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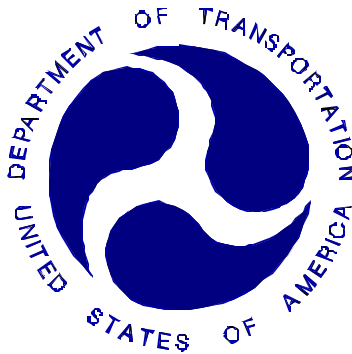
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

FUJI HEAVY INDUSTRIES, LTD.
2005 SUBARU OUTBACK
MPV

NHTSA NUMBER: M55500

GENERAL DYNAMICS TEST NUMBER: 8642-NCAP-50

GENERAL DYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
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August 5, 2004

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Rulemaking
Office of Crashworthiness Standards
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16. Abstract A frontal load cell barrier test of a 2005 Subaru Outback MPV was performed at General Dynamics crash test facility in Buffalo, New York, on August 5, 2004. The impact velocity was 56.65 kph and the temperature at the barrier face was 20°C. The maximum post-test vehicle crush was 486 mm. The test vehicle was equipped with 3-point restraint systems with torso belt pretensioners and load limiters, knee bolsters, and airbags at both the driver and right outboard passenger seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements.					
ATD Position	HIC	Clip (g's)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)
Driver (061)	391.8	38.9	-28.6	-786.7	-2424.3
Passenger (064)	323.0	44.0	-29.7	-3147.6	-2834.1
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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.65 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-01-D-32005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

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

1.2 TEST PROCEDURE

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

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

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

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

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 194 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 2005 Subaru Outback MPV at a velocity of 56.65 kph. The test was performed at General Dynamics on August 5, 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	391.8	38.9	-28.6	-786.7	-2424.3	§	†
Passenger ATD	323.0	44.0	-29.7	-3147.6	-2834.1	§	†

§ - Not used due to the configuration of the safety belt D-ring.

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

AUTOMATIC DOOR LOCK SUMMARY

ADL Equipped Test Vehicle:	No
ADL Activation Status:	N/A
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 486 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

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

The 2005 Subaru Outback MPV 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.:	M55500	Test Mode:	56.3 kph Frontal Barrier
Test Date:	August 5, 2004	Time:	11:56
		Temperature:	20 °C
Vehicle Make/Model/Body Style:	2005 Subaru Outback MPV		
Vehicle Test Weight:	1788.0	kg	
Vehicle/Barrier Impact Angle:	0	°	
Impact Velocity:	56.65	kph	
Maximum Static Crush:	486	mm	
Vehicle Rebound:	493	mm	

<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>
Type:	572E	572E
Restraint System:	Three-point safety belt with torso belt pretensioners and load limiters, airbag, knee bolster and adjustable head restraint	Three-point safety belt with torso belt pretensioners and load limiters, airbag, knee bolster and adjustable head restraint

Number of Data Channels:	194	
Number of Cameras:	1	Real Time
	16	High Speed

DOOR OPENING DATA:

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

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

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

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2005 Subaru Outback MPV

NHTSA No. : M55500 ; VIN: 4S4BP61C15730325 ; Color: Gold

Engine Data: 4 cylinders; - CID; 2.5 Liters; - cc

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

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

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

Date Received: July 9, 2004 ; Odometer Reading 77 km

Selling Dealer: West-Herr Oldsmobile, Inc.

& Address: 3565 Southwestern Boulevard Orchard Park, NY 14127

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Fuji Heavy Industries, Ltd.

Date of Manufacture 03/04

GVWR: 2010 kg; GAWR: 1040 kg FRONT; 1060 kg REAR

DATA FROM TIRE PLACARD:

Recommended Tire Size: P225/60r16

* Recommended Cold Tire Pressure: 221 kpa FRONT; 207 kpa REAR

DATA FROM TIRE SIDEWALL:

Size of Tires on Test Vehicle: P225/60R16 97H ; Manufacturer: Bridgestone

Tire Pressure with Maximum Capacity Vehicle Load: Front: 275 kPa; Rear: 275 kPa

Treadwear: 360 ; Traction: A ; Temperature: A

VEHICLE CAPACITY DATA:

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

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

Vehicle Capacity Weight (VCW) = 408 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 67.8 kg

*Tire pressure used for test

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

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

Right Front	=	<u>426.0</u>	kg	Right Rear	=	<u>348.0</u>	kg
Left Front	=	<u>423.0</u>	kg	Left Rear	=	<u>377.0</u>	kg
TOTAL FRONT	=	<u>849.0</u>	kg	TOTAL REAR	=	<u>725.0</u>	kg
TOTAL DELIVERED WEIGHT	=	<u>1574.0</u>	kg				
% of Total Front of Vehicle Weight	=	<u>53.9</u>		% of Total Rear Weight	=	<u>46.1</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW)	=	<u>1574.0</u>	kg
Rated Cargo/Luggage Weight (RCLW)	=	<u>67.8</u>	kg
Weight of 2 p.572 Dummies @ 76 each	=	<u>152</u>	kg
TARGET TEST WEIGHT	=	<u>1793.8</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND

62.0

KG OF CARGO WEIGHT:

Right Front	=	<u>465.0</u>	kg	Right Rear	=	<u>416.5</u>	kg
Left Front	=	<u>458.0</u>	kg	Left Rear	=	<u>448.5</u>	kg
TOTAL FRONT	=	<u>923.0</u>	kg	TOTAL REAR	=	<u>865.0</u>	kg
TOTAL TEST WEIGHT	=	<u>1788.0</u>	kg				
% of Total Front Weight	=	<u>51.6</u>	%	% of Total Rear Weight	=	<u>48.4</u>	%
Weight of Ballast Secured in Vehicle Trunk Area	=	<u>0</u>	kg				
Vehicle Components Removed for Weight Reduction:				Onboard cameras, mufflers, rear door window glass, rear spoiler, rear wiper motor, 37 L of Stoddard			

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED:	RF	<u>760</u>	LF	<u>759</u>	RR	<u>771</u>	LR	<u>769</u>
FULLY LOADED:	RF	<u>749</u>	LF	<u>748</u>	RR	<u>750</u>	LR	<u>747</u>
AS TESTED:	RF	<u>752</u>	LF	<u>752</u>	RR	<u>750</u>	LR	<u>750</u>
Vehicle's Wheel Base:		<u>2674</u>	mm					
Location of Vehicle's C.G.:		<u>1294</u>	mm rearward of front wheel center.					

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual	=	<u>64.4</u>	liters
Usable Capacity Figure Furnished by COTR	=	<u>64.4</u>	liters
Test Volume Range (92 to 94% of Usable Capacity)	=	<u>59.25</u>	to <u>60.54</u> liters
ACTUAL TEST VOLUME=	<u>22.7¹</u>	liters (with entire fuel system filled)	
Test Fluid Type:	<u>Stoddard Solution</u>	Spec. Grav. =	<u>0.764</u>
Kinematic Viscosity	=	<u>0.96</u>	centistokes; Color = <u>Orange</u>
Type of Fuel Pump: Electric-	<u>X</u>	Mechanical-	<u>-</u>
Does Electric Pump operate with ignition switch "ON" & engine "OFF"	Yes- <u>X</u>	No- <u>-</u>	
Details of Fuel System:	<u>Filler – right rear behind rear axle; Lines inside left sill; Tank – Saddle configuration centered ahead of the rear axle.</u>		

¹ Stoddard solvent was removed to obtain vehicle target test weight.

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°
Test Date: August 5, 2004 Time: 11:56 Temperature: 20 °C
Vehicle NHTSA No.: M55500
Required Impact Velocity Range: 55.5 to 57.1 kph

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

Trap No. 1 = 56.65 kph; Trap No. 2 = 56.65 kph
Distance from vehicle to barrier: (1) entering trap = 813 mm
(2) exiting trap = 305 mm

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

Vehicle Length:

Pre-Test	Left = <u>4723</u> ; C/L = <u>4795</u> ; Right = <u>4720</u>
Post-Test	Left = <u>4291</u> ; C/L = <u>4309</u> ; Right = <u>4242</u>
Crush	Left = <u>432</u> ; C/L = <u>486</u> ; Right = <u>478</u>
AVERAGE	= <u>465</u> mm

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

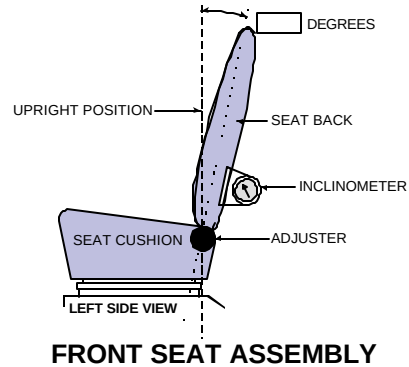
	Left = <u>505</u> ; C/L = <u>462</u> ; Right = <u>512</u>
AVERAGE	= <u>493</u> mm

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2005 Vehicle Model: Subaru Outback Body Style : MPV

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: 25°

Measurement instructions: Reclined 14 degrees rearward from the most upright position with the seat cushion in the lowest height position.

Seat back angle for passenger's seat: 25°

Measurement instructions: The same as the driver's seat

2. SEAT FORE AND AFT POSITIONING:

Positioning of the driver's seat: Placed in mid-position (120 mm) of total adjustment position (240 mm) from the seat full down and full rear to the seat full forward and full up. Marked at lowest height on cushion.

Positioning of the passenger's seat: Placed in mid-position (108 mm) of 216 mm total travel or detent 10 of 19 detents with the forward most detent being detent number 1.

3. FUEL TANK CAPACITY DATA:

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 64.4 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 = 64.4 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 59.7 liters

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

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

When the ignition is turned to the 'ON' position for a few seconds and while the engine is running.

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

4. STEERING COLUMN ADJUSTMENTS:

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

Operational Instructions: Set at mid -angle (21.8°)

5. SEAT BELT UPPER ANCHORAGE:

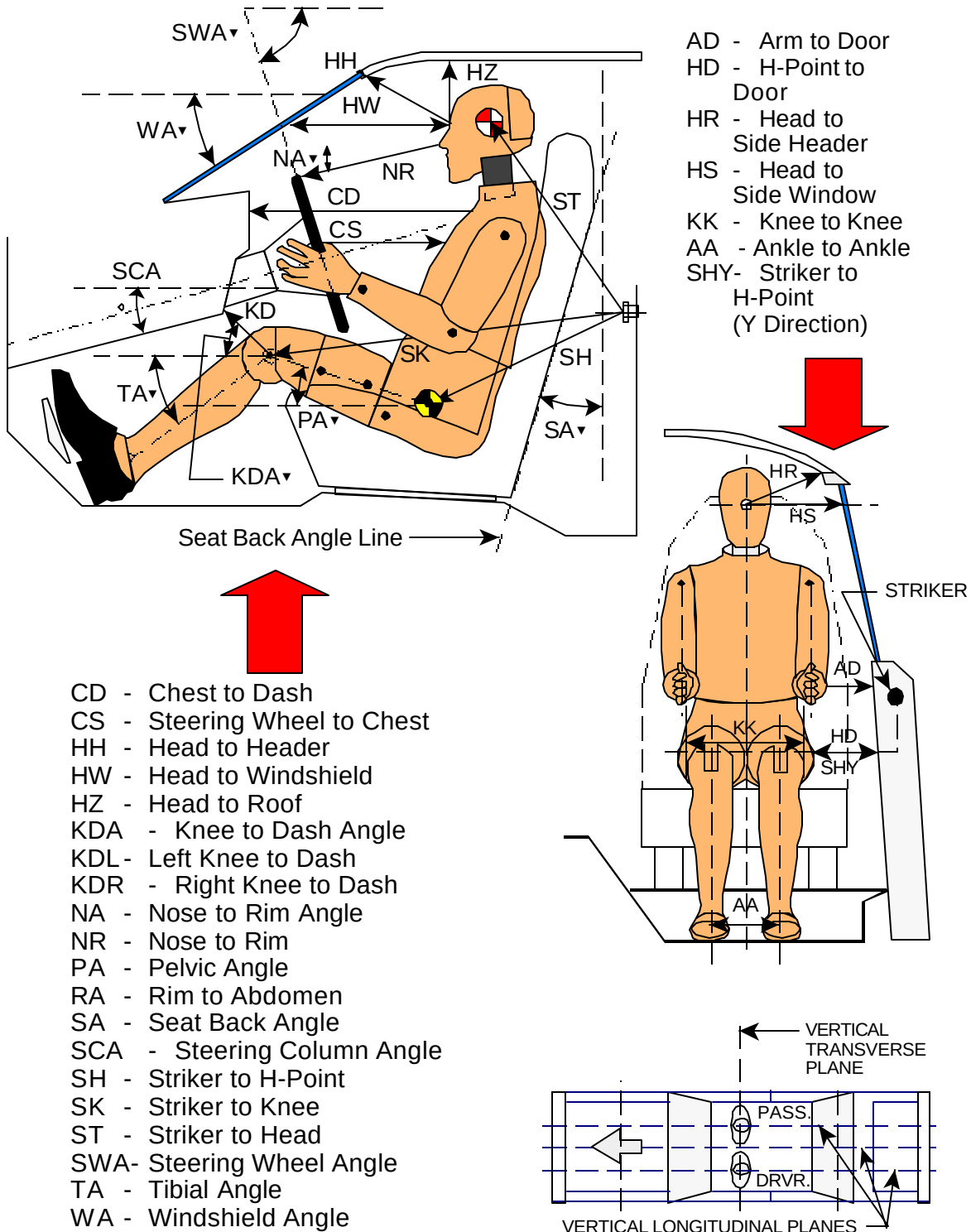
Nominal design riding position: There are five total detents. The test position is the first detent below upper-most position (detent 2).

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

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

Comments: This option is not available

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



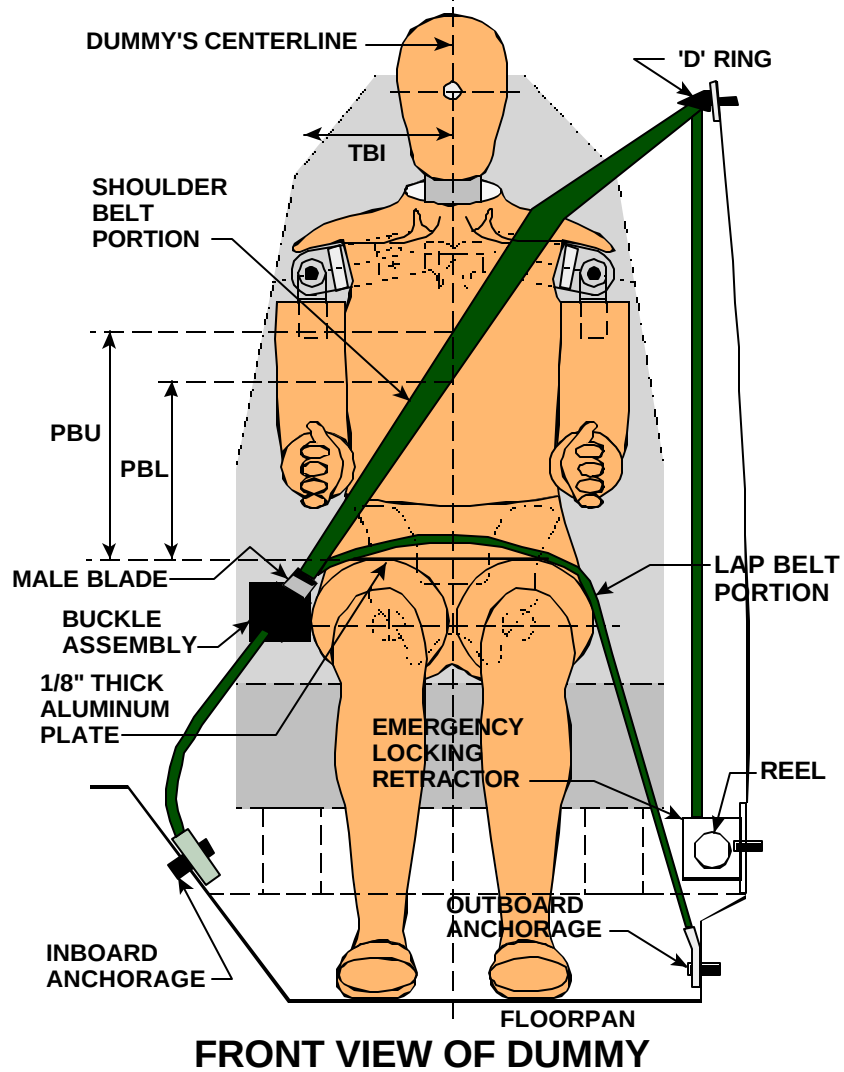
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #061)			PASS. (Serial #064)		
WA ⁰	28.9 deg.			N/A		
SWA ⁰	69.2 deg.			N/A		
SCA ⁰	21.8 deg.			N/A		
SA ⁰	12 deg.			12 deg.		
HZ	202			179		
HH	335			295		
HW	576			515		
HR	197			184		
NR	401	Angle	-12 deg.	N/A		
CD	502			512		
CS	306			N/A		
RA	202			N/A		
KDL	161	Angle (KDA)	35 deg.	145		
KDR	148			158	Angle (KDA)	35 deg.
PA ⁰	24.1 deg.			21.6 deg.		
TA ⁰	39.7 deg.			40.0 deg.		
KK	299			272		
AA	274			224		
ST	518	Angle	4 deg.	540	Angle	4 deg.
SK	580	Angle	89 deg.	550	Angle	88 deg.
SH	231	Angle	125 deg.	222	Angle	120 deg.
SHY	260			255		
HS	303			304		
HD	130			131		
AD	115			105		

Dimensions in millimeters

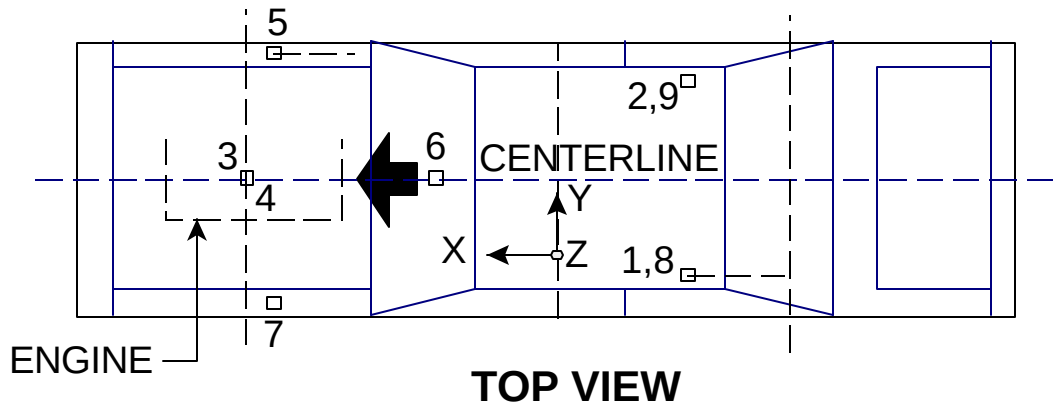
DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

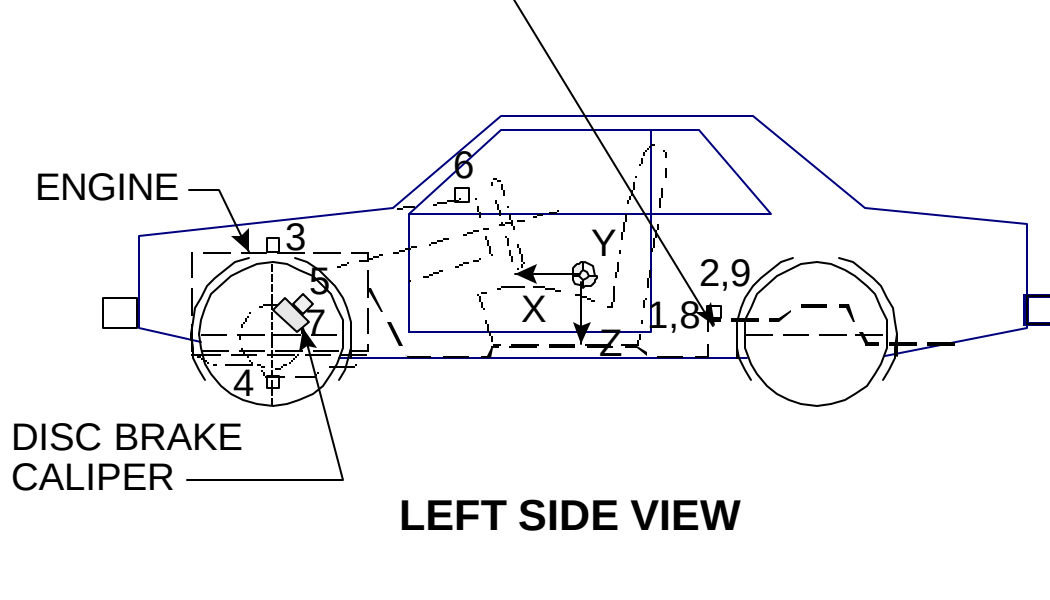


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	350	350
PBL-- Top surface of alum. plate to belt lower edge	270	270
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



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

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

LOCATION		PRE-TEST LENGTH (mm)		
		X	Y	Z
1	Left Rear Seat Cross Member X	1990	-583	-268
2	Right Rear Seat Cross Member X	1989	572	-258
3	Top of Engine Block	4080	-124	-658
4	Bottom of Engine	3876	47	-178
5	Disc Brake Caliper @ Right Side	3734	776	-298
6	Instrument Panel	3003	4	-773
7	Disc Brake Caliper @Left Side	3731	-772	-299
8	Left Rear Seat Cross Member Z	1990	-583	-268
9	Right Rear Seat Cross Member Z	1989	572	-258

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Left Rear Seat Cross Member X	2.3	171.3	-37.0	53.2
2	Right Rear Seat Cross Member X	1.8	95.4	-41.3	58.9
3	Top of Engine Block	21.1	55.2	-122.7	31.1
4	Bottom of Engine	†	†	†	†
5	Disc Brake Caliper @ Right Side	§	§	§	§
6	Instrument Panel	57.3	65.0	-271.8	55.6
7	Disc Brake Caliper @Left Side	‡	‡	‡	‡
8	Left Rear Seat Cross Member Z	7.6	84.1	-10.1	63.5
9	Right Rear Seat Cross Member Z	10.0	82.8	-7.0	20.7

† - Wire Cut at 68 ms.

§ - Data Questionable after 174 ms.

‡ - Data is Questionable.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2005 Subaru Outback MPV

NHTSA Test No.: M55500 Test Date: August 5, 2004

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head 9 Array X Arm Y	g	3.4	120.6	-9.7	84.2	2.0	39.4	-19.8	74.7
Head 9 Array X Arm Z	g	23.5	51.4	-8.6	92.2	27.6	75.9	-6.7	121.1
Head 9 Array Y Arm X	g	1.5	199.9	-52.1	83.5	2.5	192.3	-45.9	76.3
Head 9 Array Y Arm Z	g	18.5	51.4	-14.5	98.7	27.5	72.2	-1.2	16.0
Head 9 Array Z Arm X	g	2.4	199.9	-51.0	84.2	2.7	198.1	-38.5	82.2
Head 9 Array Z Arm Y	g	5.6	146.5	-10.9	82.9	4.2	45.9	-18.6	72.8
Head X	g	1.2	199.9	-49.9	83.7	4.2	191.9	-39.7	78.9
Head Y	g	3.1	135.5	-9.8	86.3	3.0	32.7	-14.5	90.8
Head Z	g	18.6	51.4	-14.3	98.8	23.9	72.1	-0.8	15.9
Head Resultant	g	50.6	83.7	0.1	-45.7	46.7	76.2	0.0	-3.7
Redundant Head X	g	1.8	198.4	-49.6	84.0	5.1	191.9	-39.5	77.3
Redundant Head Y	g	3.0	143.6	-9.3	86.4	3.2	32.7	-15.2	89.7
Redundant Head Z	g	18.6	51.5	-14.1	98.9	23.8	72.1	-0.9	16.1
Redundant Head Resultant	g	50.4	84.0	0.1	-48.8	46.4	76.0	0.0	-1.8
Upper Neck Fx	N	405.7	85.1	-319.4	49.2	117.1	85.4	-474.5	125.5
Upper Neck Fy	N	138.7	141.0	-74.8	81.8	88.0	55.3	-127.6	123.1
Upper Neck Fz	N	1067.7	72.5	-148.1	105.3	911.9	50.8	-43.3	16.2
Upper Neck F Resultant	N	1075.5	72.5	3.0	-8.7	984.6	50.8	1.0	-5.1
Upper Neck Mx	N-m	9.3	146.9	-17.3	107.1	31.0	92.8	-8.1	131.3
Upper Neck My	N-m	36.3	128.9	-28.0	101.6	42.8	120.8	-12.1	199.9
Upper Neck Mz	N-m	3.9	86.5	-1.9	157.0	20.6	96.6	-7.2	155.4
Upper Neck M Resultant	N-m	37.0	128.9	0.1	-1.3	43.6	120.2	0.1	-5.4
Chest X	g	2.6	147.2	-39.8	76.1	1.3	171.9	-45.8	72.3
Chest Y	g	4.4	96.8	-6.8	53.0	3.9	51.4	-10.9	89.6
Chest Z	g	9.7	97.5	-8.6	44.3	8.6	44.6	-7.8	99.5
Chest Resultant	g	39.9	91.9	0.0	-21.9	46.4	72.3	0.1	1.1

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

Vehicle Year/Make/Model/Body Style: 2005 Subaru Outback MPV

NHTSA Test No.: M55500 Test Date: August 5, 2004

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Redundant Chest X	g	2.6	146.8	-39.7	91.8	1.2	171.5	-46.7	72.3
Redundant Chest Y	g	4.2	96.3	-6.6	53.0	4.2	51.1	-11.0	89.6
Redundant Chest Z	g	10.1	97.7	-9.0	44.1	8.7	44.5	-8.1	98.7
Redundant Chest Resultant	g	40.2	91.9	0.0	-22.6	47.2	72.3	0.1	-0.8
Chest Displacement	mm	0.0	-13.1	-28.6	77.8	0.0	-20.5	-29.7	82.7
Pelvic X	g	14.2	90.3	-51.8	70.9	11.3	88.3	-63.7	64.3
Pelvic Y	g	15.1	82.7	-6.7	43.2	4.3	48.7	-9.5	84.3
Pelvic Z	g	2.4	141.8	-31.8	71.8	1.9	137.3	-32.3	69.8
Pelvic Resultant	g	60.4	71.4	0.0	-16.6	69.9	63.1	0.0	-3.1
Left Femur	N	751.6	50.9	-786.7	90.3	878.2	49.4	-3147.6	64.1
Right Femur	N	274.7	24.1	-2424.3	71.6	634.8	49.3	-2834.1	58.4
Left Upper Tibia Mx	N-m	17.2	49.0	-35.2	68.7	15.8	81.0	-19.2	115.0
Left Upper Tibia My	N-m	78.3	57.4	-63.6	47.5	103.0	65.0	-65.4	48.4
Left Lower Tibia Fz	N	90.6	131.0	-1300.6	86.5	49.5	133.8	-2998.1	87.5
Left Lower Tibia Mx	N-m	55.7	80.0	-6.9	25.3	16.3	86.0	-15.9	96.6
Left Lower Tibia My	N-m	38.6	91.0	-20.1	70.1	46.4	89.3	-15.4	39.2
Right Upper Tibia Mx	N-m	22.6	43.3	-24.3	81.7	0.5	19.2	-56.1	56.8
Right Upper Tibia My	N-m	124.4	58.7	-92.5	42.4	93.4	58.9	-55.6	50.7
Right Lower Tibia Fz	N	79.7	147.1	-2953.4	43.1	108.7	158.2	-2038.3	83.2
Right Lower Tibia Mx	N-m	11.5	42.8	-40.6	49.7	12.7	60.0	-10.6	54.9
Right Lower Tibia My	N-m	42.1	57.6	-23.3	38.6	43.3	85.8	-30.6	52.5
Left Foot Aft Ax	g	18.6	83.1	-62.4	69.8	27.7	91.0	-60.9	65.5
Left Foot Aft Az	g	4.4	34.5	-27.5	24.7	5.5	100.4	-37.7	44.5
Left Foot Fore Az	g	20.6	34.7	-52.4	54.4	19.6	93.4	-69.4	74.2
Right Foot Aft Ax	g	21.0	83.4	-72.1	40.4	15.3	88.6	-48.7	59.2
Right Foot Aft Az	g	4.2	132.7	-68.6	41.6	7.2	97.8	-28.9	77.8
Right Foot Fore Az	g	20.1	29.6	-128.0	33.0	21.9	97.4	-42.5	77.8
Lap Belt Load	N	9368.9	67.7	-2.0	-17.8	7717.5	57.5	1.7	3.9
Torso Belt	N	5507.9	49.0	-11.0	199.9	5584.4	50.2	-20.0	156.3

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

Vehicle Year/Make/Model/Body Style: 2005 Subaru Outback MPV

NHTSA Test No.: M55500 Test Date: August 5, 2004

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	391.8	66.6	102.6	41.2
Position #2 - Passenger	323.0	65.6	101.6	38.1

** 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	38.9	90.4	93.4	410.5
Position #2 - Passenger	44.0	71.0	74.0	388.1

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

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

Vehicle Year/Make/Model/Body Style: 2005 Subaru Outback MPV
 NHTSA Test No.: M55500 Test Date: August 5, 2004

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	381.5	66.8	102.8	40.7
Position #2 - Passenger	315.8	65.7	101.7	37.8

** 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	39.1	90.5	93.5	405.9
Position #2 - Passenger	44.6	71.0	74.0	398.0

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

DATA SHEET NO. 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

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

Driver

Passenger

1630

1600

Shoulder belt length as measured
on Part 572 Dummy.

860

860

Lap belt length as measured
on Part 572 Dummy.

770

640

Dimensions in millimeters

DATA SHEET NO.10 SUMMARY OF FMVSS 212 DATA

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA

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

Windshield is bonded in place and covered with a 15 mm molding.

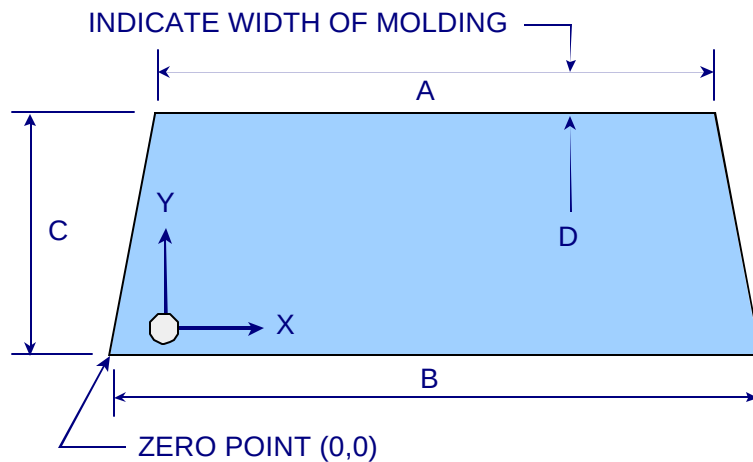
FMVSS 212 REQUIREMENTS:

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	2102.5	2102.5	100.0%
LEFT SIDE	2102.5	2102.5	100.0%
TOTAL	4205	4205	100.0%

AREA OF RETENTION FAILURE: None



DIMENSIONS (mm)	
A	1155
B	1470
C	790
D	15

FRONT VIEW OF WINDSHIELD

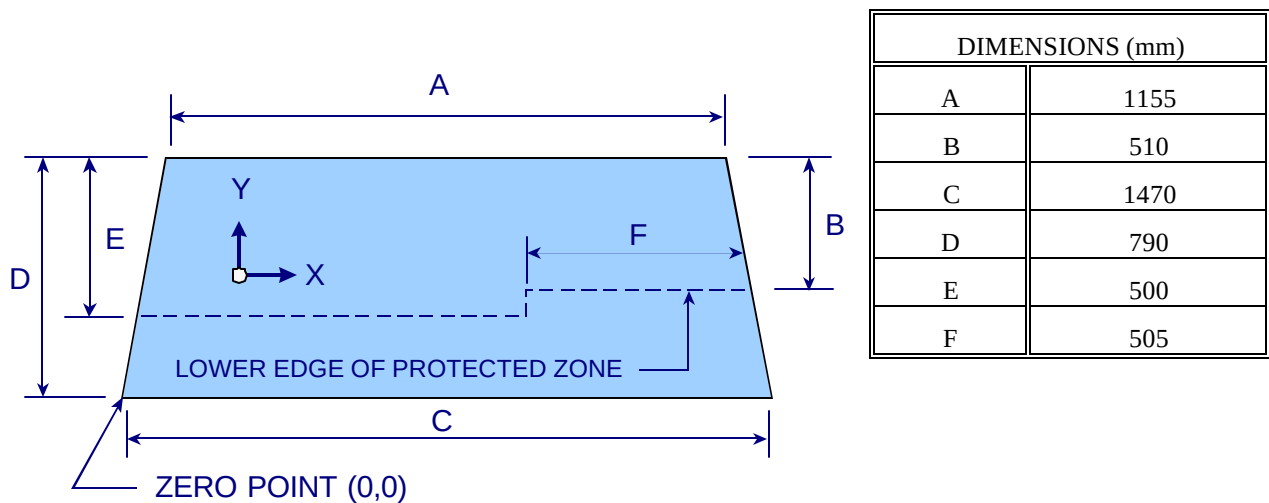
FAILURE DETAILS: None

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

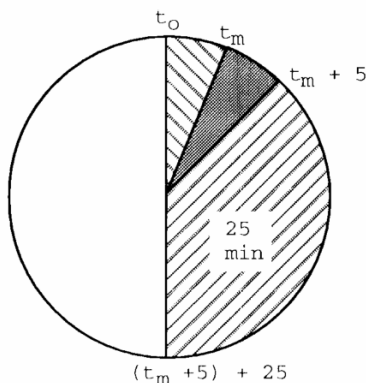
NHTSA TEST No.: M55500 TEST DATE: August 5, 2004
VEHICLE MAKE/MODEL: 2005 Subaru Outback MPV

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

=====

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

FUEL SPILLAGE MEASUREMENT:



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

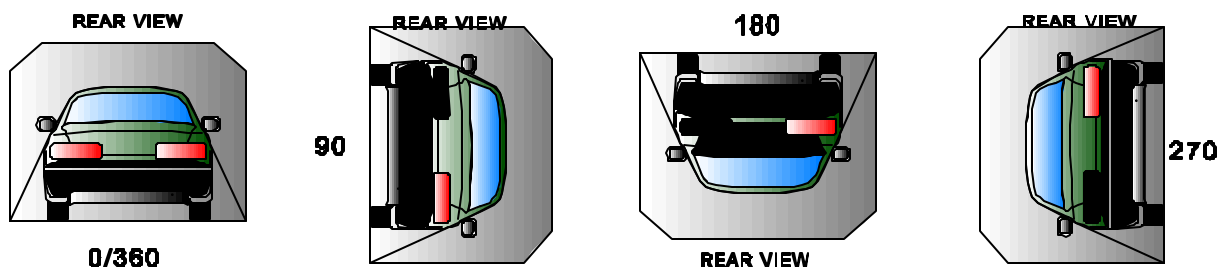
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

DATA SHEET NO. 13 - ROLLOVER DATA

Vehicle: 2005 Subaru Outback MPV

NHTSA No.: M55500



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0° - 90°	1	minutes	17	seconds	5	minutes	6	minutes	17	seconds	7	minutes
90° - 180°	1	minutes	05	seconds	5	minutes	6	minutes	5	seconds	7	minutes
180°-270°	1	minutes	01	seconds	5	minutes	6	minutes	1	seconds	7	minutes
270°-360°	1	minutes	05	seconds	5	minutes	6	minutes	5	seconds	7	minutes

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

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

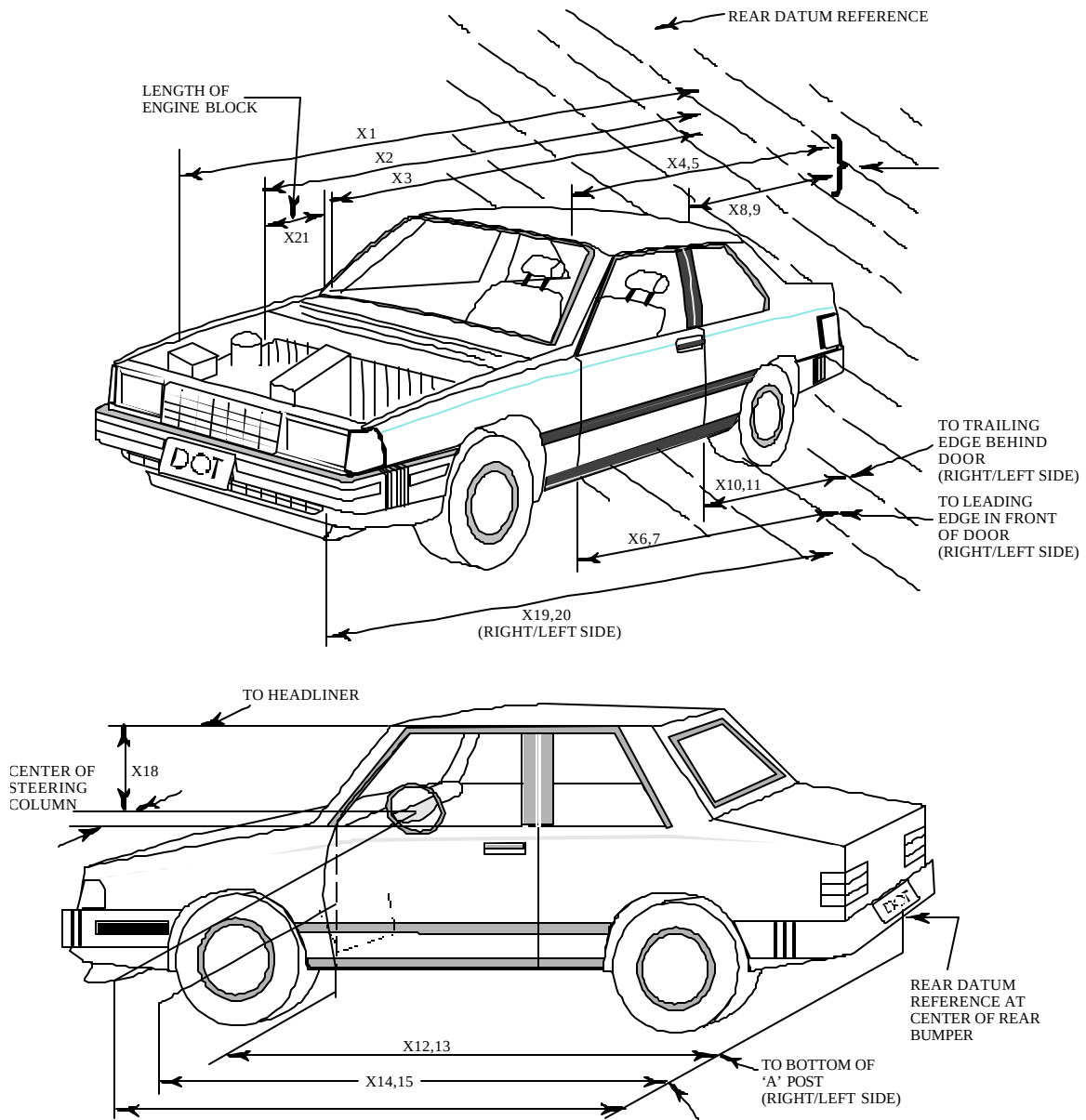
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	N/A
90° - 180°	0	0	0	N/A
180°-270°	0	0	0	N/A
270°-360°	0	0	0	N/A

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

IV. SOLVENT SPILLAGE LOCATION(S):

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

DATA SHEET NO. 14 TEST VEHICLE MEASUREMENTS

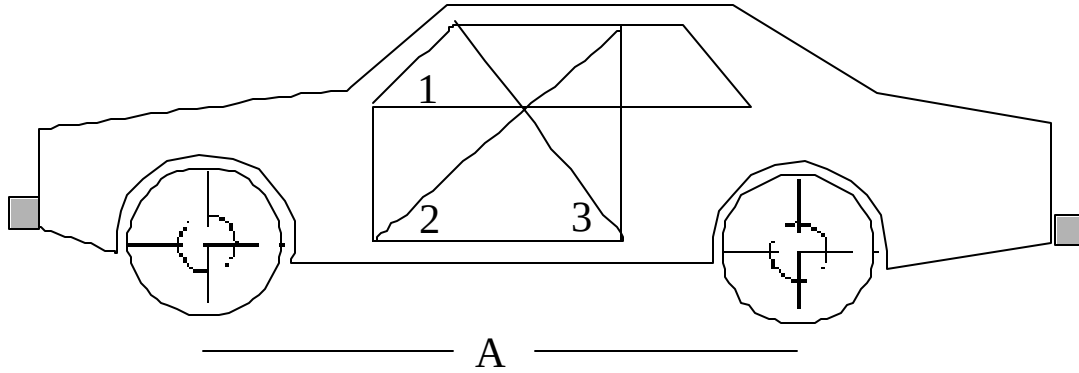


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4795	4309	486
X2	Rear Surface of Vehicle to Front of Engine	4234	4010	224
X3	Rear Surface of Vehicle to Firewall	3623	3594	29
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3278	3287	-9
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3281	3283	-2
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3281	3291	-10
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3280	3283	-3
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2231	2241	-10
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2232	2234	-2
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2219	2227	-8
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2219	2223	-4
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3284	3283	1
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3281	3281	0
X14	Rear Surface of Vehicle to Firewall, Right Side	3651	3627	24
X15	Rear Surface of Vehicle to Firewall, Left Side	3657	3640	17
X16	Rear Surface of Vehicle to Steering Column	2834	2861	-27
X17	Center of Steering Column to "A" Post	305	303	2
X18	Center of Steering Column to Headliner	424	395	29
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4720	4242	478
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4723	4291	432
X21	Length of Engine Block	270	270	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3013	3022	-9
CD	Rear Surface of Vehicle to Center of Dash Panel	3089	3097	-8
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3017	3018	-1

All Dimensions in mm

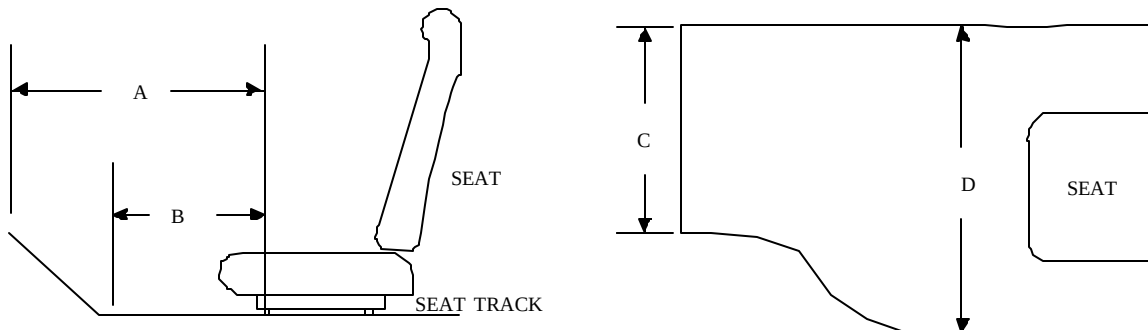
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	944	1390	912	961	1390	909
AFTER TEST	944	1389	913	961	1388	911
DIFFERENCE	0	1	-1	0	2	-2

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2673	2674
AFTER TEST	2678	2648
DIFFERENCE	-5	26

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



DRIVER

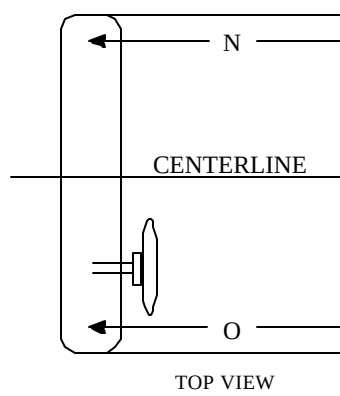
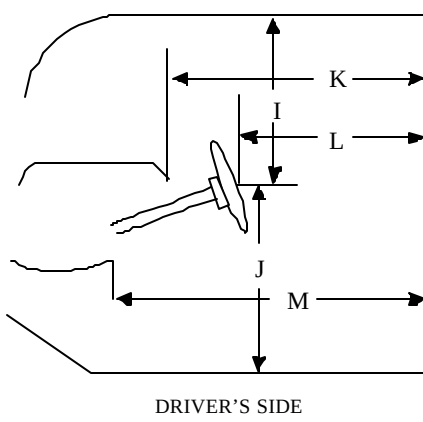
Measurement	Pre-Test	Post-Test	Difference
A	705	673	32
B	509	509	0
C	381	376	5
D	438	409	29

PASSENGER

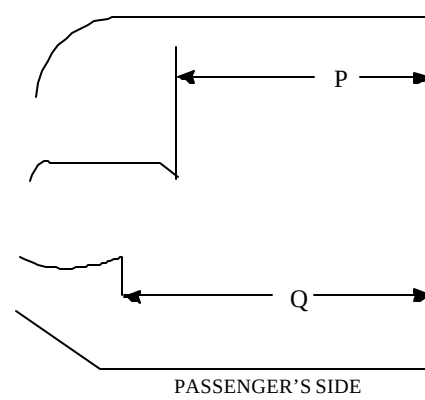
Measurement	Pre-Test	Post-Test	Difference
A	648	632	16
B	462	469	-7
C	396	429	-33
D	425	391	34

Units = mm

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



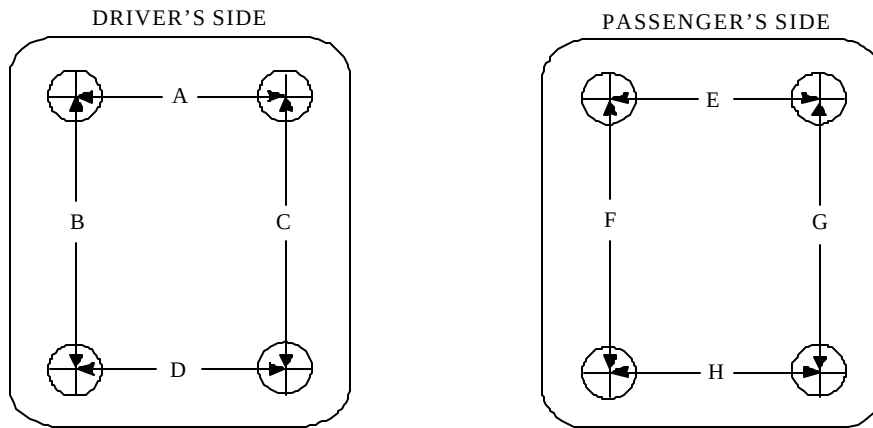
MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



Measurement	Pre-Test	Post-Test	Difference
I	424	395	29
J	607	644	-37
K	1657	1657	0
L	1473	1500	-27
M	1723	1731	-8
N	1658	1658	0
O	1656	1658	-2
P = K (PASS.)	1727	1727	0
Q = M (PASS.)	1710	1712	-2

Units = mm

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

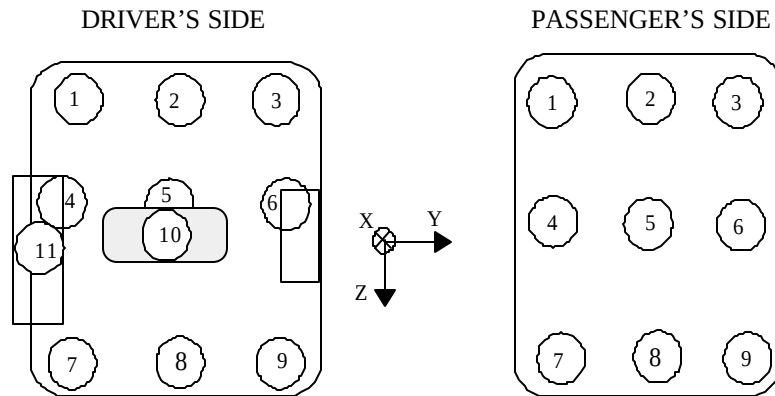


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	381	376	5
B	471	463	8
C	455	418	37
D	438	409	29
E	396	429	-33
F	392	391	1
G	401	403	-2
H	425	391	34

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	3465	3440	25	-444	-467	23
2	3485	3453	32	-395	-415	20
3	3478	3439	39	-383	-404	21
4	3372	3357	15	-348	-367	19
5	3394	3381	13	-306	-319	13
6	3387	3378	9	-305	-307	2
7	3294	3291	3	-251	-256	5
8	3289	3289	0	-245	-244	-1
9	3289	3285	4	-242	-241	-1
10	3356	3353	3	-434	-439	5
11	3384	3381	3	-415	-421	6

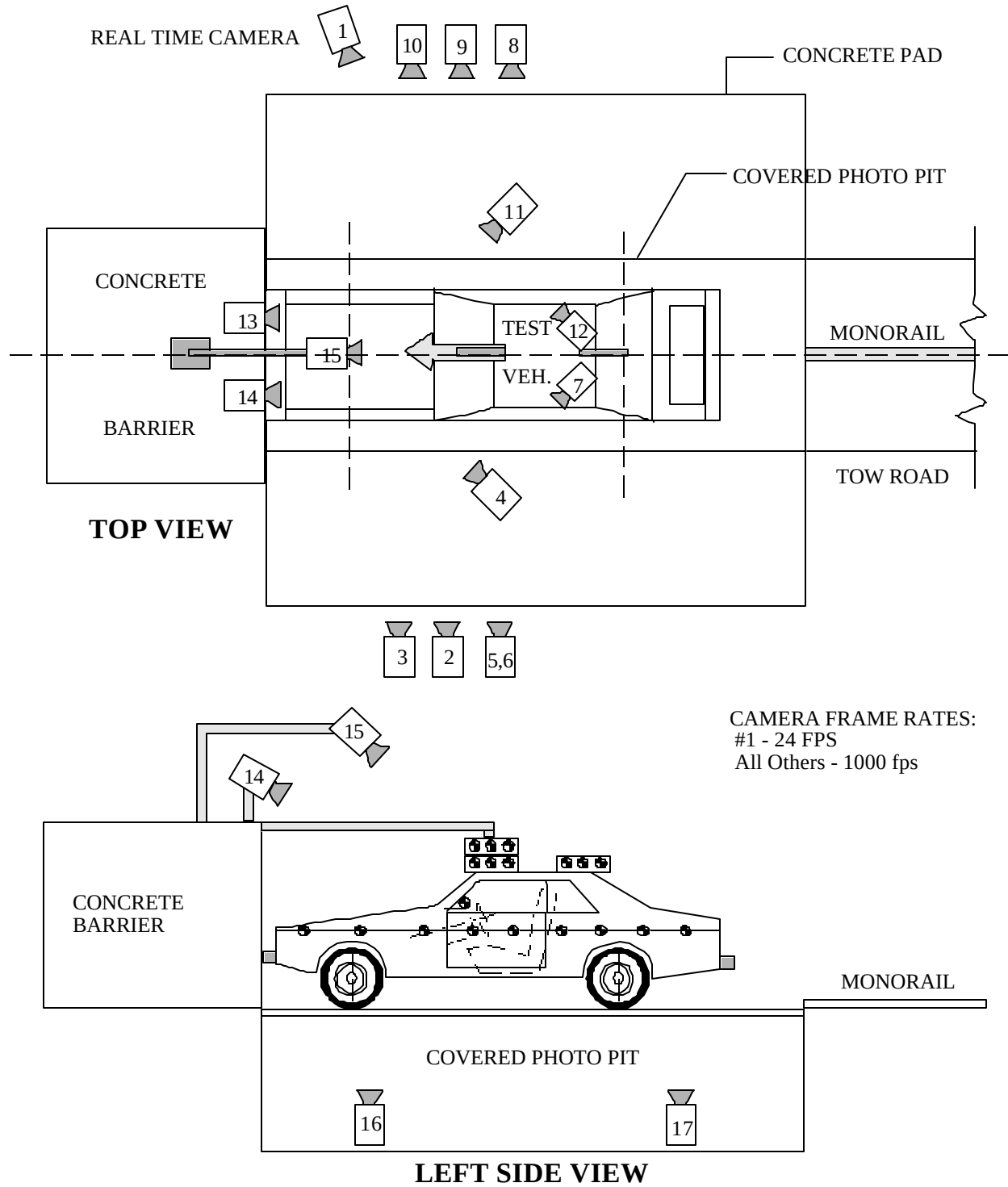
Passenger Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3424	3408	16	-420	-439	19
2	3419	3409	10	-421	-441	20
3	3414	3410	4	-418	-439	21
4	3330	3327	3	-331	-340	9
5	3330	3325	5	-331	-347	16
6	3325	3326	-1	-326	-339	13
7	3238	3244	-6	-250	-251	1
8	3237	3244	-7	-248	-251	3
9	3239	3247	-8	-240	-251	11

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

DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS

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



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

NHTSA Test No.: M55500 Vehicle: 2005 Subaru Outback MPV

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	6492	1870	1039	-2	6125	12.5	1000
3	Left Side View	7889	1310	1114	-4	7522	25	1000
4	Driver and Interior View	7345	2698	2050	-8	-	35	1005
5	Steering Column (Bottom)	7345	2123	1177	-3	6978	25	1005
6	Steering Column (Top)	7345	2123	1777	-7	6978	25	1000
7	Left Side Lateral CRS View	3178	2616	2277	-18	-	28	1000
8	Overall Right Side	6808	2280	1063	-3	7072	12.5	1050
9	Right Side View	7843	1630	1115	-2	8107	25	990
10	Right Passenger View	7853	2095	1365	-1	8117	35	1000
11	Passenger and Interior View	7548	3200	1995	-10	-	35	1000
12	Right Side Lateral CRS View	7208	2731	2200	-18	-	28	1000
13	Passenger Front View	620	-92	1987	-37	-	13	1000
14	Driver Front View	620	-92	1987	-39	-	13	1010
15	Windshield View	0	-530	3374	-52	-	13	1010
16	Pit View of Engine	0	615	-3048	90	-	13	1000
17	Pit View of Fuel Tank	0	2965	-3048	90	-	13	1005

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

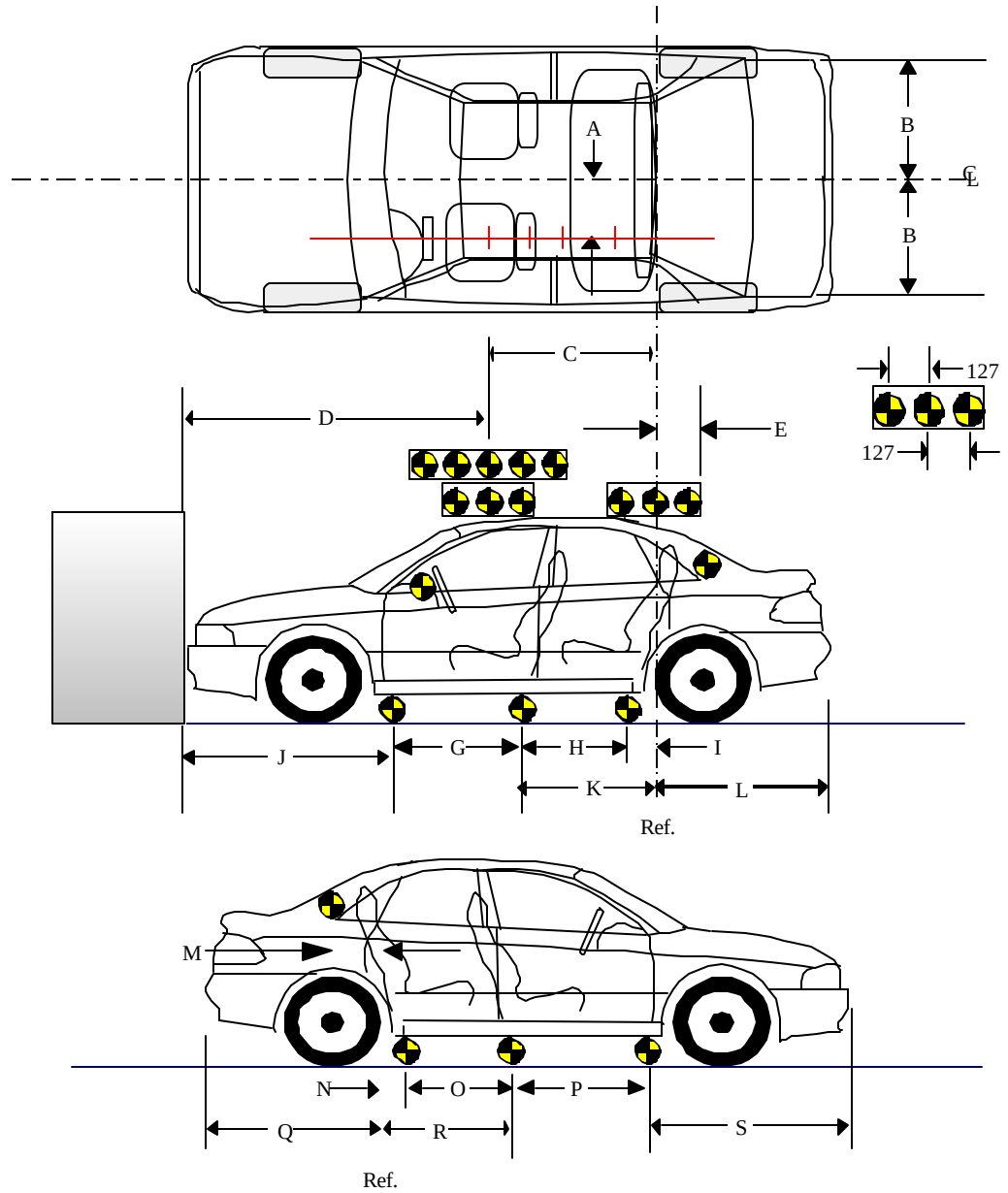
Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

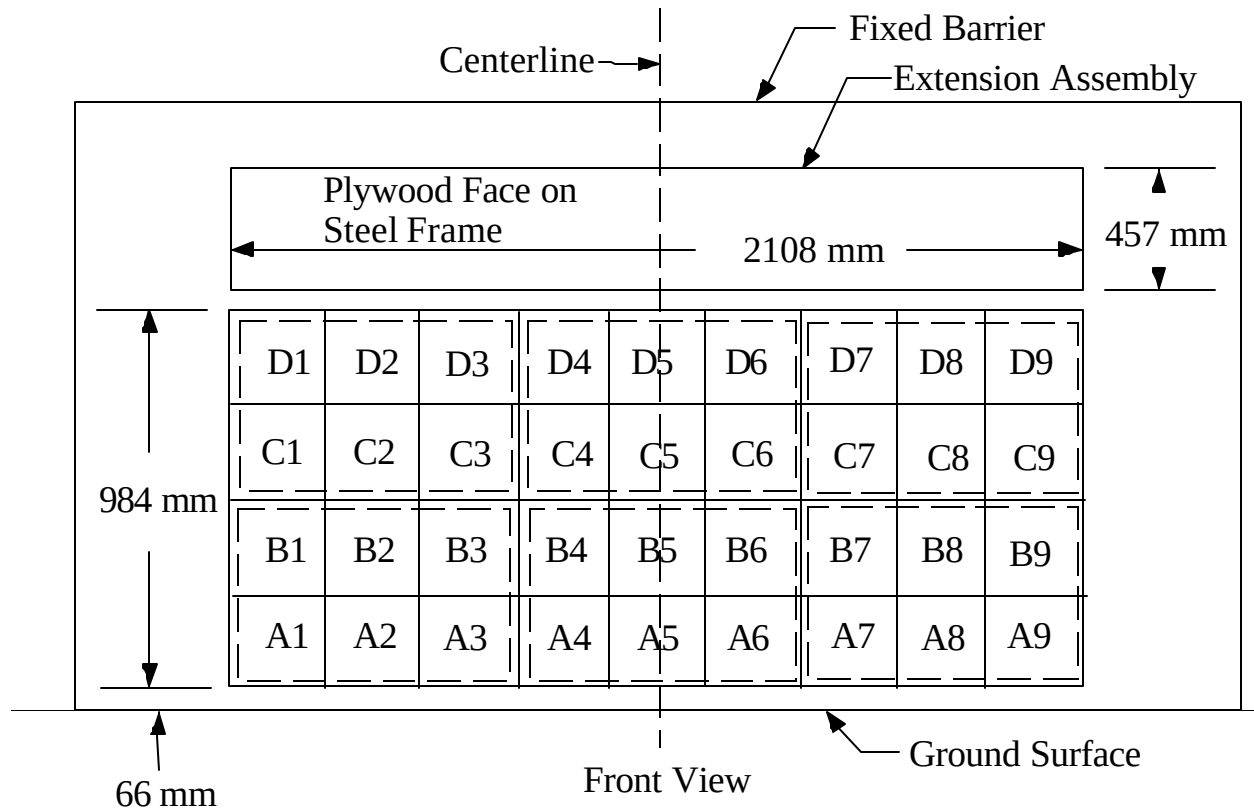
(Dimensions in millimeters)

A	340
B	631
C	1220
D	2070
E	346
F	1512
G	833
H	829
I	46
J	1581
K	875
L	1505
M	351
N	43
O	823
P	835
Q	1505
R	866
S	1590



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.: M55500; Test Date: August 5, 2004; Technician: P. MacDiarmid

Vehicle Model Year/Make/Model: 2005 Subaru Outback MPV

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

B. Size of vent holes: (mm²) 706.9 -Driver 1250 -Passenger

C. Total vent area: (mm²) 1413.8 -Driver 2500 -Passenger

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

Driver: 600 -Height; 600 -Width; 400 -Depth

Passenger: 700 -Height; 480 -Width; 700 -Depth

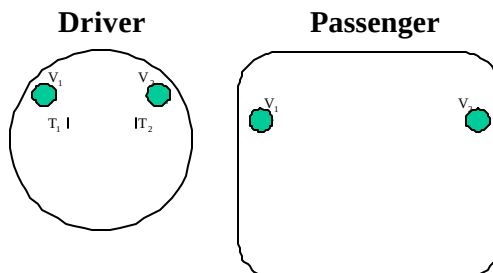
E. Is the air bag tethered?

Driver: X -Yes; - -No; If yes, record length of tether- 275

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: GA120-00810 8814008267

Generator: -

Passenger: Air bag: 2401184AB 970007198 04 03 04

Generator: -

DATA SHEET NO. 19 ACCIDENT INVESTIGATION DIVISION DATA

FOR FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Subaru Outback MPV

NHTSA Test No.: M55500 VIN: 4S4BP61C15730325

Model Year: 2005 Build Date: 03/04 Test Date: August 5, 2004

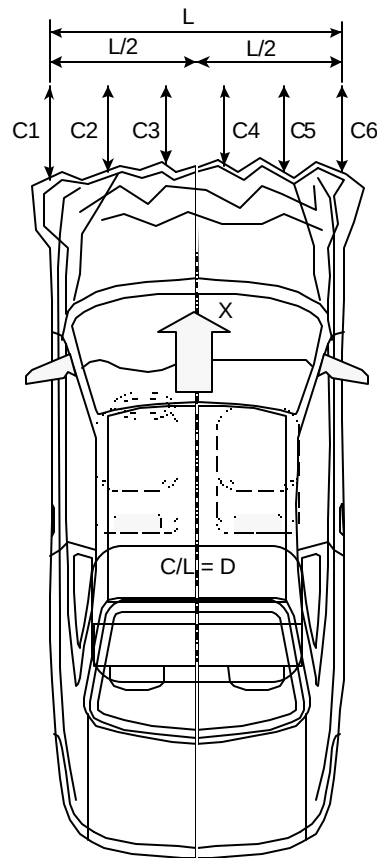
Vehicle Size Category: Light Duty Truck Test Weight: 1788.0 kg

Vehicle Wheelbase: 2674 mm; Front Overhang: 1187 mm; Overall Width: 1770 mm

Collision Deformation Classification (CDC) Code: 12FDEW 3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4581	4268	313
C2 =	4741	4303	438
C3 =	4785	4311	474
C4 =	4784	4299	485
C5 =	4740	4259	481
C6 =	4581	4219	362



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region: L1= 1396 mm

L2= 698.0 mm

L5= 279.2 mm

APPENDIX A
PHOTOGRAPHS

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A-51	Post-Test Passenger Feet View	A-54
A-52	Pre-Test Passenger Knee Bolster View	A-55
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A-56	Post-Test Passenger Head View	A-59
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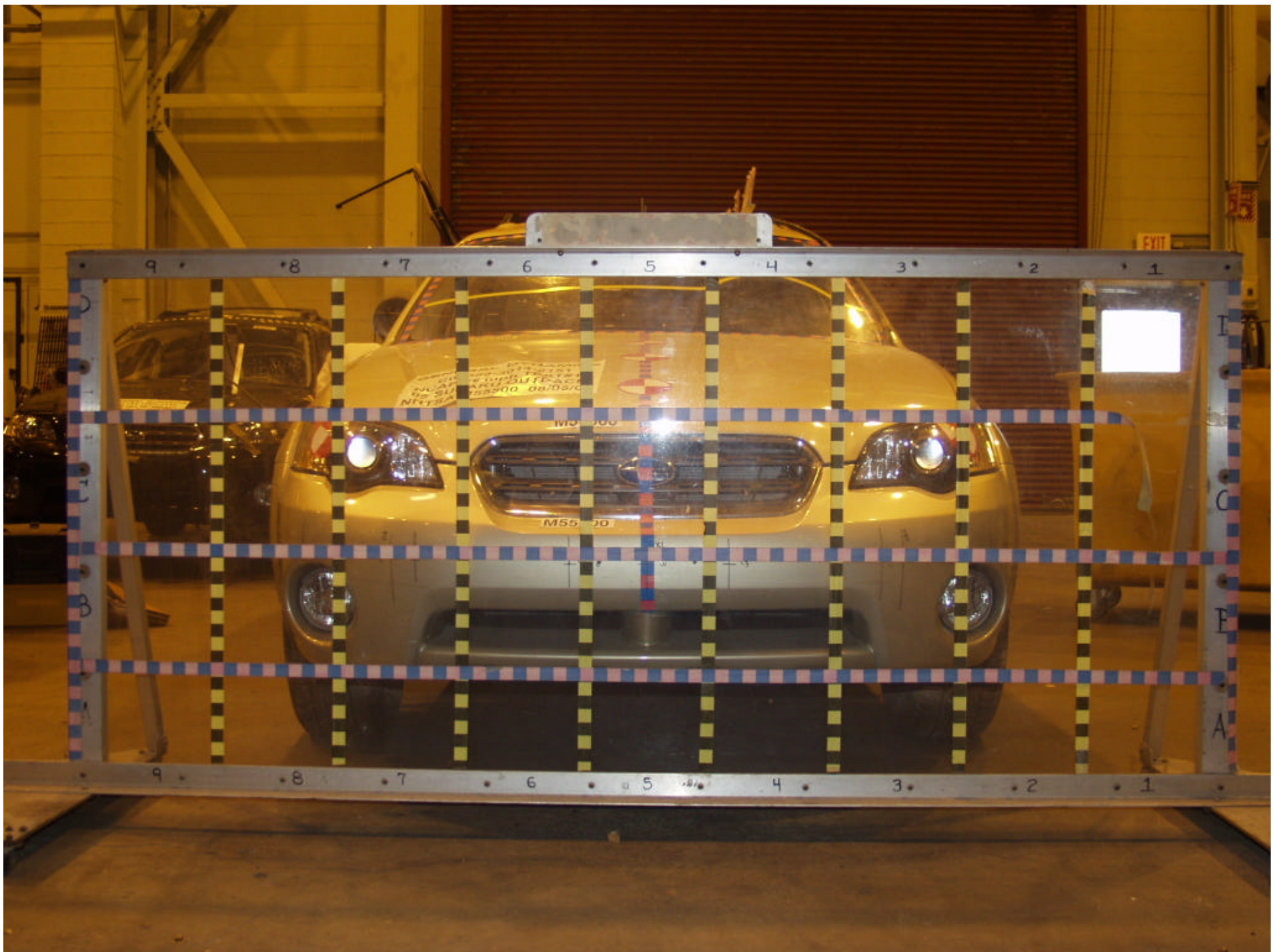


Figure A-1 LOAD CELL LOCATIONS



Figure A-2 VEHICLE CERTIFICATION PLACARD



Figure A-3 VEHICLE TIRE PLACARD



Figure A-4 RIGHT FRONT, AS RECEIVED



Figure A-5 LEFT REAR, AS RECEIVED





Figure A-7 POST-TEST FRONT VIEW



Figure A-8 PRE-TEST LEFT SIDE VIEW



Figure A-9 POST-TEST LEFT SIDE VIEW



Figure A-10 PRE-TEST RIGHT SIDE VIEW



Figure A-11 POST-TEST RIGHT SIDE VIEW



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



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



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



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



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



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



Figure A-18 PRE-TEST WINDSHIELD VIEW

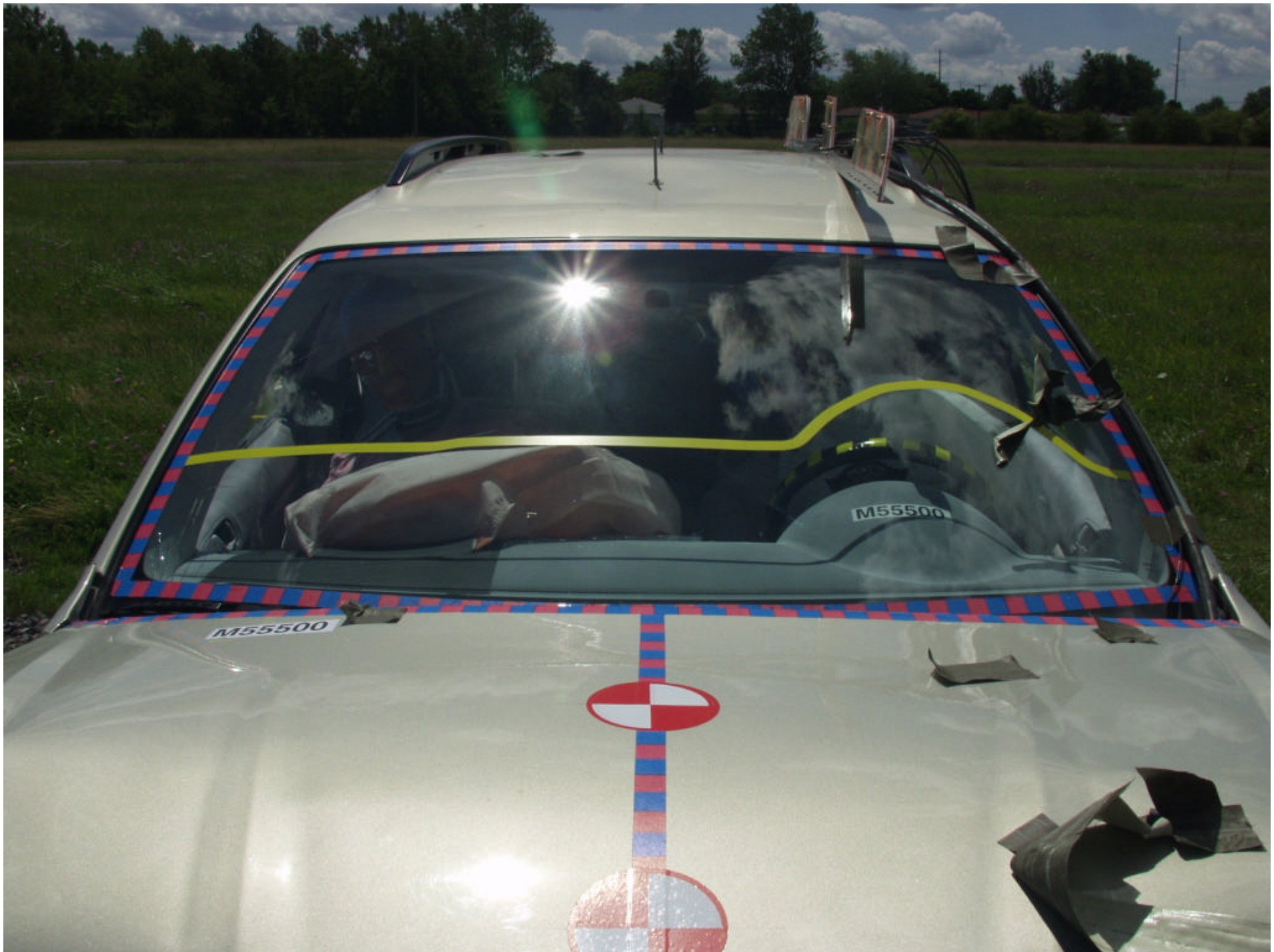


Figure A-19 POST-TEST WINDSHIELD VIEW



Figure A-20 PRE-TEST ENGINE COMPARTMENT VIEW



Figure A-21 POST-TEST ENGINE COMPARTMENT VIEW



Figure A-22 PRE-TEST FUEL CAP VIEW



Figure A-23 POST-TEST FUEL CAP VIEW

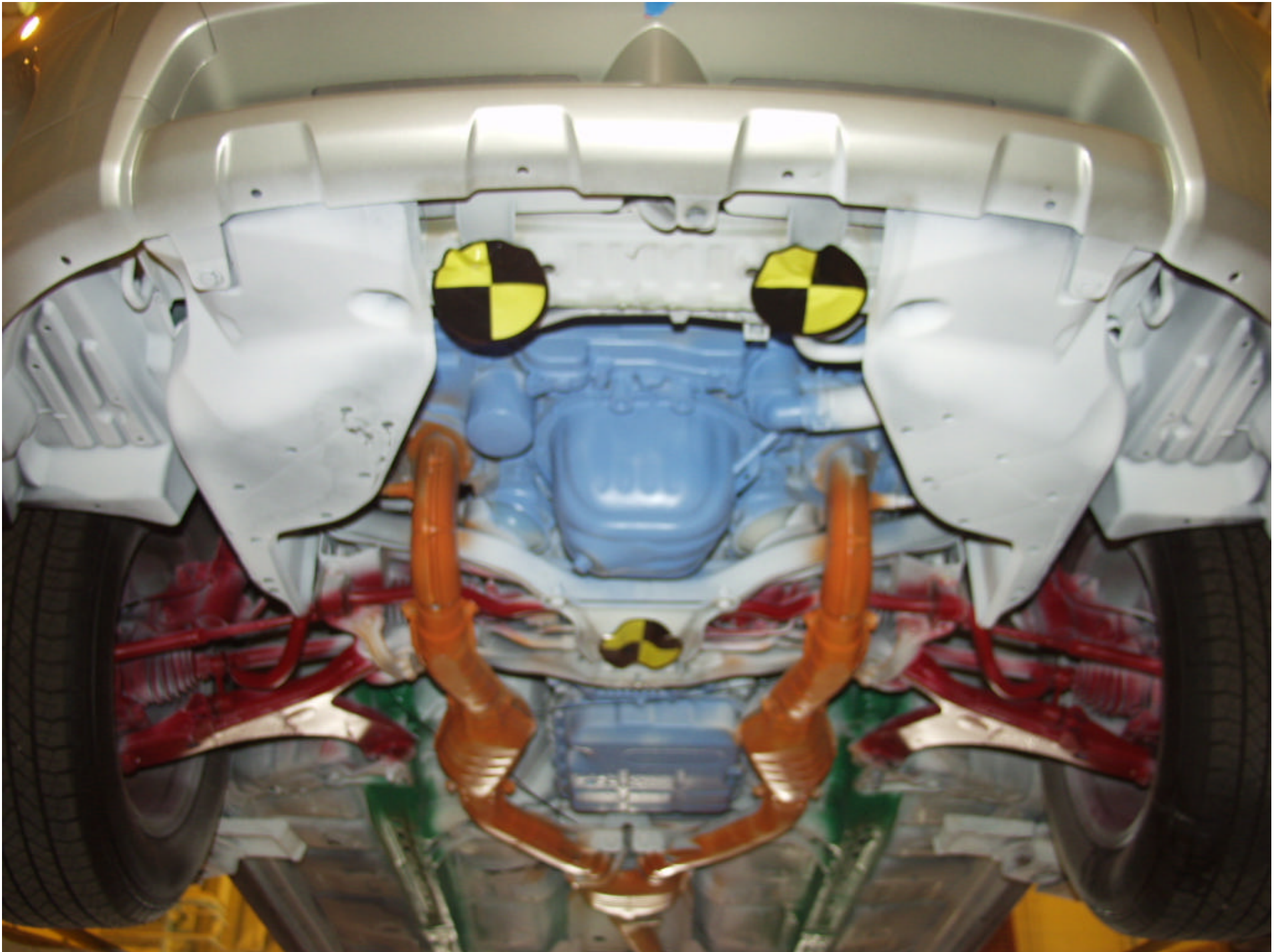


Figure A-24 PRE-TEST FRONT UNDERBODY VIEW

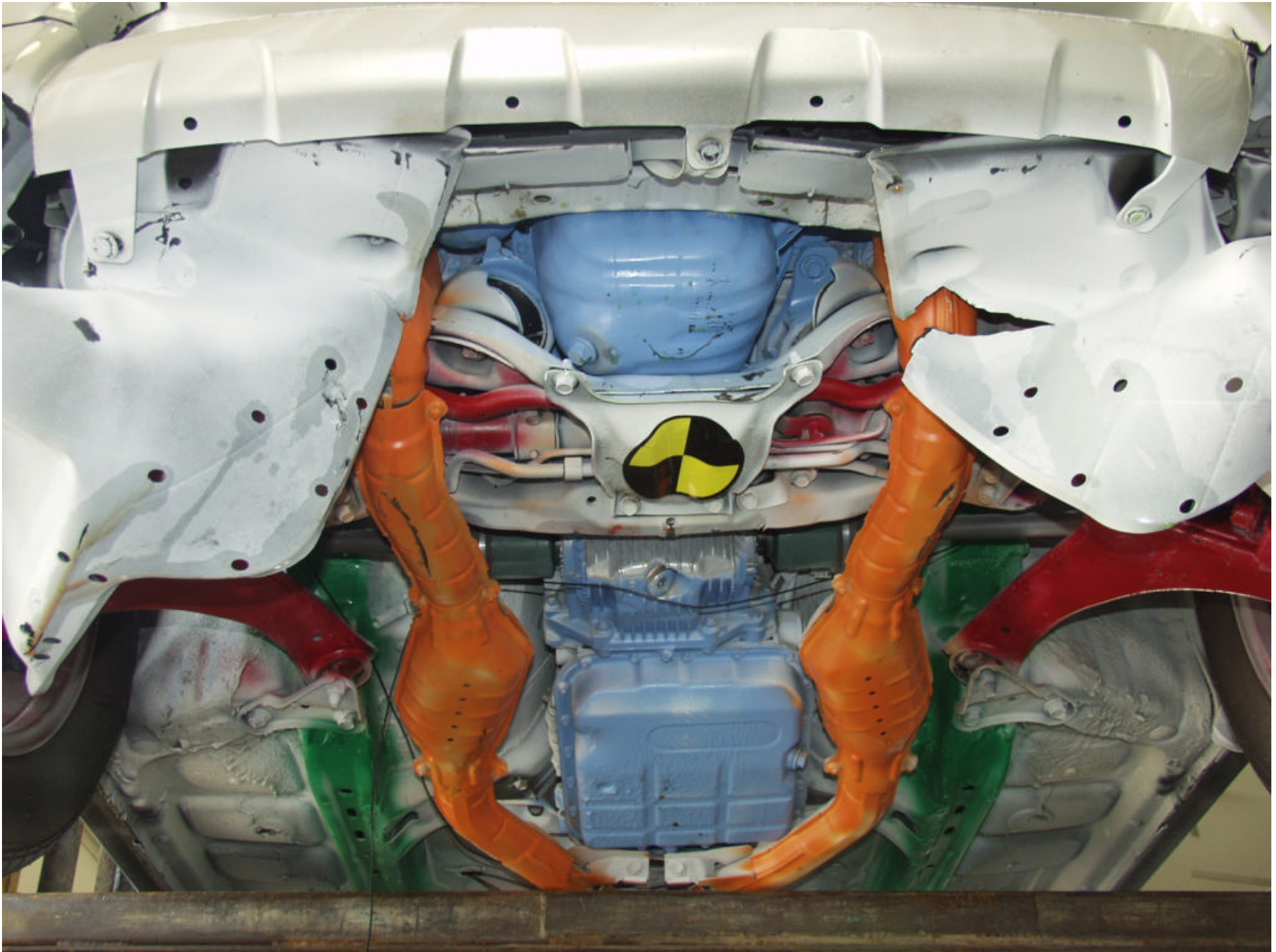


Figure A-25 POST-TEST FRONT UNDERBODY VIEW

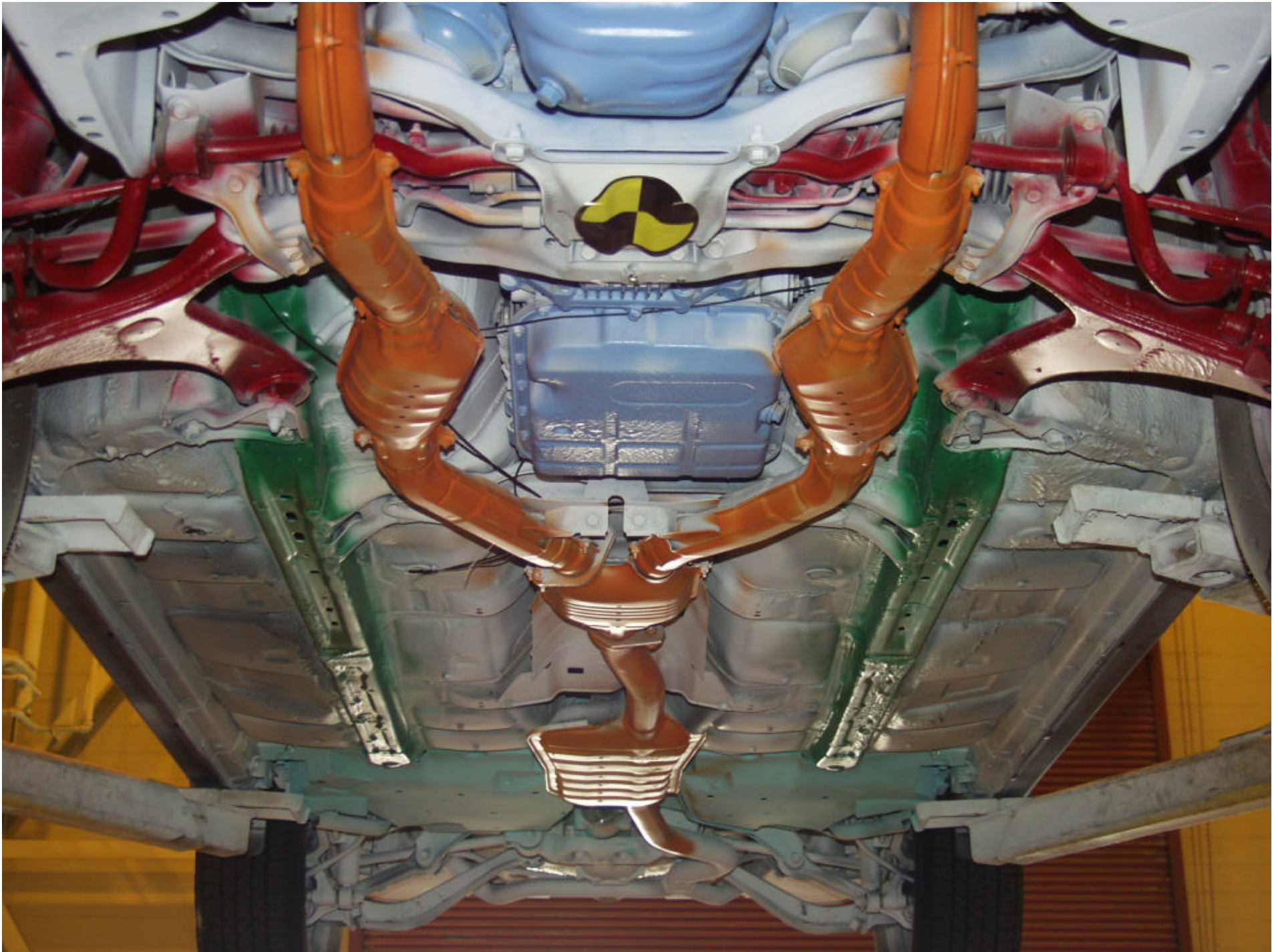


Figure A-26 PRE-TEST MID UNDERBODY VIEW

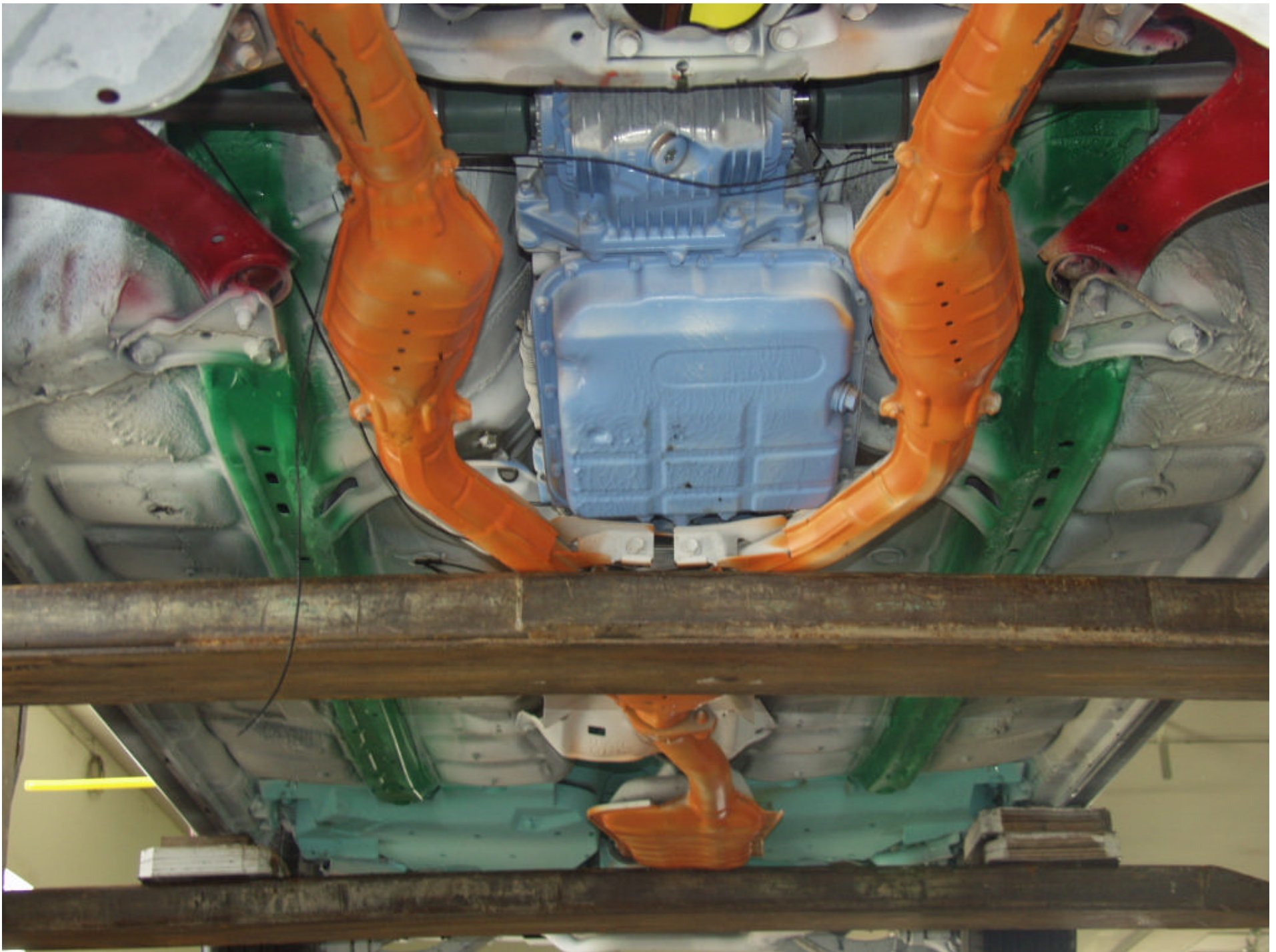


Figure A-27 POST-TEST MID UNDERBODY VIEW

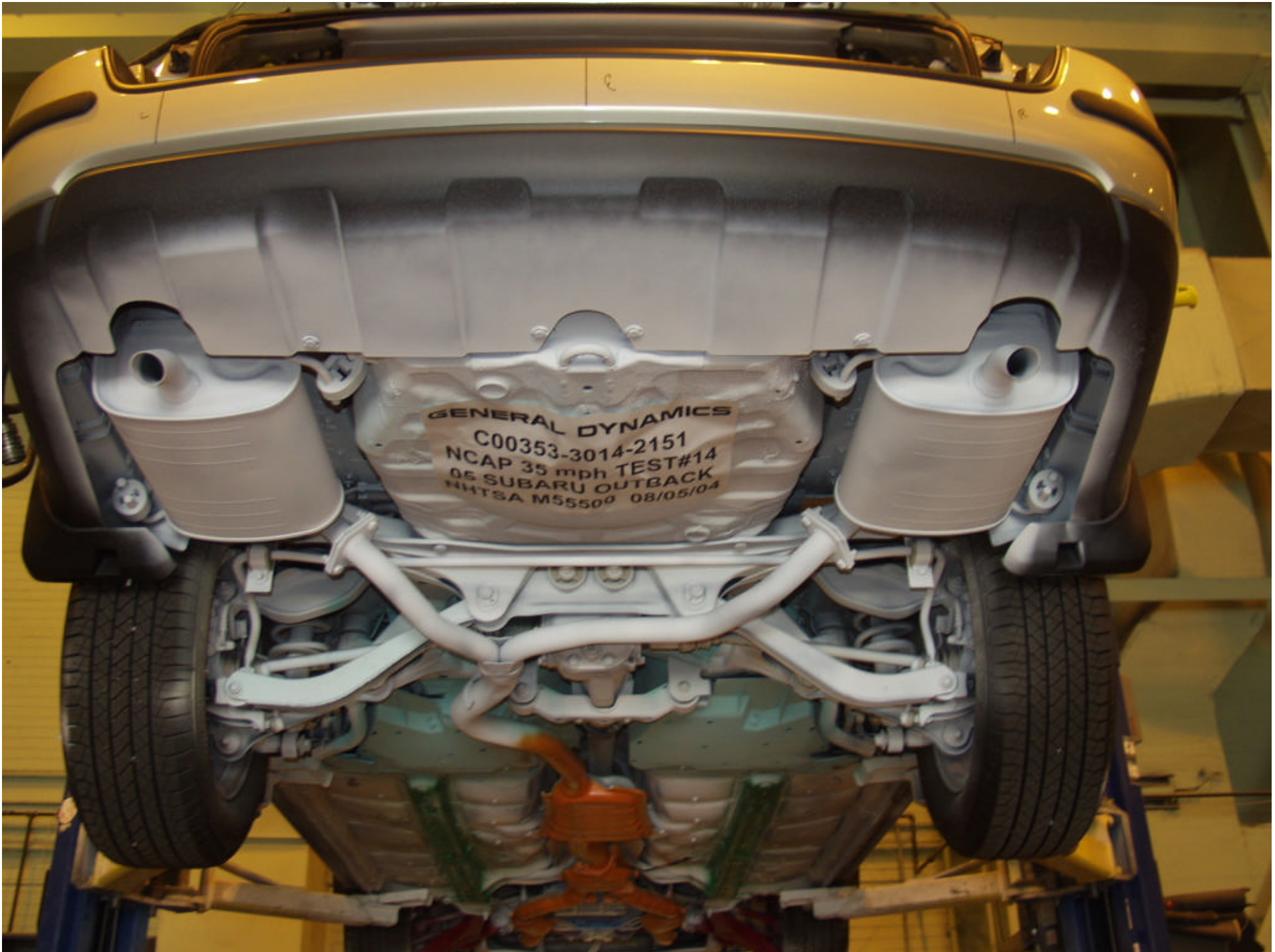


Figure A-28 PRE-TEST REAR UNDERBODY VIEW



Figure A-29 POST-TEST REAR UNDERBODY VIEW

NOT AVAILABLE – FILE CORRUPTED

Figure A-30 PRE-TEST DRIVER HEAD LOCATION



Figure A-31 POST-TEST DRIVER HEAD LOCATION



Figure A-32 PRE-TEST DRIVER POSITION VIEW



Figure A-33 POST-TEST DRIVER POSITION VIEW



Figure A-34 PRE-TEST DRIVER AND INTERIOR VIEW



Figure A-35 POST-TEST DRIVER AND INTERIOR VIEW



Figure A-36 PRE-TEST DRIVER FEET VIEW



Figure A-37 POST-TEST DRIVER FEET VIEW



Figure A-38 PRE-TEST DRIVER KNEE BOLSTER VIEW



Figure A-39 POST-TEST DRIVER KNEE BOLSTER VIEW



Figure A-40 PRE-TEST DRIVER FLOOR PAN VIEW



Figure A-41 POST-TEST DRIVER FLOOR PAN VIEW



Figure A-42 POST-TEST DRIVER HEAD VIEW



Figure A-43 POST-TEST DRIVER CONTACT TO AIRBAG



Figure A-44 PRE-TEST PASSENGER HEAD LOCATION



Figure A-45 POST-TEST PASSENGER HEAD LOCATION



Figure A-46 PRE-TEST PASSENGER POSITION VIEW

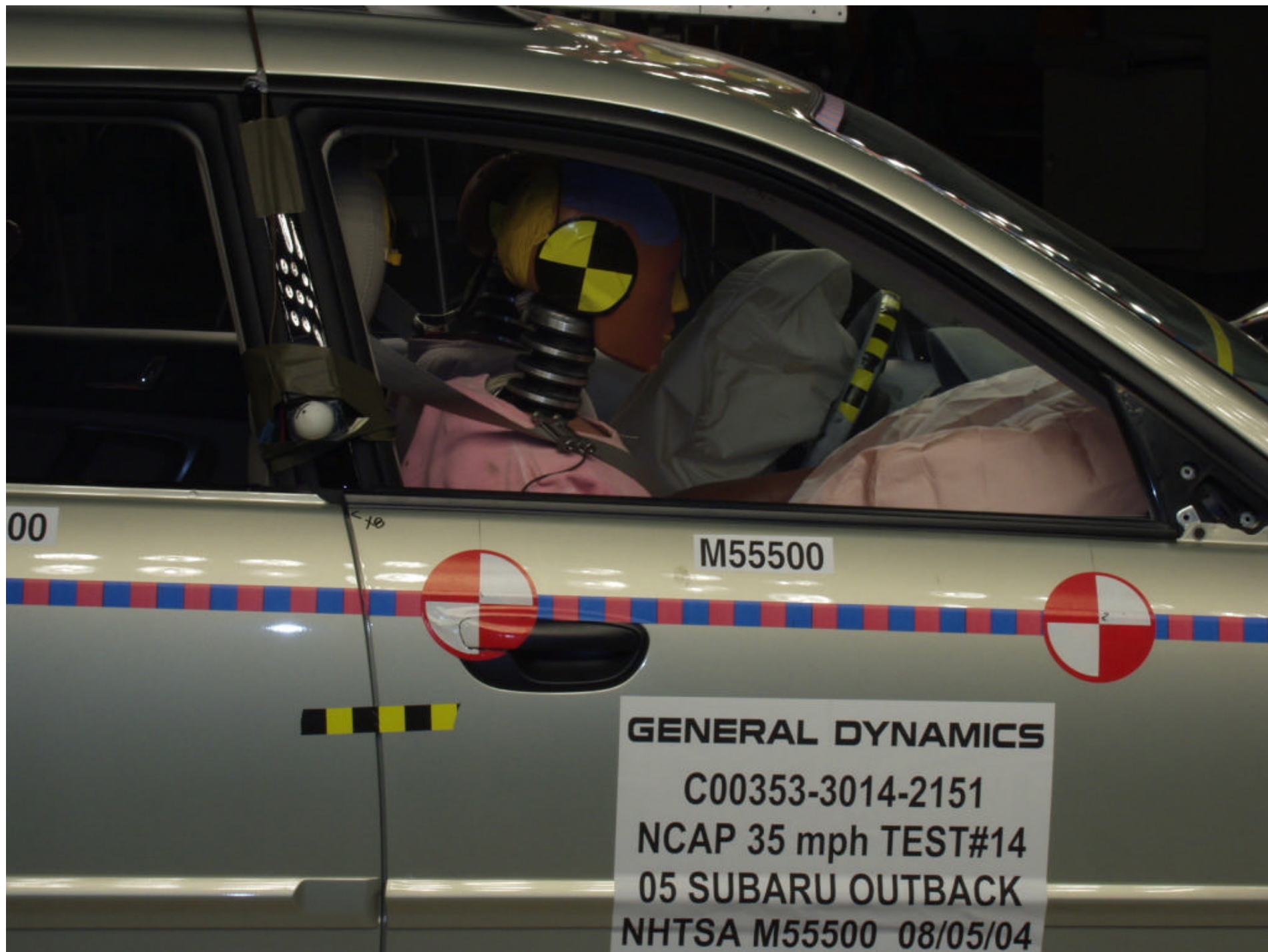


Figure A-47 POST-TEST PASSENGER POSITION VIEW



Figure A-48 PRE-TEST PASSENGER AND INTERIOR VIEW



Figure A-49 POST-TEST PASSENGER AND INTERIOR VIEW



Figure A-50 PRE- TEST PASSENGER FEET VIEW



Figure A-51 POST-TEST PASSENGER FEET VIEW



Figure A-52 PRE-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-53 POST-TEST PASSENGER KNEE BOLSTER VIEW



Figure A-54 PRE-TEST PASSENGER FLOOR PAN VIEW



Figure A-55 POST-TEST PASSENGER FLOOR PAN VIEW

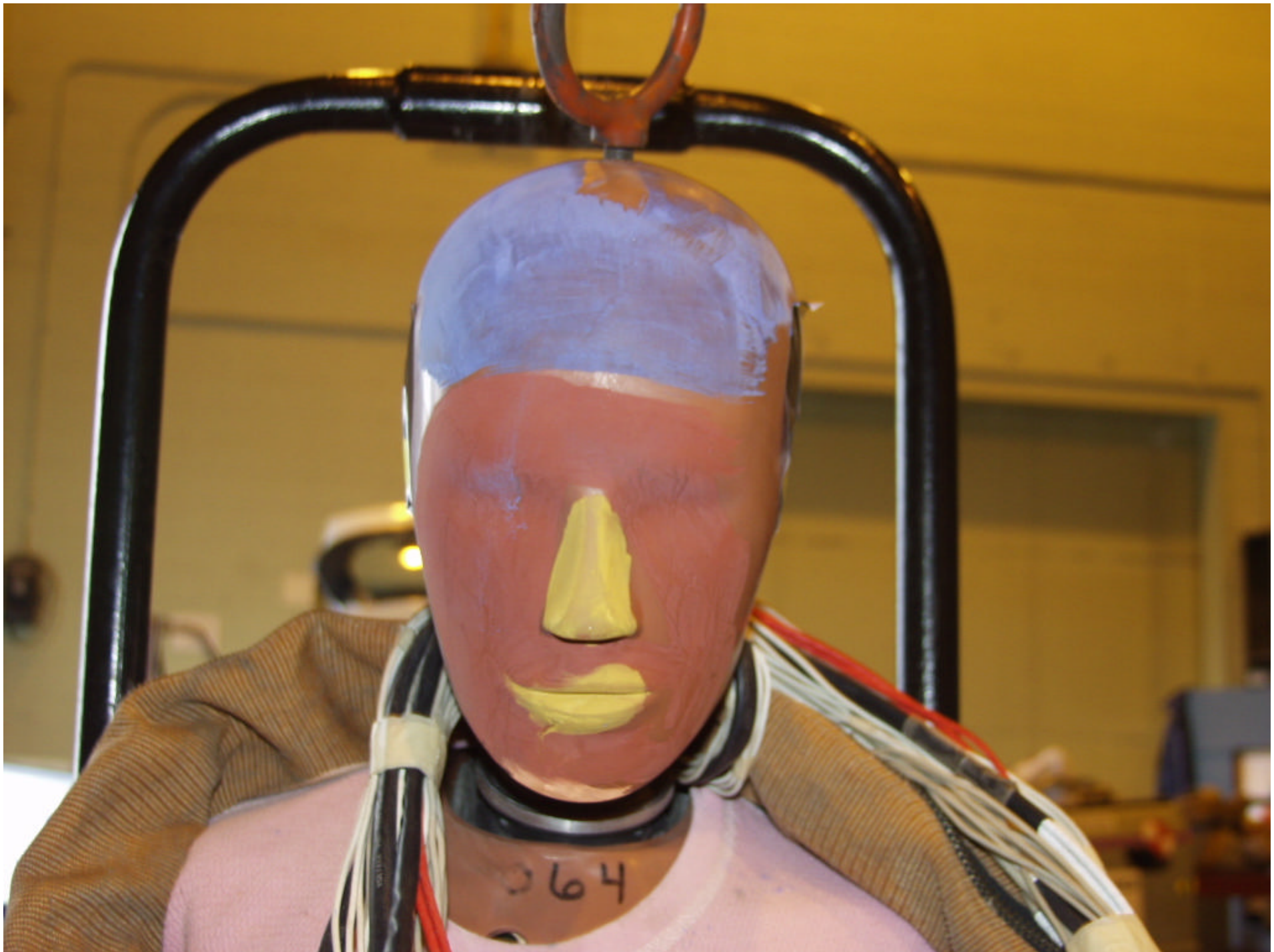


Figure A-56 POST-TEST PASSENGER HEAD VIEW



Figure A-57 POST-TEST PASSENGER CONTACT TO AIRBAG



Figure A-58 ROLLOVER VIEW



Figure A-59 IMPACT VIEW

APPENDIX B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

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

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

DATA CHANNEL FILTER CLASS SUMMARY

NHTSA TEST NO.

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

Table of Data Plots

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

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

Table of Data Plots (Continued)

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
93	V1P2 Left Upper Tibia Mx [N-m, CFC_600]	B-100
94	V1P2 Left Upper Tibia My [N-m, CFC_600]	B-101
95	V1P2 Left Lower Tibia Fz [N, CFC_600]	B-102
96	V1P2 Left Lower Tibia Mx [N-m, CFC_600]	B-103
97	V1P2 Left Lower Tibia My [N-m, CFC_600]	B-104
98	V1P2 Right Upper Tibia Mx [N-m, CFC_600]	B-105
99	V1P2 Right Upper Tibia My [N-m, CFC_600]	B-106
100	V1P2 Right Lower Tibia Fz [N, CFC_600]	B-107
101	V1P2 Right Lower Tibia Mx [N-m, CFC_600]	B-108
102	V1P2 Right Lower Tibia My [N-m, CFC_600]	B-109
103	V1P2 Left Foot Aft x [g, CFC_600]	B-110
104	V1P2 Left Foot Aft z [g, CFC_600]	B-111
105	V1P2 Left Foot Fore z [g, CFC_600]	B-112
106	V1P2 Right Foot Aft x [g, CFC_600]	B-113
107	V1P2 Right Foot Aft z [g, CFC_600]	B-114
108	V1P2 Right Foot Fore z [g, CFC_600]	B-115
109	V1P2 Lap Belt [N, CFC_60]	B-116
110	V1P2 Torso Belt [N, CFC_60]	B-117
111	V1 Left Rear #1x [g, CFC_60]	B-118
112	V1 Left Rear #1x Velocity [kph, CFC_180]	B-119
113	V1 Left Rear #1x Displacement [mm, CFC_180]	B-120
114	V1 Right Rear #2x [g, CFC_60]	B-121
115	V1 Right Rear #2x Velocity [kph, CFC_180]	B-122
116	V1 Right Rear #2x Displacement [mm, CFC_180]	B-123
117	V1 Engine Top #3x [g, CFC_60]	B-124
118	V1 Engine Top #3x Velocity [kph, CFC_180]	B-125
119	V1 Engine Top #3x Displacement [mm, CFC_180]	B-126
120	V1 Engine Bottom #4x [g, CFC_60]	B-127
121	V1 Engine Bottom #4x Velocity [kph, CFC_180]	B-128
122	V1 Engine Bottom #4x Displacement [mm, CFC_180]	B-129
123	V1 Right Caliper #5x [g, CFC_60]	B-130
124	V1 Right Caliper #5x Velocity [kph, CFC_180]	B-131
125	V1 Right Caliper #5x Displacement [mm, CFC_180]	B-132
126	V1 Instrument Panel #6x [g, CFC_60]	B-133
127	V1 Instrument Panel #6x Velocity [kph, CFC_180]	B-134
128	V1 Instrument Panel #6x Displacement [mm, CFC_180]	B-135
129	V1 Left Caliper #7x [g, CFC_60]	B-136
130	V1 Left Caliper #7x Velocity [kph, CFC_180]	B-137
131	V1 Left Caliper #7x Displacement [mm, CFC_180]	B-138
132	V1 Left Rear #8z [g, CFC_60]	B-139
133	V1 Left Rear #8z Velocity [kph, CFC_180]	B-140
134	V1 Left Rear #8z Displacement [mm, CFC_180]	B-141
135	V1 Right Rear #9z [g, CFC_60]	B-142
136	V1 Right Rear #9z Velocity [kph, CFC_180]	B-143
137	V1 Right Rear #9z Displacement [mm, CFC_180]	B-144
138	Barrier Load Cell A1 Fx [N, CFC_60]	B-145

Table of Data Plots (Continued)

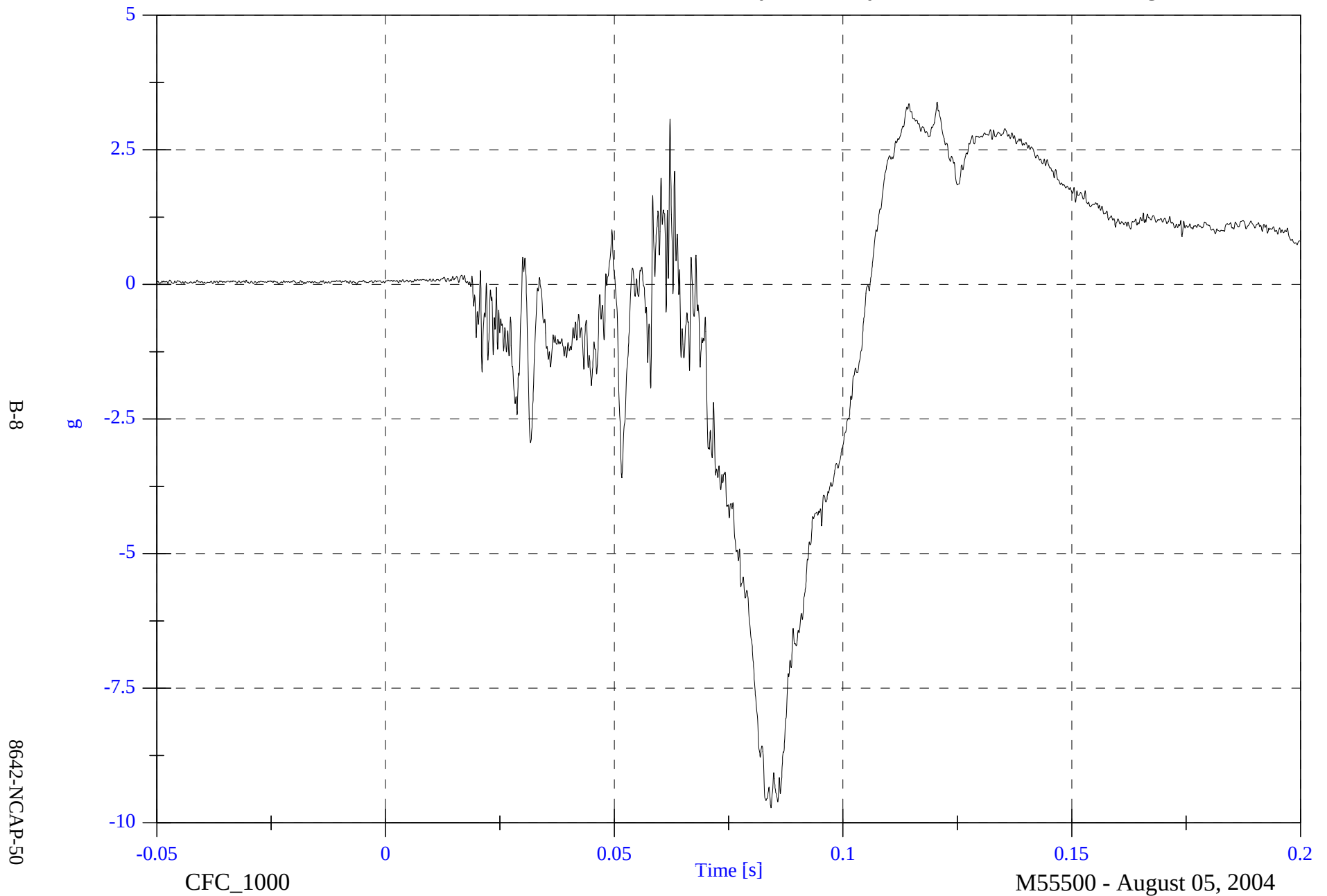
PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
139	Barrier Load Cell A2 Fx [N, CFC_60]	B-146
140	Barrier Load Cell A3 Fx [N, CFC_60]	B-147
141	Barrier Load Cell A4 Fx [N, CFC_60]	B-148
142	Barrier Load Cell A5 Fx [N, CFC_60]	B-149
143	Barrier Load Cell A6 Fx [N, CFC_60]	B-150
144	Barrier Load Cell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

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head 9 Array X Arm Ay

Max: 3.4 [g] at 0.121 [s]

Min: -9.7 [g] at 0.084 [s]

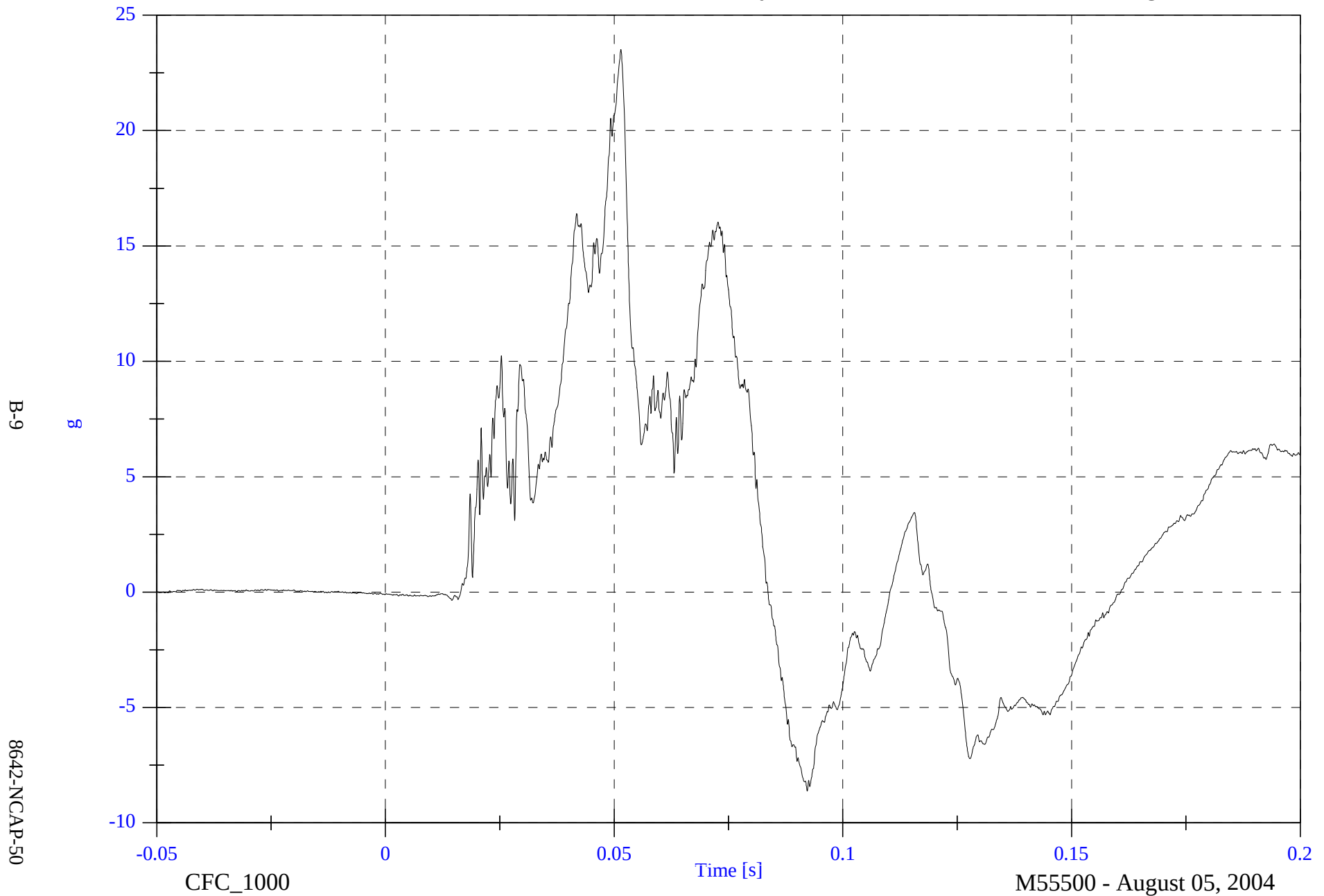


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head 9 Array X Arm Az

Max: 23.5 [g] at 0.051 [s]

Min: -8.6 [g] at 0.092 [s]

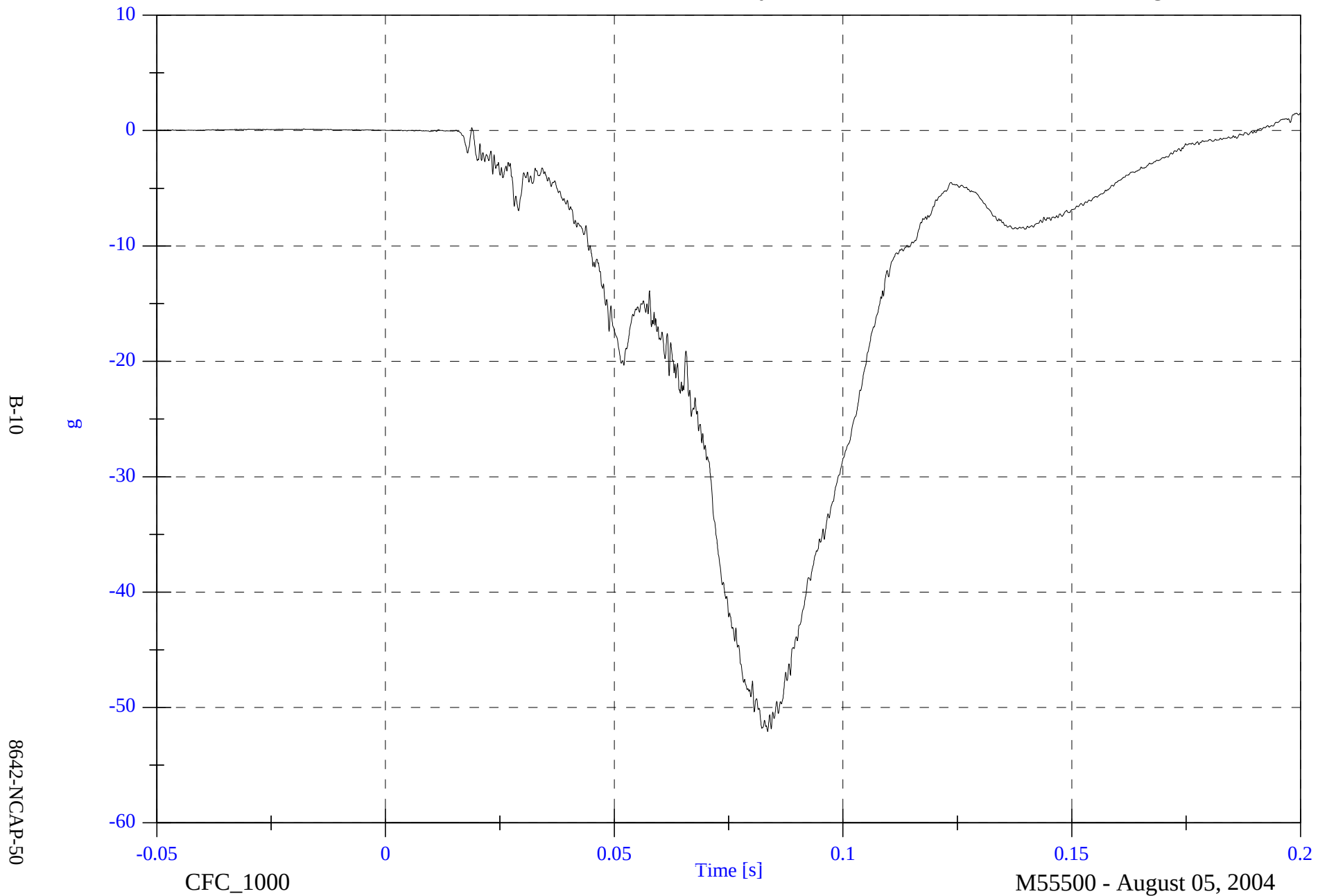


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head 9 Array Y Arm Ax

Max: 1.5 [g] at 0.200 [s]

Min: -52.1 [g] at 0.084 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

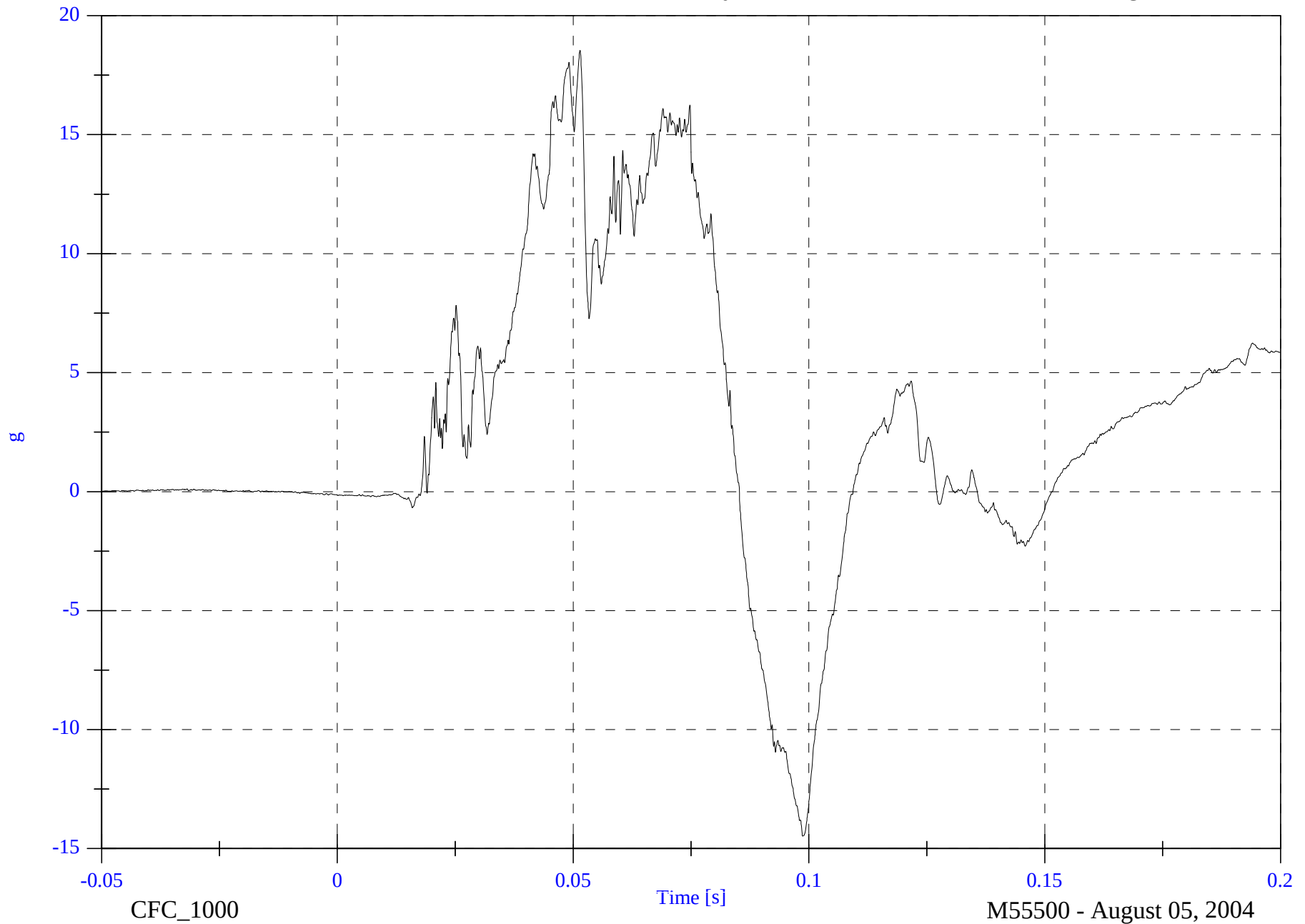
V1P1 Head 9 Array Y Arm Az

Max: 18.5 [g] at 0.051 [s]

Min: -14.5 [g] at 0.099 [s]

B-11

8642-NCAP-50

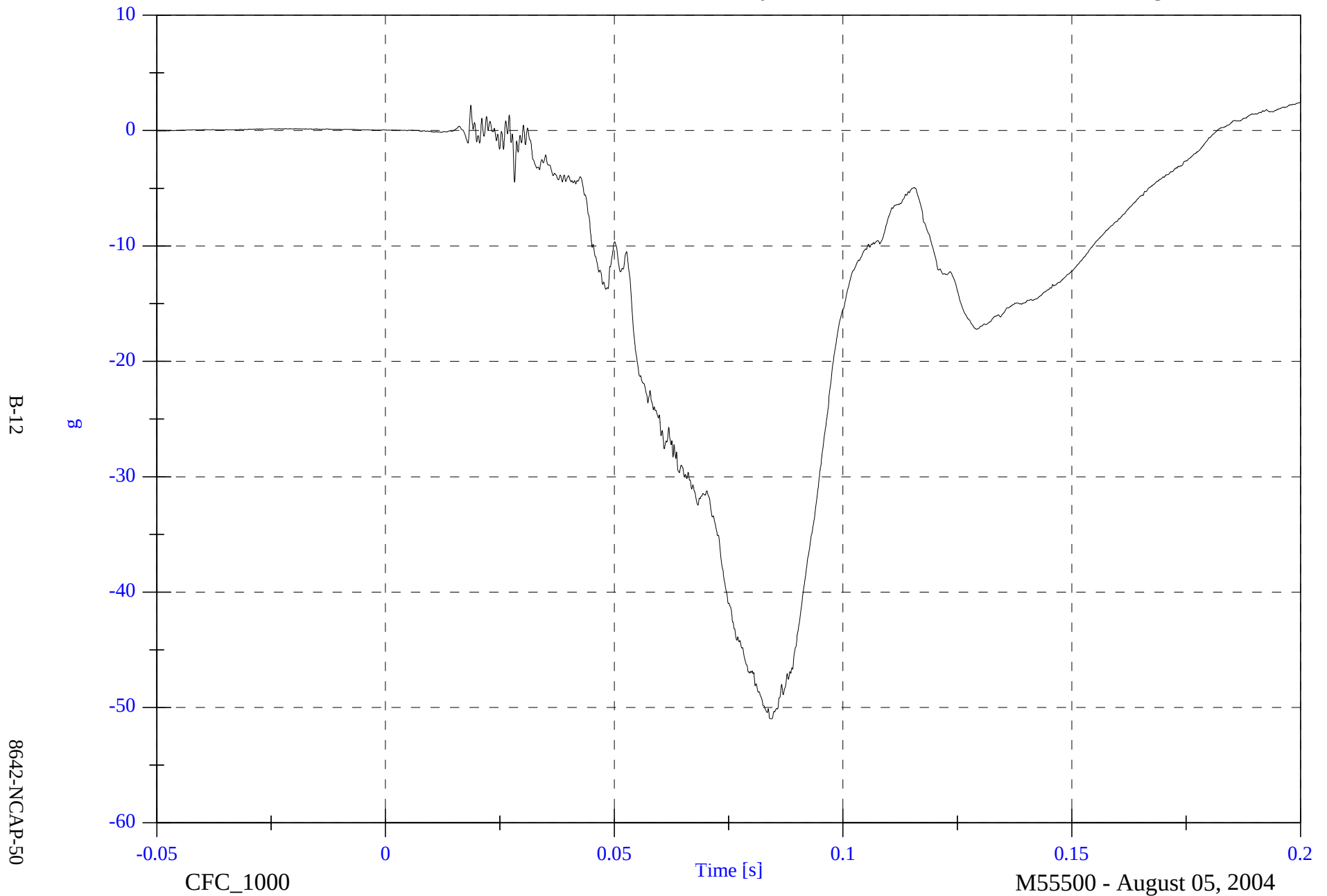


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head 9 Array Z Arm Ax

Max: 2.4 [g] at 0.200 [s]

Min: -51.0 [g] at 0.084 [s]

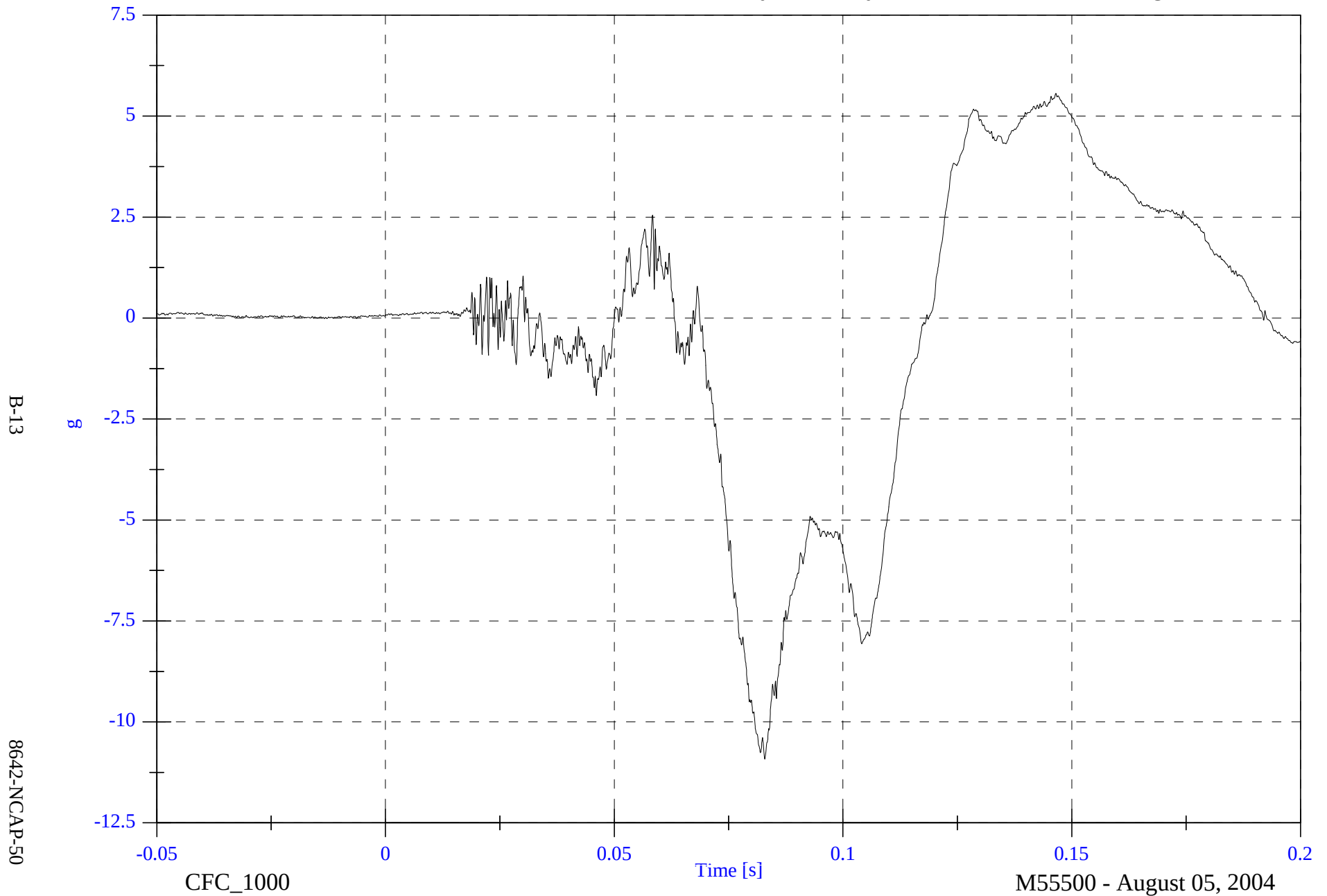


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head 9 Array Z Arm Ay

Max: 5.6 [g] at 0.146 [s]

Min: -10.9 [g] at 0.083 [s]

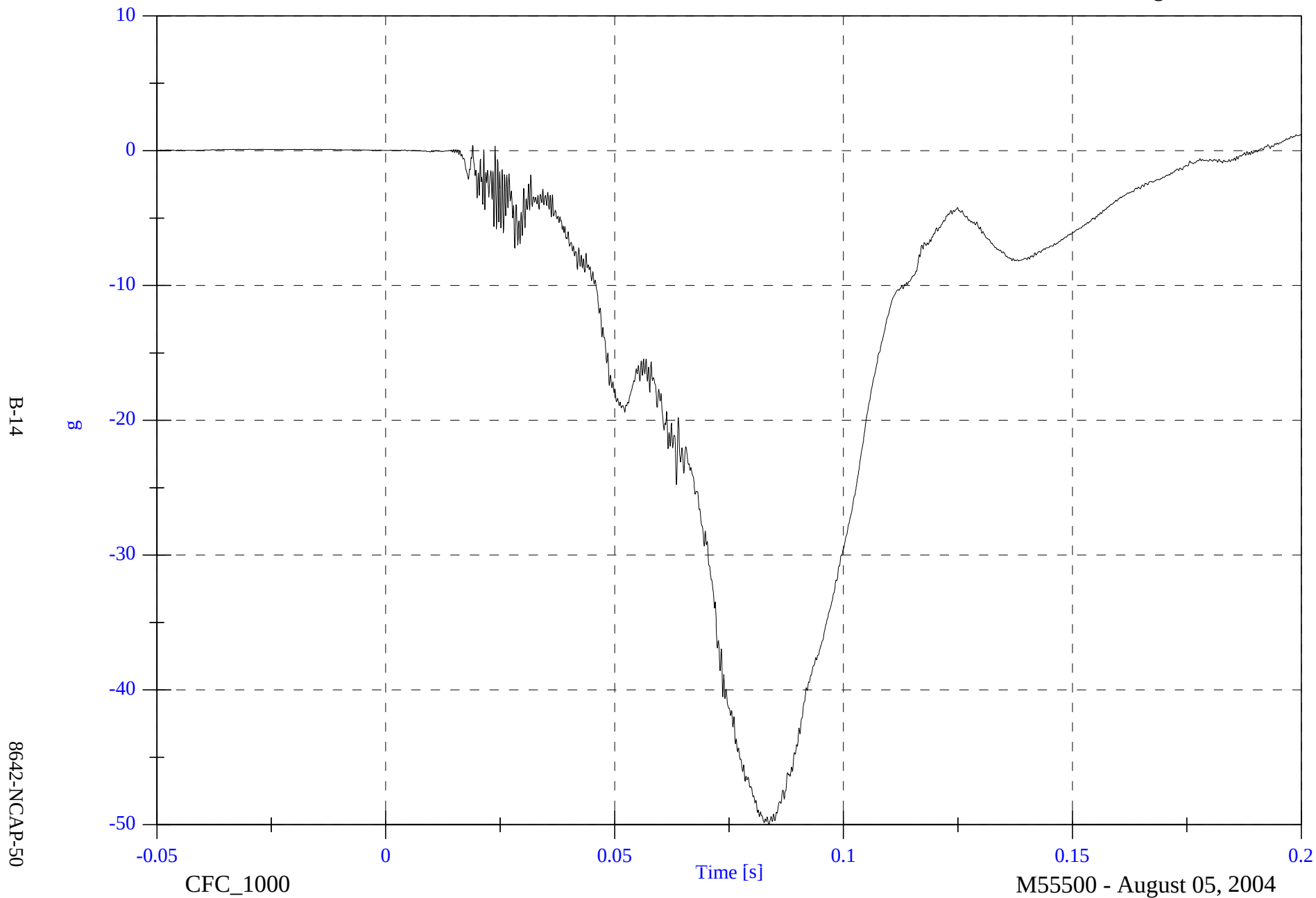


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head CG x

Max: 1.2 [g] at 0.200 [s]

Min: -49.9 [g] at 0.084 [s]

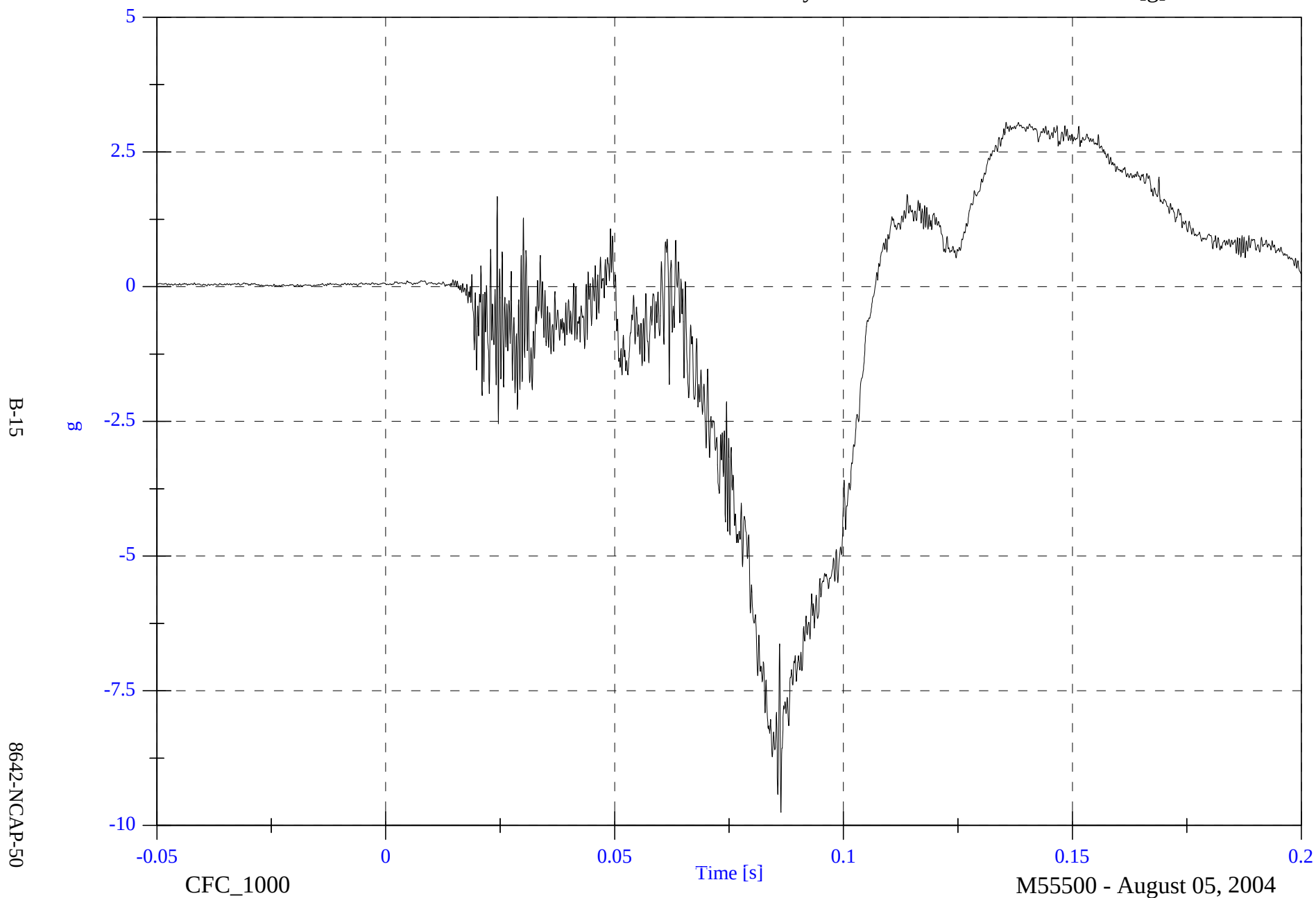


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head CG y

Max: 3.1 [g] at 0.135 [s]

Min: -9.8 [g] at 0.086 [s]

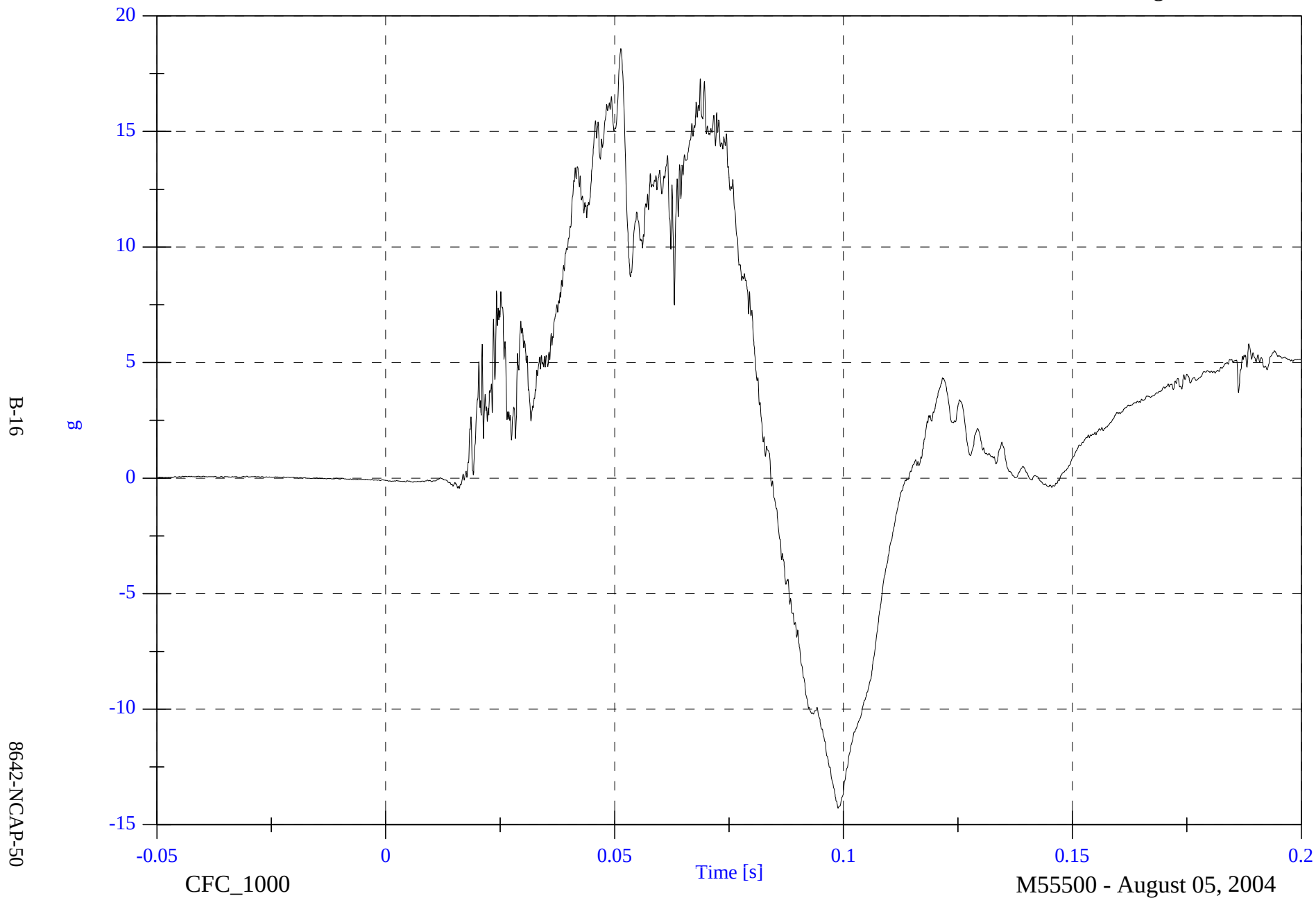


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head CG z

Max: 18.6 [g] at 0.051 [s]

Min: -14.3 [g] at 0.099 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

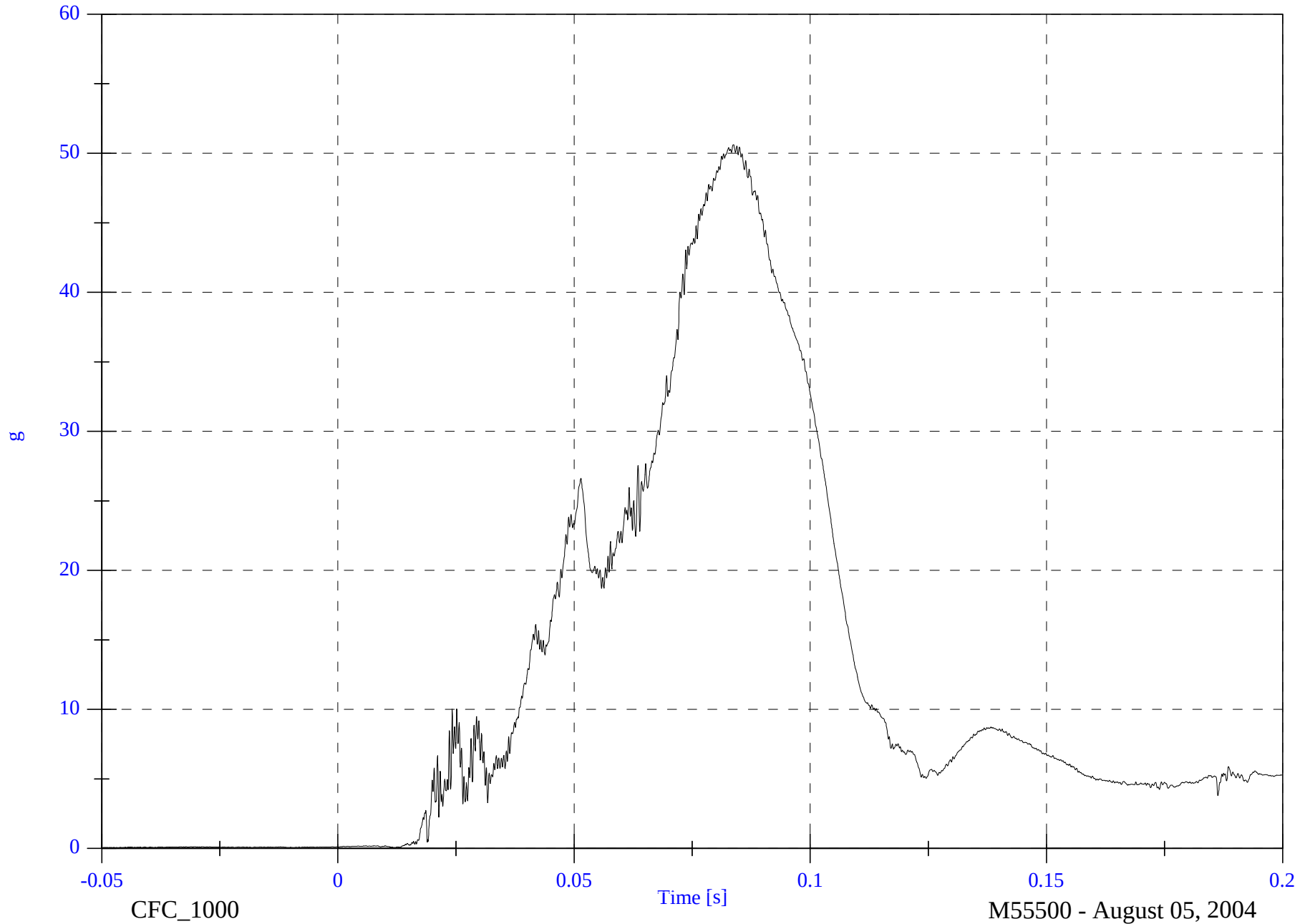
V1P1 Head CG Resultant

Max: 50.6 [g] at 0.084 [s]

