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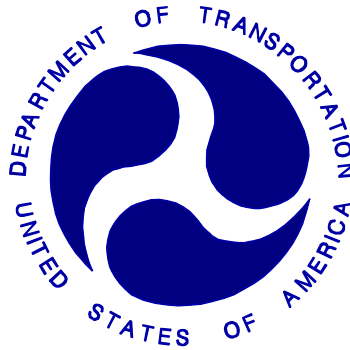
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

**TOYOTA MOTOR CORPORATION
2001 TOYOTA 4RUNNER
4-DOOR UTILITY VEHICLE**

NHTSA NUMBER: M15100

VERIDIAN TEST NUMBER: 8602-8

VERIDIAN ENGINEERING
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December 13, 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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4. <i>Title and Subtitle</i> Final Report of NEW CAR ASSESSMENT PROGRAM (NCAP) Testing of a 2001 Toyota 4Runner 4-Door Utility Vehicle NHTSA No. M15100				5. <i>Report Date</i> December 13, 2000	
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15. <i>Supplementary Notes</i>					
16. <i>Abstract</i> A frontal load cell barrier test of a 2001 Toyota 4Runner 4-Door Utility Vehicle was performed at Veridian Engineering crash test facility in Buffalo, New York, on December 13, 2000. The impact velocity was 56.32 kph and the temperature at the barrier face was 21EC. The maximum post-test vehicle crush was 551 mm. The test vehicle was equipped with 3-point restraint systems with torso belt pre-tensioners and load limiters, knee bolsters, and airbags at both the driver and right outboard passenger seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements.					
ATD Position	HIC	Clip (g's)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)
Driver (064)	673.9	41.2	33.8	3505.1	3795.0
Passenger (061)	584.4	44.8	40.5	4285.7	3319.8
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 M15100

PURPOSE

This 56.32 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 56.32 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 Toyota 4Runner 4-Door Utility Vehicle at a velocity of 56.32 kph. The test was performed at Veridian Engineering on December 13, 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. 064) and the right-front passenger (position 2) ATD (Serial No. 061) were used in one test previous to this test (M10205) where they did not exceed FMVSS head, chest and femur injury criteria. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 129 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 673.9. The maximum chest deceleration over 3 milliseconds was 41.2 g's and maximum chest deflection was 33.8 mm. Compressive femur loads were 3505.1 Newtons on the left and 3795.0 Newtons on the right.

The right front passenger's HIC was 584.4. Maximum chest deceleration over 3 milliseconds was 44.8 g's and maximum chest deflection was 40.5 mm. Compressive femur loads were 4285.7 Newtons on the left and 3319.8 Newtons on the right.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No. : M15100 Test Mode : 56.3 kph Frontal Barrier

Test Date : December 13, 2000 Time: 12:05 Temperature : -2 °C

Vehicle Make/Model/Body Style : 2001 Toyota 4Runner 4-Door Utility Vehicle

Vehicle Test Weight : 2149.5 kg

Vehicle/Barrier Impact Angle : 0 °

Impact Velocity : 56.32 kph

Maximum Static Crush : 544.0 mm

Vehicle Rebound : 285.0 mm

DUMMIES:

DRIVER

PASSENGER

Type :

572E

572E

Restraint System :

Seatbelt, Airbag, Knee Bolster

Seatbelt, Airbag, Knee Bolster

Number of Data Channels : 129

Number of Cameras : 1 Real Time

16 High Speed

DOOR OPENING DATA :

Closed/Operable - Left Front

Closed/Operable - Right Front

Front Seat(s) Data :

DRIVER

PASSENGER

Seat Track Failure :(mm of shift)

0

0

Seat Back Failure :

None

None

VISIBLE DUMMY CONTACT POINTS :

DRIVER

PASSENGER

Head :

The face to the left of the centerline of the airbag; The back of the head to the left of the centerline of the headrest. The left top of the head to the roof liner and side rail.

The face to the center of the airbag; The back of the head to the left of the centerline of the headrest. The top of the head to the roof liner.

Abdomen :

-

-

Chest

Airbag

Airbag

Knees

Knee Bolster

Knee Bolster

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 2001 Toyota 4Runner 4-Door Utility Vehicle

NHTSA No. : M15100 ; VIN: JT3HN86R510327671 ; Color : Silver

Engine Data: 6 cylinders; - CID; 3.4 Liters; - cc

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

Transmission Data : 4 speeds; - Manual; X Automatic; X Overdrive

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

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

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

Date Received : 12/4/00 ; Odometer Reading 179 km

Selling Dealer : Burdick Toyota

& Address: 3904 Brewerton Road N. Syracuse, NY 13212

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : Toyota Motor Corporation

Date of Manufacture 9/00

GVWR : 2381 kg; GAWR: 1202 kg FRONT; 1361 kg REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 240 kpa FRONT

240 kpa REAR

Recommended Tire Size : P265/70R16

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

Size of Tires on Test Vehicle: P265/70R16 ; Manufacturer: Bridgestone

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) = 513.0 kg

No. of Occupants x 68 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 172.8 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>484.5</u>	kg	Right Rear	=	<u>429.5</u>	kg
Left Front	=	<u>525.5</u>	kg	Left Rear	=	<u>428.5</u>	kg
TOTAL FRONT	=	<u>1010.0</u>	kg	TOTAL REAR	=	<u>858.0</u>	kg
TOTAL DELIVERED WEIGHT = <u>1868.0</u> kg							
% of Total Front of Vehicle Weight = <u>54.1</u>				% of Total Rear Weight = <u>45.9</u> %			

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight (UDW)	=	<u>1868.0</u>	kg
Rated Cargo/Luggage Weight (RCLW)	=	<u>136.1</u>	kg (136.1 kg maximum)
Weight of 2 p.572 Dummies @ 76 each	=	<u>152.0</u>	kg
TARGET TEST WEIGHT	=	<u>2156.1</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 130 KG OF CARGO WEIGHT:

Right Front	=	<u>513.0</u>	kg	Right Rear	=	<u>532.5</u>	kg
Left Front	=	<u>557.0</u>	kg	Left Rear	=	<u>547.0</u>	kg
TOTAL FRONT	=	<u>1070.0</u>	kg	TOTAL REAR	=	<u>1079.5</u>	kg
TOTAL TEST WEIGHT = <u>2149.5</u> kg							
% of Total Front Weight = <u>49.8</u> %				% of Total Rear Weight = <u>50.2</u> %			
Weight of Ballast Secured in Vehicle Trunk Area = <u>69</u> kg							
Vehicle Components Removed for Weight Reduction: <u>None</u>							

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED :	RF	<u>879</u>	LF	<u>876</u>	RR	<u>892</u>	LR	<u>890</u>
FULLY LOADED :	RF	<u>874</u>	LF	<u>870</u>	RR	<u>863</u>	LR	<u>858</u>
AS TESTED :	RF	<u>875</u>	LF	<u>874</u>	RR	<u>864</u>	LR	<u>861</u>
Vehicle's Wheel Base : <u>2680</u> mm								
Location of Vehicle's C.G. : <u>1345.9</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>70.0</u>	liters
Test Volume Range (92 to 94% of Usable Capacity)	=	<u>64.4</u>	to <u>65.8</u> liters
ACTUAL TEST VOLUME	=	<u>64.4</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>The fuel tank is located on the left side of the vehicle ahead of the rear axle; The fuel lines run along the inside left frame rail; The fuel filler is located on the left side behind the rear axle.</u>			

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°
Test Date : December 13, 2000 Time: 12:05 Temperature: -2 °C
Vehicle NHTSA No. : M15100
Required Impact Velocity Range : 55.5 to 57.1 kph

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

Trap No. 1 = 56.32 kph; Trap No. 2 = 56.32 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 =	<u>4536</u>	; C/L =	<u>4705</u>	; Left =	<u>4539</u>
Post-Test	Right =	<u>4025</u>	; C/L =	<u>4163</u>	; Left =	<u>4045</u>
Crush	Right =	<u>511.0</u>	; C/L =	<u>542.0</u>	; Left =	<u>494.0</u>
AVERAGE	=	<u>515.7</u>	mm			

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

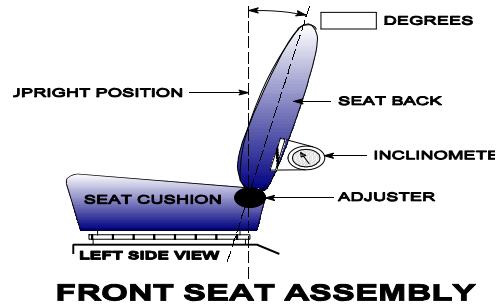
	Right =	<u>312</u>	; C/L =	<u>257</u>	; Left =	<u>287</u>
AVERAGE	=	<u>285.3</u>	mm			

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2001 Vehicle Model: Toyota 4Runner Body Style : 4-Door Utility Vehicle

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

Measurement instructions: Place seat back in first detent. Seat back test position is located in detent 8 or 12E rearward of detent 1.

Seat back angle for passenger's seat: 18

Measurement instructions: Same as the driver's seat

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: 8th notch rearward from forwardmost position

Positioning of the passenger's seat: Same as the driver's seat

3. Fuel Tank Capacity Data

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 70.0 liters

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

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 70.0 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 64.4 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.

With the ignition in the "On" position

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

4. STEERING COLUMN ADJUSTMENTS :

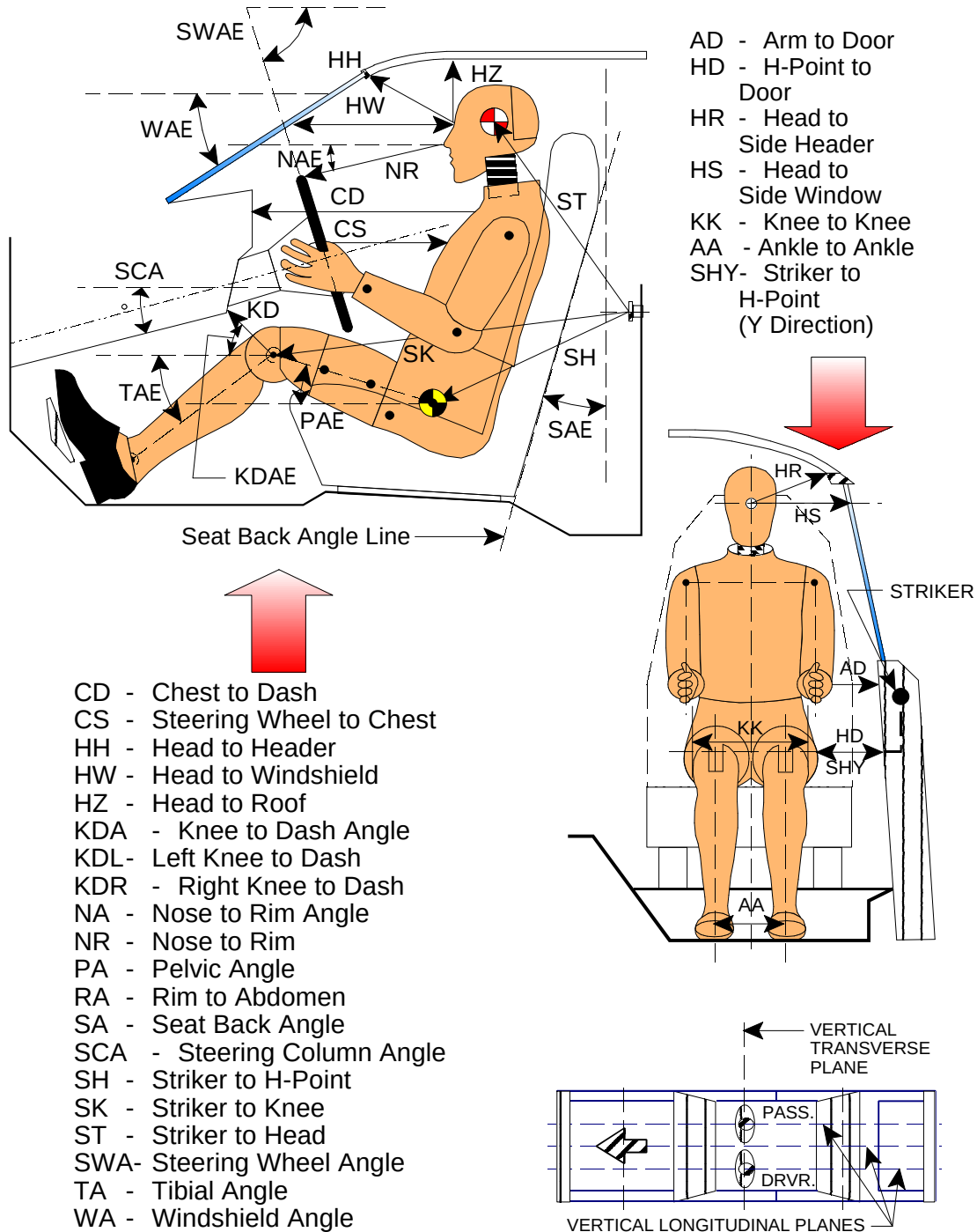
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine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

Operational Instructions: 5 total detents. Wheel is placed in detent number 4 from the topmost
position.

5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: Placed in the mechanical middle (position 3) of 5 total positions

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS

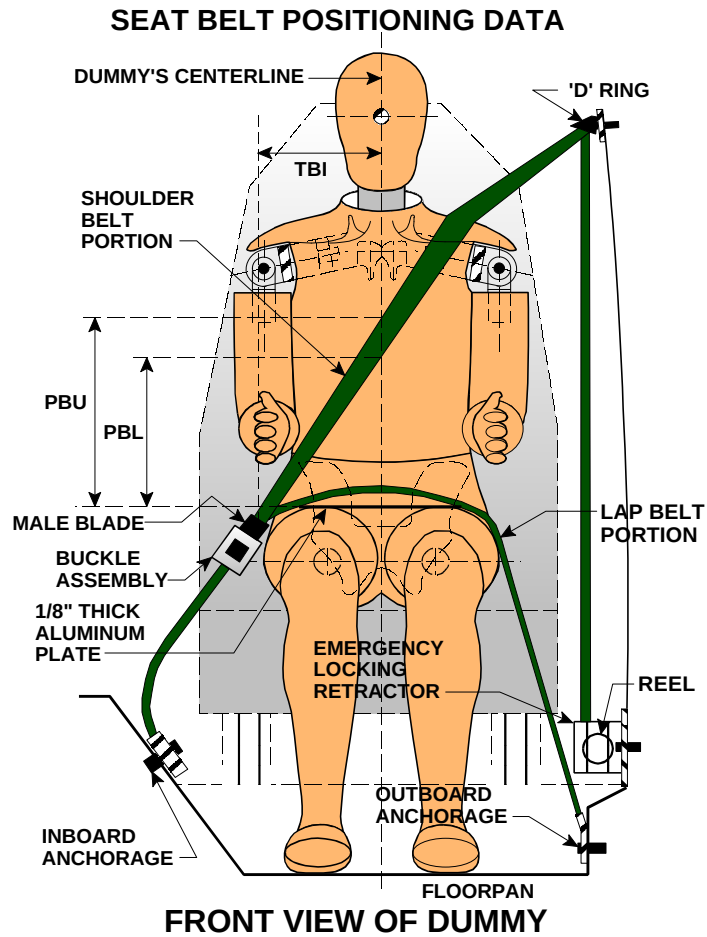


DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #064)			PASS. (Serial # 061)		
WA ^o	38.4 deg.			N/A		
SWA ^o	67.8 deg.			N/A		
SCA ^o	22.2 deg.			N/A		
SA ^o	16.8 deg.			18.1 deg.		
HZ	185			178		
HH	376			381		
HW	524			540		
HR	214			225		
NR	378	Angle	-13 deg.	N/A		
CD	530			524		
CS	285			N/A		
RA	195			N/A		
KDL	198	Angle (KDA)	31 deg.	162		
KDR	182			170	Angle (KDA)	26 deg.
PA ^o	20.7 deg.			24.1 deg.		
TA ^o	35.0 deg.			41.8 deg.		
KK	320			292		
AA	282			252		
ST	550	Angle	12 deg.	550	Angle	12 deg.
SK	620	Angle	92 deg.	612	Angle	92 deg.
SH	235	Angle	128 deg.	230	Angle	125 deg.
SHY	214			207		
HS	290			283		
HD	105			97		
AD	77			100		

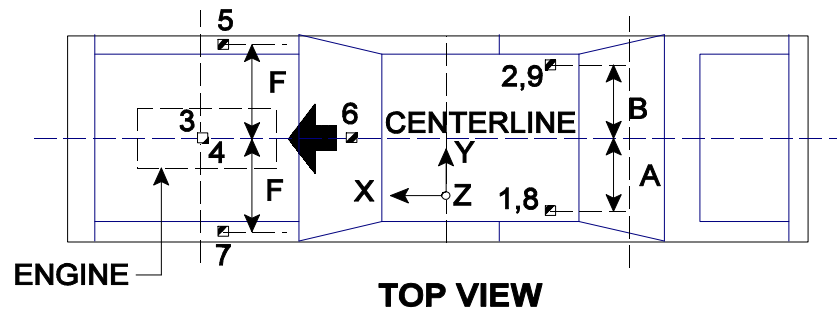
Dimensions in millimeters

DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

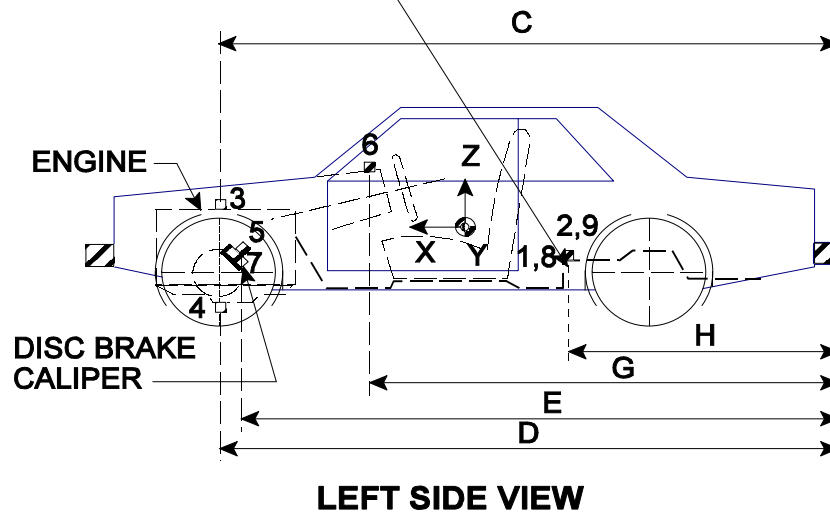


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	360	360
PBL-- Top surface of alum. plate to belt lower edge	290	290
<u>LAP BELT TENSION</u>	10 N	10 N
<u>SHOULDER BELT TENSION</u>	Retractor	Rtractor

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	-415
B Right Rear Seat Crossmember Y	415
C Top of Engine X	3891
D Bottom of Engine X	3088
E Disc Brake Calipers X	3585
F Disc Brake Calipers Y	375
G Instrument Panel X	3024
H Rear Seat Crossmembers X	1914

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	4.3	132.6	-35.8	62.9
2	Rear Seat X-Member @ Right Side	3.7	131.9	-34.6	62.9
3	Top of Engine Block	19.0	57.0	-95.5	38.8
4	Bottom of Engine	*	*	*	*
5	Disc Brake Caliper @ Right Side	**	**	**	**
6	Instrument Panel	25.3	90.8	-124.9	69.9
7	Disc Brake Caliper @Left Side	105.0	27.5	-126.7	35.1
8	Rear Seat X-Member @ Left-Redundant	4.1	132.6	-35.6	63.0
9	Rear Seat X-Member @ Right-Redundant	3.7	131.9	-34.3	62.9

* Not accurate after 42 ms

** Not accurate after 50 ms

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2001 Toyota 4Runner 4-Door Utility Vehicle

NHTSA Test No.: M15100 Test Date: December 13, 2000

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head X	g	14.7	220.8	-65.7	82.2	15.9	222.7	-48.2	83.0
Head Y	g	3.8	110.4	-11.3	77.0	6.3	215.6	-17.8	85.5
Head Z	g	28.1	63.9	-5.3	109.7	36.4	77.1	-4.9	134.9
Head Resultant	g	66.8	82.0	0.0	-47.4	60.3	79.2	0.0	13.5
Redundant Head X	g	15.0	221.1	-67.1	82.6	15.9	222.4	-47.7	81.1
Redundant Head Y	g	4.7	128.8	-10.7	77.8	6.2	215.6	-17.6	89.9
Redundant Head Z	g	28.1	64.0	-5.4	110.1	*	*	*	*
Redundant Head Resultant	g	68.0	82.0	0.0	-48.6	NA	NA	0.0	-44.4
Upper Neck Fx	N	408.5	87.5	-503.0	54.9	367.6	81.3	-479.6	139.9
Upper Neck Fy	N	119.6	108.7	-128.7	81.6	230.3	71.9	-238.0	139.6
Upper Neck Fz	N	2161.6	73.8	-169.8	131.5	1471.5	77.2	-195.6	133.2
Upper Neck F Resultant	N	2162.8	75.1	0.9	-47.1	1498.4	77.2	0.7	-24.5
Upper Neck Mx	N-m	22.0	89.8	-2.9	263.1	30.7	90.5	-17.9	133.8
Upper Neck My	N-m	28.8	151.1	-25.5	54.3	42.4	82.2	-17.1	255.6
Upper Neck Mz	N-m	5.1	63.6	-2.1	175.8	35.1	91.6	-15.9	151.0
Upper Neck M Resultant	N-m	28.9	151.1	0.1	-47.3	55.1	90.4	0.1	-46.0
Chest X	g	3.5	254.7	-44.3	79.3	3.1	161.7	-46.3	68.7
Chest Y	g	7.0	109.1	-16.3	49.2	4.2	51.8	-8.7	81.4
Chest Z	g	7.9	49.7	-3.0	84.4	12.9	47.9	-10.9	108.4
Chest Resultant	g	44.4	79.2	0.0	-47.3	46.3	68.7	0.0	-50.0
Redundant Chest X	g	3.6	254.4	-44.8	79.3	3.3	163.9	-46.1	68.7
Redundant Chest Y	g	7.0	109.1	-17.1	49.3	4.4	55.9	-9.1	81.4
Redundant Chest Z	g	8.1	49.8	-3.1	84.4	12.5	47.8	-11.2	108.6
Redundant Chest Resultant	g	45.0	79.2	0.0	-46.2	46.1	68.7	0.0	-49.8
Chest Displacement	mm	0.0	6.0	-33.8	80.2	0.0	-17.4	-40.5	80.6

* Questionable Data

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

Vehicle Year/Make/Model/Body Style: 2001 Toyota 4Runner 4-Door Utility Vehicle

NHTSA Test No.: M15100 Test Date: December 13, 2000

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Pelvic X	g	6.5	127.7	-71.5	58.0	8.2	110.5	-72.8	53.5
Pelvic Y	g	7.9	103.9	-12.7	72.4	8.5	53.4	-7.6	49.8
Pelvic Z	g	5.2	45.9	-22.3	80.6	4.1	46.7	-23.7	71.9
Pelvic Resultant	g	73.3	58.0	0.0	-49.5	73.7	53.5	0.0	-34.1
Left Femur	N	900.6	49.2	-3505.1	52.6	928.4	47.1	-4285.7	57.3
Right Femur	N	1357.7	46.3	-3795.0	57.6	551.5	44.9	-3319.8	62.5
Left Upper Tibia Mx	N-m	26.9	80.9	-11.2	62.2	43.3	47.6	-32.8	54.0
Left Upper Tibia My	N-m	32.0	121.0	-123.2	46.4	14.2	78.8	-218.1	46.1
Left Lower Tibia Fz	N	119.6	135.8	-3115.7	46.4	265.7	157.8	-4757.0	45.8
Left Lower Tibia Mx	N-m	12.1	53.7	-12.8	107.1	38.0	46.8	-19.9	51.9
Left Lower Tibia My	N-m	32.6	119.8	-45.8	49.7	48.9	53.6	-131.6	47.4
Right Upper Tibia Mx	N-m	66.3	46.6	-59.4	68.7	52.6	50.4	-21.3	71.5
Right Upper Tibia My	N-m	59.1	86.2	-182.4	46.2	74.6	70.5	-58.2	36.0
Right Lower Tibia Fz	N	200.8	132.3	-3009.3	51.8	139.2	136.9	-1759.8	53.5
Right Lower Tibia Mx	N-m	44.9	46.1	-103.5	58.2	14.5	50.7	-26.3	62.2
Right Lower Tibia My	N-m	246.5	68.1	-144.5	45.9	36.7	82.3	-29.0	36.4
Left Foot Aft Ax	g	16.1	59.2	-153.9	44.5	81.1	52.9	-325.9	46.1
Left Foot Aft Az	g	33.1	43.8	-121.3	45.8	28.1	62.6	-67.6	50.7
Left Foot Fore Az	g	252.6	43.7	-156.1	45.7	79.9	40.9	-333.4	45.1
Right Foot Aft Ax	g	48.8	52.9	-190.1	45.2	23.0	93.6	-123.1	49.7
Right Foot Aft Az	g	14.4	61.0	-150.2	45.3	4.5	35.7	-63.5	57.0
Right Foot Fore Az	g	154.1	53.0	-395.6	44.5	113.2	48.8	-147.3	57.0
Lap Belt Load	N	8586.0	60.8	-0.3	-39.6	8121.4	57.3	-69.5	116.0

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

Vehicle Year/Make/Model/Body Style: 2001 Toyota 4Runner 4-Door Utility Vehicle

NHTSA Test No.: M15100 Test Date: December 13, 2000

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	673.9	66.0	98.2	53.5
Position #2 - Passenger	584.4	64.6	100.6	48.3

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

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	41.2	77.5	80.5	447.6
Position #2 - Passenger	44.8	67.3	70.3	448.5

* 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 Toyota 4Runner 4-Door Utility Vehicle

NHTSA Test No.: M15100 Test Date: December 13, 2000

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	707.5	66.0	98.3	54.5
Position #2 - Passenger	***	N/A	N/A	N/A

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

*** Passenger 2 Redundant Head Z did not record accurately. HIC could not be determined

CLIP SUMMARY* REDUNDANT				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	41.5	77.5	80.5	456.6
Position #2 - Passenger	44.3	67.3	70.3	441.6

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

DATA SHEET NO. 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

	<u>Driver</u>	<u>Passenger</u>
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	<u>2146</u>	<u>2139</u>
Shoulder belt length as measured on Part 572 Dummy.	<u>860</u>	<u>858</u>
Lap belt length as measured on Part 572 Dummy.	<u>950</u>	<u>945</u>

SHOULDER BELT SPOOL-OFF DATA:*

As determined by film analysis.	<u>178</u>	<u>140</u>
As determined mechanically.	<u>N/A</u>	<u>N/A</u>
As determined electronically.	<u>N/A</u>	<u>N/A</u>

BELT STRETCH DATA:*

Measured electronically between shoulder belt load cell and the "D" ring.	<u>N/A</u>	<u>N/A</u>
Measured mechanically.	<u>N/A</u>	<u>N/A</u>

Dimensions in millimeters

* This vehicle was equipped with torso belt pretensioners. Seatbelt spool and stretch was not measured mechanically or electrically. No instrumentation was attached to the torso belt in order to avoid interference with the pretensioners.

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 10 mm molding.

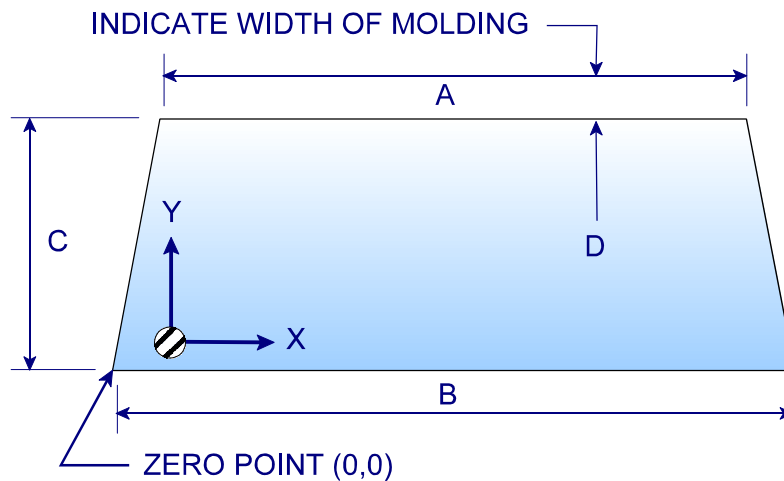
FMVSS 212 REQUIREMENTS:

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	1248.5	1248.5	100
LEFT SIDE	1248.5	1248.5	100
TOTAL	2497	2497	100

AREA OF RETENTION FAILURE:



DIMENSIONS (mm)	
A	1087
B	1410
C	600
D	10

FRONT VIEW OF WINDSHIELD

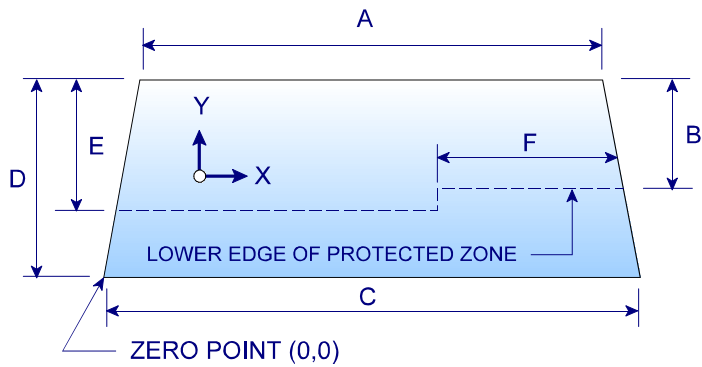
FAILURE DETAILS: None

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	1087
B	341
C	1410
D	600
E	362
F	710

FRONT VIEW OF WINDSHIELD

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm: None

(Show location of penetration on the above sketch)

	COORDINATES	
	X	Y
1.	-	-
2.	-	-
3.	-	-
4.	-	-

DATA SHEET NO. 12 FMVSS NO. 301-75 "FUEL SYSTEM INTEGRITY" POST IMPACT TEST DATA

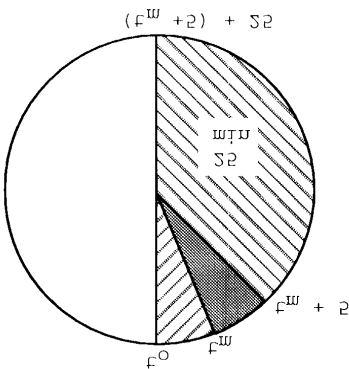
NHTSA TEST No.: M15100 TEST DATE: December 13, 2000
VEHICLE MAKE/MODEL: 2001 Toyota 4Runner

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

=====

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

FUEL SPILLAGE MEASUREMENT:



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

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

SOLVENT SPILLAGE DETAILS: none

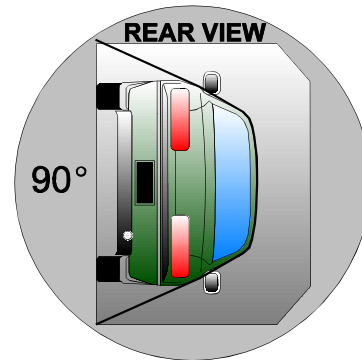
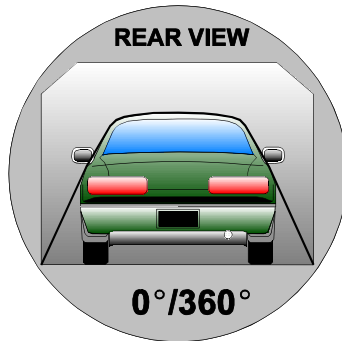
DATA SHEET 13

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Vehicle: 2001 Toyota 4Runner

NHTSA No. M15100

0 - 90 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u>	minutes	<u>14</u>	seconds
(Spec. Range = 1 to 3 minutes)				
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

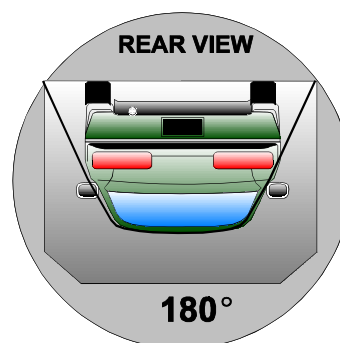
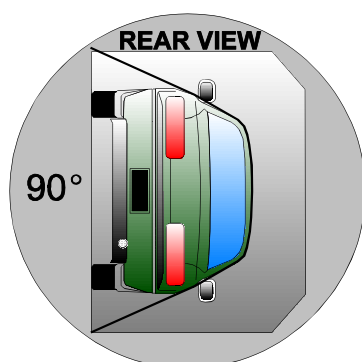
DATA SHEET 13

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (CONTINUED)

