

REPORT NUMBER: CAL-04-12

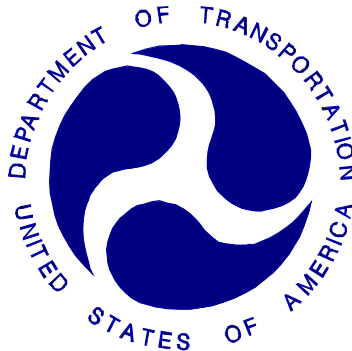
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

TOYOTA MOTOR CORPORATION
2004 TOYOTA 4RUNNER
SUV

NHTSA NUMBER: M45110

GENERAL DYNAMICS TEST NUMBER: 8642-NCAP-48

GENERAL DYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
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April 22, 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. <i>Report No.</i> CAL-04-12		2. <i>Government Accession No.</i>		3. <i>Recipient's Catalog No.</i>	
4. <i>Title and Subtitle</i> Final Report of NEW CAR ASSESSMENT PROGRAM (NCAP) Testing of a 2004 Toyota 4Runner SUV NHTSA No. M45110				5. <i>Report Date</i> April 22, 2004	
				6. <i>Performing Organization Code</i> CAL	
7. <i>Author(s)</i> David J. Travale, Program Manager Lawrence Q. Valvo, Project Engineer				8. <i>Performing Organization Report No.</i> 8642-NCAP-48	
9. <i>Performing Organization Name and Address</i> General Dynamics Advanced Information Engineering Services 4455 Genesee Street Buffalo, New York 14225				10. <i>Work Unit No.</i>	
				11. <i>Contract or Grant No.</i> DTNH22-01-D-32005	
12. <i>Sponsoring Agency Name and Address</i> 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. <i>Type of Report and Period Covered</i> Final Report April 2004 – May 2004	
				14. <i>Sponsoring Agency Code</i> NVS-111	
15. <i>Supplementary Notes</i>					
16. <i>Abstract</i> A frontal load cell barrier test of a 2004 Toyota 4Runner SUV was performed at General Dynamics crash test facility in Buffalo, New York, on April 22, 2004. The impact velocity was 56.17 kph and the temperature at the barrier face was 21.1°C. The maximum post-test vehicle crush was 580 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 (150)	585.7	46.0	-33.7	-1556.8	-664.1
Passenger (245)	379.8	46.8	-29.9	-2708.7	-1046.5
17. <i>Key Words</i> 56 kph Frontal Barrier Impact test New Car Assessment Program (NCAP)				18. <i>Distribution Statement</i> 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. <i>Security Classif. (of this report)</i> UNCLASSIFIED		20. <i>Security Classif. (of this page)</i> UNCLASSIFIED		21. <i>No. of Pages</i> 309	22. <i>Price</i>

Form DOT F1700.7 (8-69)

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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.17 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 56.17 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 56.17 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 installed 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. 150) and the right-front passenger (position 2) ATD (Serial No.245) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 195 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 Toyota 4Runner SUV at a velocity of 56.17 kph. The test was performed at General Dynamics on April 22, 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	585.7	46.0	-33.7	-1556.8	-664.1	†	0
Passenger ATD	379.8	46.8	-29.9	-2708.7	-1046.5	†	0

† - Not used due to the vehicle being equipped with torso belt pretensioners.

AUTOMATIC DOOR LOCK SUMMARY

ADL Equipped Test Vehicle:	Yes
ADL Activation Status:	Deactivated
Door Lock Condition:	Unlocked

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 580 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 lower center of airbag, back of head to head restraint, chest to airbag, knees to knee bolster. The passenger's visible contact points were as follows: Face to right quarter of airbag, back of head to outboard edge of head restraint, top of head to side header, chest to airbag, left knee to left quarter of glove compartment door, right knee to center of glove compartment door.

The 2004 Toyota 4Runner 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.: M45110 Test Mode: 56.3 kph Frontal Barrier
 Test Date: April 22, 2004 Time: 14:10 Temperature: 21.1 °C
 Vehicle Make/Model/Body Style: 2004 Toyota 4Runner SUV
 Vehicle Test Weight: 2277.0 kg
 Vehicle/Barrier Impact Angle: 0 °
 Impact Velocity: 56.17 kph
 Maximum Static Crush: 580 mm
 Vehicle Rebound: 534 mm

DUMMIES:

	<u>DRIVER</u>	<u>PASSENGER</u>
Type:	<u> 572E </u>	<u> 572E </u>
Restraint System:	<u> Seatbelt, Airbag, Knee Bolster </u>	<u> Seatbelt, Airbag, Knee Bolster </u>
Number of Data Channels:	<u> 195 </u>	
Number of Cameras:	<u> 1 </u> Real Time	
	<u> 16 </u> High Speed	

DOOR OPENING DATA:

	<u> Closed/Latched/Operable Without Tools </u>	- Left Front
	<u> Closed/Latched/Operable Without Tools </u>	- Right Front

Front Seat(s) Data:

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

VISIBLE DUMMY CONTACT POINTS:

	<u>DRIVER</u>	<u>PASSENGER</u>
Head:	<u> Face to lower center of airbag; Back of head to head restraint </u>	<u> Face to right quarter of airbag; Back of head to outboard edge of head restraint; Top of head to side header </u>
Abdomen:	<u> None </u>	<u> None </u>
Chest:	<u> Airbag </u>	<u> Airbag </u>
Knees:	<u> Knees to knee bolster </u>	<u> Left knee to left quarter of glove compartment door; Right knee to center of glove compartment door </u>

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2004 Toyota 4Runner SUV

NHTSA No. : M45110 ; VIN: JTEBU17R640032881 ; Color: White

Engine Data: 6 cylinders; - CID; 4.0 Liters; - cc

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

Transmission Data: 4 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 ADLs; X A/C; X Pwr.Strg.; X Pwr. Brakes

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

Date Received: 3/3/2004 ; Odometer Reading 45.1 km

Selling Dealer: West Herr Toyota

& Address: S-4141 Southwestern Blvd., Orchard Park NY 14127

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Toyota Motor Corporation

Date of Manufacture 12/03

GVWR: 2525 kg; GAWR: 1150 kg FRONT; 1385 kg REAR

DATA FROM TIRE PLACARD:

Recommended Tire Size: P265/65 R17

* Recommended Cold Tire Pressure: 220 kPa FRONT; 220 kPa REAR

DATA FROM TIRE SIDEWALL:

Size of Tires on Test Vehicle: P265/65 R17 ; Manufacturer: Michelin Cross Terrain

Tire Pressure with Maximum Capacity Vehicle Load: Front: 240 kPa; Rear: 240 kPa

Treadwear: A ; Traction: B ; Temperature: 420

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) = 477 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 136.8 kg ‡

*Tire pressure used for test

† This vehicle is available in 5-passenger or 7-passenger versions. The test vehicle was delivered with the 3-row seat option (7 passenger version). At the request of the COTR and the approval of the vehicle manufacturer, the 3-row seats were removed and this vehicle was treated as a 5-passenger version.

‡ Maximum RCLW of 136.1 kg was used for the target weight calculation

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>495.0</u>	kg	Right Rear =	<u>462.0</u>	kg
Left Front =	<u>565.0</u>	kg	Left Rear =	<u>472.0</u>	kg
TOTAL FRONT =	<u>1060.0</u>	kg	TOTAL REAR =	<u>934.0</u>	kg
TOTAL DELIVERED WEIGHT =	<u>1994.0</u>	kg			
% of Total Front of Vehicle Weight =	<u>53.2</u>		% of Total Rear Weight =	<u>46.8</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW) =	<u>1994.0</u>	kg
Rated Cargo/Luggage Weight (RCLW) =	<u>136.1</u>	kg
Weight of 2 p.572 Dummies @ 76 each =	<u>152</u>	kg
TARGET TEST WEIGHT =	<u>2282.1</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 131.0 KG OF CARGO WEIGHT:

Right Front =	<u>533.0</u>	kg	Right Rear =	<u>572.5</u>	kg
Left Front =	<u>590.0</u>	kg	Left Rear =	<u>581.5</u>	kg
TOTAL FRONT =	<u>1123.0</u>	kg	TOTAL REAR =	<u>1154.0</u>	kg
TOTAL TEST WEIGHT =	<u>2277.0</u>	kg			
% of Total Front Weight =	<u>49.3</u>	%	% of Total Rear Weight =	<u>50.7</u>	%
Weight of Ballast Secured in Vehicle Trunk Area =	<u>23</u>	kg			
Vehicle Components Removed for Weight Reduction:	<u>Optional 3-row seats</u>				

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED:	RF	<u>877</u>	LF	<u>870</u>	RR	<u>925</u>	LR	<u>919</u>
FULLY LOADED:	RF	<u>864</u>	LF	<u>862</u>	RR	<u>888</u>	LR	<u>887</u>
AS TESTED:	RF	<u>864</u>	LF	<u>864</u>	RR	<u>888</u>	LR	<u>894</u>
Vehicle's Wheel Base:	<u>2793</u> mm							
Location of Vehicle's C.G.:	<u>1415</u> mm rearward of front wheel center.							

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual =	<u>87</u>	liters
Usable Capacity Figure Furnished by COTR =	<u>87.1</u>	liters
Test Volume Range (92 to 94% of Usable Capacity) =	<u>80.13</u>	to <u>81.87</u> liters
ACTUAL TEST VOLUME=	<u>80.3</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>X</u>
Does Electric Pump operate with ignition switch "ON" & engine "OFF"	Yes- <u>X</u>	No- <u>-</u>
<u>Details of Fuel System: Tank – Left of center ahead of the rear axle; Lines – Along the left side of the vehicle underbody inboard of the left frame rail; Filler - Left rear quarter rear of the rear axle.</u>		

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°
Test Date: April 22, 2004 Time: 14:10 Temperature: 21.1 °C
Vehicle NHTSA No.: M45110
Required Impact Velocity Range: 55.5 to 57.1 kph

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

Trap No. 1 = 56.17 kph; Trap No. 2 = 56.17 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>4785</u> ; C/L = <u>4786</u> ; Right = <u>4782</u>
Post-Test	Left = <u>4223</u> ; C/L = <u>4208</u> ; Right = <u>4238</u>
Crush	Left = <u>562</u> ; C/L = <u>578</u> ; Right = <u>544</u>
AVERAGE	= <u>561</u> mm

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

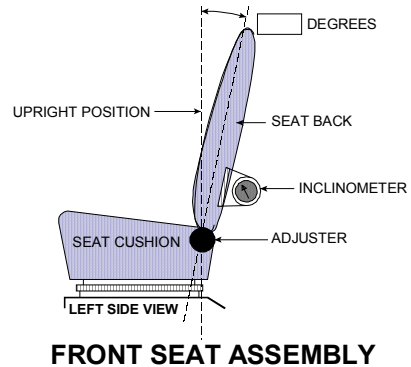
	Left = <u>558</u> ; C/L = <u>539</u> ; Right = <u>505</u>
AVERAGE	= <u>534</u> mm

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2004 Vehicle Model: Toyota 4Runner 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.



Seat back angle for driver's seat: 6.0 degrees ()
Measurement instructions: Recline the seat back 6.0 degrees rearward from the most upright position.
When properly positioned, head restraint post is 87 degrees relative to the rocker panel (side sill).

Seat back angle for passenger's seat: 8.0 degrees
Measurement instructions: Recline the seat back 8.0 degrees rearward from the most upright position.
When properly positioned, head restraint post is 87 degrees relative to the rocker panel (side sill).

2. SEAT FORE AND AFT POSITIONING:

Positioning of the driver's seat: Position seat 120 mm rearward from its forwardmost position. Total travel is 240 mm with the seat full down.

Positioning of the passenger's seat: Position seat 120 mm rearward from its forwardmost position.

3. FUEL TANK CAPACITY DATA:

- 3.1 A. "Usable Capacity" of the standard equipment fuel tank is 87 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 = 87.1 liters
- 3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 80.3 liters
- 3.3 Is vehicle equipped with electric fuel pump? Yes- X ; No- -

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

When the key is turned to the 'ON' position or 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: Place steering column tilt in detent 3, where the lowest detent is defined as 1 and there are 6 total positions. The steering column angle is 26 degrees from vertical. Place the steering column at the center of its telescoping travel (25 mm from full in or full out).

5. SEAT BELT UPPER ANCHORAGE:

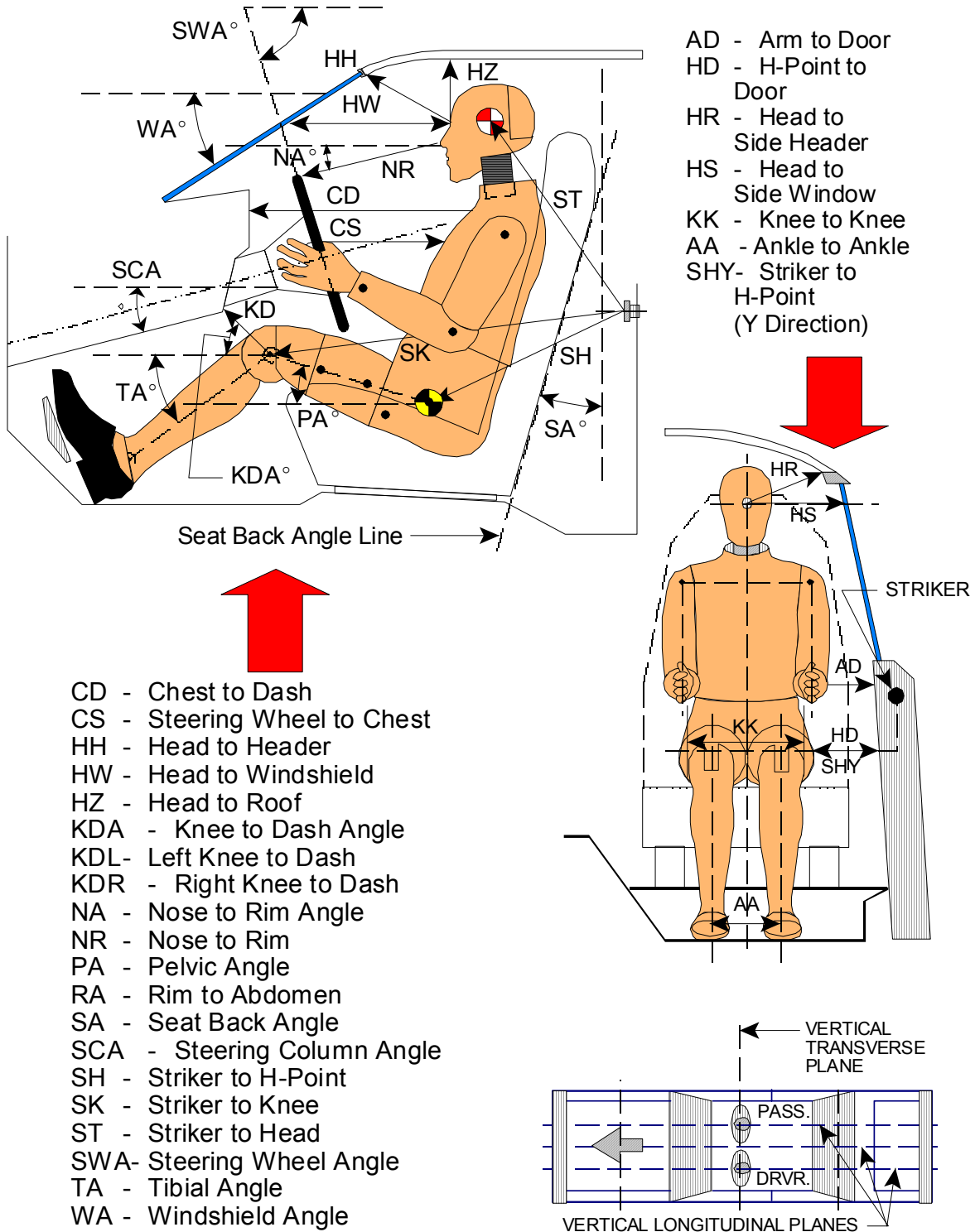
Nominal design riding position: Position in detent 2 where the top-most detent is defined as 1 and there are a total of 5 positions.

6. AUTOMATIC DOOR LOCKS: Is test vehicle equipped with ADLs? X Yes; - No;

Does vehicle owner's manual describe how to deactivate ADLs? X Yes; - No; - N/A

Comments: Each of the following ADL modes can be activated or deactivated: (a) Locking linked with the shift position; (b) Unlocking linked with the shift position; (c) Locking linked with vehicle speed; (d) Unlocking linked with the opening of the drivers door.

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

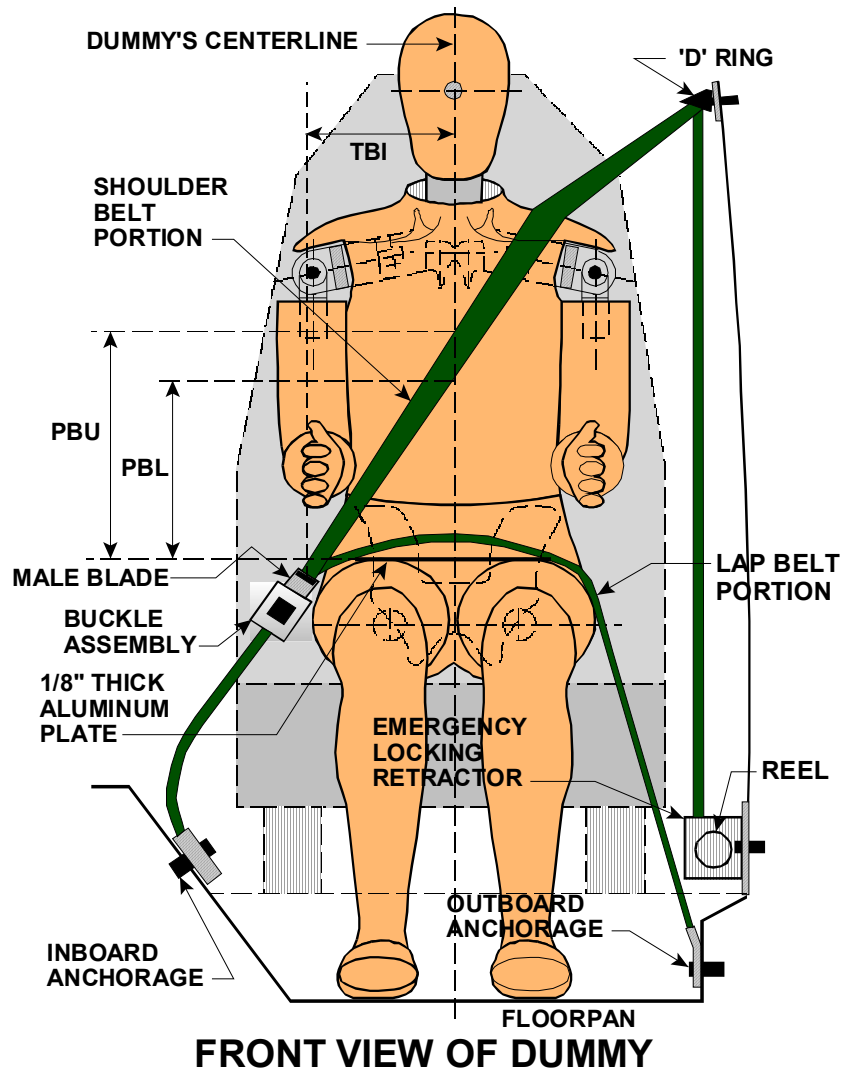


DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #150)			PASS. (Serial #245)		
WA ^o	36.5 deg.			N/A		
SWA ^o	63.0 deg.			N/A		
SCA ^o	27.0 deg.			N/A		
SA ^o	3.0 deg. (head restraint post)			3.0 deg. (head restraint post)		
HZ	210			170		
HH	414			382		
HW	645			567		
HR	224			208		
NR	423	Angle	8.5 deg.	N/A		
CD	557			525		
CS	311			N/A		
RA	193			N/A		
KDL	202	Angle (KDA)	22 deg.	131		
KDR	185			148	Angle (KDA)	20 deg.
PA ^o	24.8 deg.			24.2 deg.		
TA ^o	32.3 deg.			40.5 deg.		
KK	362			270		
AA	365			196		
ST	428	Angle	13 deg.	455	Angle	14 deg.
SK	630	Angle	100 deg.	642	Angle	97 deg.
SH	318	Angle	131 deg.	295	Angle	127 deg.
SHY	240			230		
HS	342			333		
HD	199			204		
AD	102			119		

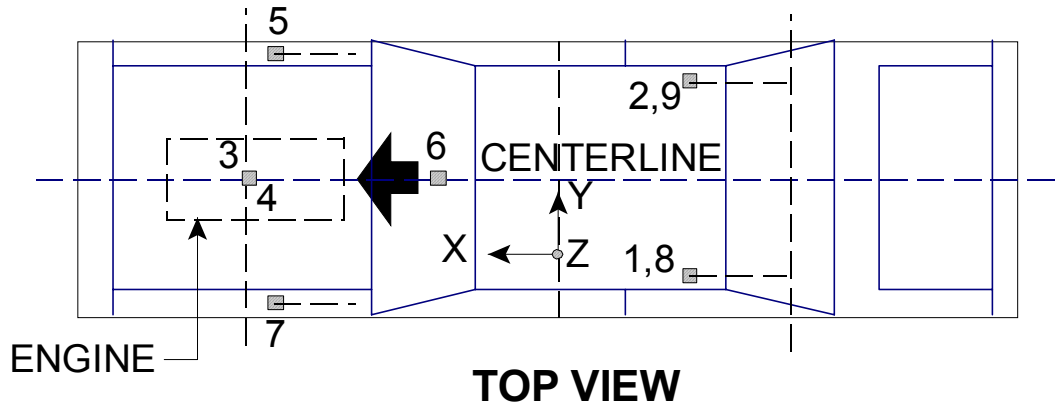
Dimensions in millimeters

SEAT BELT POSITIONING DATA

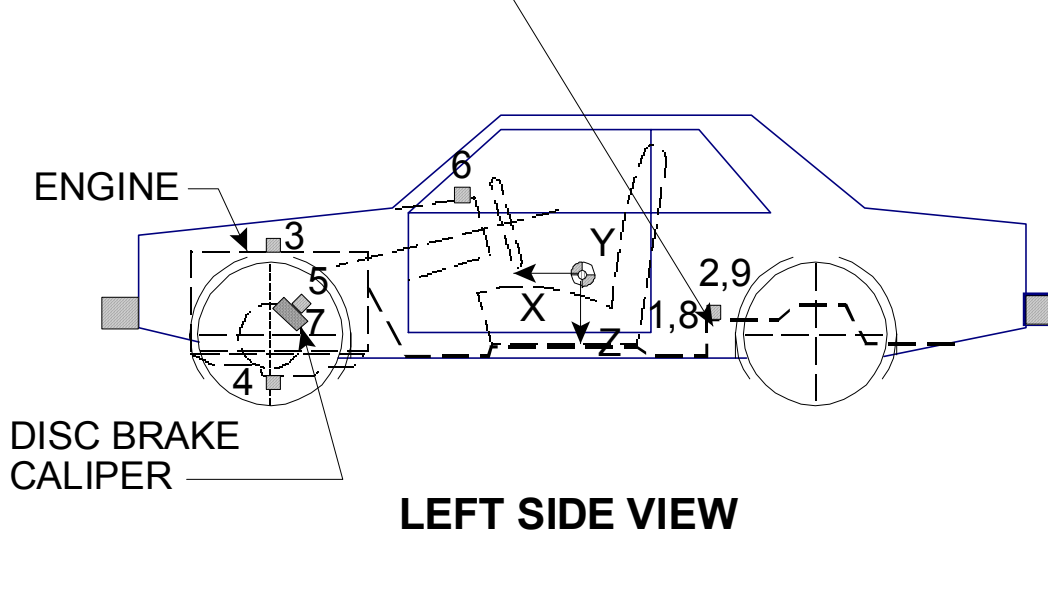


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	335	335
PBL-- Top surface of alum. plate to belt lower edge	255	250
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

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	2000	-652	-500
2	Right Rear Seat Cross Member X	1999	650	-501
3	Top of Engine Block	4074	-195	-965
4	Bottom of Engine	3639	170	-364
5	Disc Brake Caliper @ Right Side	3737	832	-419
6	Instrument Panel	3037	39	-1097
7	Disc Brake Caliper @Left Side	3725	-835	-347
8	Left Rear Seat Cross Member Z	2000	-652	-500
9	Right Rear Seat Cross Member Z	1999	650	-501

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Left Rear Seat Cross Member X	2.1	163.6	-41.5	59.1
2	Right Rear Seat Cross Member X	3.0	160.6	-45.6	58.1
3	Top of Engine Block	9.2	94.1	-65.9	47.8
4	Bottom of Engine	6.6	61.3	-58.2	49.0
5	Disc Brake Caliper @ Right Side	43.2	26.4	-135.2	47.3
6	Instrument Panel	36.0	106.1	-68.3	61.5
7	Disc Brake Caliper @Left Side	48.3	63.3	-90.4	36.1
8	Left Rear Seat Cross Member Z	14.5	59.2	-9.3	70.7
9	Right Rear Seat Cross Member Z	18.5	50.8	-11.4	71.9

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2004 Toyota 4Runner SUV

NHTSA Test No.: M45110 Test Date: April 22, 2004

DESCRIPTION	Unit	MAXIMUM VALUE							
		Driver				Passenger			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head 9 Array X Arm Y	g	3.1	73.3	-6.0	85.9	31.4	61.6	-12.4	67.5
Head 9 Array X Arm Z	g	31.2	58.4	-9.5	142.5	36.2	78.0	-7.4	146.0
Head 9 Array Y Arm X	g	0.4	199.9	-63.3	85.5	0.5	190.8	-56.7	77.6
Head 9 Array Y Arm Z	g	26.2	78.1	-2.9	114.2	26.5	75.8	-3.0	139.0
Head 9 Array Z Arm X	g	†	-	†	-	2.5	199.9	-44.9	70.5
Head 9 Array Z Arm Y	g	††	-	††	-	19.6	63.2	-12.0	127.6
Head X	g	0.3	199.9	-62.2	85.0	0.4	21.1	-49.3	77.5
Head Y	g	5.8	127.6	-6.4	86.4	18.0	61.7	-9.8	124.6
Head Z	g	27.0	78.2	-4.0	117.3	27.9	80.6	-3.9	136.8
Head Resultant	g	64.7	81.0	-	-	55.9	77.5	-	-
Redundant Head X	g	2.0	199.9	-62.7	85.2	0.8	190.8	-48.0	77.5
Redundant Head Y	g	1.7	174.2	-6.9	86.4	17.4	61.7	-9.6	125.1
Redundant Head Z	g	27.1	78.2	-3.8	117.3	23.0	80.6	-3.1	136.8
Redundant Head Resultant	g	65.3	84.7	-	-	52.7	77.5	-	-
Upper Neck Fx	N	476.0	74.0	-462.9	152.3	231.0	73.3	-428.2	139.7
Upper Neck Fy	N	57.2	176.3	-197.2	88.6	52.6	57.3	-292.3	137.9
Upper Neck Fz	N	1707.8	78.3	-152.3	121.0	1034.7	81.1	-131.0	136.1
Upper Neck F Resultant	N	1755.4	78.3	-	-	1038.0	81.1	-	-
Upper Neck Mx	N-m	21.0	88.7	-5.3	121.4	21.4	86.8	-12.0	131.6
Upper Neck My	N-m	40.5	143.7	-26.7	89.0	27.3	148.5	-13.6	199.9
Upper Neck Mz	N-m	5.6	86.9	-3.3	118.5	17.6	105.9	-12.6	70.1
Upper Neck M Resultant	N-m	40.6	143.7	-	-	30.0	148.5	-	-
Chest X	g	3.0	178.4	-47.3	73.2	1.8	174.2	-48.5	73.1
Chest Y	g	5.2	80.8	-4.9	50.1	4.8	34.1	-7.2	86.5
Chest Z	g	13.1	79.6	-8.4	122.8	15.5	79.7	-8.7	118.9
Chest Resultant	g	47.6	73.1	-	-	48.6	73.1	-	-

† Wire Cut: 65 ms

†† Channel Opened: 74-107 ms

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

Vehicle Year/Make/Model/Body Style: 2004 Toyota 4Runner SUV

NHTSA Test No.: M45110 Test Date: April 22, 2004

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Redundant Chest X	g	3.1	178.4	-47.3	73.2	1.9	174.3	-48.2	73.6
Redundant Chest Y	g	5.4	83.1	-4.7	49.9	5.0	34.1	-6.9	86.5
Redundant Chest Z	g	13.4	79.6	-8.3	122.8	15.6	79.7	-8.6	118.6
Redundant Chest Resultant	g	47.6	73.1	-	-	48.4	73.6	-	-
Chest Displacement	mm	0.0	20.5	-33.7	80.6	0.0	6.1	-29.9	79.7
Pelvic X	g	6.1	115.7	-64.2	64.0	-	-	-61.2††	65.7
Pelvic Y	g	9.7	99.8	-7.2	63.6	‡	-	‡	-
Pelvic Z	g	1.5	183.2	-30.9	64.6	1.8	32.9	-23.7	67.7
Pelvic Resultant	g	70.7	64.0	-	-	65.2††	66.7	-	-
Left Femur	N	954.1	49.0	-1556.8	67.8	215.3	25.9	-2708.7	66.8
Right Femur	N	900.0	59.6	-664.1	63.7	524.0	68.8	-1046.5	57.0
Left Upper Tibia Mx	N-m	59.6	69.6	-0.8	199.9	10.6	54.4	-43.6	72.3
Left Upper Tibia My	N-m	47.5	59.5	-69.1	33.0	105.7	48.6	-38.3	33.7
Left Lower Tibia Fz	N	572.6	60.8	-2645.6	32.7	129.5	132.8	-2234.3	63.4
Left Lower Tibia Mx	N-m	20.9	69.9	-10.5	113.2	8.5	52.8	-35.7	72.7
Left Lower Tibia My	N-m	44.0	111.2	-23.2	61.7	70.5	73.0	-10.1	33.0
Right Upper Tibia Mx	N-m	32.3	104.0	-13.2	57.8	2.3	182.3	-35.3	60.9
Right Upper Tibia My	N-m	23.3	111.2	-71.1	52.5	51.3	99.6	-67.8	68.3
Right Lower Tibia Fz	N	242.7	136.3	-2960.5	56.9	161.5	125.7	-1998.4	76.1
Right Lower Tibia Mx	N-m	44.0	60.8	-1.6	193.8	2.0	33.4	-18.0	73.6
Right Lower Tibia My	N-m	39.5	66.5	-26.0	51.8	50.3	79.4	-47.6	33.3
Left Foot Aft Ax	g	20.0	110.1	-79.6	64.1	22.5	73.8	-76.3	61.2
Left Foot Aft Az	g	7.4	112.0	-61.7	66.8	1.5	68.8	-23.1	62.6
Left Foot Fore Az	g	64.5	33.4	-104.9	68.8	67.2	58.8	-103.9	51.3
Right Foot Aft Ax	g	18.4	94.6	-78.8	50.2	22.8	73.2	-64.4	61.2
Right Foot Aft Az	g	20.4	67.5	-77.8	52.6	14.5	47.6	-30.7	75.4
Right Foot Fore Az	g	26.4	68.8	-94.5	49.7	31.3	60.8	-39.1	66.4
Lap Belt Load	N	10009.6	64.6	-20.4	182.0	8471.0	63.9	-23.2	152.9
Torso Belt	N	13343.8†	112.9	-562.9†	10.2	6087.2	49.2	-32.3	162.8

† Questionable Data

†† Invalid Data: 70 ms – 89 ms

‡ Invalid Data: 71 ms – 78 ms

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

Vehicle Year/Make/Model/Body Style: 2004 Toyota 4Runner SUV

NHTSA Test No.: M45110 Test Date: April 22, 2004

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	585.7	67.0	96.3	52.5
Position #2 - Passenger	379.8	61.3	97.3	40.7

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

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	46.0	71.7	74.7	442.3
Position #2 - Passenger	46.8	71.8	74.8	384.2

* 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 Toyota 4Runner SUV

NHTSA Test No.: M45110 Test Date: April 22, 2004

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	596.7	67.0	96.3	53.0
Position #2 - Passenger	329.9	61.4	97.3	38.4

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

CLIP SUMMARY* REDUNDANT				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	46.0	71.6	74.6	445.8
Position #2 - Passenger	46.3	71.9	74.9	376.0

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

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 15 mm molding.

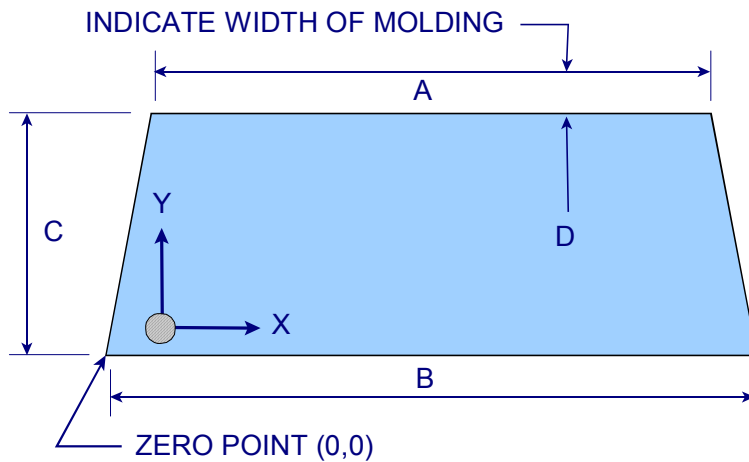
FMVSS 212 REQUIREMENTS:

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	2055	2055	100.0%
LEFT SIDE	2055	2055	100.0%
TOTAL	4110	4110	100.0%

AREA OF RETENTION FAILURE:



DIMENSIONS (mm)	
A	1220
B	1480
C	705
D	15

FRONT VIEW OF WINDSHIELD

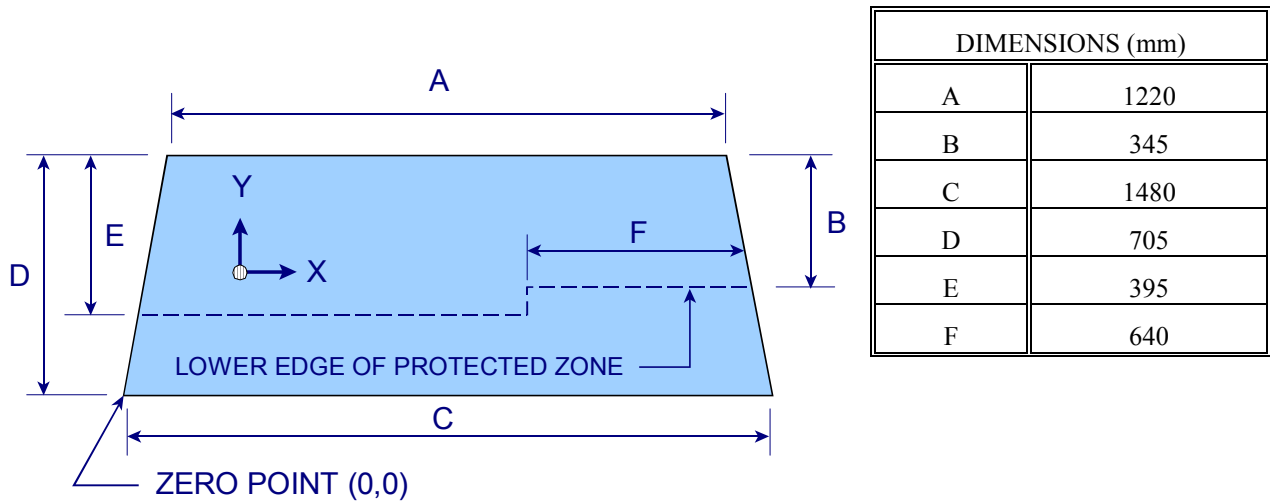
FAILURE DETAILS: None

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

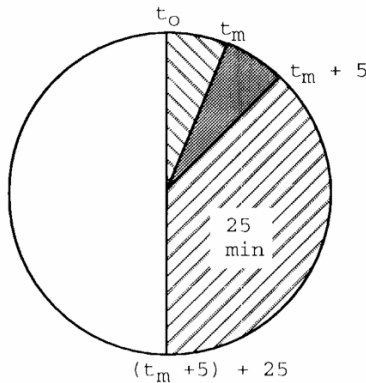
NHTSA TEST No.: M45110 TEST DATE: April 22, 2004
VEHICLE MAKE/MODEL: 2004 Toyota 4Runner SUV

The test vehicle was filled from 92% to 94% of the manufacturer'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

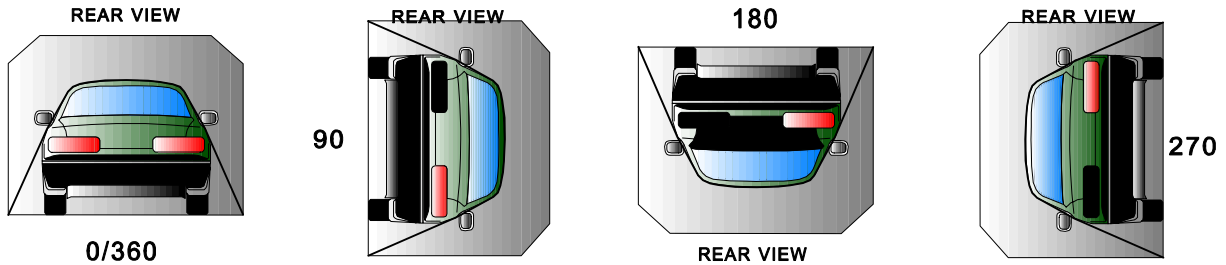
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

DATA SHEET NO. 13 - ROLLOVER DATA

Vehicle: 2004 Toyota 4Runner SUV

NHTSA No.: M45110



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

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

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

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

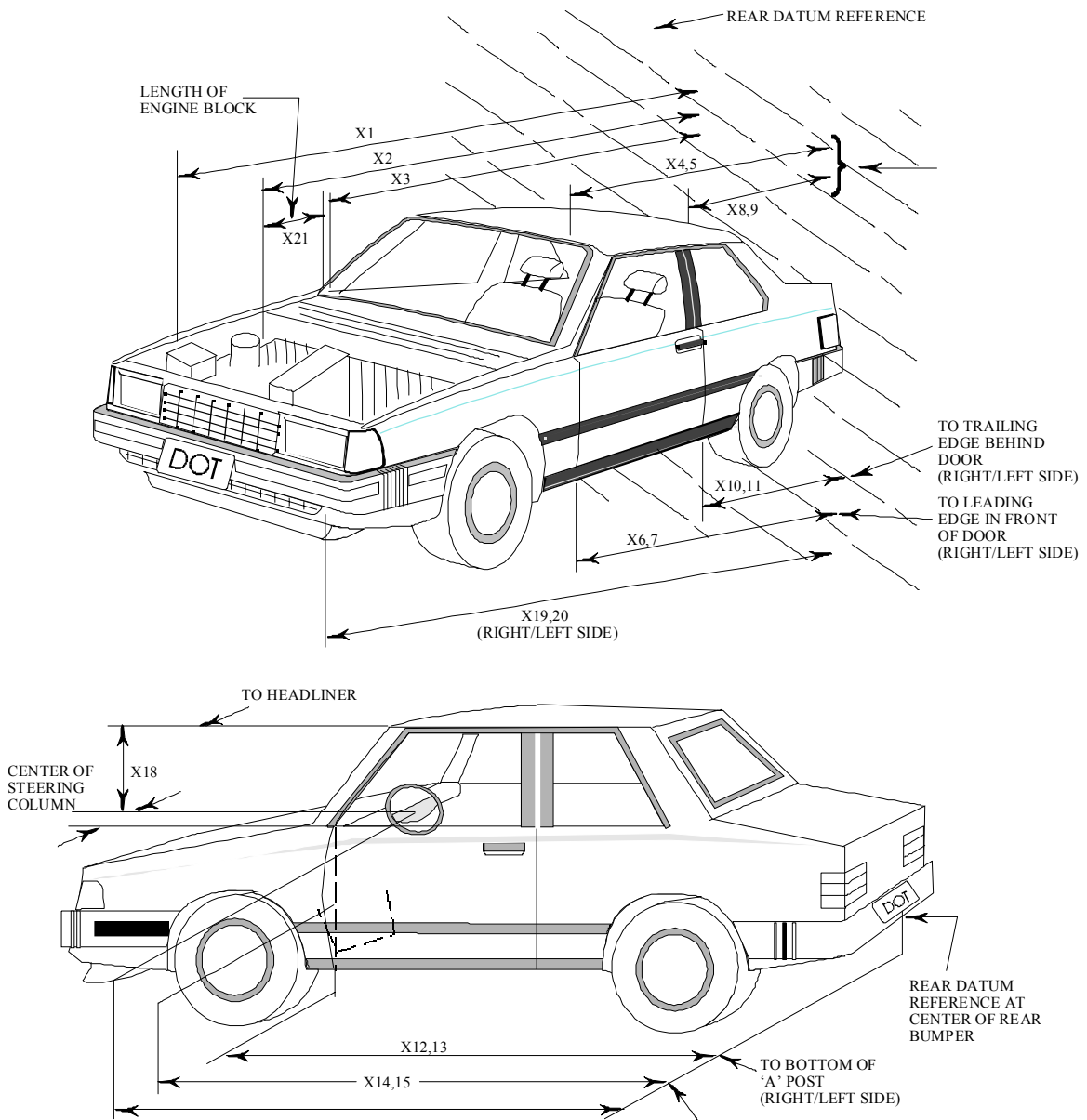
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	-
90° - 180°	0	0	0	-
180°-270°	0	0	0	-
270°-360°	0	0	0	-

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

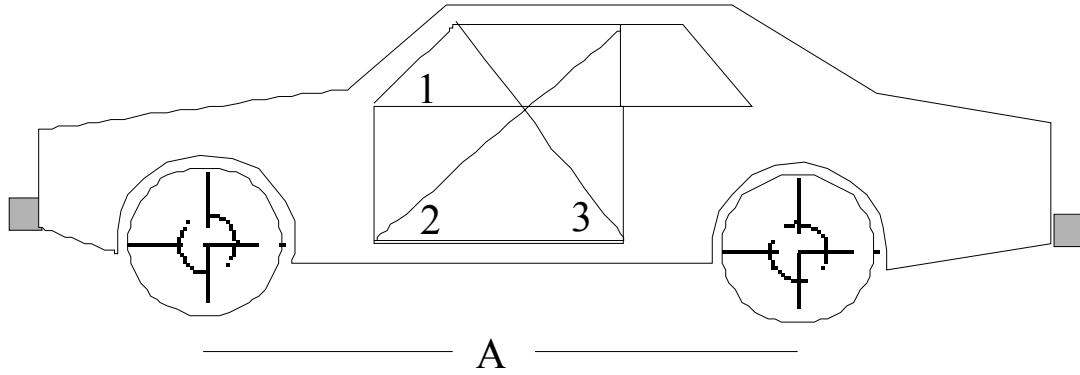


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4786	4208	578
X2	Rear Surface of Vehicle to Front of Engine	4095	3952	143
X3	Rear Surface of Vehicle to Firewall	3532	3452	80
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3263	3254	9
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3267	3259	8
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3253	3236	17
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3245	3241	4
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2189	2184	5
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2192	2192	0
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2183	2174	9
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2183	2185	-2
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3315	3302	13
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3319	3312	7
X14	Rear Surface of Vehicle to Firewall, Right Side	3559	3502	57
X15	Rear Surface of Vehicle to Firewall, Left Side	3560	3497	63
X16	Rear Surface of Vehicle to Steering Column	2835	2810	25
X17	Center of Steering Column to "A" Post	307	333	-26
X18	Center of Steering Column to Headliner	395	419	-24
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4782	4238	544
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4785	4223	562
X21	Length of Engine Block	567	567	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3046	3039	7
CD	Rear Surface of Vehicle to Center of Dash Panel	3112	3099	13
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3059	3039	20

All Dimensions in mm

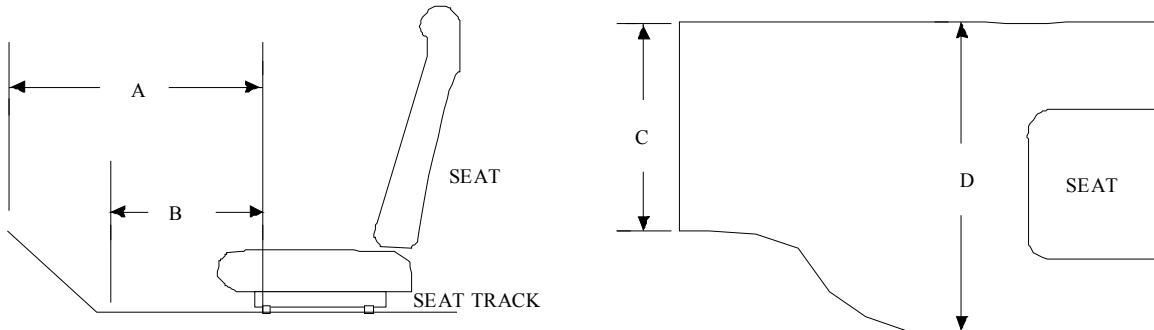
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	1009	1476	1104	1007	1467	1112
AFTER TEST	1005	1459	1095	1002	1460	1108
DIFFERENCE	4	17	9	5	7	4

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2793	2793
AFTER TEST	2758	2733
DIFFERENCE	35	60

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



DRIVER

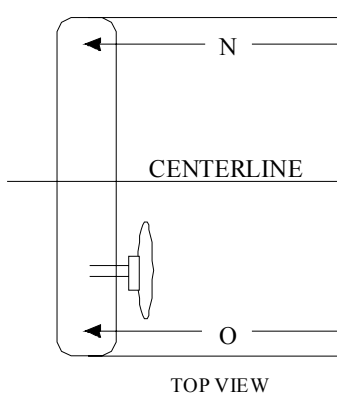
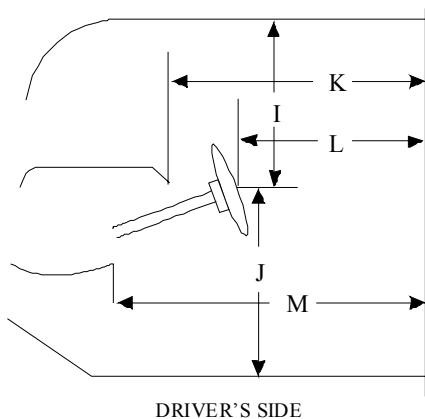
Measurement	Pre-Test	Post-Test	Difference
A	694	634	60
B	510	499	11
C	463	456	7
D	467	476	-9

PASSENGER

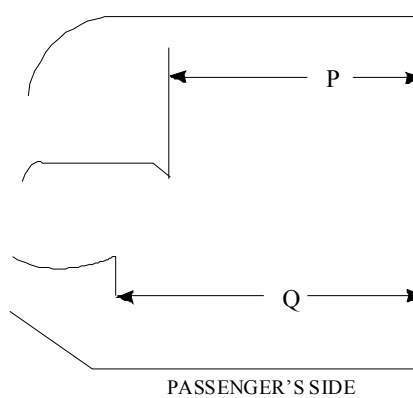
Measurement	Pre-Test	Post-Test	Difference
A	669	646	23
B	413	411	2
C	416	419	-3
D	455	431	24

Units = mm

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



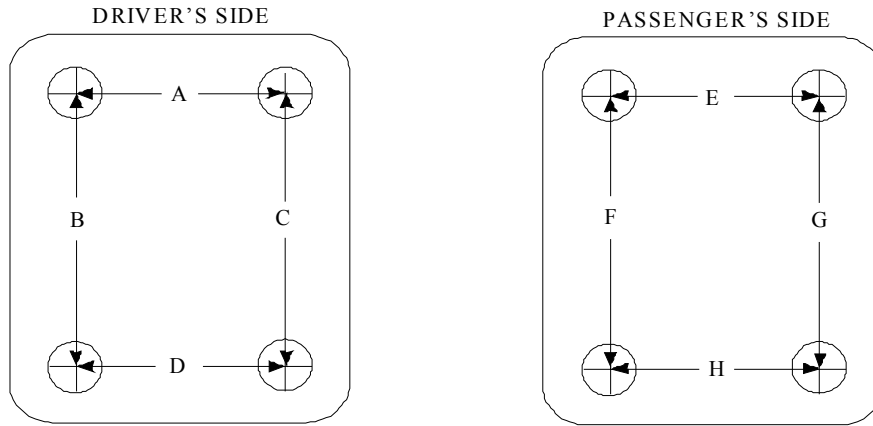
MEASUREMENTS
 FROM C-PILLAR
 BELT ANCHORAGE



Measurement	Pre-Test	Post-Test	Difference
I	395	419	-24
J	646	632	14
K	1777	1767	10
L	1562	1537	25
M	1850	1848	2
N	1780	1776	4
O	1786	1767	19
P = K (PASS.)	1768	1766	2
Q = M (PASS.)	1810	1809	1

Units = mm

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

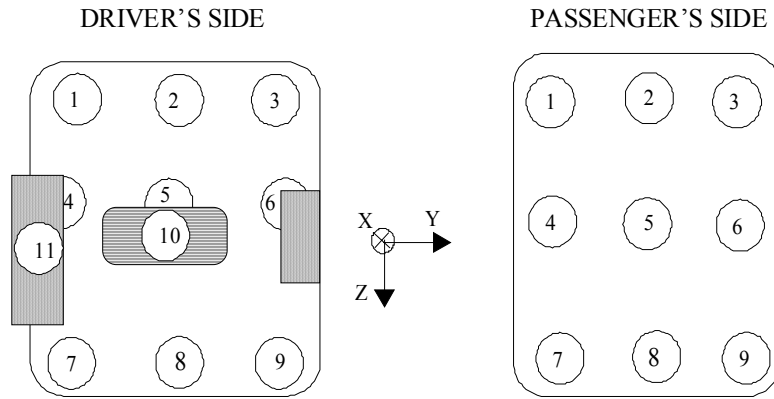


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	463	456	7
B	334	359	-25
C	306	298	8
D	467	476	-9
E	416	419	-3
F	355	355	0
G	260	298	-38
H	455	431	24

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	3530	3491	39	-761	-786	25
2	3489	3426	63	-738	-794	56
3	3519	3471	48	-726	-780	54
4	3435	3417	18	-609	-630	21
5	3471	3394	77	-615	-632	17
6	3449	3366	83	-617	-617	0
7	3305	3300	5	-542	-532	-10
8	3305	3291	14	-541	-543	2
9	3285	3272	13	-538	-538	0
10	3339	3339	0	-701	-690	-11
11	3366	3353	13	-609	-611	2

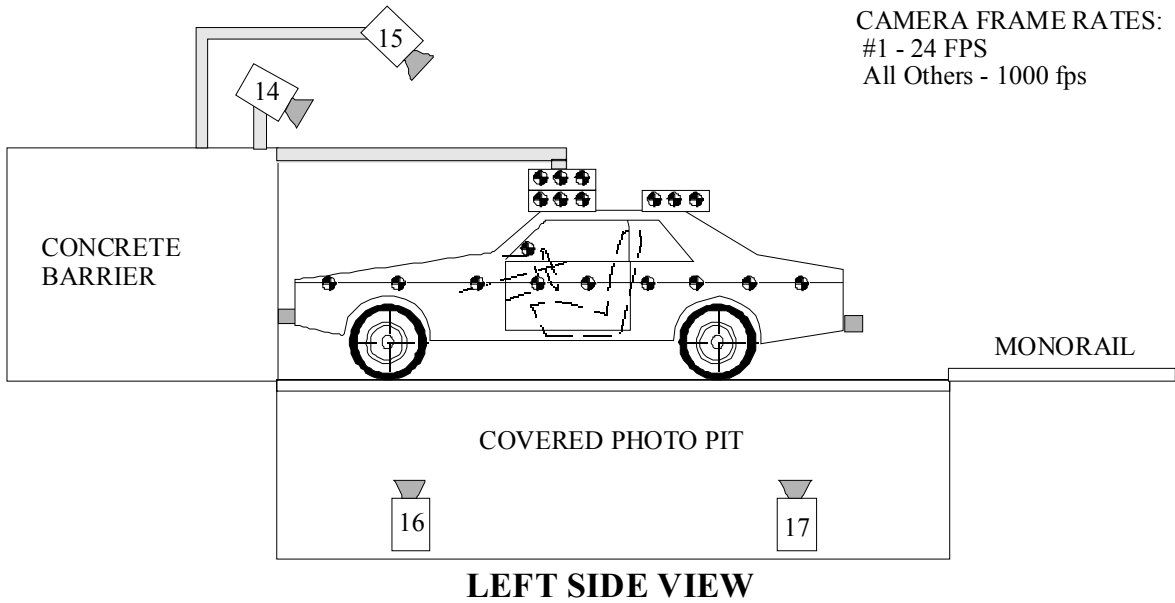
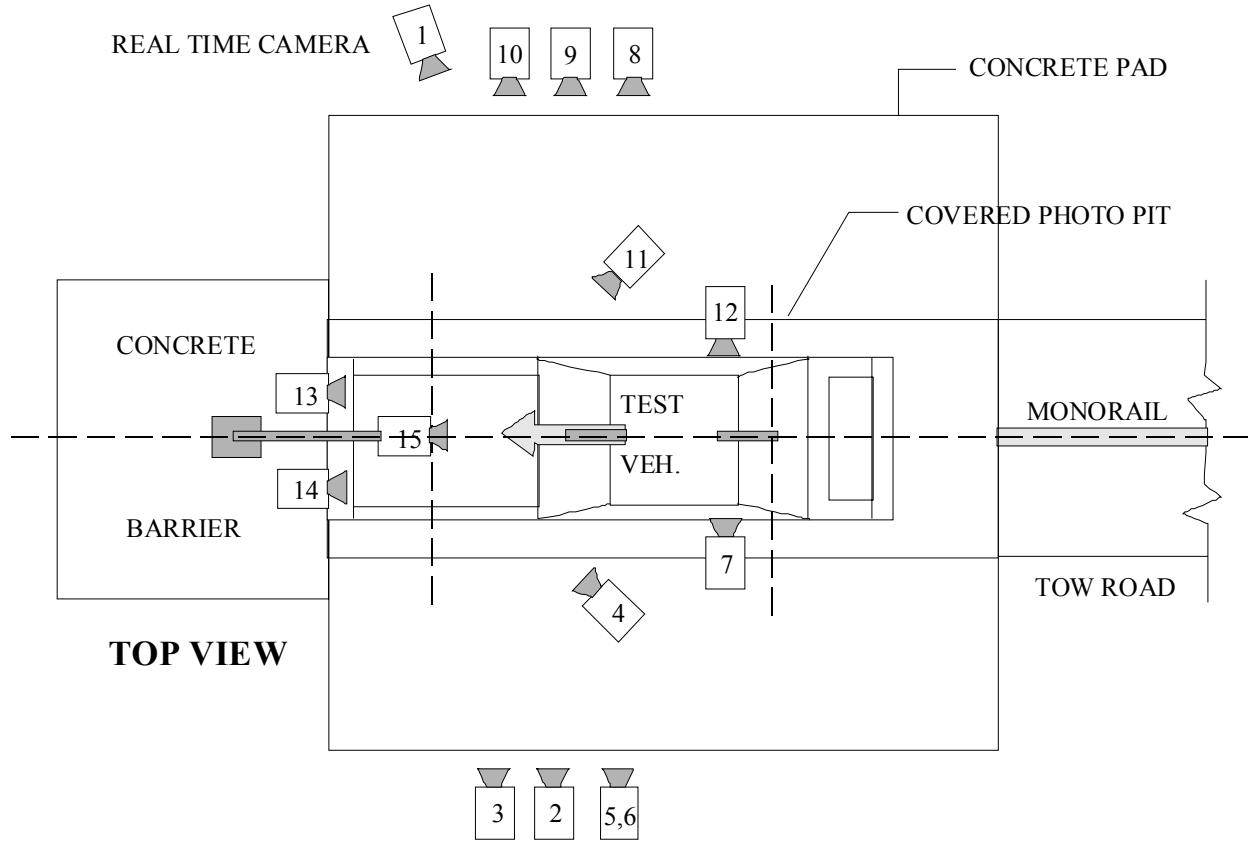
Passenger Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3443	3393	50	-680	-692	12
2	3467	3436	31	-694	-704	10
3	3465	3436	29	-700	-693	-7
4	3331	3313	18	-578	-578	0
5	3356	3344	12	-581	-586	5
6	3376	3360	16	-575	-562	-13
7	3188	3174	14	-531	-528	-3
8	3211	3201	10	-527	-522	-5
9	3226	3216	10	-531	-528	-3

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.



CAMERA FRAME RATES:
 #1 - 24 FPS
 All Others - 1000 fps

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

NHTSA Test No.: M45110 Vehicle: 2004 Toyota 4Runner 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	6716	1593	1090	-2.8	6259	12.5	1025
3	Left Side View	7718	1118	1055	-1.3	7261	25	1000
4	Driver and Interior View	6871	2647	2052	-7.9	-	25	1055
5	Steering Column (Bottom)	7408	1883	1165	-1.6	6951	25	1020
6	Steering Column (Top)	7408	1883	1810	-6.6	6951	25	1020
7	Left CRS View	970	2790	1235	-23.5	-	28-70	1000
8	Overall Right Side	6831	2218	1108	-1.9	7156	12.5	1015
9	Right Side View	8070	1210	1100	-1.4	8395	25	1020
10	Right Passenger View	7995	1815	1395	-2.3	8320	35	1025
11	Passenger and Interior View	7280	2777	1975	-7.1	-	25	1010
12	Right CRS View	970	2790	1255	-23.5	-	28-70	1000
13	Passenger Front View	620	-92	1987	-30.0	-	13	1020
14	Driver Front View	620	-92	1987	-30.0	-	13	1005
15	Windshield View	0	-530	3374	-500.	-	13	1005
16	Pit View of Engine	0	615	-3048	90.0	-	13	1005
17	Pit View of Fuel Tank	0	2700	-3048	90.0	-	13	970

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

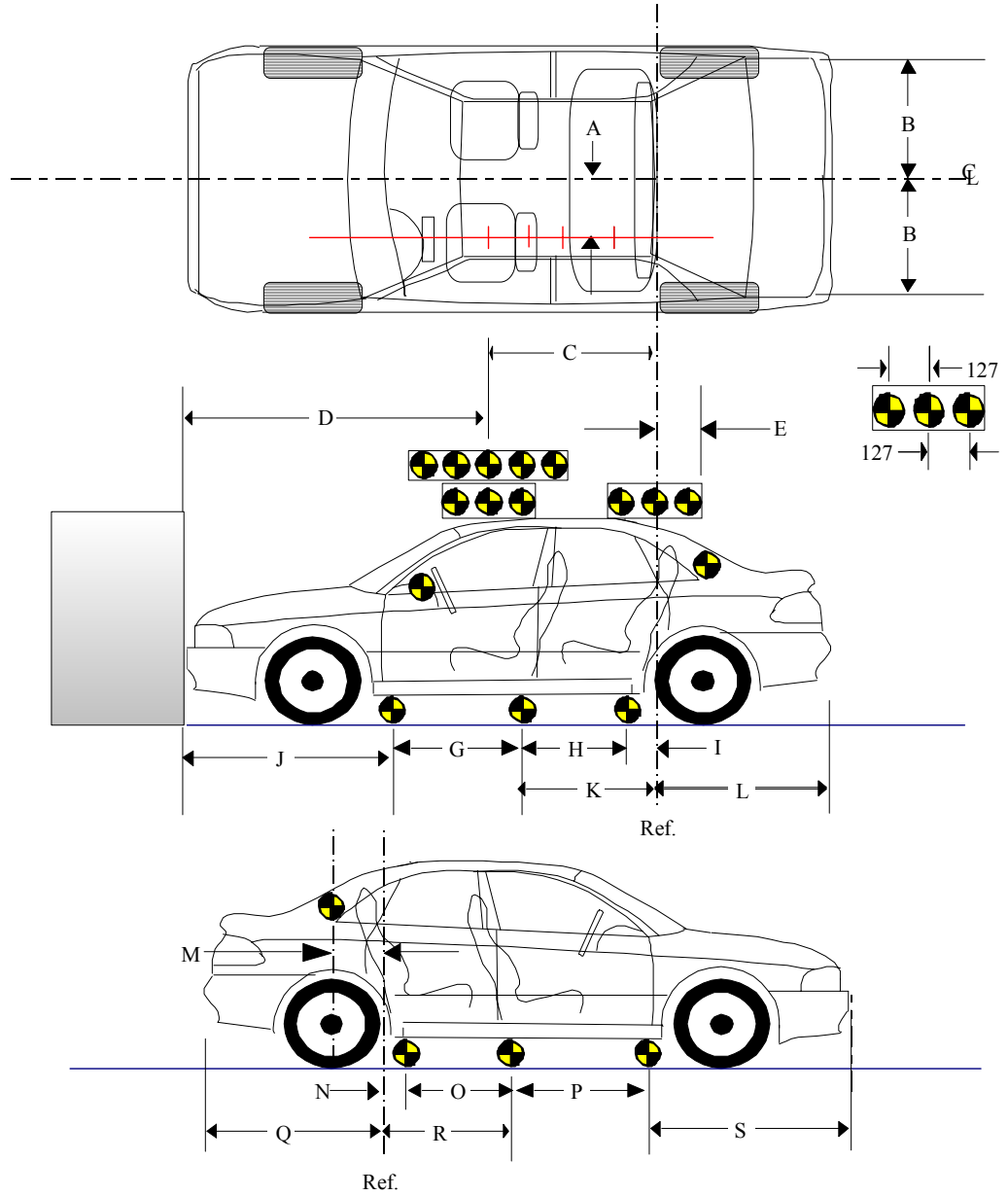
Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

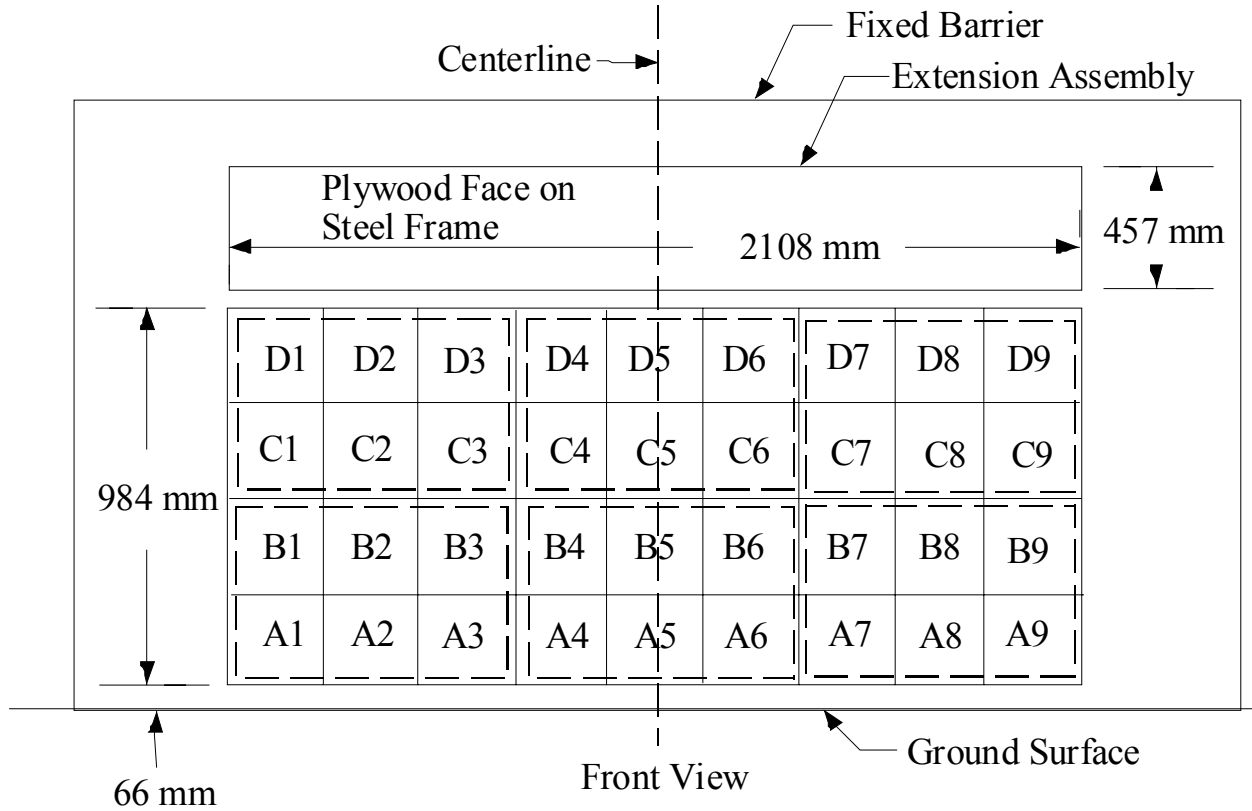
(Dimensions in millimeters)

A	401
B	782
C	1221
D	2103
E	187
F	1555
G	872
H	879
I	122
J	1441
K	1001
L	1472
M	197
N	73
O	882
P	872
Q	1530
R	955
S	1429



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.: M45110; Test Date: April 22, 2004; Technician: Lawrence Q. Valvo

Vehicle Model Year/Make/Model: 2004 Toyota 4Runner SUV

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

B. Size of vent holes: (mm²) 804 -Driver 3217 -Passenger

C. Total vent area: (mm²) 1608 -Driver 6434 -Passenger

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

Driver: 600 -Height; 600 -Width; 320 -Depth

Passenger: 600 -Height; 420 -Width; 340 -Depth

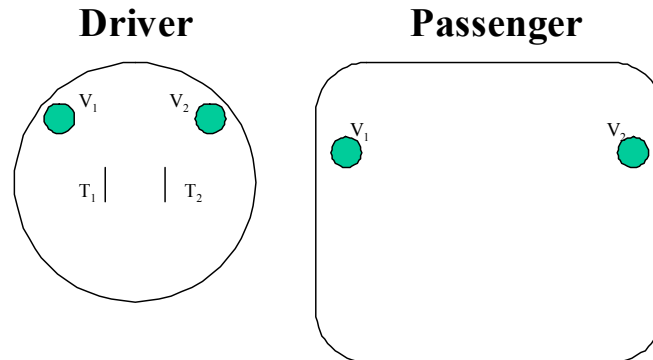
E. Is the air bag tethered?

Driver: X -Yes; - -No; If yes, record length of tether- 370

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

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

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



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

Driver: Air bag: GA120-00540; 543095173

 Generator: -

Passenger: Air bag: *TEHPYT09AYR*

 Generator: -

DATA SHEET NO. 19 ACCIDENT INVESTIGATION DIVISION DATA

FOR FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Toyota 4Runner SUV

NHTSA Test No.: M45110 VIN: JTEBU17R640032881

Model Year: 2004 Build Date: 12/03 Test Date: April 22, 2004

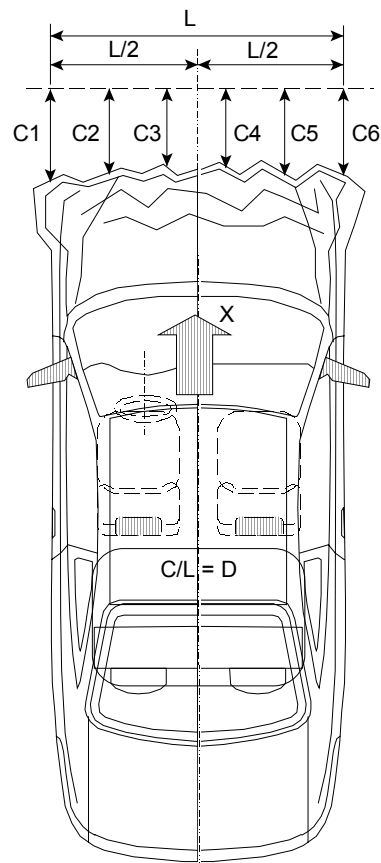
Vehicle Size Category: MPV Test Weight: 2277.0 kg

Vehicle Wheelbase: 2793 mm; Front Overhang: 917 mm; Overall Width: 1875 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4597	4238	359
C2 =	4762	4186	576
C3 =	4782	4202	580
C4 =	4785	4206	579
C5 =	4765	4197	568
C6 =	4603	4247	356



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region:

L1=	<u>1572</u>	mm
L2=	<u>786.0</u>	mm
L5=	<u>314.4</u>	mm

APPENDIX A
PHOTOGRAPHS

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A-54	Pre-Test Passenger Floor Pan View	A-57
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A-56	Post-Test Passenger Head View	A-59
A-57	Post-Test Passenger Contact To Airbag	A-60
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A-59	Impact View	A-62



Figure A-1 LOAD CELL LOCATIONS

* MFD. BY: TOYOTA MOTOR CORPORATION
 GVWR: 2525KG (5570LB)
 GAWR: FRT. 1150KG (2540LB) WITH P265/65R17 TIRES.
 17X7 1/2JJ RIMS. AT 220KPA (32PSI) COLD.
 RR. 1385KG (3050LB) WITH P265/65R17 TIRES.
 17X7 1/2JJ RIMS. AT 220KPA (32PSI) COLD.
 THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR
 VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT
 ON THE DATE OF MANUFACTURE SHOWN ABOVE.
 JTEBU17R640032881 MPV
 GRN215L-GKPZKA
 C/TR 056/LB42
 A/TM A02A/
 A340F
 MADE IN JAPAN
 NO. 094

DATE 12/03

*
*

Figure A-2 VEHICLE CERTIFICATION PLACARD



TIRE AND LOADING INFORMATION

SEATING CAPACITY: TOTAL 7
FRONT 2: REAR 5

The combined weight of occupants and cargo should never exceed 477 kg or 1050 lbs.

ORIGINAL TIRE SIZE	COLD TIRE INFLATION PRESSURE	
	P265/65R17	FRONT
REAR		220kPa, 32PSI

SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION

35670

INFORMATION SUR LES PNEUS ET LE CHARGEMENT

NOMBRE DE PLACES ASSISES : TOTAL 7
AVANT 2: ARRIÈRE 5

Le poids total des occupants et du chargement ne doit jamais être supérieur à 477 kg ou 1050 lb.

DIMENSION DES PNEUS D'ORIGINE	PRESSION DE GONFLAGE À FROID	
	P265/65R17	AVANT
ARRIÈRE		220kPa, 32PSI

POUR DE PLUS AMPLES INFORMATIONS, VOIR LE MANUEL DU PROPRIÉTAIRE

SP

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



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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



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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



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Figure A-20 PRE-TEST ENGINE COMPARTMENT VIEW



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Figure A-21 POST-TEST ENGINE COMPARTMENT VIEW



Figure A-22 PRE-TEST FUEL CAP VIEW



Figure A-23 POST-TEST FUEL CAP VIEW



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Figure A-24 PRE-TEST FRONT UNDERBODY VIEW

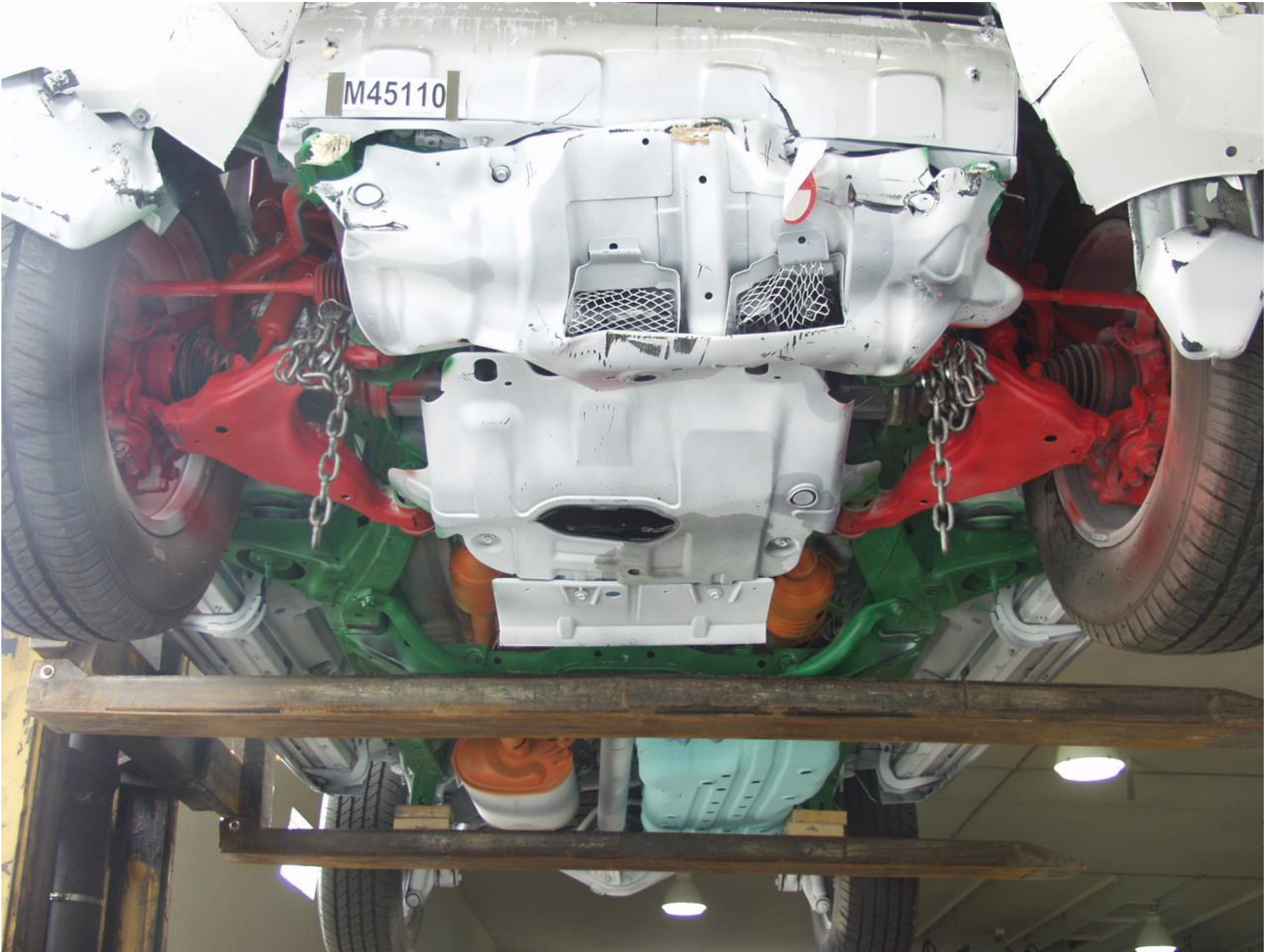


Figure A-25 POST-TEST FRONT UNDERBODY VIEW



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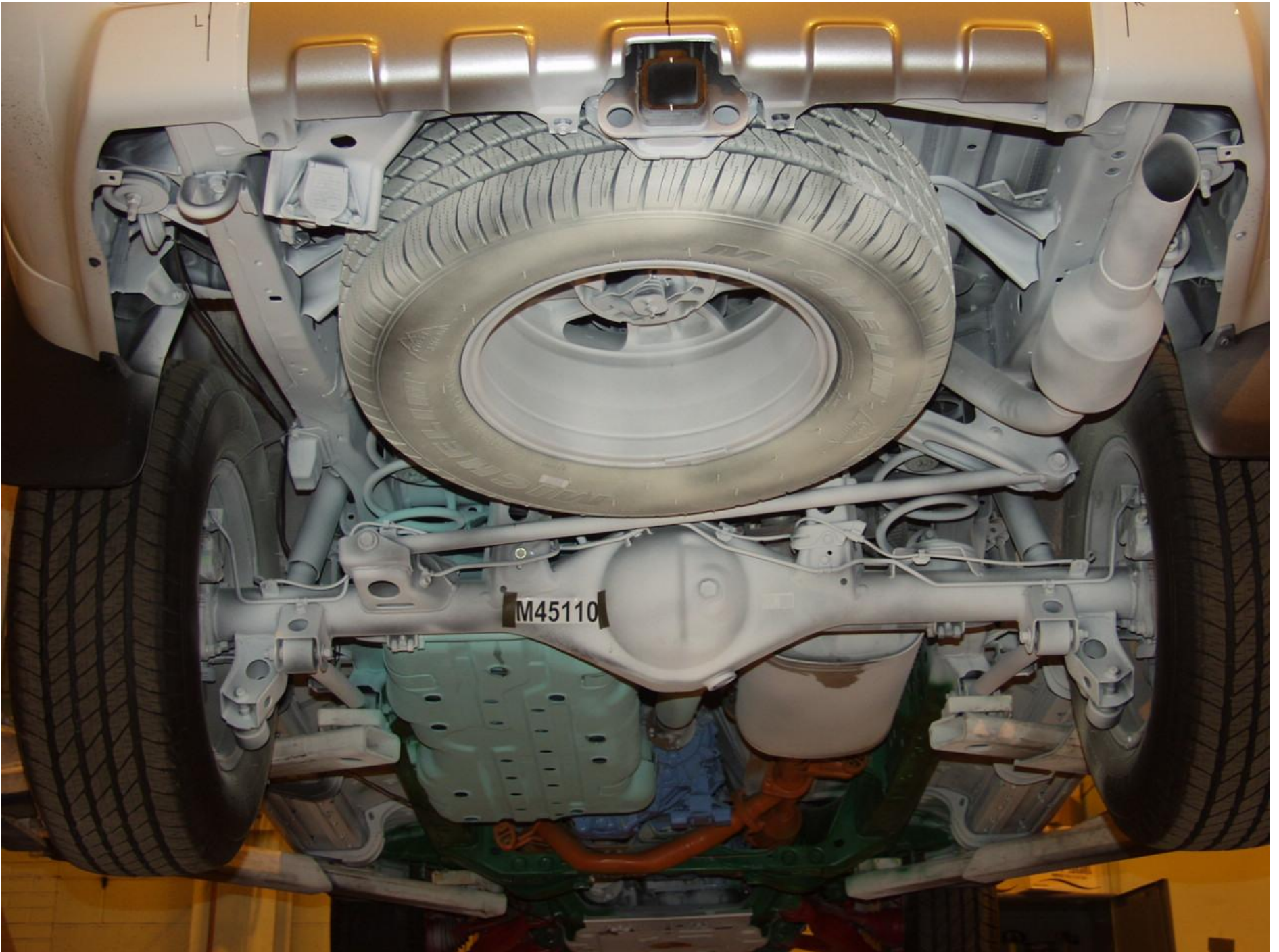
Figure A-26 PRE-TEST MID UNDERBODY VIEW



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Figure A-27 POST-TEST MID UNDERBODY VIEW



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Figure A-28 PRE-TEST REAR UNDERBODY VIEW



Figure A-29 POST-TEST REAR UNDERBODY VIEW



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Figure A-30 PRE-TEST DRIVER HEAD LOCATION



Figure A-31 POST-TEST DRIVER HEAD LOCATION

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Figure A-32 PRE-TEST DRIVER POSITION VIEW



Figure A-33 POST-TEST DRIVER POSITION VIEW



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Figure A-34 PRE-TEST DRIVER AND INTERIOR VIEW



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Figure A-35 POST-TEST DRIVER AND INTERIOR VIEW



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Figure A-36 PRE-TEST DRIVER FEET VIEW



Figure A-37 POST-TEST DRIVER FEET VIEW



Figure A-38 PRE-TEST DRIVER KNEE BOLSTER VIEW



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Figure A-39 POST-TEST DRIVER KNEE BOLSTER VIEW



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Figure A-40 PRE-TEST DRIVER FLOOR PAN VIEW



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Figure A-41 POST-TEST DRIVER FLOOR PAN VIEW



Figure A-42 POST-TEST DRIVER HEAD VIEW



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Figure A-43 POST-TEST DRIVER CONTACT TO AIRBAG



Figure A-44 PRE-TEST PASSENGER HEAD LOCATION

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Figure A-45 POST-TEST PASSENGER HEAD LOCATION

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Figure A-46 PRE-TEST PASSENGER POSITION VIEW



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Figure A-47 POST-TEST PASSENGER POSITION VIEW



Figure A-48 PRE-TEST PASSENGER AND INTERIOR VIEW



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Figure A-49 POST-TEST PASSENGER AND INTERIOR VIEW



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Figure A-50 PRE- TEST PASSENGER FEET VIEW



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Figure A-51 POST-TEST PASSENGER FEET VIEW



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Figure A-52 PRE-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-53 POST-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-54 PRE-TEST PASSENGER FLOOR PAN VIEW



Figure A-55 POST-TEST PASSENGER FLOOR PAN VIEW



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Figure A-56 POST-TEST PASSENGER HEAD VIEW



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Figure A-57 POST-TEST PASSENGER CONTACT TO AIRBAG



Figure A-58 ROLLOVER VIEW



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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. M45110

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

Table of Data Plots

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

Table of Data Plots (Continued)

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 Ax [g, CFC_600]	B-55
49	V1P1 Left Foot Aft Az [g, CFC_600]	B-56
50	V1P1 Left Foot Fore Az [g, CFC_600]	B-57
51	V1P1 Right Foot Aft x [g, CFC_600]	B-58
52	V1P1 Right Foot Aft z [g, CFC_600]	B-59
53	V1P1 Right Foot Fore z [g, CFC_600]	B-60
54	V1 Driver Lap Belt [N, CFC_60]	B-61
55	V1 Driver Torso Belt [N, CFC_60]	B-62
56	V1P2 Head 9 Array X Arm y [g, CFC_1000]	B-63
57	V1P2 Head 9 Array X Arm z [g, CFC_1000]	B-64
58	V1P2 Head 9 Array Y Arm x [g, CFC_1000]	B-65
59	V1P2 Head 9 Array Y Arm z [g, CFC_1000]	B-66
60	V1P2 Head 9 Array Z Arm x [g, CFC_1000]	B-67
61	V1P2 Head 9 Array Z Arm y [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 [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 [N, CFC_600]	B-98
92	V1P2 Right Femur [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
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2004 NCAP Test 12 - 2004 Toyota 4Runner

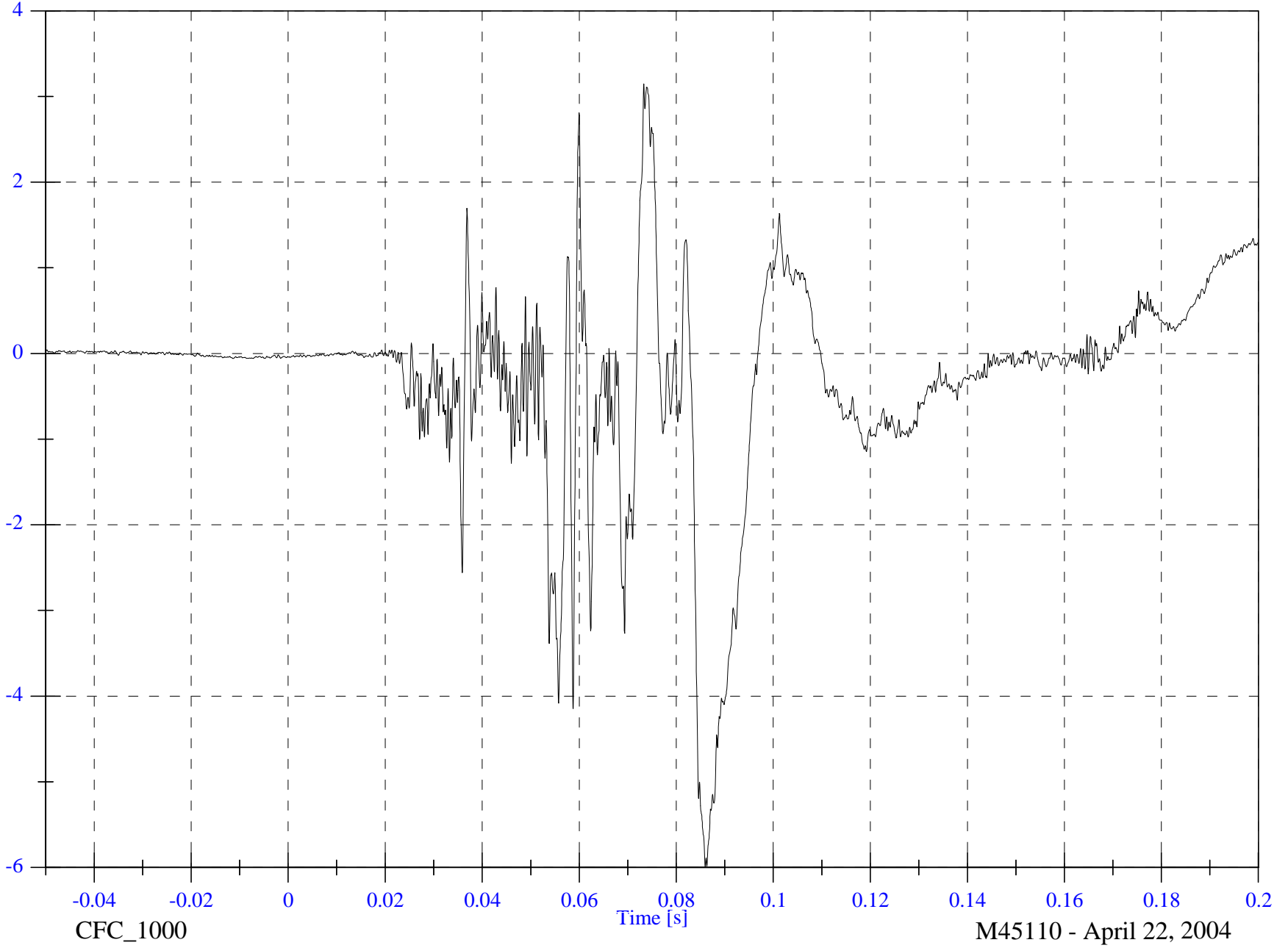
V1P1 Head 9 Array X Arm Ay

Max: 3.1 [g] at 0.073 [s]

Min: -6.0 [g] at 0.086 [s]

B-8

g



8642-NCAP-48

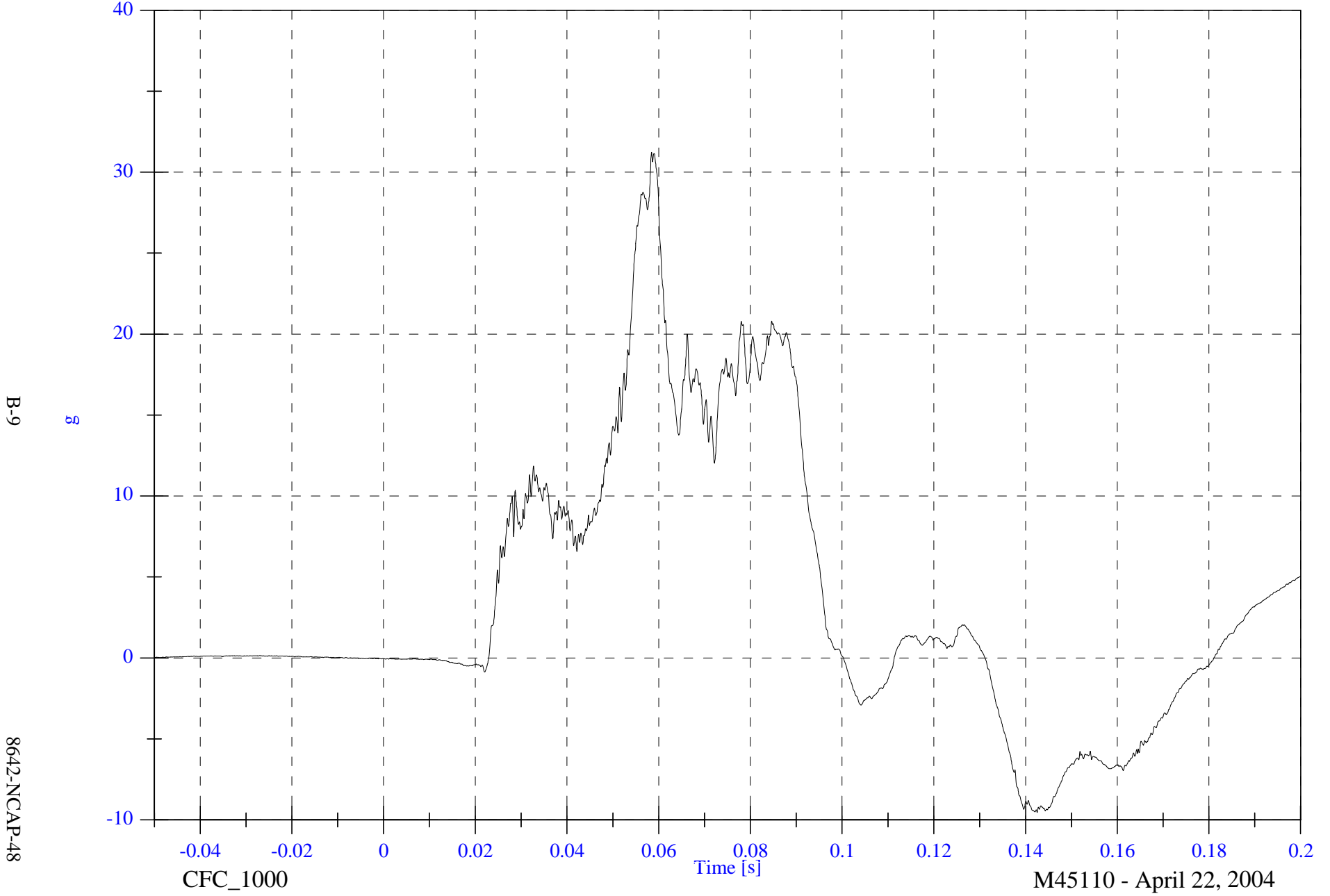
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP1 Head 9 Array X Arm Az

Max: 31.2 [g] at 0.058 [s]

Min: -9.5 [g] at 0.143 [s]



B-9

8642-NCAP-48

CFC_1000

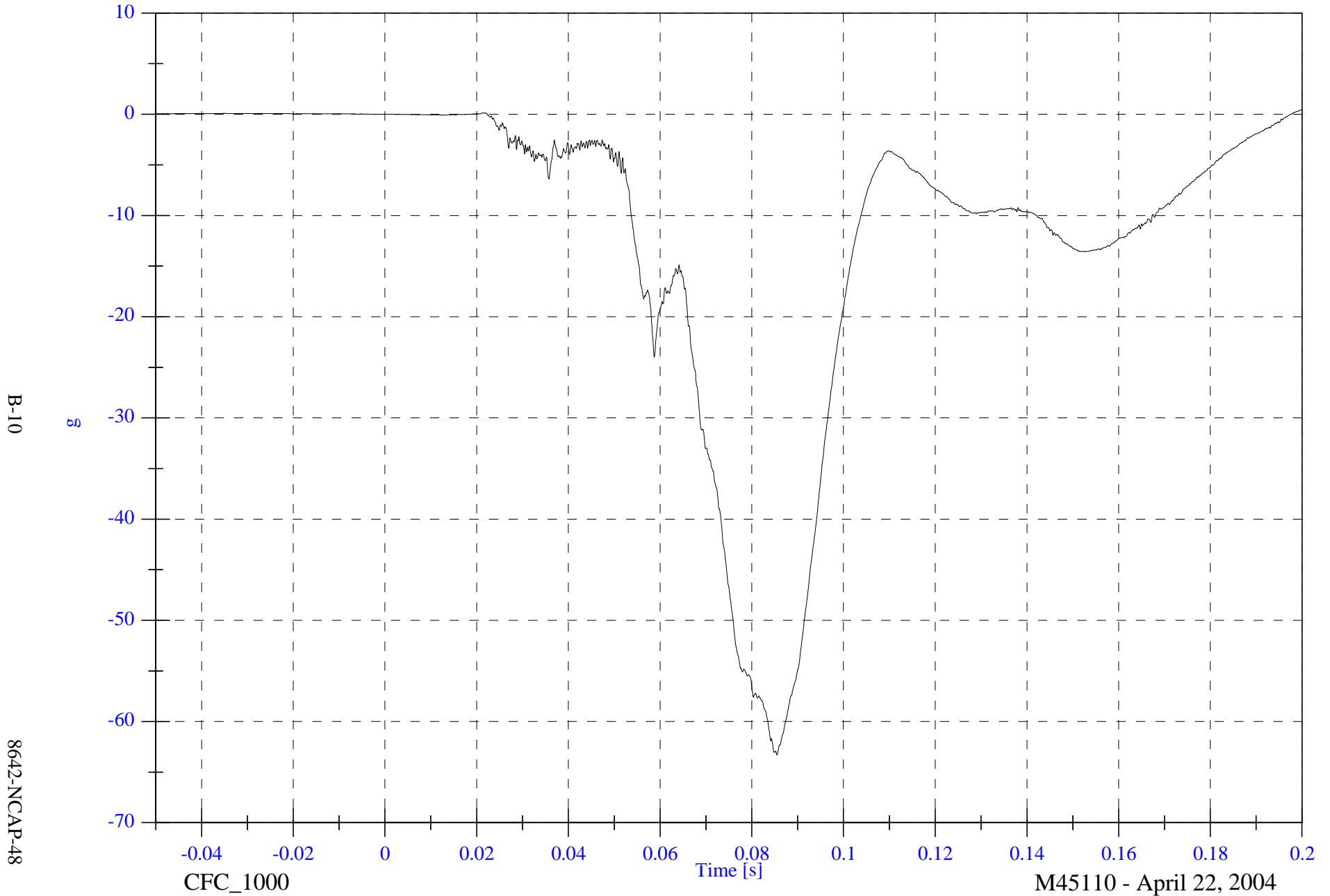
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P1 Head 9 Array Y Arm Ax

Max: 0.4 [g] at 0.200 [s]

Min: -63.3 [g] at 0.085 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

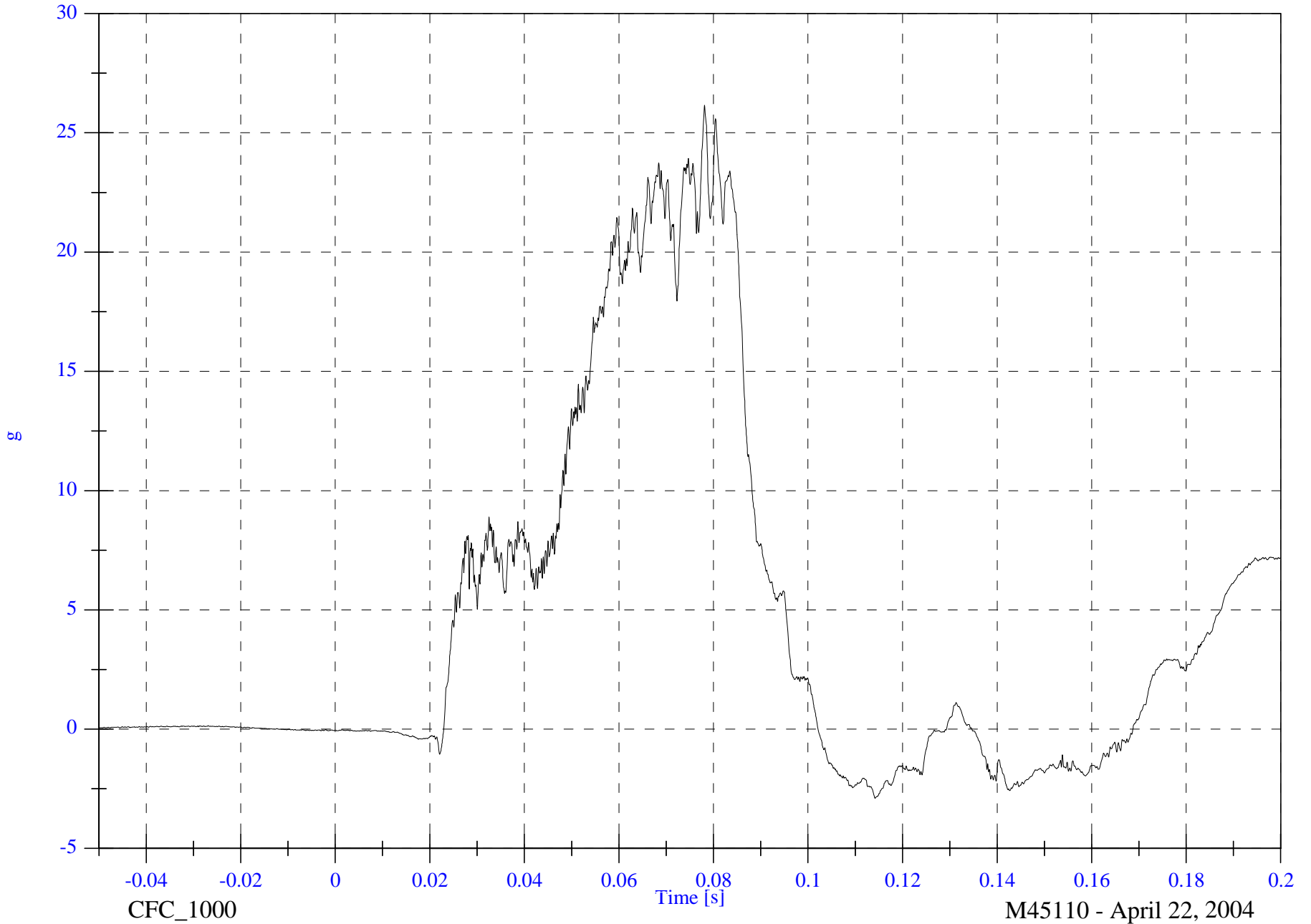
VIP1 Head 9 Array Y Arm Az

Max: 26.2 [g] at 0.078 [s]

Min: -2.9 [g] at 0.114 [s]

B-11

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

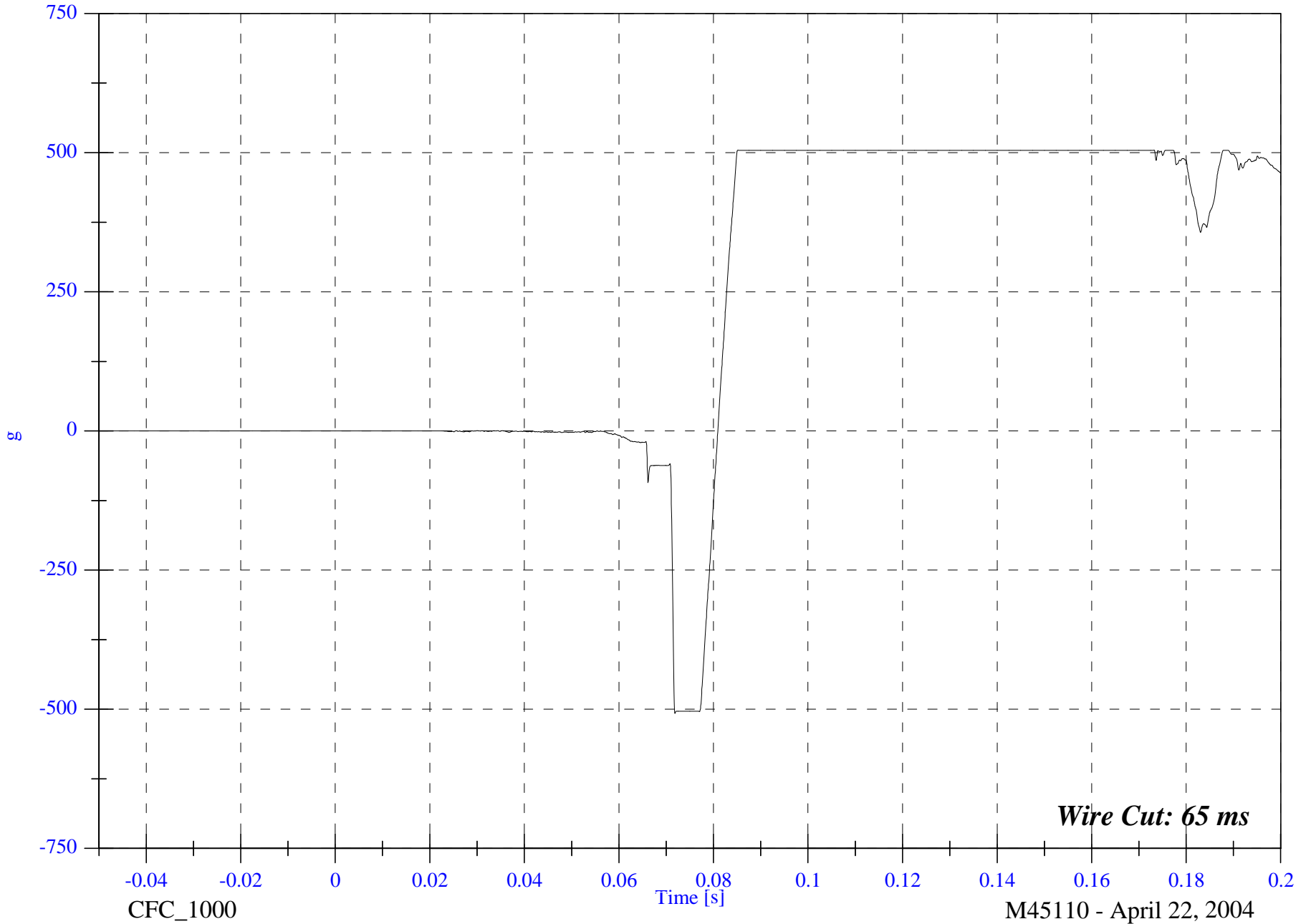
V1P1 Head 9 Array Z Arm Ax

Max: 504.5 [g] at 0.085 [s]

Min: -507.6 [g] at 0.072 [s]

B-12

8642-NCAP-48



Wire Cut: 65 ms

2004 NCAP Test 12 - 2004 Toyota 4Runner

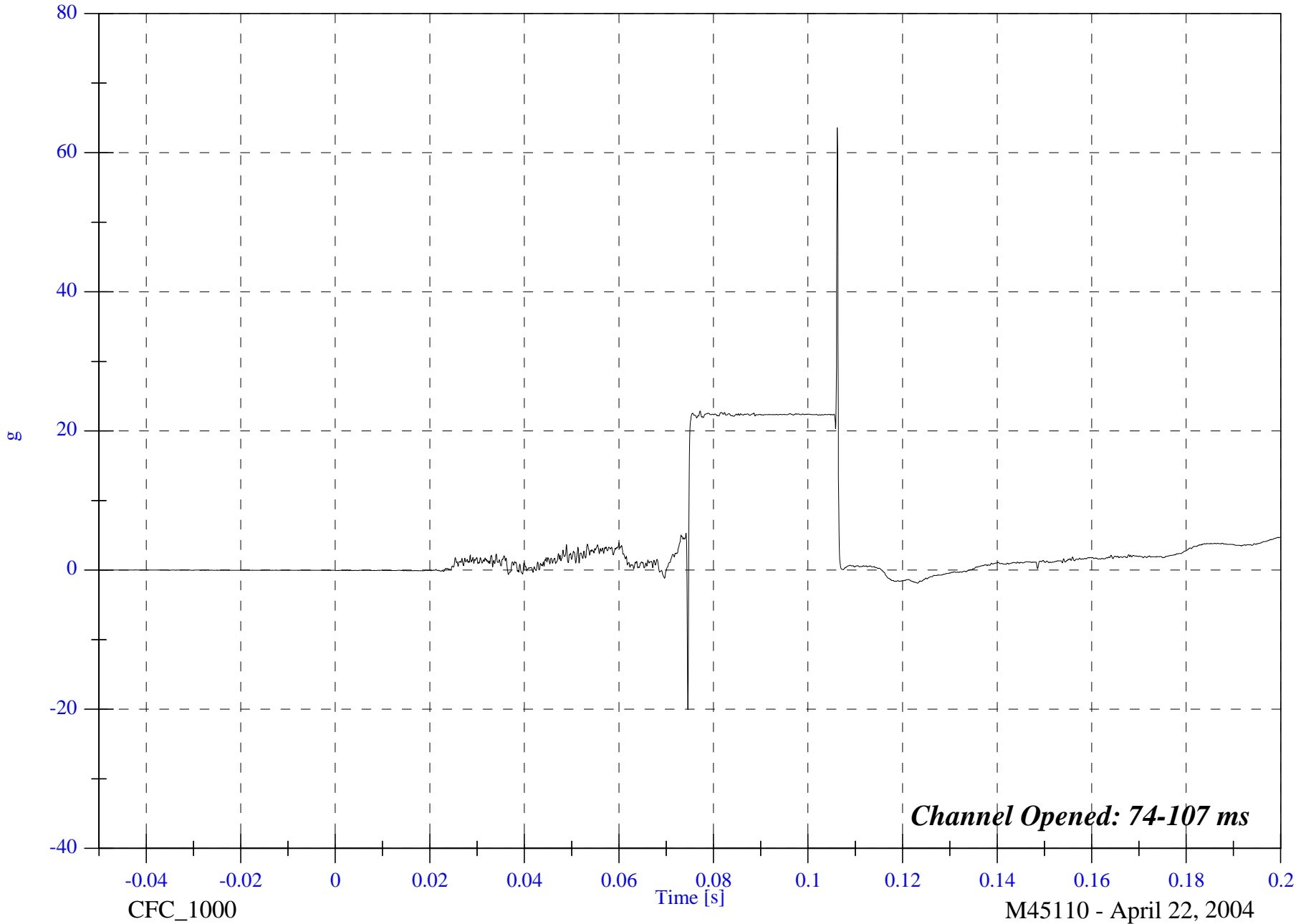
V1P1 Head 9 Array Z Arm Ay

Max: 63.6 [g] at 0.106 [s]

Min: -20.0 [g] at 0.075 [s]

B-13

8642-NCAP-48

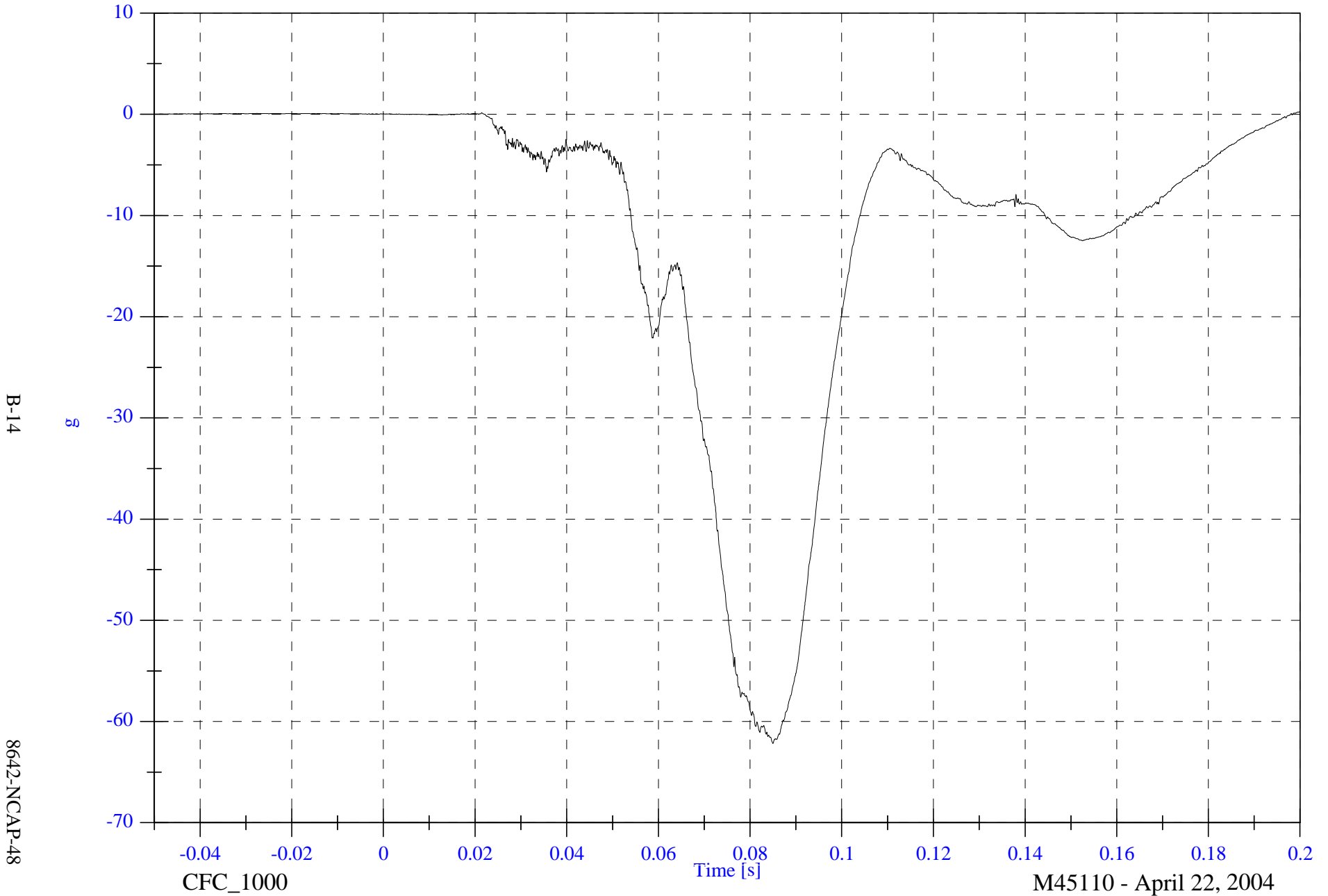


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P1 Head CG x

Max: 0.3 [g] at 0.200 [s]

Min: -62.2 [g] at 0.085 [s]



B-14

8642-NCAP-48

CFC_1000

Time [s]

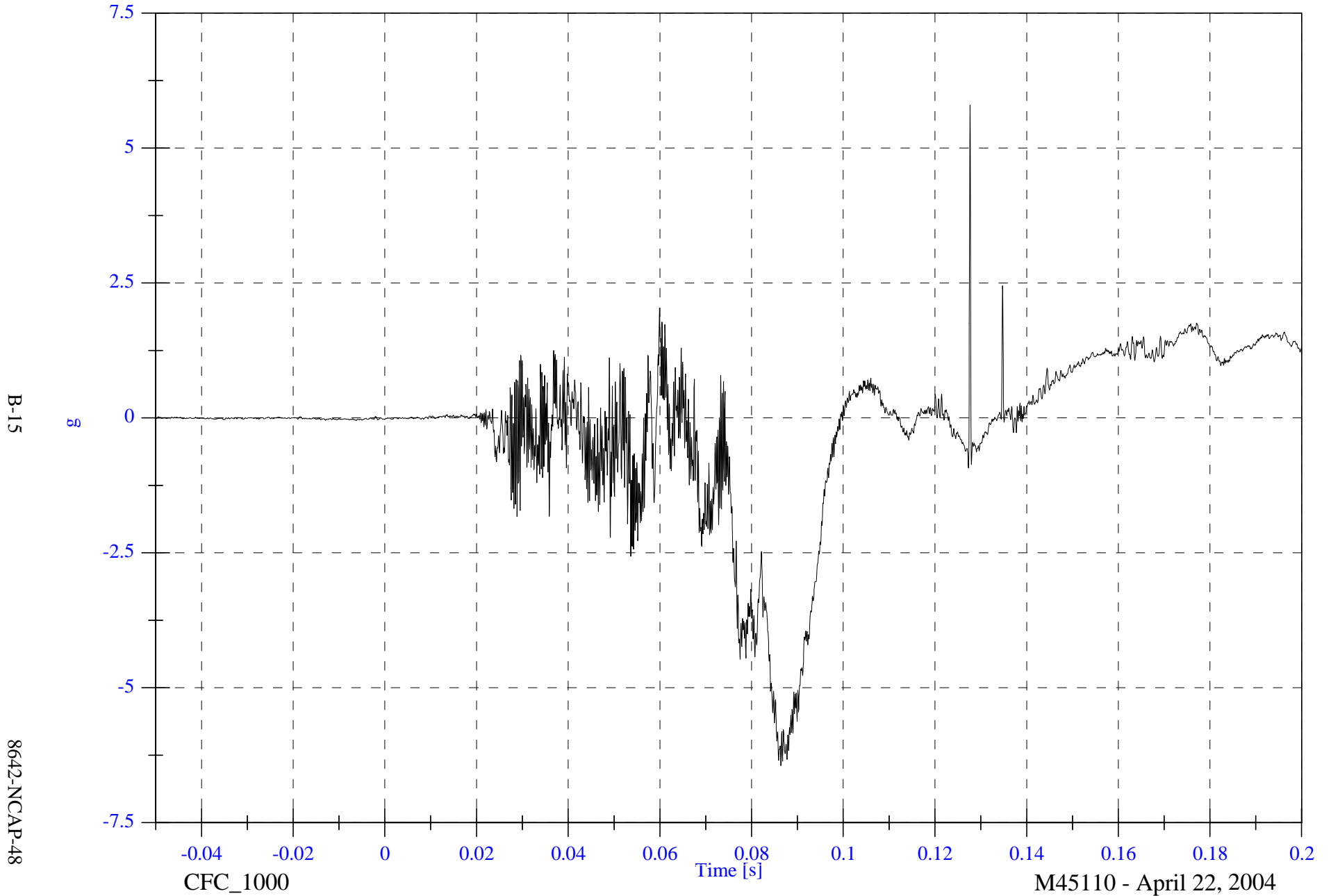
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P1 Head CG y

Max: 5.8 [g] at 0.128 [s]

Min: -6.4 [g] at 0.086 [s]

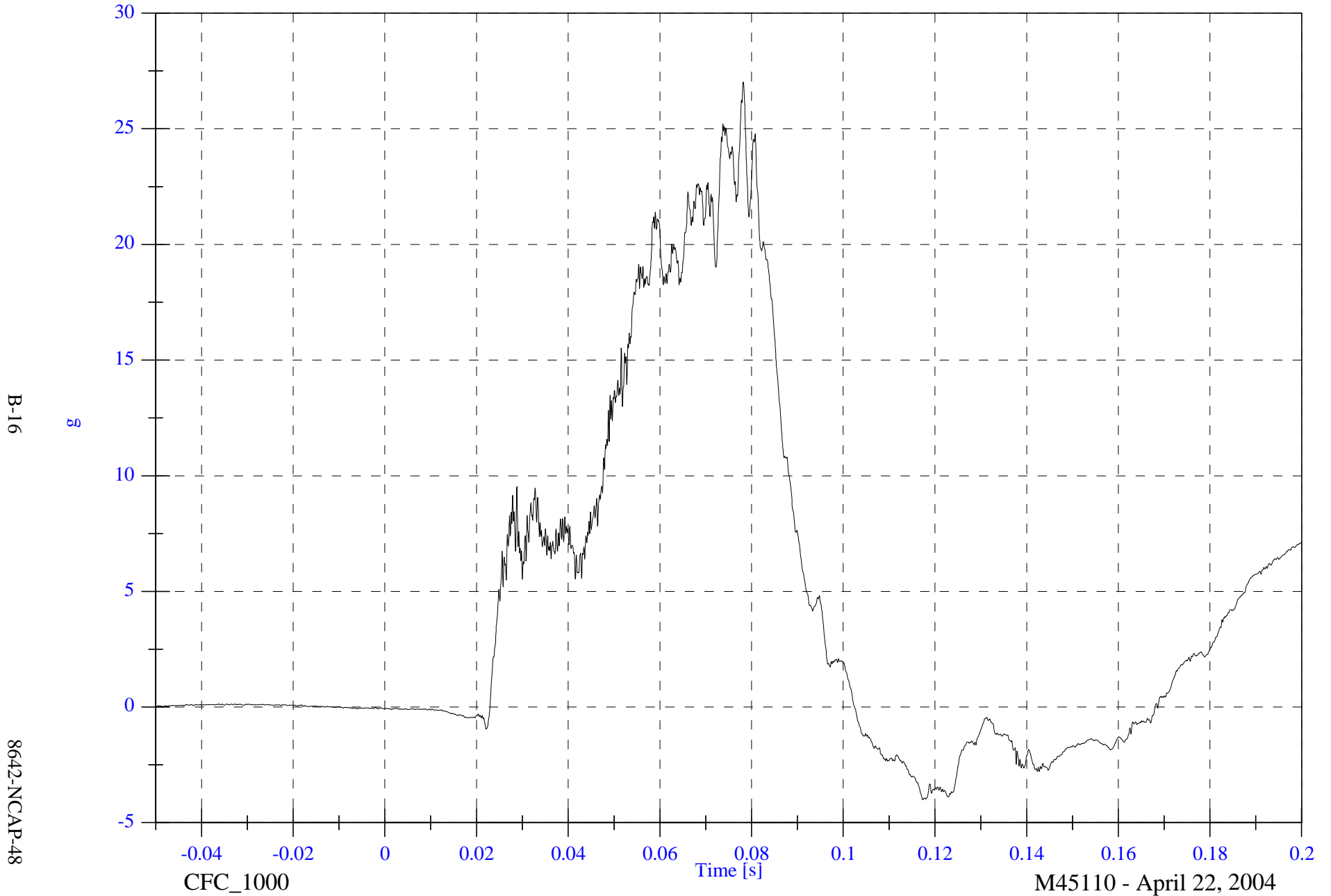


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 27.0 [g] at 0.078 [s]

Min: -4.0 [g] at 0.117 [s]

V1P1 Head CG z



B-16

8642-NCAP-48

CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

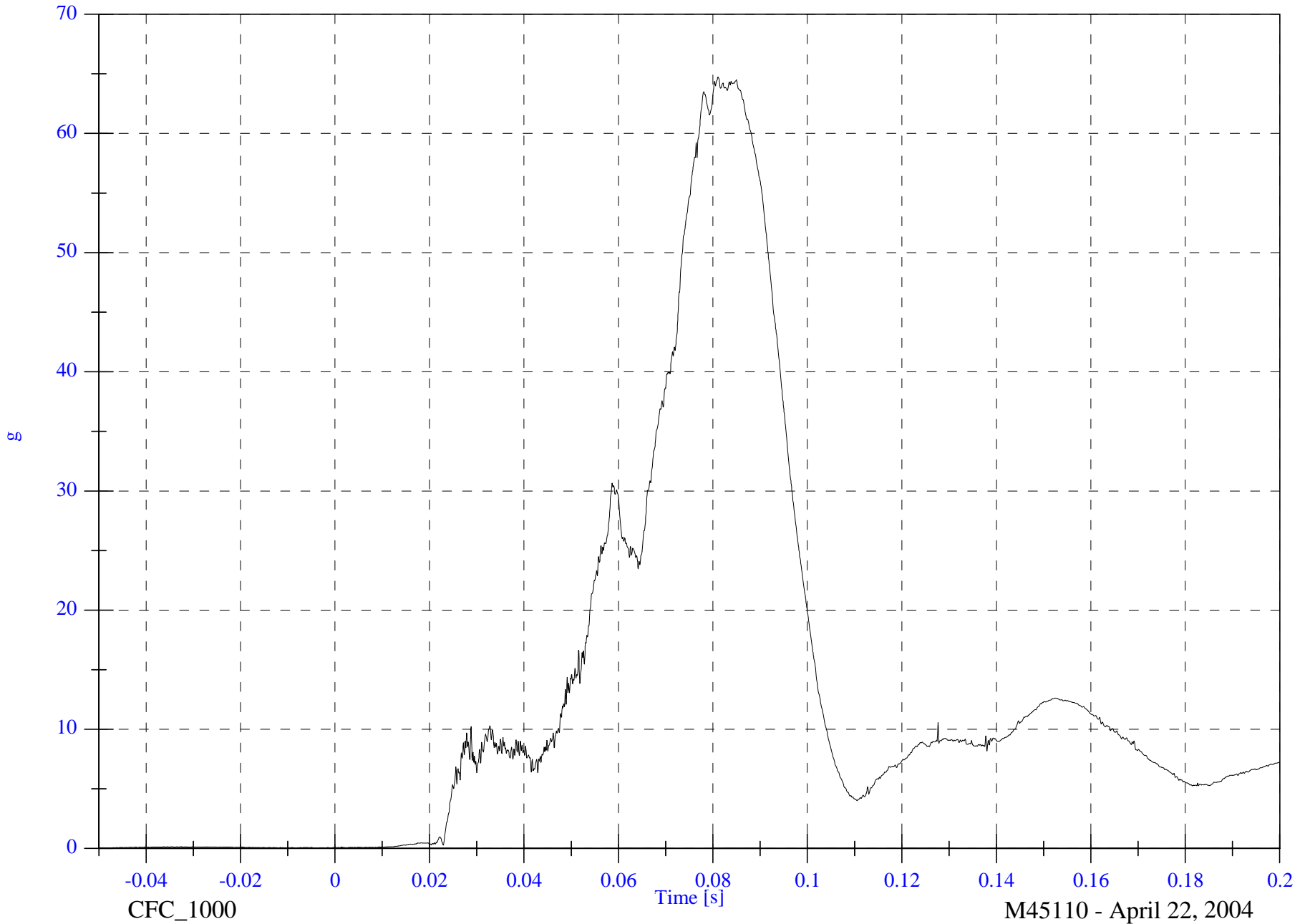
V1P1 Head CG Resultant

Max: 64.7 [g] at 0.081 [s]

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

B-17

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

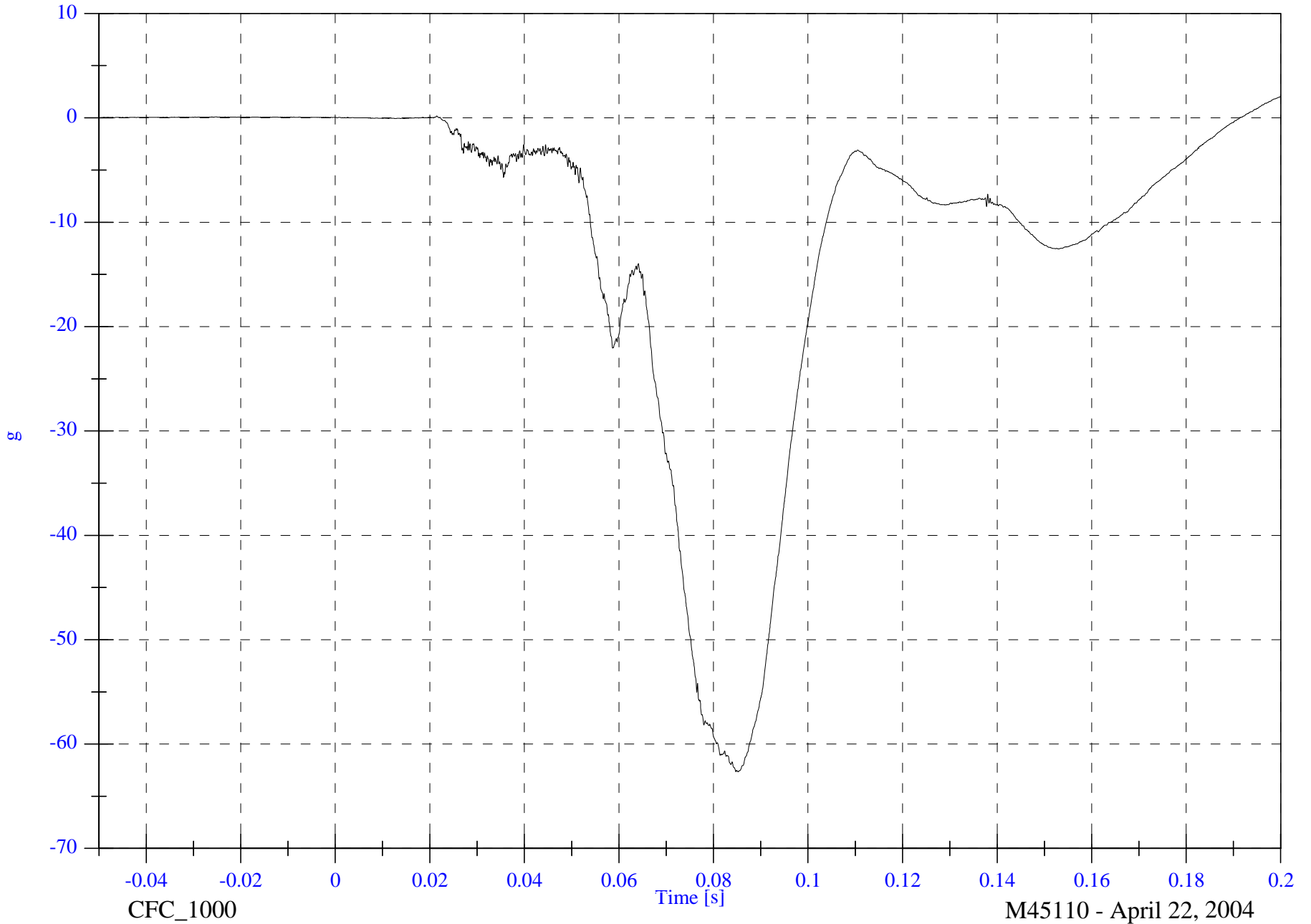
V1P1 Head CG Red x

Max: 2.0 [g] at 0.200 [s]

Min: -62.7 [g] at 0.085 [s]

B-18

8642-NCAP-48



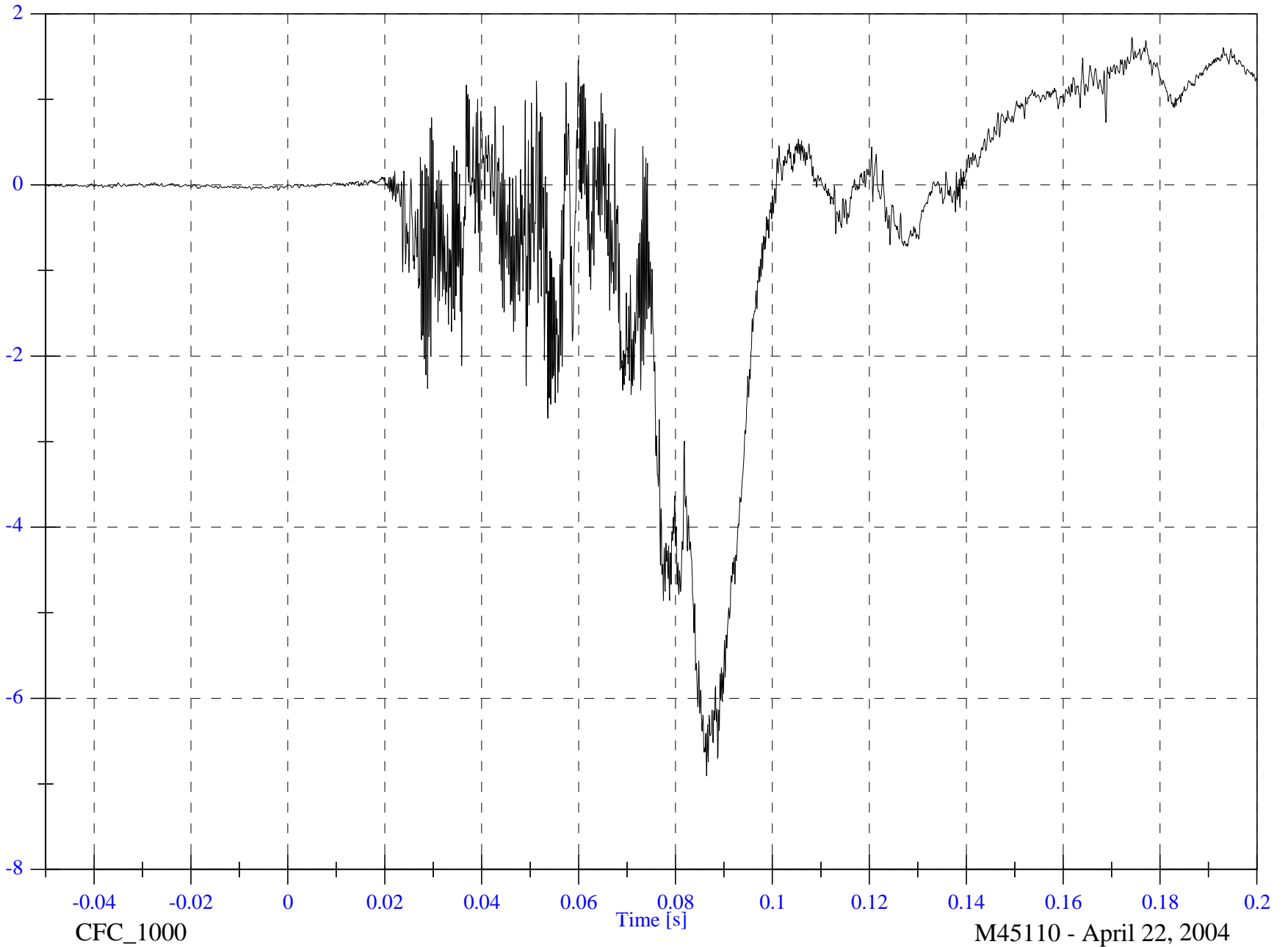
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P1 Head CG Red y

Max: 1.7 [g] at 0.174 [s]

Min: -6.9 [g] at 0.086 [s]



B-19

g

8642-NCAP-48

CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

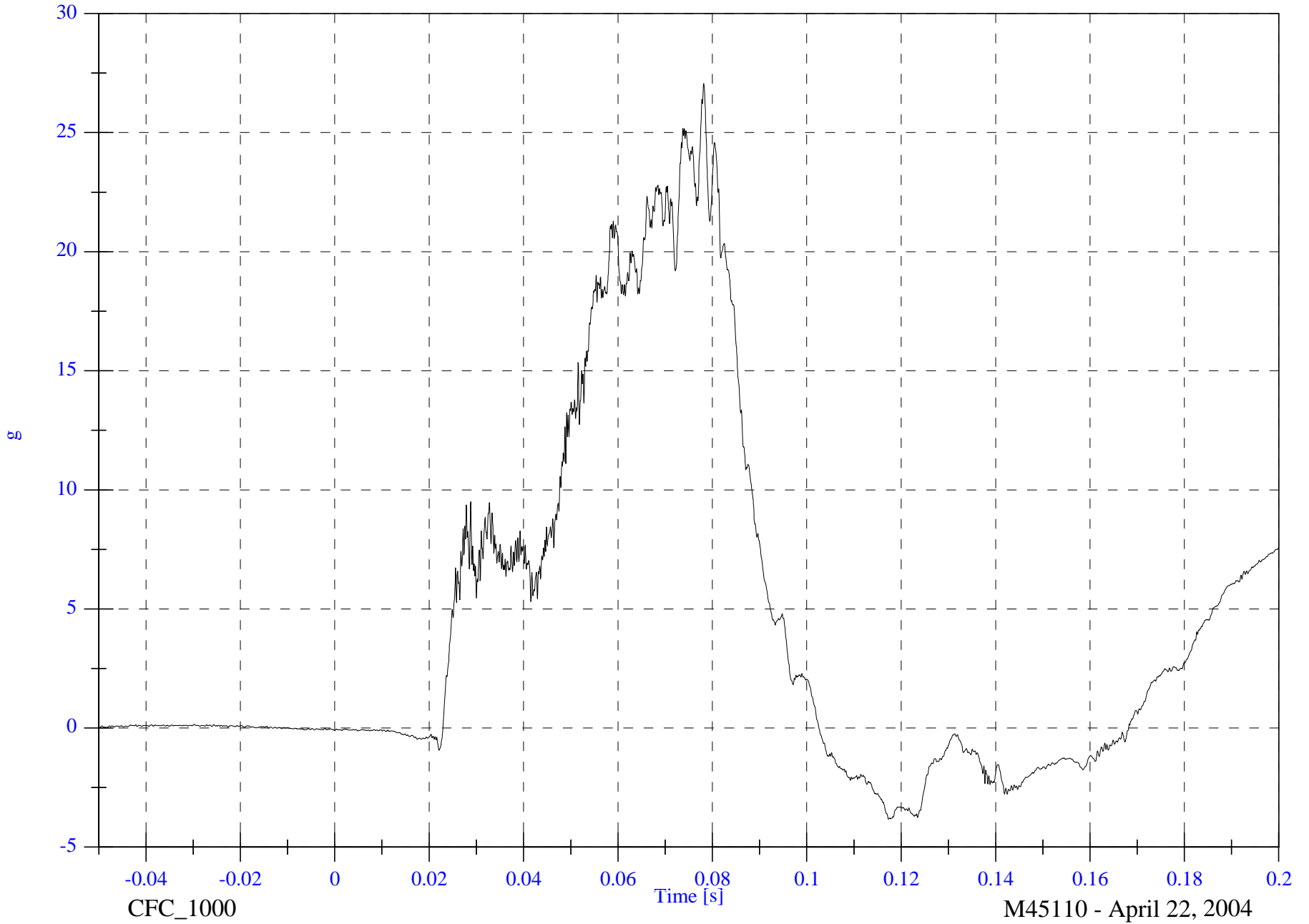
Max: 27.1 [g] at 0.078 [s]

V1P1 Head CG Red z

Min: -3.8 [g] at 0.117 [s]

B-20

8642-NCAP-48



CFC_1000

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

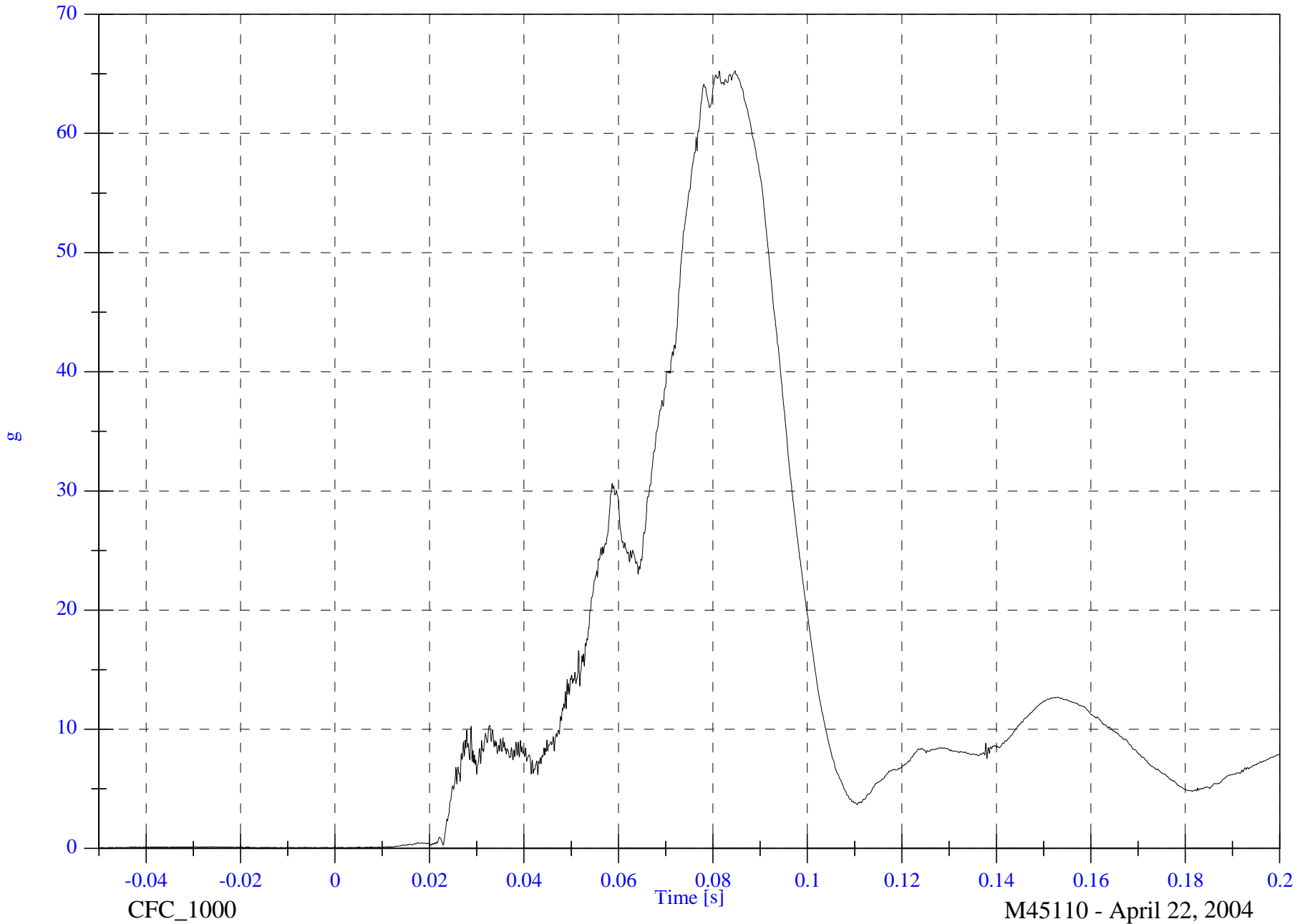
V1P1 Head CG Red Resultant

Max: 65.3 [g] at 0.085 [s]