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

B-17

8642-NCAP-50

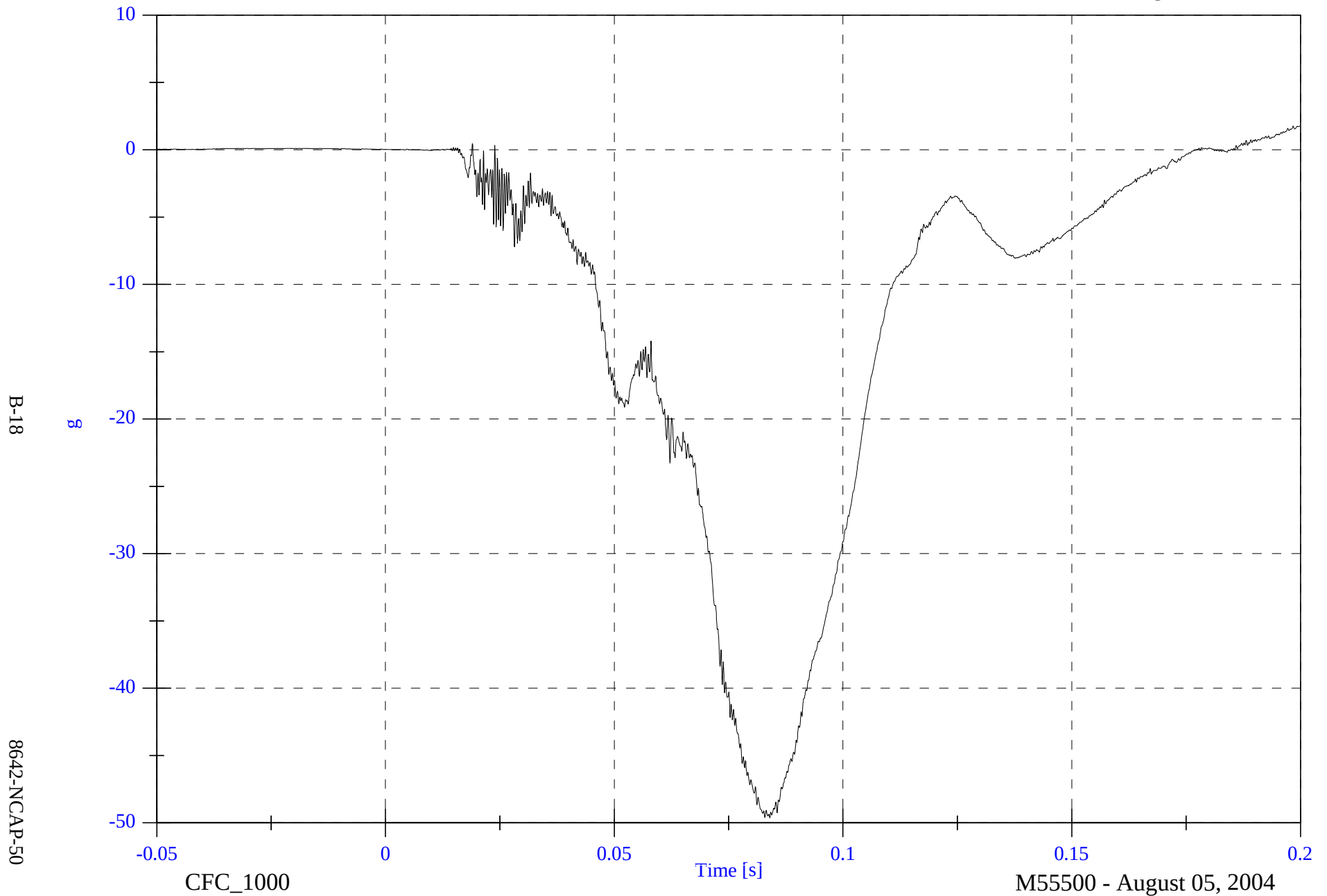


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head CG Red x

Max: 1.8 [g] at 0.198 [s]

Min: -49.6 [g] at 0.084 [s]

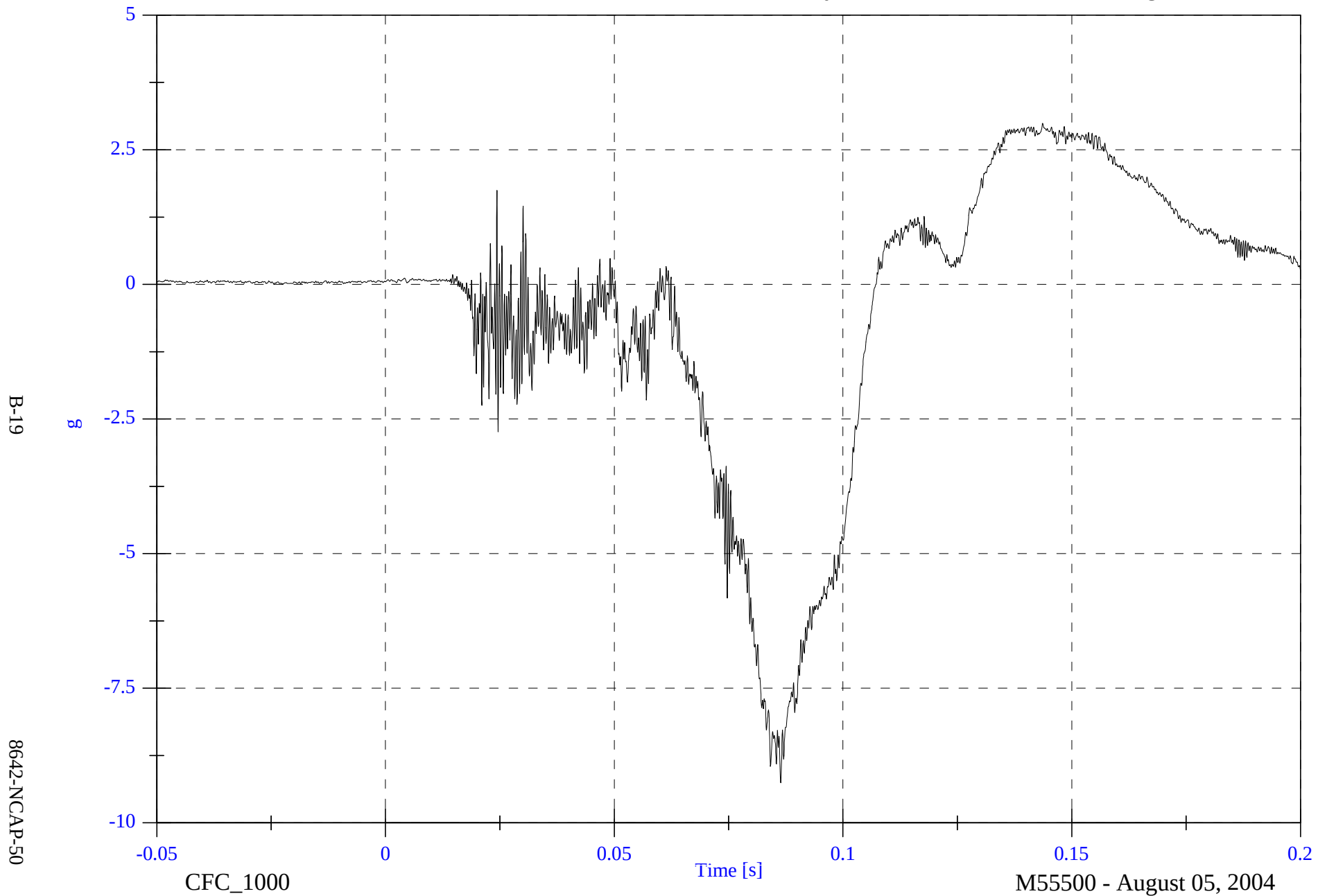


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head CG Red y

Max: 3.0 [g] at 0.144 [s]

Min: -9.3 [g] at 0.086 [s]

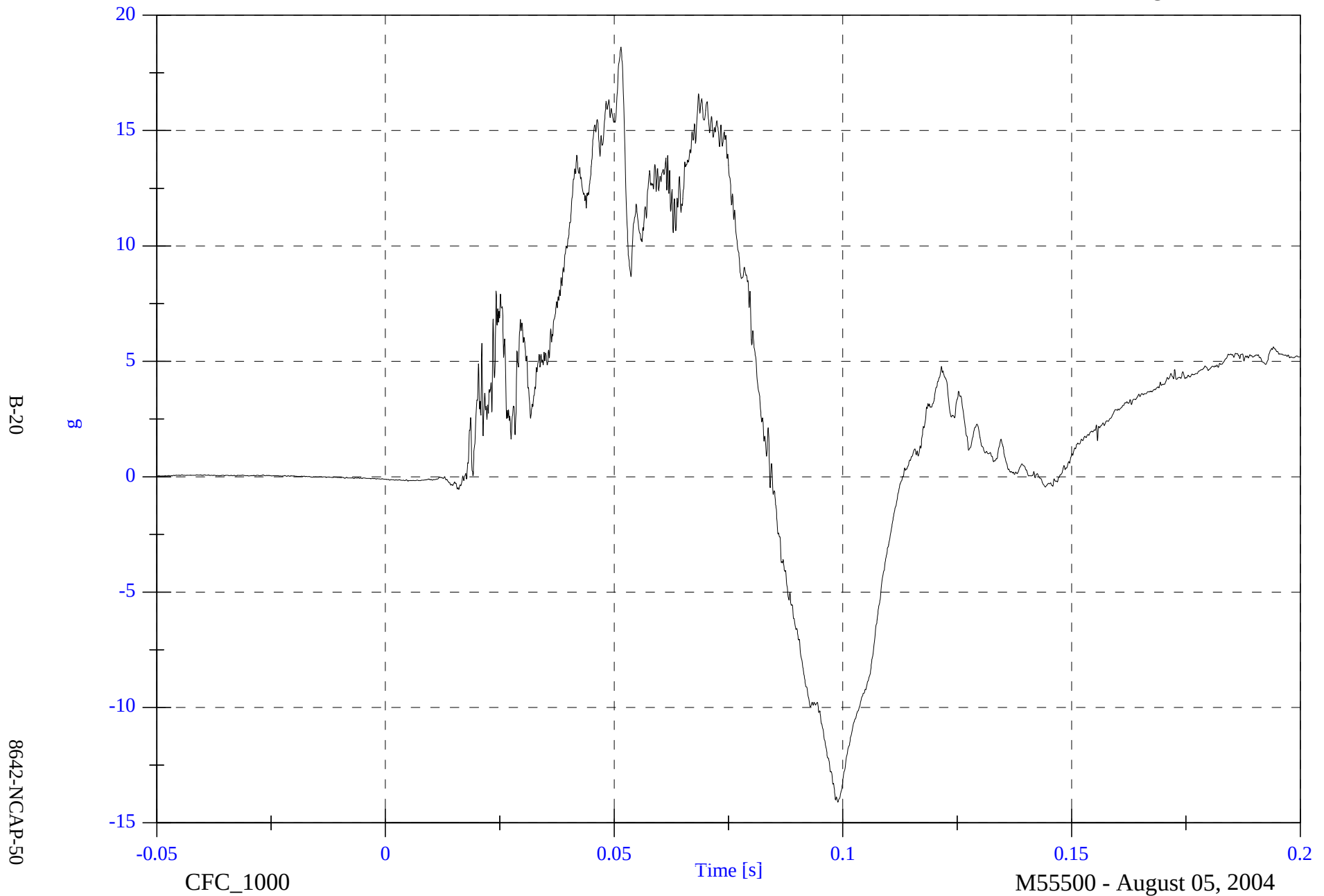


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Head CG Red z

Max: 18.6 [g] at 0.051 [s]

Min: -14.1 [g] at 0.099 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

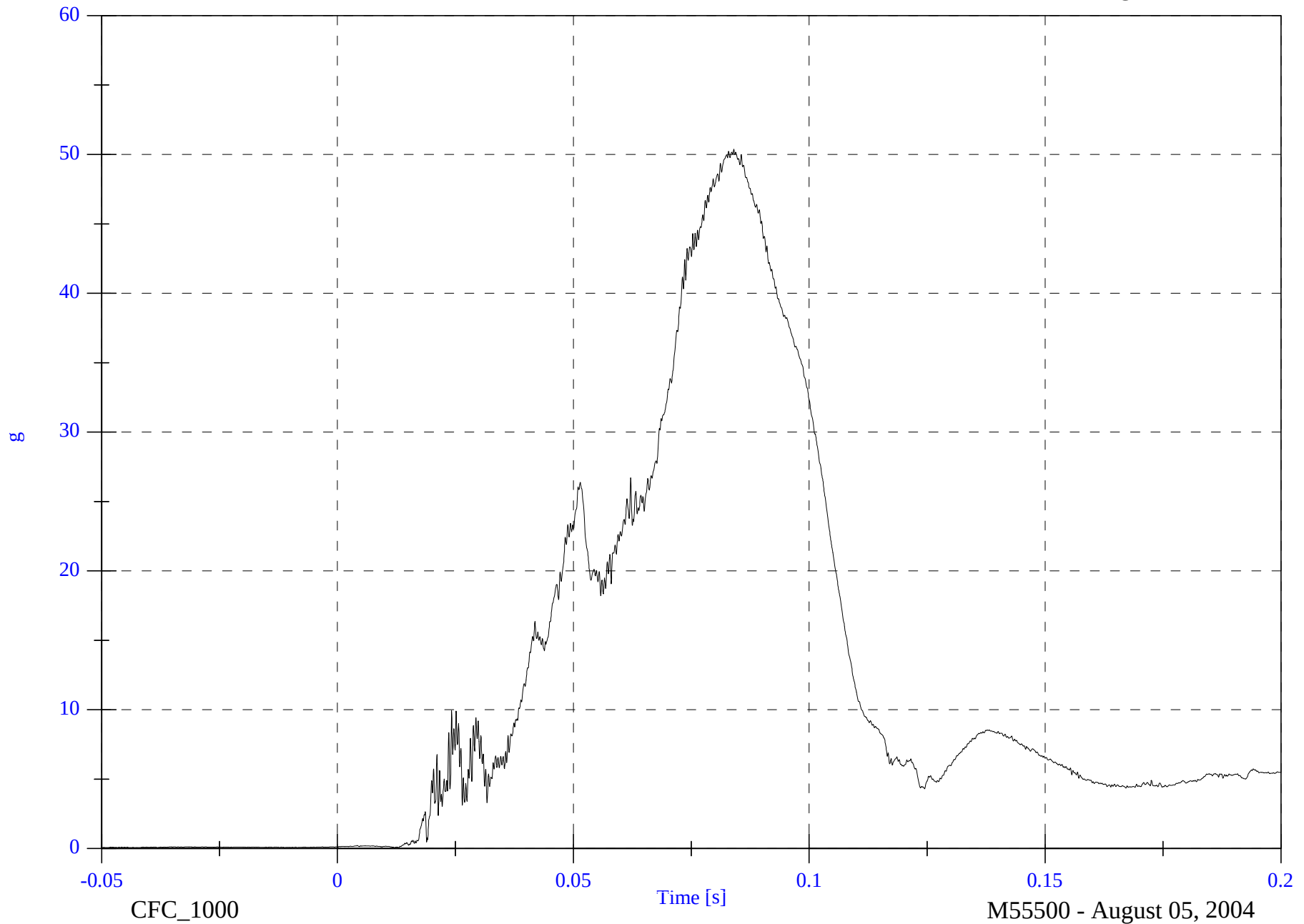
V1P1 Head CG Red Resultant

Max: 50.4 [g] at 0.084 [s]

Min: 0.1 [g] at -0.049 [s]

B-21

8642-NCAP-50

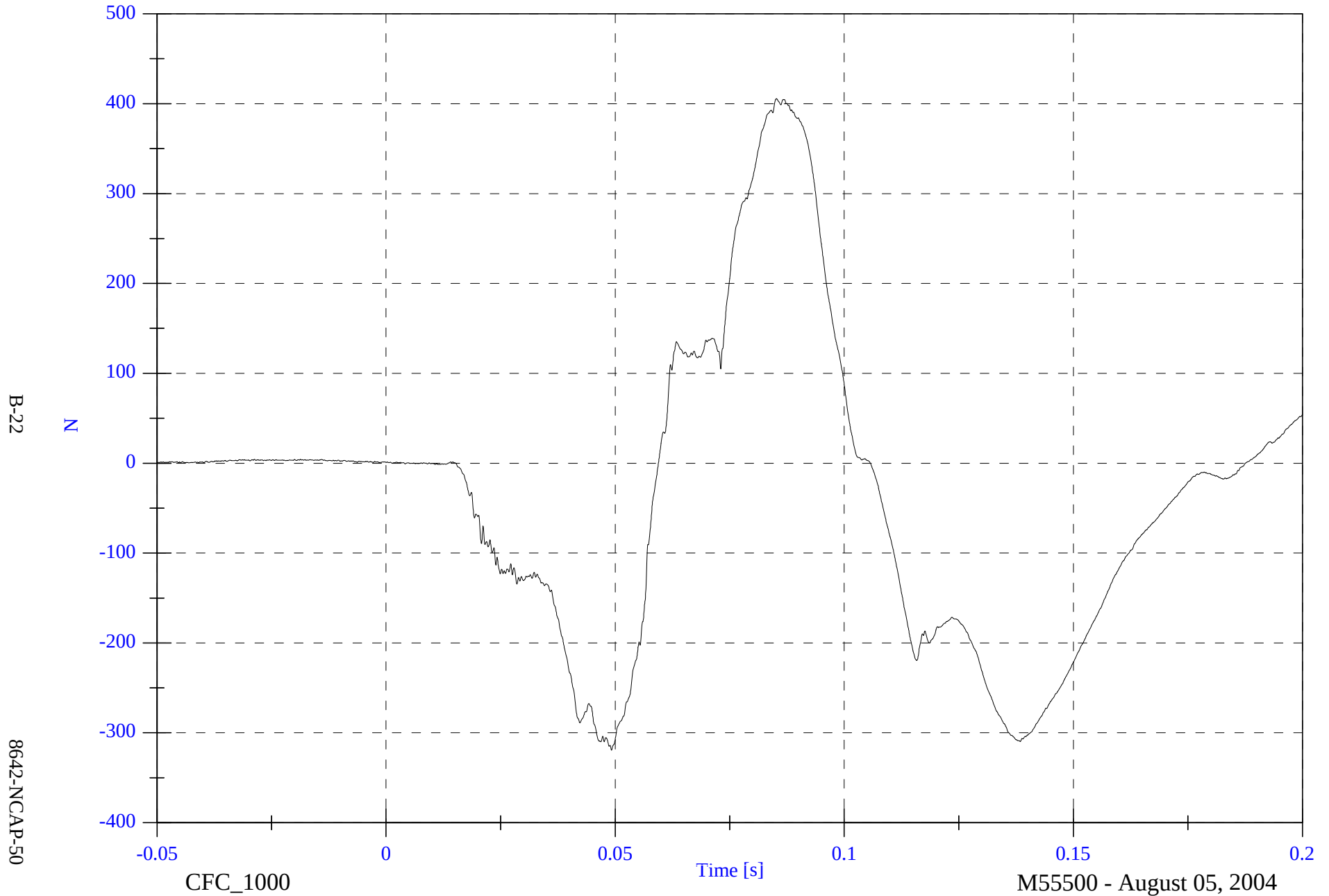


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Upper Neck Fx

Max: 405.7 [N] at 0.085 [s]

Min: -319.4 [N] at 0.049 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Upper Neck Fy

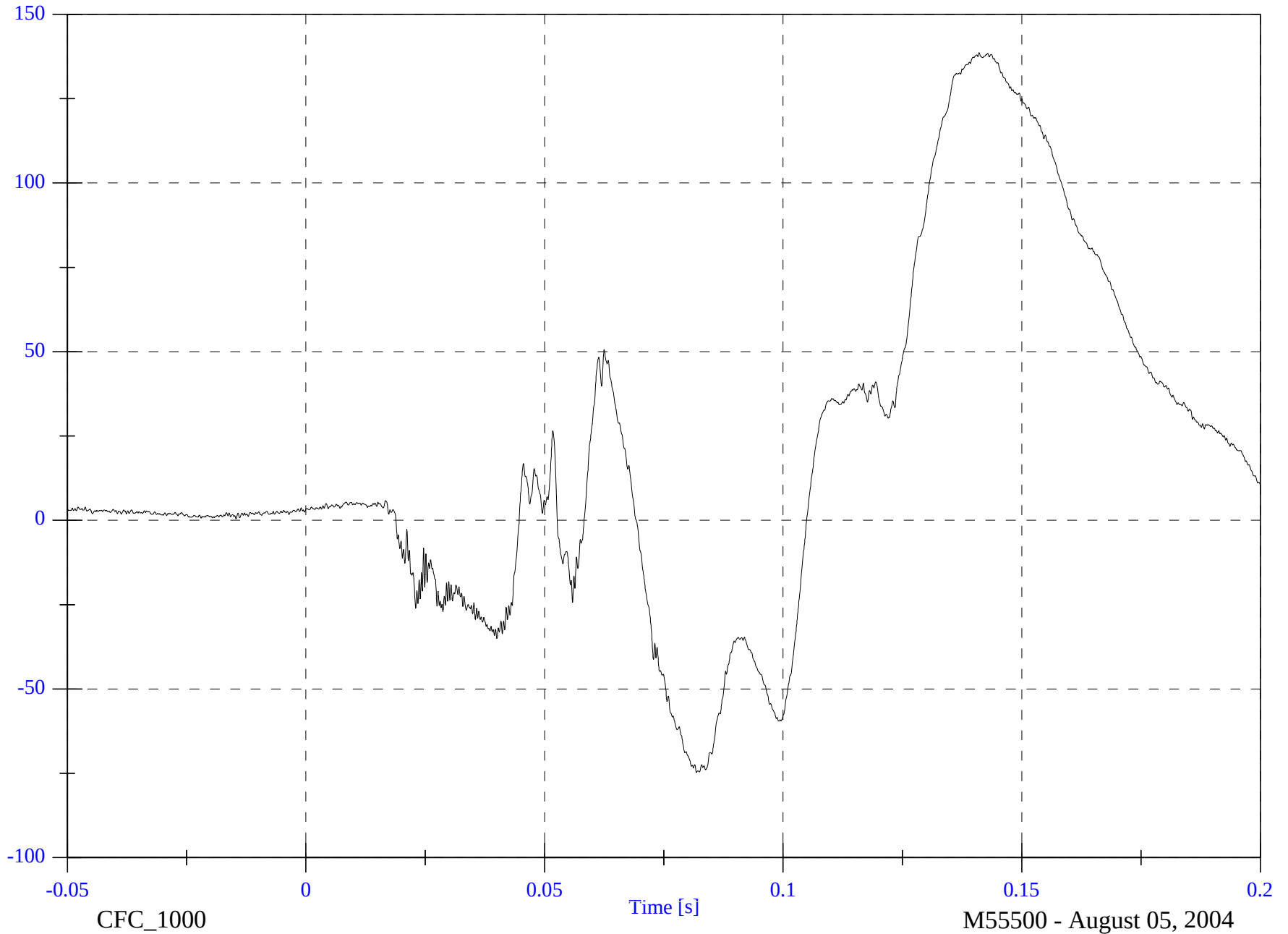
Max: 138.7 [N] at 0.141 [s]

Min: -74.8 [N] at 0.082 [s]

B-23

N

8642-NCAP-50

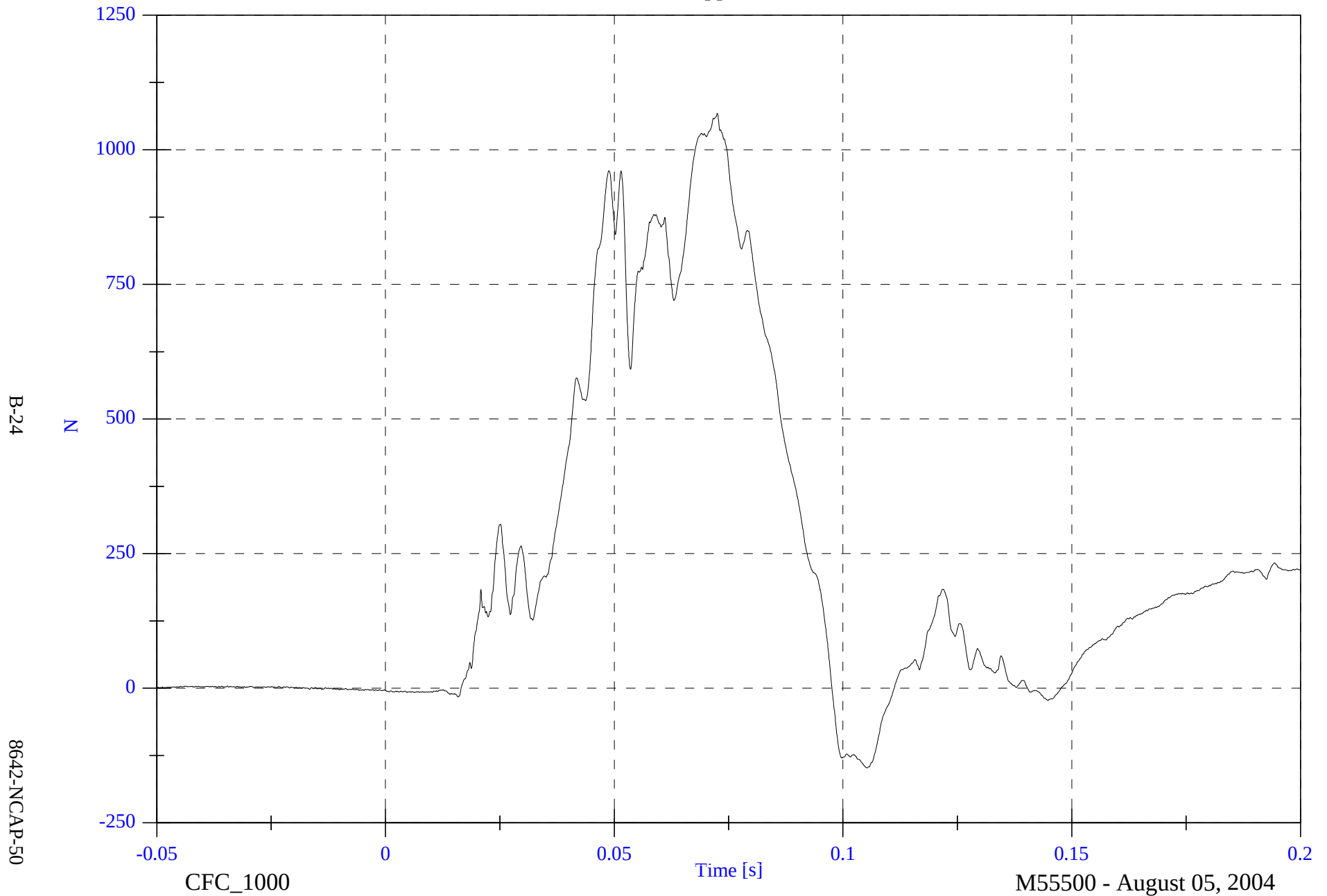


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Upper Neck Fz

Max: 1067.7 [N] at 0.073 [s]

Min: -148.1 [N] at 0.105 [s]

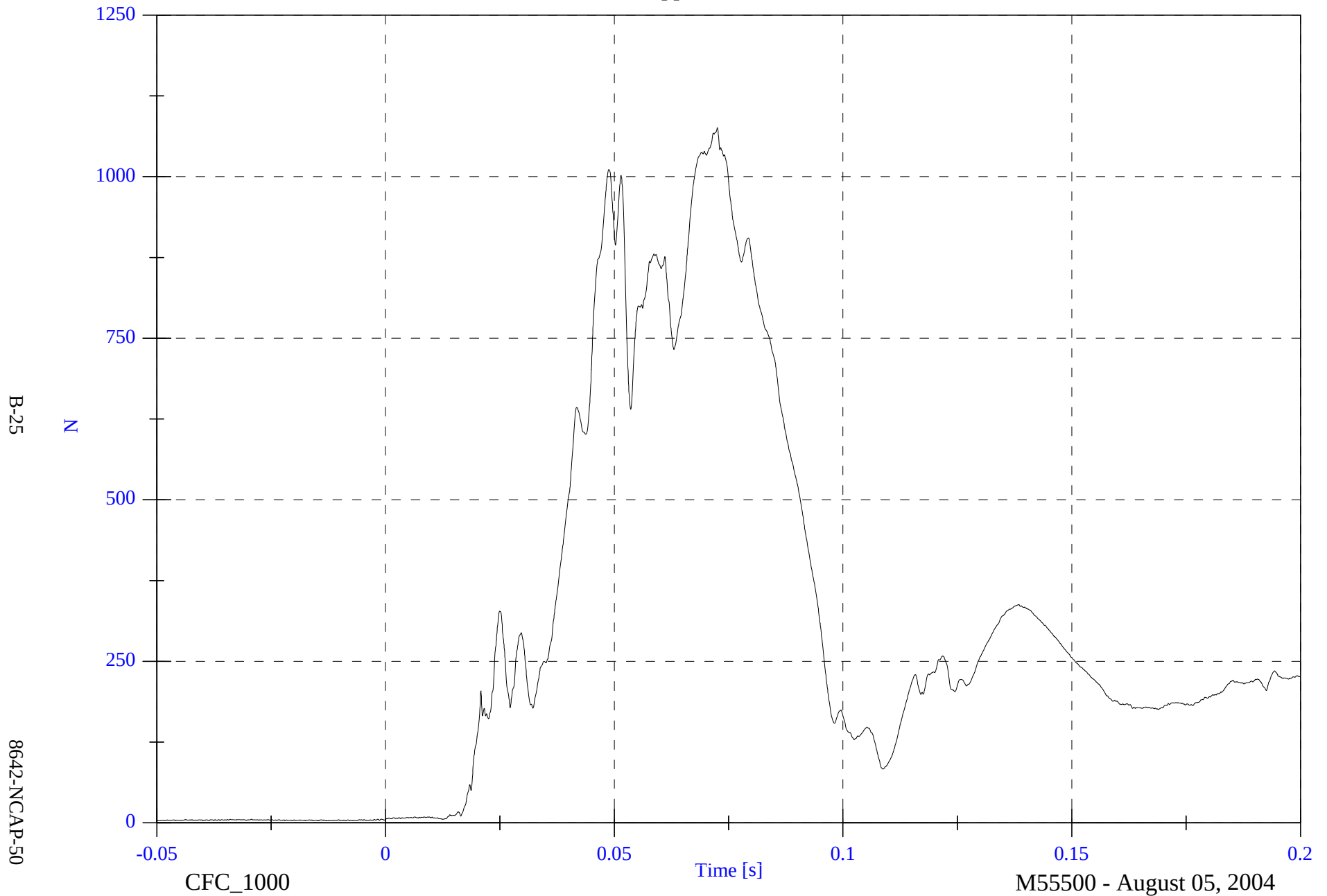


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Upper Neck F Resultant

Max: 1075.5 [N] at 0.073 [s]

Min: 3.0 [N] at -0.009 [s]

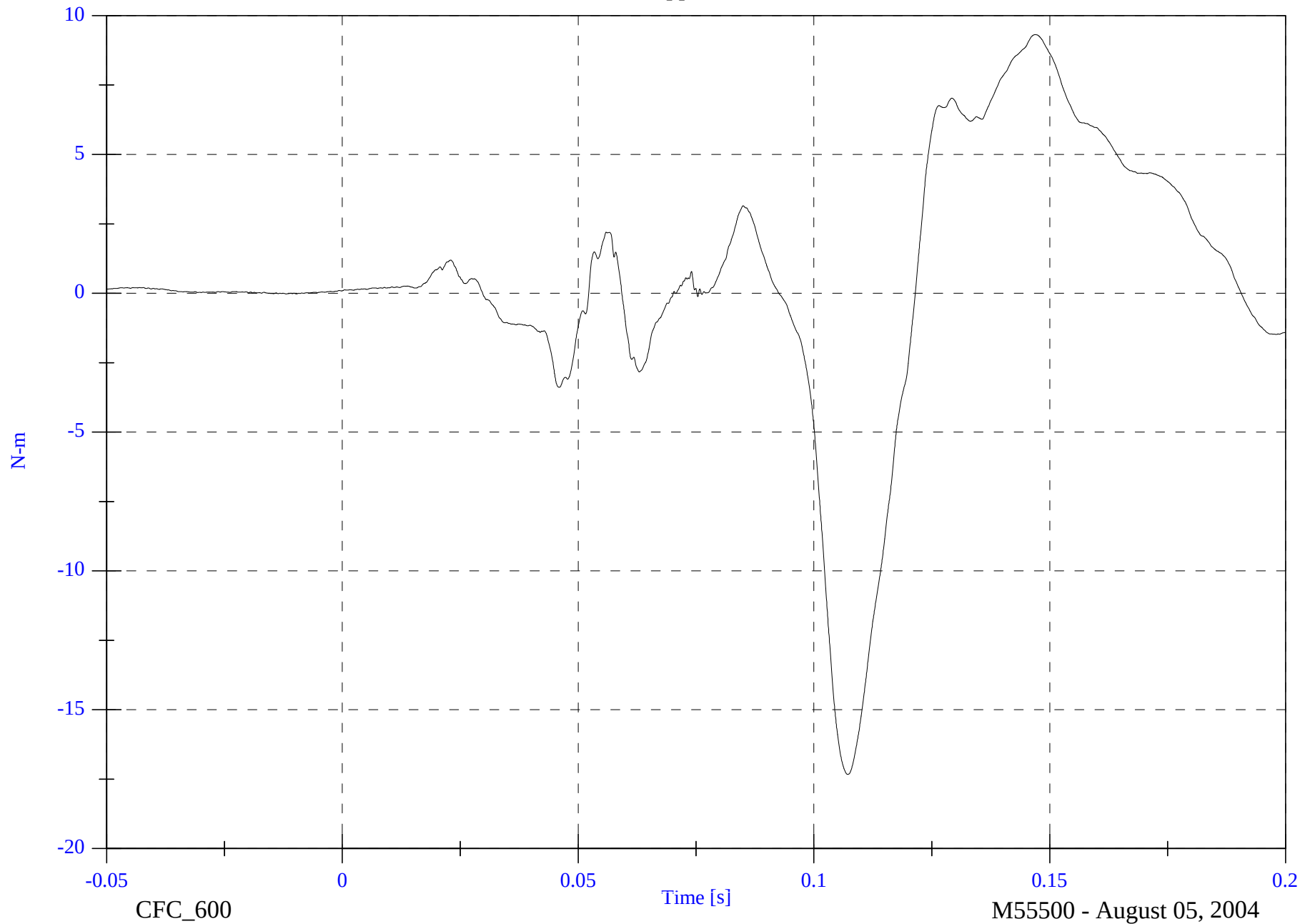


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Upper Neck Mx

Max: 9.3 [N-m] at 0.147 [s]

Min: -17.3 [N-m] at 0.107 [s]

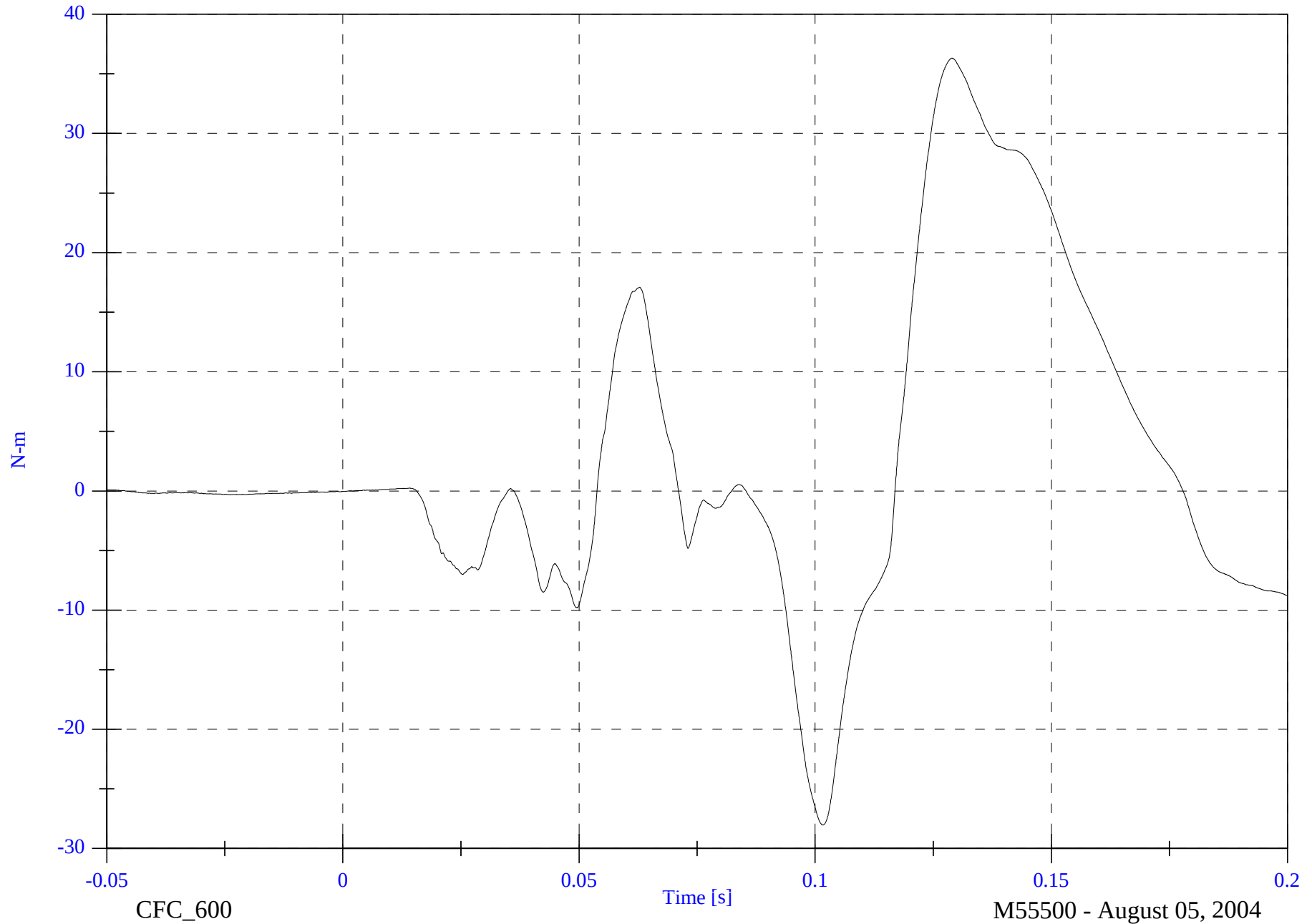


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Upper Neck My

Max: 36.3 [N-m] at 0.129 [s]

Min: -28.0 [N-m] at 0.102 [s]



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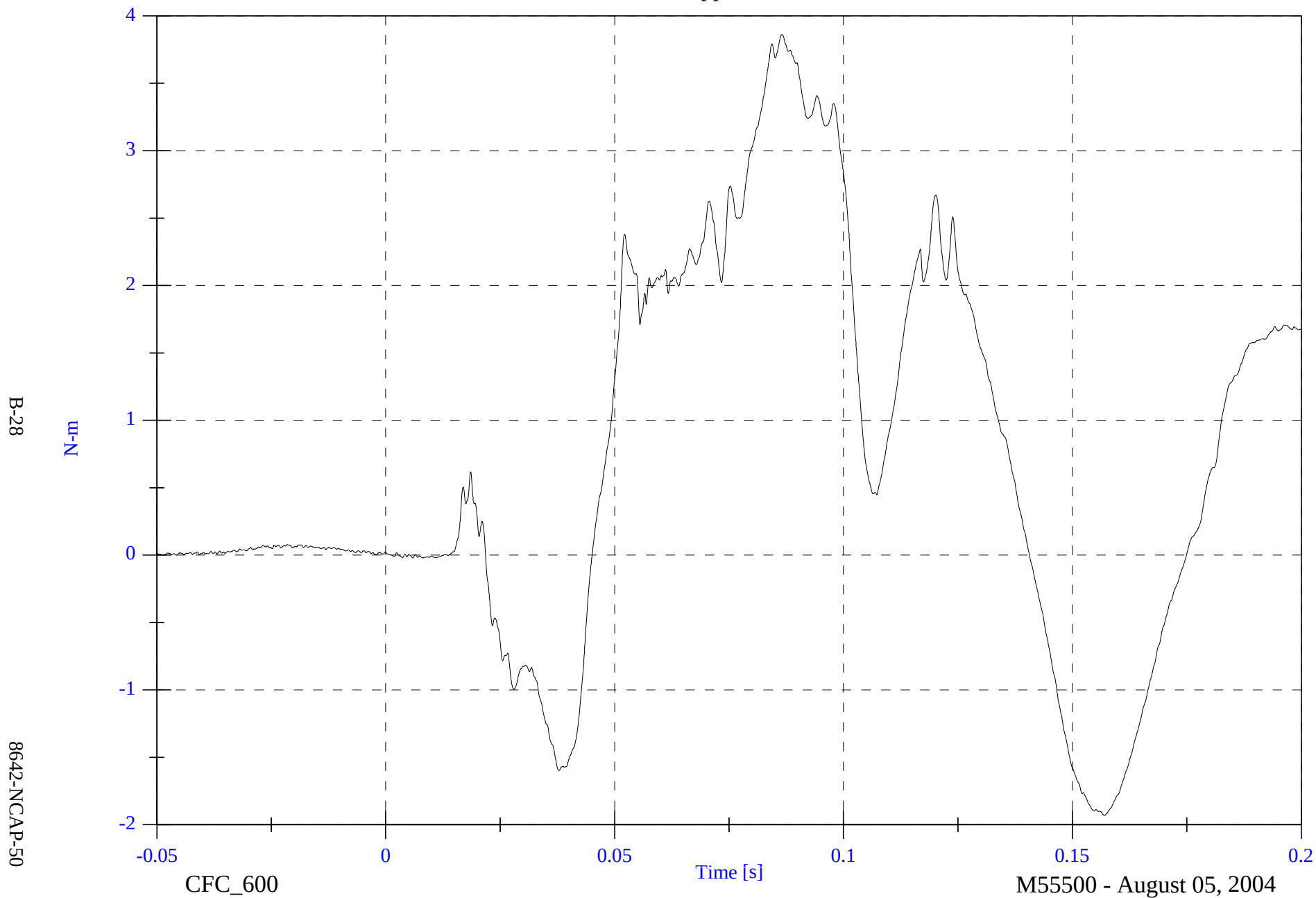
8642-NCAP-50

2004 NCAP TEST 14 - 2005 Subaru Outback

Max: 3.9 [N-m] at 0.086 [s]

Min: -1.9 [N-m] at 0.157 [s]

V1P1 Upper Neck Mz

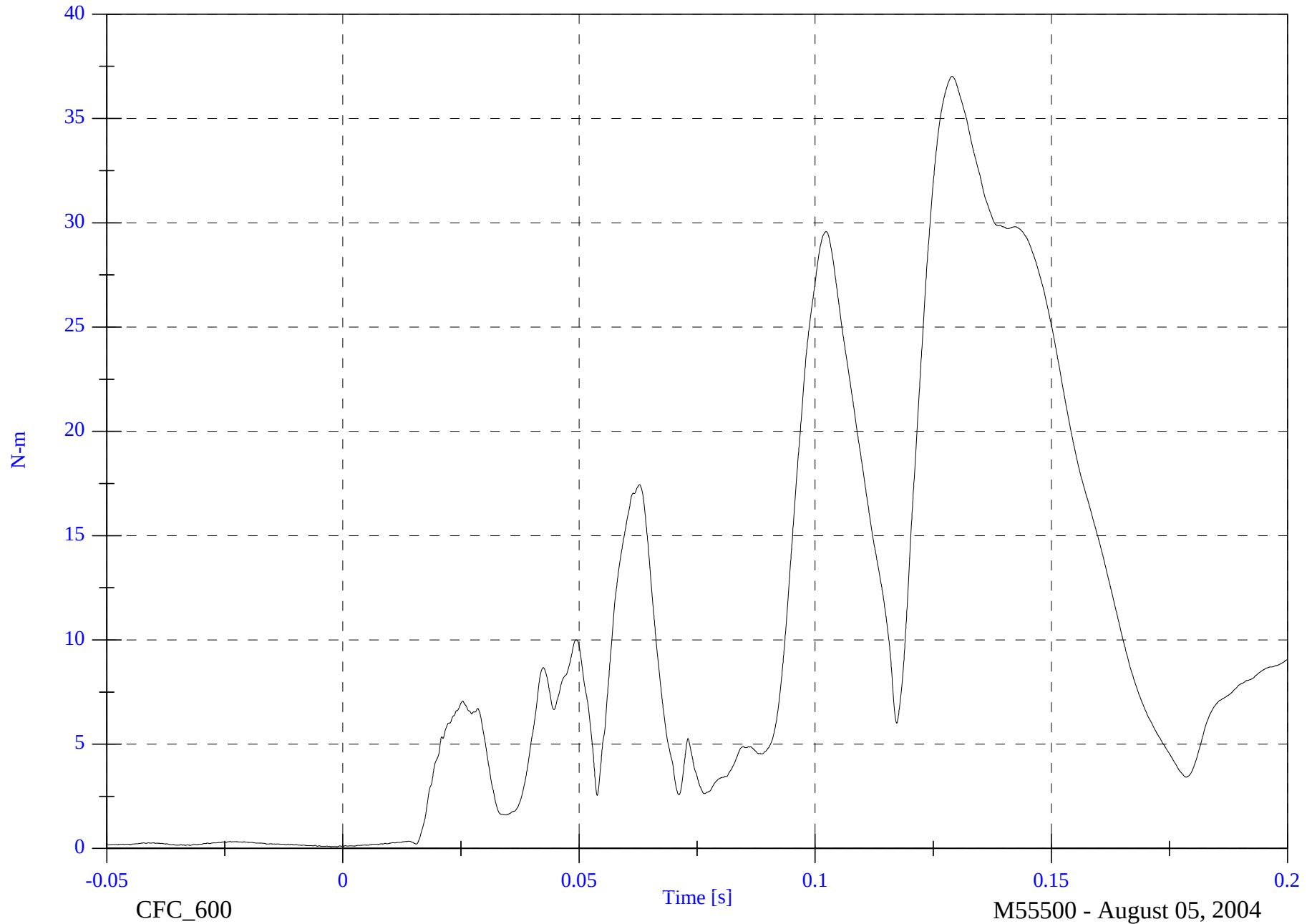


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Upper Neck M Resultant

Max: 37.0 [N-m] at 0.129 [s]

Min: 0.1 [N-m] at -0.001 [s]



B-29

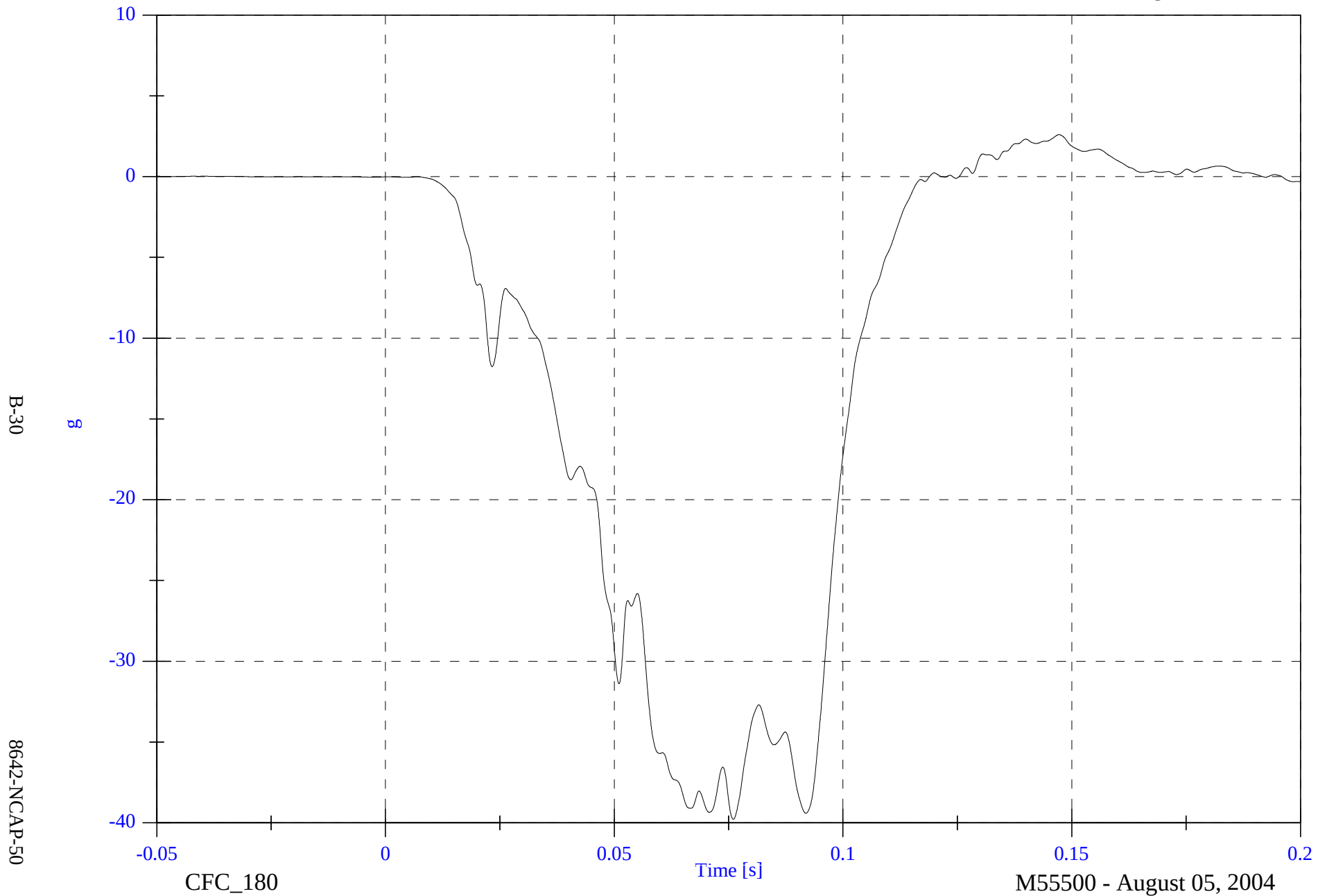
8642-NCAP-50

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Chest x

Max: 2.6 [g] at 0.147 [s]

Min: -39.8 [g] at 0.076 [s]

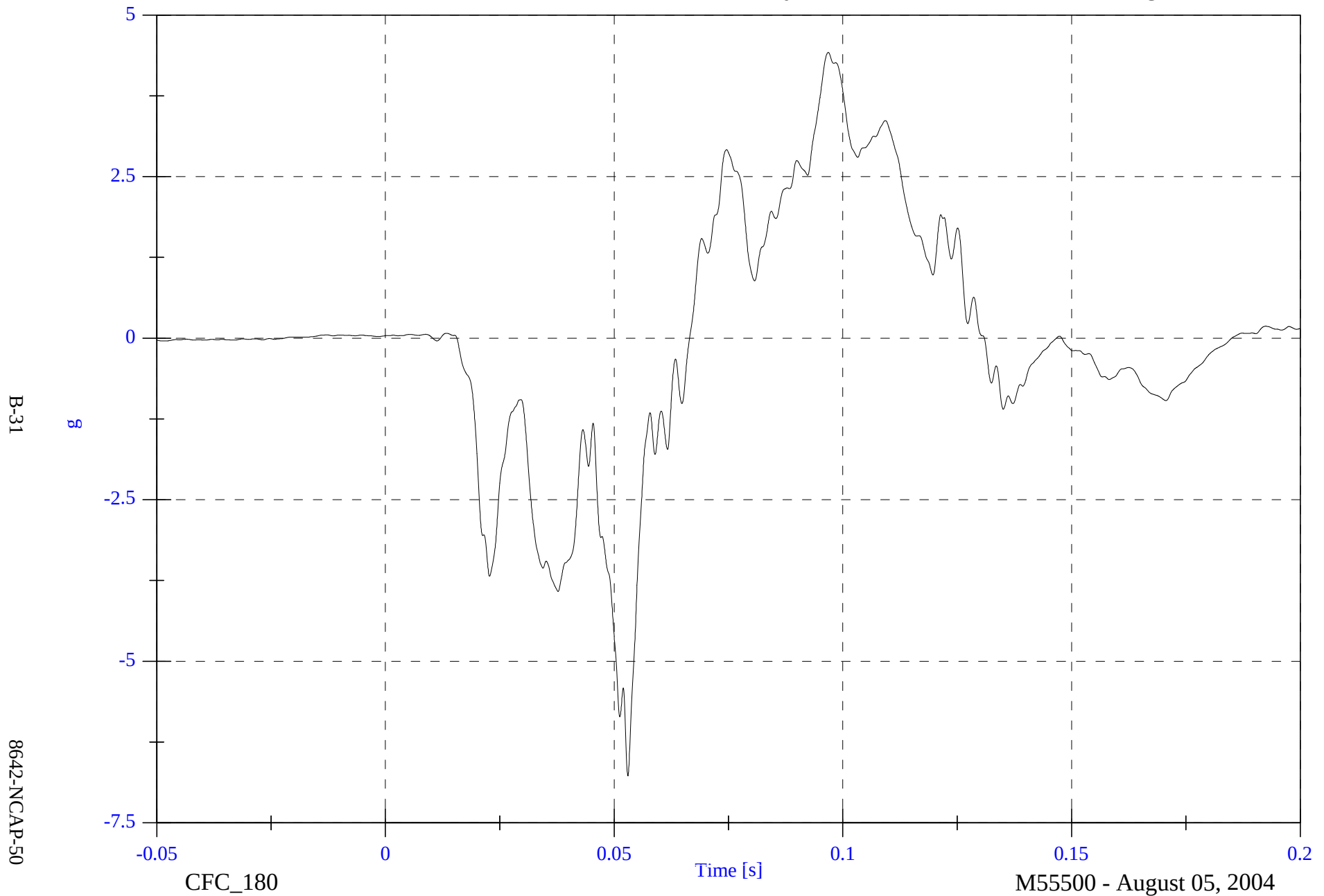


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Chest y

Max: 4.4 [g] at 0.097 [s]

Min: -6.8 [g] at 0.053 [s]

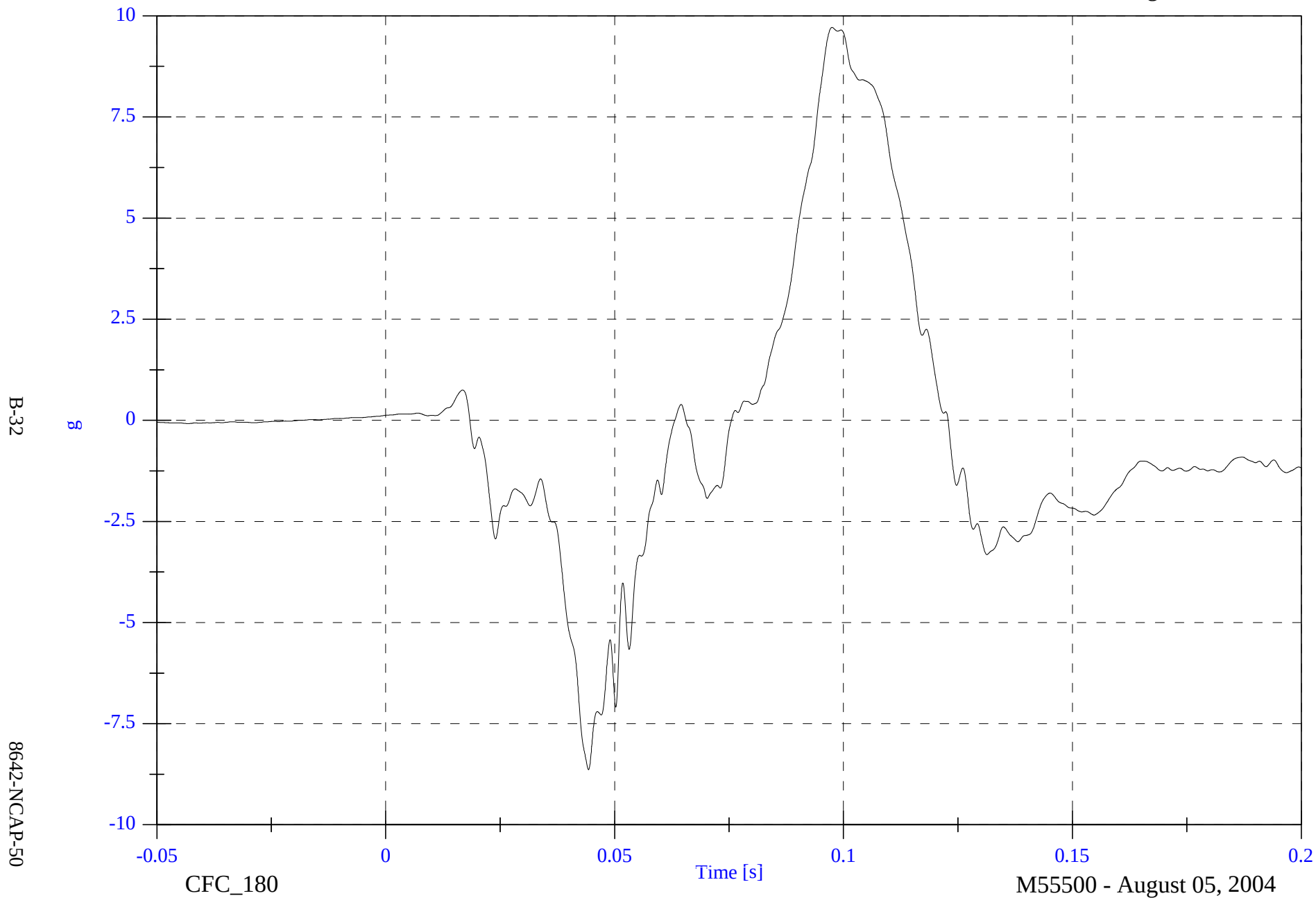


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Chest z

Max: 9.7 [g] at 0.097 [s]

Min: -8.6 [g] at 0.044 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

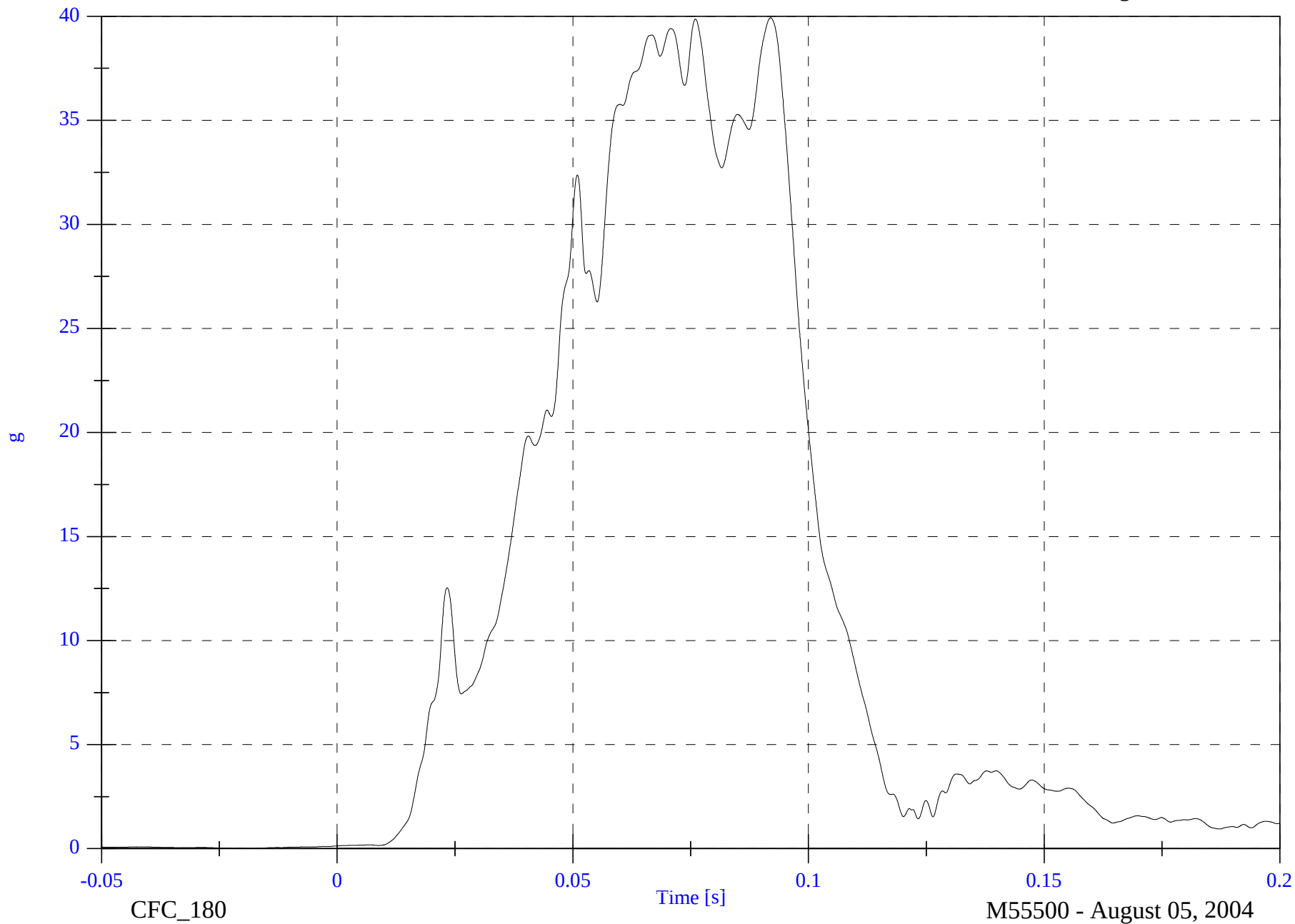
V1P1 Chest Resultant

Max: 39.9 [g] at 0.092 [s]

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

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8642-NCAP-50

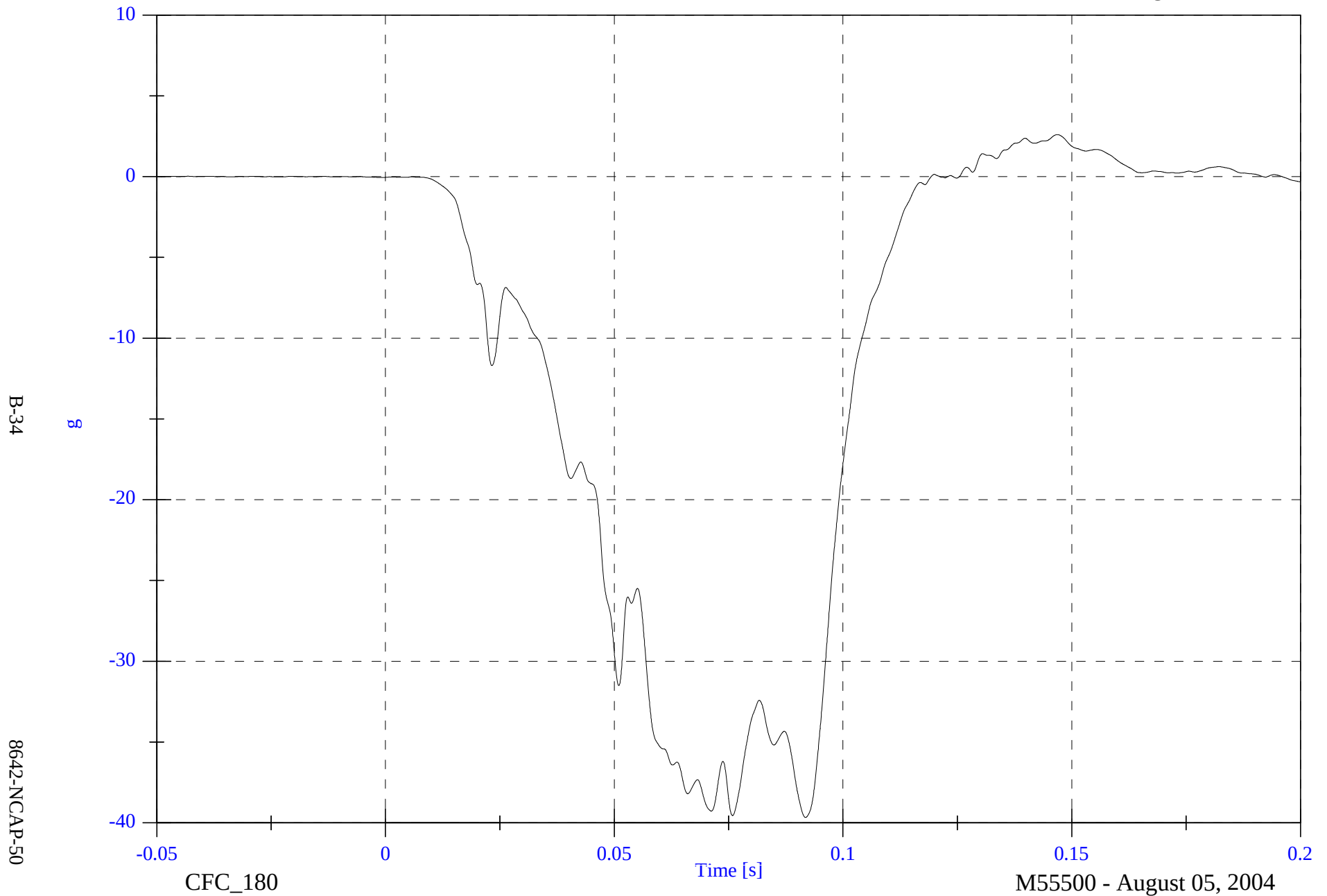


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Chest Red x

Max: 2.6 [g] at 0.147 [s]

Min: -39.7 [g] at 0.092 [s]

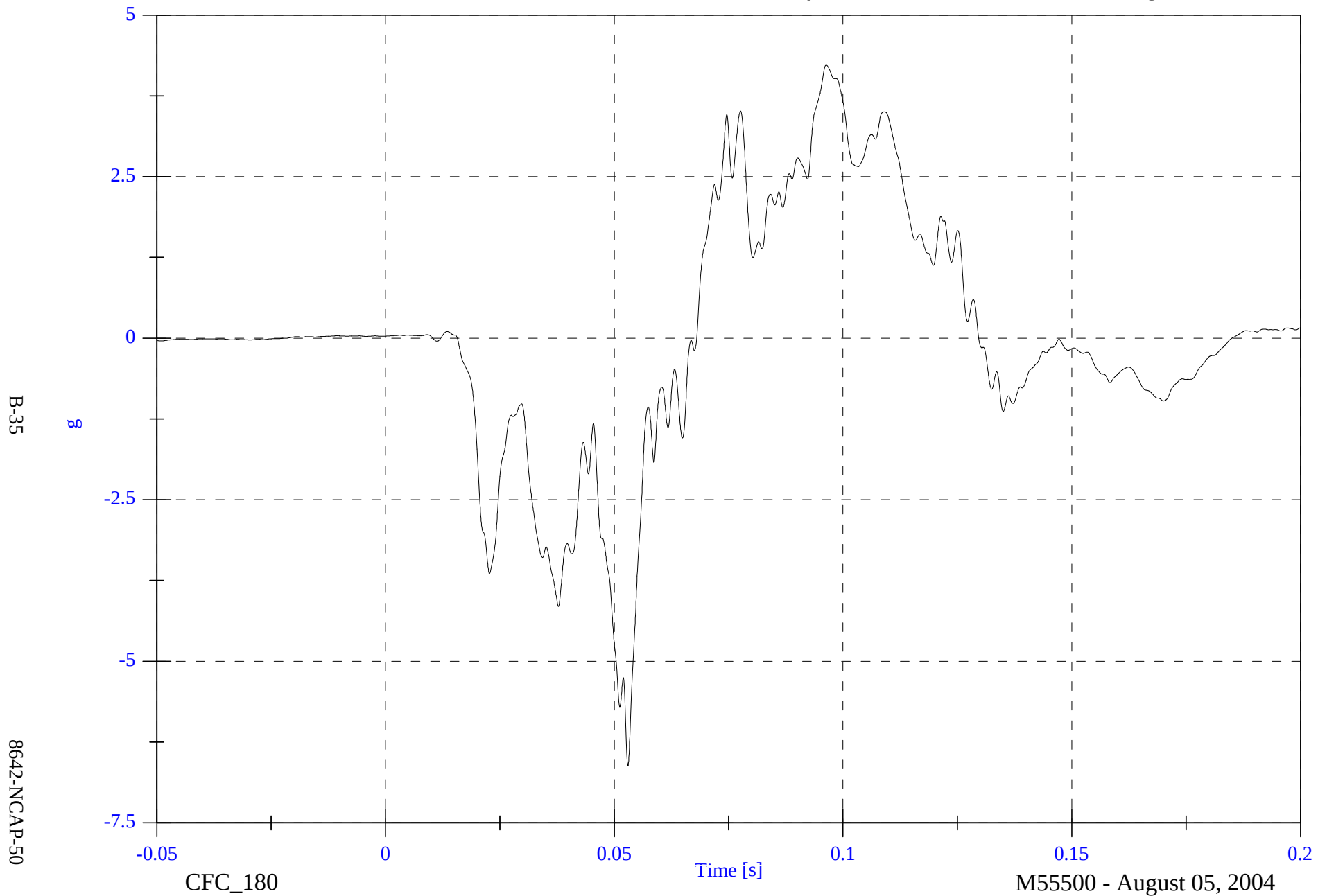


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Chest Red y

Max: 4.2 [g] at 0.096 [s]

Min: -6.6 [g] at 0.053 [s]

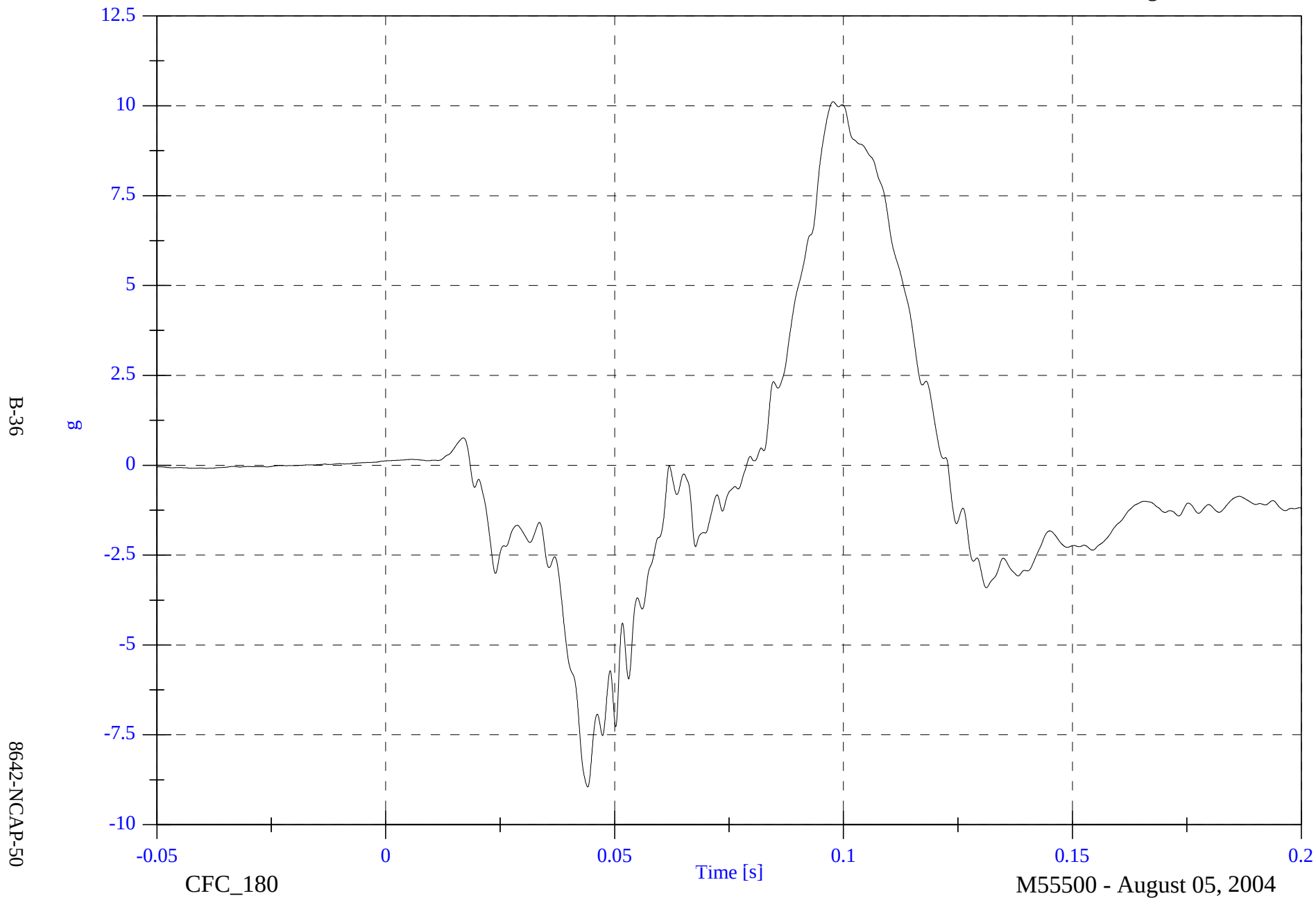


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Chest Red z

Max: 10.1 [g] at 0.098 [s]

Min: -9.0 [g] at 0.044 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

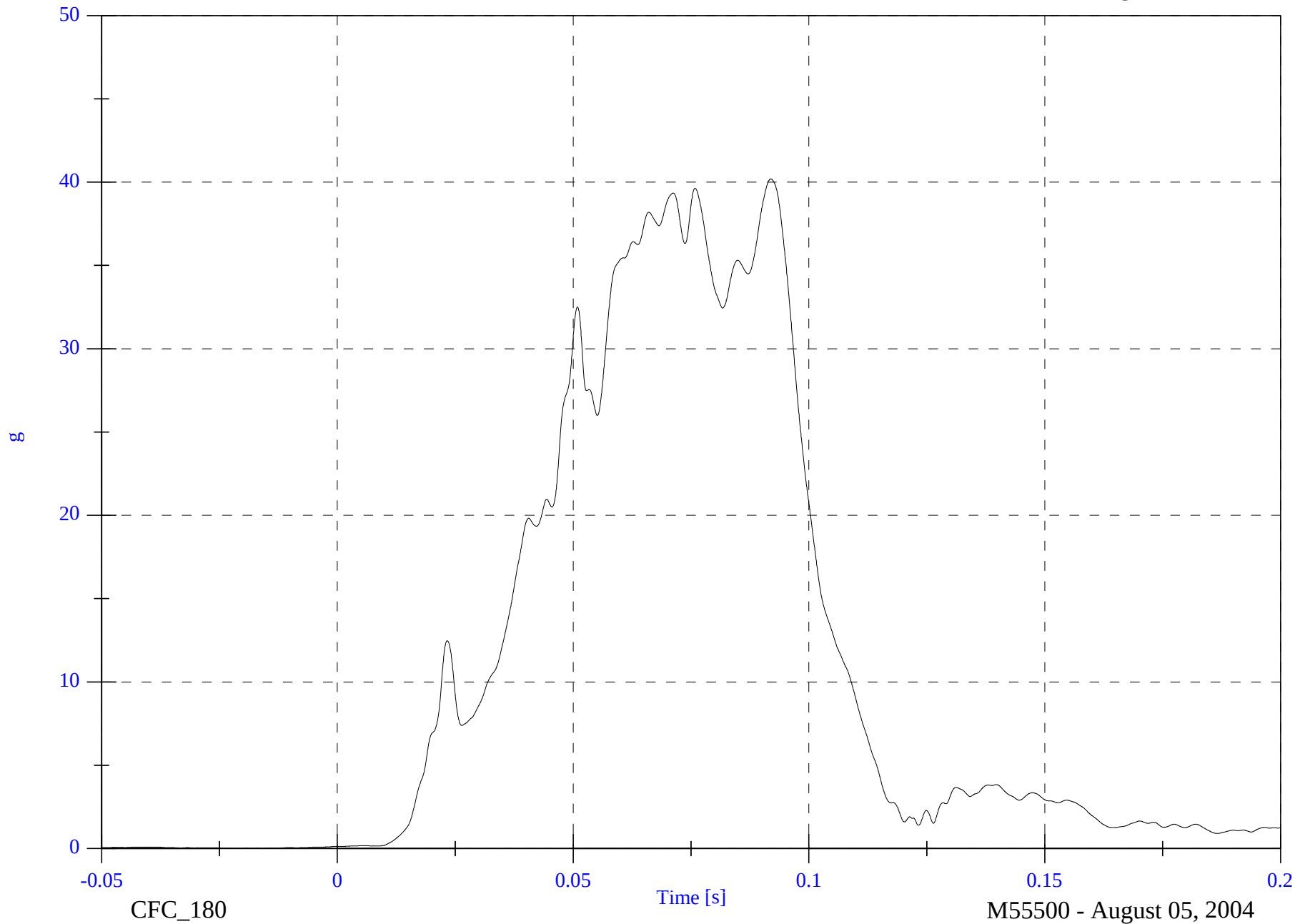
V1P1 Chest Red Resultant

Max: 40.2 [g] at 0.092 [s]

Min: 0.0 [g] at -0.023 [s]

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8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

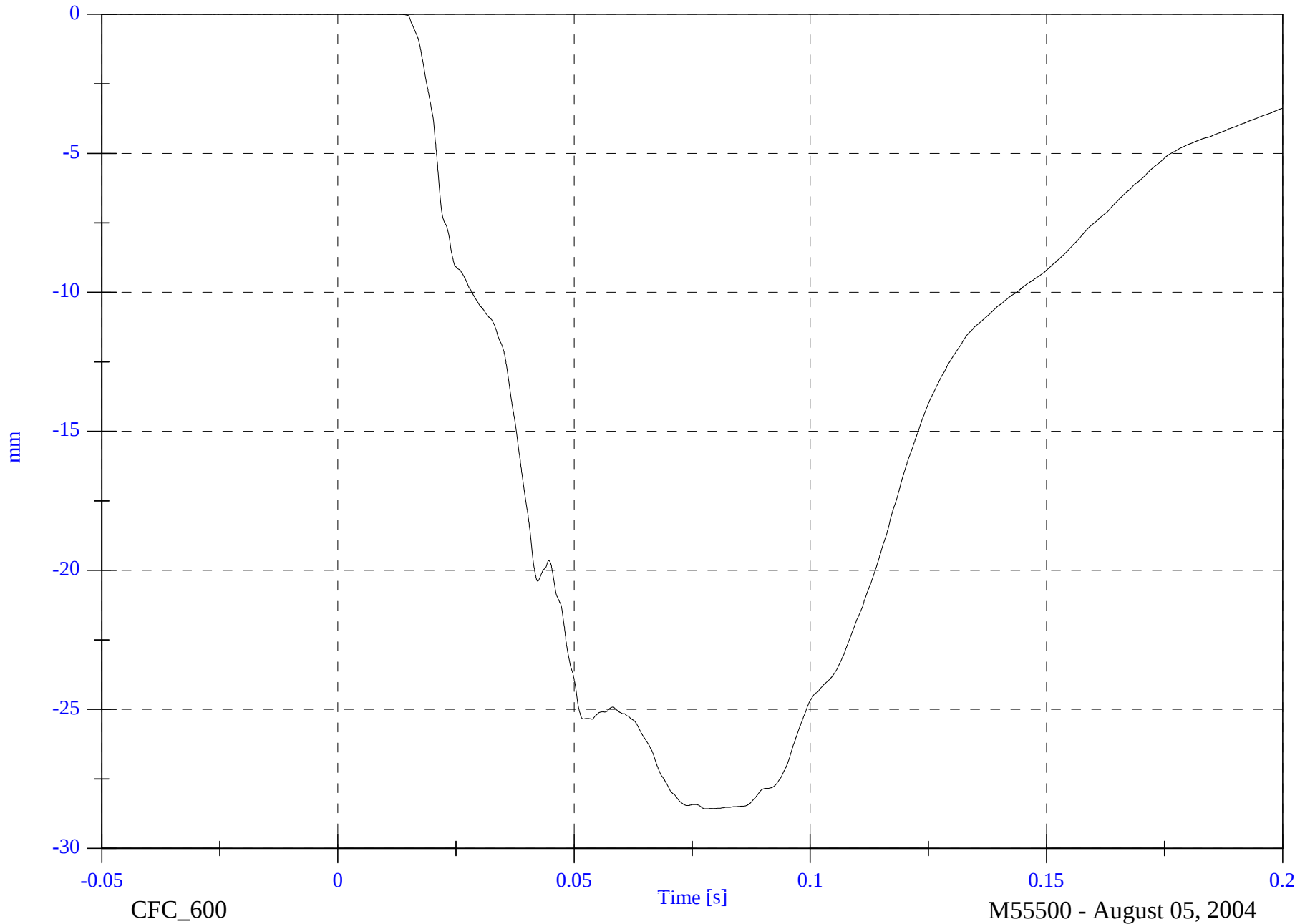
V1P1 Chest Compression x

Max: 0.0 [mm] at -0.013 [s]

Min: -28.6 [mm] at 0.078 [s]

B-38

8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

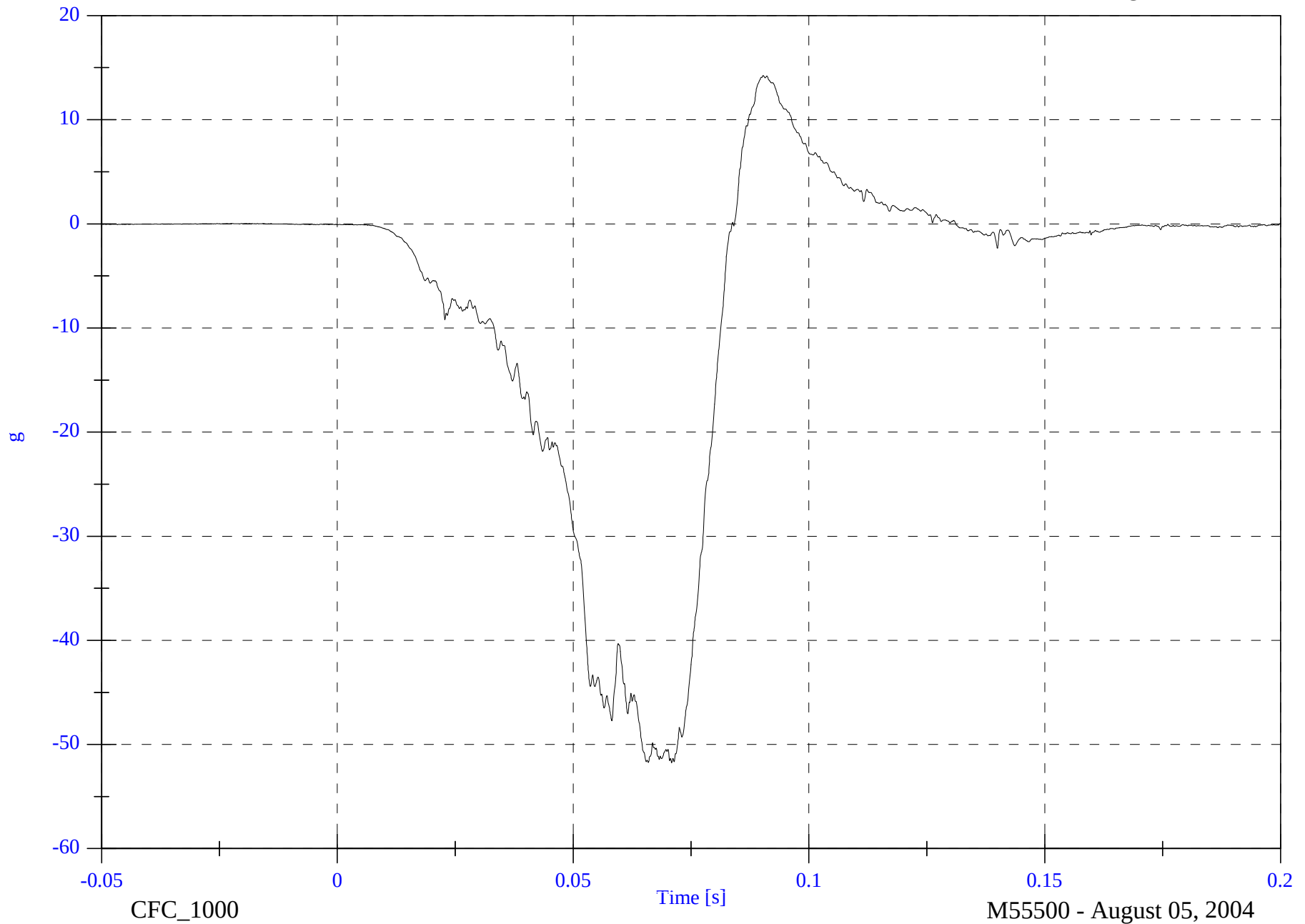
V1P1 Pelvic x

Max: 14.2 [g] at 0.090 [s]

Min: -51.8 [g] at 0.071 [s]

B-39

8642-NCAP-50

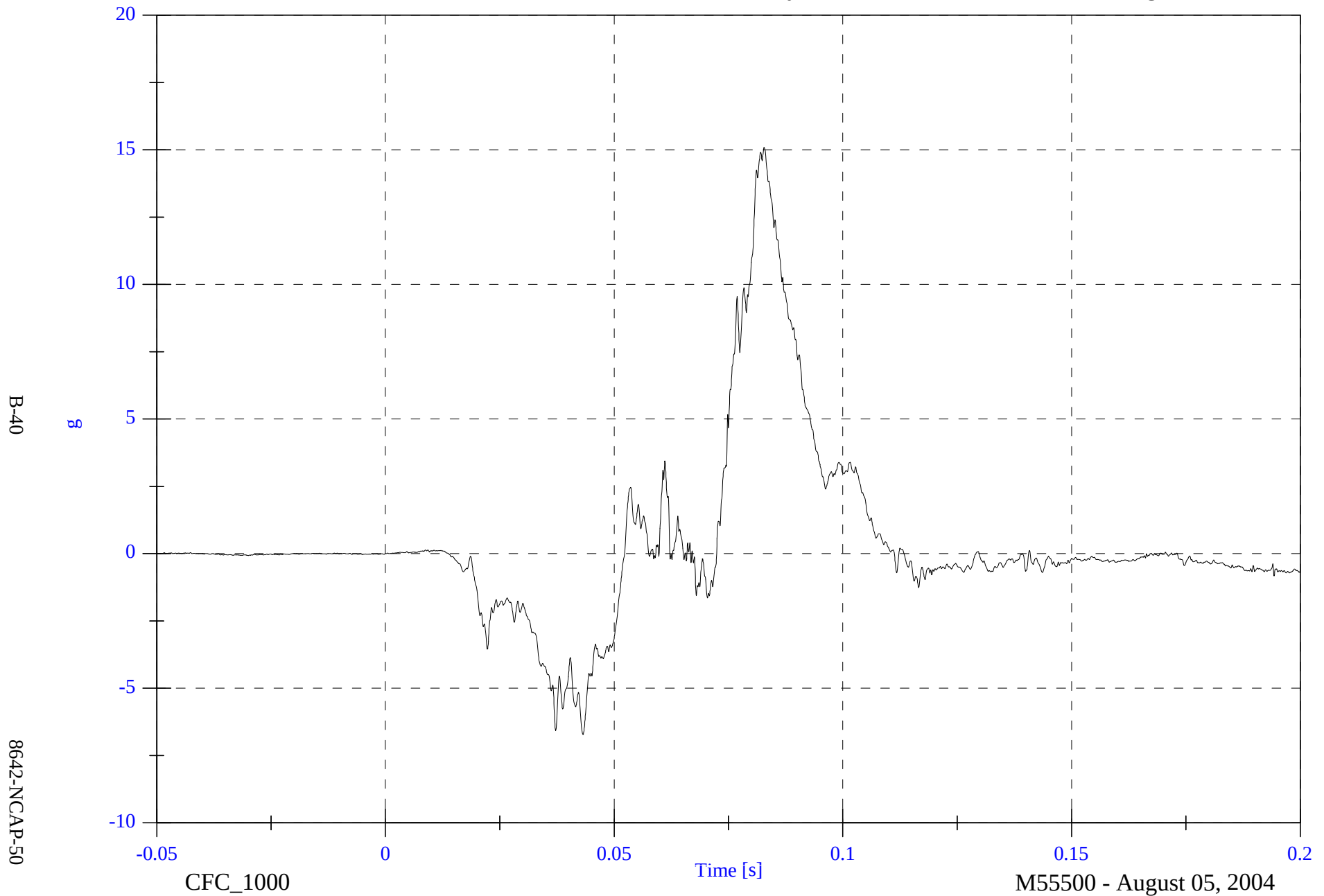


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Pelvic y

Max: 15.1 [g] at 0.083 [s]

Min: -6.7 [g] at 0.043 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Pelvic z

Max: 2.4 [g] at 0.142 [s]

Min: -31.8 [g] at 0.072 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

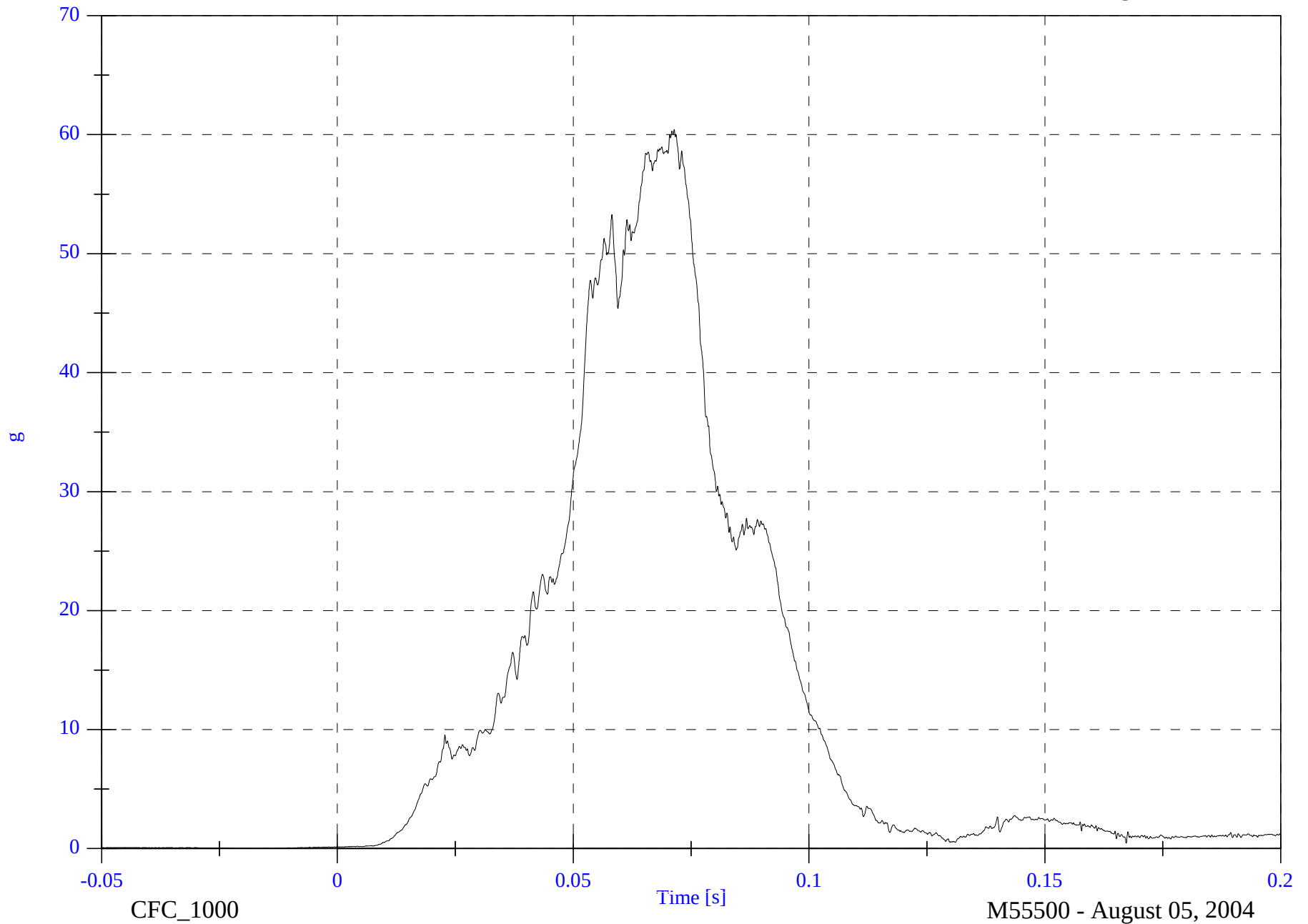
V1P1 Pelvic Resultant

Max: 60.4 [g] at 0.071 [s]

Min: 0.0 [g] at -0.017 [s]

B-42

8642-NCAP-50

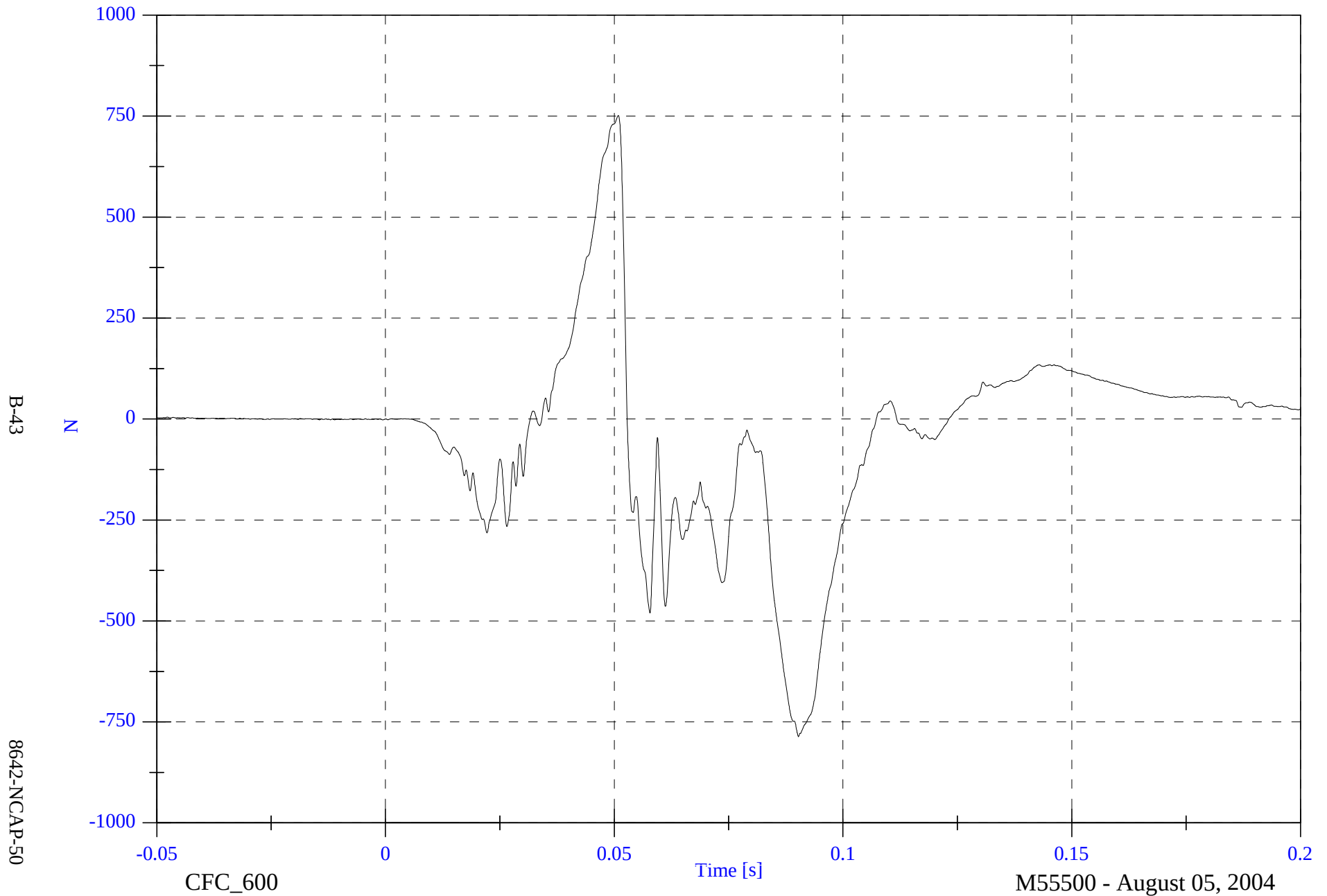


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Left Femur z

Max: 751.6 [N] at 0.051 [s]

Min: -786.7 [N] at 0.090 [s]

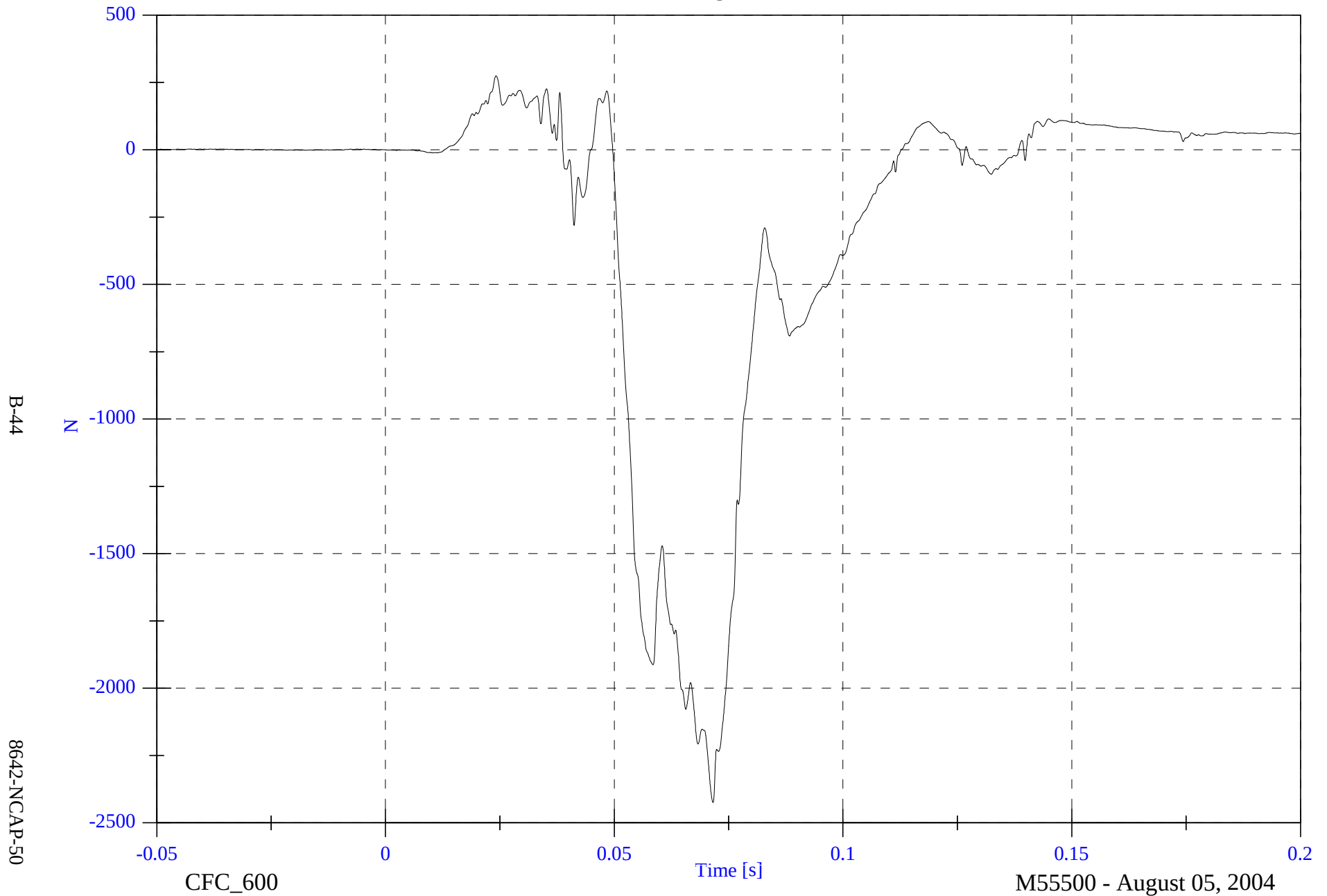


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Right Femur z

Max: 274.7 [N] at 0.024 [s]

Min: -2424.3 [N] at 0.072 [s]

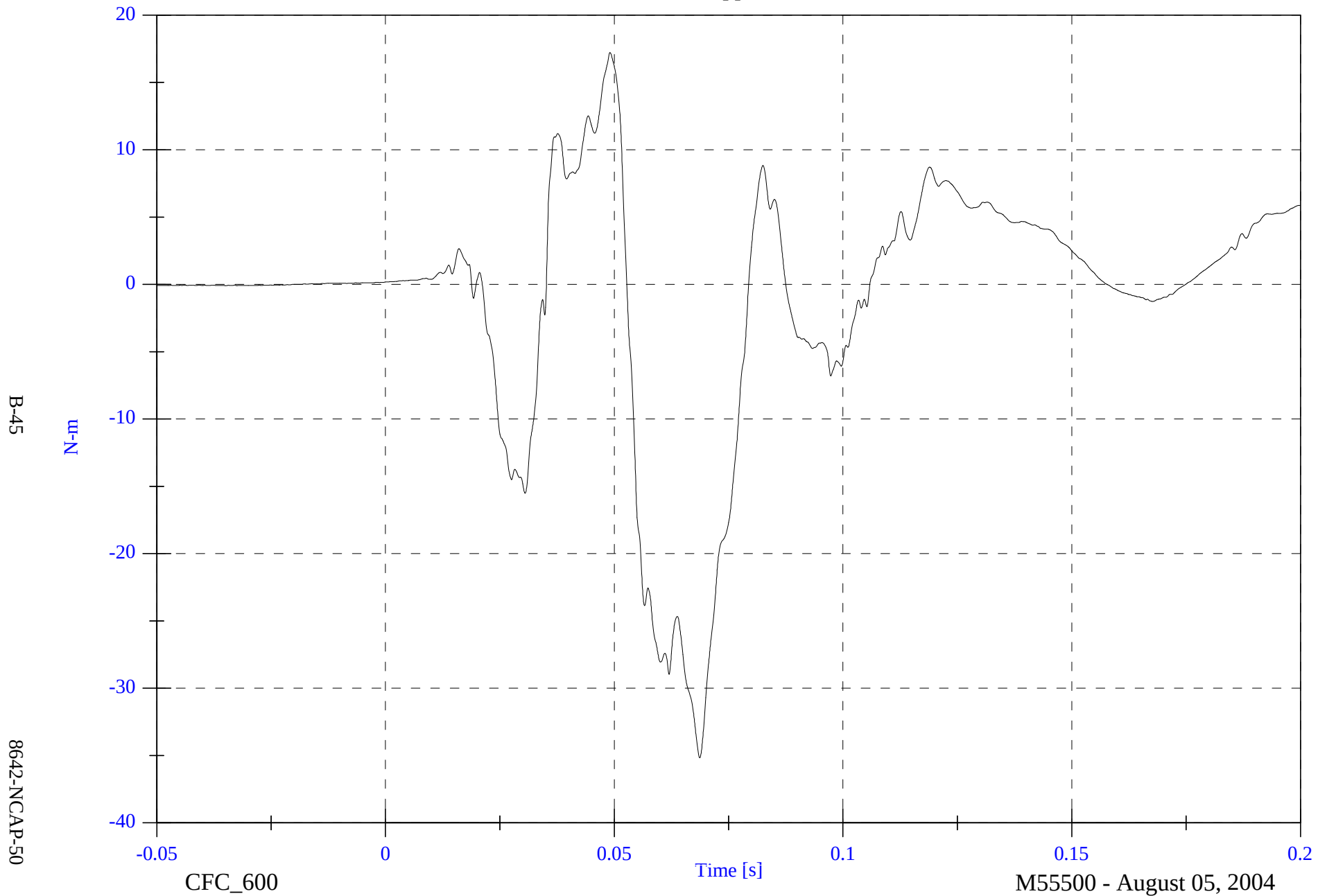


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Left Upper Tibia Mx

Max: 17.2 [N-m] at 0.049 [s]

Min: -35.2 [N-m] at 0.069 [s]

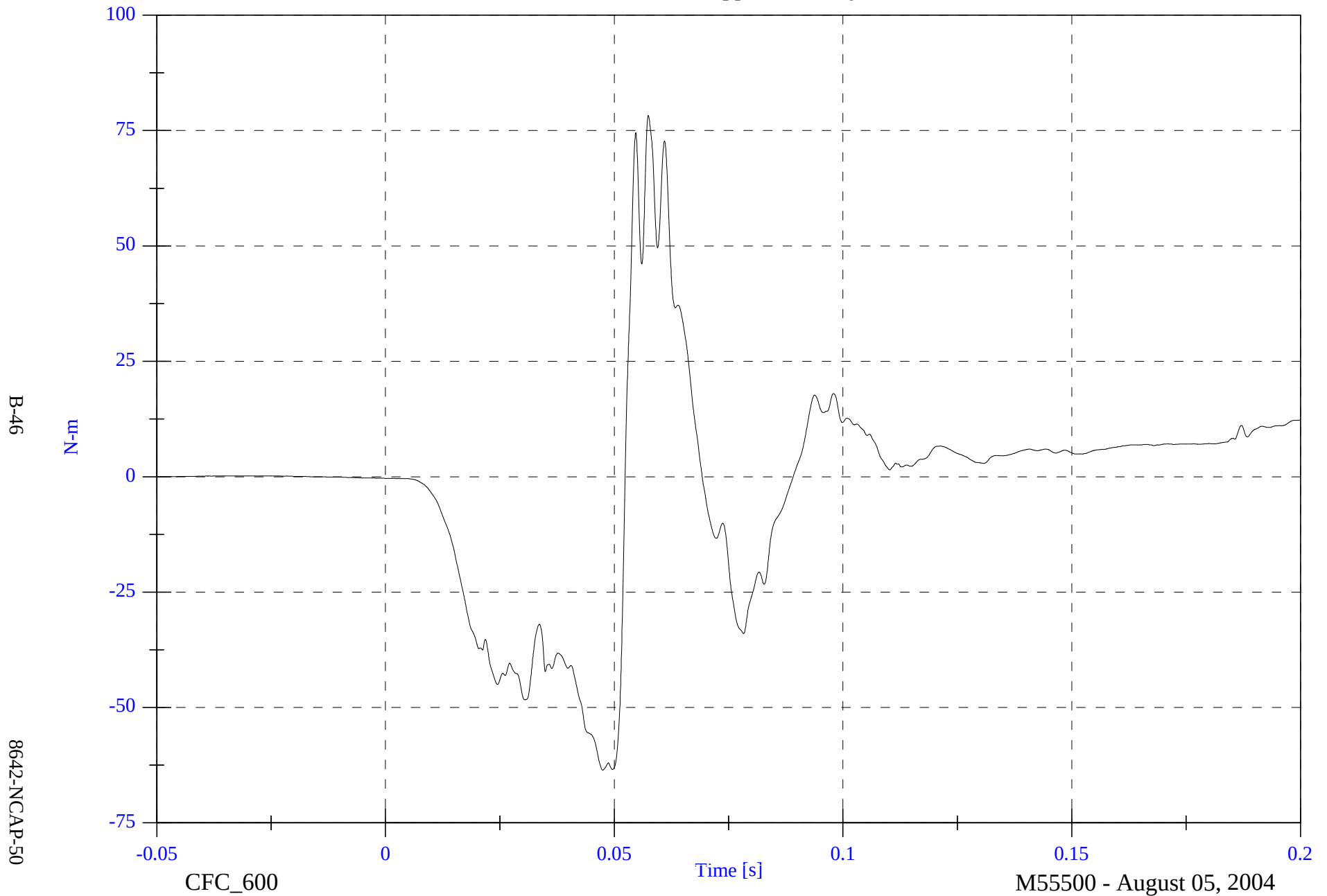


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Left Upper Tibia My

Max: 78.3 [N-m] at 0.057 [s]

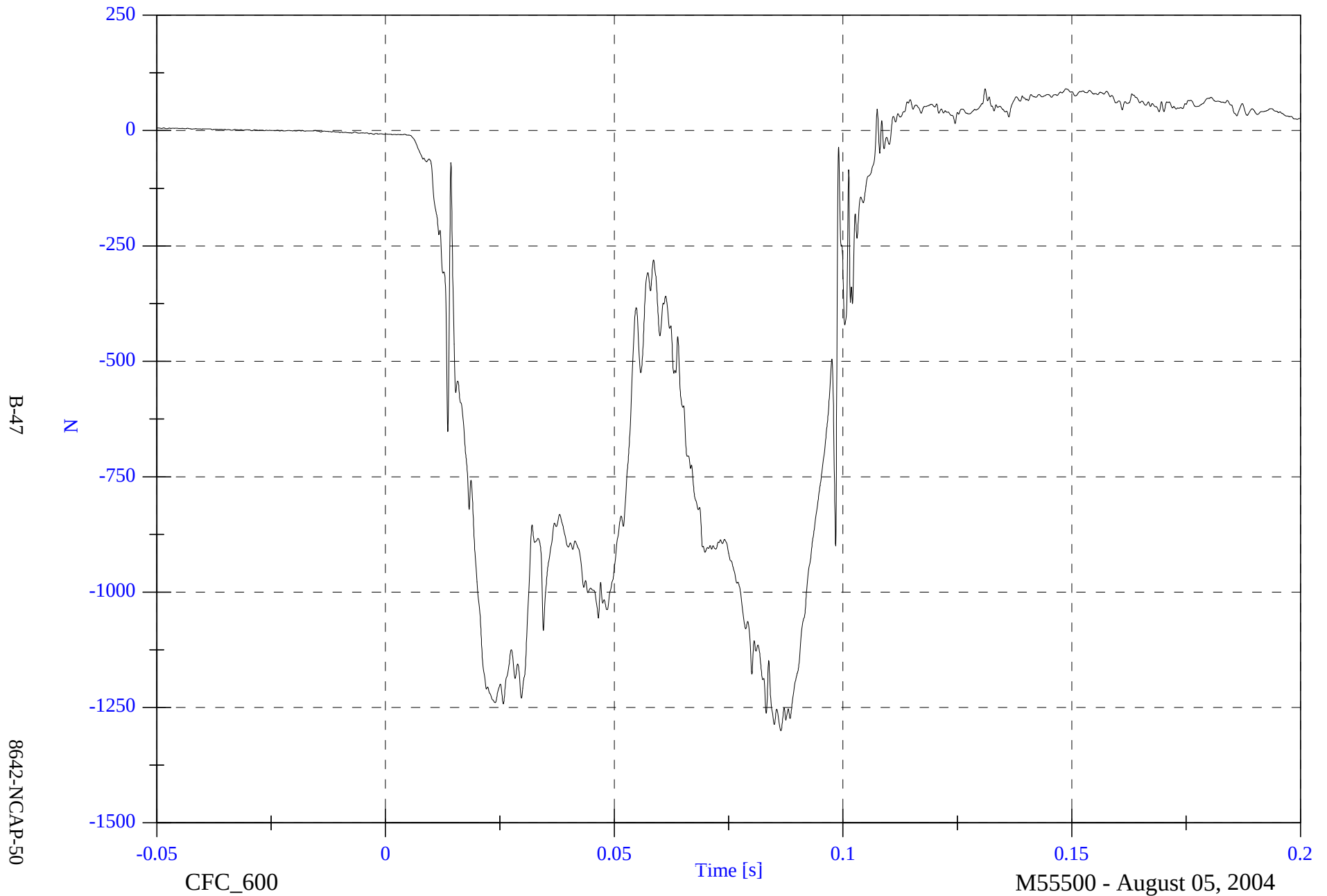
Min: -63.6 [N-m] at 0.047 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Left Lower Tibia Fz

Max: 90.6 [N] at 0.131 [s]
Min: -1300.6 [N] at 0.086 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

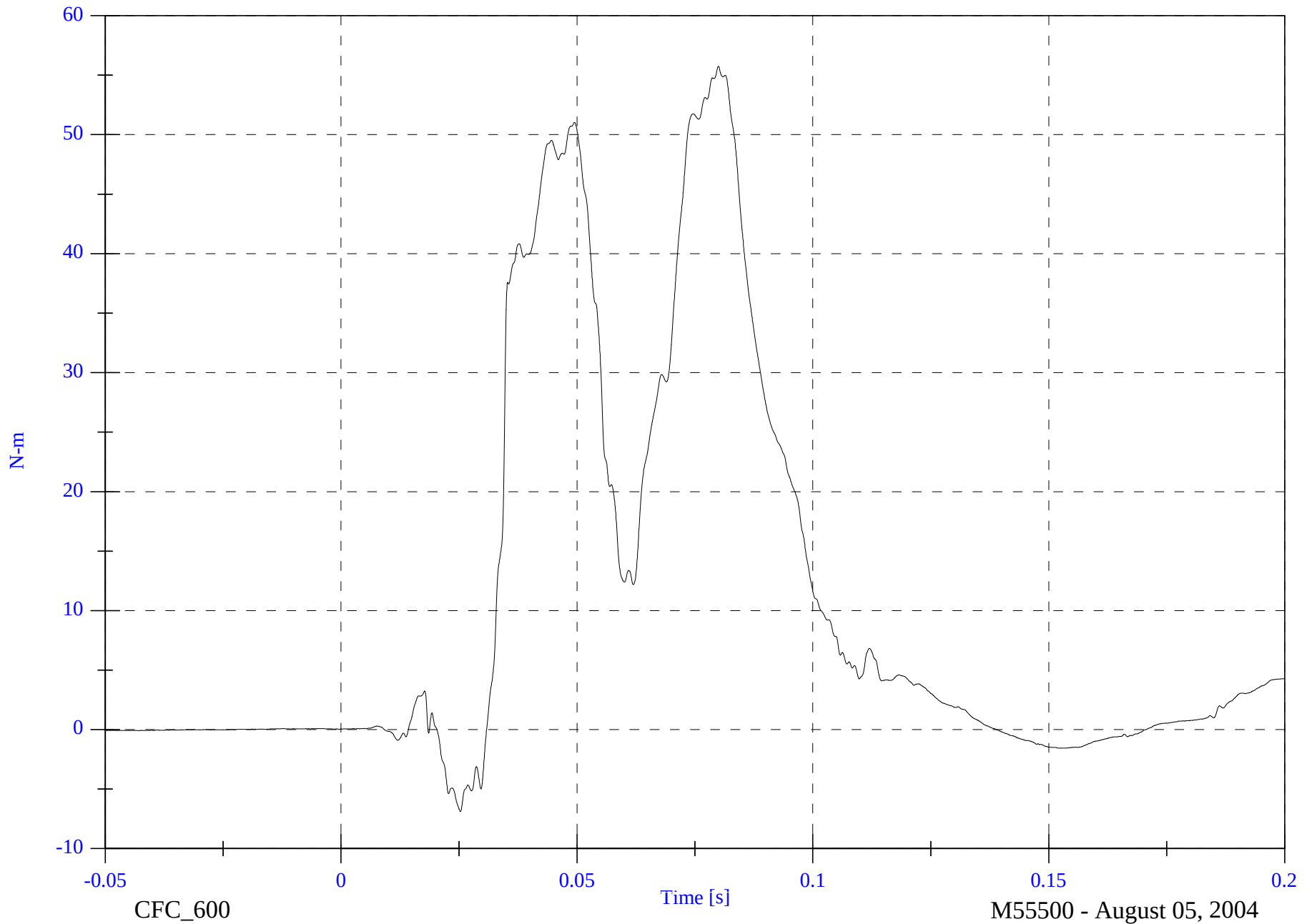
V1P1 Left Lower Tibia Mx

Max: 55.7 [N-m] at 0.080 [s]

Min: -6.9 [N-m] at 0.025 [s]

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8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

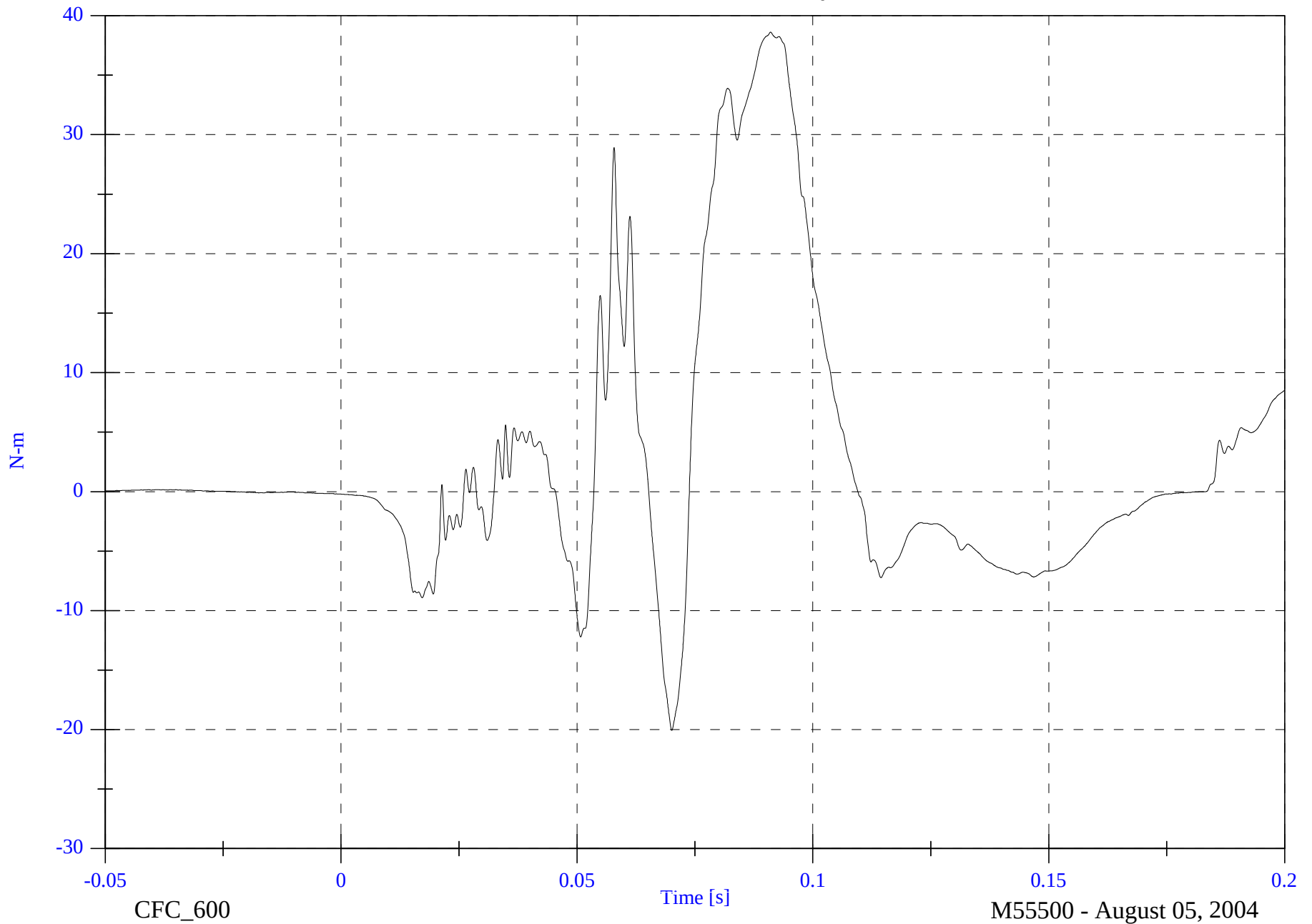
V1P1 Left Lower Tibia My

Max: 38.6 [N-m] at 0.091 [s]

Min: -20.1 [N-m] at 0.070 [s]

B-49

8642-NCAP-50

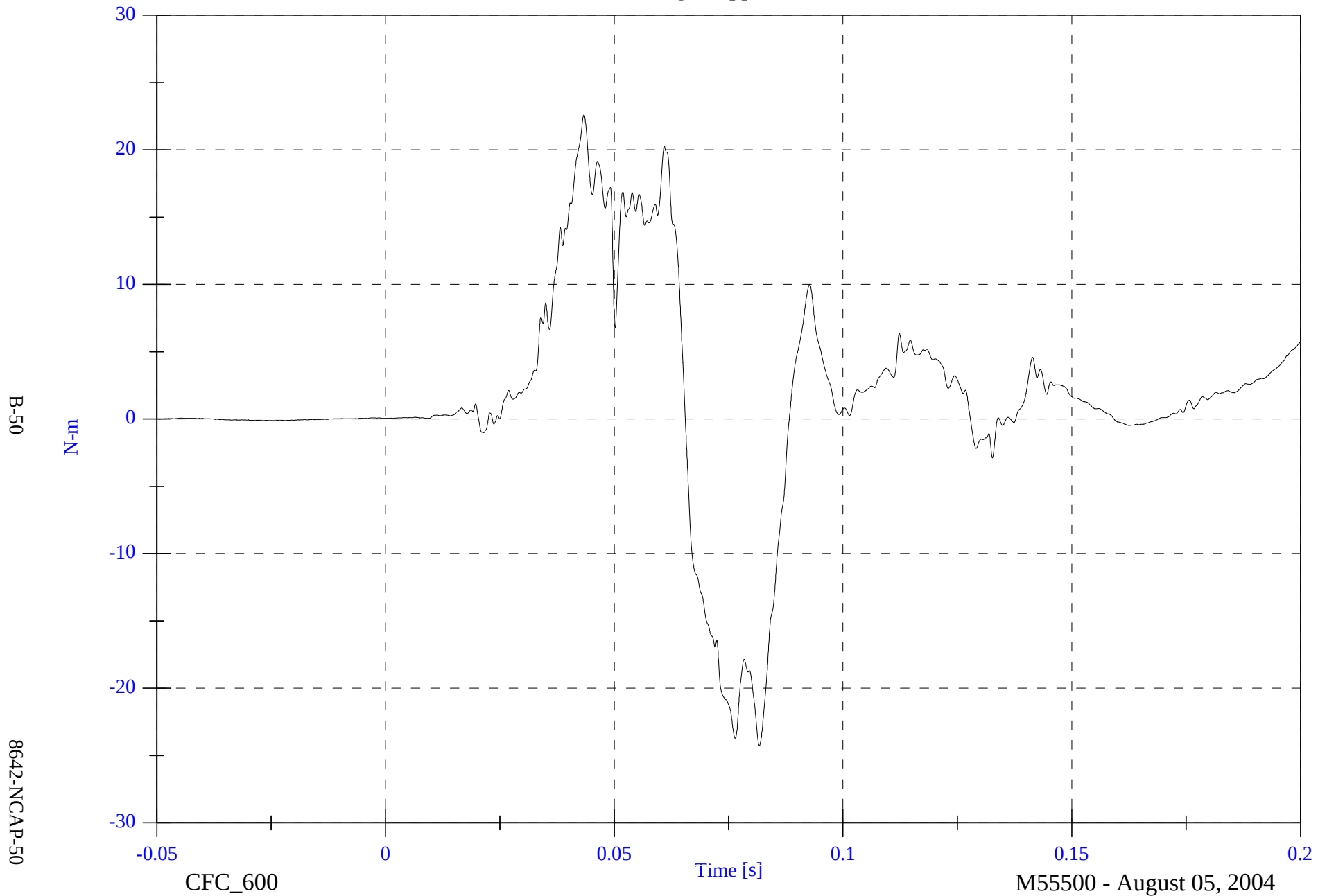


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Right Upper Tibia Mx

Max: 22.6 [N-m] at 0.043 [s]

Min: -24.3 [N-m] at 0.082 [s]

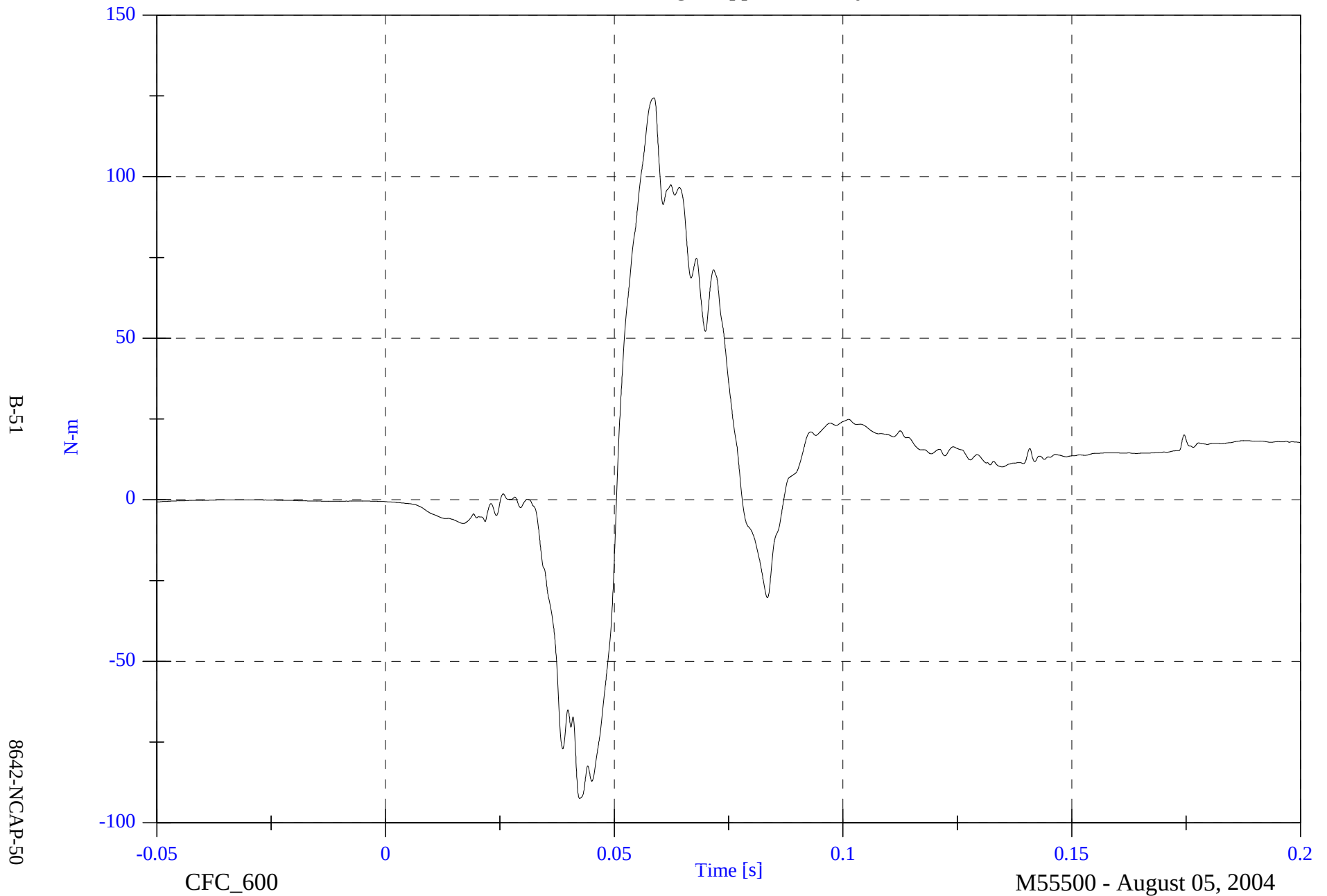


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Right Upper Tibia My

Max: 124.4 [N-m] at 0.059 [s]

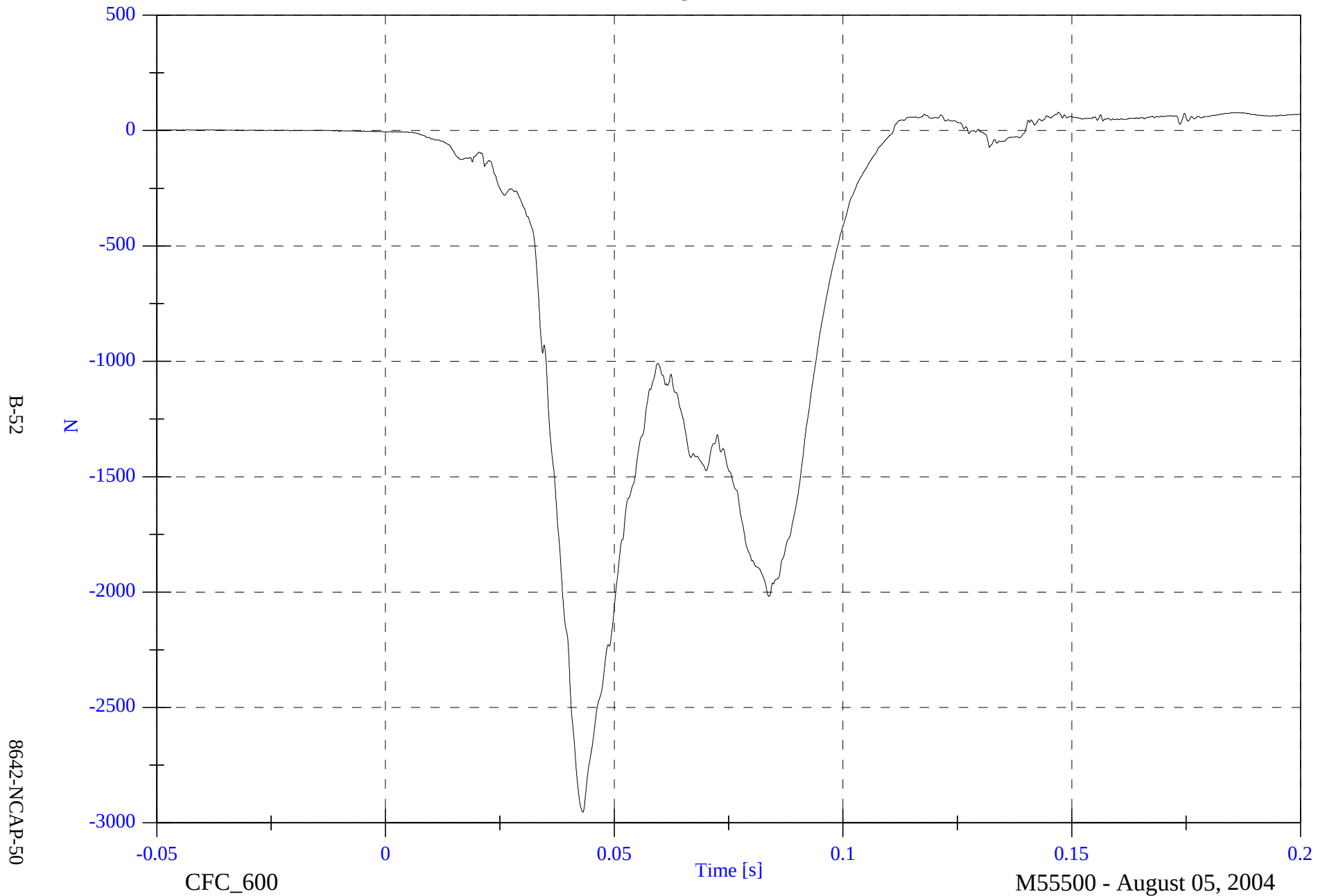
Min: -92.5 [N-m] at 0.042 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Right Lower Tibia Fz

Max: 79.7 [N] at 0.147 [s]
Min: -2953.4 [N] at 0.043 [s]

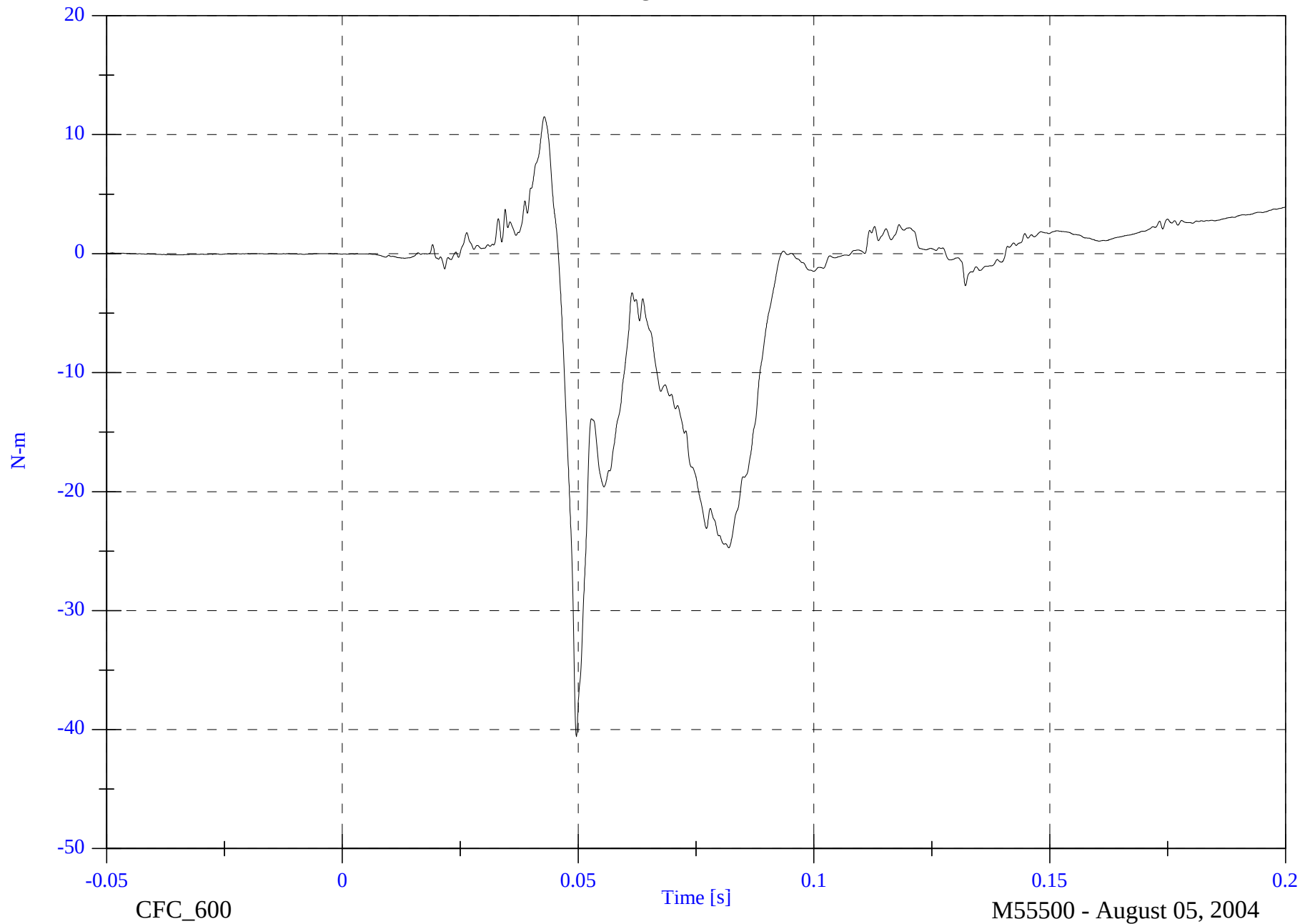


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Right Lower Tibia Mx

Max: 11.5 [N-m] at 0.043 [s]

Min: -40.6 [N-m] at 0.050 [s]



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8642-NCAP-50

CFC_600

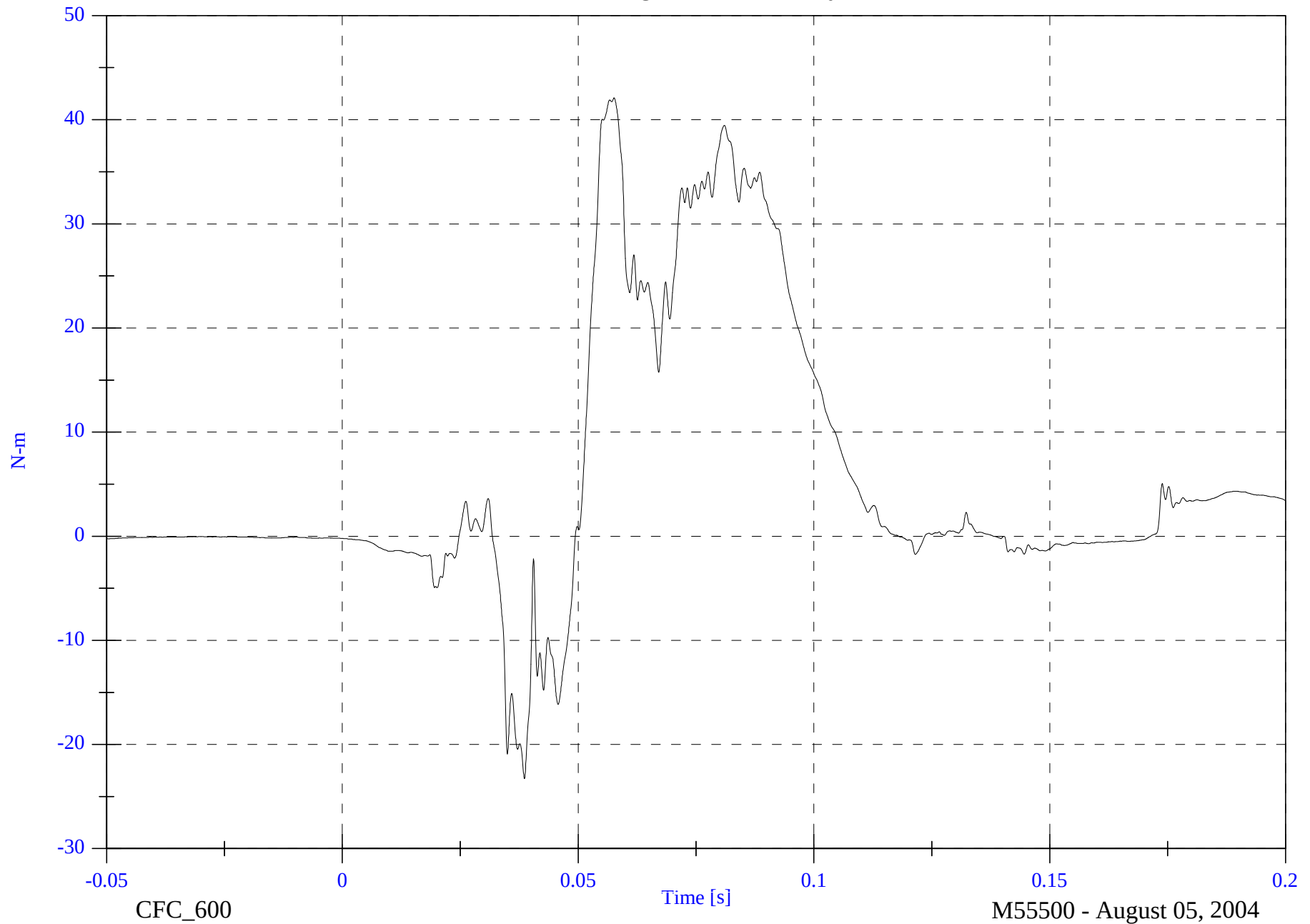
M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Right Lower Tibia My

Max: 42.1 [N-m] at 0.058 [s]

Min: -23.3 [N-m] at 0.039 [s]



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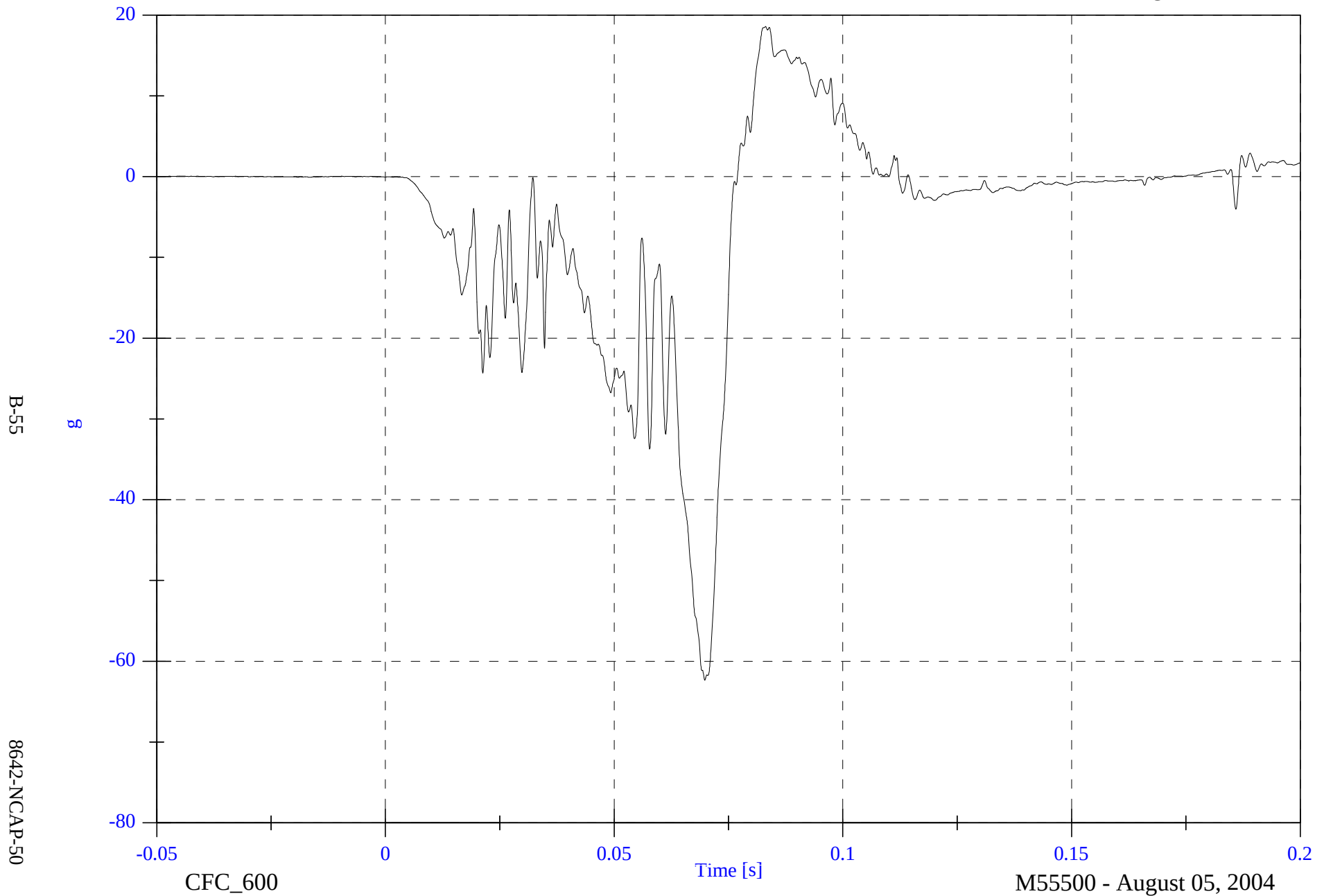
8642-NCAP-50

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Left Foot Aft x

Max: 18.6 [g] at 0.083 [s]

Min: -62.4 [g] at 0.070 [s]

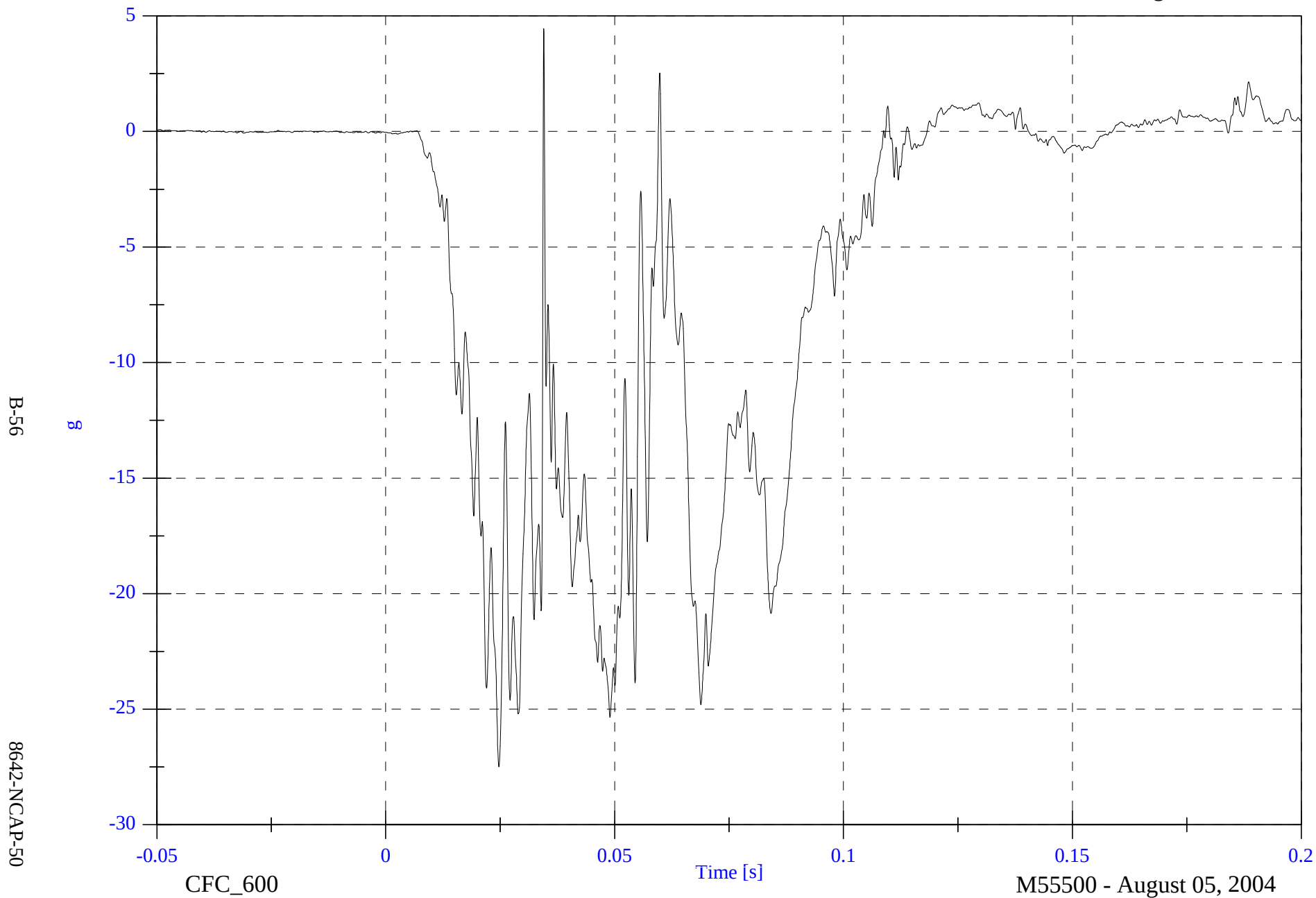


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Left Foot Aft z

Max: 4.4 [g] at 0.034 [s]

Min: -27.5 [g] at 0.025 [s]