Vehicle: 2001 Toyota 4Runner

NHTSA No. M15100

90 - 180 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u>	minutes	<u>10</u>	seconds
(Spec. Range = 1 to 3 minutes)				
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>0</u>	seconds
TOTAL	<u>6</u>	minutes	<u>10</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

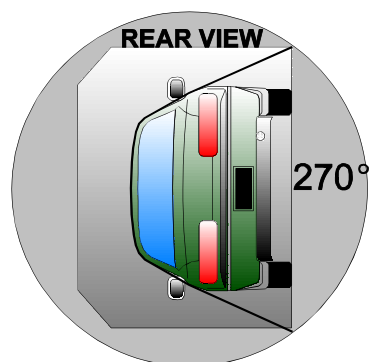
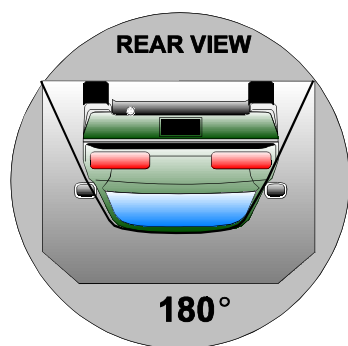
DATA SHEET 13

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (CONTINUED)

Vehicle: 2001 Toyota 4Runner

NHTSA No. M15100

180 - 270 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u>	minutes	<u>03</u>	seconds
(Spec. Range = 1 to 3 minutes)				
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>0</u>	seconds
TOTAL	<u>6</u>	minutes	<u>3</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

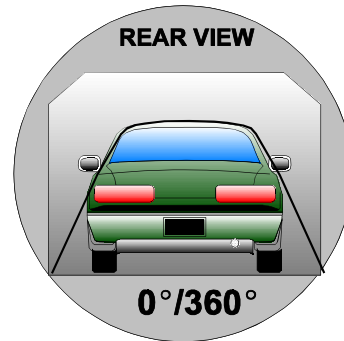
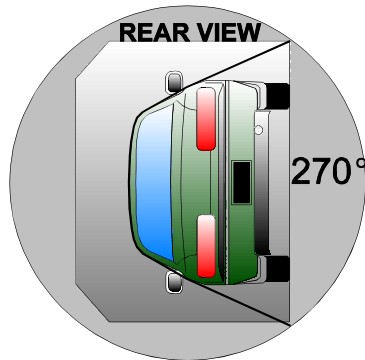
DATA SHEET 13

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (CONTINUED)

Vehicle: 2001 Toyota 4Runner

NHTSA No. M15100

270 - 360 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u>	minutes	<u>14</u>	seconds
(Spec. Range = 1 to 3 minutes)				
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:

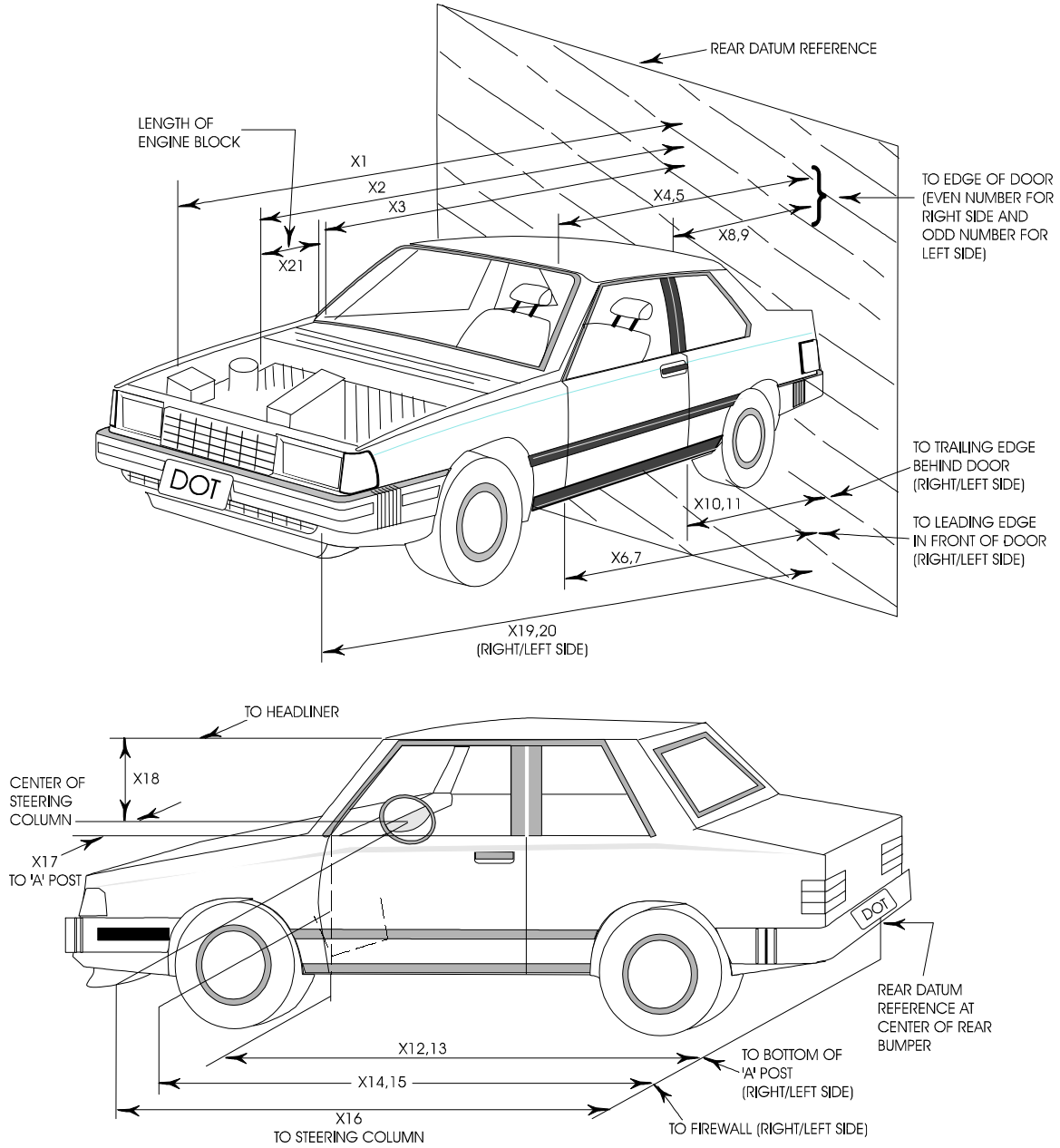
0 g	0 g	0 g	N/A
-----	-----	-----	-----

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

IV. SOLVENT SPILLAGE LOCATION(S) :

None

DATA SHEET NO. 14 TEST VEHICLE MEASUREMENTS

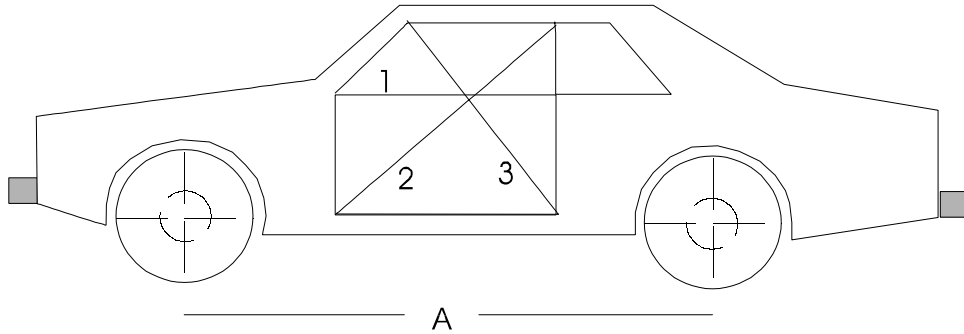


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4698	4147	551
X2	Rear Surface of Vehicle to Front of Engine	3984	3808	176
X3	Rear Surface of Vehicle to Firewall	3499	3411	88
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3238	3230	8
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3238	3239	-1
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3225	3241	-16
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3220	3229	-9
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2207	2207	0
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2215	2210	5
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2193	2206	-13
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2197	2200	-3
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3231	3038	193
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3228	3034	194
X14	Rear Surface of Vehicle to Firewall, Right Side	3505	3489	16
X15	Rear Surface of Vehicle to Firewall, Left Side	3489	3472	17
X16	Rear Surface of Vehicle to Steering Column	2821	2849	-28
X17	Center of Steering Column to "A" Post	309	276	33
X18	Center of Steering Column to Headliner	426	342	84
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4596	4081	515
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4591	4101	490
X21	Length of Engine Block	419	419	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3067	3061	6
CD	Rear Surface of Vehicle to Center of Dash Panel	3080	3061	19
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3076	3048	28

All Dimensions in mm

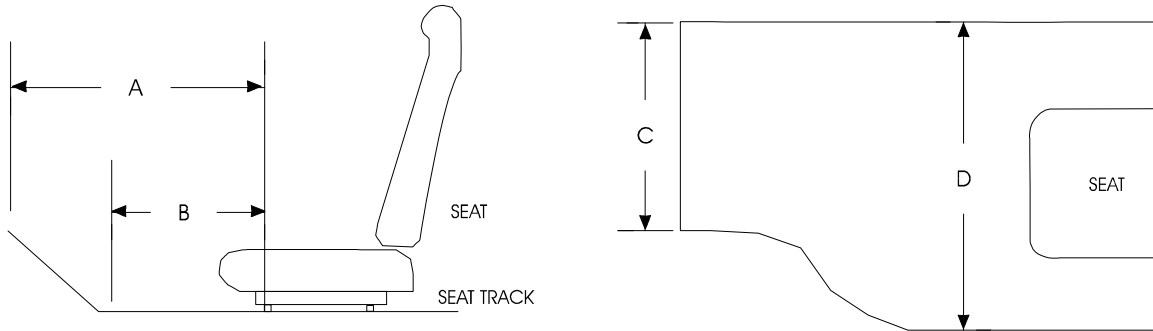
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	936	1443	1088	937	1441	1082
AFTER TEST	921	1441	1103	941	1434	1085
DIFFERENCE	15	2	-15	-4	7	-3

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2680	2680
AFTER TEST	2612	2620
DIFFERENCE	68	60

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



DRIVER

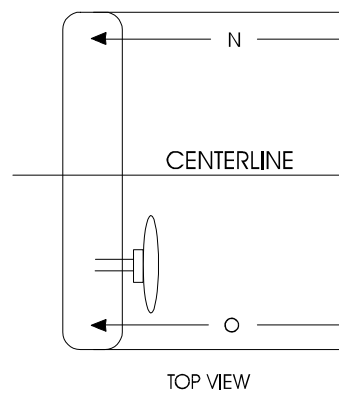
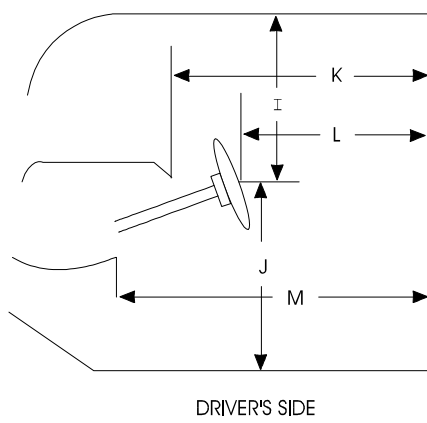
Measurement	Pre-Test	Post-Test	Difference
A	683	569	114
B	625	589	36
C	403	405	-2
D	429	420	9

PASSENGER

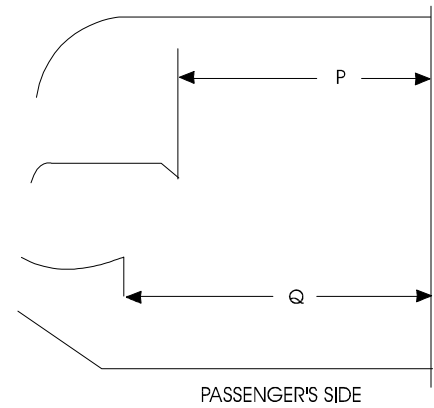
Measurement	Pre-Test	Post-Test	Difference
A	690	593	97
B	620	578	42
C	421	383	38
D	429	413	16

Units = mm

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



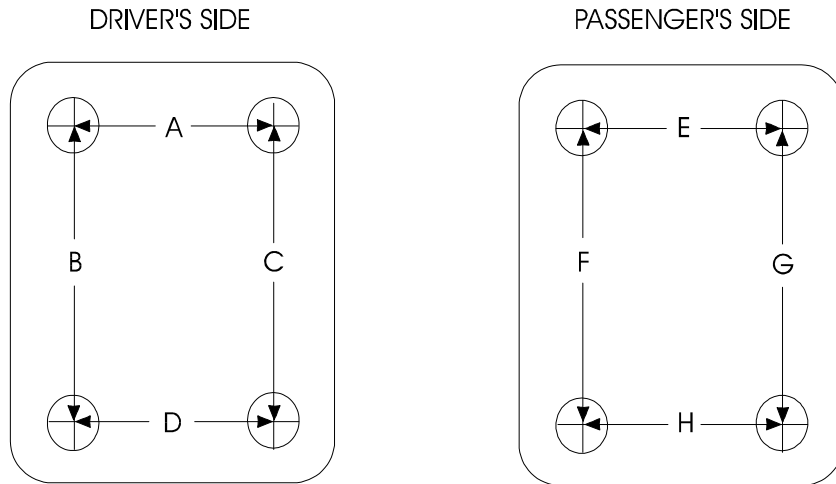
MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



Measurement	Pre-Test	Post-Test	Difference
I	426	342	84
J	610	734	-124
K	1732	1694	38
L	1505	1529	-24
M	1772	1778	-6
N	1730	1752	-22
O	1761	1728	33
P = K (PASS.)	1665	1685	-20
Q = M (PASS.)	1709	1719	-10

Units = mm

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

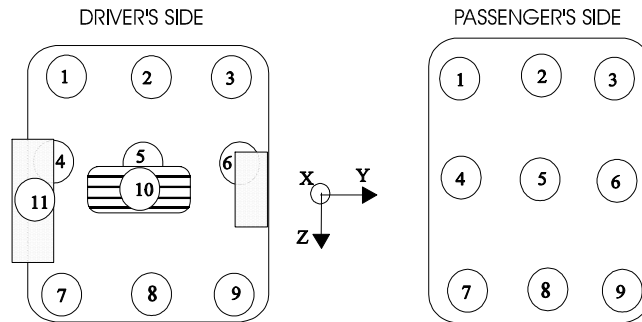


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	75	75	0
B	425	425	0
C	430	430	0
D	100	100	0
E	92	92	0
F	330	330	0
G	330	330	0
H	98	98	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	3455	3379	76	-707	-772	65
2	3460	3348	112	-710	-785	75
3	3448	3328	120	-694	-774	80
4	3421	3370	51	-639	-708	69
5	3435	3353	82	-640	-713	73
6	3425	3345	80	-635	-701	66
7	3398	3381	17	-584	-641	57
8	3402	3369	33	-593	-640	47
9	3396	3364	32	-586	-646	60
10	3343	3239	104	-715	-764	49
11	3386	3357	29	-651	-711	60

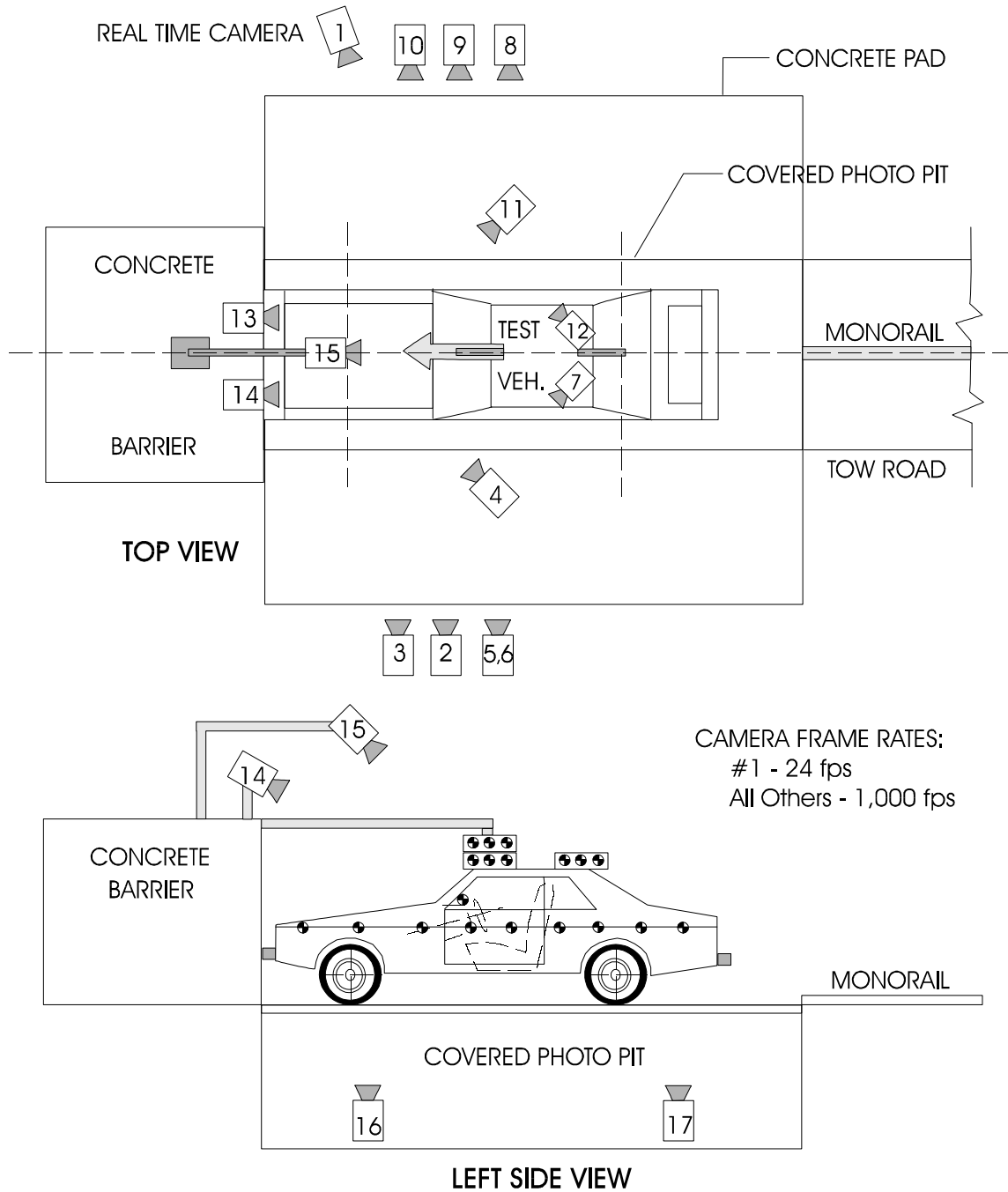
Passenger Side Floorpan Measurements

Floorpan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3454	3353	101	-699	-804	105
2	3474	3384	90	-701	-794	93
3	3451	3406	45	-711	-796	85
4	3435	3360	75	-651	-761	110
5	3438	3354	84	-650	-741	91
6	3428	3398	30	-647	-756	109
7	3389	3359	30	-609	-694	85
8	3404	3369	35	-605	-692	87
9	3400	3394	6	-606	-696	90

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.15 HIGH-SPEED CAMERA LOCATIONS (cont.)

NHTSA Test No.: M15100 Vehicle: 2001 Toyota 4Runner 4-Door Utility Vehicle

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)*			ANGLE (deg)**	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	6876	1760	1165	-4	6409	12.5	1000
3	Left Side View	6780	1138	1100	-2	6313	25	1010
4	Driver and Interior View	7140	2600	1948	-7	-	25	1050
5	Steering Column (Bottom)	7620	1953	1177	-2	7153	25	1010
6	Steering Column (Top)	7620	1953	1777	-7	7153	25	1010
7	Left Belt	-	-	-	-	-	13	1025
8	Overall Right Side	6902	2048	1207	-2	6435	12.5	1010
9	Right Side View	8259	656	1233	-2	7792	25	1005
10	Right Passenger View	7933	1740	1486	-3	7466	35	1010
11	Passenger and Interior View	7109	2762	1971	-6	-	25	1005
12	Right Belt	-	-	-	-	-	13	1015
13	Passenger Front View	620	-92	1987	-28	-	13	1020
14	Driver Front View	620	-92	1987	-26	-	13	1005
15	Windshield View	0	-530	3374	-49	-	13	1010
16	Pit View of Engine	0	615	-3048	90	-	13	1005
17	Pit View of Fuel Tank	0	2375	-3048	90	-	13	1050

*X = film plane to monorail centerline

** = referenced to horizontal plane

Y = film plane to impact location

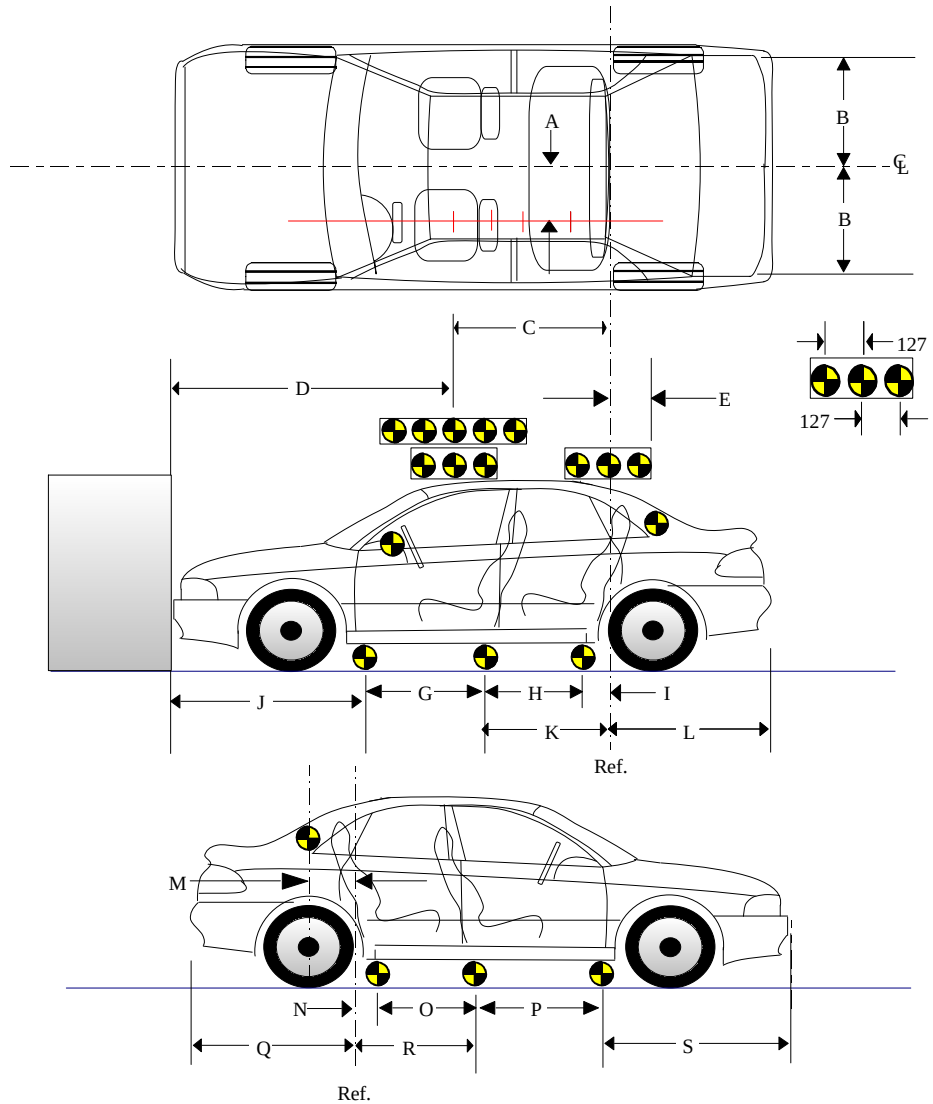
N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

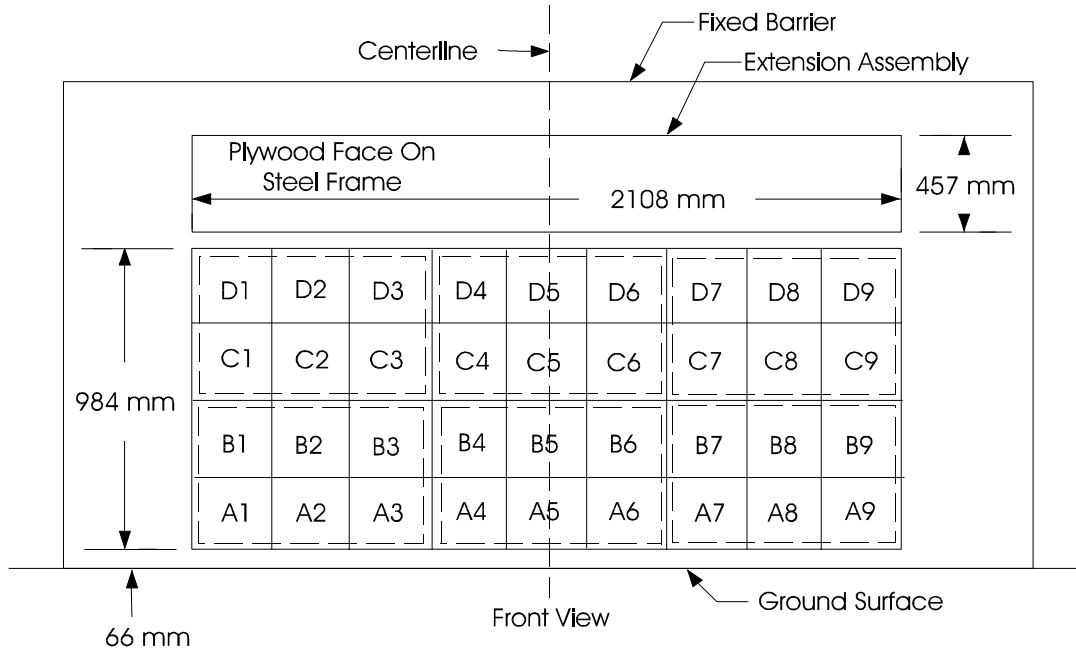
(Dimensions in millimeters)

A	391
B	635
C	1211
D	2285
E	-19
F	1791
G	845
H	845
I	112
J	1394
K	957
L	1502
M	-27
N	114
O	820
P	856
Q	1504
R	934
S	1312



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. : M15100; Test Date: December 13, 2000; Technician: Patrick MacDiarmid

Vehicle Model Year/Make/Model: 2001 Toyota 4Runner

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

B. Size of vent holes: (mm²) 707 -Driver 1590 -Passenger

C. Total vent area: (mm²) 1414 -Driver 3180 -Passenger

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

Driver: 540 -Height; 630 -Width; 300 -Depth

Passenger: 870 -Height; 690 -Width; 700 -Depth

E. Is the air bag tethered?

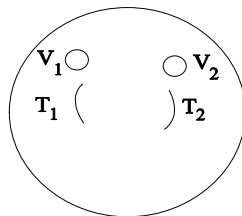
Driver: X -Yes; - -No; If yes, record length of tether- 220

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

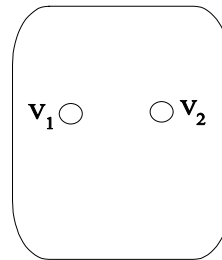
Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.

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

Driver



Passenger



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

Driver: Air bag: GA120-0920 920011114

Generator: 400625700A0U TATL6T1UART

Passenger: Air bag: -

Generator: ANC L8X 1 00 PLZ

DATA SHEET NO. 19 ACCIDENT INVESTIGATION DIVISION DATA
FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Toyota 4Runner 4-Door Utility Vehicle

NHTSA Test No.: M15100 VIN: JT3HN86R510327671

Model Year: 2001 Build Date: 9/00 Test Date: December 13, 2000

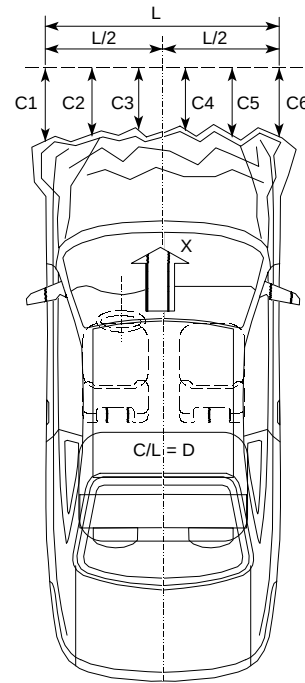
Vehicle Size Category: Utility Vehicle Test Weight: 2149.5 kg

Vehicle Wheelbase: 2680 mm; Front Overhang: 1199 mm; Overall Width: 1800 mm

Collision Deformation Classification (CDC) Code: 12FDEW2

Crush Depth Dimensions:

	PRE	POST	DIFF	
C1 =	4512	4124	388.0	mm
C2 =	4669	4164	505.0	mm
C3 =	4694	4159	535.0	mm
C4 =	4696	4158	538.0	mm
C5 =	4677	4133	544.0	mm
C6 =	4516	4117	399.0	mm



Midpoint of Damage: D = Vehicle Centerline
(Longitudinal)

Length of Damaged Region:

L1= 1500 mm
L2= 750.0 mm
L3= 500.0 mm

APPENDIX A
PHOTOGRAPHS

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Figure A-1 LOAD CELL LOCATIONS