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

B-21

8642-NCAP-48

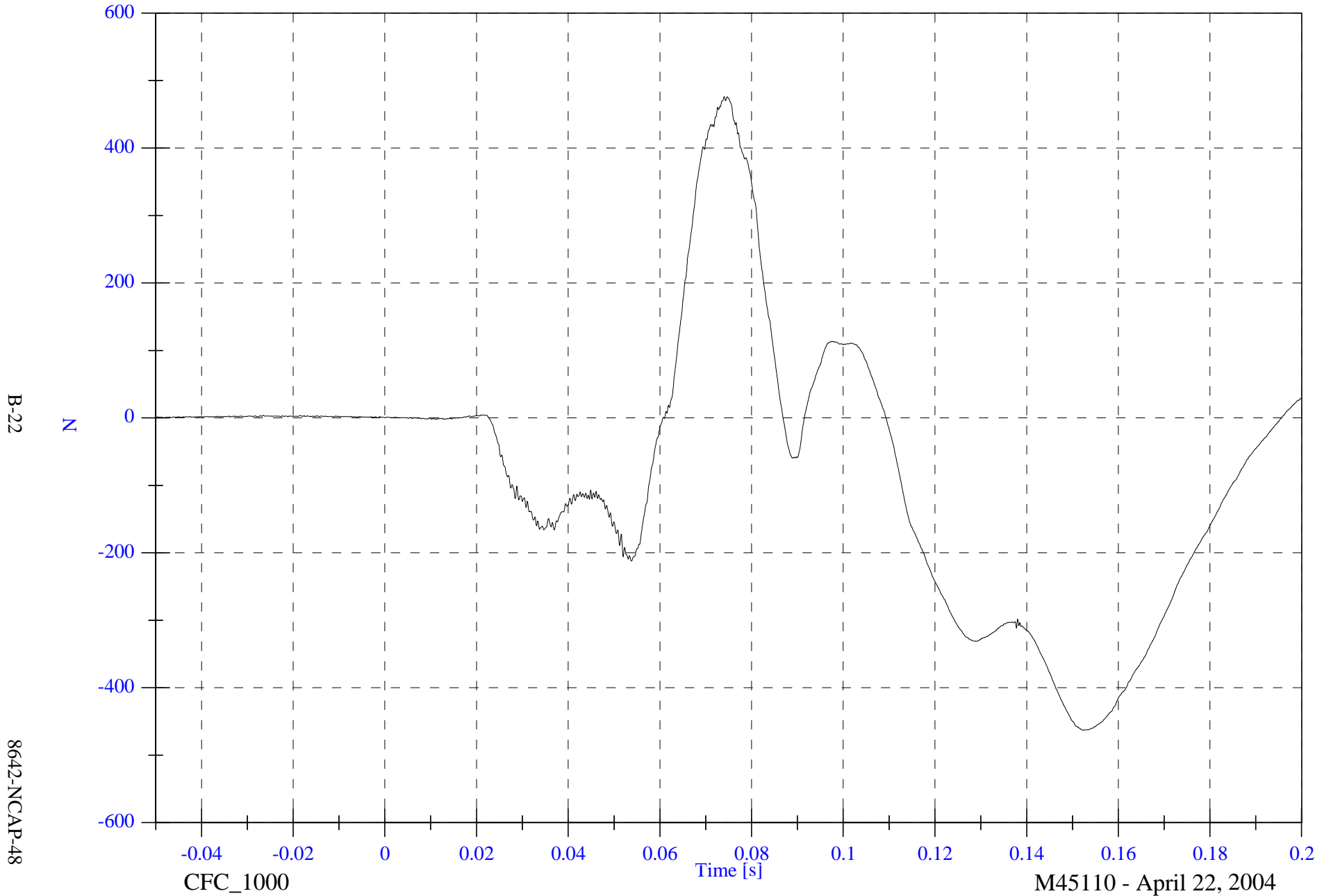


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 476.0 [N] at 0.074 [s]

Min: -462.9 [N] at 0.152 [s]

V1P1 Upper Neck Fx



B-22

8642-NCAP-48

CFC_1000

Time [s]

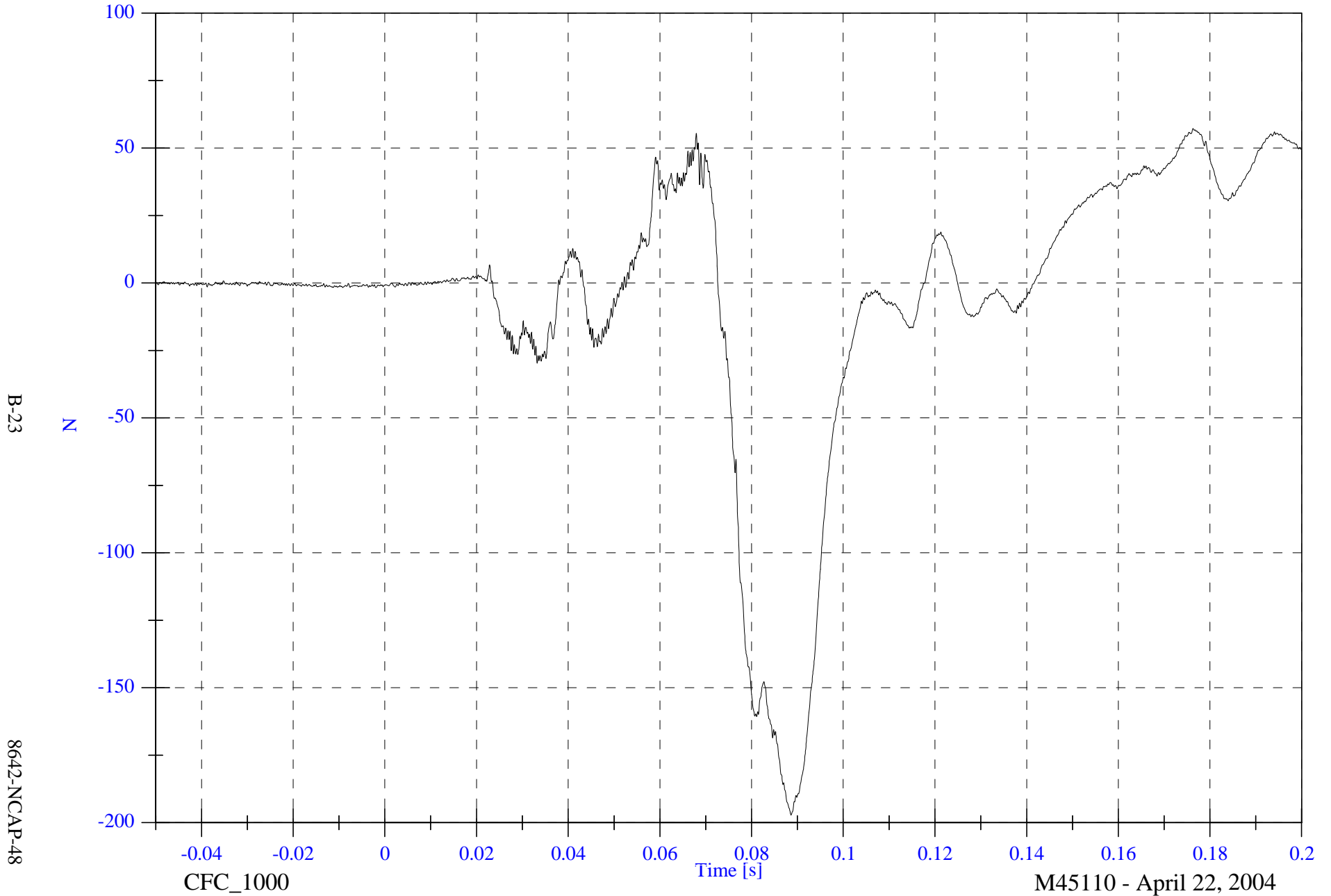
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 57.2 [N] at 0.176 [s]

V1P1 Upper Neck Fy

Min: -197.2 [N] at 0.089 [s]



B-23

8642-NCAP-48

CFC_1000

Time [s]

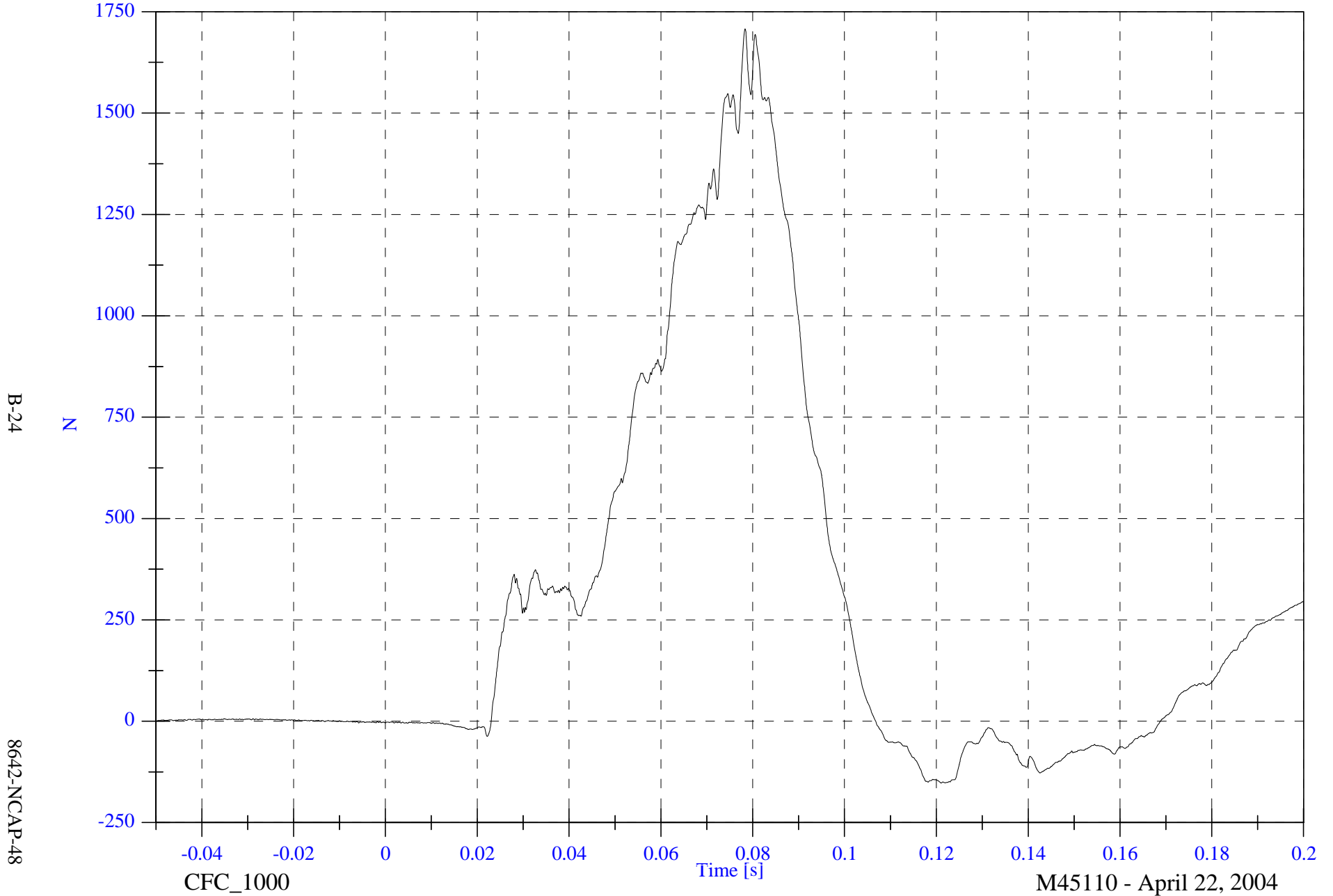
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 1707.8 [N] at 0.078 [s]

Min: -152.3 [N] at 0.121 [s]

V1P1 Upper Neck Fz



B-24

8642-NCAP-48

CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 1755.4 [N] at 0.078 [s]

V1P1 Upper Neck F Resultant

Min: 0.5 [N] at -0.050 [s]



B-25

8642-NCAP-48

CFC_1000

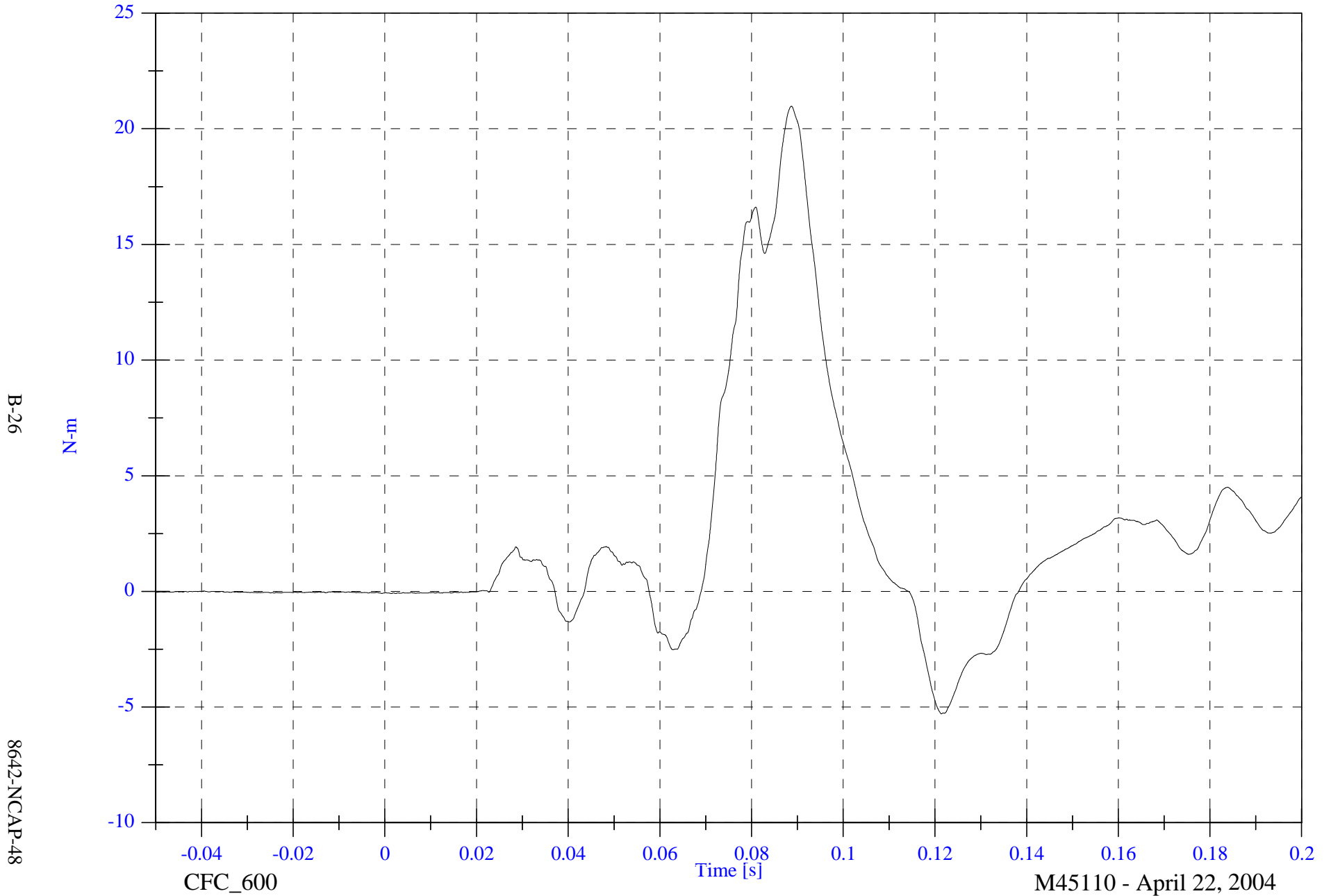
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 21.0 [N-m] at 0.089 [s]

V1P1 Upper Neck Mx

Min: -5.3 [N-m] at 0.121 [s]



B-26

8642-NCAP-48

CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

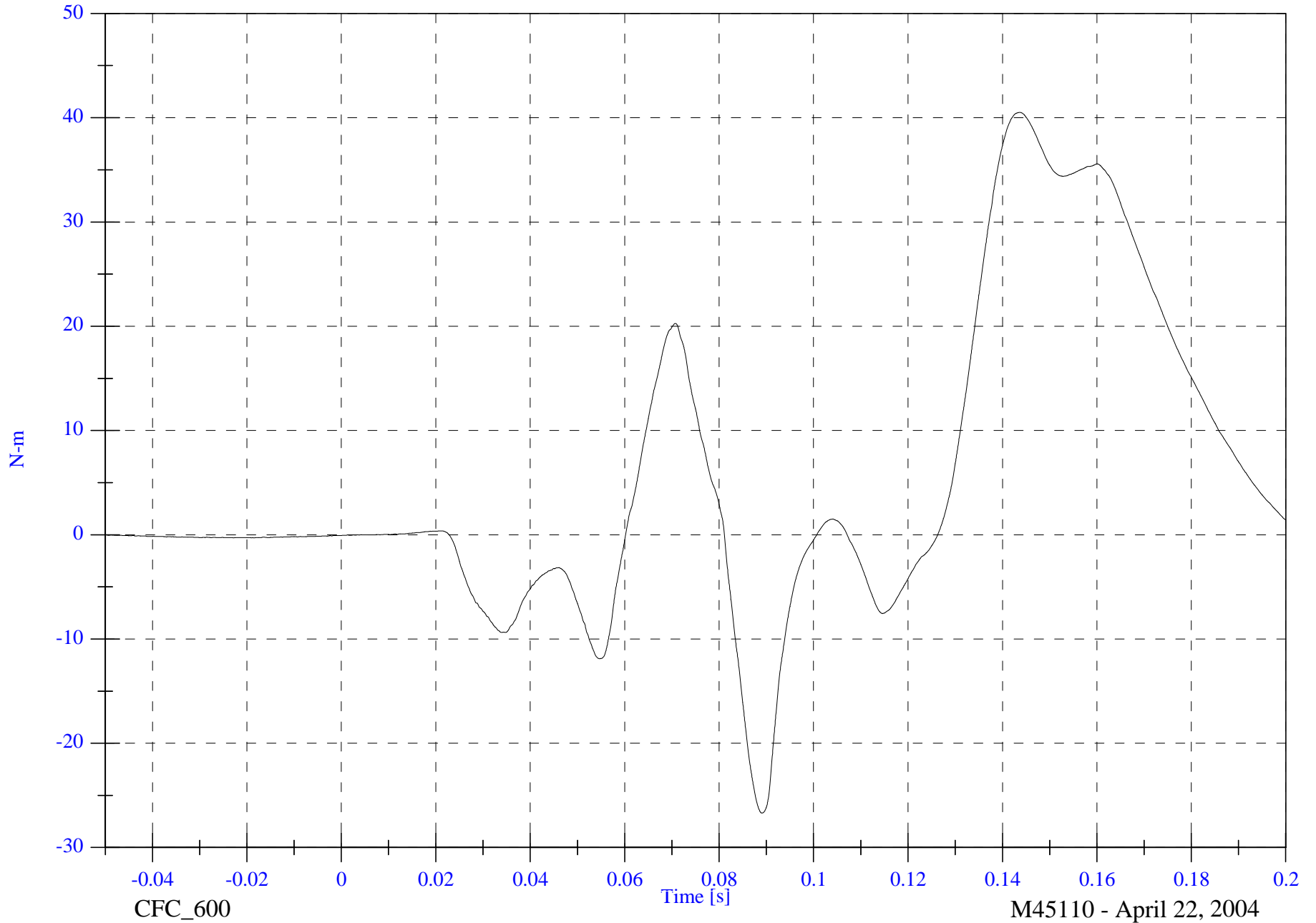
V1P1 Upper Neck My

Max: 40.5 [N-m] at 0.144 [s]

Min: -26.7 [N-m] at 0.089 [s]

B-27

8642-NCAP-48



CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 5.6 [N-m] at 0.087 [s]

V1P1 Upper Neck Mz

Min: -3.3 [N-m] at 0.119 [s]



B-28

8642-NCAP-48

CFC_600

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

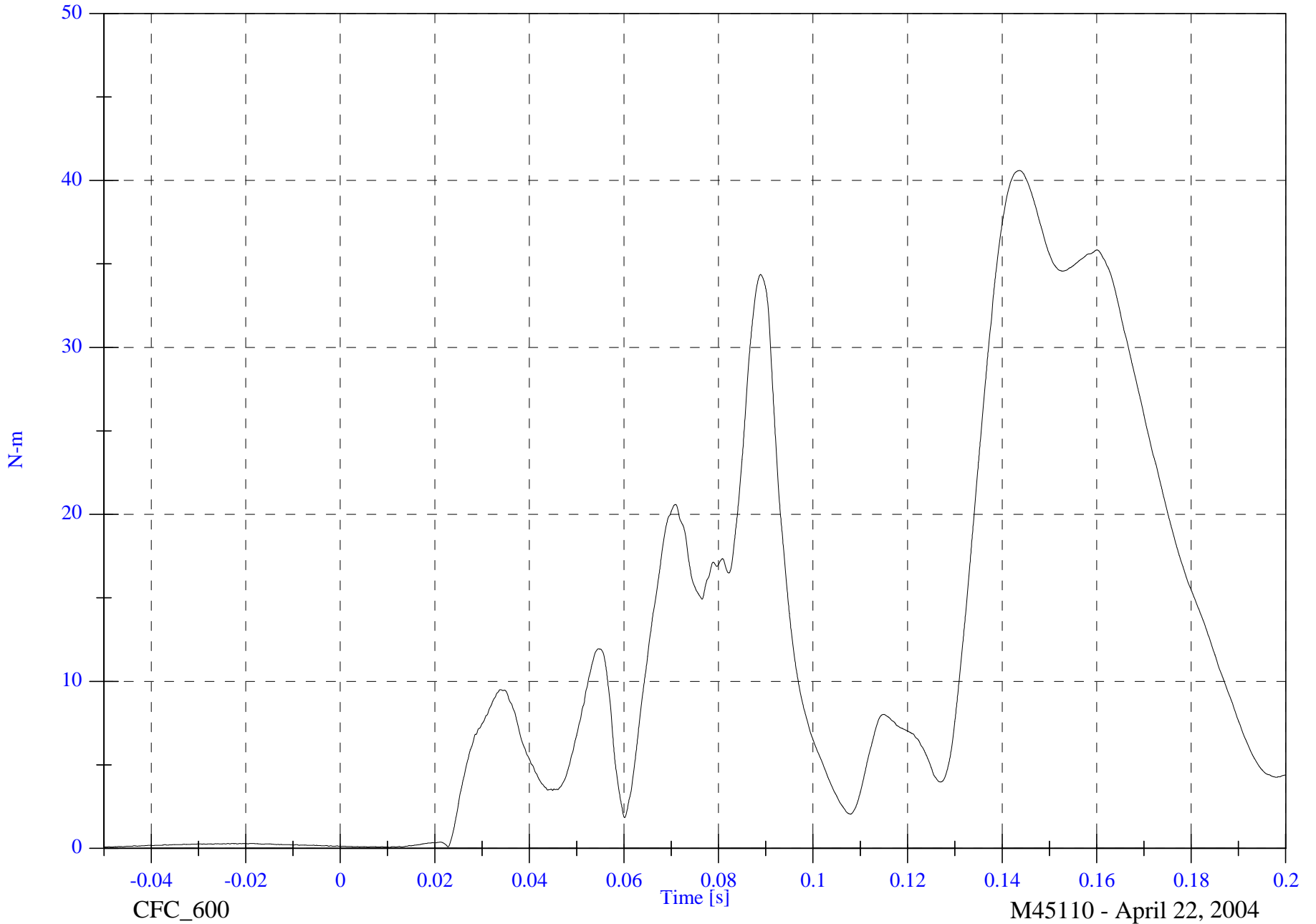
V1P1 Upper Neck M Resultant

Max: 40.6 [N-m] at 0.144 [s]

Min: 0.1 [N-m] at 0.010 [s]

B-29

8642-NCAP-48



CFC_600

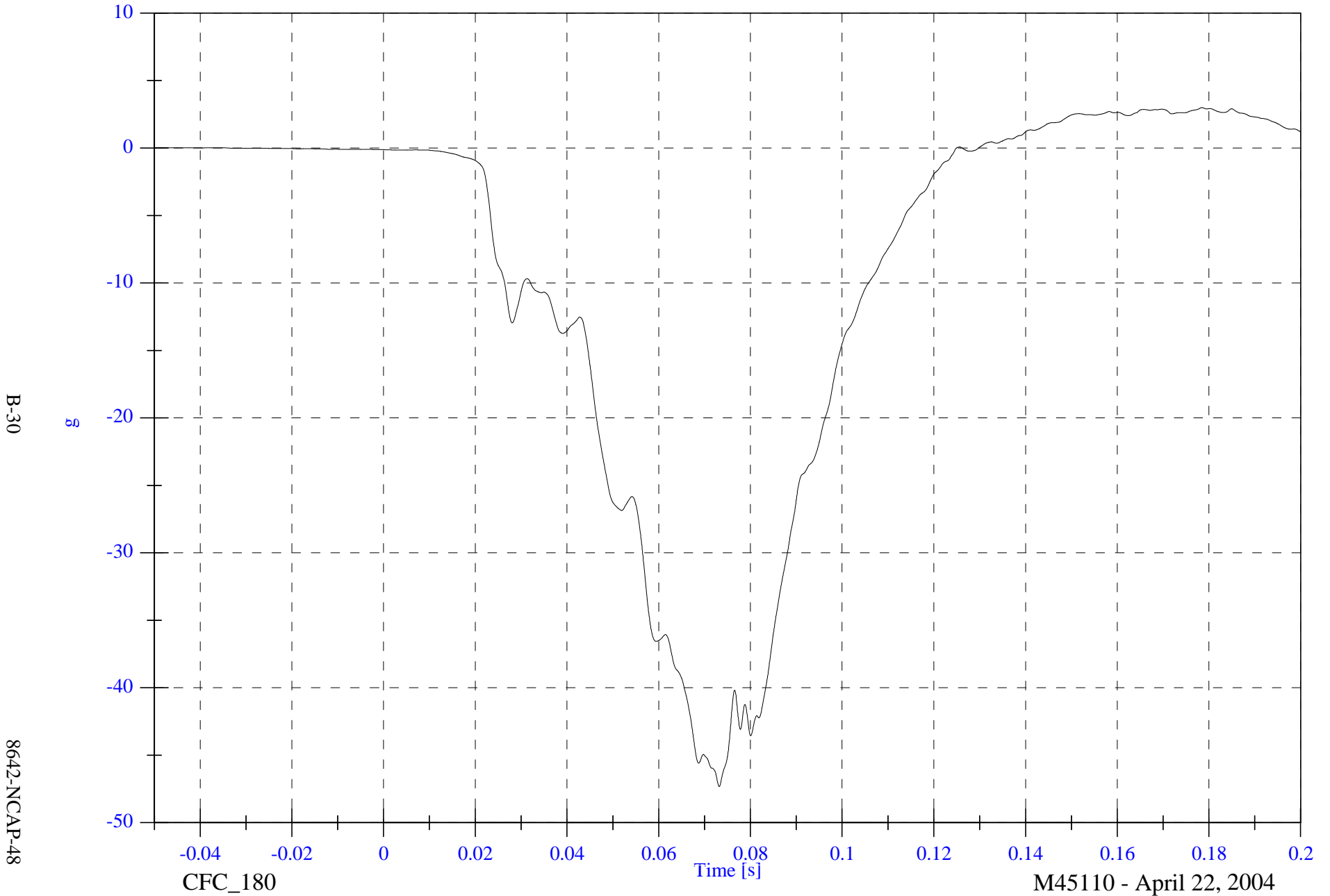
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP1 Chest x

Max: 3.0 [g] at 0.178 [s]

Min: -47.3 [g] at 0.073 [s]



B-30

8642-NCAP-48

CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 5.2 [g] at 0.081 [s]

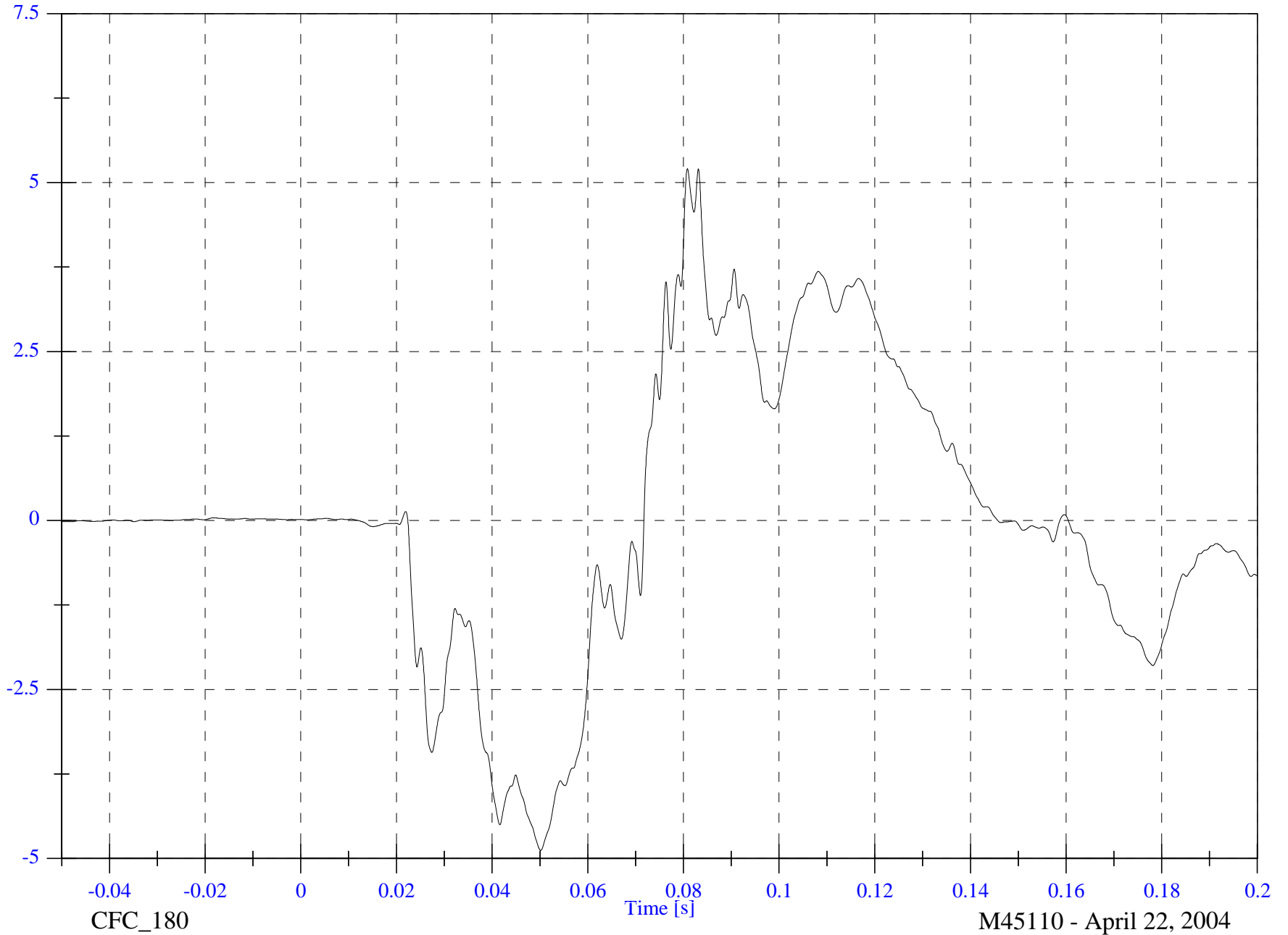
V1P1 Chest y

Min: -4.9 [g] at 0.050 [s]

B-31

g

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

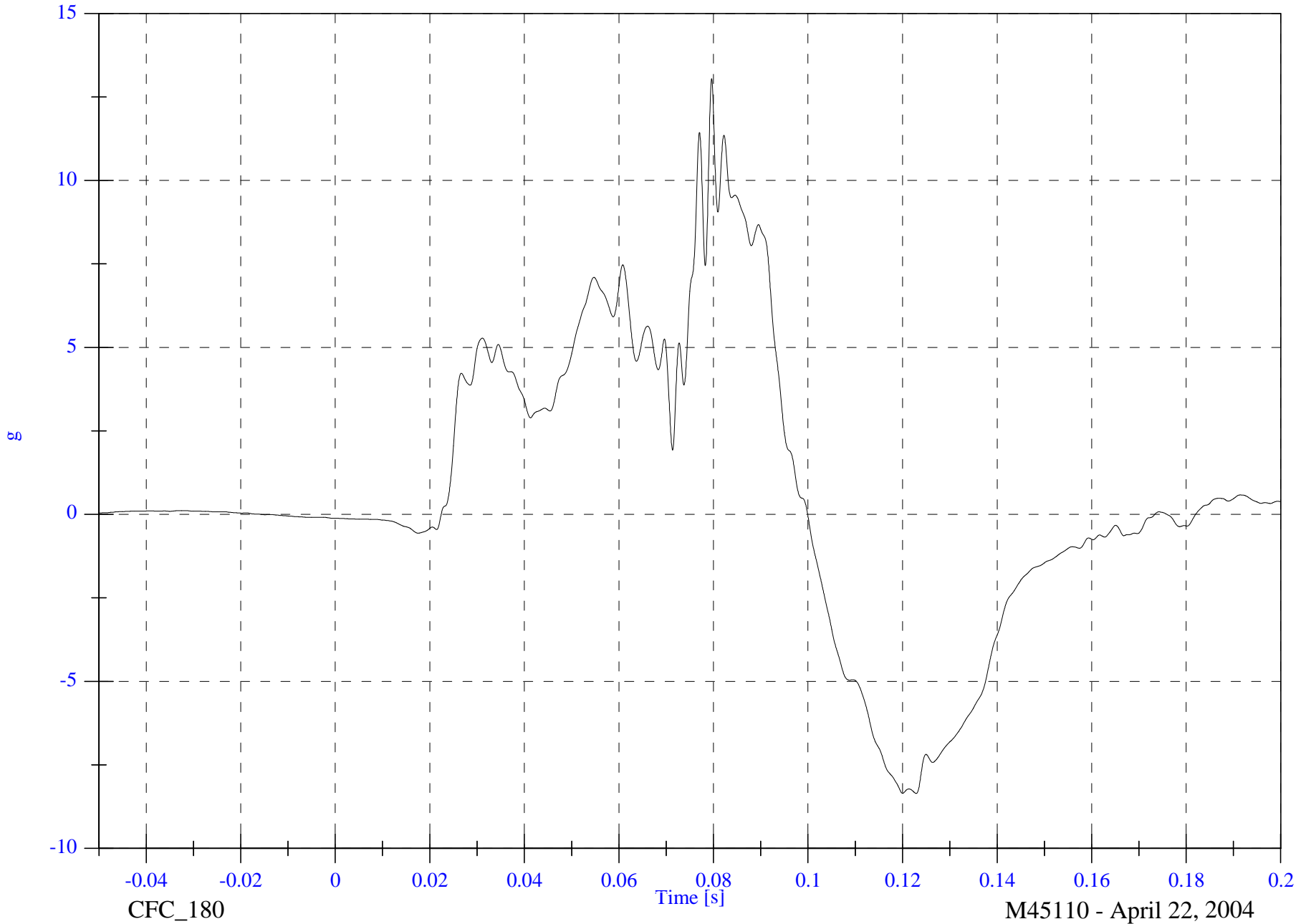
VIP1 Chest z

Max: 13.1 [g] at 0.080 [s]

Min: -8.4 [g] at 0.123 [s]

B-32

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 47.6 [g] at 0.073 [s]

V1P1 Chest Resultant

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

B-33

g

8642-NCAP-48



CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

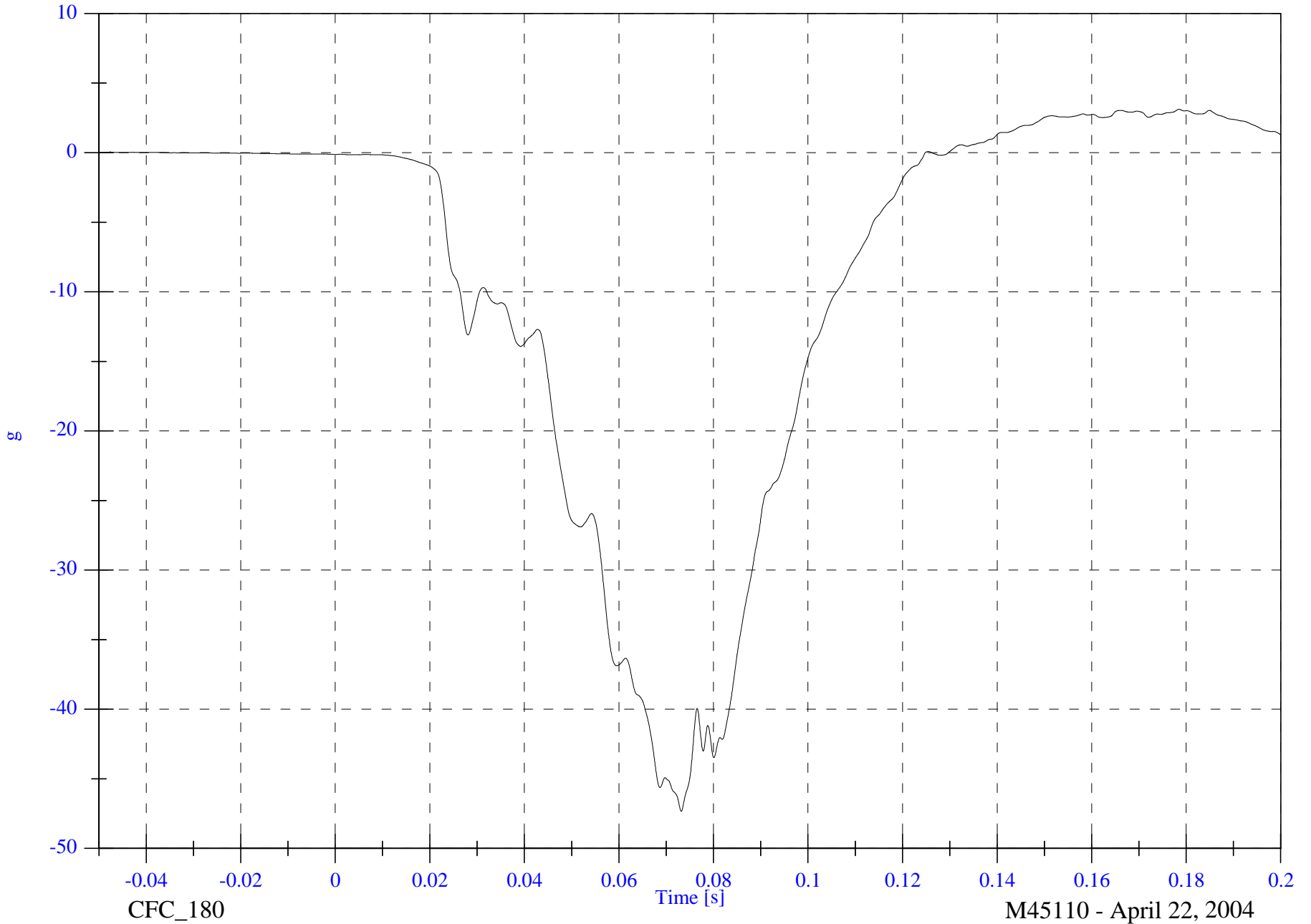
VIP1 Chest Red x

Max: 3.1 [g] at 0.178 [s]

Min: -47.3 [g] at 0.073 [s]

B-34

8642-NCAP-48

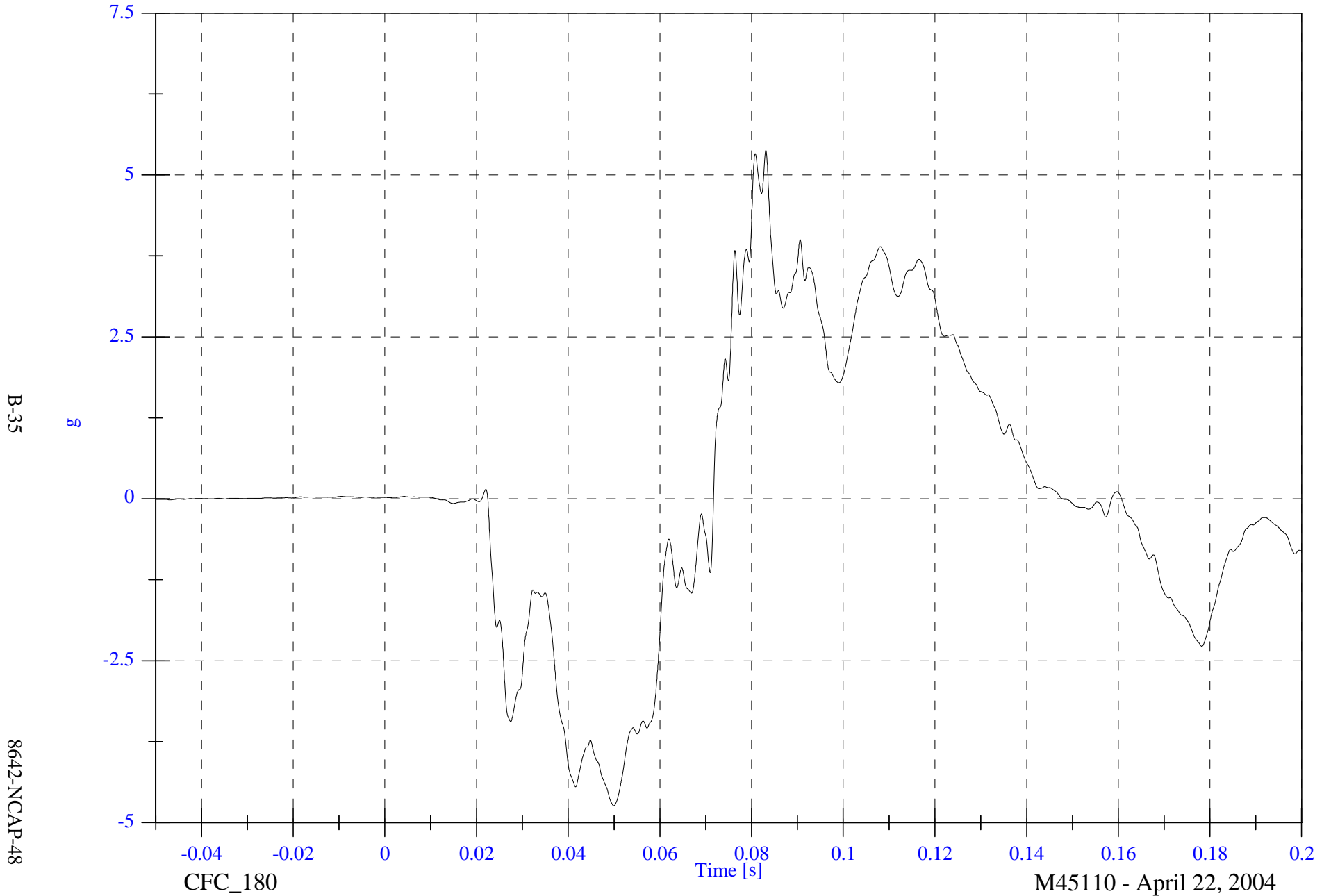


2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP1 Chest Red y

Max: 5.4 [g] at 0.083 [s]

Min: -4.7 [g] at 0.050 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

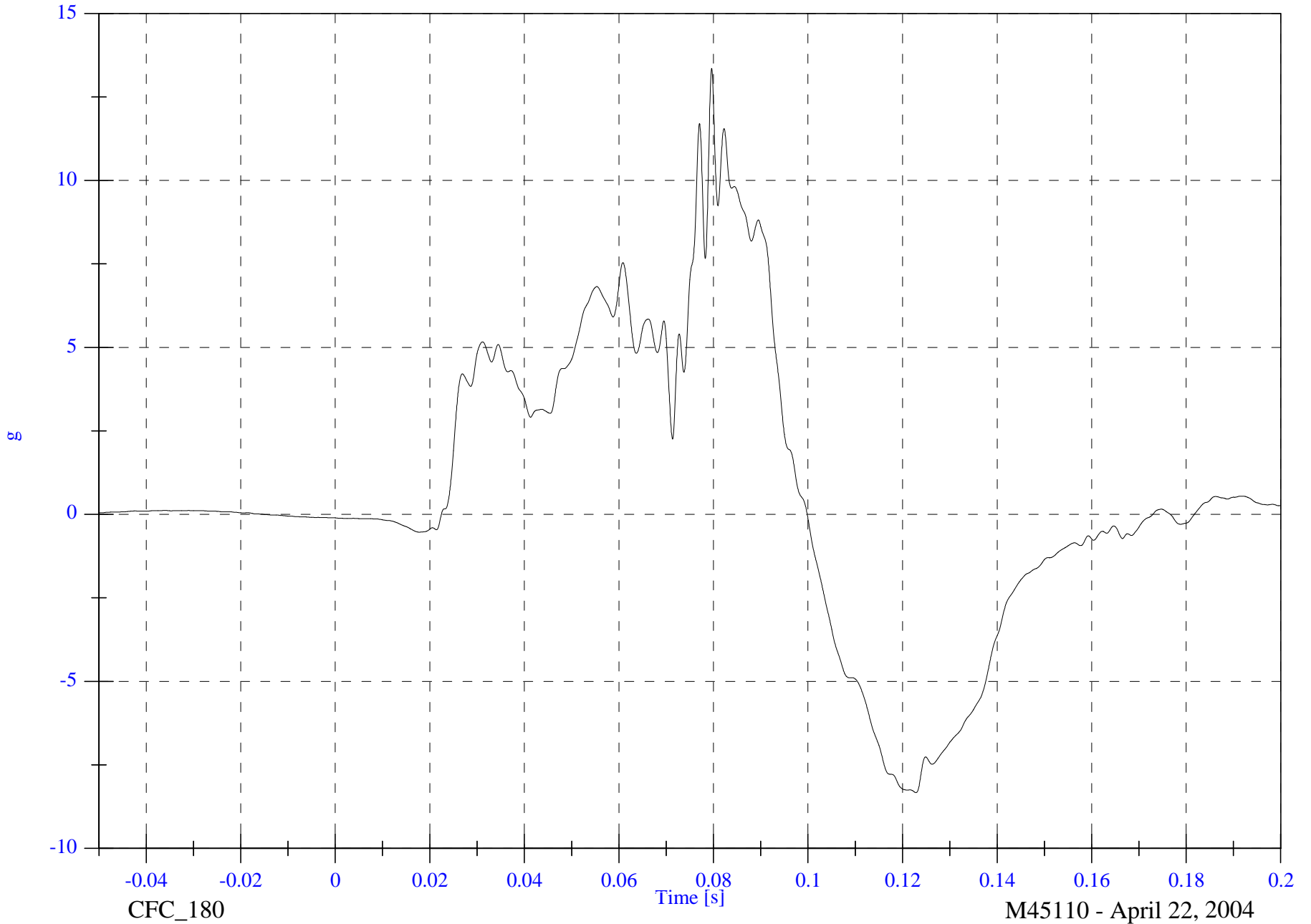
VIP1 Chest Red z

Max: 13.4 [g] at 0.080 [s]

Min: -8.3 [g] at 0.123 [s]

B-36

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P1 Chest Red Resultant

Max: 47.6 [g] at 0.073 [s]

Min: 0.1 [g] at -0.017 [s]

B-37

8642-NCAP-48



CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

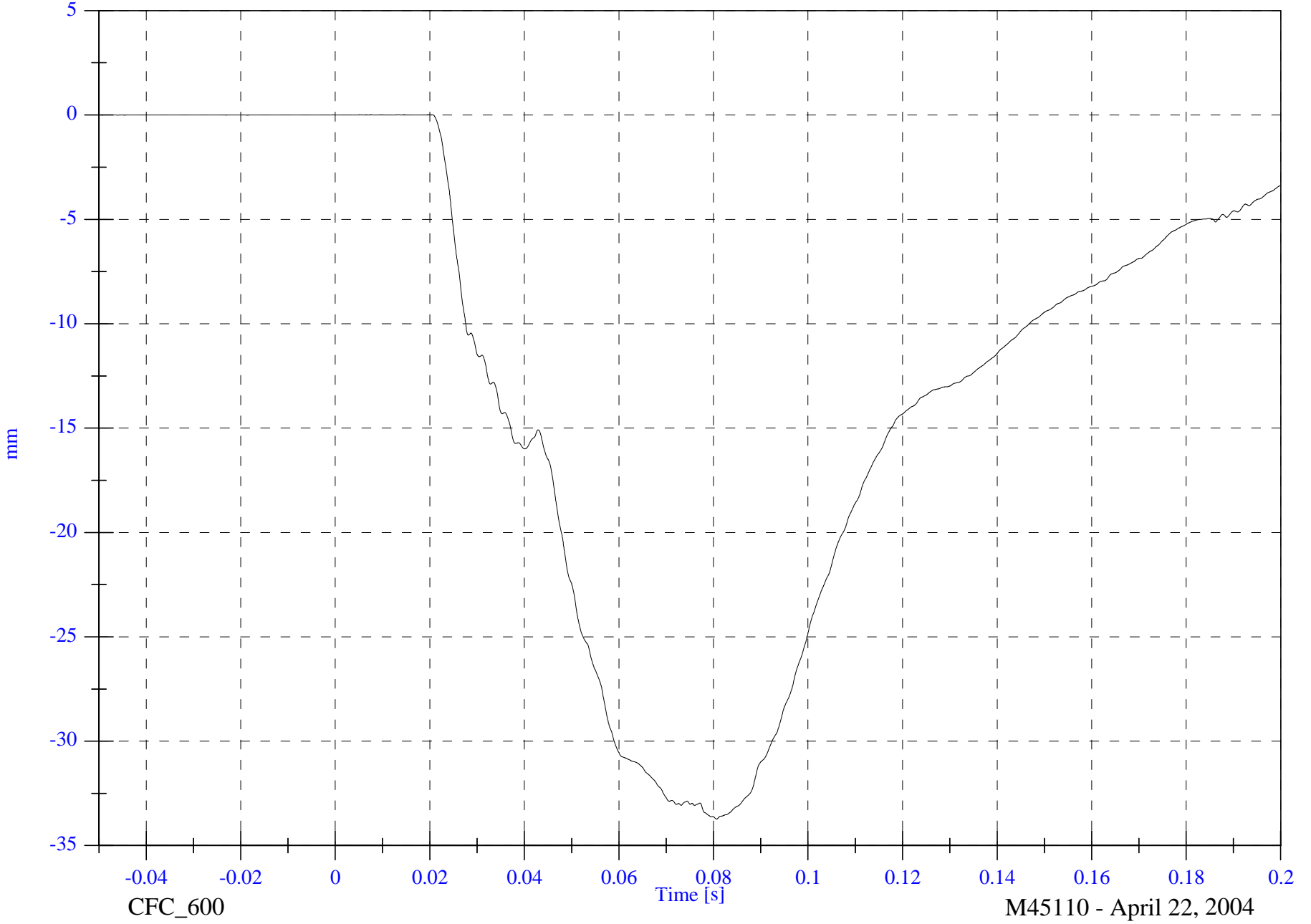
VIP1 Chest Compression

Max: 0.0 [mm] at 0.021 [s]

Min: -33.7 [mm] at 0.081 [s]

B-38

8642-NCAP-48



CFC_600

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

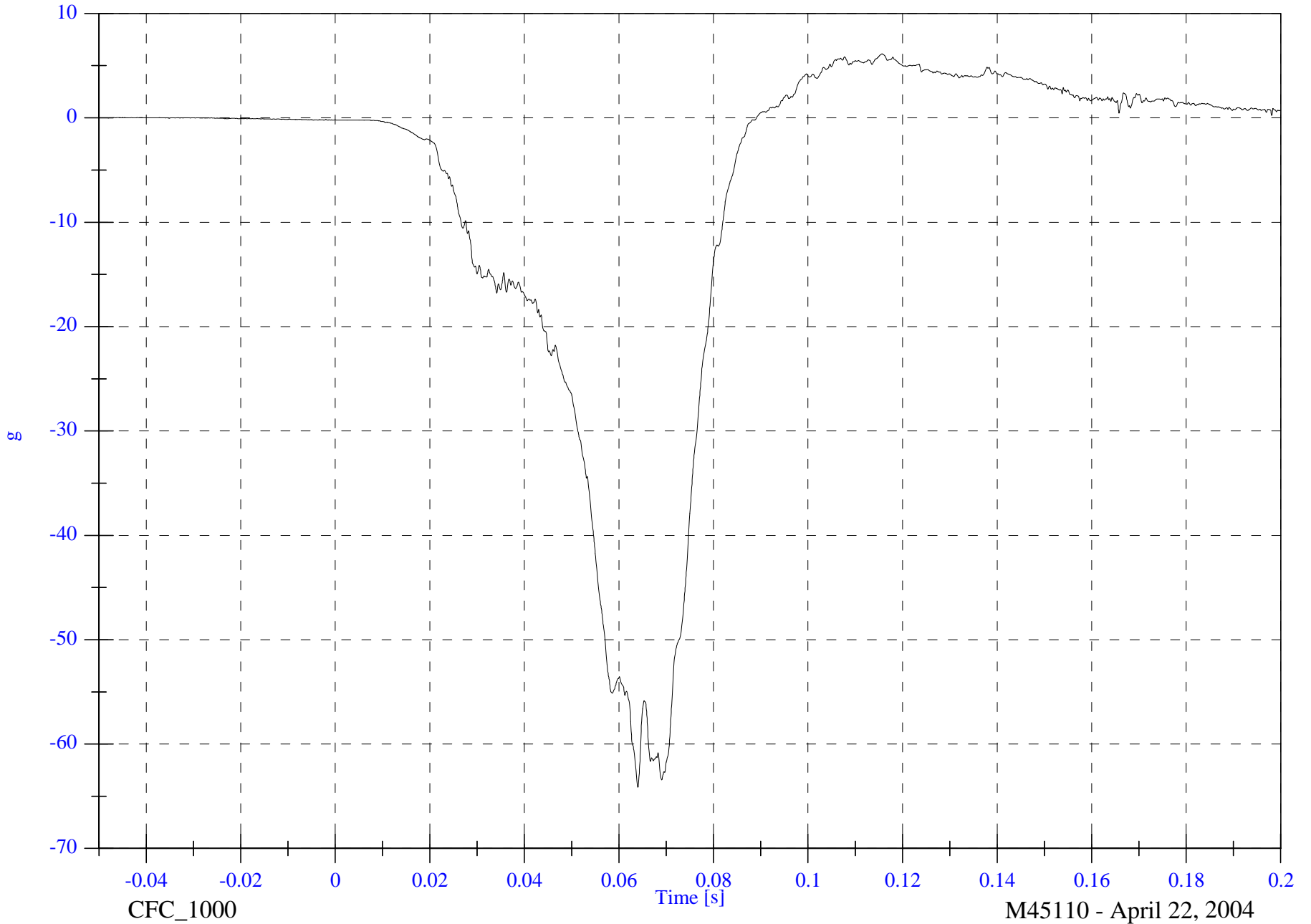
V1P1 Pelvic x

Max: 6.1 [g] at 0.116 [s]

Min: -64.2 [g] at 0.064 [s]

B-39

8642-NCAP-48

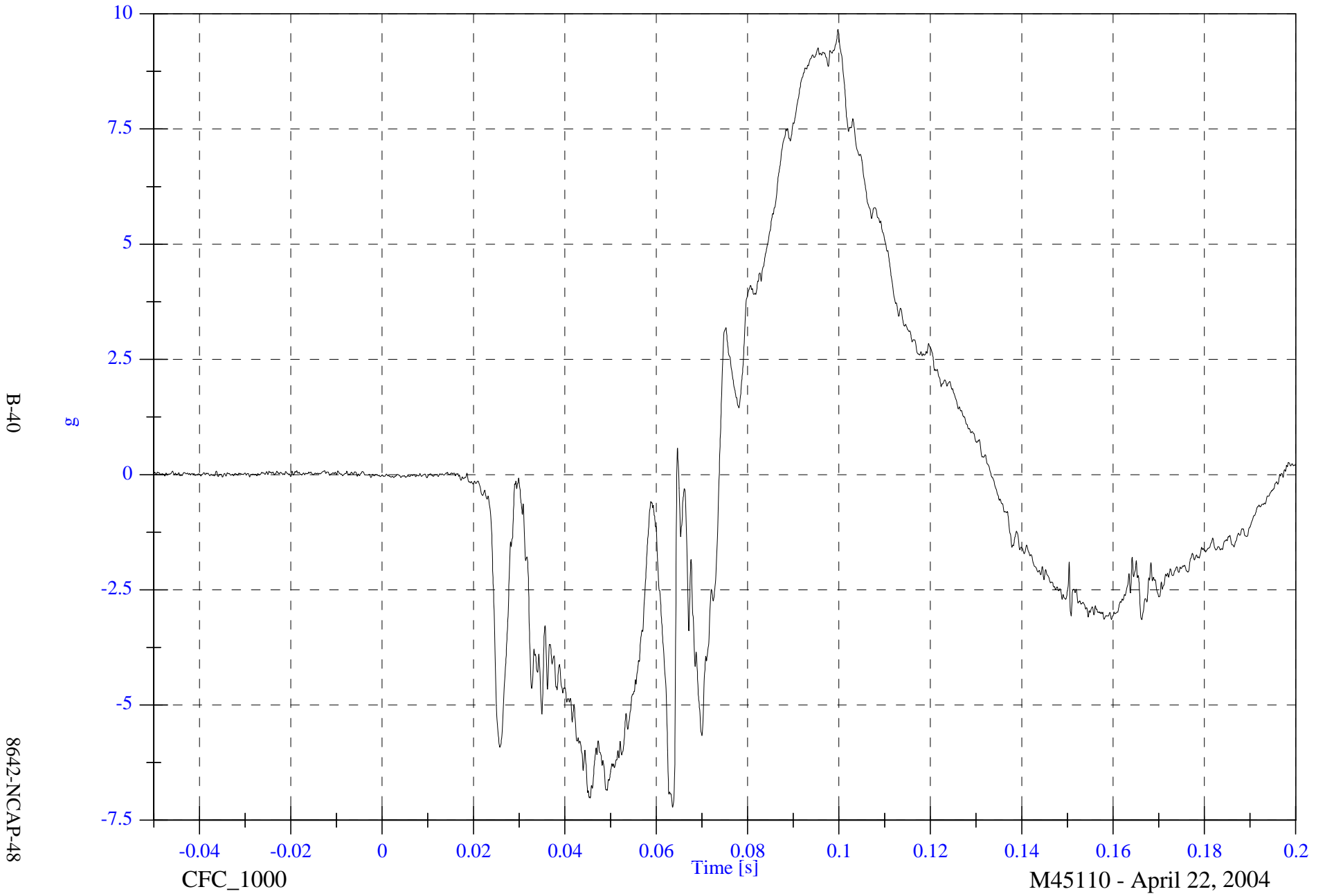


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 9.7 [g] at 0.100 [s]

Min: -7.2 [g] at 0.064 [s]

V1P1 Pelvic y



2004 NCAP Test 12 - 2004 Toyota 4Runner

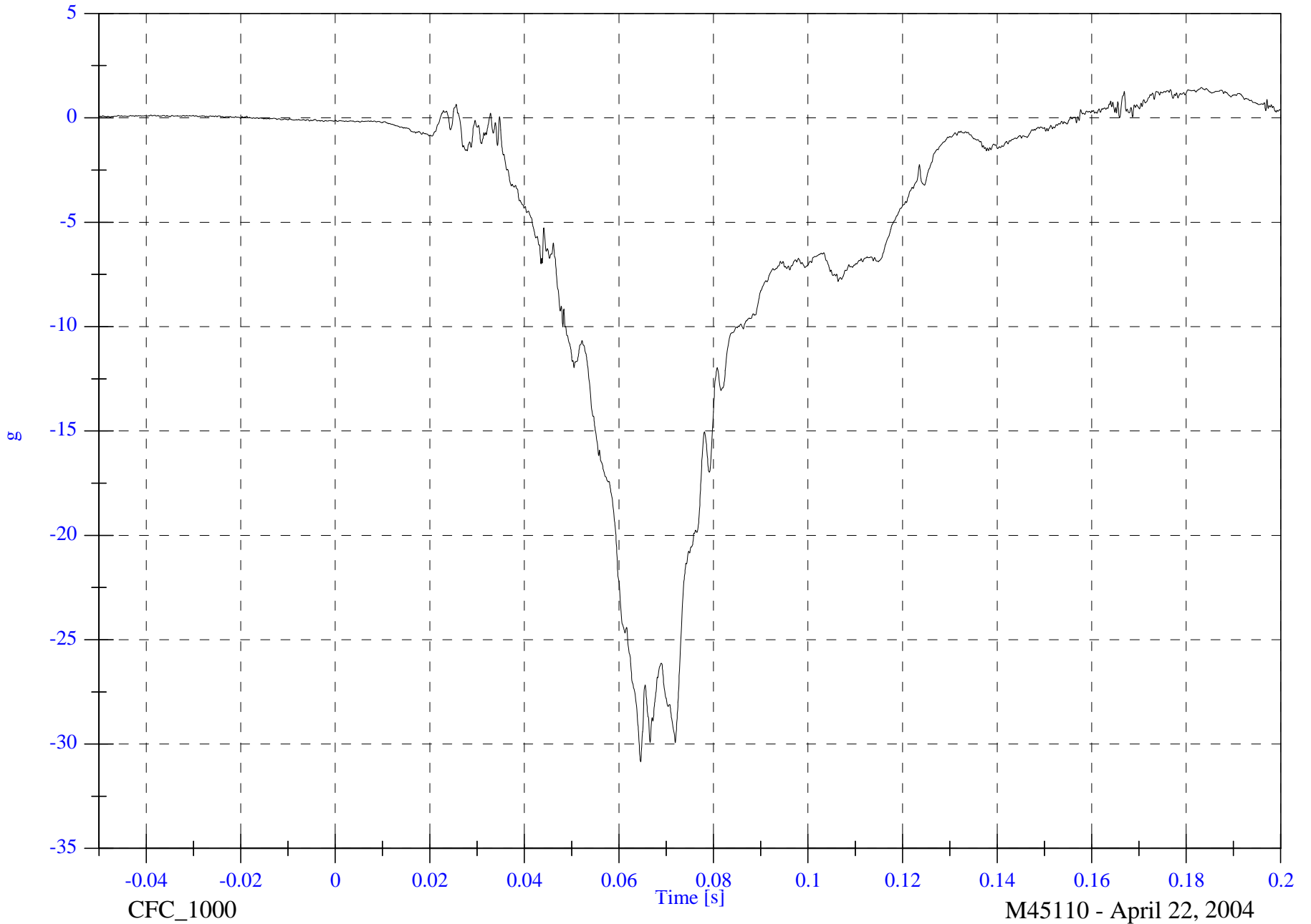
V1P1 Pelvic z

Max: 1.5 [g] at 0.183 [s]

Min: -30.9 [g] at 0.065 [s]

B-41

8642-NCAP-48



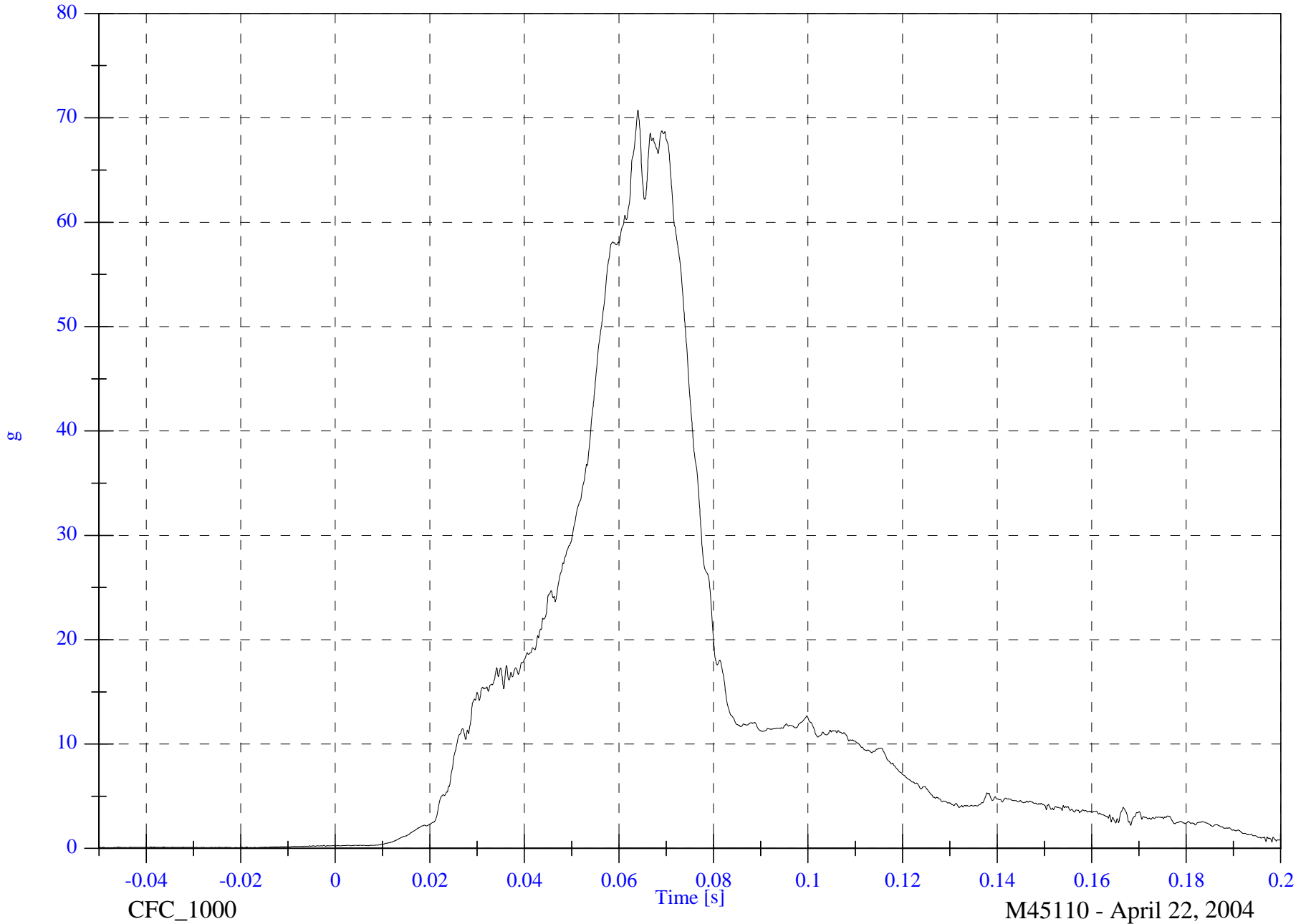
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P1 Pelvic Resultant

Max: 70.7 [g] at 0.064 [s]

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



B-42

8642-NCAP-48

CFC_1000

Time [s]

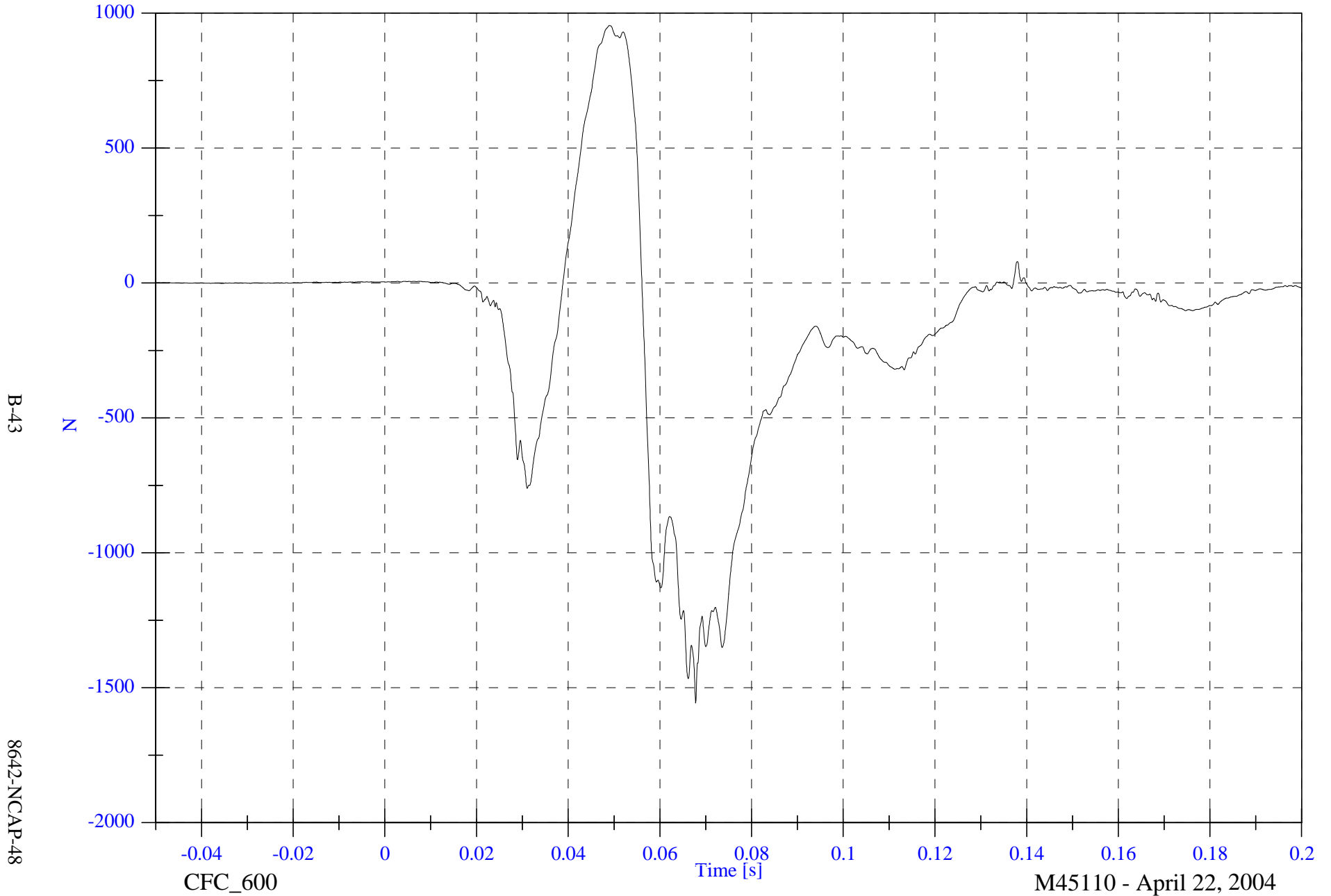
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P1 Left Femur

Max: 954.1 [N] at 0.049 [s]

Min: -1556.8 [N] at 0.068 [s]



B-43

8642-NCAP-48

CFC_600

Time [s]

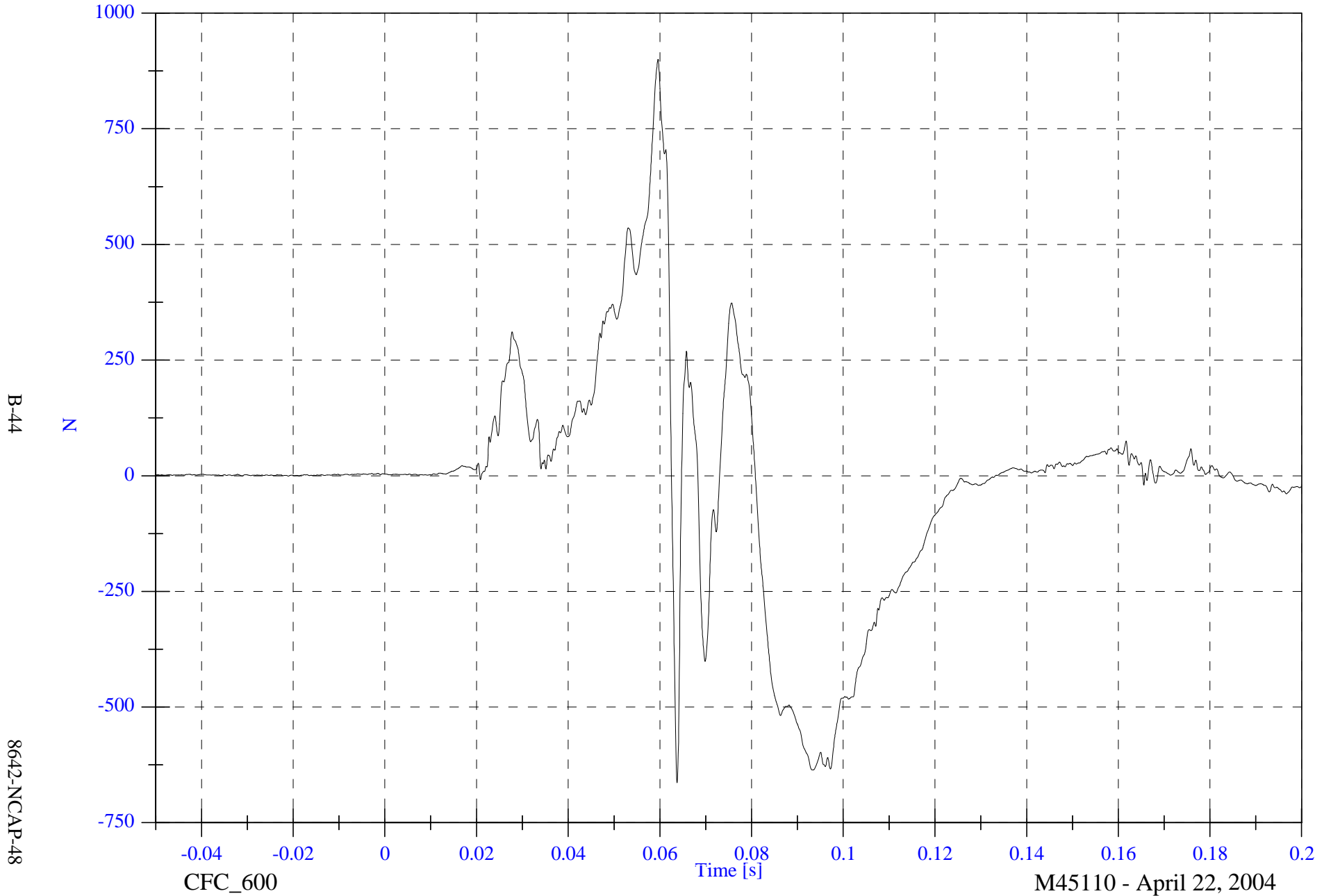
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P1 Right Femur

Max: 900.0 [N] at 0.060 [s]

Min: -664.1 [N] at 0.064 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

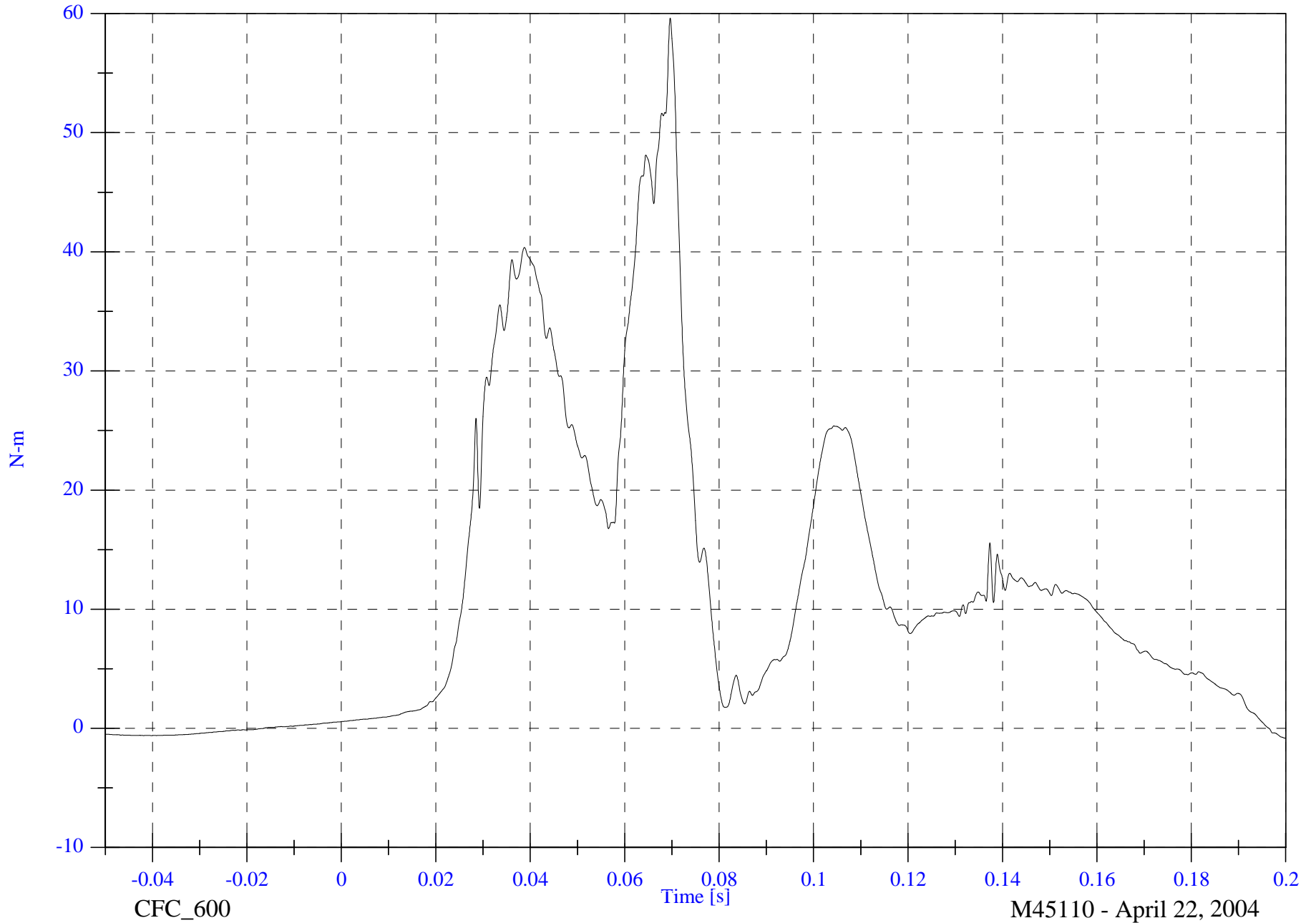
Max: 59.6 [N-m] at 0.070 [s]

V1P1 Left Upper Tibia Mx

Min: -0.8 [N-m] at 0.200 [s]

B-45

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

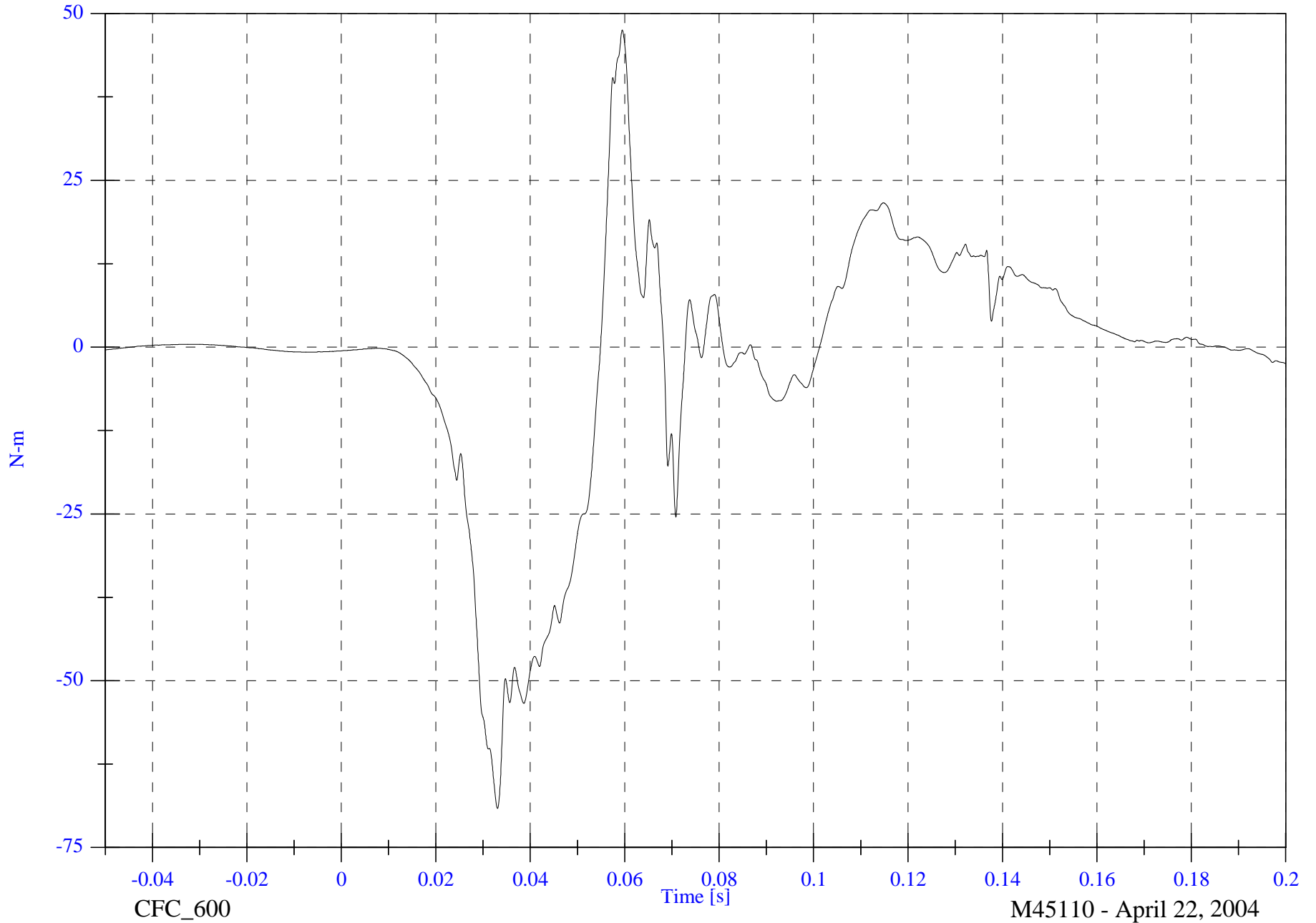
Max: 47.5 [N-m] at 0.059 [s]

V1P1 Left Upper Tibia My

Min: -69.1 [N-m] at 0.033 [s]

B-46

8642-NCAP-48



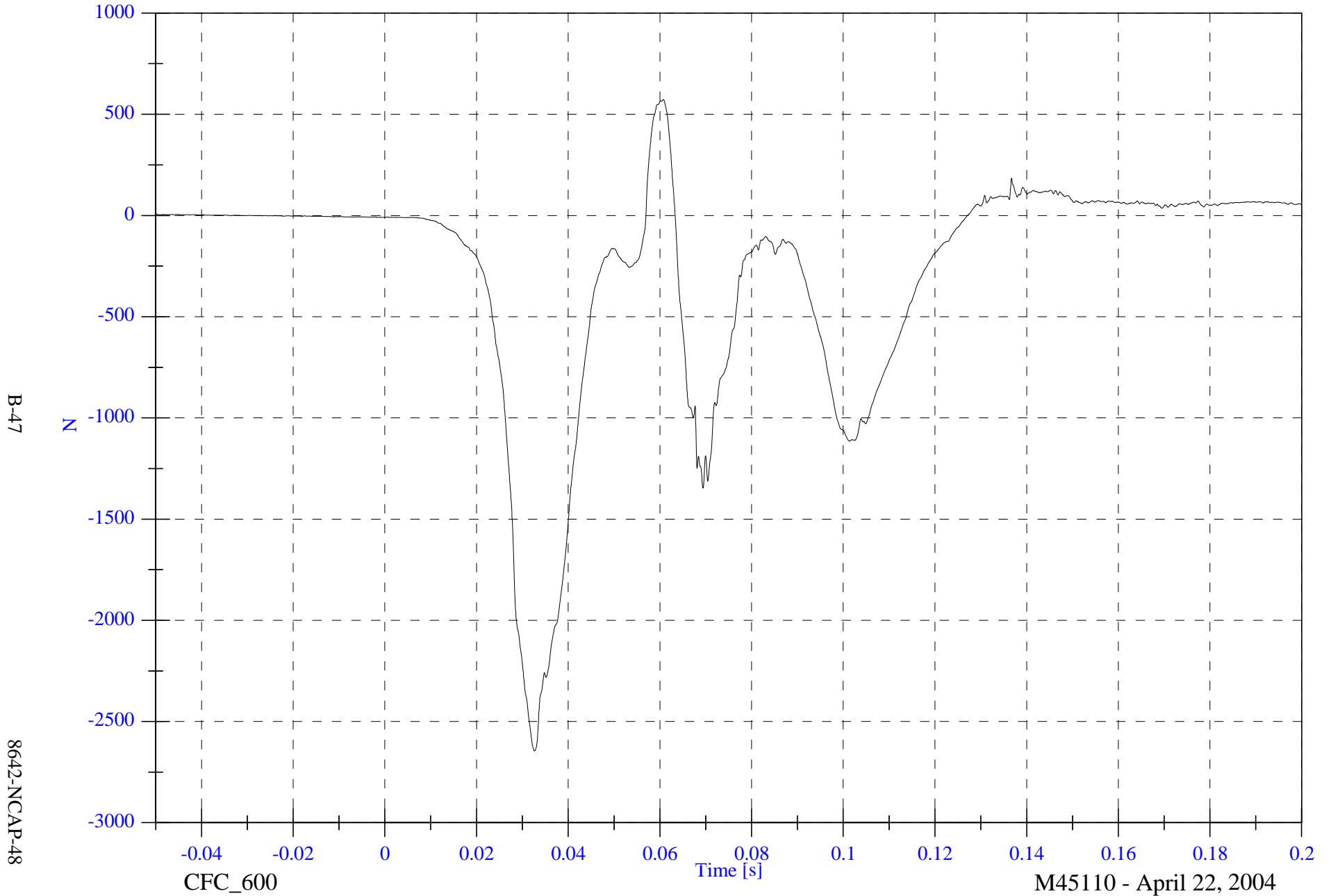
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 572.6 [N] at 0.061 [s]

V1P1 Left Lower Tibia Fz

Min: -2645.6 [N] at 0.033 [s]



B-47

8642-NCAP-48

CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

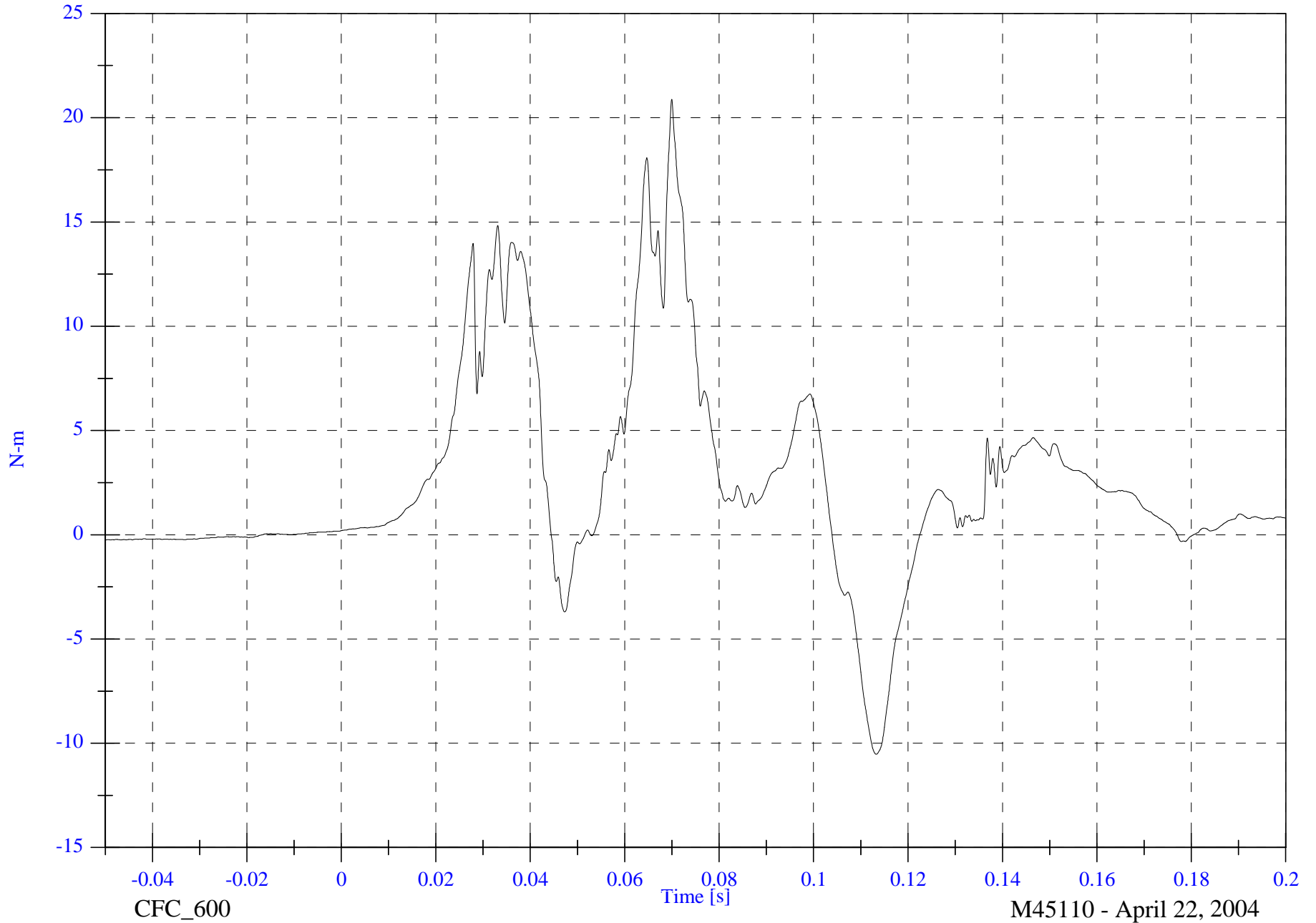
VIP1 Left Lower Tibia Mx

Max: 20.9 [N-m] at 0.070 [s]

Min: -10.5 [N-m] at 0.113 [s]

B-48

8642-NCAP-48



CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

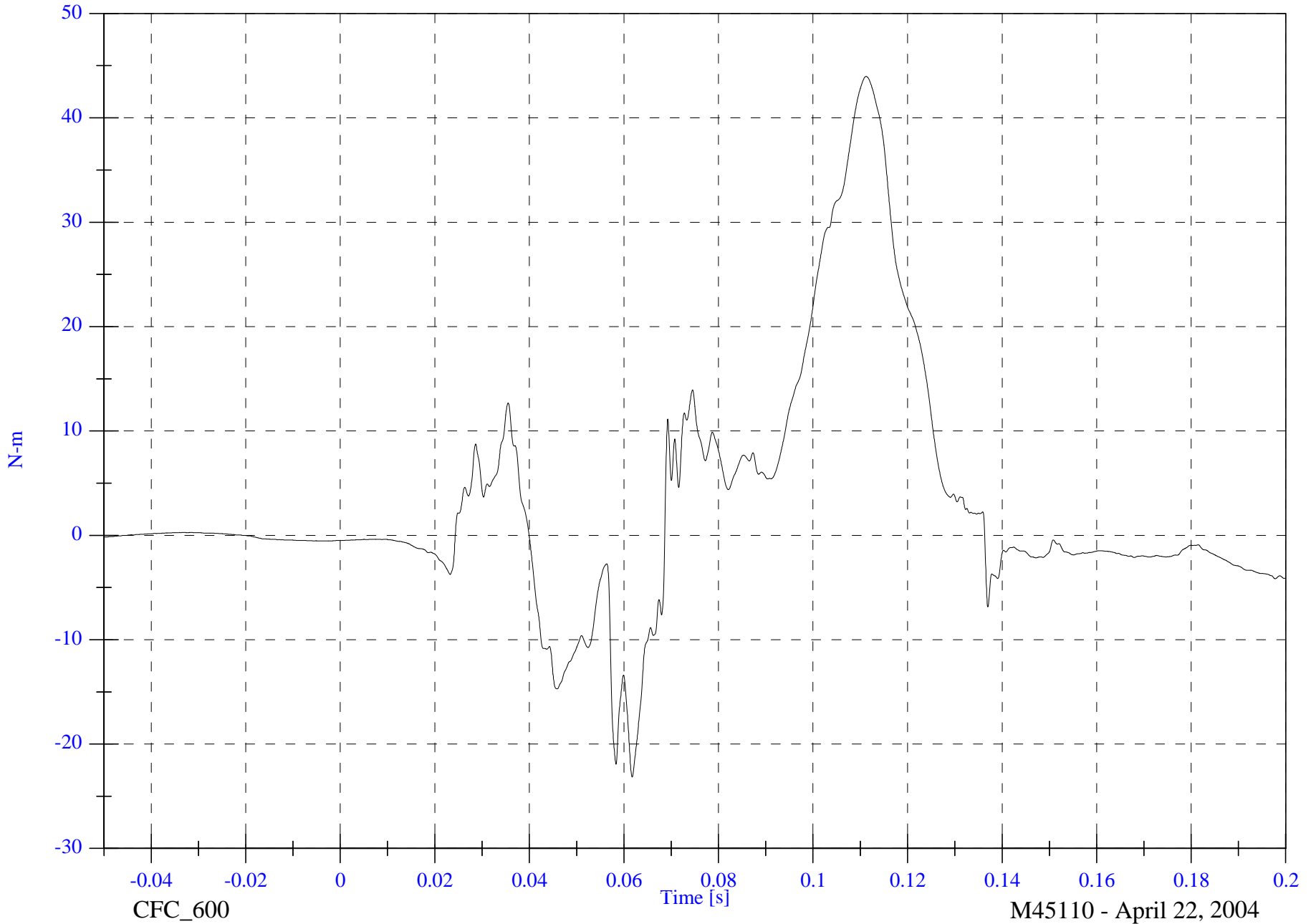
Max: 44.0 [N-m] at 0.111 [s]

V1P1 Left Lower tibia My

Min: -23.2 [N-m] at 0.062 [s]

B-49

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

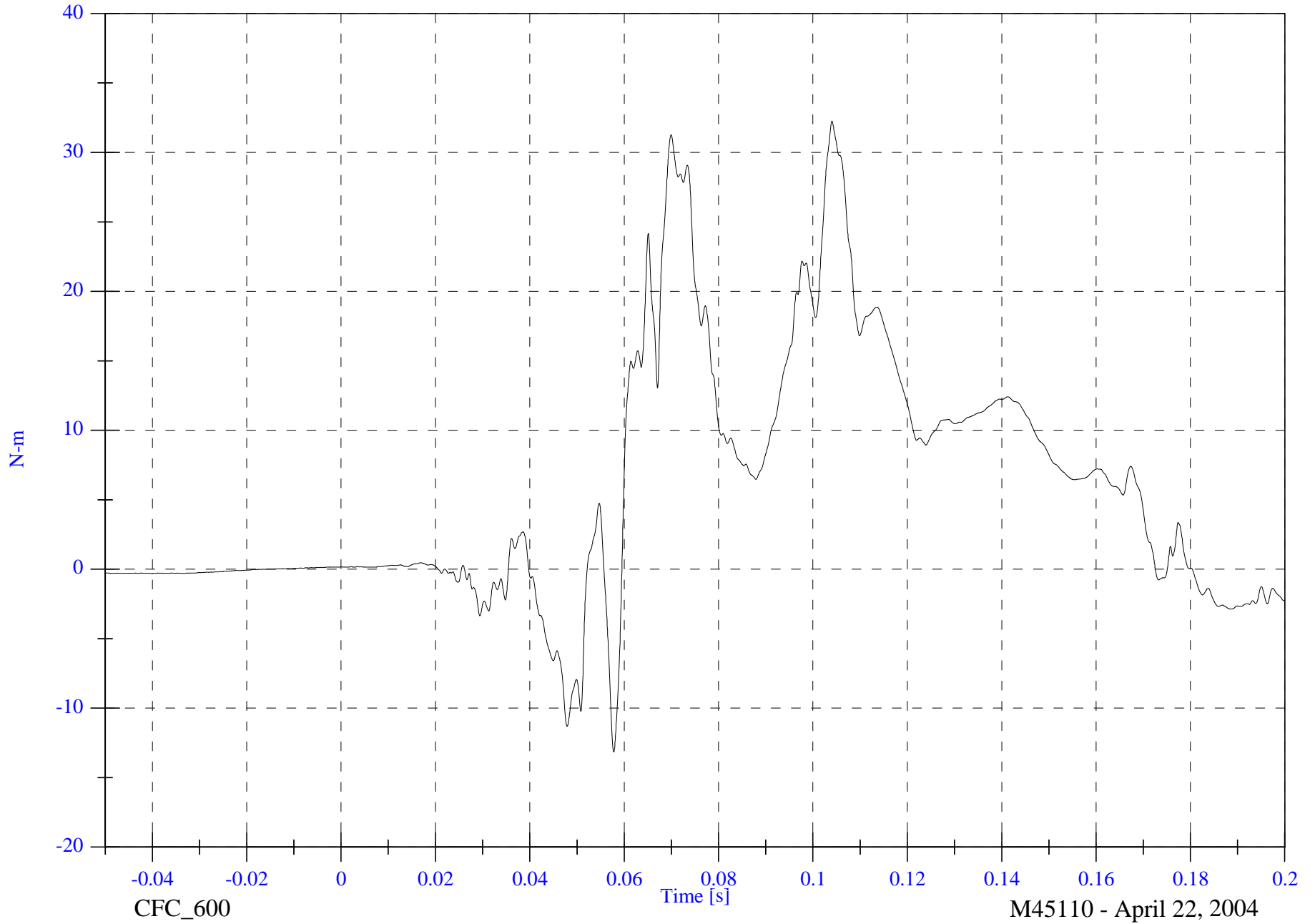
V1P1 Right Upper Tibia Mx

Max: 32.3 [N-m] at 0.104 [s]

Min: -13.2 [N-m] at 0.058 [s]

B-50

8642-NCAP-48



M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P1 Right Upper Tibia My

Max: 23.3 [N-m] at 0.111 [s]

Min: -71.1 [N-m] at 0.052 [s]

B-51

8642-NCAP-48



CFC_600

Time [s]

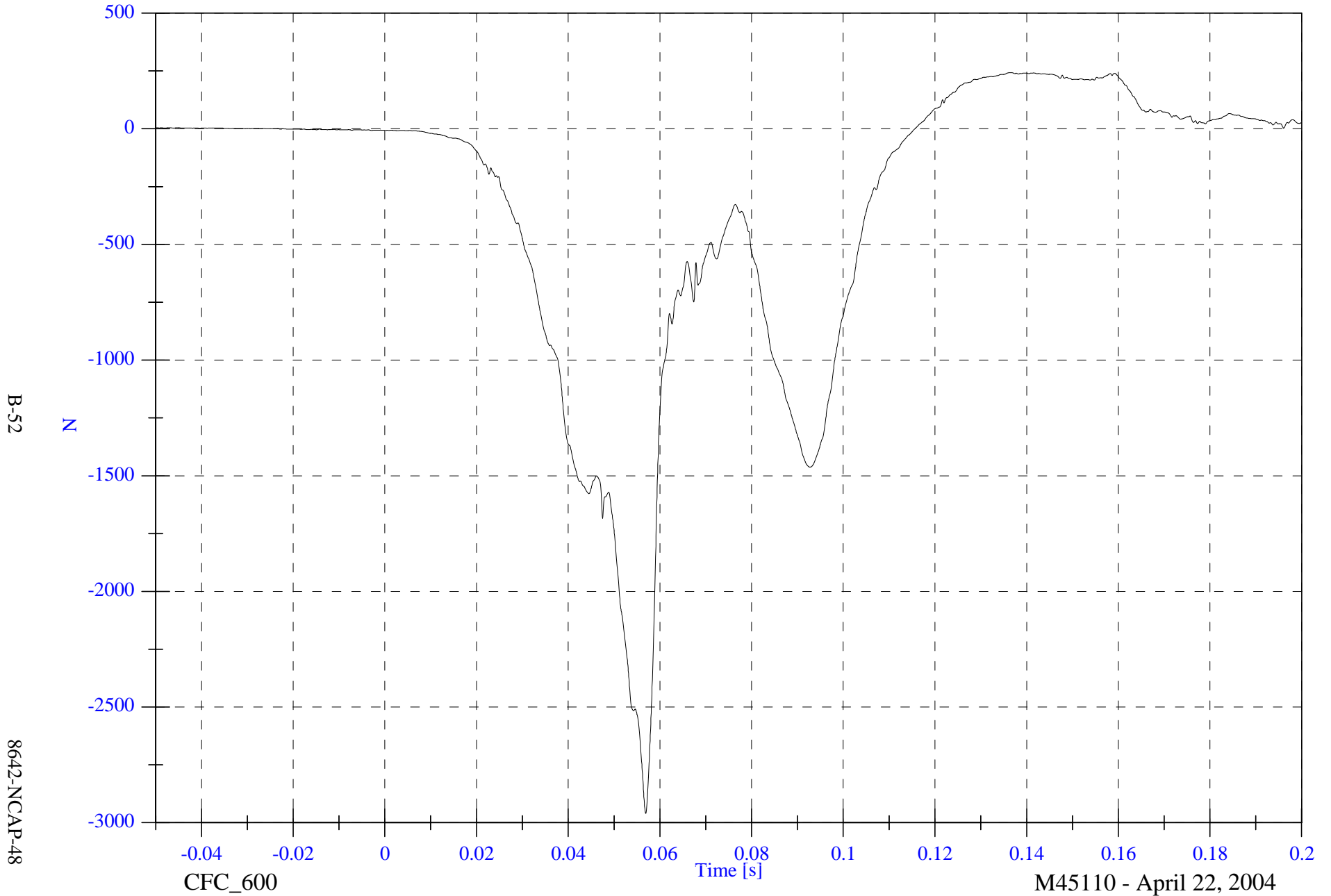
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP1 Right Lower Tibia Fz

Max: 242.7 [N] at 0.136 [s]

Min: -2960.5 [N] at 0.057 [s]

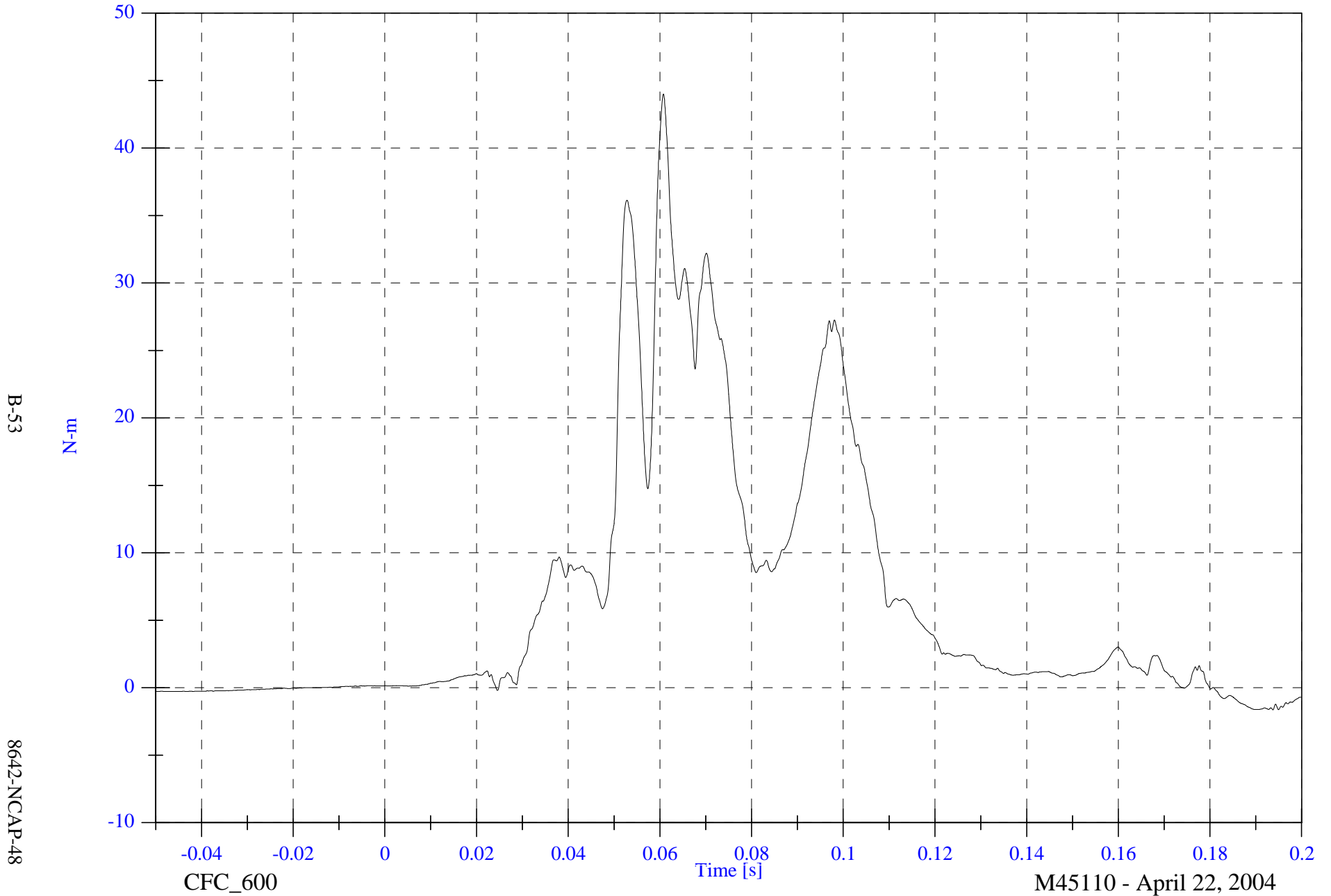


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 44.0 [N-m] at 0.061 [s]

V1P1 Right Lower tibia Mx

Min: -1.6 [N-m] at 0.194 [s]



B-53

8642-NCAP-48

CFC_600

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

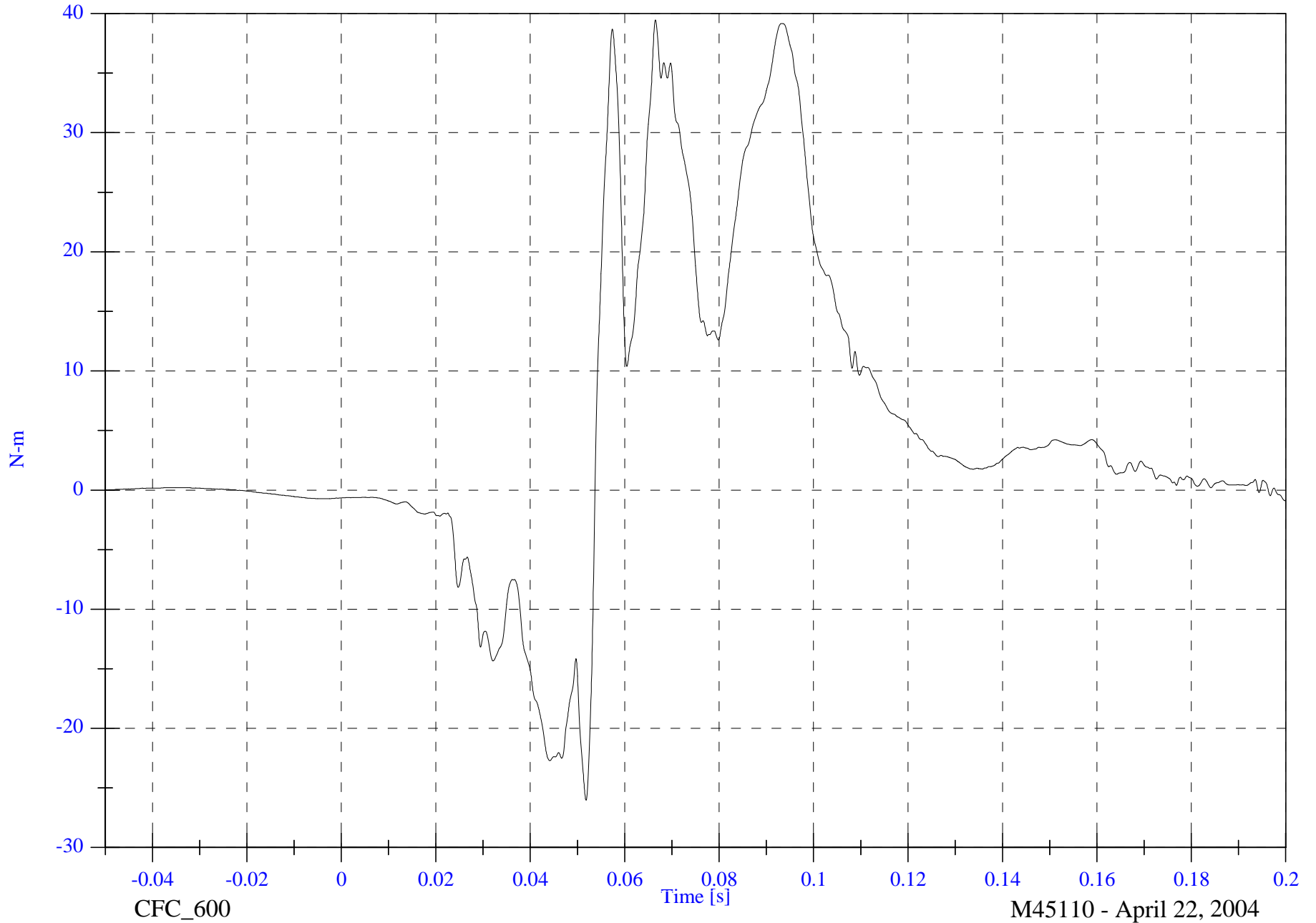
Max: 39.5 [N-m] at 0.067 [s]

V1P1 Right Lower Tibia My

Min: -26.0 [N-m] at 0.052 [s]

B-54

8642-NCAP-48



CFC_600

Time [s]

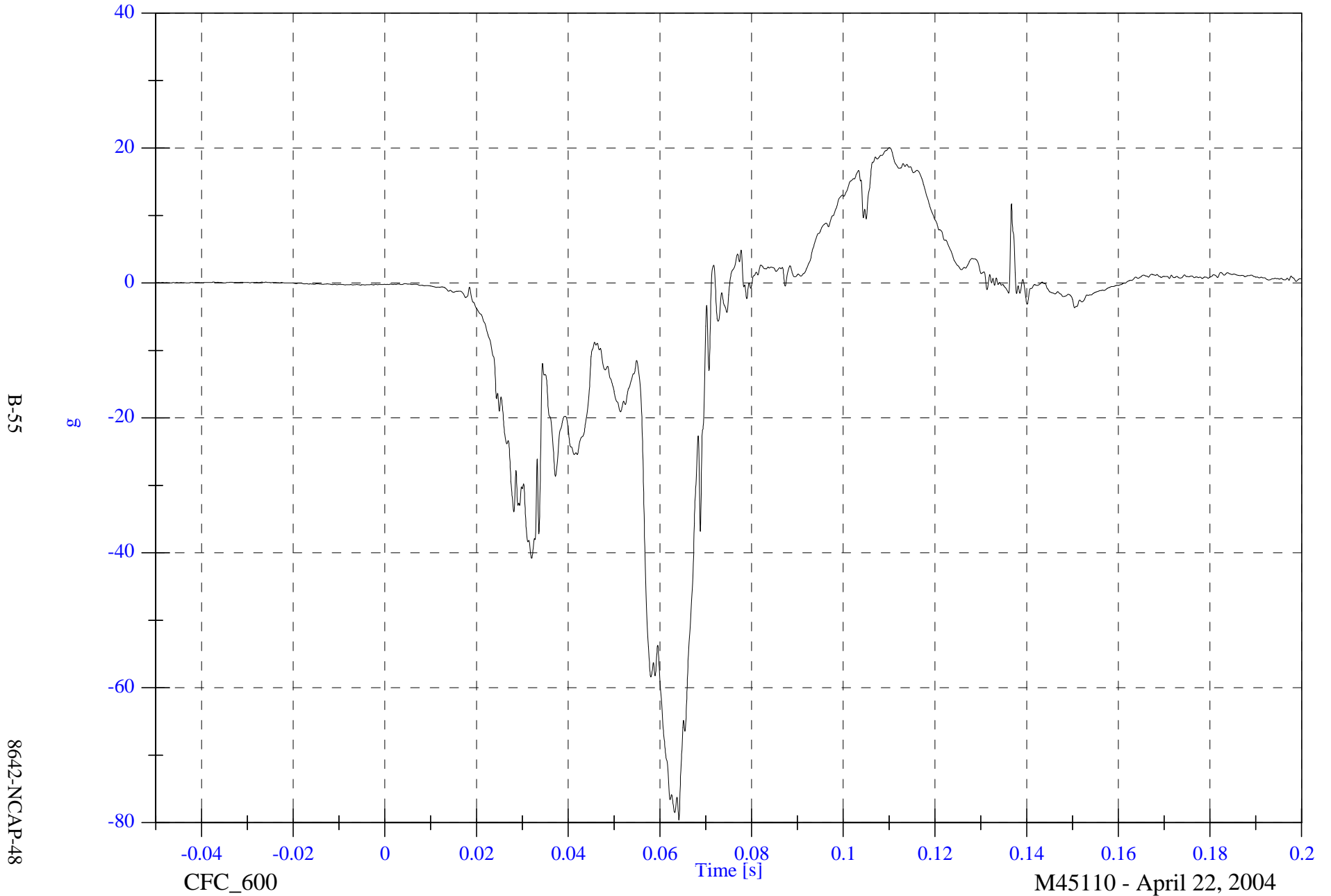
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP1 Left Foot Aft Ax

Max: 20.0 [g] at 0.110 [s]

Min: -79.6 [g] at 0.064 [s]

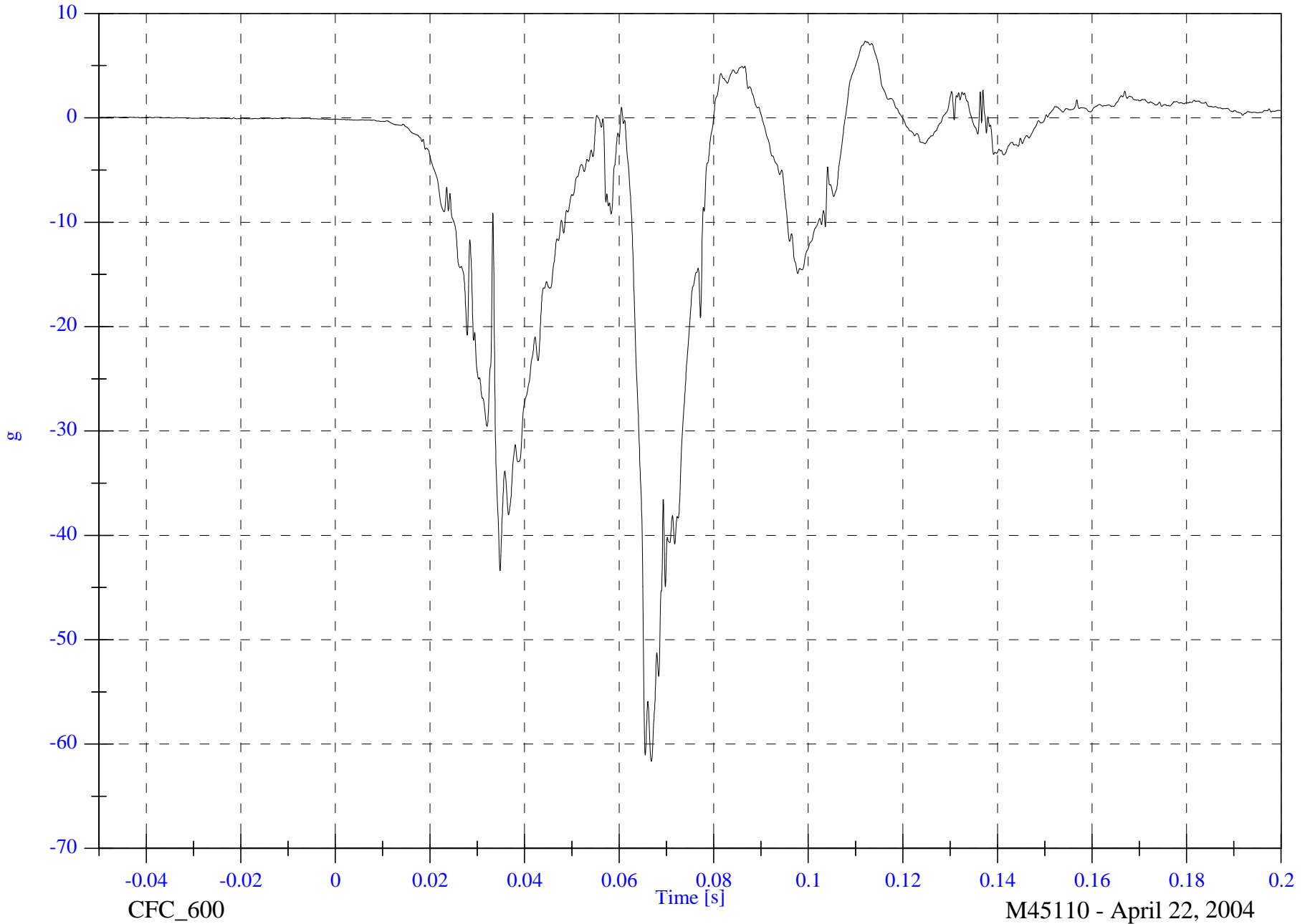


2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP1 Left Foot Aft Az

Max: 7.4 [g] at 0.112 [s]

Min: -61.7 [g] at 0.067 [s]



B-56

8642-NCAP-48

CFC_600

Time [s]

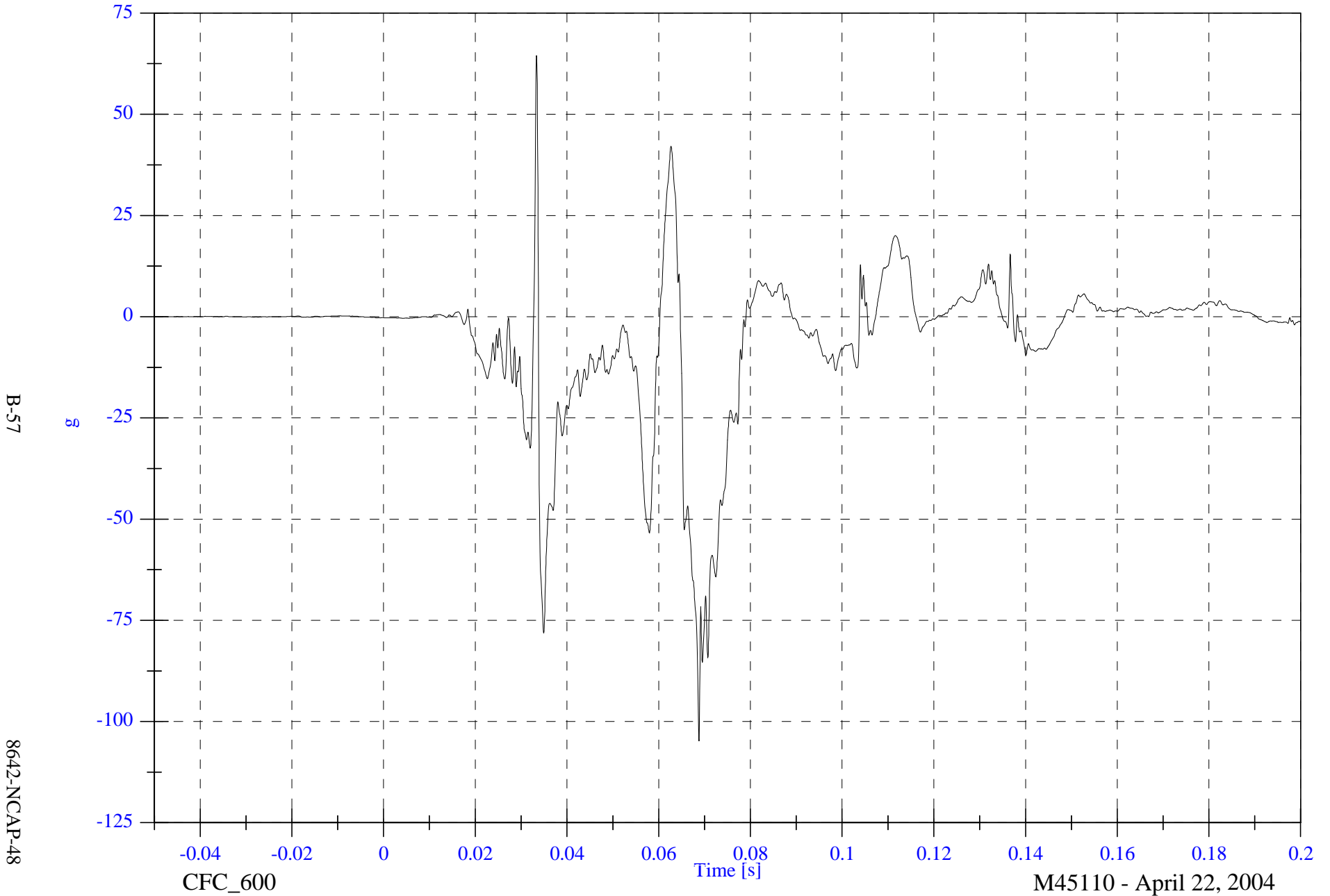
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 64.5 [g] at 0.033 [s]

V1P1 Left Foot Fore Az

Min: -104.9 [g] at 0.069 [s]

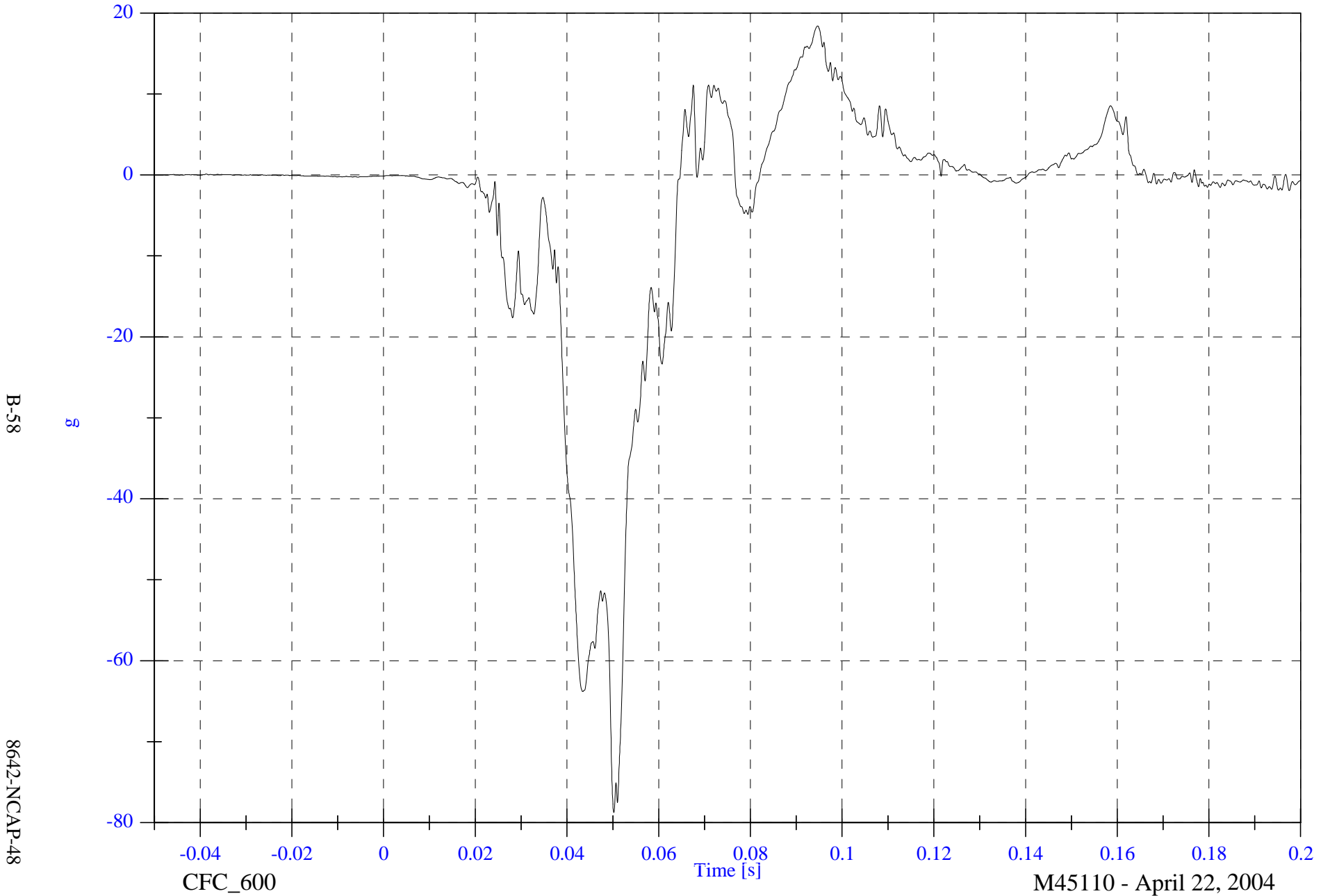


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 18.4 [g] at 0.095 [s]

V1P1 Right Foot Aft x

Min: -78.8 [g] at 0.050 [s]

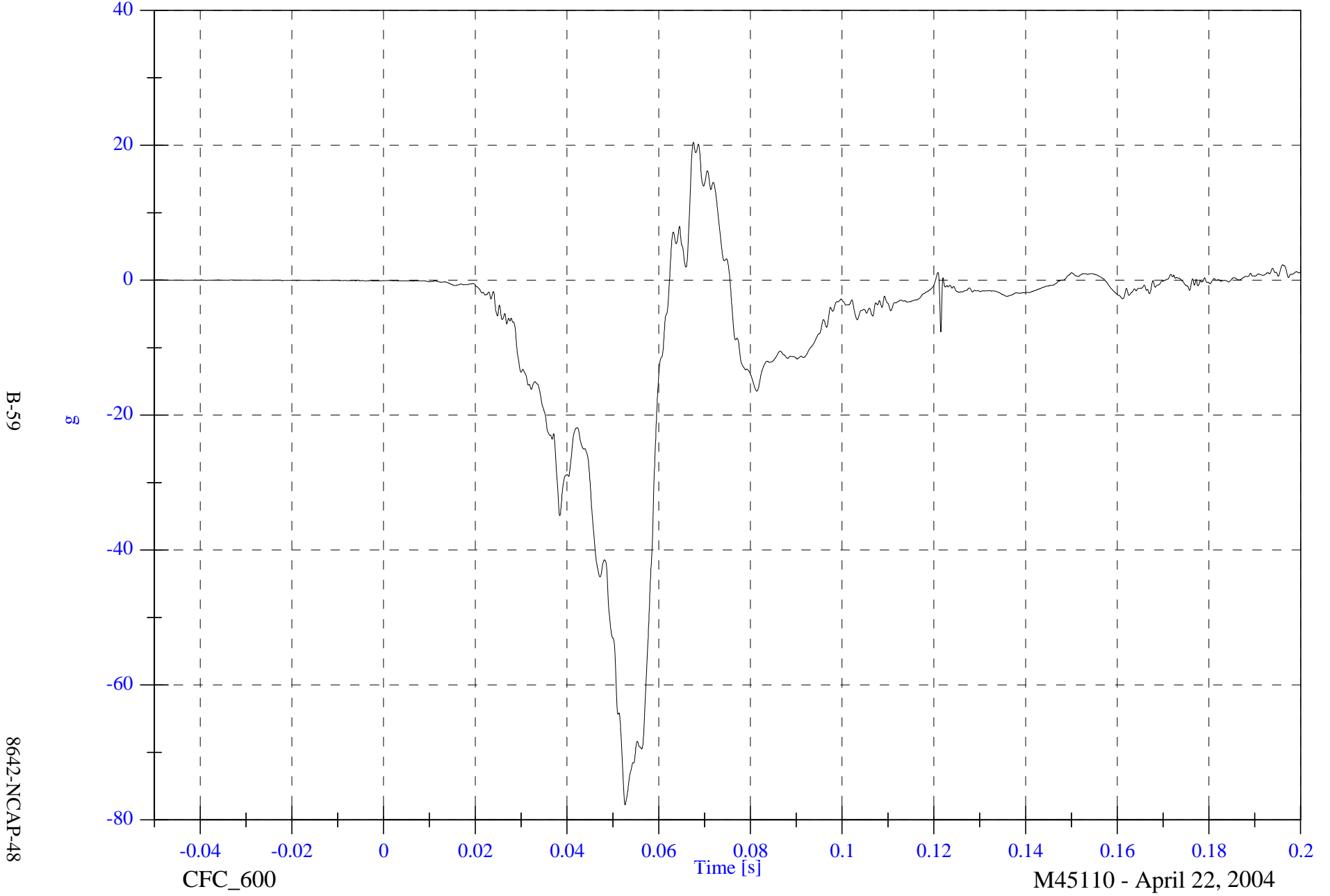


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P1 Right Foot Aft z

Max: 20.4 [g] at 0.068 [s]

Min: -77.8 [g] at 0.053 [s]

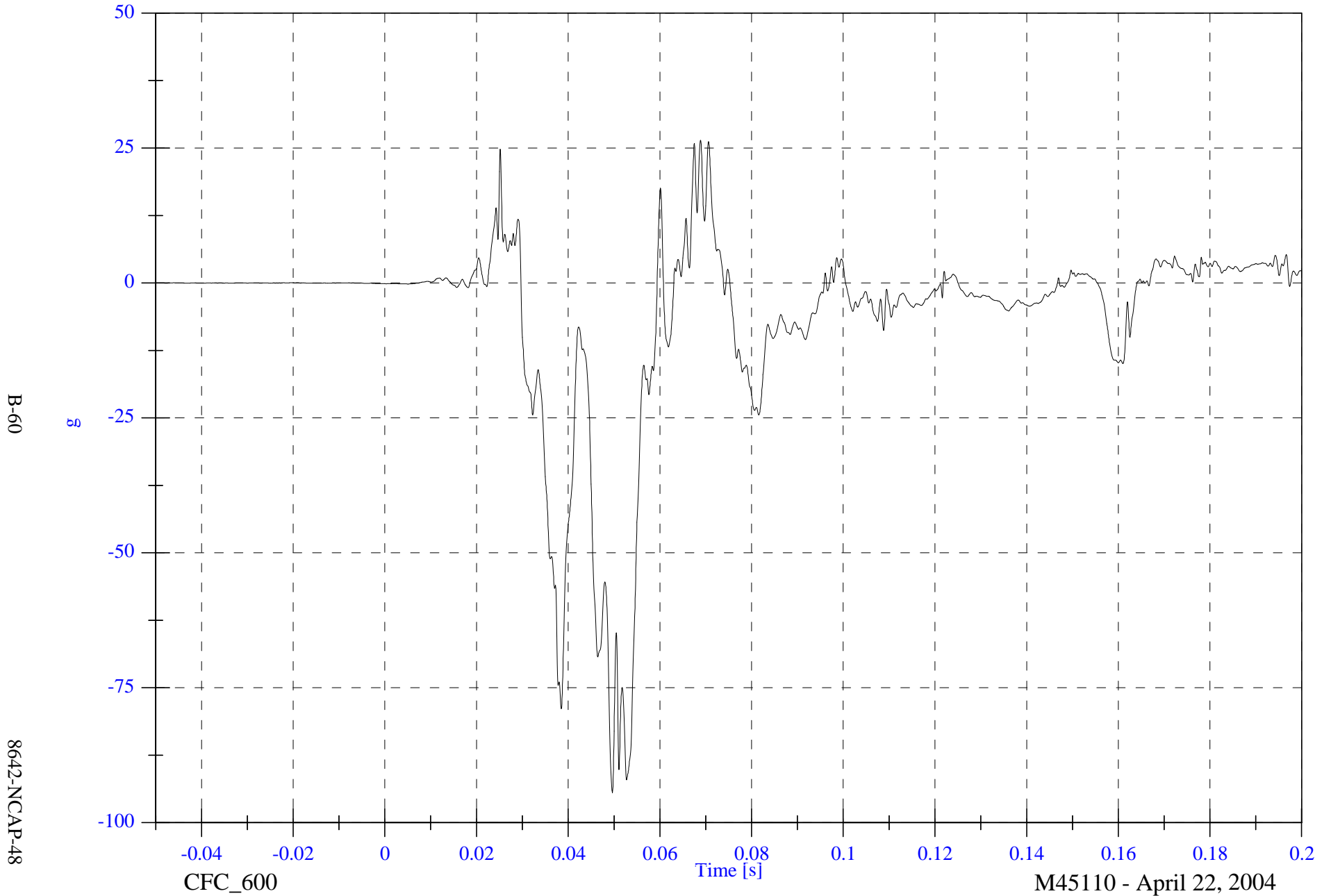


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 26.4 [g] at 0.069 [s]

VIP1 Right Foot Fore z

Min: -94.5 [g] at 0.050 [s]

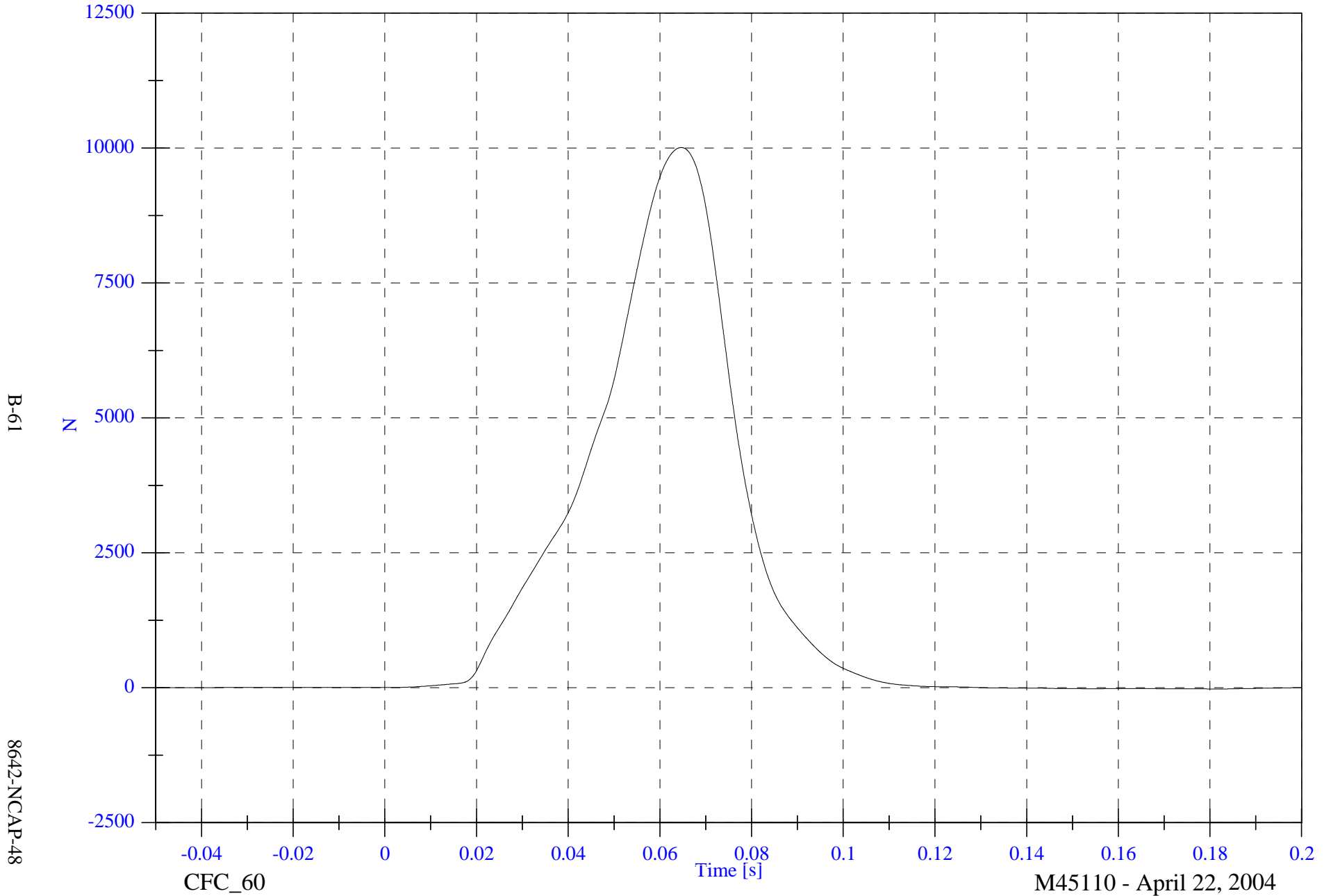


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Driver Lap Belt

Max: 10009.6 [N] at 0.065 [s]

Min: -20.4 [N] at 0.182 [s]



B-61

8642-NCAP-48

CFC_60

Time [s]

