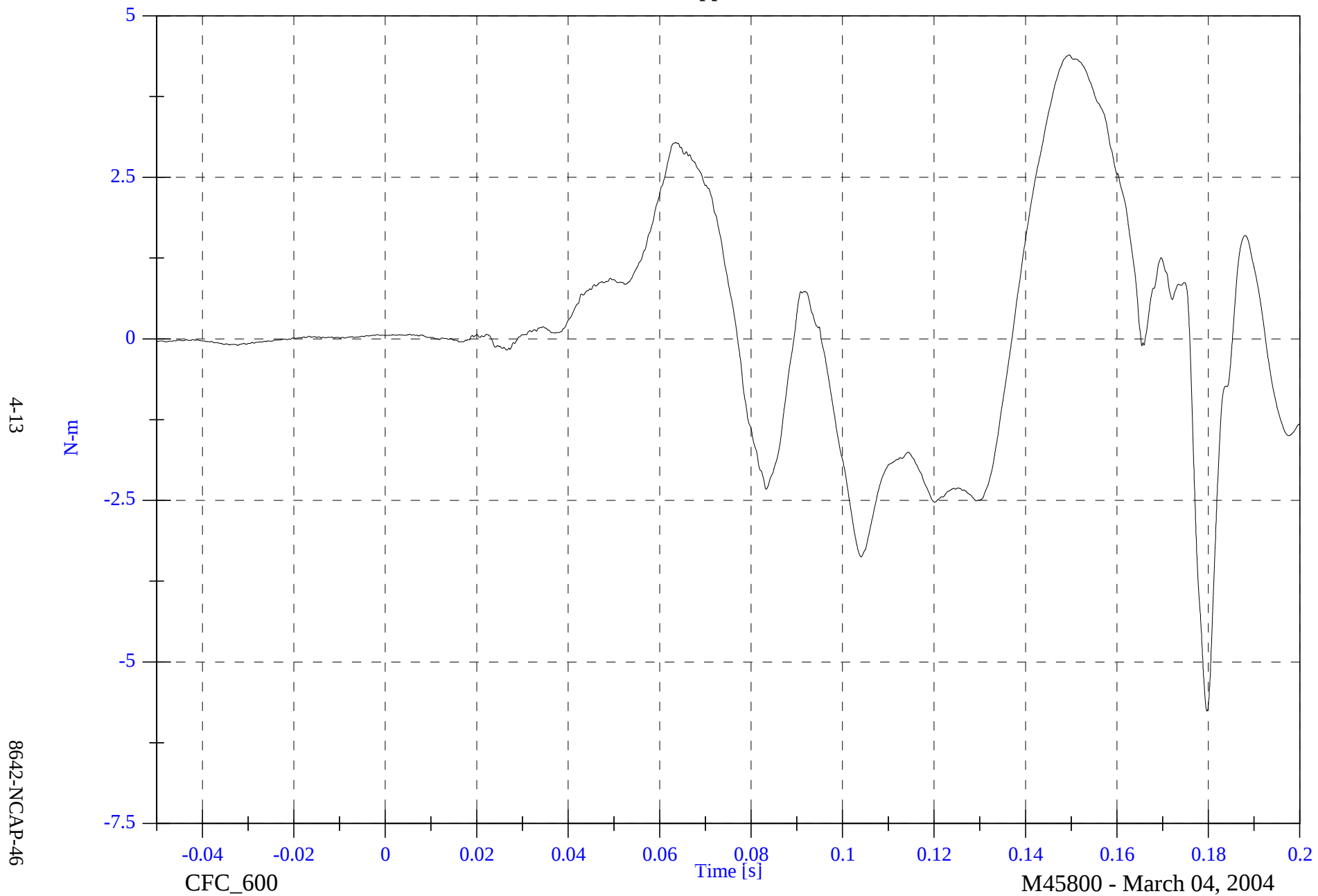


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Upper Neck Mx

Max: 4.4 [N-m] at 0.150 [s]

Min: -5.8 [N-m] at 0.180 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Upper Neck My

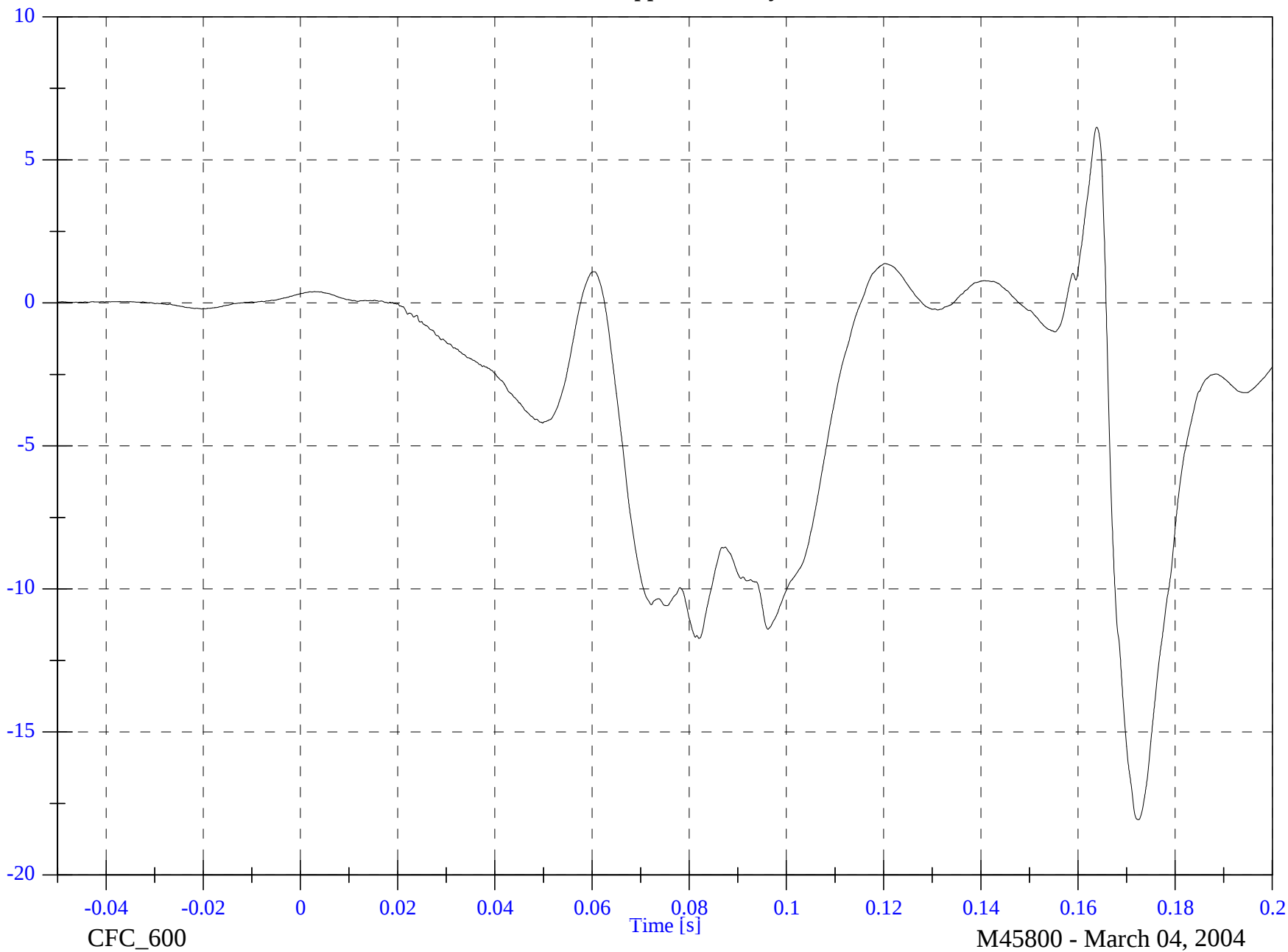
Max: 6.1 [N-m] at 0.164 [s]

Min: -18.1 [N-m] at 0.172 [s]

4-14

N-m

8642-NCAP-46

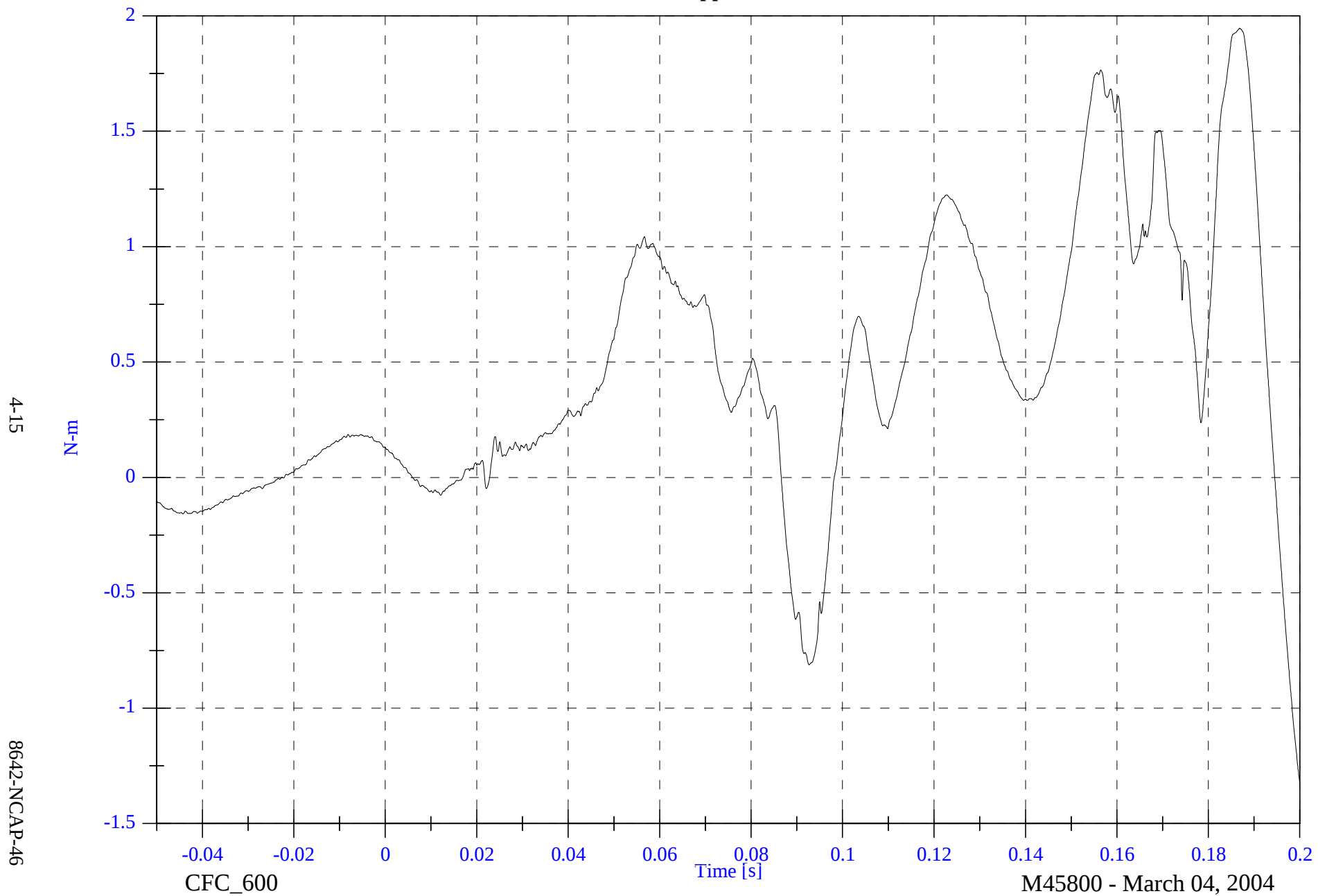


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Upper Neck Mz

Max: 1.9 [N-m] at 0.187 [s]

Min: -1.3 [N-m] at 0.200 [s]

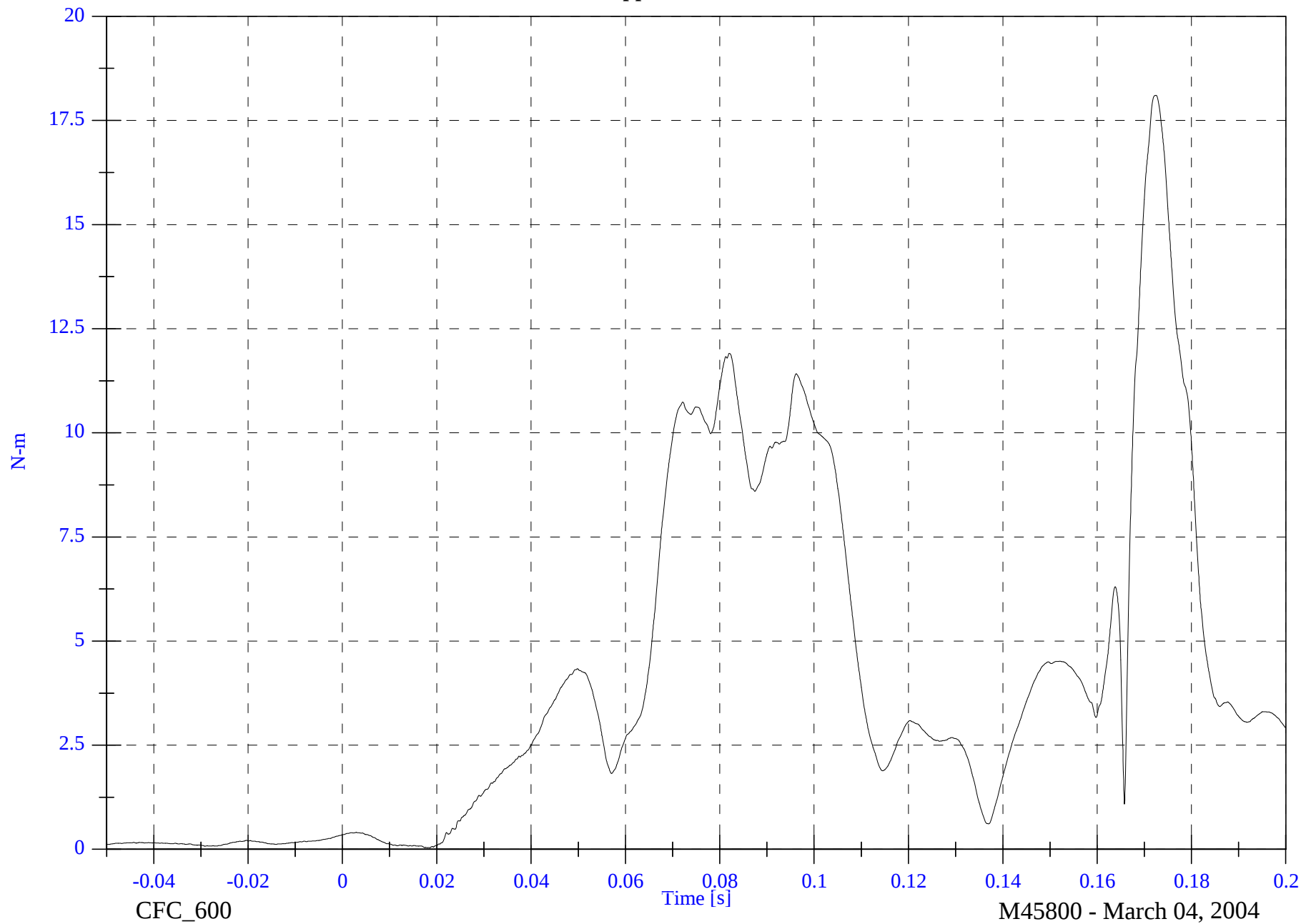


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Upper Neck M Resultant

Max: 18.1 [N-m] at 0.172 [s]

Min: 0.0 [N-m] at 0.019 [s]



4-16

8642-NCAP-46

CFC_600

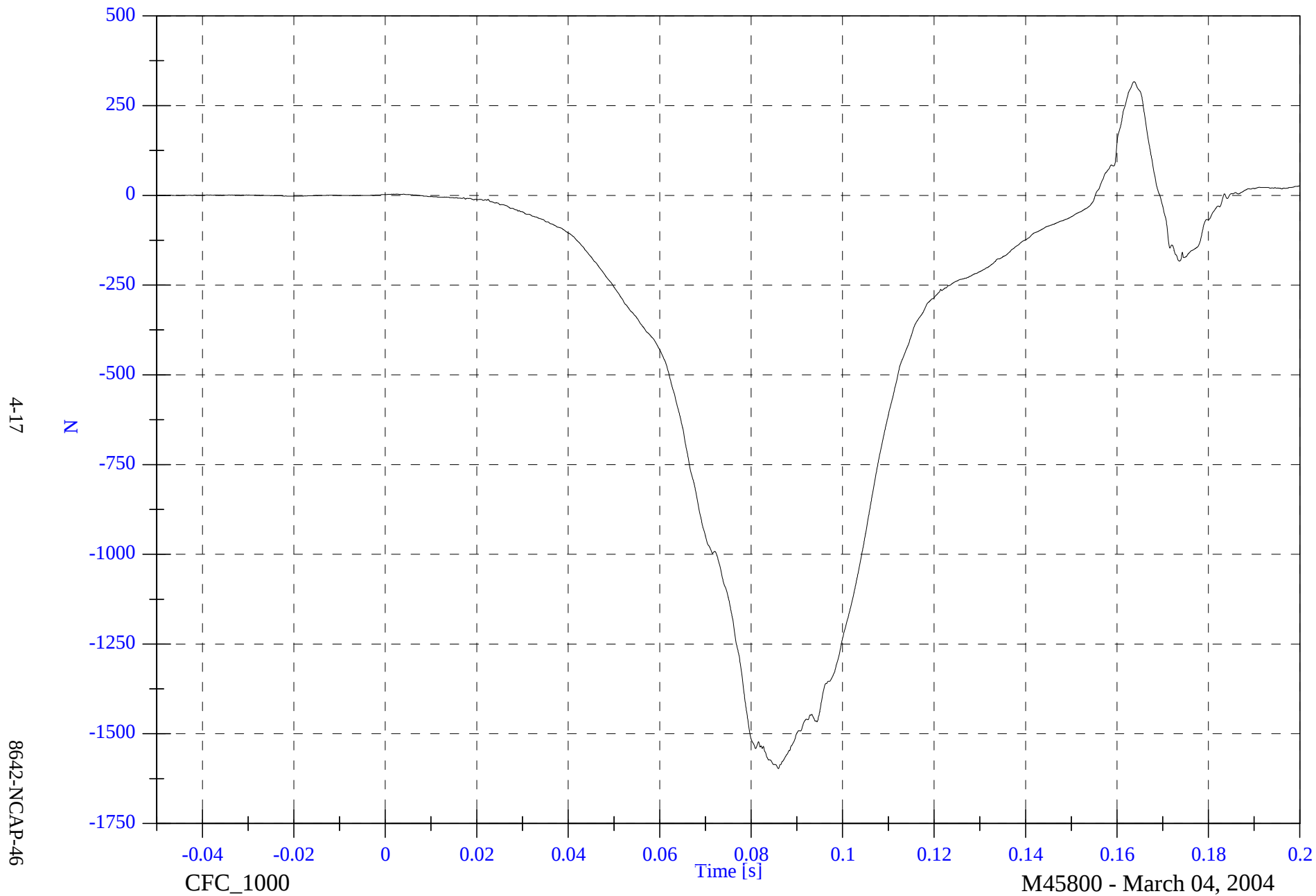
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Lower Neck Fx

Max: 316.6 [N] at 0.164 [s]

Min: -1596.9 [N] at 0.086 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Lower Neck Fy

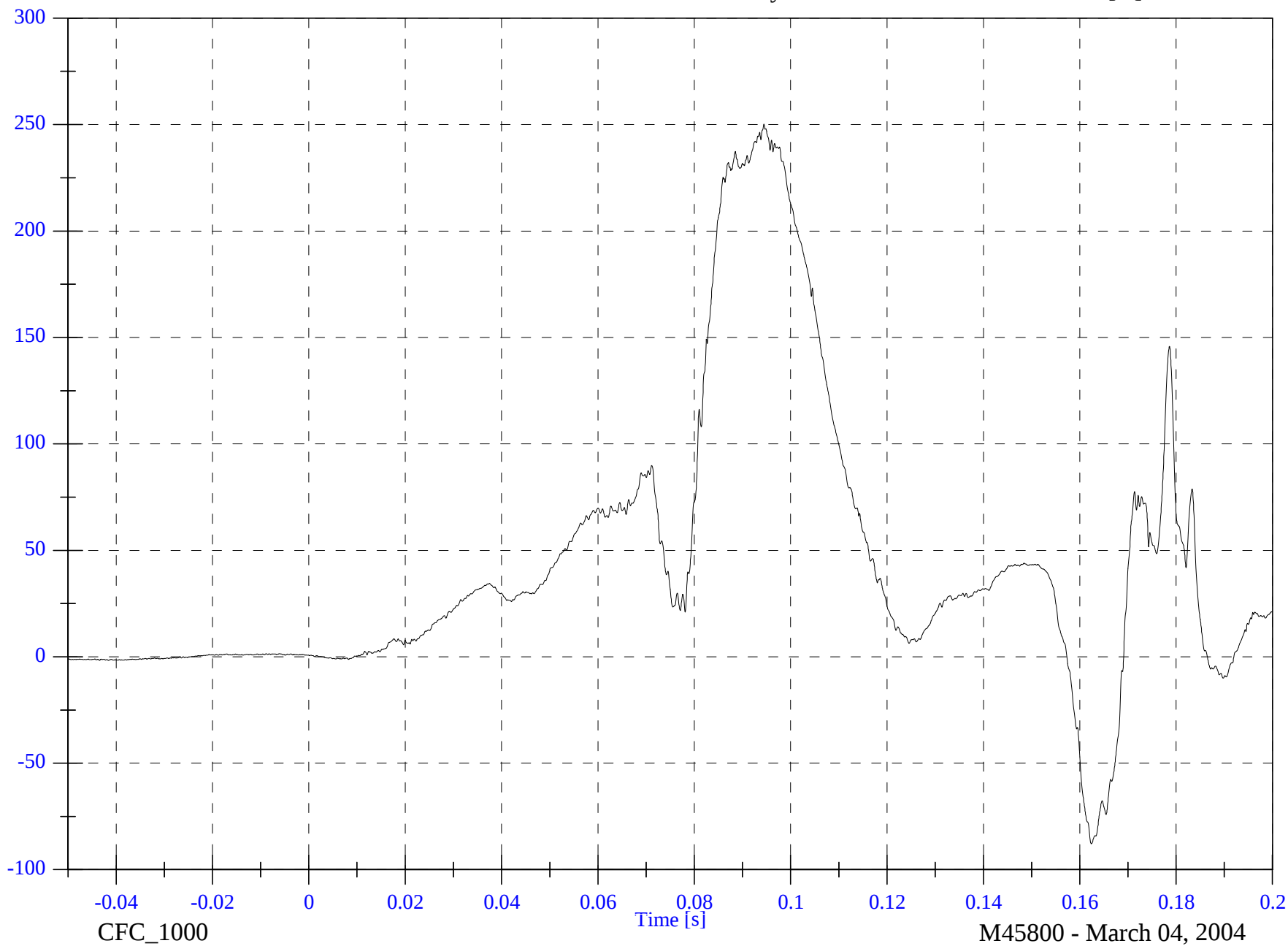
Max: 250.2 [N] at 0.094 [s]

Min: -87.8 [N] at 0.162 [s]

4-18

N

8642-NCAP-46

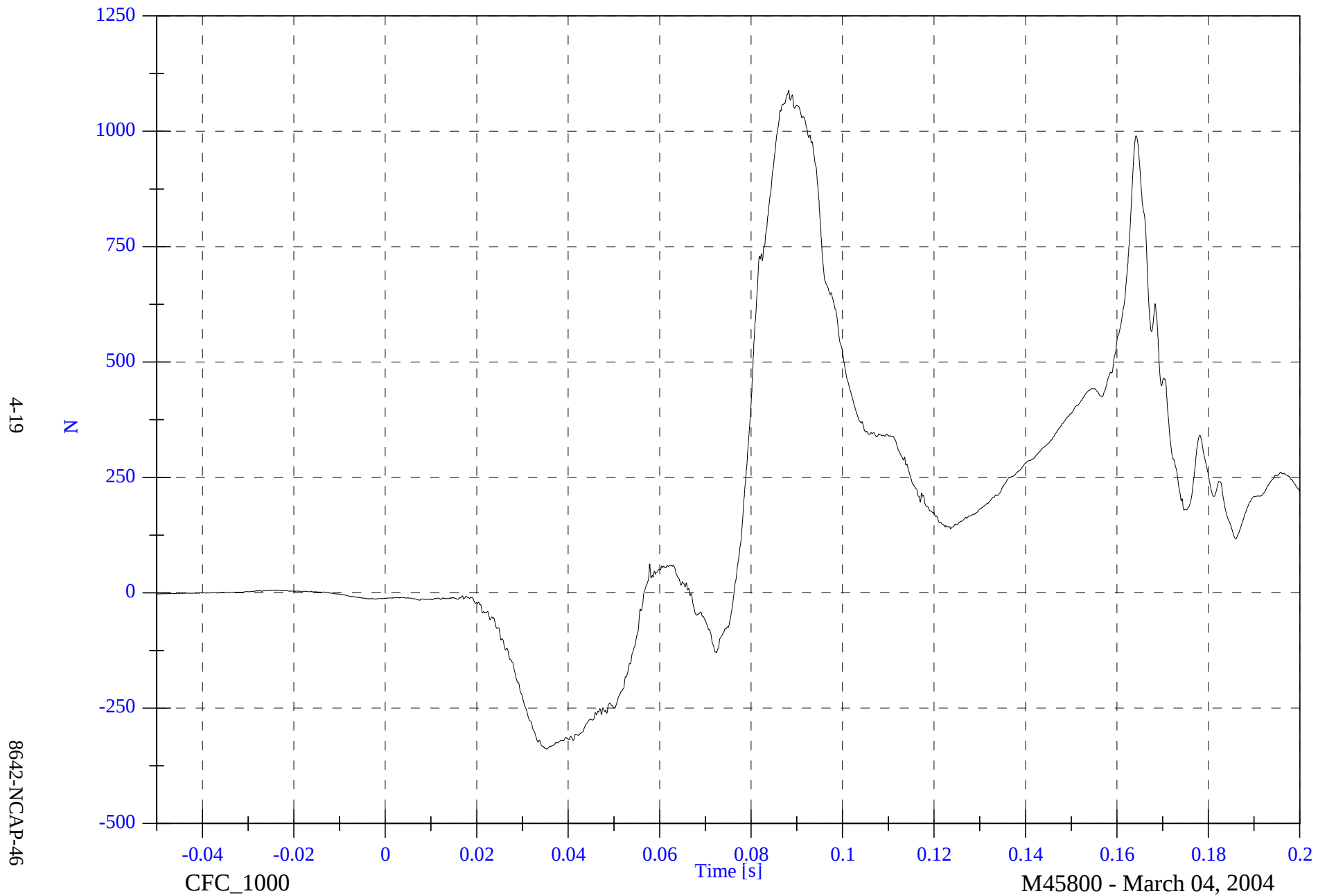


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Lower Neck Fz

Max: 1088.4 [N] at 0.088 [s]

Min: -338.8 [N] at 0.035 [s]

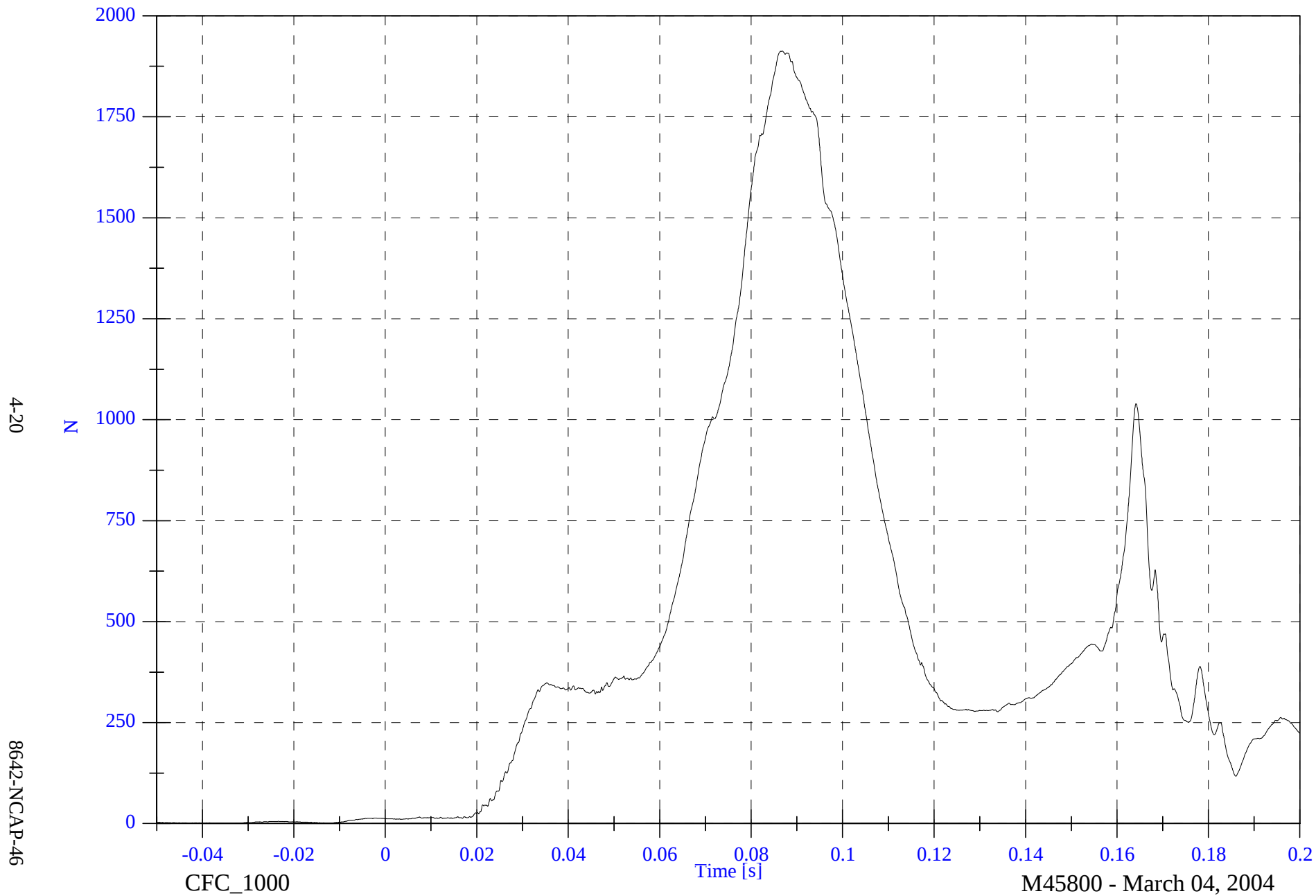


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Lower Neck F Resultant

Max: 1912.9 [N] at 0.087 [s]

Min: 1.0 [N] at -0.012 [s]

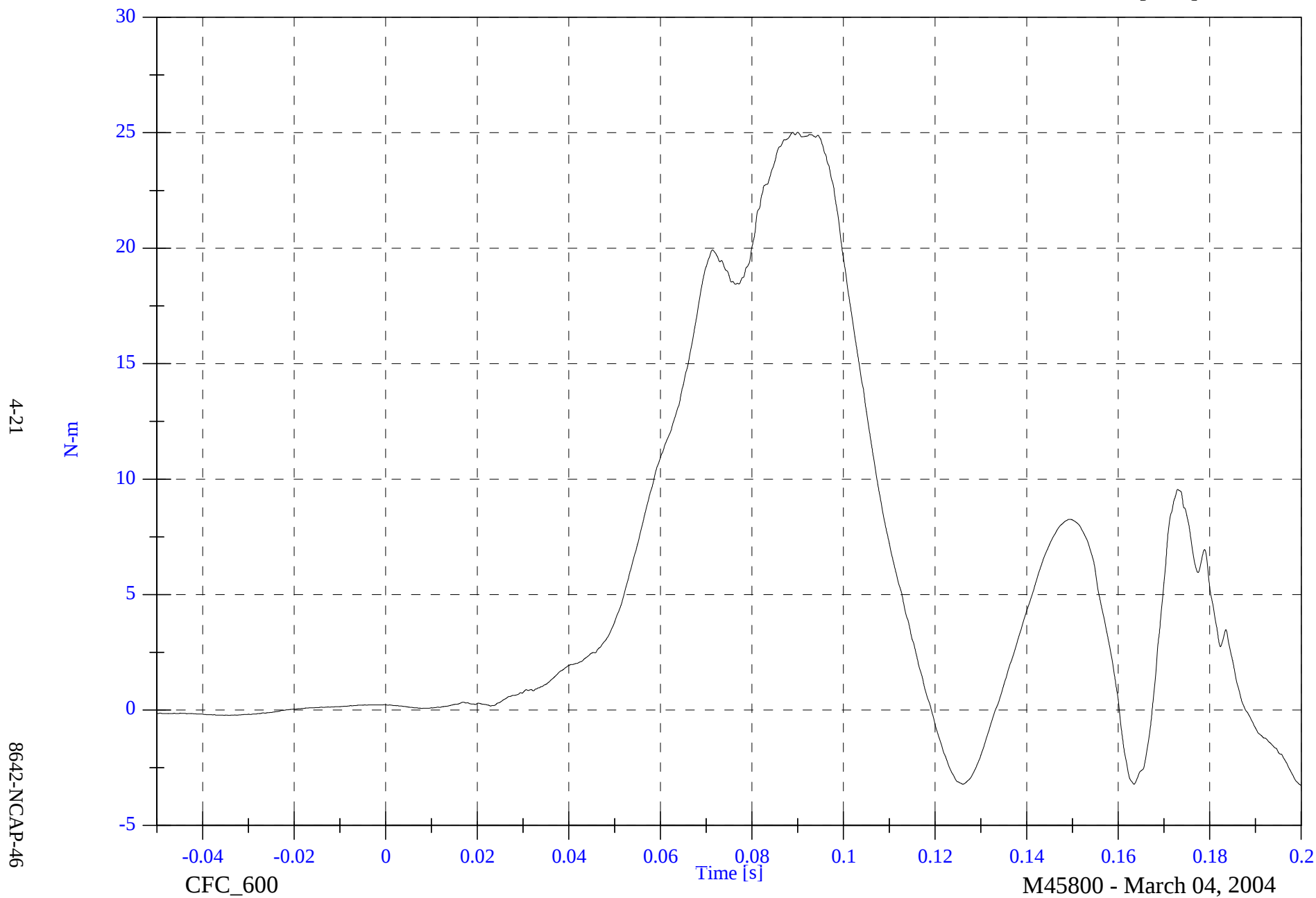


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Lower Neck Mx

Max: 25.0 [N-m] at 0.090 [s]

Min: -3.3 [N-m] at 0.200 [s]