Figure A-2 PRE-TEST FRONT VIEW



Figure A-3 POST-TEST FRONT VIEW



Figure A-4 PRE-TEST LEFT SIDE VIEW



Figure A-5 POST-TEST LEFT SIDE VIEW



Figure A-6 PRE-TEST RIGHT SIDE VIEW



Figure A-7 POST-TEST RIGHT SIDE VIEW



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



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



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



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



Figure A-12 PRE-TEST WINDSHIELD VIEW



Figure A-13 POST-TEST WINDSHIELD VIEW



Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW



Figure A-15 FUEL CAP VIEW



Figure A-16 PRE-TEST FRONT UNDERBODY VIEW



Figure A-17 POST-TEST FRONT UNDERBODY VIEW



Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW



Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW



Figure A-20 PRE-TEST REAR UNDERBODY VIEW

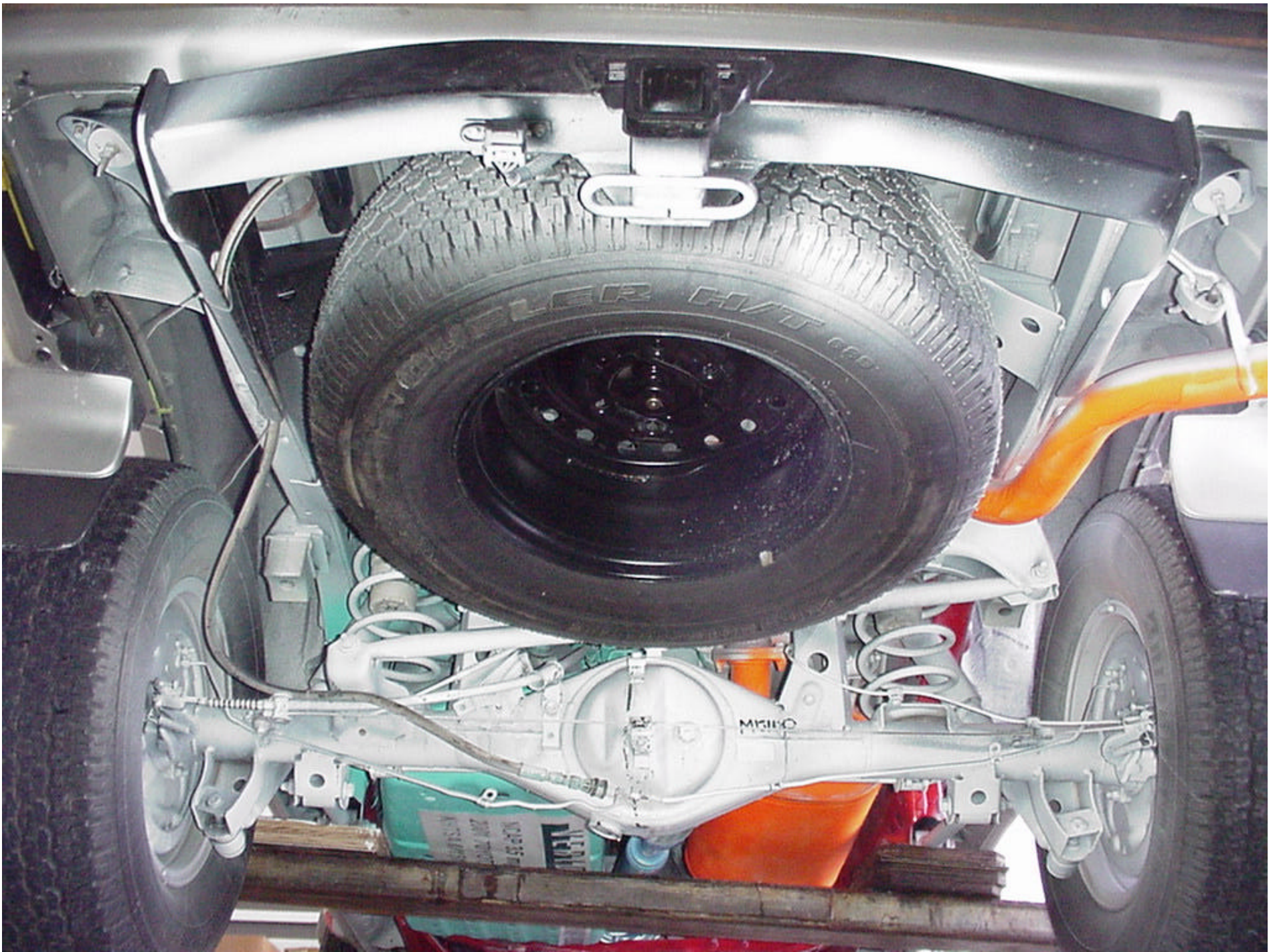


Figure A-21 POST-TEST REAR UNDERBODY VIEW



Figure A-22 PRE-TEST DRIVER POSITION VIEW



Figure A-23 POST-TEST DRIVER POSITION VIEW



Figure A-24 PRE-TEST PASSENGER POSITION VIEW



Figure A-25 POST-TEST PASSENGER POSITION VIEW



Figure A-26 PRE-TEST DRIVER AND INTERIOR VIEW



Figure A-27 POST-TEST DRIVER AND INTERIOR VIEW



Figure A-28 PRE-TEST PASSENGER AND INTERIOR VIEW



Figure A-29 POST-TEST PASSENGER AND INTERIOR VIEW



Figure A-30 PRE-TEST DRIVER HEAD LOCATION



Figure A-31 POST-TEST DRIVER HEAD LOCATION



Figure A-32 PRE-TEST PASSENGER HEAD LOCATION



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8602-8

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. M15100

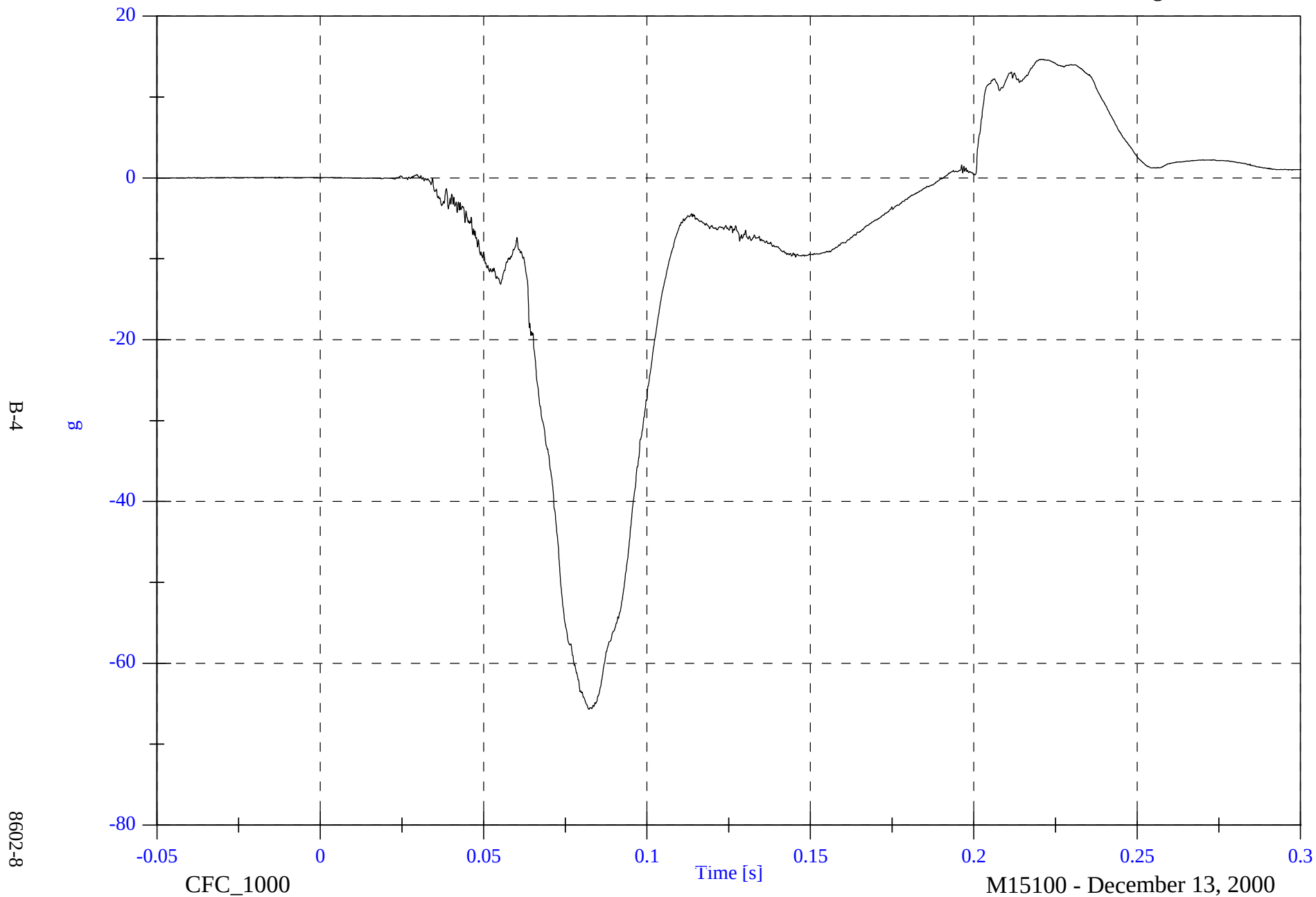
DATA TYPE	SAE FILTER CLASS (Hz)
Dummy Head Accelerations	1000
Dummy Chest Accelerations	180
Dummy Chest Displacements	60
Dummy Femur Forces	600
Dummy Belt Loads	60
Dummy Belt Displacements	180
Dummy Neck Forces	1000
Dummy Neck Moments	600
Vehicle Accelerations	60
Vehicle Velocity Integrations	180
Vehicle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

NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Head x

Max: 14.7 [g] at 0.221 [s]

Min: -65.7 [g] at 0.082 [s]

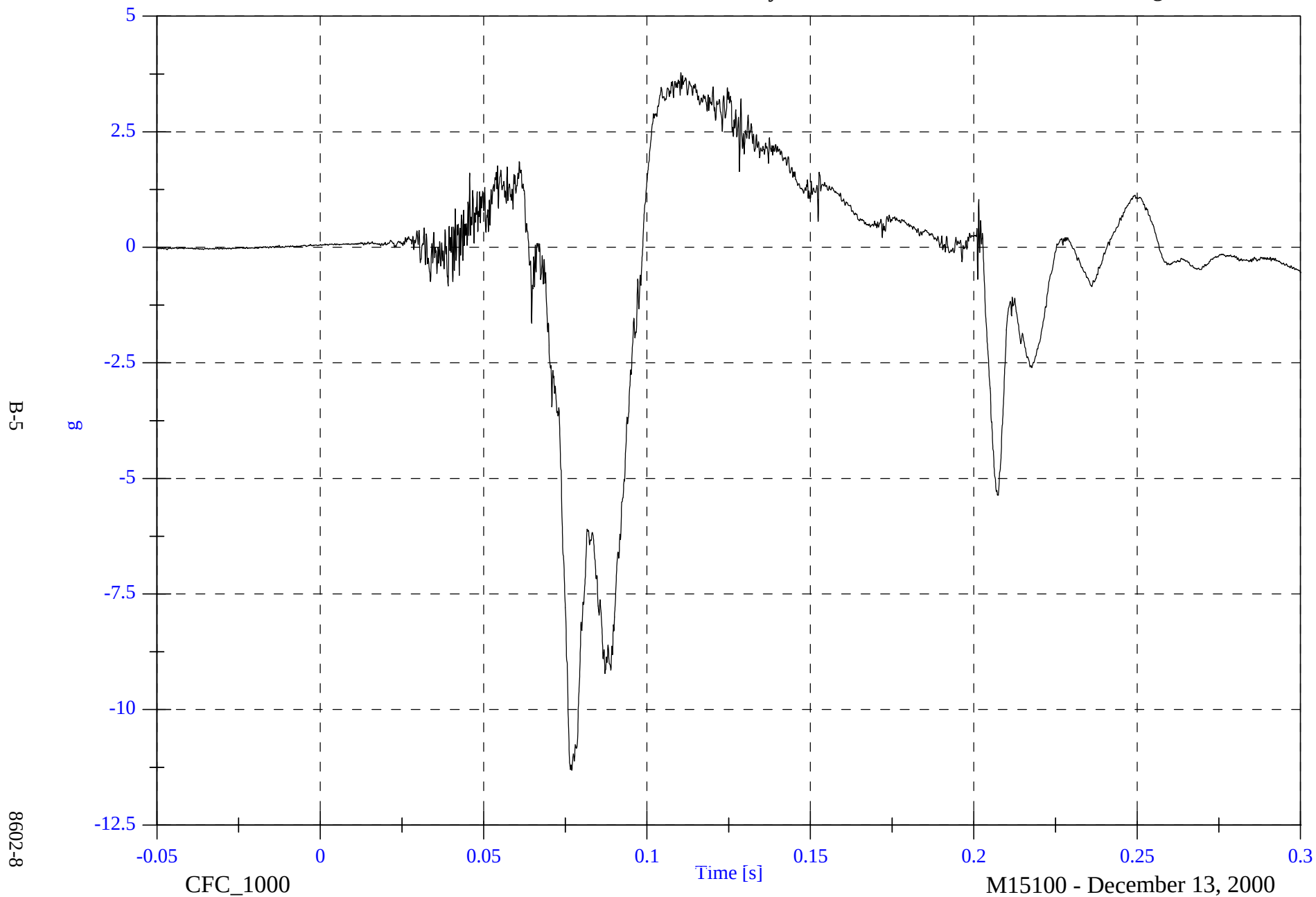


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 3.8 [g] at 0.110 [s]

Min: -11.3 [g] at 0.077 [s]

P1 Head y



NCAP 2001 Test #8 2001 Toyota 4Runner

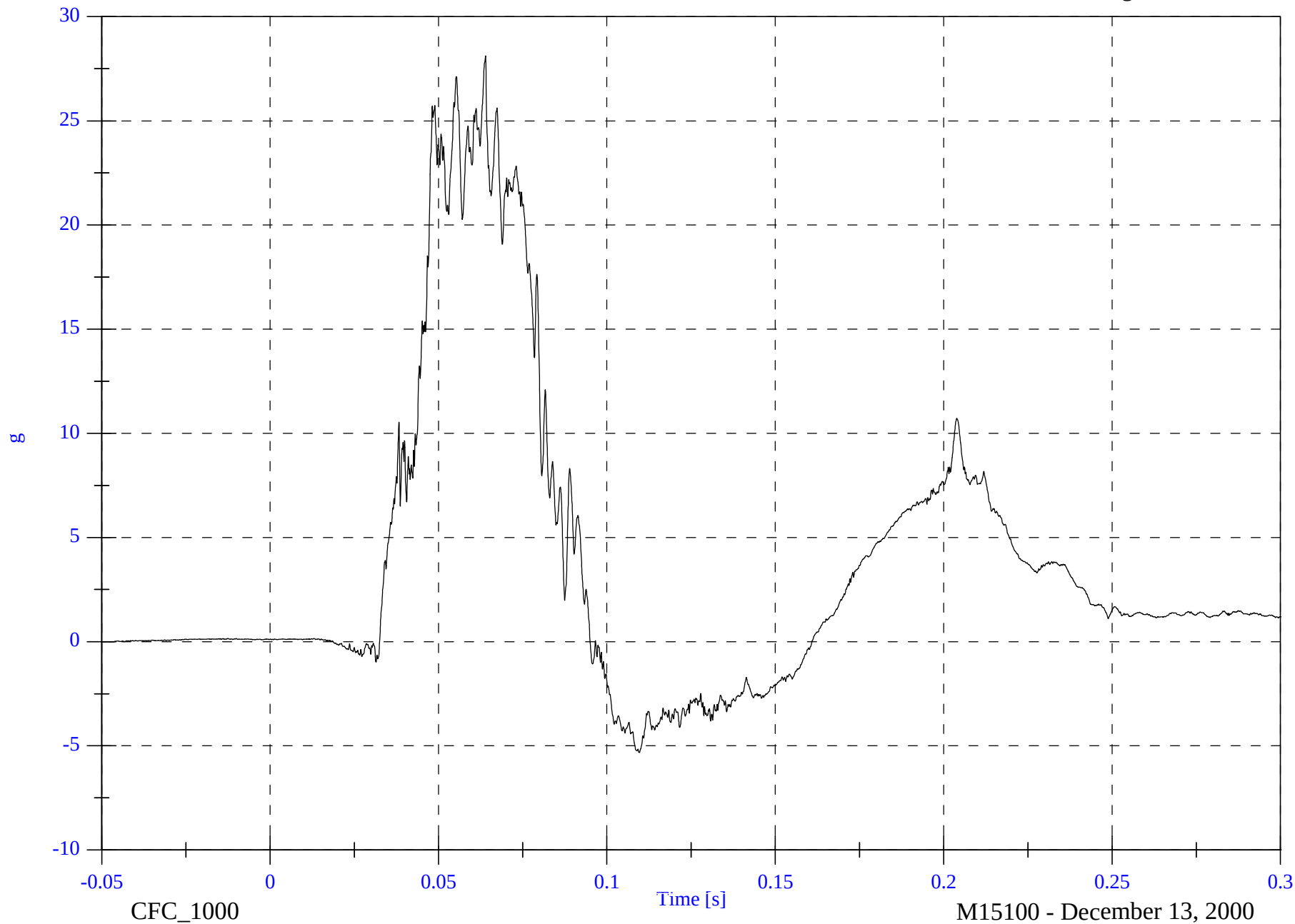
P1 Head z

Max: 28.1 [g] at 0.064 [s]

Min: -5.3 [g] at 0.110 [s]

B-6

8602-8

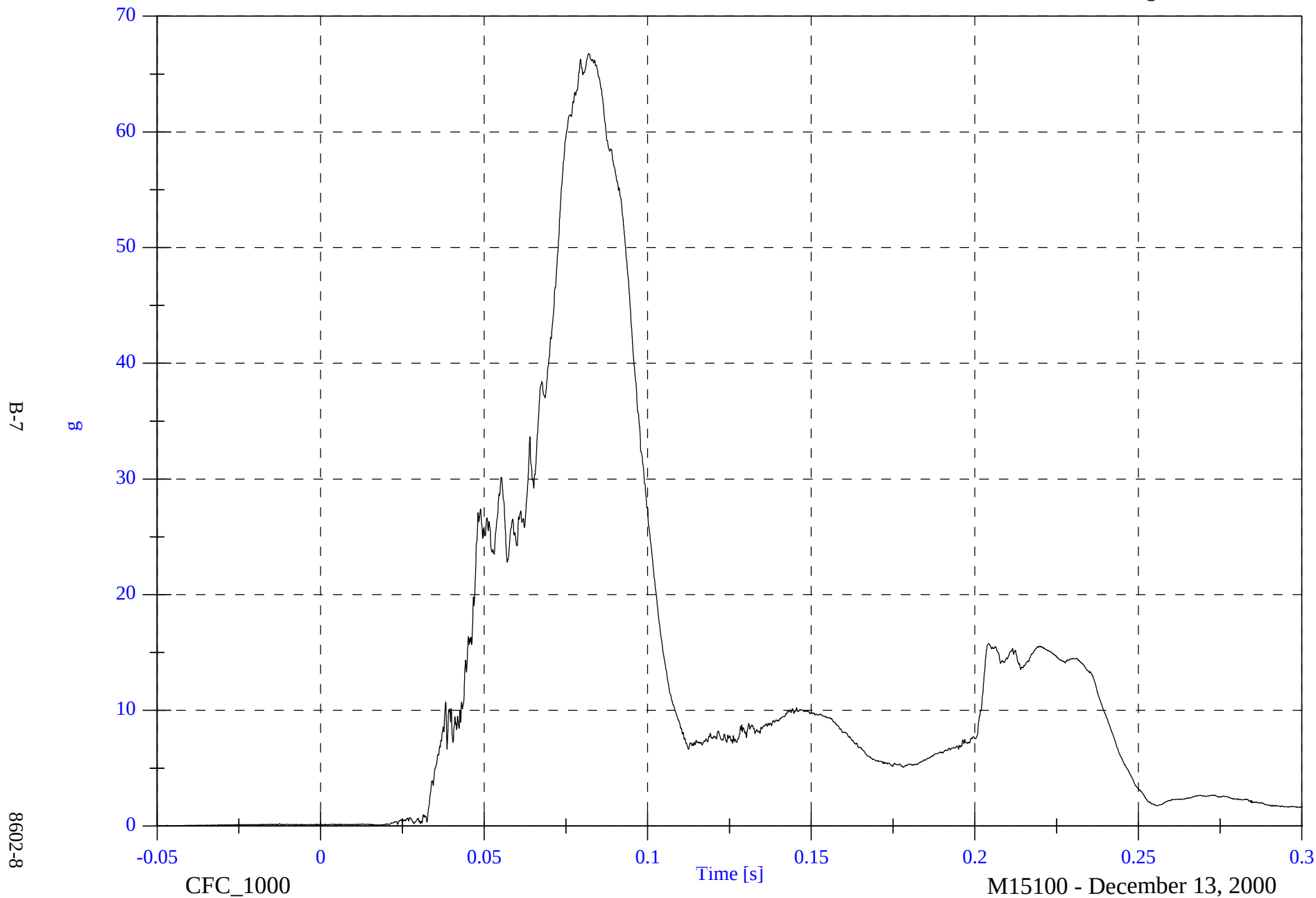


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Head Resultant

Max: 66.8 [g] at 0.082 [s]

Min: 0.0 [g] at -0.047 [s]

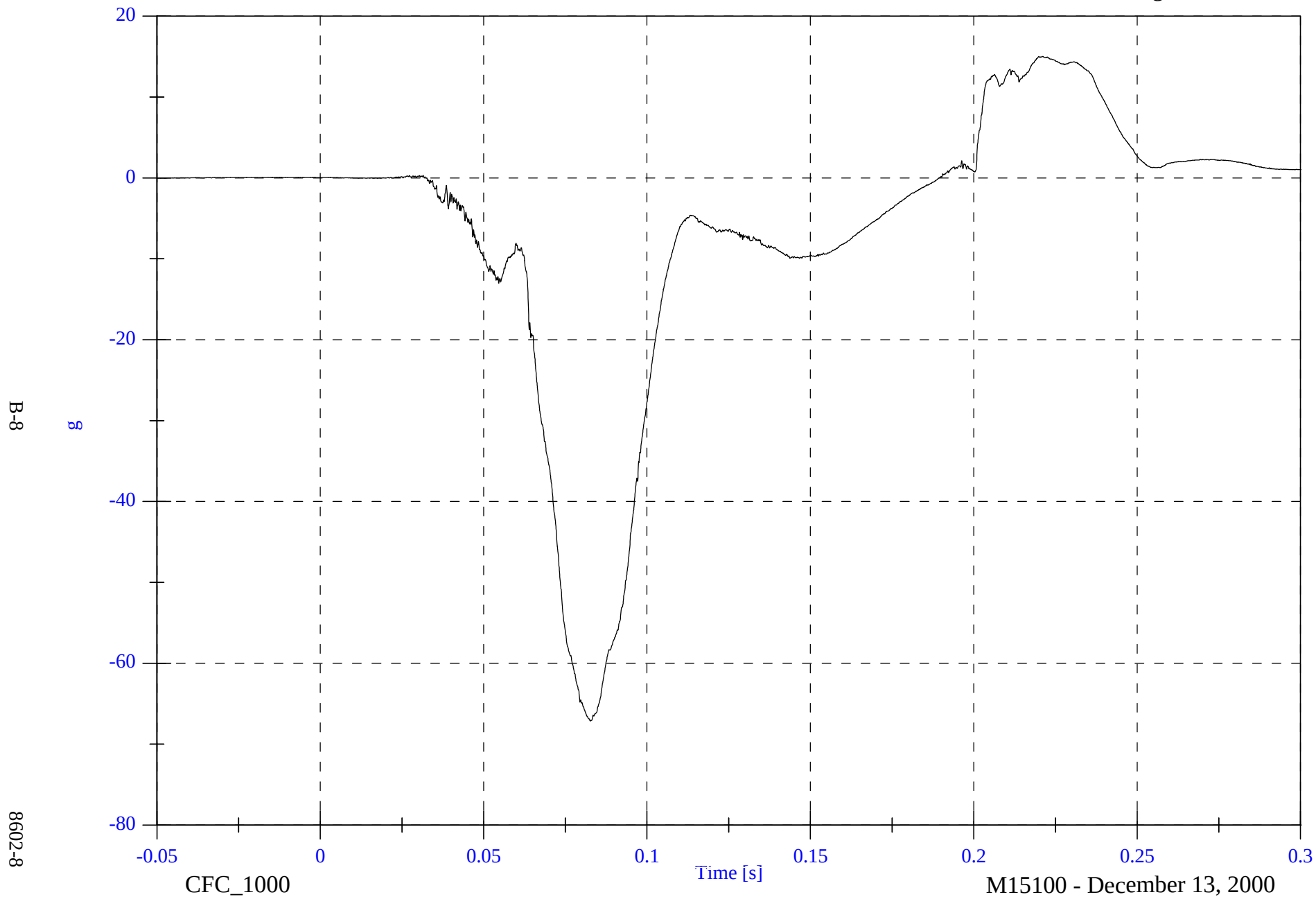


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 15.0 [g] at 0.221 [s]

Min: -67.1 [g] at 0.083 [s]

P1 Head Red x

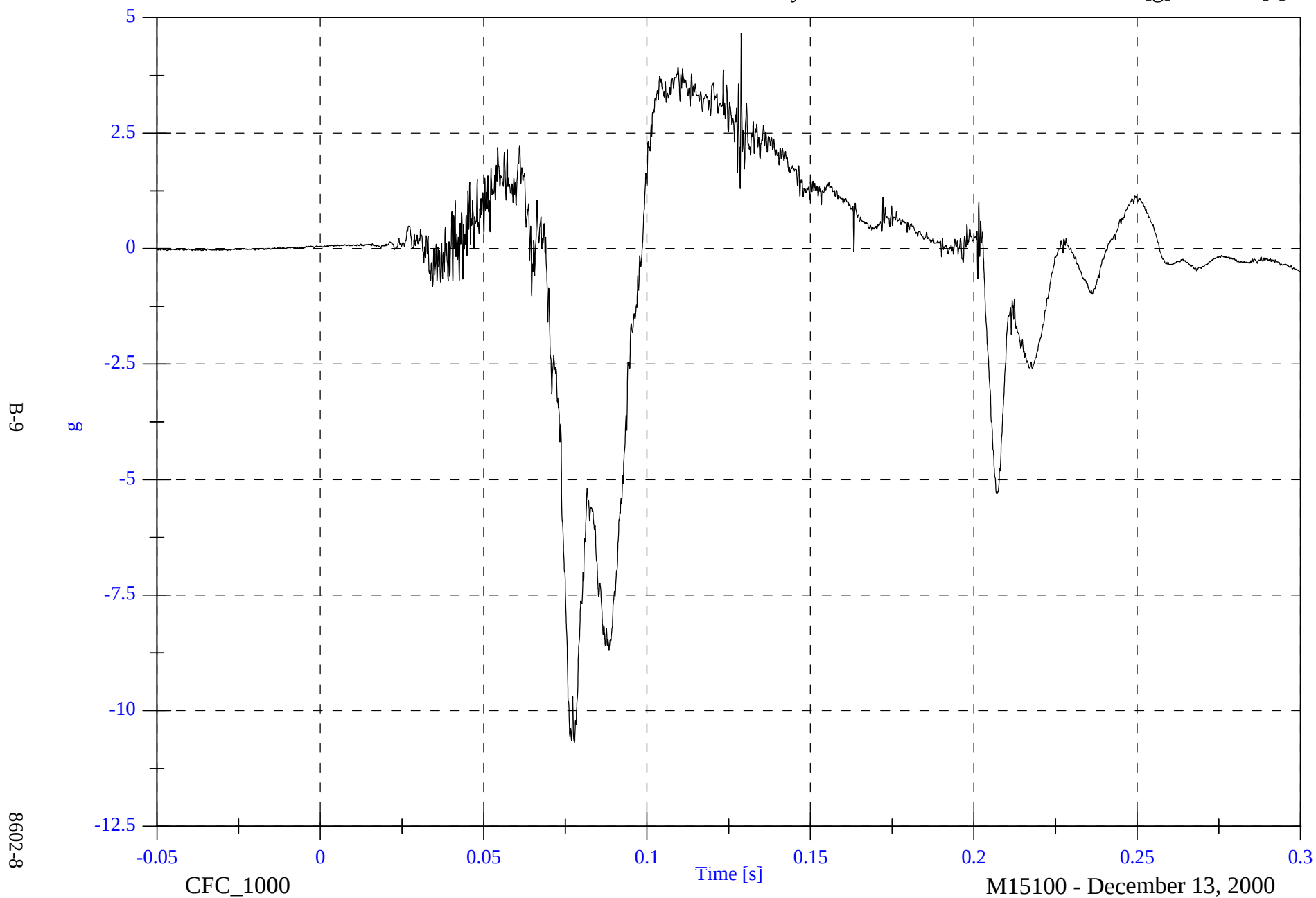


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 4.7 [g] at 0.129 [s]

Min: -10.7 [g] at 0.078 [s]

P1 Head Red y

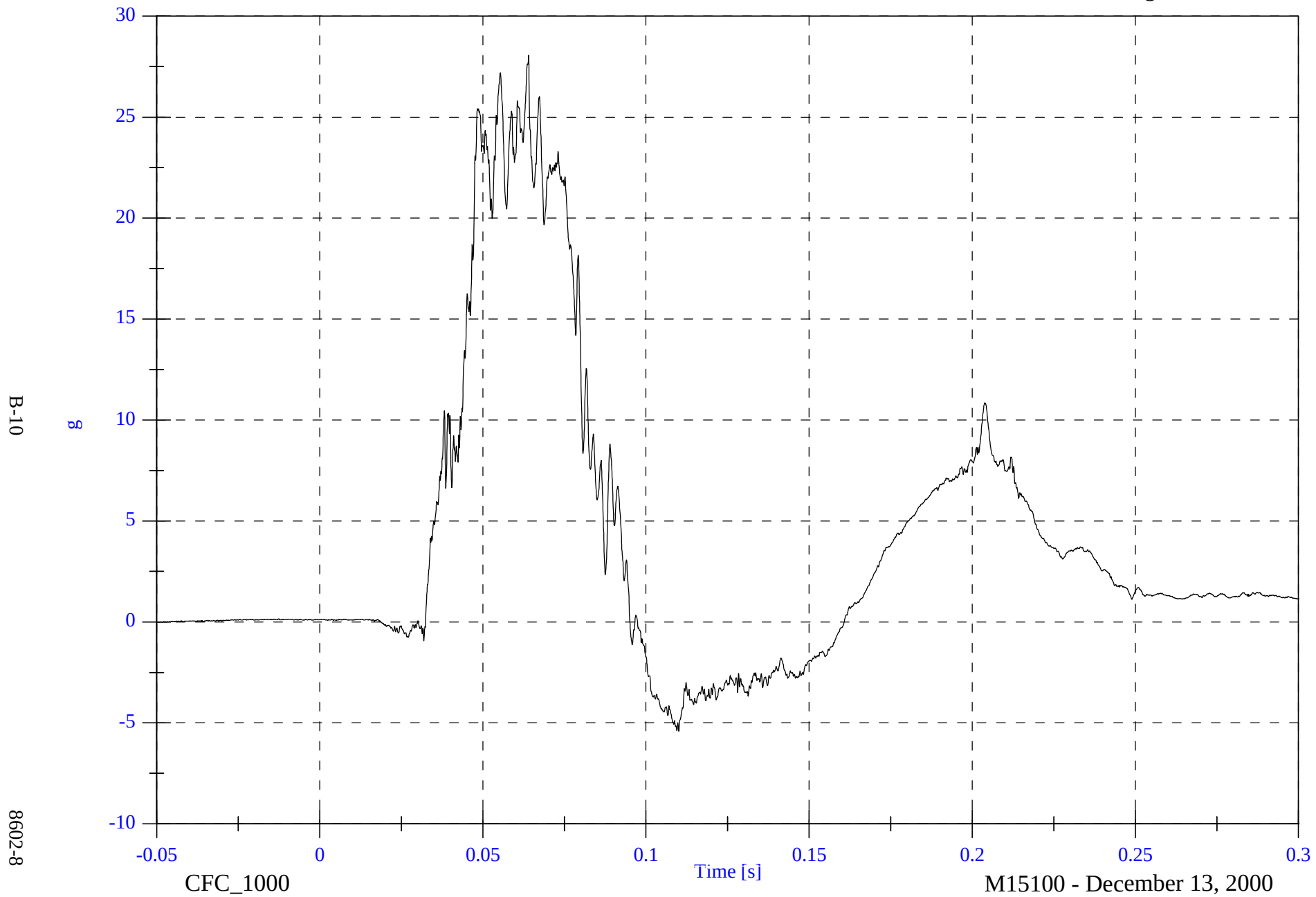


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Head Red z

Max: 28.1 [g] at 0.064 [s]

Min: -5.4 [g] at 0.110 [s]



NCAP 2001 Test #8 2001 Toyota 4Runner

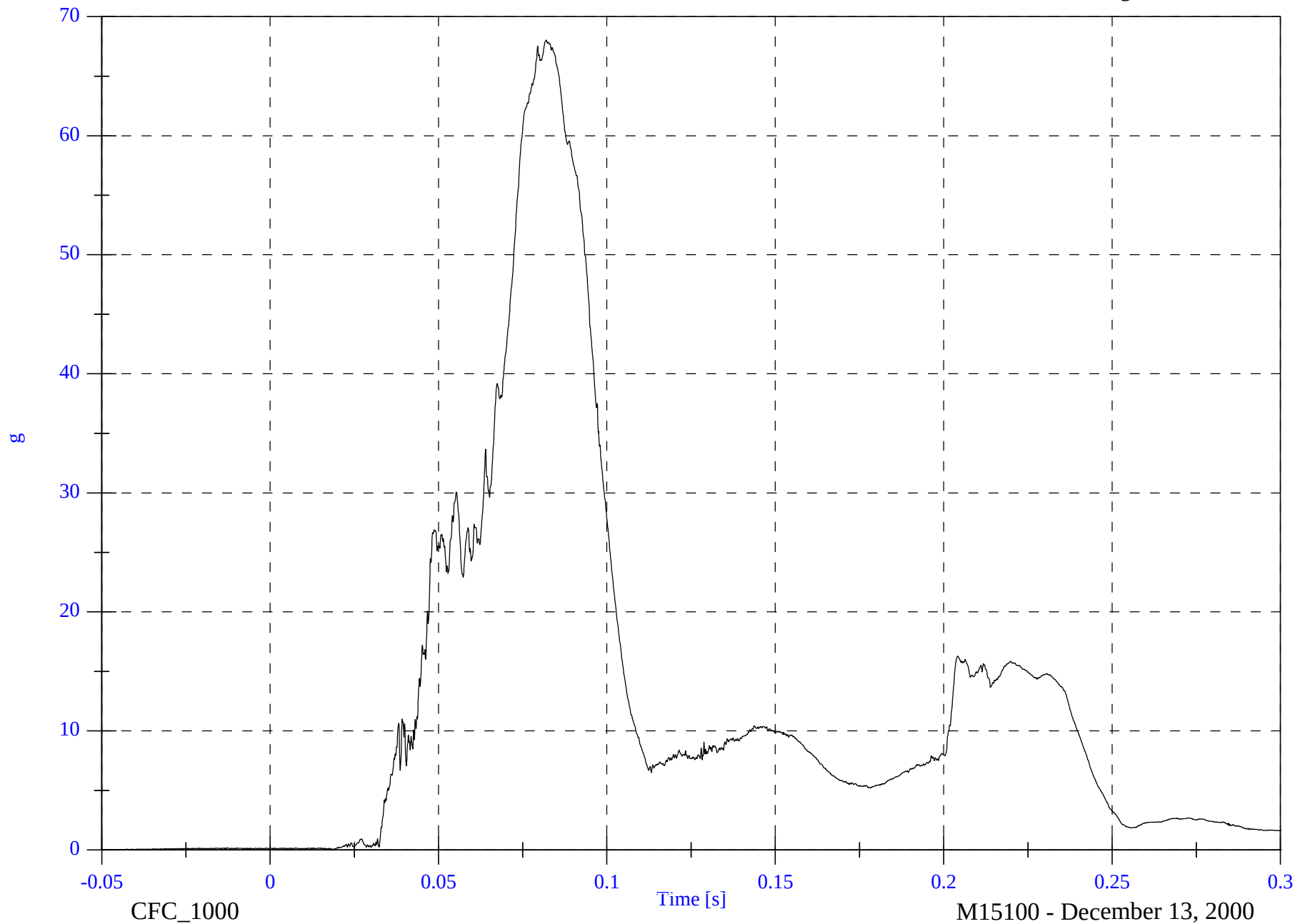
P1 Head Red Resultant

Max: 68.0 [g] at 0.082 [s]