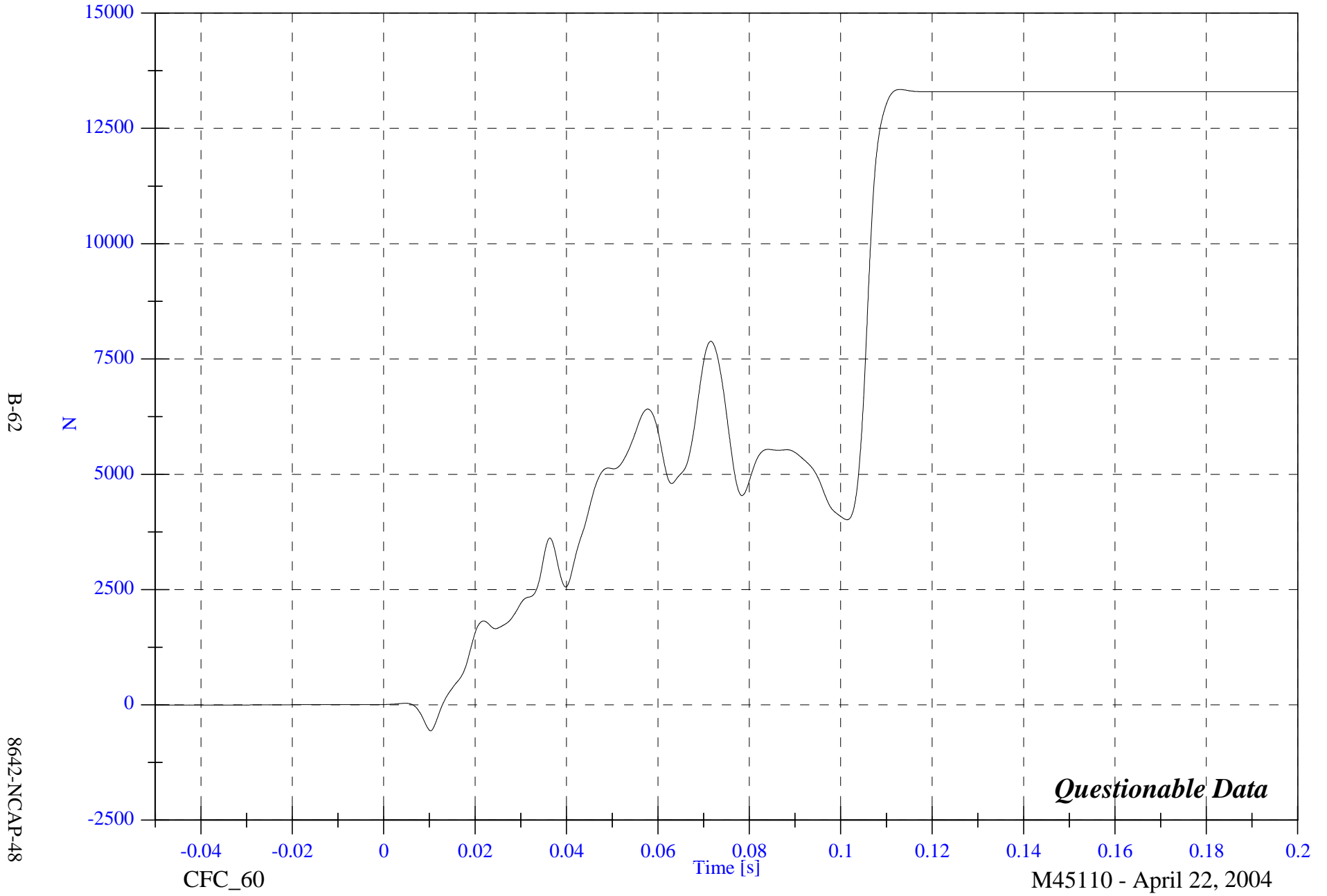
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 13343.8 [N] at 0.113 [s]

V1 Driver Torso Belt

Min: -562.9 [N] at 0.010 [s]



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8642-NCAP-48

CFC_60

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

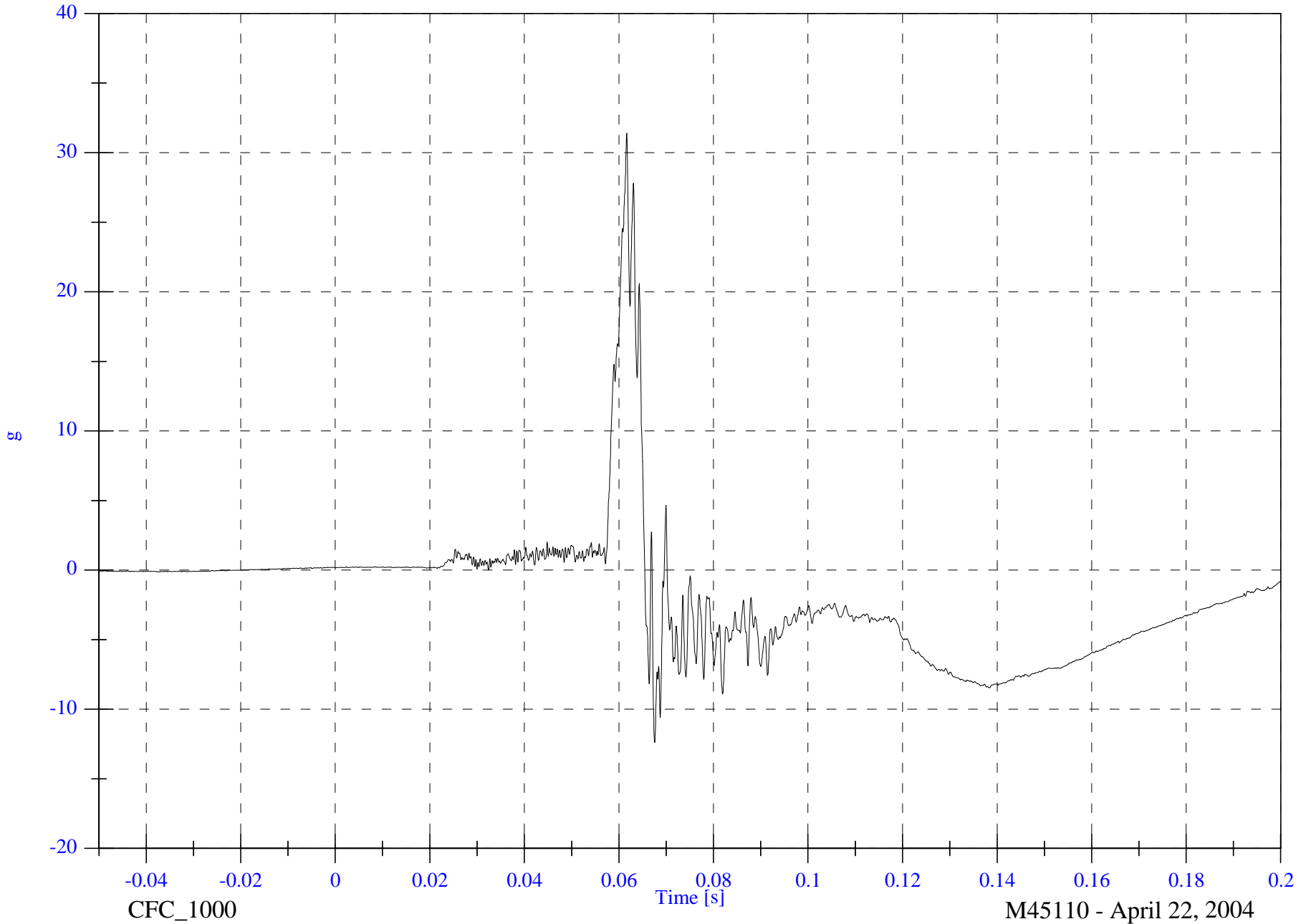
V1P2 Head 9 Array X Arm y

Max: 31.4 [g] at 0.062 [s]

Min: -12.4 [g] at 0.068 [s]

B-63

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

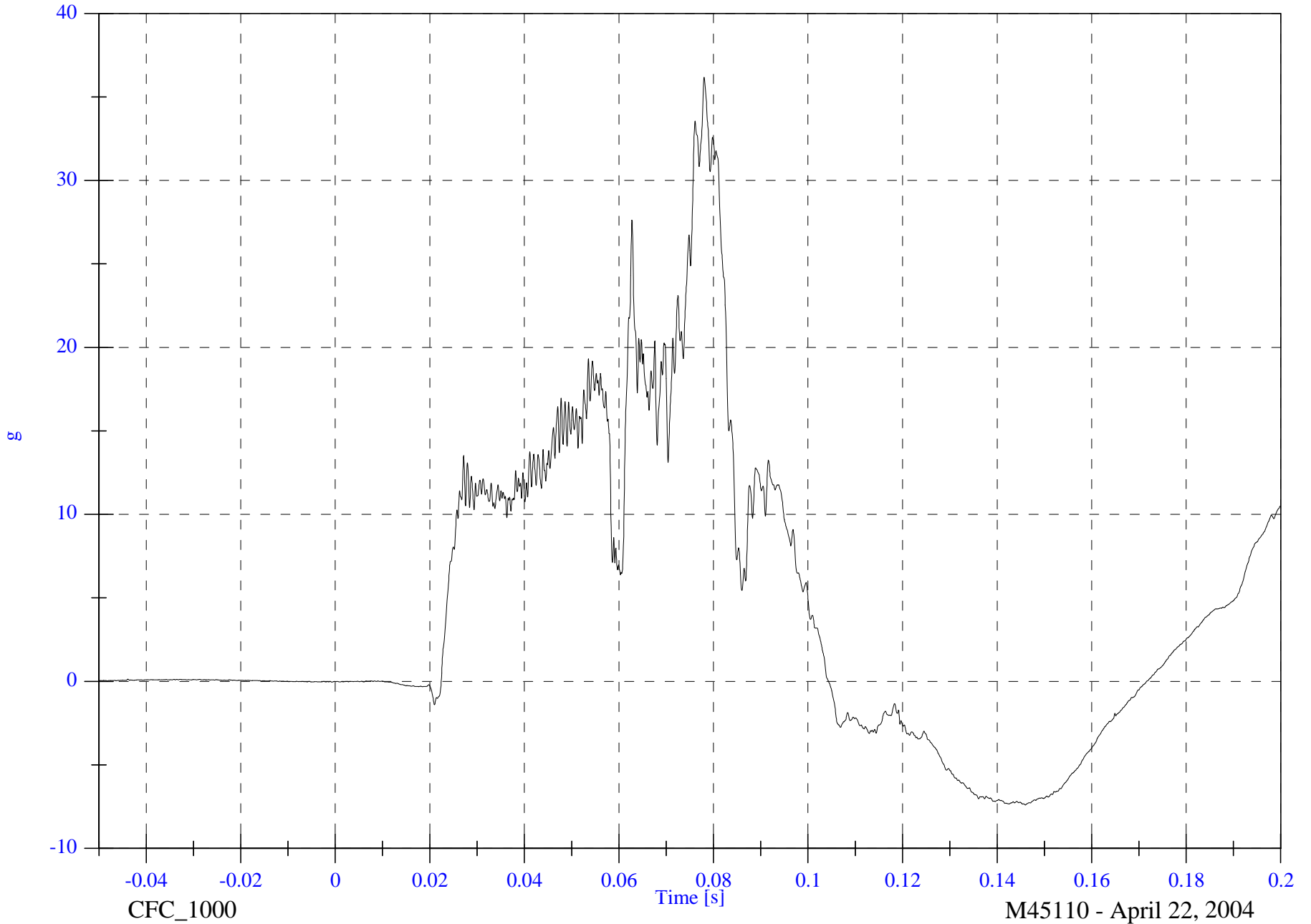
V1P2 Head 9 Array X Arm z

Max: 36.2 [g] at 0.078 [s]

Min: -7.4 [g] at 0.146 [s]

B-64

8642-NCAP-48

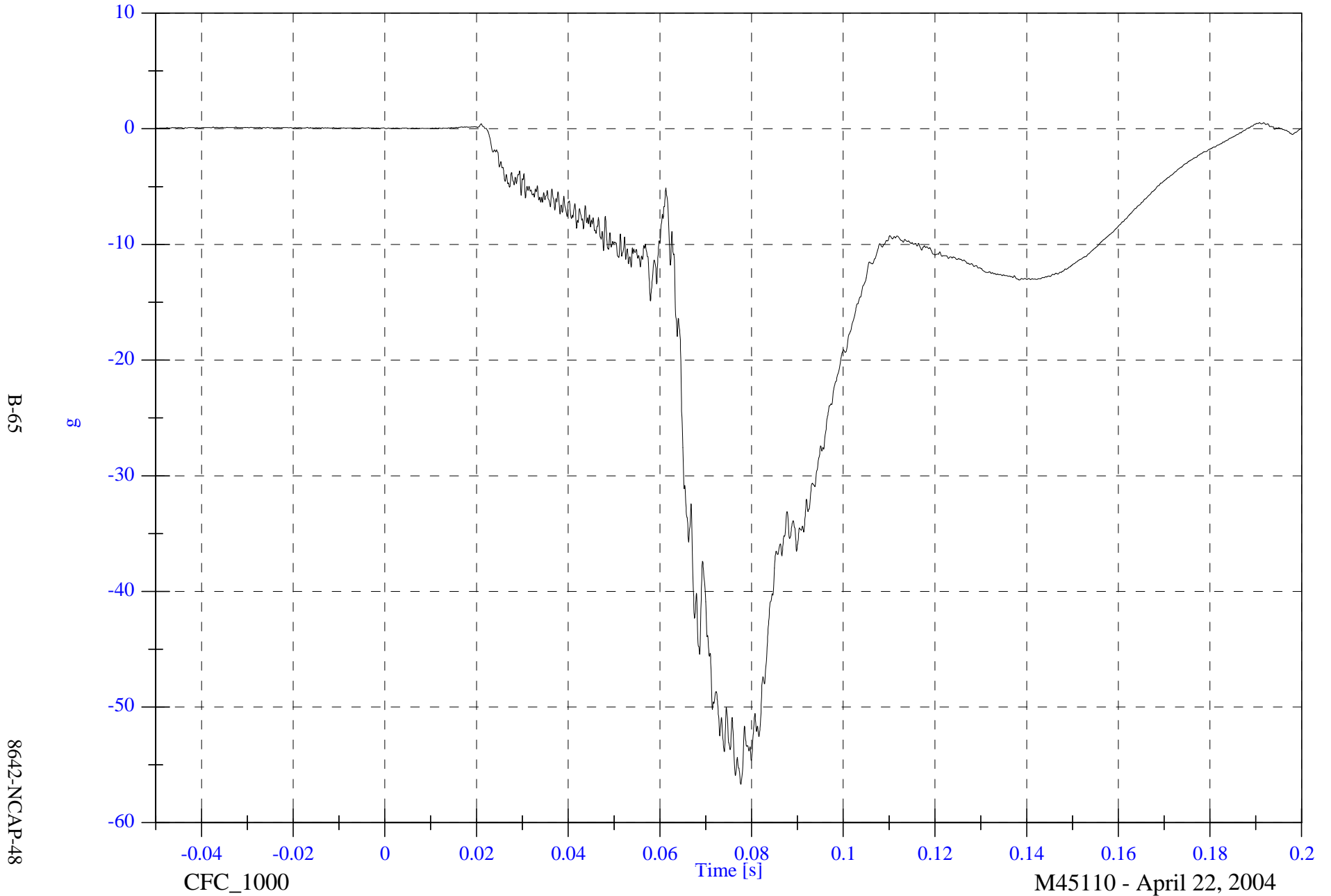


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Head 9 Array Y Arm x

Max: 0.5 [g] at 0.191 [s]

Min: -56.7 [g] at 0.078 [s]



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8642-NCAP-48

CFC_1000

Time [s]

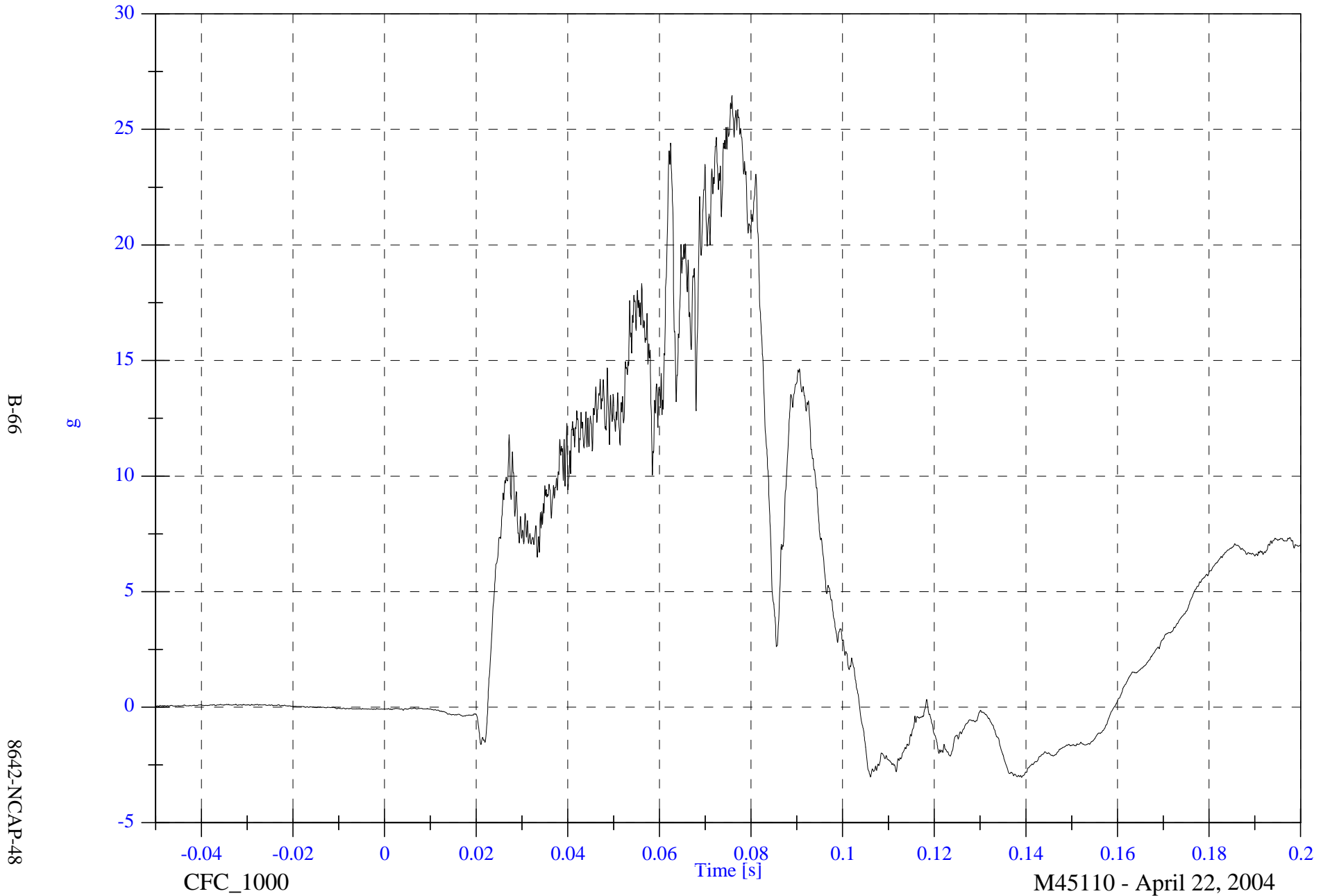
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Head 9 Array Y Arm z

Max: 26.5 [g] at 0.076 [s]

Min: -3.0 [g] at 0.139 [s]



B-66

8642-NCAP-48

CFC_1000

Time [s]

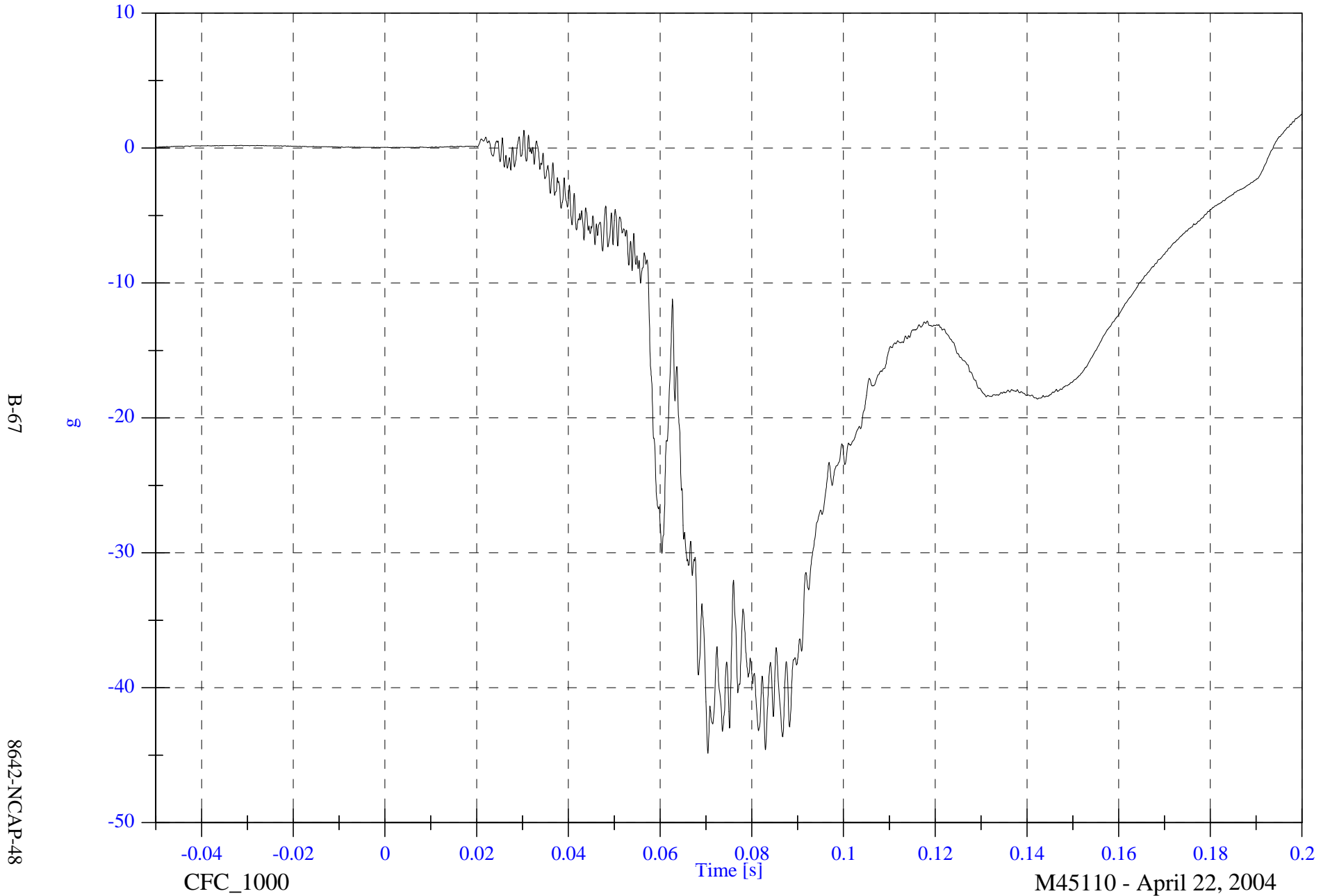
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Head 9 Array Z Arm x

Max: 2.5 [g] at 0.200 [s]

Min: -44.9 [g] at 0.070 [s]



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8642-NCAP-48

CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

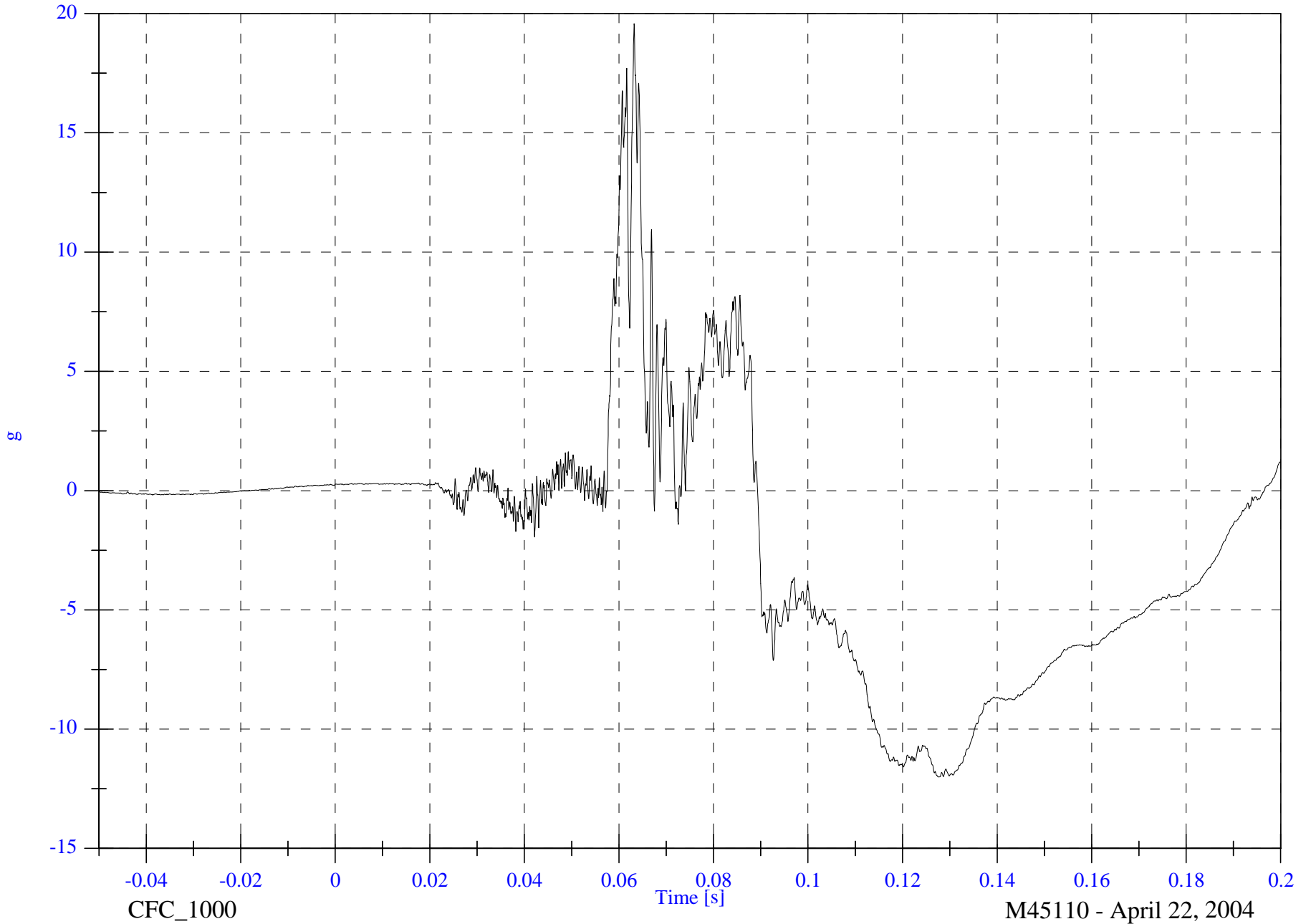
V1P2 Head 9 Array Z Arm y

Max: 19.6 [g] at 0.063 [s]

Min: -12.0 [g] at 0.128 [s]

B-68

8642-NCAP-48

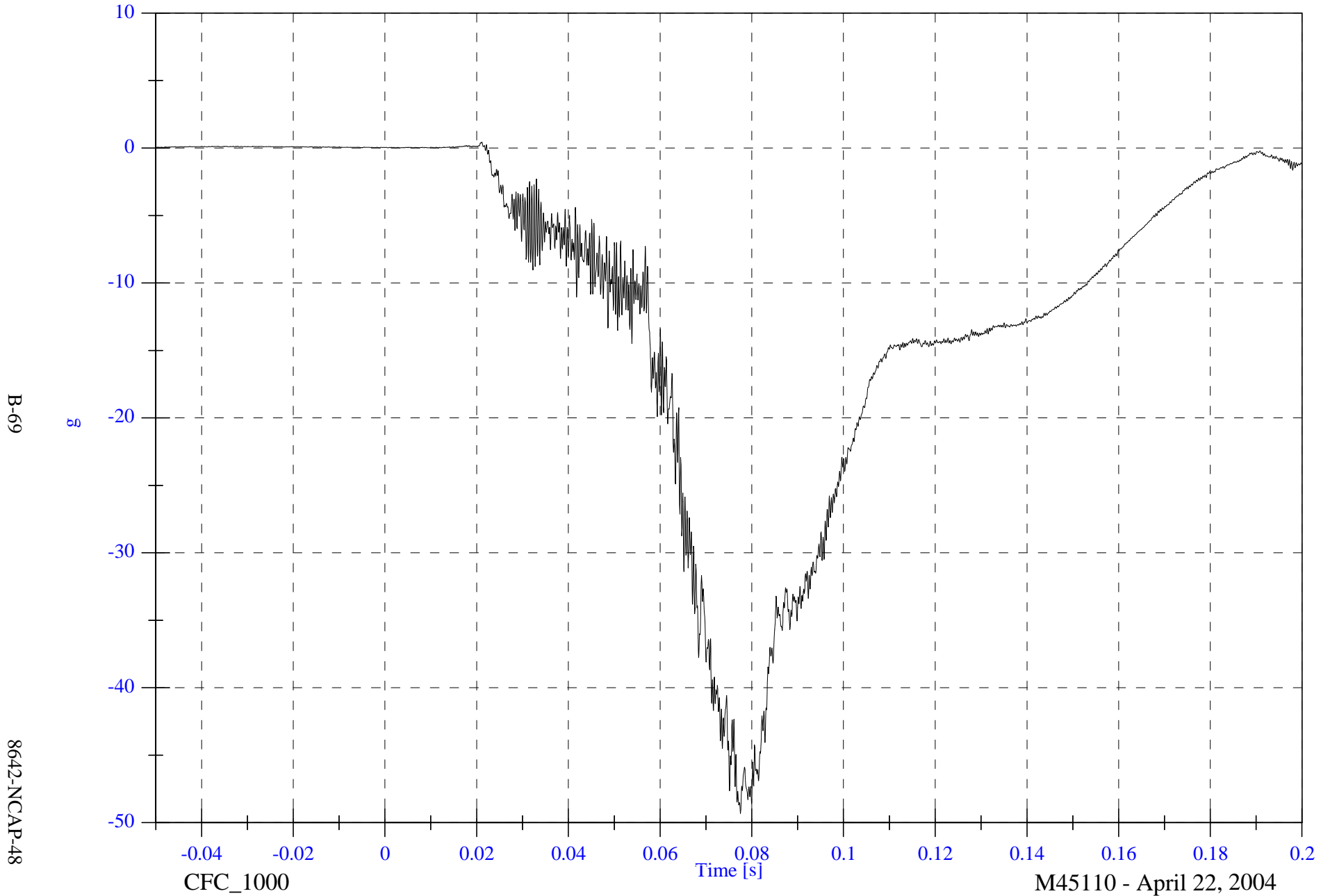


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Head CG x

Max: 0.4 [g] at 0.021 [s]

Min: -49.3 [g] at 0.077 [s]

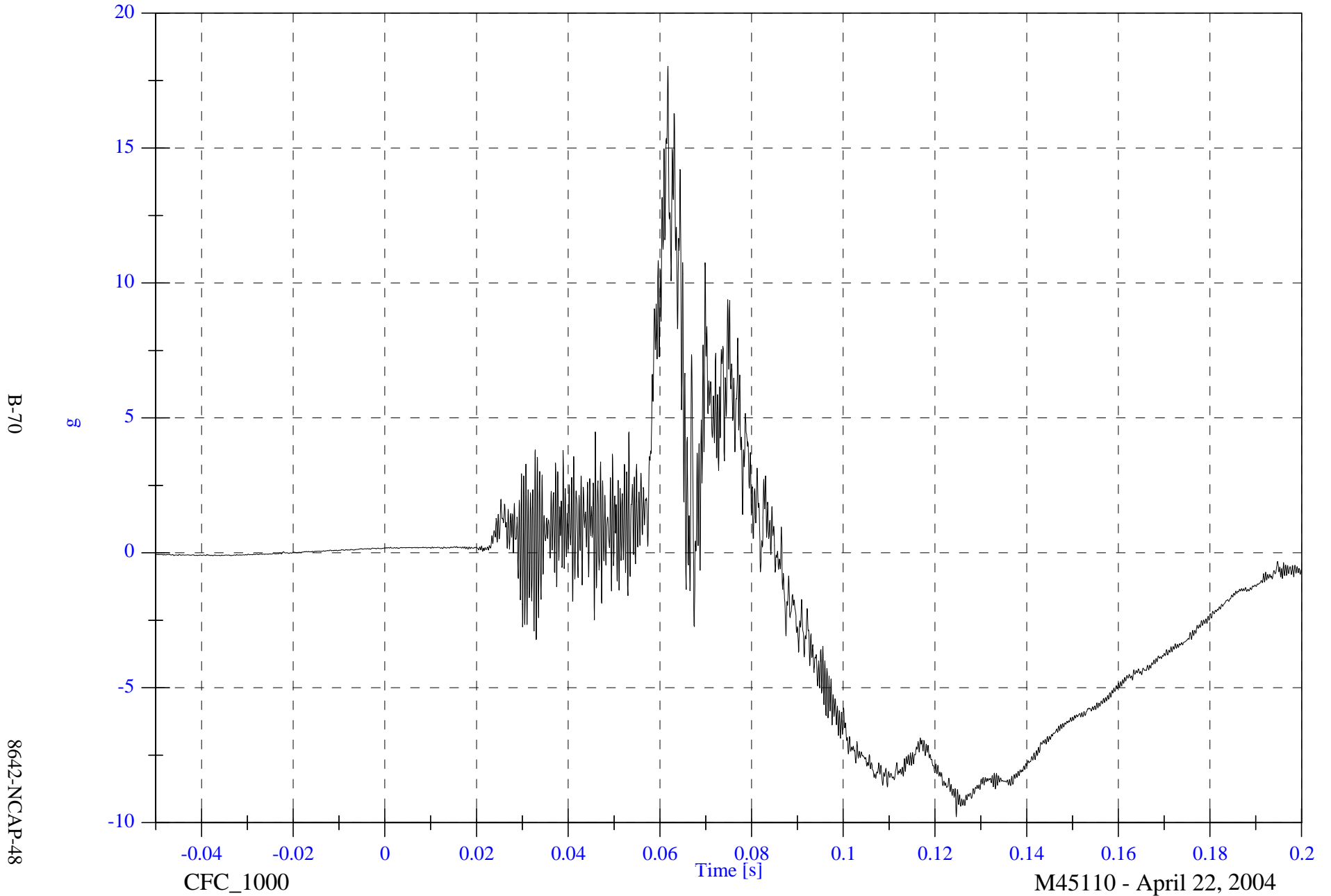


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Head CG y

Max: 18.0 [g] at 0.062 [s]

Min: -9.8 [g] at 0.125 [s]

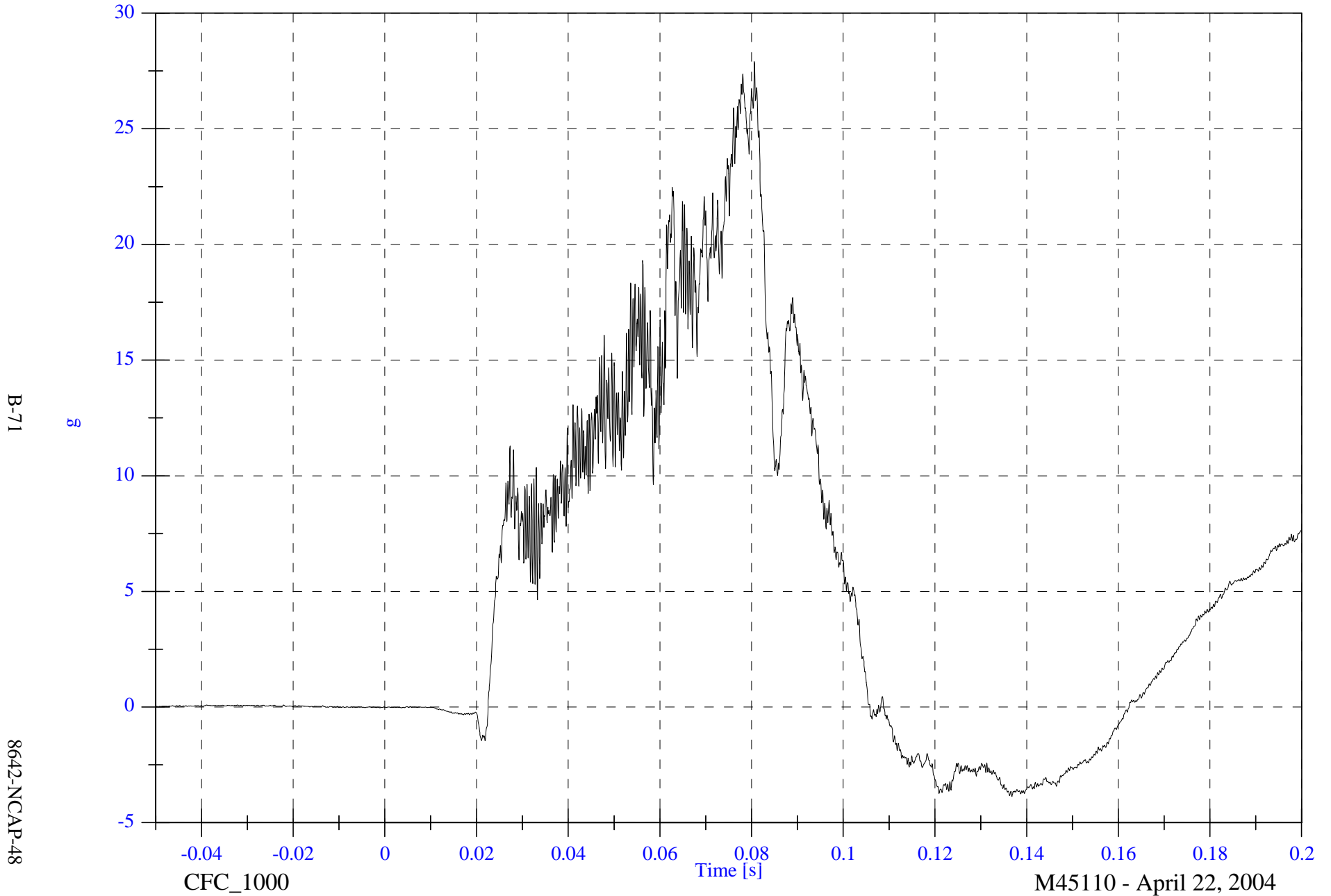


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 27.9 [g] at 0.081 [s]

Min: -3.9 [g] at 0.137 [s]

V1P2 Head CG z



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8642-NCAP-48

CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

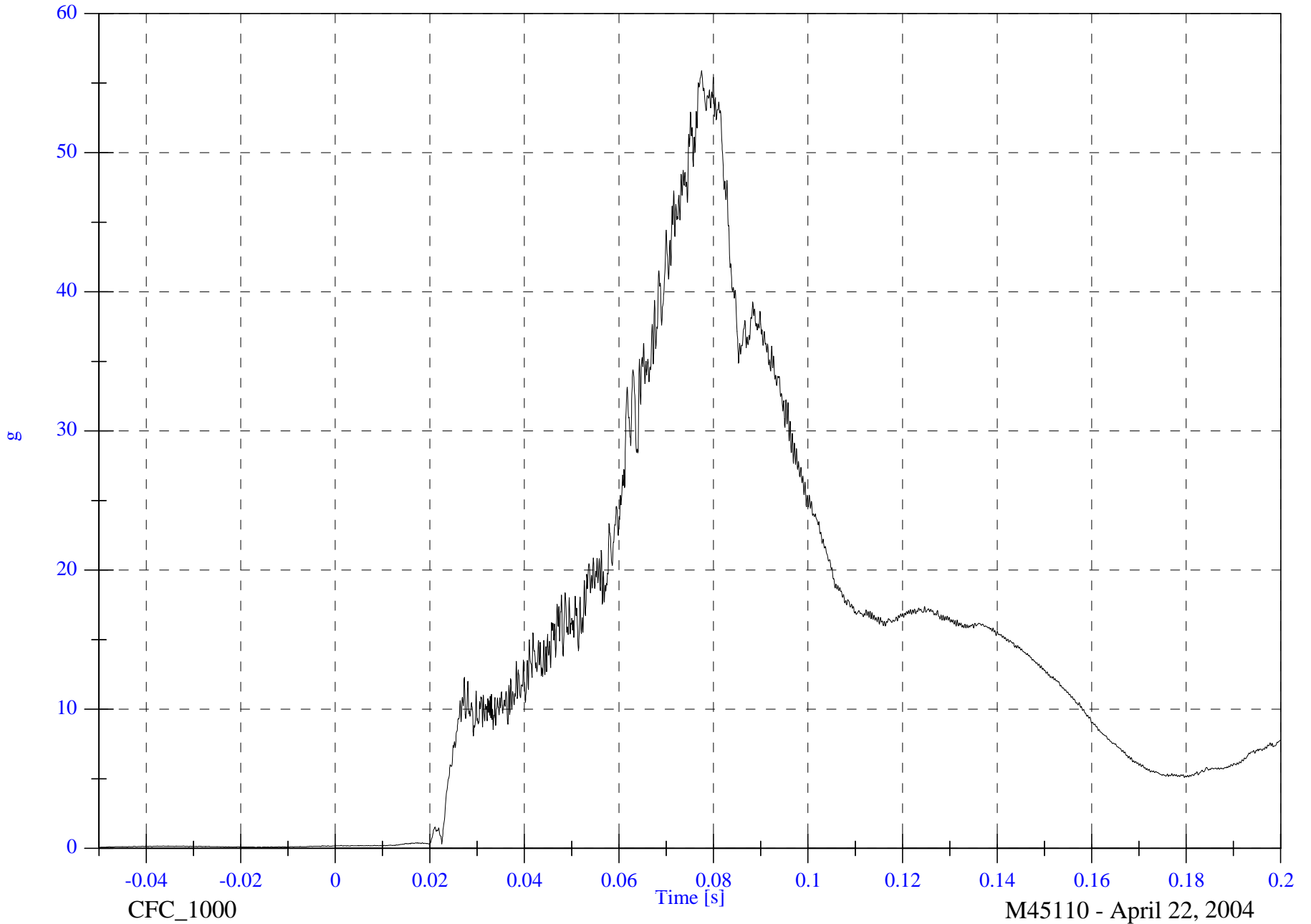
V1P2 Head CG Resultant

Max: 55.9 [g] at 0.077 [s]

Min: 0.1 [g] at -0.016 [s]

B-72

8642-NCAP-48



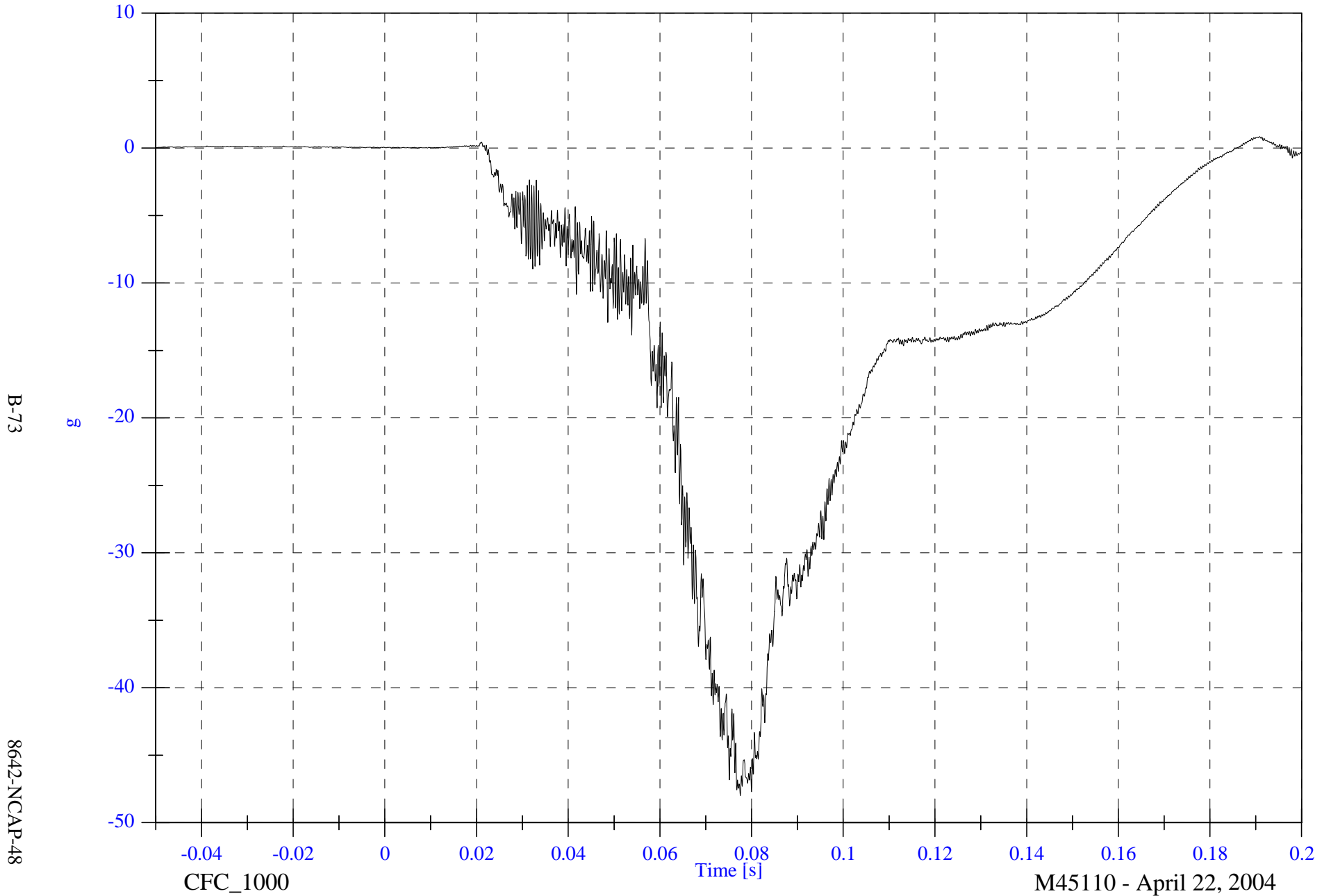
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Head CG Red x

Max: 0.8 [g] at 0.191 [s]

Min: -48.0 [g] at 0.078 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

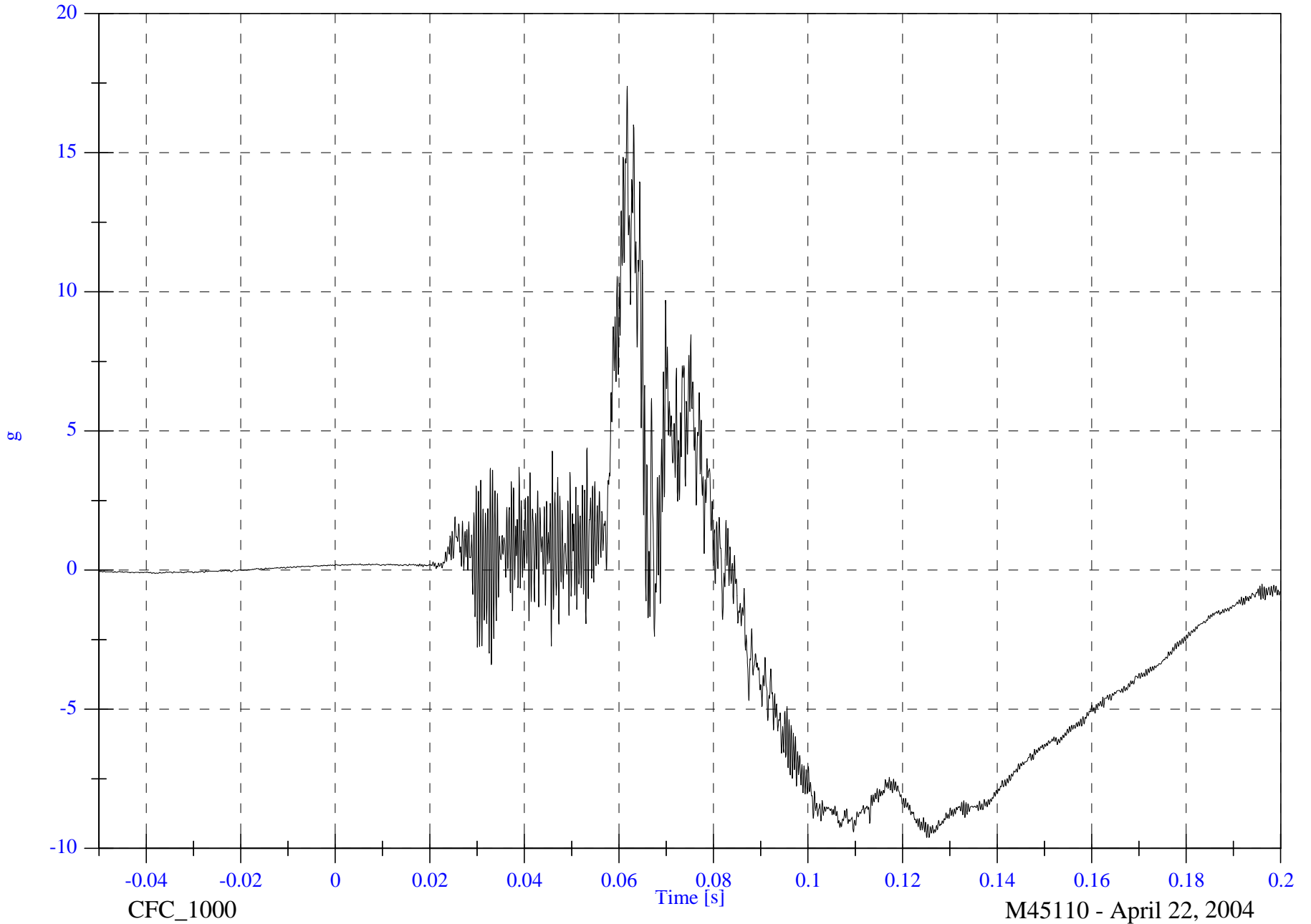
V1P2 Head CG Red y

Max: 17.4 [g] at 0.062 [s]

Min: -9.6 [g] at 0.125 [s]

B-74

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 23.0 [g] at 0.081 [s]

V1P2 Head CG Red z

Min: -3.1 [g] at 0.137 [s]

B-75

g

8642-NCAP-48



CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

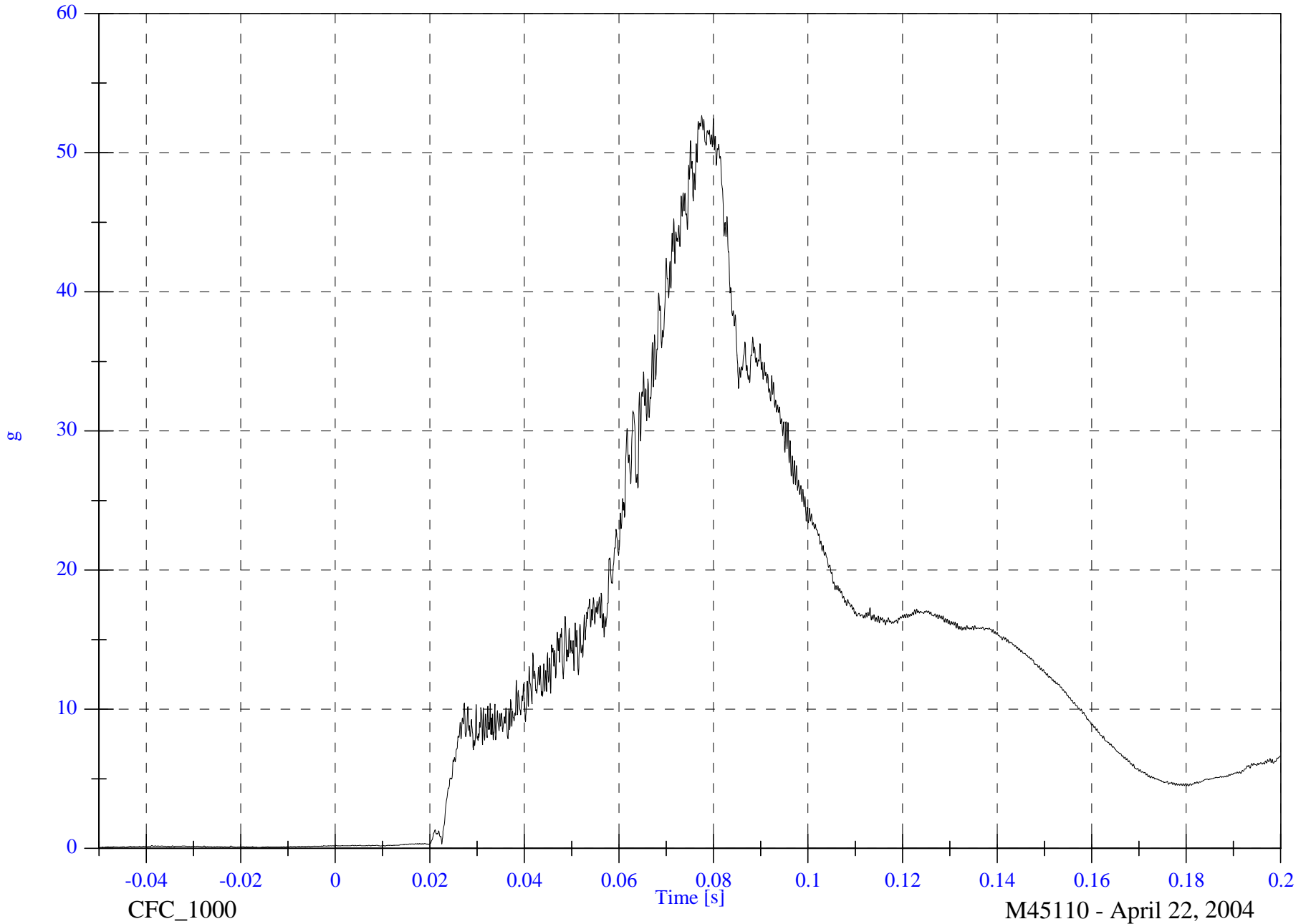
V1P2 Head CG Red Resultant

Max: 52.7 [g] at 0.077 [s]

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

B-76

8642-NCAP-48

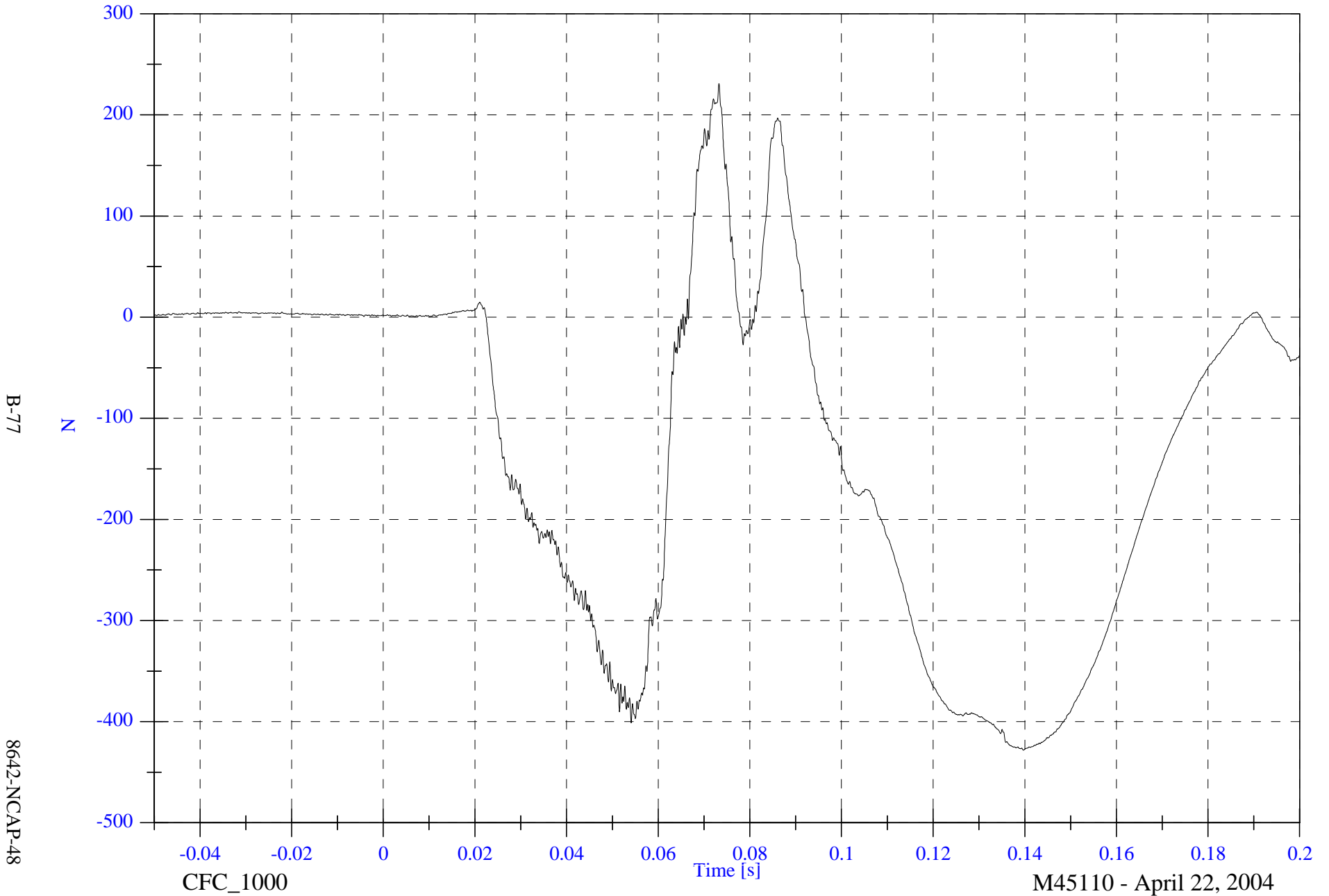


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 231.0 [N] at 0.073 [s]

Min: -428.2 [N] at 0.140 [s]

V1P2 Upper Neck Fx

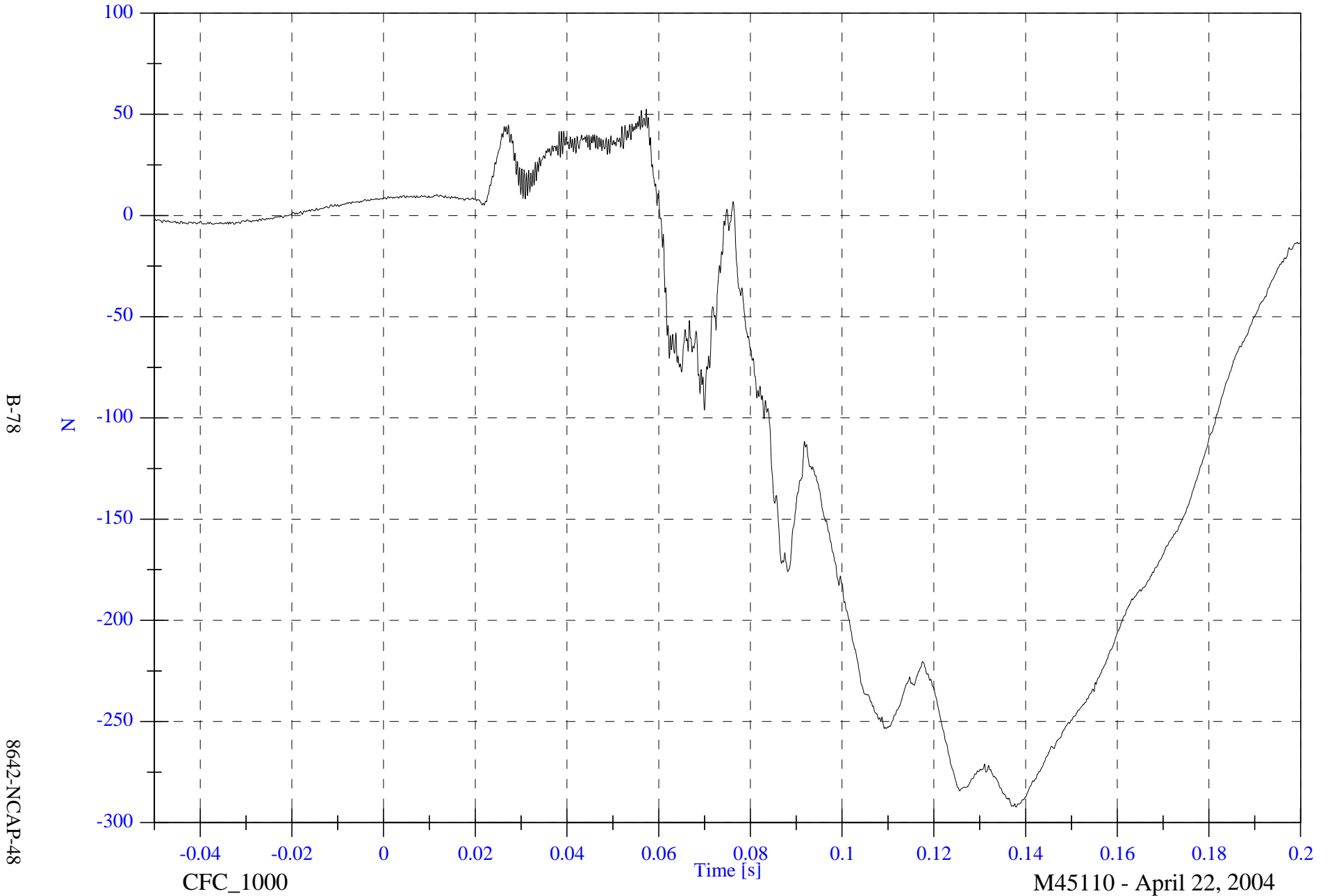


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 52.6 [N] at 0.057 [s]

V1P2 Upper Neck Fy

Min: -292.3 [N] at 0.138 [s]



B-78

8642-NCAP-48

CFC_1000

Time [s]

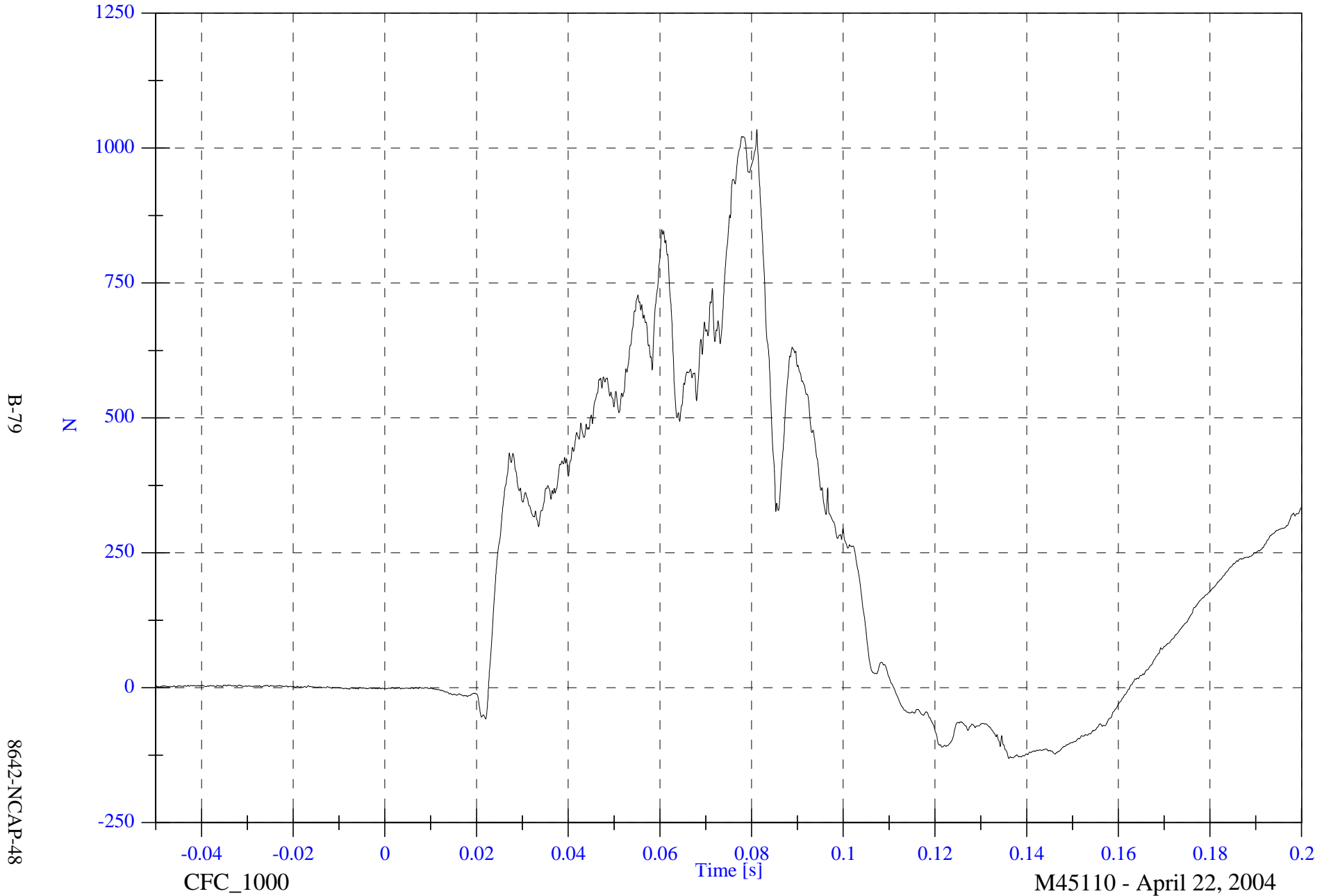
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 1034.7 [N] at 0.081 [s]

V1P2 Upper Neck Fz

Min: -131.0 [N] at 0.136 [s]



B-79

8642-NCAP-48

CFC_1000

Time [s]

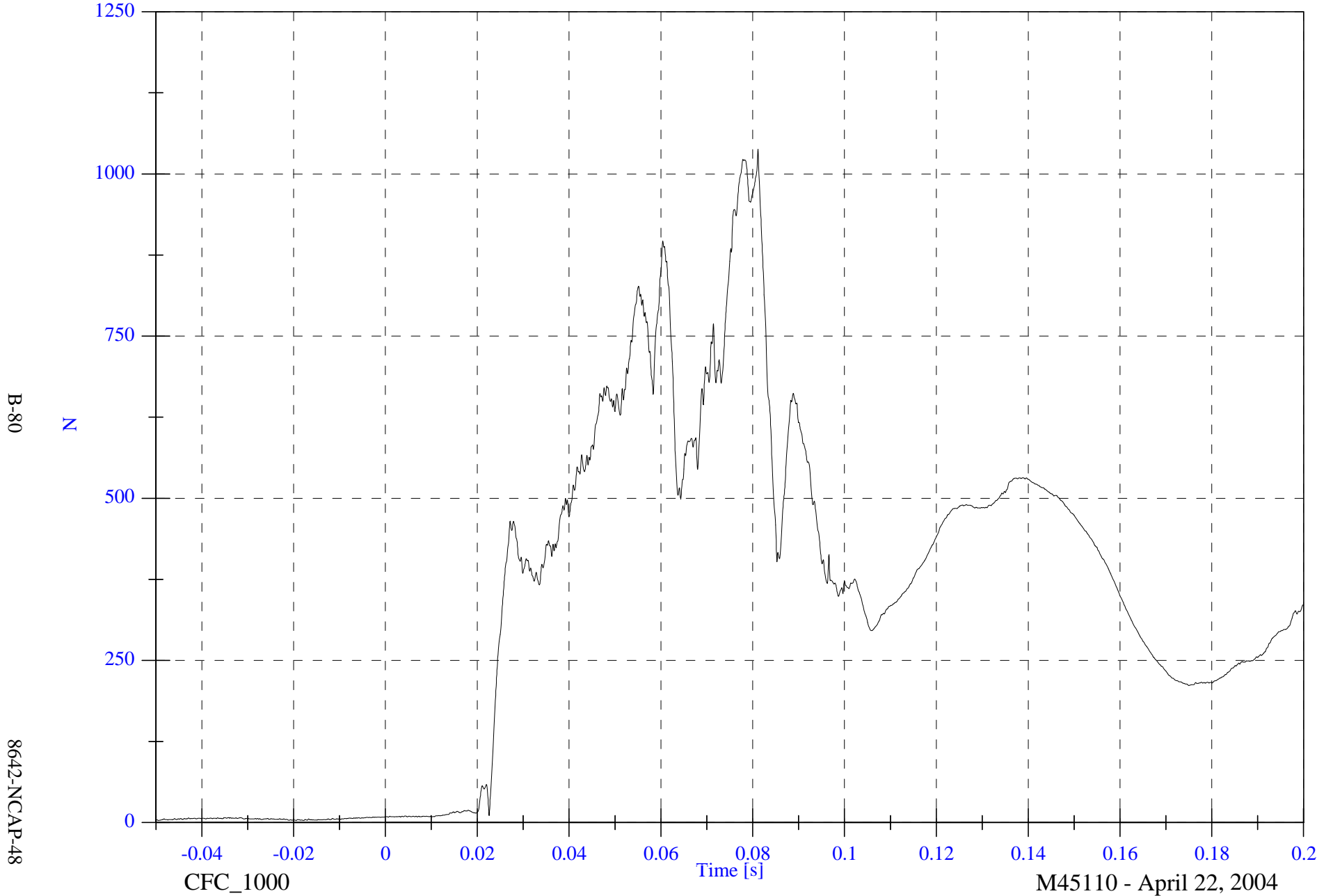
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 1038.0 [N] at 0.081 [s]

V1P2 Upper Neck F Resultant

Min: 3.1 [N] at -0.018 [s]



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8642-NCAP-48

CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

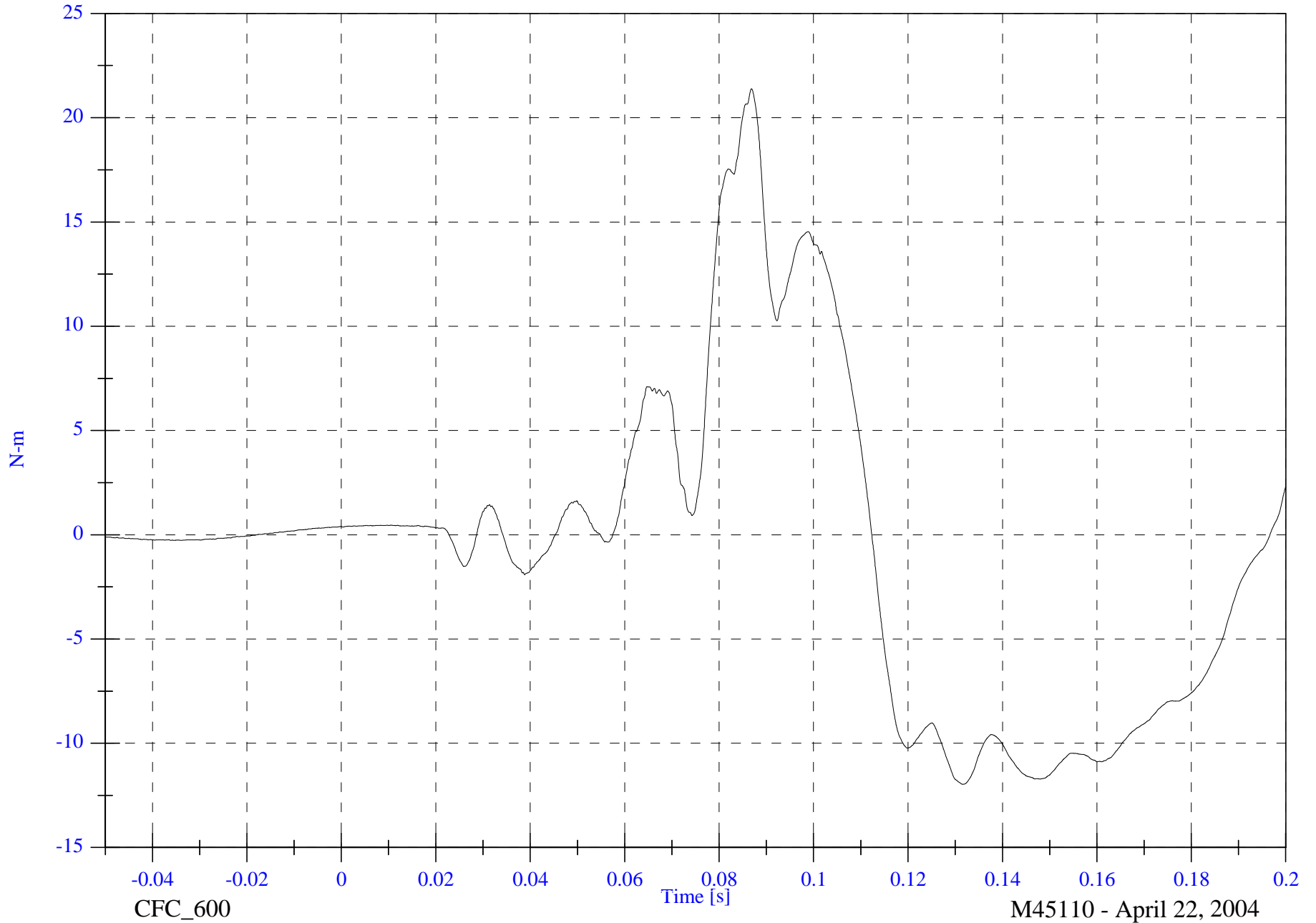
Max: 21.4 [N-m] at 0.087 [s]

V1P2 Upper Neck Mx

Min: -12.0 [N-m] at 0.132 [s]

B-81

8642-NCAP-48



CFC_600

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

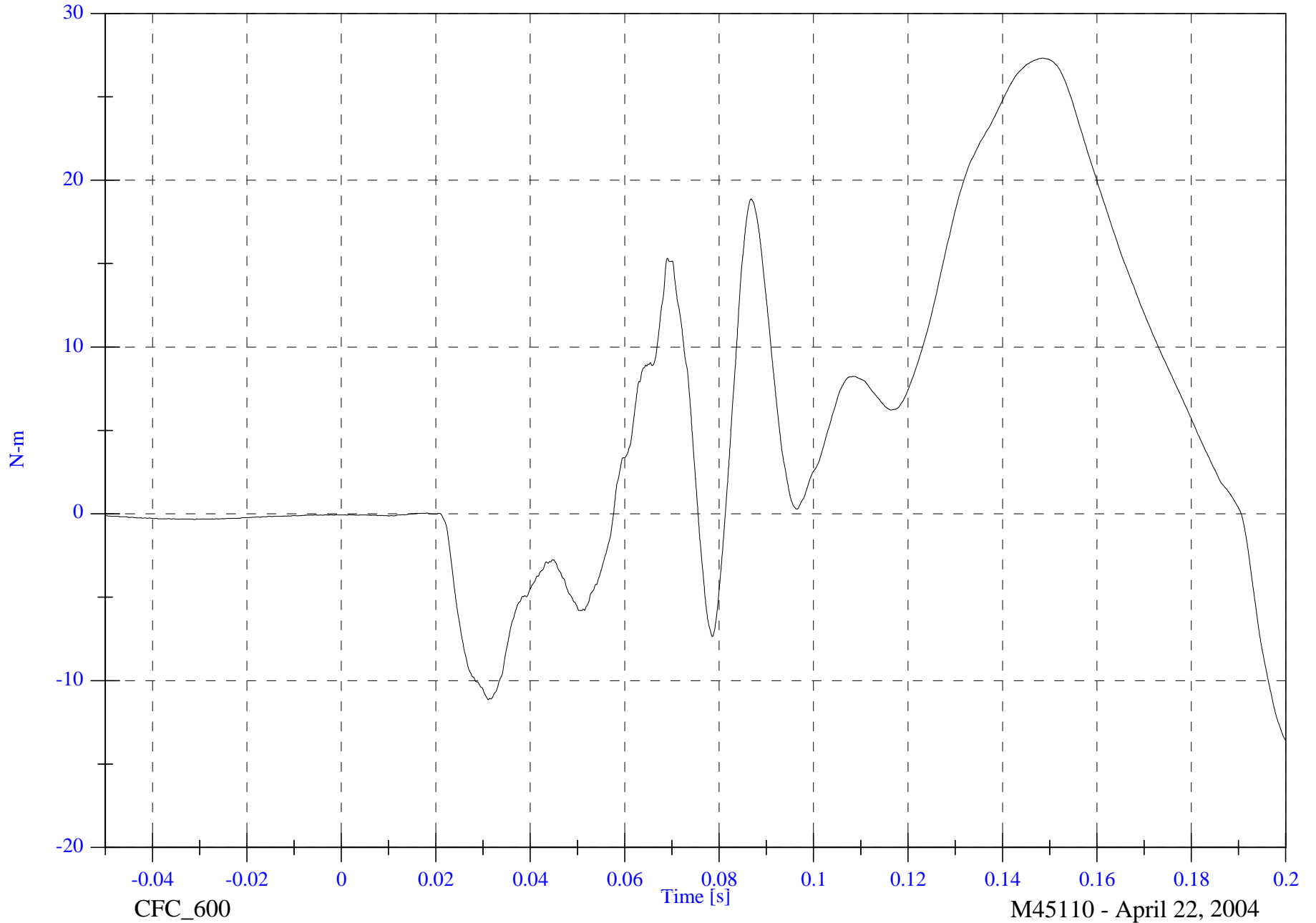
V1P2 Upper Neck My

Max: 27.3 [N-m] at 0.148 [s]

Min: -13.6 [N-m] at 0.200 [s]

B-82

8642-NCAP-48



CFC_600

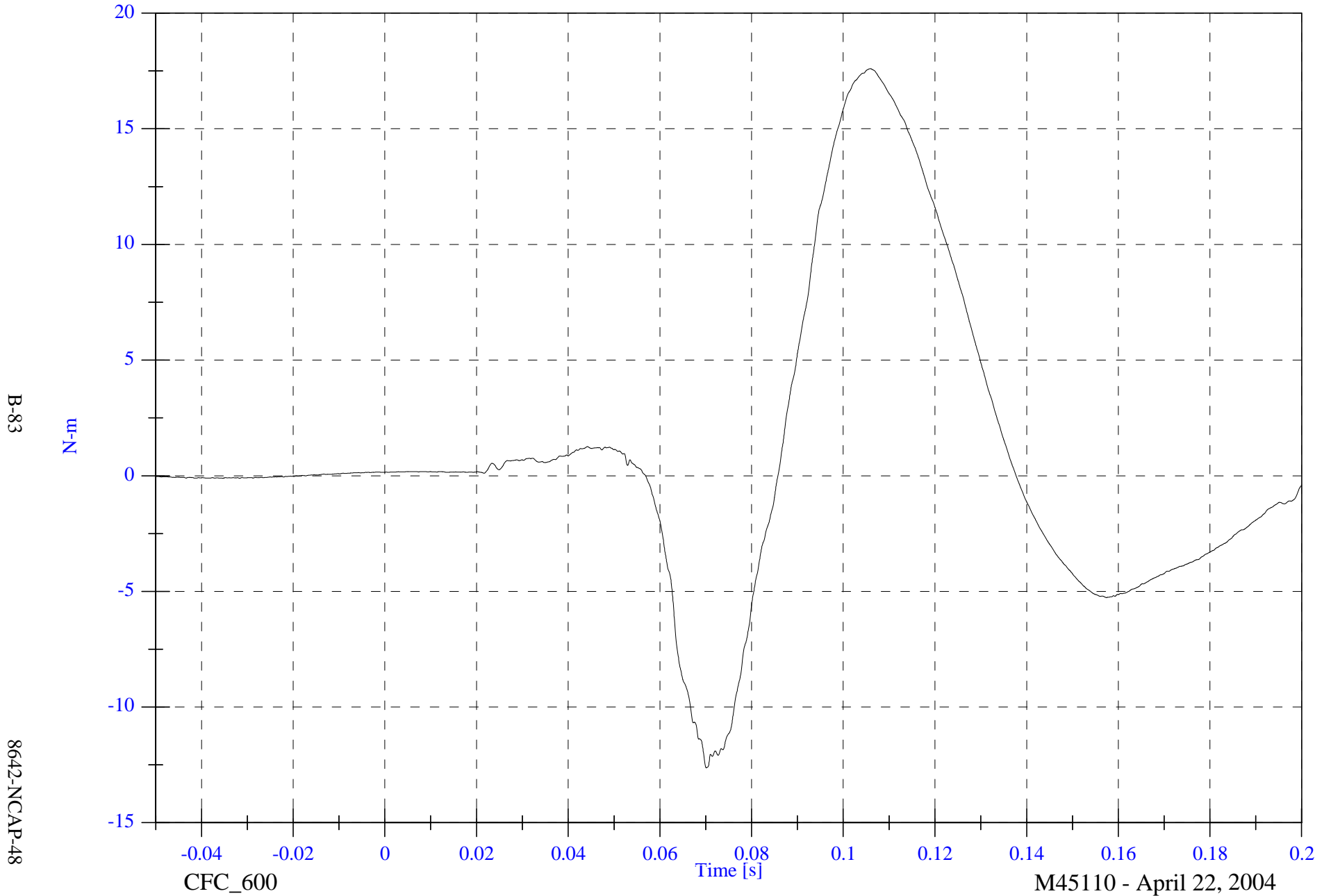
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 17.6 [N-m] at 0.106 [s]

V1P2 Upper Neck Mz

Min: -12.6 [N-m] at 0.070 [s]



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8642-NCAP-48

CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

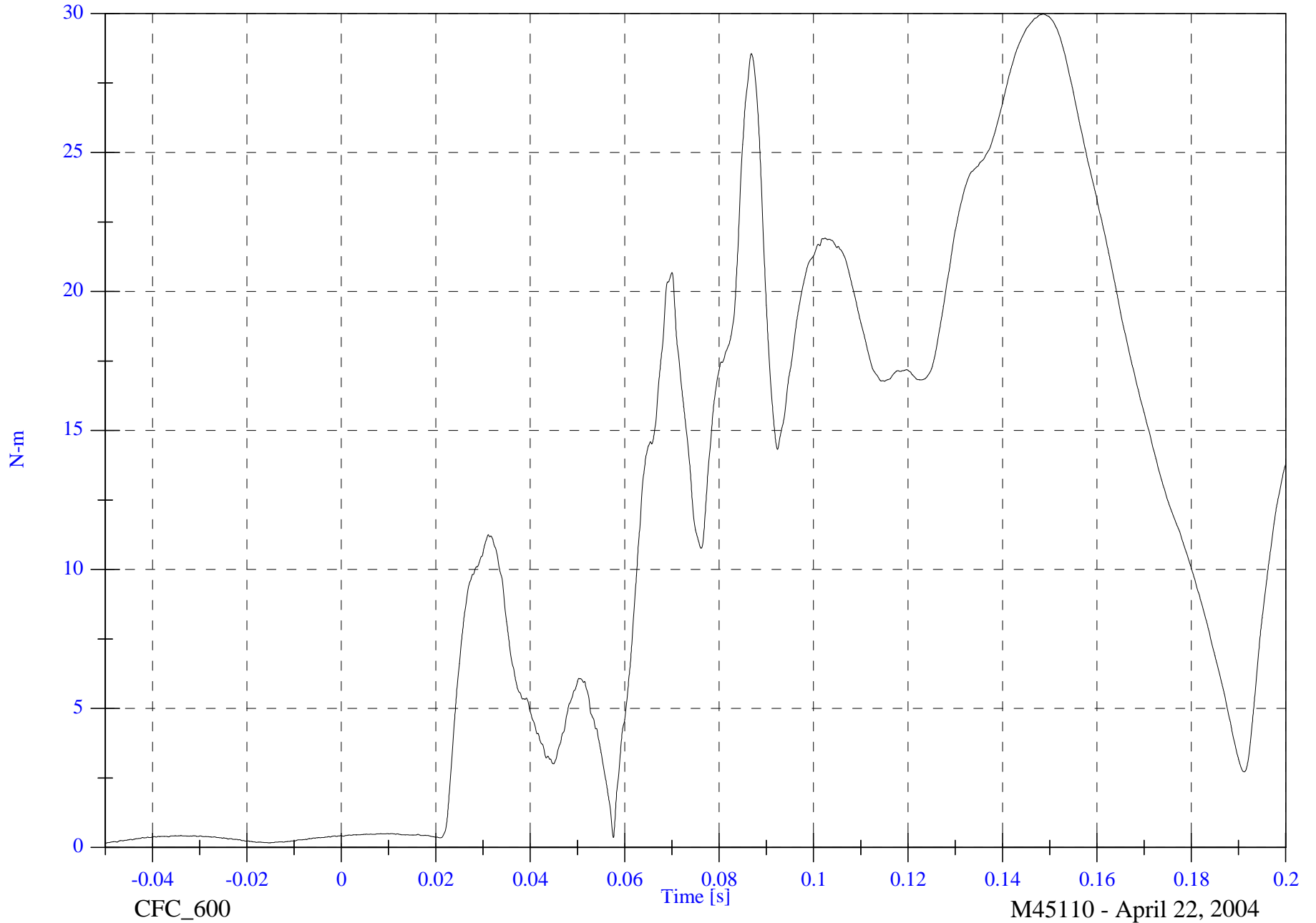
V1P2 Upper Neck M Resultant

Max: 30.0 [N-m] at 0.149 [s]

Min: 0.1 [N-m] at -0.050 [s]

B-84

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

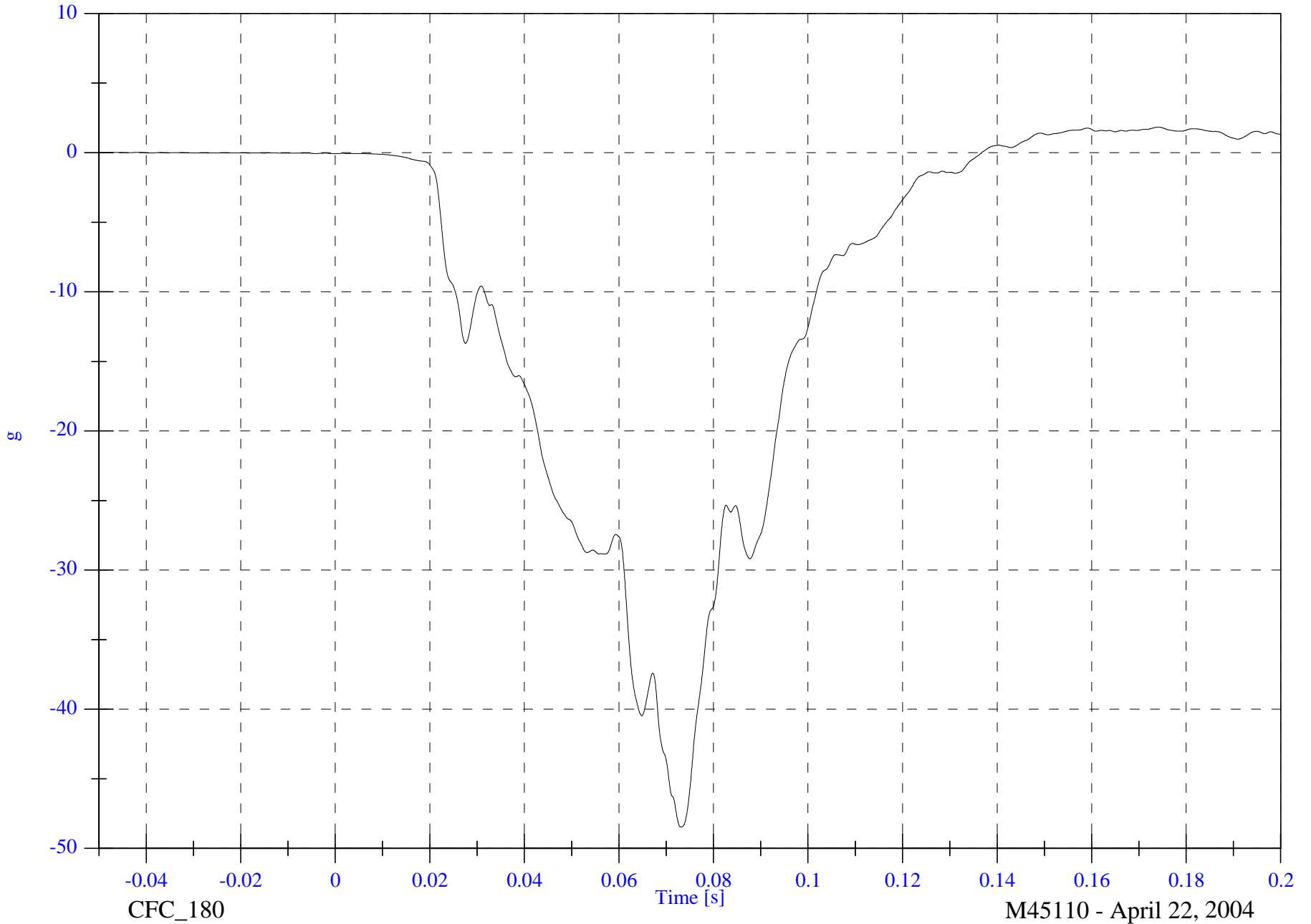
V1P2 Chest x

Max: 1.8 [g] at 0.174 [s]

Min: -48.5 [g] at 0.073 [s]

B-85

8642-NCAP-48



CFC_180

Time [s]

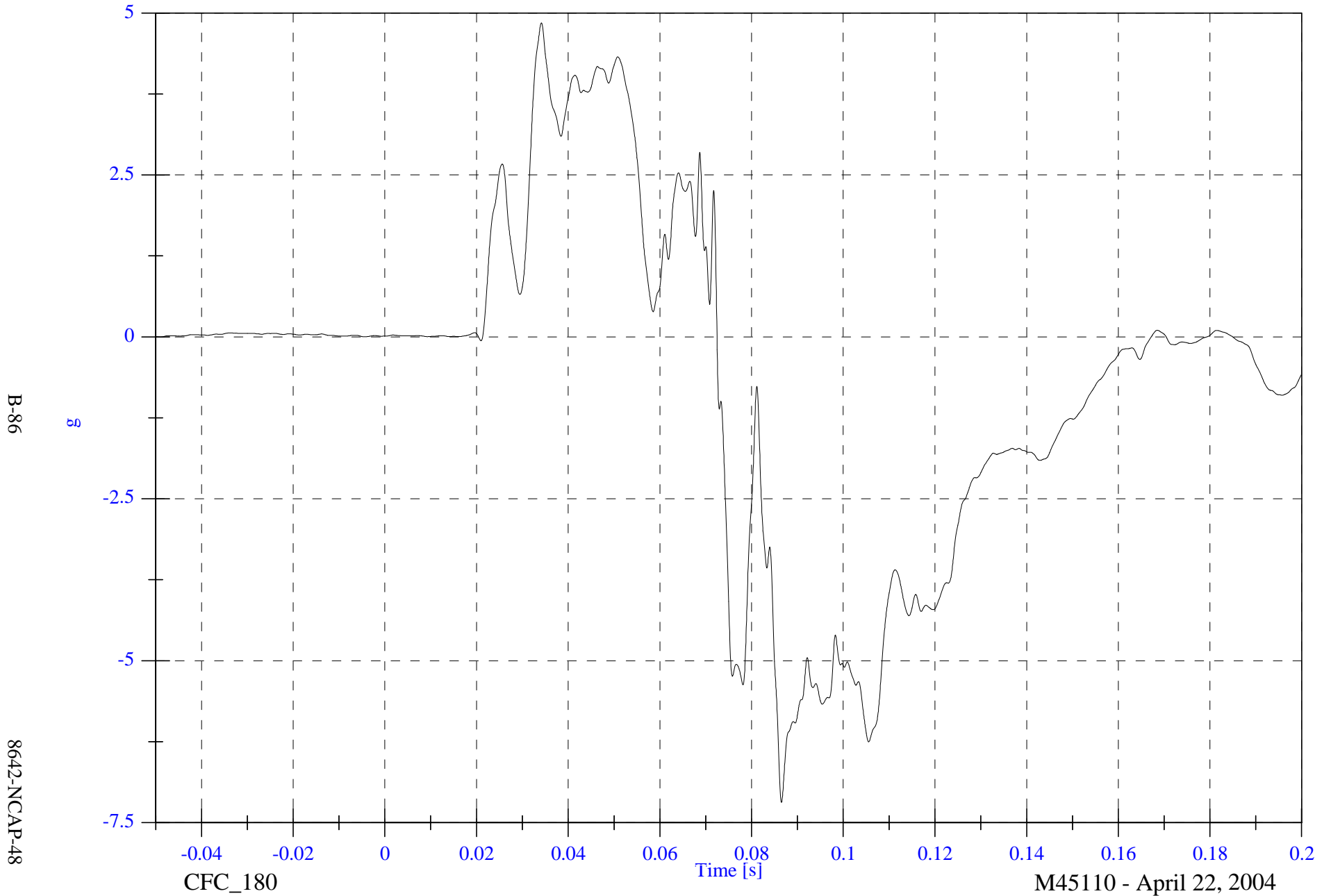
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP2 Chest y

Max: 4.8 [g] at 0.034 [s]

Min: -7.2 [g] at 0.086 [s]

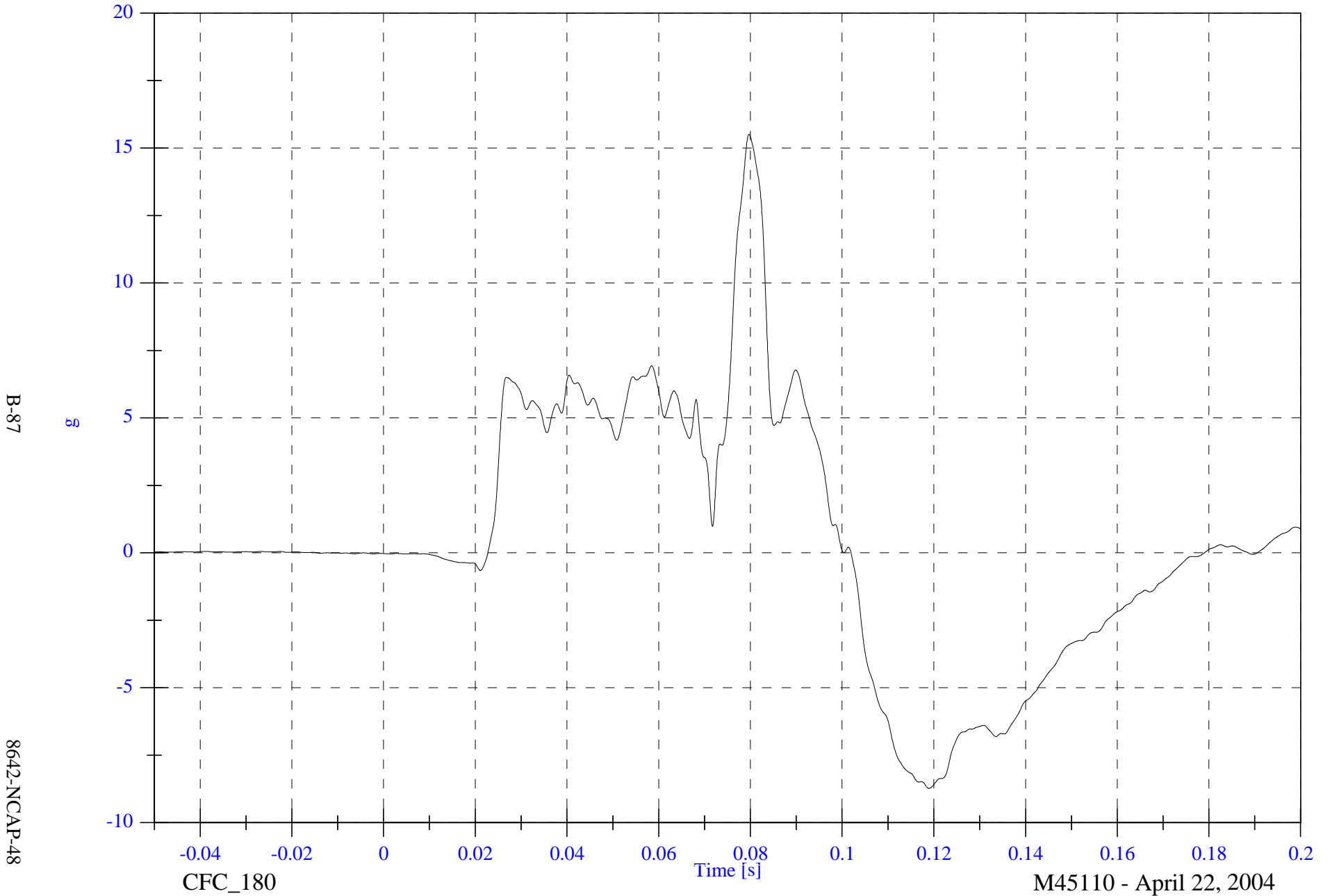


2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP2 Chest z

Max: 15.5 [g] at 0.080 [s]

Min: -8.7 [g] at 0.119 [s]



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8642-NCAP-48

CFC_180

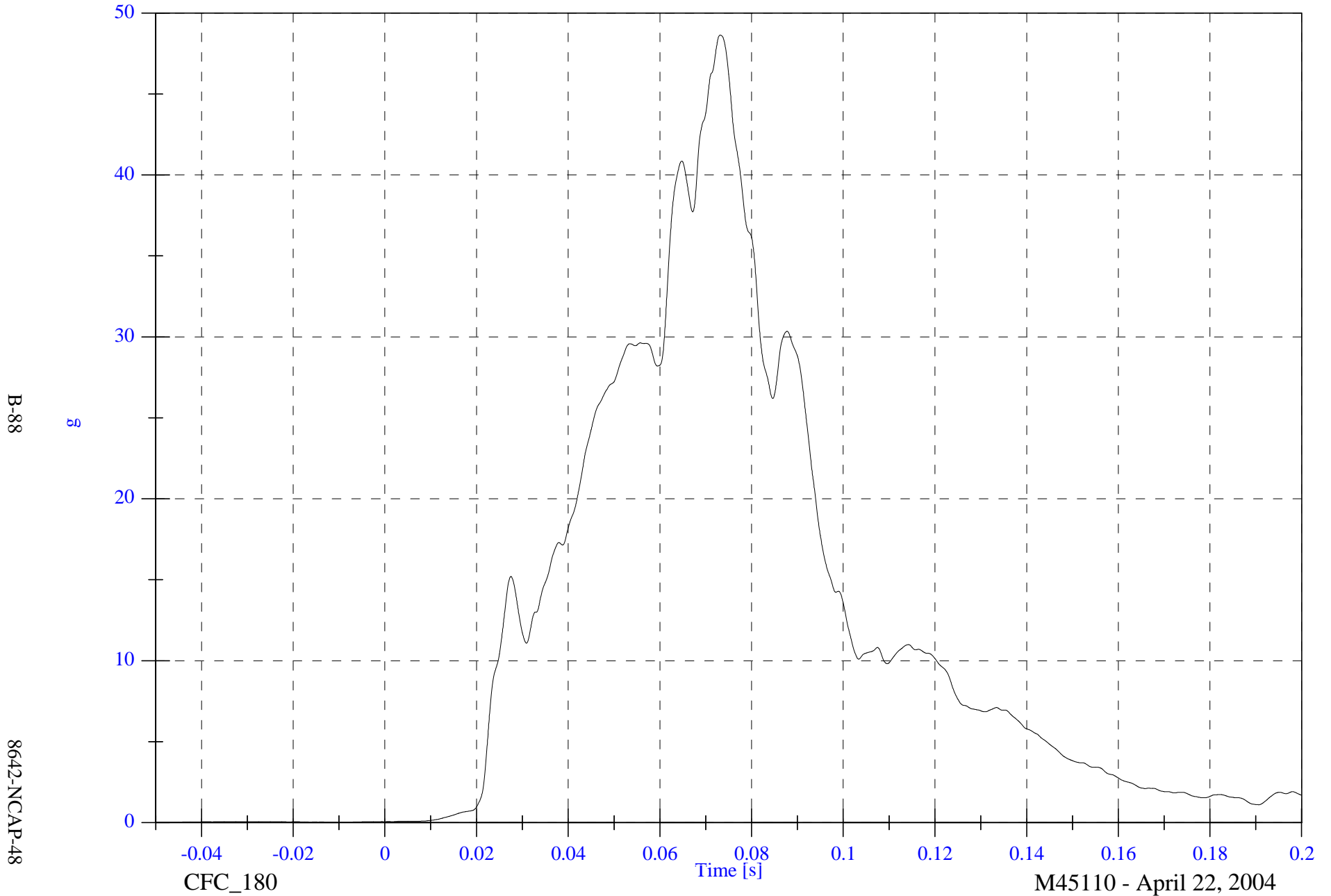
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 48.6 [g] at 0.073 [s]

V1P2 Chest Resultant

Min: 0.0 [g] at -0.046 [s]



B-88

8642-NCAP-48

CFC_180

Time [s]

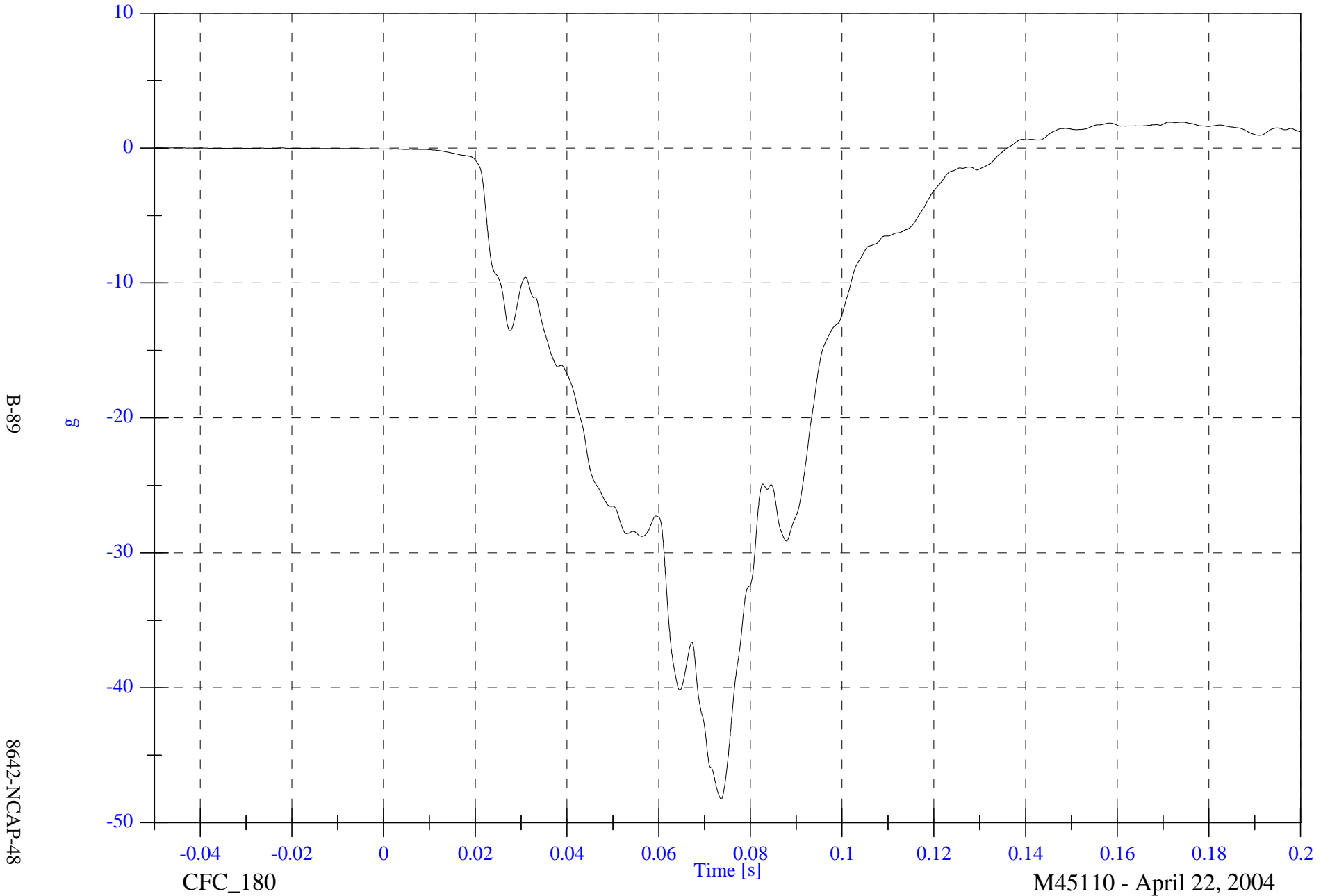
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP2 Chest Red x

Max: 1.9 [g] at 0.174 [s]

Min: -48.2 [g] at 0.074 [s]

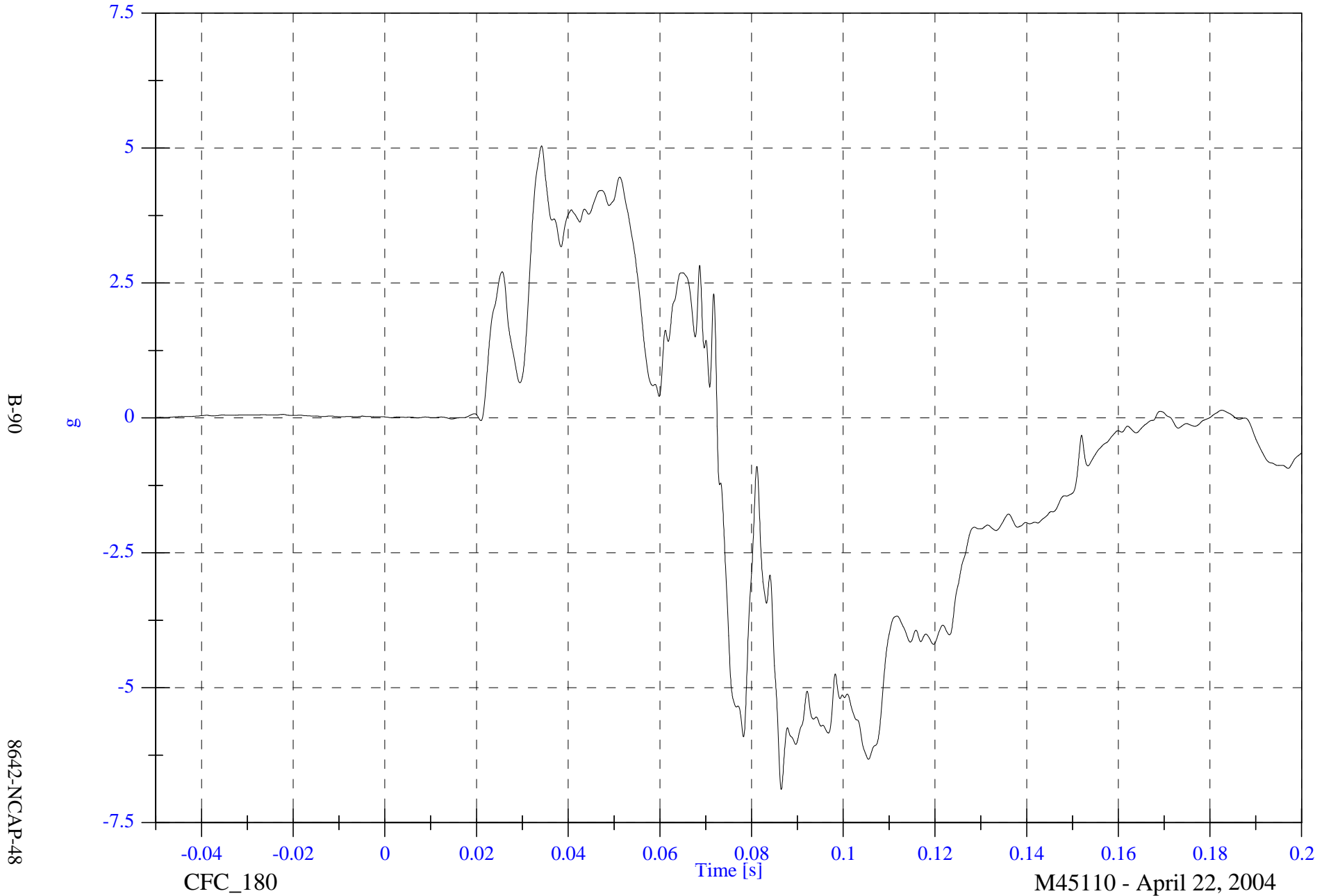


2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP2 Chest Red y

Max: 5.0 [g] at 0.034 [s]

Min: -6.9 [g] at 0.086 [s]



B-90

8642-NCAP-48

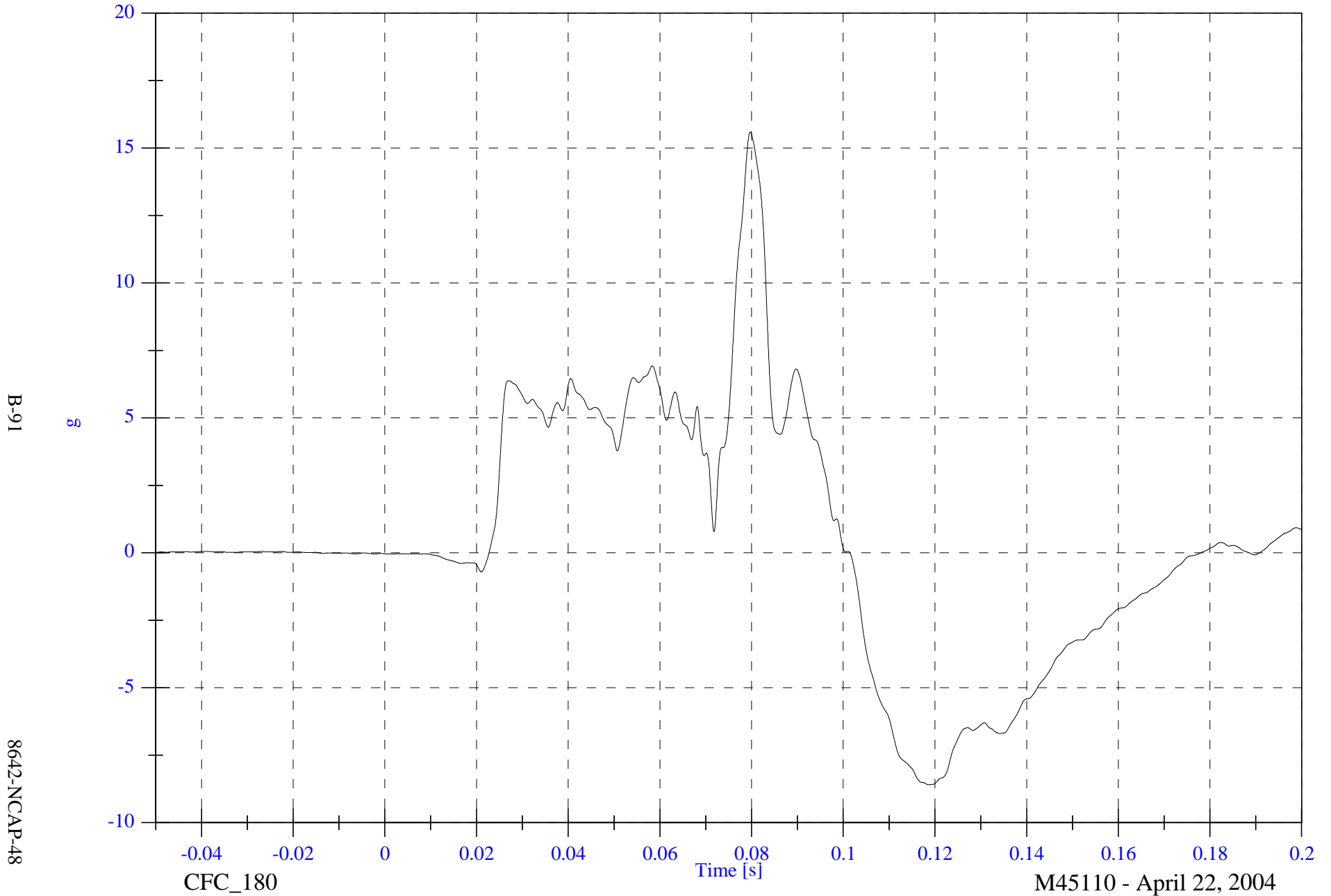
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP2 Chest Red z

Max: 15.6 [g] at 0.080 [s]

Min: -8.6 [g] at 0.119 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

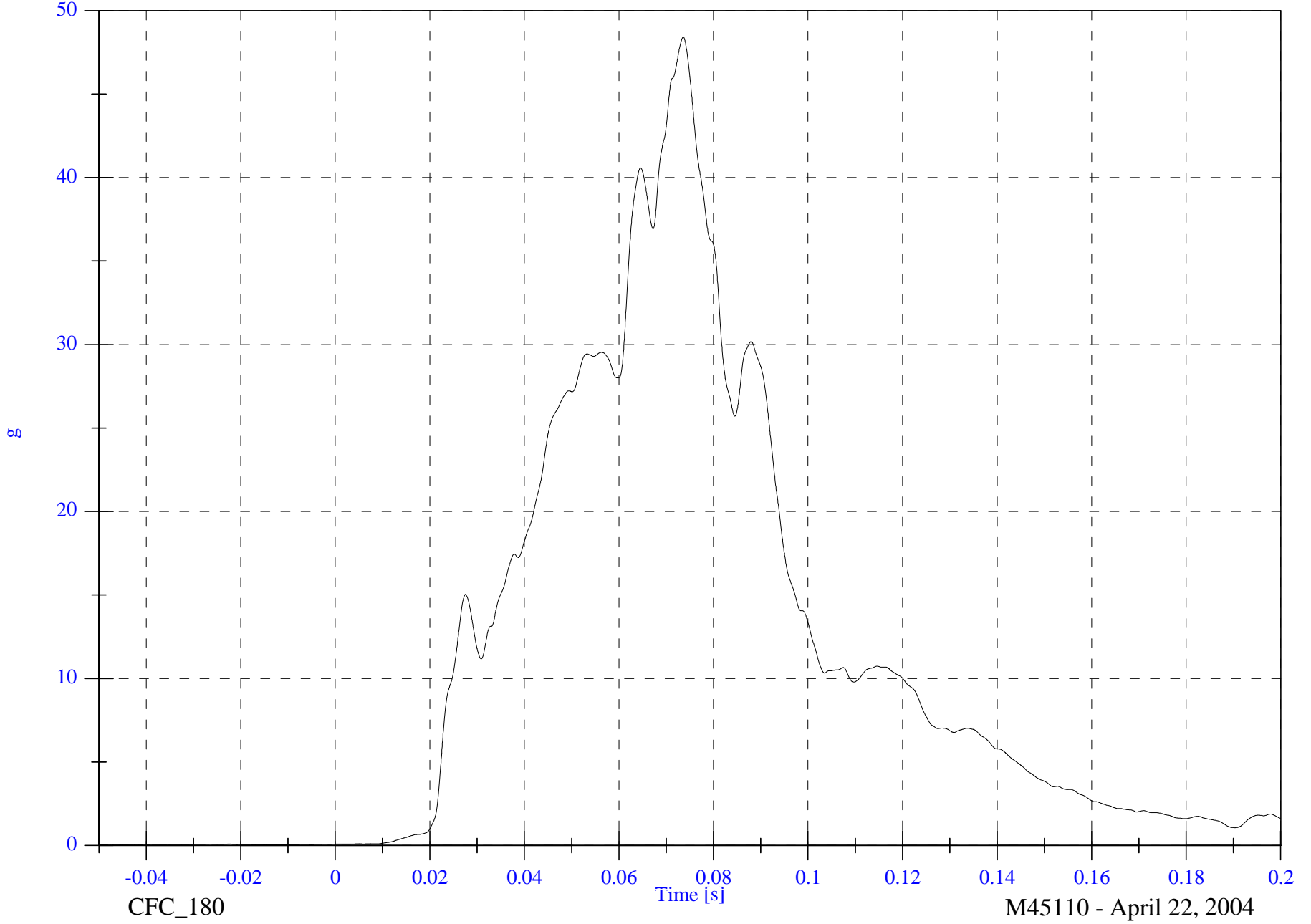
V1P2 Chest Red Resultant

Max: 48.4 [g] at 0.074 [s]

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

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8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

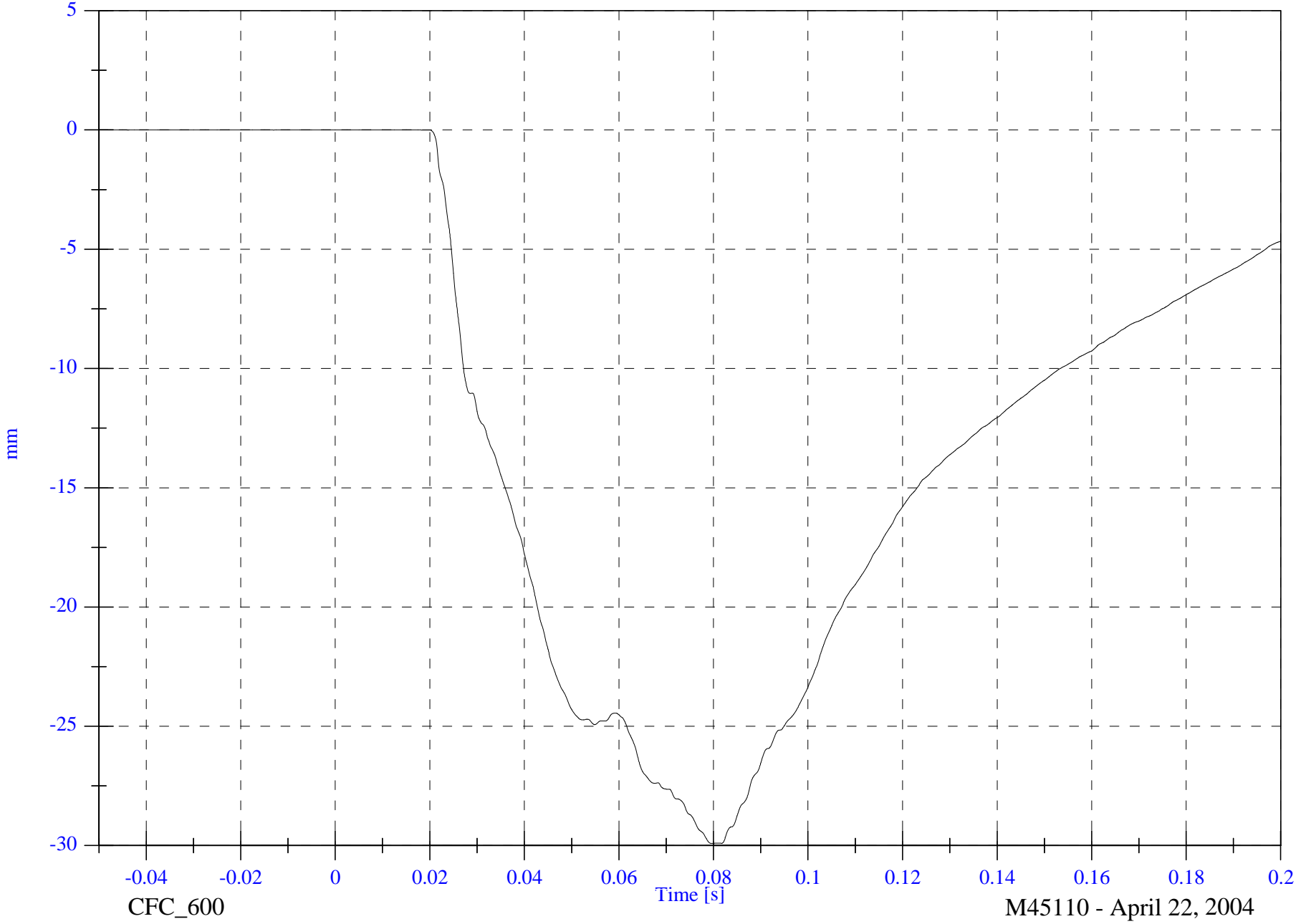
V1P2 Chest Compression

Max: 0.0 [mm] at 0.006 [s]

Min: -29.9 [mm] at 0.080 [s]

B-93

8642-NCAP-48



CFC_600

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 48.1 [g] at 0.074 [s]

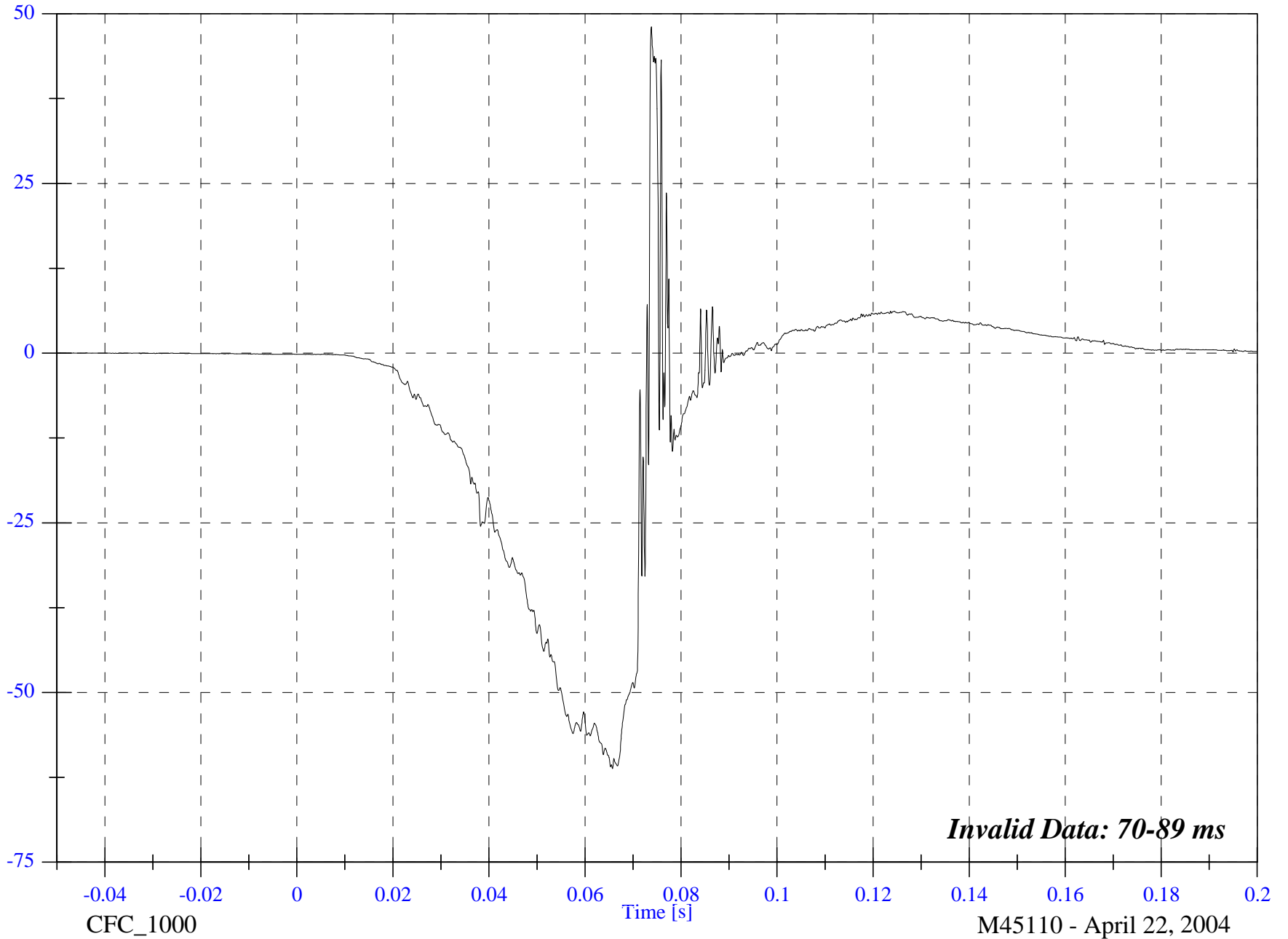
Min: -61.2 [g] at 0.066 [s]

V1P2 Pelvic x

B-94

g

8642-NCAP-48

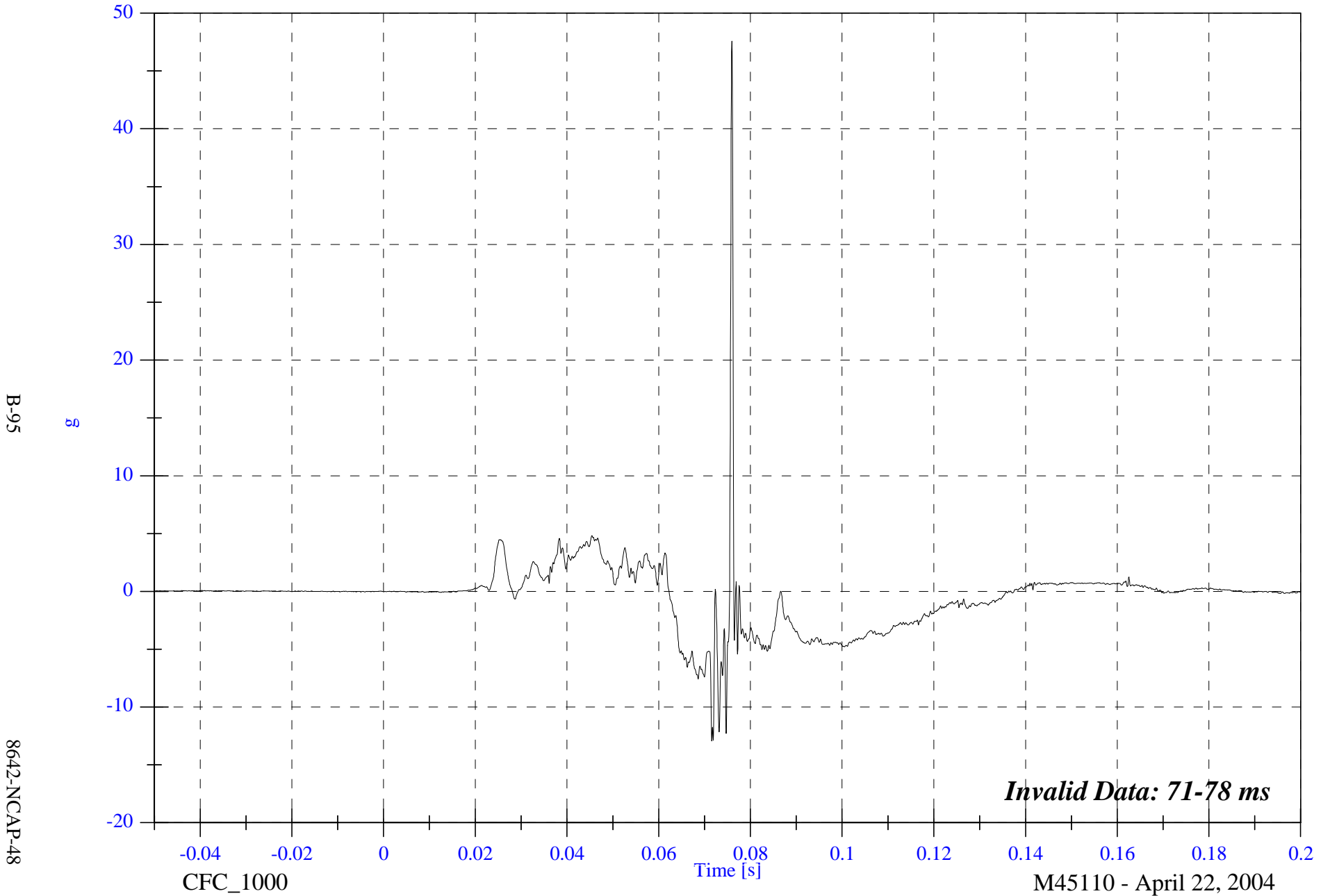


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 47.6 [g] at 0.076 [s]

Min: -12.9 [g] at 0.072 [s]

V1P2 Pelvic y



B-95

8642-NCAP-48

Invalid Data: 71-78 ms

2004 NCAP Test 12 - 2004 Toyota 4Runner

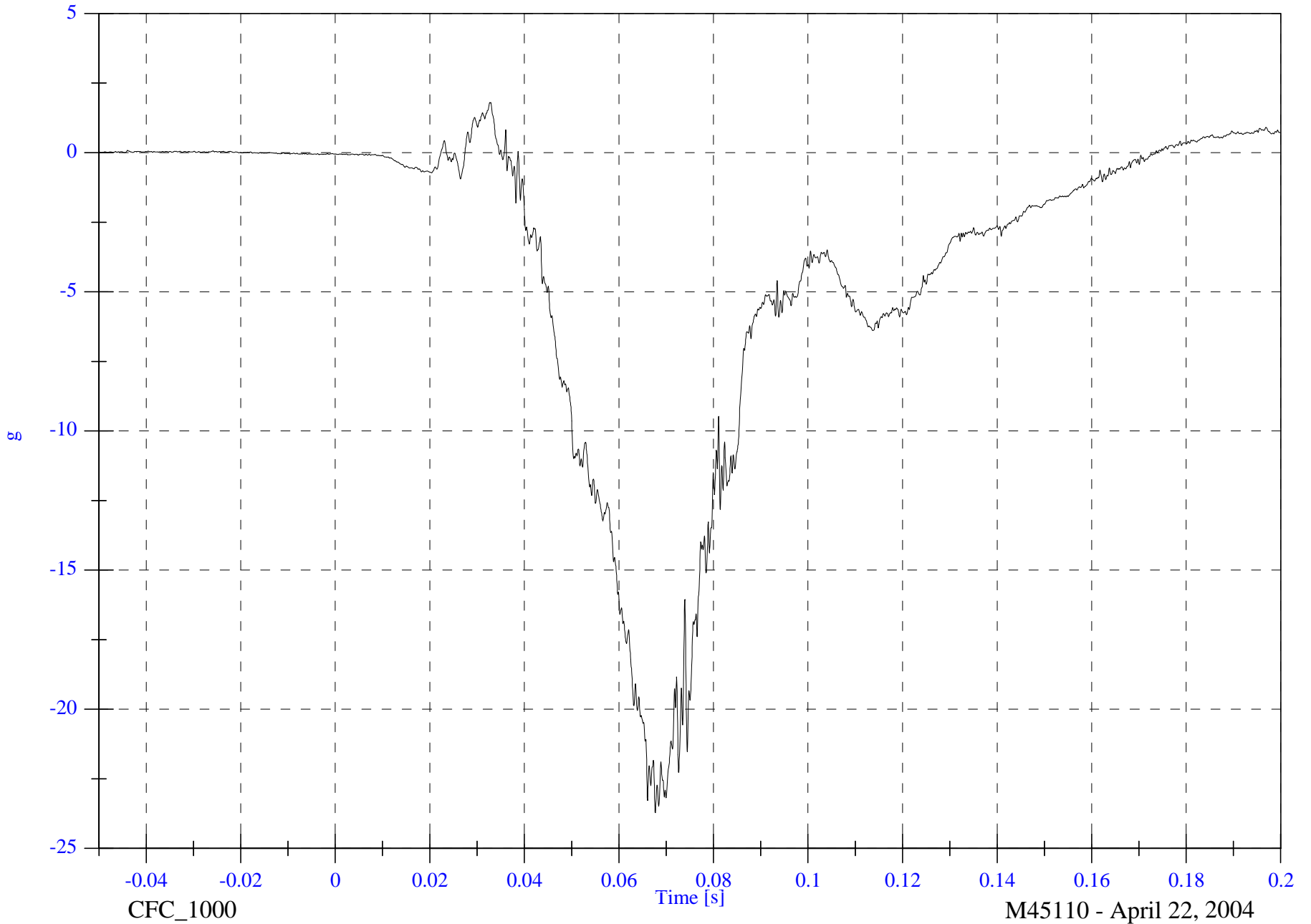
Max: 1.8 [g] at 0.033 [s]

V1P2 Pelvic z

Min: -23.7 [g] at 0.068 [s]

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8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

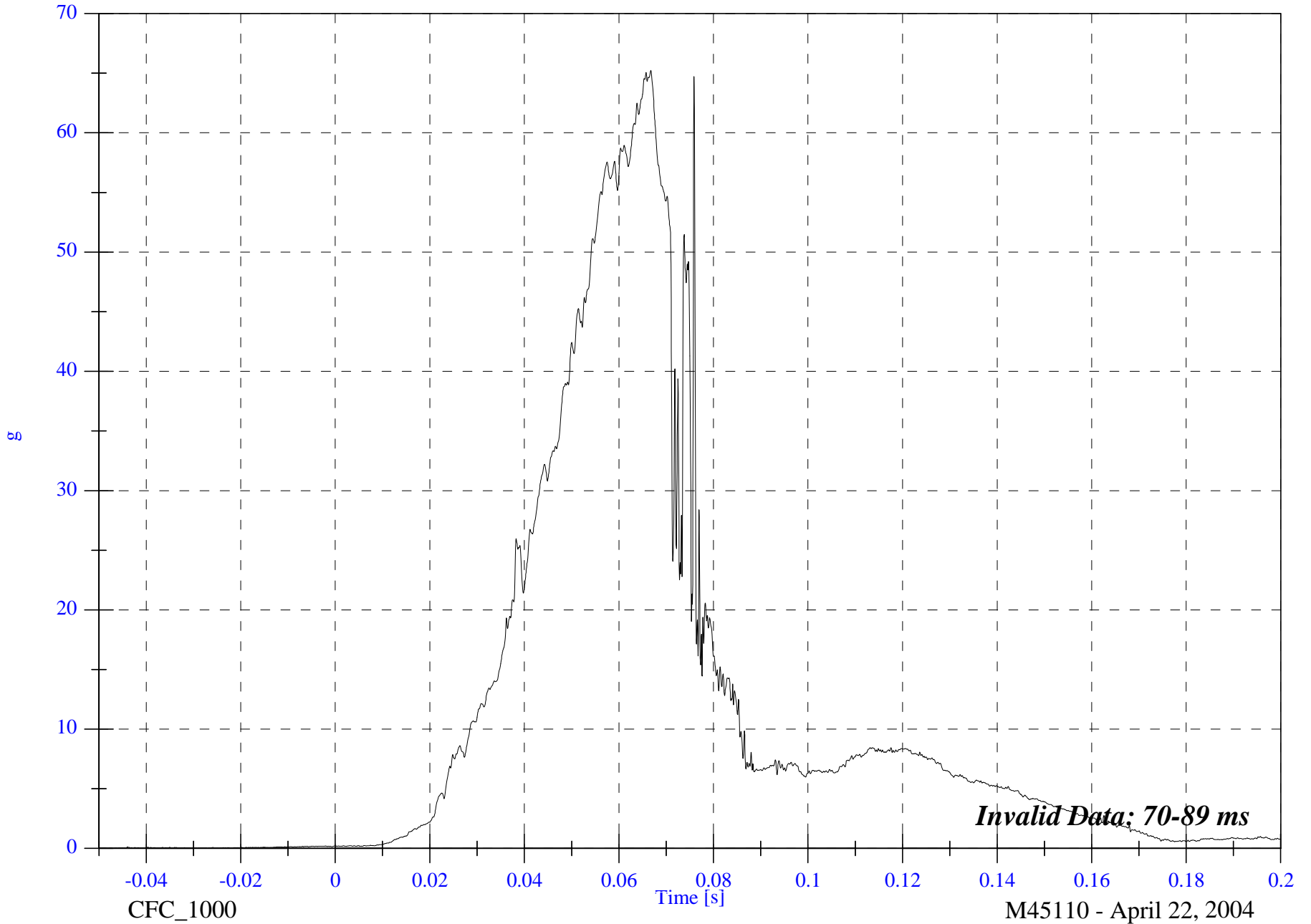
V1P2 Pelvic Resultant

Max: 65.2 [g] at 0.067 [s]

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

B-97

8642-NCAP-48



Invalid Data: 70-89 ms

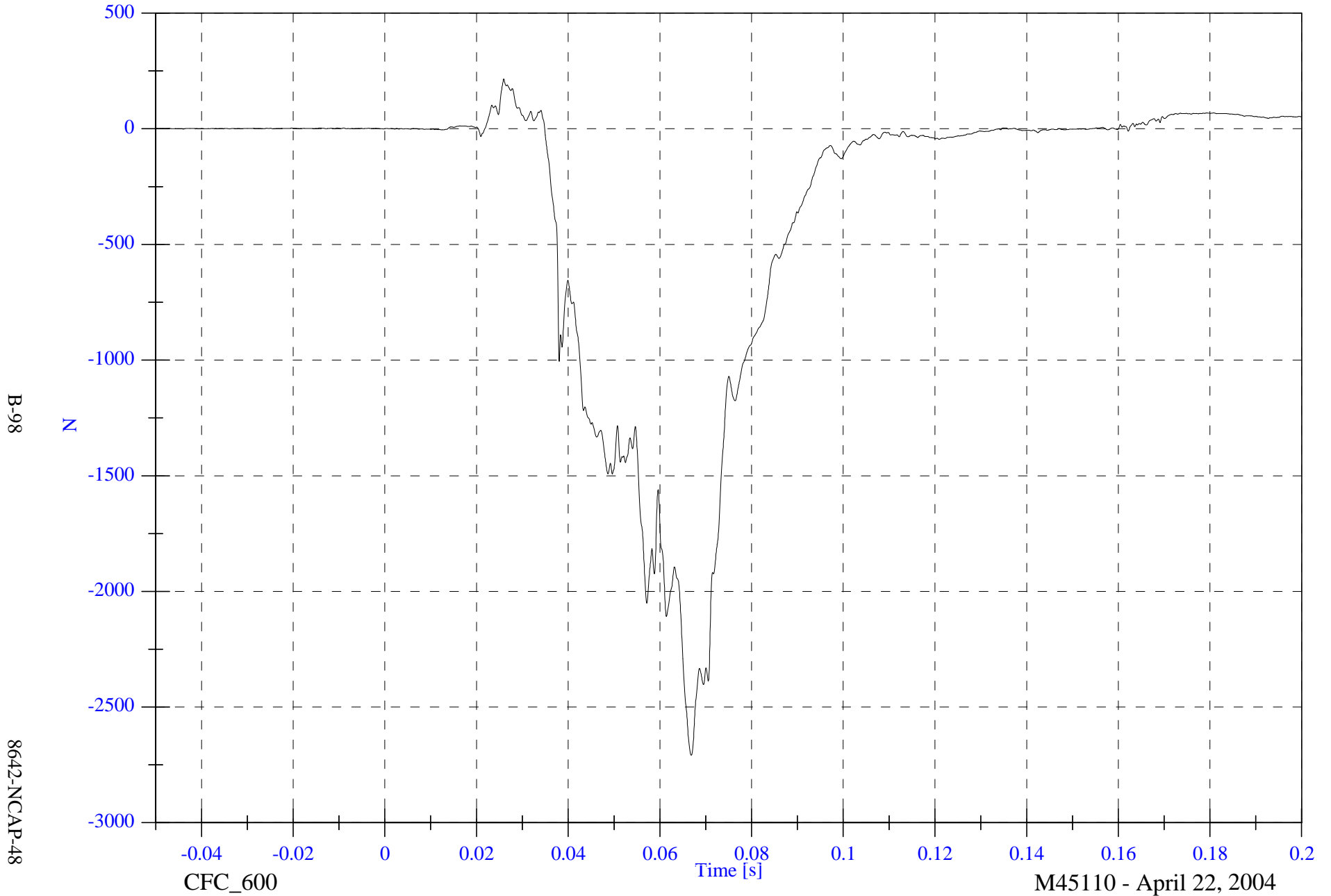
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Left Femur