4-21

8642-NCAP-46

CFC_600

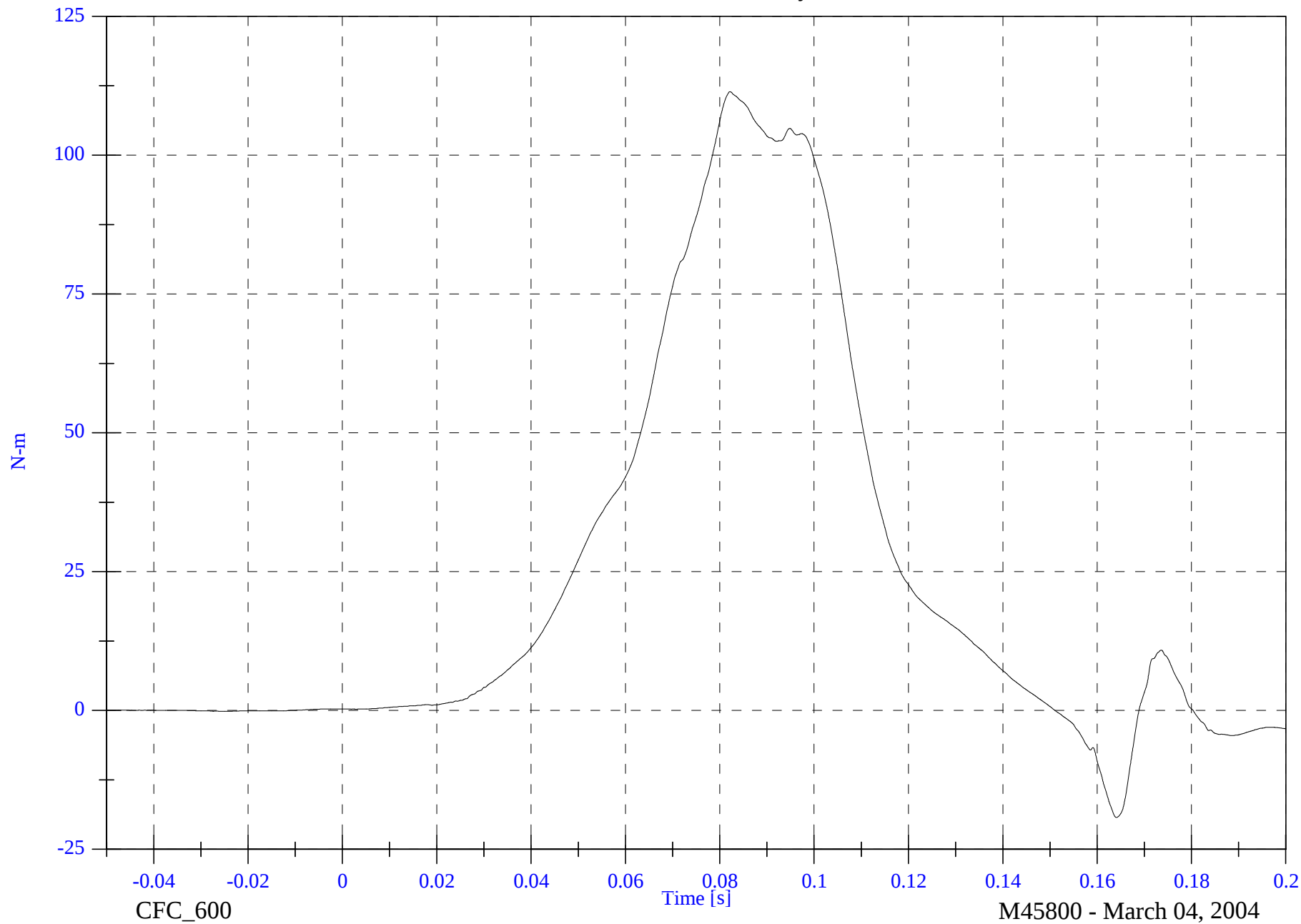
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Lower Neck My

Max: 111.4 [N-m] at 0.082 [s]

Min: -19.3 [N-m] at 0.164 [s]



4-22

8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Lower Neck Mz

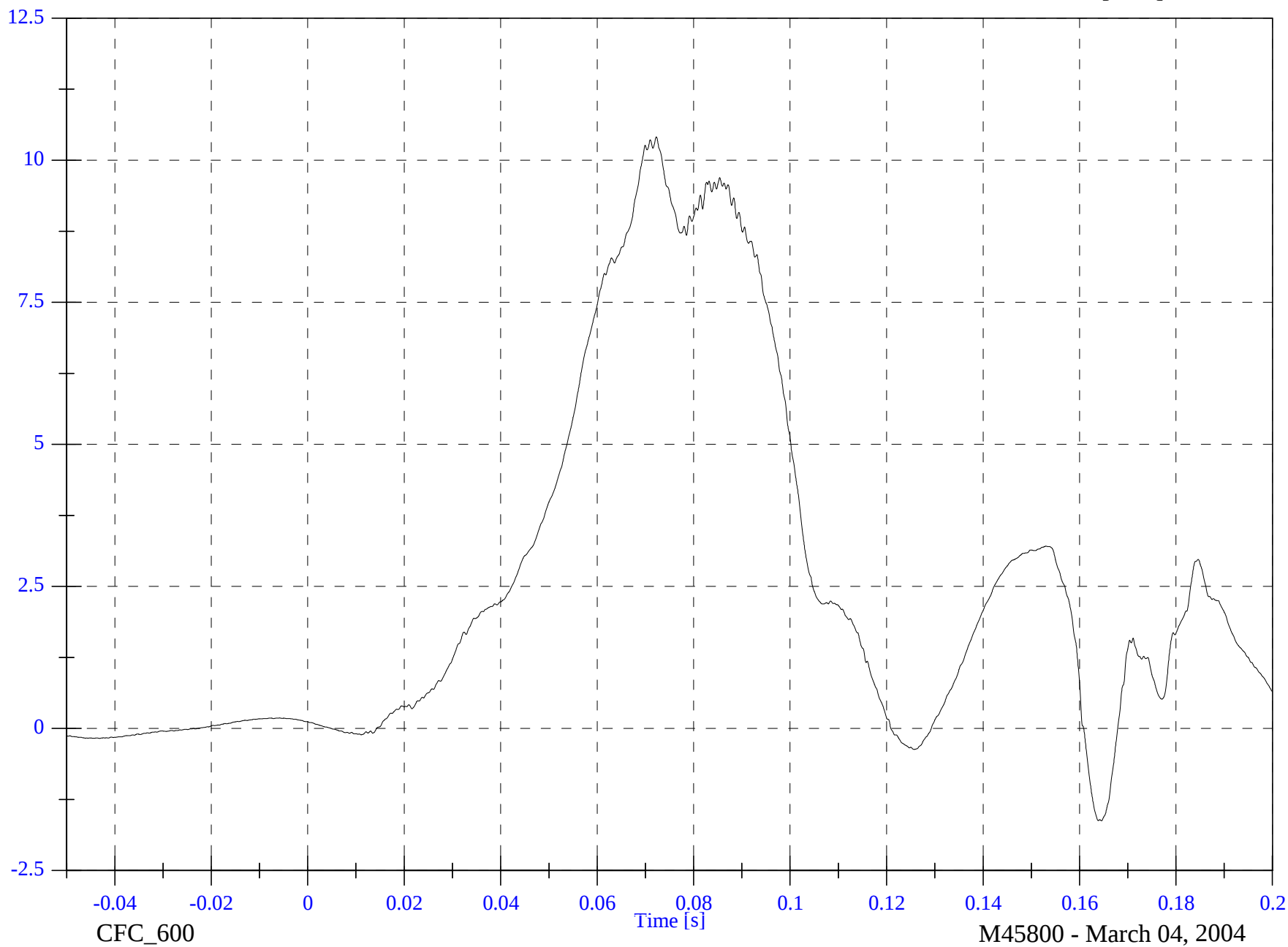
Max: 10.4 [N-m] at 0.072 [s]

Min: -1.6 [N-m] at 0.165 [s]

4-23

N-m

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

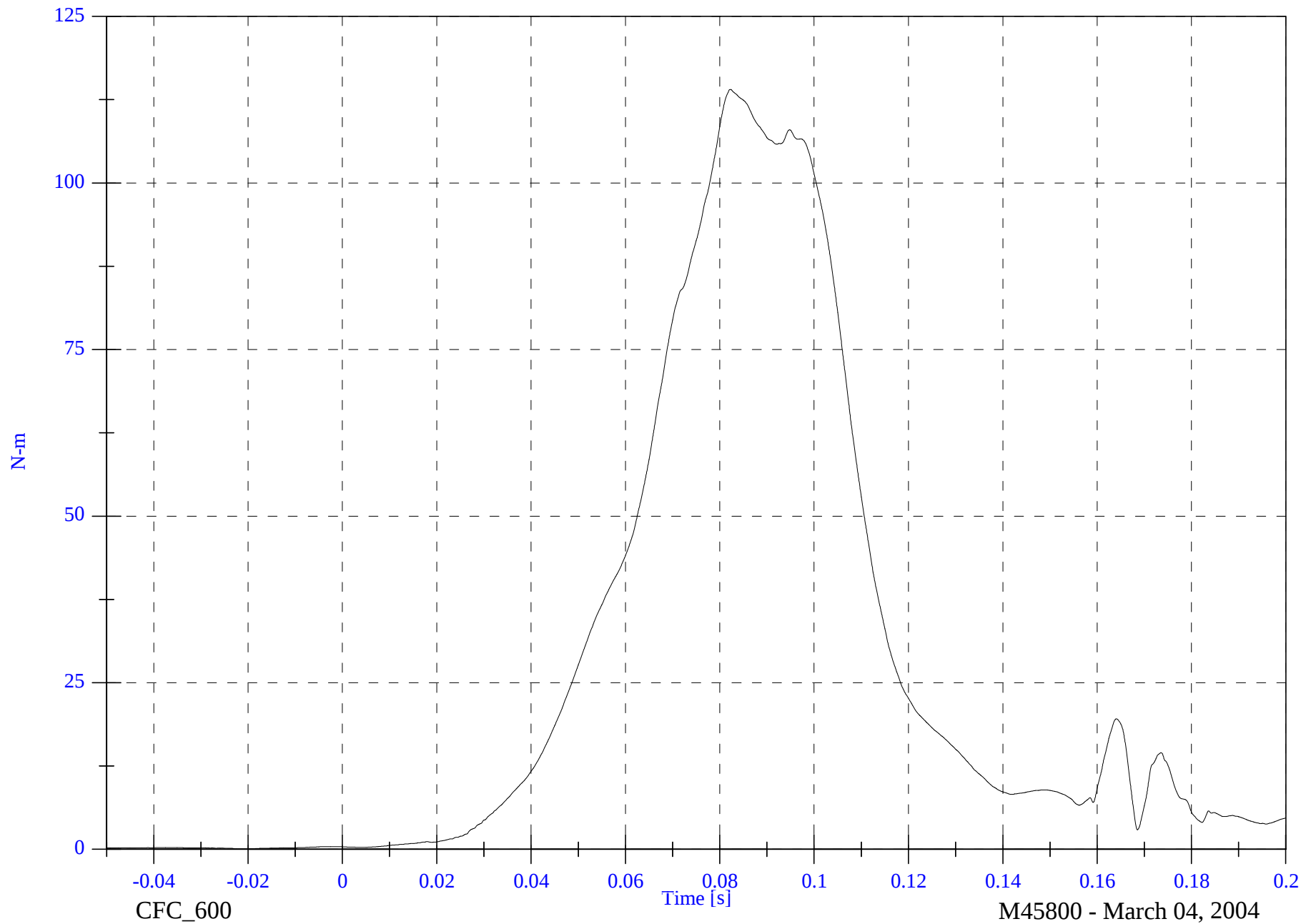
V1P3 Lower Neck M Resultant

Max: 114.0 [N-m] at 0.082 [s]

Min: 0.1 [N-m] at -0.021 [s]

4-24

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

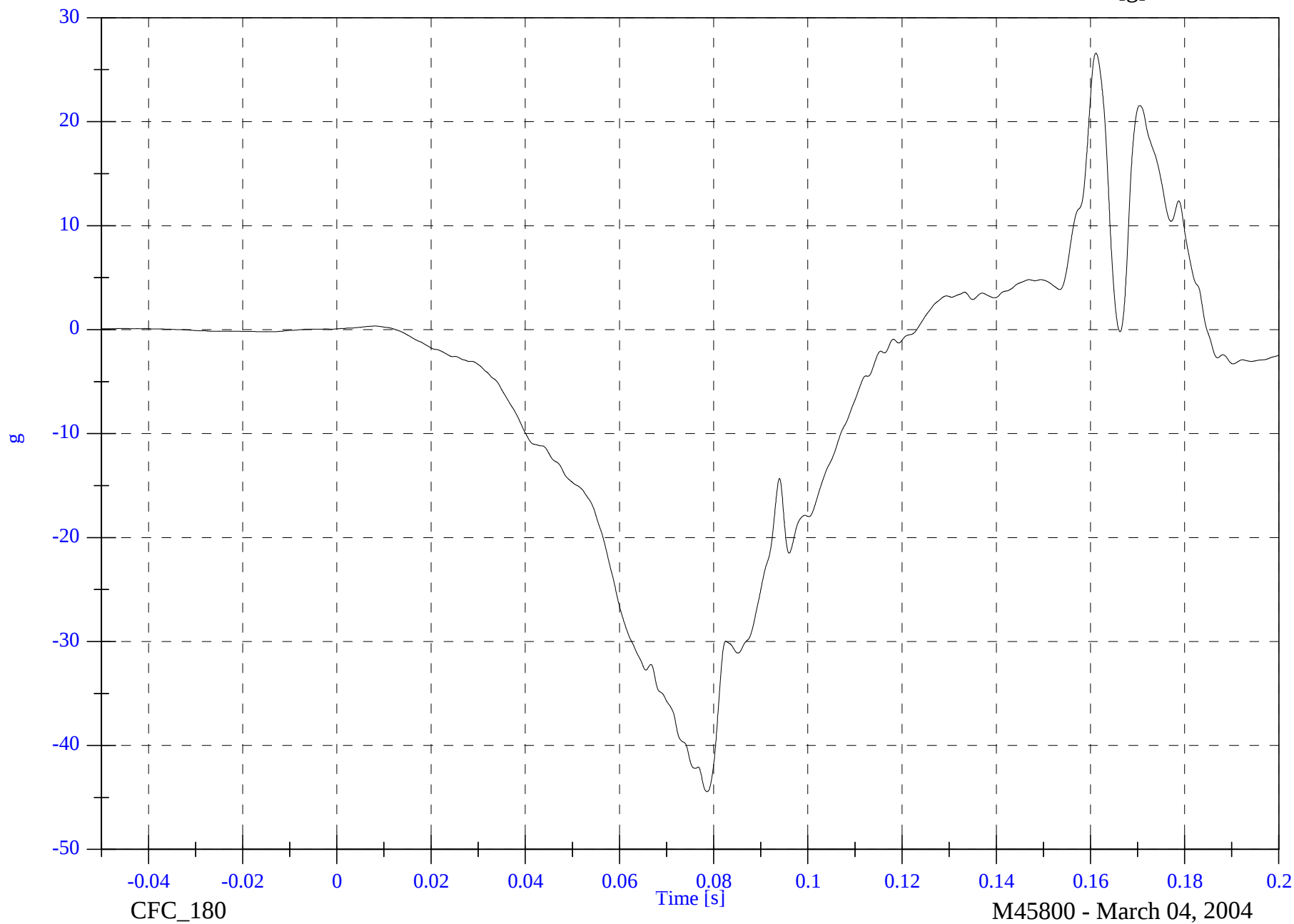
V1P3 Chest x

Max: 26.6 [g] at 0.161 [s]

Min: -44.4 [g] at 0.079 [s]

4-25

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Chest y

Max: 8.6 [g] at 0.078 [s]

Min: -10.2 [g] at 0.180 [s]

4-26

8642-NCAP-46

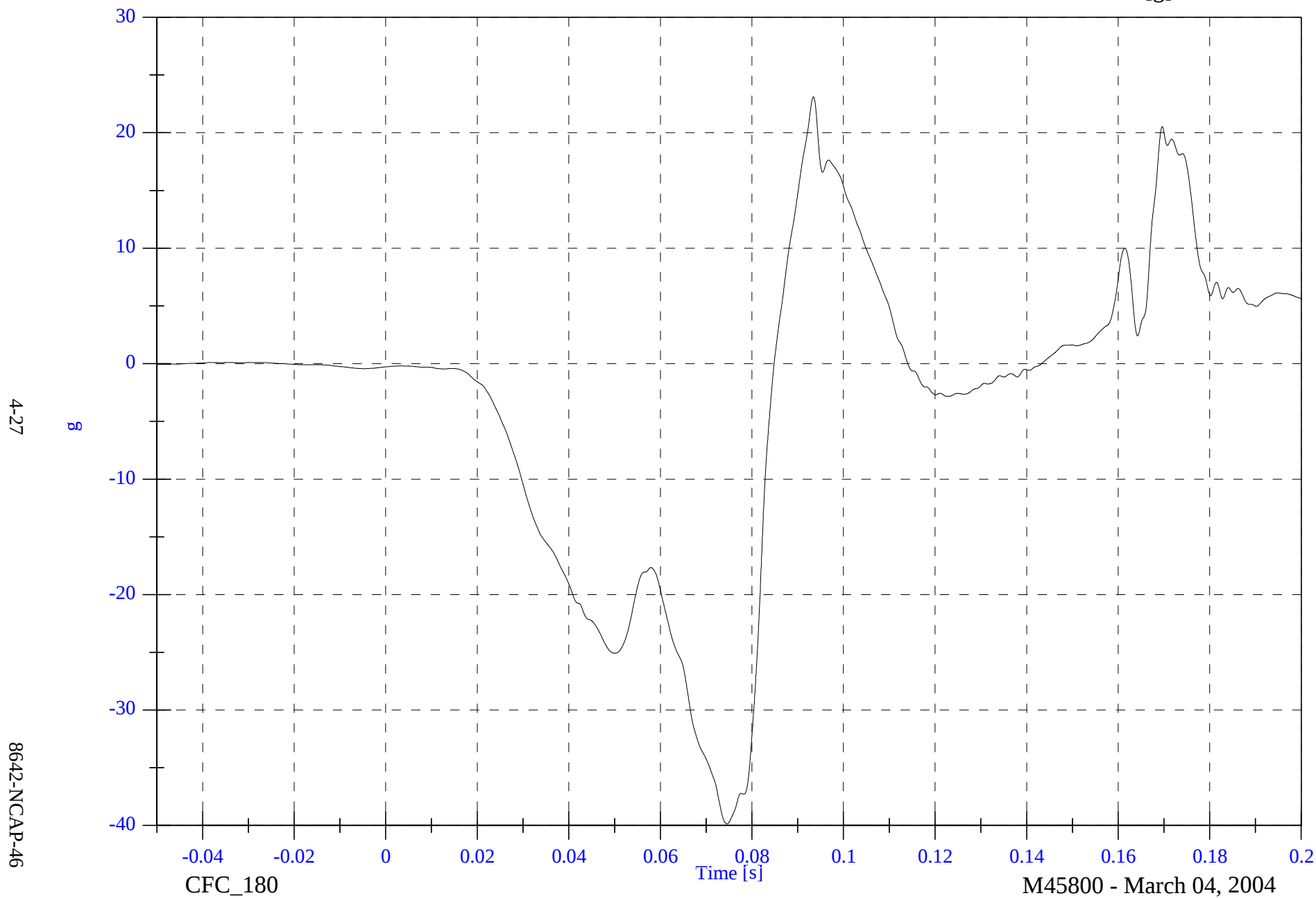


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Chest z

Max: 23.1 [g] at 0.093 [s]

Min: -39.8 [g] at 0.075 [s]



2004 NCAP Test 10 - 2004 VW Touareg

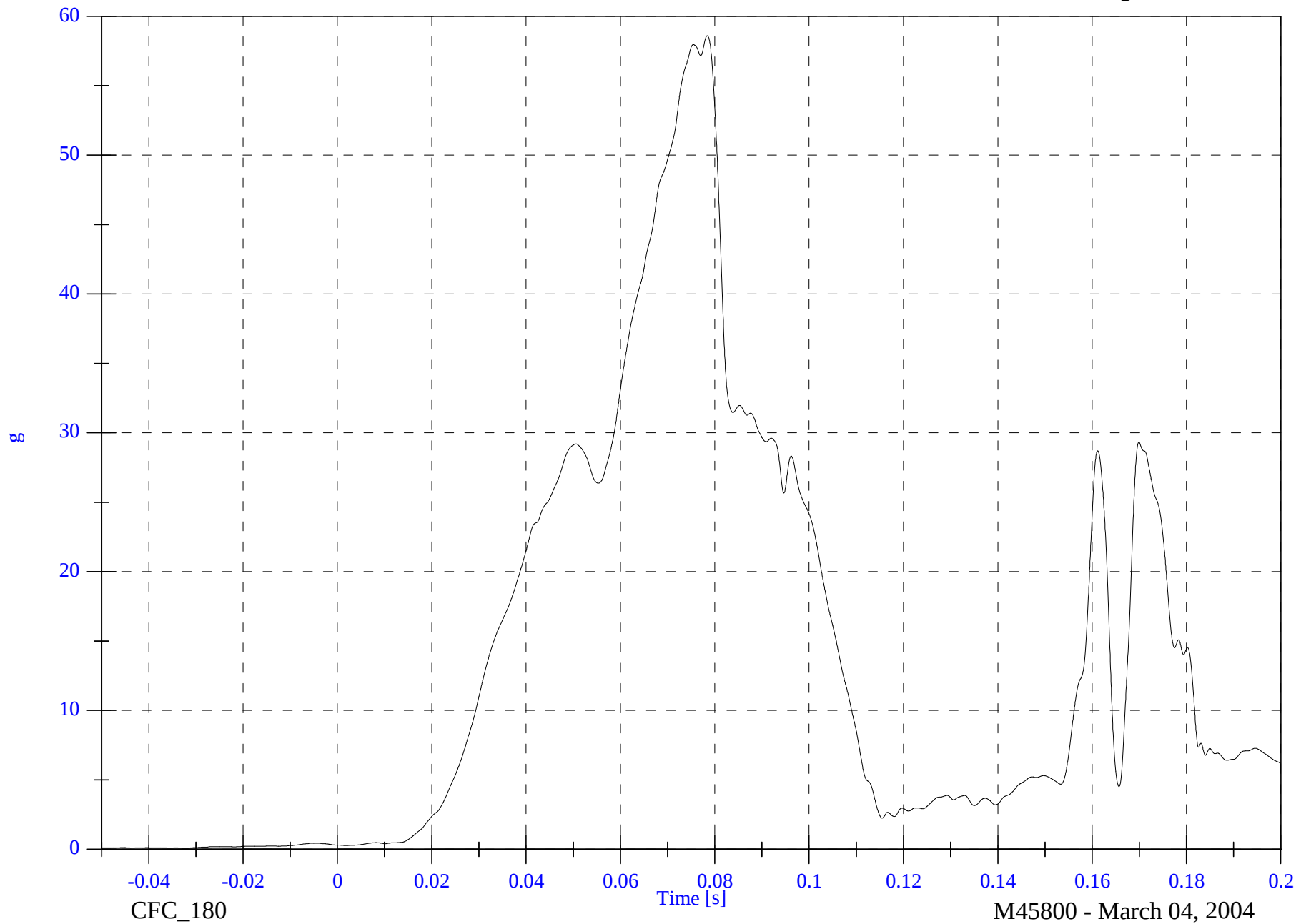
V1P3 Chest Resultant

Max: 58.6 [g] at 0.078 [s]

Min: 0.1 [g] at -0.032 [s]

4-28

8642-NCAP-46

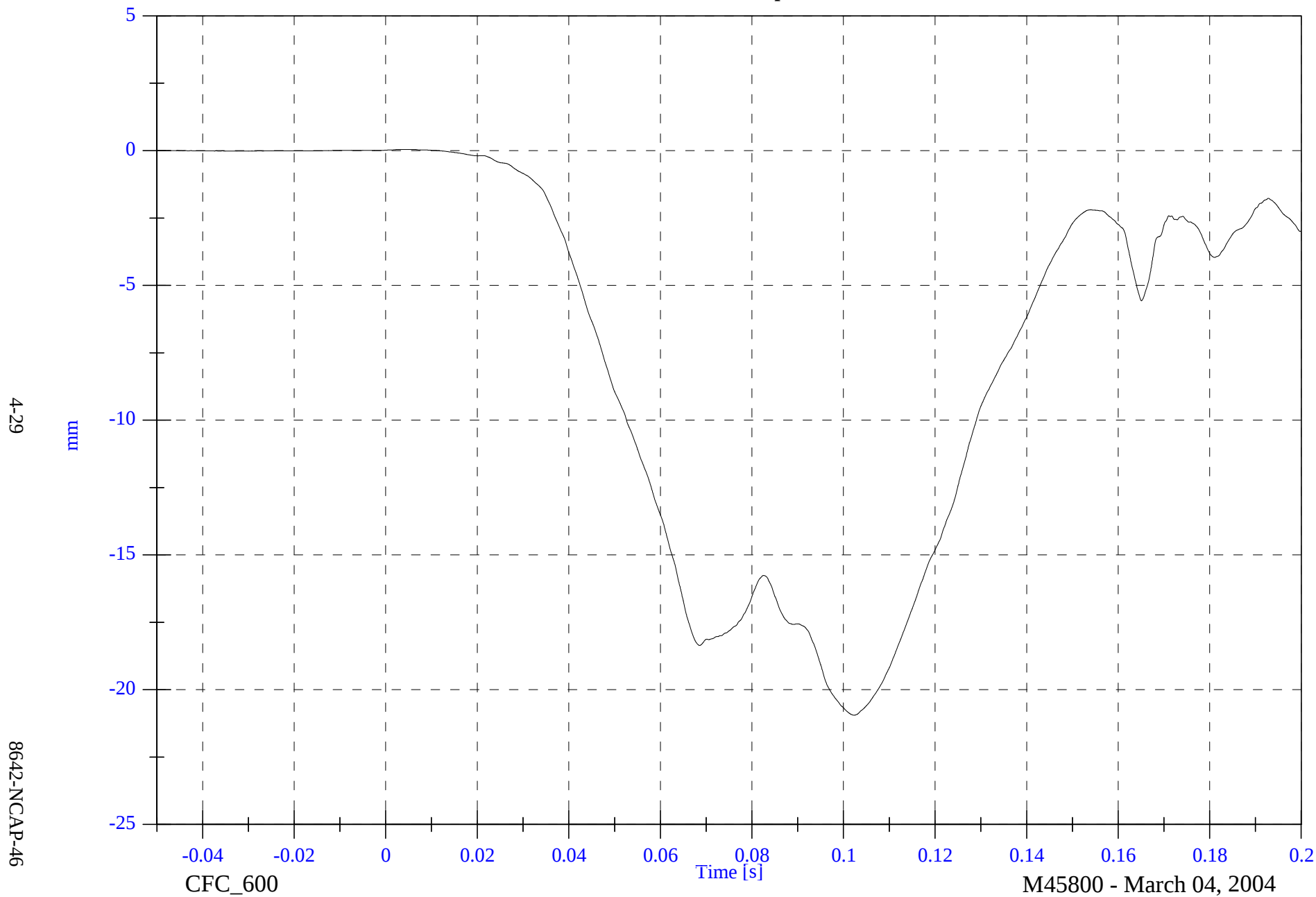


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Chest Compression

Max: 0.0 [mm] at 0.005 [s]

Min: -20.9 [mm] at 0.102 [s]



2004 NCAP Test 10 - 2004 VW Touareg

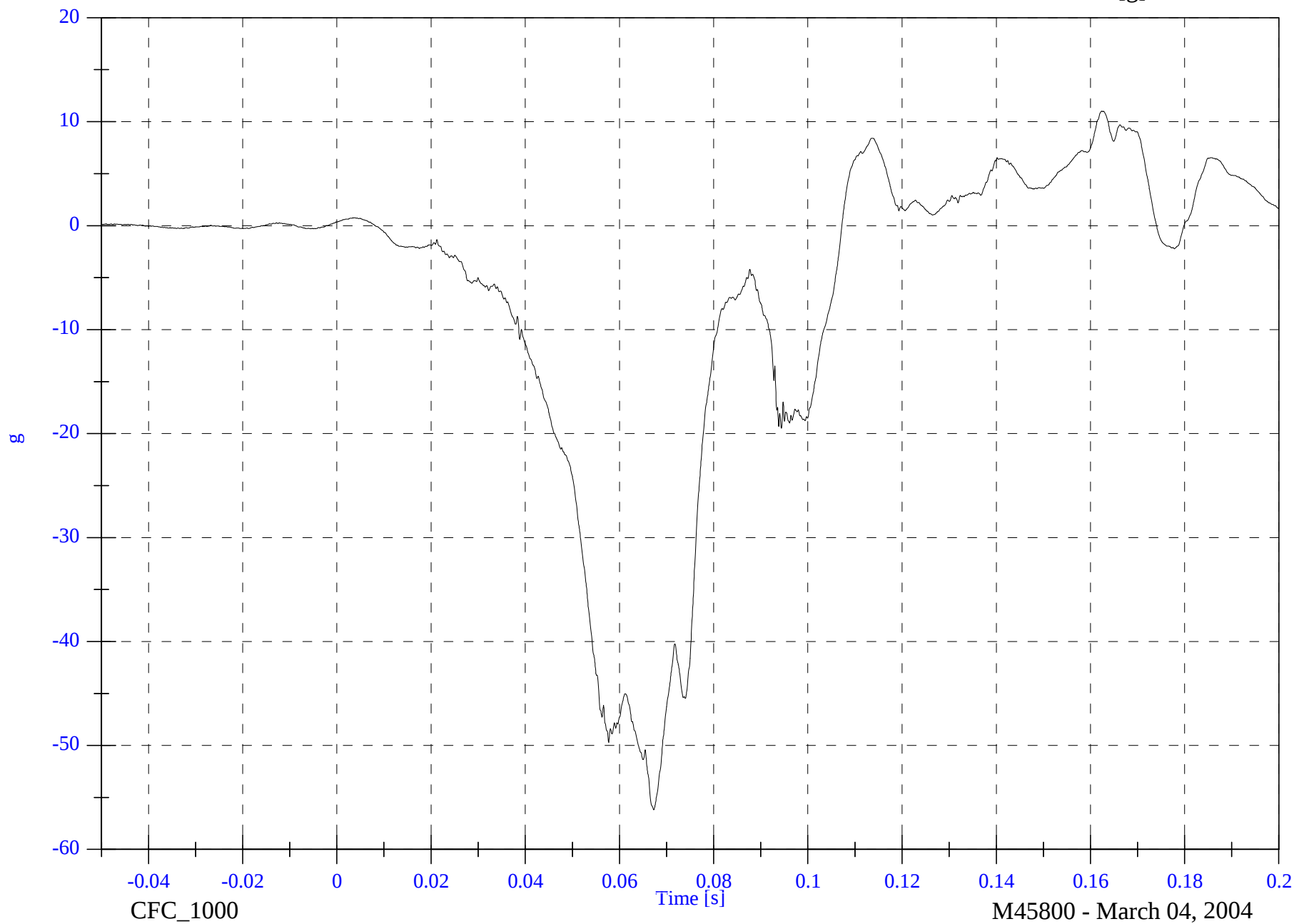
V1P3 Pelvic x

Max: 11.0 [g] at 0.162 [s]

Min: -56.2 [g] at 0.067 [s]

4-30

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

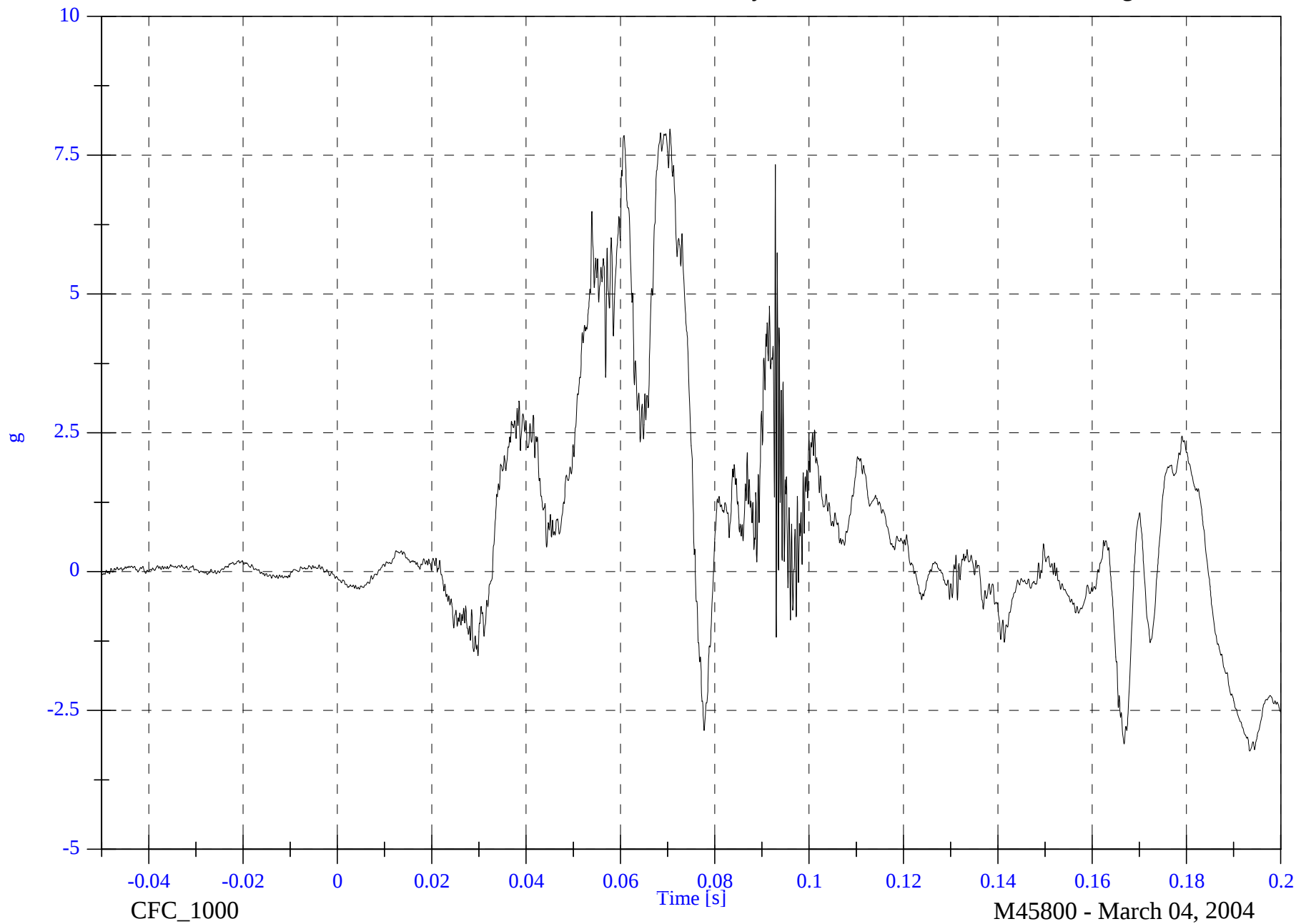
V1P3 Pelvic y

Max: 8.0 [g] at 0.070 [s]

Min: -3.2 [g] at 0.193 [s]

4-31

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

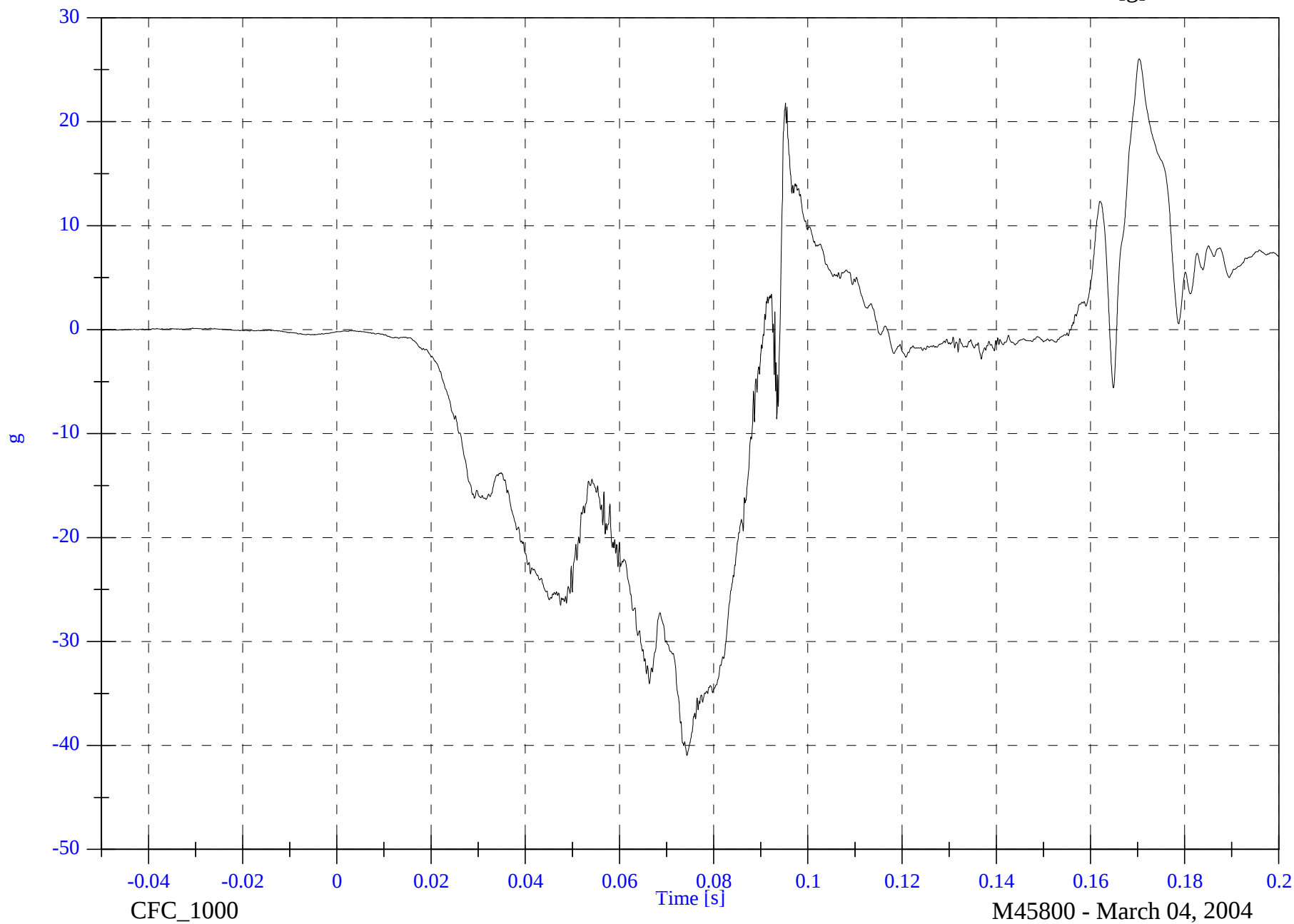
V1P3 Pelvic z

Max: 26.0 [g] at 0.170 [s]