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

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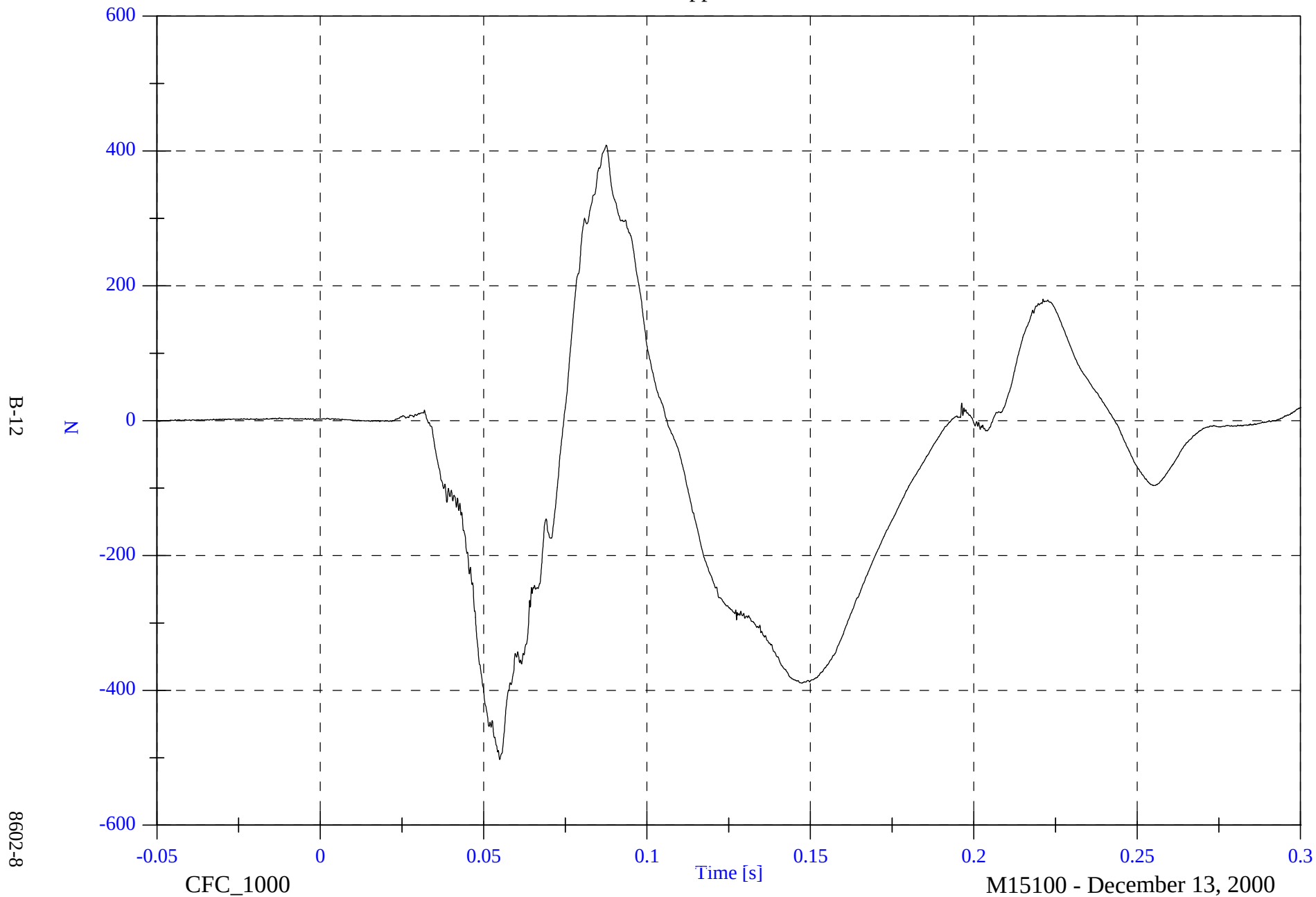


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Upper Neck Fx

Max: 408.5 [N] at 0.088 [s]

Min: -503.0 [N] at 0.055 [s]

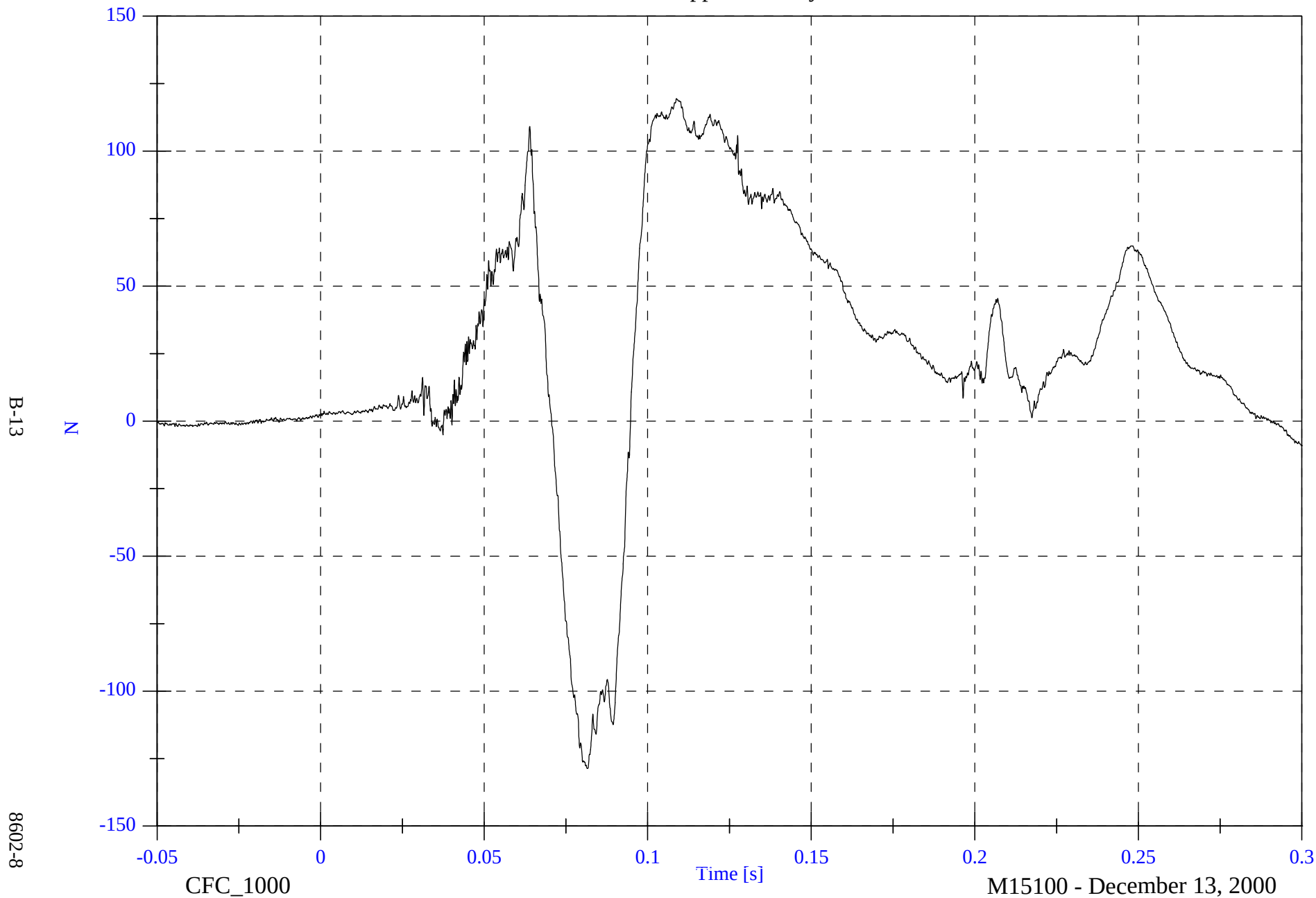


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 119.6 [N] at 0.109 [s]

Min: -128.7 [N] at 0.082 [s]

P1 Upper Neck Fy

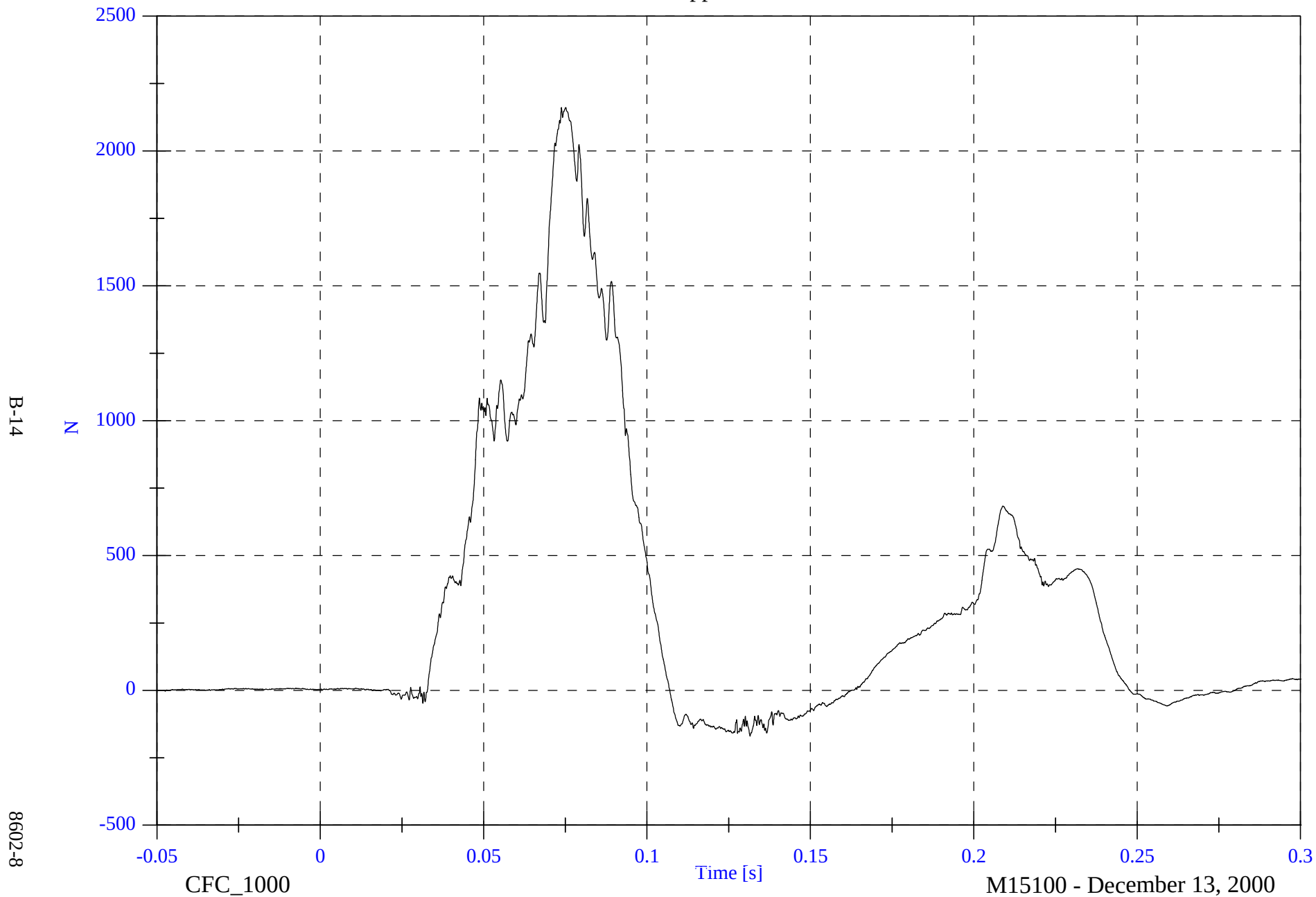


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Upper Neck Fz

Max: 2161.6 [N] at 0.074 [s]

Min: -169.8 [N] at 0.131 [s]

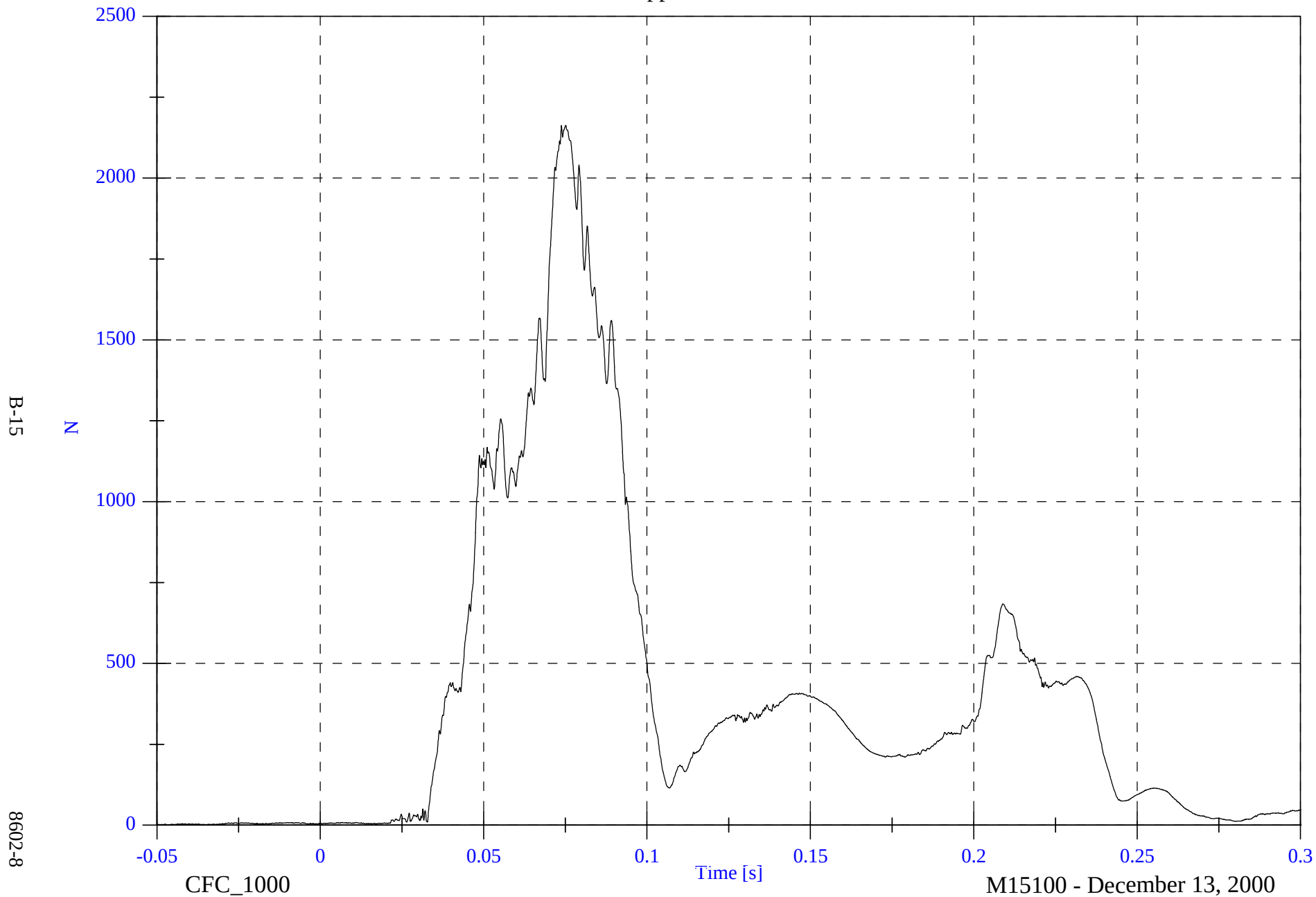


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Upper Neck F Resultant

Max: 2162.8 [N] at 0.075 [s]

Min: 0.9 [N] at -0.047 [s]



NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 22.0 [N-m] at 0.090 [s]

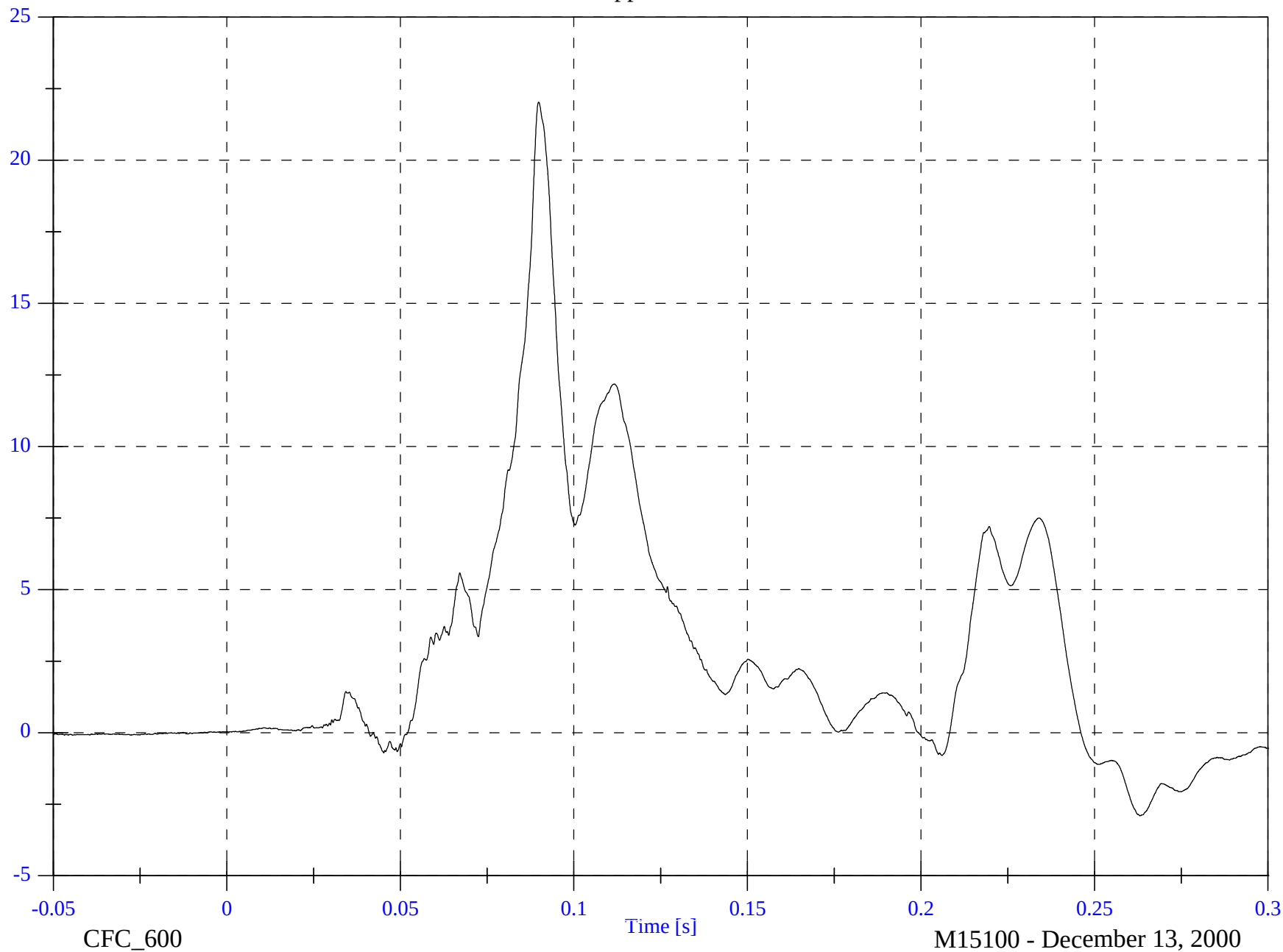
P1 Upper Neck Mx

Min: -2.9 [N-m] at 0.263 [s]

B-16

N-m

8602-8

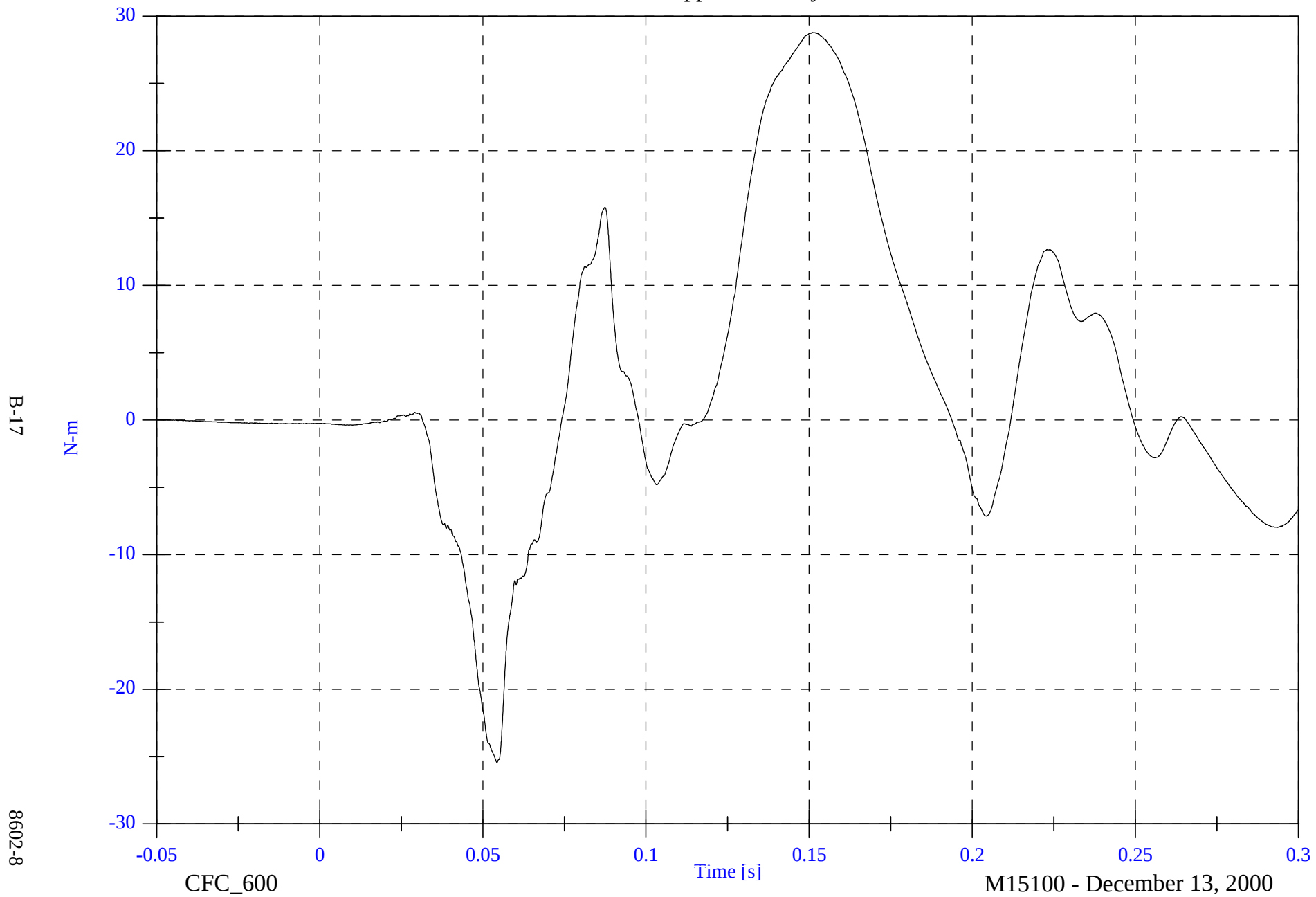


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Upper Neck My

Max: 28.8 [N-m] at 0.151 [s]

Min: -25.5 [N-m] at 0.054 [s]

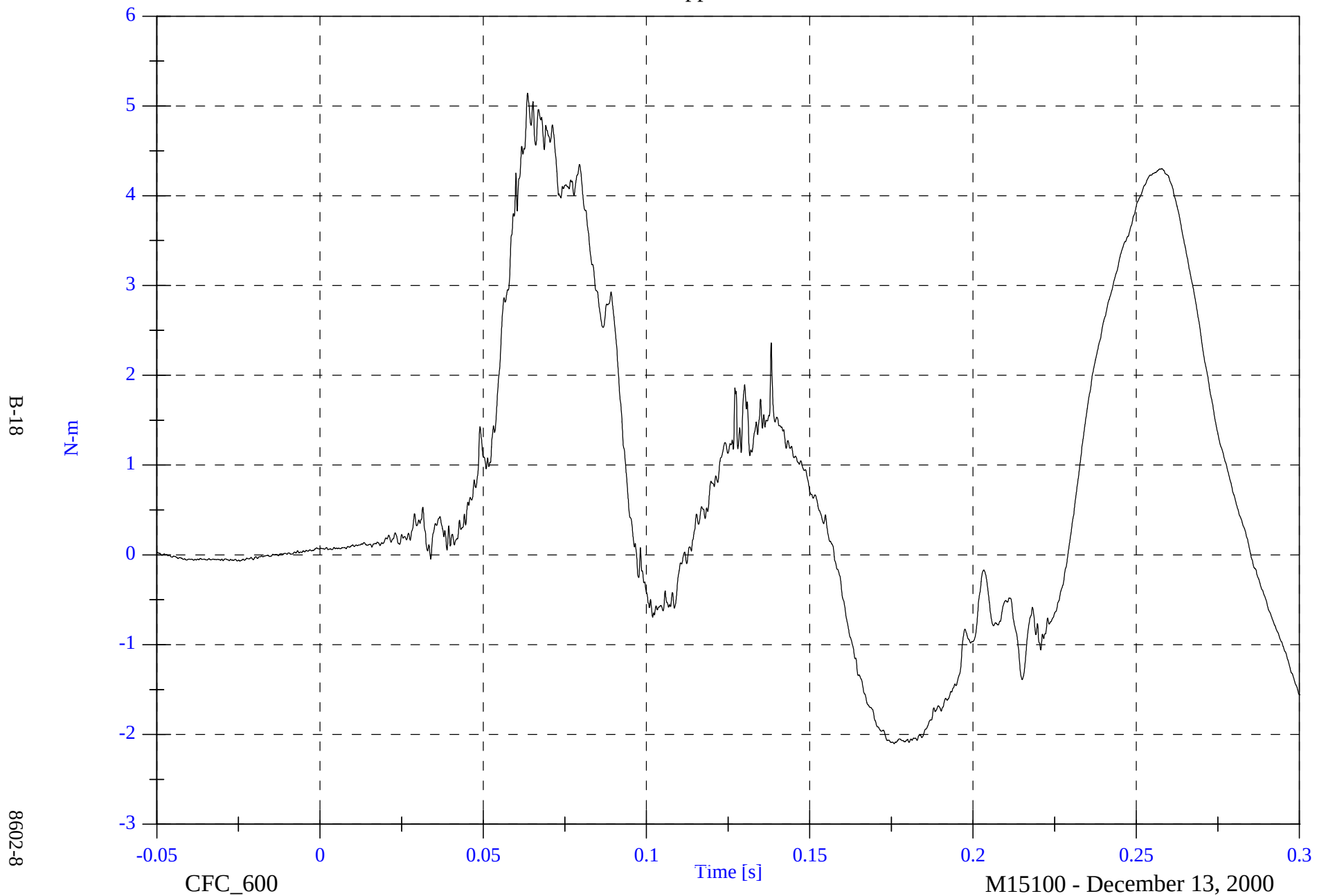


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Upper Neck Mz

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

Min: -2.1 [N-m] at 0.176 [s]



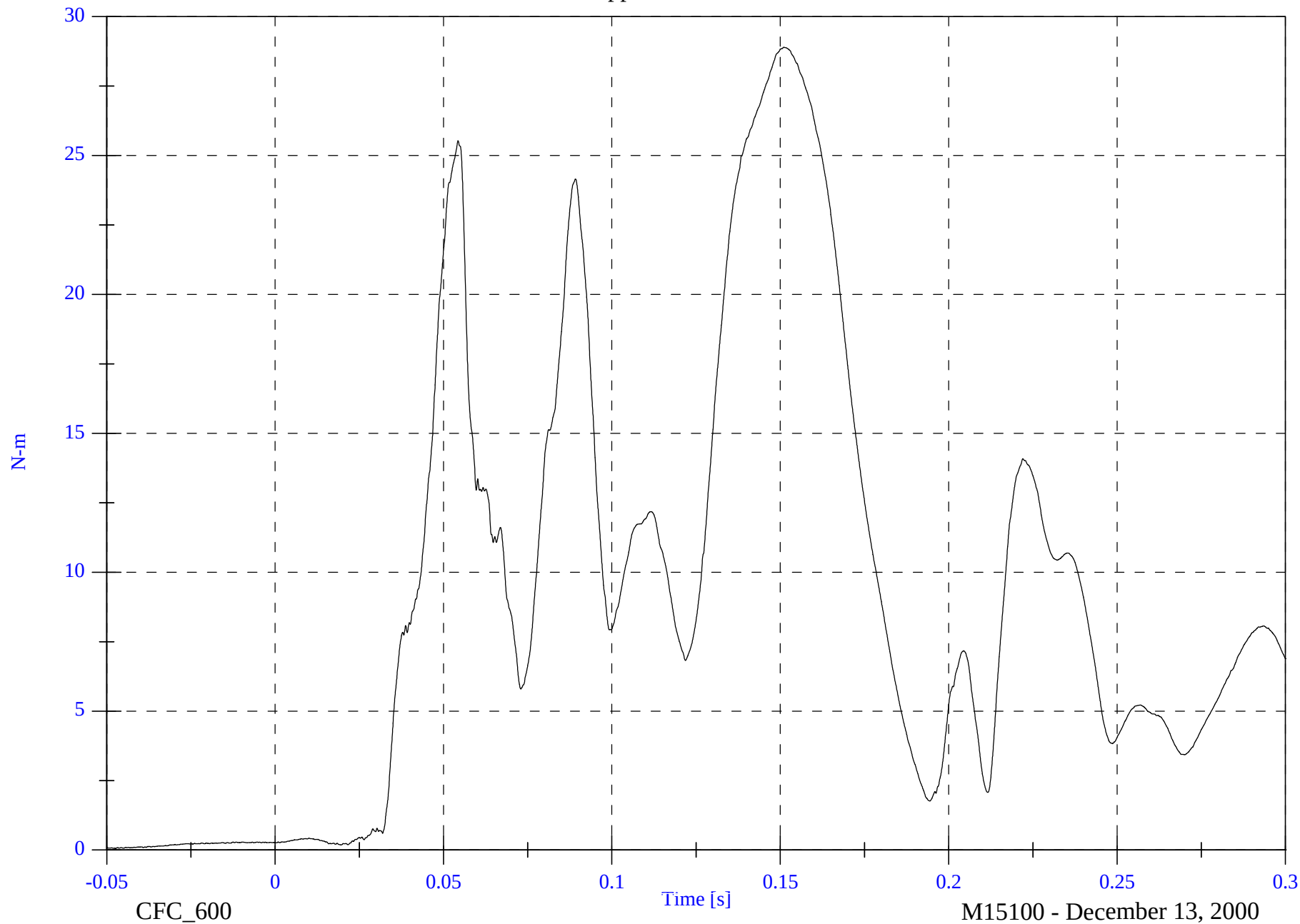
8602-8

NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Upper Neck M Resultant

Max: 28.9 [N-m] at 0.151 [s]

Min: 0.1 [N-m] at -0.047 [s]