Max: 215.3 [N] at 0.026 [s]

Min: -2708.7 [N] at 0.067 [s]



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8642-NCAP-48

CFC_600

Time [s]

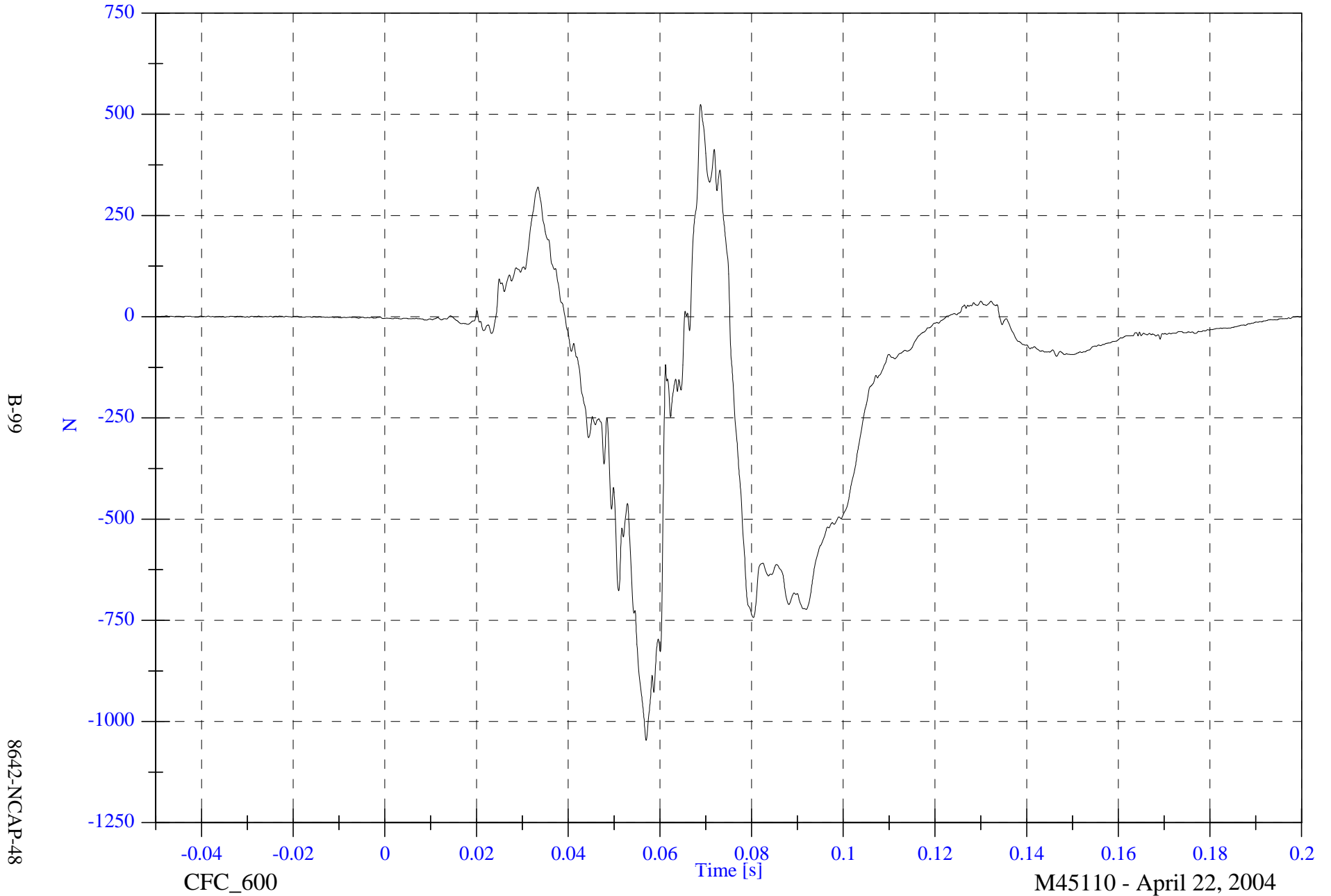
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Right Femur

Max: 524.0 [N] at 0.069 [s]

Min: -1046.5 [N] at 0.057 [s]



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8642-NCAP-48

CFC_600

Time [s]

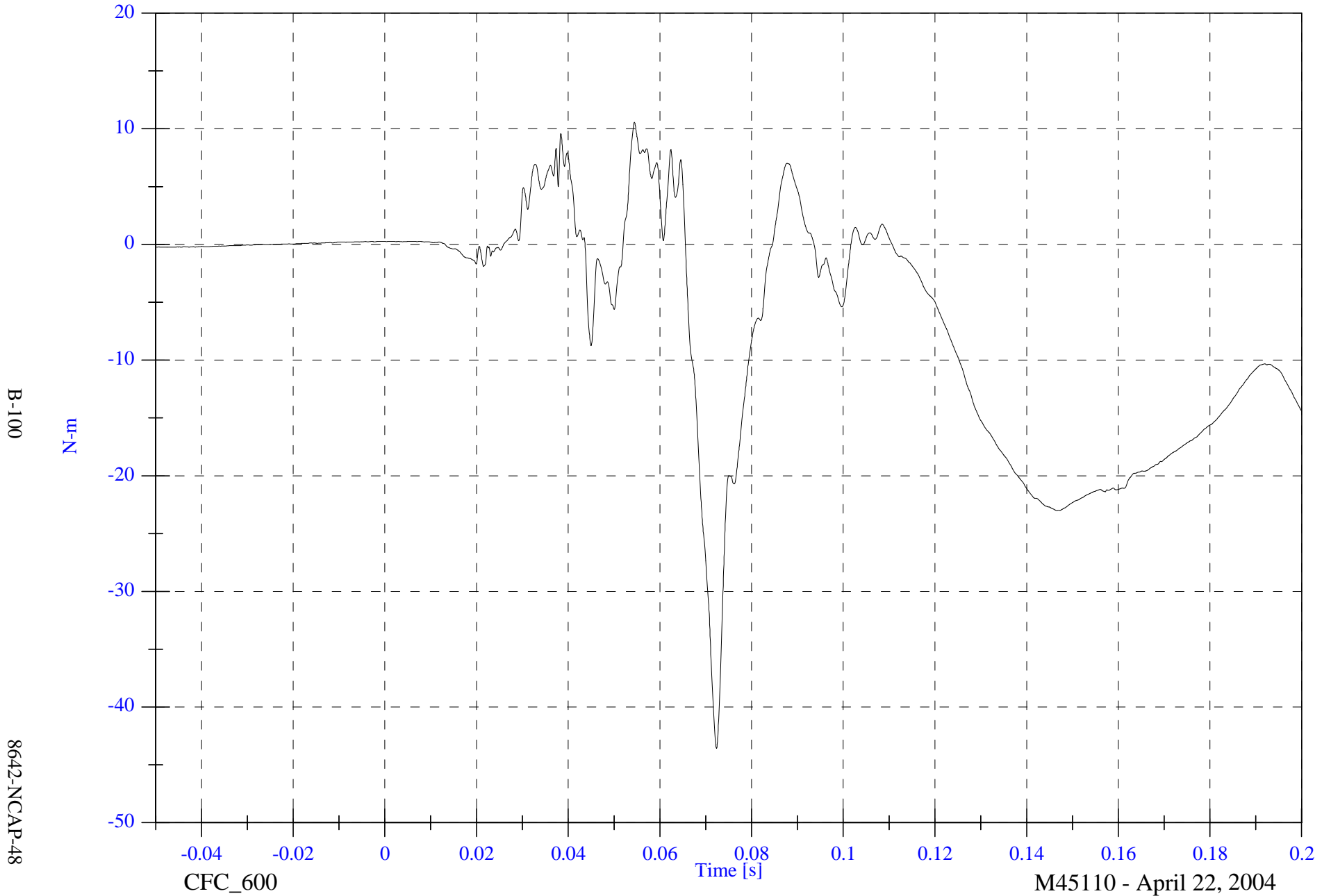
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 10.6 [N-m] at 0.054 [s]

V1P2 Left Upper Tibia Mx

Min: -43.6 [N-m] at 0.072 [s]



B-100

8642-NCAP-48

CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

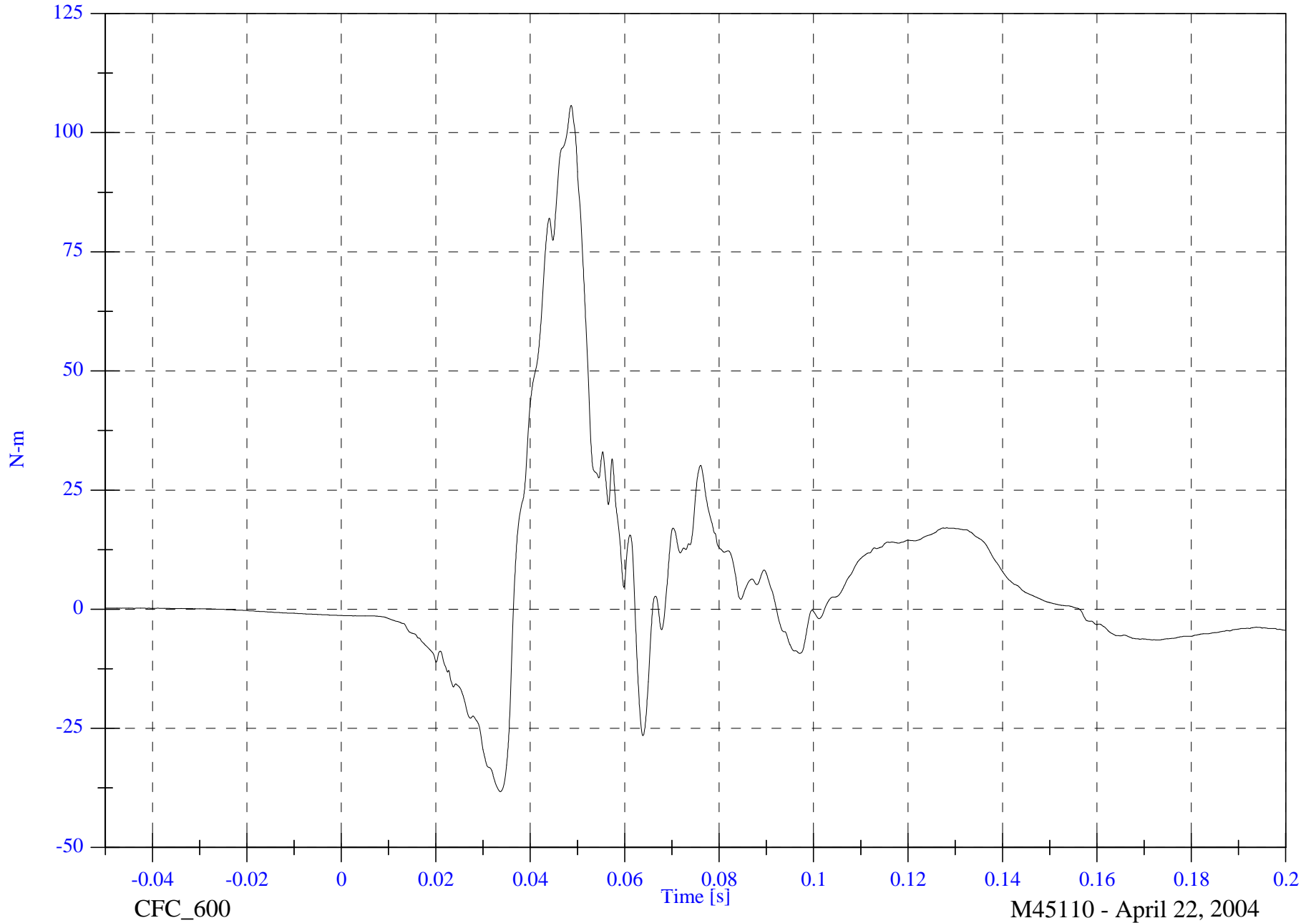
Max: 105.7 [N-m] at 0.049 [s]

V1P2 Left Upper Tibia My

Min: -38.3 [N-m] at 0.034 [s]

B-101

8642-NCAP-48



CFC_600

Time [s]

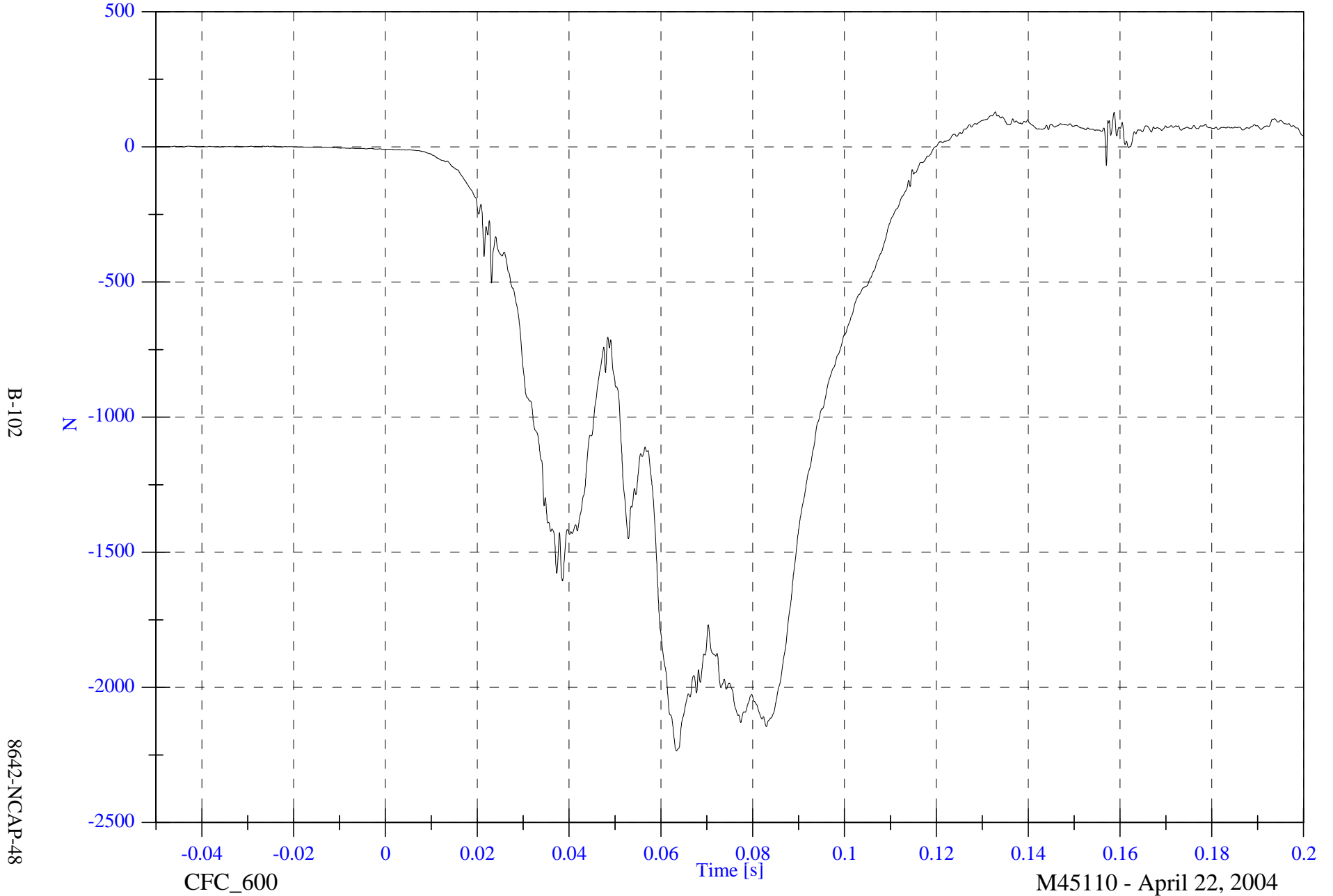
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Left Lower Tibia Fz

Max: 129.5 [N] at 0.133 [s]

Min: -2234.3 [N] at 0.063 [s]



B-102

8642-NCAP-48

CFC_600

Time [s]

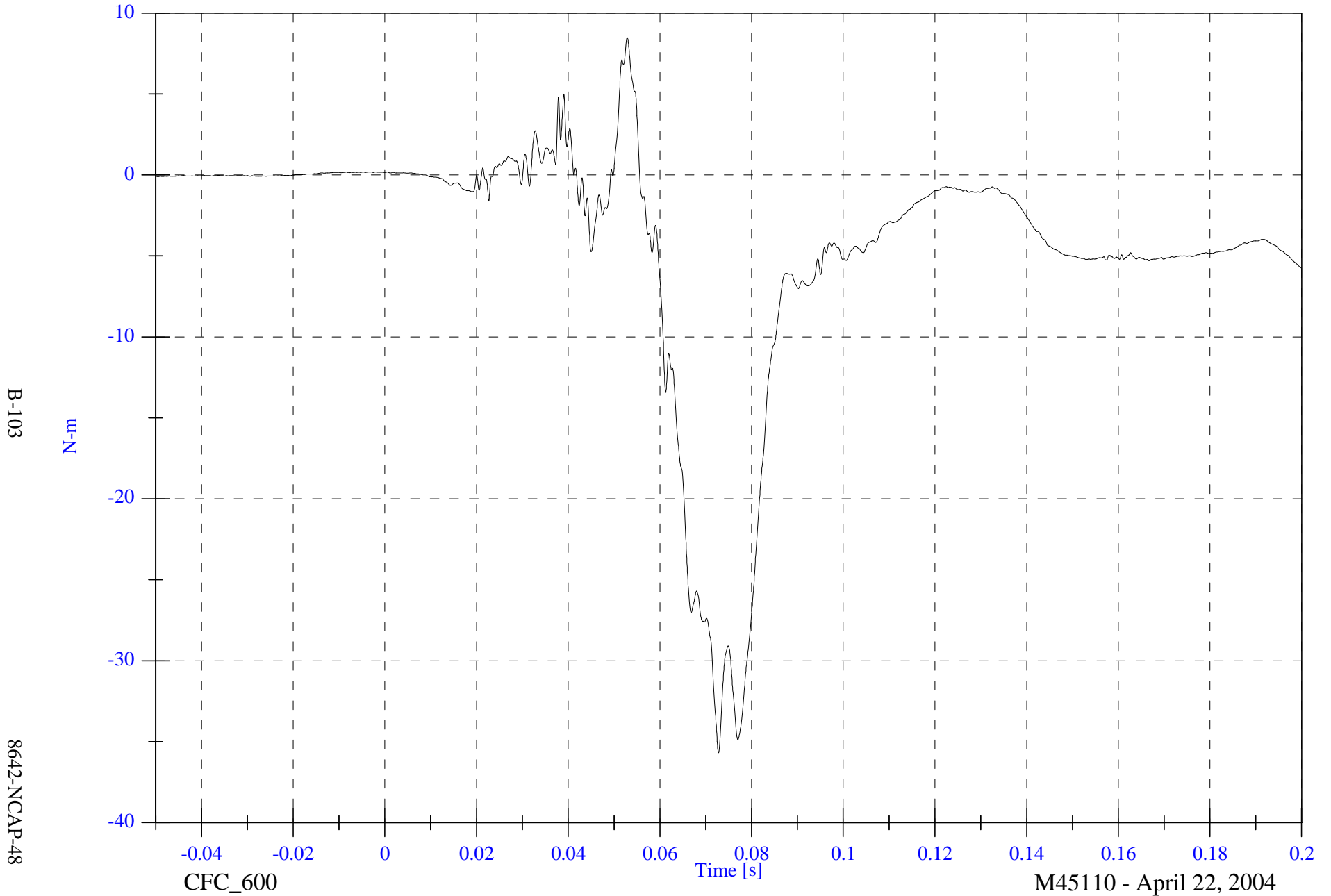
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Left Lower Tibia Mx

Max: 8.5 [N-m] at 0.053 [s]

Min: -35.7 [N-m] at 0.073 [s]



B-103

8642-NCAP-48

CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

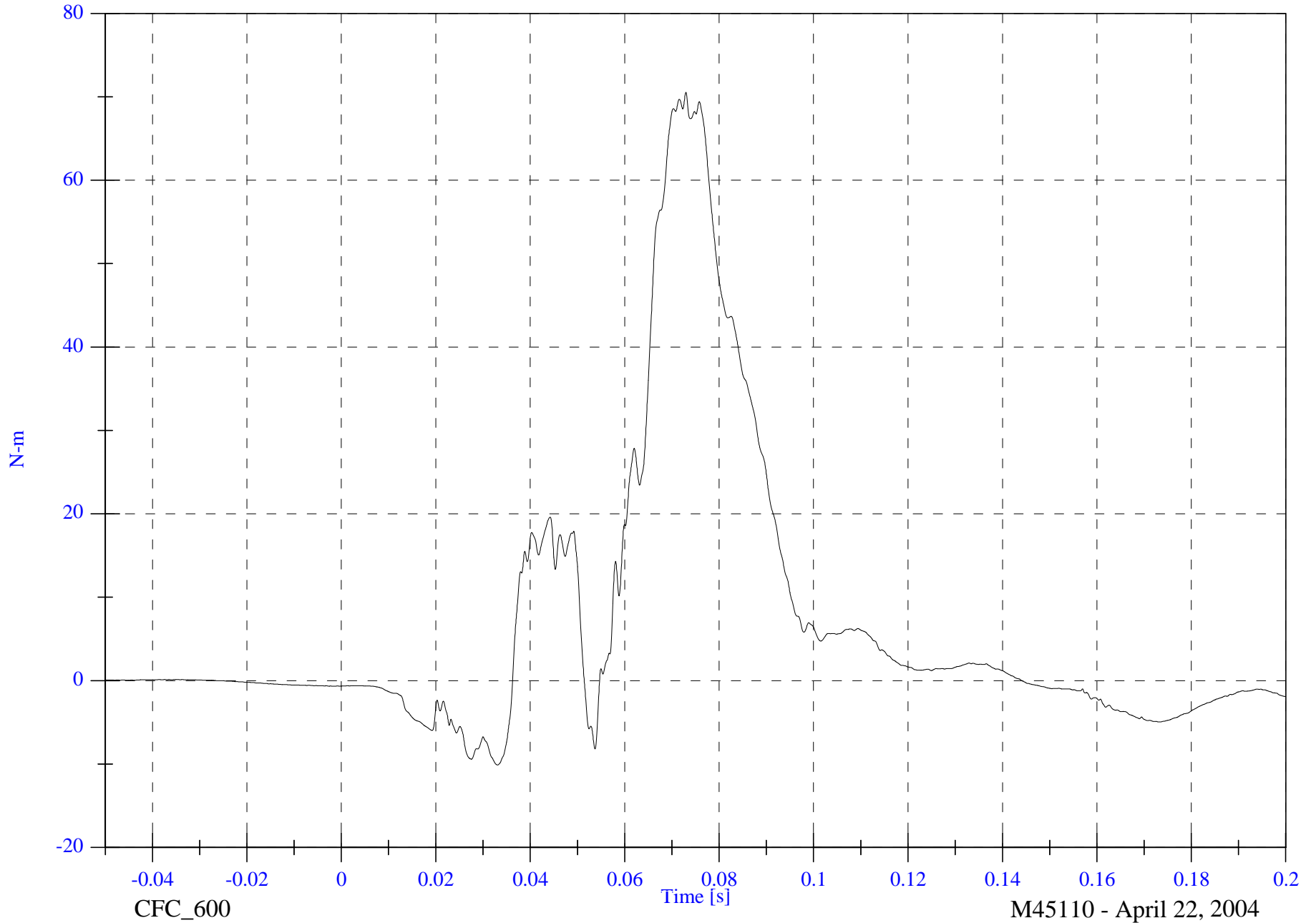
Max: 70.5 [N-m] at 0.073 [s]

V1P2 Left Lower Tibia My

Min: -10.1 [N-m] at 0.033 [s]

B-104

8642-NCAP-48



CFC_600

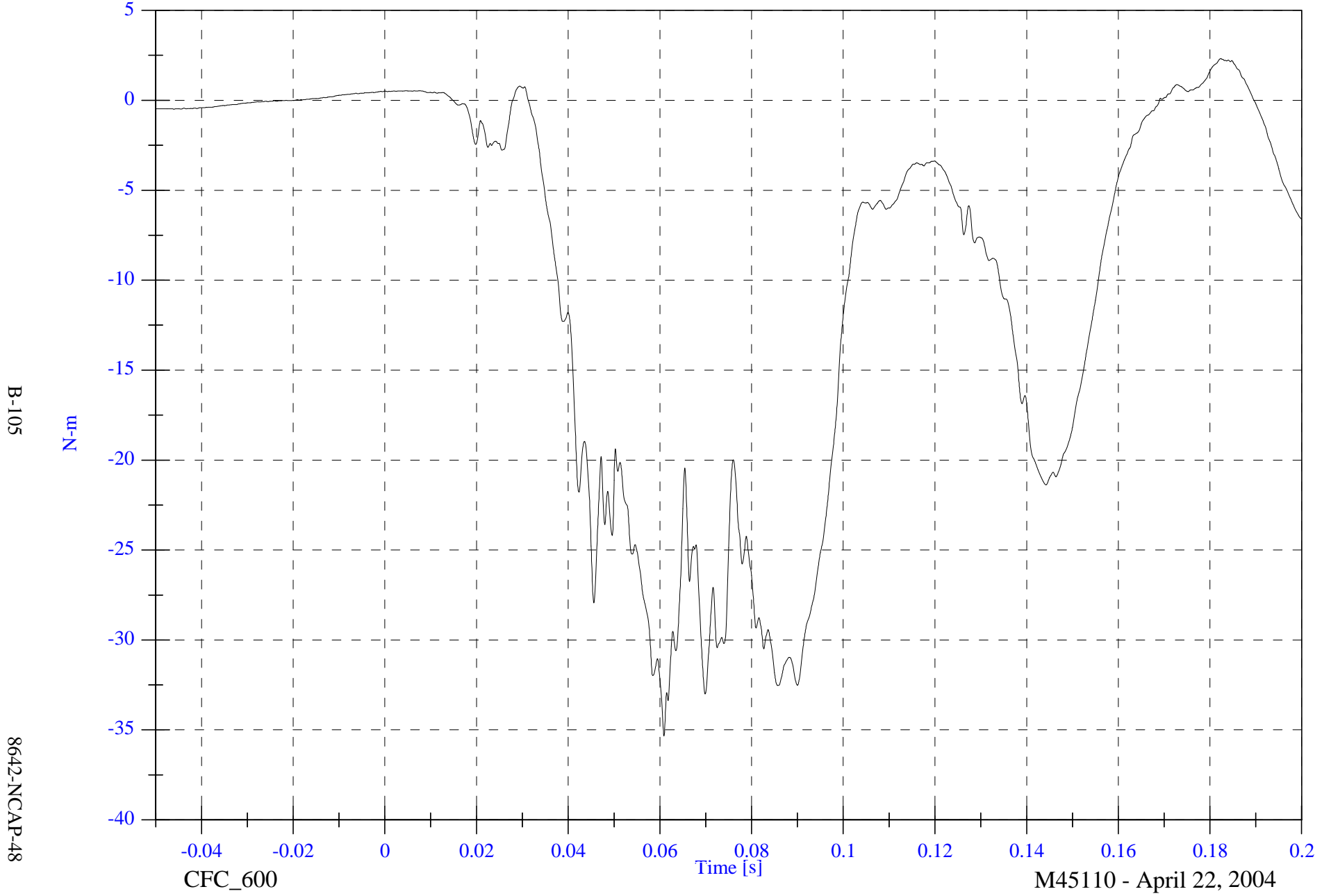
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Right Upper Tibia Mx

Max: 2.3 [N-m] at 0.182 [s]

Min: -35.3 [N-m] at 0.061 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

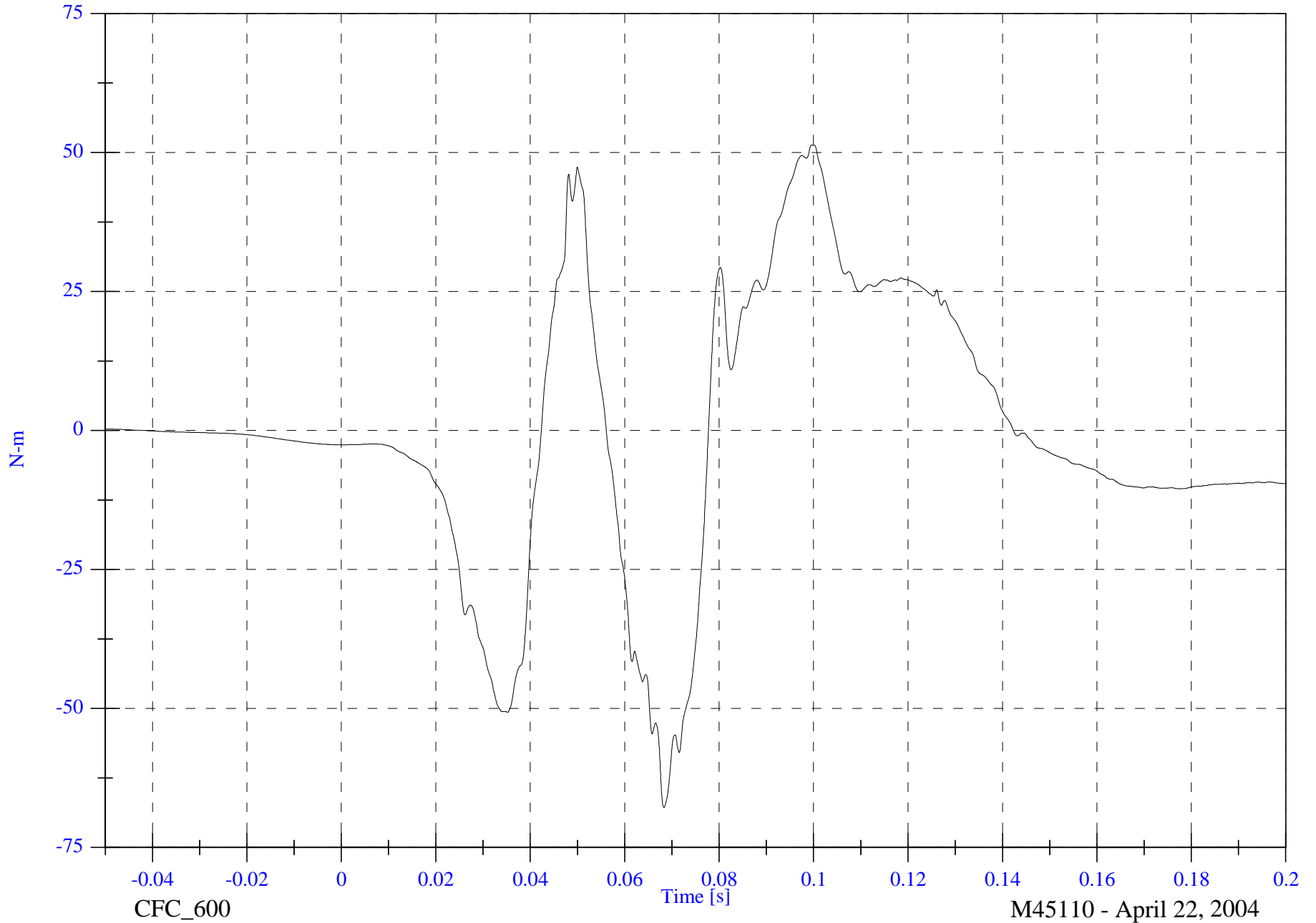
Max: 51.3 [N-m] at 0.100 [s]

V1P2 Right Upper Tibia My

Min: -67.8 [N-m] at 0.068 [s]

B-106

8642-NCAP-48



CFC_600

Time [s]

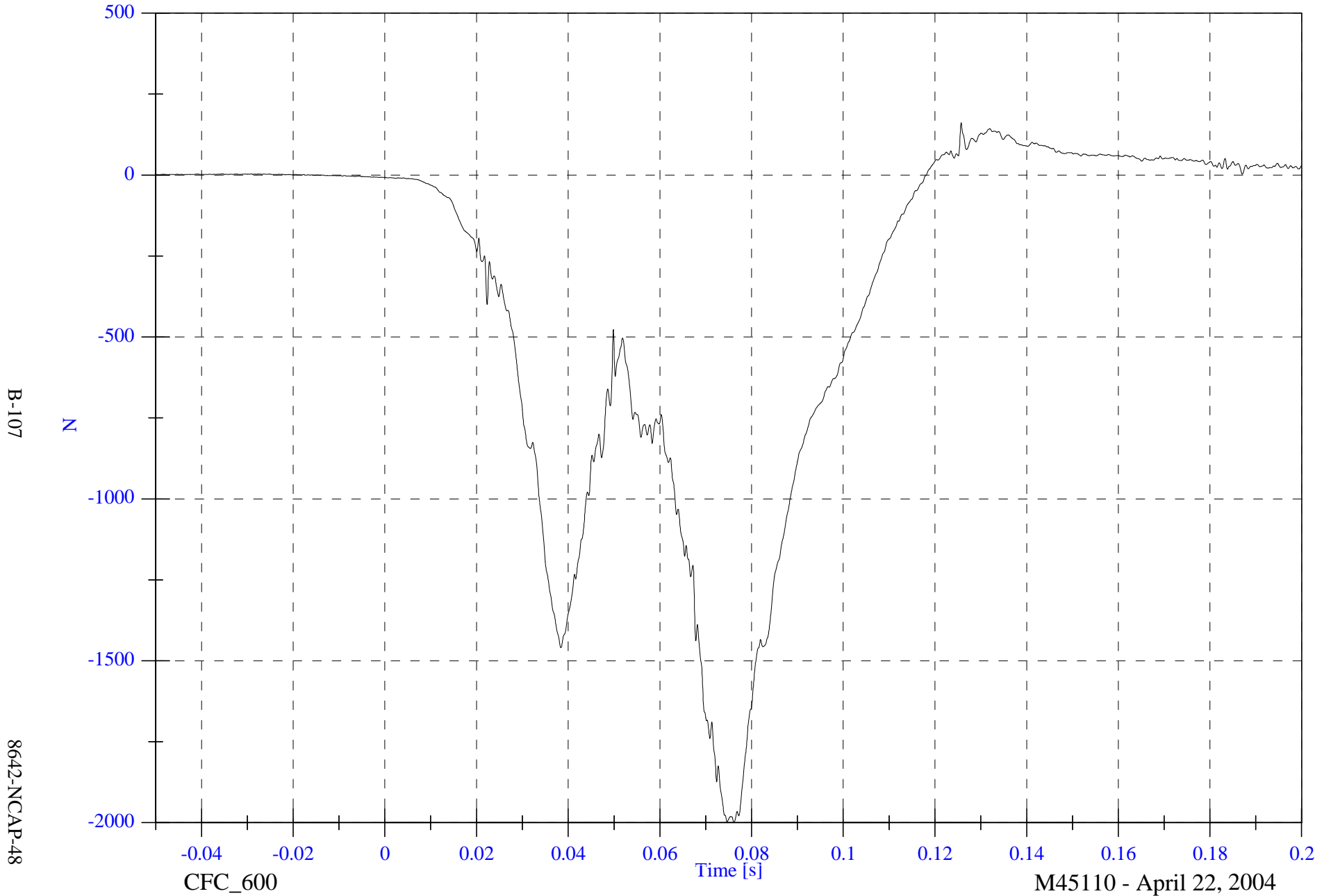
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Right Lower Tibia Fz

Max: 161.5 [N] at 0.126 [s]

Min: -1998.4 [N] at 0.076 [s]



B-107

8642-NCAP-48

CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

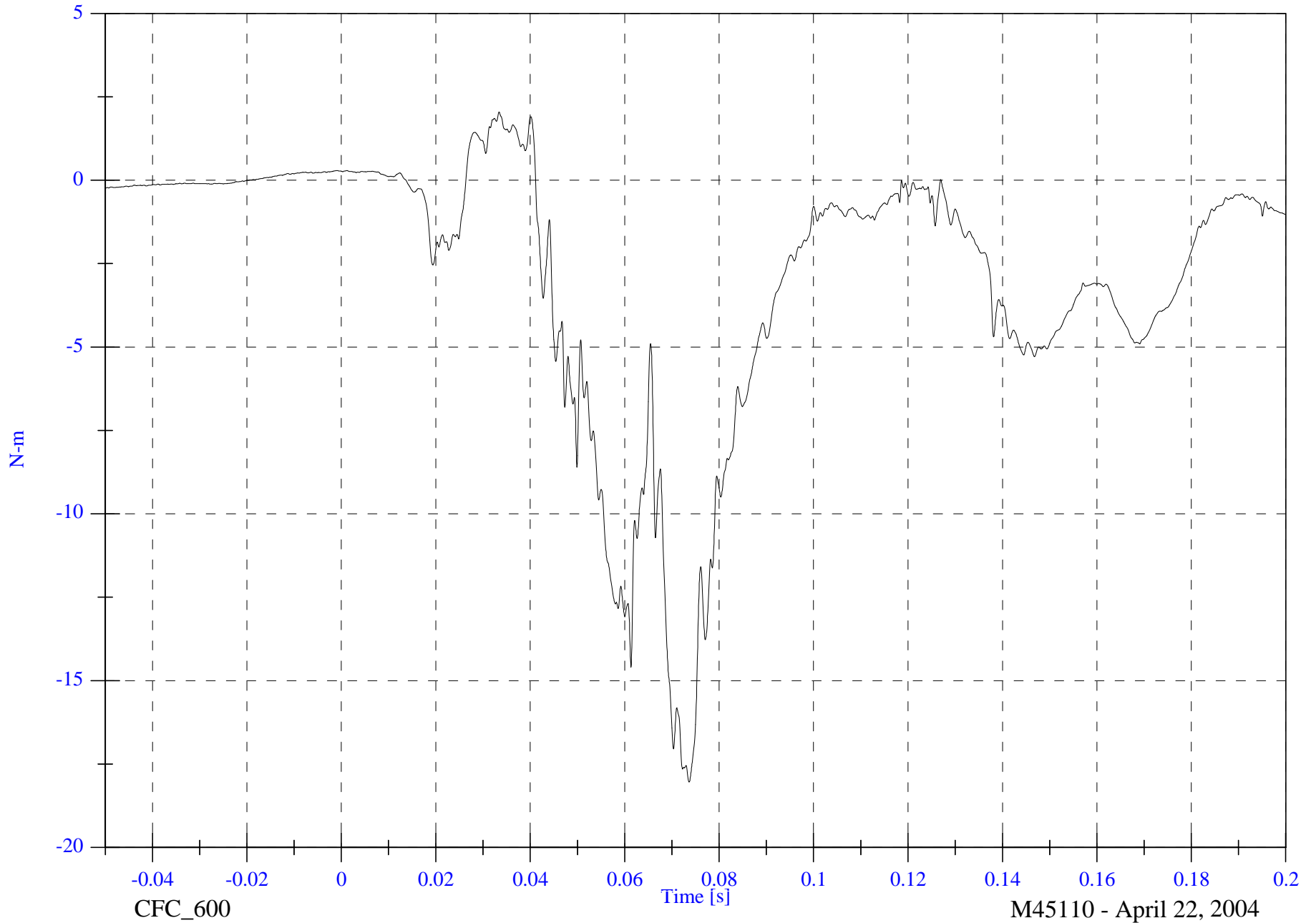
V1P2 Right Lower Tibia Mx

Max: 2.0 [N-m] at 0.033 [s]

Min: -18.0 [N-m] at 0.074 [s]

B-108

8642-NCAP-48



CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

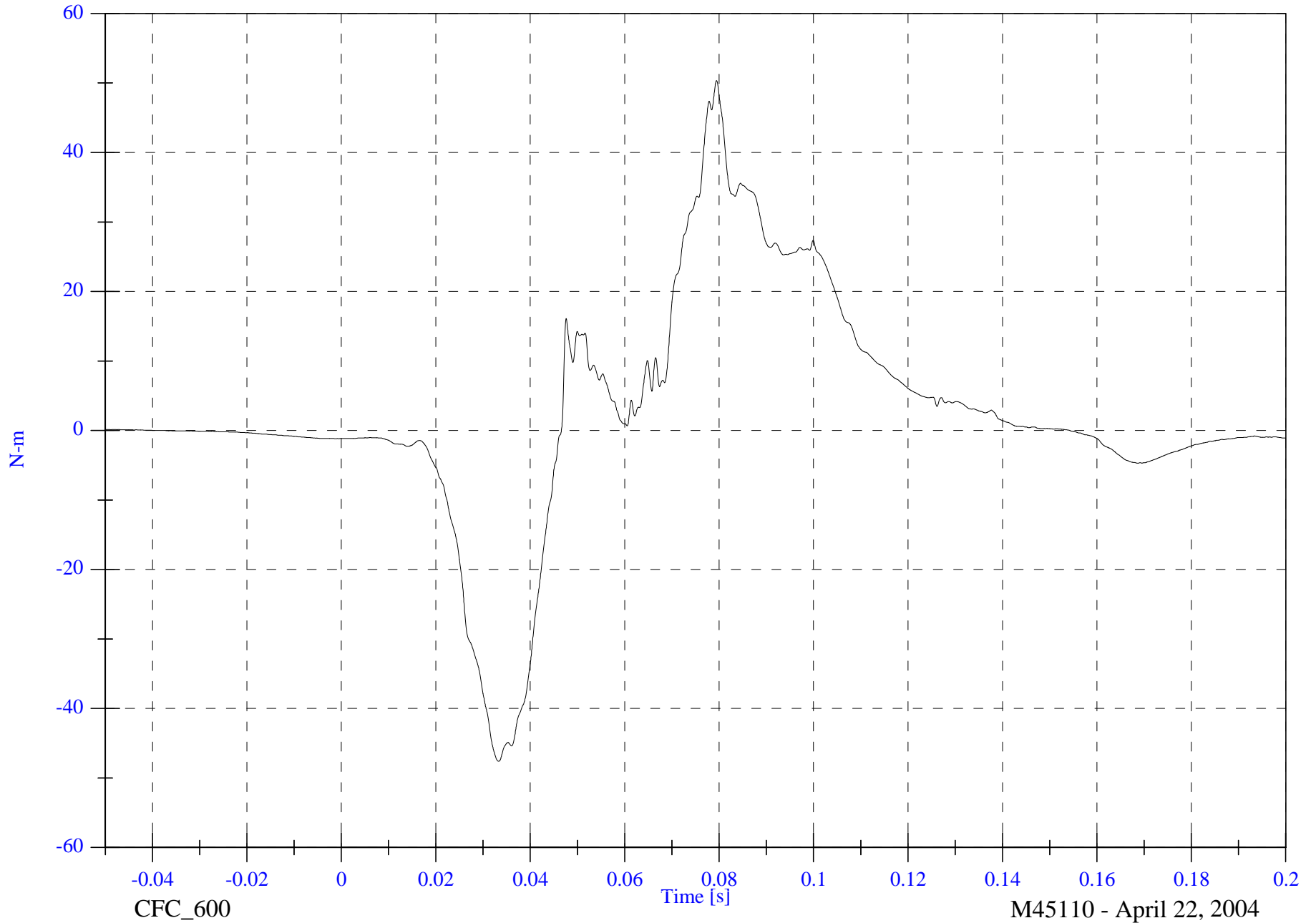
V1P2 Right Lower Tibia My

Max: 50.3 [N-m] at 0.079 [s]

Min: -47.6 [N-m] at 0.033 [s]

B-109

8642-NCAP-48



CFC_600

Time [s]

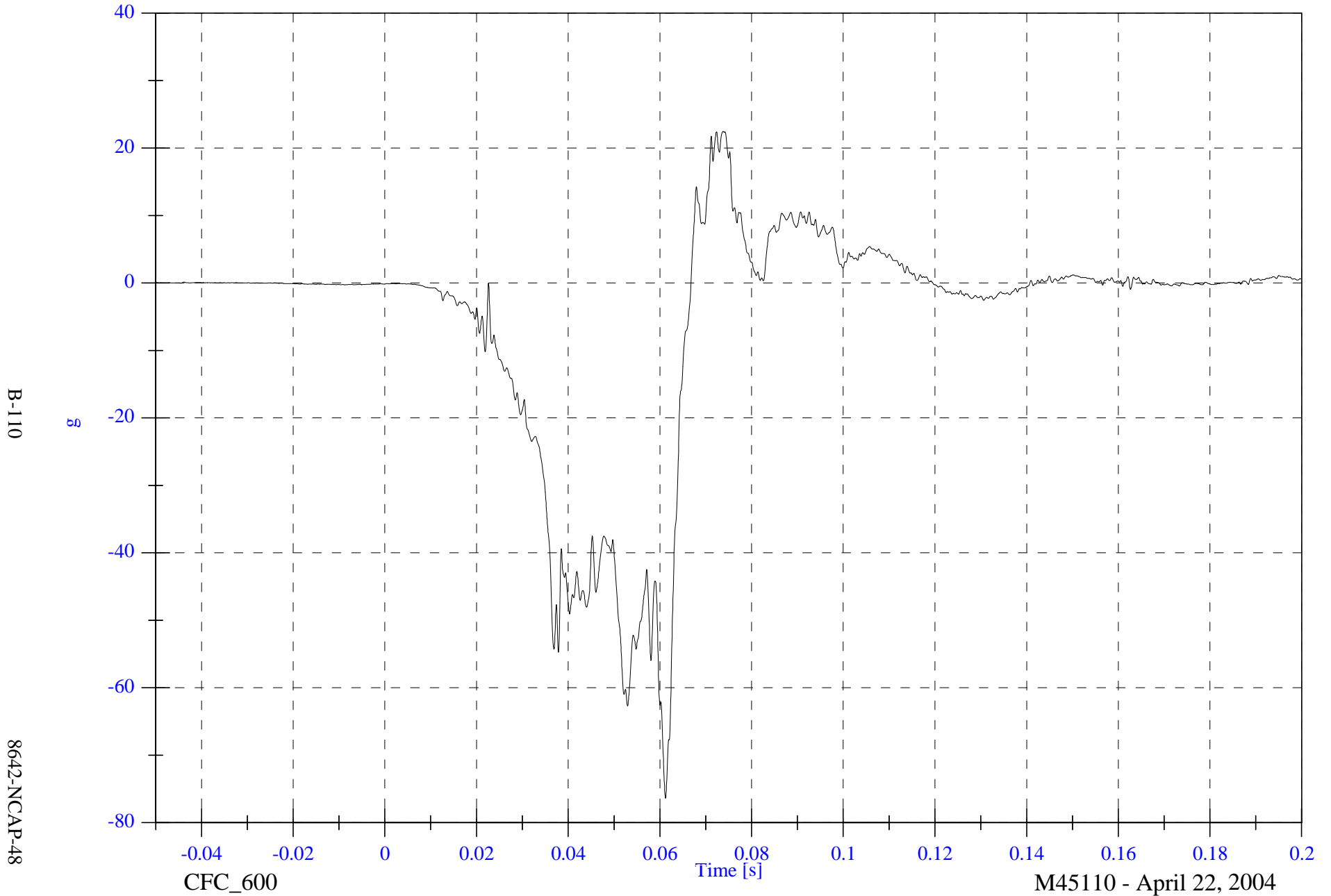
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 22.5 [g] at 0.074 [s]

V1P2 Left Foot Aft x

Min: -76.3 [g] at 0.061 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

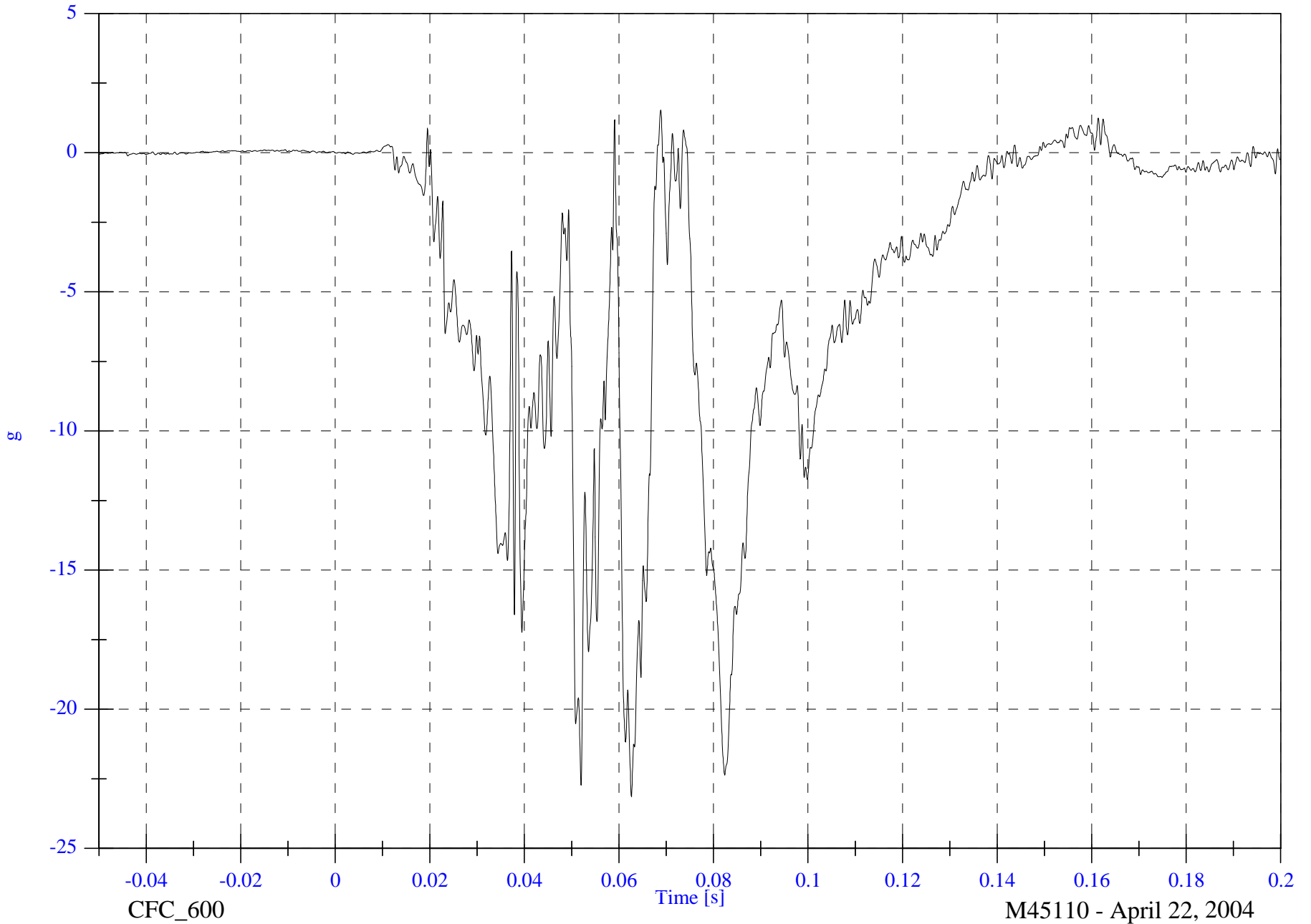
Max: 1.5 [g] at 0.069 [s]

V1P2 Left Foot Aft z

Min: -23.1 [g] at 0.063 [s]

B-111

8642-NCAP-48



CFC_600

Time [s]

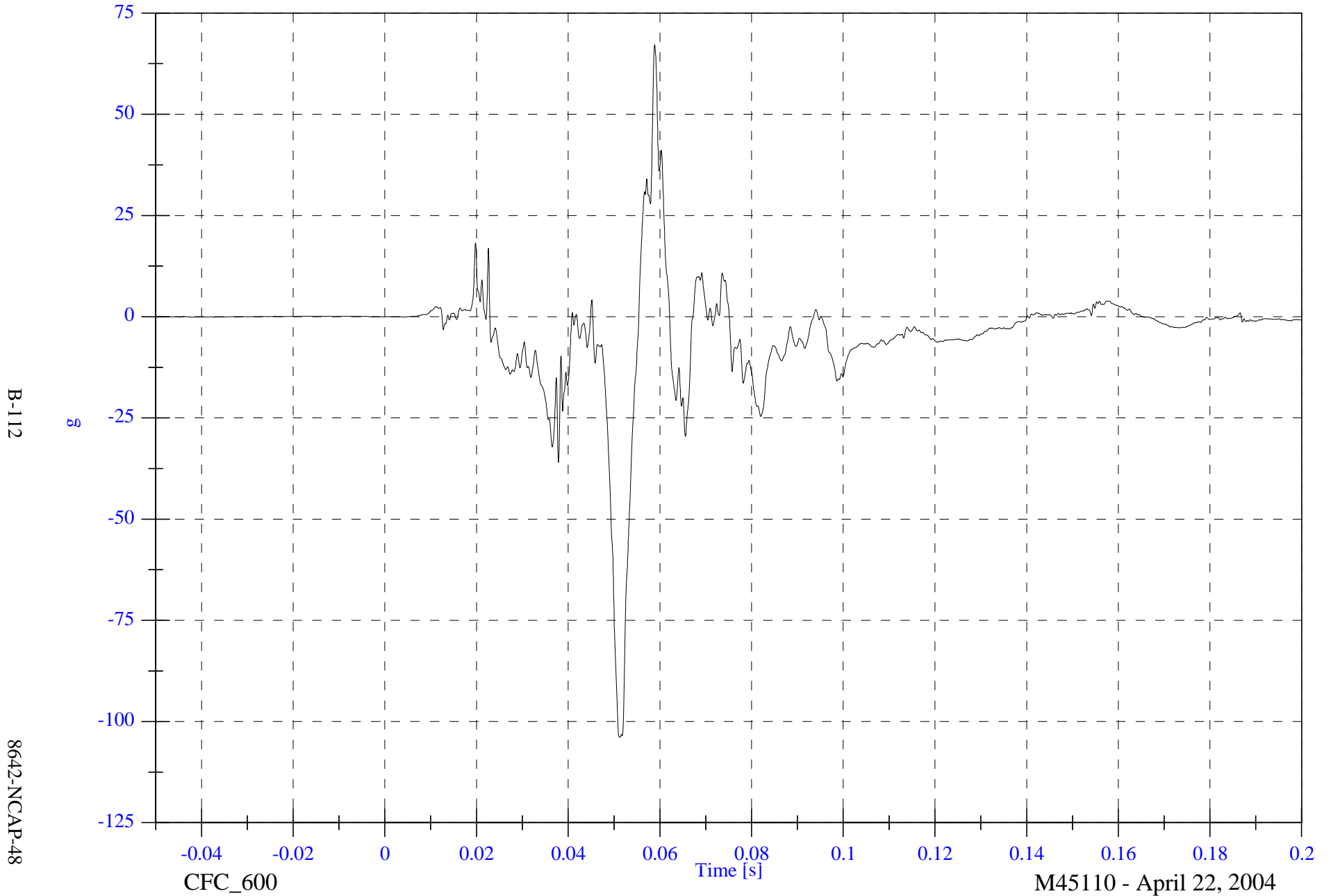
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 67.2 [g] at 0.059 [s]

Min: -103.9 [g] at 0.051 [s]

V1P2 Left Foot Fore z



2004 NCAP Test 12 - 2004 Toyota 4Runner

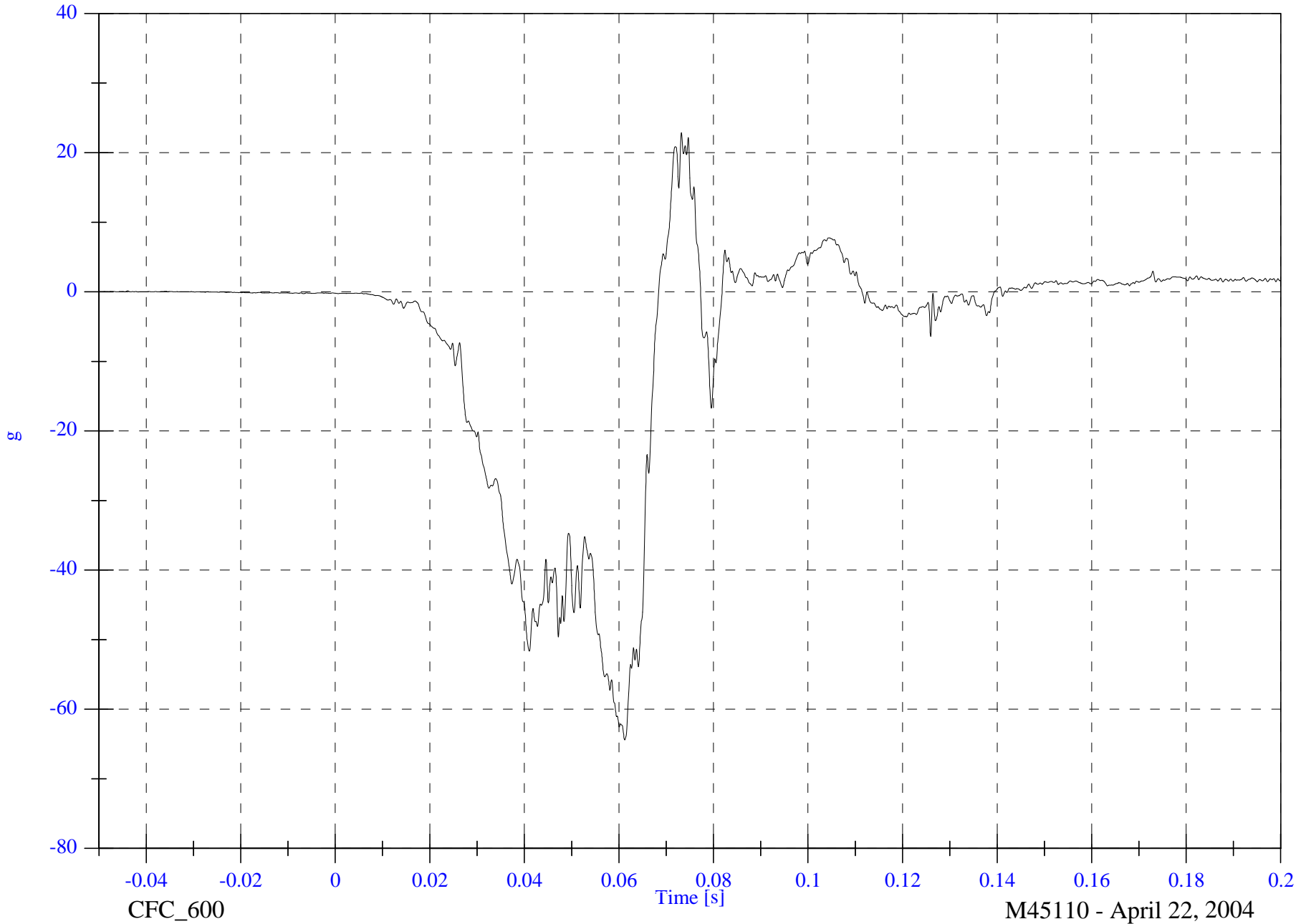
Max: 22.8 [g] at 0.073 [s]

V1P2 Right Foot Aft x

Min: -64.4 [g] at 0.061 [s]

B-113

8642-NCAP-48



CFC_600

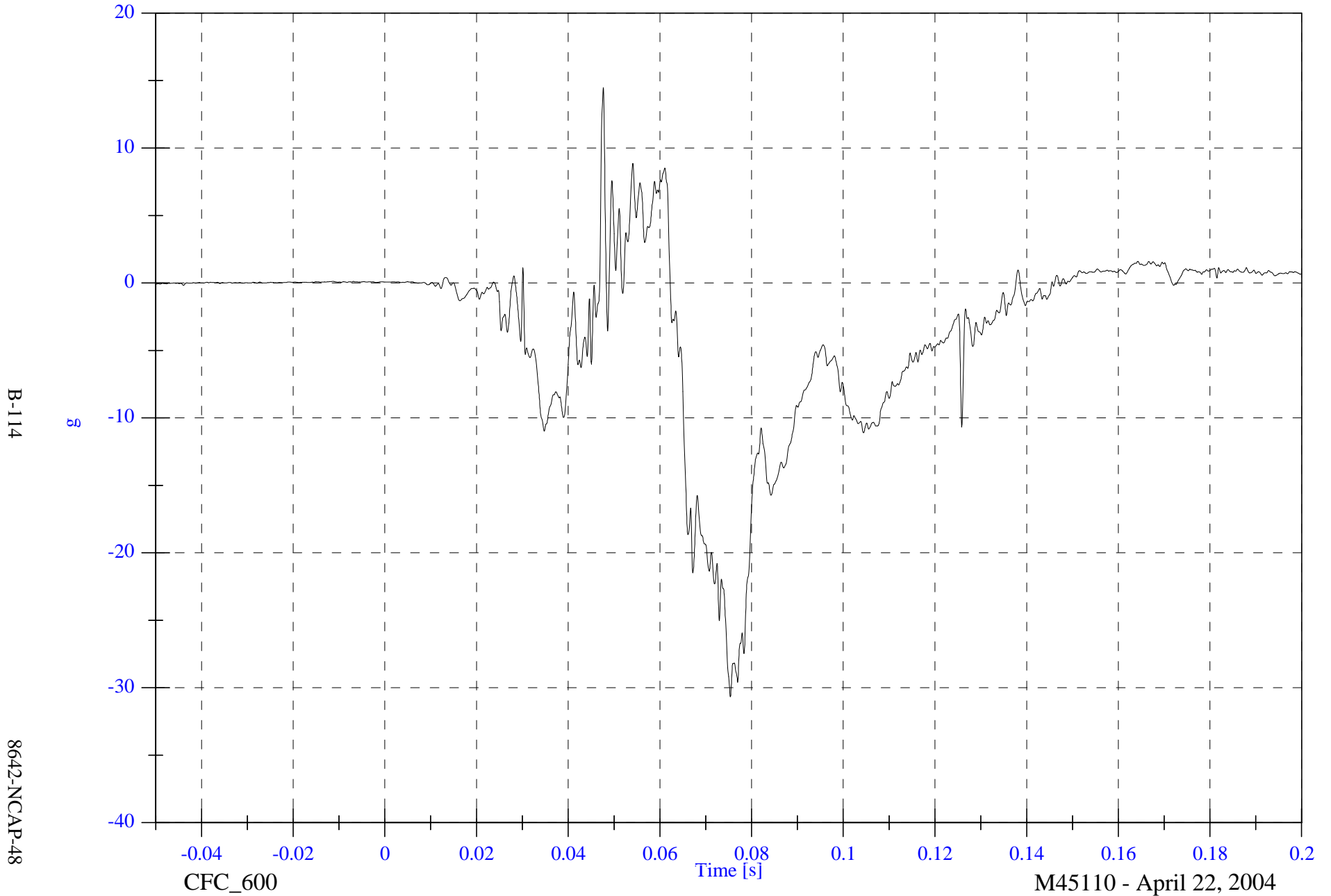
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P2 Right Foot Aft z

Max: 14.5 [g] at 0.048 [s]

Min: -30.7 [g] at 0.075 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

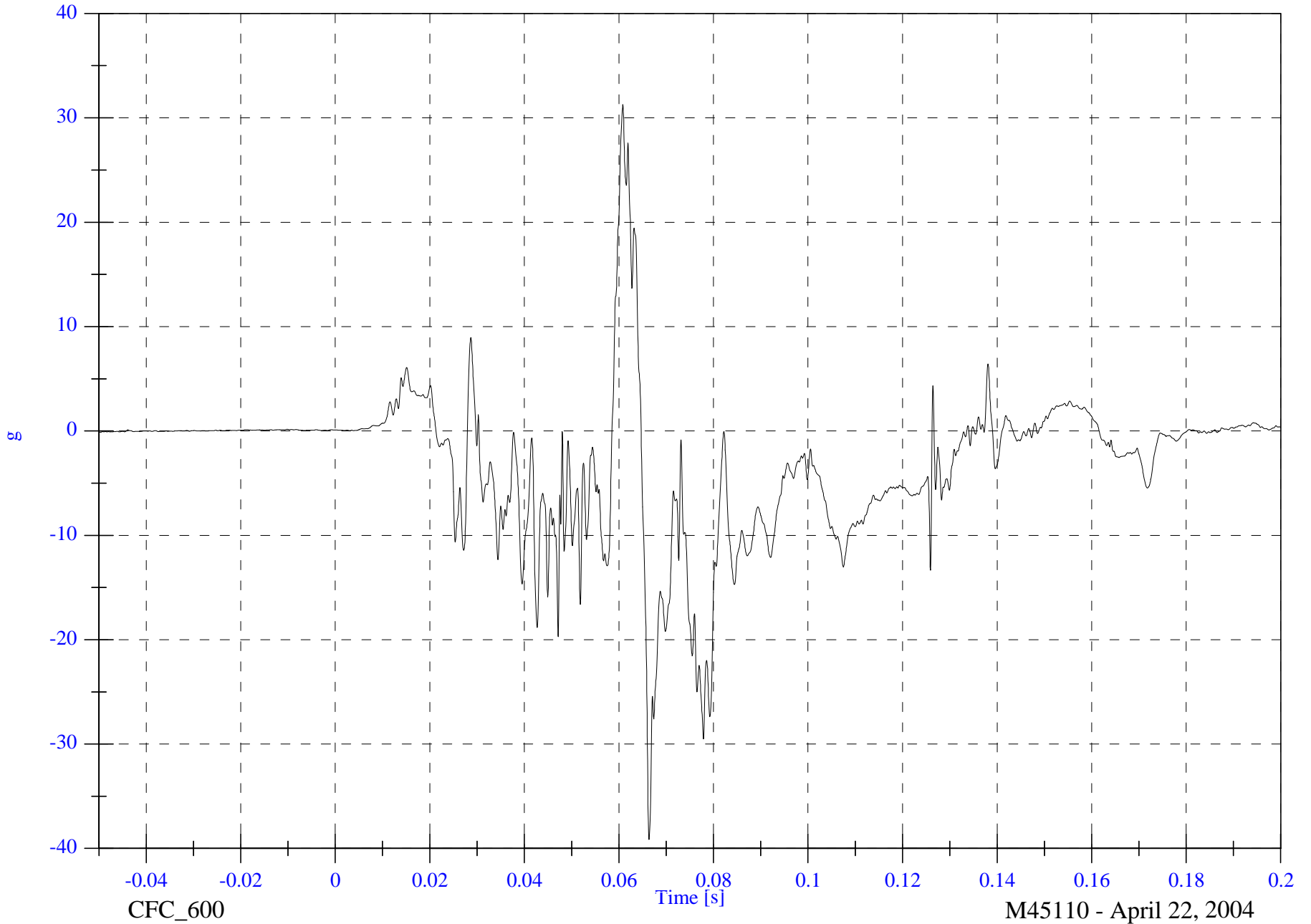
V1P2 Right Foot Fore z

Max: 31.3 [g] at 0.061 [s]

Min: -39.1 [g] at 0.066 [s]

B-115

8642-NCAP-48



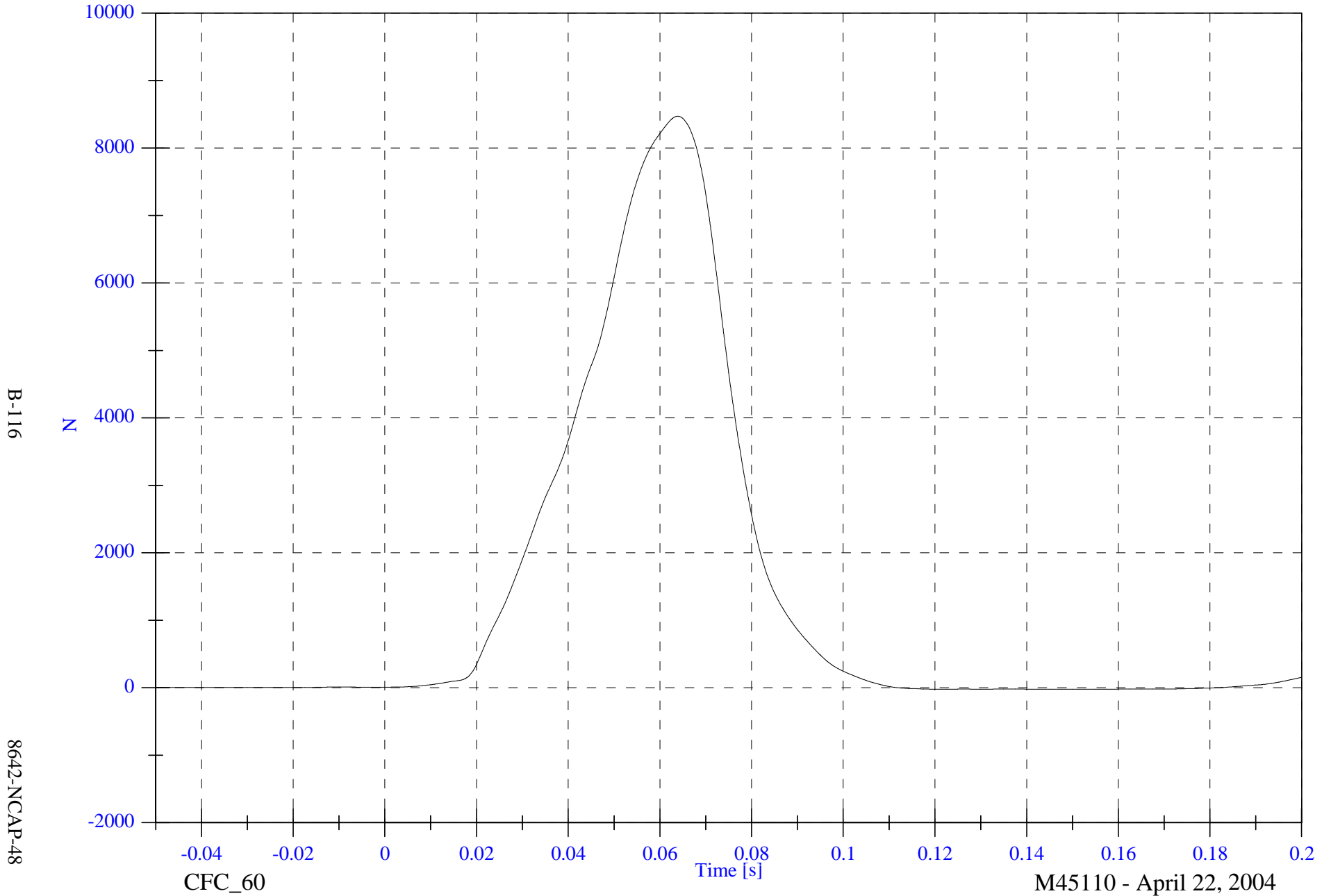
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 RFP Lap Belt

Max: 8471.0 [N] at 0.064 [s]

Min: -23.2 [N] at 0.153 [s]



B-116

8642-NCAP-48

CFC_60

Time [s]

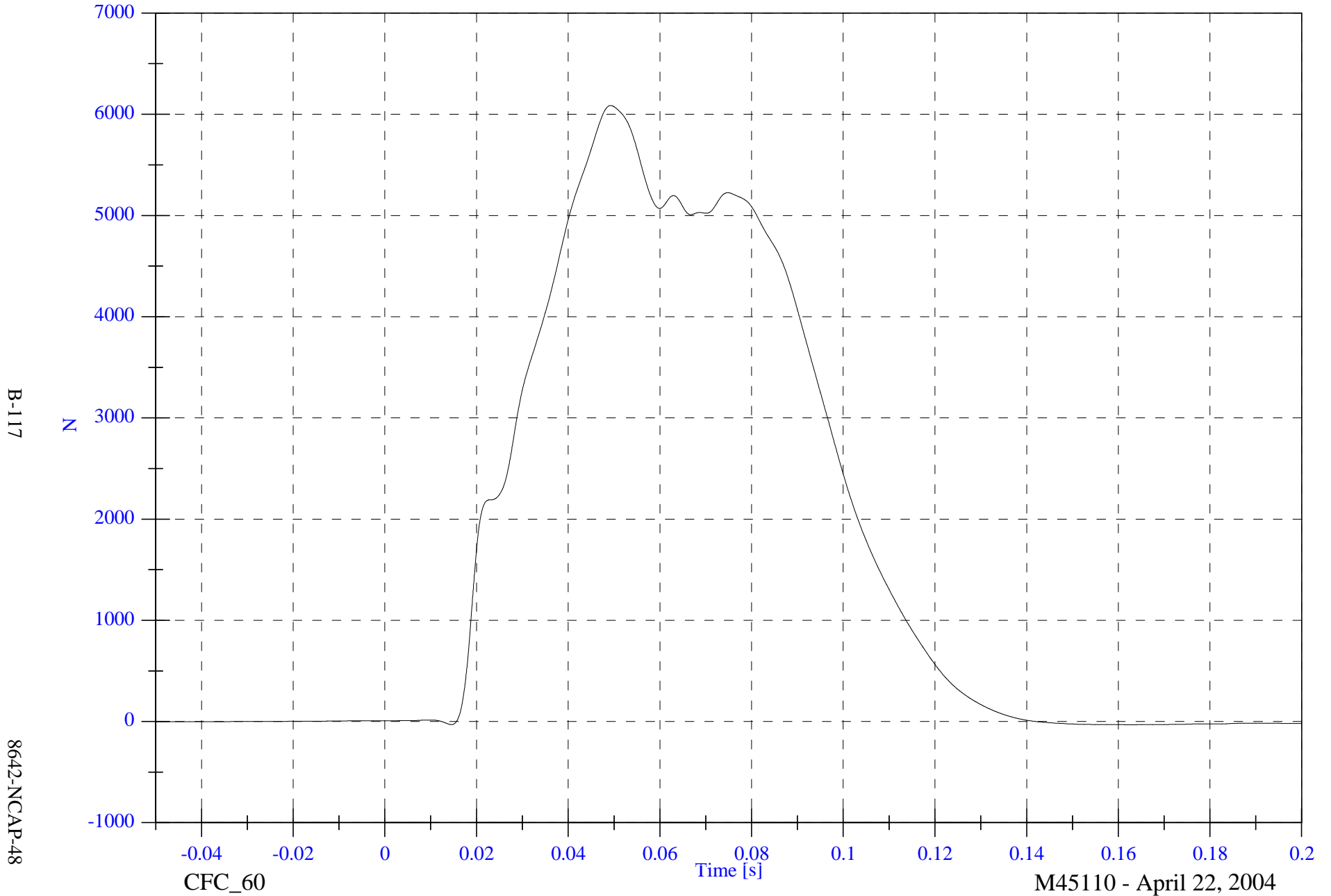
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 6087.2 [N] at 0.049 [s]

V1 RFP Torso Belt

Min: -32.3 [N] at 0.163 [s]



B-117

8642-NCAP-48

CFC_60

Time [s]

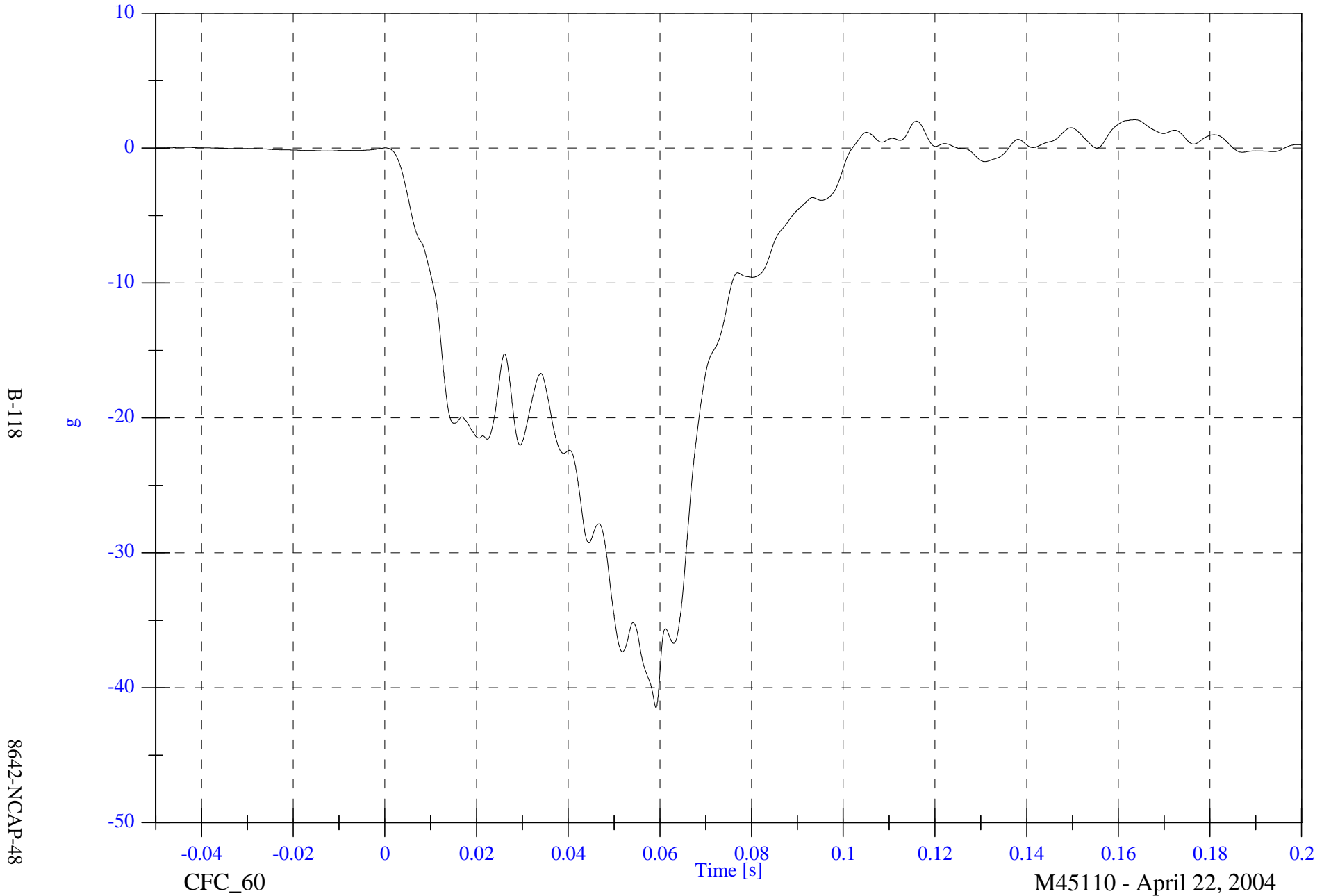
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Left Rear #1x

Max: 2.1 [g] at 0.164 [s]

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



2004 NCAP Test 12 - 2004 Toyota 4Runner

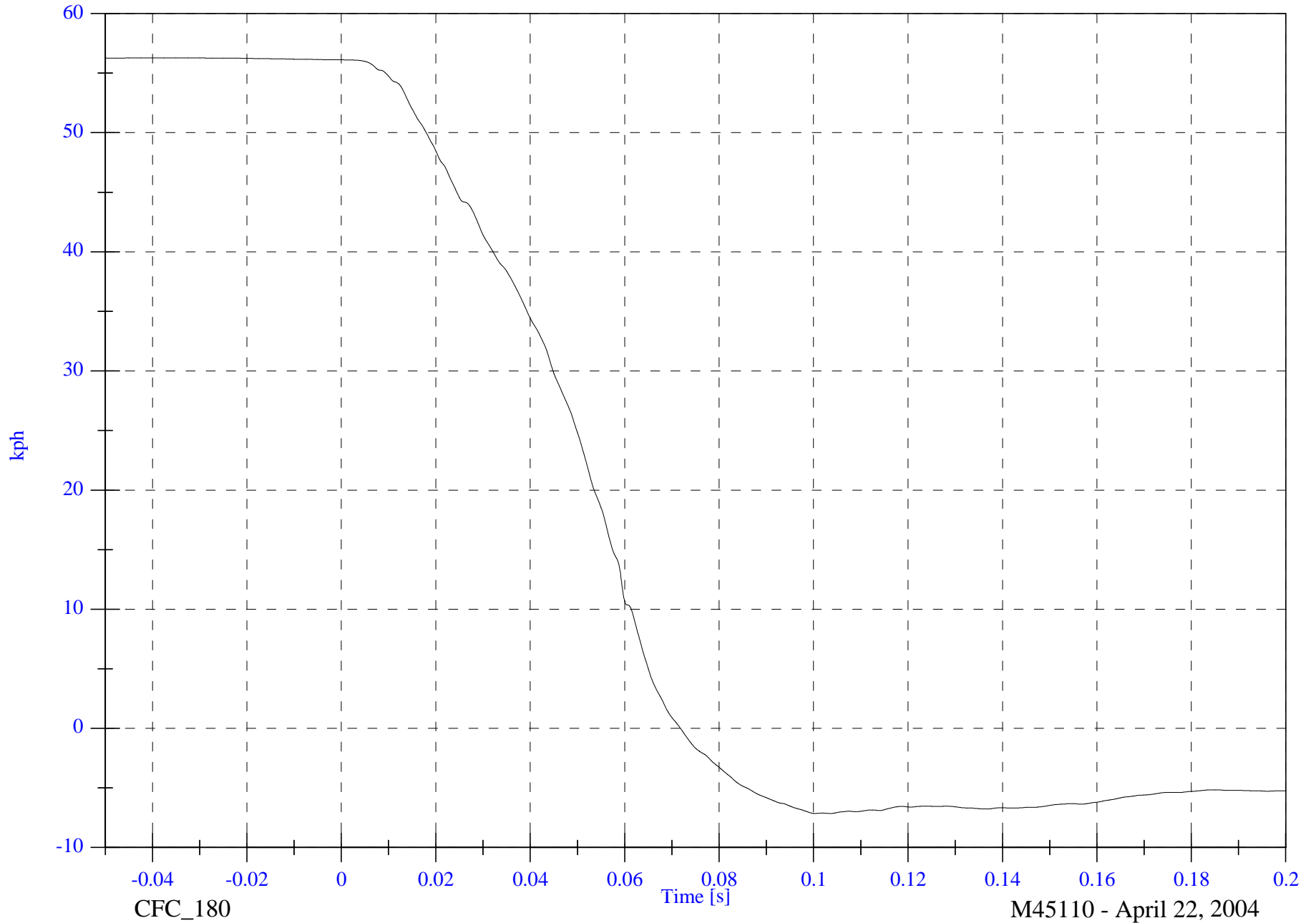
Max: 56.3 [kph] at -0.036 [s]

V1 Left Rear #1x Velocity

Min: -7.1 [kph] at 0.104 [s]

B-119

8642-NCAP-48



CFC_180

Time [s]

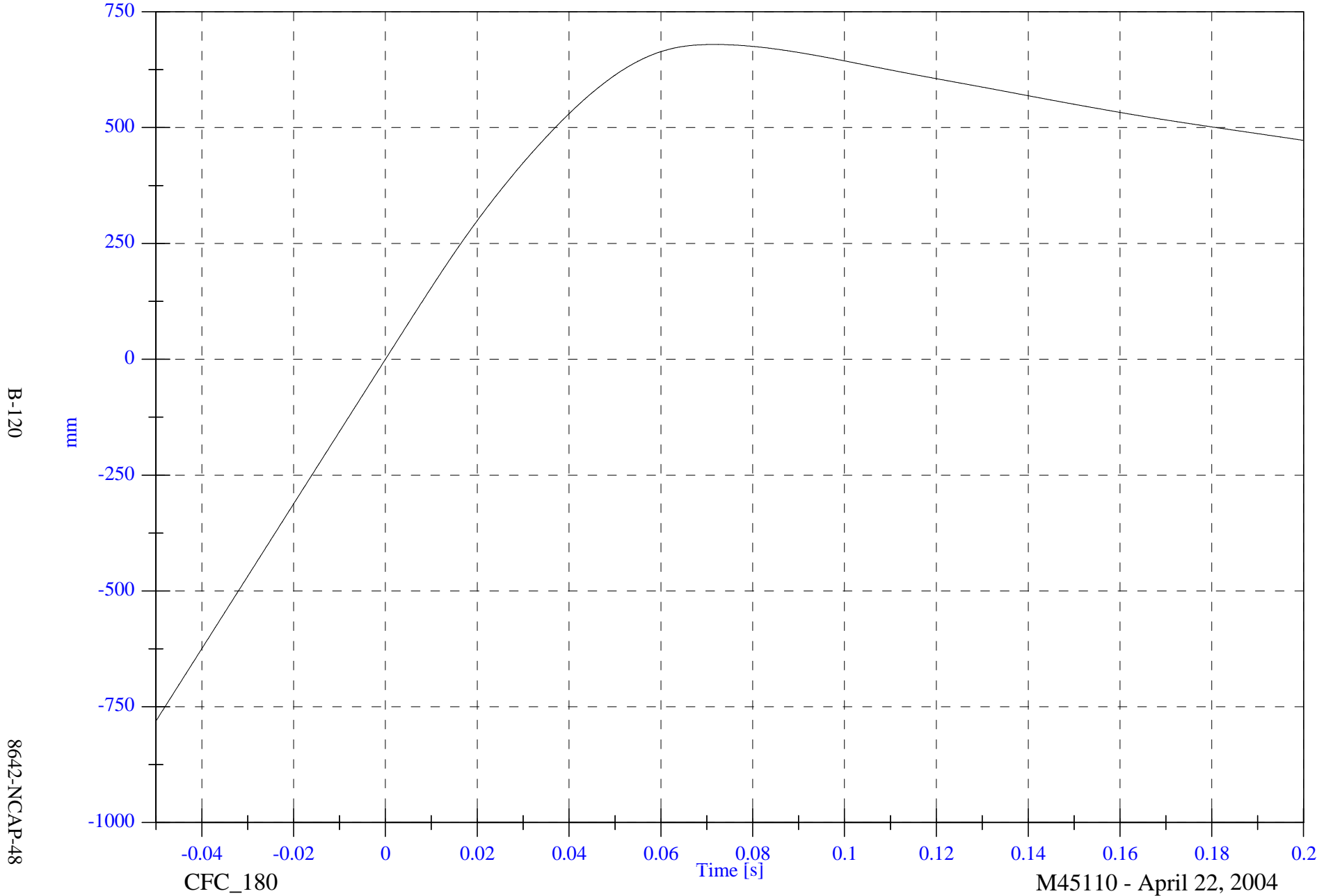
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Left Rear #1x Displacement

Max: 679.3 [mm] at 0.072 [s]

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



B-120

8642-NCAP-48

CFC_180

Time [s]

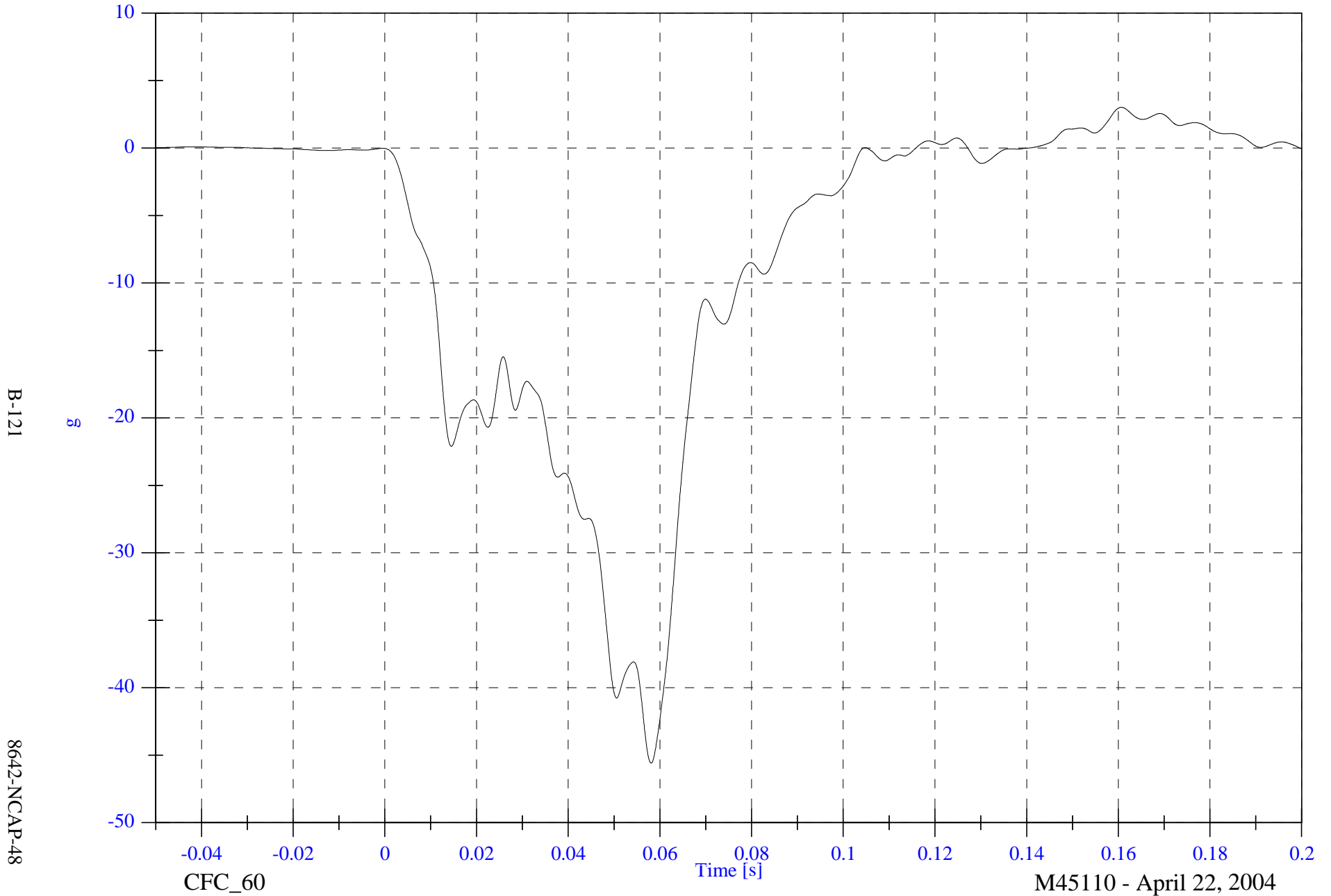
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Right Rear #2x

Max: 3.0 [g] at 0.161 [s]

Min: -45.6 [g] at 0.058 [s]



B-121

8642-NCAP-48

CFC_60

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

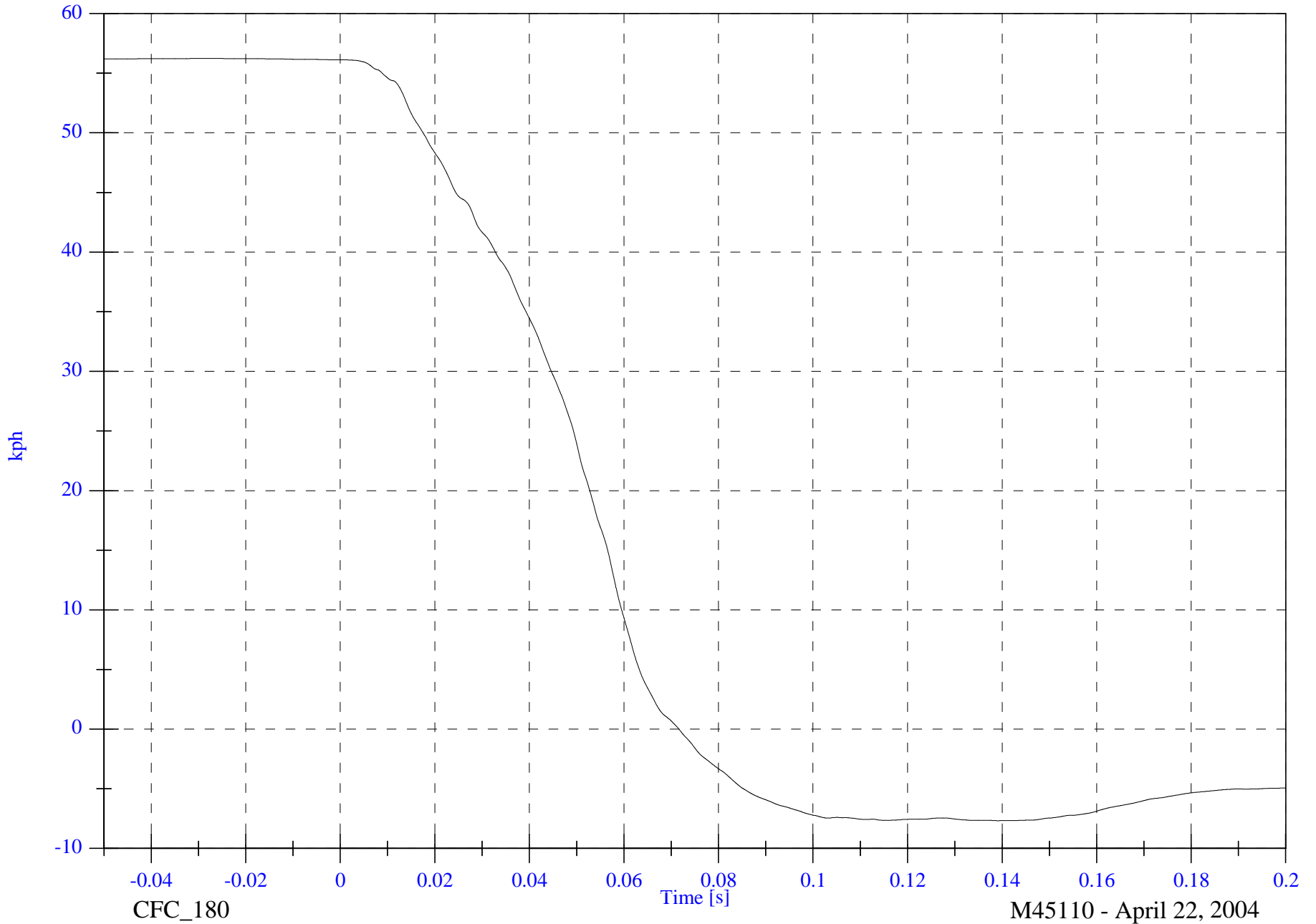
Max: 56.2 [kph] at -0.030 [s]

V1 Right Rear #2x Velocity

Min: -7.7 [kph] at 0.139 [s]

B-122

8642-NCAP-48



CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

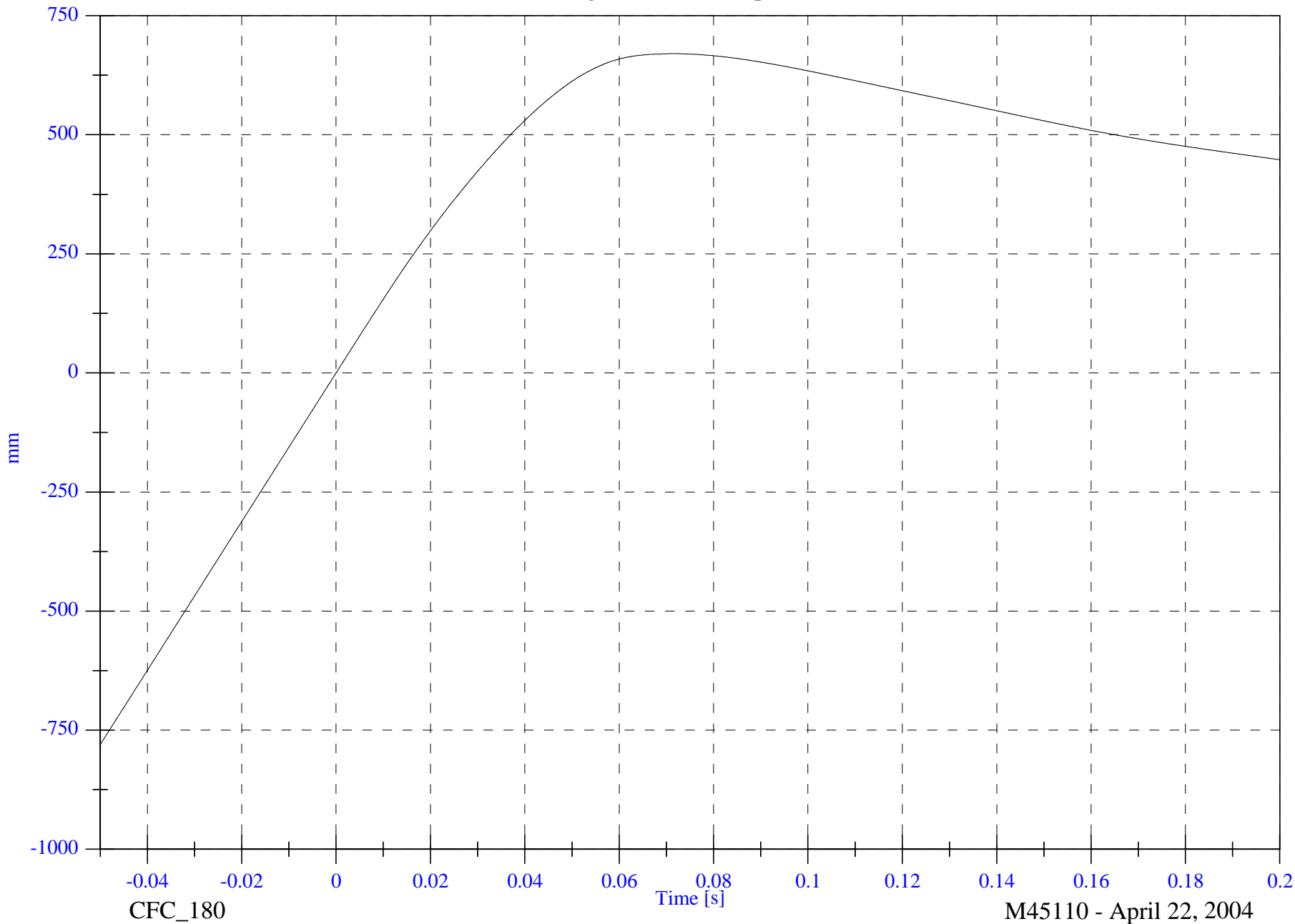
V1 Right Rear #2x Displacement

Max: 670.0 [mm] at 0.072 [s]

Min: -780.5 [mm] at -0.050 [s]

B-123

8642-NCAP-48



CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

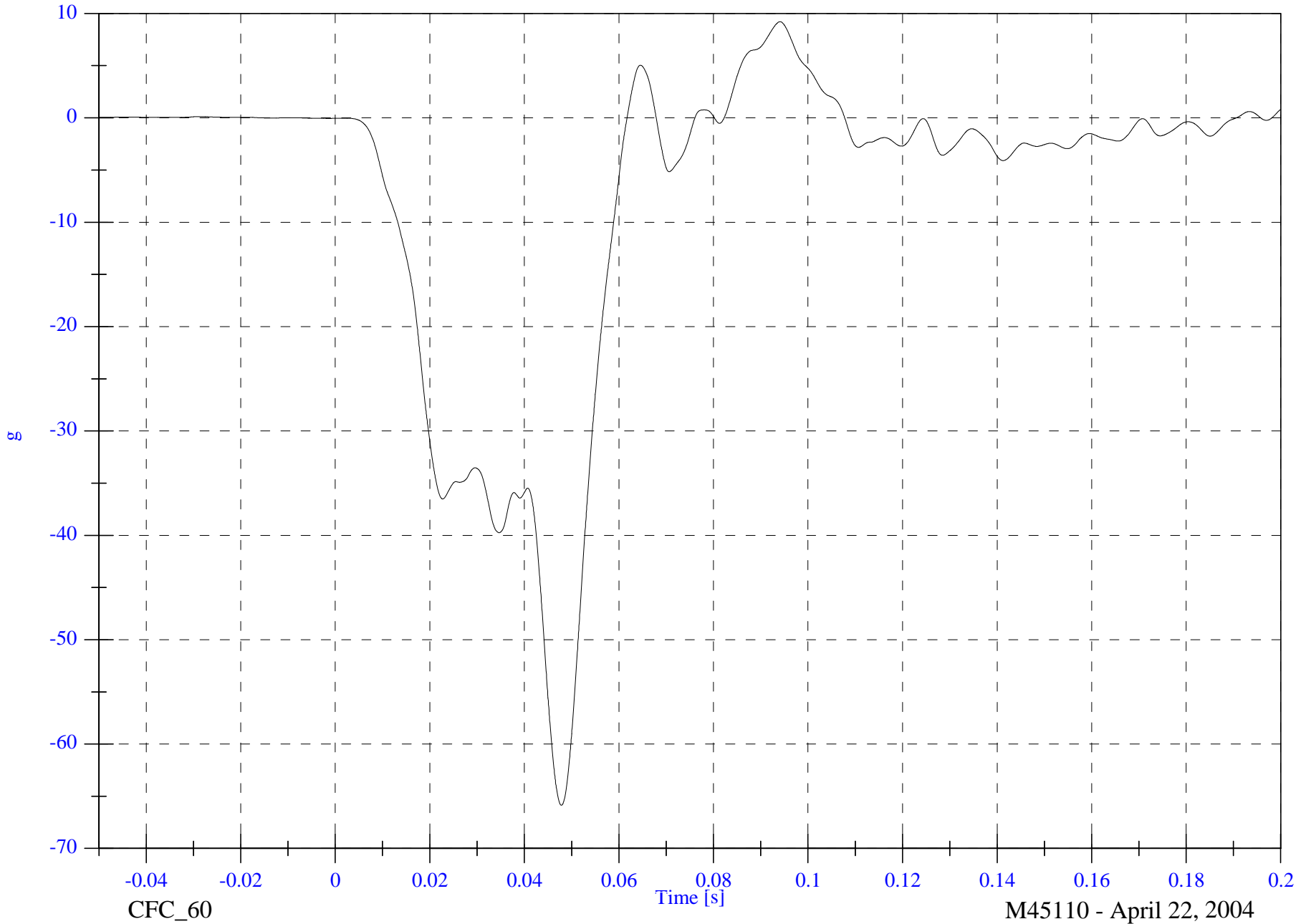
V1 Engine Top #3x

Max: 9.2 [g] at 0.094 [s]

Min: -65.9 [g] at 0.048 [s]

B-124

8642-NCAP-48



CFC_60

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

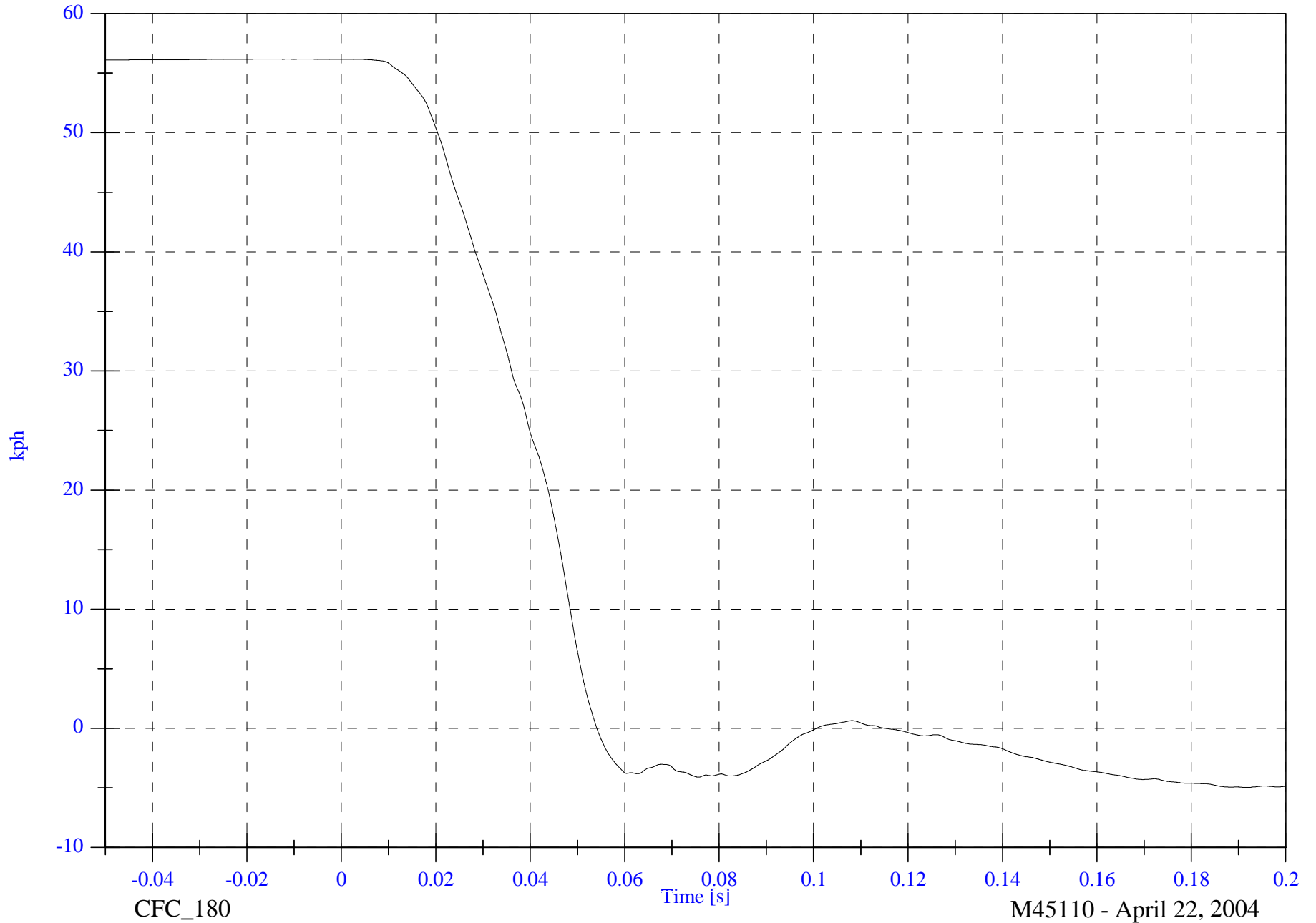
Max: 56.2 [kph] at -0.015 [s]

V1 Engine Top #3x Velocity

Min: -5.0 [kph] at 0.192 [s]

B-125

8642-NCAP-48



CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

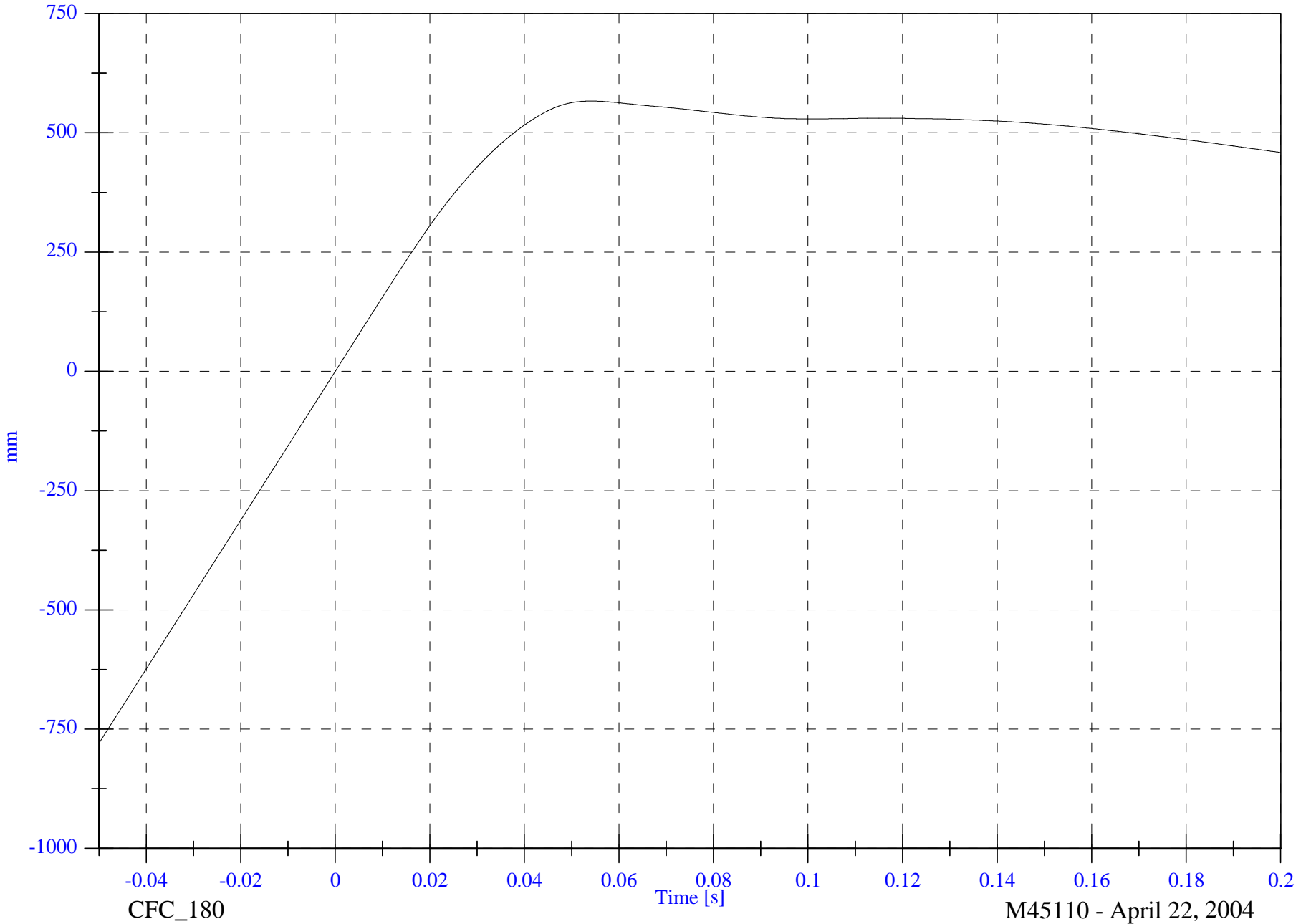
V1 Engine Top #3x Displacement

Max: 566.4 [mm] at 0.054 [s]

Min: -779.8 [mm] at -0.050 [s]

B-126

8642-NCAP-48



CFC_180

Time [s]

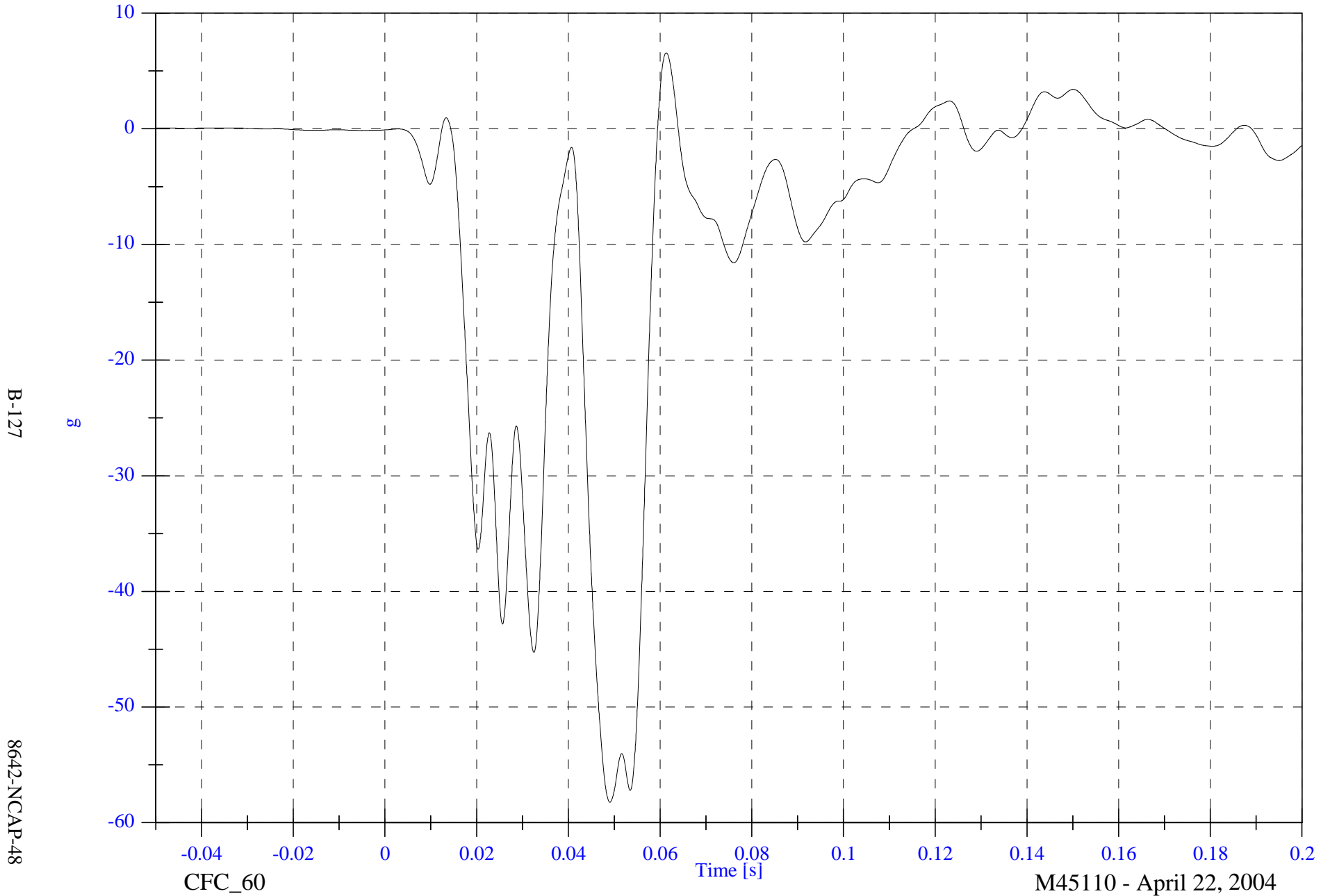
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Engine Bottom #4x

Max: 6.6 [g] at 0.061 [s]

Min: -58.2 [g] at 0.049 [s]

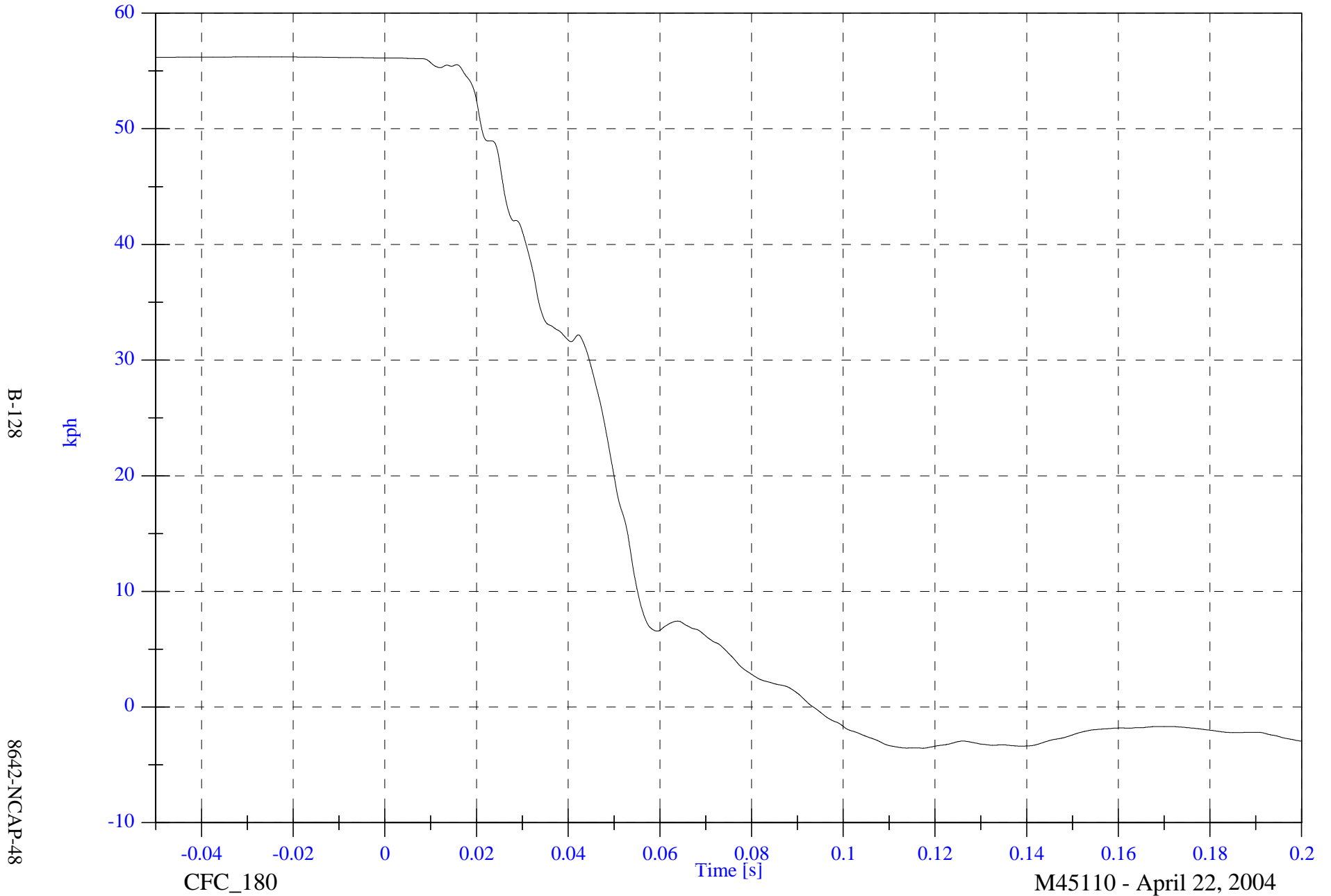


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Engine Bottom #4x Velocity

Max: 56.2 [kph] at -0.028 [s]

Min: -3.6 [kph] at 0.117 [s]



B-128

8642-NCAP-48

CFC_180

Time [s]

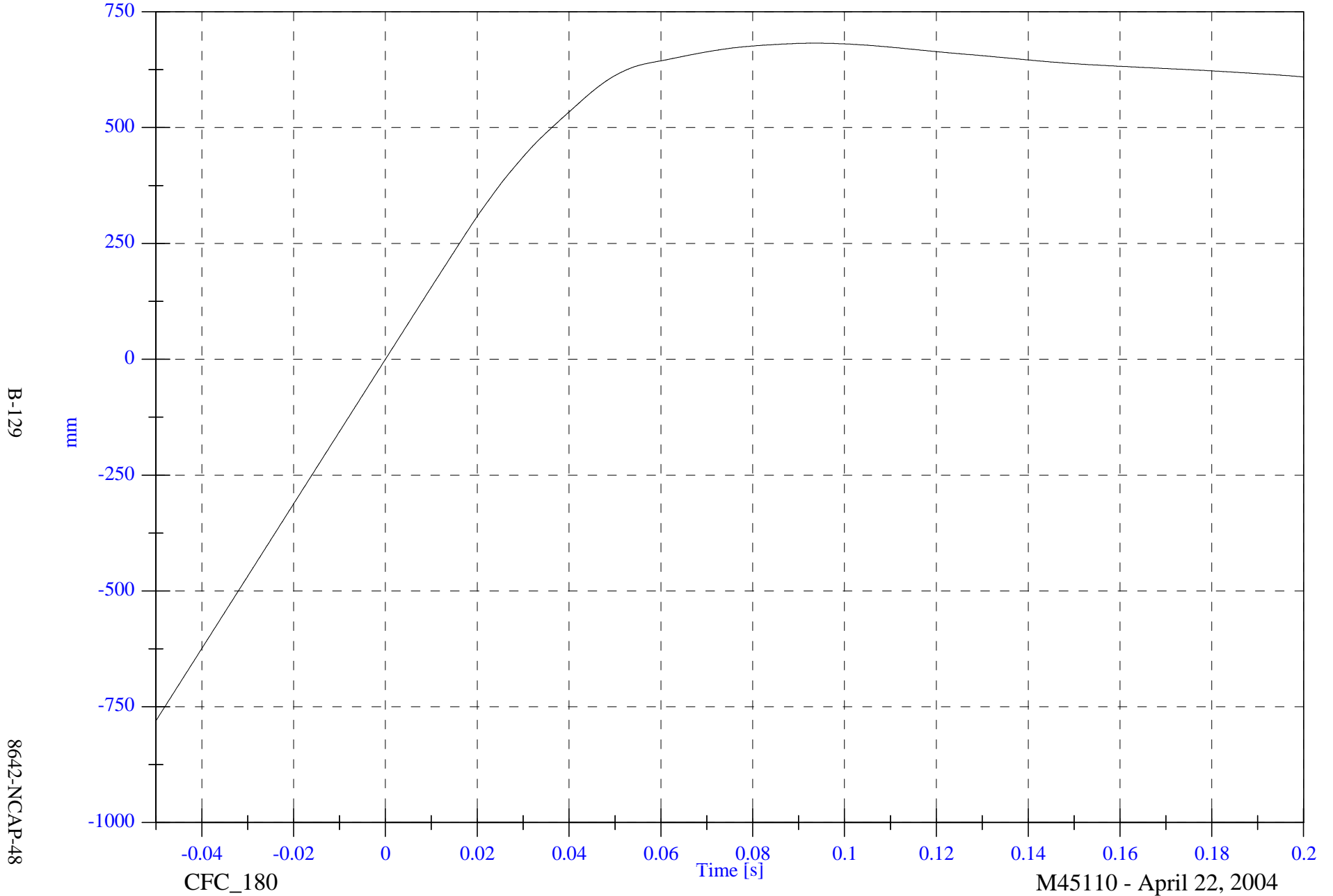
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 682.2 [mm] at 0.093 [s]

V1 Engine Bottom #4x Displacement

Min: -780.3 [mm] at -0.050 [s]



B-129

8642-NCAP-48

CFC_180

Time [s]

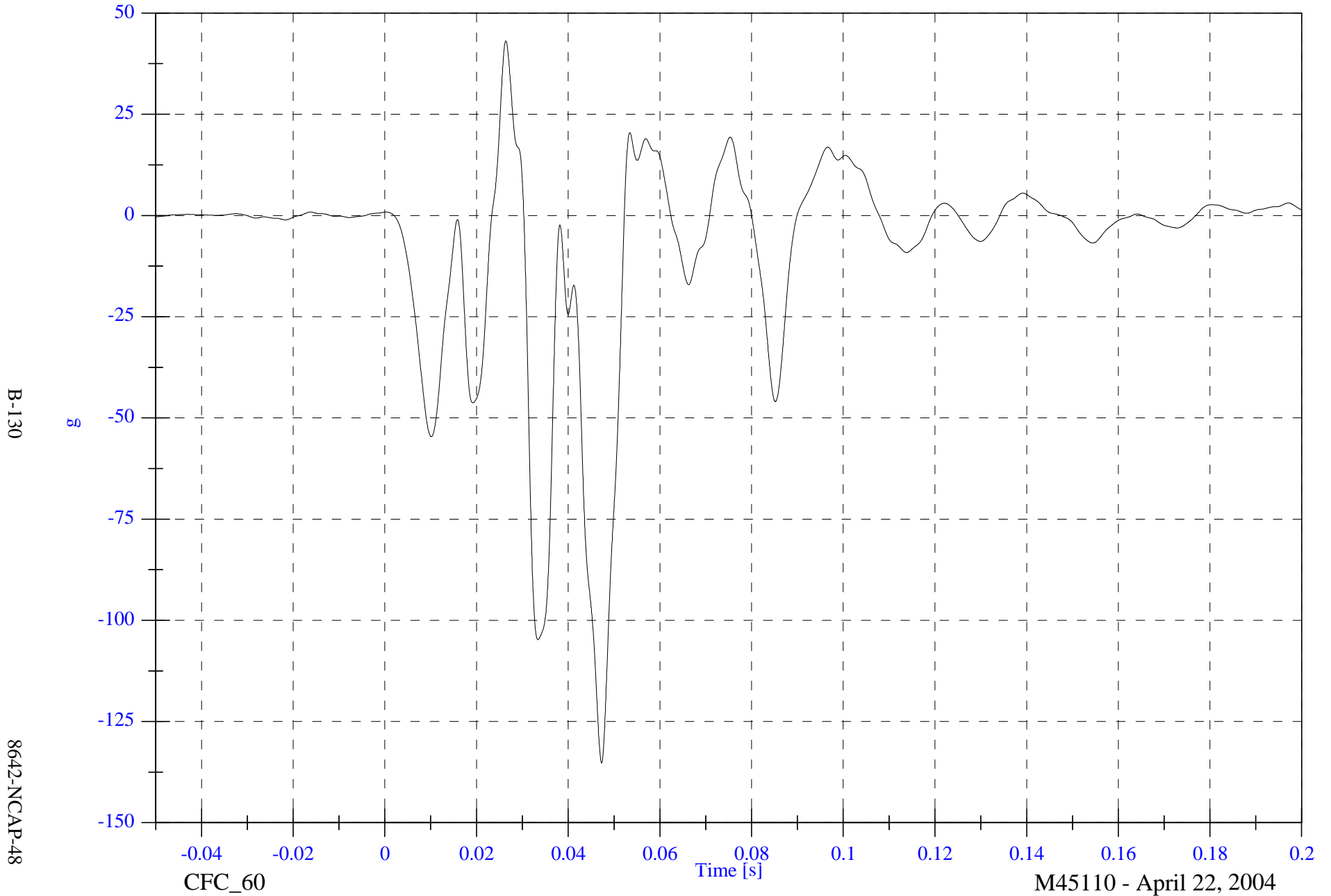
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Right Caliper #5x

Max: 43.2 [g] at 0.026 [s]

Min: -135.2 [g] at 0.047 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

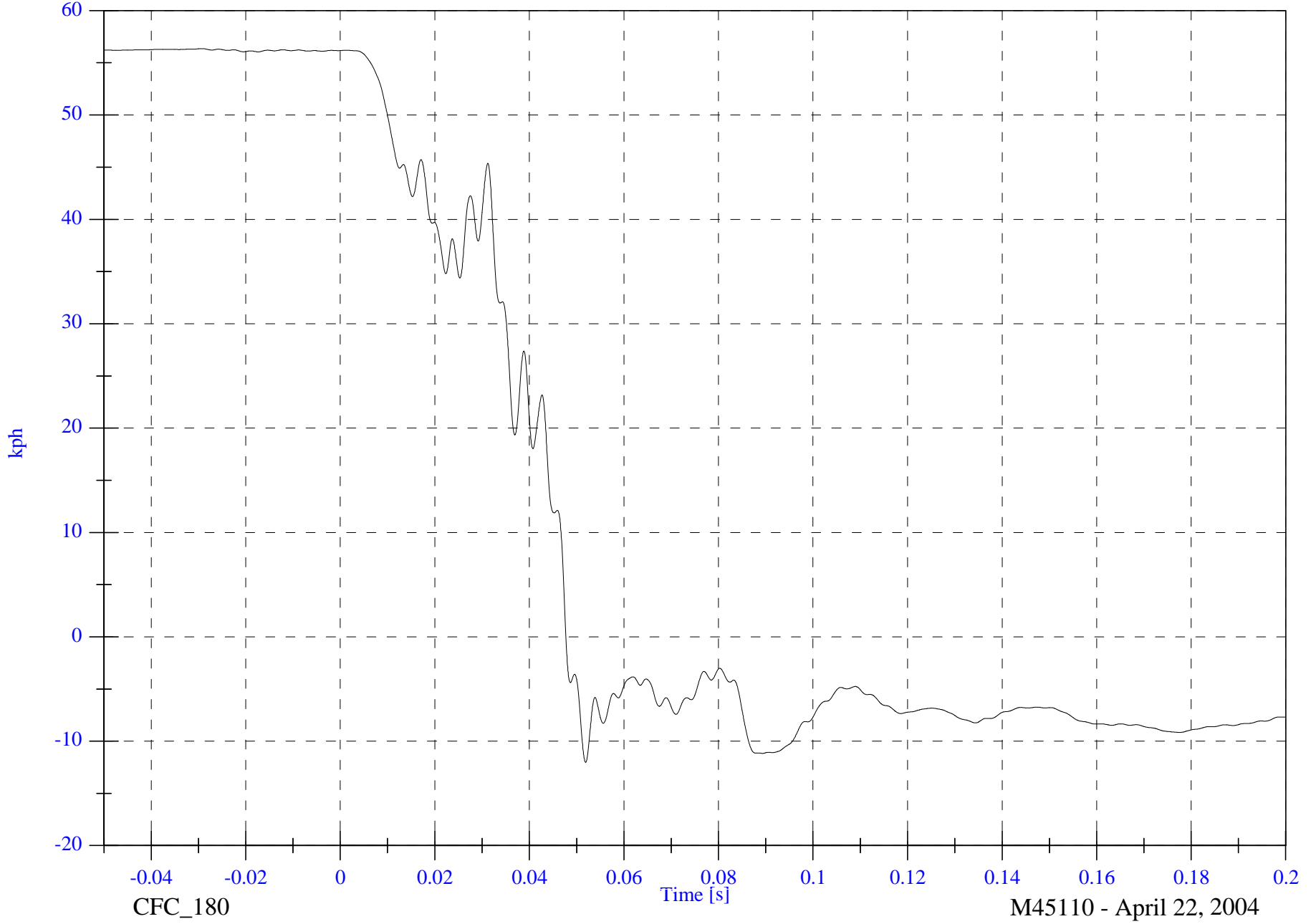
Max: 56.4 [kph] at -0.029 [s]

V1 Right Caliper #5x Velocity

Min: -12.0 [kph] at 0.052 [s]

B-131

8642-NCAP-48



CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

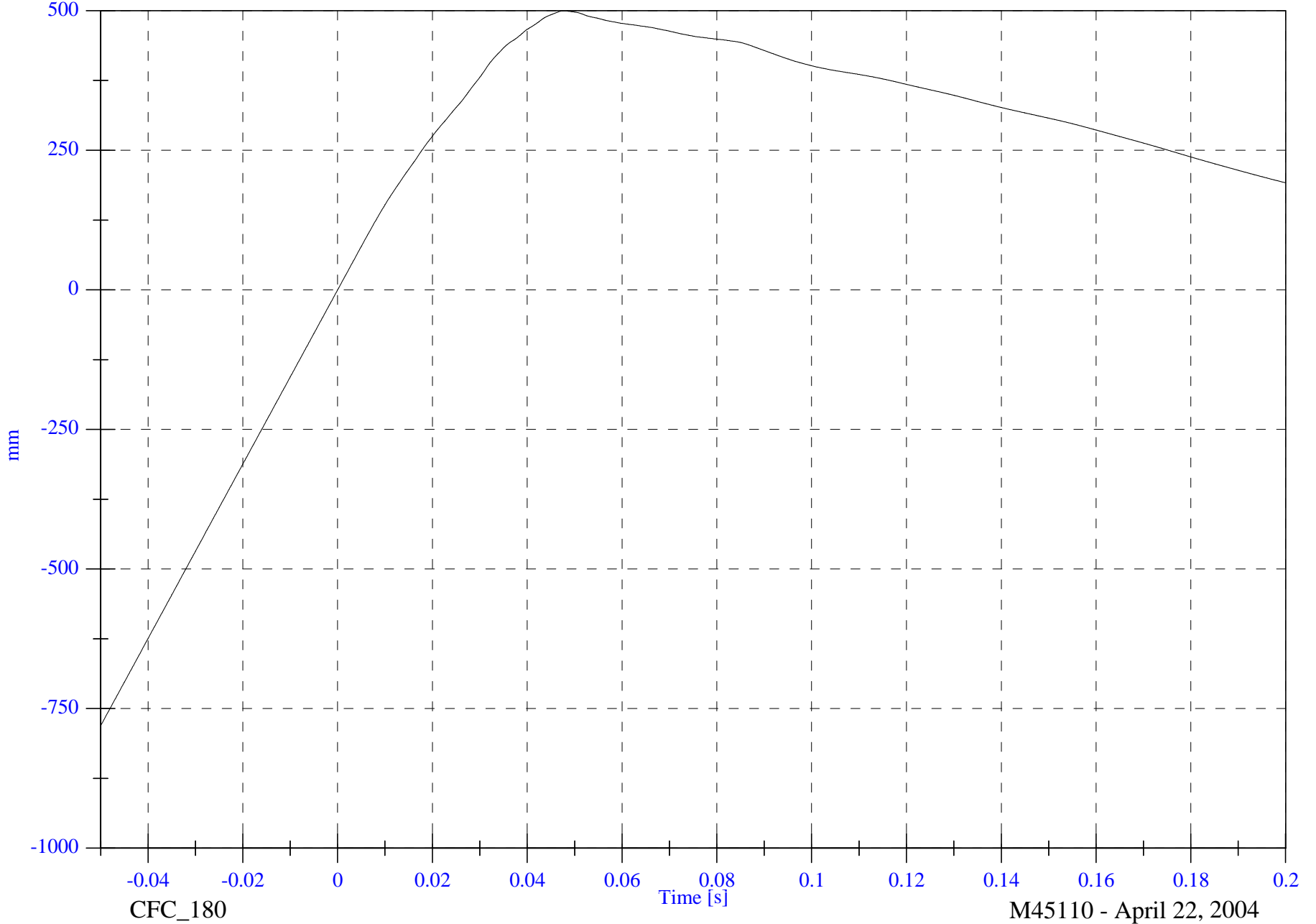
Max: 499.7 [mm] at 0.048 [s]

V1 Right Caliper #5x Displacement

Min: -780.8 [mm] at -0.050 [s]

B-132

8642-NCAP-48



CFC_180

Time [s]

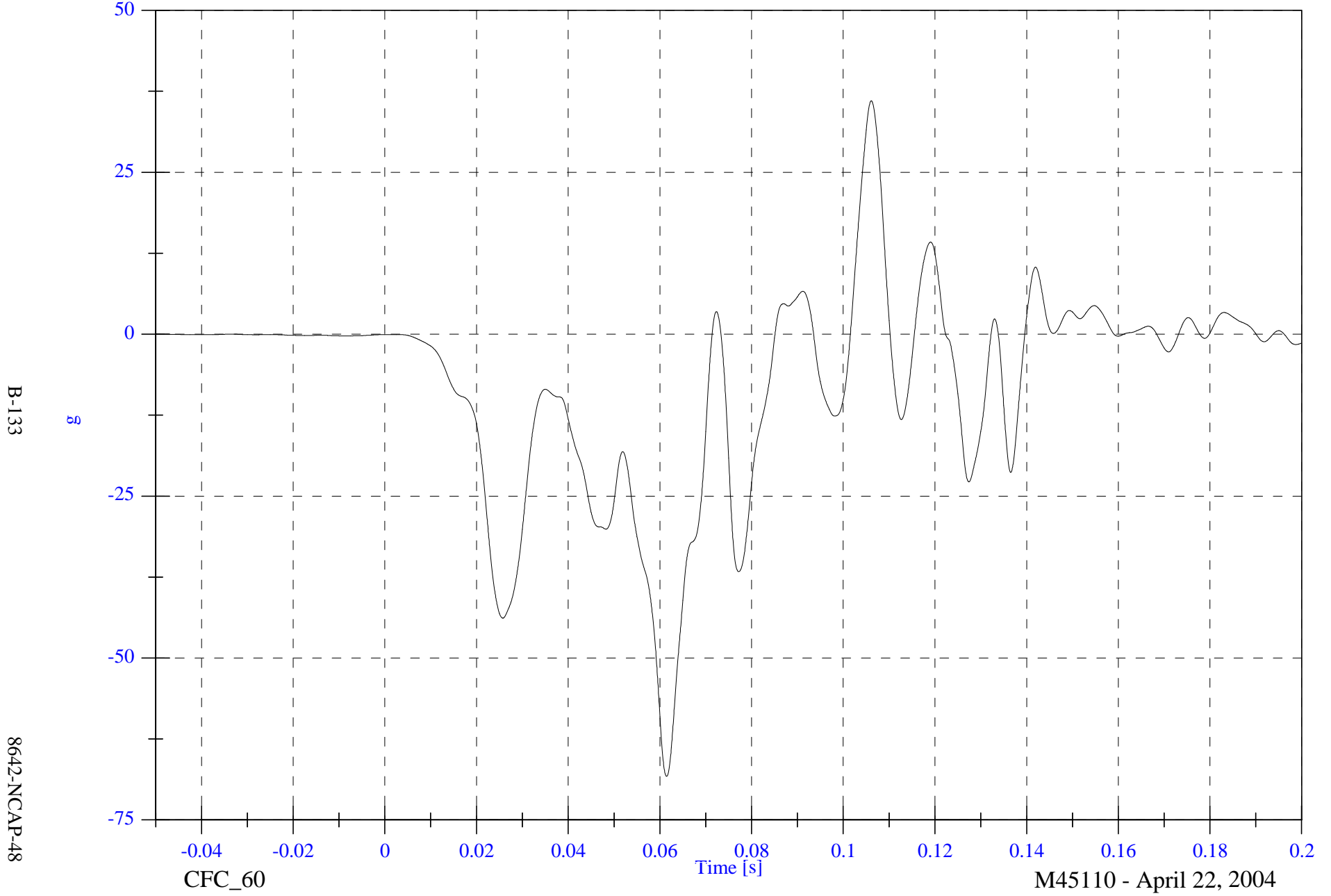
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Instrument Panel #6x

Max: 36.0 [g] at 0.106 [s]