Min: -41.0 [g] at 0.074 [s]

4-32

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

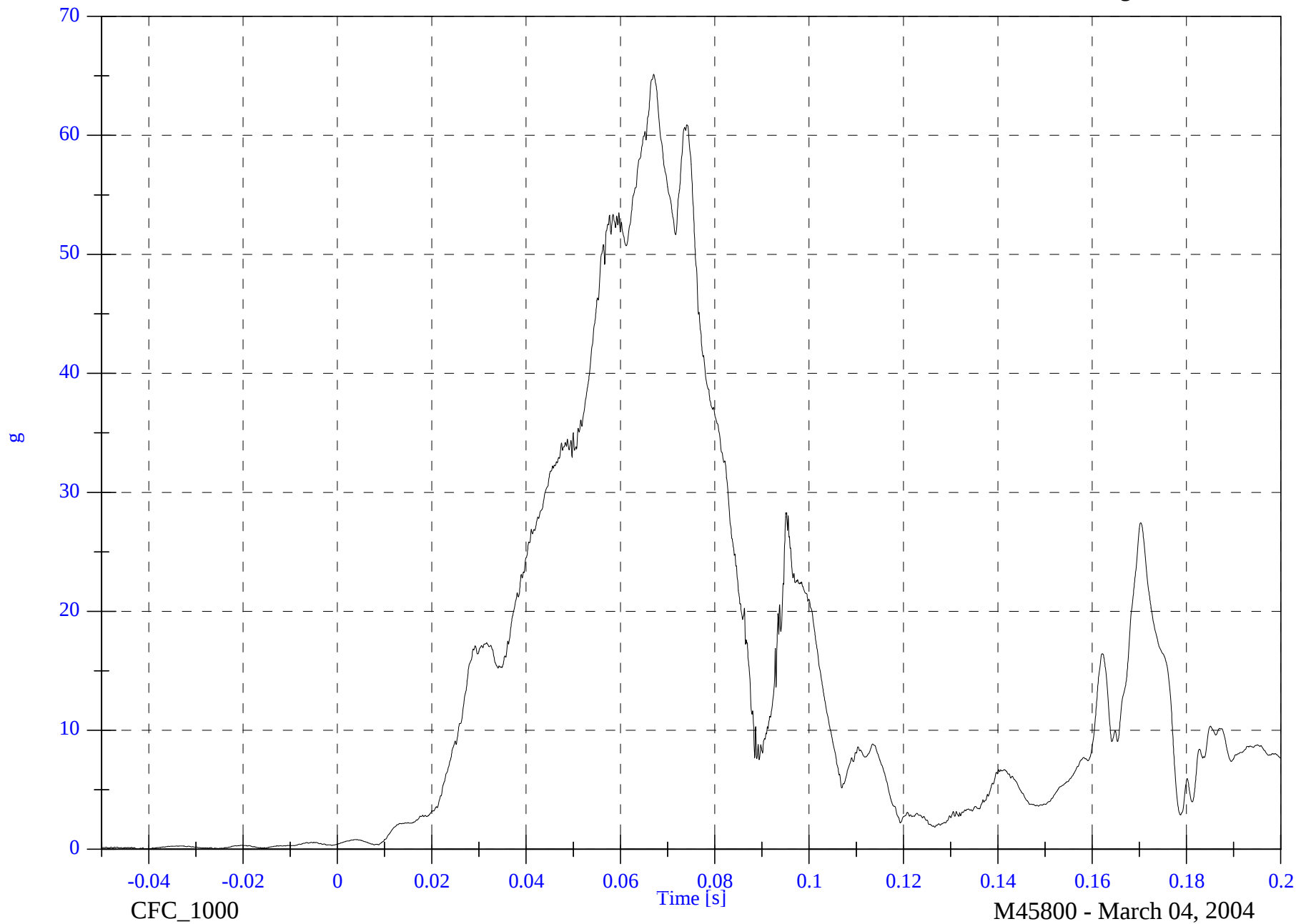
V1P3 Pelvic Resultant

Max: 65.1 [g] at 0.067 [s]

Min: 0.0 [g] at -0.042 [s]

4-33

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Tether Belt

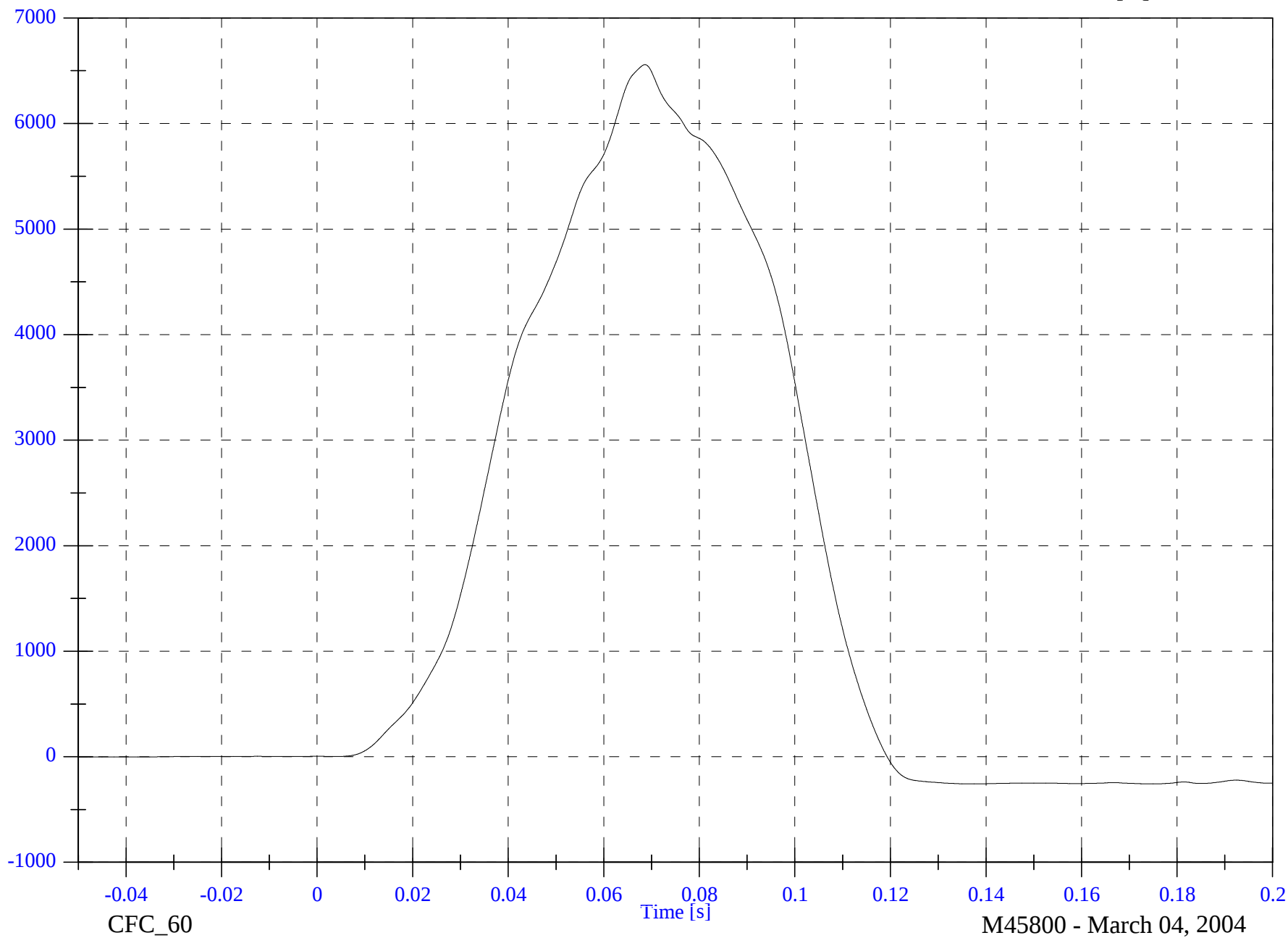
Max: 6558.0 [N] at 0.069 [s]

Min: -256.5 [N] at 0.175 [s]

4-34

N

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

V1P3 Latch Belt

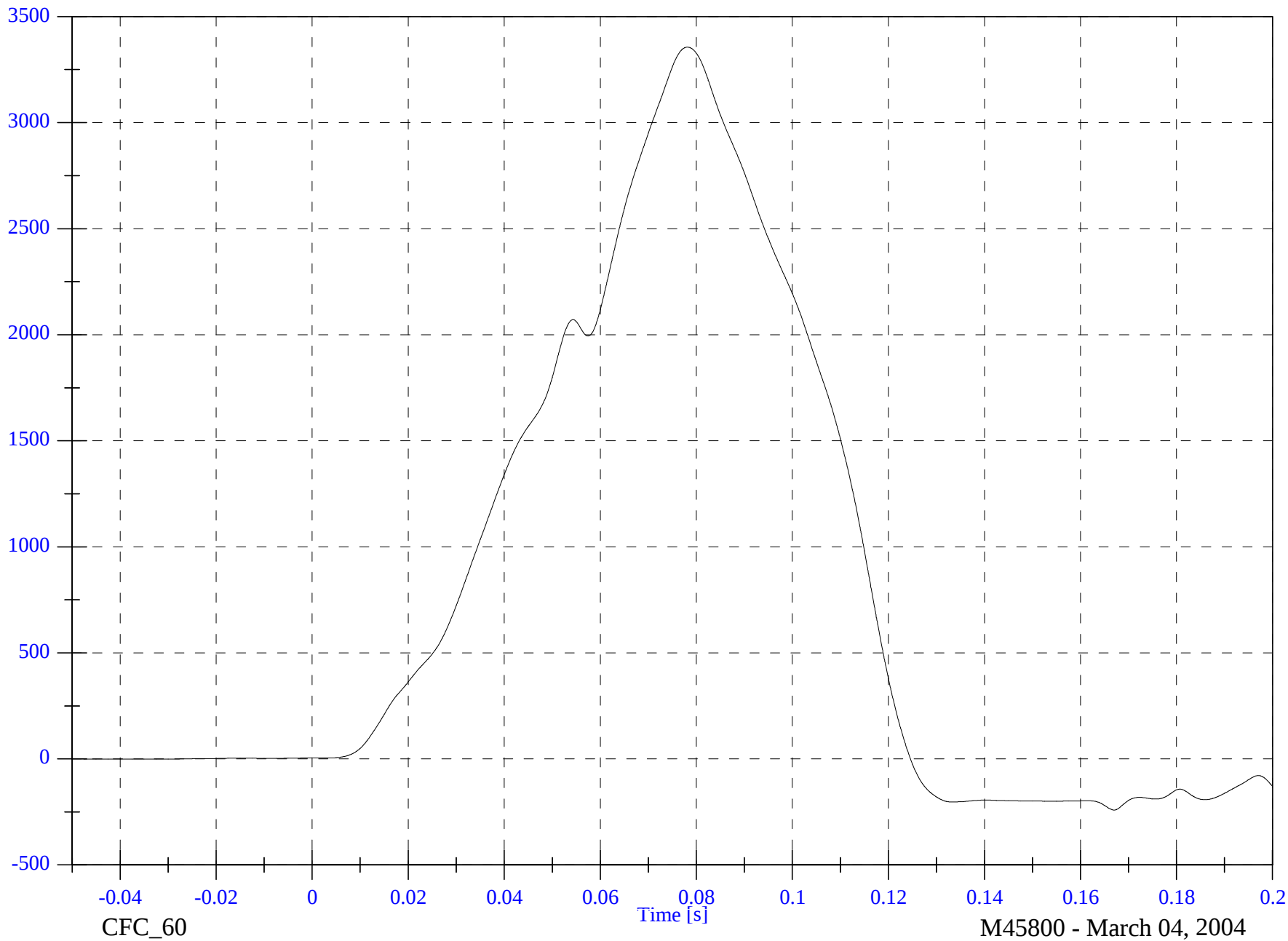
Max: 3356.3 [N] at 0.078 [s]

Min: -241.2 [N] at 0.167 [s]

4-35

N

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

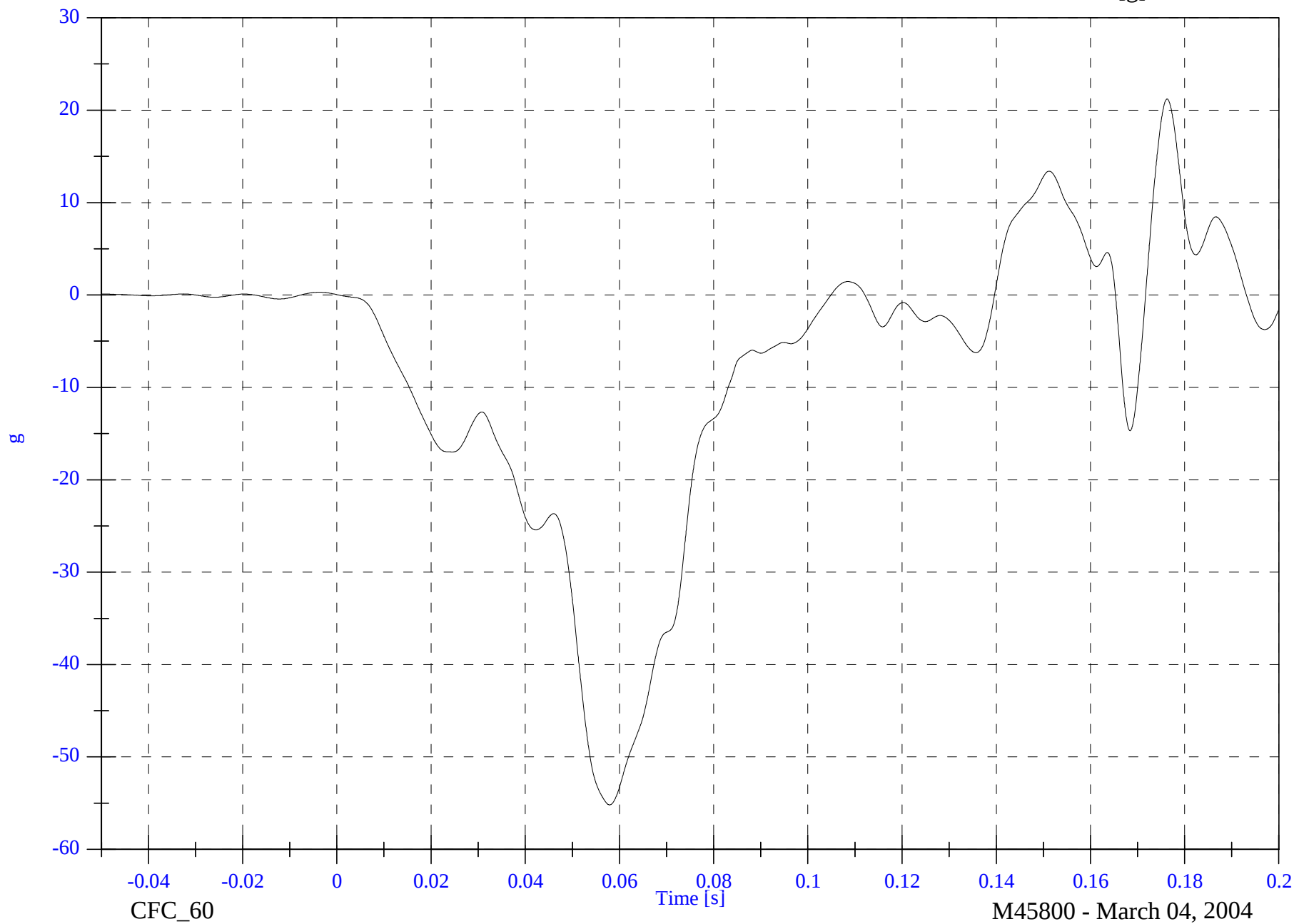
V1P3 CRS x

Max: 21.2 [g] at 0.176 [s]

Min: -55.2 [g] at 0.058 [s]

4-36

8642-NCAP-46

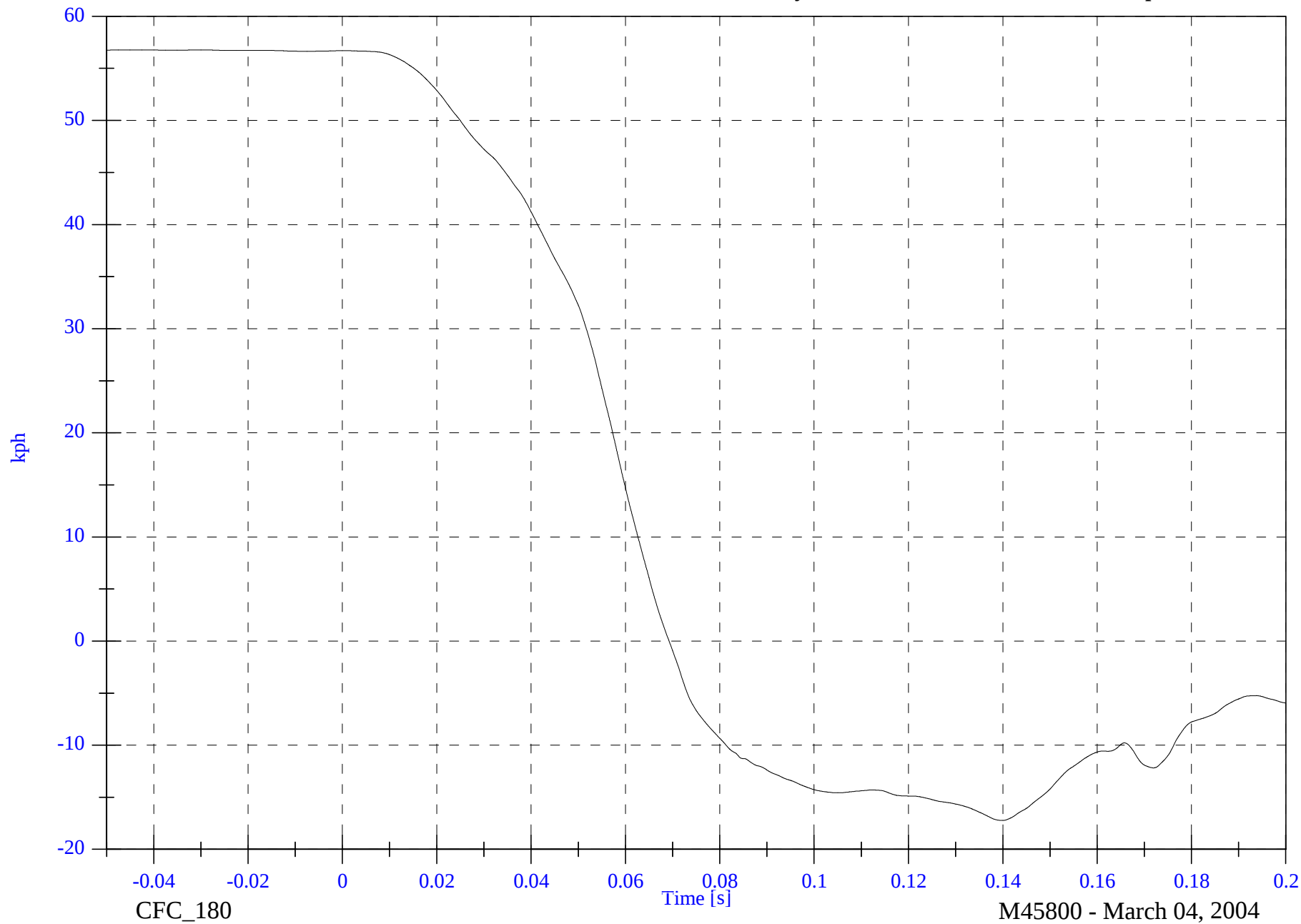


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 CRS x Velocity

Max: 56.8 [kph] at -0.043 [s]

Min: -17.2 [kph] at 0.140 [s]



4-37

8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

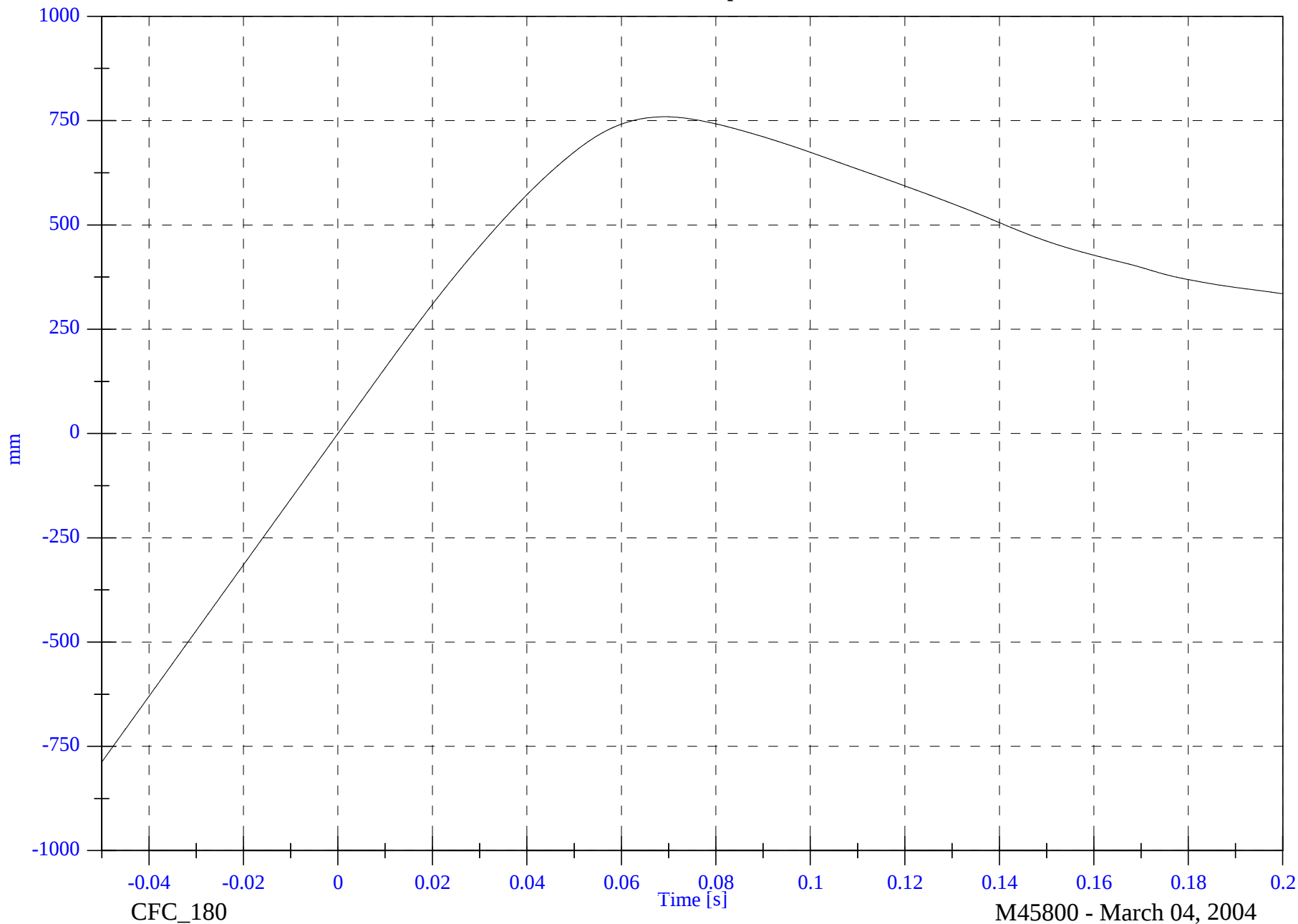
V1P3 CRS x Displacement

Max: 759.2 [mm] at 0.069 [s]

Min: -787.8 [mm] at -0.050 [s]

4-38

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

V1P3 CRS y

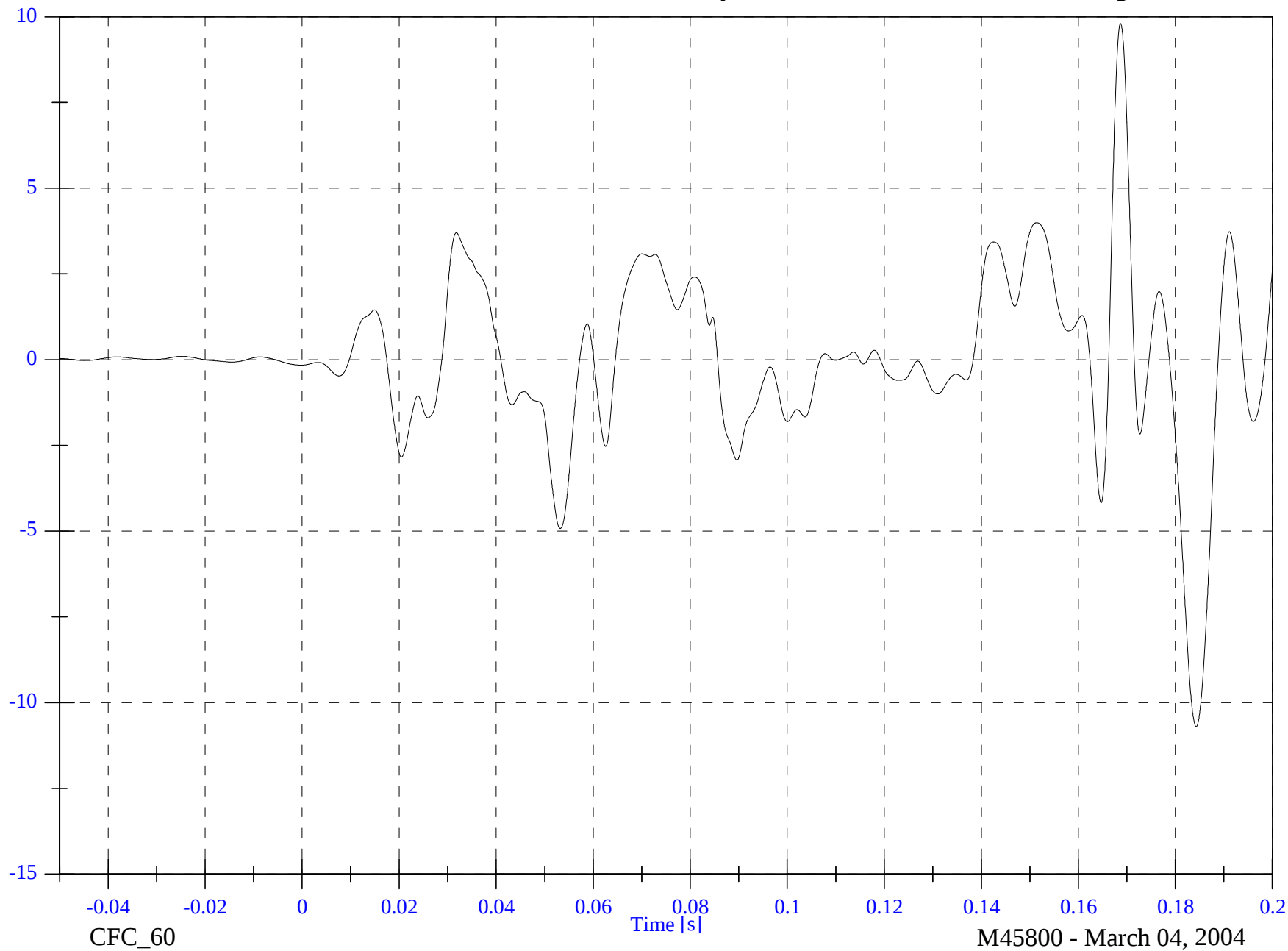
Max: 9.8 [g] at 0.169 [s]

Min: -10.7 [g] at 0.184 [s]

4-39

g

8642-NCAP-46

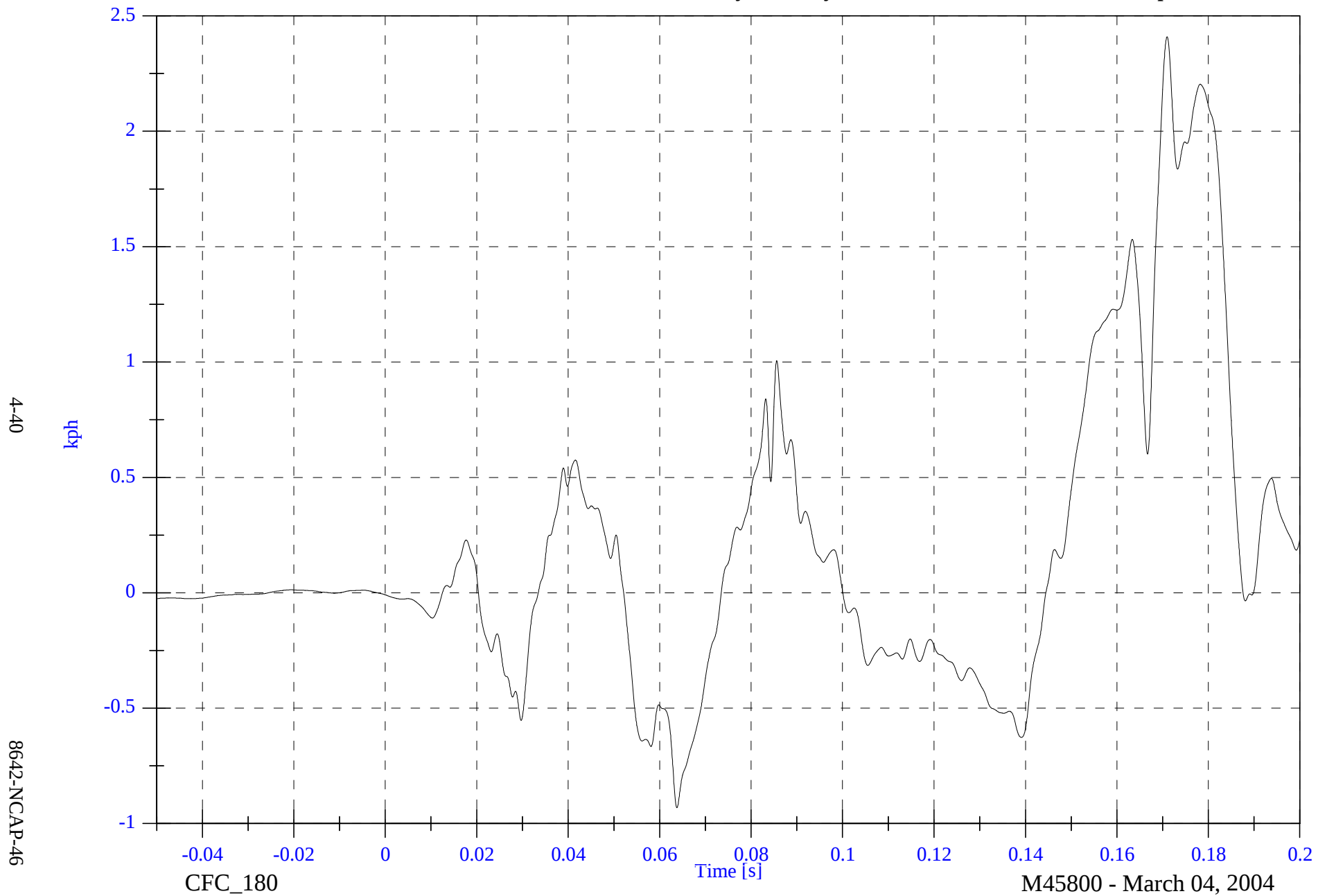


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 CRS y Velocity

Max: 2.4 [kph] at 0.171 [s]

Min: -0.9 [kph] at 0.064 [s]



2004 NCAP Test 10 - 2004 VW Touareg

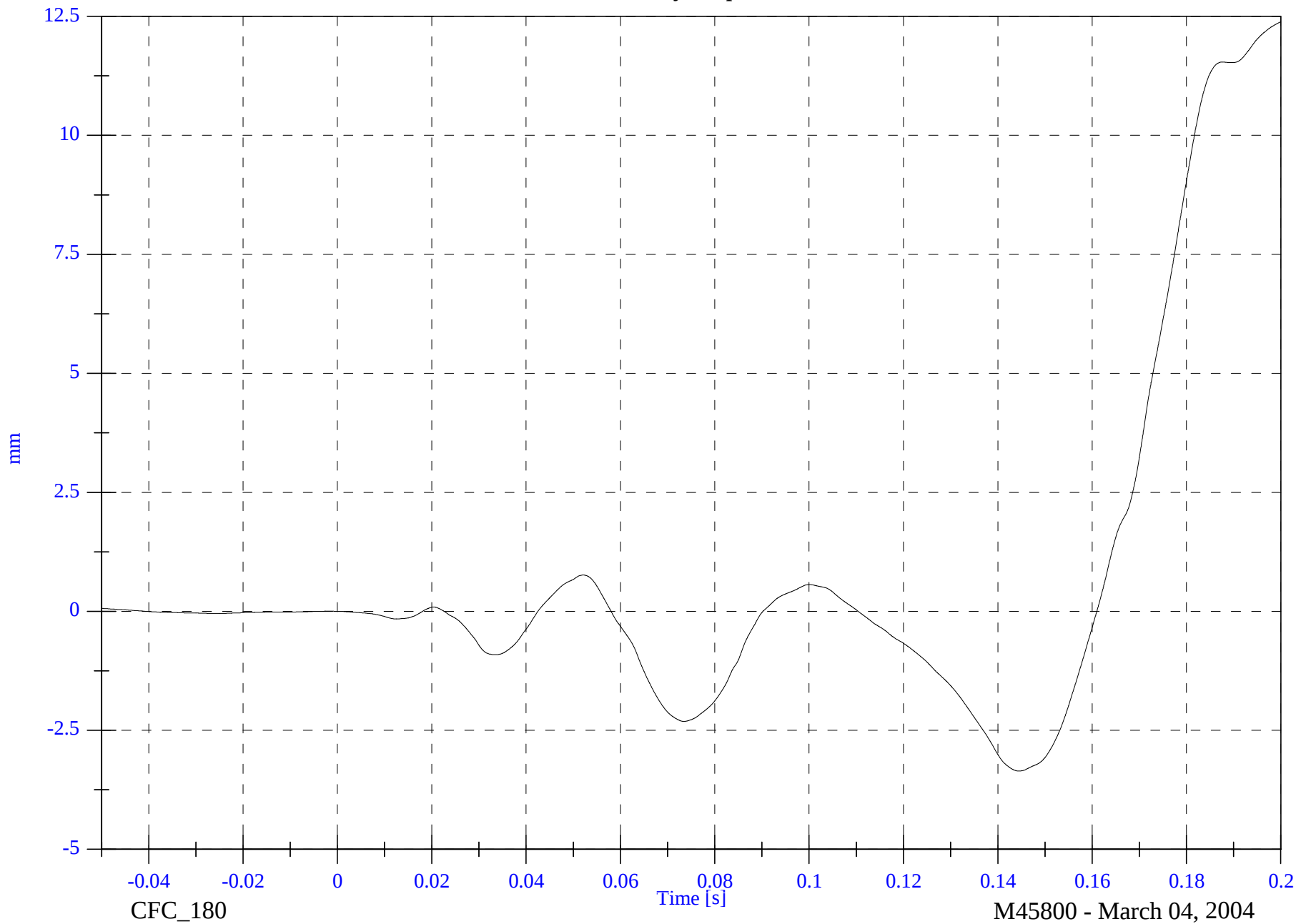
V1P3 CRS y Displacement

Max: 12.4 [mm] at 0.200 [s]

Min: -3.4 [mm] at 0.144 [s]