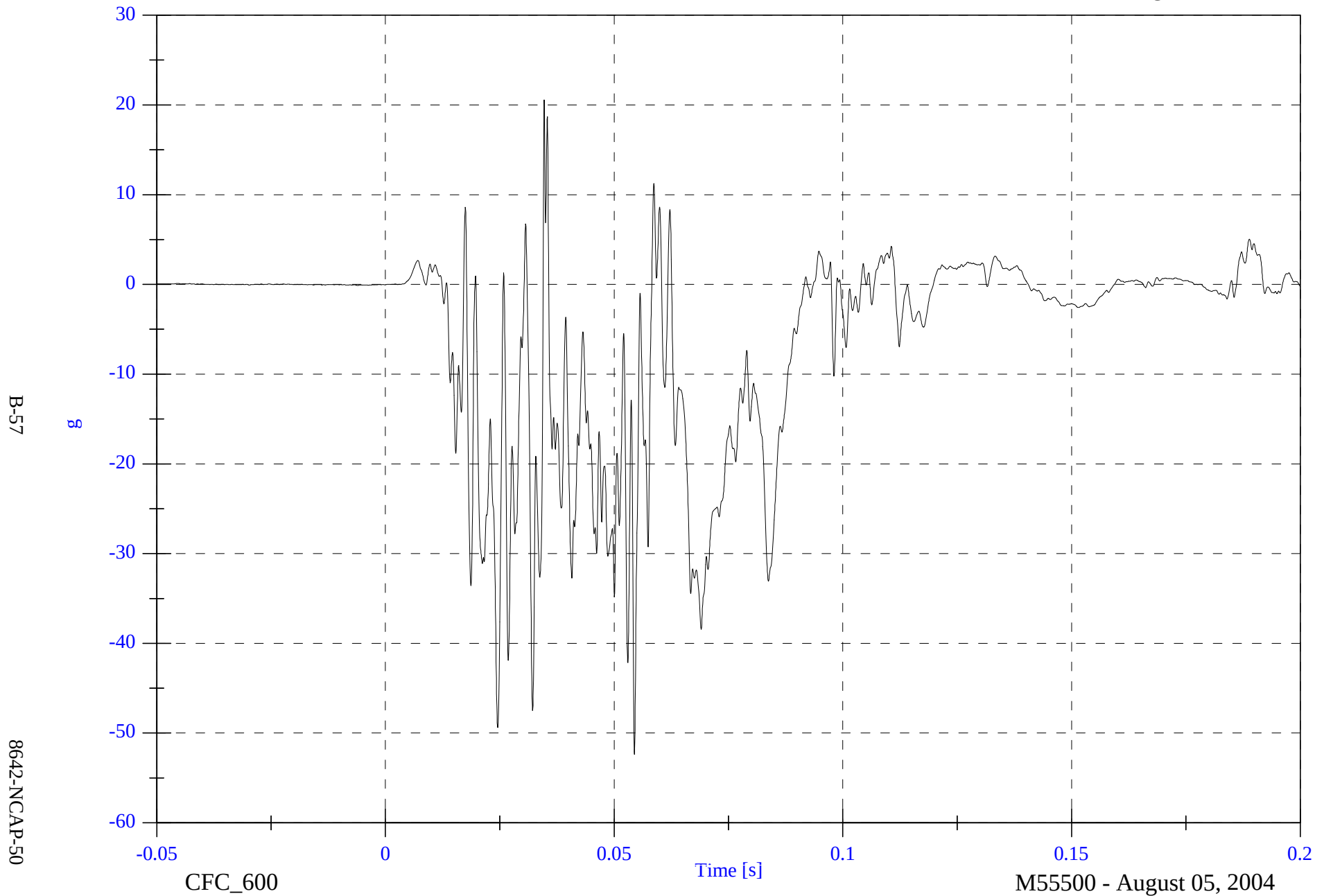


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Left Foot Fore z

Max: 20.6 [g] at 0.035 [s]

Min: -52.4 [g] at 0.054 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

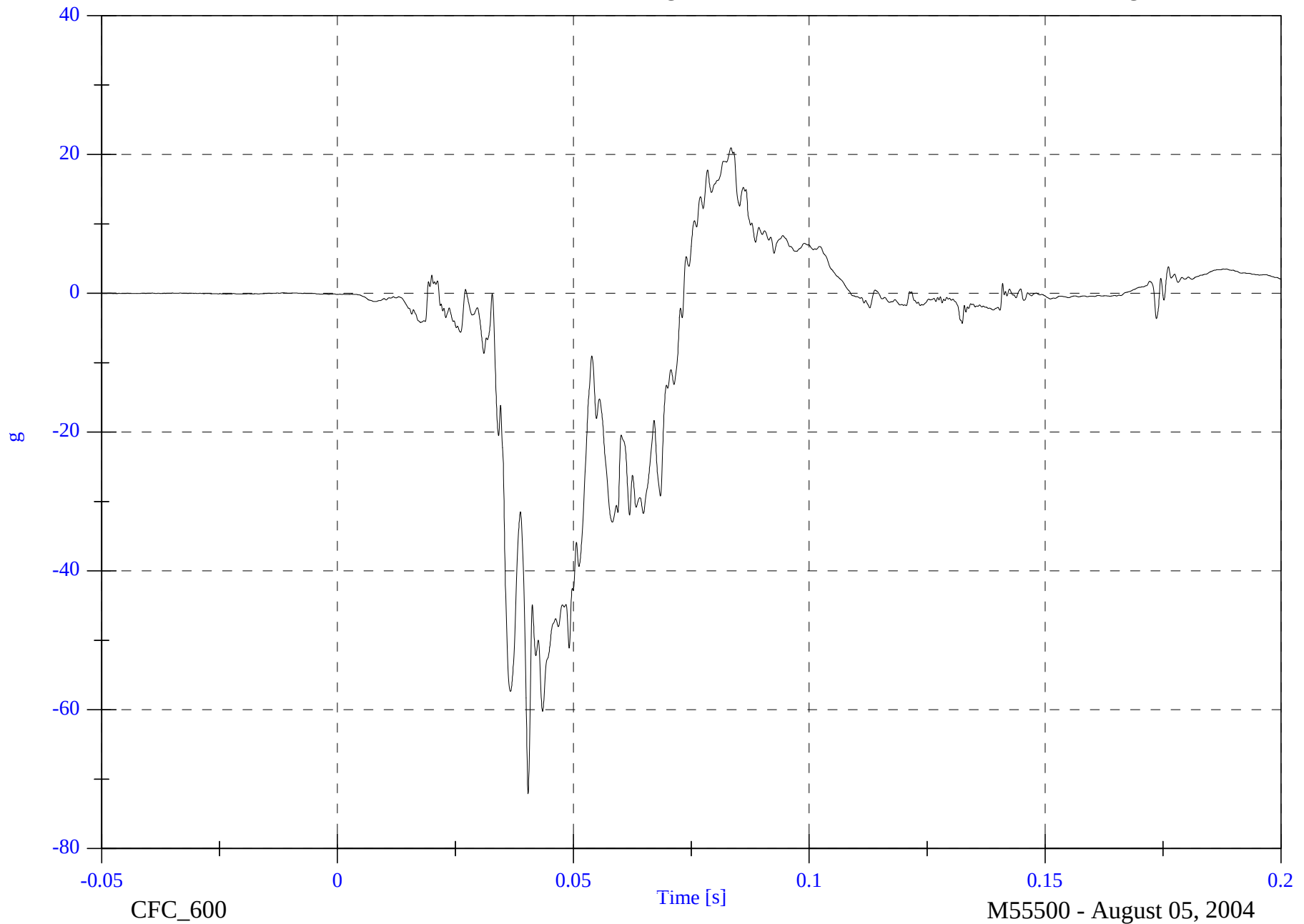
V1P1 Right Foot Aft x

Max: 21.0 [g] at 0.083 [s]

Min: -72.1 [g] at 0.040 [s]

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2004 NCAP TEST 14 - 2005 Subaru Outback

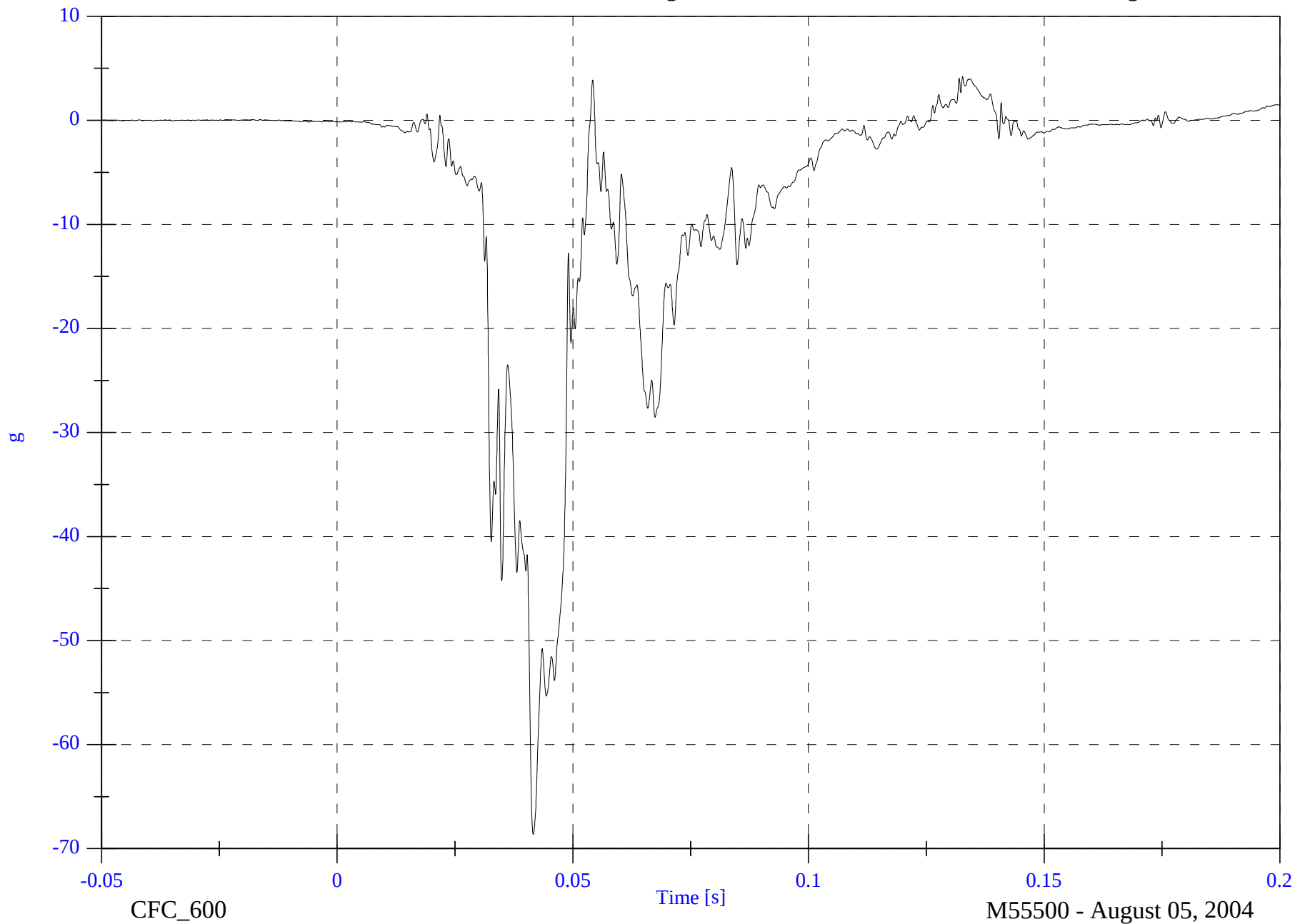
V1P1 Right Foot Aft z

Max: 4.2 [g] at 0.133 [s]

Min: -68.6 [g] at 0.042 [s]

B-59

8642-NCAP-50

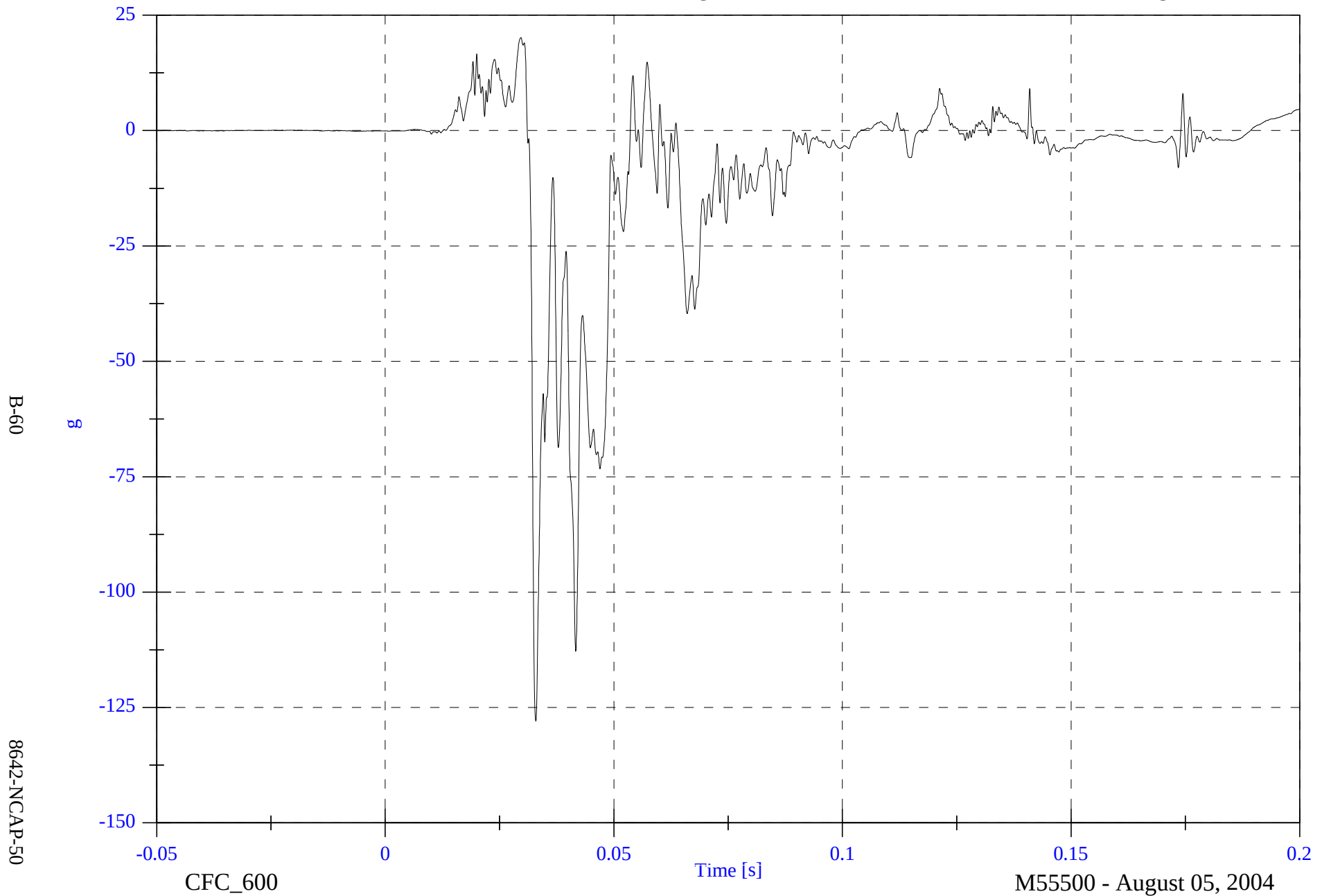


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Right Foot Fore z

Max: 20.1 [g] at 0.030 [s]

Min: -128.0 [g] at 0.033 [s]

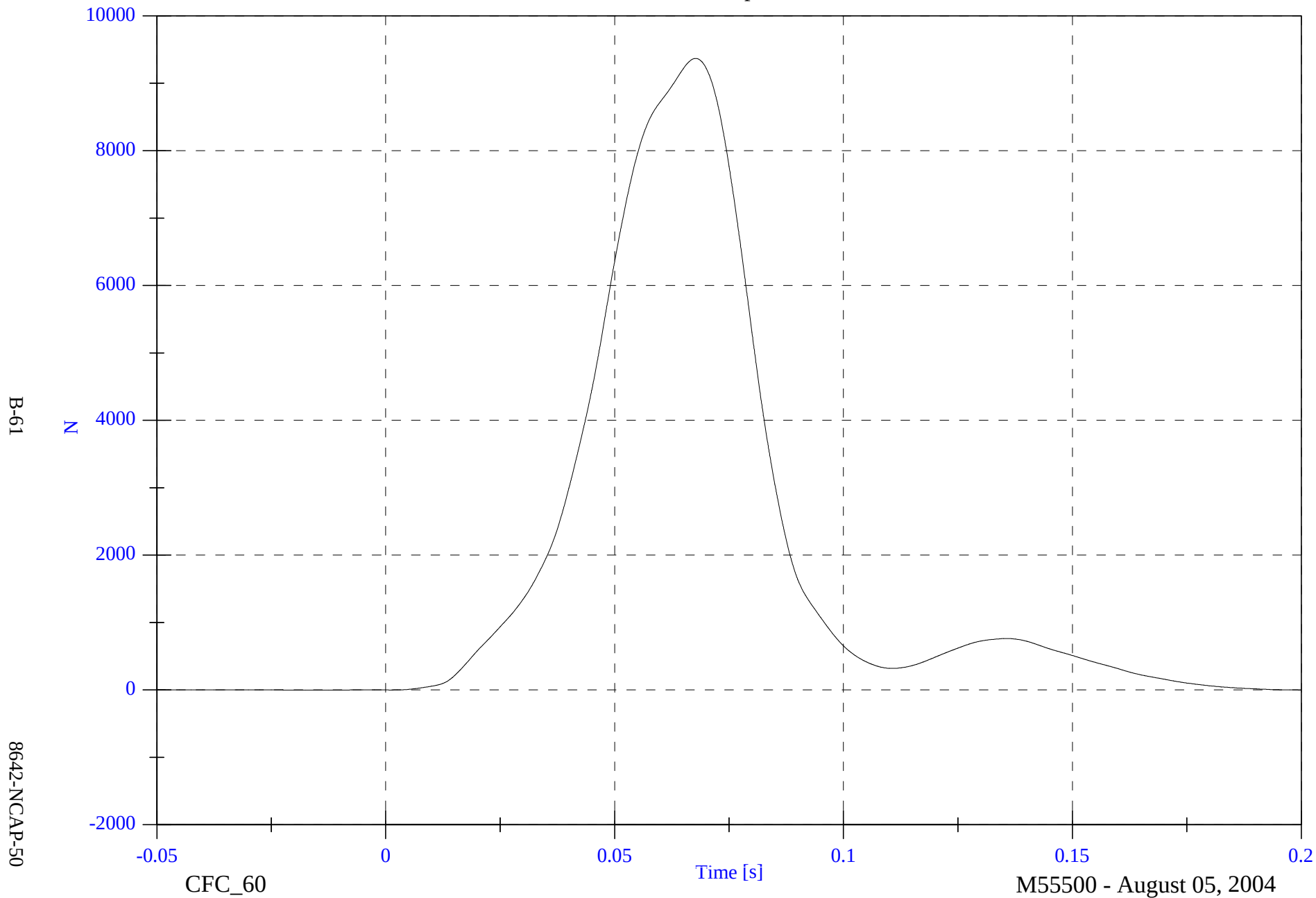


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Lap Belt

Max: 9368.9 [N] at 0.068 [s]

Min: -2.0 [N] at -0.018 [s]

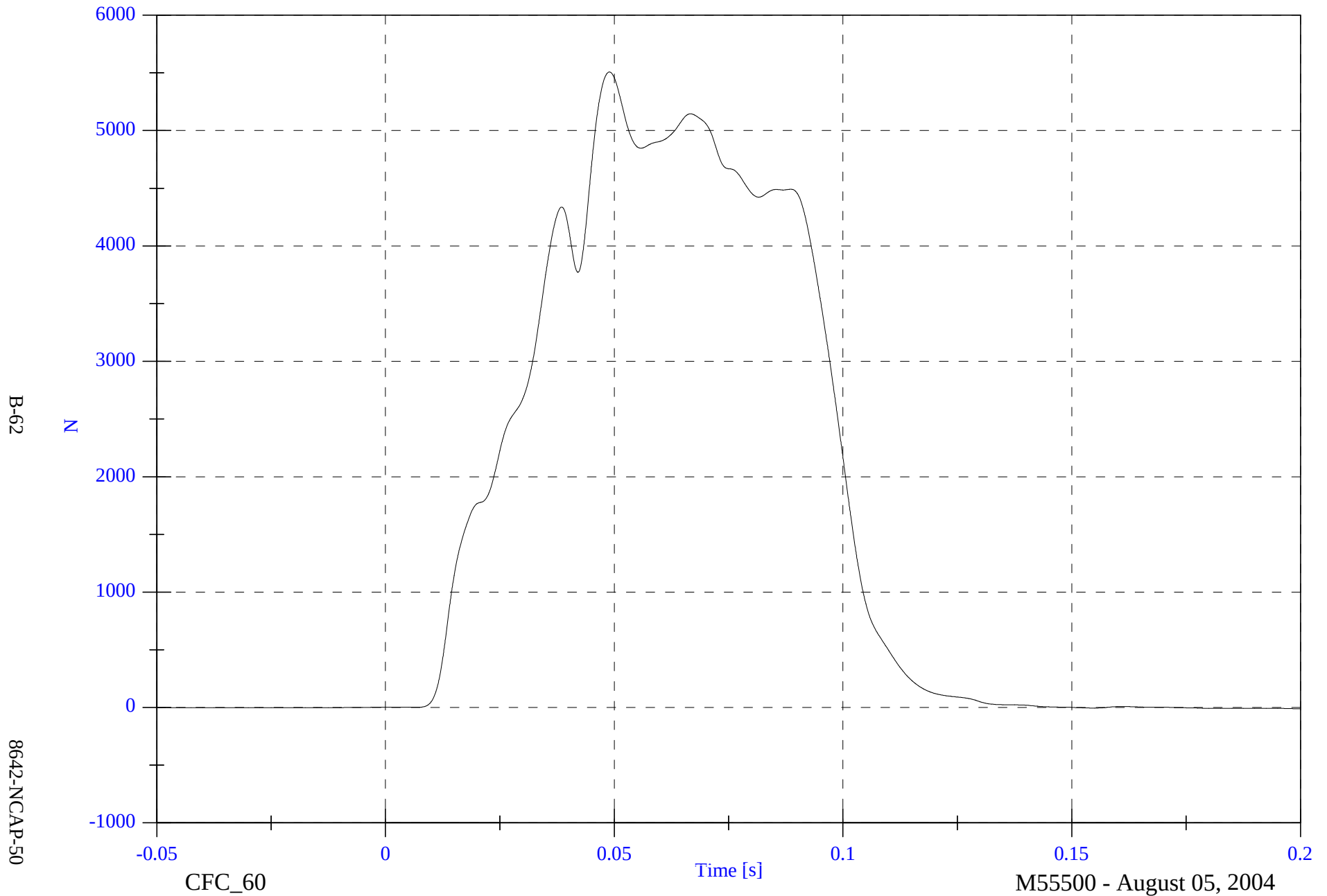


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P1 Torso Belt

Max: 5507.9 [N] at 0.049 [s]

Min: -11.0 [N] at 0.200 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head 9 Array X Arm Ay

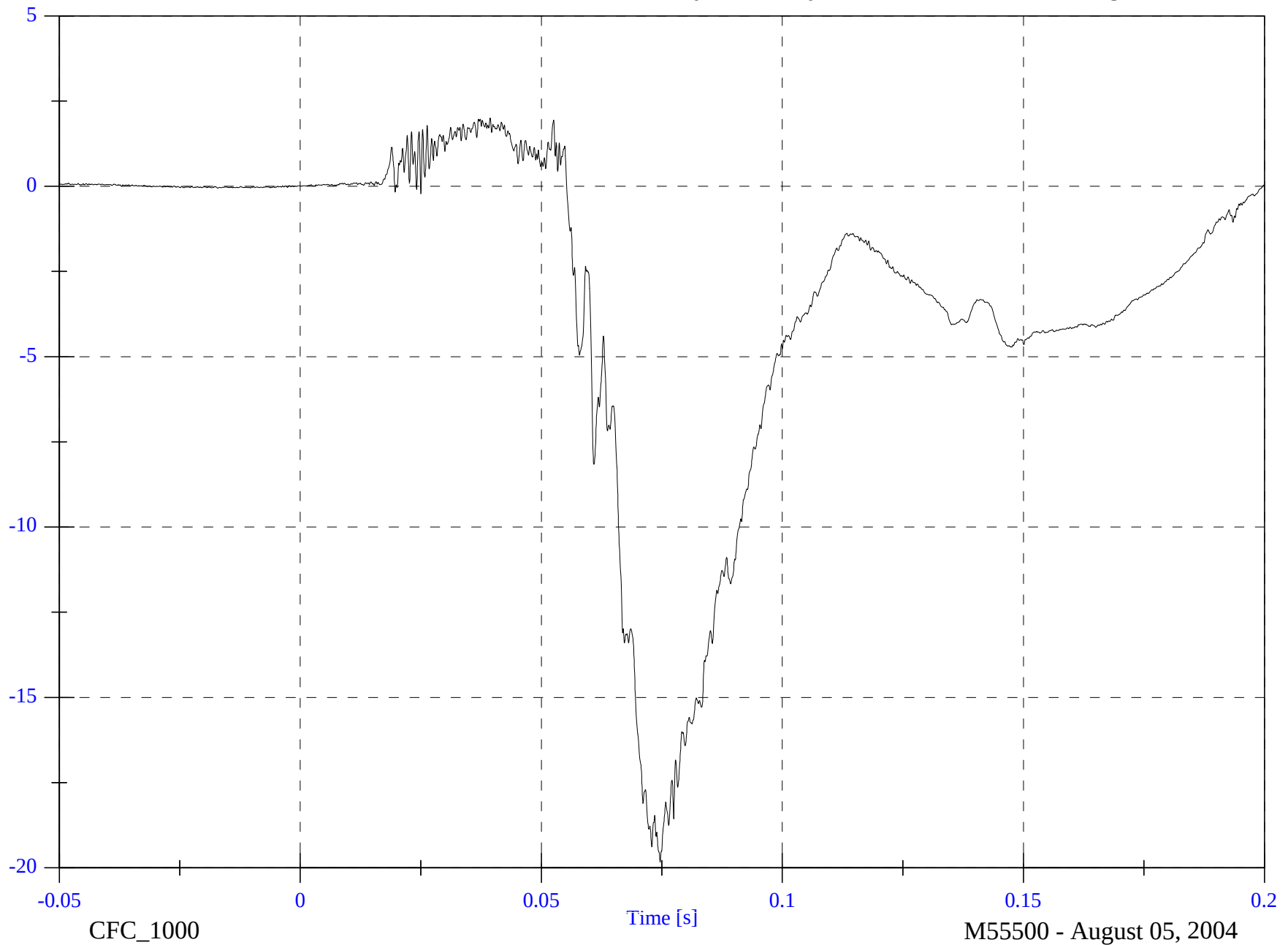
Max: 2.0 [g] at 0.039 [s]

Min: -19.8 [g] at 0.075 [s]

B-63

8642-NCAP-50

g

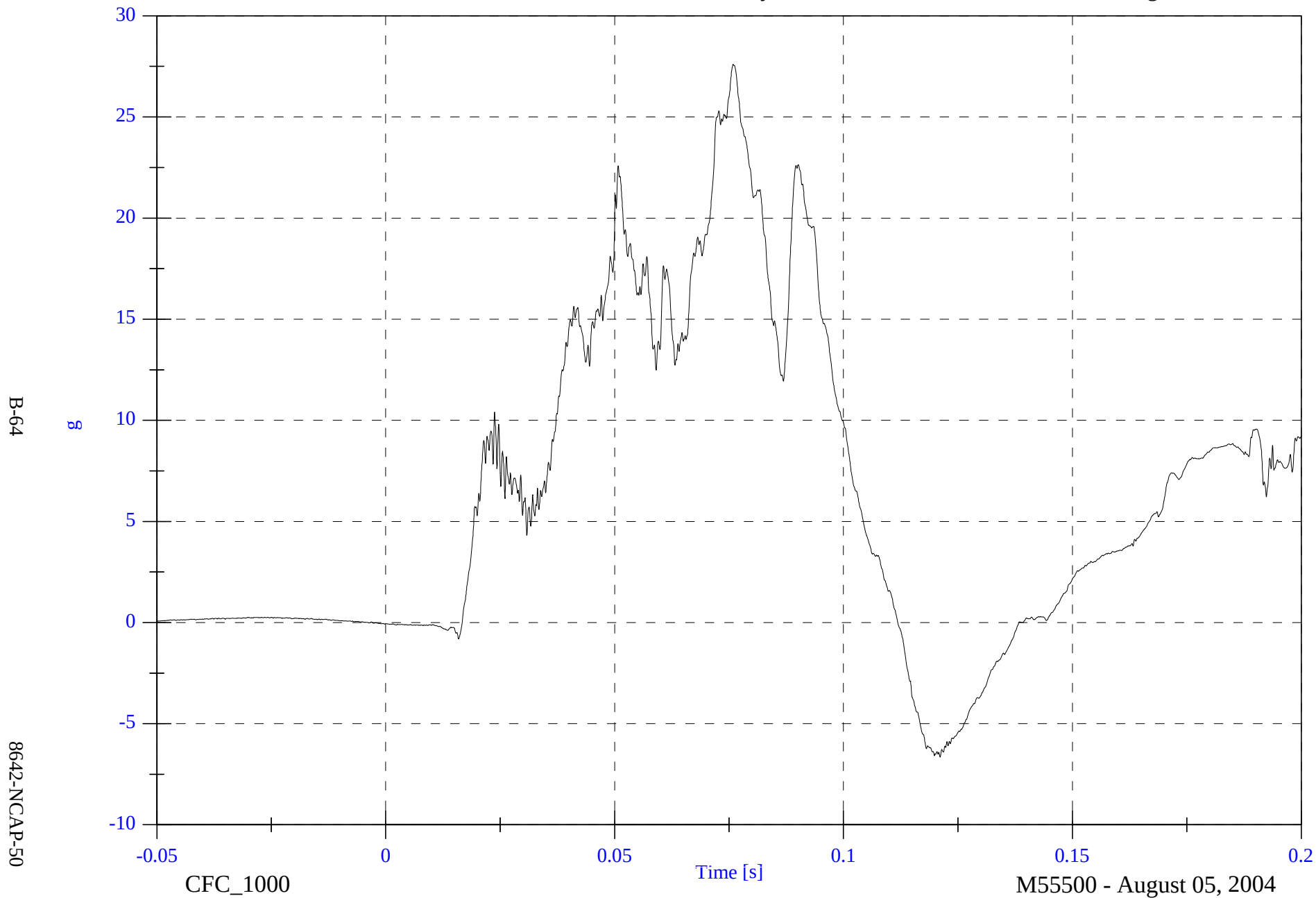


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head 9 Array X Arm Az

Max: 27.6 [g] at 0.076 [s]

Min: -6.7 [g] at 0.121 [s]

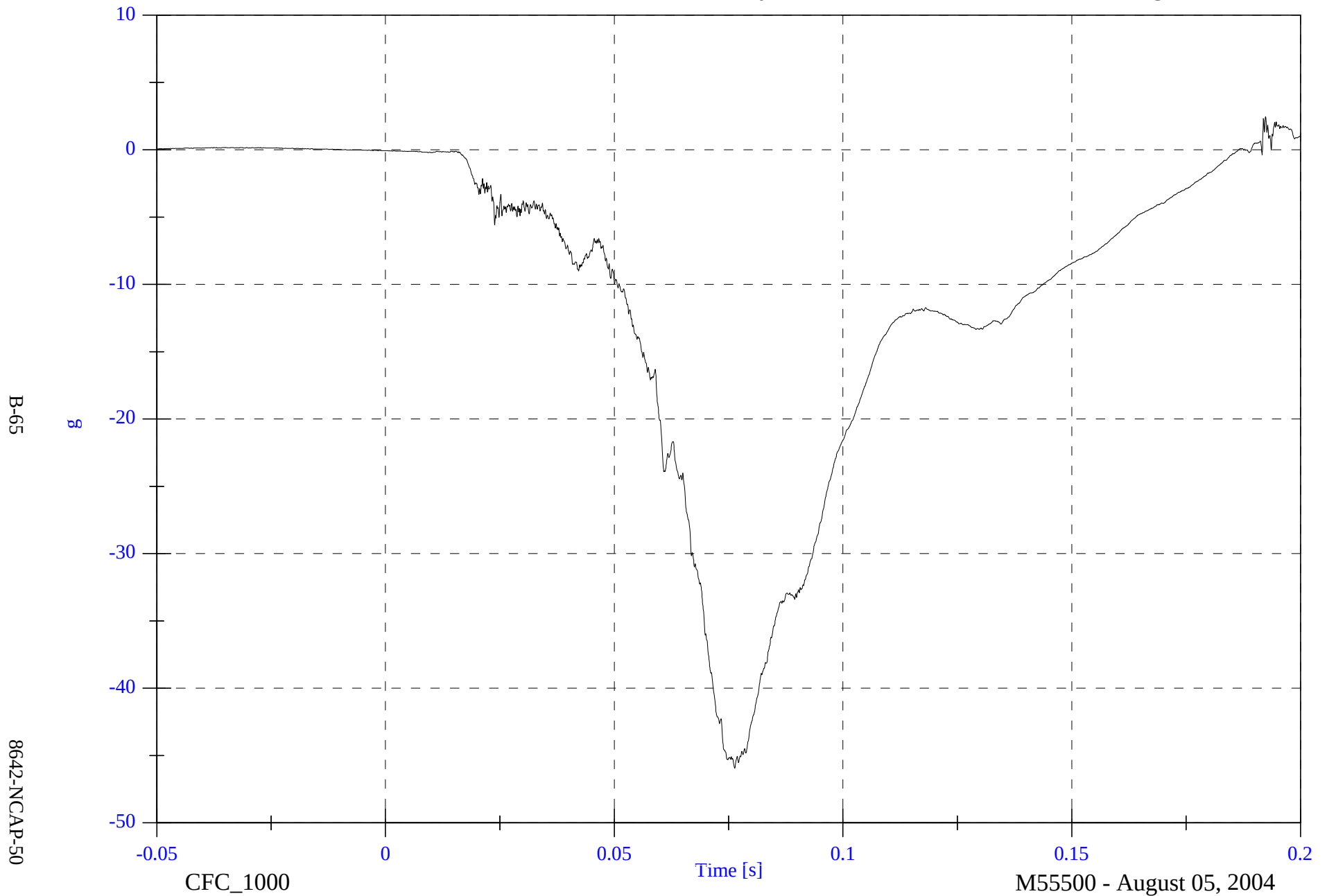


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head 9 Array Y Arm Ax

Max: 2.5 [g] at 0.192 [s]

Min: -45.9 [g] at 0.076 [s]

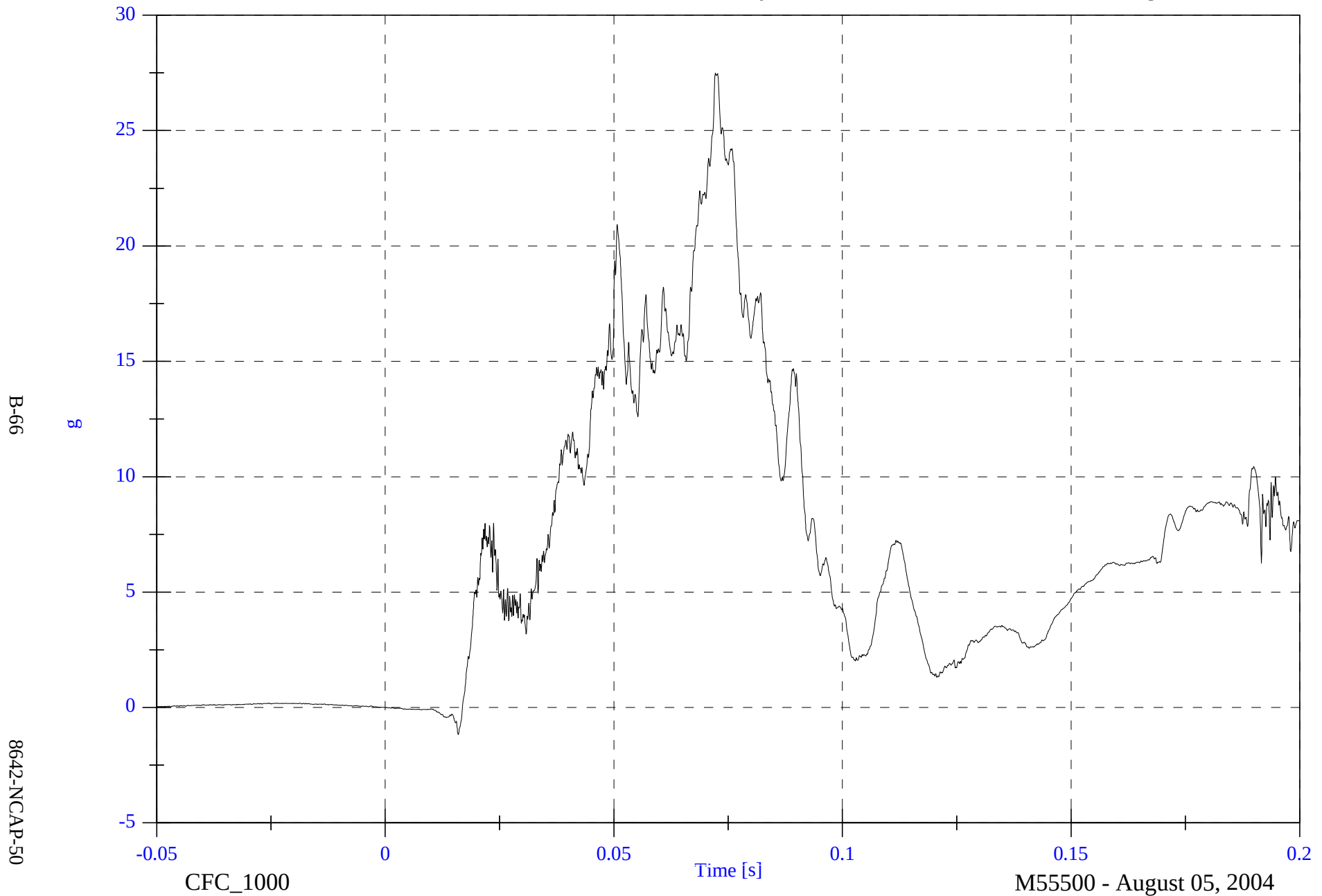


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head 9 Array Y Arm Az

Max: 27.5 [g] at 0.072 [s]

Min: -1.2 [g] at 0.016 [s]

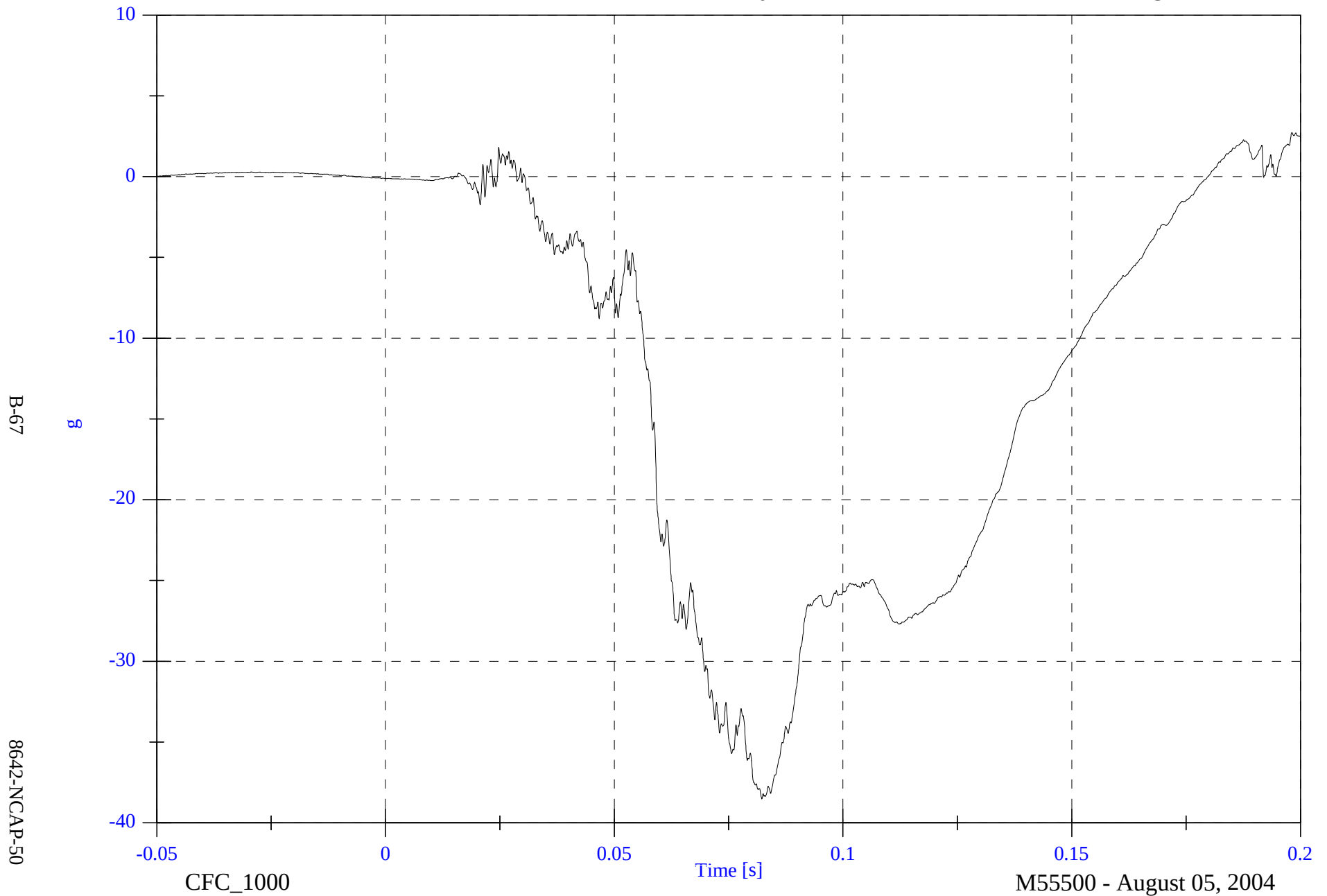


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head 9 Array Z Arm Ax

Max: 2.7 [g] at 0.198 [s]

Min: -38.5 [g] at 0.082 [s]

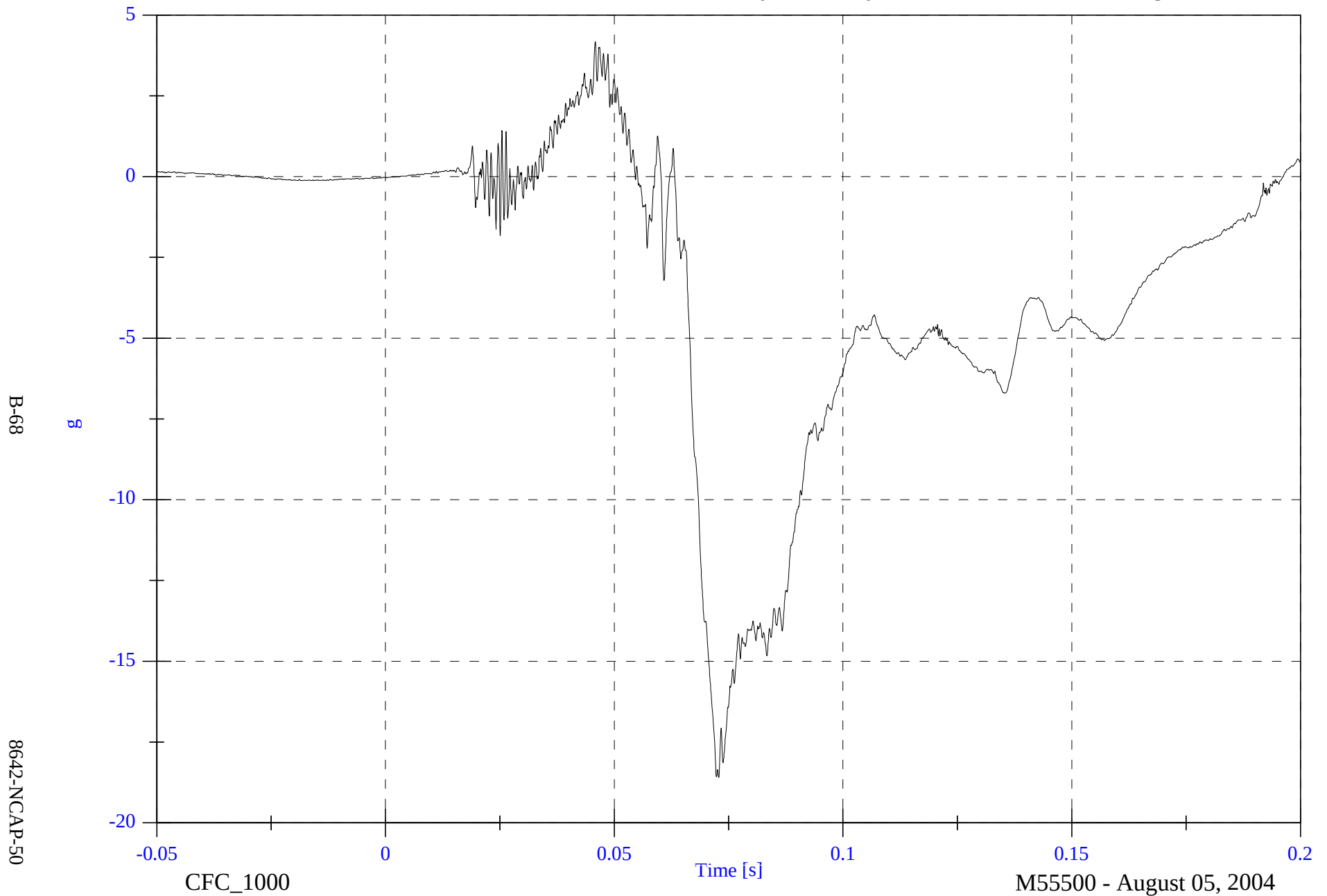


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head 9 Array Z Arm Ay

Max: 4.2 [g] at 0.046 [s]

Min: -18.6 [g] at 0.073 [s]

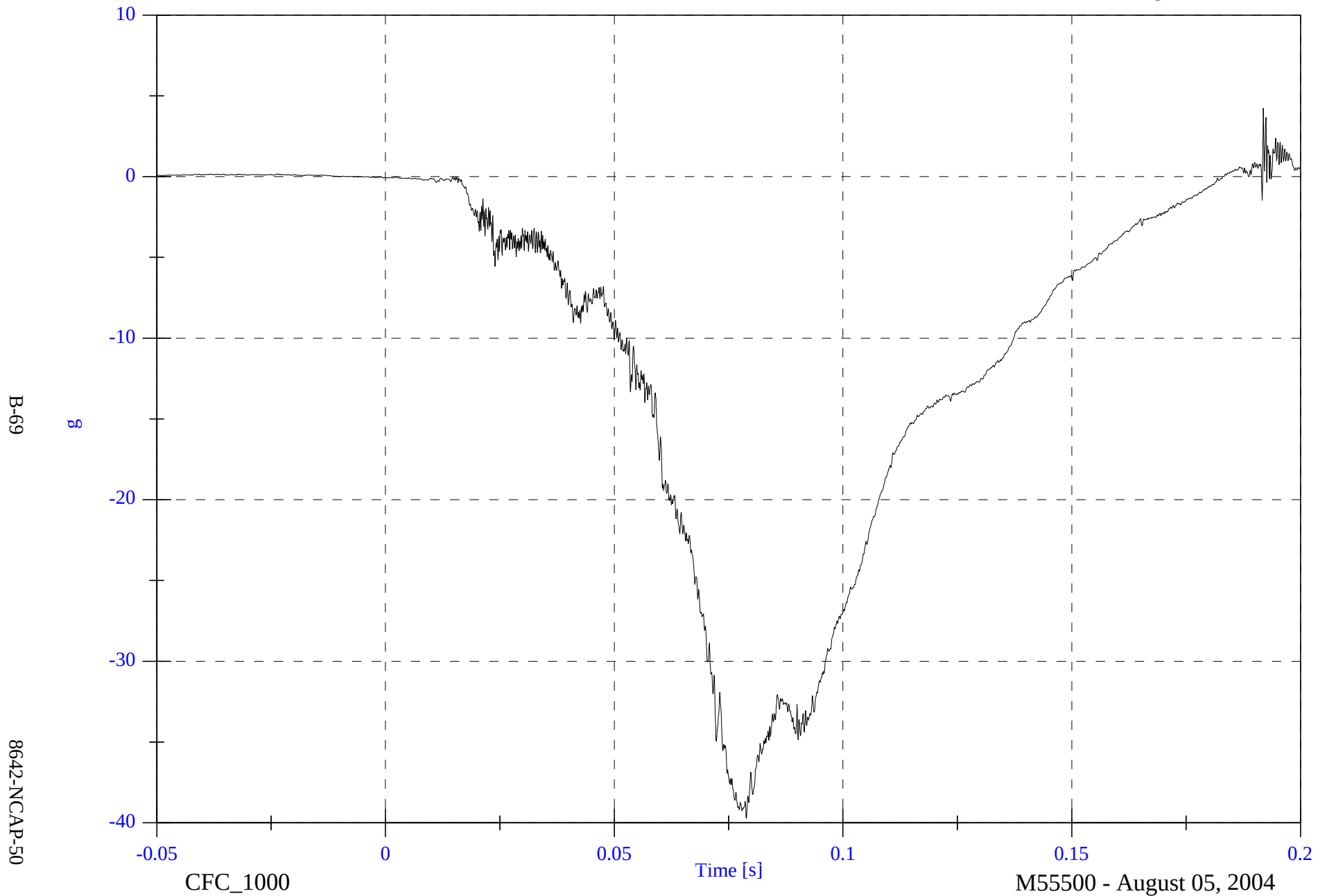


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head CG x

Max: 4.2 [g] at 0.192 [s]

Min: -39.7 [g] at 0.079 [s]

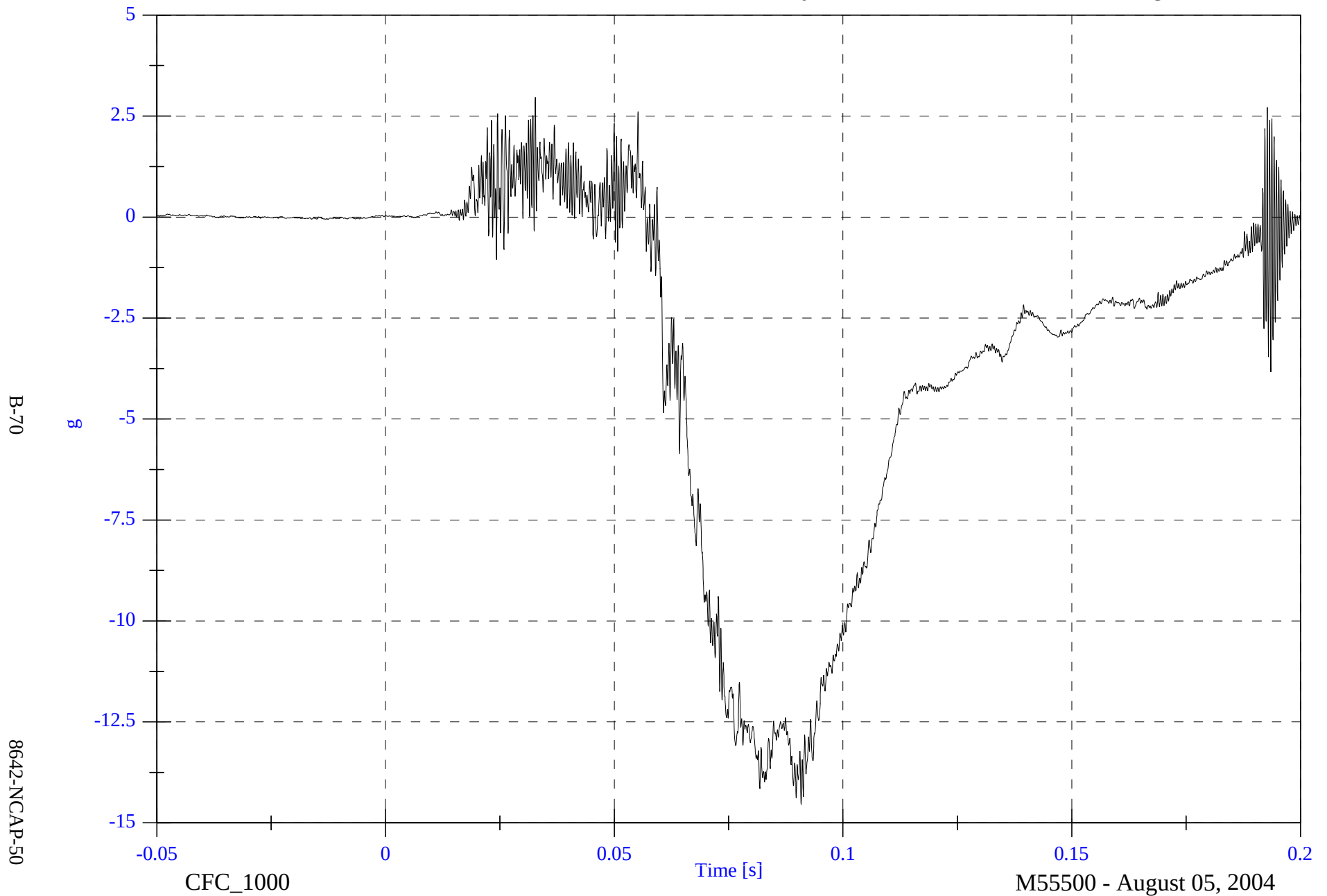


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head CG y

Max: 3.0 [g] at 0.033 [s]

Min: -14.5 [g] at 0.091 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

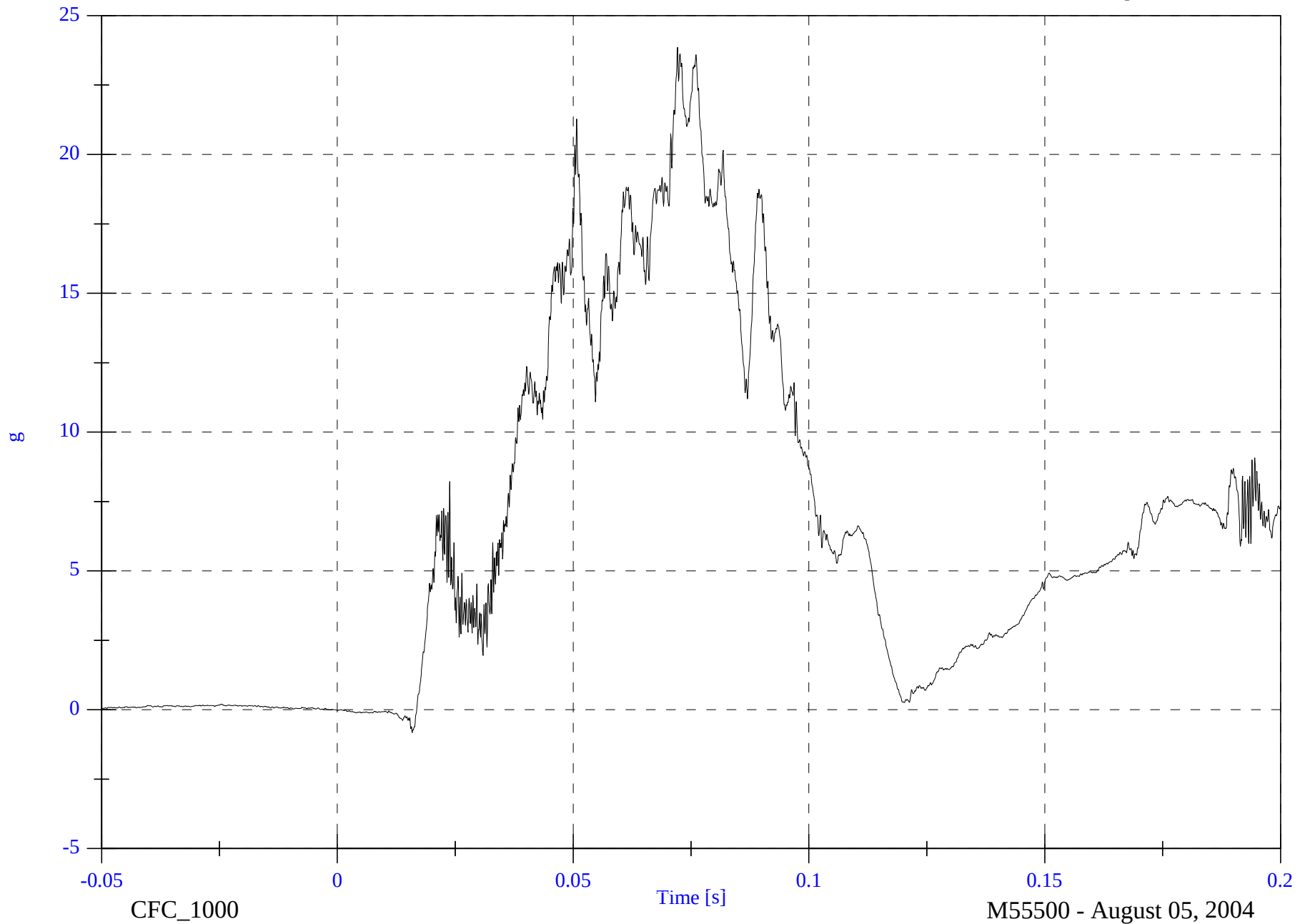
V1P2 Head CG z

Max: 23.9 [g] at 0.072 [s]

Min: -0.8 [g] at 0.016 [s]

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8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

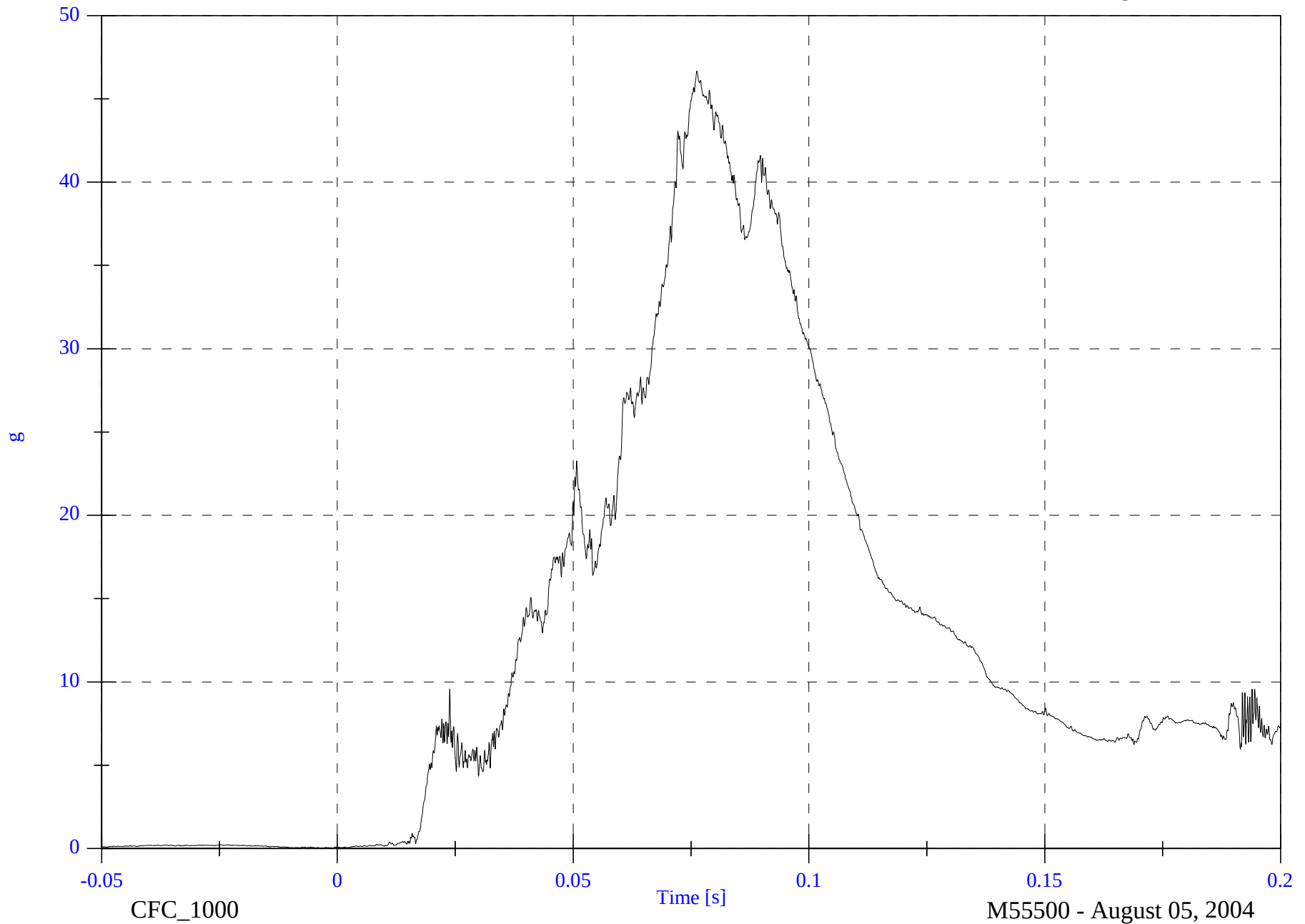
V1P2 Head CG Resultant

Max: 46.7 [g] at 0.076 [s]

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

B-72

8642-NCAP-50

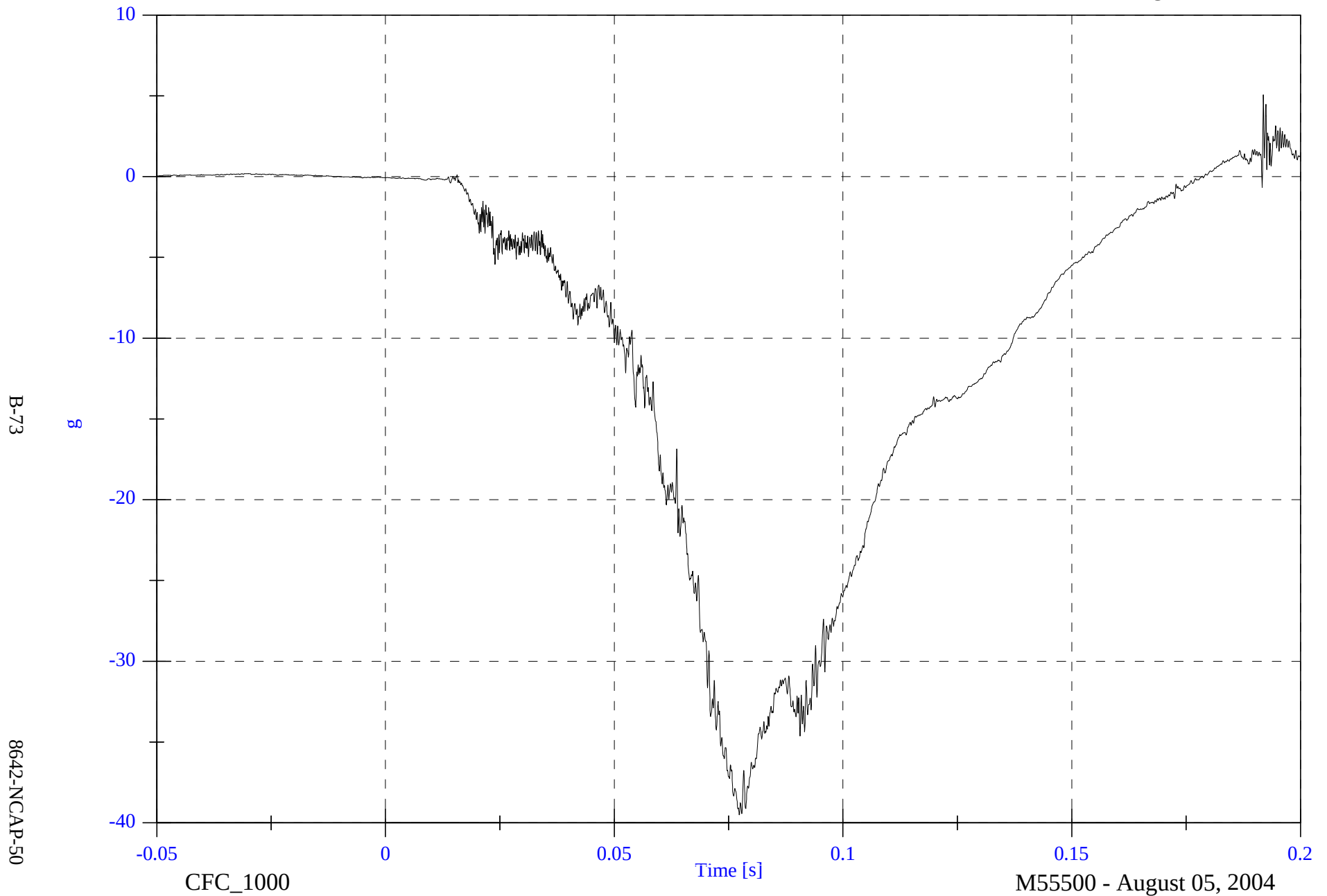


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head CG Red x

Max: 5.1 [g] at 0.192 [s]

Min: -39.5 [g] at 0.077 [s]

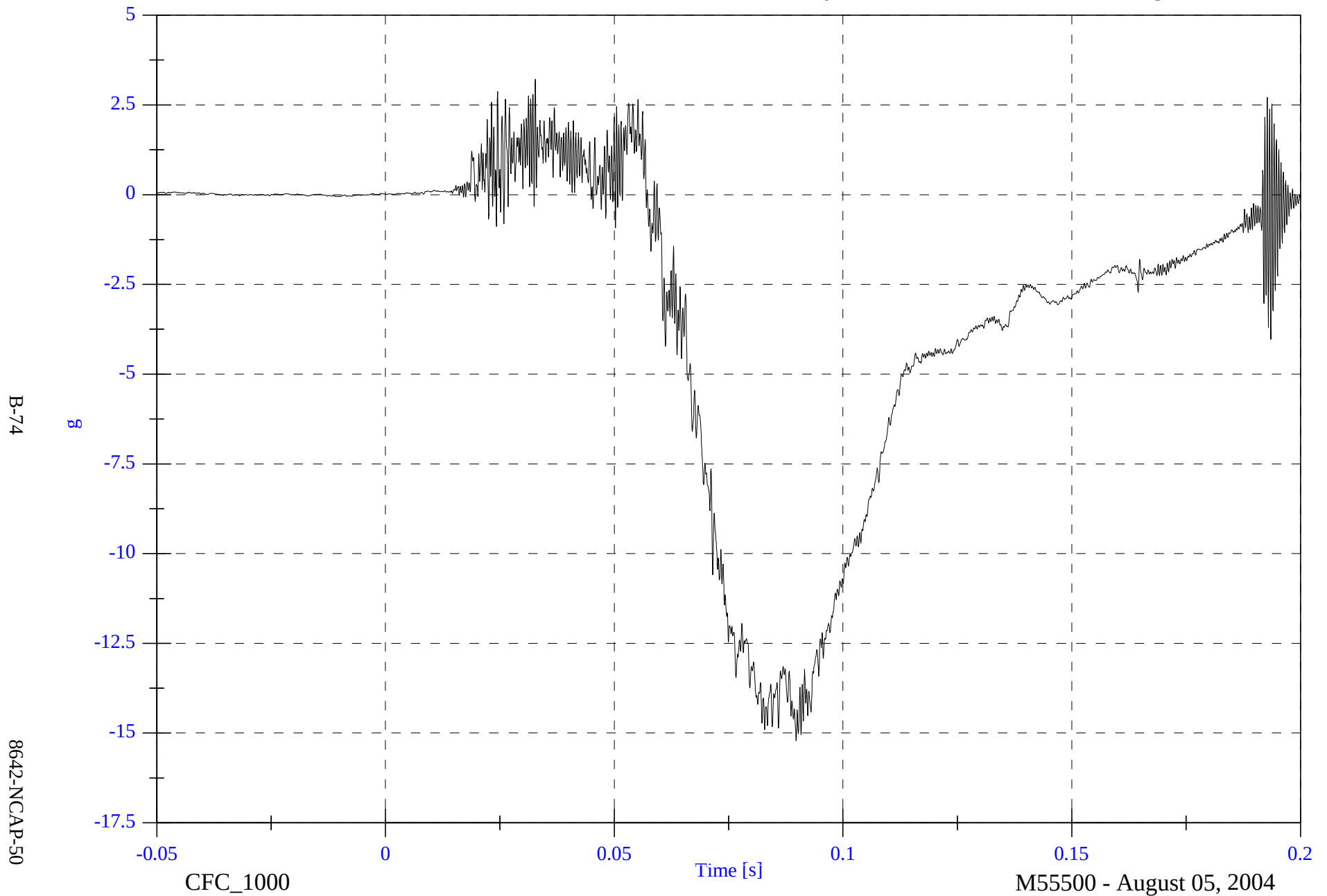


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head CG Red y

Max: 3.2 [g] at 0.033 [s]

Min: -15.2 [g] at 0.090 [s]

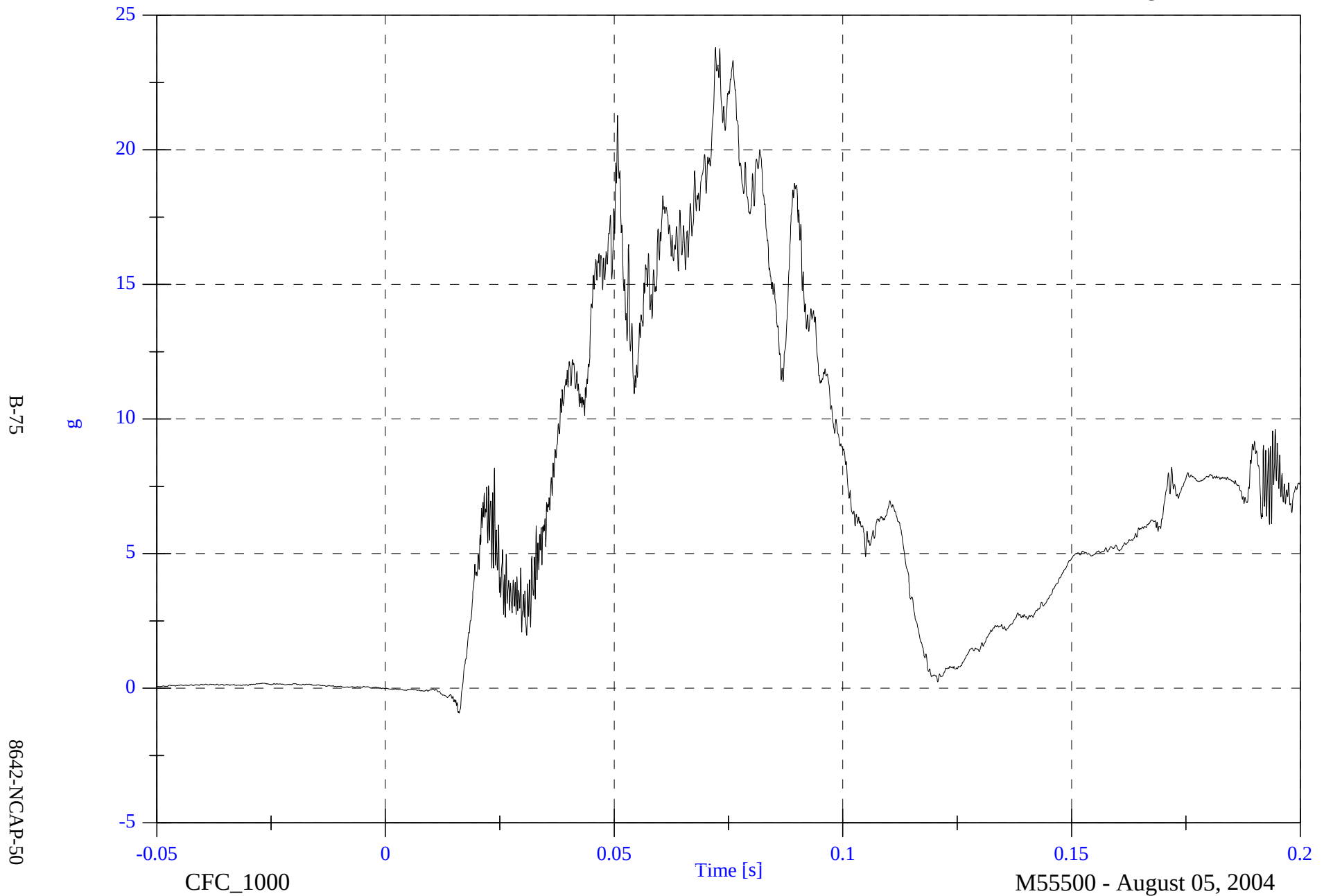


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Head CG Red z

Max: 23.8 [g] at 0.072 [s]

Min: -0.9 [g] at 0.016 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

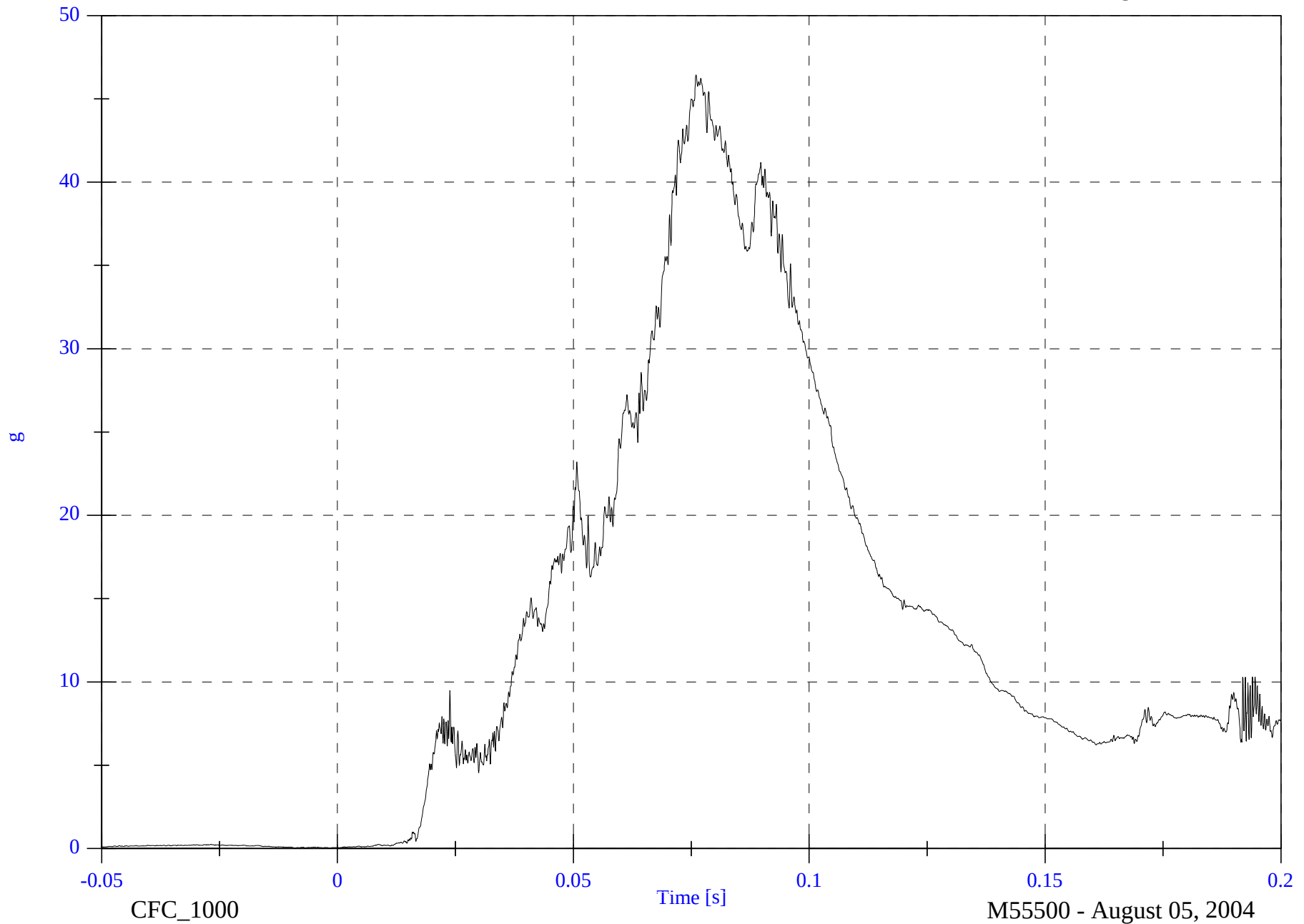
V1P2 Head CG Red Resultant

Max: 46.4 [g] at 0.076 [s]

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

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8642-NCAP-50

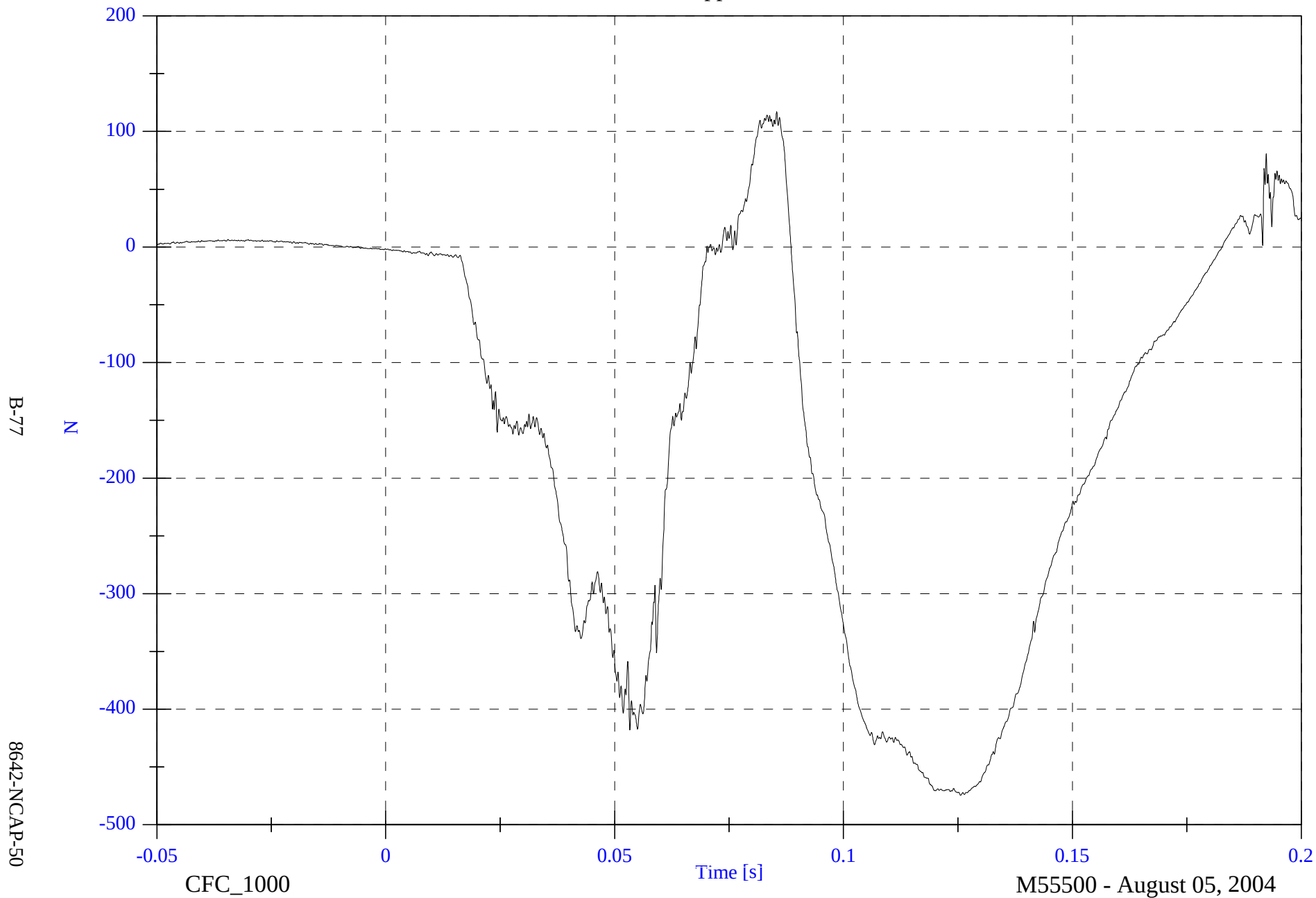


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Upper Neck Fx

Max: 117.1 [N] at 0.085 [s]

Min: -474.5 [N] at 0.126 [s]

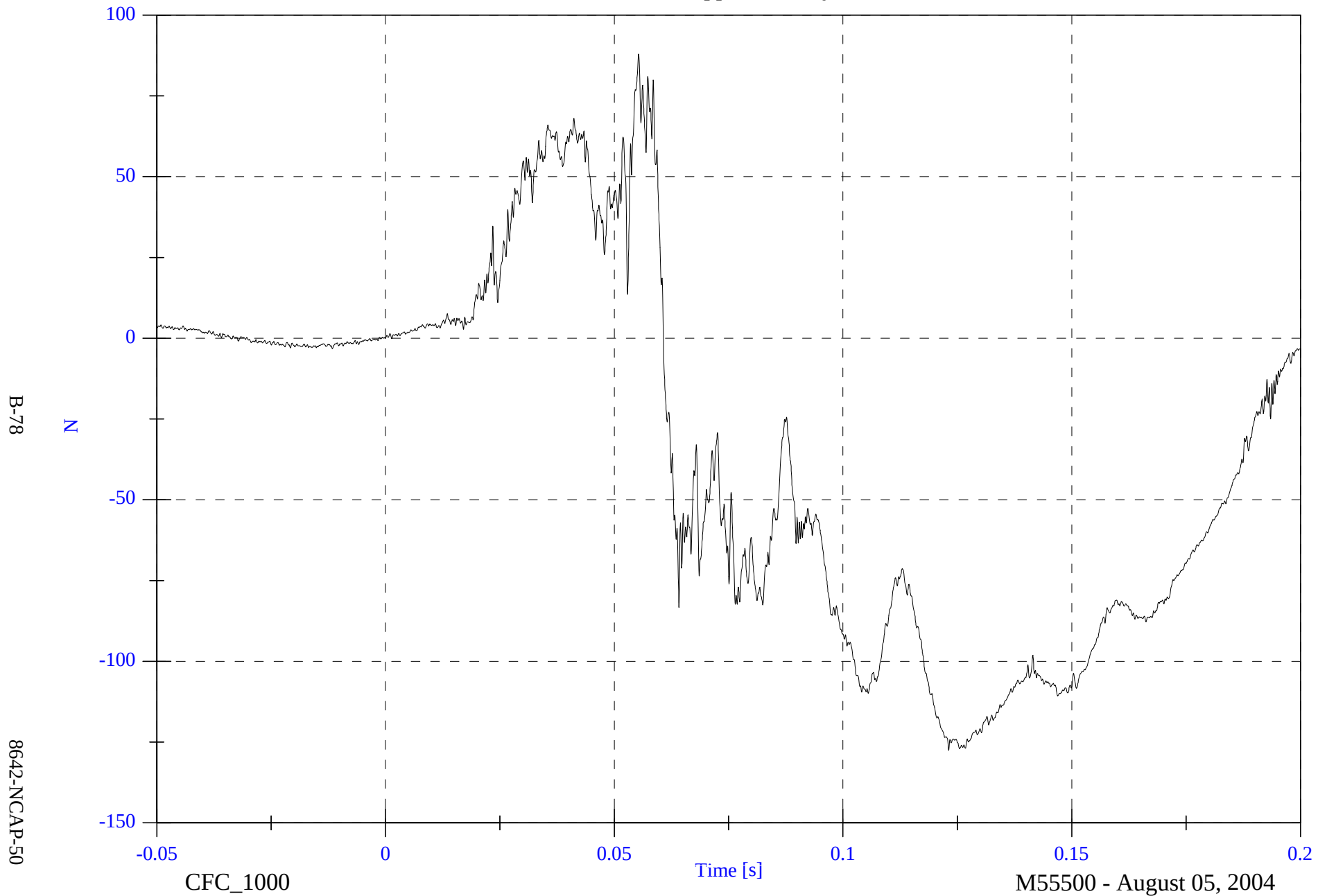


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Upper Neck Fy

Max: 88.0 [N] at 0.055 [s]

Min: -127.6 [N] at 0.123 [s]

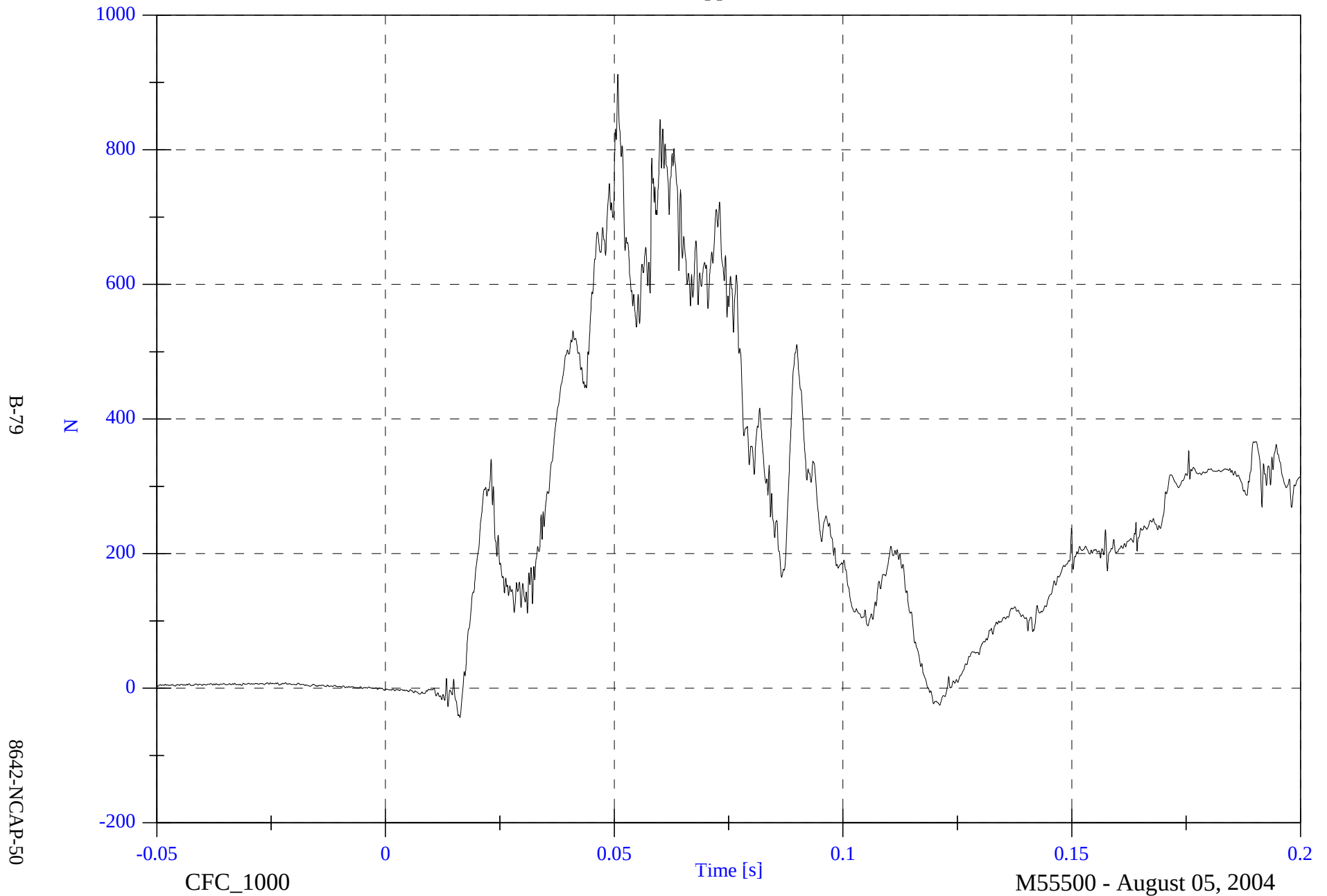


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Upper Neck Fz

Max: 911.9 [N] at 0.051 [s]

Min: -43.3 [N] at 0.016 [s]

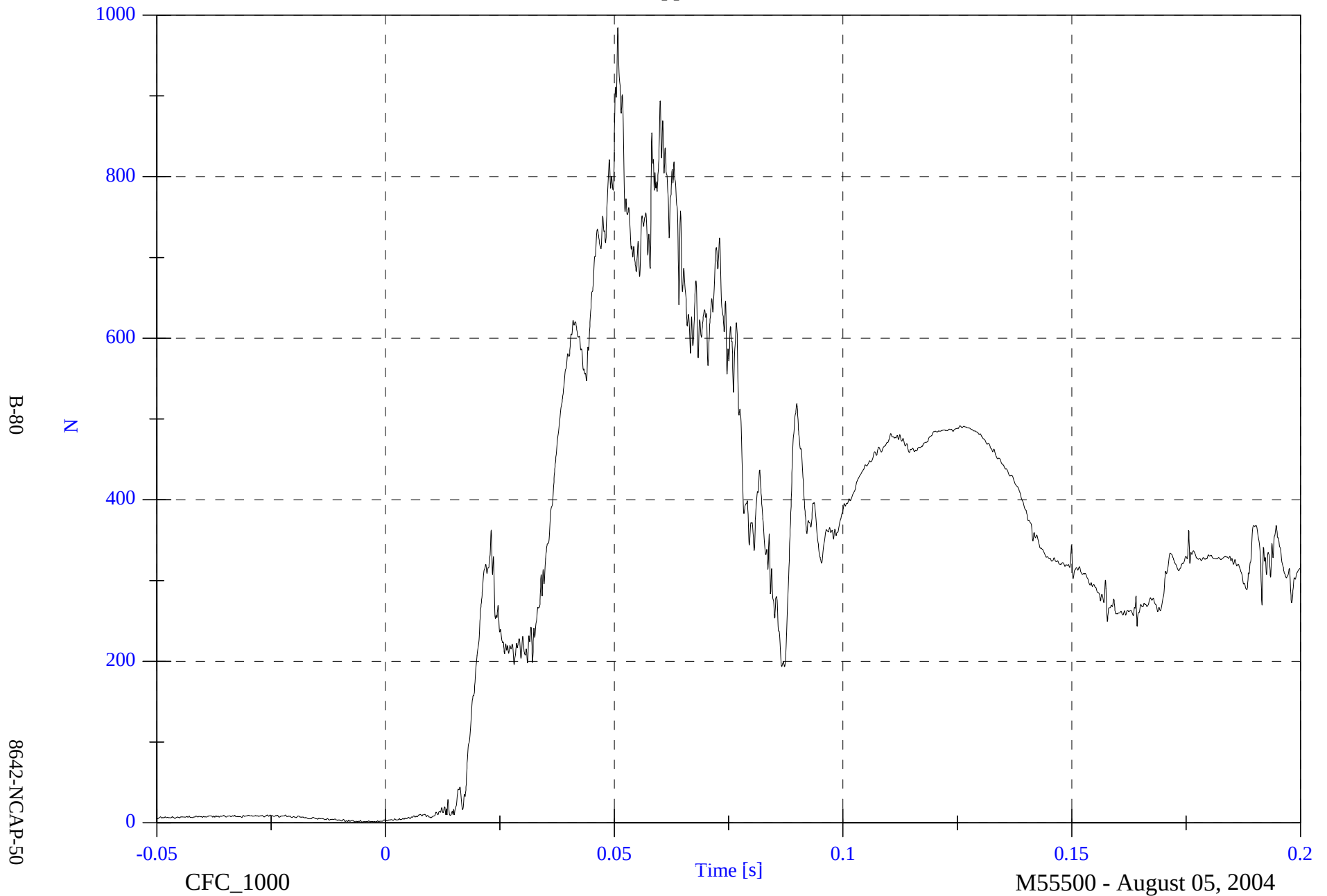


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Upper Neck F Resultant

Max: 984.6 [N] at 0.051 [s]

Min: 1.0 [N] at -0.005 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

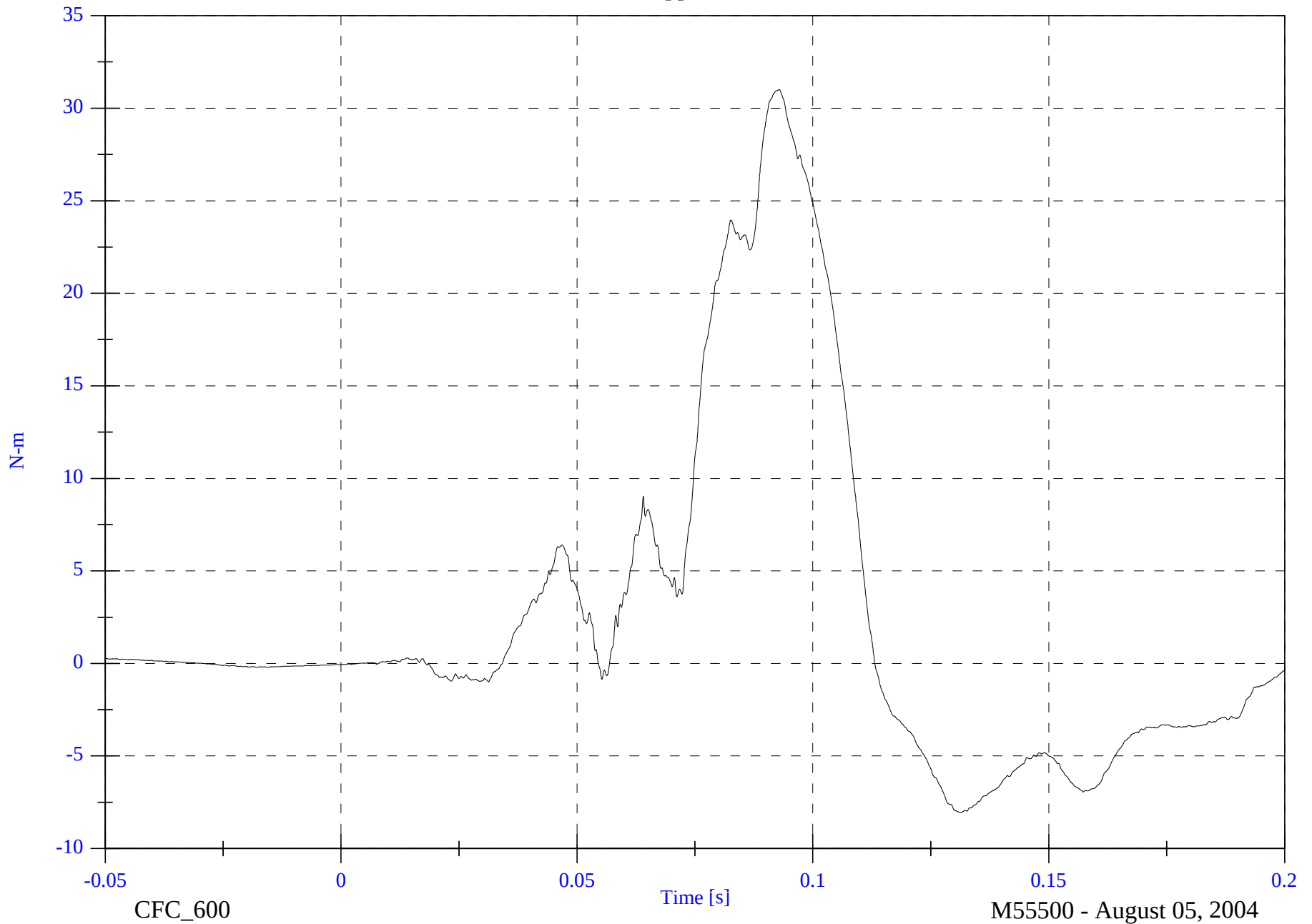
V1P2 Upper Neck Mx

Max: 31.0 [N-m] at 0.093 [s]

Min: -8.1 [N-m] at 0.131 [s]

B-81

8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

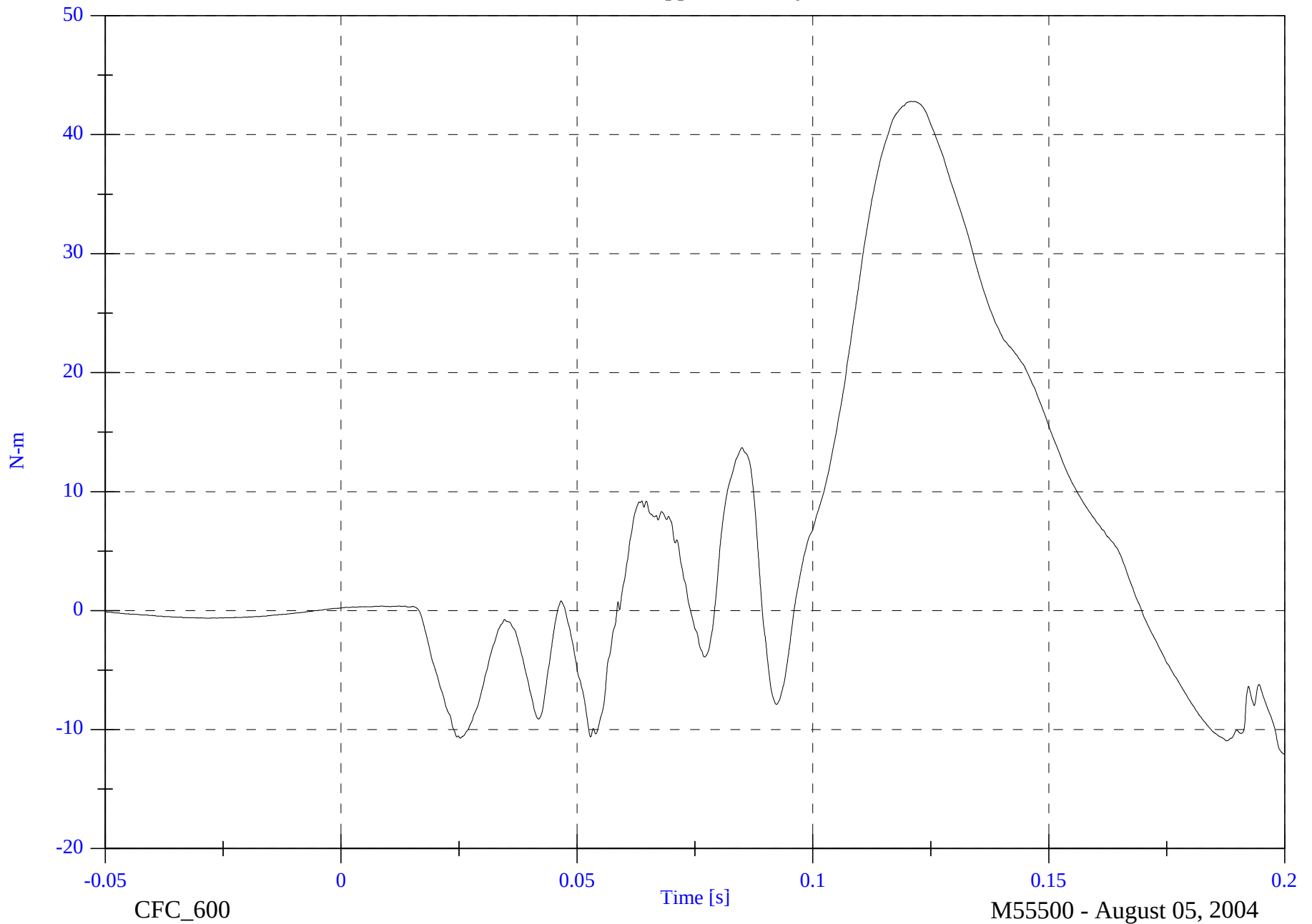
V1P2 Upper Neck My

Max: 42.8 [N-m] at 0.121 [s]

Min: -12.1 [N-m] at 0.200 [s]

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8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

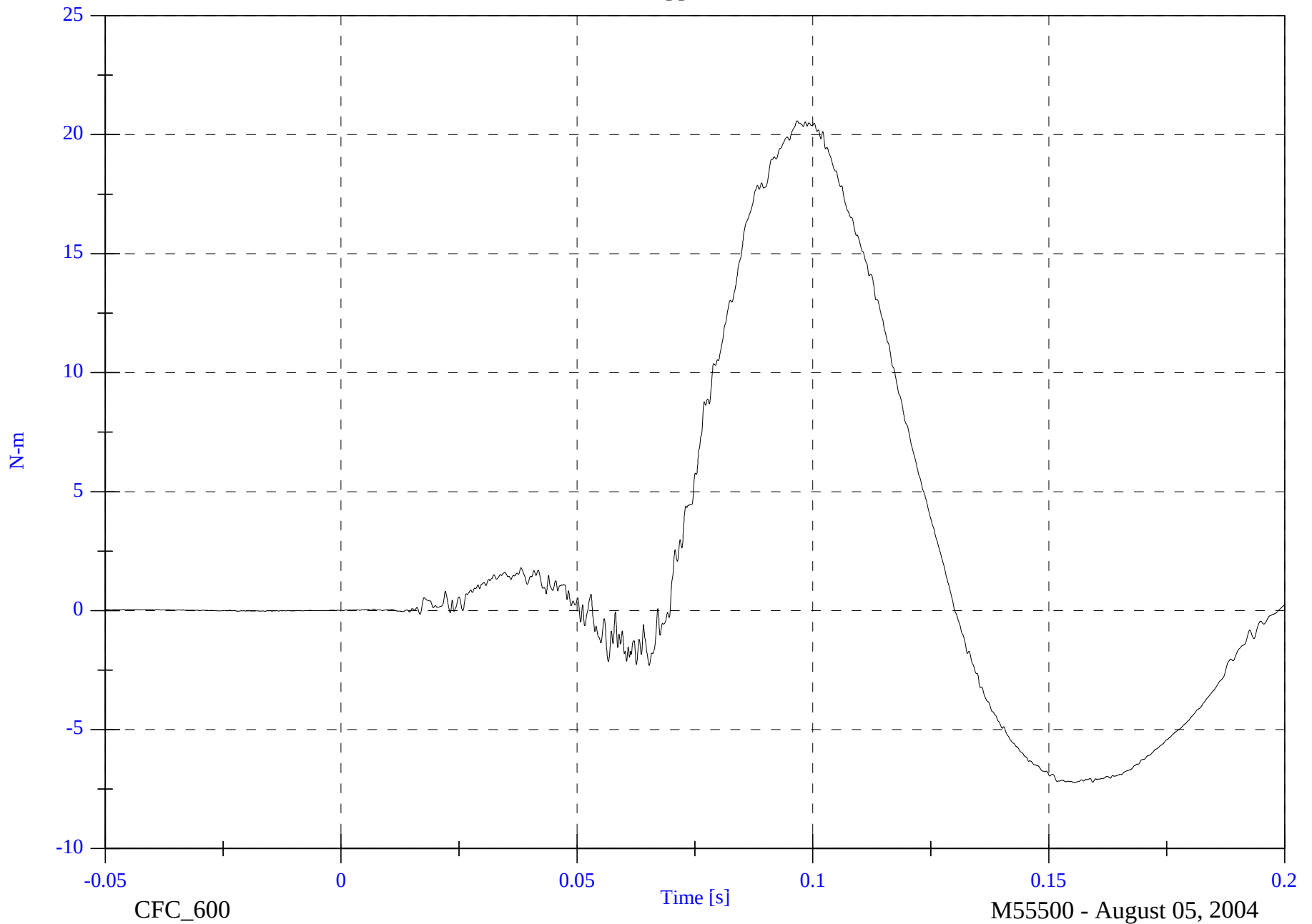
V1P2 Upper Neck Mz

Max: 20.6 [N-m] at 0.097 [s]

Min: -7.2 [N-m] at 0.155 [s]

B-83

8642-NCAP-50

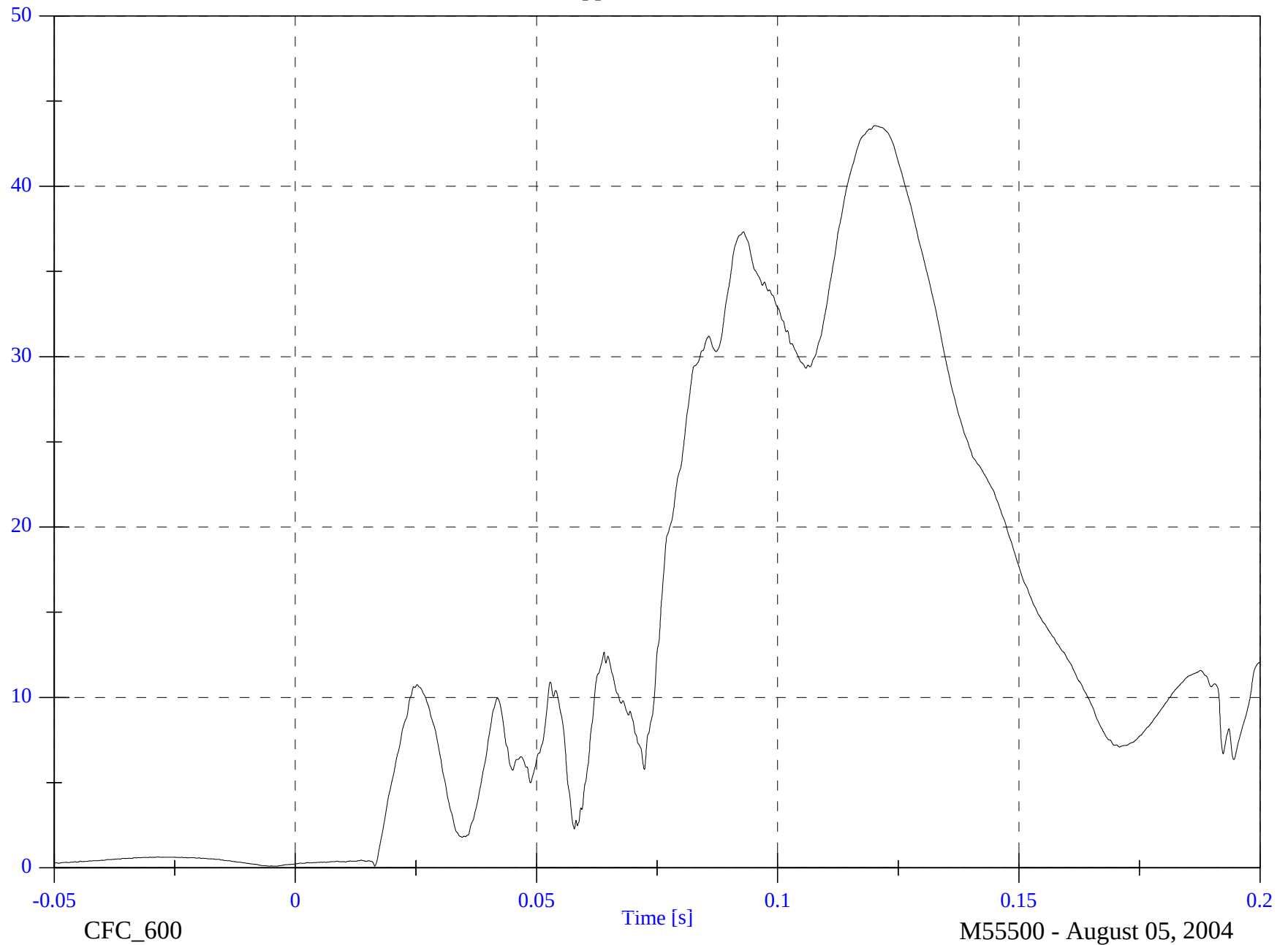


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Upper Neck M Resultant

Max: 43.6 [N-m] at 0.120 [s]

Min: 0.1 [N-m] at -0.005 [s]



B-84

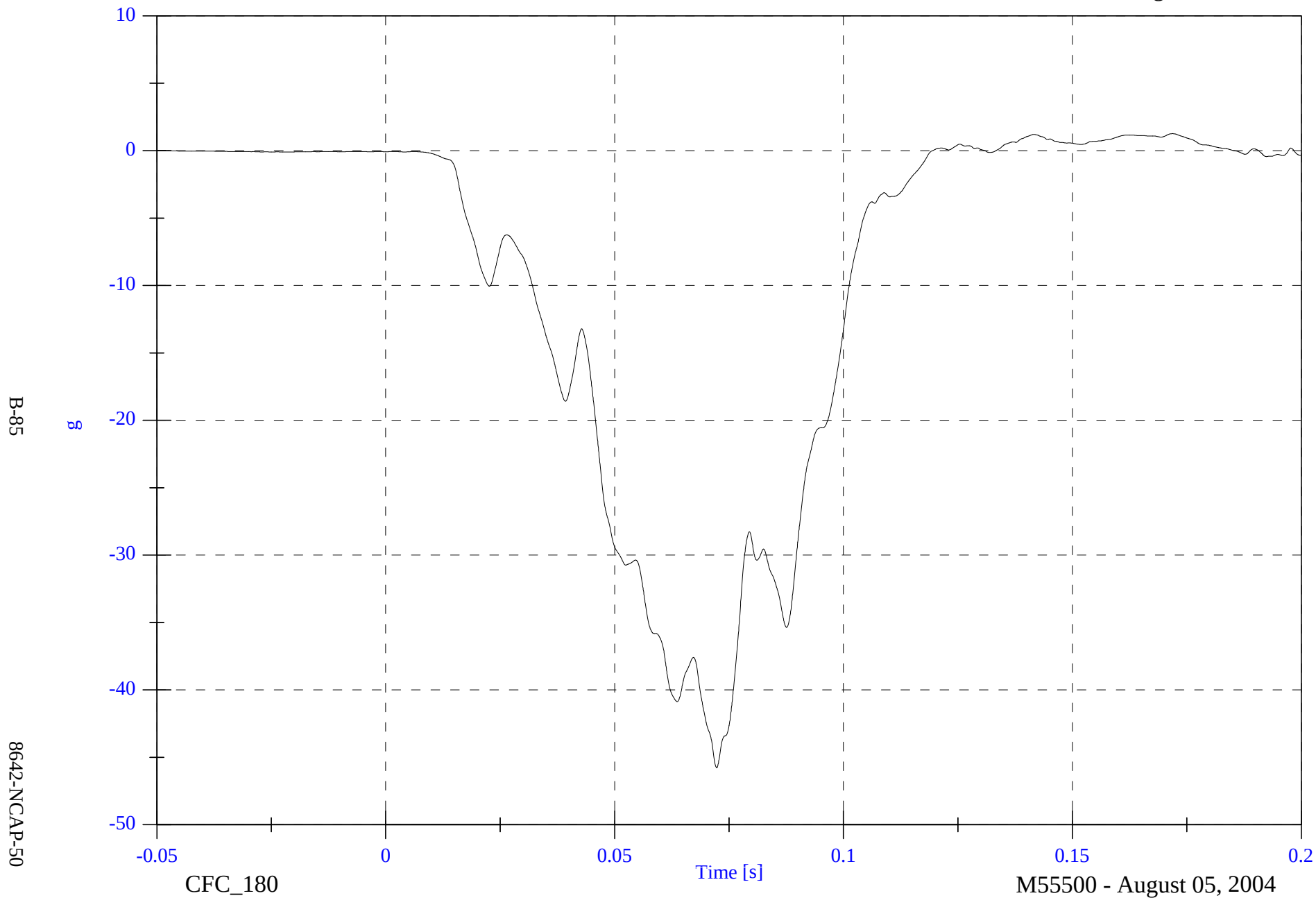
8642-NCAP-50

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Chest x

Max: 1.3 [g] at 0.172 [s]

Min: -45.8 [g] at 0.072 [s]

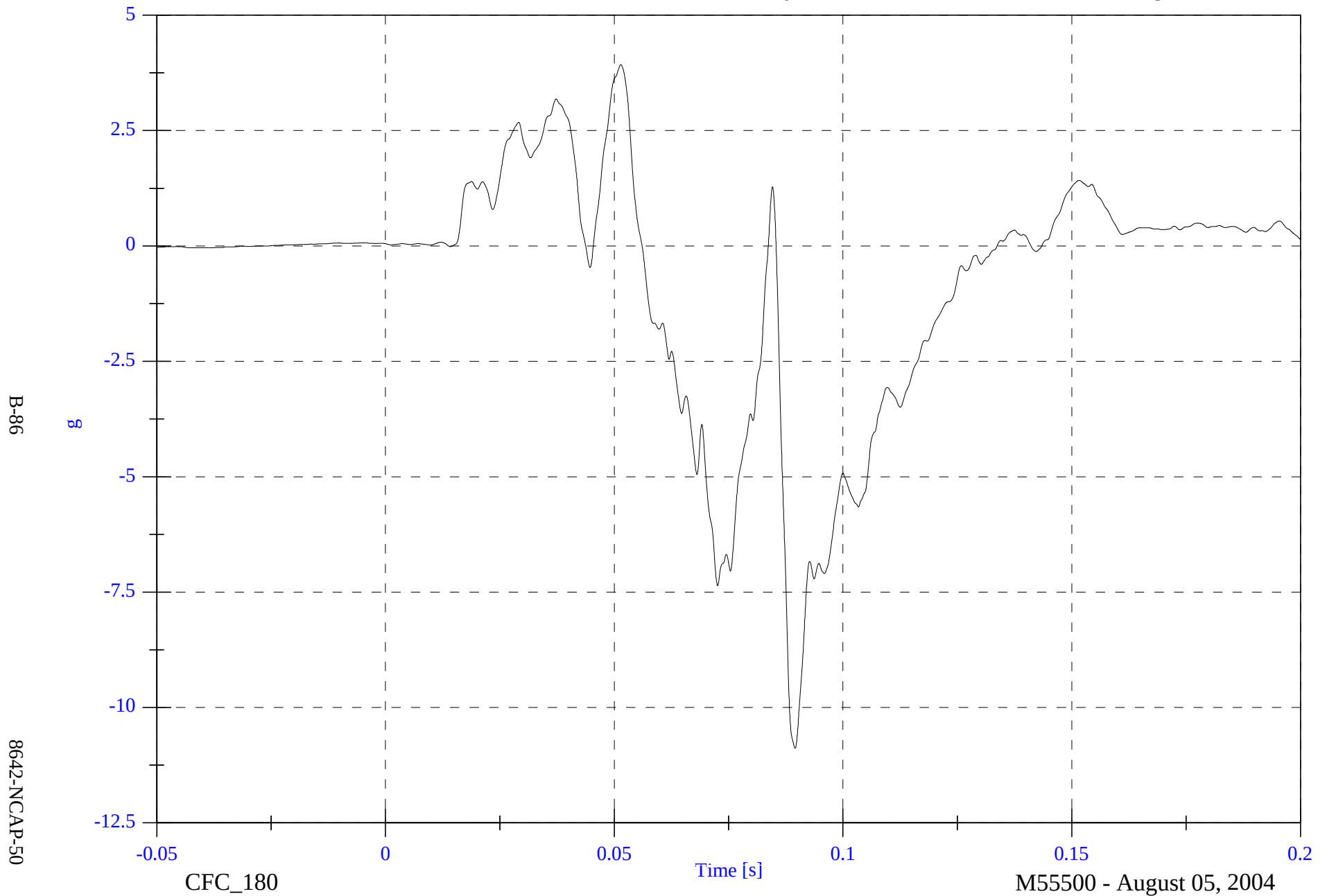


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Chest y

Max: 3.9 [g] at 0.051 [s]

Min: -10.9 [g] at 0.090 [s]

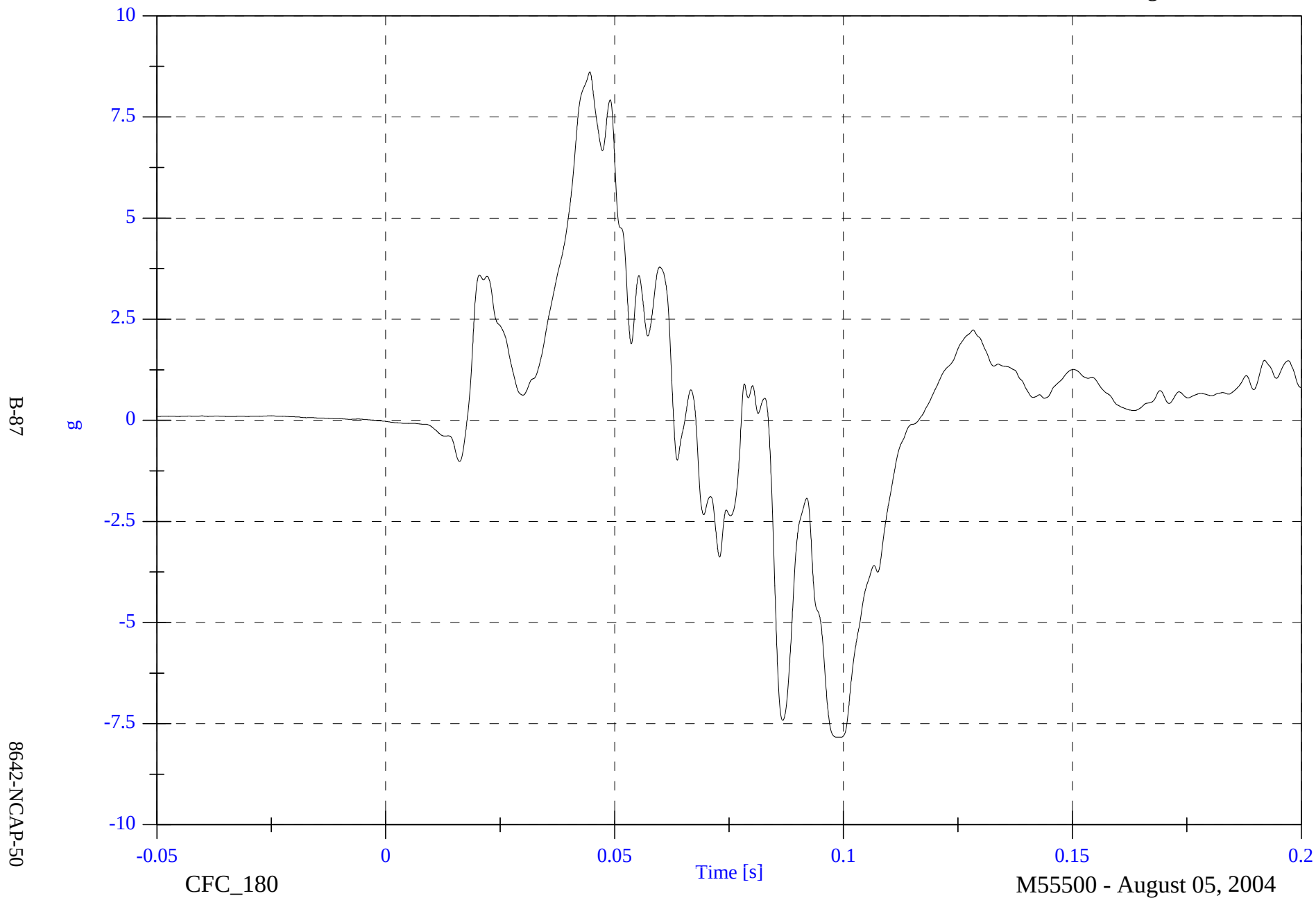


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Chest z

Max: 8.6 [g] at 0.045 [s]

Min: -7.8 [g] at 0.100 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

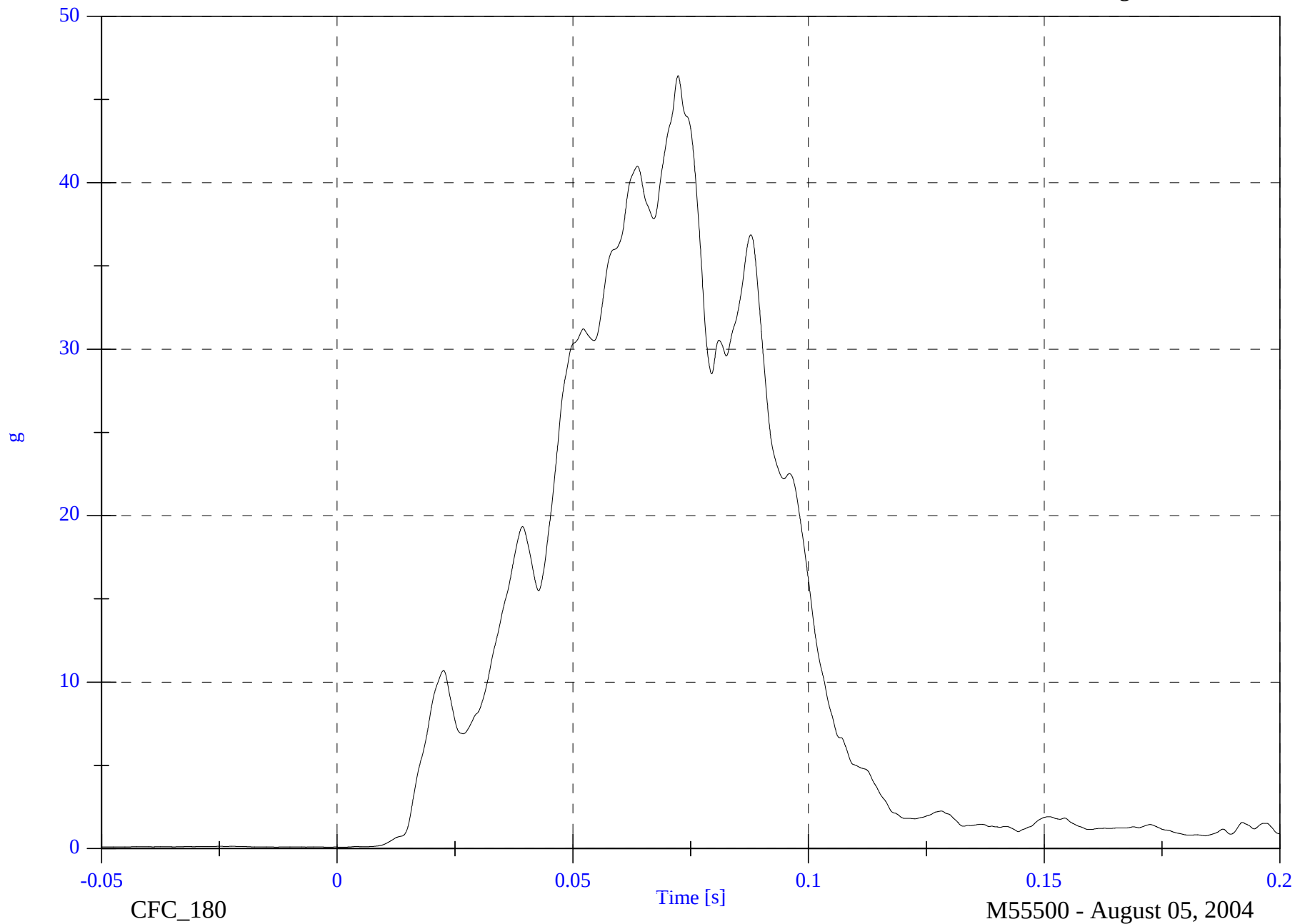
V1P2 Chest Resultant

Max: 46.4 [g] at 0.072 [s]

Min: 0.1 [g] at 0.001 [s]

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8642-NCAP-50

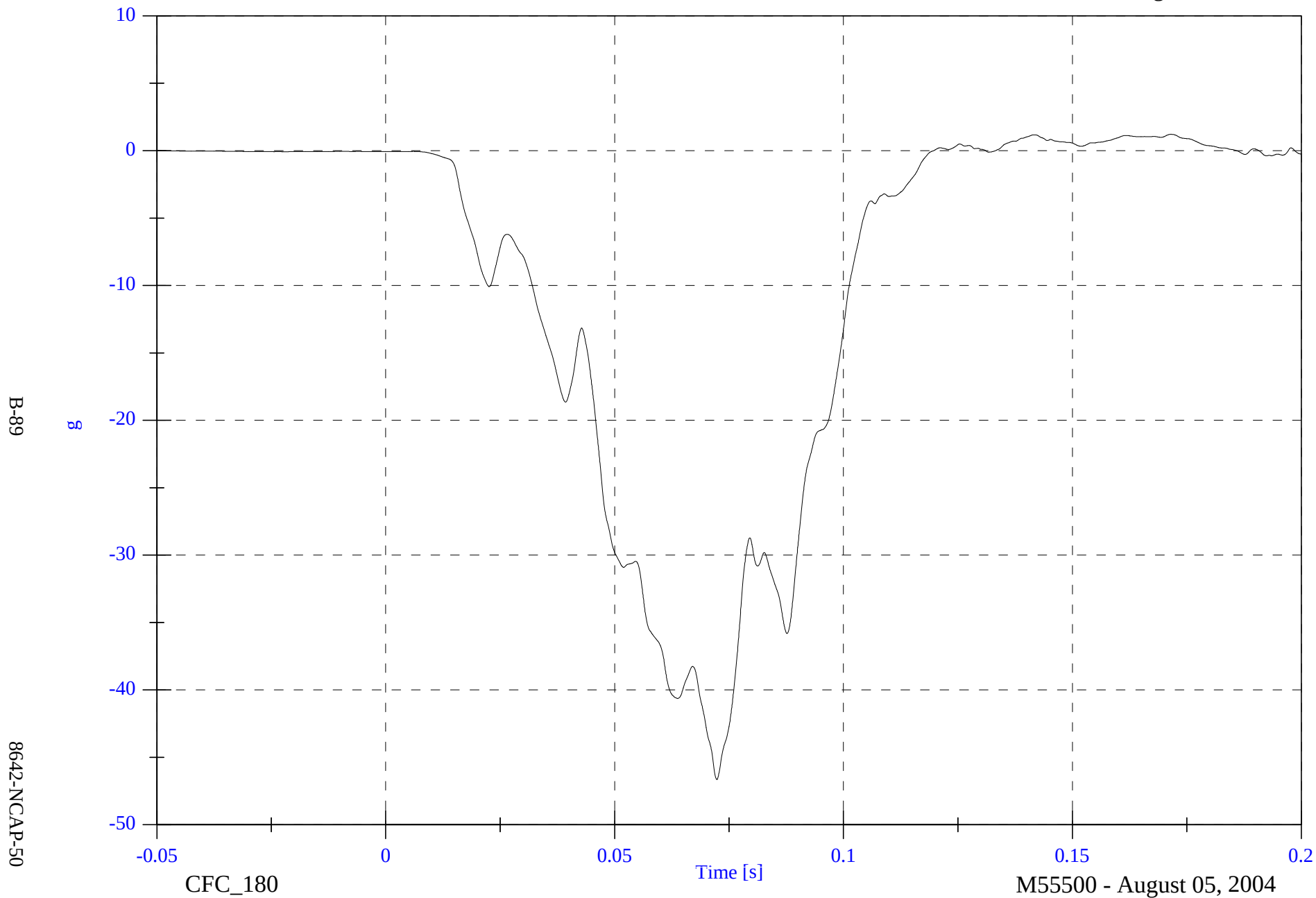


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Chest Red x

Max: 1.2 [g] at 0.171 [s]

Min: -46.7 [g] at 0.072 [s]

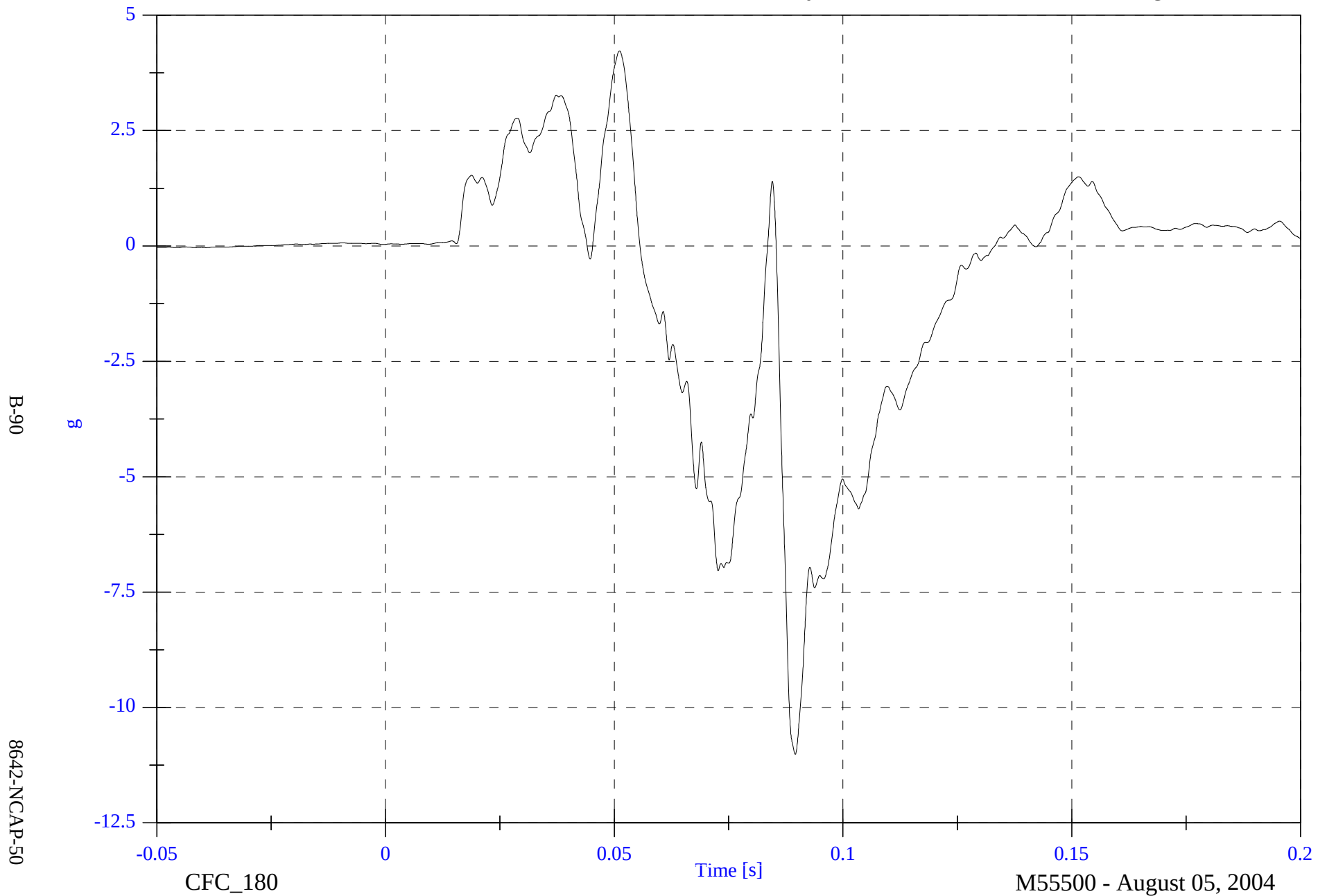


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Chest Red y

Max: 4.2 [g] at 0.051 [s]

Min: -11.0 [g] at 0.090 [s]

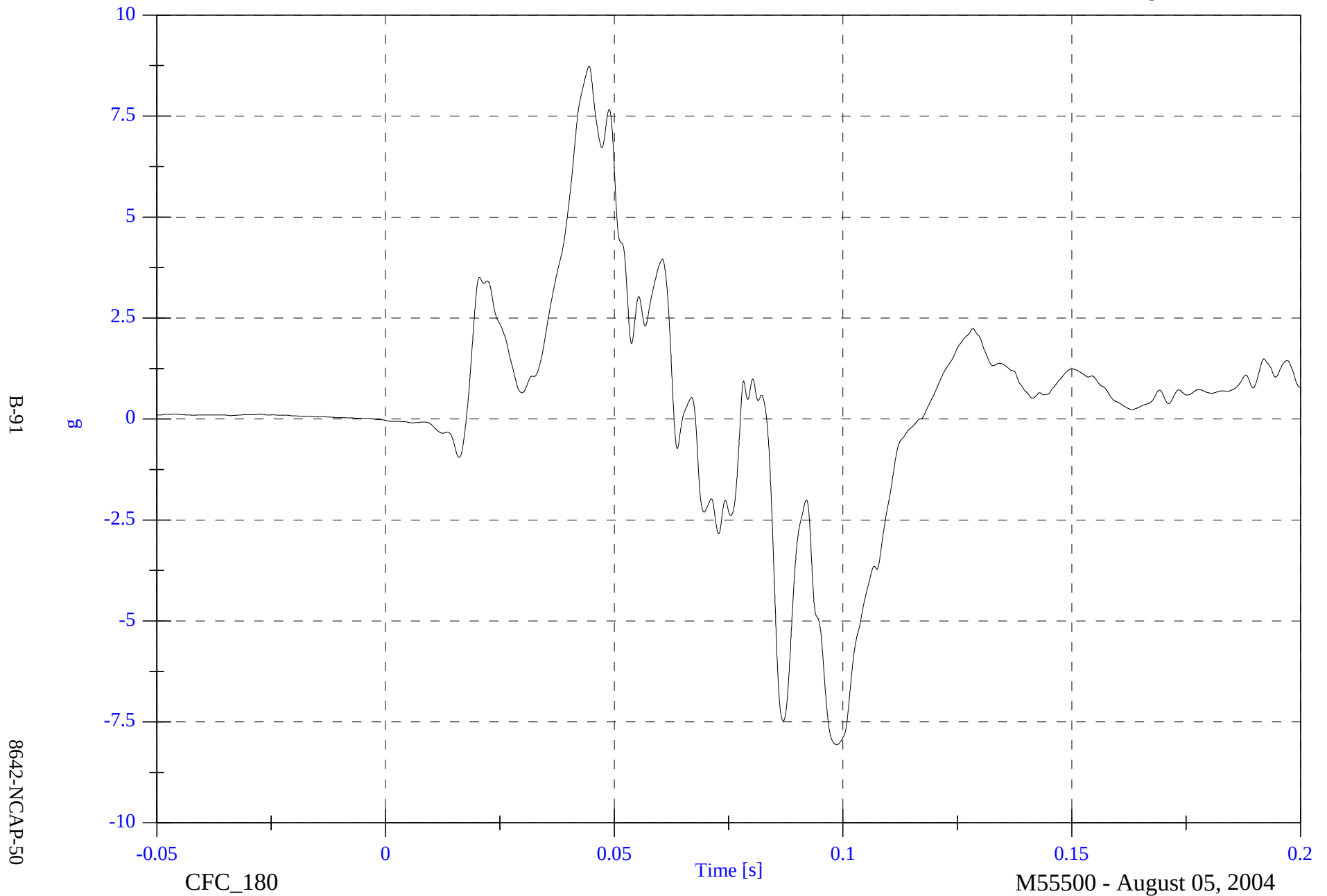


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Chest Red z

Max: 8.7 [g] at 0.044 [s]

Min: -8.1 [g] at 0.099 [s]

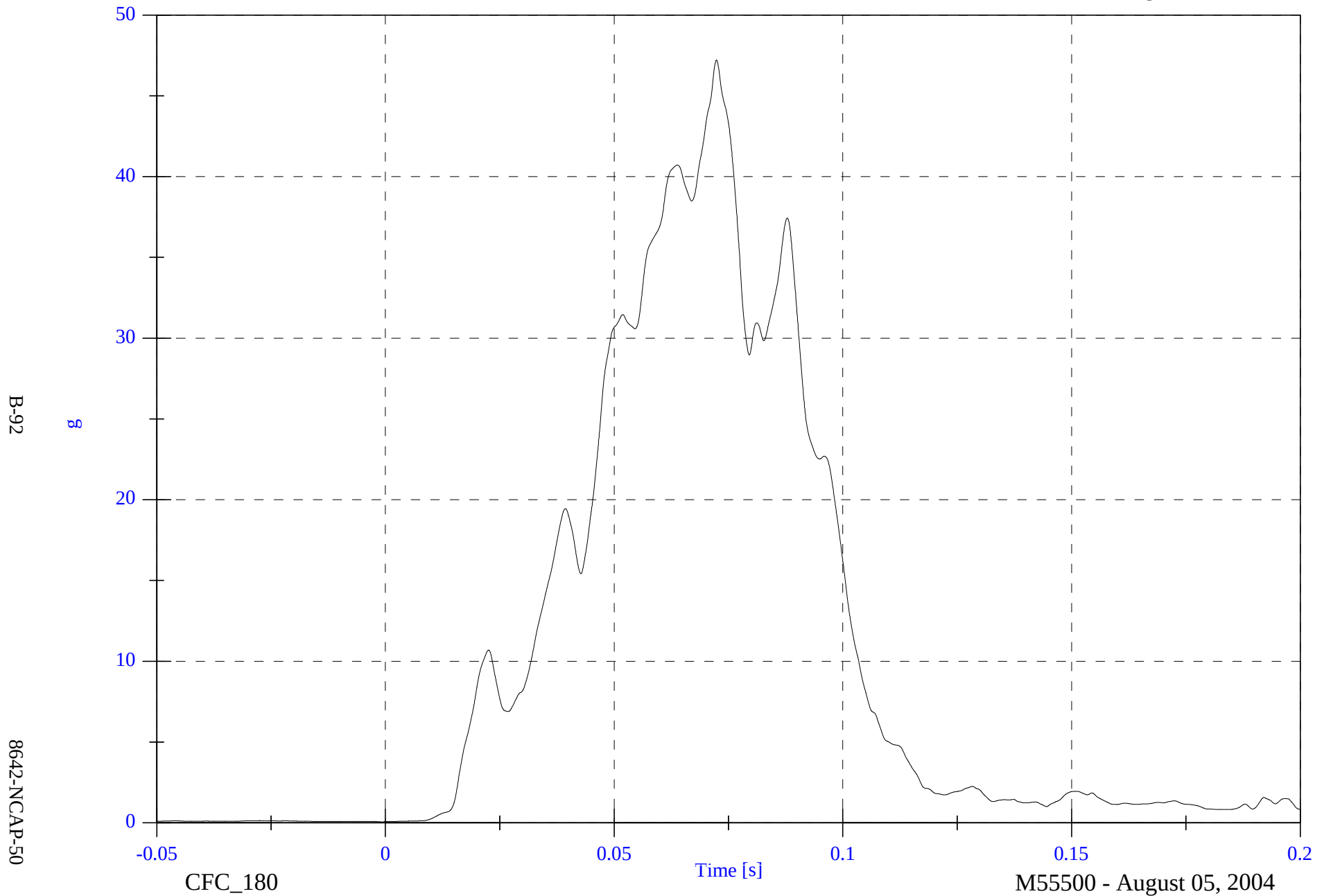


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Chest Red Resultant

Max: 47.2 [g] at 0.072 [s]

Min: 0.1 [g] at -0.001 [s]

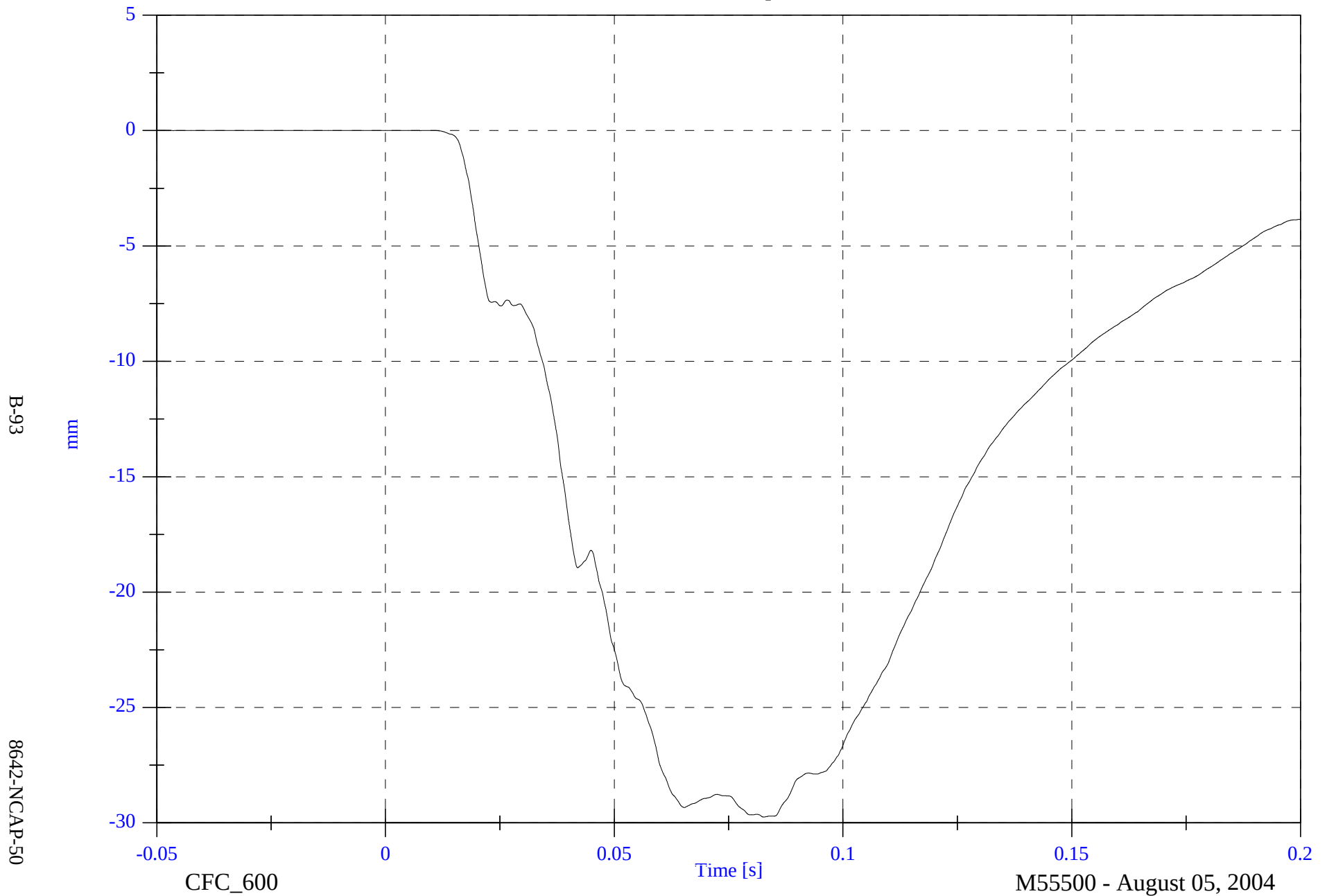


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Chest Compression x

Max: 0.0 [mm] at -0.021 [s]

Min: -29.7 [mm] at 0.083 [s]

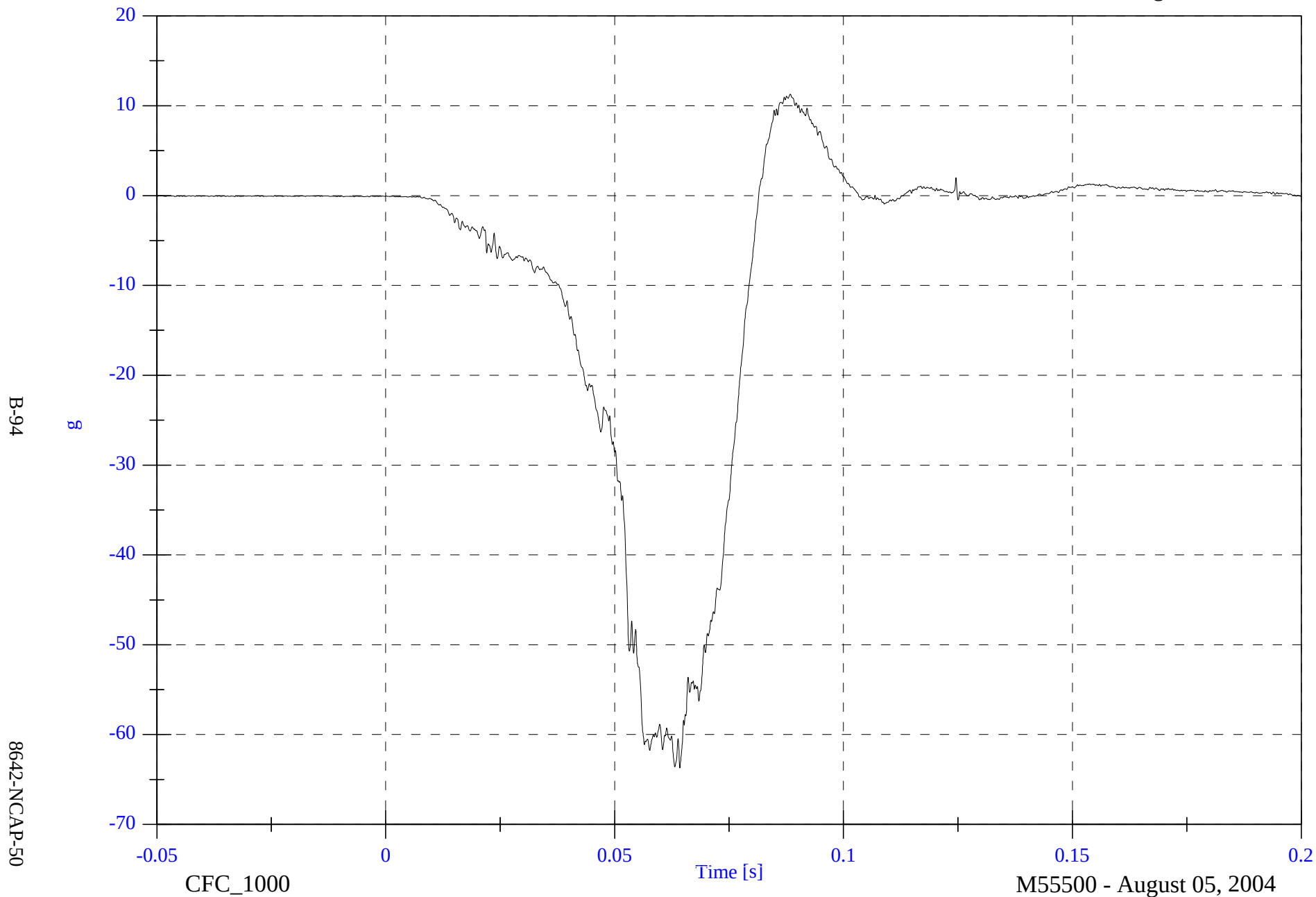


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Pelvic x

Max: 11.3 [g] at 0.088 [s]