Min: -68.3 [g] at 0.061 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

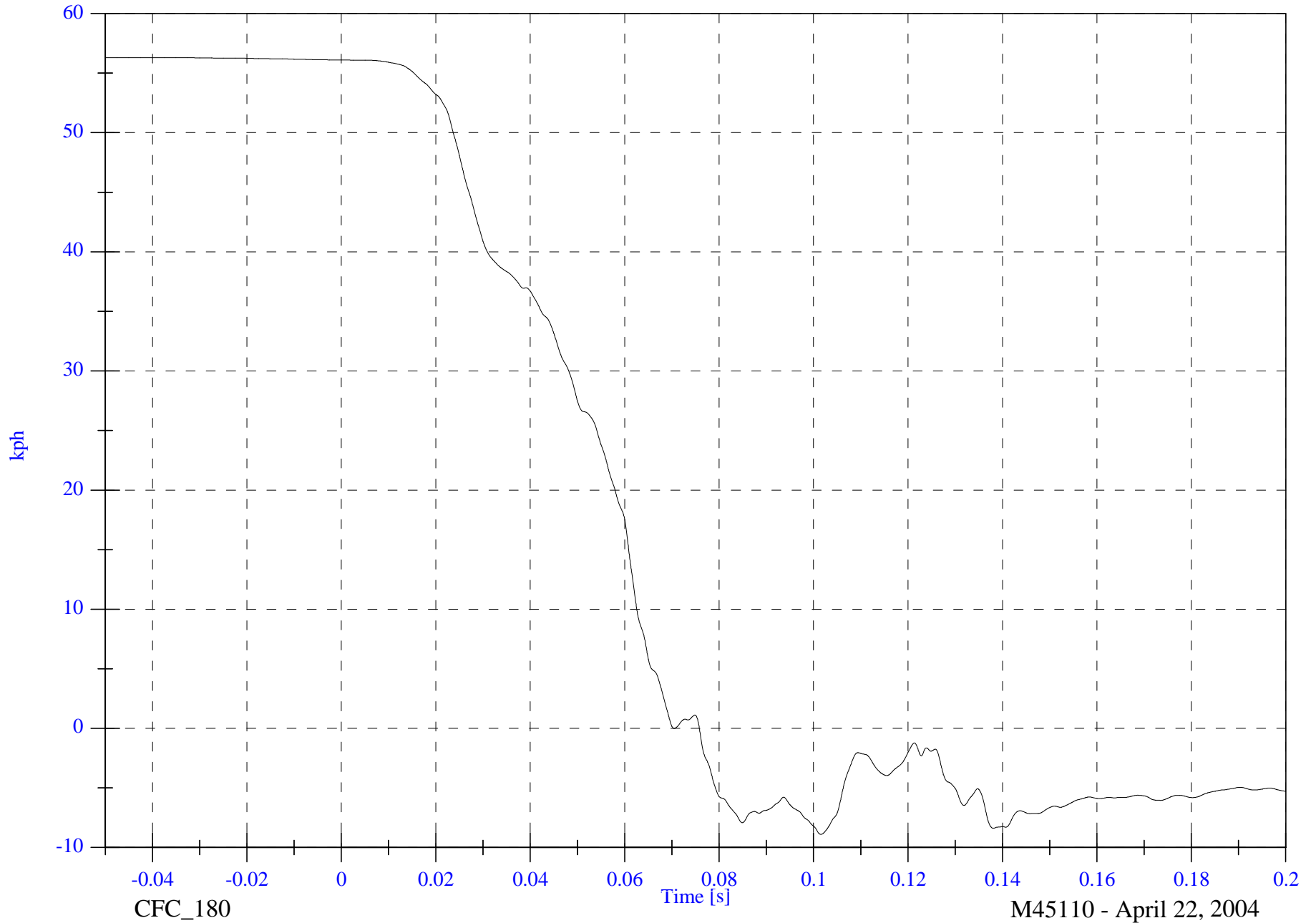
Max: 56.3 [kph] at -0.048 [s]

V1 Instrument Panel #6x Velocity

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

B-134

8642-NCAP-48



CFC_180

Time [s]

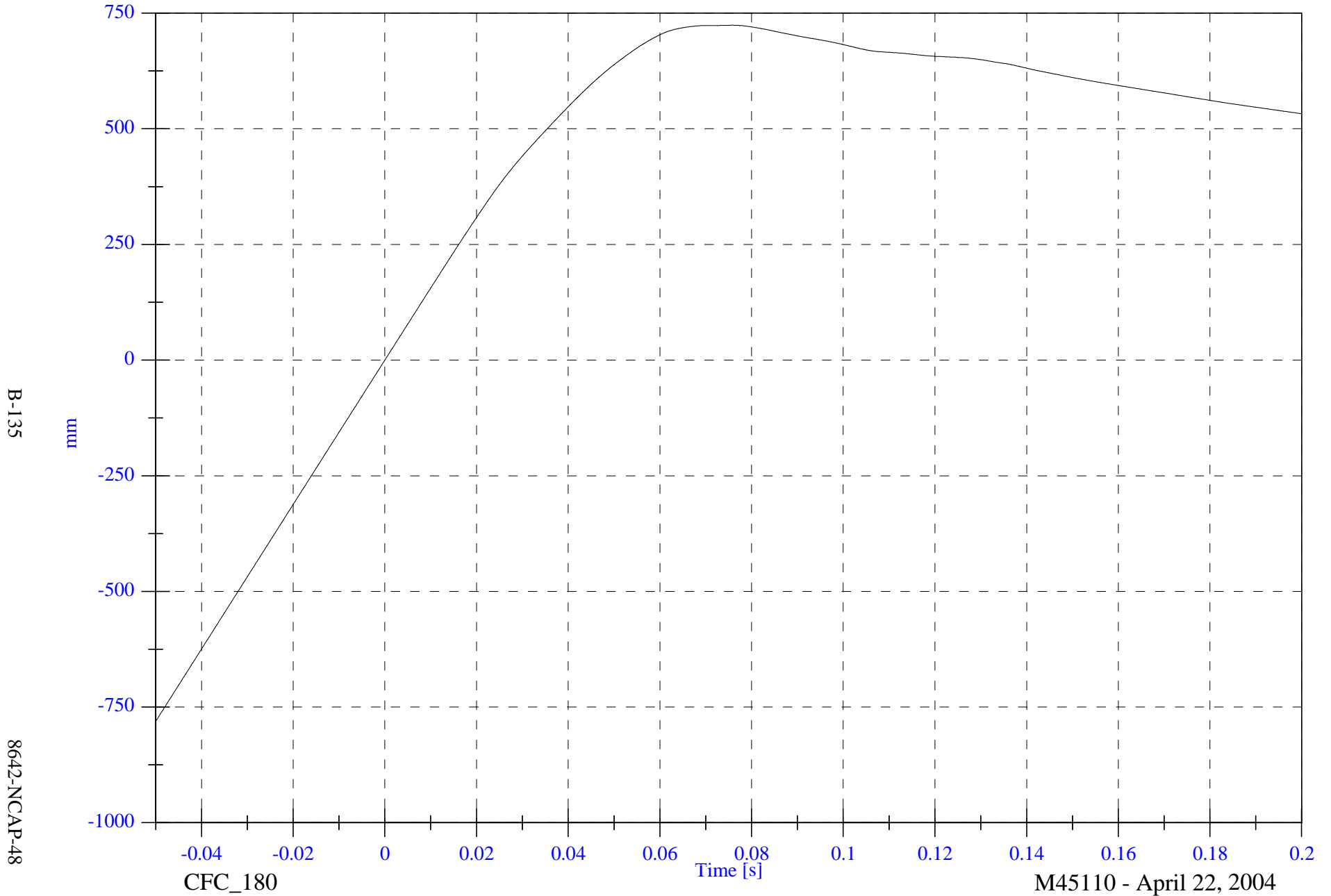
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 723.9 [mm] at 0.076 [s]

V1 Instrument Panel #6x Displacement

Min: -781.0 [mm] at -0.050 [s]



B-135

8642-NCAP-48

CFC_180

Time [s]

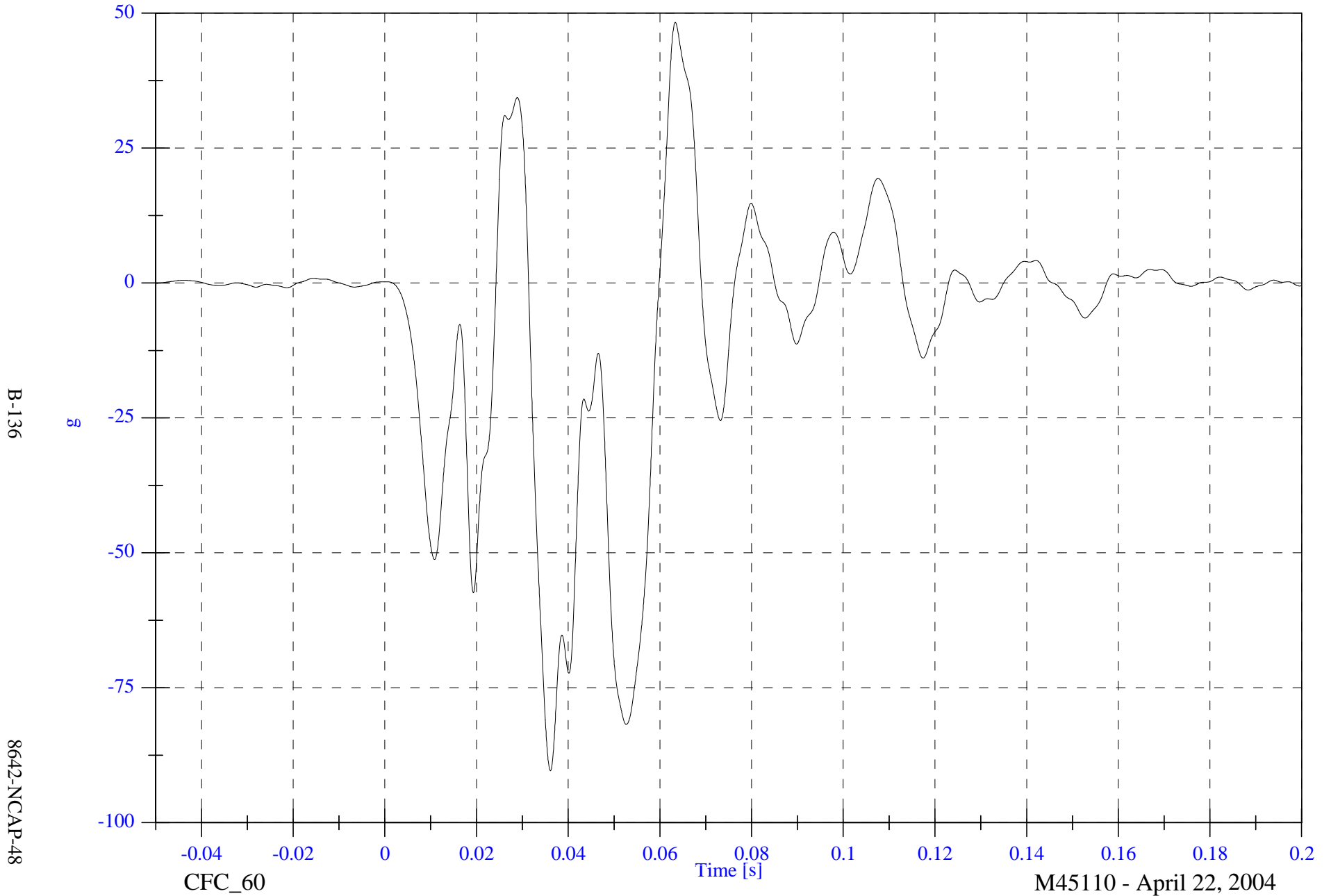
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Left Caliper #7x

Max: 48.3 [g] at 0.063 [s]

Min: -90.4 [g] at 0.036 [s]



2004 NCAP Test 12 - 2004 Toyota 4Runner

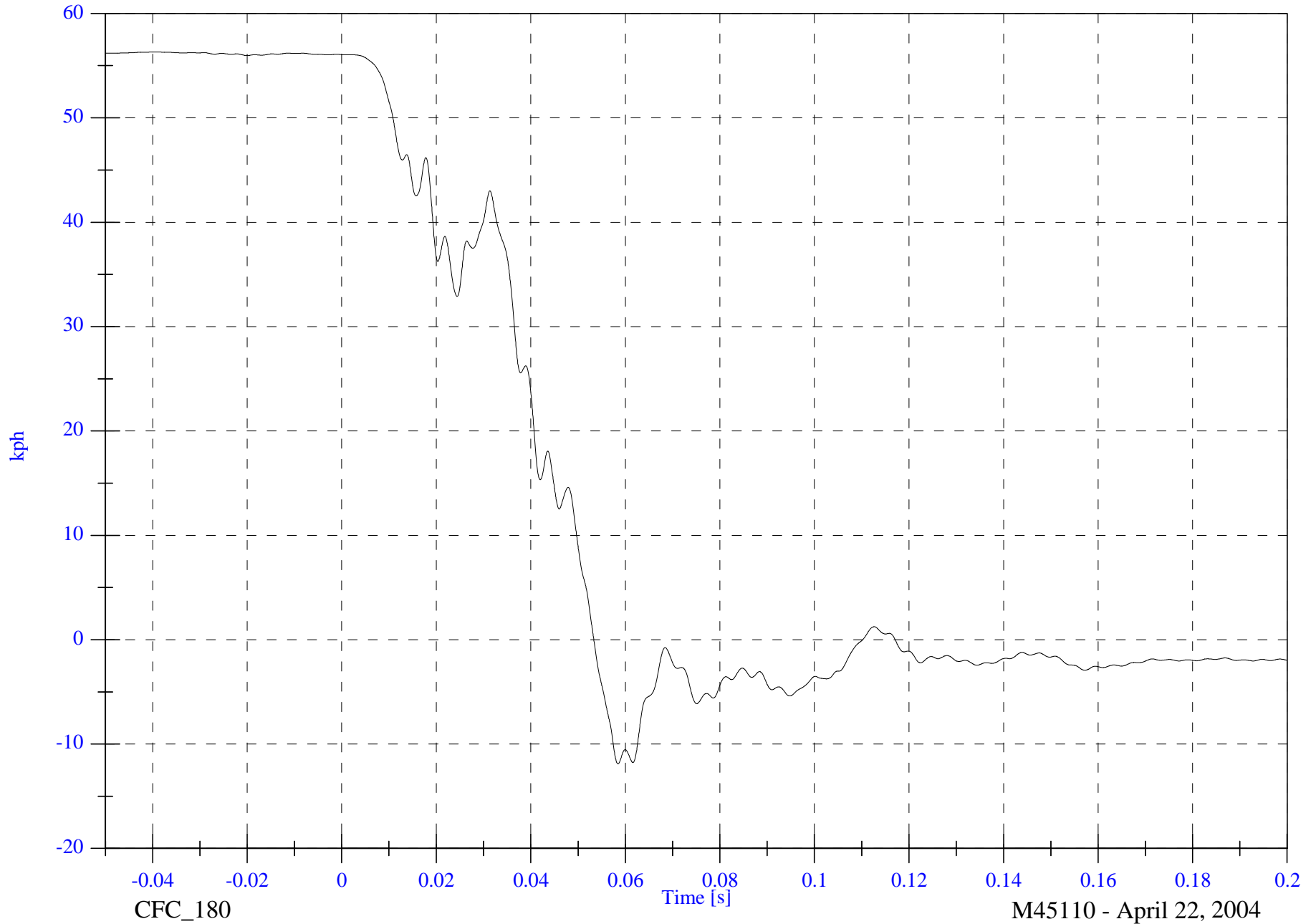
Max: 56.3 [kph] at -0.039 [s]

V1 Left Caliper #7x Velocity

Min: -11.9 [kph] at 0.058 [s]

B-137

8642-NCAP-48



CFC_180

Time [s]

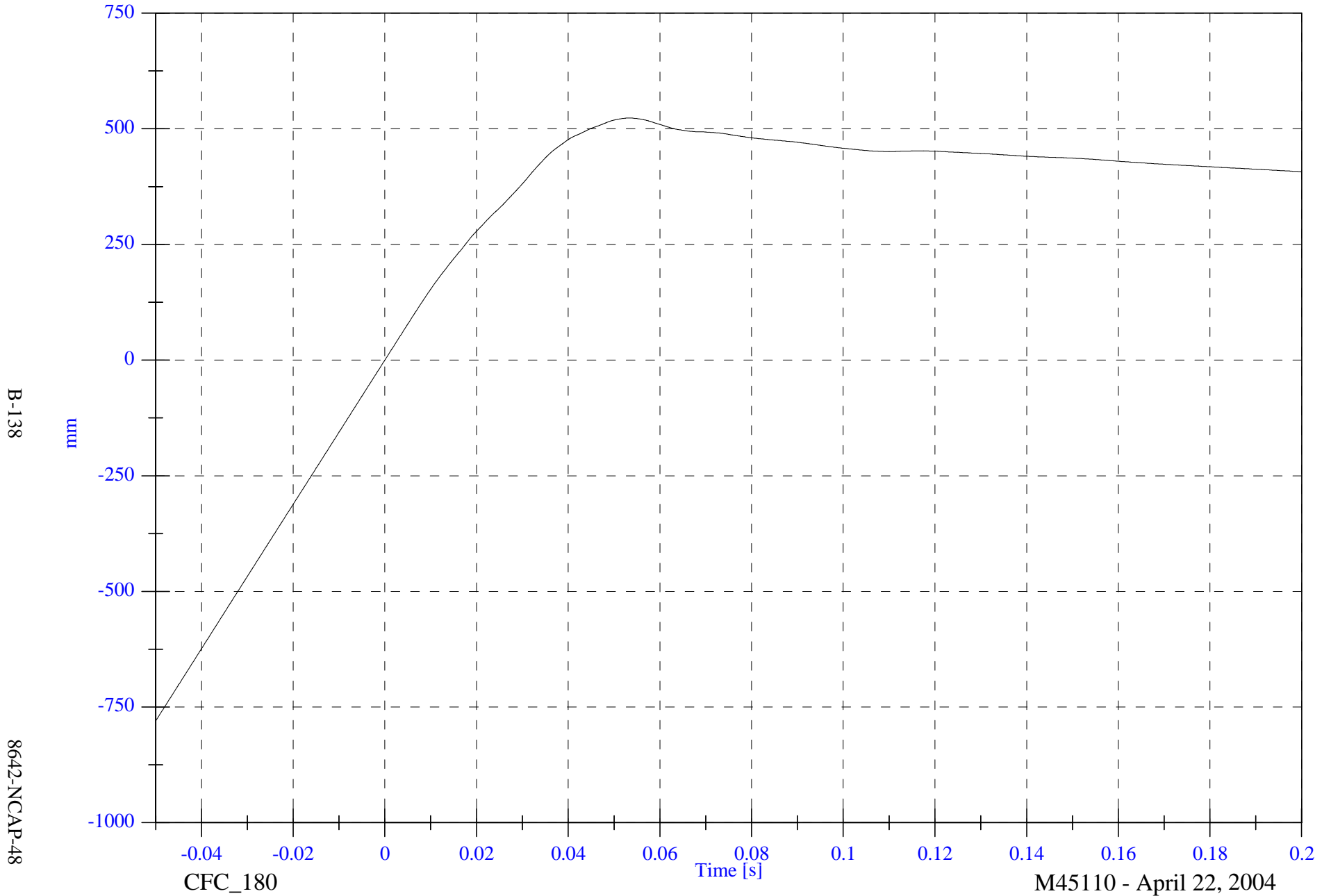
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Left Caliper #7x Displacement

Max: 523.1 [mm] at 0.053 [s]

Min: -780.1 [mm] at -0.050 [s]



B-138

8642-NCAP-48

CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

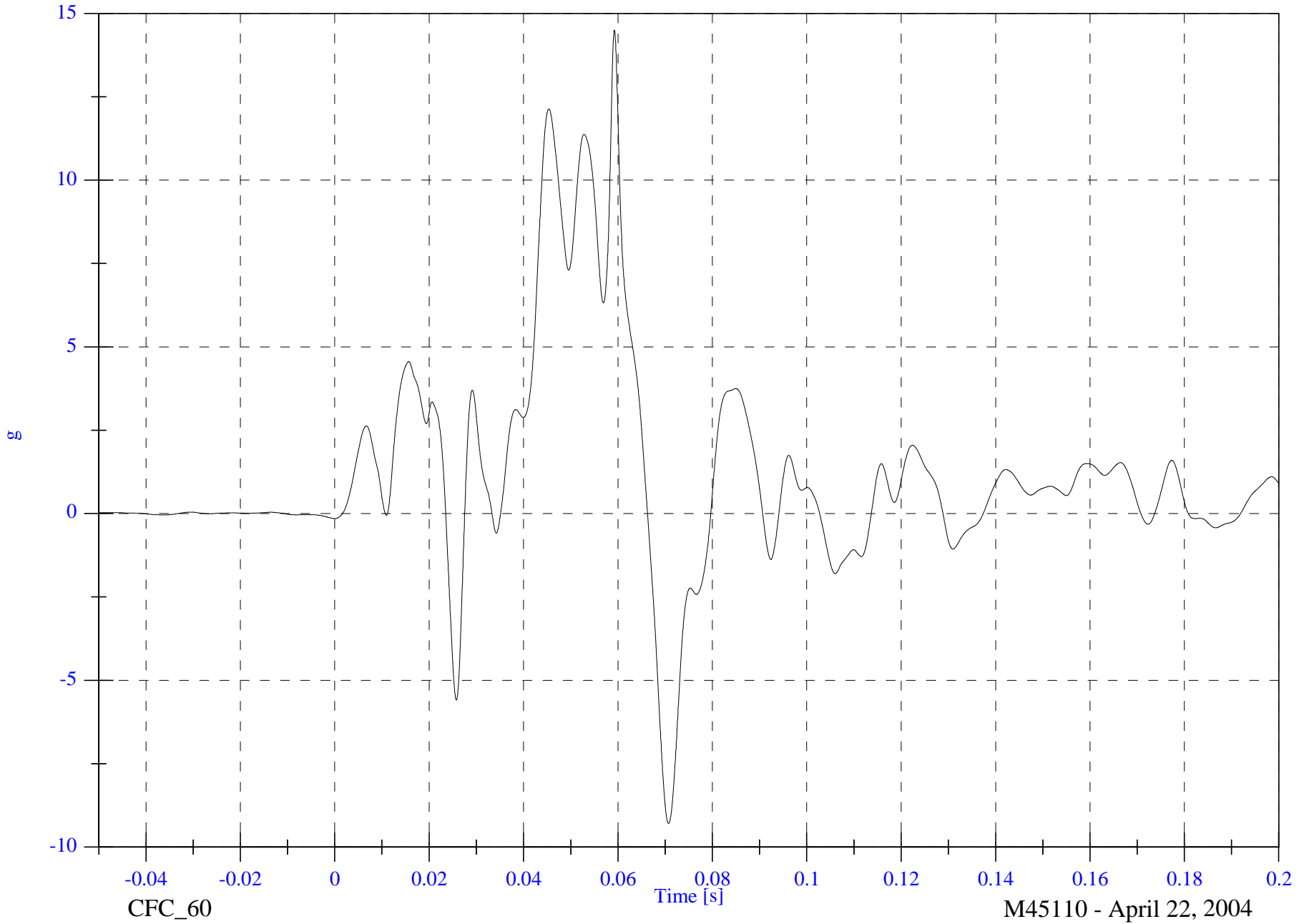
Max: 14.5 [g] at 0.059 [s]

Min: -9.3 [g] at 0.071 [s]

V1 Left Rear #8z

B-139

8642-NCAP-48



CFC_60

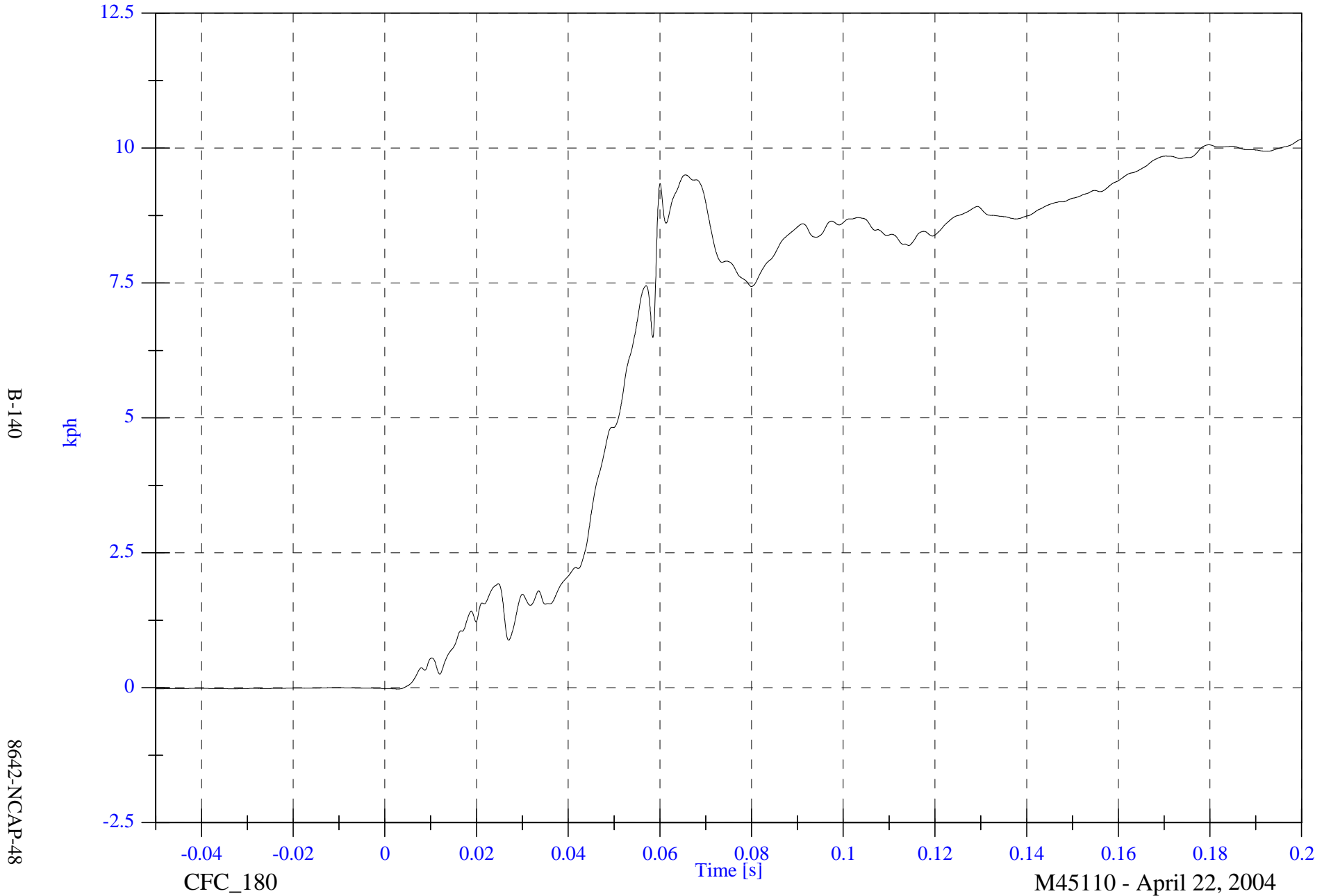
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 10.2 [kph] at 0.200 [s]

V1 Left Rear #8z Velocity

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



B-140

8642-NCAP-48

CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

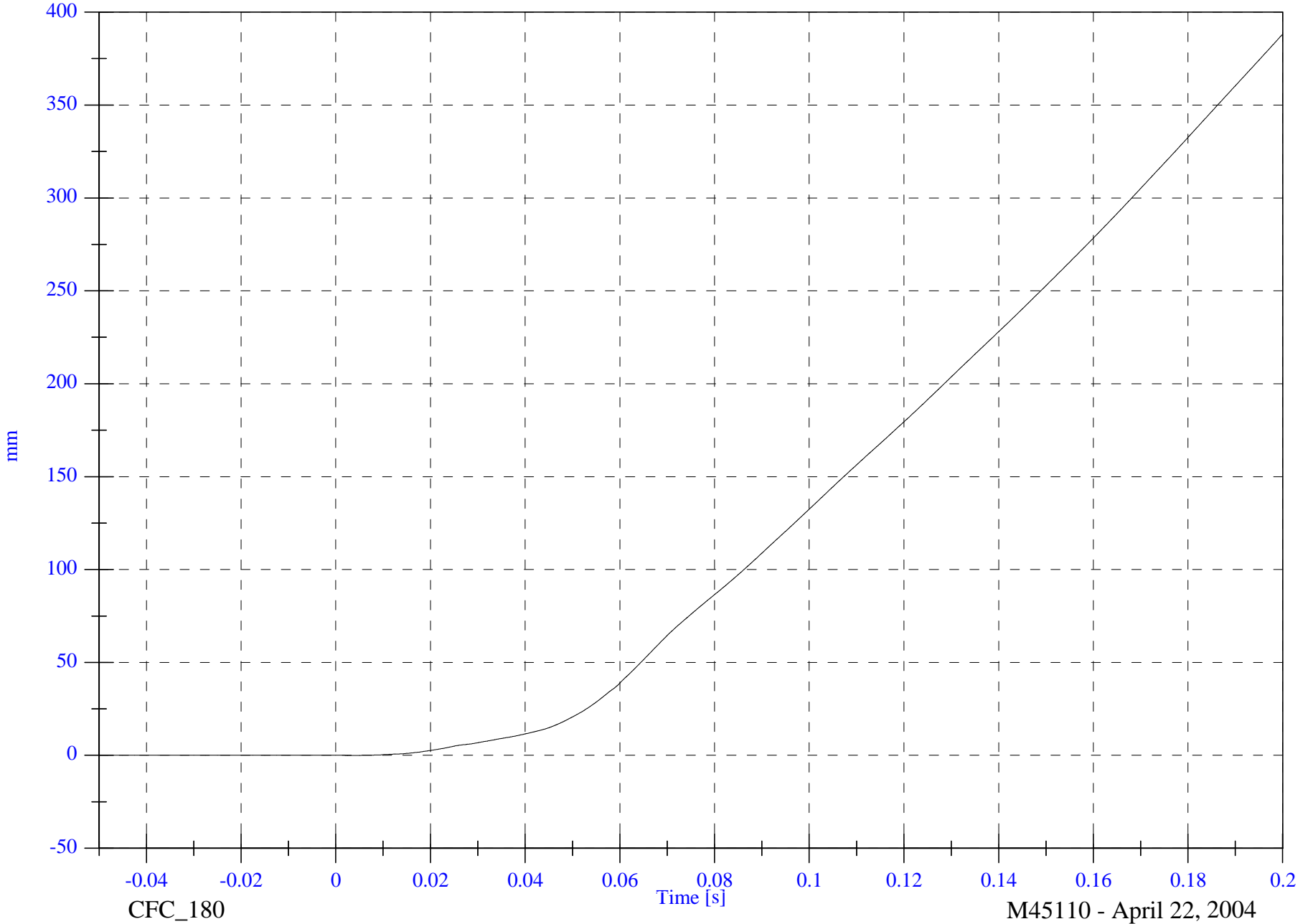
V1 Left Rear #8z Displacement

Max: 388.0 [mm] at 0.200 [s]

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

B-141

8642-NCAP-48



CFC_180

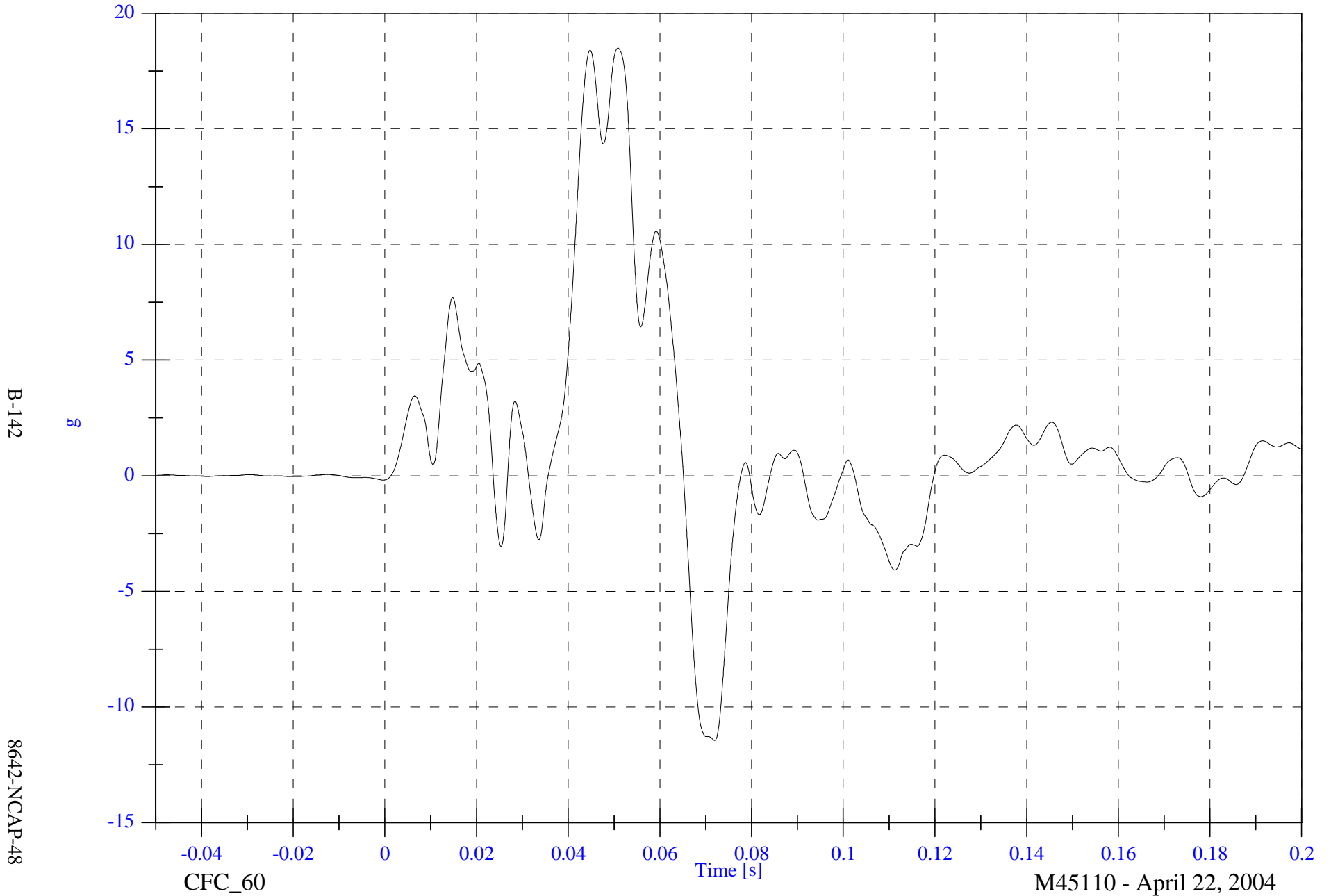
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Right Rear #9z

Max: 18.5 [g] at 0.051 [s]

Min: -11.4 [g] at 0.072 [s]



B-142

8642-NCAP-48

CFC_60

Time [s]

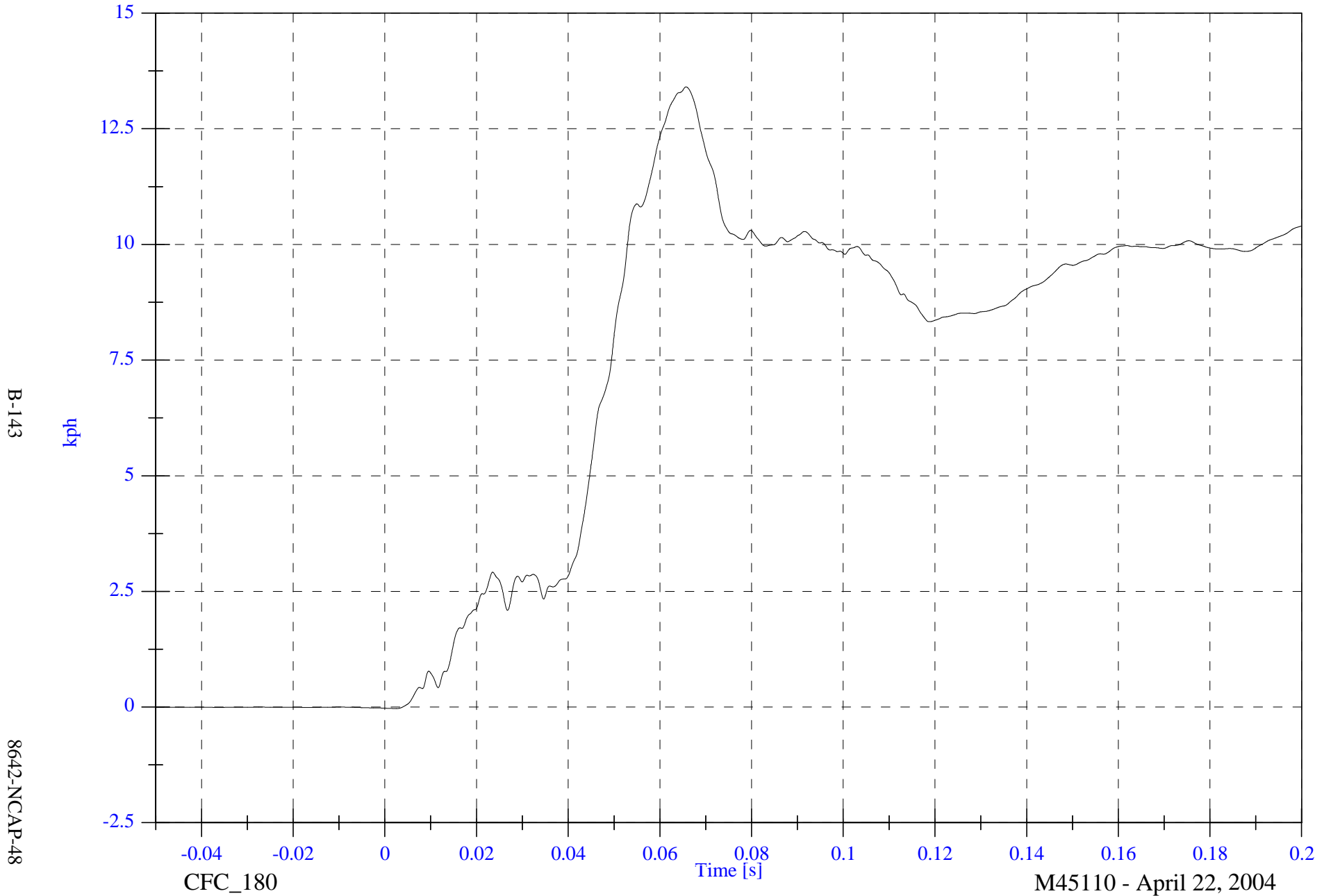
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1 Right Rear #9z Velocity

Max: 13.4 [kph] at 0.066 [s]

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



B-143

8642-NCAP-48

CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

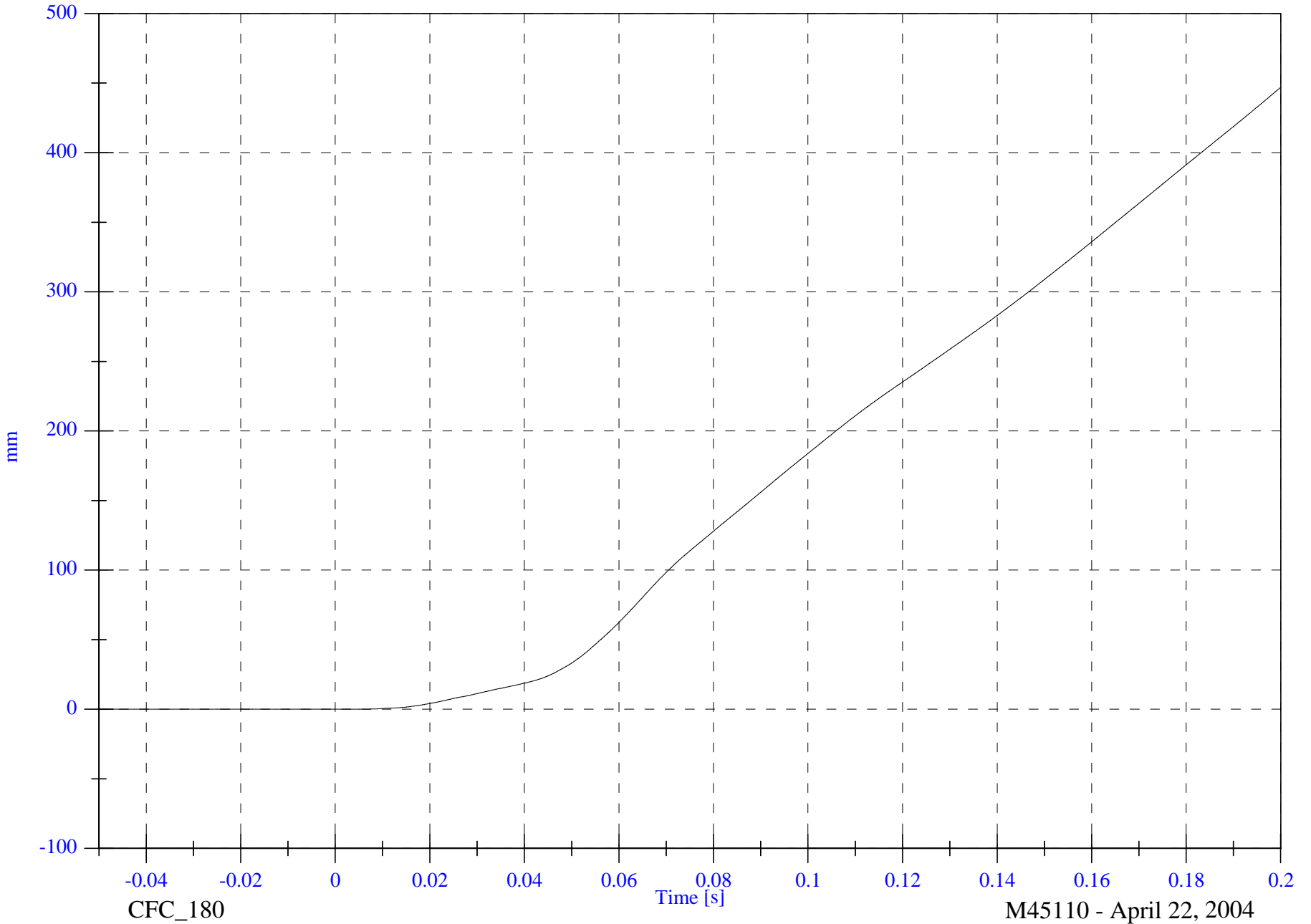
V1 Right Rear #9z Displacement

Max: 446.9 [mm] at 0.200 [s]

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

B-144

8642-NCAP-48



CFC_180

Time [s]

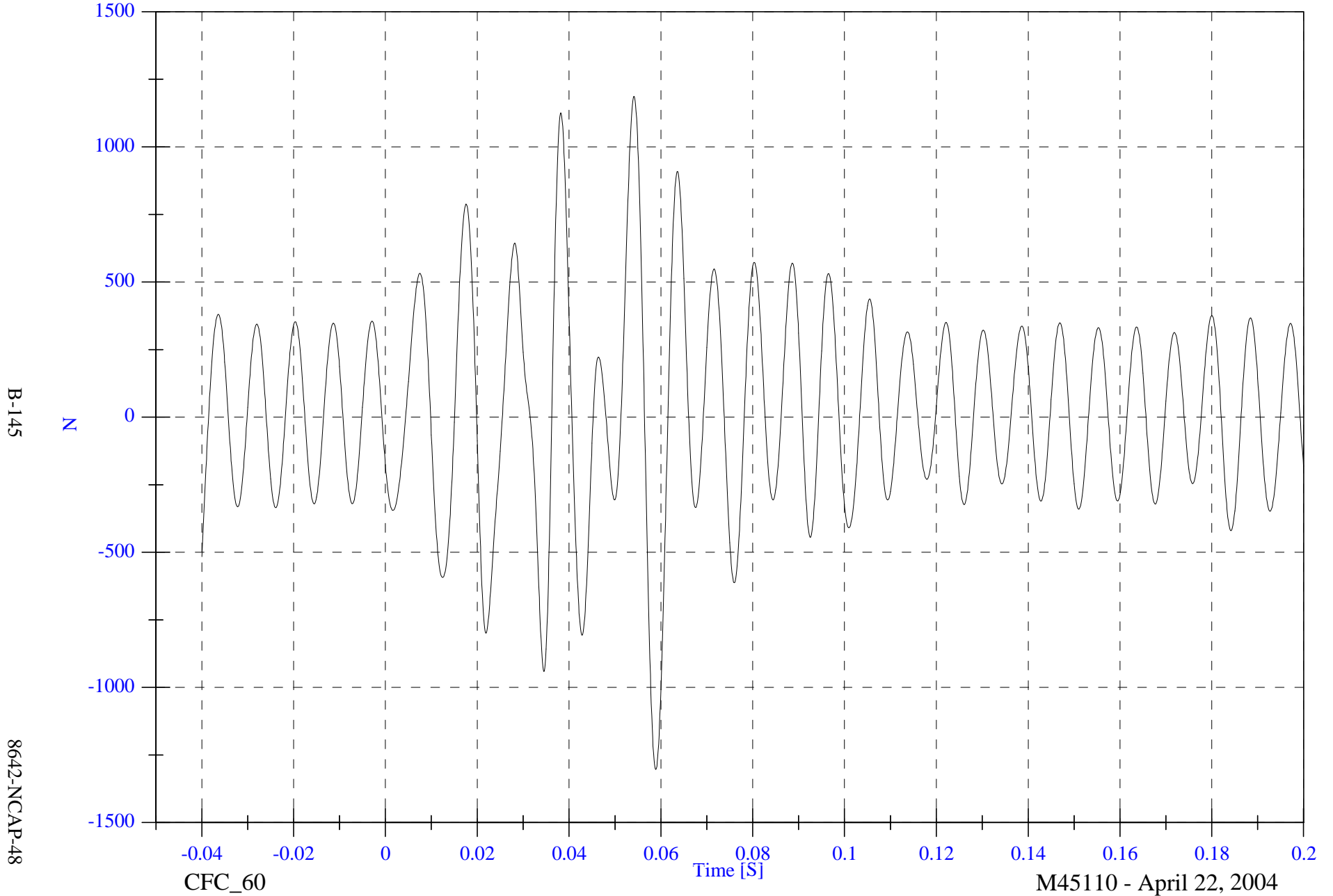
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell A1 Fx

Max: 1186.6 [N] at 0.054 [S]

Min: -1303.6 [N] at 0.059 [S]

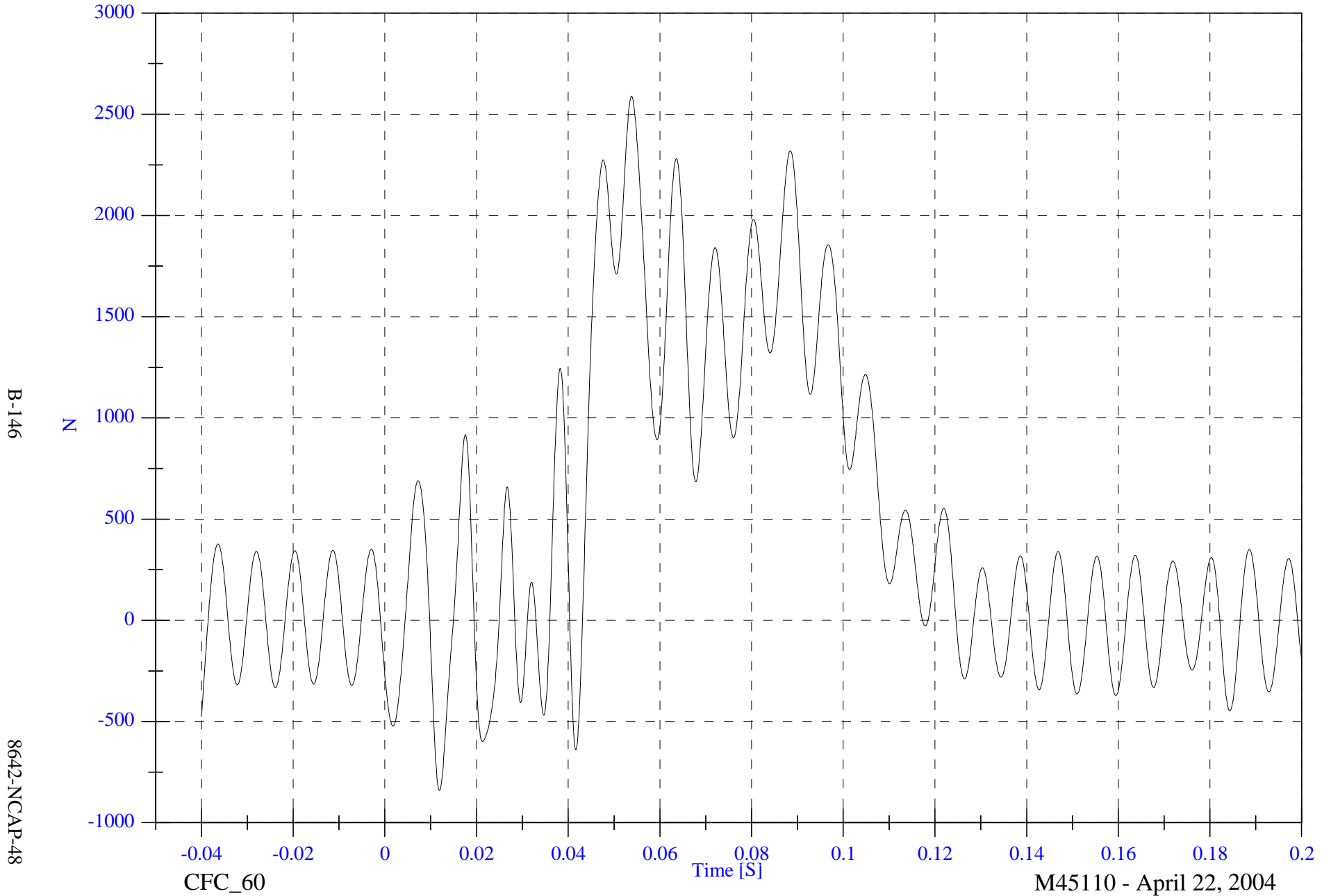


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 2590.2 [N] at 0.054 [S]

Barrier Load Cell A2 Fx

Min: -840.8 [N] at 0.012 [S]

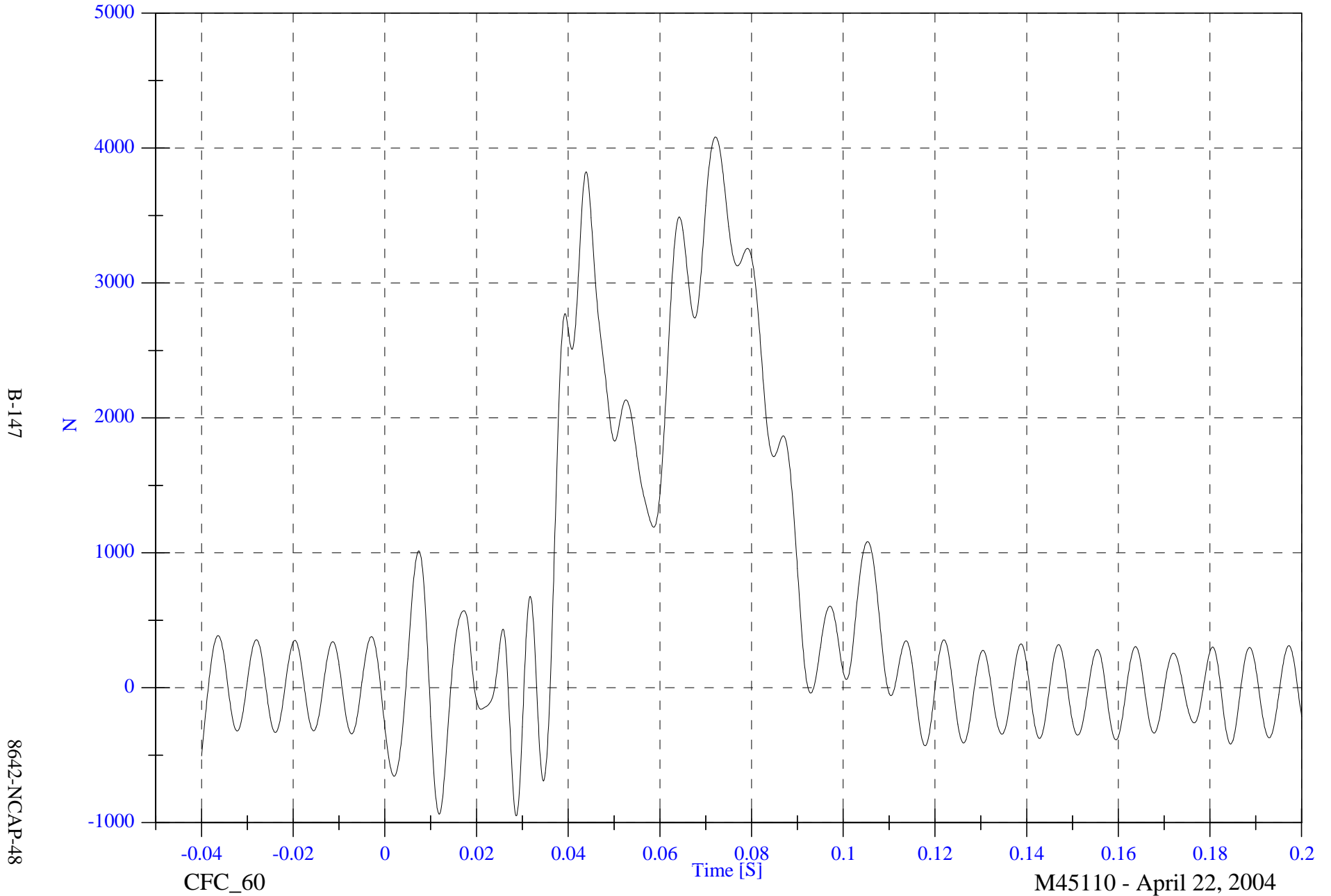


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 4081.8 [N] at 0.072 [S]

Barrier Load Cell A3 Fx

Min: -948.5 [N] at 0.029 [S]

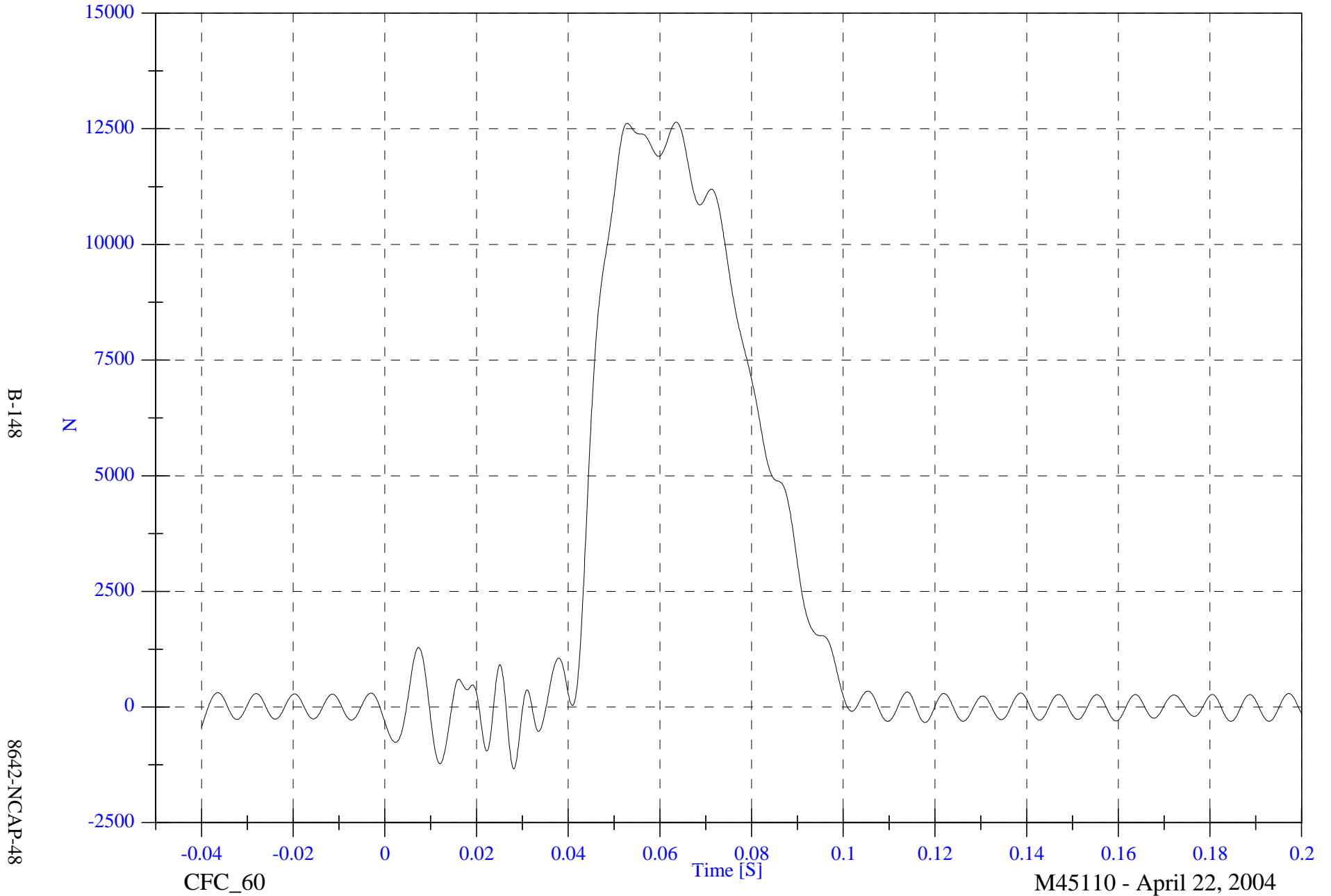


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 12643.3 [N] at 0.064 [S]

Barrier Load Cell A4 Fx

Min: -1338.8 [N] at 0.028 [S]



B-148

8642-NCAP-48

CFC_60

Time [S]

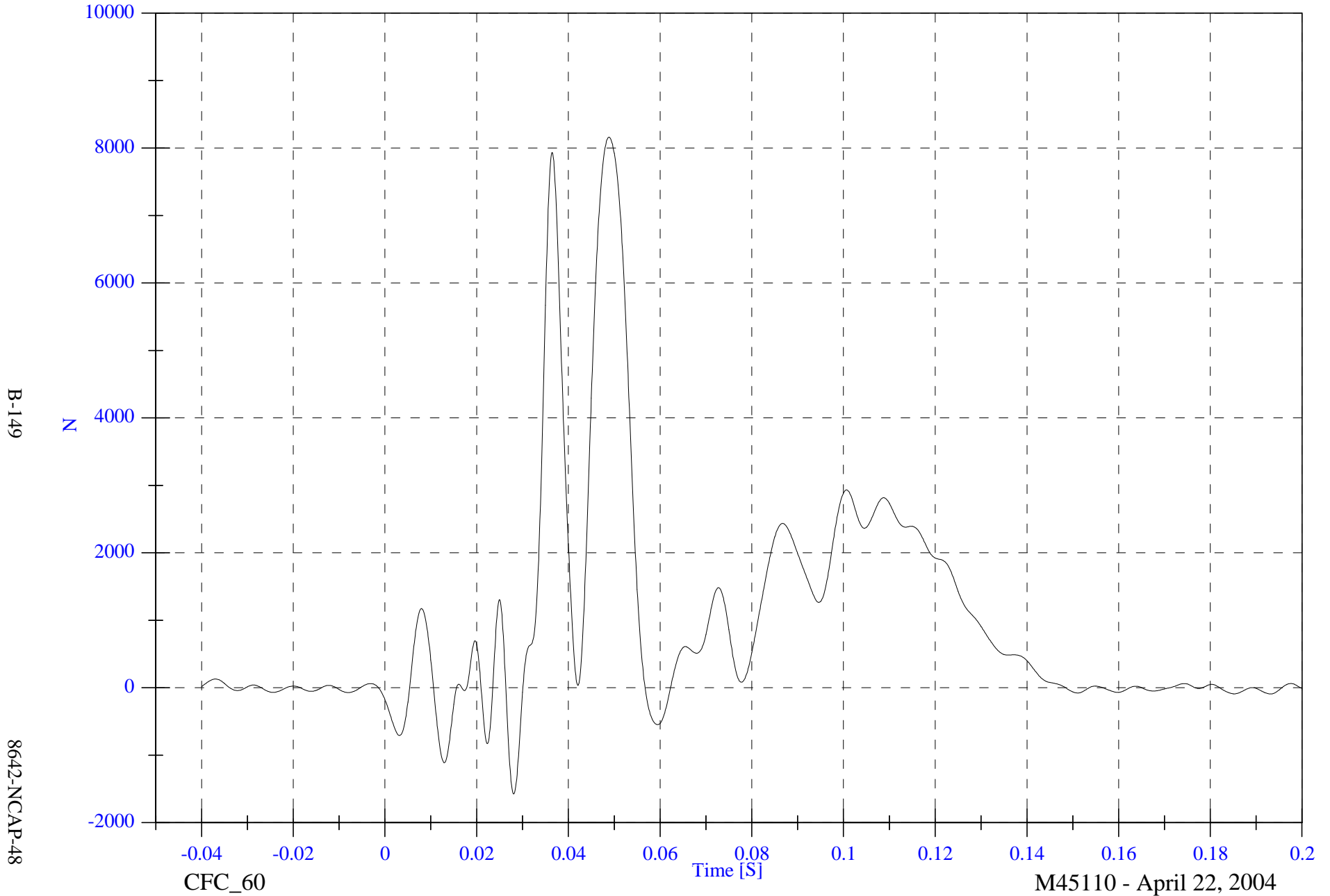
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 8161.3 [N] at 0.049 [S]

Barrier Load Cell A5 Fx

Min: -1573.8 [N] at 0.028 [S]



B-149

8642-NCAP-48

CFC_60

Time [S]

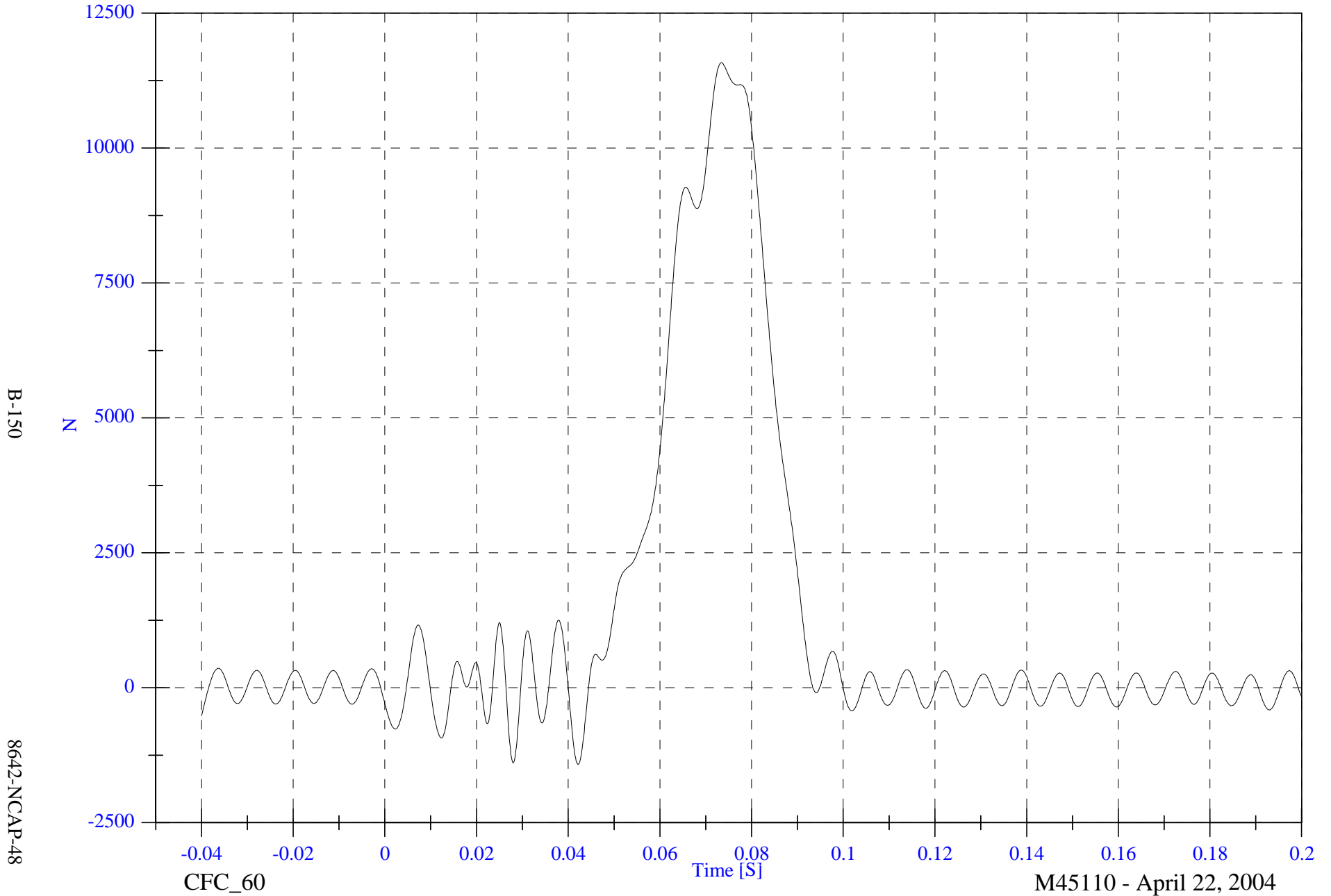
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell A6 Fx

Max: 11580.8 [N] at 0.073 [S]

Min: -1420.3 [N] at 0.042 [S]



B-150

8642-NCAP-48

CFC_60

Time [S]

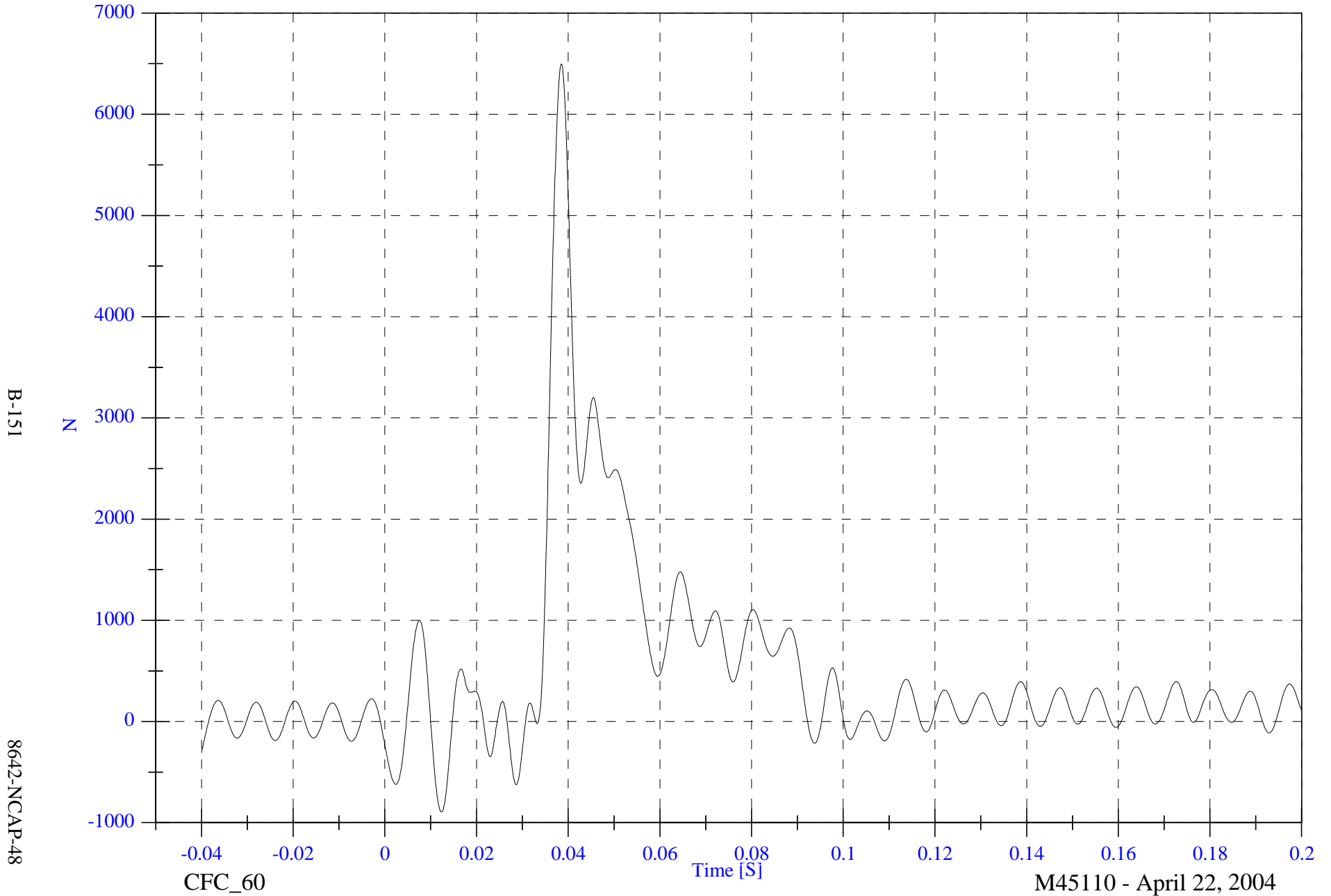
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell A7 Fx

Max: 6497.6 [N] at 0.038 [S]

Min: -894.2 [N] at 0.012 [S]



B-151

8642-NCAP-48

CFC_60

Time [S]

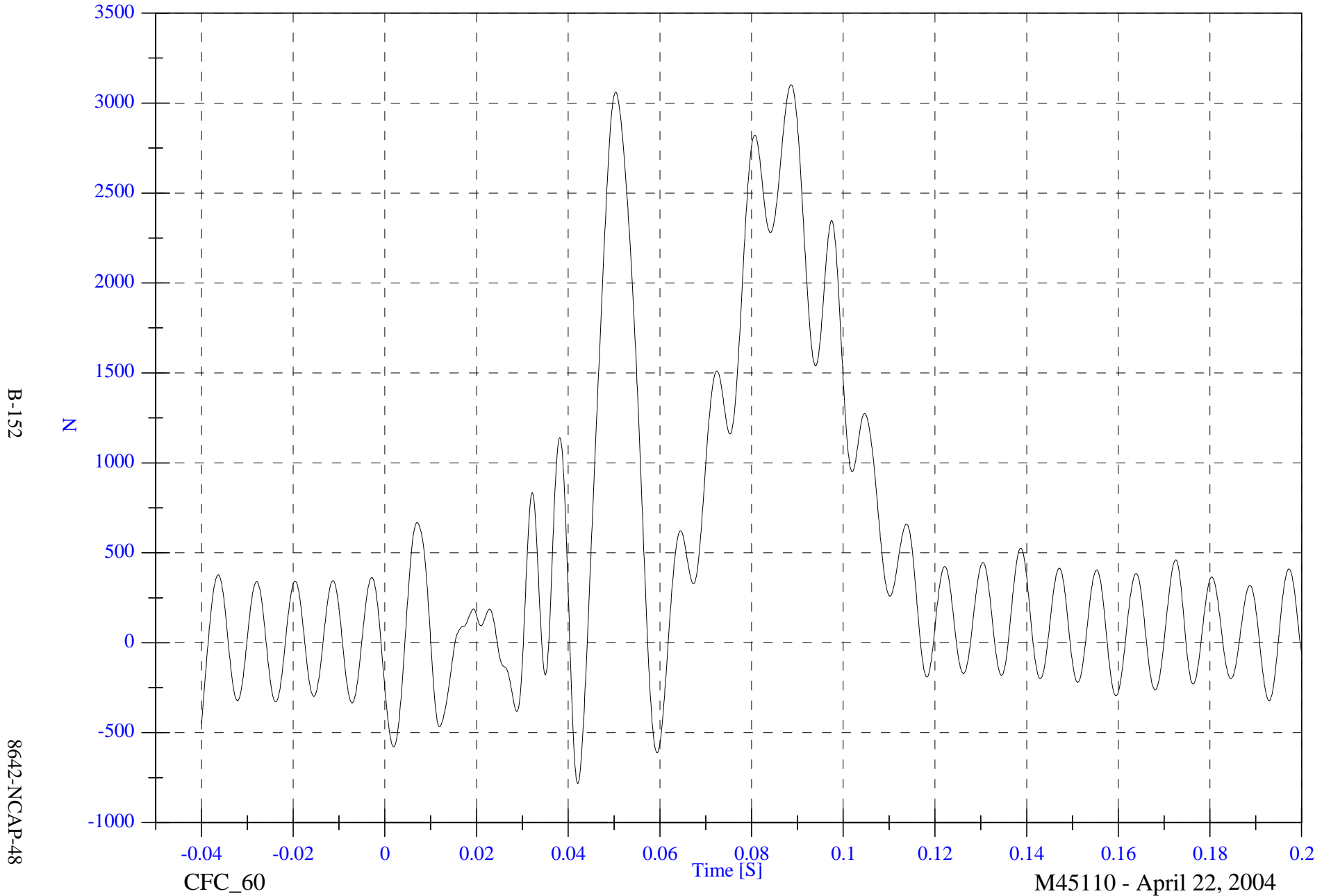
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell A8 Fx

Max: 3101.8 [N] at 0.089 [S]

Min: -783.0 [N] at 0.042 [S]



B-152

8642-NCAP-48

CFC_60

Time [S]

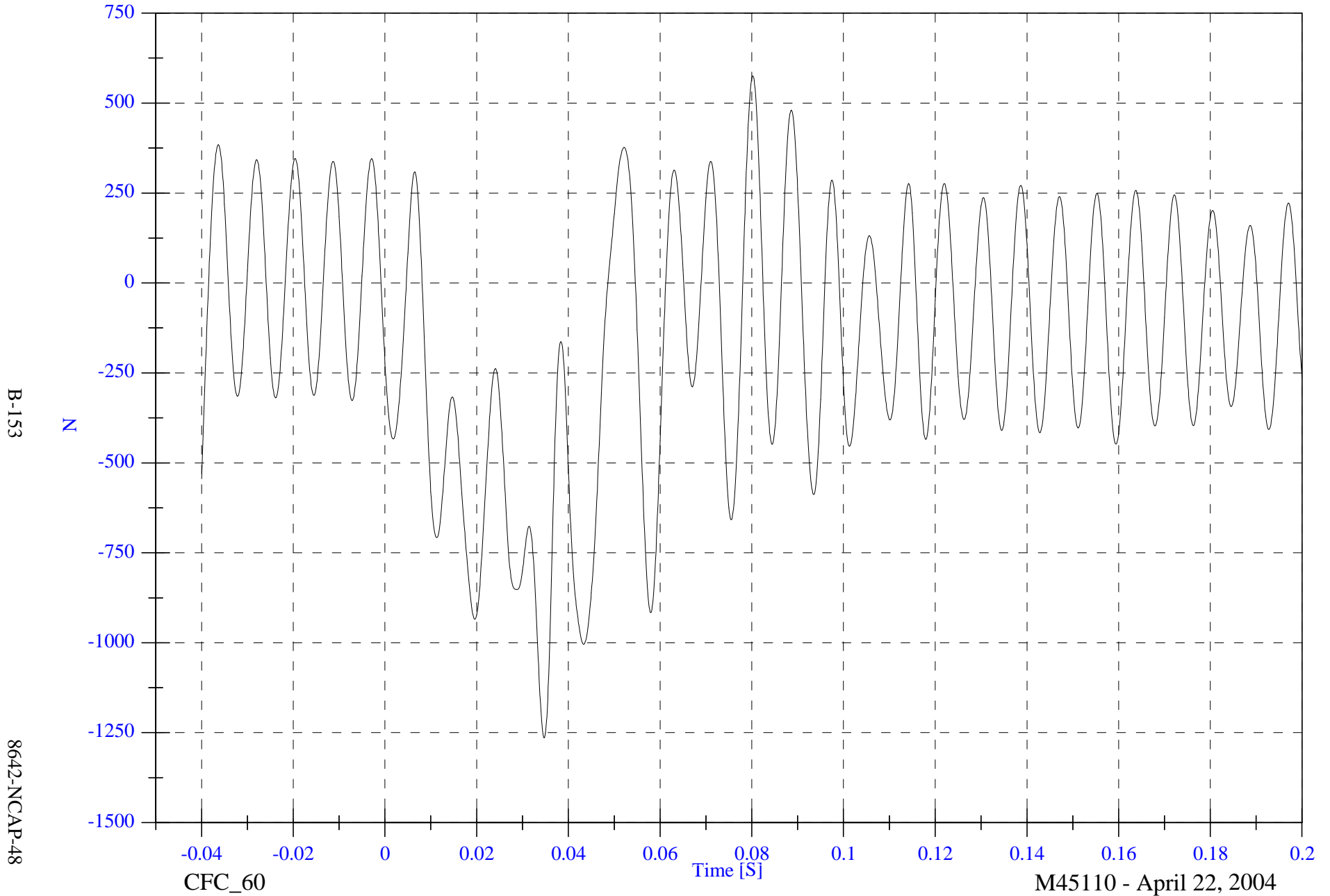
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell A9 Fx

Max: 575.6 [N] at 0.080 [S]

Min: -1264.4 [N] at 0.035 [S]

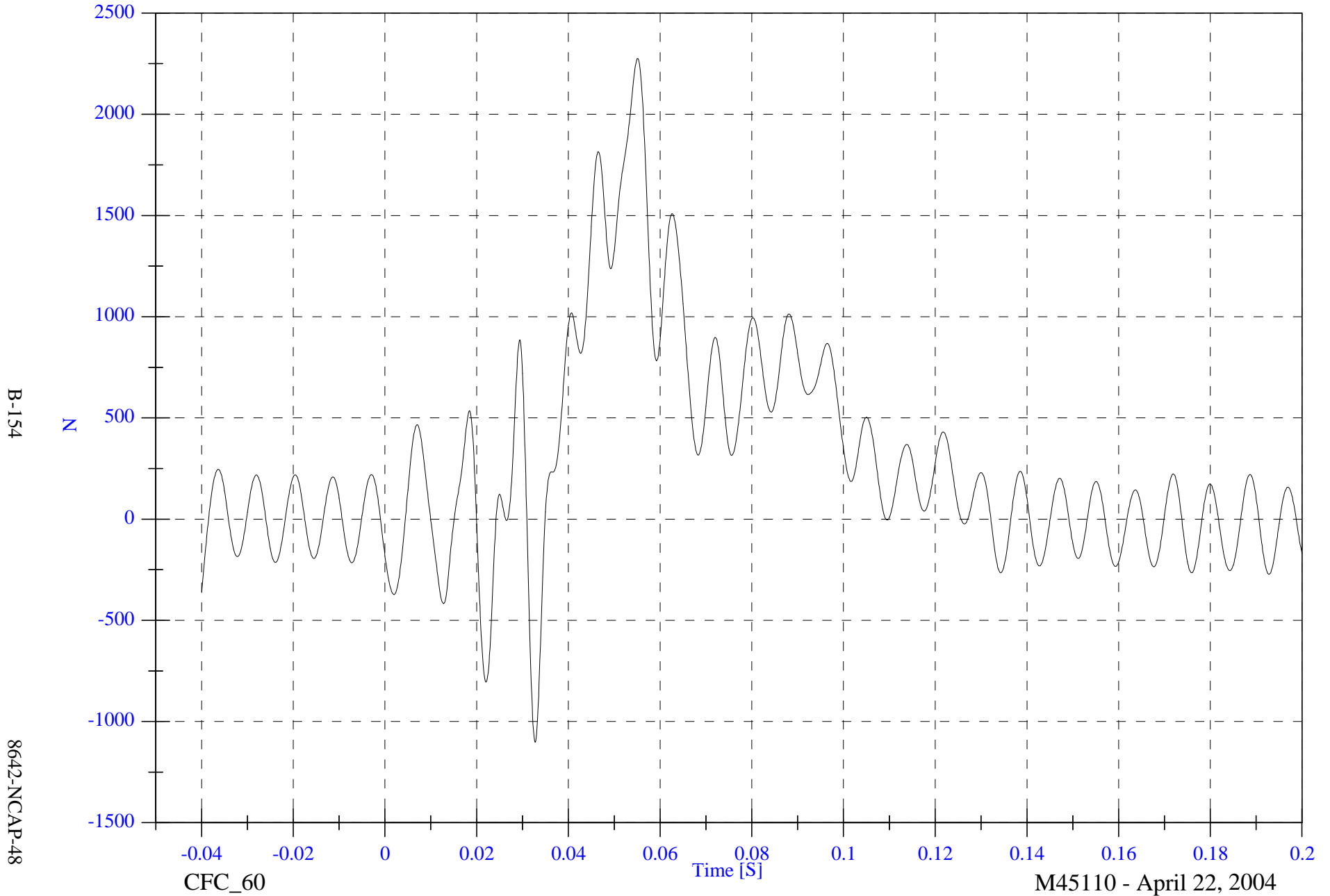


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 2275.5 [N] at 0.055 [S]

Barrier Load Cell B1 Fx

Min: -1101.5 [N] at 0.033 [S]



B-154

8642-NCAP-48

CFC_60

Time [S]

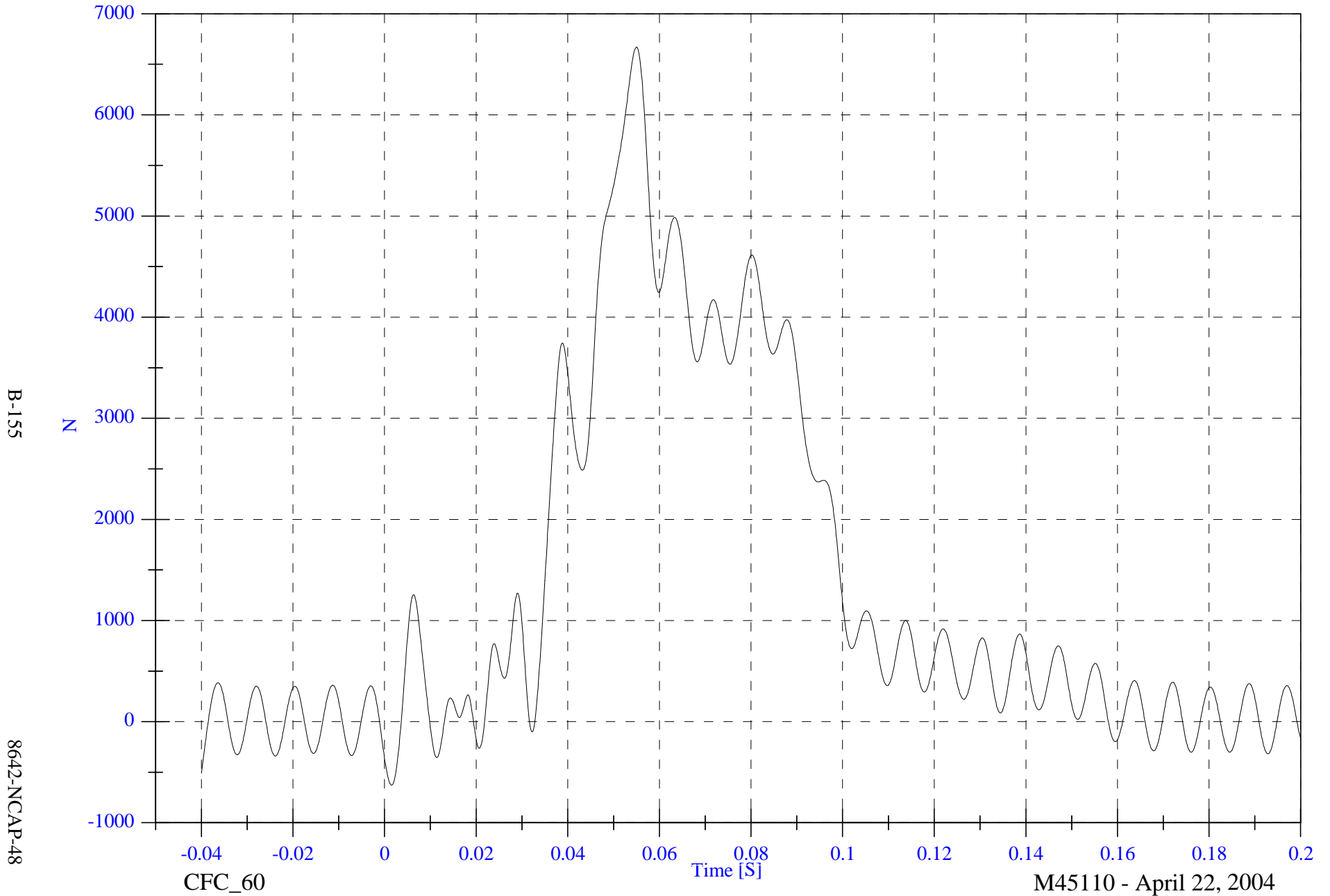
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 6669.8 [N] at 0.055 [S]

Barrier Load Cell B2 Fx

Min: -627.7 [N] at 0.001 [S]



B-155

8642-NCAP-48

CFC_60

Time [S]

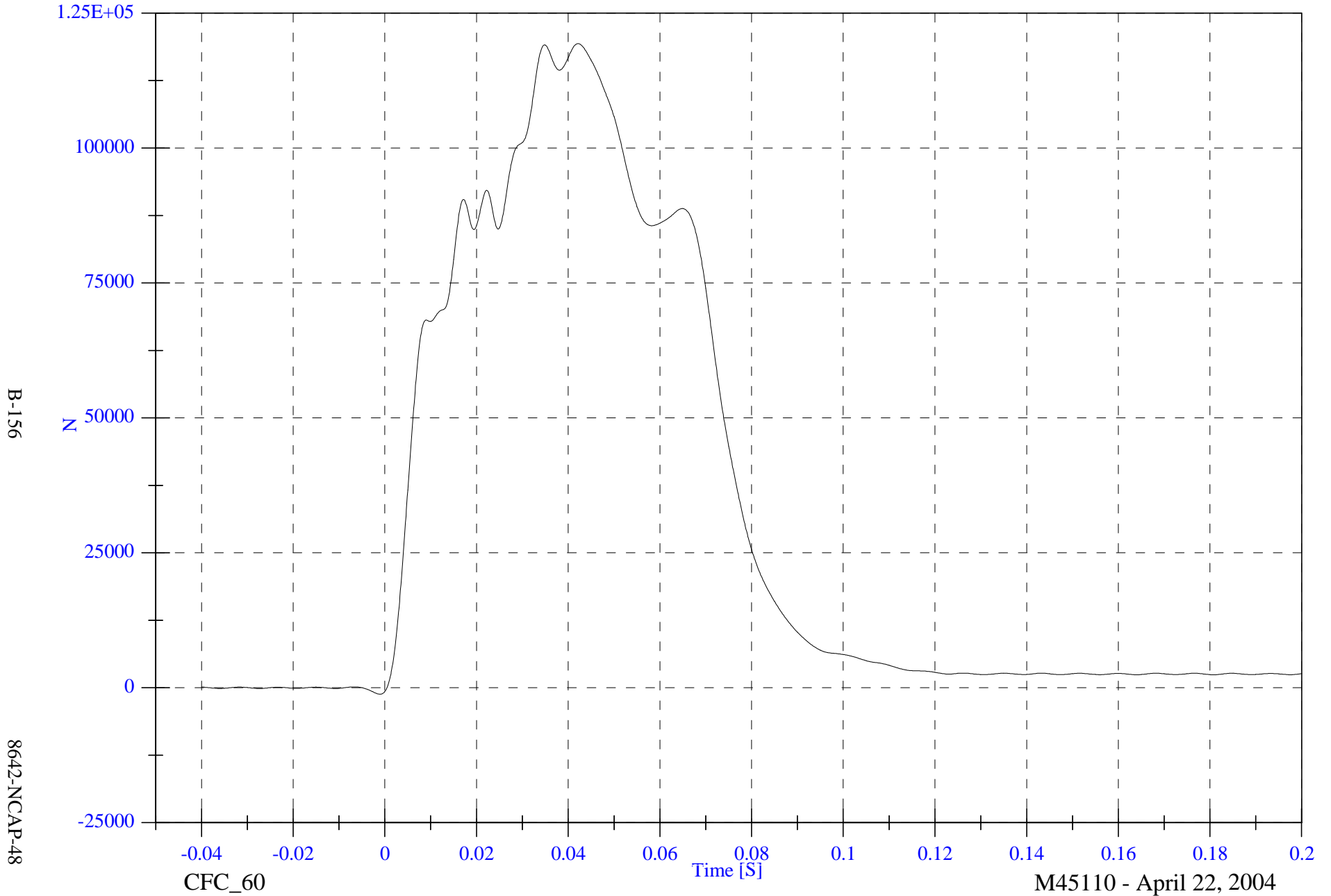
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 119340.3 [N] at 0.042 [S]

Barrier Load Cell B3 Fx

Min: -1191.4 [N] at -0.001 [S]



B-156

8642-NCAP-48

CFC_60

Time [S]

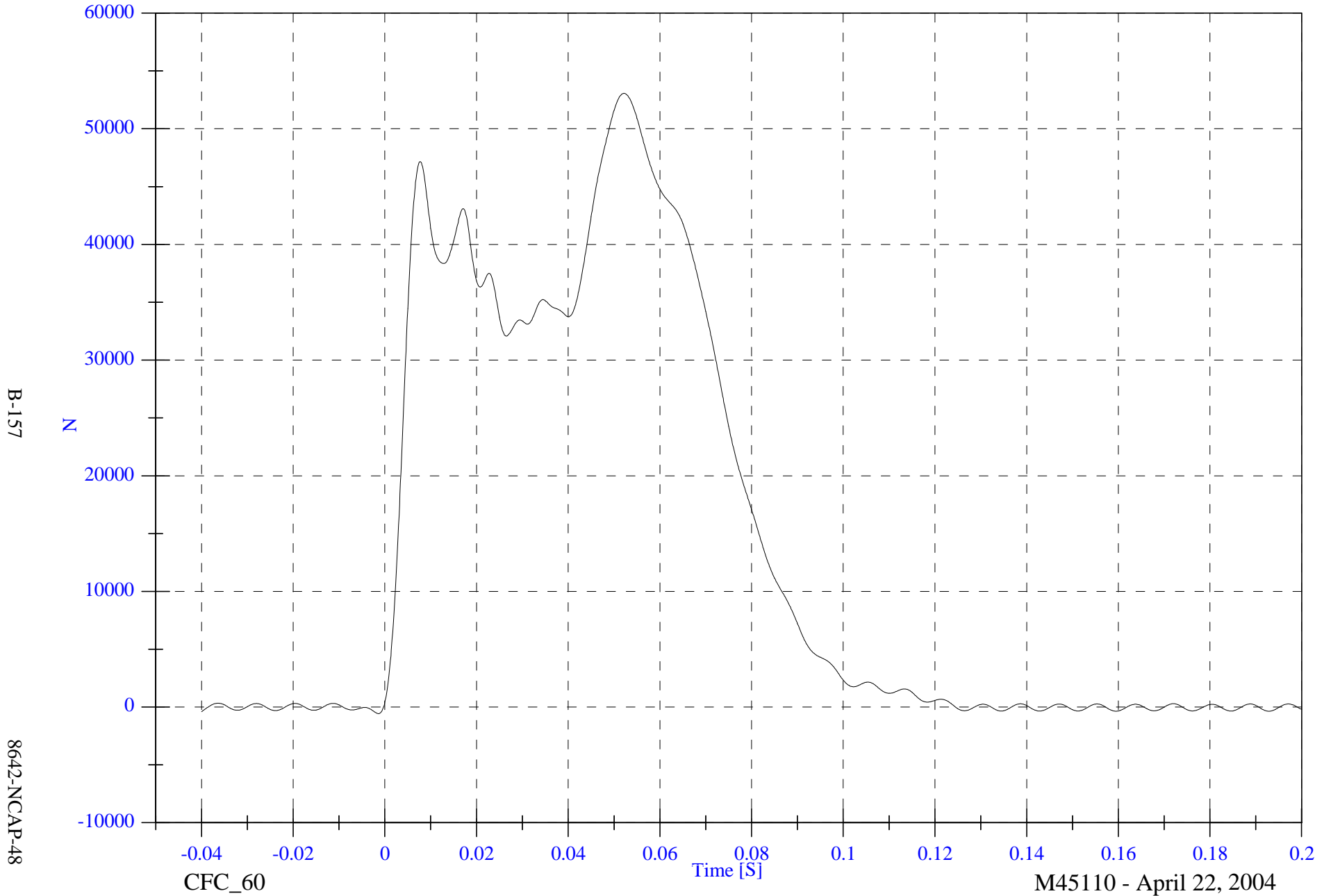
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 53057.5 [N] at 0.052 [S]

Barrier Load Cell B4 Fx

Min: -566.1 [N] at -0.001 [S]



B-157

8642-NCAP-48

CFC_60

Time [S]

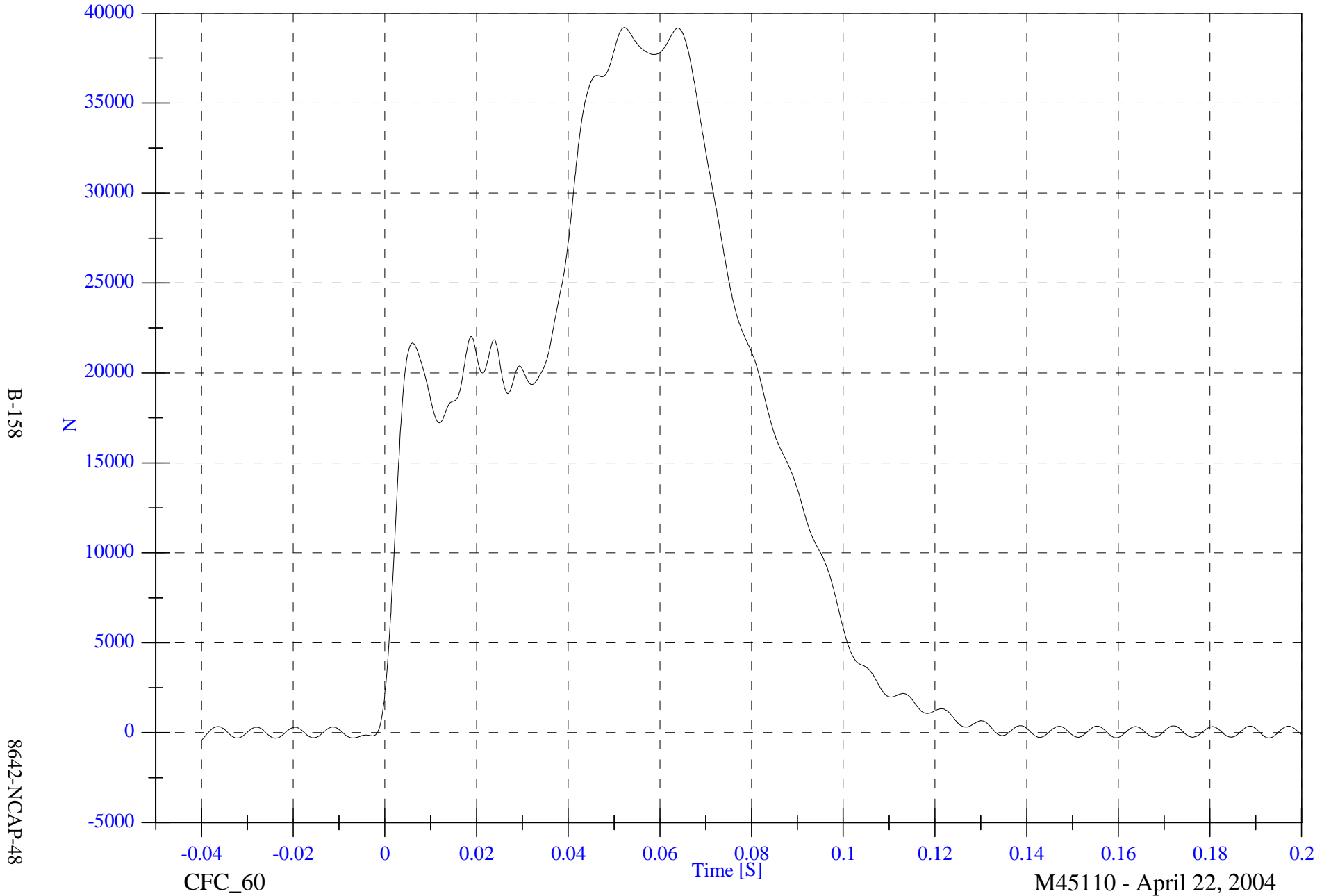
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 39190.4 [N] at 0.052 [S]

Barrier Load Cell B5 Fx

Min: -422.7 [N] at -0.040 [S]



B-158

8642-NCAP-48

CFC_60

Time [S]

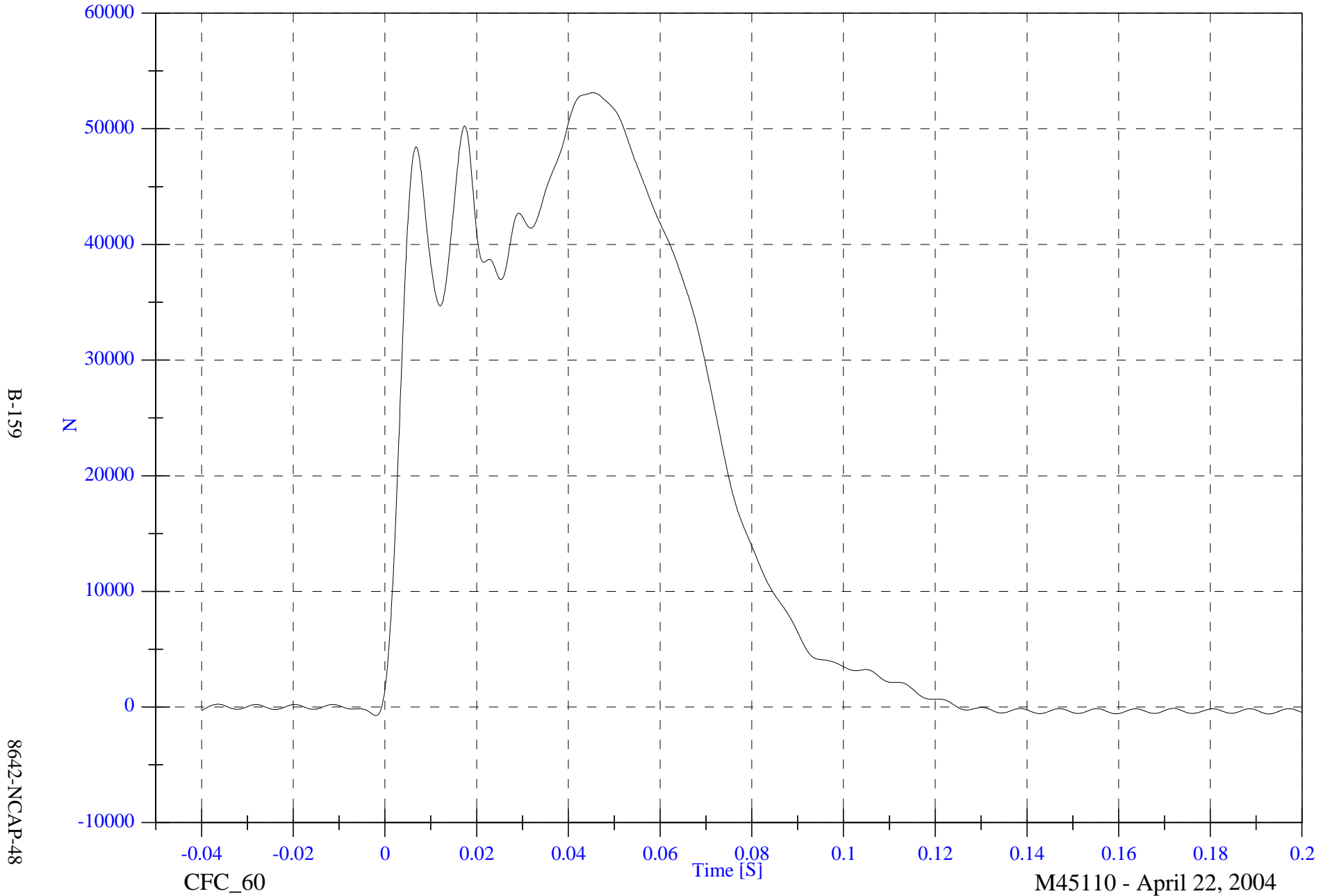
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 53114.1 [N] at 0.045 [S]

Barrier Load Cell B6 Fx

Min: -740.7 [N] at -0.002 [S]



B-159

8642-NCAP-48

CFC_60

Time [S]

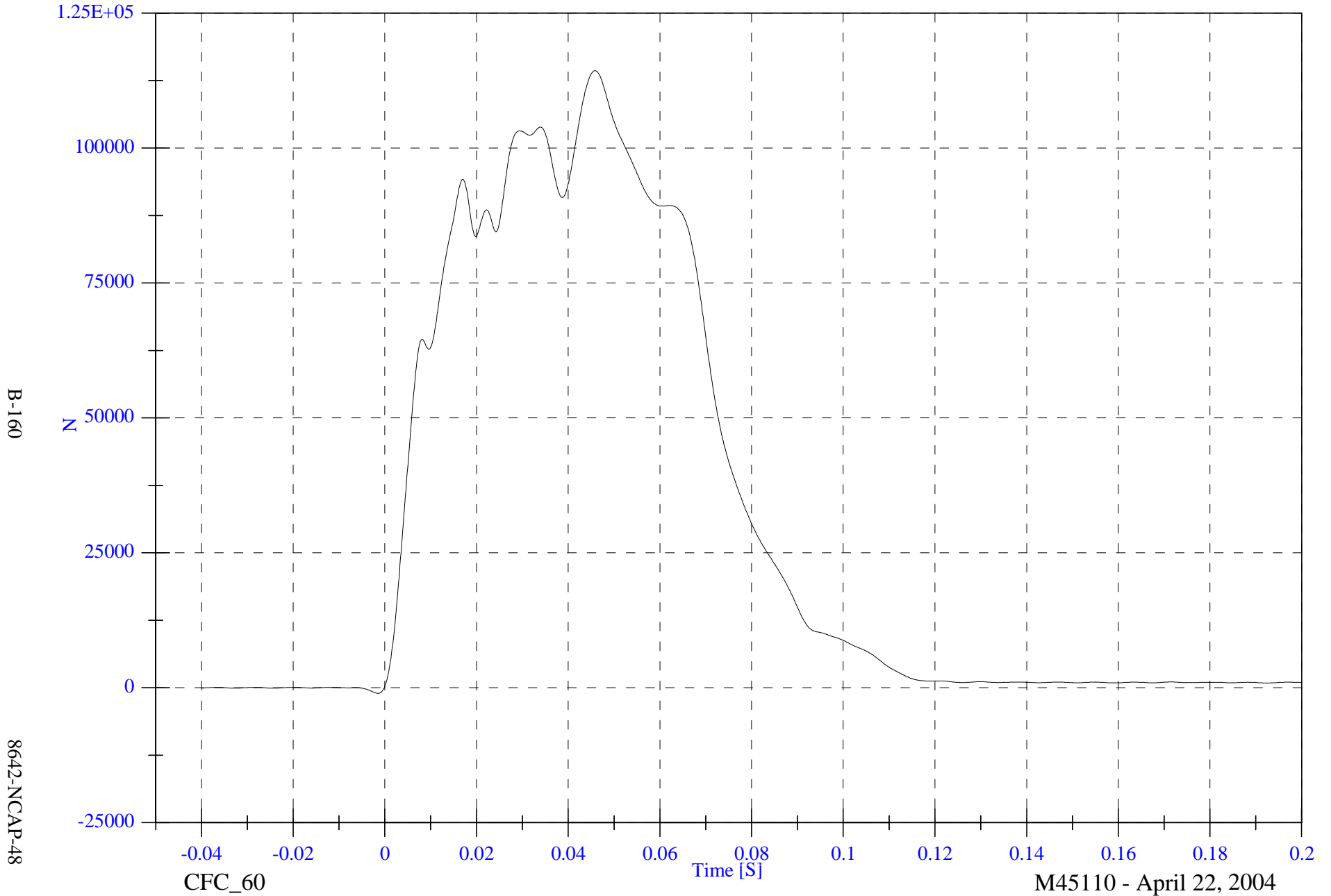
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 114337.7 [N] at 0.046 [S]

Barrier Load Cell B7 Fx

Min: -1037.3 [N] at -0.002 [S]



B-160

8642-NCAP-48

CFC_60

Time [S]

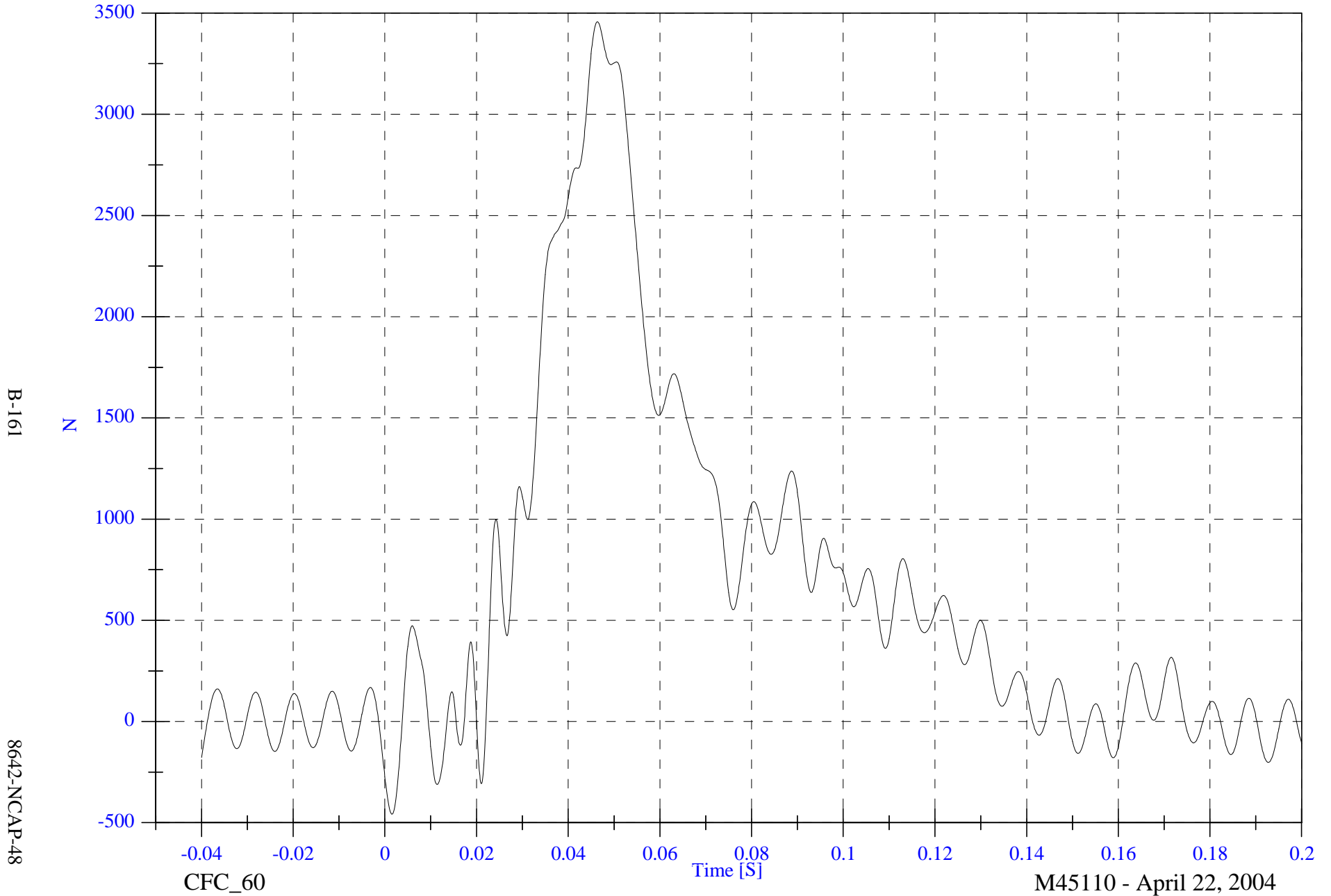
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 3457.3 [N] at 0.046 [S]

Barrier Load Cell B8 Fx

Min: -457.2 [N] at 0.001 [S]



B-161

8642-NCAP-48

CFC_60

Time [S]

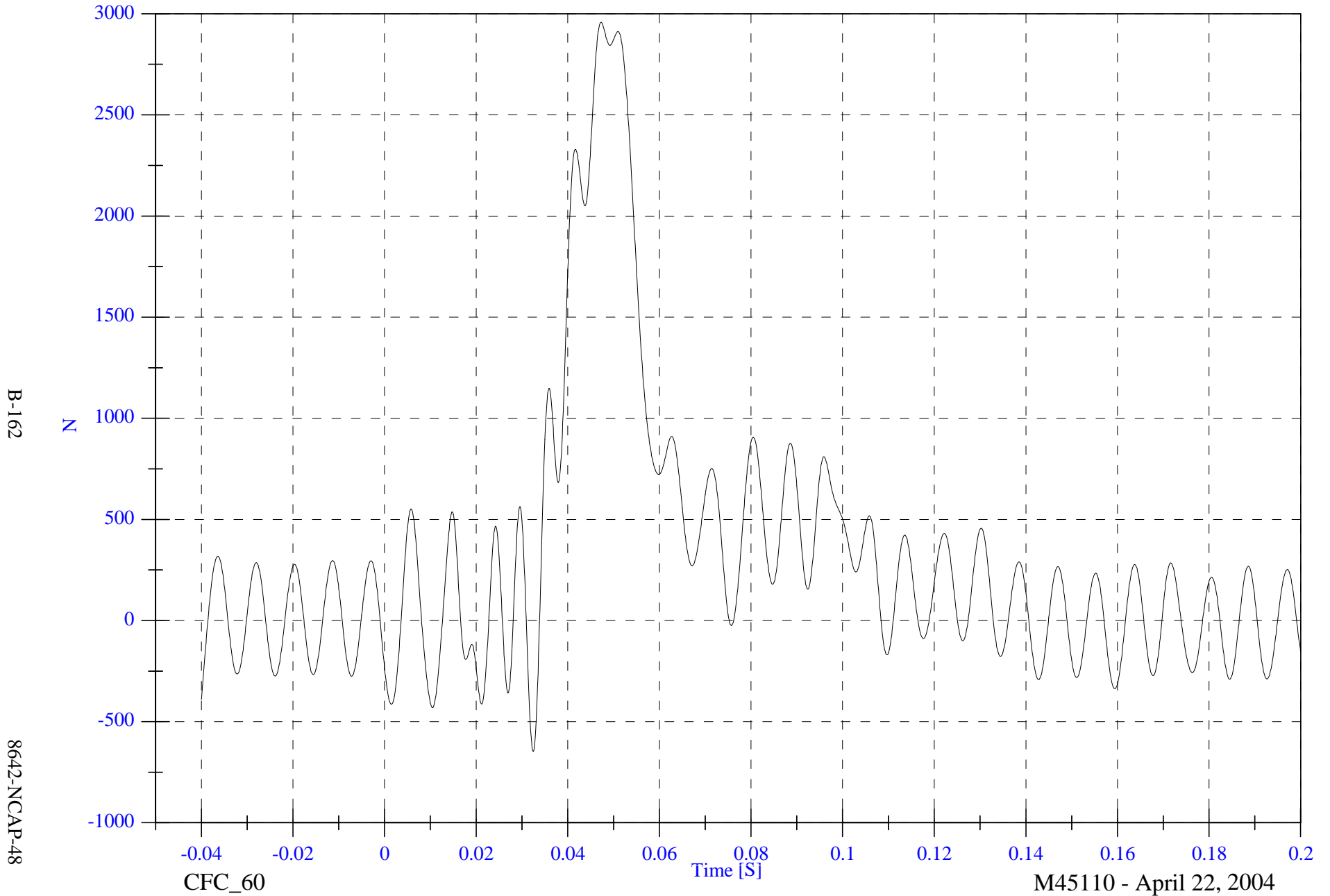
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 2958.2 [N] at 0.047 [S]

Barrier Load Cell B9 Fx

Min: -646.9 [N] at 0.032 [S]

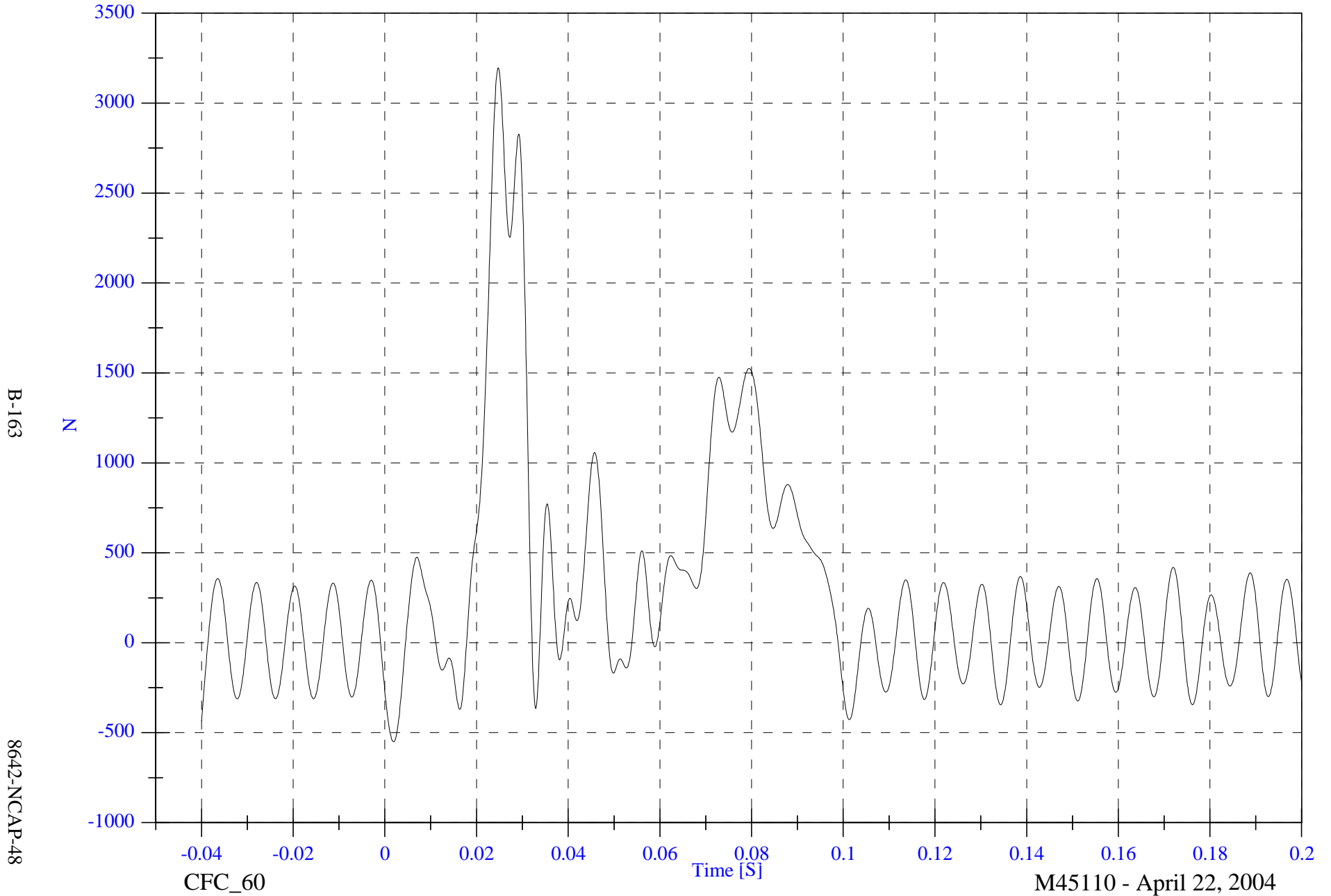


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 3195.5 [N] at 0.025 [S]

Barrier Load Cell C1 Fx

Min: -550.4 [N] at 0.002 [S]

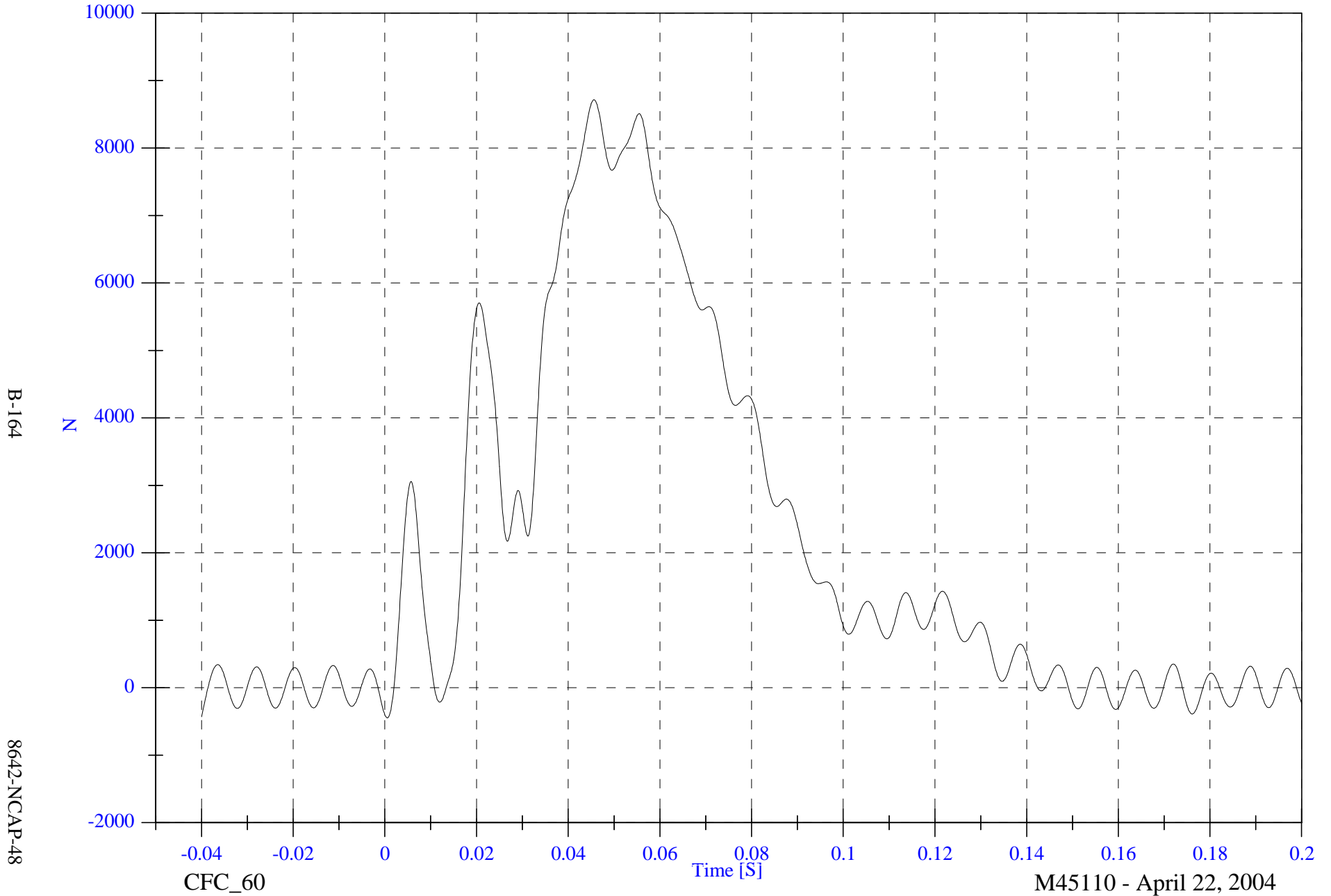


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 8716.2 [N] at 0.046 [S]

Barrier Load Cell C2 Fx

Min: -445.9 [N] at 0.000 [S]

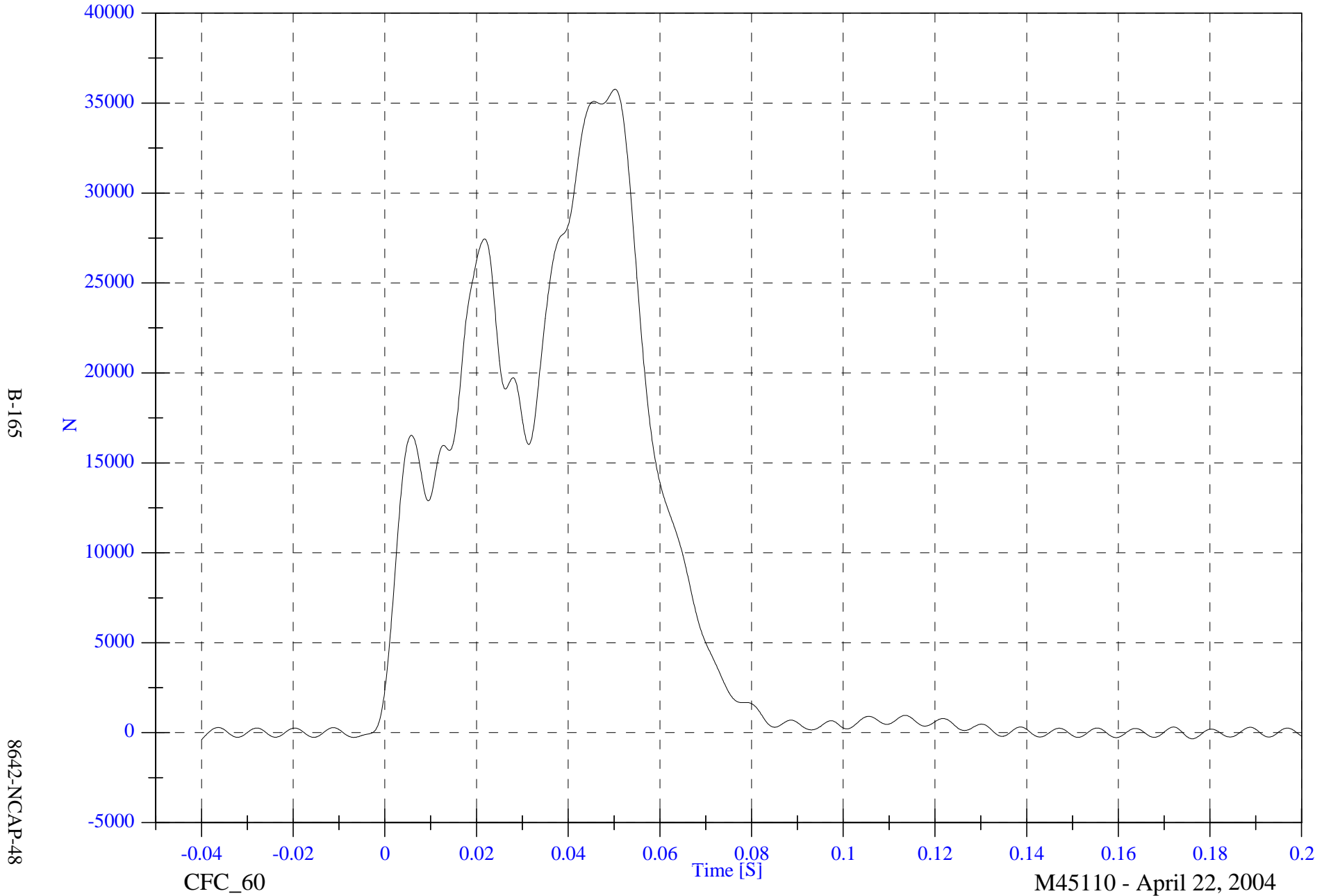


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 35766.5 [N] at 0.050 [S]

Barrier Load Cell C3 Fx

Min: -380.8 [N] at -0.040 [S]



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8642-NCAP-48

CFC_60

Time [S]

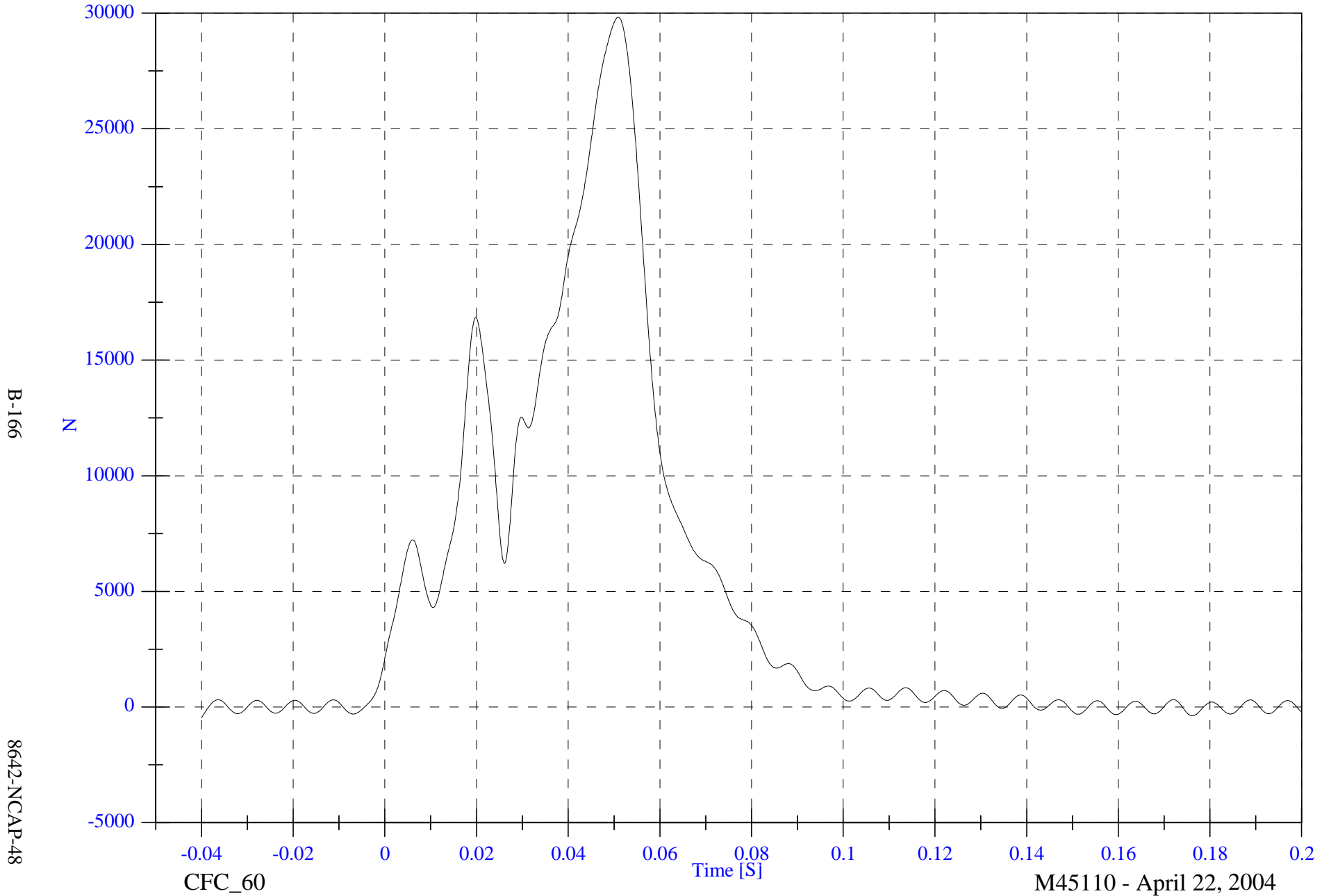
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 29823.2 [N] at 0.051 [S]

Min: -463.9 [N] at -0.040 [S]

Barrier Load Cell C4 Fx



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8642-NCAP-48

CFC_60

Time [S]

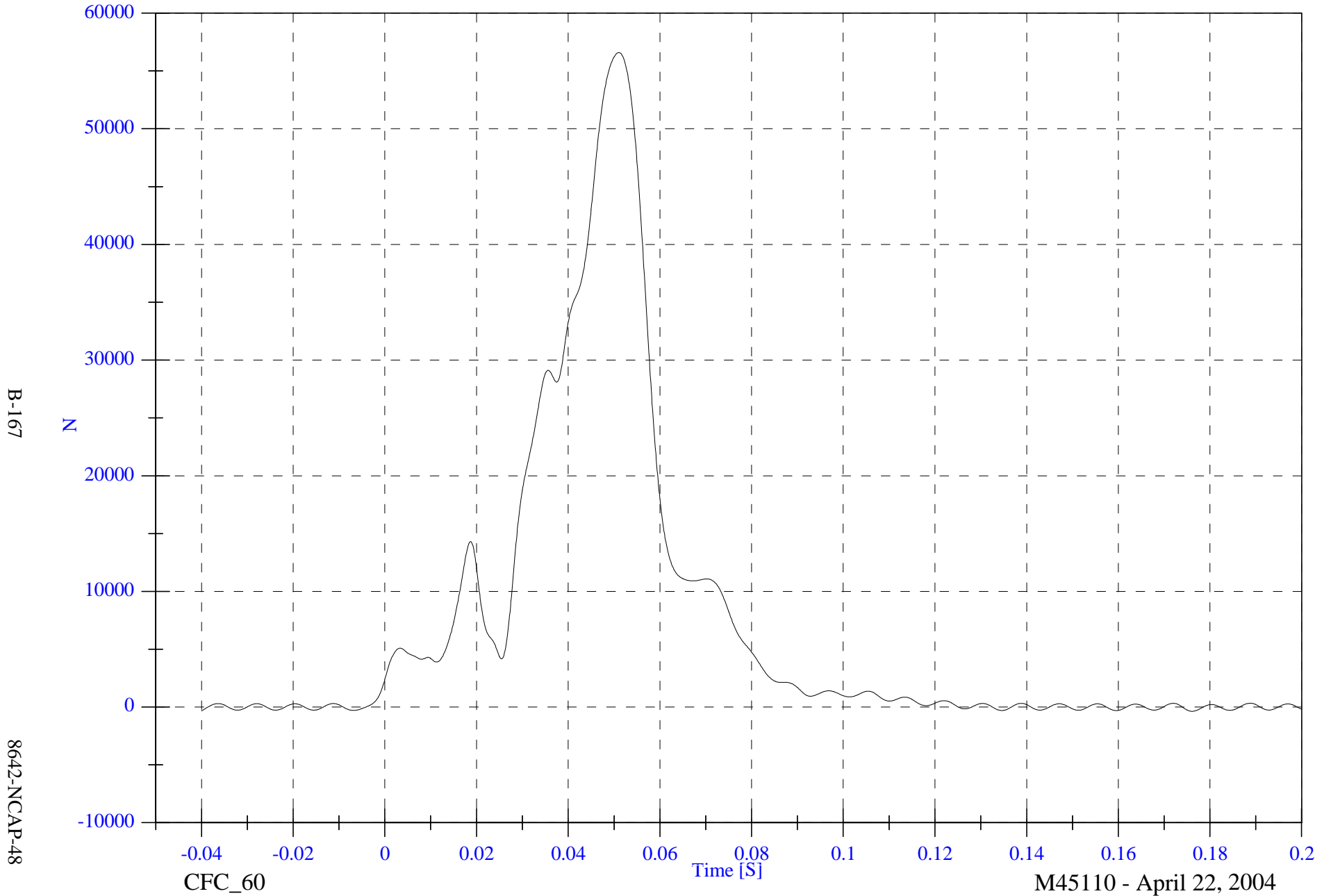
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 56592.9 [N] at 0.051 [S]

Barrier Load Cell C5 Fx

Min: -368.5 [N] at 0.176 [S]



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8642-NCAP-48

CFC_60

Time [S]

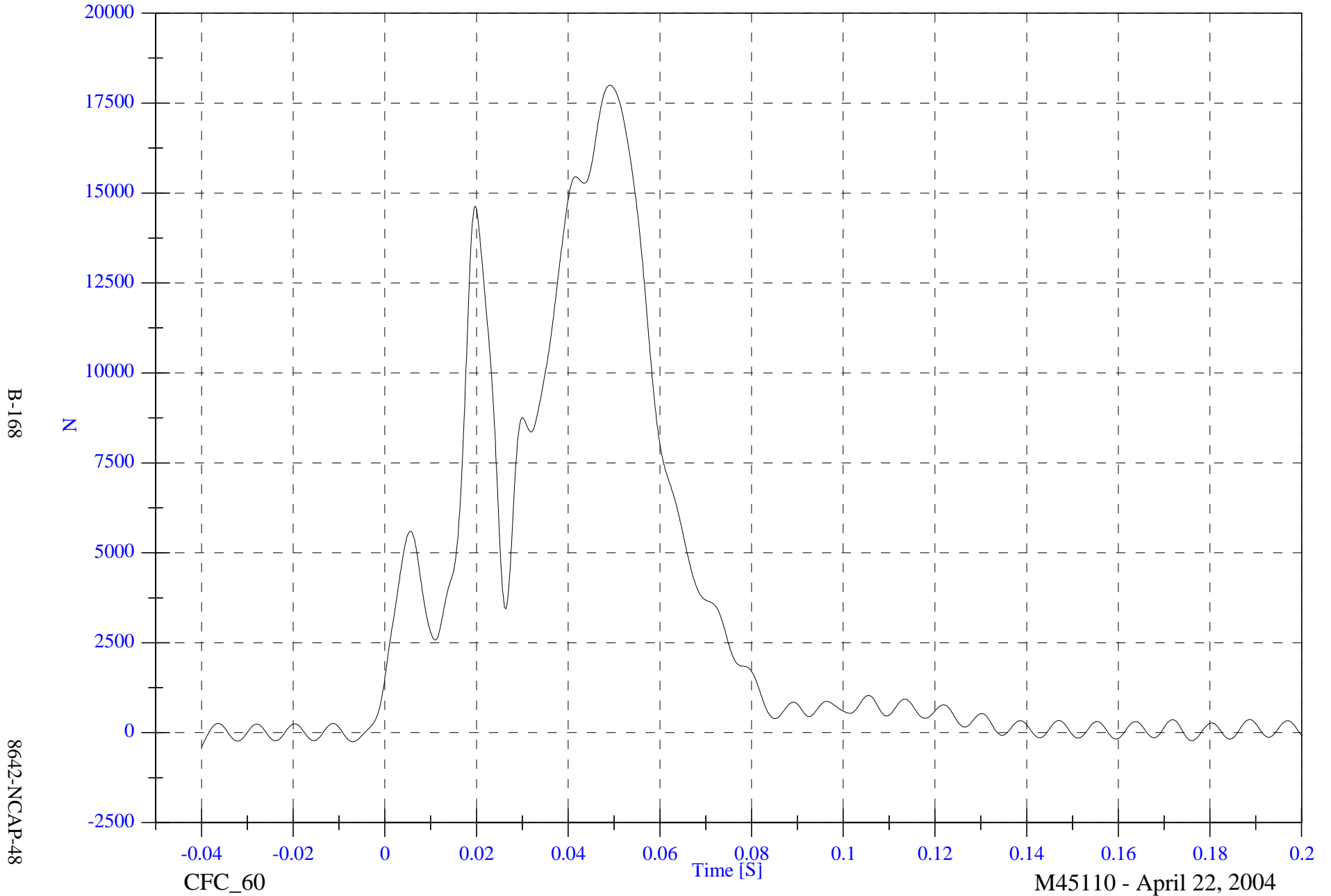
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 17997.2 [N] at 0.049 [S]

Barrier Load Cell C6 Fx

Min: -399.6 [N] at -0.040 [S]



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8642-NCAP-48

CFC_60

Time [S]

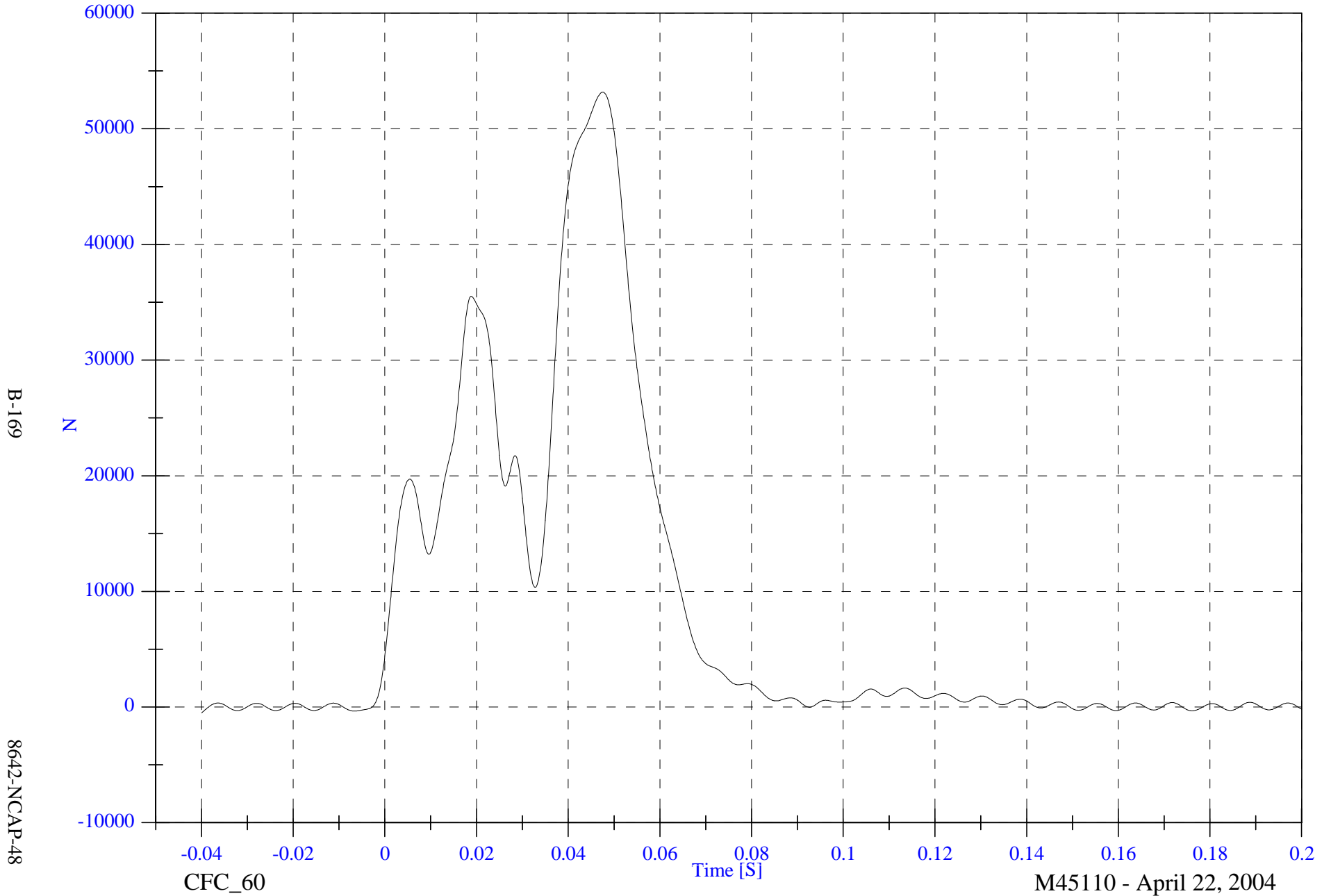
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 53169.4 [N] at 0.047 [S]