4-41

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

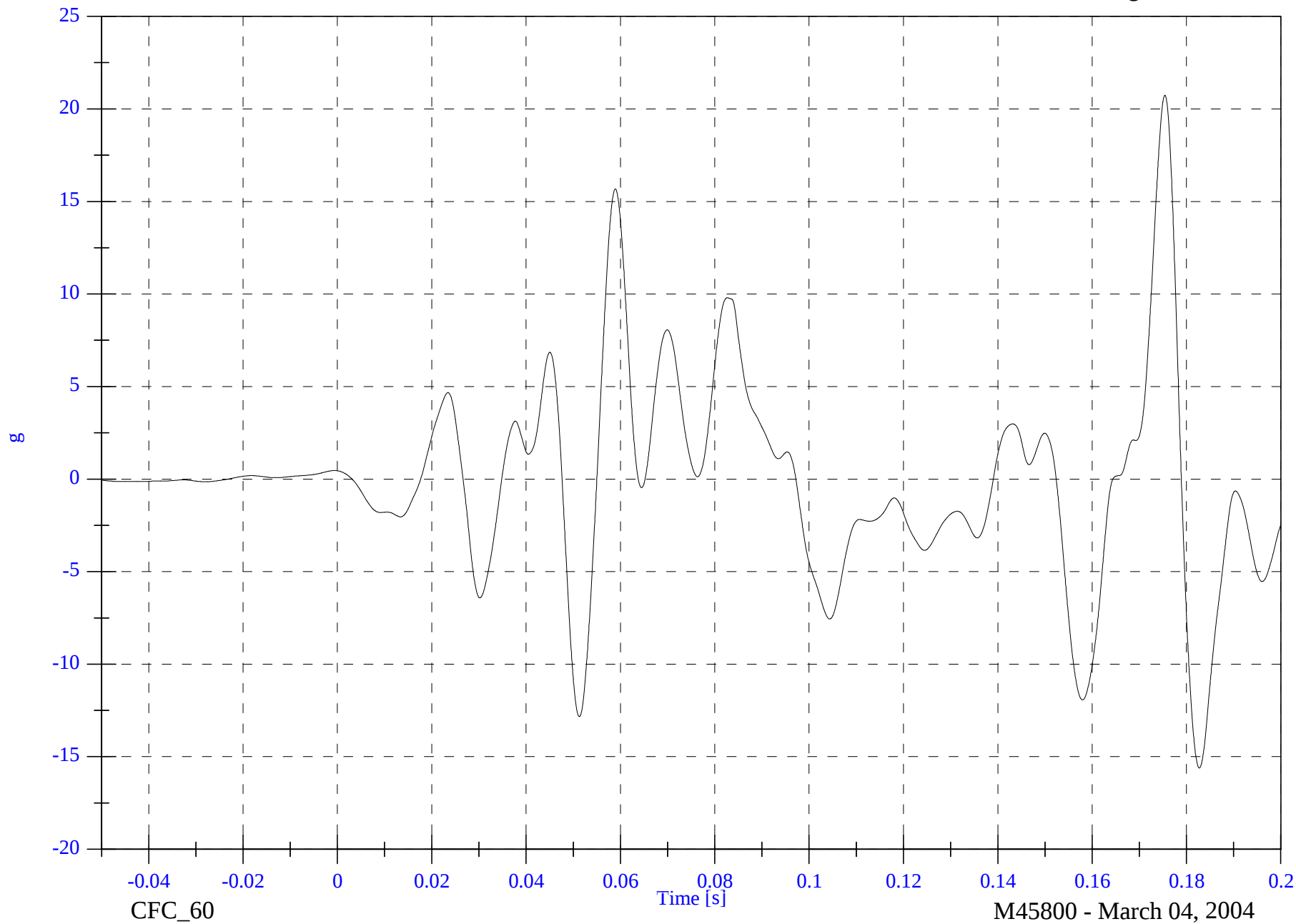
V1P3 CRS z

Max: 20.7 [g] at 0.175 [s]

Min: -15.6 [g] at 0.183 [s]

4-42

8642-NCAP-46

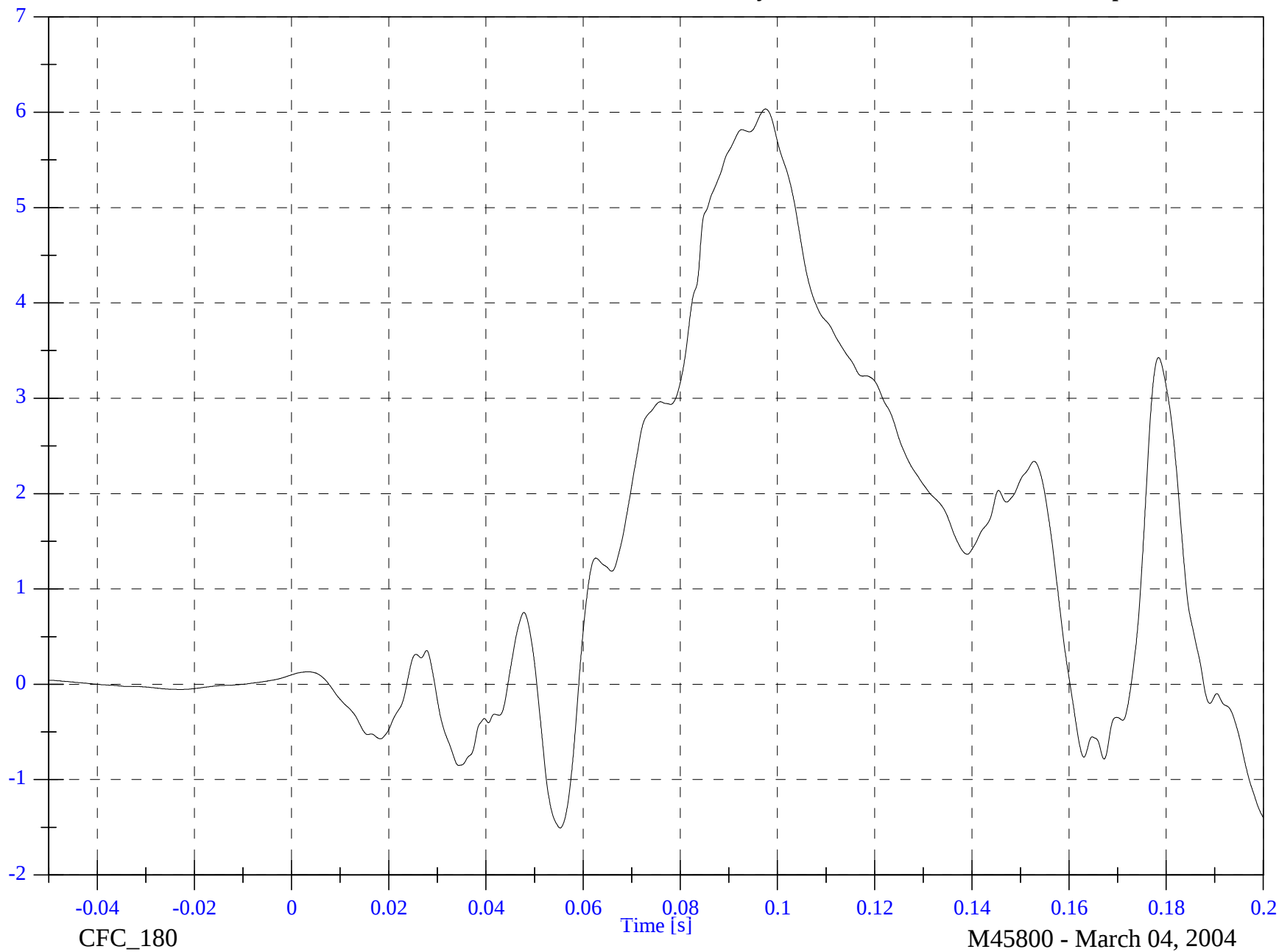


2004 NCAP Test 10 - 2004 VW Touareg

V1P3 CRS z Velocity

Max: 6.0 [kph] at 0.098 [s]

Min: -1.5 [kph] at 0.055 [s]



4-43

8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

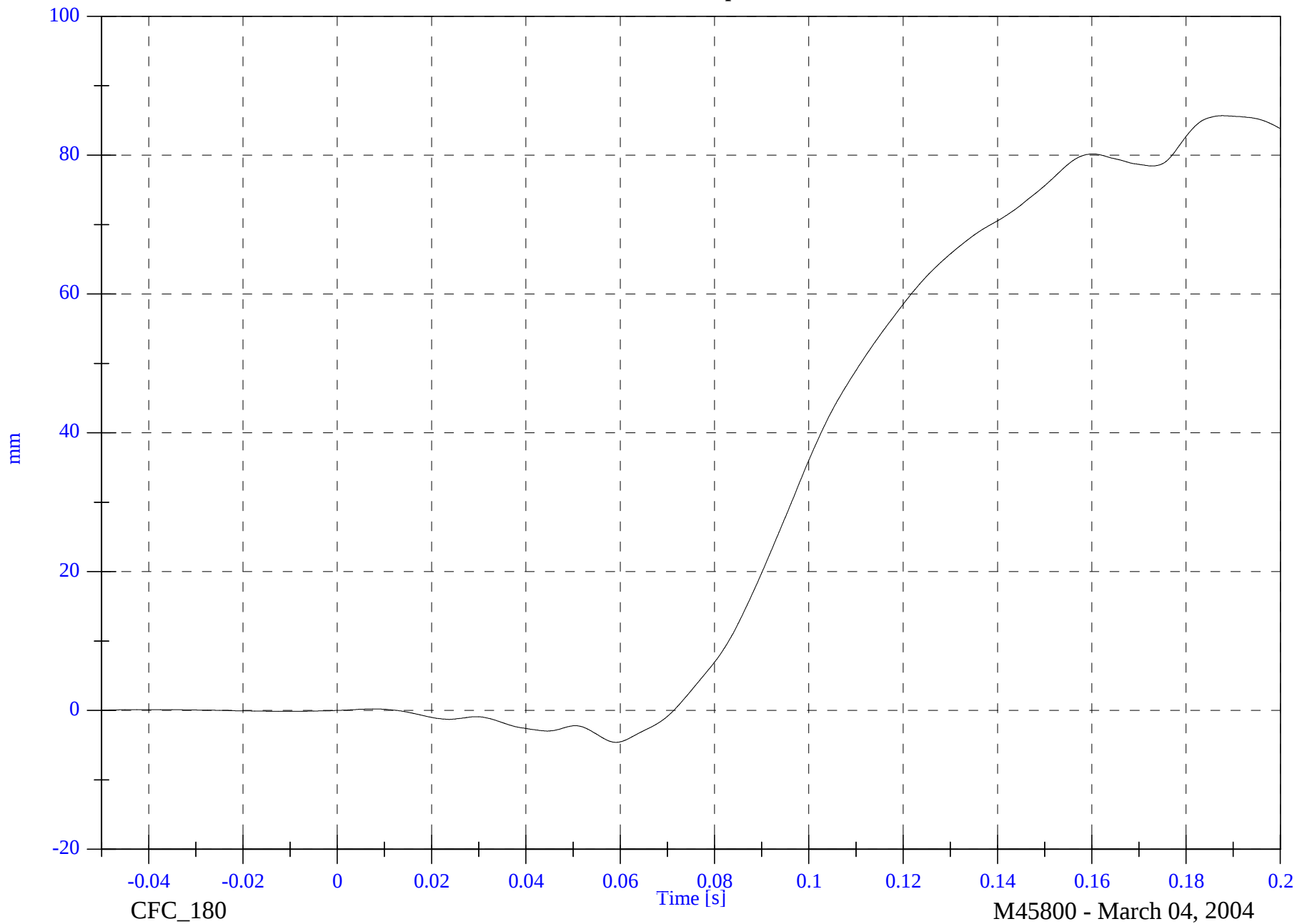
V1P3 CRS z Displacement

Max: 85.7 [mm] at 0.188 [s]

Min: -4.6 [mm] at 0.059 [s]

4-44

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

V1P3 CRS Resultant

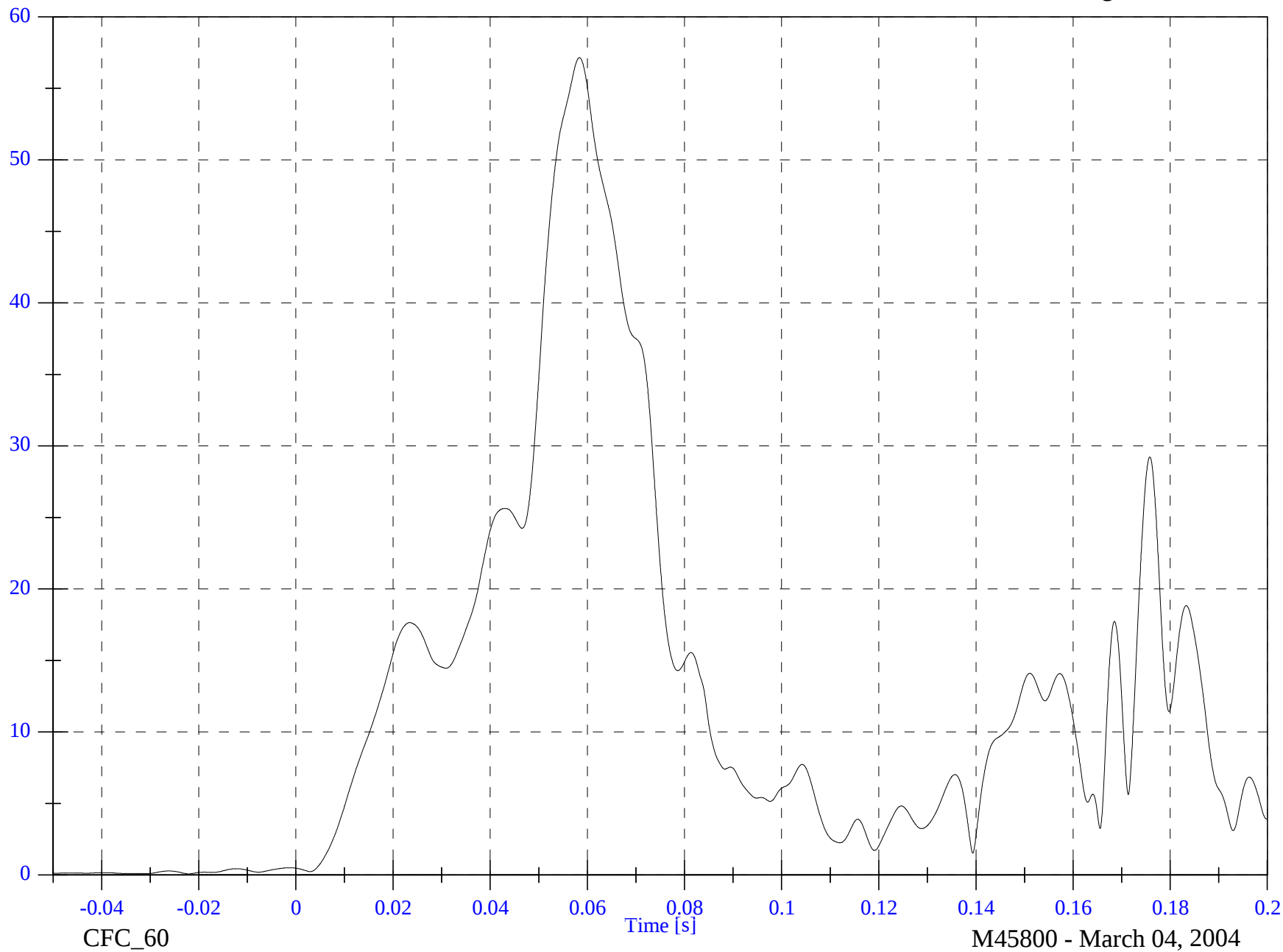
Max: 57.1 [g] at 0.058 [s]

Min: 0.1 [g] at -0.022 [s]

4-45

8642-NCAP-46

g



2004 NCAP Test 10 - 2004 VW Touareg

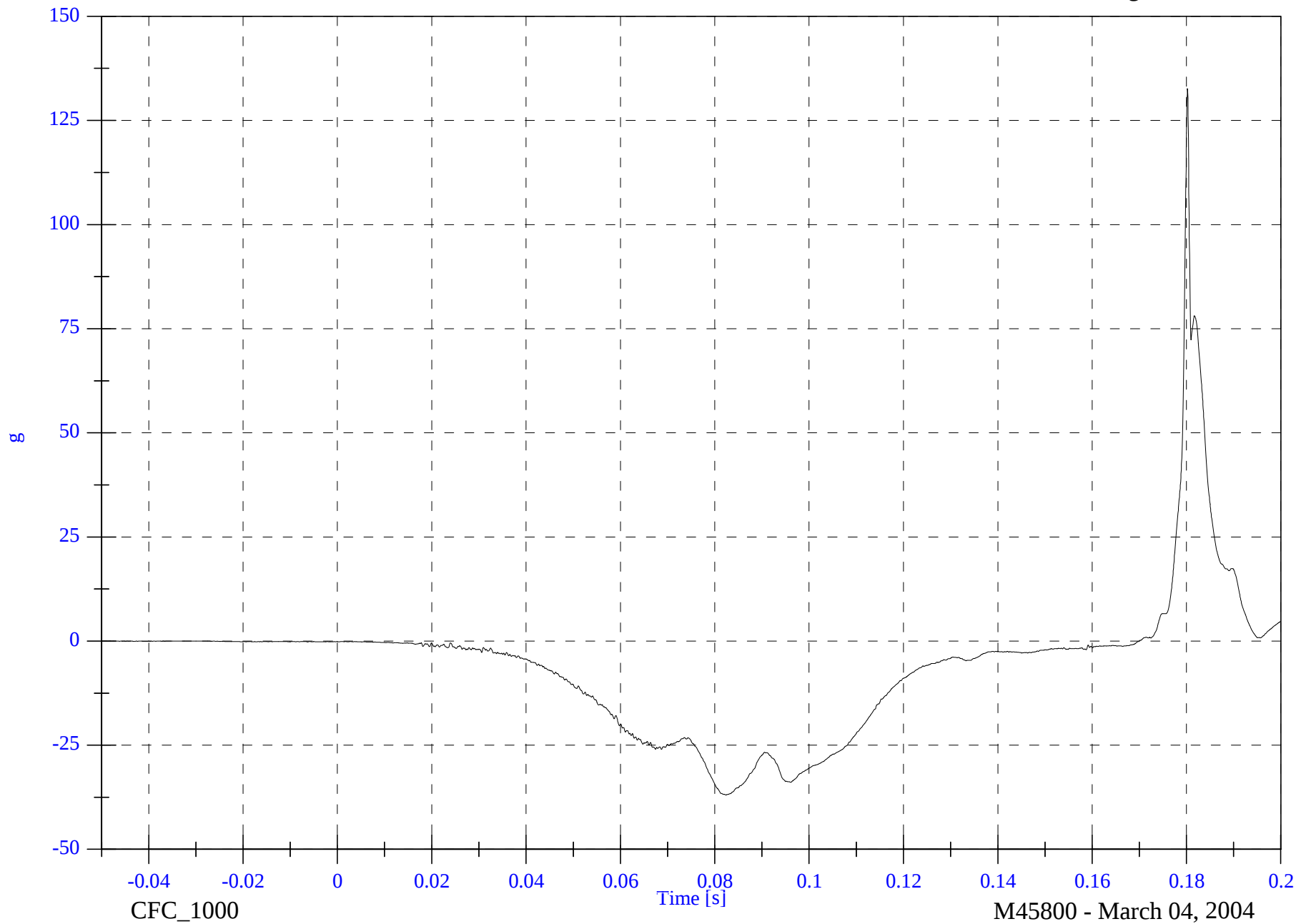
V1P4 Head x

Max: 132.7 [g] at 0.180 [s]

Min: -36.9 [g] at 0.082 [s]

4-46

8642-NCAP-46

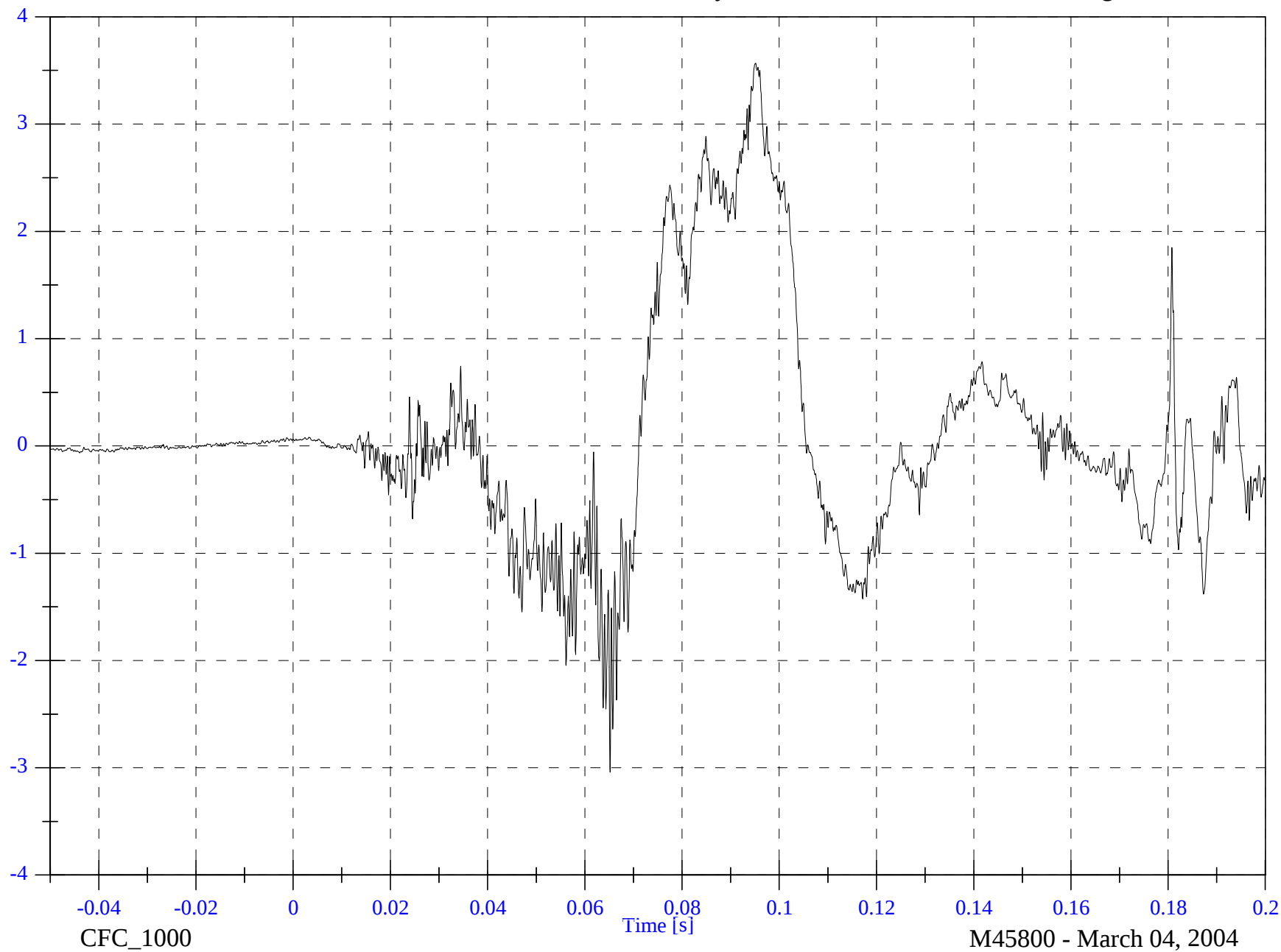


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Head y

Max: 3.6 [g] at 0.095 [s]

Min: -3.0 [g] at 0.065 [s]



4-47

8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

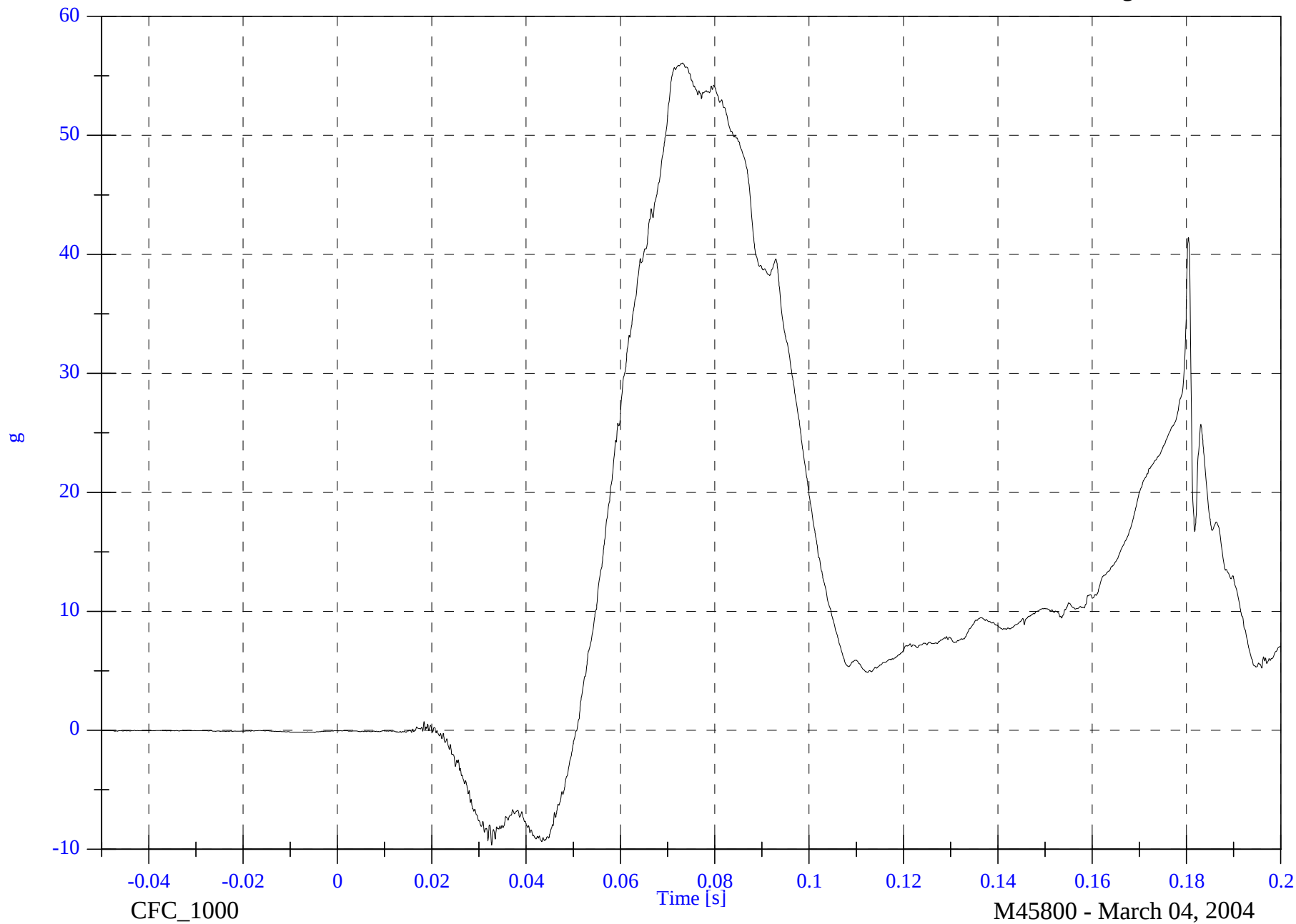
V1P4 Head z

Max: 56.1 [g] at 0.073 [s]

Min: -9.7 [g] at 0.033 [s]

4-48

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

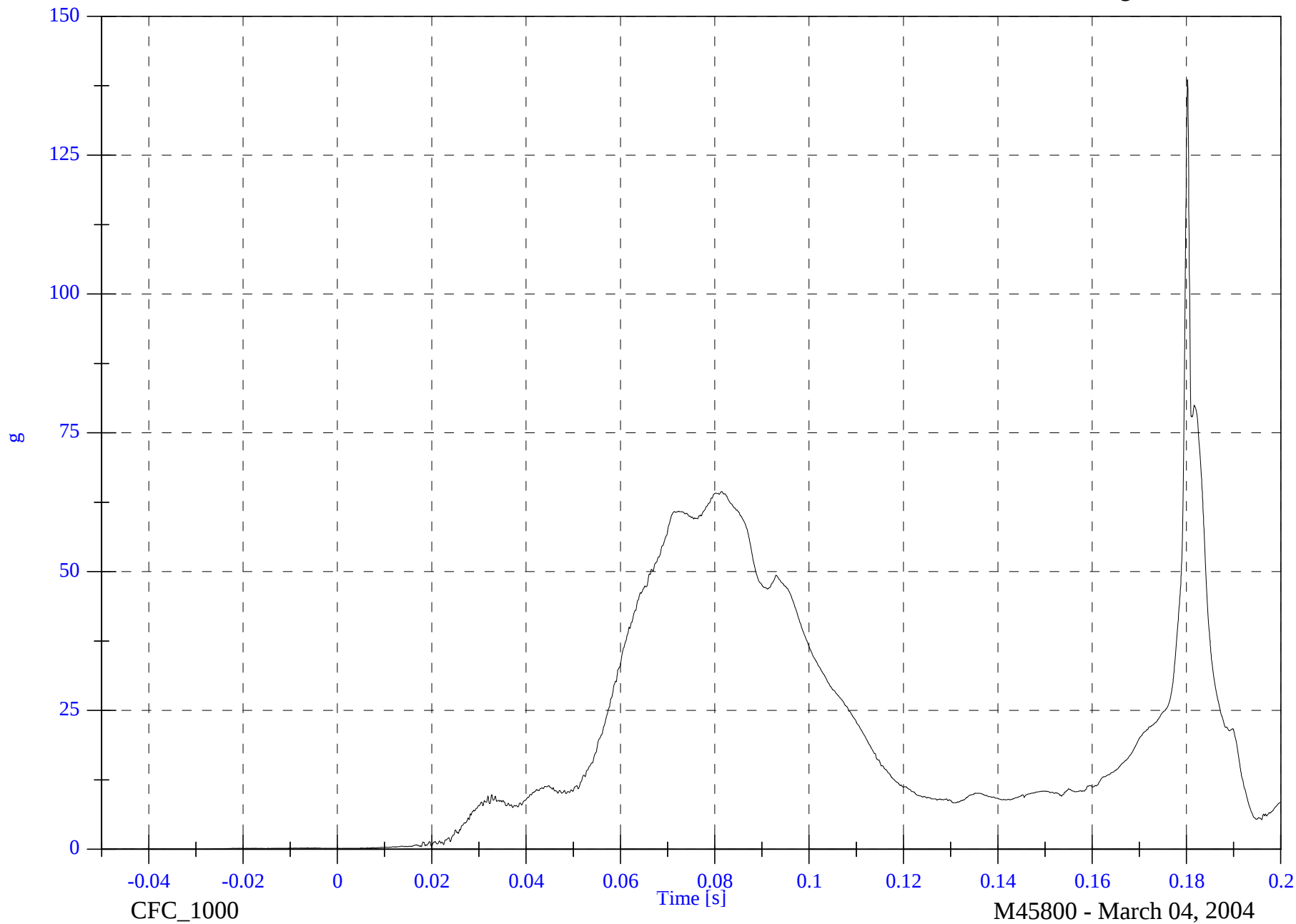
V1P4 Head Resultant

Max: 138.6 [g] at 0.180 [s]

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

4-49

8642-NCAP-46

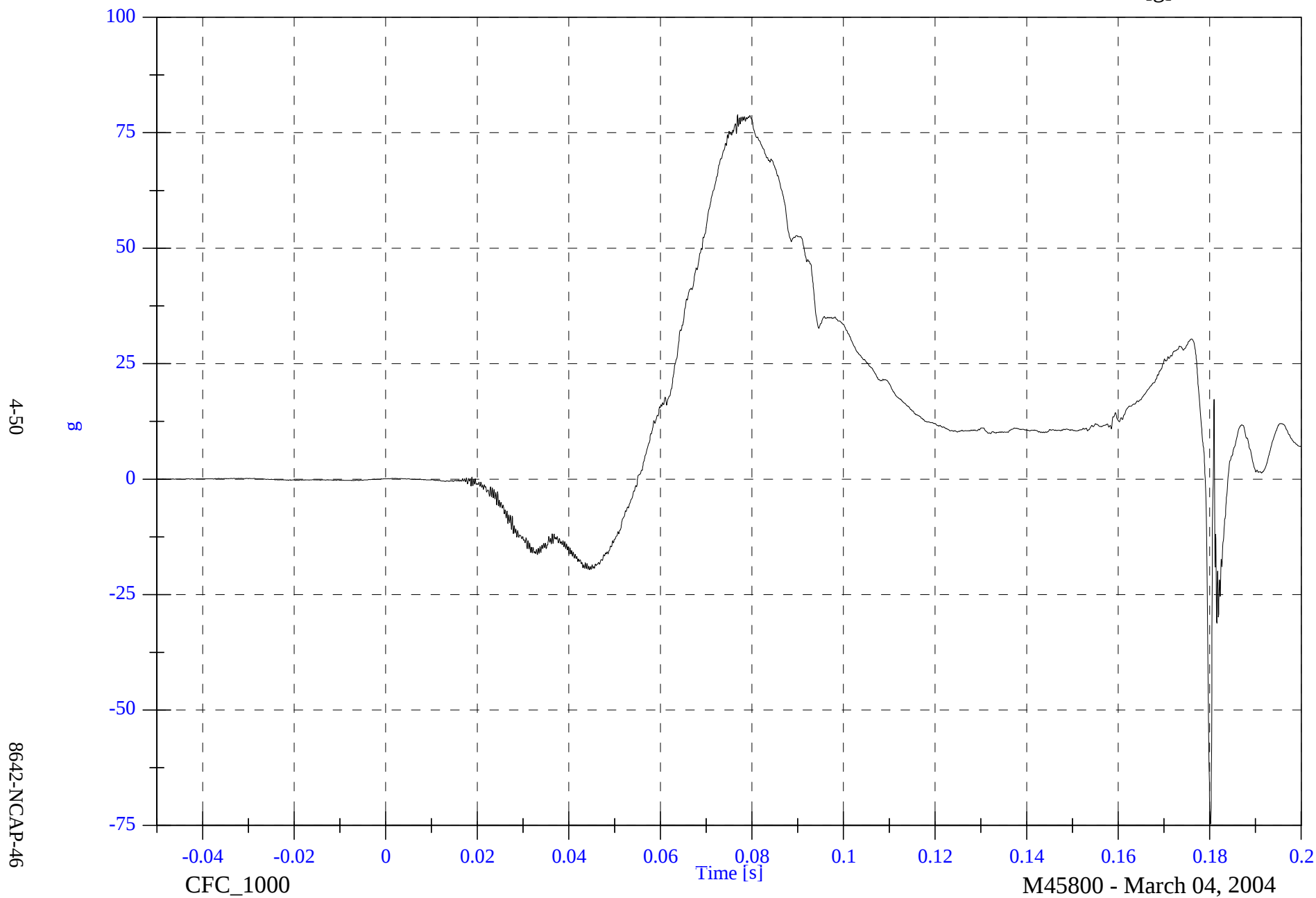


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Head Rear z

Max: 78.9 [g] at 0.077 [s]

Min: -74.7 [g] at 0.180 [s]

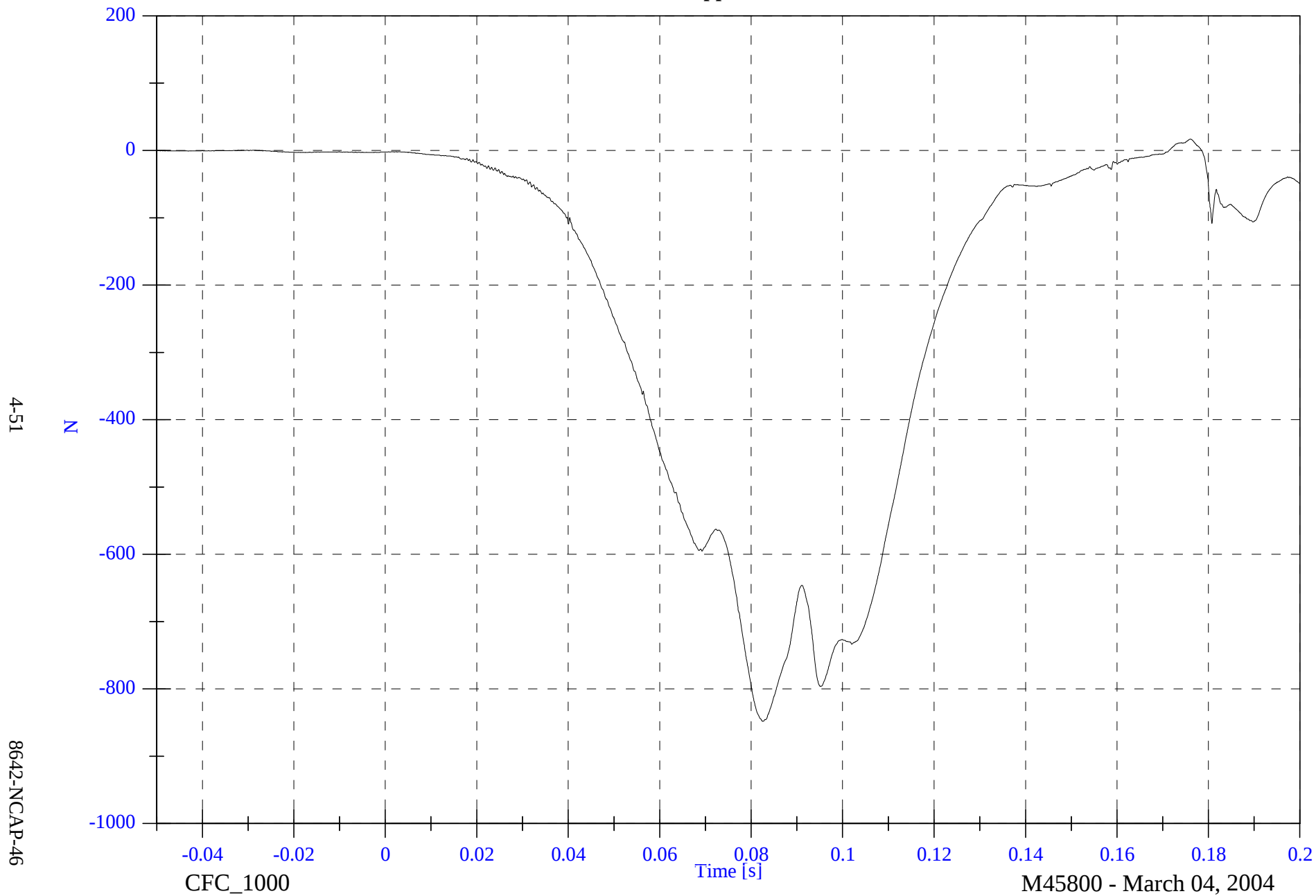


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Upper Neck Fx

Max: 16.7 [N] at 0.176 [s]