Min: -63.7 [g] at 0.064 [s]

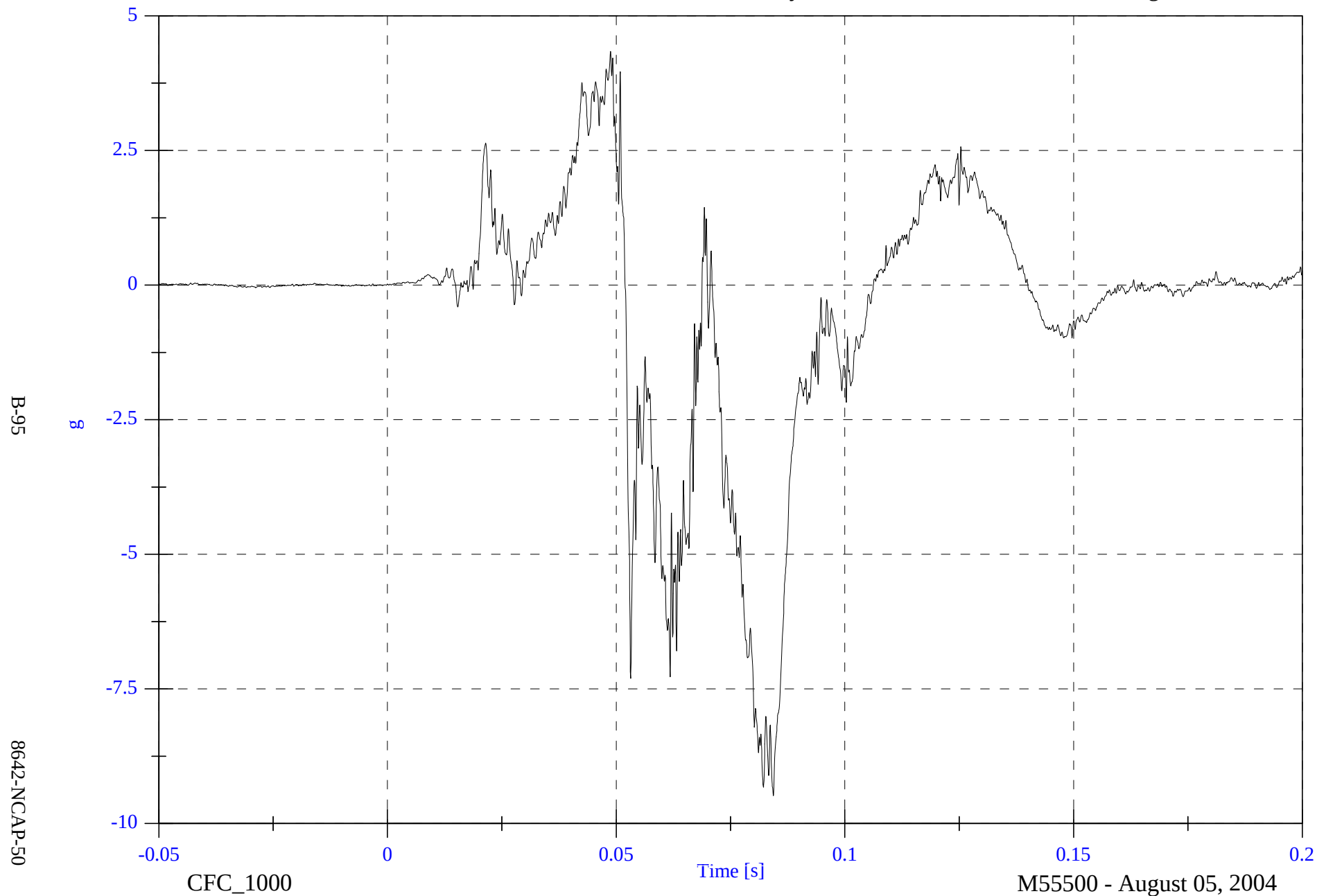


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Pelvic y

Max: 4.3 [g] at 0.049 [s]

Min: -9.5 [g] at 0.084 [s]

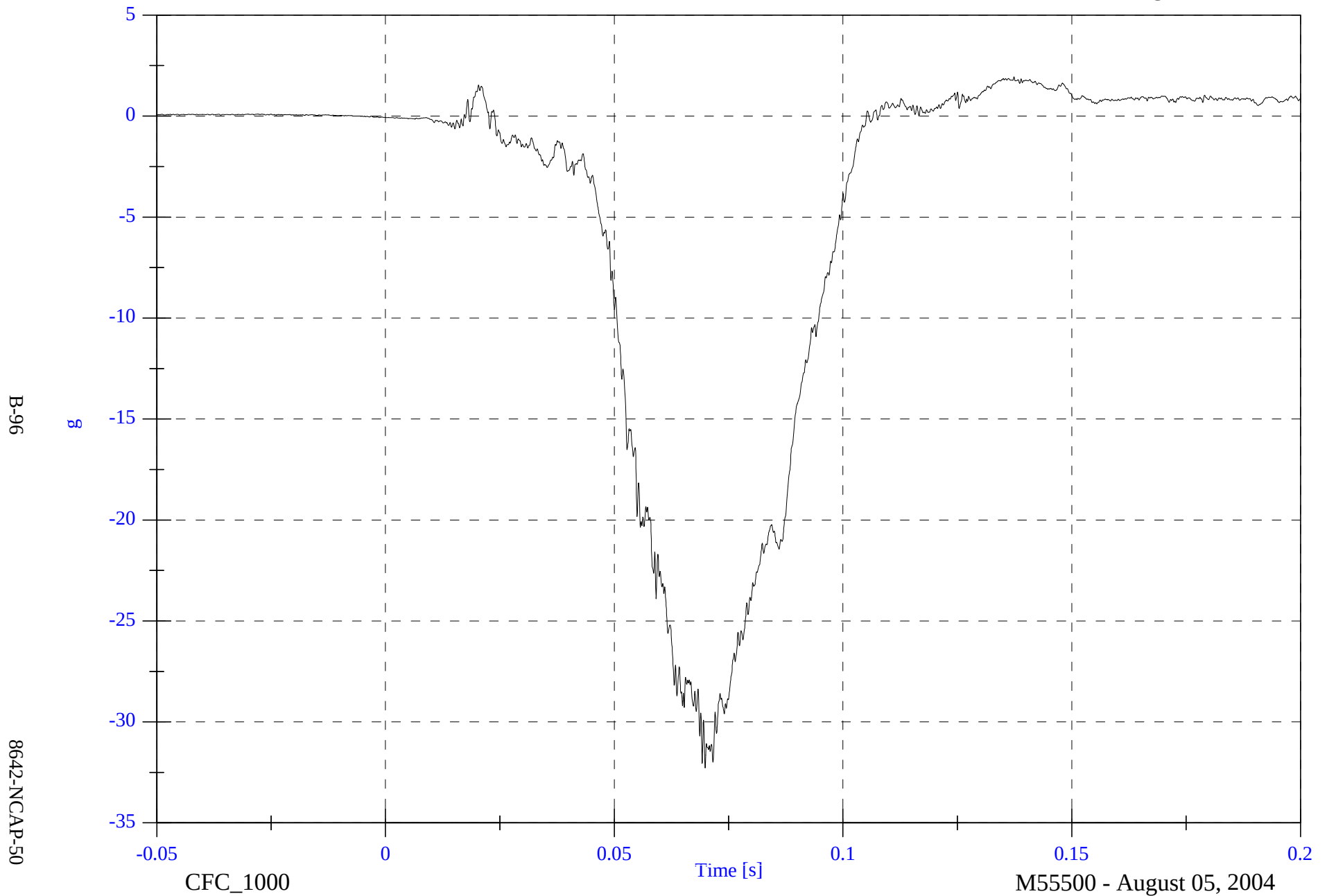


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Pelvic z

Max: 1.9 [g] at 0.137 [s]

Min: -32.3 [g] at 0.070 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

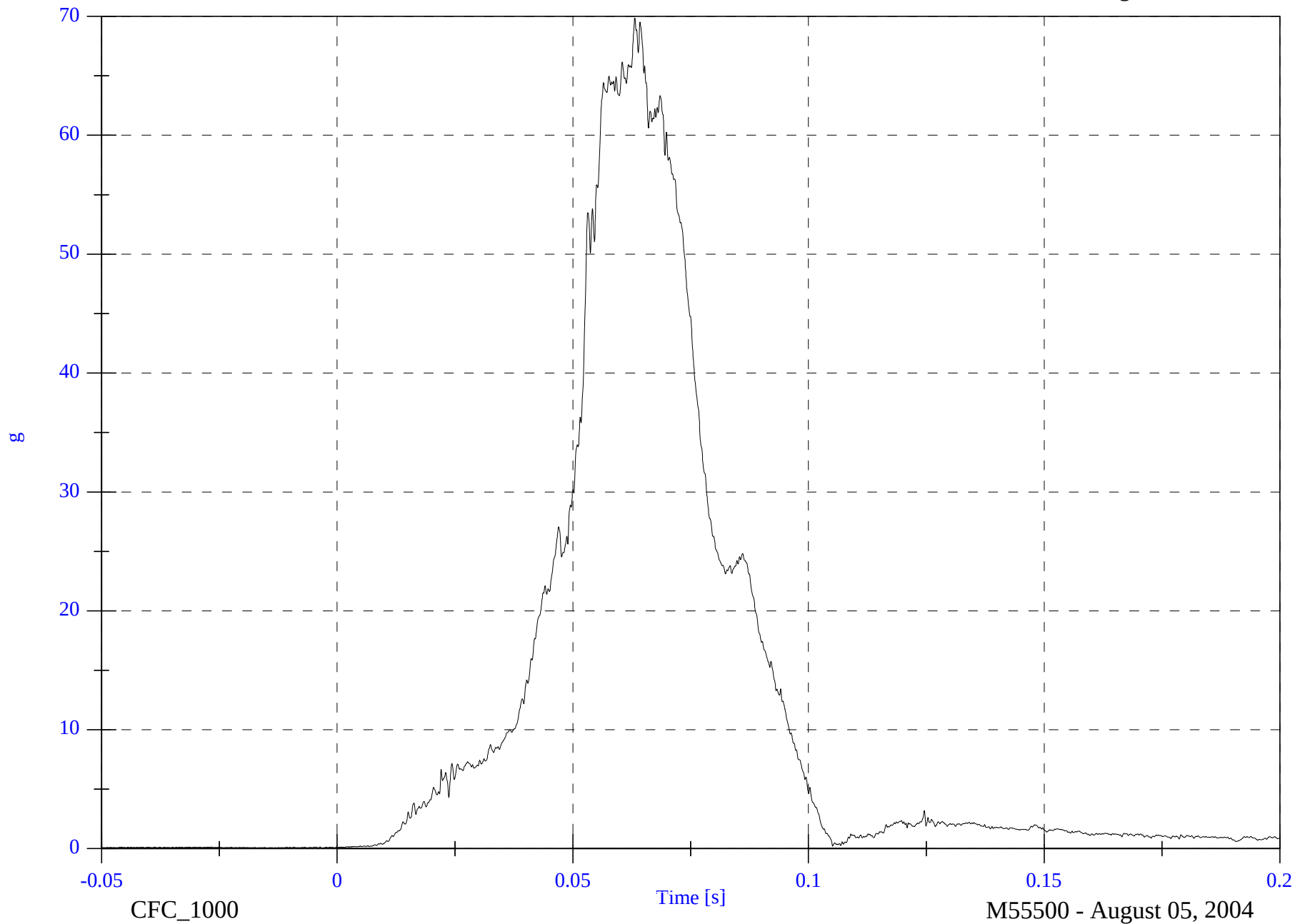
V1P2 Pelvic Resultant

Max: 69.9 [g] at 0.063 [s]

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

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8642-NCAP-50

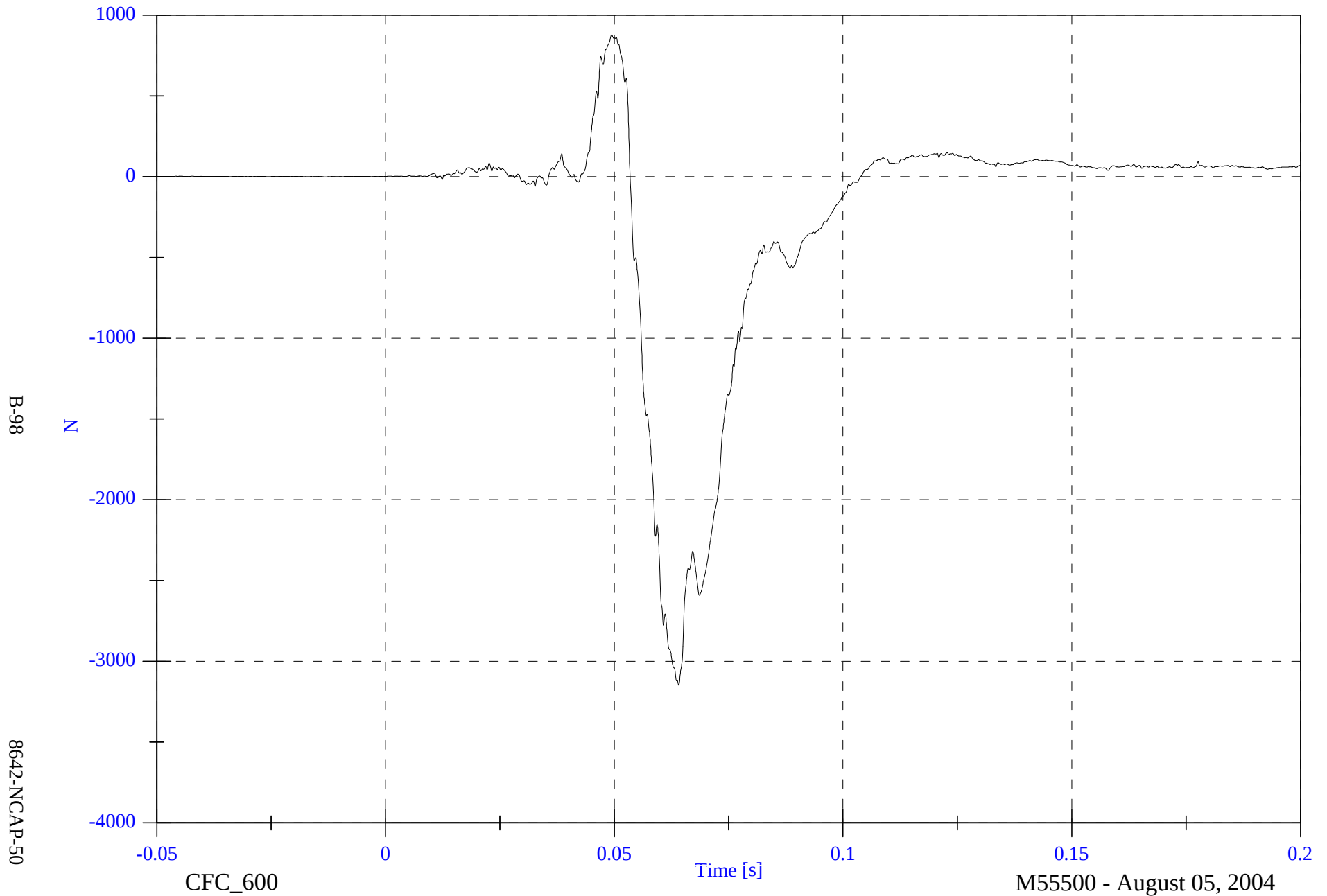


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Left Femur z

Max: 878.2 [N] at 0.049 [s]

Min: -3147.6 [N] at 0.064 [s]

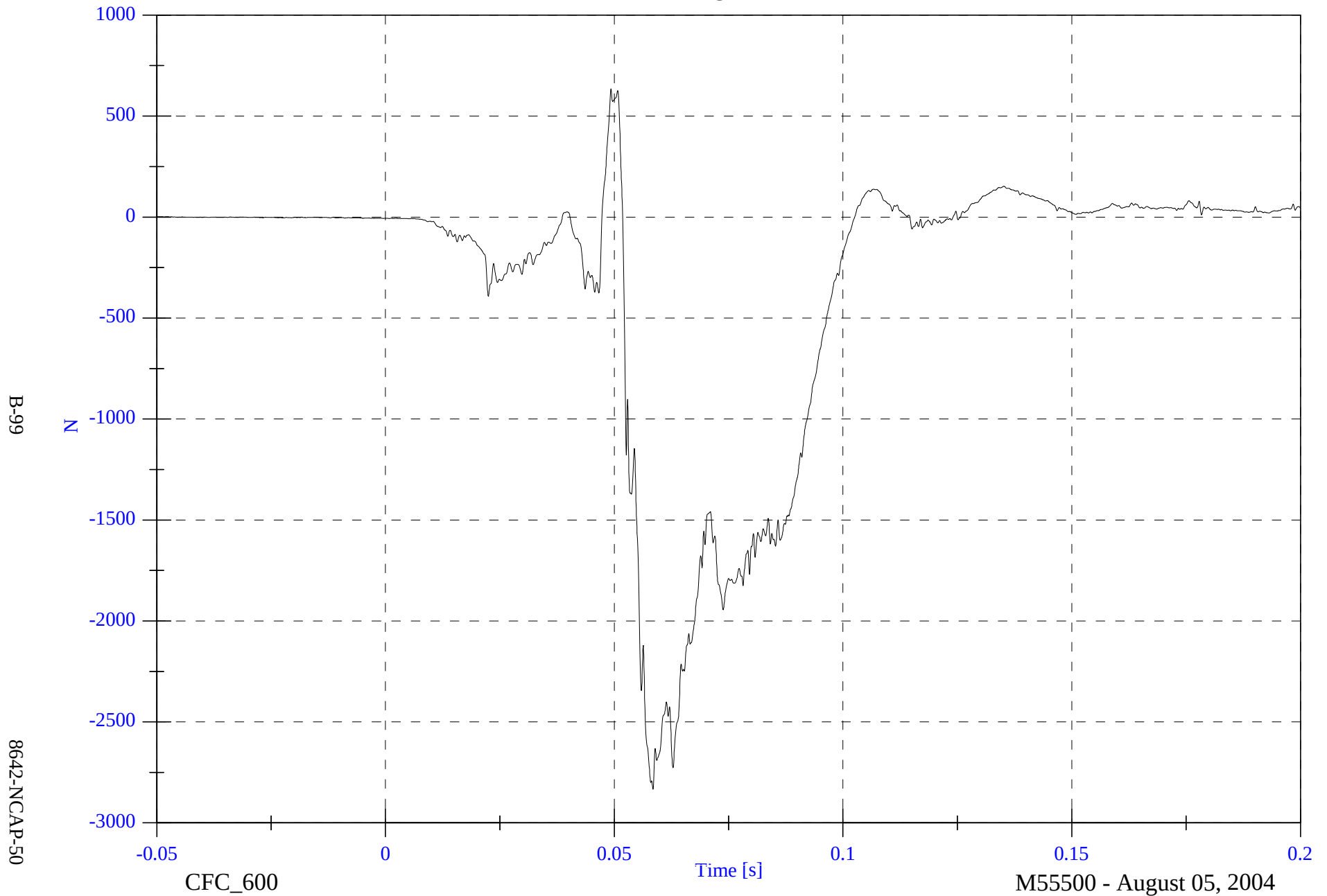


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Right Femur z

Max: 634.8 [N] at 0.049 [s]

Min: -2834.1 [N] at 0.058 [s]

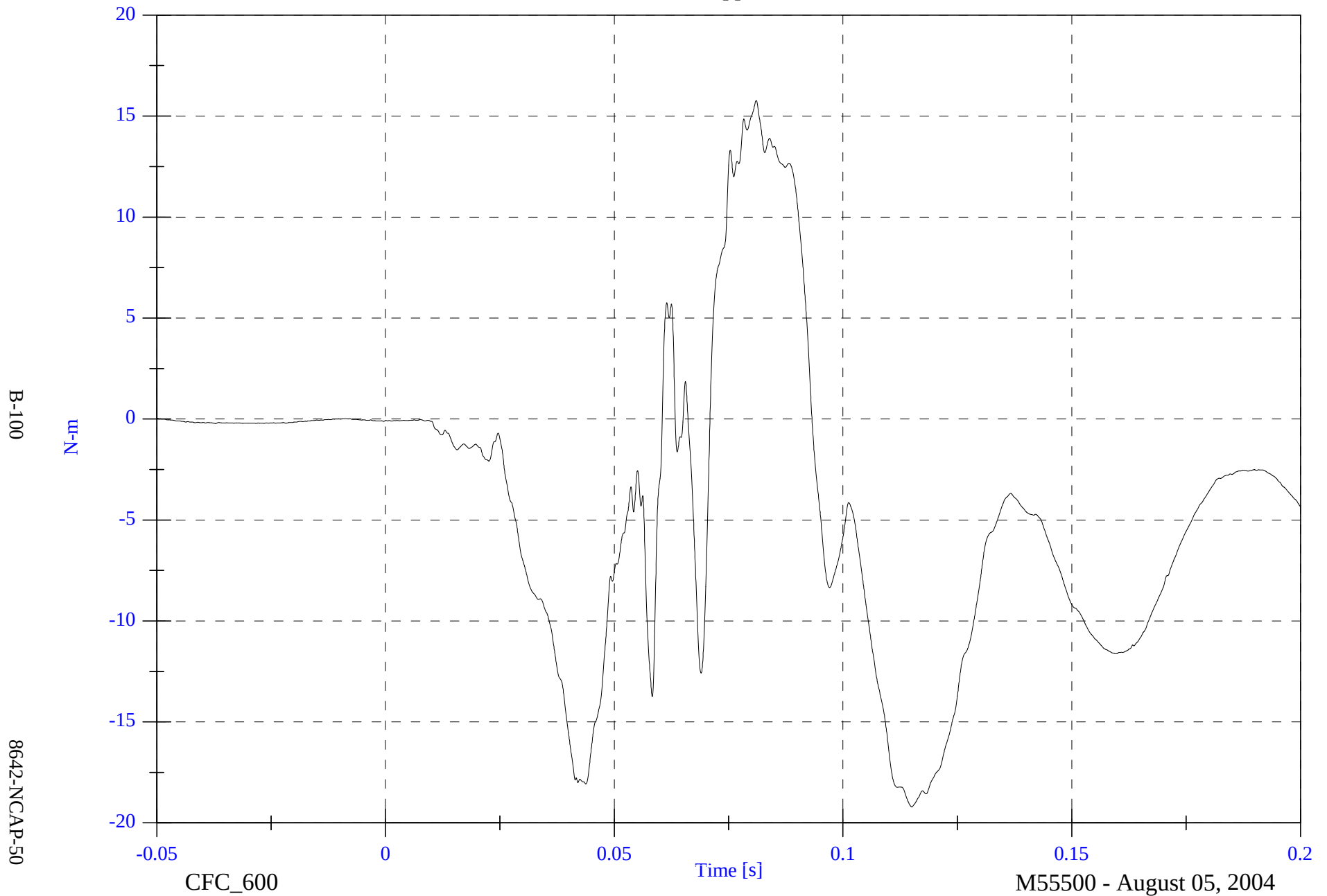


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Left Upper Tibia Mx

Max: 15.8 [N-m] at 0.081 [s]

Min: -19.2 [N-m] at 0.115 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

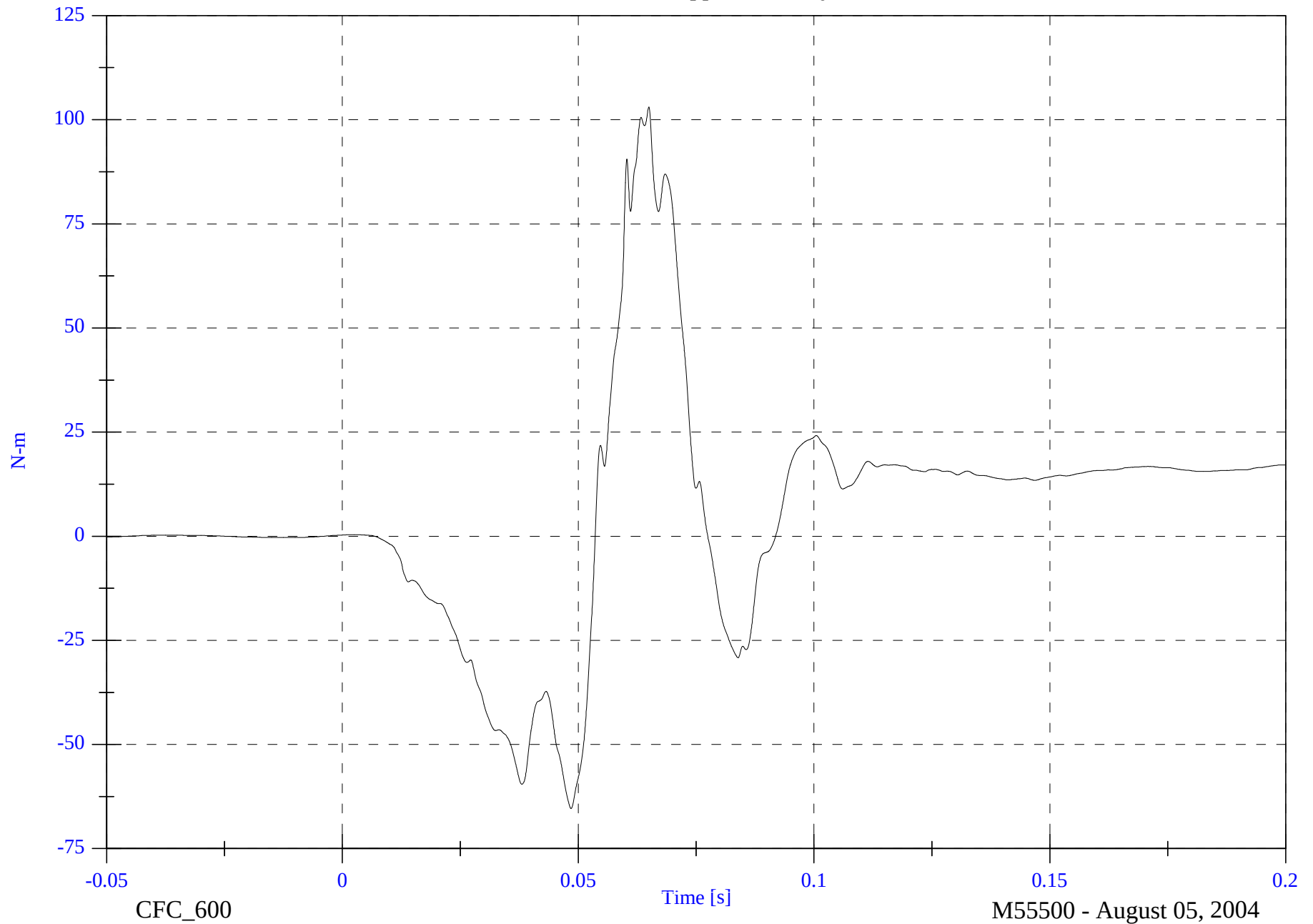
V1P2 Left Upper Tibia My

Max: 103.0 [N-m] at 0.065 [s]

Min: -65.4 [N-m] at 0.048 [s]

B-101

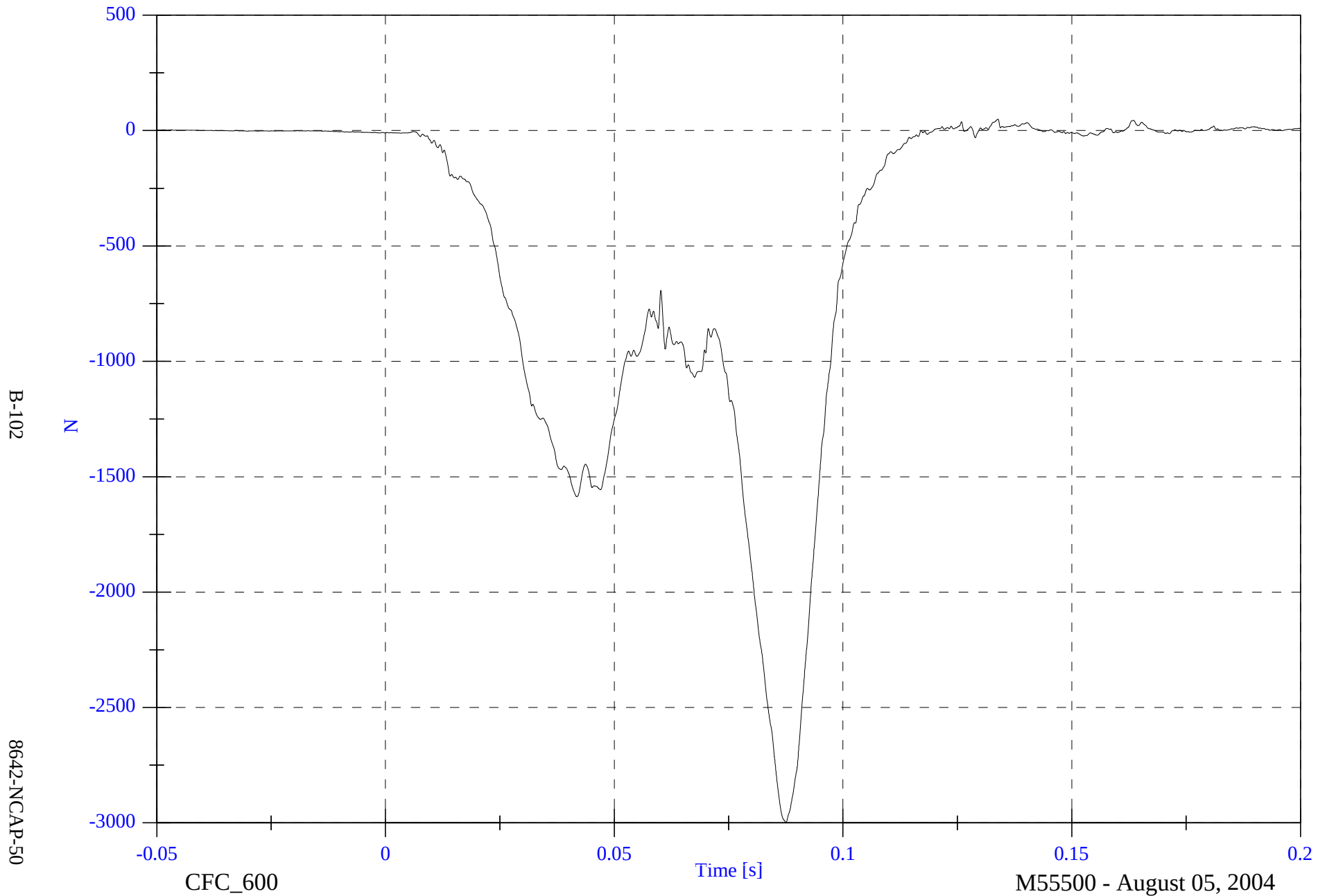
8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Left Lower Tibia Fz

Max: 49.5 [N] at 0.134 [s]
Min: -2998.1 [N] at 0.088 [s]

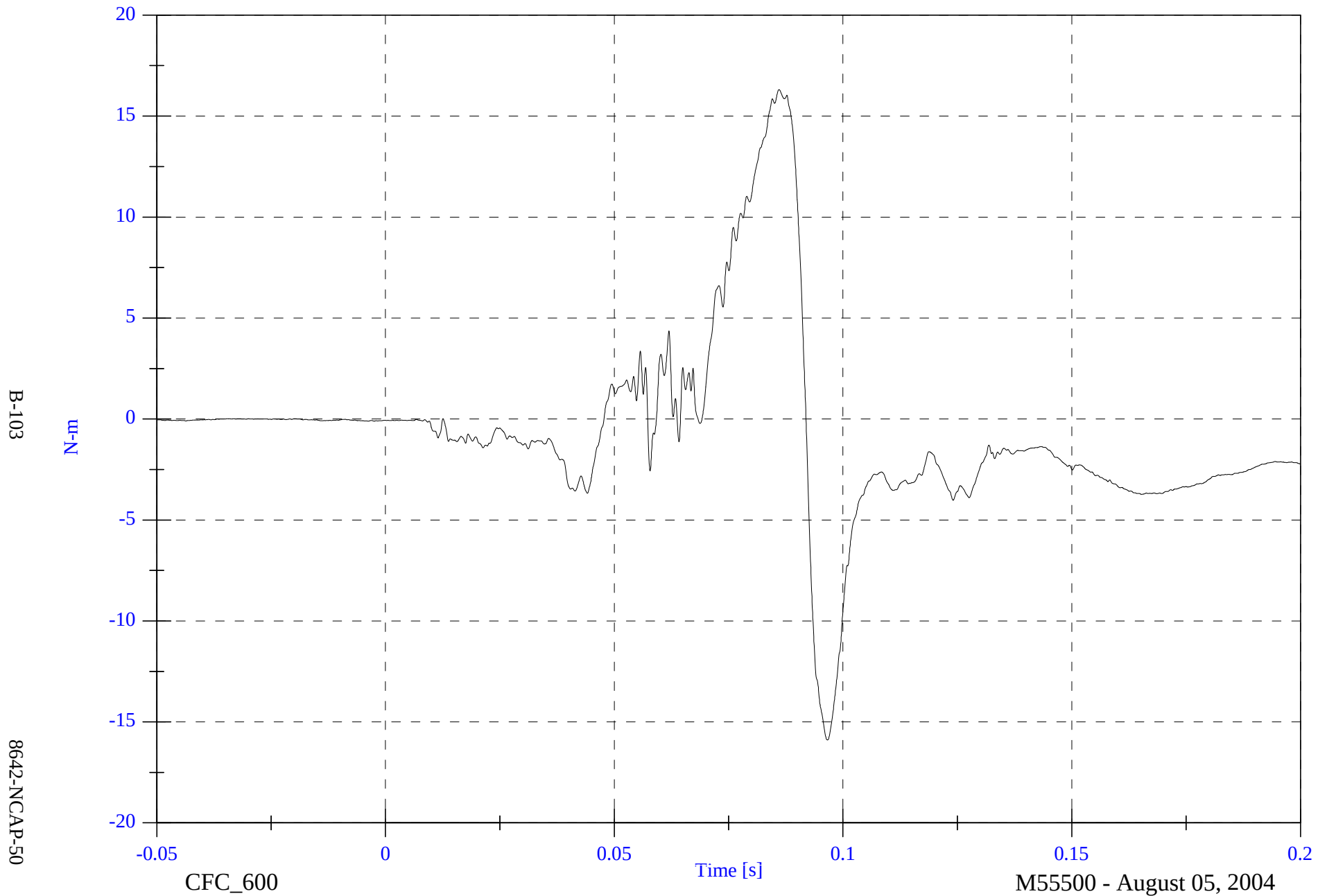


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Left Lower Tibia Mx

Max: 16.3 [N-m] at 0.086 [s]

Min: -15.9 [N-m] at 0.097 [s]

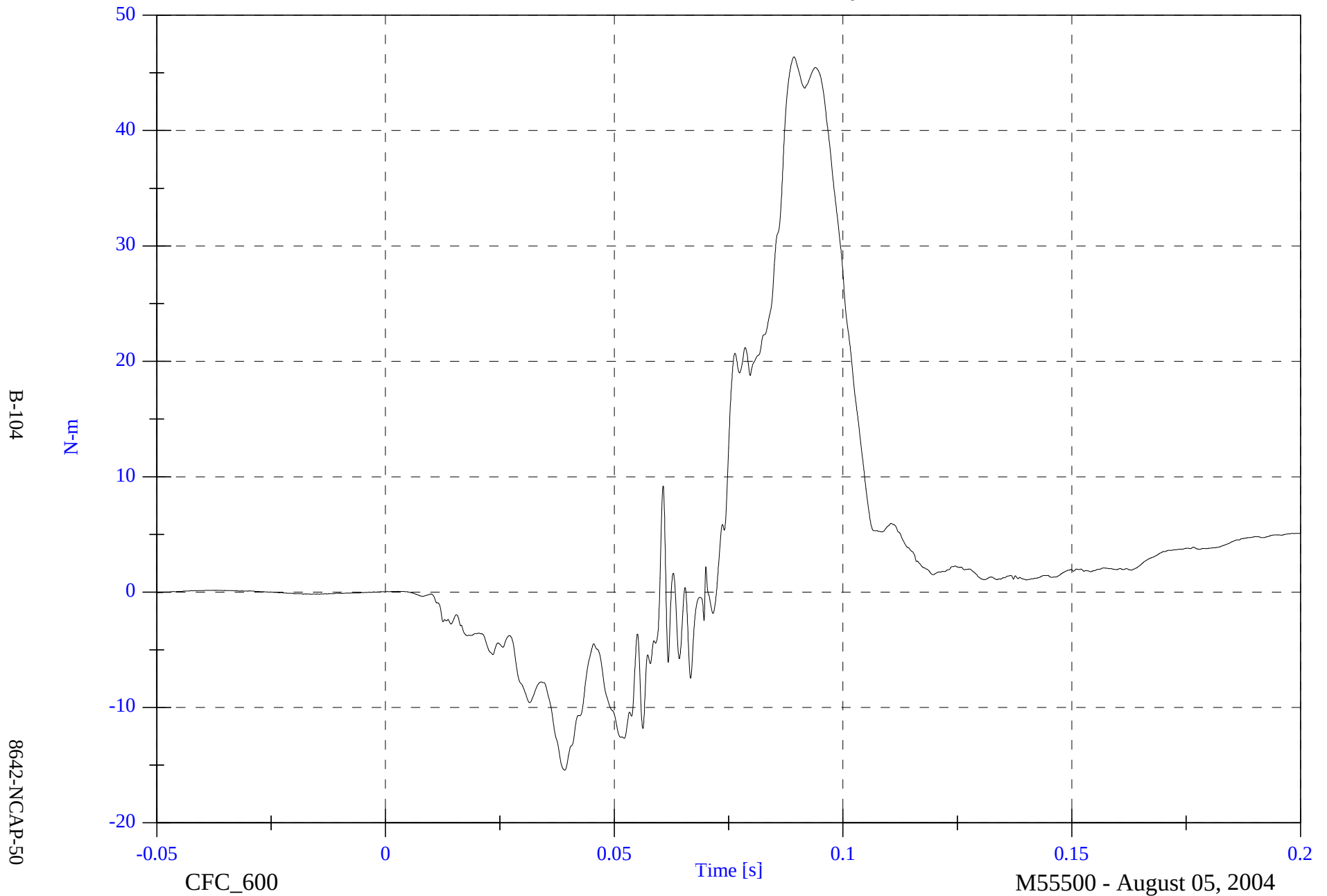


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Left Lower Tibia My

Max: 46.4 [N-m] at 0.089 [s]

Min: -15.4 [N-m] at 0.039 [s]

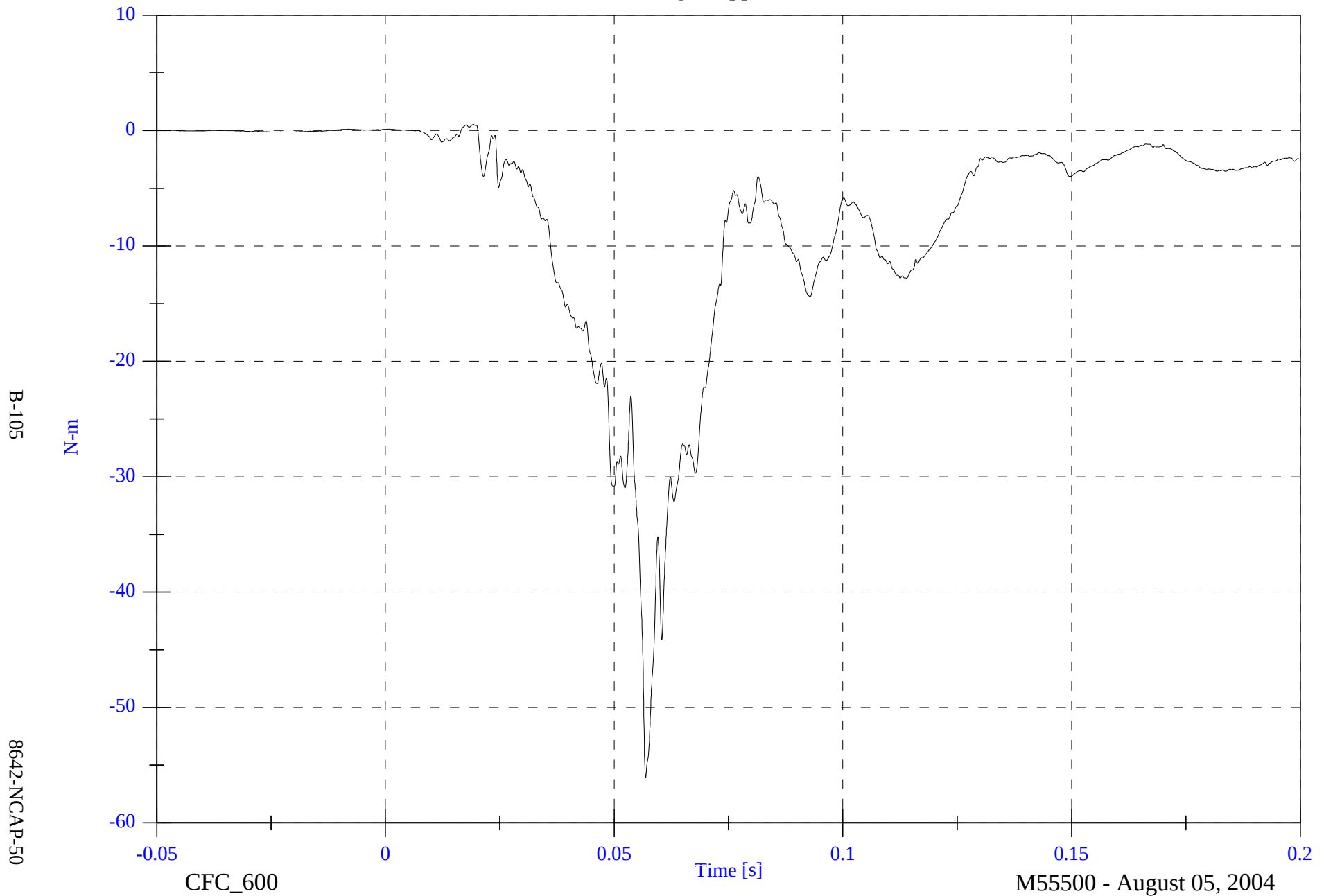


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Right Upper Tibia Mx

Max: 0.5 [N-m] at 0.019 [s]

Min: -56.1 [N-m] at 0.057 [s]

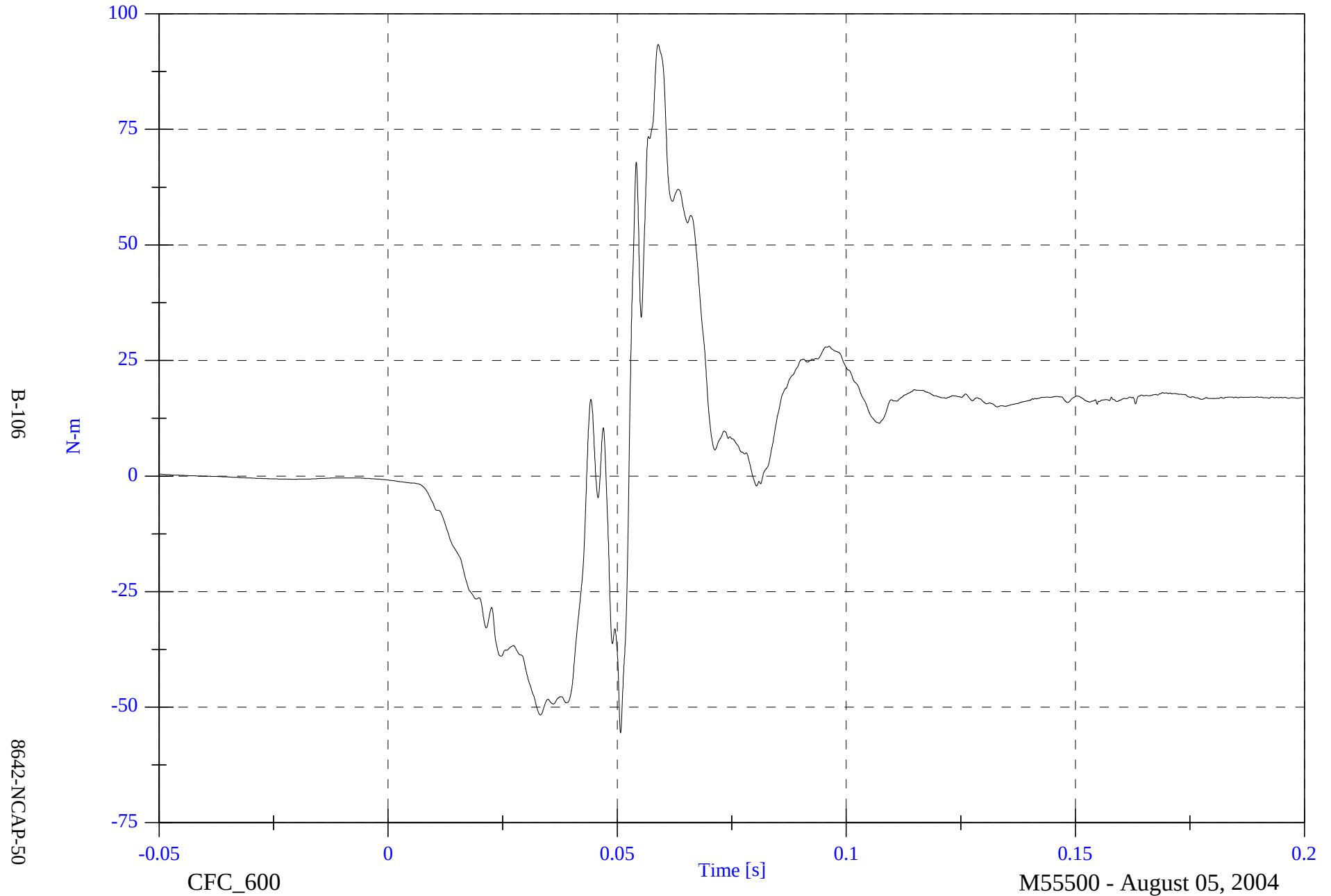


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Right Upper Tibia My

Max: 93.4 [N-m] at 0.059 [s]

Min: -55.6 [N-m] at 0.051 [s]

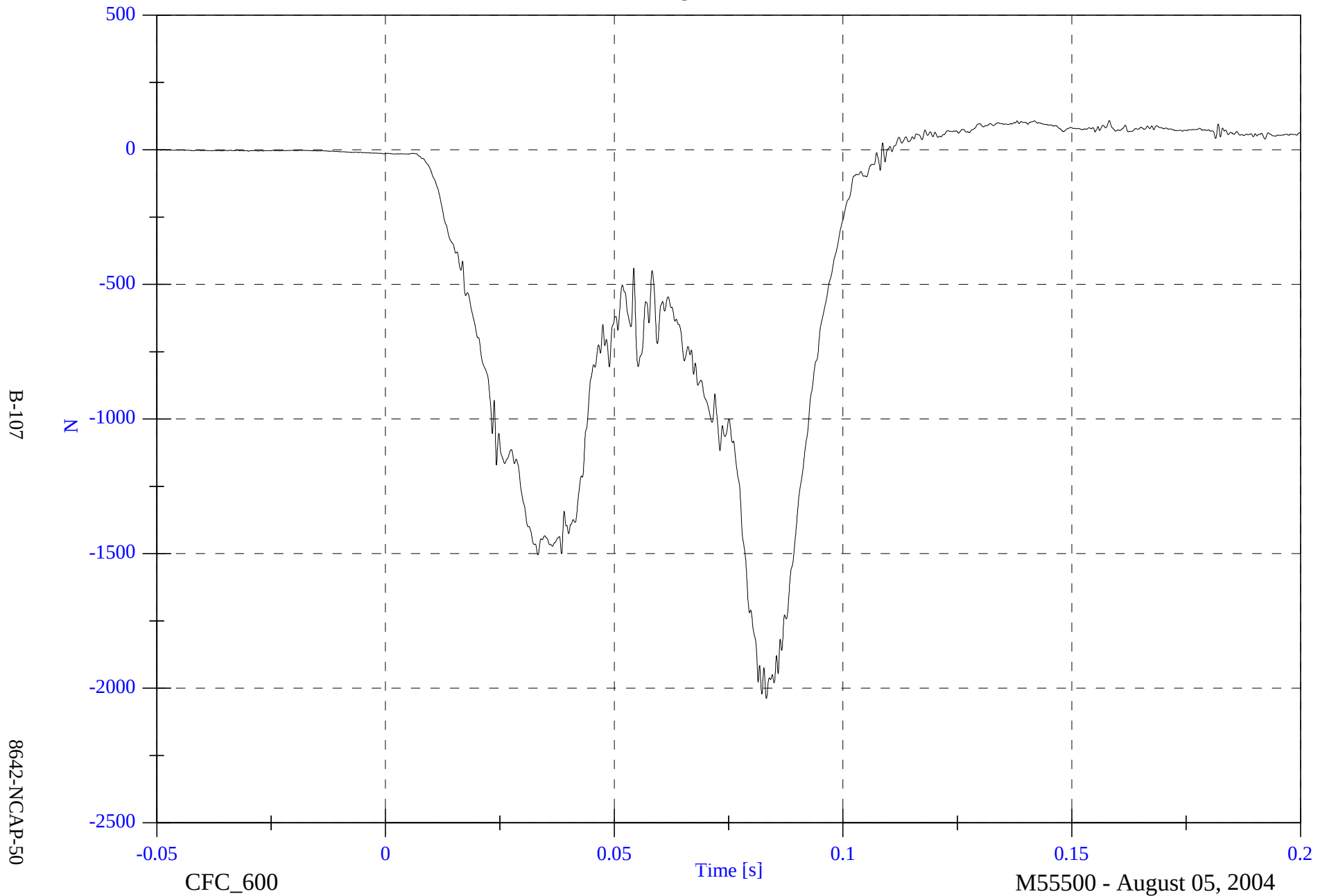


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Right Lower Tibia Fz

Max: 108.7 [N] at 0.158 [s]

Min: -2038.3 [N] at 0.083 [s]

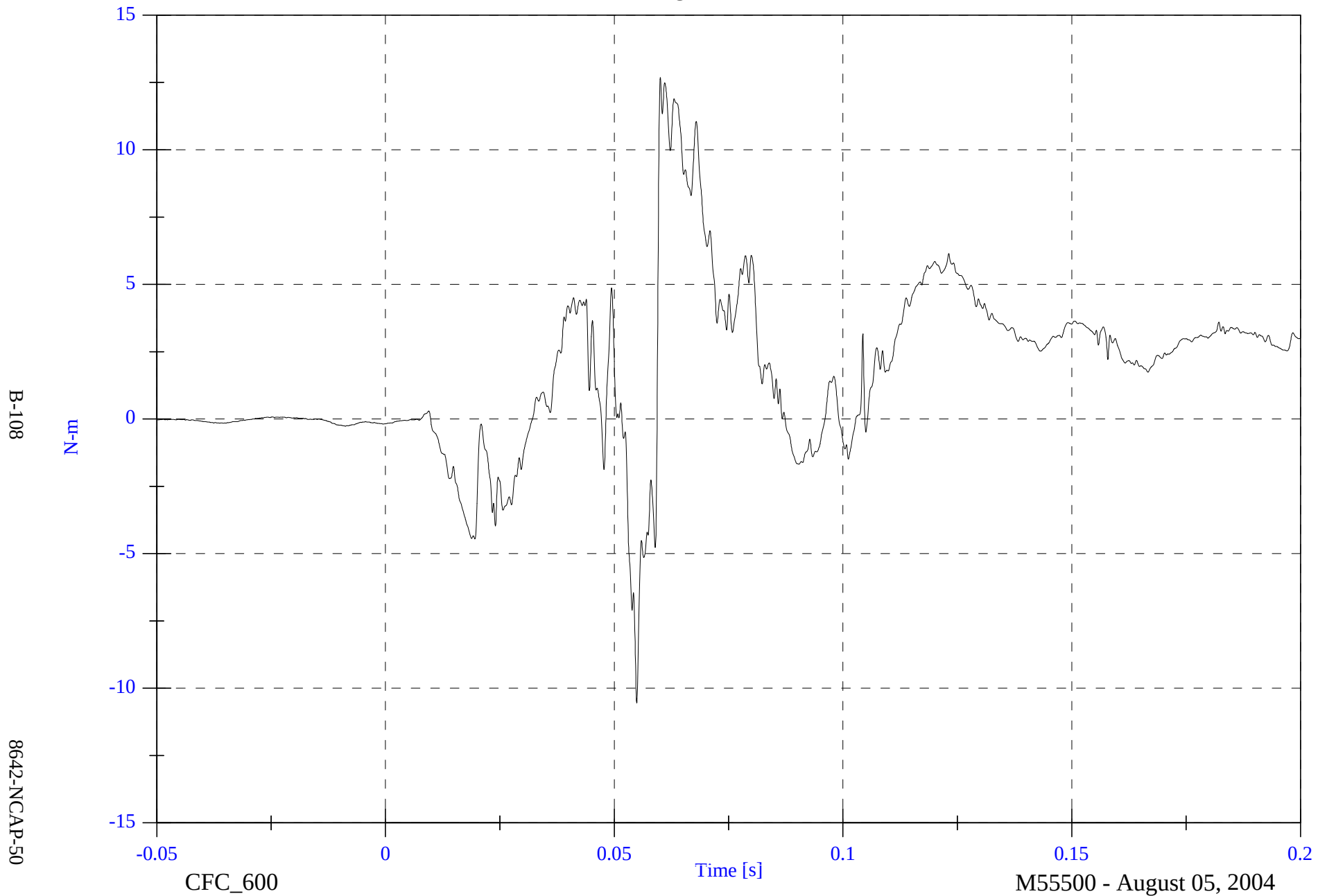


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Right Lower Tibia Mx

Max: 12.7 [N-m] at 0.060 [s]

Min: -10.6 [N-m] at 0.055 [s]

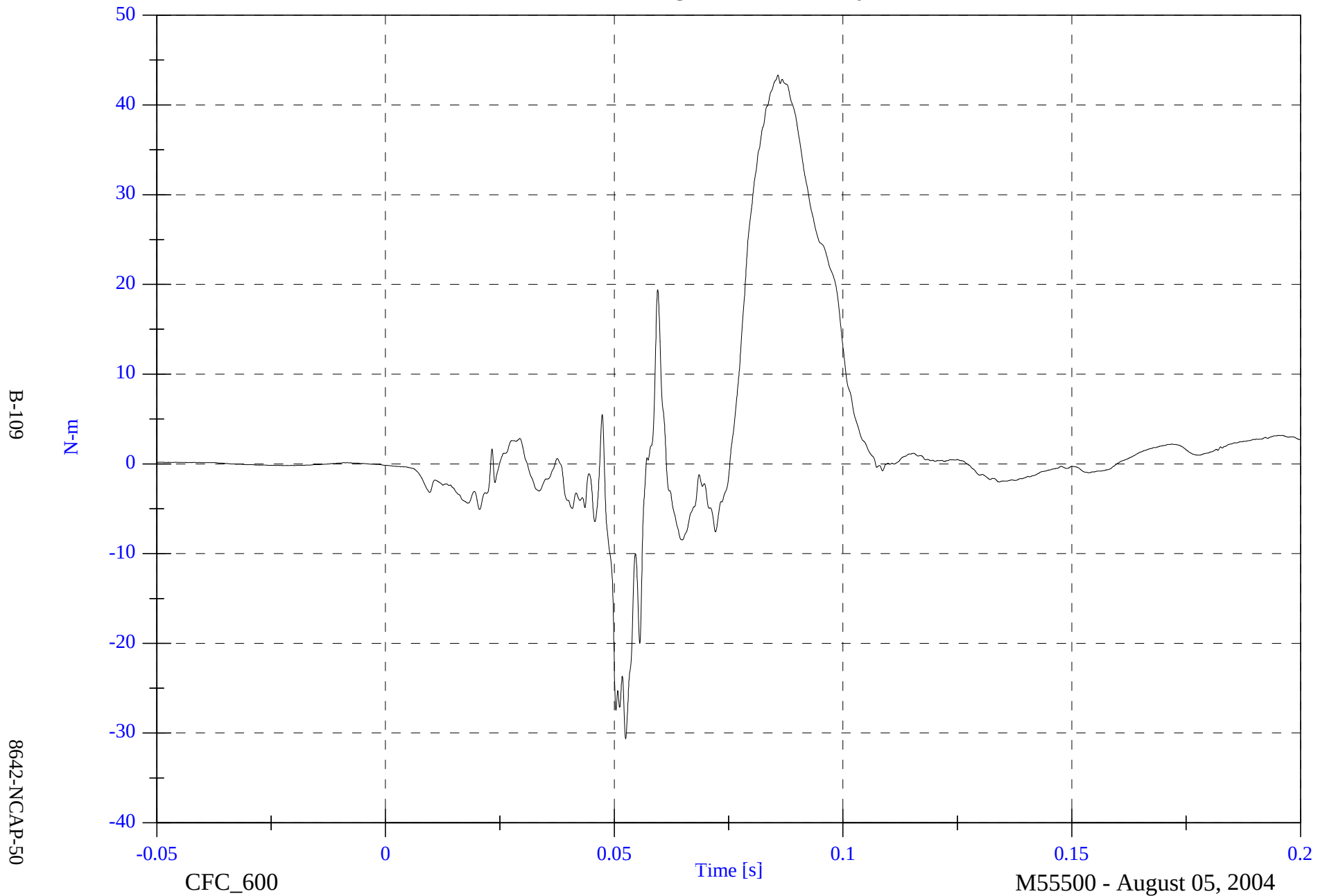


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Right Lower Tibia My

Max: 43.3 [N-m] at 0.086 [s]

Min: -30.6 [N-m] at 0.052 [s]

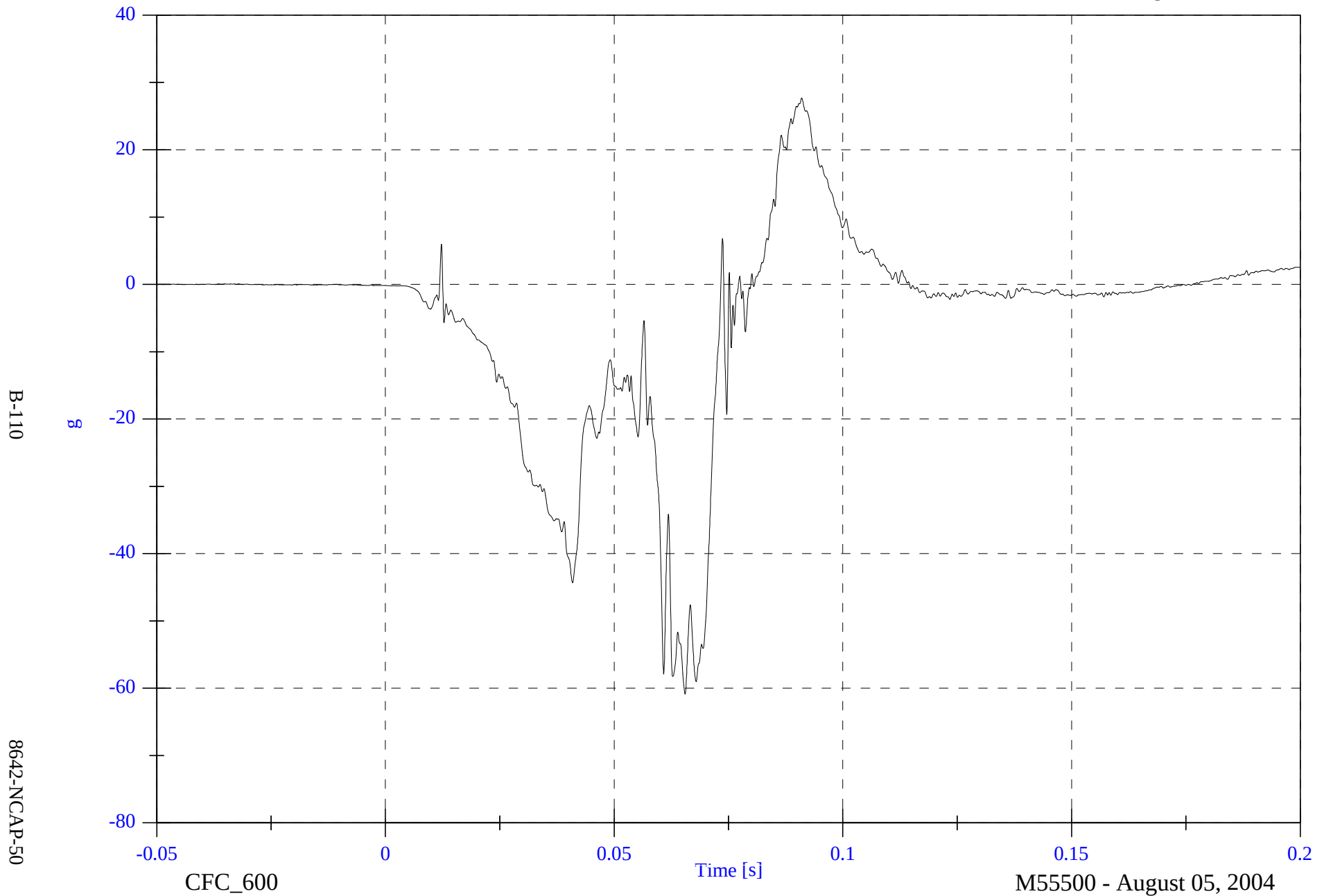


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Left Foot Aft x

Max: 27.7 [g] at 0.091 [s]

Min: -60.9 [g] at 0.065 [s]

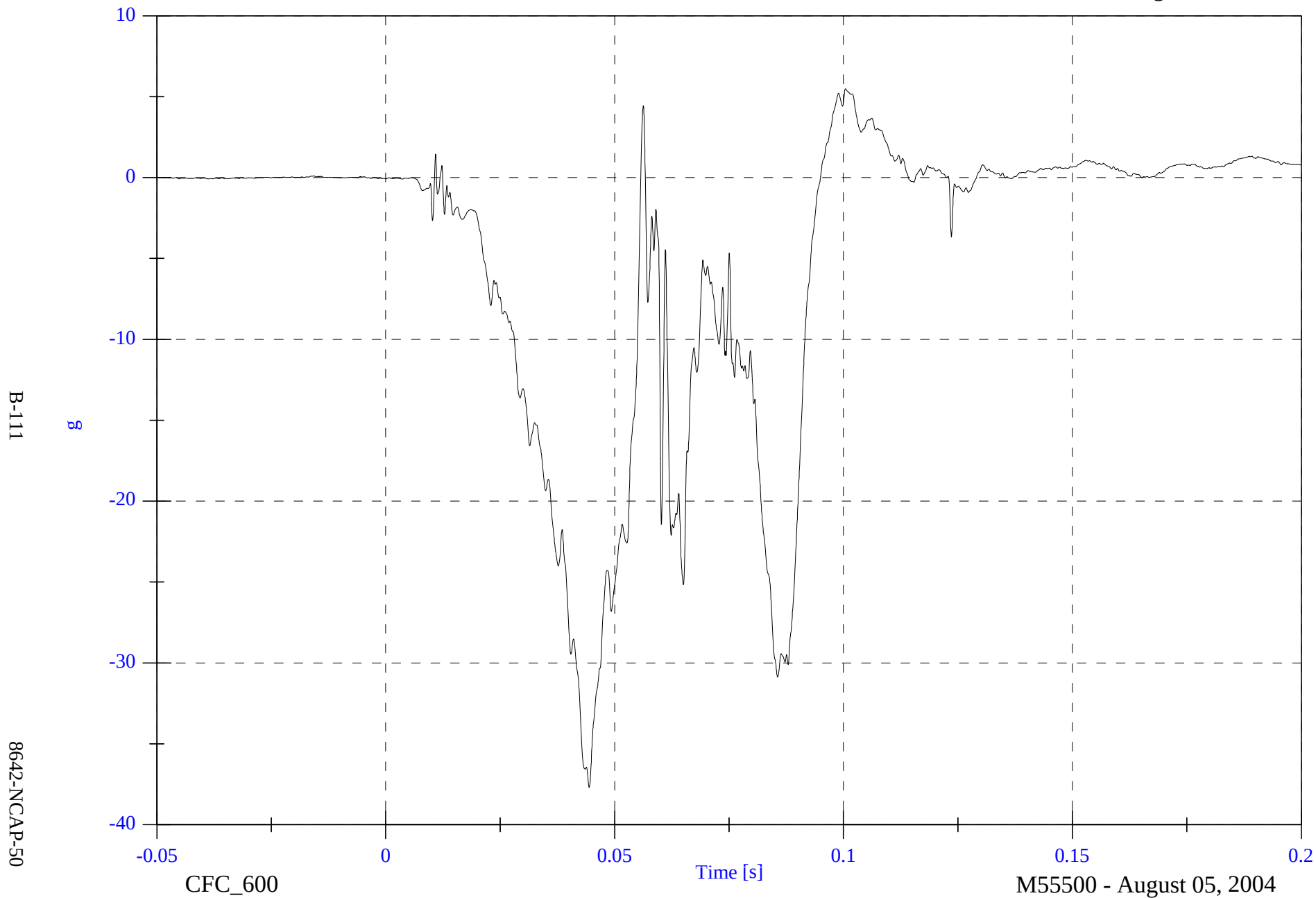


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Left Foot Aft z

Max: 5.5 [g] at 0.100 [s]

Min: -37.7 [g] at 0.044 [s]

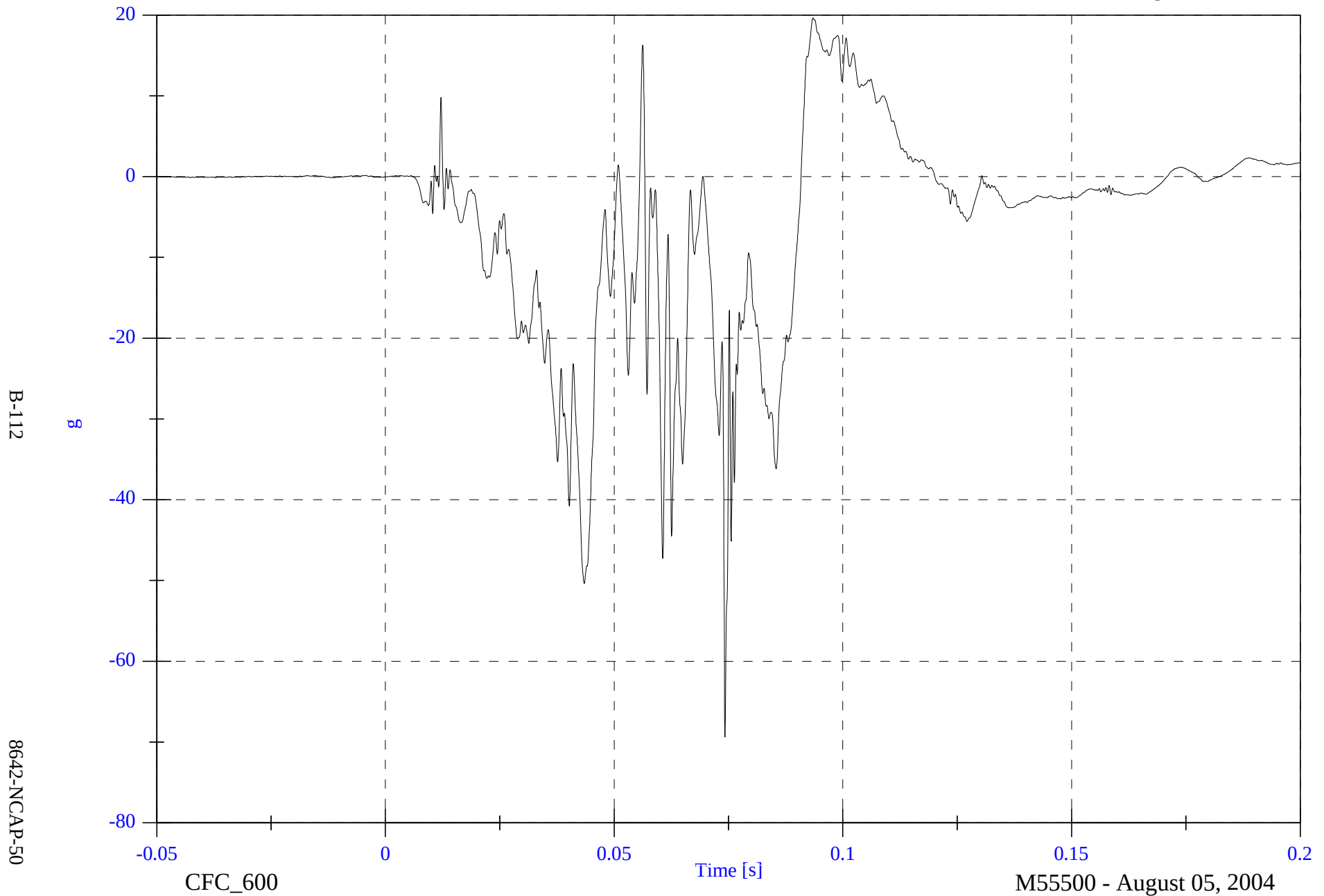


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Left Foot Fore z

Max: 19.6 [g] at 0.093 [s]

Min: -69.4 [g] at 0.074 [s]

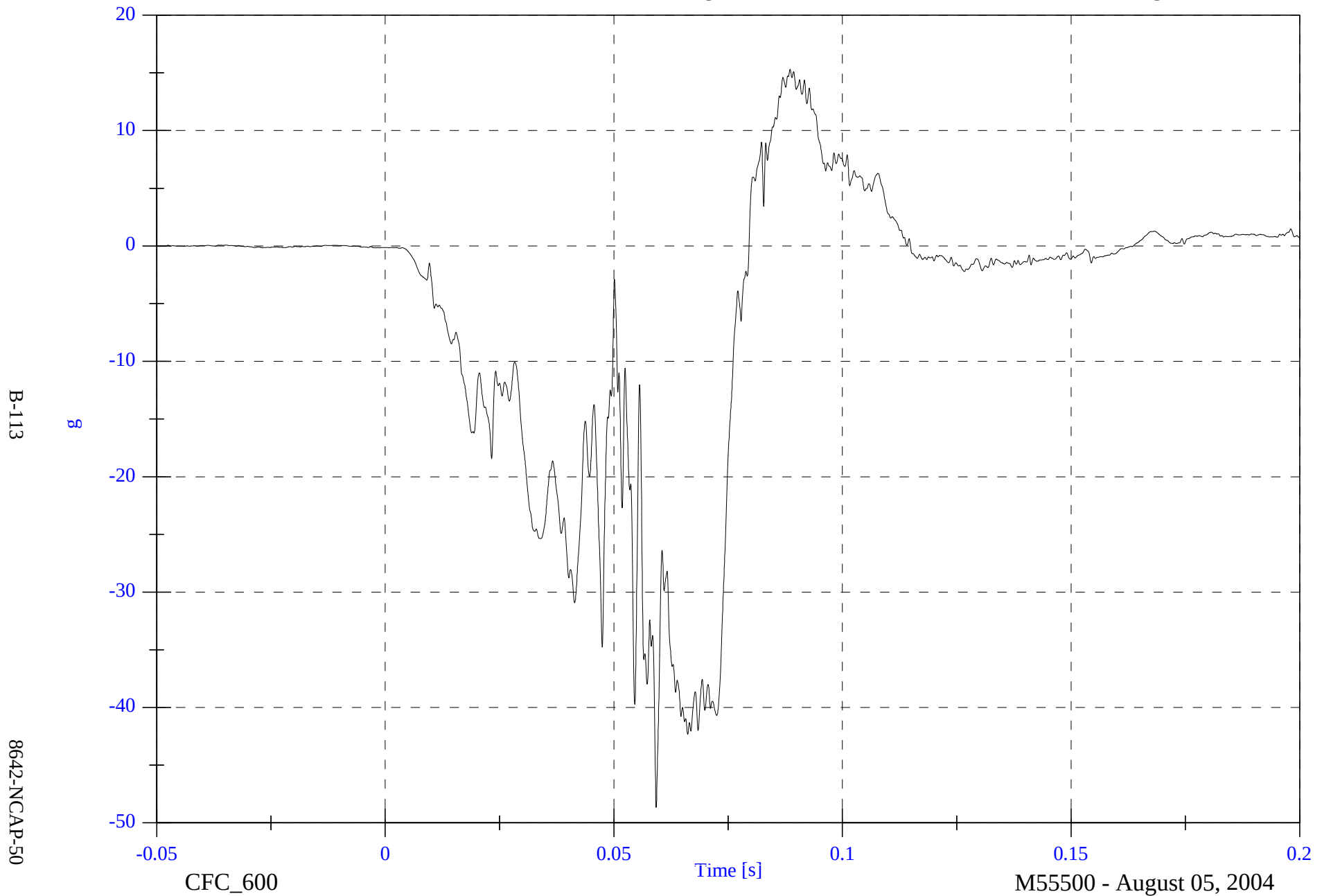


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Right Foot Aft x

Max: 15.3 [g] at 0.089 [s]

Min: -48.7 [g] at 0.059 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

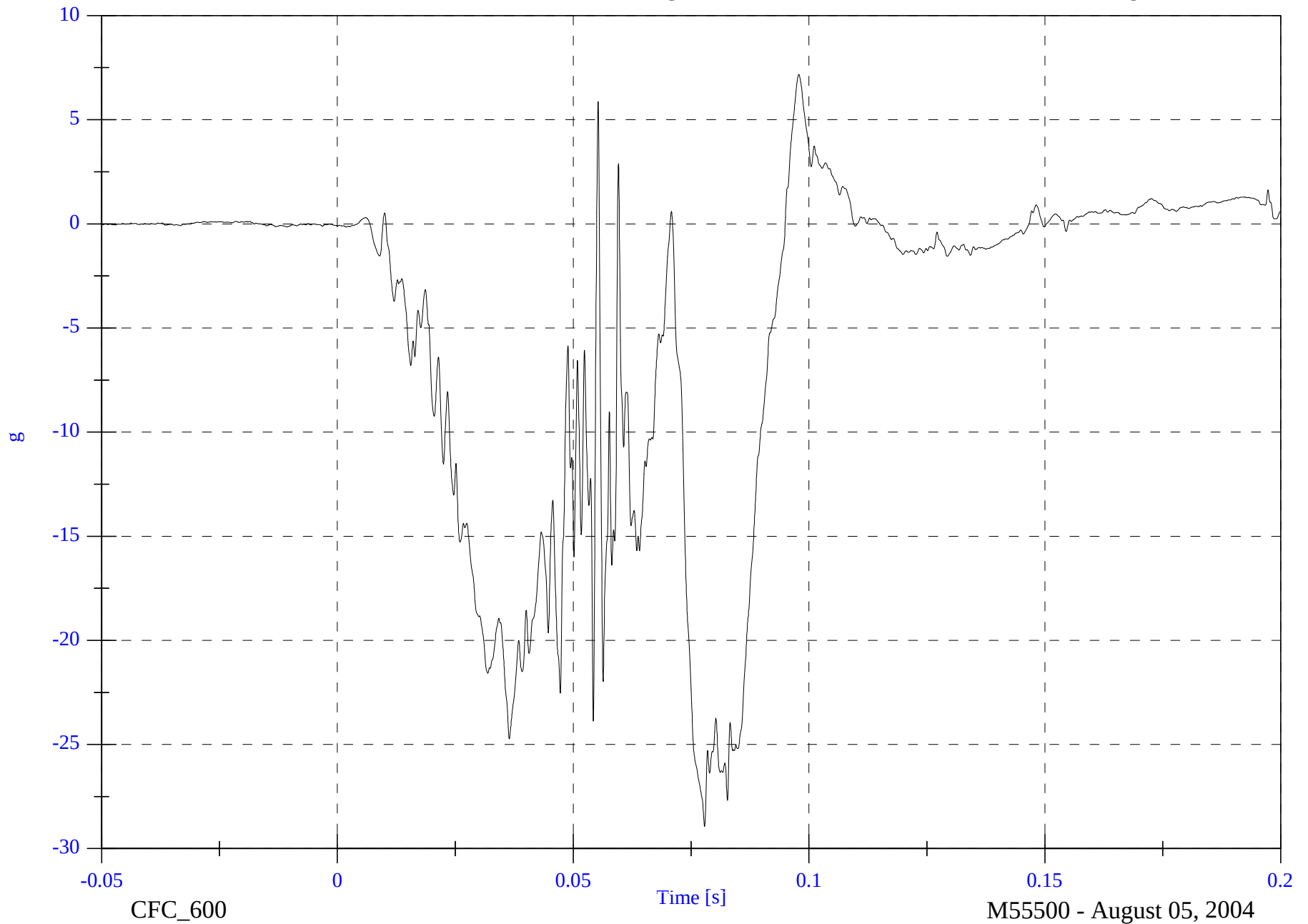
V1P2 Right Foot Aft z

Max: 7.2 [g] at 0.098 [s]

Min: -28.9 [g] at 0.078 [s]

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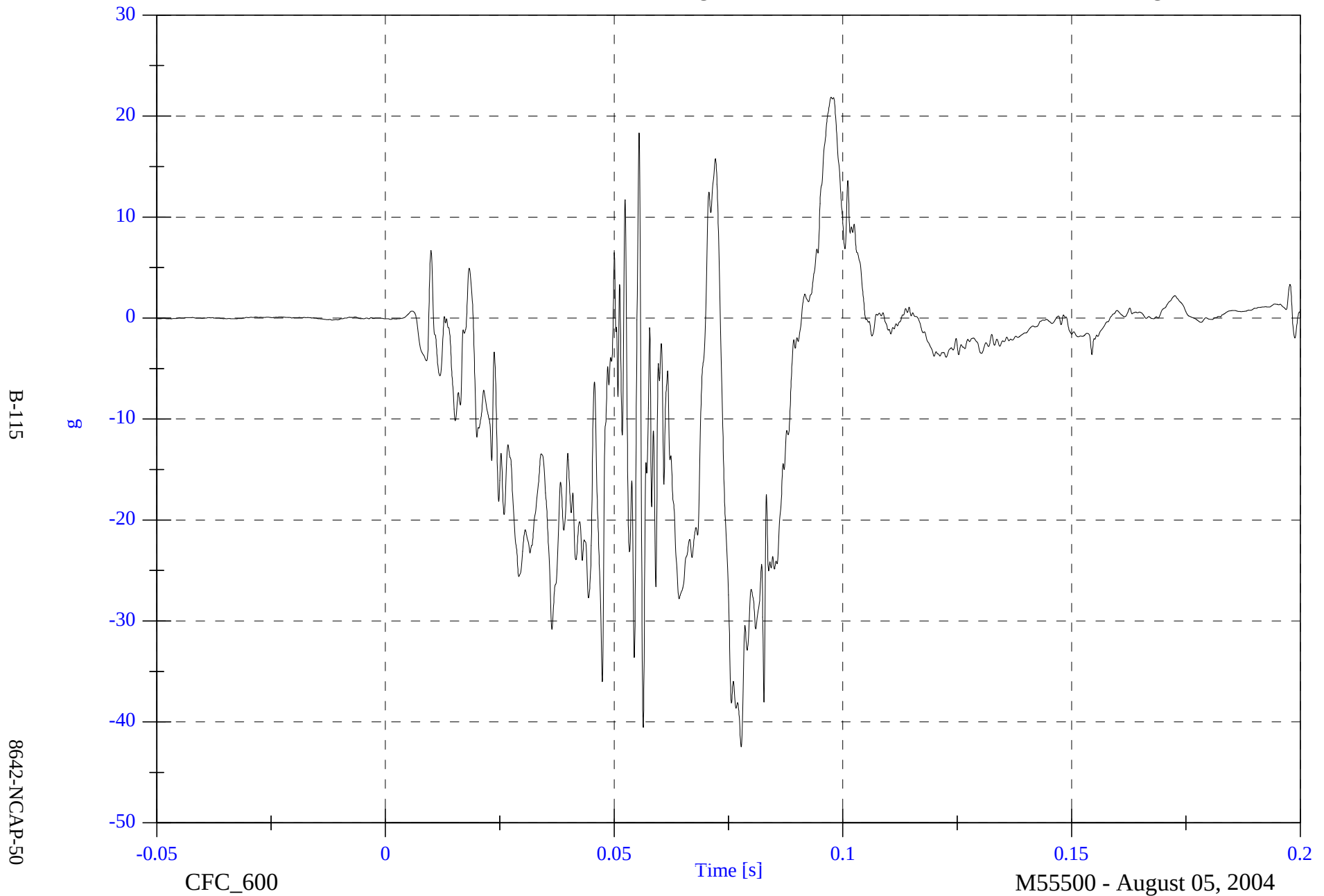


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Right Foot Fore z

Max: 21.9 [g] at 0.097 [s]

Min: -42.5 [g] at 0.078 [s]

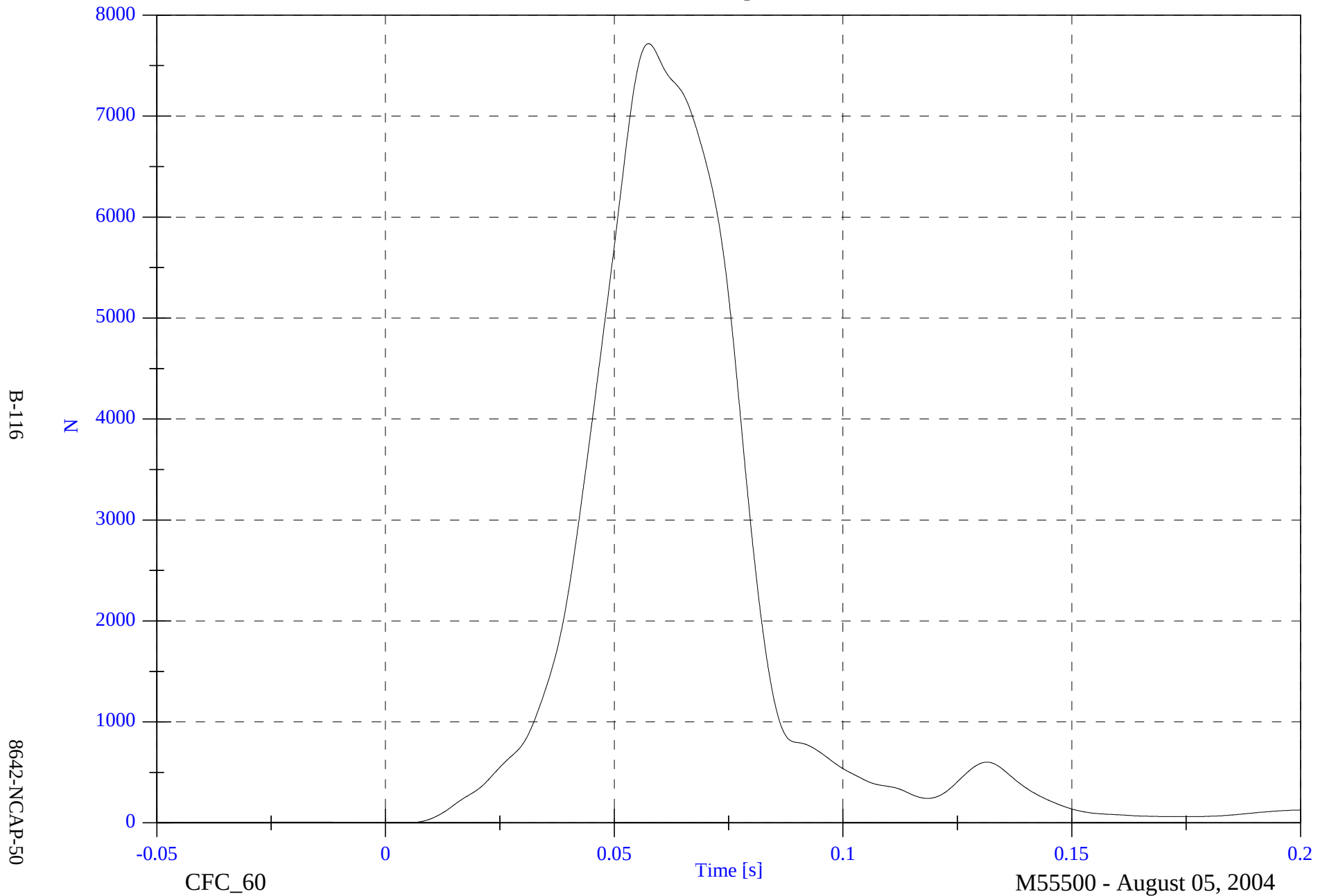


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Lap Belt

Max: 7717.5 [N] at 0.057 [s]

Min: 1.7 [N] at 0.004 [s]

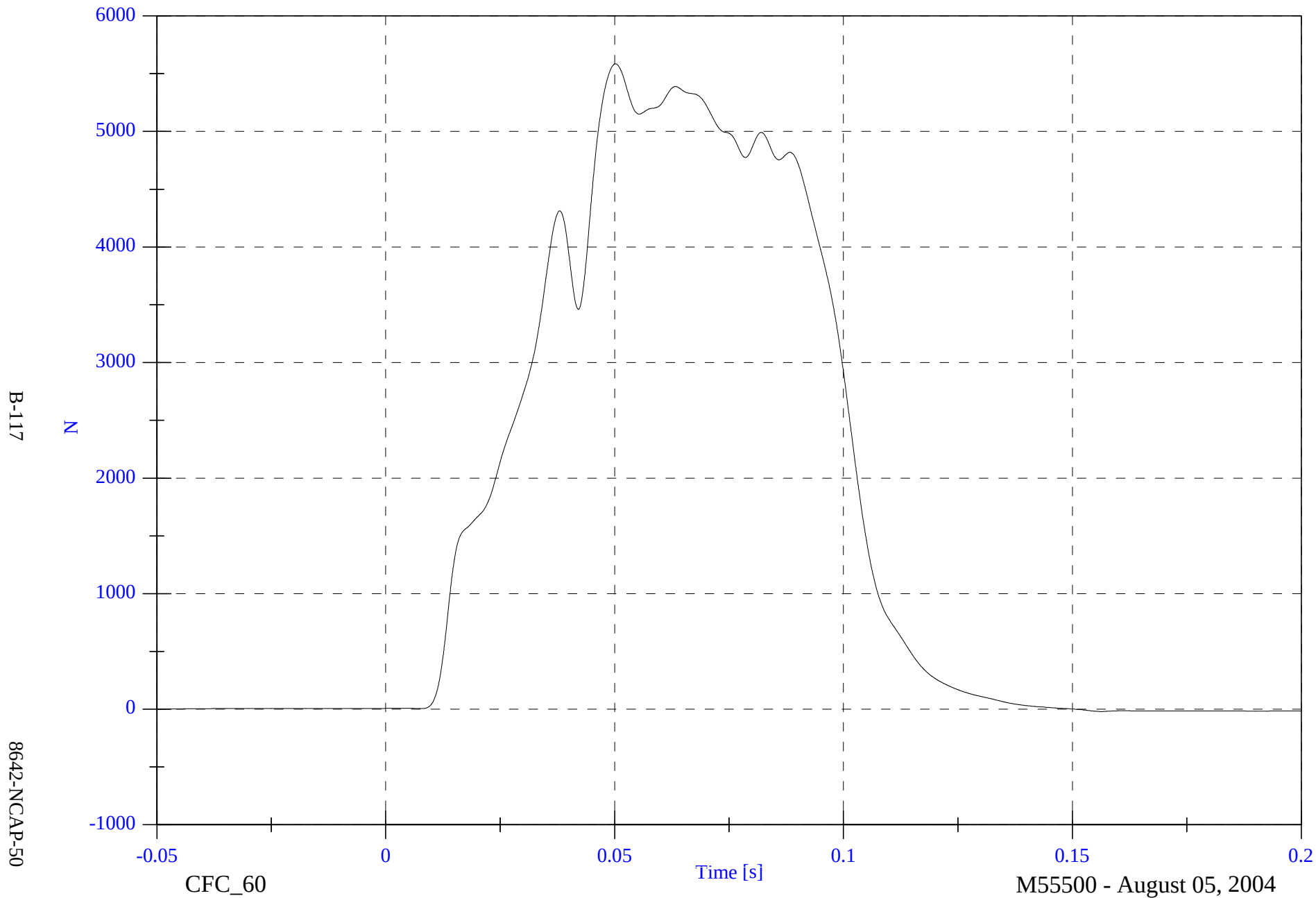


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P2 Torso Belt

Max: 5584.4 [N] at 0.050 [s]

Min: -20.0 [N] at 0.156 [s]

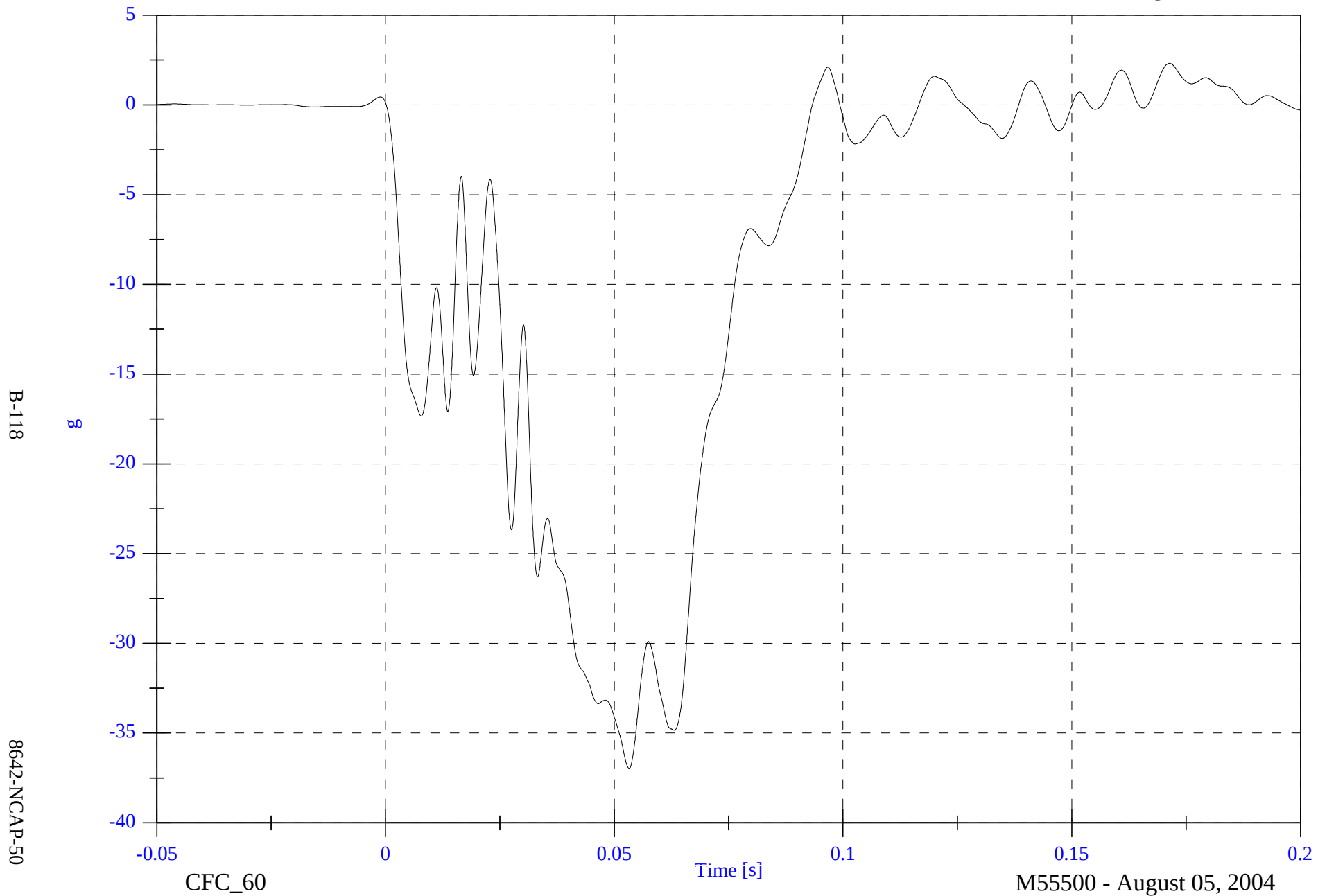


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Left Rear #1x

Max: 2.3 [g] at 0.171 [s]

Min: -37.0 [g] at 0.053 [s]

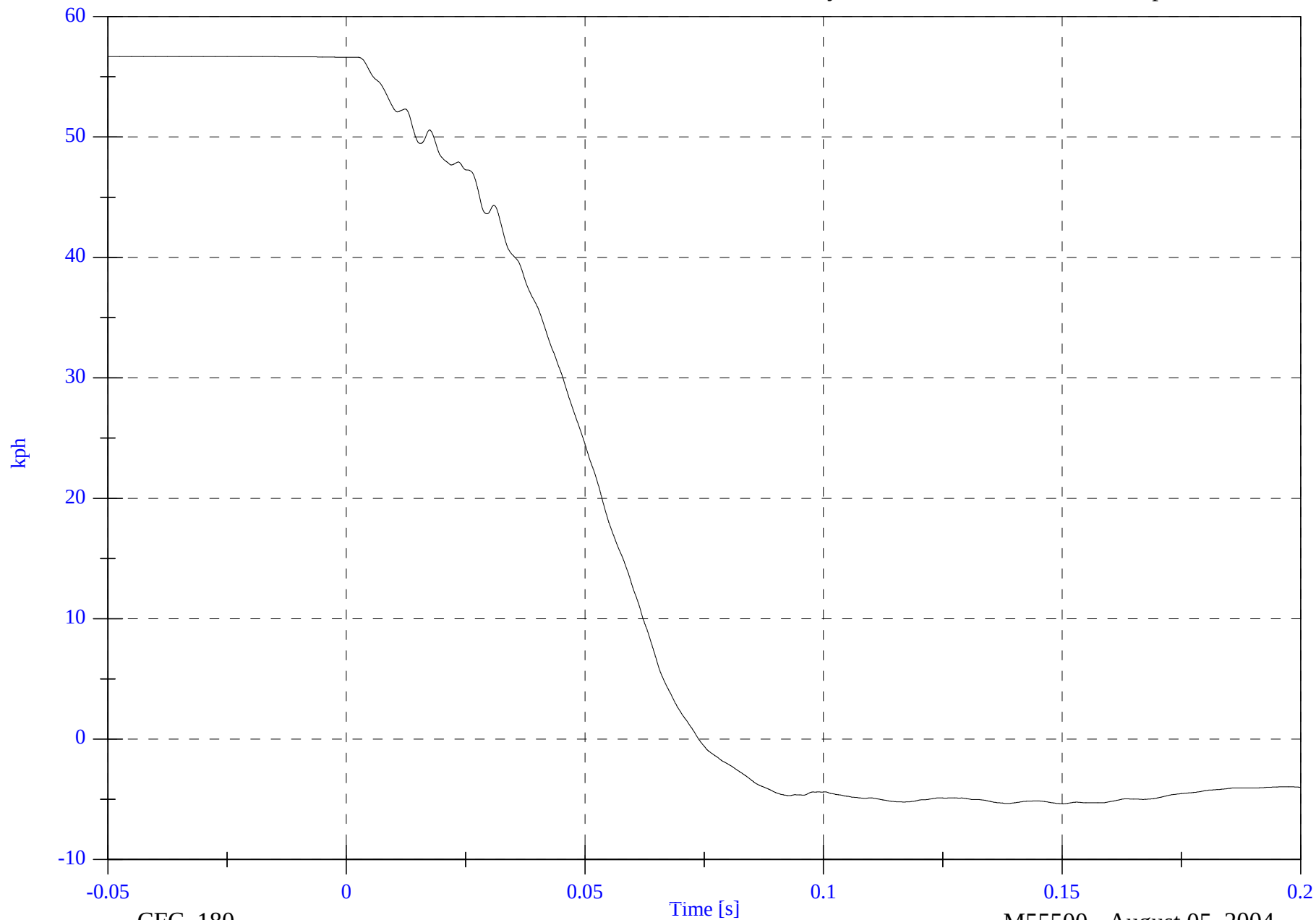


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Left Rear #1x Velocity

Max: 56.7 [kph] at -0.019 [s]

Min: -5.4 [kph] at 0.150 [s]



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CFC_180

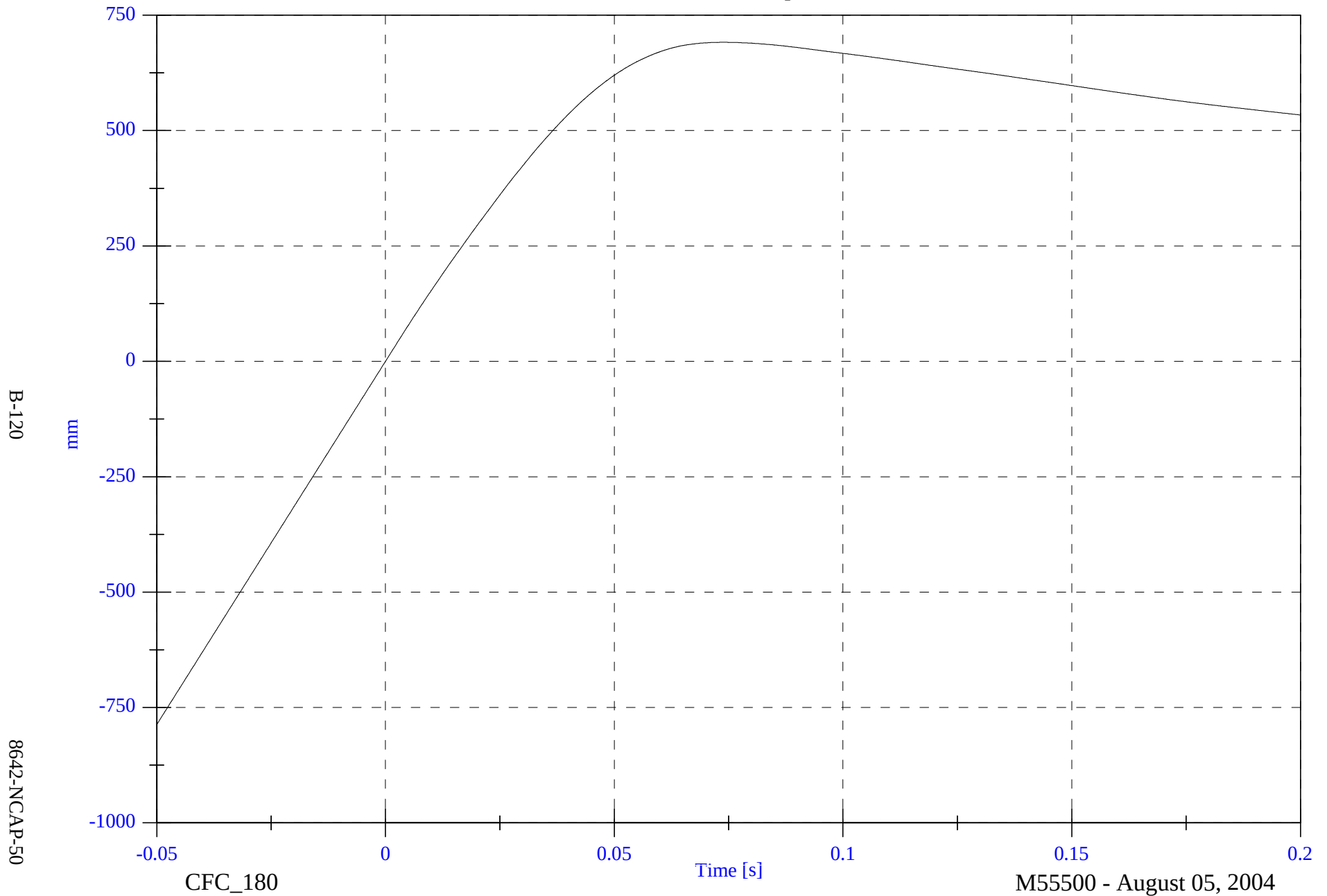
M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Left Rear #1x Displacement

Max: 691.2 [mm] at 0.074 [s]

Min: -787.0 [mm] at -0.050 [s]

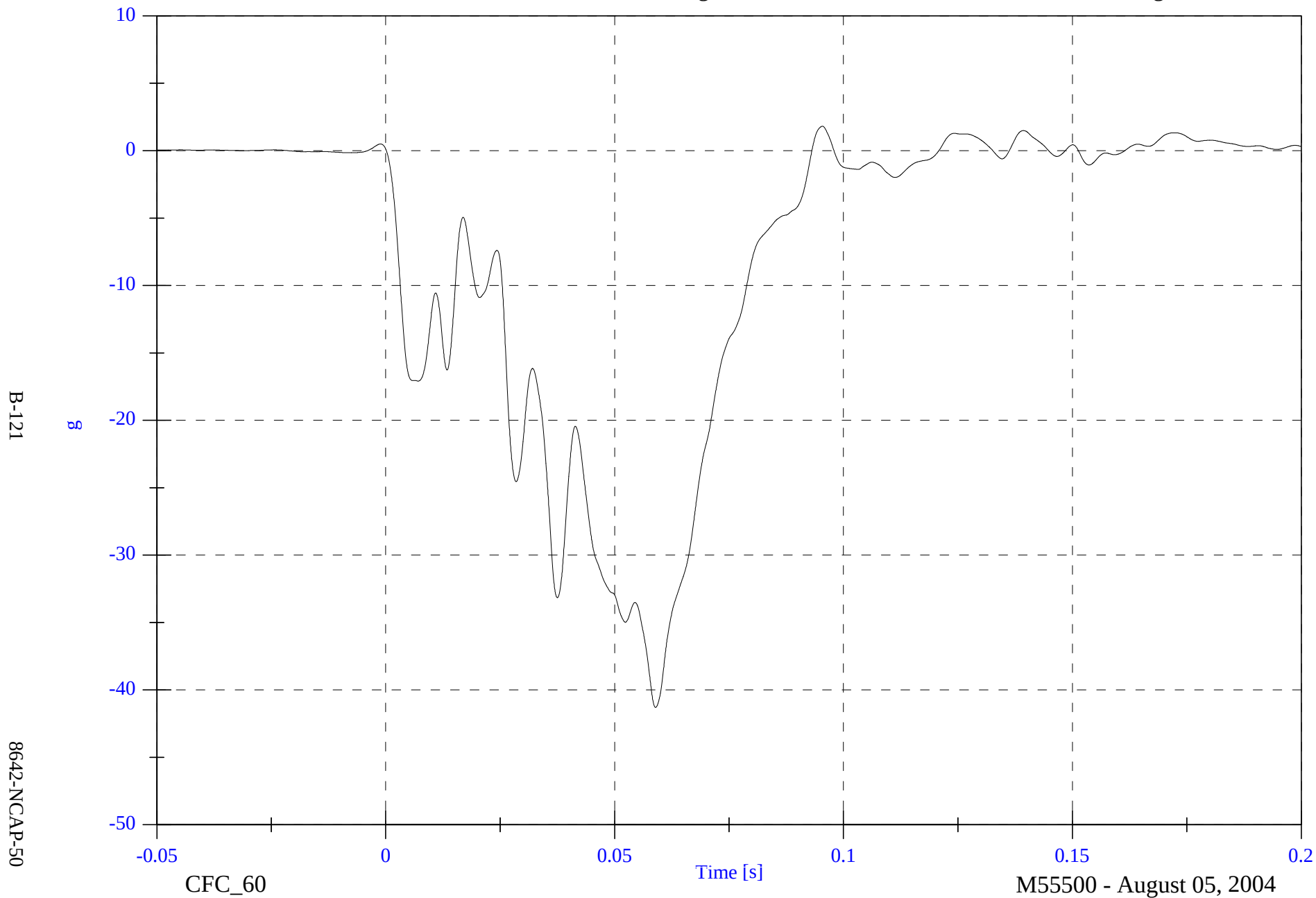


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Right Rear #2x

Max: 1.8 [g] at 0.095 [s]

Min: -41.3 [g] at 0.059 [s]

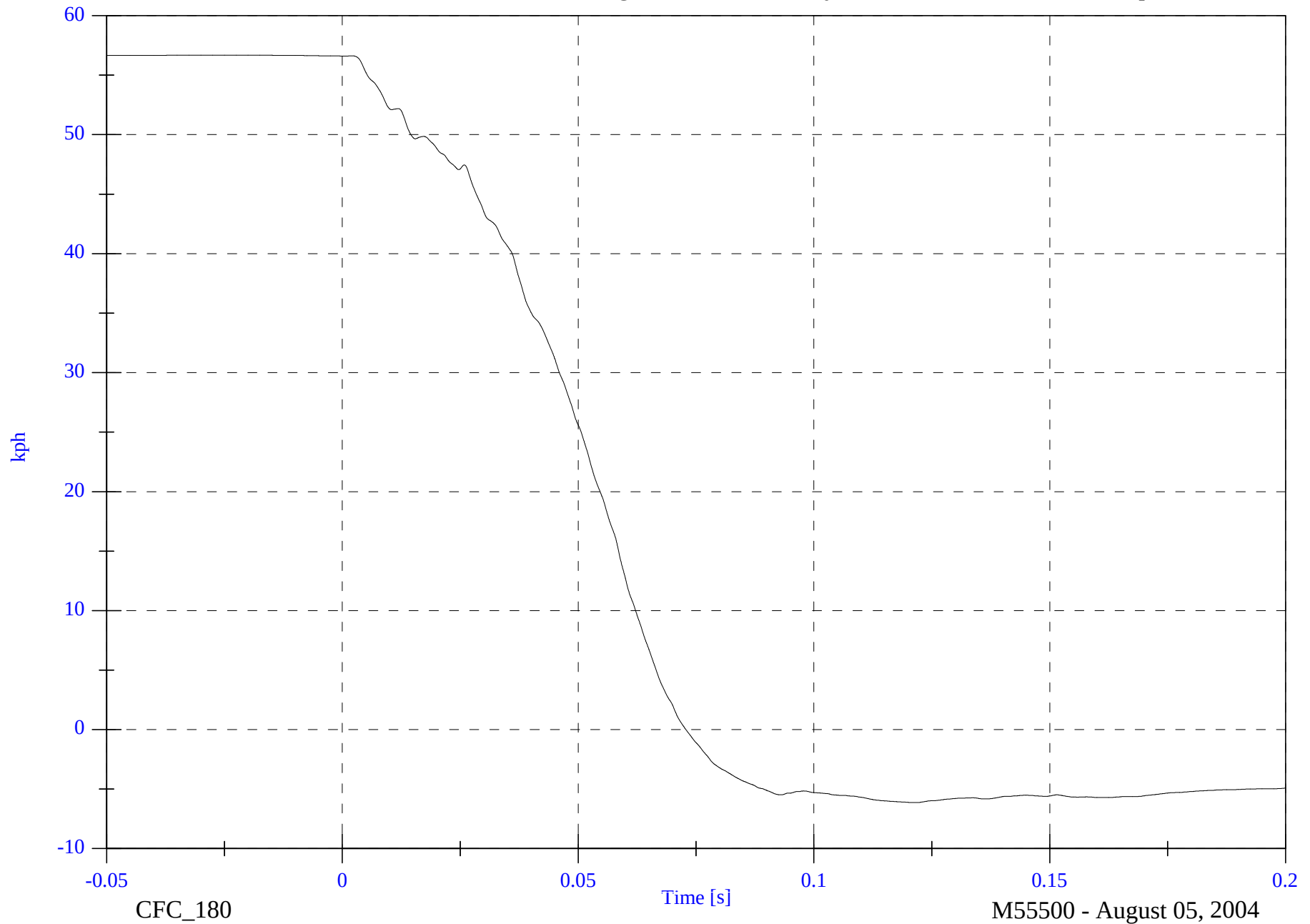


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Right Rear #2x Velocity

Max: 56.7 [kph] at -0.020 [s]

Min: -6.1 [kph] at 0.122 [s]



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8642-NCAP-50

CFC_180

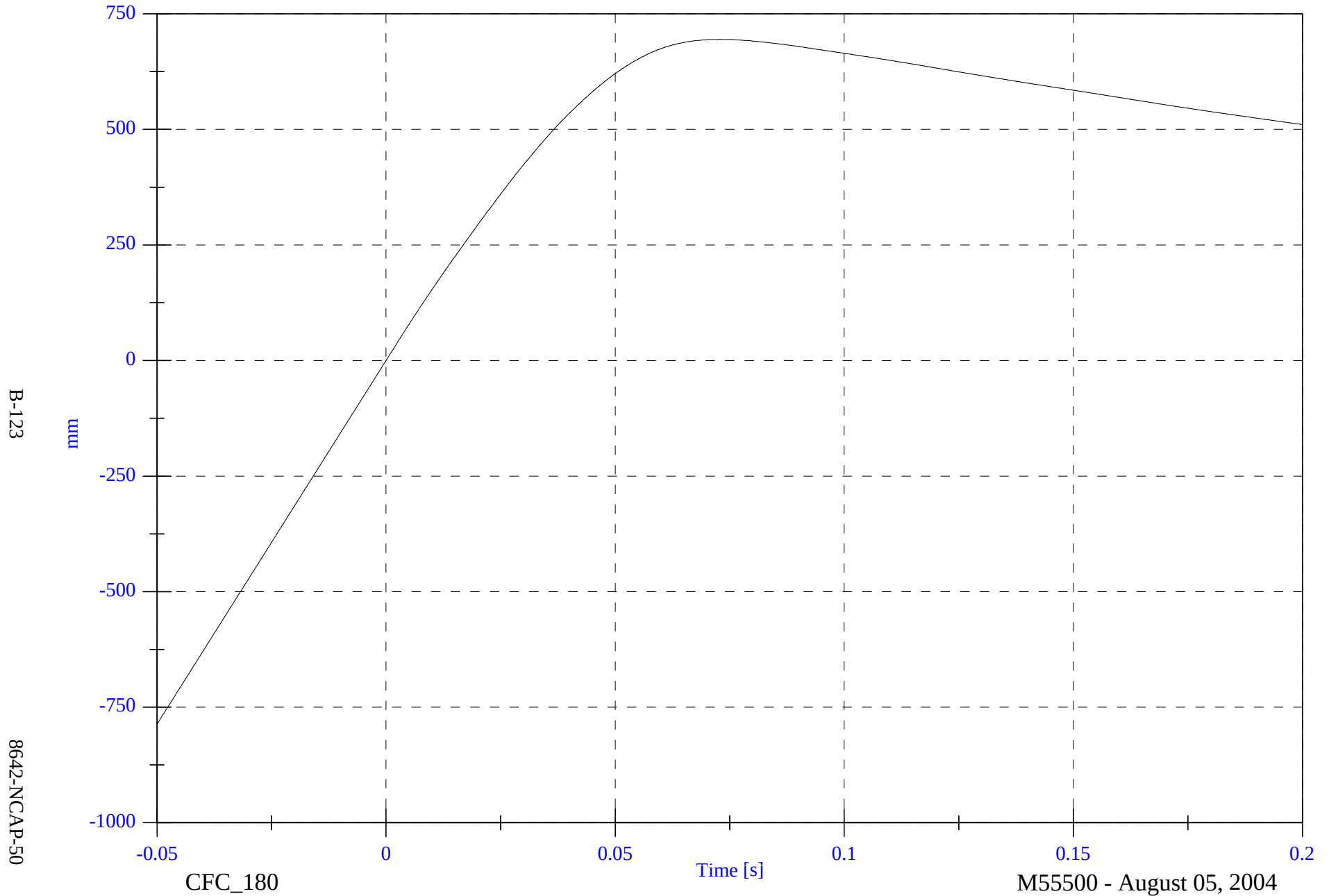
M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Right Rear #2x Displacement

Max: 694.5 [mm] at 0.073 [s]

Min: -786.9 [mm] at -0.050 [s]

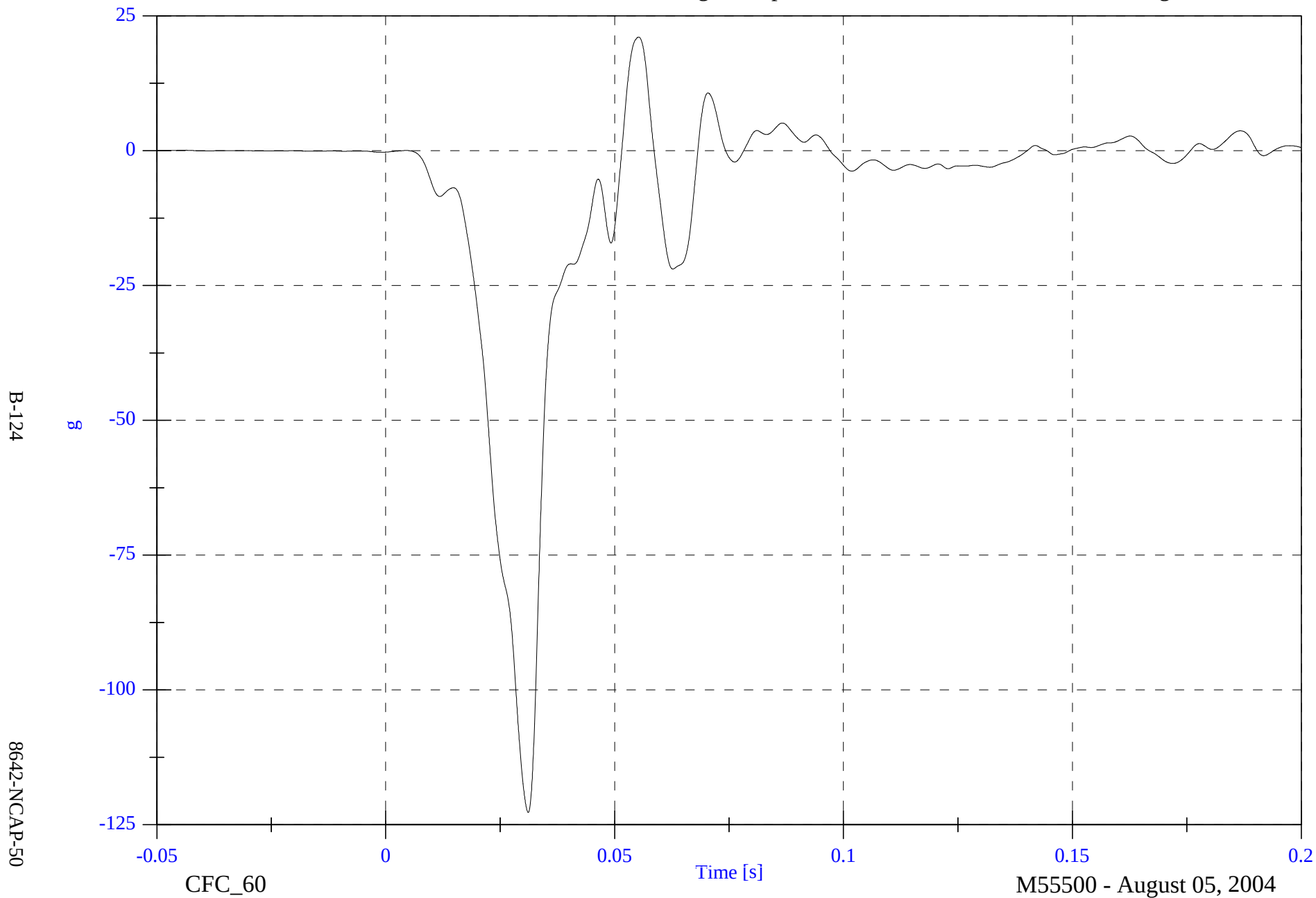


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Engine Top #3x

Max: 21.1 [g] at 0.055 [s]

Min: -122.7 [g] at 0.031 [s]

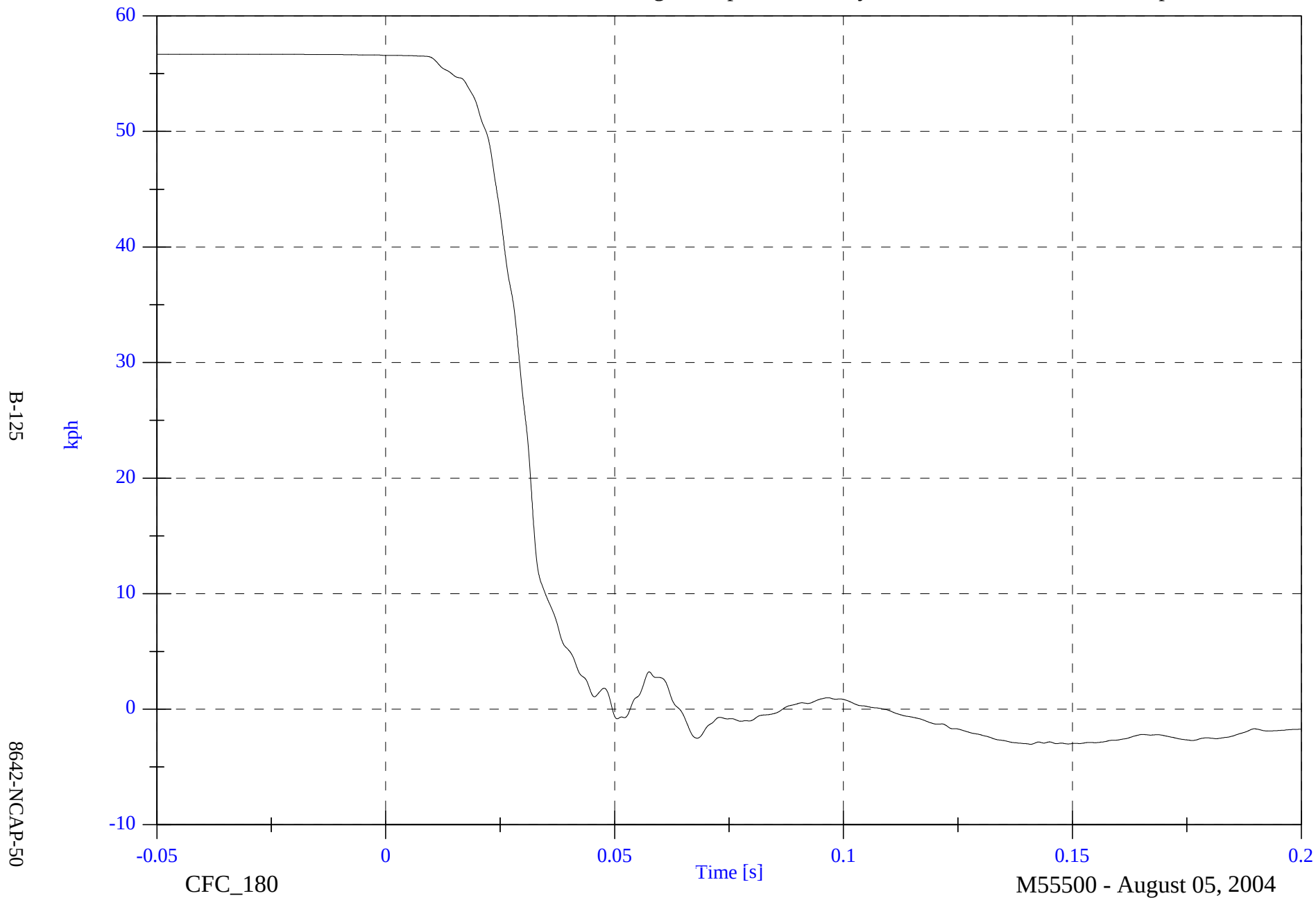


2004 NCAP TEST 14 - 2005 Subaru Outback

Max: 56.7 [kph] at -0.042 [s]

V1 Engine Top #3x Velocity

Min: -3.0 [kph] at 0.141 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

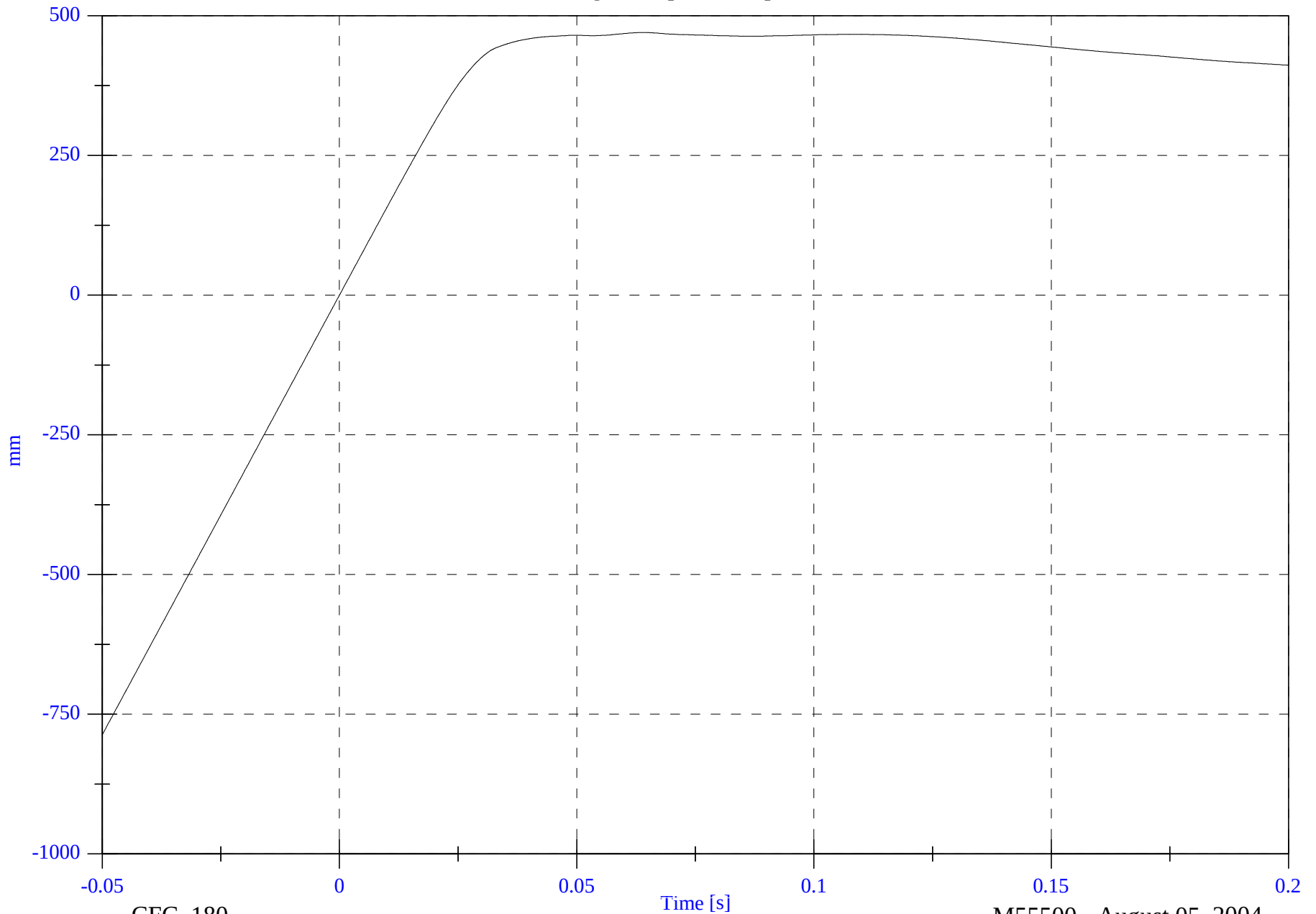
V1 Engine Top #3x Displacement

Max: 469.7 [mm] at 0.064 [s]

Min: -786.9 [mm] at -0.050 [s]

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CFC_180

M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

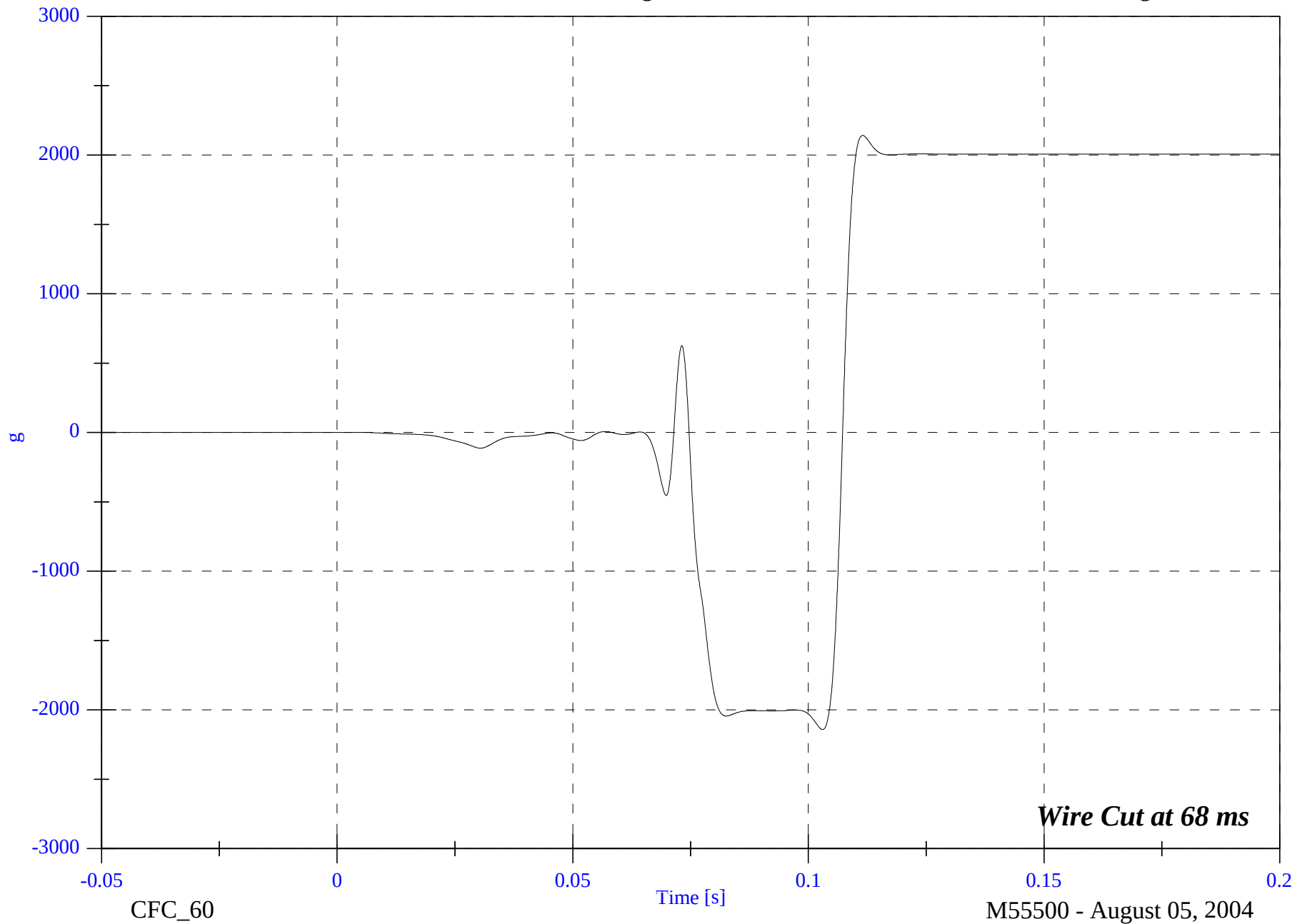
V1 Engine Bottom #4x

Max: 2141.4 [g] at 0.111 [s]

Min: -2141.4 [g] at 0.103 [s]

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2004 NCAP TEST 14 - 2005 Subaru Outback

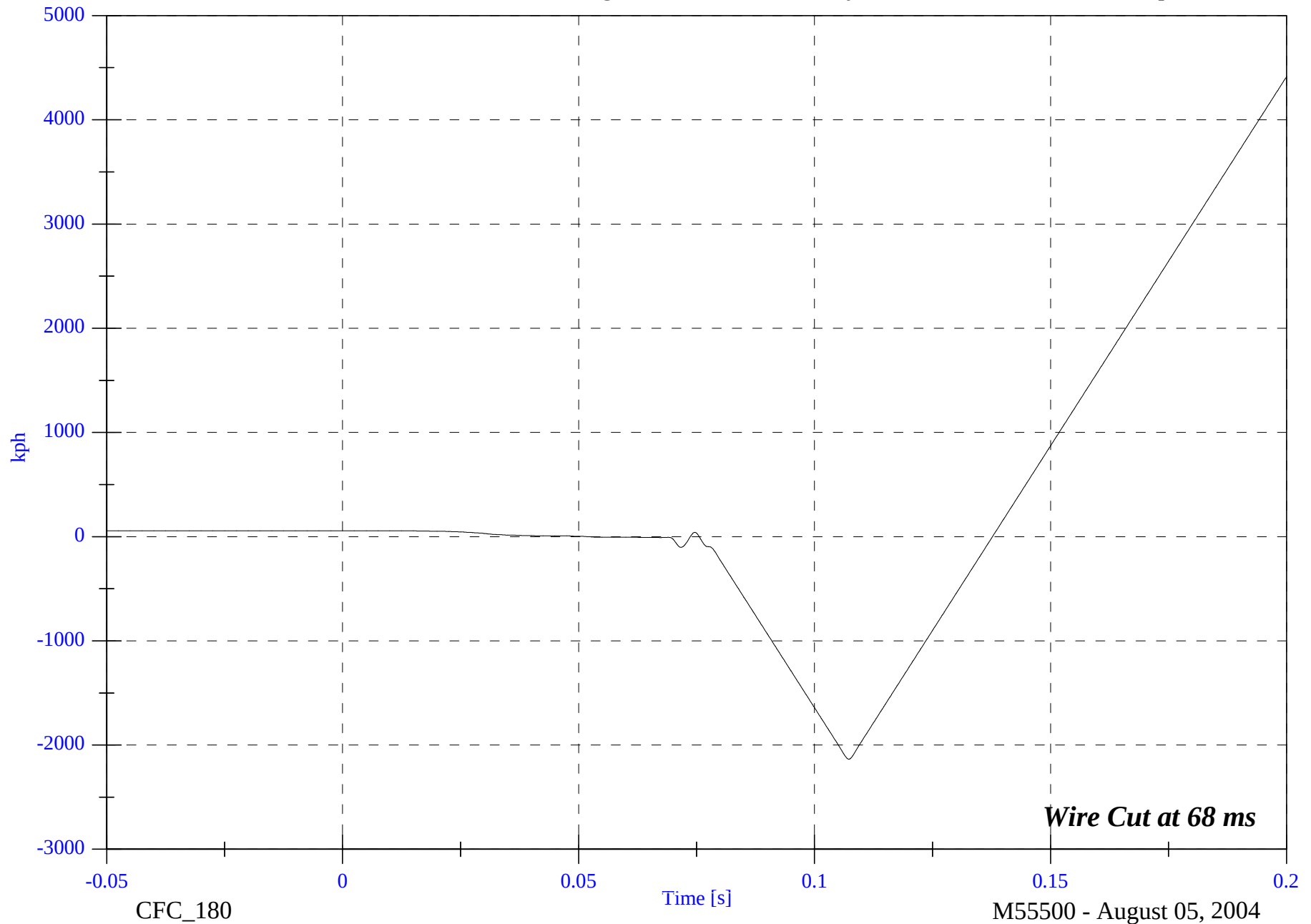
V1 Engine Bottom #4x Velocity

Max: 4410.7 [kph] at 0.200 [s]

Min: -2135.5 [kph] at 0.107 [s]

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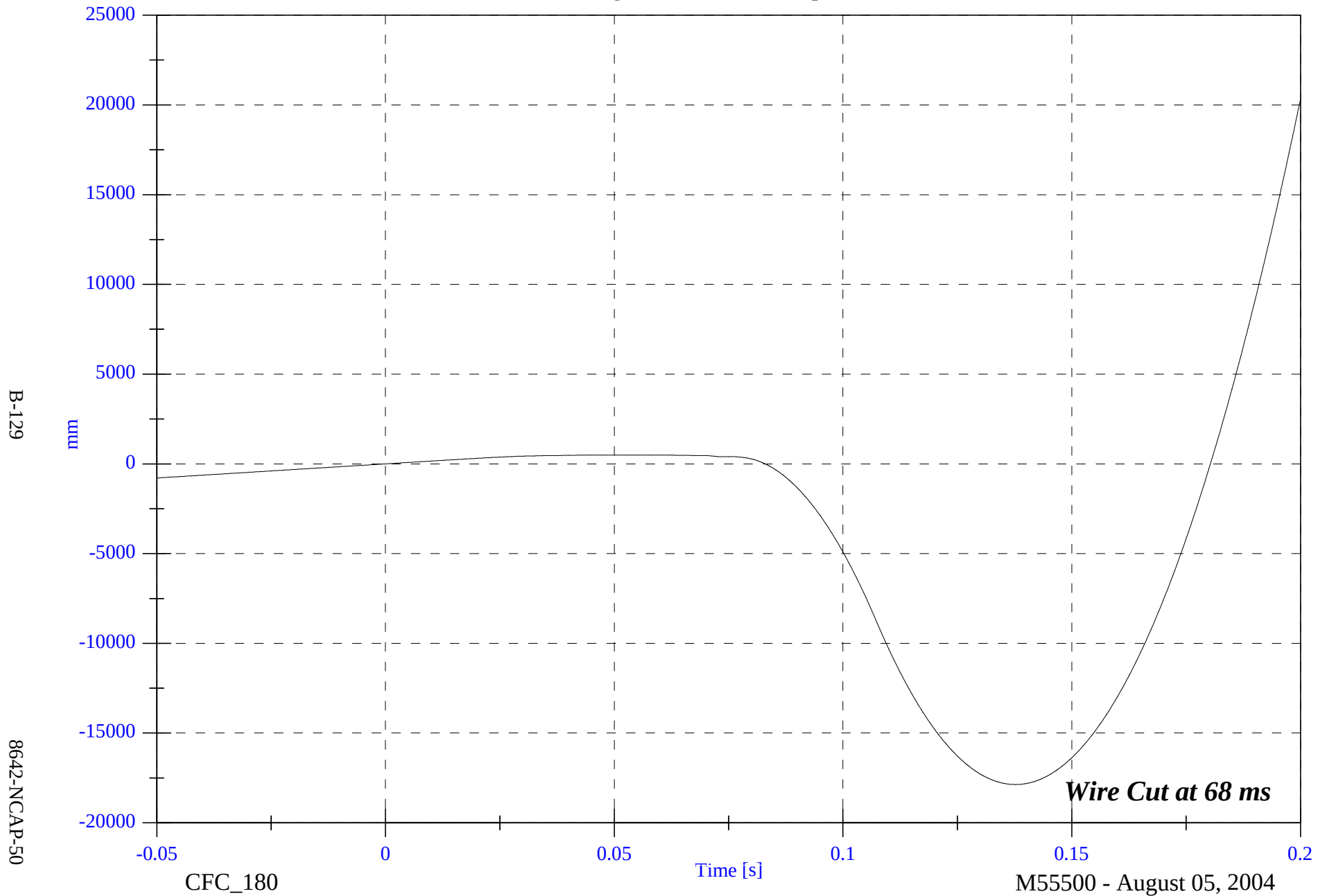


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Engine Bottom #4x Displacement

Max: 20272.0 [mm] at 0.200 [s]

Min: -17863.4 [mm] at 0.138 [s]

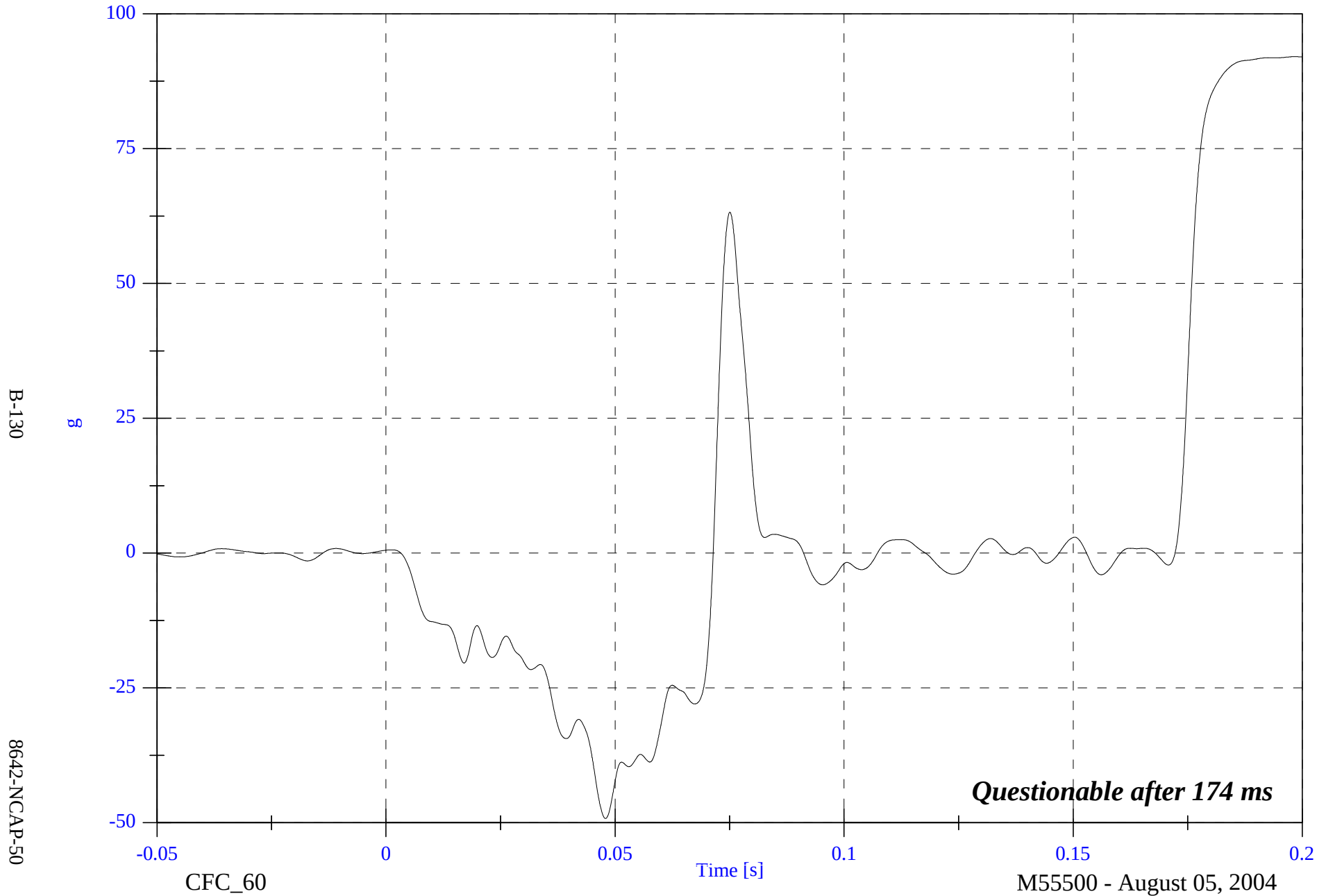


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Right Caliper #5x

Max: 92.0 [g] at 0.198 [s]

Min: -49.2 [g] at 0.048 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

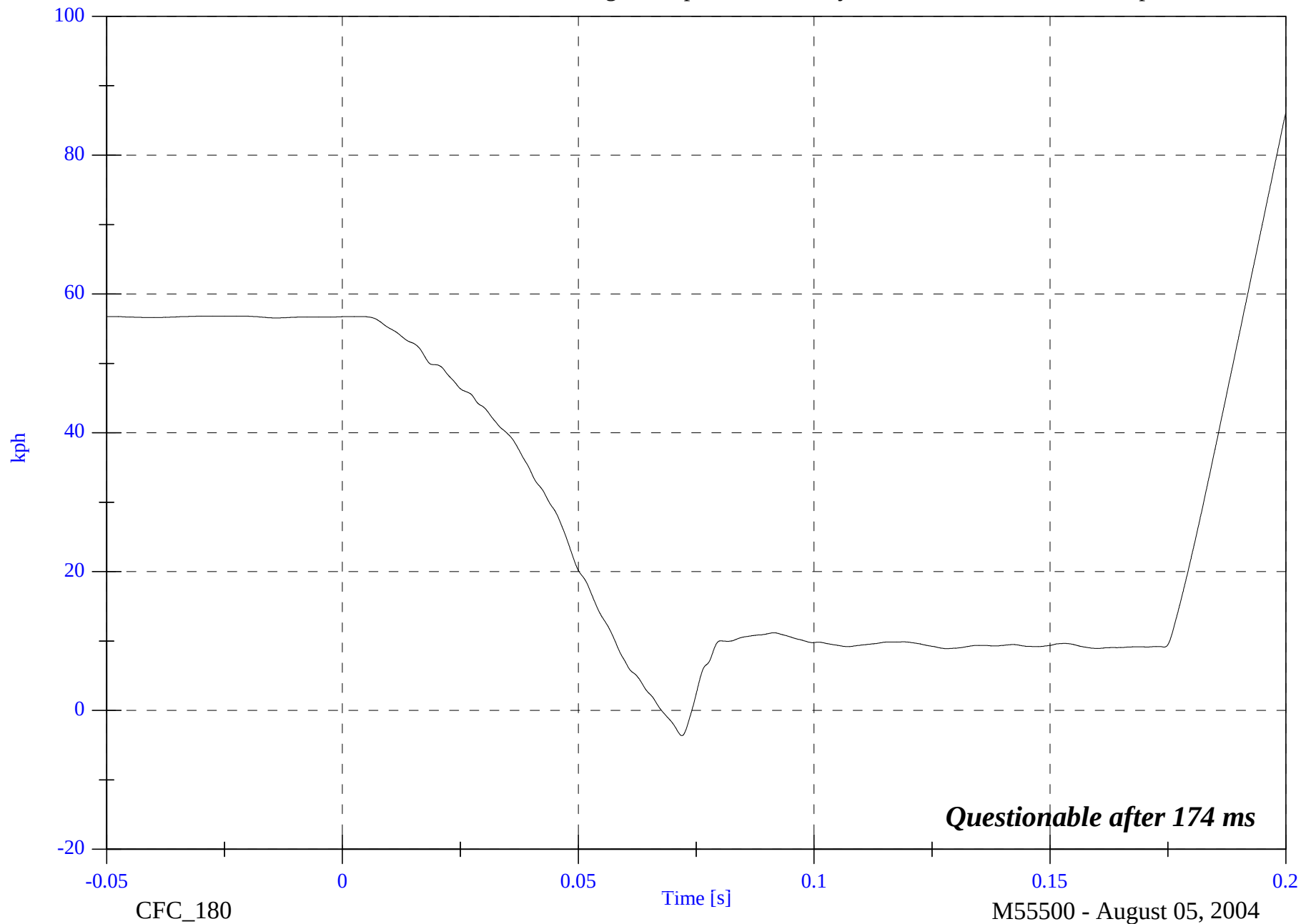
V1 Right Caliper #5x Velocity

Max: 86.1 [kph] at 0.200 [s]

Min: -3.6 [kph] at 0.072 [s]

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8642-NCAP-50

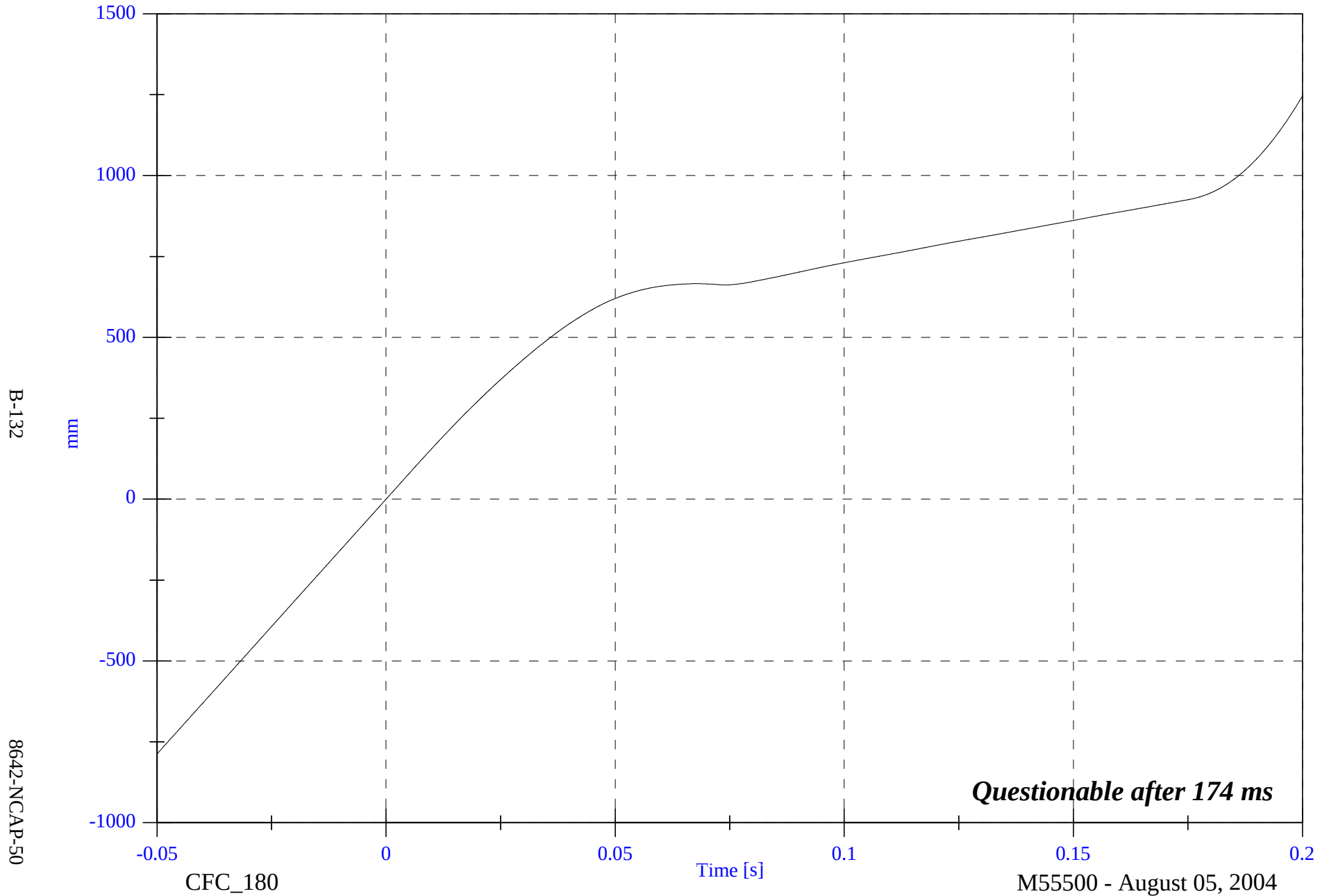


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Right Caliper #5x Displacement

