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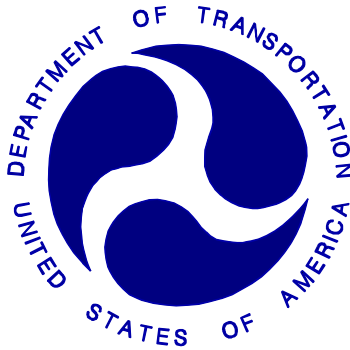
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

**GENERAL MOTORS CORP.
2001 OLDSMOBILE AURORA
4-DOOR SEDAN**

NHTSA NUMBER: M10111

VERIDIAN TEST NUMBER: 8602-4

VERIDIAN ENGINEERING
TRANSPORTATION SCIENCES CENTER
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November 30, 2000

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
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15. <i>Supplementary Notes</i>					
16. <i>Abstract</i> A frontal load cell barrier test of a 2001 Oldsmobile Aurora 4-Door Sedan was performed at Veridian Engineering crash test facility in Buffalo, New York, on November 30, 2000. The impact velocity was 56.81 kph and the temperature at the barrier face was 21.1 °C. The maximum post-test vehicle crush was 507 mm. The test vehicle was equipped with 3-point restraint systems, knee bolsters, and airbags at both the driver and right outboard passenger seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements.					
ATD Position	HIC	Clip (g's)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)
Driver (245)	626.7	49.7	32.3	3552.6	3227.1
Passenger (150)	577.5	49.1	27.4	1113.1	3320.1
17. <i>Key Words</i> 56 kph Frontal Barrier Impact test New Car Assessment Program (NCAP)				18. <i>Distribution Statement</i> <u>Copies of this report are available from:</u> NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, DC 20590	
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SECTION 1

PURPOSE AND SUMMARY OF TEST M10111

PURPOSE

This 56.81 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. DTNH22-96-D-02010. 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 56.81 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2001 Oldsmobile Aurora 4-Door Sedan at a velocity of 56.81 kph. The test was performed at Veridian Engineering on November 30, 2000. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by 1 real-time camera and 16 high-speed cameras. 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 head, chest, and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also 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. 245) and the right-front passenger (position 2) ATD (Serial No. 150) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 132 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.

The driver's HIC was 626.7†. The maximum chest deceleration over 3 milliseconds was 49.7 g's and maximum chest deflection was 32.3 mm. Compressive femur loads were 3552.6 Newtons on the left and 3227.1 Newtons on the right.

The right front passenger's HIC was 577.5. Maximum chest deceleration over 3 milliseconds was 49.1 g's and maximum chest deflection was 27.4 mm. Compressive femur loads were 1113.1 Newtons on the left and 3320.1 Newtons on the right.

† The driver HIC was calculated using a redundant Head Z Acceleration channel.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No. : M10111 Test Mode : 56.3 kph Frontal Barrier

Test Date : November 30, 2000 Time: 11:45 Temperature : 2.2 °C

Vehicle Make/Model/Body Style : 2001 Oldsmobile Aurora 4-Door Sedan

Vehicle Test Weight : 1868.5 kg

Vehicle/Barrier Impact Angle : 0 °

Impact Velocity : 56.81 kph

Maximum Static Crush : 507 mm

Vehicle Rebound : 605 mm

<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>
Type :	<u> 572E </u>	<u> 572E </u>
Restraint System :	<u> Airbag, 3-Point Active Seat Belt, Knee Bolster </u>	<u> Airbag, 3-Point Active Seat Belt, Knee Bolster </u>

Number of Data Channels : 132

Number of Cameras : 1 Real Time

 16 High Speed

DOOR OPENING DATA : Closed / Operable - Left Front

 Closed / Operable - Right Front

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

<u>VISIBLE DUMMY CONTACT POINTS :</u>	<u>DRIVER</u>	<u>PASSENGER</u>
Head :	<u> Face to center of airbag; Back of head to center of head restraint </u>	<u> Face to right half of airbag; Back of head to inboard half of head restraint </u>
Abdomen :	<u> Airbag </u>	<u> Airbag </u>
Chest:	<u> None </u>	<u> None </u>
Knees:	<u> Left knee to bolster left of steering column; Right knee to bolster right of steering column </u>	<u> Left knee to left side of glove compartment door; Right knee to center of glove compartment door </u>

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 2001 Oldsmobile Aurora 4-Door Sedan
NHTSA No. : M10111 ; VIN: 1G3GR64H714158319 ; Color : Silver
Engine Data: 6 cylinders; - CID; 3.5 Liters; - cc
Placement : - Longitudinal or In-Line; X Transverse or Lateral
Transmission Data : 4 speeds; - Manual; X Automatic; X Overdrive
Final Drive : - Rear Wheel Drive; X Front Wheel Drive; - Four Wheel Drive
Major Options : X A/C; X Pwr.Strg.; X Pwr. Brakes
X Pwr. Windows; X Pwr. Door Locks; X Tilt Wheel
Date Received : 11-6-00 ; Odometer Reading 18 km
Selling Dealer : Glen Campbell Chevrolet - Oldsmobile
& Address: 8040 Transit Road, Williamsville NY 14221

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : General Motors Corp.
Date of Manufacture 08/00
GVWR : 2079 kg; GAWR: 1128 kg FRONT; 951 kg REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 300 kpa FRONT
300 kpa REAR
Recommended Tire Size : P225/60R16
* Recommended Cold Tire Pressure : 210 kpa FRONT; 210 kpa REAR
Size of Tires on Test Vehicle: P225/60R16 ; Manufacturer: Goodyear
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) = 408.0 kg
No. of Occupants x 68 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>515.0</u>	kg	Right Rear	=	<u>310.5</u>	kg
Left Front	=	<u>498.0</u>	kg	Left Rear	=	<u>331.5</u>	kg
TOTAL FRONT	=	<u>1013.0</u>	kg	TOTAL REAR	=	<u>642.0</u>	kg
TOTAL DELIVERED WEIGHT	=	<u>1655.0</u>	kg				
% of Total Front of Vehicle Weight	=	<u>61.2</u>	%	% of Total Rear Weight	=	<u>38.8</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight (UDW)	=	<u>1655.0</u>	kg
Rated Cargo/Luggage Weight (RCLW)	=	<u>67.8</u>	kg
Weight of 2 p.572 Dummies @ 76 each	=	<u>152.0</u>	kg
TARGET TEST WEIGHT	=	<u>1874.8</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 62 KG OF CARGO WEIGHT:

Right Front	=	<u>546.5</u>	kg	Right Rear	=	<u>381.0</u>	kg
Left Front	=	<u>531.5</u>	kg	Left Rear	=	<u>409.5</u>	kg
TOTAL FRONT	=	<u>1078.0</u>	kg	TOTAL REAR	=	<u>790.5</u>	kg
TOTAL TEST WEIGHT	=	<u>1868.5</u>	kg				
% of Total Front Weight	=	<u>57.7</u>	%	% of Total Rear Weight	=	<u>42.3</u>	%
Weight of Ballast Secured in Vehicle Trunk Area	=	<u>23</u>	kg				
Vehicle Components Removed for Weight Reduction:		<u>None</u>					

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED :	RF	<u>753</u>	LF	<u>750</u>	RR	<u>763</u>	LR	<u>761</u>
FULLY LOADED :	RF	<u>743</u>	LF	<u>738</u>	RR	<u>734</u>	LR	<u>733</u>
AS TESTED † :	RF	<u>744</u>	LF	<u>741</u>	RR	<u>740</u>	LR	<u>736</u>
Vehicle's Wheel Base :		<u>2850</u>	mm					
Location of Vehicle's C.G. :		<u>1206</u>	mm rearward of front wheel center.					

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual	=	<u>70.0</u>	liters
Usable Capacity Figure Furnished by COTR	=	<u>70.1</u>	liters
Test Volume Range (92 to 94% of Usable Capacity)	=	<u>64.5</u>	to <u>65.9</u> liters
ACTUAL TEST VOLUME	=	<u>64.5</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>Fuel Tank: Located between the rear wheels; Fuel lines: Routed along the vehicle underbody inboard of the right frame rail; Fuel Filler: Located on right rear quarter panel above the rear wheel</u>		

† Vehicle was equipped with an automatic load leveling system.

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°
Test Date : November 30, 2000 Time: 11:45 Temperature: 2.2 °C
Vehicle NHTSA No. : M10111
Required Impact Velocity Range : 55.5 to 57.1 kph

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

Trap No. 1 = 56.81 kph; Trap No. 2 = 56.81 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 Right = 4928 ; C/L = 5058 ; Left = 4920
Post-Test Right = 4517 ; C/L = 4551 ; Left = 4585
Crush Right = 411 ; C/L = 507 ; Left = 335
AVERAGE = 418 mm

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

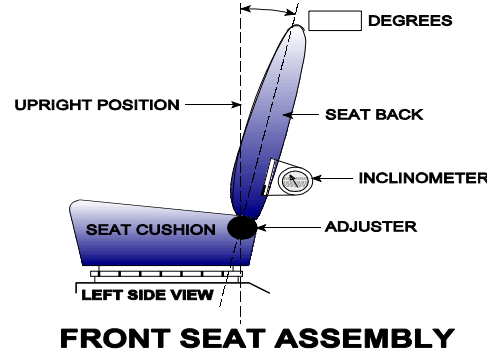
Right = 657 ; C/L = 607 ; Left = 550
AVERAGE = 605 mm

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2001 Vehicle Model: Oldsmobile Aurora Body Style : 4-Door Sedan

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



Seat back angle for driver's seat: 18.5 degrees

Measurement instructions: Unzip seat back zipper, place inclinometer through opening in cardboard, position seat back 18.5 degrees from vertical with vehicle sills level.

Seat back angle for passenger's seat: 18.5 degrees

Measurement instructions: Unzip seat back zipper, place inclinometer through opening in cardboard, position seat back 18.5 degrees from vertical with vehicle sills level.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: Place seat in mid-travel position.

Positioning of the passenger's seat: Place seat in mid-travel position.

3. Fuel Tank Capacity Data

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 70.1 liters

B. "Usable Capacity" of the optional equipment fuel tank is 66.3 liters †

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 70.1 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 64.5 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.

Fuel pump will prime when ignition key is turned to the "run" position and vehicle is not started. Fuel pump runs continuously when engine is running.

† Capacity with optional 4.0 liter engine (test vehicle was equipped with 3.5 liter engine).

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

4. STEERING COLUMN ADJUSTMENTS :

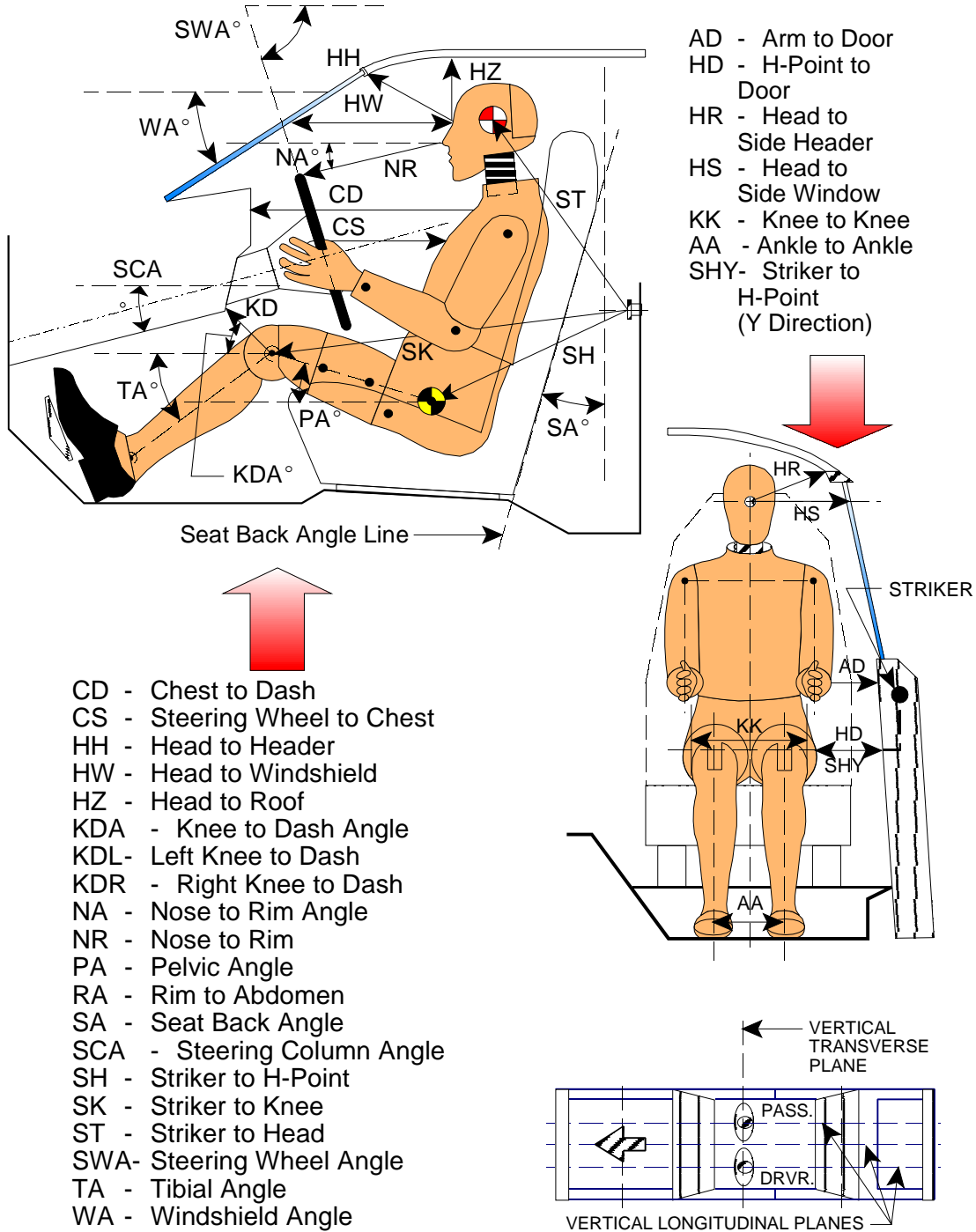
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine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

Operational Instructions: Place steering column in position 3 where the upper-most position is defined as 0. This results in a steering wheel angle of 18 degrees from vertical with the vehicle sills level.

5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: Anchorage is not adjustable.

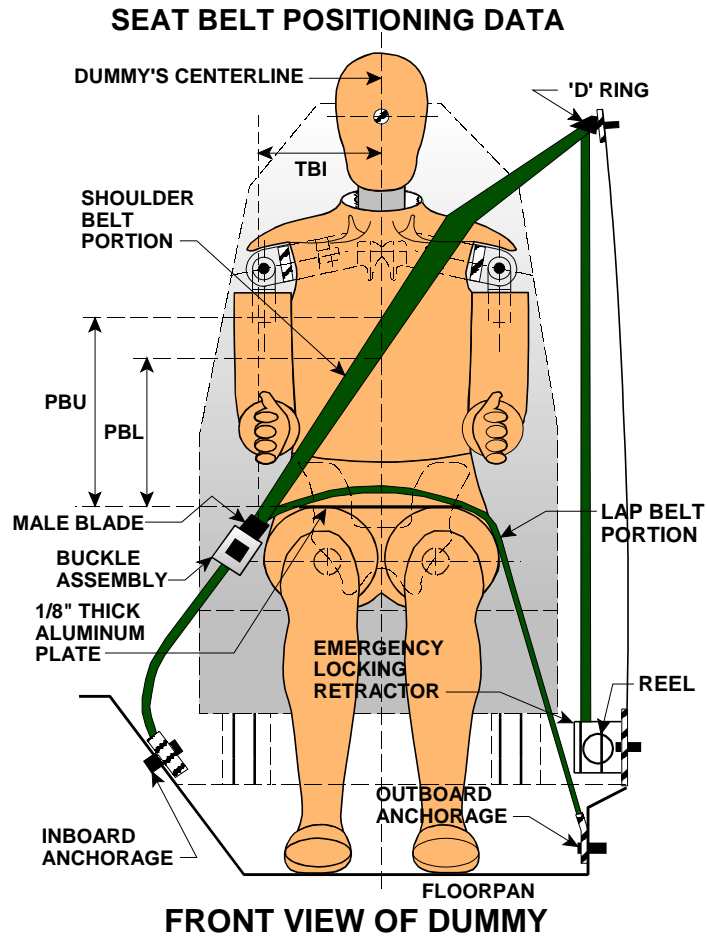
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



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

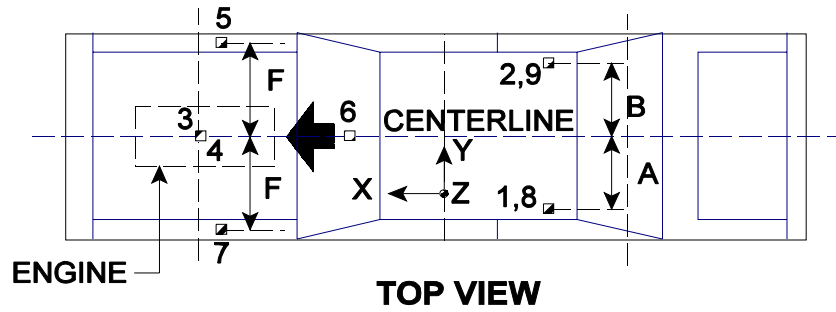
	DRIVER (Serial #245)			PASS. (Serial # 150)		
WA ^o	25 deg.			N/A		
SWA ^o	18 deg.			N/A		
SCA ^o	72 deg.			N/A		
SA ^o	18.5 deg.			18.5 deg.		
HZ	194			185		
HH	349			356		
HW	678			686		
HR	198			209		
NR	351	Angle	7 deg.	N/A		
CD	510			499		
CS	296			N/A		
RA	195			N/A		
KDL	164	Angle (KDA)	40 deg.	165		
KDR	160			162	Angle (KDA)	43 deg.
PA ^o	22.5 deg.			22.3 deg.		
TA ^o	37.1 deg.			38.0 deg.		
KK	345			285		
AA	355			229		
ST	490	Angle	5 deg.	492	Angle	7 deg.
SK	576	Angle	94 deg.	580	Angle	92 deg.
SH	255	Angle	128 deg.	252	Angle	130 deg.
SHY	258			253		
HS	340			338		
HD	192			190		
AD	108			125		

Dimensions in millimeters

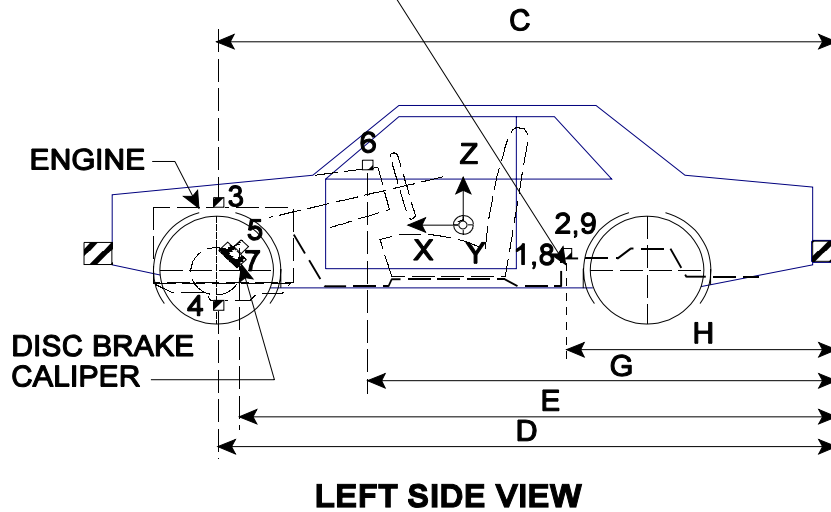


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	327	353
PBL-- Top surface of alum. plate to belt lower edge	245	265
<u>LAP BELT TENSION</u>	Retractor	Retractor
<u>SHOULDER BELT TENSION</u>	Retractor	Retractor

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.)

DIMENSION	PRE-TEST LENGTH (mm)
A Left Rear Seat Crossmember Y	-598
B Right Rear Seat Crossmember Y	577
C Top of Engine X	4201
D Bottom of Engine X	3894
E Disc Brake Calipers X	3928
F Disc Brake Calipers Y	±680
G Instrument Panel X	3041
H Rear Seat Crossmembers X	2007

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	4.3	21.8	-31.3	50.8
2	Rear Seat X-Member @ Right Side	2.3	148.7	-33.2	70.3
3	Top of Engine Block	57.3	44.4	-142.5	33.0
4†	Bottom of Engine	-	-	-	-
5††	Disc Brake Caliper @ Right Side	-	-	-	-
6‡	Instrument Panel	-	-	-	-
7	Disc Brake Caliper @Left Side	4.2	104.2	-66.5	48.7
8	Rear Seat X-Member @ Left-Redundant	4.3	21.8	-30.5	50.8
9	Rear Seat X-Member @ Right-Redundant	2.2	131.8	-32.9	70.2

† Channel failed during impact.

†† Transducer wire was cut at 65 ms, data after this time is invalid.

‡ Transducer wire was cut at 68 ms, data after this time is invalid.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2001 Oldsmobile Aurora 4-Door Sedan

NHTSA Test No.: M10111 Test Date: November 30, 2000

DESCRIPTION	Unit	MAXIMUM VALUE							
		Driver				Passenger			
		Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head X	g	18.6	221.0	-69.2	77.7	24.4	238.6	-52.6	81.8
Head Y	g	3.8	56.3	-4.2	89.1	9.0	60.6	-16.6	91.8
Head Z	g	†	-	†	-	36.2	82.1	-2.7	39.4
Head Resultant	g	69.8 †	77.6	-	-	65.6	81.8	-	-
Redundant Head X	g	18.8	220.6	-70.4	78.2	24.7	238.5	-53.0	81.8
Redundant Head Y	g	4.6	56.3	-4.3	90.8	9.2	60.7	-16.7	88.0
Redundant Head Z	g	14.9	70.2	-3.9	85.8	35.9	81.6	-2.6	39.4
Redundant Head Resultant	g	71.0	78.2	-	-	65.8	81.7	-	-
Upper Neck Fx	N	691.8	68.9	-336.1	138.5	802.0	68.4	-718.8	139.0
Upper Neck Fy	N	30.5	43.2	-92.1	88.4	114.8	241.2	-232.9	97.0
Upper Neck Fz	N	1903.2	74.9	-151.7	129.3	875.2	207.5	-483.5	92.9
Upper Neck F Resultant	N	1988.9	74.8	-	-	877.4	207.5	-	-
Upper Neck Mx	N-m	13.5	84.9	-9.9	112.7	32.9	85.0	-6.3	57.8
Upper Neck My	N-m	43.6	66.5	-18.6	103.2	72.7	68.4	-29.0	263.7
Upper Neck Mz	N-m	6.0	115.5	-4.0	64.2	16.4	94.1	-13.0	147.1
Upper Neck M Resultant	N-m	44.0	66.7	-	-	73.4	68.4	-	-
Chest X	g	5.0	185.1	-49.9	68.5	6.2	197.6	-49.3	67.9
Chest Y	g	1.6	104.5	-6.1	81.0	1.6	220.4	-8.4	79.2
Chest Z	g	14.0	77.8	-2.4	56.6	22.8	83.5	-2.6	123.3
Chest Resultant	g	50.5	68.7	-	-	50.3	67.9	-	-
Redundant Chest X	g	5.1	185.1	-51.0	68.5	6.2	197.6	-49.2	69.1
Redundant Chest Y	g	1.7	105.9	-6.4	81.1	1.6	217.3	-8.4	79.2
Redundant Chest Z	g	13.2	80.6	-2.9	56.0	22.5	83.5	-2.7	120.5
Redundant Chest Resultant	g	51.6	68.6	0.0	-26.4	50.1	68.0	0.0	-29.3
Chest Displacement	mm	0.0	18.6	-32.3	86.6	0.1	34.9	-27.4	95.4

† Head Az transducer failed during the impact, Head Az Redundant channel was used to calculate the resultant and HIC value.

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

Vehicle Year/Make/Model/Body Style: 2001 Oldsmobile Aurora 4-Door Sedan

NHTSA Test No.: M10111 Test Date: November 30, 2000

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Pelvic X	g	4.3	199.2	-65.3	58.0	3.6	178.8	-60.5	59.6
Pelvic Y	g	5.9	90.5	-8.4	54.5	9.9	93.6	-6.9	70.5
Pelvic Z	g	†	-	†	-	3.2	228.3	-20.7	65.9
Pelvic Resultant	g	65.4 †	58.0	-	-	63.2	59.6	-	-
Left Femur	N	401.2	43.9	-3552.6	62.0	742.7	49.1	-1113.1	59.3
Right Femur	N	242.2	152.2	-3227.1	56.7	230.3	118.8	-3320.1	60.2
Left Upper Tibia Mx	N-m	21.1	82.0	-16.5	106.9	40.4	74.2	-11.7	35.1
Left Upper Tibia My	N-m	19.7	146.6	-86.1	54.8	8.2	144.8	-85.2	66.0
Left Lower Tibia Fz	N	175.7	146.7	-2450.0	32.9	182.7	158.1	-2520.1	39.3
Left Lower Tibia Mx	N-m	15.2	55.5	-5.5	252.9	24.1	74.7	-6.0	126.8
Left Lower Tibia My	N-m	17.7	34.9	-37.5	55.8	15.7	109.5	-36.3	66.2
Right Upper Tibia Mx	N-m	30.6	48.0	-7.1	107.8	14.3	37.2	-16.0	73.3
Right Upper Tibia My	N-m	27.4	132.7	-150.6	51.9	15.6	145.1	-125.1	63.9
Right Lower Tibia Fz	N	† †	-	† †	-	119.7	166.4	-3084.6	36.4
Right Lower Tibia Mx	N-m	75.9	47.5	-8.5	99.5	11.2	36.8	-28.6	92.5
Right Lower Tibia My	N-m	35.7	71.0	-15.3	42.8	28.9	92.8	-37.5	64.3
Left Foot Aft Ax	g	6.7	45.4	-44.7	60.9	7.0	111.5	-53.3	47.0
Left Foot Aft Az	g	5.3	45.2	-43.7	35.0	3.8	133.6	-46.7	39.1
Left Foot Fore Az	g	15.8	48.0	-84.1	25.2	29.6	23.6	-75.7	48.3
Right Foot Aft Ax	g	21.8	55.0	-94.7	46.8	10.0	78.6	-49.3	65.9
Right Foot Aft Az	g	5.6	174.7	-80.8	44.4	6.5	50.1	-53.7	36.0
Right Foot Fore Az	g	41.1	54.9	-195.8	44.2	42.4	22.4	-62.5	39.4
Lap Belt Load	N	4332.6	59.8	-6.4	150.0	4918.3	64.7	-14.9	159.0
Torso Belt	N	5889.2	73.9	-2.7	239.3	6041.7	84.5	-40.8	164.7

† Pelvic Az transducer failed during the impact. This channel was excluded from the resultant calculation.

† † Transducer failed during the impact.

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

Vehicle Year/Make/Model/Body Style: 2001 Oldsmobile Aurora 4-Door Sedan

NHTSA Test No.: M10111 Test Date: November 30, 2000

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver †	626.7	59.7	91.6	52.2
Position #2 - Passenger	577.5	65.5	101.5	48.1

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

† P1 Head Az accelerometer was damaged during the test, P1 Head Az Redundant accelerometer was substituted for this calculation.

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	49.7	67.7	70.7	525.5
Position #2 - Passenger	49.1	66.9	69.9	528.2

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

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

Vehicle Year/Make/Model/Body Style: 2001 Oldsmobile Aurora 4-Door Sedan

NHTSA Test No.: M10111 Test Date: November 30, 2000

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	626.3	59.6	92.0	51.8
Position #2 - Passenger	586.7	65.5	101.5	48.4

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

CLIP SUMMARY* REDUNDANT				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	50.6	67.7	70.7	550.0
Position #2 - Passenger	49.0	67.1	70.0	528.0

* 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:

	<u>Driver</u>	<u>Passenger</u>
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	<u>1330</u>	<u>1373</u>
Shoulder belt length as measured on Part 572 Dummy.	<u>795</u>	<u>838</u>
Lap belt length as measured on Part 572 Dummy.	<u>535</u>	<u>535</u>

SHOULDER BELT SPOOL-OFF DATA:

As determined by film analysis.	<u>†</u>	<u>†</u>
As determined mechanically.	<u>57</u>	<u>62</u>
As determined electronically.	<u>†</u>	<u>†</u>

BELT STRETCH DATA:

Measured electronically between shoulder belt load cell and the "D" ring.	<u>32 mm/M</u>	<u>38 mm/M</u>
Measured mechanically.	<u>24 mm/M</u>	<u>30 mm/M</u>

_____ Dimensions in millimeters

† Vehicle front seat belts were integrated into the seat back, instrumentation could not be not installed.

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.

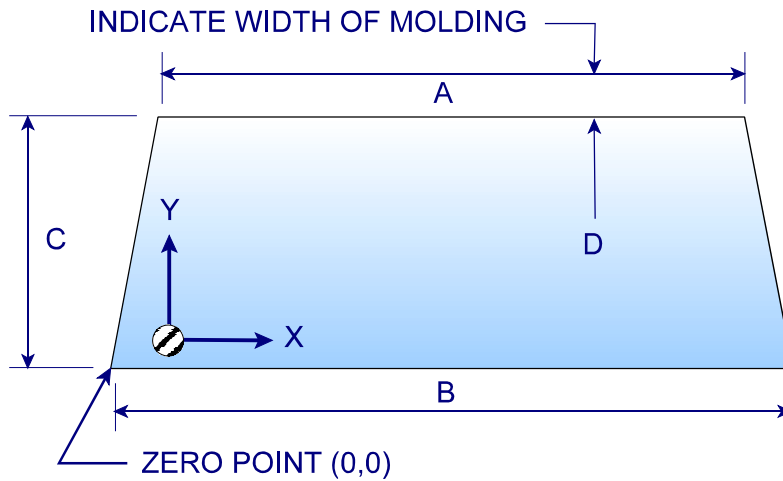
FMVSS 212 REQUIREMENTS:

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	2230	2230	100
LEFT SIDE	2230	2230	100
TOTAL	4460	4460	100

AREA OF RETENTION FAILURE: None



DIMENSIONS (mm)	
A	1210
B	1750
C	750
D	15

FRONT VIEW OF WINDSHIELD

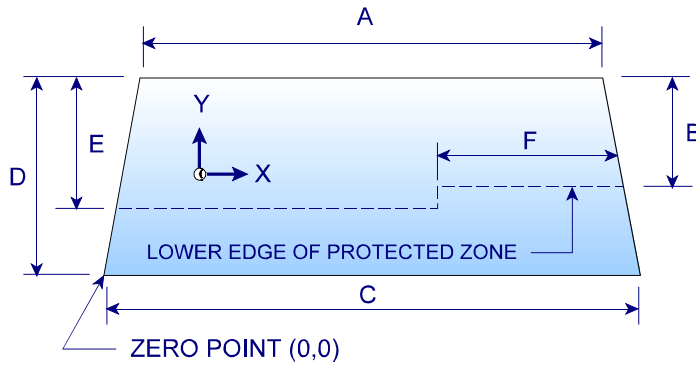
FAILURE DETAILS: None

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:



DIMENSIONS (mm)	
A	1210
B	375
C	1750
D	750
E	540
F	825

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.	-	-

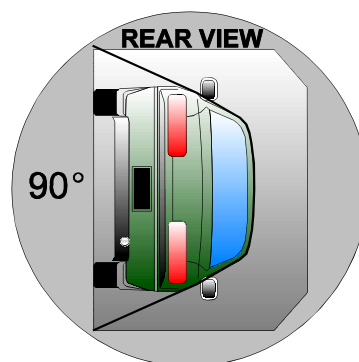
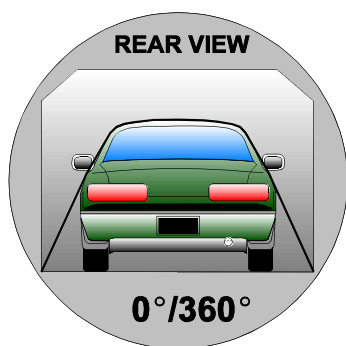
DATA SHEET 13

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Vehicle: 2001 Oldsmobile Aurora

NHTSA No. M10111

0 - 90 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u> minutes	<u>13</u> seconds
FMVSS 301 Position Hold Time +	<u>5</u> minutes	<u>0</u> seconds
TOTAL	<u>6</u> minutes	<u>13</u> seconds
Next whole minute interval	<u>7</u> minutes	

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

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

IV. SOLVENT SPILLAGE LOCATION(S) :

None

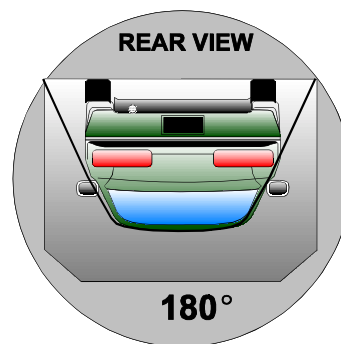
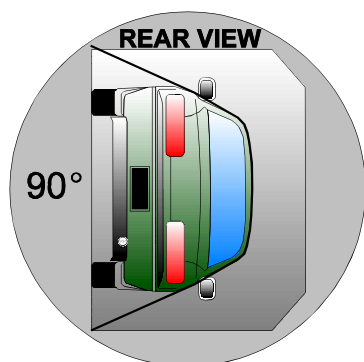
DATA SHEET 13

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (CONTINUED)

Vehicle: 2001 Oldsmobile Aurora

NHTSA No. M10111

90 - 180 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u> minutes	<u>14</u> seconds
FMVSS 301 Position Hold Time +	<u>5</u> minutes	<u>0</u> seconds
TOTAL	<u>6</u> minutes	<u>14</u> seconds
Next whole minute interval	<u>7</u> minutes	

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

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

IV. SOLVENT SPILLAGE LOCATION(S) :

None

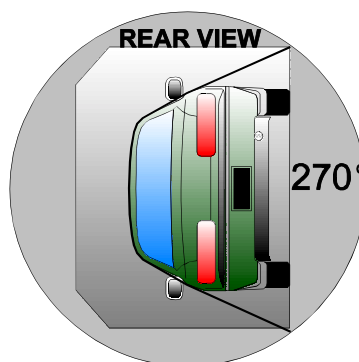
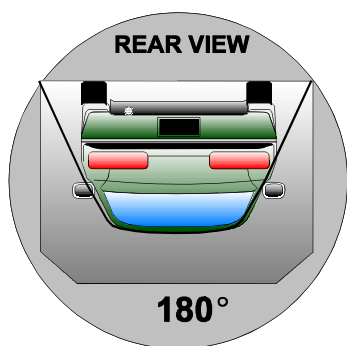
DATA SHEET 13

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (CONTINUED)

Vehicle: 2001 Oldsmobile Aurora

NHTSA No. M10111

180 - 270 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>2</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>0</u>	seconds
TOTAL	<u>6</u>	minutes	<u>2</u>	seconds
Next whole minute interval	<u>7</u>	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

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

IV. SOLVENT SPILLAGE LOCATION(S) :

None

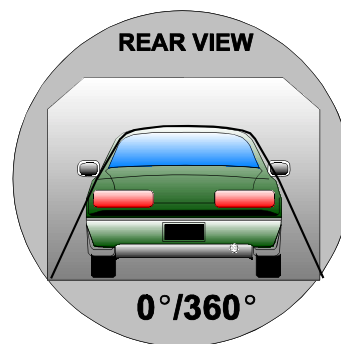
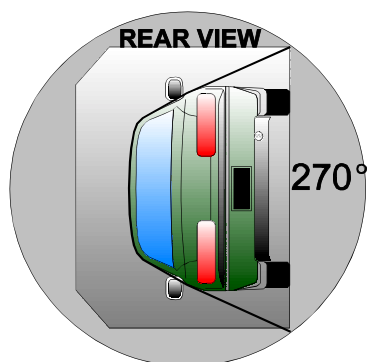
DATA SHEET 13

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (CONTINUED)

Vehicle: 2001 Oldsmobile Aurora

NHTSA No. M10111

270 - 360 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	<u>1</u>	minutes	<u>5</u>	seconds
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>0</u>	seconds
TOTAL	<u>6</u>	minutes	<u>5</u>	seconds
Next whole minute interval	<u>7</u>	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

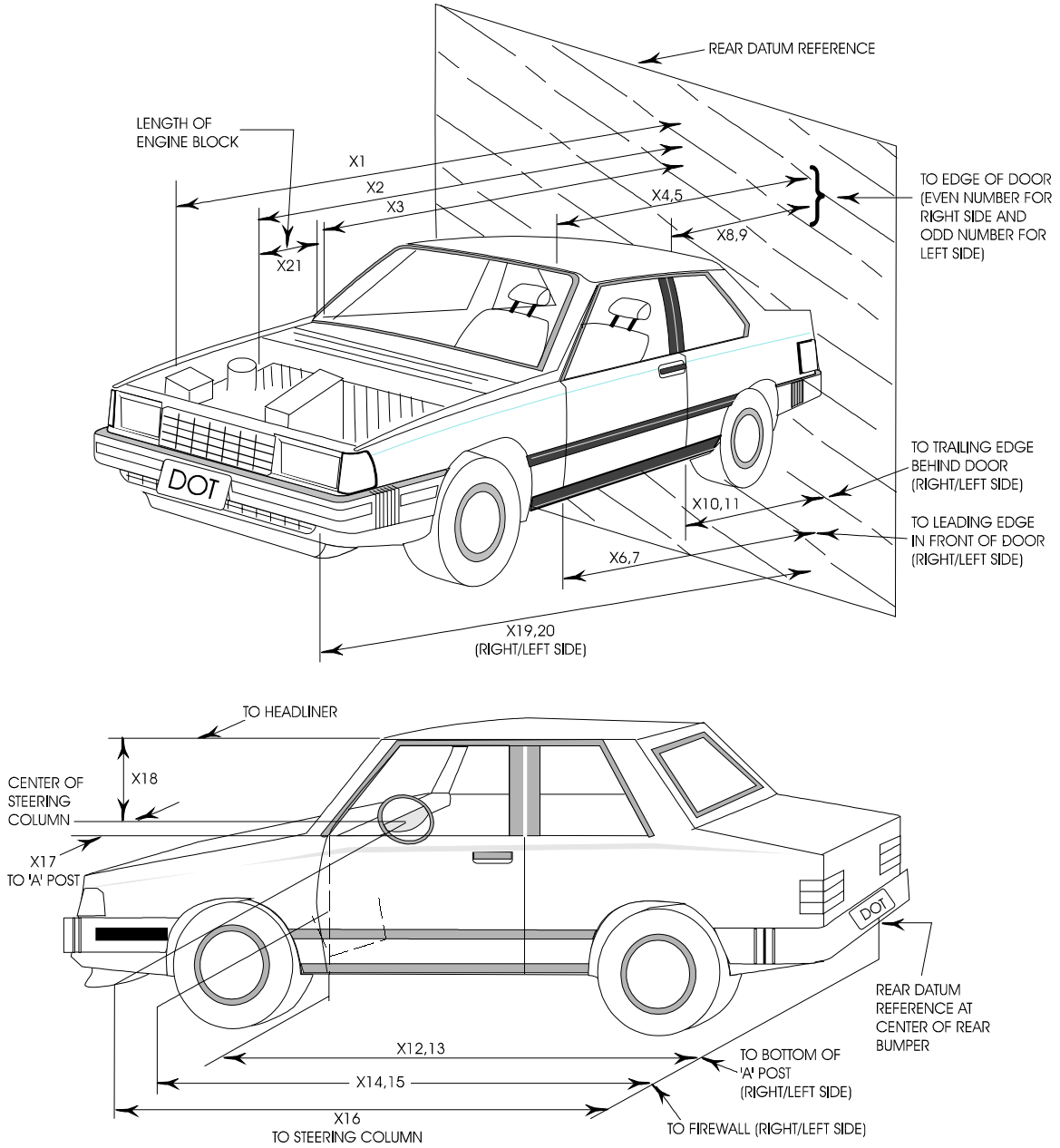
0 g	0 g	0 g	N/A
-----	-----	-----	-----

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

IV. SOLVENT SPILLAGE LOCATION(S) :

None

DATA SHEET NO. 14 TEST VEHICLE MEASUREMENTS

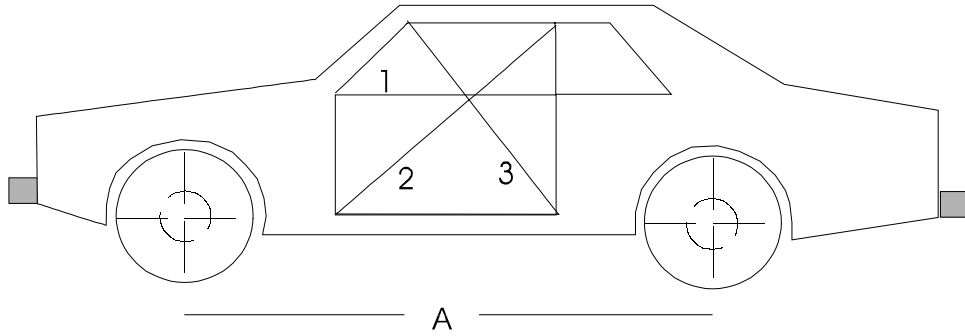


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	5058	4551	507
X2	Rear Surface of Vehicle to Front of Engine	4518	4300	218
X3	Rear Surface of Vehicle to Firewall	3763	3714	49
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3429	3435	-6
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3435	3434	1
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3438	3452	-14
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3446	3452	-6
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2354	2361	-7
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2352	2362	-10
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2373	2383	-10
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2379	2408	-29
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3556	3548	8
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3565	3594	-29
X14	Rear Surface of Vehicle to Firewall, Right Side	3803	3758	45
X15	Rear Surface of Vehicle to Firewall, Left Side	3801	3801	0
X16	Rear Surface of Vehicle to Steering Column	2961	2985	-24
X17	Center of Steering Column to "A" Post	297	298	-1
X18	Center of Steering Column to Headliner	401	379	22
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4928	4517	411
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4920	4585	335
X21	Length of Engine Block	635	635	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3115	3119	-4
CD	Rear Surface of Vehicle to Center of Dash Panel	3189	3181	8
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3162	3159	3

All Dimensions in mm

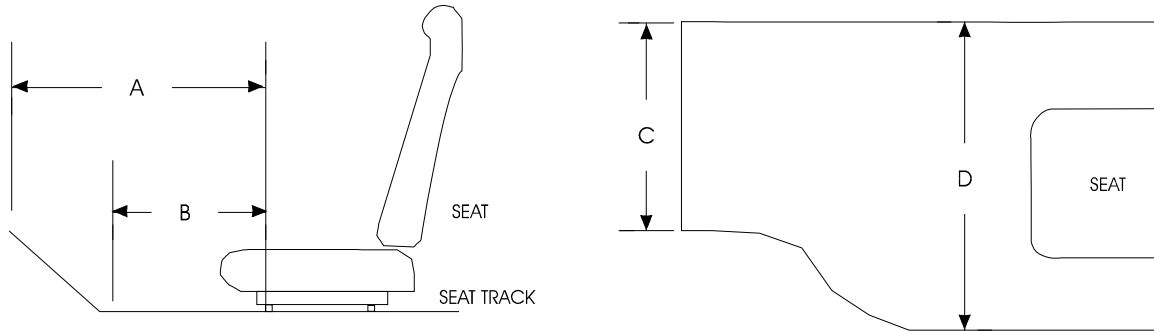
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	984	1438	964	990	1442	963
AFTER TEST	983	1440	969	984	1452	974
DIFFERENCE	1	-2	-5	6	-10	-11

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2850	2849
AFTER TEST	2790	2745
DIFFERENCE	60	104

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



DRIVER

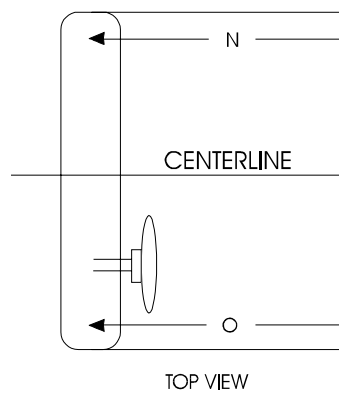
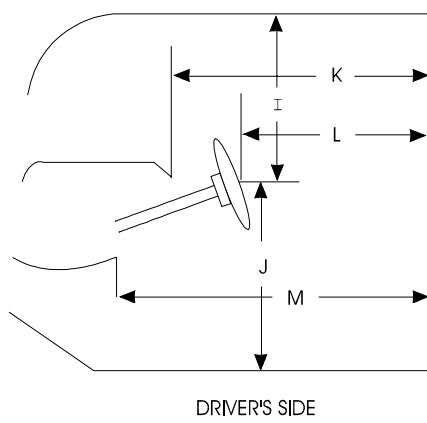
Measurement	Pre-Test	Post-Test	Difference
A	723	663	60
B	522	522	0
C	490	470	20
D	519	492	27

PASSENGER

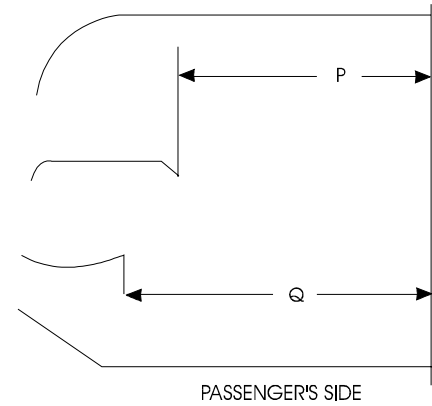
Measurement	Pre-Test	Post-Test	Difference
A	749	618	131
B	528	479	49
C	489	476	13
D	495	499	-4

Units = mm

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



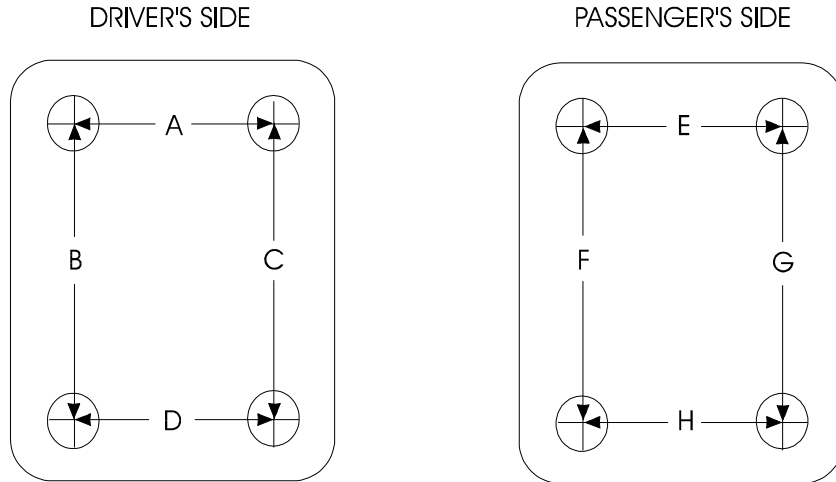
MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



Measurement	Pre-Test	Post-Test	Difference
I	401	379	22
J	639	687	-48
K	2028	2030	-2
L	1837	1865	-28
M	1996	2002	-6
N	1995	1992	3
O	2038	2039	-1
P = K (PASS.)	2018	2007	11
Q = M (PASS.)	2119	2100	19

Units = mm

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

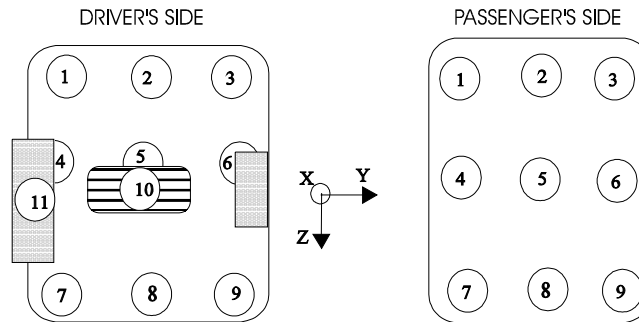


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	400	400	0
B	600	600	0
C	600	598	2
D	400	400	0
E	400	399	1
F	600	589	11
G	600	599	1
H	400	400	0

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
TOE-PAN INTRUSION



Driver Side Floorpan Measurements

Floorpan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3662	3633	-29	-544	-566	-22
2	3674	3623	-51	-514	-538	-24
3	3688	3594	-94	-511	-563	-52
4	3581	3569	-12	-411	-425	-14
5	3585	3555	-30	-403	-420	-17
6	3605	3550	-55	-373	-414	-41
7	3470	3461	-9	-310	-326	-16
8	3473	3482	9	-301	-298	3
9	3473	3482	9	-287	-279	8
10	3490	3421	-69	-478	-537	-59
11	3521	3516	-5	-417	-431	-14

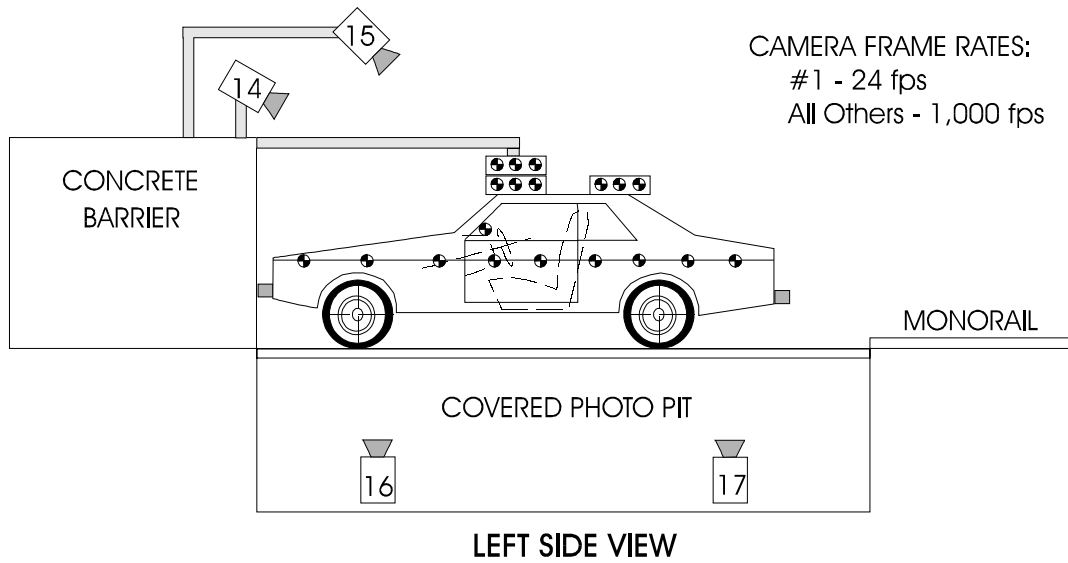
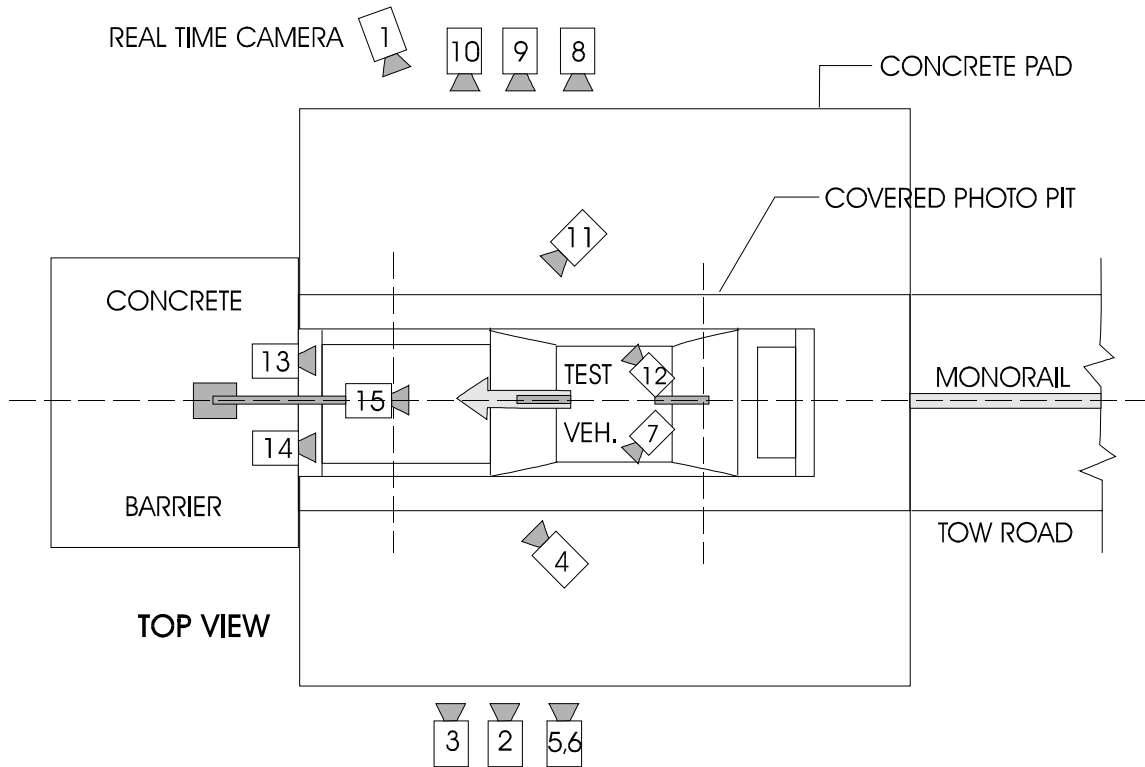
Passenger Side Floorpan Measurements

Floorpan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3679	3564	-115	-484	-501	-17
2	3692	3569	-123	-514	-569	-55
3	3628	3541	-87	-522	-536	-14
4	3588	3524	-64	-406	-412	-6
5	3587	3527	-60	-405	-420	-15
6	3554	3488	-66	-432	-451	-19
7	3467	3466	-1	-305	-264	41
8	3472	3430	-42	-309	-310	-1
9	3463	3442	-21	-312	-298	14

Reference: X = Rear Bumper; Z = Ground

DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS

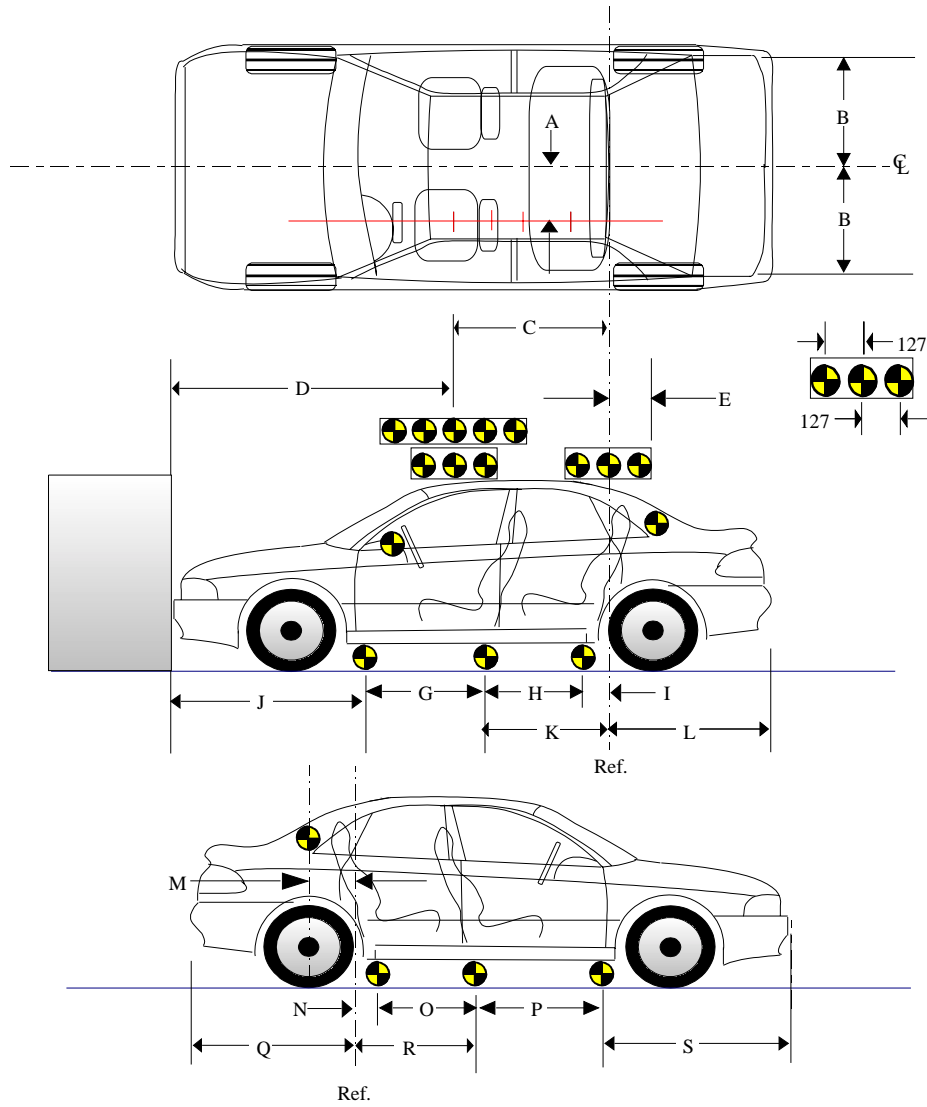
NOTE: Camera information shown in DATA SHEET NO. 15.



DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

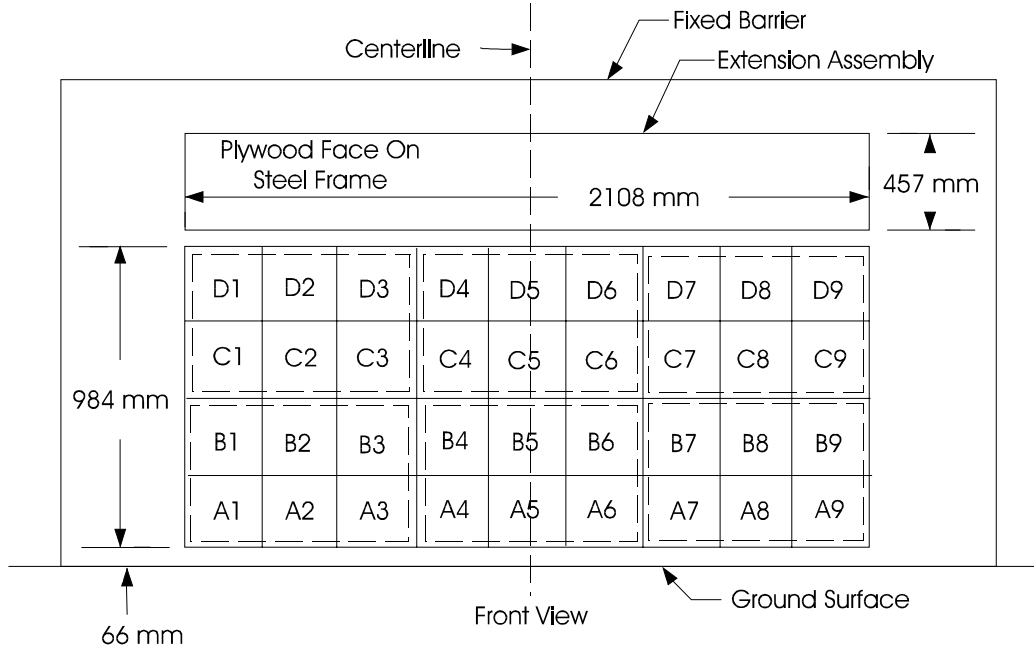
(Dimensions in millimeters)

A	390
B	698
C	1222
D	2388
E	323
F	1691
G	943
H	937
I	171
J	1540
K	1108
L	1467
M	327
N	169
O	933
P	935
Q	1464
R	1102
S	1557



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. : M10111; Test Date: November 30, 2000; Technician: Lawrence Q. Valvo

Vehicle Model Year/Make/Model: 2001 Oldsmobile Aurora

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

B. Size of vent holes: (mm²) 962 -Driver 1590 -Passenger

C. Total vent area: (mm²) 1924 -Driver 3180 -Passenger

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

Driver: - -Length; 550 -Diameter; 285 -Depth

Passenger: 580 -Height; 370 -Width; 420 -Depth

E. Is the air bag tethered?

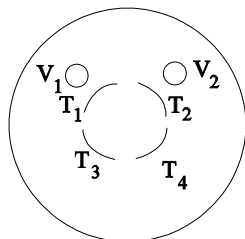
Driver: X -Yes; - -No; If yes, record length of tether- 280

Passenger: X -Yes; - -No; If yes, record length of tether- 500

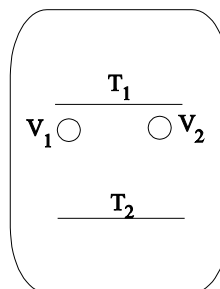
Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.

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

Driver



Passenger



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

Driver: Air bag: Serial number was illegible as a result of the airbag deployment.

Generator: *AB7265Q6SSRWQQ*; T2 96

Passenger: Air bag: 121504-12; REV. K; GNVL8802AHI

Generator: *AL739412231W0422*; 25727394

DATA SHEET NO. 19 ACCIDENT INVESTIGATION DIVISION DATA

FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Oldsmobile Aurora 4-Door Sedan

NHTSA Test No.: M10111 VIN: 1G3GR64H714158319

Model Year: 2001 Build Date: 08/00 Test Date: November 30, 2000

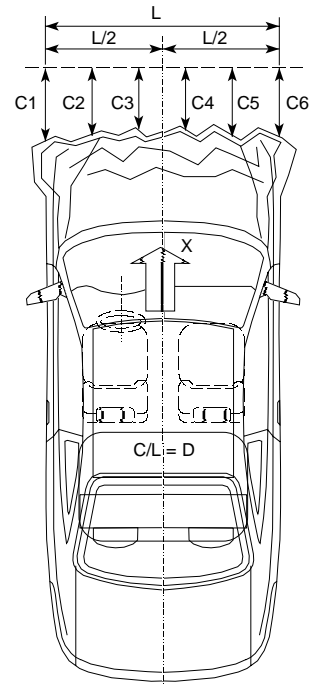
Vehicle Size Category: Mid-Size Test Weight: 1868.5 kg

Vehicle Wheelbase: 2850 mm; Front Overhang: 1083 mm; Overall Width: 1852 mm

Collision Deformation Classification (CDC) Code: 12FDEW2

Crush Depth Dimensions:

	PRE	POST	DIFF	
C1 =	4853	4547	306	mm
C2 =	4997	4587	410	mm
C3 =	5046	4554	492	mm
C4 =	5044	4540	504	mm
C5 =	4999	4533	466	mm
C6 =	4861	4479	382	mm



Midpoint of Damage: $D = \frac{\text{Vehicle Centerline}}{\text{(Longitudinal)}}$

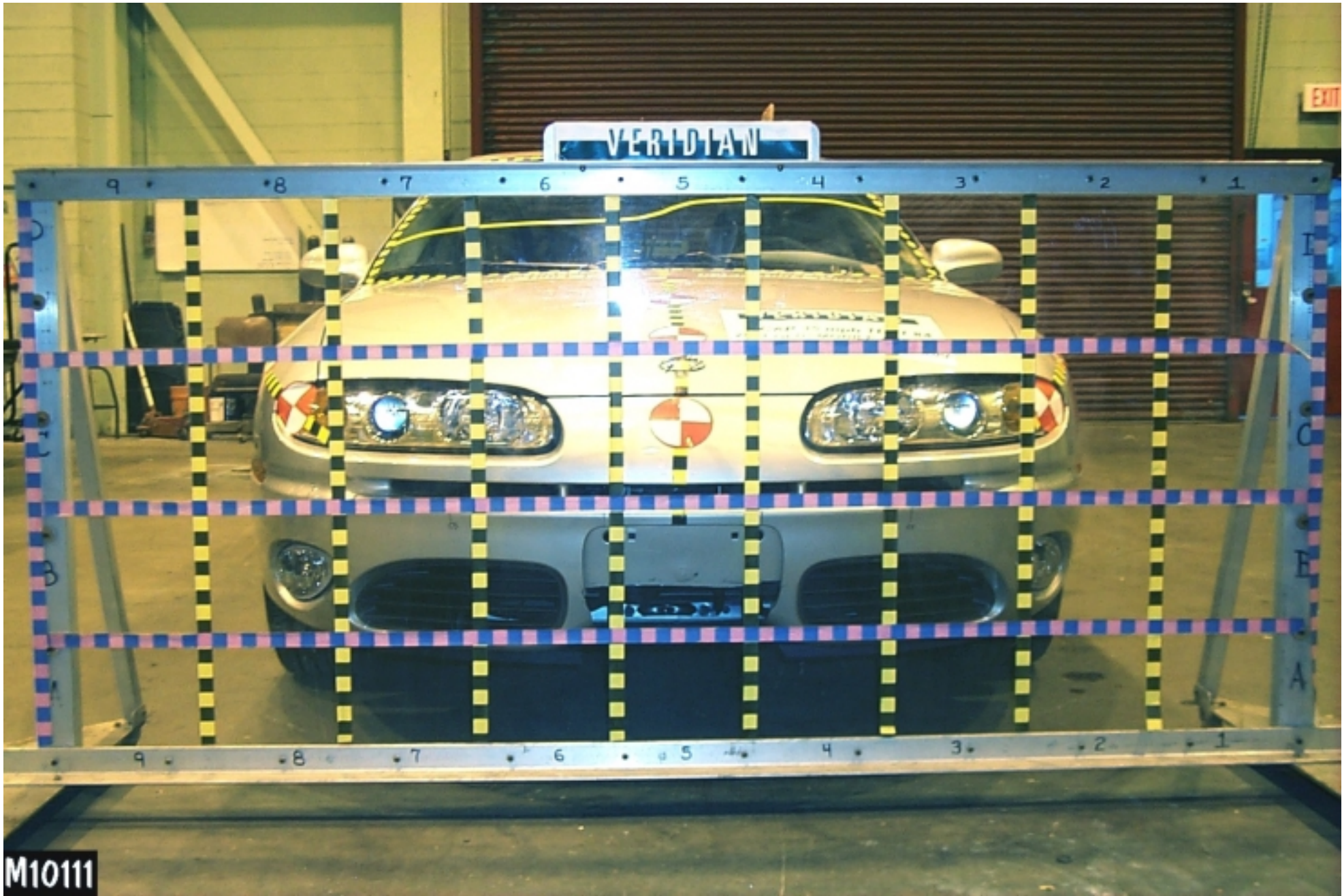
Length of Damaged Region:

L1= 1852 mm
 L2= 926 mm
 L3= 617 mm

APPENDIX A
PHOTOGRAPHS

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A-3

8602-4

Figure A-1: LOAD CELL LOCATIONS.



Figure A-2: PRE-TEST FRONT VIEW



A-5

8602-4

Figure A-3: POST-TEST FRONT VIEW.



Figure A-4: PRE-TEST LEFT SIDE VIEW



Figure A-5: POST-TEST LEFT SIDE VIEW

M10111



Figure A-6: PRE-TEST RIGHT SIDE VIEW



Figure A-7: POST-TEST RIGHT SIDE VIEW



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



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



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



M10111

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



Figure A-12: PRE-TEST WINDSHIELD VIEW



Figure A-13: POST-TEST WINDSHIELD VIEW



A-16

8602-4

M10111

Figure A-14: PRE-TEST ENGINE COMPARTMENT VIEW

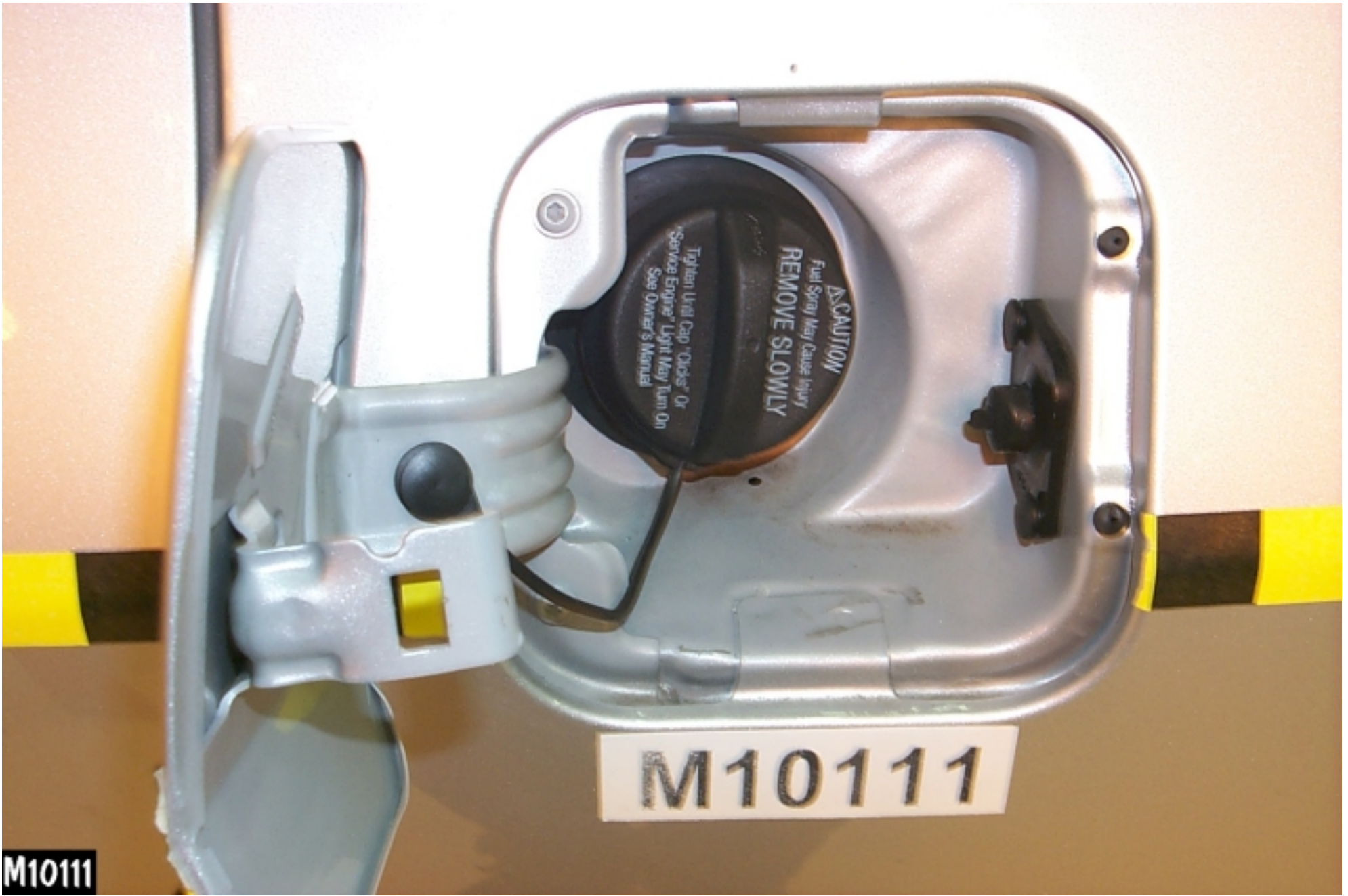


Figure A-15: FUEL CAP VIEW



A-18

8602-4

M10111

Figure A-16: PRE-TEST FRONT UNDERBODY VIEW



Figure A-17: POST-TEST FRONT UNDERBODY VIEW



Figure A-18: PRE-TEST FRONT SIDE UNDERBODY VIEW



Figure A-19: POST-TEST FRONT SIDE UNDERBODY VIEW



M10111

M10111

A-22

8602-4

Figure A-20: PRE-TEST REAR UNDERBODY VIEW



Figure A-21: POST-TEST REAR UNDERBODY VIEW



A-24

8602-4

Figure A-22: PRE-TEST DRIVER POSITION VIEW



A-25

8602-4

Figure A-23: POST-TEST DRIVER POSITION VIEW



A-26

8602-4

Figure A-24: PRE-TEST PASSENGER POSITION VIEW



A-27

8602-4

Figure A-25: POST-TEST PASSENGER POSITION VIEW



M10111

Figure A-26: PRE-TEST DRIVER AND INTERIOR VIEW



Figure A-27: POST-TEST DRIVER AND INTERIOR VIEW



Figure A-28: PRE-TEST PASSENGER AND INTERIOR VIEW



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M10111

Figure A-29: POST-TEST PASSENGER AND INTERIOR VIEW



A-32

8602-4

Figure A-30: PRE-TEST DRIVER HEAD LOCATION



Figure A-31: POST-TEST DRIVER HEAD LOCATION



Figure A-32: PRE-TEST PASSENGER HEAD LOCATION



A-35

8602-4

Figure A-33: POST-TEST PASSENGER HEAD LOCATION

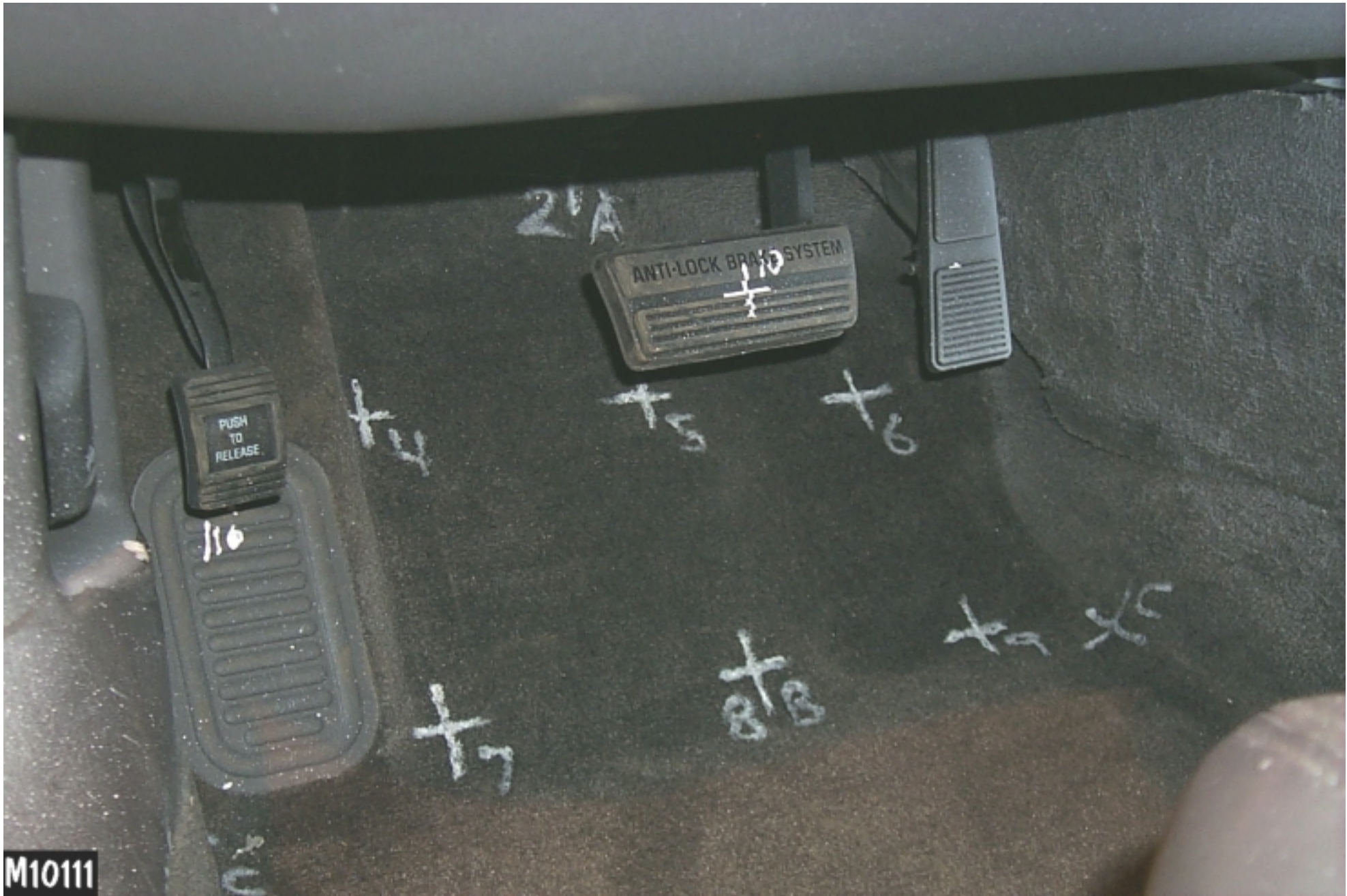


Figure A-34: PRE-TEST DRIVER FLOOR PAN VIEW

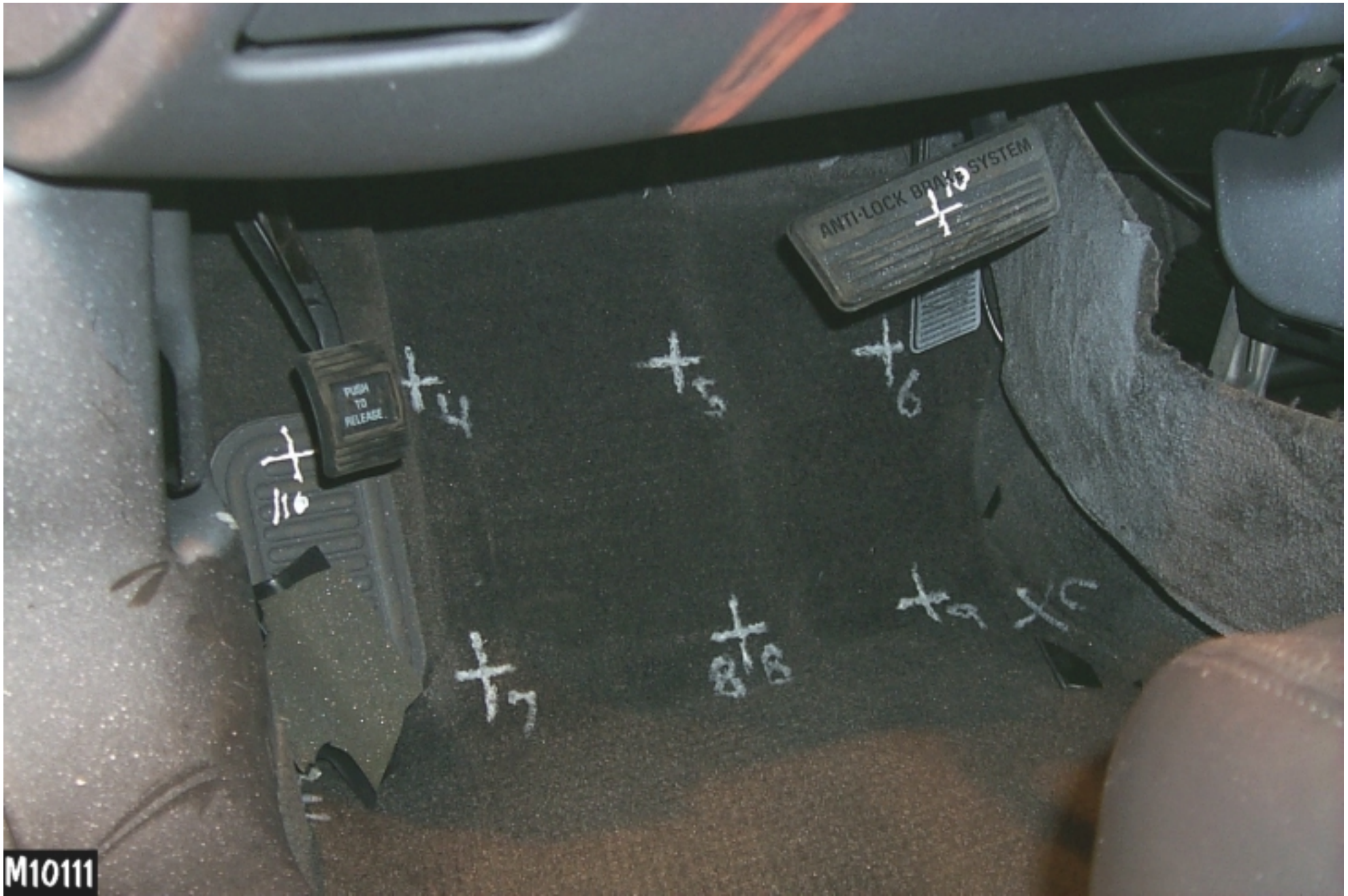


Figure A-35: POST-TEST DRIVER FLOOR PAN VIEW

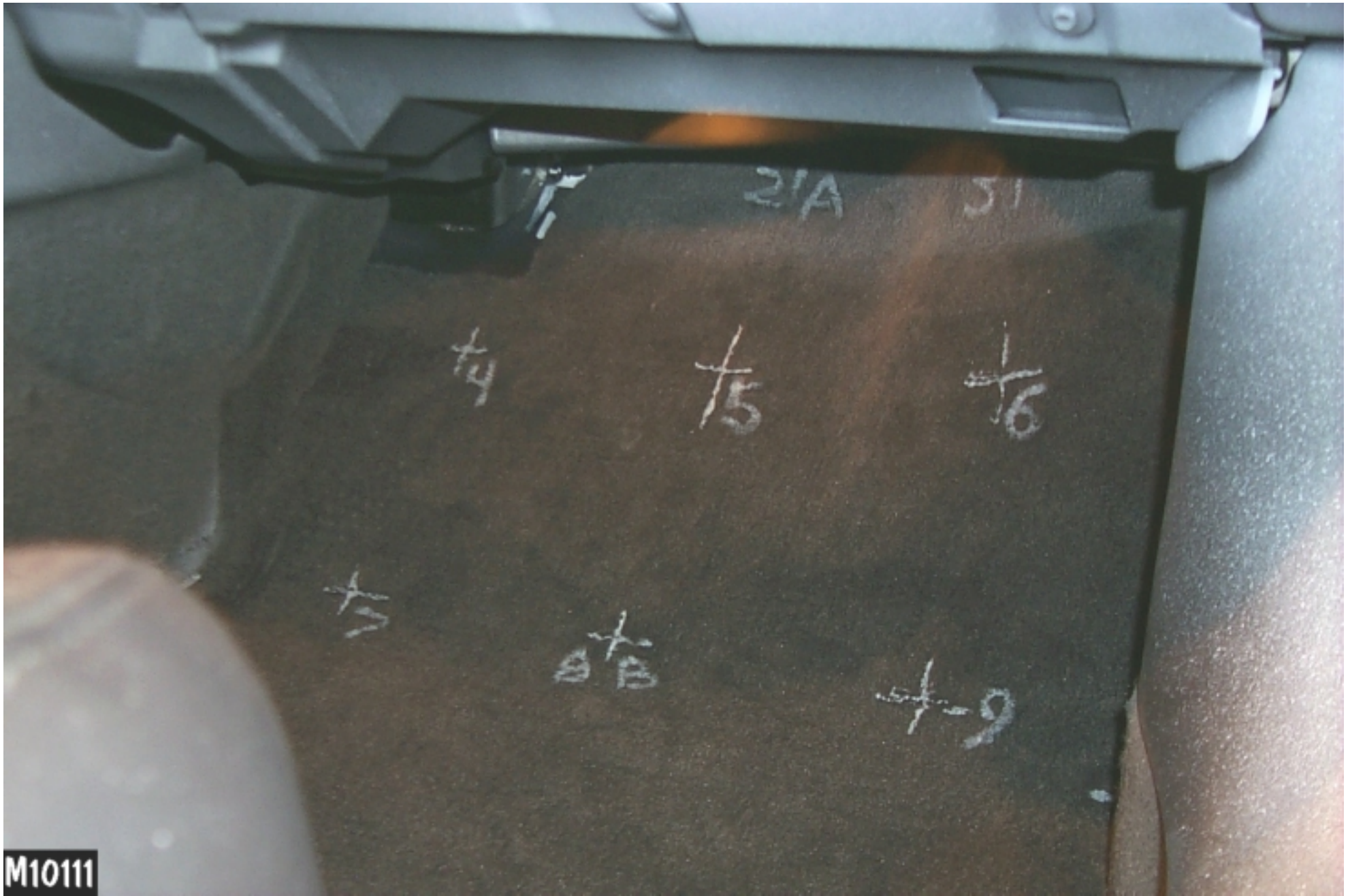


Figure A-36: PRE-TEST PASSENGER FLOOR PAN VIEW



Figure A-37: POST-TEST PASSENGER FLOOR PAN VIEW



Figure A-38: ROLLOVER VIEW



Figure A-39: 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. M10111

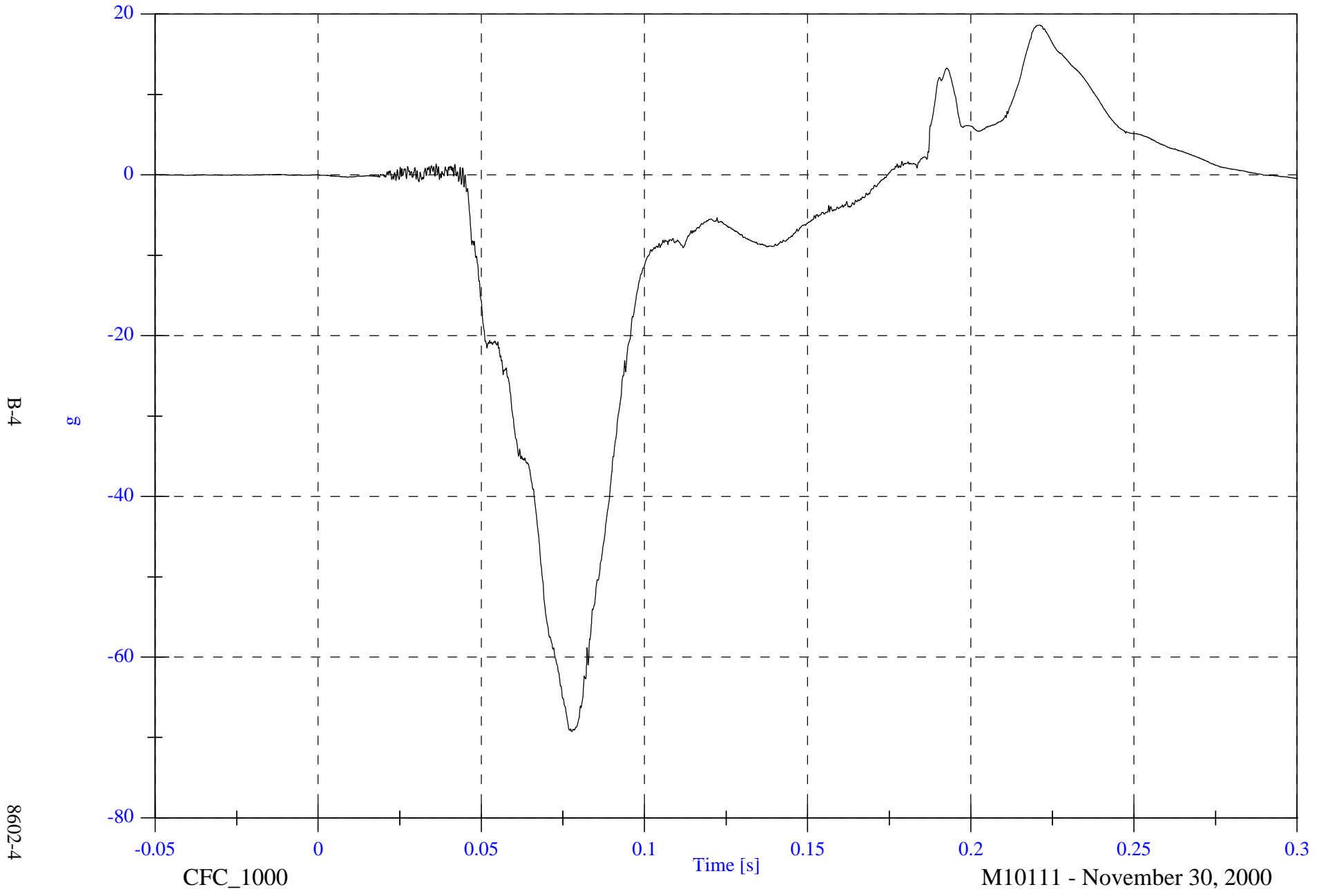
DATA TYPE	SAE FILTER CLASS (Hz)
Dummy Head Accelerations	1000
Dummy Chest Accelerations	180
Dummy Chest Displacements	60
Dummy Femur Forces	600
Dummy Belt Loads	60
Dummy Belt Displacements	180
Dummy Neck Forces	1000
Dummy Neck Moments	600
Vehicle Accelerations	60
Vehicle Velocity Integrations	180
Vehicle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

NCAP Test 4 - 2001 Oldsmobile Aurora

P1 Head x

Max: 18.6 [g] at 0.221 [s]

Min: -69.2 [g] at 0.078 [s]



B-4

g

8602-4

CFC_1000

Time [s]

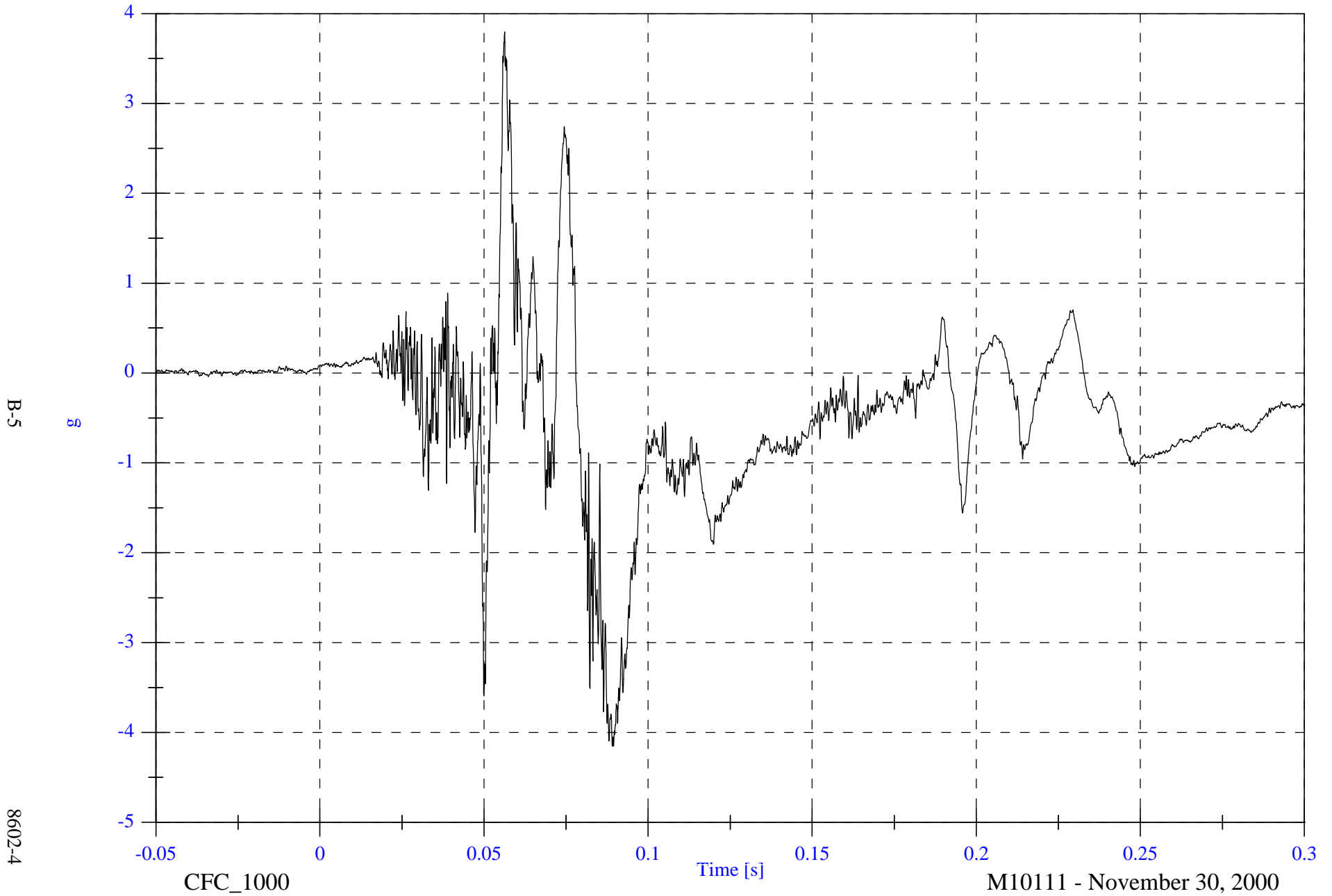
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P1 Head y

Max: 3.8 [g] at 0.056 [s]

Min: -4.2 [g] at 0.089 [s]

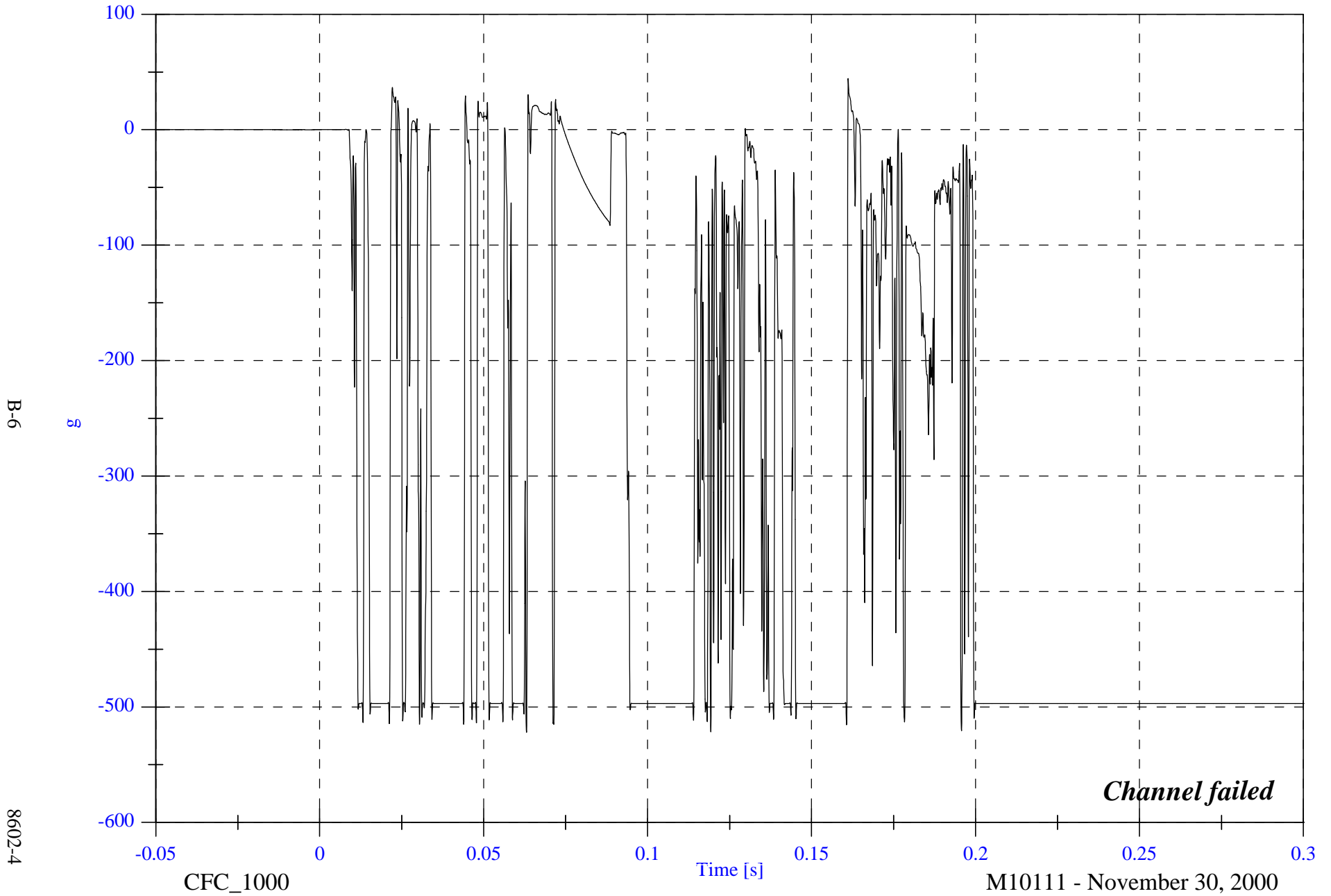


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 44.3 [g] at 0.161 [s]