Barrier Load Cell C7 Fx

Min: -508.4 [N] at -0.040 [S]



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8642-NCAP-48

CFC_60

Time [S]

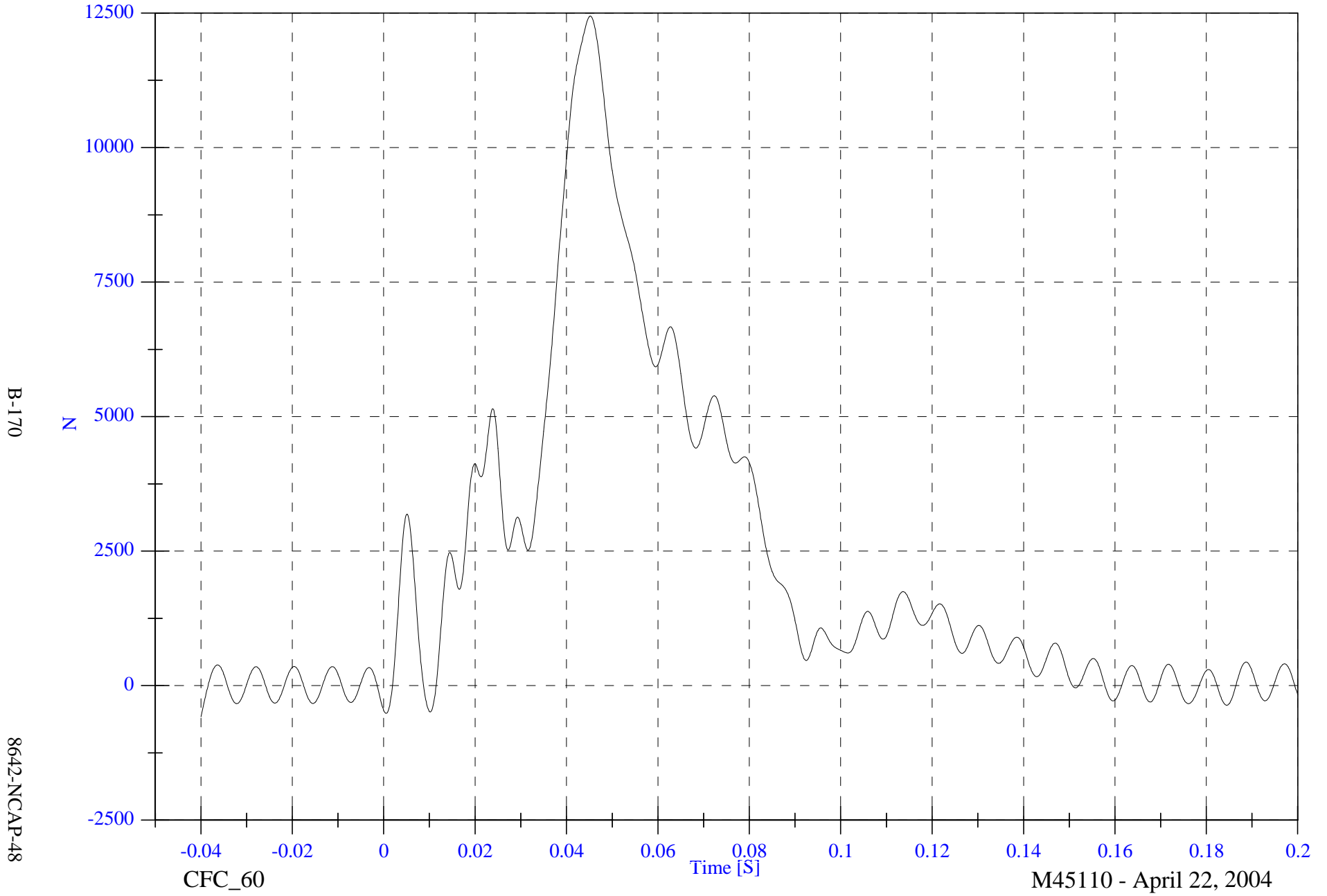
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 12443.2 [N] at 0.045 [S]

Barrier Load Cell C8 Fx

Min: -579.6 [N] at -0.040 [S]



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8642-NCAP-48

CFC_60

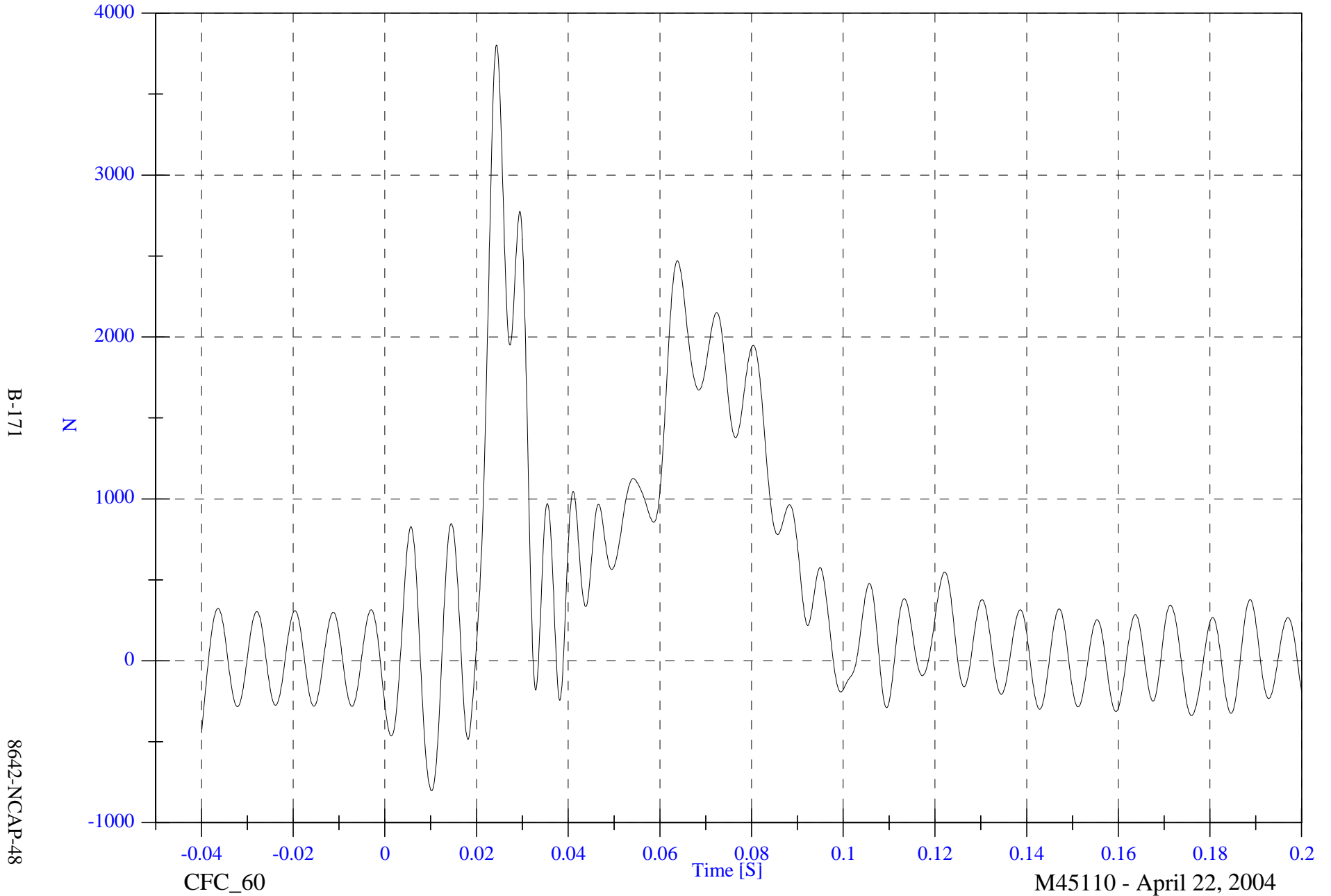
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 3801.7 [N] at 0.024 [S]

Barrier Load Cell C9 Fx

Min: -803.0 [N] at 0.010 [S]

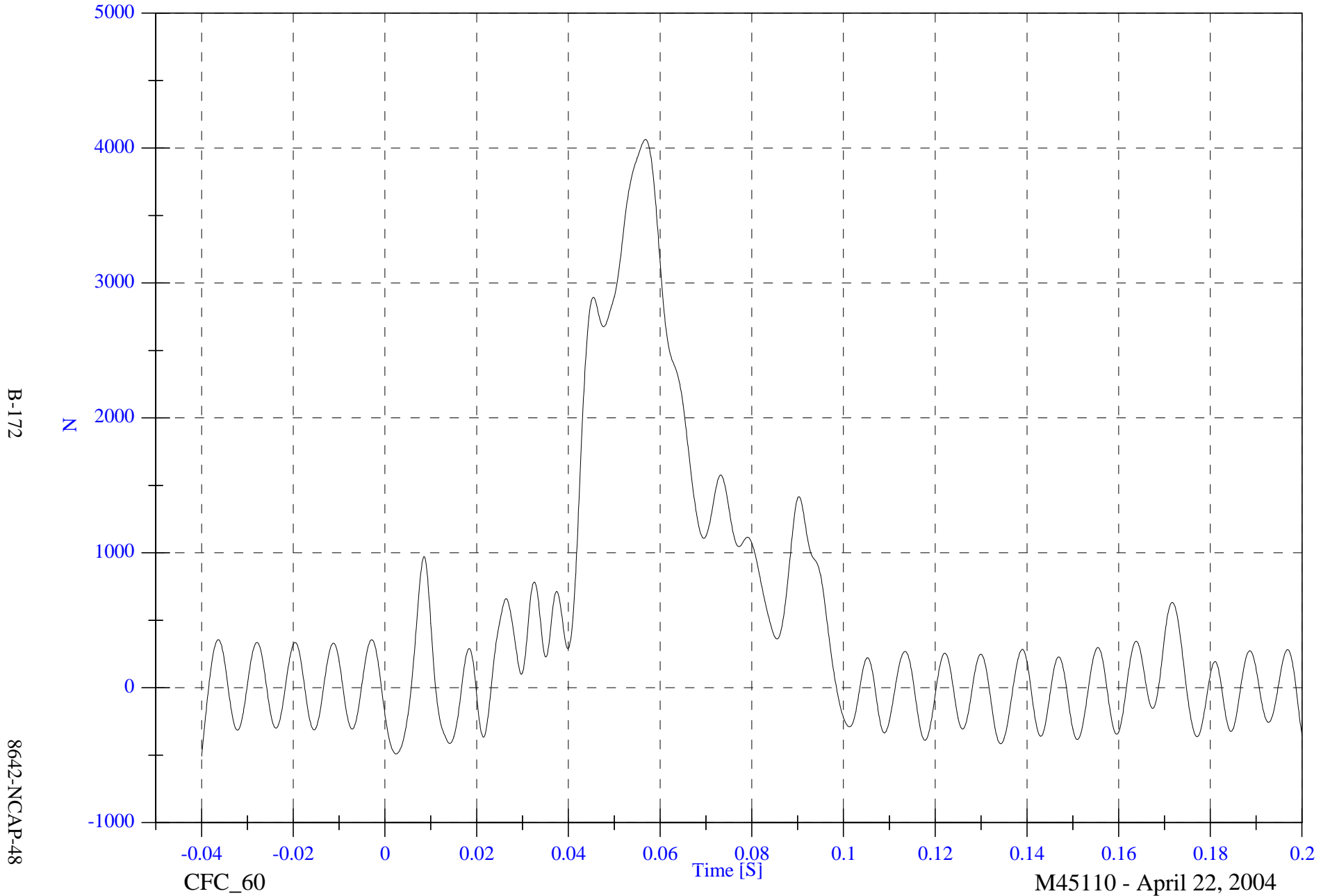


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 4063.4 [N] at 0.057 [S]

Barrier Load Cell D1 Fx

Min: -506.3 [N] at -0.040 [S]

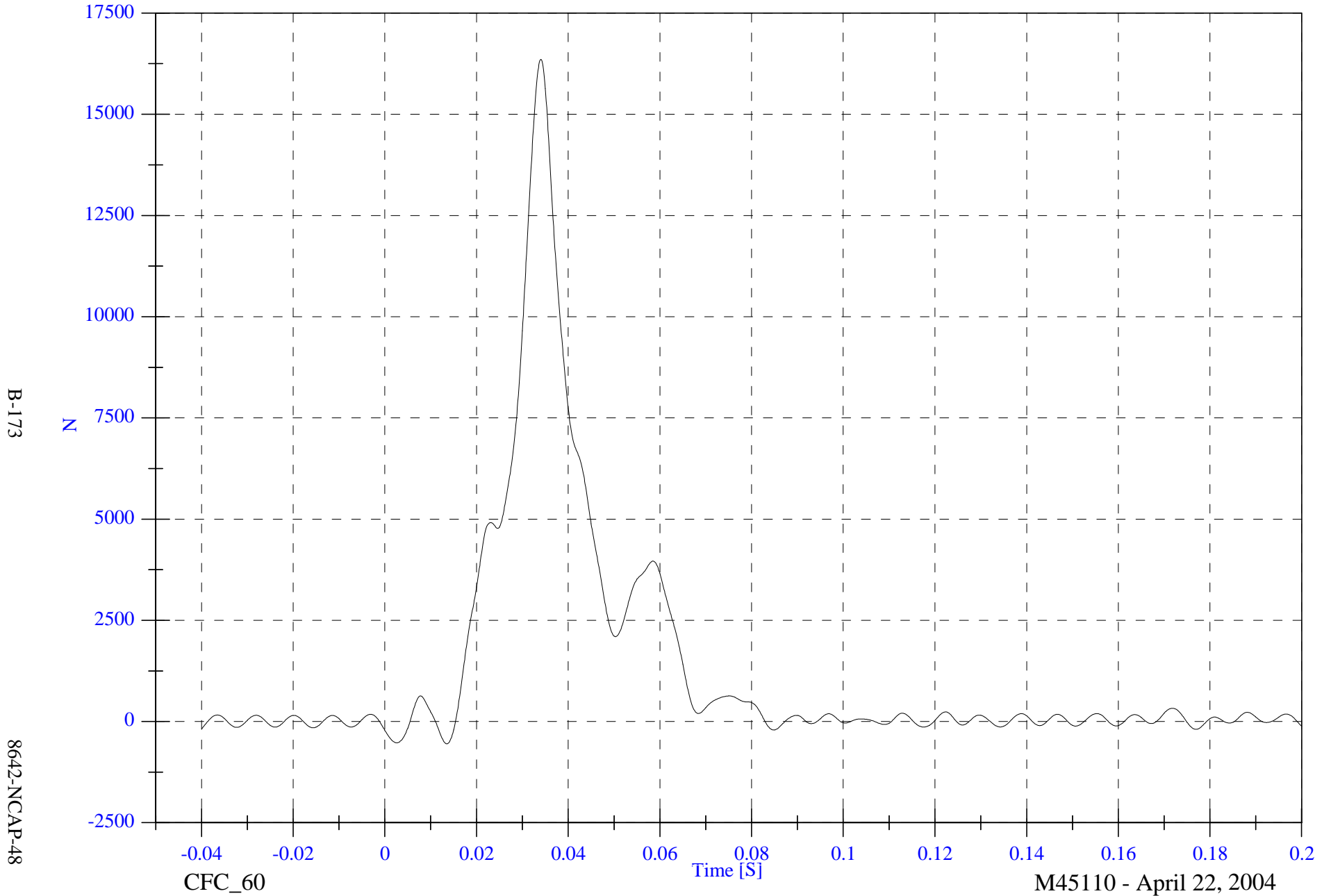


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 16359.4 [N] at 0.034 [S]

Barrier Load Cell D2 Fx

Min: -553.0 [N] at 0.013 [S]



B-173

8642-NCAP-48

CFC_60

Time [S]

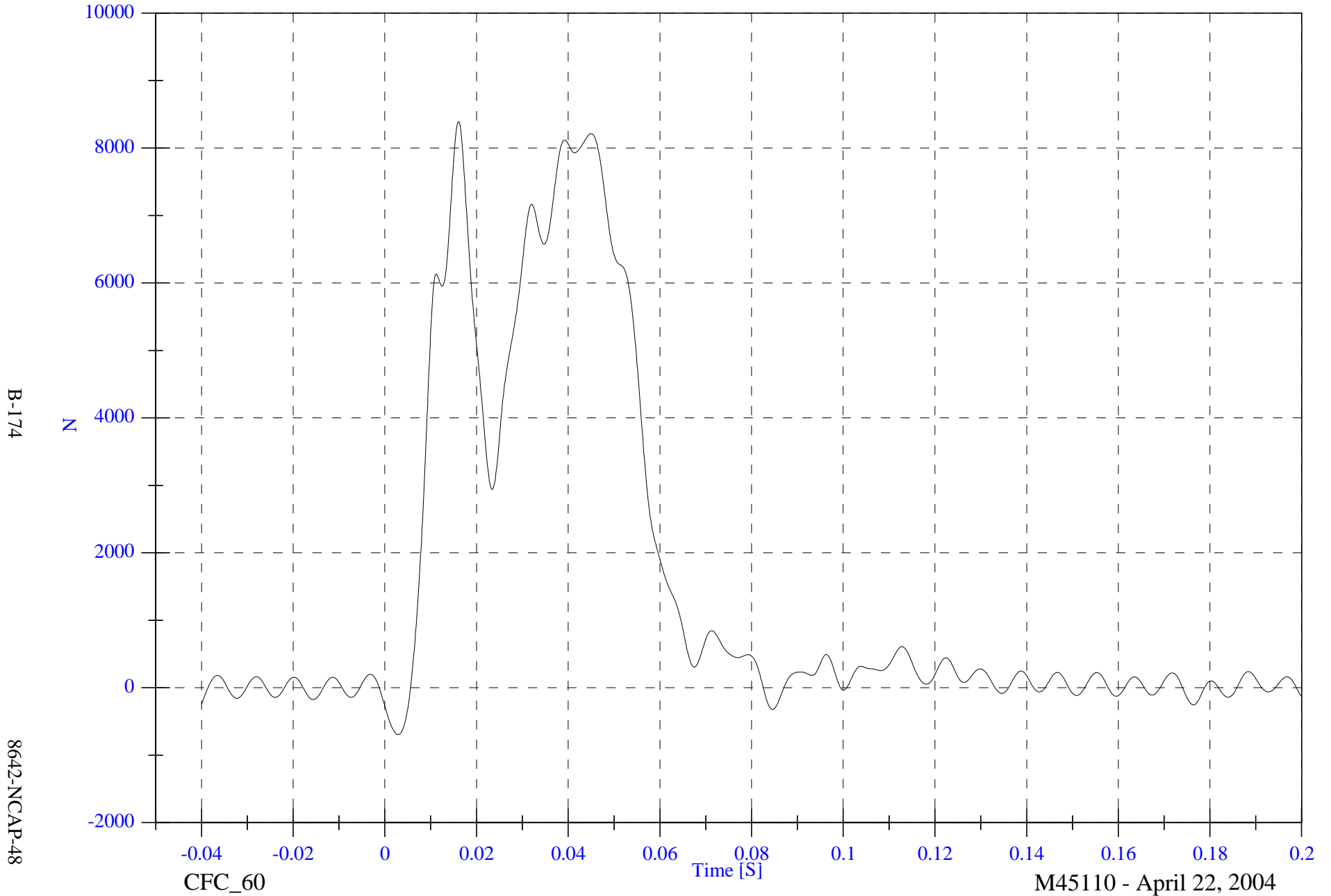
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell D3 Fx

Max: 8393.1 [N] at 0.016 [S]

Min: -695.2 [N] at 0.003 [S]



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8642-NCAP-48

CFC_60

Time [S]

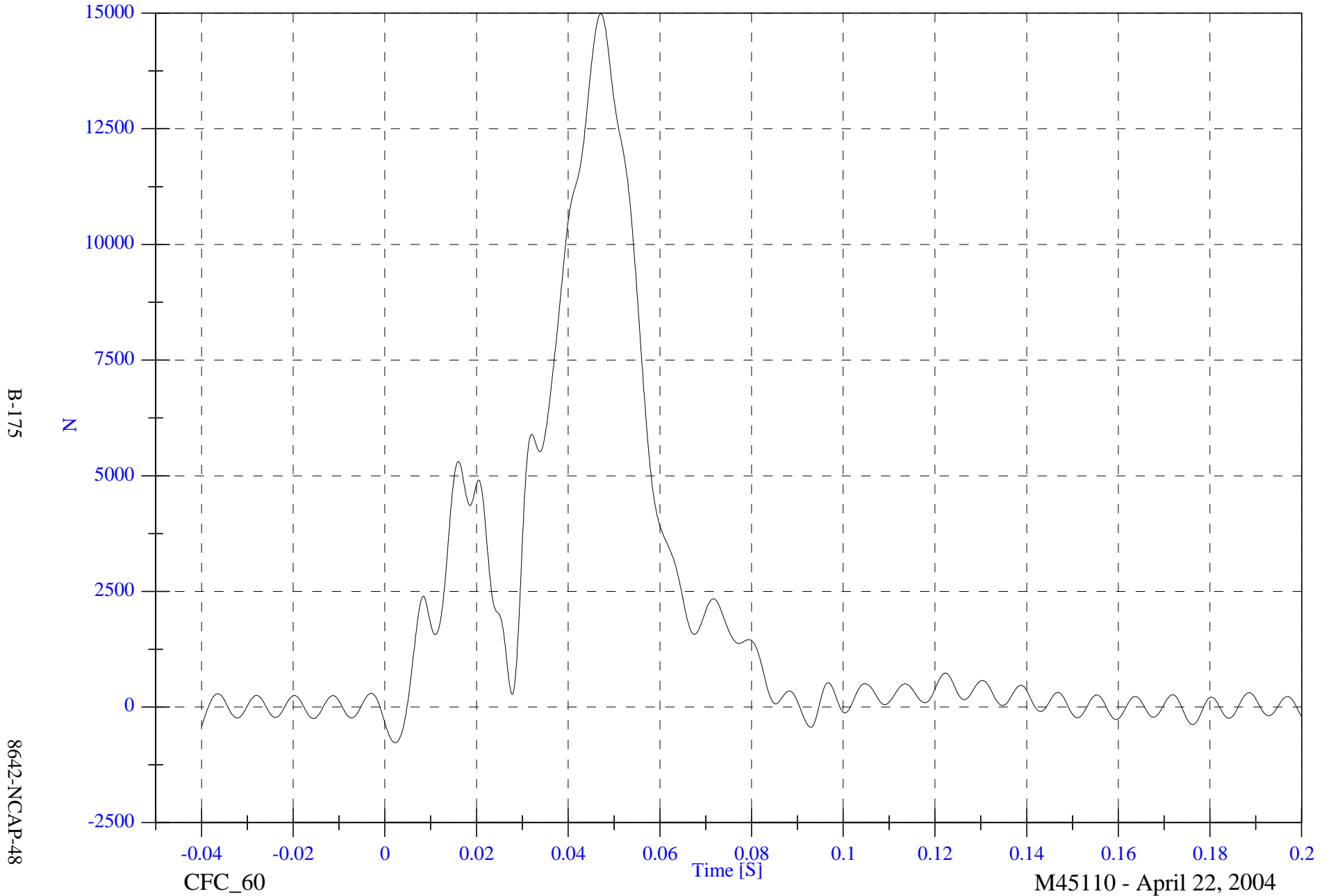
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 14987.7 [N] at 0.047 [S]

Barrier Load Cell D4 Fx

Min: -772.4 [N] at 0.002 [S]

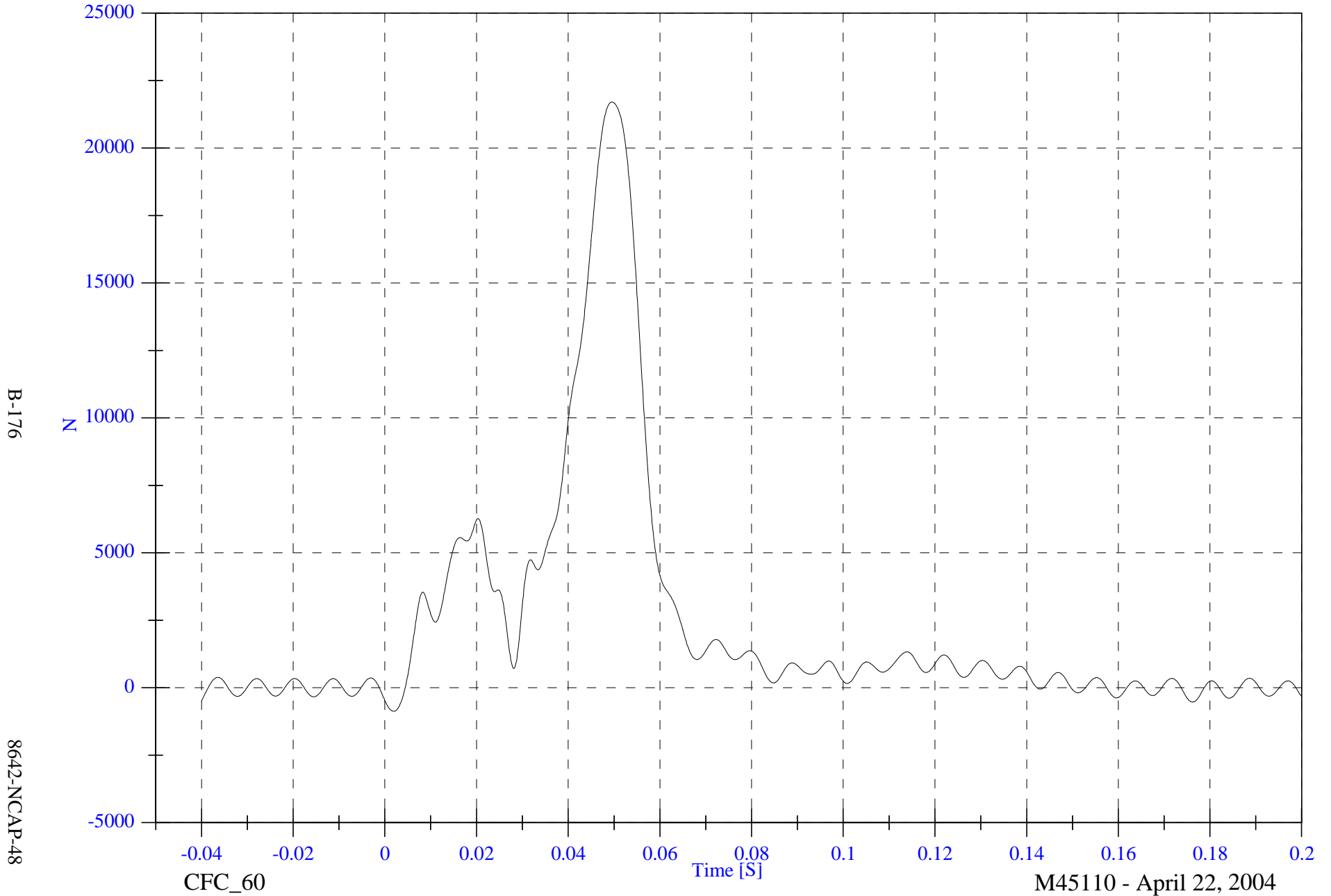


2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell D5 Fx

Max: 21702.6 [N] at 0.049 [S]

Min: -870.9 [N] at 0.002 [S]

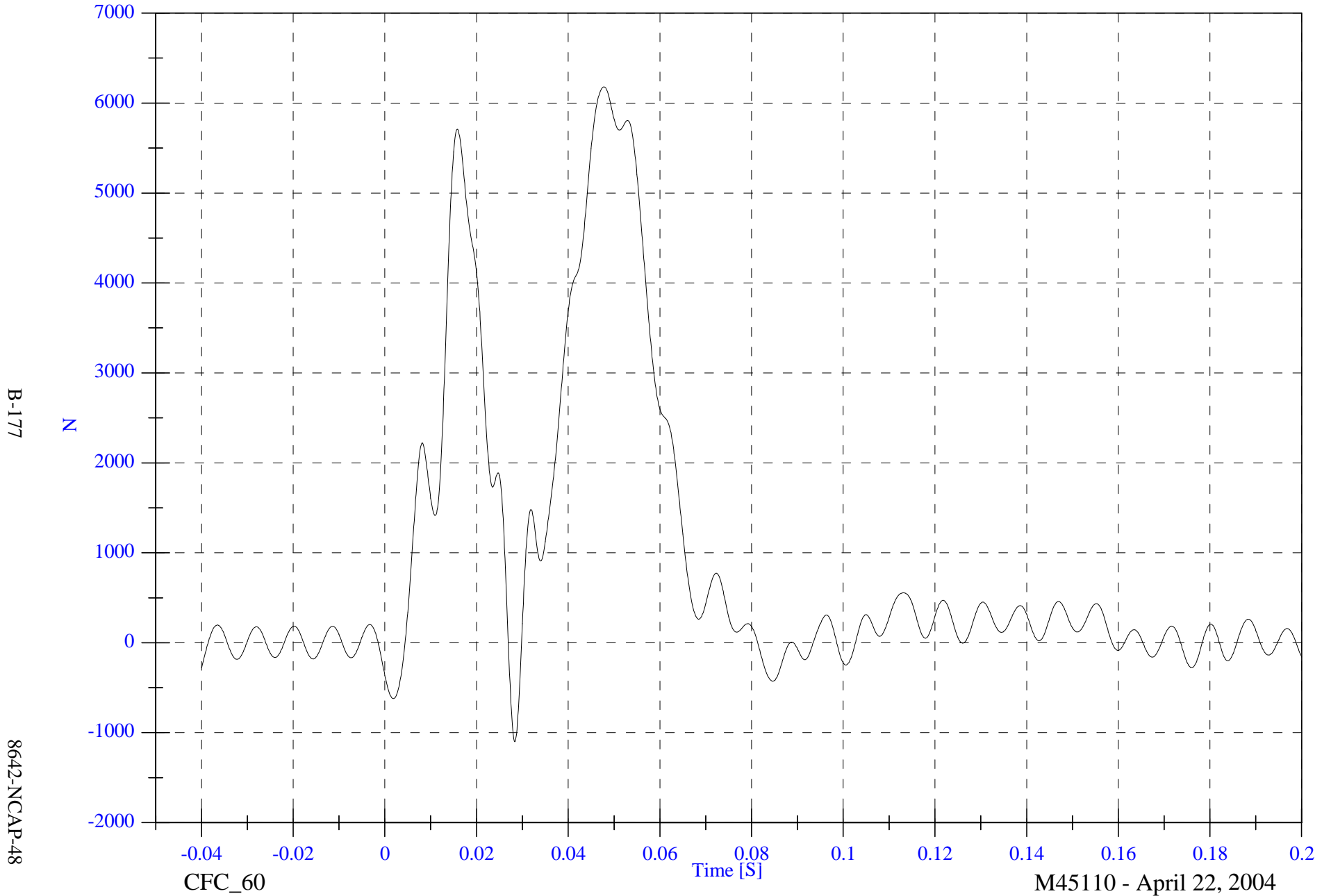


2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell D6 Fx

Max: 6179.5 [N] at 0.048 [S]

Min: -1100.9 [N] at 0.028 [S]



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8642-NCAP-48

CFC_60

Time [S]

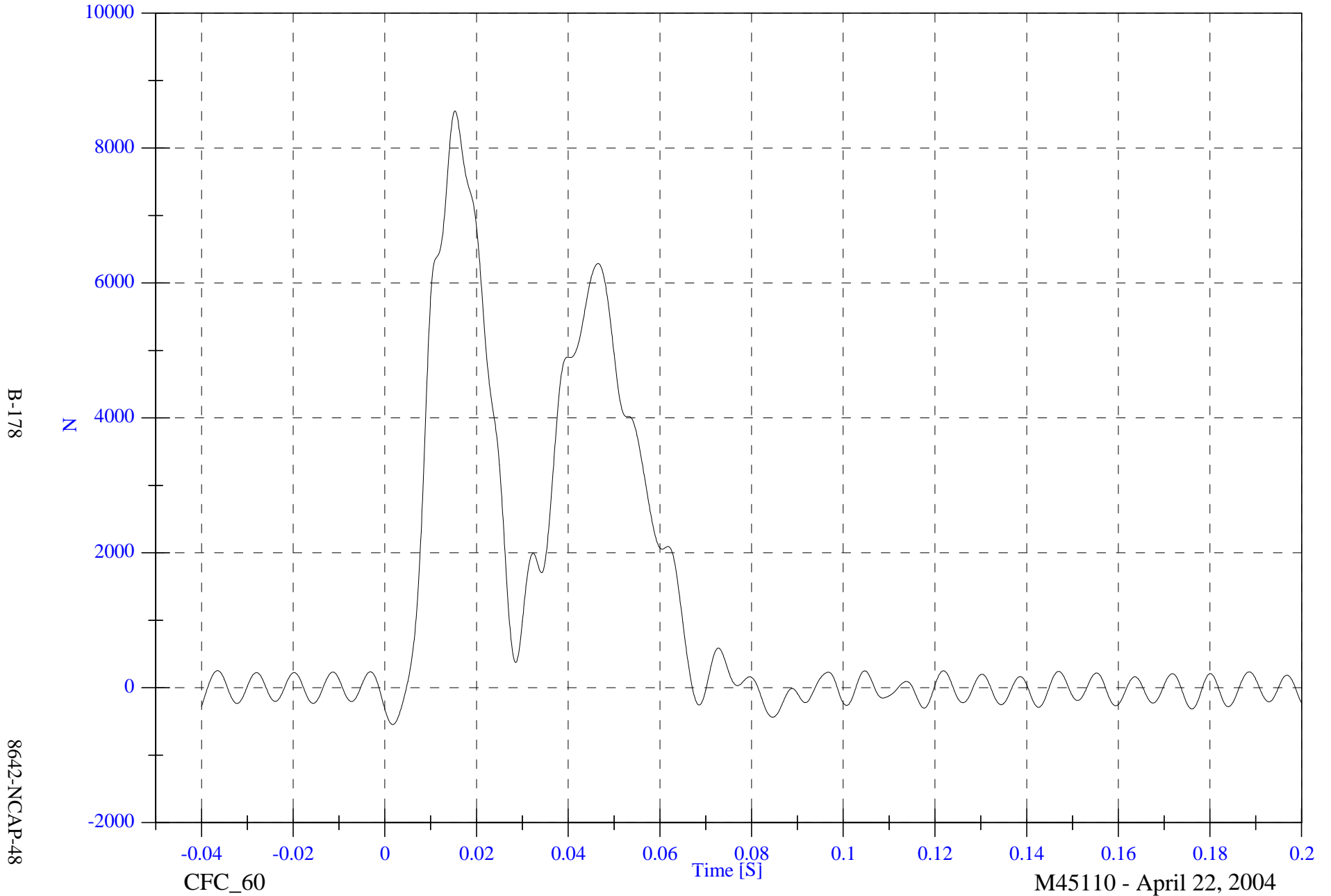
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell D7 Fx

Max: 8550.8 [N] at 0.015 [S]

Min: -544.6 [N] at 0.002 [S]



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8642-NCAP-48

CFC_60

Time [S]

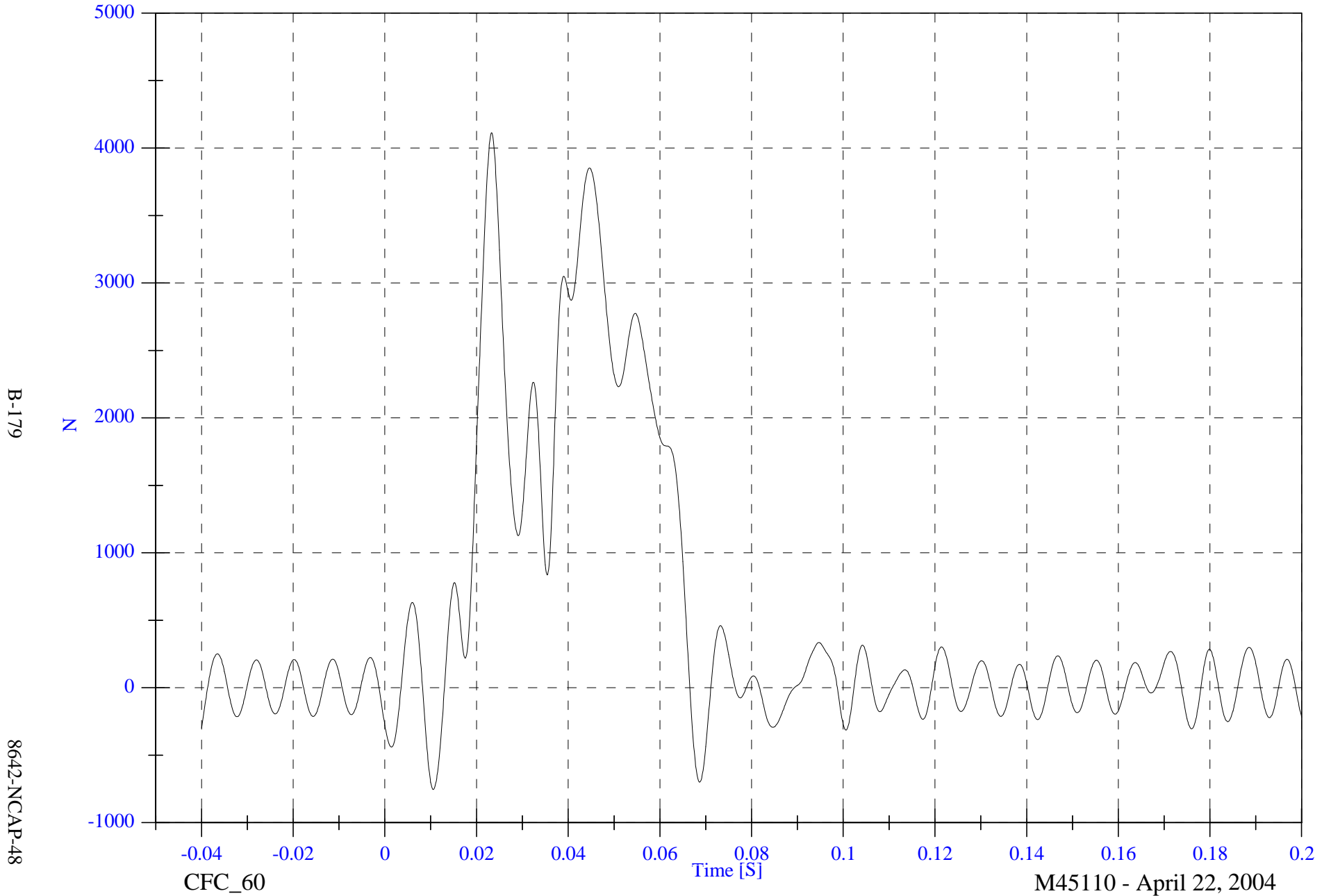
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell D8 Fx

Max: 4113.7 [N] at 0.023 [S]

Min: -754.0 [N] at 0.011 [S]

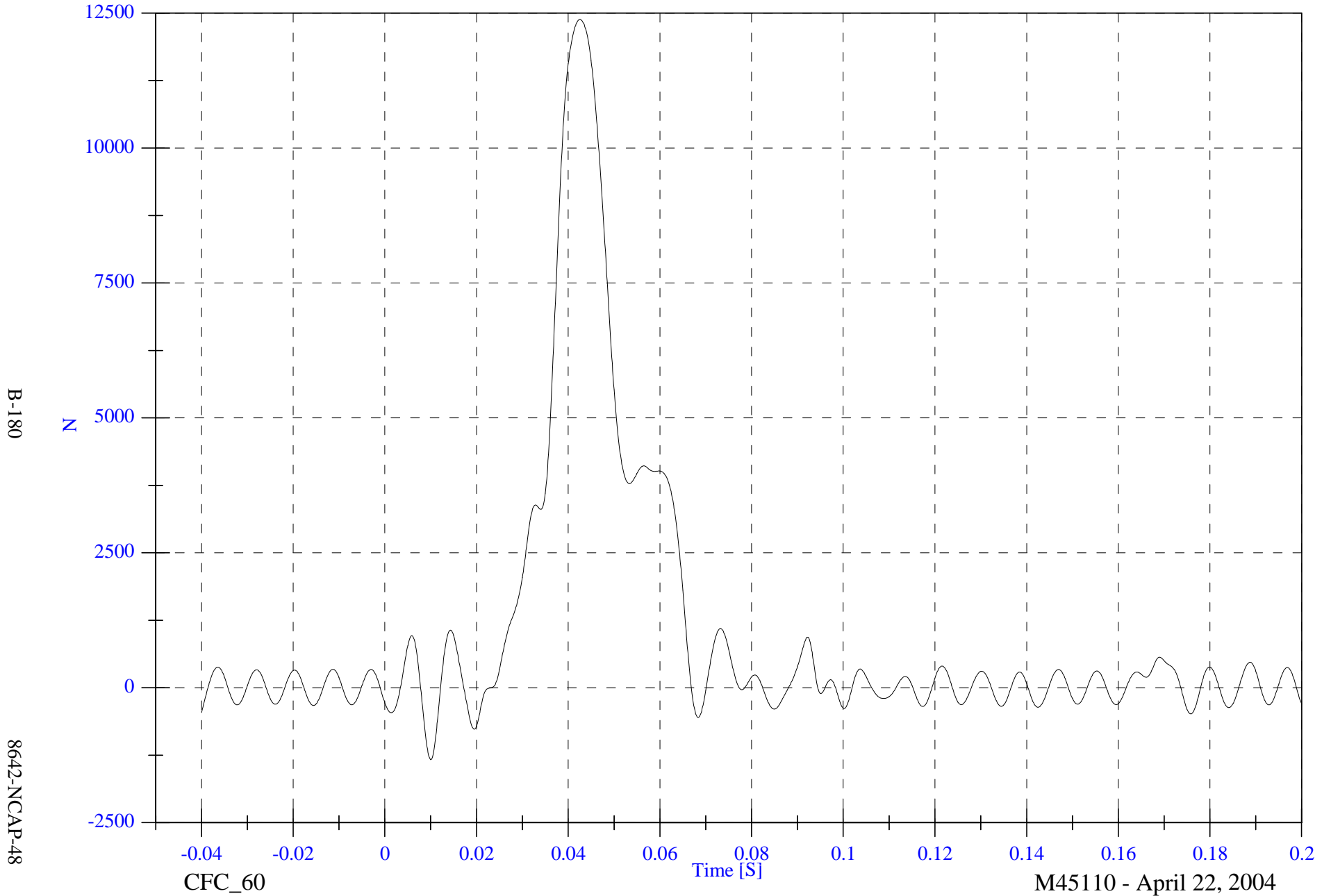


2004 NCAP Test 12 - 2004 Toyota 4Runner

Barrier Load Cell D9 Fx

Max: 12380.5 [N] at 0.042 [S]

Min: -1332.0 [N] at 0.010 [S]



B-180

8642-NCAP-48

CFC_60

Time [S]

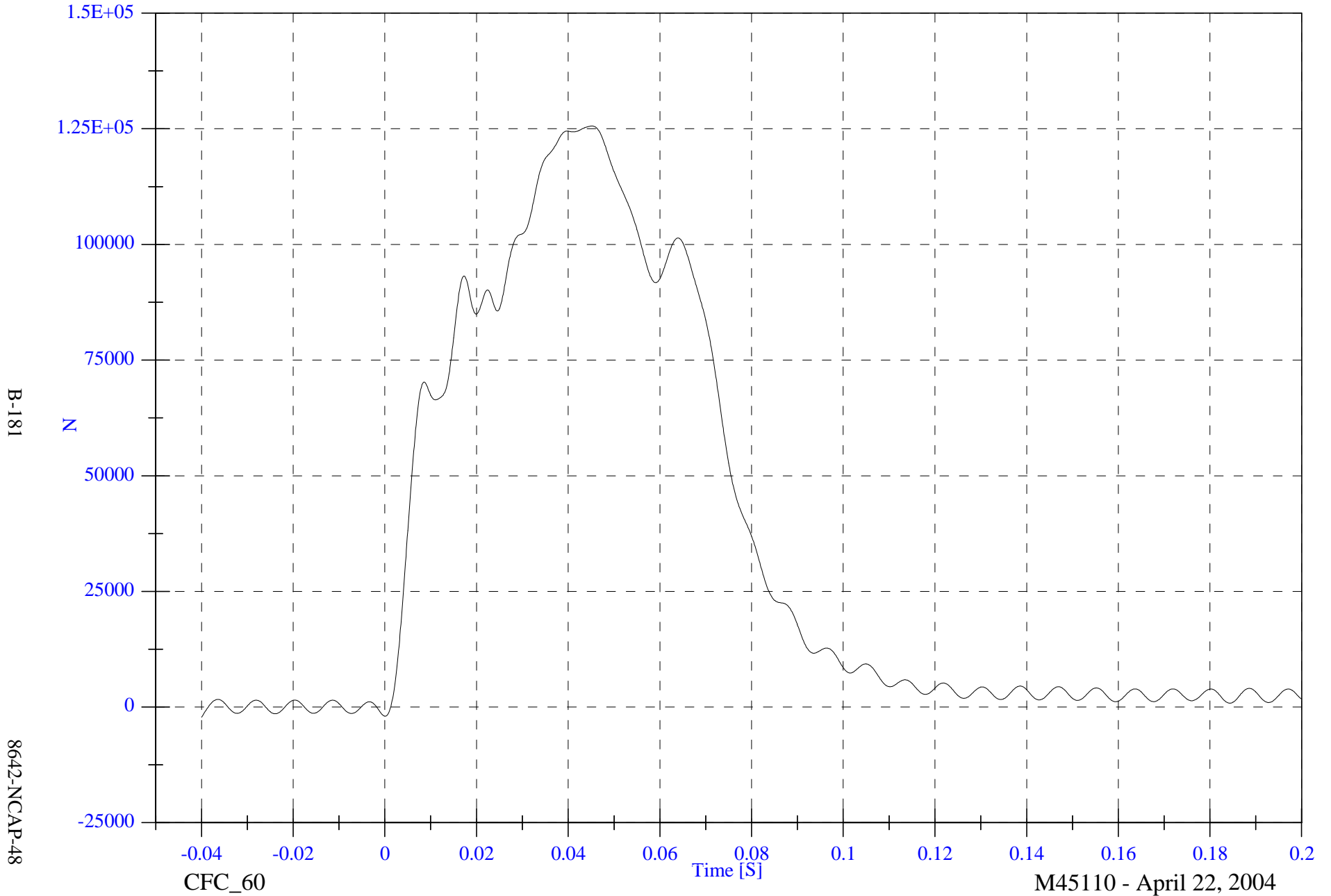
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 125578.8 [N] at 0.045 [S]

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

Min: -2210.5 [N] at -0.040 [S]



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8642-NCAP-48

CFC_60

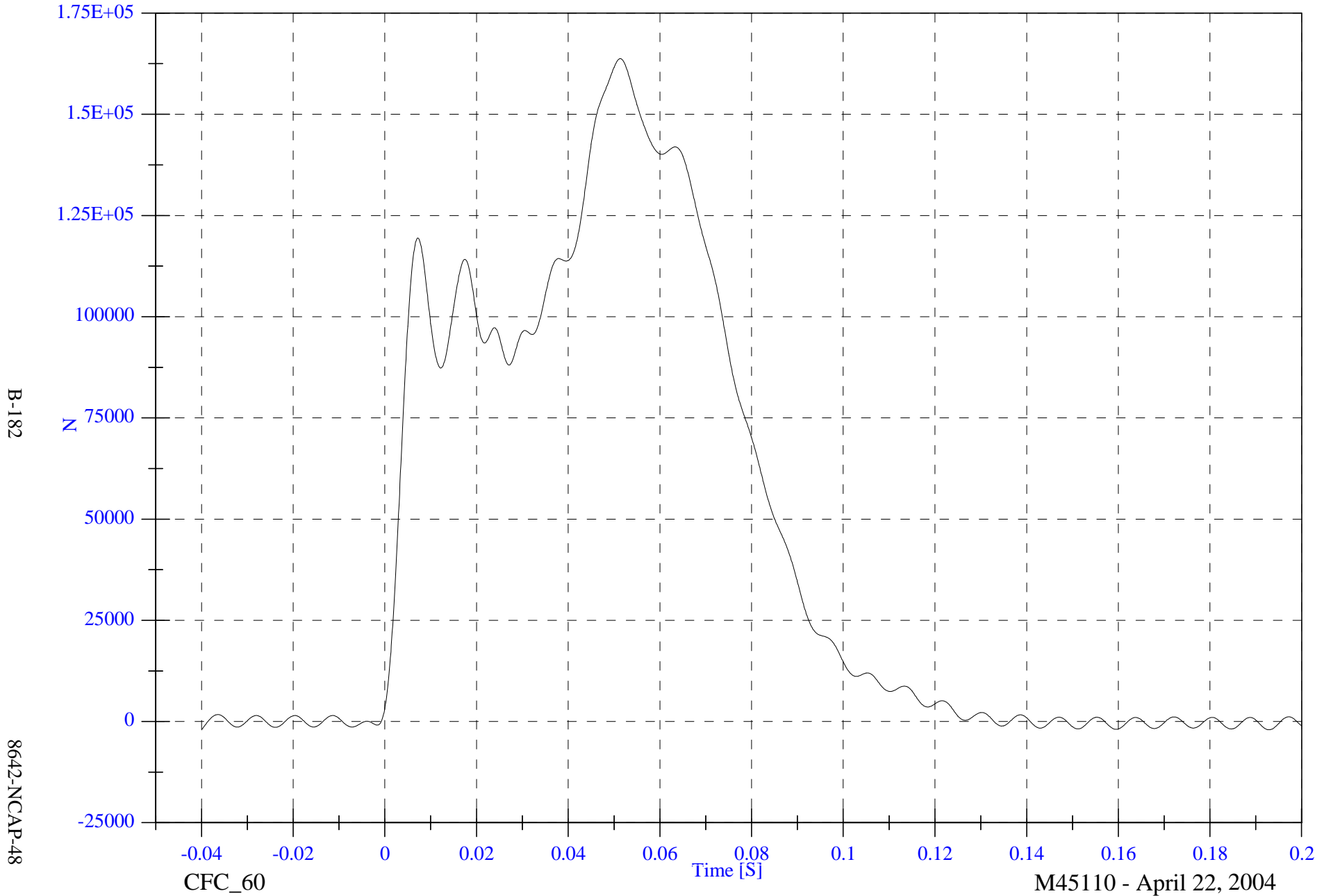
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 163743.4 [N] at 0.051 [S]

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

Min: -2065.7 [N] at -0.040 [S]

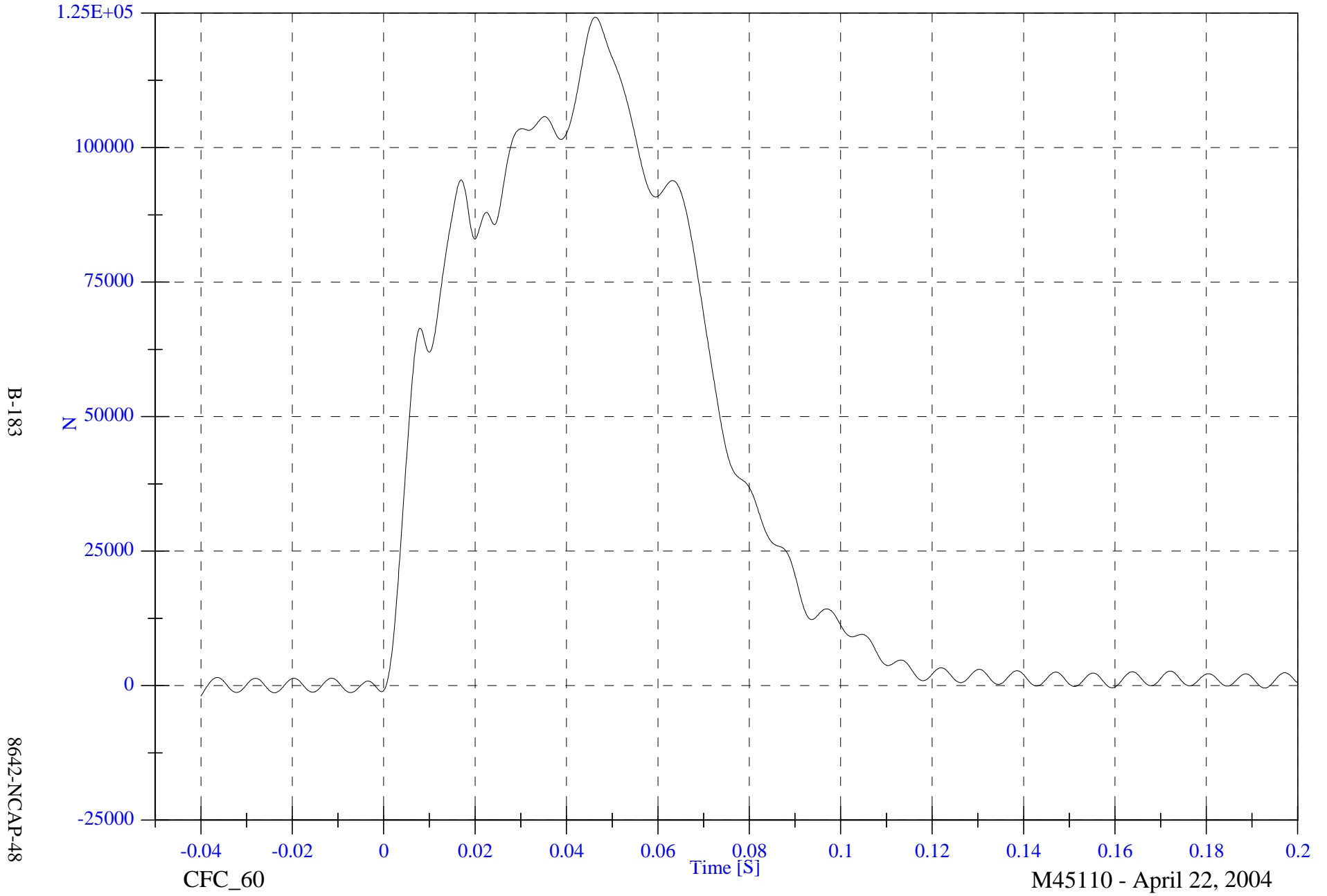


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 124232.4 [N] at 0.046 [S]

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

Min: -1936.3 [N] at -0.040 [S]



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8642-NCAP-48

CFC_60

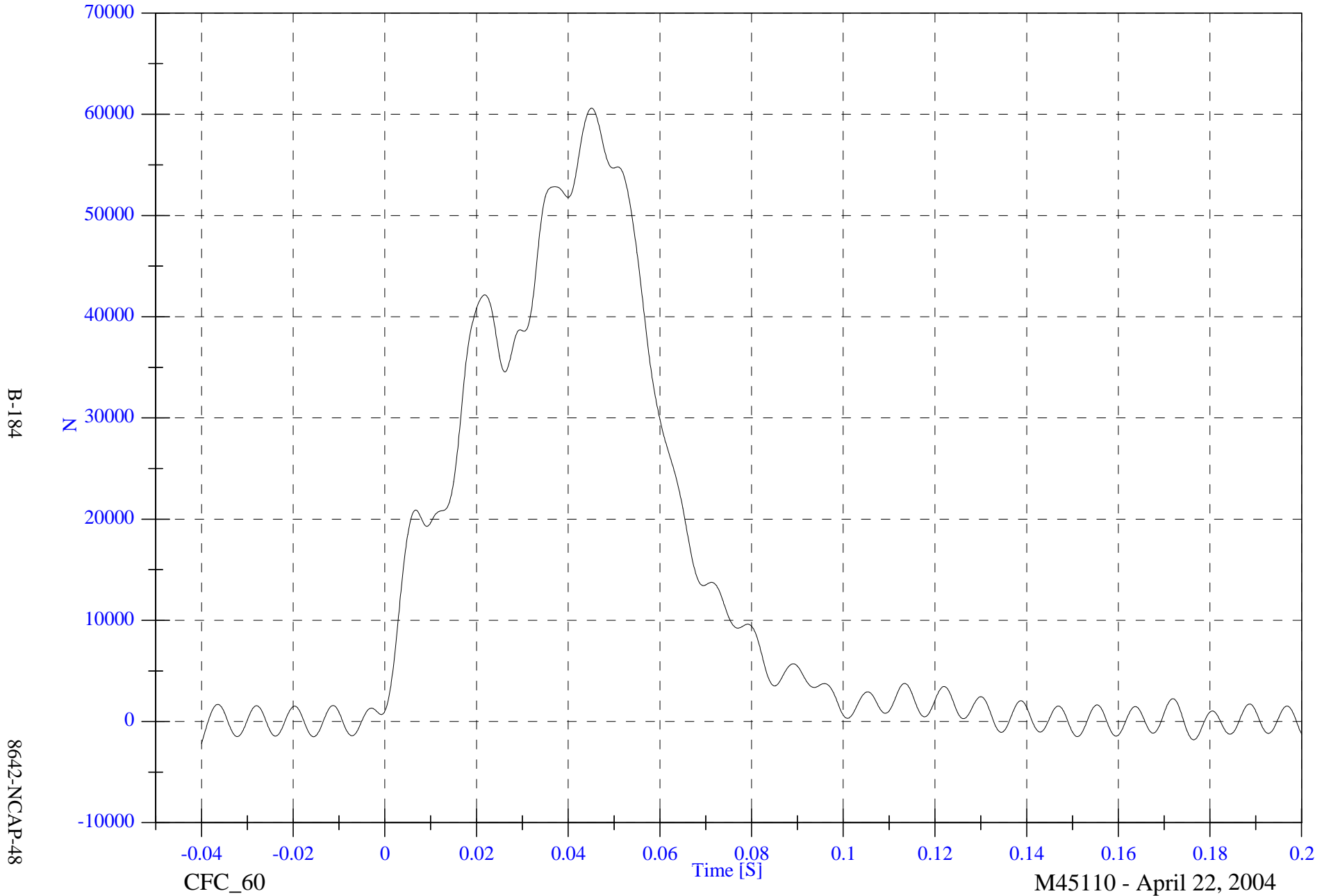
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

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

Max: 60605.4 [N] at 0.045 [S]

Min: -2181.0 [N] at -0.040 [S]



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8642-NCAP-48

CFC_60

Time [S]

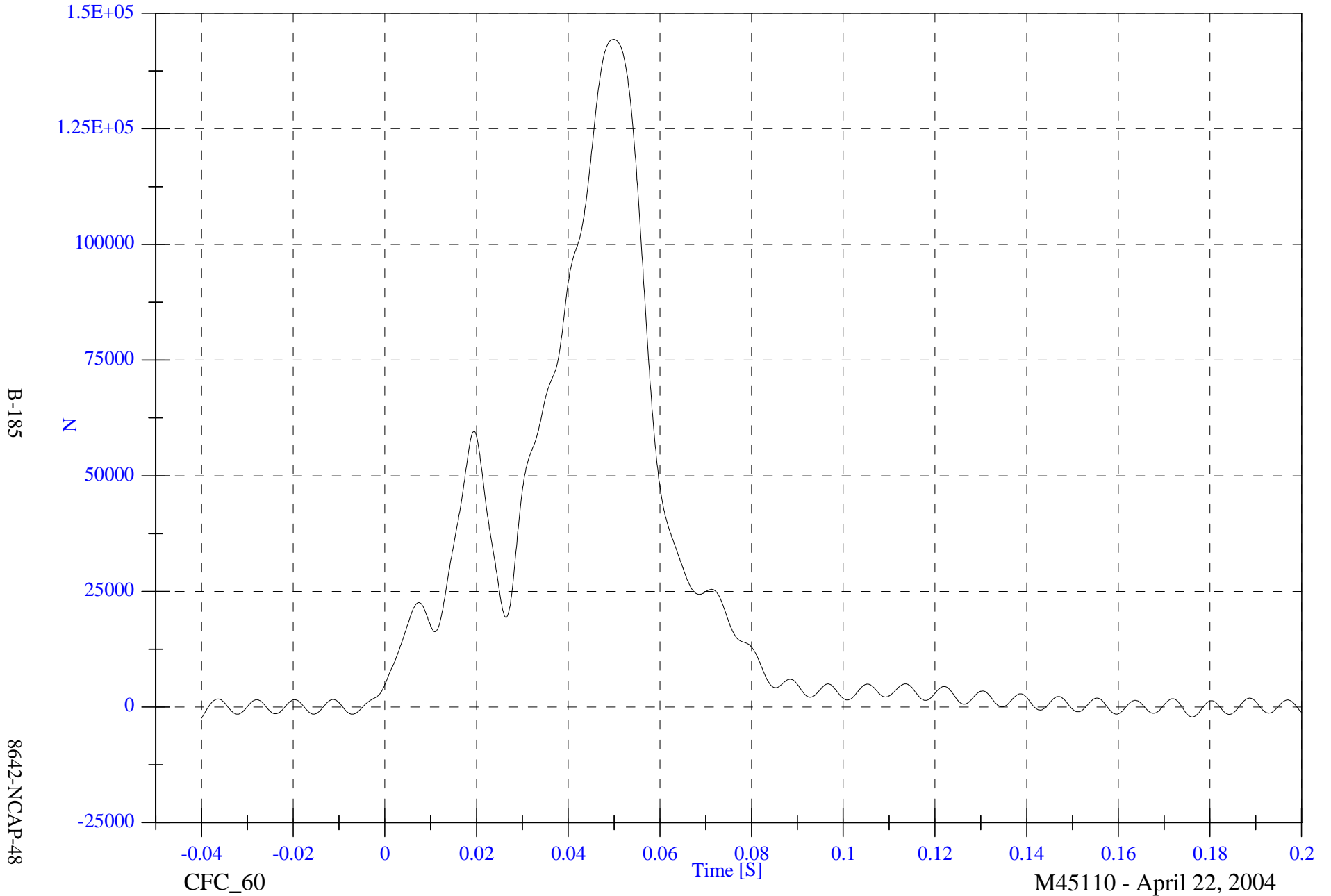
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 144311.2 [N] at 0.050 [S]

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

Min: -2389.6 [N] at -0.040 [S]



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8642-NCAP-48

CFC_60

Time [S]

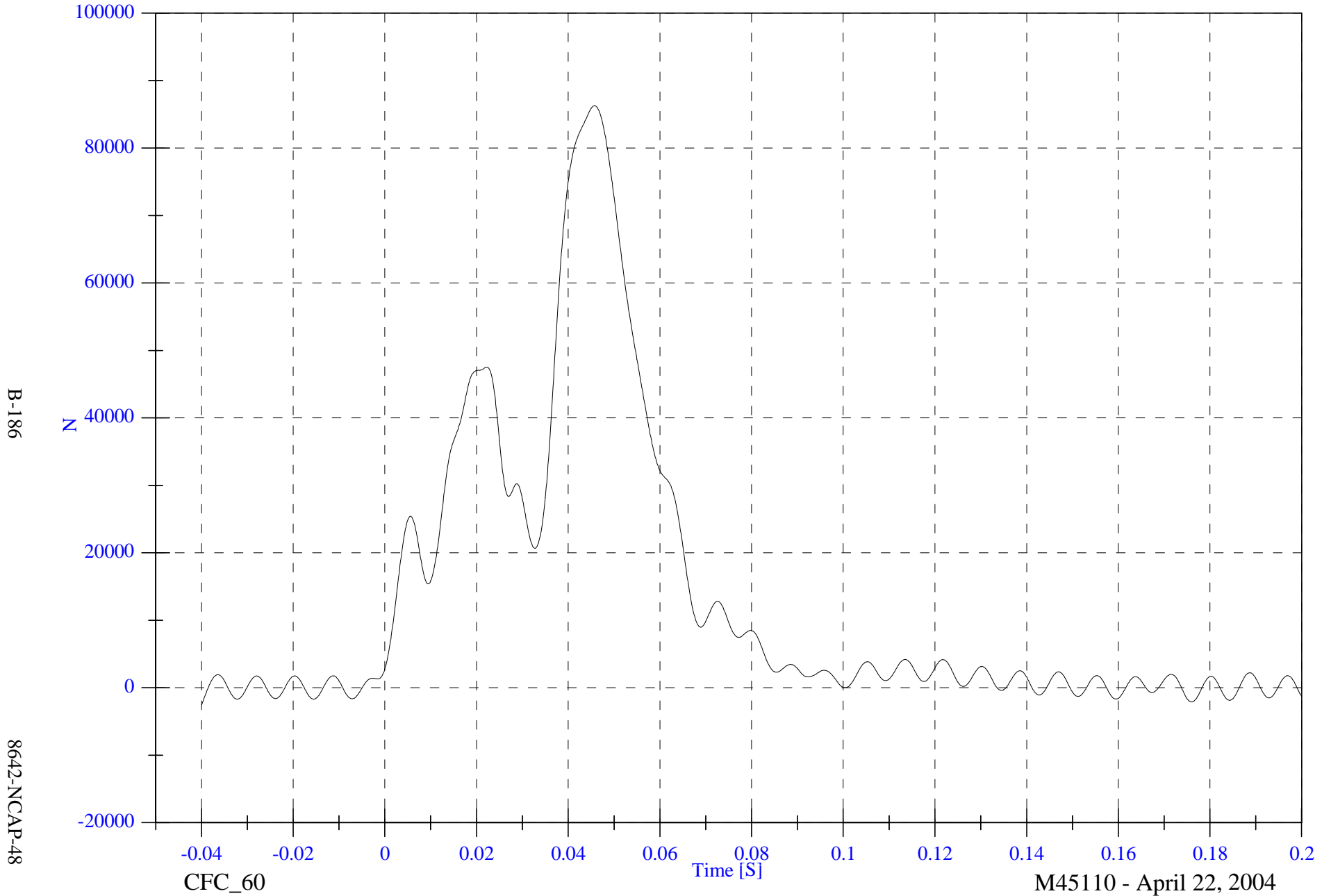
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

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

Max: 86277.3 [N] at 0.046 [S]

Min: -2566.0 [N] at -0.040 [S]



B-186

8642-NCAP-48

CFC_60

Time [S]

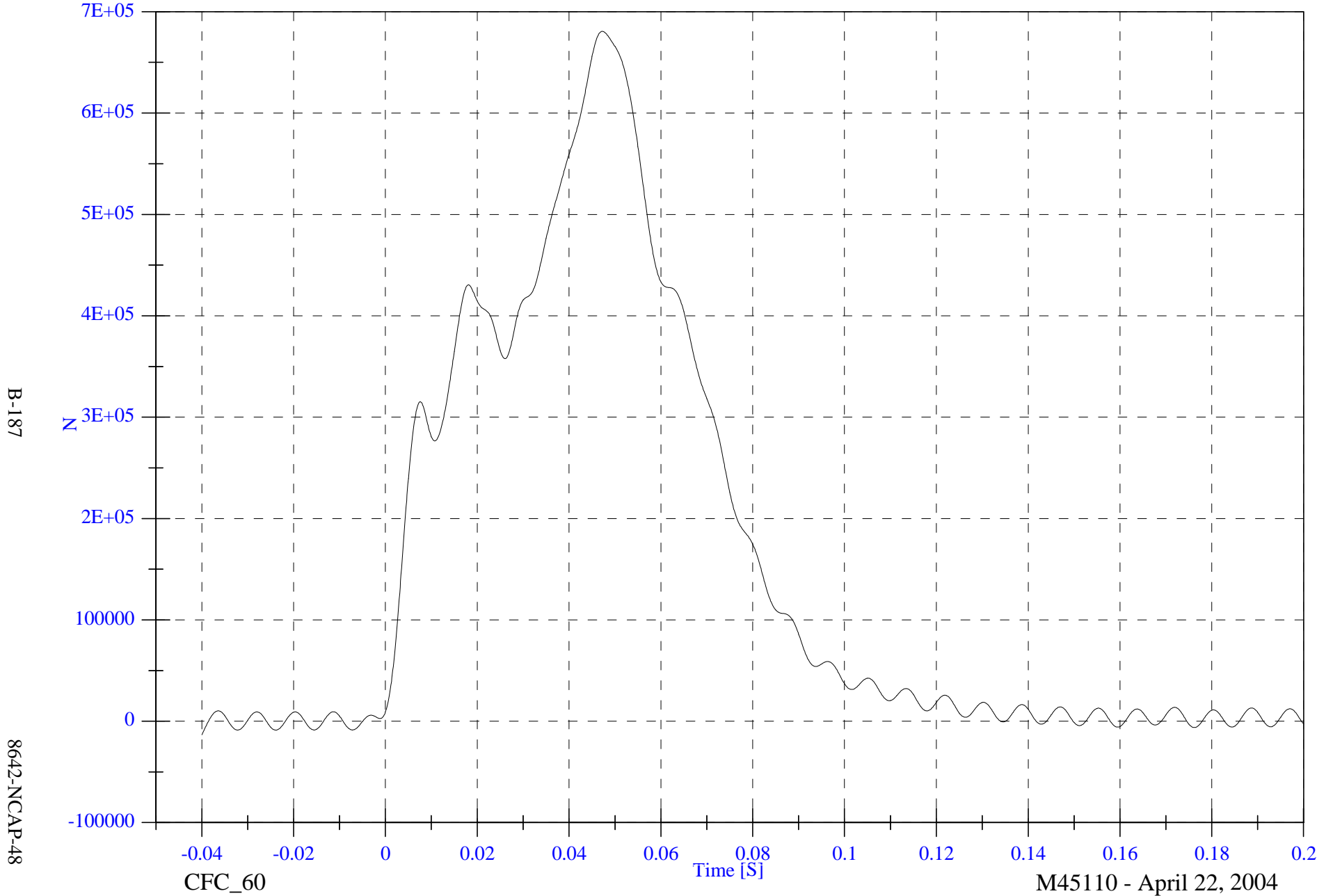
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 680677.9 [N] at 0.047 [S]

Total Load Cell Sum (All 6 Groups)

Min: -13349.1 [N] at -0.040 [S]



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8642-NCAP-48

CFC_60

Time [S]

M45110 - April 22, 2004

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:

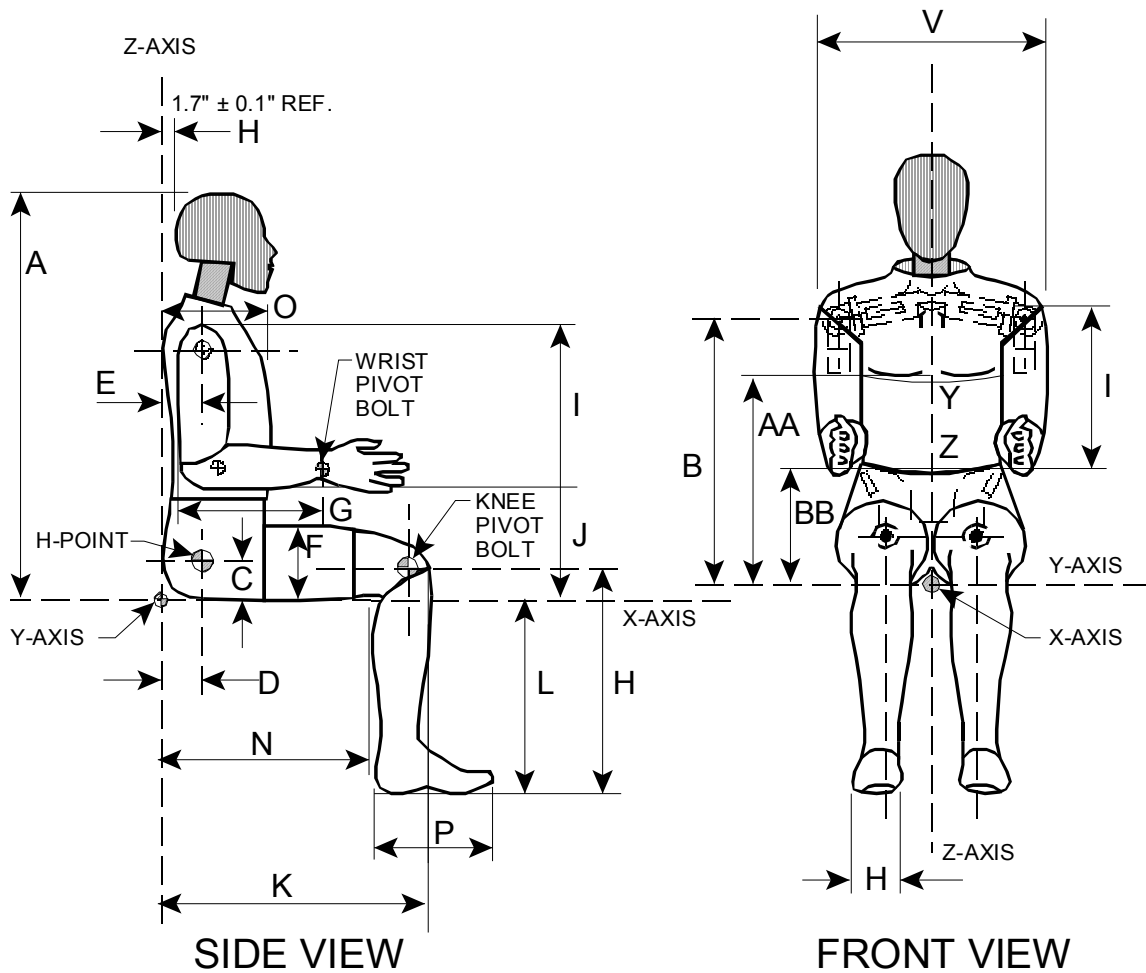
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	150	3/25/2004
#2/Right Front Passenger	245	3/25/2004

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 Indicant Testing Final Report No. 6525-V-1.

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS
SPECIFICATIONS



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

PART 572E
HEAD DROP TEST

Dummy Serial Number 150
Sequential Test Number 1
Date 03-10-04
Workfile 150H 03-10-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	37.0
Peak Resultant Acceleration	225-275 G's	246.14
Peak Lateral Acceleration	15 G's Max	11.13
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	150	
Sequential Test Number	1	
Date	03-11-04	6 Axis Neck Transducer
Workfile	150NF 03-11-04	

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	22.82
Pendulum Deceleration 10 ms	22.50 - 27.50 G's	25.35
20 ms	17.60 - 22.60 G's	19.87
30 ms	12.50 - 18.50 G's	14.08
Max Pendulum G's Above 30 ms	29 G's Max	14.35
Deceleration - Time Curve Decay Time to 5 G's	34 - 42 ms	39.80
D Plane Rotation Max	64 - 78 Deg	69.12
Time	57 - 64 ms	58.9
Moment About Occipital Max	65 - 80 Ft-Lbs	71.13
Condyle Time	47 - 58 ms	52.5
Rotation Angle - Time Curve Decay Time to Zero	113 - 128 ms	113.0
Positive Moment - Time Curve Decay Time to Zero	97 - 107 ms	105.6

Remarks:

Laboratory Technician: _____ B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 150
Sequential Test Number 1
Date 03-25-04
Workfile 150T 03-25-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	28.0
Pendulum Velocity	21.6 - 22.4 Ft/s	22.23
Maximum Deflection	2.50 - 2.86 in	2.53
Maximum Resistive Force	1160 - 1325 Lbs	1317.01
Internal Hysteresis	69 - 85 %	72.78

Remarks:

Laboratory Technician:

_____ B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 150
 Sequential Test Number 1
 Date 03-25-04
 Workfile 150LF 03-25-04 / 150RF 03-25-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	29.0
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1135.37
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	29.0
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1121.02

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 150
Sequential Test Number 1
Date 03-25-04

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			29
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	34.0
Chest Depth	O	8.4 - 9.0 in	8.5
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	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.8
Knee Pivot Height	M	19.1 - 19.7 in	19.6
Foot Length	P	9.9 - 10.5 in	10.2
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.7
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
Elbow Rest Height	J	7.5 - 8.3 in	8.1
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number 245
Sequential Test Number 1
Date 03-10-04
Workfile 245H2 03-10-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	37.0
Peak Resultant Acceleration	225-275 G's	242.28
Peak Lateral Acceleration	15 G's Max	4.87
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	245	
Sequential Test Number	1	
Date	03-11-04	6 Axis Neck Transducer
Workfile	245NF 03-11-04	

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	22.63
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.54
	20 ms	17.60 - 22.60 G's	22.17
	30 ms	12.50 - 18.50 G's	15.67
Max Pendulum G's Above 30 ms		29 G's Max	15.67
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	41.00
D Plane Rotation	Max	64 - 78 Deg	65.87
	Time	57 - 64 ms	58.20
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	908.99
	Time	47 - 58 ms	49.90
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	113.10
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.30

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	245	
Sequential Test Number	1	
Date	03-12-04	6 Axis Neck Transducer
Workfile	245NE 03-12-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	36.0
Impact Velocity		19.50 - 20.30 Ft/s	19.66
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	20.69
	20 ms	14.00 - 19.00 G's	18.79
	30 ms	11.00 - 16.00 G's	14.68
Max Pendulum G's Above 30 ms		22 G's Max	14.68
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	38.10
D Plane Rotation	Max	81 - 106 Deg	88.52
	Time	72 - 82 ms	72.70
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-593.01
	Time	65 - 79 ms	67.80
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	149.70
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	130.80

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 245
Sequential Test Number 1
Date 03-24-04
Workfile 245T2 03-24-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	72.0
Relative Humidity	10% - 70%	26.0
Pendulum Velocity	21.6 - 22.4 Ft/s	22.01
Maximum Deflection	2.50 - 2.86 in	2.62
Maximum Resistive Force	1160 - 1325 Lbs	1238.66
Internal Hysteresis	69 - 85 %	72.69

Remarks:

Laboratory Technician:

_____ B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 245
 Sequential Test Number 1
 Date 03-25-04
 Workfile 245LF 03-25-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	29.0
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1106.67
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	29.0
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1079.96

Remarks:

Laboratory Technician:

_____ B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 245
 Sequential Test Number 1
 Date 03-25-04

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			29
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	34.0
Chest Depth	O	8.4 - 9.0 in	8.5
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	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.2
Foot Length	P	9.9 - 10.5 in	10.2
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 150)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P17531	11/21/2003	5/21/2004
	X Arm Z	ENDEVCO	AC-P14965	11/21/2003	5/21/2004
	Y Arm X	ENDEVCO	AC-P17563	11/21/2003	5/21/2004
	Y Arm Z	ENDEVCO	AC-P18551	11/21/2003	5/21/2004
	Z Arm X	ENDEVCO	AC-P17539	11/21/2003	5/21/2004
	Z Arm Y	ENDEVCO	AC-P18718	11/21/2003	5/21/2004
Head	X	ENDEVCO	AC-P16832	11/20/2003	5/20/2004
	Y	ENDEVCO	AC-P16591	11/20/2003	5/20/2004
	Z	ENDEVCO	AC-P16286	11/20/2003	5/20/2004
Head	X (R)	ENDEVCO	AC-P17141	11/20/2003	5/20/2004
	Y (R)	ENDEVCO	AC-P17242	11/20/2003	5/20/2004
	Z (R)	ENDEVCO	AC-P17152	11/20/2003	5/20/2004
Neck Load Cell	X	DENTON	LC-1633FX	8/13/2003	2/11/2004
	Y	DENTON	LC-1633FY	8/13/2003	2/11/2004
	Z	DENTON	LC-1633FZ	8/13/2003	2/11/2004
Neck Moment	X	DENTON	LC-1633MX	8/13/2003	2/11/2004
	Y	DENTON	LC-1633MY	8/13/2003	2/11/2004
	Z	DENTON	LC-1633MZ	8/13/2003	2/11/2004
Chest	X	ENDEVCO	AC-P19216	11/26/2003	5/26/2004
	Y	ENDEVCO	AC-P16576	12/1/2003	5/31/2004
	Z	ENDEVCO	AC-P15534	11/26/2003	5/26/2004
Chest	X (R)	ENDEVCO	AC-P23303	11/26/2003	5/26/2004
	Y (R)	ENDEVCO	AC-P15526	12/1/2003	5/31/2004
	Z (R)	ENDEVCO	AC-P19255	12/1/2003	5/31/2004
Chest Deflection	X	SERVO	DS-150	12/19/2003	6/18/2004
Pelvic	X	ENDEVCO	AC-P21393	12/4/2003	6/3/2004
	Y	ENDEVCO	AC-P23788	12/4/2003	6/3/2004
	Z	ENDEVCO	AC-P16845	12/4/2003	6/3/2004

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 150)	Manufacturer	Serial #	Calibration		
			Last	Next	
Left Femur Load Cell Fz	DENTON	LC-255	12/3/2003	6/2/2004	
Right Femur Load Cell Fz	GSE	LC-420	12/3/2003	6/2/2004	
Left Upper Tibia	Mx	DENTON	LC-199MX	9/26/2003	3/26/2004
	My	DENTON	LC-199MY	9/26/2003	3/26/2004
Left Lower Tibia	Fz	DENTON	LC-128FZ	9/26/2003	3/26/2004
	Mx	DENTON	LC-128MX	9/26/2003	3/26/2004
	My	DENTON	LC-128MY	9/26/2003	3/26/2004
Right Upper Tibia	Mx	DENTON	LC-200MX	9/26/2003	3/26/2004
	My	DENTON	LC-200MY	9/26/2003	3/26/2004
Right Lower Tibia	Fz	DENTON	LC-129FZ	9/26/2003	3/26/2004
	Mx	DENTON	LC-129MX	9/26/2003	3/26/2004
	My	DENTON	LC-129MY	9/26/2003	3/26/2004
Left Foot Rear	X	ENDEVCO	AC-J30491	1/16/2004	7/16/2004
	Z	ENDEVCO	AC-J31026	1/16/2004	7/16/2004
Left Foot Front	Z	ENDEVCO	AC-J32831	1/16/2004	7/16/2004
Right Foot Rear	X	ENDEVCO	AC-J32838	1/16/2004	7/16/2004
	Z	ENDEVCO	AC-J32174	11/24/2003	5/24/2004
Right Foot Front	Z	ENDEVCO	AC-J32143	11/24/2003	5/24/2004
Lap Belt Load Cell	FIRST TECHNOLOGY	LC-155	9/16/2003	3/16/2004	
Shoulder Belt Load Cell	FIRST TECHNOLOGY	LC-180	10/10/2003	4/9/2004	

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 245)	Manufacturer	Serial #	Calibration		
			Last	Next	
Head 9 Array	X Arm Y	ENDEVCO	AC-P32453	1/22/2004	7/22/2004
	X Arm Z	ENDEVCO	AC-P32289	1/22/2004	7/22/2004
	Y Arm X	ENDEVCO	AC-P32146	1/23/2004	7/23/2004
	Y Arm Z	ENDEVCO	AC-P32225	1/23/2004	7/23/2004
	Z Arm X	ENDEVCO	AC-P32217	1/23/2004	7/23/2004
	Z Arm Y	ENDEVCO	AC-P32276	1/23/2004	7/23/2004
Head	X	ENDEVCO	AC-P32464	1/22/2004	7/22/2004
	Y	ENDEVCO	AC-P32295	1/22/2004	7/22/2004
	Z	ENDEVCO	AC-P32227	1/22/2004	7/22/2004
Head	X (R)	ENDEVCO	AC-P32139	1/22/2004	7/22/2004
	Y (R)	ENDEVCO	AC-P32197	1/22/2004	7/22/2004
	Z (R)	ENDEVCO	AC-P32455	11/12/2003	5/12/2004
Neck Load Cell	X	DENTON	LC-1634FX	8/18/2003	2/16/2004
	Y	DENTON	LC-1634FY	8/18/2003	2/16/2004
	Z	DENTON	LC-1634FZ	8/18/2003	2/16/2004
Neck Moment	X	DENTON	LC-1634MX	8/18/2003	2/16/2004
	Y	DENTON	LC-1634MY	8/18/2003	2/16/2004
	Z	DENTON	LC-1634MZ	8/18/2003	2/16/2004
Chest	X	ENDEVCO	AC-P17235	11/26/2003	5/26/2004
	Y	ENDEVCO	AC-P23640	11/24/2003	5/24/2004
	Z	ENDEVCO	AC-P17285	11/26/2003	5/26/2004
Chest	X (R)	ENDEVCO	AC-P17283	11/26/2003	5/26/2004
	Y (R)	ENDEVCO	AC-P16863	11/24/2003	5/24/2004
	Z (R)	ENDEVCO	AC-P14393	11/26/2003	5/26/2004
Chest Deflection	X	SERVO	DS-245	12/19/2003	6/18/2004
Pelvic	X	ENDEVCO	AC-P18739	11/26/2003	5/26/2004
	Y	ENDEVCO	AC-P19212	11/26/2003	5/26/2004
	Z	ENDEVCO	AC-P18738	11/26/2003	5/26/2004

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 245)	Manufacturer	Serial #	Calibration		
			Last	Next	
Left Femur Load Cell	Fz	GSE	LC-657	12/3/2003	6/2/2004
Right Femur Load Cell	Fz	GSE	LC-653	12/3/2003	6/2/2004
Left Upper Tibia	Mx	DENTON	LC-265MX	9/26/2003	3/26/2004
	My	DENTON	LC-265MY	9/26/2003	3/26/2004
Left Lower Tibia	Fz	DENTON	LC-178FZ	9/26/2003	3/26/2004
	Mx	DENTON	LC-178MX	9/26/2003	3/26/2004
	My	DENTON	LC-178MY	9/26/2003	3/26/2004
Right Upper Tibia	Mx	DENTON	LC-264MX	9/26/2003	3/26/2004
	My	DENTON	LC-264MY	9/26/2003	3/26/2004
Right Lower Tibia	Fz	DENTON	LC-177FZ	9/26/2003	3/26/2004
	Mx	DENTON	LC-177MX	9/26/2003	3/26/2004
	My	DENTON	LC-177MY	9/26/2003	3/26/2004
Left Foot Rear	X	ENDEVCO	AC-J20084	1/30/2004	7/30/2004
	Z	ENDEVCO	AC-AGRP4	1/30/2004	7/30/2004
Left Foot Front	Z	ENDEVCO	AC-J28727	1/30/2004	7/30/2004
Right Foot Rear	X	ENDEVCO	AC-AJ7F6	1/30/2004	7/30/2004
	Z	ENDEVCO	AC-J27079	1/30/2004	7/30/2004
Right Foot Front	Z	ENDEVCO	AC-J23997	1/30/2004	7/30/2004
Lap Belt Load Cell		FIRST TECHNOLOGY	LC-156	9/16/2003	3/16/2004
Shoulder Belt Load Cell		FIRST TECHNOLOGY	LC-174	10/10/2003	4/9/2004

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	GS SENSORS	AC-9440-023	12/3/2003	6/2/2004
Right Rear Seat Crossmember X	GS SENSORS	AC-9444-038	12/3/2003	6/2/2004
Top of Engine	GS SENSORS	AC-9440-011	12/1/2003	5/31/2004
Bottom of Engine	ICS	AC-8084-010	12/11/2003	6/10/2004
Right Disc Brake Caliper	GS SENSORS	AC-9440-024	12/2/2003	6/1/2004
Instrument Panel	GS SENSORS	AC-9440-017	12/1/2003	5/31/2004
Left Disc Brake Caliper	GS SENSORS	AC-9440-039	12/3/2003	6/2/2004
Left Seat Rear Crossmember Z	GS SENSORS	AC-9440-046	12/3/2003	6/2/2004
Right Seat Rear Crossmember Z	GS SENSORS	AC-9440-029	12/3/2003	6/2/2004

REPORT NUMBER: CAL-04-12

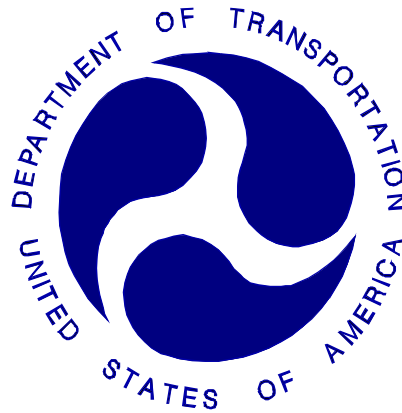
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

EVENFLO VANGUARD 5 WITH LATCH AND TOP TETHER
COSCO TOURIVA / REGAL RIDE OVERHEAD SHIELD WITH LATCH AND TOP TETHER

NHTSA NUMBER: M45110

GENERAL DYNAMICS REPORT NUMBER: 8642-NCAP-48

GENERAL DYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
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April 22, 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-04-12		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of Evenflo Vanguard 5 LATCH and Top Tether Forward Facing Convertible NHTSA No.: M45110				5. Report Date April 22, 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-48	
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 April 2004 – May 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 forward facing convertible was secured in Position 3 (P3) with the LATCH system and top tether. A Cosco Touriva / Regal Ride Overhead Shield (OS) forward facing convertible 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 April 22, 2004.					
ATD Position		HIC 15		HIC 36	
P3 (Right Rear) (044)		445.6		810.2	
P4 (Left Rear) (142)		366.0		741.2	
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 146	
22. Price					

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SECTION 1

PURPOSE AND SUMMARY OF TEST M45110

The purpose of this test was to obtain CRS performance data in a frontal impact NCAP condition. The 56.17 kph NCAP frontal impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

An Evenflo Vanguard 5 (5-point belt) forward facing convertible CRS and a 3 year old child dummy (serial no. 044) was secured in the right rear occupant position (Position 3 or P3) with the LATCH system and top tether. A Cosco Touriva / Regal Ride OS (overhead shield) forward facing convertible CRS and a 3 year old child dummy (serial no. 142) was secured in the left rear occupant position (Position 4 or P4) with the LATCH system and top tether. 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 445.6, maximum chest deceleration over 3 ms was 48.6 g's. The left rear child dummy's HIC (15 ms) was 366.0, maximum chest deceleration over 3 ms was 49.2 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 Forward Facing Convertible with LATCH and Top Tether	Cosco Touriva / Regal Ride OS Forward Facing Convertible with LATCH and Top Tether

Number of Data Channels _____ 54
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)	0	None
P2 (Right Front)	0	None
P3 (Right Rear)	0	None
P4 (Left Rear)	0	None

VISIBLE DUMMY CONTACT POINTS

	Position #3 CRS	Position #4 CRS
Head Contact:	Chin to the chest; Back of the head to the top of the CRS and the bottom of the P3 head restraint	Chin to the chest; Face to the CRS overhead shield; Back of the head to the top of the CRS
Upper Torso Contact:	Chin to chest	None
Lower Torso Contact:	None	None
Left Knee Contact:	No knee contact; Left foot to the P2 seat back	None
Right Knee Contact:	No knee contact; Right foot to the P2 seat back	No knee contact; Right foot to inboard edge of the P1 seat back

DATA SHEET NO. 2

CRS PARAMETER DATA

CRS: Evenflo Vanguard 5 and Cosco Touriva / Regal Ride OS with LATCH and Top Tether

NHTSA No. M45110

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Delivered Weight of Vehicle with Maximum Fluids = 1994.0 kg (A)

AS TESTED WEIGHT OF VEHICLE

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

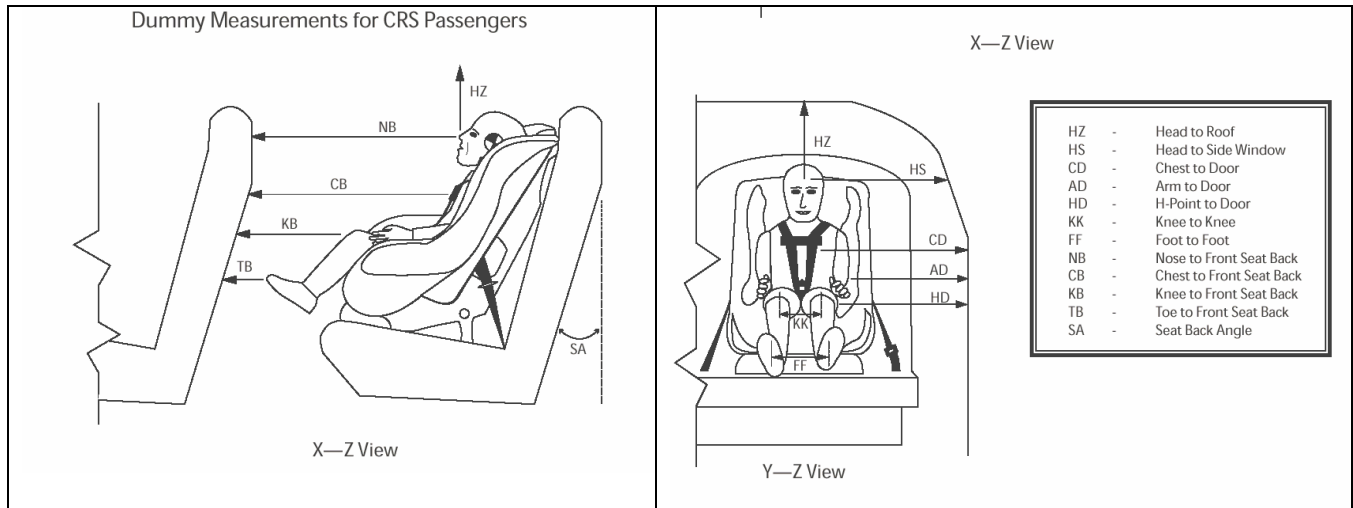
Left Front	=	<u>590.0</u>	kg	Left Rear	=	<u>581.5</u>	kg
Right Front	=	<u>533.0</u>	kg	Right Rear	=	<u>572.5</u>	kg
TOTAL FRONT	=	<u>1123.0</u>	kg	TOTAL REAR	=	<u>1154.0</u>	kg
TOTAL TEST WEIGHT =		<u>2277.0</u>	kg				

DATA SHEET NO. 3

CHILD DUMMY POSITIONING IN VEHICLE

CRS: Evenflo Vanguard 5 and Cosco Touriva / Regal Ride OS with LATCH and Top Tether

NHTSA No. M45110



Measurement	P3 CRS (044)	P4 CRS (142)
SA	13.0	13.0
HS	390	535
CD	377	512
AD	260	384
HD	231 (to arm rest)	374 (to arm rest)
HZ	354	348
NB	592	567
CB	583	525
KK	138	138
FF	125	140
KB – LEFT	384	350
KB – RIGHT	384	335
TB – LEFT	103	94
TB – RIGHT	97	78

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 Cosco Touriva / Regal Ride OS with LATCH and Top Tether

NHTSA No. M45110

DESCRIPTION	Unit	MAXIMUM VALUE							
		Position #3				Position #4			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head X	g	59.3	192.4	-34.3	98.7	5.0	199.9	-48.7	98.3
Head Y	g	1.5	135.0	-5.3	193.2	0.9	55.1	-3.4	99.0
Head Z	g	58.9	89.3	-12.8	45.7	54.7	78.6	-8.0	50.9
Head Resultant	g	66.0	190.7	-	-	60.5	78.6	-	-
Head Rear Z	g	68.0	91.5	-25.5	46.6	67.7	84.1	-19.0	51.5
Upper Neck Fx	N	1.4	-48.9	-928.9	105.3	2.2	-16.3	-789.0	90.7
Upper Neck Fy	N	118.4	102.1	-32.3	199.9	16.2	88.5	-73.5	68.1
Upper Neck Fz	N	1407.6	95.4	-341.4	46.2	1684.4	88.1	-221.4	51.2
Upper Neck F Resultant	N	1629.6	97.3	-	-	1853.4	89.1	-	-
Upper Neck Mx	N-m	3.6	179.7	-6.7	110.0	2.8	113.5	-5.5	87.9
Upper Neck My	N-m	4.5	153.2	-18.3	106.1	6.2	144.0	-10.7	60.4
Upper Neck Mz	N-m	1.6	60.3	-1.1	160.8	3.1	109.5	-1.8	150.3
Upper Neck M Resultant	N-m	19.3	107.1	-	-	10.8	60.4	-	-
Lower Neck Fx	N	96.1	193.2	-800.9	97.7	103.3	197.4	-1373.8	89.3
Lower Neck Fy	N	46.1	192.8	-141.0	84.8	204.1	74.0	-75.2	189.7
Lower Neck Fz	N	881.5	89.4	-437.5	46.0	676.3	76.1	-324.0	51.2
Lower Neck F Resultant	N	1104.5	90.5	-	-	1475.3	87.4	-	-
Lower Neck Mx	N-m	14.7	100.5	-4.0	141.8	0.6	27.6	-11.3	183.4
Lower Neck My	N-m	112.6	103.3	-7.5	190.6	130.2	89.3	-10.9	198.5
Lower Neck Mz	N-m	5.1	82.4	-2.1	115.9	2.7	113.4	-4.8	82.3
Lower Neck M Resultant	N-m	113.4	103.2	-	-	130.4	89.3	-	-
Chest X	g	3.5	190.0	-42.8	77.3	2.2	139.1	-46.2	79.9
Chest Y	g	6.0	78.7	-3.6	175.1	1.0	91.8	-7.7	66.8
Chest Z	g	17.7	196.4	-26.0	79.1	5.5	199.9	-25.3	54.0
Chest Resultant	g	49.8	78.2	-	-	49.7	80.1	-	-
Chest Displacement	mm	0.1	23.7	-17.9	111.6	0.0	-6.2	-17.4	73.9

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 and Cosco Touriva / Regal Ride OS with LATCH and Top Tether

NHTSA No. M45110

		MAXIMUM VALUE							
		Position #3				Position #4			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Pelvic X	g	6.6	147.4	-55.9	72.1	13.5	113.2	-50.3	71.5
Pelvic Y	g	10.8	73.3	-4.8	87.4	6.1	108.9	-10.8	69.1
Pelvic Z	g	23.1	197.1	-26.2	41.9	5.5	195.3	-31.9	95.5
Pelvic Resultant	g	59.6	72.1	-	-	54.7	70.7	-	-
Tether Belt Load	N	1030.3	97.4	-68.2	199.9	1194.7	84.8	-6.3	161.0

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 and Cosco Touriva / Regal Ride OS with LATCH and Top Tether

NHTSA No. M45110

	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	445.6	82.0	97.0	61.5	810.2	74.5	110.5	55.1
Position #4 - Left	366.0	72.8	87.8	56.9	741.2	69.8	105.8	53.1

	CLIP SUMMARY*			
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #3 - Right	48.6	76.8	79.8	433.5
Position #4 - Left	49.2	78.2	81.2	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 Cosco Touriva / Regal Ride OS with LATCH and Top Tether

NHTSA No. M45110

		MAXIMUM VALUE			
DESCRIPTION	Unit	Positive	Time (ms)	Negative	Time (ms)
P3 CRS X	g	8.6	179.0	-54.2	54.9
P3 CRS Y	g	5.2	72.5	-4.1	57.9
P3 CRS Z	g	12.5	50.1	-17.1	72.5
P3 CRS Resultant	g	54.2	54.8	0.0	-27.0
P4 CRS X	g	9.9	191.5	-60.1	63.2
P4 CRS Y	g	6.1	79.8	-5.8	88.7
P4 CRS Z	g	22.5	56.0	-18.1	68.4
P4 CRS Resultant	g	60.6	63.4	0.0	-33.3

DATA SHEET NO. 5

CRS PERFORMANCE DATA (CONTINUED)

CRS: Evenflo Vanguard 5 and Cosco Touriva / Regal Ride OS with LATCH and Top Tether

NHTSA No. M45110

POSITION #3 CRS POST-TEST INSPECTION (Serial No. 3691261 P1 22NOV03)

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. 22-130-WAL 01/05/2004 T02A)

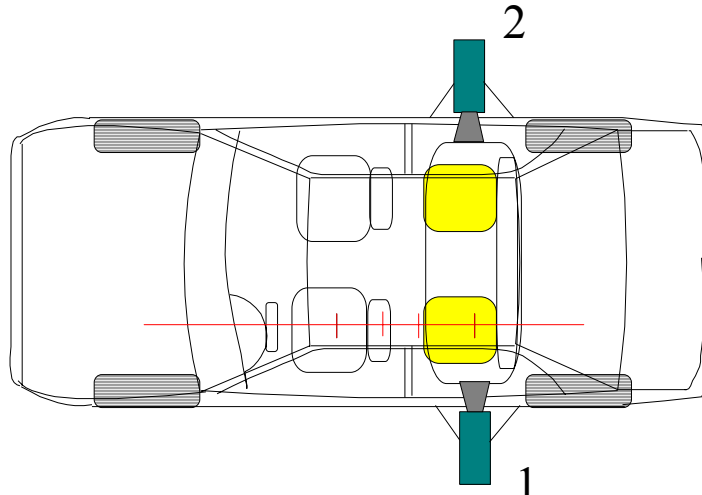
LOCATION	DAMAGE	REMARKS
Upper Tether Strap	No	None
Upper Tether Buckle	No	None
Upper Tether Hook	No	None
Vehicle Upper Tether Anchor	No	None
Lower Anchor Strap	No	None
Lower Anchor Buckle	No	None
Lower Anchor Hooks	No	None
Vehicle Lower CRS Anchors	No	None
Harness Connections	No	None
Overhead Shield	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 Cosco Touriva / Regal Ride OS with LATCH and Top Tether

NHTSA No. M45110



Camera No.	View	Coordinates (millimeters)			Angle** (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Left side CRS lateral view	970	2790	1235	-23.5	28-70	1000
2	Right side CRS lateral view	620	-92	1987	-30.0	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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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

d restraint and in the written instructions
he manufacturer.

8

Manufactured in
22-130-WAL
01/05/2004 TO2A

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



Figure 3-15: PRE-TEST LEFT SIDE VIEW OF POSITION 4 CRS



Figure 3-16: POST-TEST LEFT SIDE VIEW OF POSITION 4 CRS



Figure 3-17: PRE-TEST RIGHT SIDE VIEW OF POSITION 4 CRS



Figure 3-18: POST-TEST RIGHT SIDE VIEW OF POSITION 4 CRS



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

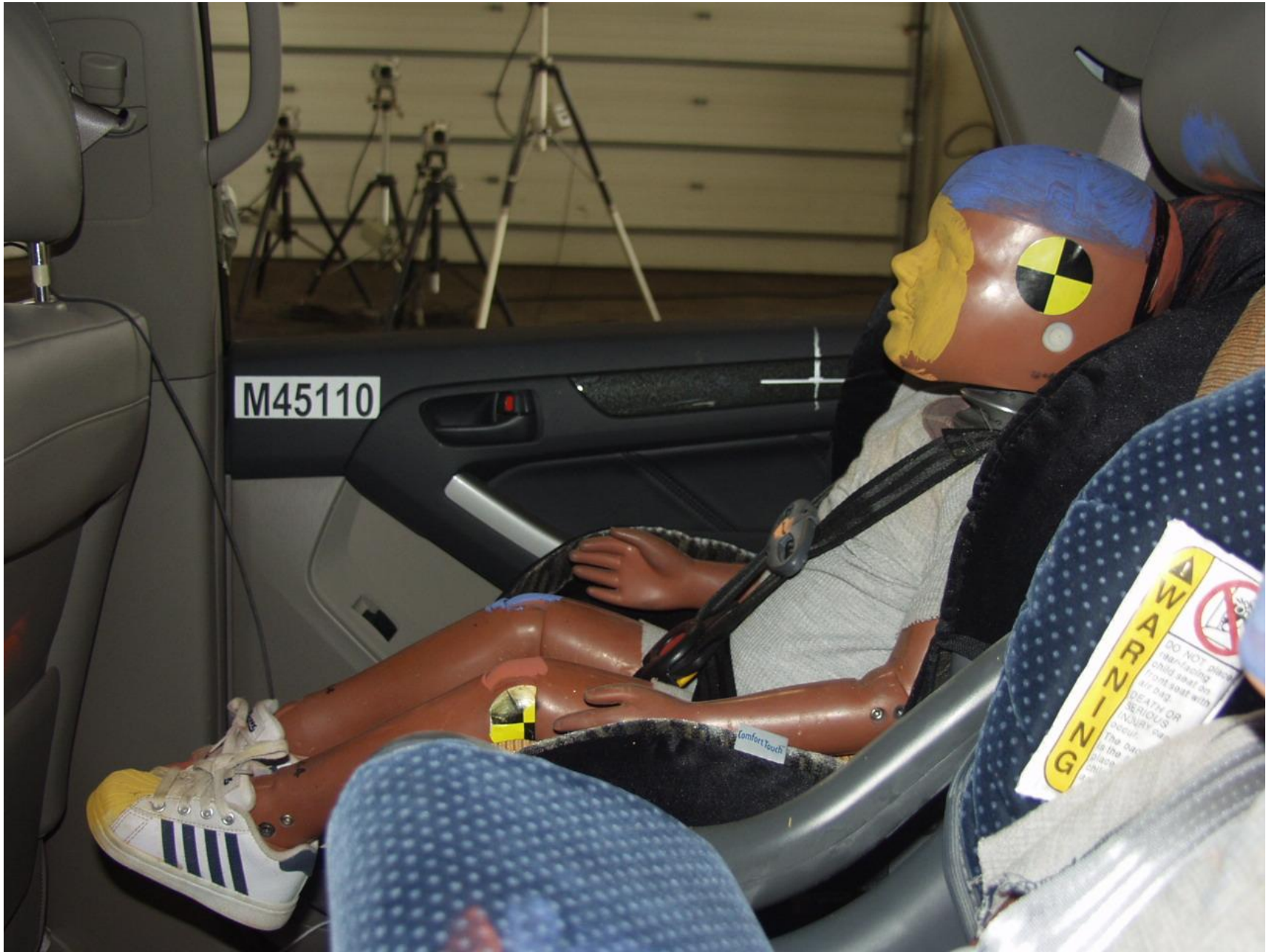


Figure 3-20: POST-TEST POSITION 3 LEFT SIDE VIEW



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

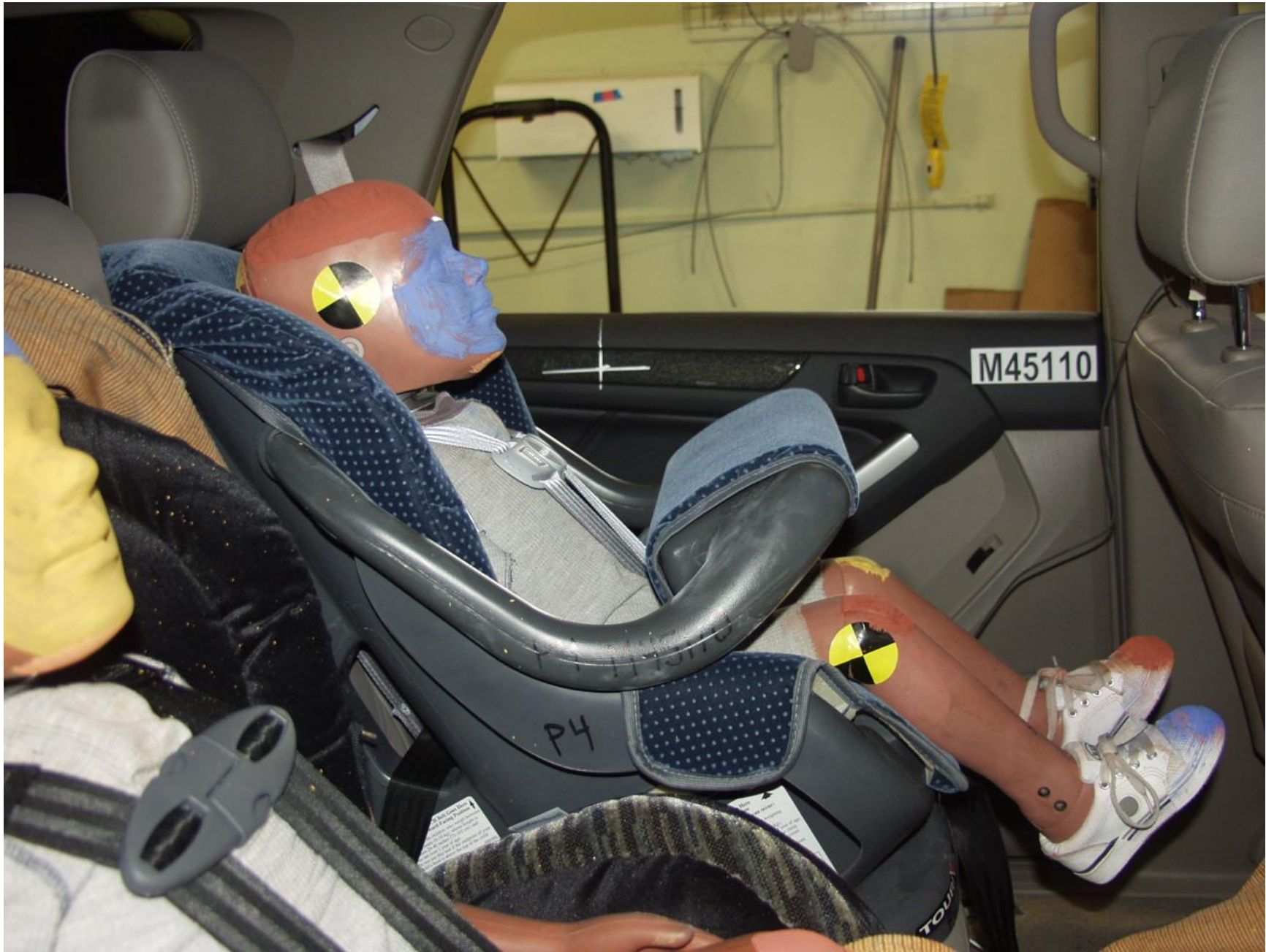


Figure 3-25: PRE-TEST POSITION 4 RIGHT SIDE VIEW



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 12 - 2004 Toyota 4Runner

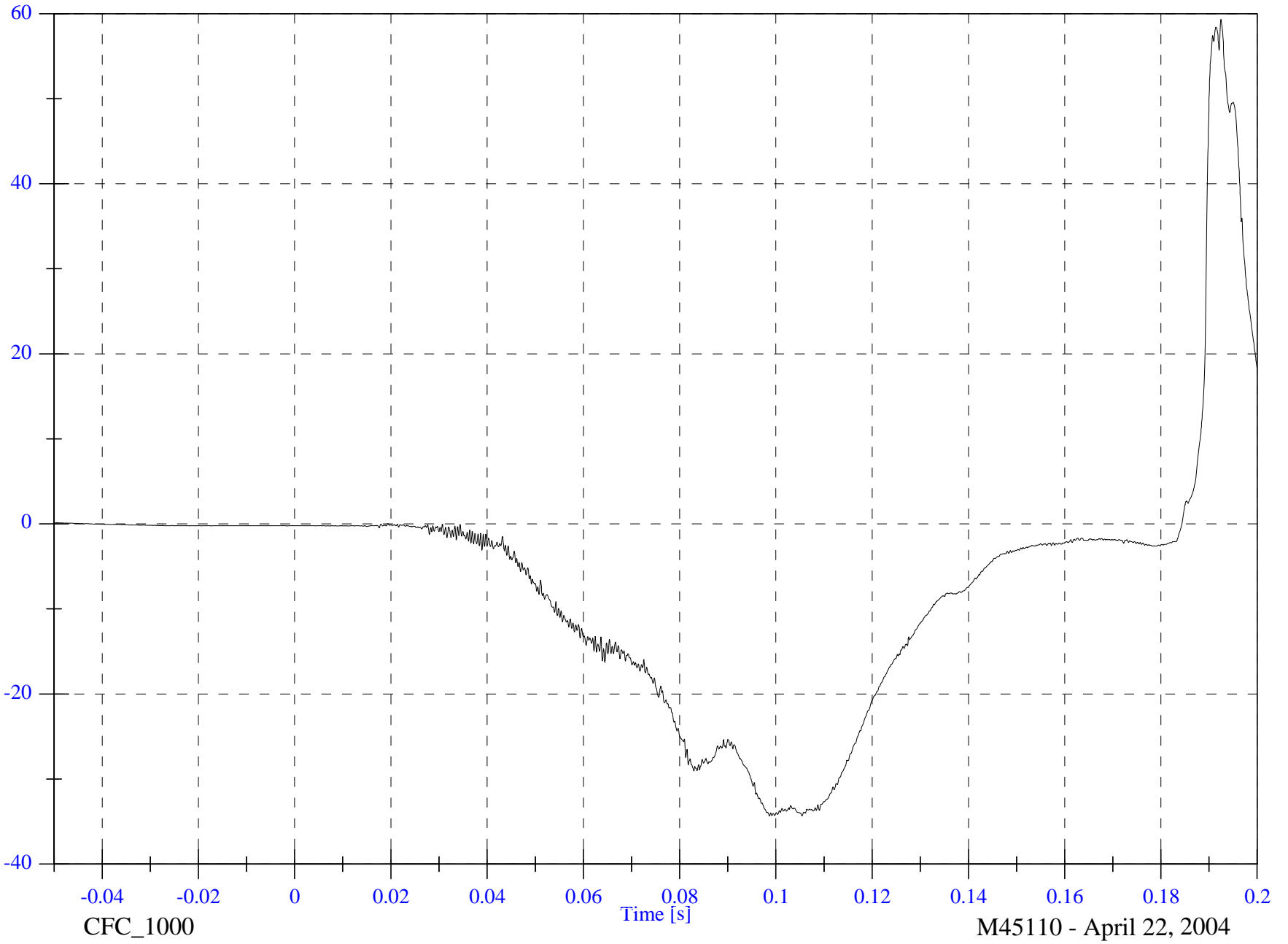
V1P3 Head x

Max: 59.3 [g] at 0.192 [s]

Min: -34.3 [g] at 0.099 [s]

4-4

g



8642-NCAP-48

CFC_1000

Time [s]

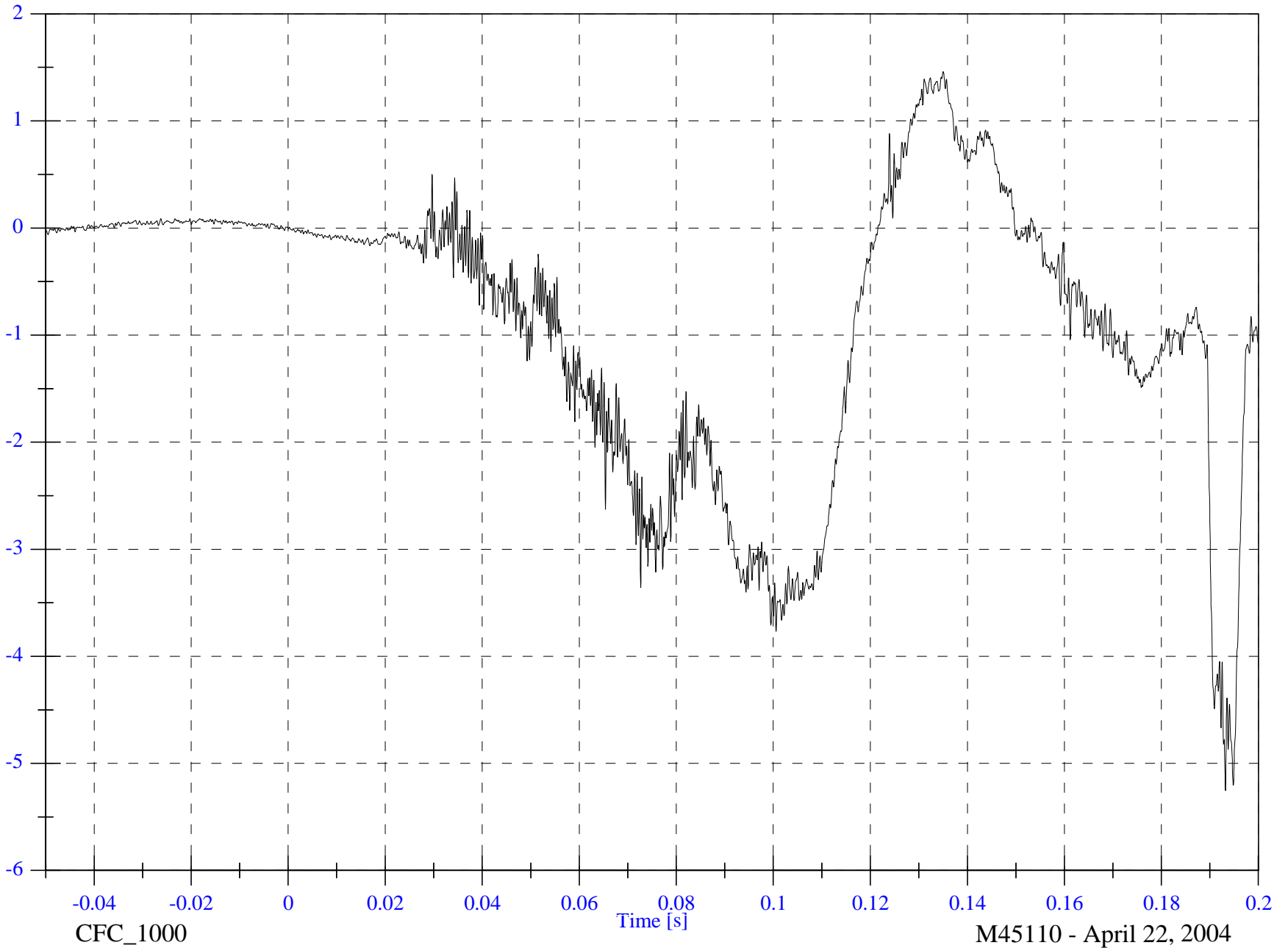
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P3 Head y

Max: 1.5 [g] at 0.135 [s]

Min: -5.3 [g] at 0.193 [s]



4-5

8642-NCAP-48

CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

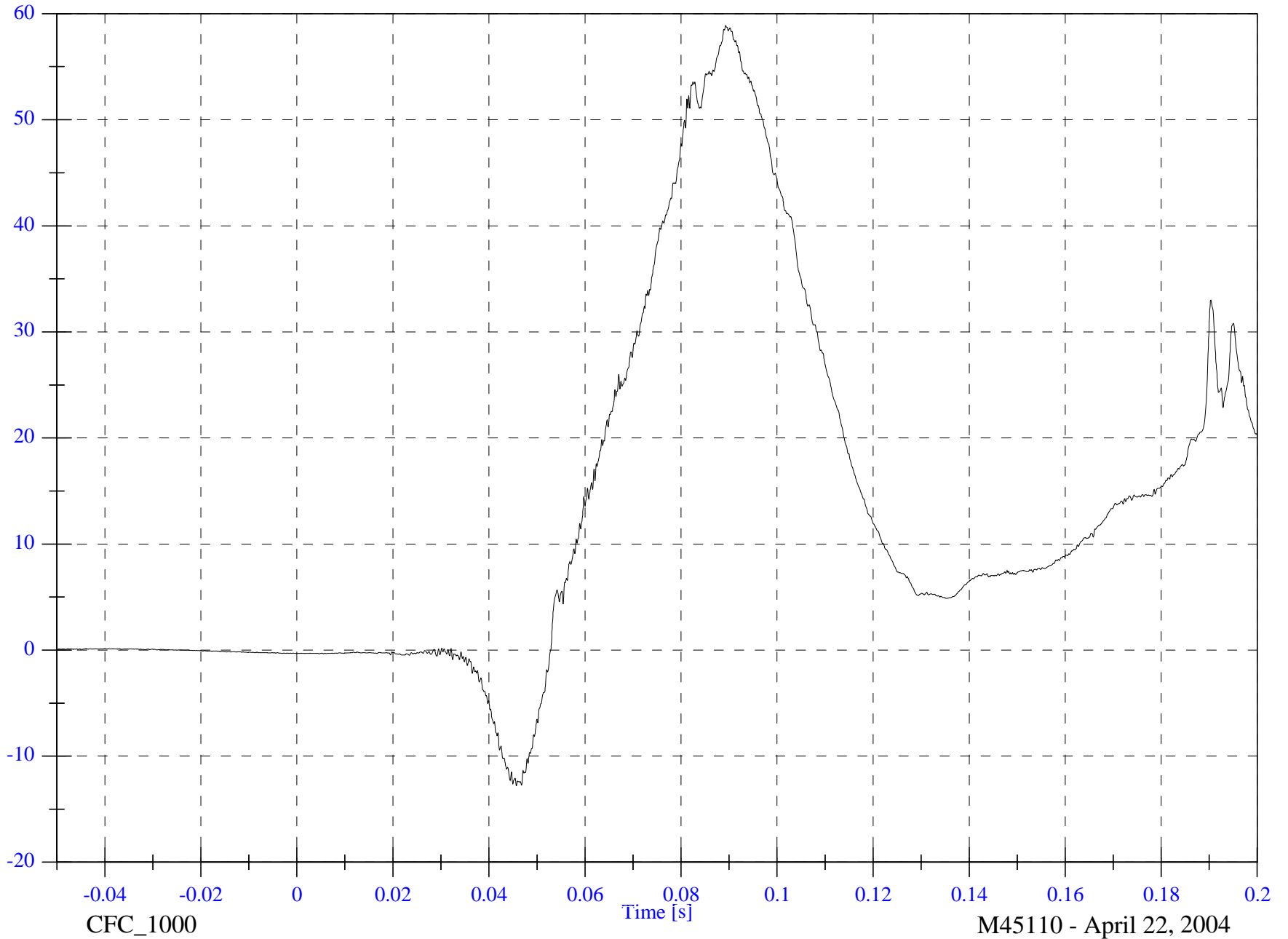
Max: 58.9 [g] at 0.089 [s]

Min: -12.8 [g] at 0.046 [s]

V1P3 Head z

4-6

g



8642-NCAP-48

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

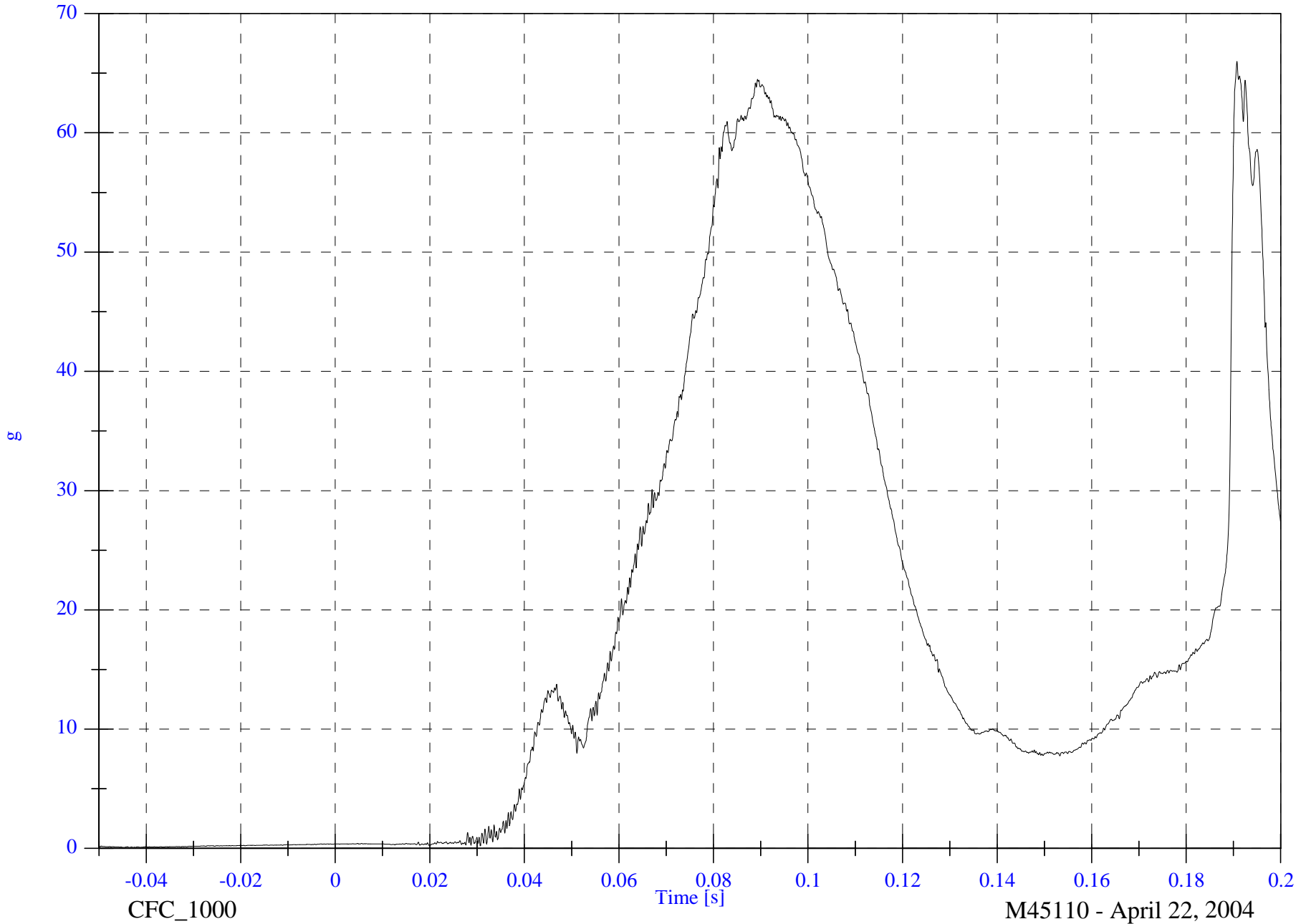
V1P3 Head Resultant

Max: 66.0 [g] at 0.191 [s]

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

4-7

8642-NCAP-48



M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

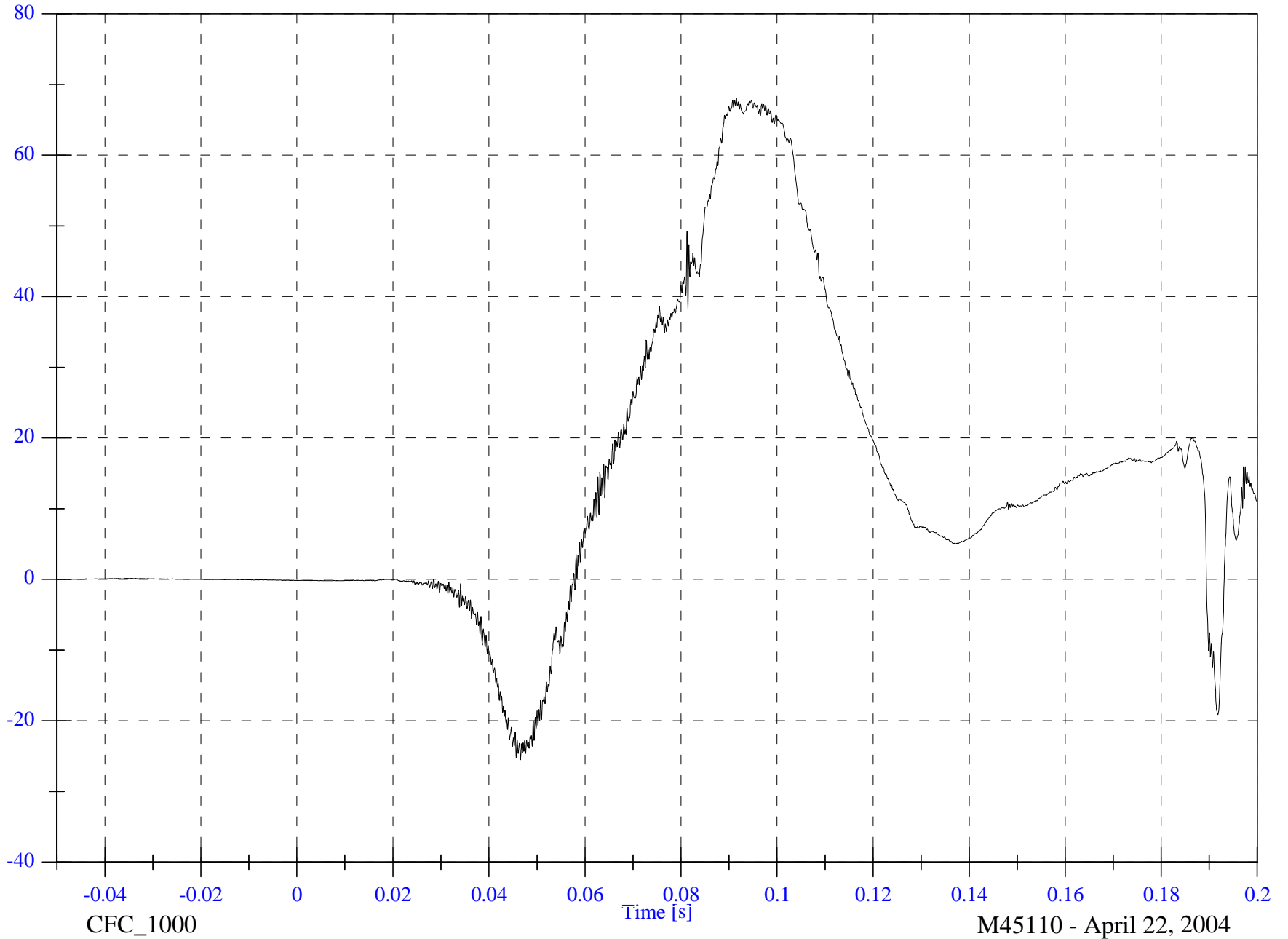
VIP3 Head Rear z

Max: 68.0 [g] at 0.092 [s]

Min: -25.5 [g] at 0.047 [s]

4-8

g



8642-NCAP-48

CFC_1000

Time [s]

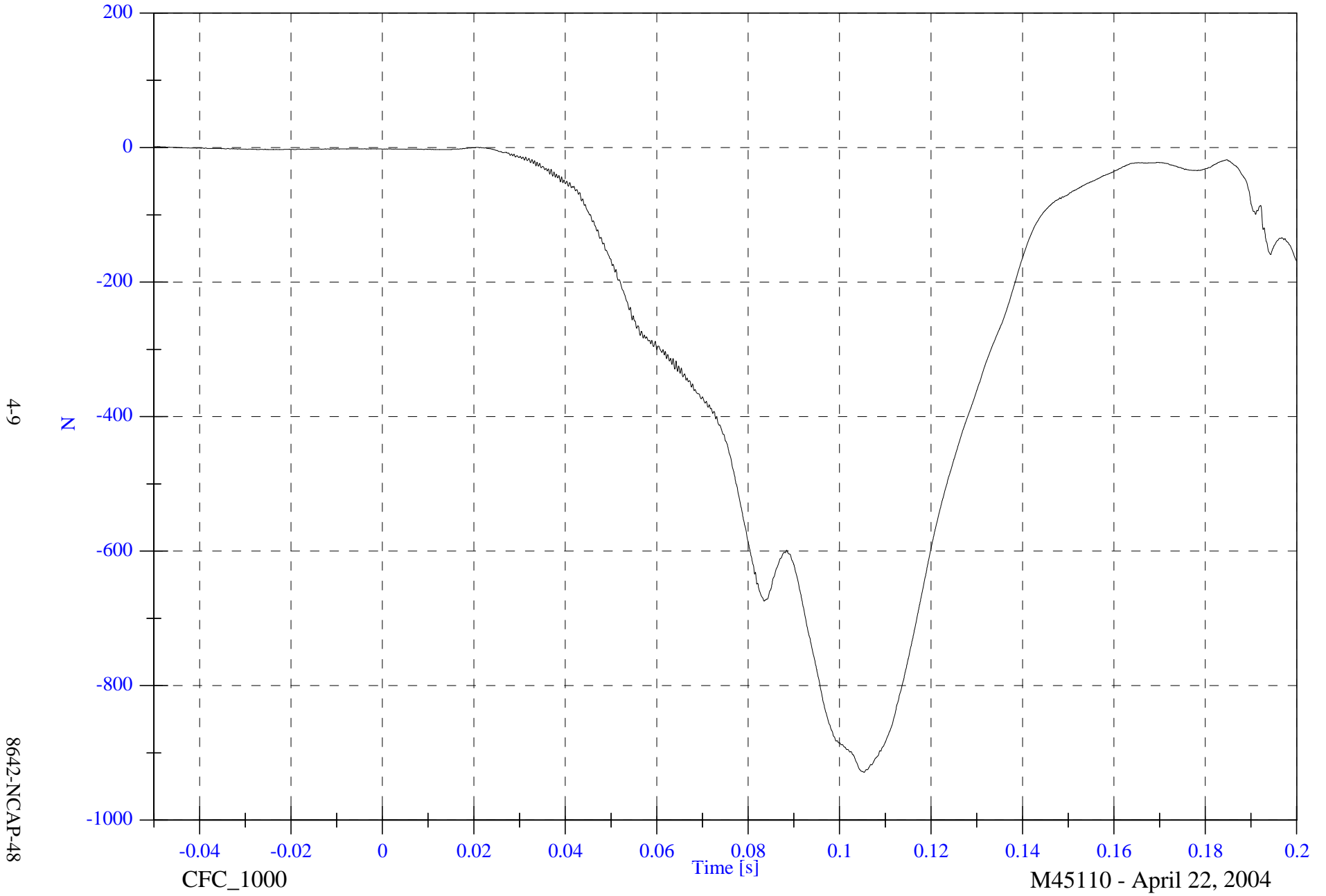
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 1.4 [N] at -0.049 [s]

V1P3 Upper Neck Fx

Min: -928.9 [N] at 0.105 [s]

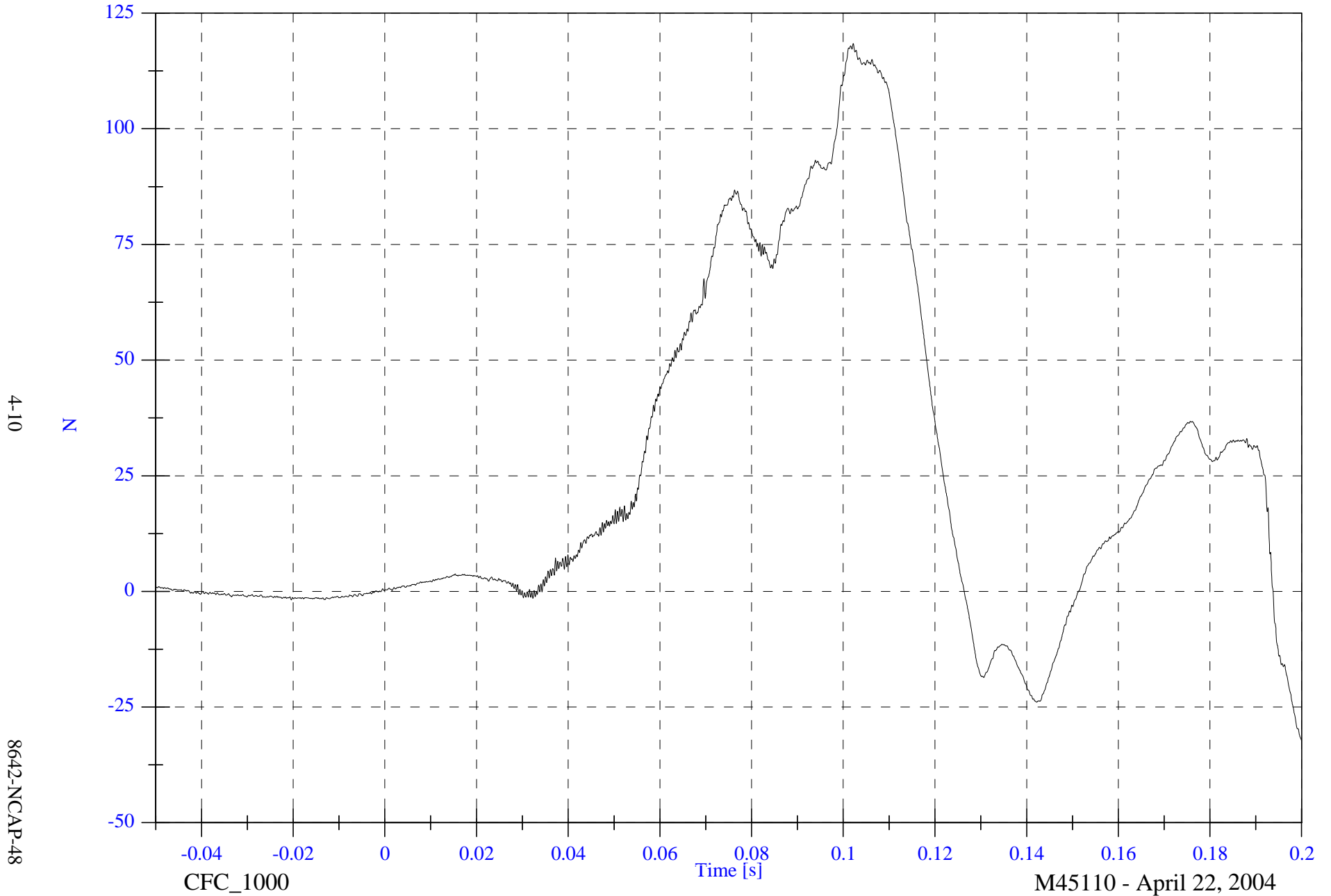


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 118.4 [N] at 0.102 [s]