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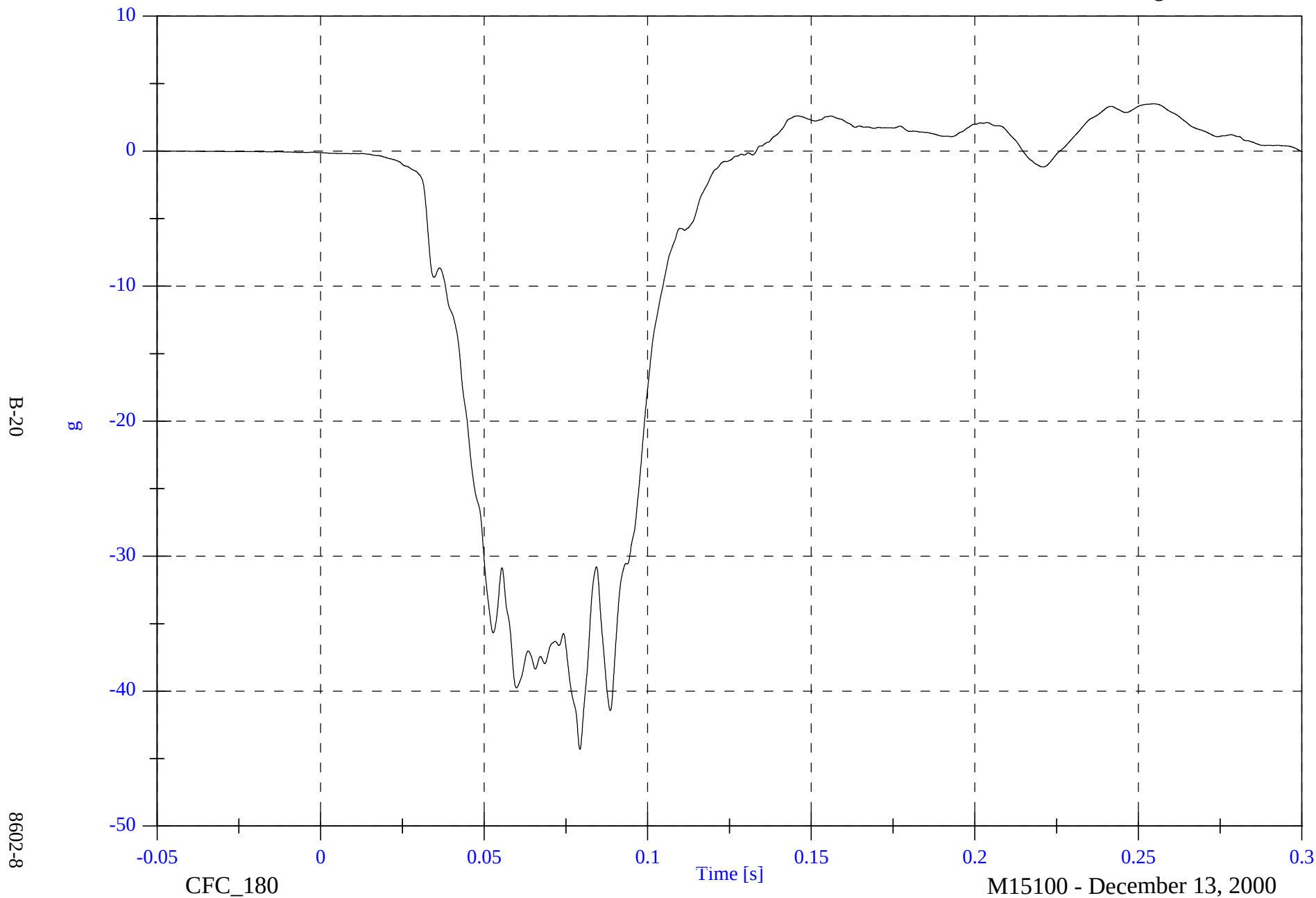
8602-8

NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 3.5 [g] at 0.255 [s]

Min: -44.3 [g] at 0.079 [s]

P1 Chest x

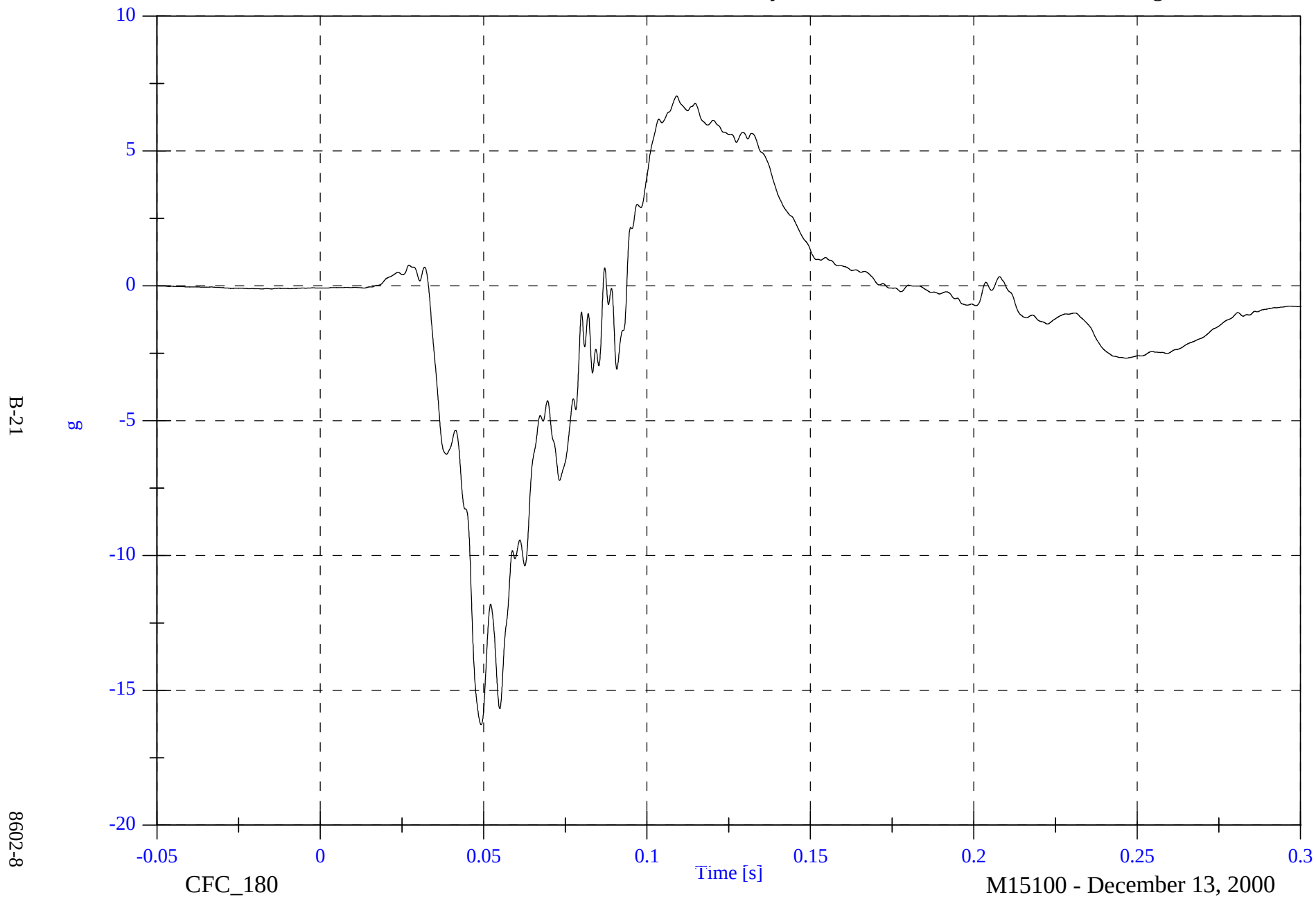


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Chest y

Max: 7.0 [g] at 0.109 [s]

Min: -16.3 [g] at 0.049 [s]

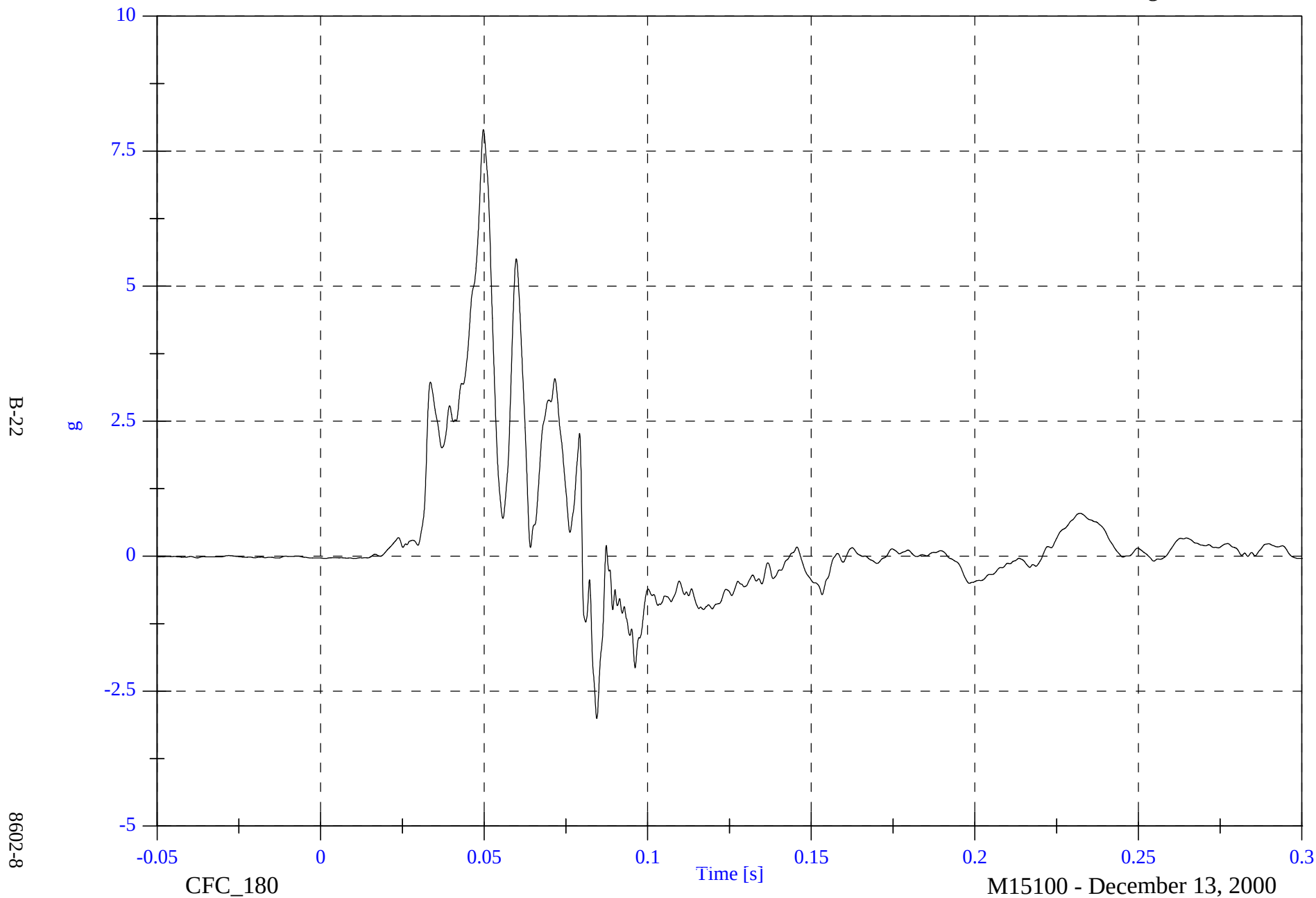


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Chest z

Max: 7.9 [g] at 0.050 [s]

Min: -3.0 [g] at 0.084 [s]



NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Chest Resultant

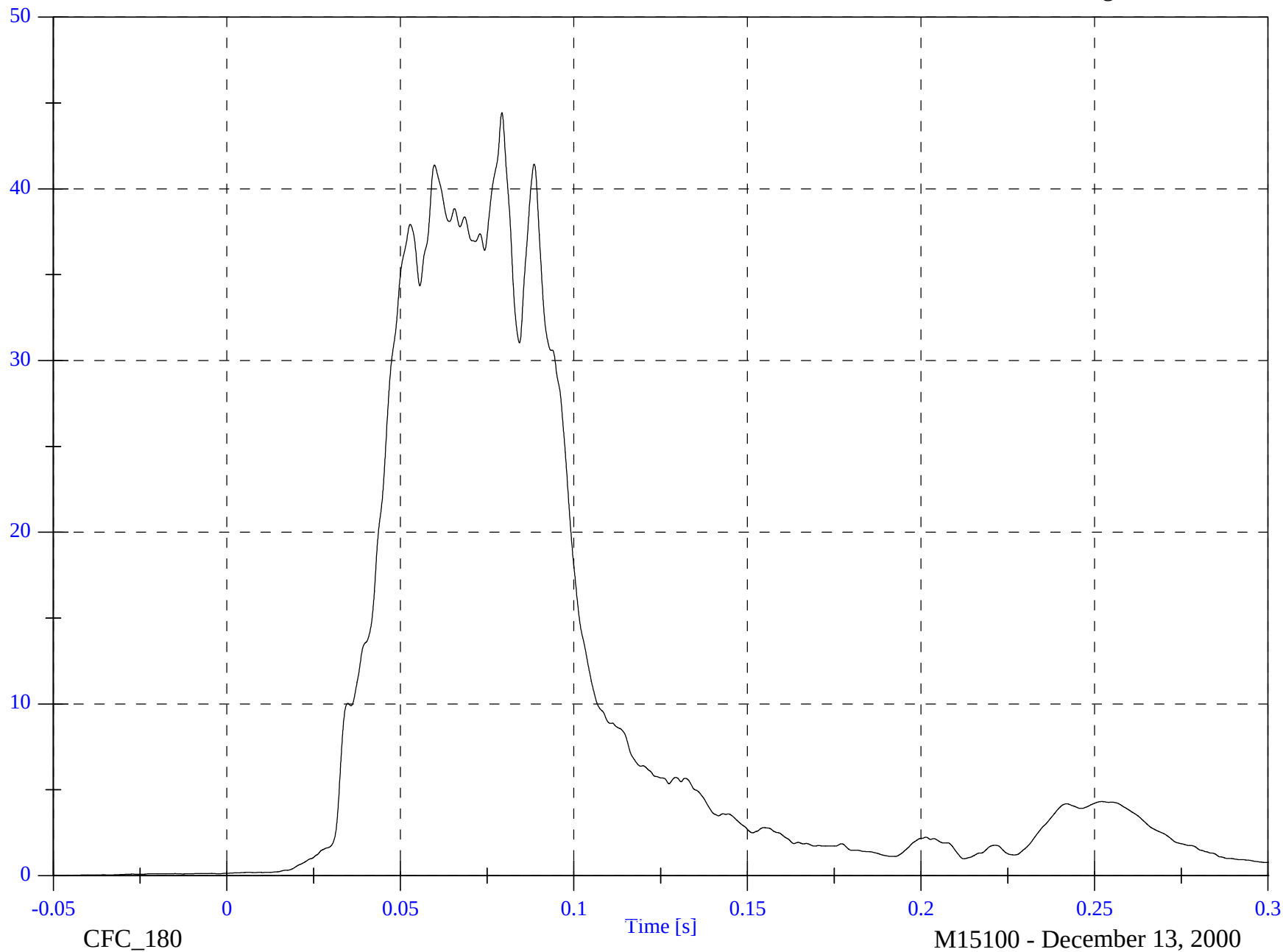
Max: 44.4 [g] at 0.079 [s]

Min: 0.0 [g] at -0.047 [s]

B-23

8602-8

g

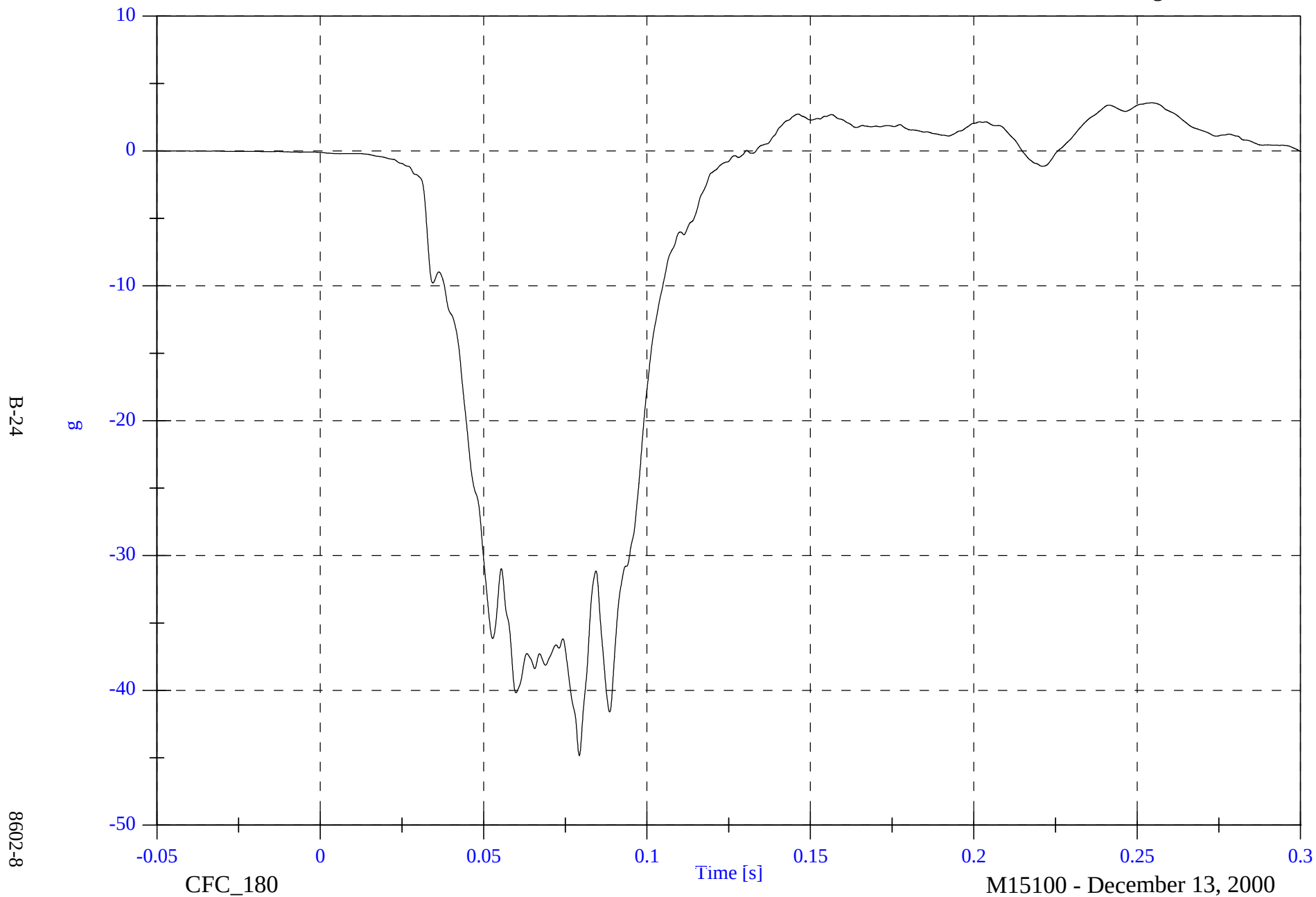


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Chest Red x

Max: 3.6 [g] at 0.254 [s]

Min: -44.8 [g] at 0.079 [s]

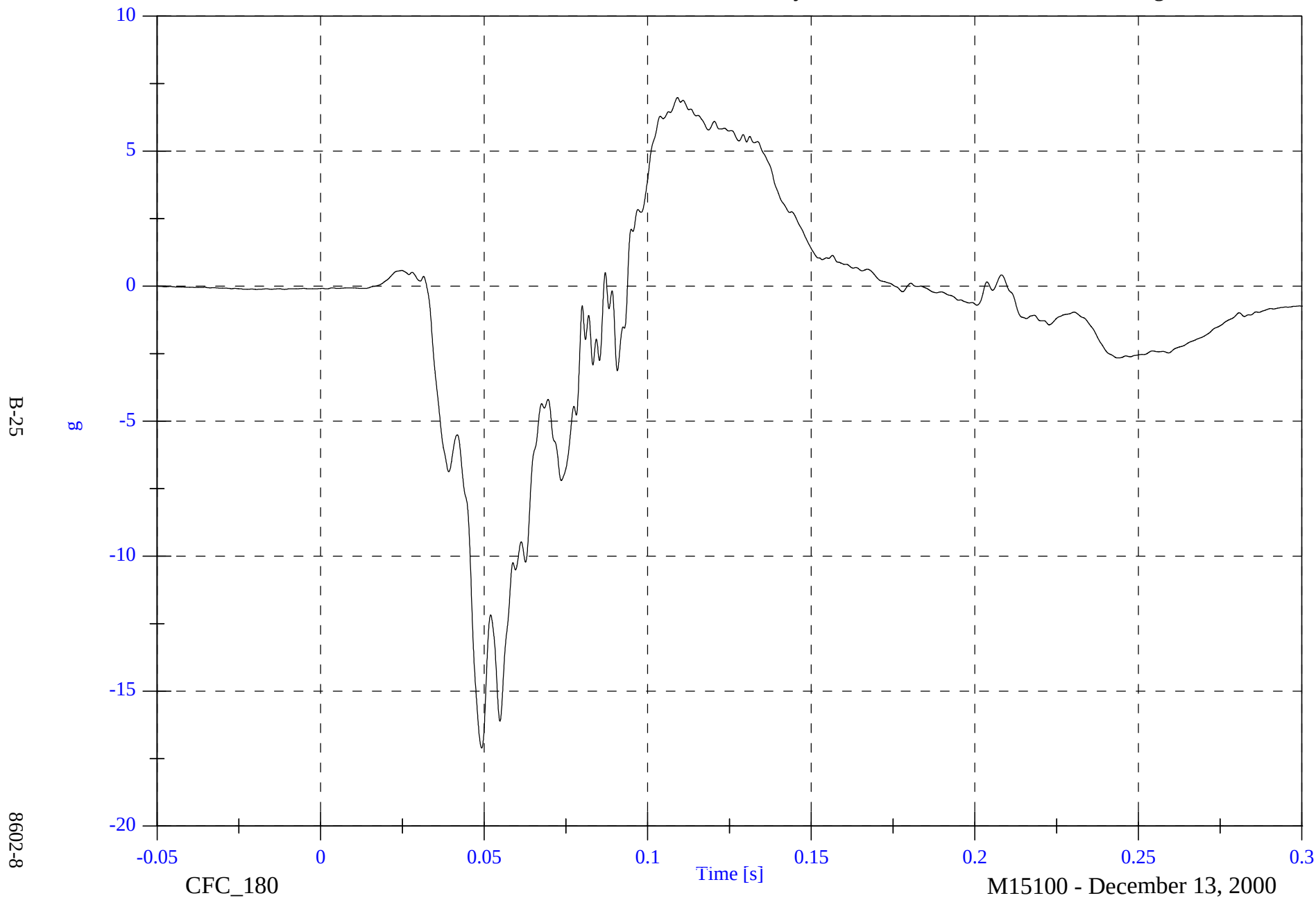


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Chest Red y

Max: 7.0 [g] at 0.109 [s]

Min: -17.1 [g] at 0.049 [s]

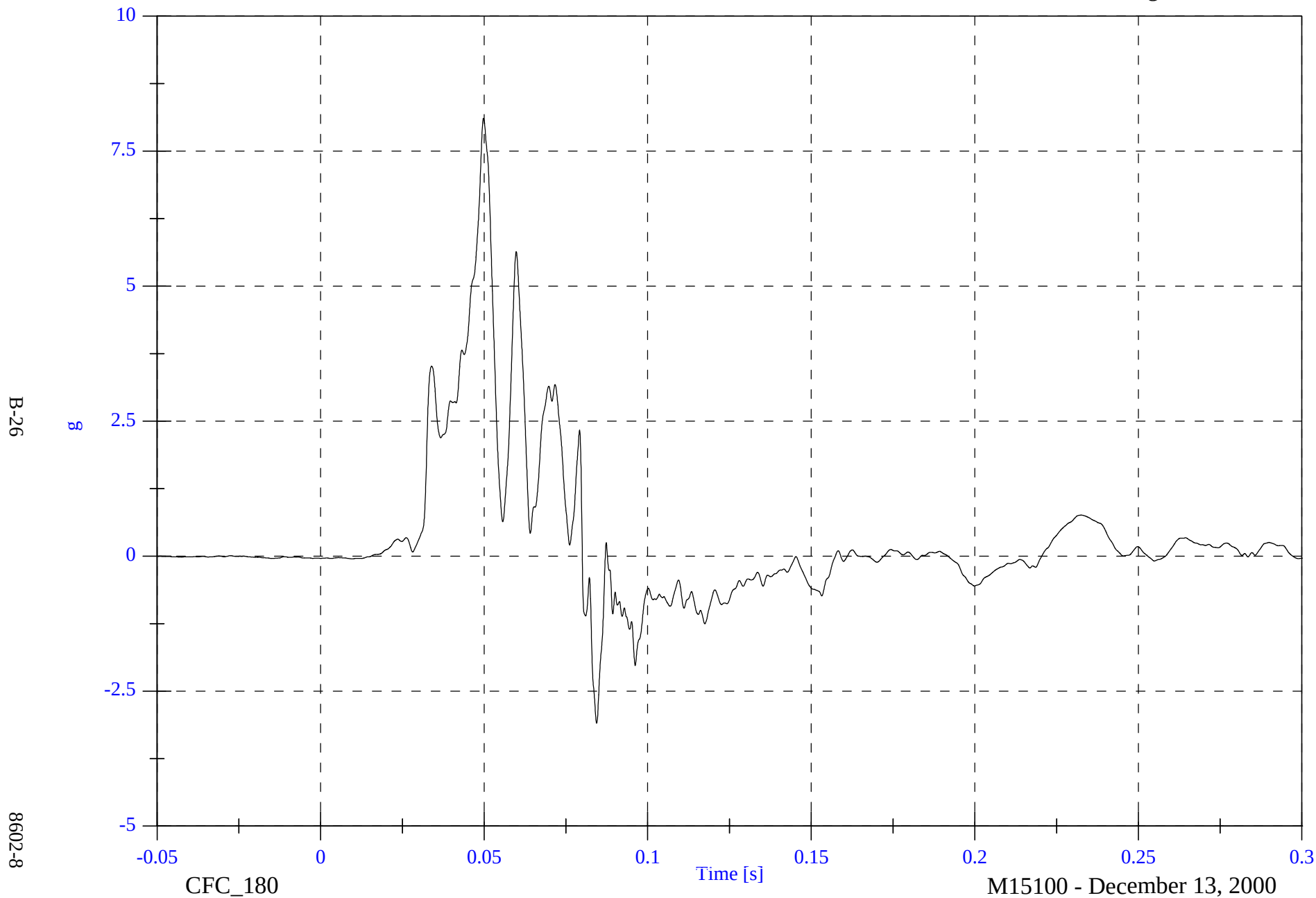


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Chest Red z

Max: 8.1 [g] at 0.050 [s]

Min: -3.1 [g] at 0.084 [s]



NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Chest Red Resultant

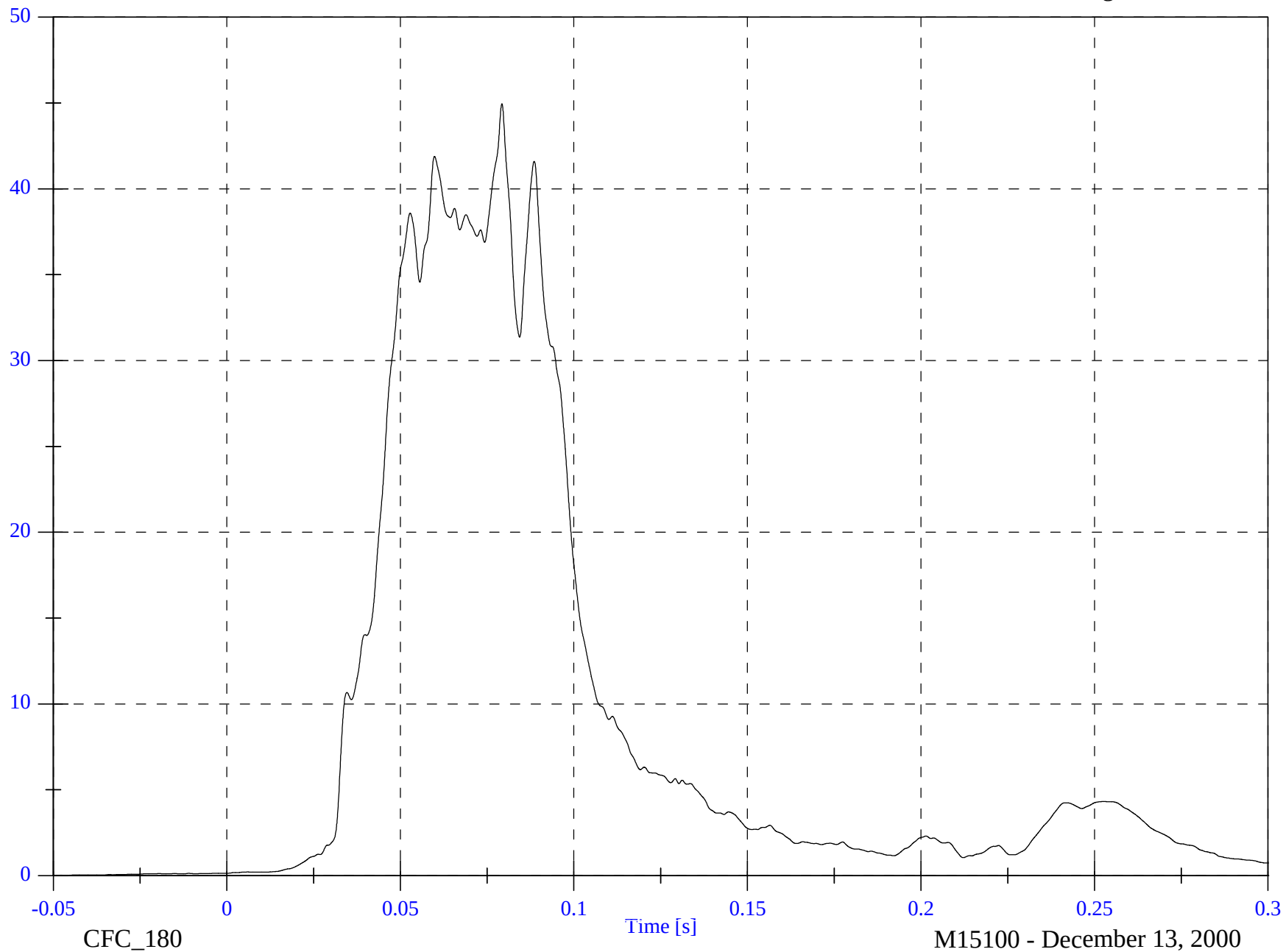
Max: 45.0 [g] at 0.079 [s]

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

B-27

8602-8

g

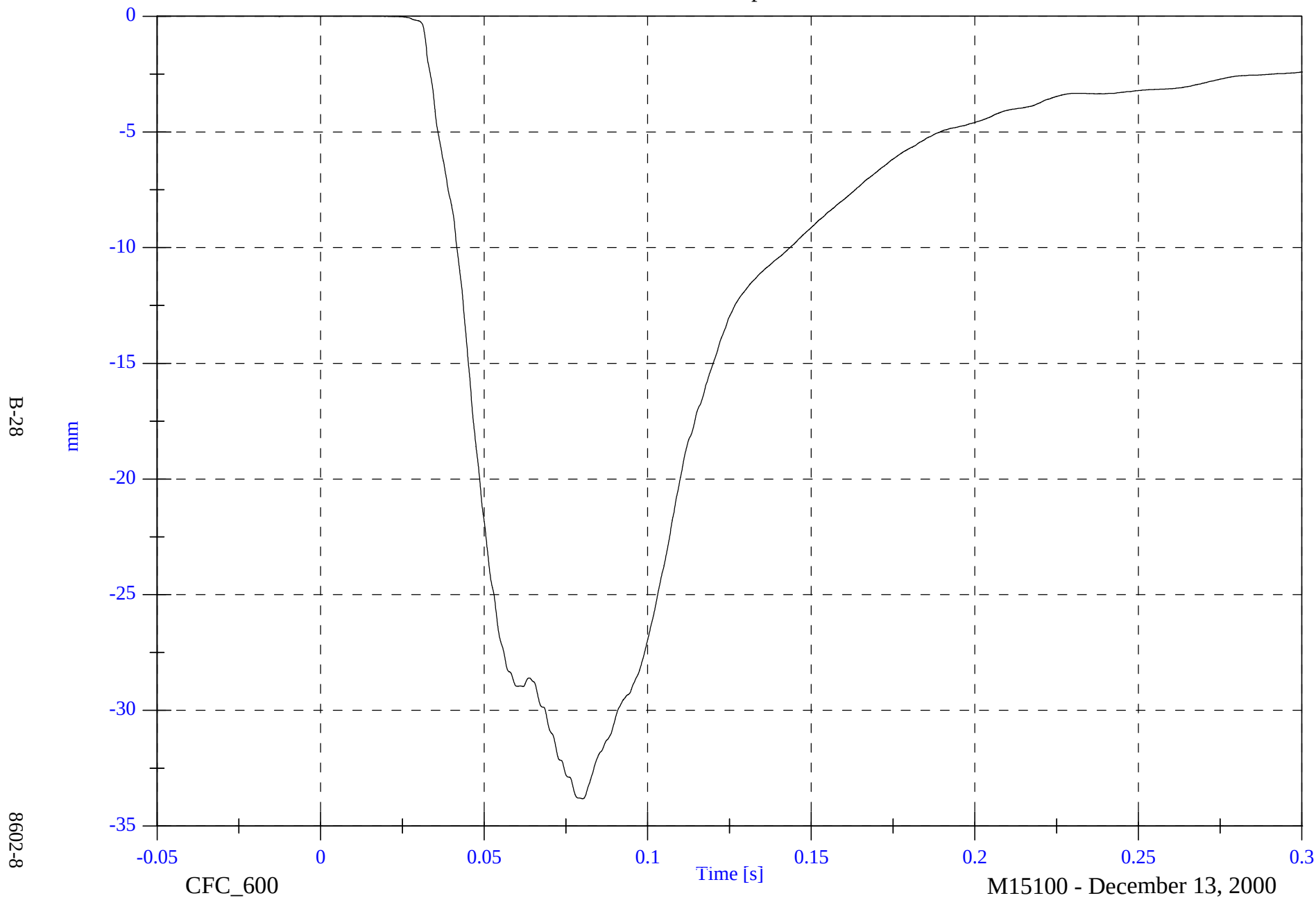


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 0.0 [mm] at 0.006 [s]