Min: -848.0 [N] at 0.083 [s]

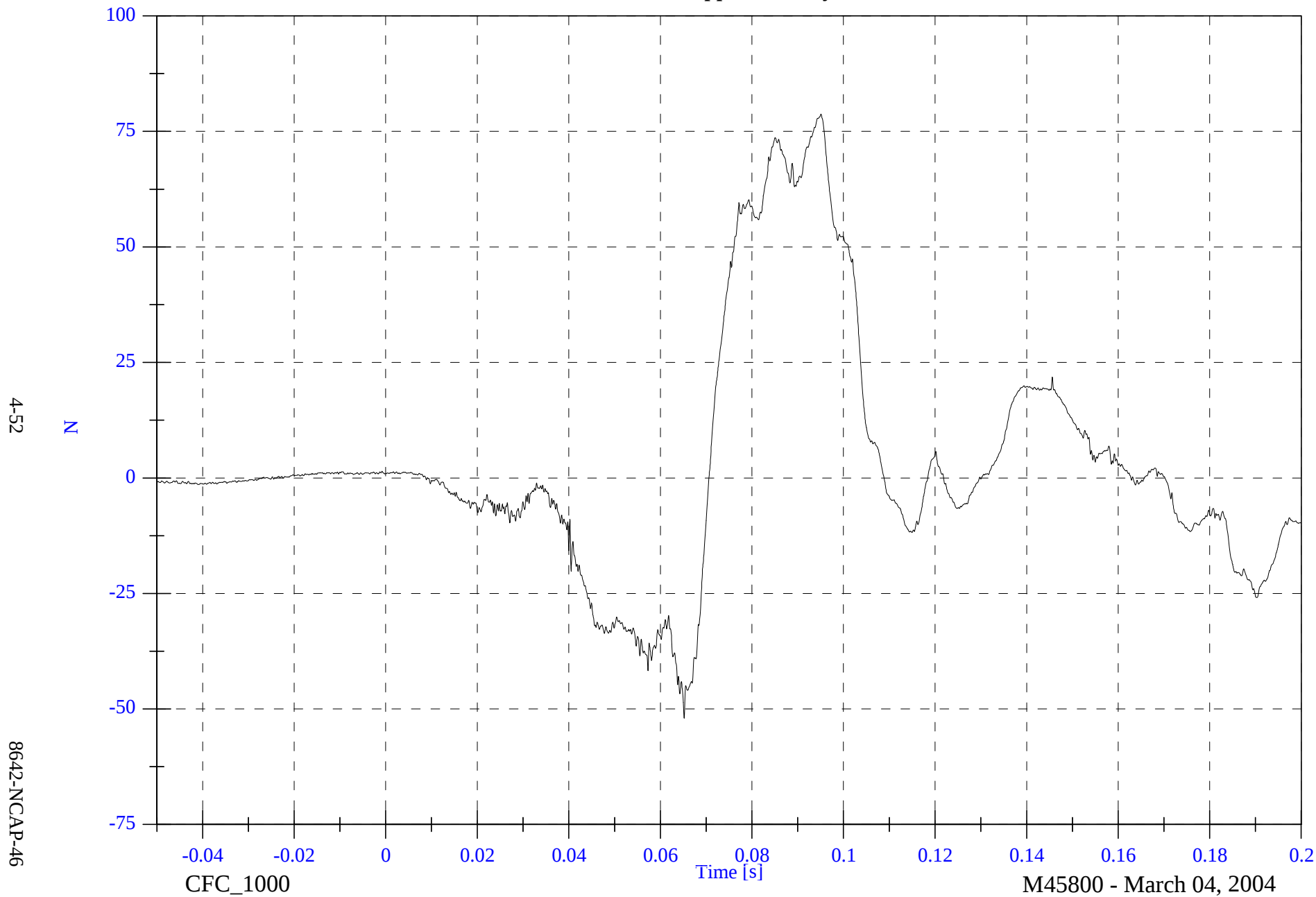


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Upper Neck Fy

Max: 78.7 [N] at 0.095 [s]

Min: -52.0 [N] at 0.065 [s]

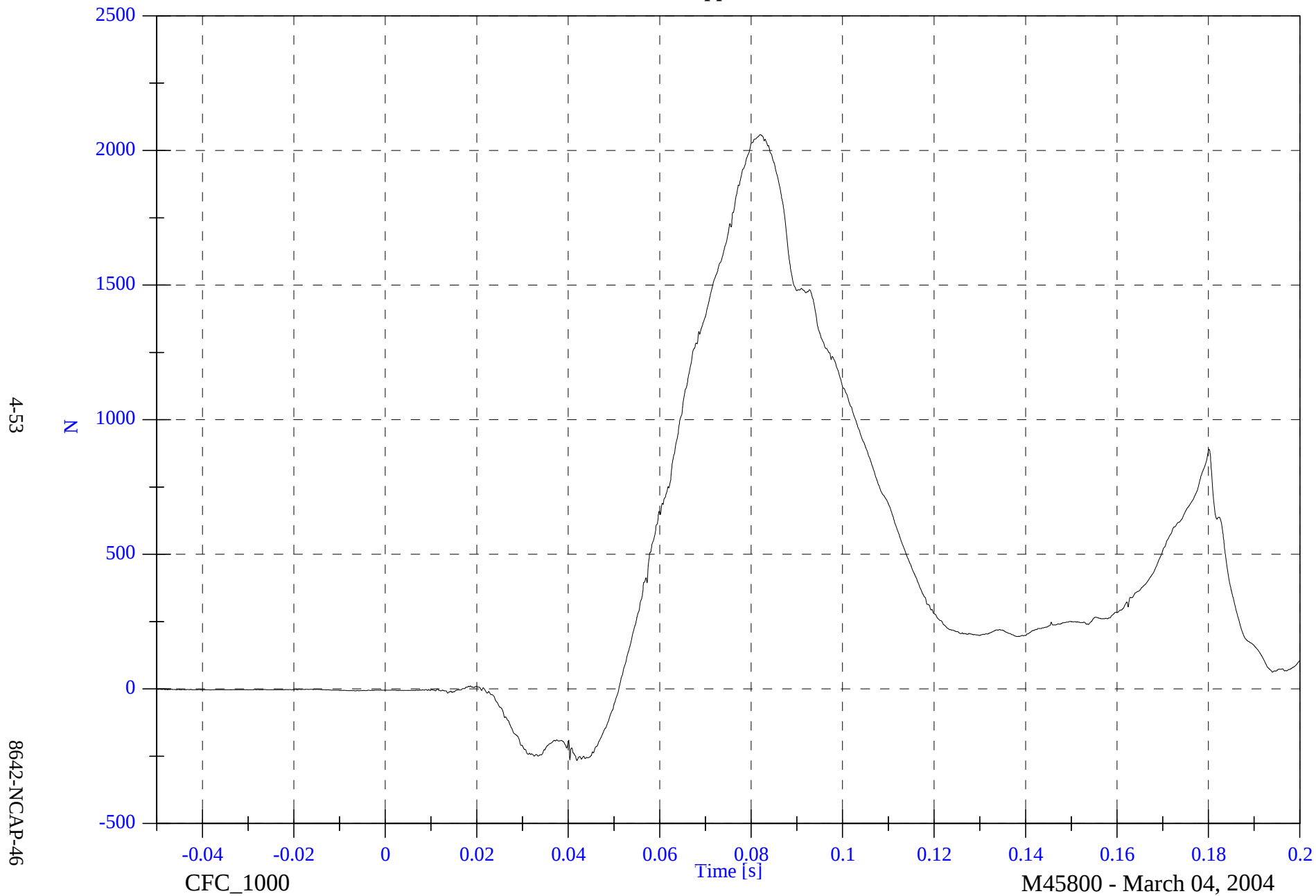


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Upper Neck Fz

Max: 2058.5 [N] at 0.082 [s]

Min: -265.7 [N] at 0.042 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Upper Neck F Resultant

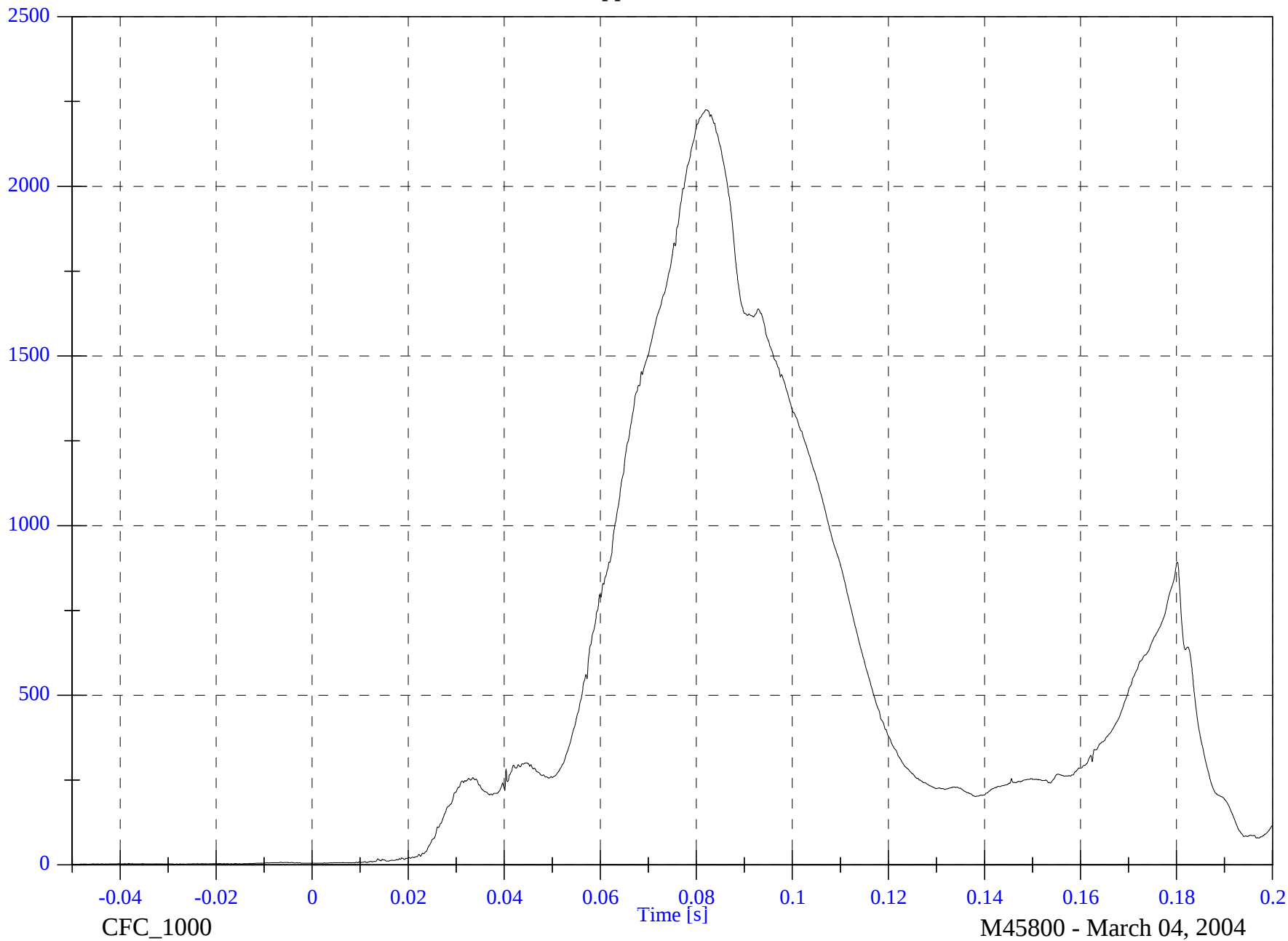
Max: 2225.5 [N] at 0.082 [s]

Min: 1.6 [N] at -0.049 [s]

4-54

N

8642-NCAP-46



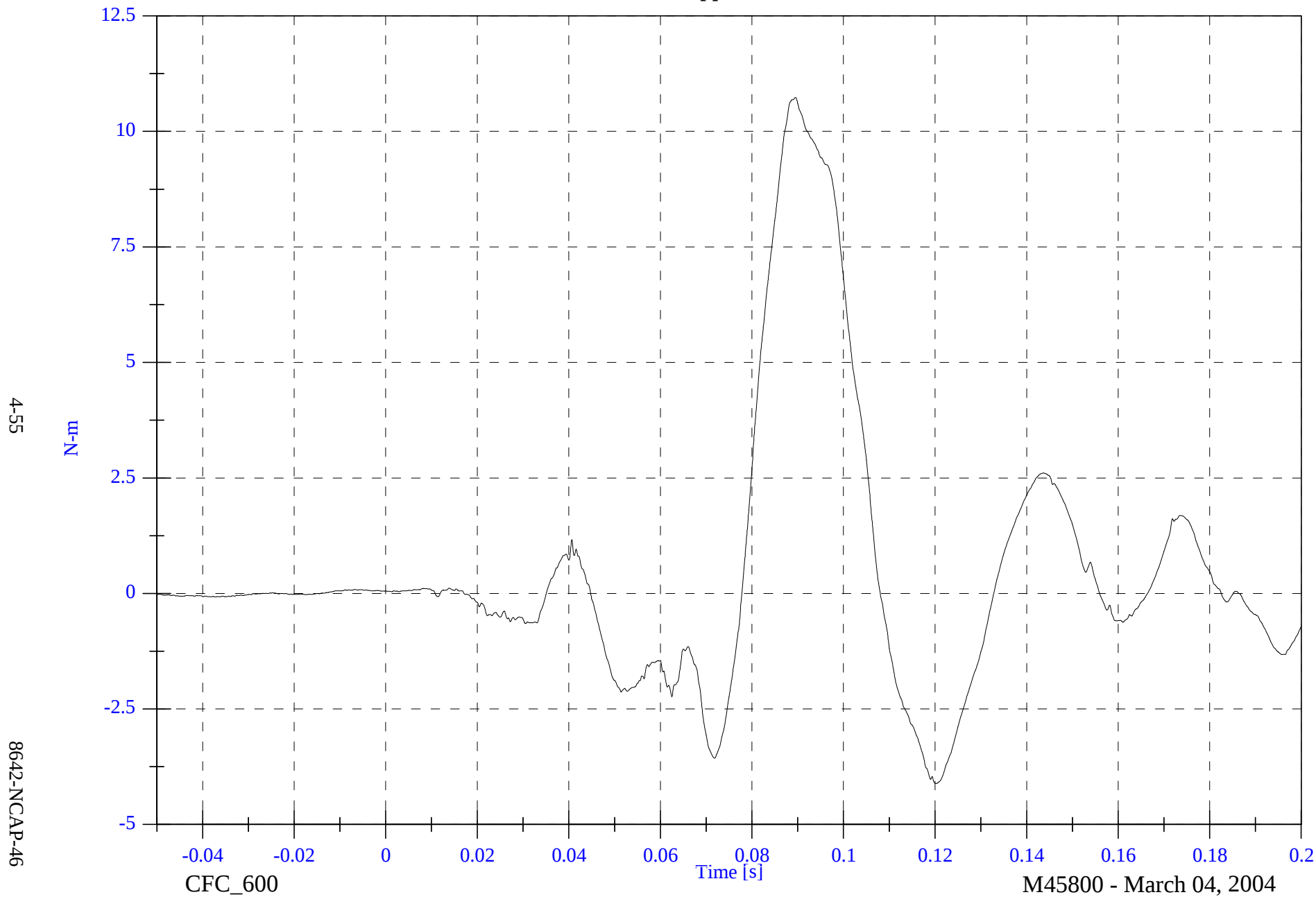
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Upper Neck Mx

Max: 10.7 [N-m] at 0.089 [s]

Min: -4.1 [N-m] at 0.120 [s]



4-55

8642-NCAP-46

CFC_600

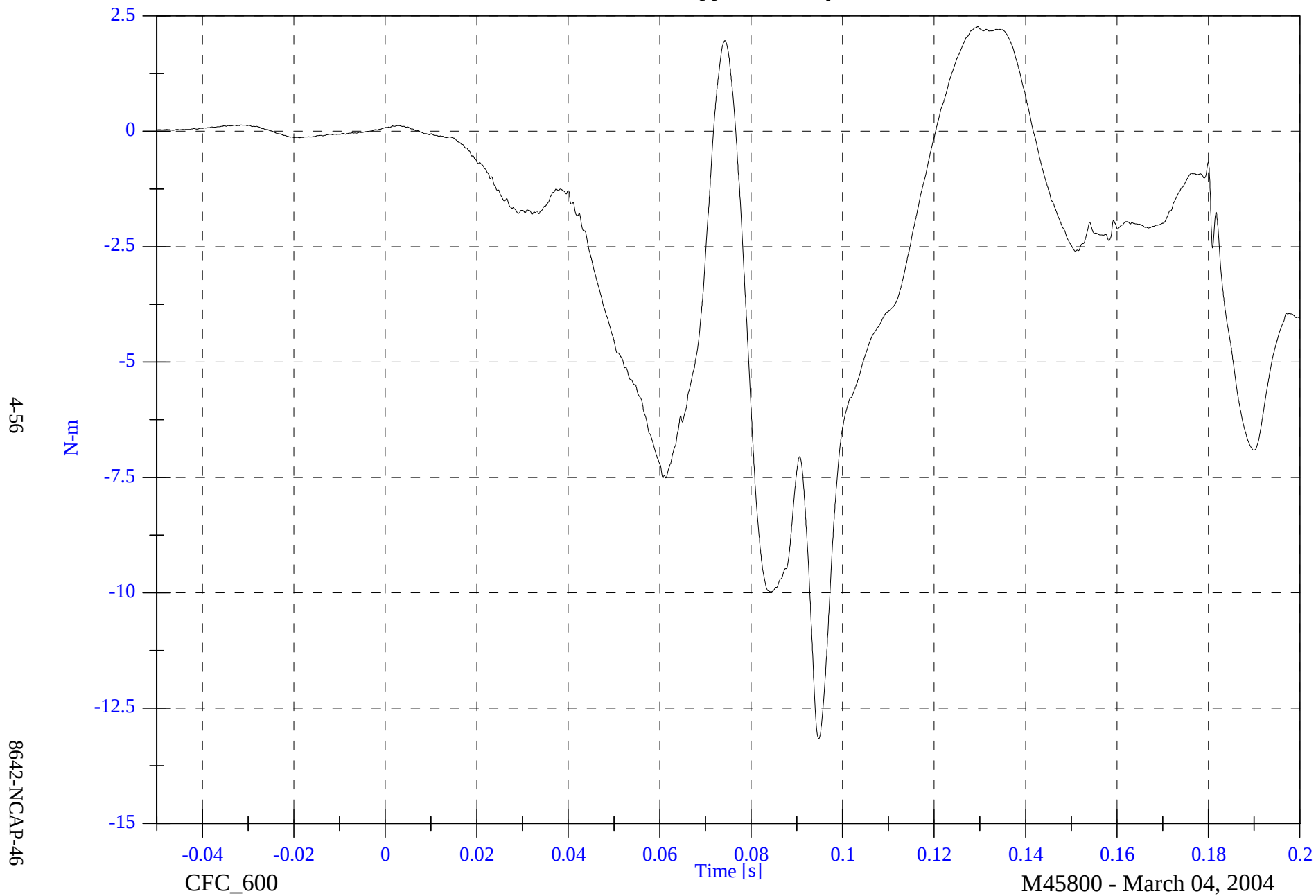
M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Upper Neck My

Max: 2.3 [N-m] at 0.130 [s]

Min: -13.2 [N-m] at 0.095 [s]

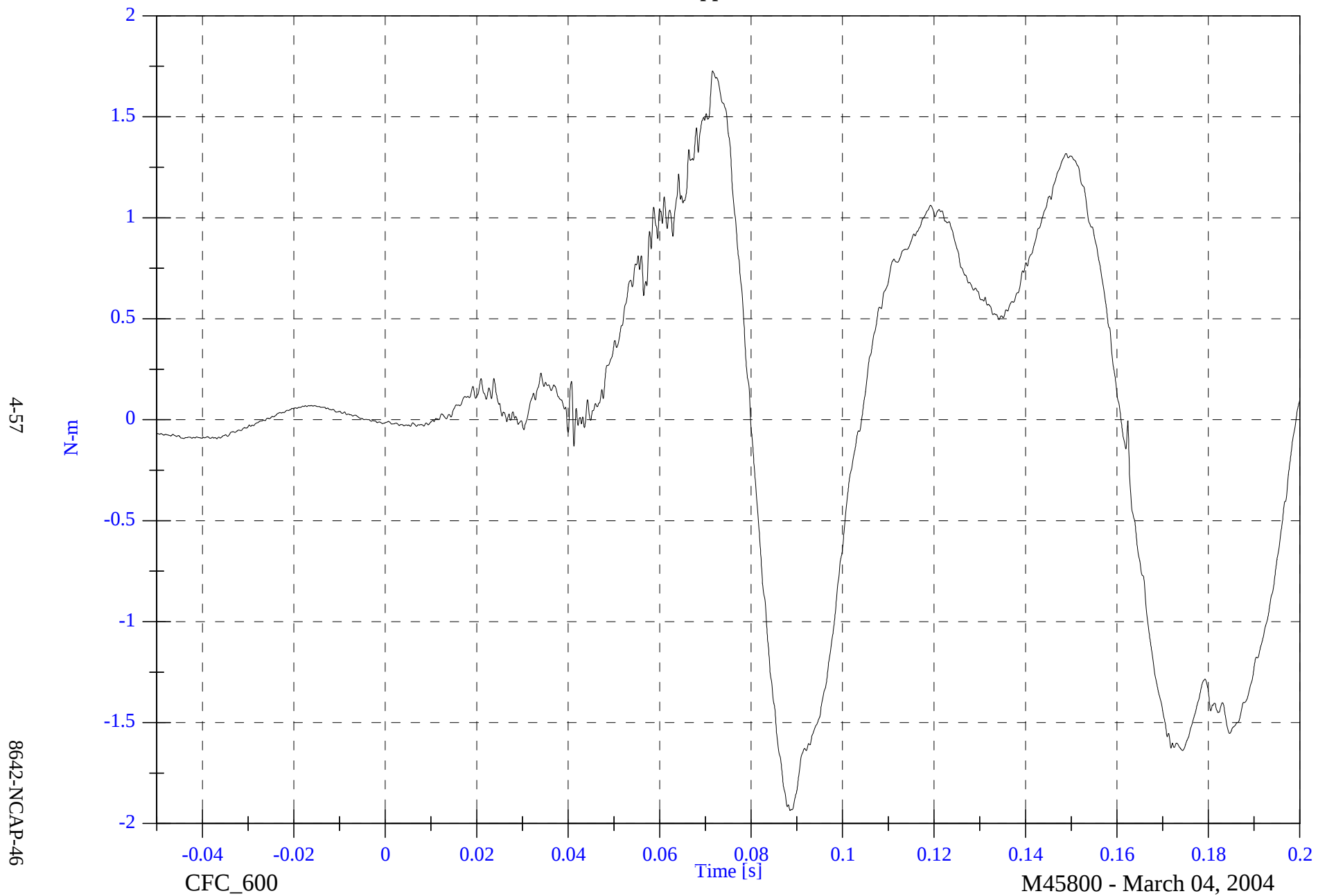


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Upper Neck Mz

Max: 1.7 [N-m] at 0.072 [s]

Min: -1.9 [N-m] at 0.088 [s]



2004 NCAP Test 10 - 2004 VW Touareg

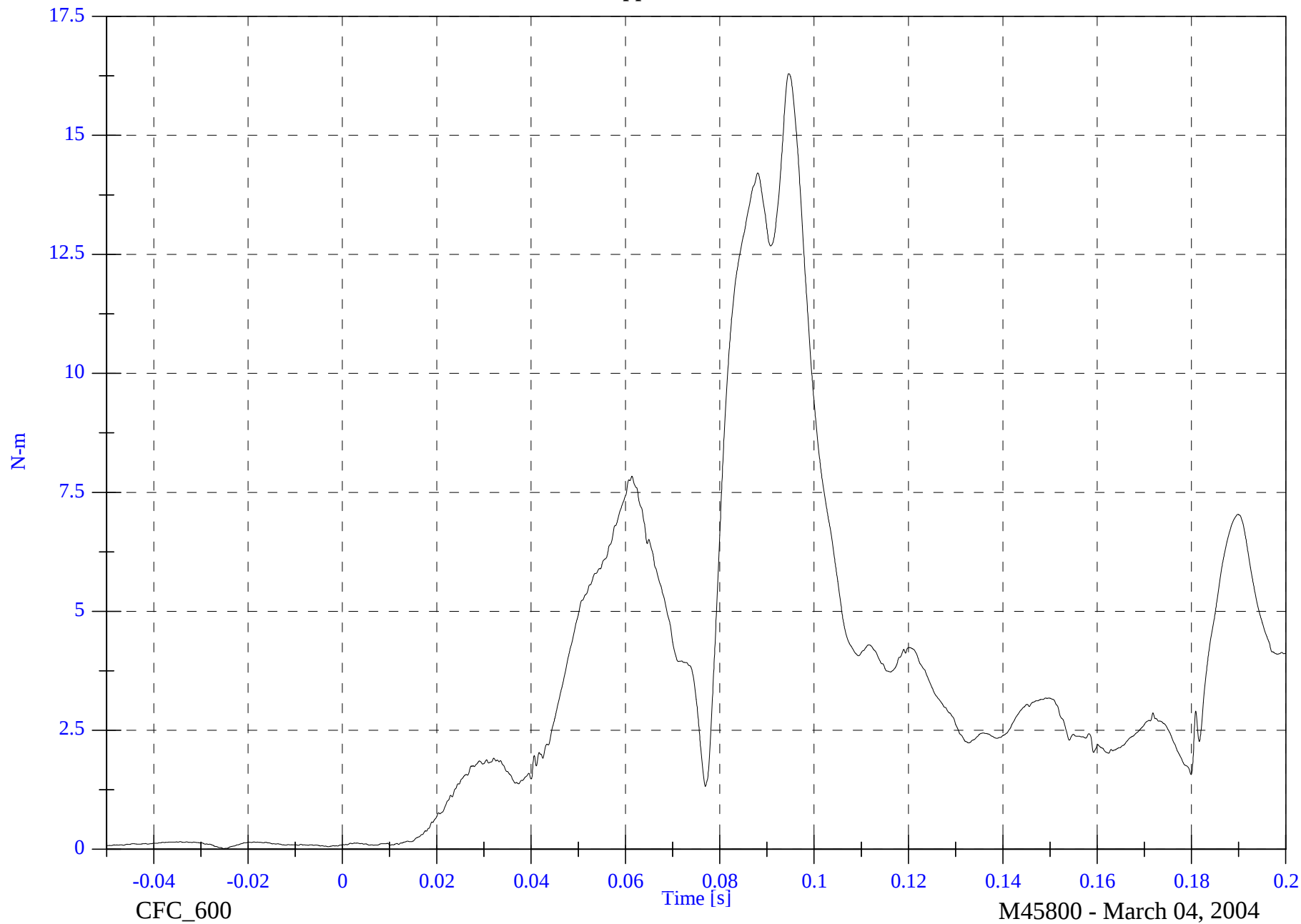
V1P4 Upper Neck M Resultant

Max: 16.3 [N-m] at 0.095 [s]

Min: 0.0 [N-m] at -0.025 [s]

4-58

8642-NCAP-46

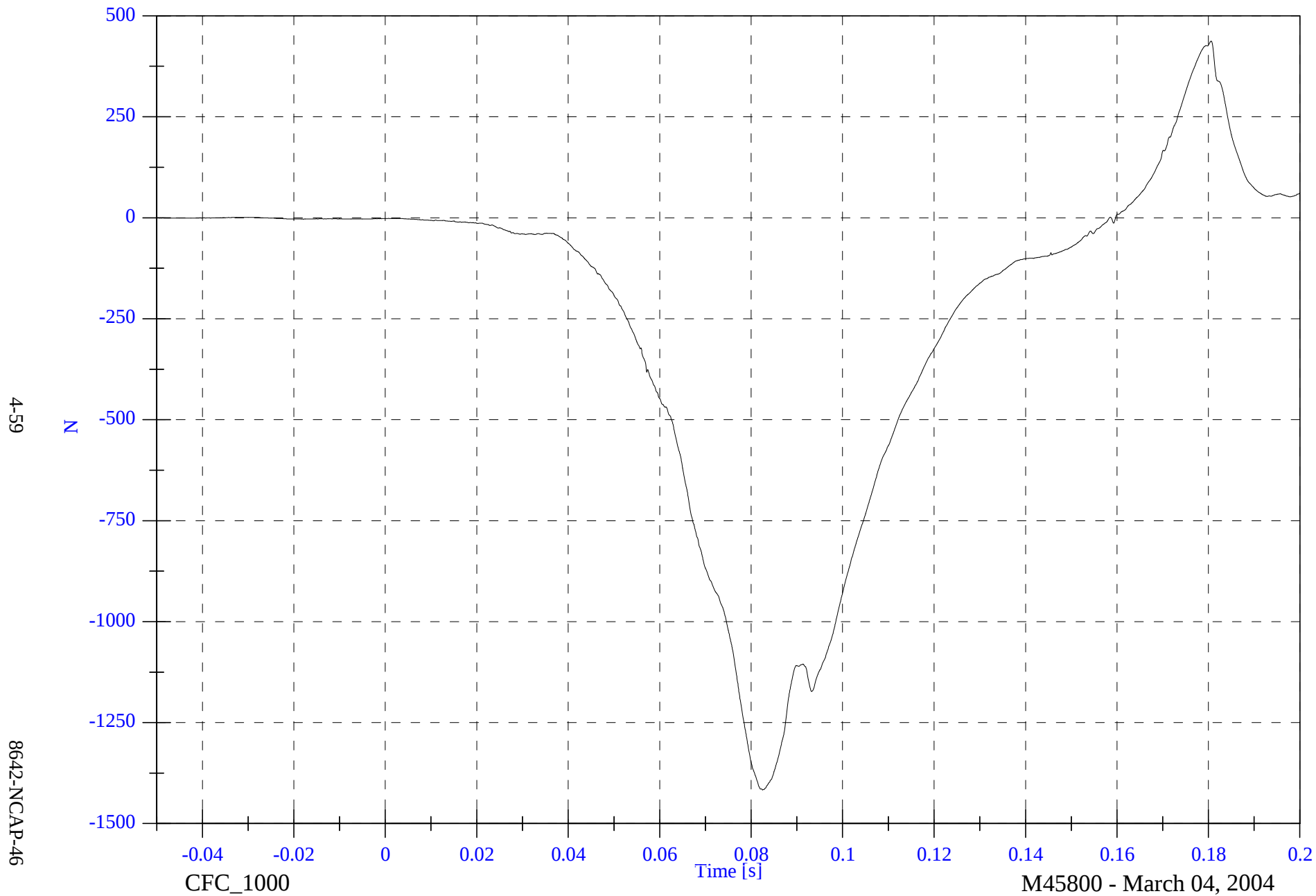


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Lower Neck Fx

Max: 437.5 [N] at 0.181 [s]

Min: -1416.5 [N] at 0.083 [s]

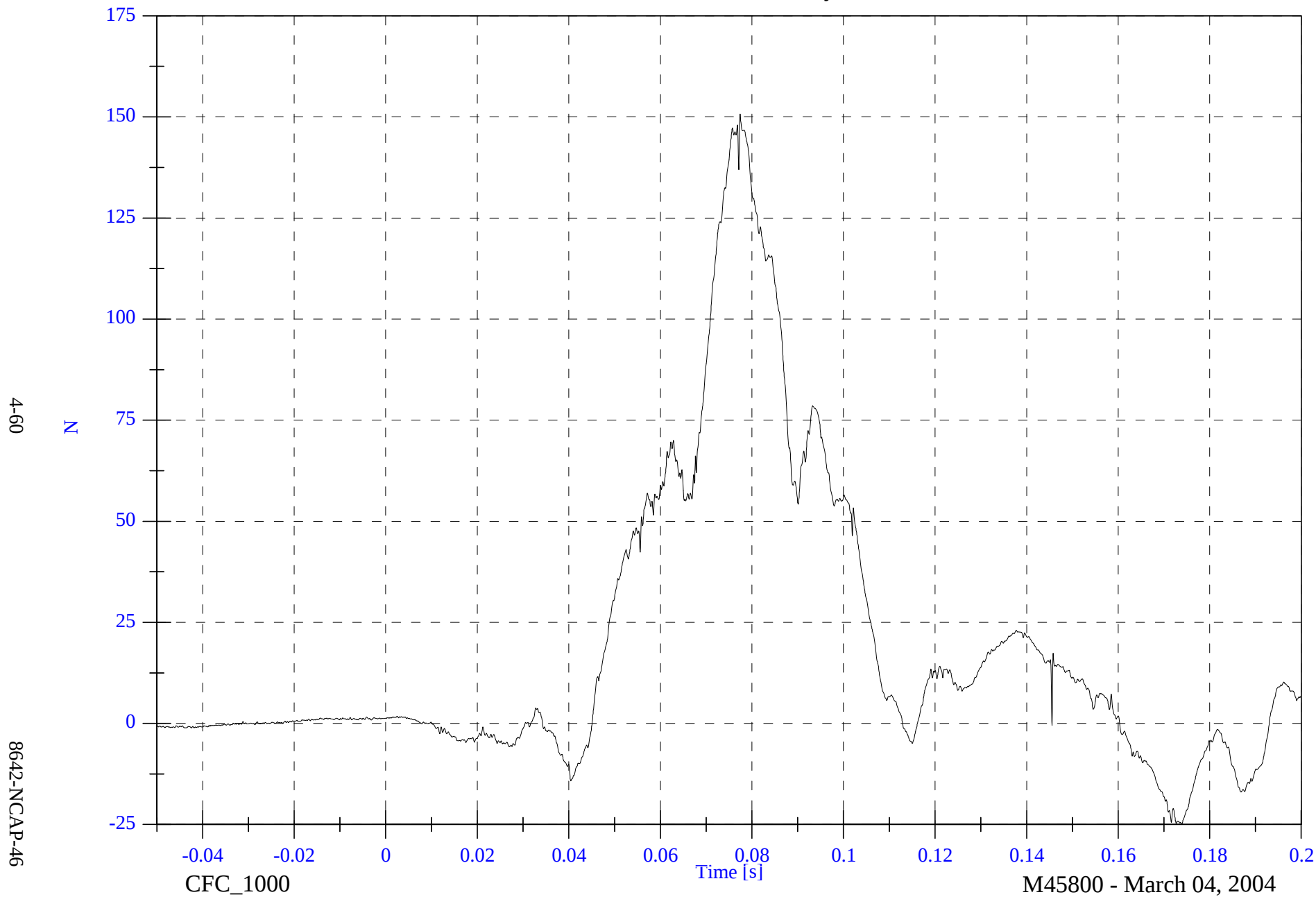


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Lower Neck Fy

Max: 150.7 [N] at 0.077 [s]

Min: -25.0 [N] at 0.174 [s]