Min: -521.9 [g] at 0.063 [s]

P1 Head z



B-6

8602-4

CFC_1000

Time [s]

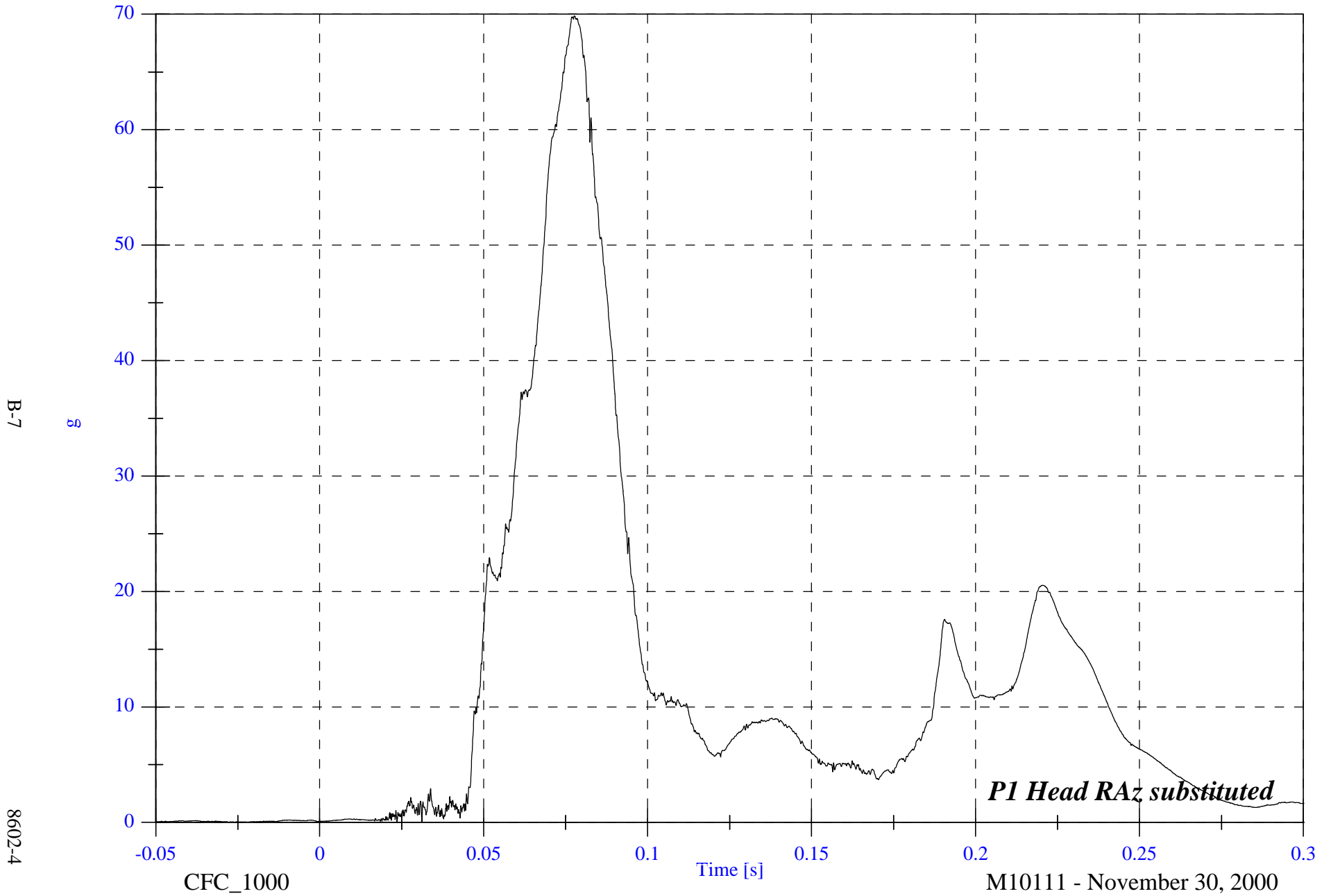
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 69.8 [g] at 0.078 [s]

Min: 0.0 [g] at -0.026 [s]

P1 Head Resultant

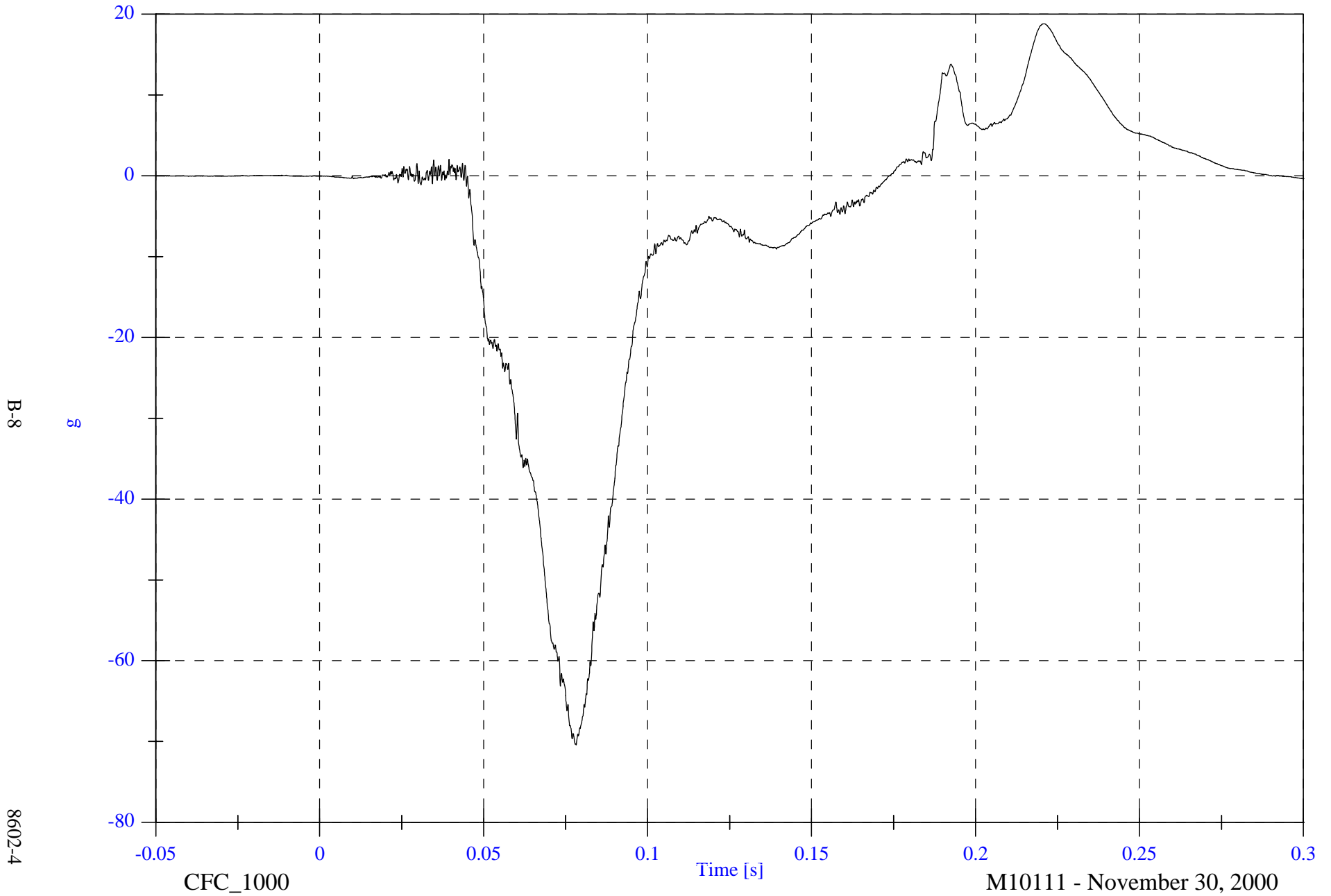


NCAP Test 4 - 2001 Oldsmobile Aurora

P1 Head Red x

Max: 18.8 [g] at 0.221 [s]

Min: -70.4 [g] at 0.078 [s]



B-8

g

8602-4

CFC_1000

Time [s]

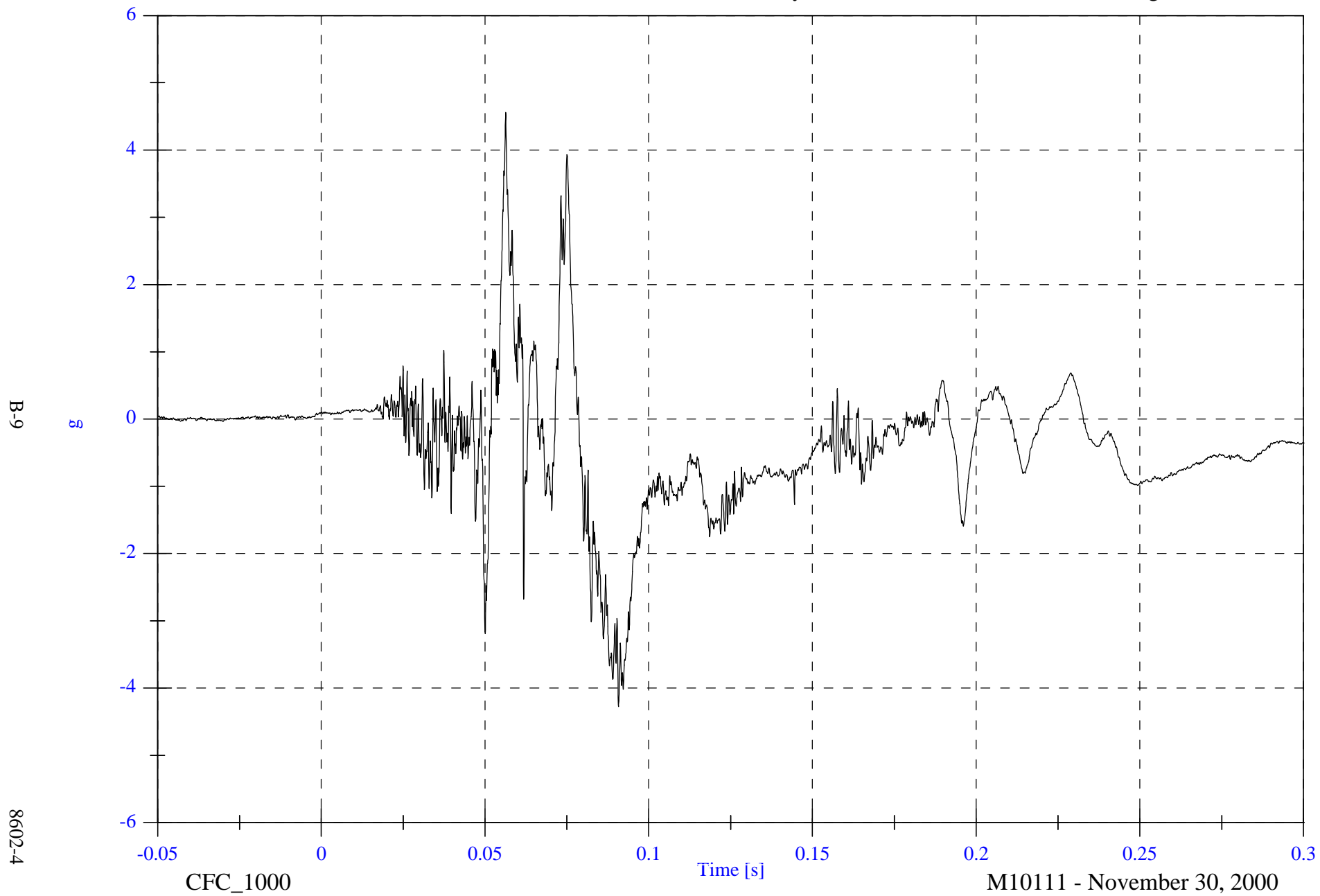
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 4.6 [g] at 0.056 [s]

P1 Head Red y

Min: -4.3 [g] at 0.091 [s]



B-9

g

8602-4

CFC_1000

Time [s]

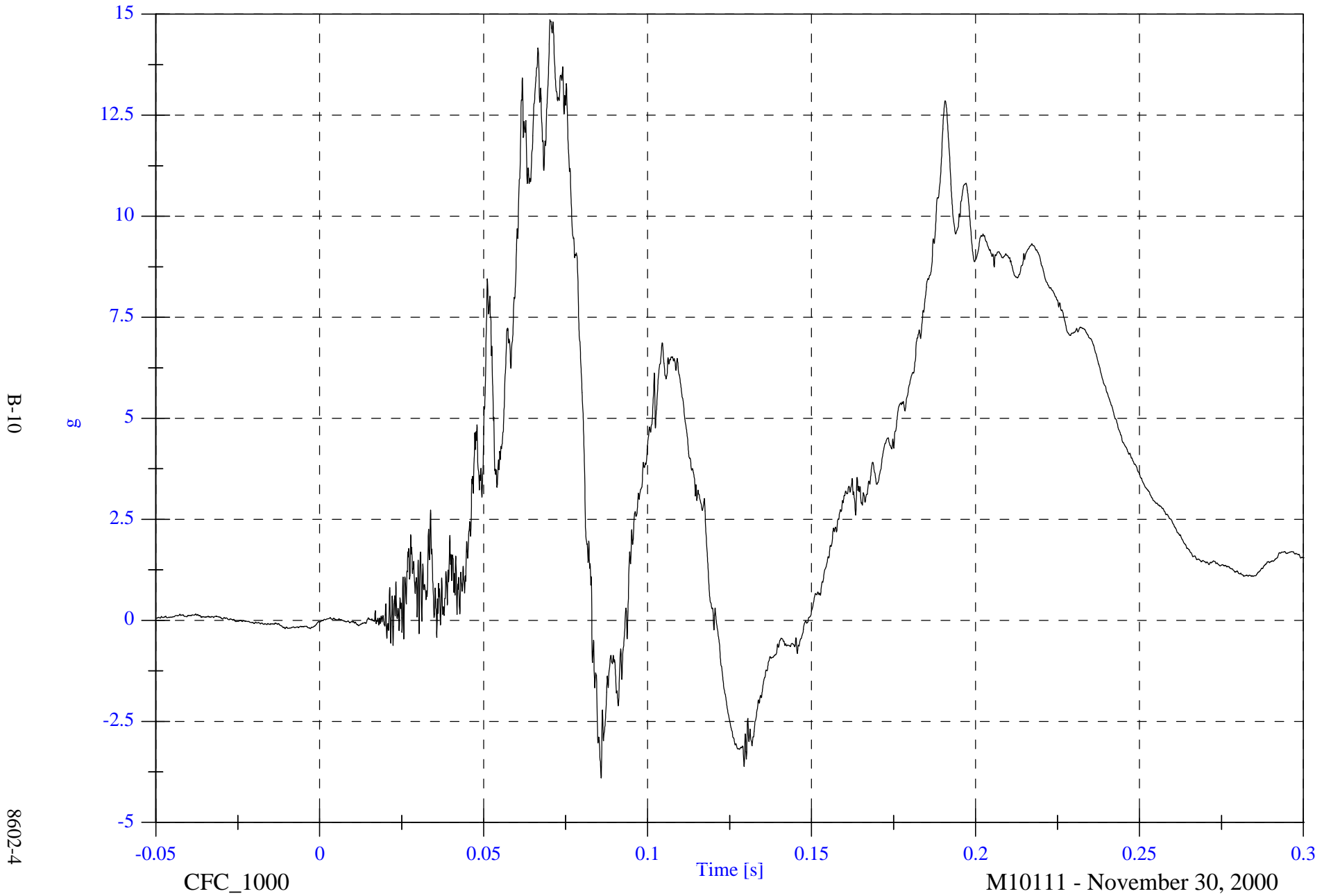
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 14.9 [g] at 0.070 [s]

P1 Head Red z

Min: -3.9 [g] at 0.086 [s]



B-10

8602-4

NCAP Test 4 - 2001 Oldsmobile Aurora

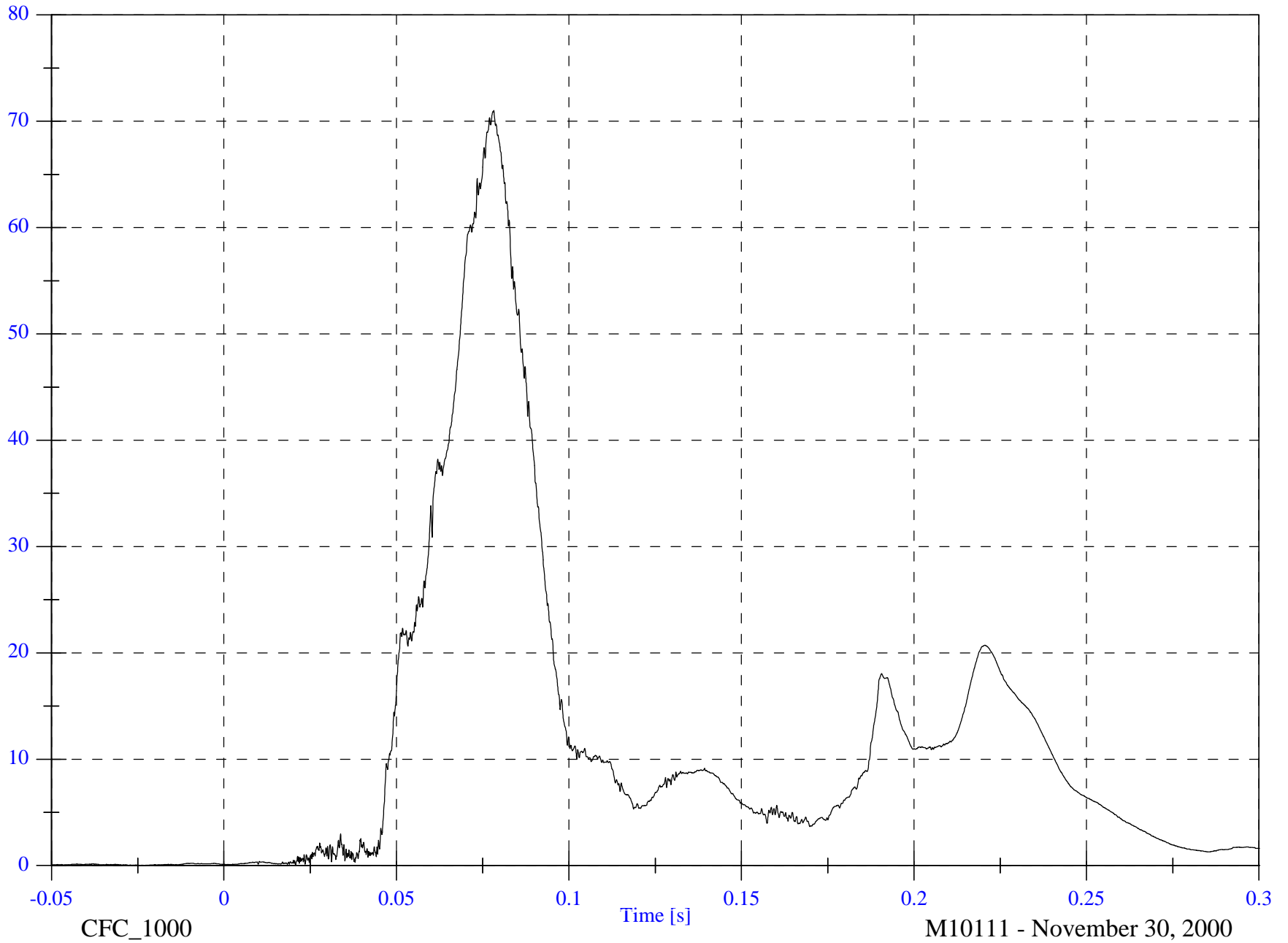
Max: 71.0 [g] at 0.078 [s]

P1 Head Red Resultant

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

B-11

g



8602-4

CFC_1000

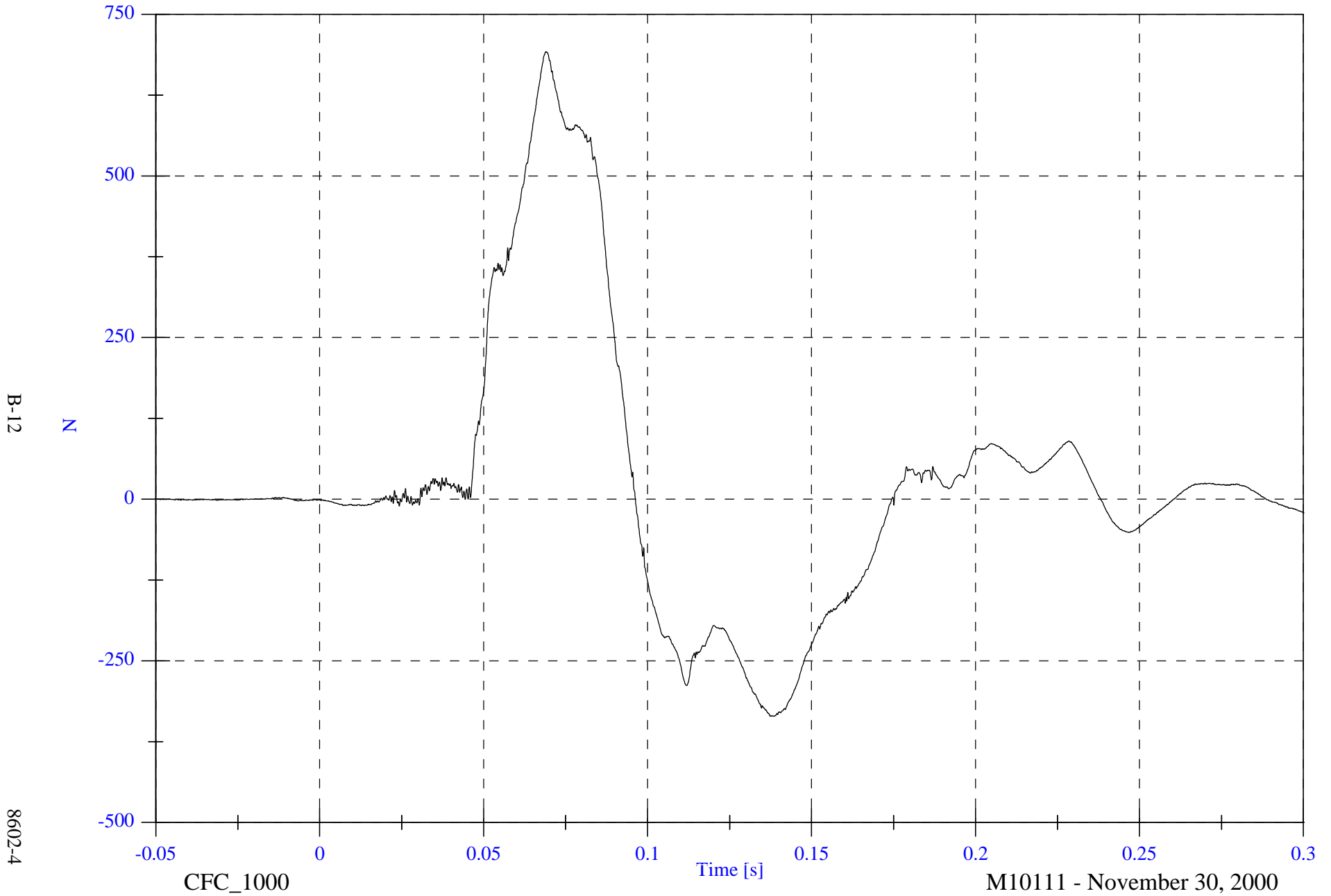
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 691.8 [N] at 0.069 [s]

P1 Upper Neck Fx

Min: -336.1 [N] at 0.139 [s]



B-12

N

8602-4

CFC_1000

Time [s]

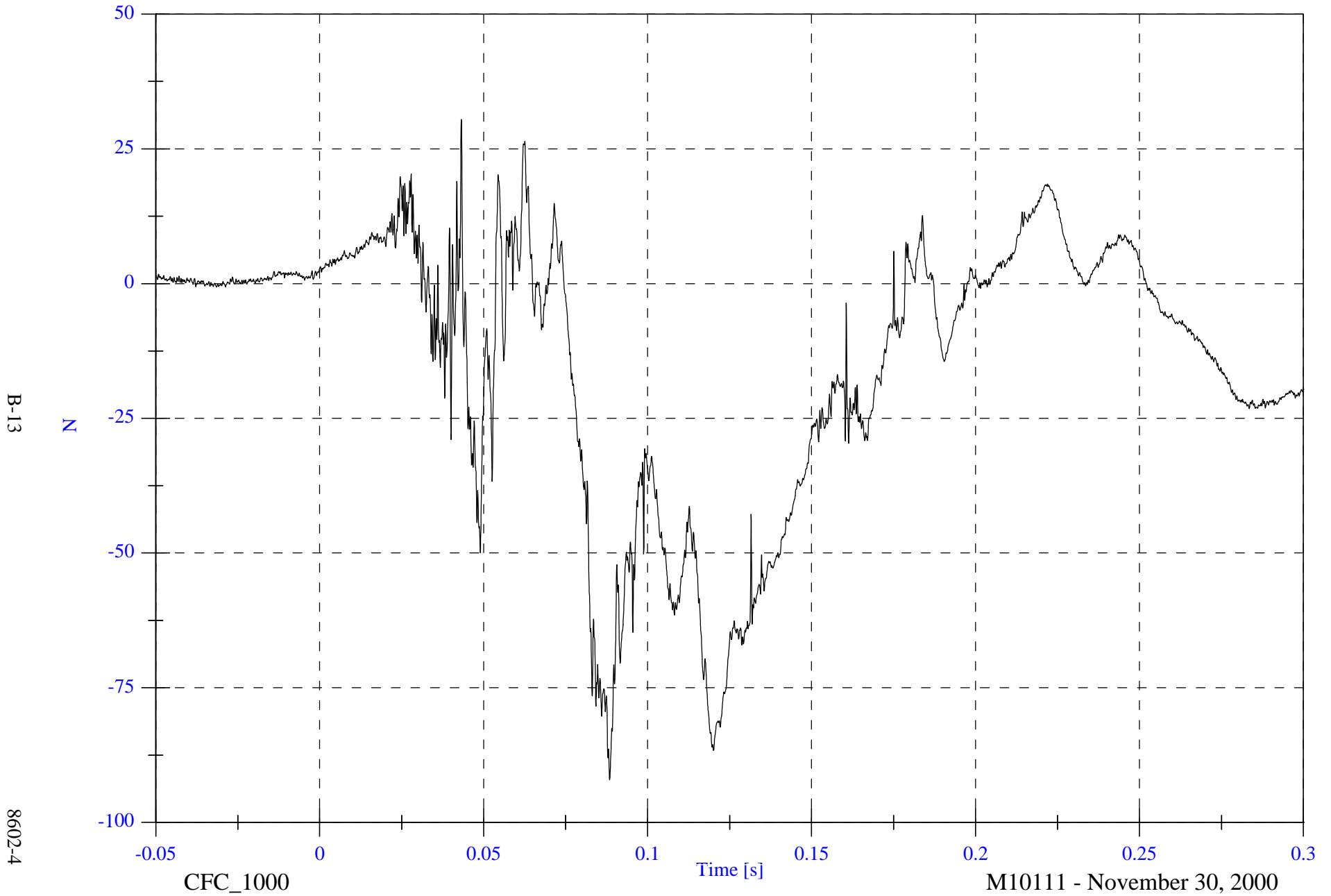
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 30.5 [N] at 0.043 [s]

P1 Upper Neck Fy

Min: -92.1 [N] at 0.088 [s]



B-13

N

8602-4

CFC_1000

Time [s]

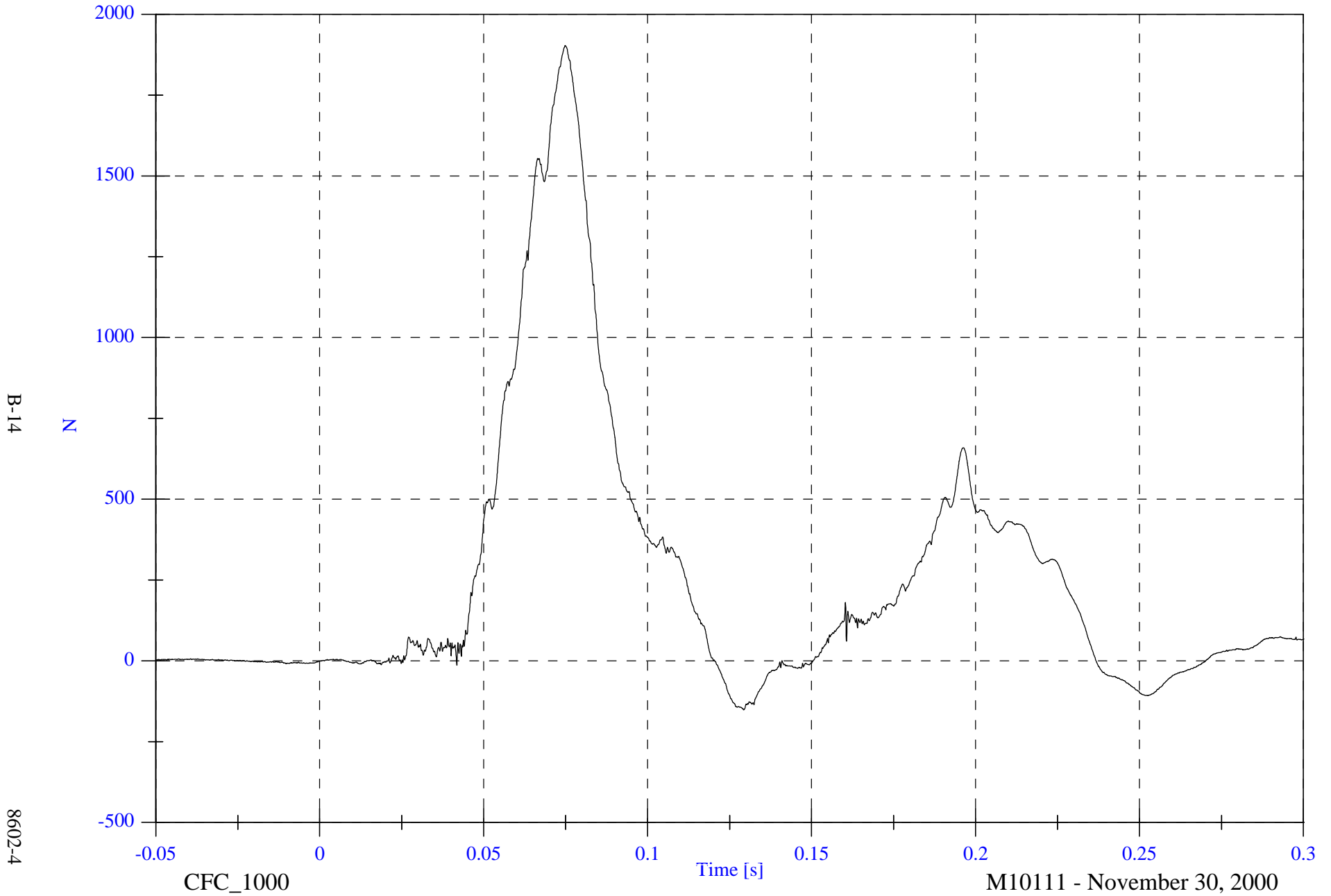
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P1 Upper Neck Fz

Max: 1903.2 [N] at 0.075 [s]

Min: -151.7 [N] at 0.129 [s]



B-14

N

8602-4

CFC_1000

Time [s]

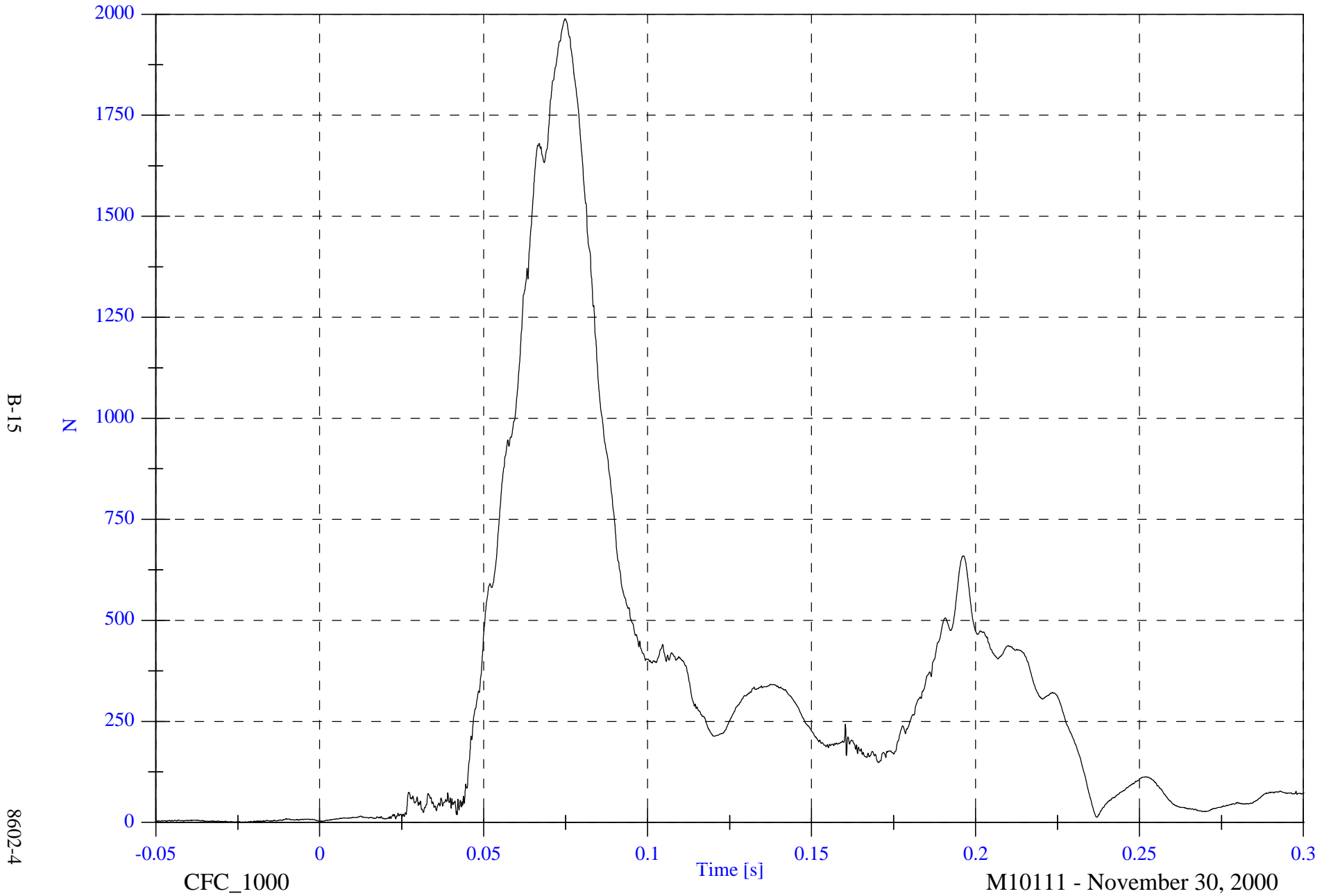
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 1988.9 [N] at 0.075 [s]

P1 Upper Neck F Resultant

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



B-15

8602-4

CFC_1000

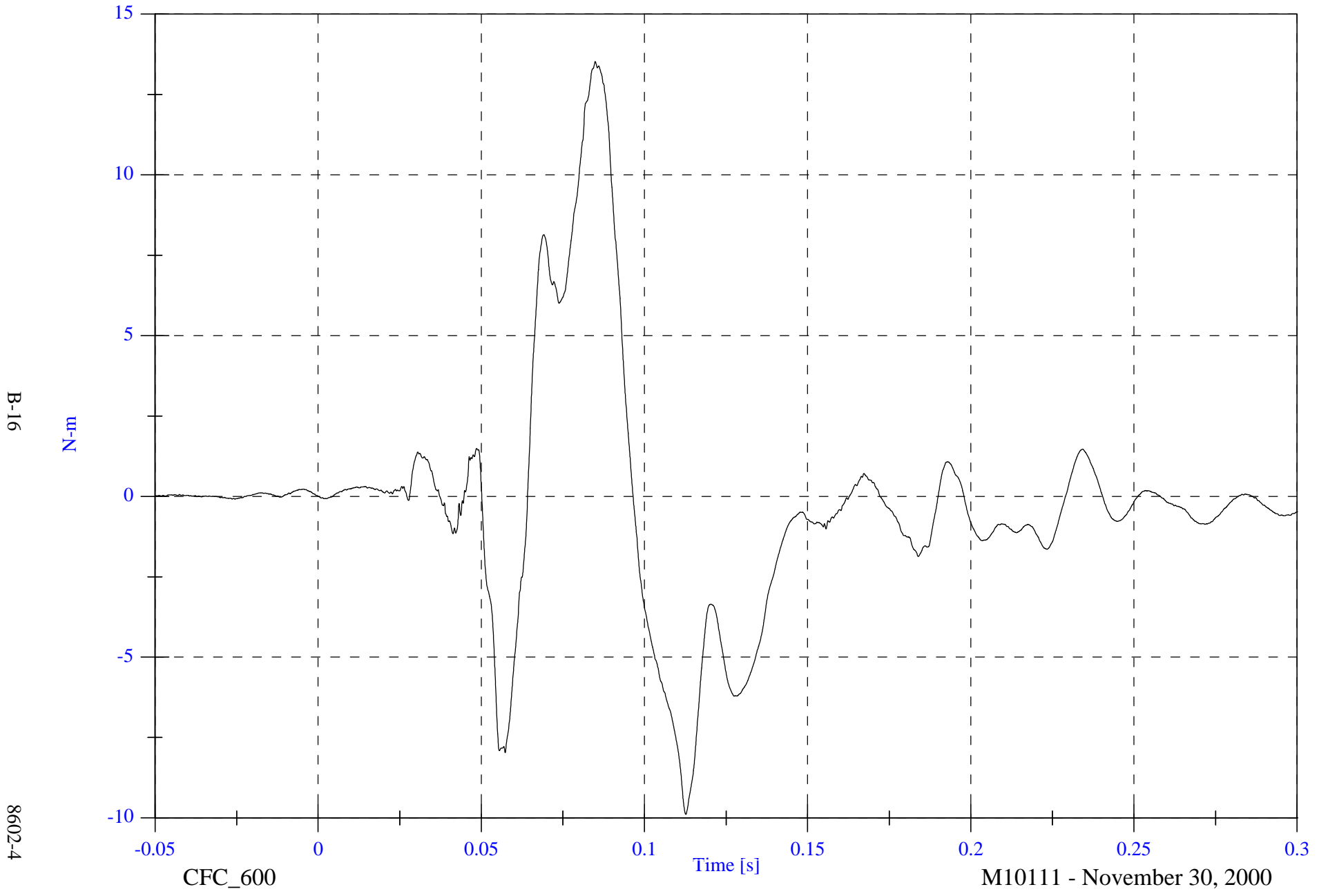
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 13.5 [N-m] at 0.085 [s]

P1 Upper Neck Mx

Min: -9.9 [N-m] at 0.113 [s]



B-16

8602-4

CFC_600

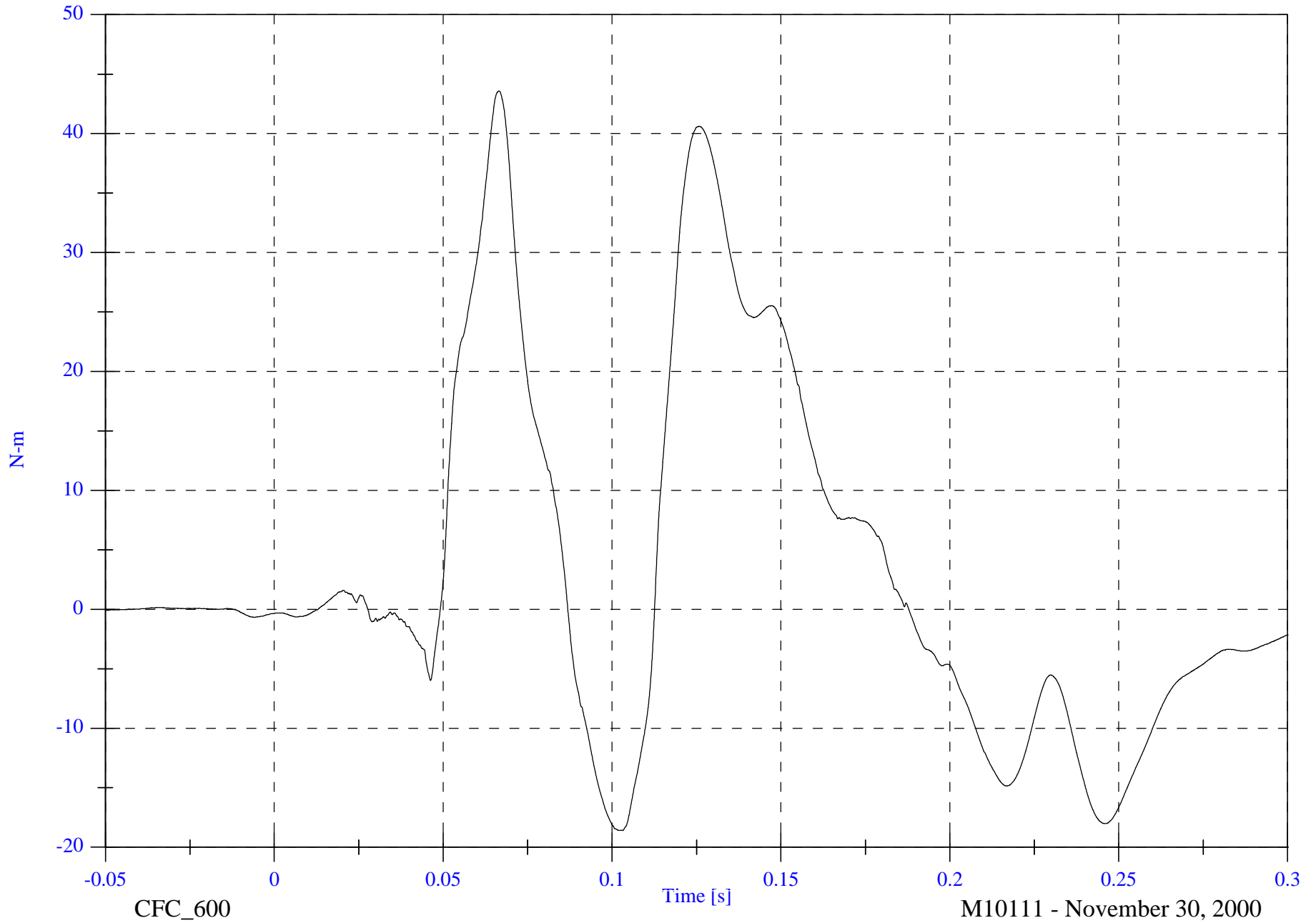
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 43.6 [N-m] at 0.067 [s]

P1 Upper Neck My

Min: -18.6 [N-m] at 0.103 [s]



B-17

8602-4

CFC_600

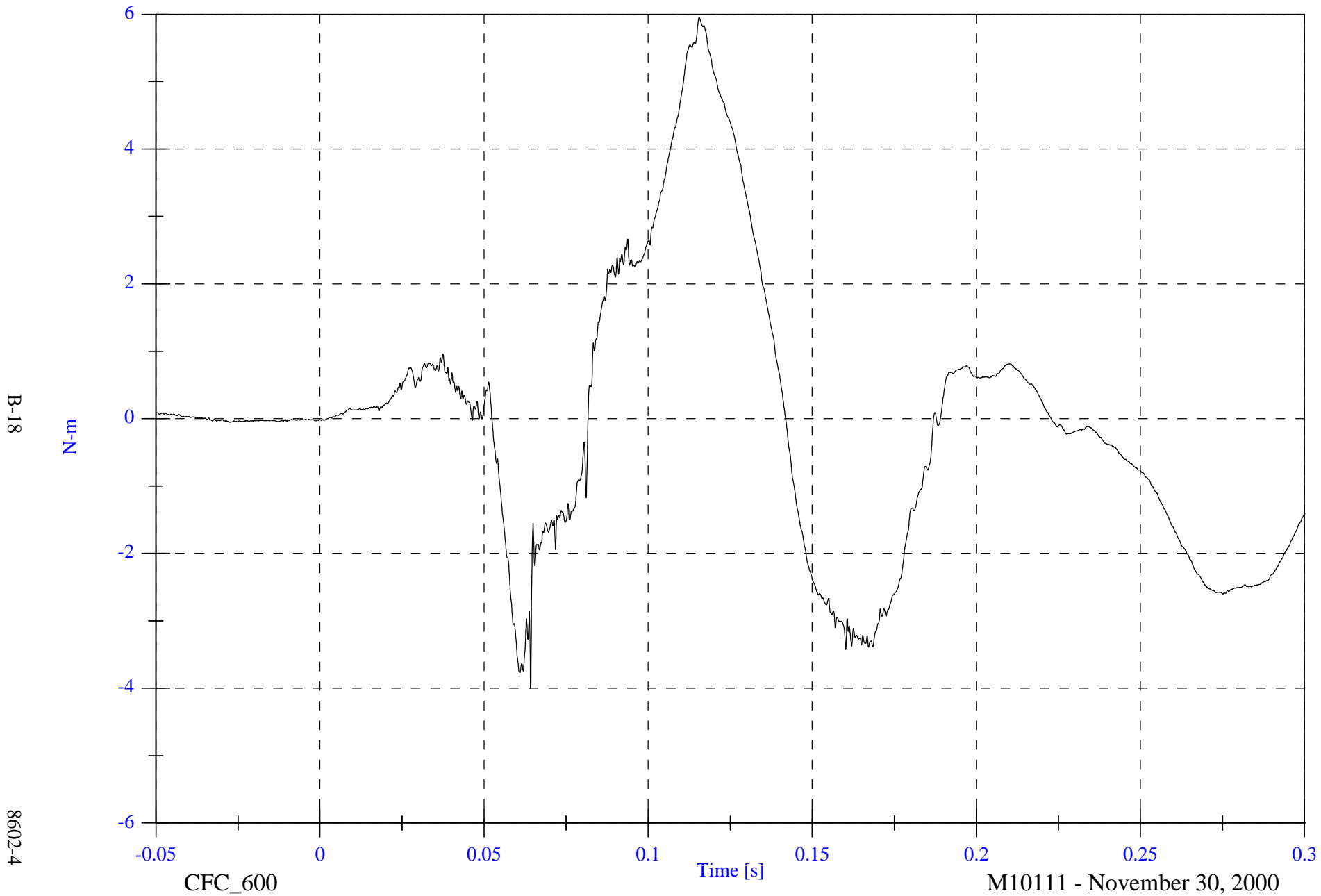
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 6.0 [N-m] at 0.116 [s]

Min: -4.0 [N-m] at 0.064 [s]

P1 Upper Neck Mz



B-18

8602-4

CFC_600

Time [s]

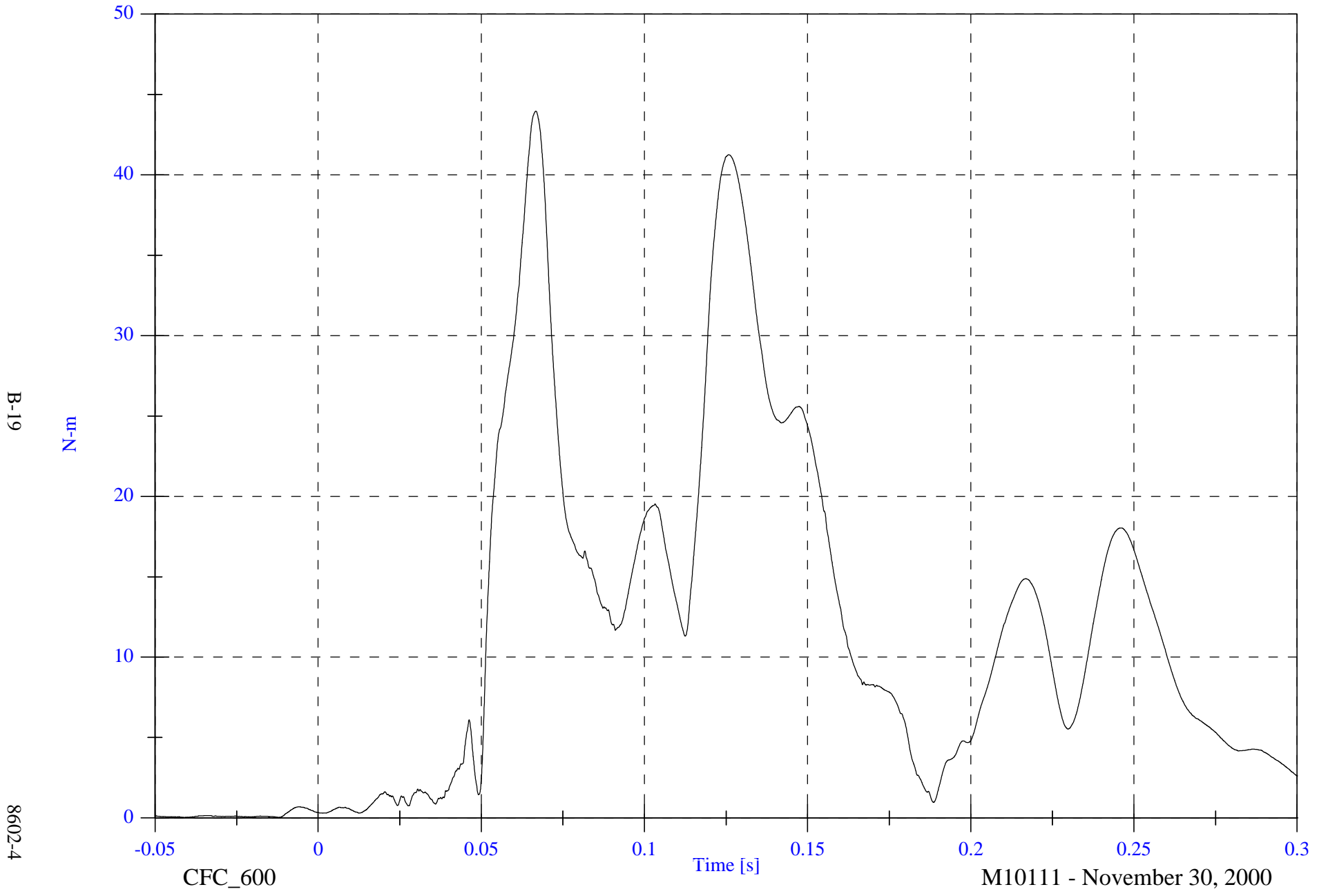
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P1 Upper Neck M Resultant

Max: 44.0 [N-m] at 0.067 [s]

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



B-19

8602-4

CFC_600

Time [s]

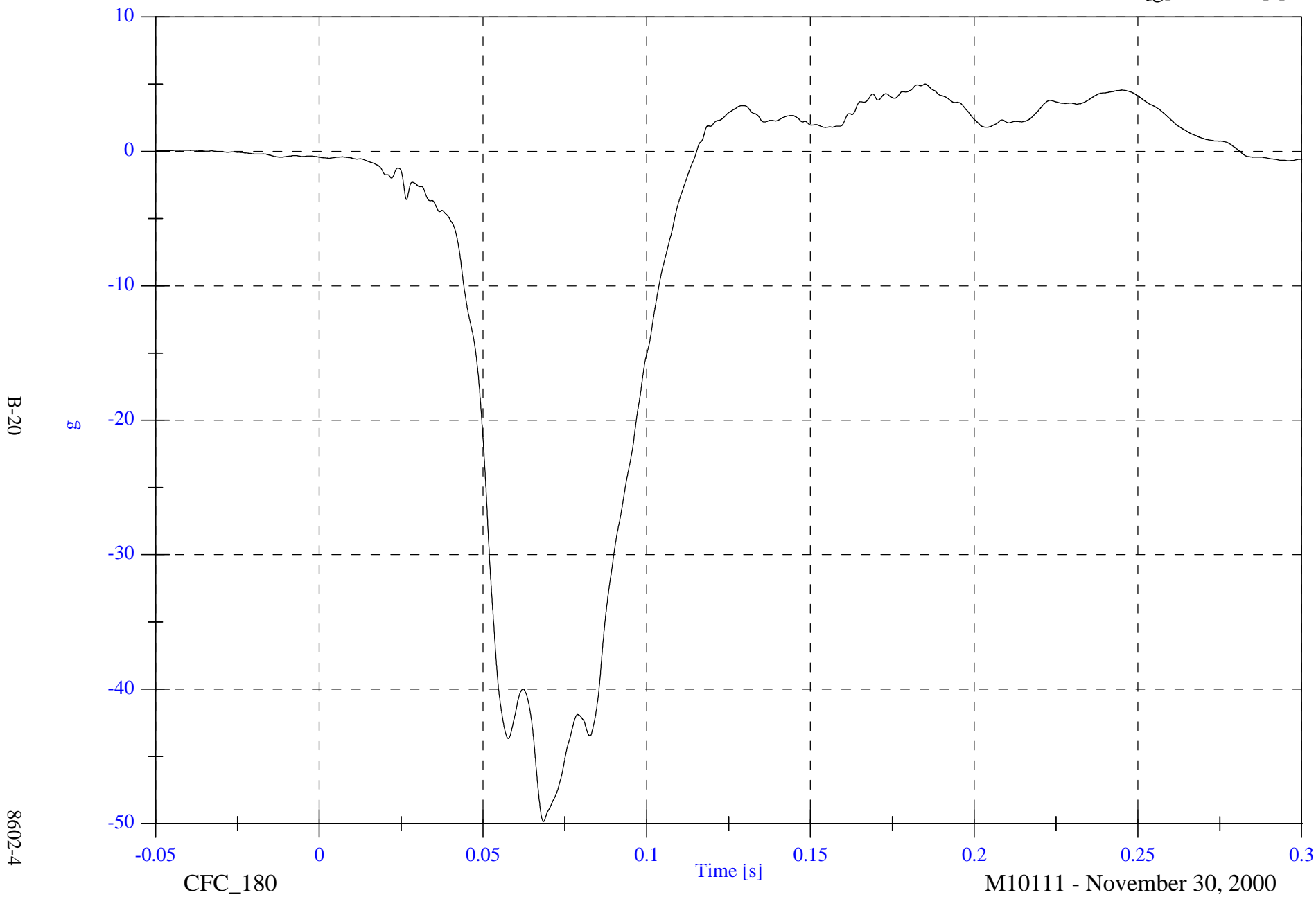
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 5.0 [g] at 0.185 [s]

Min: -49.9 [g] at 0.068 [s]

P1 Chest x



B-20

8602-4

CFC_180

Time [s]

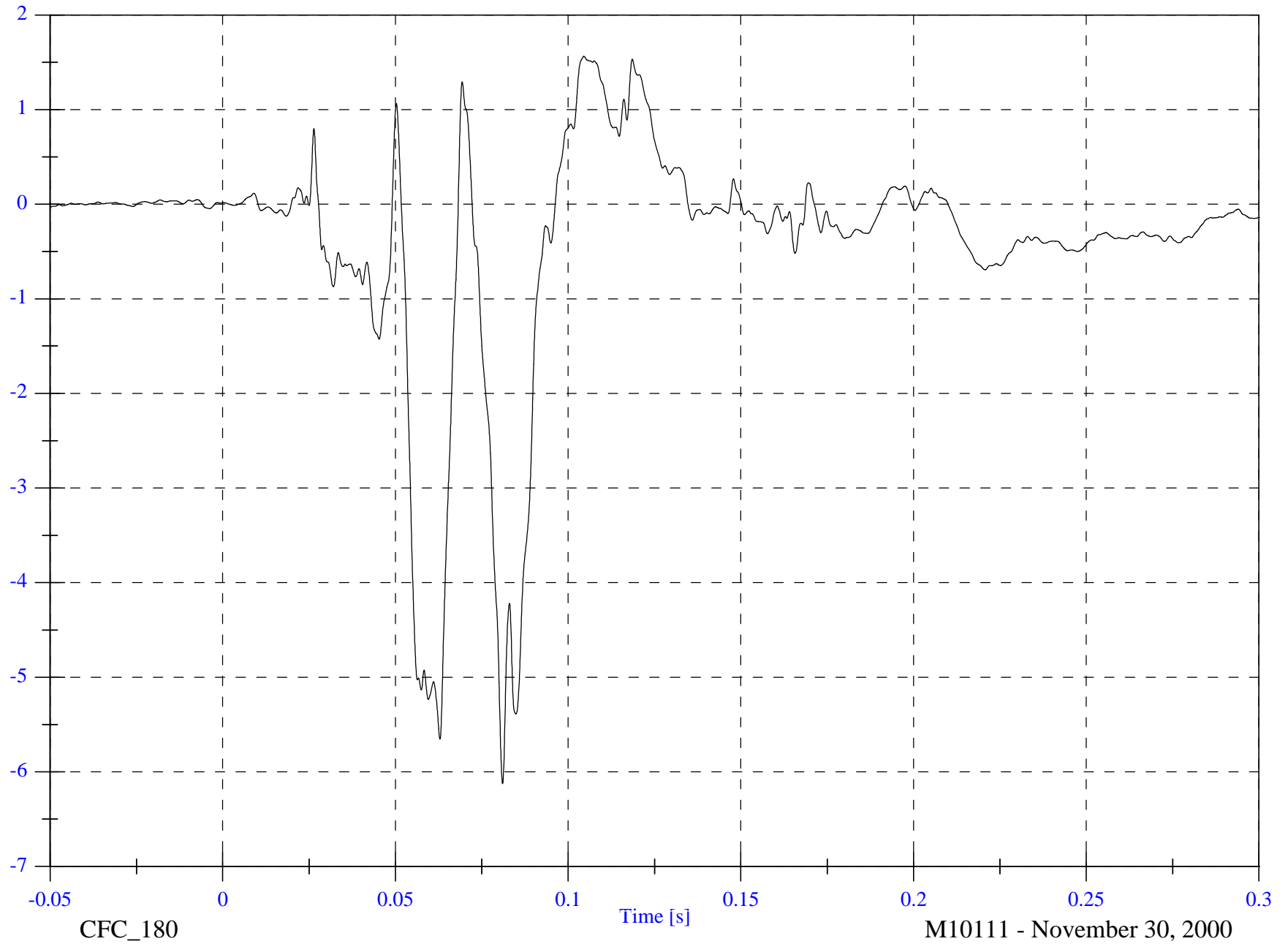
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 1.6 [g] at 0.105 [s]

Min: -6.1 [g] at 0.081 [s]

P1 Chest y



B-21

g

8602-4

CFC_180

Time [s]

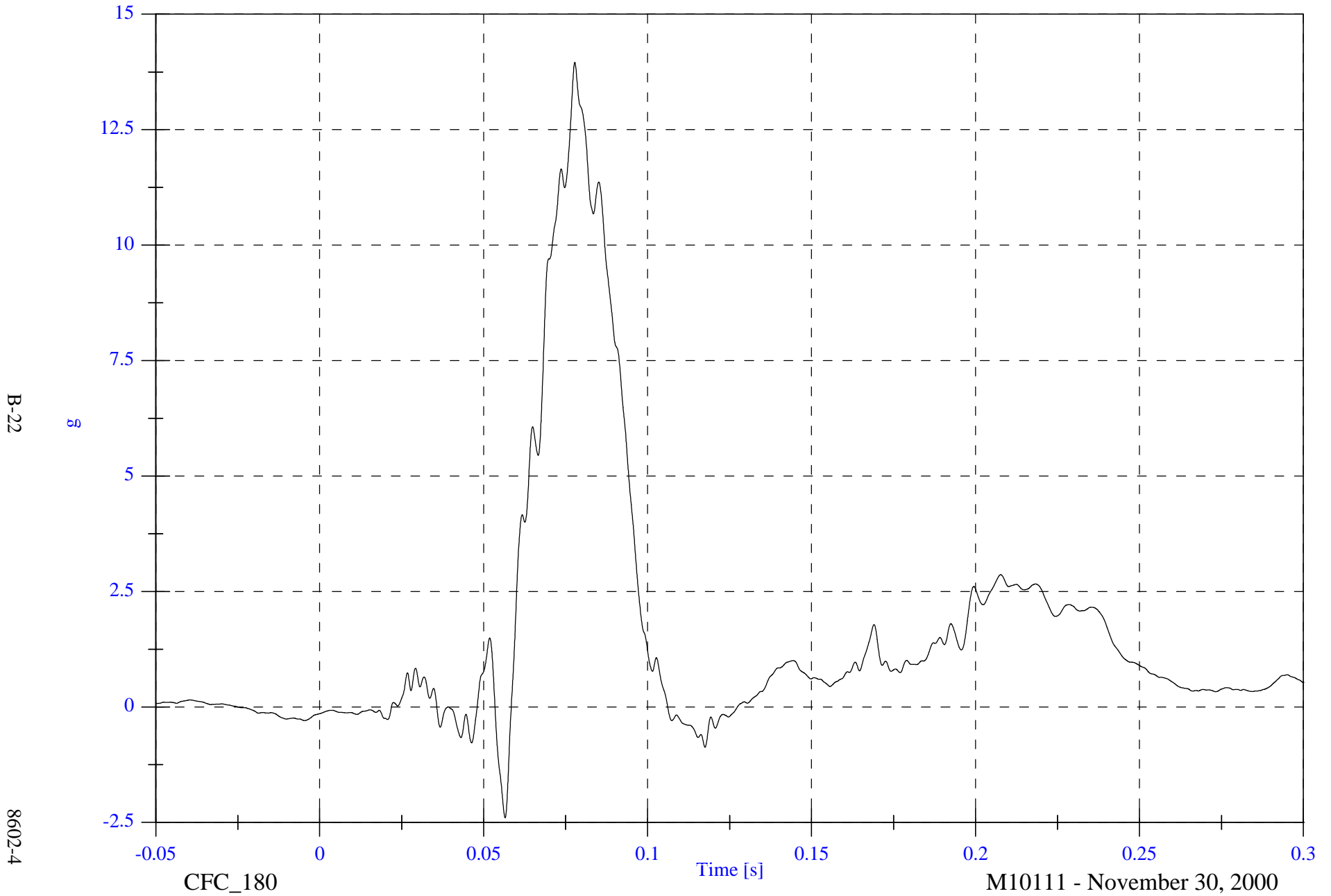
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 14.0 [g] at 0.078 [s]

Min: -2.4 [g] at 0.057 [s]

P1 Chest z



B-22

8602-4

NCAP Test 4 - 2001 Oldsmobile Aurora

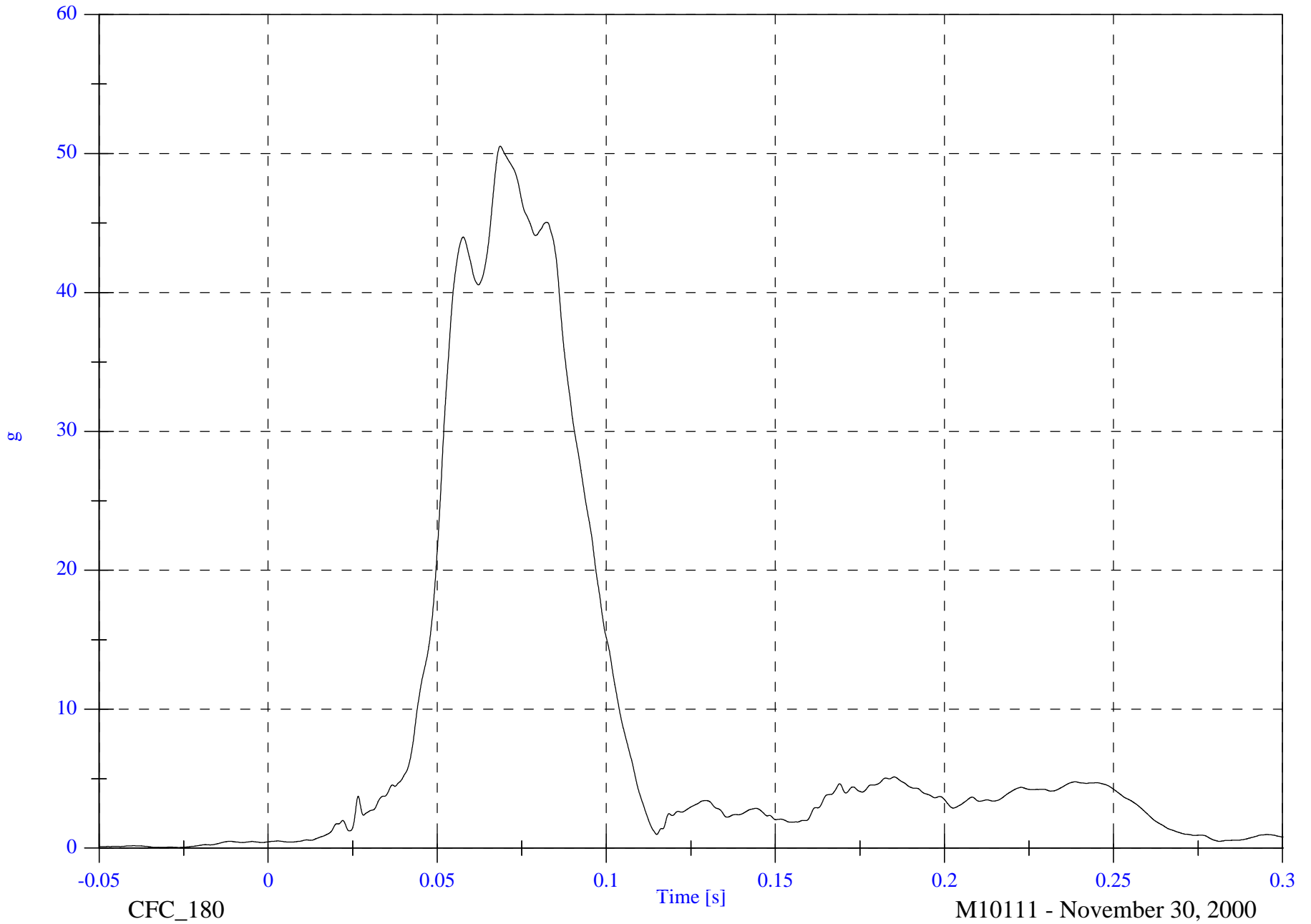
P1 Chest Resultant

Max: 50.5 [g] at 0.069 [s]

Min: 0.0 [g] at -0.026 [s]

B-23

8602-4



CFC_180

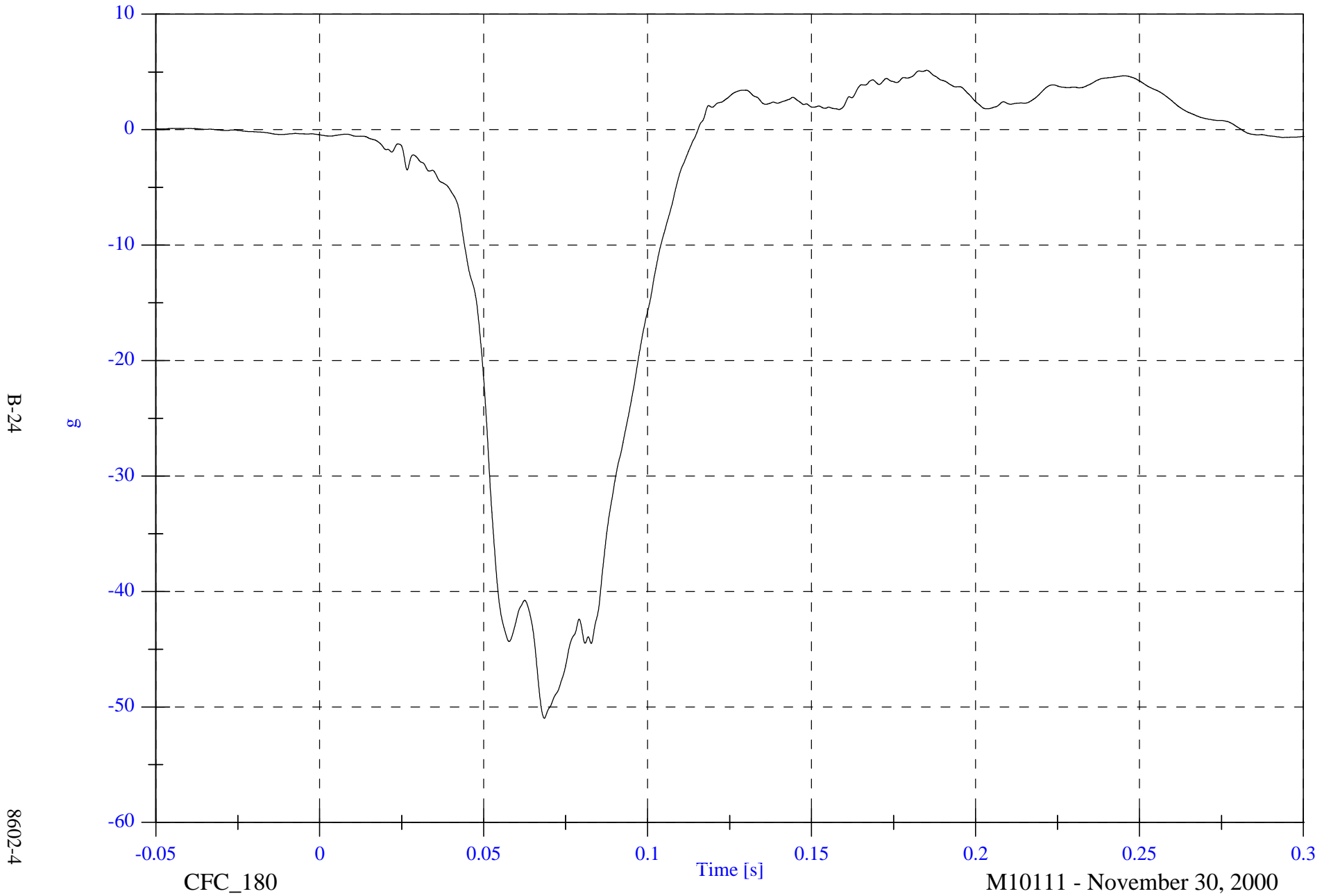
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P1 Chest Red x

Max: 5.1 [g] at 0.185 [s]

Min: -51.0 [g] at 0.069 [s]



B-24

8602-4

CFC_180

Time [s]

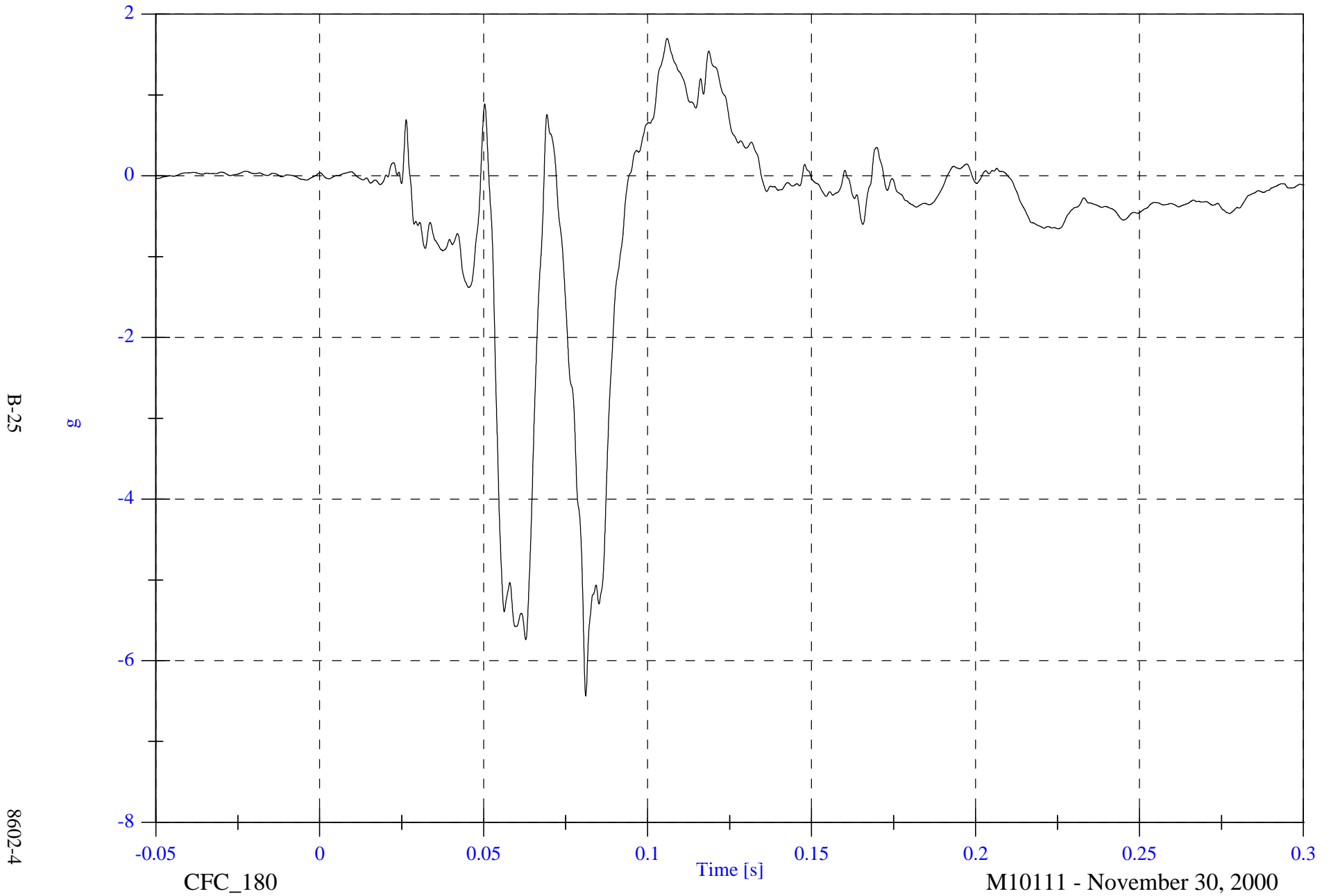
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 1.7 [g] at 0.106 [s]

Min: -6.4 [g] at 0.081 [s]

P1 Chest Red y



B-25

g

8602-4

CFC_180

Time [s]

M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 13.2 [g] at 0.081 [s]

Min: -2.9 [g] at 0.056 [s]

P1 Chest Red z



B-26

8602-4

CFC_180

M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

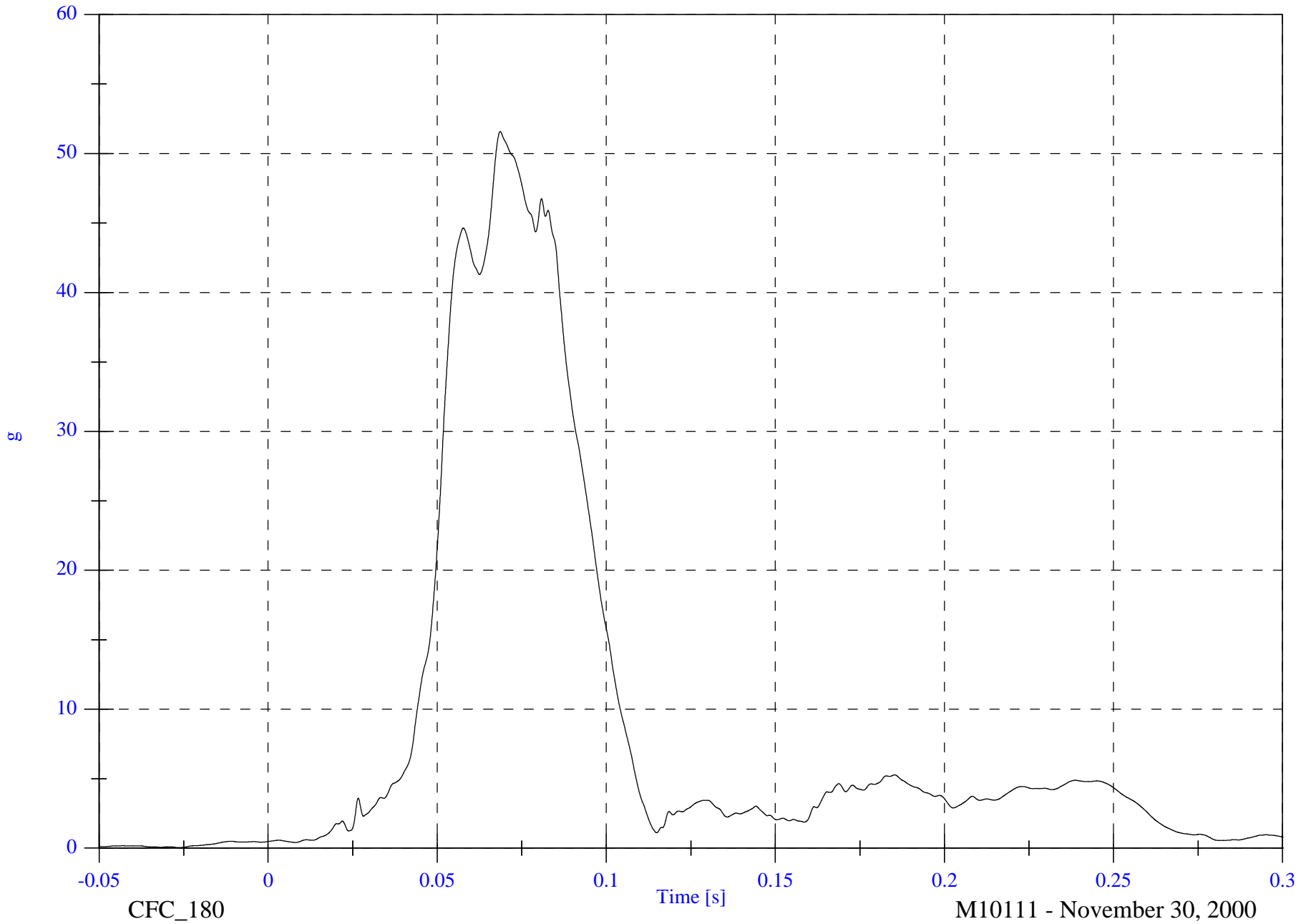
P1 Chest Red Resultant

Max: 51.6 [g] at 0.069 [s]

Min: 0.0 [g] at -0.026 [s]

B-27

8602-4



CFC_180

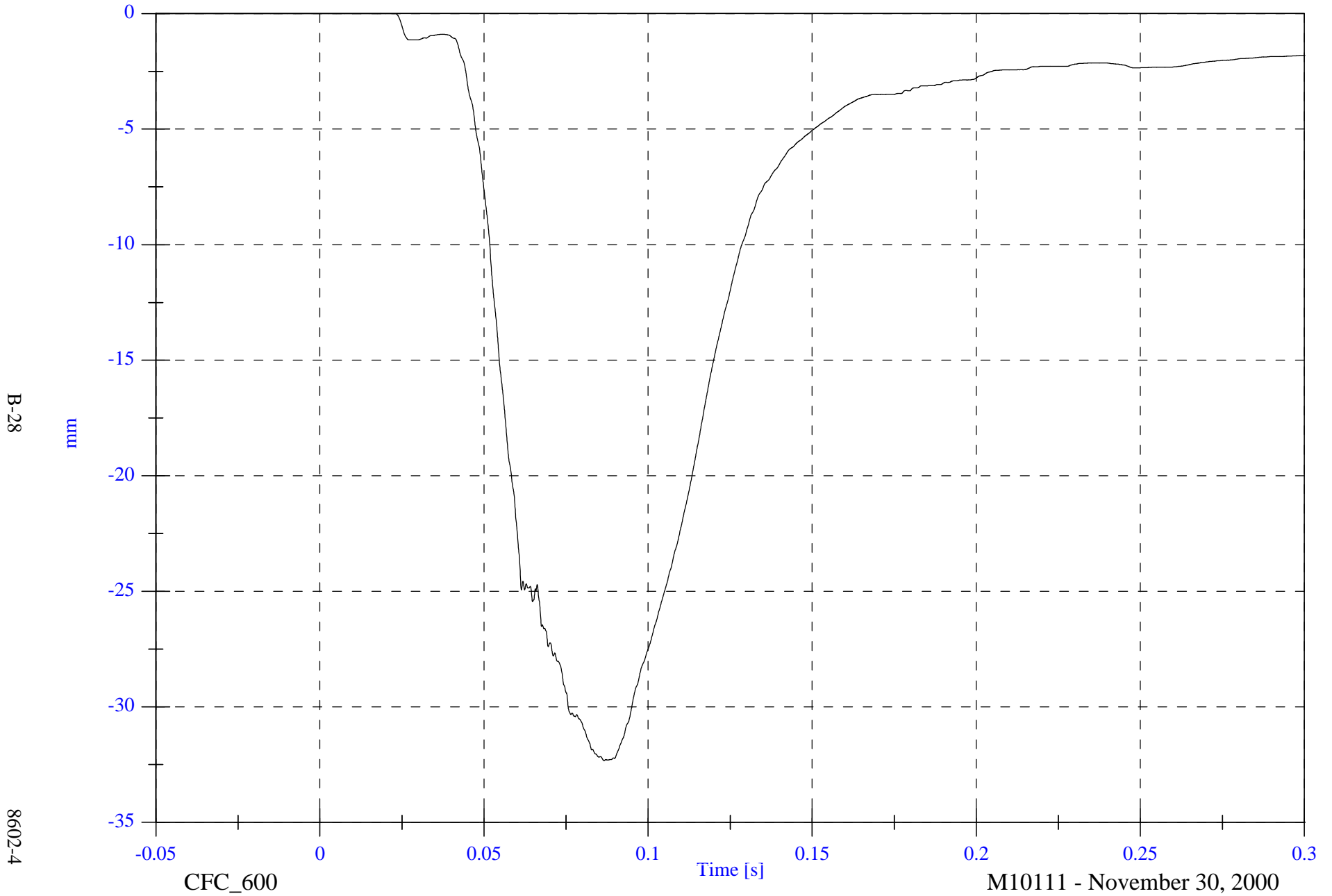
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P1 Chest Compression

Max: 0.0 [mm] at 0.019 [s]

Min: -32.3 [mm] at 0.087 [s]



B-28

8602-4

CFC_600

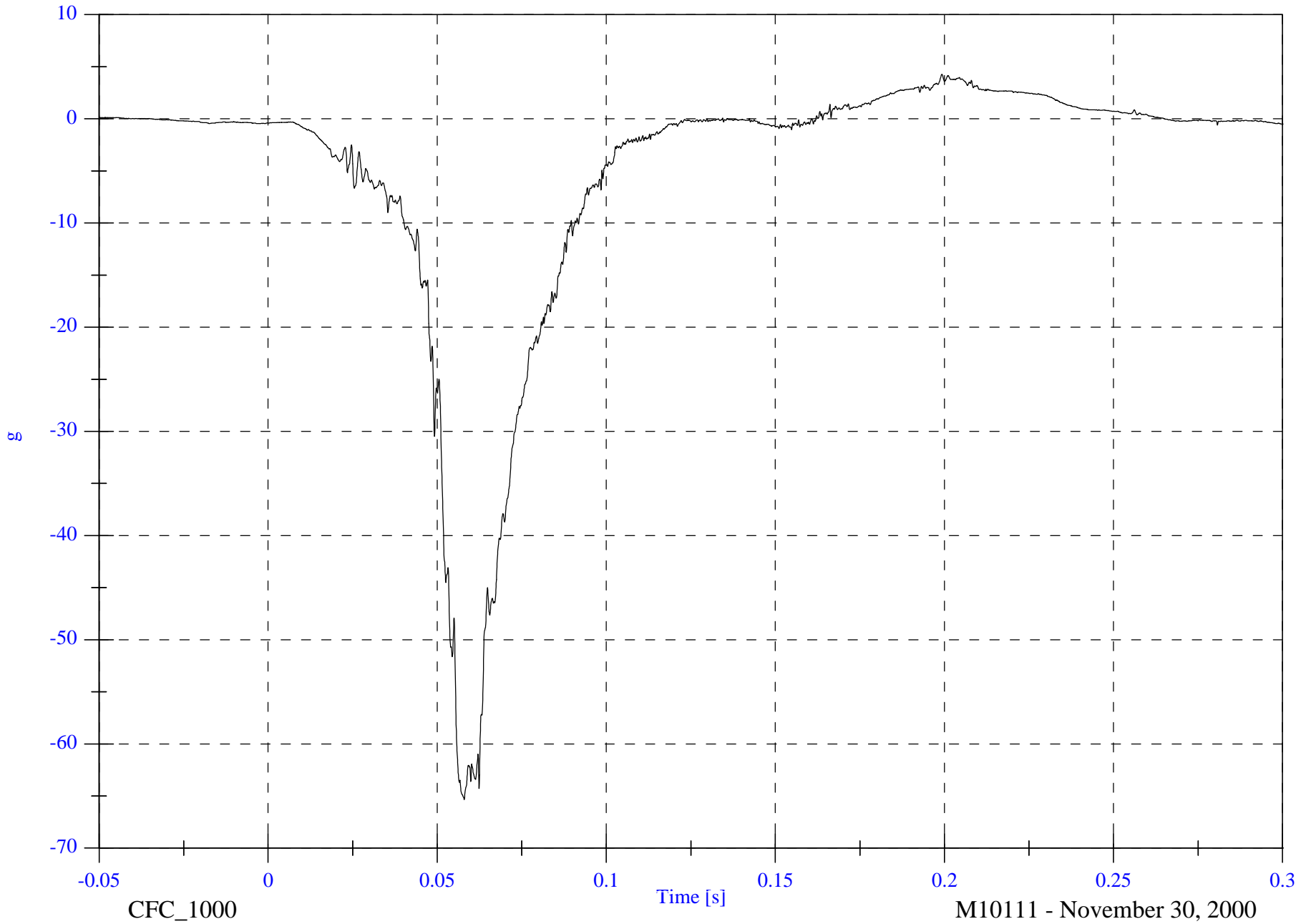
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 4.3 [g] at 0.199 [s]

Min: -65.3 [g] at 0.058 [s]

P1 Pelvic x



B-29

8602-4

CFC_1000

Time [s]

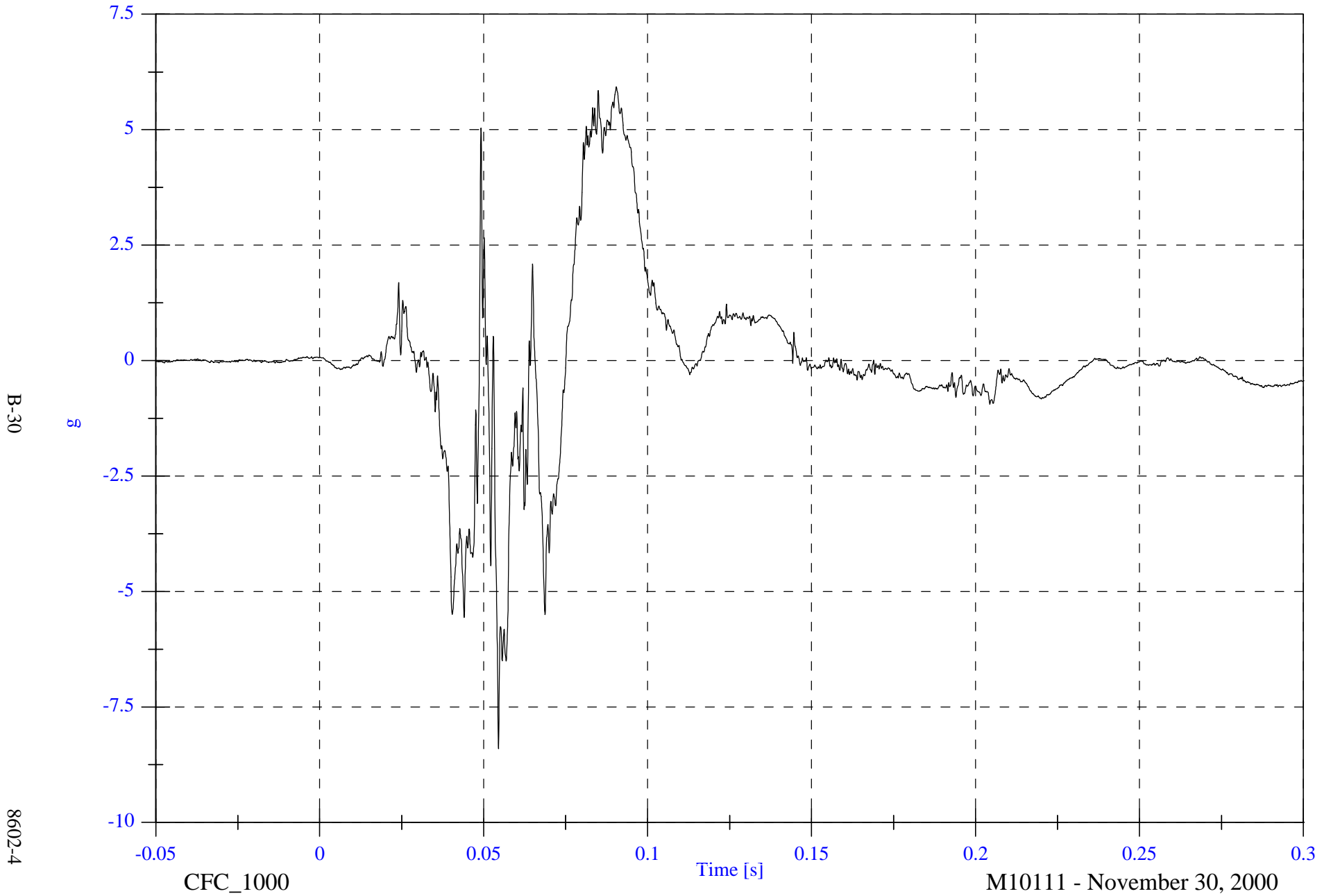
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 5.9 [g] at 0.090 [s]

Min: -8.4 [g] at 0.055 [s]

P1 Pelvic y

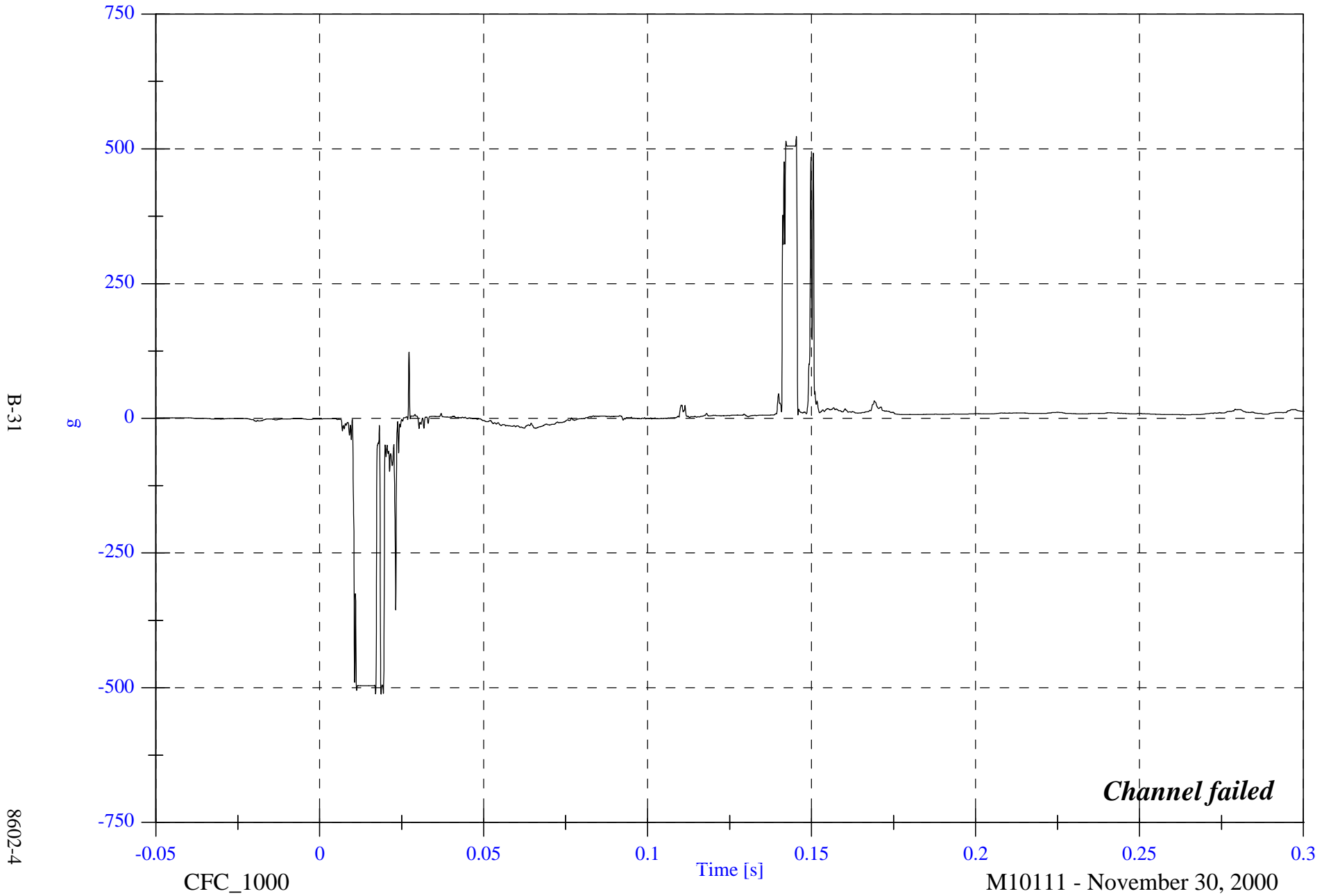


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 523.0 [g] at 0.145 [s]

Min: -512.0 [g] at 0.019 [s]