Max: 1244.9 [mm] at 0.200 [s]

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

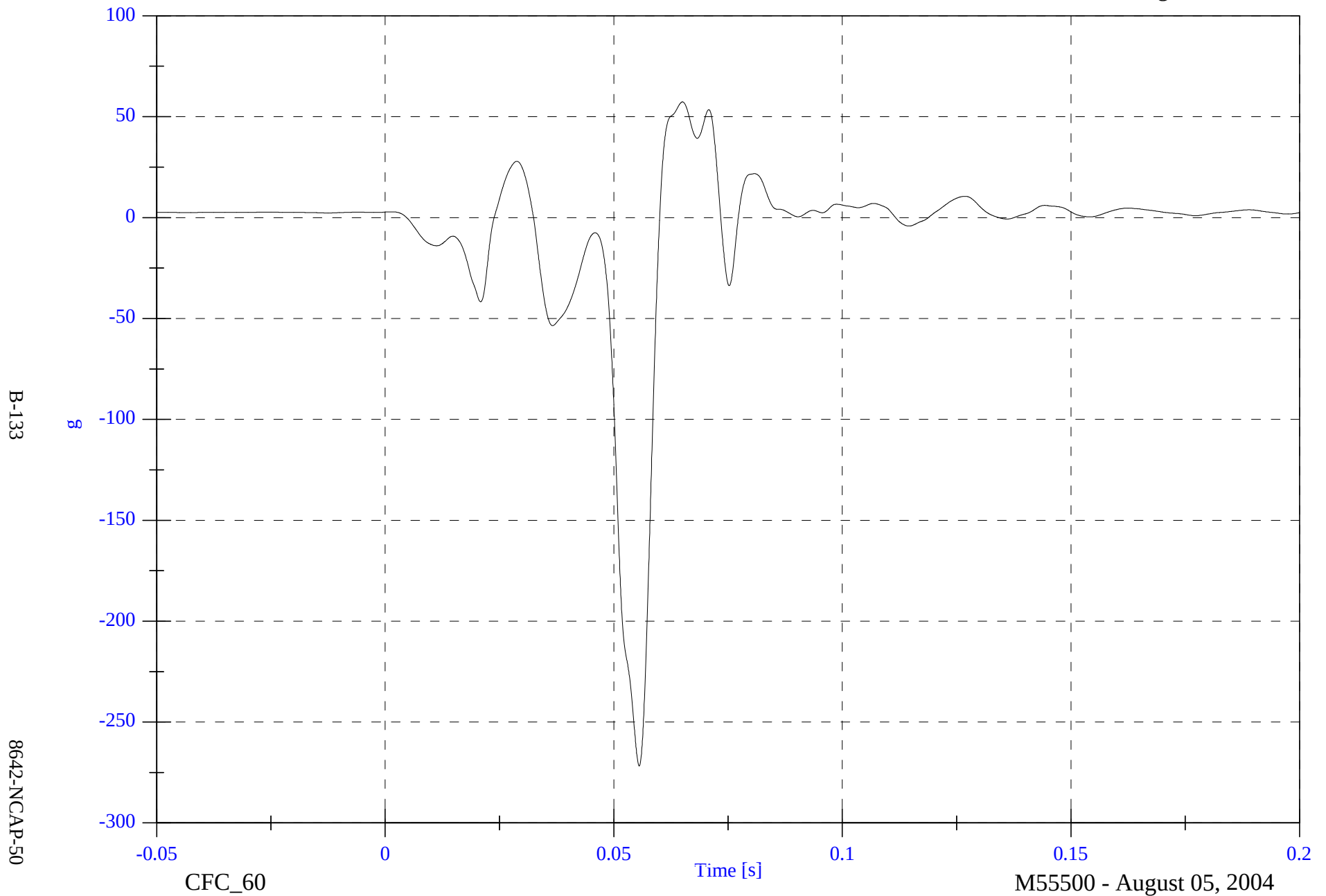


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Instrument Panel #6x

Max: 57.3 [g] at 0.065 [s]

Min: -271.8 [g] at 0.056 [s]

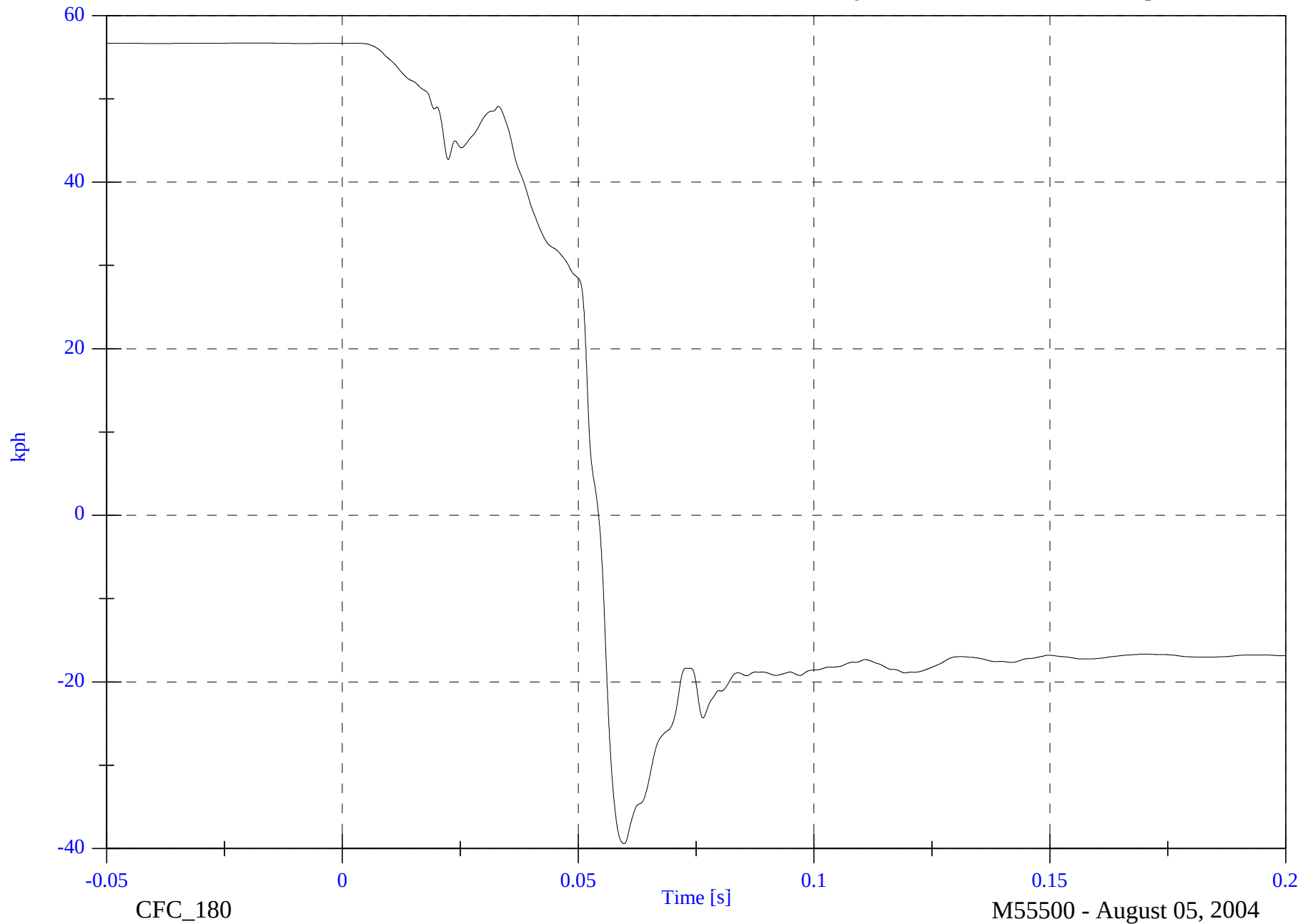


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Instrument Panel #6x Velocity

Max: 56.7 [kph] at -0.019 [s]

Min: -39.4 [kph] at 0.060 [s]



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CFC_180

Time [s]

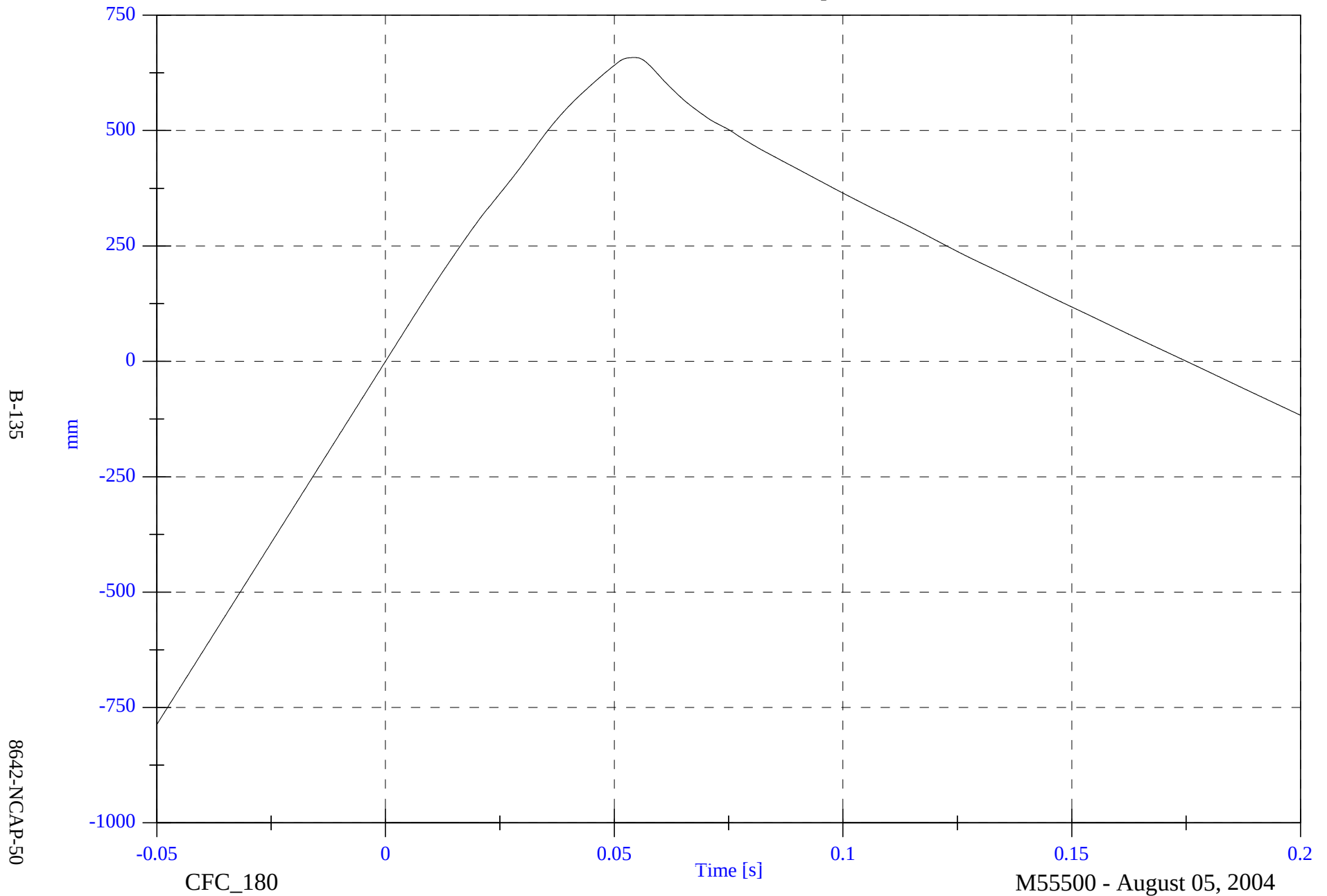
M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Instrument Panel #6x Displacement

Max: 658.3 [mm] at 0.054 [s]

Min: -787.1 [mm] at -0.050 [s]

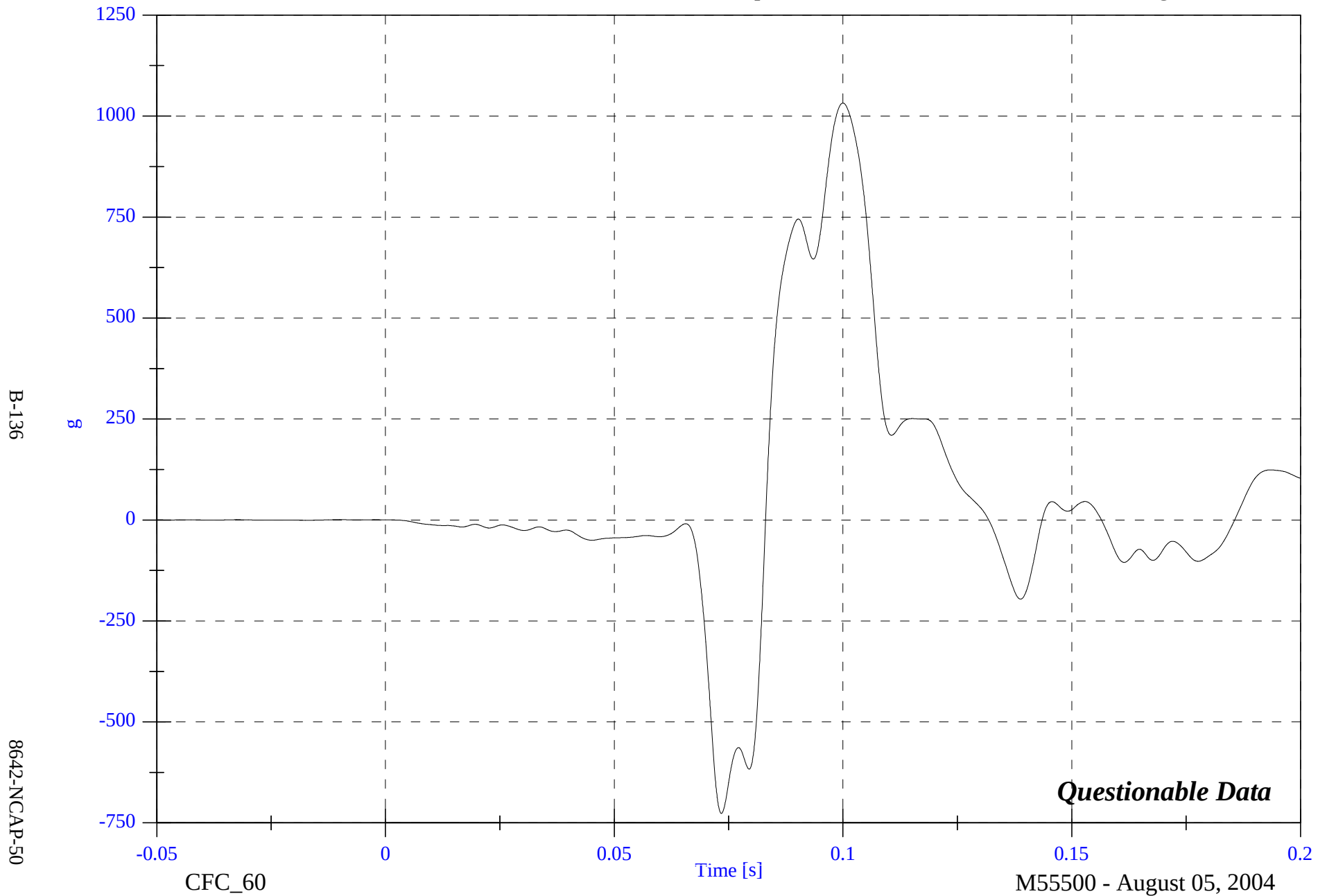


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Left Caliper #7x

Max: 1032.3 [g] at 0.100 [s]

Min: -726.6 [g] at 0.073 [s]

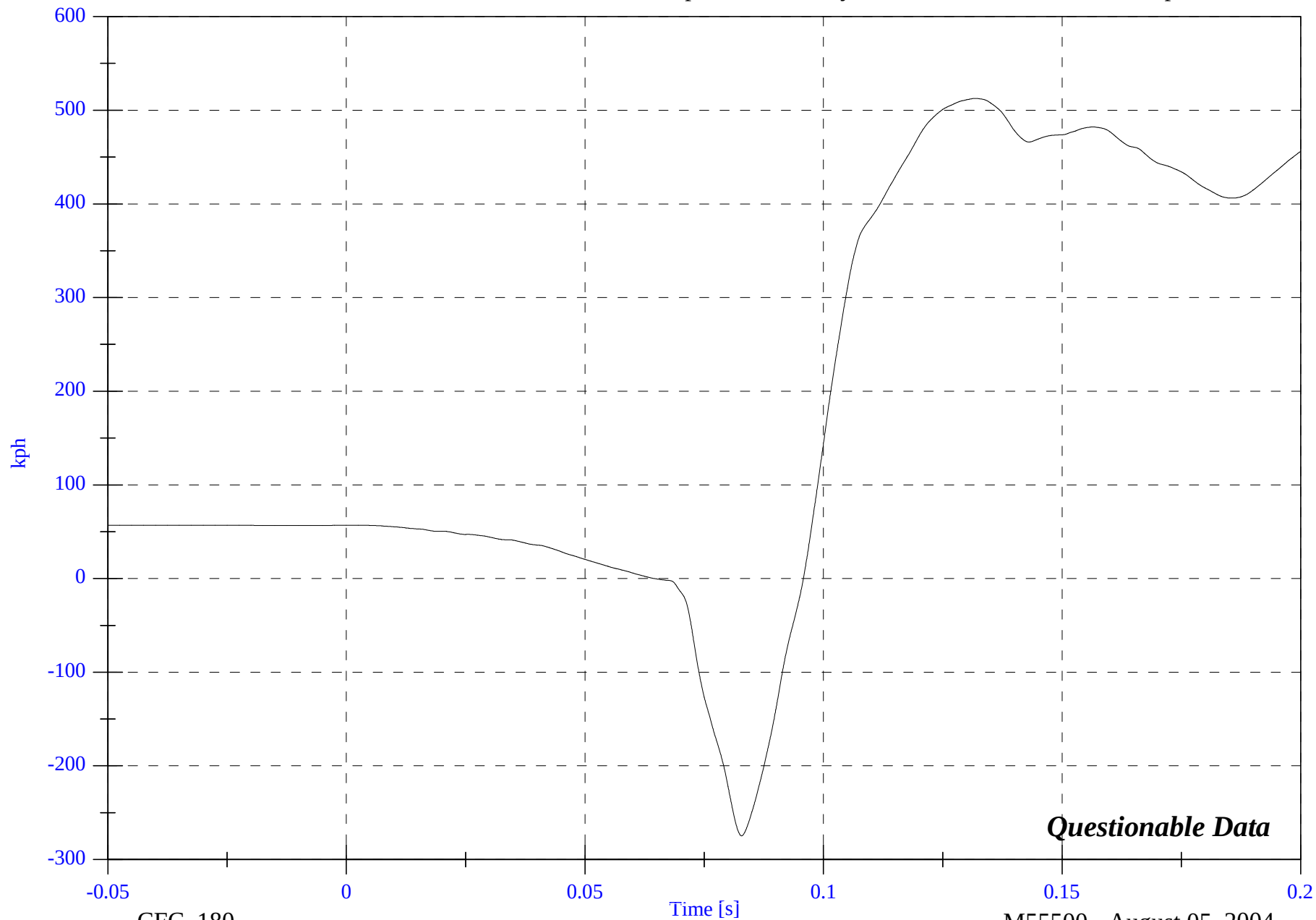


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Left Caliper #7x Velocity

Max: 512.5 [kph] at 0.132 [s]

Min: -274.7 [kph] at 0.083 [s]



Questionable Data

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CFC_180

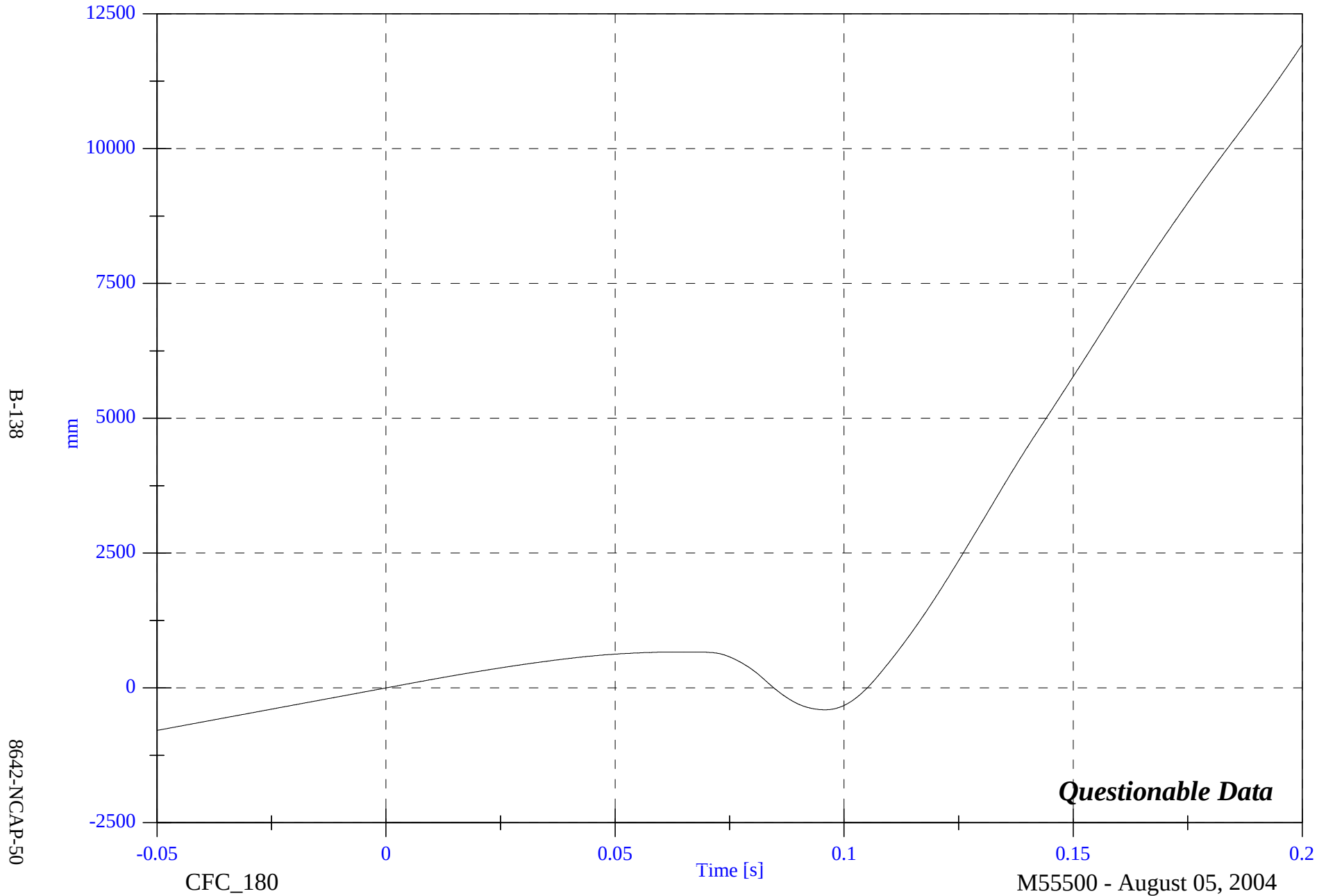
M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Left Caliper #7x Displacement

Max: 11924.6 [mm] at 0.200 [s]

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

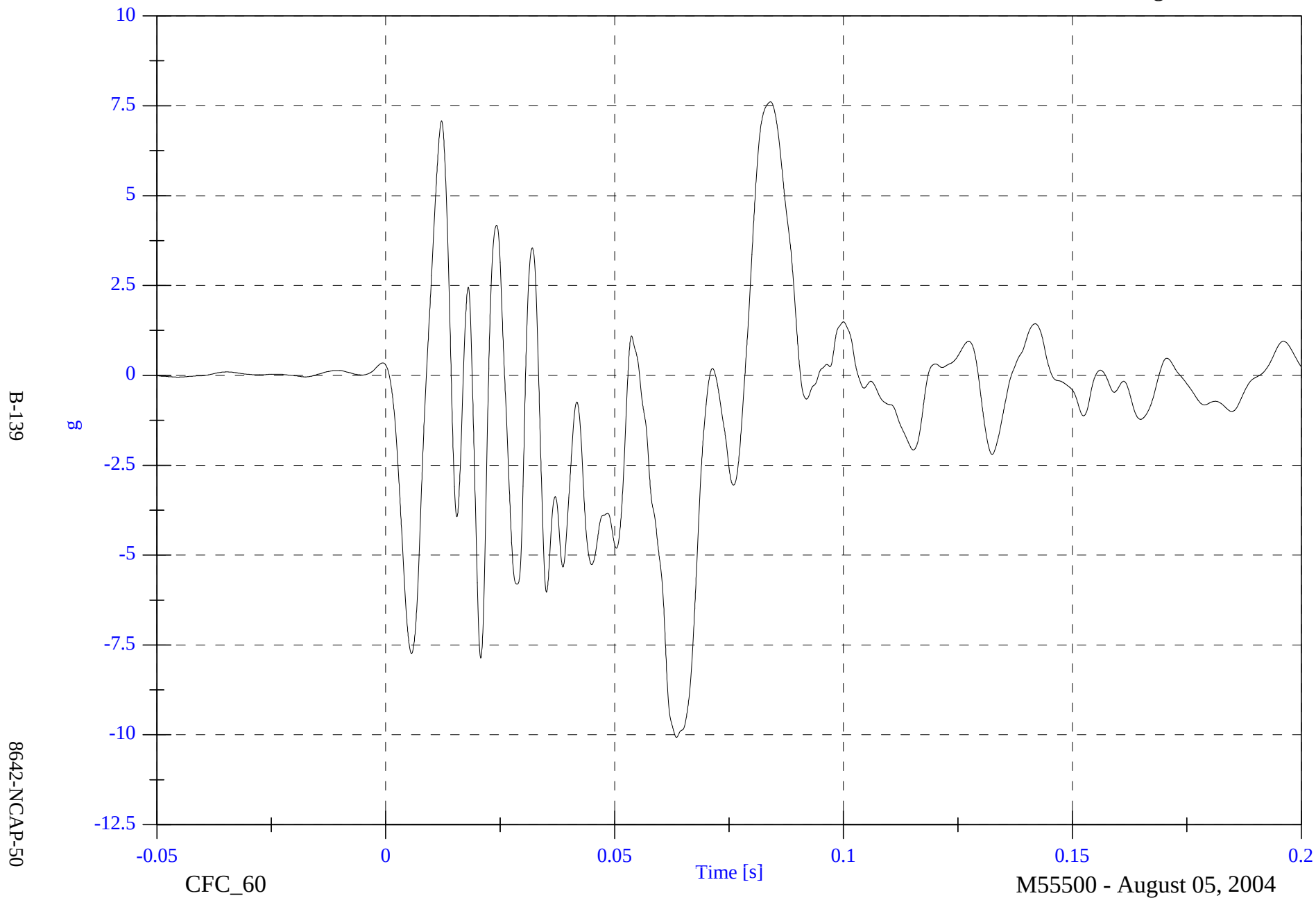


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Left Rear #8z

Max: 7.6 [g] at 0.084 [s]

Min: -10.1 [g] at 0.063 [s]

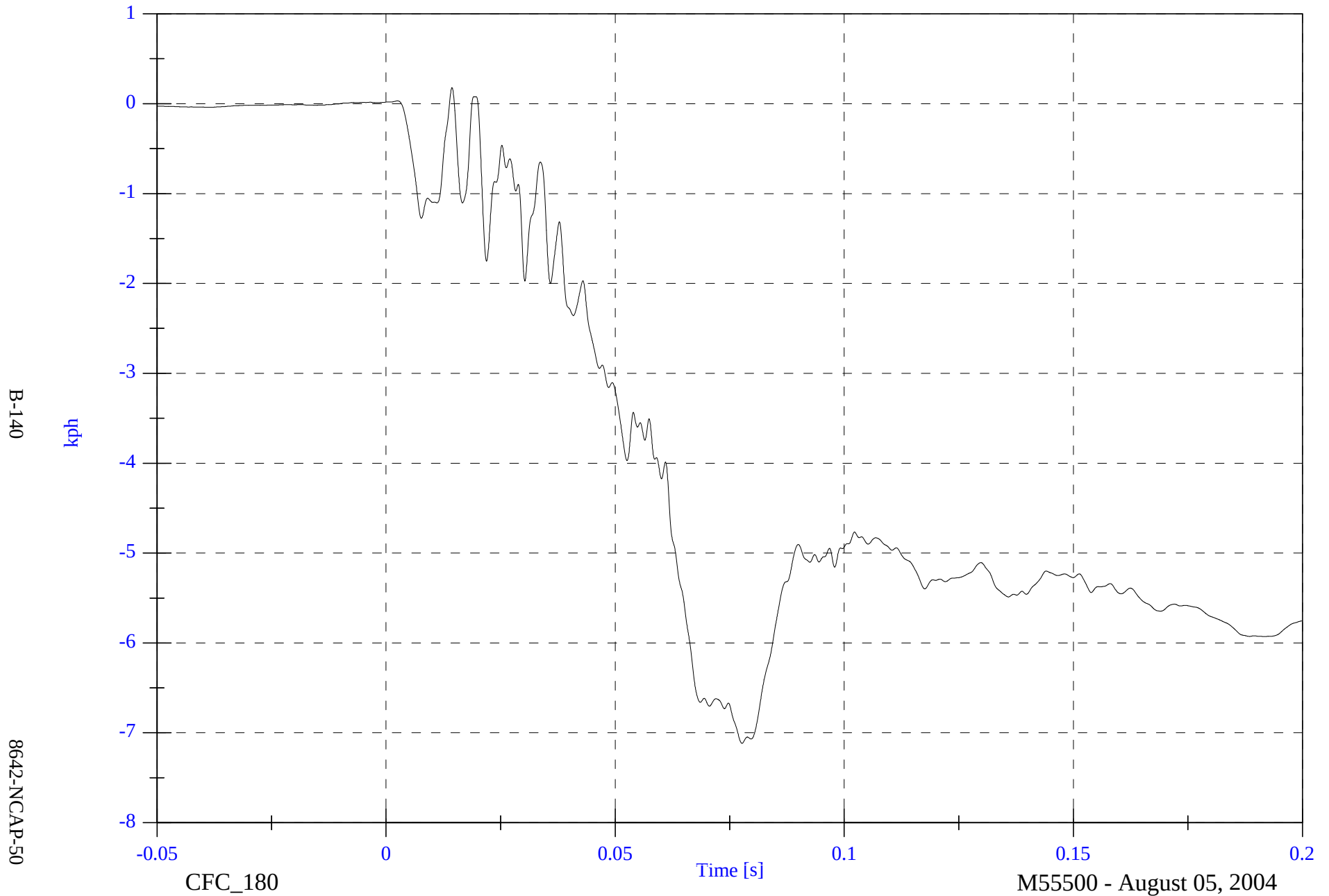


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Left Rear #8z Velocity

Max: 0.2 [kph] at 0.014 [s]

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

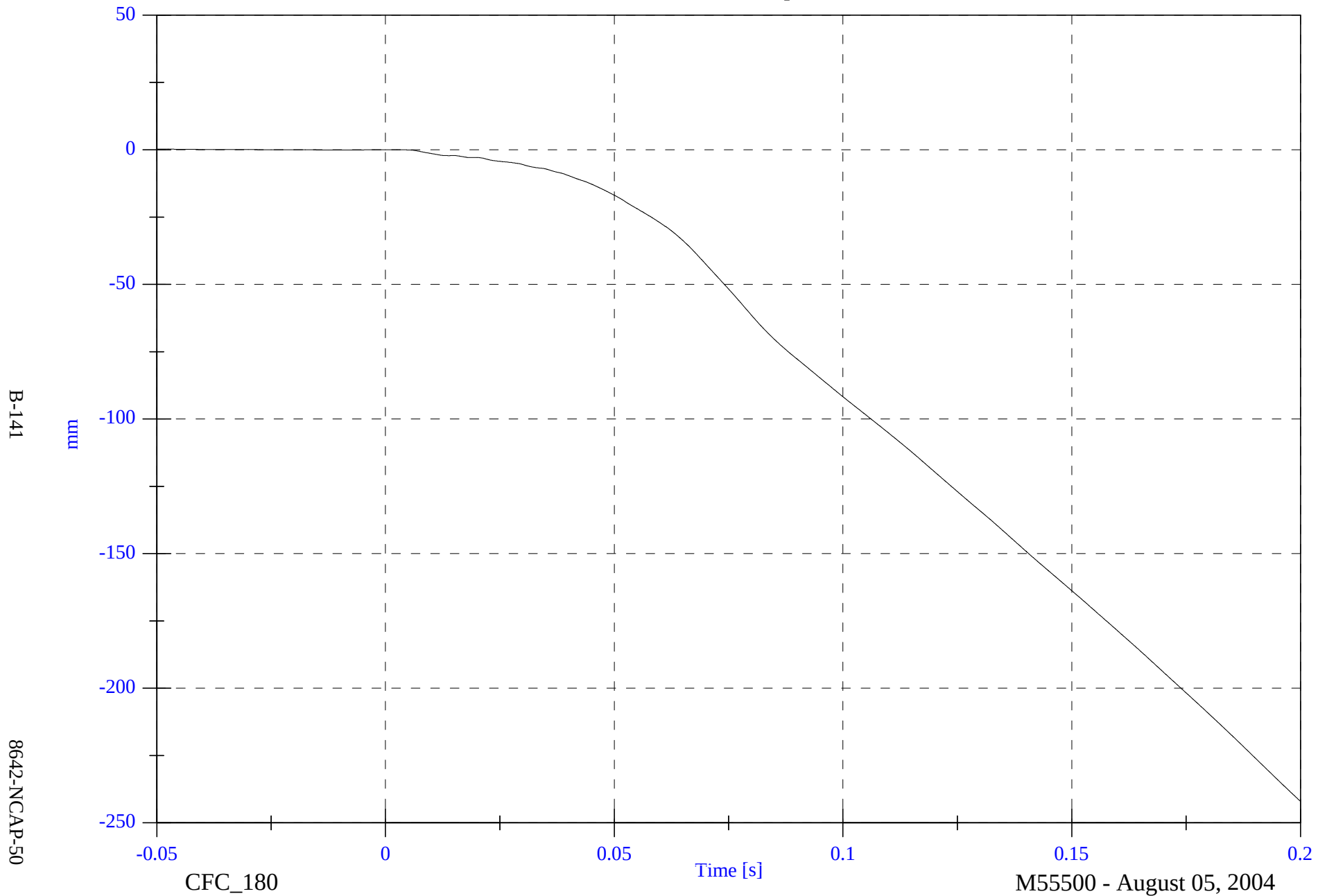


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Left Rear #8z Displacement

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

Min: -242.0 [mm] at 0.200 [s]

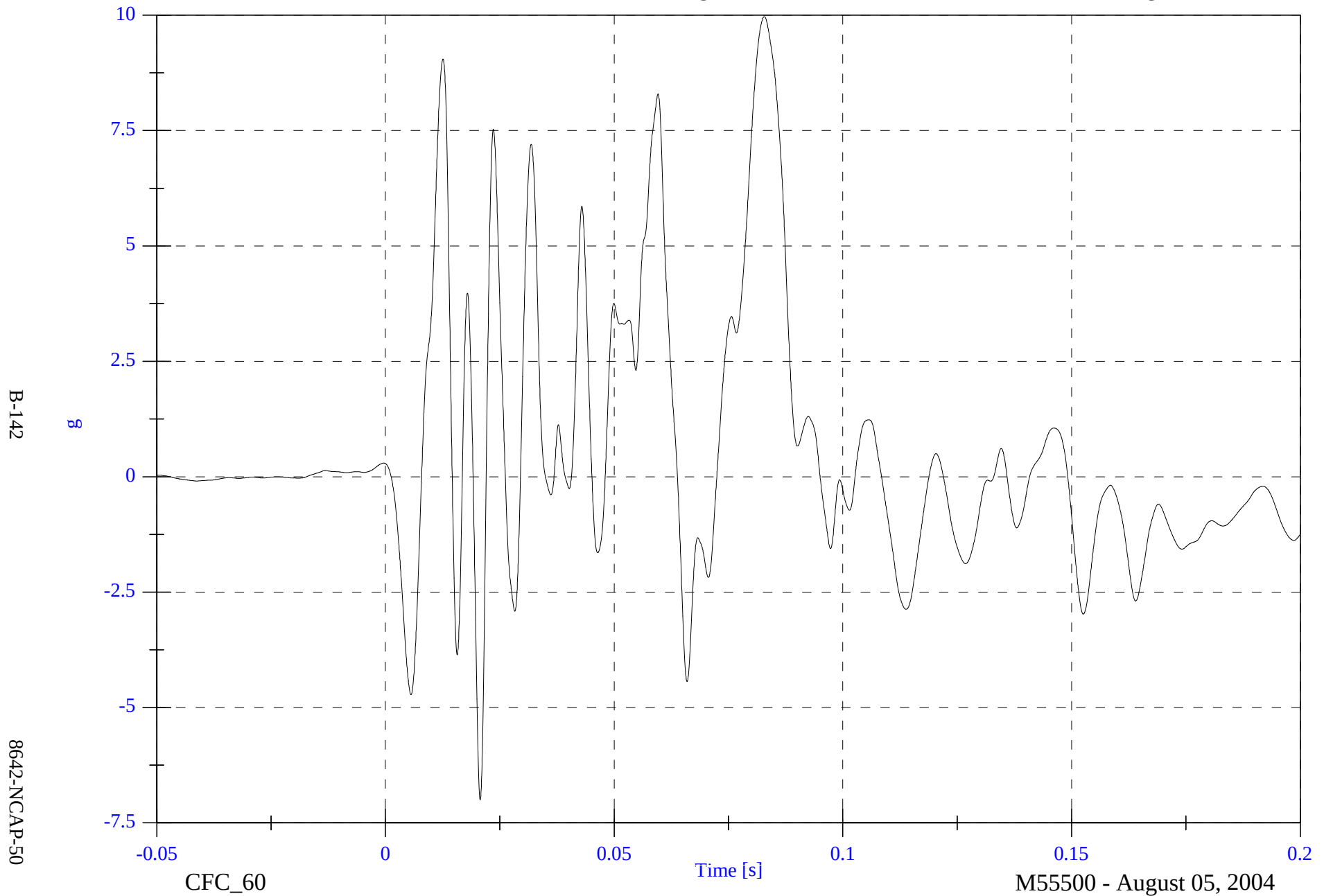


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Right Rear #9z

Max: 10.0 [g] at 0.083 [s]

Min: -7.0 [g] at 0.021 [s]

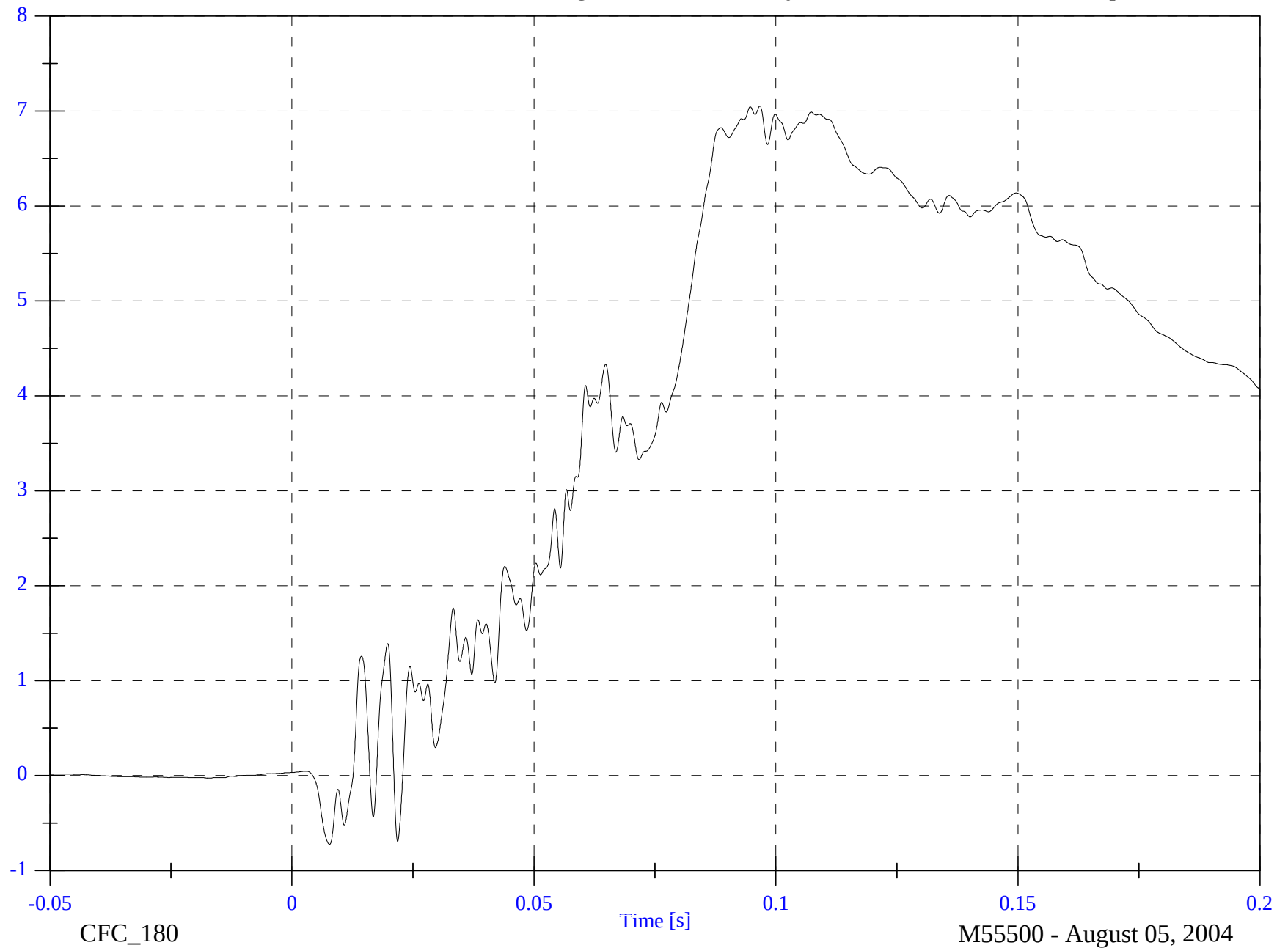


2004 NCAP TEST 14 - 2005 Subaru Outback

V1 Right Rear #9z Velocity

Max: 7.1 [kph] at 0.097 [s]

Min: -0.7 [kph] at 0.008 [s]



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2004 NCAP TEST 14 - 2005 Subaru Outback

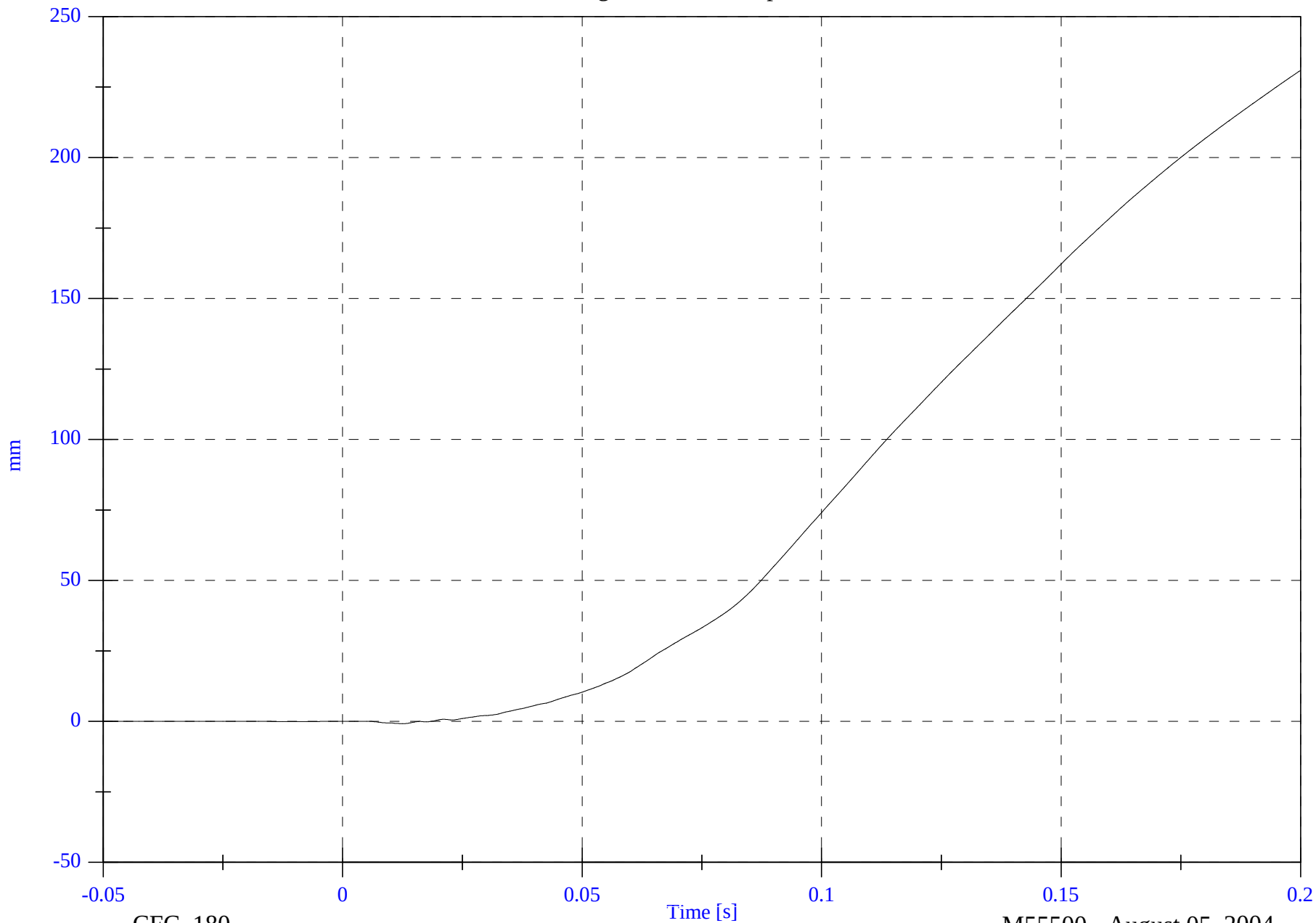
V1 Right Rear #9z Displacement

Max: 230.9 [mm] at 0.200 [s]

Min: -0.8 [mm] at 0.013 [s]

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CFC_180

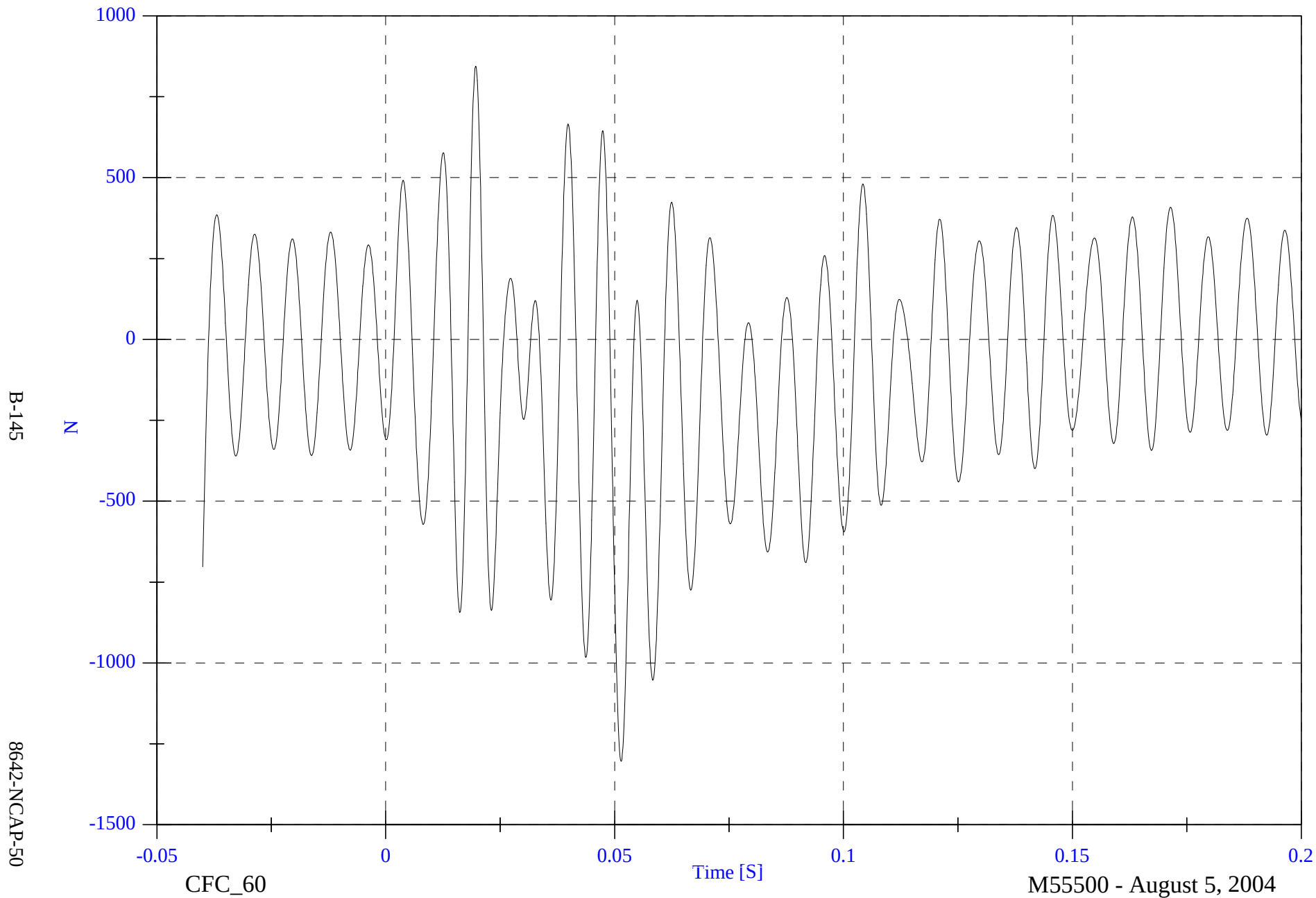
M55500 - August 05, 2004

2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell A1 Fx

Max: 844.0 [N] at 0.020 [S]

Min: -1303.9 [N] at 0.051 [S]

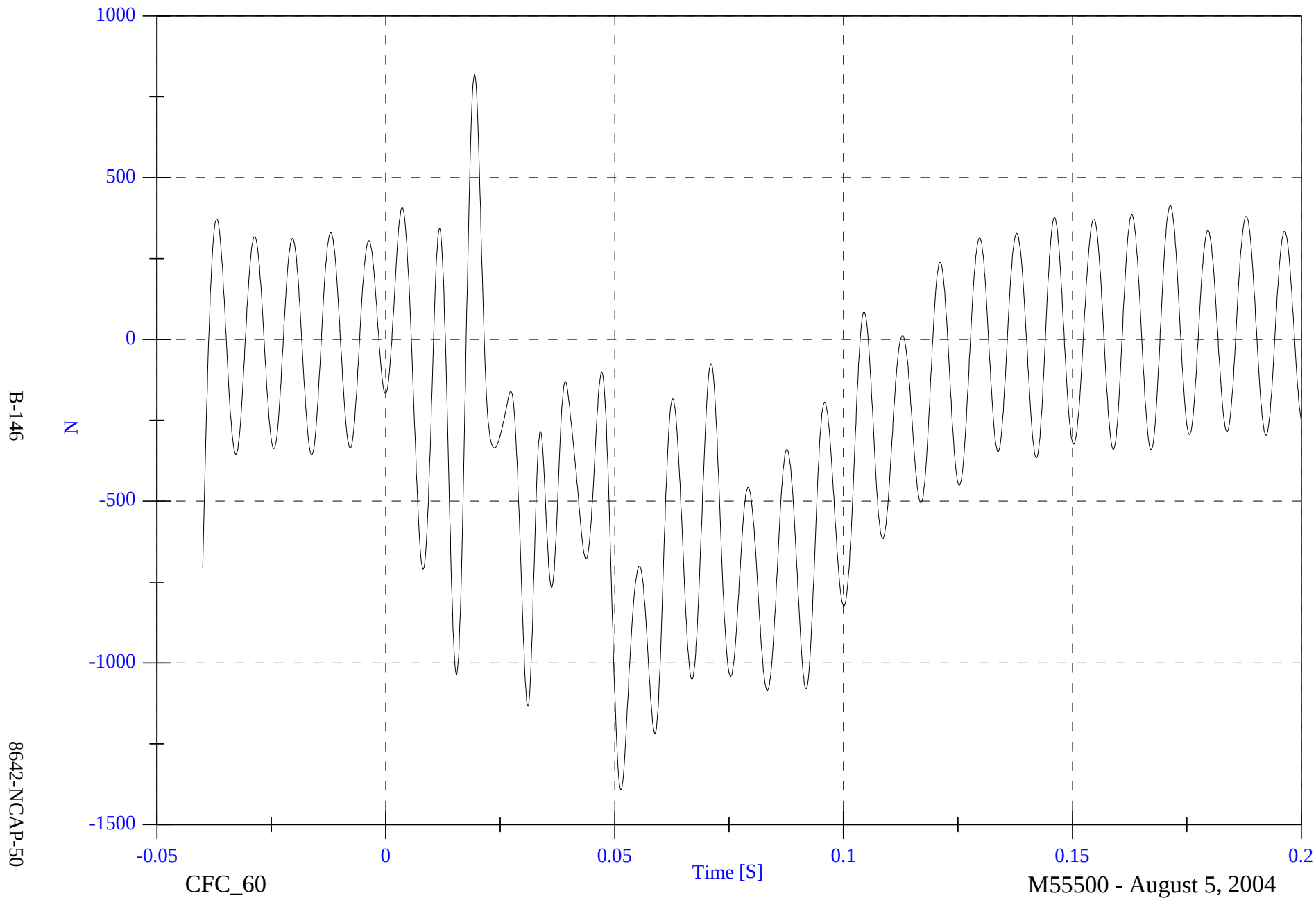


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell A2 Fx

Max: 819.8 [N] at 0.019 [S]

Min: -1391.7 [N] at 0.051 [S]

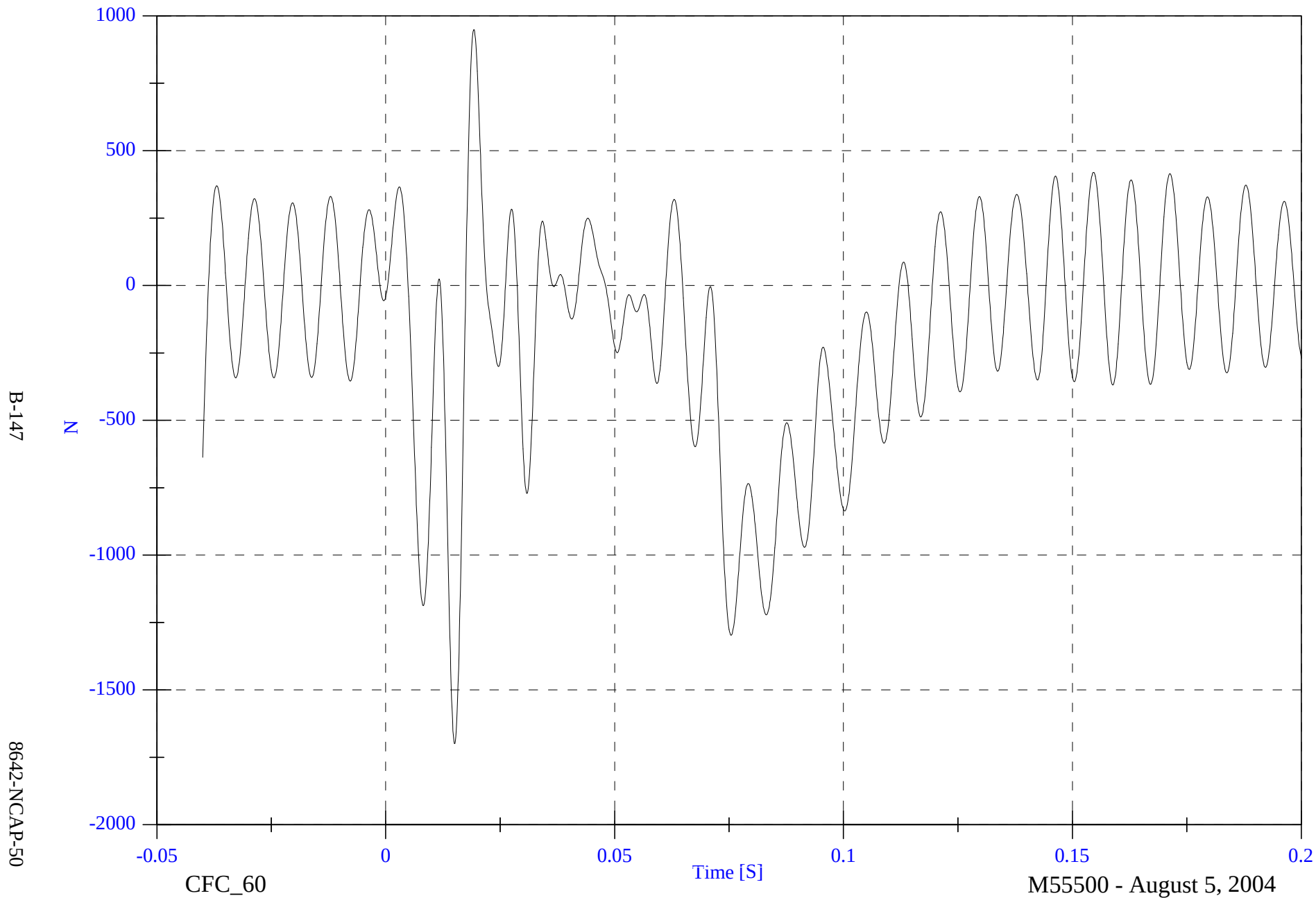


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell A3 Fx

Max: 948.6 [N] at 0.019 [S]

Min: -1699.2 [N] at 0.015 [S]

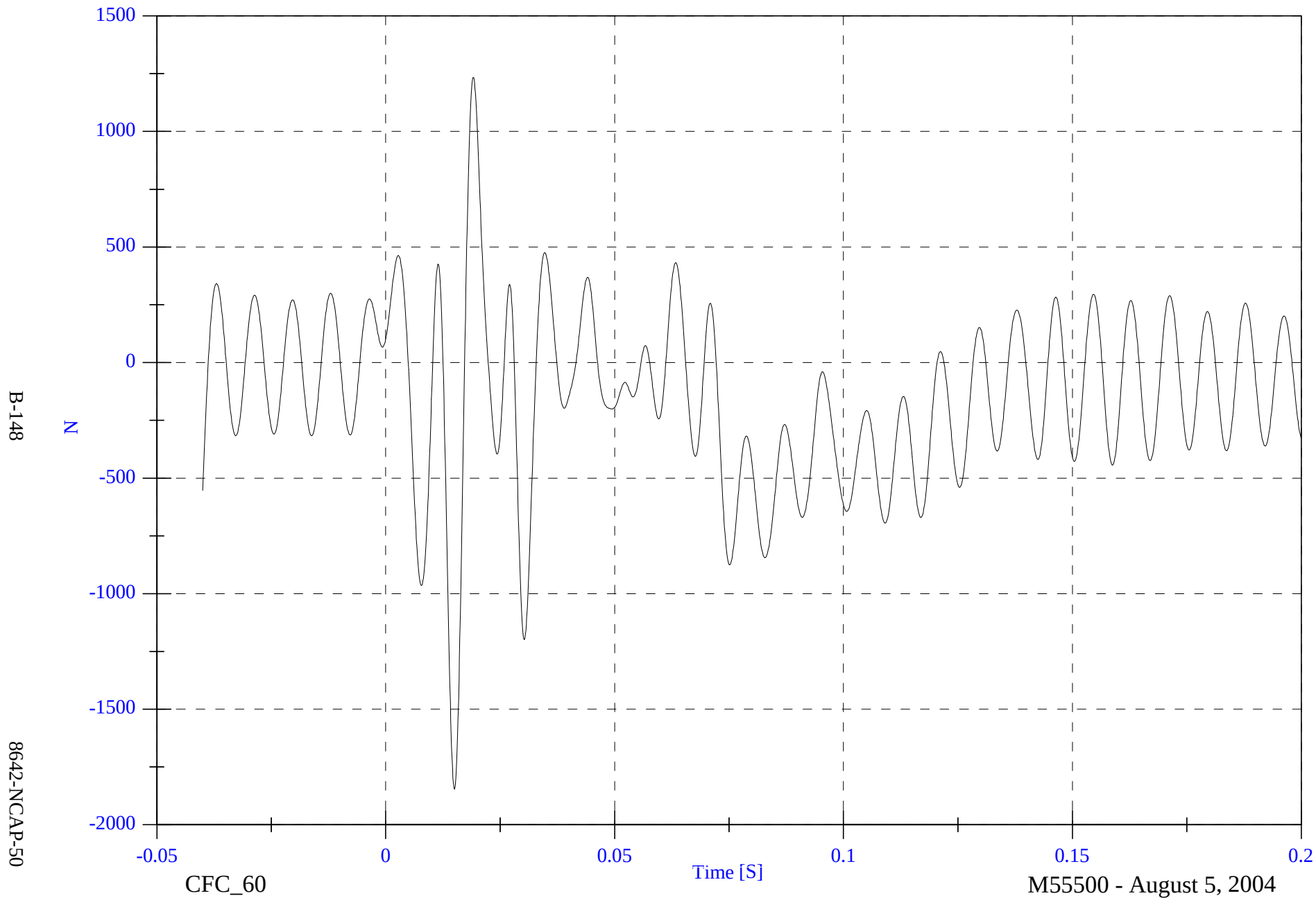


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell A4 Fx

Max: 1234.1 [N] at 0.019 [S]

Min: -1846.0 [N] at 0.015 [S]



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CFC_60

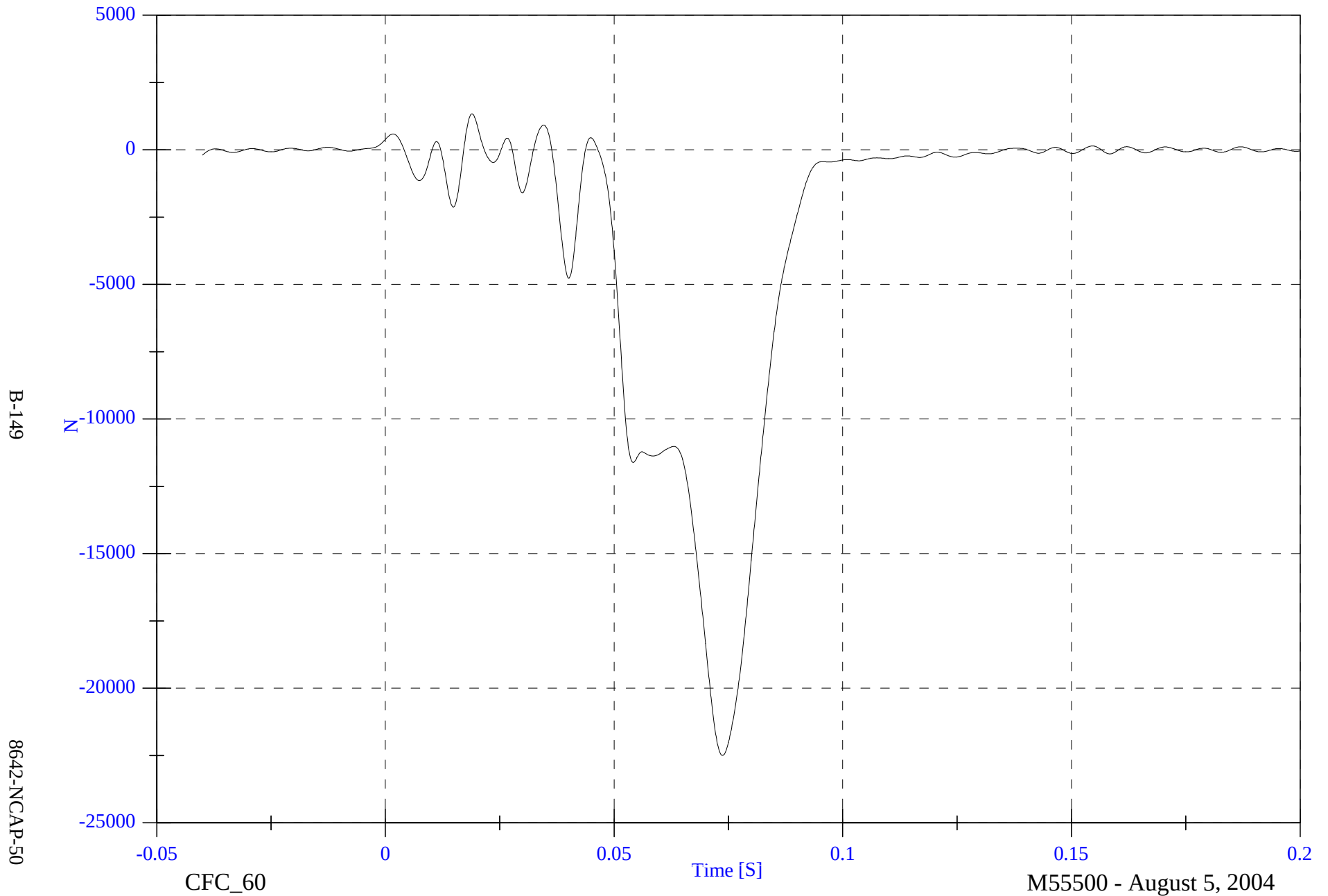
Time [S]

M55500 - August 5, 2004

2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell A5 Fx

Max: 1333.7 [N] at 0.019 [S]
Min: -22498.9 [N] at 0.074 [S]

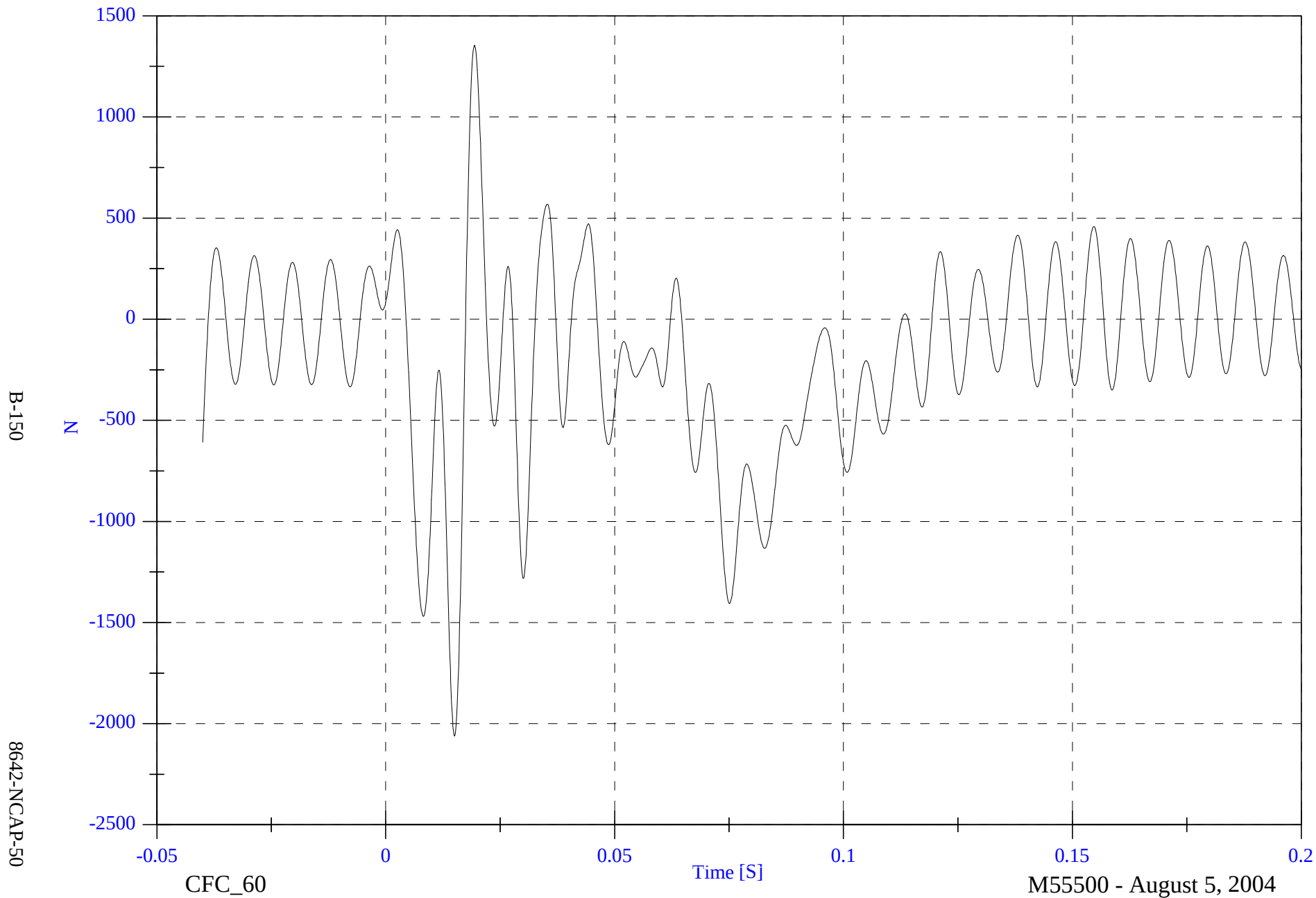


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell A6 Fx

Max: 1354.5 [N] at 0.019 [S]

Min: -2060.9 [N] at 0.015 [S]

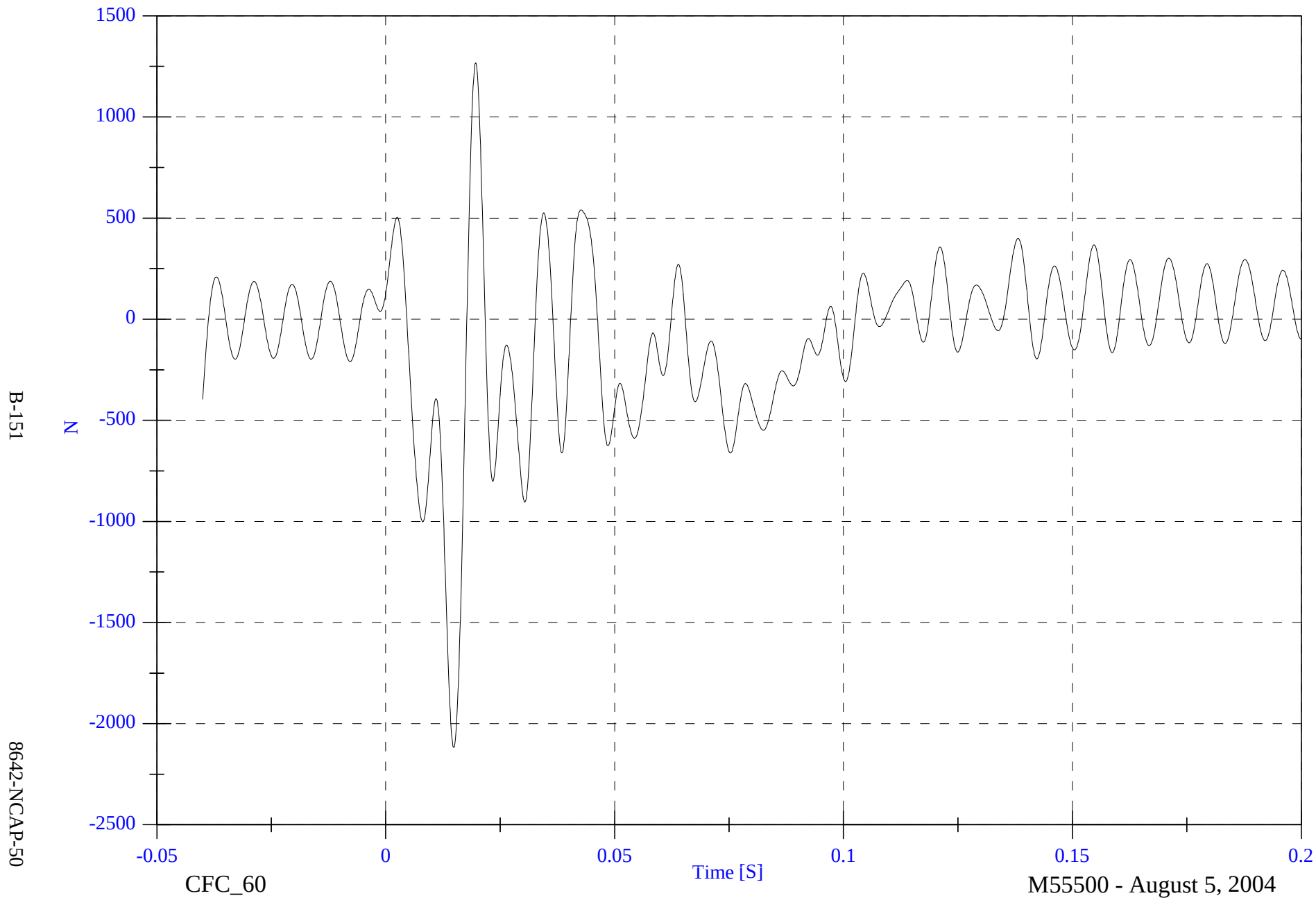


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell A7 Fx

Max: 1267.6 [N] at 0.020 [S]

Min: -2117.8 [N] at 0.015 [S]

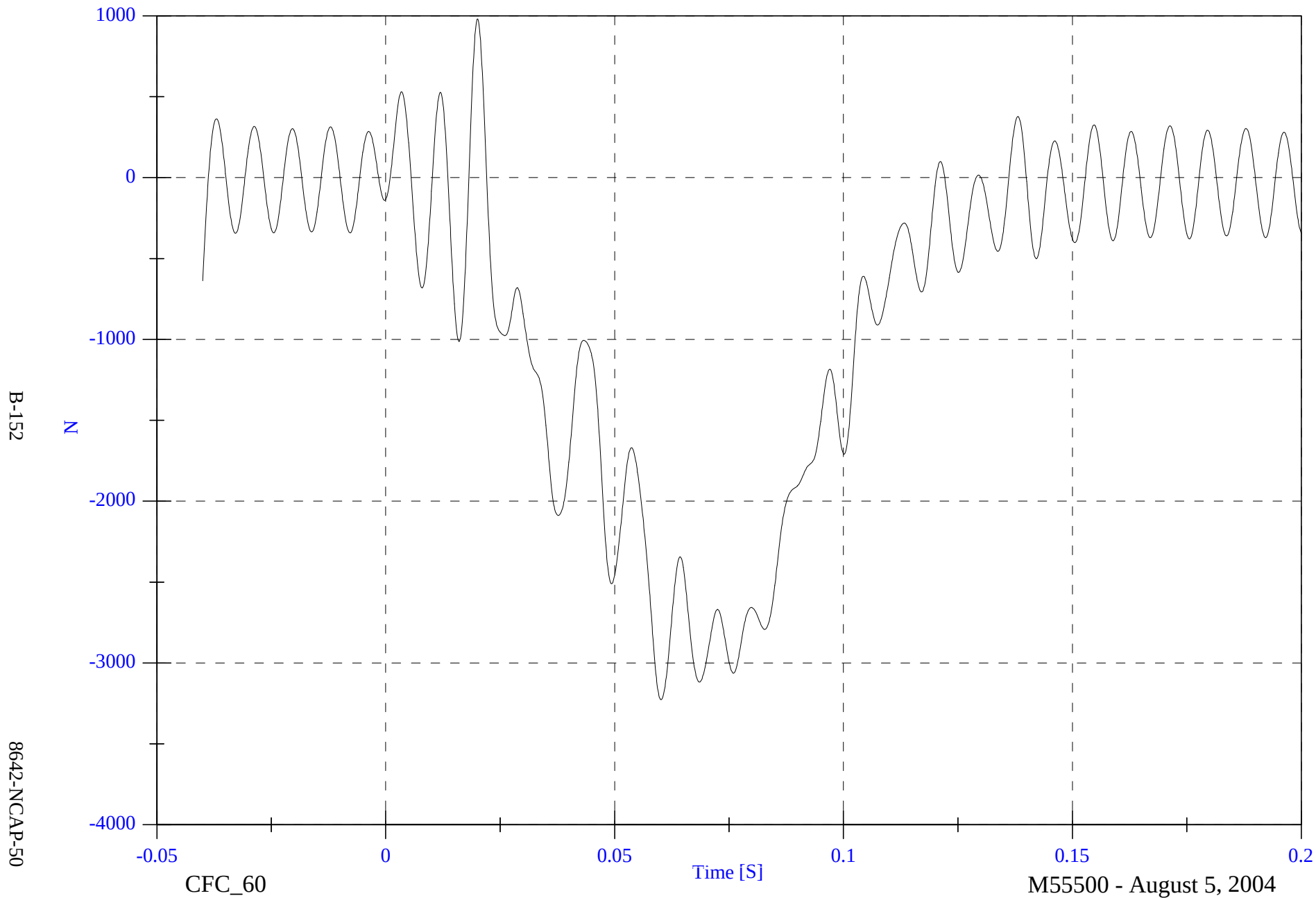


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell A8 Fx

Max: 980.9 [N] at 0.020 [S]

Min: -3227.0 [N] at 0.060 [S]

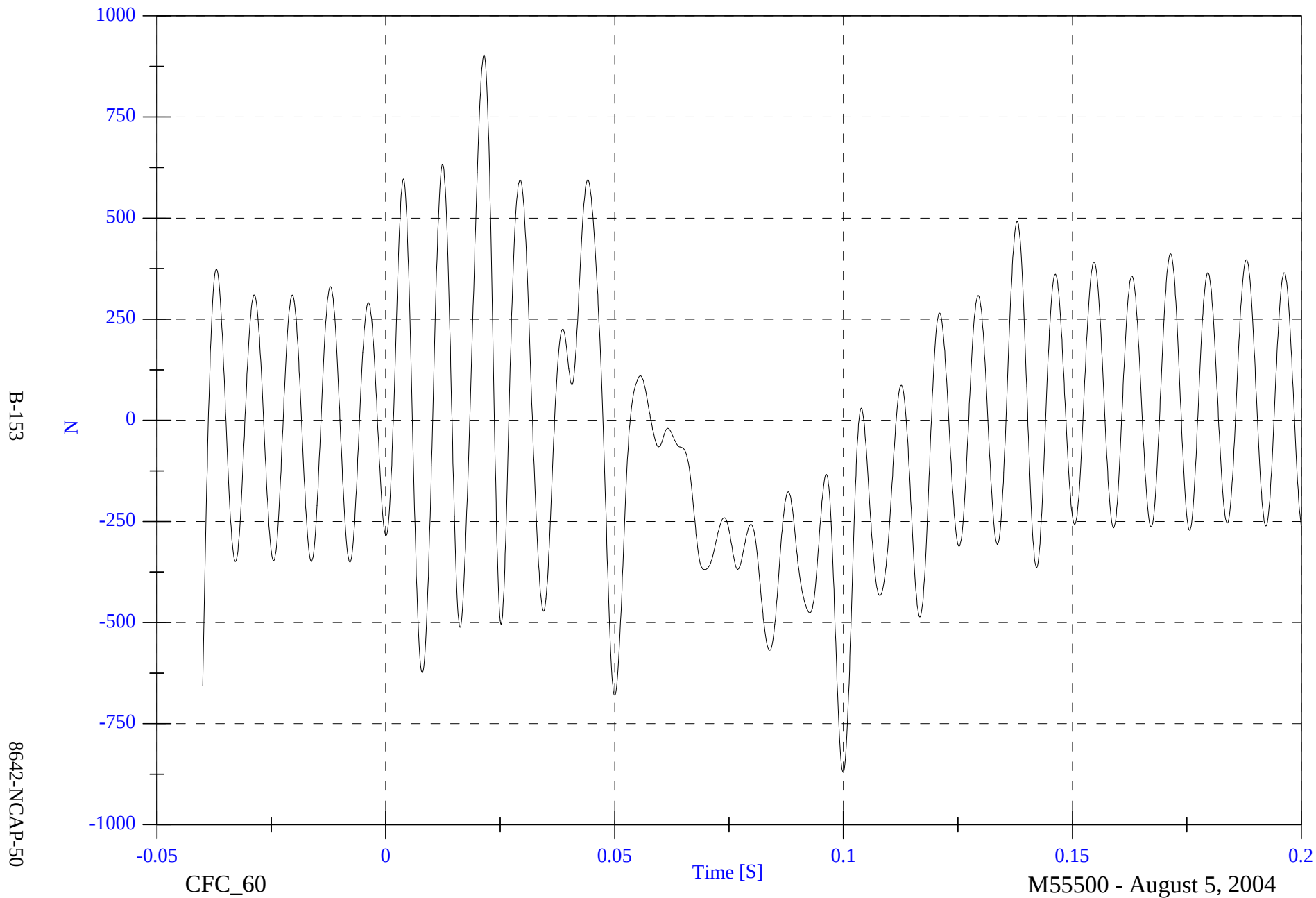


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell A9 Fx

Max: 903.6 [N] at 0.021 [S]

Min: -870.4 [N] at 0.100 [S]

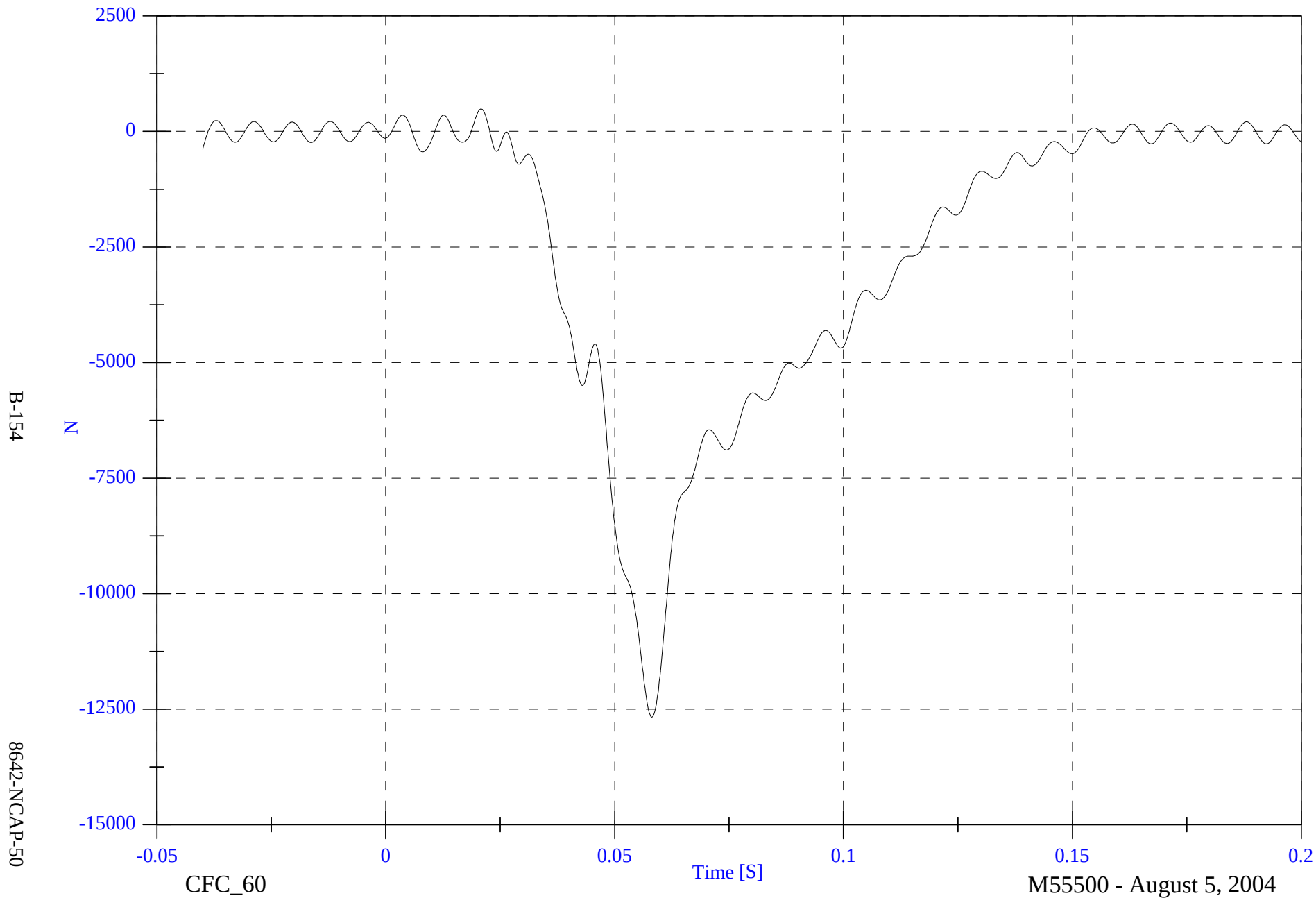


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell B1 Fx

Max: 485.8 [N] at 0.021 [S]

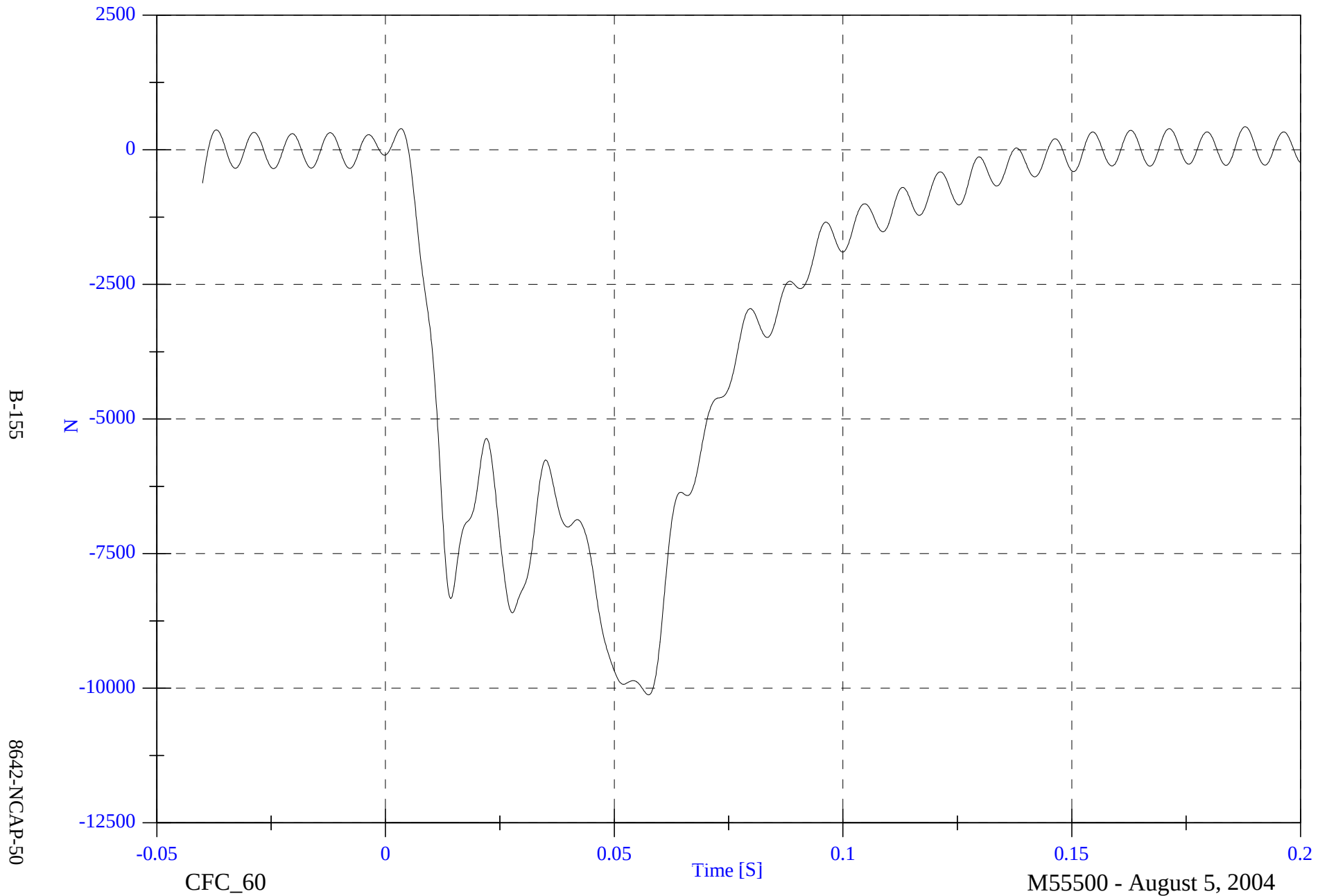
Min: -12671.0 [N] at 0.058 [S]



2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell B2 Fx

Max: 427.6 [N] at 0.188 [S]
Min: -10123.6 [N] at 0.057 [S]

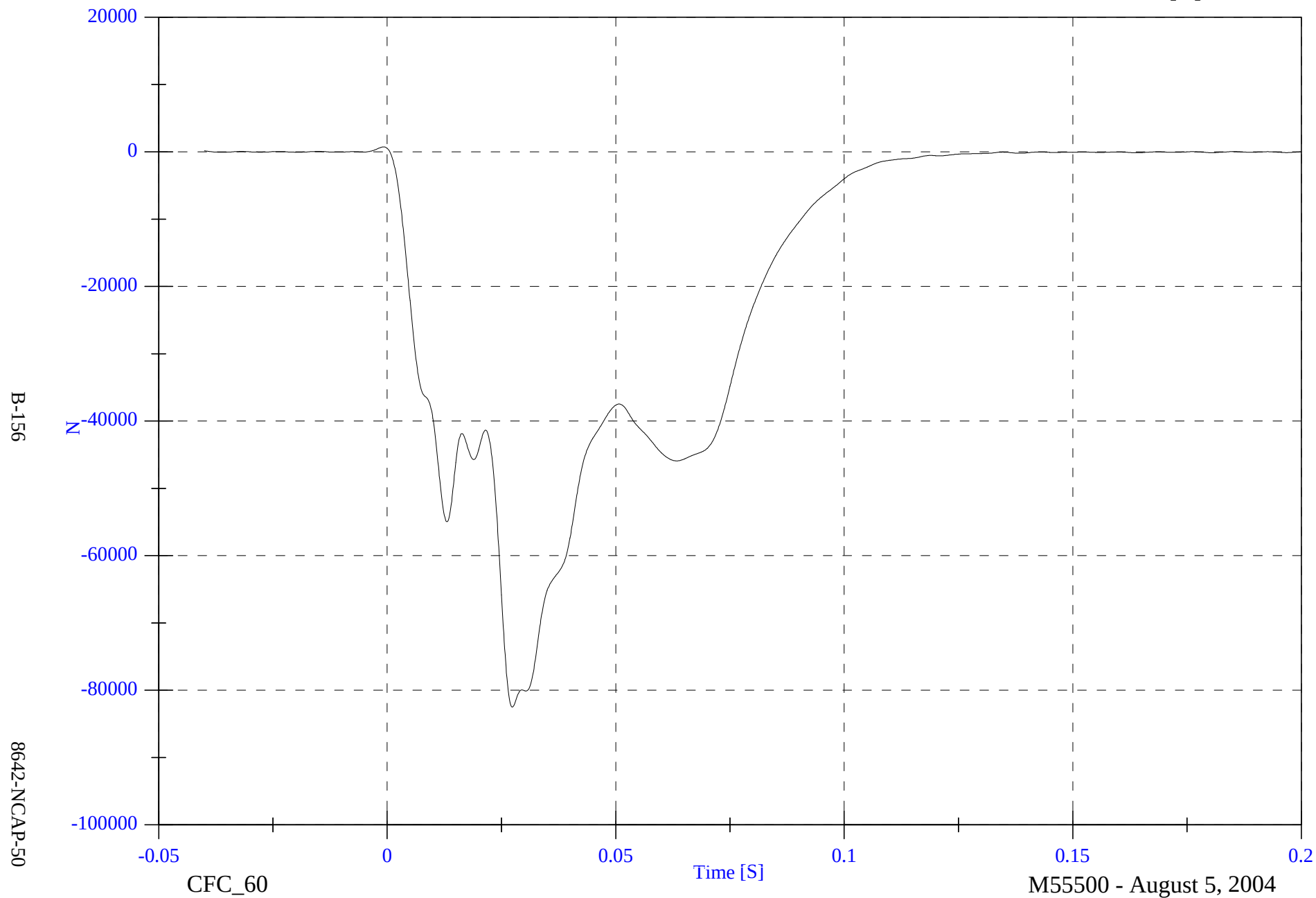


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell B3 Fx

Max: 723.6 [N] at -0.001 [S]

Min: -82493.6 [N] at 0.027 [S]

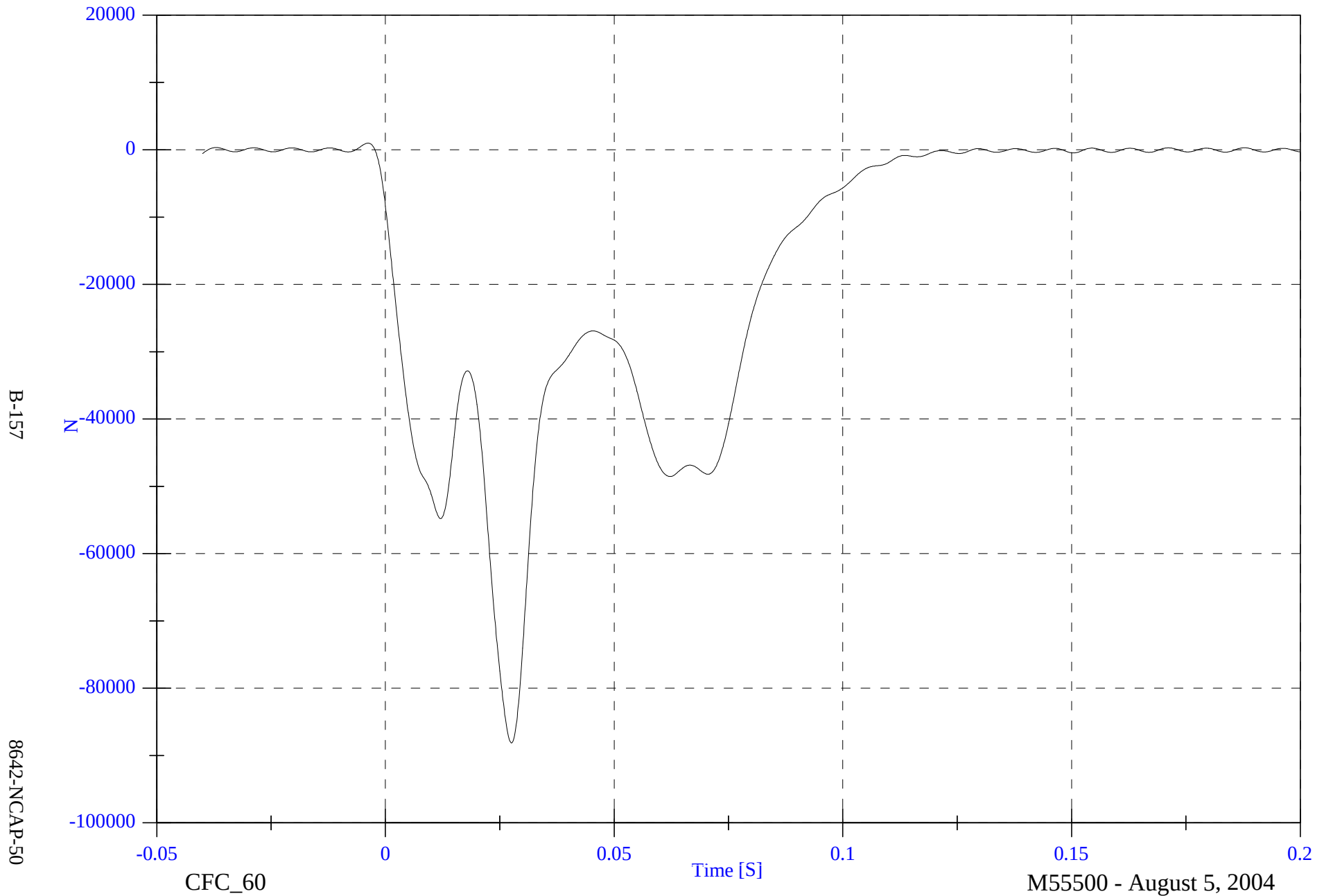


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell B4 Fx

Max: 978.7 [N] at -0.004 [S]

Min: -88110.4 [N] at 0.028 [S]

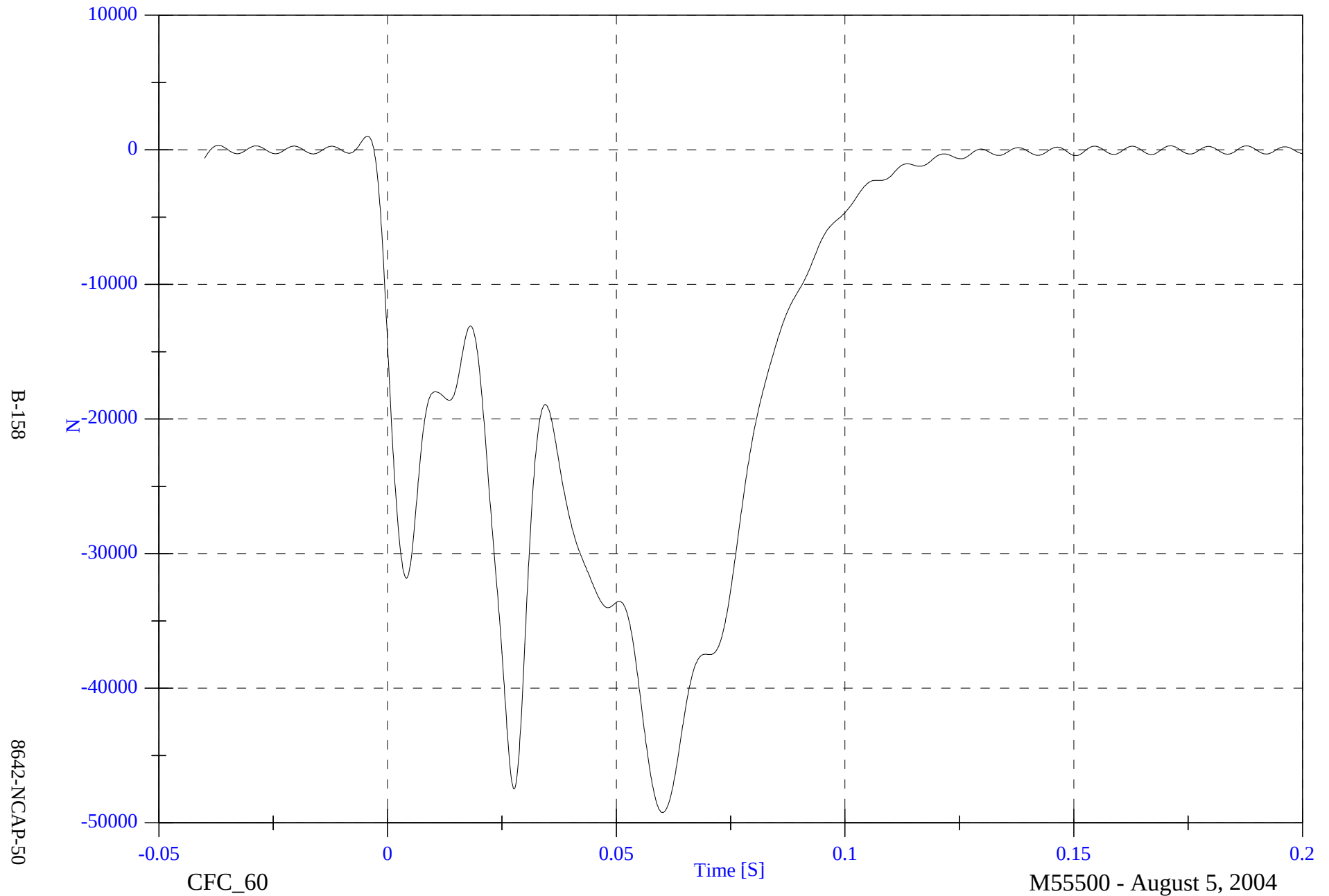


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell B5 Fx

Max: 1015.3 [N] at -0.004 [S]

Min: -49235.3 [N] at 0.060 [S]

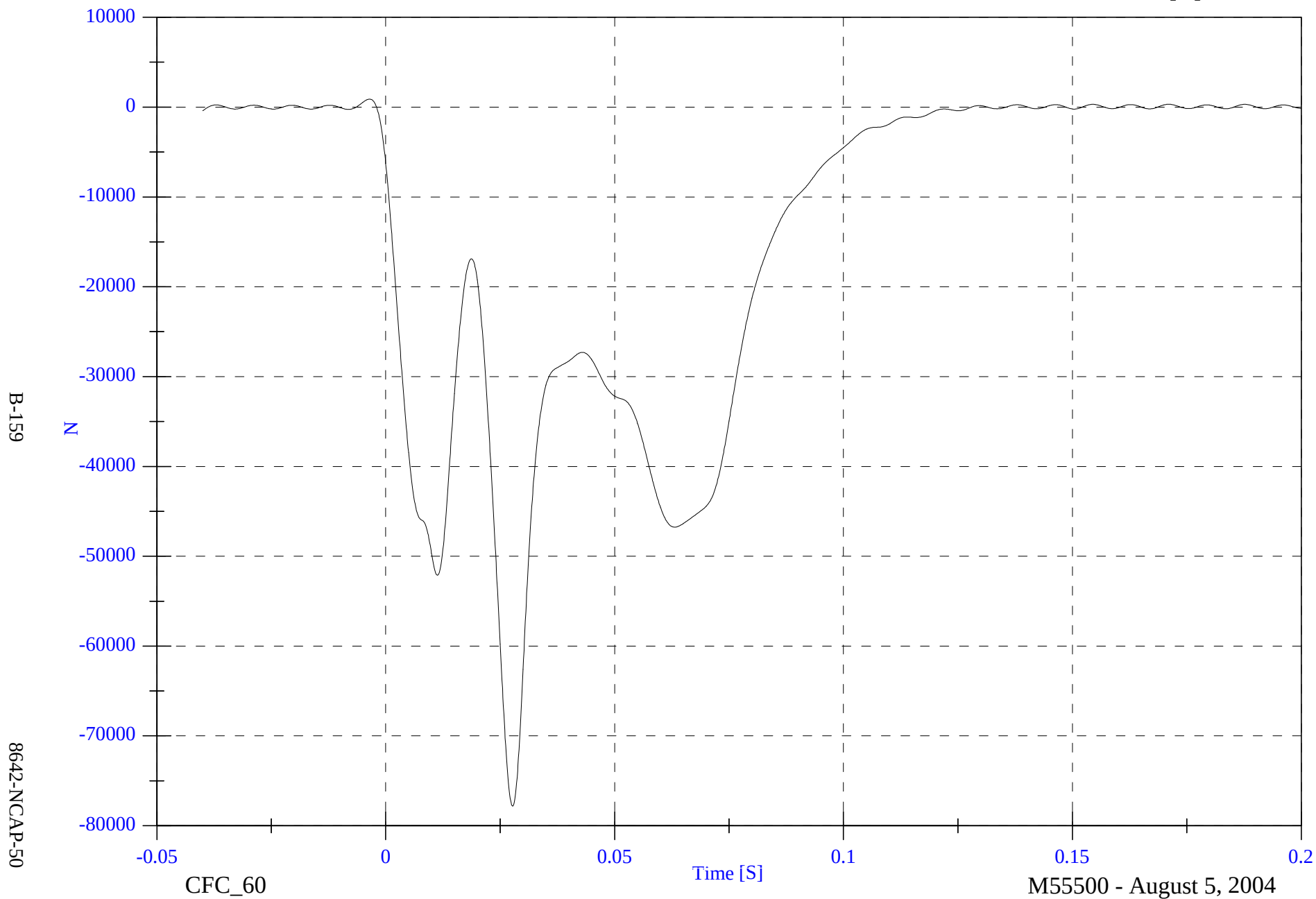


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell B6 Fx

Max: 888.3 [N] at -0.004 [S]

Min: -77816.3 [N] at 0.028 [S]

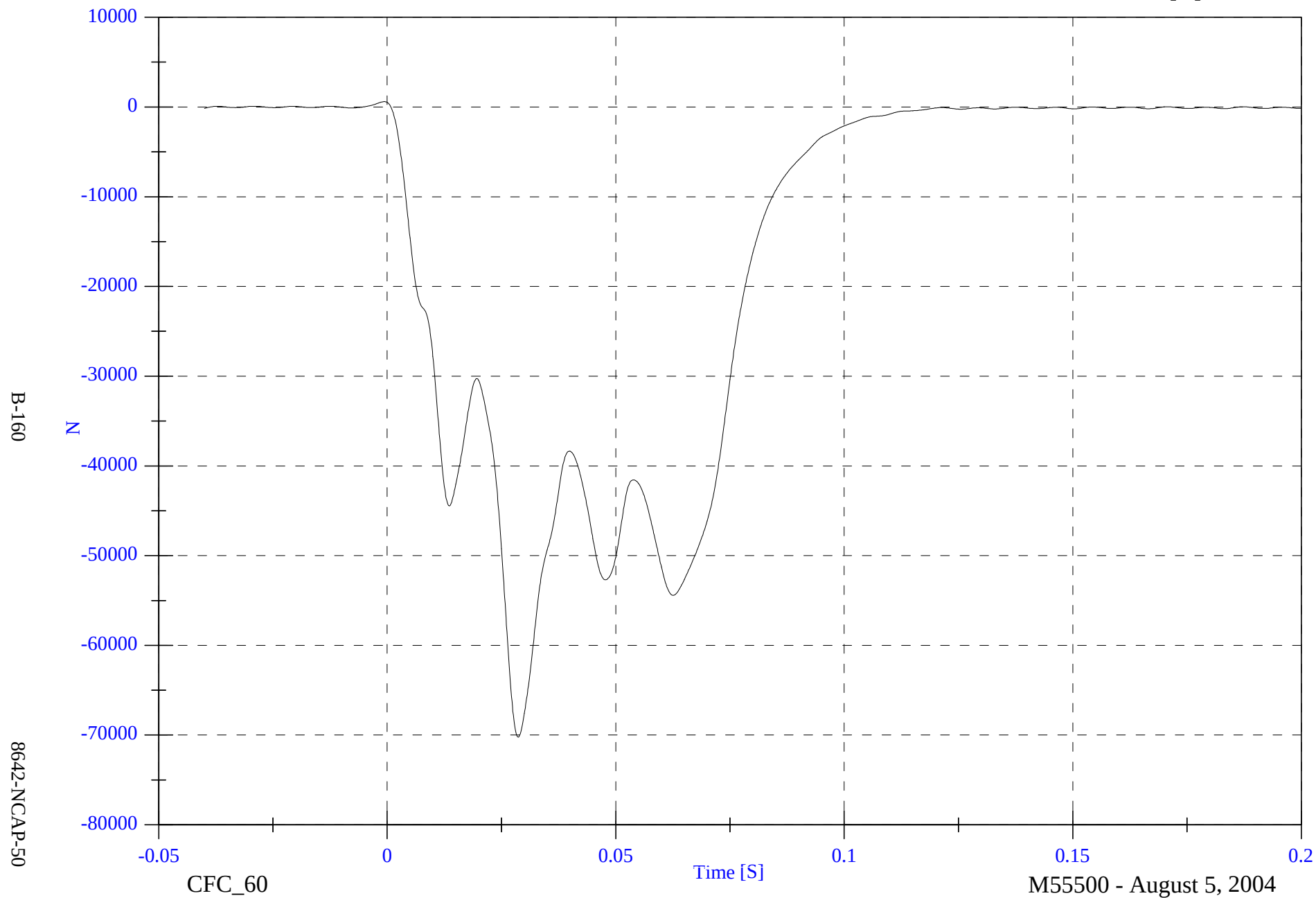


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell B7 Fx

Max: 596.7 [N] at -0.001 [S]

Min: -70220.5 [N] at 0.029 [S]



2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell B8 Fx

Max: 283.4 [N] at 0.002 [S]
Min: -15152.8 [N] at 0.051 [S]

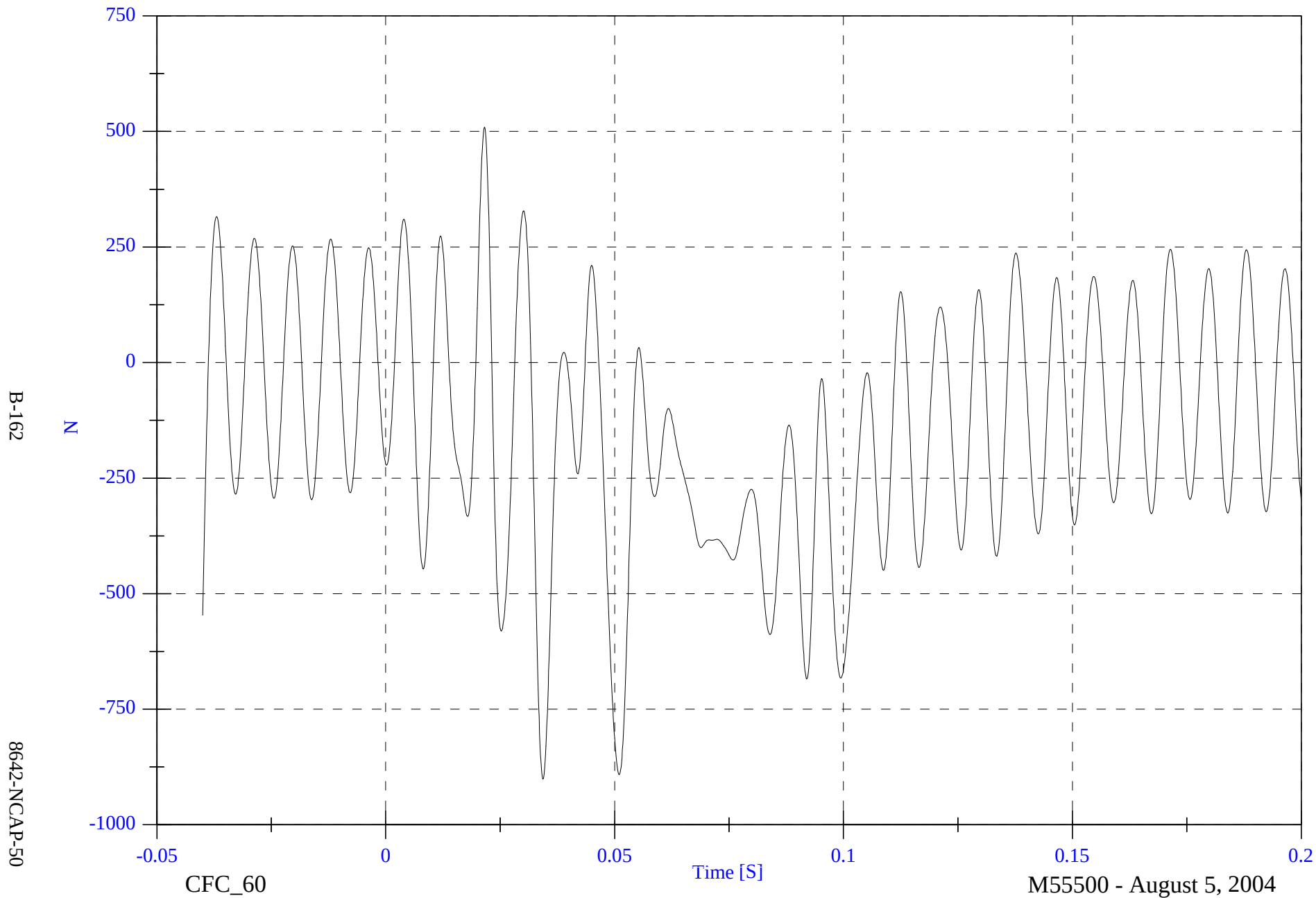


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell B9 Fx

Max: 509.2 [N] at 0.022 [S]

Min: -901.2 [N] at 0.034 [S]

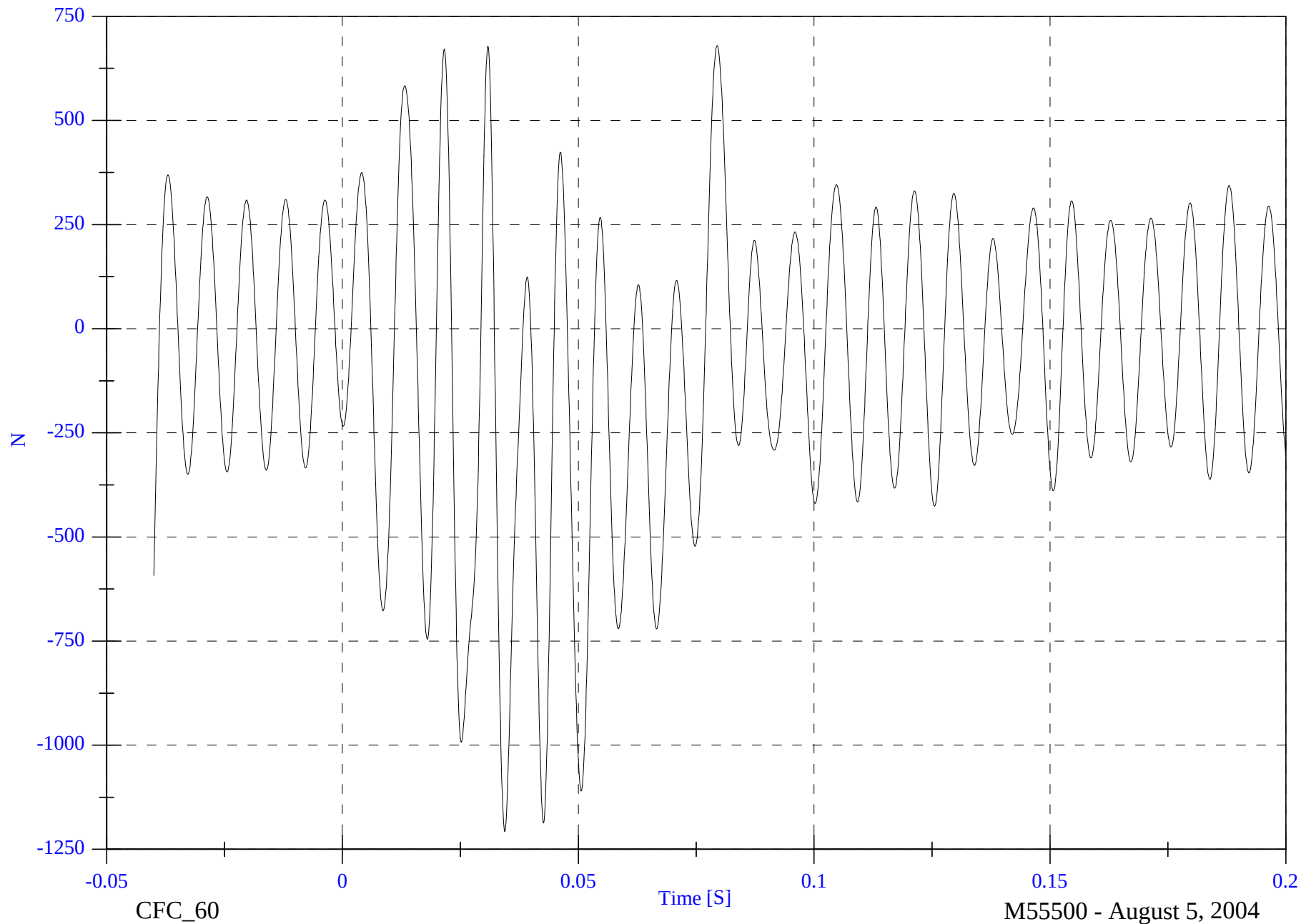


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell C1 Fx

Max: 679.9 [N] at 0.079 [S]

Min: -1207.4 [N] at 0.034 [S]



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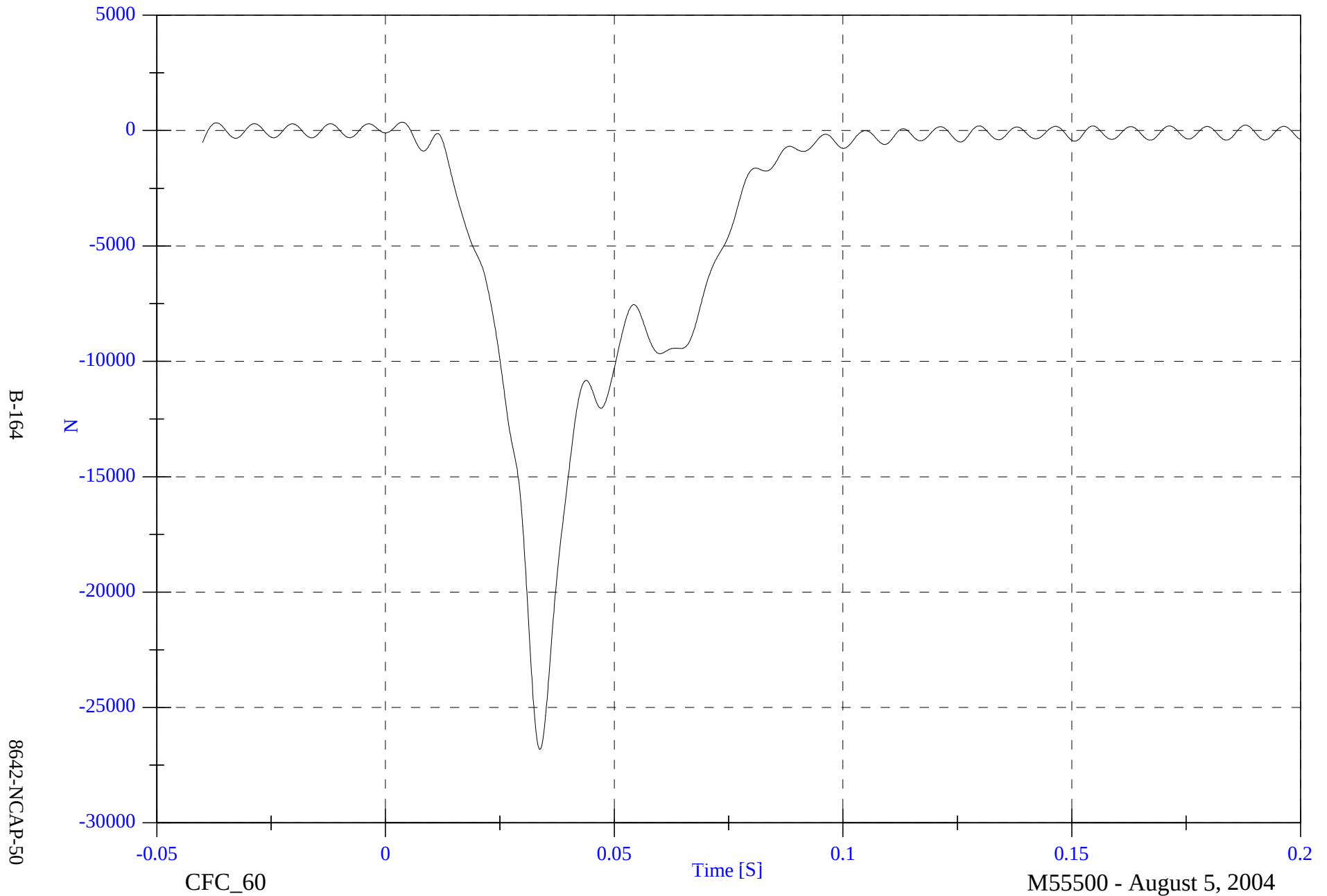
CFC_60

M55500 - August 5, 2004

2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell C2 Fx

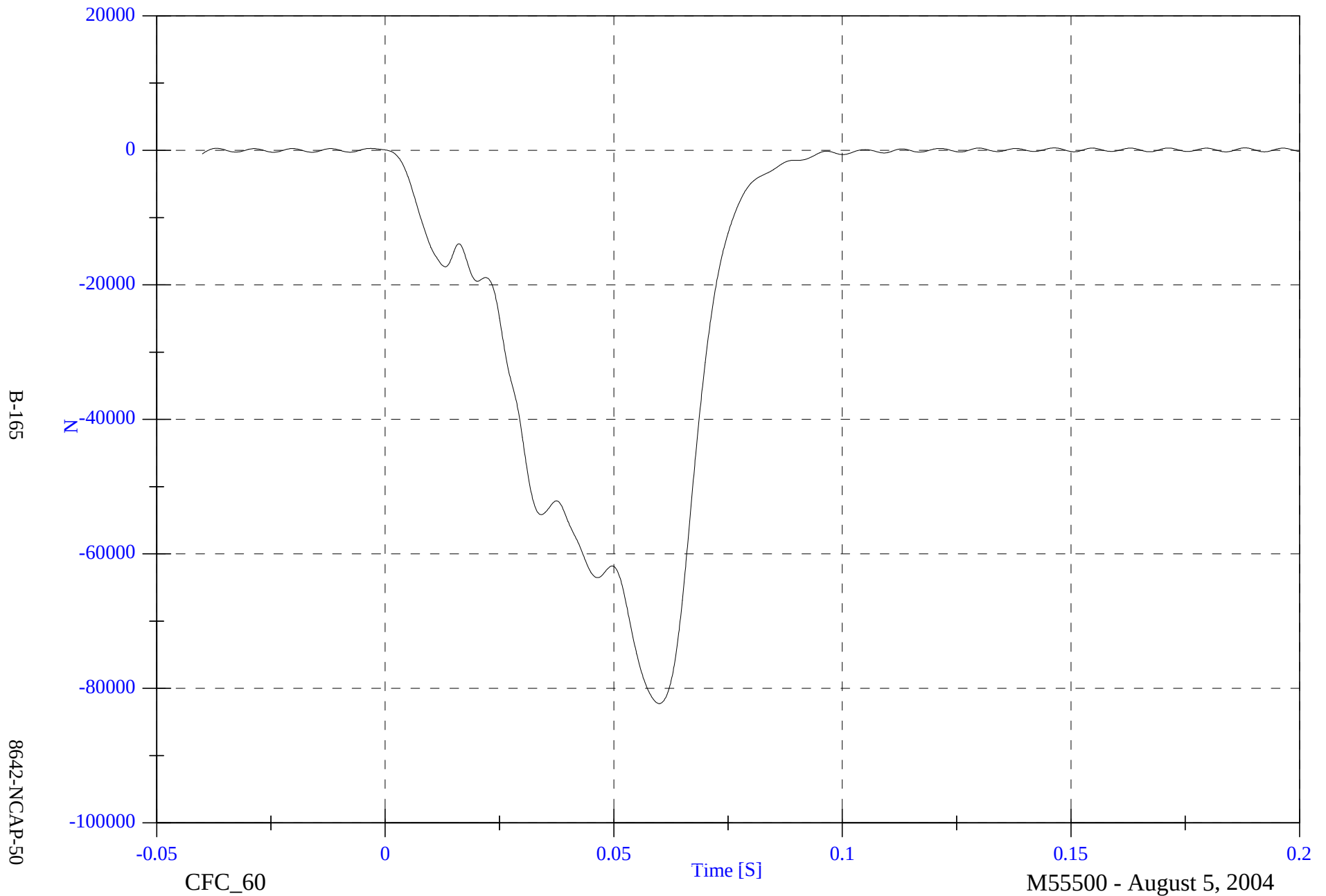
Max: 365.4 [N] at 0.004 [S]
Min: -26813.8 [N] at 0.034 [S]



2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell C3 Fx

Max: 362.9 [N] at 0.188 [S]
Min: -82252.2 [N] at 0.060 [S]

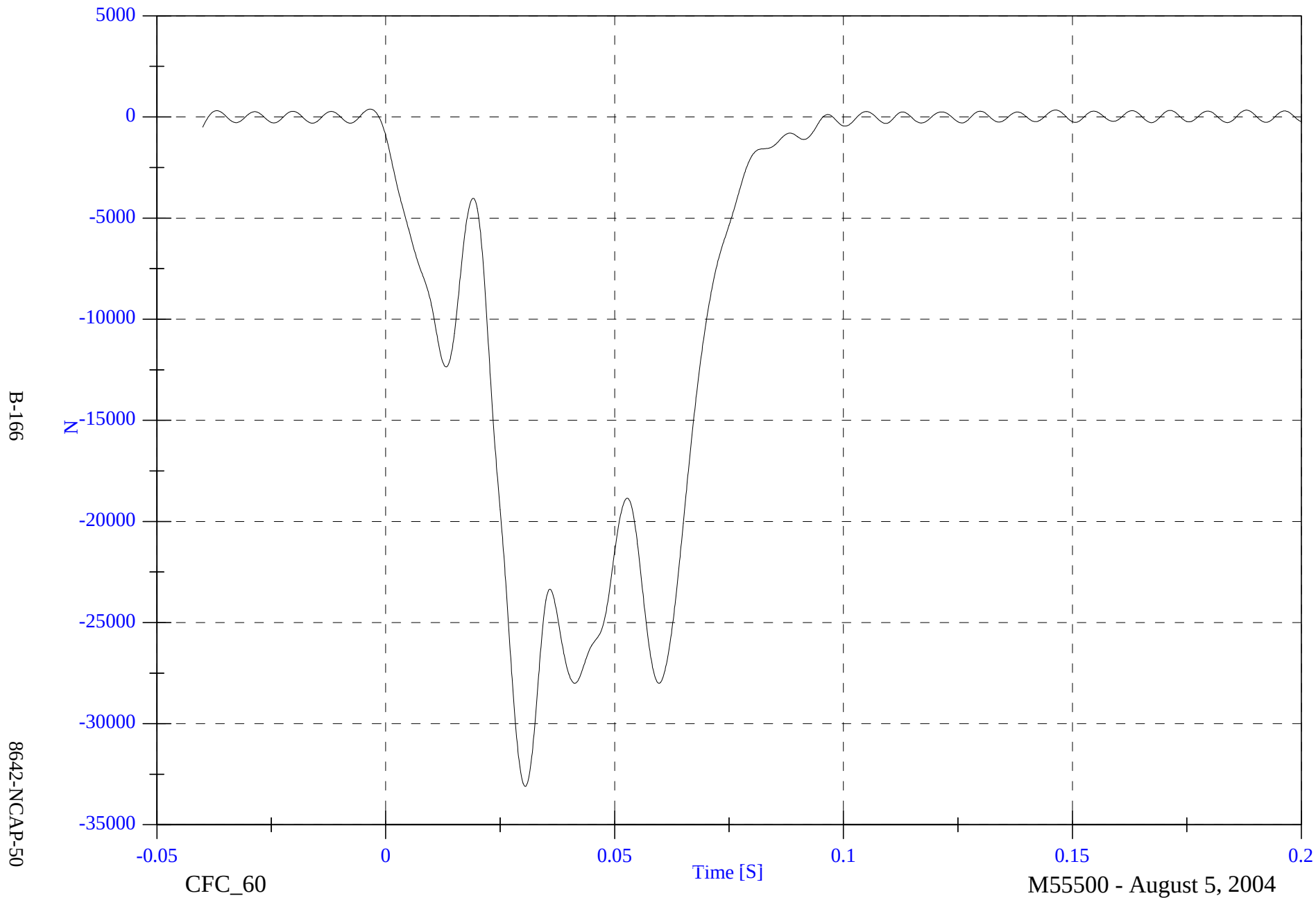


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell C4 Fx

Max: 388.9 [N] at -0.003 [S]

Min: -33101.0 [N] at 0.030 [S]

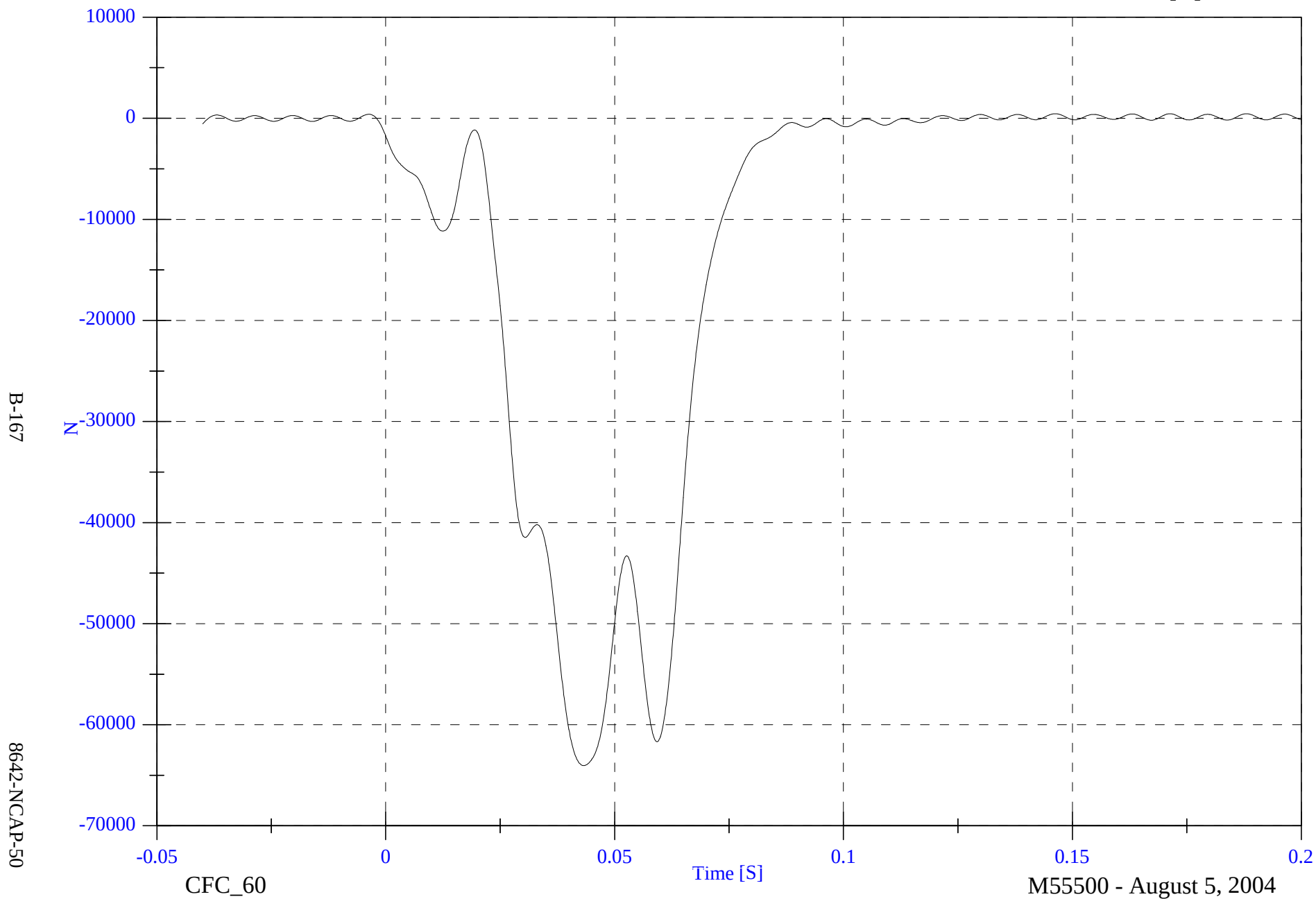


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell C5 Fx

Max: 453.5 [N] at 0.146 [S]

Min: -64044.2 [N] at 0.043 [S]

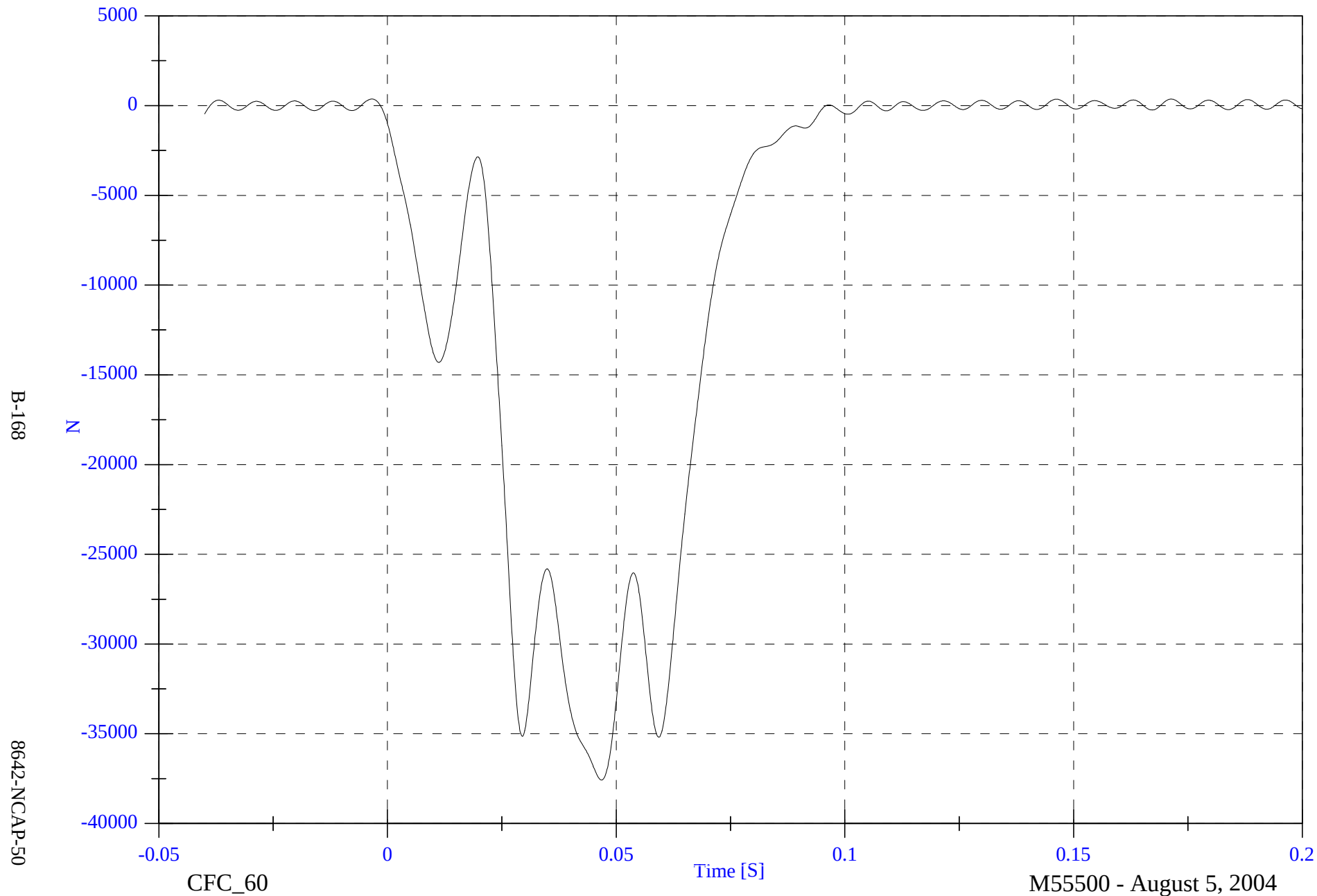


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell C6 Fx

Max: 364.9 [N] at -0.003 [S]

Min: -37577.0 [N] at 0.047 [S]

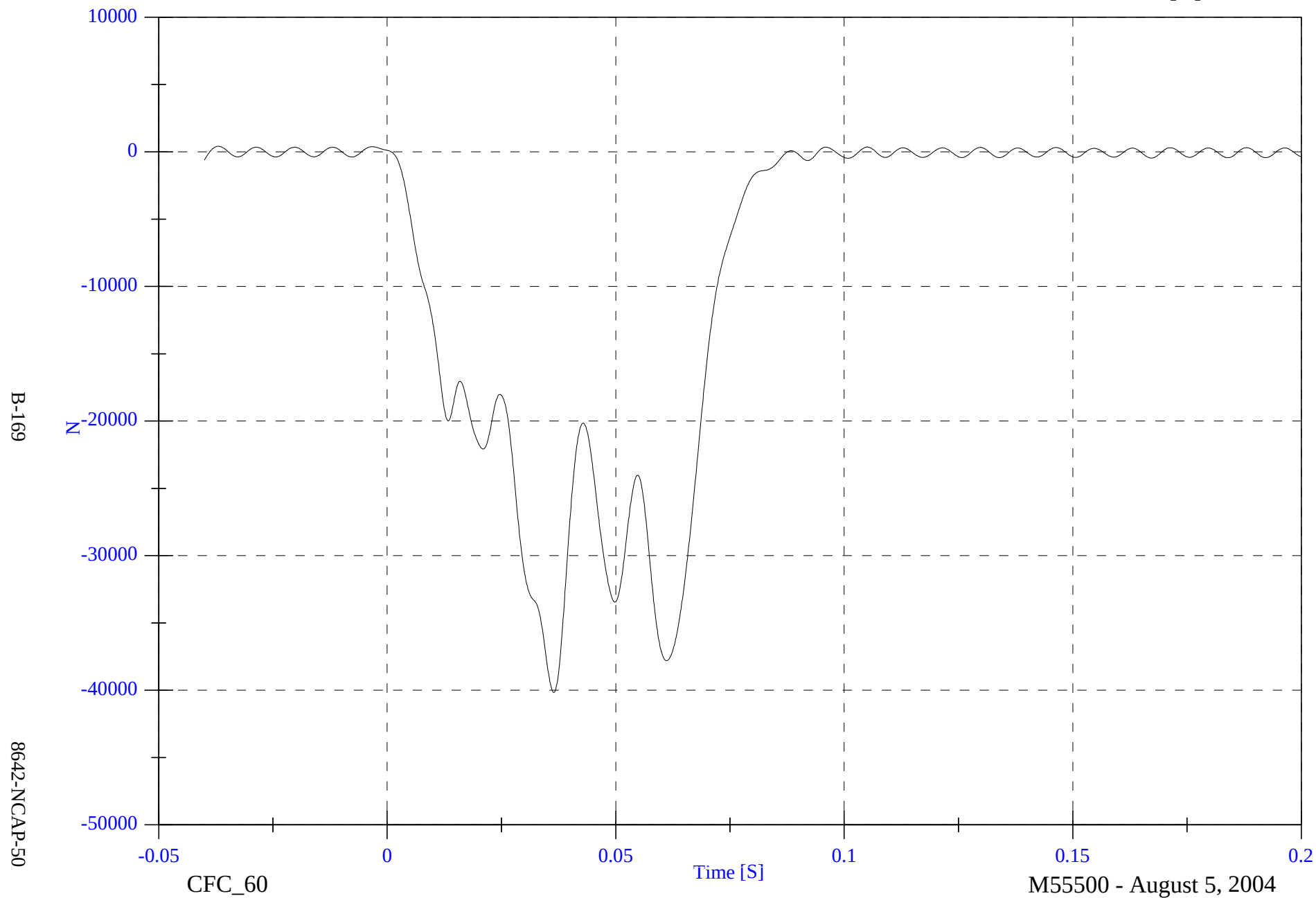


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell C7 Fx

Max: 412.1 [N] at -0.037 [S]

Min: -40158.5 [N] at 0.036 [S]

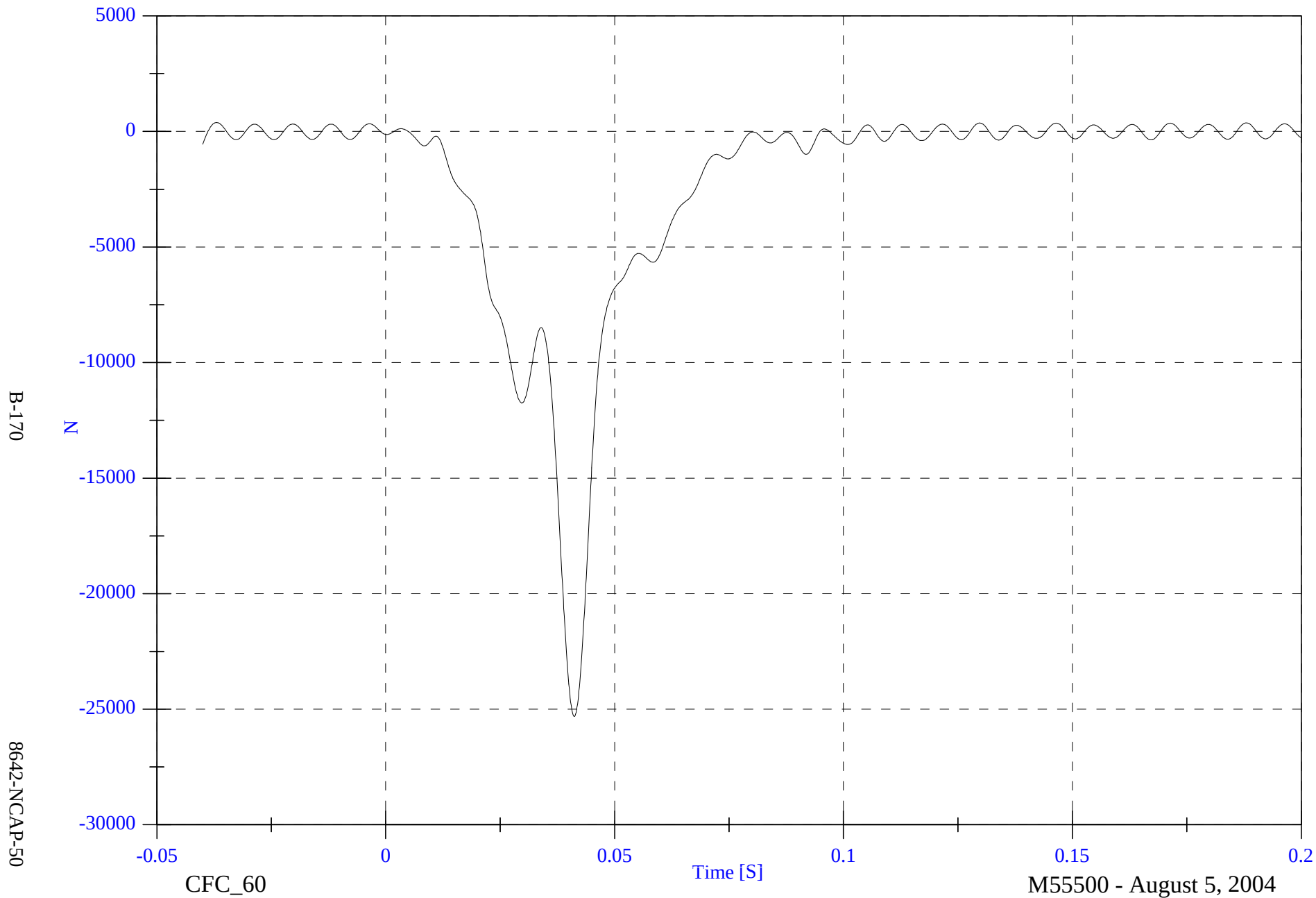


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell C8 Fx

Max: 384.8 [N] at -0.037 [S]

Min: -25314.7 [N] at 0.041 [S]

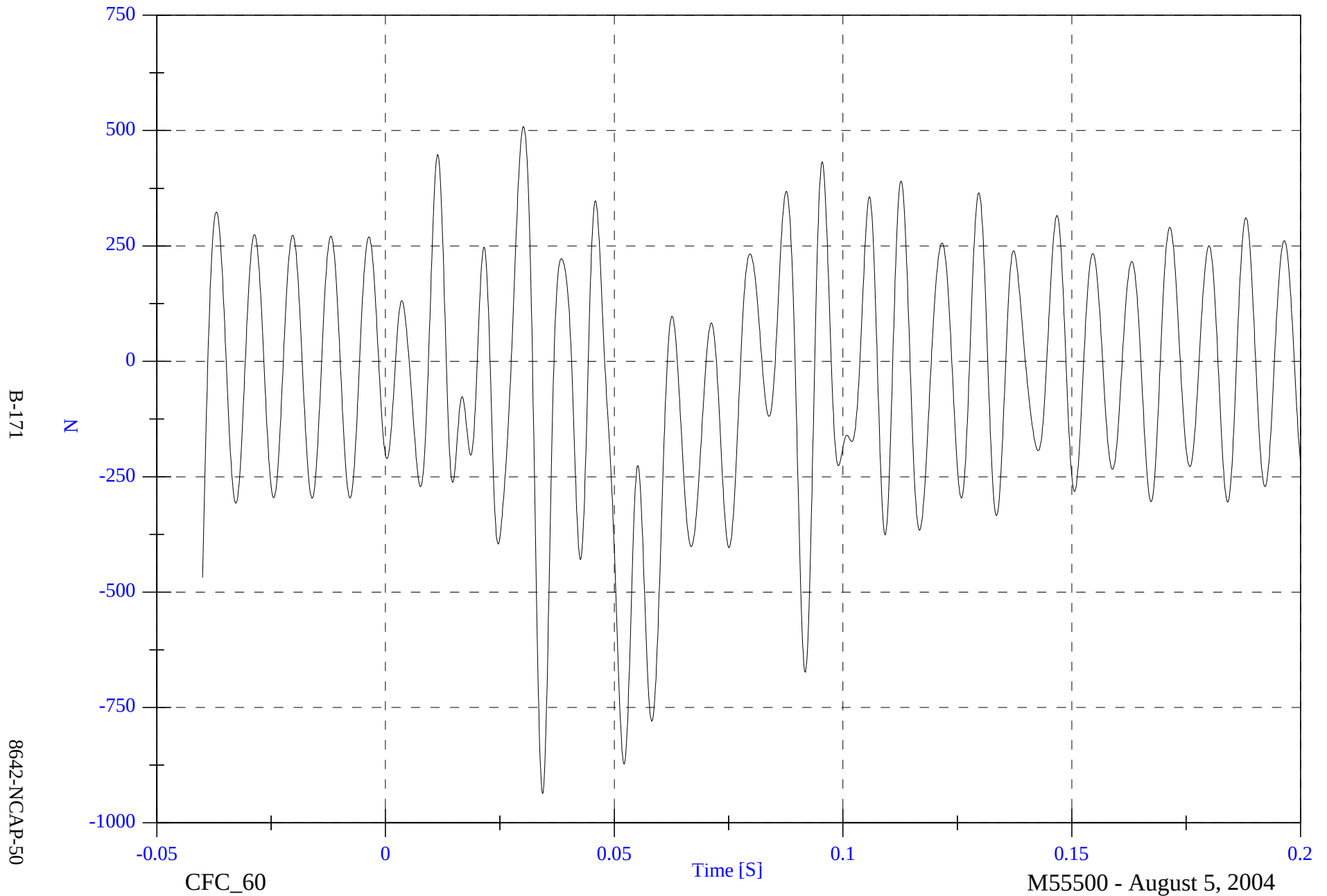


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell C9 Fx

Max: 508.4 [N] at 0.030 [S]