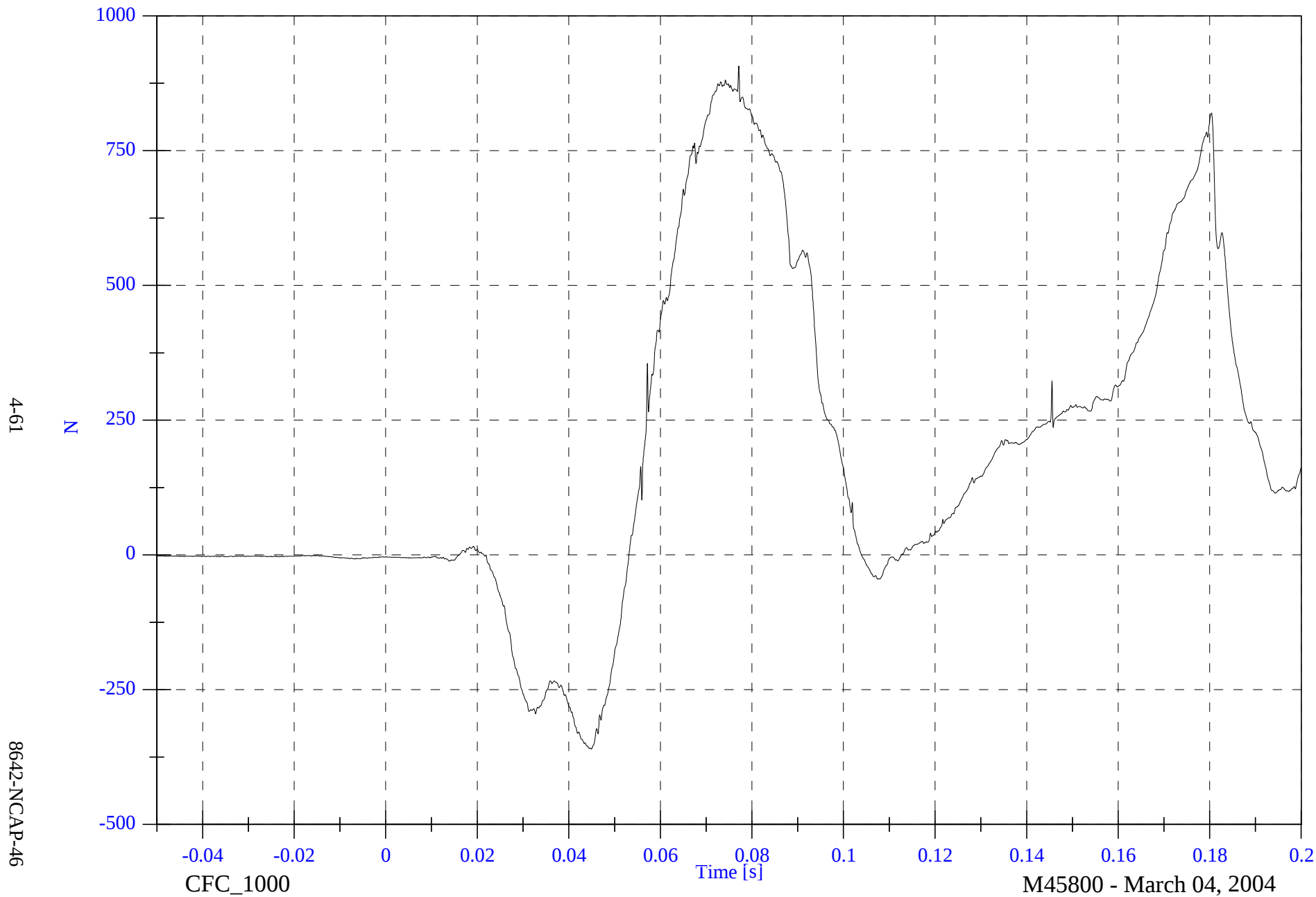


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Lower Neck Fz

Max: 906.9 [N] at 0.077 [s]

Min: -360.3 [N] at 0.045 [s]

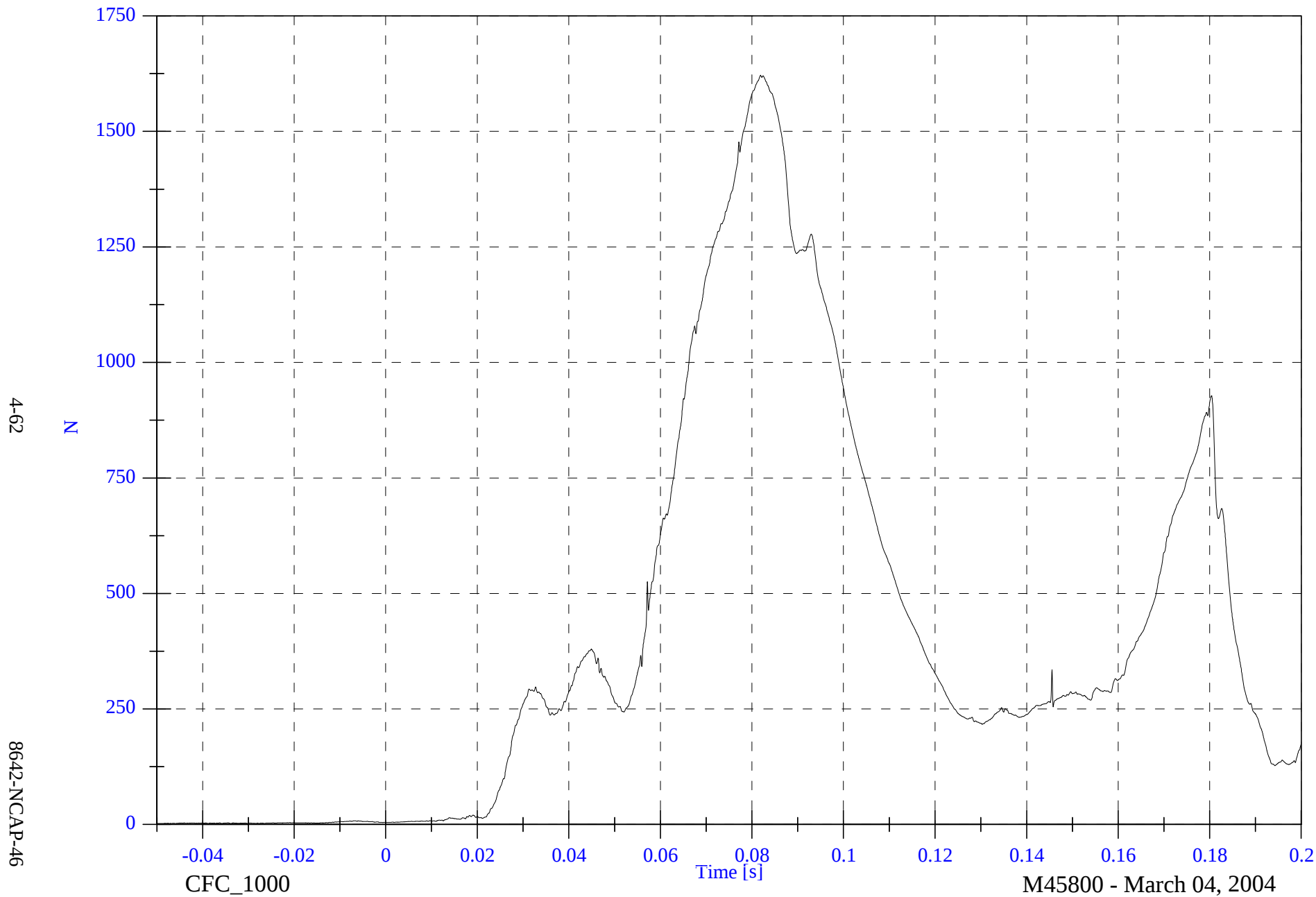


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Lower Neck F Resultant

Max: 1621.5 [N] at 0.082 [s]

Min: 2.0 [N] at -0.050 [s]

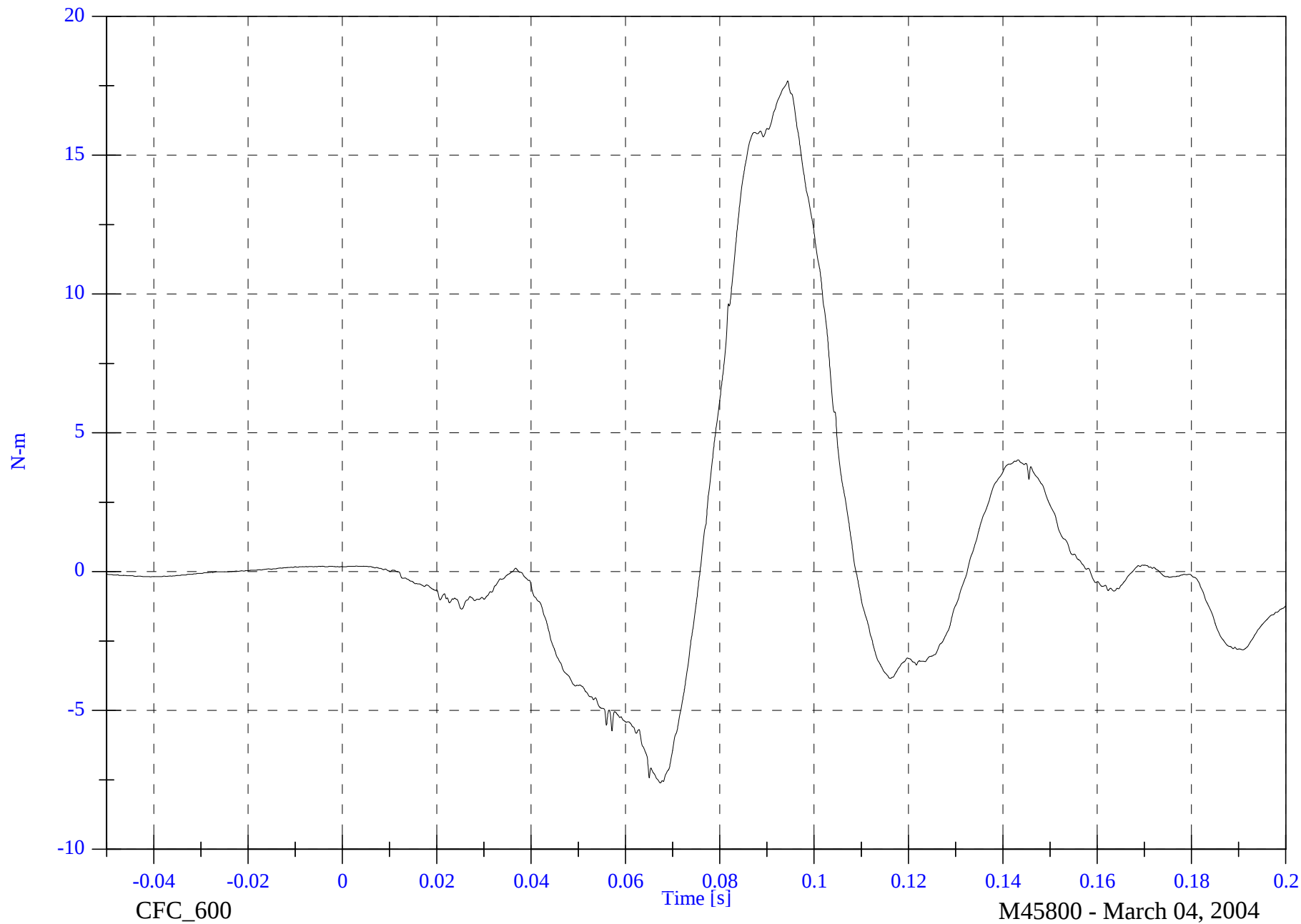


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Lower Neck Mx

Max: 17.7 [N-m] at 0.094 [s]

Min: -7.6 [N-m] at 0.067 [s]



4-63

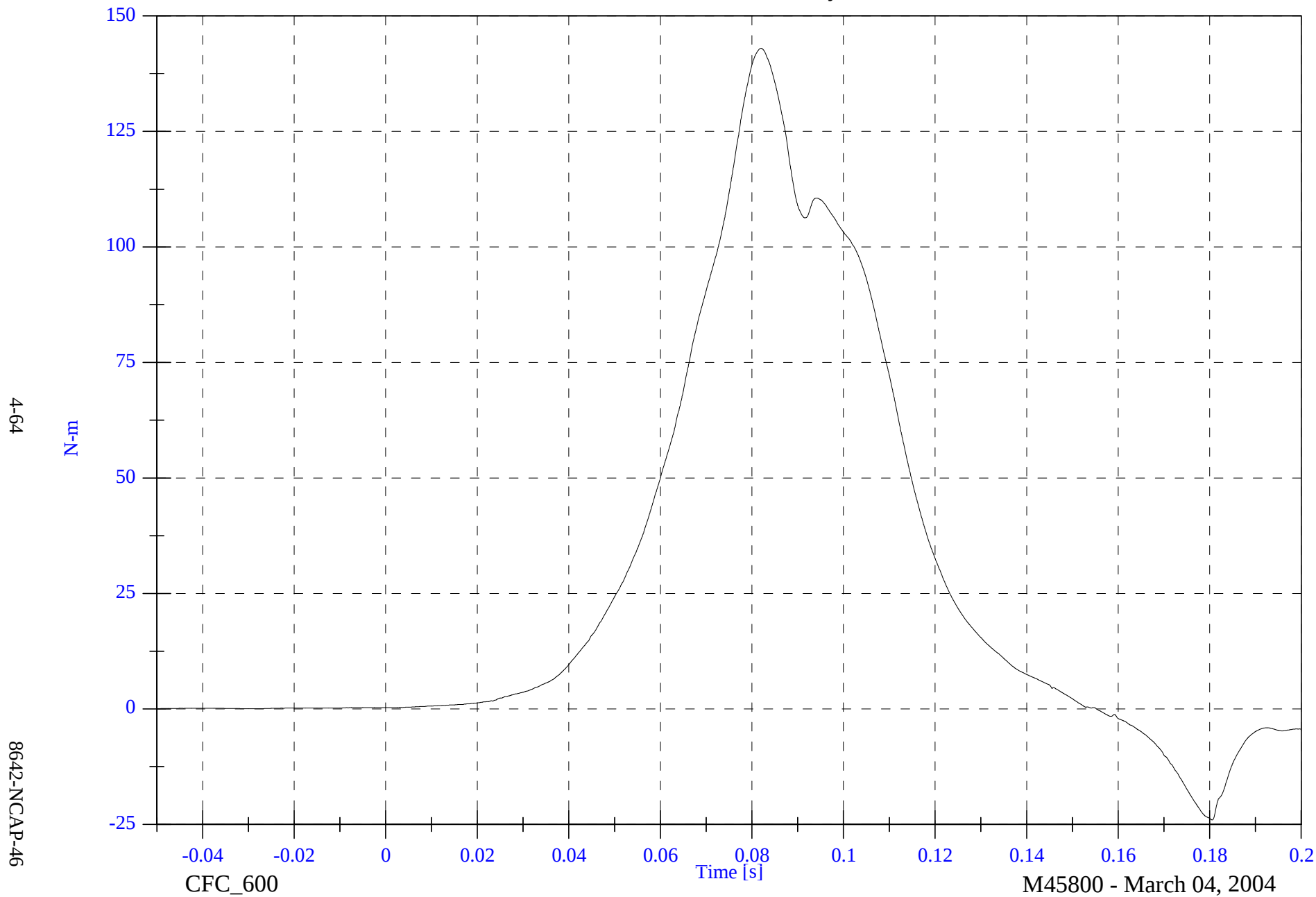
8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Lower Neck My

Max: 143.0 [N-m] at 0.082 [s]

Min: -24.0 [N-m] at 0.180 [s]

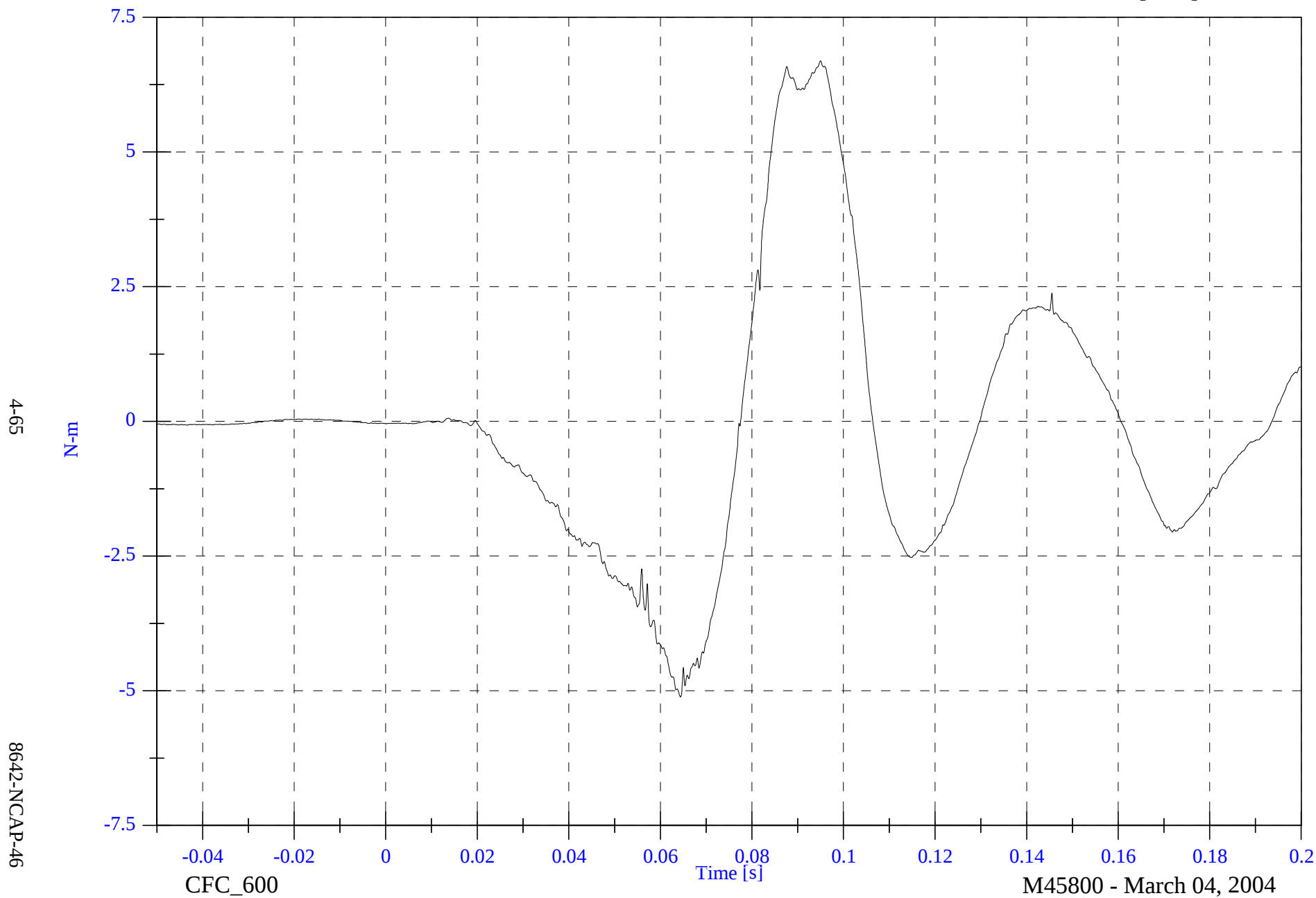


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Lower Neck Mz

Max: 6.7 [N-m] at 0.095 [s]

Min: -5.1 [N-m] at 0.064 [s]



2004 NCAP Test 10 - 2004 VW Touareg

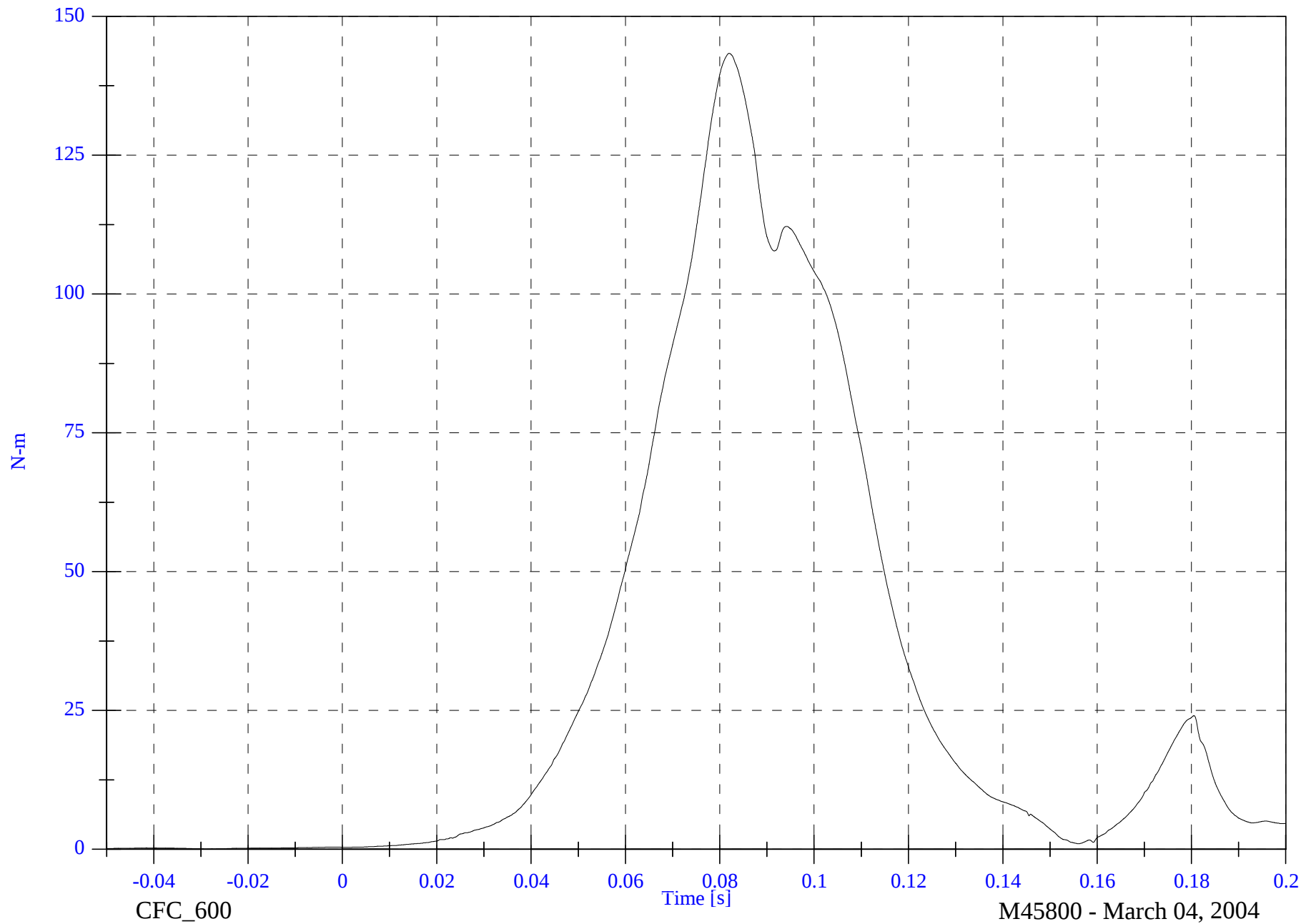
V1P4 Lower Neck M Resultant

Max: 143.3 [N-m] at 0.082 [s]

Min: 0.1 [N-m] at -0.029 [s]

4-66

8642-NCAP-46

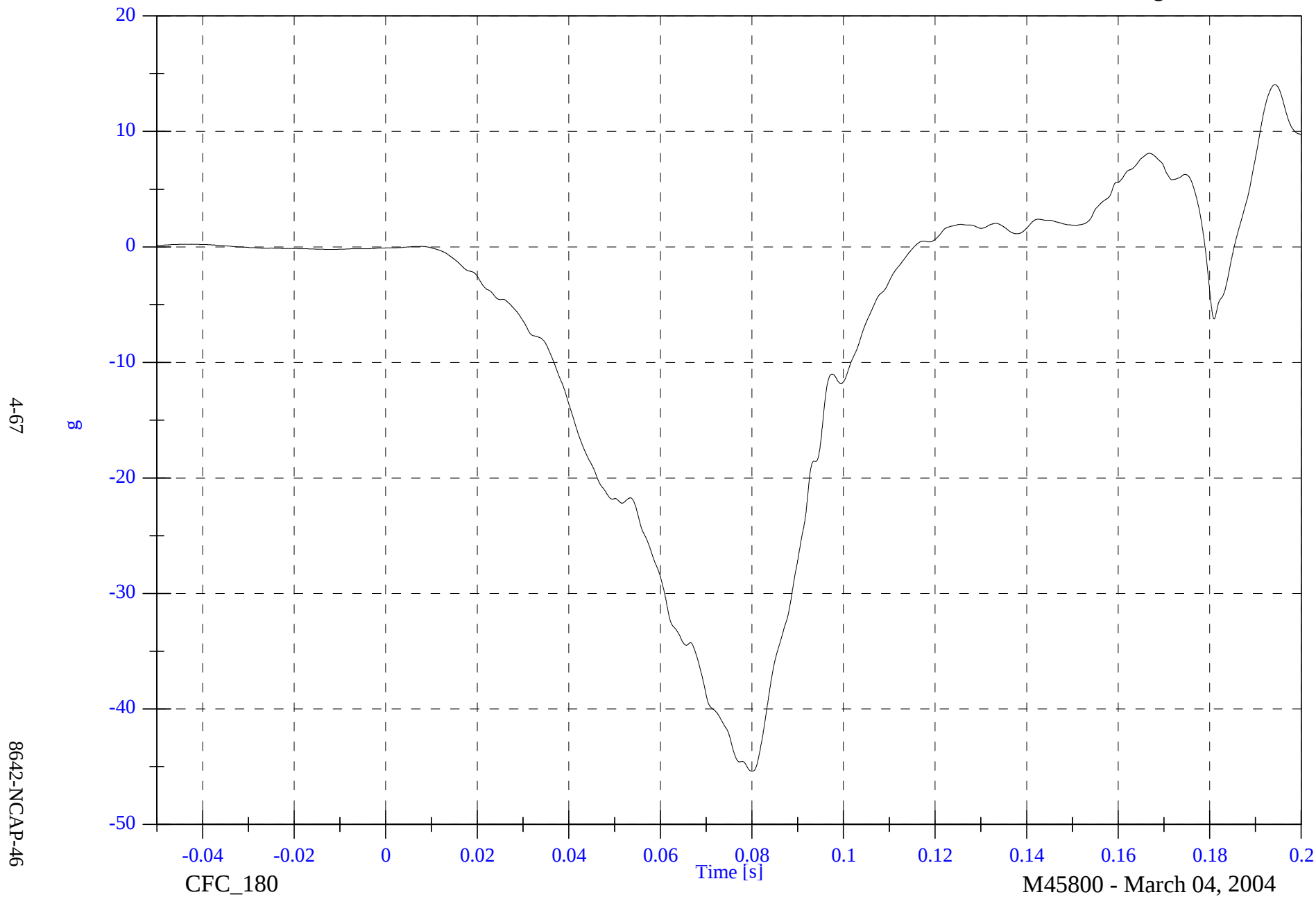


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Chest x

Max: 14.1 [g] at 0.194 [s]

Min: -45.4 [g] at 0.080 [s]

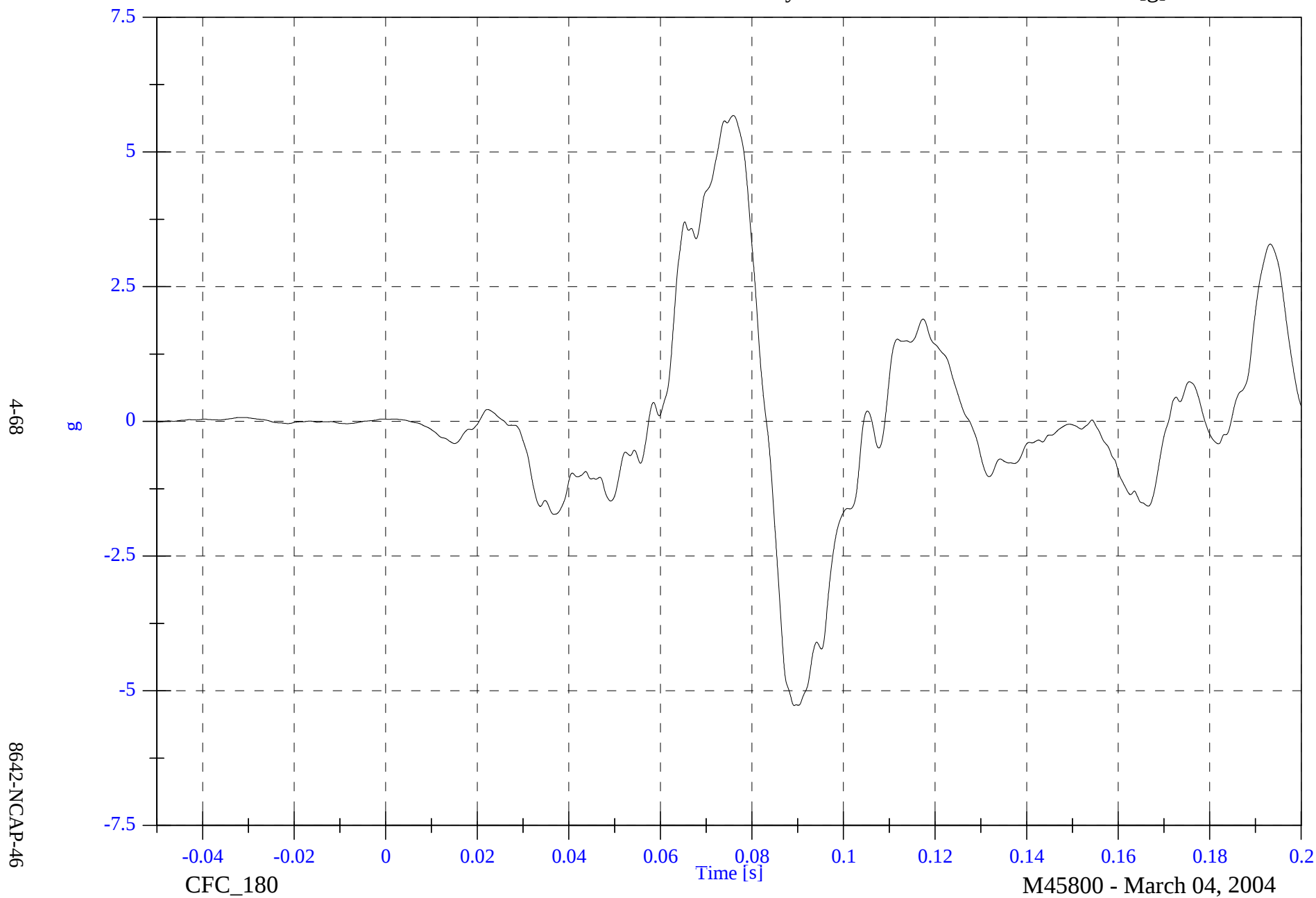


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Chest y

Max: 5.7 [g] at 0.076 [s]

Min: -5.3 [g] at 0.089 [s]



2004 NCAP Test 10 - 2004 VW Touareg

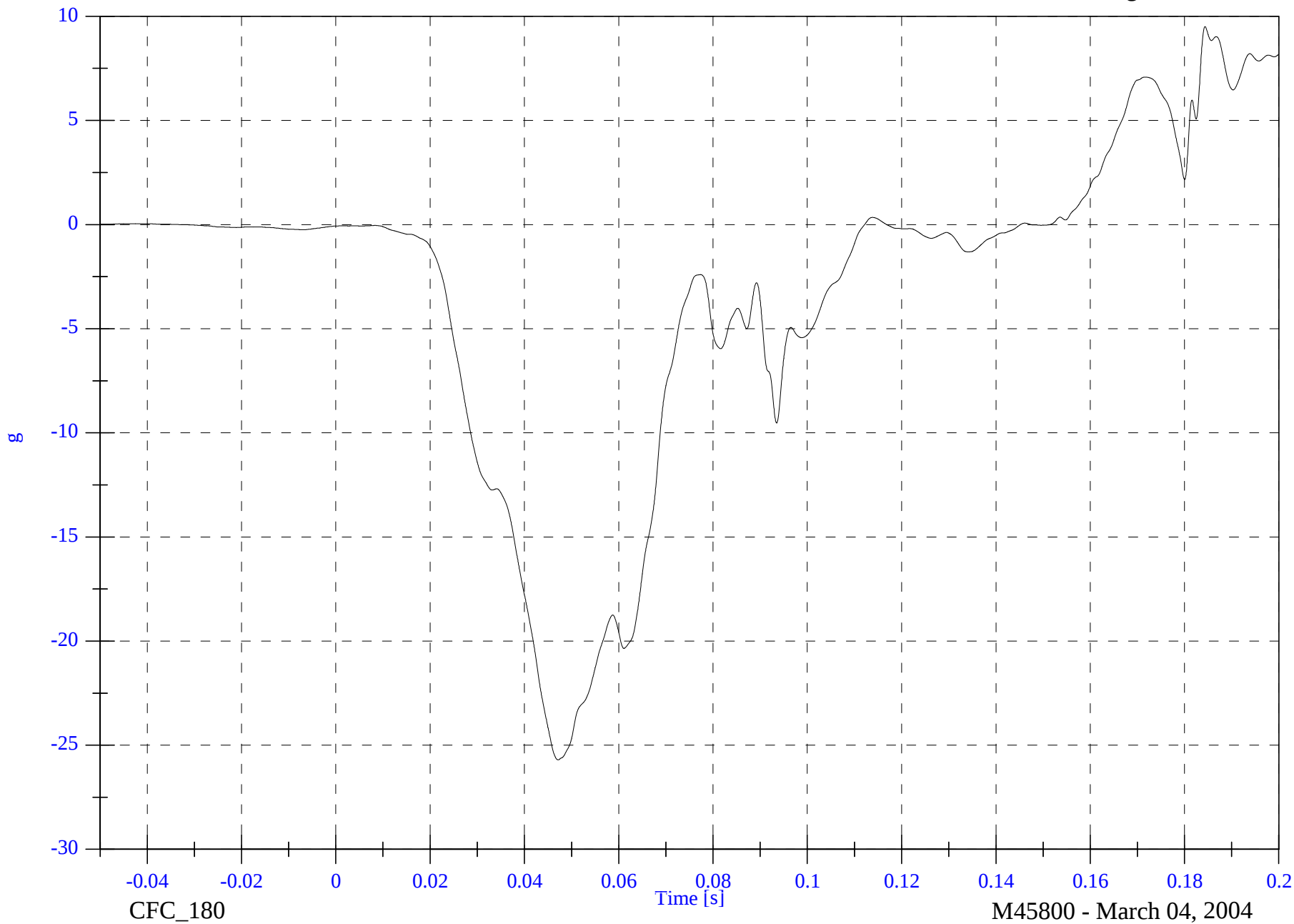
V1P4 Chest z

Max: 9.5 [g] at 0.184 [s]

Min: -25.7 [g] at 0.047 [s]