Min: -33.8 [mm] at 0.080 [s]

P1 Chest Compression x

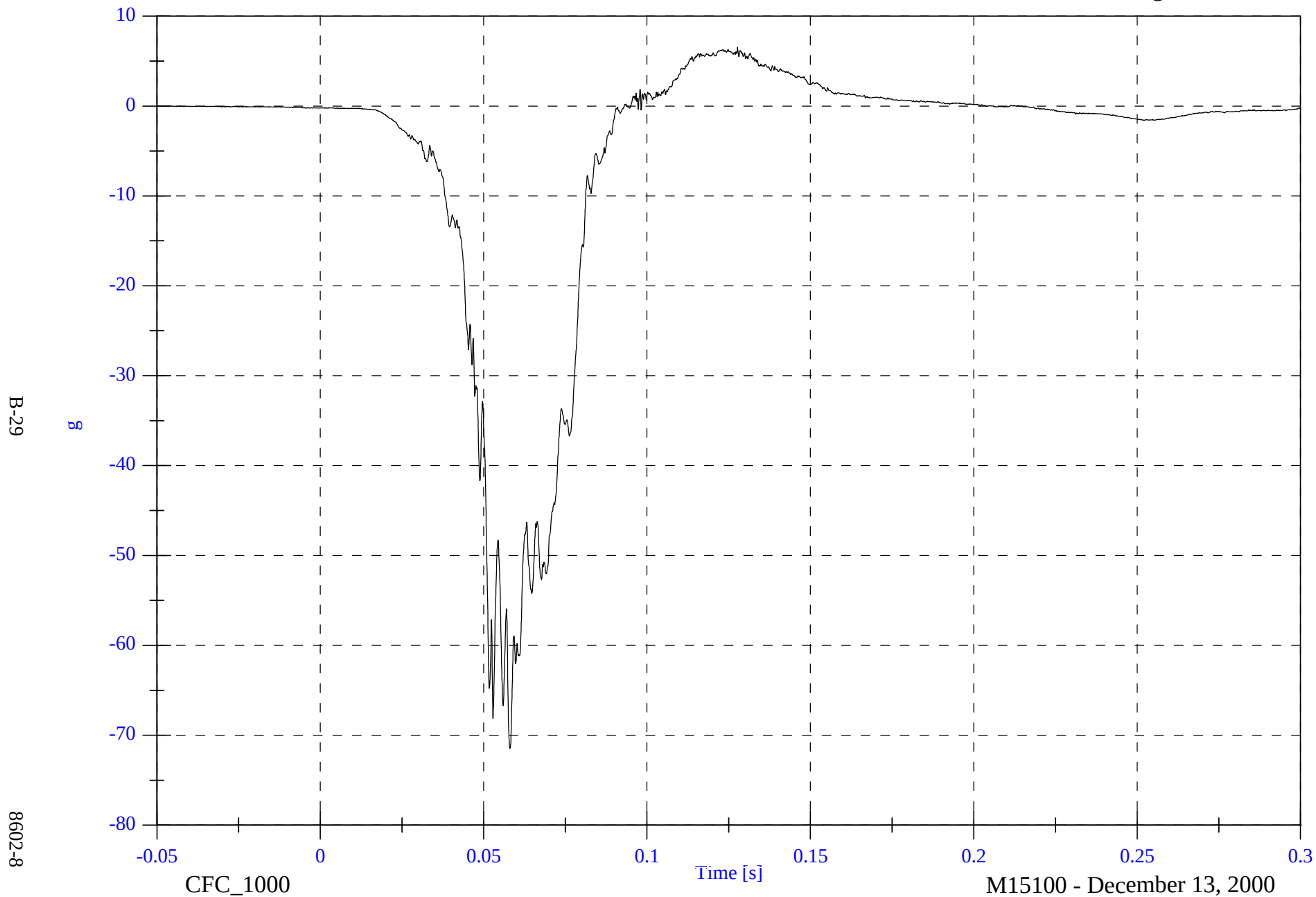


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 6.5 [g] at 0.128 [s]

Min: -71.5 [g] at 0.058 [s]

P1 Pelvic x

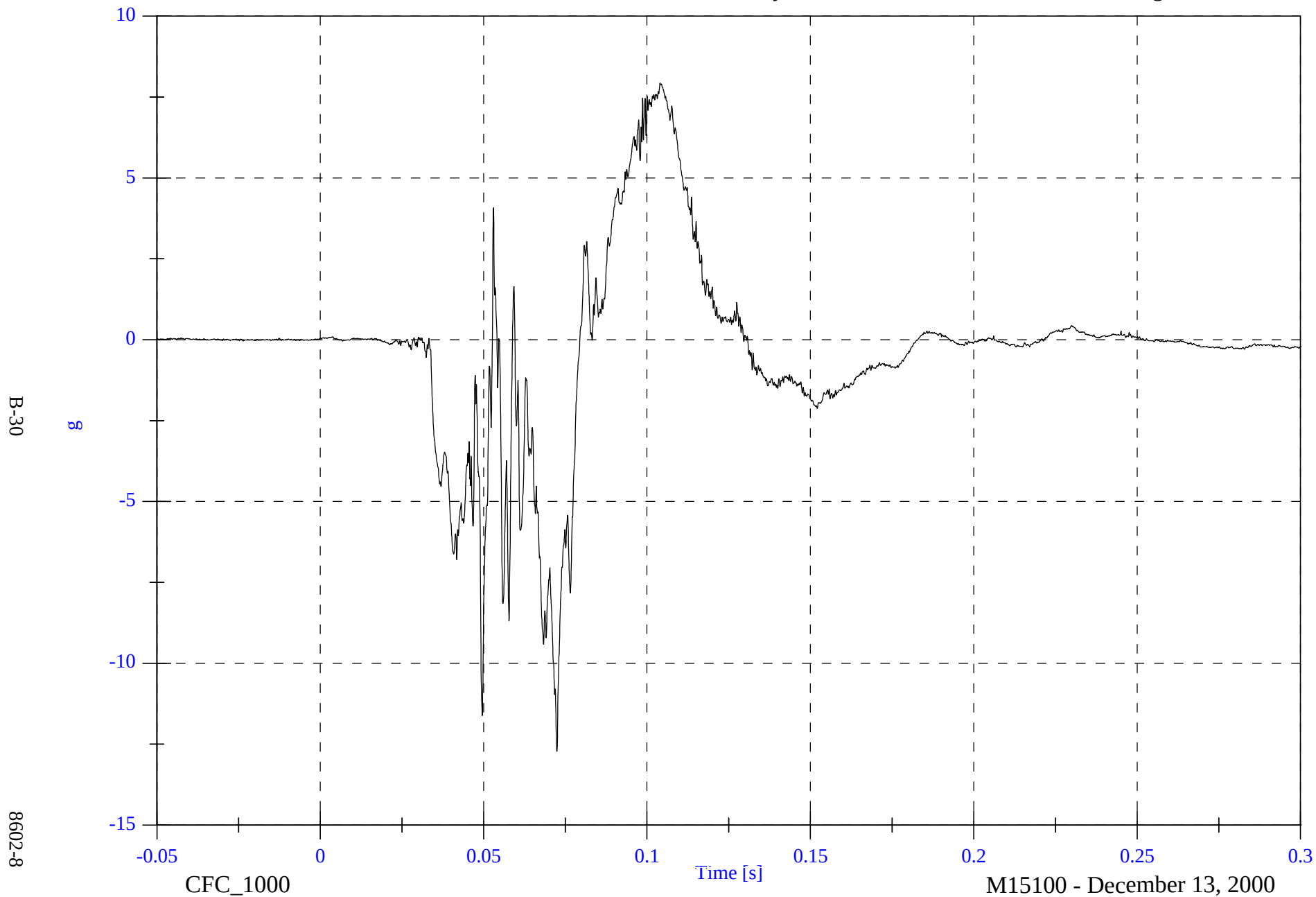


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 7.9 [g] at 0.104 [s]

Min: -12.7 [g] at 0.072 [s]

P1 Pelvic y

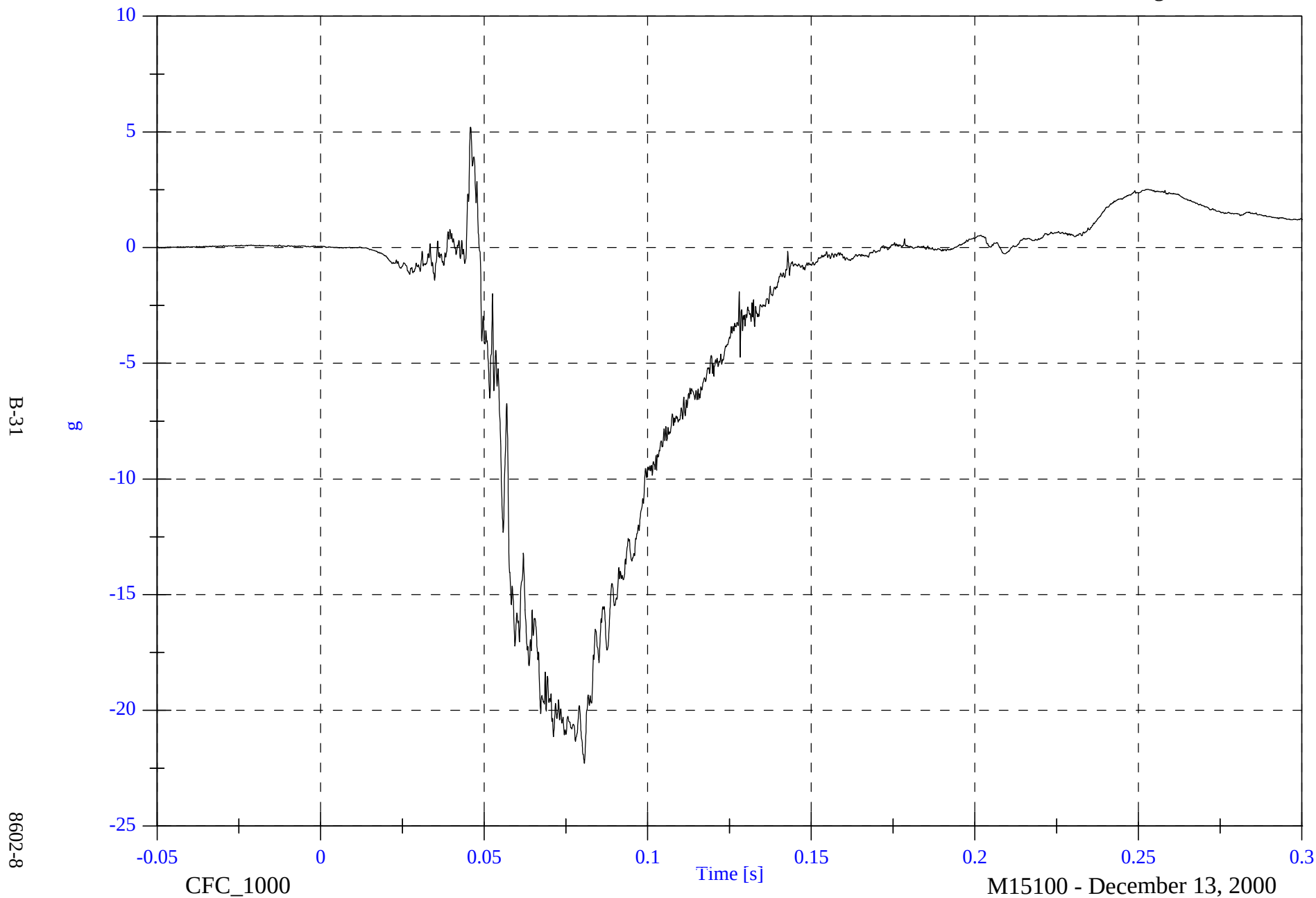


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Pelvic z

Max: 5.2 [g] at 0.046 [s]

Min: -22.3 [g] at 0.081 [s]



NCAP 2001 Test #8 2001 Toyota 4Runner

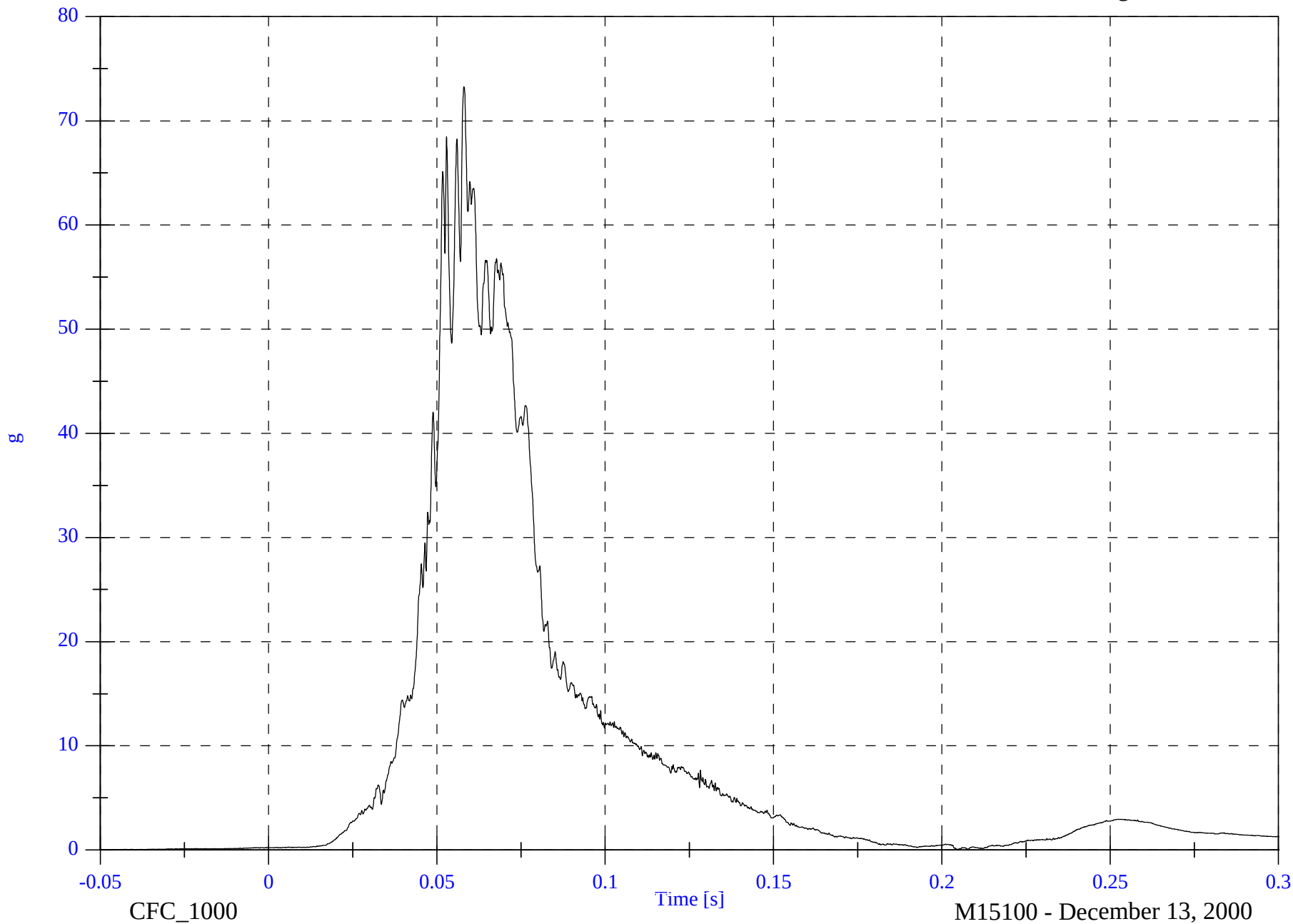
P1 Pelvic Resultant

Max: 73.3 [g] at 0.058 [s]

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

B-32

8602-8

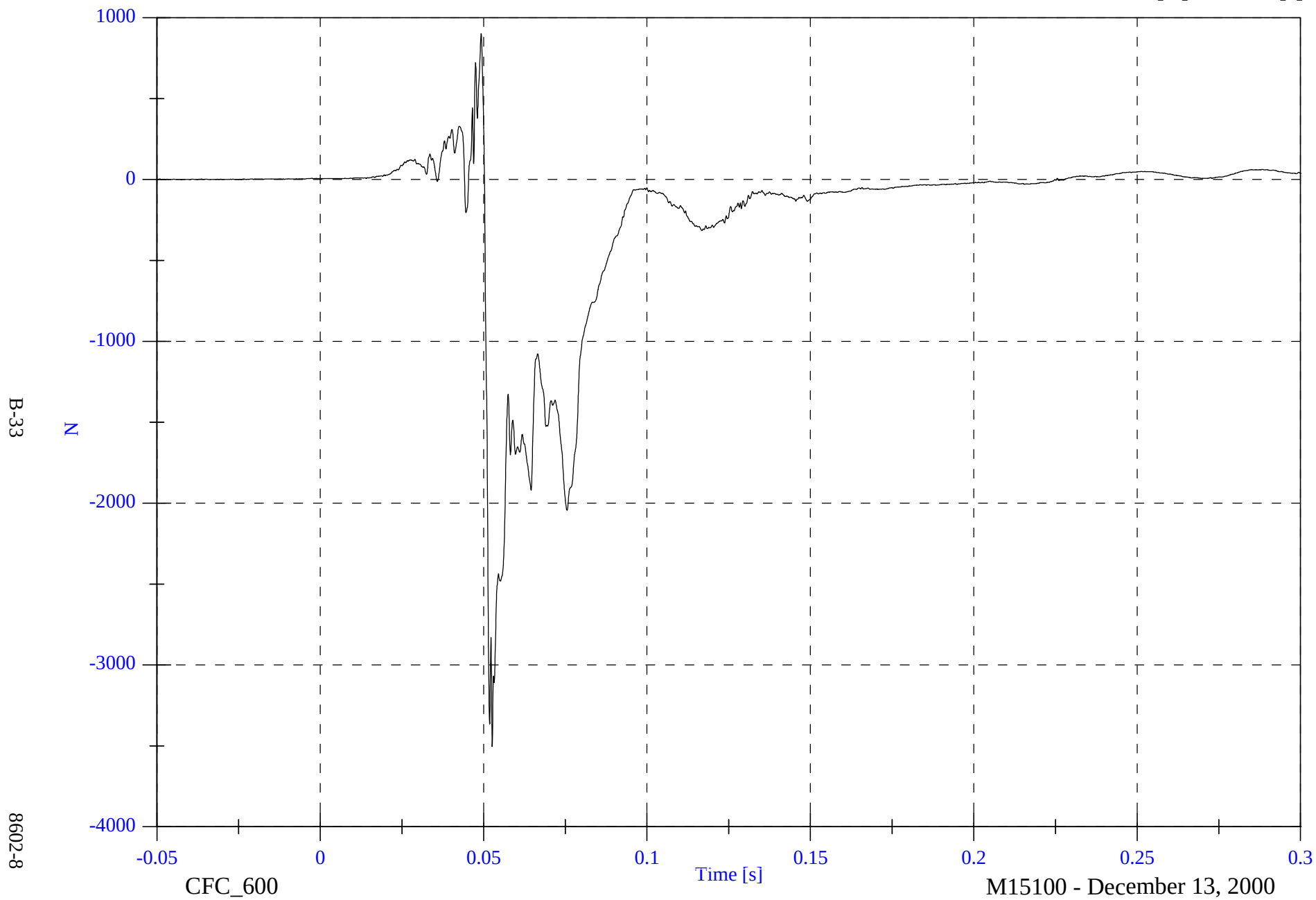


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 900.6 [N] at 0.049 [s]

Min: -3505.1 [N] at 0.053 [s]

P1 Left Femur z

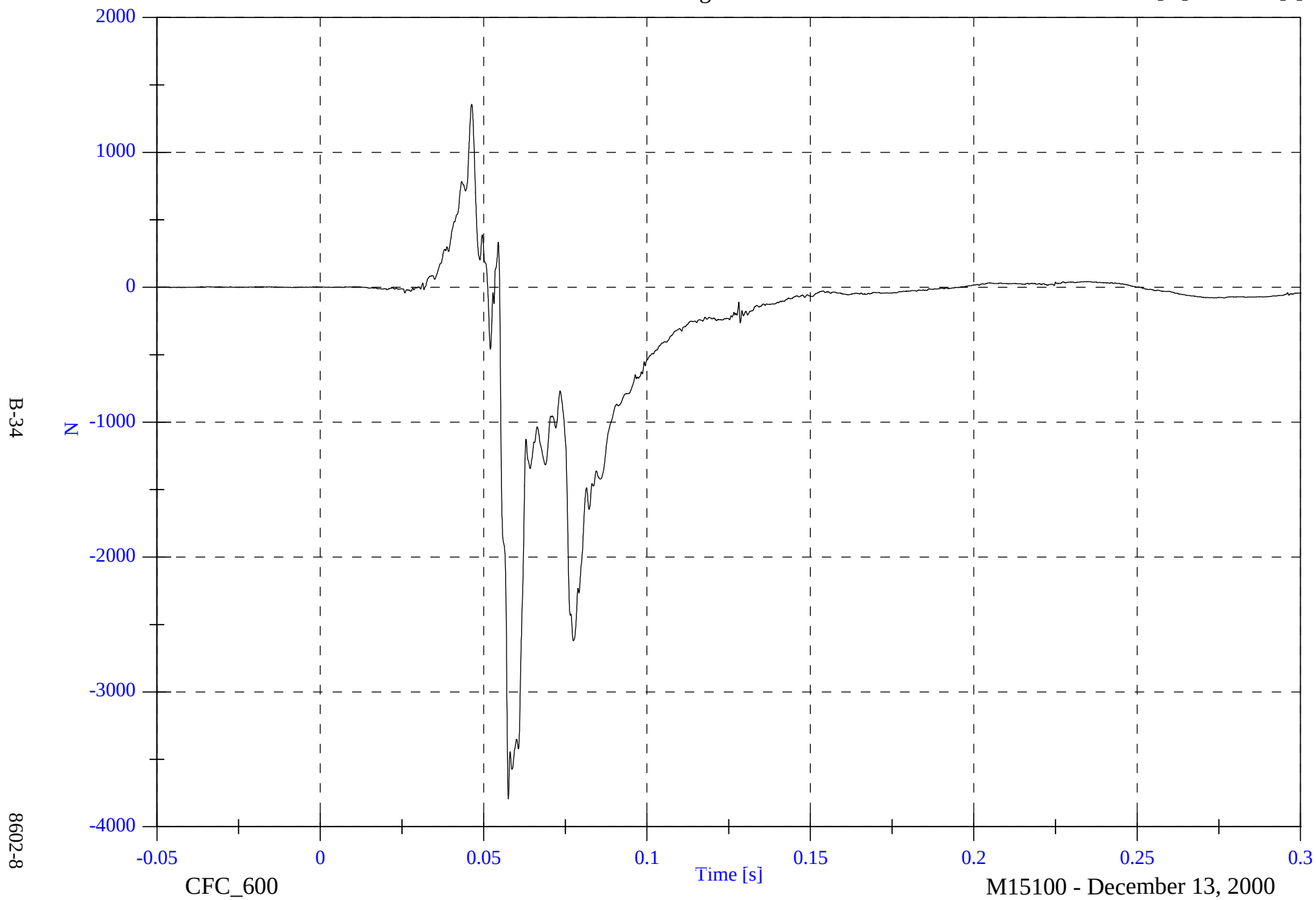


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 1357.7 [N] at 0.046 [s]

Min: -3795.0 [N] at 0.058 [s]

P1 Right Femur z

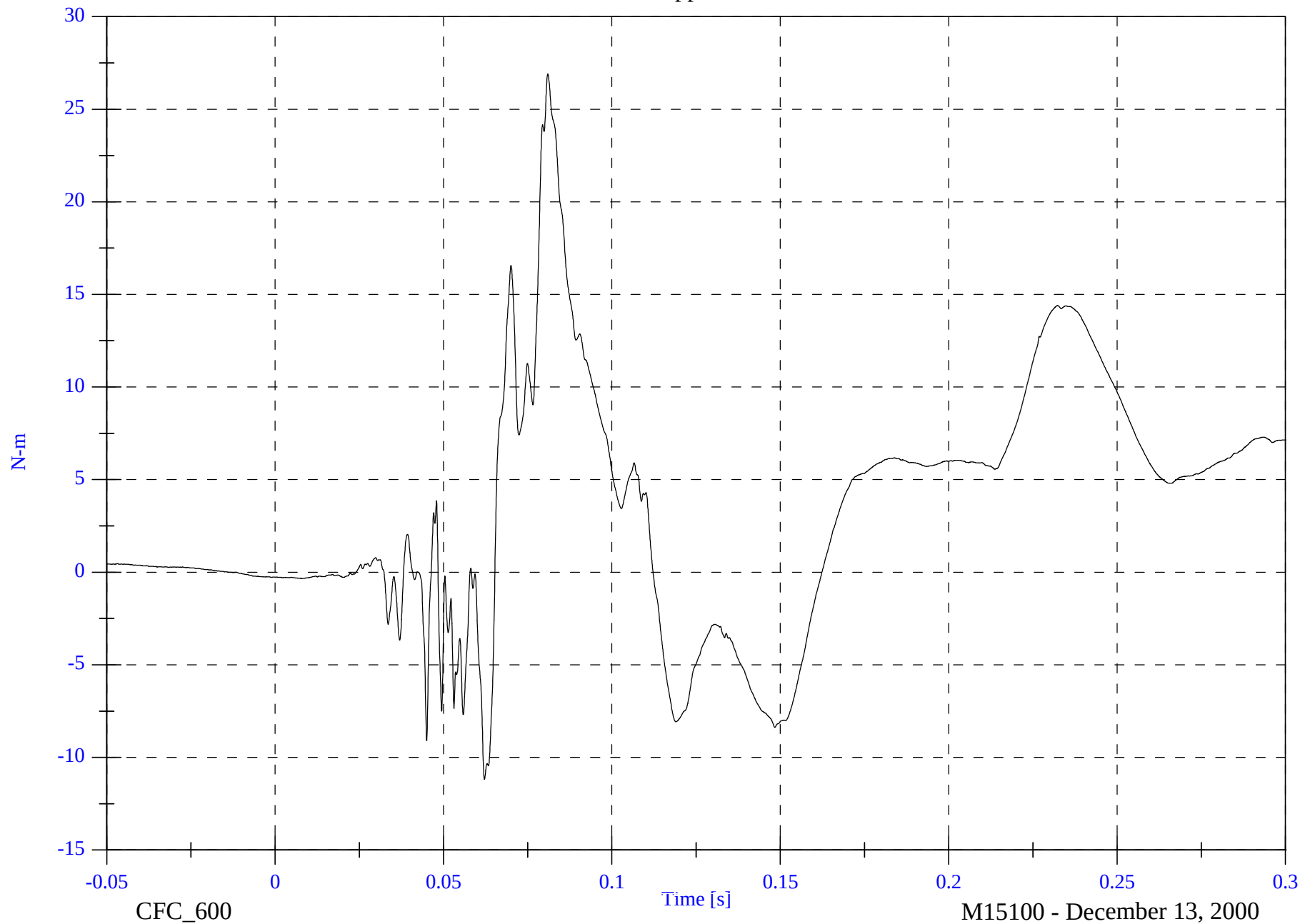


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Left Upper Tibia Mx

Max: 26.9 [N-m] at 0.081 [s]

Min: -11.2 [N-m] at 0.062 [s]



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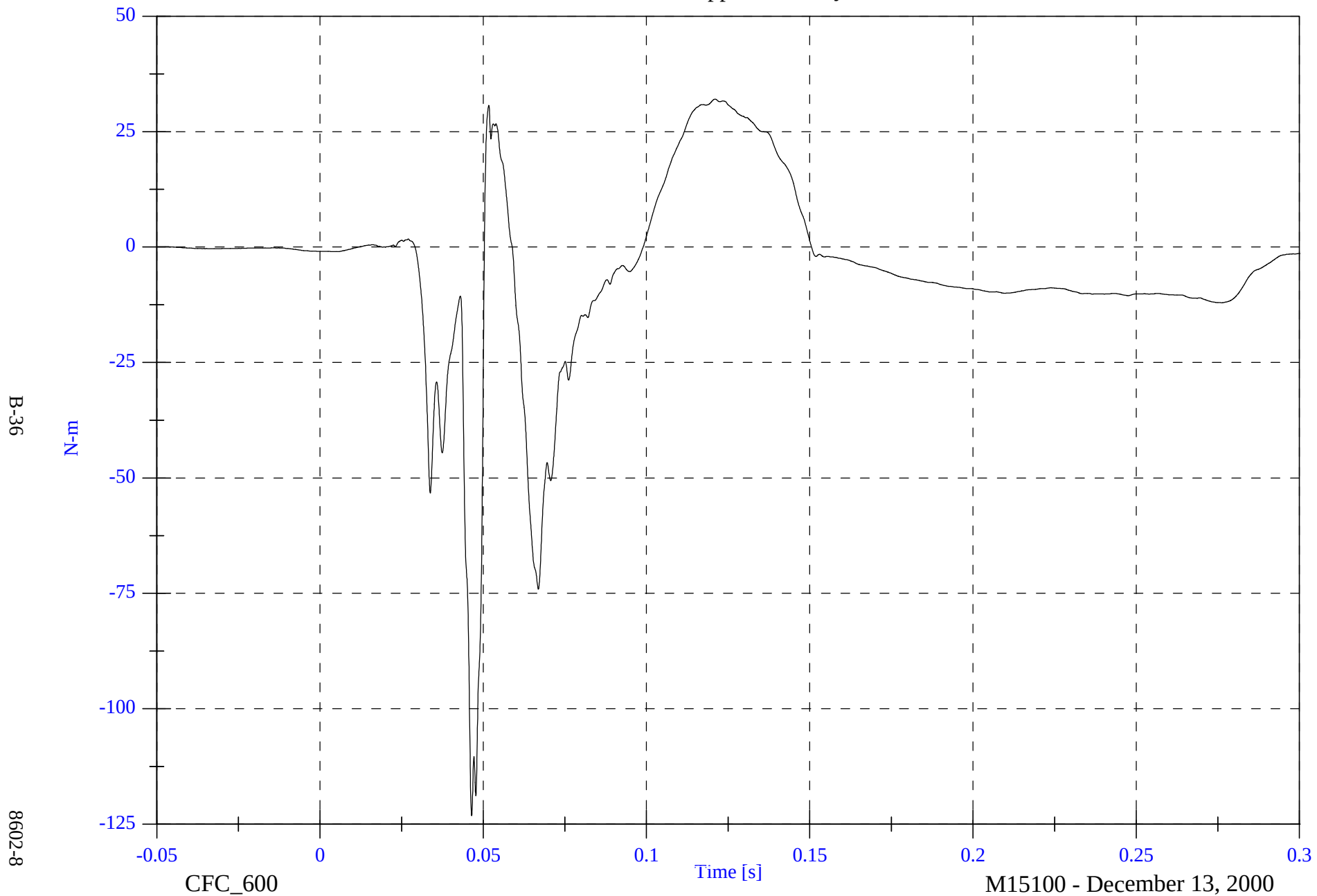
8602-8

NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Left Upper Tibia My

Max: 32.0 [N-m] at 0.121 [s]

Min: -123.2 [N-m] at 0.046 [s]