Min: -936.5 [N] at 0.034 [S]

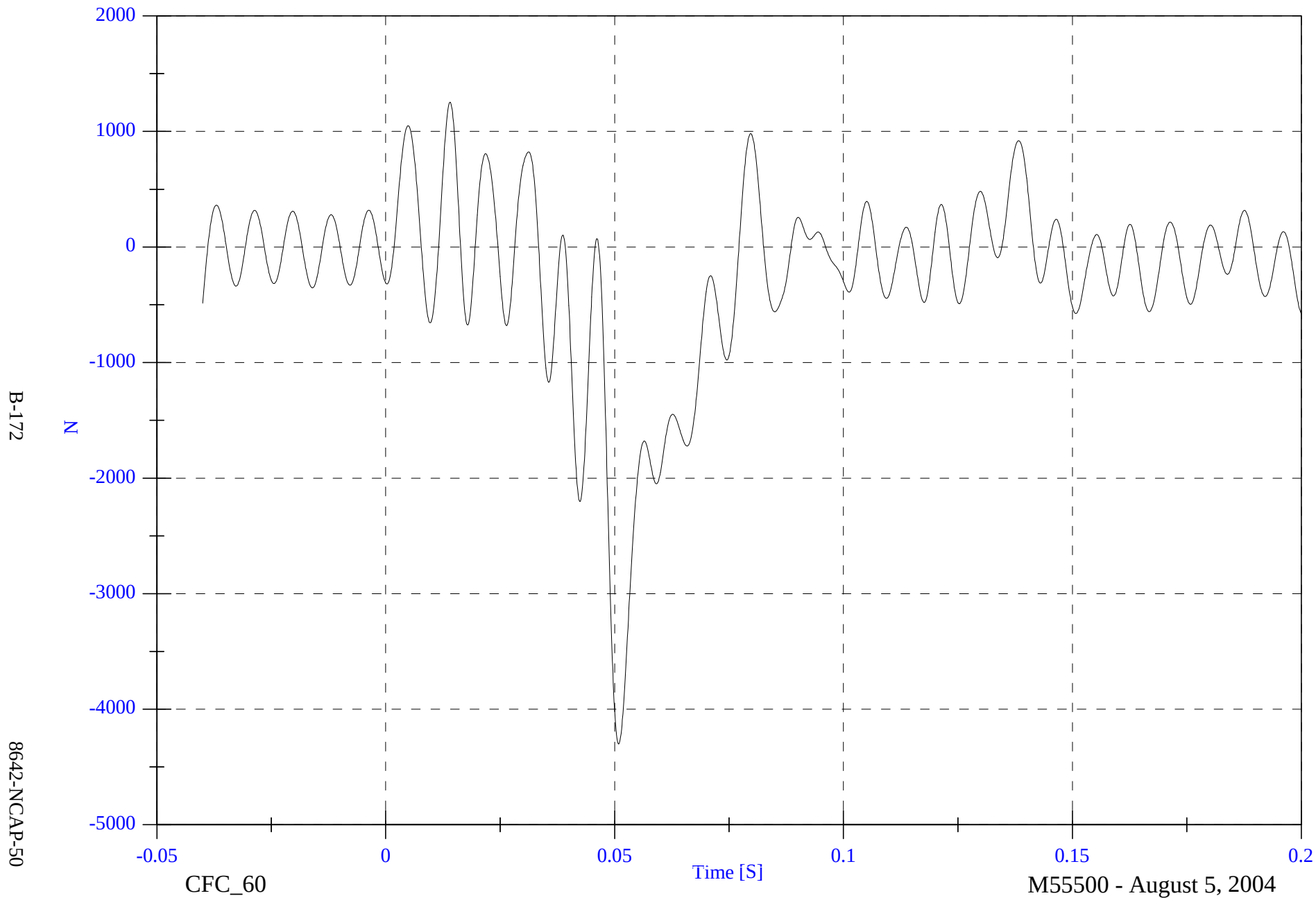


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell D1 Fx

Max: 1252.4 [N] at 0.014 [S]

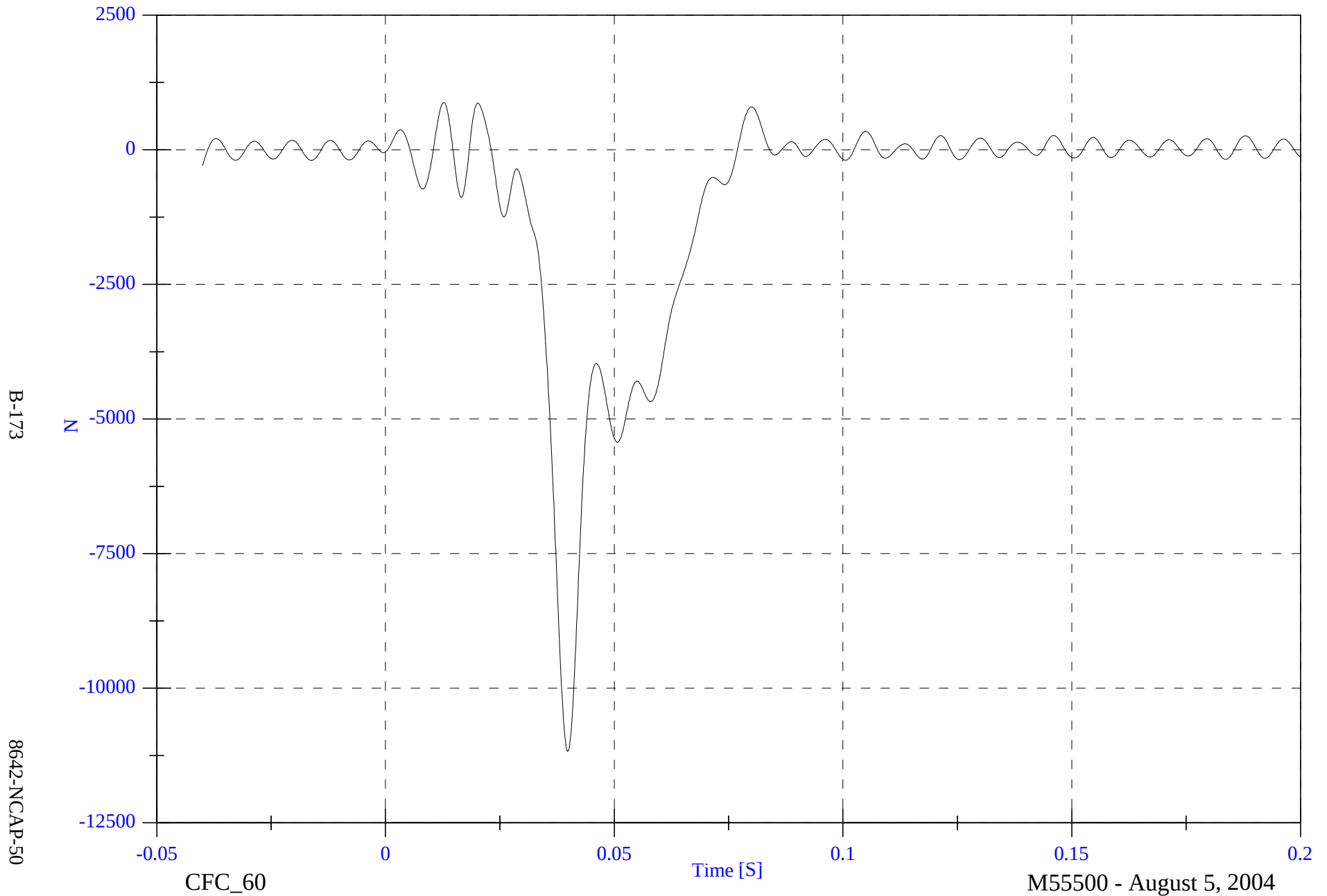
Min: -4301.5 [N] at 0.051 [S]



2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell D2 Fx

Max: 878.3 [N] at 0.013 [S]
Min: -11170.3 [N] at 0.040 [S]

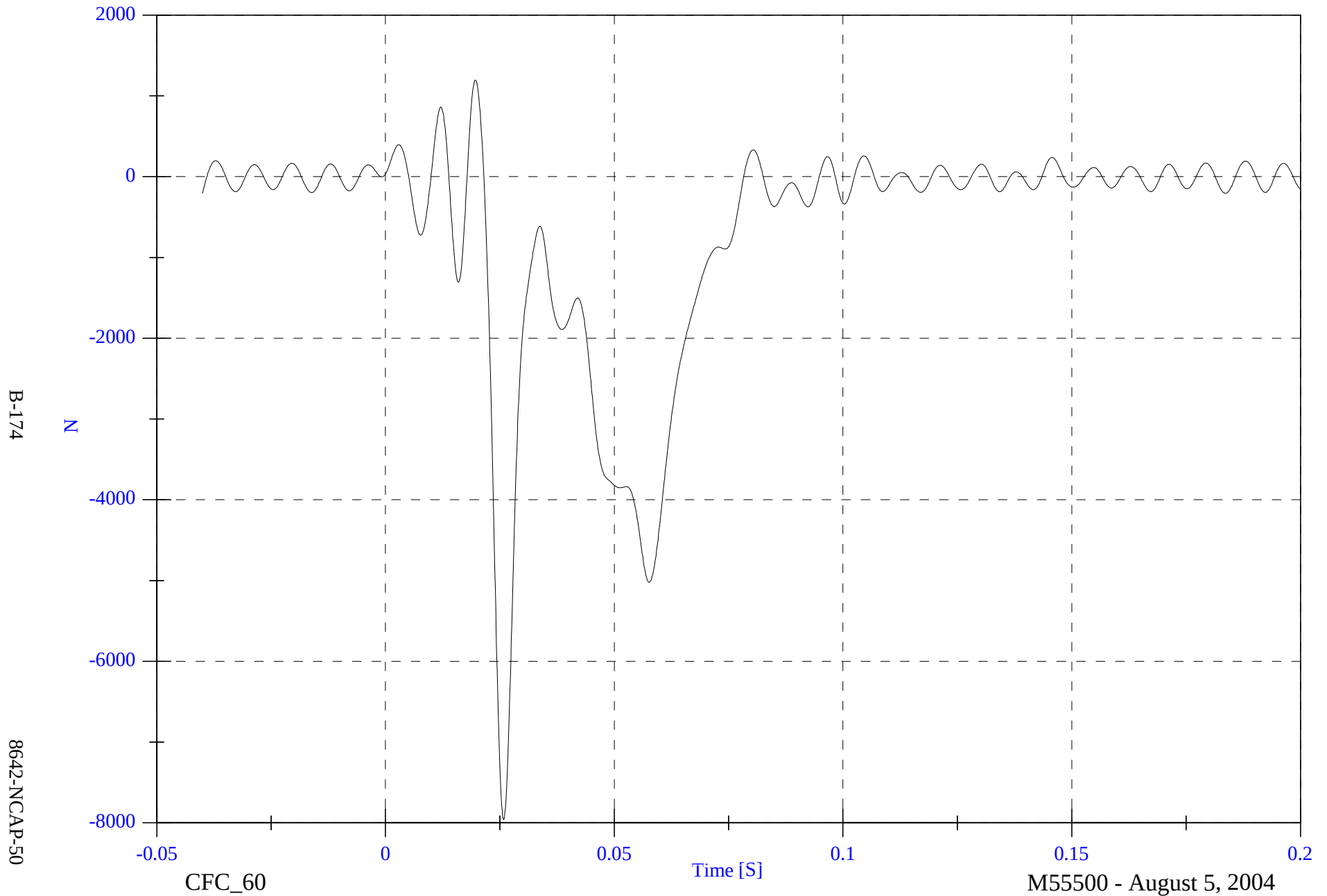


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell D3 Fx

Max: 1196.8 [N] at 0.020 [S]

Min: -7958.1 [N] at 0.026 [S]

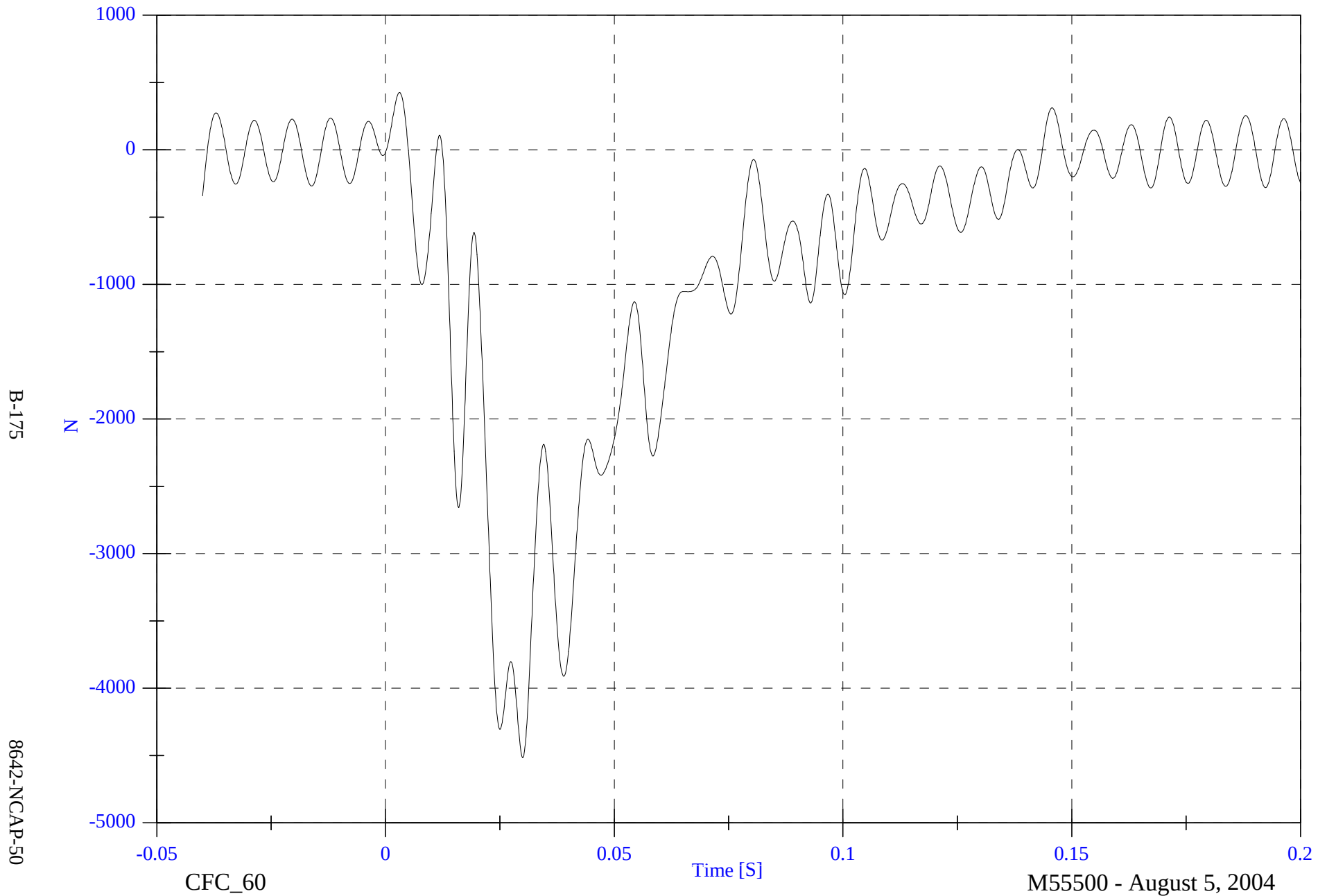


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell D4 Fx

Max: 425.6 [N] at 0.003 [S]

Min: -4515.8 [N] at 0.030 [S]

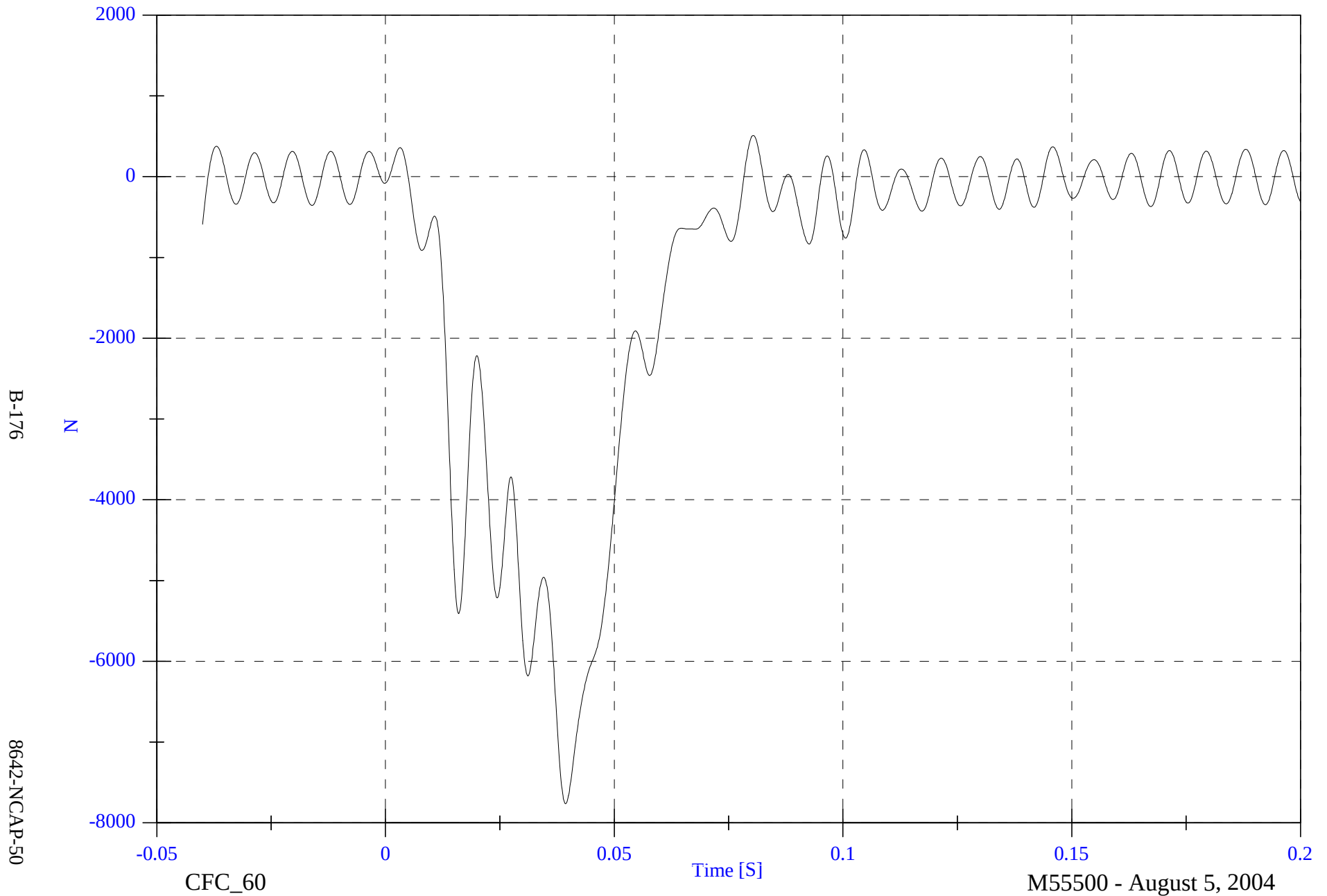


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell D5 Fx

Max: 511.2 [N] at 0.080 [S]

Min: -7763.2 [N] at 0.039 [S]

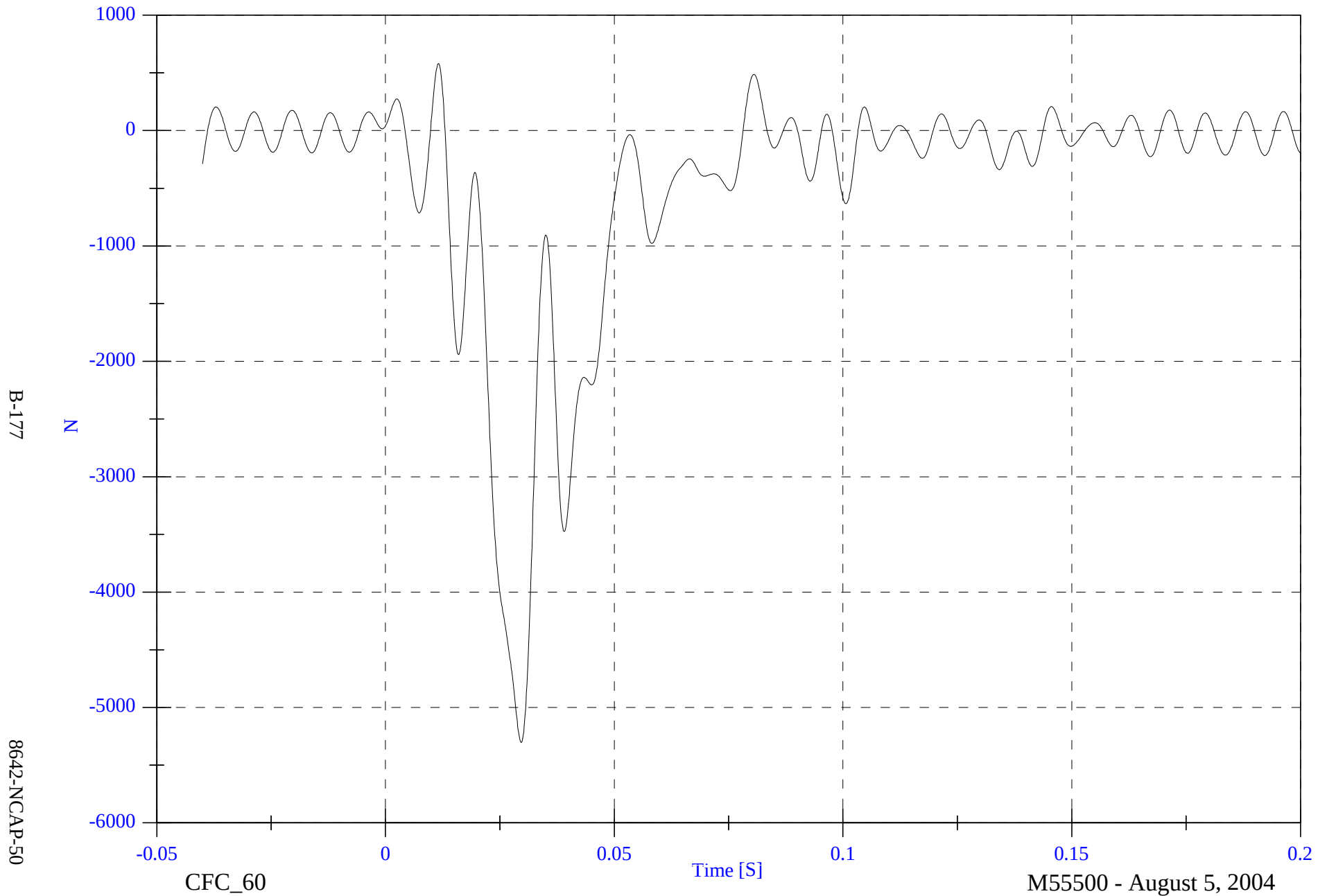


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell D6 Fx

Max: 580.9 [N] at 0.012 [S]

Min: -5302.9 [N] at 0.030 [S]

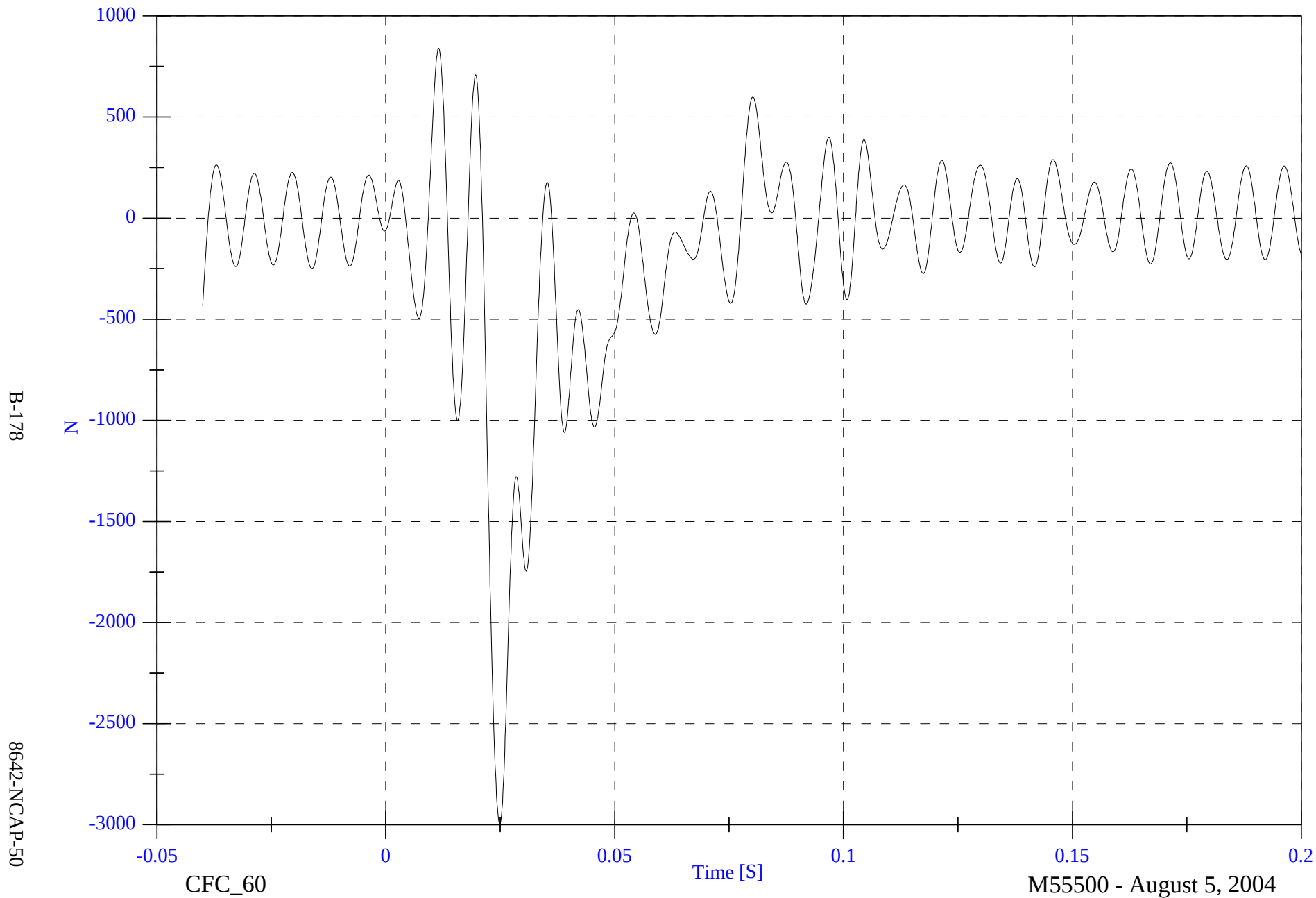


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell D7 Fx

Max: 839.4 [N] at 0.011 [S]

Min: -2998.4 [N] at 0.025 [S]

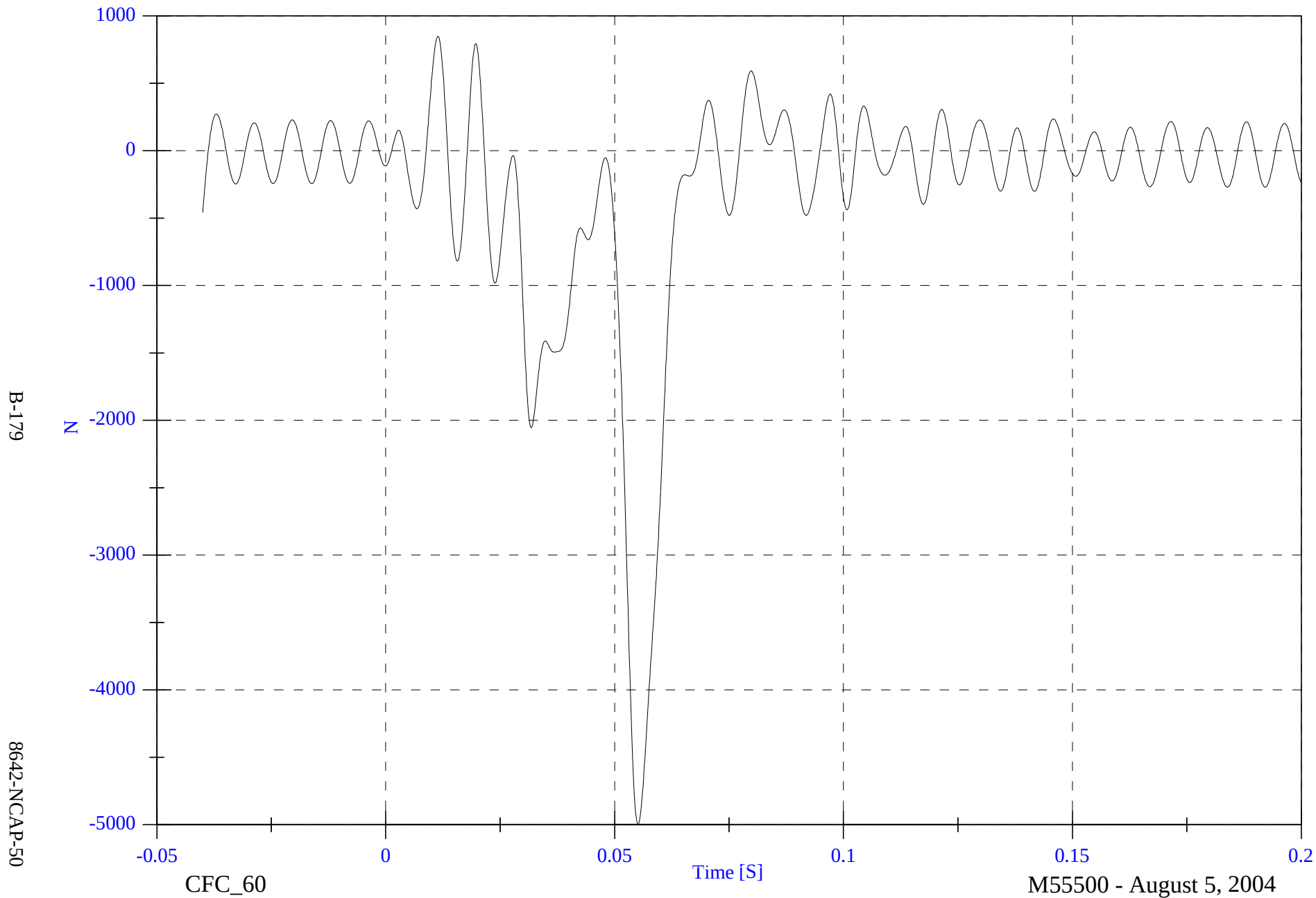


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell D8 Fx

Max: 848.7 [N] at 0.011 [S]

Min: -4997.1 [N] at 0.055 [S]

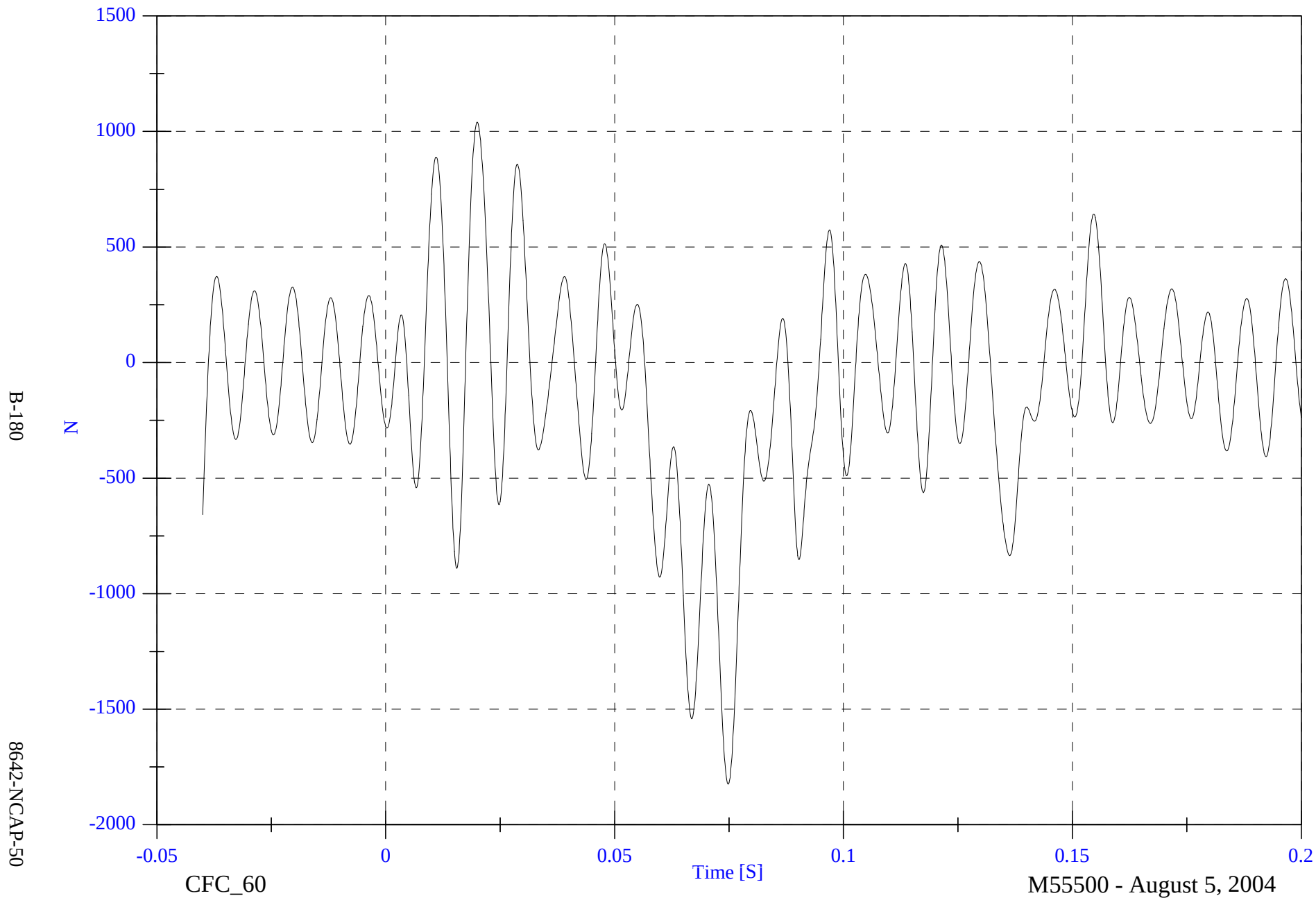


2004 NCAP Test 14 - 2005 Subaru Outback

Barrier Load Cell D9 Fx

Max: 1040.2 [N] at 0.020 [S]

Min: -1825.1 [N] at 0.075 [S]

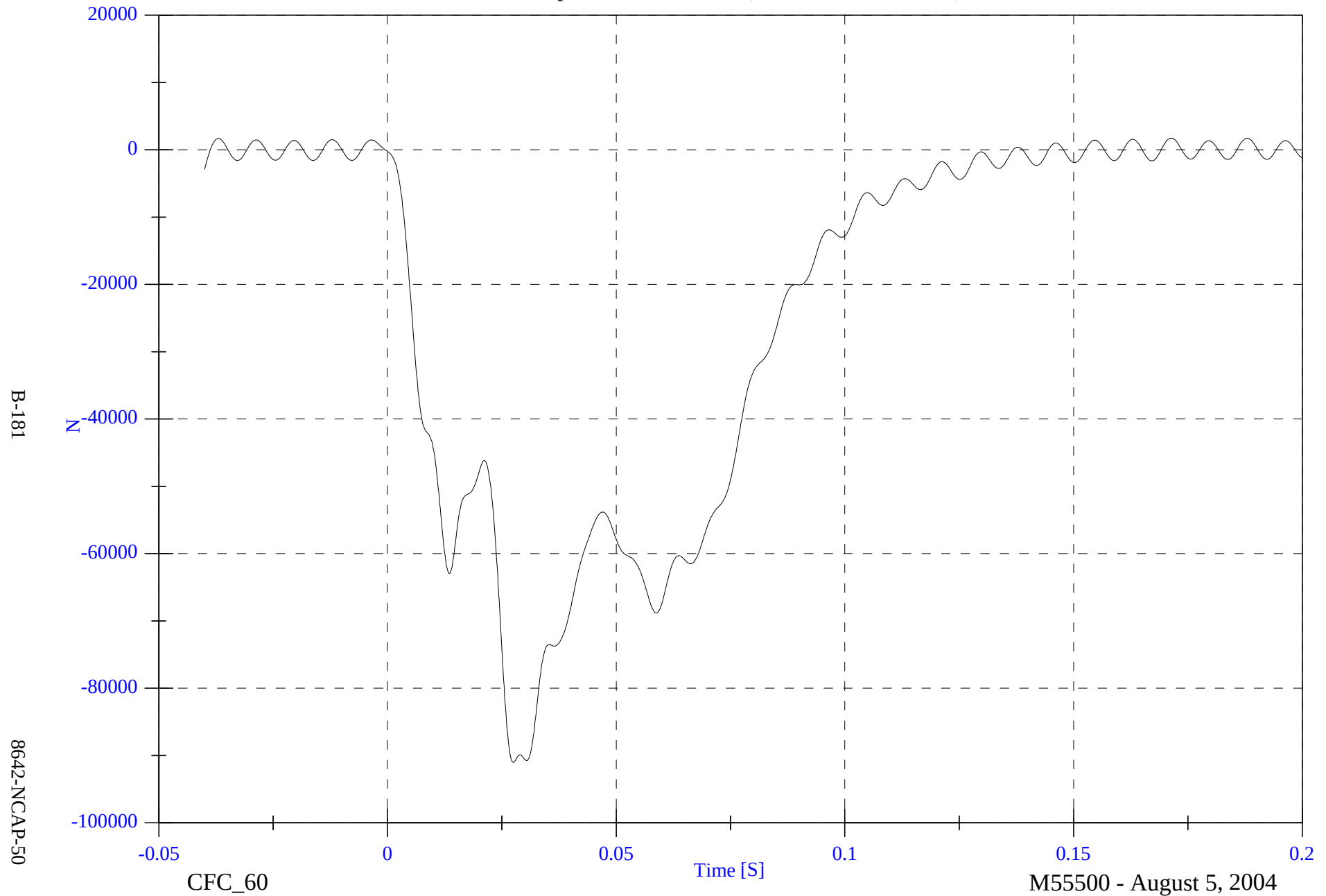


2004 NCAP Test 14 - 2005 Subaru Outback

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

Max: 1733.0 [N] at 0.171 [S]

Min: -91017.2 [N] at 0.027 [S]

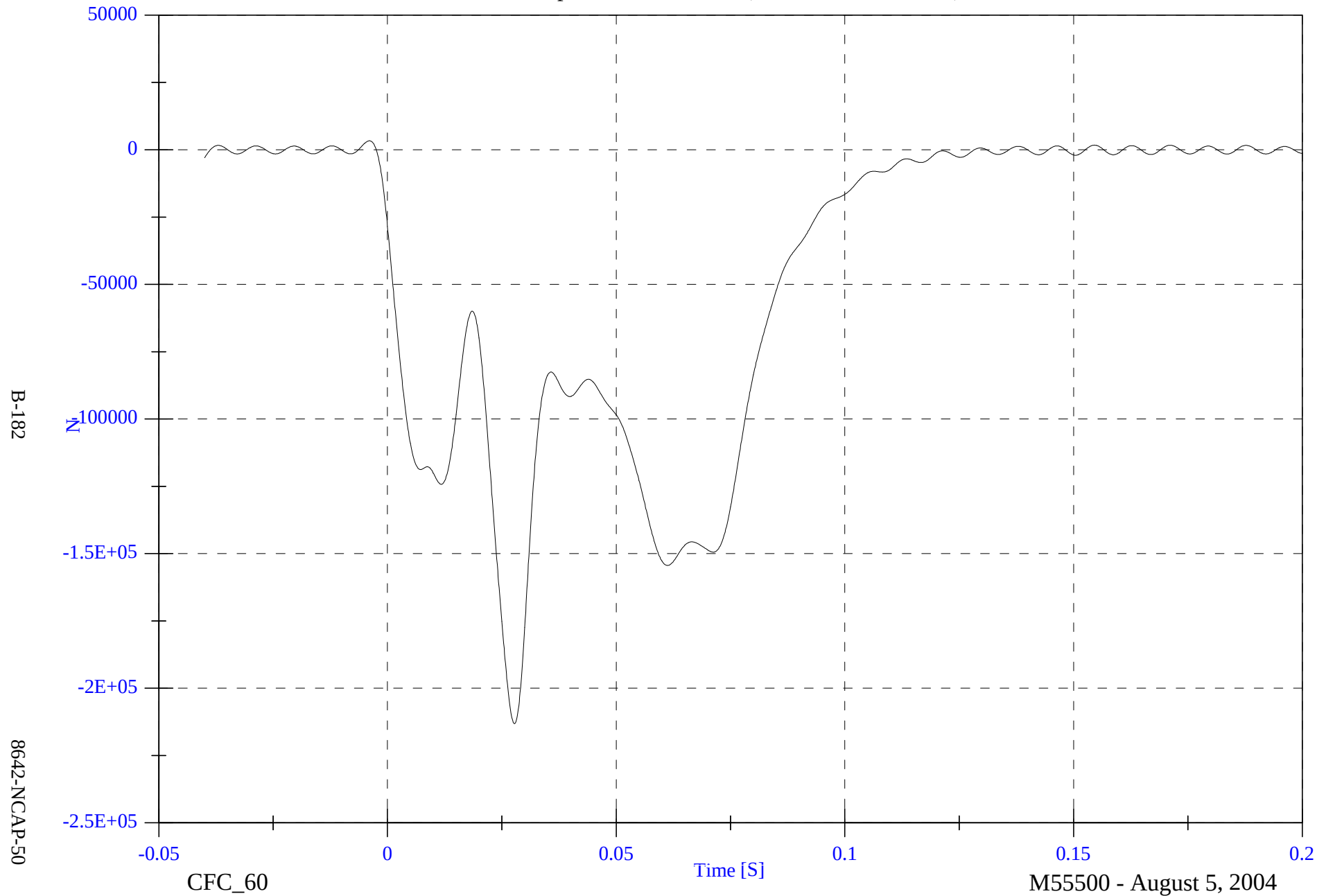


2004 NCAP Test 14 - 2005 Subaru Outback

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

Max: 3321.2 [N] at -0.004 [S]

Min: -213158.5 [N] at 0.028 [S]

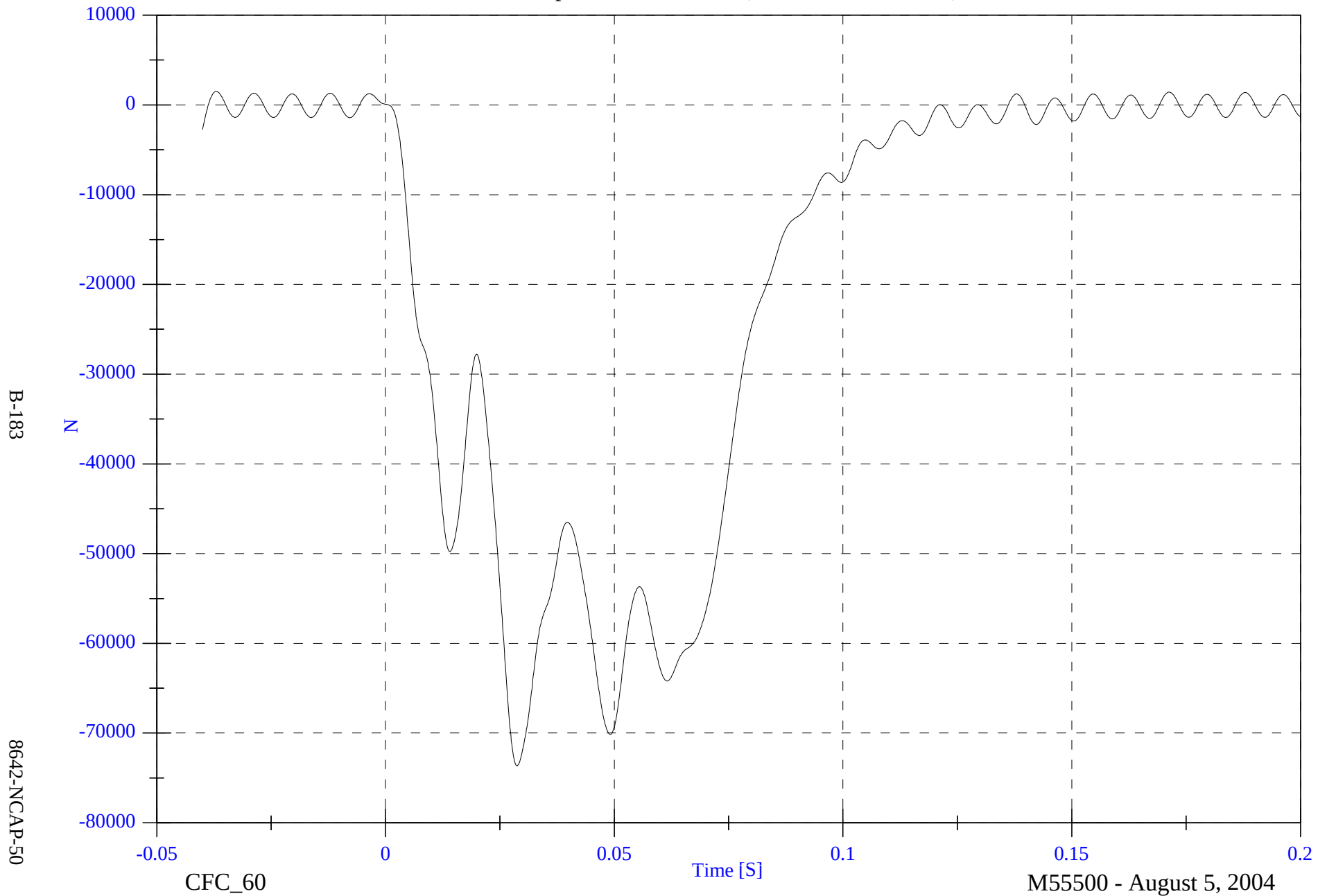


2004 NCAP Test 14 - 2005 Subaru Outback

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

Max: 1495.0 [N] at -0.037 [S]

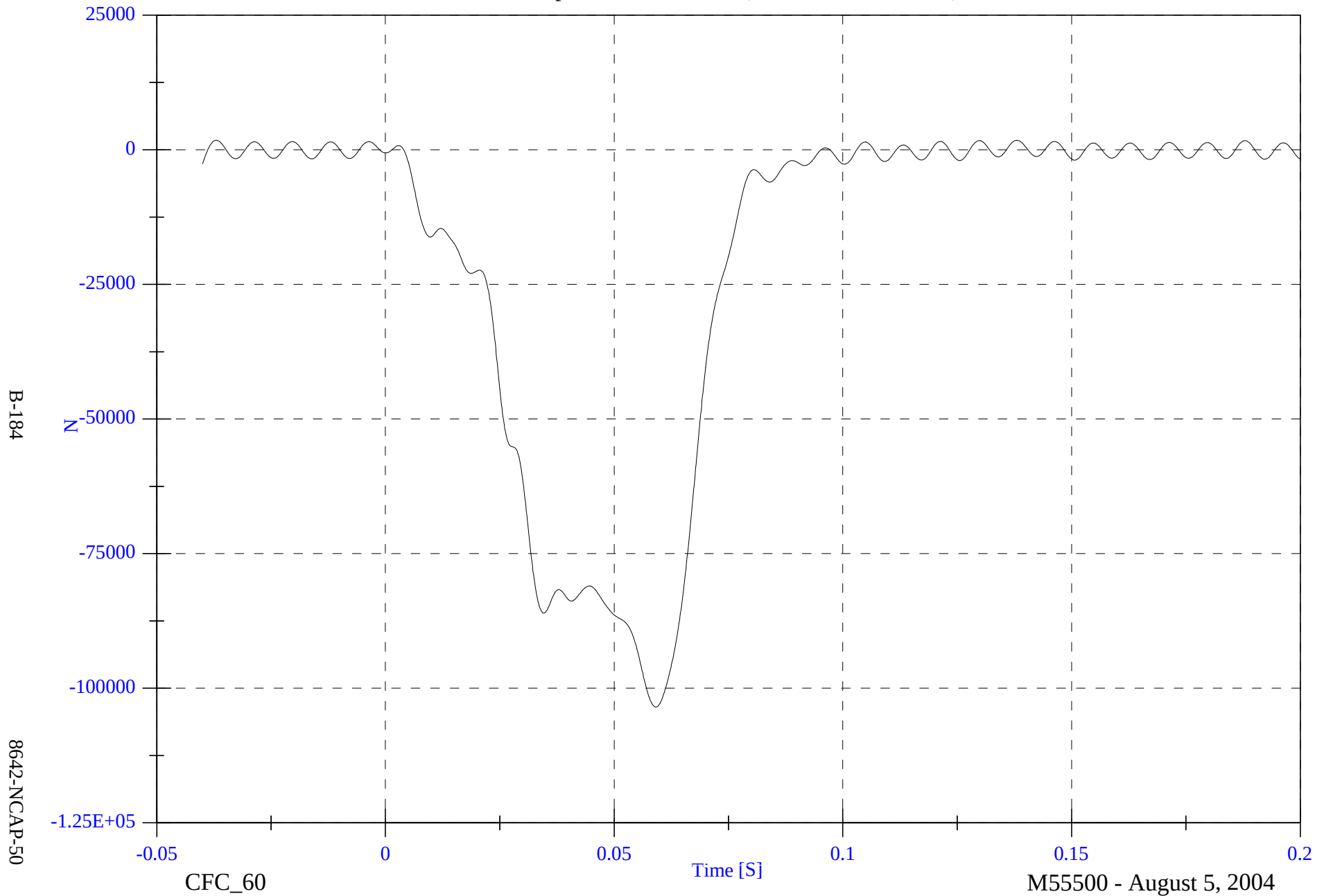
Min: -73635.3 [N] at 0.029 [S]



2004 NCAP Test 14 - 2005 Subaru Outback

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

Max: 1770.4 [N] at -0.037 [S]
Min: -103490.7 [N] at 0.059 [S]

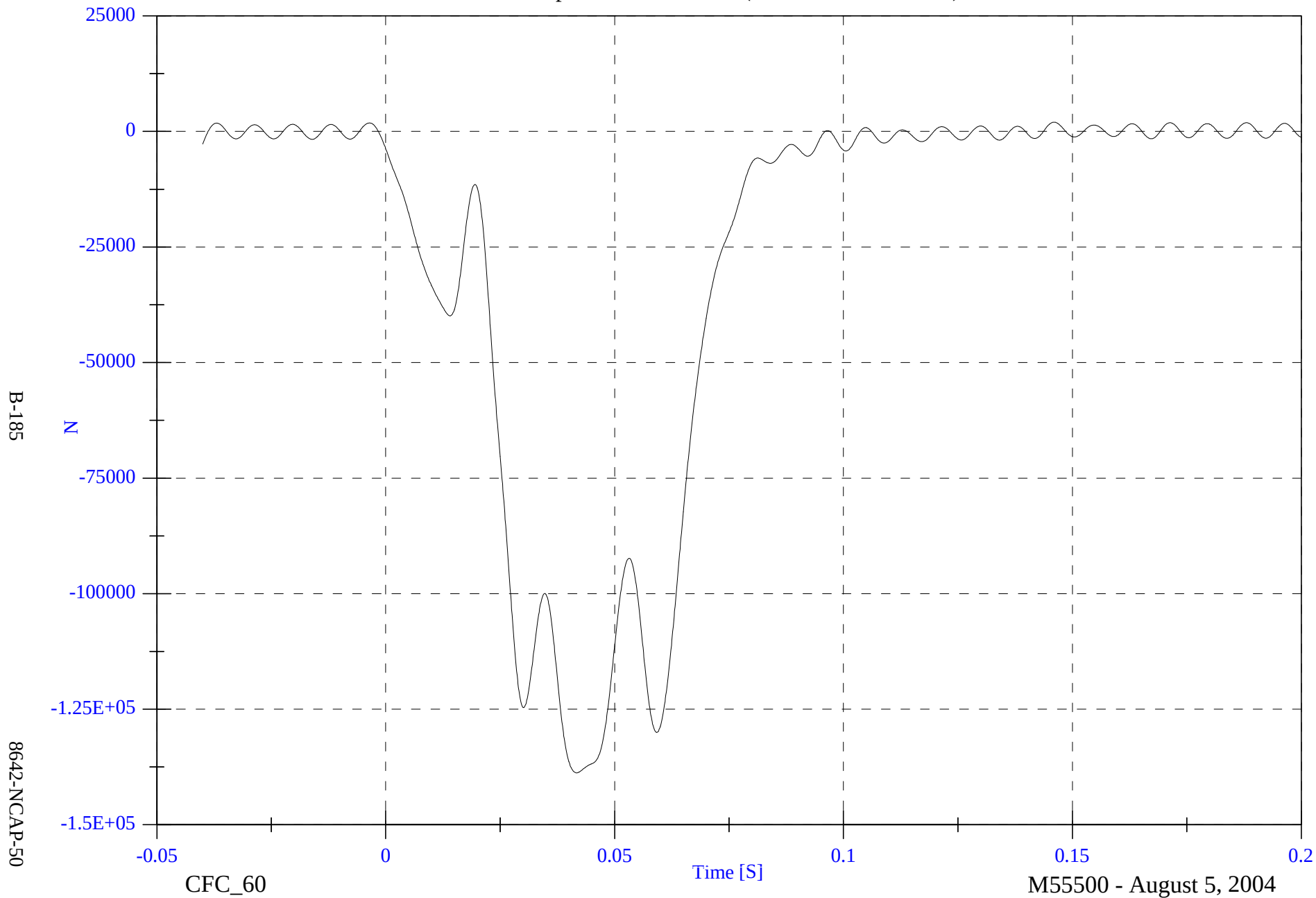


2004 NCAP Test 14 - 2005 Subaru Outback

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

Max: 2001.6 [N] at 0.146 [S]

Min: -138759.9 [N] at 0.042 [S]

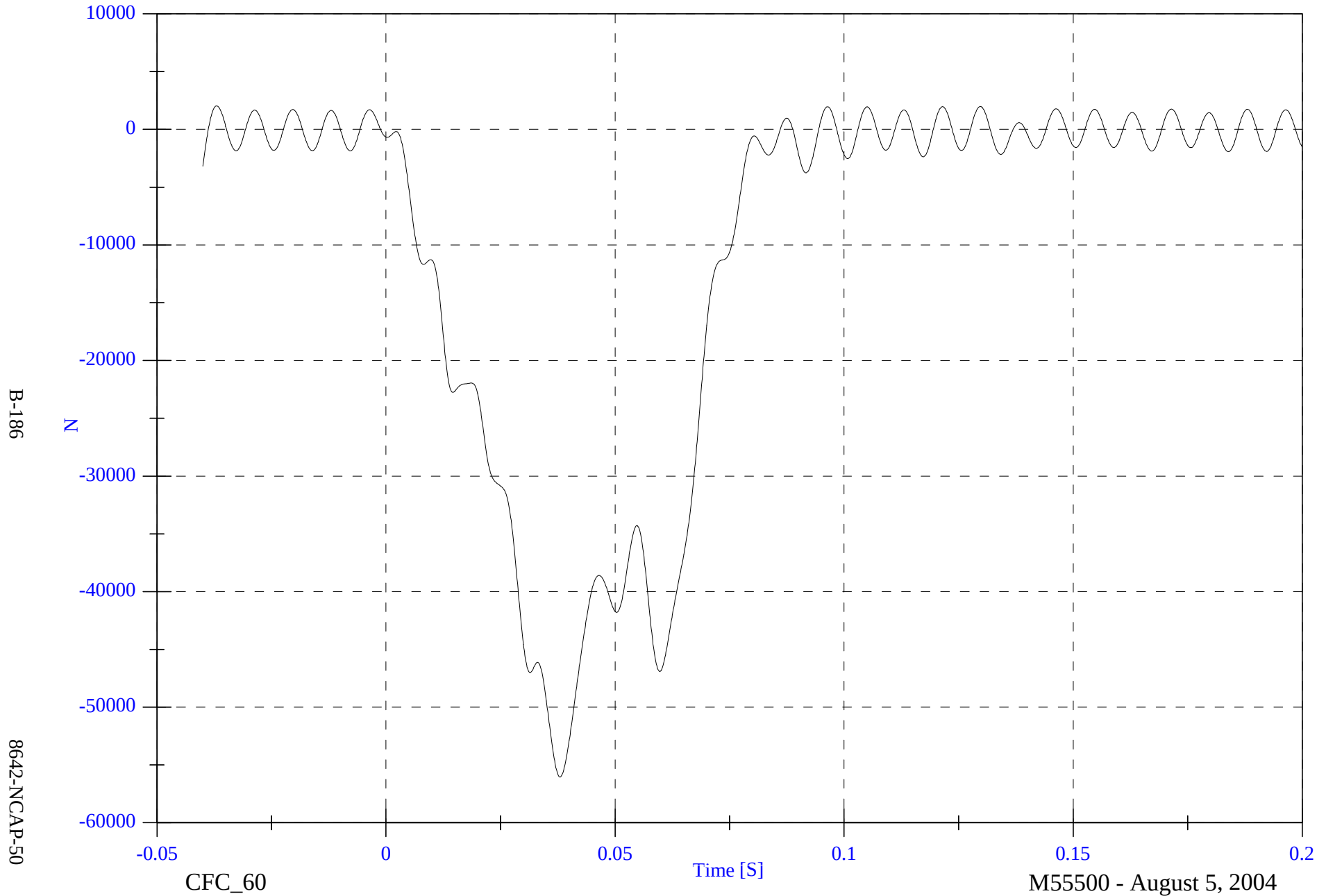


2004 NCAP Test 14 - 2005 Subaru Outback

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

Max: 2027.8 [N] at -0.037 [S]

Min: -56049.6 [N] at 0.038 [S]

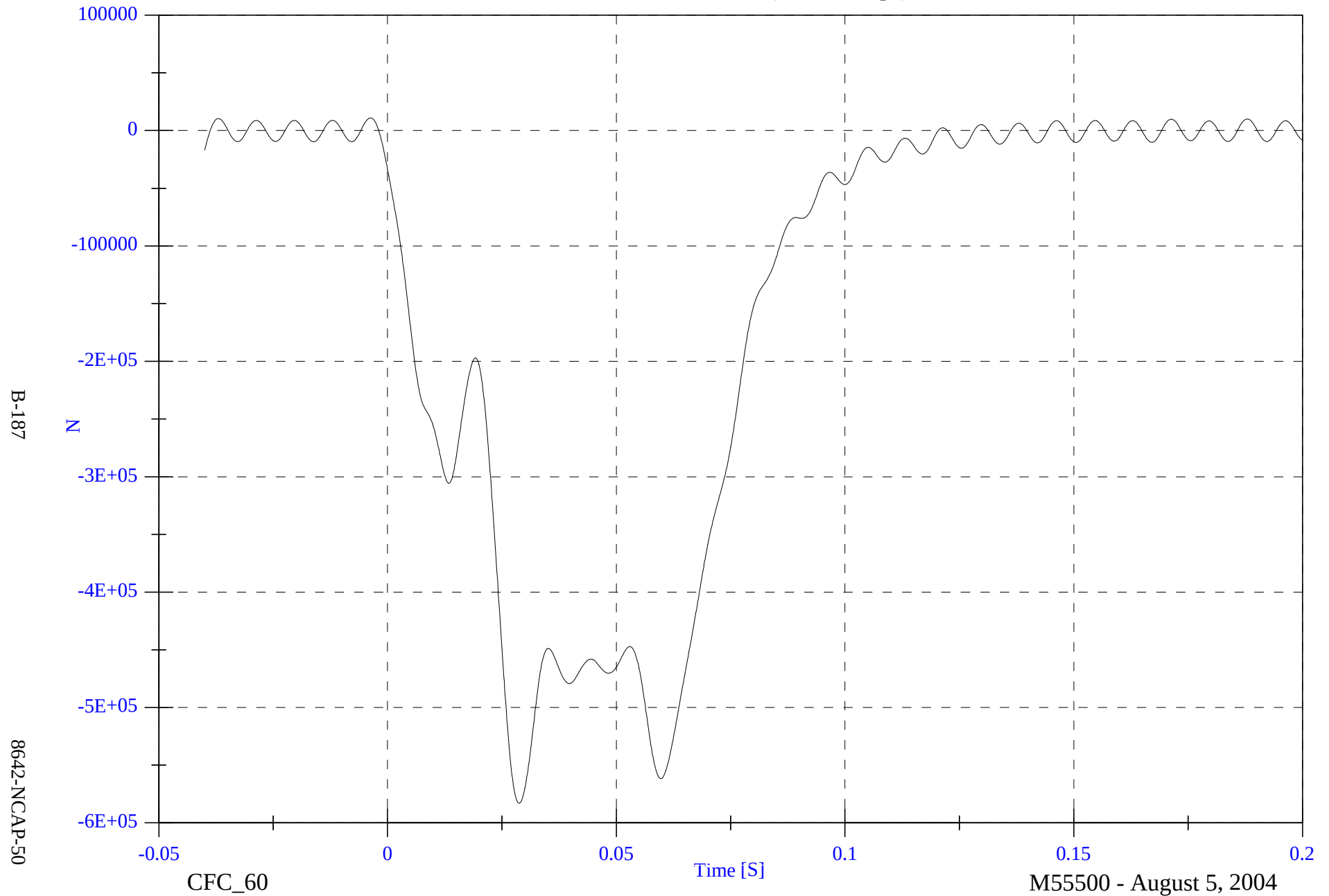


2004 NCAP Test 14 - 2005 Subaru Outback

Total Load Cell Sum (All 6 Groups)

Max: 10935.7 [N] at -0.004 [S]

Min: -583003.5 [N] at 0.029 [S]



APPENDIX C

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

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

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

Dummy serial numbers and certification dates are:

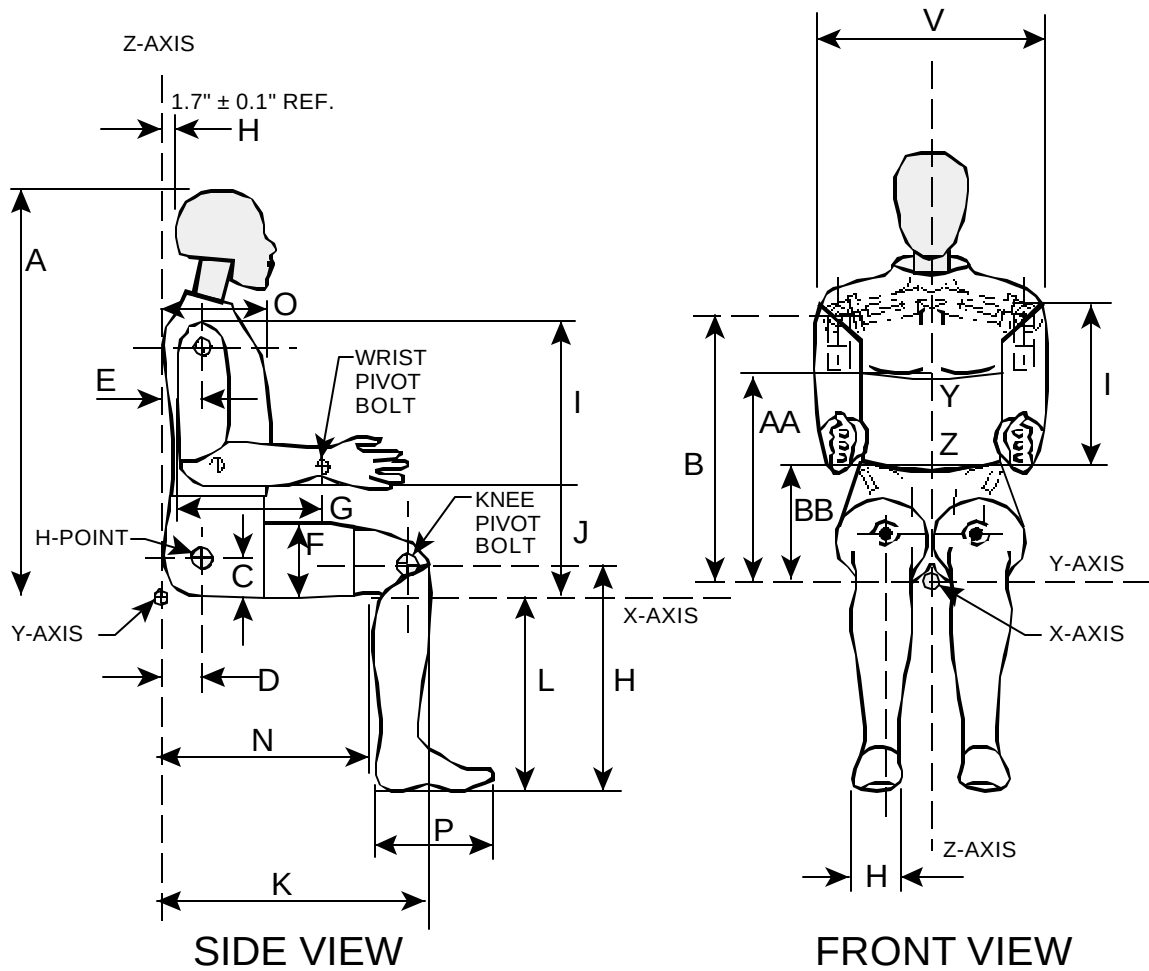
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	061	July 1, 2004
#2/Right Front Passenger	064	July 1, 2004

Electronic Test Equipment

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

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS SPECIFICATIONS



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

PART 572E
HEAD DROP TEST

Dummy Serial Number 061
Sequential Test Number 1
Date June 25, 2004
Workfile 061H 06-25-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	31.00
Peak Resultant Acceleration	225-275 G's	240.35
Peak Lateral Acceleration	15 G's Max	4.47
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	June 28, 2004	6 Axis Neck Transducer
Workfile	061NF1 06-28-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.00
Relative Humidity		10% - 70%	37.00
Impact Velocity		22.60 - 23.40 Ft/s	23.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.70
	20 ms	17.60 - 22.60 G's	20.73
	30 ms	12.50 - 18.50 G's	17.21
Max Pendulum G's Above 30 ms		29 G's Max	17.21
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.92
D Plane Rotation	Max	64 - 78 Deg	66.02
	Time	57 - 64 ms	57.82
Moment About Occipital Condyle	Max	88.13 – 108.47 Nm	105.23
	Time	47 - 58 ms	51.02
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	115.12
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.42

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061	
Sequential Test Number	2	
Date	June 28, 2004	6 Axis Neck Transducer
Workfile	061N2 06-28-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.00
Relative Humidity		10% - 70%	37.00
Impact Velocity		19.50 - 20.30 Ft/s	19.70
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.63
	20 ms	14.00 - 19.00 G's	18.76
	30 ms	11.00 - 16.00 G's	14.18
Max Pendulum G's Above 30 ms		22 G's Max	14.18
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	38.00
D Plane Rotation	Max	81 - 106 Deg	90.76
	Time	72 - 82 ms	72.50
Moment About Occipital Condyle	Max	-79.99 - -52.88 Nm	-71.12
	Time	65 - 79 ms	67.70
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	154.80
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	130.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 1
Date July 1, 2004 061T 07-01-04
Workfile

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.00
Relative Humidity	10% - 70%	37.00
Pendulum Velocity	21.6 - 22.4 Ft/s	21.93
Maximum Deflection	2.50 - 2.86 in	2.57
Maximum Resistive Force	1160 - 1325 Lbs	1232.32
Internal Hysteresis	69 - 85 %	75.07

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 1
Date June 29, 2004
Workfile 061LF 06-29-04/061RF 06-29-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.00
Relative Humidity	10% - 70%	31.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1296.37
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.00
Relative Humidity	10% - 70%	31.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1258.68

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Sequential Test Number 1
Date July 1, 2004

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70.00
Relative Humidity			37.00
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	33.6
Chest Depth	O	8.4 - 9.0 in	8.4
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.7
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
Elbow Rest Height	J	7.5 - 8.3 in	7.8
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.4
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number 064
Sequential Test Number 1
Date June 25, 2004
Workfile 064H 06-25-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.00
Relative Humidity	10% - 70%	31.00
Peak Resultant Acceleration	225-275 G's	228.86
Peak Lateral Acceleration	15 G's Max	1.92
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	2	
Date	June 30, 2004	6 Axis Neck Transducer
Workfile	064NF2 06-30-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.00
Relative Humidity		10% - 70%	28.00
Impact Velocity		22.60 - 23.40 Ft/s	23.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.58
	20 ms	17.60 - 22.60 G's	20.33
	30 ms	12.50 - 18.50 G's	16.42
Max Pendulum G's Above 30 ms		29 G's Max	16.42
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.40
D Plane Rotation	Max	64 - 78 Deg	70.50
	Time	57 - 64 ms	60.60
Moment About Occipital Condyle	Max	88.13 – 108.47 Nm	98.74
	Time	47 - 58 ms	51.90
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	121.00
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.50

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	June 30, 2004	6 Axis Neck Transducer
Workfile	064NE 06-30-04	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.00
Relative Humidity		10% - 70%	28.00
Impact Velocity		19.50 - 20.30 Ft/s	19.70
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.53
	20 ms	14.00 - 19.00 G's	18.76
	30 ms	11.00 - 16.00 G's	15.88
Max Pendulum G's Above 30 ms		22 G's Max	15.88
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	38.20
D Plane Rotation	Max	81 - 106 Deg	97.57
	Time	72 - 82 ms	76.70
Moment About Occipital Condyle	Max	-79.99 - -52.88 Nm	-72.73
	Time	65 - 79 ms	71.00
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	159.90
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	134.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 1
Date July 1, 2004
Workfile 064T 07-01-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.00
Relative Humidity	10% - 70%	37.00
Pendulum Velocity	21.6 - 22.4 Ft/s	21.88
Maximum Deflection	2.50 - 2.86 in	2.62
Maximum Resistive Force	1160 - 1325 Lbs	1256.01
Internal Hysteresis	69 - 85 %	73.08

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 1
Date June 29, 2004
Workfile 064LF 06-29-04/064RF 06-29-04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.00
Relative Humidity	10% - 70%	31.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1200.16
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.00
Relative Humidity	10% - 70%	31.00
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1293.28

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 1
Date July 1, 2004

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70.00
Relative Humidity			37.00
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	34.0
Chest Depth	O	8.4 - 9.0 in	8.6
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.2
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.4
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician:

B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P21399	07-Jun-04	07-Dec-04
	X Arm Z	ENDEVCO	AC-P23282	07-Jun-04	07-Dec-04
	Y Arm X	ENDEVCO	AC-P23155	07-Jun-04	07-Dec-04
	Y Arm Z	ENDEVCO	AC-P23358	07-Jun-04	07-Dec-04
	Z Arm X	ENDEVCO	AC-P18731	07-Jun-04	07-Dec-04
	Z Arm Y	ENDEVCO	AC-P19217	07-Jun-04	07-Dec-04
Head	X	ENDEVCO	AC-P18516	17-Jun-04	17-Dec-04
	Y	ENDEVCO	AC-P19222	17-Jun-04	17-Dec-04
	Z	ENDEVCO	AC-P18558	17-Jun-04	17-Dec-04
Head	X (R)	ENDEVCO	AC-P18663	17-Jun-04	17-Dec-04
	Y (R)	ENDEVCO	AC-P18639	17-Jun-04	17-Dec-04
	Z (R)	ENDEVCO	AC-P18537	17-Jun-04	17-Dec-04
Neck Load Cell	X	DENTON	LC-076Fx	24-Sep-03	24-Sep-04
	Y	DENTON	LC-076Fy	24-Sep-03	24-Sep-04
	Z	DENTON	LC-076Fz	24-Sep-03	24-Sep-04
Neck Moment	X	DENTON	LC-076Mx	24-Sep-03	24-Sep-04
	Y	DENTON	LC-076My	24-Sep-03	24-Sep-04
	Z	DENTON	LC-076Mz	24-Sep-03	24-Sep-04
Chest	X	ENDEVCO	AC-P21373	07-Jun-04	07-Dec-04
	Y	ENDEVCO	AC-P22639	07-Jun-04	07-Dec-04
	Z	ENDEVCO	AC-P21297	07-Jun-04	07-Dec-04
Chest	X (R)	ENDEVCO	AC-P21171	07-Jun-04	07-Dec-04
	Y (R)	ENDEVCO	AC-P23136	07-Jun-04	07-Dec-04
	Z (R)	ENDEVCO	AC-P23128	07-Jun-04	07-Dec-04
Chest Deflection	X	SERVO	DS-061	11-Nov-03	11-Nov-04
Pelvic	X	ENDEVCO	AC-P18792	08-Jun-04	08-Dec-04
	Y	ENDEVCO	AC-P17535	08-Jun-04	08-Dec-04
	Z	ENDEVCO	AC-P23134	08-Jun-04	08-Dec-04

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	LC-231	03-Dec-03	03-Dec-04
Right Femur Load Cell	Fz	DENTON	LC-232	03-Dec-03	03-Dec-04
Left Upper Tibia	Mx	DENTON	LC-038Mx	26-Sep-03	26-Sep-04
	My	DENTON	LC-038My	26-Sep-03	26-Sep-04
Left Lower Tibia	Fz	DENTON	LC-124Fz	26-Sep-03	26-Sep-04
	Mx	DENTON	LC-124Mx	26-Sep-03	26-Sep-04
	My	DENTON	LC-124My	26-Sep-03	26-Sep-04
Right Upper Tibia	Mx	DENTON	LC-023Mx	26-Sep-03	26-Sep-04
	My	DENTON	LC-023My	26-Sep-03	26-Sep-04
Right Lower Tibia	Fz	DENTON	LC-111Fz	26-Sep-03	26-Sep-04
	Mx	DENTON	LC-111Mx	26-Sep-03	26-Sep-04
	My	DENTON	LC-111My	26-Sep-03	26-Sep-04
Left Foot Rear	X	ENTRAN	AC-00L13-F04	14-May-04	14-Nov-04
	Z	ENTRAN	AC-01G18-F15	15-May-04	15-Nov-04
Left Foot Front	Z	ENTRAN	AC-01G18-F14	15-May-04	15-Nov-04
Right Foot Rear	X	ENTRAN	AC-01G18-F05	15-May-04	15-Nov-04
	Z	ENTRAN	AC-01G18-F03	15-May-04	15-Nov-04
Right Foot Front	Z	ENTRAN	AC-01J02-F09	15-May-04	15-Nov-04
Lap Belt Load Cell		First Technology	LC-170	10-Oct-03	10-Oct-04
Shoulder Belt Load Cell		First Technology	LC-175	10-Oct-03	10-Oct-04

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-P18532	09-Jun-04	09-Dec-04
	X Arm Z	ENDEVCO	AC-P17237	08-Jun-04	08-Dec-04
	Y Arm X	ENDEVCO	AC-P16662	09-Jun-04	09-Dec-04
	Y Arm Z	ENDEVCO	AC-P17299	09-Jun-04	09-Dec-04
	Z Arm X	ENDEVCO	AC-P21441	08-Jun-04	08-Dec-04
	Z Arm Y	ENDEVCO	AC-P19197	09-Jun-04	09-Dec-04
Head	X	ENDEVCO	AC-J33018	08-Jun-04	08-Dec-04
	Y	ENDEVCO	AC-J32185	08-Jun-04	08-Dec-04
	Z	ENDEVCO	AC-J31011	08-Jun-04	08-Dec-04
Head	X (R)	ENDEVCO	AC-J31020	08-Jun-04	08-Dec-04
	Y (R)	ENDEVCO	AC-J31101	08-Jun-04	08-Dec-04
	Z (R)	ENDEVCO	AC-J31059	08-Jun-04	08-Dec-04
Neck Load Cell	X	DENTON	LC-441Fx	25-Sep-03	25-Sep-04
	Y	DENTON	LC-441Fy	25-Sep-03	25-Sep-04
	Z	DENTON	LC-441Fz	25-Sep-03	25-Sep-04
Neck Moment	X	DENTON	LC-441Mx	25-Sep-03	25-Sep-04
	Y	DENTON	LC-441My	25-Sep-03	25-Sep-04
	Z	DENTON	LC-441Mz	25-Sep-03	25-Sep-04
Chest	X	ENDEVCO	AC-P15534	15-Jun-04	15-Dec-04
	Y	ENDEVCO	AC-P16576	15-Jun-04	15-Dec-04
	Z	ENDEVCO	AC-P19255	15-Jun-04	15-Dec-04
Chest	X (R)	ENDEVCO	AC-P15526	15-Jun-04	15-Dec-04
	Y (R)	ENDEVCO	AC-P23303	15-Jun-04	15-Dec-04
	Z (R)	ENDEVCO	AC-P19216	11-Jun-04	15-Dec-04
Chest Deflection	X	SERVO	DS-064	20-Nov-03	20-Nov-04
Pelvic	X	ENDEVCO	AC-P23174	08-Jun-04	08-Dec-04
	Y	ENDEVCO	AC-P23164	08-Jun-04	08-Dec-04
	Z	ENDEVCO	AC-P23137	08-Jun-04	08-Dec-04

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	GSE	LC-723	03-Dec-03	03-Dec-04
Right Femur Load Cell	Fz	GSE	LC-955	03-Dec-03	03-Dec-04
Left Upper Tibia	Mx	DENTON	LC-045Mx	26-Sep-03	26-Sep-04
	My	DENTON	LC-045My	26-Sep-03	26-Sep-04
Left Lower Tibia	Fz	DENTON	LC-125Fz	26-Sep-03	26-Sep-04
	Mx	DENTON	LC-125Mx	26-Sep-03	26-Sep-04
	My	DENTON	LC-125My	26-Sep-03	26-Sep-04
Right Upper Tibia	Mx	DENTON	LC-016Mx	26-Sep-03	26-Sep-04
	My	DENTON	LC-016My	26-Sep-03	26-Sep-04
Right Lower Tibia	Fz	DENTON	LC-123Fz	26-Sep-03	26-Sep-04
	Mx	DENTON	LC-123Mx	26-Sep-03	26-Sep-04
	My	DENTON	LC-123My	26-Sep-03	26-Sep-04
Left Foot Rear	X	ENDEVCO	AC-J18059	04-Feb-04	04-Aug-04
	Z	ENDEVCO	AC-J36176	04-Feb-04	04-Aug-04
Left Foot Front	Z	ENDEVCO	AC-J18662	04-Feb-04	04-Aug-04
Right Foot Rear	X	ENDEVCO	AC-AJ8C0	04-Feb-04	04-Aug-04
	Z	ENDEVCO	AC-J19868	04-Feb-04	04-Aug-04
Right Foot Front	Z	ENDEVCO	AC-J34378	04-Feb-04	04-Aug-04
Lap Belt Load Cell		First Technology	LC-174	10-Oct-03	10-Oct-04
Shoulder Belt Load Cell		First Technology	LC-180	10-Oct-03	10-Oct-04

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	GS SENSORS	AC-9440-046	09-Jun-04	09-Dec-04
Right Rear Seat Crossmember X	GS SENSORS	AC-9440-017	09-Jun-04	09-Dec-04
Top of Engine	GS SENSORS	AC-9440-029	09-Jun-04	09-Dec-04
Bottom of Engine	GS SENSORS	AC-9444-038	09-Jun-04	09-Dec-04
Right Disc Brake Caliper	GS SENSORS	AC-9440-045	09-Jun-04	09-Dec-04
Instrument Panel	ICS	AC-FGP03	19-Jul-04	19-Jan-05
Left Disc Brake Caliper	GS SENSORS	AC-9450-039	09-Jun-04	09-Dec-04
Left Seat Rear Crossmember Z	GS SENSORS	AC-9440-023	09-Jun-04	09-Dec-04
Right Seat Rear Crossmember Z	GS SENSORS	AC-9440-032	09-Jun-04	09-Dec-04

REPORT NUMBER: CAL-04-14

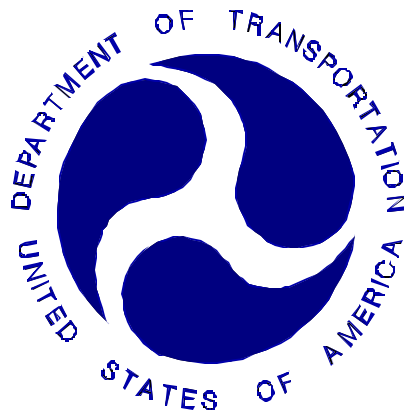
NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

EVENFLO VANGUARD 5 FORWARD FACING CONVERTIBLE WITH LATCH AND TOP TETHER
GRACO MYCARGO BOOSTER

NHTSA NUMBER: M55500

GDAIS REPORT NUMBER: 8642-NCAP-50

GENERAL DYNAMICS
ADVANCED INFORMATION ENGINEERING SERVICES
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August 5, 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

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7. Author(s) Patrick G. MacDiarmid, Jr., Project Engineer David J. Travale, Program Manager				8. Performing Organization Report No. 8642-NCAP-50	
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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 with LATCH and top tether forward facing convertible was secured in Position 3 (P3) with the LATCH system and top tether. A Graco MyCarGo booster seat was placed in Position 4 (P4) to secure the P4 occupant using the vehicle three point safety belt. This test was conducted at the General Dynamics Crash Test Facility in Buffalo, New York, on August 5, 2004.					
ATD Position		HIC 15		HIC 36	
P3 (Right Rear) (142)		854.2		1184.8	
P4 (Left Rear) (186)		1477.8		2339.2	
				Clip (3 ms)	
				47.2	
				73.6	
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	
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SECTION 1

PURPOSE AND SUMMARY OF TEST M55500

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

SUMMARY

A forward facing convertible 5-point belt CRS and a 3 year old child dummy (serial no. 142) was secured in the right rear occupant position (Position 3 or P3). A 6 year old child dummy (serial no. 186) was secured in the left rear occupant position (Position 4 or P4) using a booster seat with the vehicle safety belt. The 3 Year Old Hybrid III (P572 P) child dummy was instrumented with head, chest, and pelvic triaxial accelerometers, a chest displacement sensor, and upper and lower six axial neck force and moment load cells as well as a head rear Z-direction accelerometer. The 6 Year Old Hybrid III (P572N) child dummy was instrumented with head, chest, and pelvic triaxial accelerometers, a chest displacement sensor, and upper neck force and moment 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 854.2, the HIC over 36 ms was 1184.8, the maximum chest deceleration over 3 ms was 47.2 g's. The left rear child dummy's HIC (15 ms) was 1477.8, the HIC over 36 ms was 2339.2, the maximum chest deceleration over 3 ms was 73.6 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/142	Hybrid III 6C /186
Restraint System:	Evenflo Vanguard 5 Forward facing convertible with LATCH and top tether	Graco MyCarGo Booster

Number of Data Channels 52

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:	The chin to the chest and the back of the head to the child restraint	The face and chin to the chest and the back of the head to the child restraint
Upper Torso Contact:	None	None
Lower Torso Contact:	None	None
Left Knee Contact:	None	None
Right Knee Contact:	None	None

DATA SHEET NO. 2

CRS PARAMETER DATA

CRS: Evenflo Vanguard 5 Forward facing convertible with LATCH and top tether and a Graco MyCarGo Booster Seat

NHTSA No. M55500

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Delivered Weight of Vehicle with Maximum Fluids = 1574.0 kg (A)

AS TESTED WEIGHT OF VEHICLE

(2 P572E + 1 P572P w/ CRS + 1 P572N w/ CRS +CARGO + EQUIPMENT & INSTRUMENTATION):

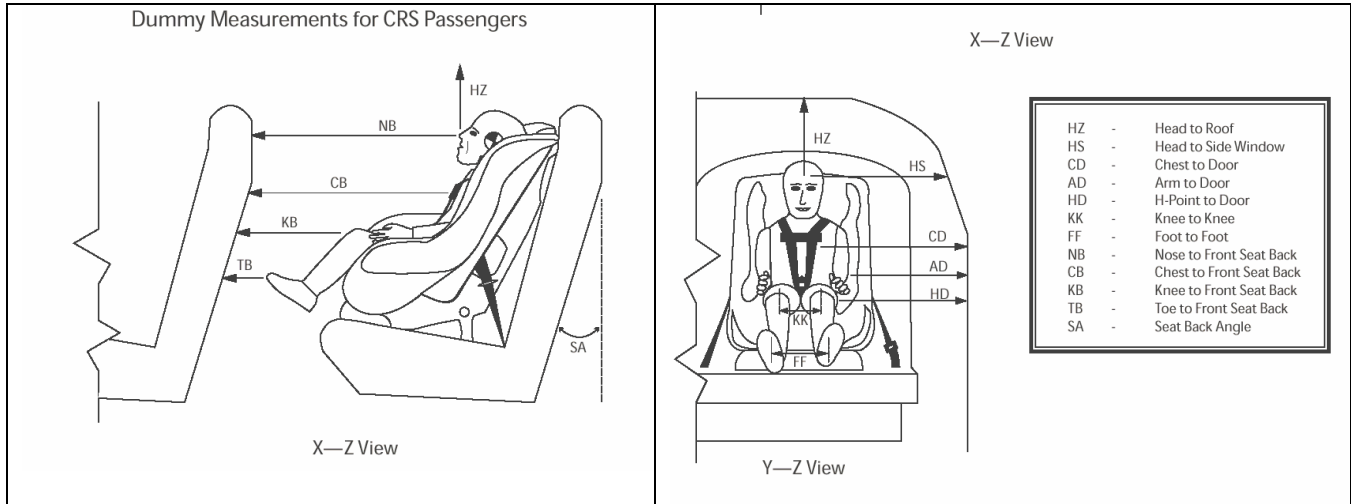
Left Front	=	<u>458.0</u>	kg	Left Rear	=	<u>448.5</u>	kg
Right Front	=	<u>465.0</u>	kg	Right Rear	=	<u>416.5</u>	kg
TOTAL FRONT	=	<u>923.0</u>	kg	TOTAL REAR	=	<u>865.0</u>	kg
TOTAL TEST WEIGHT =		<u>1788.0</u>	kg				

DATA SHEET NO. 3

CHILD DUMMY POSITIONING IN VEHICLE

CRS: Evenflo Vanguard 5 Forward facing convertible with LATCH and top tether and a Graco MyCarGo Booster Seat

NHTSA No. M55500



Measurement	P3 CRS (142)	P4 CRS (186)
SA	32	15
HS	364	314
CD	334	293
AD	224	191
HD	285	239
HZ	396	341
NB	560	522
CB	533	497
KK	176	136
FF	134	89
KB – LEFT	308	309
KB – RIGHT	306	309
TB – LEFT	38	117
TB – RIGHT	33	117
Tether Length	491	-
Tether Angle	48°	-

All dimensions in mm (unless noted)

P3 – Right Rear Passenger (CRS #1)

P4 – Left Rear Passenger (CRS #2)

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES

CRS: Evenflo Vanguard 5 Forward facing convertible with LATCH and top tether and a Graco MyCarGo Booster Seat

NHTSA No. M55500

		MAXIMUM VALUE							
		Position #3				Position #4			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head X	g	78.5	193.1	-37.8	107.7	0.9	25.7	-71.8	102.1
Head Y	g	6.4	76.5	-14.6	193.8	2.1	61.8	-12.4	102.1
Head Z	g	82.8	86.5	-9.7	41.3	95.6	82.4	-1.4	37.4
Head Resultant	g	88.5	193.2	0.0	-34.5	102.5	77.6	0.0	-21.0
Head Rear Z	g	80.4	83.2	-26.7	190.6	-	-	-	-
Upper Neck Fx	N	12.5	184.5	-682.7	99.5	11.2	26.8	-930.9	77.4
Upper Neck Fy	N	155.7	77.0	-57.0	190.7	50.6	64.7	-73.2	94.5
Upper Neck Fz	N	1897.6	86.3	-487.3	197.0	3527.0	101.0	-42.9	36.4
Upper Neck F Resultant	N	1979.3	86.3	0.1	-35.1	3527.3	101.0	0.3	-23.7
Upper Neck Mx	N-m	10.6	89.4	-3.0	144.7	7.9	71.2	-6.3	100.2
Upper Neck My	N-m	4.3	152.8	-13.3	199.9	29.6	96.4	-35.7	69.7
Upper Neck Mz	N-m	2.0	64.8	-1.4	111.8	6.5	100.2	-1.9	74.0
Upper Neck M Resultant	N-m	13.4	199.9	0.0	-44.3	36.5	69.7	0.0	12.2
Lower Neck Fx	N	206.4	191.3	-1226.3	80.6	-	-	-	-
Lower Neck Fy	N	115.7	69.5	-80.3	115.4	-	-	-	-
Lower Neck Fz	N	1215.2	87.0	-340.8	196.7	-	-	-	-
Lower Neck F Resultant	N	1683.8	86.3	0.1	-35.1	-	-	-	-
Lower Neck Mx	N-m	†	†	†	†	-	-	-	-
Lower Neck My	N-m	104.2	97.2	-12.7	191.3	-	-	-	-
Lower Neck Mz	N-m	17.1	82.1	-2.4	113.2	-	-	-	-
Lower Neck M Resultant	N-m	§	§	§	§	-	-	-	-
Chest X	g	7.1	187.2	-43.8	79.9	4.7	148.9	-73.8	63.7
Chest Y	g	9.0	79.3	-2.2	199.9	7.3	73.5	-8.7	102.9
Chest Z	g	19.2	195.6	-37.0	64.1	15.0	100.5	-27.5	73.5
Chest Resultant	g	50.3	64.3	0.0	-33.2	75.7	63.9	0.0	-23.1
Chest Displacement	g	0.0	19.8	-19.9	75.7	0.0	-38.8	-32.8	105.7

† - Did Not Record

§ - Questionable Data – Lower Neck Mx did not record

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 Forward facing convertible with LATCH and top tether and a
Graco MyCarGo Booster Seat

NHTSA No. M55500

		MAXIMUM VALUE							
		Position #3				Position #4			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Pelvic X	g	12.5	132.9	-57.5	62.4	24.8	110.3	-65.5	62.9
Pelvic Y	g	5.3	74.3	-5.6	61.5	17.0	78.2	-5.0	50.5
Pelvic Z	g	19.0	195.1	-42.5	62.6	6.3	110.5	-44.4	74.2
Pelvic Resultant	g	70.9	62.6	0.0	-32.7	75.7	66.4	0.0	-23.2
Tether Belt Load	N	§	§	§	§	-	-	-	-
Lap Belt Load	N	-	-	-	-	4491.5	61.1	-46.1	149.7
Torso Belt Load	N	-	-	-	-	6329.8	71.2	-14.9	147.1
Torso Belt Stretch	mm	-	-	-	-	3.0	184.0	0.0	24.0
Torso Belt Spoolout	mm	-	-	-	-	82.0	80.4	-16.2	188.7

§ - Cut wire at 65 ms.

DATA SHEET 4

CHILD DUMMY INJURY CRITERIA VALUES (CONTINUED)

CRS: Evenflo Vanguard 5 Forward facing convertible with LATCH and top tether and a
Graco MyCarGo Booster Seat

NHTSA No. M55500

	HEAD INJURY CRITERIA (HIC)							
	HIC15				HIC36			
		t ₁	t ₂	Average		t ₁	t ₂	Average
	HIC	(msec)	(msec)	Acceleration t ₁ to t ₂	HIC	(msec)	(msec)	Acceleration t ₁ to t ₂
Position #3 - Right	854.2	78.3	93.3	79.8	1184.8	72.0	108.0	64.1
Position #4 - Left	1477.8	73.8	88.8	99.4	2339.2	68.7	104.7	84.2

		CLIP SUMMARY*			
		CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #3 - Right		47.2	62.9	65.9	459.5
Position #4 - Left		73.6	62.2	65.2	808.3

* 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 Forward facing convertible with LATCH and top tether and a Graco MyCarGo Booster Seat

NHTSA No. M55500

		MAXIMUM VALUE			
DESCRIPTION	Unit	Positive	Time (ms)	Negative	Time (ms)
P3 CRS X	g	11.0	191.5	-56.5	56.6
P3 CRS Y	g	25.5	192.8	-29.9	199.9
P3 CRS Z	g	23.2	199.9	-30.5	77.8
P3 CRS Resultant	g	56.5	56.6	0.0	-22.3
P4 CRS X	g	33.1	124.6	-45.9	47.1
P4 CRS Y	g	25.2	74.7	-9.8	126.2
P4 CRS Z	g	11.7	115.8	-46.4	58.7
P4 CRS Resultant	g	51.4	59.4	0.0	-31.4
P4 SEATBACK X	g	4.4	101.0	-51.1	64.6
P4 SEATBACK Y	g	4.4	33.0	-5.0	17.4
P4 SEATBACK Z	g	§	§	§	§
P4 SEATBACK Resultant	g	§	§	§	§

§ - Data is Questionable

DATA SHEET NO. 5**CRS PERFORMANCE DATA (CONTINUED)**

CRS: Evenflo Vanguard 5 Forward facing convertible with LATCH and top tether and a Graco MyCarGo Booster Seat

NHTSA No. M55500

POSITION #3 CRS POST-TEST INSPECTION (Serial No. 3691331 P1 11NOV03)

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. 8481LAN 042803)

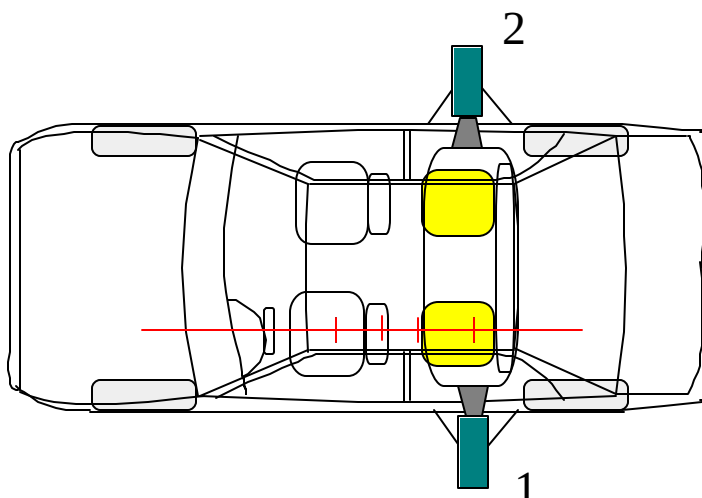
LOCATION	DAMAGE	REMARKS
Upper Tether Strap	NA	None
Upper Tether Buckle	NA	None
Upper Tether Hook	NA	None
Vehicle Upper Tether Anchor	NA	None
Lower Anchor Strap	NA	None
Lower Anchor Buckle	NA	None
Lower Anchor Hooks	NA	None
Vehicle Lower CRS Anchors	NA	None
Five Point Harness Connections	NA	None
Cracks 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 Forward facing convertible with LATCH and top tether and a Graco MyCarGo Booster Seat

NHTSA No. M55500



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Left side CRS lateral view	3178	2616	2277	-18	28	1000
2	Right side CRS lateral view	7208	2731	2200	-18	28	1000

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

X = + Forward

Y = + To Right

Z = + Down

SECTION 3

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Figure 3-1 CLOSE-UP VIEW OF POSITION 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

Attached to your vehicle.
Although it is possible in case of an accident and address.

1. Selecting a suitable vehicle.
2. Placing child in booster seat.
3. Properly securing the booster seat and child in the vehicle using a seat belt designed to restrain the booster seat and your child. This booster seat MUST be used with a lap/shoulder belt. Not all lap/shoulder belts can be used. NEVER use a vehicle lap-only belt.
4. Use belt positioner if necessary to adjust vehicle shoulder belt to fit child properly.

ame
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227827 PB227827

Consumer: Just fill in your name and address. Please print.

Your first name
Your last name
Your street address
City
State

Zip Code

CHILD RESTRAINT REGISTRATION CARD

MODEL **8481LAN**
Manufactured in 042803 10
GRACO CHILDREN'S PRODUCTS, INC.
EXTON, PA 19341 1-888-224-6549
Made in U.S.A.

PB-25927

LAPC0063A

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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3	V1P3 Head z [g, CFC_1000]	4-6
4	V1P3 Head Resultant [g, CFC_1000]	4-7
5	V1P3 Head Rear z [g, CFC_1000]	4-8
6	V1P3 Upper Neck Fx [N, CFC_1000]	4-9
7	V1P3 Upper Neck Fy [N, CFC_1000]	4-10
8	V1P3 Upper Neck Fz [N, CFC_1000]	4-11
9	V1P3 Upper Neck F Resultant [N, CFC_1000]	4-12
10	V1P3 Upper Neck Mx [N-m, CFC_600]	4-13
11	V1P3 Upper Neck My [N-m, CFC_600]	4-14
12	V1P3 Upper Neck Mz [N-m, CFC_600]	4-15
13	V1P3 Upper Neck M Resultant [N-m, CFC_600]	4-16
14	V1P3 Lower Neck Fx [N, CFC_1000]	4-17
15	V1P3 Lower Neck Fy [N, CFC_1000]	4-18
16	V1P3 Lower Neck Fz [N, CFC_1000]	4-19
17	V1P3 Lower Neck F Resultant [N, CFC_1000]	4-20
18	V1P3 Lower Neck Mx [N-m, CFC_600]	4-21
19	V1P3 Lower Neck My [N-m, CFC_600]	4-22
20	V1P3 Lower Neck Mz [N-m, CFC_600]	4-23
21	V1P3 Lower Neck M Resultant [N-m, CFC_600]	4-24
22	V1P3 Chest x [g, CFC_180]	4-25
23	V1P3 Chest y [g, CFC_180]	4-26
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25	V1P3 Chest Resultant [g, CFC_180]	4-28
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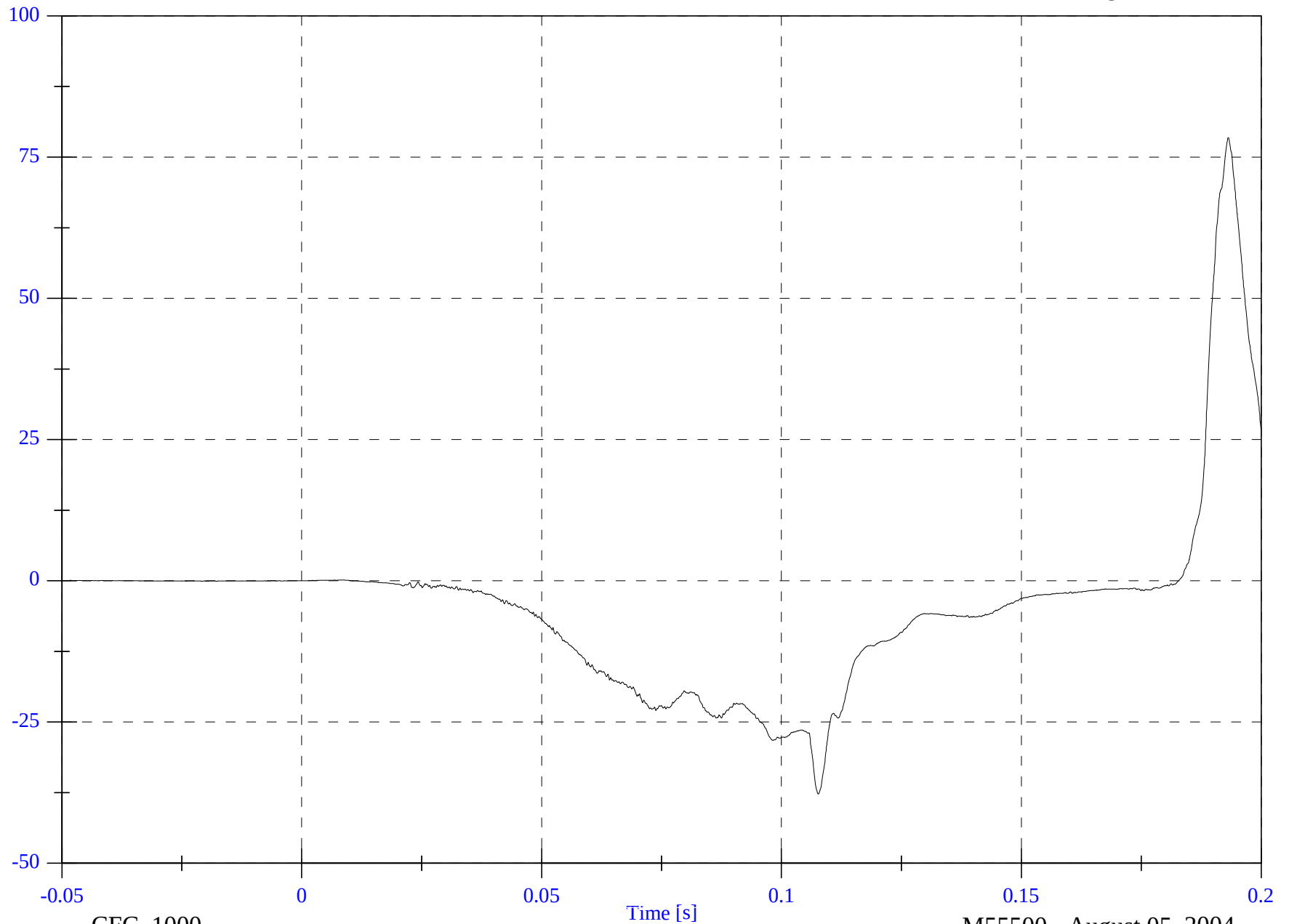
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59	V1P3 CRS z [g, CFC_60]	4-62
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62	V1P3 CRS y Velocity [kph, CFC_180]	4-65
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2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Head x

Max: 78.5 [g] at 0.193 [s]

Min: -37.8 [g] at 0.108 [s]



4-4

8642-NCAP-50

CFC_1000

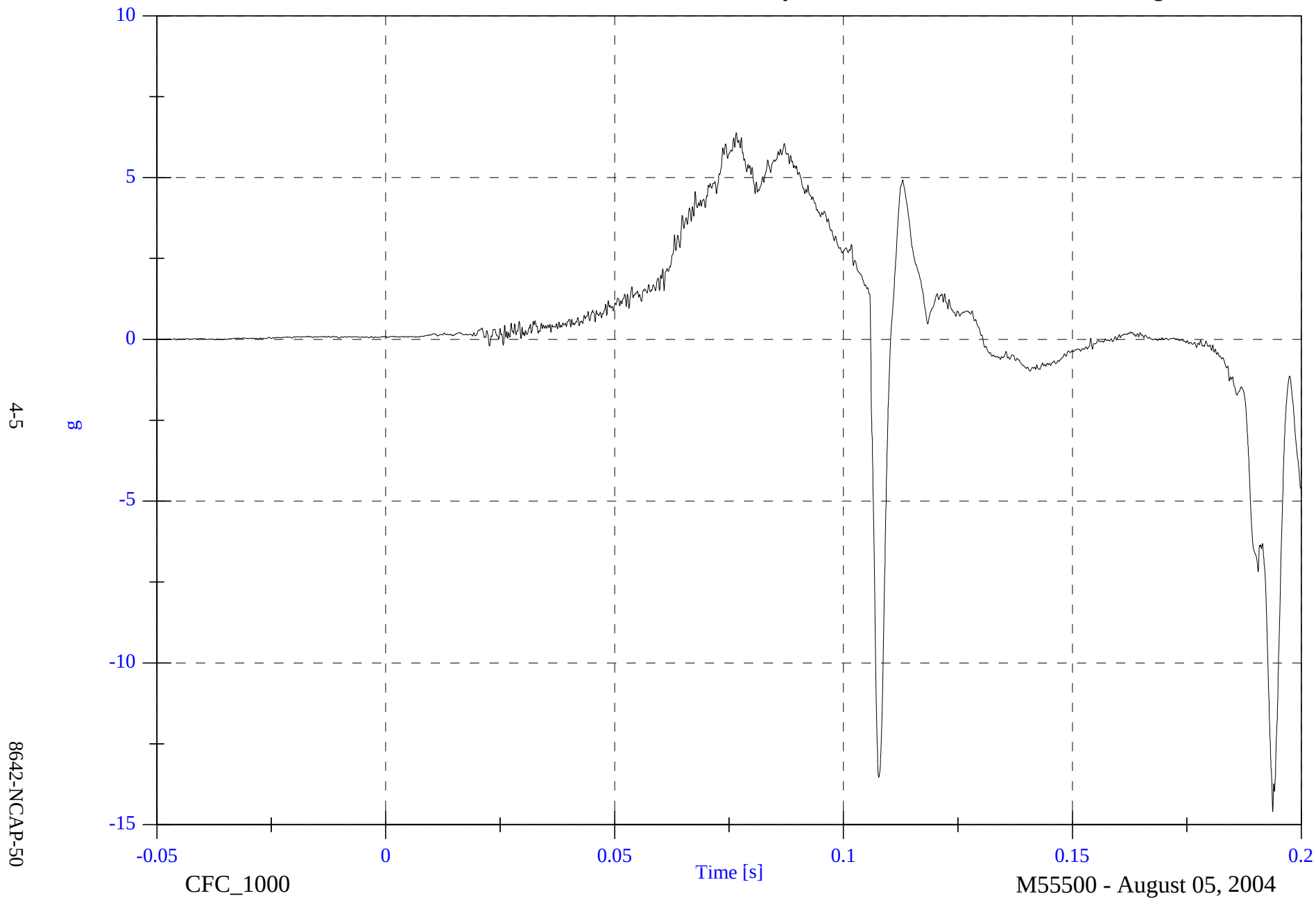
M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Head y

Max: 6.4 [g] at 0.077 [s]

Min: -14.6 [g] at 0.194 [s]

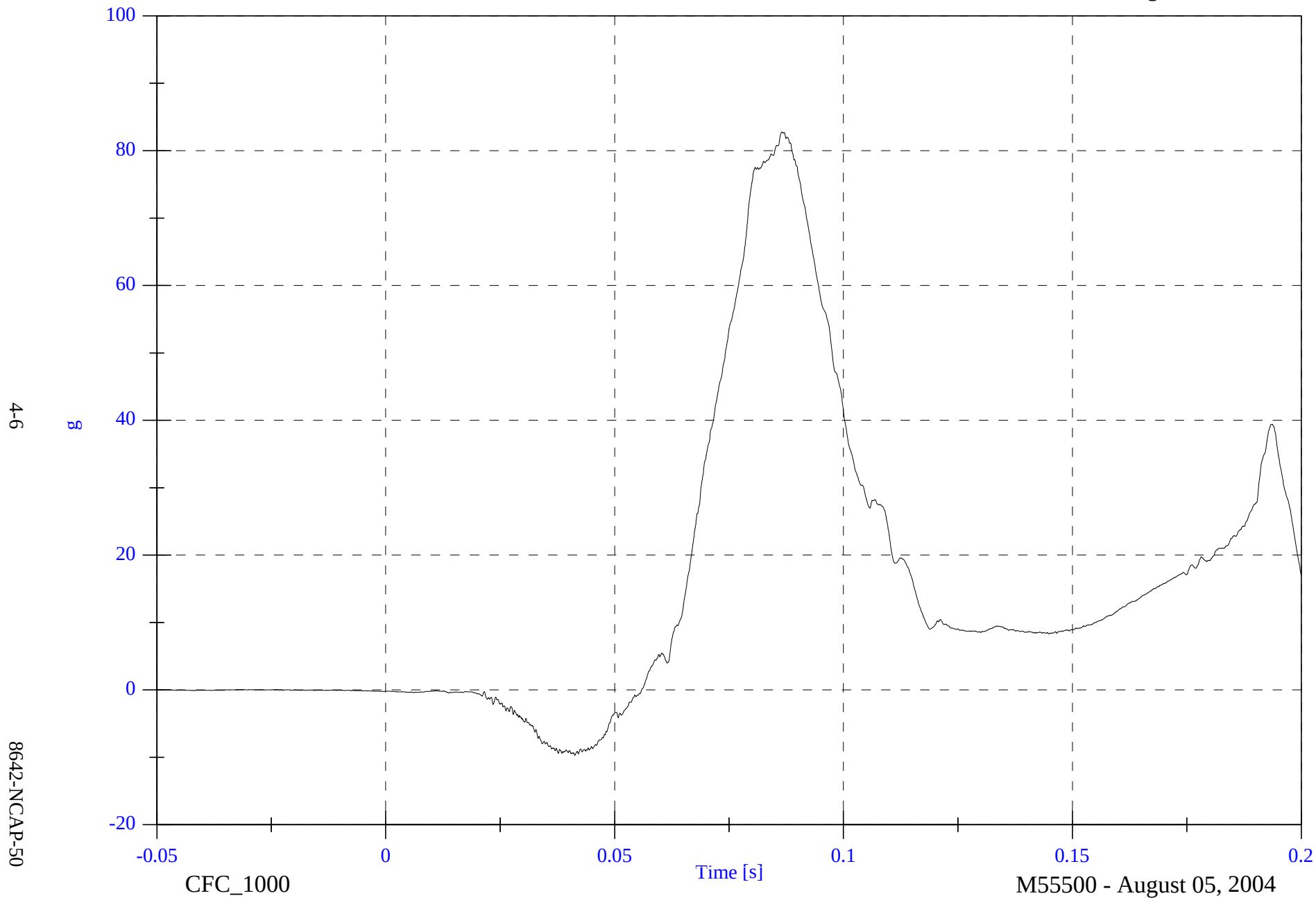


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Head z

Max: 82.8 [g] at 0.087 [s]

Min: -9.7 [g] at 0.041 [s]

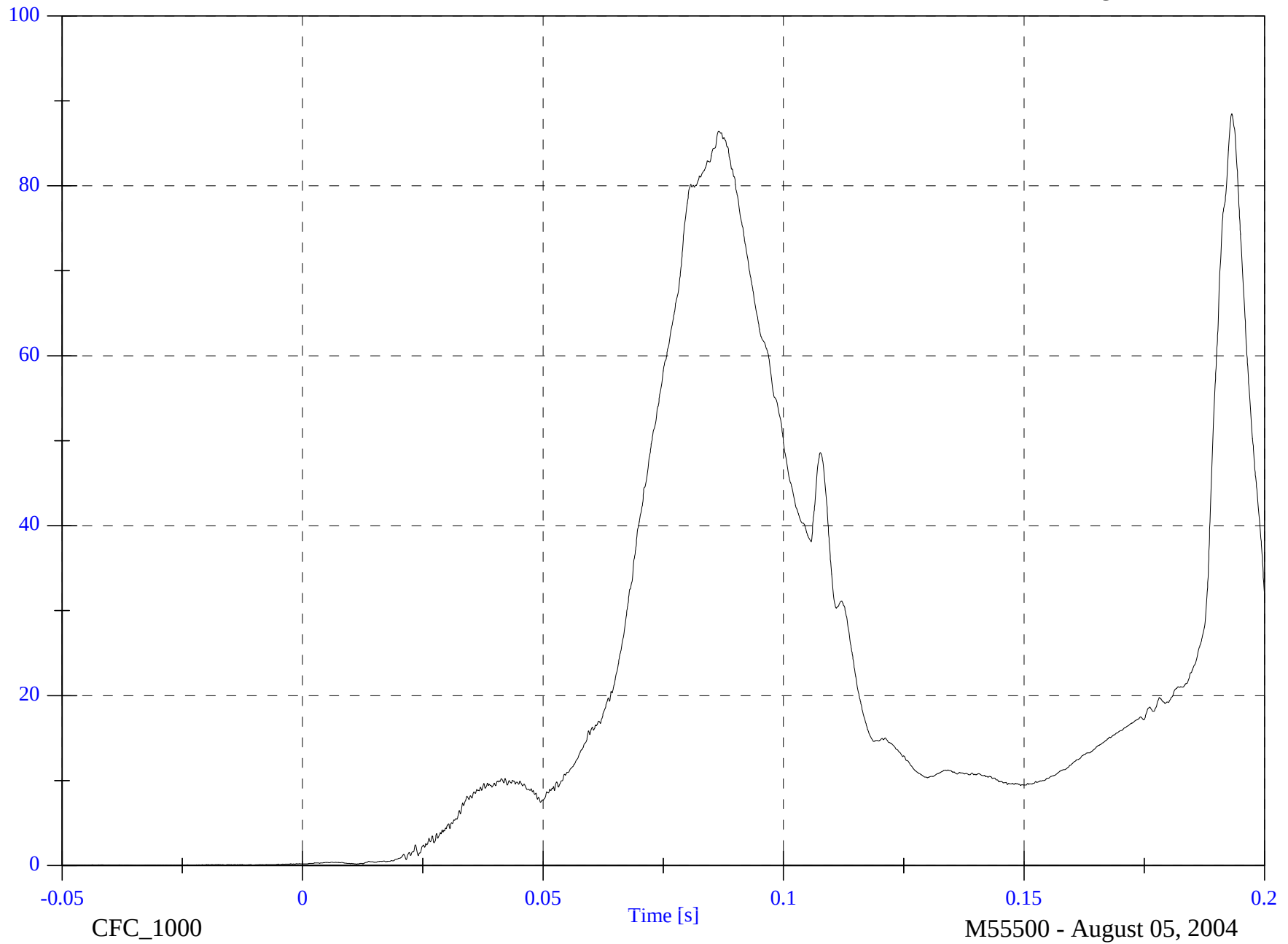


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Head Resultant

Max: 88.5 [g] at 0.193 [s]

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

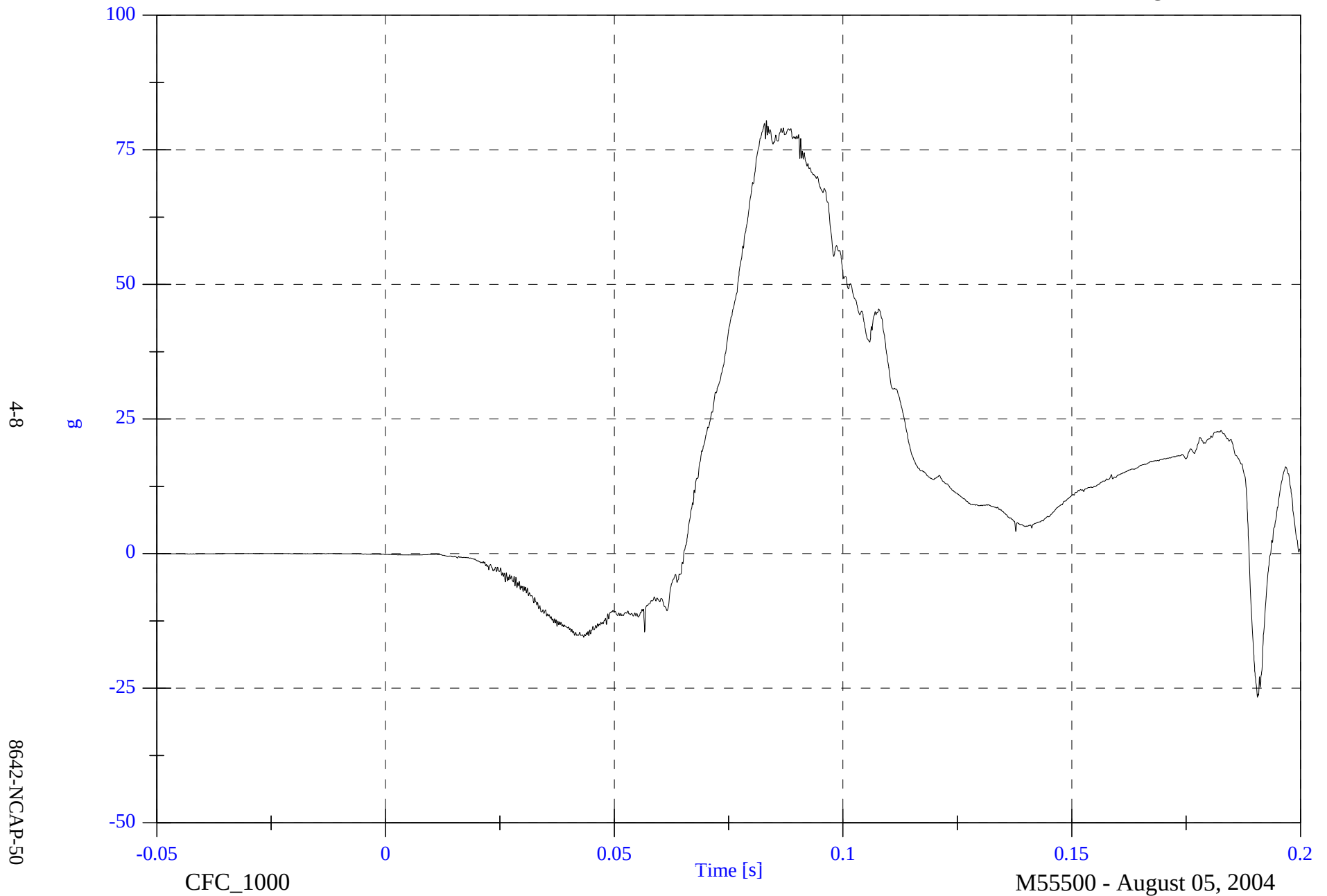


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Head Rear z

Max: 80.4 [g] at 0.083 [s]

Min: -26.7 [g] at 0.191 [s]

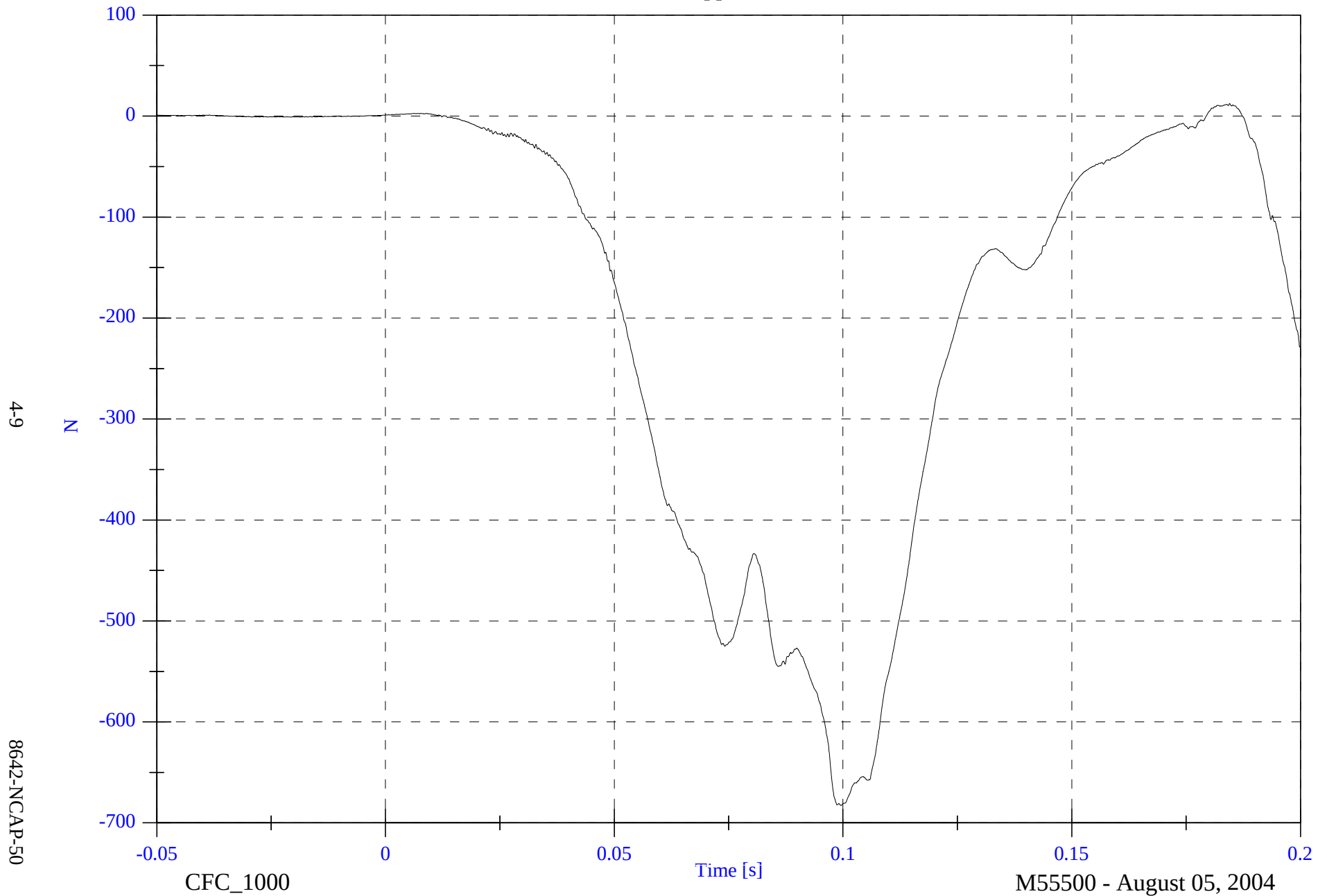


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Upper Neck Fx

Max: 12.5 [N] at 0.184 [s]

Min: -682.7 [N] at 0.100 [s]

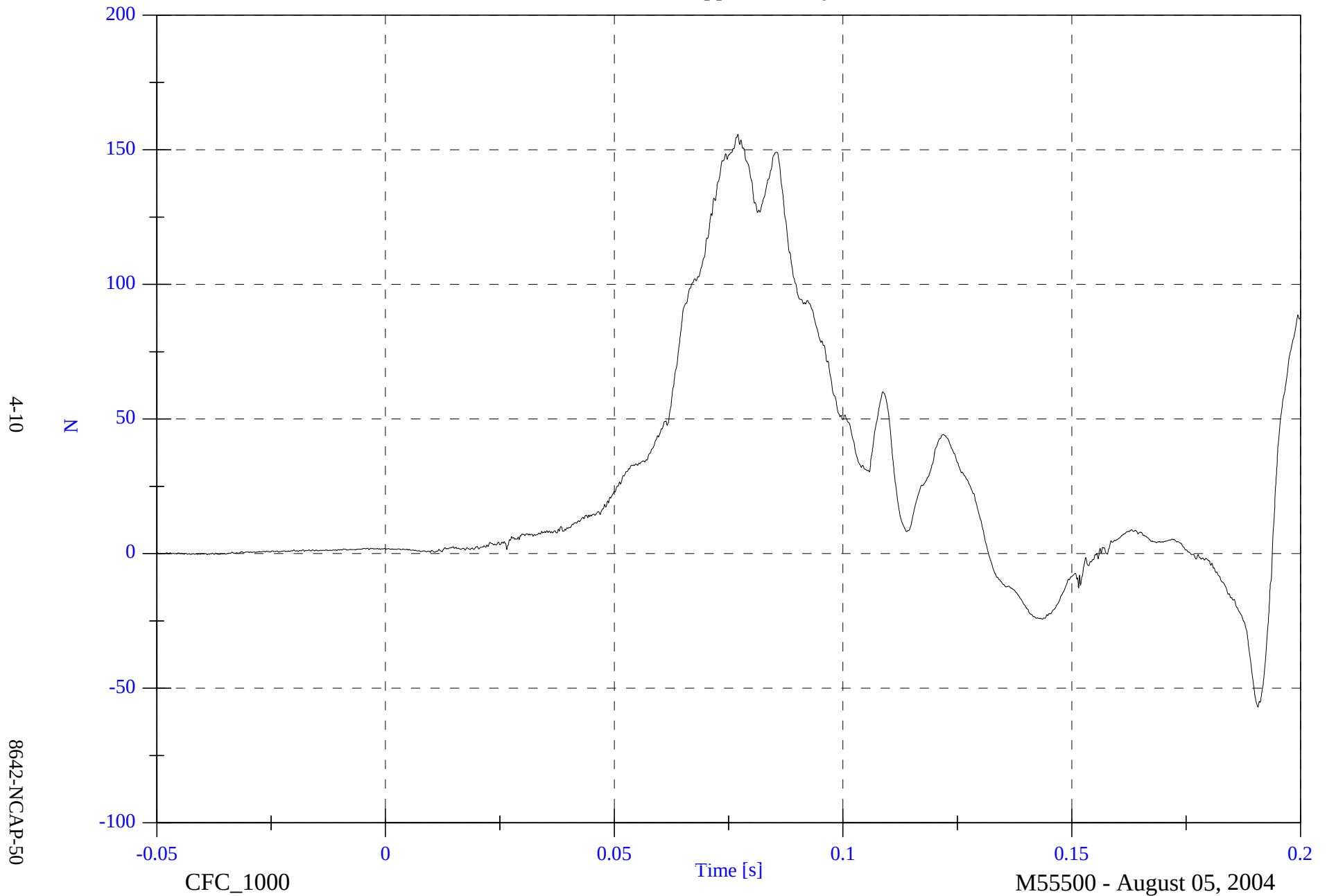


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Upper Neck Fy

Max: 155.7 [N] at 0.077 [s]

Min: -57.0 [N] at 0.191 [s]

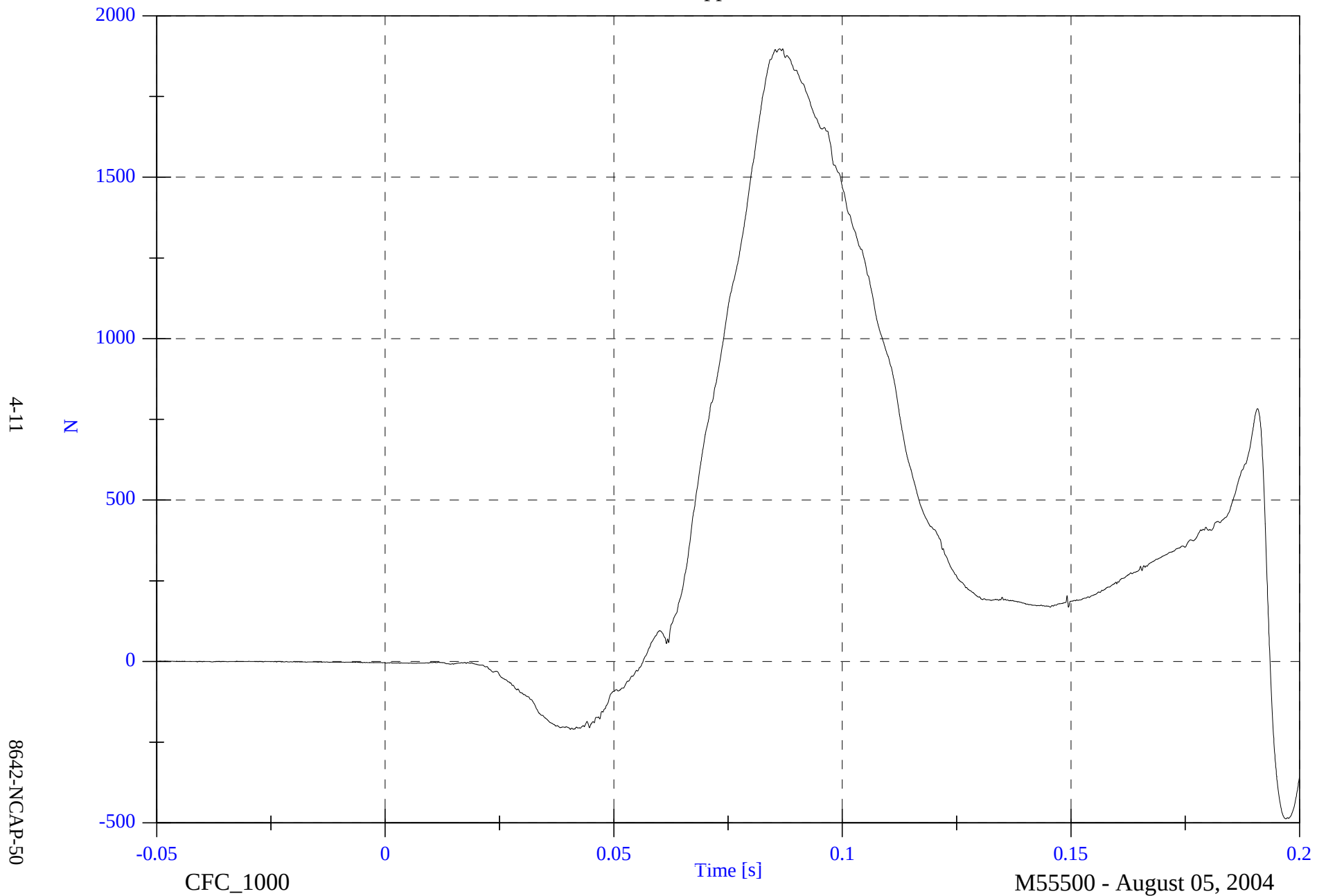


2004 NCAP TEST 14 - 2005 Subaru Outback

Max: 1897.6 [N] at 0.086 [s]

Min: -487.3 [N] at 0.197 [s]

V1P3 Upper Neck Fz

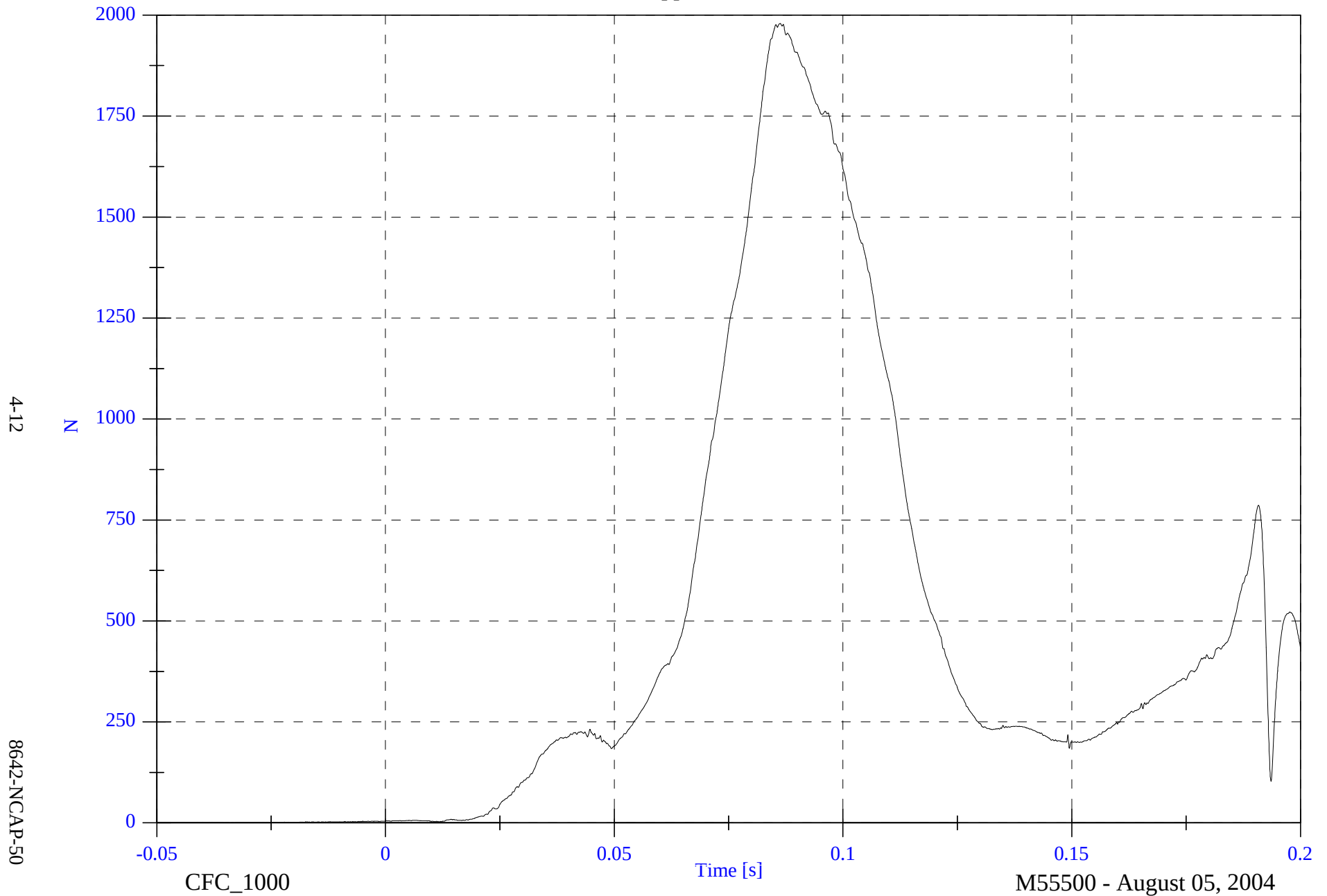


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Upper Neck F Resultant

Max: 1979.3 [N] at 0.086 [s]

Min: 0.1 [N] at -0.035 [s]

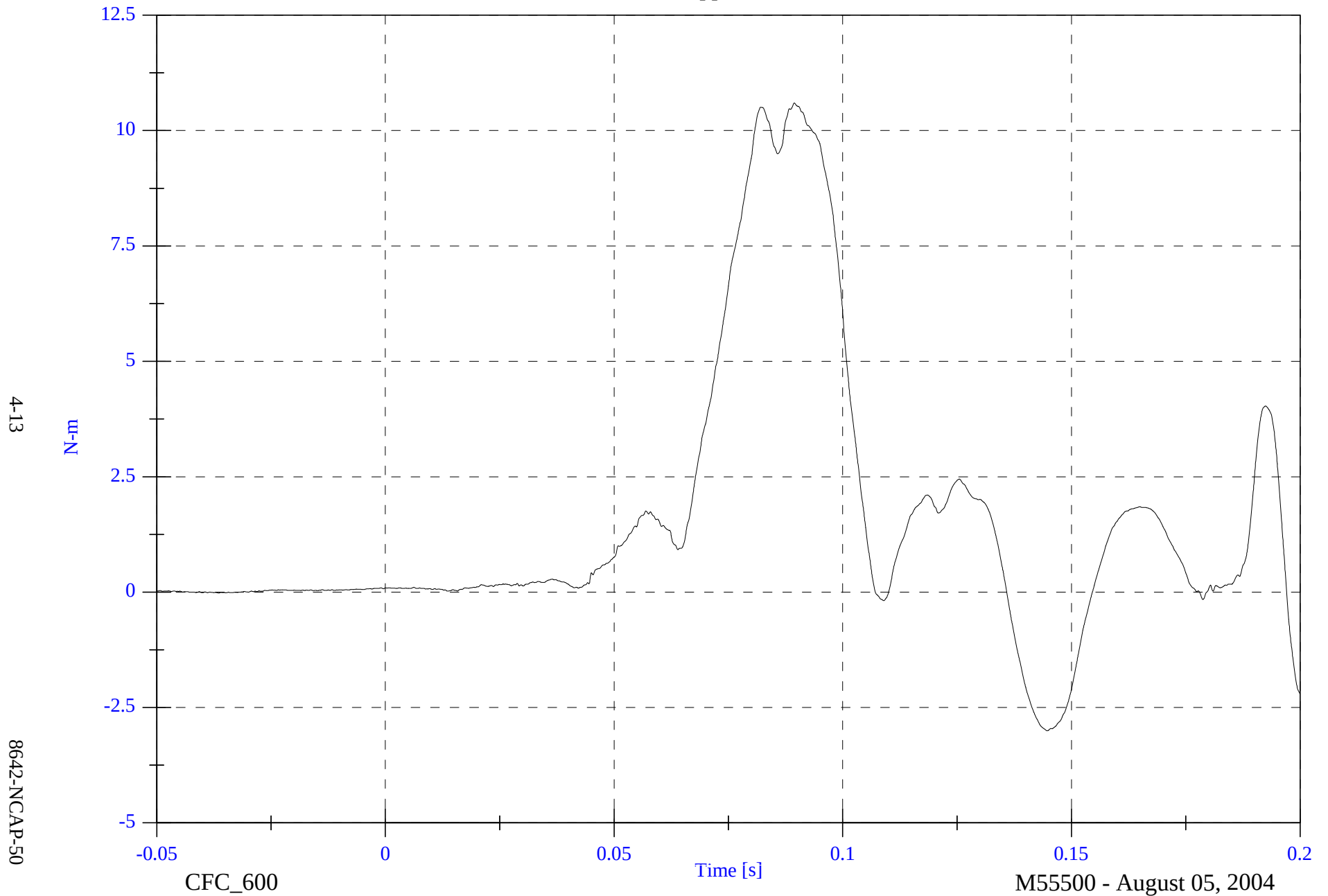


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Upper Neck Mx

Max: 10.6 [N-m] at 0.089 [s]

Min: -3.0 [N-m] at 0.145 [s]

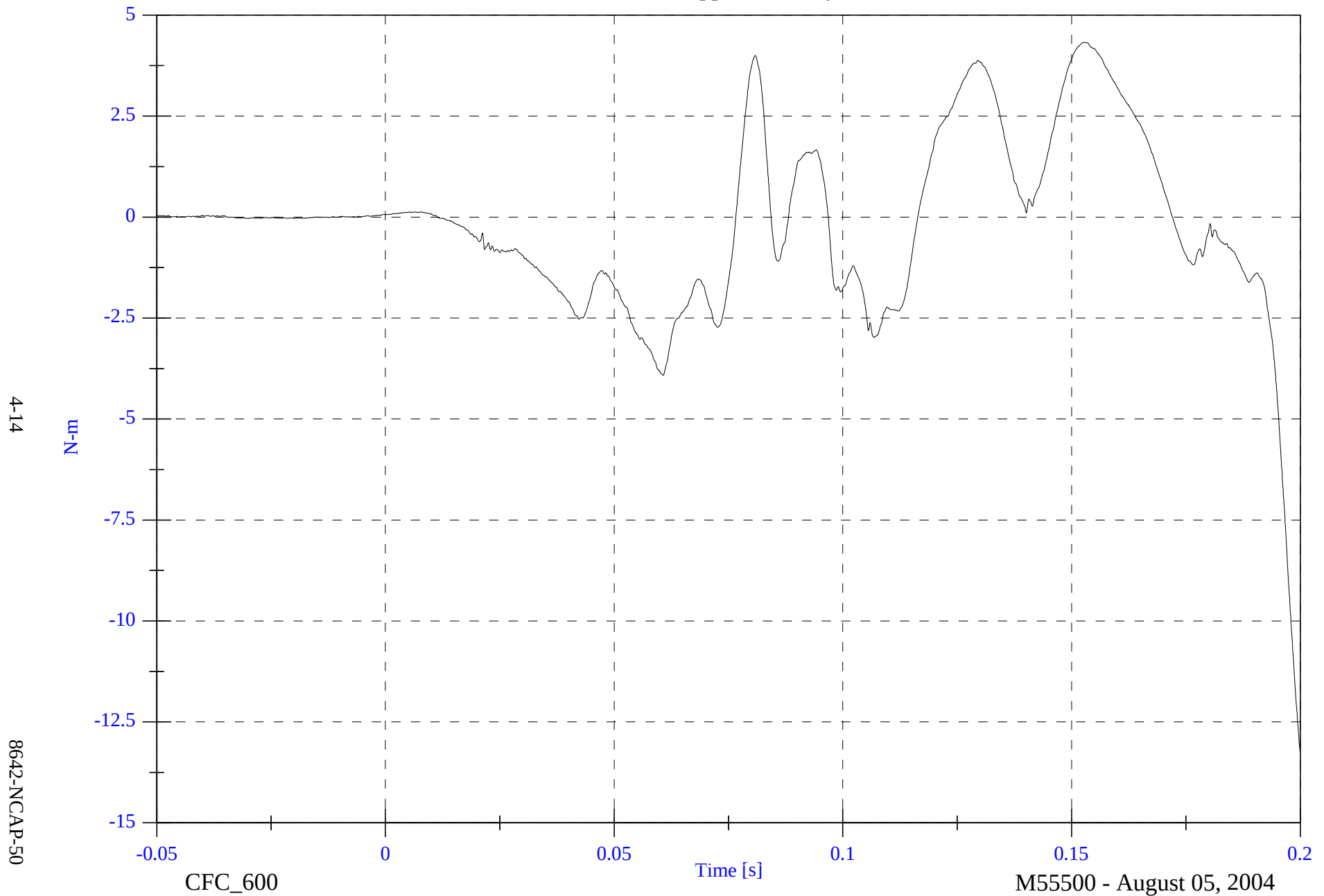


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Upper Neck My

Max: 4.3 [N-m] at 0.153 [s]

Min: -13.3 [N-m] at 0.200 [s]

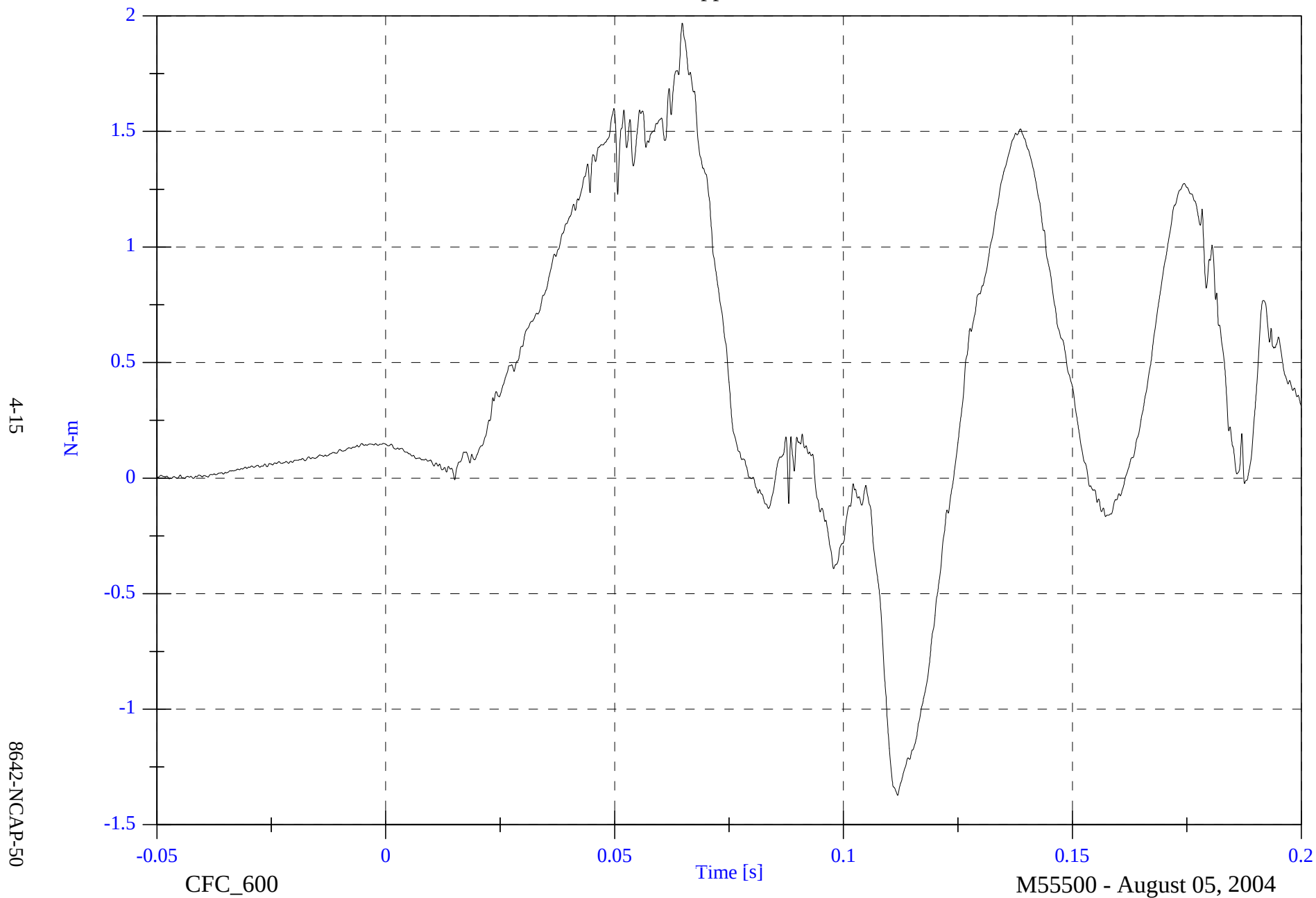


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Upper Neck Mz

Max: 2.0 [N-m] at 0.065 [s]