4-69

8642-NCAP-46

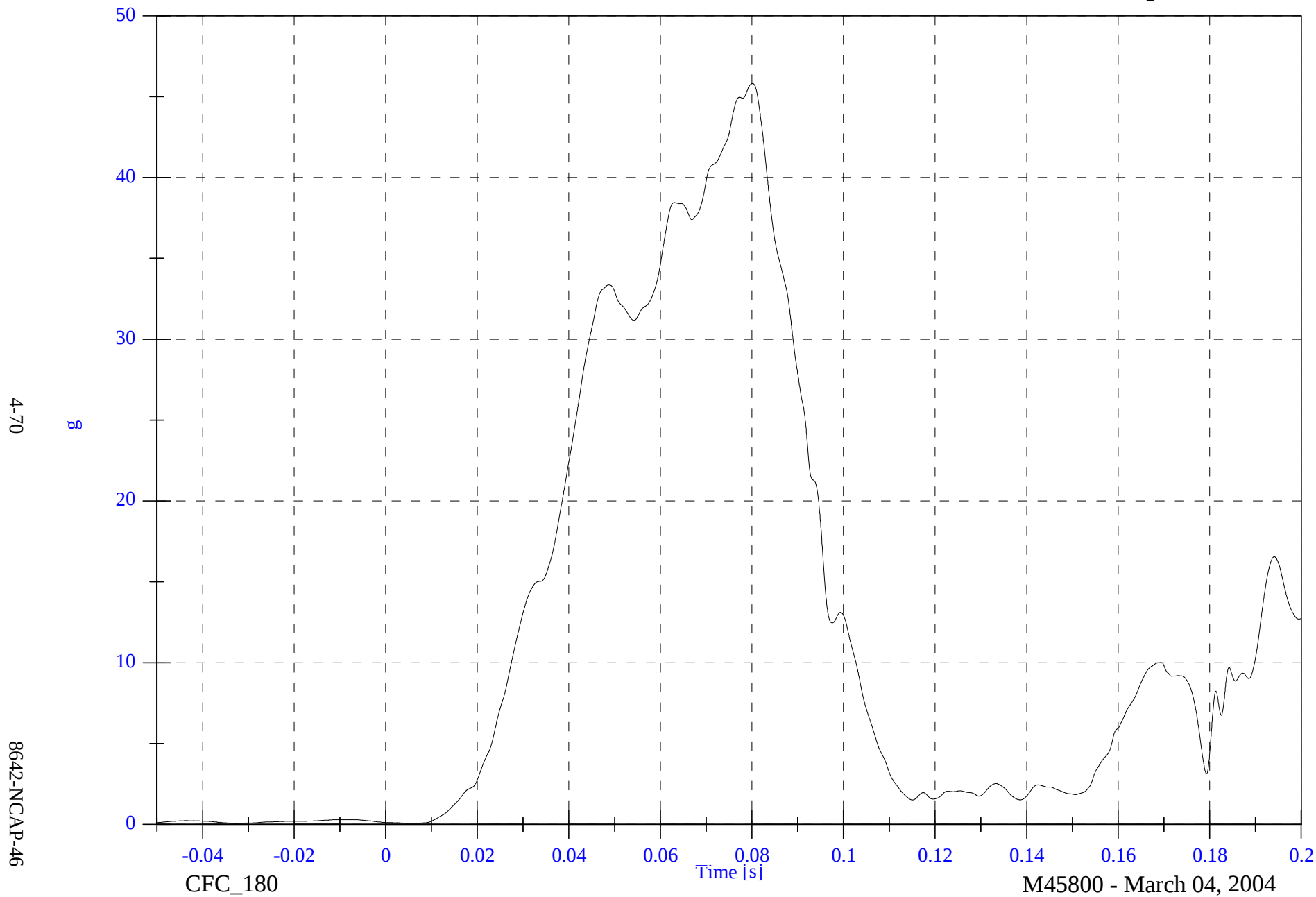


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Chest Resultant

Max: 45.8 [g] at 0.080 [s]

Min: 0.1 [g] at -0.033 [s]

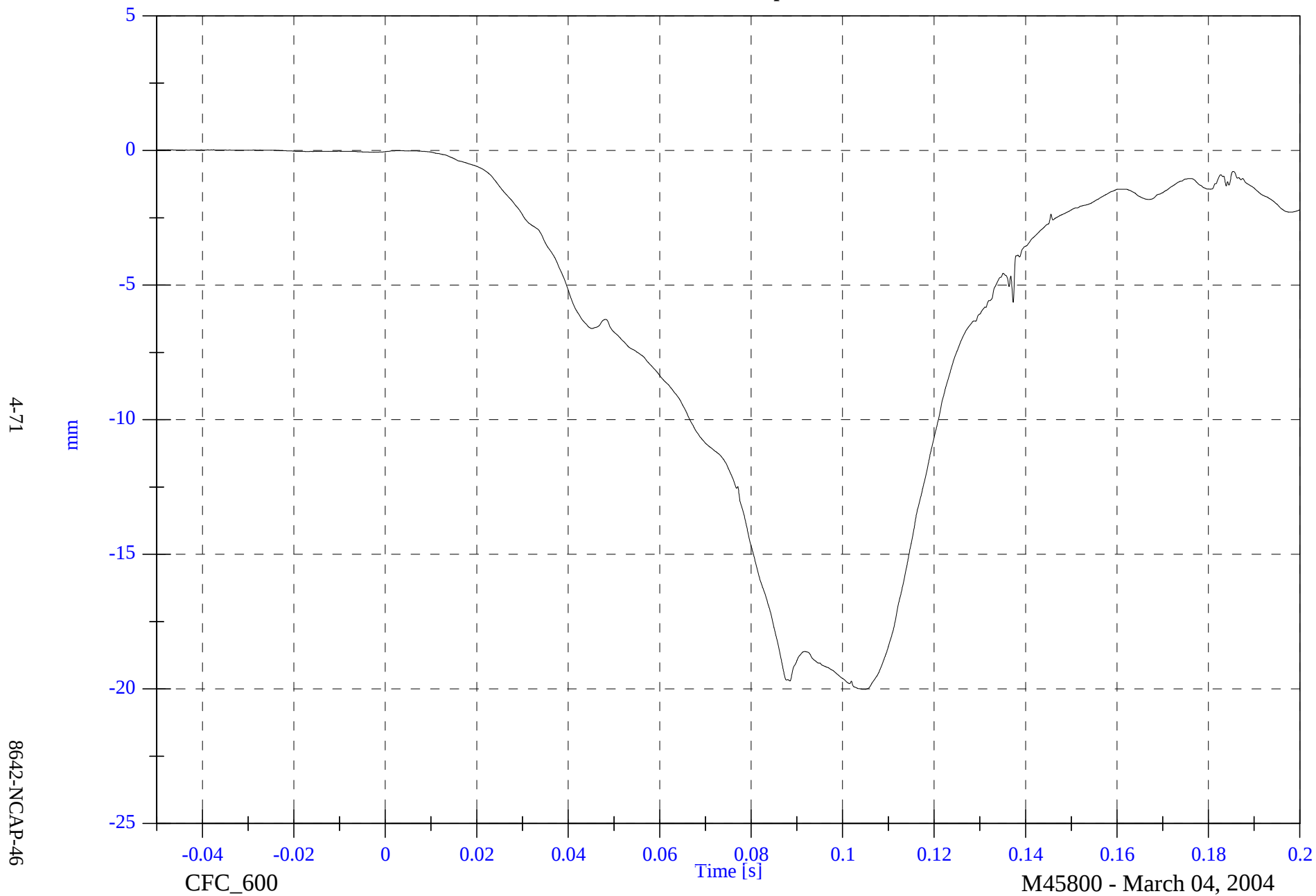


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Chest Compression

Max: 0.0 [mm] at -0.050 [s]

Min: -20.0 [mm] at 0.105 [s]



2004 NCAP Test 10 - 2004 VW Touareg

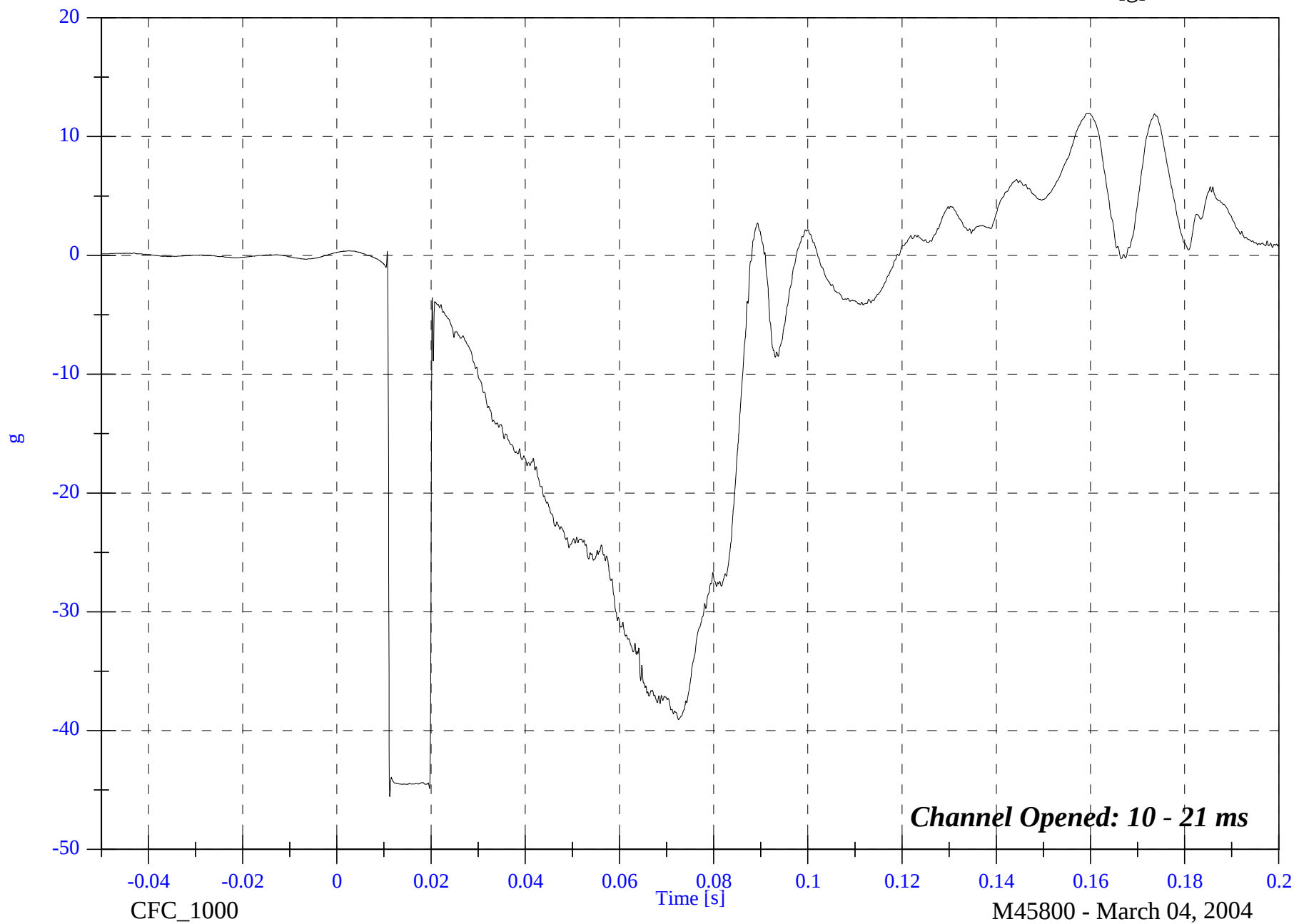
V1P4 Pelvic x

Max: 11.9 [g] at 0.159 [s]

Min: -45.6 [g] at 0.011 [s]

4-72

8642-NCAP-46

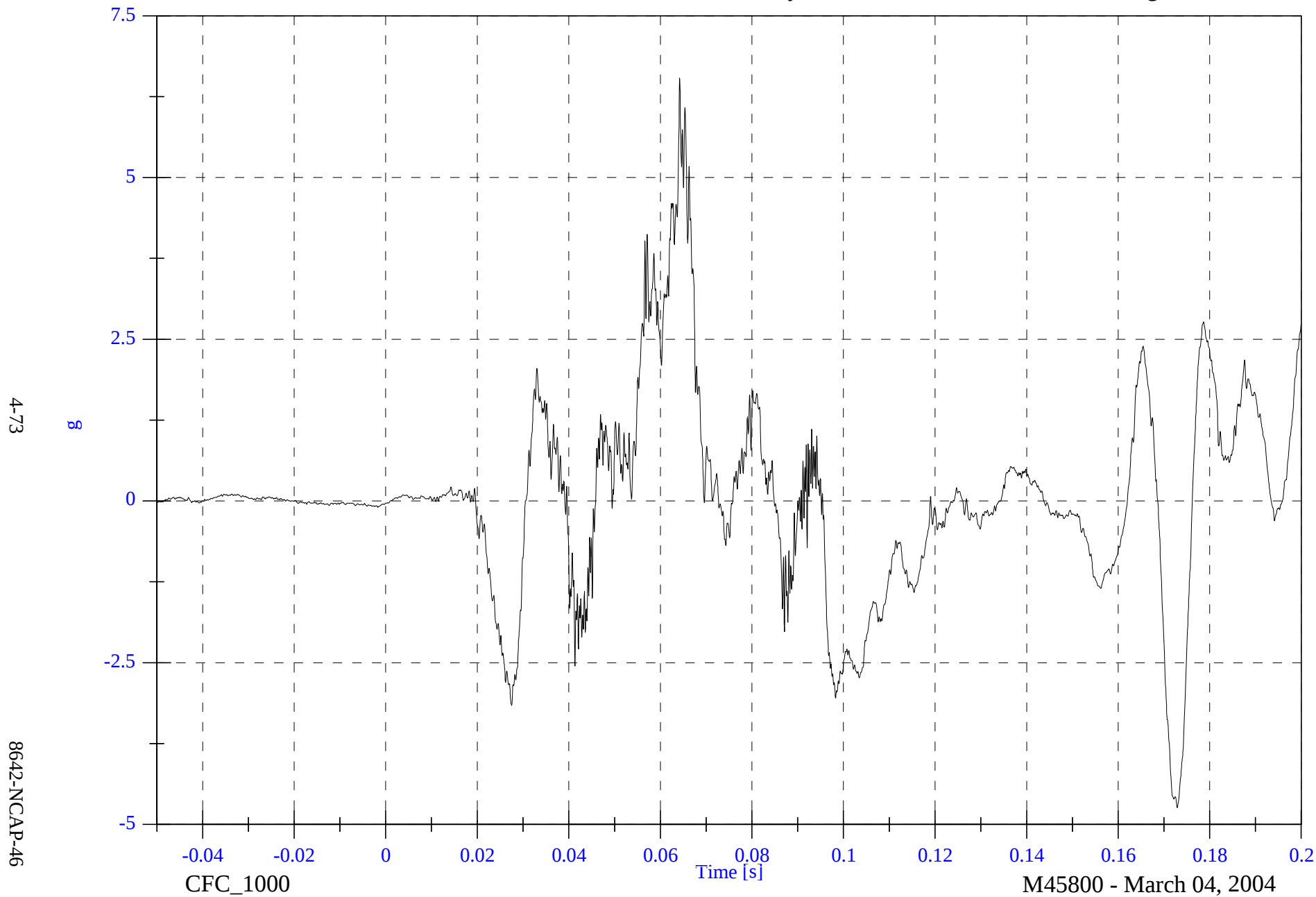


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Pelvic y

Max: 6.5 [g] at 0.064 [s]

Min: -4.7 [g] at 0.173 [s]

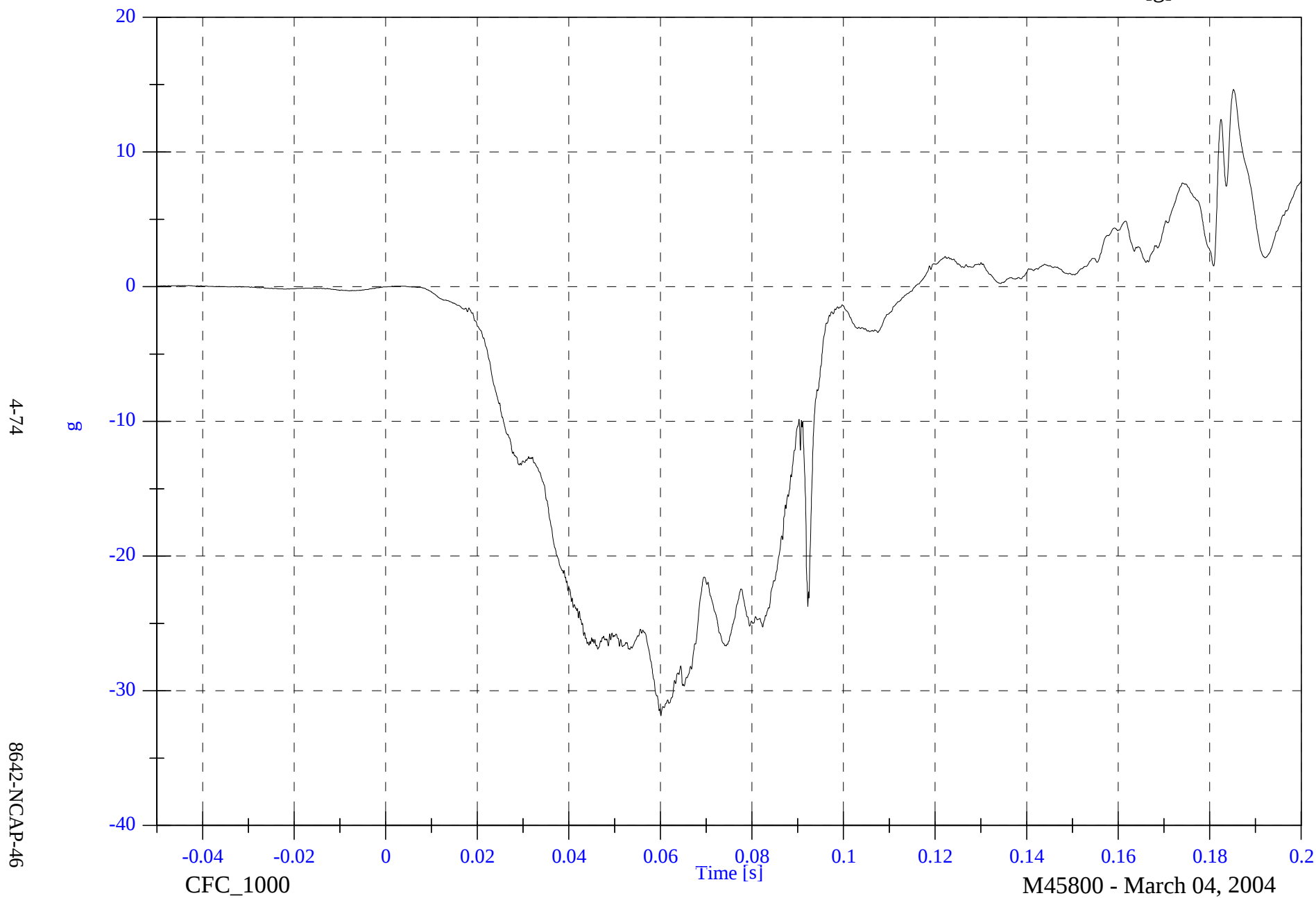


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Pelvic z

Max: 14.6 [g] at 0.185 [s]

Min: -31.9 [g] at 0.060 [s]



4-74

8642-NCAP-46

2004 NCAP Test 10 - 2004 VW Touareg

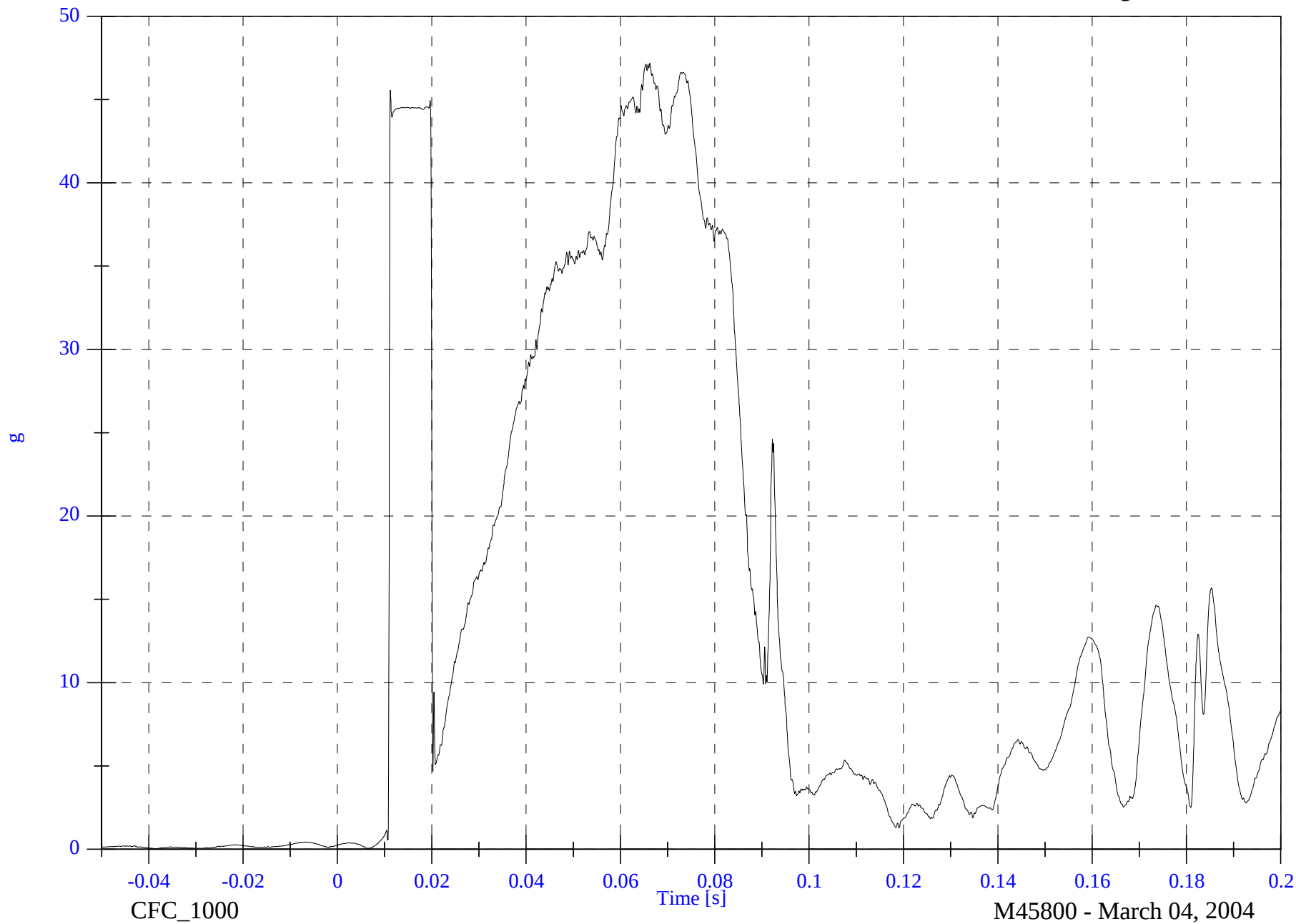
V1P4 Pelvic Resultant

Max: 47.2 [g] at 0.066 [s]

Min: 0.0 [g] at -0.039 [s]

4-75

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

V1P4 Tether Belt

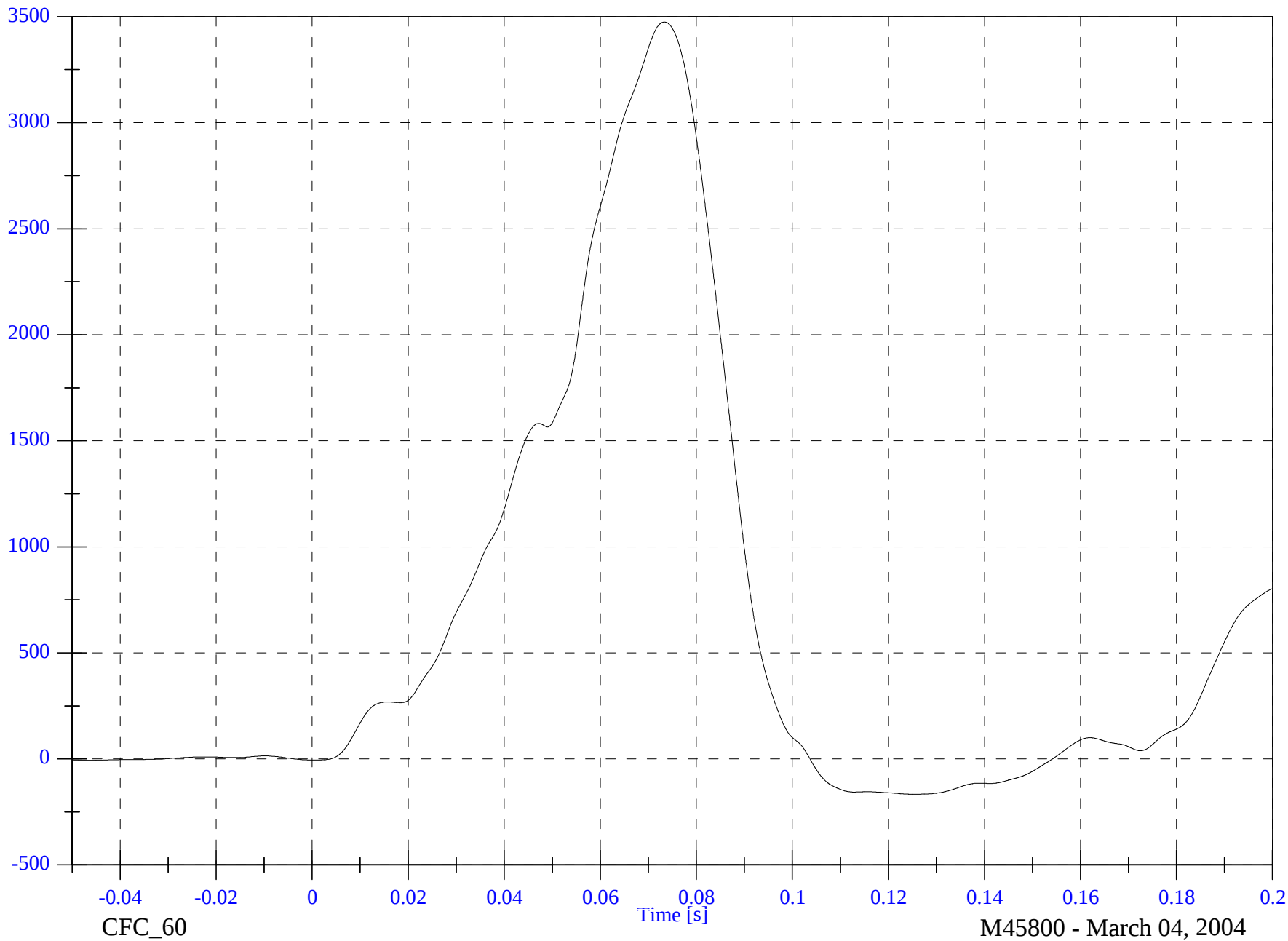
Max: 3474.8 [N] at 0.073 [s]

Min: -167.1 [N] at 0.125 [s]

4-76

N

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

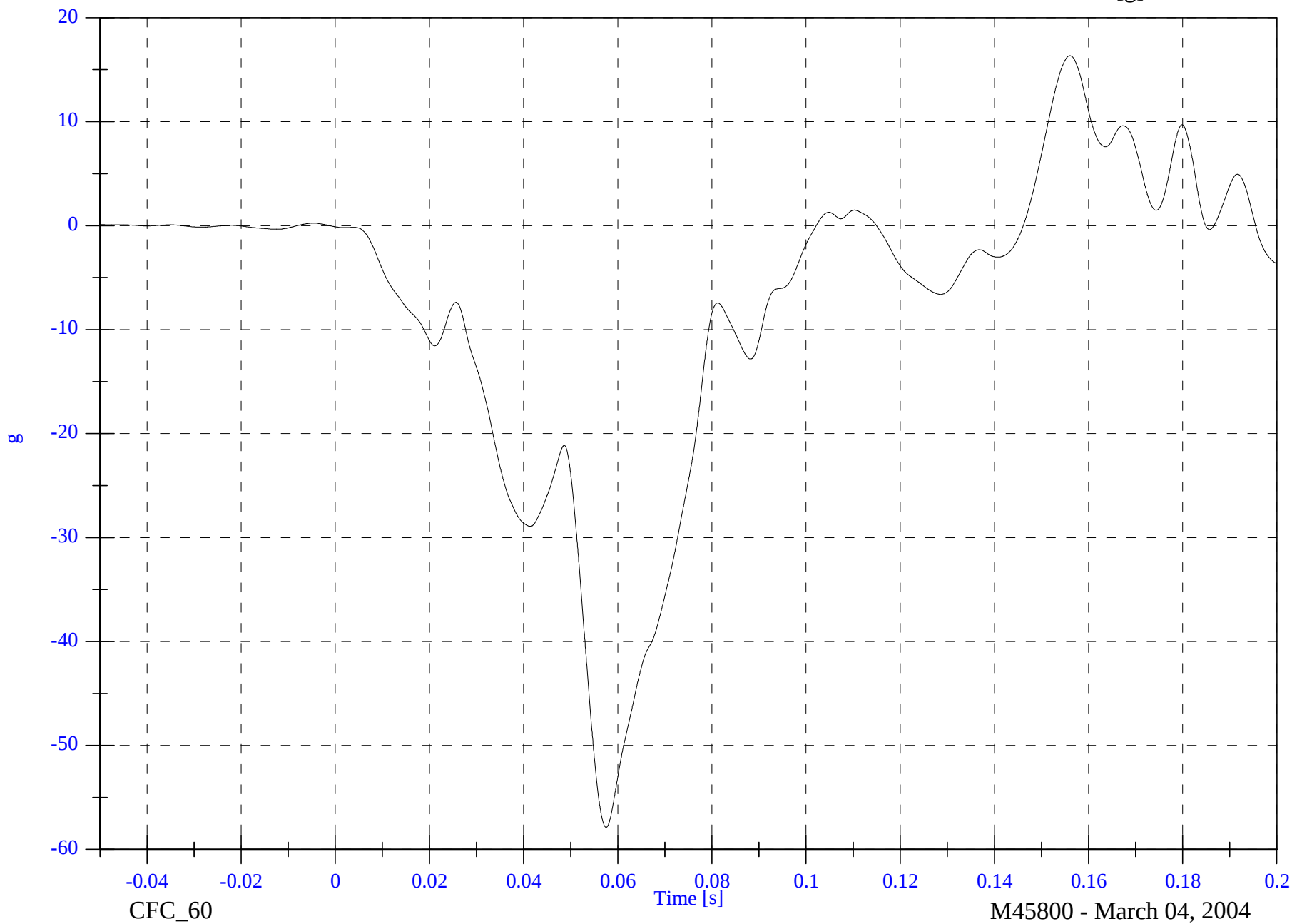
V1P4 CRS x

Max: 16.4 [g] at 0.156 [s]

Min: -57.9 [g] at 0.057 [s]

4-77

8642-NCAP-46



2004 NCAP Test 10 - 2004 VW Touareg

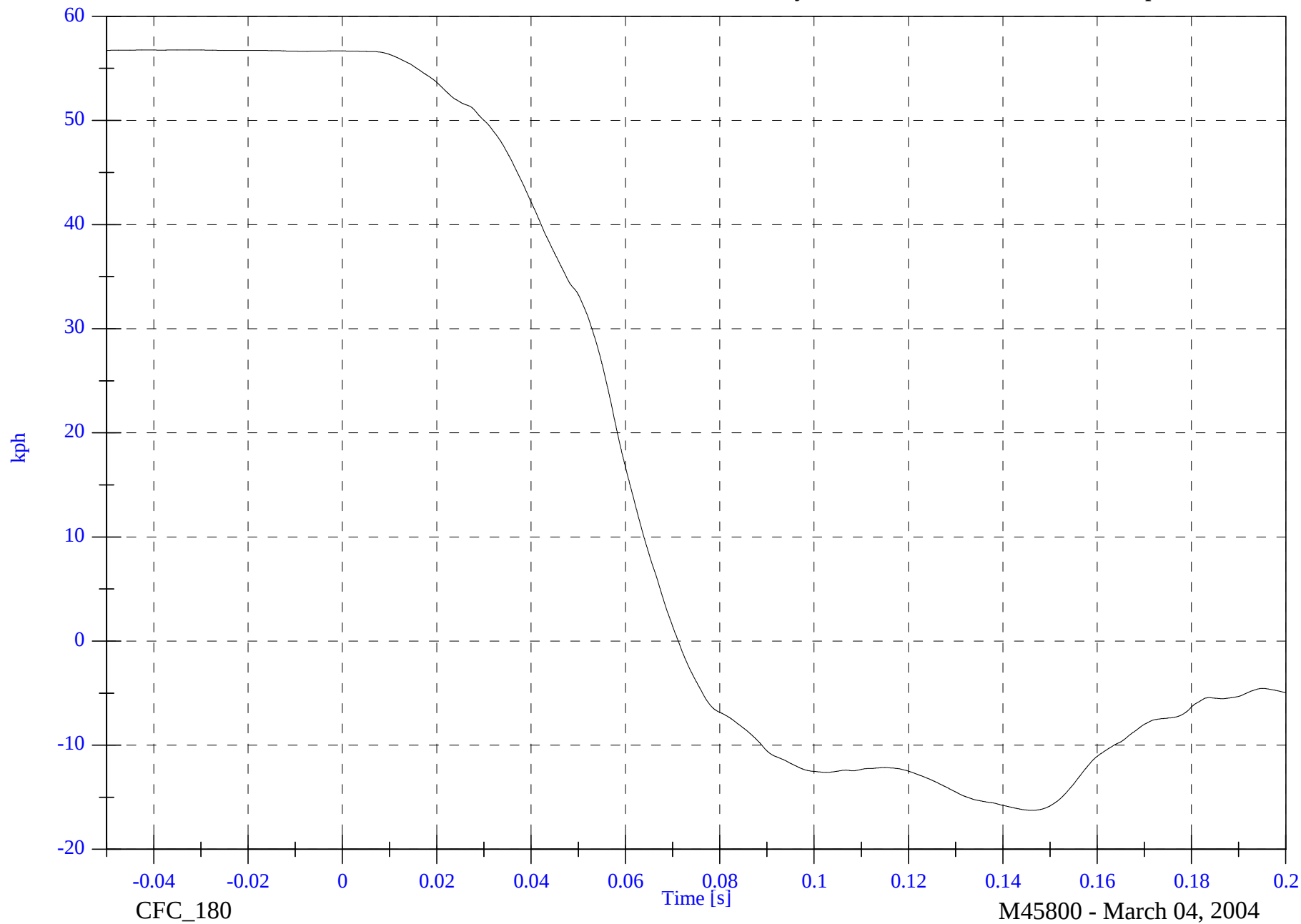
V1P4 CRS x Velocity

Max: 56.8 [kph] at -0.032 [s]

Min: -16.3 [kph] at 0.146 [s]

4-78

8642-NCAP-46

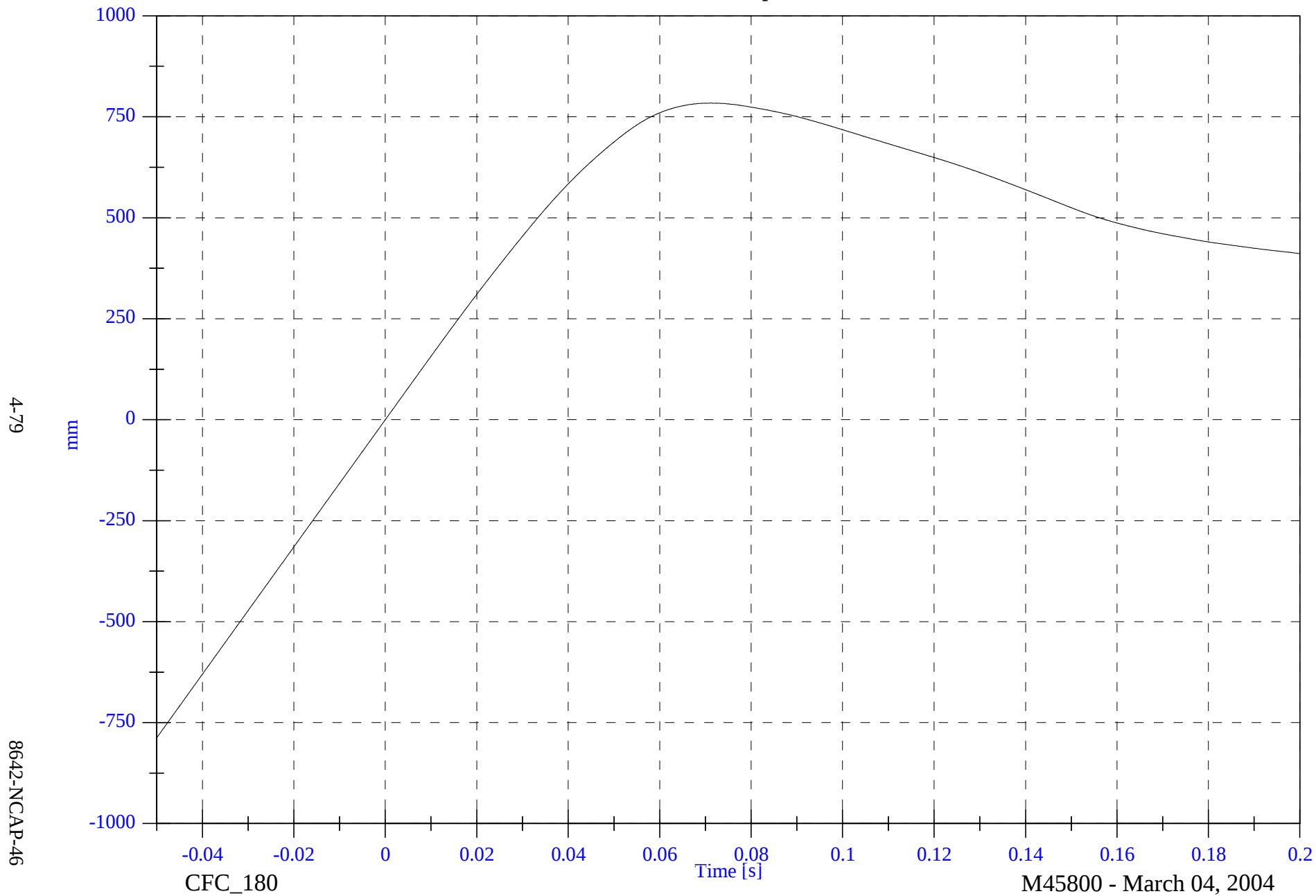


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 CRS x Displacement

Max: 784.1 [mm] at 0.071 [s]