P1 Pelvic z



B-31

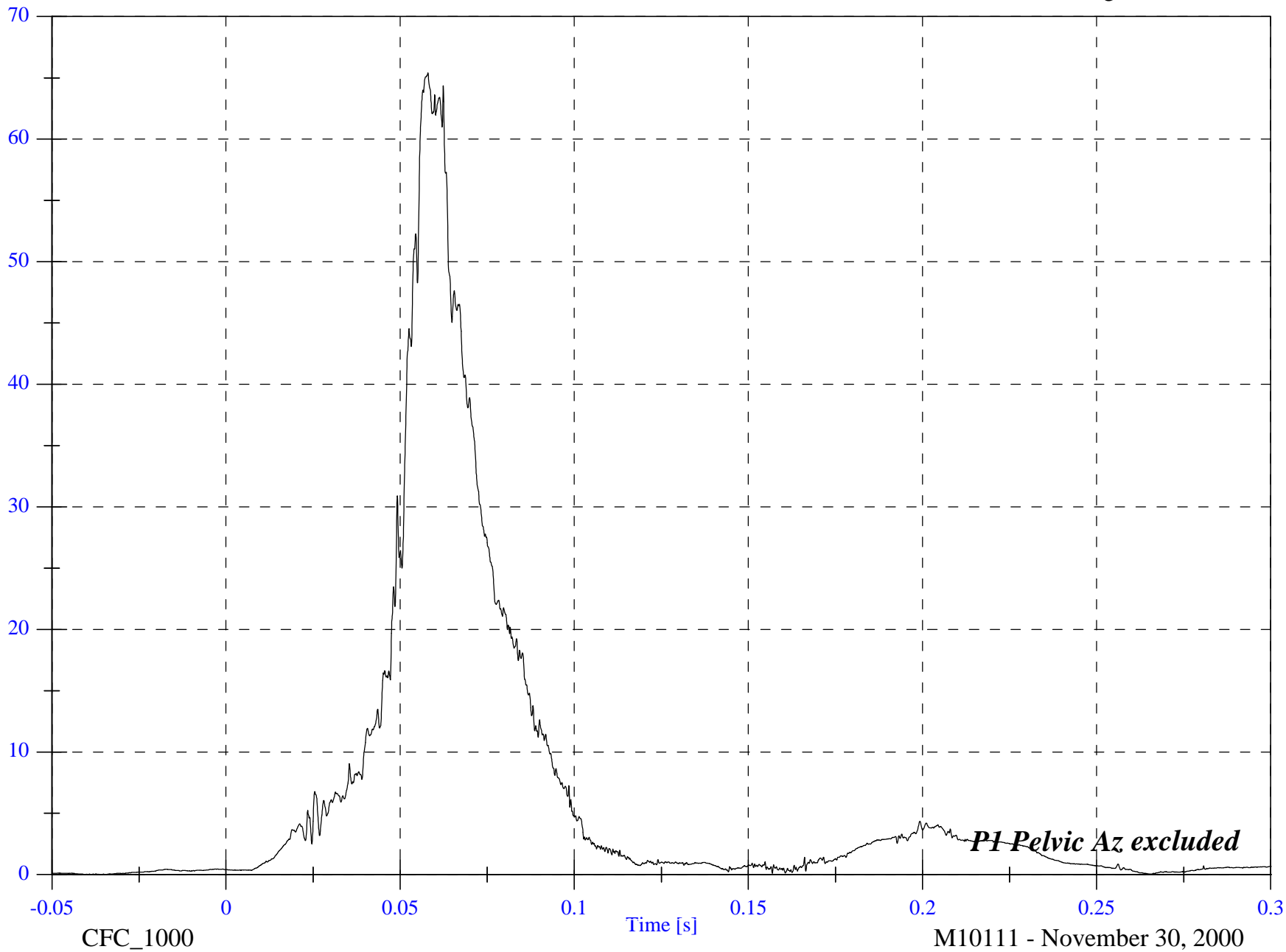
8602-4

CFC_1000

Time [s]

M10111 - November 30, 2000

P1 Pelvic Resultant



B-32

8602-4

CFC_1000

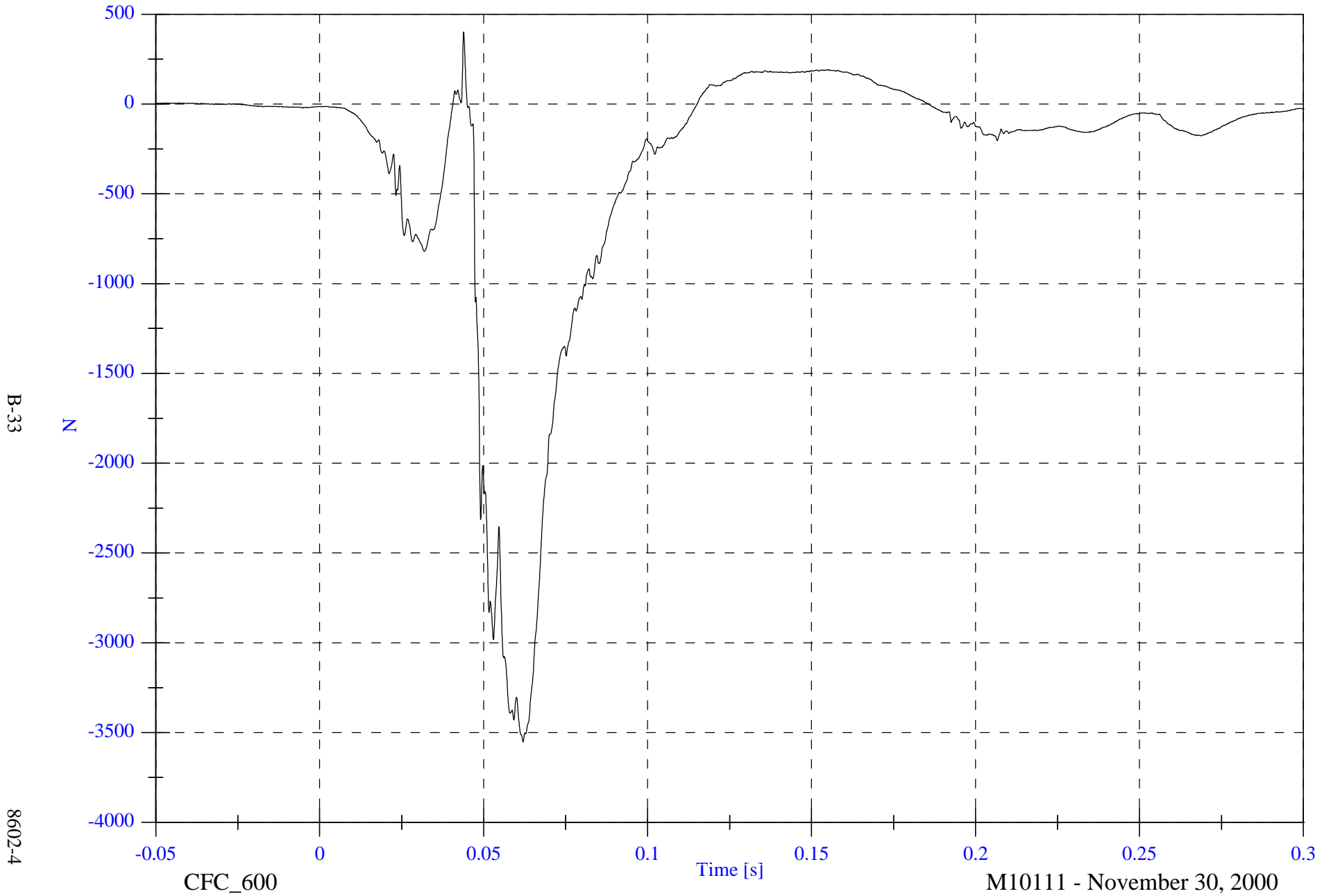
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 401.2 [N] at 0.044 [s]

P1 Left Femur

Min: -3552.6 [N] at 0.062 [s]



B-33

8602-4

CFC_600

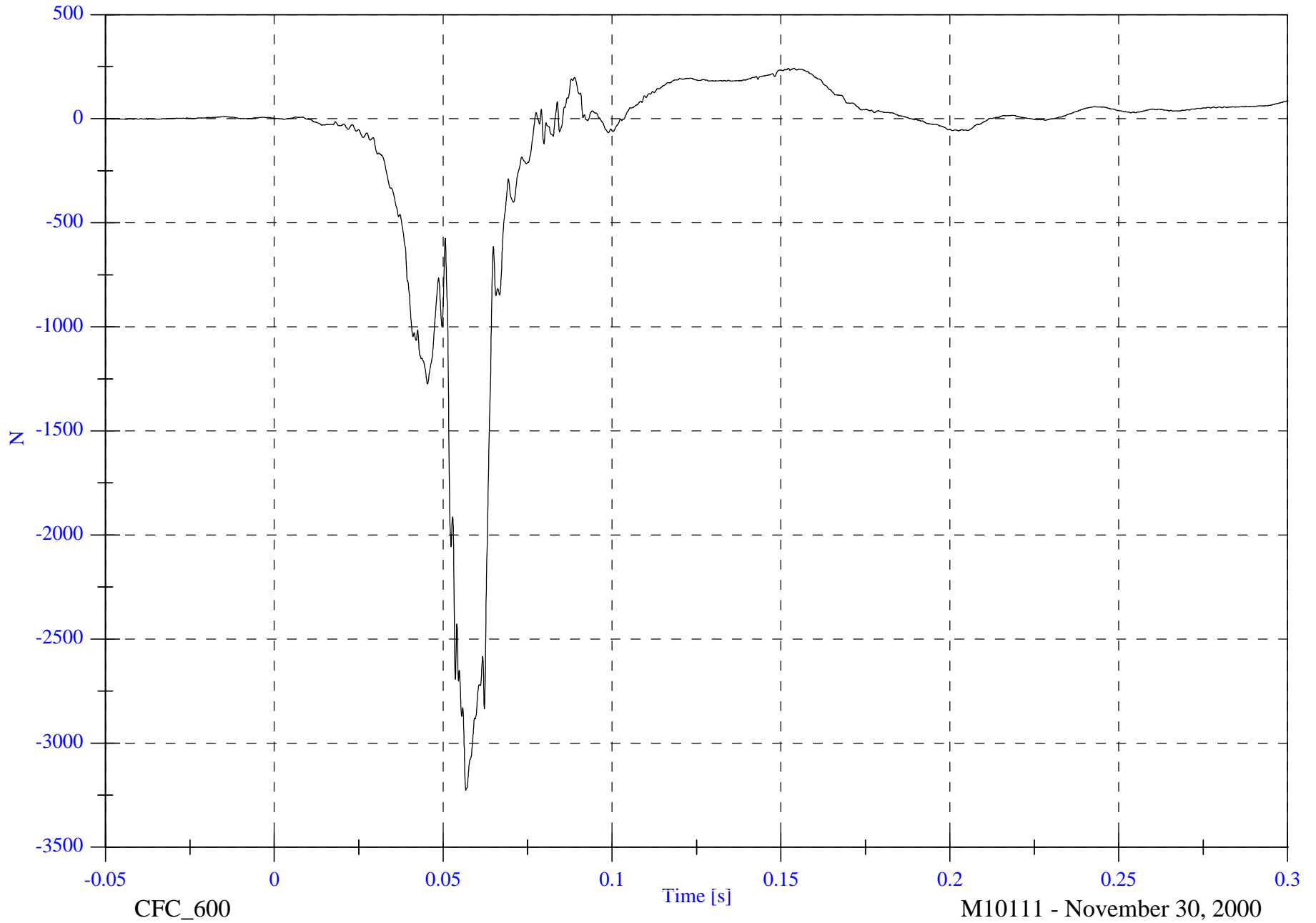
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 242.2 [N] at 0.152 [s]

P1 Right Femur

Min: -3227.1 [N] at 0.057 [s]



B-34

8602-4

CFC_600

Time [s]

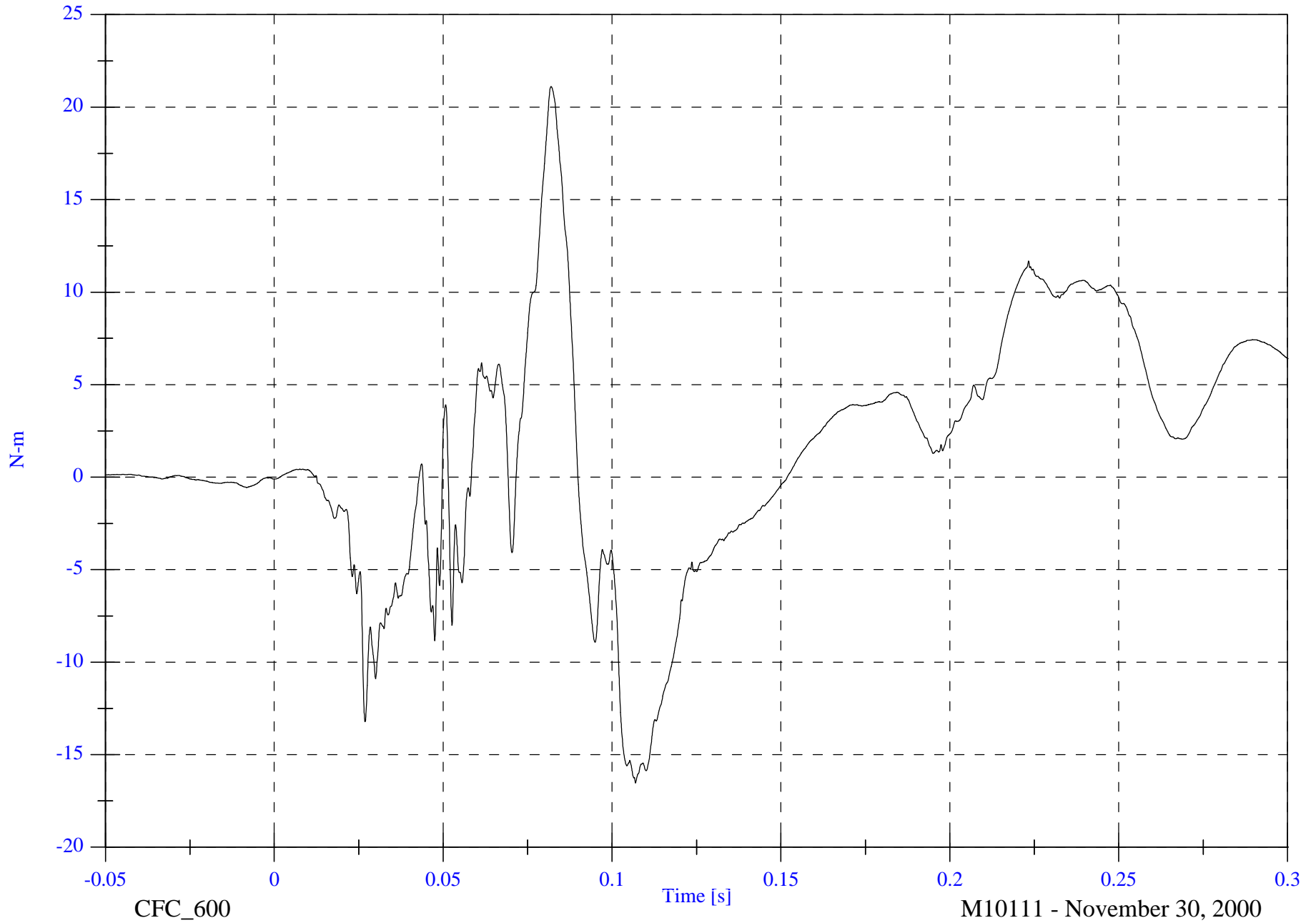
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 21.1 [N-m] at 0.082 [s]

P1 Left Upper Tibia Mx

Min: -16.5 [N-m] at 0.107 [s]



B-35

8602-4

CFC_600

Time [s]

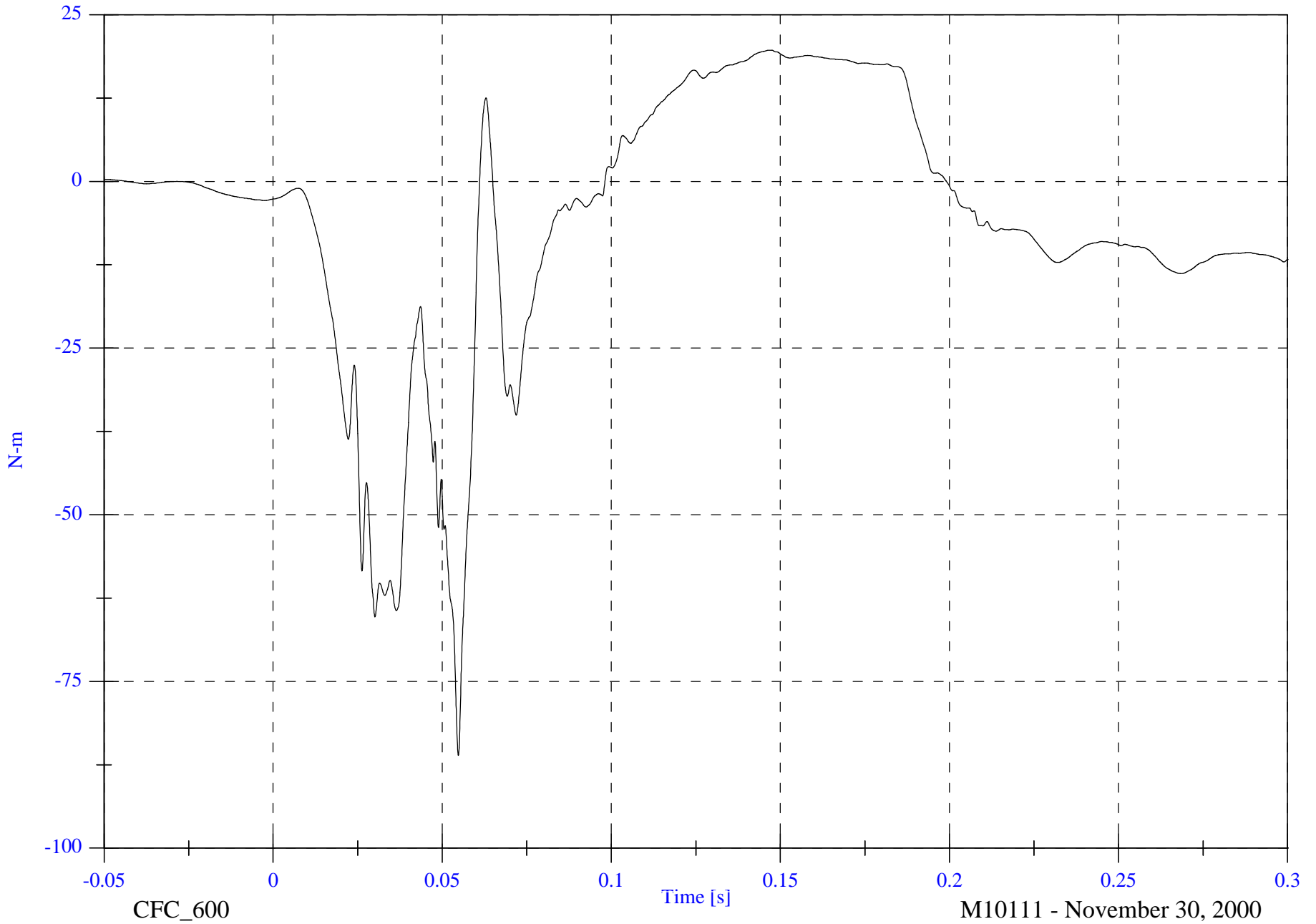
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 19.7 [N-m] at 0.147 [s]

Min: -86.1 [N-m] at 0.055 [s]

P1 Left Upper Tibia My



B-36

8602-4

CFC_600

Time [s]

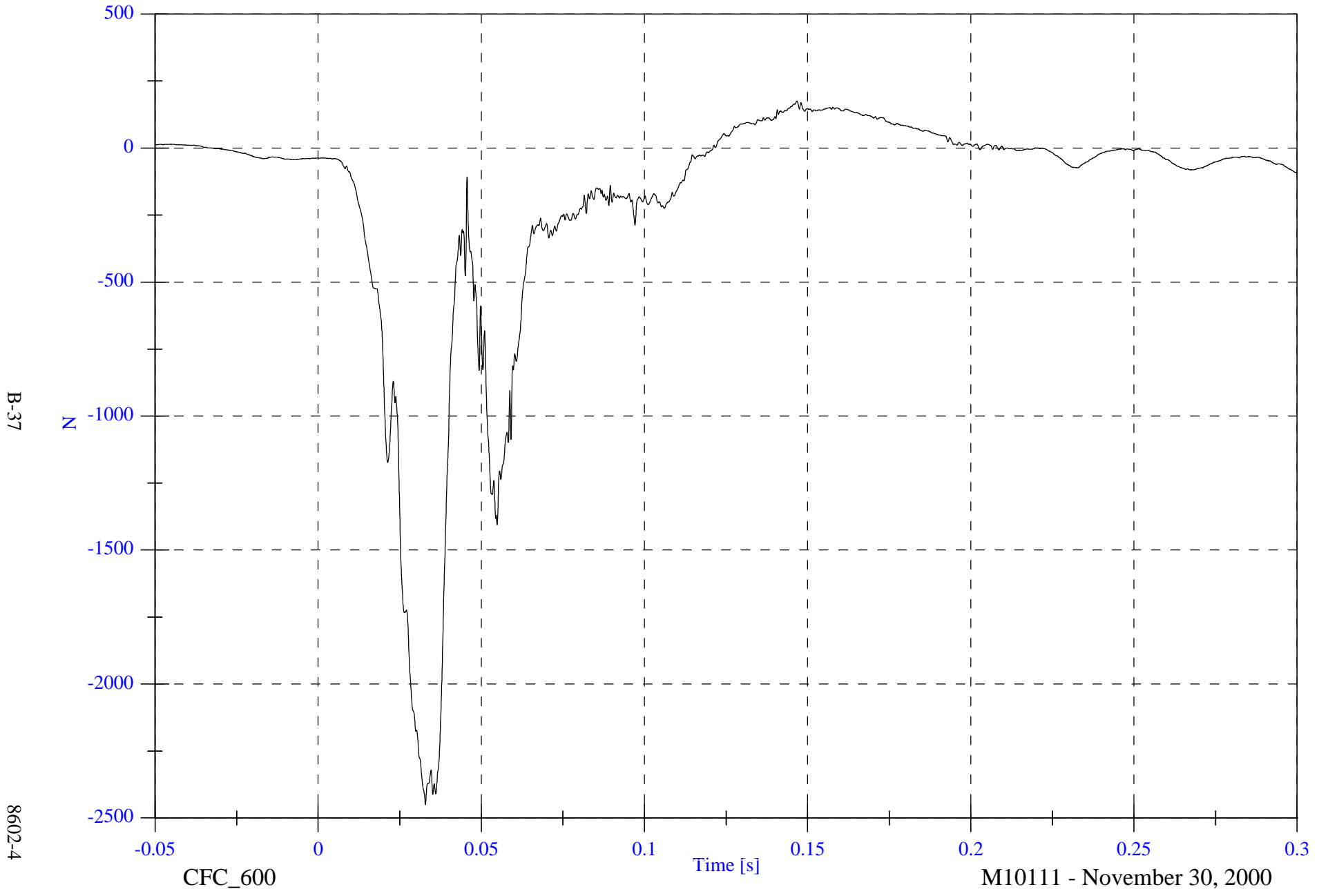
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 175.7 [N] at 0.147 [s]

P1 Left Lower Tibia Fz

Min: -2450.0 [N] at 0.033 [s]



B-37

8602-4

CFC_600

Time [s]

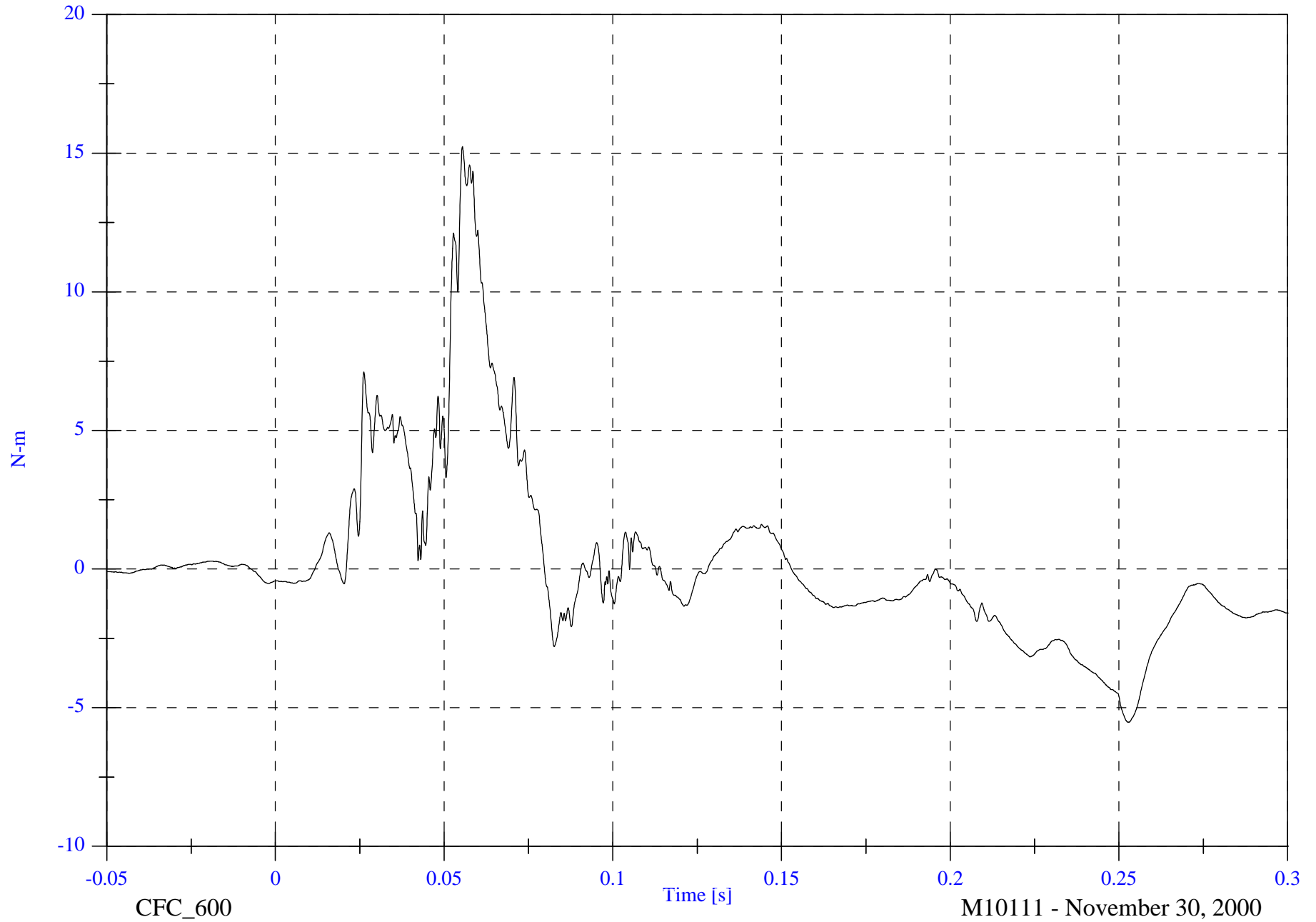
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 15.2 [N-m] at 0.055 [s]

P1 Left Lower Tibia Mx

Min: -5.5 [N-m] at 0.253 [s]



B-38

8602-4

CFC_600

Time [s]

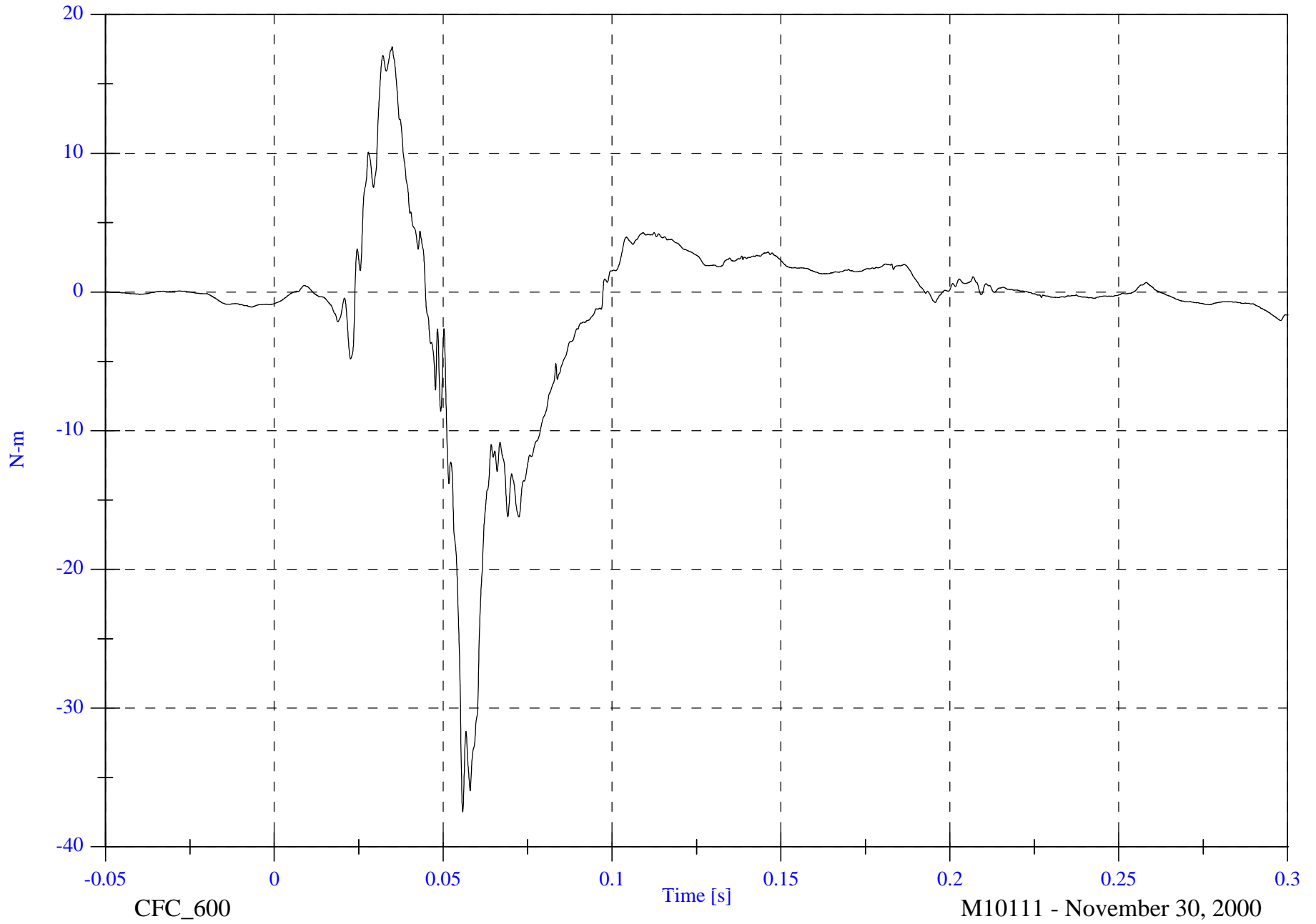
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 17.7 [N-m] at 0.035 [s]

P1 Left Lower Tibia My

Min: -37.5 [N-m] at 0.056 [s]



B-39

8602-4

CFC_600

Time [s]

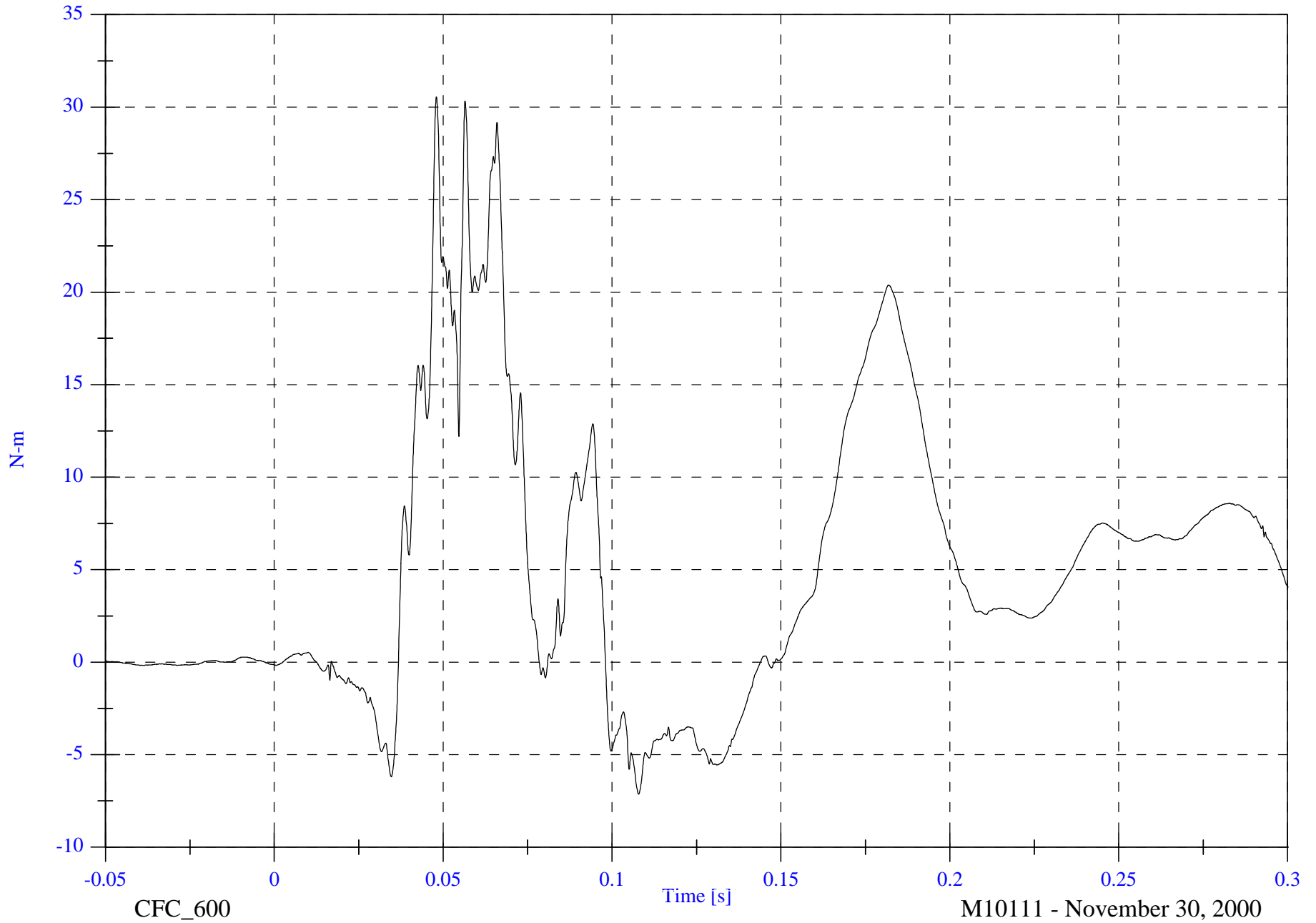
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 30.6 [N-m] at 0.048 [s]

P1 Right Upper Tibia Mx

Min: -7.1 [N-m] at 0.108 [s]



B-40

8602-4

CFC_600

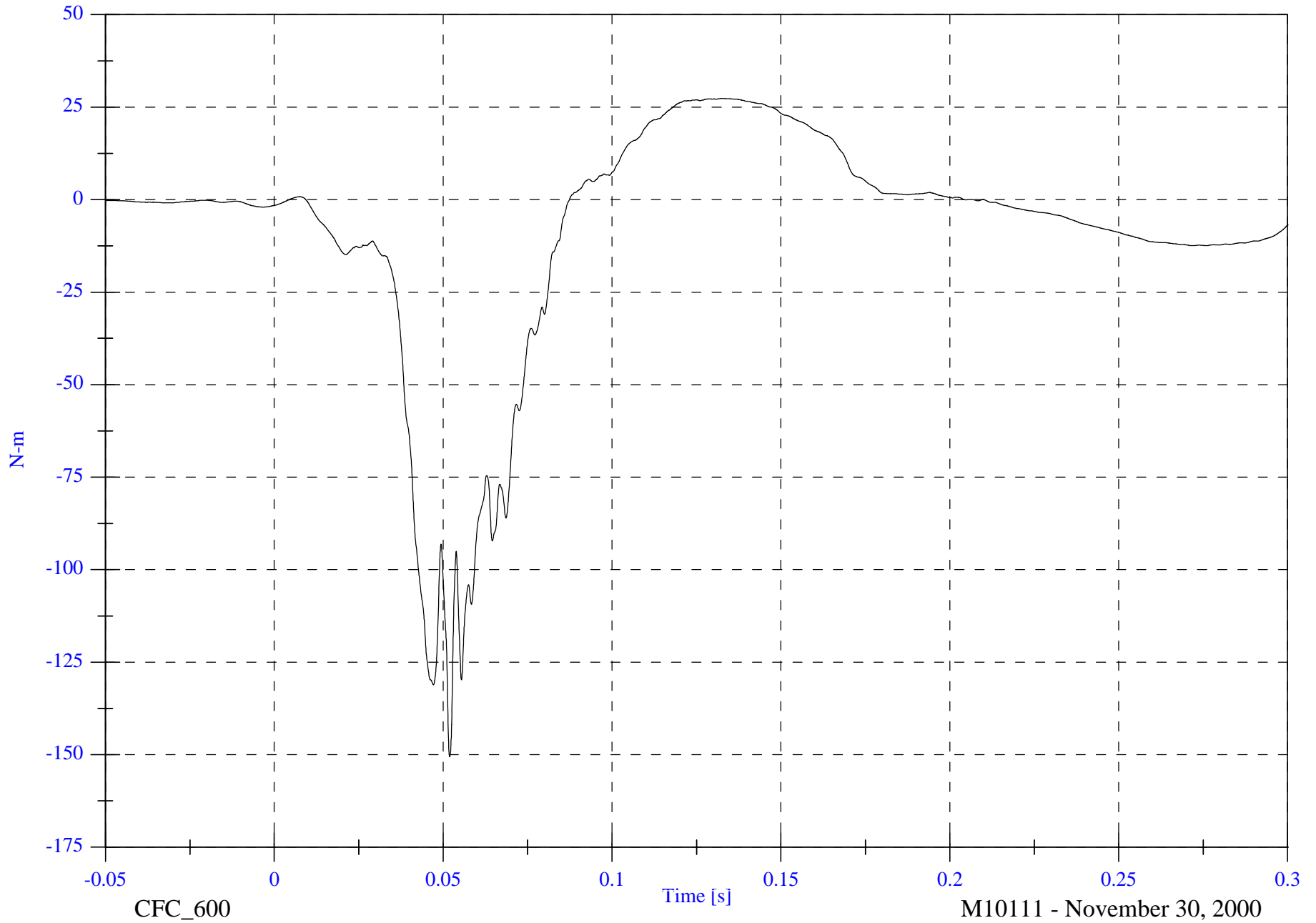
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 27.4 [N-m] at 0.133 [s]

P1 Right Upper Tibia My

Min: -150.6 [N-m] at 0.052 [s]



B-41

8602-4

CFC_600

Time [s]

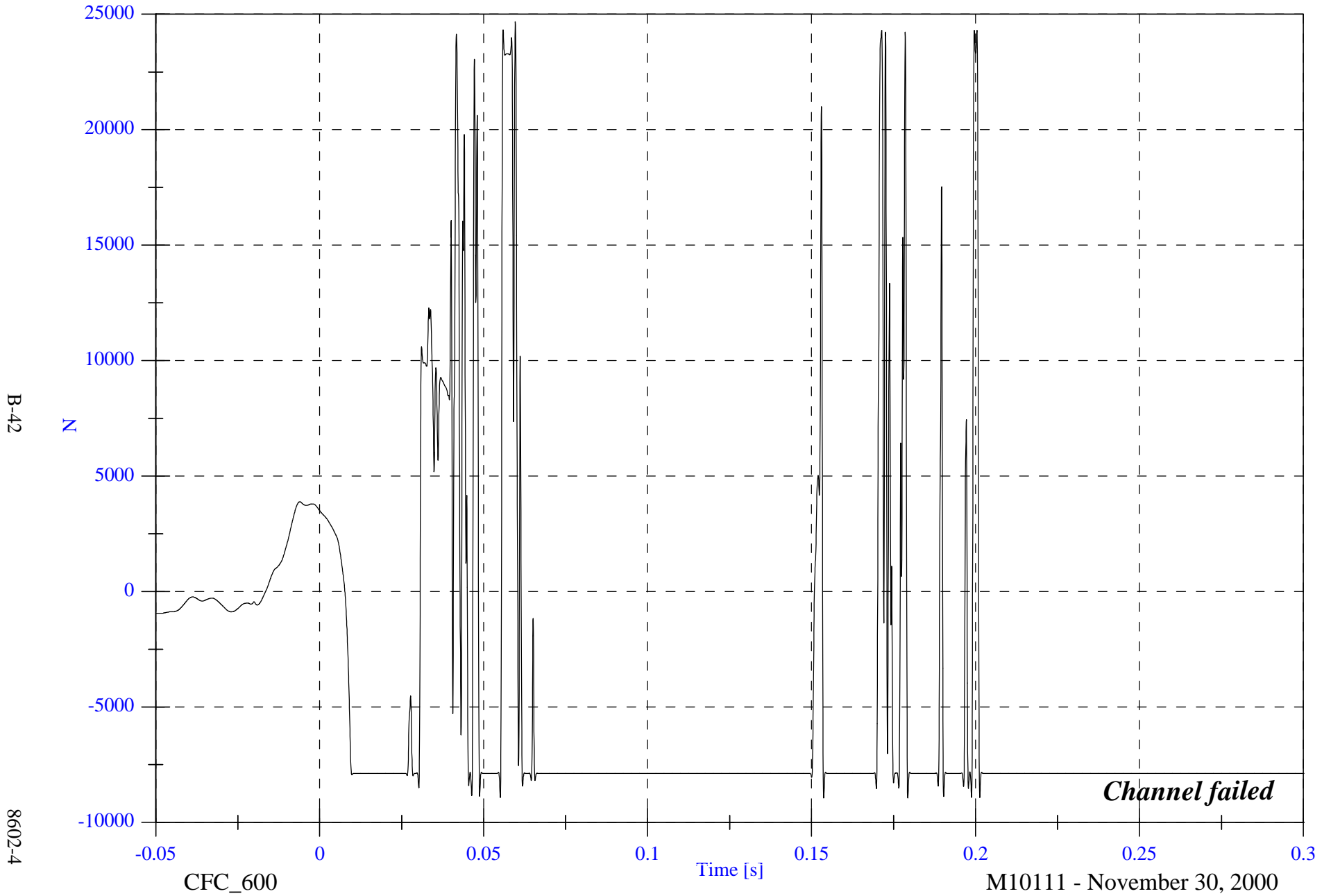
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 24676.9 [N] at 0.060 [s]

P1 Right Lower Tibia Fz

Min: -8948.0 [N] at 0.179 [s]



B-42

8602-4

CFC_600

Time [s]

M10111 - November 30, 2000

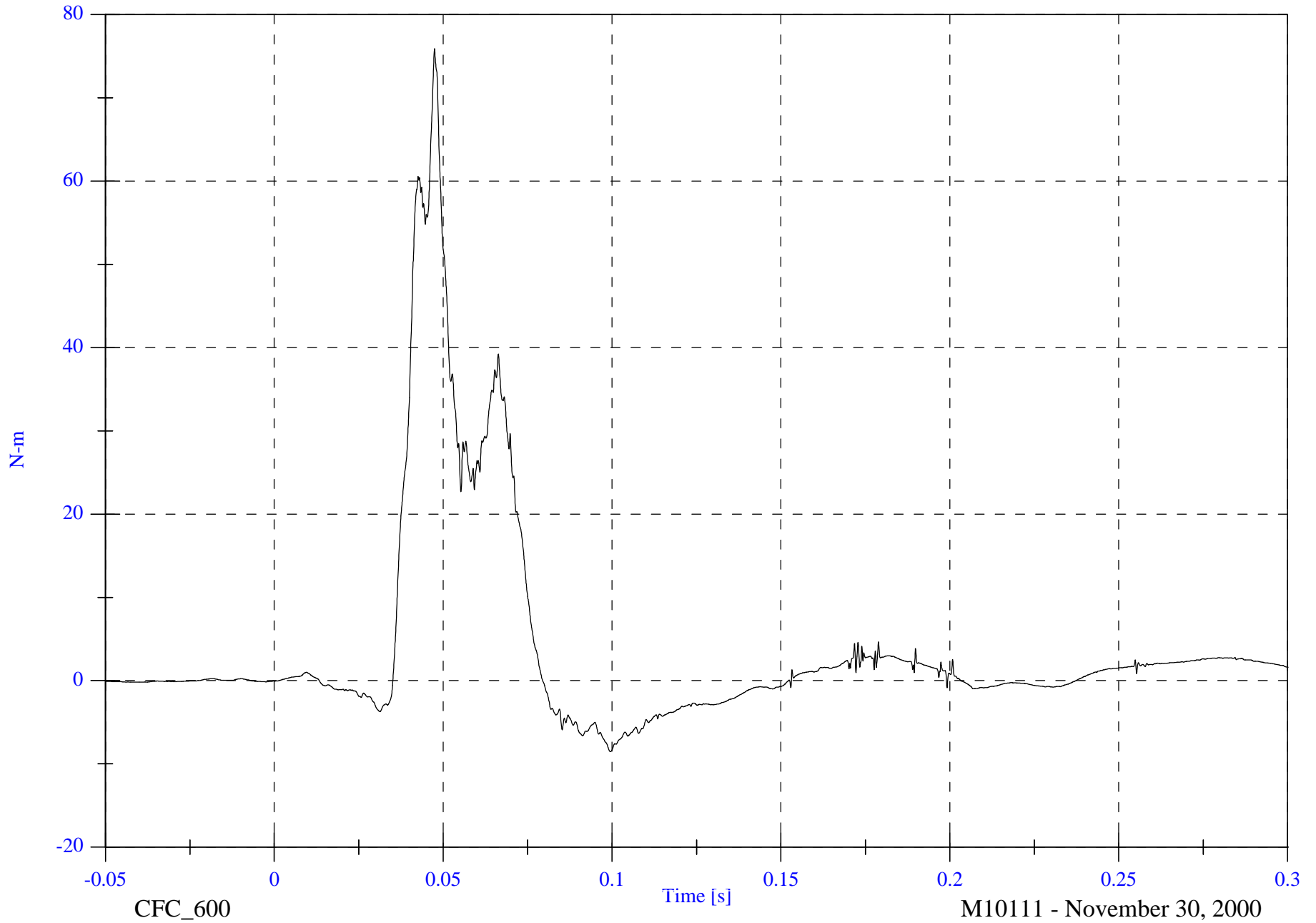
Channel failed

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 75.9 [N-m] at 0.047 [s]

P1 Right Lower Tibia Mx

Min: -8.5 [N-m] at 0.100 [s]



B-43

8602-4

CFC_600

Time [s]

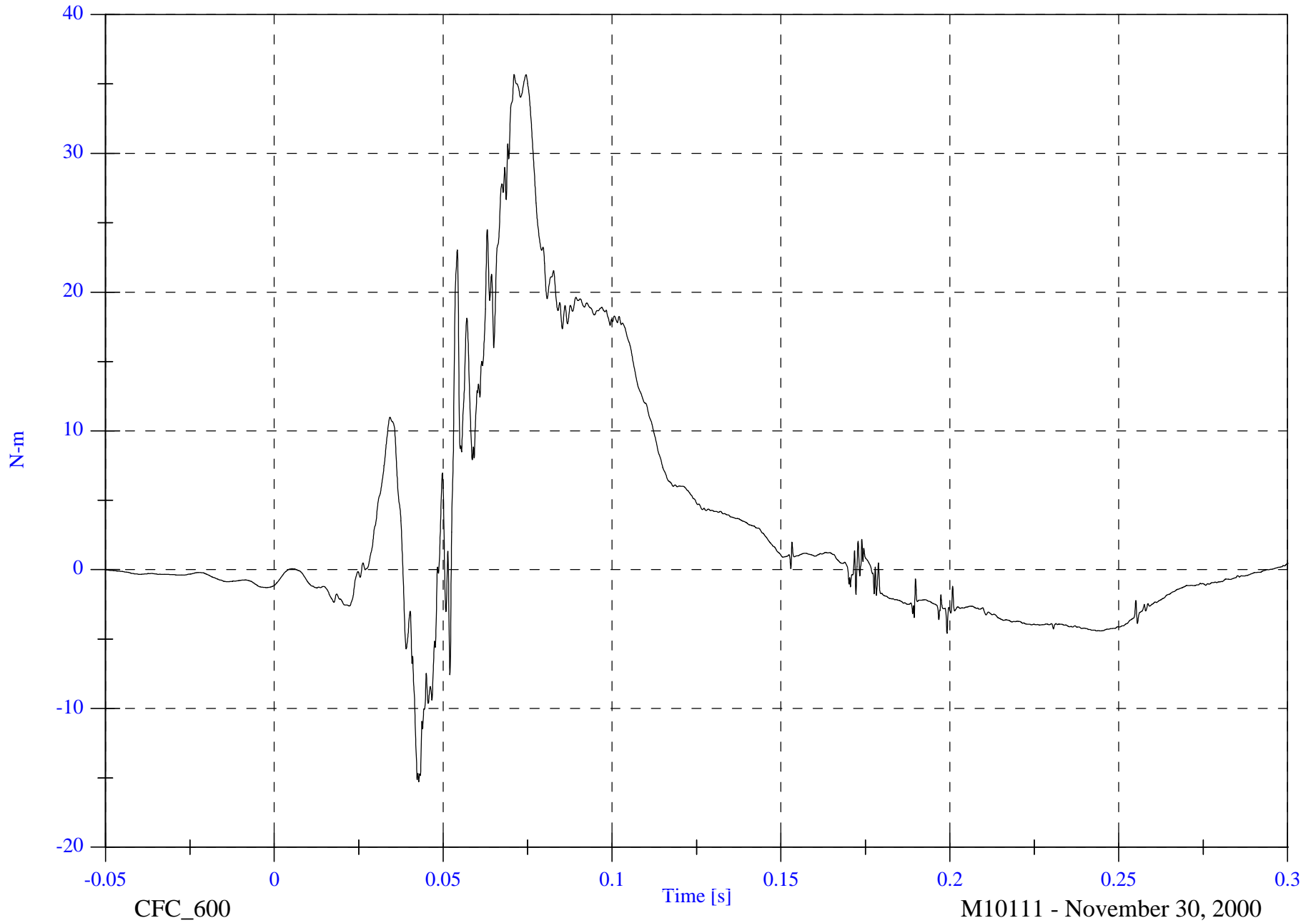
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 35.7 [N-m] at 0.071 [s]

P1 Right Lower Tibia My

Min: -15.3 [N-m] at 0.043 [s]



B-44

8602-4

CFC_600

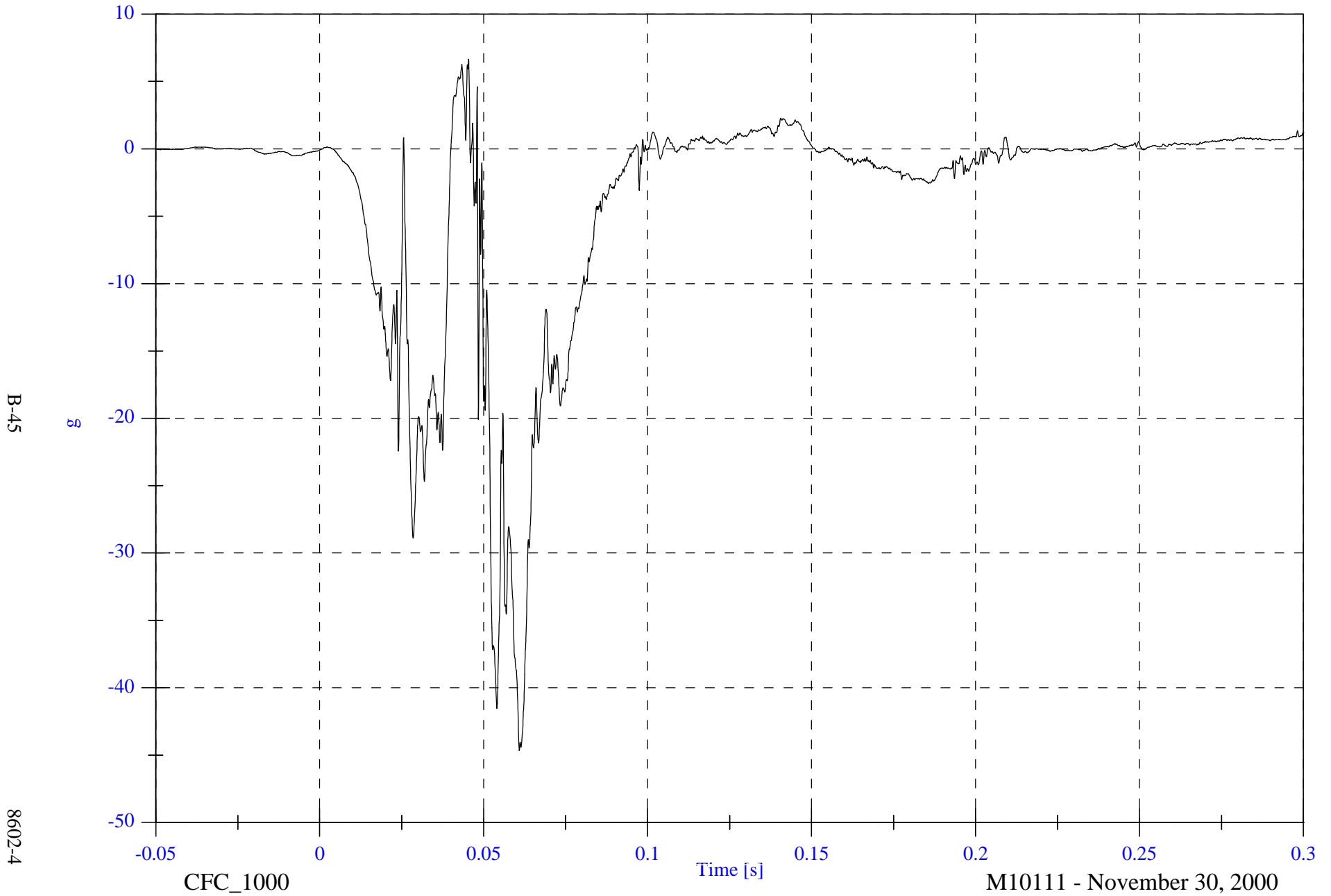
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 6.7 [g] at 0.045 [s]

Min: -44.7 [g] at 0.061 [s]

P1 Left Foot Aft x

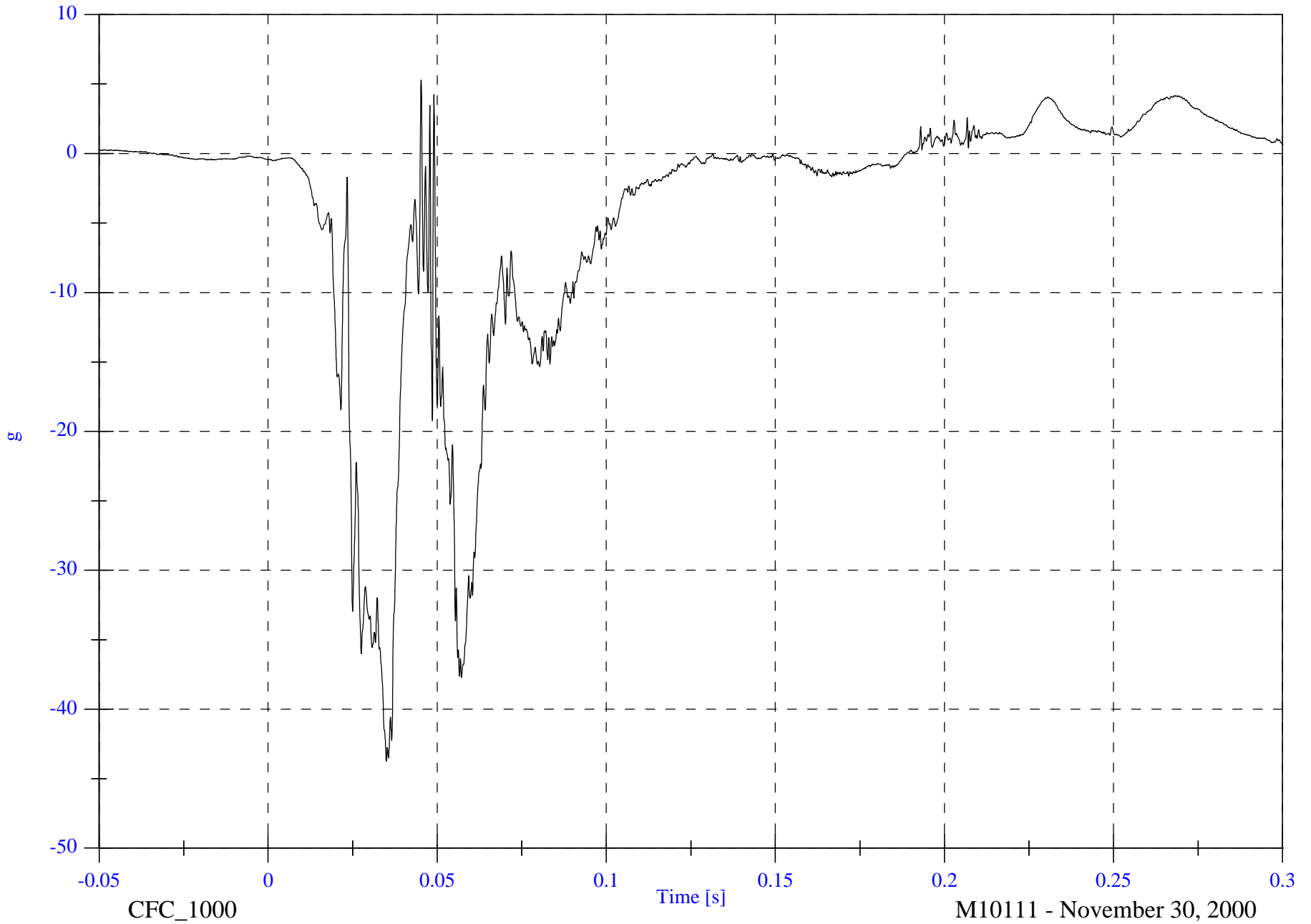


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 5.3 [g] at 0.045 [s]

Min: -43.7 [g] at 0.035 [s]

P1 Left Foot Aft z



B-46

8602-4

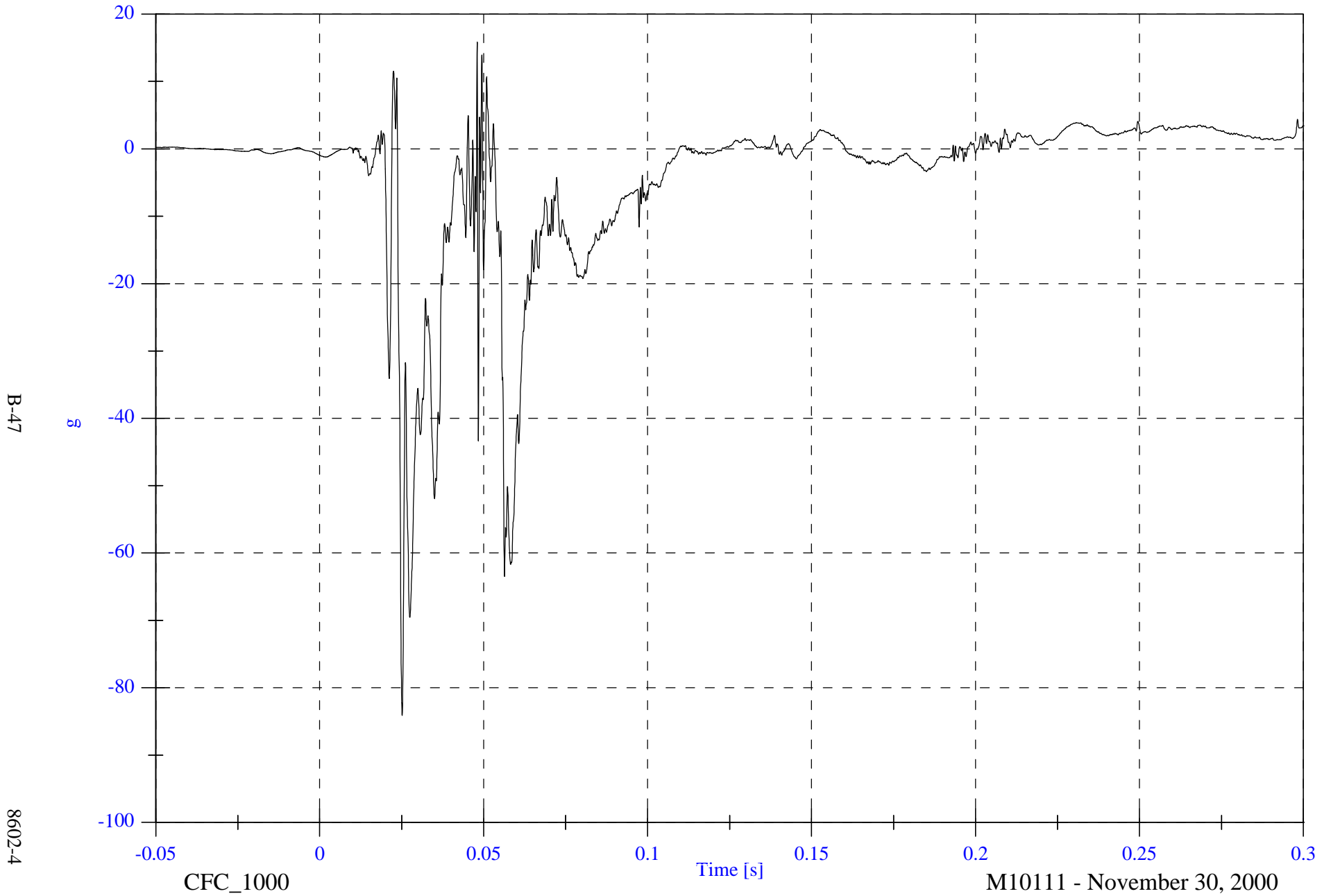
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 15.8 [g] at 0.048 [s]

Min: -84.1 [g] at 0.025 [s]

P1 Left Foot Fore z



B-47

8602-4

CFC_1000

Time [s]

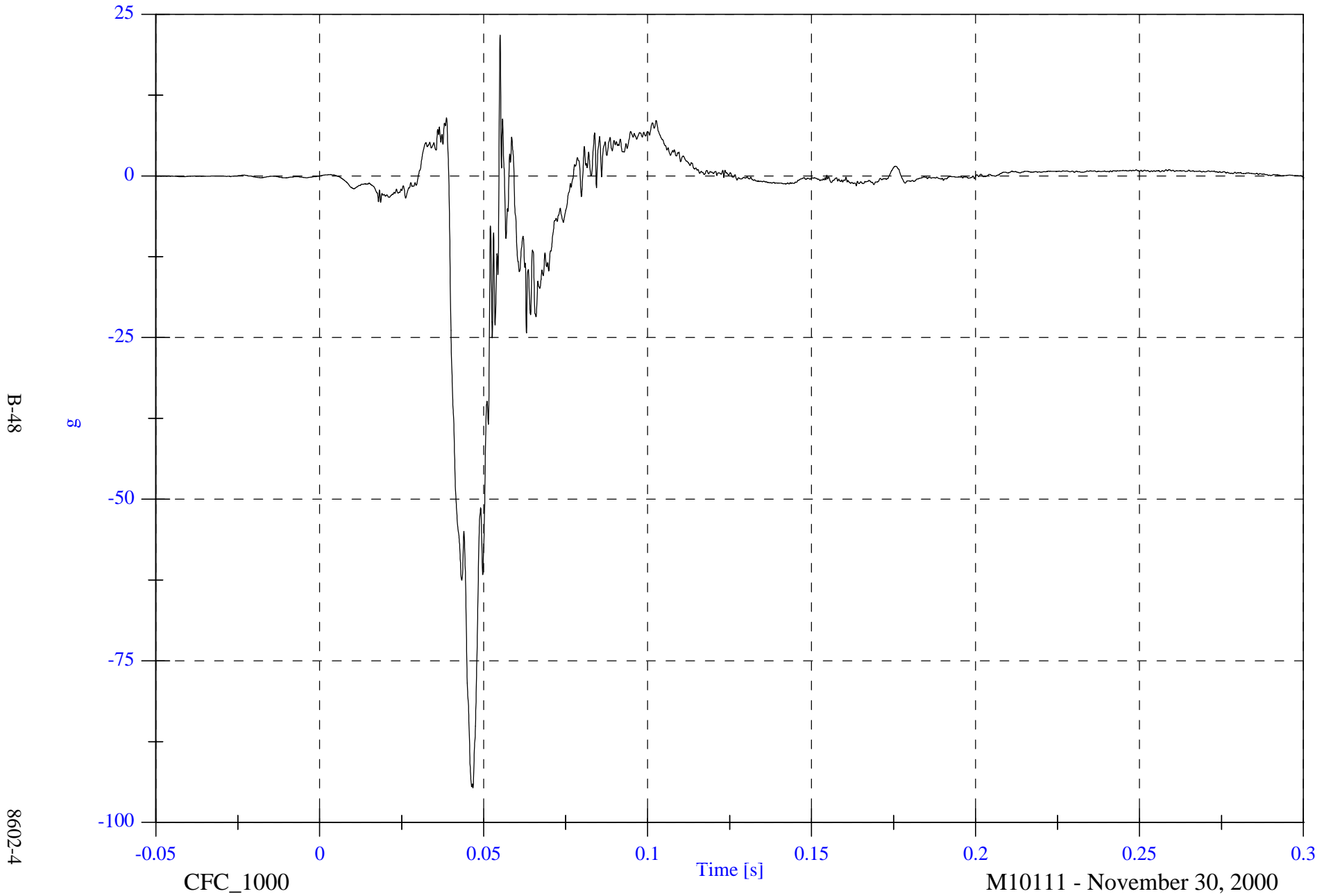
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 21.8 [g] at 0.055 [s]

Min: -94.7 [g] at 0.047 [s]

P1 Right Foot Aft x



B-48

8602-4

CFC_1000

Time [s]

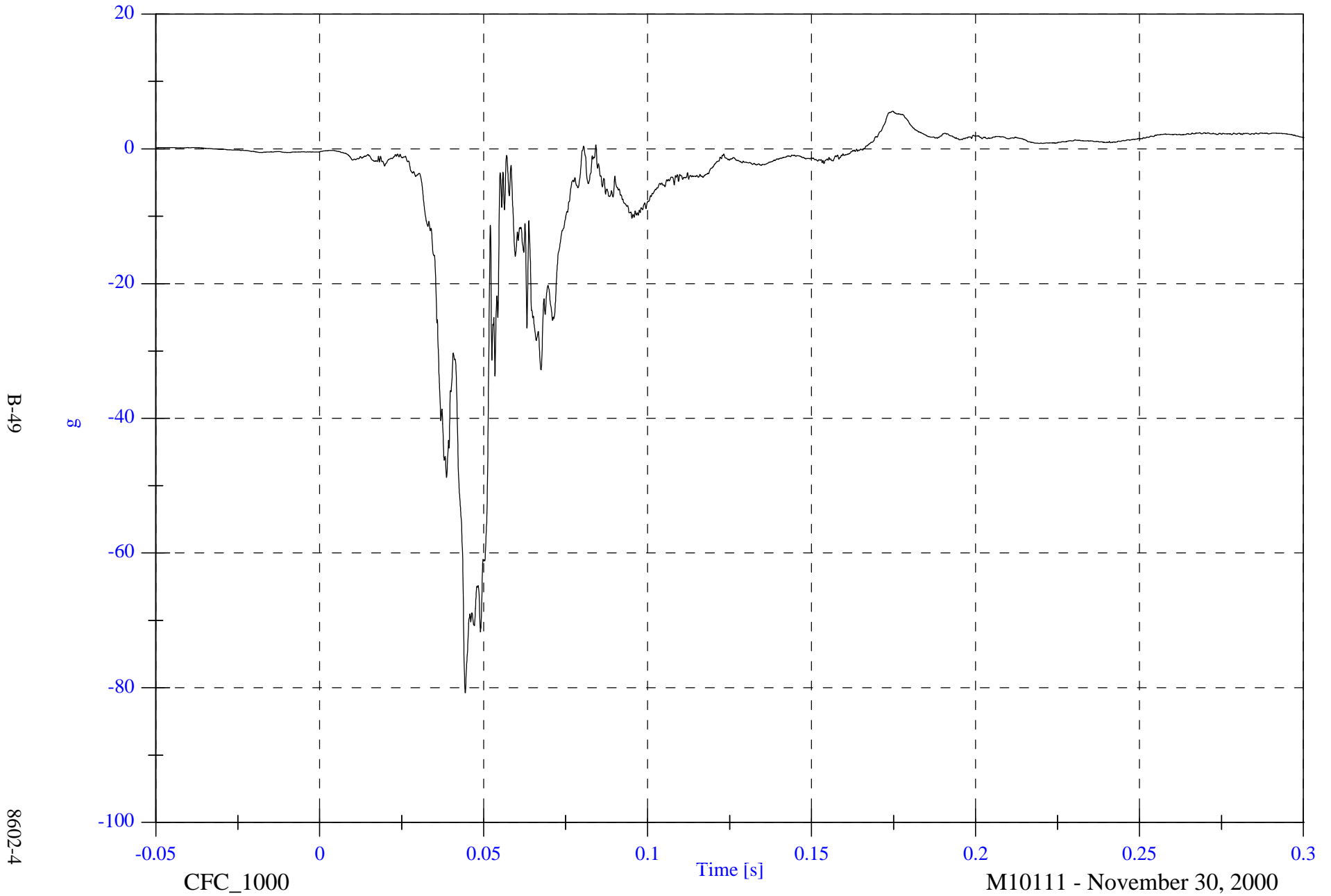
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 5.6 [g] at 0.175 [s]

Min: -80.8 [g] at 0.044 [s]

P1 Right Foot Aft z



B-49

8602-4

CFC_1000

Time [s]

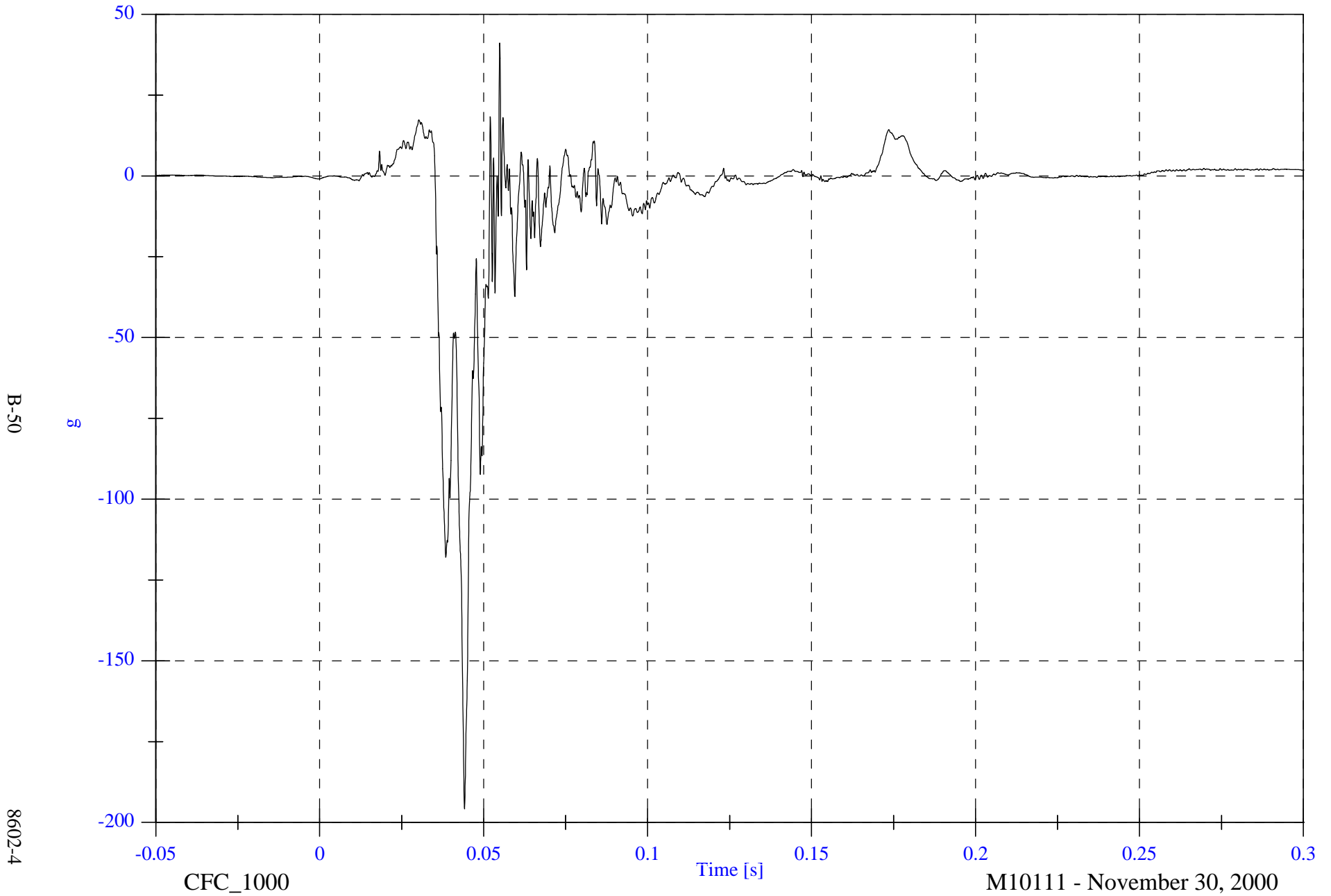
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 41.1 [g] at 0.055 [s]

Min: -195.8 [g] at 0.044 [s]

P1 Right Foot Fore z



B-50

g

8602-4

CFC_1000

Time [s]

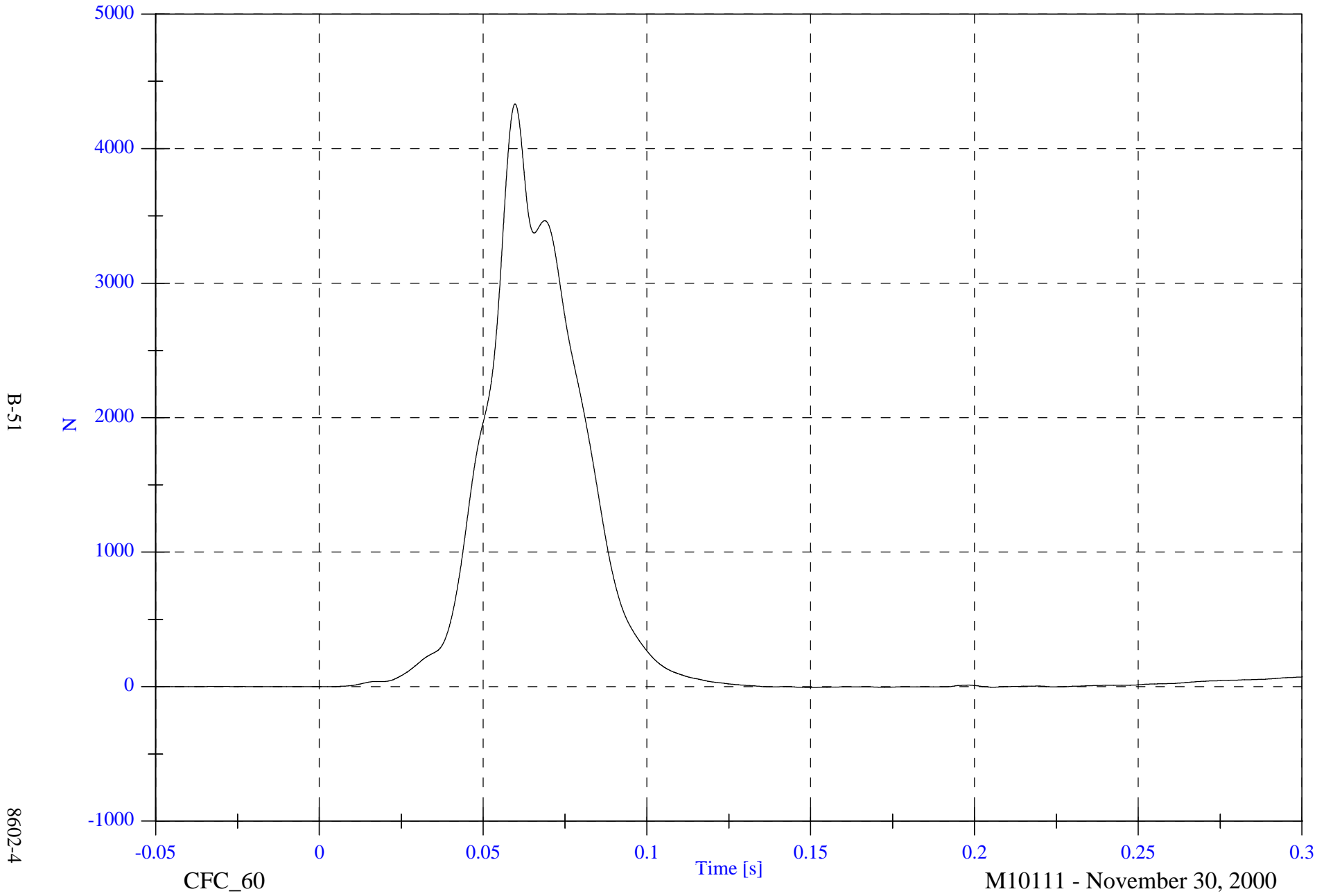
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 4332.6 [N] at 0.060 [s]

P1 Lap Belt Force

Min: -6.4 [N] at 0.150 [s]



B-51

N

8602-4

CFC_60

Time [s]

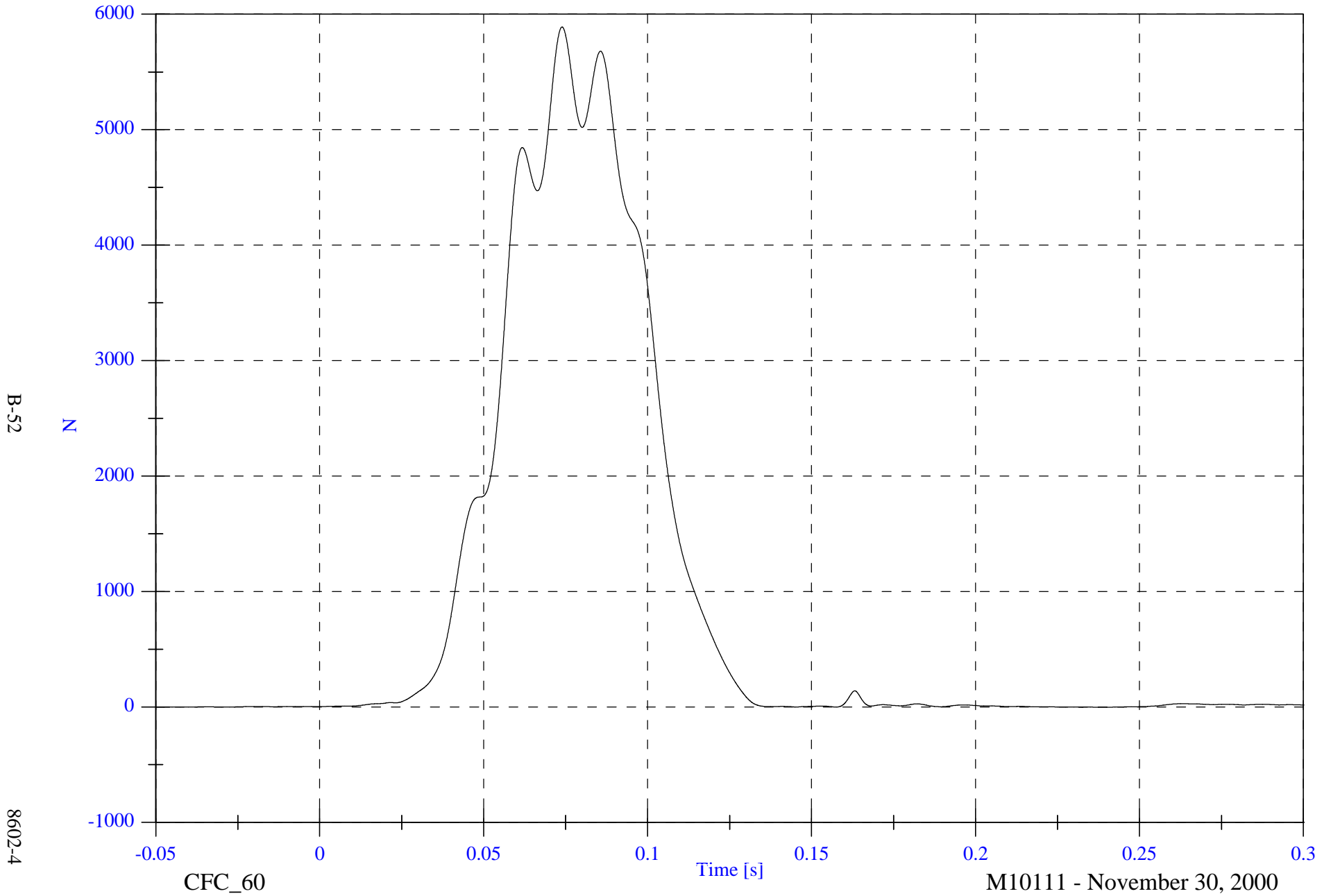
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 5889.2 [N] at 0.074 [s]

P1 Shoulder Belt Force

Min: -2.7 [N] at 0.239 [s]



B-52

8602-4

CFC_60

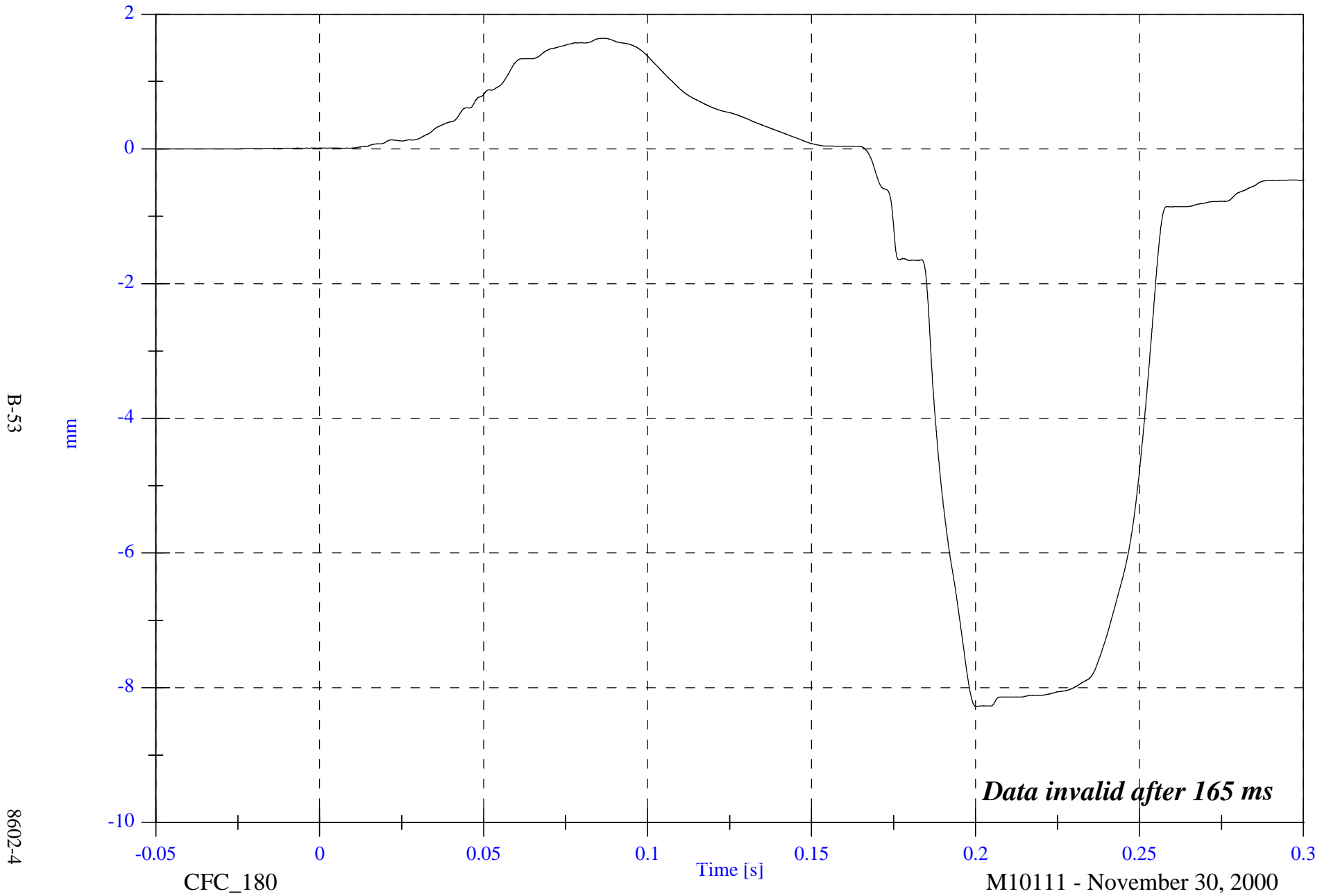
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P1 Shoulder Belt Elongation

Max: 1.6 [mm] at 0.086 [s]

Min: -8.3 [mm] at 0.200 [s]



B-53

8602-4

CFC_180

Time [s]

M10111 - November 30, 2000

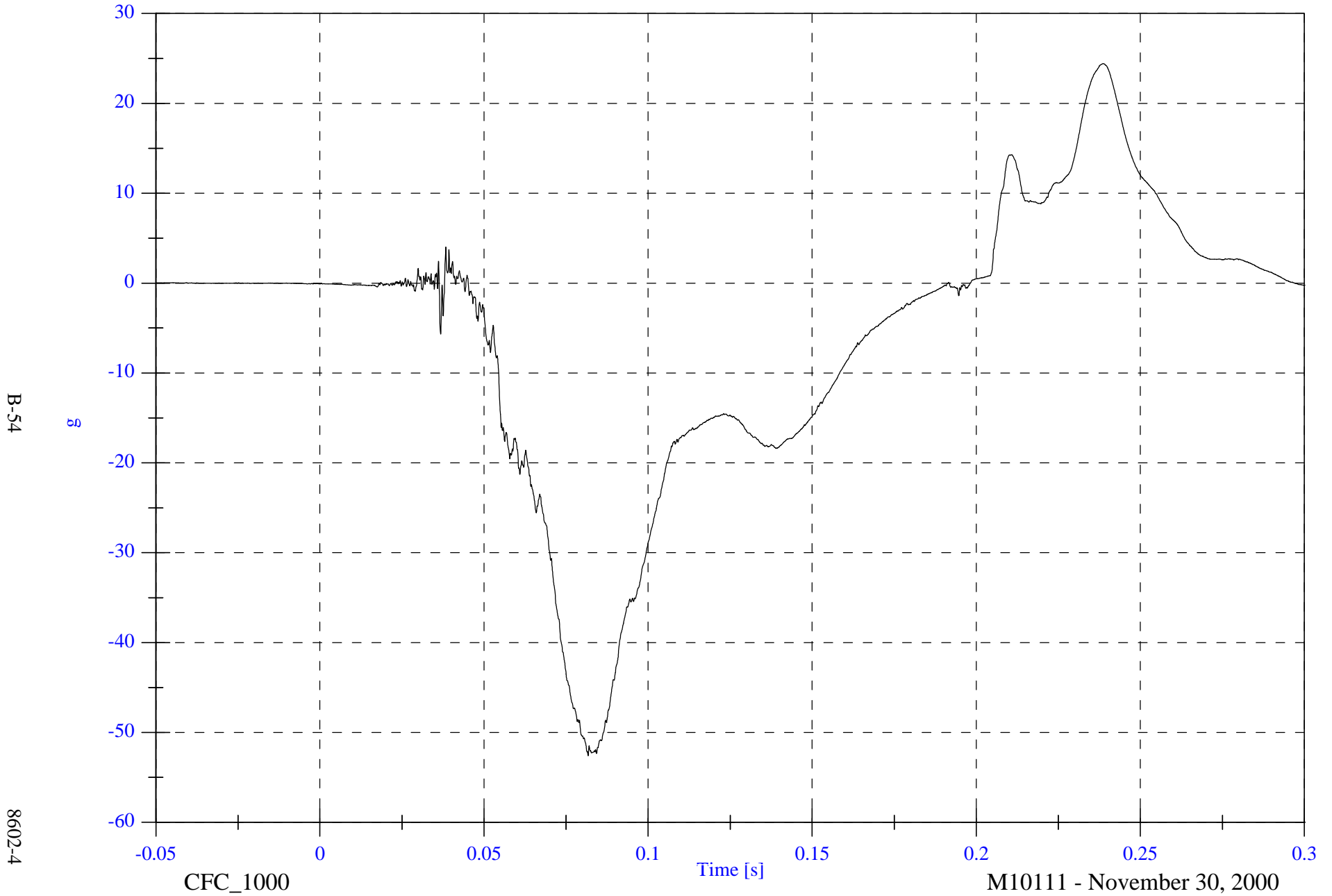
Data invalid after 165 ms

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Head x

Max: 24.4 [g] at 0.239 [s]

Min: -52.6 [g] at 0.082 [s]

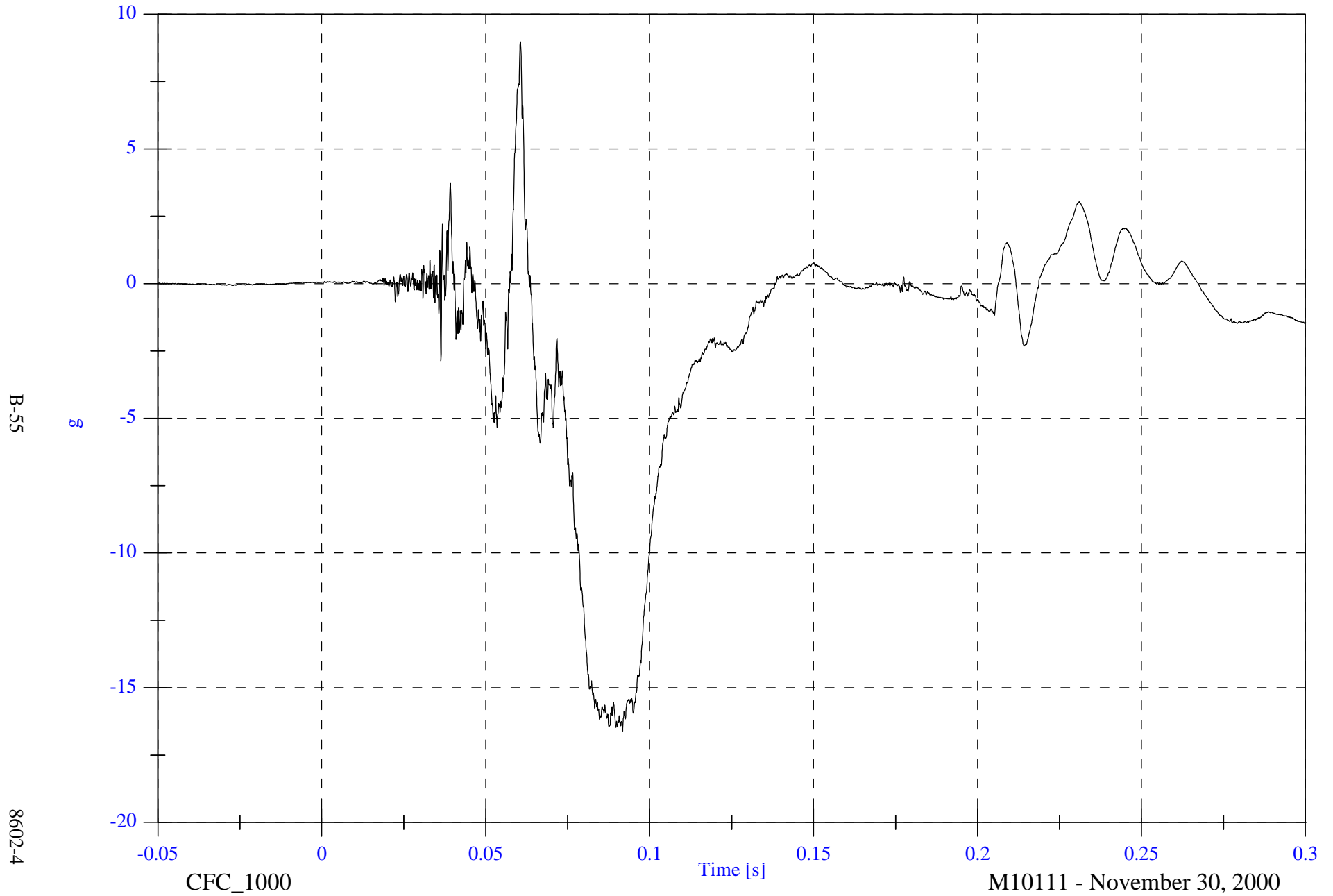


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 9.0 [g] at 0.061 [s]

Min: -16.6 [g] at 0.092 [s]

P2 Head y



B-55

g

8602-4

CFC_1000

Time [s]

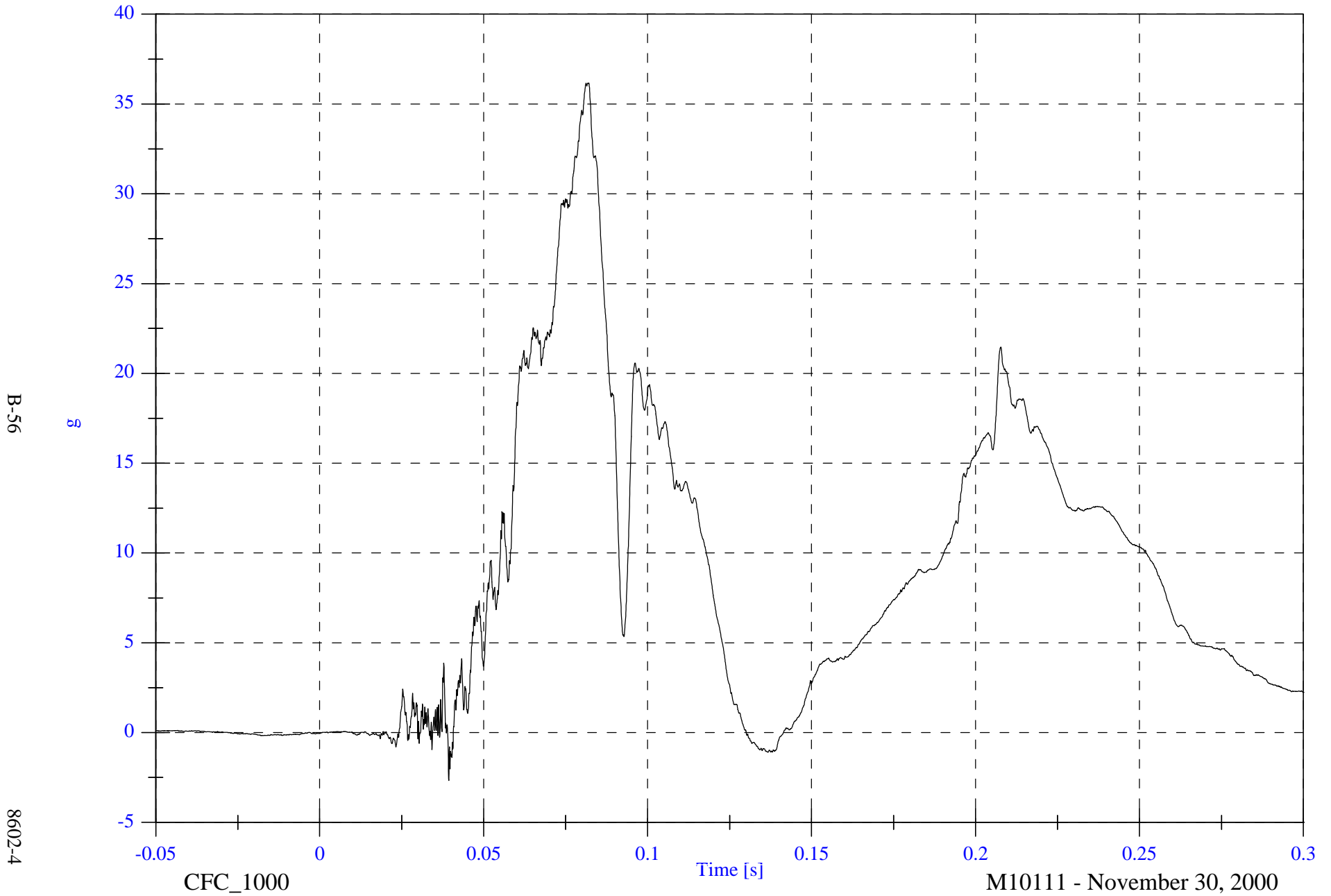
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 36.2 [g] at 0.082 [s]