Min: -1.4 [N-m] at 0.112 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

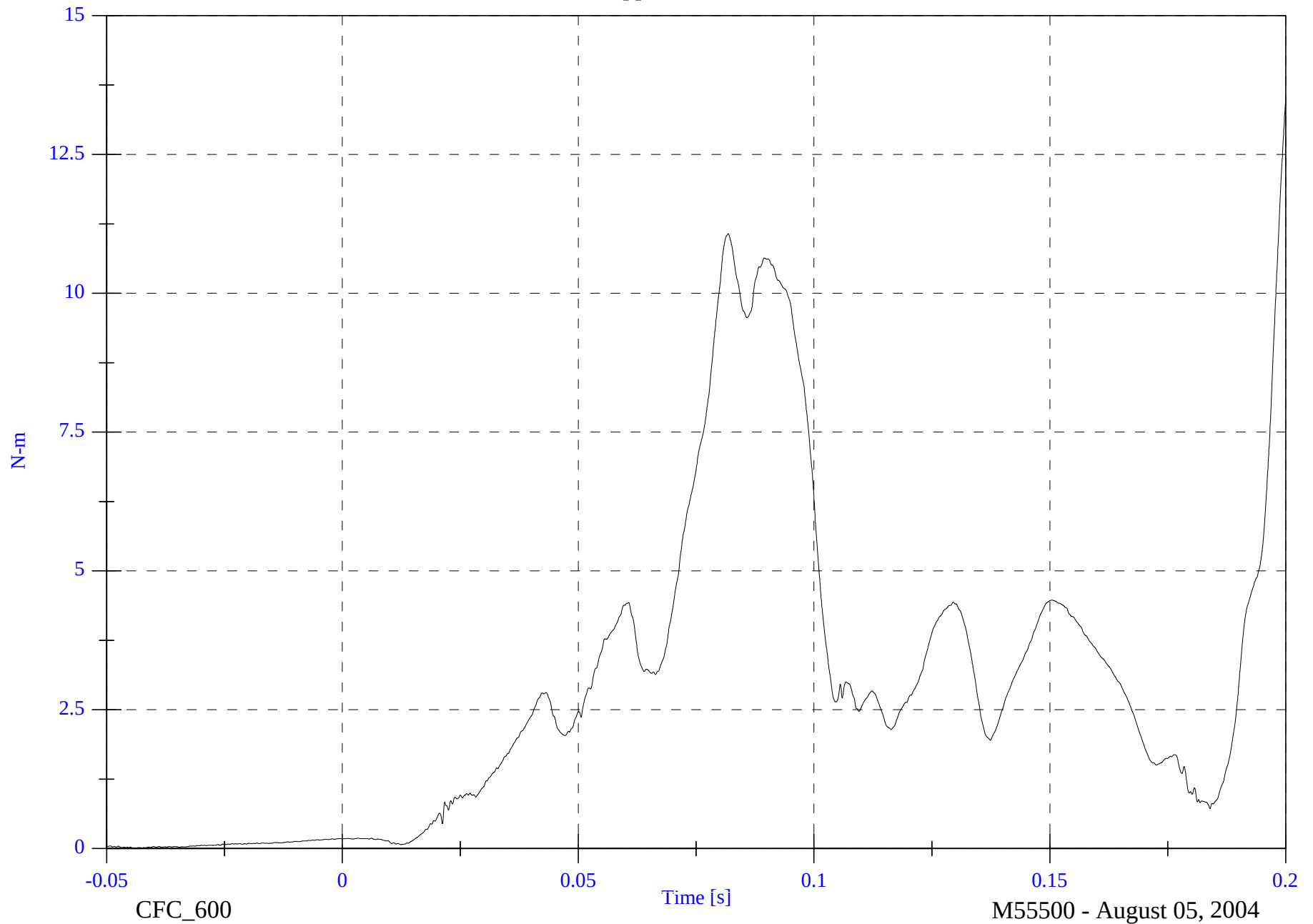
V1P3 Upper Neck M Resultant

Max: 13.4 [N-m] at 0.200 [s]

Min: 0.0 [N-m] at -0.044 [s]

4-16

8642-NCAP-50

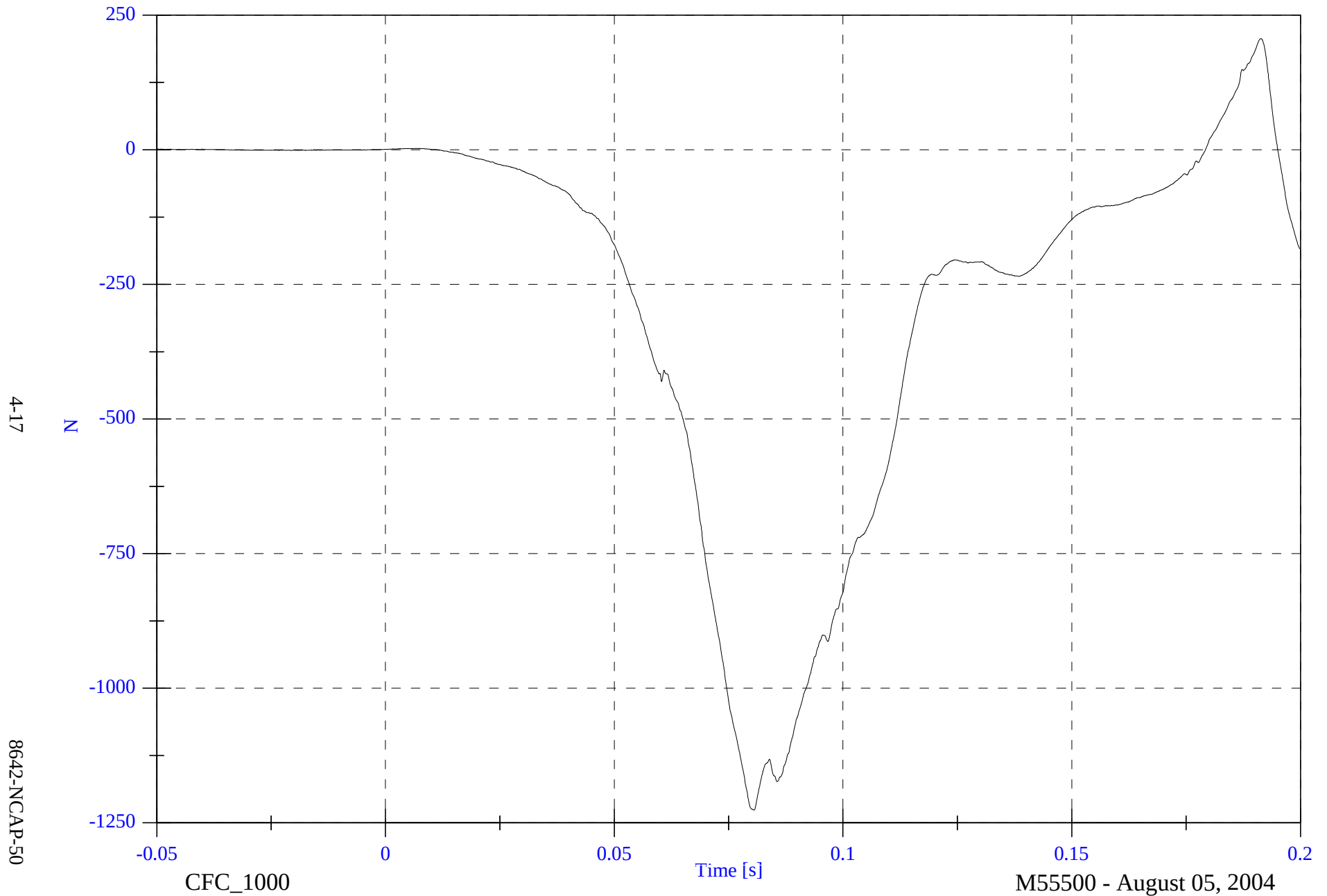


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Lower Neck Fx

Max: 206.4 [N] at 0.191 [s]

Min: -1226.3 [N] at 0.081 [s]

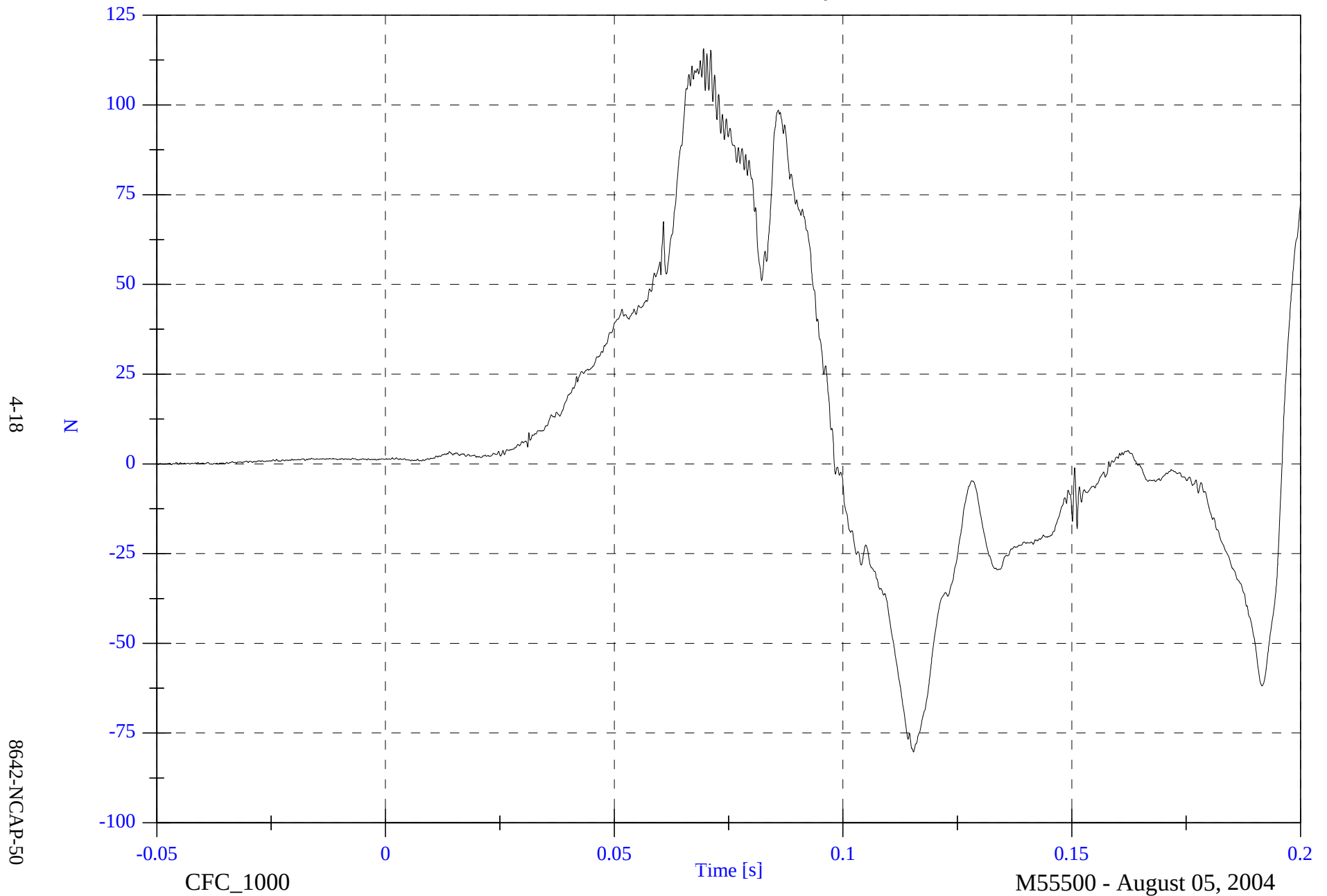


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Lower Neck Fy

Max: 115.7 [N] at 0.069 [s]

Min: -80.3 [N] at 0.115 [s]

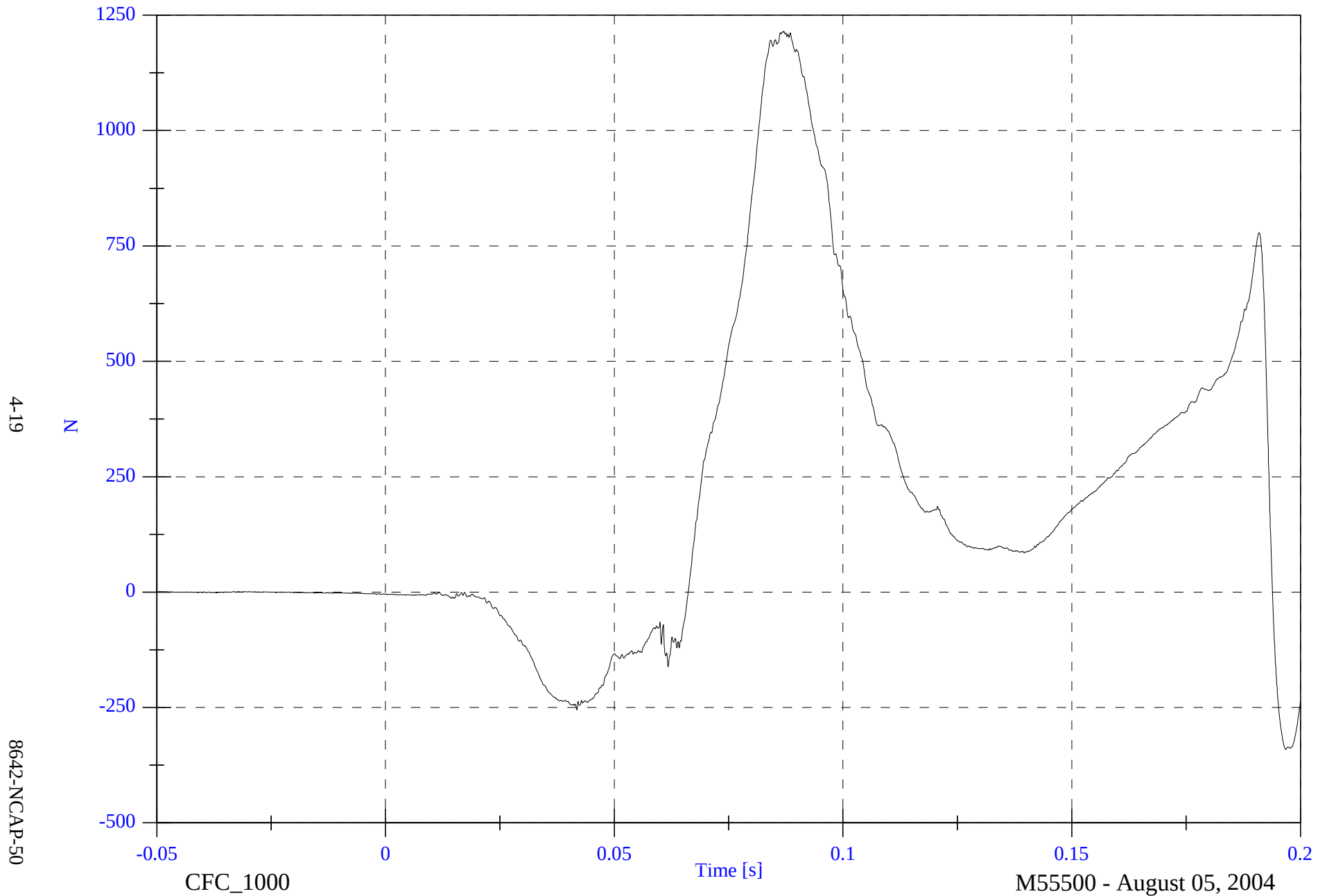


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Lower Neck Fz

Max: 1215.2 [N] at 0.087 [s]

Min: -340.8 [N] at 0.197 [s]

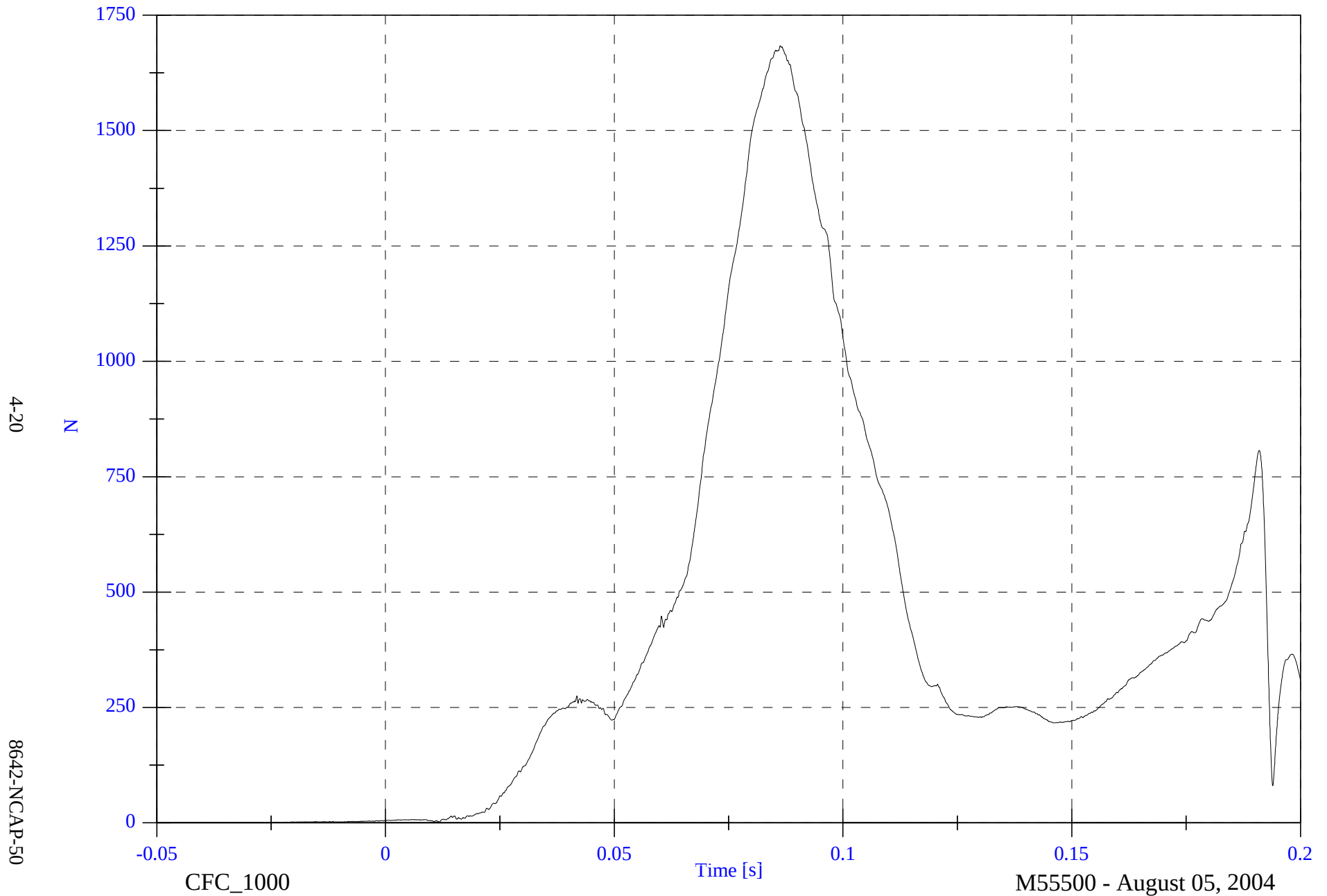


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Lower Neck F Resultant

Max: 1683.8 [N] at 0.086 [s]

Min: 0.1 [N] at -0.035 [s]

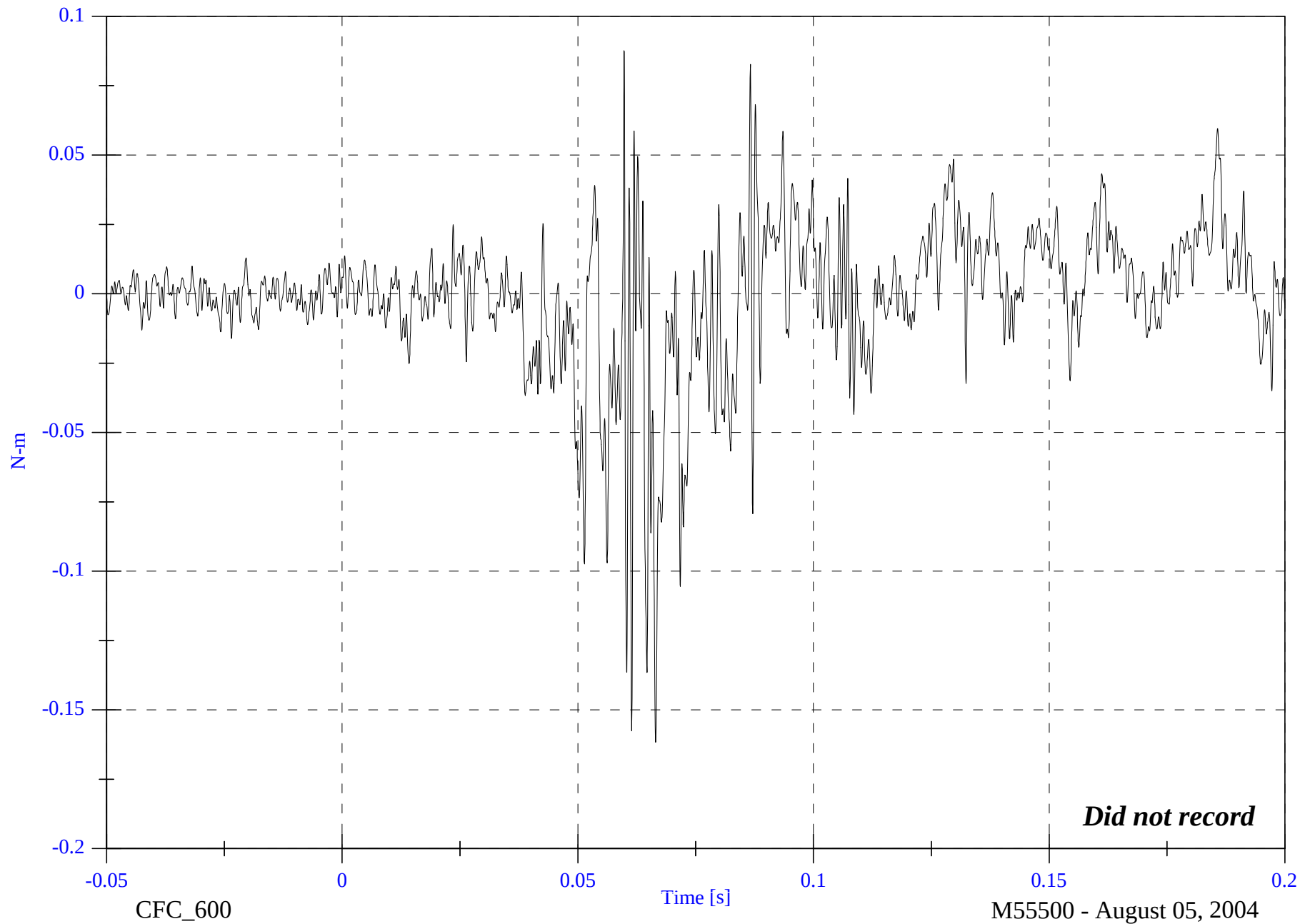


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Lower Neck Mx

Max: 0.1 [N-m] at 0.060 [s]

Min: -0.2 [N-m] at 0.067 [s]



4-21

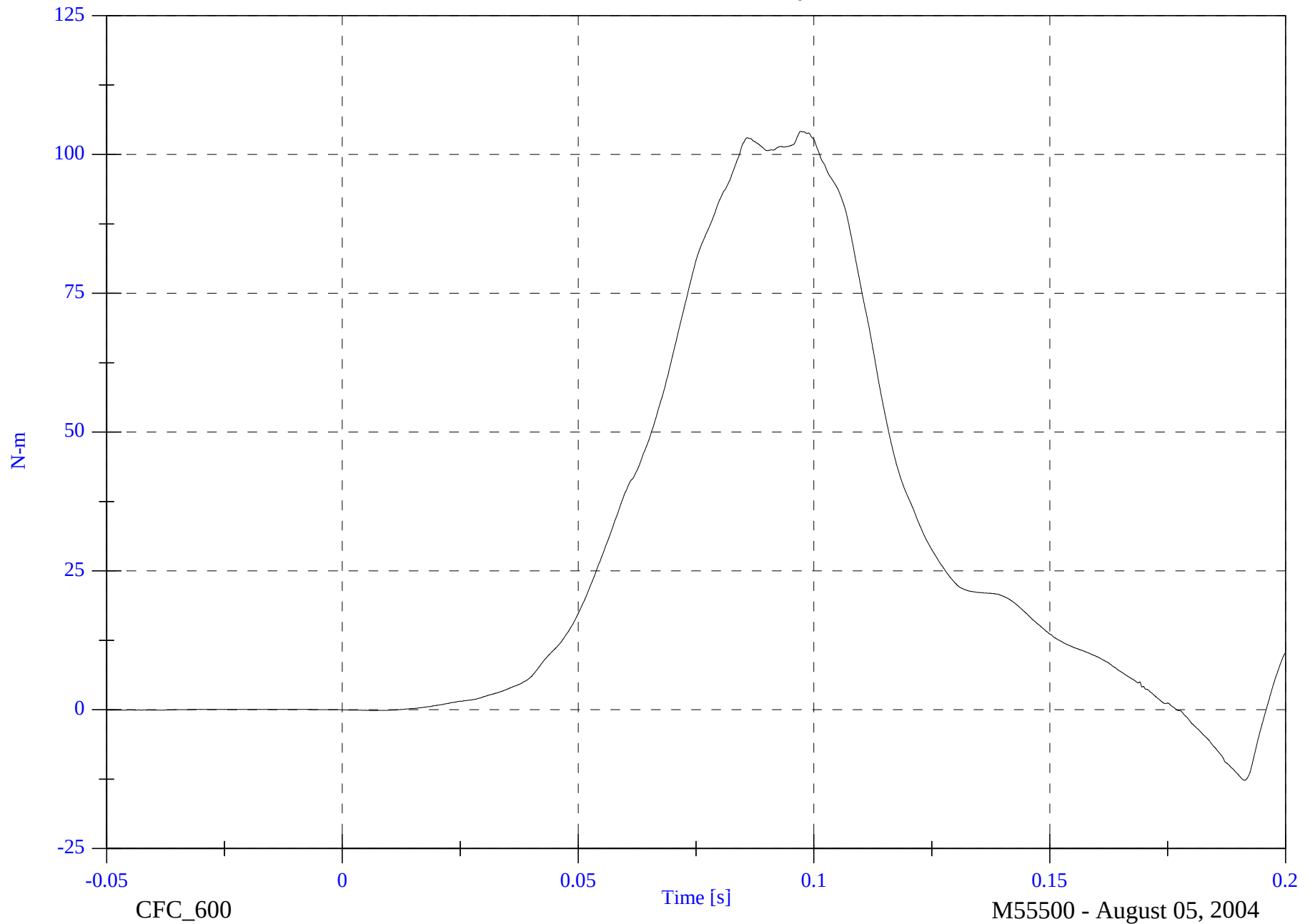
8642-NCAP-50

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Lower Neck My

Max: 104.2 [N-m] at 0.097 [s]

Min: -12.7 [N-m] at 0.191 [s]



4-22

8642-NCAP-50

CFC_600

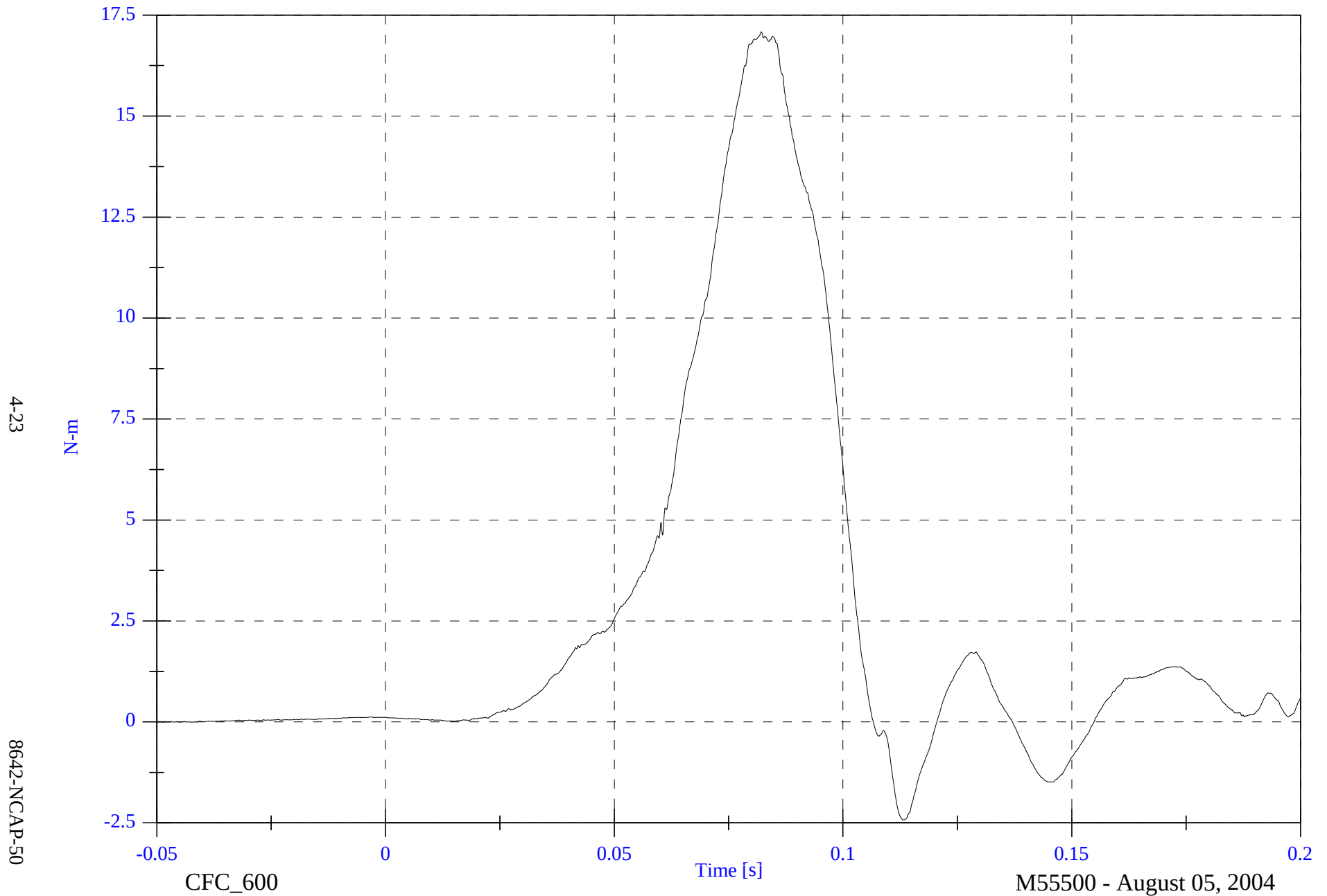
M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Lower Neck Mz

Max: 17.1 [N-m] at 0.082 [s]

Min: -2.4 [N-m] at 0.113 [s]

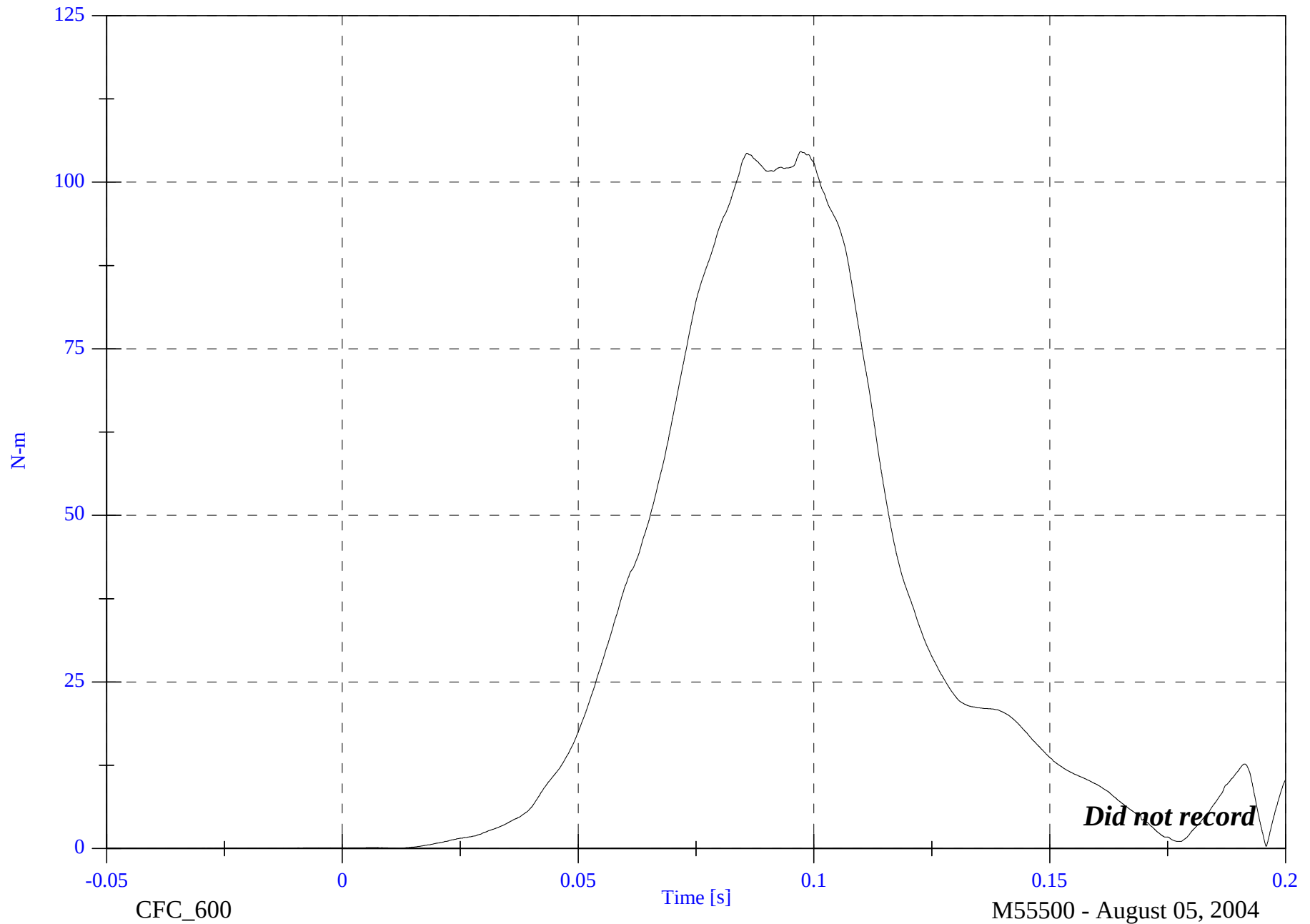


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Lower Neck M Resultant

Max: 104.6 [N-m] at 0.097 [s]

Min: 0.0 [N-m] at -0.034 [s]

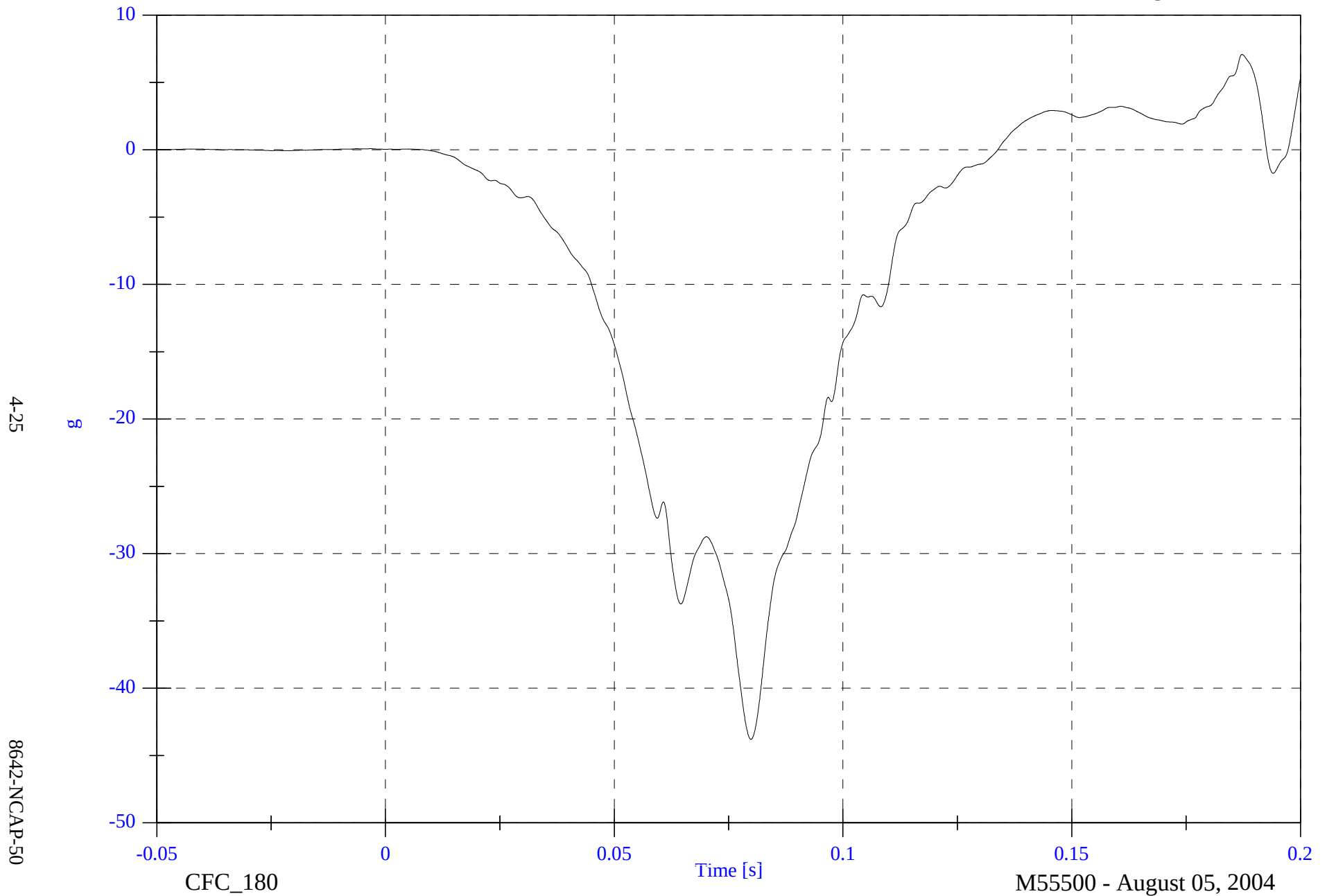


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Chest x

Max: 7.1 [g] at 0.187 [s]

Min: -43.8 [g] at 0.080 [s]

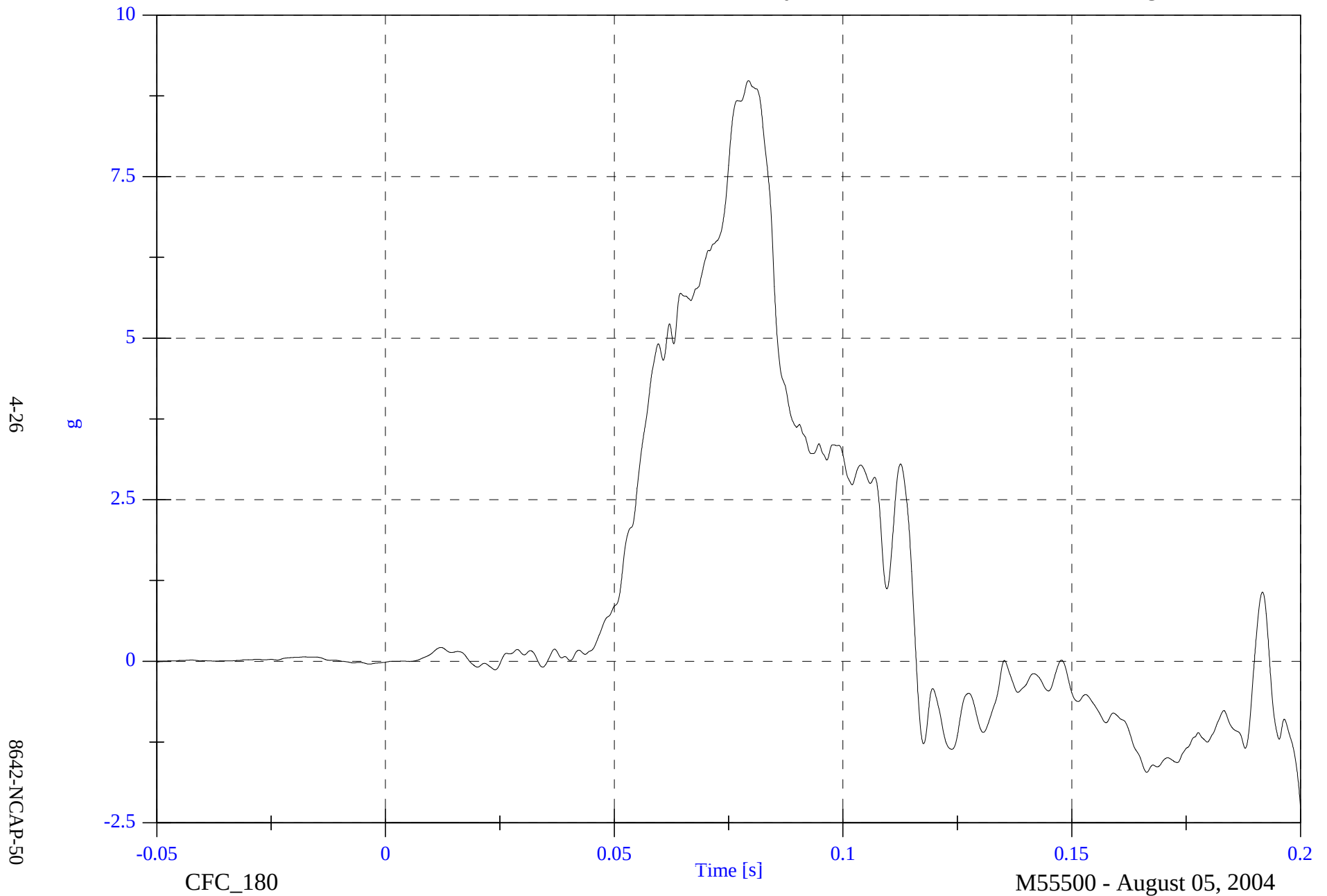


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Chest y

Max: 9.0 [g] at 0.079 [s]

Min: -2.2 [g] at 0.200 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

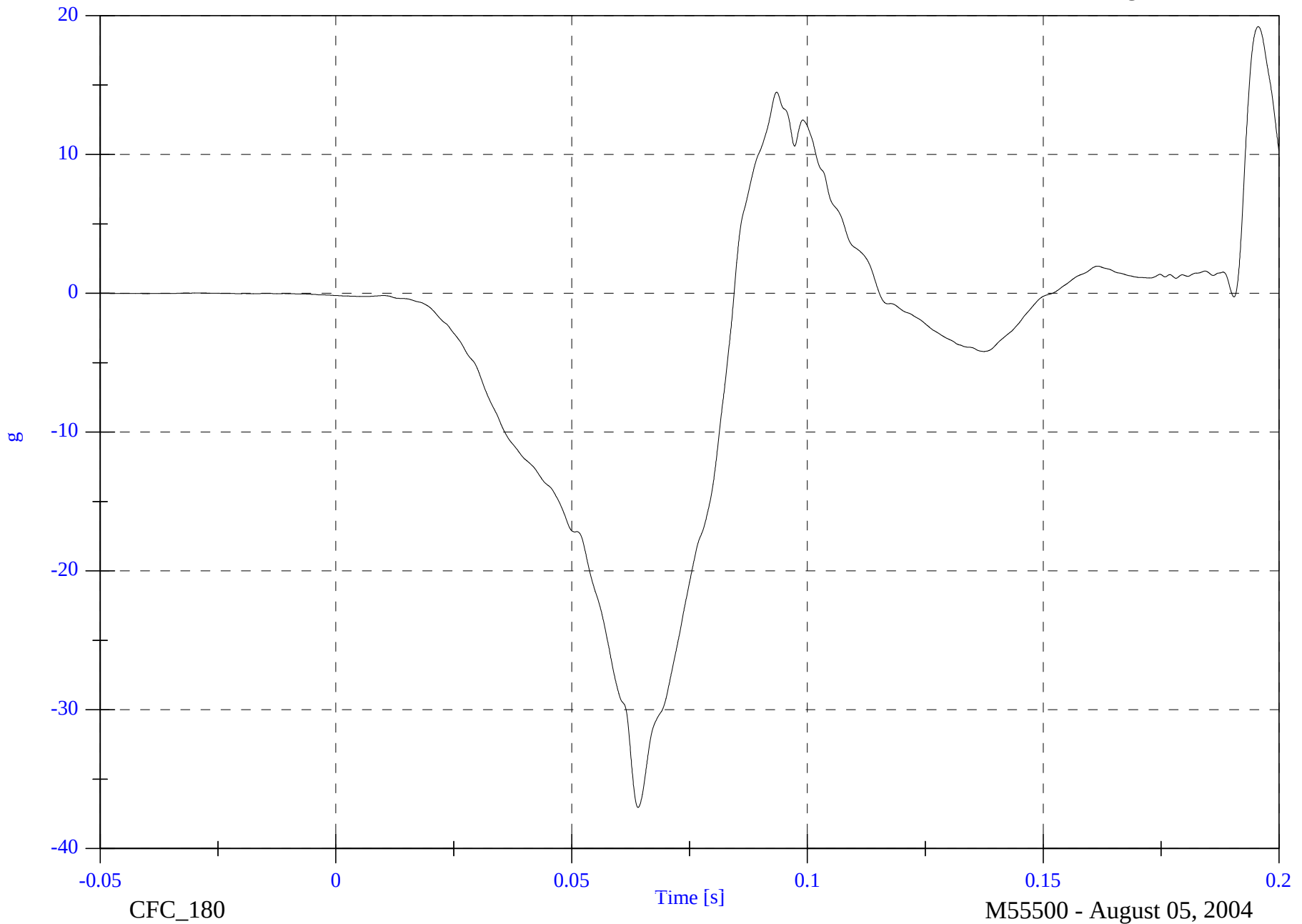
V1P3 Chest z

Max: 19.2 [g] at 0.196 [s]

Min: -37.0 [g] at 0.064 [s]

4-27

8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

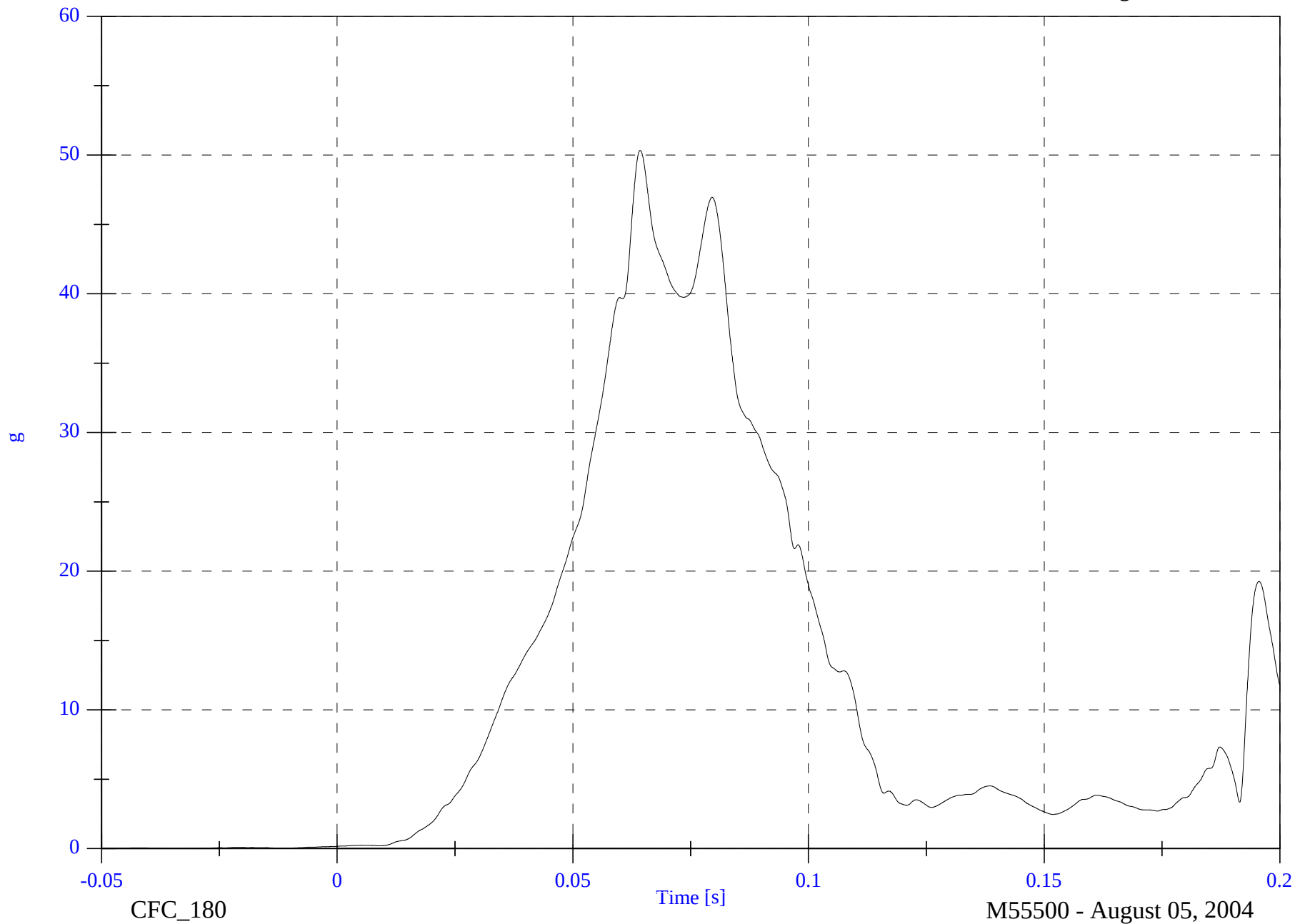
V1P3 Chest Resultant

Max: 50.3 [g] at 0.064 [s]

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

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8642-NCAP-50

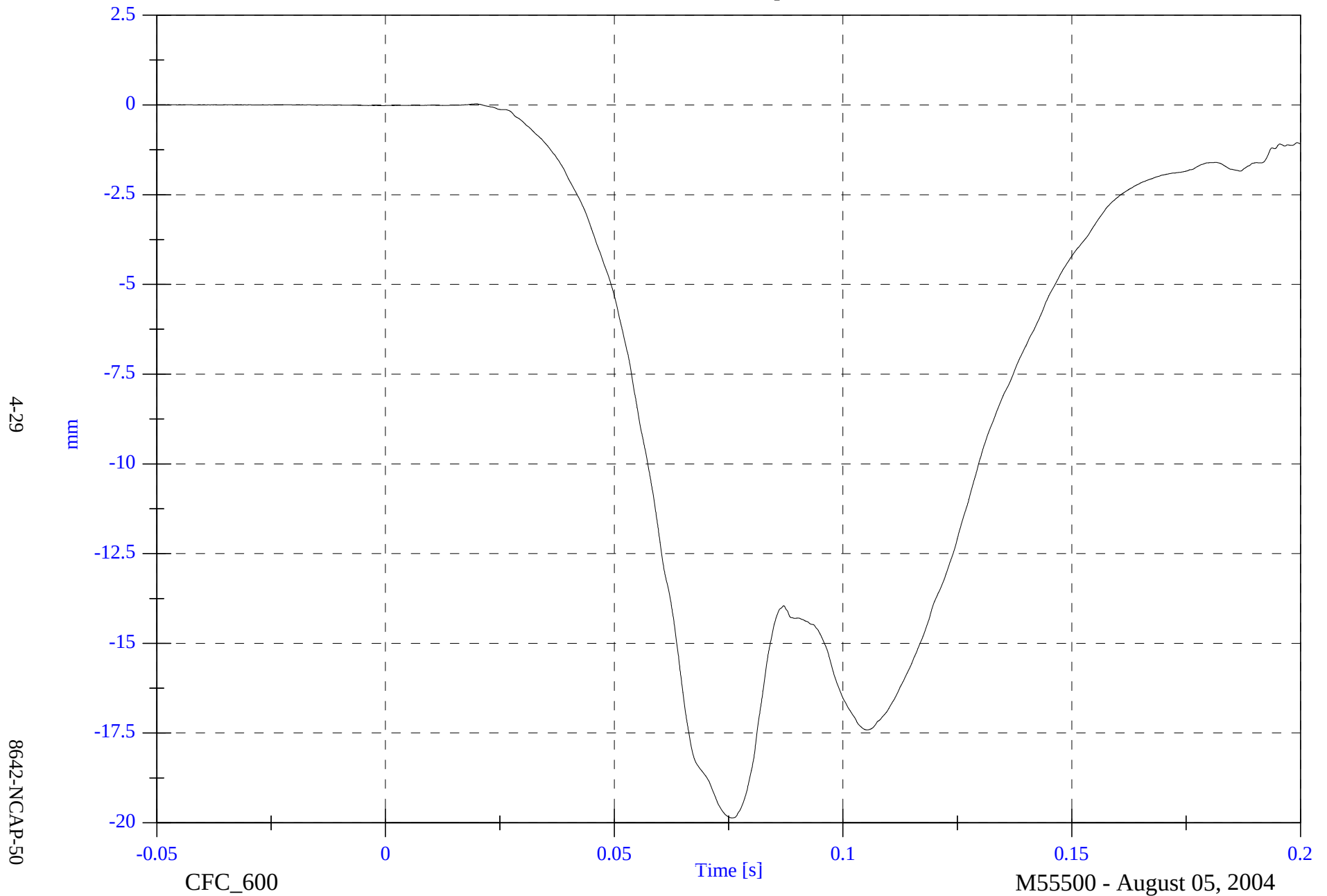


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Chest Compression

Max: 0.0 [mm] at 0.020 [s]

Min: -19.9 [mm] at 0.076 [s]

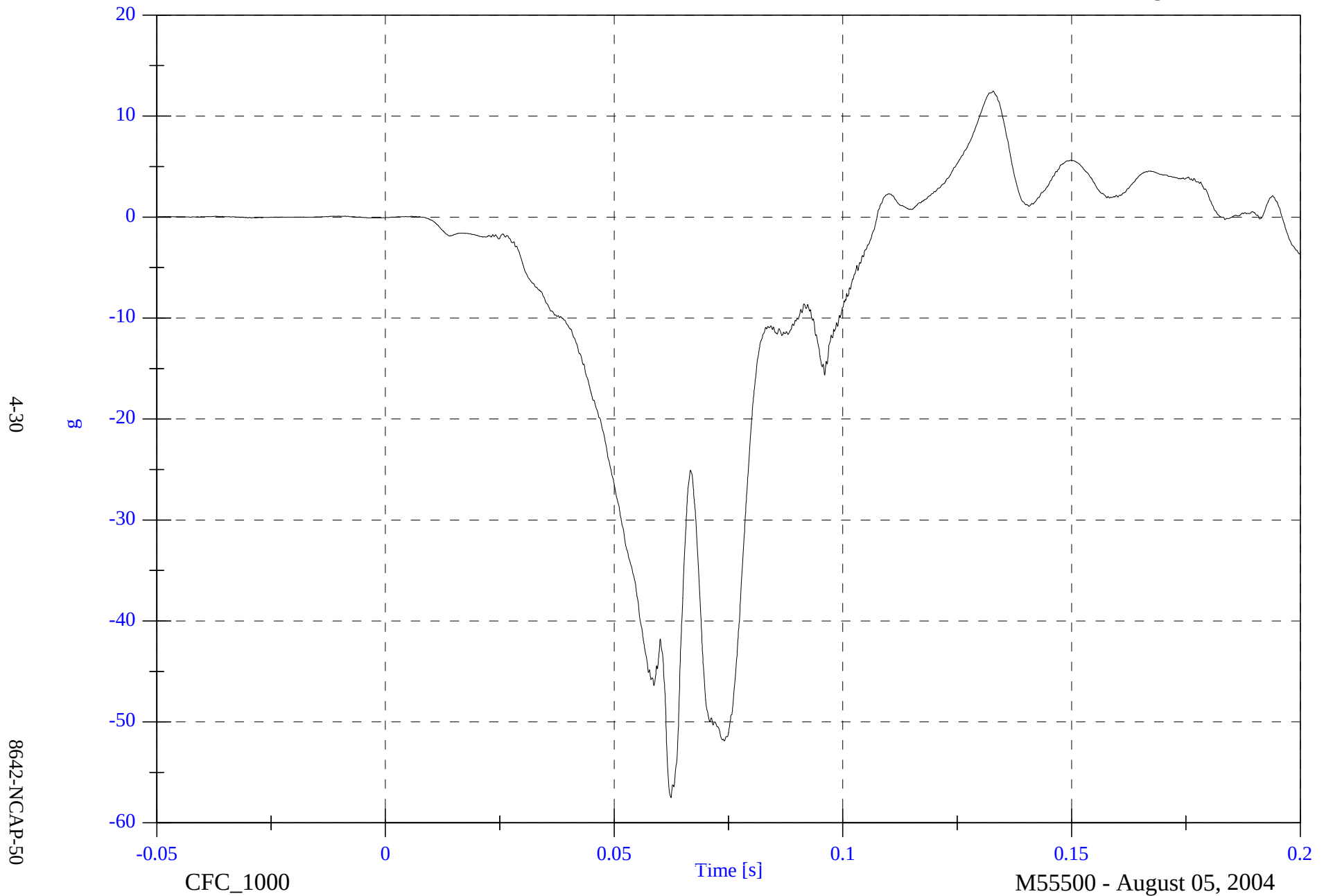


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Pelvic x

Max: 12.5 [g] at 0.133 [s]

Min: -57.5 [g] at 0.062 [s]

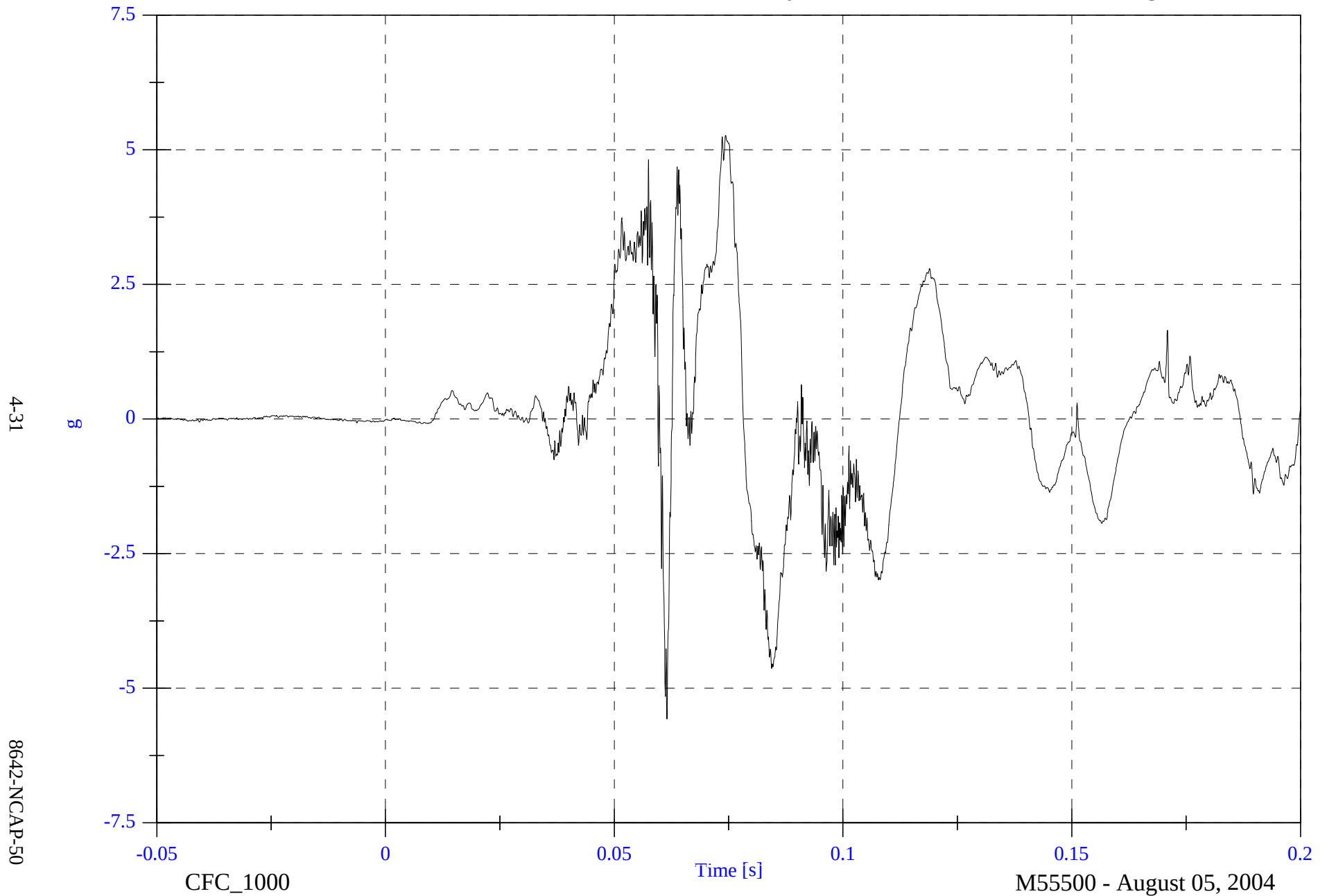


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Pelvic y

Max: 5.3 [g] at 0.074 [s]

Min: -5.6 [g] at 0.061 [s]

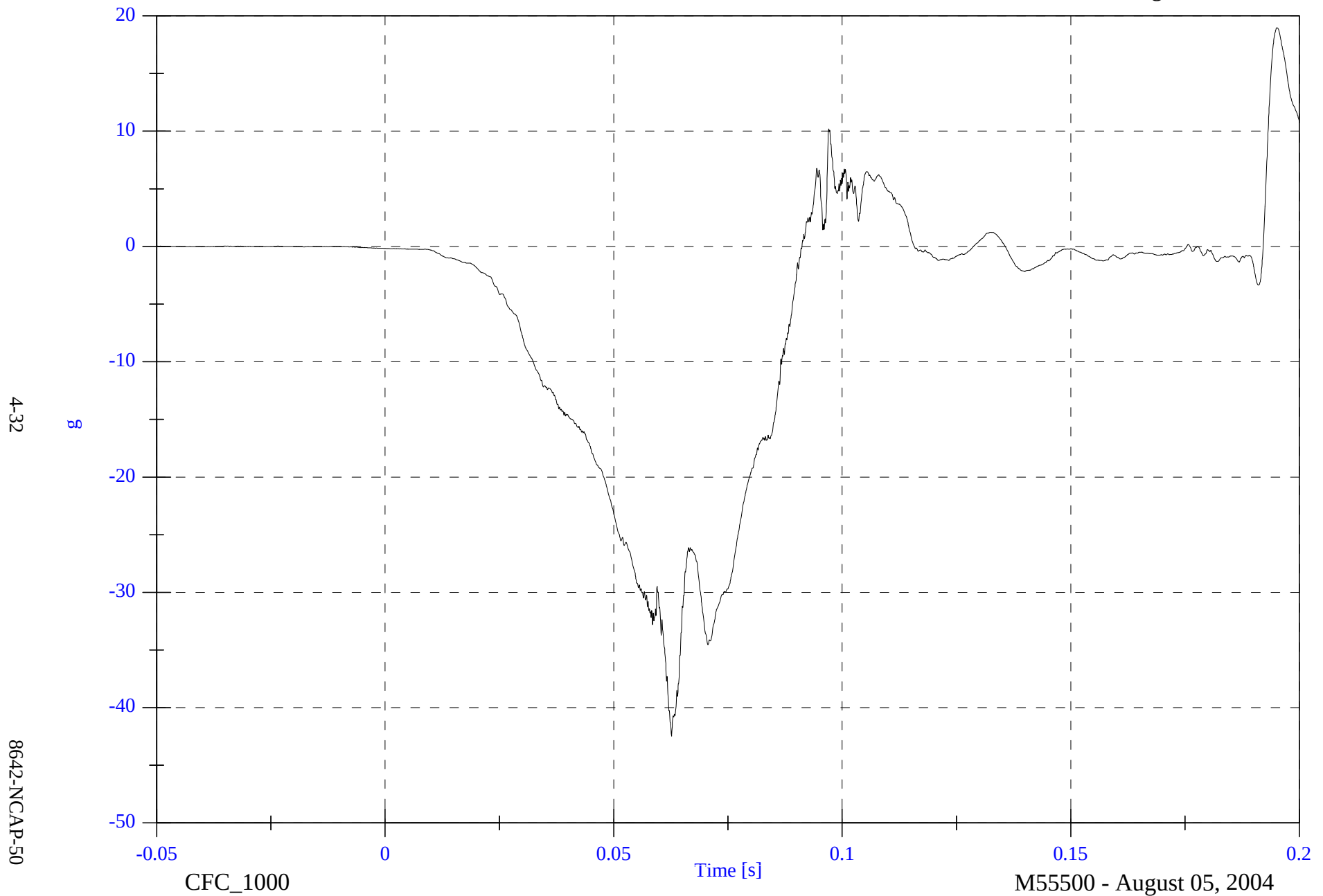


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Pelvic z

Max: 19.0 [g] at 0.195 [s]

Min: -42.5 [g] at 0.063 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

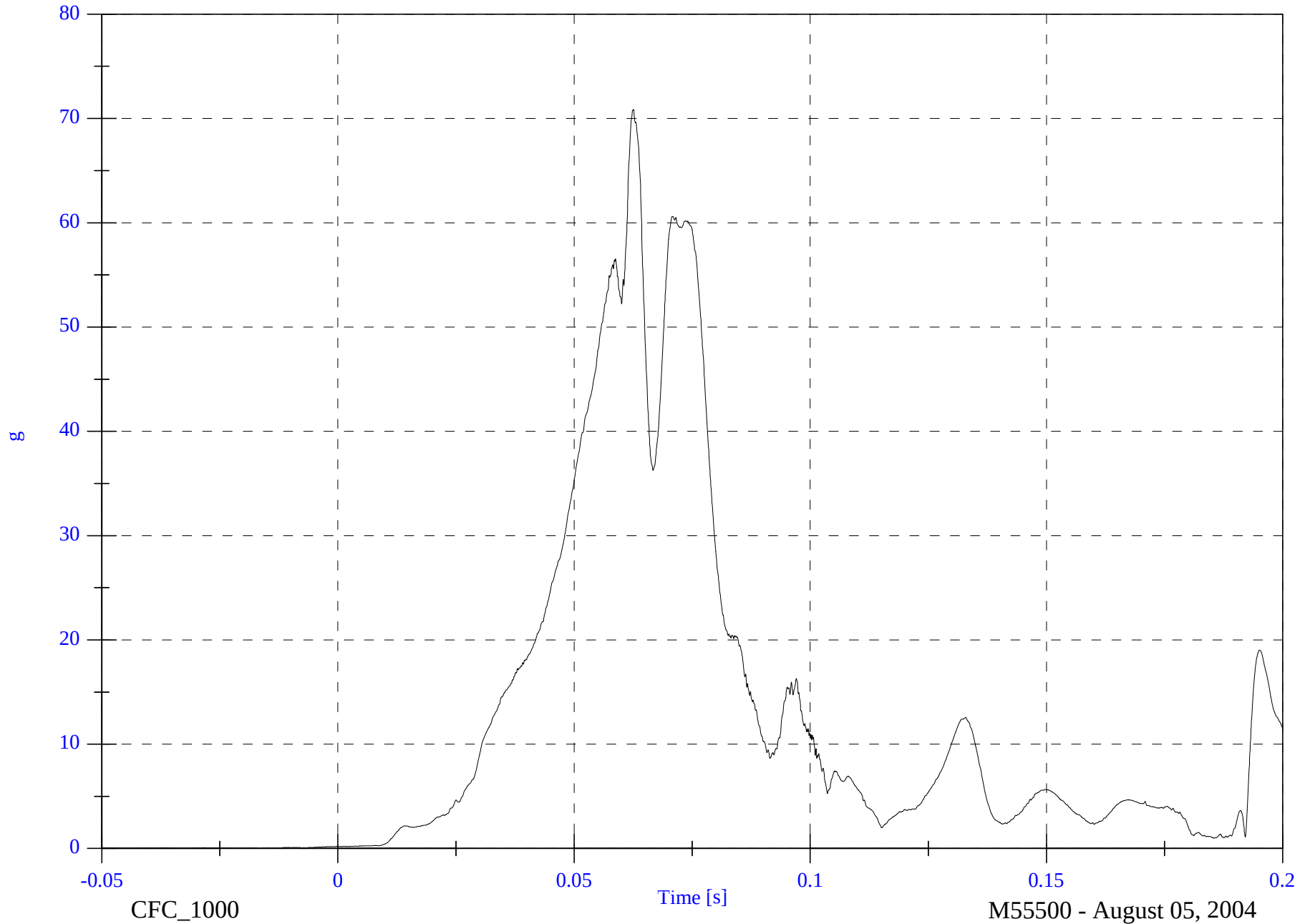
V1P3 Pelvic Resultant

Max: 70.9 [g] at 0.063 [s]

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

4-33

8642-NCAP-50

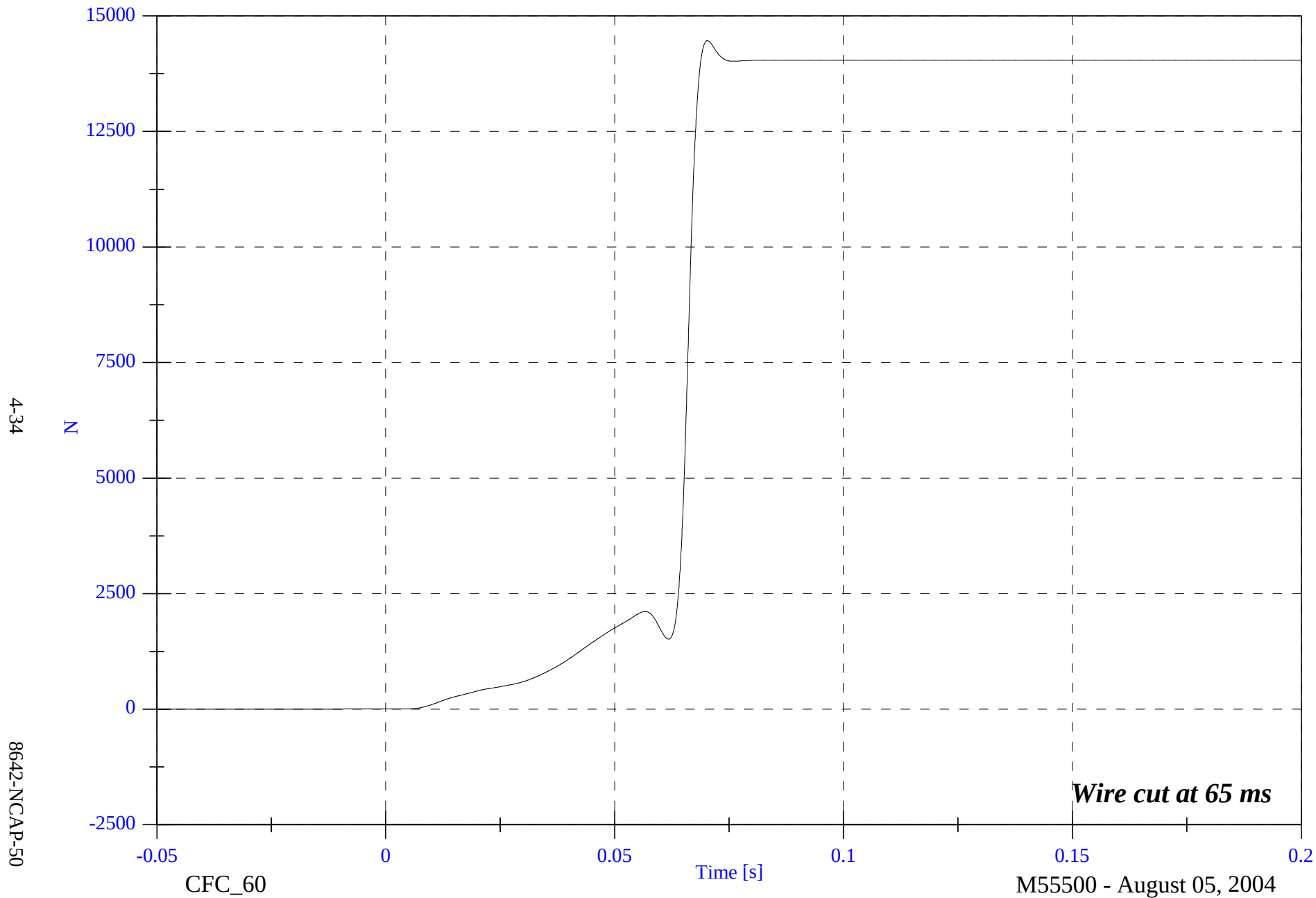


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 Tether Belt

Max: 14464.0 [N] at 0.070 [s]

Min: -1.3 [N] at -0.050 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

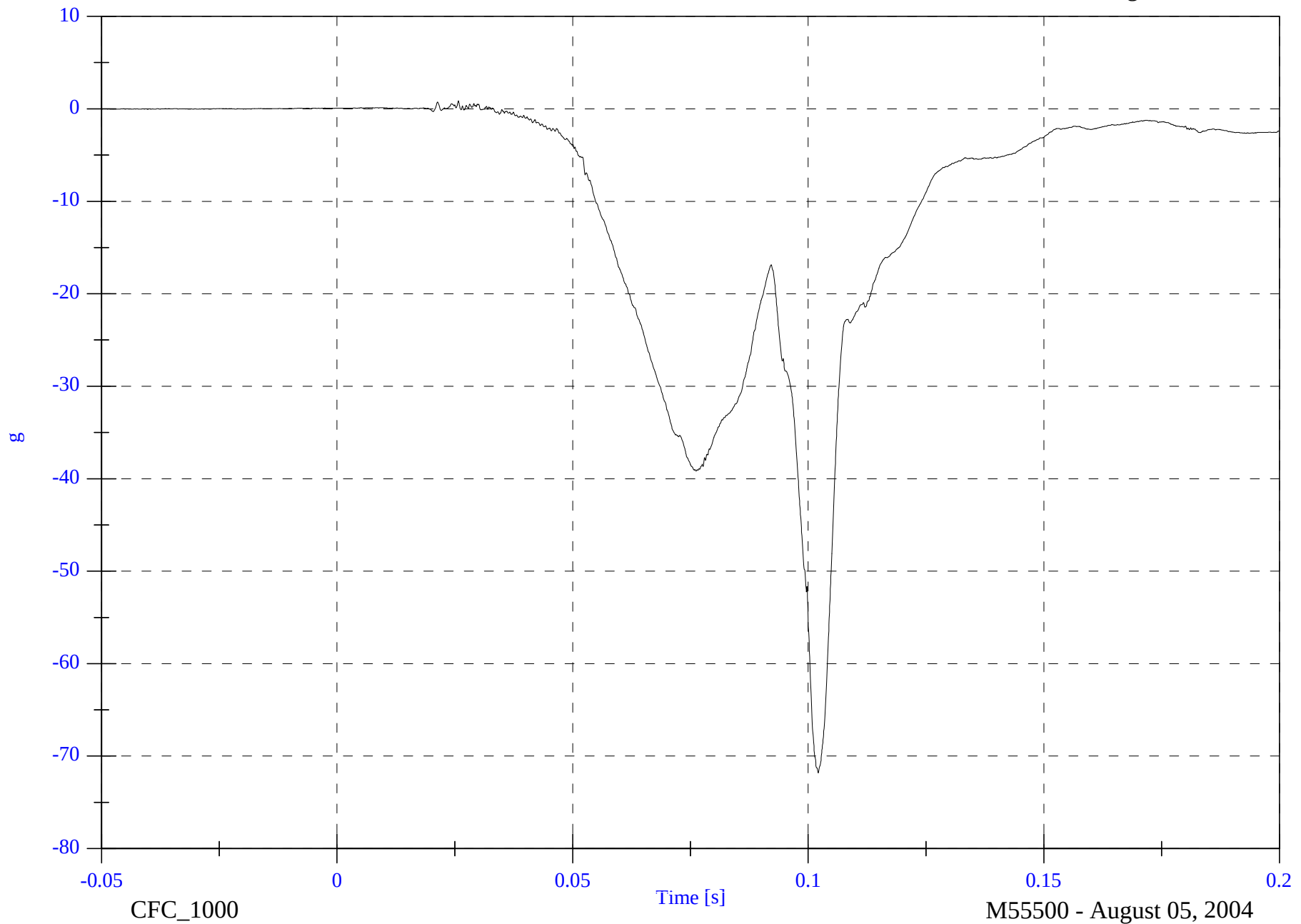
V1P4 Head x

Max: 0.9 [g] at 0.026 [s]

Min: -71.8 [g] at 0.102 [s]

4-35

8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

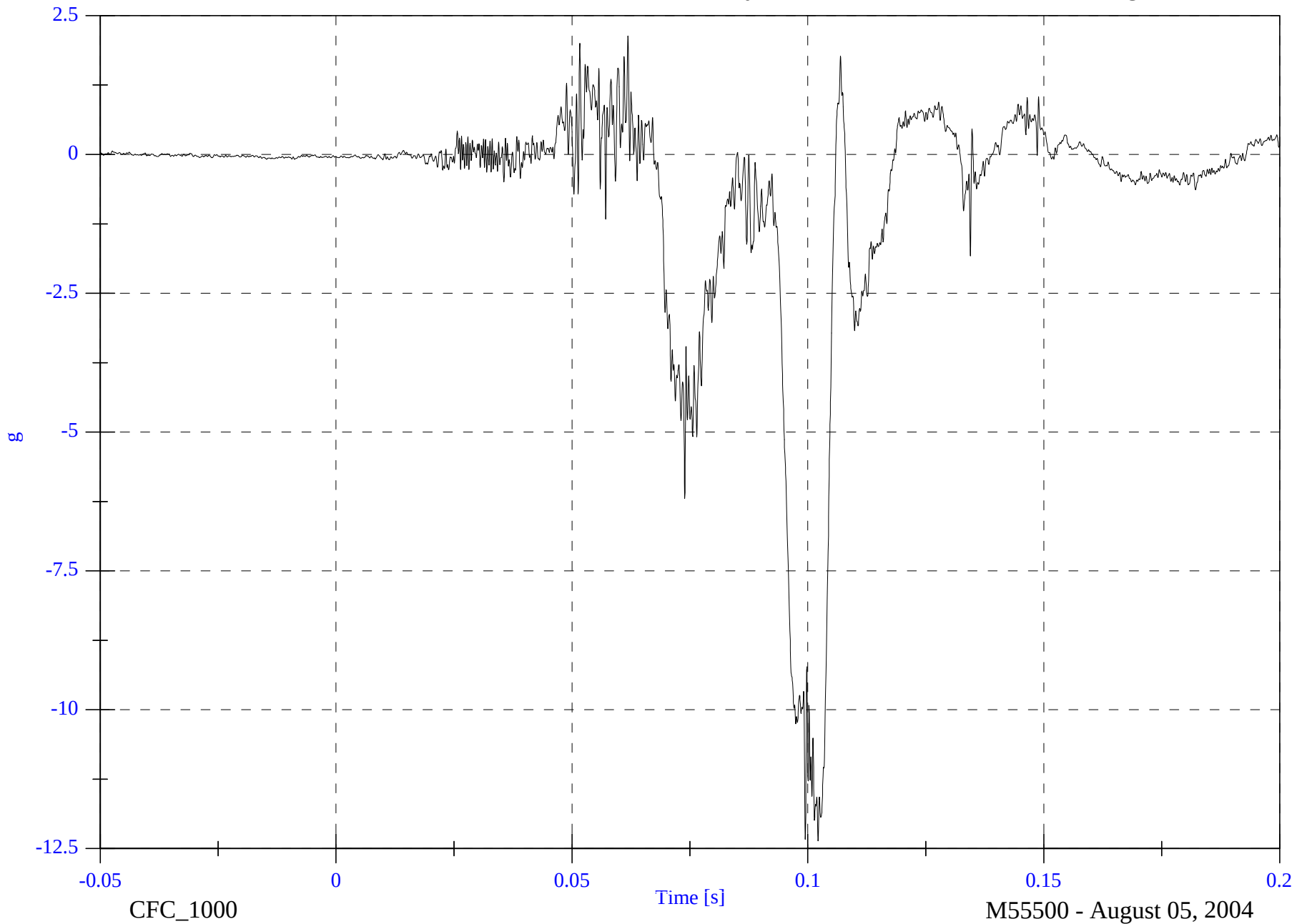
V1P4 Head y

Max: 2.1 [g] at 0.062 [s]

Min: -12.4 [g] at 0.102 [s]

4-36

8642-NCAP-50

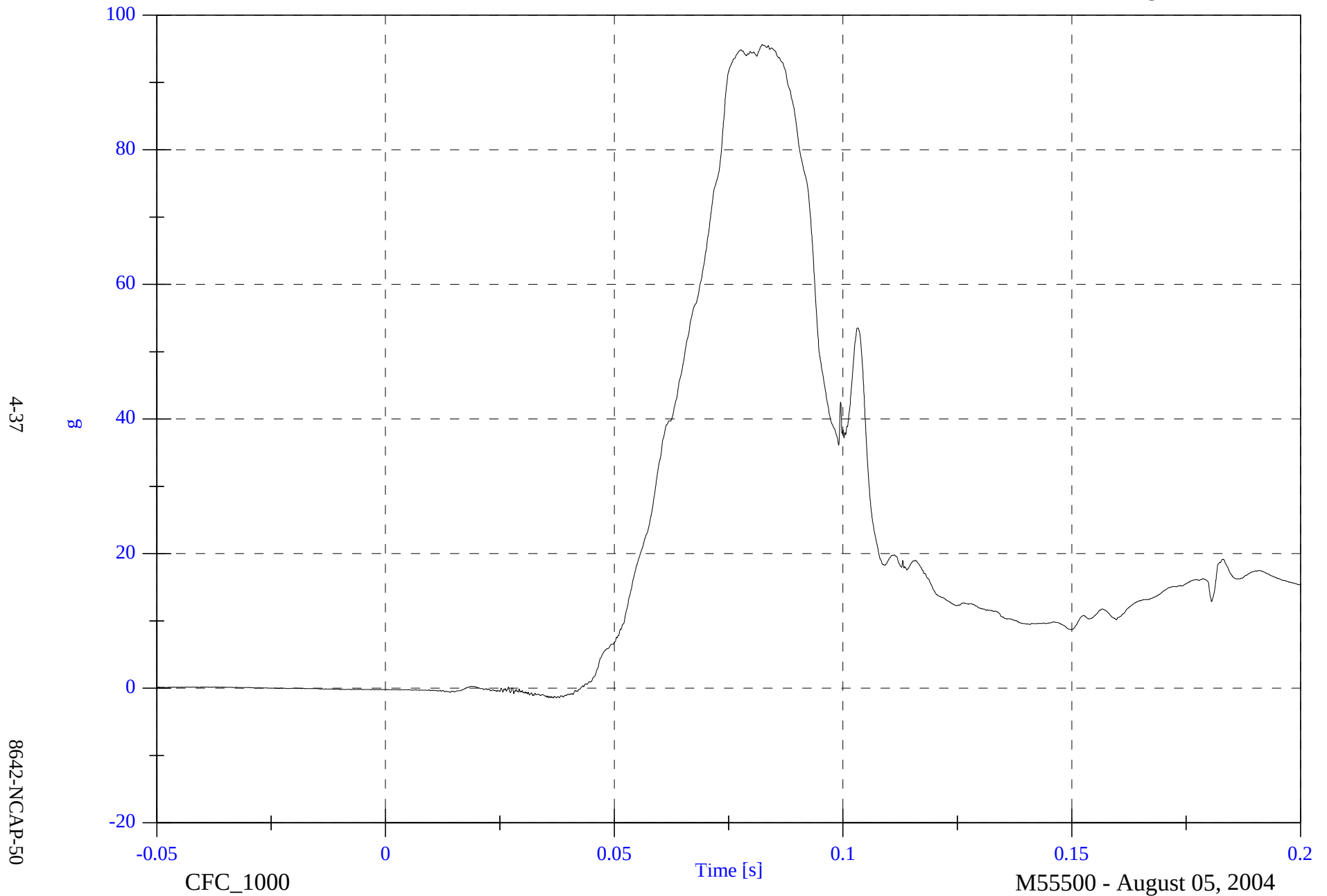


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Head z

Max: 95.6 [g] at 0.082 [s]

Min: -1.4 [g] at 0.037 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

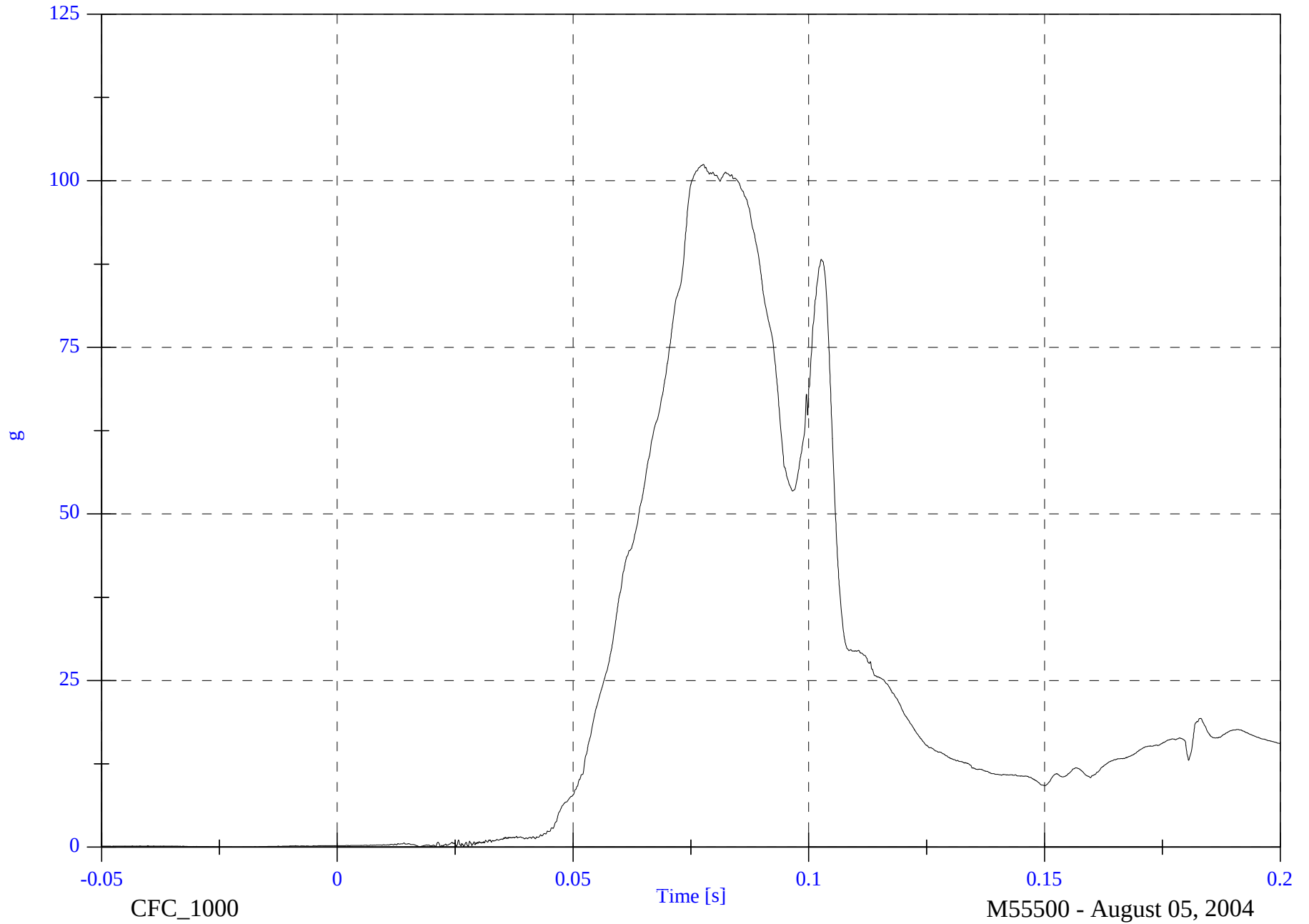
V1P4 Head Resultant

Max: 102.5 [g] at 0.078 [s]

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

4-38

8642-NCAP-50

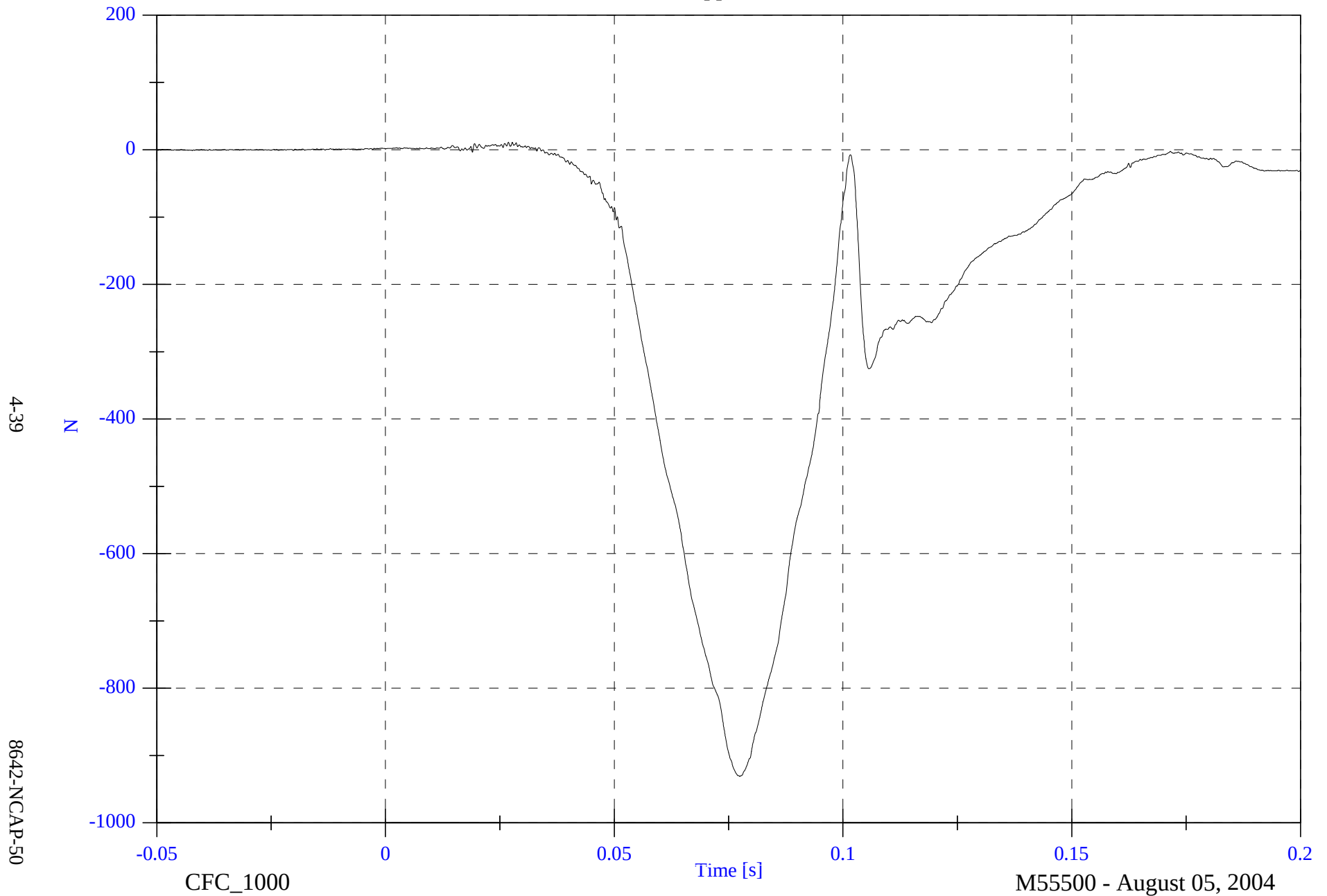


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Upper Neck Fx

Max: 11.2 [N] at 0.027 [s]

Min: -930.9 [N] at 0.077 [s]

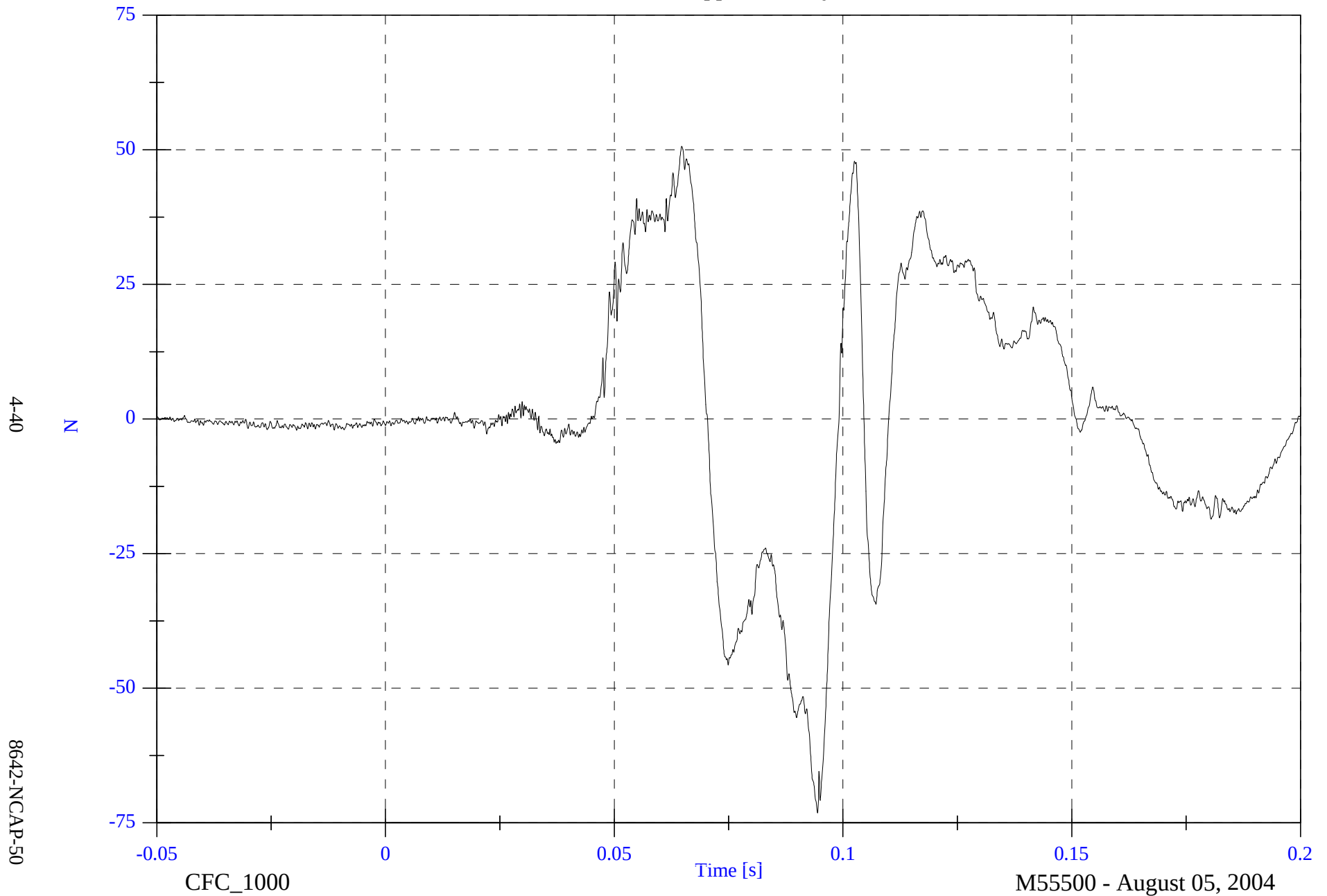


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Upper Neck Fy

Max: 50.6 [N] at 0.065 [s]

Min: -73.2 [N] at 0.094 [s]

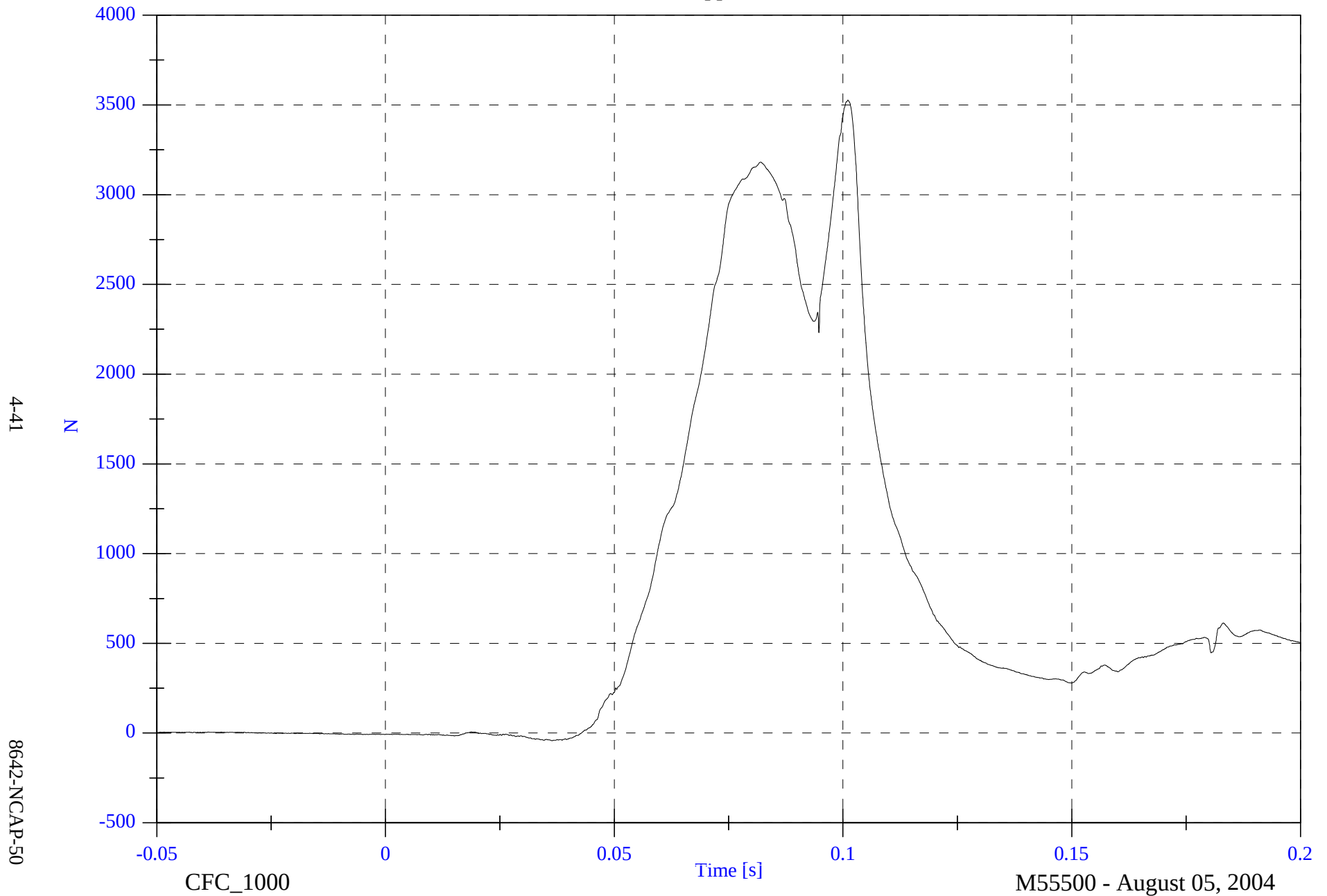


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Upper Neck Fz

Max: 3527.0 [N] at 0.101 [s]

Min: -42.9 [N] at 0.036 [s]

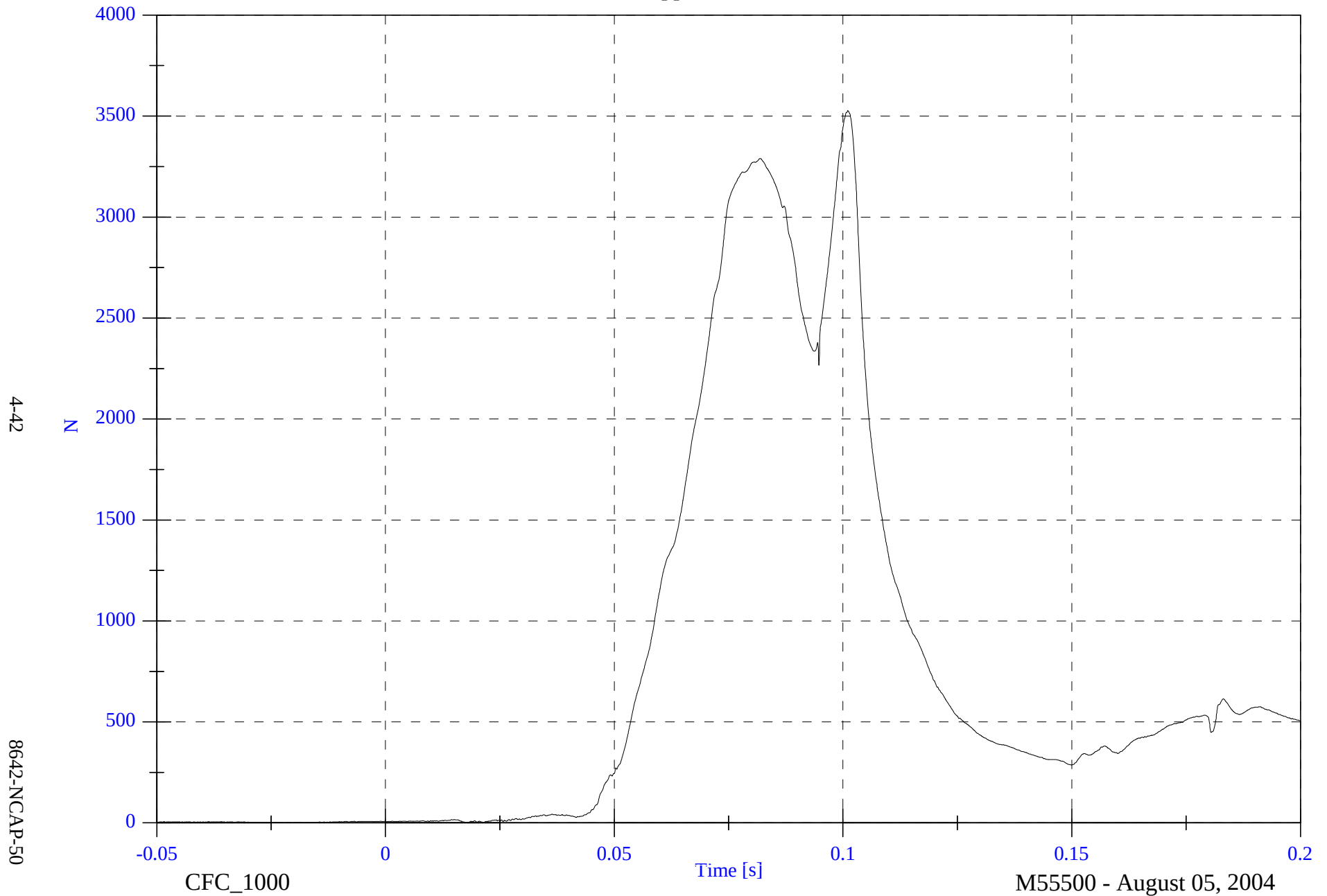


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Upper Neck F Resultant

Max: 3527.3 [N] at 0.101 [s]

Min: 0.3 [N] at -0.024 [s]

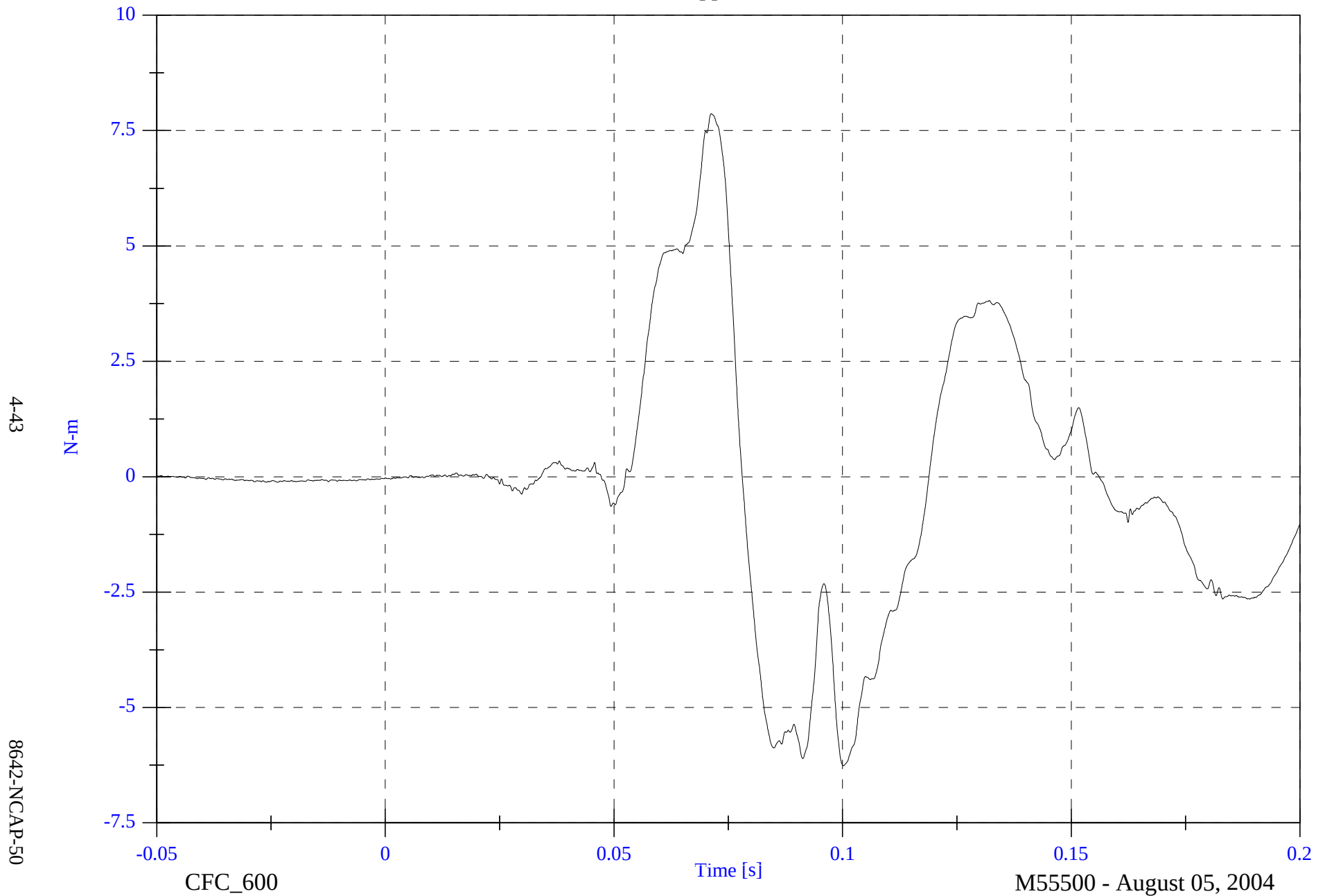


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Upper Neck Mx

Max: 7.9 [N-m] at 0.071 [s]

Min: -6.3 [N-m] at 0.100 [s]

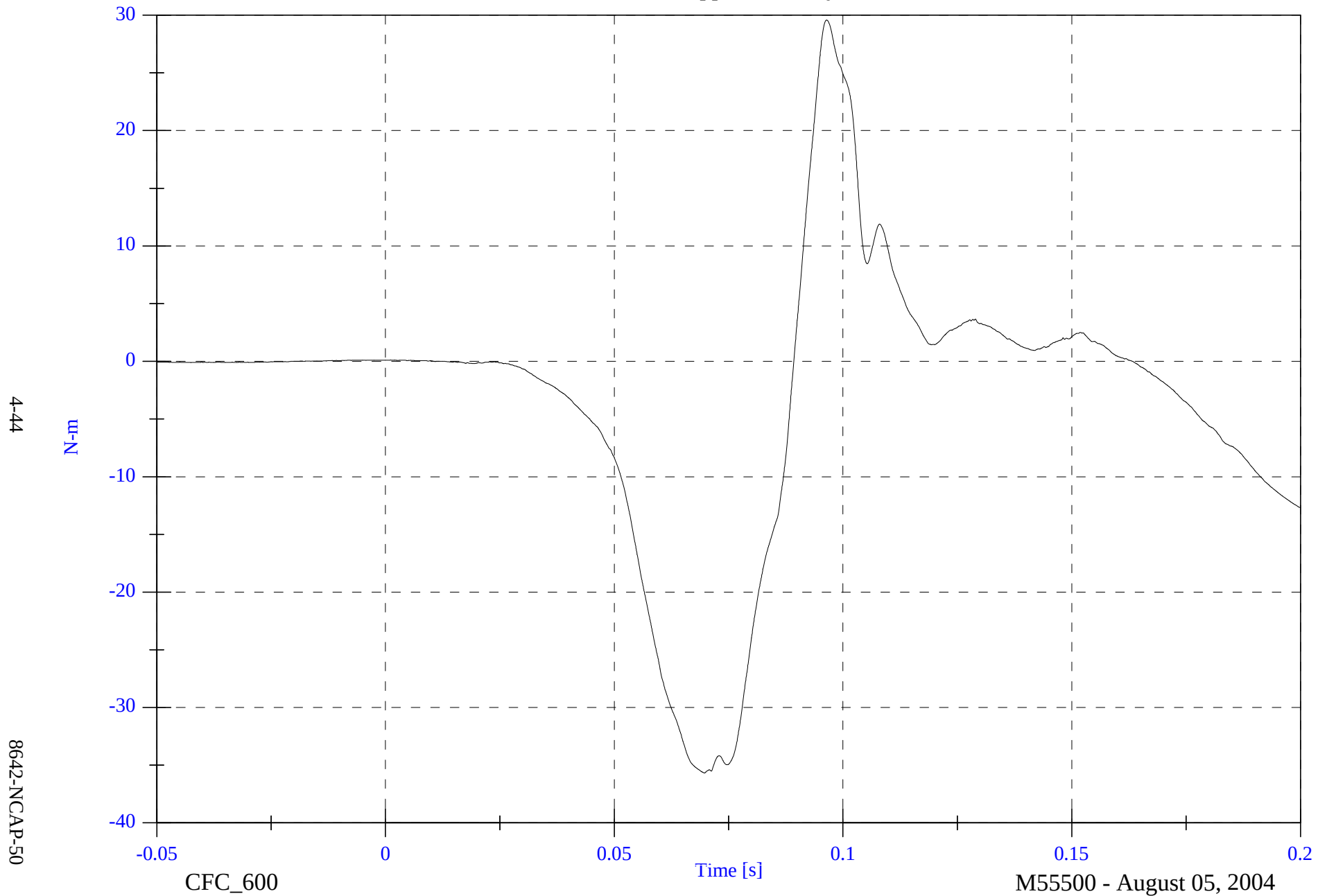


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Upper Neck My

Max: 29.6 [N-m] at 0.096 [s]

Min: -35.7 [N-m] at 0.070 [s]

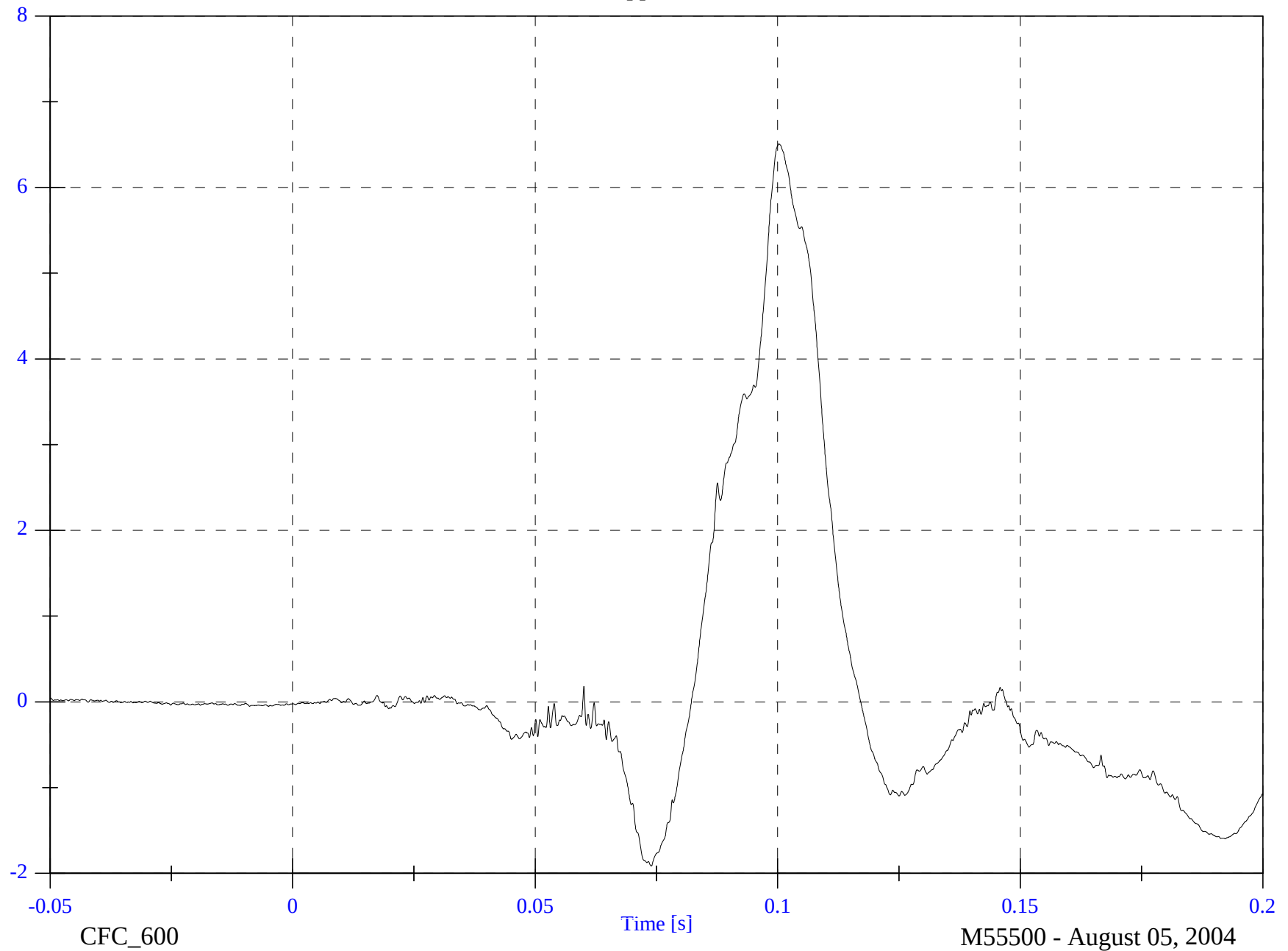


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Upper Neck Mz

Max: 6.5 [N-m] at 0.100 [s]

Min: -1.9 [N-m] at 0.074 [s]



4-45

8642-NCAP-50

CFC_600

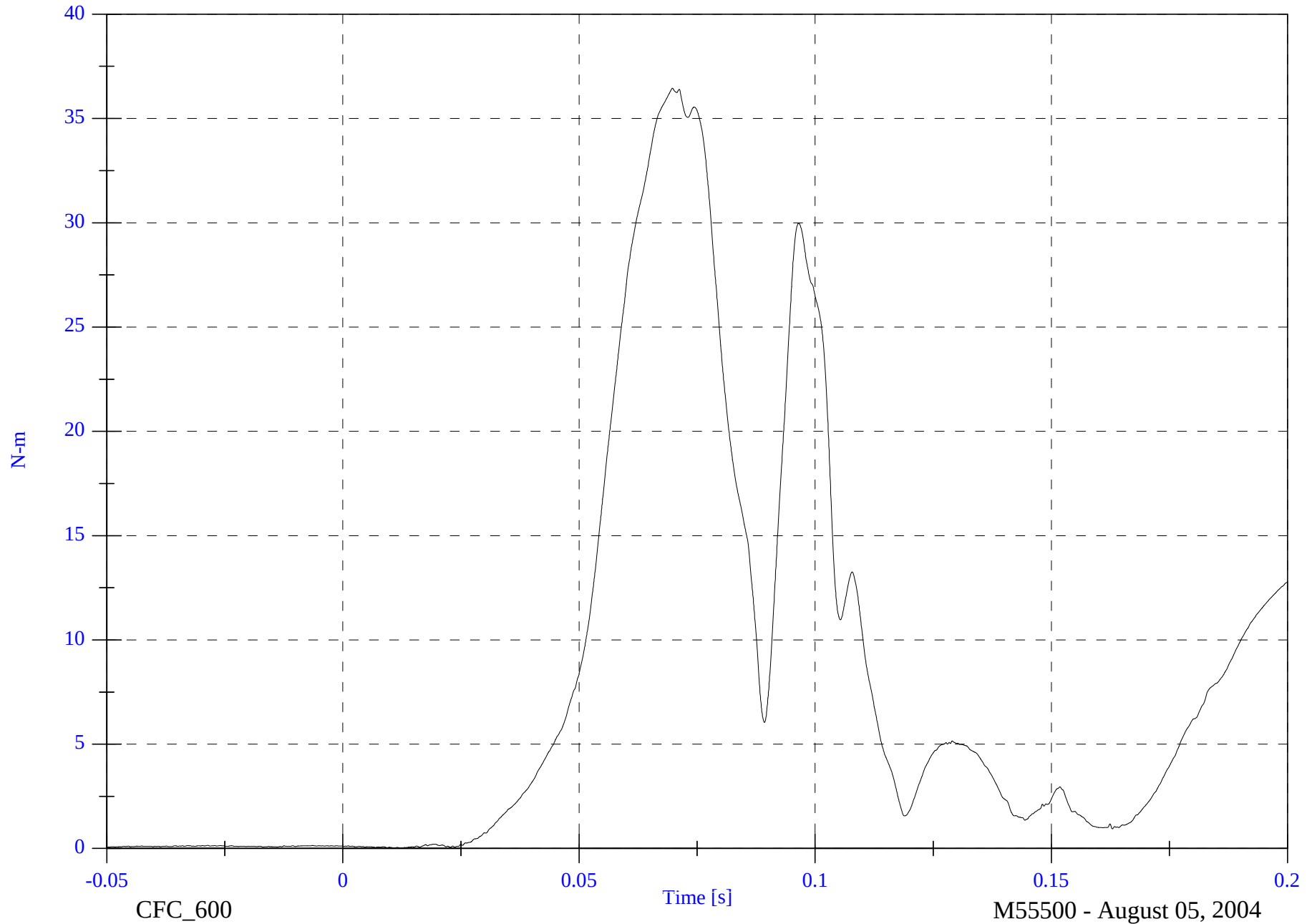
M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Upper Neck M Resultant

Max: 36.5 [N-m] at 0.070 [s]

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



4-46

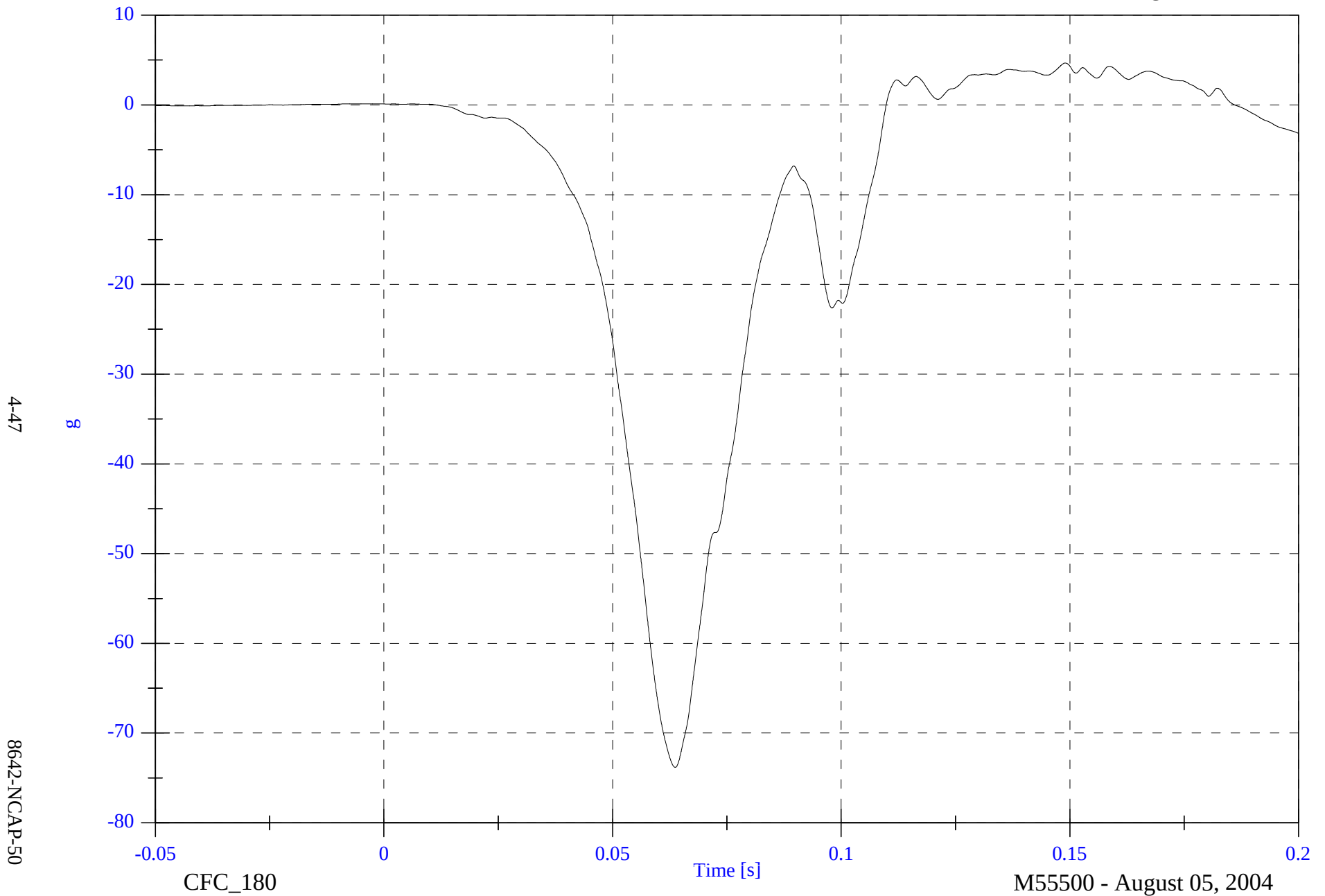
8642-NCAP-50

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Chest x

Max: 4.7 [g] at 0.149 [s]

Min: -73.8 [g] at 0.064 [s]

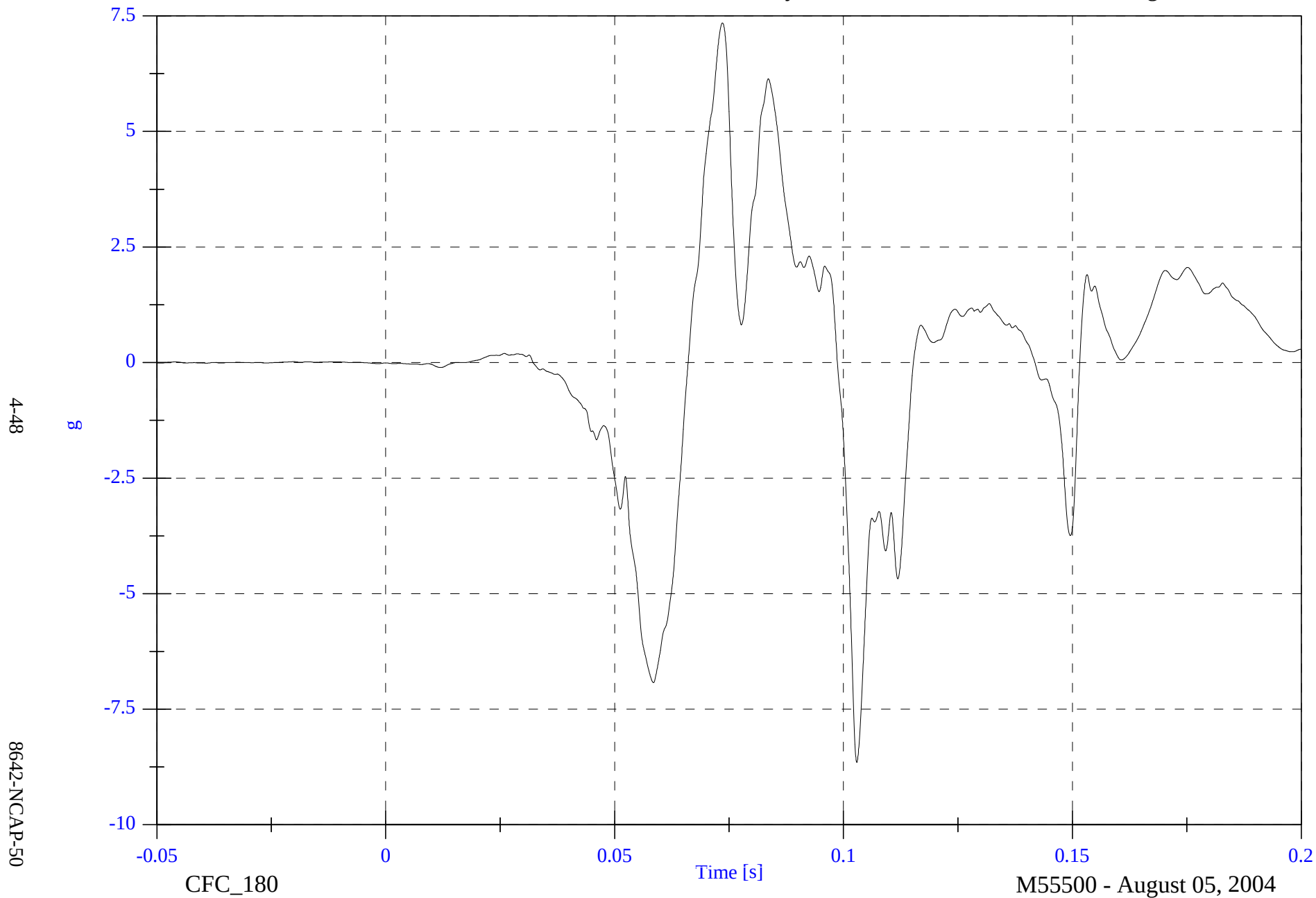


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Chest y

Max: 7.3 [g] at 0.074 [s]

Min: -8.7 [g] at 0.103 [s]

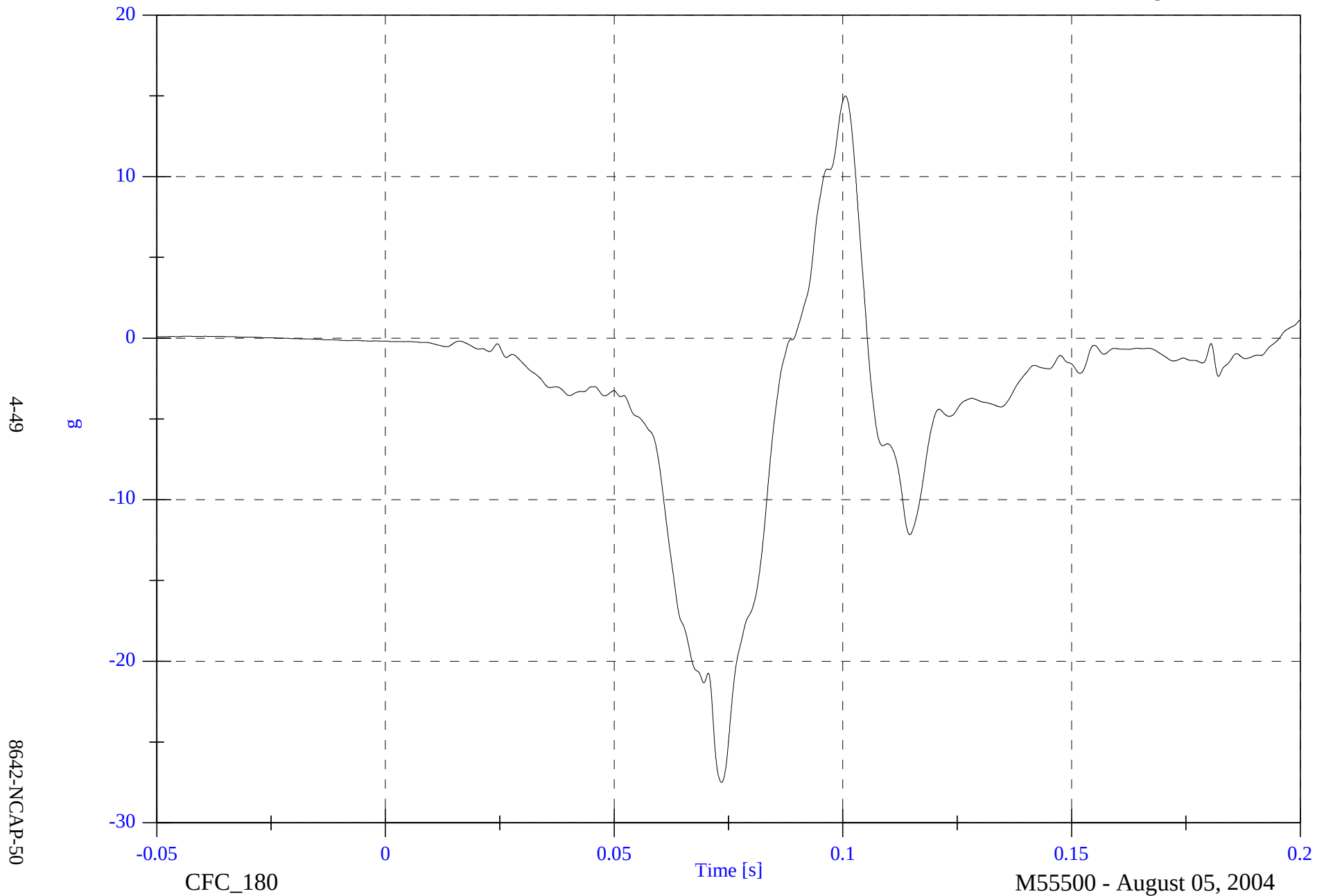


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Chest z

Max: 15.0 [g] at 0.101 [s]

Min: -27.5 [g] at 0.073 [s]

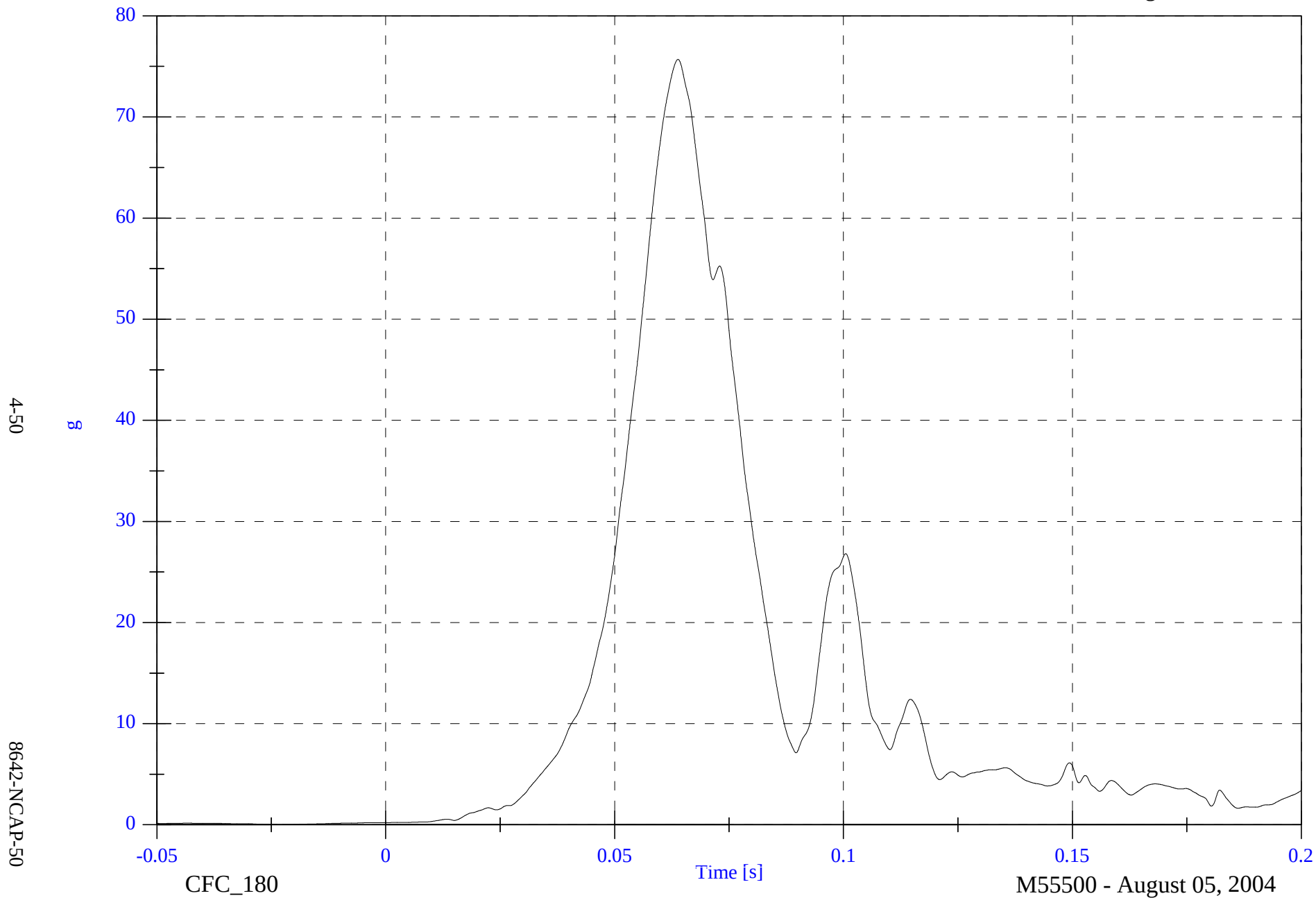


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Chest Resultant

Max: 75.7 [g] at 0.064 [s]

Min: 0.0 [g] at -0.023 [s]

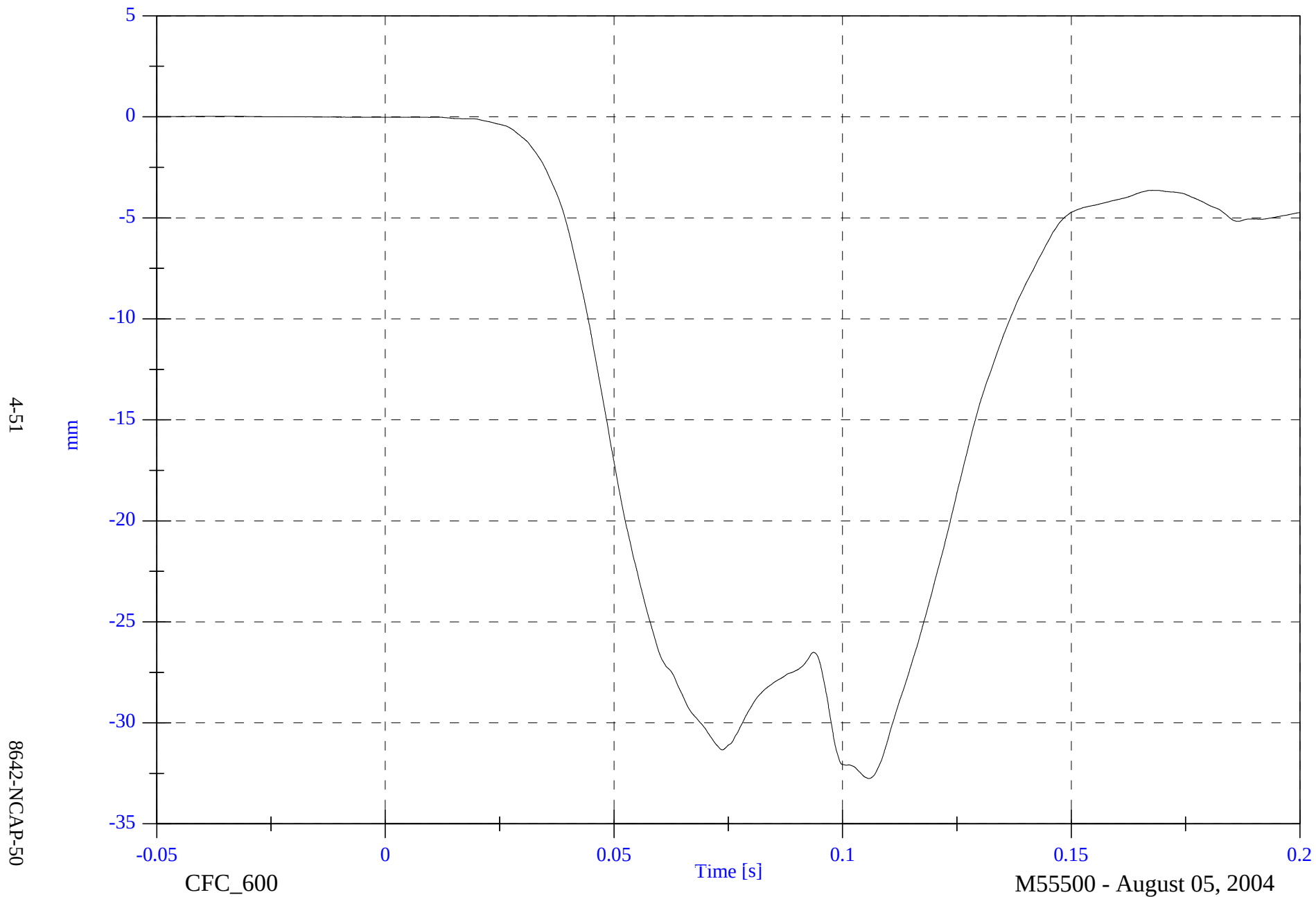


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Chest Pot

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

Min: -32.8 [mm] at 0.106 [s]

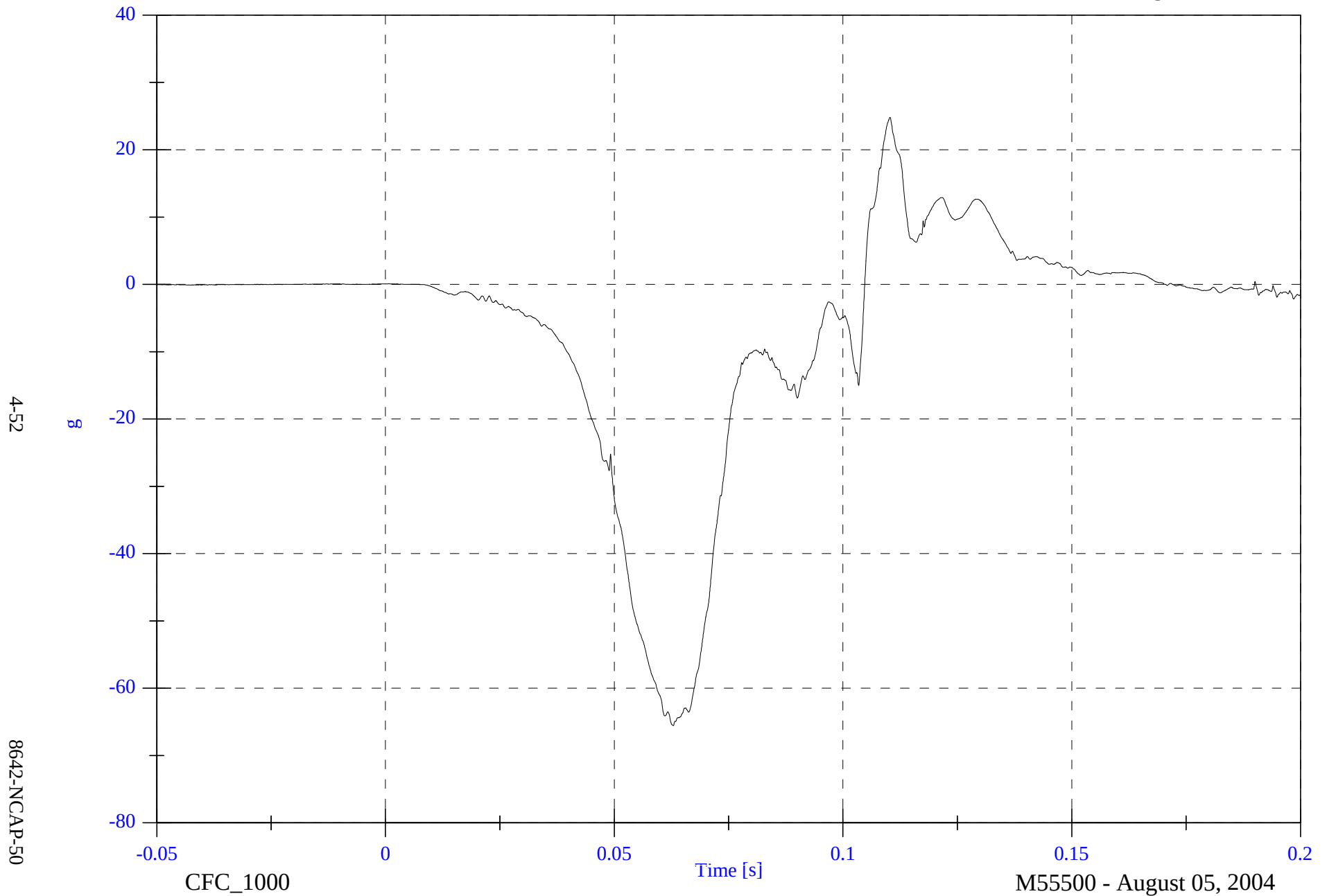


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Pelvic x

Max: 24.8 [g] at 0.110 [s]

Min: -65.5 [g] at 0.063 [s]

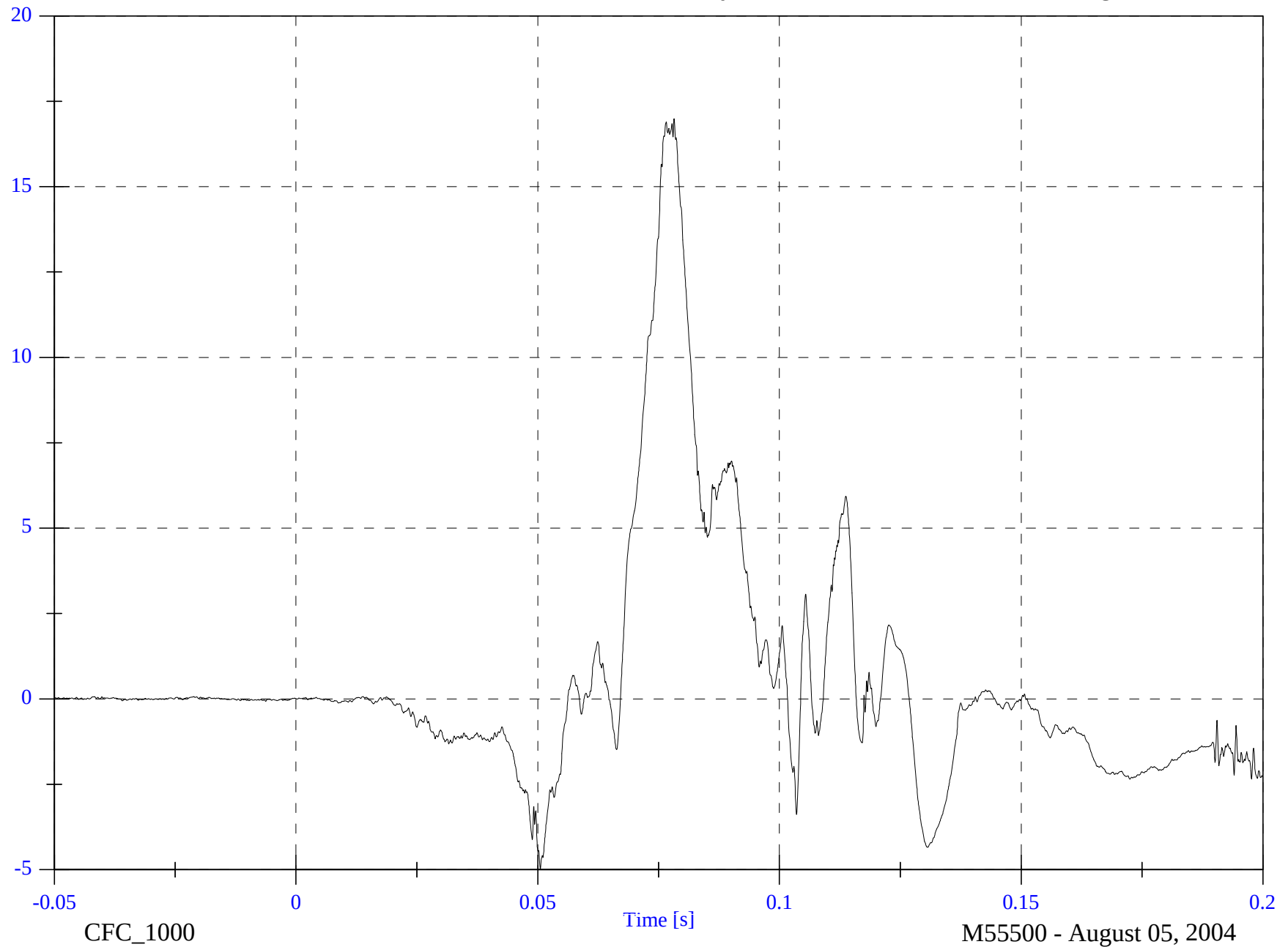


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Pelvic y

Max: 17.0 [g] at 0.078 [s]