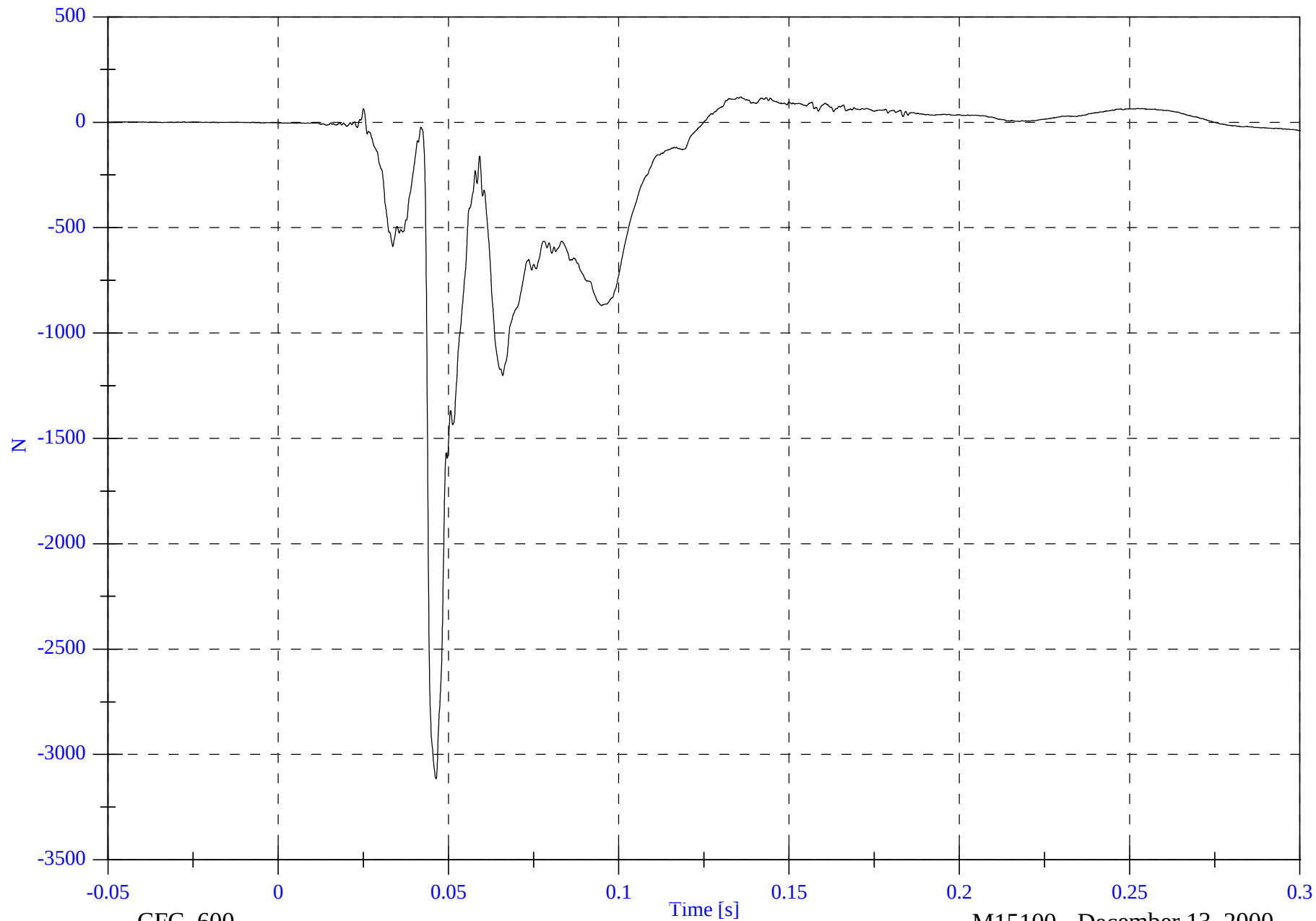


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Left Lower Tibia Fz

Max: 119.6 [N] at 0.136 [s]

Min: -3115.7 [N] at 0.046 [s]



B-37

8602-8

CFC_600

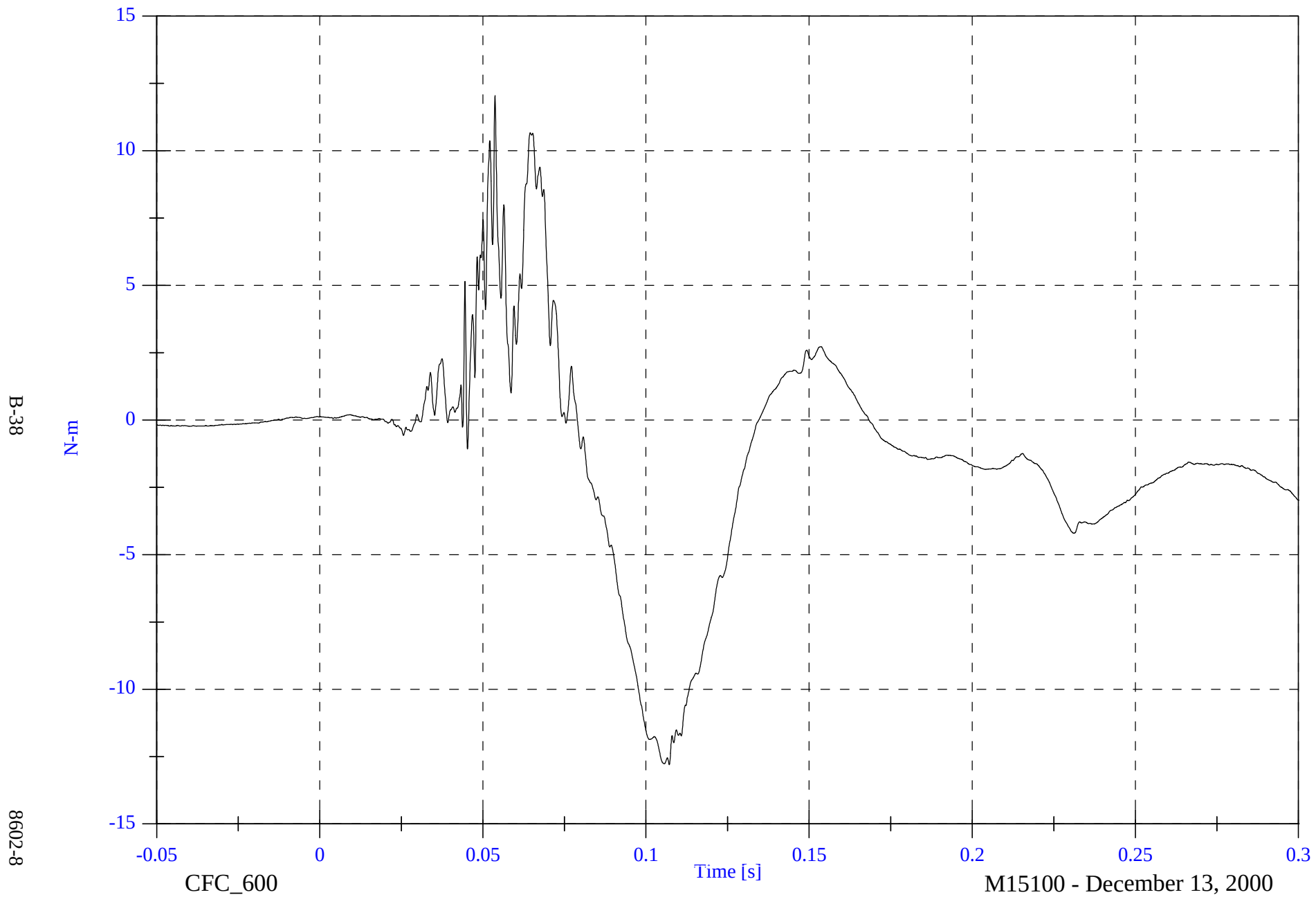
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Left Lower Tibia Mx

Max: 12.1 [N-m] at 0.054 [s]

Min: -12.8 [N-m] at 0.107 [s]

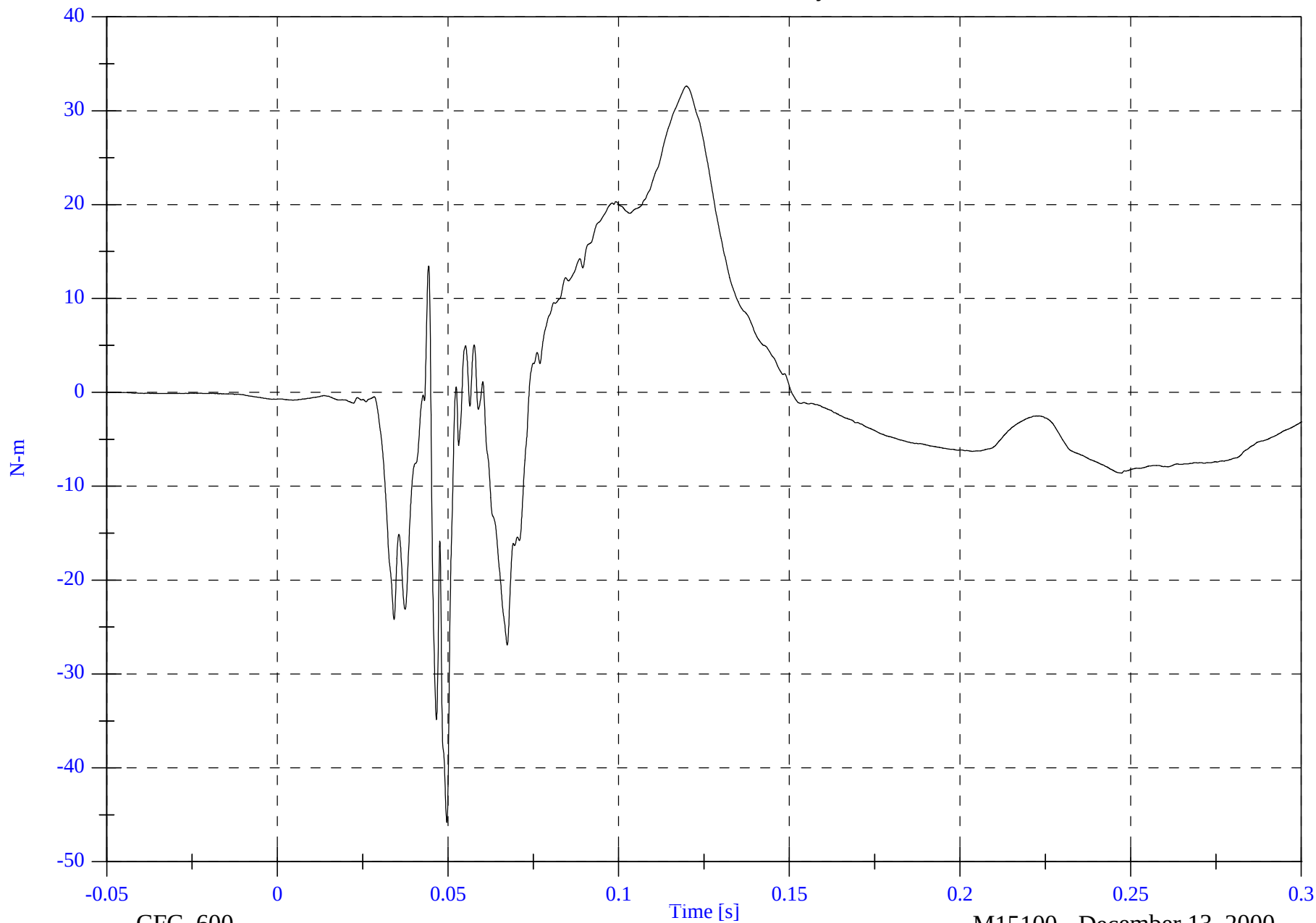


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Left Lower Tibia My

Max: 32.6 [N-m] at 0.120 [s]

Min: -45.8 [N-m] at 0.050 [s]



B-39

8602-8

CFC_600

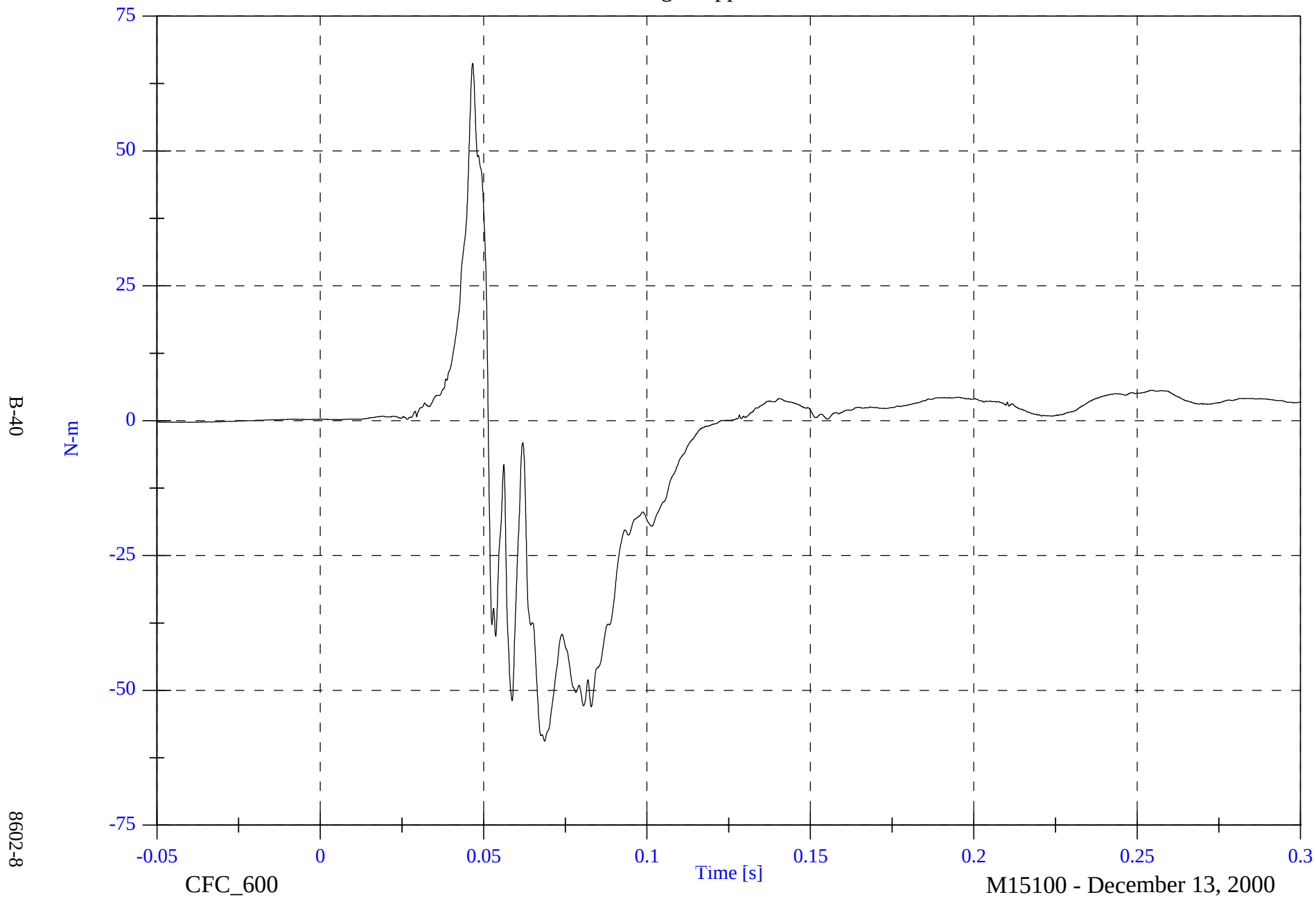
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Right Upper Tibia Mx

Max: 66.3 [N-m] at 0.047 [s]

Min: -59.4 [N-m] at 0.069 [s]

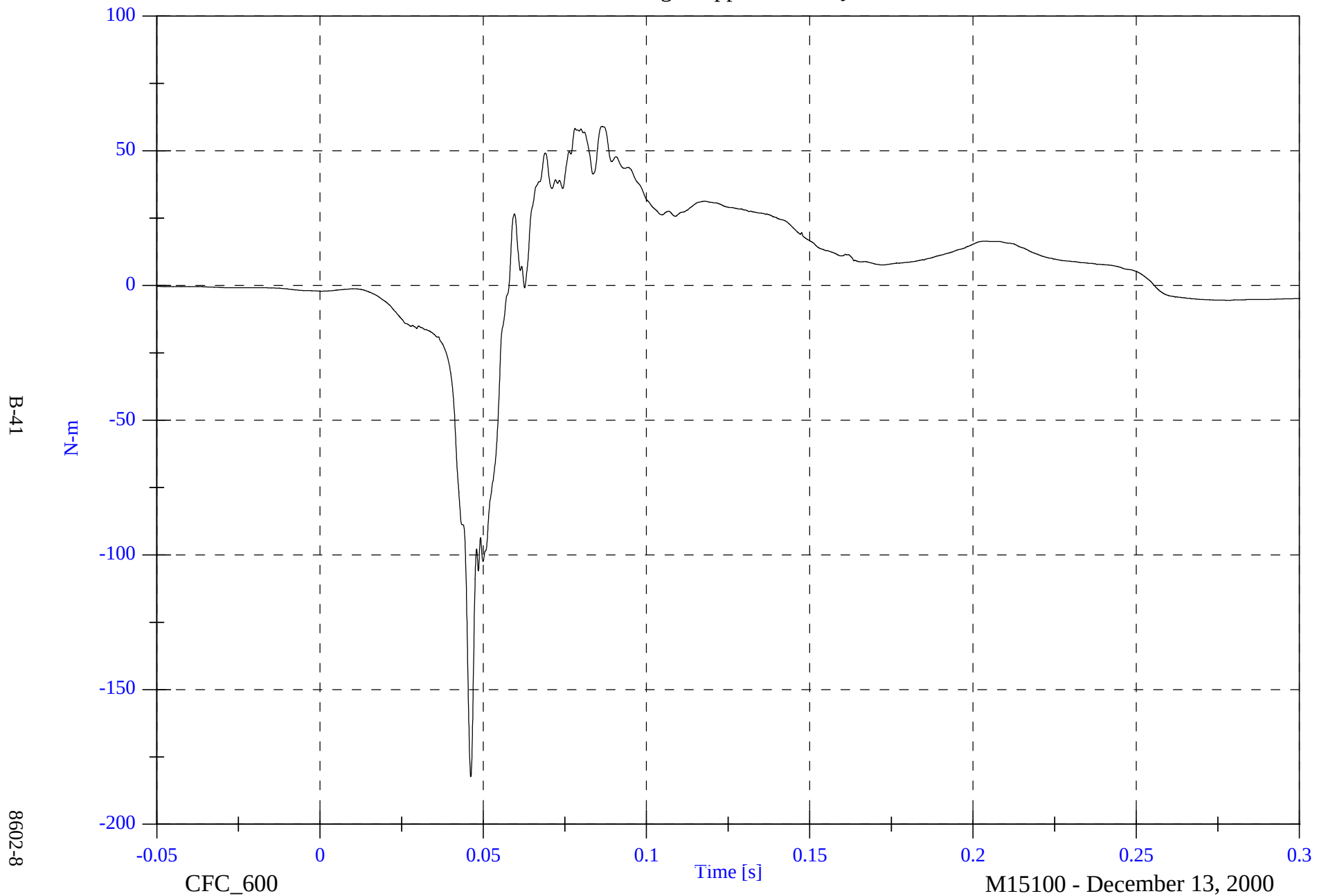


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Right Upper Tibia My

Max: 59.1 [N-m] at 0.086 [s]

Min: -182.4 [N-m] at 0.046 [s]

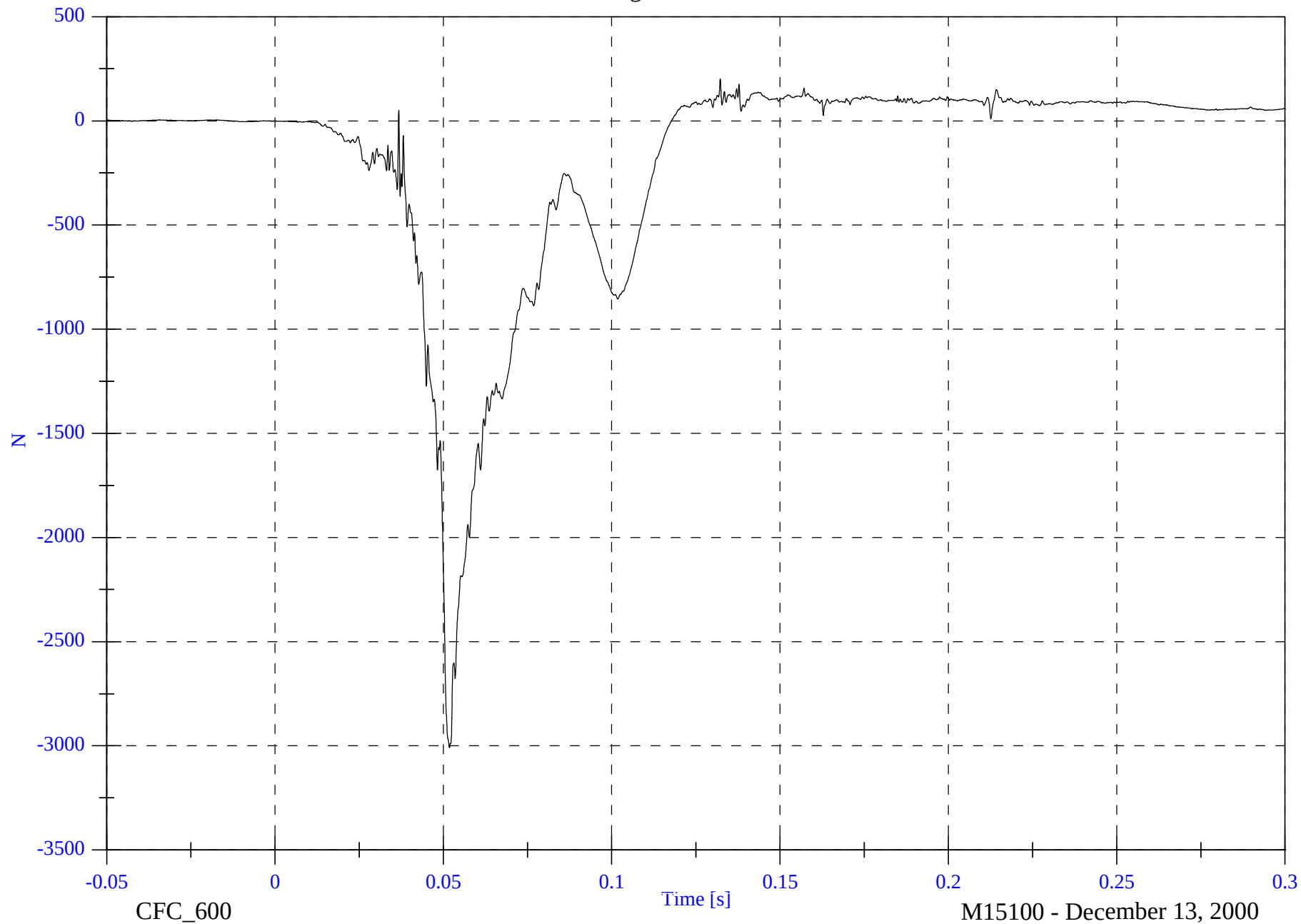


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Right Lower Tibia Fz

Max: 200.8 [N] at 0.132 [s]

Min: -3009.3 [N] at 0.052 [s]



B-42

8602-8

CFC_600

Time [s]

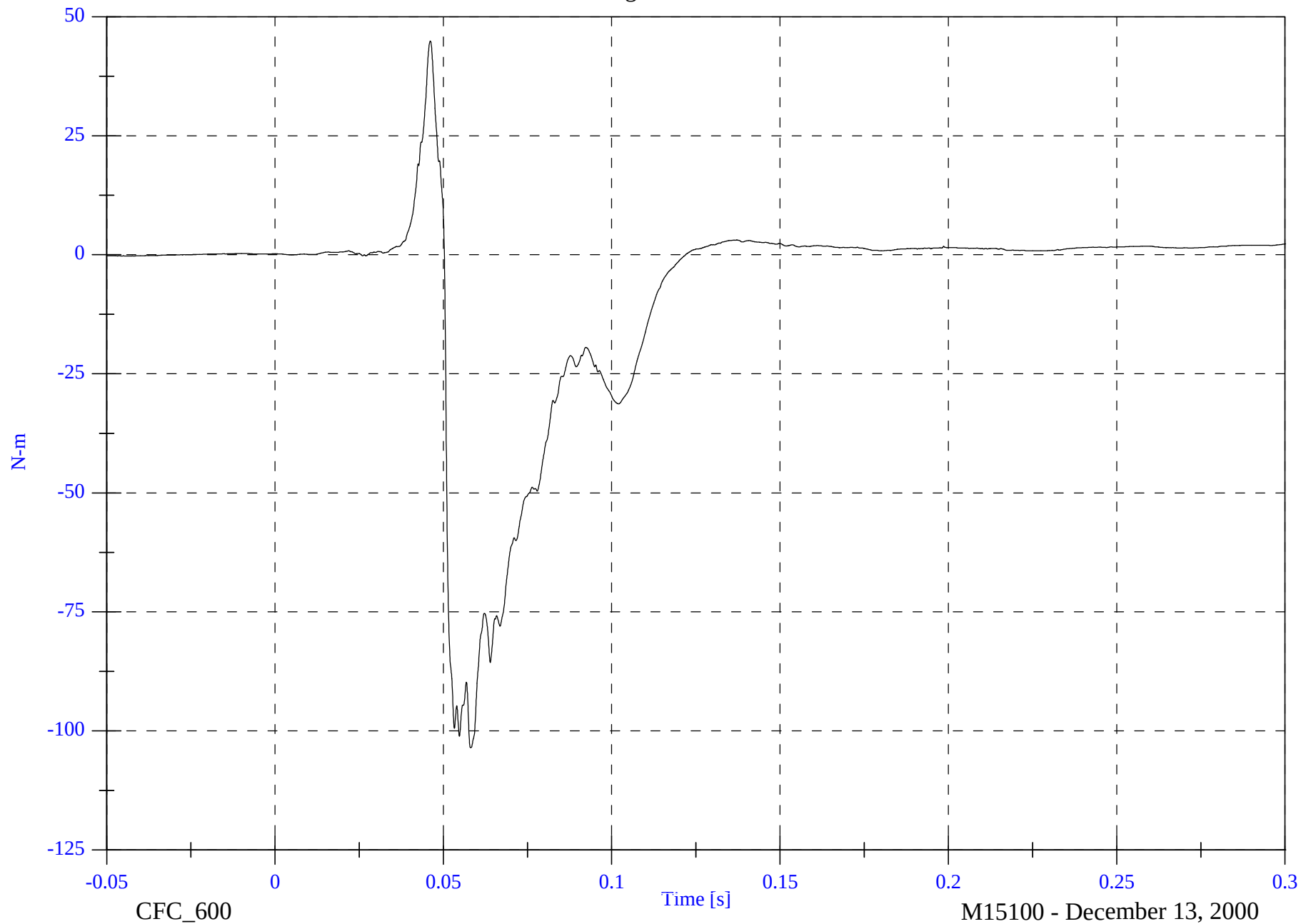
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Right Lower Tibia Mx

Max: 44.9 [N-m] at 0.046 [s]

Min: -103.5 [N-m] at 0.058 [s]



B-43

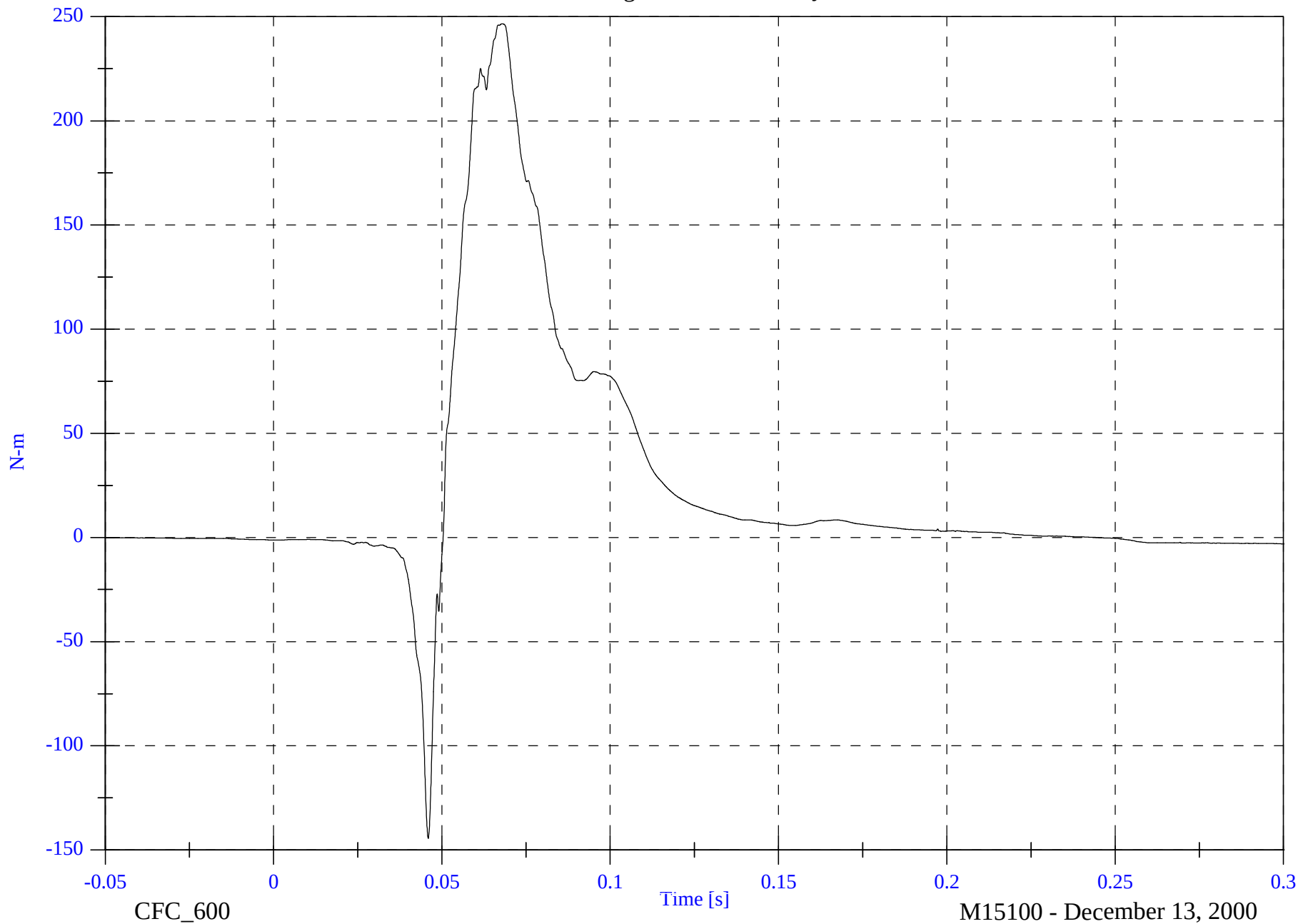
8602-8

NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Right Lower Tibia My

Max: 246.5 [N-m] at 0.068 [s]

Min: -144.5 [N-m] at 0.046 [s]



B-44

8602-8

CFC_600

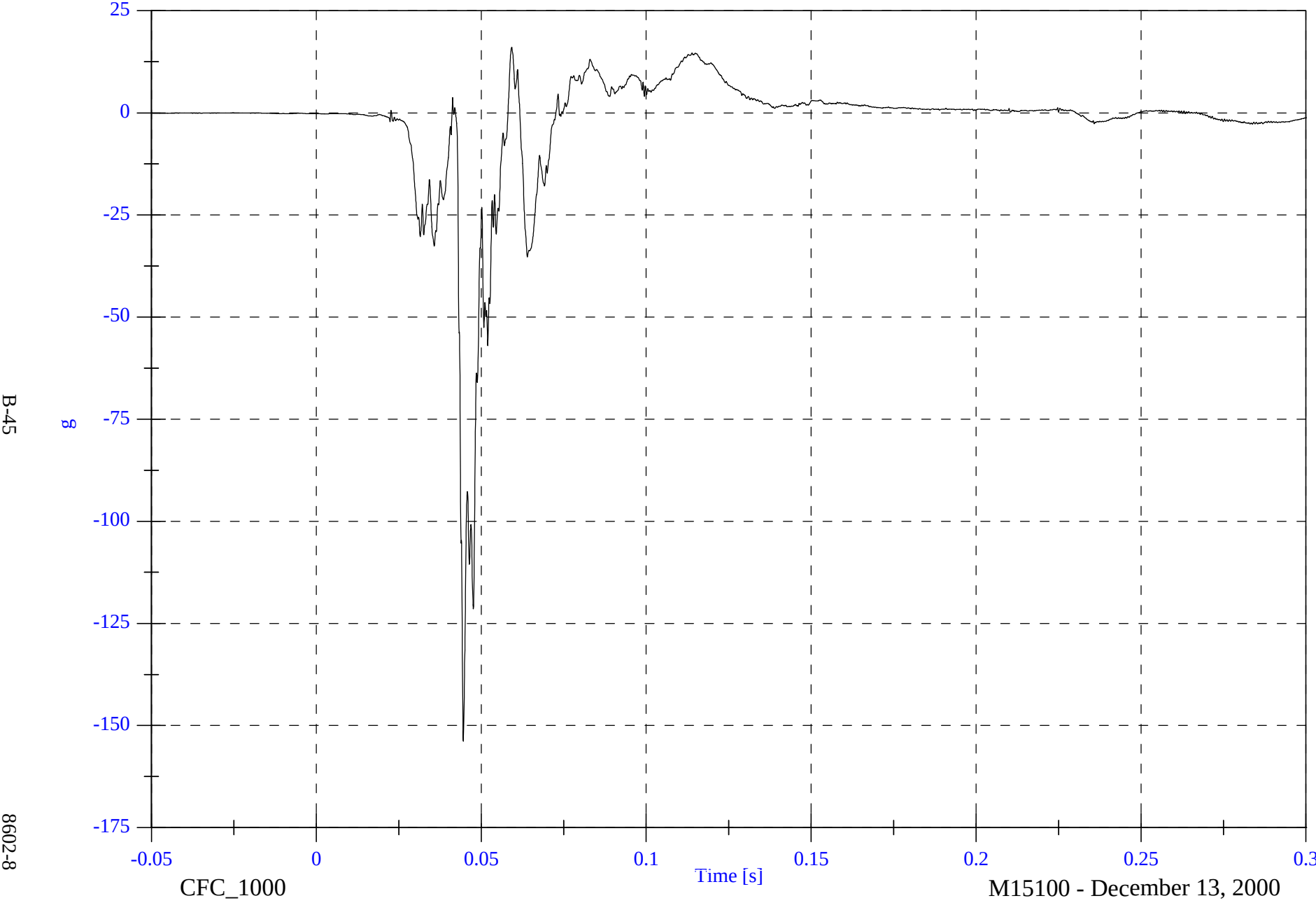
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 16.1 [g] at 0.059 [s]