Min: -2.7 [g] at 0.039 [s]

P2 Head z



B-56

8602-4

CFC_1000

Time [s]

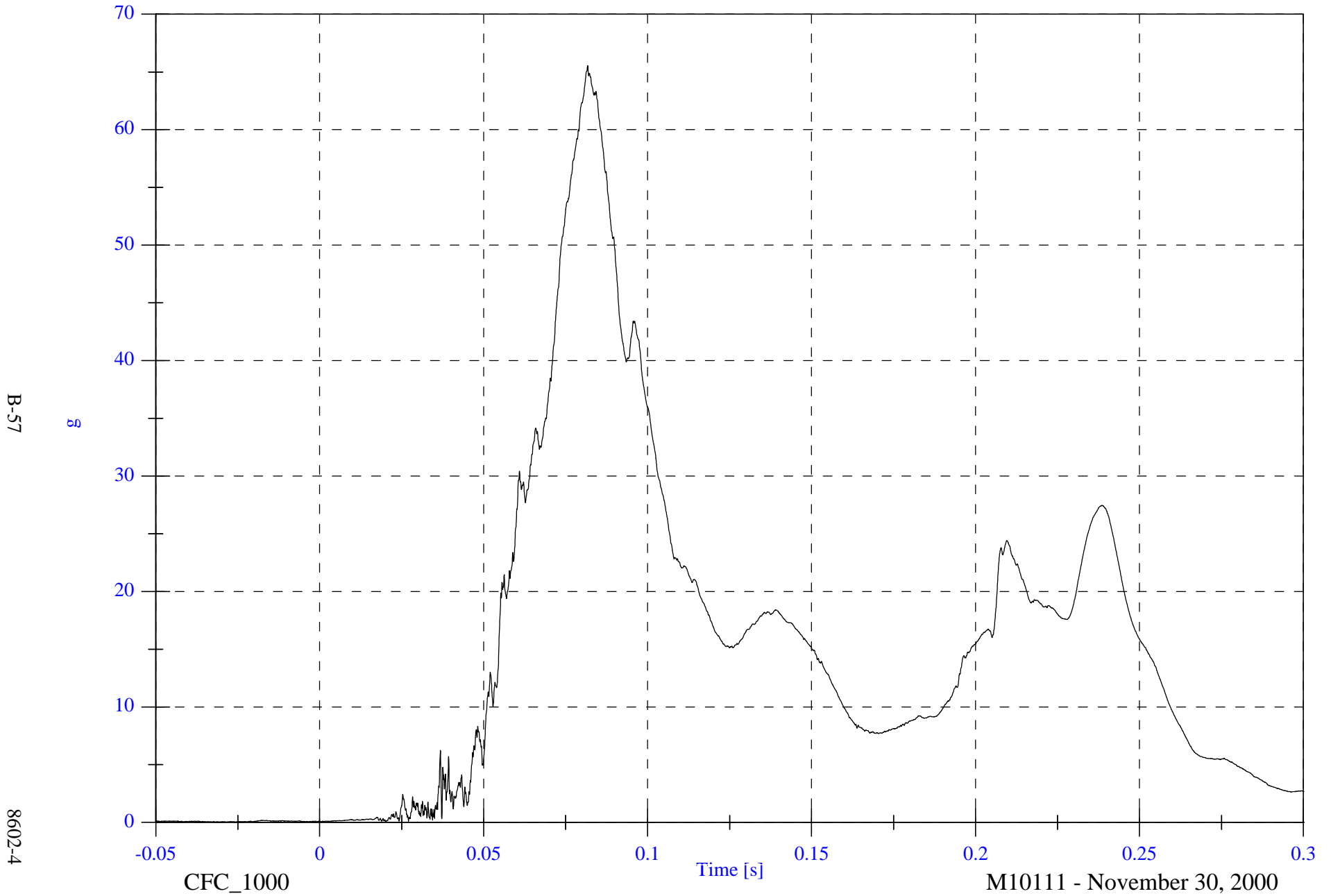
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Head Resultant

Max: 65.6 [g] at 0.082 [s]

Min: 0.0 [g] at -0.028 [s]



B-57

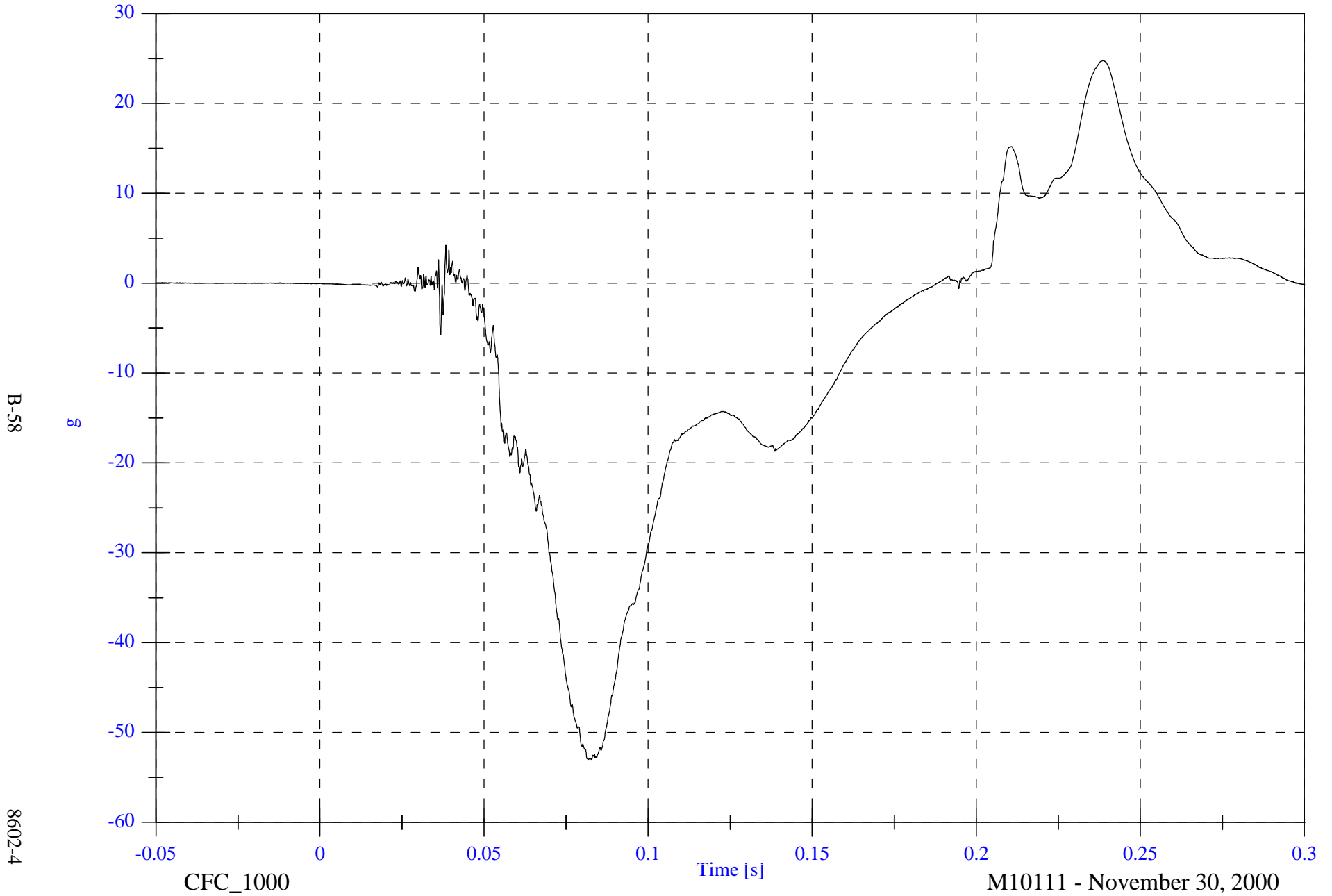
8602-4

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Head Red x

Max: 24.7 [g] at 0.238 [s]

Min: -53.0 [g] at 0.082 [s]



B-58

8602-4

CFC_1000

Time [s]

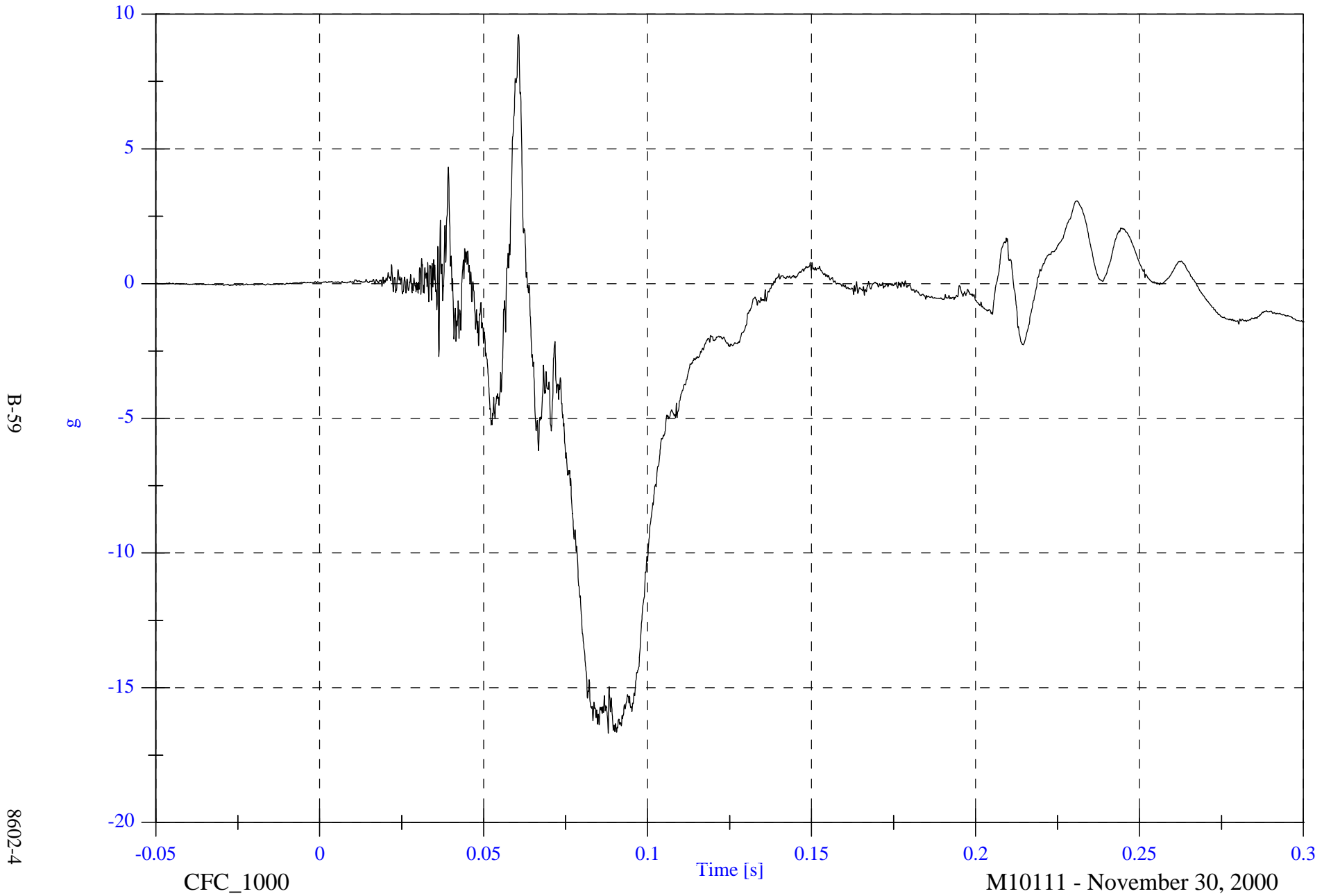
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 9.2 [g] at 0.061 [s]

Min: -16.7 [g] at 0.088 [s]

P2 Head Red y

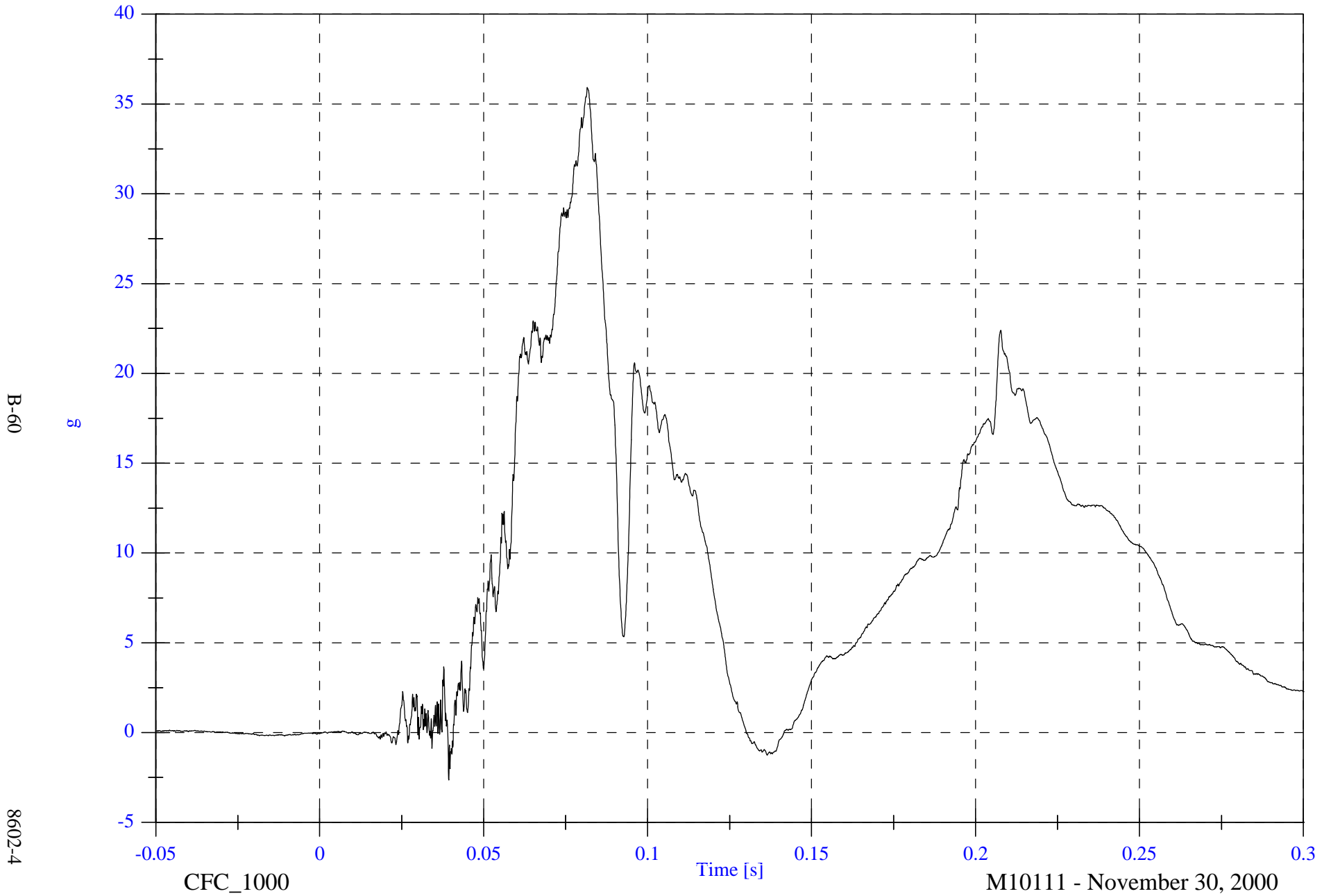


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 35.9 [g] at 0.082 [s]

Min: -2.6 [g] at 0.039 [s]

P2 Head Red z

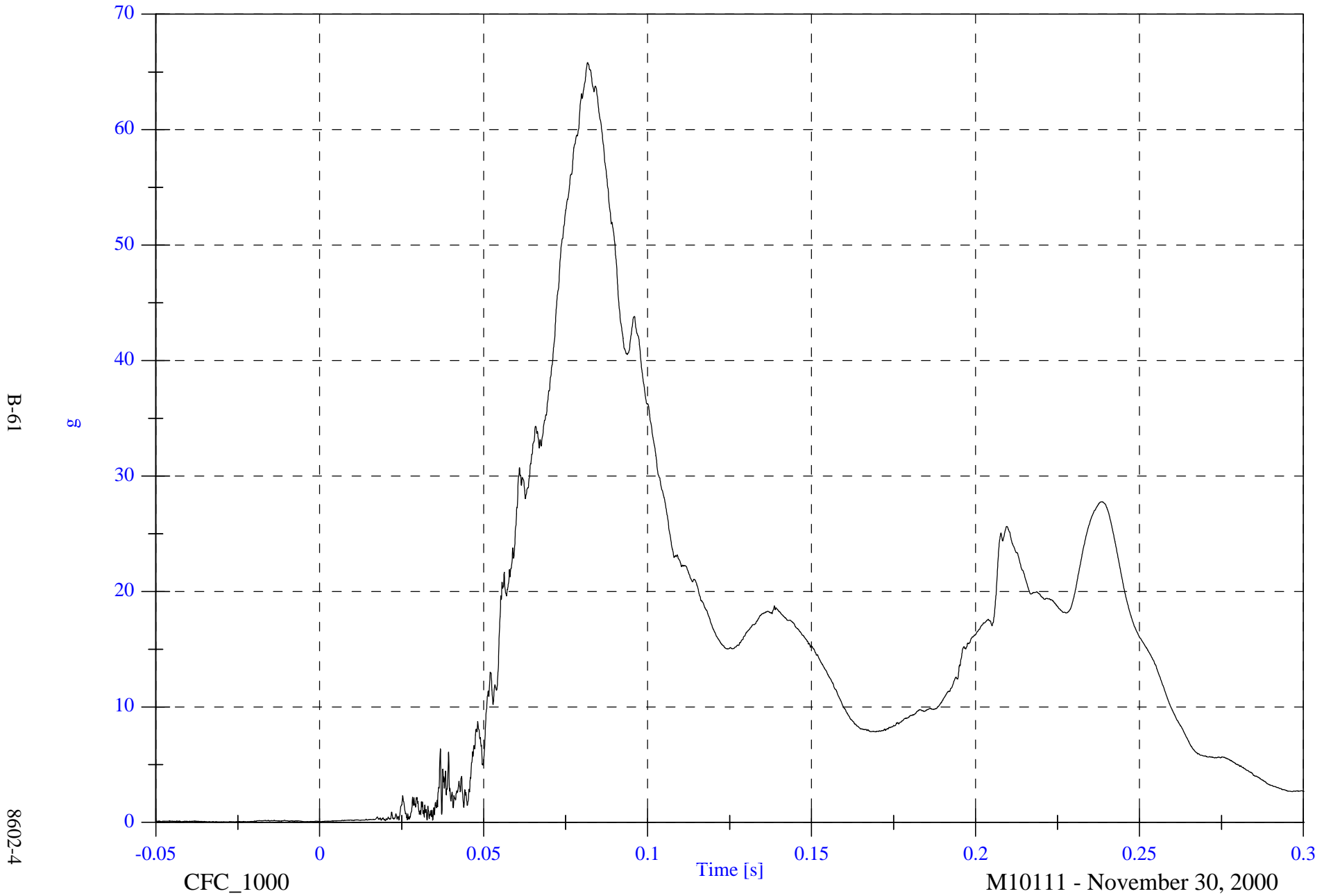


NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Head Red Resultant

Max: 65.8 [g] at 0.082 [s]

Min: 0.0 [g] at -0.028 [s]



B-61

8602-4

CFC_1000

Time [s]

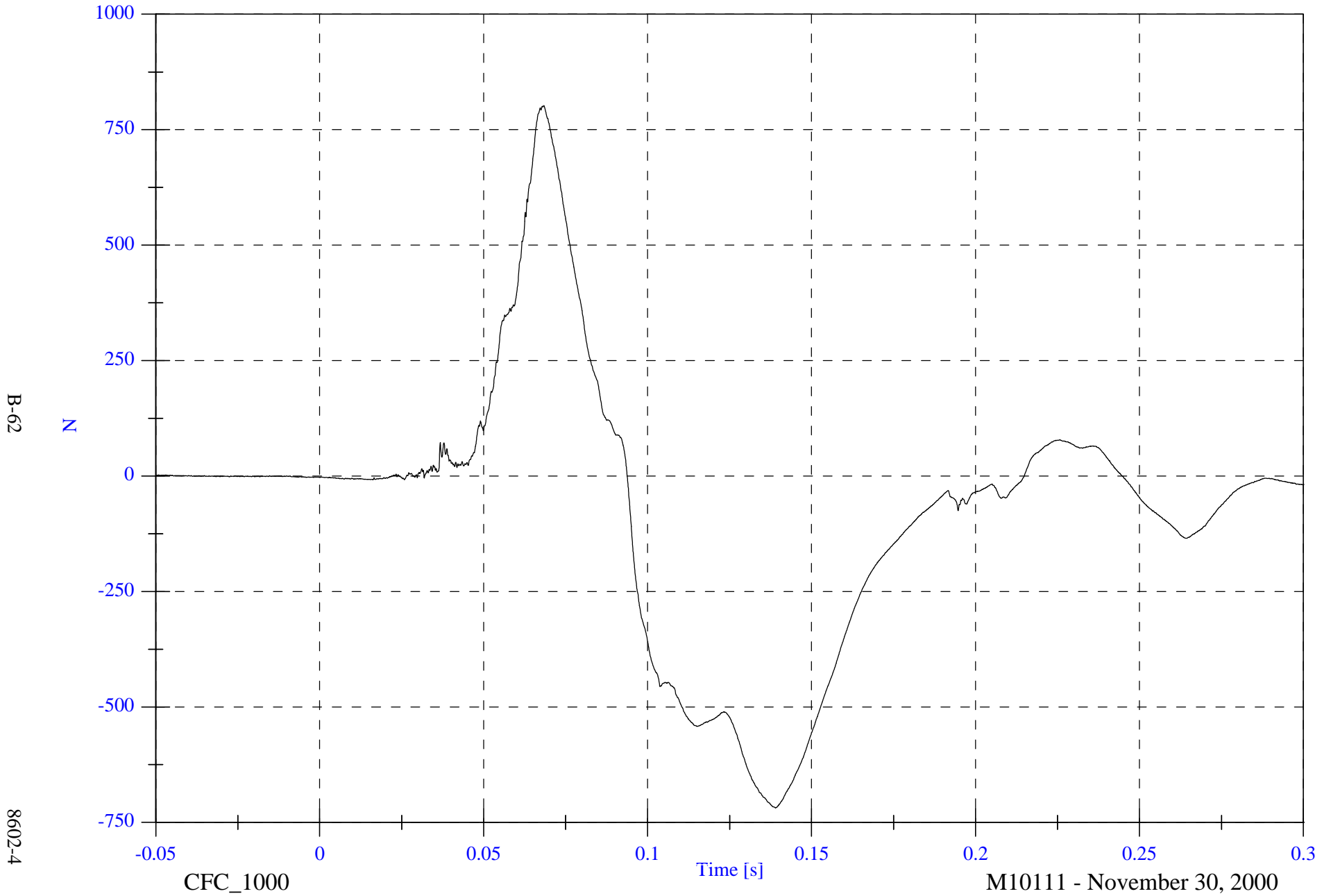
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Upper Neck Fx

Max: 802.0 [N] at 0.068 [s]

Min: -718.8 [N] at 0.139 [s]



B-62

8602-4

CFC_1000

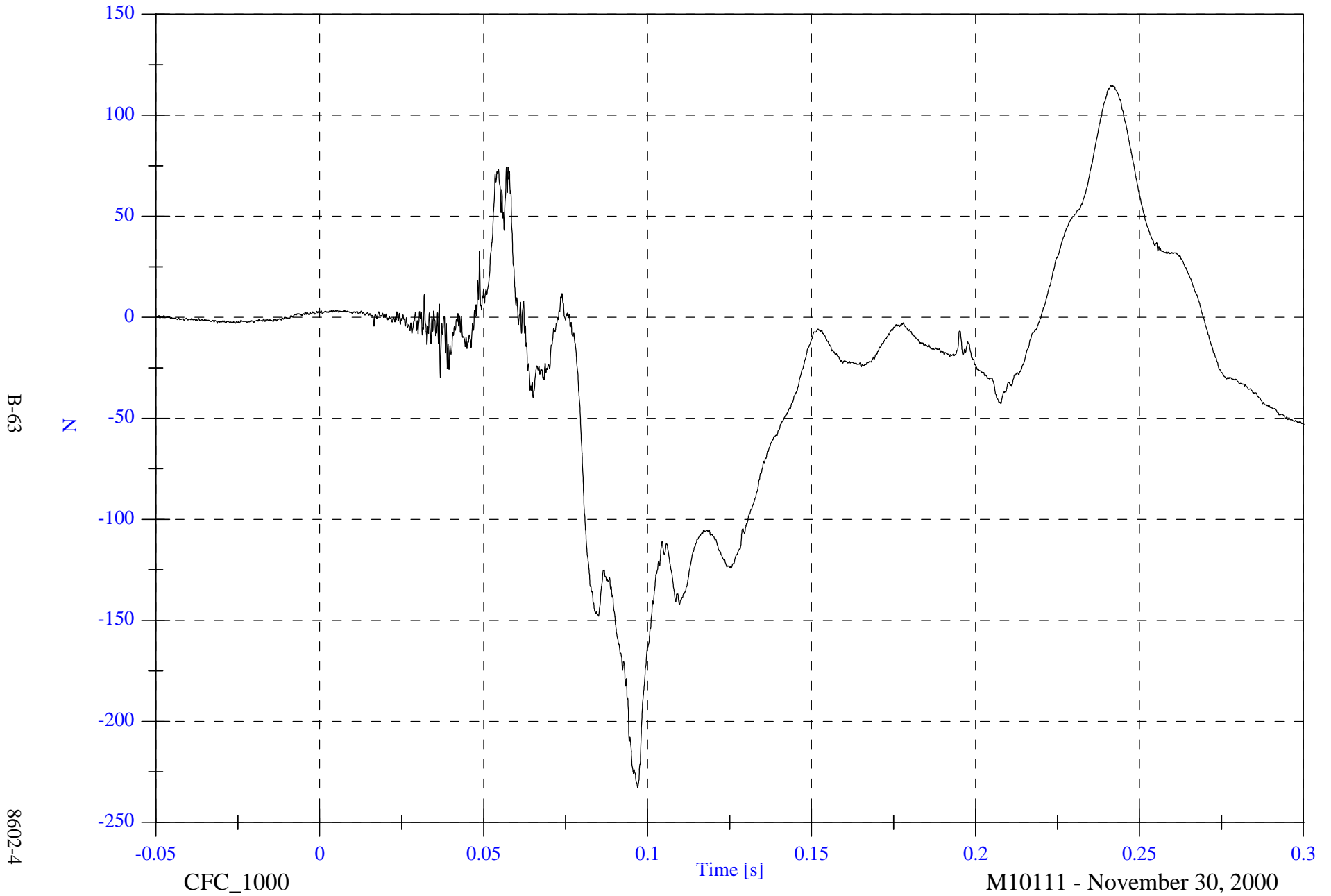
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Upper Neck Fy

Max: 114.8 [N] at 0.241 [s]

Min: -232.9 [N] at 0.097 [s]



B-63

8602-4

CFC_1000

Time [s]

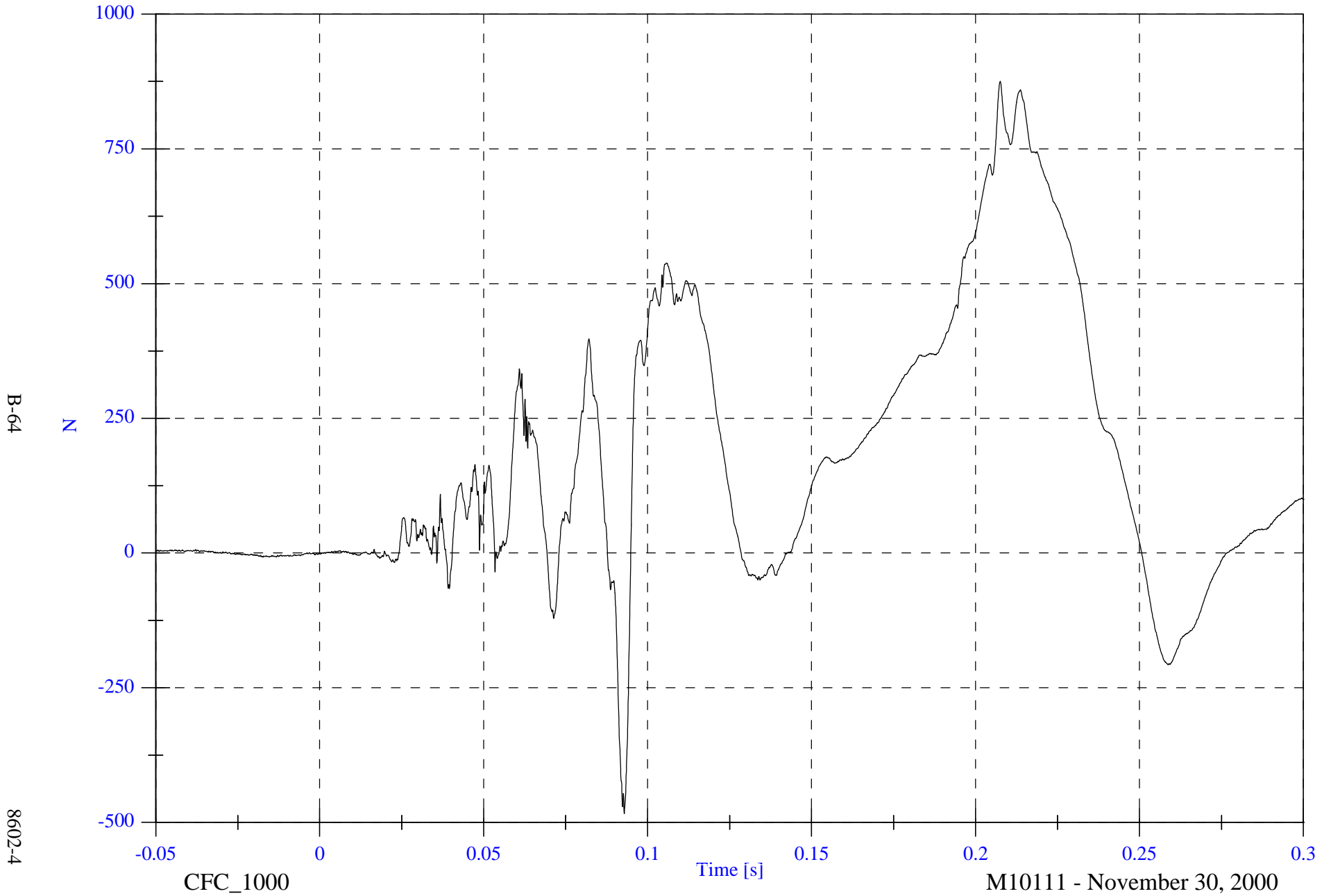
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Upper Neck Fz

Max: 875.2 [N] at 0.207 [s]

Min: -483.5 [N] at 0.093 [s]



B-64

8602-4

CFC_1000

Time [s]

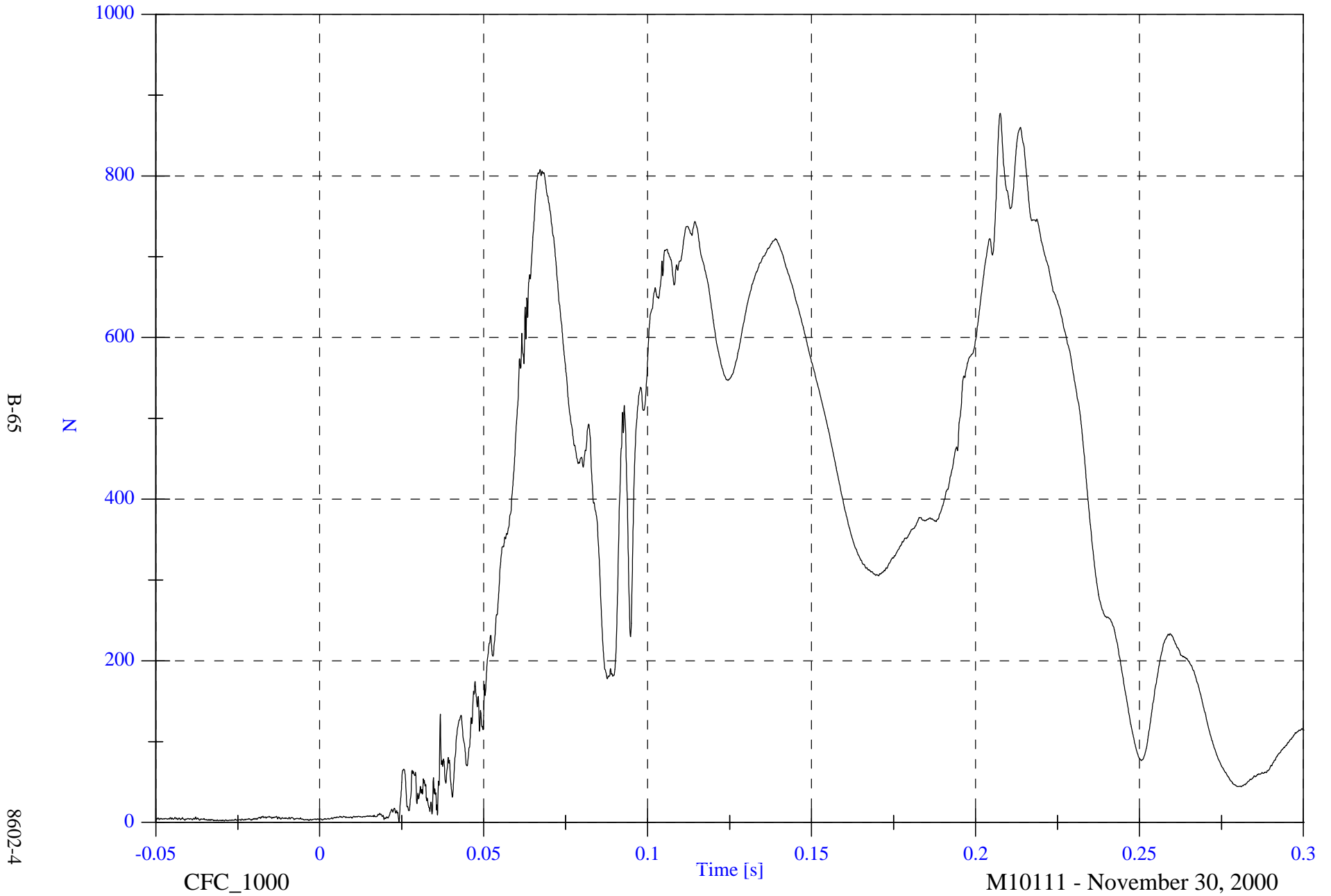
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Upper Neck F Resultant

Max: 877.4 [N] at 0.207 [s]

Min: 0.7 [N] at 0.024 [s]



B-65

N

8602-4

CFC_1000

Time [s]

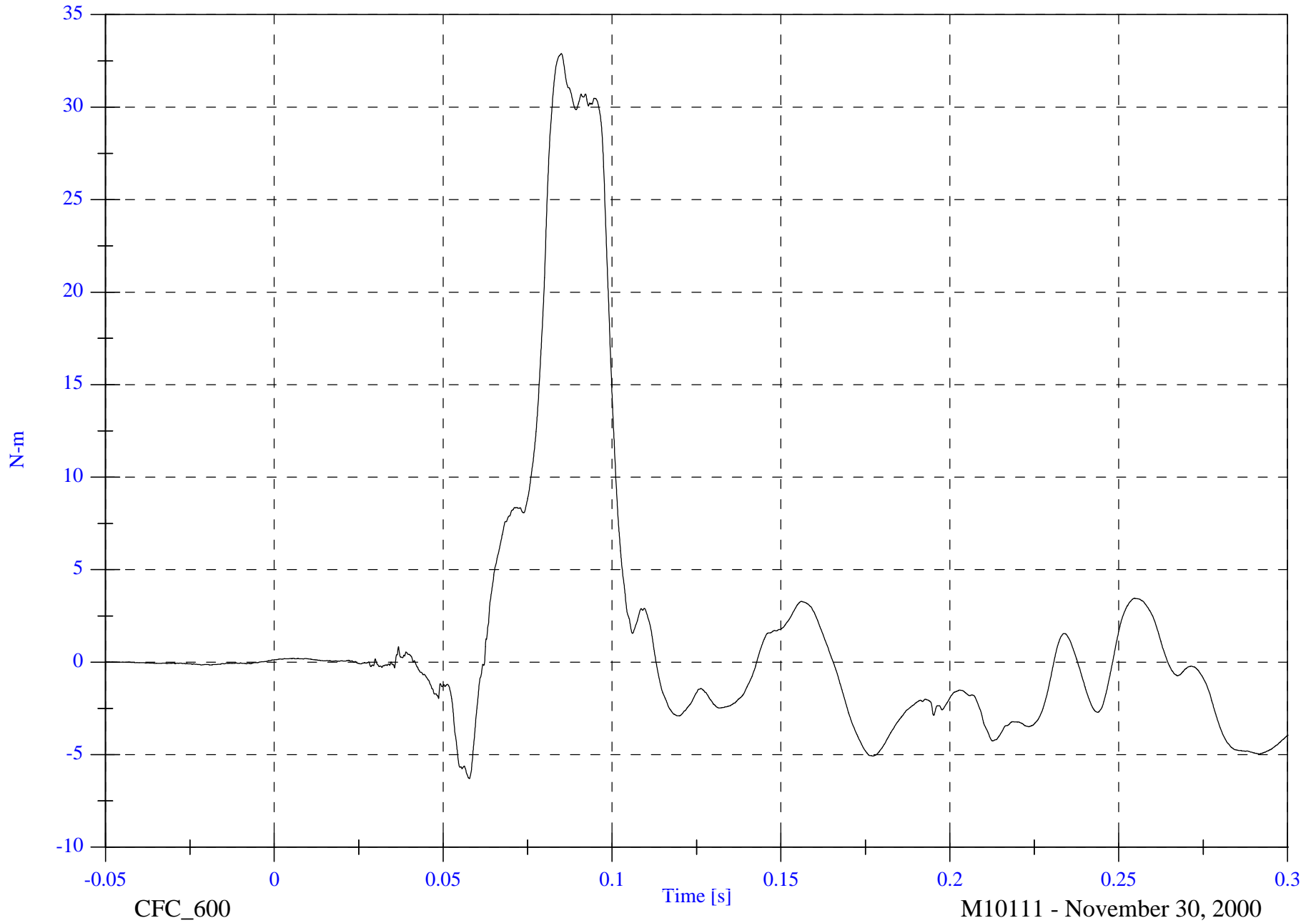
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 32.9 [N-m] at 0.085 [s]

P2 Upper Neck Mx

Min: -6.3 [N-m] at 0.058 [s]



B-66

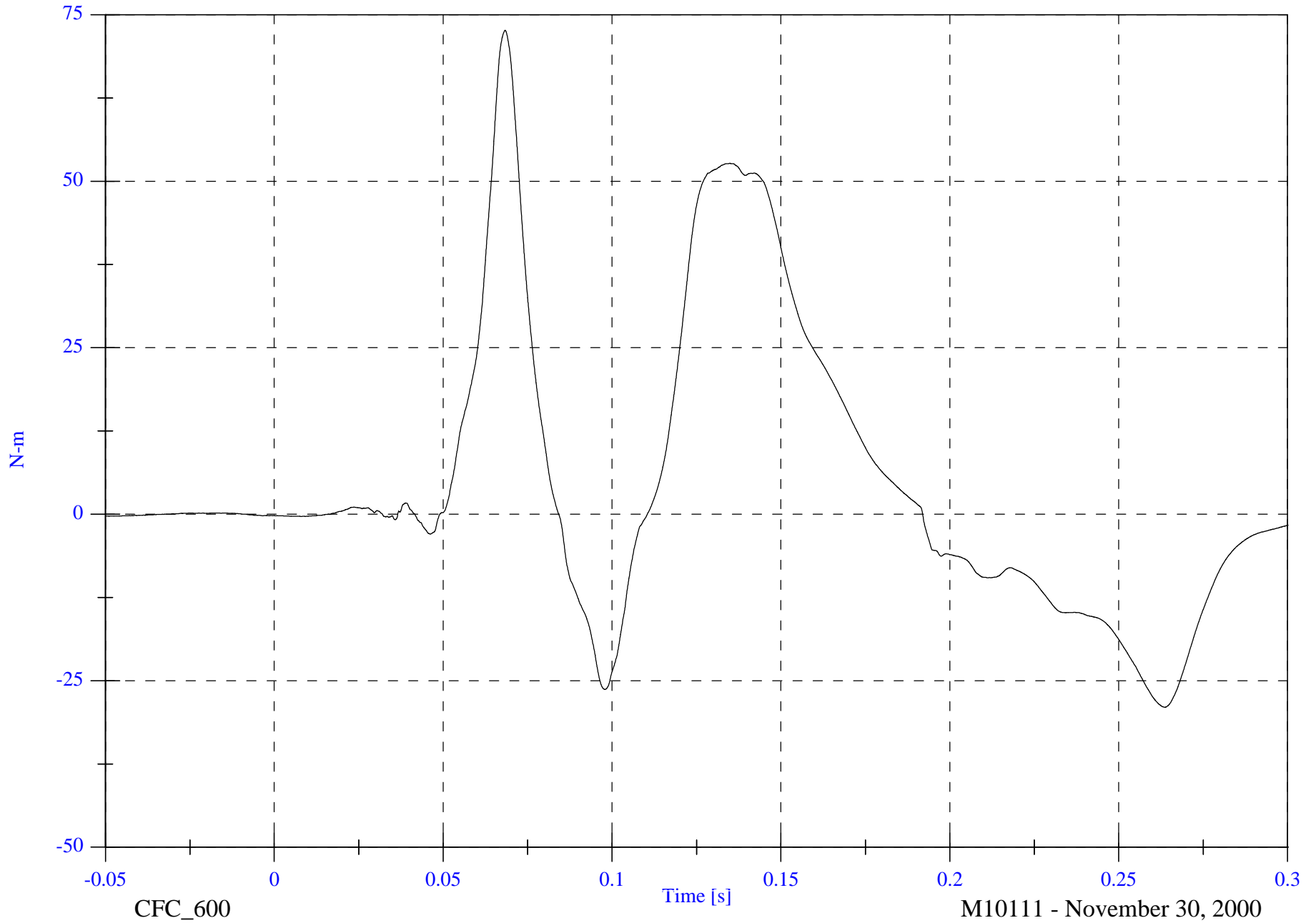
8602-4

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Upper Neck My

Max: 72.7 [N-m] at 0.068 [s]

Min: -29.0 [N-m] at 0.264 [s]



B-67

8602-4

CFC_600

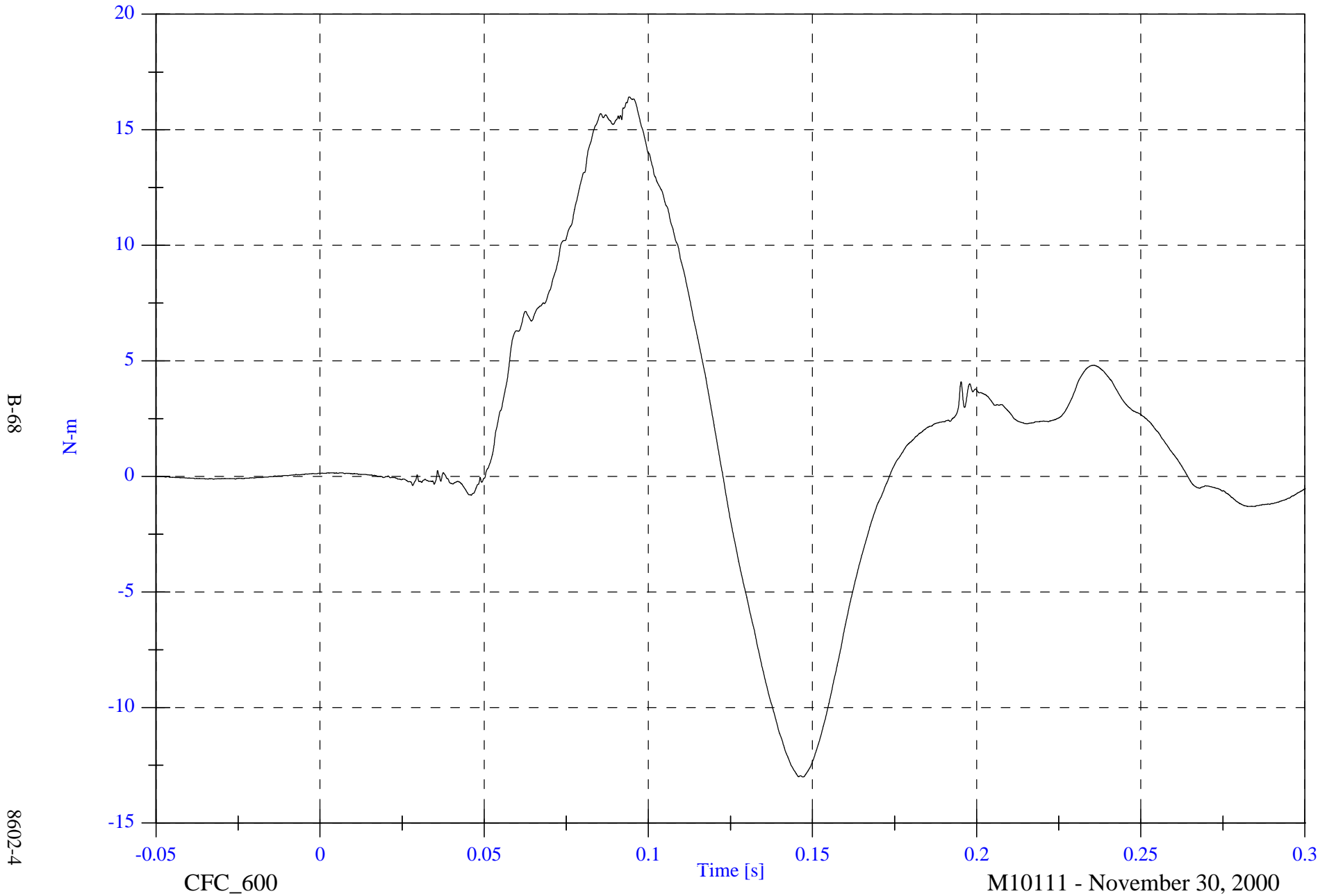
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 16.4 [N-m] at 0.094 [s]

P2 Upper Neck Mz

Min: -13.0 [N-m] at 0.147 [s]



B-68

8602-4

CFC_600

Time [s]

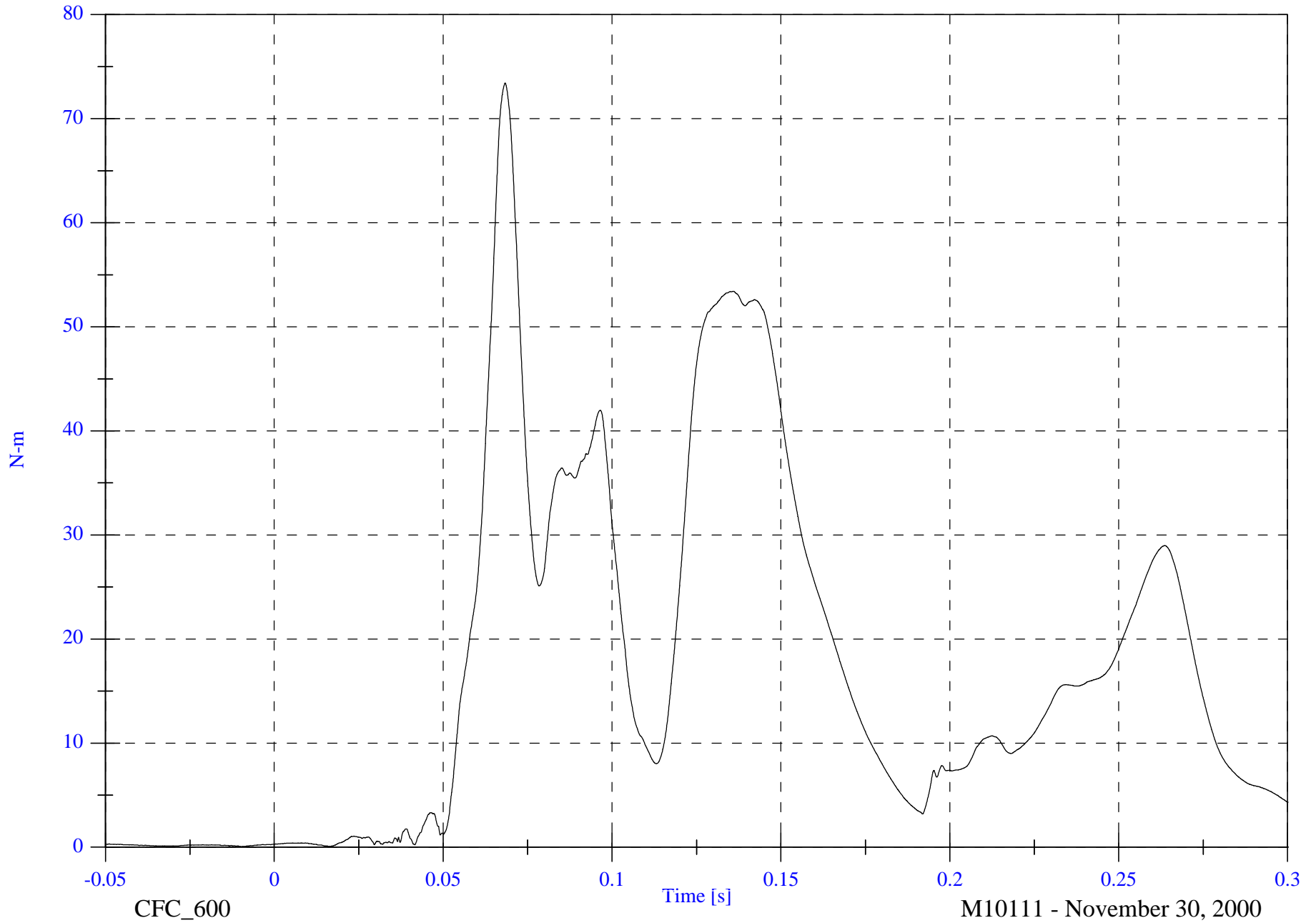
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Upper Neck M Resultant

Max: 73.4 [N-m] at 0.068 [s]

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



B-69

8602-4

CFC_600

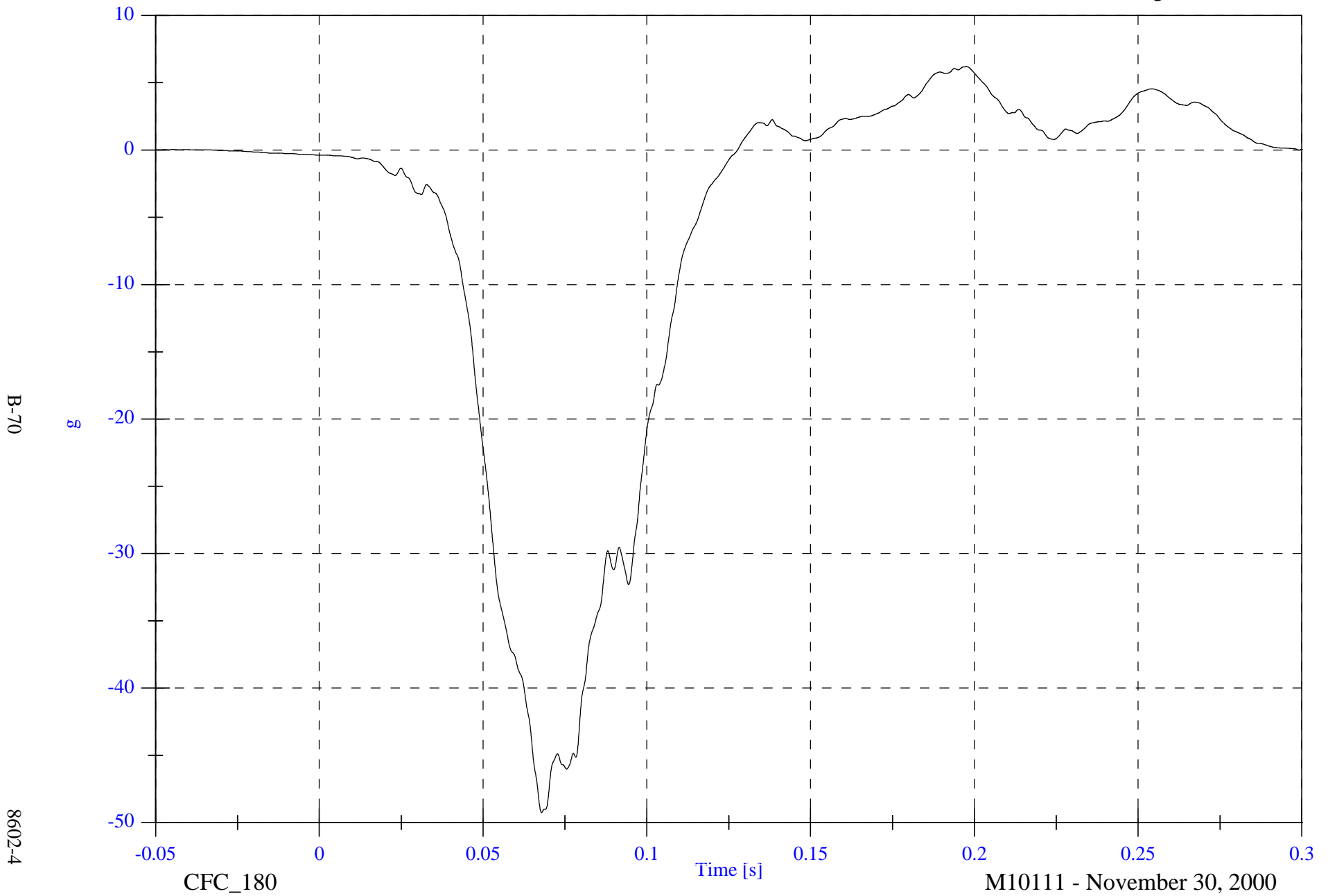
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 6.2 [g] at 0.198 [s]

Min: -49.3 [g] at 0.068 [s]

P2 Chest x



B-70

g

8602-4

CFC_180

Time [s]

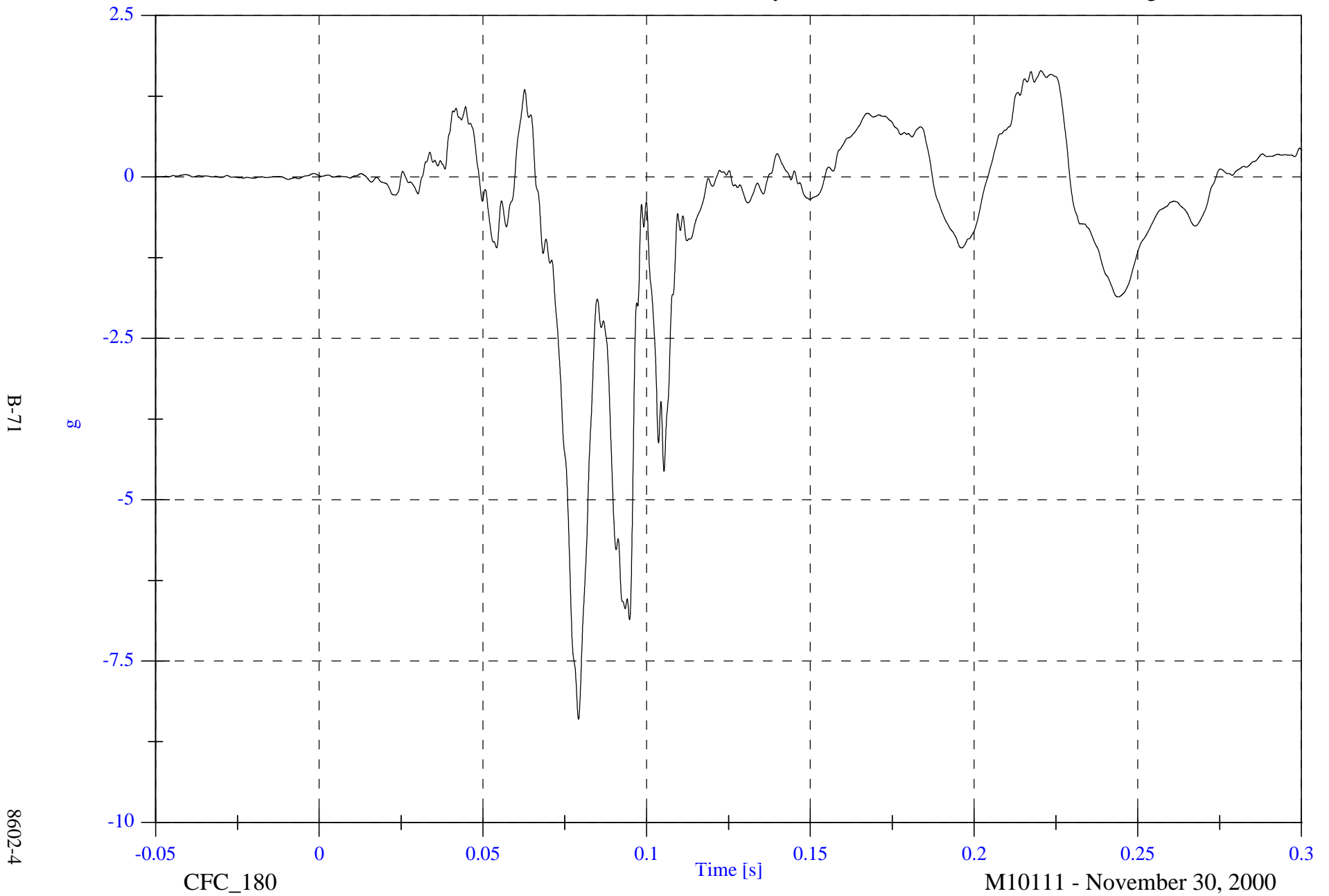
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 1.6 [g] at 0.220 [s]

Min: -8.4 [g] at 0.079 [s]

P2 Chest y

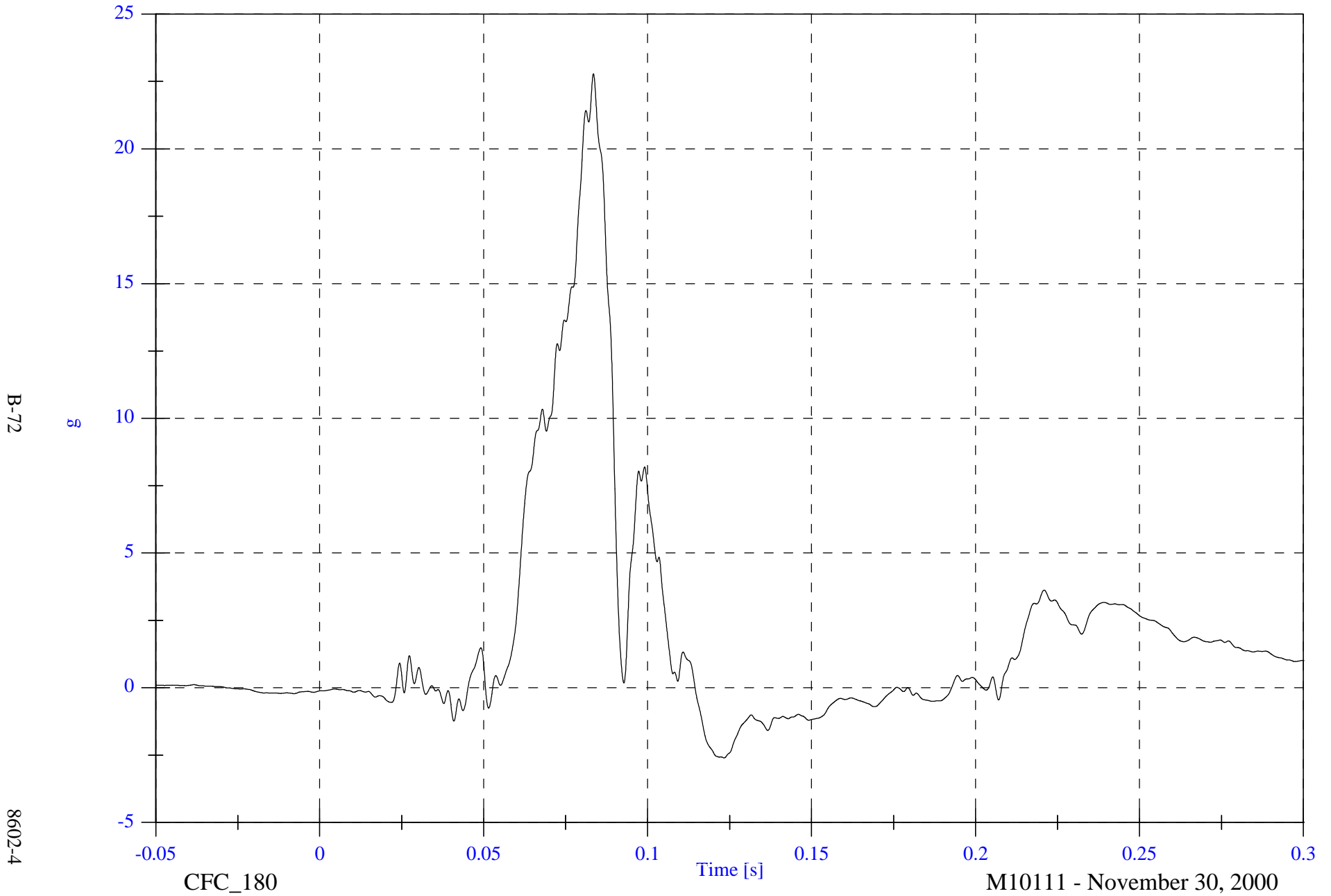


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 22.8 [g] at 0.083 [s]

Min: -2.6 [g] at 0.123 [s]

P2 Chest z



B-72

8602-4

CFC_180

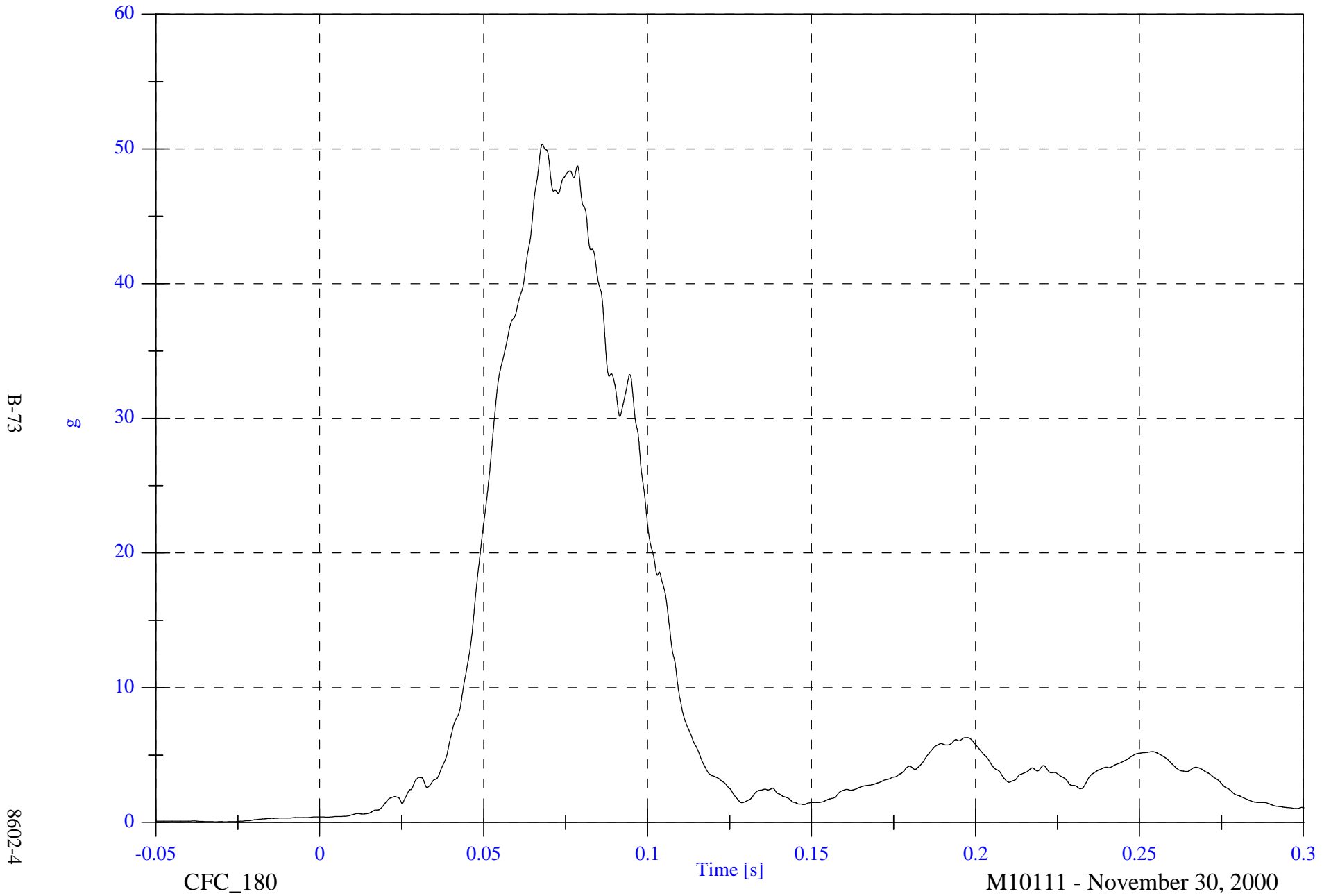
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Chest Resultant

Max: 50.3 [g] at 0.068 [s]

Min: 0.0 [g] at -0.029 [s]



B-73

8602-4

CFC_180

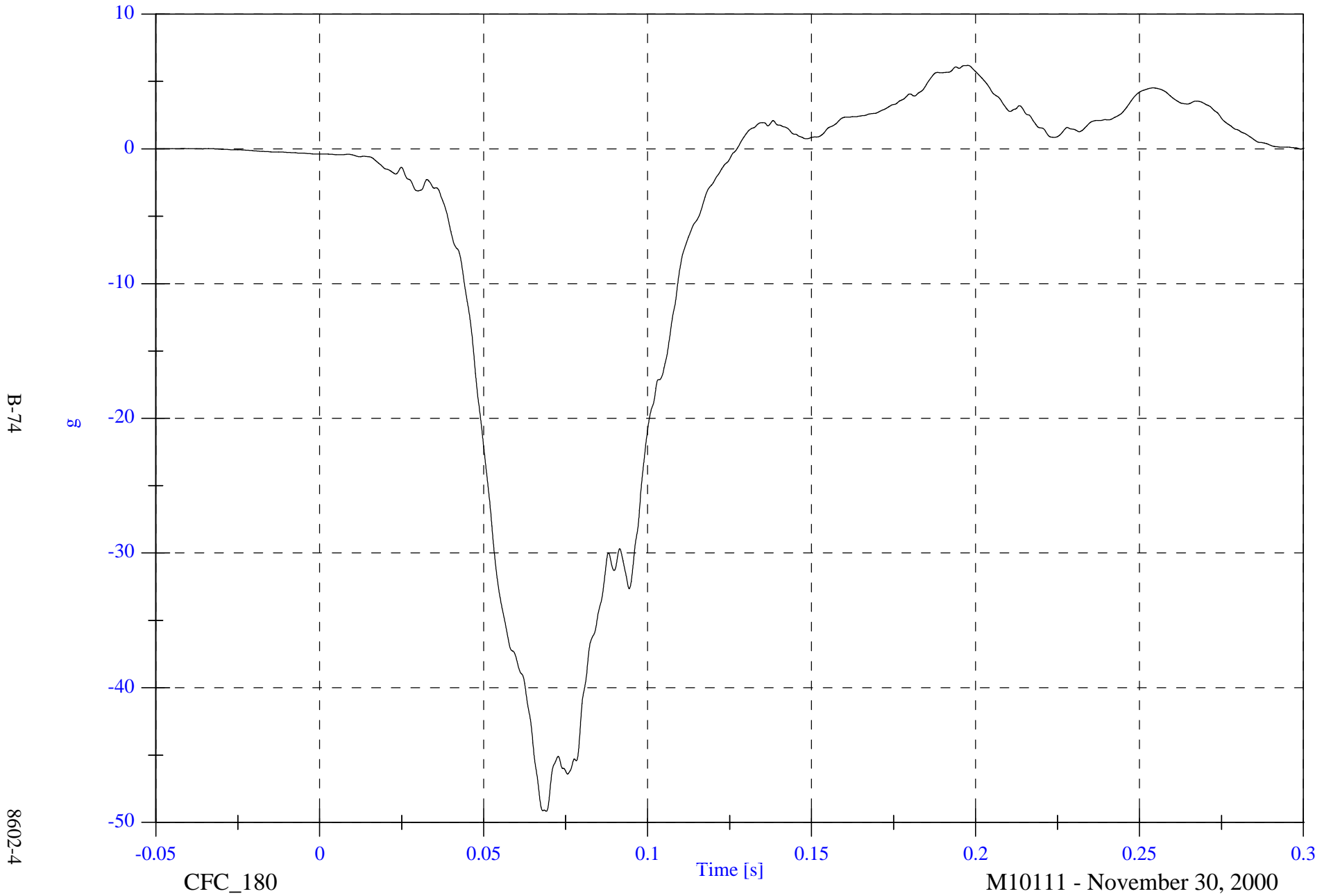
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Chest Red x

Max: 6.2 [g] at 0.198 [s]

Min: -49.2 [g] at 0.069 [s]



B-74

8602-4

CFC_180

Time [s]

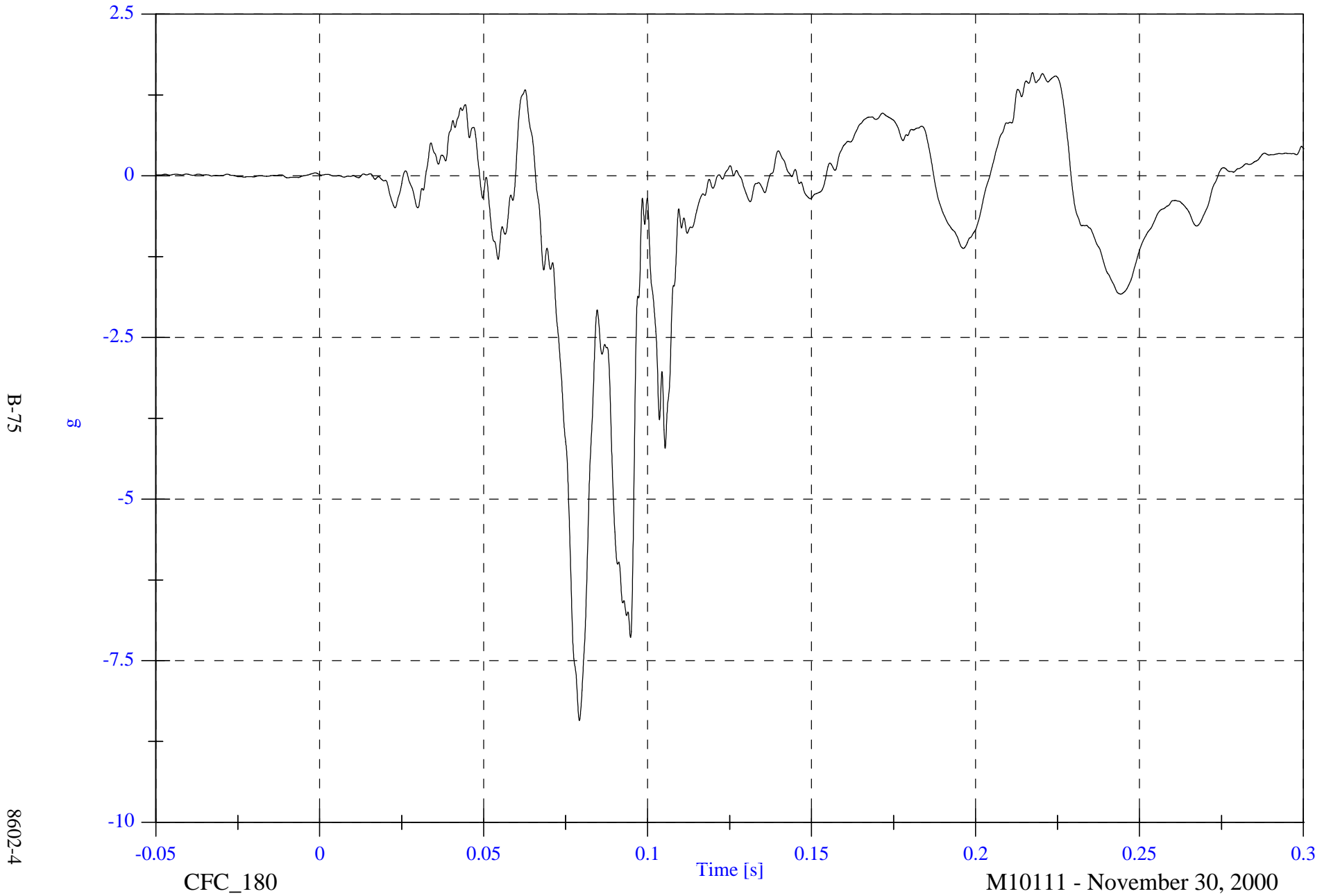
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 1.6 [g] at 0.217 [s]

P2 Chest Red y

Min: -8.4 [g] at 0.079 [s]



B-75

8602-4

CFC_180

Time [s]

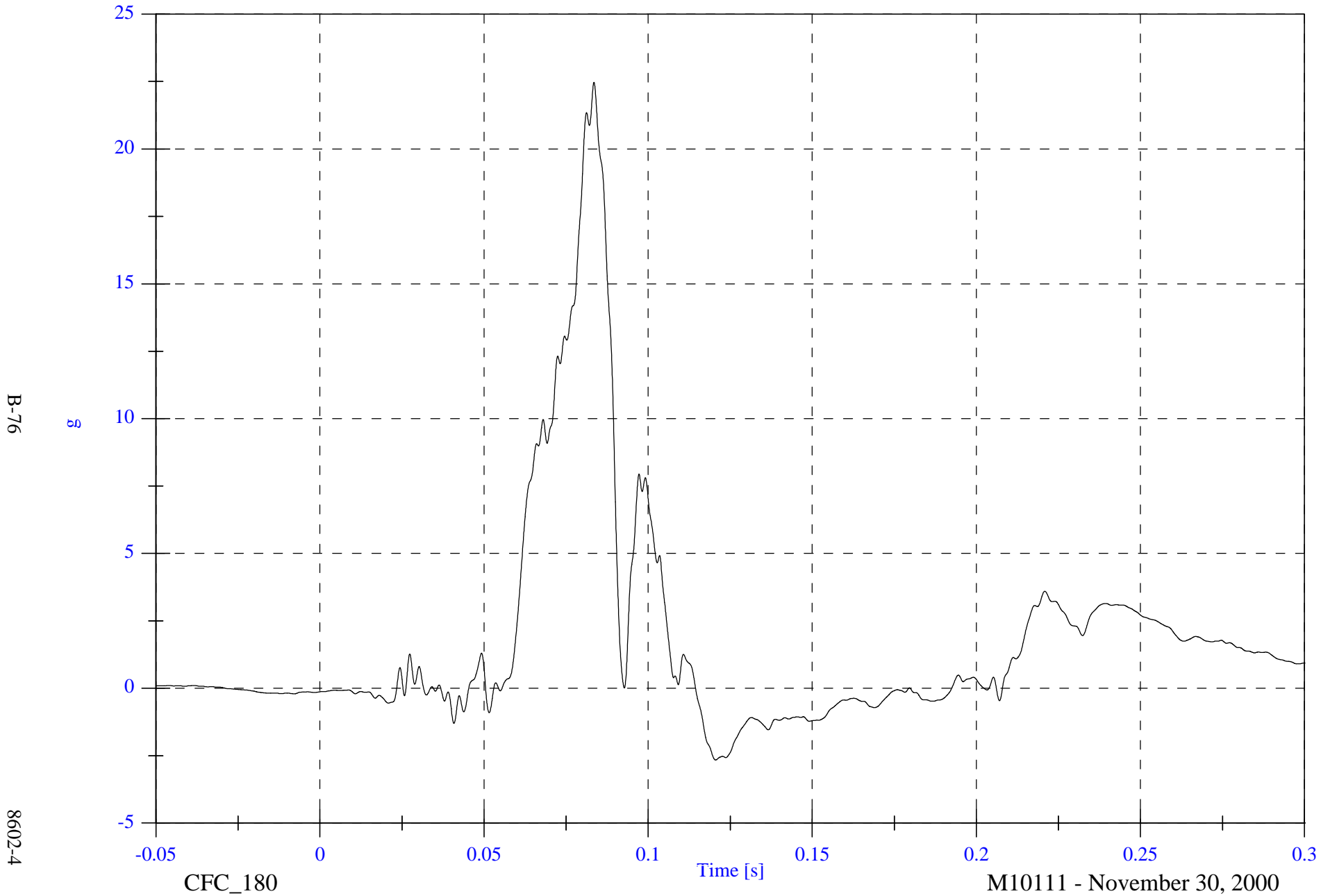
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Chest Red z

Max: 22.5 [g] at 0.084 [s]

Min: -2.7 [g] at 0.121 [s]

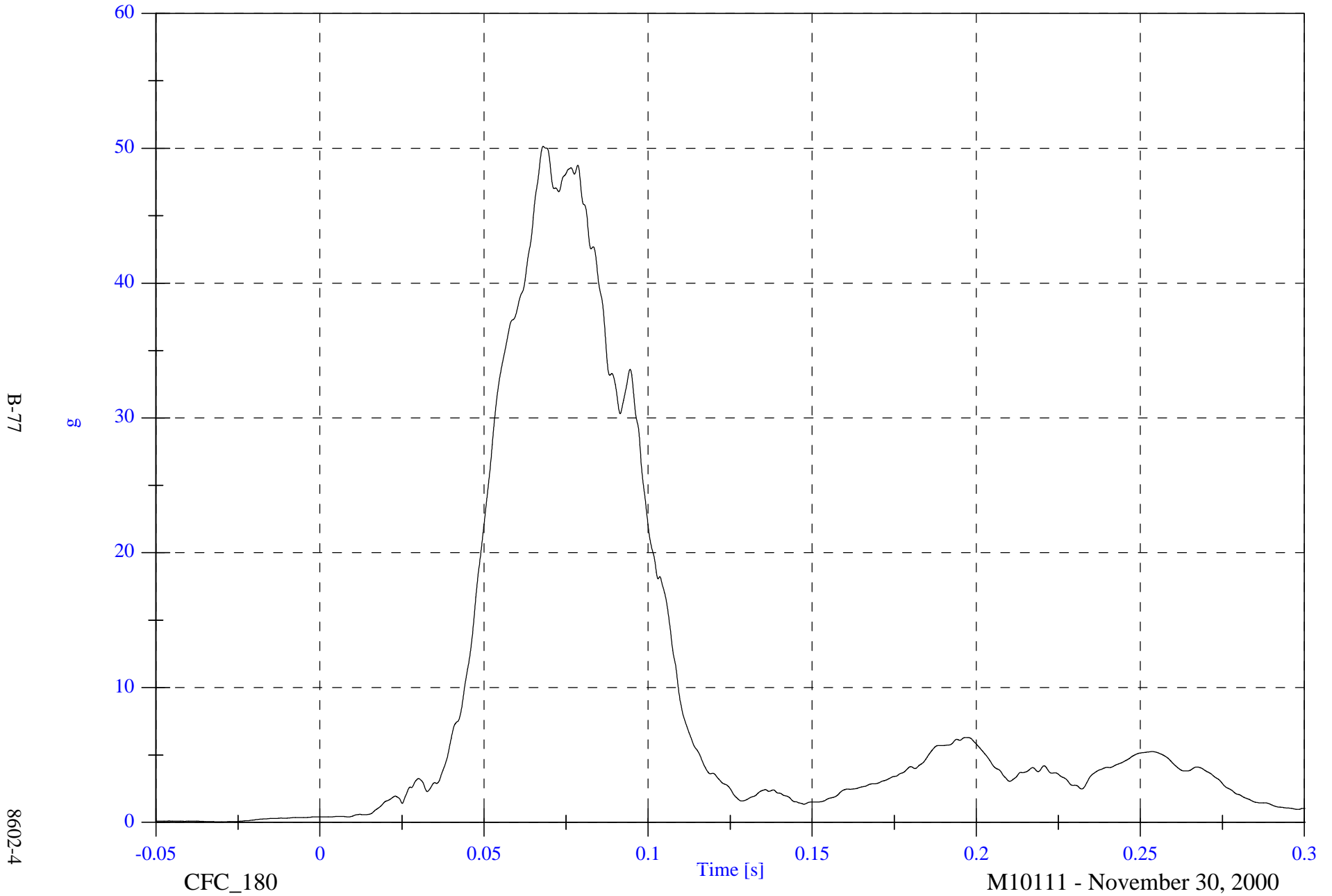


NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Chest Red Resultant

Max: 50.1 [g] at 0.068 [s]

Min: 0.0 [g] at -0.029 [s]



B-77

8602-4

CFC_180

Time [s]

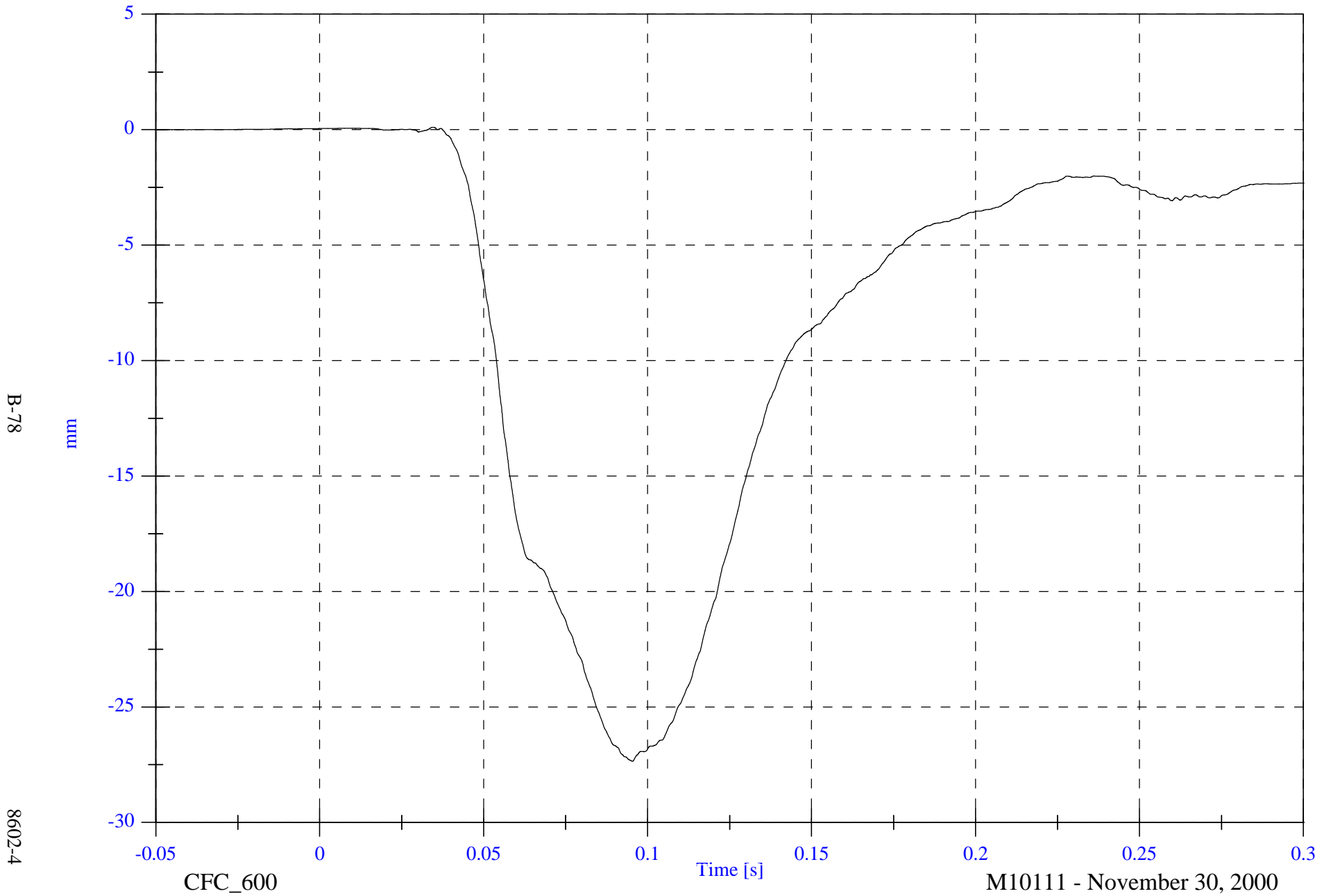
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Chest Compression

Max: 0.1 [mm] at 0.035 [s]

Min: -27.4 [mm] at 0.095 [s]



B-78

8602-4

CFC_600

Time [s]

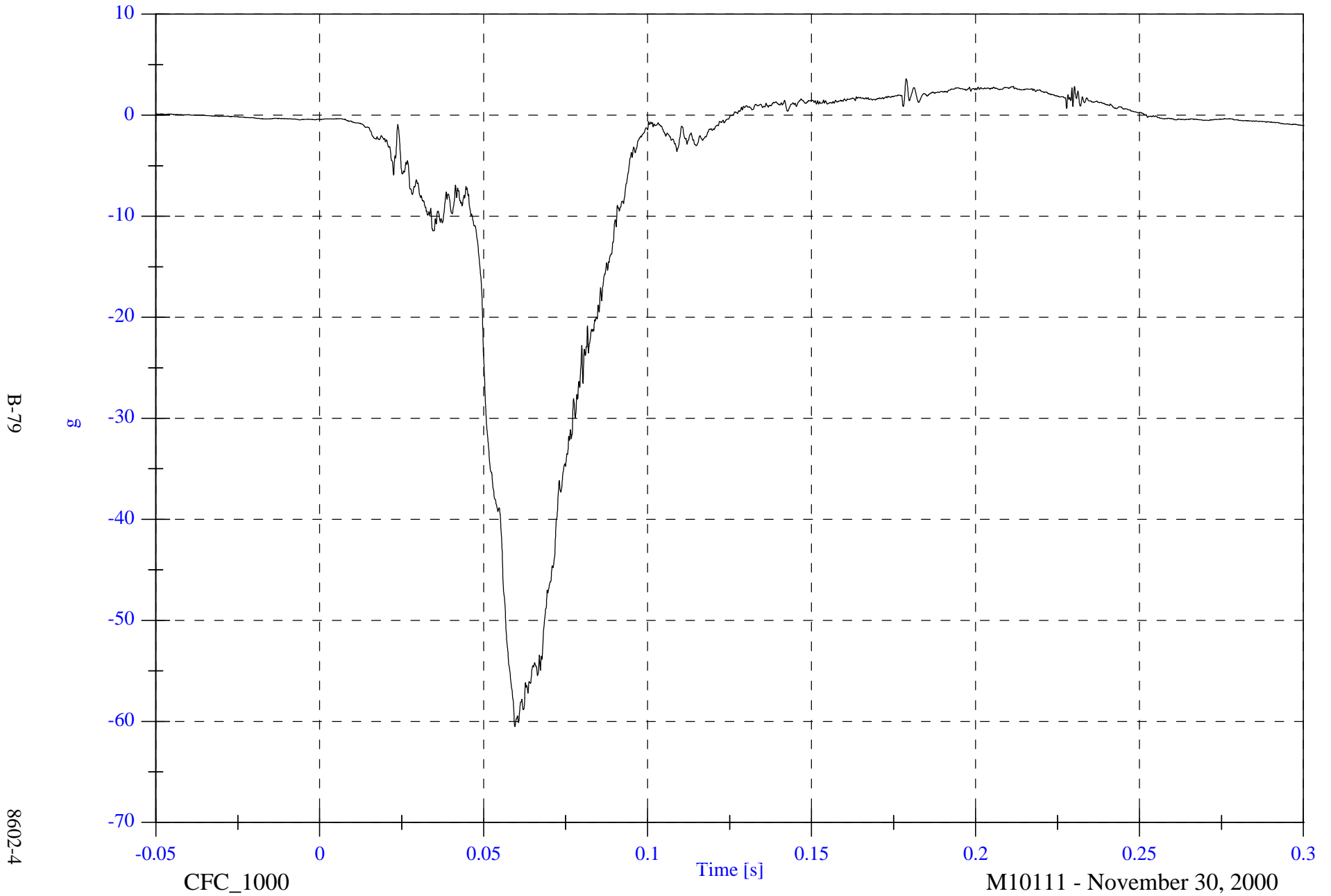
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 3.6 [g] at 0.179 [s]

Min: -60.5 [g] at 0.060 [s]

P2 Pelvic x



B-79

8602-4

CFC_1000

Time [s]

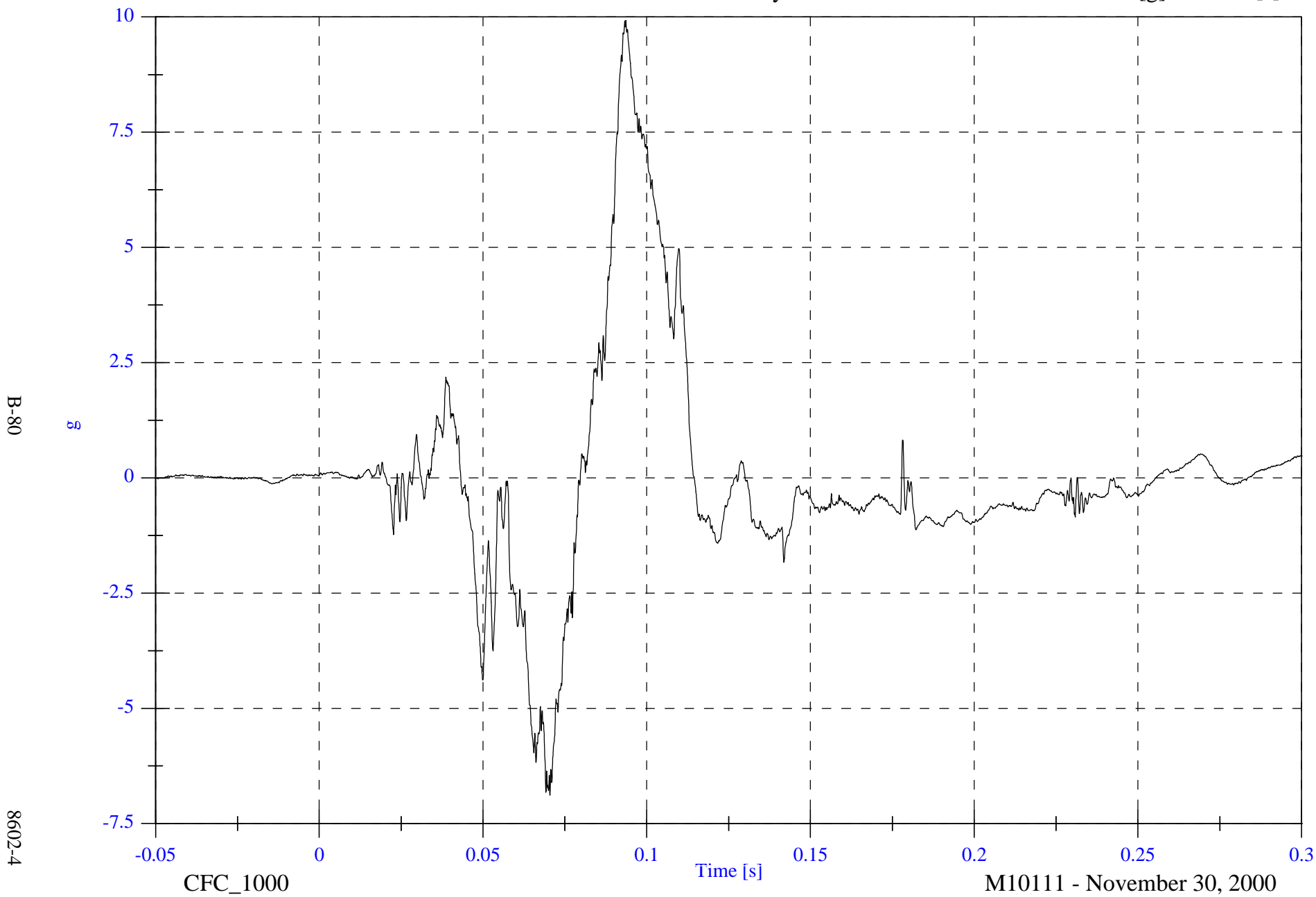
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 9.9 [g] at 0.094 [s]

Min: -6.9 [g] at 0.070 [s]

P2 Pelvic y



B-80

8602-4

CFC_1000

Time [s]