Min: -5.0 [g] at 0.051 [s]



4-53

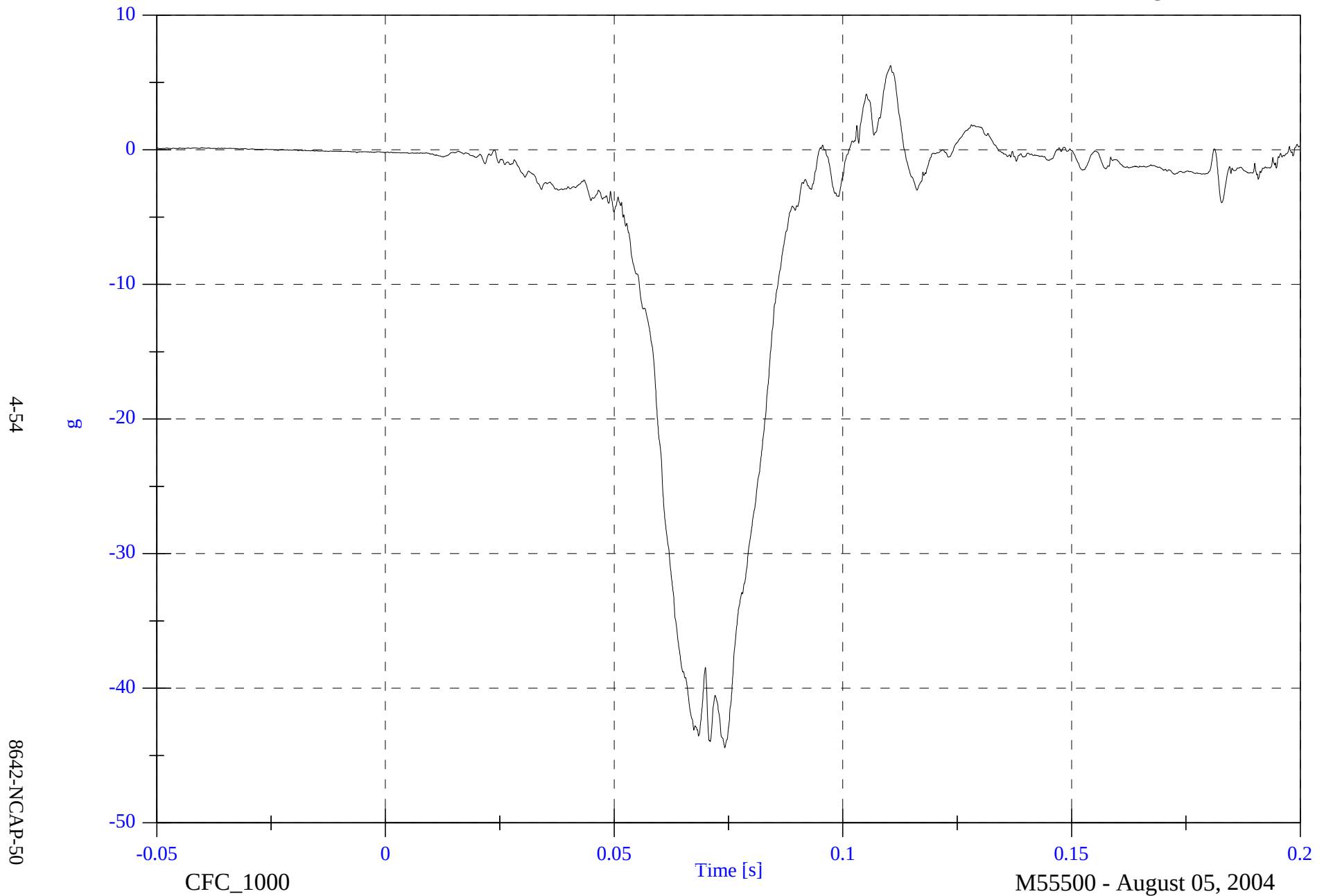
8642-NCAP-50

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Pelvic z

Max: 6.3 [g] at 0.110 [s]

Min: -44.4 [g] at 0.074 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

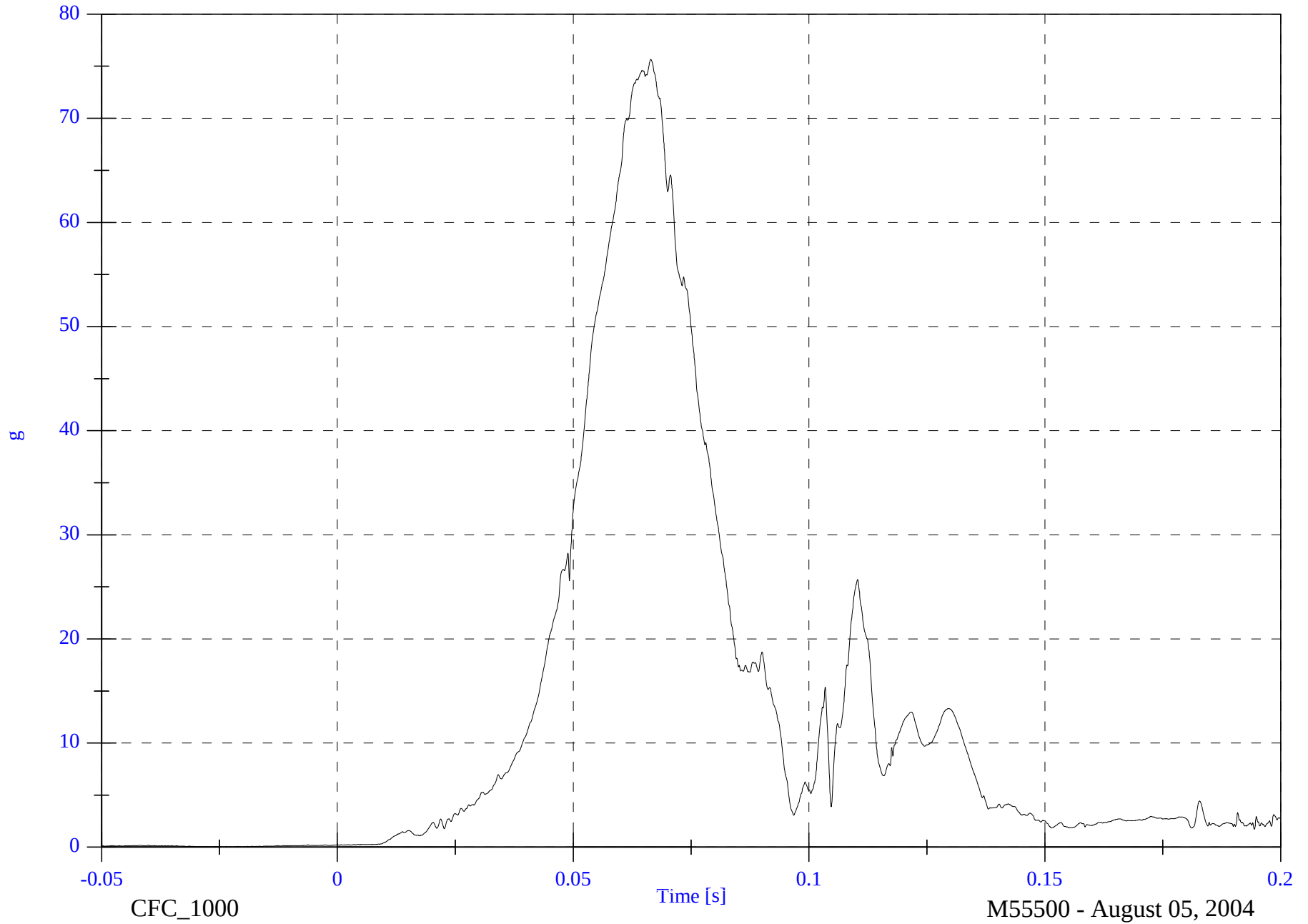
V1P4 Pelvic Resultant

Max: 75.7 [g] at 0.066 [s]

Min: 0.0 [g] at -0.023 [s]

4-55

8642-NCAP-50

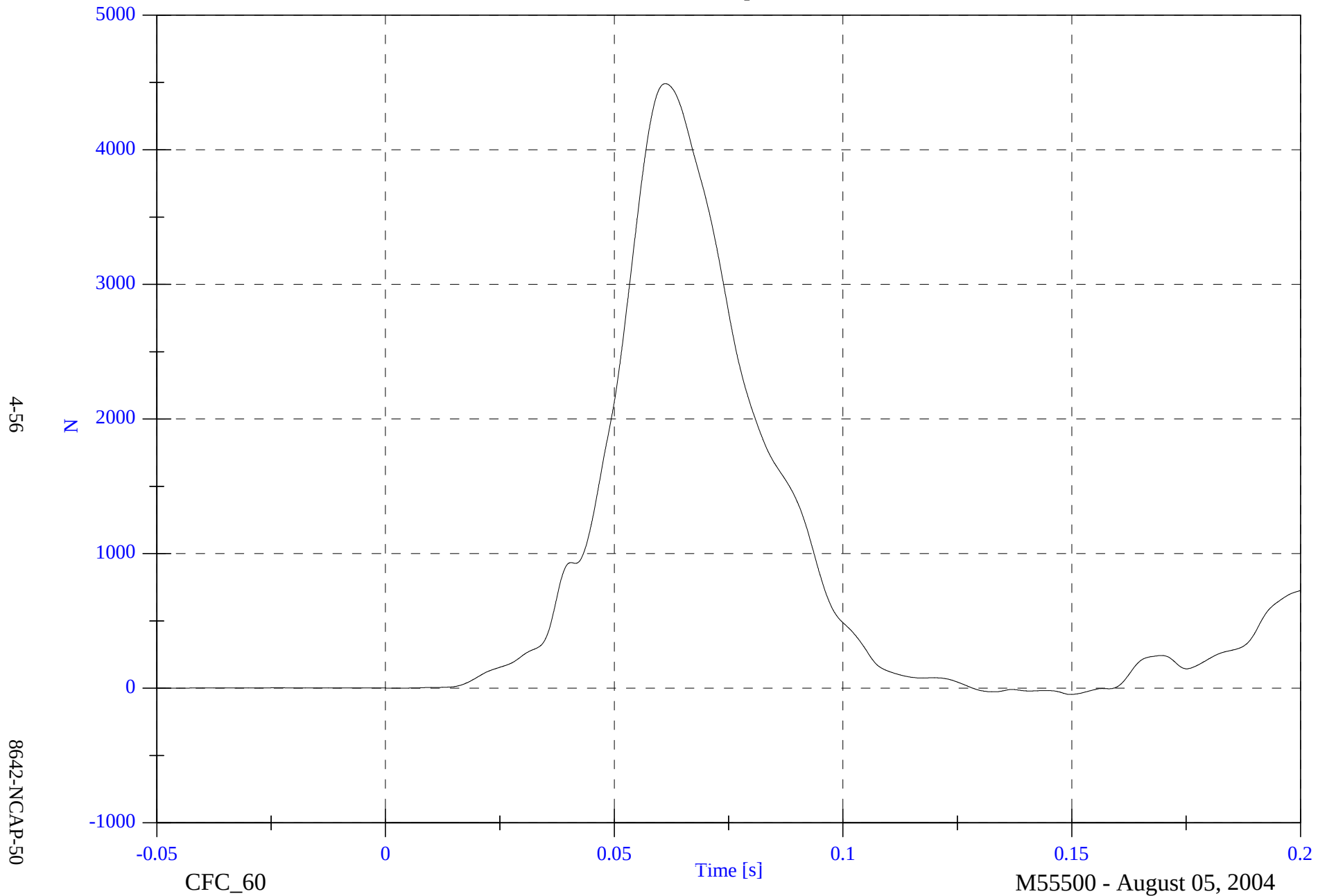


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Lap Belt

Max: 4491.5 [N] at 0.061 [s]

Min: -46.1 [N] at 0.150 [s]

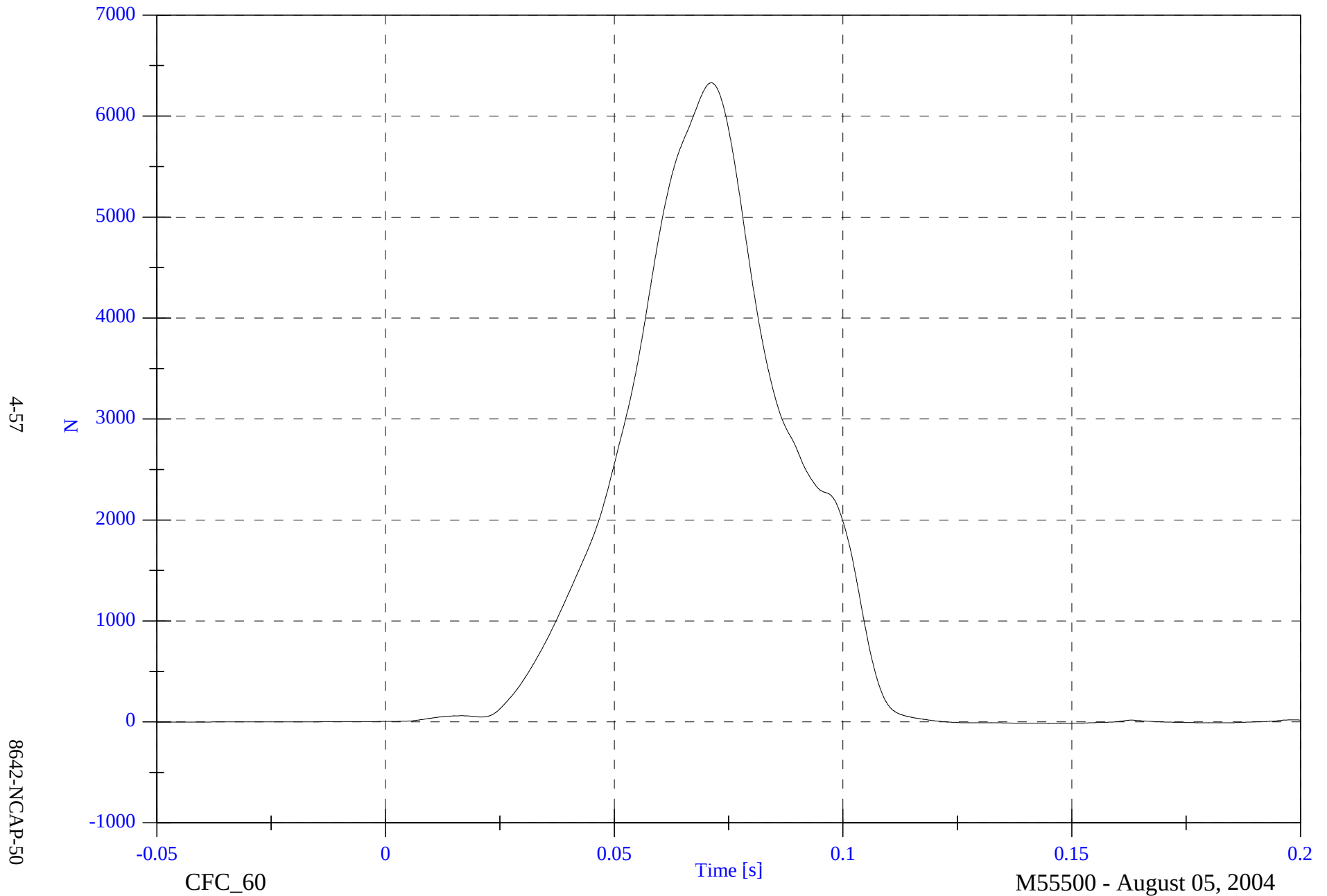


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Torso Belt

Max: 6329.8 [N] at 0.071 [s]

Min: -14.9 [N] at 0.147 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

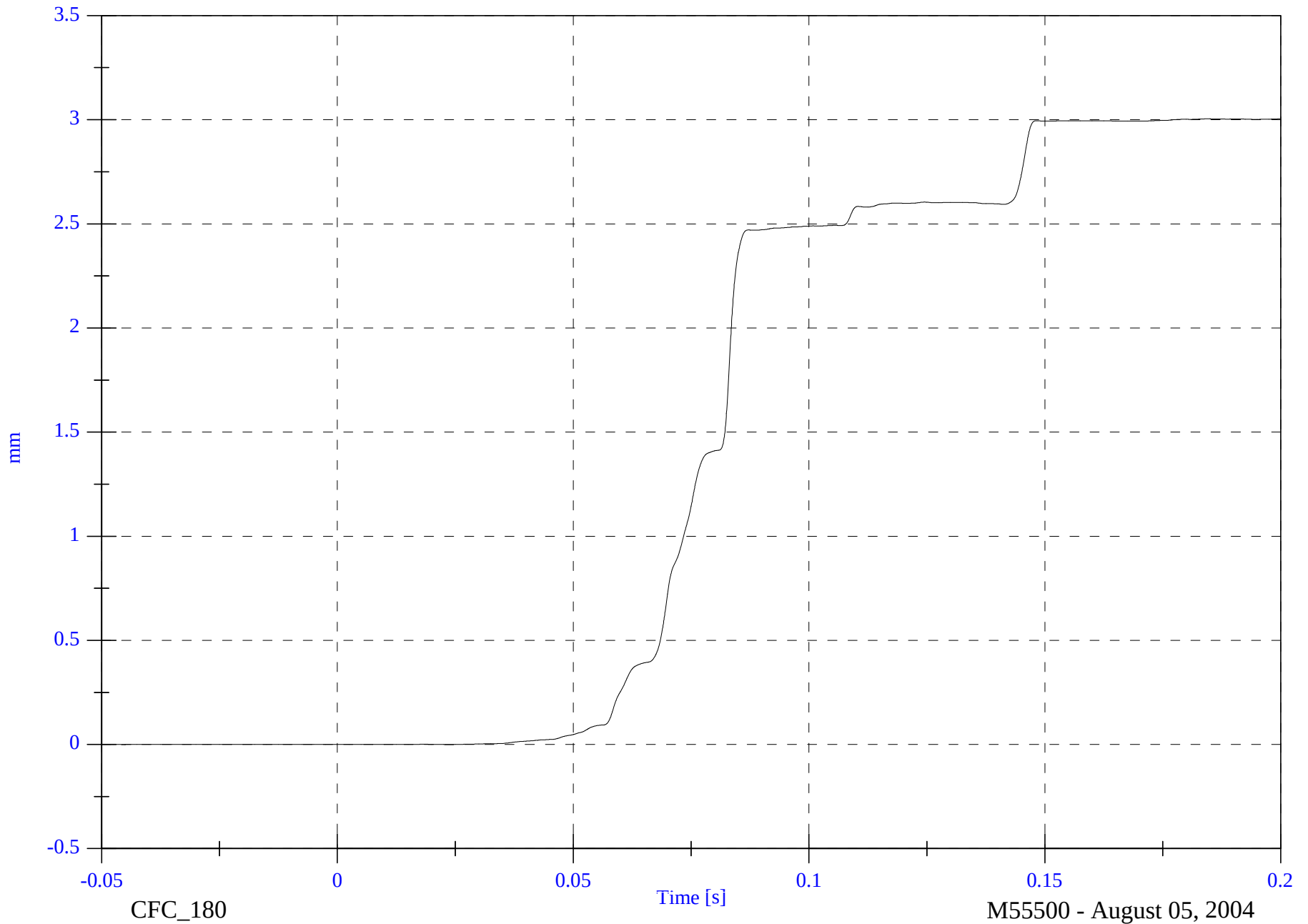
V1P4 Torso Belt Stretch

Max: 3.0 [mm] at 0.184 [s]

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

4-58

8642-NCAP-50

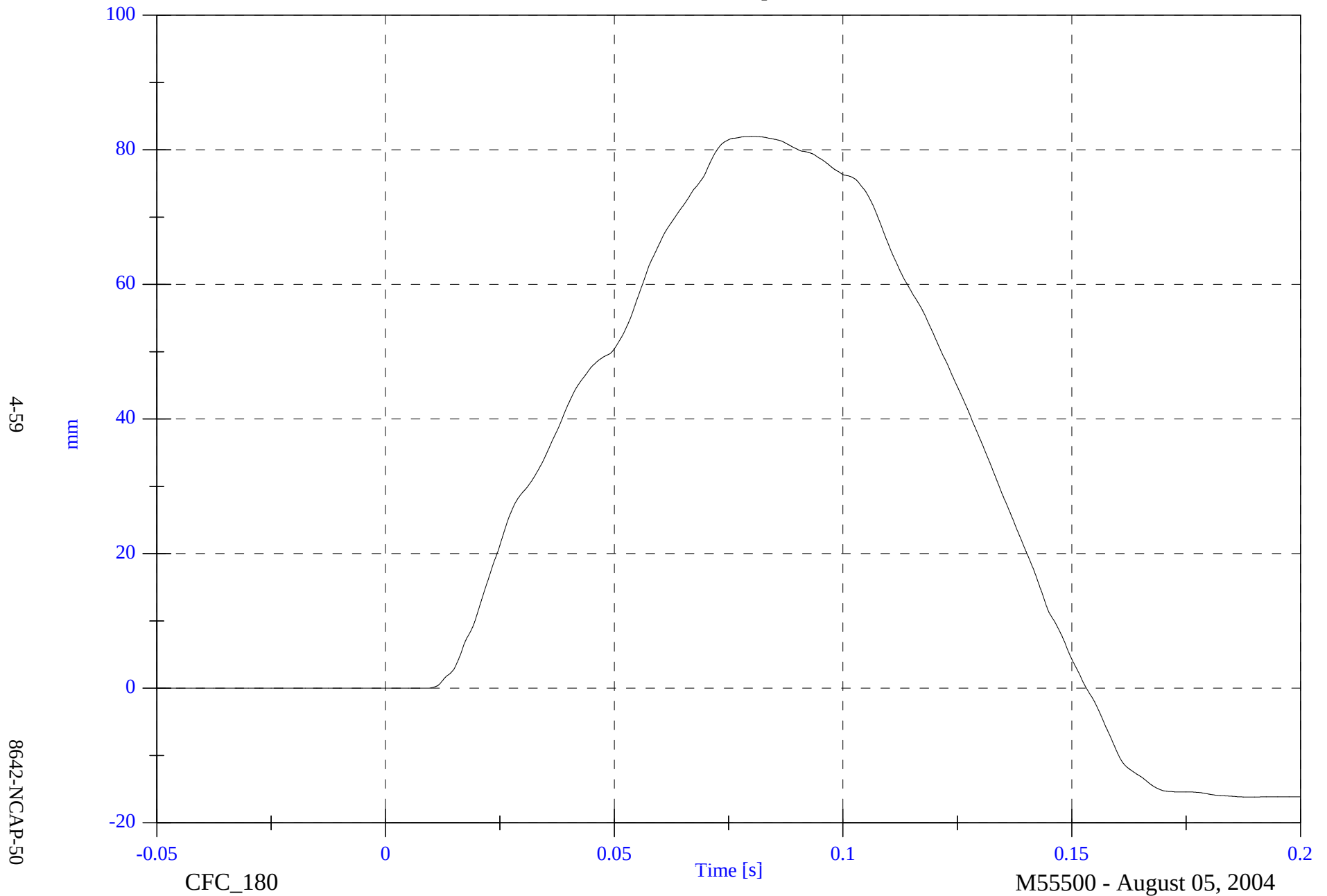


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Torso Spoolout

Max: 82.0 [mm] at 0.080 [s]

Min: -16.2 [mm] at 0.189 [s]

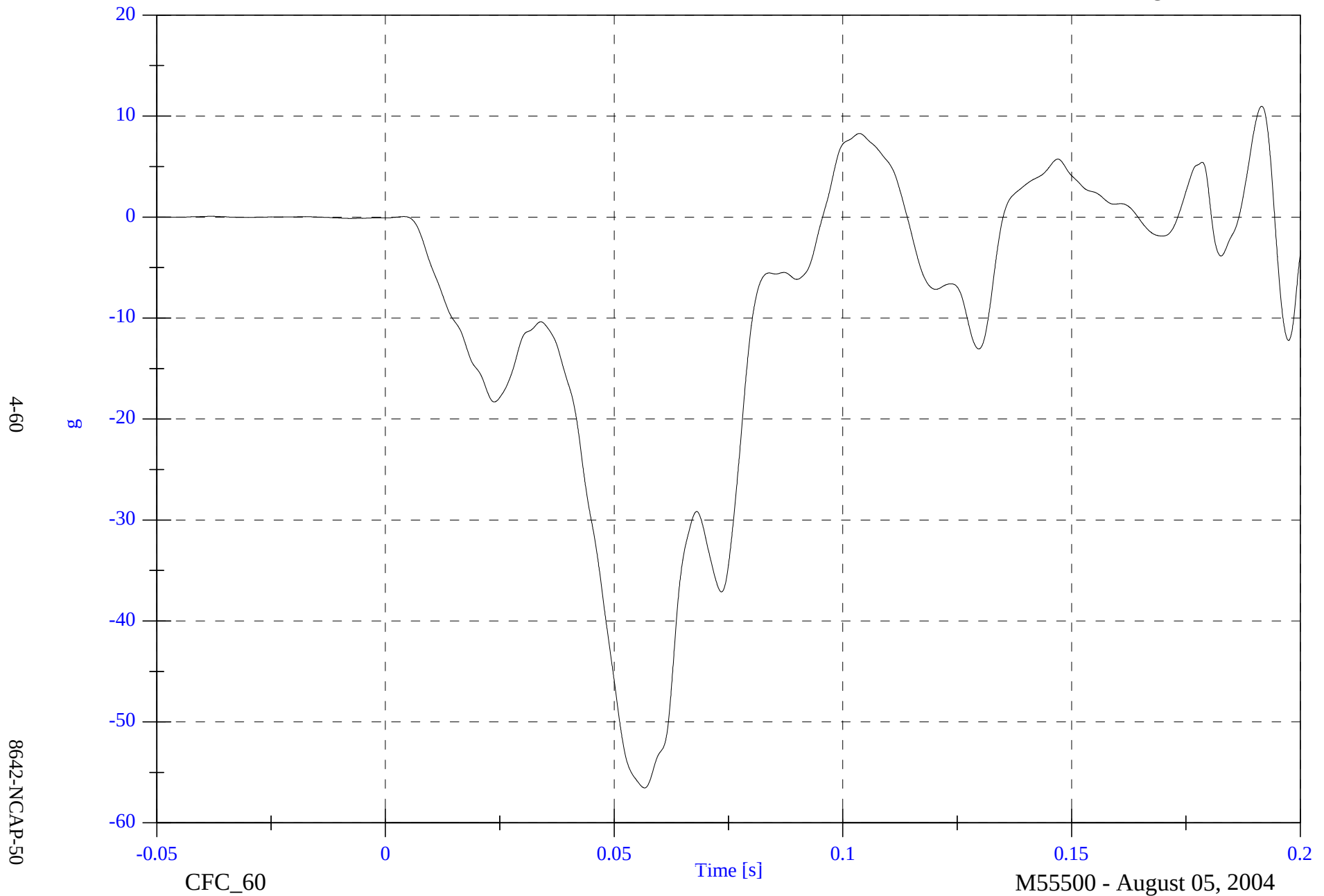


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 CRS x

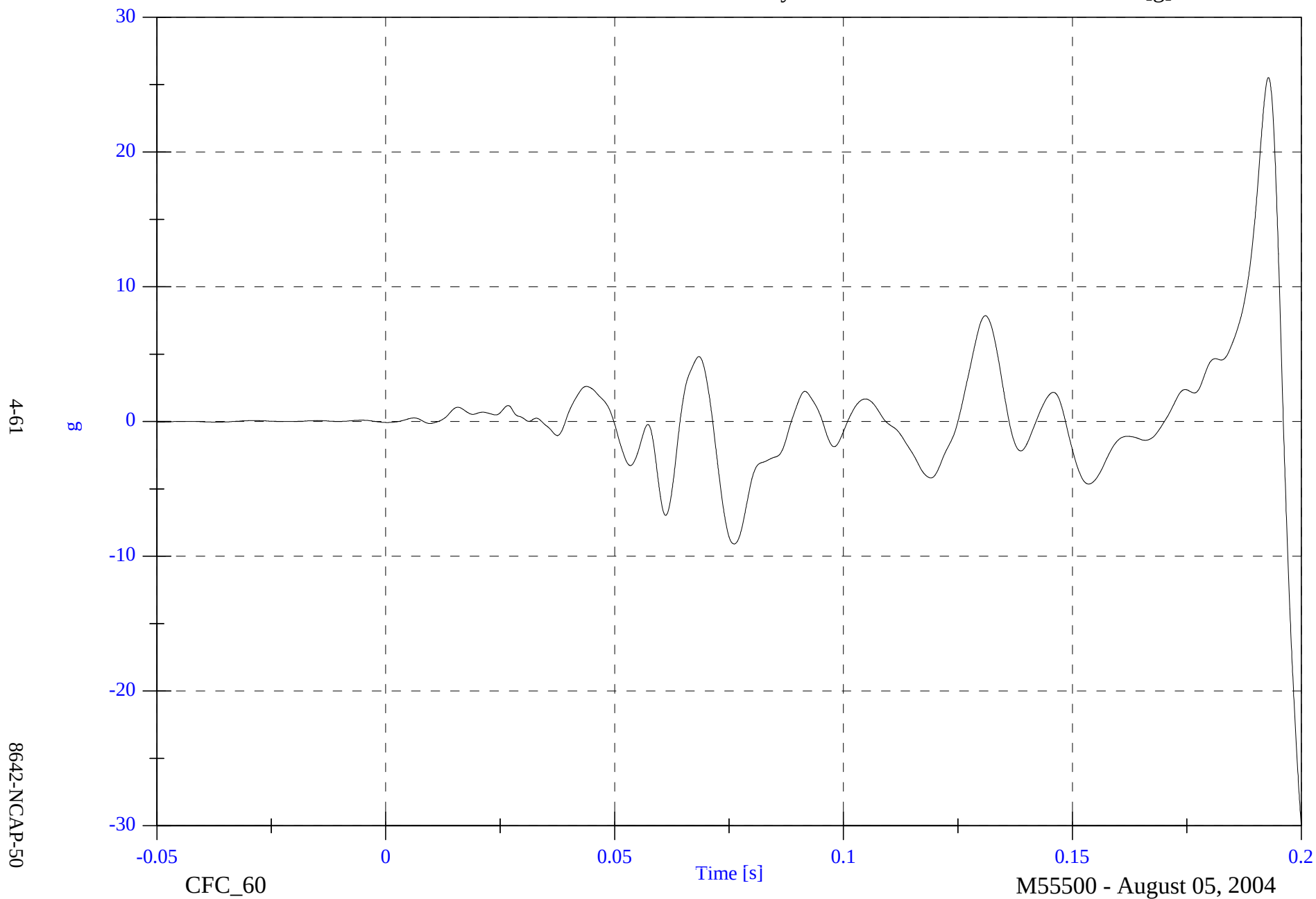
Max: 11.0 [g] at 0.192 [s]

Min: -56.5 [g] at 0.057 [s]



V1P3 CRS y

Min: -29.9 [g] at 0.200 [s]

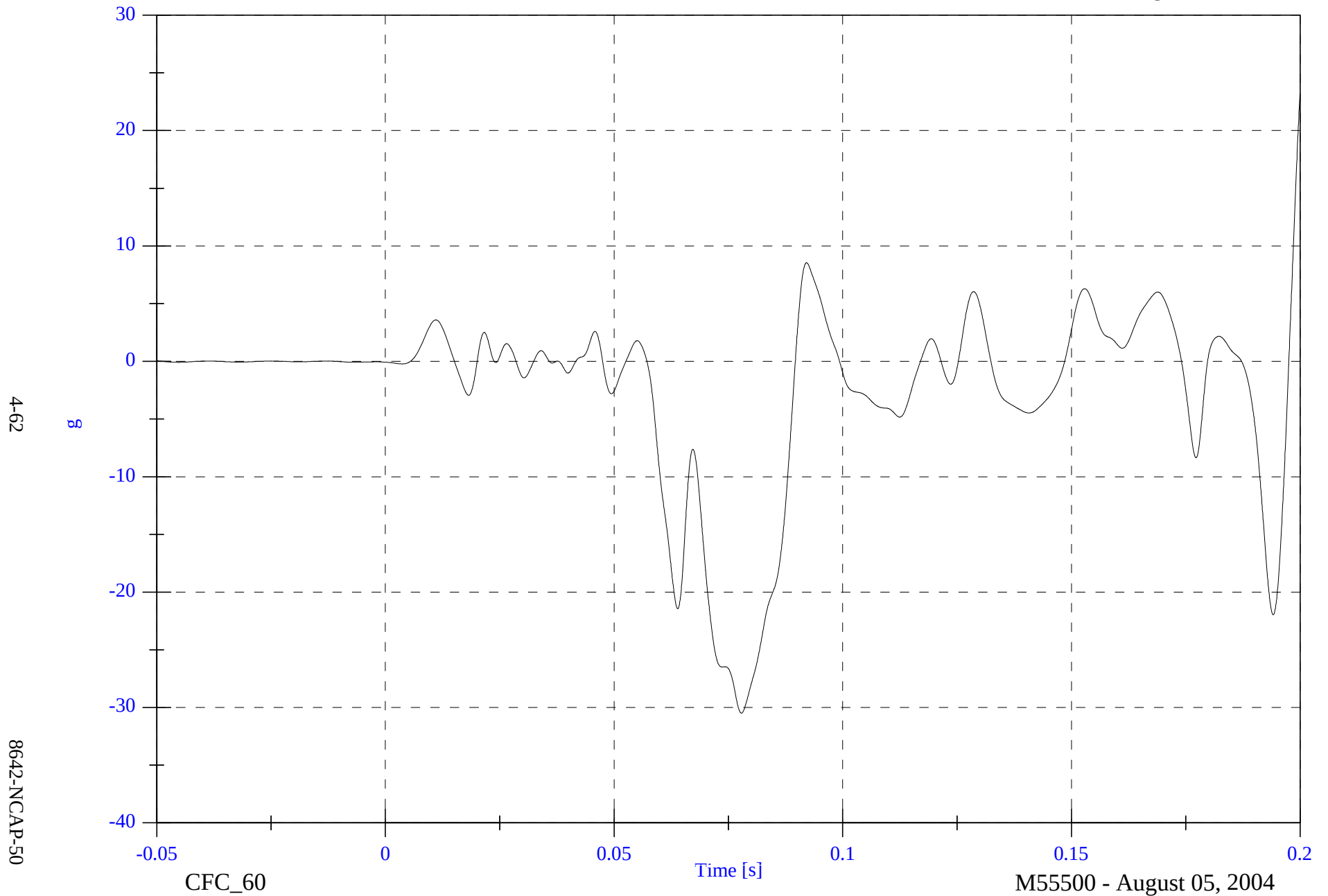


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 CRS z

Max: 23.2 [g] at 0.200 [s]

Min: -30.5 [g] at 0.078 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 CRS Resultant

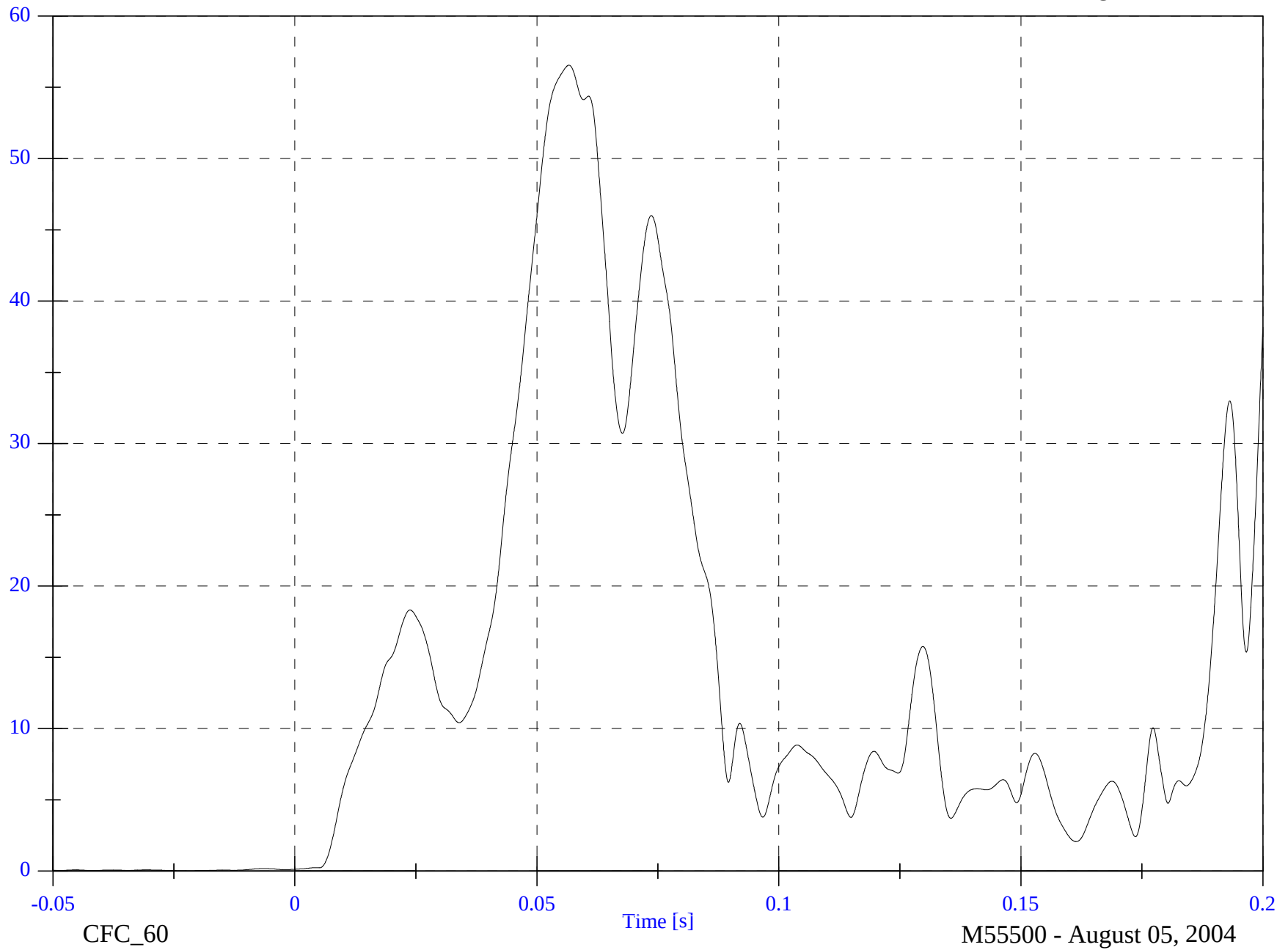
Max: 56.5 [g] at 0.057 [s]

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

4-63

8642-NCAP-50

g

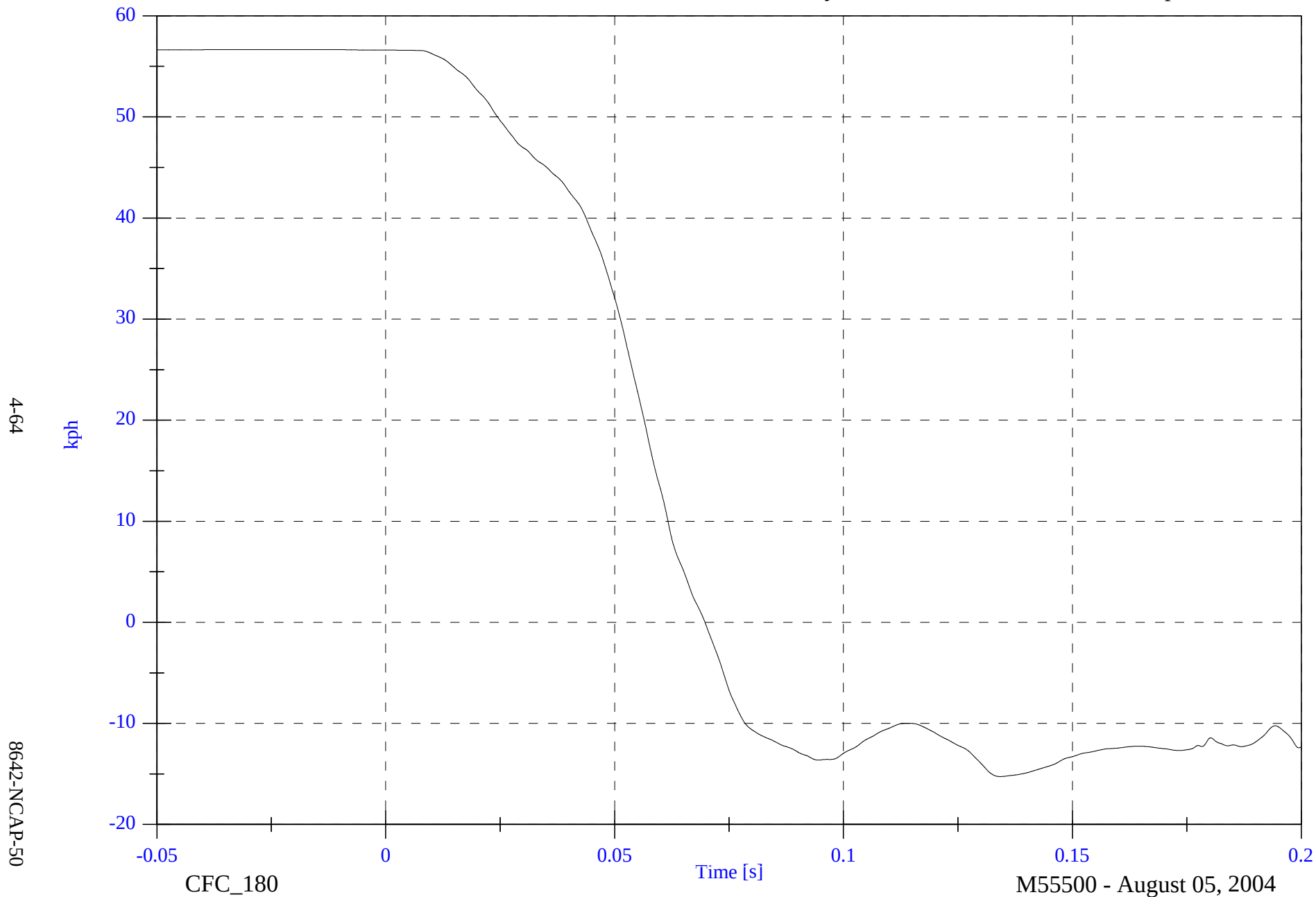


2004 NCAP TEST 14 - 2005 Subaru Outback

Max: 56.7 [kph] at -0.015 [s]

Min: -15.3 [kph] at 0.134 [s]

V1P3 CRS x Velocity

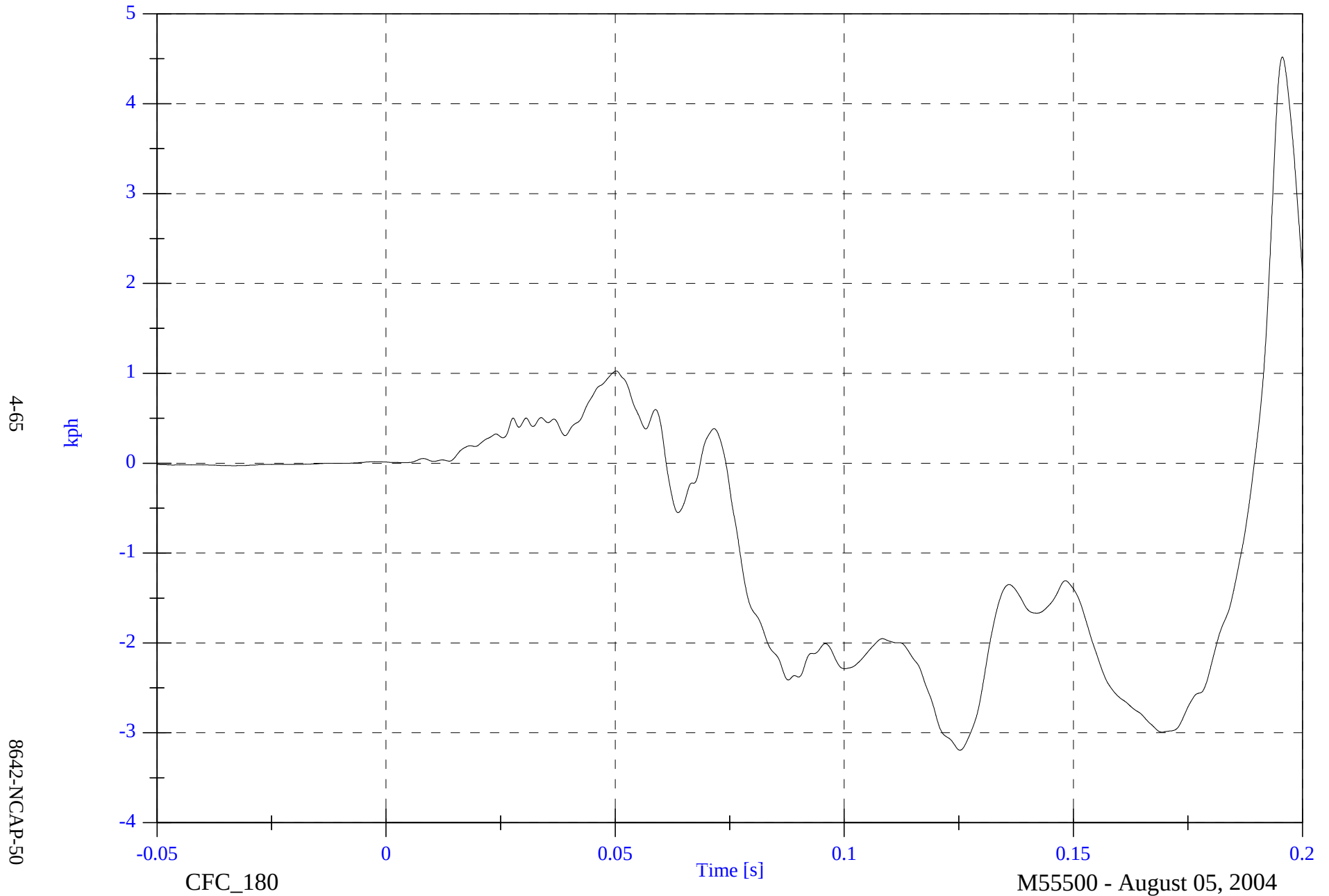


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 CRS y Velocity

Max: 4.5 [kph] at 0.196 [s]

Min: -3.2 [kph] at 0.125 [s]

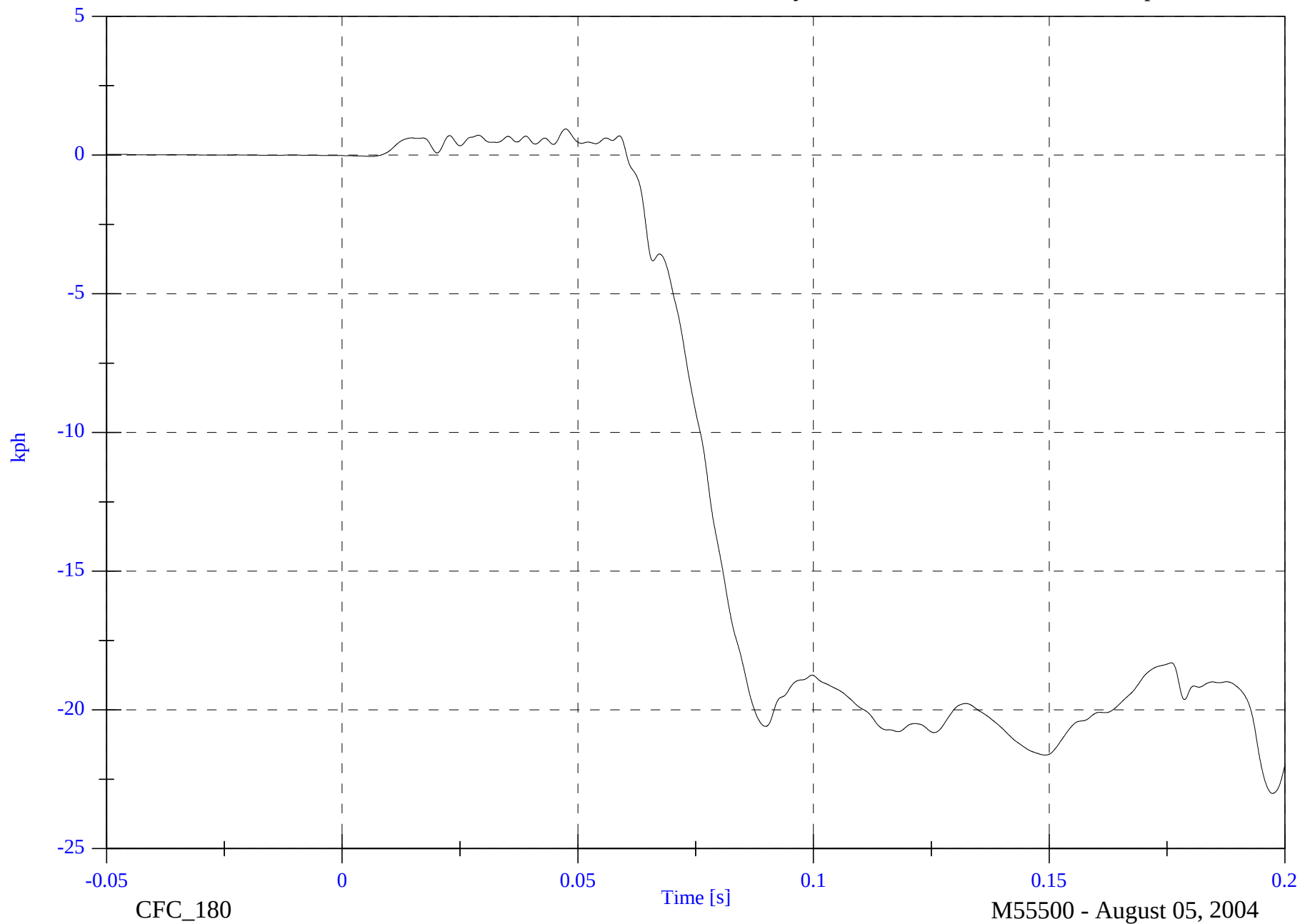


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 CRS z Velocity

Max: 0.9 [kph] at 0.047 [s]

Min: -23.0 [kph] at 0.197 [s]



4-66

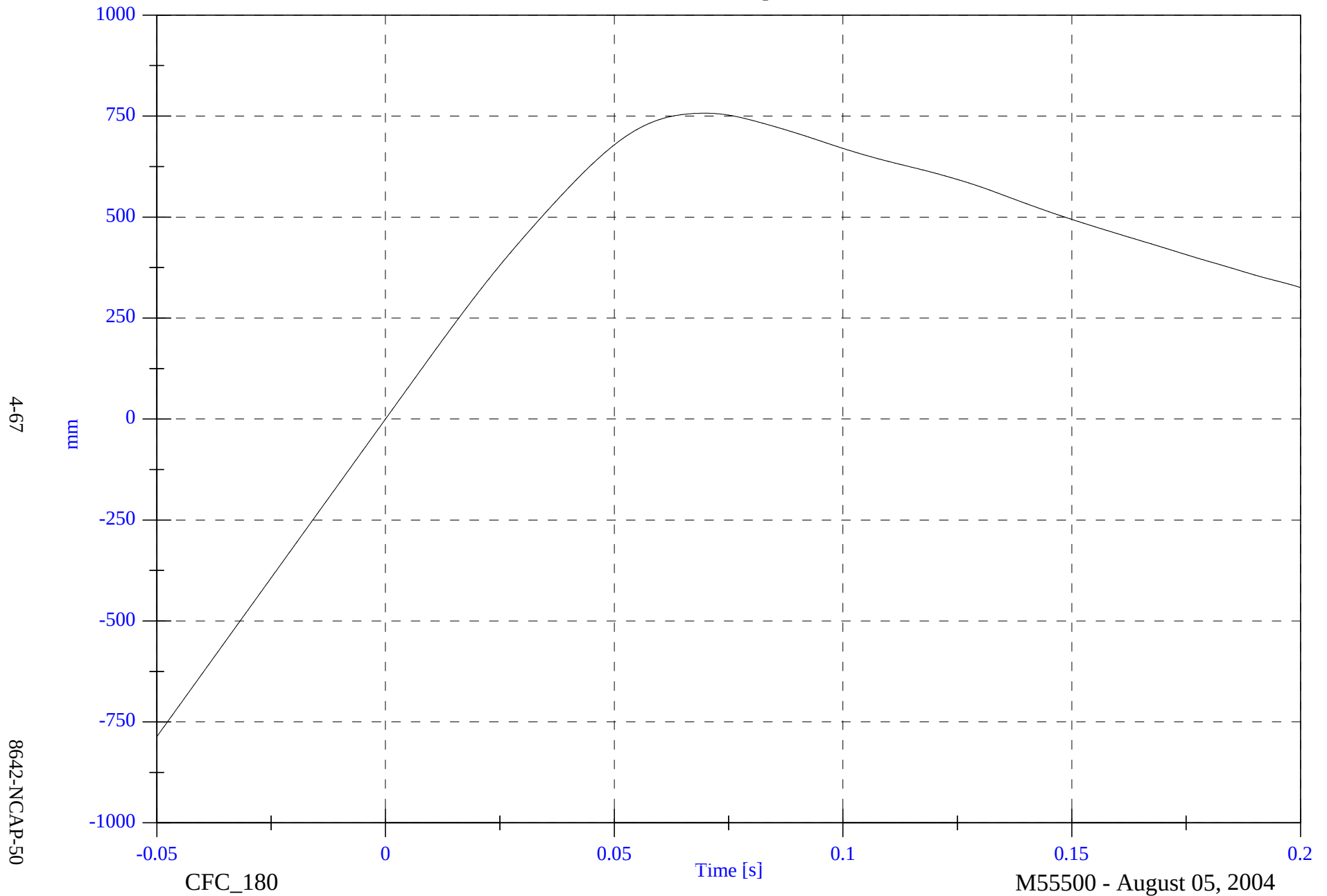
8642-NCAP-50

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 CRS x Displacement

Max: 757.2 [mm] at 0.070 [s]

Min: -786.7 [mm] at -0.050 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 CRS y Displacement

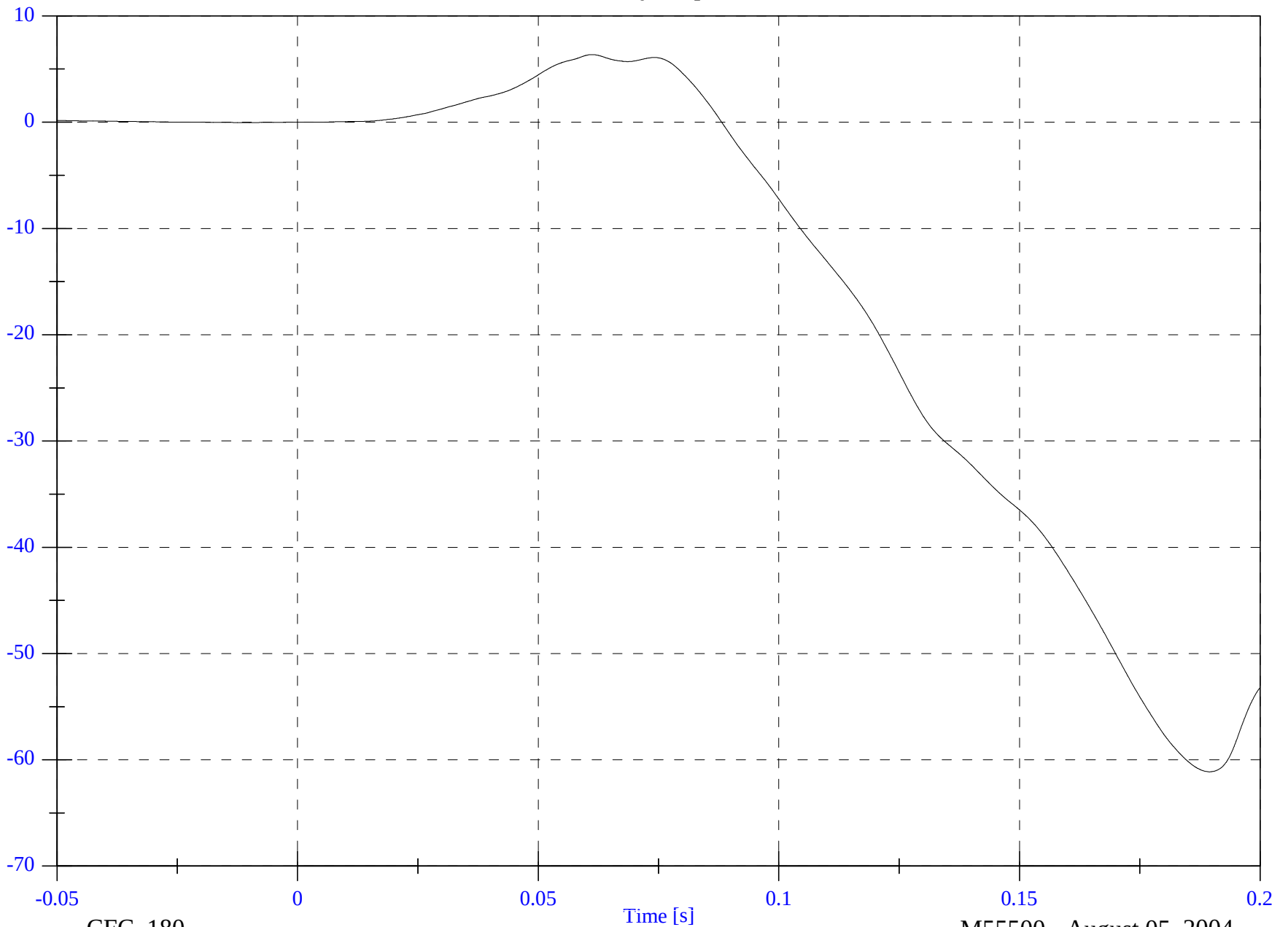
Max: 6.4 [mm] at 0.061 [s]

Min: -61.1 [mm] at 0.189 [s]

4-68

8642-NCAP-50

mm



CFC_180

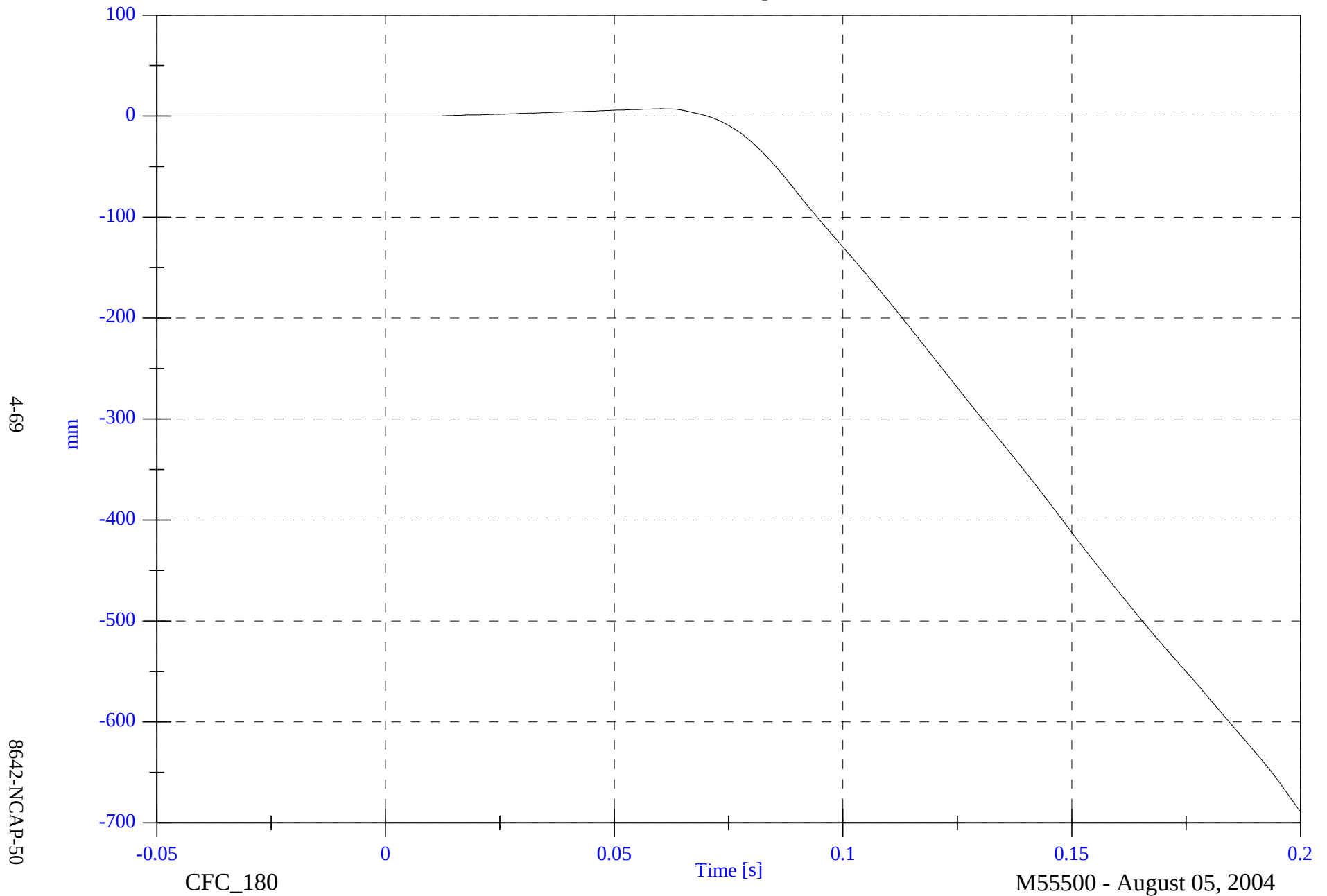
M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P3 CRS z Displacement

Max: 7.3 [mm] at 0.060 [s]

Min: -688.7 [mm] at 0.200 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 CRS x

Max: 33.1 [g] at 0.125 [s]

Min: -45.9 [g] at 0.047 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

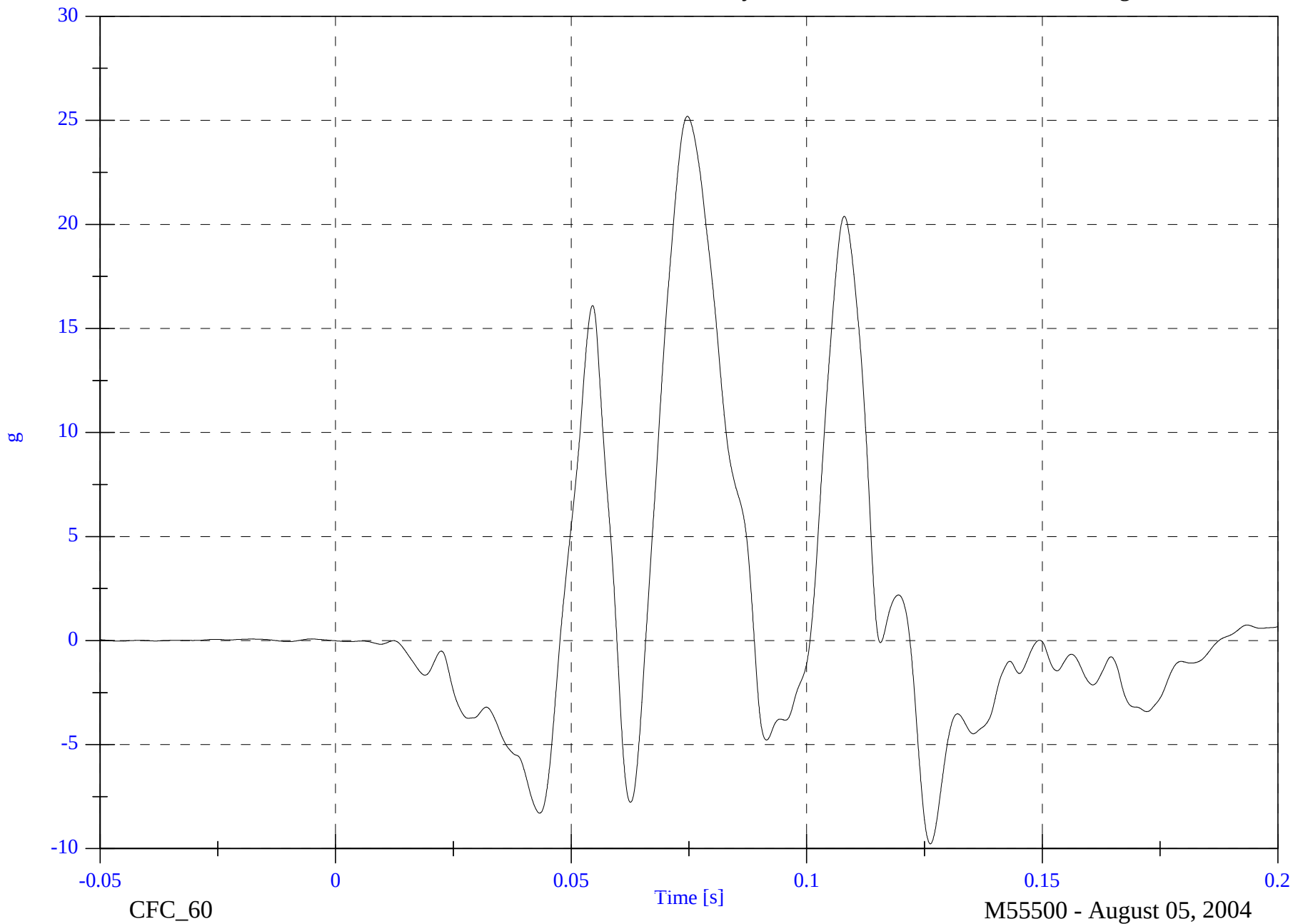
V1P4 CRS y

Max: 25.2 [g] at 0.075 [s]

Min: -9.8 [g] at 0.126 [s]

4-71

8642-NCAP-50

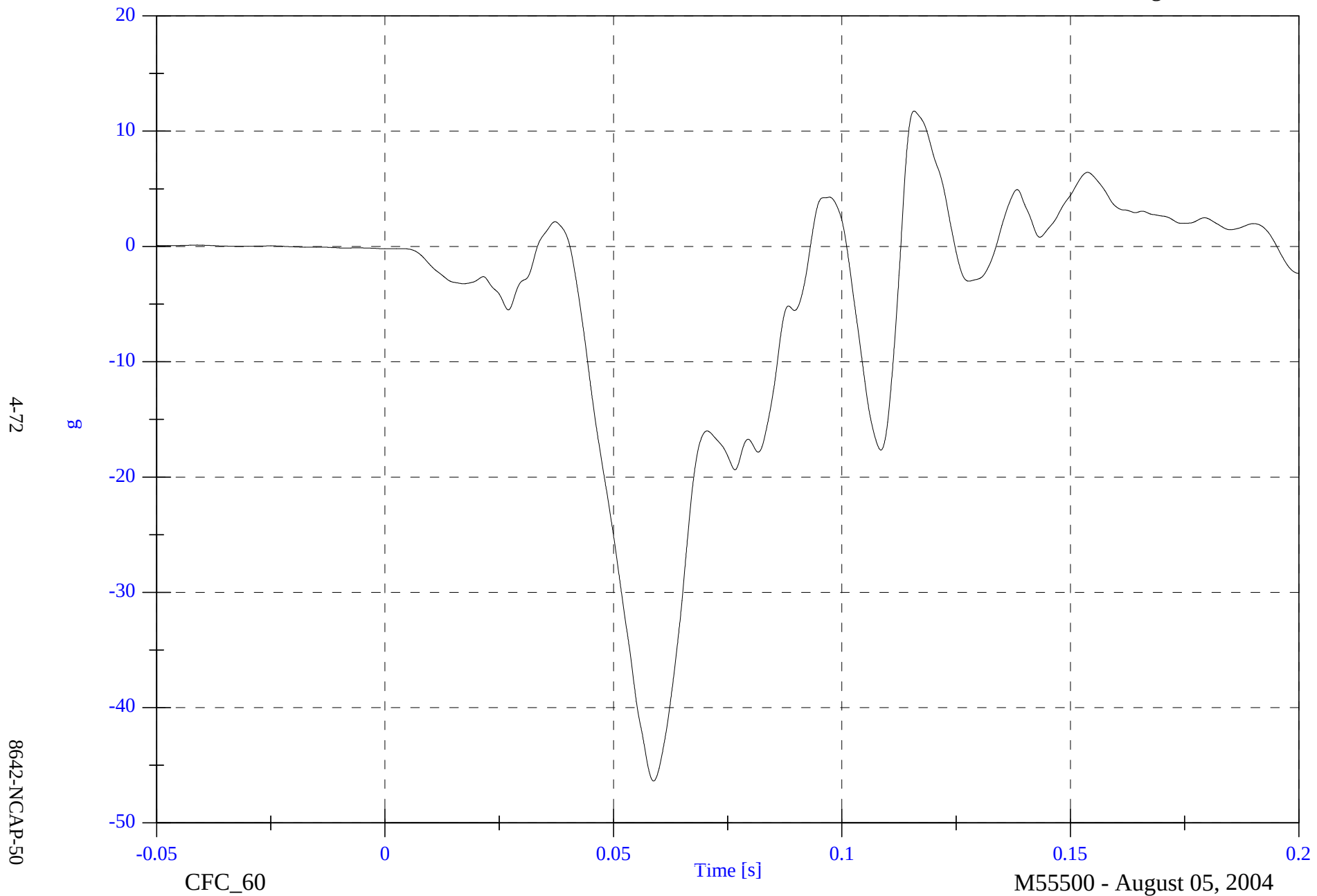


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 CRS z

Max: 11.7 [g] at 0.116 [s]

Min: -46.4 [g] at 0.059 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

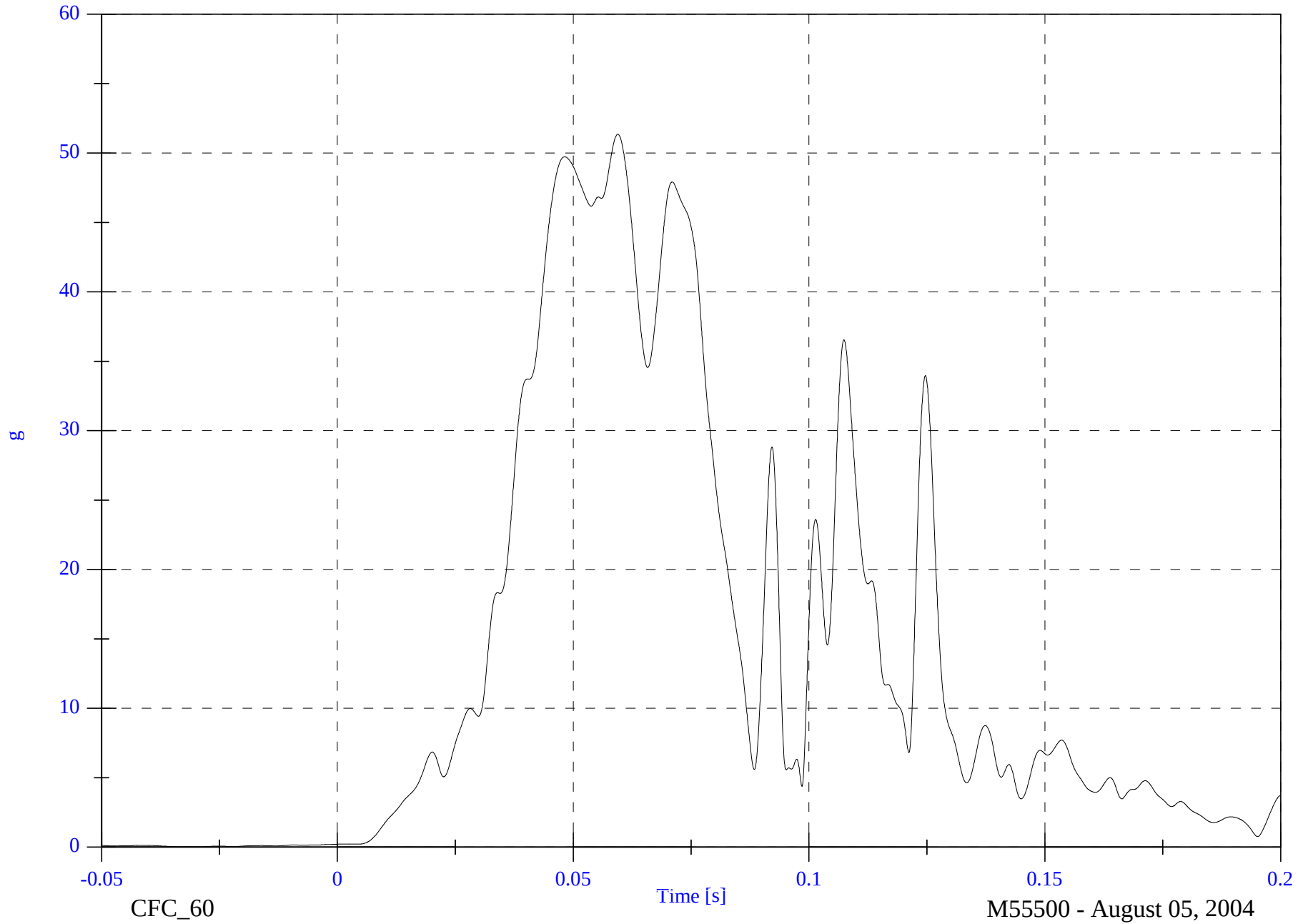
V1P4 CRS Resultant

Max: 51.4 [g] at 0.059 [s]

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

4-73

8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

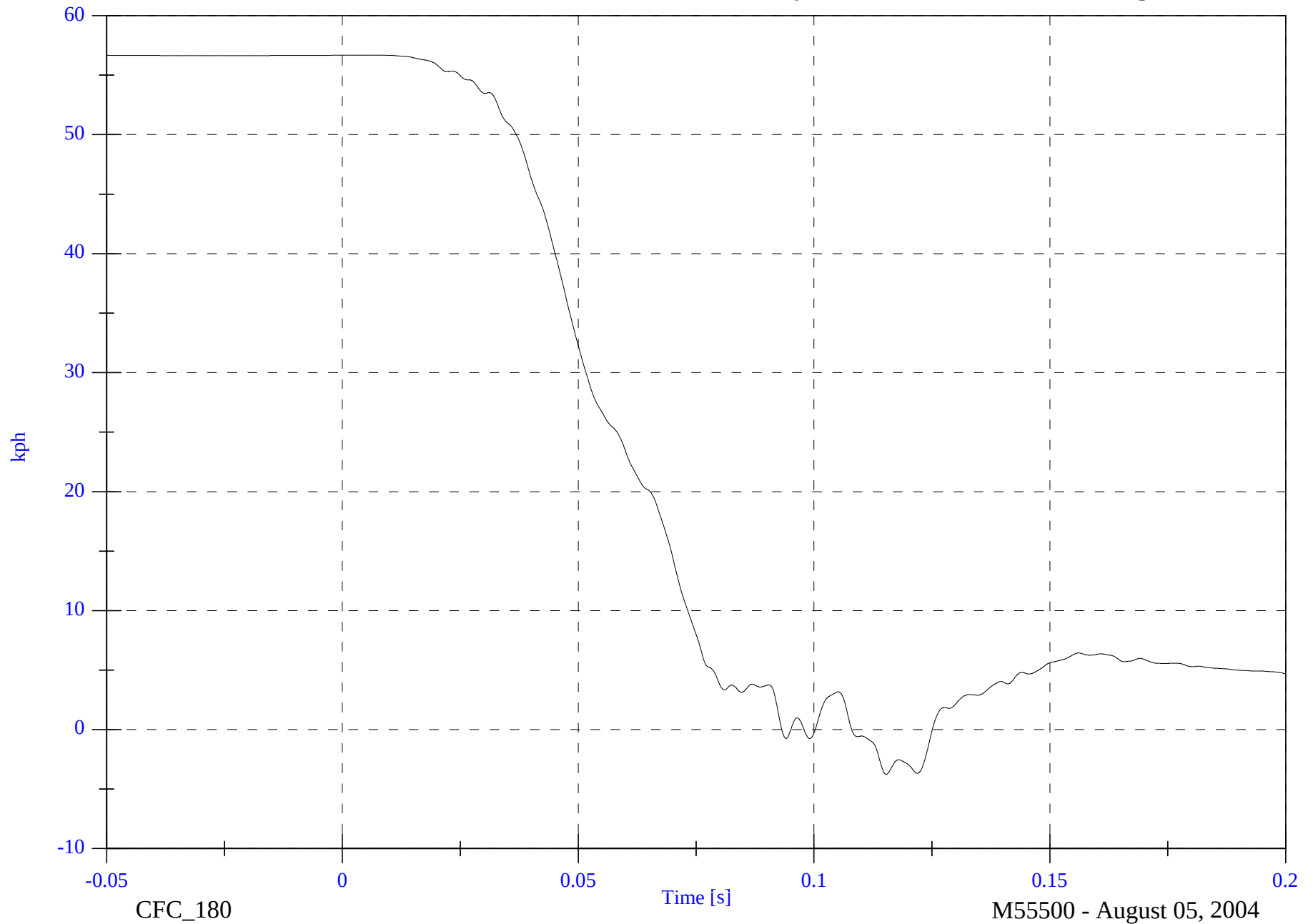
V1P4 CRS x Velocity

Max: 56.7 [kph] at 0.006 [s]

Min: -3.8 [kph] at 0.115 [s]

4-74

8642-NCAP-50

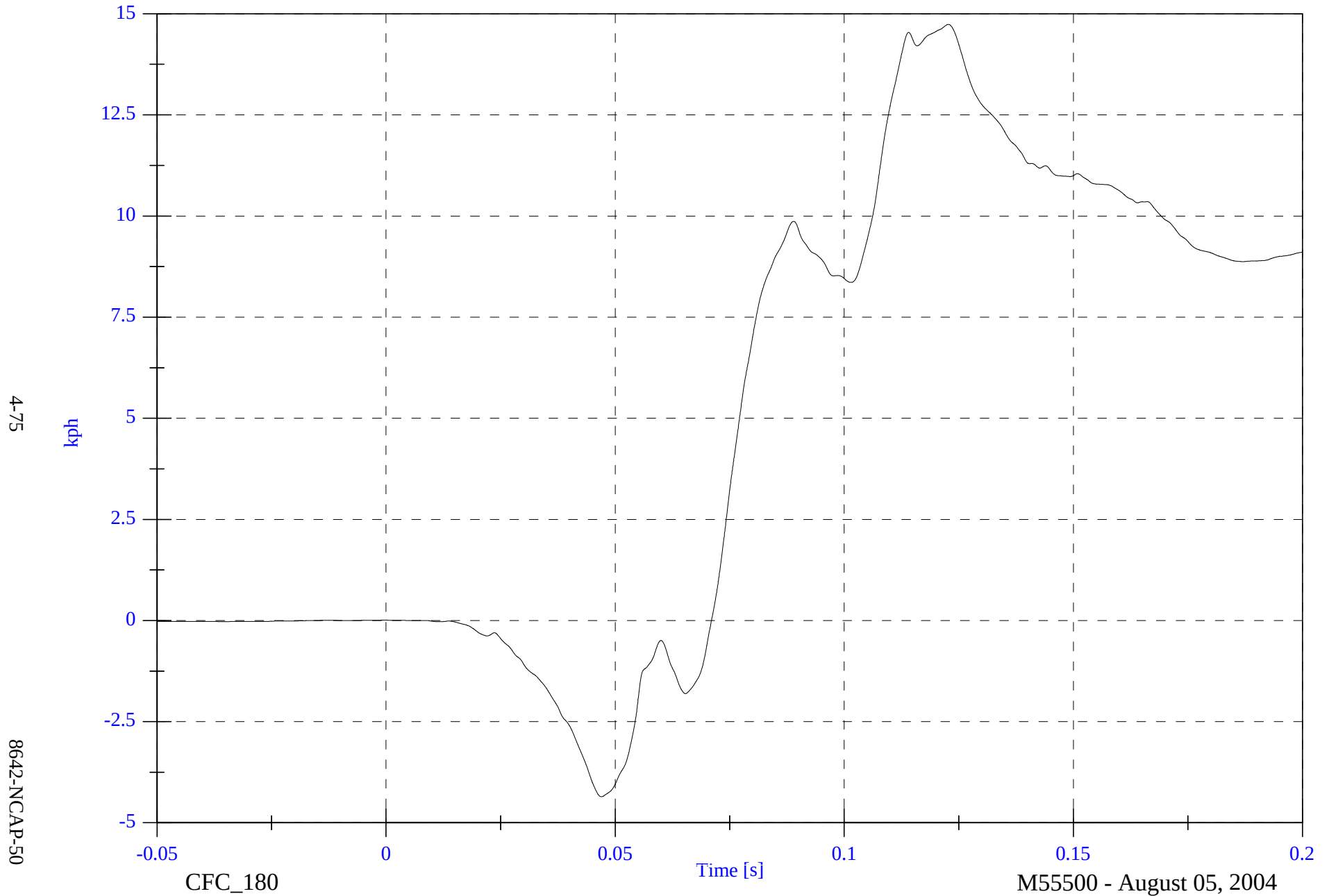


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 CRS y Velocity

Max: 14.7 [kph] at 0.123 [s]

Min: -4.4 [kph] at 0.047 [s]

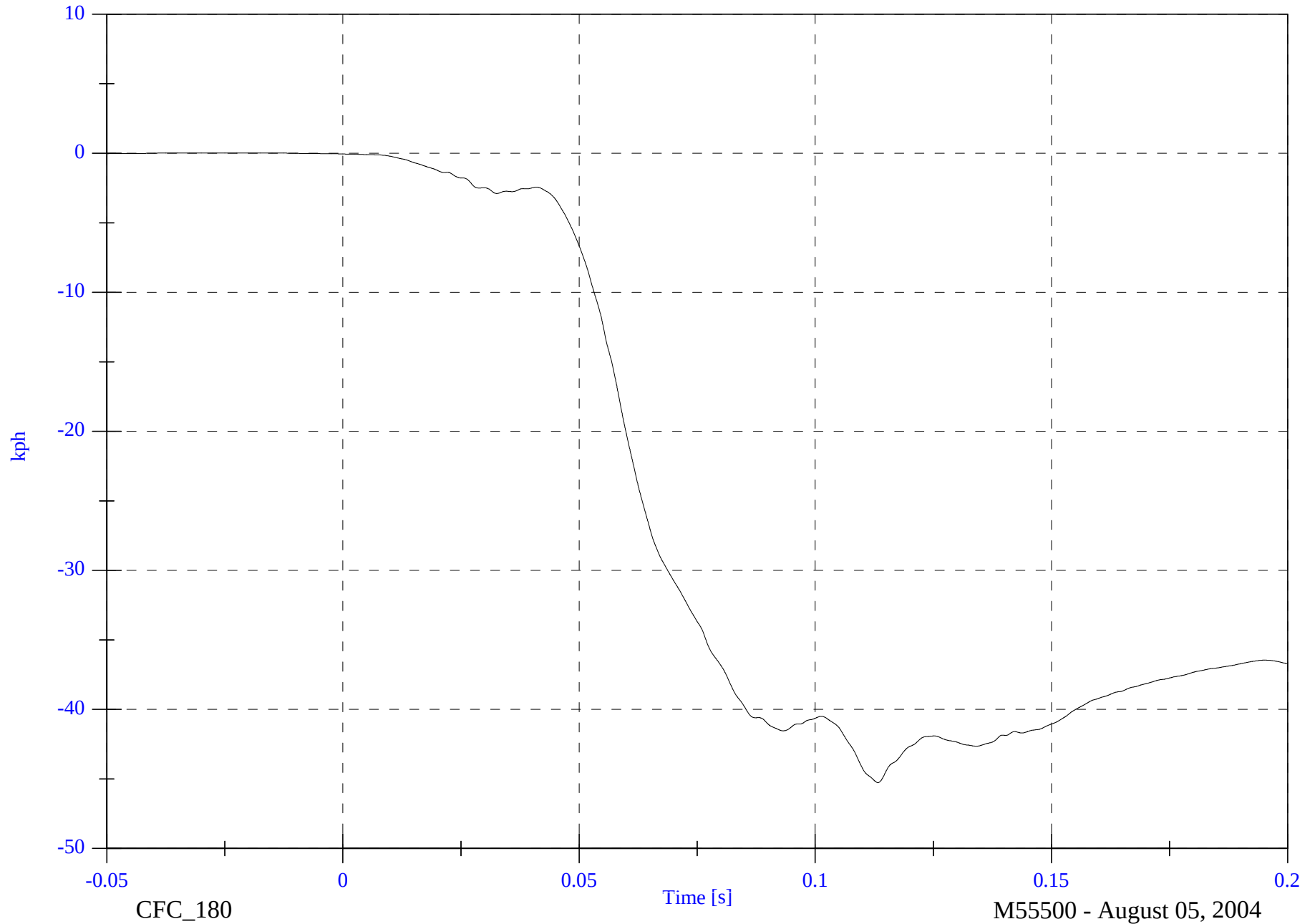


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 CRS z Velocity

Max: 0.0 [kph] at -0.022 [s]

Min: -45.3 [kph] at 0.113 [s]



4-76

8642-NCAP-50

CFC_180

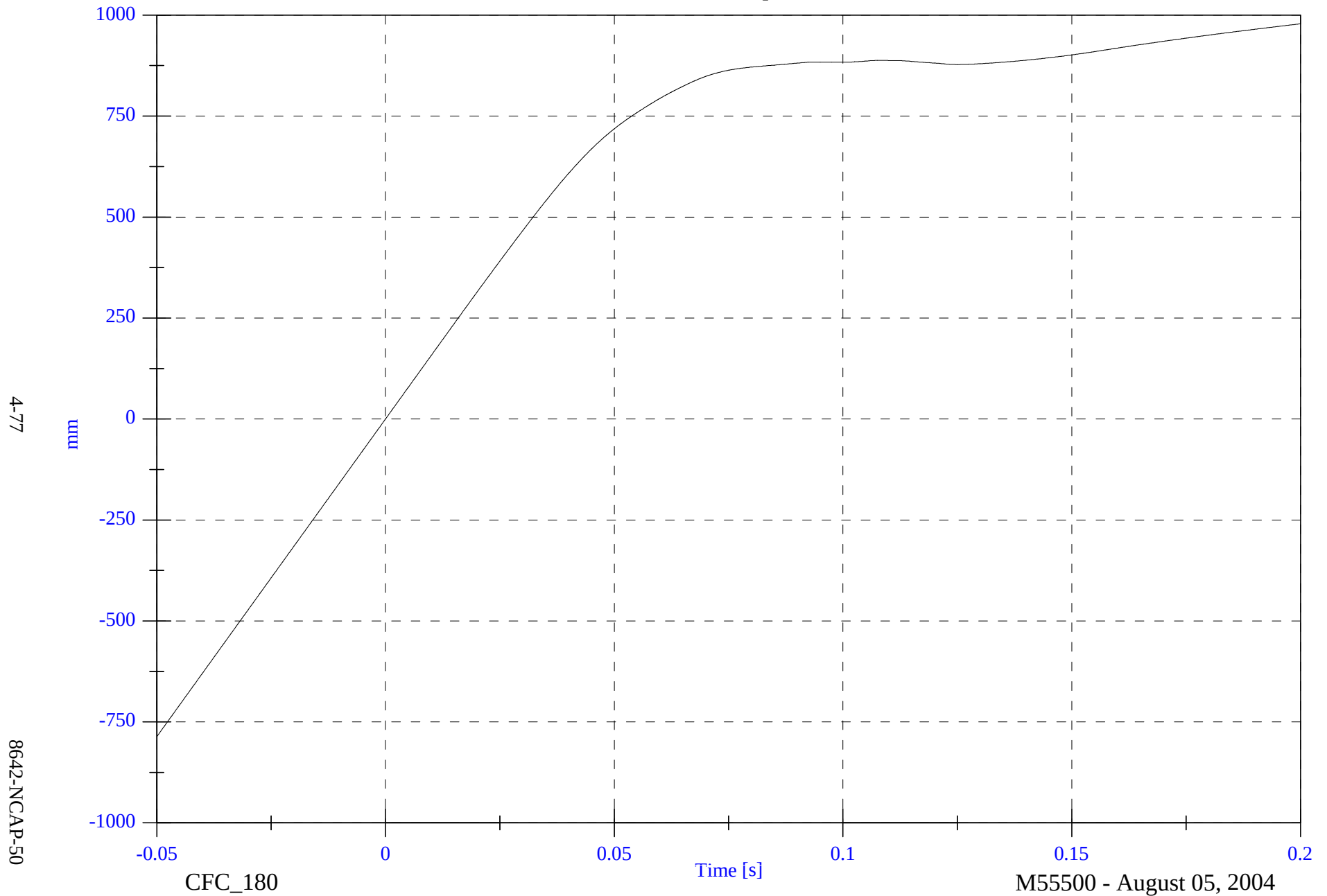
M55500 - August 05, 2004

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 CRS x Displacement

Max: 978.5 [mm] at 0.200 [s]

Min: -786.7 [mm] at -0.050 [s]



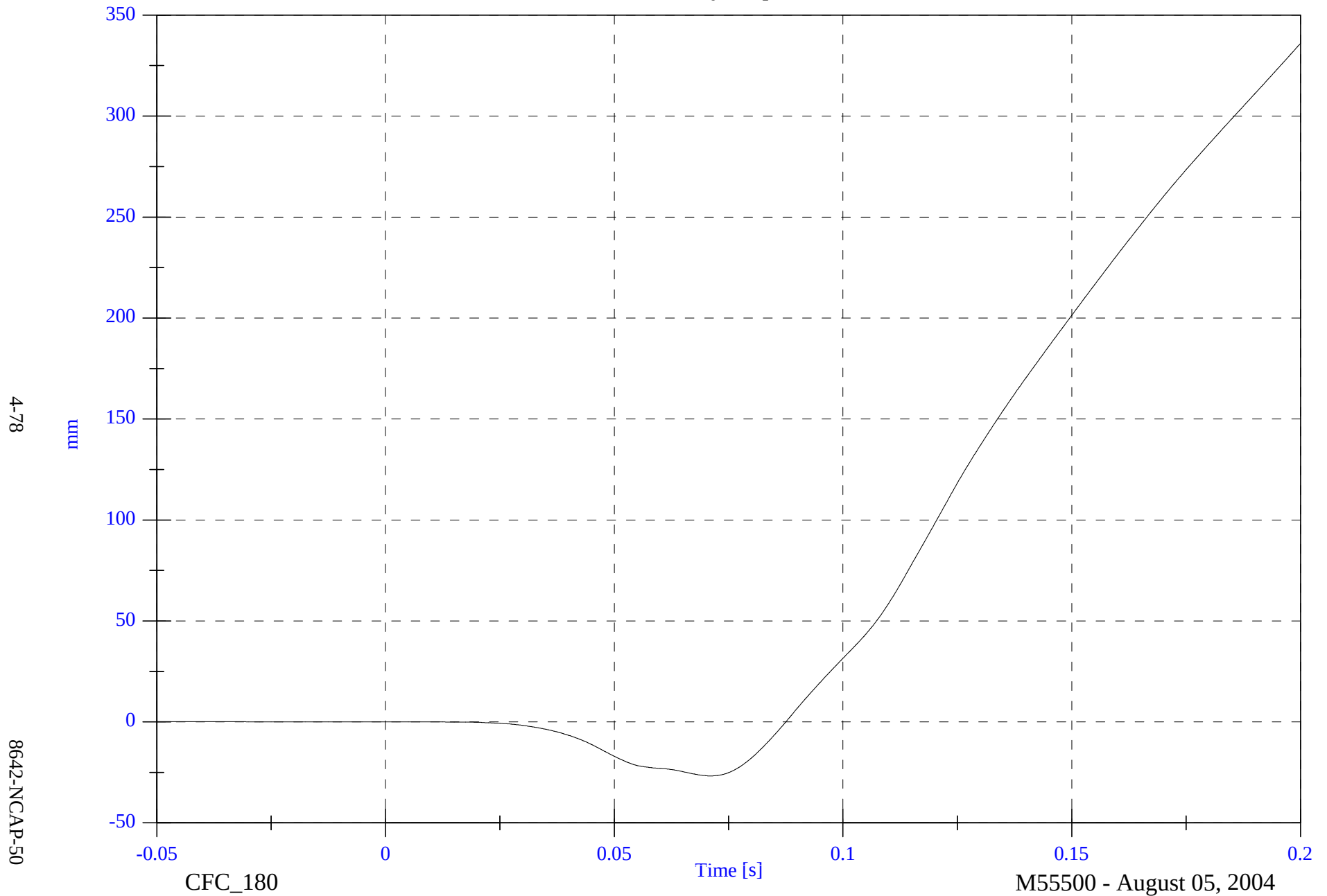
8642-NCAP-50

2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 CRS y Displacement

Max: 335.9 [mm] at 0.200 [s]

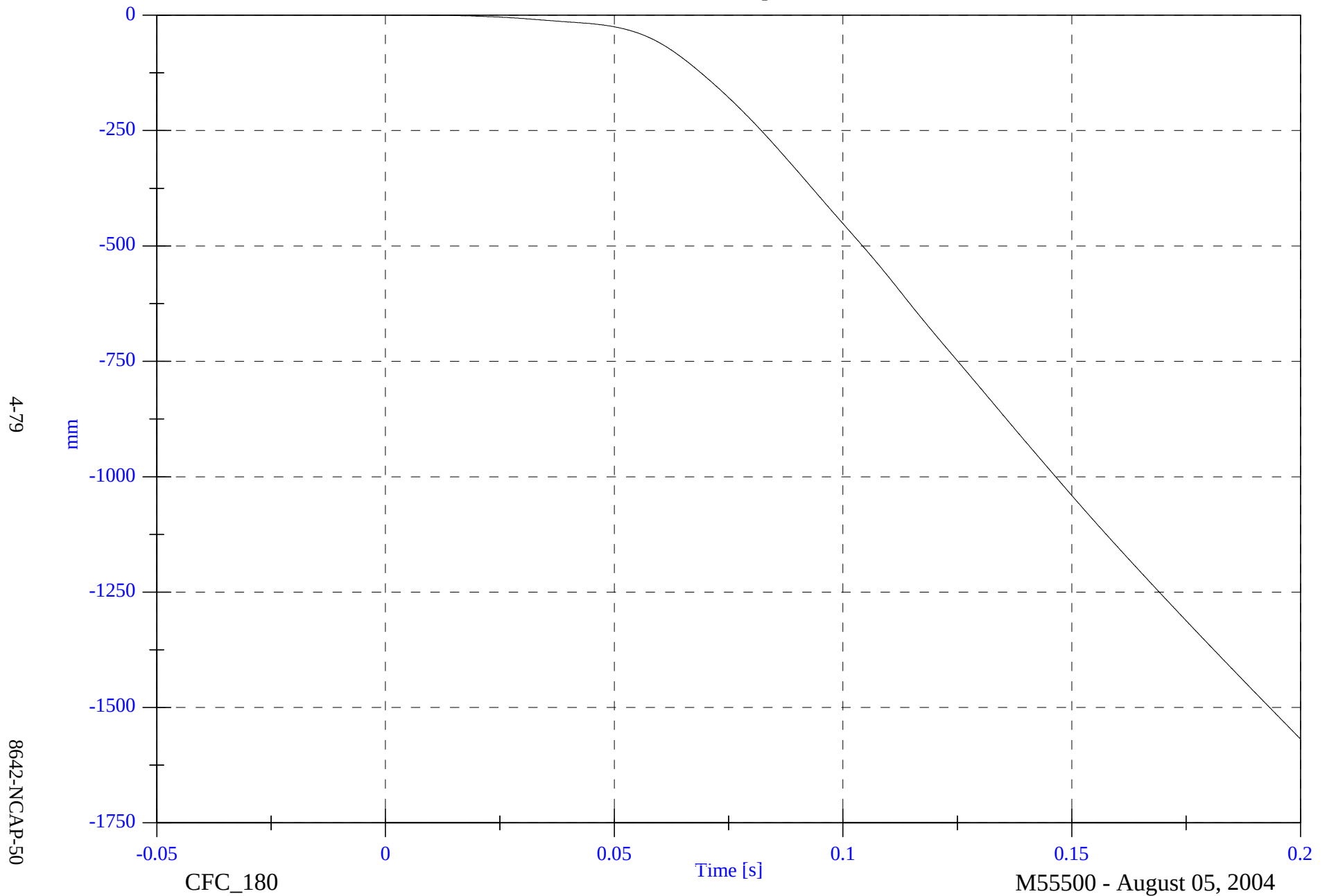
Min: -26.7 [mm] at 0.071 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 CRS z Displacement

Max: 0.1 [mm] at -0.010 [s]
Min: -1568.0 [mm] at 0.200 [s]

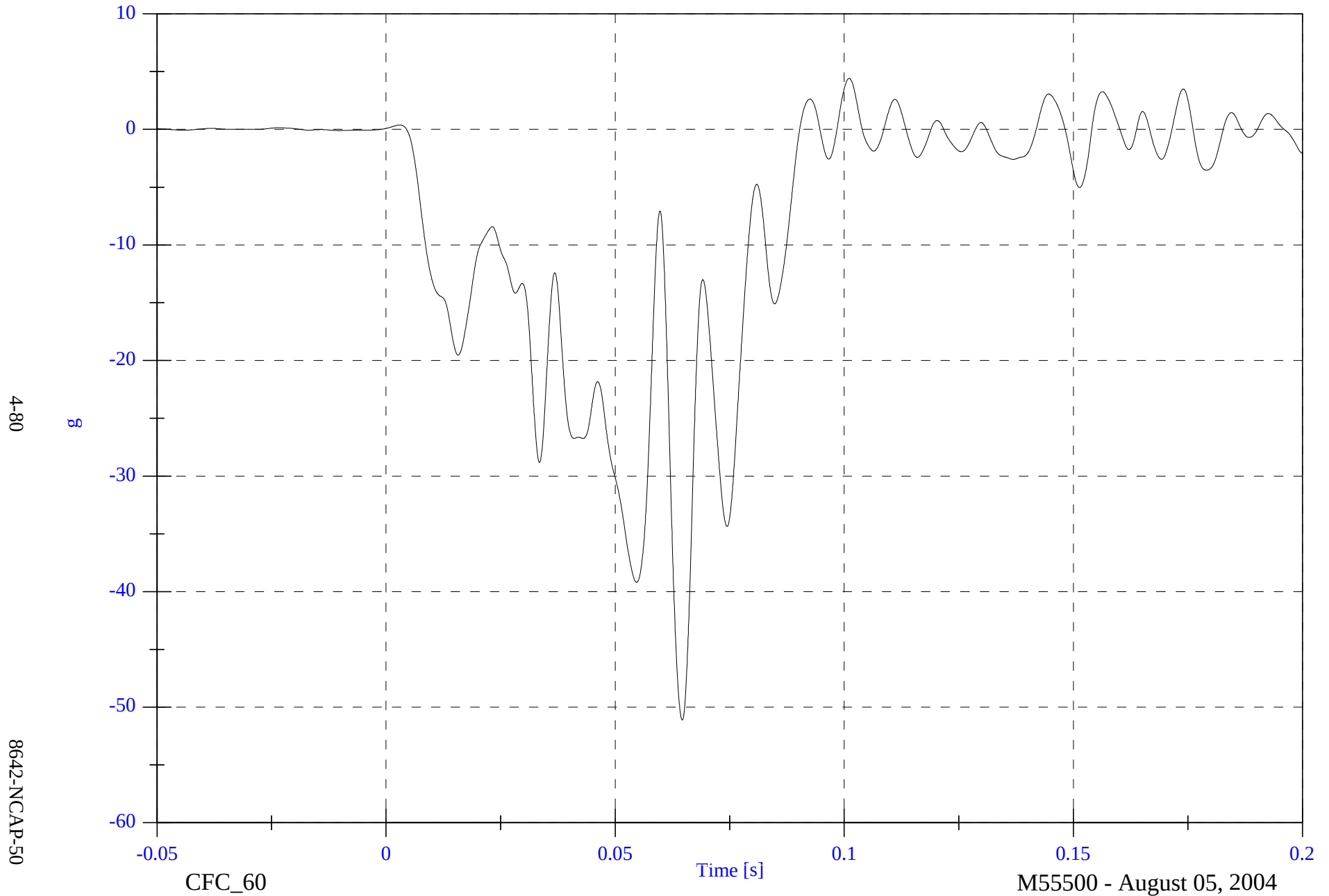


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Seat Back x

Max: 4.4 [g] at 0.101 [s]

Min: -51.1 [g] at 0.065 [s]

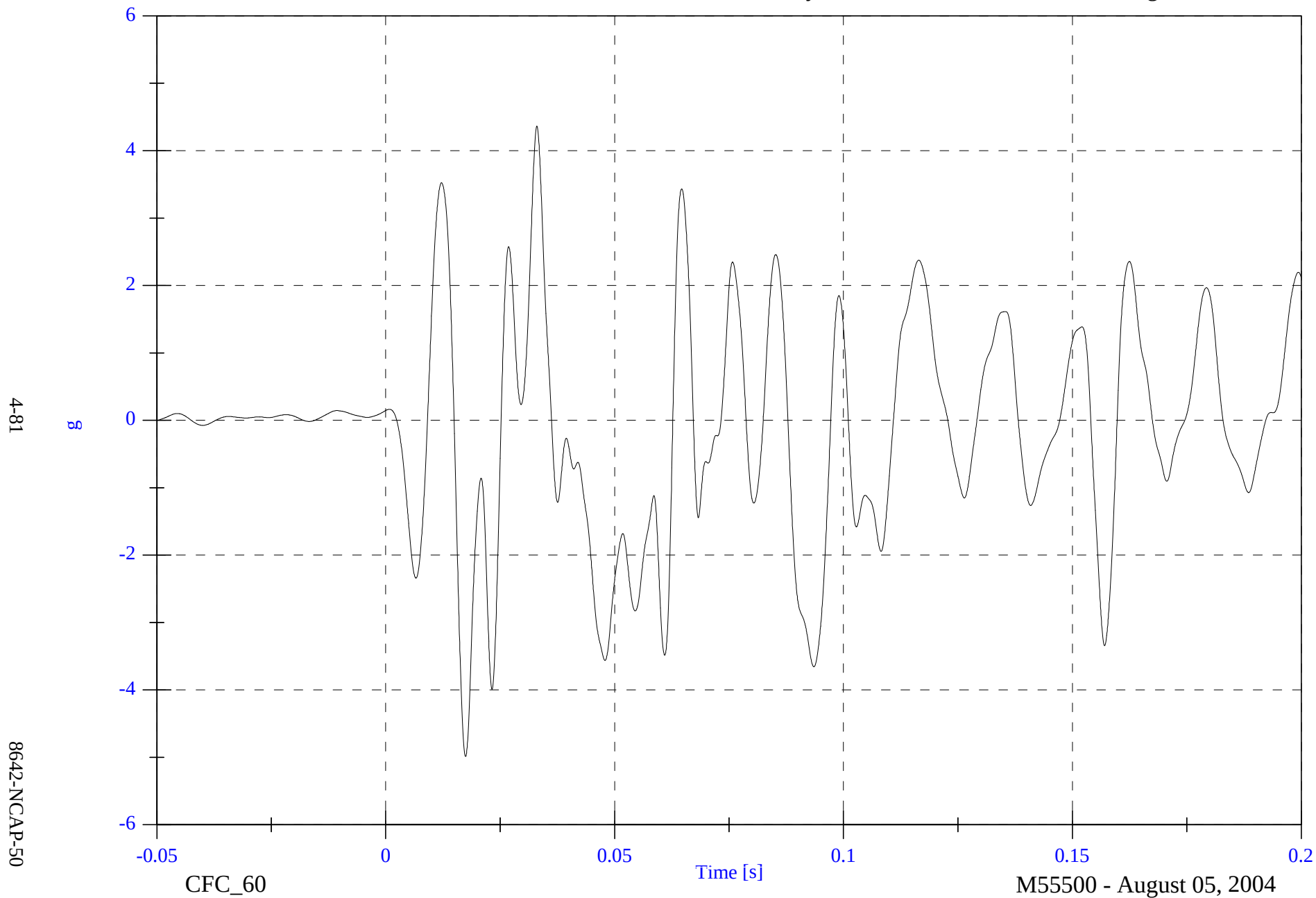


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Seat Back y

Max: 4.4 [g] at 0.033 [s]

Min: -5.0 [g] at 0.017 [s]

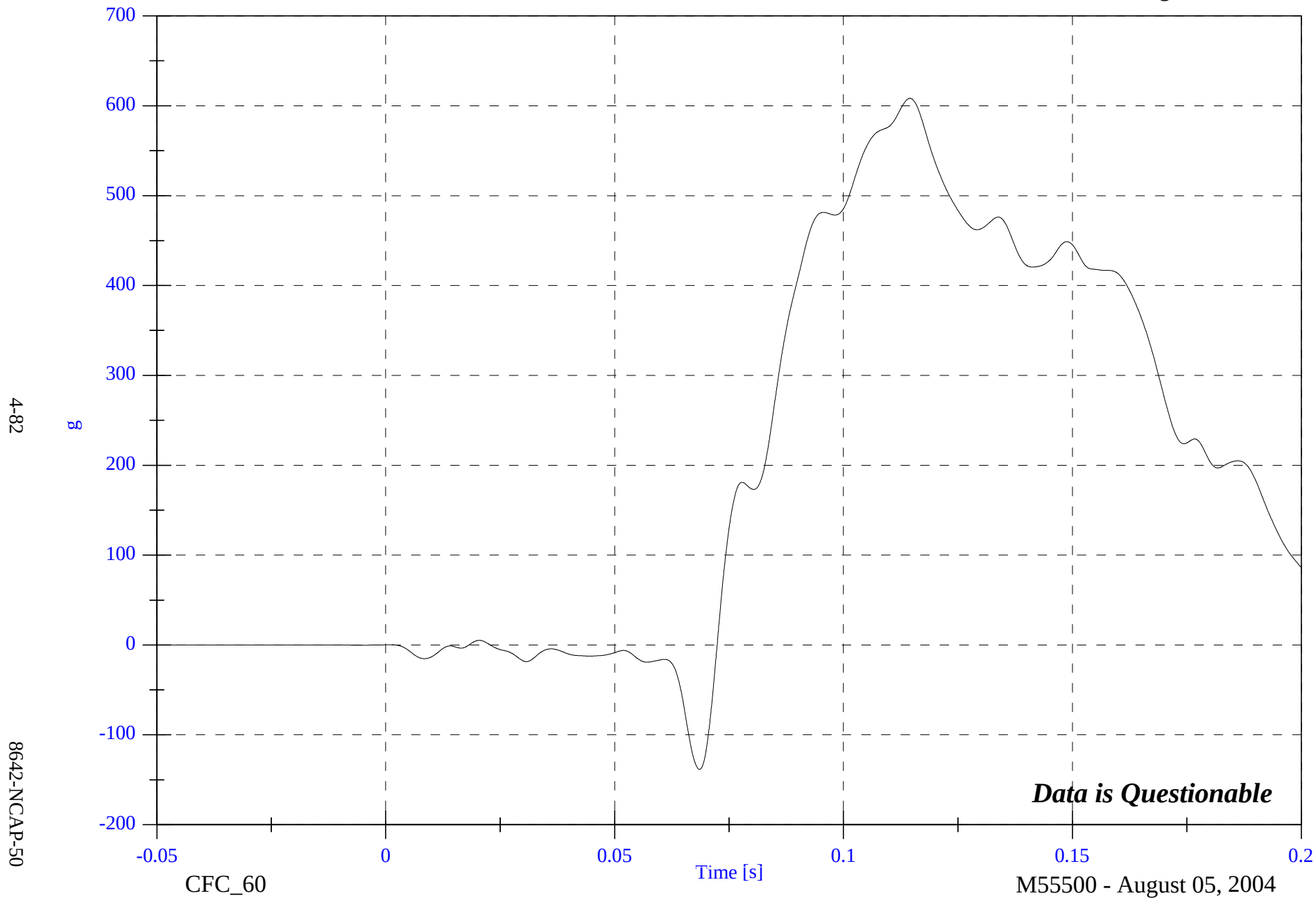


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Seat Back z

Max: 608.2 [g] at 0.114 [s]

Min: -138.5 [g] at 0.069 [s]



2004 NCAP TEST 14 - 2005 Subaru Outback

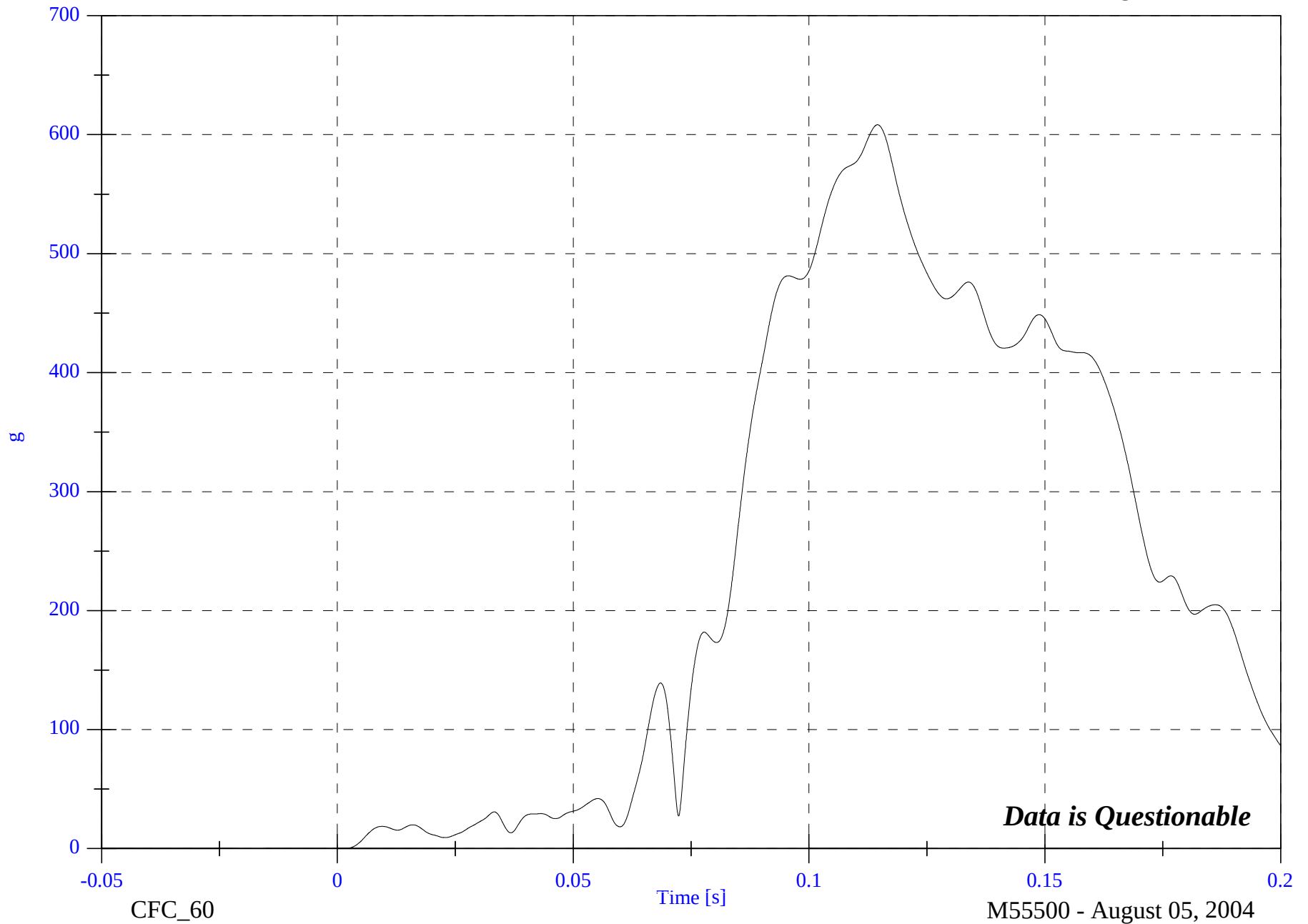
V1P4 Seat Back Resultant

Max: 608.2 [g] at 0.114 [s]

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

4-83

8642-NCAP-50



2004 NCAP TEST 14 - 2005 Subaru Outback

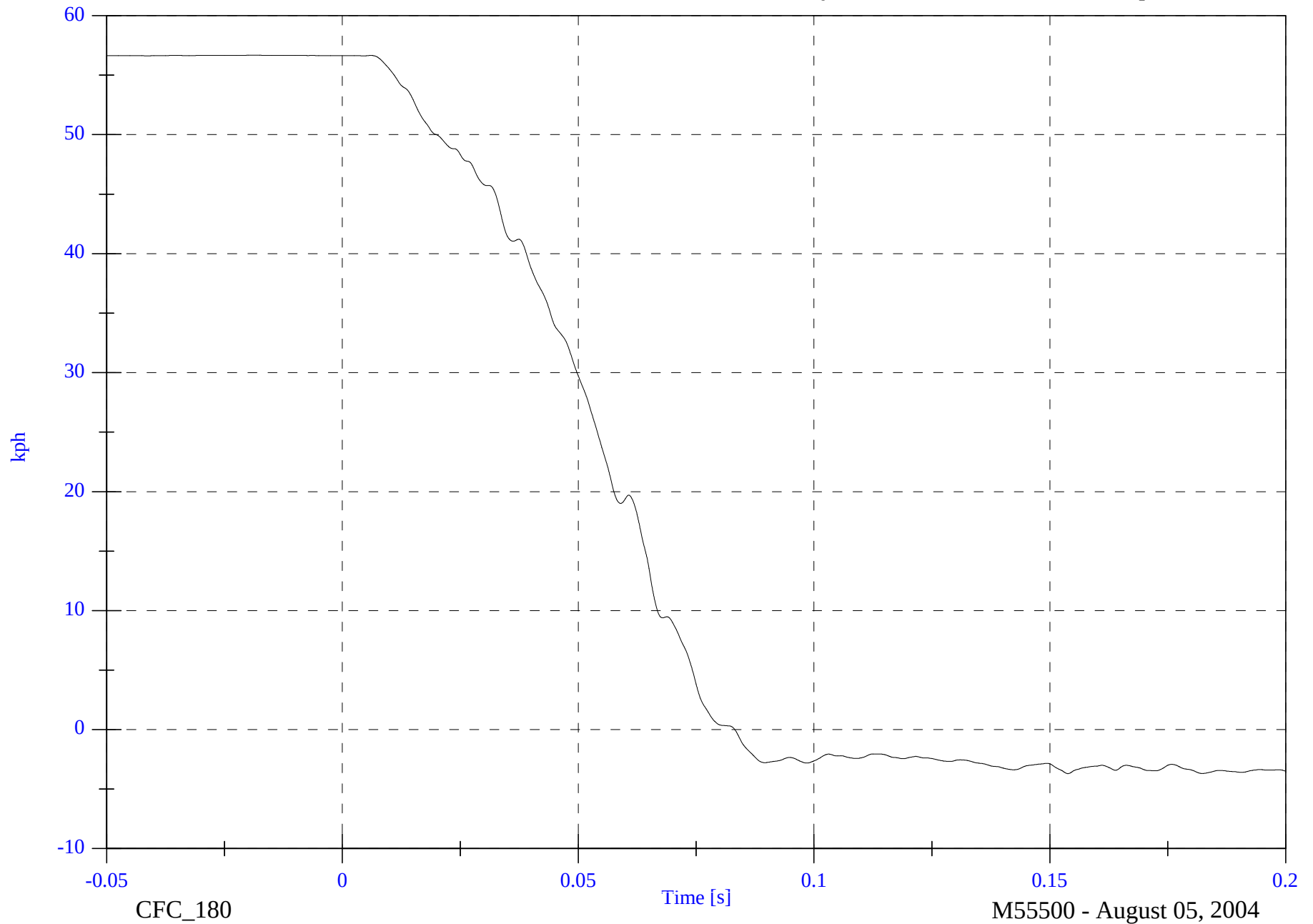
V1P4 Seat Back x Velocity

Max: 56.7 [kph] at -0.019 [s]

Min: -3.7 [kph] at 0.154 [s]

4-84

8642-NCAP-50

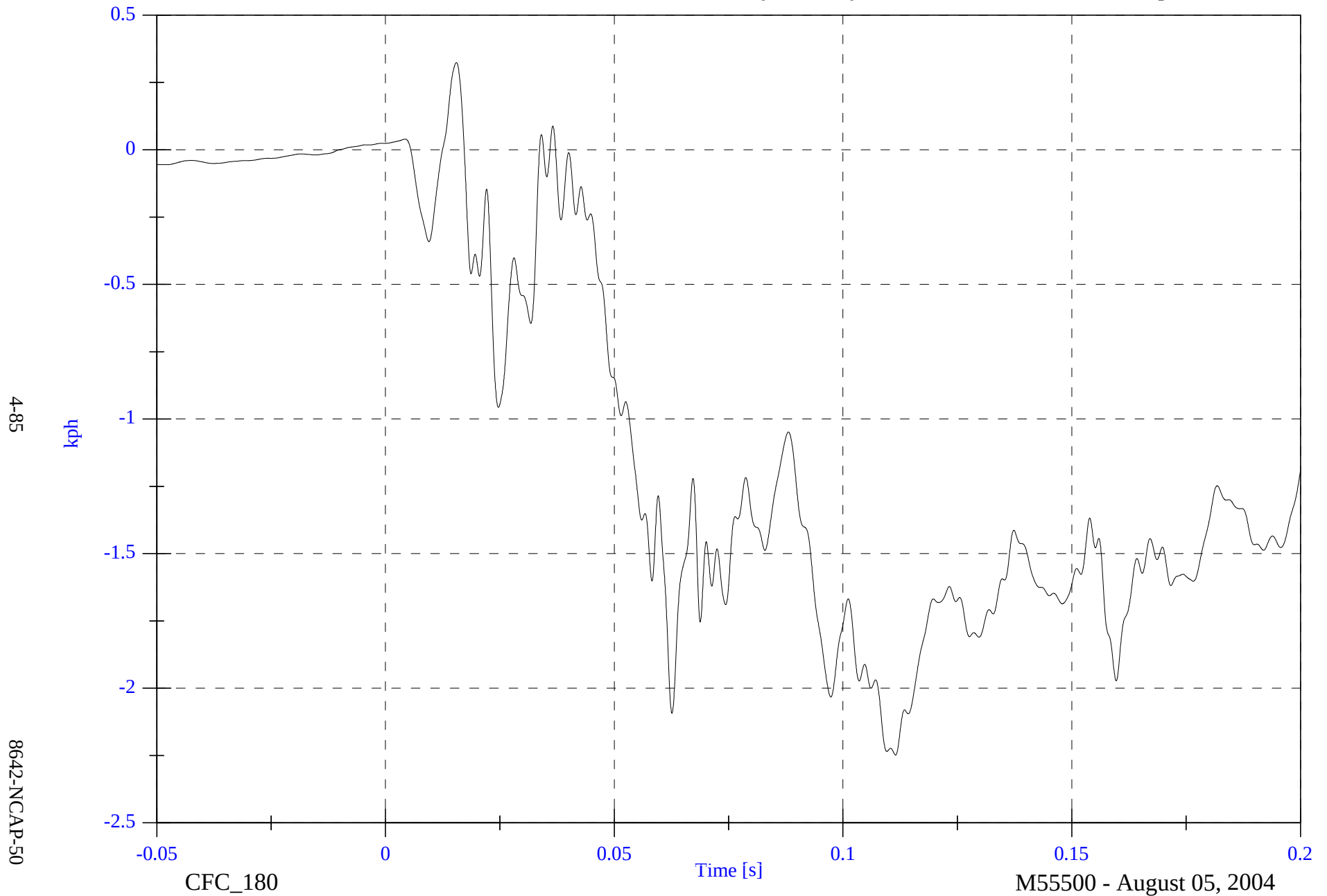


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Seat Back y Velocity

Max: 0.3 [kph] at 0.015 [s]

Min: -2.2 [kph] at 0.111 [s]

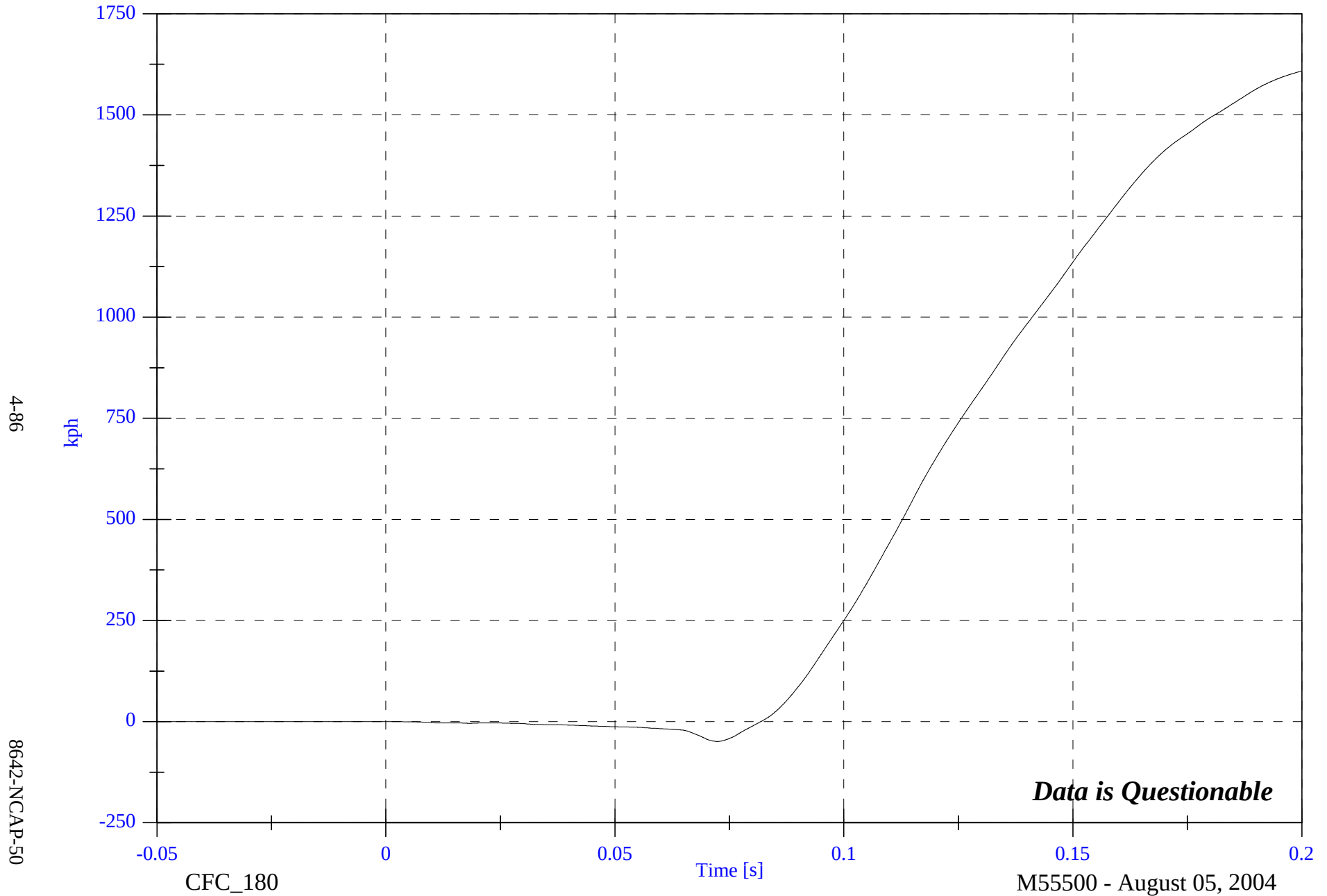


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Seat Back z Velocity

Max: 1608.4 [kph] at 0.200 [s]

Min: -49.0 [kph] at 0.072 [s]

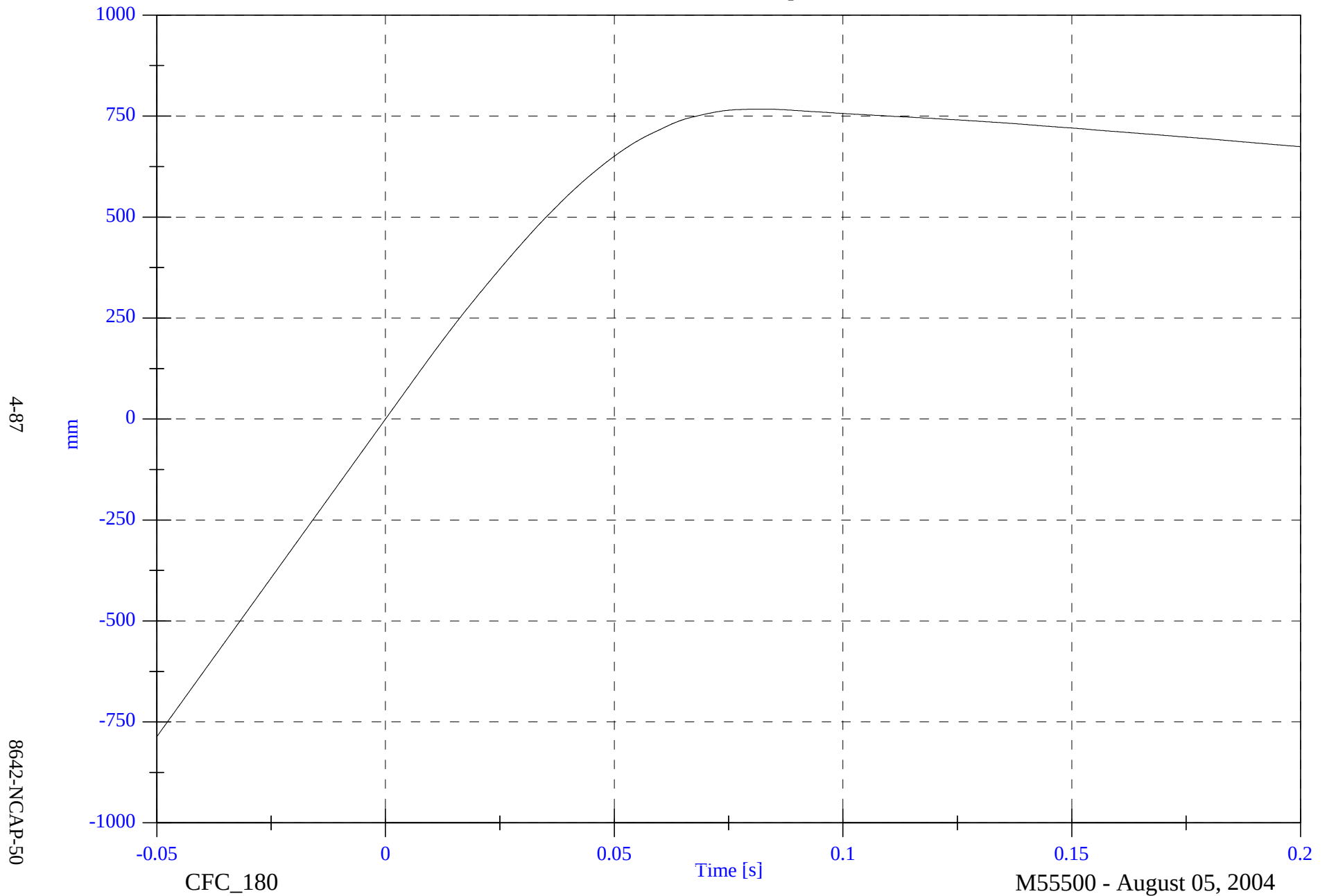


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Seat Back x Displacement

Max: 767.1 [mm] at 0.083 [s]

Min: -786.7 [mm] at -0.050 [s]

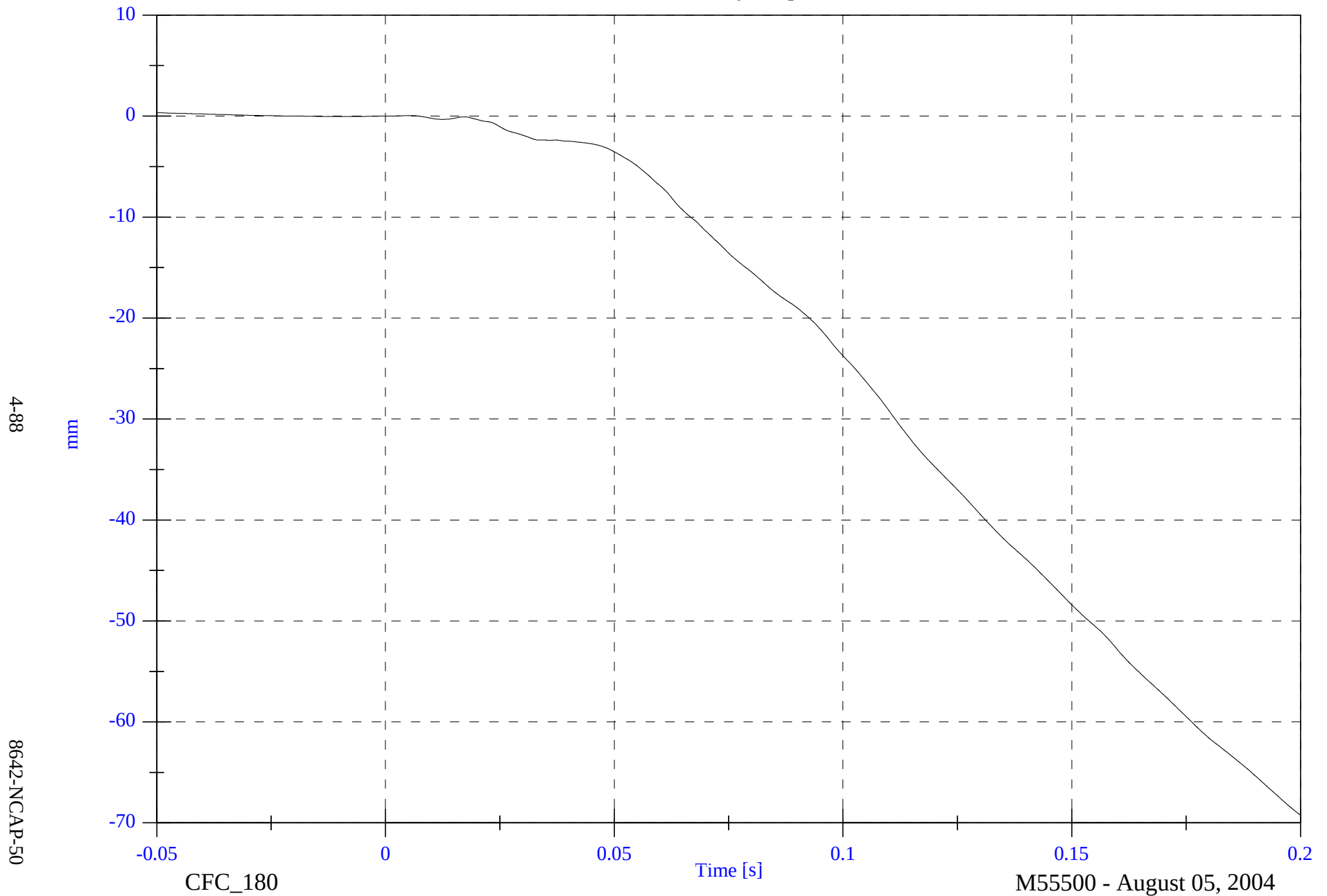


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Seat Back y Displacement

Max: 0.3 [mm] at -0.050 [s]

Min: -69.2 [mm] at 0.200 [s]

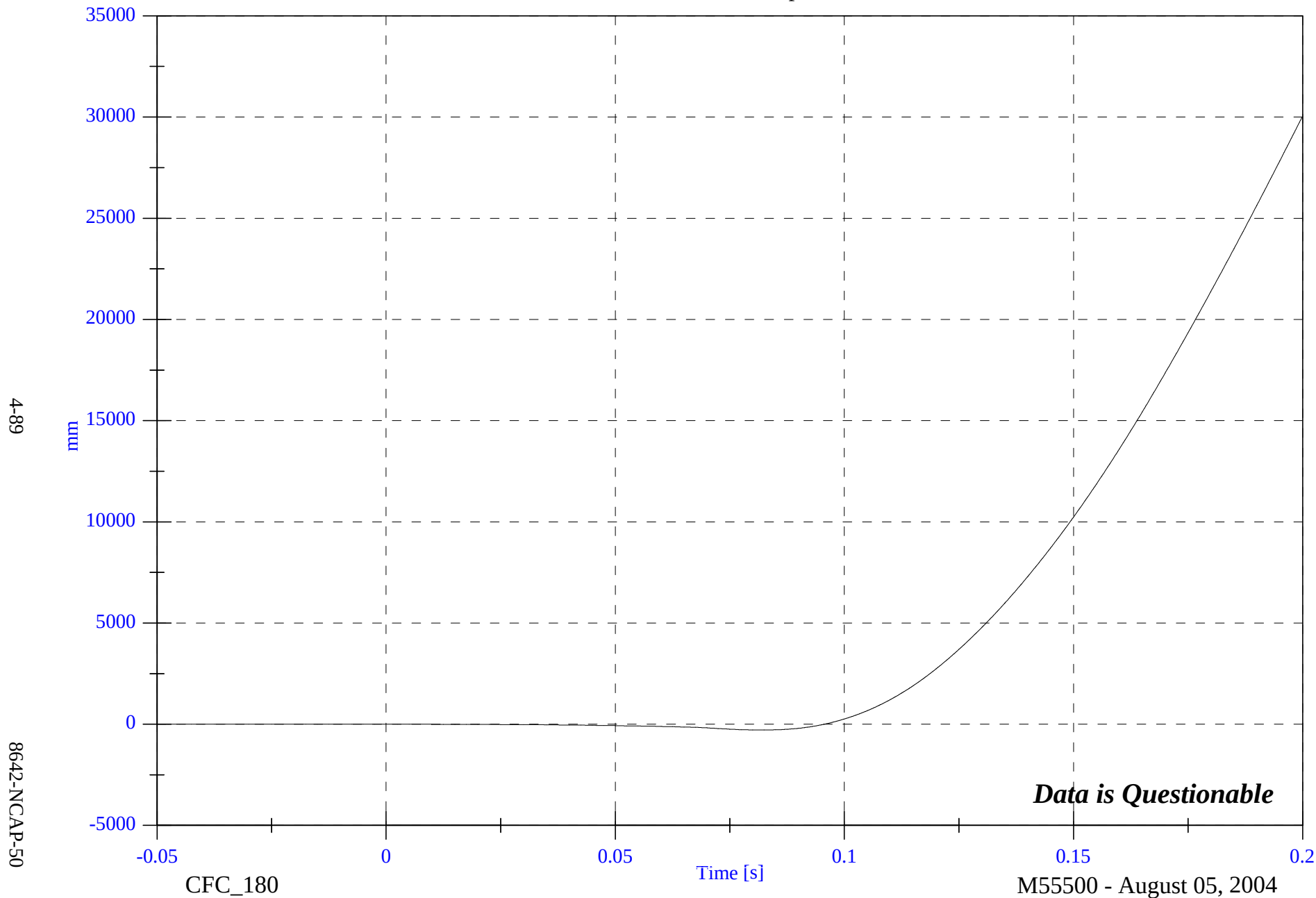


2004 NCAP TEST 14 - 2005 Subaru Outback

V1P4 Seat Back z Displacement

Max: 30030.2 [mm] at 0.200 [s]

Min: -285.8 [mm] at 0.082 [s]



SECTION 5

CHILD DUMMY CALIBRATION INFORMATION

PART 572P
HEAD DROP TEST

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

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

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK FLEXION TEST

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

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

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
NECK EXTENSION TEST

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

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

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
THORAX IMPACT TEST

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

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

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572P
EXTERNAL DIMENSIONS

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

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

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572N
HEAD DROP TEST

Dummy Serial Number 186
Sequential Test Number 01
Date June 16, 2004

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	20.7
Relative Humidity	10% - 70%	56
Peak Resultant Acceleration	245-300 G's	279.2
Peak Lateral Acceleration	15 G's Max	-5.0
Is Acceleration Curve Unimodal?	<10%	YES

Remarks:

Laboratory Technician: V. O.

PART 572N
NECK FLEXION TEST

Dummy Serial Number 186
Sequential Test Number 01-1
Date June 16, 2004

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	20.7
Relative Humidity		10% - 70%	54
Pendulum Speed		4.83 -5.07 m/s	4.99
Pendulum Pulse	10 ms	1.20 – 1.60 m/s	1.50
	15 ms	2.40 – 3.40 m/s	2.83
	20 ms	3.80 – 5.00 m/s	4.05
D Plane Rotation	Max	74.0 – 92.0 Deg	76.3
Maximum Occipital Moment		27.00 - 33.00 N-m	29.69
Occipital Moment Decay		103.0 - 120.0 ms	116.08

Remarks:

Laboratory Technician: _____ V. O.

PART 572N

NECK EXTENSION TEST

Dummy Serial Number	186
Sequential Test Number	01-1
Date	June 16, 2004

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	20.8
Relative Humidity		10% - 70%	55.0
Pendulum Speed		4.18 – 4.42 m/s	4.35
Pendulum Pulse	10 ms	1.00 – 1.40 m/s	1.30
	15 ms	2.20 – 3.00 m/s	2.41
	20 ms	3.20 – 4.20 m/s	3.53
D Plane Rotation	Max	85.0 – 103.0 Deg	94.2
Maximum Occipital Moment		-19.0 - -24.0 N-m	-21.67
Occipital Moment Decay		123.0 - 137.4 ms	138.72

Remarks:

Laboratory Technician: _____ V. O. _____

PART 572N
TORSO FLEXION TEST

Dummy Serial Number 186
Sequential Test Number 01
Date June 4, 2004

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2° C	21.7
Relative Humidity	10% - 70%	44.0
Initial Angle of Unsupported Dummy	= 22°	15.8
Maximum Force at 45° during 10 second period	147 – 200 N	192.5
Return Angle		22.3
Difference between Return and Initial Angles	± 8° of Initial Angle	6.5
Rate	0.5 – 1.5 Deg/sec	1.02

Remarks:

Laboratory Technician:

V. O.

PART 572N
THORAX IMPACT TEST

Dummy Serial Number 186
Sequential Test Number 01-4
Date June 17, 2004

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	20.7
Relative Humidity	10% - 70%	54.0
Pendulum Velocity	6.59 – 6.83 m/s	6.78
Maximum Deflection	-46.0 - -38.0 mm	-38.3
Maximum Resistive Force	1150 – 1380 N	1212
Internal Hysteresis	65 - 85 %	81.0
Maximum Resistive Force between 12.5 mm and 38 mm of Deflection.	<= 1500 N	1393.0

Remarks:

Laboratory Technician:

V. O.

PART 572N
KNEE IMPACT TEST

Dummy Serial Number 186
Sequential Test Number 01-2/01-1
Date June 18, 2004

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 °C	20.8
Relative Humidity	10 – 70 %	55.0
Pendulum Velocity	2.07 – 2.13 m/s	2.09
Maximum Pendulum Force	2000 – 3000 N	2684.0
RIGHT KNEE		
Temperature	18.9 – 25.6 °C	20.8
Relative Humidity	10 – 70 %	55.0
Pendulum Velocity	2.07 – 2.13 m/s	2.08
Maximum Pendulum Force	2000 – 3000 N	2580.0

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572N
EXTERNAL DIMENSIONS

Dummy Serial Number 186
Sequential Test Number 01
Date 06/16/2004

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Total Sitting Height	A	622.3 – 647.7	637
Shoulder Pivot Height	B	348.0 – 363.2	354
H-Point Height	C	63.5 – 73.7	68
H-Point from Backline	D	88.9 – 99.1	94
Shoulder Pivot from Backline	E	53.3 – 63.5	61
Thigh Clearance	F	88.9 – 104.1	94
Back of Elbow to Fingertip	G	182.9 – 198.1	197
Head back from Backline	H	17.8 – 22.8	21
Shoulder - Elbow Length	I	215.9 – 231.1	217
Elbow Rest Height	J	157.4 – 177.8	162
Buttock to Knee Length	K	370.8 – 391.2	389
Popliteal Height	L	269.2 – 289.6	277
Knee Pivot Height	M	307.4 – 322.6	313
Buttock Popliteal Length	N	320.0 – 340.4	322
Chest Depth with Jacket	O	129.6 – 144.8	137
Foot Length	P	170.2 – 185.4	174
Stature	Q	1099.9 – 1181.1	1137
Buttock to Knee Pivot Length	R	342.9 – 363.2	349
Head Breadth	S	137.1 – 147.3	138
Head Depth	T	167.6 – 177.8	177
Hip Breadth	U	208.3 – 223.5	221
Shoulder Breadth	V	259.1 – 274.3	274
Foot Breadth	W	62.3 – 77.5	65
Head Circumference	X	510.5 – 530.9	520
Chest Circumference (With Jacket)	Y	596.9 – 622.3	608
Waist Circumference	Z	558.8 – 584.2	559
Location for Chest Circumference	AA	325.1 – 335.3	330
Location for Waist Circumference	BB	153.7 – 163.9	154

Remarks: All dimensions in millimeters

Laboratory Technician:

V. Walter

SECTION 6

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III 3C INSTRUMENTATION

	POSITION #3 (RIGHT) SERIAL NO.: 3691331 P1 11NOV03		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-P32218	ENDEVCO	17-Feb-04
HEAD AY	AC-99102-F12	ENTRAN	24-Feb-04
HEAD AZ	AC-00L13-F03	ENDEVCO	22-Jun-04
HEAD REAR AZ	AC-P16979	ENDEVCO	8-Jun-04
UPPER NECK FX	LC-213Fx	Denton	1-Oct-03
UPPER NECK FY	LC-213Fy	Denton	1-Oct-03
UPPER NECK FZ	LC-213Fz	Denton	1-Oct-03
UPPER NECK MX	LC-213Mx	Denton	1-Oct-03
UPPER NECK MY	LC-213My	Denton	1-Oct-03
UPPER NECK MZ	LC-213Mz	Denton	1-Oct-03
LOWER NECK FX	LC-214Fx	Denton	1-Oct-03
LOWER NECK FY	LC-214Fy	Denton	1-Oct-03
LOWER NECK FZ	LC-214Fz	Denton	1-Oct-03
LOWER NECK MX	LC-214Mx	Denton	1-Oct-03
LOWER NECK MY	LC-214My	Denton	1-Oct-03
LOWER NECK MZ	LC-214Mz	Denton	1-Oct-03
CHEST AX	AC-99108-F30	ENTRAN	24-Feb-04
CHEST AY	AC-99108-F28	ENTRAN	24-Feb-04
CHEST AZ	AC-99H30-Z04	ENTRAN	24-Feb-04
CHEST DISPLACEMENT X	DS-142	SERVO	18-Sep-03
PELVIS AX	AC-99102-F06	ENTRAN	23-Feb-04
PELVIS AY	AC-99102-F15	ENTRAN	23-Feb-04
PELVIS AZ	AC-99G29-Q13	ENTRAN	23-Feb-04
TETHER BELT LOAD	LC-155	First Technology	16-Sep-03

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

HYBRID III 6C INSTRUMENTATION

	POSITION #4 (LEFT) SERIAL NO.:		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	AC-03D03D16-F03	ENTRAN	29-Jun-04
HEAD AY	AC-J27461	ENDEVCO	14-Apr-04
HEAD AZ	AC-01J02-F08	ENTRAN	29-Jun-04
UPPER NECK FX	LC-1632Fx	DENTON	12-Aug-03
UPPER NECK FY	LC-1632Fy	DENTON	12-Aug-03
UPPER NECK FZ	LC-1632Fz	DENTON	12-Aug-03
UPPER NECK MX	LC-1632Mx	DENTON	12-Aug-03
UPPER NECK MY	LC-1632My	DENTON	12-Aug-03
UPPER NECK MZ	LC-1632Mz	DENTON	12-Aug-03
CHEST AX	AC-02I02I05-F10	ENTRAN	29-Jun-04
CHEST AY	AC-02I02I16-A04	ENTRAN	29-Jun-04
CHEST AZ	AC-03E03E20-N18	ENTRAN	29-Jun-04
CHEST DISPLACEMENT X	DS-186	SERVO	19-May-04
PELVIS AX	AC-02I02I05-F05	ENTRAN	29-Jun-04
PELVIS AY	AC-98H14-K13	ENTRAN	29-Jun-04
PELVIS AZ	AC-02I02I16-A10	ENTRAN	29-Jun-04
LAP BELT LOAD	LC-712	LEBOW	8-Oct-03
TORSO BELT LOAD	LC-156	First Technology	16-Sep-03
TORSO BELT STRETCH	DS-E6	CAL	11-Oct-03
TORSO BELT SPOOLOUT	DS-M27	MAGNETEK	1-Apr-04

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

CRS INSTRUMENTATION

	CRS Accelerometers		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
P3 CRS AX	AC-P13323	ENDEVCO	30-Mar-04
P3 CRS AY	AC-P22943	ENDEVCO	25-Mar-04
P3 CRS AZ	AC-P23139	ENDEVCO	30-Mar-04
P4 CRS AX	AC-P24011	ENDEVCO	30-Mar-04
P4 CRS AY	AC-P23161	ENDEVCO	30-Mar-04
P4 CRS AZ	AC-P19111	ENDEVCO	30-Mar-04
P4 SEATBACK AX	AC-J32143	ENDEVCO	20-Jul-04
P4 SEATBACK AY	AC-J32838	ENDEVCO	20-Jul-04
P4 SEATBACK AZ	AC-J32174	ENDEVCO	20-Jul-04