V1P3 Upper Neck Fy

Min: -32.3 [N] at 0.200 [s]



4-10

8642-NCAP-48

CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

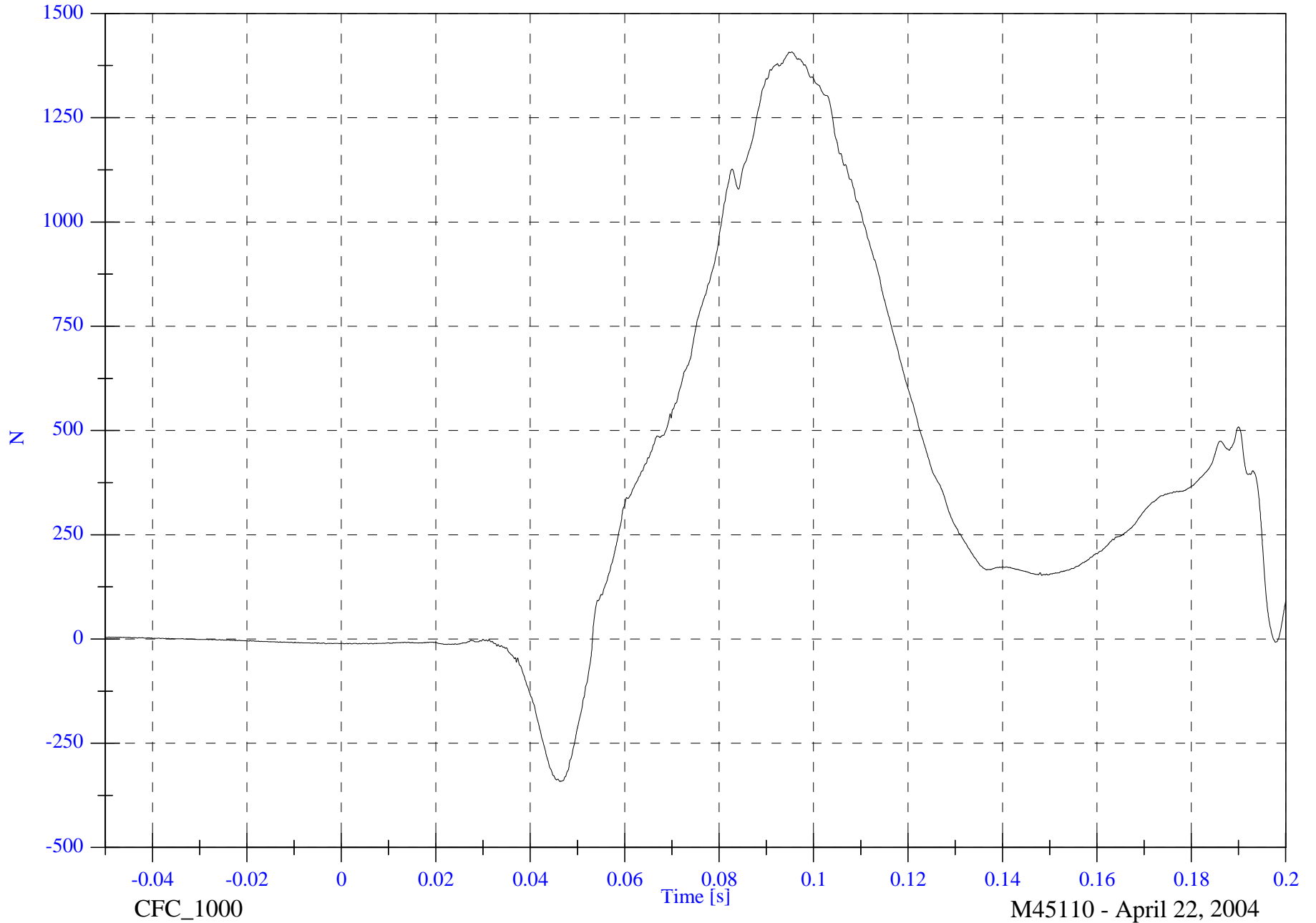
Max: 1407.6 [N] at 0.095 [s]

V1P3 Upper Neck Fz

Min: -341.4 [N] at 0.046 [s]

4-11

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

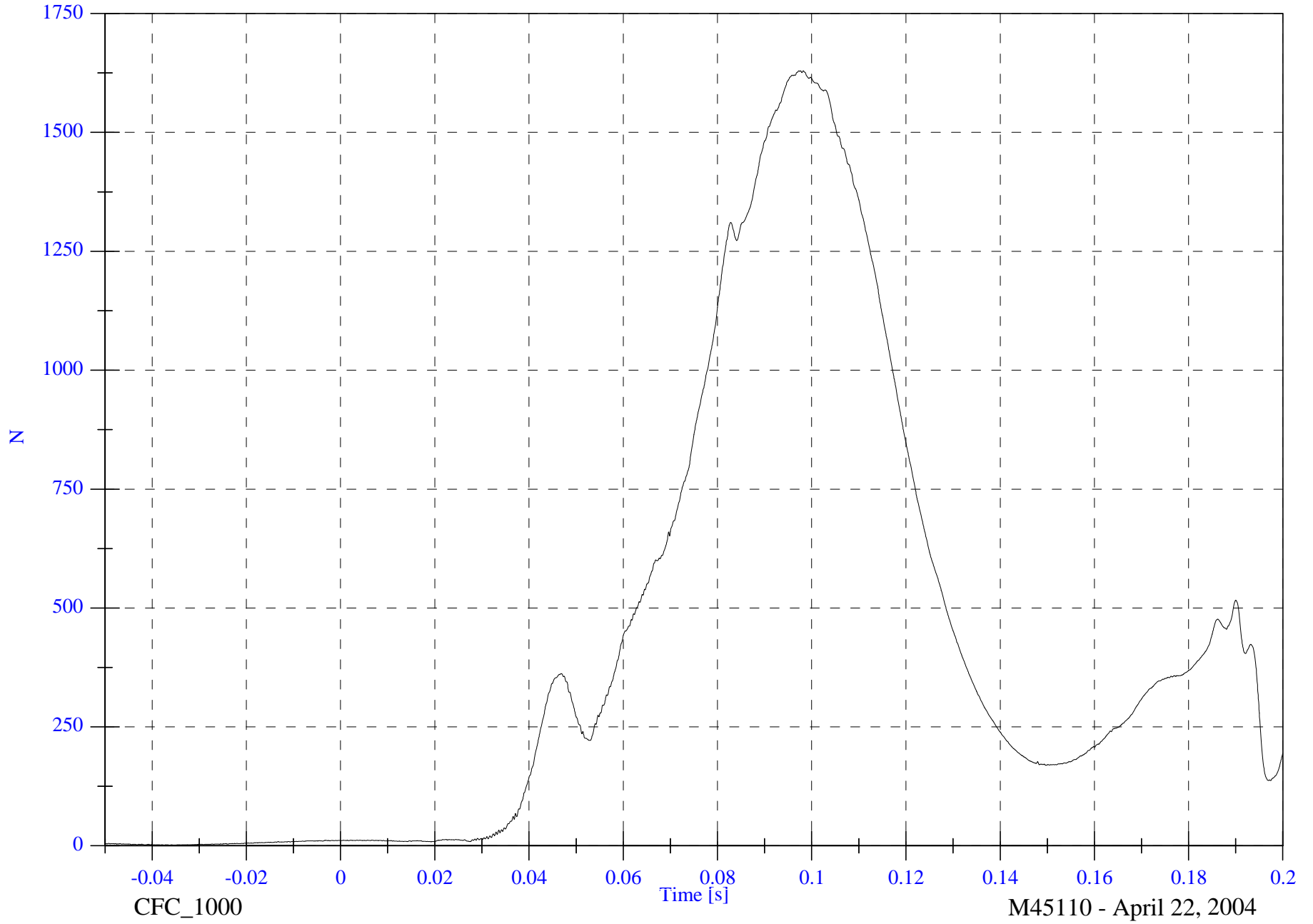
V1P3 Upper Neck F Resultant

Max: 1629.6 [N] at 0.097 [s]

Min: 1.4 [N] at -0.036 [s]

4-12

8642-NCAP-48



CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 3.6 [N-m] at 0.180 [s]

V1P3 Upper Neck Mx

Min: -6.7 [N-m] at 0.110 [s]



4-13

8642-NCAP-48

CFC_600

M45110 - April 22, 2004

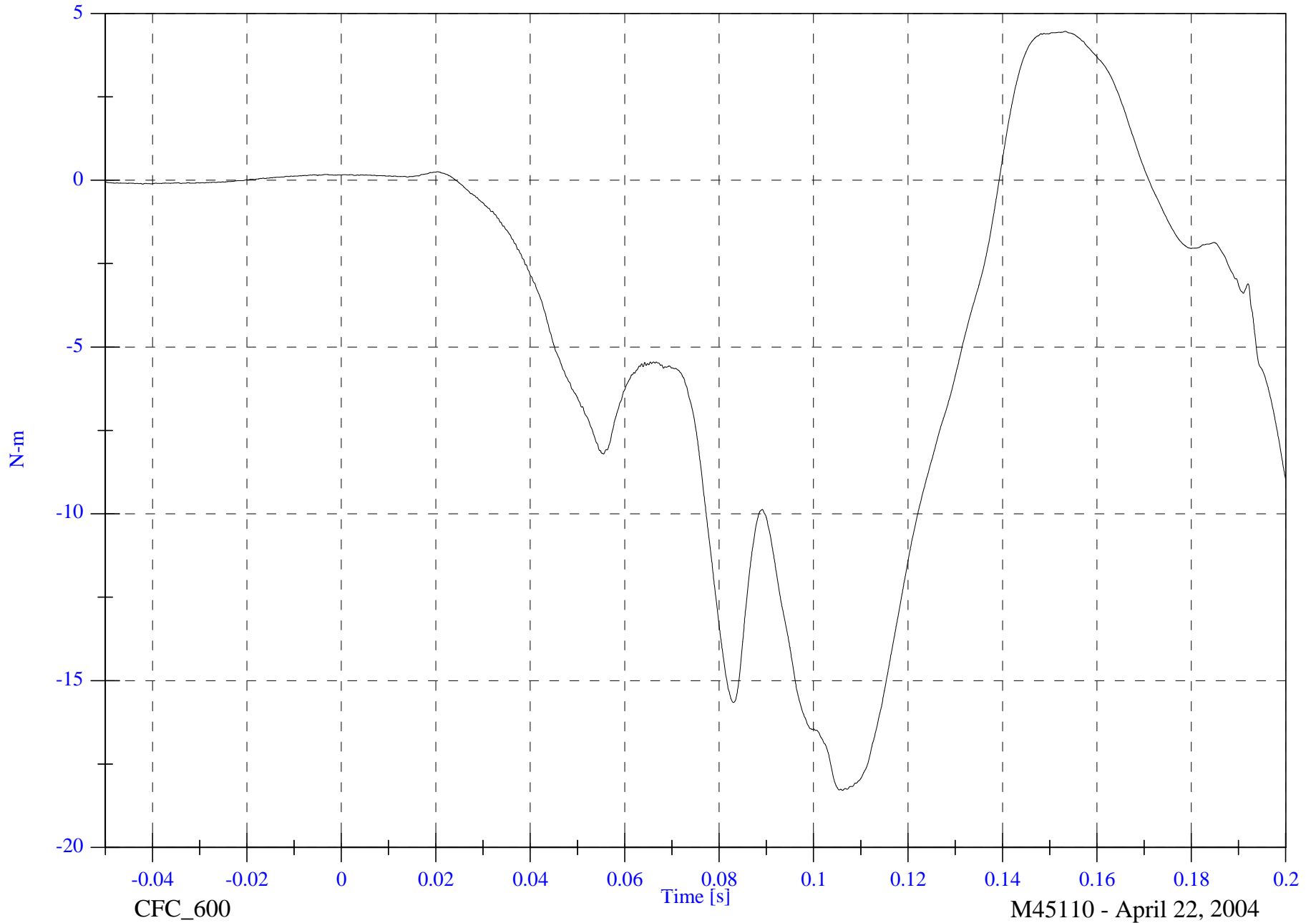
2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P3 Upper Neck My

Max: 4.5 [N-m] at 0.153 [s]
Min: -18.3 [N-m] at 0.106 [s]

4-14

8642-NCAP-48



CFC_600

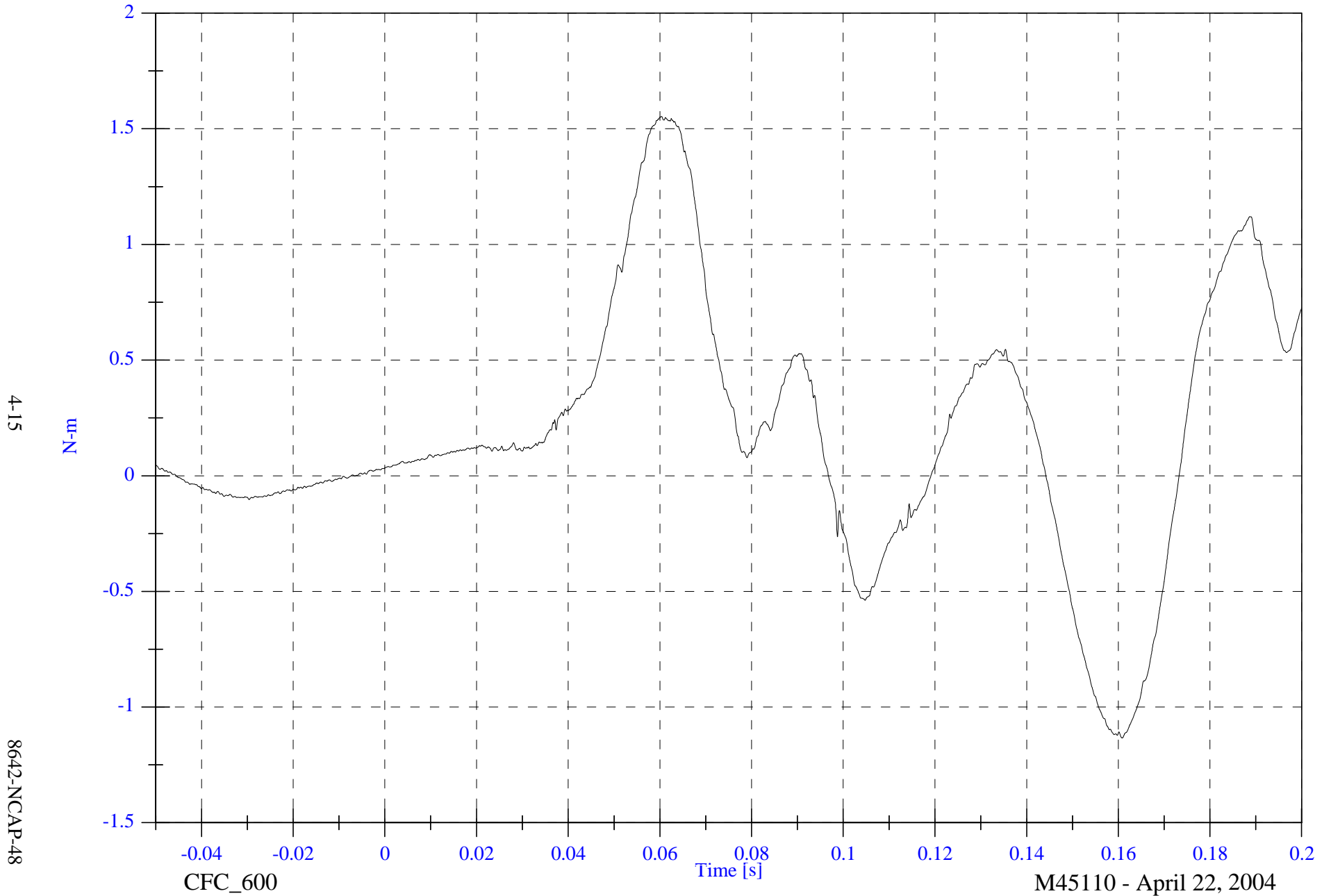
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 1.6 [N-m] at 0.060 [s]

V1P3 Upper Neck Mz

Min: -1.1 [N-m] at 0.161 [s]



4-15

8642-NCAP-48

CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

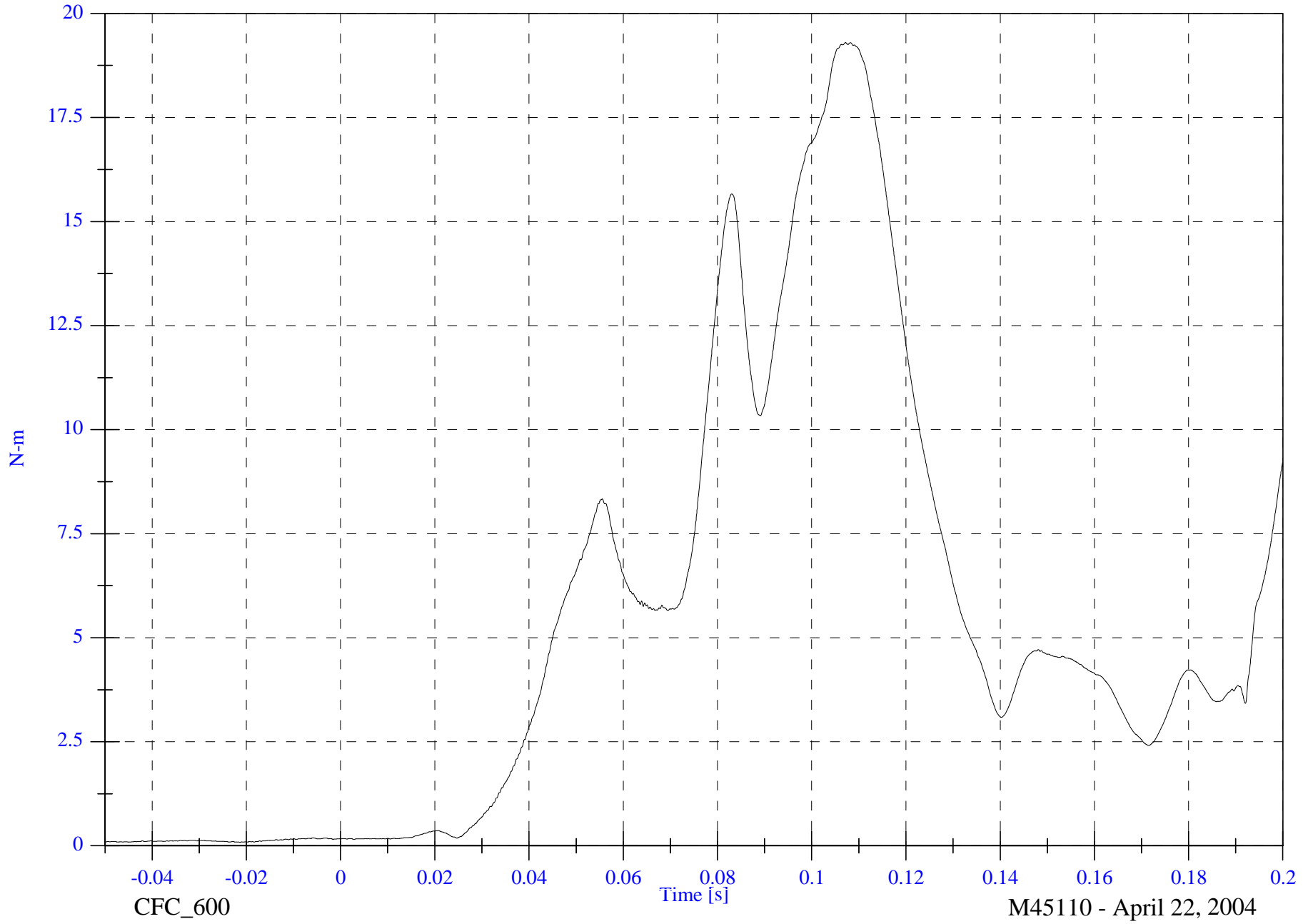
V1P3 Upper Neck M Resultant

Max: 19.3 [N-m] at 0.107 [s]

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

4-16

8642-NCAP-48



CFC_600

Time [s]

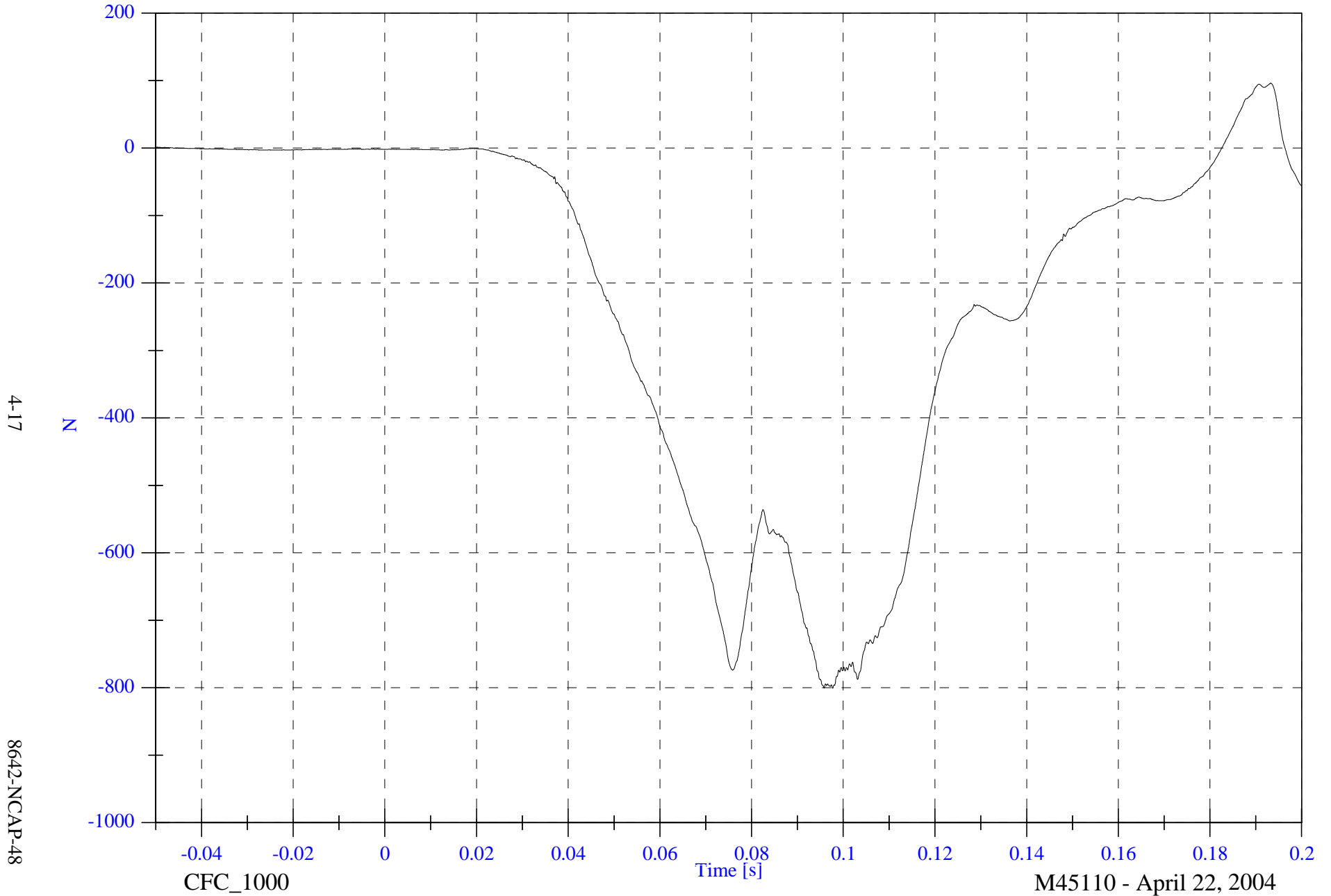
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P3 Lower Neck Fx

Max: 96.1 [N] at 0.193 [s]

Min: -800.9 [N] at 0.098 [s]



4-17

8642-NCAP-48

CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P3 Lower Neck Fy

Max: 46.1 [N] at 0.193 [s]

Min: -141.0 [N] at 0.085 [s]

4-18

8642-NCAP-48



CFC_1000

Time [s]

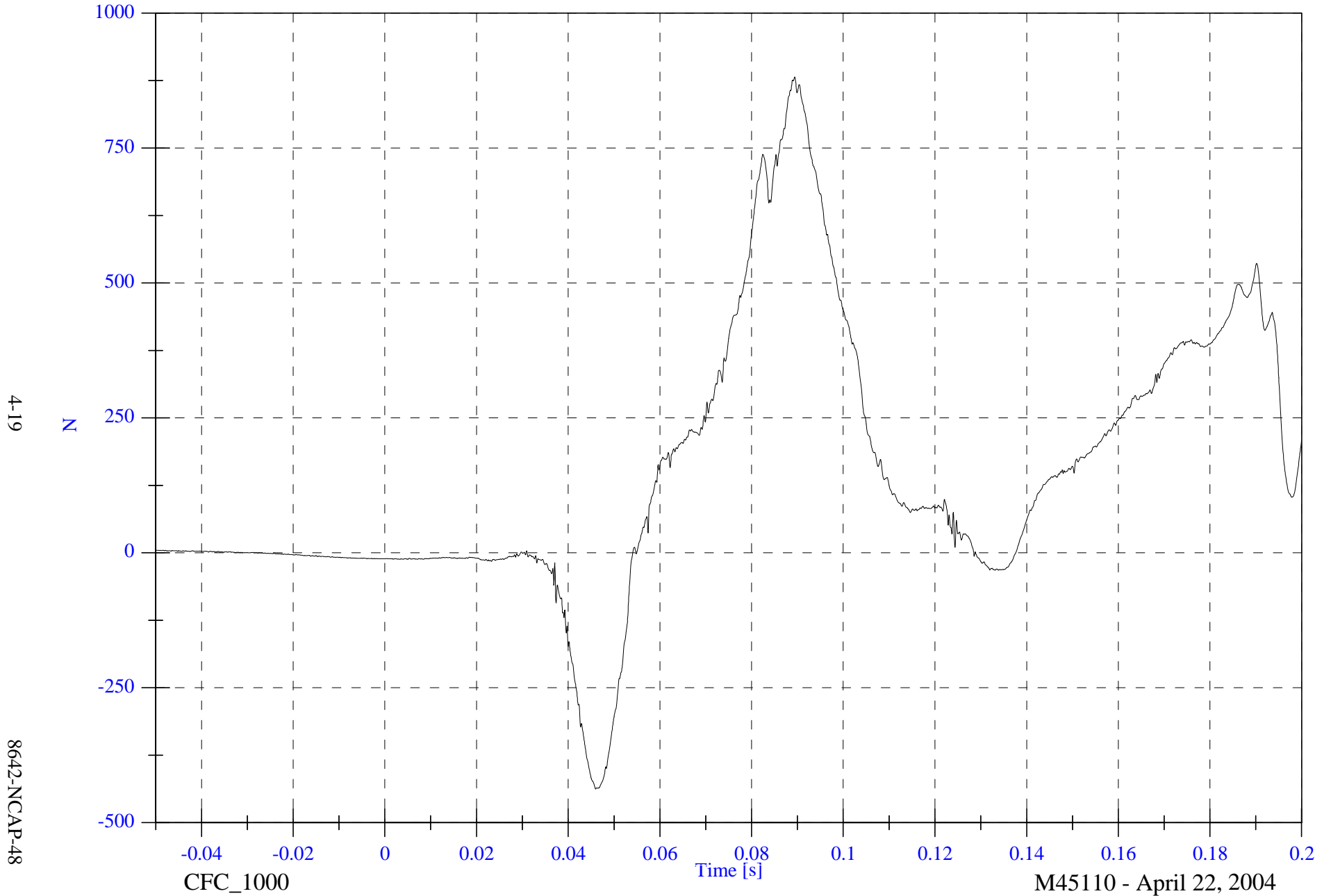
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 881.5 [N] at 0.089 [s]

V1P3 Lower Neck Fz

Min: -437.5 [N] at 0.046 [s]



4-19

8642-NCAP-48

CFC_1000

Time [s]

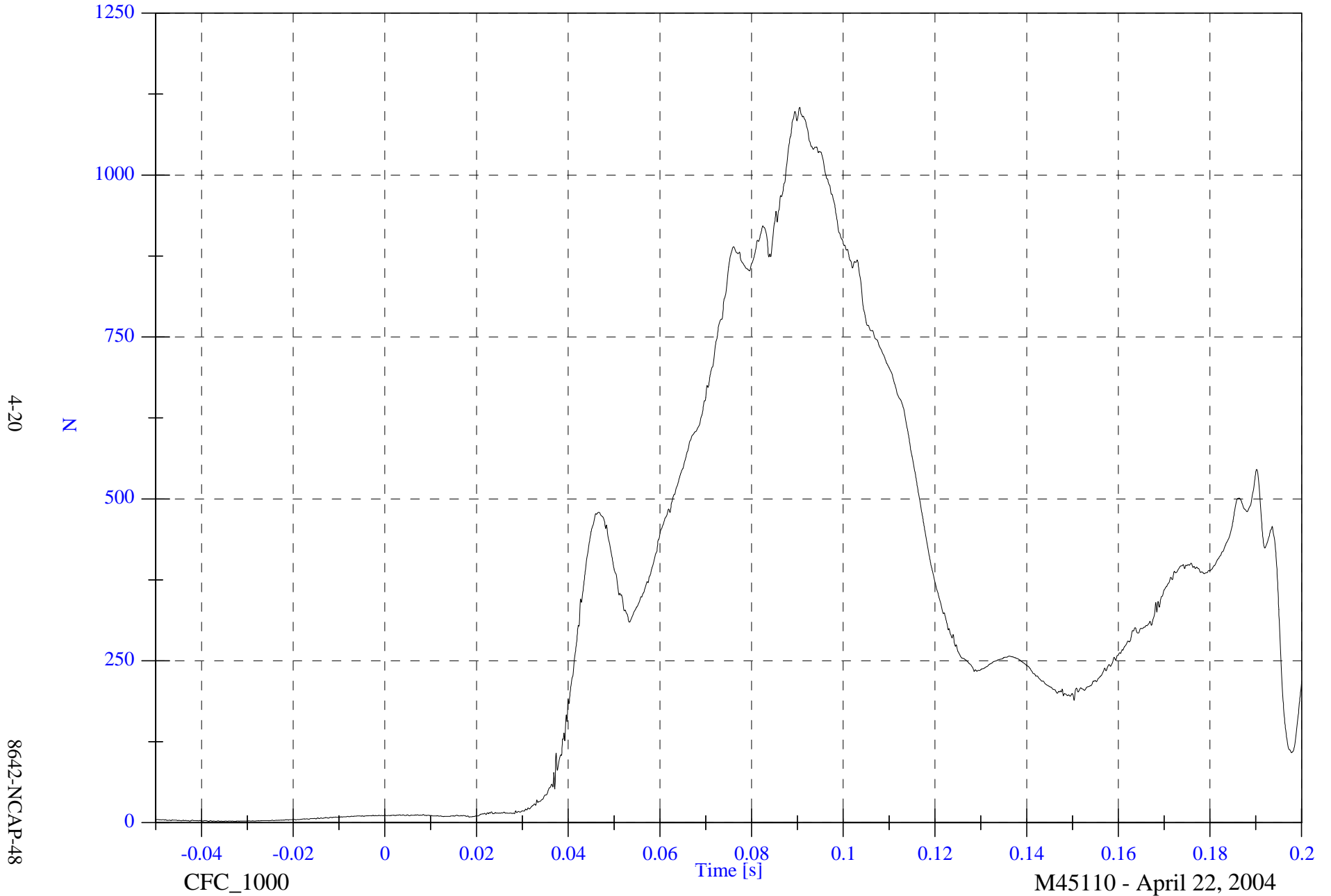
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P3 Lower Neck F Resultant

Max: 1104.5 [N] at 0.090 [s]

Min: 1.9 [N] at -0.039 [s]



4-20

8642-NCAP-48

CFC_1000

Time [s]

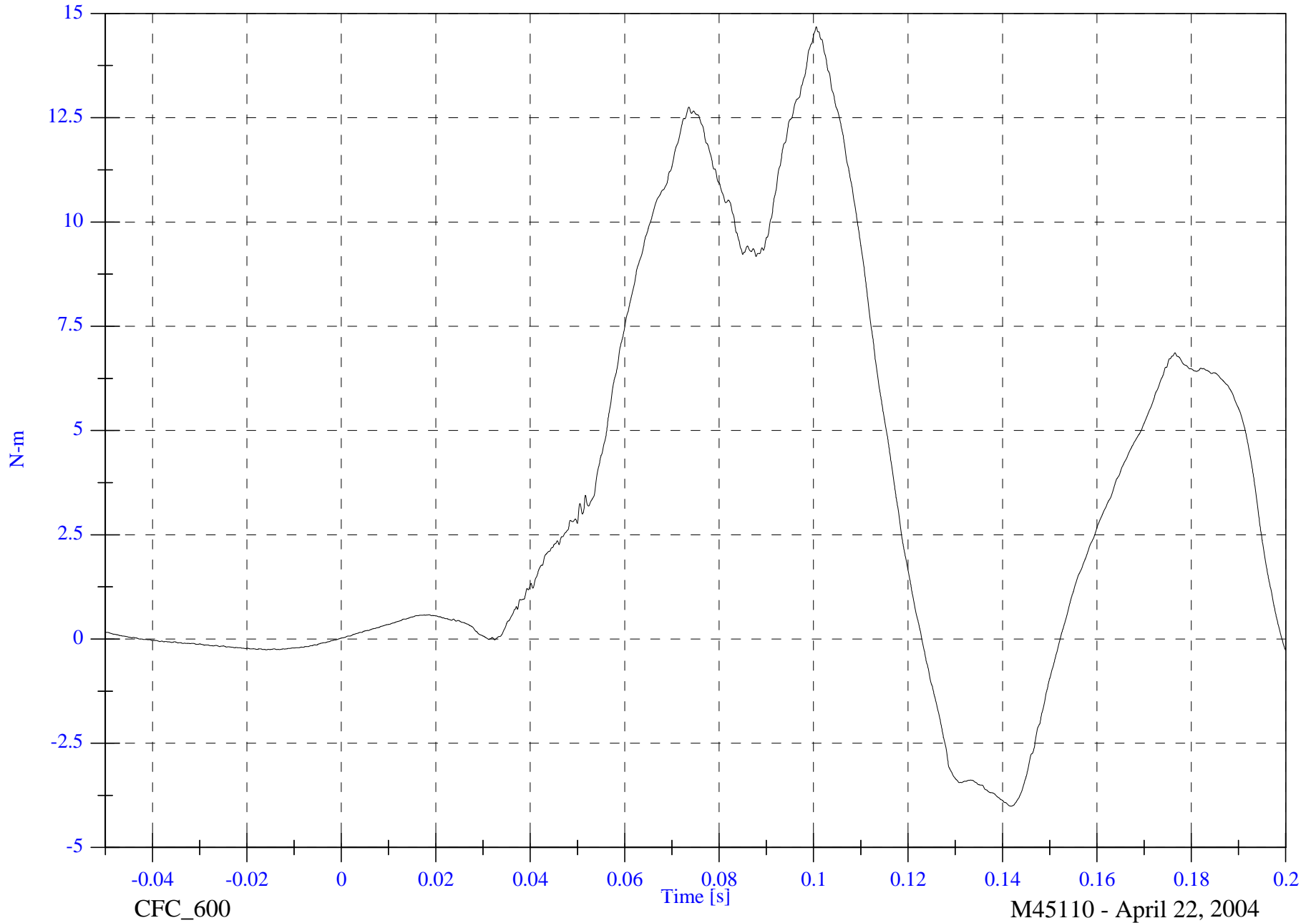
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 14.7 [N-m] at 0.101 [s]

V1P3 Lower Neck Mx

Min: -4.0 [N-m] at 0.142 [s]



4-21

8642-NCAP-48

CFC_600

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

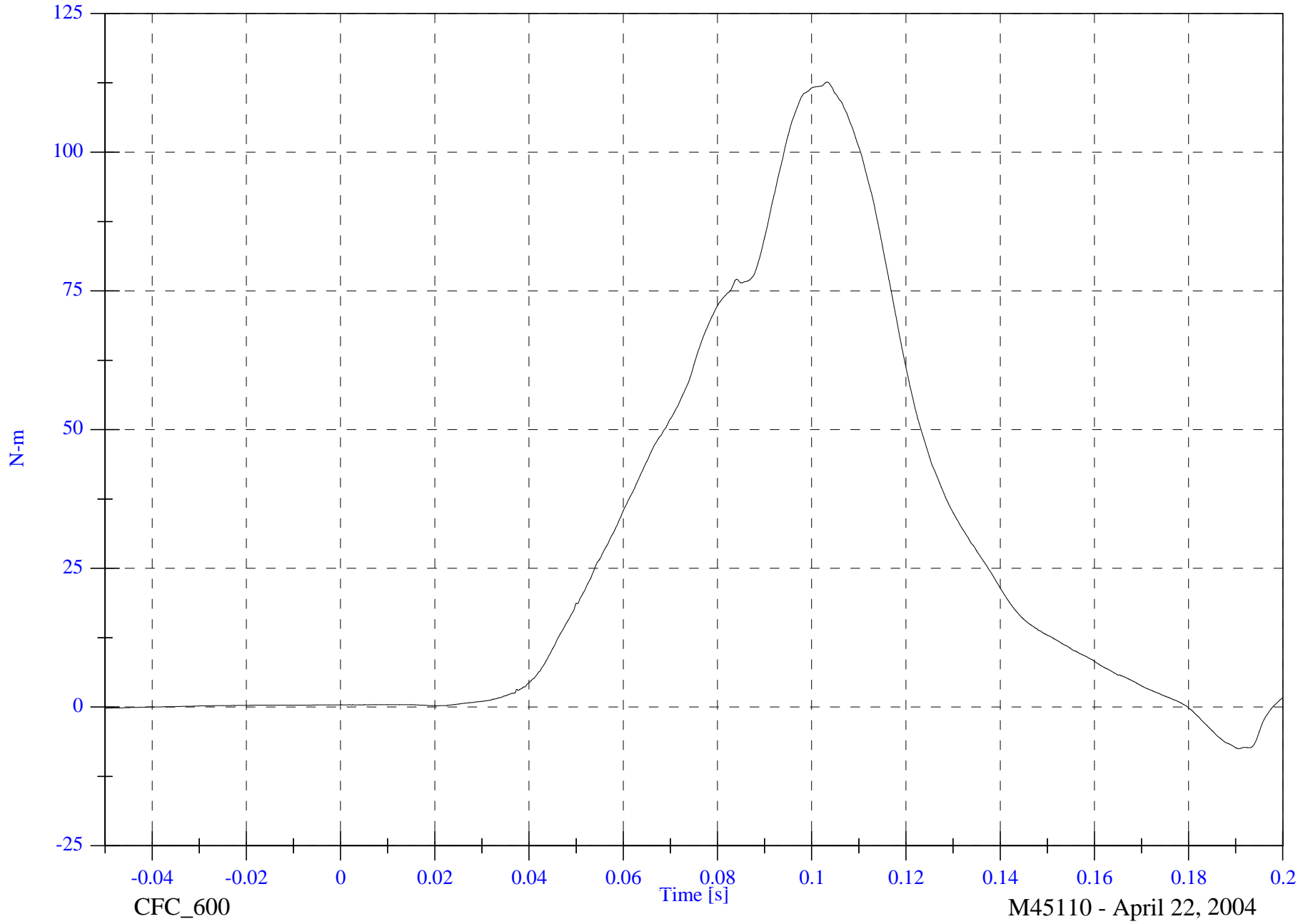
V1P3 Lower Neck My

Max: 112.6 [N-m] at 0.103 [s]

Min: -7.5 [N-m] at 0.191 [s]

4-22

8642-NCAP-48

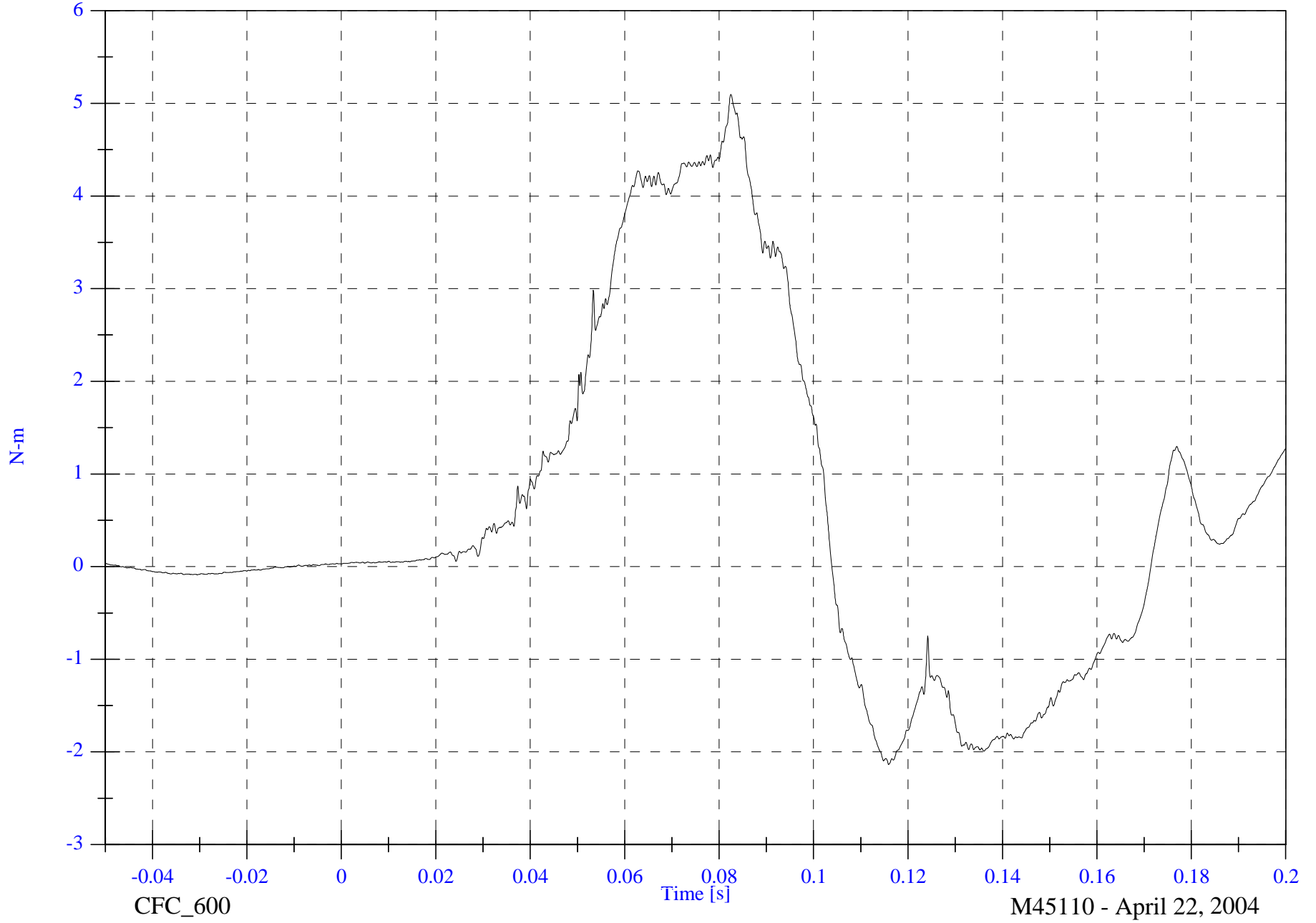


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P3 Lower Neck Mz

Max: 5.1 [N-m] at 0.082 [s]

Min: -2.1 [N-m] at 0.116 [s]



4-23

8642-NCAP-48

CFC_600

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

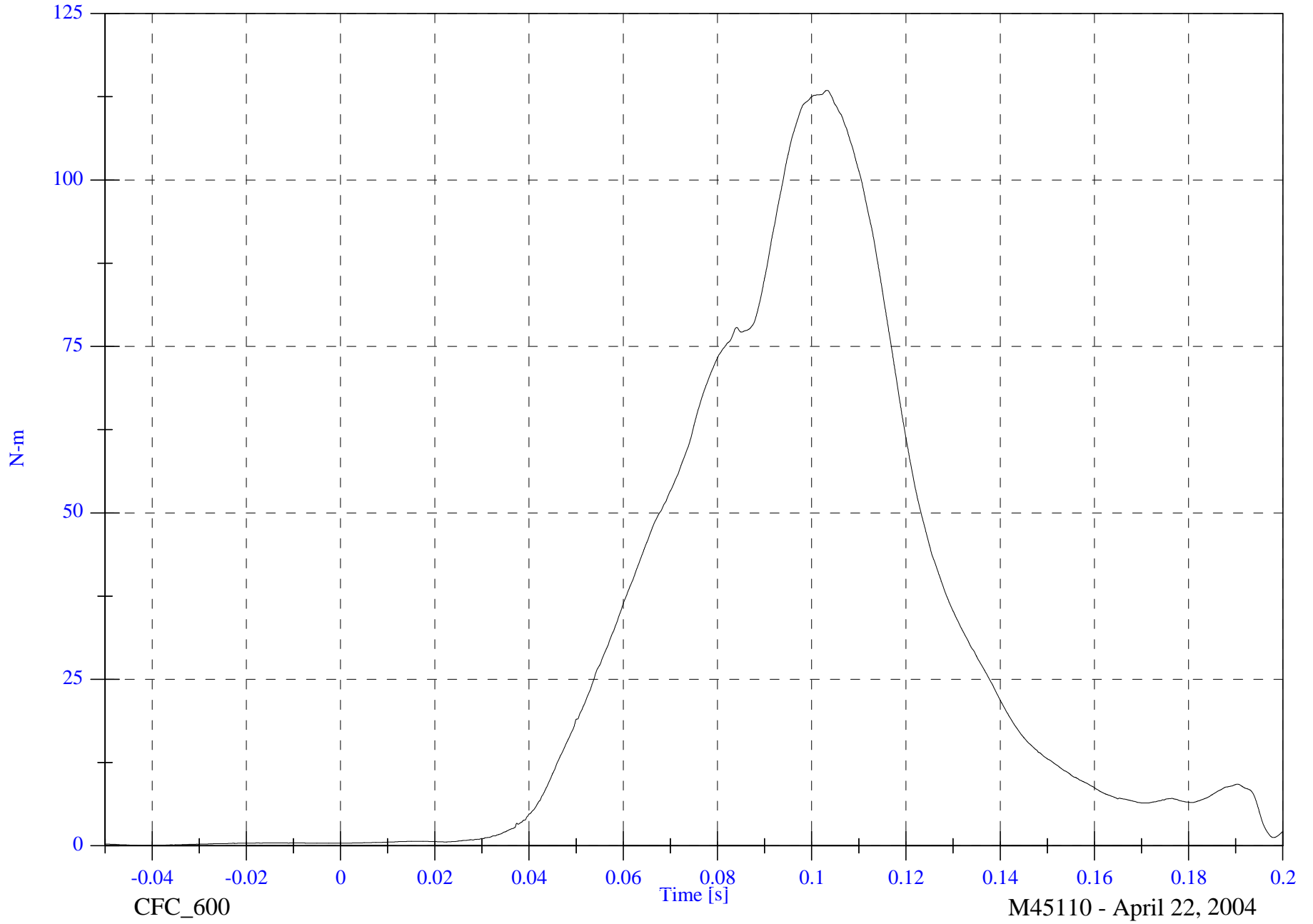
V1P3 Lower Neck M Resultant

Max: 113.4 [N-m] at 0.103 [s]

Min: 0.0 [N-m] at -0.042 [s]

4-24

8642-NCAP-48



M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

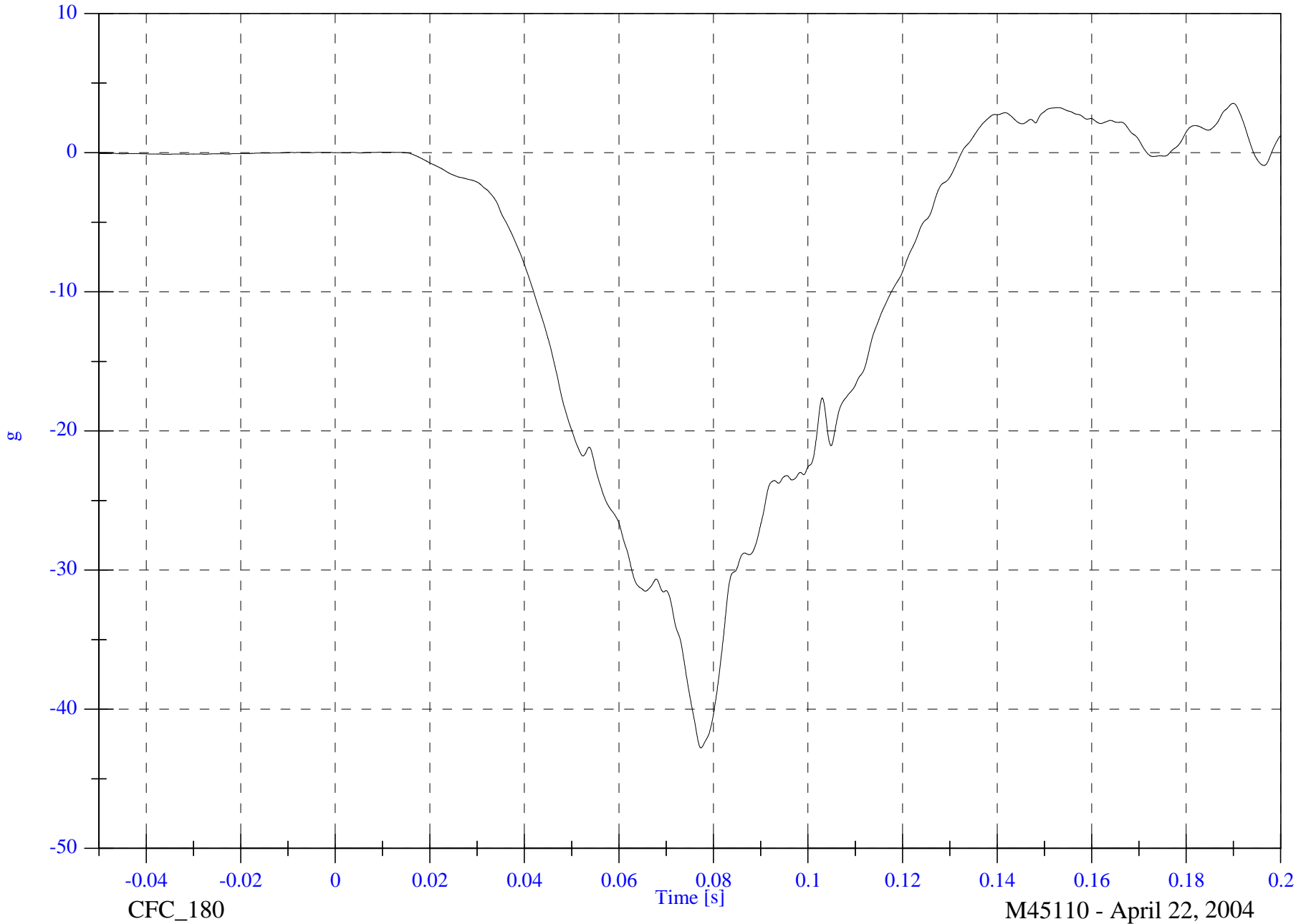
VIP3 Chest x

Max: 3.5 [g] at 0.190 [s]

Min: -42.8 [g] at 0.077 [s]

4-25

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 6.0 [g] at 0.079 [s]

Min: -3.6 [g] at 0.175 [s]

VIP3 Chest y

4-26

g

8642-NCAP-48



M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP3 Chest z

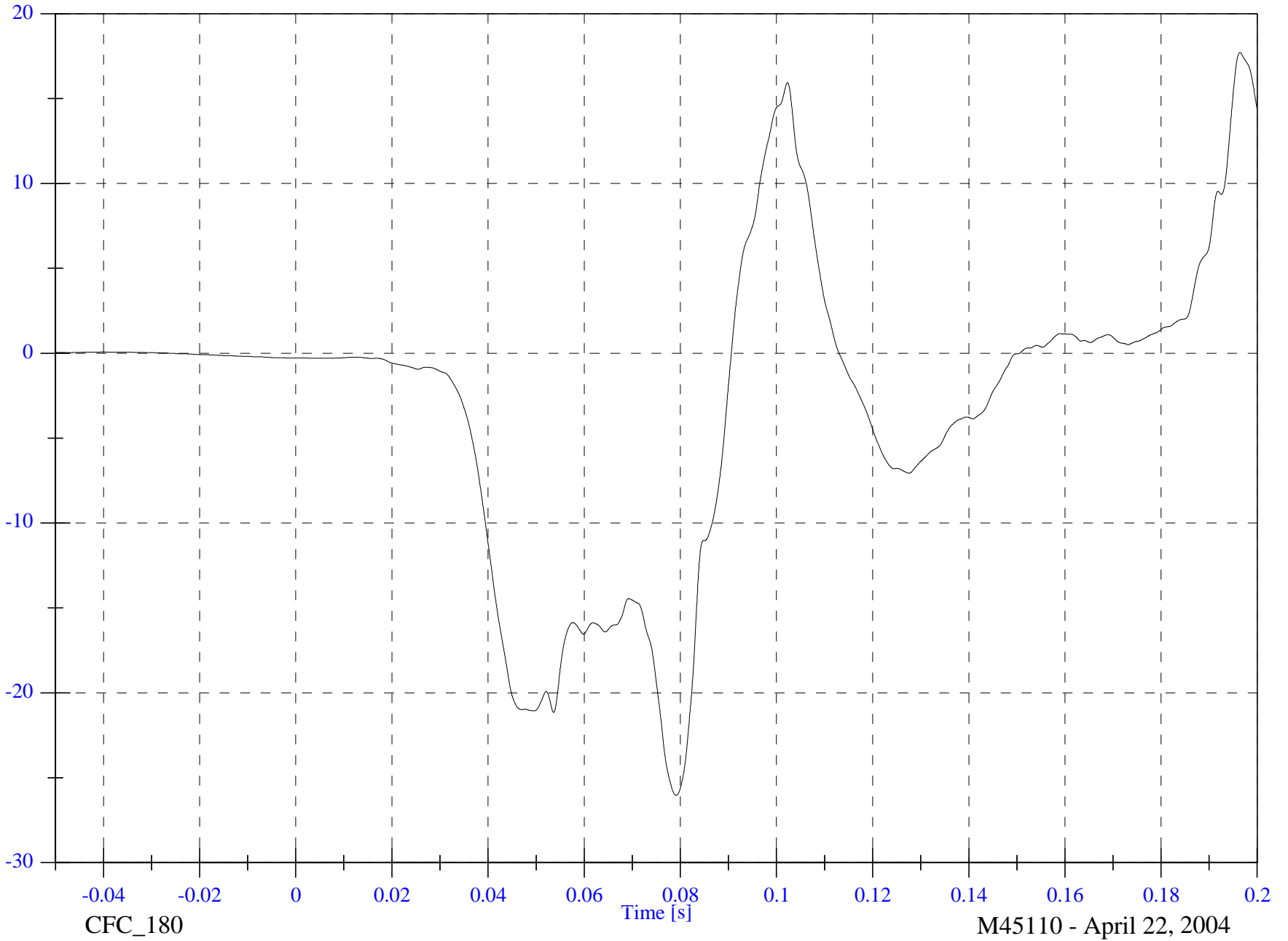
Max: 17.7 [g] at 0.196 [s]

Min: -26.0 [g] at 0.079 [s]

4-27

g

8642-NCAP-48



CFC_180

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

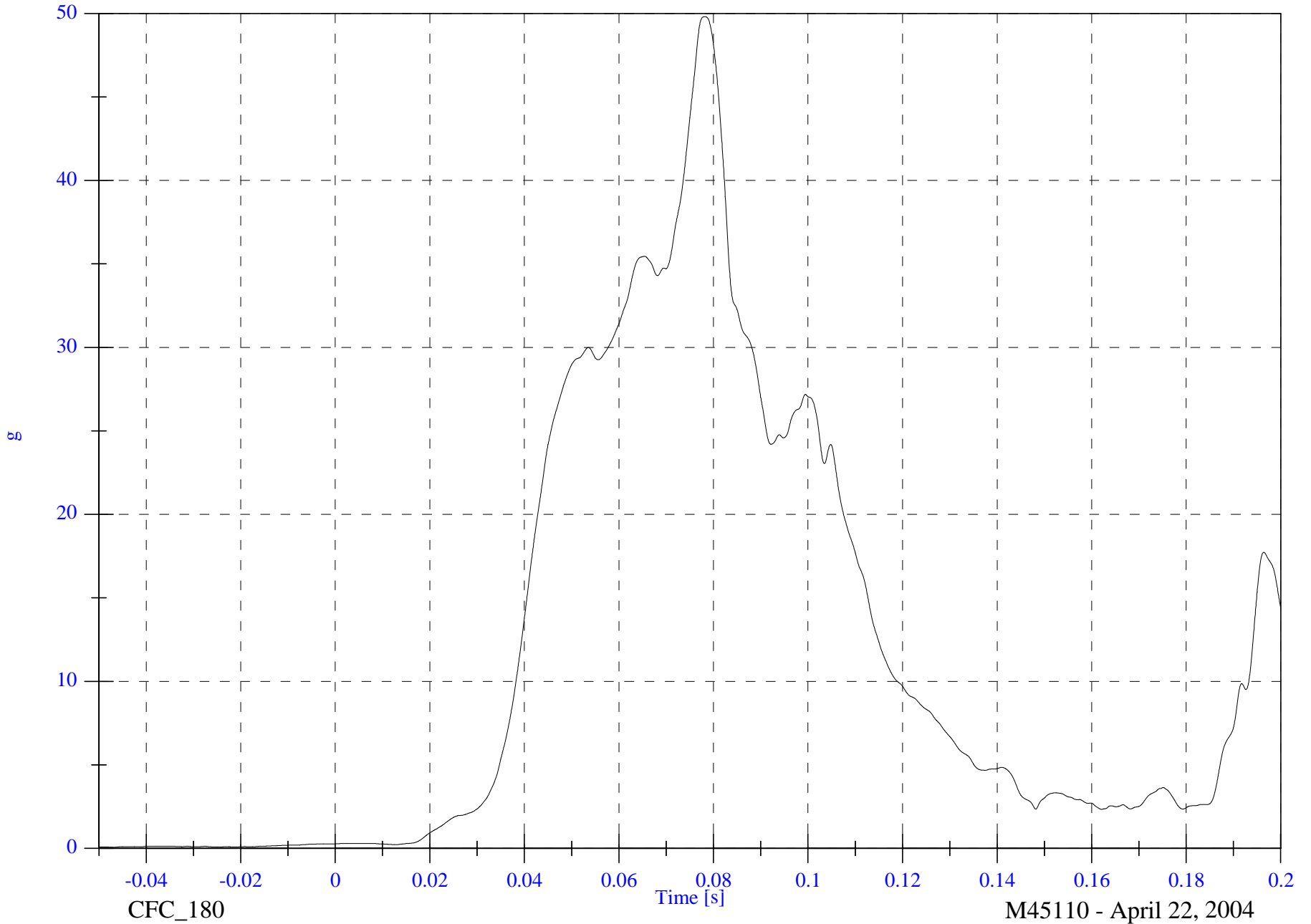
V1P3 Chest Resultant

Max: 49.8 [g] at 0.078 [s]

Min: 0.1 [g] at -0.047 [s]

4-28

8642-NCAP-48

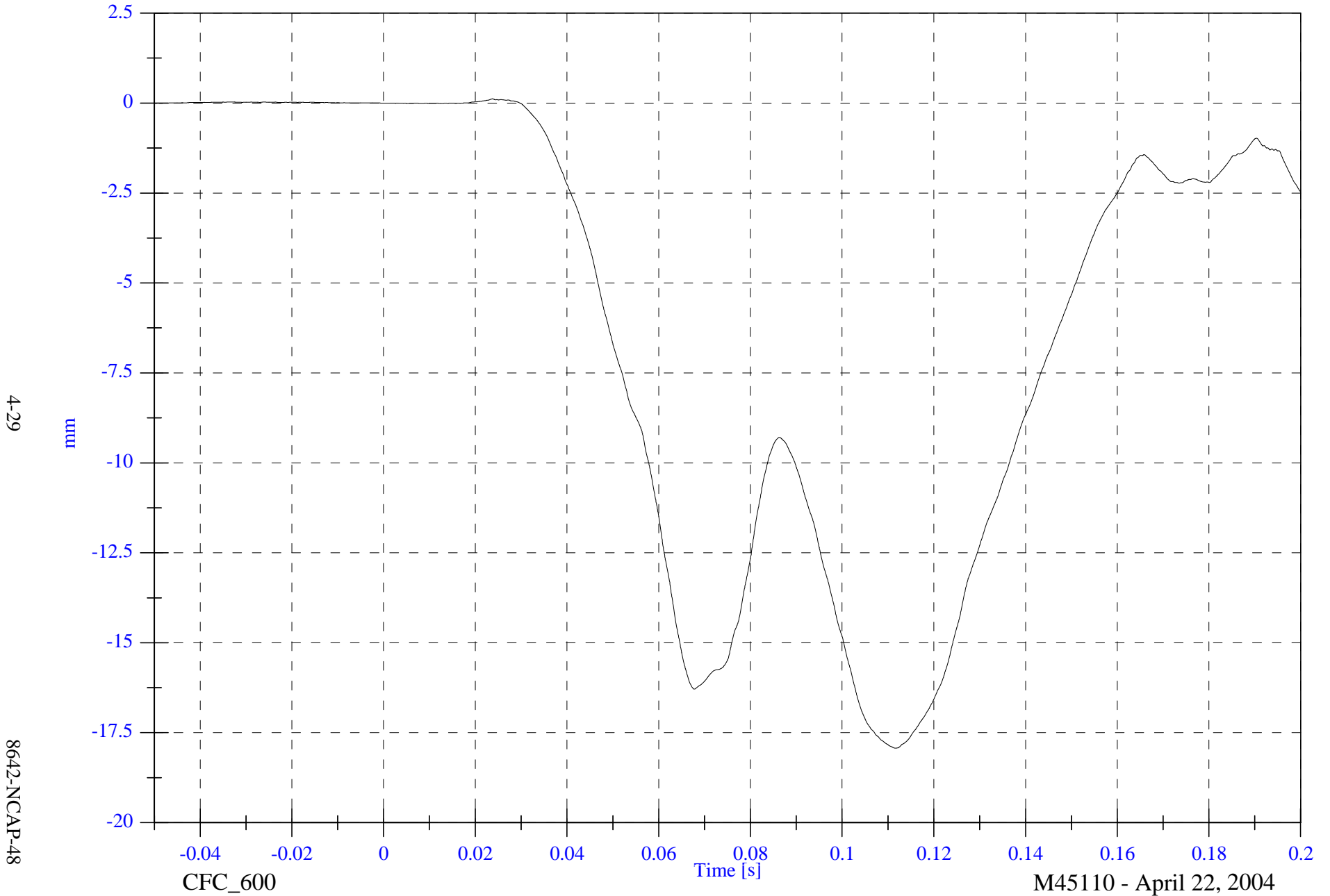


2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP3 Chest Compression

Max: 0.1 [mm] at 0.024 [s]

Min: -17.9 [mm] at 0.112 [s]



4-29

8642-NCAP-48

CFC_600

Time [s]

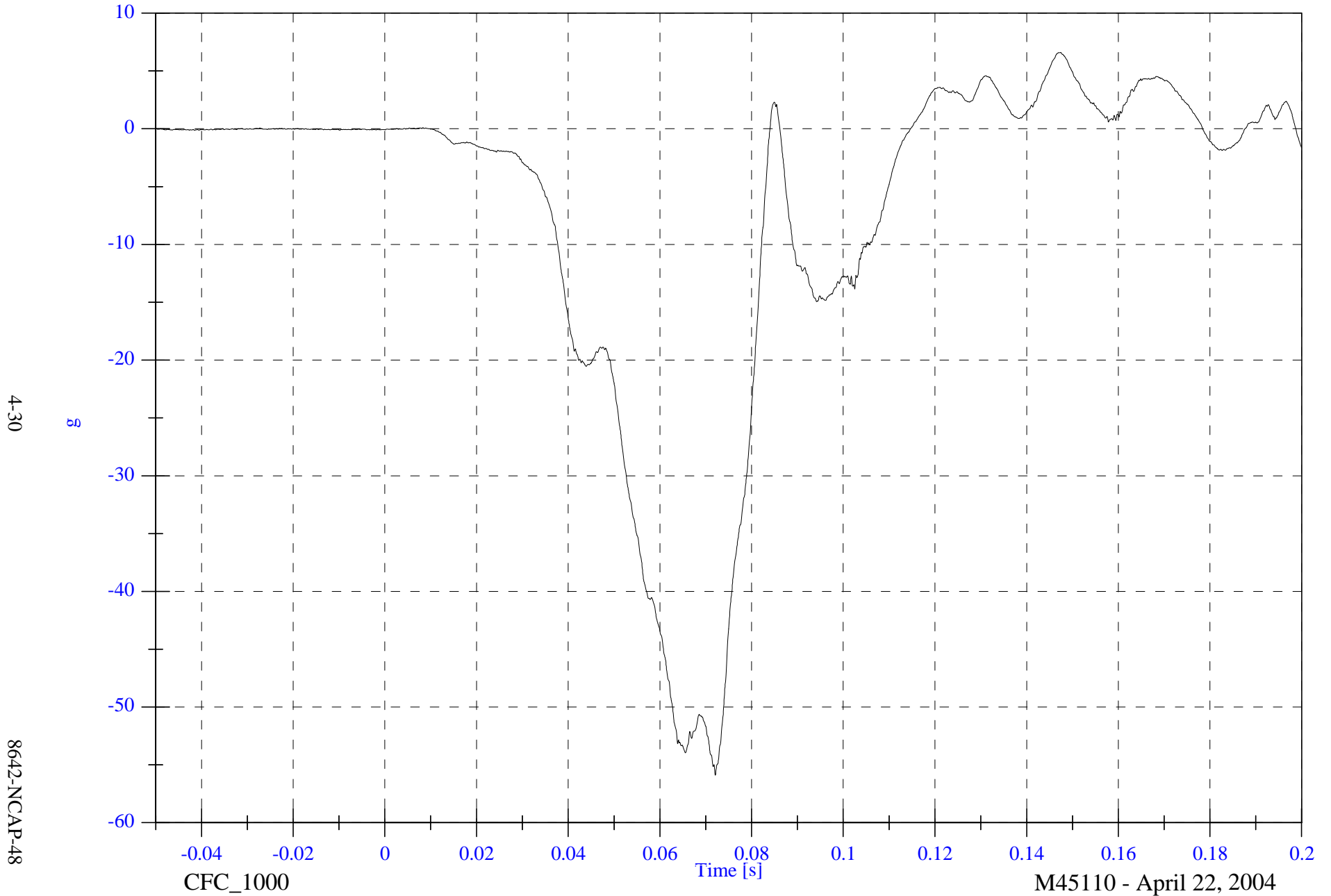
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P3 Pelvic x

Max: 6.6 [g] at 0.147 [s]

Min: -55.9 [g] at 0.072 [s]

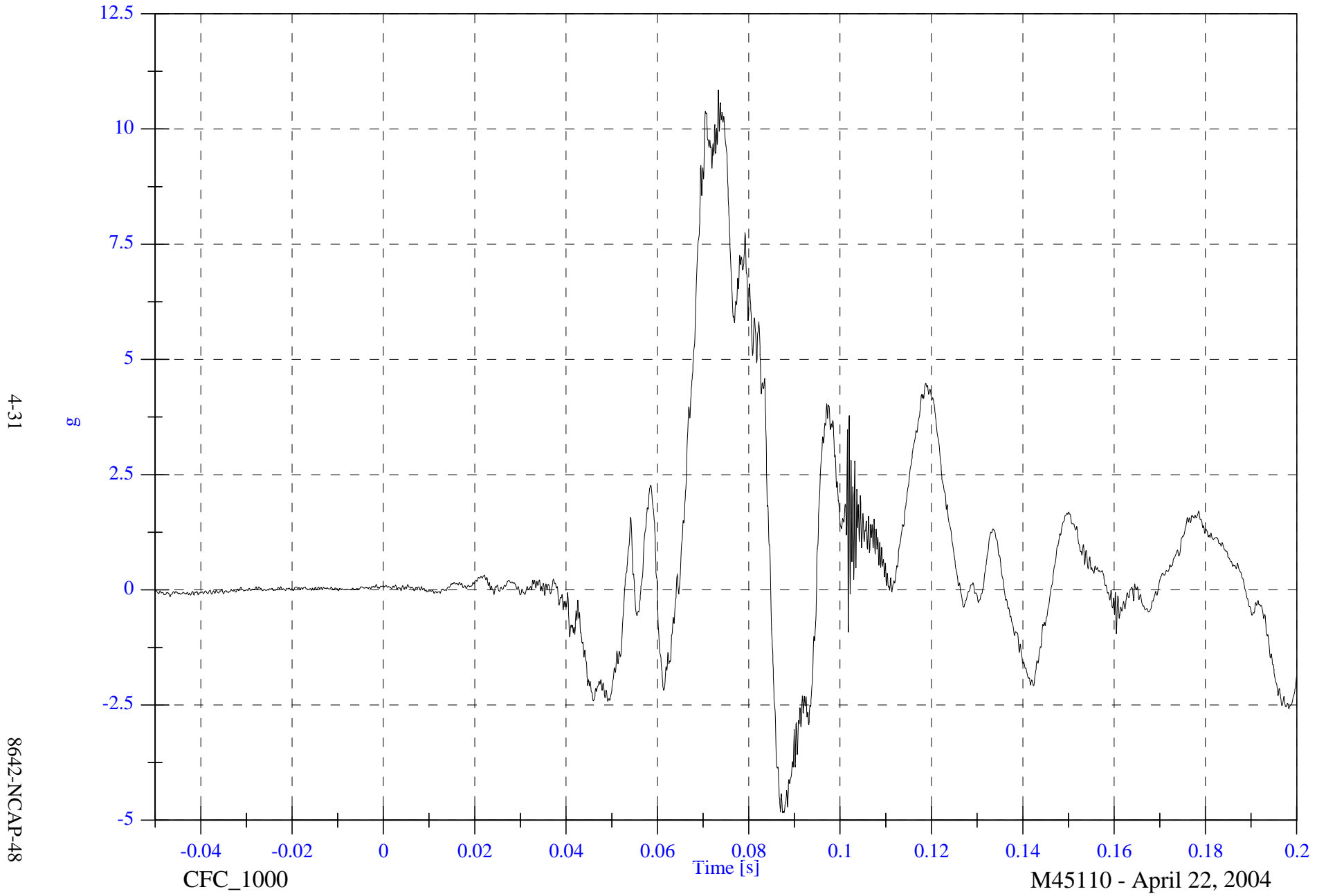


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 10.8 [g] at 0.073 [s]

Min: -4.8 [g] at 0.087 [s]

V1P3 Pelvic y



4-31

8642-NCAP-48

2004 NCAP Test 12 - 2004 Toyota 4Runner

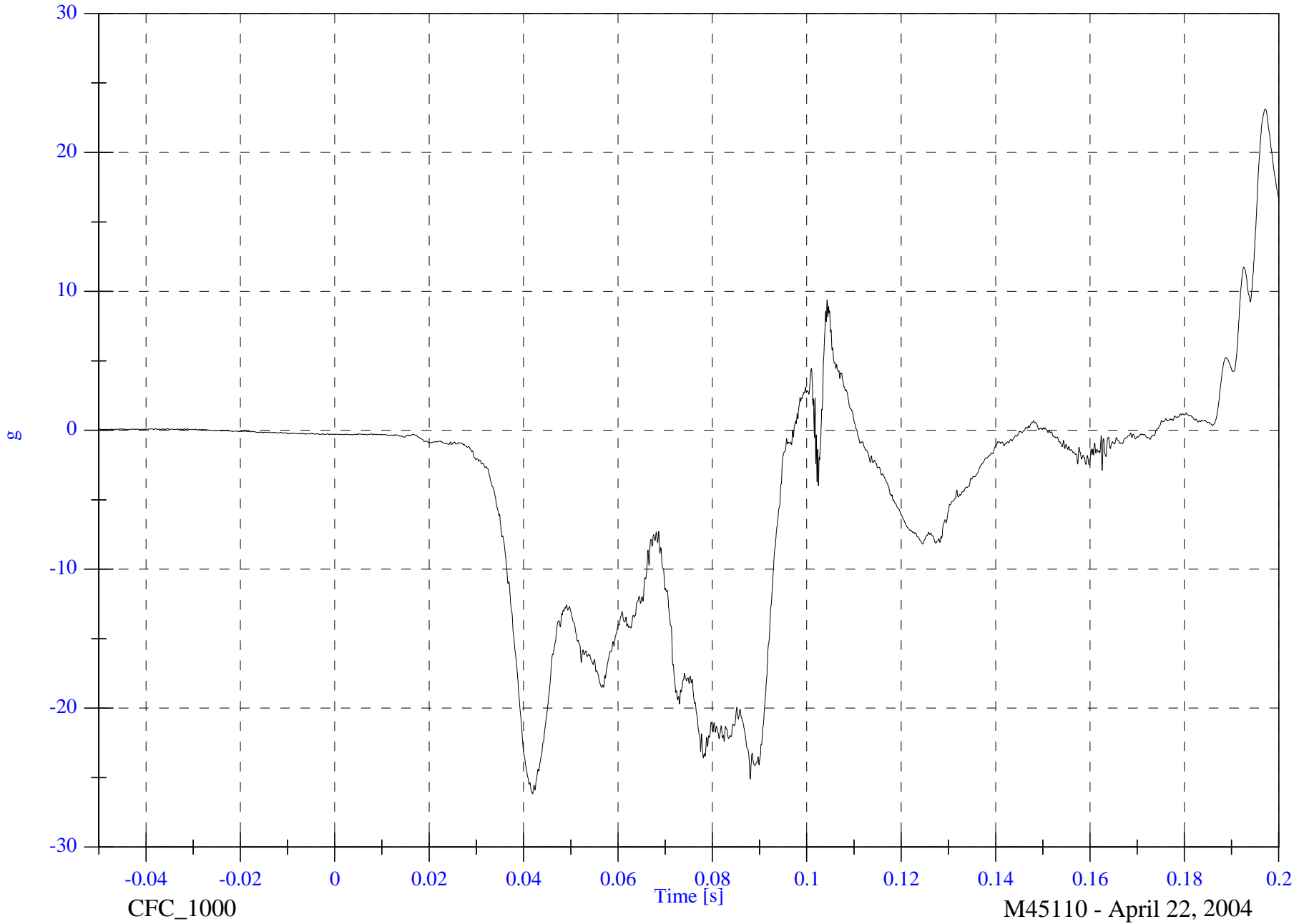
V1P3 Pelvic z

Max: 23.1 [g] at 0.197 [s]

Min: -26.2 [g] at 0.042 [s]

4-32

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

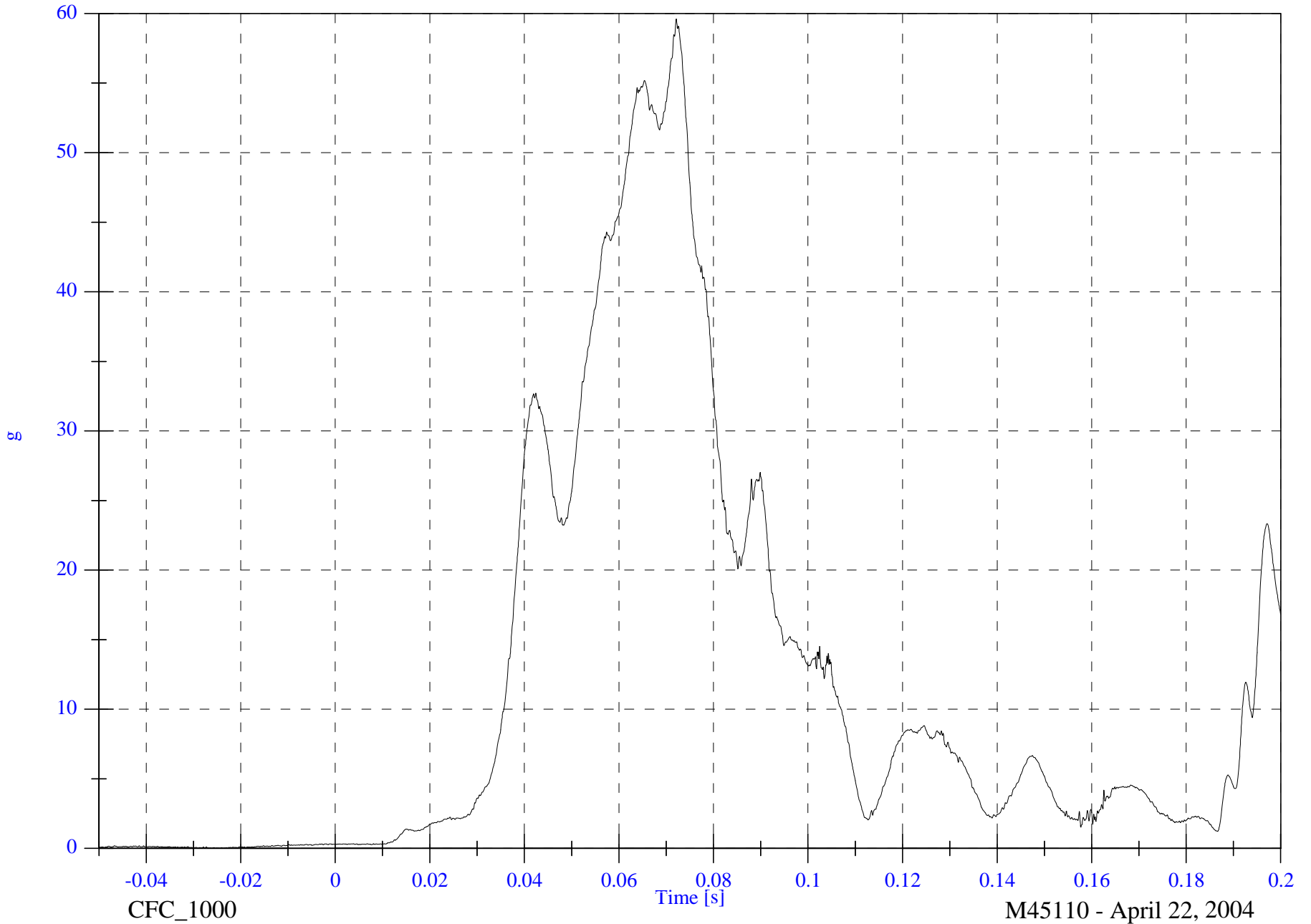
V1P3 Pelvic Resultant

Max: 59.6 [g] at 0.072 [s]

Min: 0.0 [g] at -0.025 [s]

4-33

8642-NCAP-48

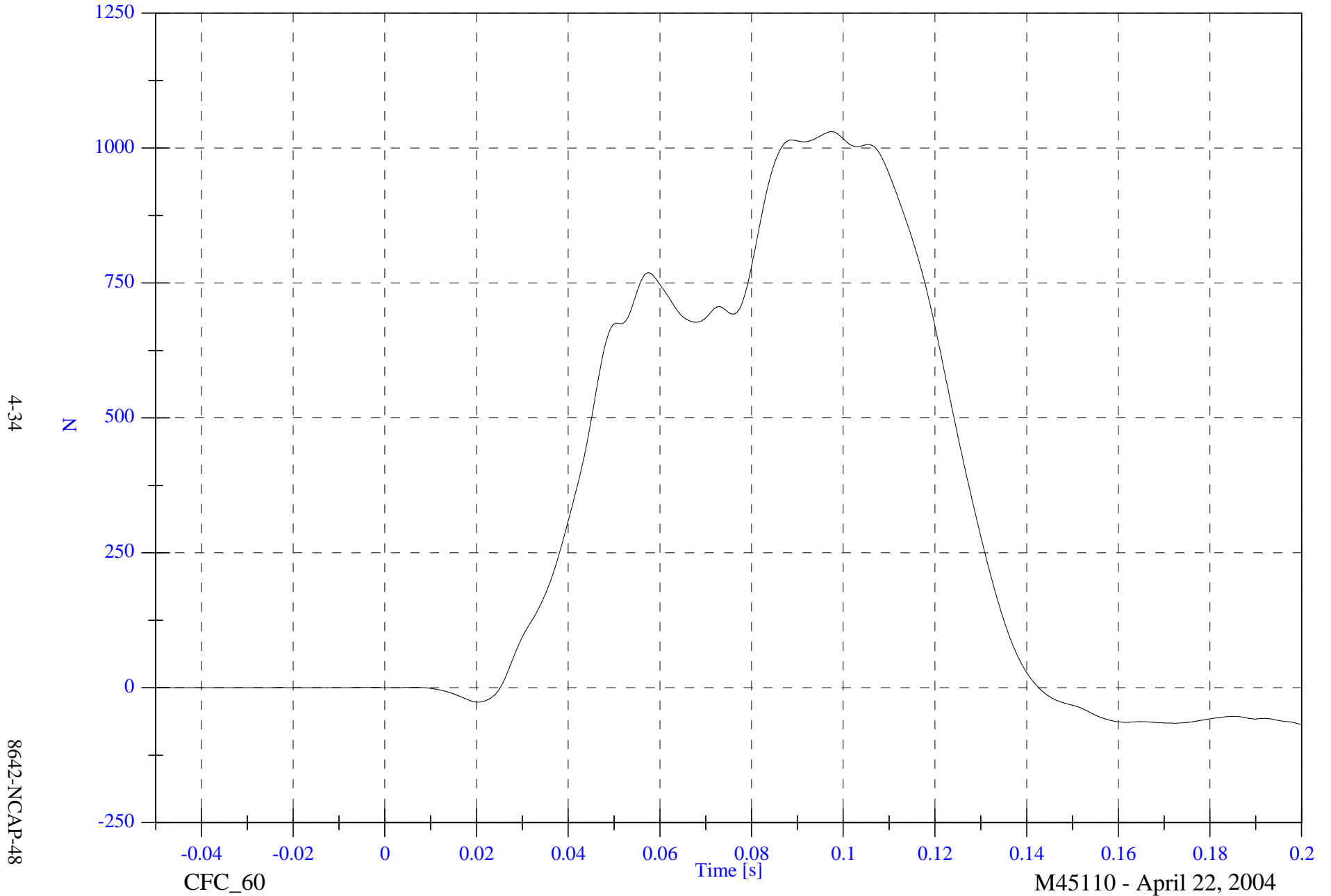


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P3 Tether Belt

Max: 1030.3 [N] at 0.097 [s]

Min: -68.2 [N] at 0.200 [s]



4-34

8642-NCAP-48

CFC_60

Time [s]

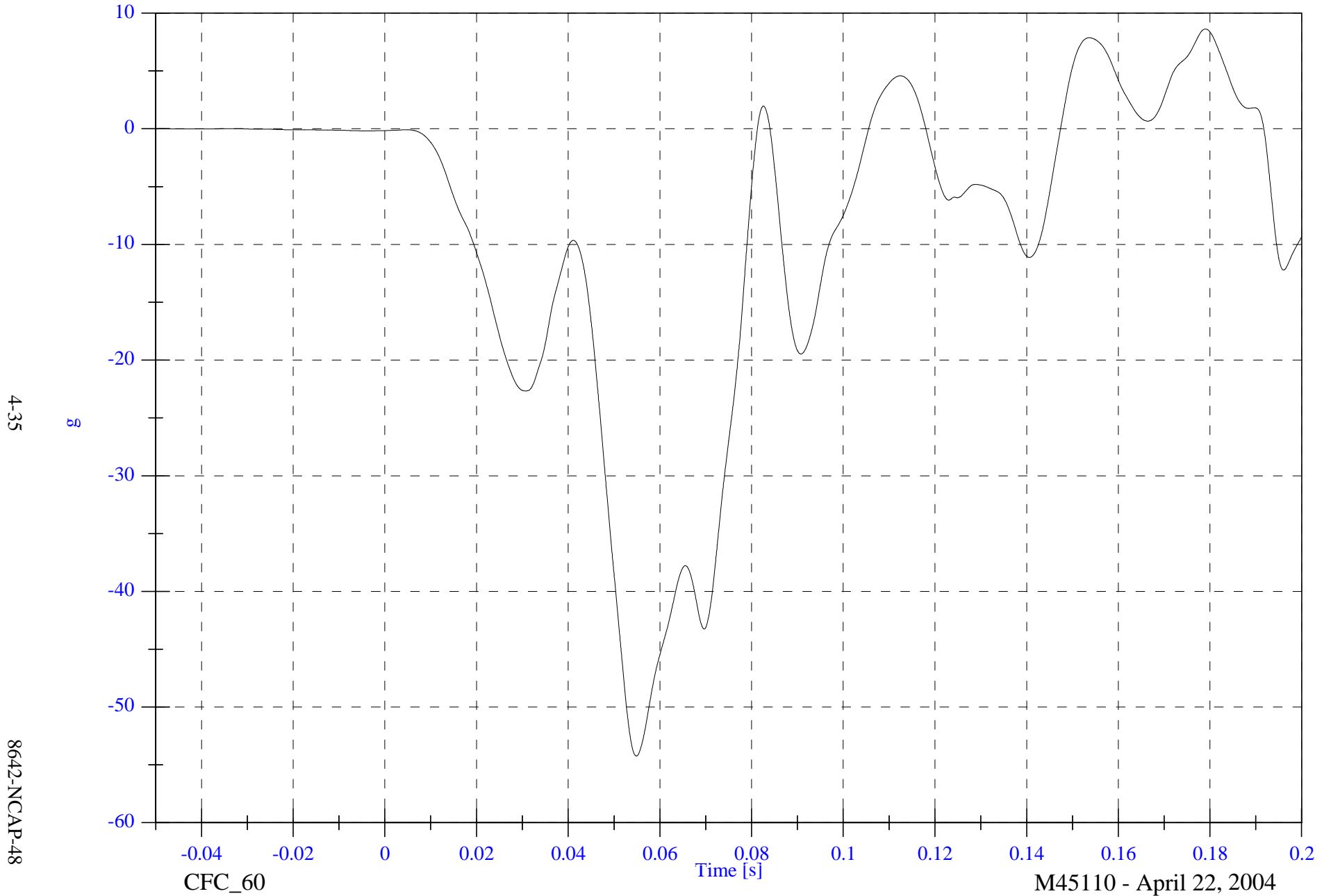
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P3 CRS x

Max: 8.6 [g] at 0.179 [s]

Min: -54.2 [g] at 0.055 [s]



4-35

8642-NCAP-48

CFC_60

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

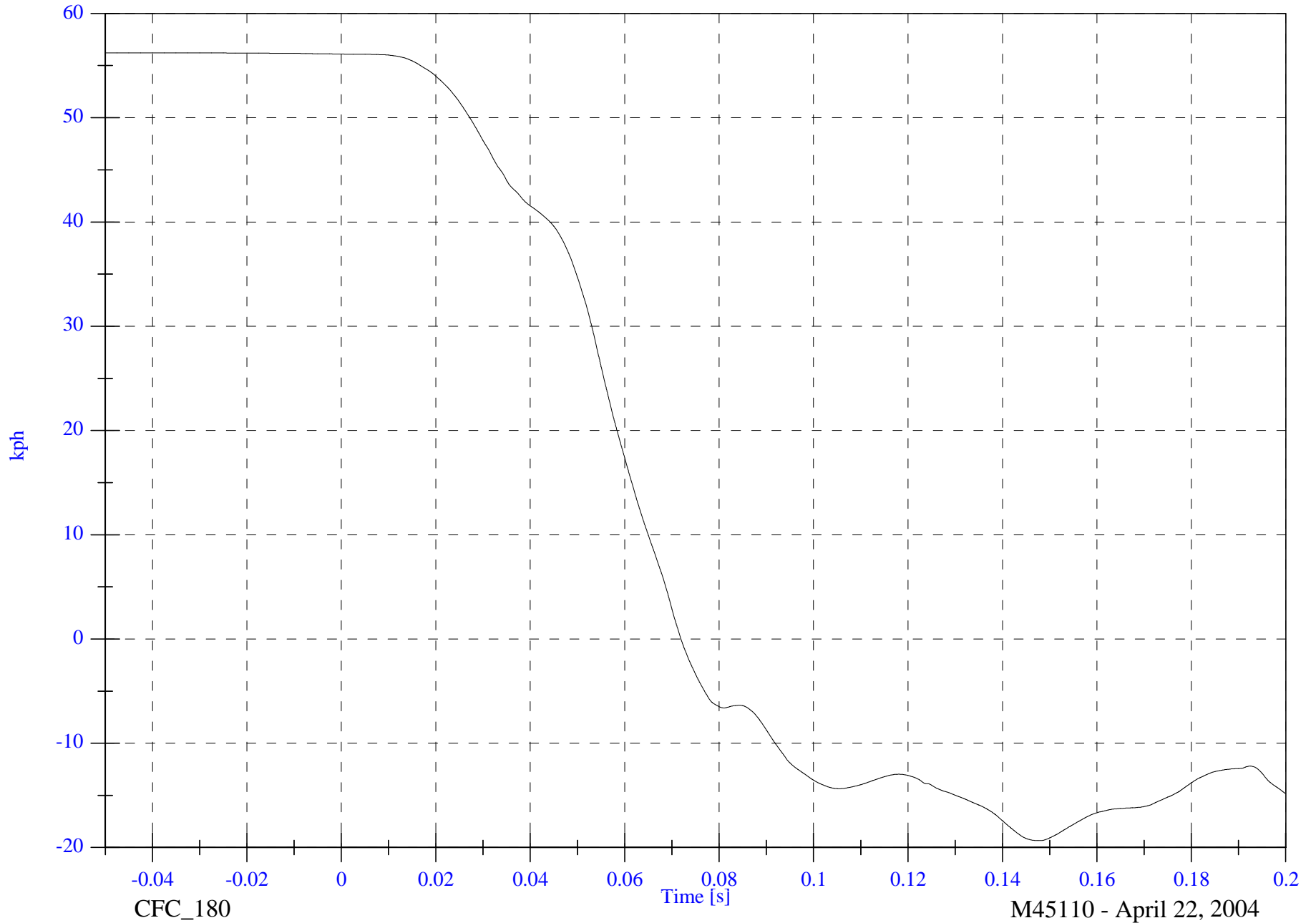
Max: 56.2 [kph] at -0.049 [s]

V1P3 CRS x Velocity

Min: -19.3 [kph] at 0.148 [s]

4-36

8642-NCAP-48



CFC_180

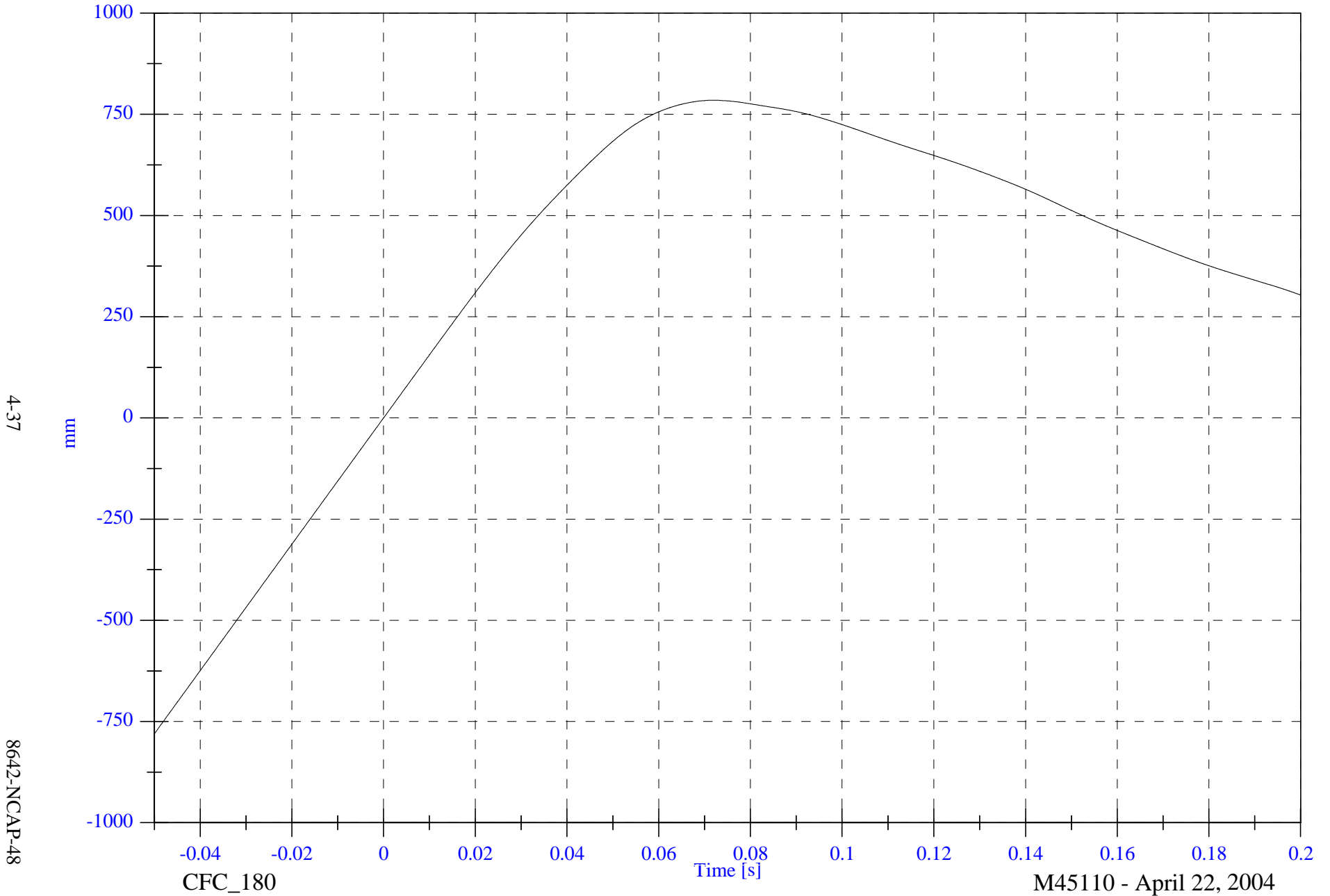
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 784.7 [mm] at 0.072 [s]

Min: -780.5 [mm] at -0.050 [s]

V1P3 CRS x Displacement



4-37

8642-NCAP-48

CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

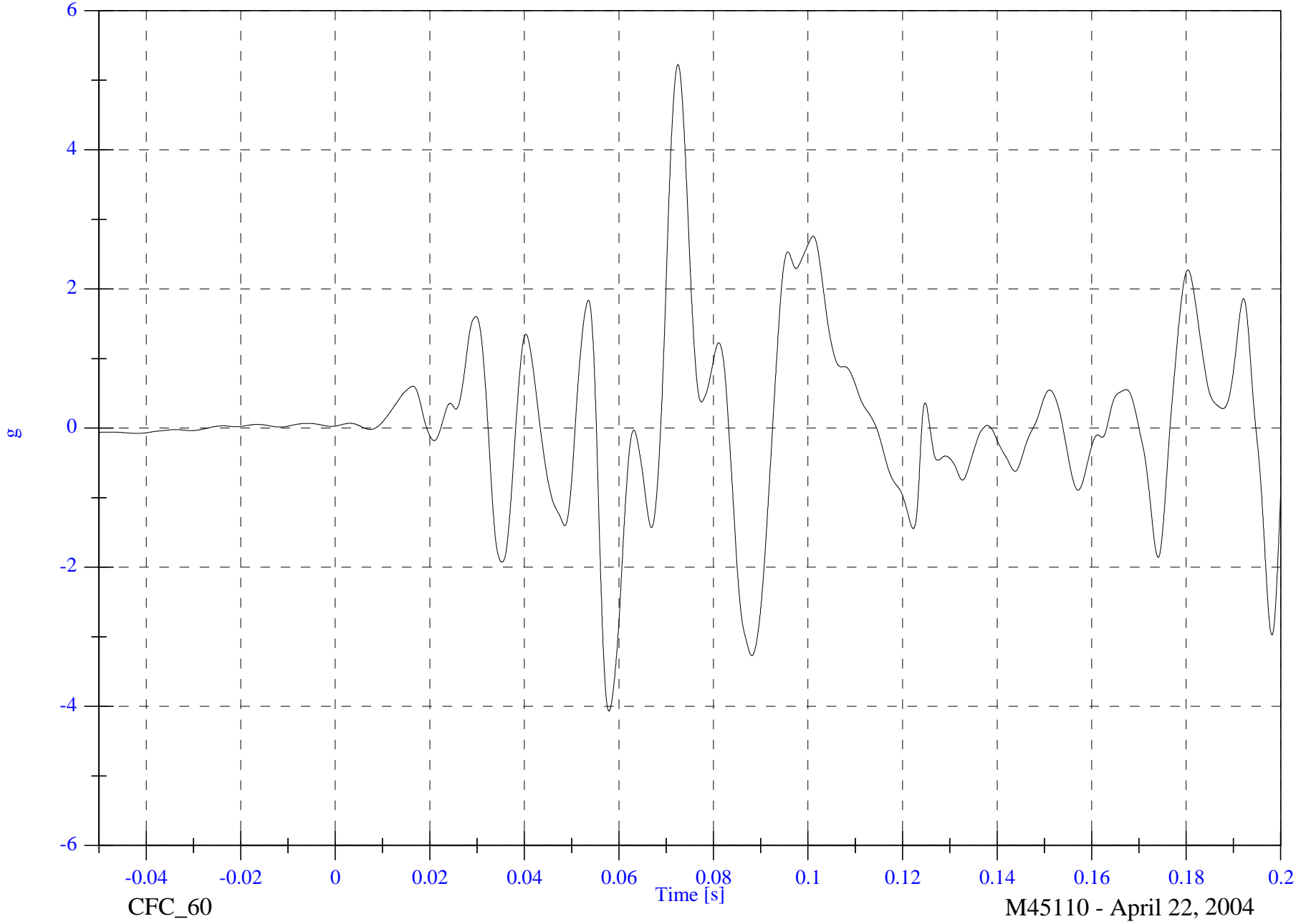
Max: 5.2 [g] at 0.072 [s]

Min: -4.1 [g] at 0.058 [s]

V1P3 CRS y

4-38

8642-NCAP-48



CFC_60

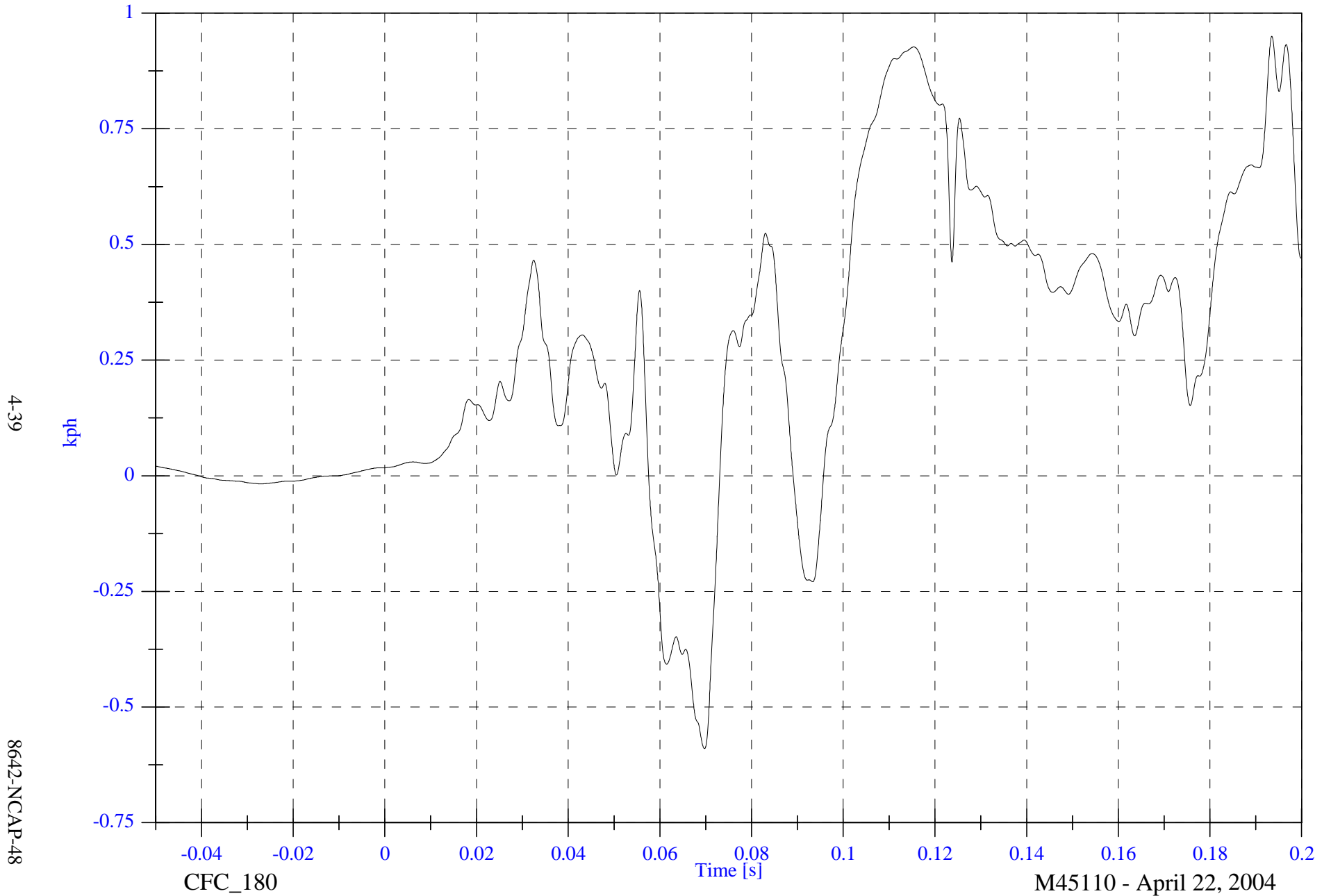
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 0.9 [kph] at 0.193 [s]

V1P3 CRS y Velocity

Min: -0.6 [kph] at 0.070 [s]

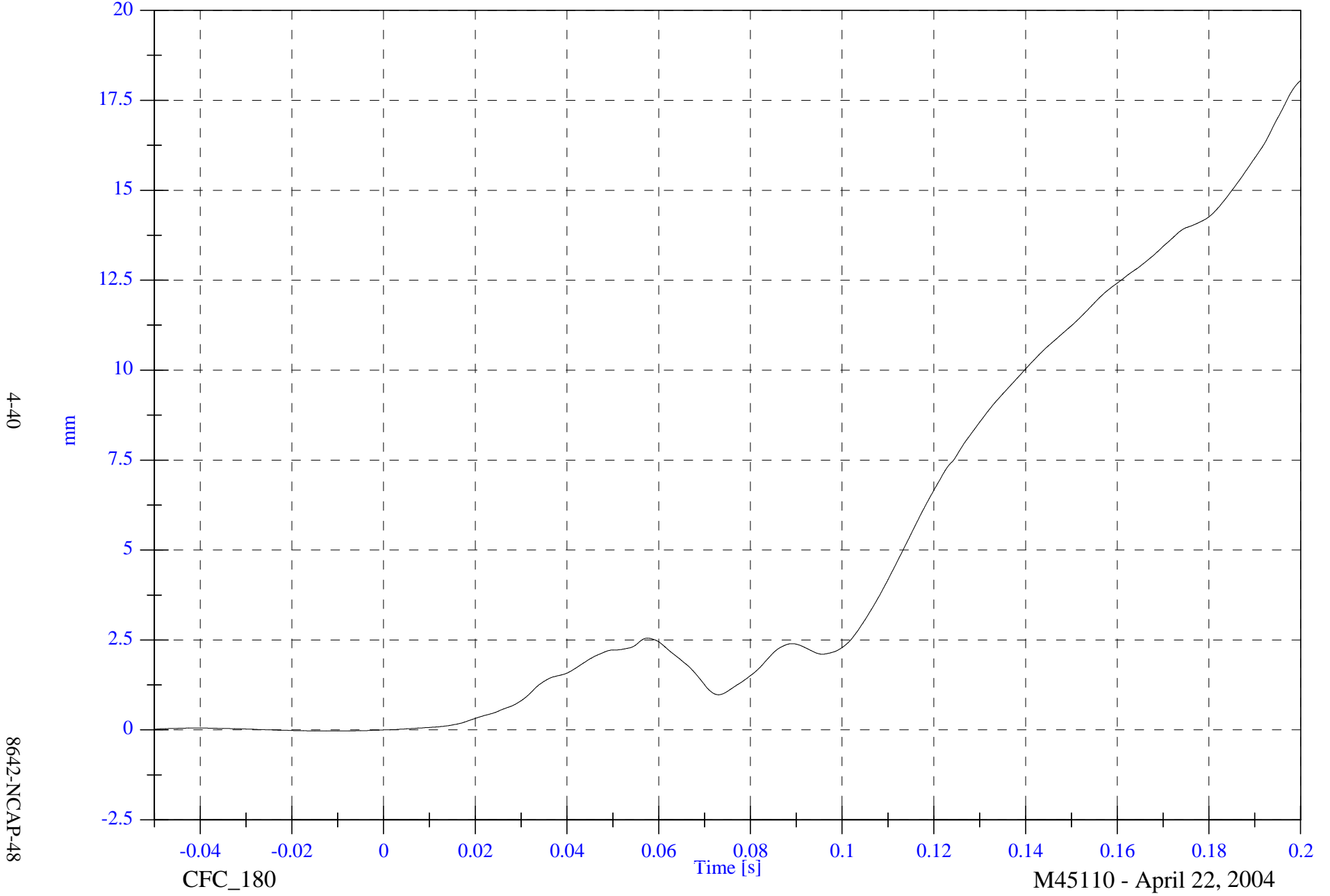


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 18.0 [mm] at 0.200 [s]

V1P3 CRS y Displacement

Min: -0.0 [mm] at -0.010 [s]



4-40

8642-NCAP-48

CFC_180

Time [s]

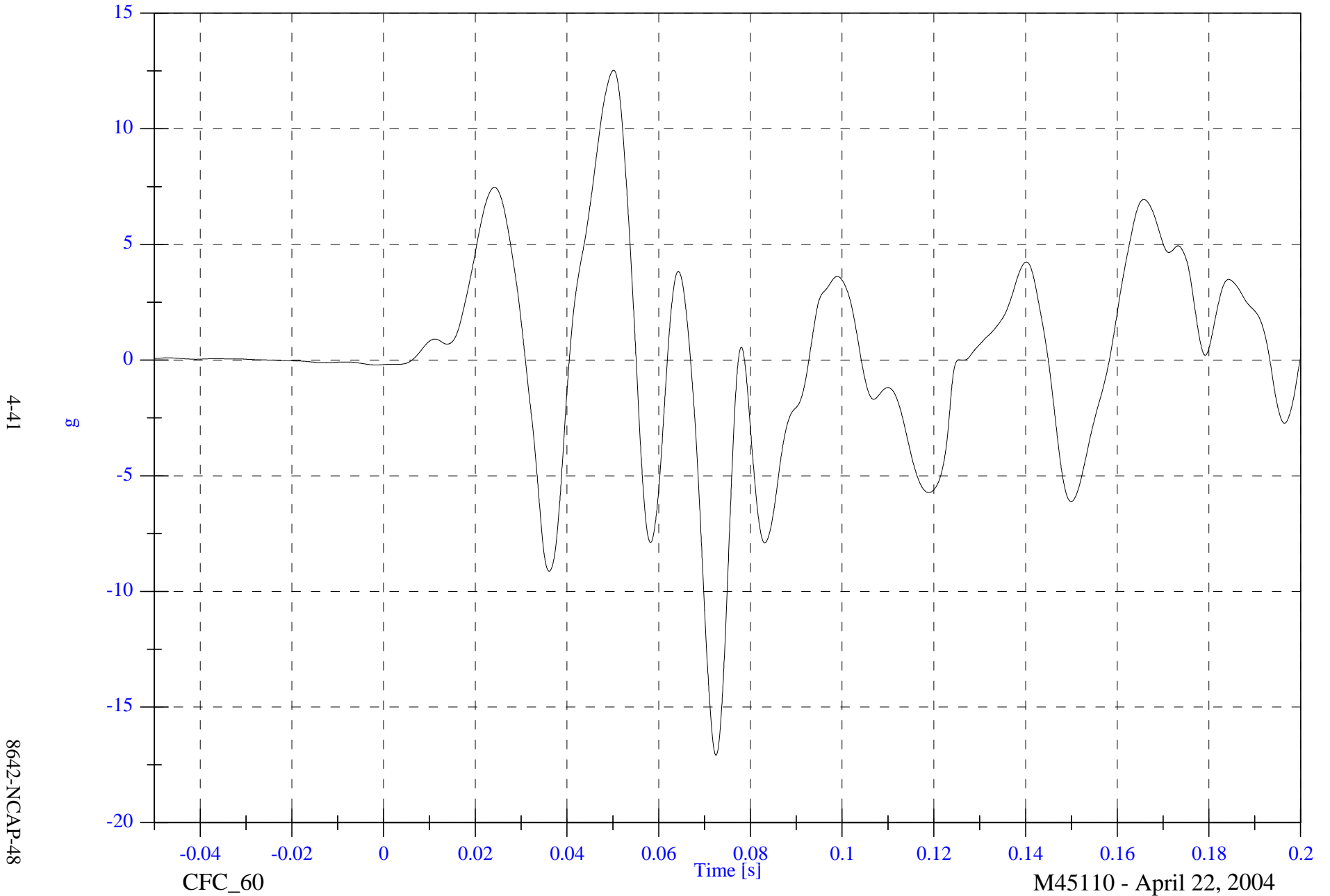
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P3 CRS z

Max: 12.5 [g] at 0.050 [s]

Min: -17.1 [g] at 0.072 [s]



4-41

8642-NCAP-48

CFC_60

Time [s]

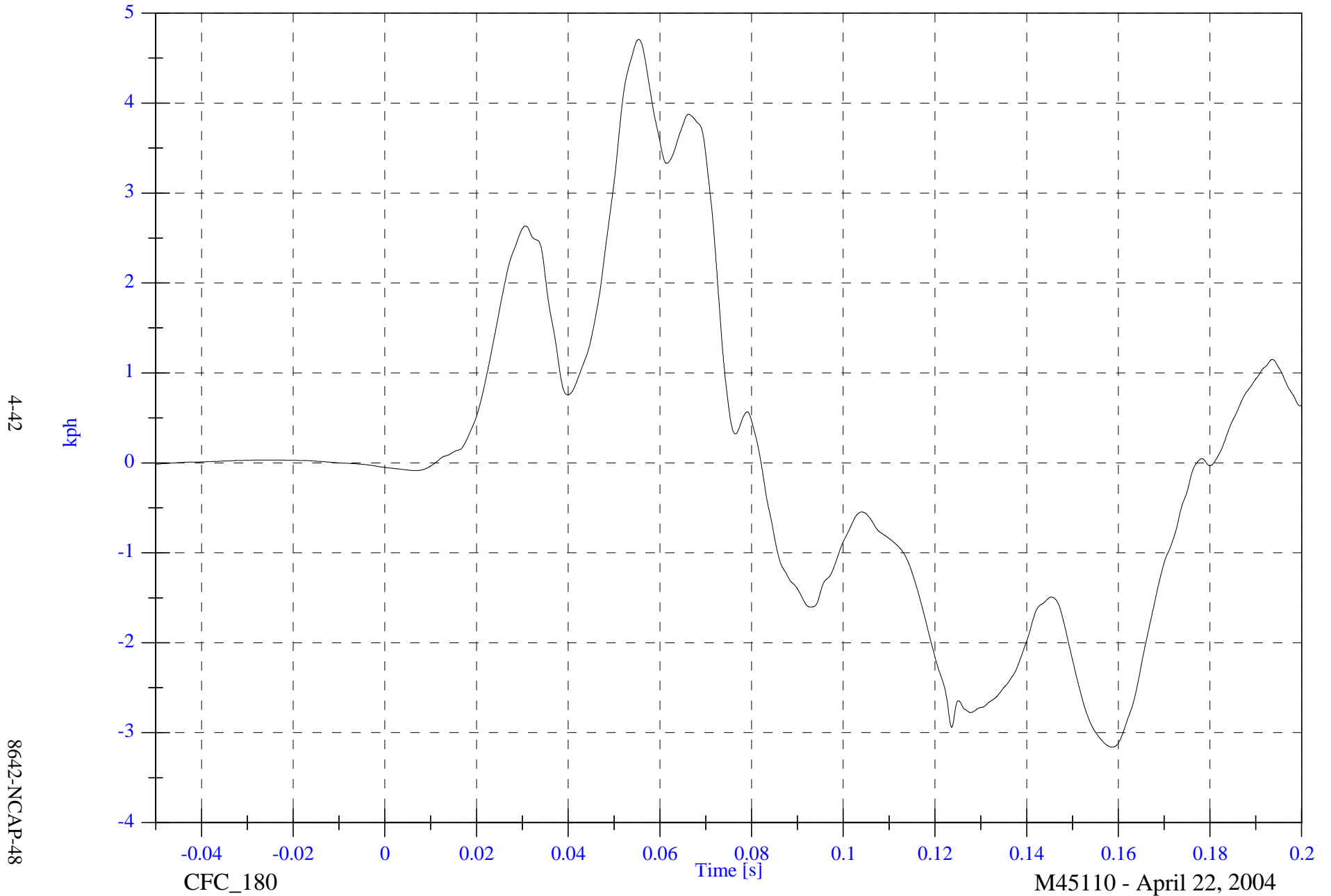
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 4.7 [kph] at 0.055 [s]

Min: -3.2 [kph] at 0.159 [s]

V1P3 CRS z Velocity



4-42

8642-NCAP-48

CFC_180

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 39.7 [mm] at 0.082 [s]

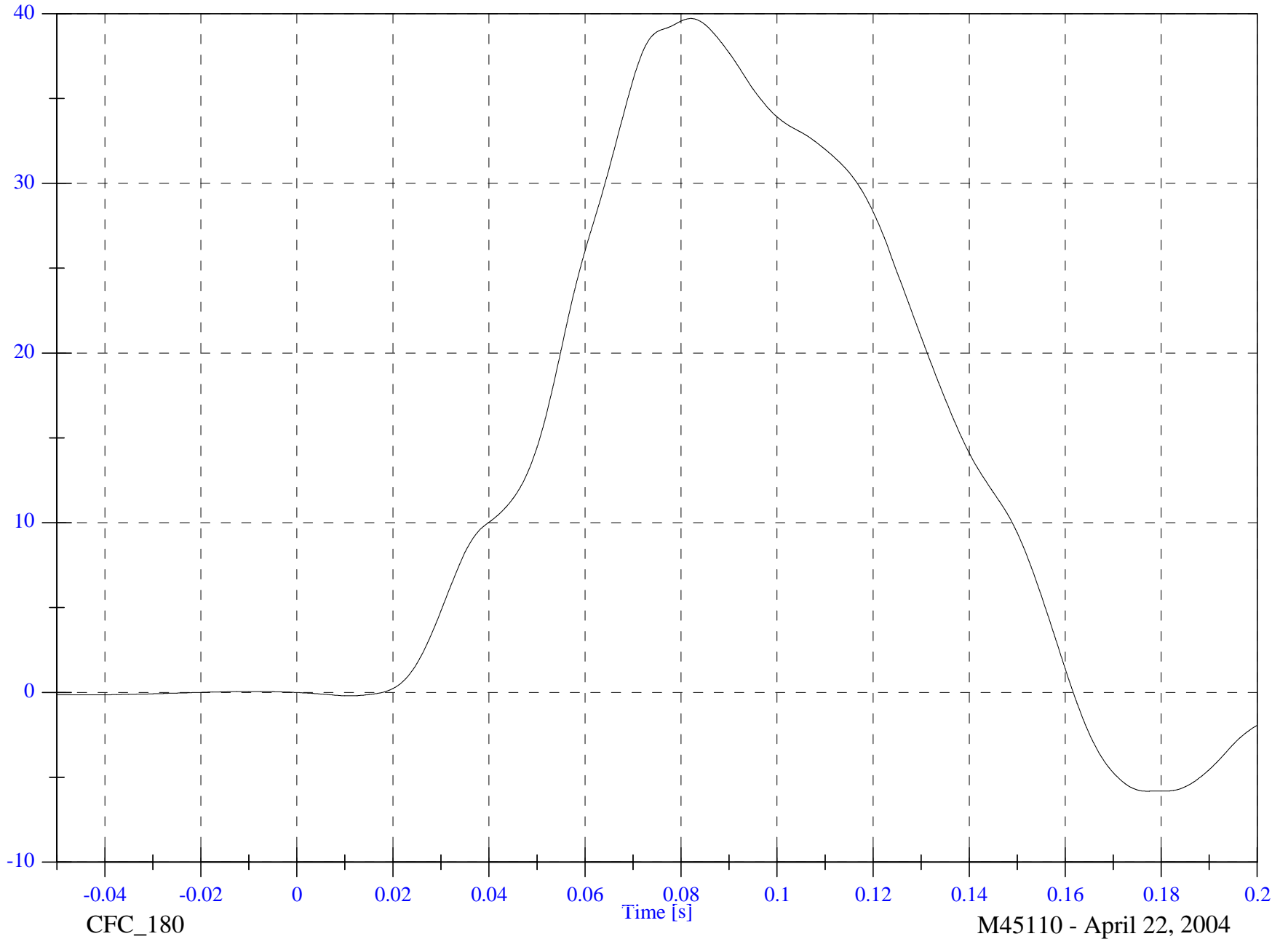
V1P3 CRS z Displacement

Min: -5.8 [mm] at 0.177 [s]

4-43

mm

8642-NCAP-48



CFC_180

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

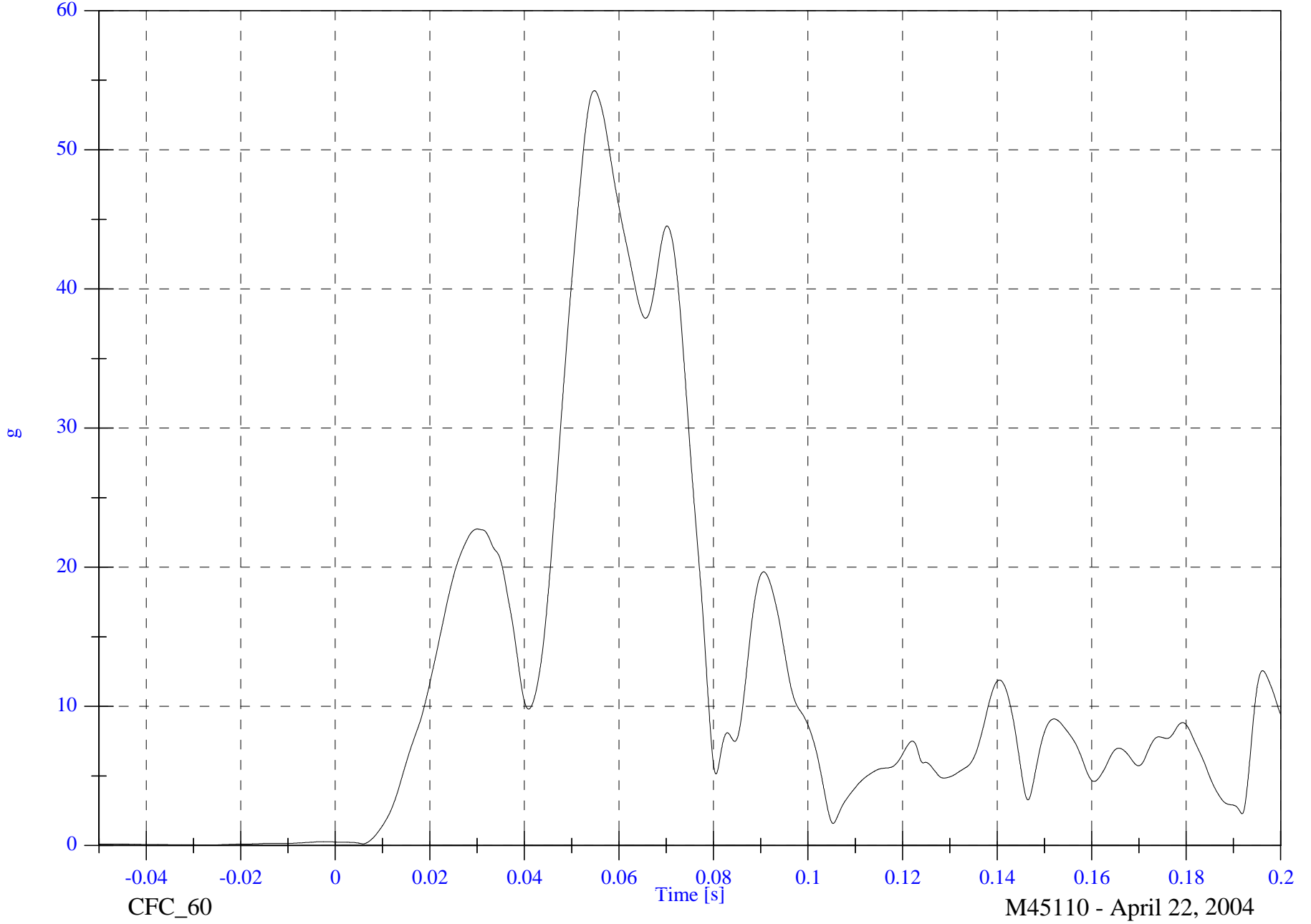
V1P3 CRS Resultant

Max: 54.2 [g] at 0.055 [s]

Min: 0.0 [g] at -0.027 [s]

4-44

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

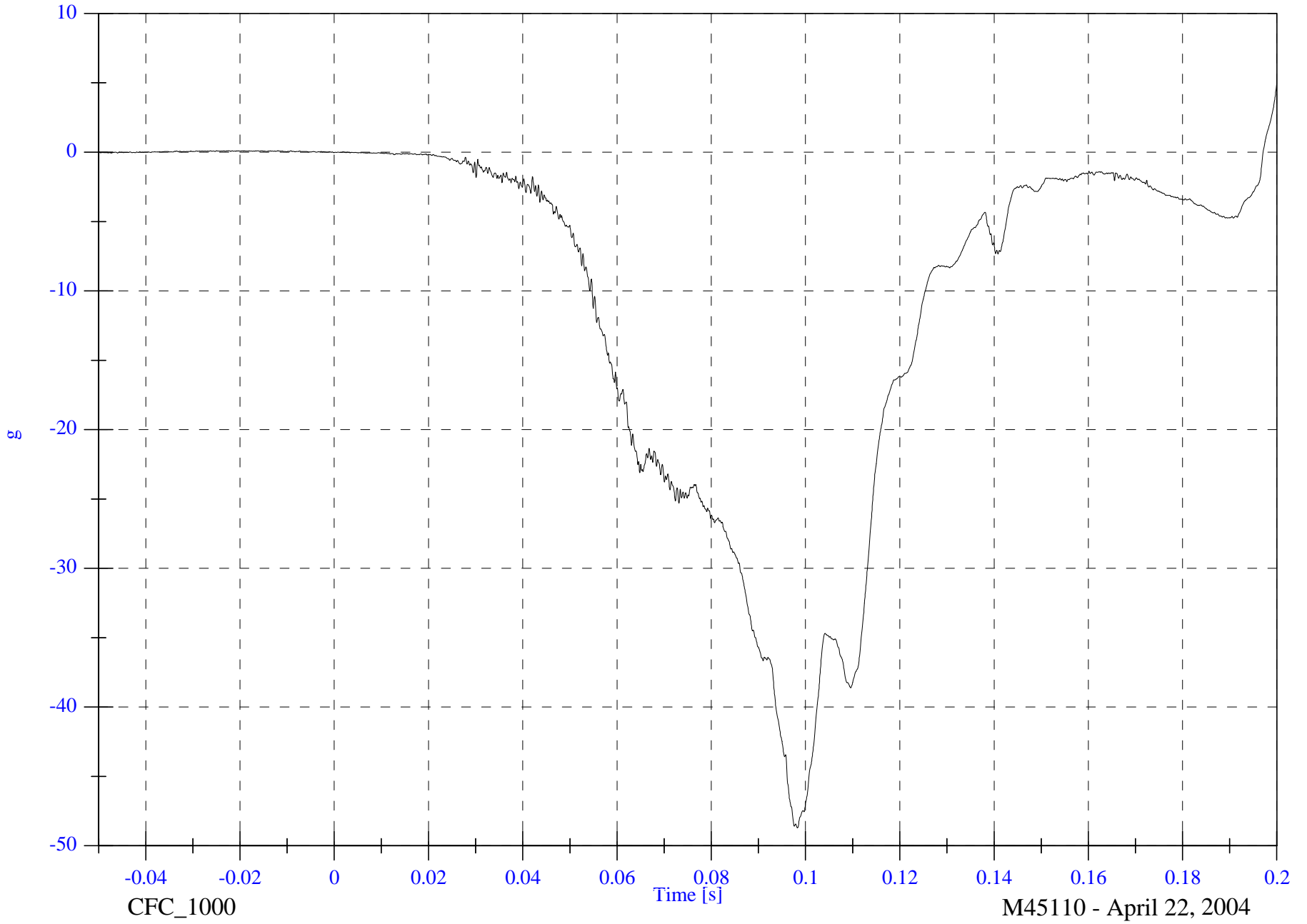
V1P4 Head x

Max: 5.0 [g] at 0.200 [s]

Min: -48.7 [g] at 0.098 [s]

4-45

8642-NCAP-48

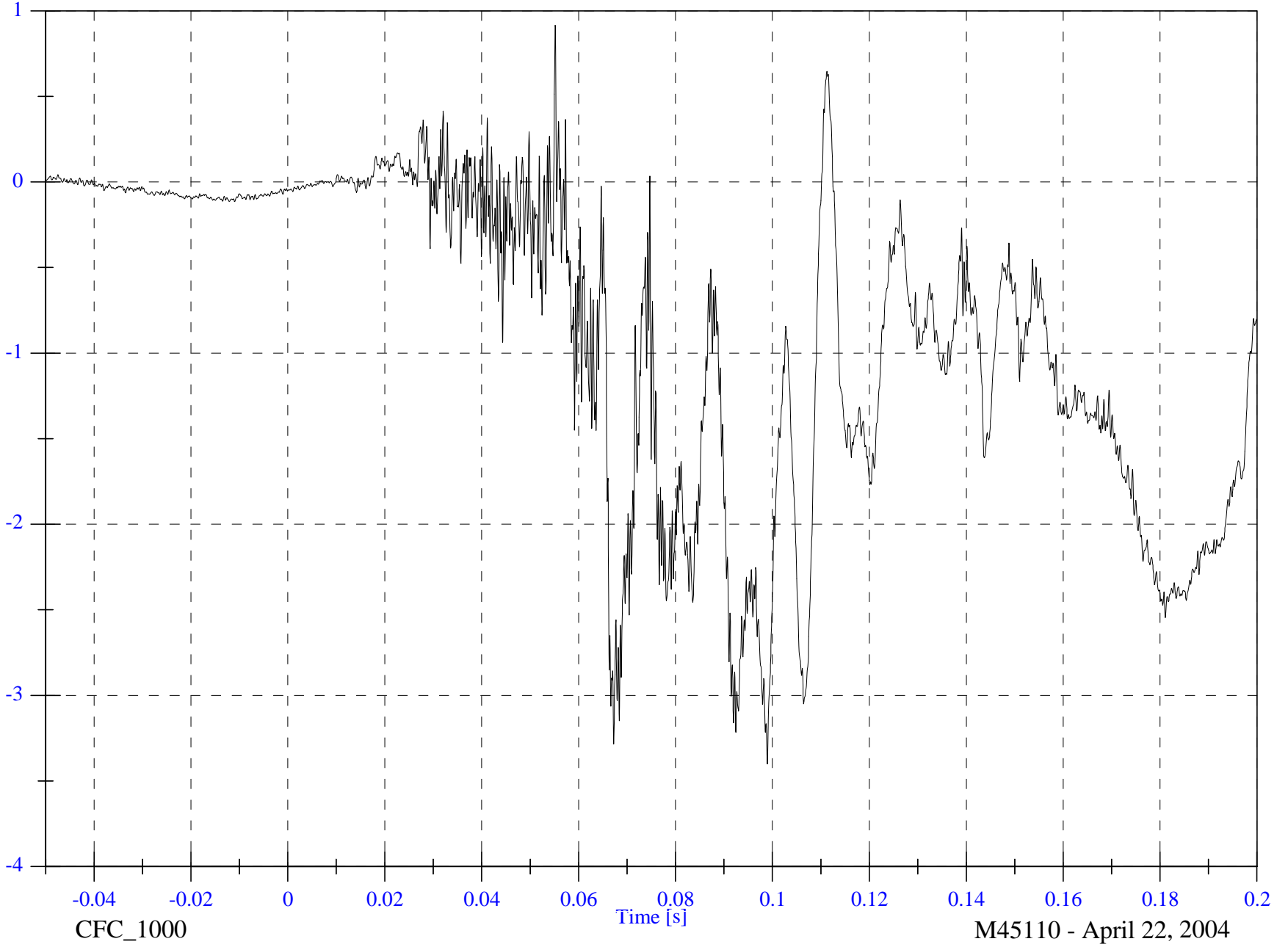


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 0.9 [g] at 0.055 [s]

Min: -3.4 [g] at 0.099 [s]

V1P4 Head y



4-46

g

8642-NCAP-48

CFC_1000

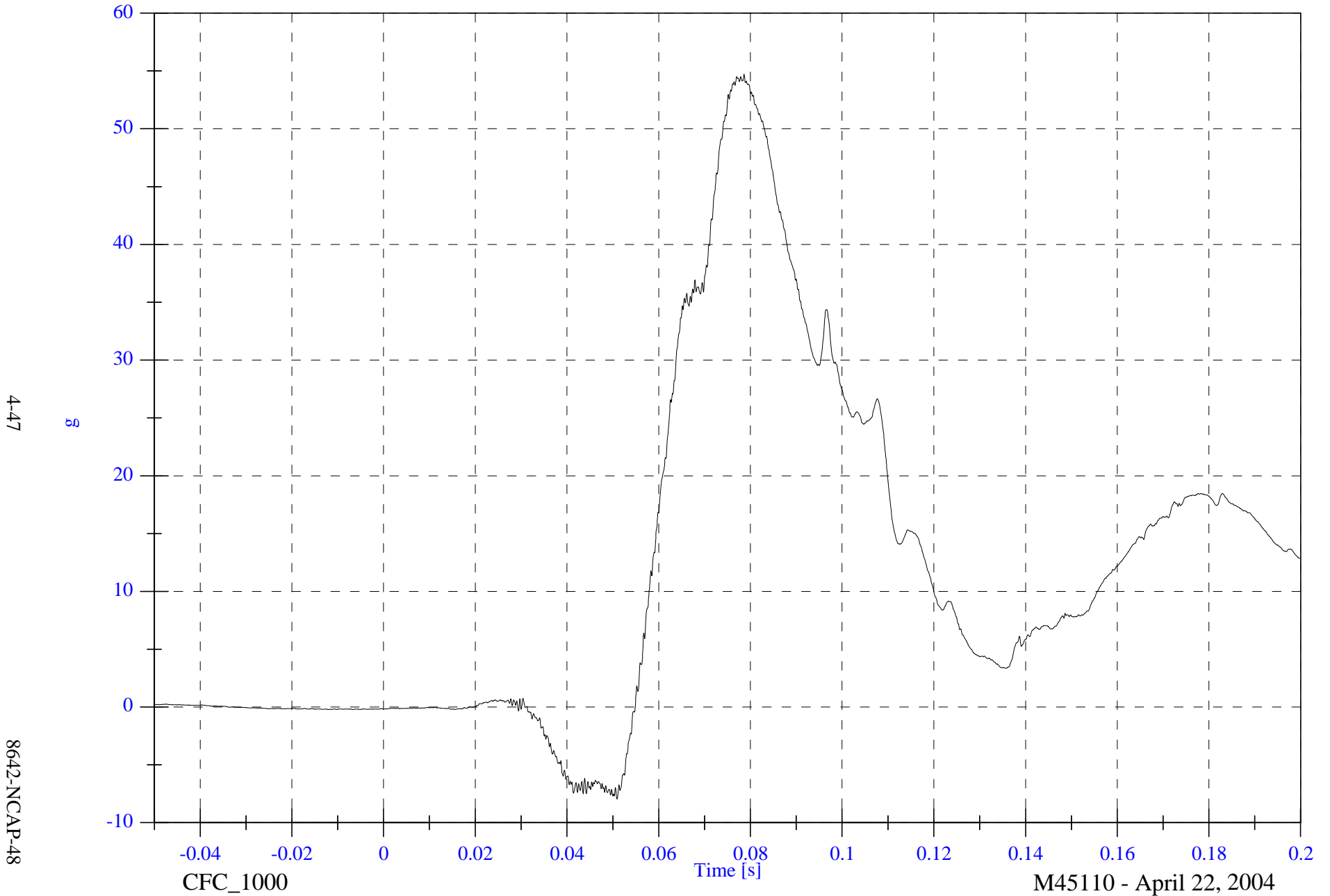
Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 54.7 [g] at 0.079 [s]
Min: -8.0 [g] at 0.051 [s]

V1P4 Head z



4-47

8642-NCAP-48

CFC_1000

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

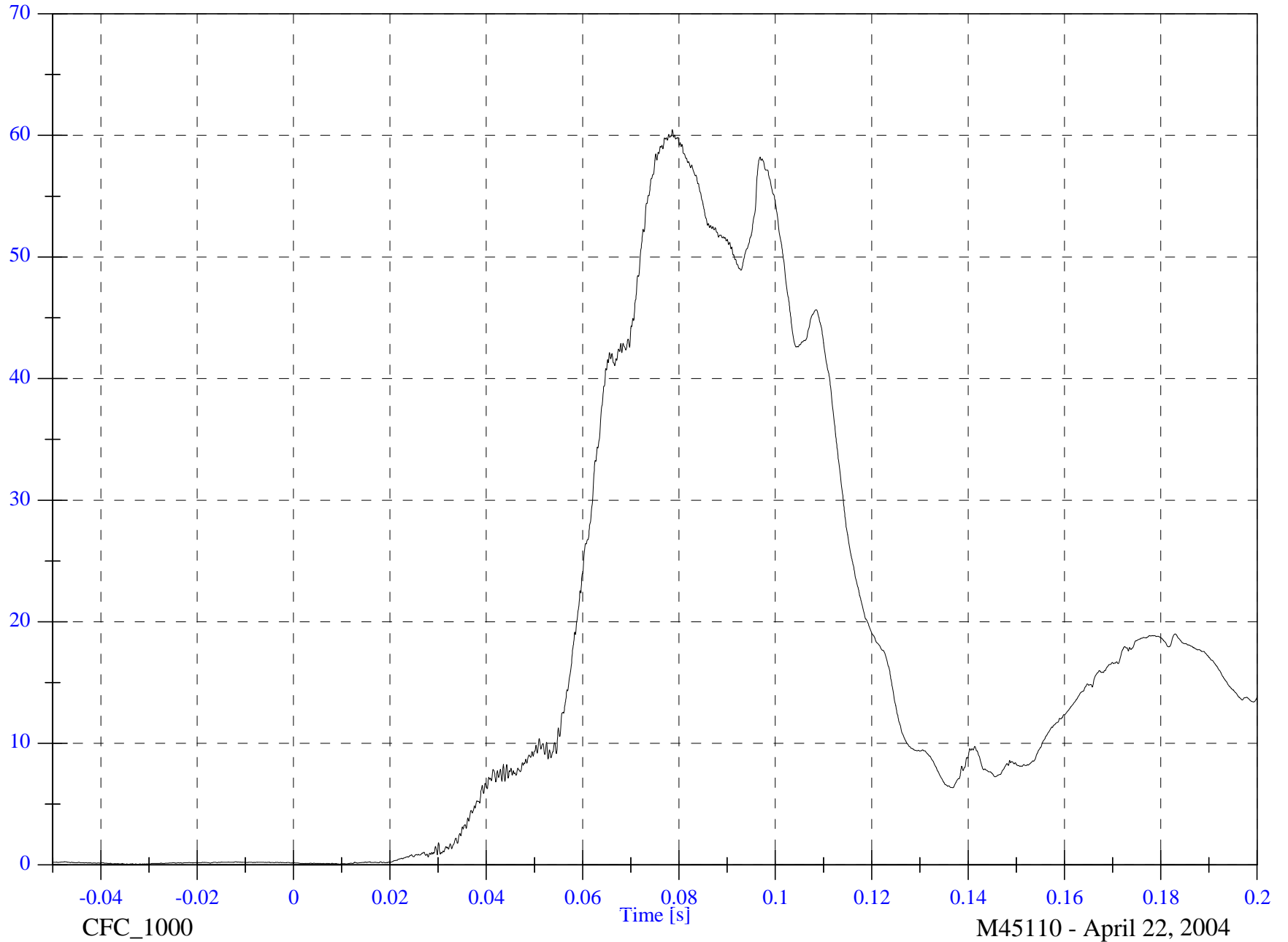
Max: 60.5 [g] at 0.079 [s]

V1P4 Head Resultant

Min: 0.0 [g] at -0.034 [s]