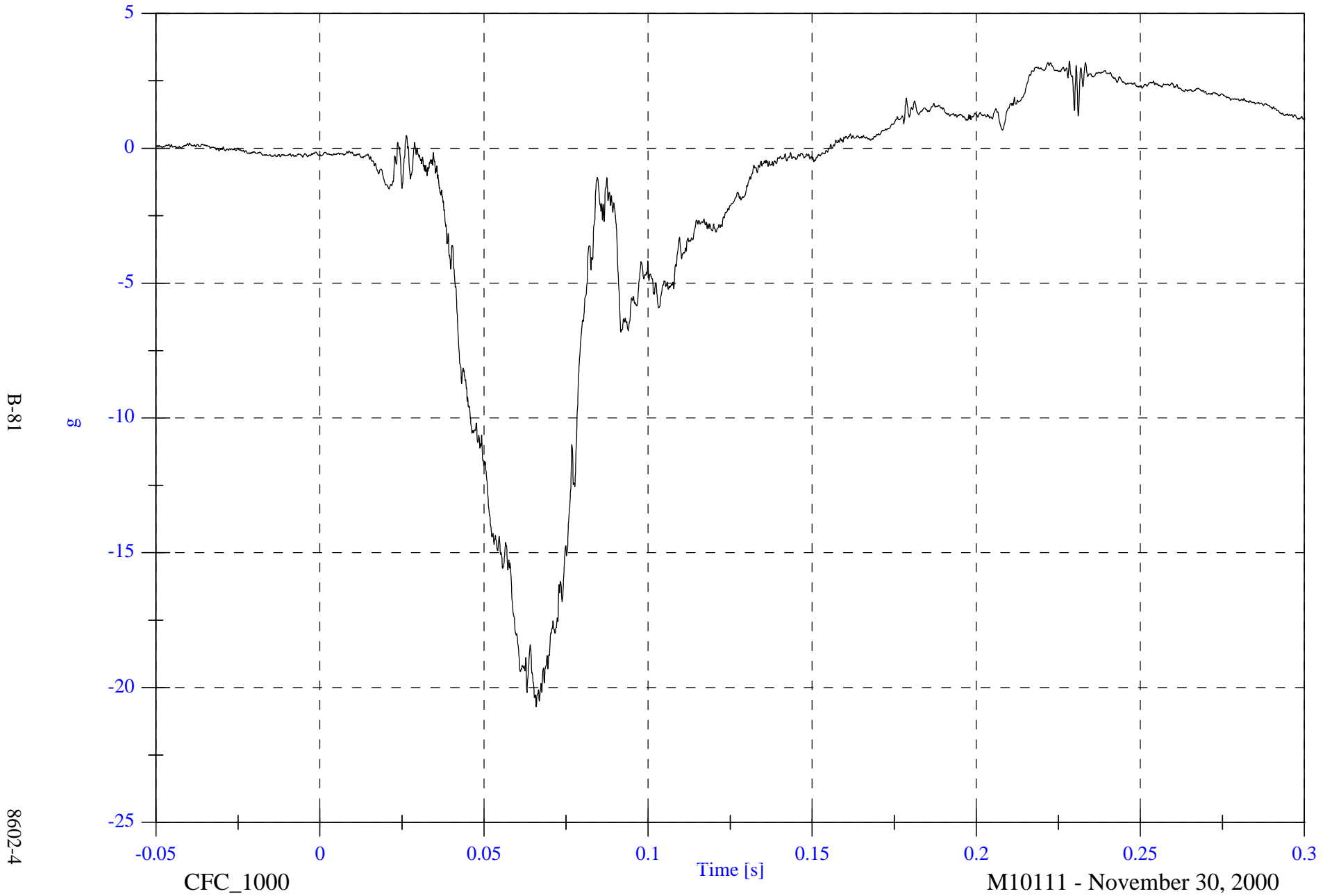
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Pelvic z

Max: 3.2 [g] at 0.228 [s]

Min: -20.7 [g] at 0.066 [s]



B-81

8602-4

CFC_1000

Time [s]

M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

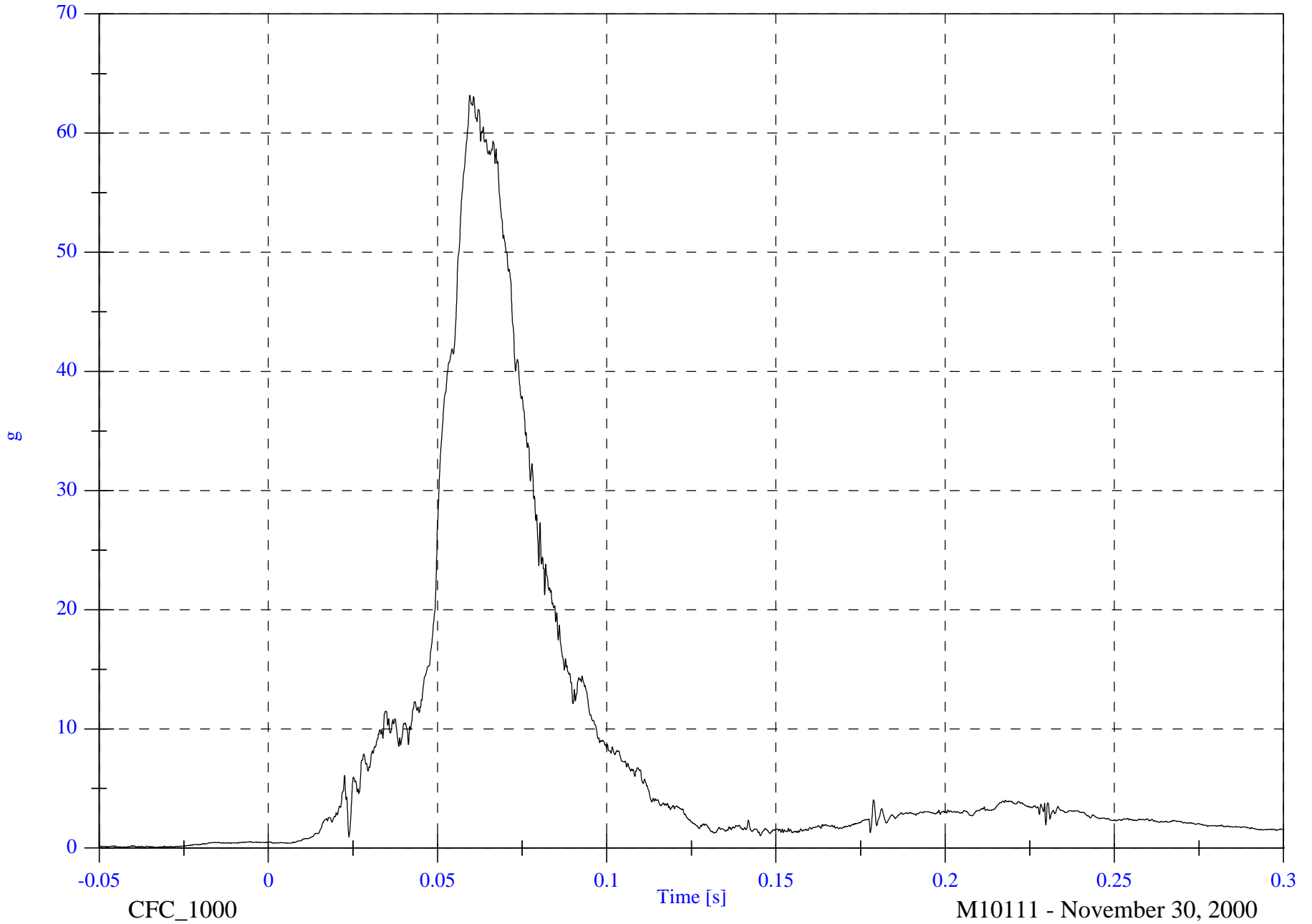
P2 Pelvic Resultant

Max: 63.2 [g] at 0.060 [s]

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

B-82

8602-4



CFC_1000

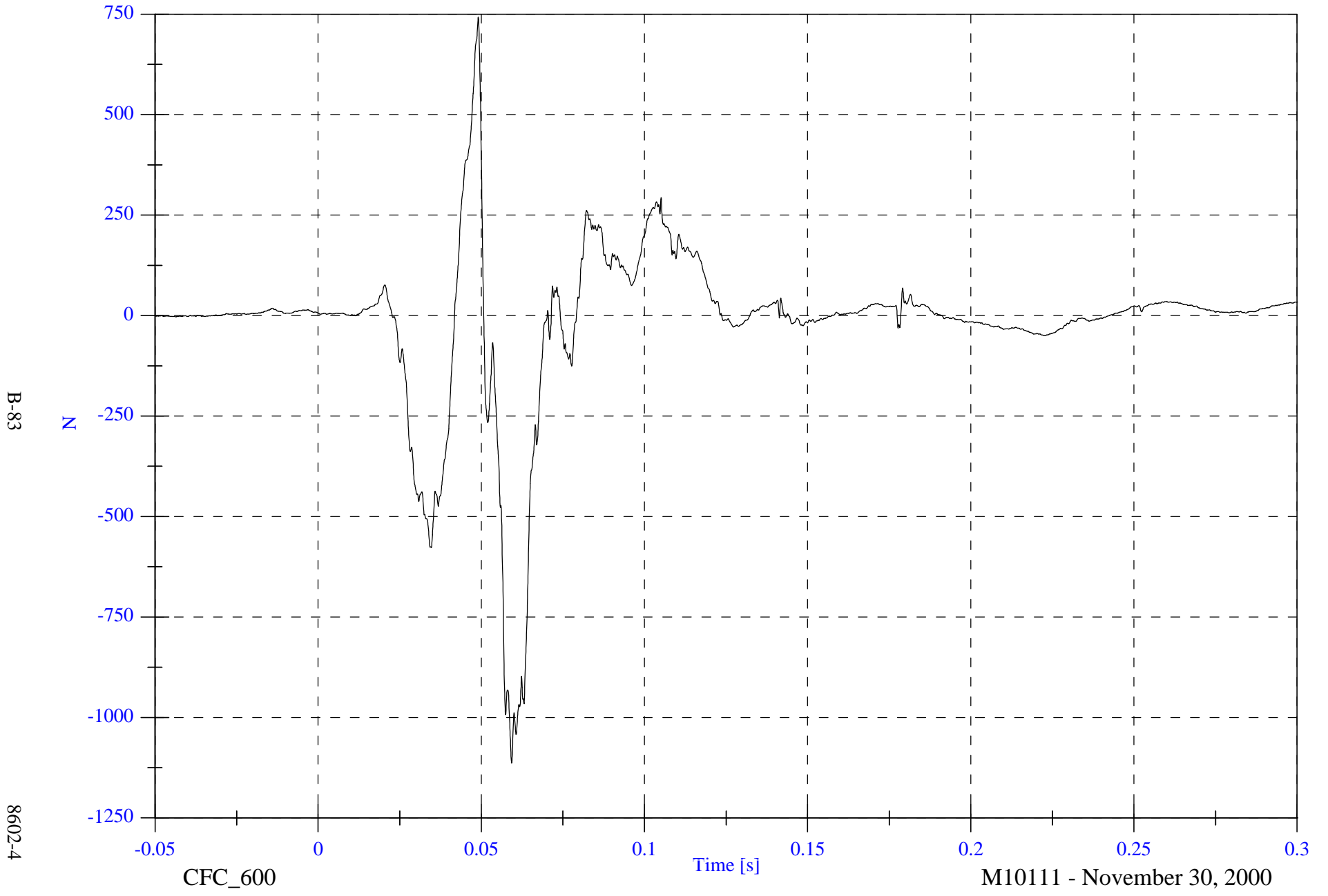
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 742.7 [N] at 0.049 [s]

P2 Left Femur

Min: -1113.1 [N] at 0.059 [s]



B-83

8602-4

CFC_600

Time [s]

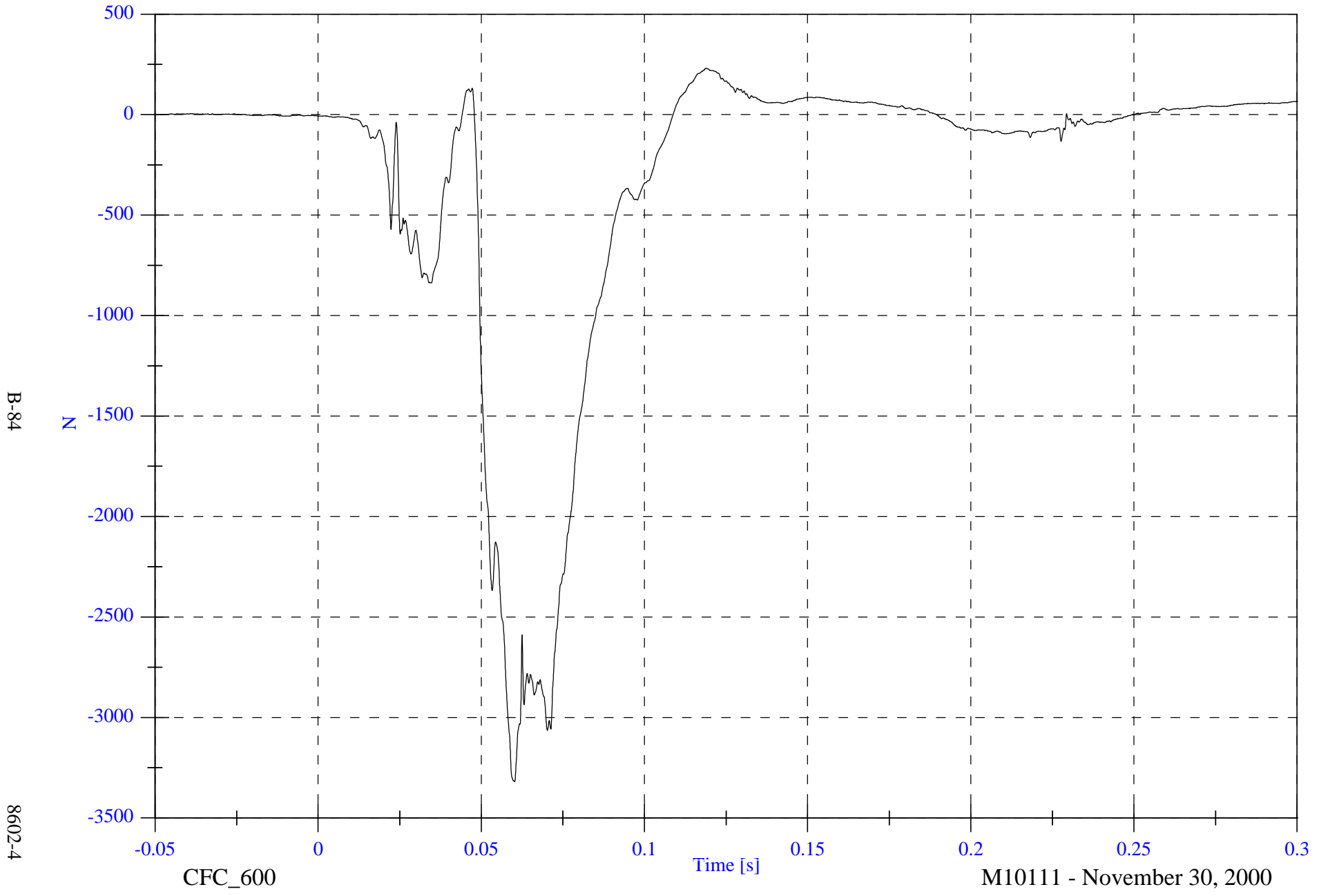
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Right Femur

Max: 230.3 [N] at 0.119 [s]

Min: -3320.1 [N] at 0.060 [s]



B-84

8602-4

CFC_600

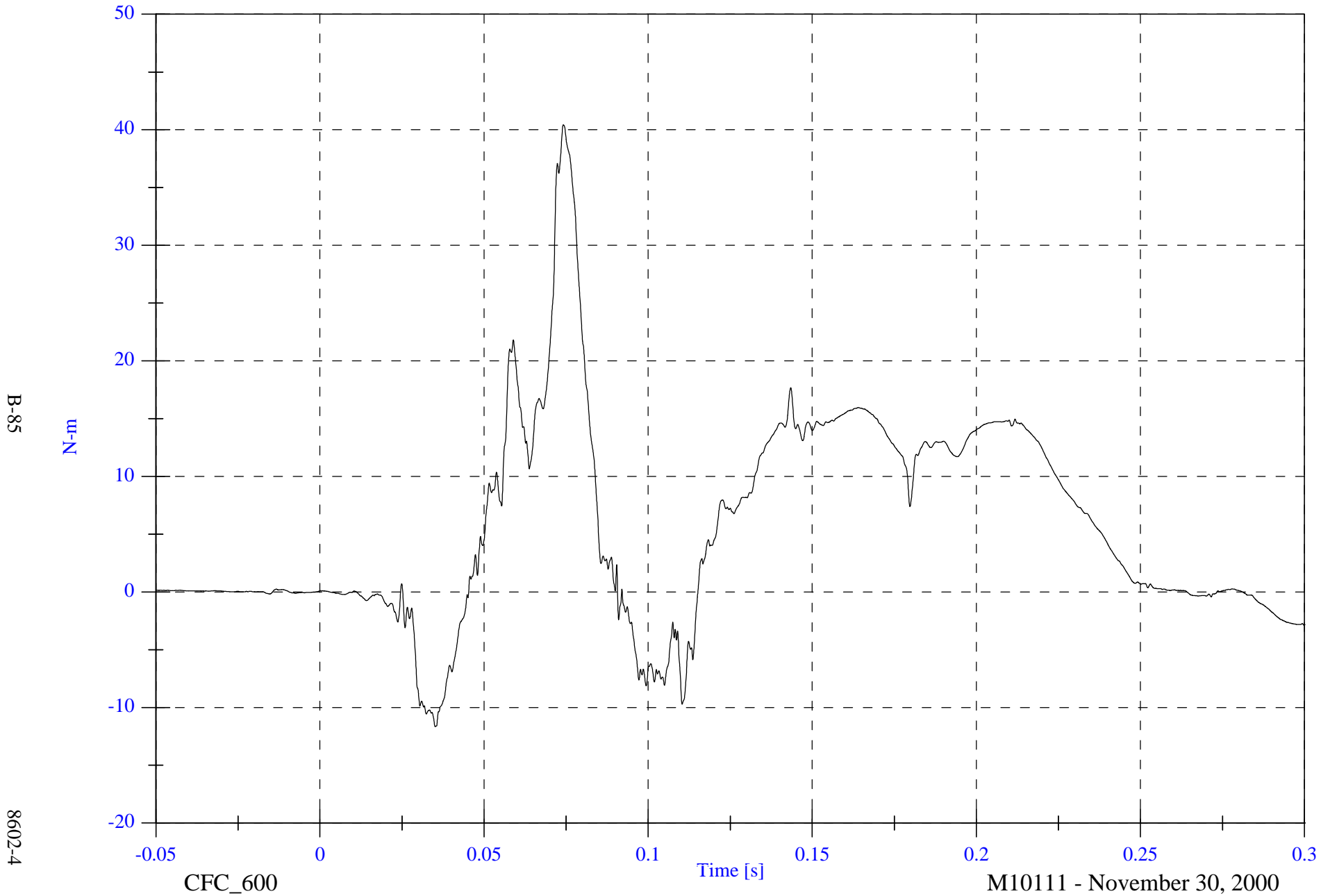
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 40.4 [N-m] at 0.074 [s]

P2 Left Upper Tibia Mx

Min: -11.7 [N-m] at 0.035 [s]



B-85

8602-4

CFC_600

Time [s]

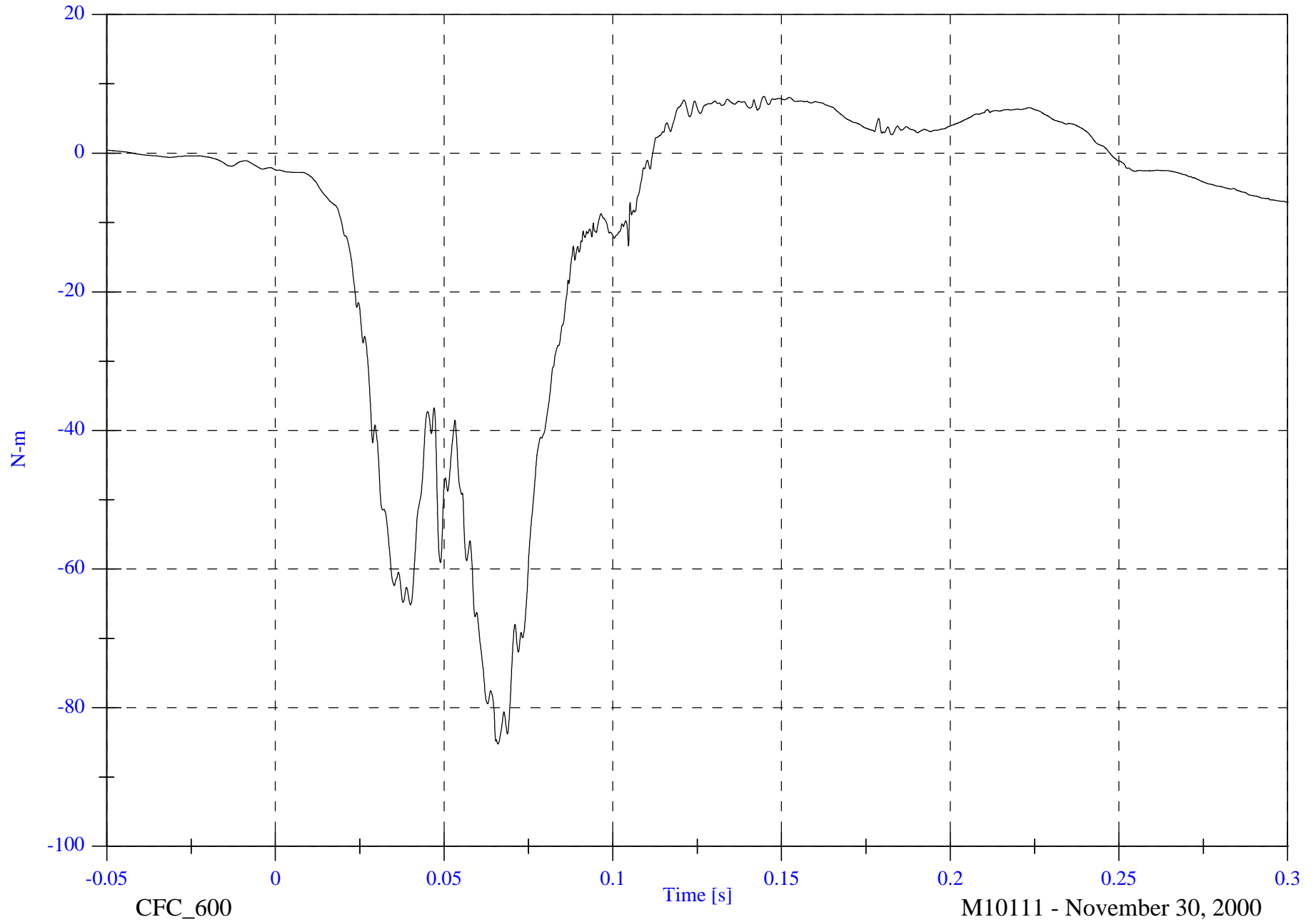
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 8.2 [N-m] at 0.145 [s]

P2 Left Upper Tibia My

Min: -85.2 [N-m] at 0.066 [s]



B-86

8602-4

CFC_600

Time [s]

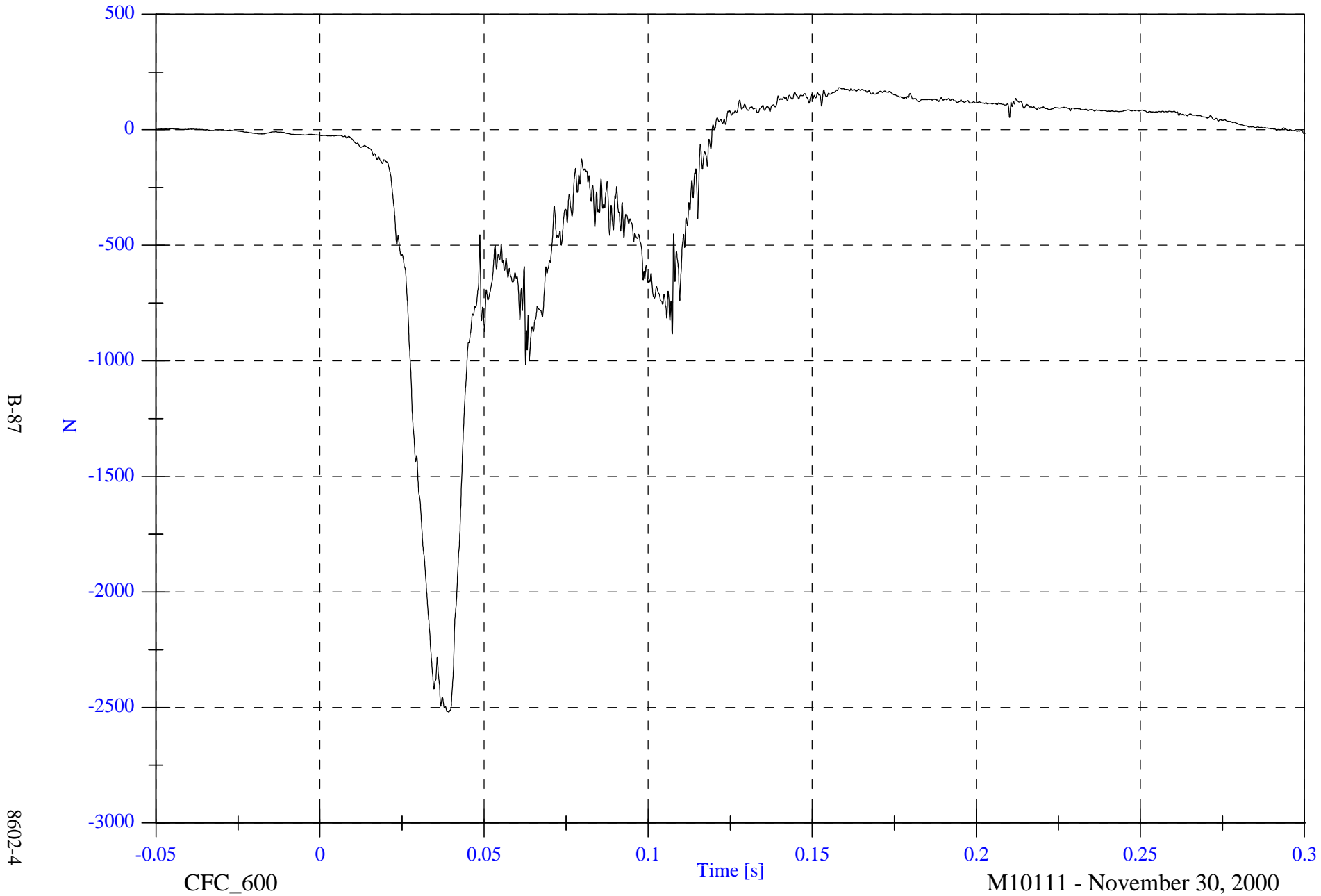
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 182.7 [N] at 0.158 [s]

P2 Left Lower Tibia Fz

Min: -2520.1 [N] at 0.039 [s]



B-87

8602-4

CFC_600

Time [s]

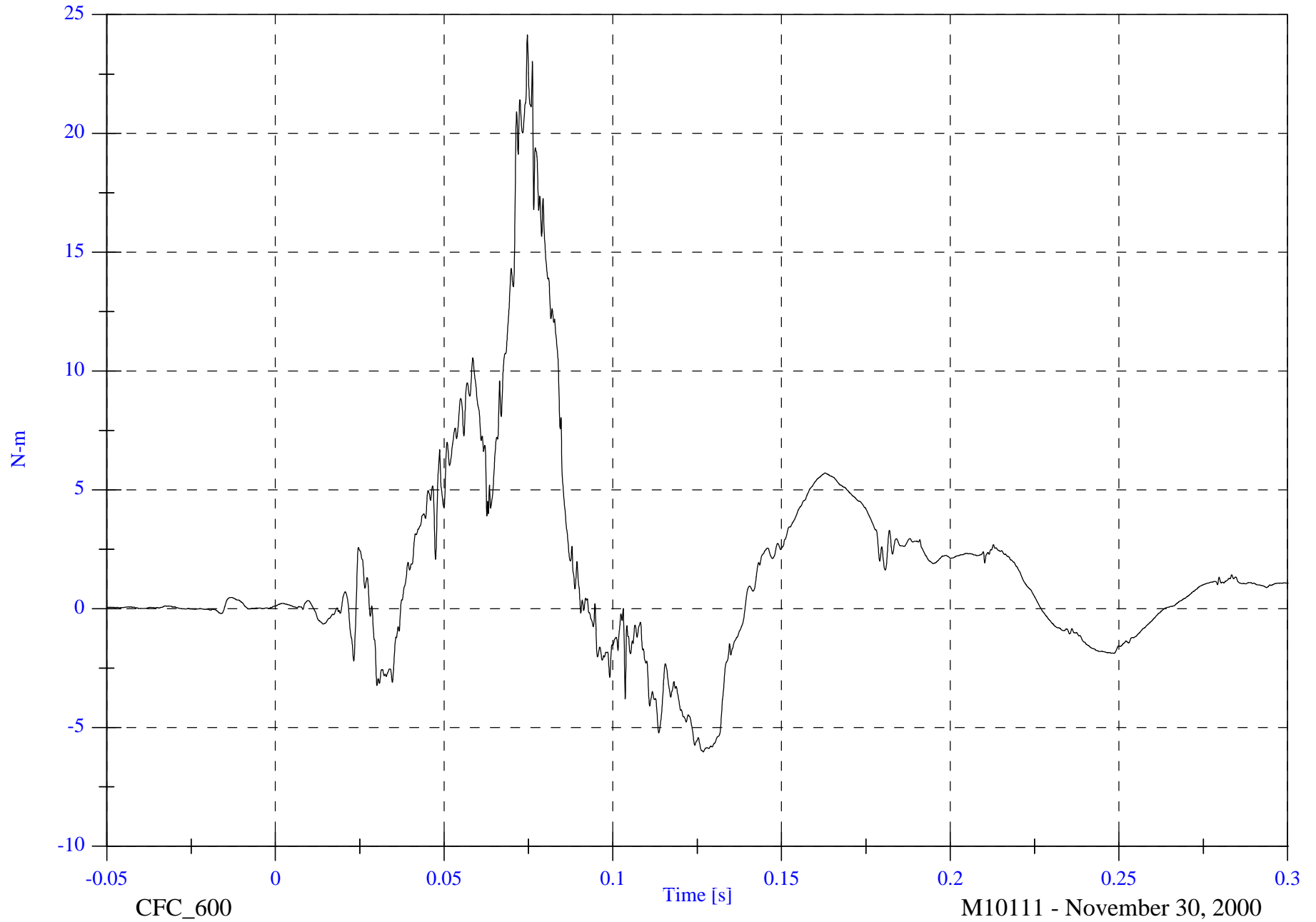
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 24.1 [N-m] at 0.075 [s]

P2 Left Lower Tibia Mx

Min: -6.0 [N-m] at 0.127 [s]



B-88

8602-4

CFC_600

Time [s]

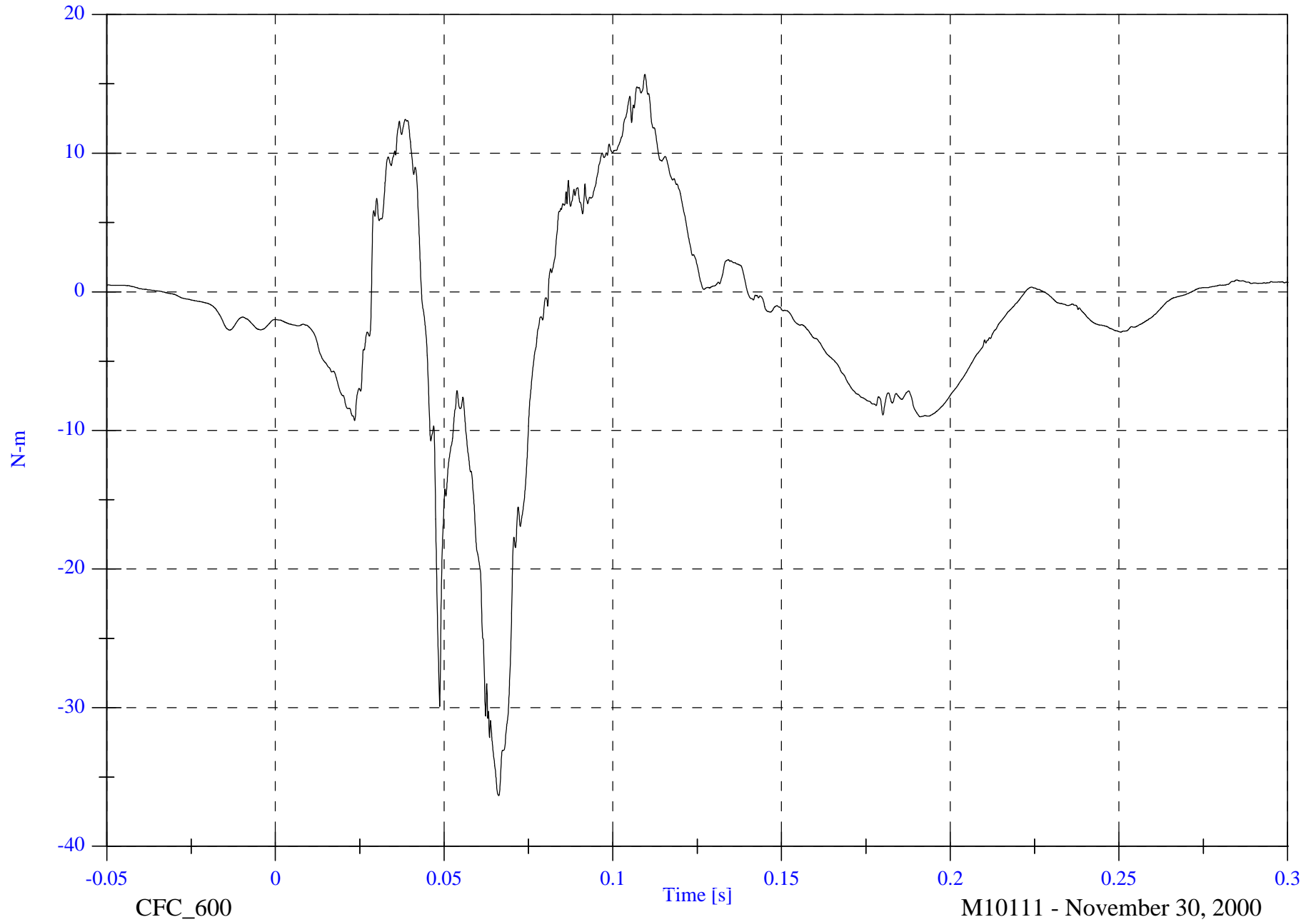
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 15.7 [N-m] at 0.110 [s]

P2 Left Lower Tibia My

Min: -36.3 [N-m] at 0.066 [s]



B-89

8602-4

CFC_600

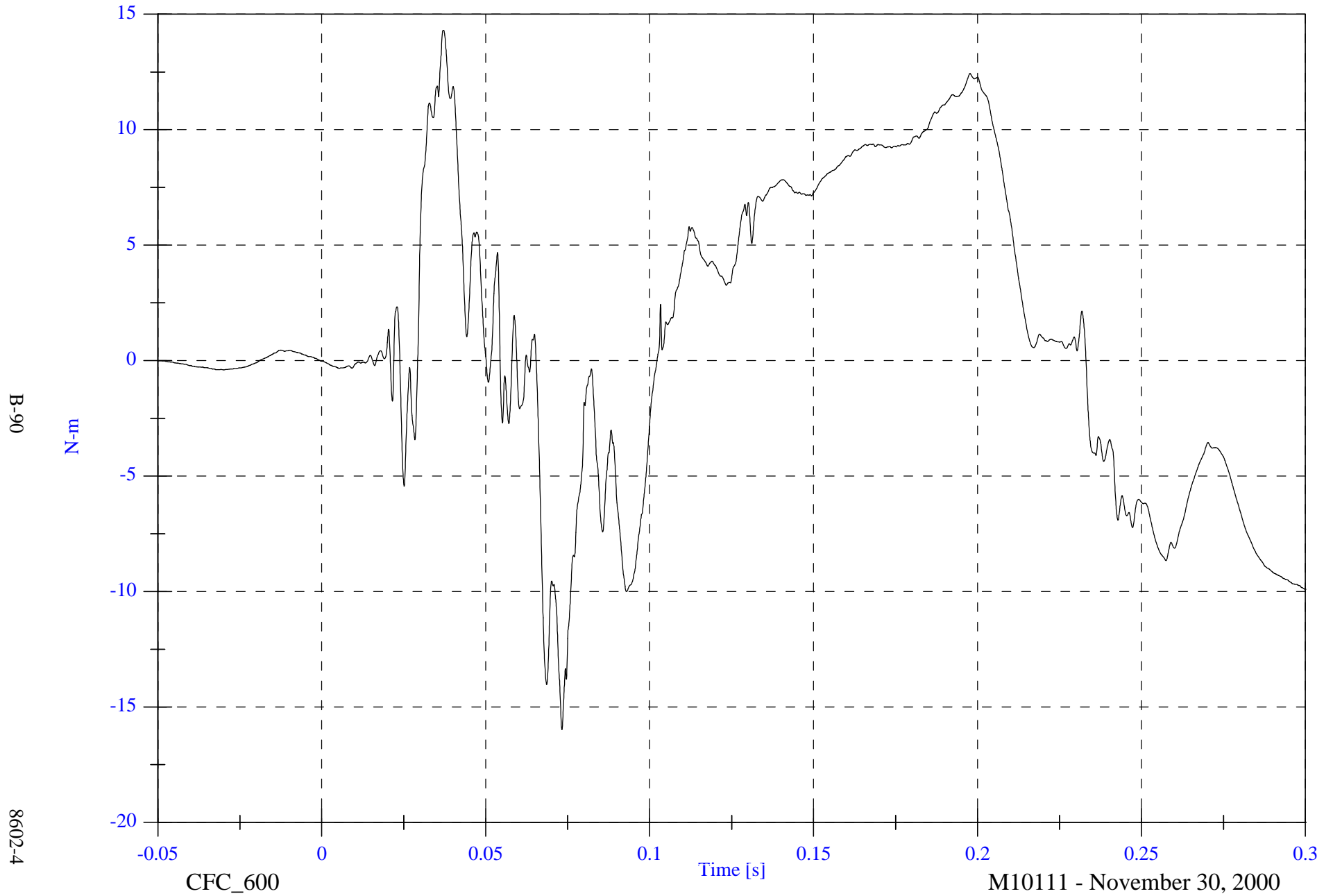
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 14.3 [N-m] at 0.037 [s]

P2 Right Upper Tibia Mx

Min: -16.0 [N-m] at 0.073 [s]



B-90

8602-4

CFC_600

Time [s]

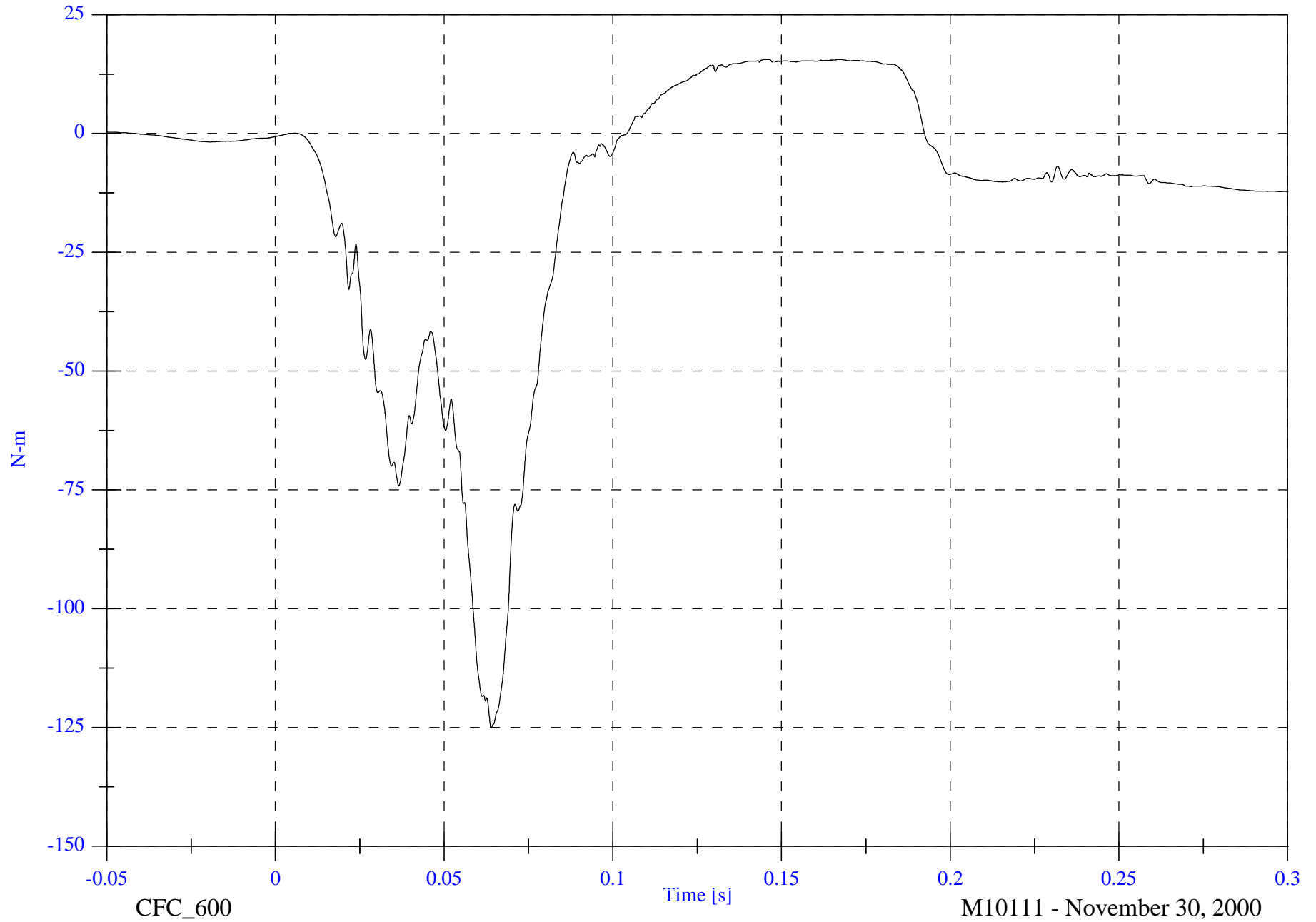
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 15.6 [N-m] at 0.145 [s]

P2 Right Upper Tibia My

Min: -125.1 [N-m] at 0.064 [s]



B-91

8602-4

CFC_600

Time [s]

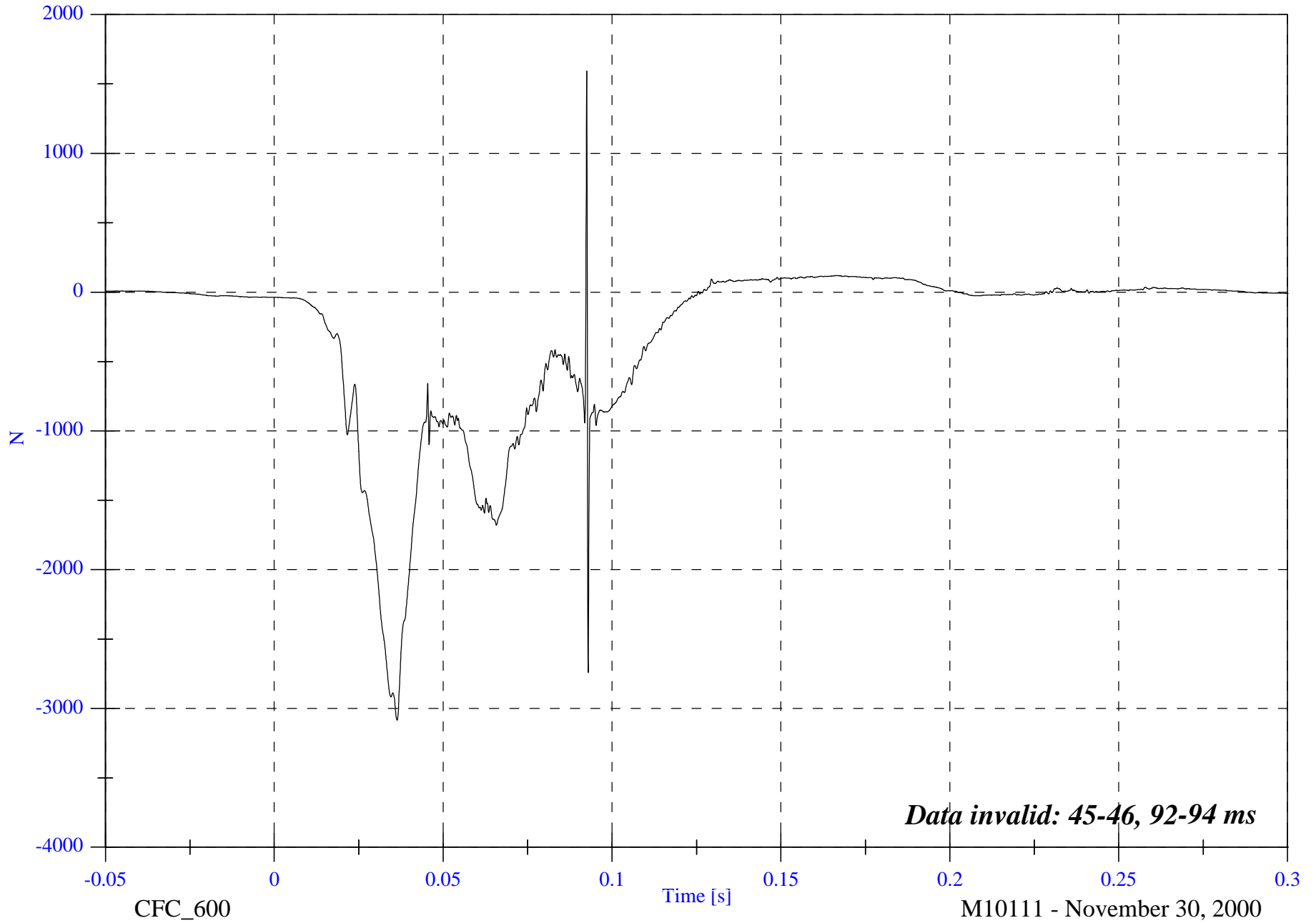
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 1593.7 [N] at 0.093 [s]

Min: -3084.6 [N] at 0.036 [s]

P2 Right Lower Tibia Fz



B-92

8602-4

Data invalid: 45-46, 92-94 ms

CFC_600

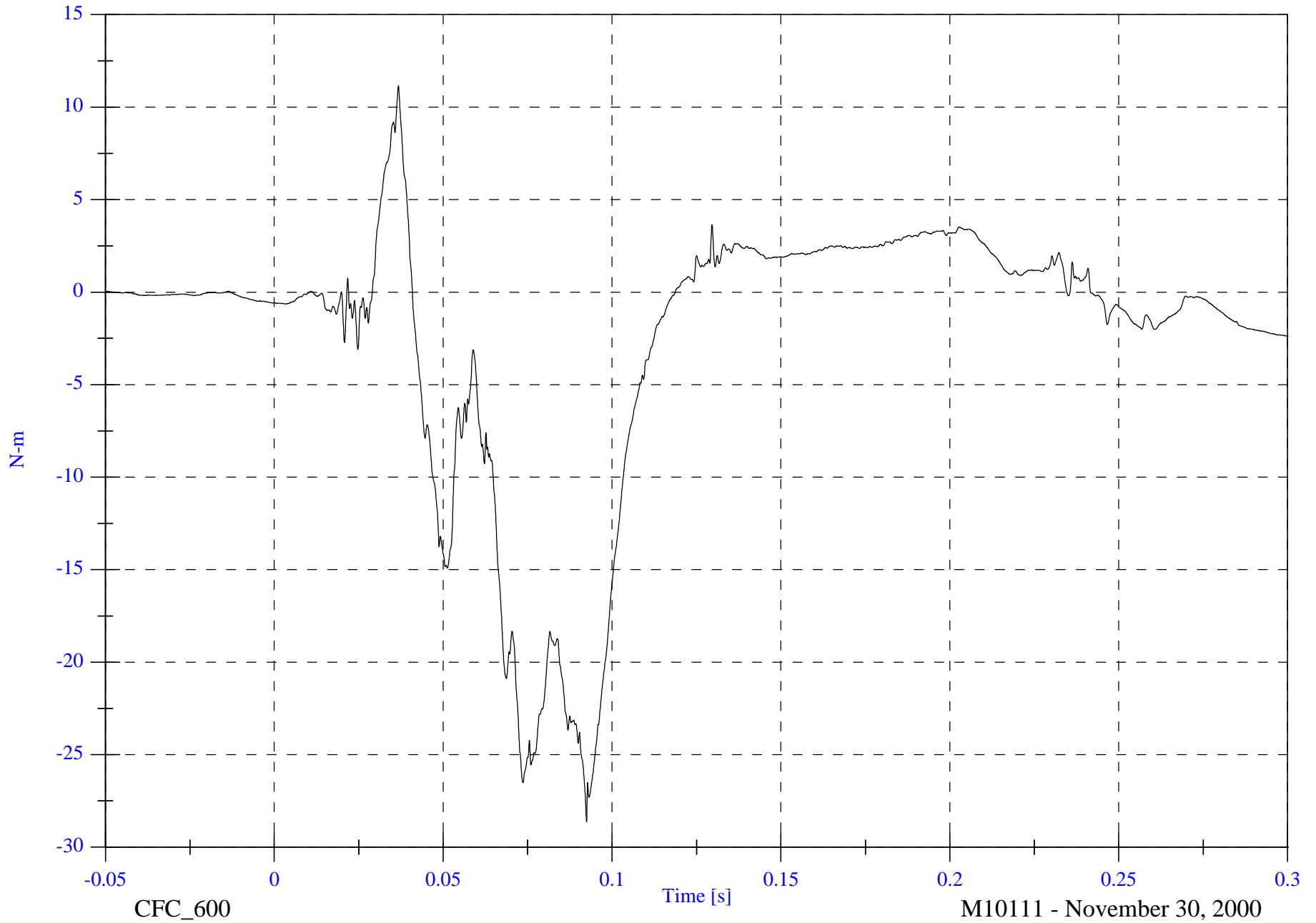
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 11.2 [N-m] at 0.037 [s]

P2 Right Lower Tibia Mx

Min: -28.6 [N-m] at 0.092 [s]



B-93

8602-4

CFC_600

Time [s]

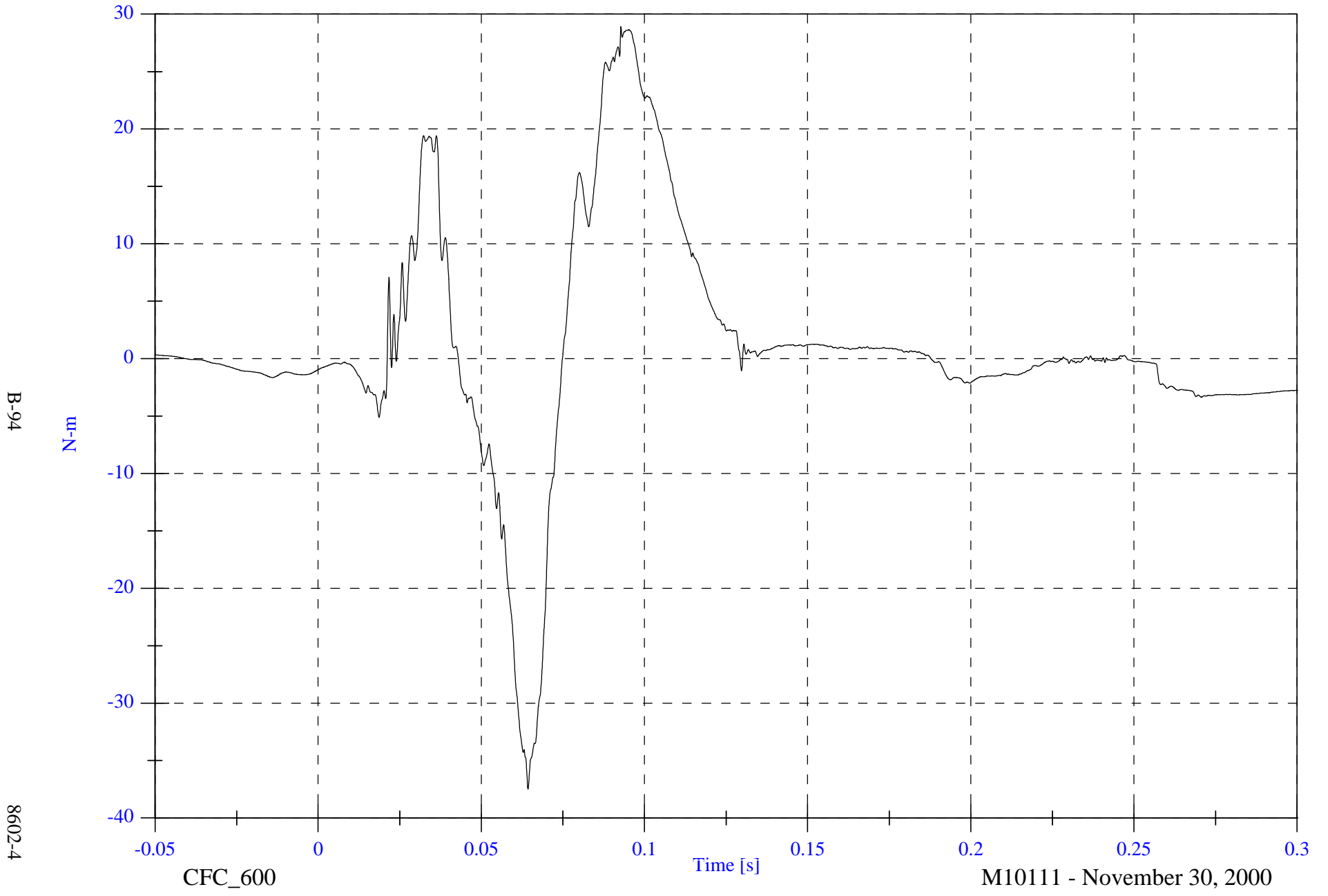
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 28.9 [N-m] at 0.093 [s]

P2 Right Lower Tibia My

Min: -37.5 [N-m] at 0.064 [s]



B-94

8602-4

CFC_600

Time [s]

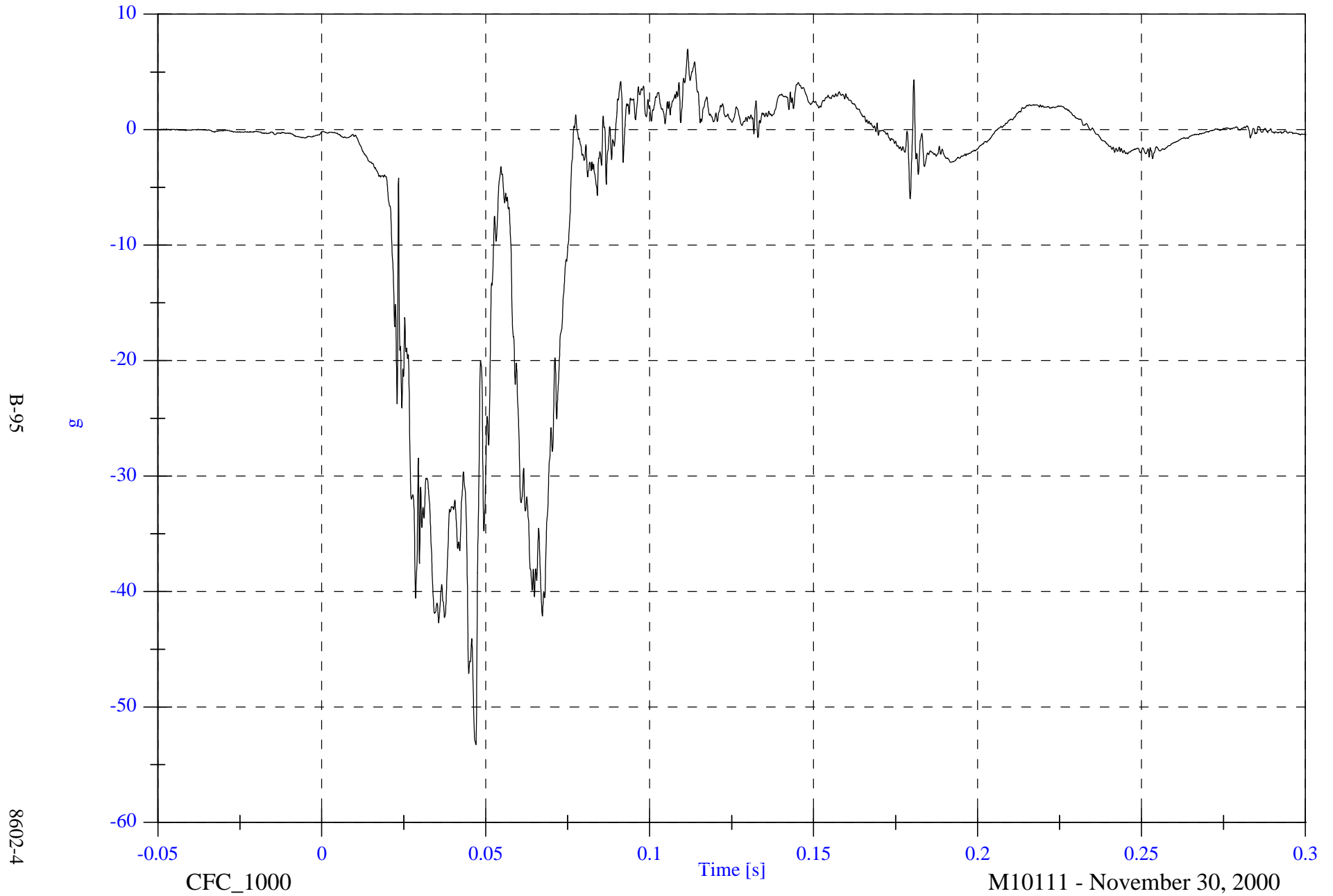
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 7.0 [g] at 0.112 [s]

Min: -53.3 [g] at 0.047 [s]

P2 Left Foot Aft x



B-95

g

8602-4

CFC_1000

Time [s]

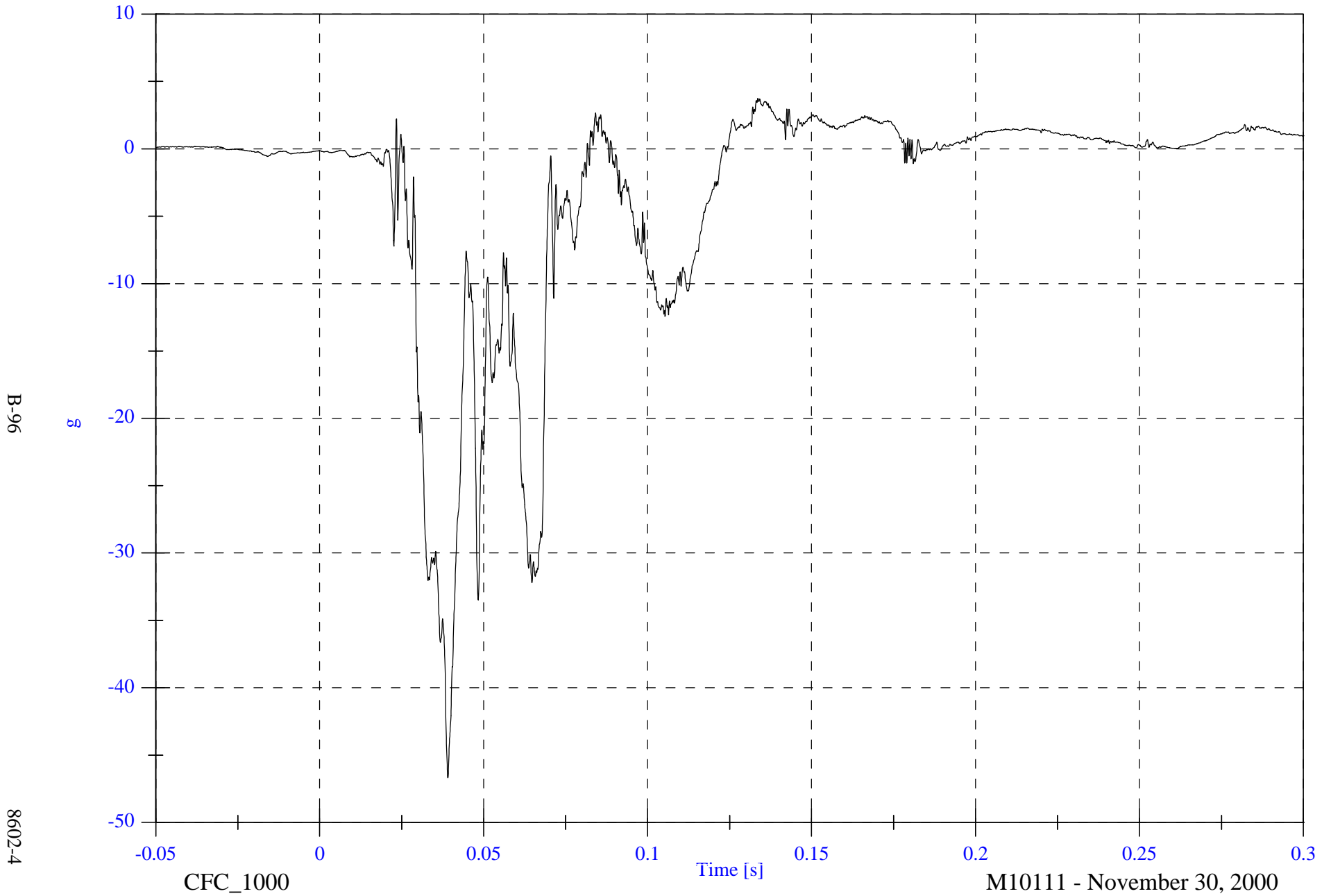
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 3.8 [g] at 0.134 [s]

Min: -46.7 [g] at 0.039 [s]

P2 Left Foot Aft z



B-96

8602-4

CFC_1000

Time [s]

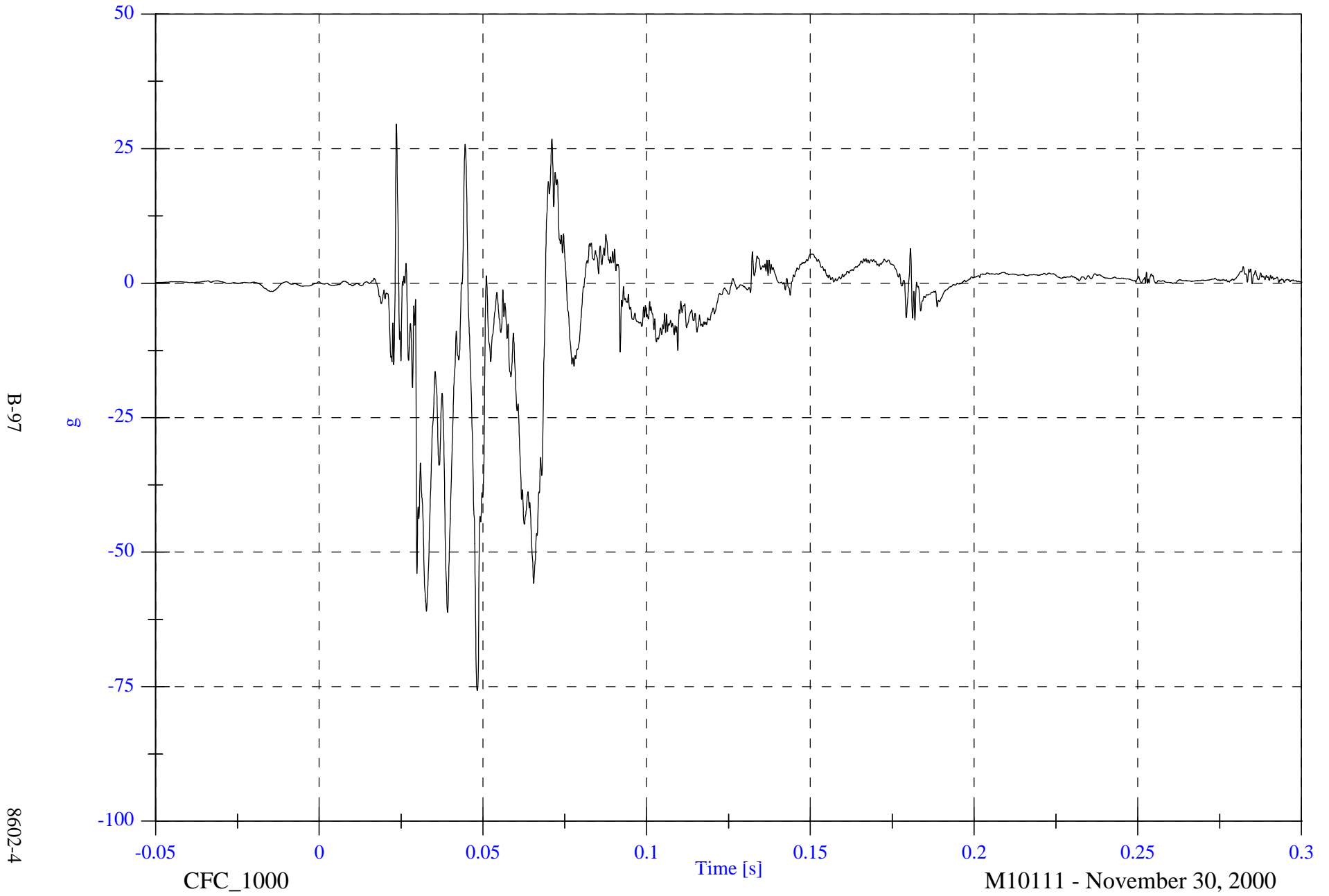
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Left Foot Fore z

Max: 29.6 [g] at 0.024 [s]

Min: -75.7 [g] at 0.048 [s]

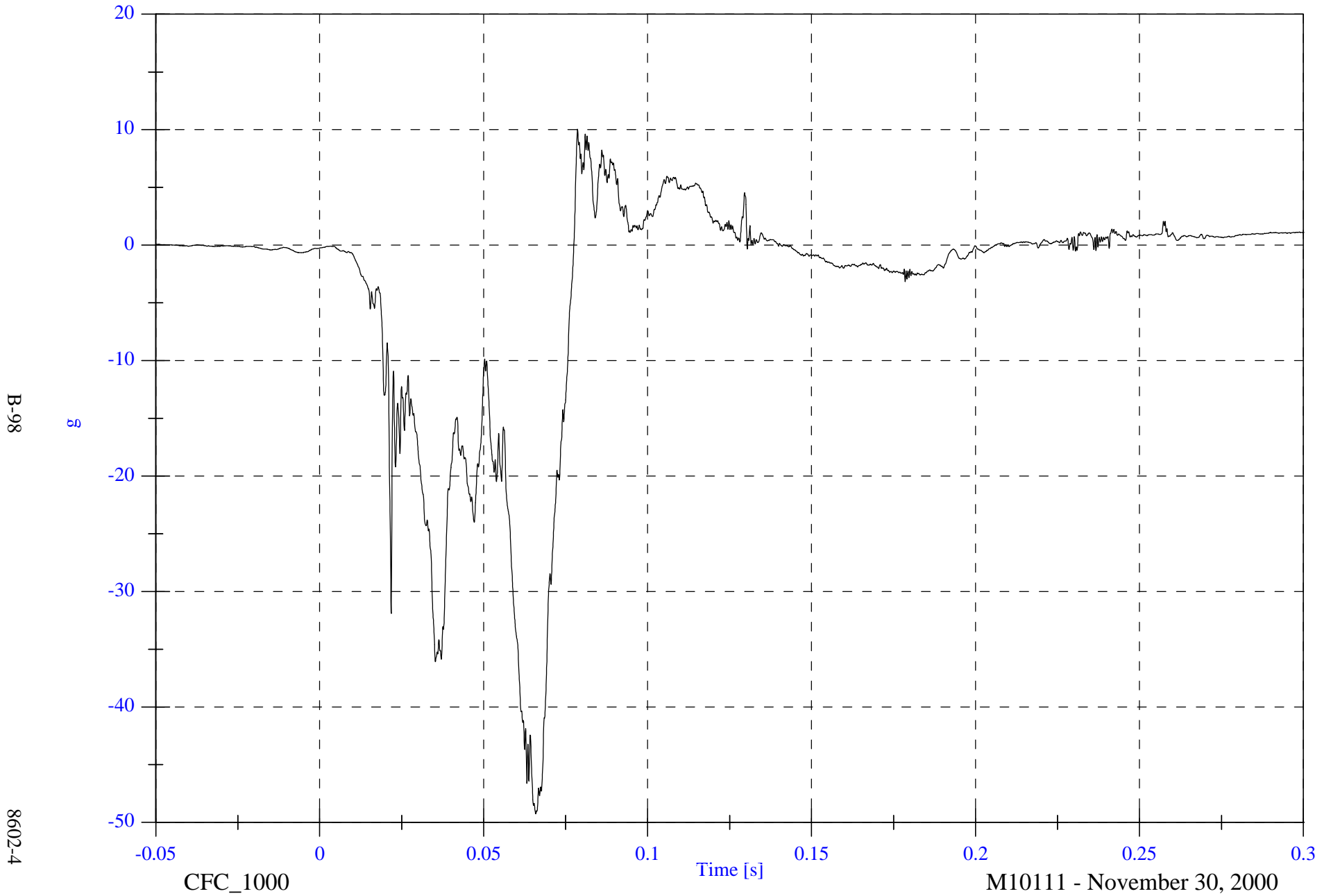


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 10.0 [g] at 0.079 [s]

Min: -49.3 [g] at 0.066 [s]

P2 Right Foot Aft x



B-98

g

8602-4

CFC_1000

Time [s]

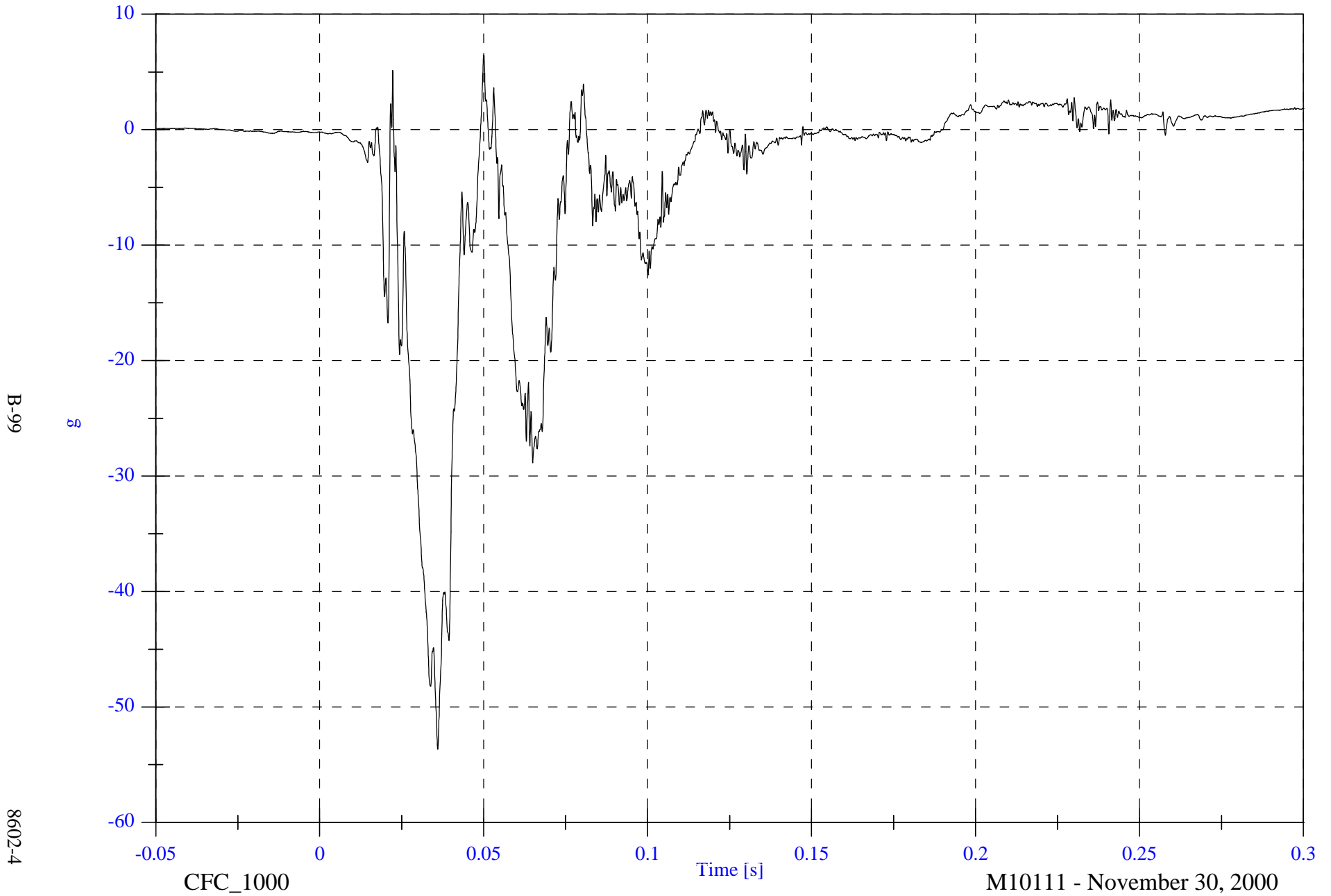
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 6.5 [g] at 0.050 [s]

Min: -53.7 [g] at 0.036 [s]

P2 Right Foot Aft z



B-99

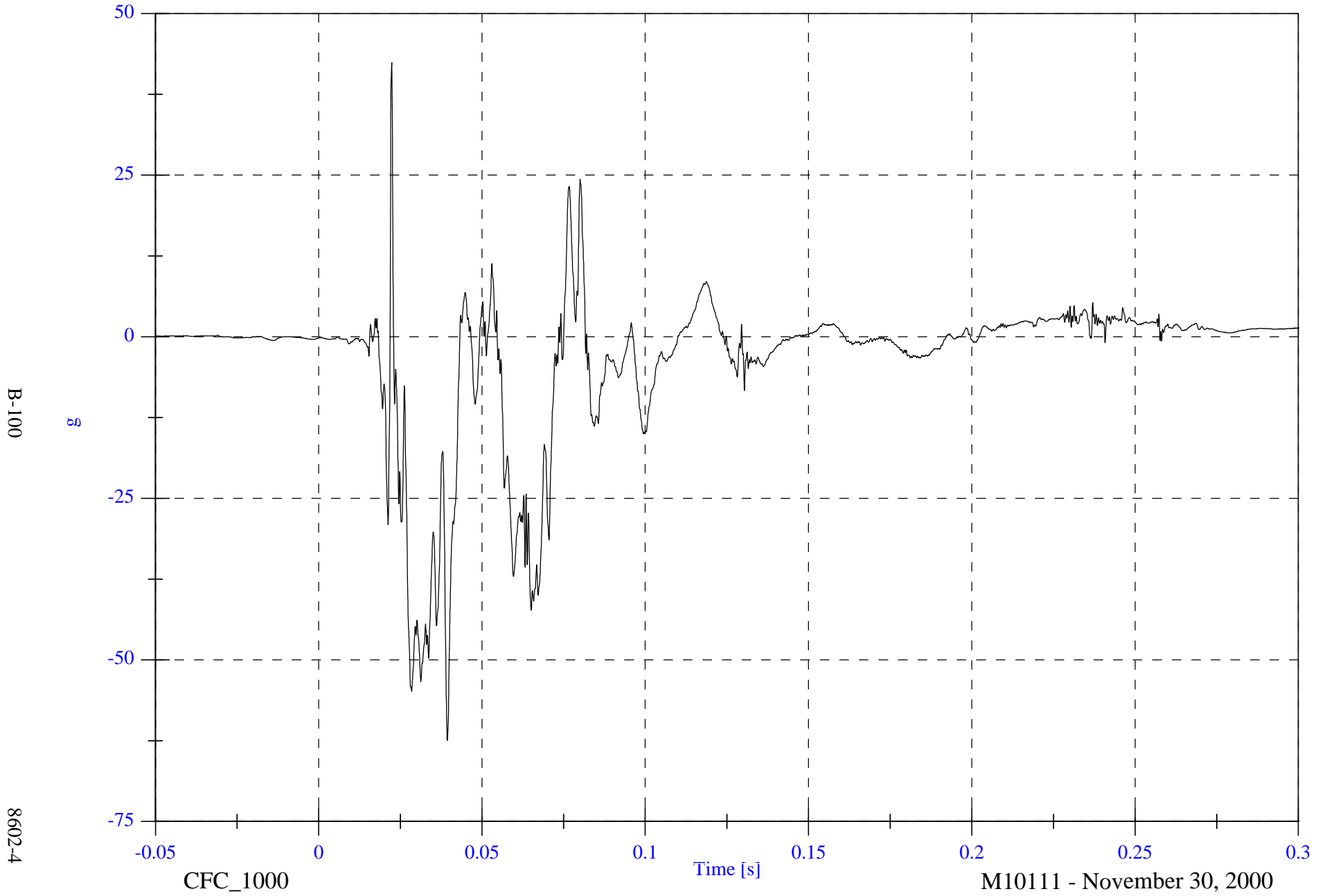
8602-4

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 42.4 [g] at 0.022 [s]

Min: -62.5 [g] at 0.039 [s]

P2 Right Foot Fore z

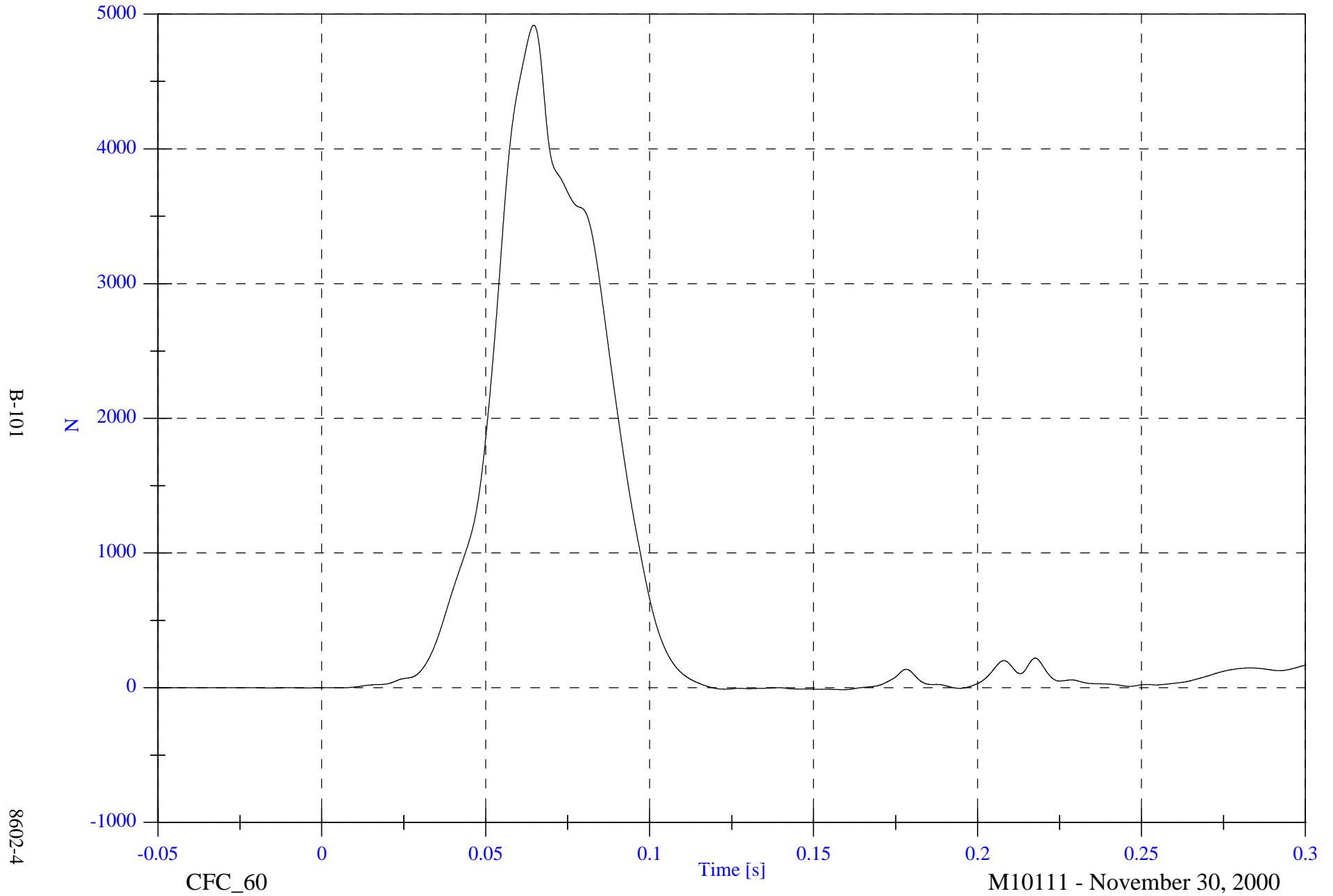


NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Lap Belt Force

Max: 4918.3 [N] at 0.065 [s]

Min: -14.9 [N] at 0.159 [s]



B-101

8602-4

CFC_60

Time [s]

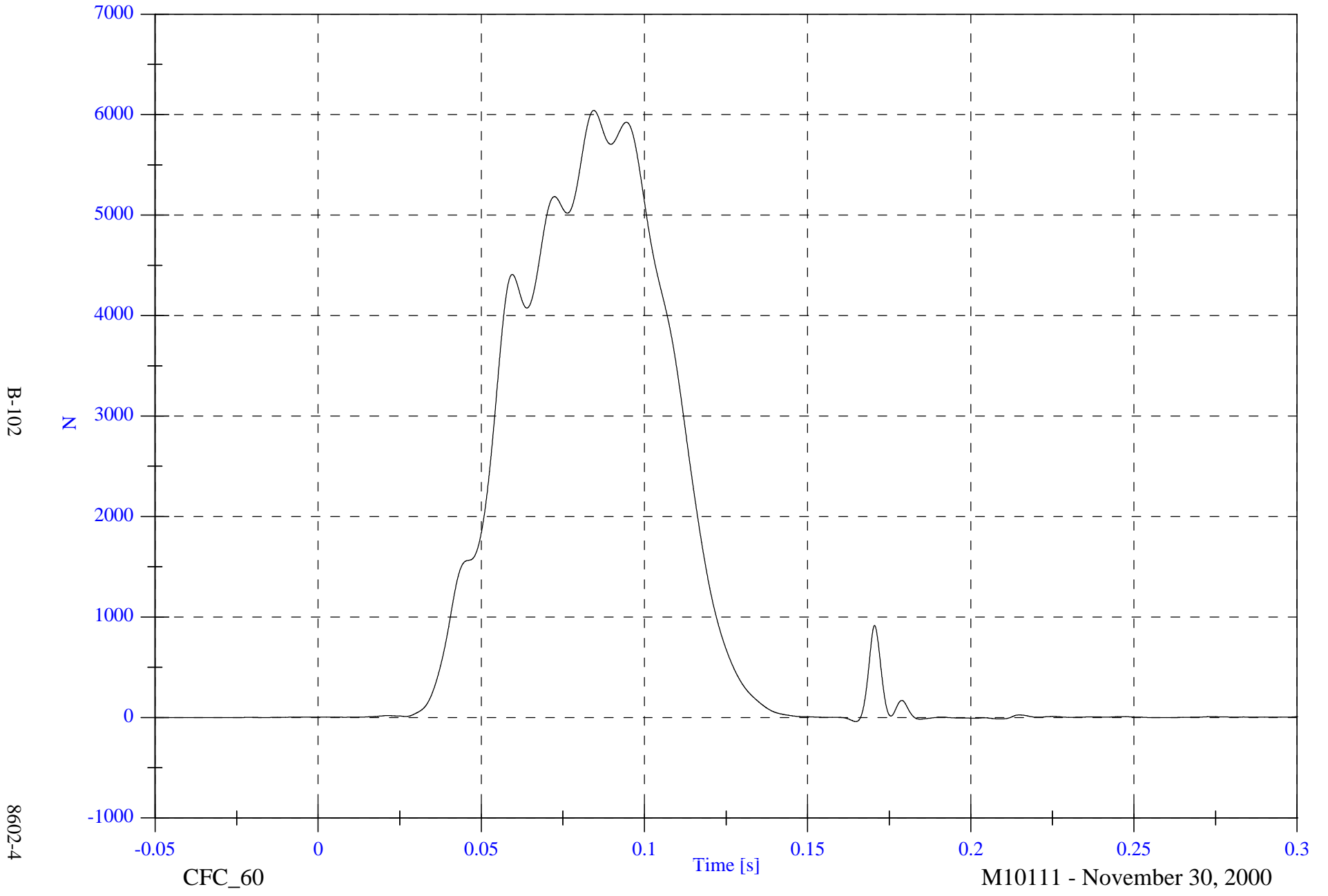
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 6041.7 [N] at 0.084 [s]

P2 Shoulder Belt Force

Min: -40.8 [N] at 0.165 [s]



B-102

8602-4

CFC_60

Time [s]

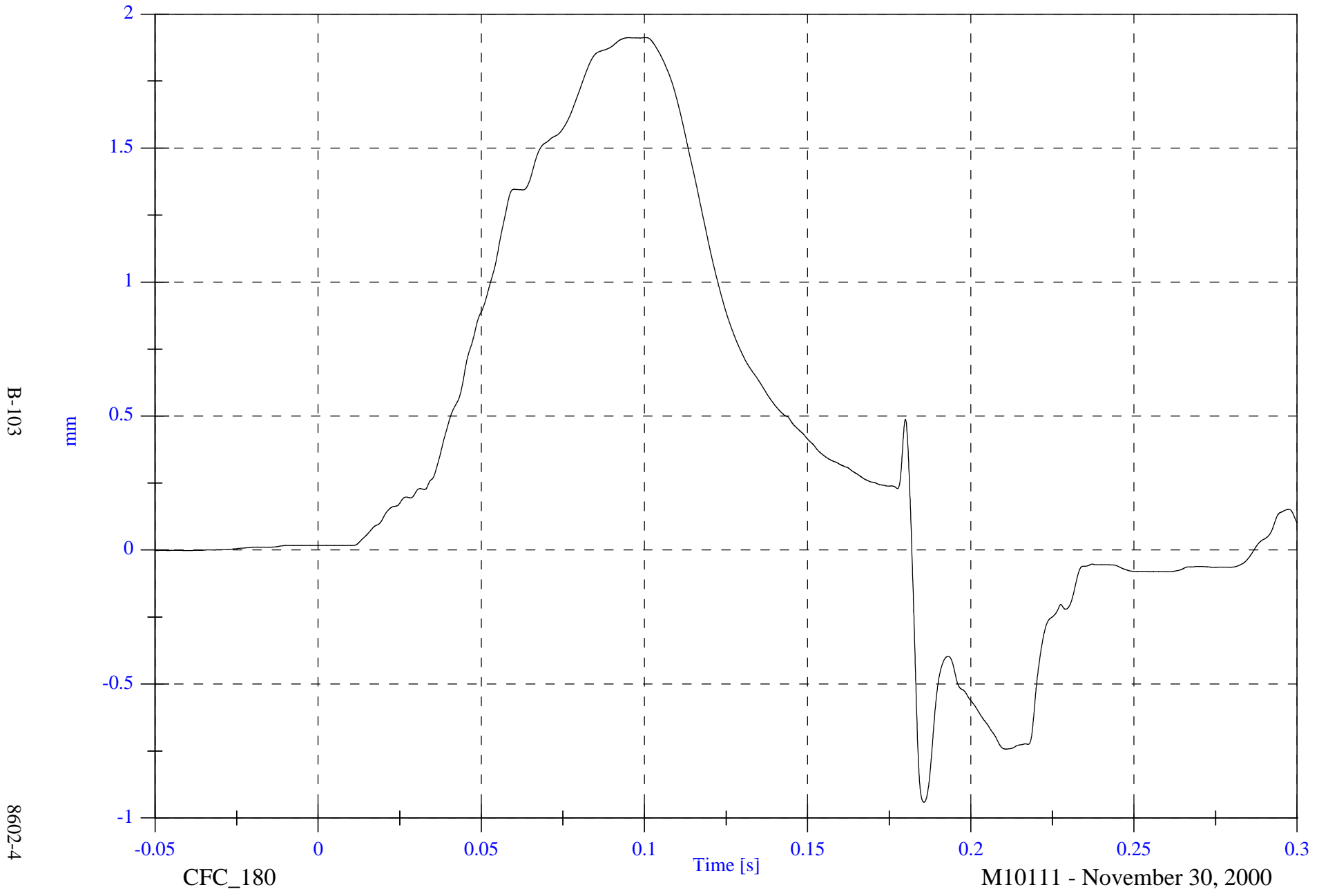
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

P2 Shoulder Belt Elongation

Max: 1.9 [mm] at 0.100 [s]

Min: -0.9 [mm] at 0.186 [s]



B-103

8602-4

CFC_180

Time [s]

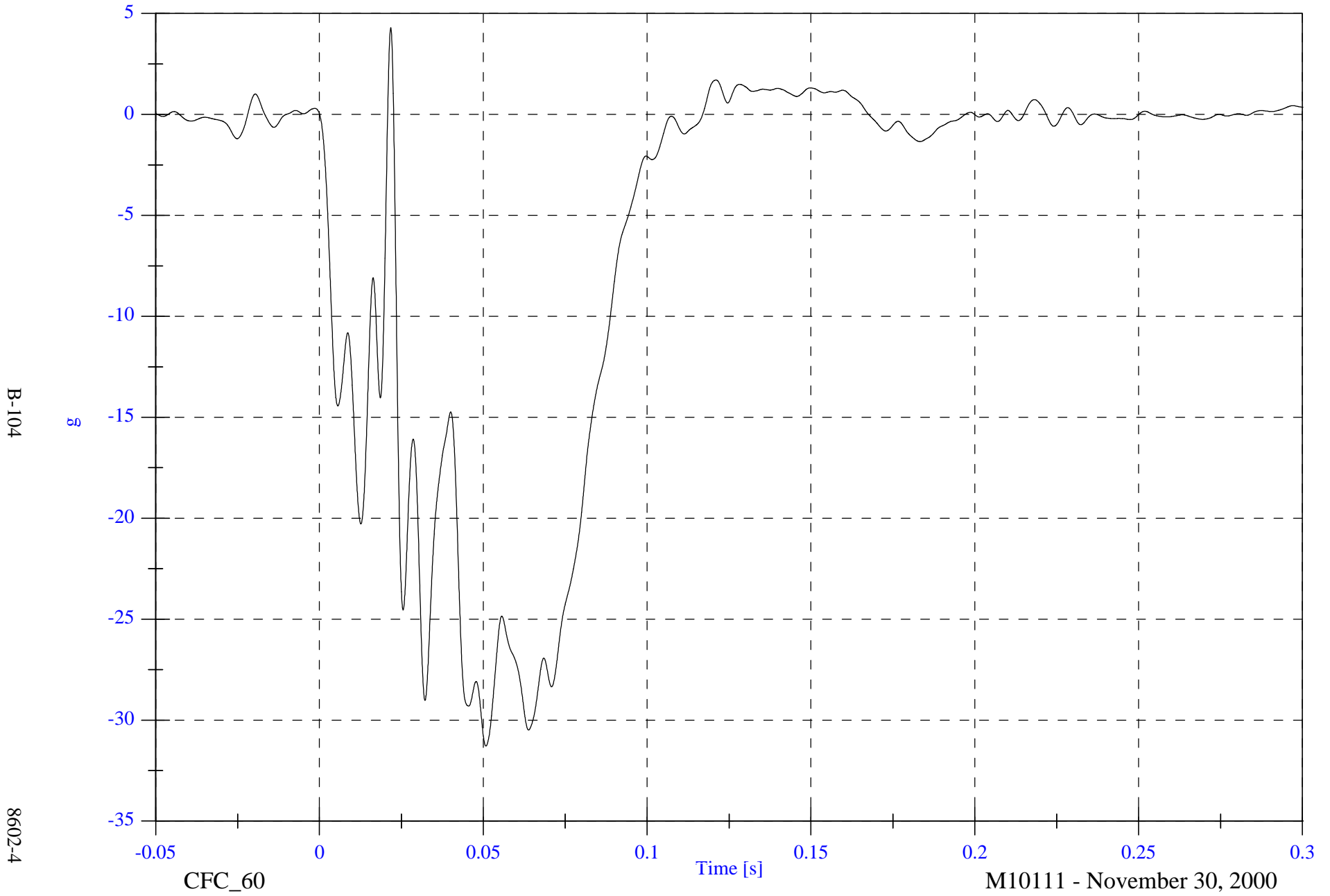
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Left Rear #1x

Max: 4.3 [g] at 0.022 [s]

Min: -31.3 [g] at 0.051 [s]

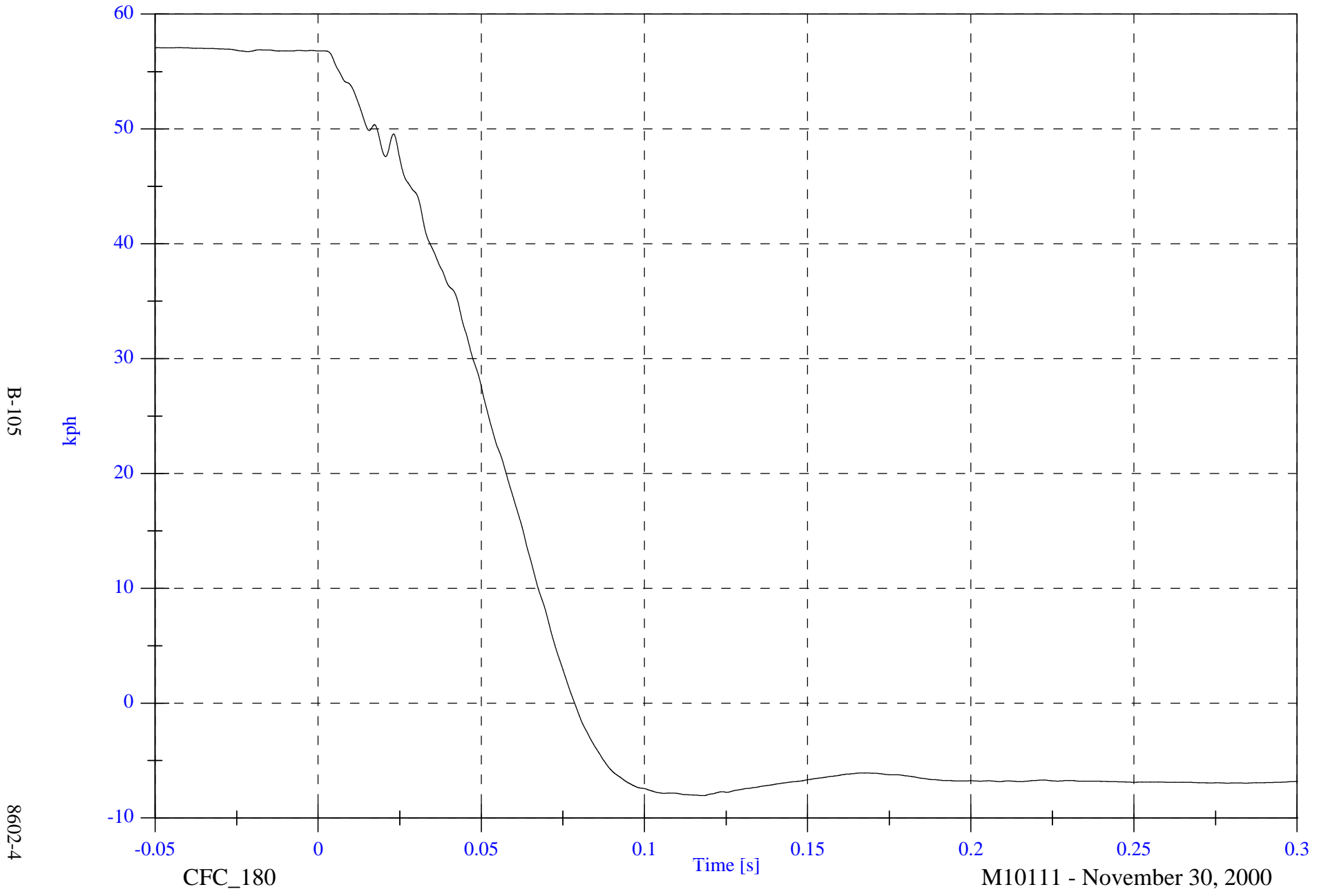


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 57.1 [kph] at -0.043 [s]