Min: -787.8 [mm] at -0.050 [s]

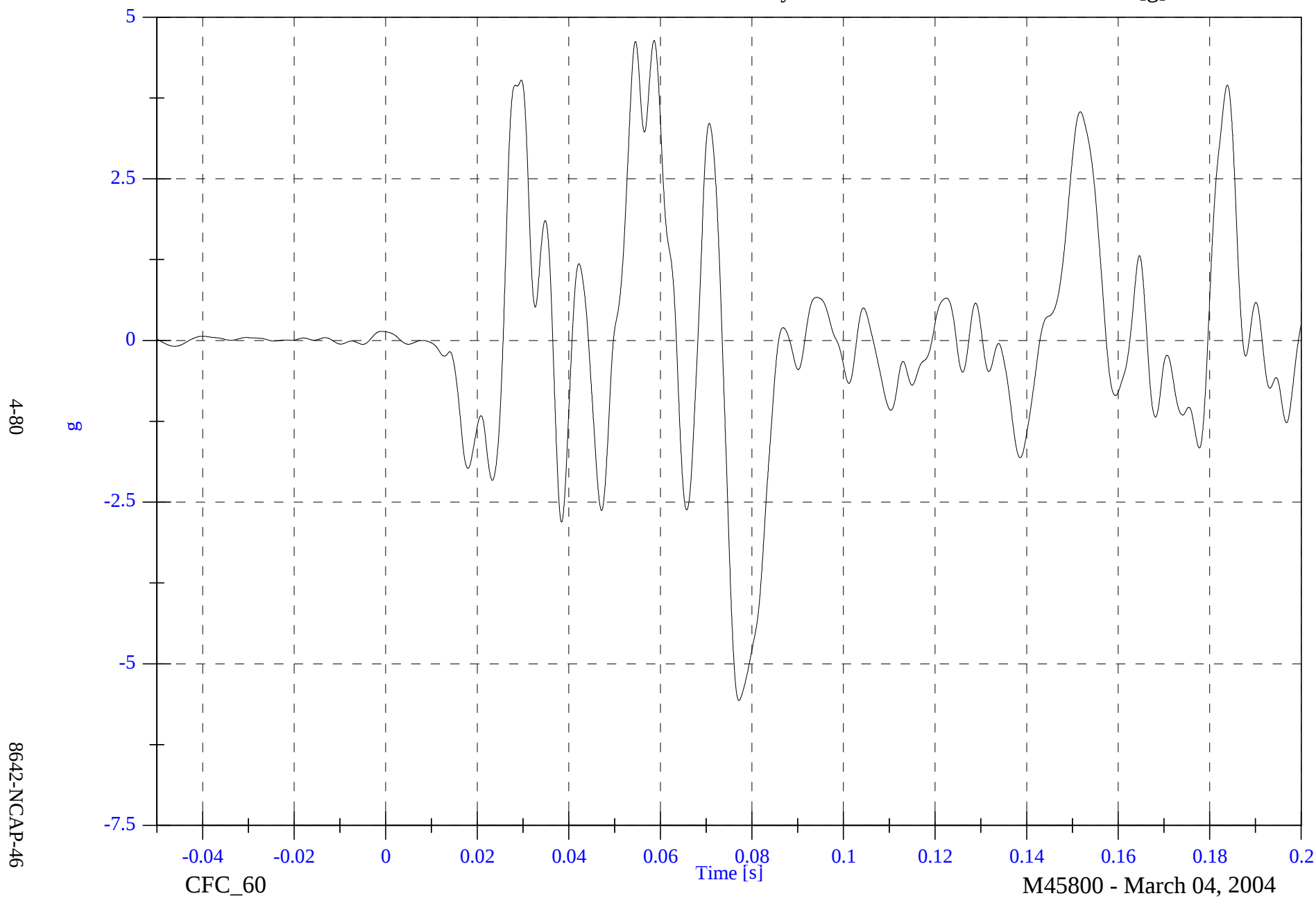


2004 NCAP Test 10 - 2004 VW Touareg

Max: 4.6 [g] at 0.059 [s]

Min: -5.6 [g] at 0.077 [s]

V1P4 CRS y

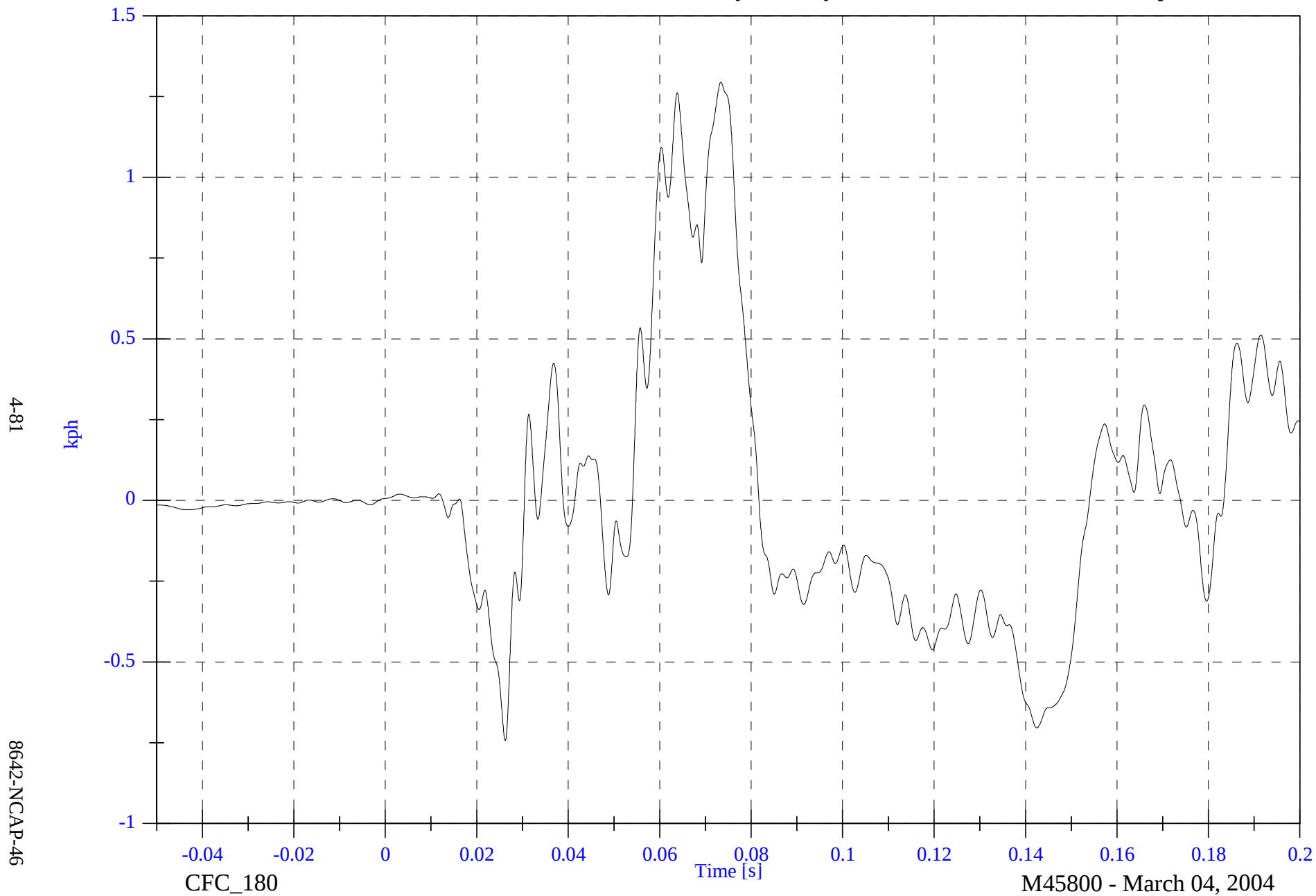


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 CRS y Velocity

Max: 1.3 [kph] at 0.073 [s]

Min: -0.7 [kph] at 0.026 [s]



2004 NCAP Test 10 - 2004 VW Touareg

V1P4 CRS y Displacement

Max: 5.3 [mm] at 0.082 [s]

Min: -1.7 [mm] at 0.154 [s]

4-82

8642-NCAP-46

mm



CFC_180

Time [s]

M45800 - March 04, 2004

2004 NCAP Test 10 - 2004 VW Touareg

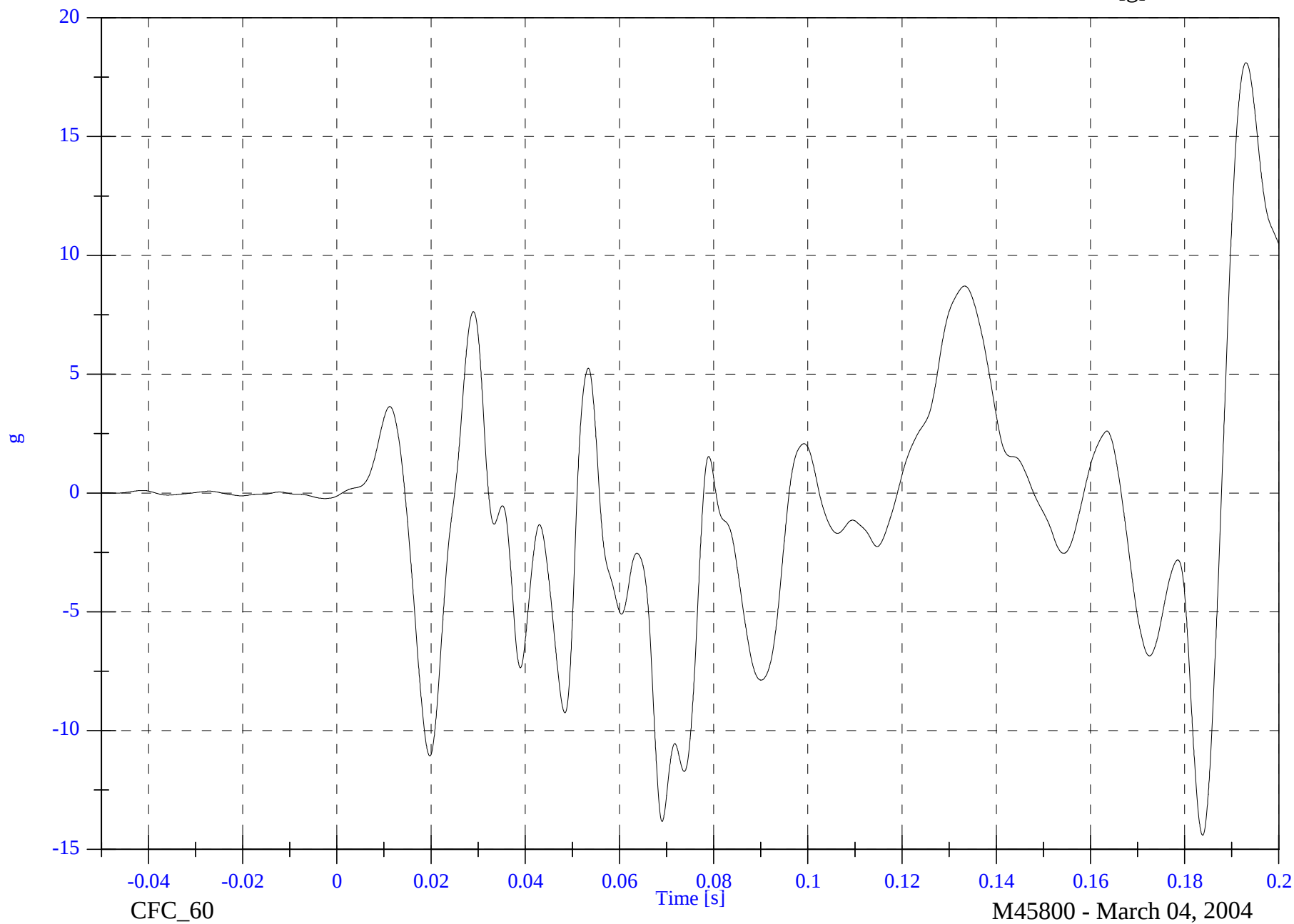
V1P4 CRS z

Max: 18.1 [g] at 0.193 [s]

Min: -14.4 [g] at 0.184 [s]

4-83

8642-NCAP-46

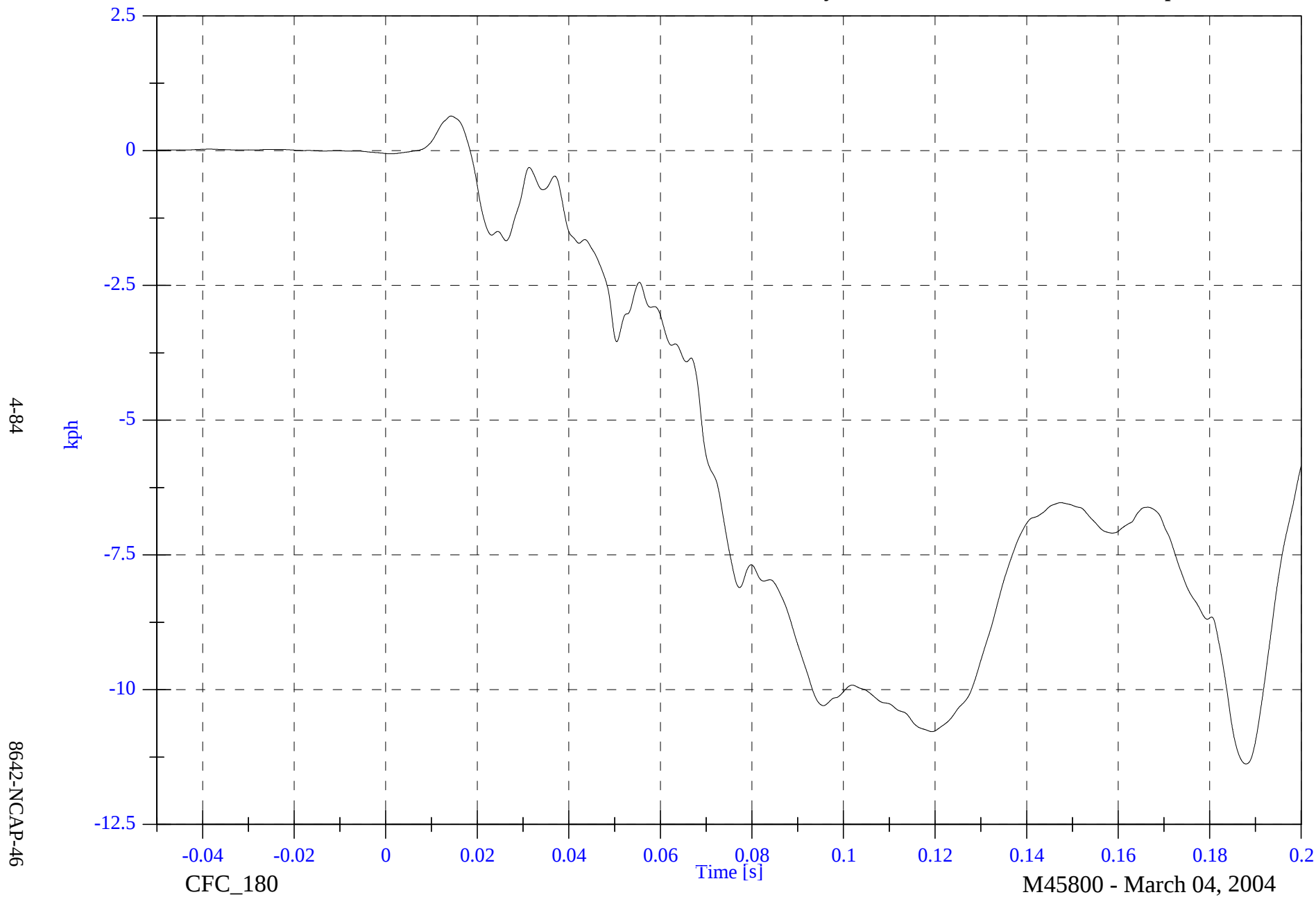


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 CRS z Velocity

Max: 0.6 [kph] at 0.014 [s]

Min: -11.4 [kph] at 0.188 [s]

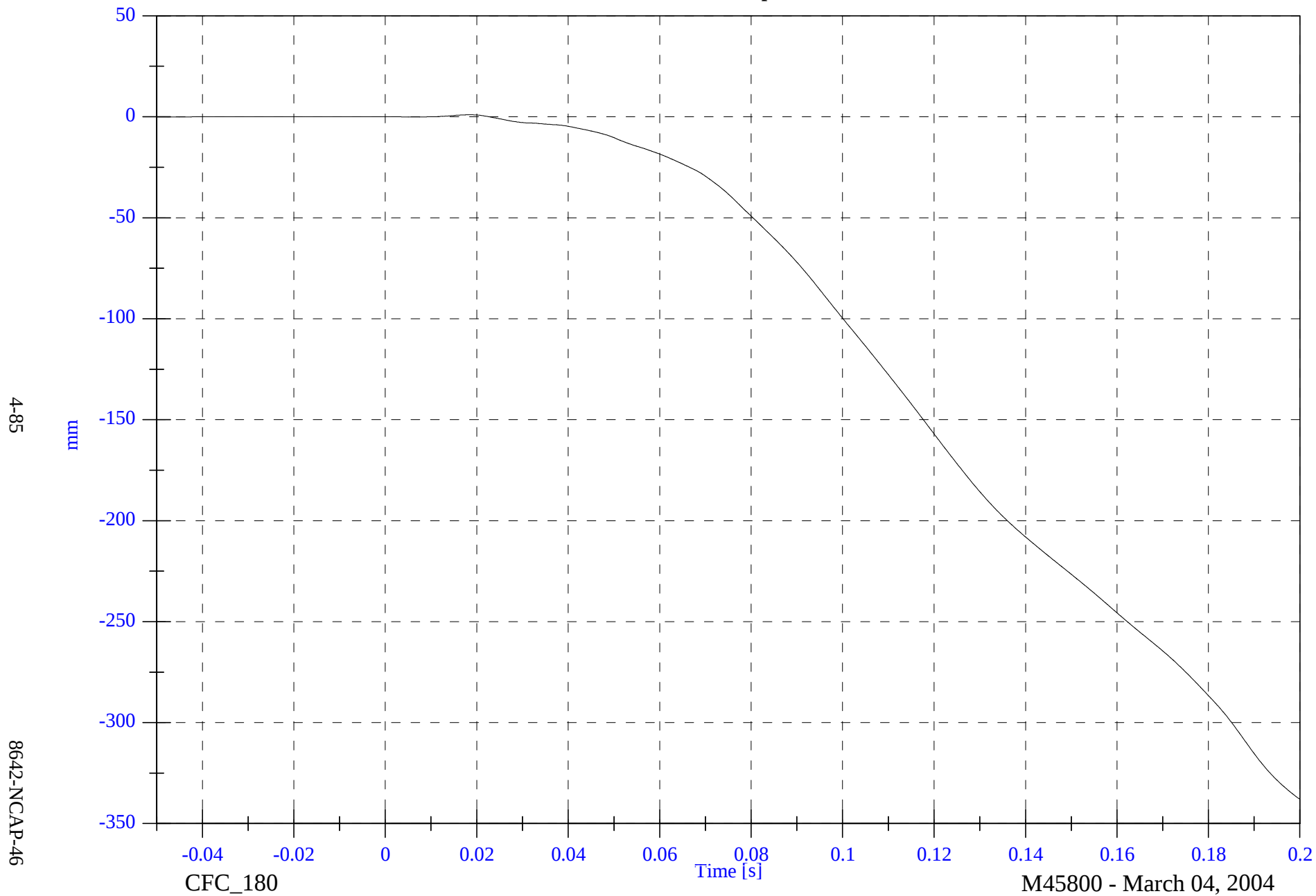


2004 NCAP Test 10 - 2004 VW Touareg

V1P4 CRS z Displacement

Max: 1.0 [mm] at 0.018 [s]

Min: -337.9 [mm] at 0.200 [s]



2004 NCAP Test 10 - 2004 VW Touareg

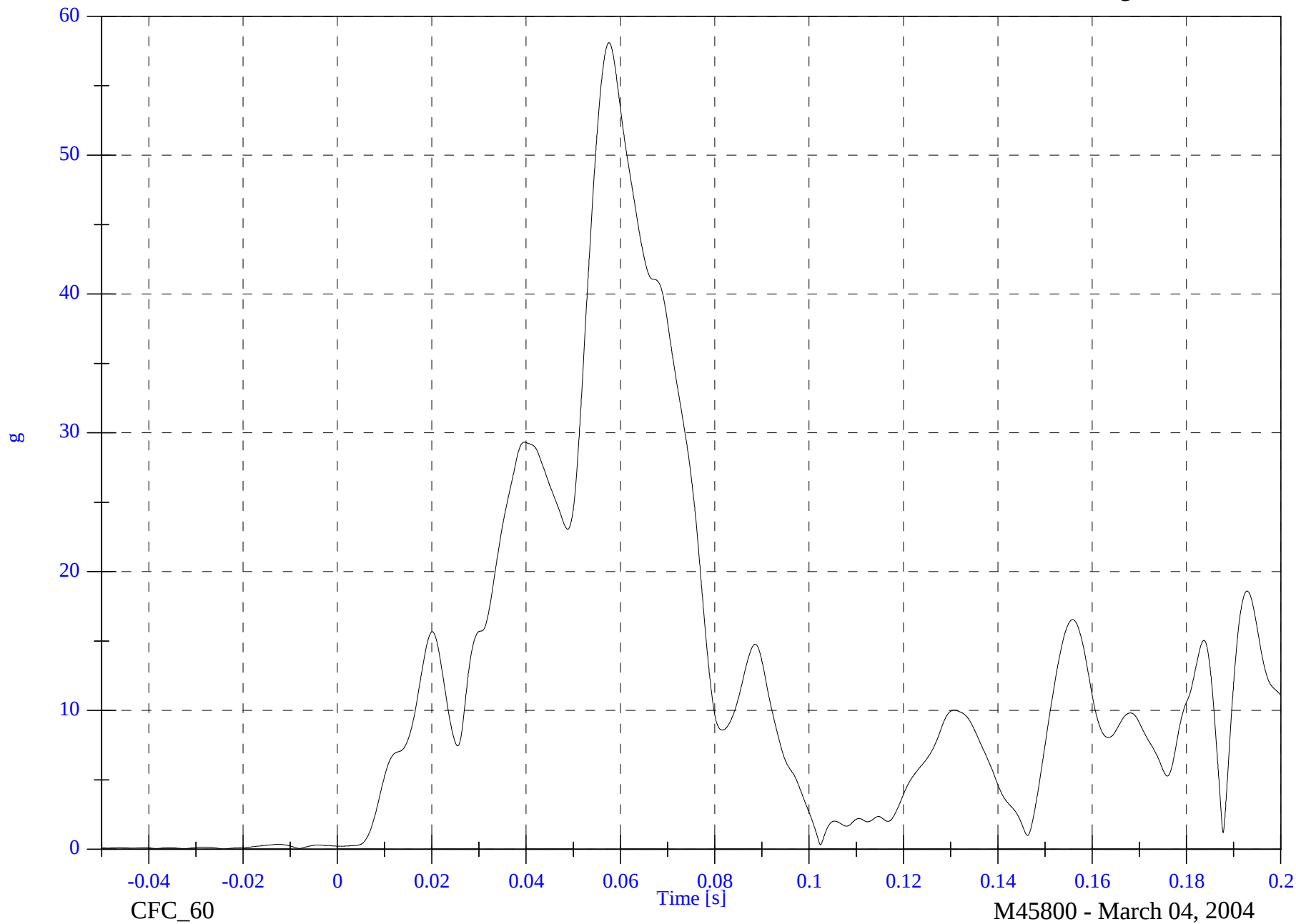
V1P4 CRS Resultant

Max: 58.1 [g] at 0.058 [s]

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

4-86

8642-NCAP-46



SECTION 5

CHILD DUMMY CALIBRATION INFORMATION

PART 572P
HEAD DROP TEST

Dummy Serial Number 044
Sequential Test Number 1
Date 01-21-2004
Workfile 044H 01-21-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0 F
Relative Humidity	10% - 70%	35.00 %
Peak Resultant Acceleration	250-280 G's	271.45 Gs
Peak Lateral Acceleration	15 G's Max	6.74 Gs
Is Acceleration Curve Unimodal?	<10%	4.71 %

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK FLEXION TEST

Dummy Serial Number 044
Sequential Test Number 1
Date 10-22-03
Workfile 044NF 10-22-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	38.00
Pendulum Speed		5.40-5.60 m/s	5.46
Pendulum Pulse	10 ms	2.00 – 2.70 m/s	2.14
	15 ms	3.00 – 4.00 m/s	3.13
	20 ms	4.00 – 5.10 m/s	4.30
D Plane Rotation	Max	70.0 – 82.0 Deg	75.72
Maximum Occipital Moment		42.00 - 53.00 N-m	52.40
Occipital Moment Decay		60.0 - 80.0 ms	74.60

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK EXTENSION TEST

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

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	38.00
Pendulum Speed		3.55 – 3.75 m/s	3.72
Pendulum Pulse	10 ms	1.00 – 1.40 m/s	1.05
	15 ms	1.90 – 2.50 m/s	1.98
	20 ms	2.80 – 3.50 m/s	2.82
D Plane Rotation	Max	83.0 – 93.0 Deg	85.02
Maximum Occipital Moment		-53.30 - -43.70 N-m	-45.28
Occipital Moment Decay		60.0 - 80.0 ms	67.60

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
THORAX IMPACT TEST

Dummy Serial Number 044
Sequential Test Number 3
Date 01-22-2004
Workfile 044T3 01-22-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0 F
Relative Humidity	10% - 70%	35.00 %
Pendulum Velocity	19.40 – 20.00 Ft/s	19.67 ft/s
Maximum Deflection	1.30 – 1.50 in	1.35 in
Maximum Resistive Force	152.90 – 182.10 Lbs	168.03 lbf
Internal Hysteresis	65 - 85 %	72.89 %
Sternum Force Criteria	193.30 lbf	186.73 lbf

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
EXTERNAL DIMENSIONS

Dummy Serial Number 044
Sequential Test Number 1
Date 10-22-2003

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Total Sitting Height	A	21.2 – 21.8 in	21.4
Shoulder Pivot Height	B	12.1 - 12.7 in	12.4
H-Point Height	C	1.35 – 1.75 in	1.57
H-Point from Backline	D	2.24 – 2.64 in	2.76
Shoulder Pivot from Backline	E	2.40 – 2.80 in	2.76
Thigh Clearance	F	3.19 – 3.59 in	3.27
Back of Elbow to Fingertip	G	9.74 – 10.34 in	10.04
Head back from Backline	H	1.9 – 2.3 in	2.17
Shoulder - Elbow Length	I	7.3 – 7.9 in	7.87
Elbow Rest Height	J	5.26 – 5.86 in	5.31
Buttock to Knee Length	K	11.21 – 11.81 in	11.41
Popliteal Height	L	8.60 – 9.20 in	8.86
Knee Pivot Height	M	9.51 – 10.11 in	9.84
Buttock Popliteal Length	N	8.58 - 9.18 in	8.86
Chest Depth with Jacket	O	5.45 - 6.05 in	5.98
Foot Length	P	5.42 – 5.82 in	5.47
Stature	Q	36.7 – 37.7 in	37.01
Buttock to Knee Pivot Length	R	9.9 - 10.3 in	10.04
Head Breadth	S	5.15 – 5.55 in	5.16
Head Depth	T	6.59 -7.19 in	6.81
Hip Breadth	U	7.9 – 8.5 in	8.15
Shoulder Breadth	V	9.31 – 9.91in	9.49
Foot Breadth	W	2.11 – 2.51 in	2.32
Head Circumference	X	19.7 – 20.3 in	20.0
Chest Circumference (With Jacket)	Y	20.75 – 21.75 in	21.65
Waist Circumference	Z	20.75 – 21.75 in	21.66
Location for Chest Circumference	AA	9.8 – 10.2 in	10.04
Location for Waist Circumference	BB	6.3 – 6.7 in	6.50

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
HEAD DROP TEST

Dummy Serial Number 142
Sequential Test Number 1
Date 01-12-2004
Workfile 142H2 01-12-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.00 F
Relative Humidity	10% - 70%	33.00 %
Peak Resultant Acceleration	250-280 G's	263.52 Gs
Peak Lateral Acceleration	15 G's Max	12.48 Gs
Is Acceleration Curve Unimodal?	<10%	4.38 %

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK FLEXION TEST

Dummy Serial Number 142
Sequential Test Number 1
Date 12-11-03
Workfile 142nf 12-11-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	27.0
Pendulum Speed		5.40-5.60 m/s	5.55
Pendulum Pulse	10 ms	2.00 – 2.70 m/s	2.05
	15 ms	3.00 – 4.00 m/s	3.03
	20 ms	4.00 – 5.10 m/s	4.13
D Plane Rotation	Max	70.0 – 82.0 Deg	80.64
Maximum Occipital Moment		42.00 - 53.00 N-m	42.46
Occipital Moment Decay		60.0 - 80.0 ms	69.60

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK EXTENSION TEST

Dummy Serial Number 142
Sequential Test Number 2
Date 12-11-03
Workfile 142ne2 12-11-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	27.00
Pendulum Speed		3.55 – 3.75 m/s	3.60
Pendulum Pulse	10 ms	1.00 – 1.40 m/s	1.10
	15 ms	1.90 – 2.50 m/s	2.02
	20 ms	2.80 – 3.50 m/s	2.85
D Plane Rotation	Max	83.0 – 93.0 Deg	83.64
Maximum Occipital Moment		-53.30 - -43.70 N-m	-52.76
Occipital Moment Decay		60.0 - 80.0 ms	72.40

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
THORAX IMPACT TEST

Dummy Serial Number 142
Sequential Test Number 1
Date 12-12-03
Workfile 142T 12-12-03

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	35.0
Pendulum Velocity	19.40 – 20.00 Ft/s	19.70
Maximum Deflection	1.30 – 1.50 in	1.30
Maximum Resistive Force	152.90 – 182.10 Lbs	167.53
Internal Hysteresis	65 - 85 %	76.46
Sternum Force Criteria	193.30 lbf	179.91

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
EXTERNAL DIMENSIONS

Dummy Serial Number 142
Sequential Test Number 1
Date 12-11-03

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Total Sitting Height	A	21.2 – 21.8 in	21.2
Shoulder Pivot Height	B	12.1 - 12.7 in	12.4
H-Point Height	C	1.35 – 1.75 in	1.55
H-Point from Backline	D	2.24 – 2.64 in	2.5
Shoulder Pivot from Backline	E	2.40 – 2.80 in	2.6
Thigh Clearance	F	3.19 – 3.59 in	3.5
Back of Elbow to Fingertip	G	9.74 – 10.34 in	10.1
Head back from Backline	H	1.9 – 2.3 in	2.1
Shoulder - Elbow Length	I	7.3 – 7.9 in	7.7
Elbow Rest Height	J	5.26 – 5.86 in	5.5
Buttock to Knee Length	K	11.21 – 11.81 in	11.5
Popliteal Height	L	8.60 – 9.20 in	8.9
Knee Pivot Height	M	9.51 – 10.11 in	9.75
Buttock Popliteal Length	N	8.58 - 9.18 in	9.0
Chest Depth with Jacket	O	5.45 - 6.05 in	5.8
Foot Length	P	5.42 – 5.82 in	5.8
Stature	Q	36.7 – 37.7 in	37.0
Buttock to Knee Pivot Length	R	9.9 - 10.3 in	10.25
Head Breadth	S	5.15 – 5.55 in	5.4
Head Depth	T	6.59 -7.19 in	6.9
Hip Breadth	U	7.9 – 8.5 in	8.1
Shoulder Breadth	V	9.31 – 9.91in	9.9
Foot Breadth	W	2.11 – 2.51 in	2.3
Head Circumference	X	19.7 – 20.3 in	20.3
Chest Circumference (With Jacket)	Y	20.75 – 21.75 in	21.4
Waist Circumference	Z	20.75 – 21.75 in	21.4
Location for Chest Circumference	AA	9.8 – 10.2 in	10.00
Location for Waist Circumference	BB	6.3 – 6.7 in	6.50

Remarks:

Laboratory Technician:

B. Swiecicki

SECTION 6

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III INSTRUMENTATION

	POSITION #3 (RIGHT) SERIAL NO.: 044		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-P32218	ENDEVCO	02/17/04
HEAD AY	AC-P17743	ENDEVCO	10/21/03
HEAD AZ	AC-P15319	ENDEVCO	10/21/03
HEAD REAR AZ	AC-02I02I10-N06	ENTRAN	12/08/03
UPPER NECK FX	LC-248-FX	DENTON	10/01/03
UPPER NECK FY	LC-248-FY	DENTON	10/01/03
UPPER NECK FZ	LC-248-FZ	DENTON	10/01/03
UPPER NECK MX	LC-248-MX	DENTON	10/01/03
UPPER NECK MY	LC-248-MY	DENTON	10/01/03
UPPER NECK MZ	LC-248-MZ	DENTON	10/01/03
LOWER NECK FX	LC-249FX	DENTON	10/01/03
LOWER NECK FY	LC-249FY	DENTON	10/01/03
LOWER NECK FZ	LC-249FZ	DENTON	10/01/03
LOWER NECK MX	LC-249MX	DENTON	10/01/03
LOWER NECK MY	LC-249MY	DENTON	10/01/03
LOWER NECK MZ	LC-249MZ	DENTON	10/01/03
CHEST AX	AC-P15334	ENDEVCO	10/21/03
CHEST AY	AC-P15321	ENDEVCO	10/21/03
CHEST AZ	AC-P17758	ENDEVCO	10/21/03
CHEST DISPLACEMENT X	DS-044	SERVO	11/22/03
PELVIS AX	AC-P16755	ENDEVCO	10/21/03
PELVIS AY	AC-P15591	ENDEVCO	10/21/03
PELVIS AZ	AC-P16155	ENDEVCO	10/21/03
TETHER BELT LOAD	LC-174	FIRST TECHNOLOGY	10/10/03
LATCH BELT LOAD	LC-156	FIRST TECHNOLOGY	09/16/03

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III INSTRUMENTATION

	POSITION #4 (LEFT) SERIAL NO.: 142		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-P23804	ENDEVCO	02/24/04
HEAD AY	AC-99102-F12	ENTRAN	02/24/04
HEAD AZ	AC-00L13-F03	ENDEVCO	02/24/04
HEAD REAR AZ	AC-P23926	ENDEVCO	02/23/04
UPPER NECK FX	LC-213FX	DENTON	10/01/03
UPPER NECK FY	LC-213FY	DENTON	10/01/03
UPPER NECK FZ	LC-213FZ	DENTON	10/01/03
UPPER NECK MX	LC-213MX	DENTON	10/01/03
UPPER NECK MY	LC-213MY	DENTON	10/01/03
UPPER NECK MZ	LC-213MZ	DENTON	10/01/03
LOWER NECK FX	LC-214FX	DENTON	10/01/03
LOWER NECK FY	LC-214FY	DENTON	10/01/03
LOWER NECK FZ	LC-214FZ	DENTON	10/01/03
LOWER NECK MX	LC-214MX	DENTON	10/01/03
LOWER NECK MY	LC-214MY	DENTON	10/01/03
LOWER NECK MZ	LC-214MZ	DENTON	10/01/03
CHEST AX	AC-99108-F30	ENTRAN	02/24/04
CHEST AY	AC-99108-F28	ENTRAN	02/24/04
CHEST AZ	AC-99H30-Z04	ENTRAN	02/24/04
CHEST DISPLACEMENT X	DS-142	SERVO	09/18/03
PELVIS AX	AC-99102-F06	ENTRAN	02/23/04
PELVIS AY	AC-99102-F15	ENTRAN	02/23/04
PELVIS AZ	AC-99G29-Q13	ENTRAN	02/23/04
TETHER BELT LOAD	LC-155	FIRST TECHNOLOGY	09/16/03

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

CRS INSTRUMENTATION

	CRS ACCELEROMETERS		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
P3 CRS AX	AC-P18525	ENDEVCO	09/18/03
P3 CRS AY	AC-P14438	ENDEVCO	09/24/03
P3 CRS AZ	AC-P15747	ENDEVCO	09/24/03
P4 CRS AX	AC-P19246	ENDEVCO	01/16/04
P4 CRS AY	AC-P18682	ENDEVCO	01/16/04
P4 CRS AZ	AC-P23873	ENDEVCO	01/16/04