4-48

g



8642-NCAP-48

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

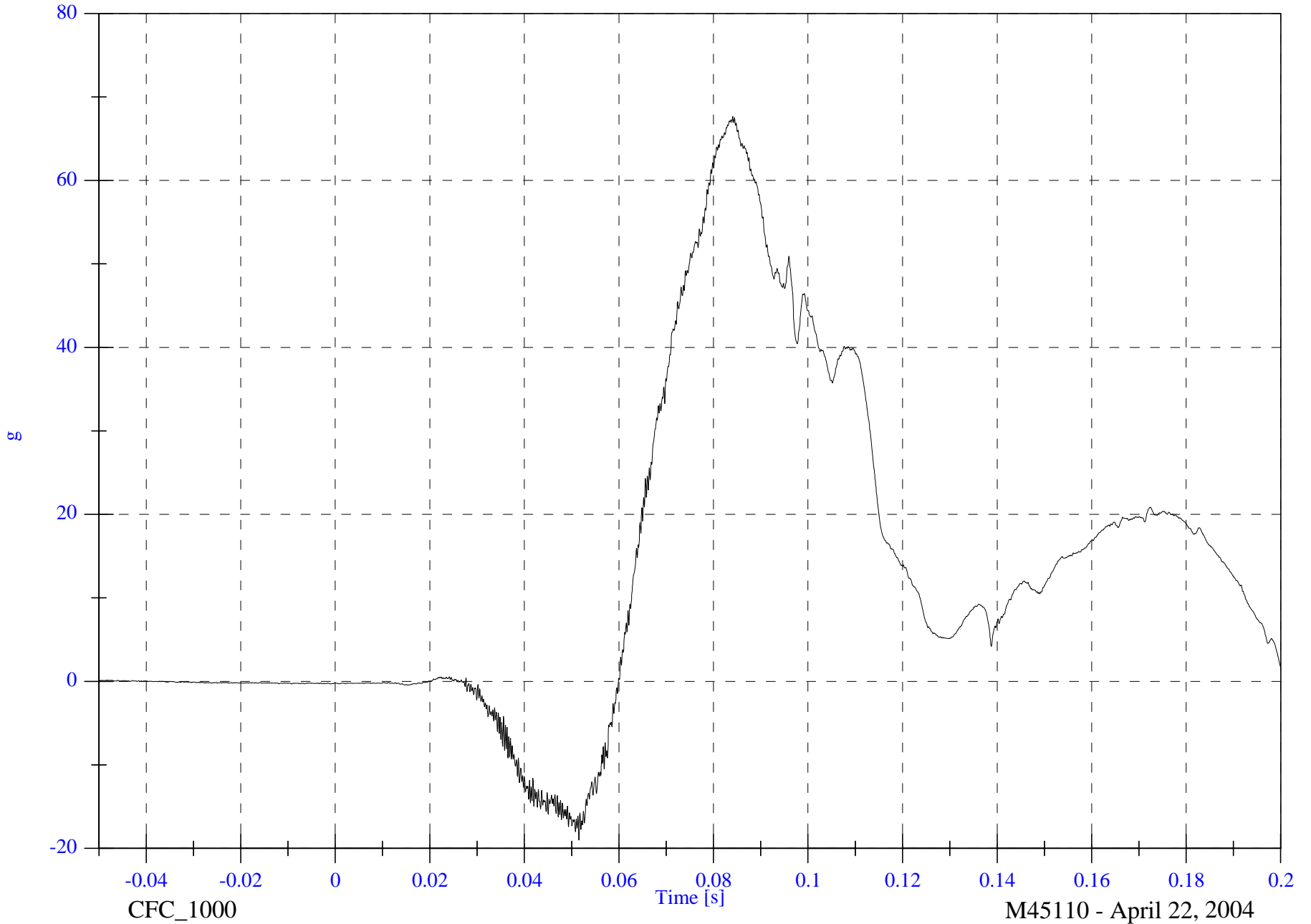
VIP4 Head Rear z

Max: 67.7 [g] at 0.084 [s]

Min: -19.0 [g] at 0.052 [s]

4-49

8642-NCAP-48



CFC_1000

Time [s]

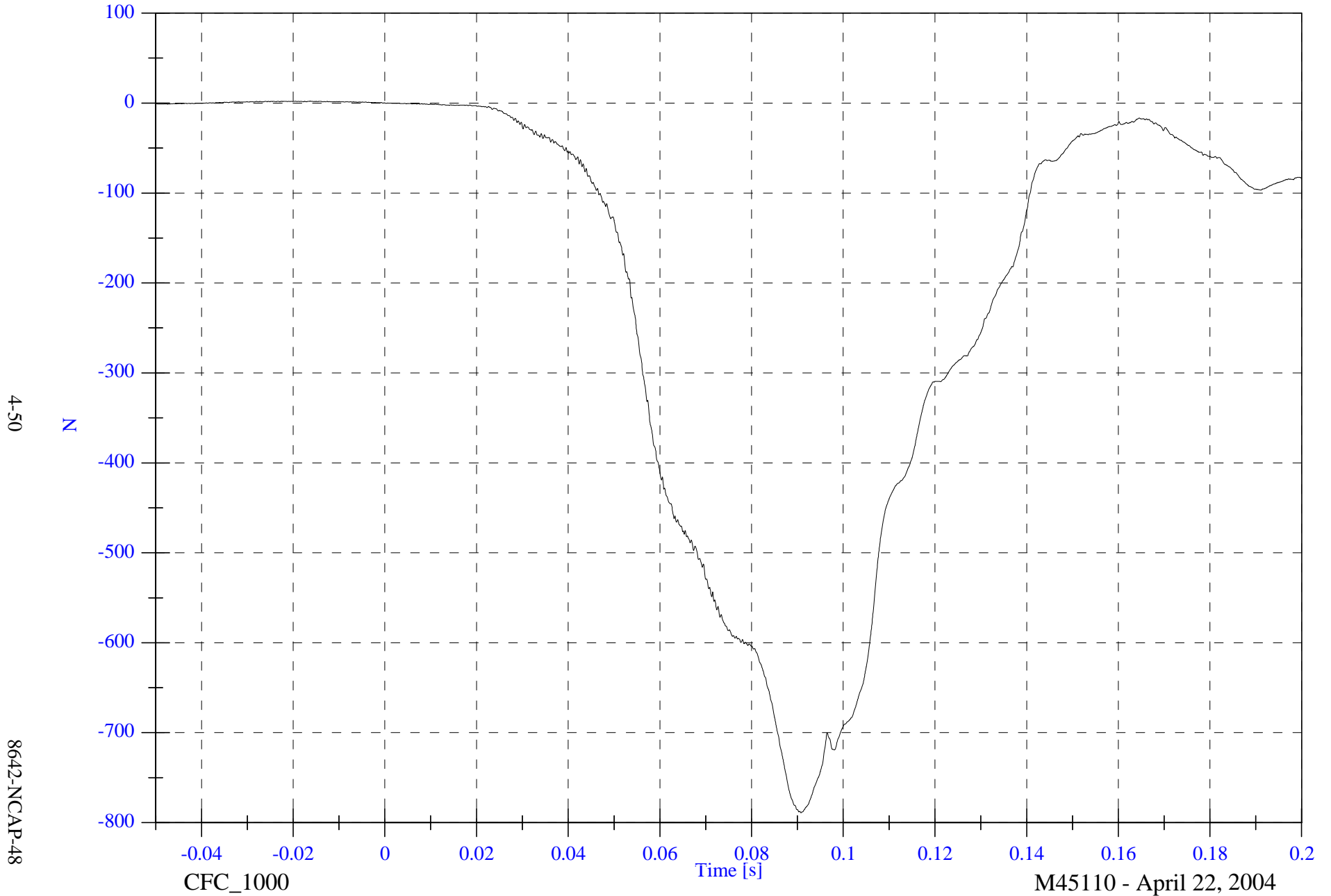
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P4 Upper Neck Fx

Max: 2.2 [N] at -0.016 [s]

Min: -789.0 [N] at 0.091 [s]



4-50

N

8642-NCAP-48

CFC_1000

Time [s]

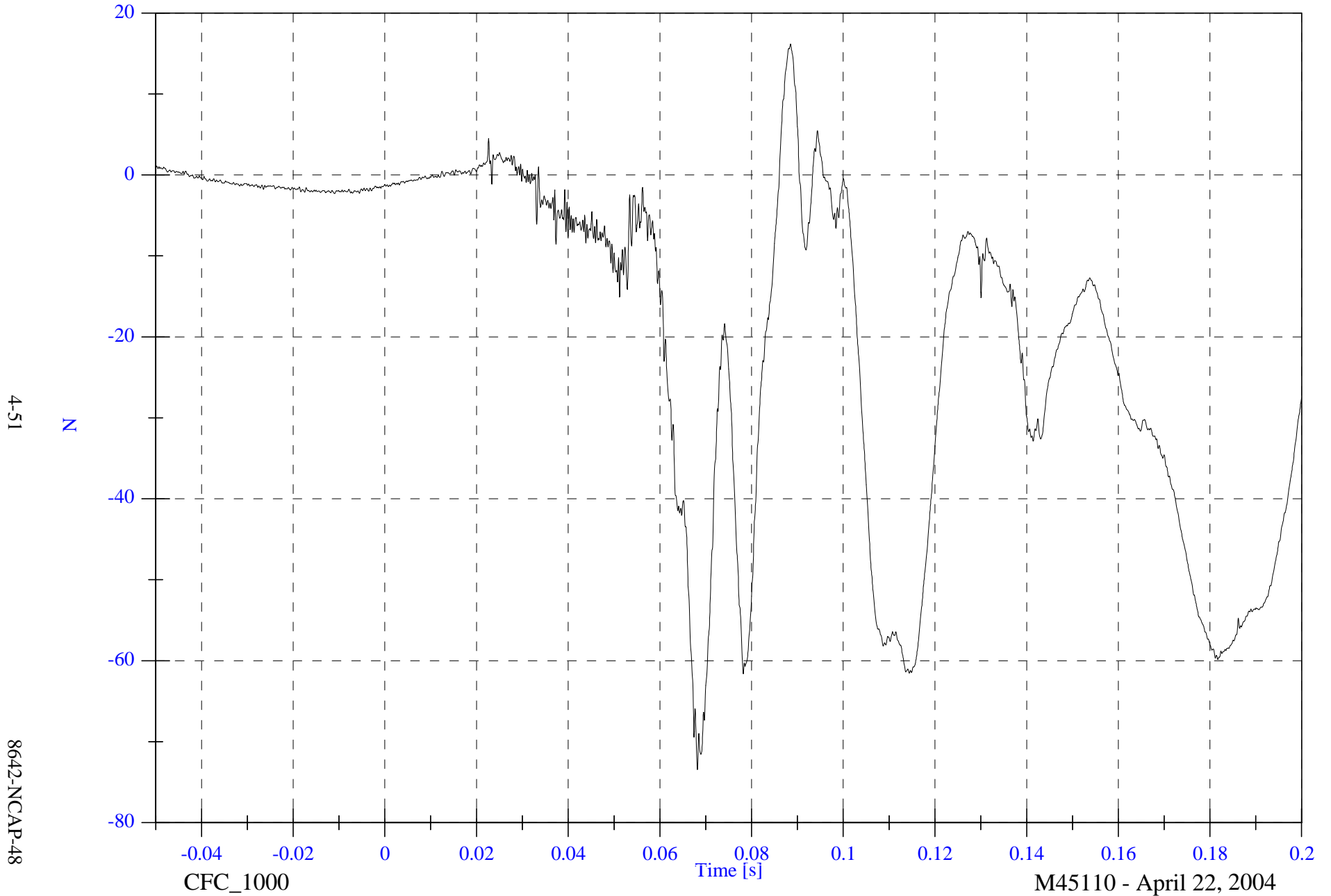
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 16.2 [N] at 0.088 [s]

V1P4 Upper Neck Fy

Min: -73.5 [N] at 0.068 [s]



4-51

8642-NCAP-48

CFC_1000

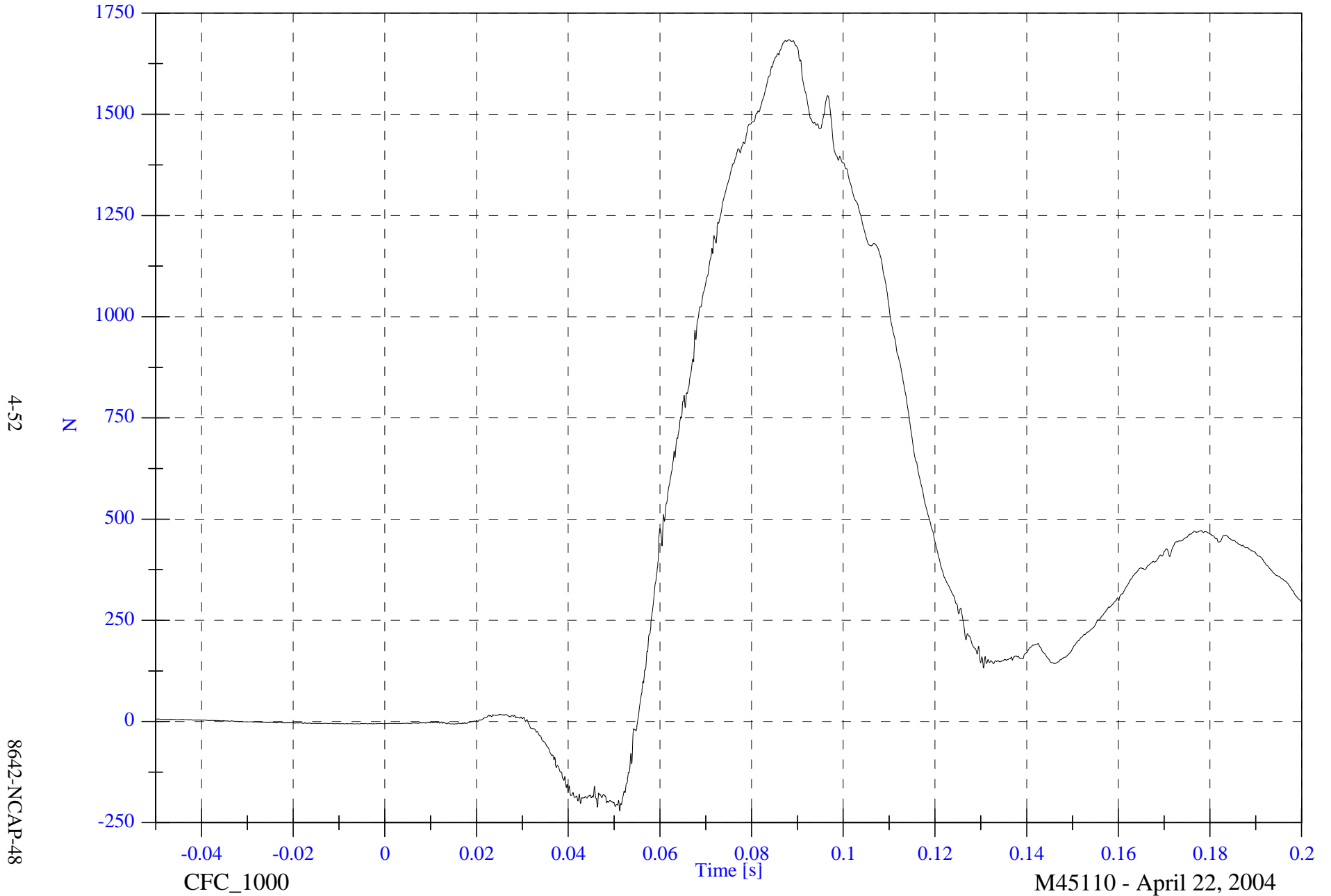
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 1684.4 [N] at 0.088 [s]

V1P4 Upper Neck Fz

Min: -221.4 [N] at 0.051 [s]



4-52

8642-NCAP-48

CFC_1000

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

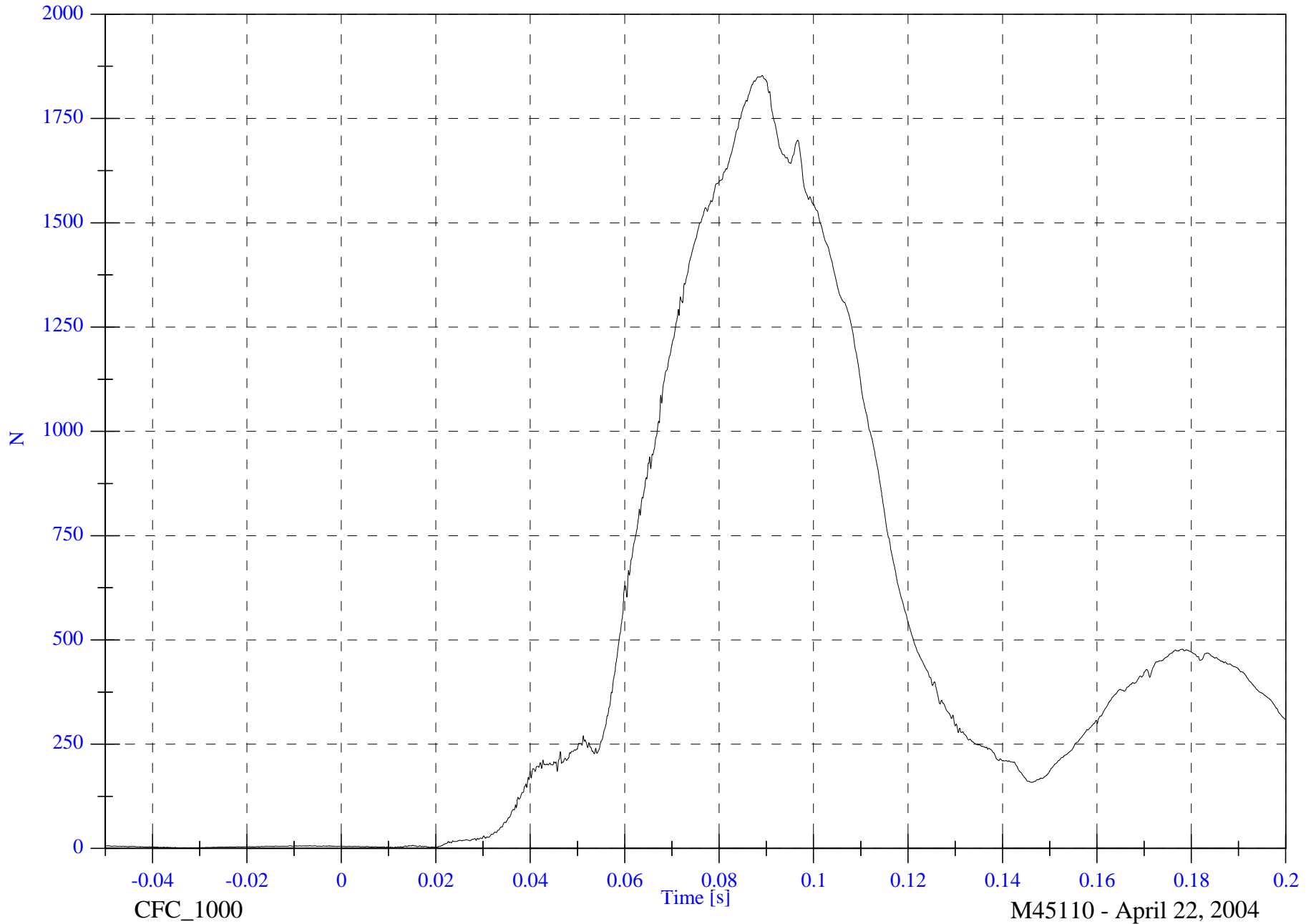
Max: 1853.4 [N] at 0.089 [s]

V1P4 Upper Neck F Resultant

Min: 1.4 [N] at 0.011 [s]

4-53

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

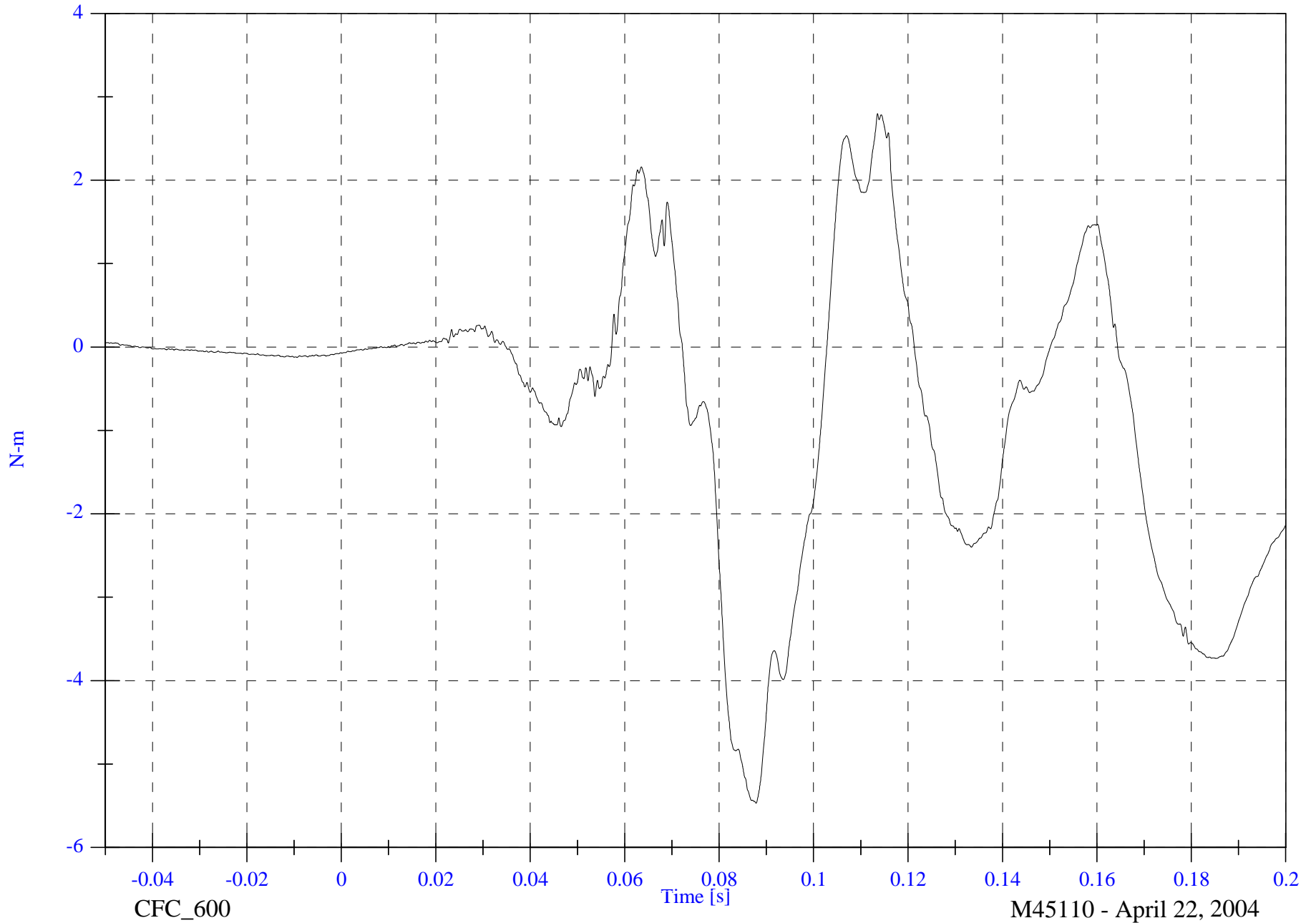
Max: 2.8 [N-m] at 0.114 [s]

V1P4 Upper Neck Mx

Min: -5.5 [N-m] at 0.088 [s]

4-54

8642-NCAP-48



CFC_600

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

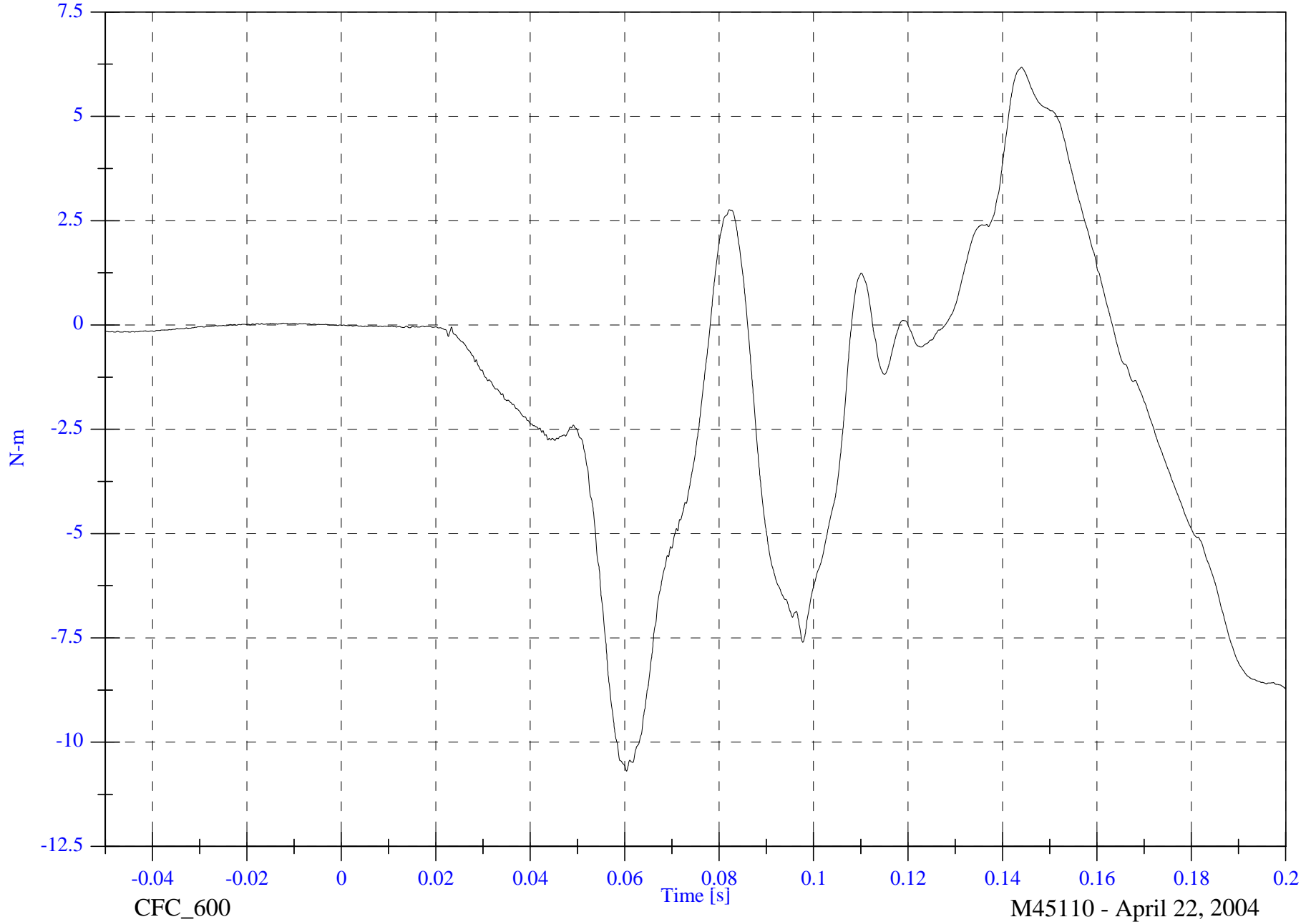
V1P4 Upper Neck My

Max: 6.2 [N-m] at 0.144 [s]

Min: -10.7 [N-m] at 0.060 [s]

4-55

8642-NCAP-48



CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

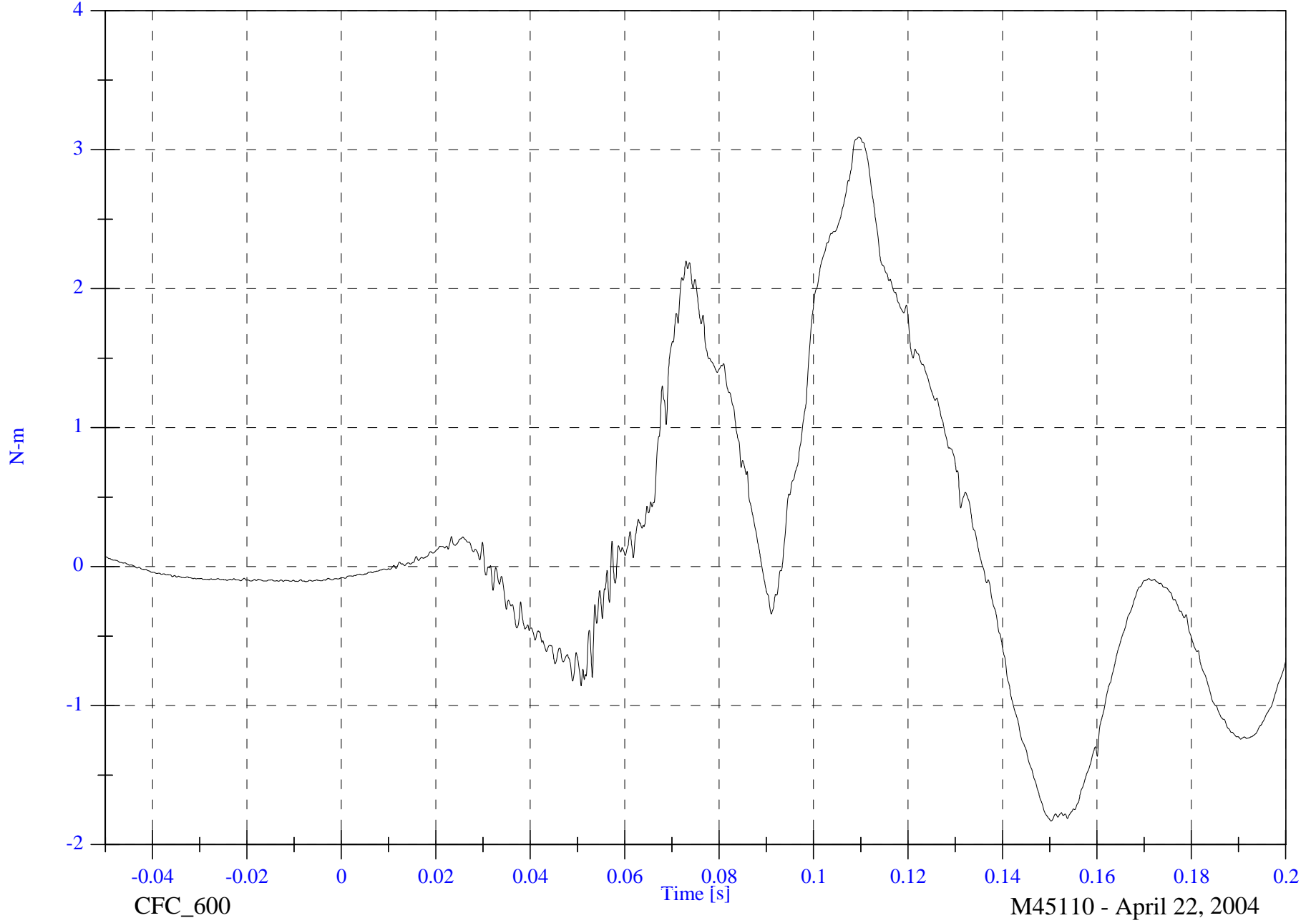
V1P4 Upper Neck Mz

Max: 3.1 [N-m] at 0.110 [s]

Min: -1.8 [N-m] at 0.150 [s]

4-56

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

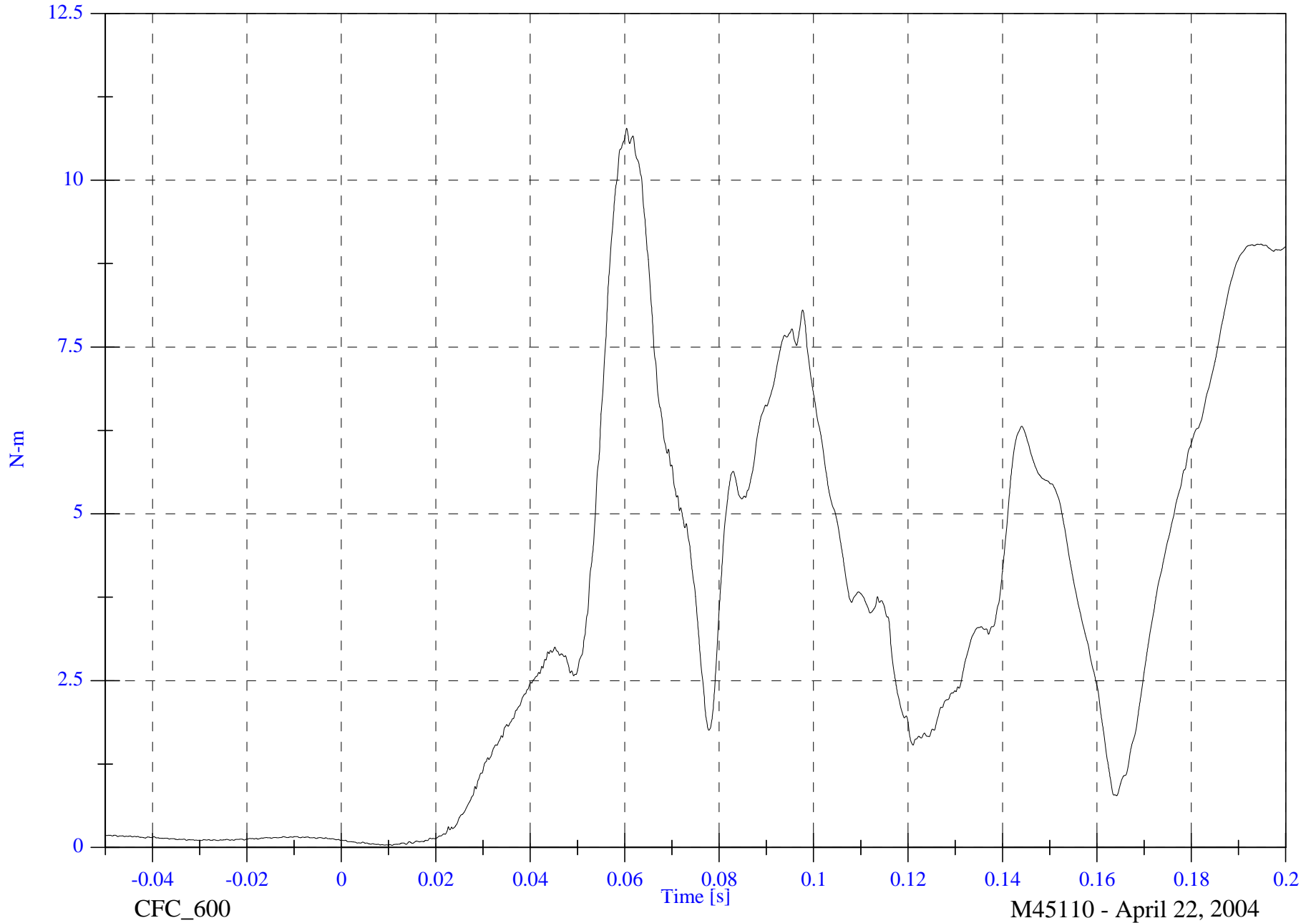
V1P4 Upper Neck M Resultant

Max: 10.8 [N-m] at 0.060 [s]

Min: 0.0 [N-m] at 0.011 [s]

4-57

8642-NCAP-48

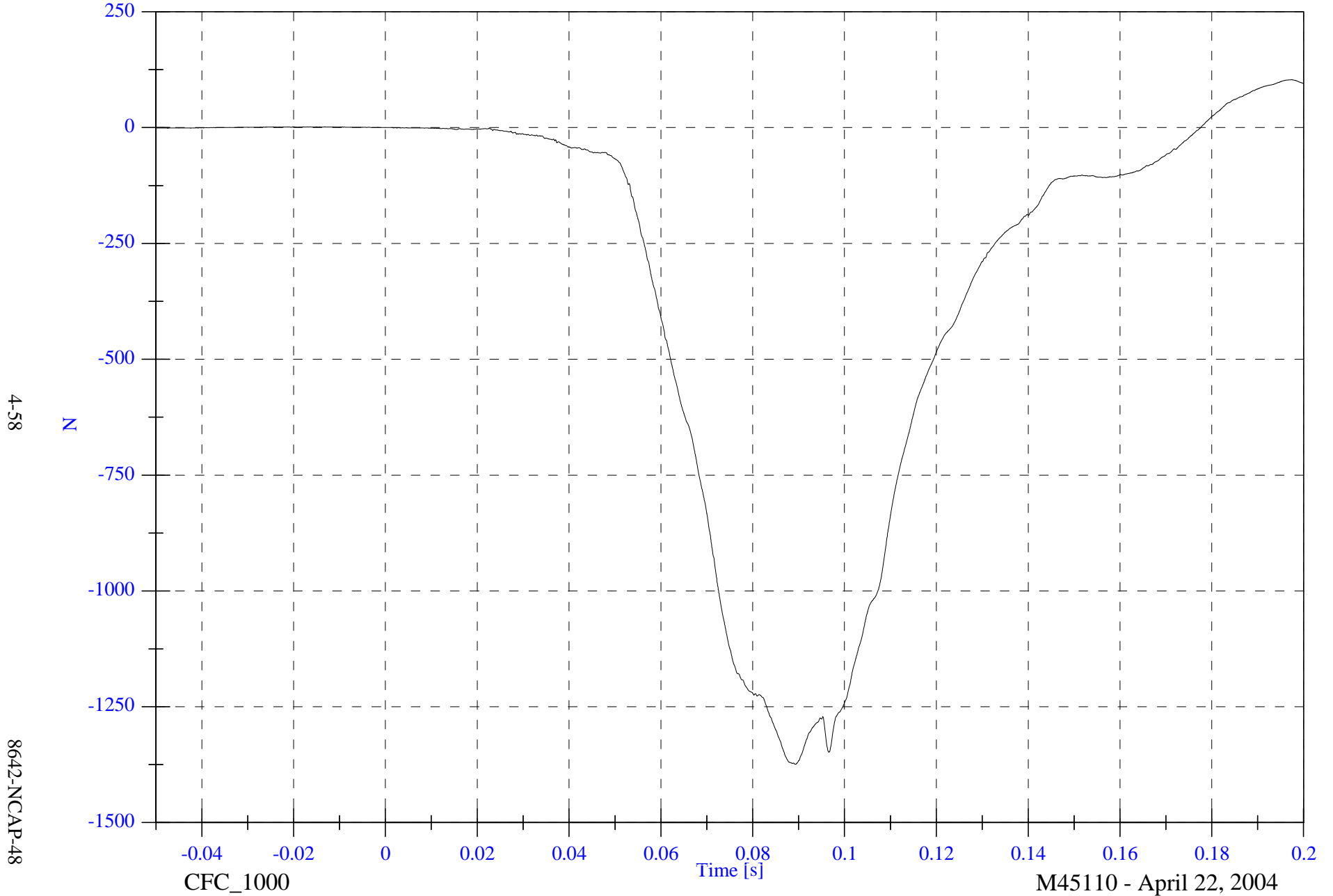


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P4 Lower Neck Fx

Max: 103.3 [N] at 0.197 [s]

Min: -1373.8 [N] at 0.089 [s]



4-58

8642-NCAP-48

CFC_1000

Time [s]

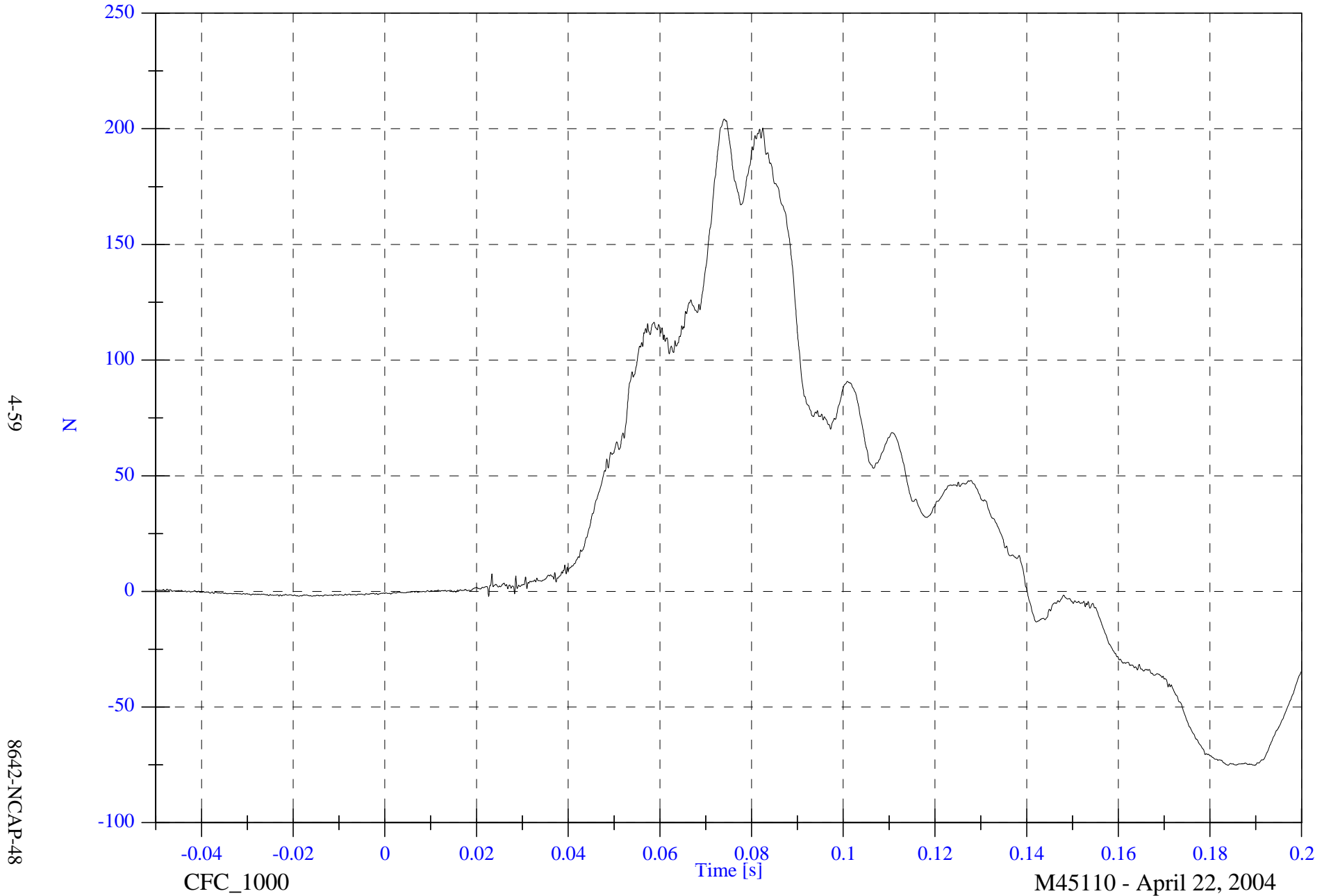
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 204.1 [N] at 0.074 [s]

V1P4 Lower Neck Fy

Min: -75.2 [N] at 0.190 [s]



4-59

8642-NCAP-48

CFC_1000

Time [s]

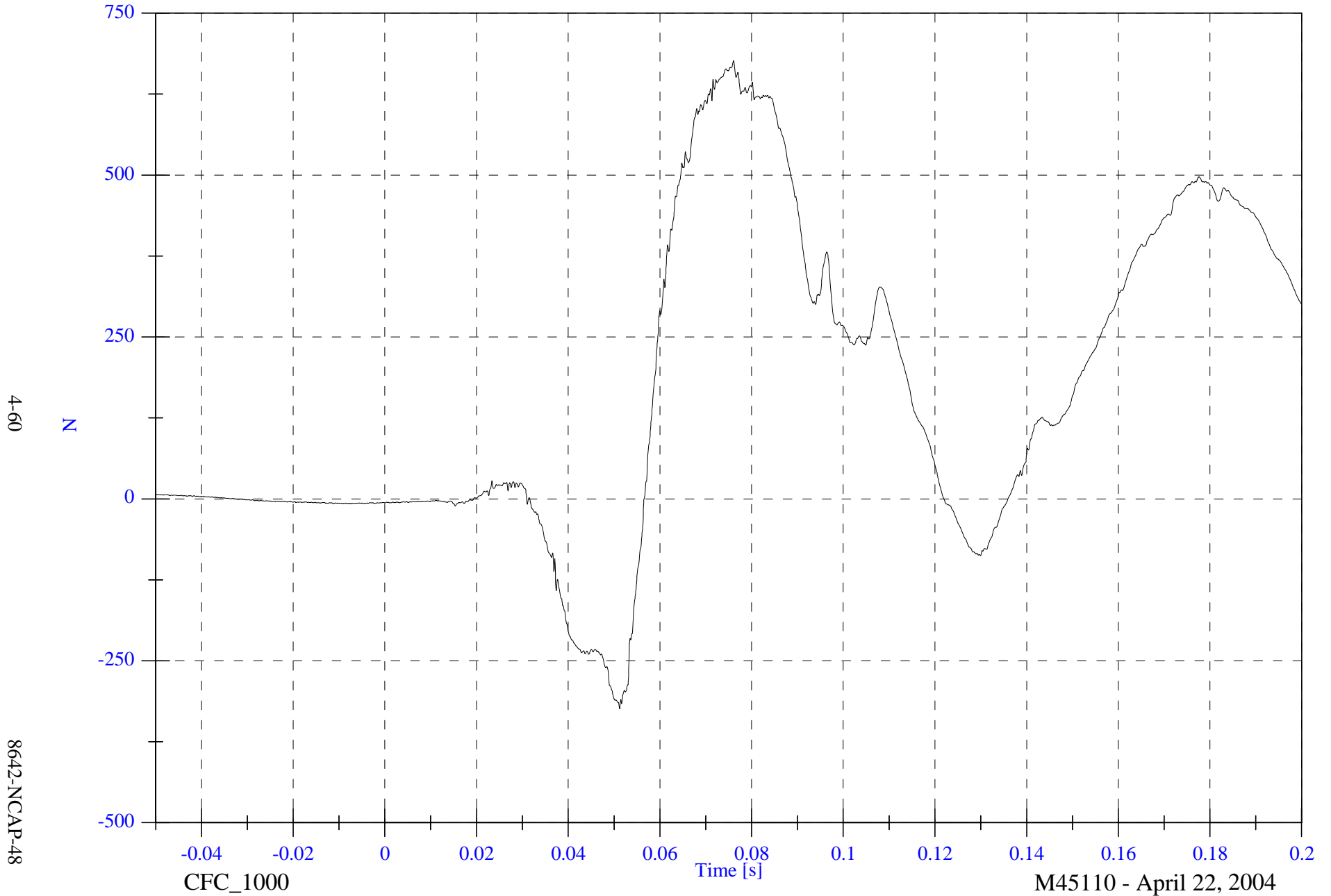
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 676.3 [N] at 0.076 [s]

V1P4 Lower Neck Fz

Min: -324.0 [N] at 0.051 [s]



4-60

8642-NCAP-48

CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

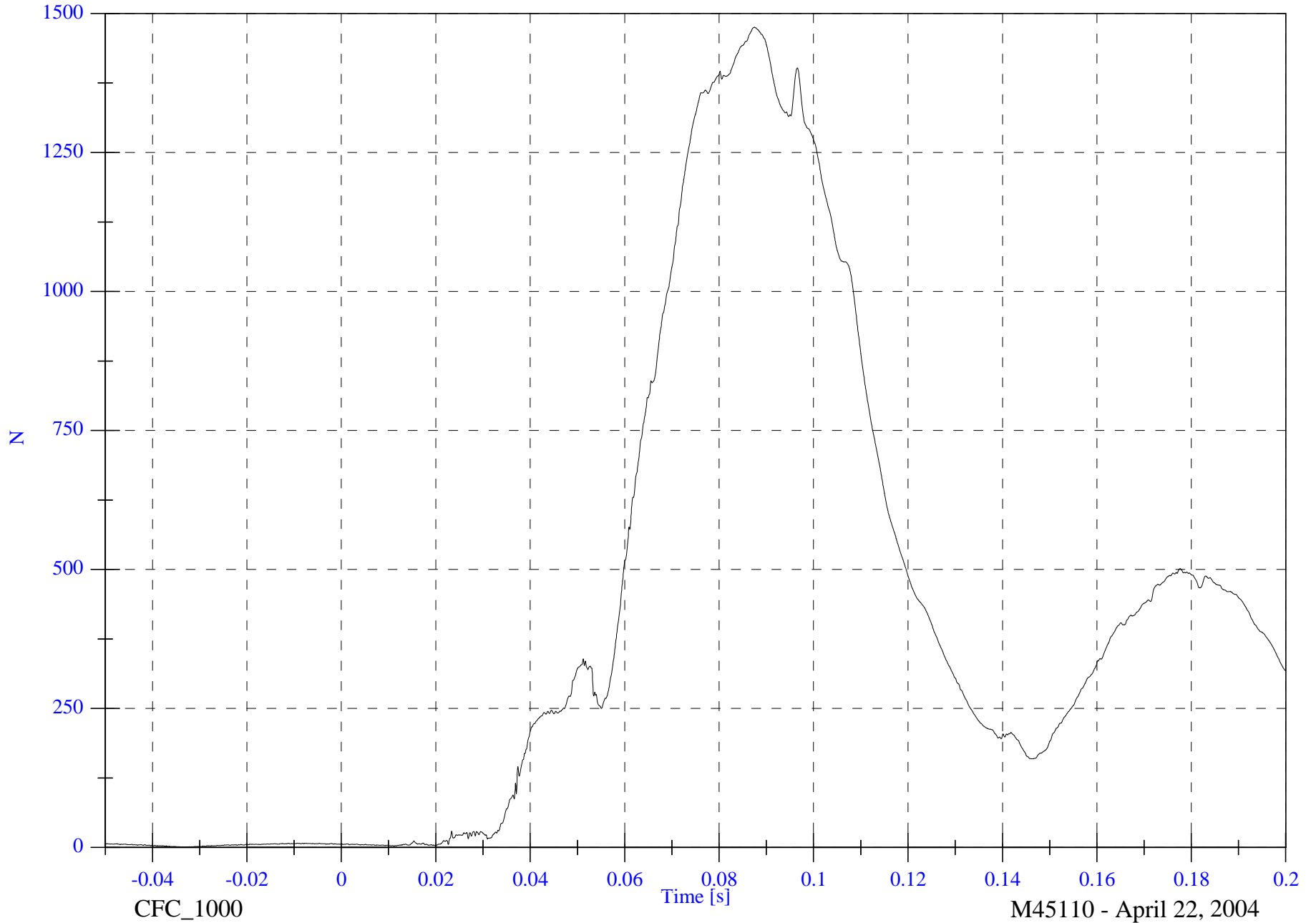
V1P4 Lower Neck F Resultant

Max: 1475.3 [N] at 0.087 [s]

Min: 0.9 [N] at -0.034 [s]

4-61

8642-NCAP-48



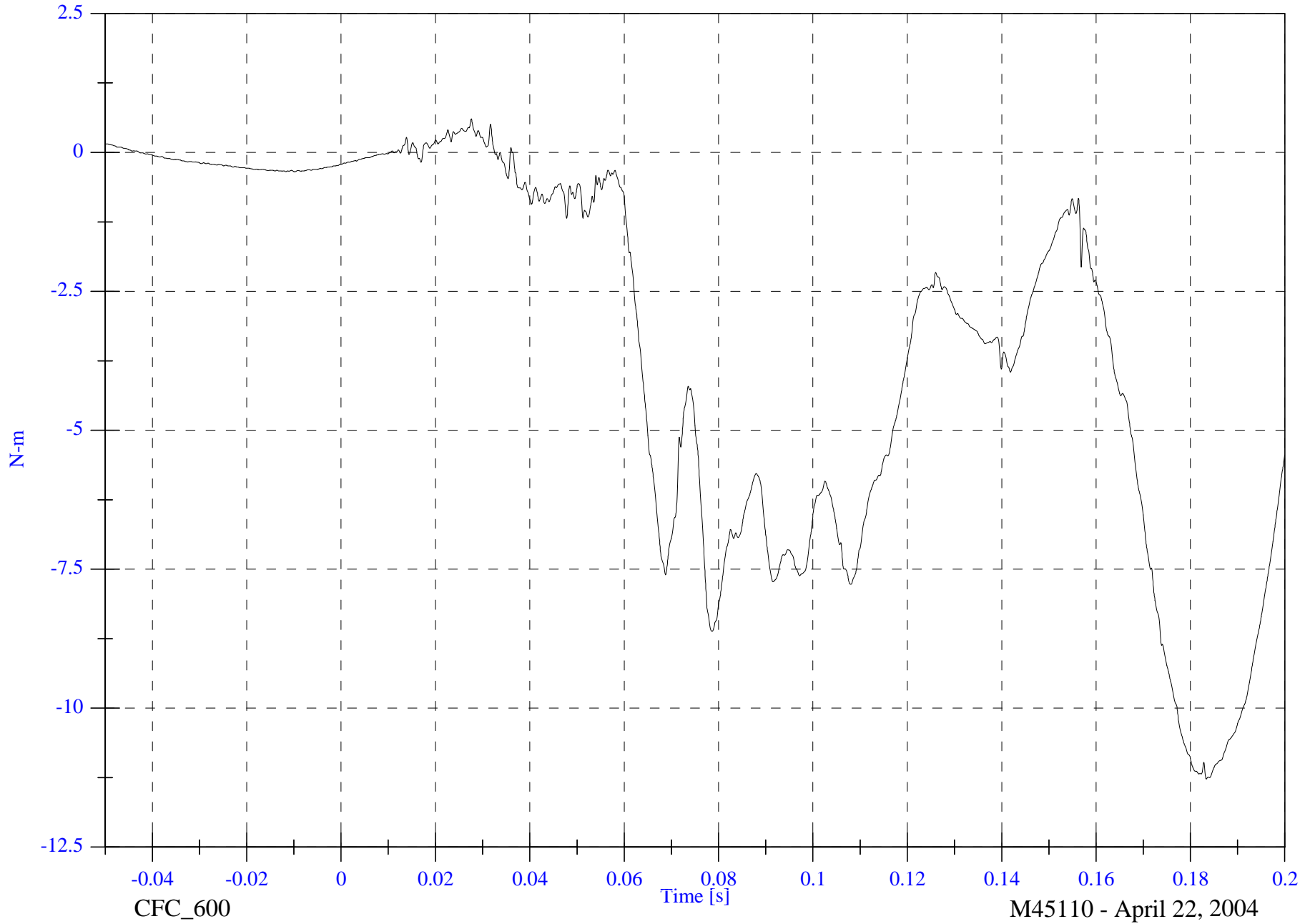
2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P4 Lower Neck Mx

Max: 0.6 [N-m] at 0.028 [s]
Min: -11.3 [N-m] at 0.183 [s]

4-62

8642-NCAP-48



CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

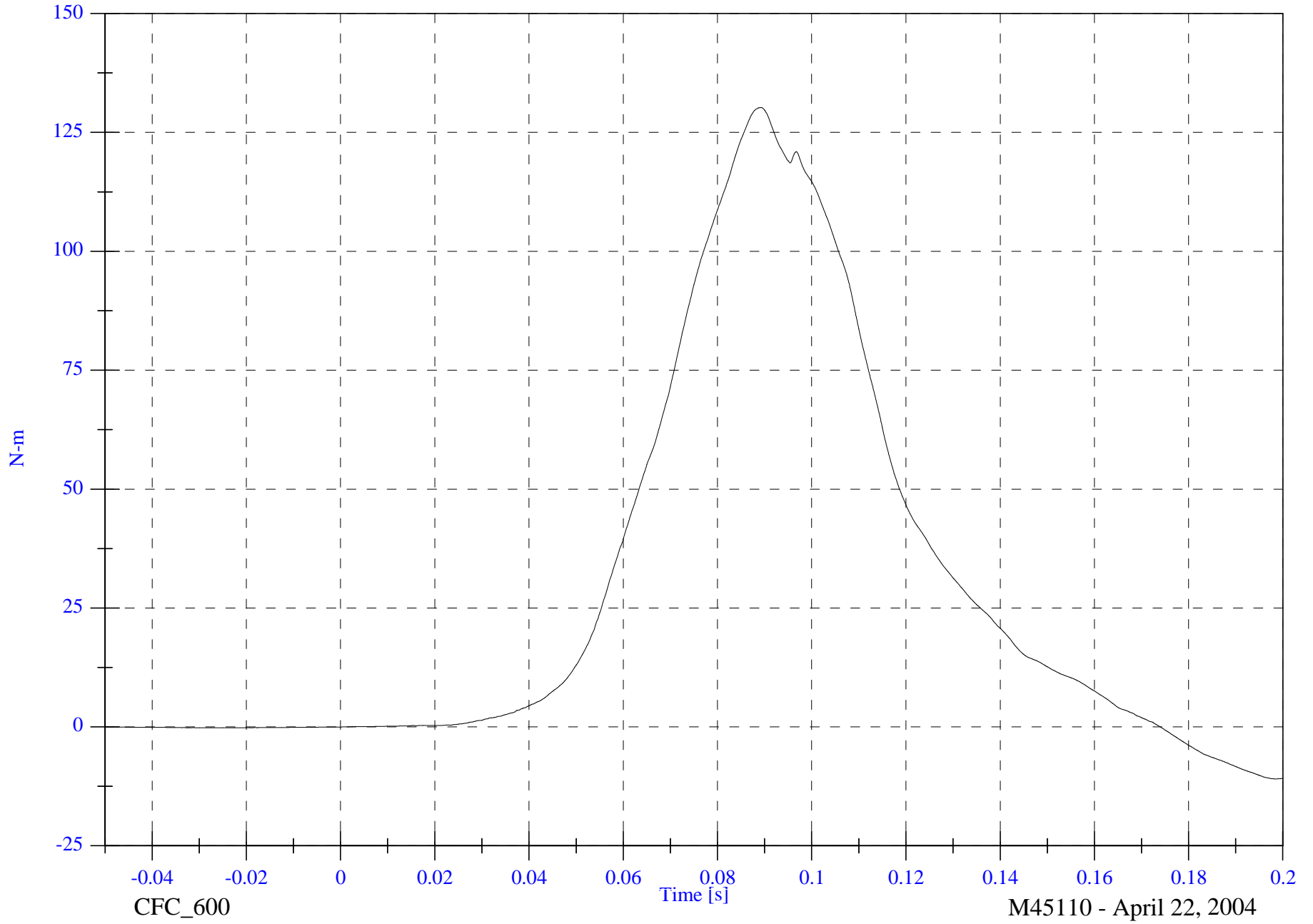
V1P4 Lower Neck My

Max: 130.2 [N-m] at 0.089 [s]

Min: -10.9 [N-m] at 0.198 [s]

4-63

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

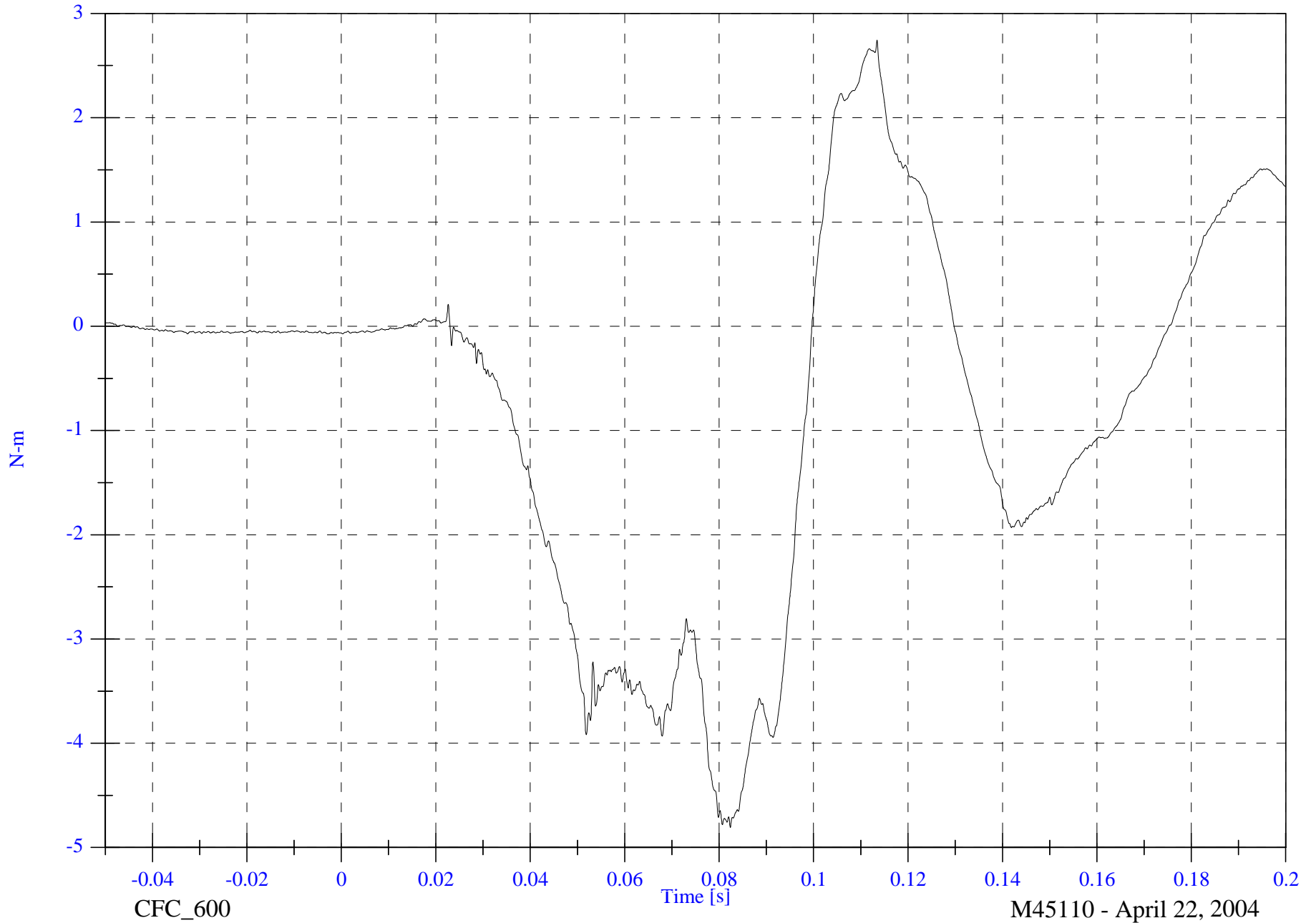
V1P4 Lower Neck Mz

Max: 2.7 [N-m] at 0.113 [s]

Min: -4.8 [N-m] at 0.082 [s]

4-64

8642-NCAP-48



CFC_600

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

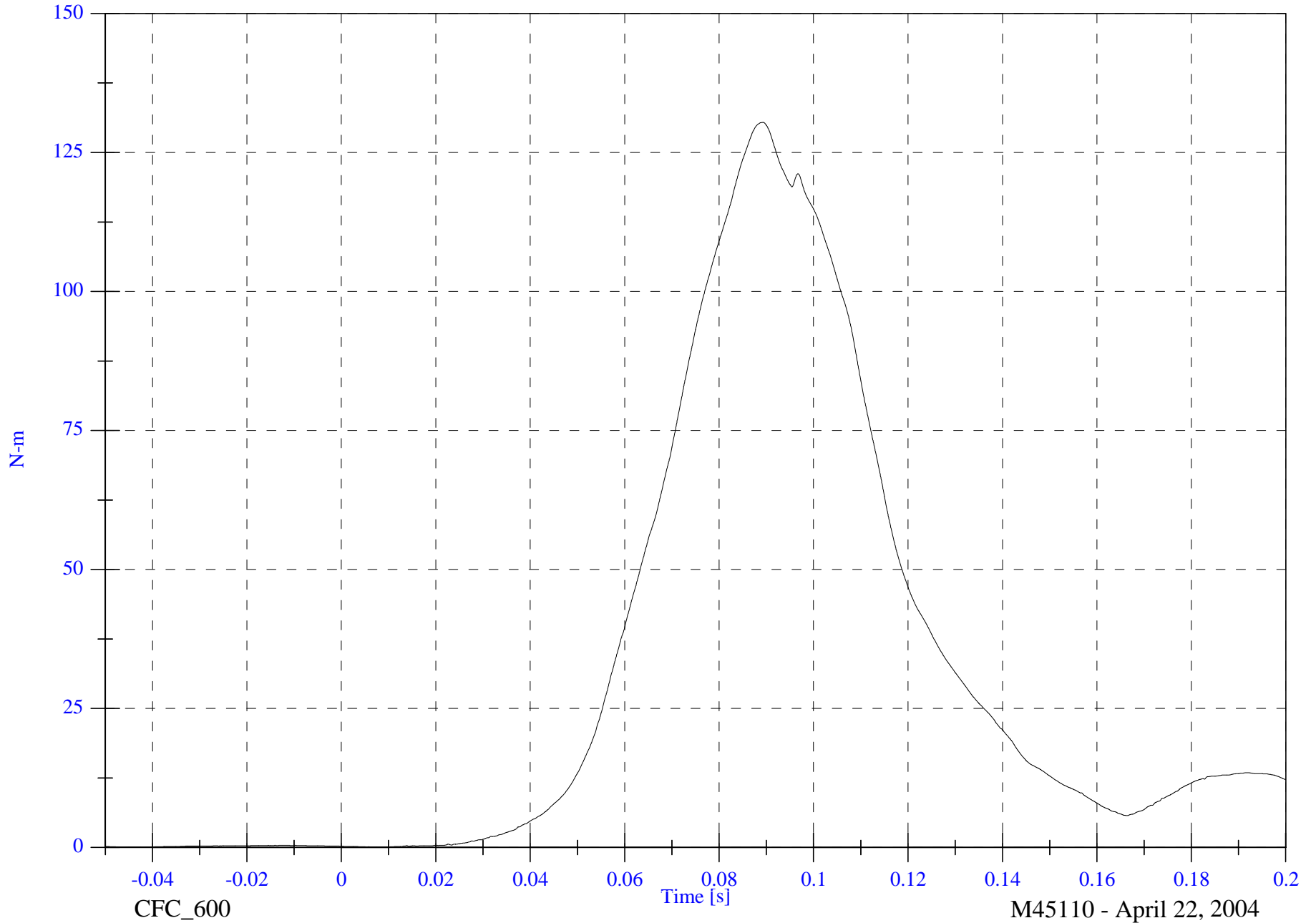
V1P4 Lower Neck M Resultant

Max: 130.4 [N-m] at 0.089 [s]

Min: 0.1 [N-m] at -0.044 [s]

4-65

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

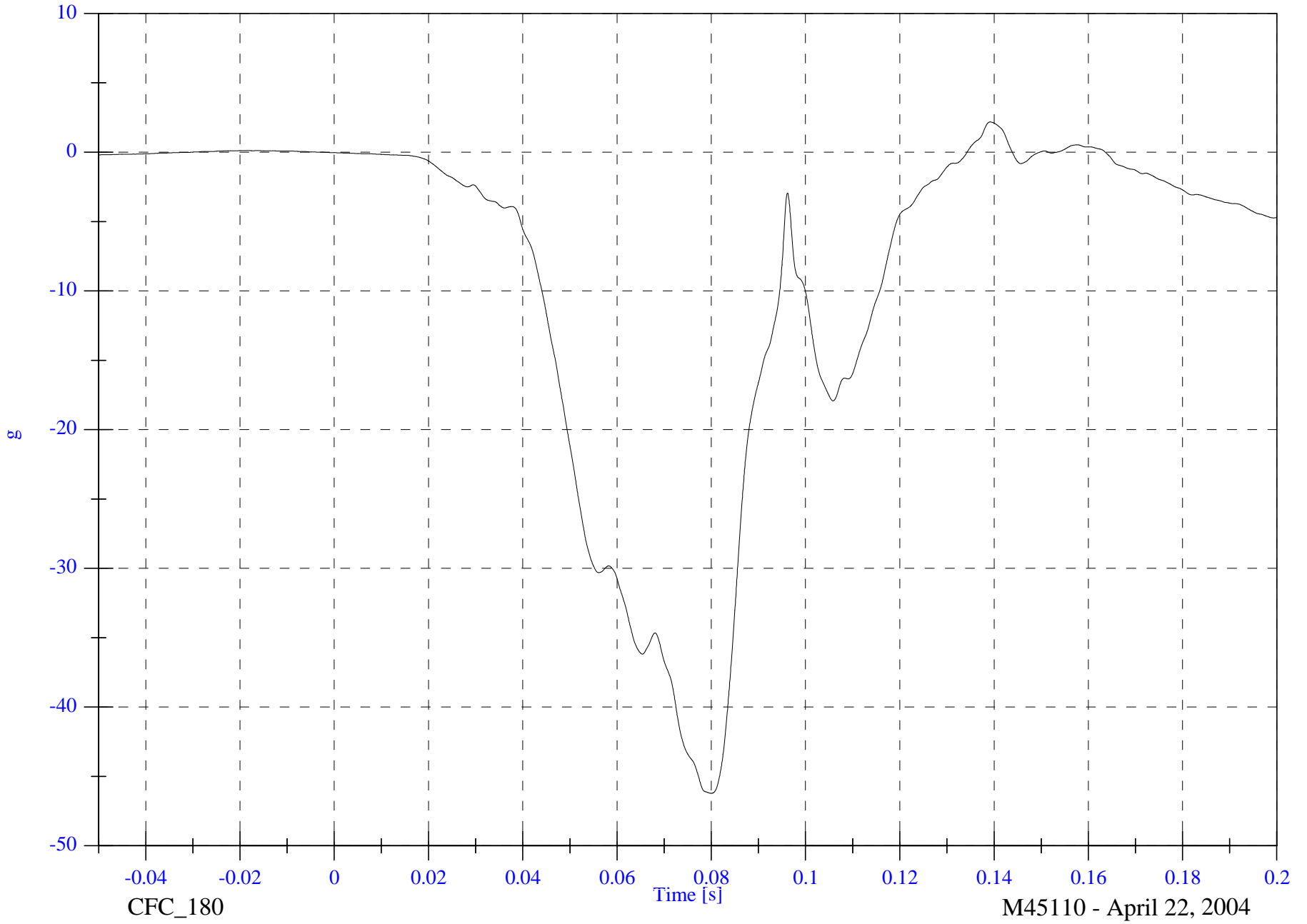
VIP4 Chest x

Max: 2.2 [g] at 0.139 [s]

Min: -46.2 [g] at 0.080 [s]

4-66

8642-NCAP-48



CFC_180

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 1.0 [g] at 0.092 [s]

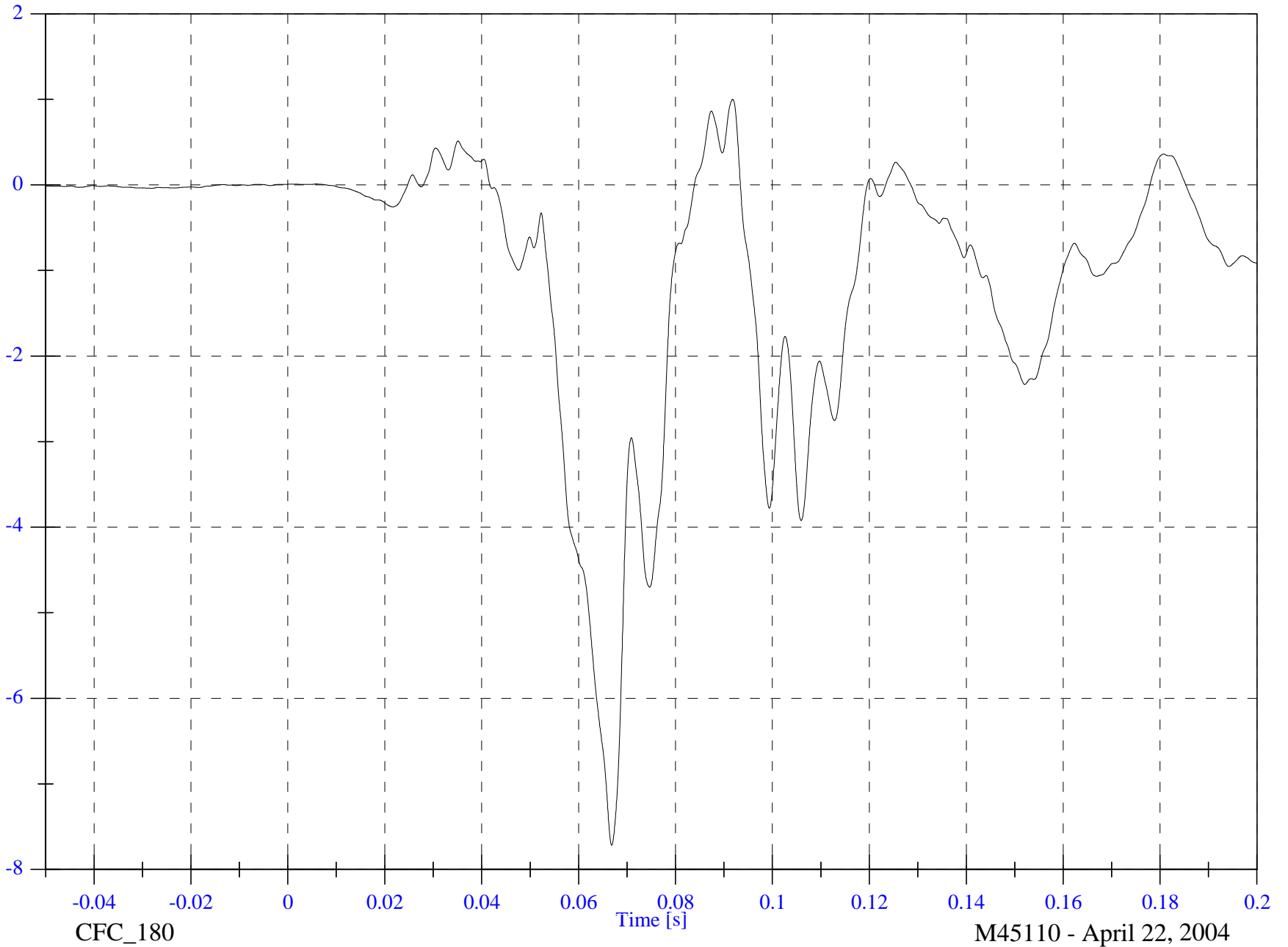
Min: -7.7 [g] at 0.067 [s]

VIP4 Chest y

4-67

g

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

VIP4 Chest z

Max: 5.5 [g] at 0.200 [s]

Min: -25.3 [g] at 0.054 [s]

4-68

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 49.7 [g] at 0.080 [s]

V1P4 Chest Resultant

Min: 0.0 [g] at -0.033 [s]

4-69

g



8642-NCAP-48

CFC_180

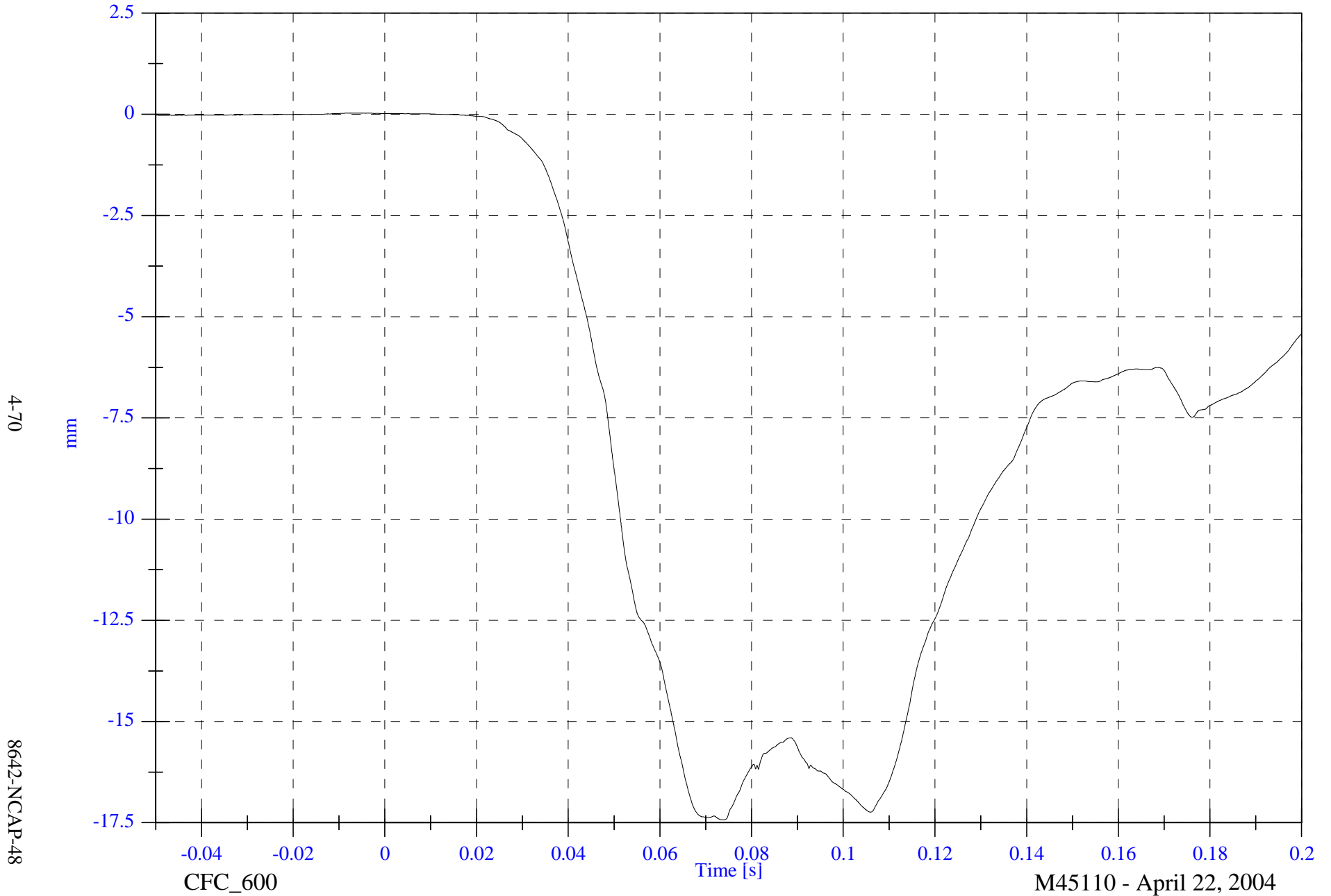
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 0.0 [mm] at -0.006 [s]

VIP4 Chest Compression

Min: -17.4 [mm] at 0.074 [s]



4-70

8642-NCAP-48

CFC_600

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

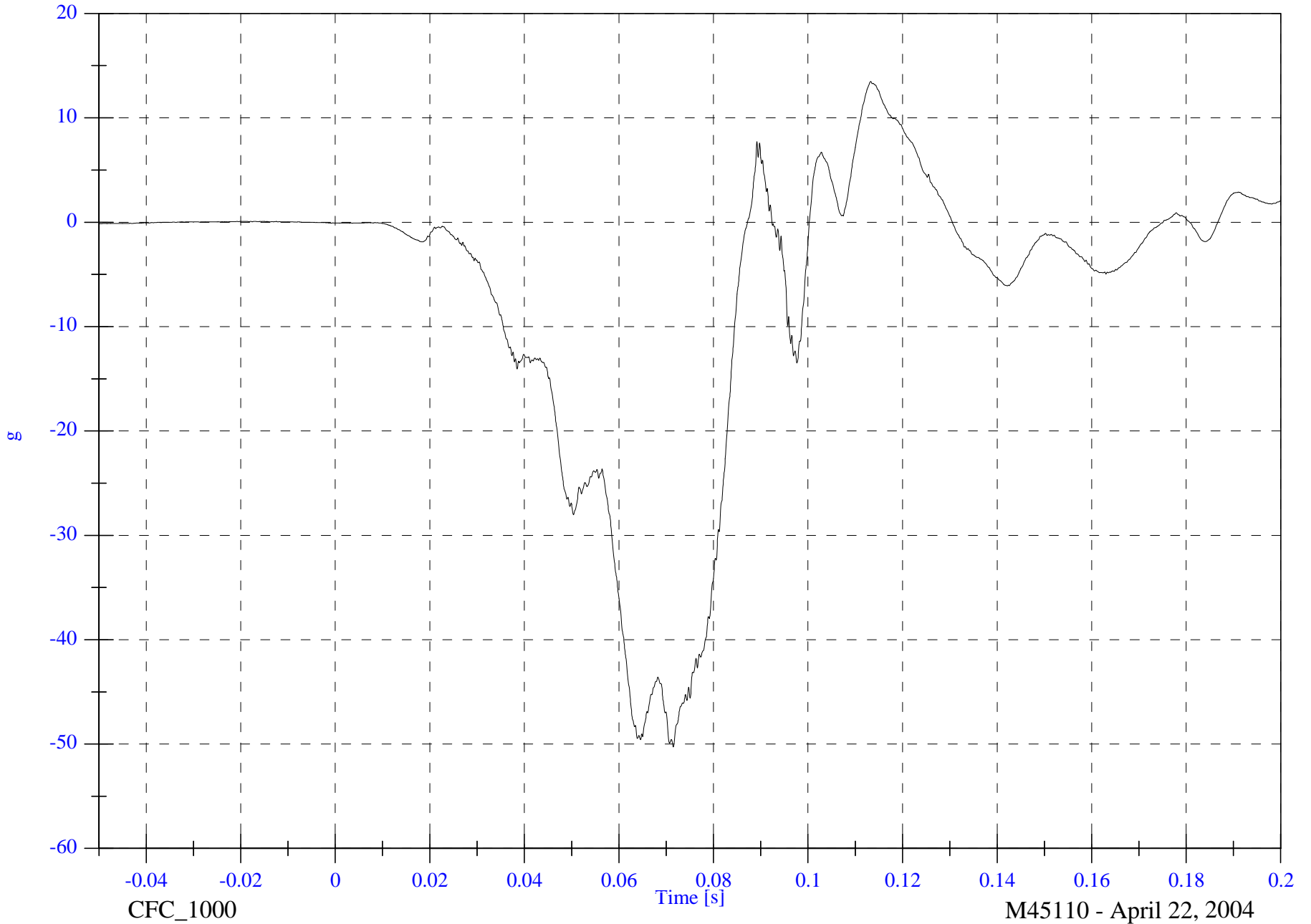
V1P4 Pelvic x

Max: 13.5 [g] at 0.113 [s]

Min: -50.3 [g] at 0.071 [s]

4-71

8642-NCAP-48



CFC_1000

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

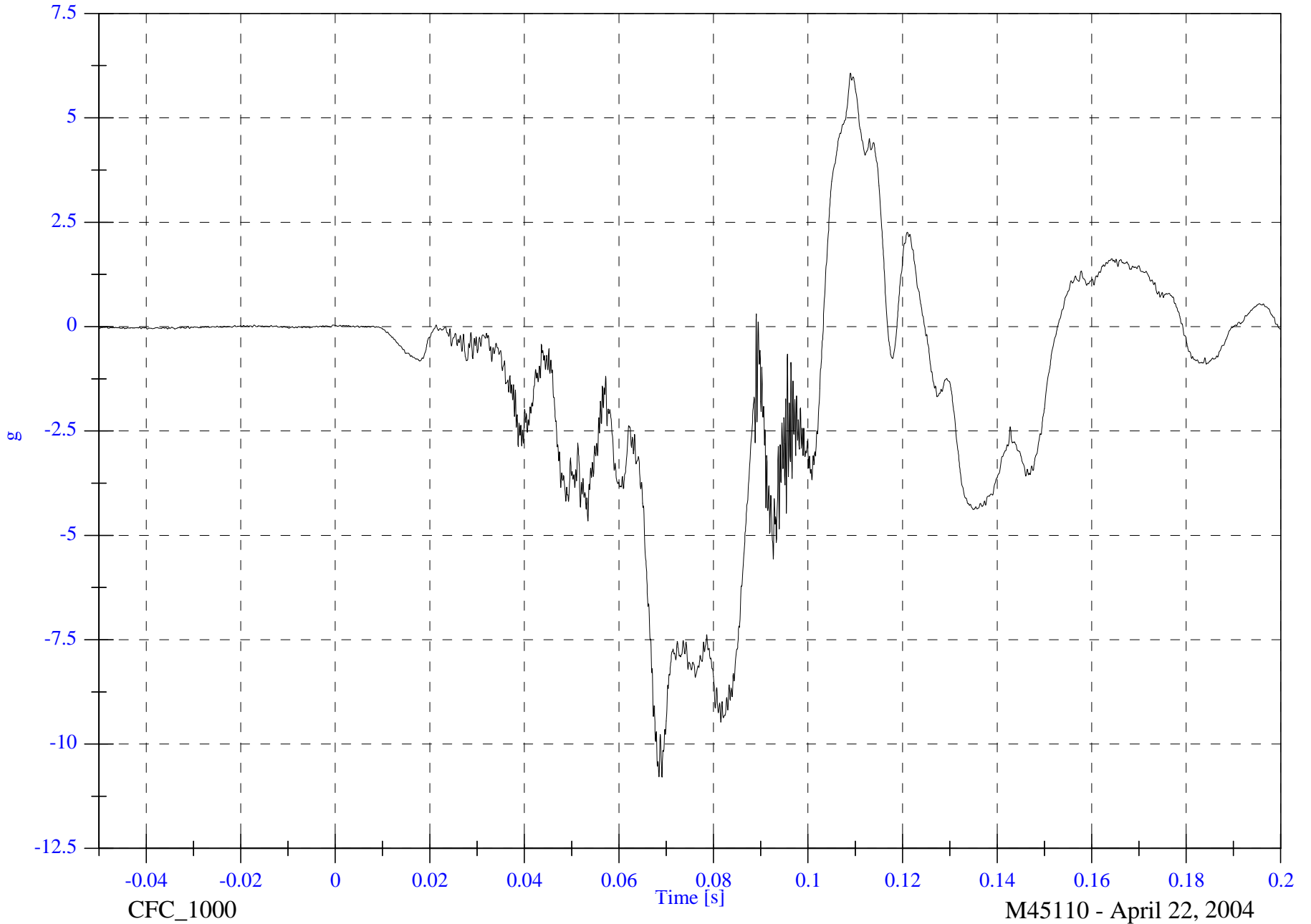
Max: 6.1 [g] at 0.109 [s]

V1P4 Pelvic y

Min: -10.8 [g] at 0.069 [s]

4-72

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

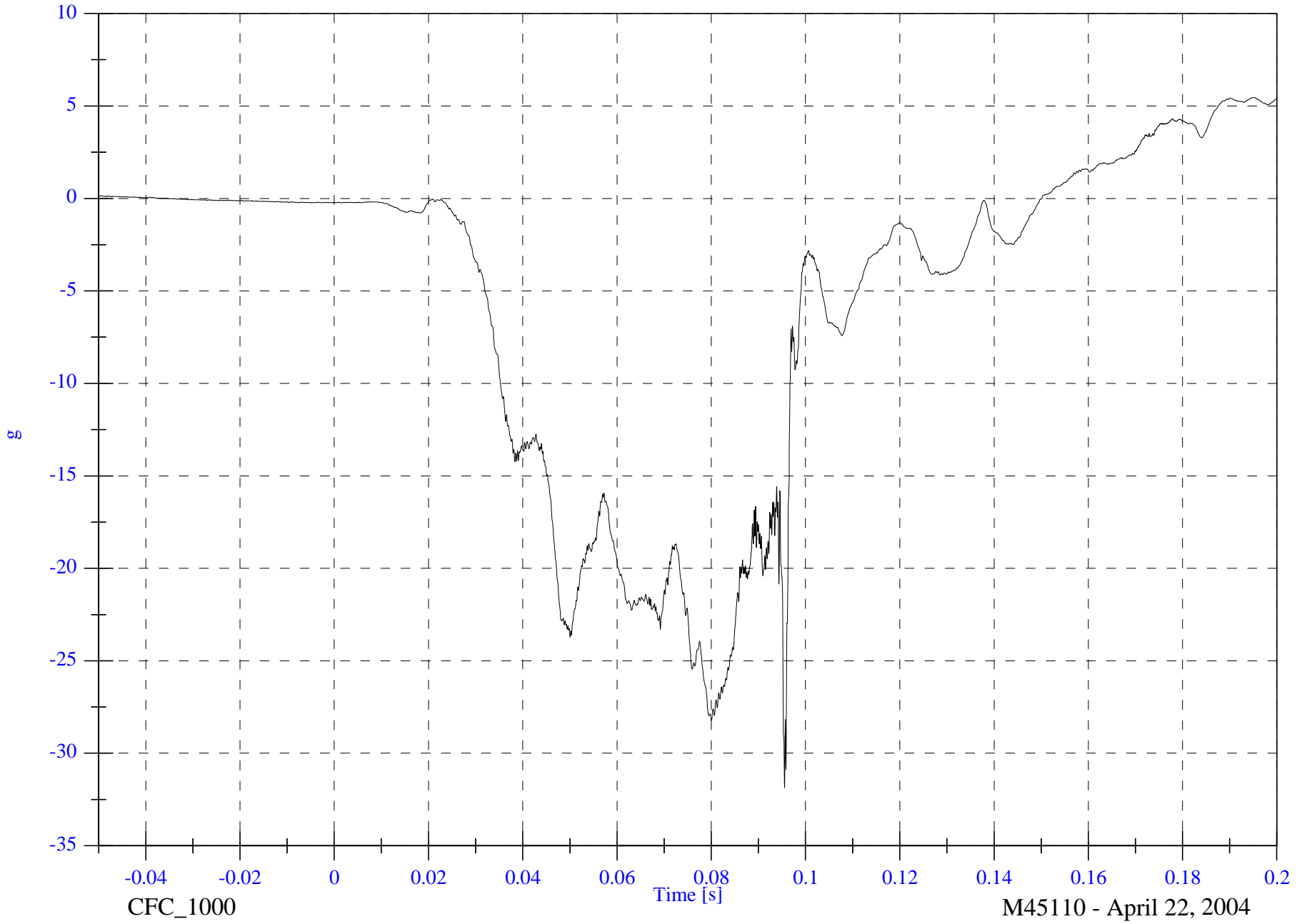
VIP4 Pelvic z

Max: 5.5 [g] at 0.195 [s]

Min: -31.9 [g] at 0.096 [s]

4-73

8642-NCAP-48



2004 NCAP Test 12 - 2004 Toyota 4Runner

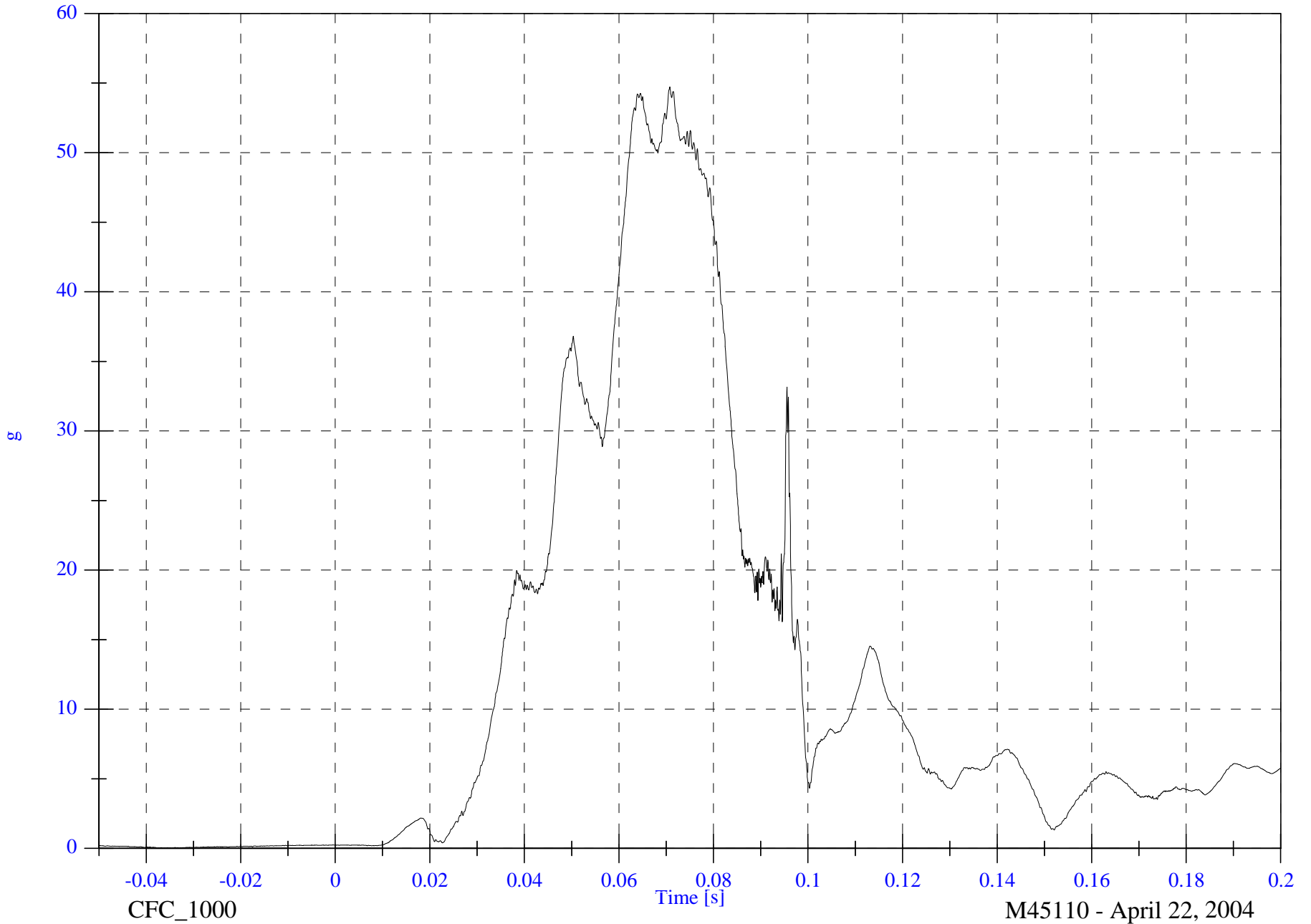
V1P4 Pelvic Resultant

Max: 54.7 [g] at 0.071 [s]

Min: 0.0 [g] at -0.035 [s]

4-74

8642-NCAP-48

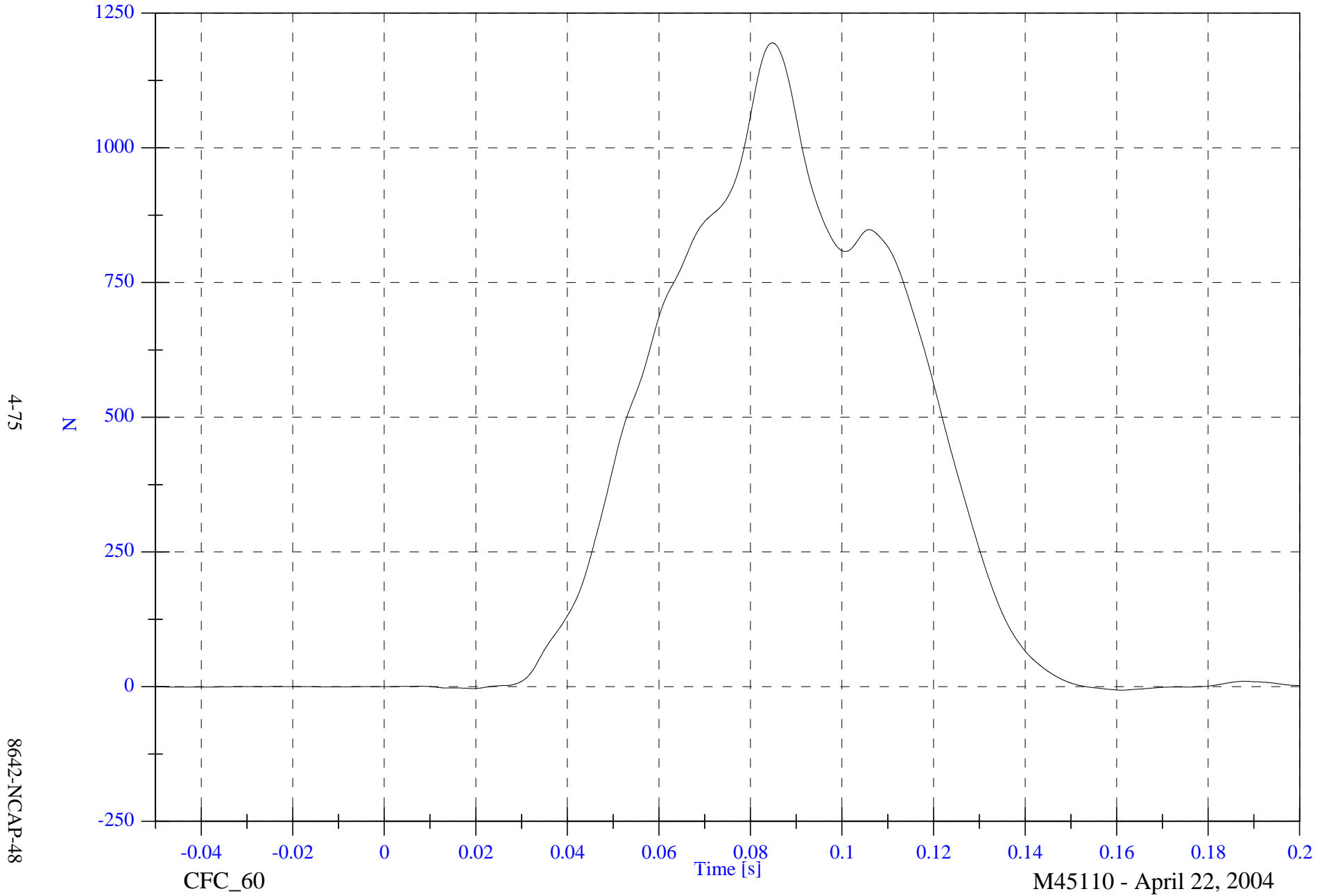


2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P4 Tether Belt

Max: 1194.7 [N] at 0.085 [s]

Min: -6.3 [N] at 0.161 [s]



4-75

8642-NCAP-48

CFC_60

Time [s]

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

V1P4 CRS x

Max: 9.9 [g] at 0.192 [s]

Min: -60.1 [g] at 0.063 [s]

4-76

8642-NCAP-48



CFC_60

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

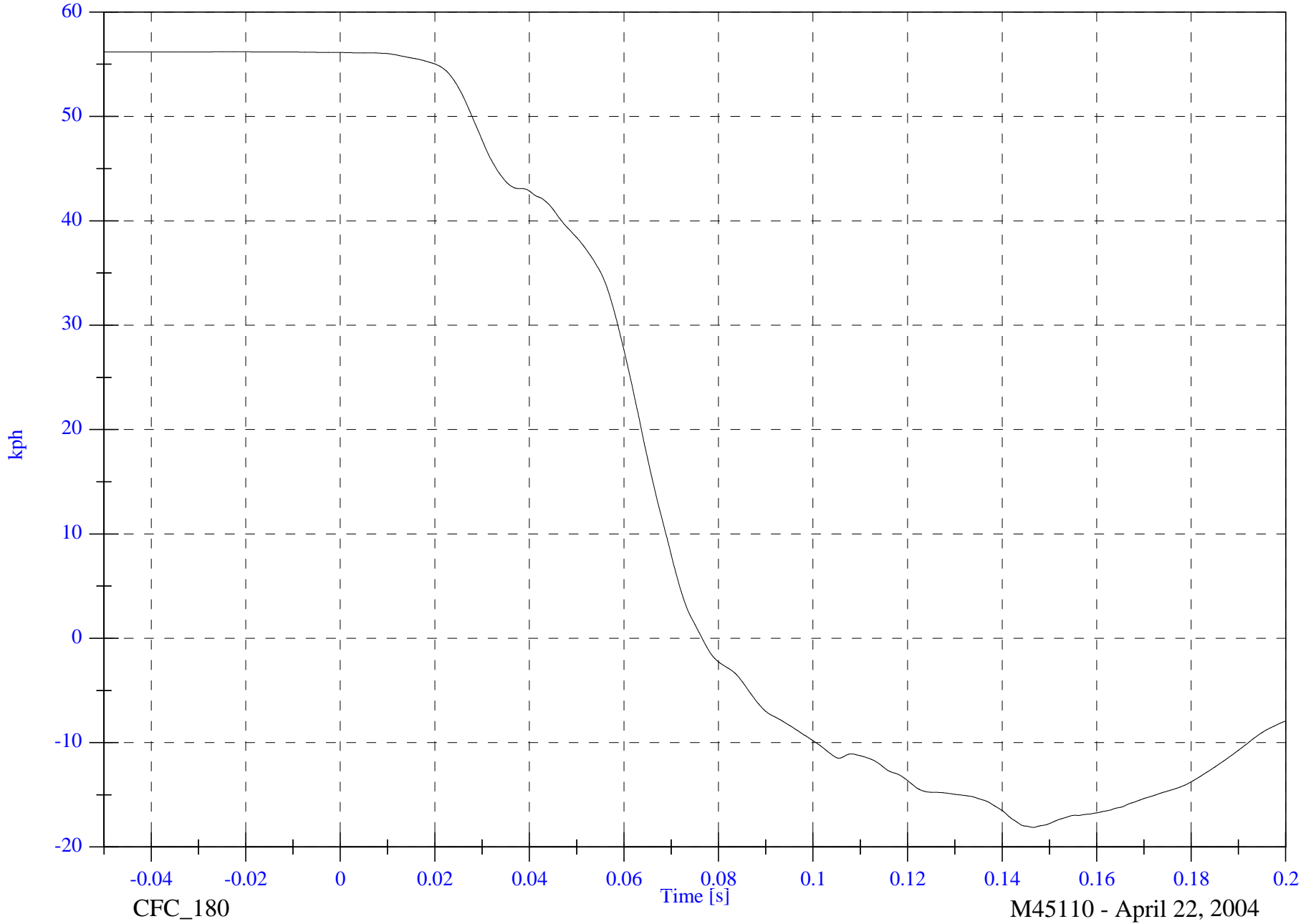
Max: 56.2 [kph] at -0.023 [s]

V1P4 CRS x Velocity

Min: -18.1 [kph] at 0.147 [s]

4-77

8642-NCAP-48



CFC_180

Time [s]

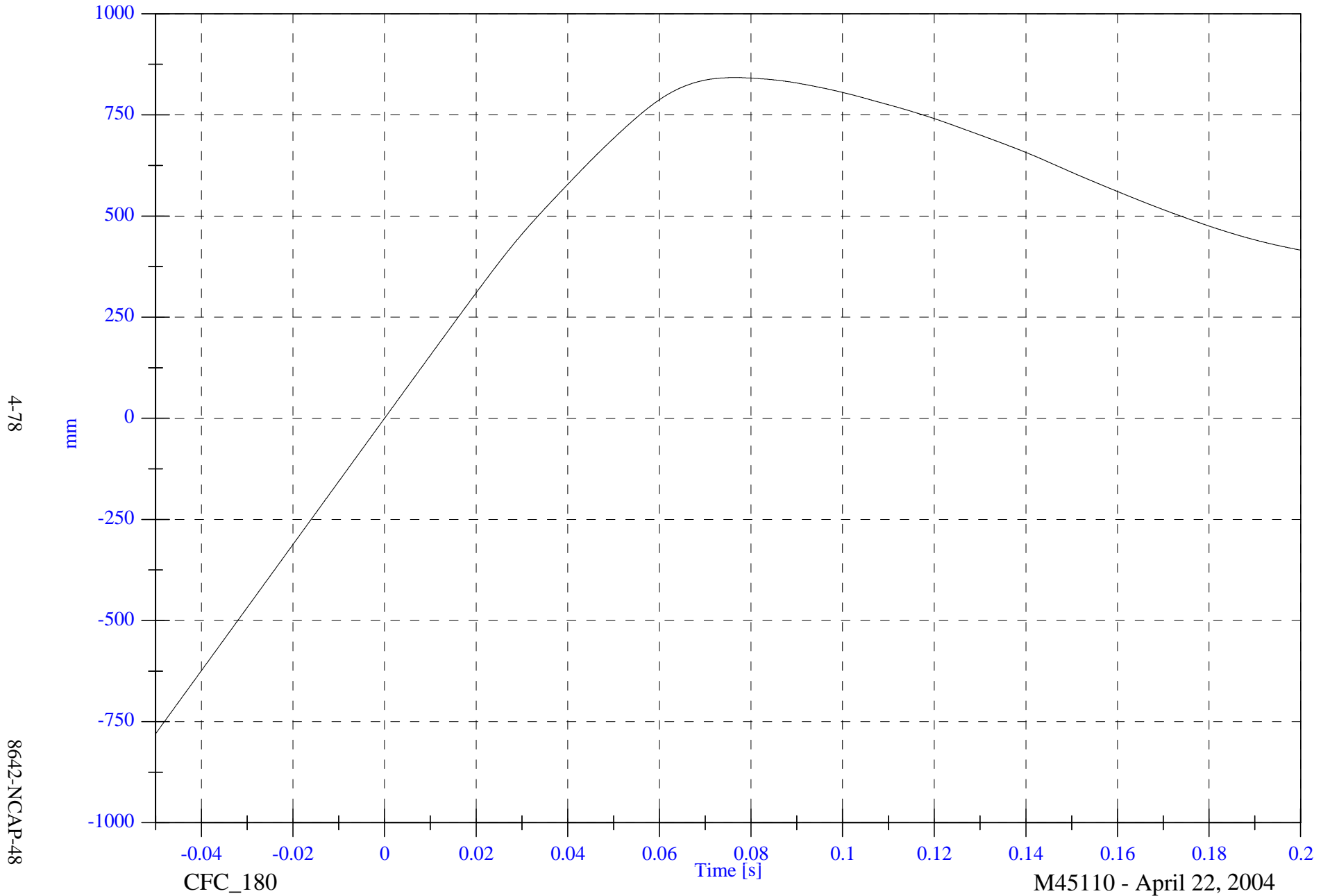
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 842.2 [mm] at 0.077 [s]

Min: -780.2 [mm] at -0.050 [s]

V1P4 CRS x Displacement



4-78

8642-NCAP-48

CFC_180

Time [s]

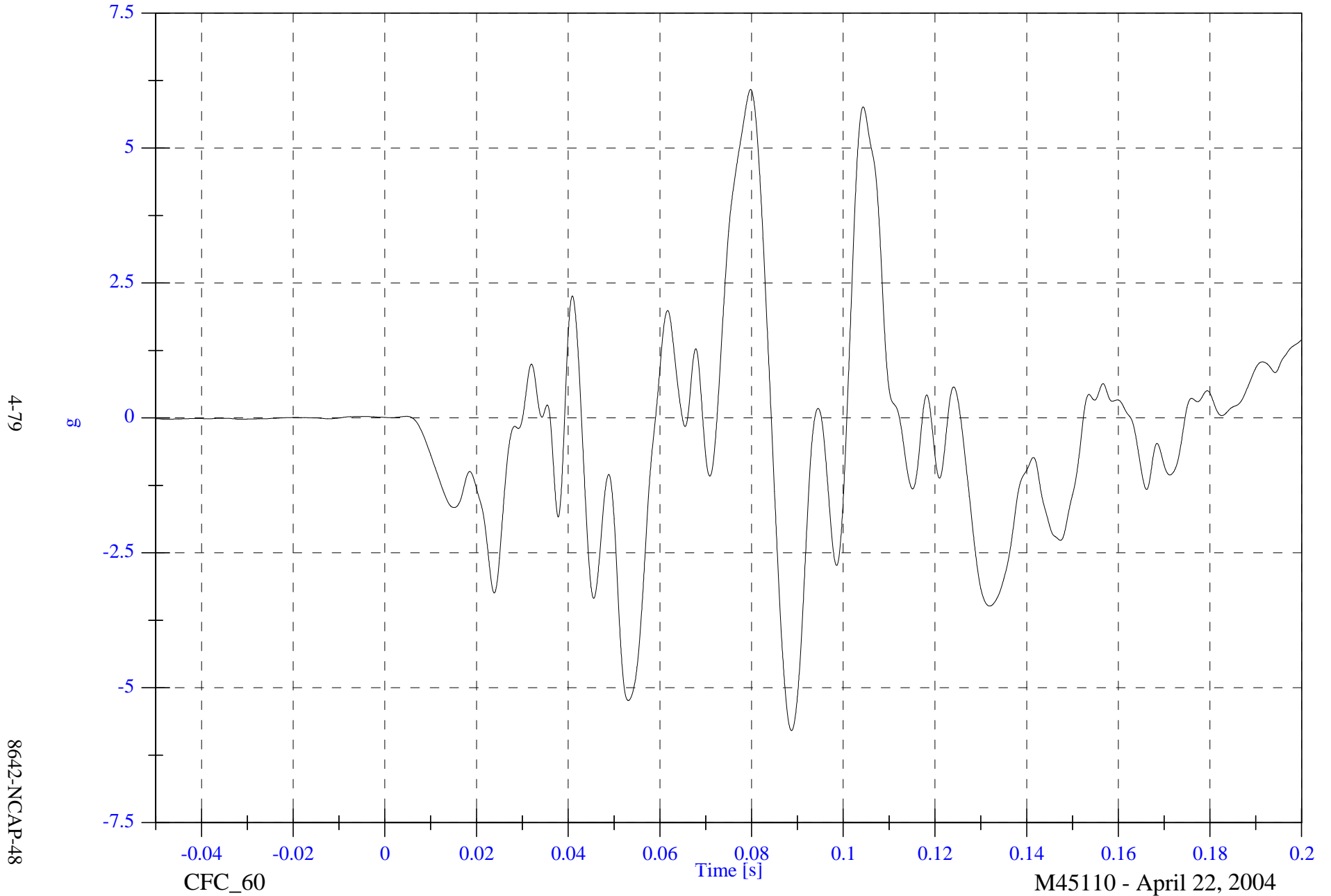
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 6.1 [g] at 0.080 [s]

Min: -5.8 [g] at 0.089 [s]

V1P4 CRS y



4-79

8642-NCAP-48

CFC_60

Time [s]

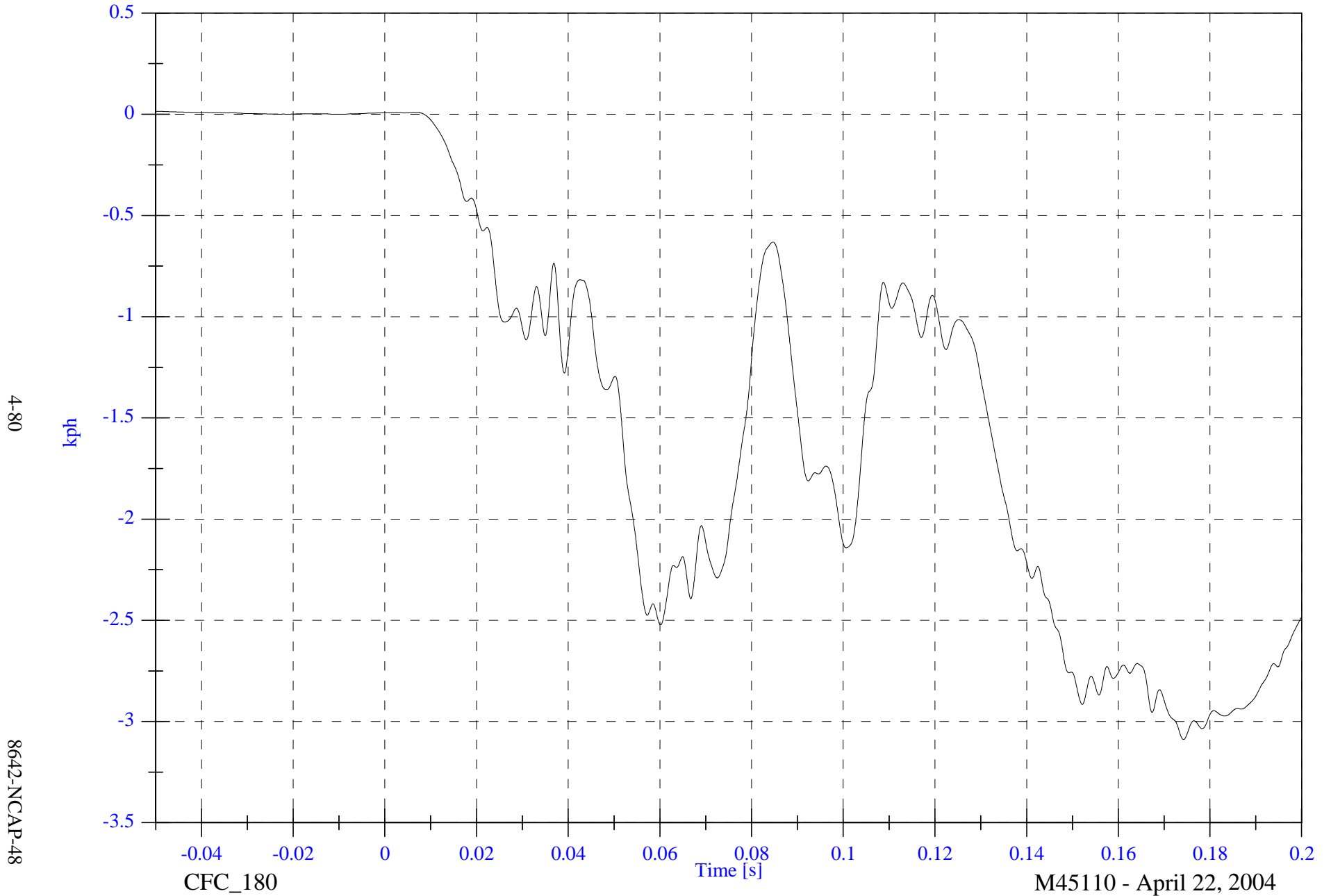
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

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

V1P4 CRS y Velocity

Min: -3.1 [kph] at 0.174 [s]



4-80

8642-NCAP-48

CFC_180

Time [s]

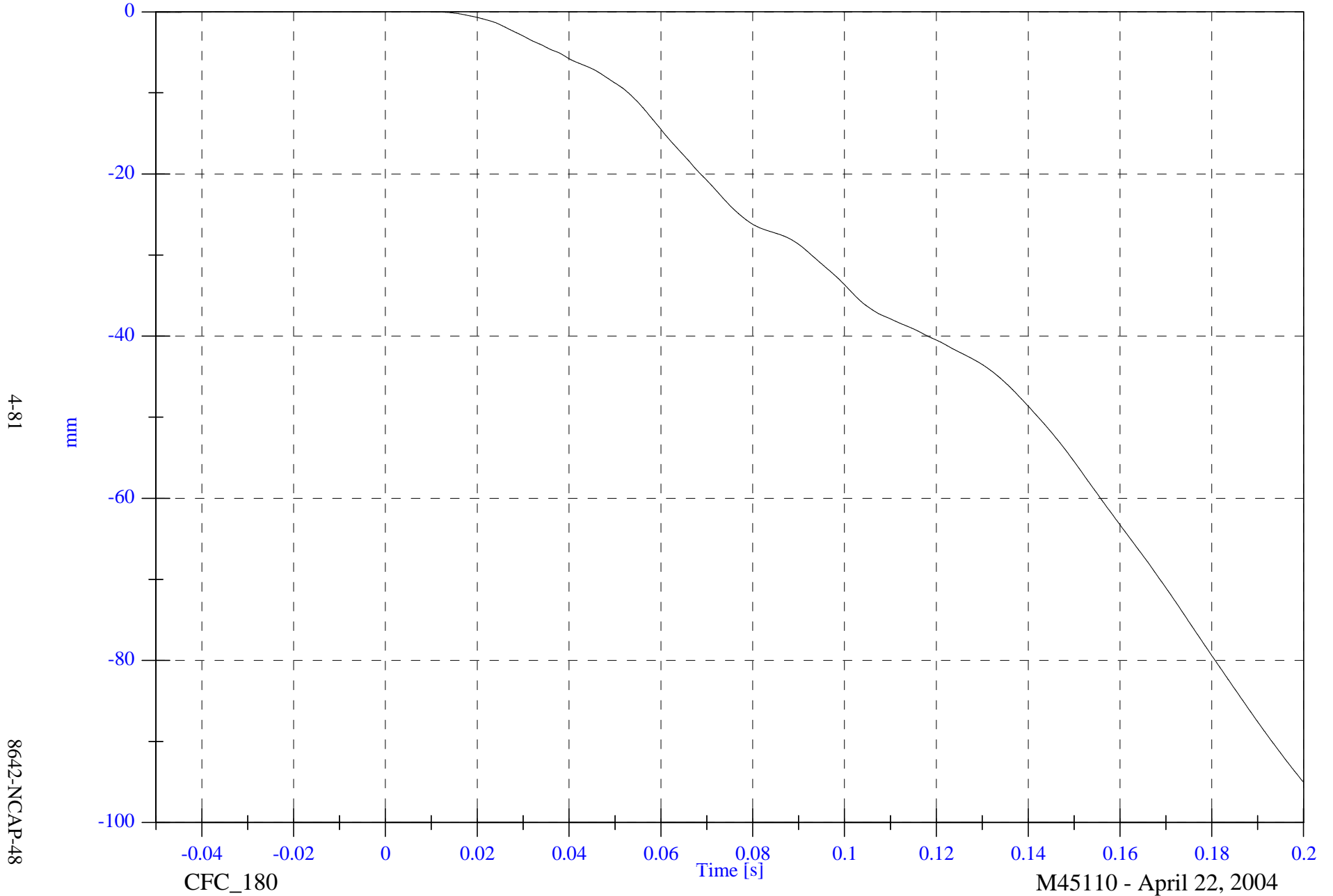
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 0.0 [mm] at 0.009 [s]

V1P4 CRS y Displacement

Min: -95.0 [mm] at 0.200 [s]



4-81

8642-NCAP-48

CFC_180

Time [s]

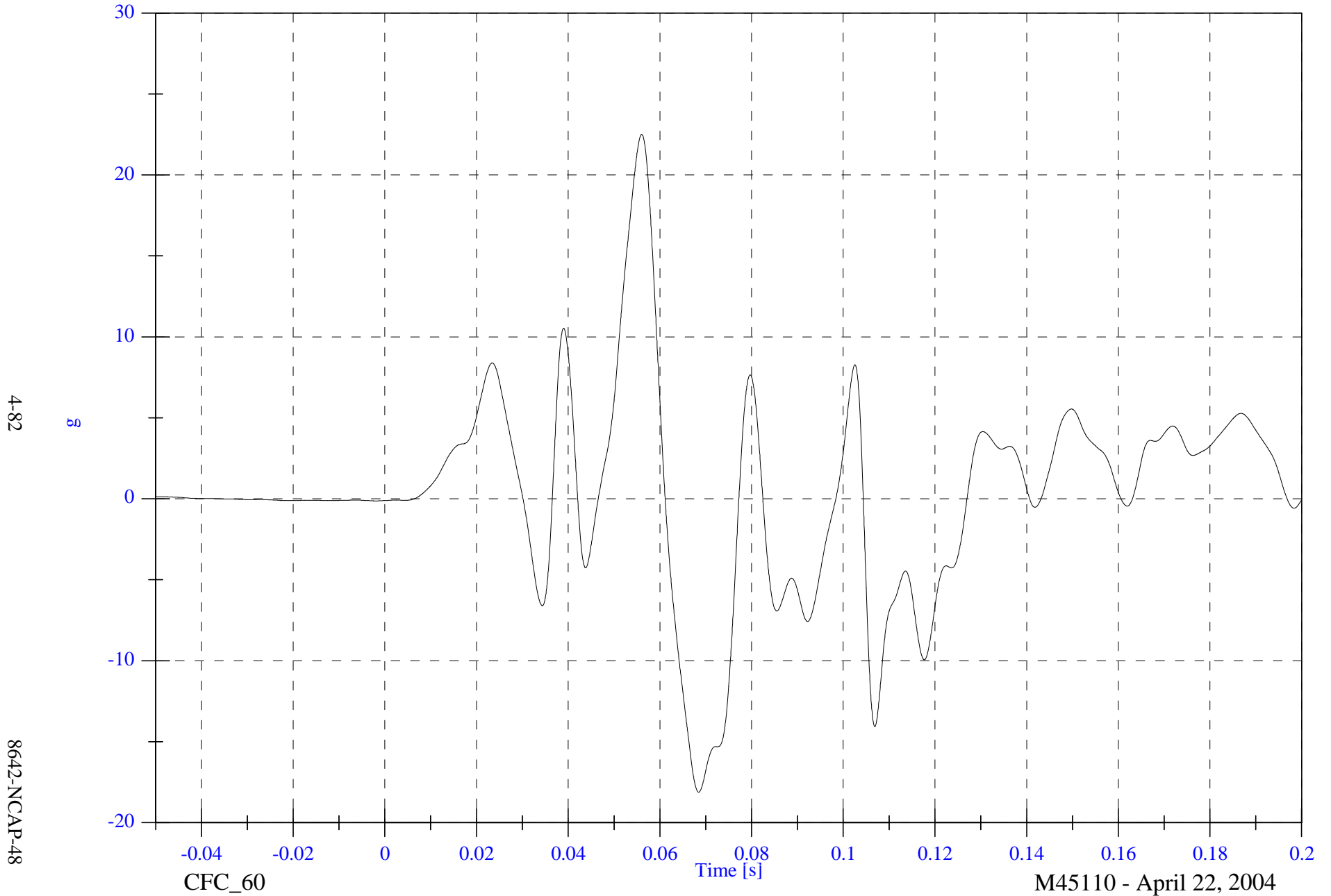
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 22.5 [g] at 0.056 [s]

V1P4 CRS z

Min: -18.1 [g] at 0.068 [s]

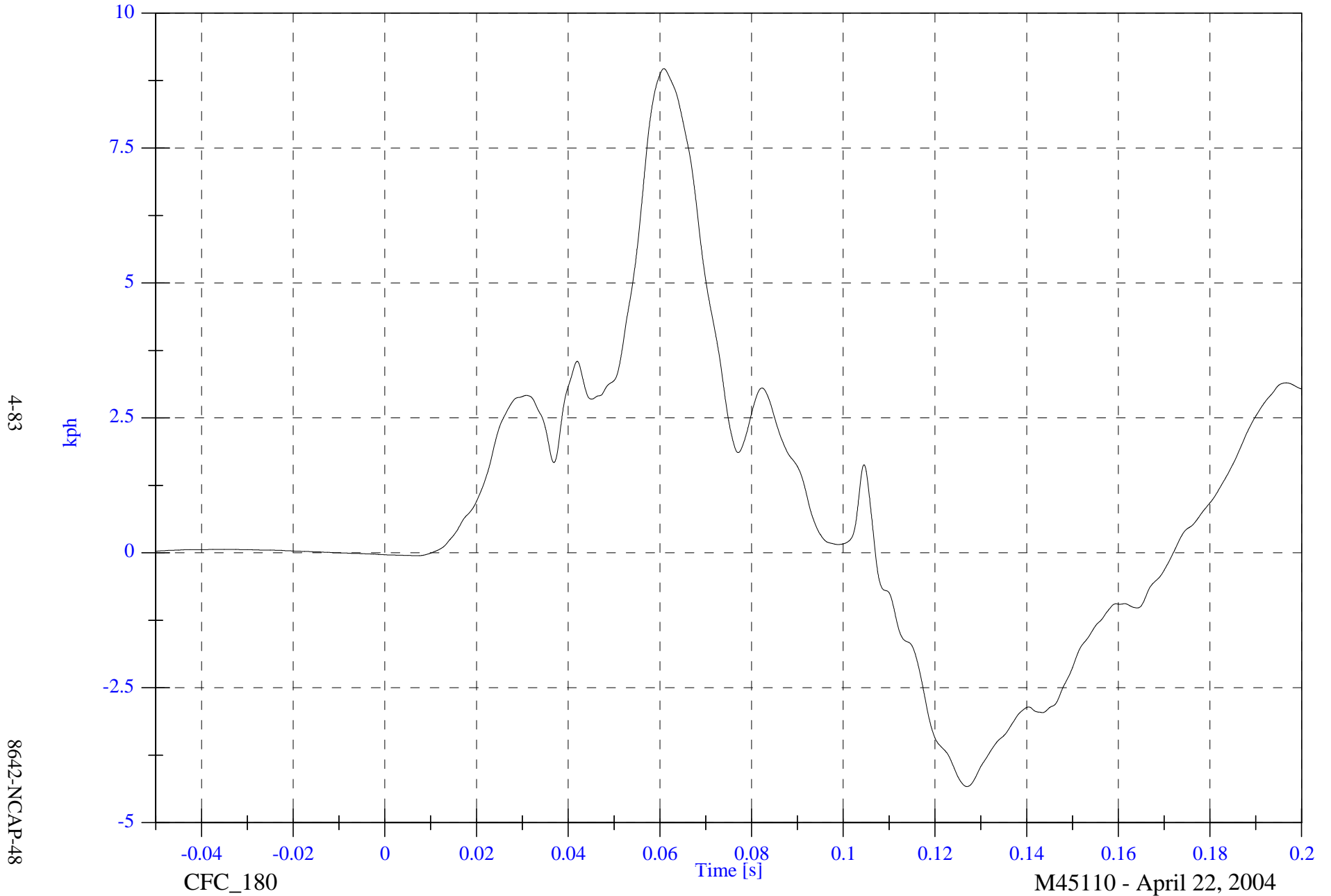


2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 9.0 [kph] at 0.061 [s]

V1P4 CRS z Velocity

Min: -4.3 [kph] at 0.127 [s]



4-83

8642-NCAP-48

CFC_180

M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

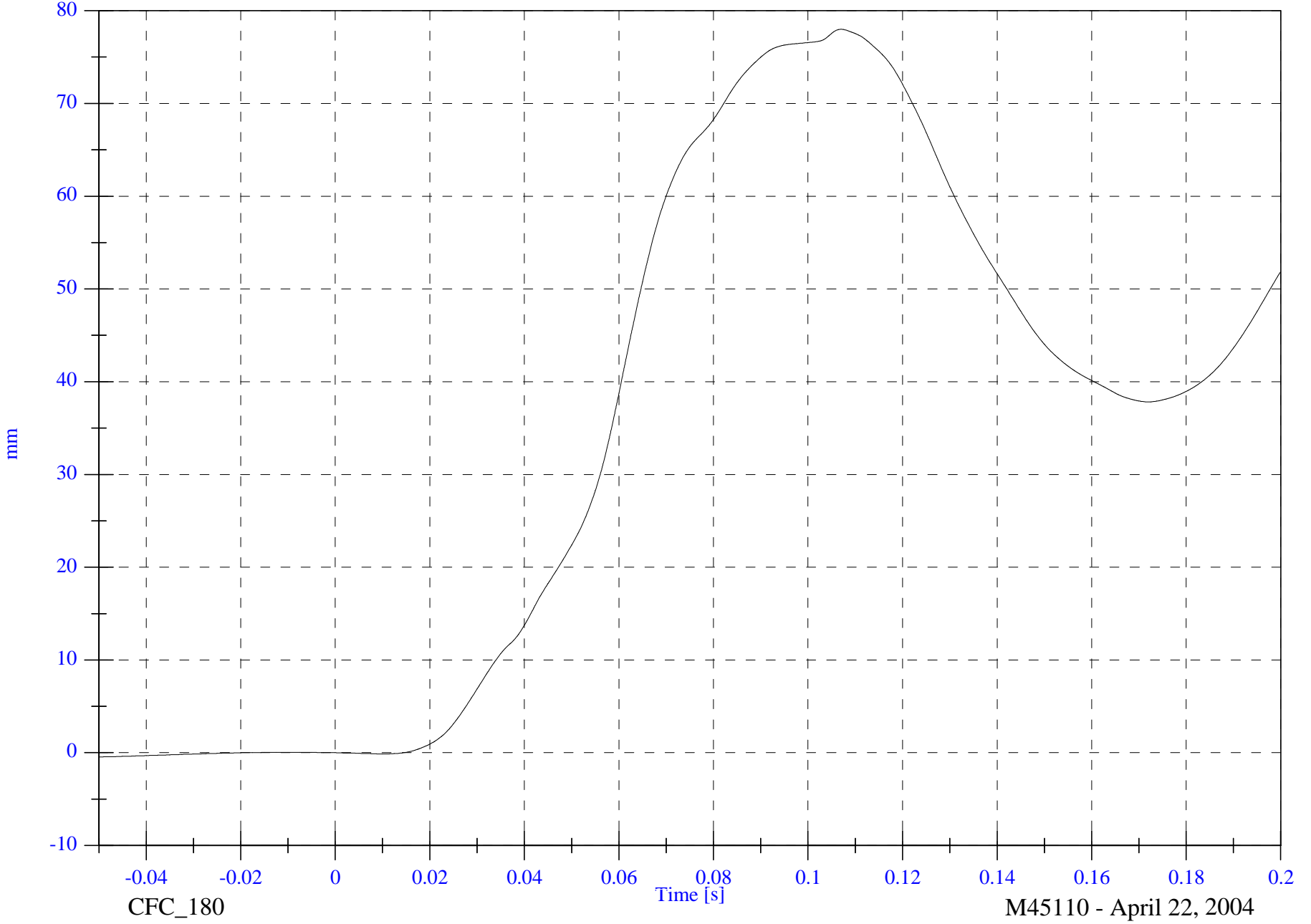
V1P4 CRS z Displacement

Max: 78.0 [mm] at 0.107 [s]

Min: -0.4 [mm] at -0.050 [s]

4-84

8642-NCAP-48



CFC_180

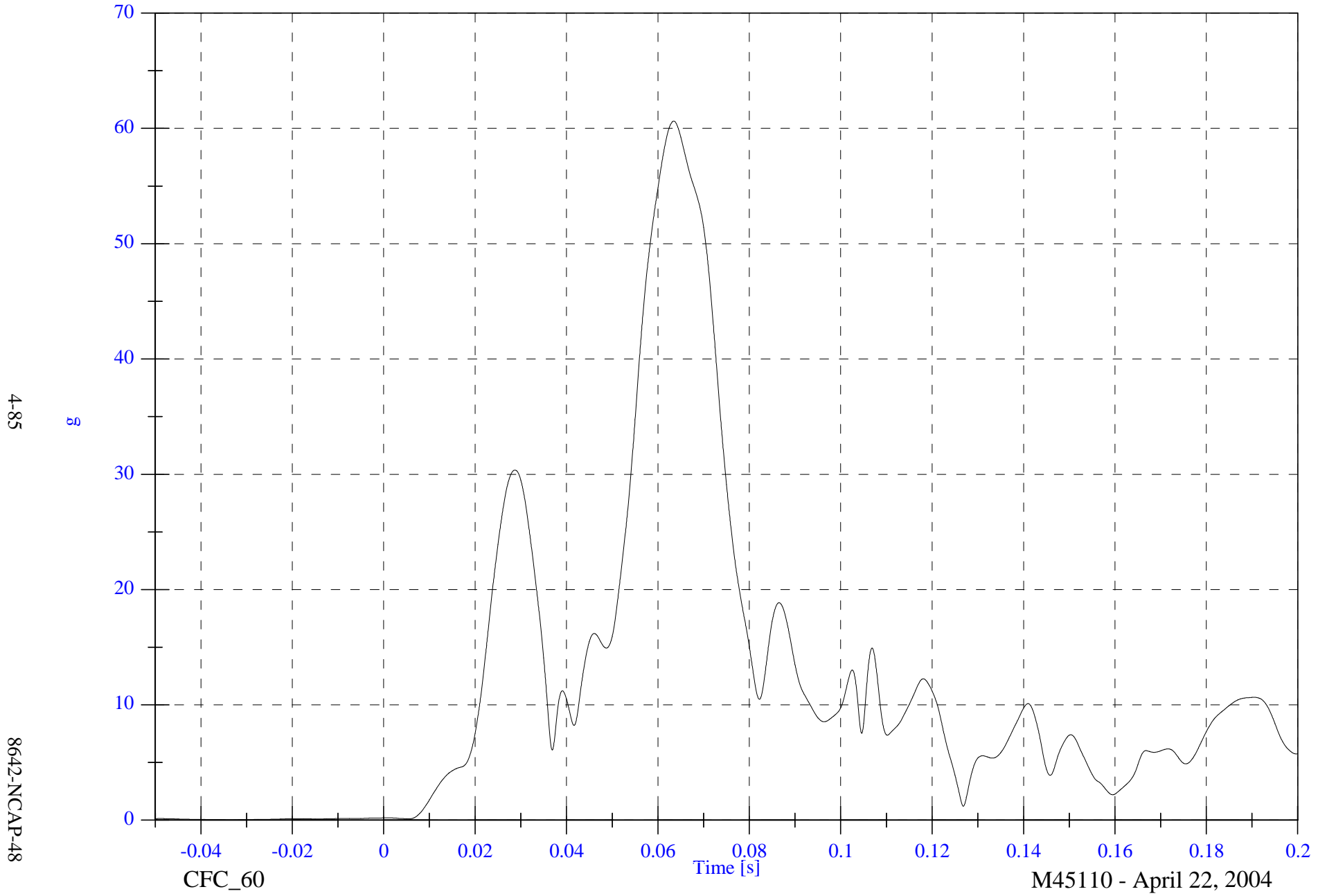
M45110 - April 22, 2004

2004 NCAP Test 12 - 2004 Toyota 4Runner

Max: 60.6 [g] at 0.063 [s]

V1P4 CRS Resultant

Min: 0.0 [g] at -0.033 [s]



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 2
Date 10/23/03

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

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
HEAD DROP TEST

Dummy Serial Number 142
Sequential Test Number 1
Date 04-13-2004
Workfile 142H2 04-13-04

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	275.12 Gs
Peak Lateral Acceleration	15 G's Max	6.92 Gs
Is Acceleration Curve Unimodal?	<10%	5.25 %

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 – 9.91 in	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	2/17/2004
HEAD AY	AC-P17743	ENDEVCO	11/21/2003
HEAD AZ	AC-P15319	ENDEVCO	11/21/2003
HEAD REAR AZ	AC-02I02I10-N06	ENTRAN	12/8/2003
UPPER NECK FX	LC-248-FX	DENTON	10/1/2003
UPPER NECK FY	LC-248-FY	DENTON	10/1/2003
UPPER NECK FZ	LC-248-FZ	DENTON	10/1/2003
UPPER NECK MX	LC-248-MX	DENTON	10/1/2003
UPPER NECK MY	LC-248-MY	DENTON	10/1/2003
UPPER NECK MZ	LC-248-MZ	DENTON	10/1/2003
LOWER NECK FX	LC-249FX	DENTON	10/1/2003
LOWER NECK FY	LC-249FY	DENTON	10/1/2003
LOWER NECK FZ	LC-249FZ	DENTON	10/1/2003
LOWER NECK MX	LC-249MX	DENTON	10/1/2003
LOWER NECK MY	LC-249MY	DENTON	10/1/2003
LOWER NECK MZ	LC-249MZ	DENTON	10/1/2003
CHEST AX	AC-P15334	ENDEVCO	11/21/2003
CHEST AY	AC-P15321	ENDEVCO	11/21/2003
CHEST AZ	AC-P17758	ENDEVCO	11/21/2003
CHEST DISPLACEMENT X	DS-044	SERVO	11/22/2003
PELVIS AX	AC-P16755	ENDEVCO	11/21/2003
PELVIS AY	AC-P15591	ENDEVCO	11/21/2003
PELVIS AZ	AC-P16155	ENDEVCO	11/21/2003
TETHER BELT LOAD	LC-170	FIRST TECHNOLOGY	10/10/2003

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	2/24/2004
HEAD AY	AC-99102-F12	ENTRAN	2/24/2004
HEAD AZ	AC-00L13-F03	ENDEVCO	2/24/2004
HEAD REAR AZ	AC-P23926	ENDEVCO	2/23/2004
UPPER NECK FX	LC-213FX	DENTON	10/1/2003
UPPER NECK FY	LC-213FY	DENTON	10/1/2003
UPPER NECK FZ	LC-213FZ	DENTON	10/1/2003
UPPER NECK MX	LC-213MX	DENTON	10/1/2003
UPPER NECK MY	LC-213MY	DENTON	10/1/2003
UPPER NECK MZ	LC-213MZ	DENTON	10/1/2003
LOWER NECK FX	LC-214FX	DENTON	10/1/2003
LOWER NECK FY	LC-214FY	DENTON	10/1/2003
LOWER NECK FZ	LC-214FZ	DENTON	10/1/2003
LOWER NECK MX	LC-214MX	DENTON	10/1/2003
LOWER NECK MY	LC-214MY	DENTON	10/1/2003
LOWER NECK MZ	LC-214MZ	DENTON	10/1/2003
CHEST AX	AC-99108-F30	ENTRAN	2/24/2004
CHEST AY	AC-99108-F28	ENTRAN	2/24/2004
CHEST AZ	AC-99H30-Z04	ENTRAN	2/24/2004
CHEST DISPLACEMENT X	DS-142	SERVO	9/18/2003
PELVIS AX	AC-99102-F06	ENTRAN	2/23/2004
PELVIS AY	AC-99102-F15	ENTRAN	2/23/2004
PELVIS AZ	AC-99G29-Q13	ENTRAN	2/23/2004
TETHER BELT LOAD	LC-175	FIRST TECHNOLOGY	10/10/2003

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

CRS INSTRUMENTATION

	CRS ACCELEROMETERS		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
P3 CRS AX	AC-P23993	ENDEVCO	3/22/2004
P3 CRS AY	AC-P23999	ENDEVCO	3/22/2004
P3 CRS AZ	AC-P23939	ENDEVCO	3/22/2004
P4 CRS AX	AC-P19246	ENDEVCO	1/16/2004
P4 CRS AY	AC-J31034	ENDEVCO	1/22/2004
P4 CRS AZ	AC-P23873	ENDEVCO	1/16/2004