Left Rear #1x Velocity

Min: -8.1 [kph] at 0.118 [s]



B-105

8602-4

CFC_180

Time [s]

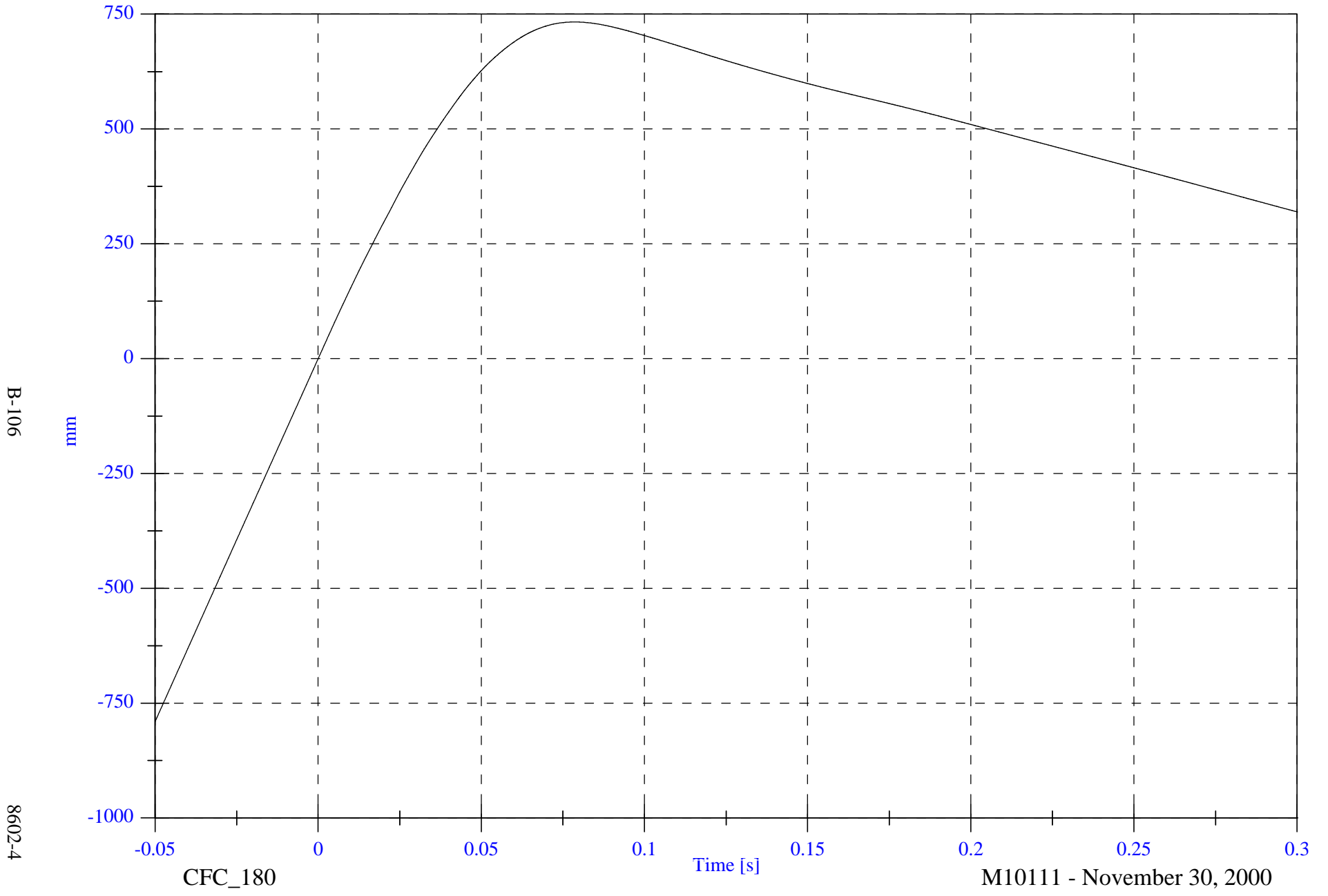
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 733.0 [mm] at 0.079 [s]

Left Rear #1x Displacement

Min: -790.5 [mm] at -0.050 [s]



B-106

8602-4

CFC_180

Time [s]

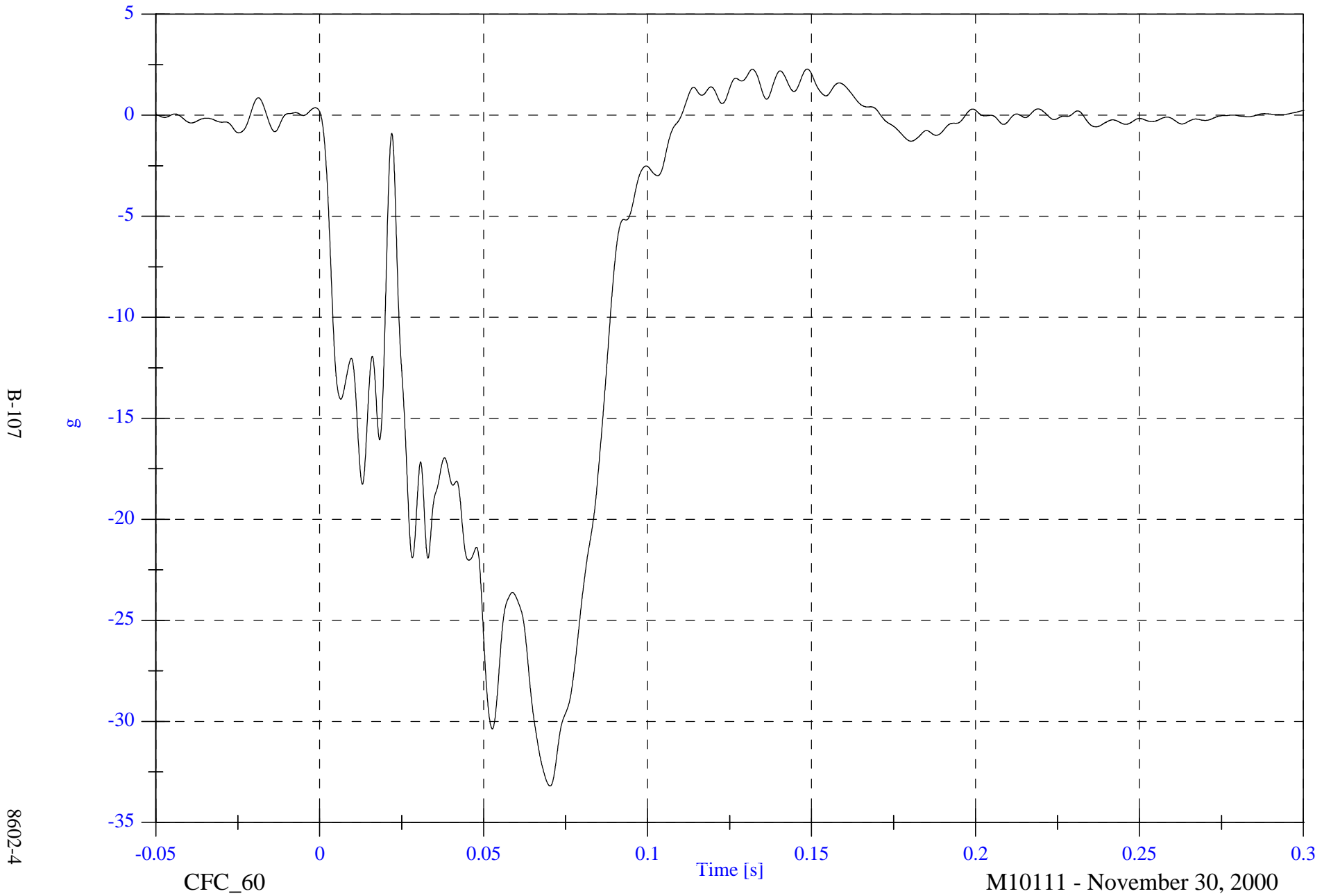
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 2.3 [g] at 0.149 [s]

Right Rear #2x

Min: -33.2 [g] at 0.070 [s]



B-107

8602-4

CFC_60

Time [s]

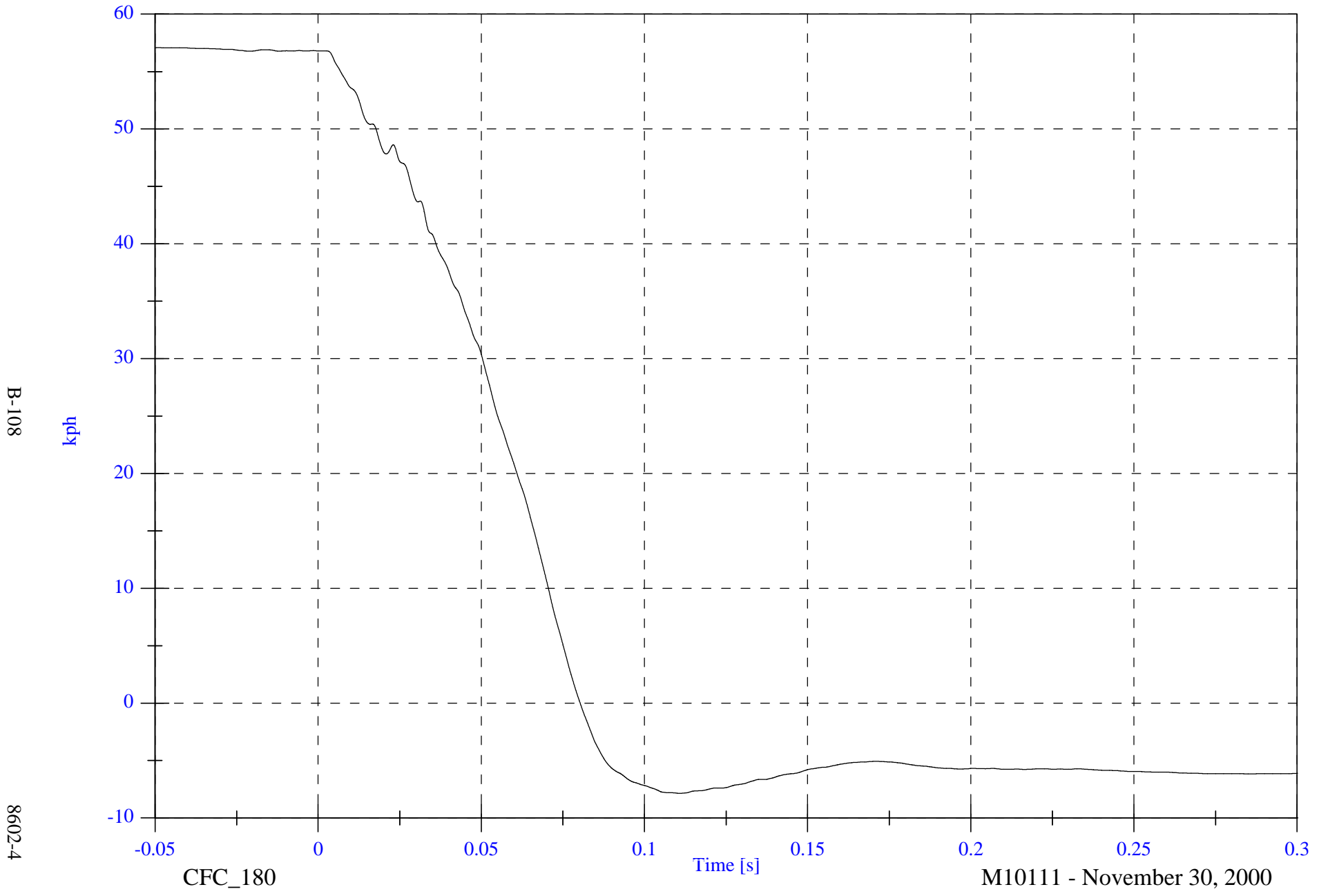
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 57.1 [kph] at -0.049 [s]

Right Rear #2x Velocity

Min: -7.9 [kph] at 0.111 [s]



B-108

8602-4

CFC_180

Time [s]

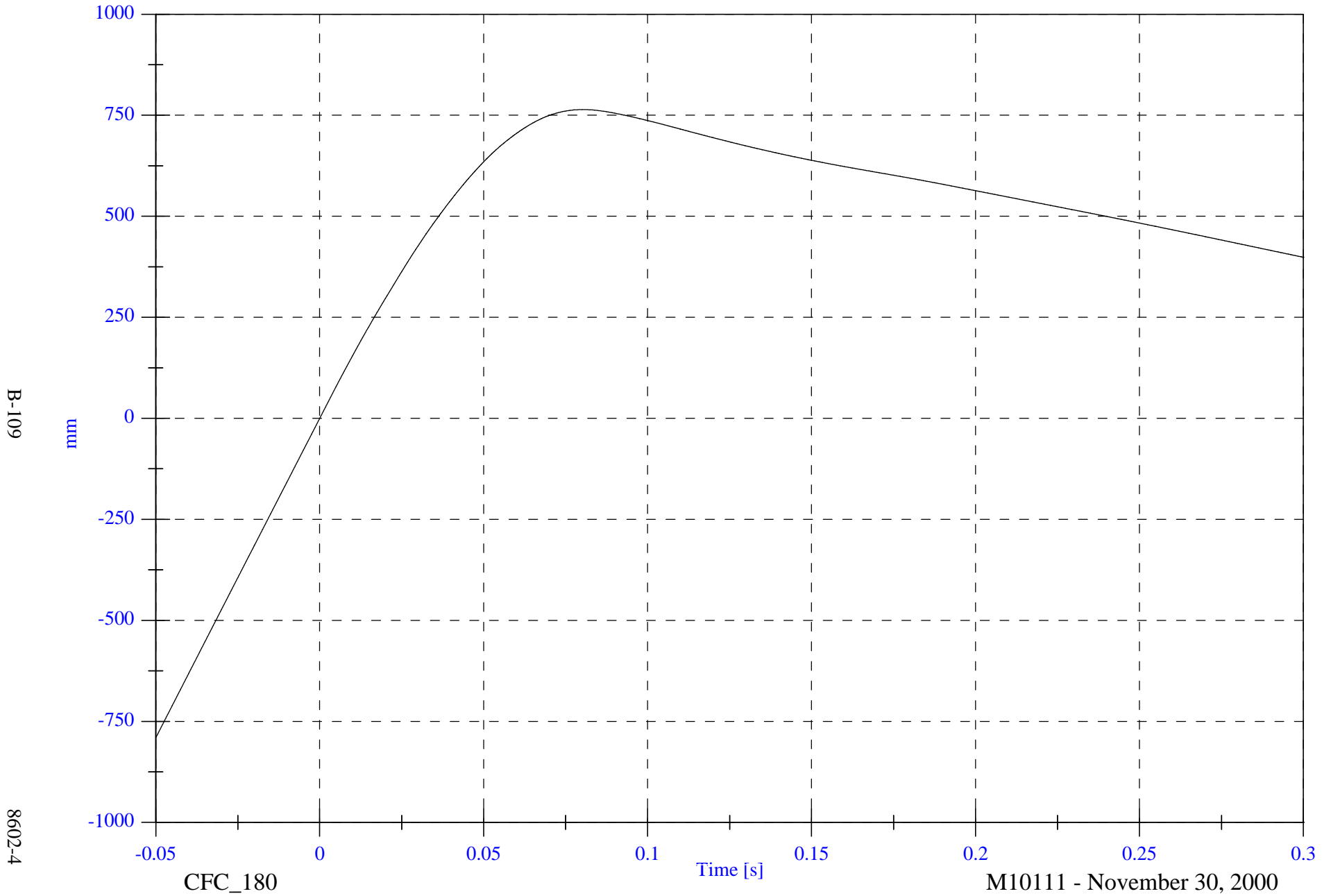
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Right Rear #2x Displacement

Max: 763.9 [mm] at 0.080 [s]

Min: -790.5 [mm] at -0.050 [s]



B-109

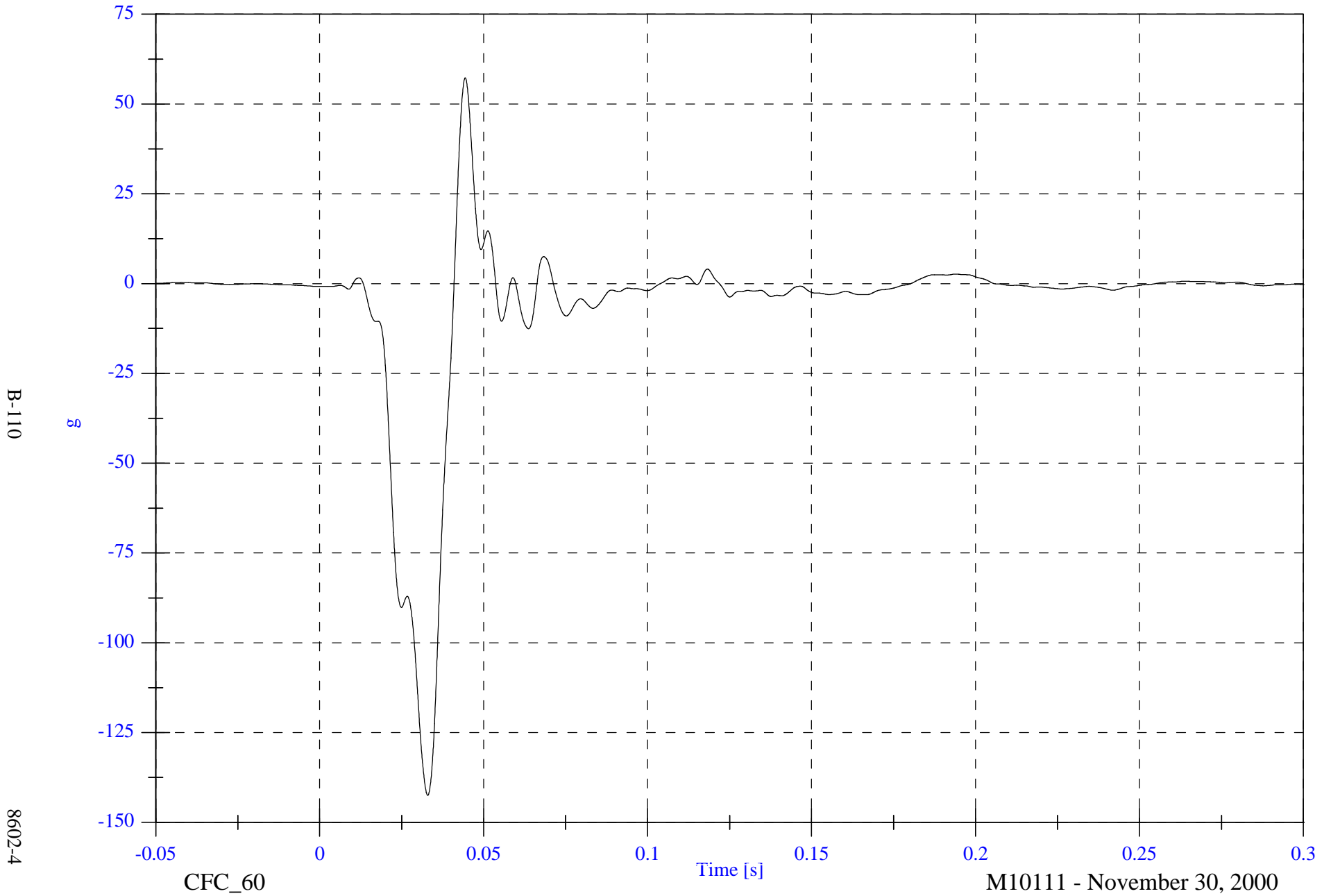
8602-4

NCAP Test 4 - 2001 Oldsmobile Aurora

Engine Top #3x

Max: 57.3 [g] at 0.044 [s]

Min: -142.5 [g] at 0.033 [s]



B-110

8602-4

CFC_60

Time [s]

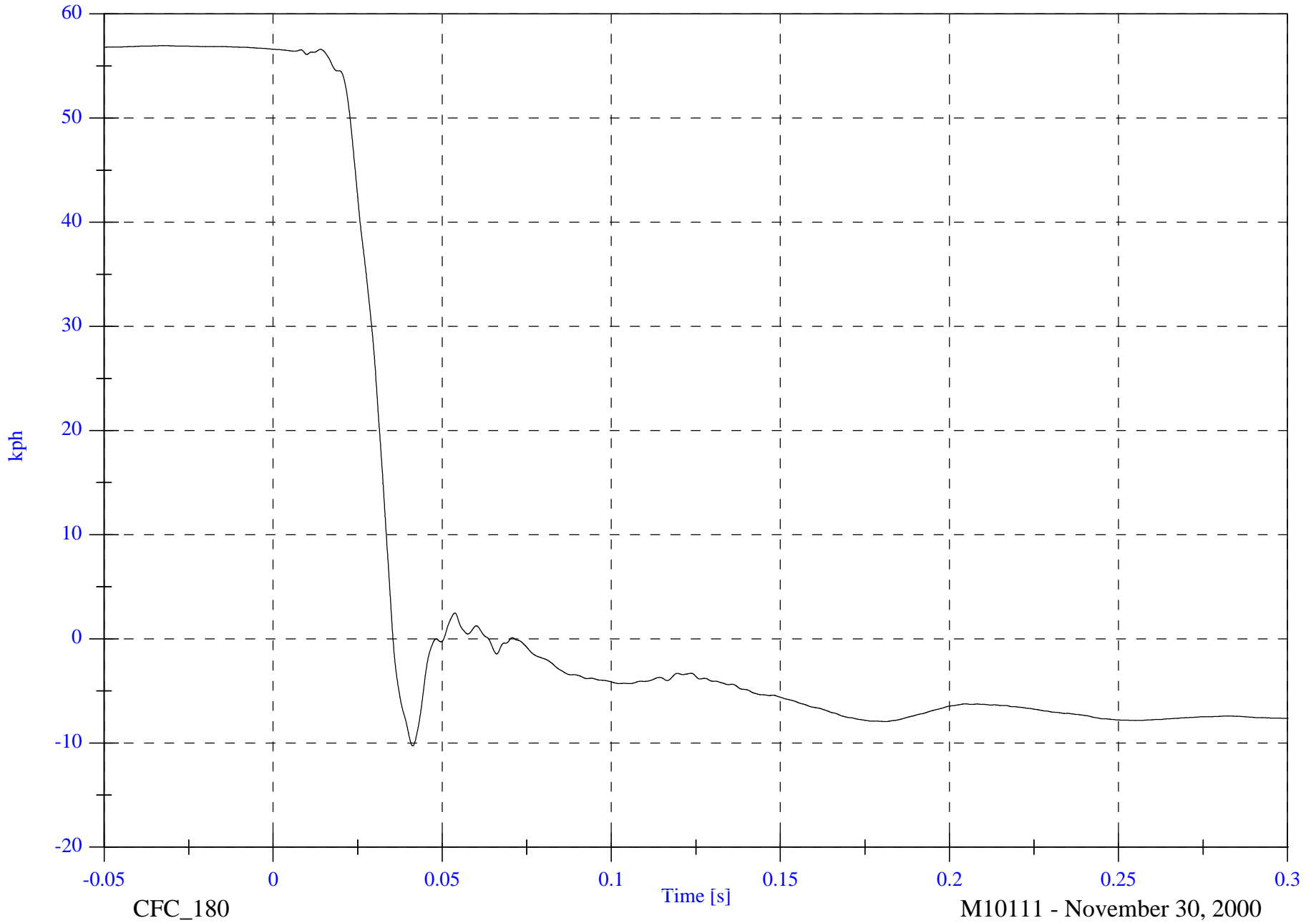
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 56.9 [kph] at -0.032 [s]

Engine Top #3x Velocity

Min: -10.3 [kph] at 0.041 [s]



B-111

8602-4

CFC_180

Time [s]

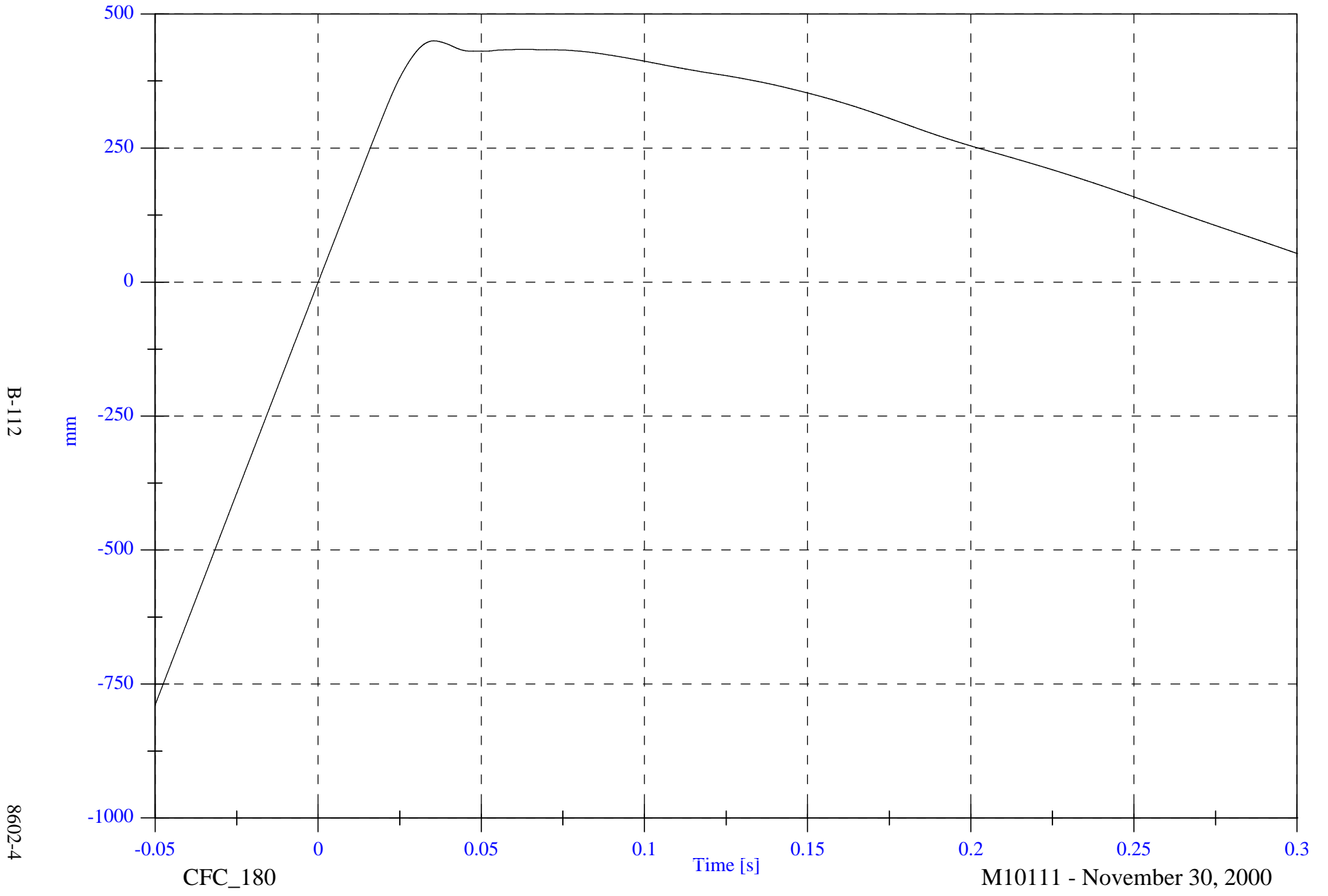
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Engine Top #3x Displacement

Max: 450.1 [mm] at 0.035 [s]

Min: -789.6 [mm] at -0.050 [s]



B-112

8602-4

CFC_180

Time [s]

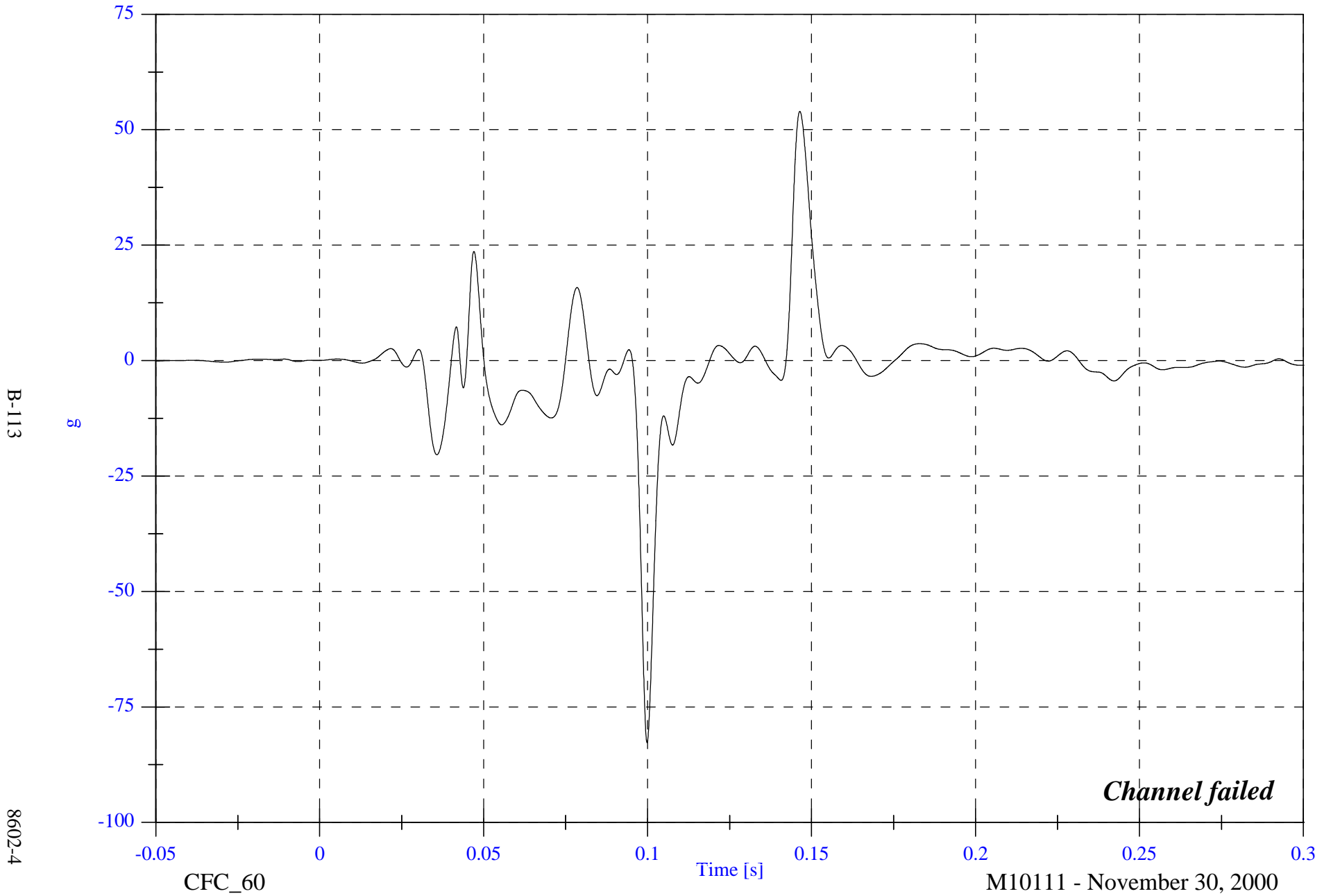
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 54.0 [g] at 0.146 [s]

Engine Bottom #4x

Min: -82.8 [g] at 0.100 [s]



B-113

8602-4

CFC_60

Time [s]

M10111 - November 30, 2000

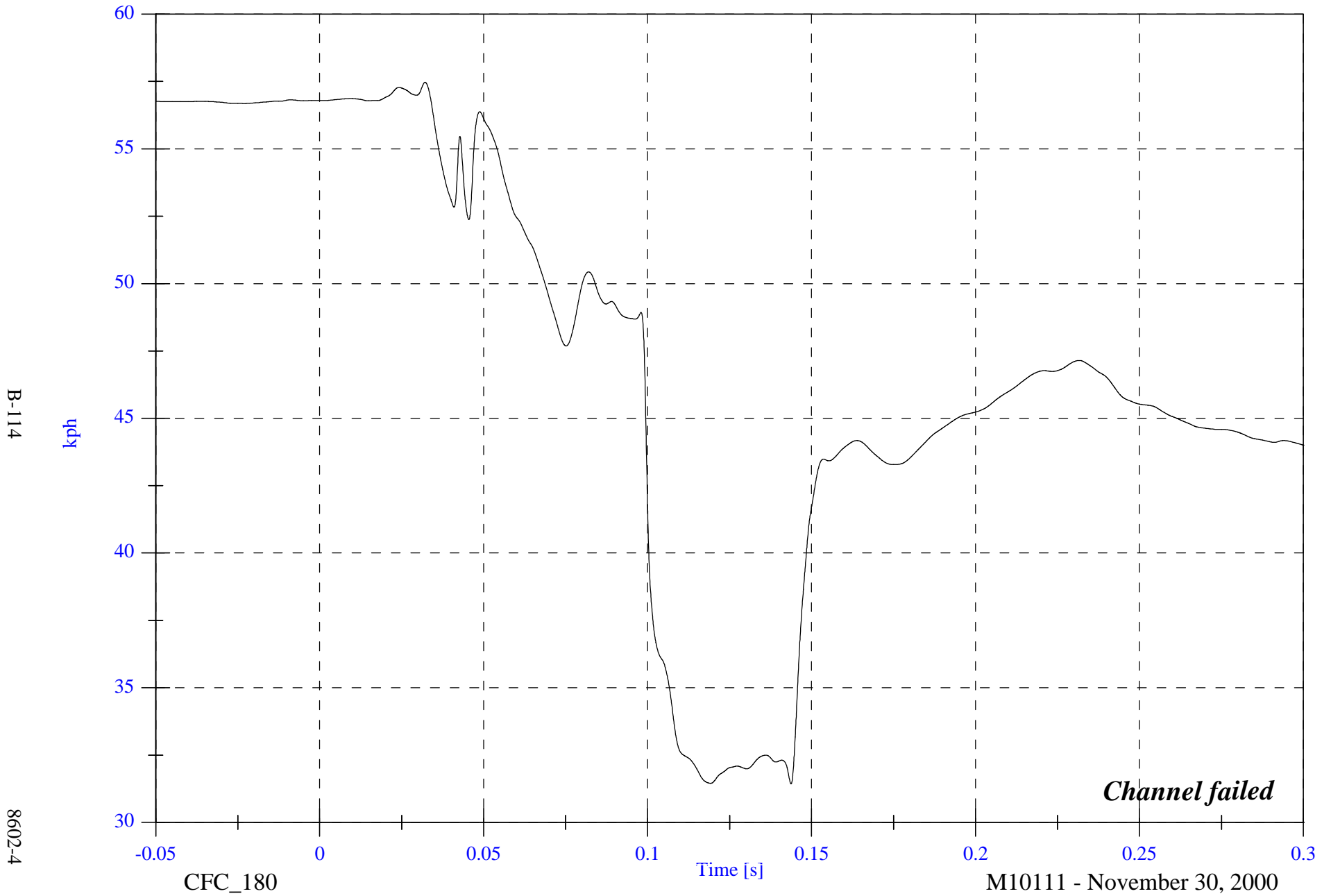
Channel failed

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 57.5 [kph] at 0.032 [s]

Engine Bottom #4x Velocity

Min: 31.4 [kph] at 0.144 [s]



B-114

8602-4

CFC_180

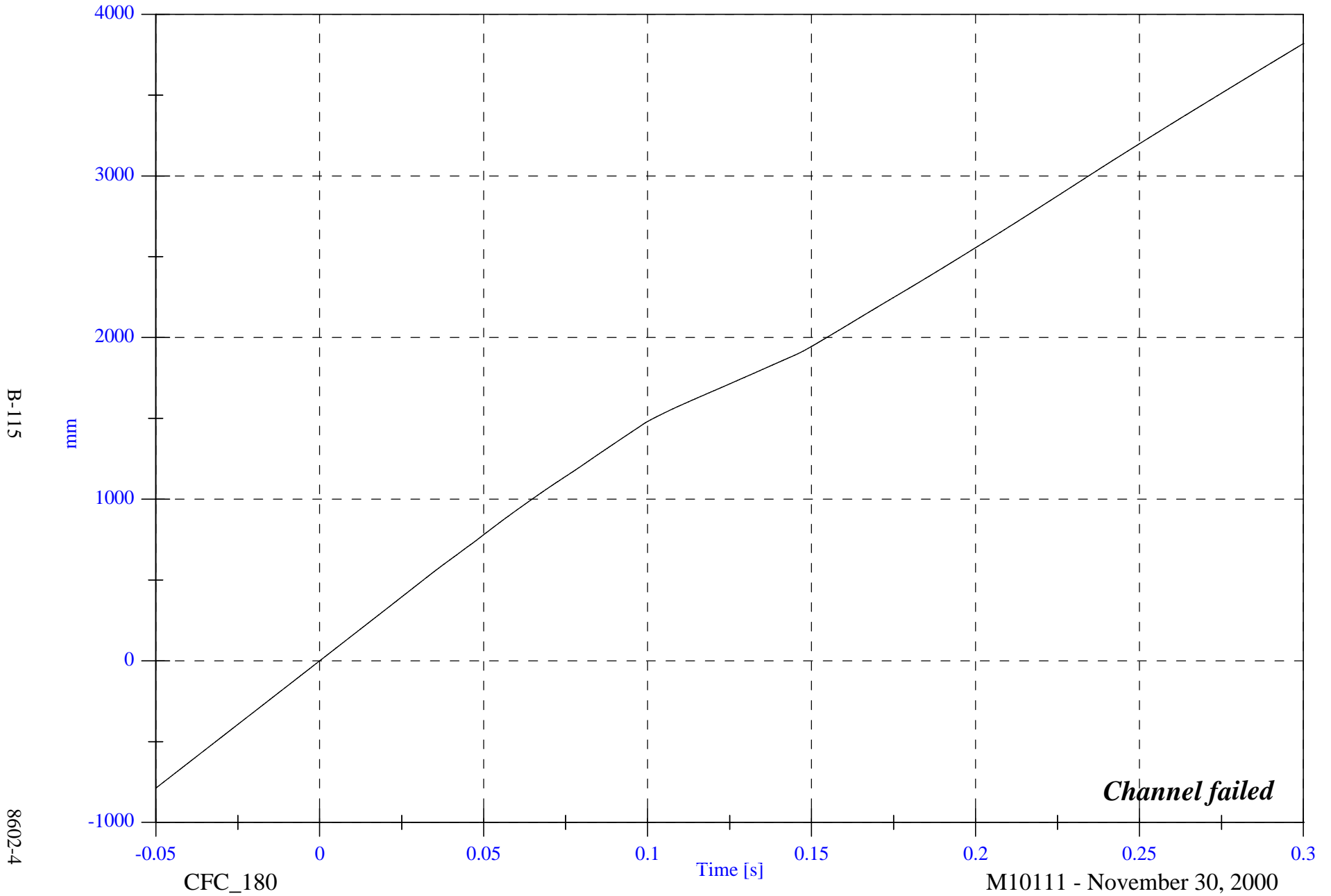
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Engine Bottom #4x Displacement

Max: 3818.0 [mm] at 0.300 [s]

Min: -788.2 [mm] at -0.050 [s]



B-115

8602-4

CFC_180

Time [s]

M10111 - November 30, 2000

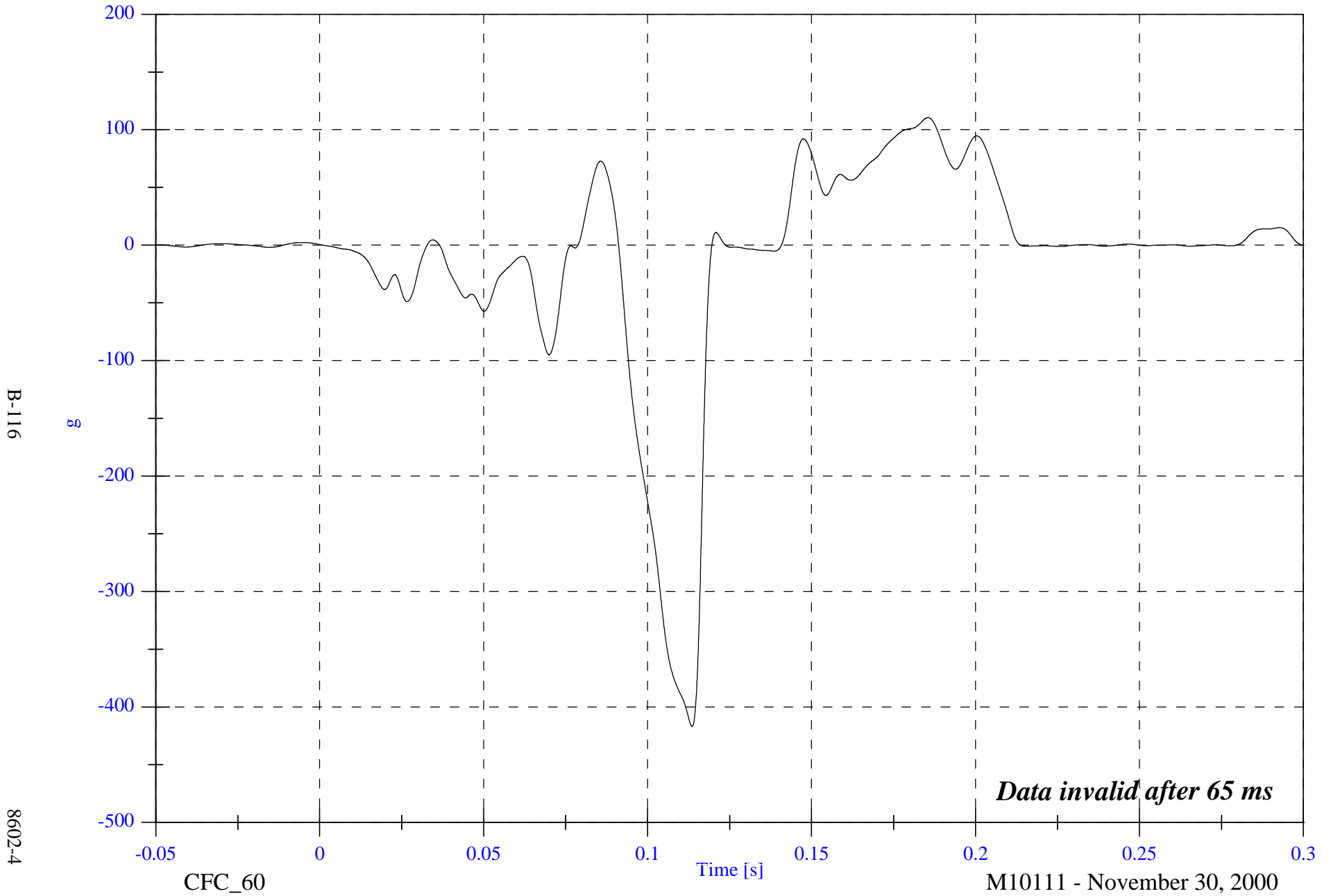
Channel failed

NCAP Test 4 - 2001 Oldsmobile Aurora

Right Caliper #5x

Max: 110.4 [g] at 0.185 [s]

Min: -416.9 [g] at 0.114 [s]



B-116

8602-4

CFC_60

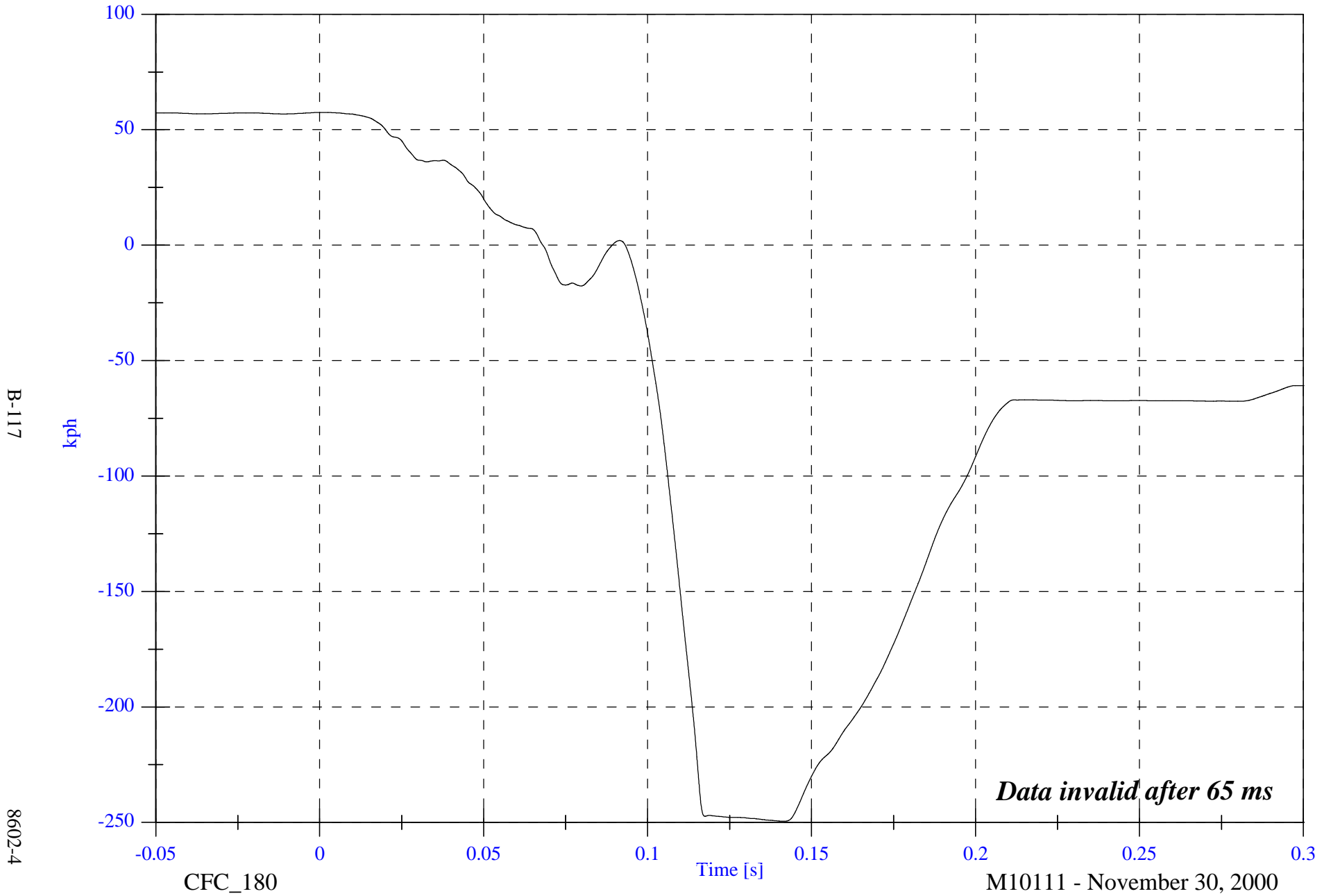
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 57.4 [kph] at 0.001 [s]

Right Caliper #5x Velocity

Min: -249.4 [kph] at 0.142 [s]



B-117

8602-4

CFC_180

Time [s]

M10111 - November 30, 2000

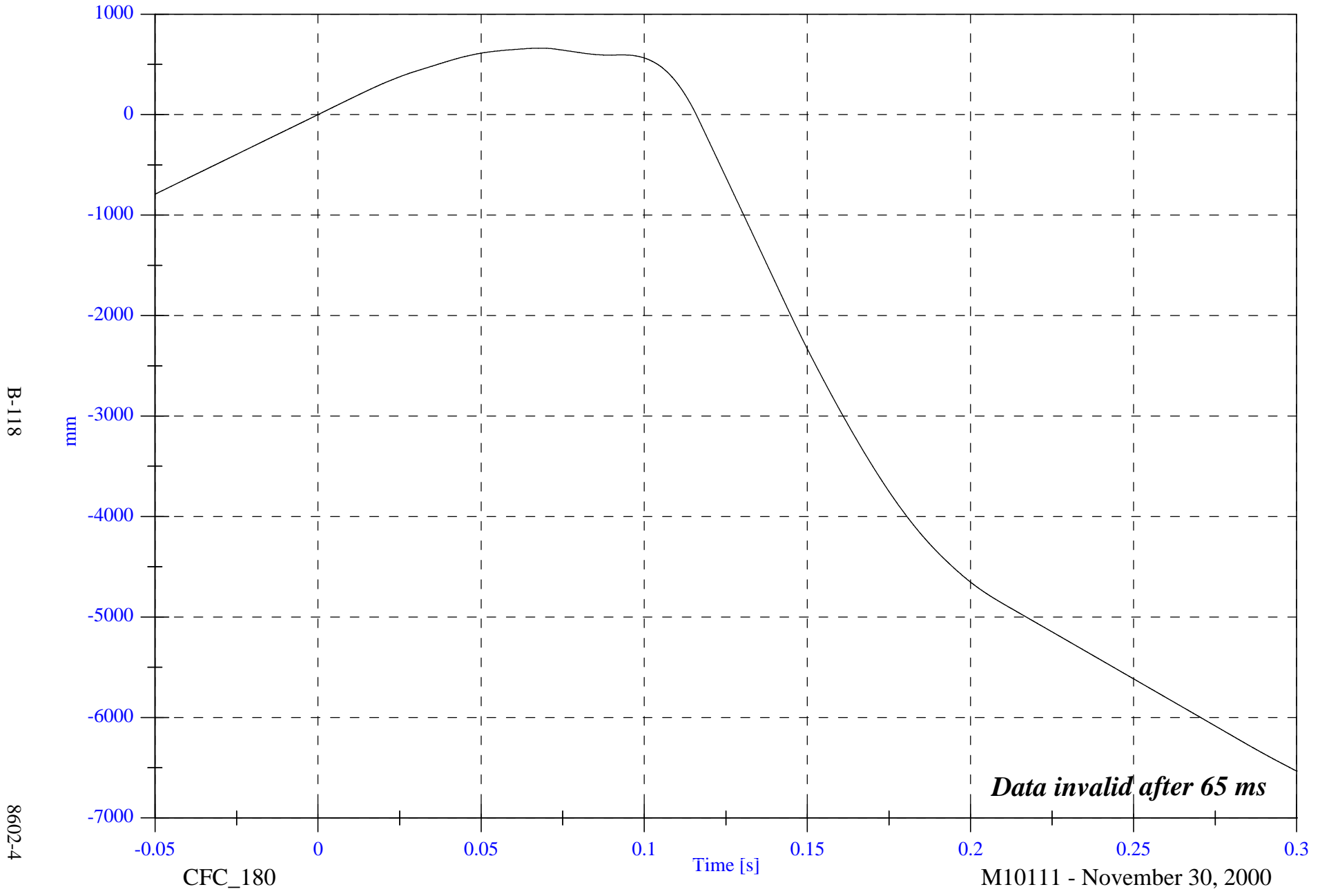
Data invalid after 65 ms

NCAP Test 4 - 2001 Oldsmobile Aurora

Right Caliper #5x Displacement

Max: 661.5 [mm] at 0.068 [s]

Min: -6533.3 [mm] at 0.300 [s]



B-118

8602-4

CFC_180

Time [s]

M10111 - November 30, 2000

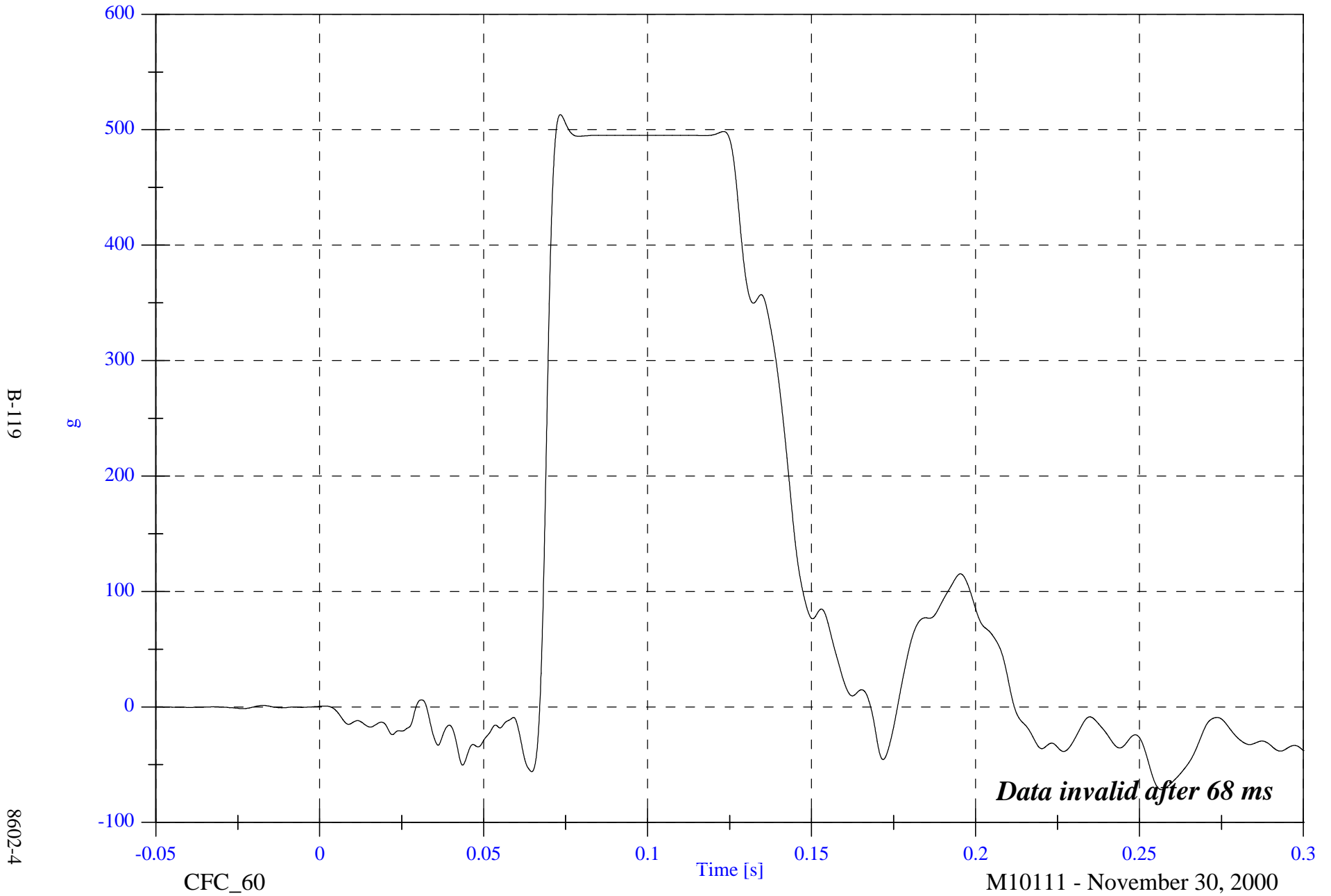
Data invalid after 65 ms

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 513.0 [g] at 0.073 [s]

Instrument Panel #6x

Min: -71.6 [g] at 0.257 [s]



B-119

8602-4

CFC_60

Time [s]

M10111 - November 30, 2000

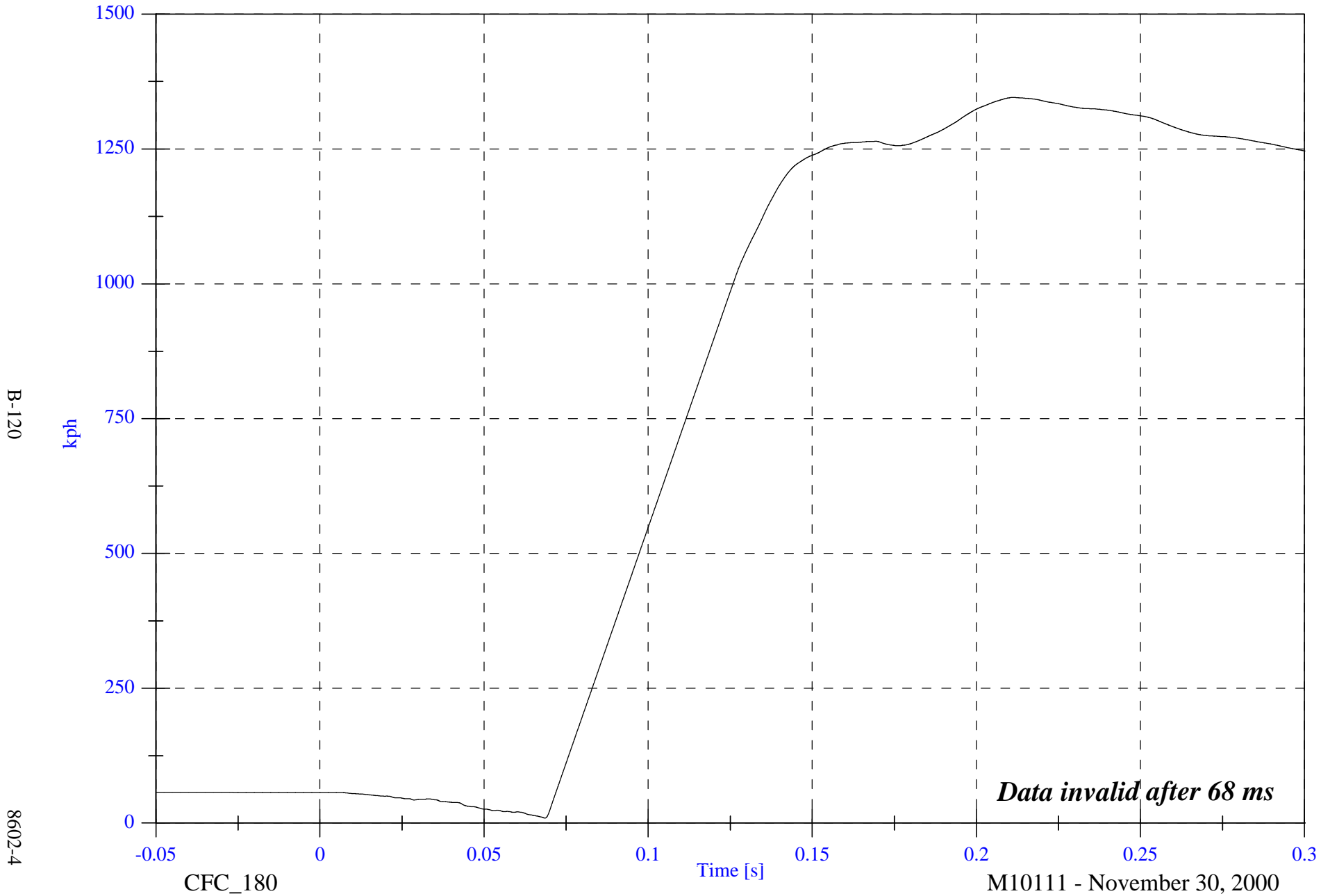
Data invalid after 68 ms

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 1345.5 [kph] at 0.211 [s]

Instrument Panel #6x Velocity

Min: 9.3 [kph] at 0.069 [s]



B-120

8602-4

Data invalid after 68 ms

CFC_180

Time [s]

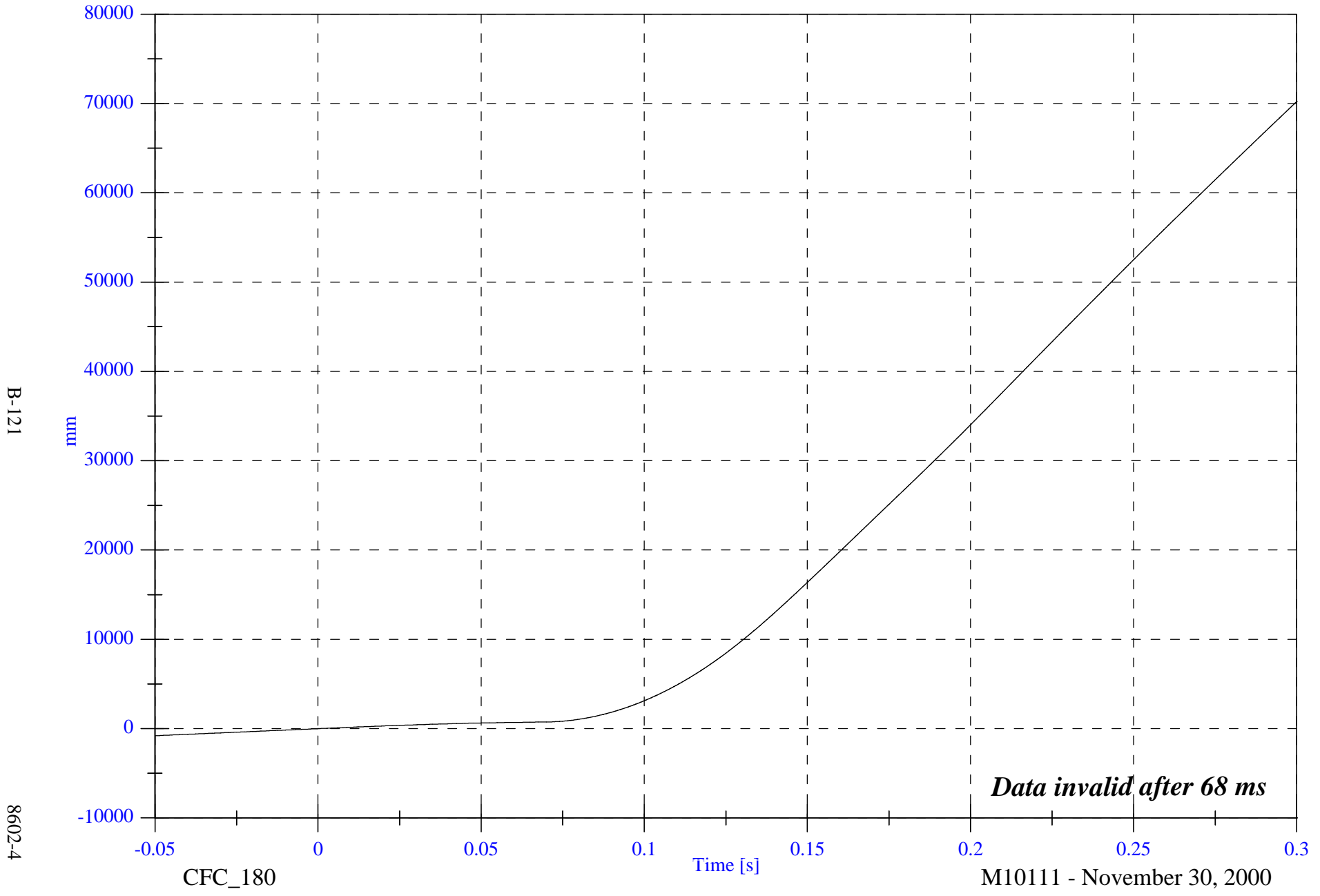
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Instrument Panel #6x Displacement

Max: 70196.2 [mm] at 0.300 [s]

Min: -790.4 [mm] at -0.050 [s]



B-121

8602-4

CFC_180

Time [s]

M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

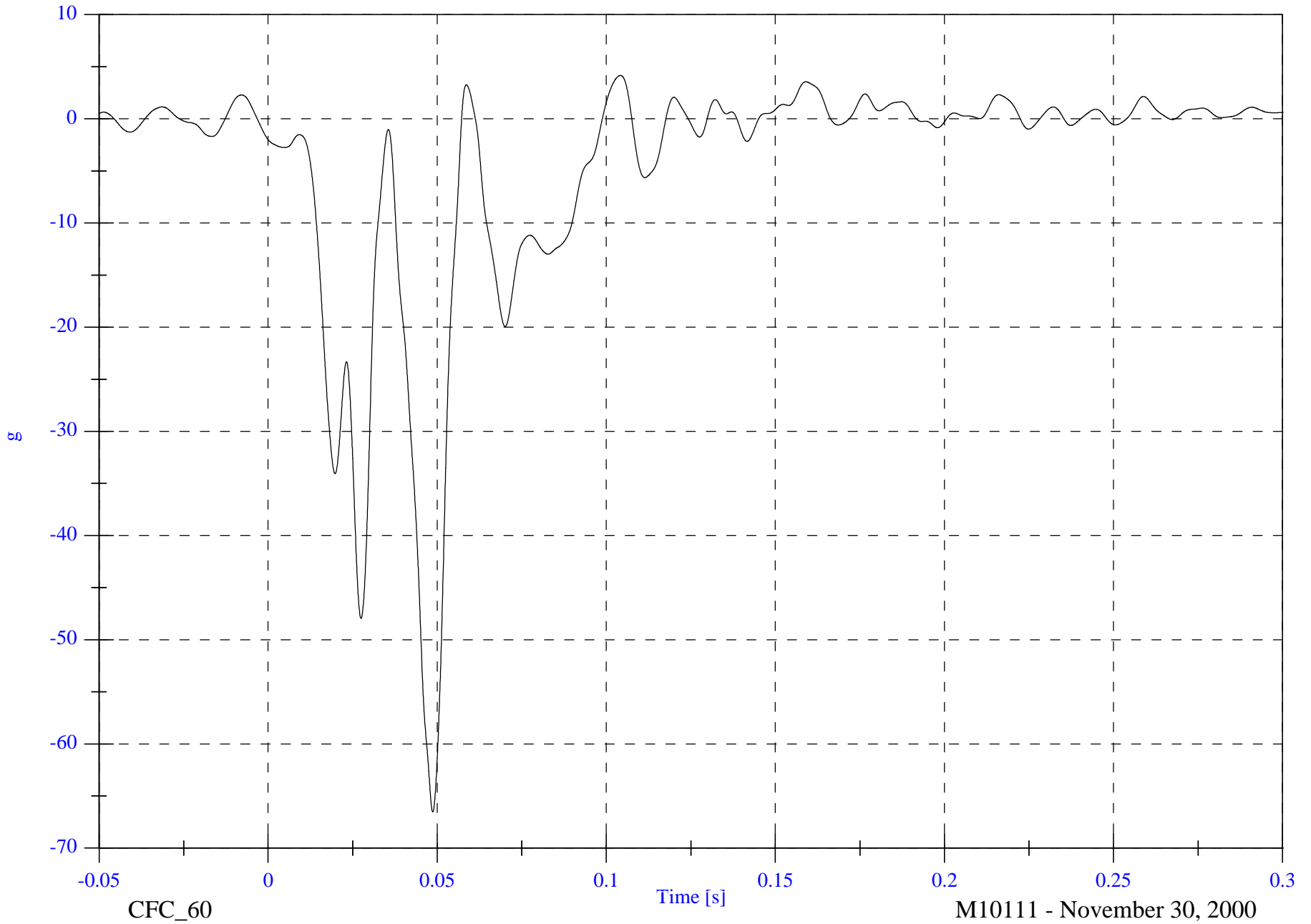
Left Caliper #7x

Max: 4.2 [g] at 0.104 [s]

Min: -66.5 [g] at 0.049 [s]

B-122

8602-4

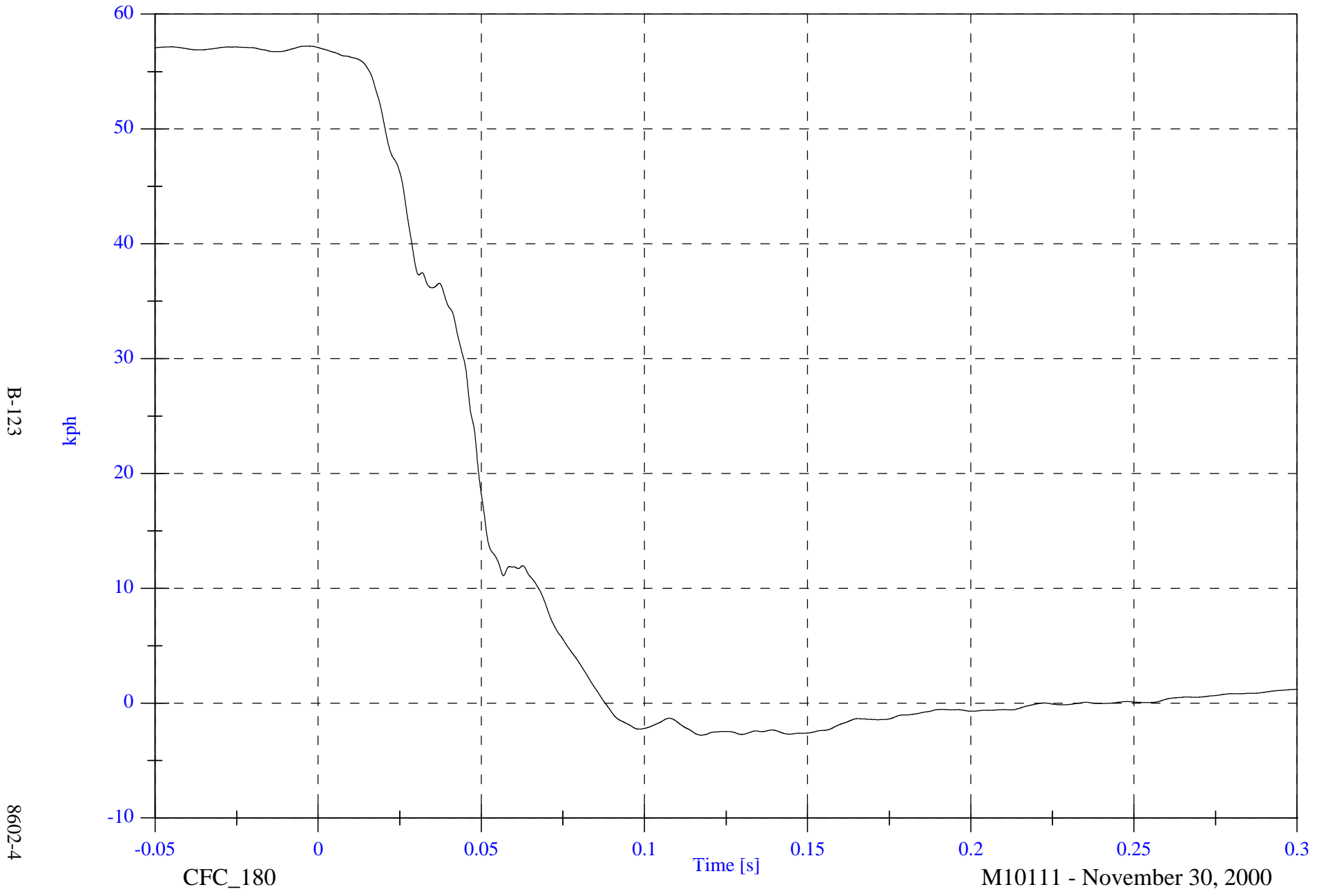


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 57.2 [kph] at -0.003 [s]

Left Caliper #7x Velocity

Min: -2.8 [kph] at 0.117 [s]



B-123

8602-4

CFC_180

Time [s]

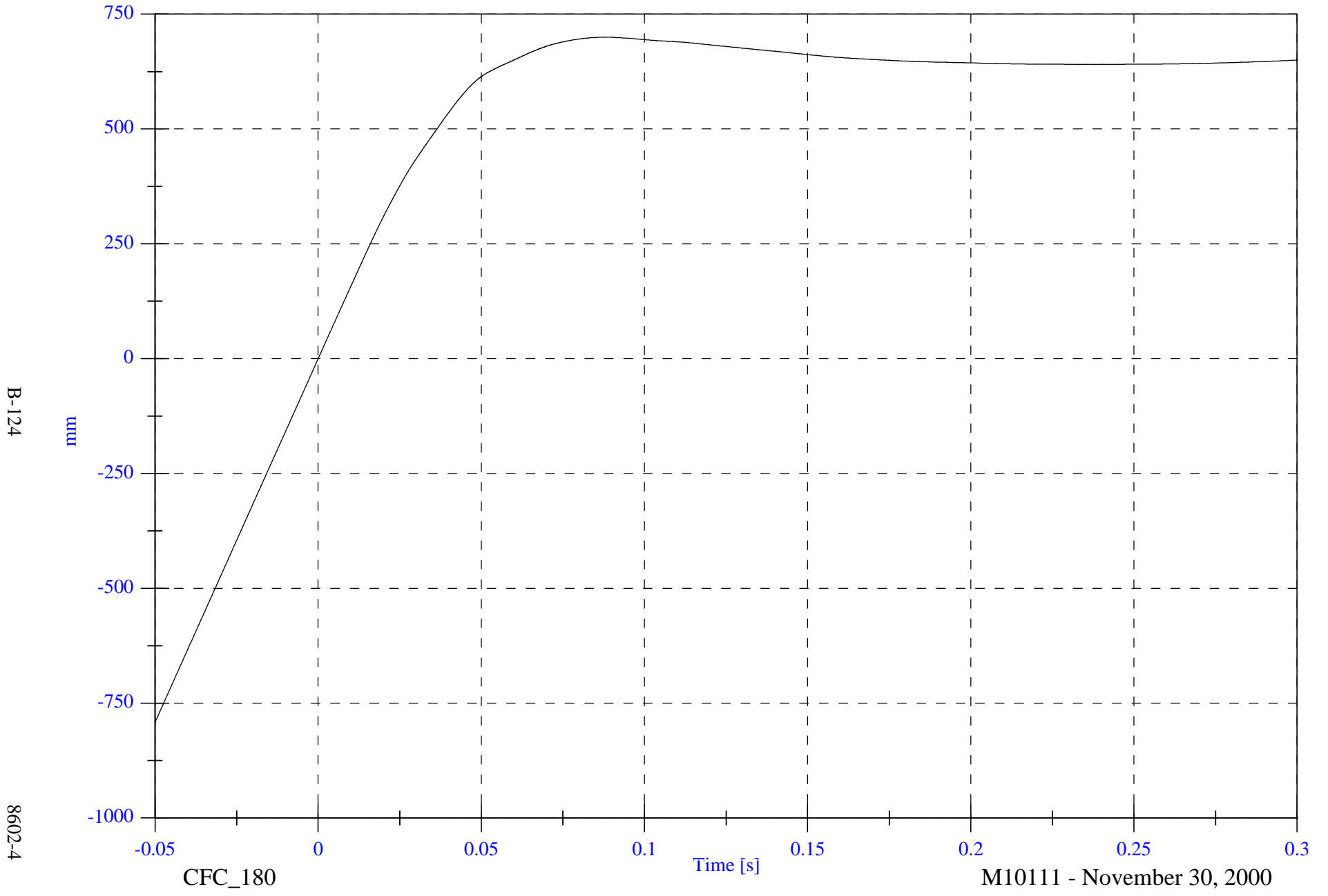
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 699.6 [mm] at 0.088 [s]

Left Caliper #7x Displacement

Min: -791.9 [mm] at -0.050 [s]



B-124

8602-4

CFC_180

Time [s]

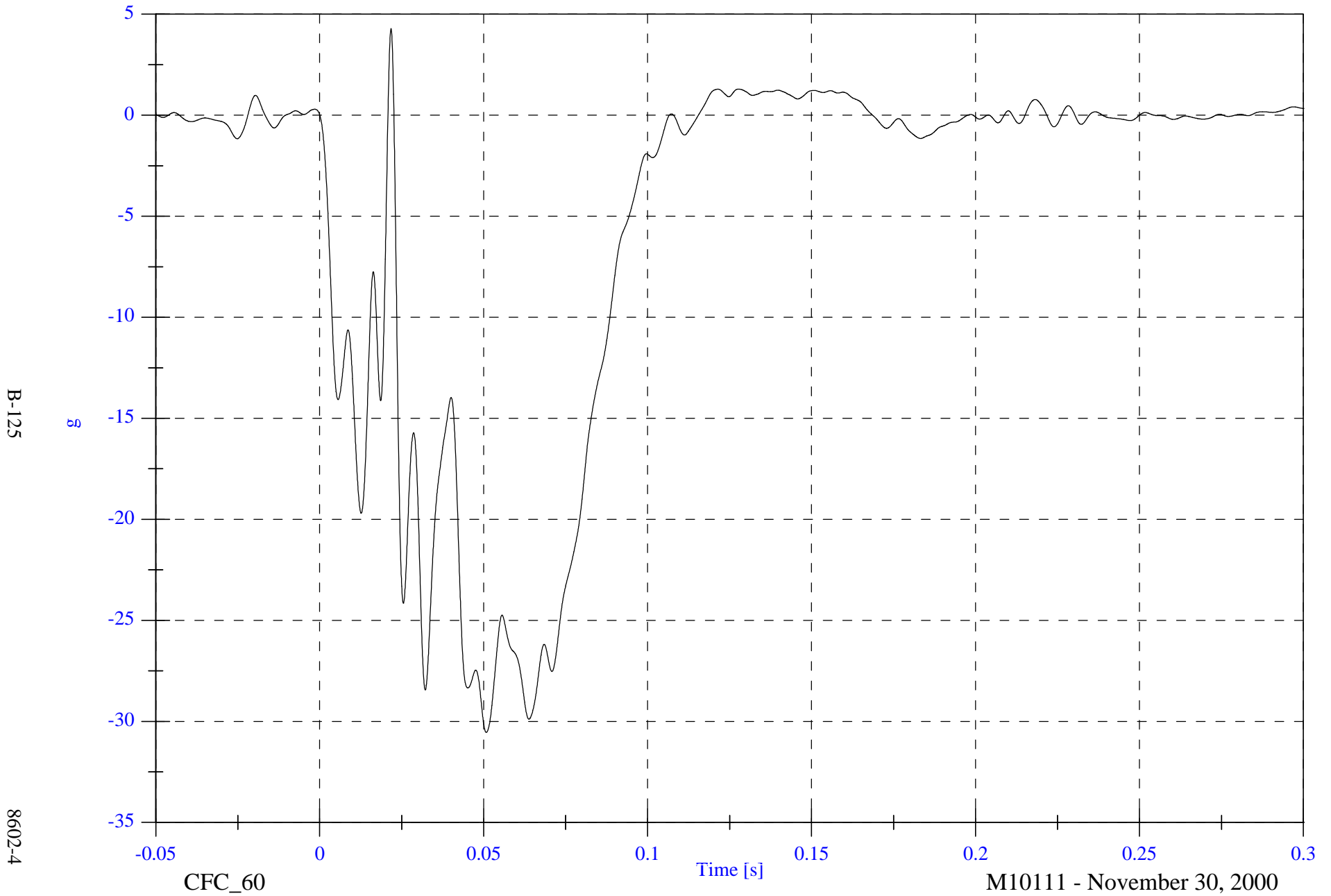
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Left Rear Red #8x

Max: 4.3 [g] at 0.022 [s]

Min: -30.5 [g] at 0.051 [s]



B-125

8602-4

CFC_60

Time [s]

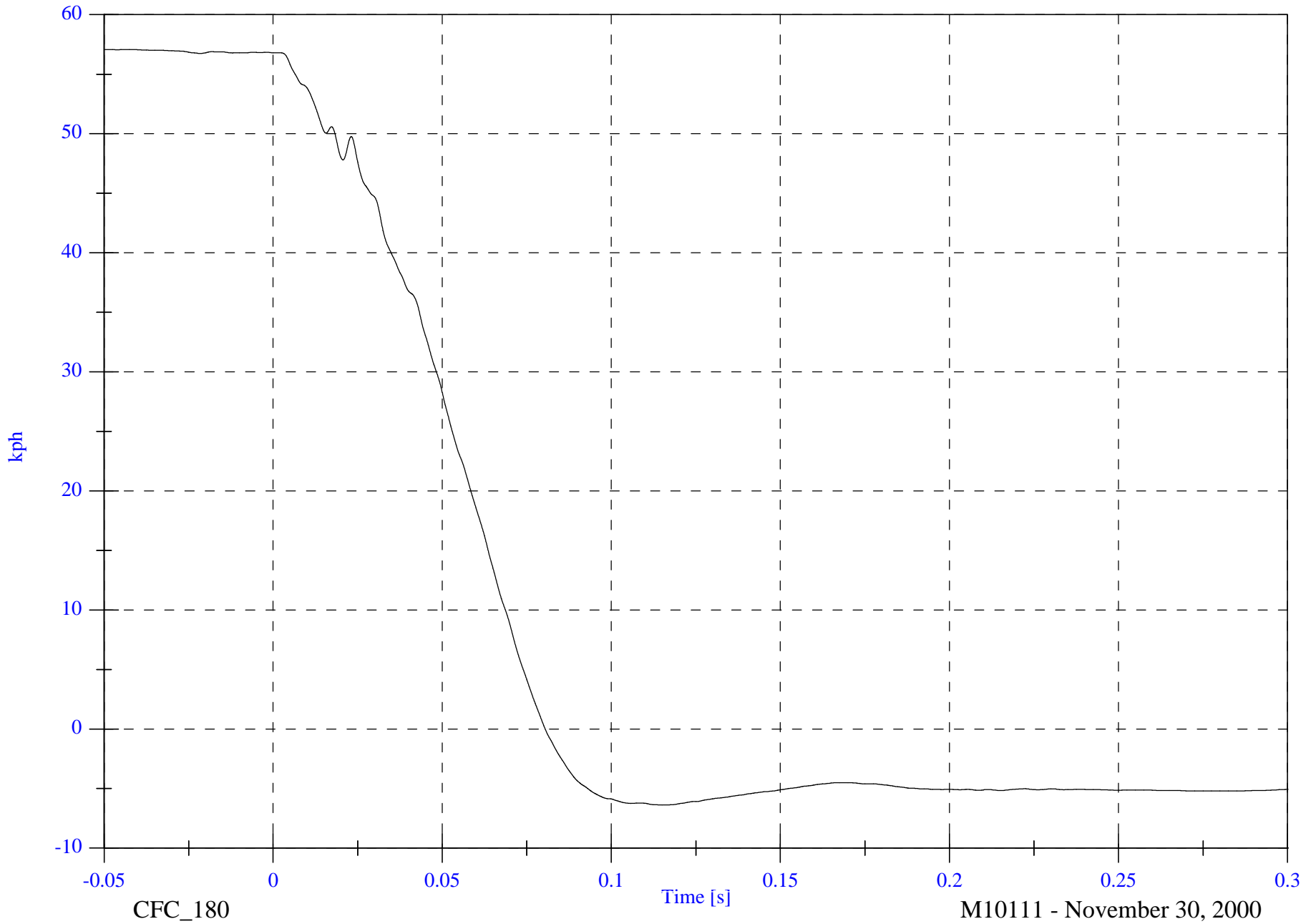
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 57.1 [kph] at -0.043 [s]

Left Rear Red #8x Velocity

Min: -6.4 [kph] at 0.115 [s]



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8602-4

CFC_180

Time [s]

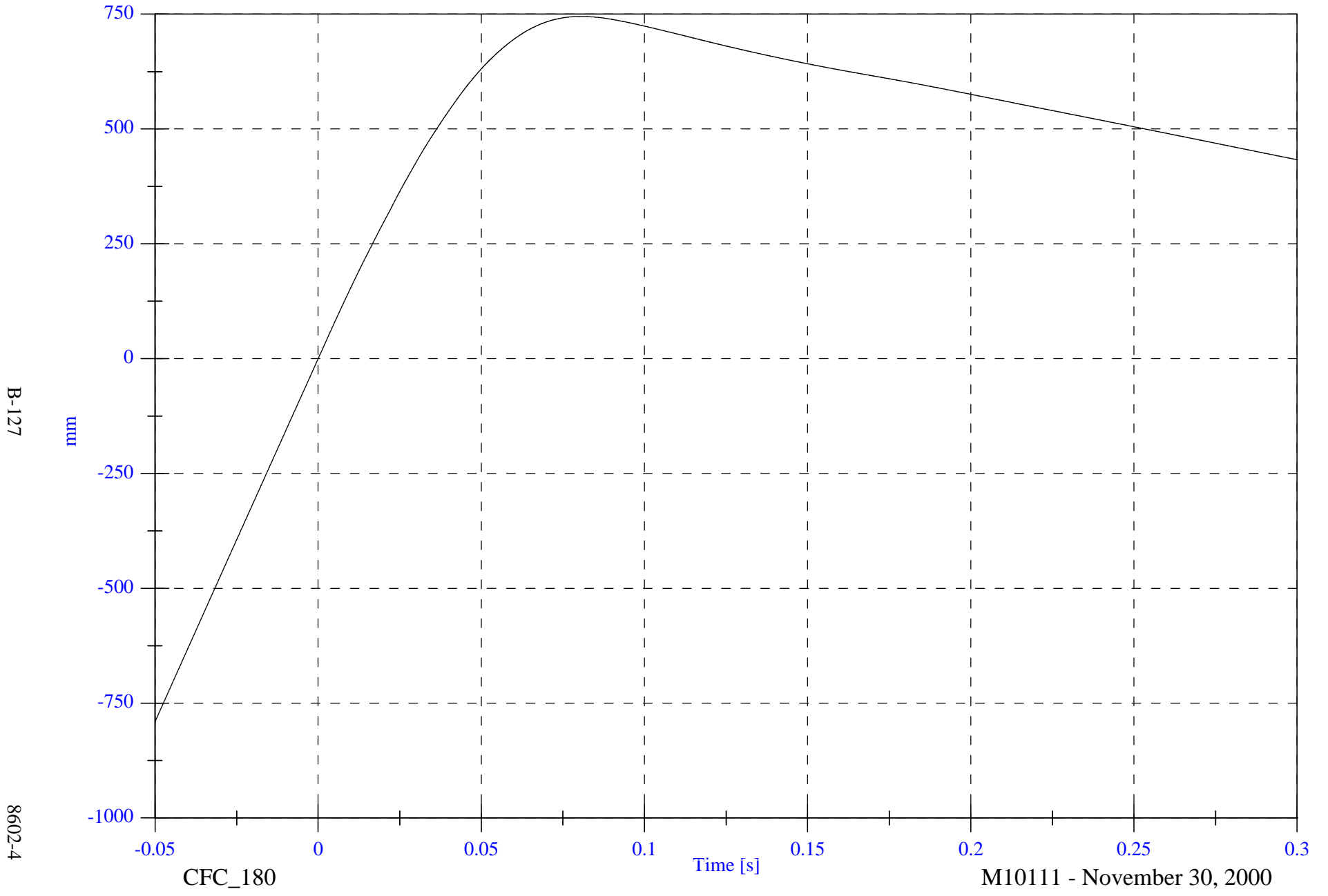
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 744.9 [mm] at 0.080 [s]

Left Rear Red #8x Displacement

Min: -790.5 [mm] at -0.050 [s]



B-127

8602-4

CFC_180

Time [s]

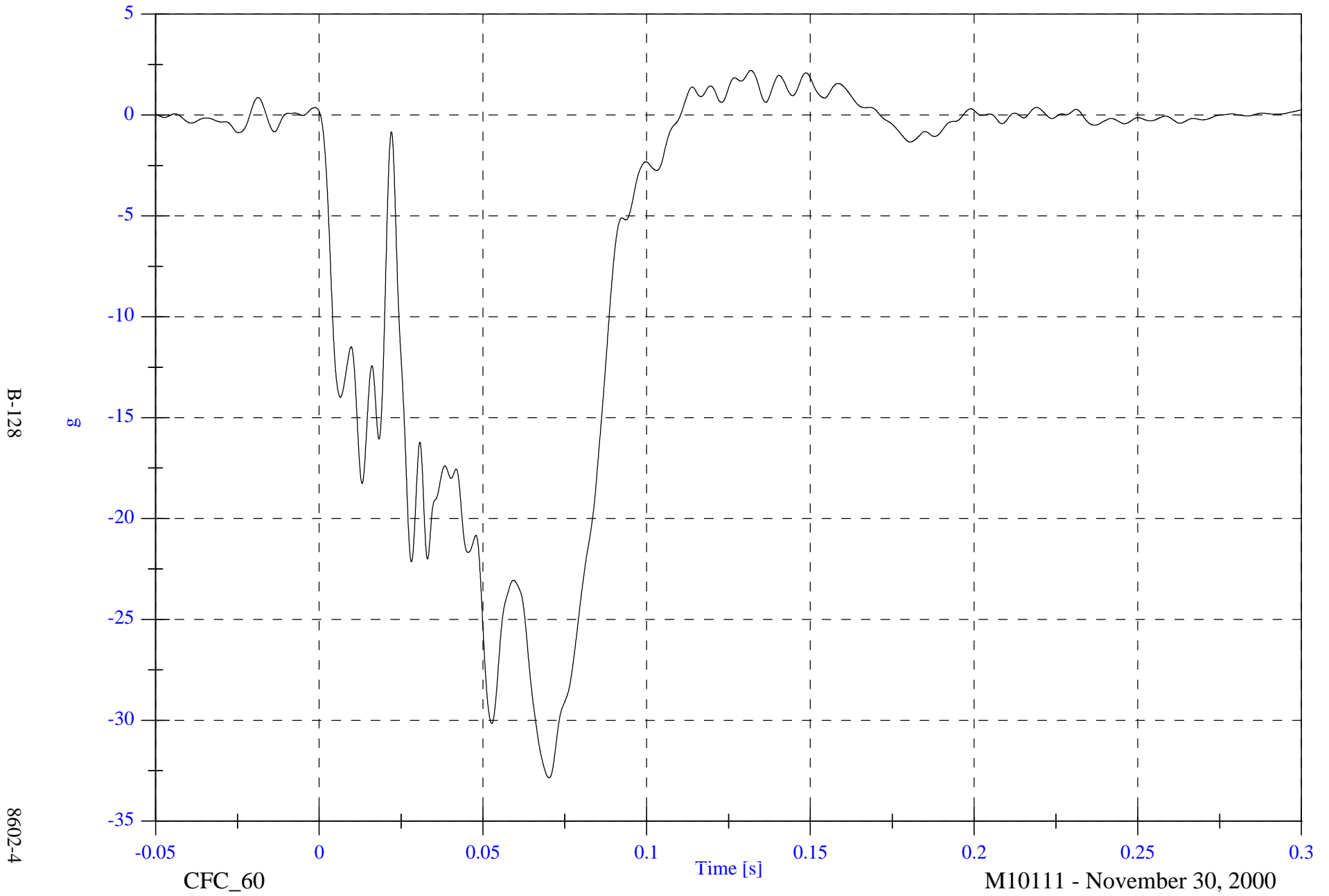
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Right Rear Red #9x

Max: 2.2 [g] at 0.132 [s]

Min: -32.9 [g] at 0.070 [s]

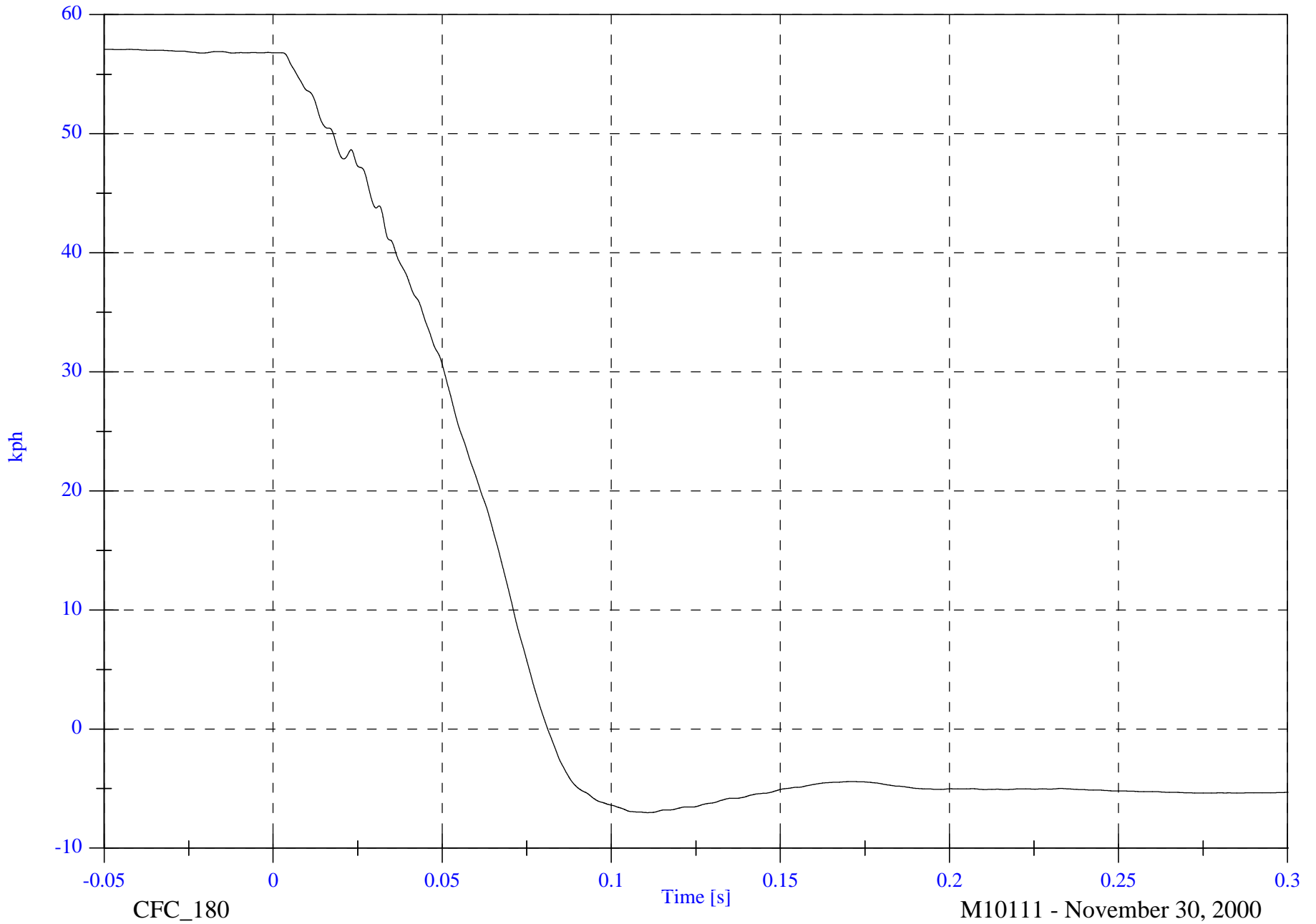


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 57.1 [kph] at -0.049 [s]

Right Rear Red #9x Velocity

Min: -7.0 [kph] at 0.111 [s]



B-129

8602-4

CFC_180

Time [s]

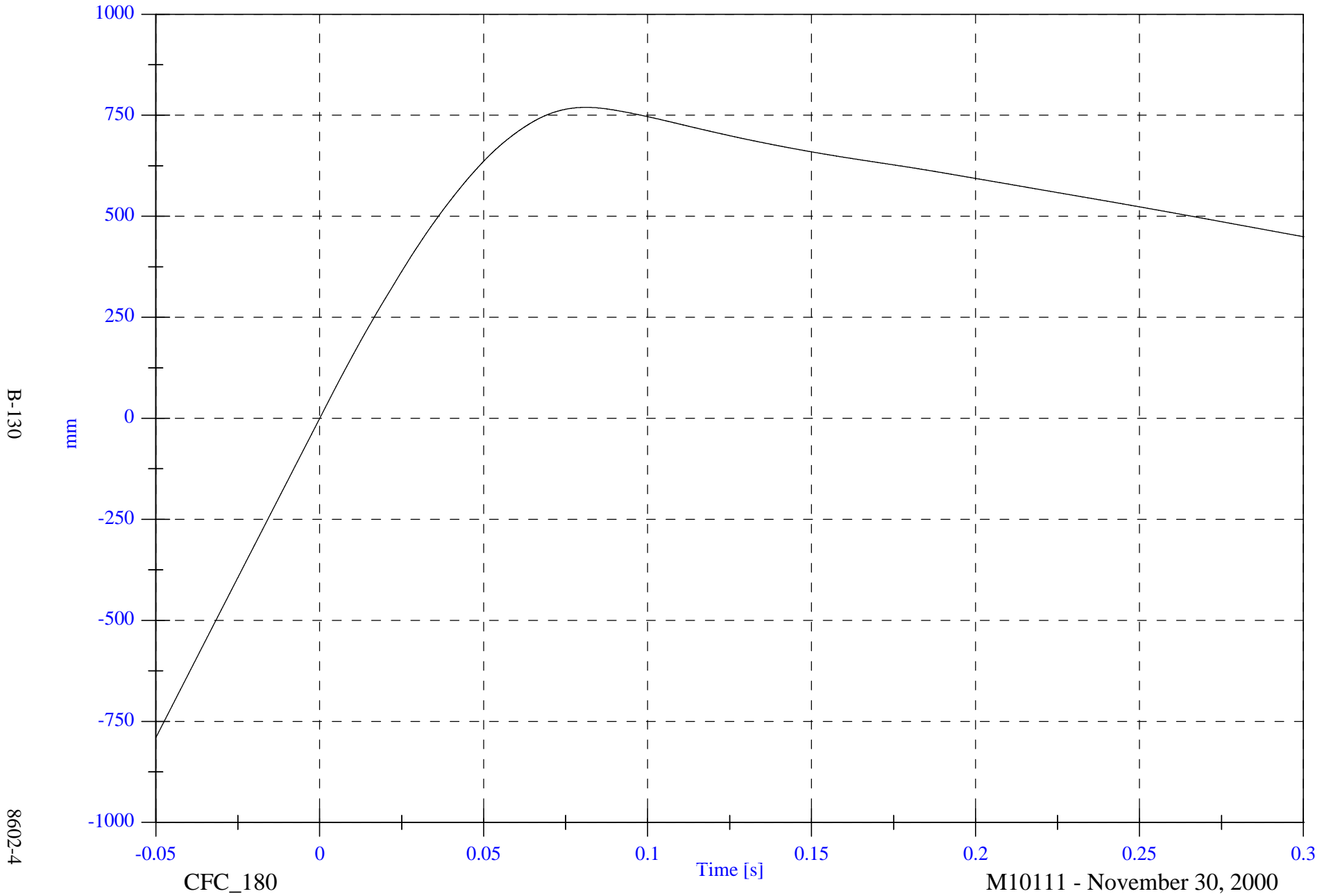
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Right Rear Red #9x Displacement

Max: 769.5 [mm] at 0.081 [s]

Min: -790.6 [mm] at -0.050 [s]



B-130

8602-4

CFC_180

Time [s]

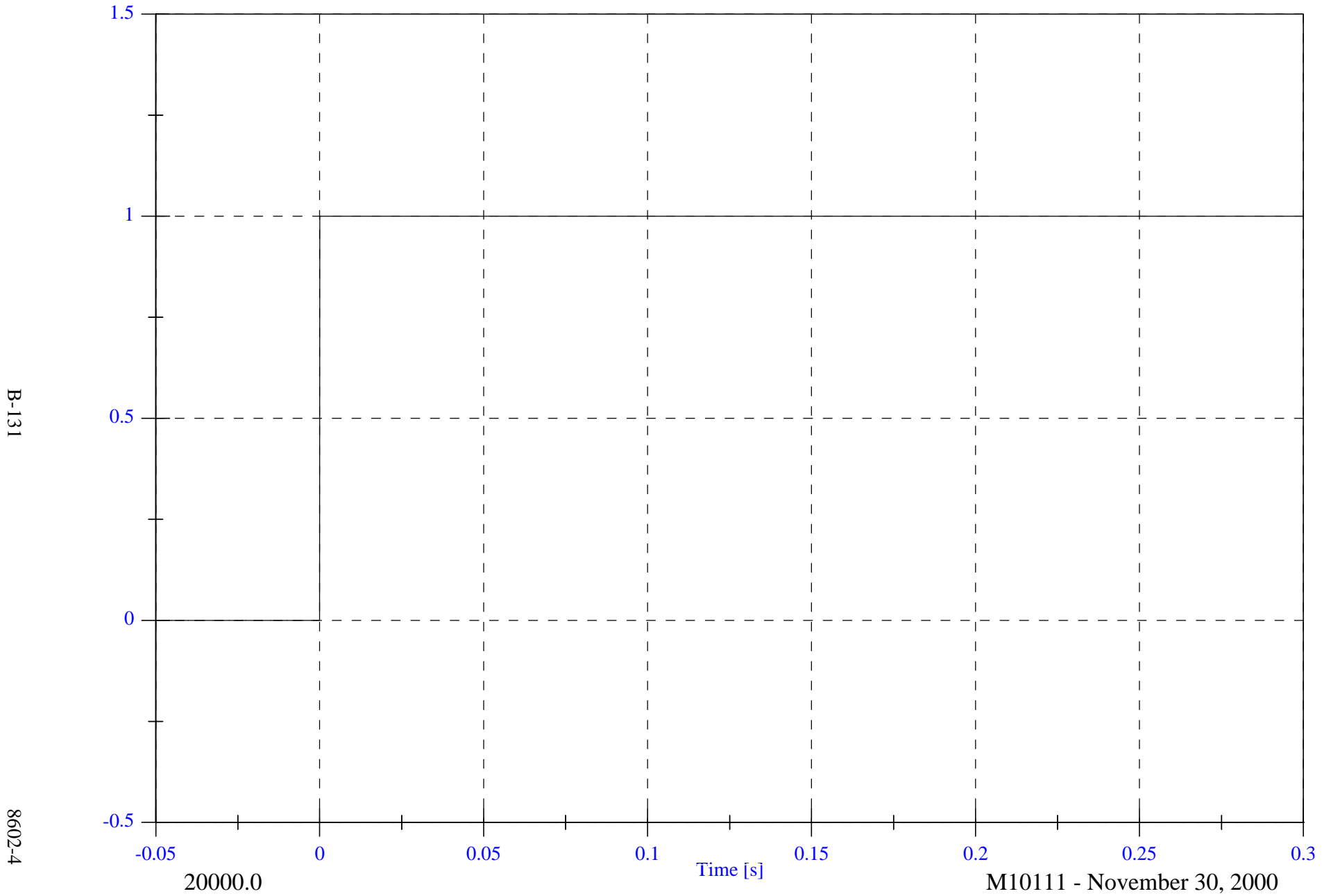
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 1.0 [] at 0.000 [s]

Min: 0.0 [] at -0.050 [s]

Contact Time



B-131

8602-4

20000.0

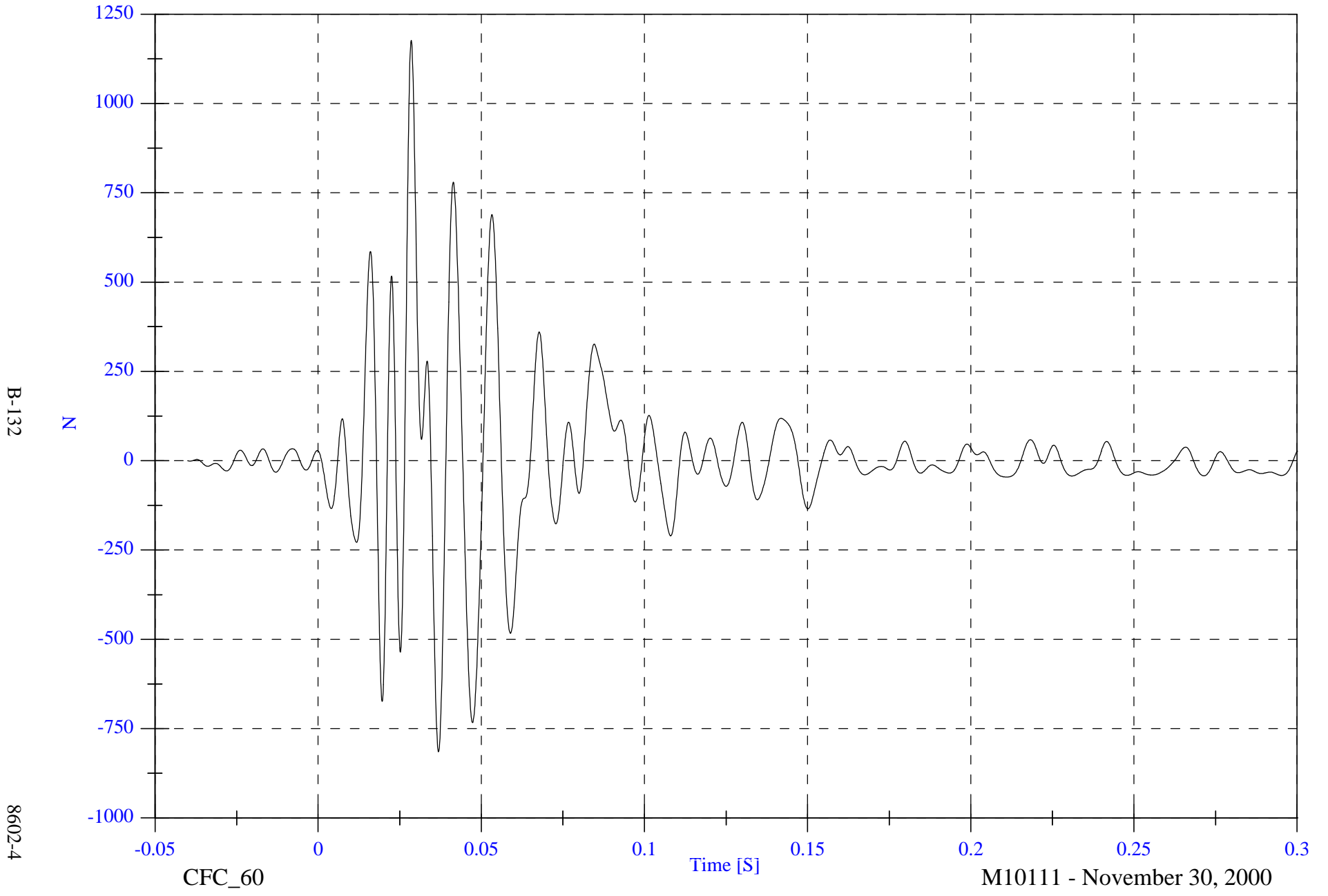
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 1177.0 [N] at 0.028 [S]

Barrier Load Cell A1 Fx

Min: -815.2 [N] at 0.037 [S]



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8602-4

CFC_60

Time [S]

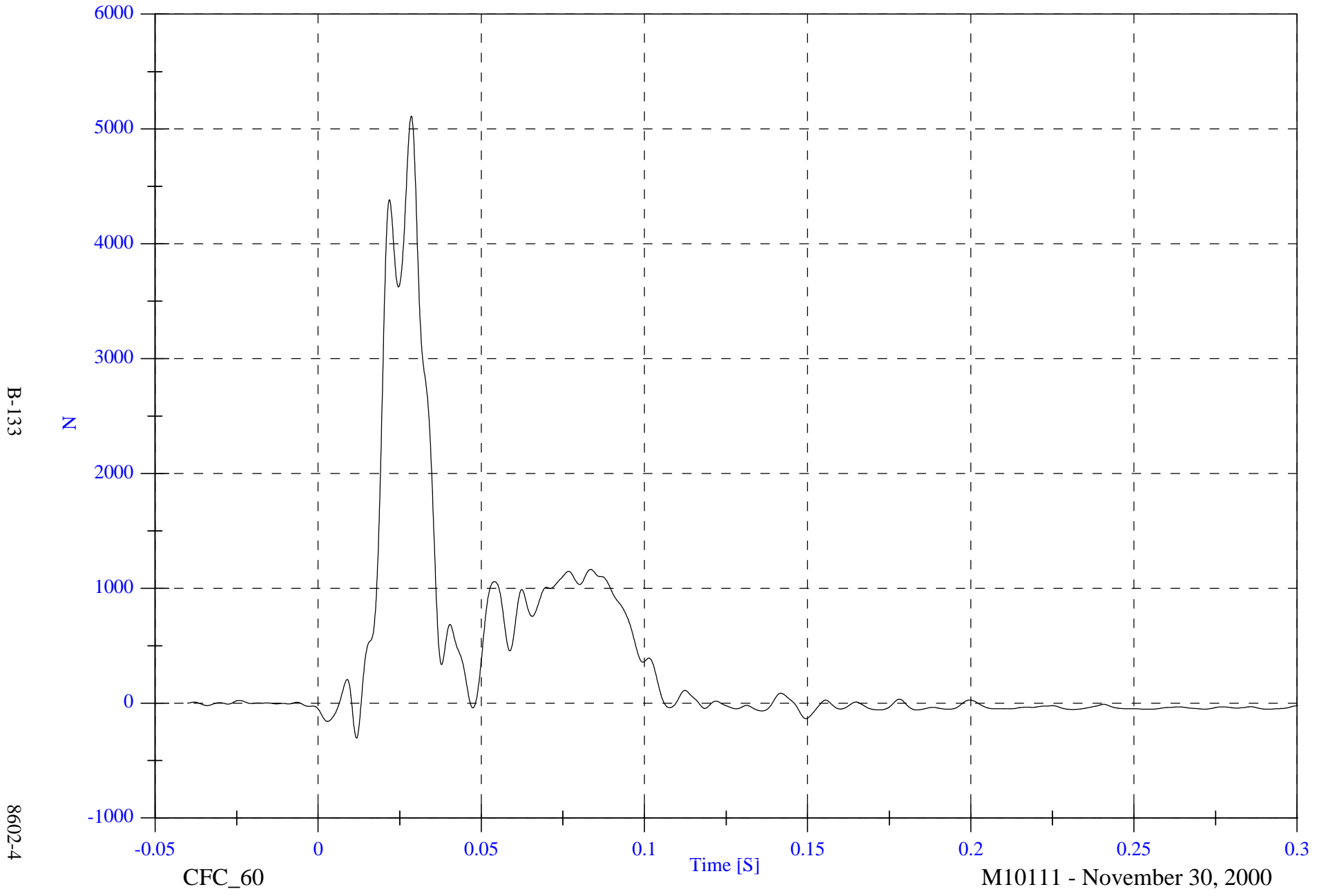
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 5112.5 [N] at 0.028 [S]

Barrier Load Cell A2 Fx

Min: -303.7 [N] at 0.012 [S]



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8602-4

CFC_60

Time [S]

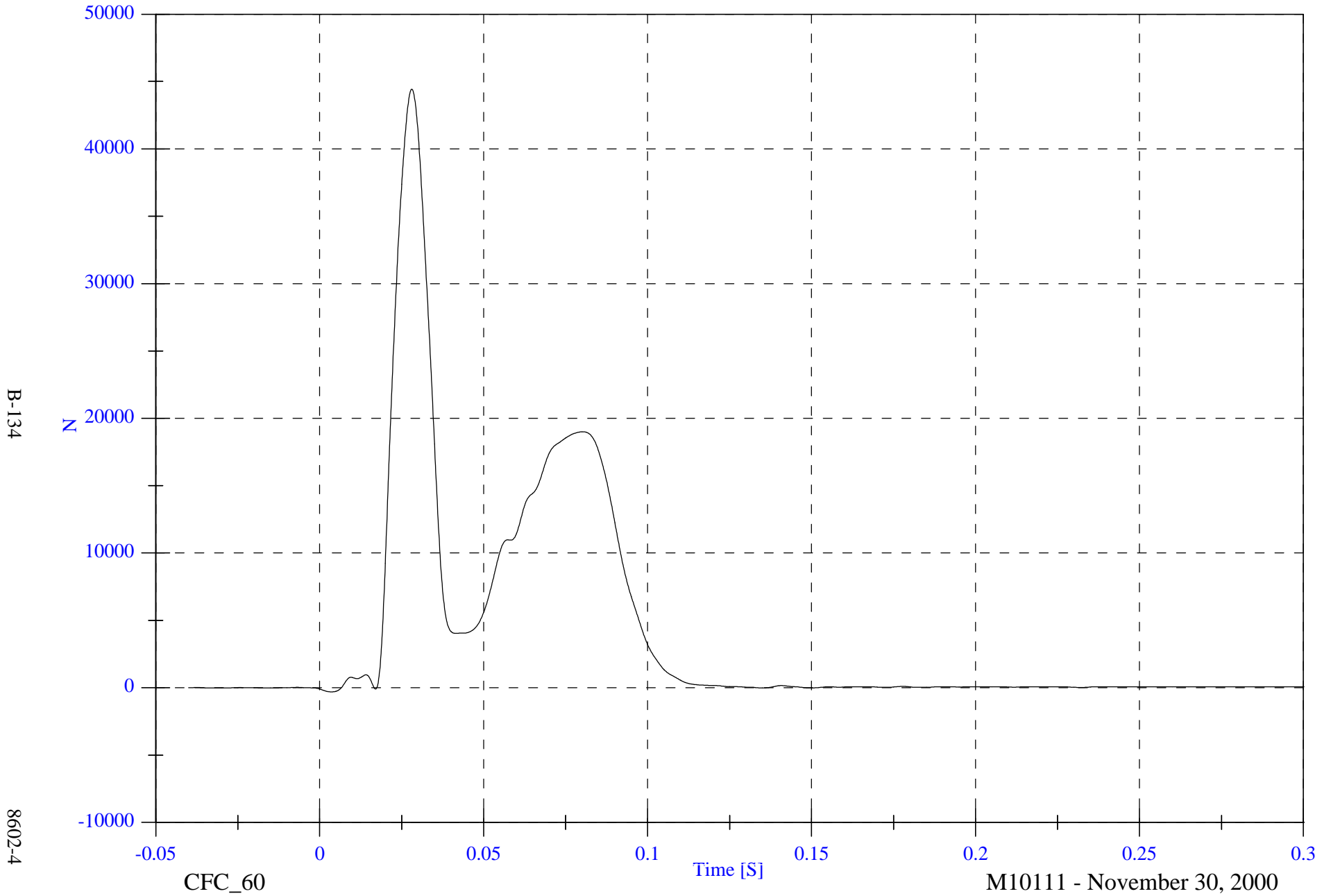
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell A3 Fx

Max: 44433.3 [N] at 0.028 [S]

Min: -315.0 [N] at 0.003 [S]



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8602-4

CFC_60

Time [S]

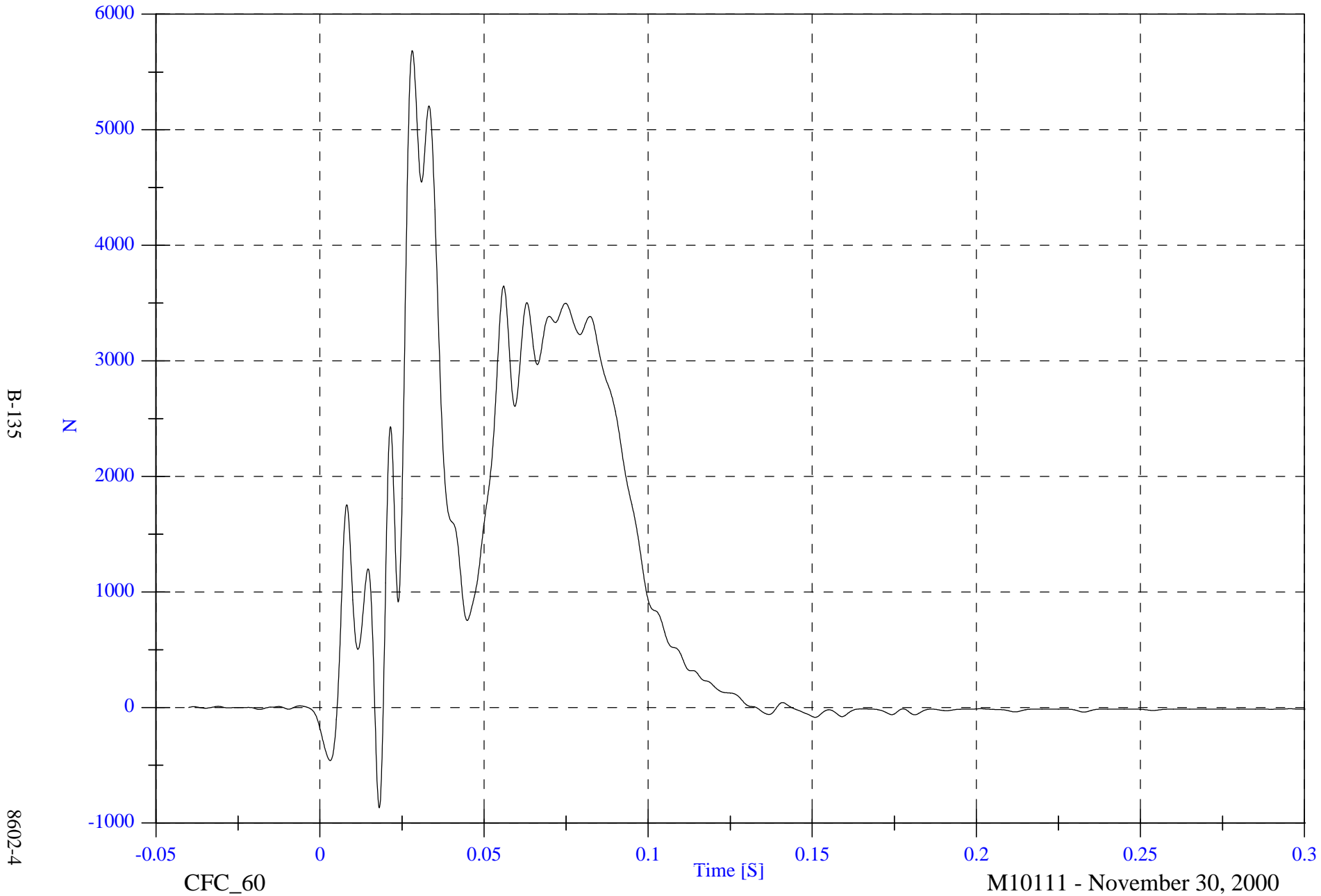
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell A4 Fx

Max: 5684.6 [N] at 0.028 [S]

Min: -867.9 [N] at 0.018 [S]



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8602-4

CFC_60

Time [S]

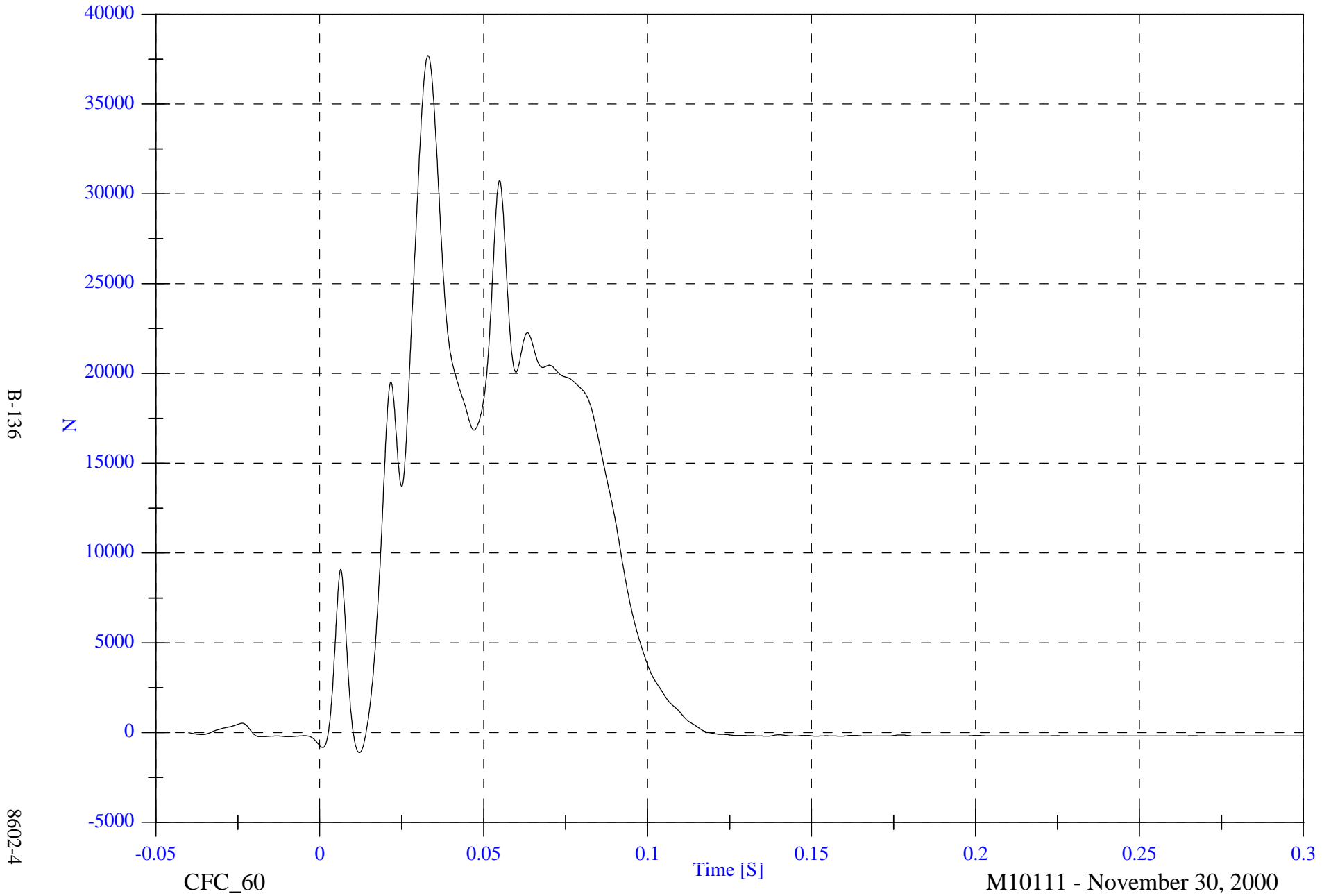
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell A5 Fx

Max: 37699.5 [N] at 0.033 [S]

Min: -1114.9 [N] at 0.012 [S]



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8602-4

CFC_60

Time [S]

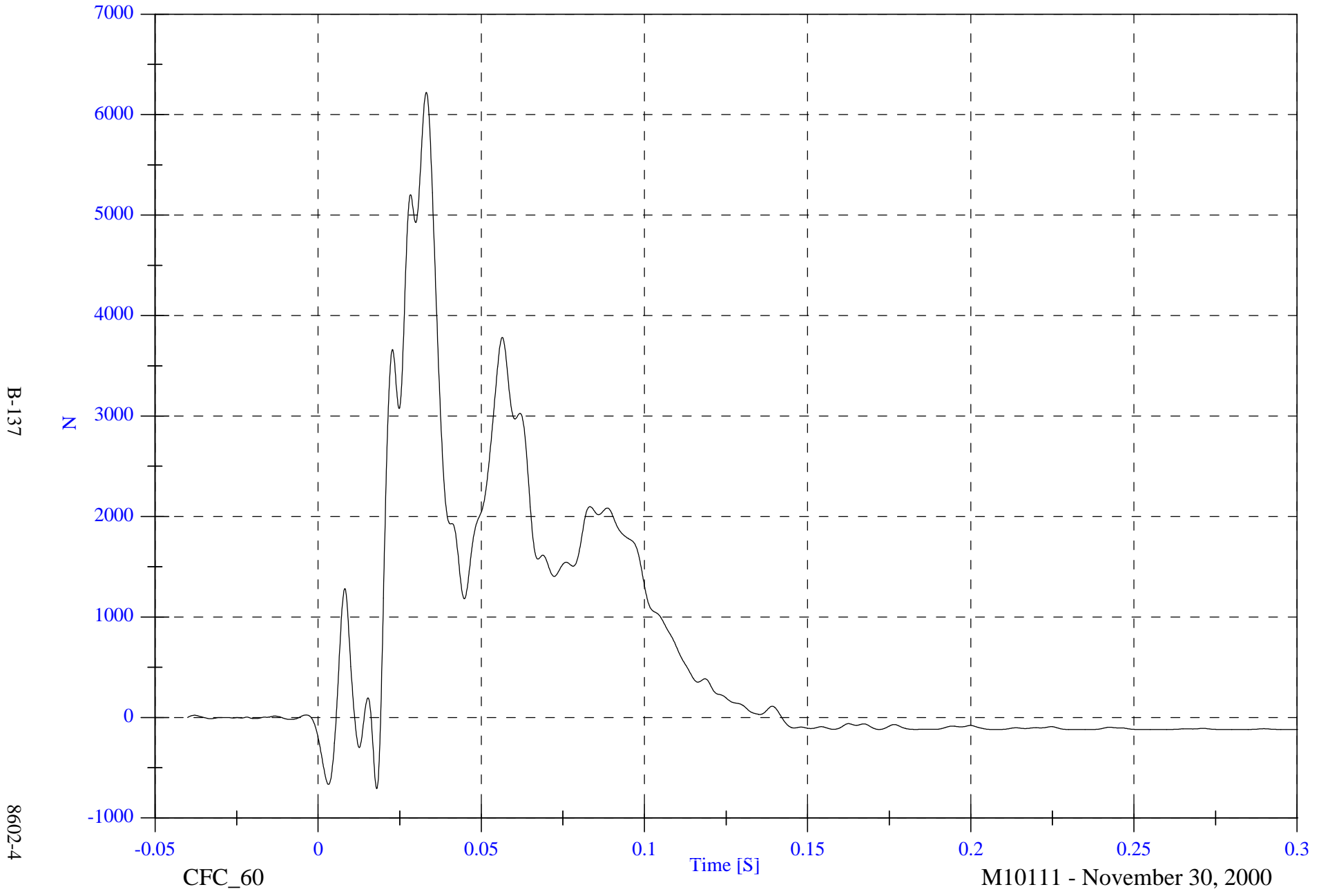
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 6222.0 [N] at 0.033 [S]

Barrier Load Cell A6 Fx

Min: -709.7 [N] at 0.018 [S]



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8602-4

CFC_60

Time [S]

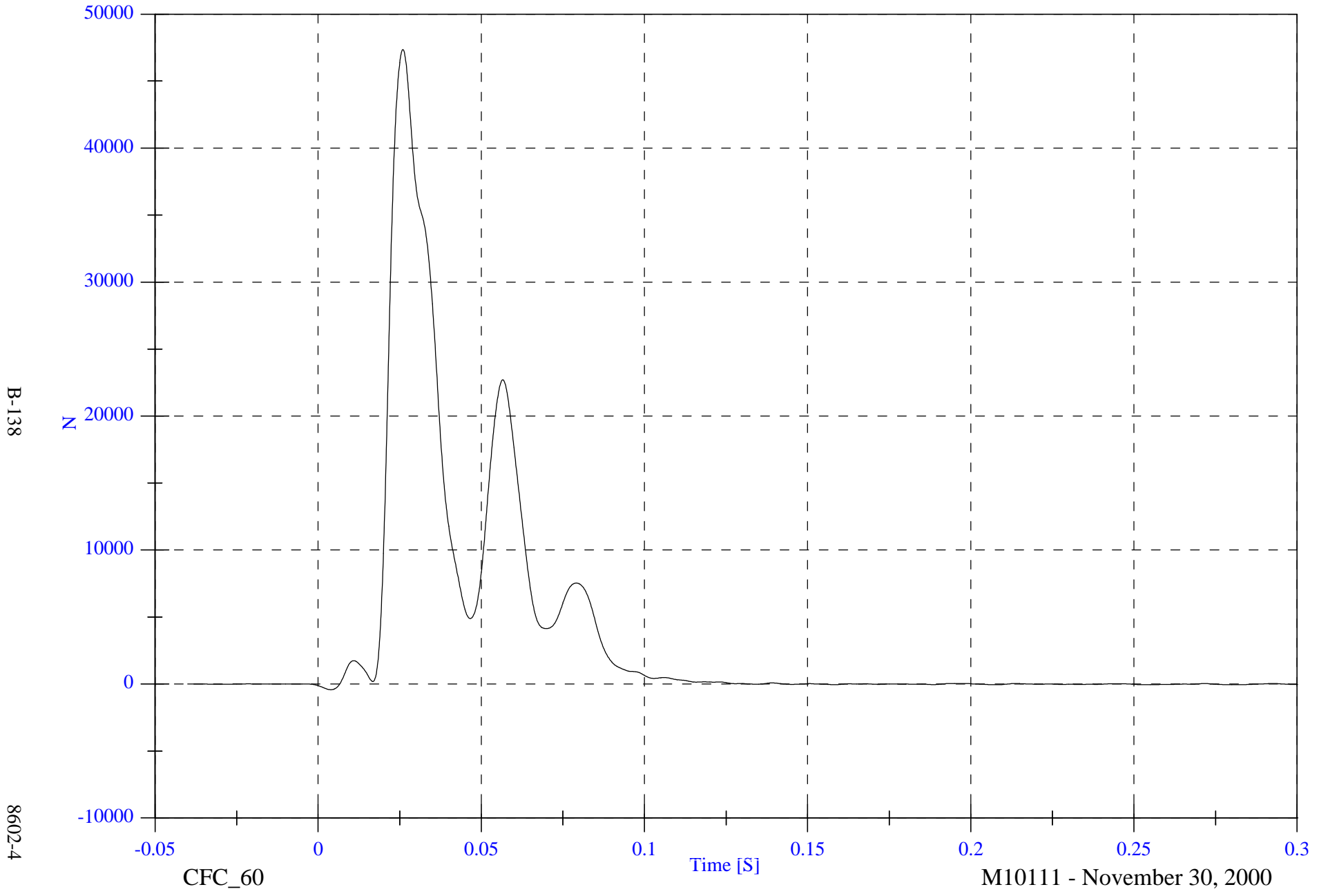
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell A7 Fx

Max: 47356.8 [N] at 0.026 [S]

Min: -425.4 [N] at 0.004 [S]



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8602-4

CFC_60

Time [S]

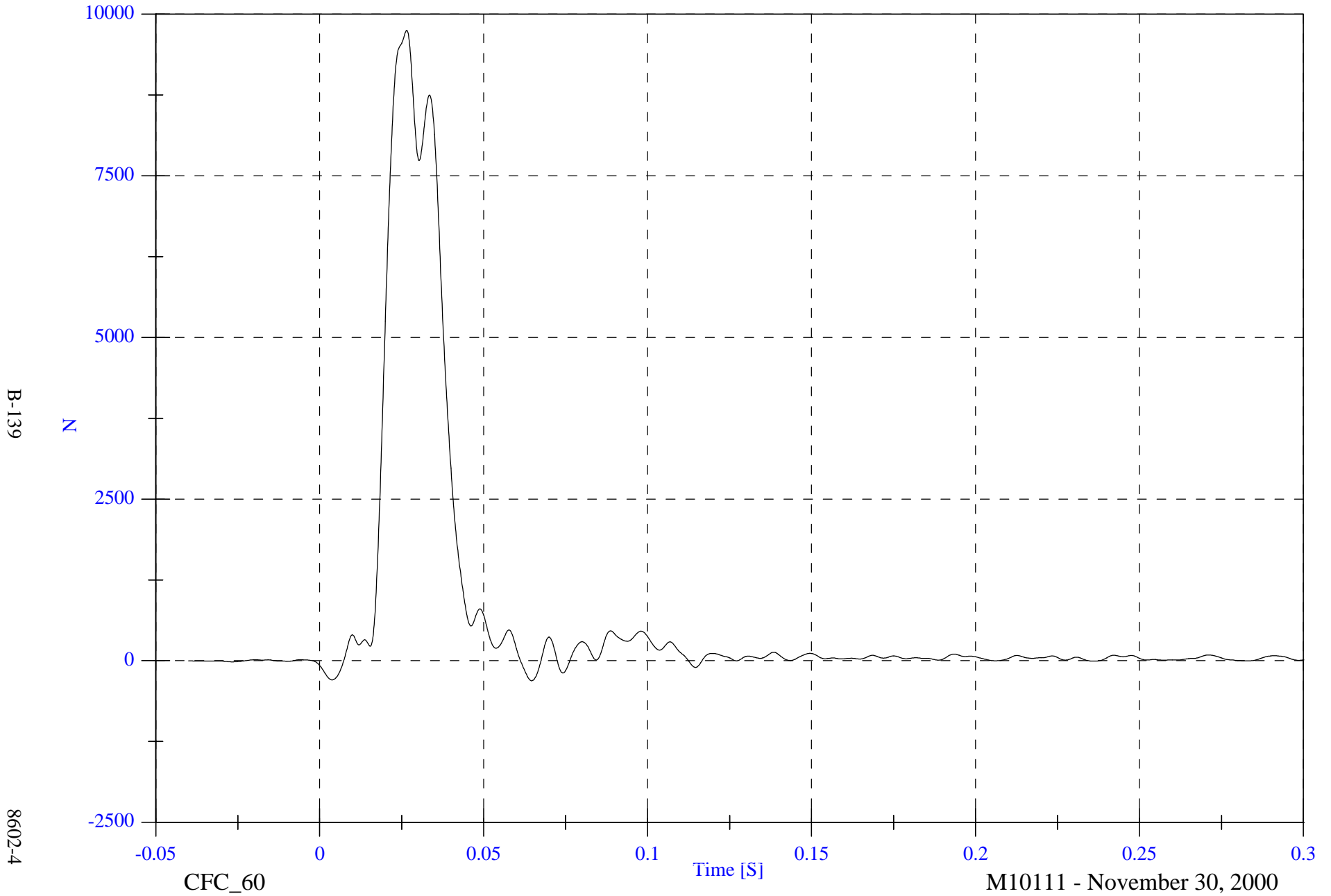
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell A8 Fx

Max: 9748.8 [N] at 0.026 [S]

Min: -308.5 [N] at 0.065 [S]



B-139

8602-4

CFC_60

Time [S]

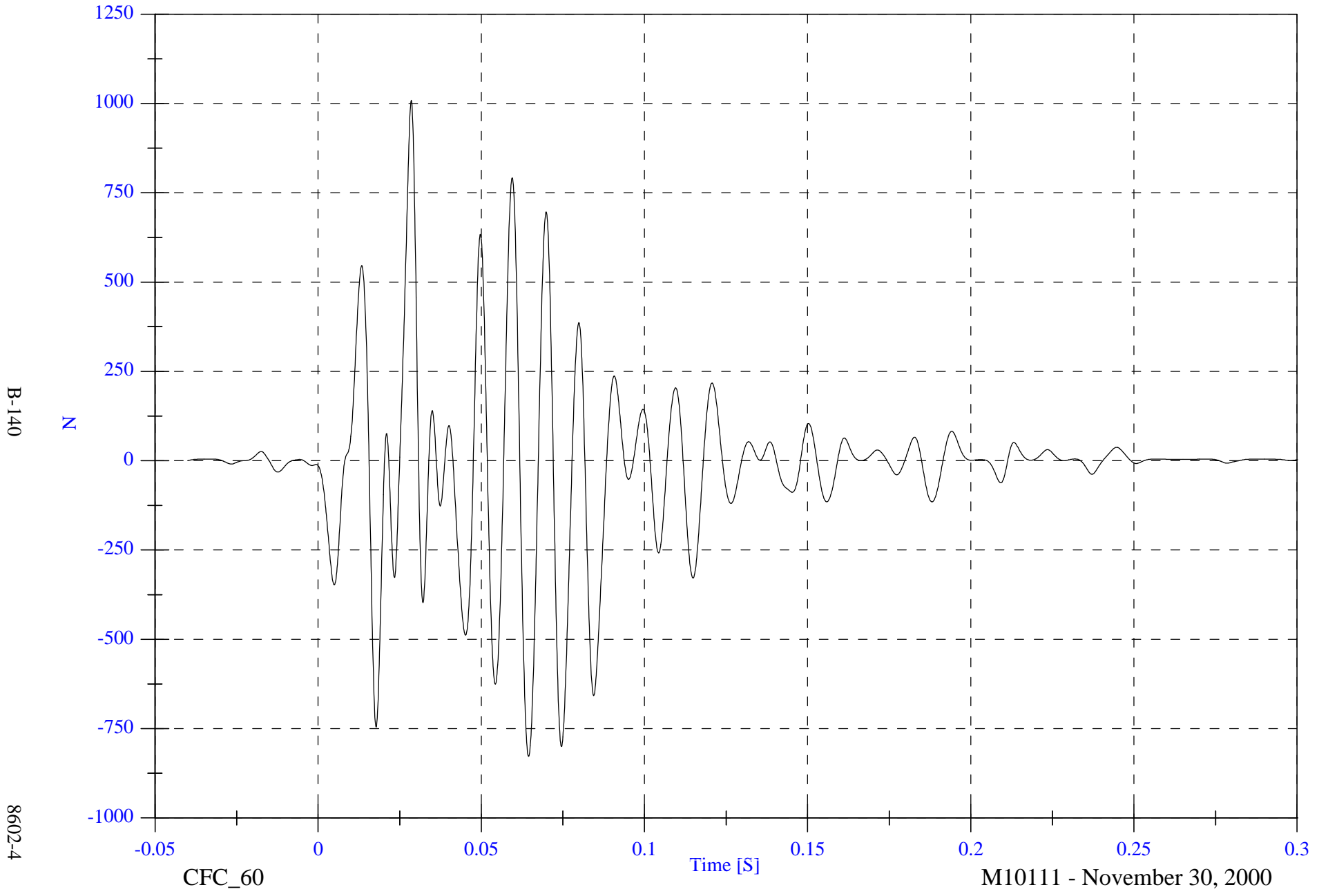
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 1008.6 [N] at 0.028 [S]

Barrier Load Cell A9 Fx

Min: -827.7 [N] at 0.064 [S]



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8602-4

CFC_60

Time [S]

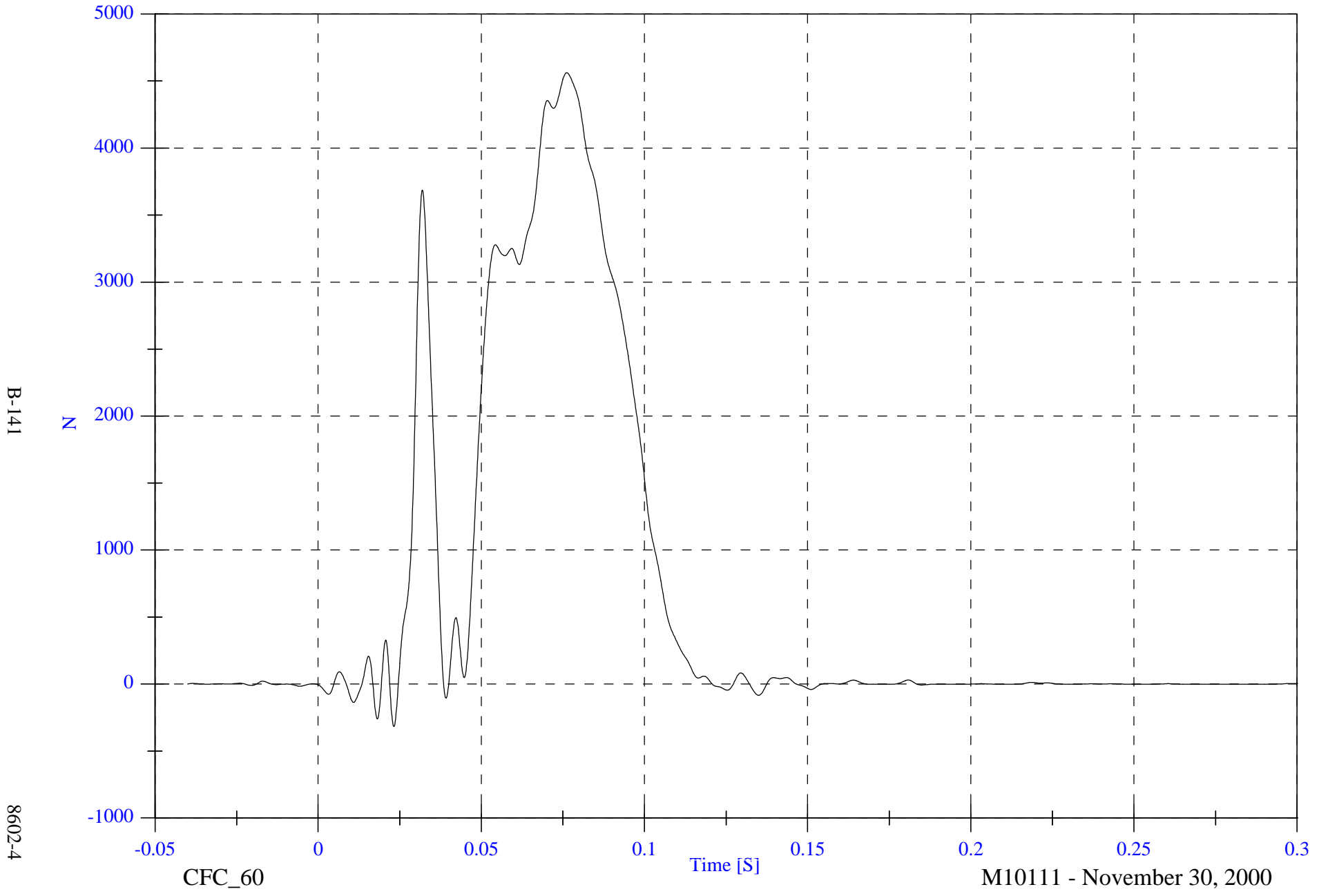
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 4562.4 [N] at 0.076 [S]

Barrier Load Cell B1 Fx

Min: -317.2 [N] at 0.023 [S]



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8602-4

CFC_60

Time [S]

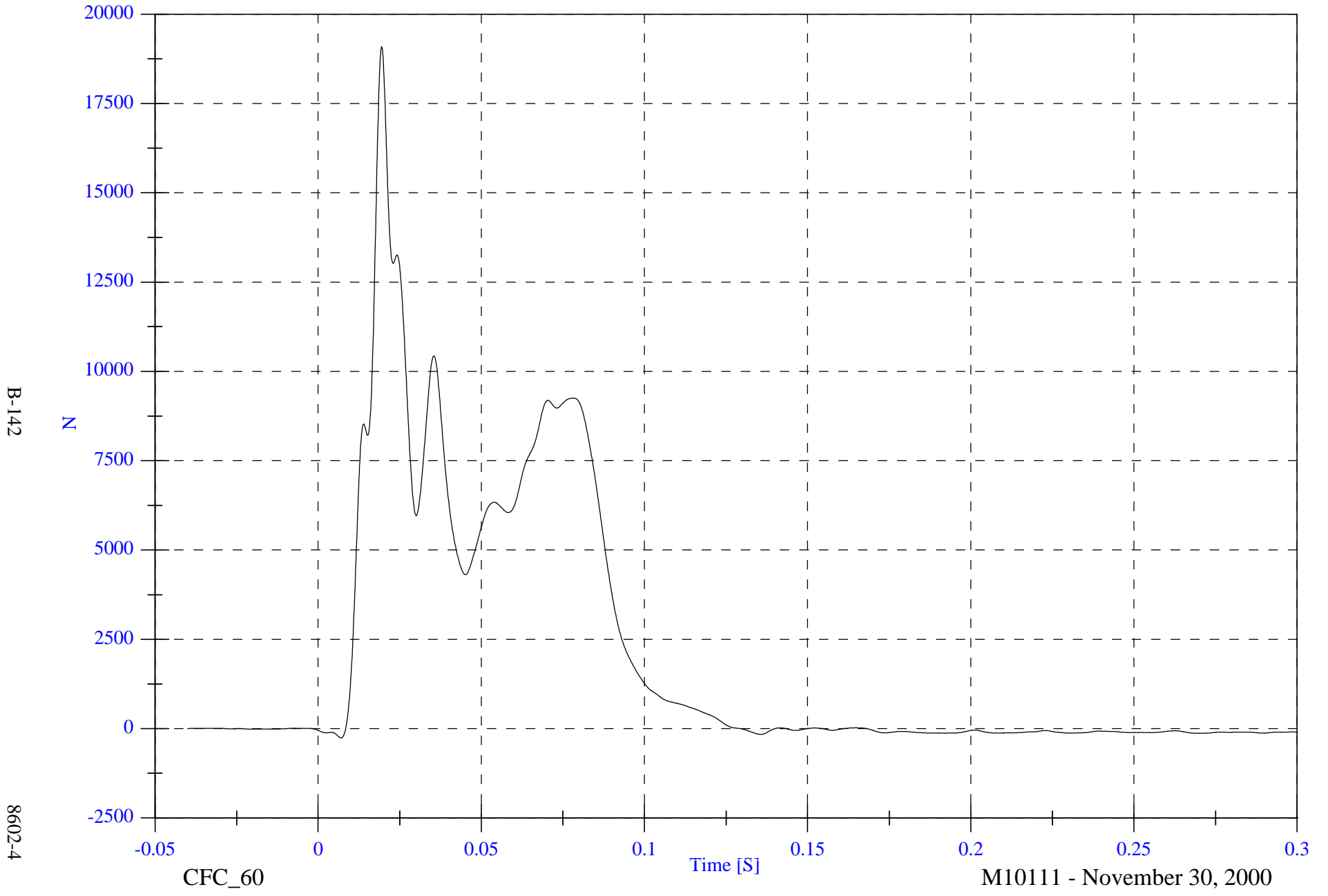
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 19087.3 [N] at 0.019 [S]

Barrier Load Cell B2 Fx

Min: -258.4 [N] at 0.007 [S]



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8602-4

CFC_60

Time [S]

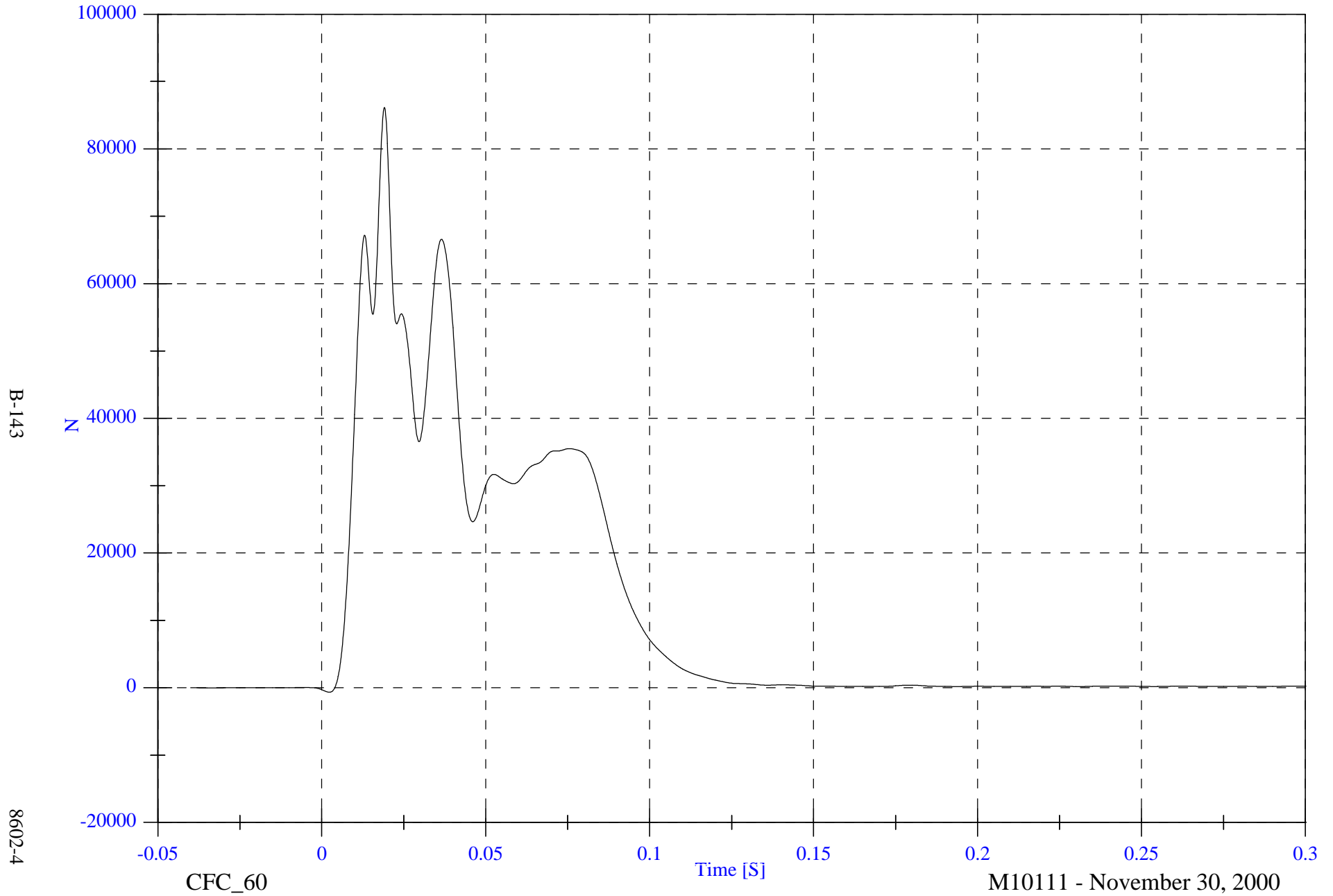
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell B3 Fx

Max: 86154.4 [N] at 0.019 [S]

Min: -674.3 [N] at 0.002 [S]



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8602-4

CFC_60

Time [S]

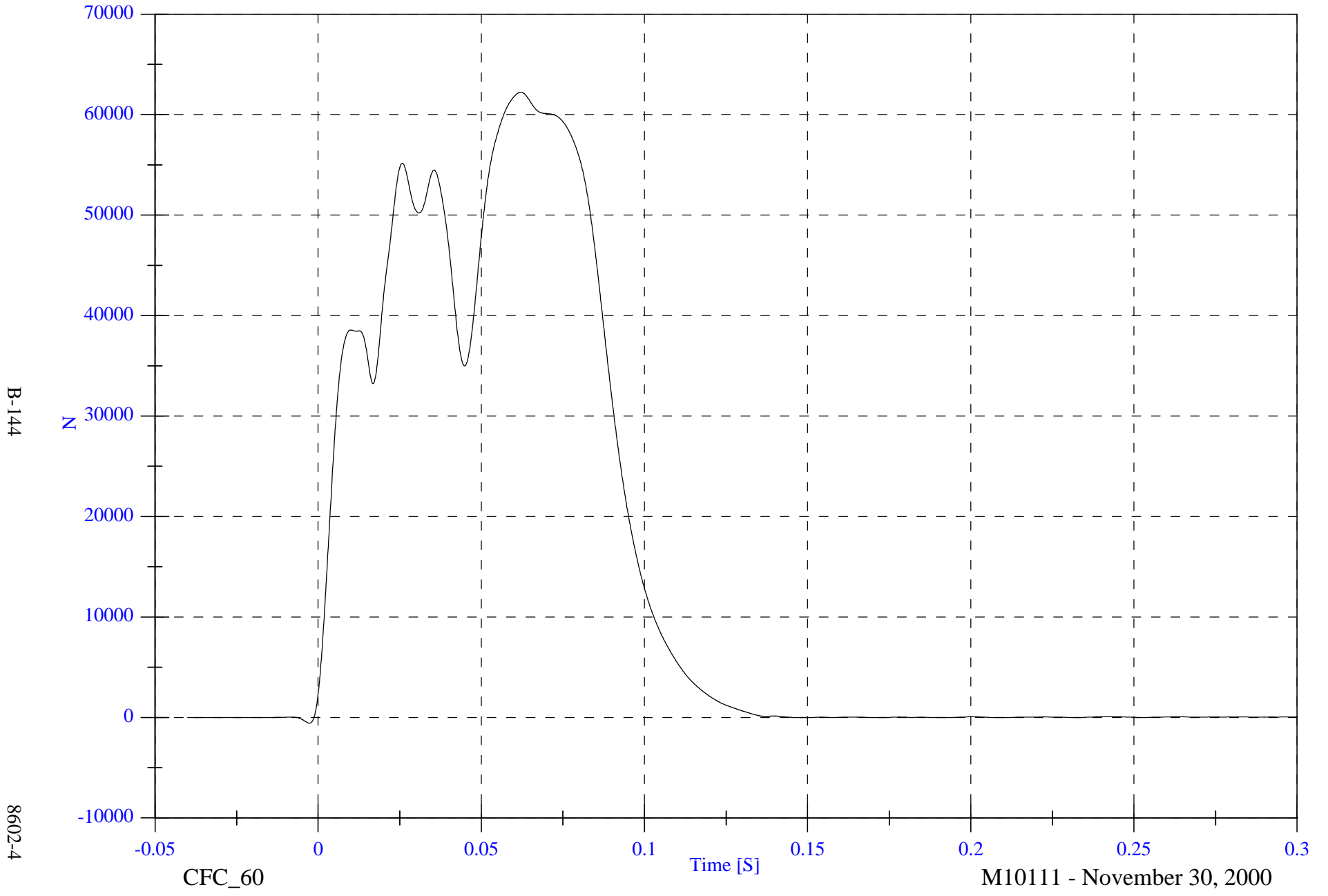
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 62221.8 [N] at 0.062 [S]

Barrier Load Cell B4 Fx

Min: -562.2 [N] at -0.003 [S]



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8602-4

CFC_60

Time [S]

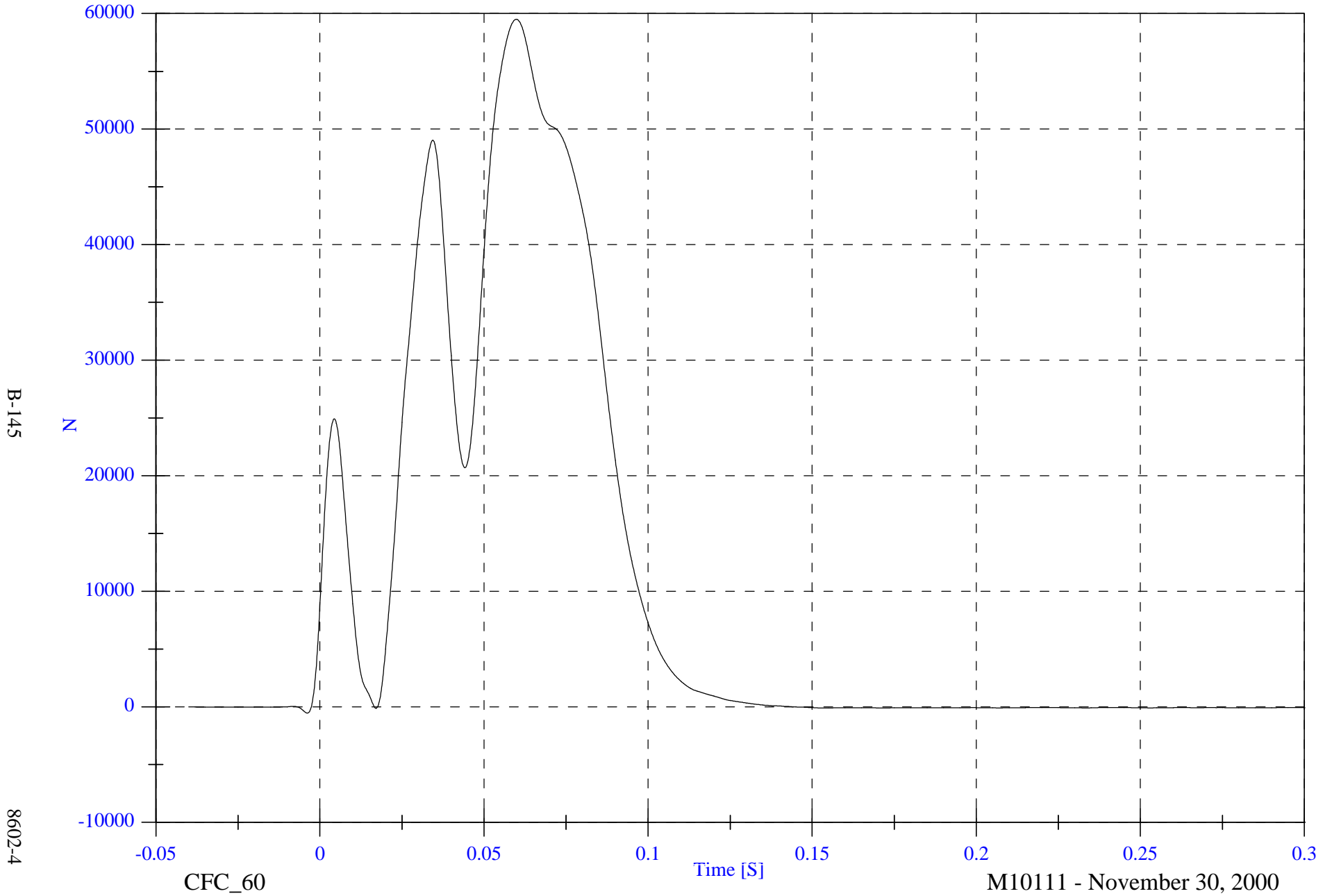
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell B5 Fx

Max: 59498.1 [N] at 0.060 [S]

Min: -543.5 [N] at -0.004 [S]



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8602-4

CFC_60

Time [S]

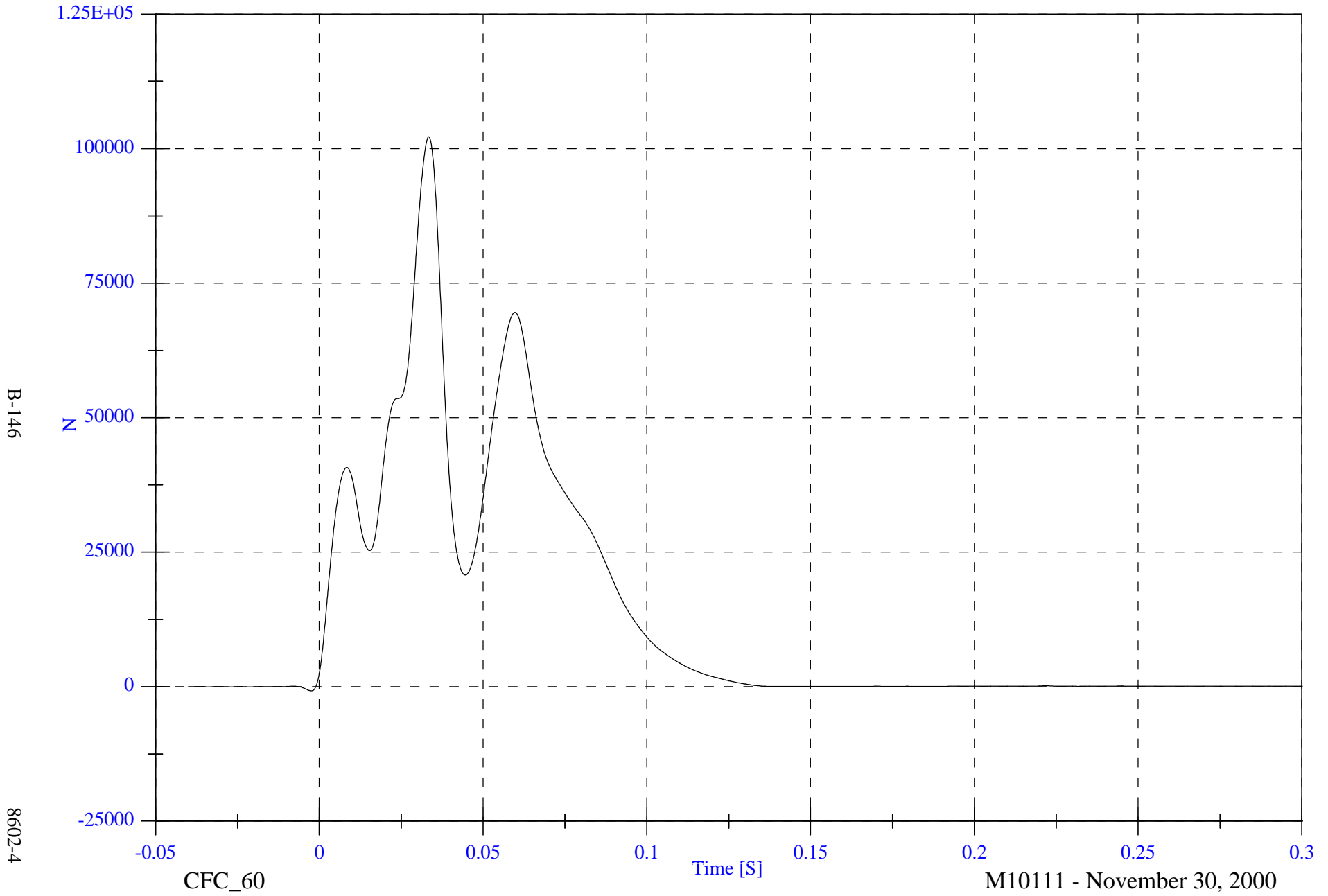
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell B6 Fx

Max: 102204.7 [N] at 0.033 [S]

Min: -795.7 [N] at -0.003 [S]



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8602-4

CFC_60

Time [S]

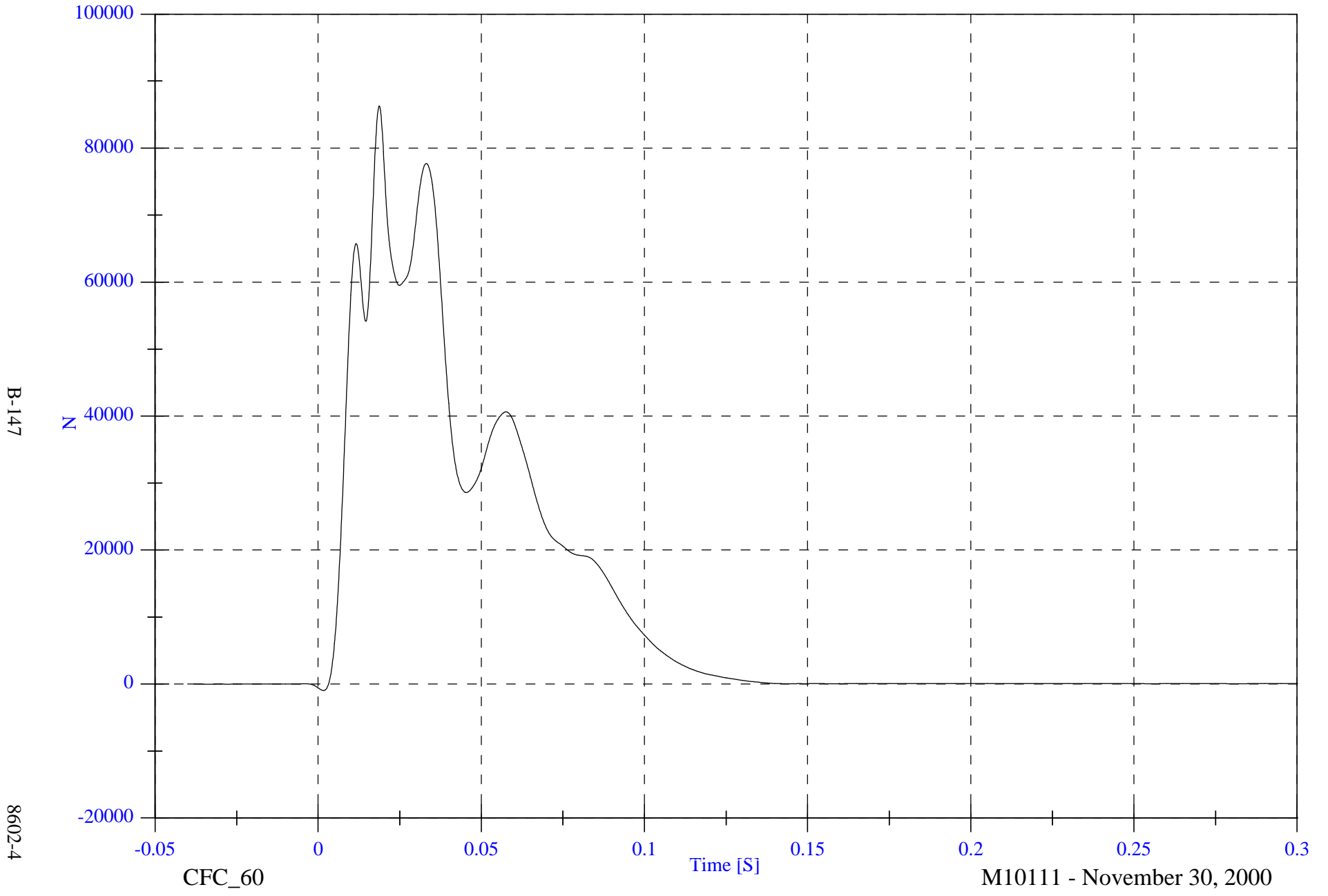
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell B7 Fx

Max: 86291.1 [N] at 0.019 [S]

Min: -972.5 [N] at 0.002 [S]



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8602-4

CFC_60

Time [S]

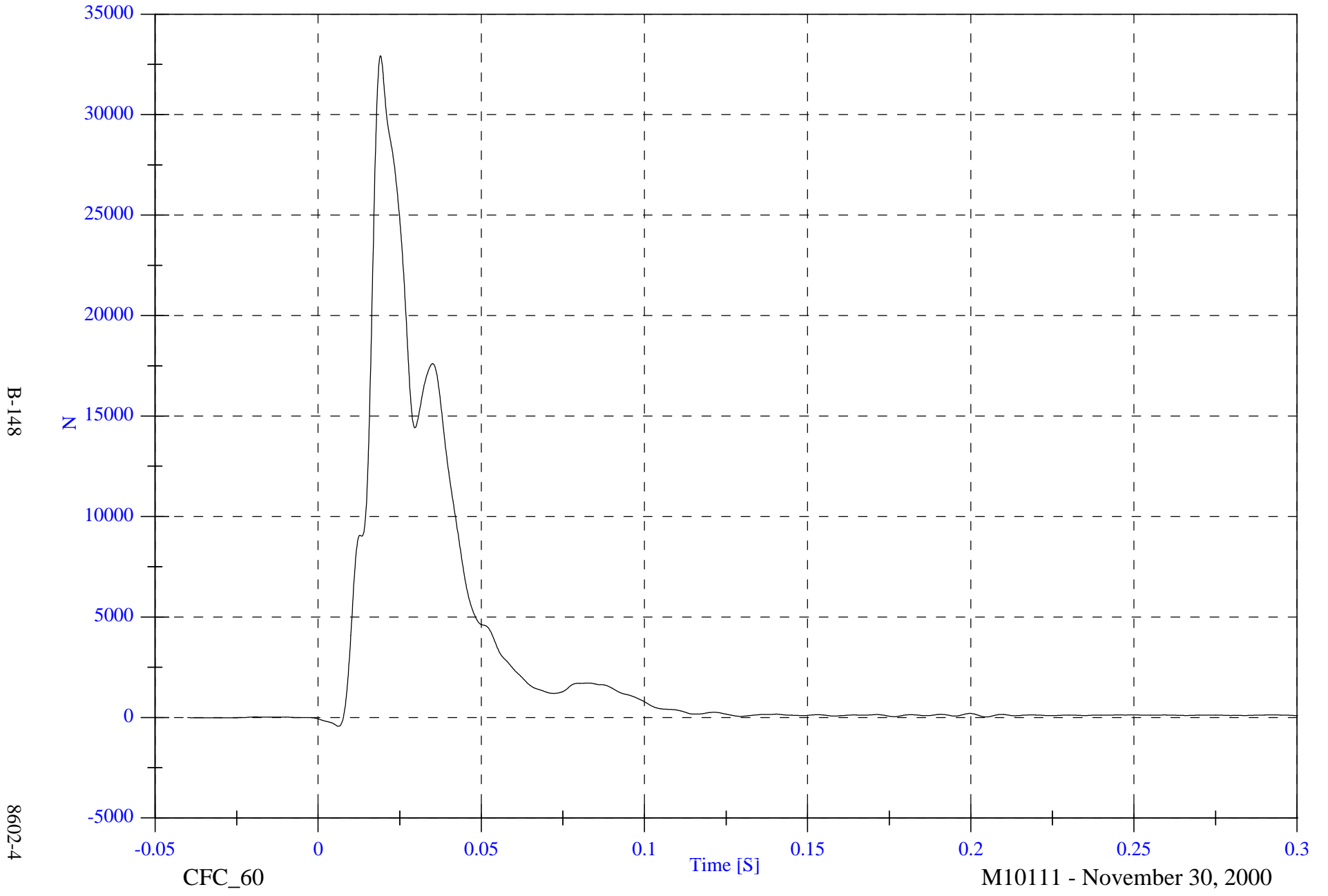
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 32932.0 [N] at 0.019 [S]

Barrier Load Cell B8 Fx

Min: -437.4 [N] at 0.006 [S]



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8602-4

CFC_60

Time [S]

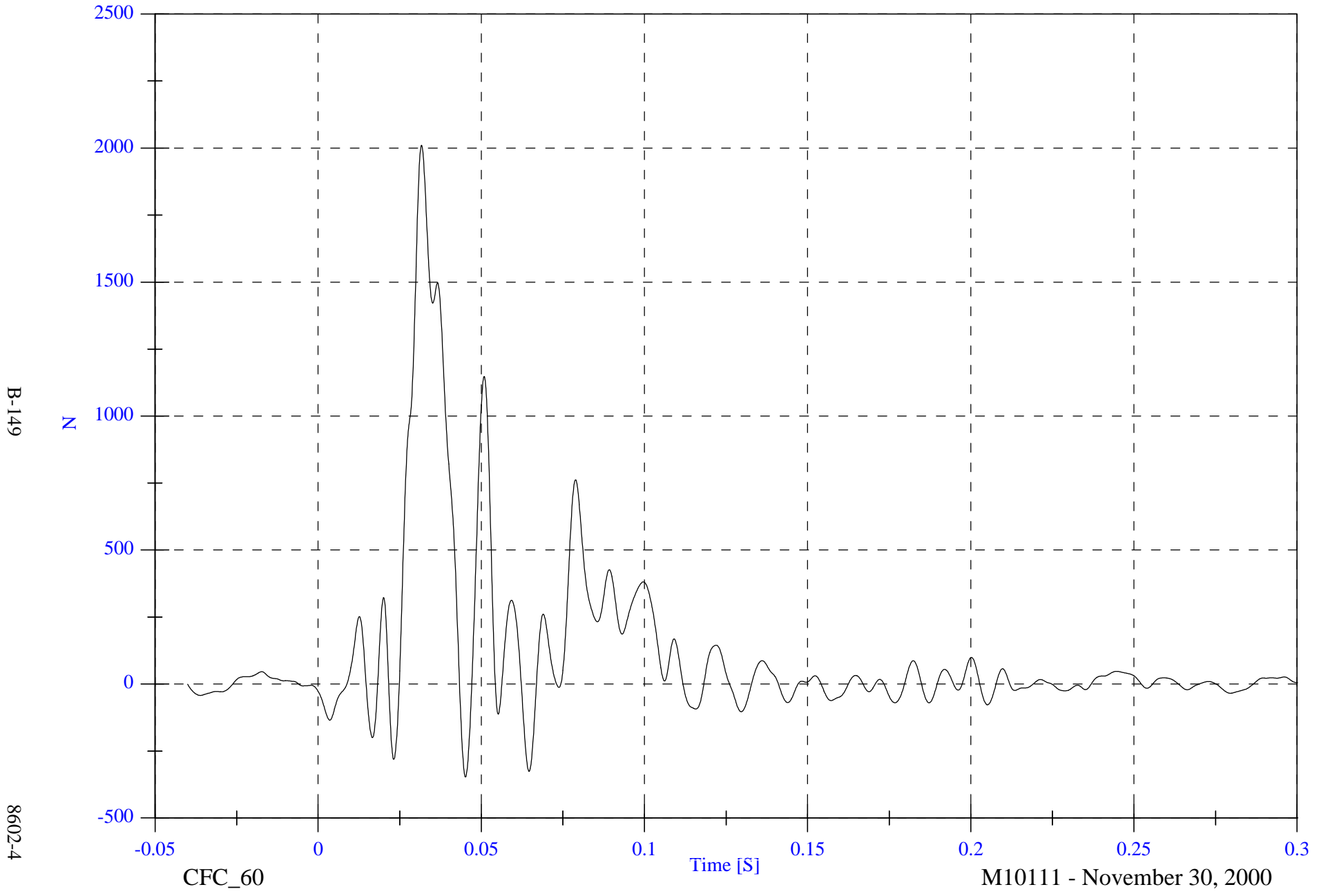
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 2010.6 [N] at 0.032 [S]

Barrier Load Cell B9 Fx

Min: -347.4 [N] at 0.045 [S]



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8602-4

CFC_60

Time [S]

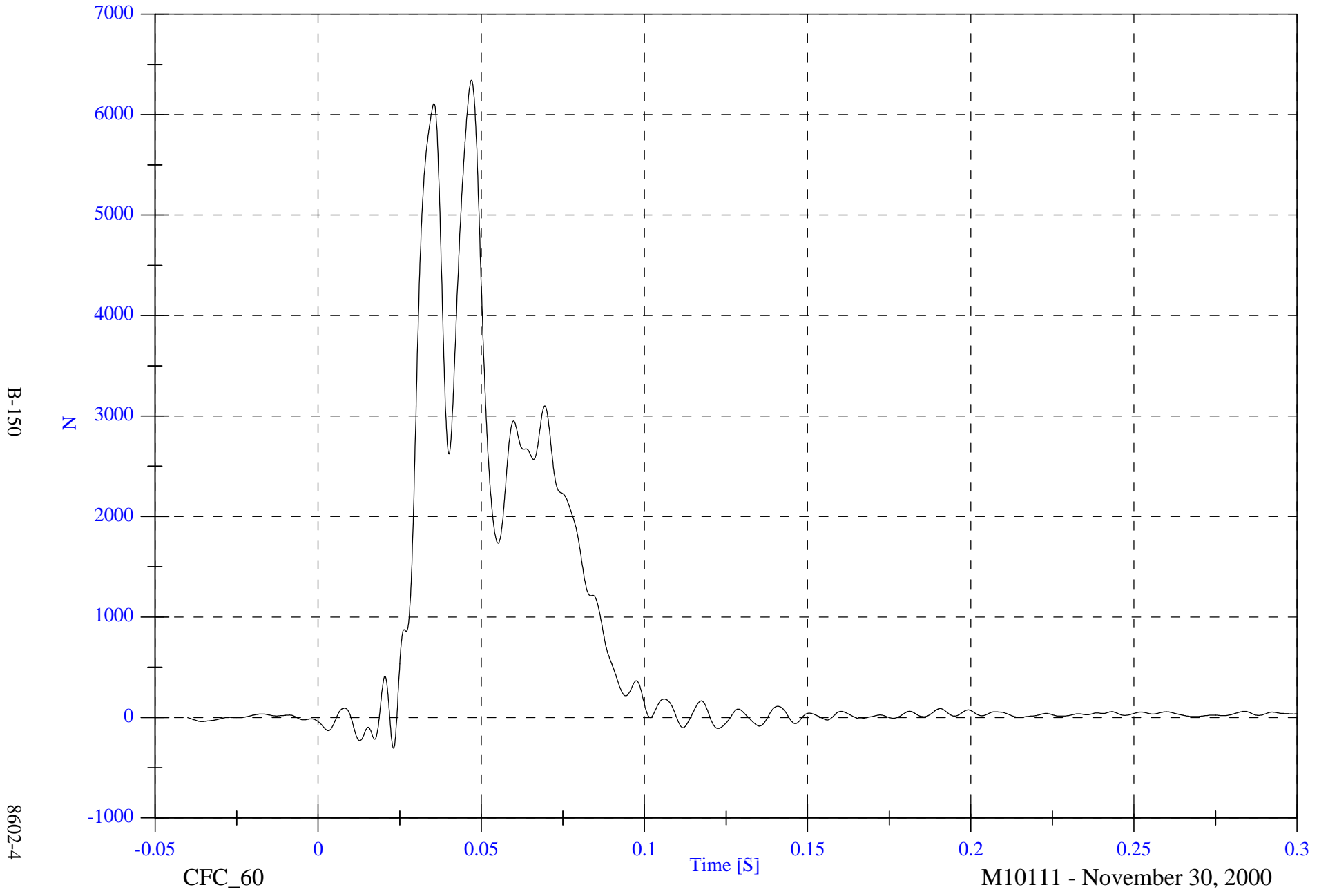
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 6341.9 [N] at 0.047 [S]

Barrier Load Cell C1 Fx

Min: -306.2 [N] at 0.023 [S]



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8602-4

CFC_60

Time [S]

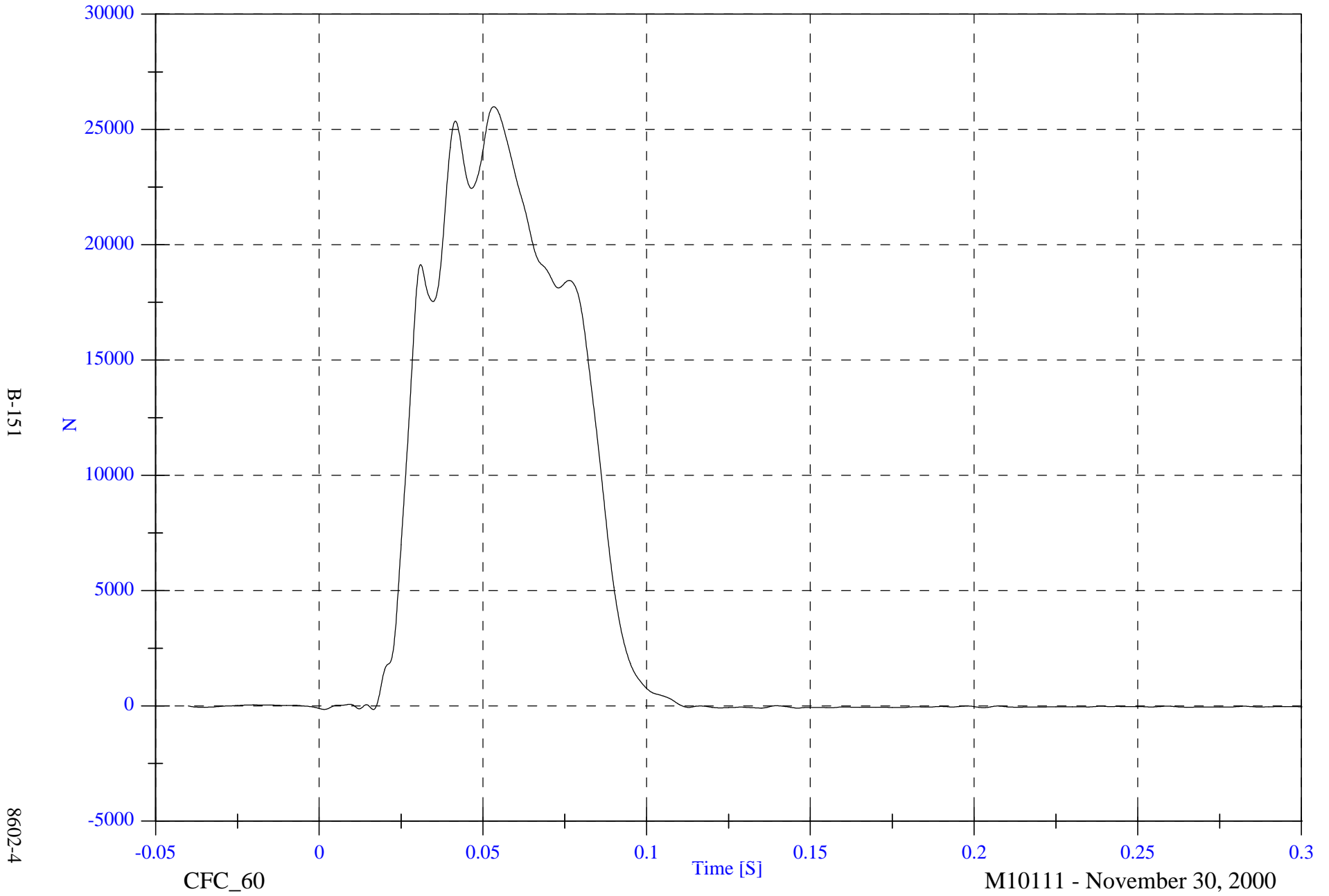
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell C2 Fx

Max: 25984.1 [N] at 0.053 [S]

Min: -158.2 [N] at 0.016 [S]



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8602-4

CFC_60

Time [S]

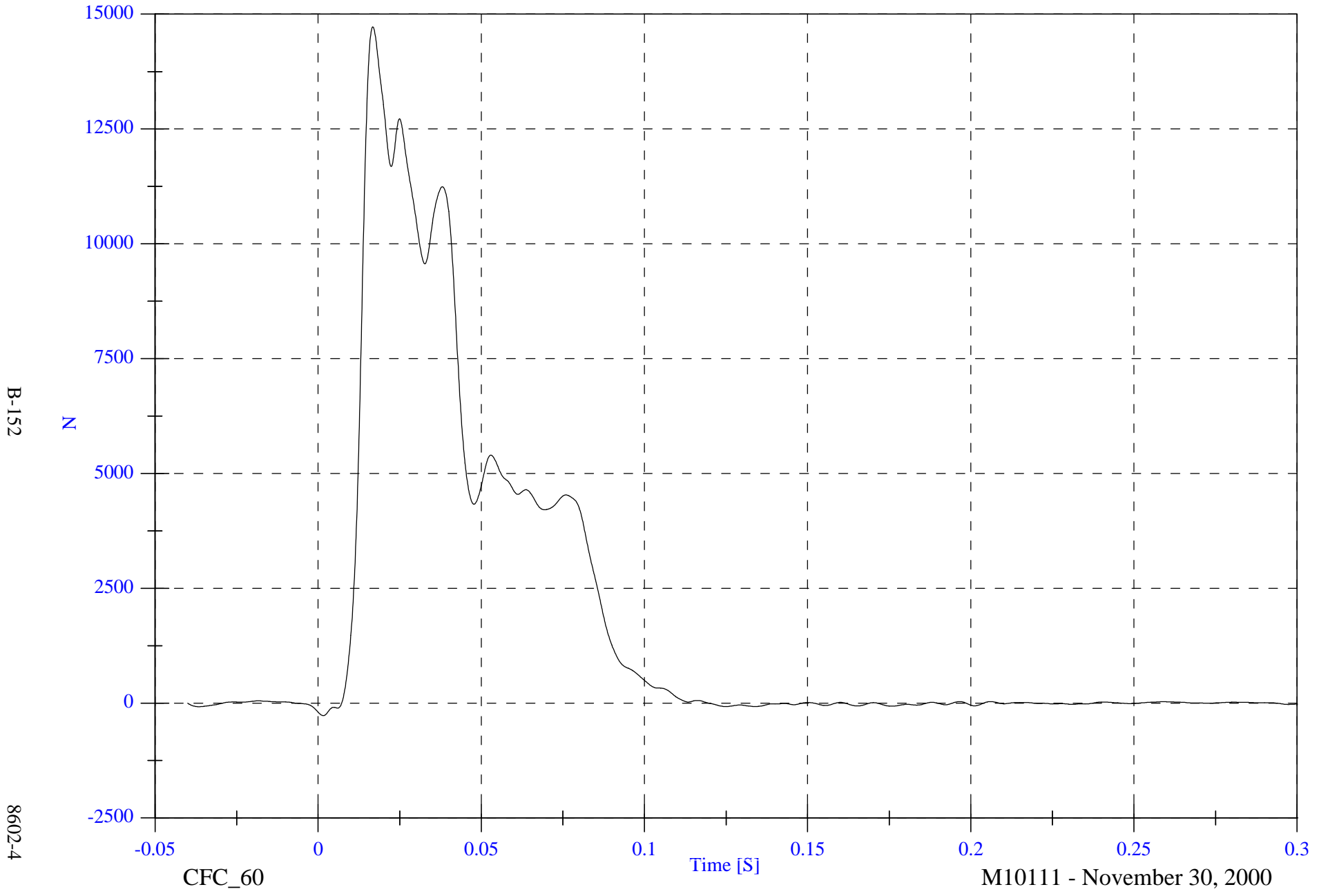
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 14721.5 [N] at 0.017 [S]

Barrier Load Cell C3 Fx

Min: -271.8 [N] at 0.001 [S]



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8602-4

CFC_60

Time [S]

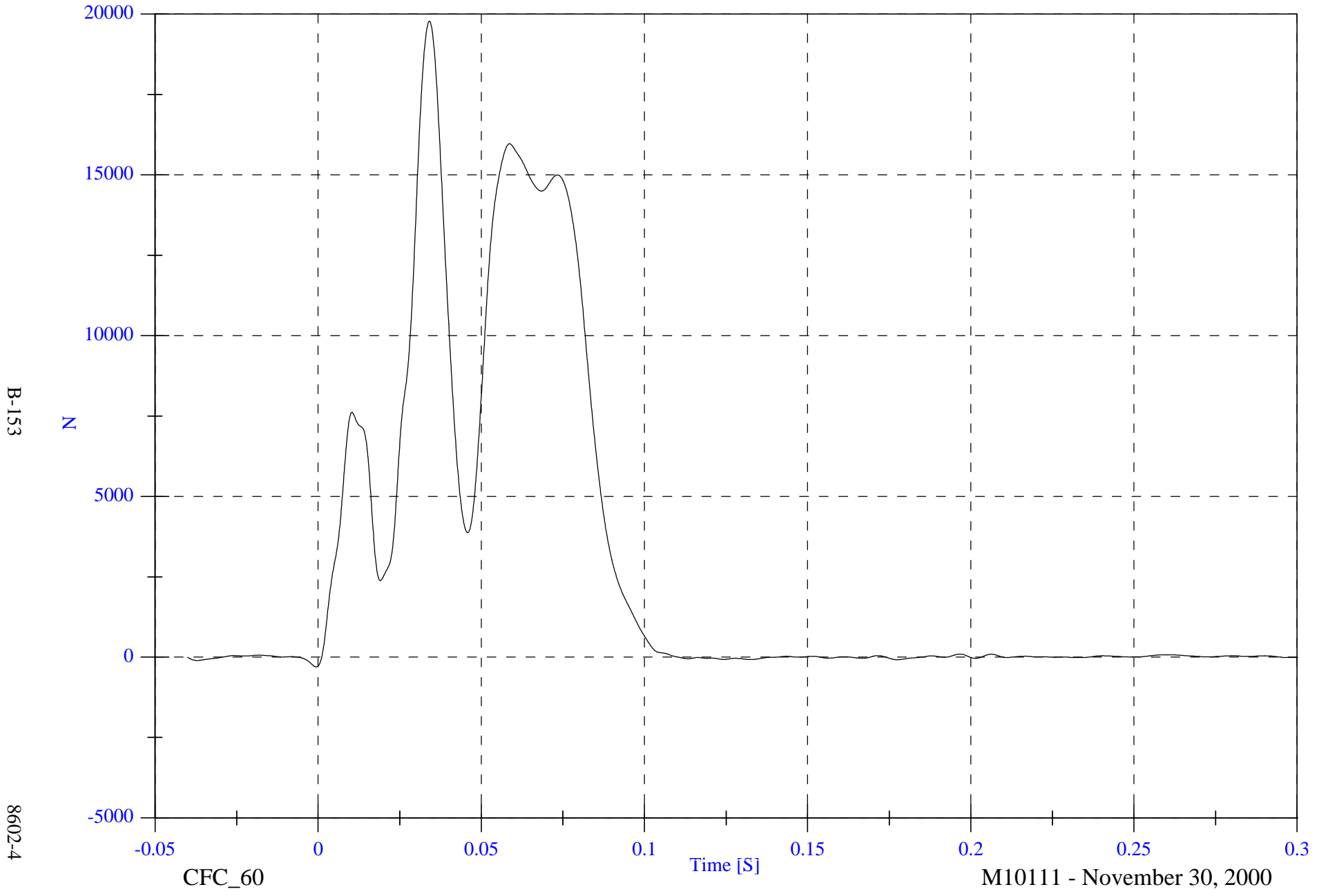
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 19782.3 [N] at 0.034 [S]

Barrier Load Cell C4 Fx

Min: -301.9 [N] at -0.001 [S]



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8602-4

CFC_60

Time [S]

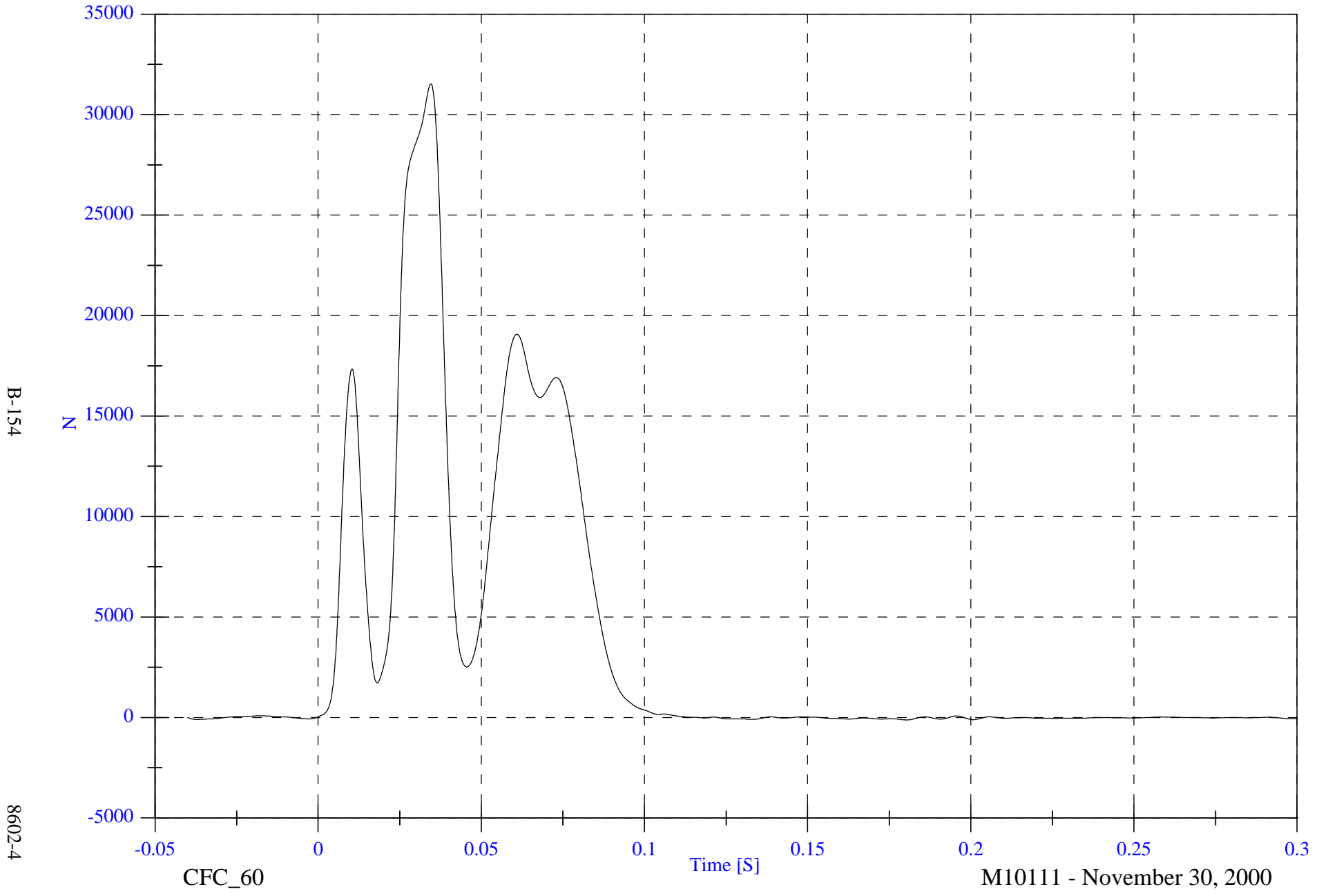
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 31532.2 [N] at 0.034 [S]

Barrier Load Cell C5 Fx

Min: -120.8 [N] at 0.180 [S]



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8602-4

CFC_60

Time [S]

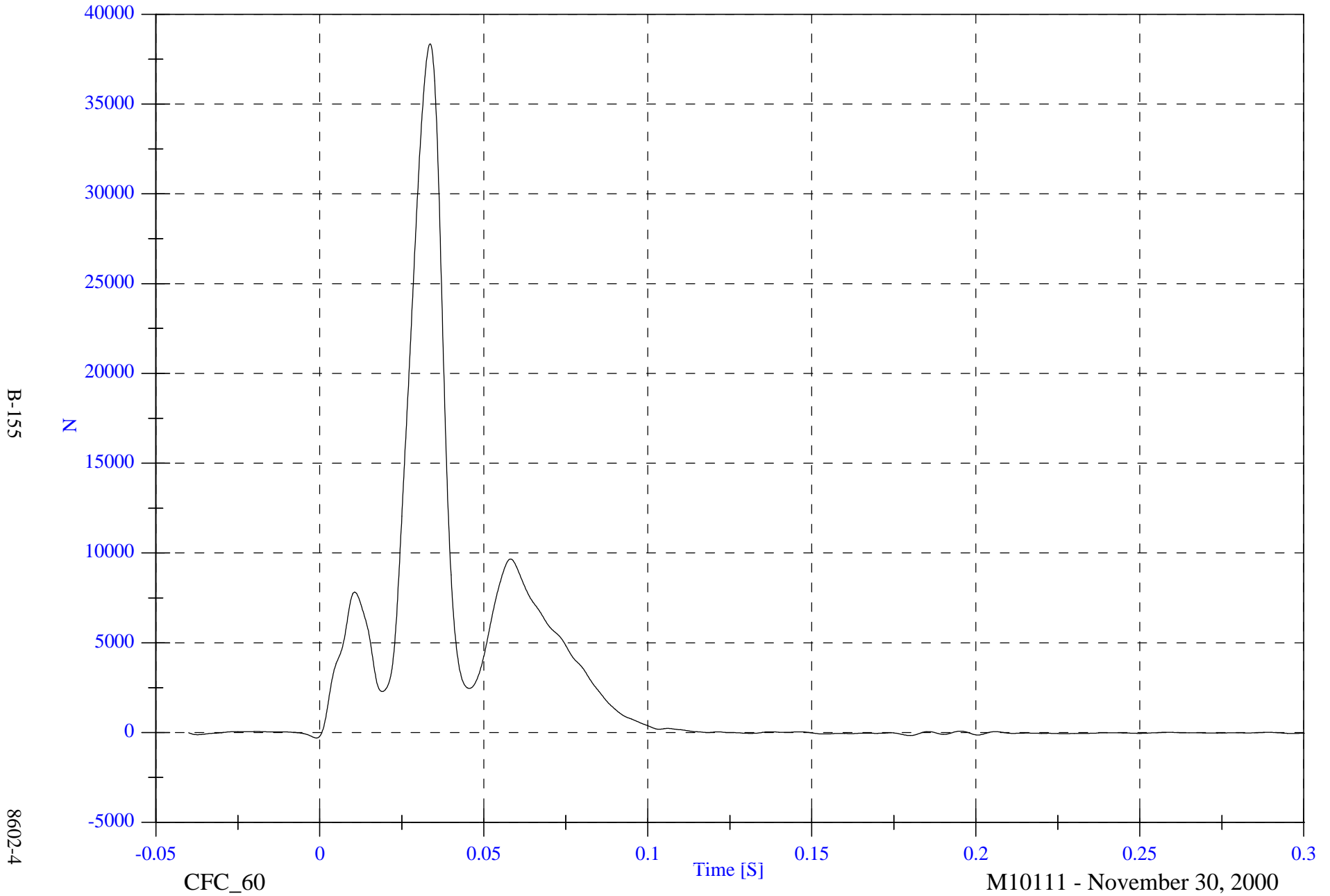
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell C6 Fx

Max: 38351.2 [N] at 0.034 [S]

Min: -297.7 [N] at -0.001 [S]



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8602-4

CFC_60

Time [S]

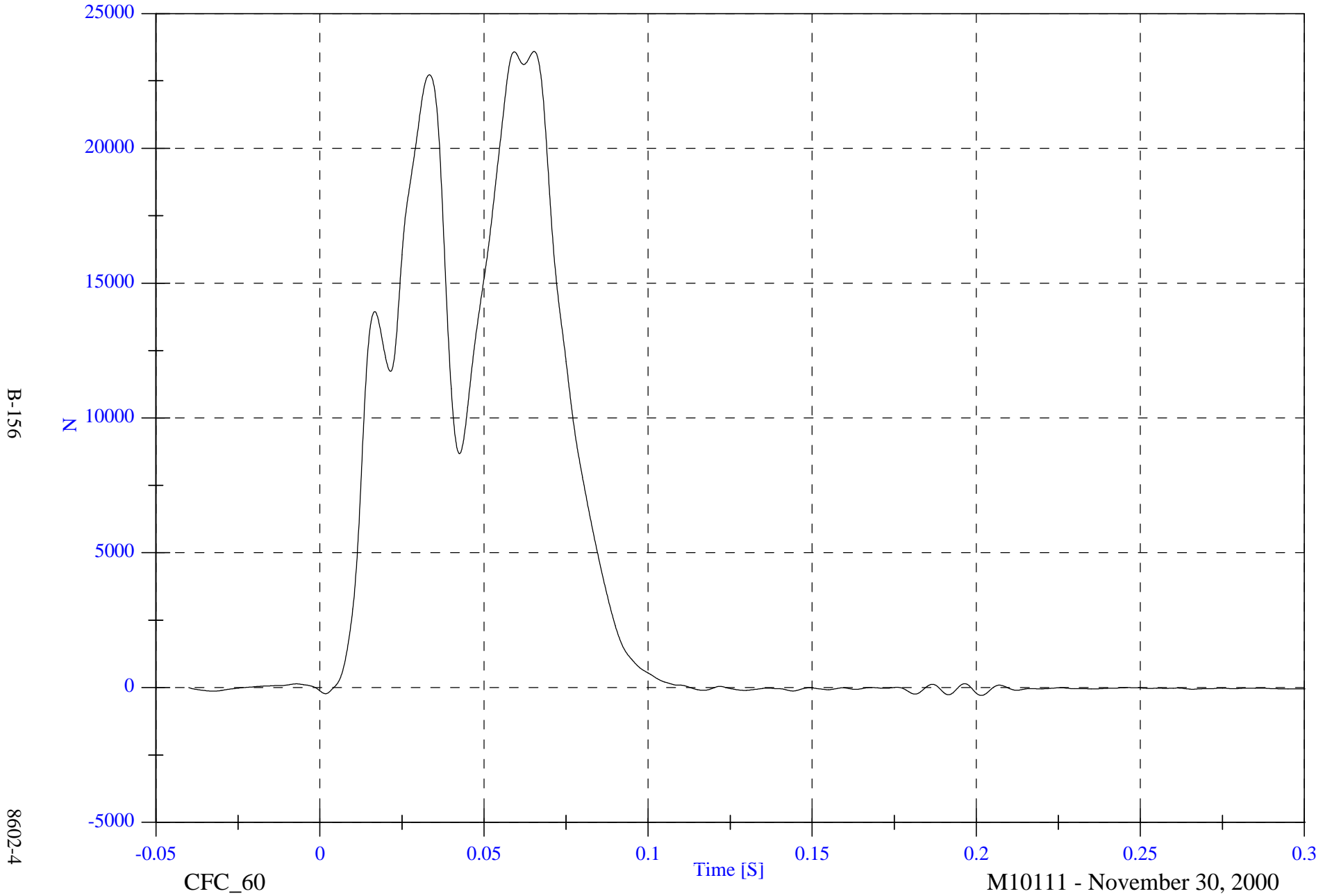
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell C7 Fx

Max: 23591.7 [N] at 0.065 [S]

Min: -293.9 [N] at 0.201 [S]



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8602-4

CFC_60

Time [S]

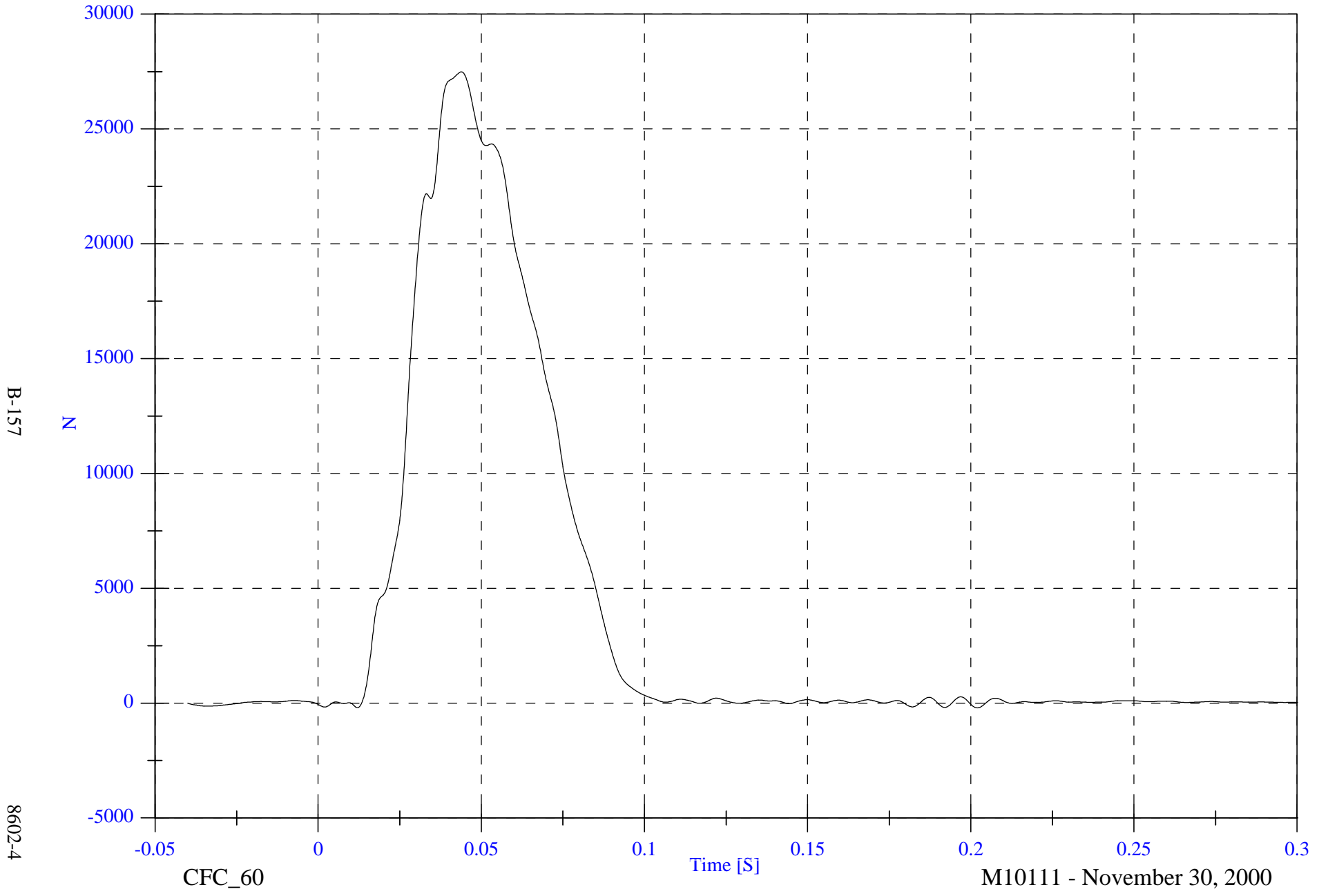
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 27485.6 [N] at 0.044 [S]

Barrier Load Cell C8 Fx

Min: -204.7 [N] at 0.202 [S]

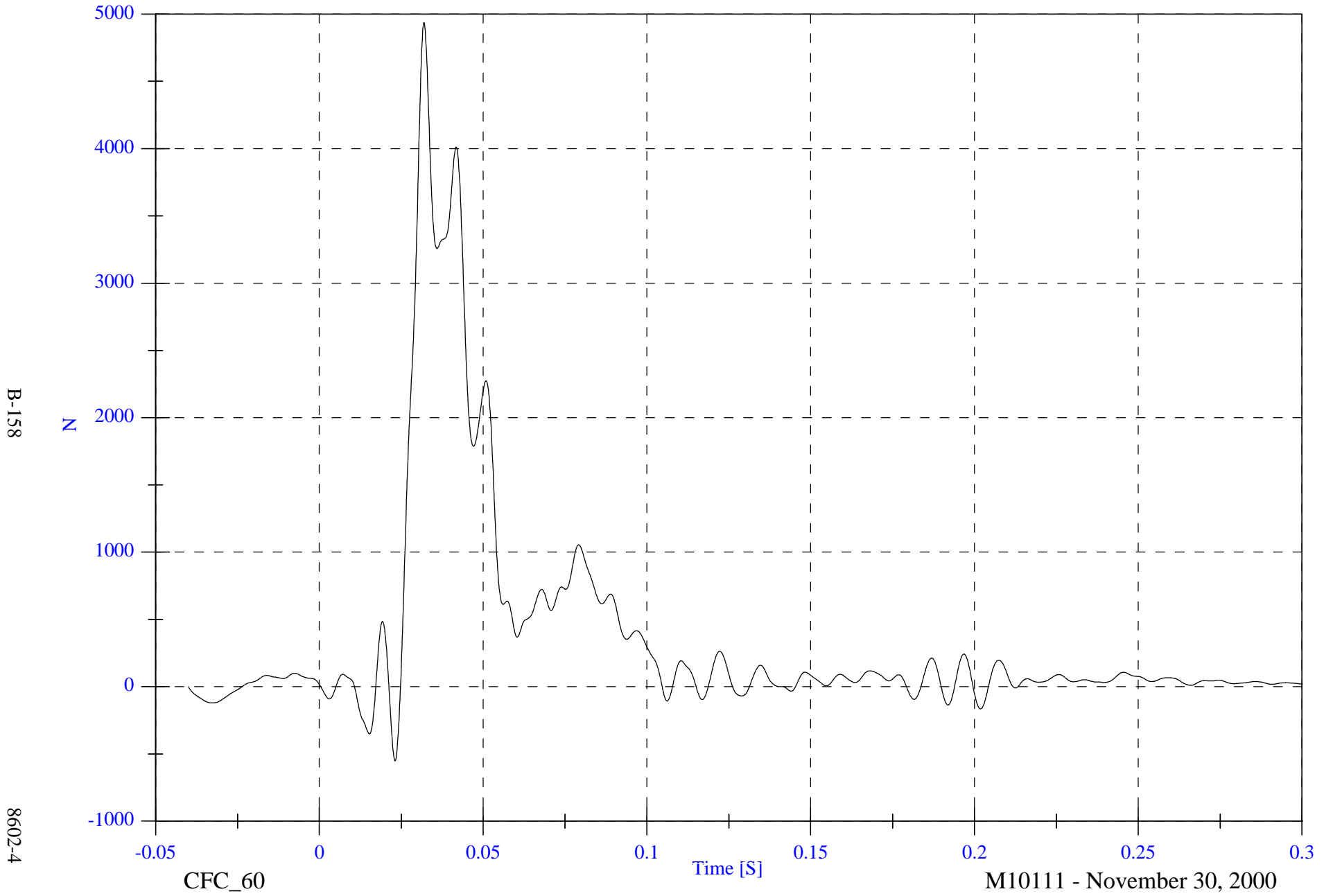


NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 4938.1 [N] at 0.032 [S]

Barrier Load Cell C9 Fx

Min: -552.6 [N] at 0.023 [S]



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8602-4

CFC_60

Time [S]

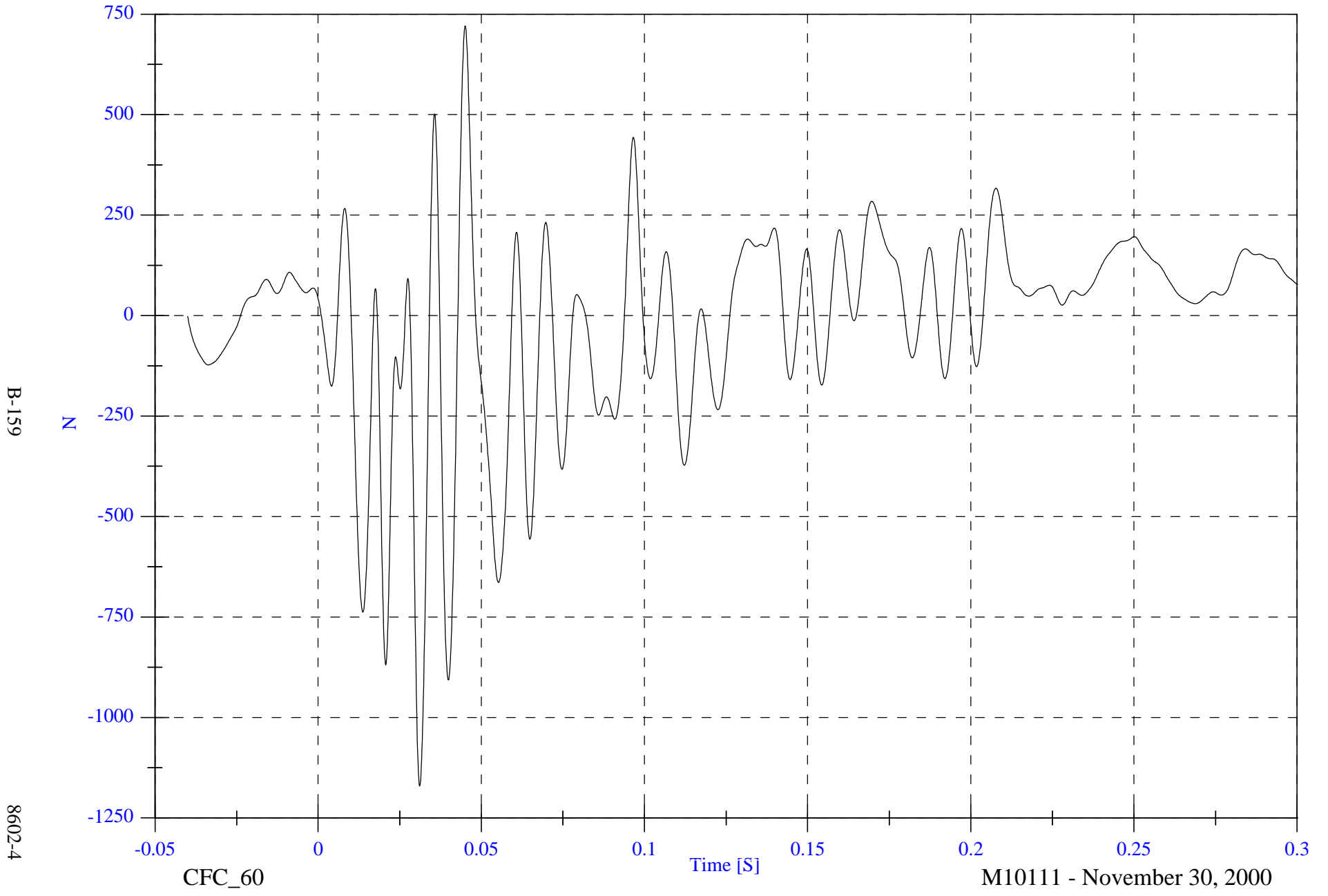
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 720.5 [N] at 0.045 [S]

Barrier Load Cell D1 Fx

Min: -1170.8 [N] at 0.031 [S]



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8602-4

CFC_60

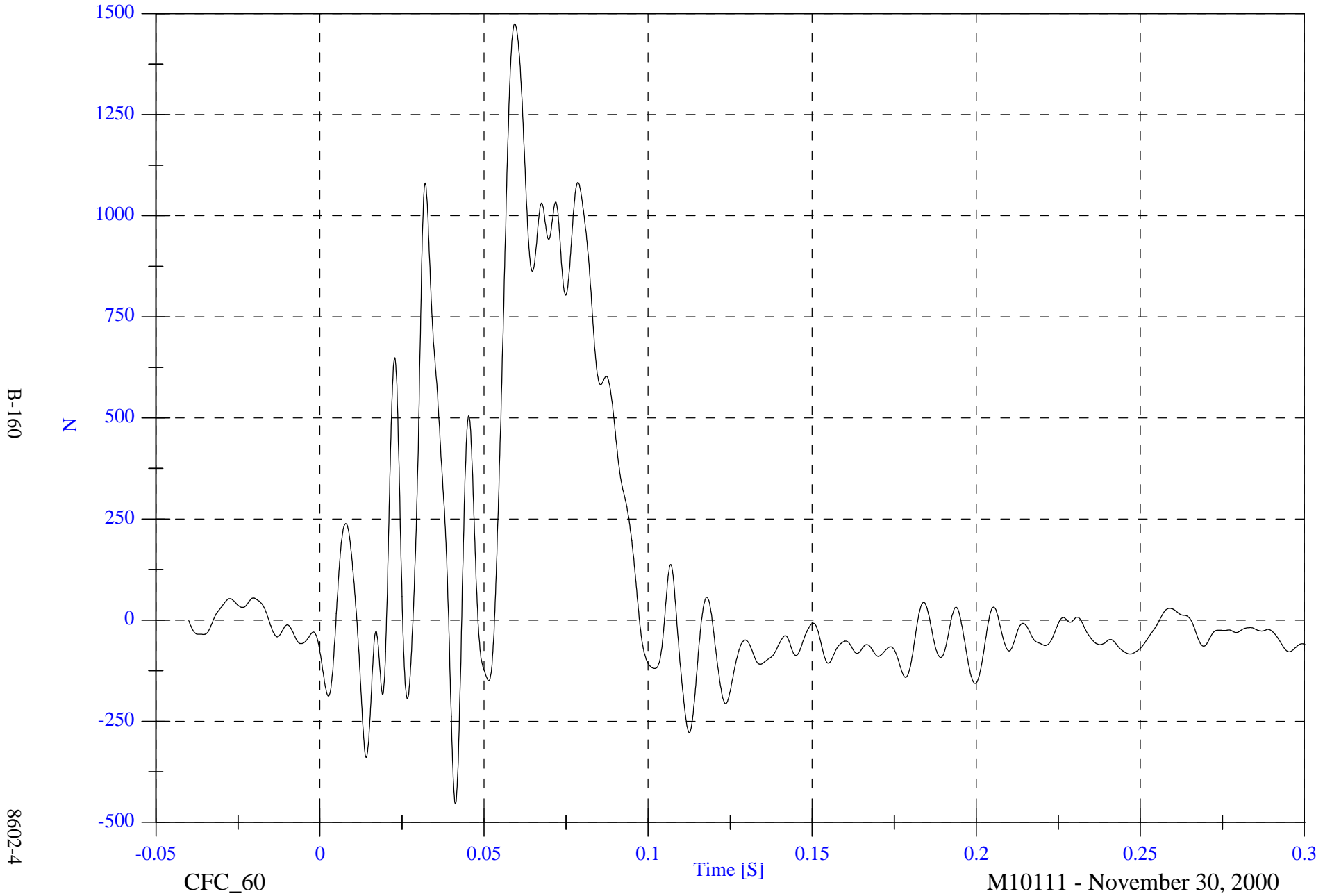
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell D2 Fx

Max: 1474.5 [N] at 0.059 [S]

Min: -454.3 [N] at 0.041 [S]



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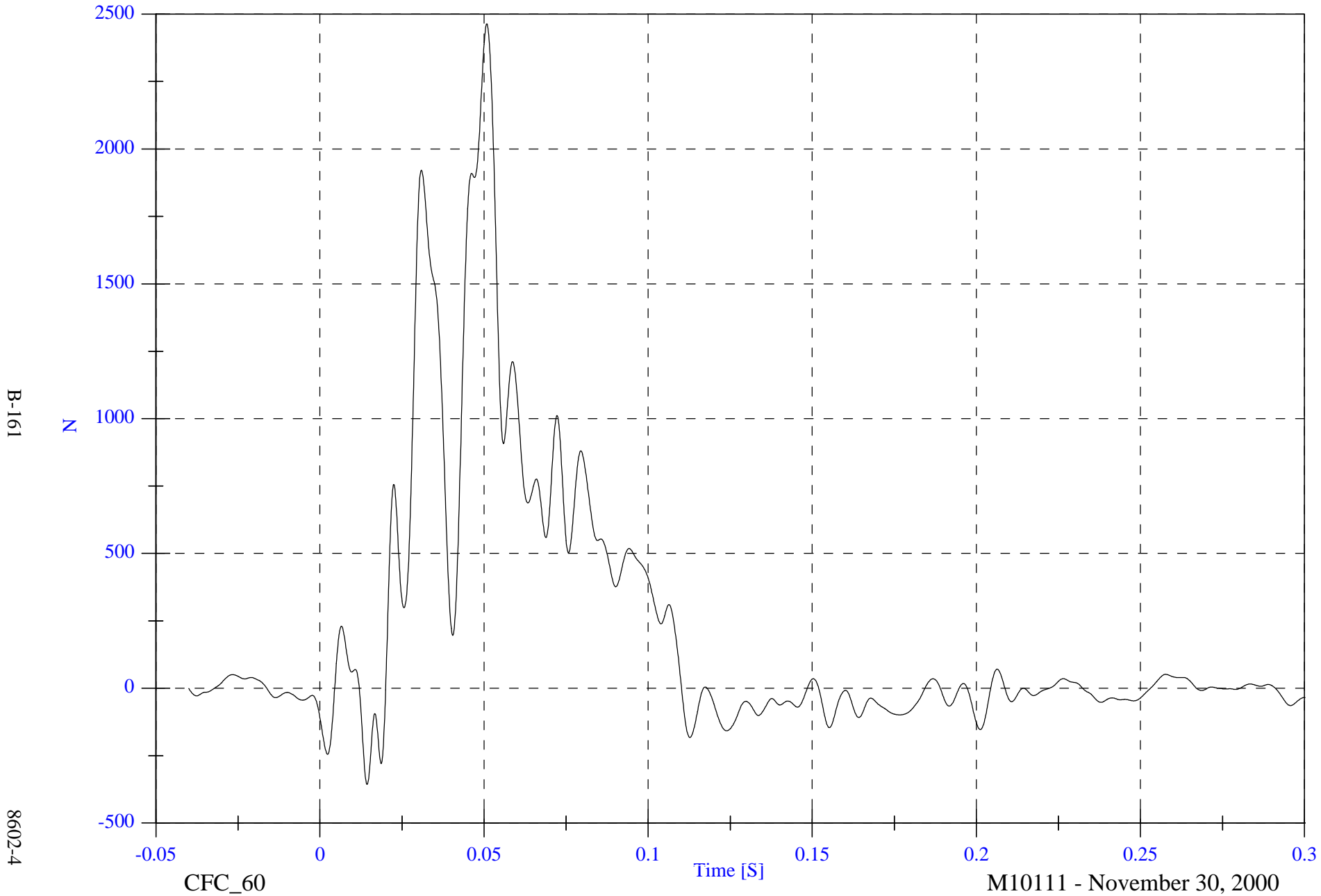
8602-4

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 2464.5 [N] at 0.051 [S]

Barrier Load Cell D3 Fx

Min: -356.7 [N] at 0.014 [S]



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CFC_60

Time [S]

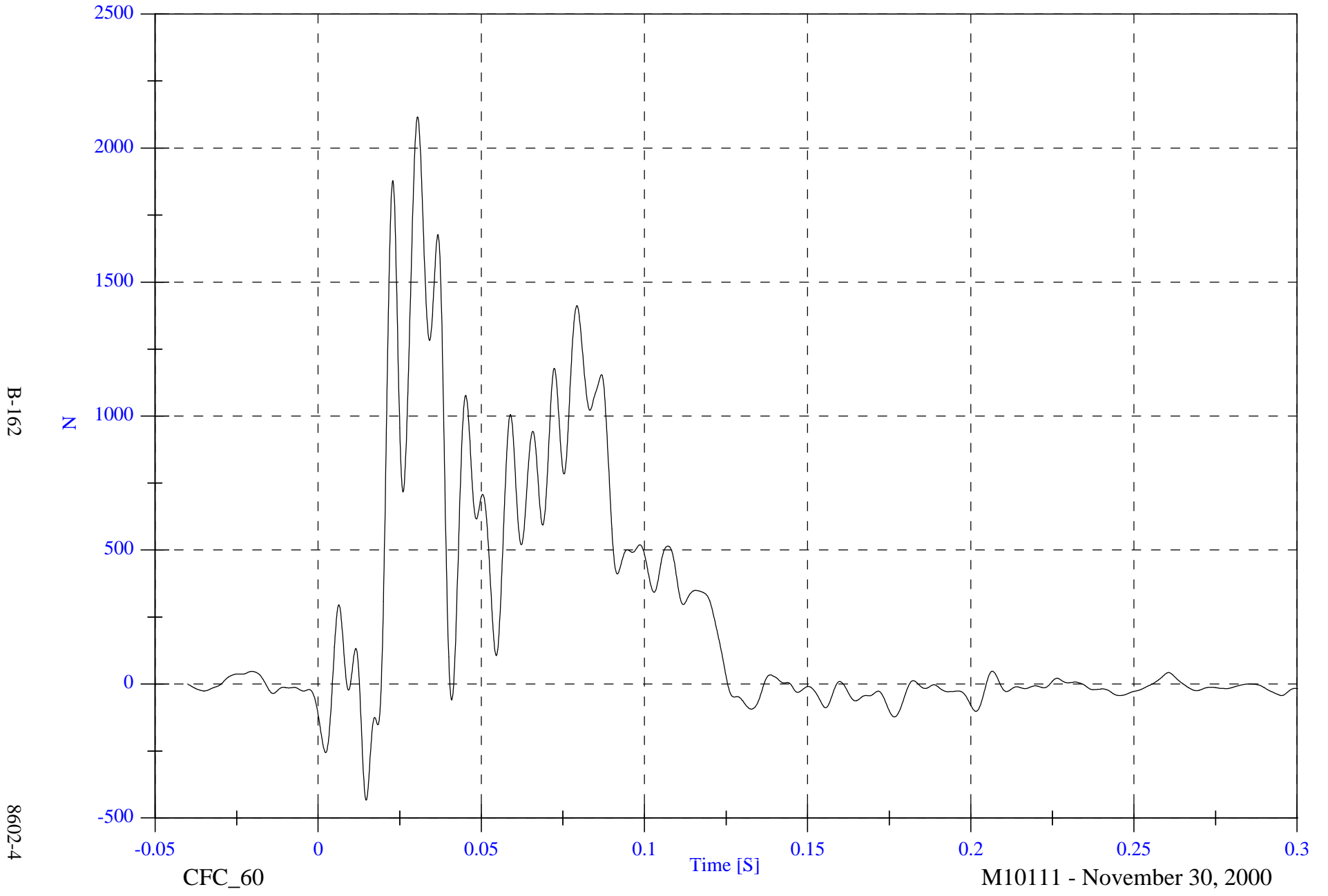
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 2116.6 [N] at 0.030 [S]

Barrier Load Cell D4 Fx

Min: -433.1 [N] at 0.015 [S]



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8602-4

CFC_60

Time [S]

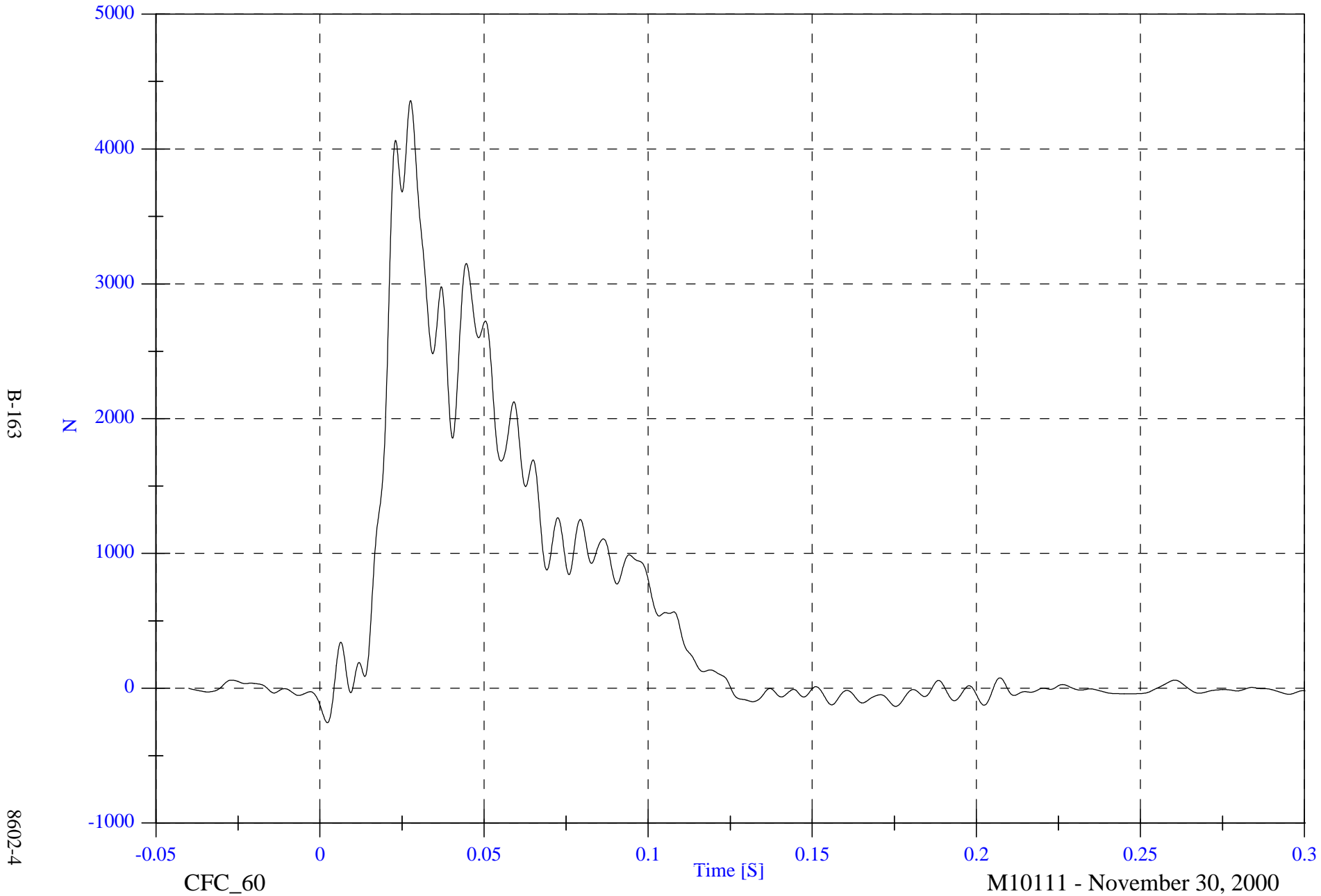
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 4359.9 [N] at 0.028 [S]

Barrier Load Cell D5 Fx

Min: -256.3 [N] at 0.002 [S]



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8602-4

CFC_60

Time [S]

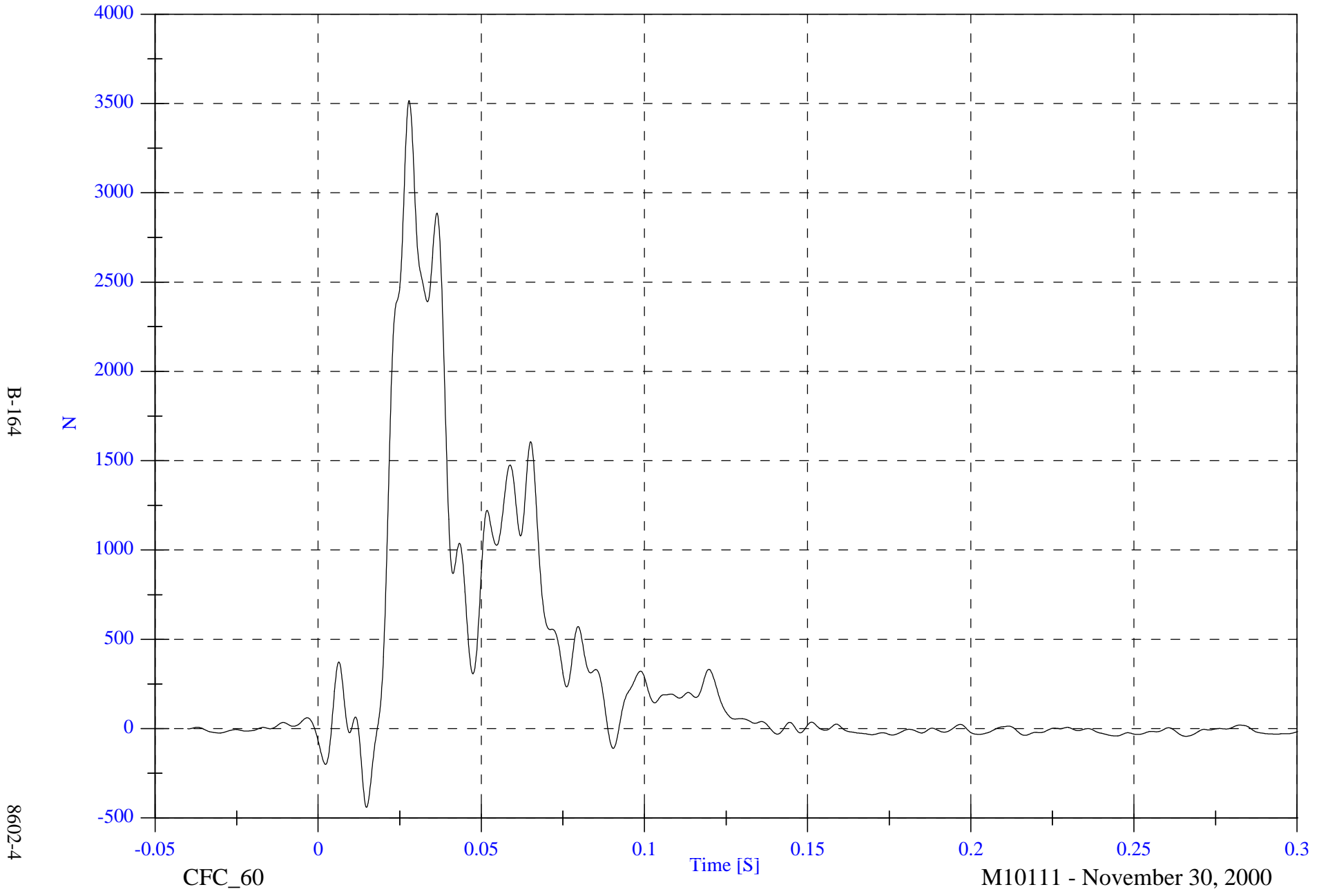
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 3515.7 [N] at 0.028 [S]

Barrier Load Cell D6 Fx

Min: -440.7 [N] at 0.015 [S]



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8602-4

CFC_60

Time [S]

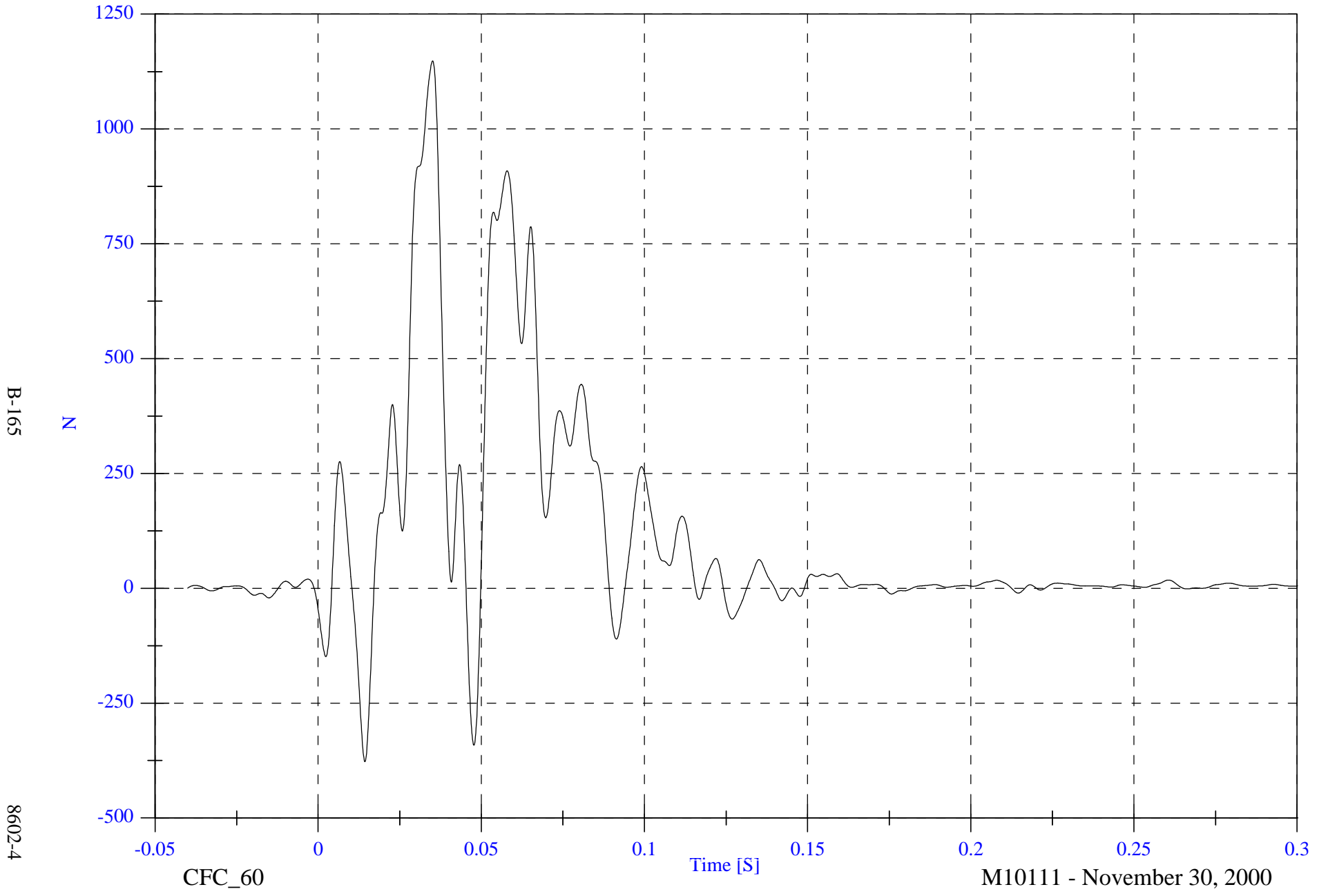
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Barrier Load Cell D7 Fx

Max: 1148.4 [N] at 0.035 [S]

Min: -377.7 [N] at 0.014 [S]



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8602-4

CFC_60

Time [S]

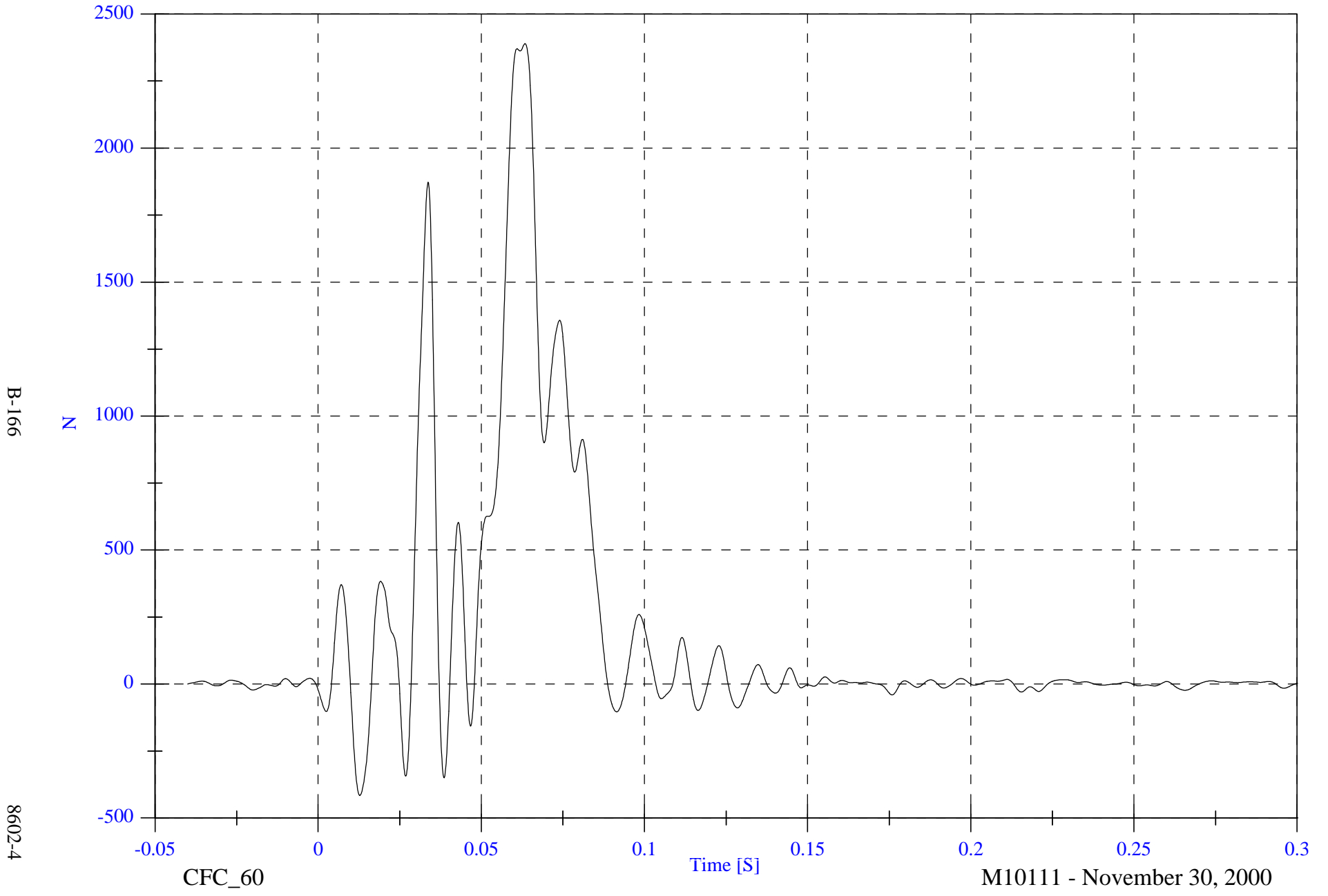
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 2389.6 [N] at 0.063 [S]

Barrier Load Cell D8 Fx

Min: -415.9 [N] at 0.013 [S]



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8602-4

CFC_60

Time [S]

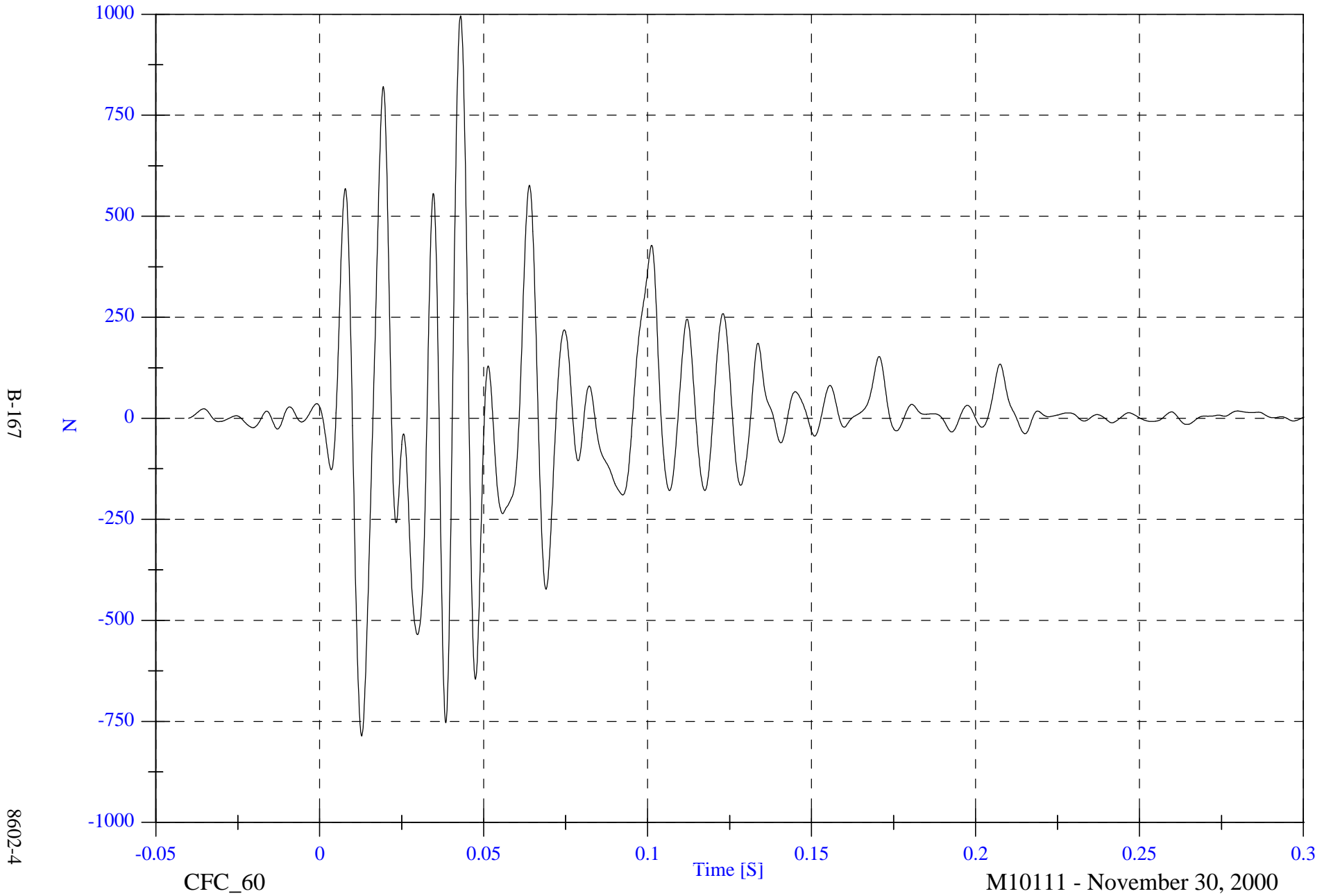
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 995.8 [N] at 0.043 [S]

Barrier Load Cell D9 Fx

Min: -786.2 [N] at 0.013 [S]



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8602-4

CFC_60

Time [S]

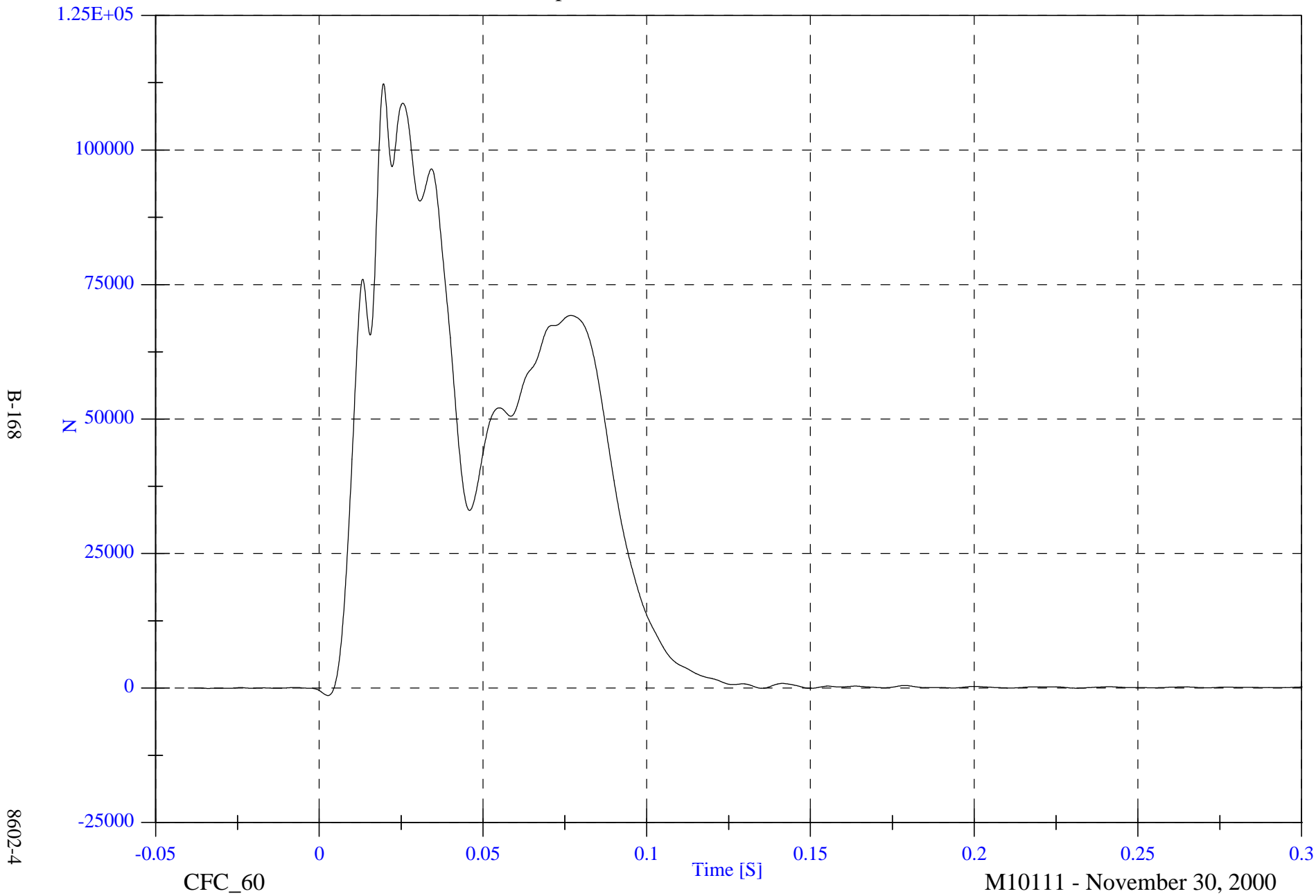
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

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

Max: 112323.7 [N] at 0.020 [S]

Min: -1383.9 [N] at 0.003 [S]



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8602-4

CFC_60

Time [S]

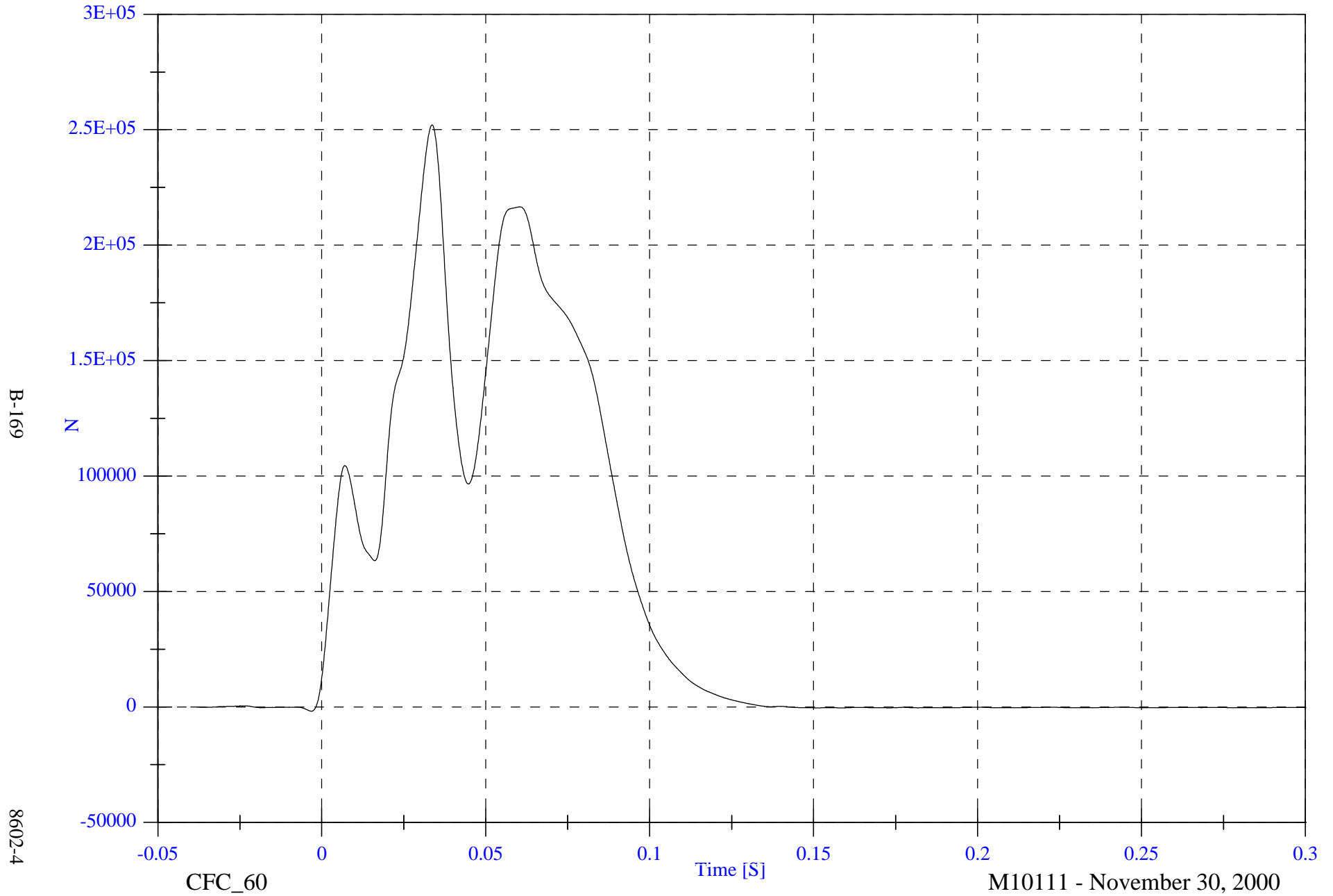
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

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

Max: 252052.2 [N] at 0.034 [S]

Min: -1812.9 [N] at -0.003 [S]



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8602-4

CFC_60

Time [S]

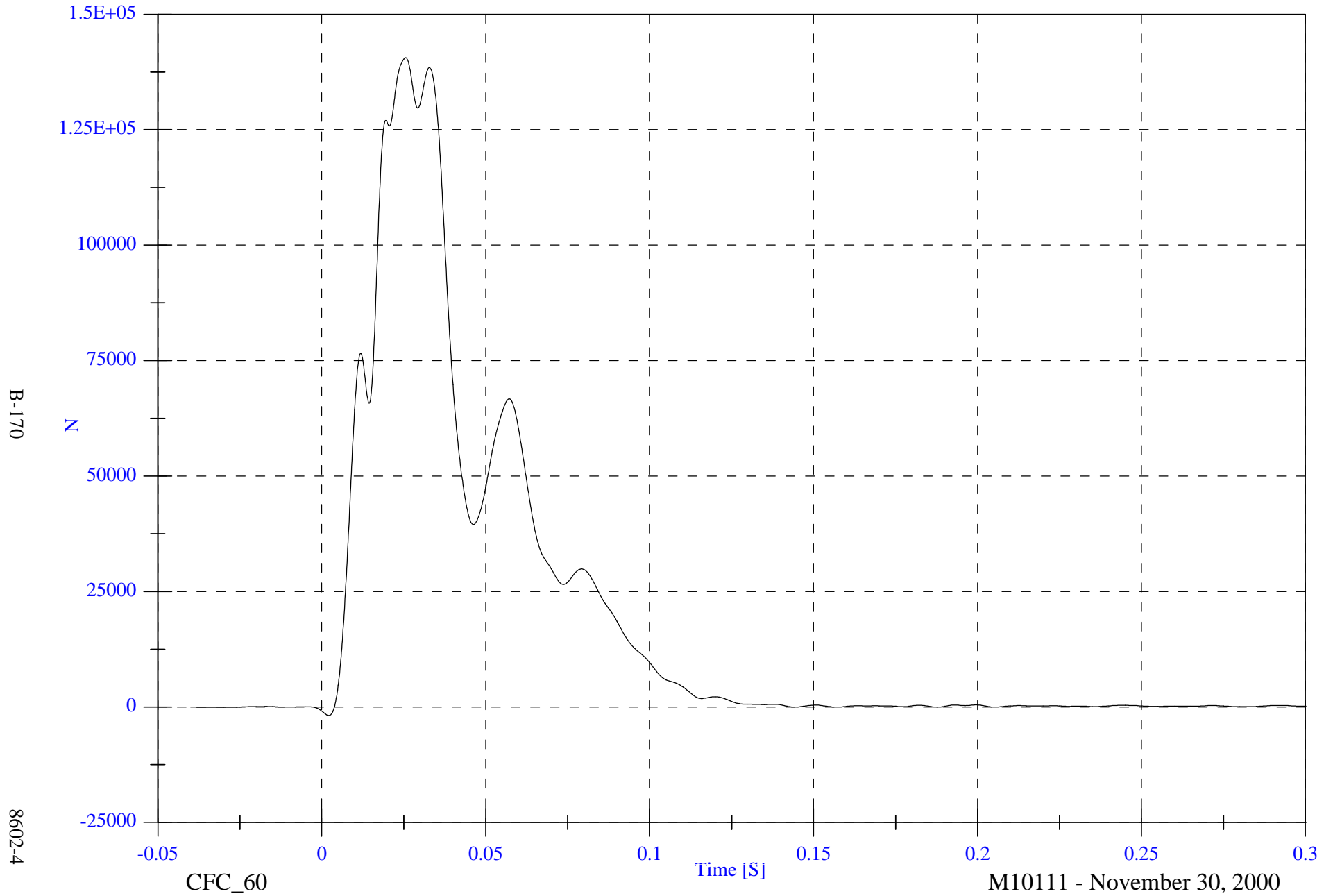
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

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

Max: 140579.5 [N] at 0.026 [S]

Min: -1849.1 [N] at 0.002 [S]



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8602-4

CFC_60

Time [S]

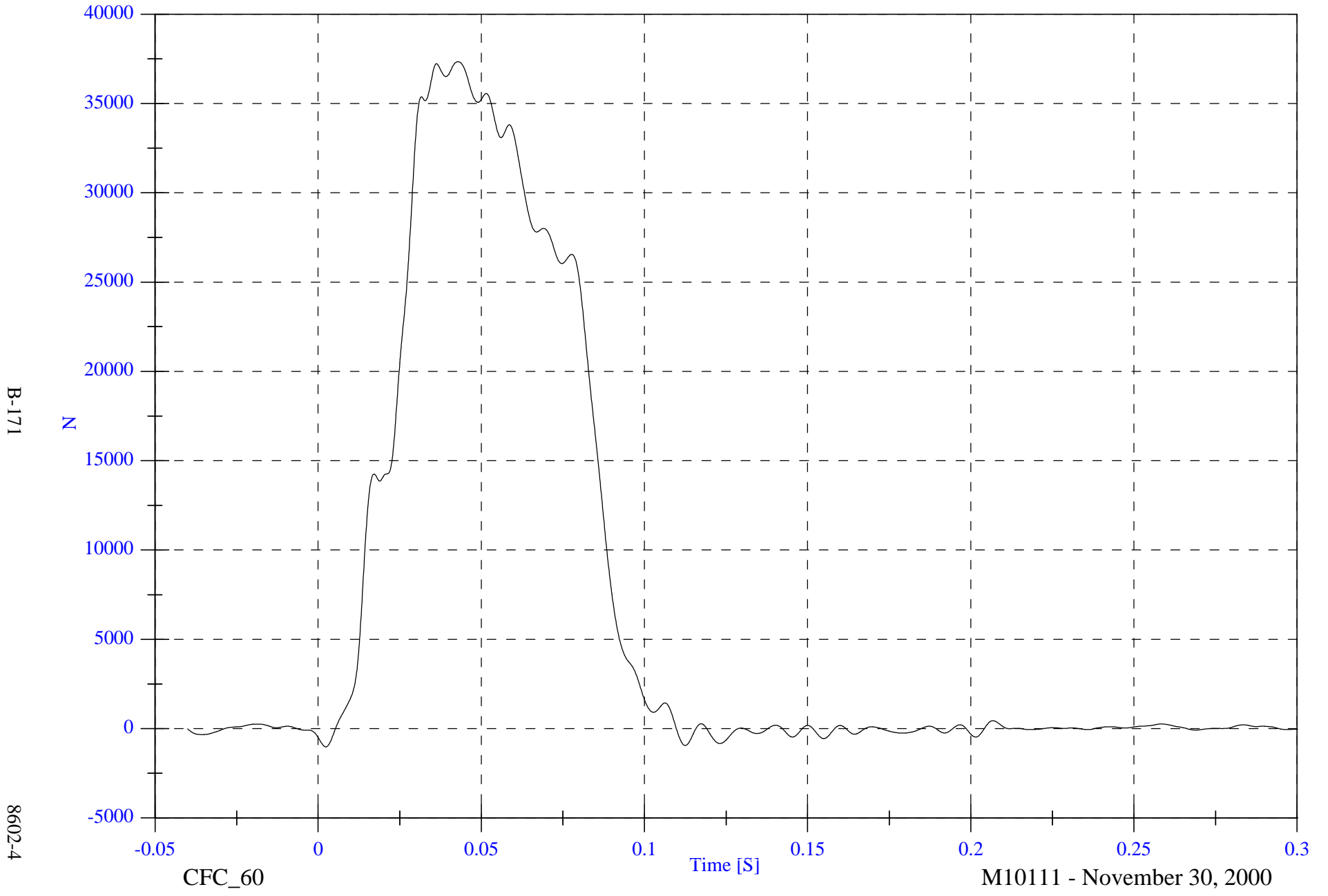
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

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

Max: 37332.9 [N] at 0.043 [S]

Min: -1018.9 [N] at 0.002 [S]



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8602-4

CFC_60

Time [S]

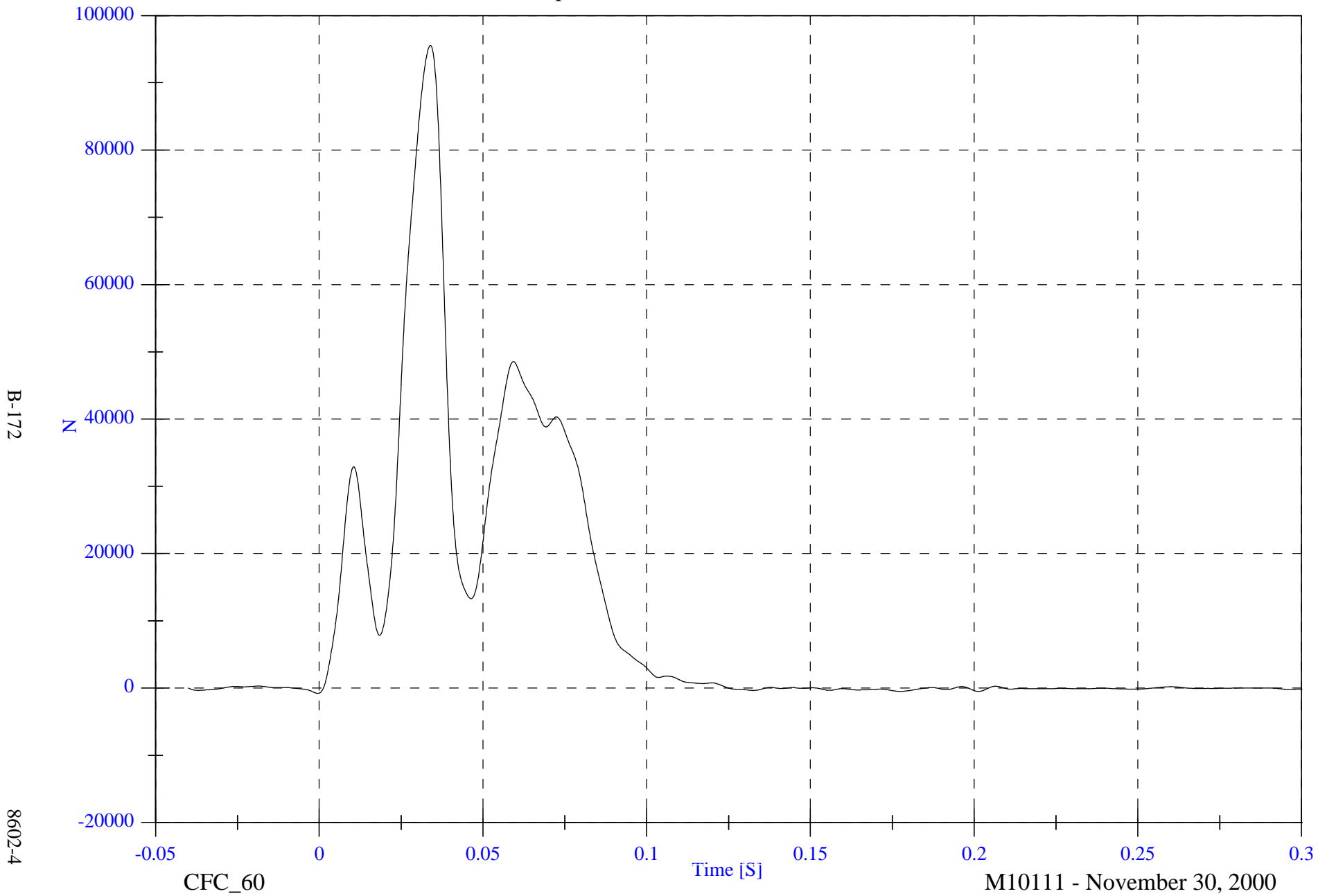
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

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

Max: 95569.1 [N] at 0.034 [S]

Min: -786.7 [N] at -0.001 [S]



B-172

8602-4

CFC_60

Time [S]

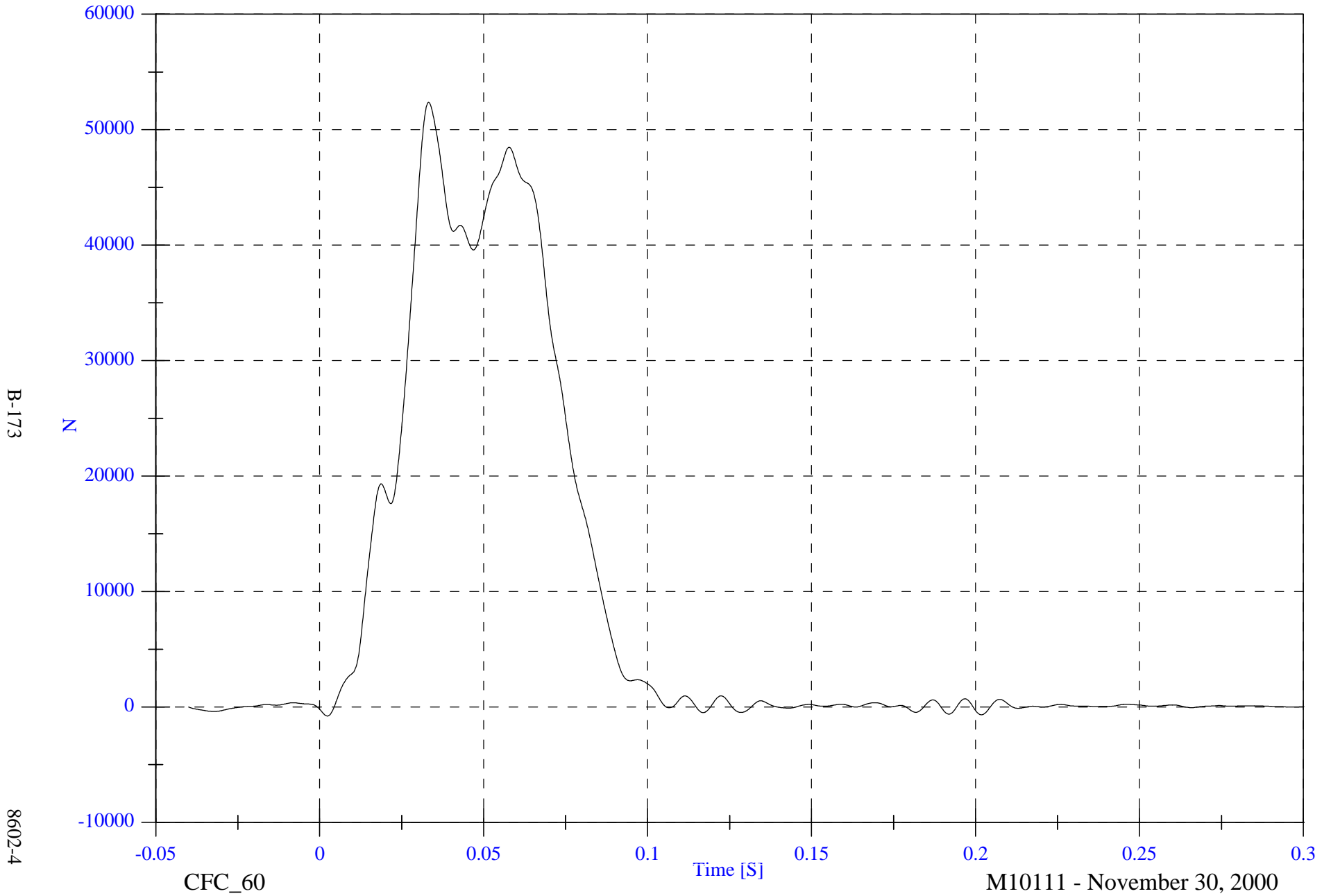
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

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

Max: 52369.4 [N] at 0.033 [S]

Min: -781.8 [N] at 0.002 [S]



B-173

8602-4

CFC_60

Time [S]

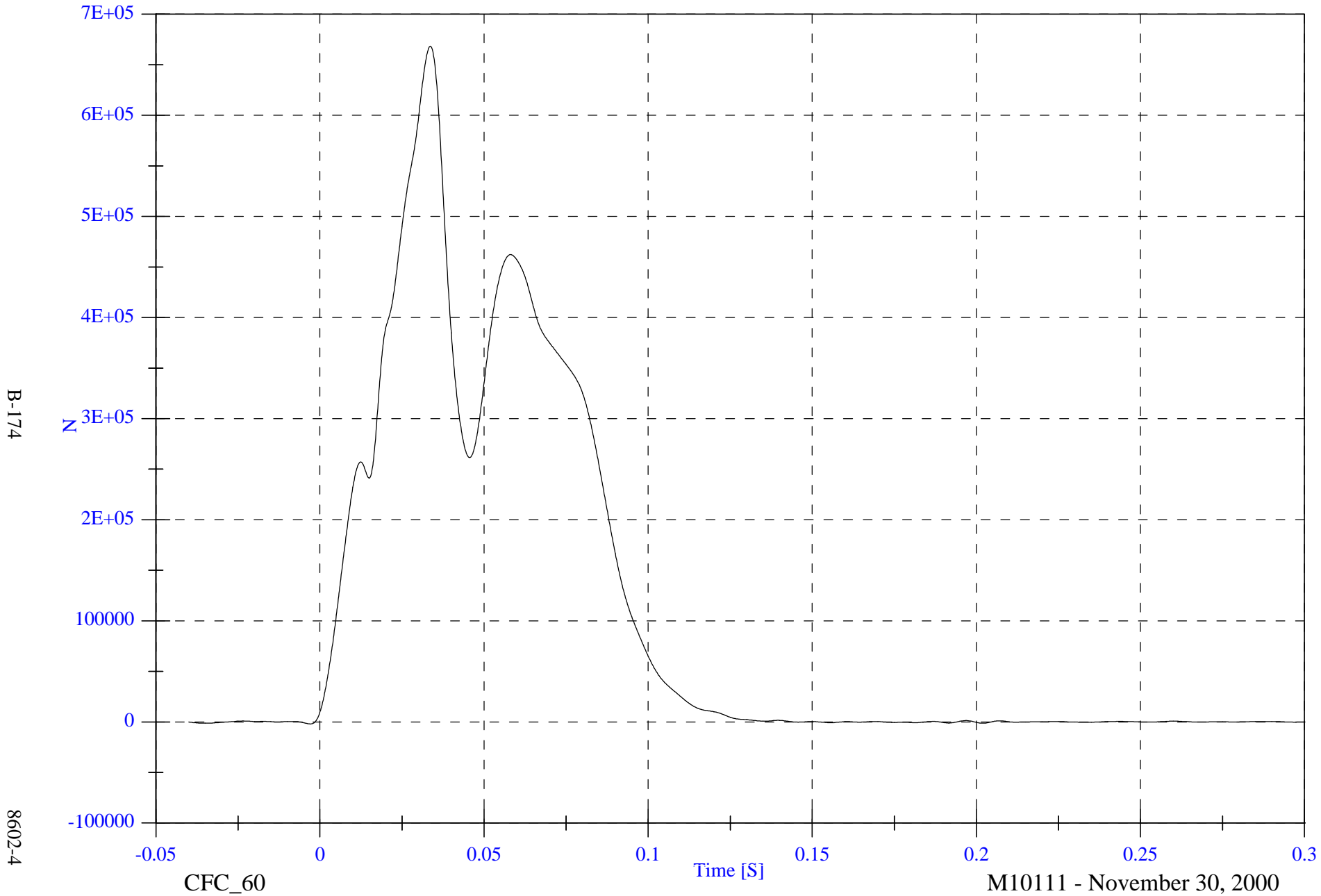
M10111 - November 30, 2000

NCAP Test 4 - 2001 Oldsmobile Aurora

Max: 668390.8 [N] at 0.034 [S]

Total Load Cell Sum (All 6 Groups)

Min: -1999.3 [N] at -0.003 [S]



B-174

8602-4

CFC_60

Time [S]

M10111 - November 30, 2000

APPENDIX C

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

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

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

Dummy serial numbers and certification dates are:

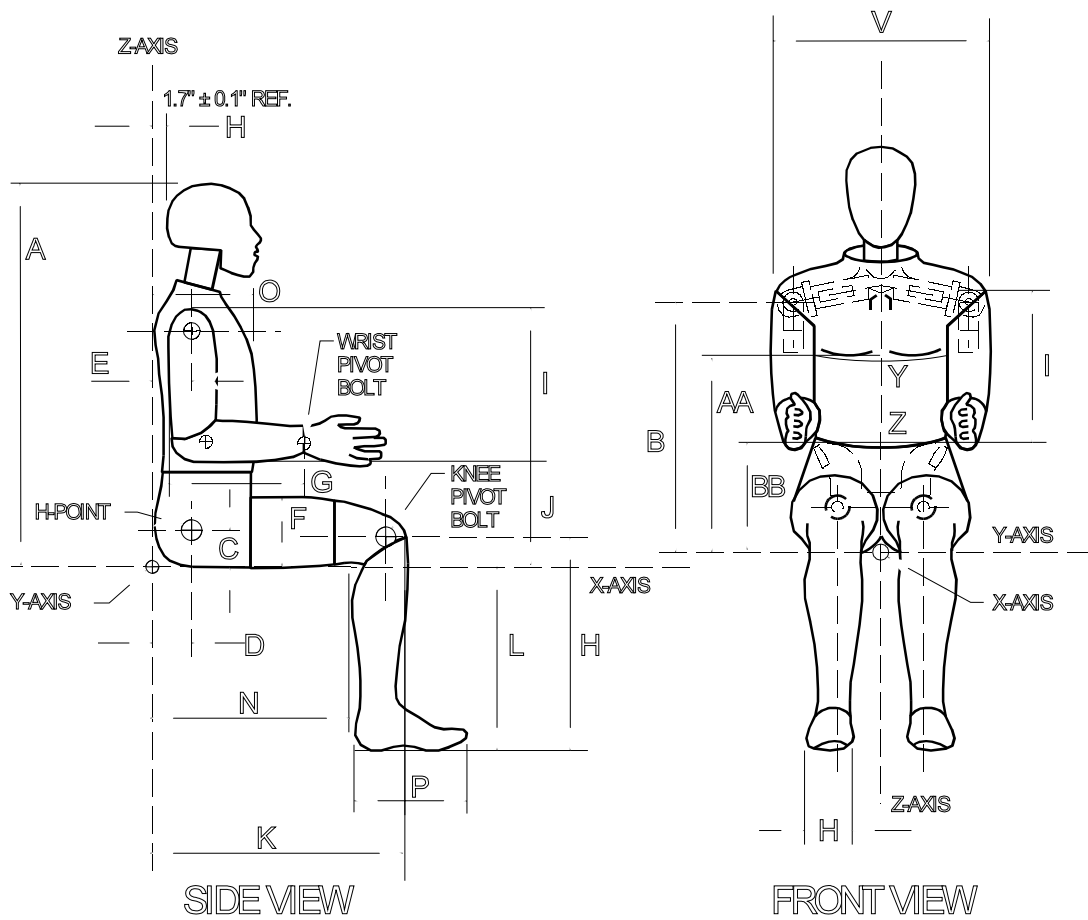
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	245	11/28/00
#2/Right Front Passenger	150	11/13/00

Electronic Test Equipment

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

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS
SPECIFICATIONS



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

PART 572E
HEAD DROP TEST

Dummy Serial Number 245
Sequential Test Number 5.1
Date 11/27/00
Workfile 245500.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	30
Peak Resultant Acceleration	225-275 G's	236.43
Peak Lateral Acceleration	15 G's Max	8.13
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number 245
 Sequential Test Number 5.1
 Date 11/28/00 6 Axis Neck Transducer
 Workfile 245500.nfl

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	31
Impact Velocity		22.60 - 23.40 Ft/s	22.76
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.74
	20 ms	17.60 - 22.60 G's	18.81
	30 ms	12.50 - 18.50 G's	14.89
Max Pendulum G's Above 30 ms		29 G's Max	14.89
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	41.50
D Plane Rotation	Max	64 - 78 Deg	71.39
	Time	57 - 64 ms	58.62
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	78.00
	Time	47 - 58 ms	55.12
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	126.12
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	100.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number 245
 Sequential Test Number 5.1
 Date 11/28/00 6 Axis Neck Transducer
 Workfile 245500.nex

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	71
Relative Humidity		10% - 70%	31
Impact Velocity		19.50 - 20.30 Ft/s	19.67
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.18
	20 ms	14.00 - 19.00 G's	16.92
	30 ms	11.00 - 16.00 G's	14.29
Max Pendulum G's Above 30 ms		22 G's Max	14.29
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	38.88
D Plane Rotation	Max	81 - 106 Deg	99.49
	Time	72 - 82 ms	73.12
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-58.31
	Time	65 - 79 ms	69.25
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	147.62
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	135.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 245
Sequential Test Number 5.1
Date 11/28/00
Workfile 245500.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	71
Relative Humidity	10% - 70%	31
Pendulum Velocity	21.6 - 22.4 Ft/s	21.8
Maximum Deflection	2.50 - 2.86 in	2.51
Maximum Resistive Force	1160 - 1325 Lbs	1283.39
Internal Hysteresis	69 - 85 %	74.1

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 245
 Sequential Test Number 5.1
 Date 11/28/00
 Workfile 245500.lf/245500.rf

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	30
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1192.47
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	30
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1240.93

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 245
 Sequential Test Number 5.1
 Date 11/28/00

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			30
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	39.0
Waist Circumference	Z	32.9 - 34.1 in	33.6
Chest Depth	O	8.4 - 9.0 in	8.5
H-Point Height	C	3.3 - 3.5 in	3.2
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.3
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.2
Foot Length	P	9.9 - 10.5 in	10.2
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number 150
Sequential Test Number 3.1
Date 10/27/00
Workfile 150300.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	32
Peak Resultant Acceleration	225-275 G's	241.69
Peak Lateral Acceleration	15 G's Max	8.74
Is Acceleration Curve Unimodal?	YES	Yes

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number 150
 Sequential Test Number 3.1
 Date 10/24/00 6 Axis Neck Transducer
 Workfile 150300.nfl

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	71
Relative Humidity		10% - 70%	32
Impact Velocity		22.60 - 23.40 Ft/s	22.80
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.05
	20 ms	17.60 - 22.60 G's	19.80
	30 ms	12.50 - 18.50 G's	14.78
Max Pendulum G's Above 30 ms		29 G's Max	14.78
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	39.50
D Plane Rotation	Max	64 - 78 Deg	75.90
	Time	57 - 64 ms	60.25
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	74.25
	Time	47 - 58 ms	54.50
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	127.00
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	102.38

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number 150
 Sequential Test Number 3.1
 Date 10/27/00 6 Axis Neck Transducer
 Workfile 150300.nex

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	31
Impact Velocity		19.50 - 20.30 Ft/s	19.70
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.73
	20 ms	14.00 - 19.00 G's	16.06
	30 ms	11.00 - 16.00 G's	14.02
Max Pendulum G's Above 30 ms		22 G's Max	14.02
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	40.88
D Plane Rotation	Max	81 - 106 Deg	95.51
	Time	72 - 82 ms	76.12
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-46.60
	Time	65 - 79 ms	71.62
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	155.75
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	134.62

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 150
Sequential Test Number 3.1
Date 10/28/00
Workfile 150300.lf

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	31
Pendulum Velocity	21.6 - 22.4 Ft/s	21.9
Maximum Deflection	2.50 - 2.86 in	2.53
Maximum Resistive Force	1160 - 1325 Lbs	1223.1
Internal Hysteresis	69 - 85 %	71.6

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 150
 Sequential Test Number 3.1
 Date 10/28/00
 Workfile 150300.lf / 150300.rf

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	31
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1278.2
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	32
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1264.7

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 150
 Sequential Test Number 3.1
 Date 11/13/00

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			32
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	34.0
Chest Depth	O	8.4 - 9.0 in	8.5
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	5.7
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.8
Knee Pivot Height	M	19.1 - 19.7 in	19.6
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.7
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.1
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.5

Remarks:

Laboratory Technician: B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY (S/N 245)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENDEVCO	AC-J32184	6/5/00	12/4/00
	Y	ENDEVCO	AC-J32185	6/5/00	12/4/00
	Z	ENDEVCO	AC-J31011	6/5/00	12/4/00
Head	X (R)	ENDEVCO	AC-J31020	6/5/00	12/4/00
	Y (R)	ENDEVCO	AC-J31101	6/5/00	12/4/00
	Z (R)	ENDEVCO	AC-J31059	6/5/00	12/4/00
Neck Load Cell	X	DENTON	LC-076FX	8/28/00	2/26/01
	Y	DENTON	LC-076FY	8/28/00	2/26/01
	Z	DENTON	LC-076FZ	8/28/00	2/26/01
Neck Moment	X	DENTON	LC-076MX	8/28/00	2/26/01
	Y	DENTON	LC-076MY	8/28/00	2/26/01
	Z	DENTON	LC-076MZ	8/28/00	2/26/01
Chest	X	ENDEVCO	AC-J34019	6/19/00	12/18/00
	Y	ENDEVCO	AC-J33018	6/19/00	12/18/00
	Z	ENDEVCO	AC-J32783	6/19/00	12/18/00
Chest	X (R)	ENDEVCO	AC-J31066	8/4/00	2/2/01
	Y (R)	ENDEVCO	AC-J31021	8/4/00	2/2/01
	Z (R)	ENDEVCO	AC-J31022	8/4/00	2/2/01
Chest Deflection Gauge		SERVO	DS-245	6/6/00	12/5/00
Hybrid III Use Only					
Pelvic	X	ENDEVCO	AC-J31034	6/26/00	12/25/00
	Y	ENDEVCO	AC-J31058	6/26/00	12/25/00
	Z	ENDEVCO	AC-J31010	6/26/00	12/25/00

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY (S/N 245)	Manufacturer	Serial #	Calibration		
			Last	Next	
Left Femur Load Cell	GSE	LC-551	11/20/00	5/21/01	
Right Femur Load Cell	GSE	LC-951	11/20/00	5/21/01	
Left Upper Tibia	Mx	DENTON	LC-045MX	11/4/00	5/5/01
	My	DENTON	LC-045MY	11/4/00	5/5/01
Left Lower Tibia	Fz	DENTON	LC-125FZ	11/4/00	5/5/01
	Mx	DENTON	LC-125MX	11/4/00	5/5/01
	My	DENTON	LC-125MY	11/4/00	5/5/01
Right Upper Tibia	Mx	DENTON	LC-038MX	11/9/00	5/10/01
	My	DENTON	LC-038MY	11/9/00	5/10/01
Right Lower Tibia	Fz	DENTON	LC-124FZ	11/9/00	5/10/01
	Mx	DENTON	LC-124MX	11/9/00	5/10/01
	My	DENTON	LC-124MY	11/9/00	5/10/01
Left Foot Rear	X	ENDEVCO	AC-P16951	10/2/00	4/2/01
	Z	ENDEVCO	AC-P17152	10/2/00	4/2/01
Left Foot Front	Z	ENDEVCO	AC-P16975	10/2/00	4/2/01
Right Foot Rear	X	ENDEVCO	AC-J31042	11/7/00	5/8/01
	Z	ENDEVCO	AC-J32176	11/7/00	5/8/01
Right Foot Front	Z	ENDEVCO	AC-J31009	11/8/00	5/9/01
Lap Belt Load Cells	LEBOW	LC-706	6/1/00	11/30/00	
Shoulder Belt Load Cells	LEBOW	LC-707	6/1/00	11/30/00	
Spool-Out Potentiometer	-	-	-	-	
Belt Stretch Transducer	CAL	DS-E6	8/8/00	2/6/01	

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 150)	Manufacturer	Serial #	Calibration		
			Last	Next	
Head	X	ENDEVCO	AC-P16832	9/20/00	3/21/01
	Y	ENDEVCO	AC-P16591	9/20/00	3/21/01
	Z	ENDEVCO	AC-P17154	9/21/00	3/22/01
Head	X (R)	ENDEVCO	AC-P17141	9/20/00	3/21/01
	Y (R)	ENDEVCO	AC-P17242	9/20/00	3/21/01
	Z (R)	ENDEVCO	AC-P17265	9/20/00	3/21/01
Neck Load Cell	X	DENTON	LC-269FX	11/16/00	5/17/01
	Y	DENTON	LC-269FY	11/16/00	5/17/01
	Z	DENTON	LC-269FZ	11/16/00	5/17/01
Neck Moment	X	DENTON	LC-269MX	11/16/00	5/17/01
	Y	DENTON	LC-269MY	11/16/00	5/17/01
	Z	DENTON	LC-269MZ	11/16/00	5/17/01
Chest	X	ENDEVCO	AC-P17235	9/15/00	3/16/01
	Y	ENDEVCO	AC-P14393	9/20/00	3/21/01
	Z	ENDEVCO	AC-P17285	9/20/00	3/21/01
Chest	X (R)	ENDEVCO	AC-P16863	9/13/00	3/14/01
	Y (R)	ENDEVCO	AC-P17248	9/20/00	3/21/01
	Z (R)	ENDEVCO	AC-P17283	9/20/00	3/21/01
Chest Deflection Gauge Hybrid III Use Only	SERVO	DS-150	11/16/00	5/17/01	
Pelvic	X	ENDEVCO	AC-J30041	8/4/00	2/2/01
	Y	ENDEVCO	AC-P13355	11/16/00	5/17/01
	Z	ENDEVCO	AC-P13329	11/16/00	5/17/01

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 150)	Manufacturer	Serial #	Calibration		
			Last	Next	
Left Femur Load Cell	GSE	LC-418	11/20/00	5/21/01	
Right Femur Load Cell	GSE	LC-420	11/30/00	5/31/01	
Left Upper Tibia	Mx	DENTON	LC-016MX	11/9/00	5/10/01
	My	DENTON	LC-016MY	11/9/00	5/10/01
Left Lower Tibia	Fz	DENTON	LC-123FZ	11/9/00	5/10/01
	Mx	DENTON	LC-123MX	11/9/00	5/10/01
	My	DENTON	LC-123MY	11/9/00	5/10/01
Right Upper Tibia	Mx	DENTON	LC-023MX	11/9/00	5/10/01
	My	DENTON	LC-023MY	11/9/00	5/10/01
Right Lower Tibia	Fz	DENTON	LC-111FZ	11/9/00	5/10/01
	Mx	DENTON	LC-111MX	11/9/00	5/10/01
	My	DENTON	LC-111MY	11/9/00	5/10/01
Left Foot Rear	X	ENDEVCO	AC-APA30	7/6/00	1/4/01
	Z	ENDEVCO	AC-J31026	9/21/00	3/22/01
Left Foot Front	Z	ENDEVCO	AC-J32831	7/6/00	1/4/01
Right Foot Rear	X	ENDEVCO	AC-J32832	6/14/00	12/13/00
	Z	ENDEVCO	AC-J33376	7/6/00	1/4/01
Right Foot Front	Z	ENDEVCO	AC-J18400	9/28/00	3/29/01
Lap Belt Load Cells	LEBOW	LC-711	6/1/00	11/30/00	
Shoulder Belt Load Cells	LEBOW	LC-712	6/1/00	11/30/00	
Spool-Out Potentiometer	-	-	-	-	
Belt Stretch Transducer	CAL	DS-E5	8/7/00	2/5/01	

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS

(6 Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember	ICS	AC-X33	8/25/00	2/23/01
Right Rear Seat Crossmember	ICS	AC-D84	8/14/00	2/12/01
Top of Engine	ENTRAN	AC-Z02	6/7/00	12/6/00
Bottom of Engine	ENDEVCO	AC-AY60	11/15/00	5/16/01
Right Disc Brake Caliper	ENDEVCO	AC-B10951	9/28/00	3/29/01
Instrument Panel	ENDEVCO	AC-A14077	8/7/00	2/5/01
Left Disc Brake Caliper	ENTRAN	AC-D03	8/31/00	3/1/01
Left Seat Rear Crossmember (R)	ICS	AC-X88	8/14/00	2/12/01
Right Seat Rear Crossmember (R)	ICS	AC-Y05	8/25/00	2/23/01