Min: -153.9 [g] at 0.045 [s]

P1 Left Foot Aft x



B-45

8602-8

CFC_1000

Time [s]

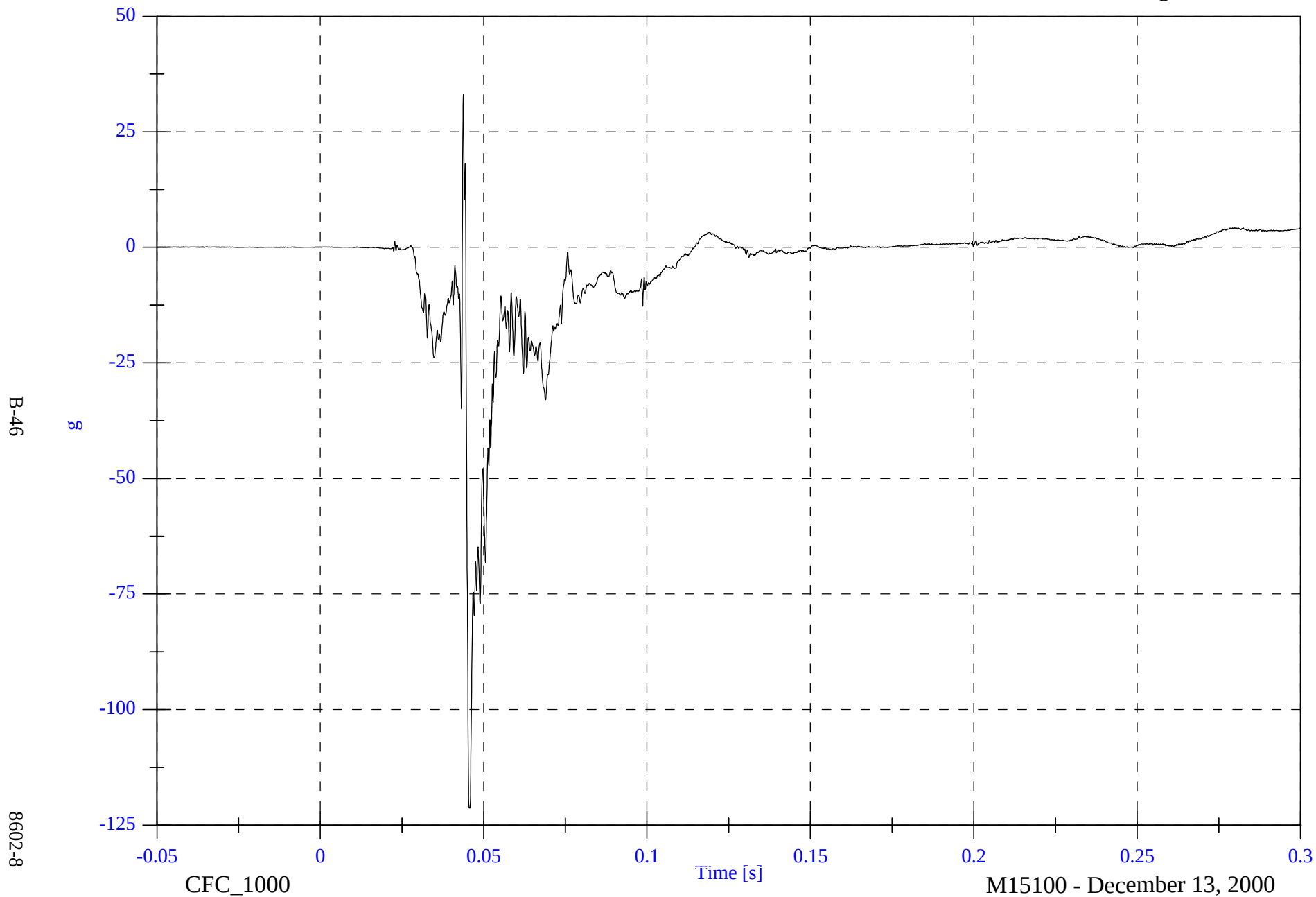
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Left Foot Aft z

Max: 33.1 [g] at 0.044 [s]

Min: -121.3 [g] at 0.046 [s]

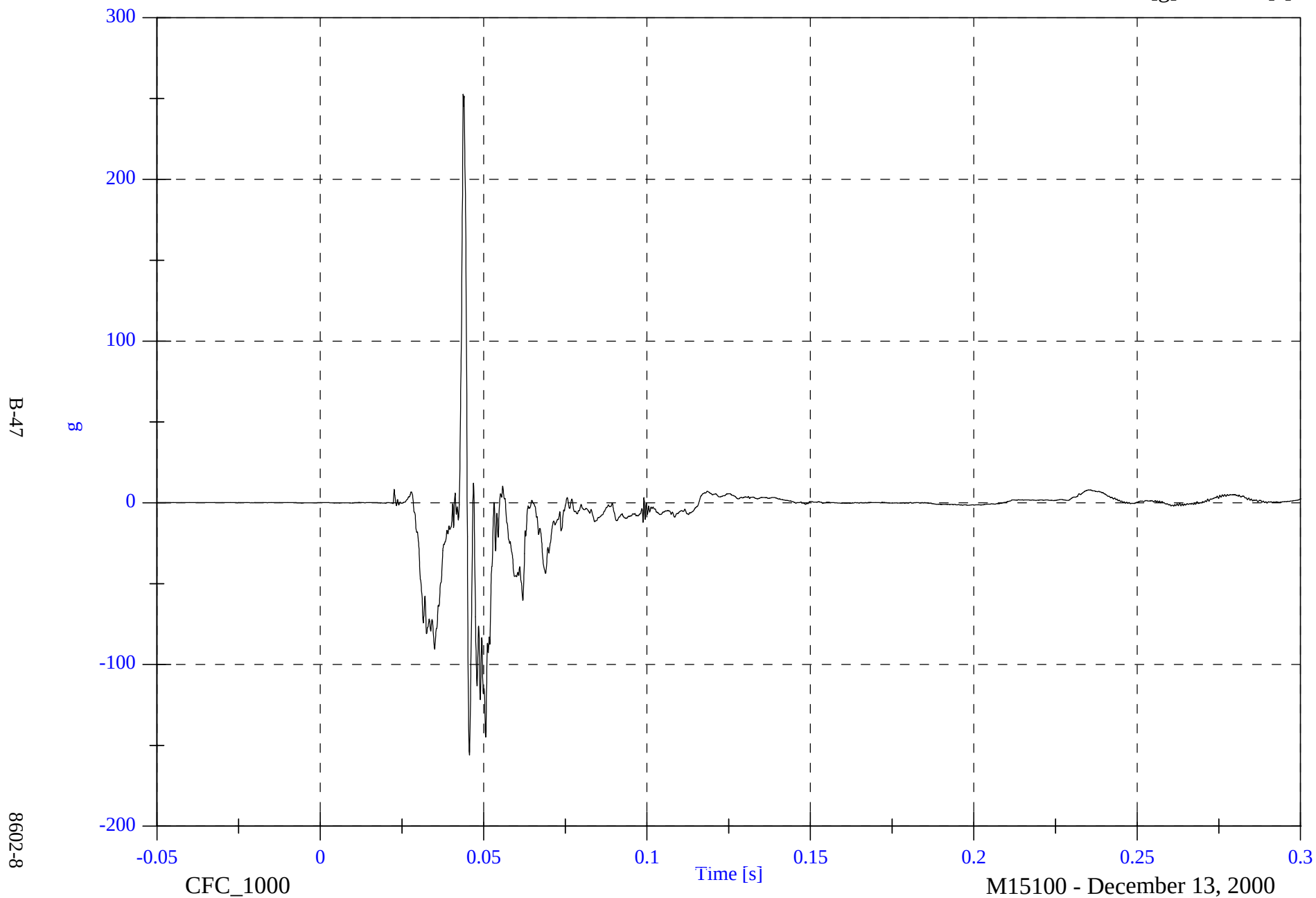


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 252.6 [g] at 0.044 [s]

Min: -156.1 [g] at 0.046 [s]

P1 Left Foot Fore z

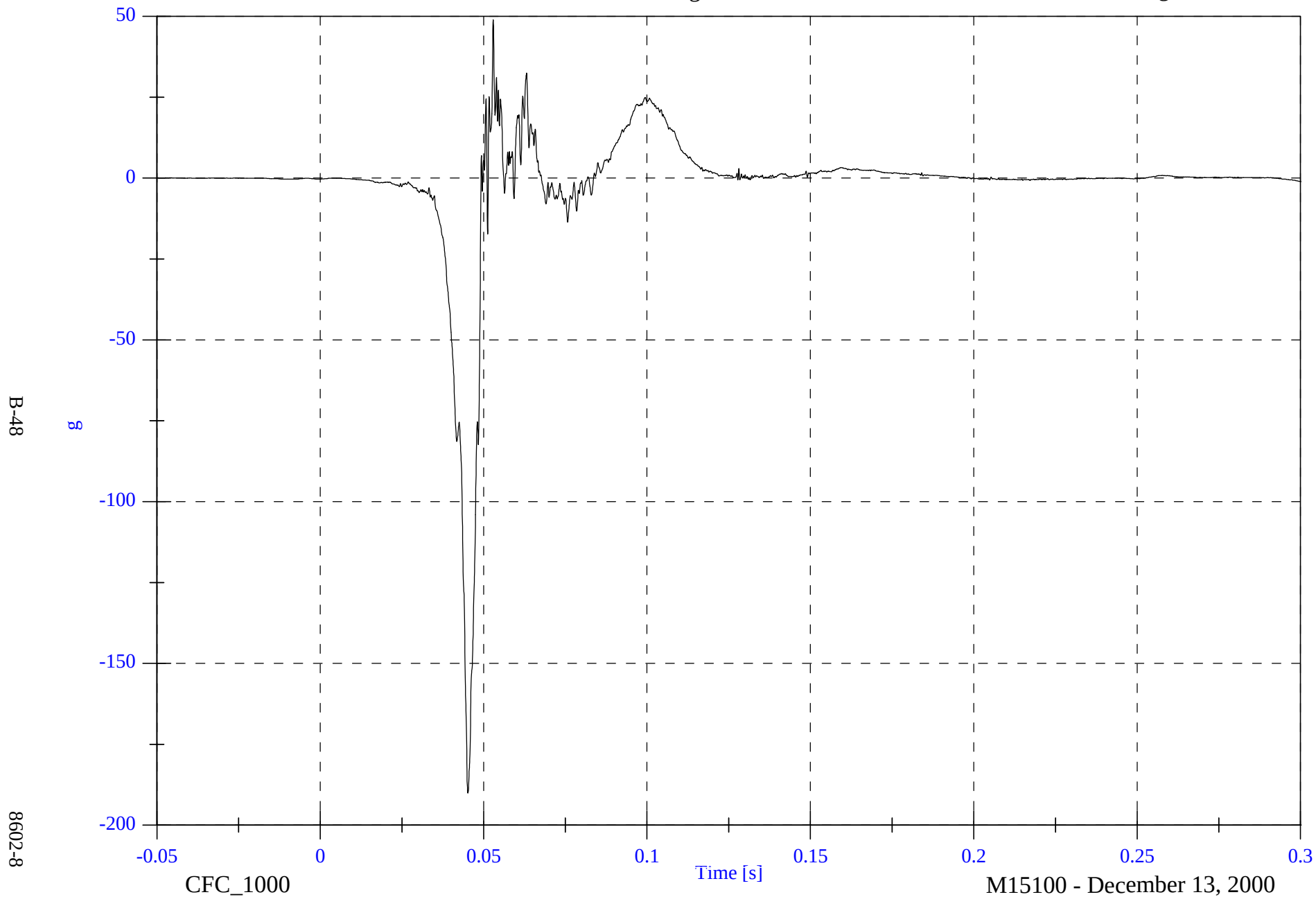


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 48.8 [g] at 0.053 [s]

Min: -190.1 [g] at 0.045 [s]

P1 Right Foot Aft x

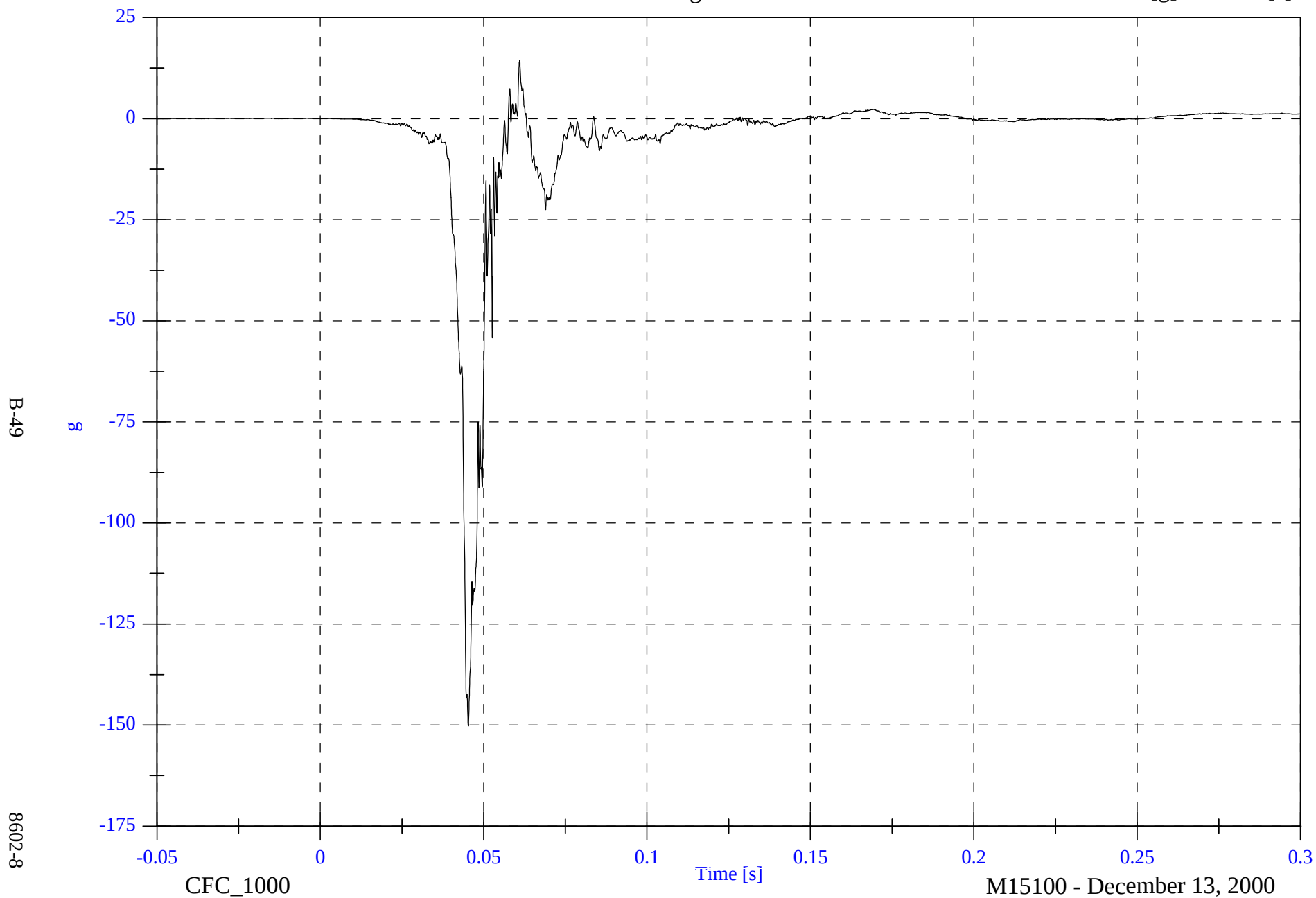


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 14.4 [g] at 0.061 [s]

Min: -150.2 [g] at 0.045 [s]

P1 Right Foot Aft z

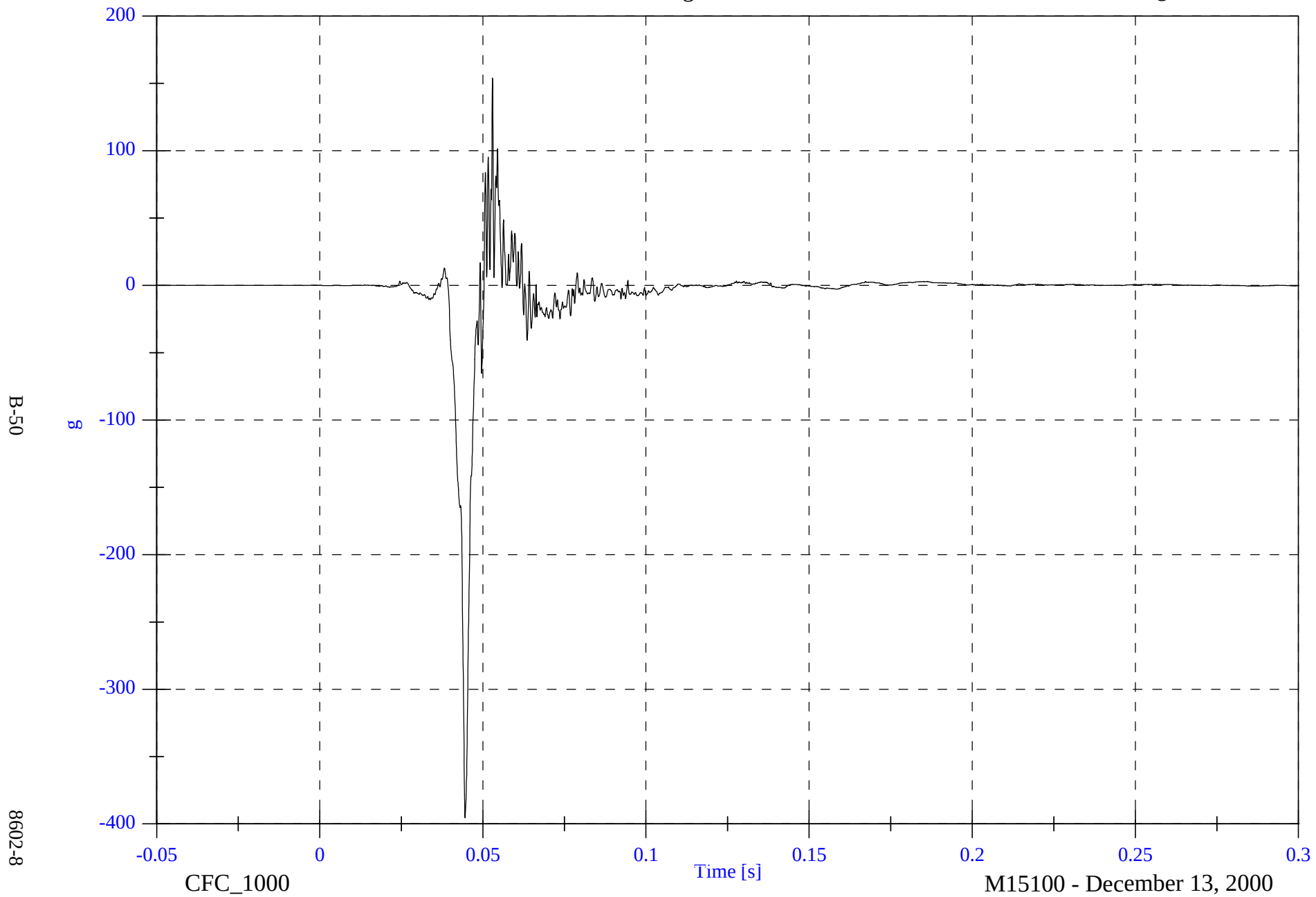


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Right Foot Fore z

Max: 154.1 [g] at 0.053 [s]

Min: -395.6 [g] at 0.045 [s]

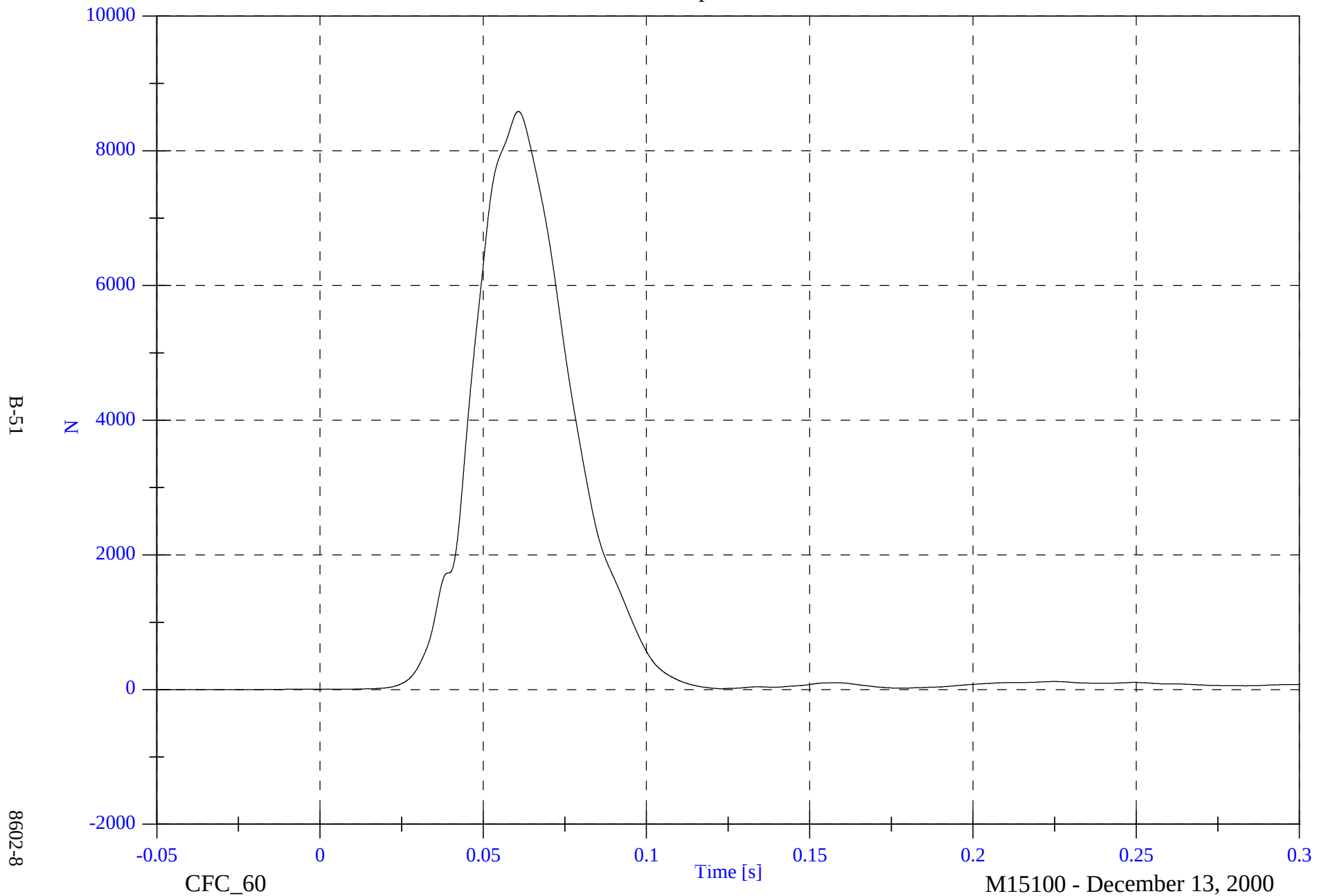


NCAP 2001 Test #8 2001 Toyota 4Runner

P1 Lap Belt Force

Max: 8586.0 [N] at 0.061 [s]

Min: -0.3 [N] at -0.040 [s]

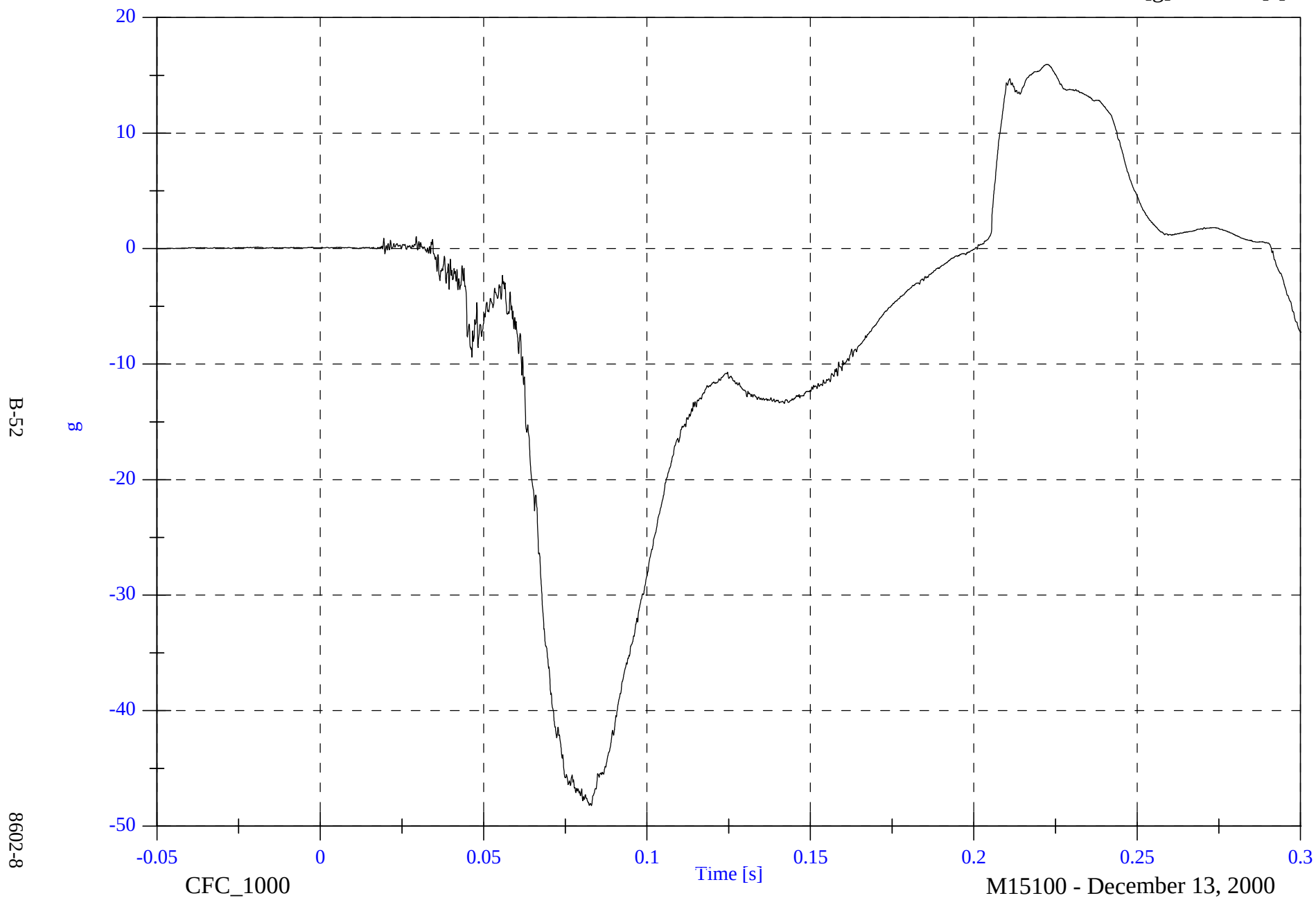


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Head x

Max: 15.9 [g] at 0.223 [s]

Min: -48.2 [g] at 0.083 [s]

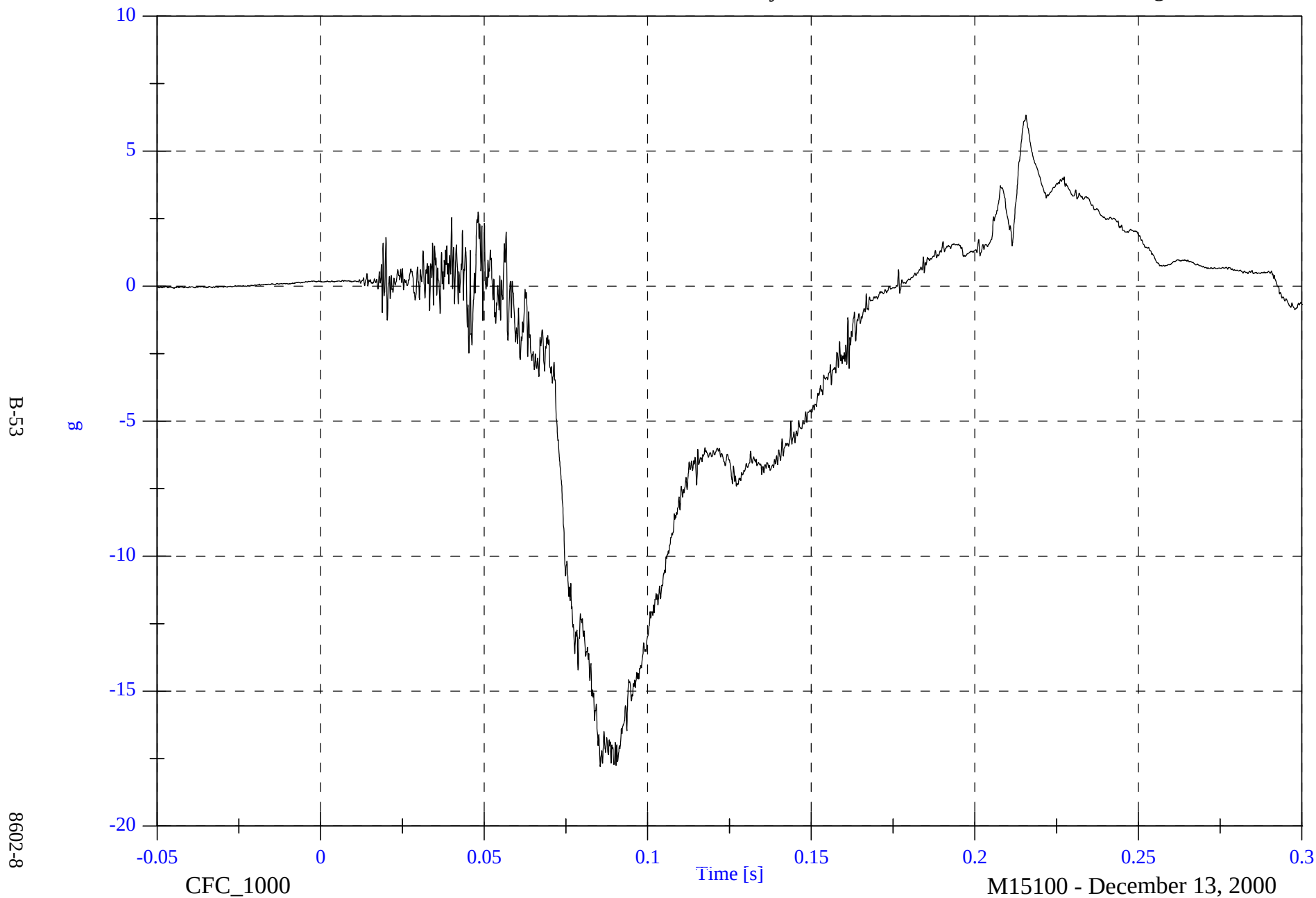


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Head y

Max: 6.3 [g] at 0.216 [s]

Min: -17.8 [g] at 0.085 [s]



NCAP 2001 Test #8 2001 Toyota 4Runner

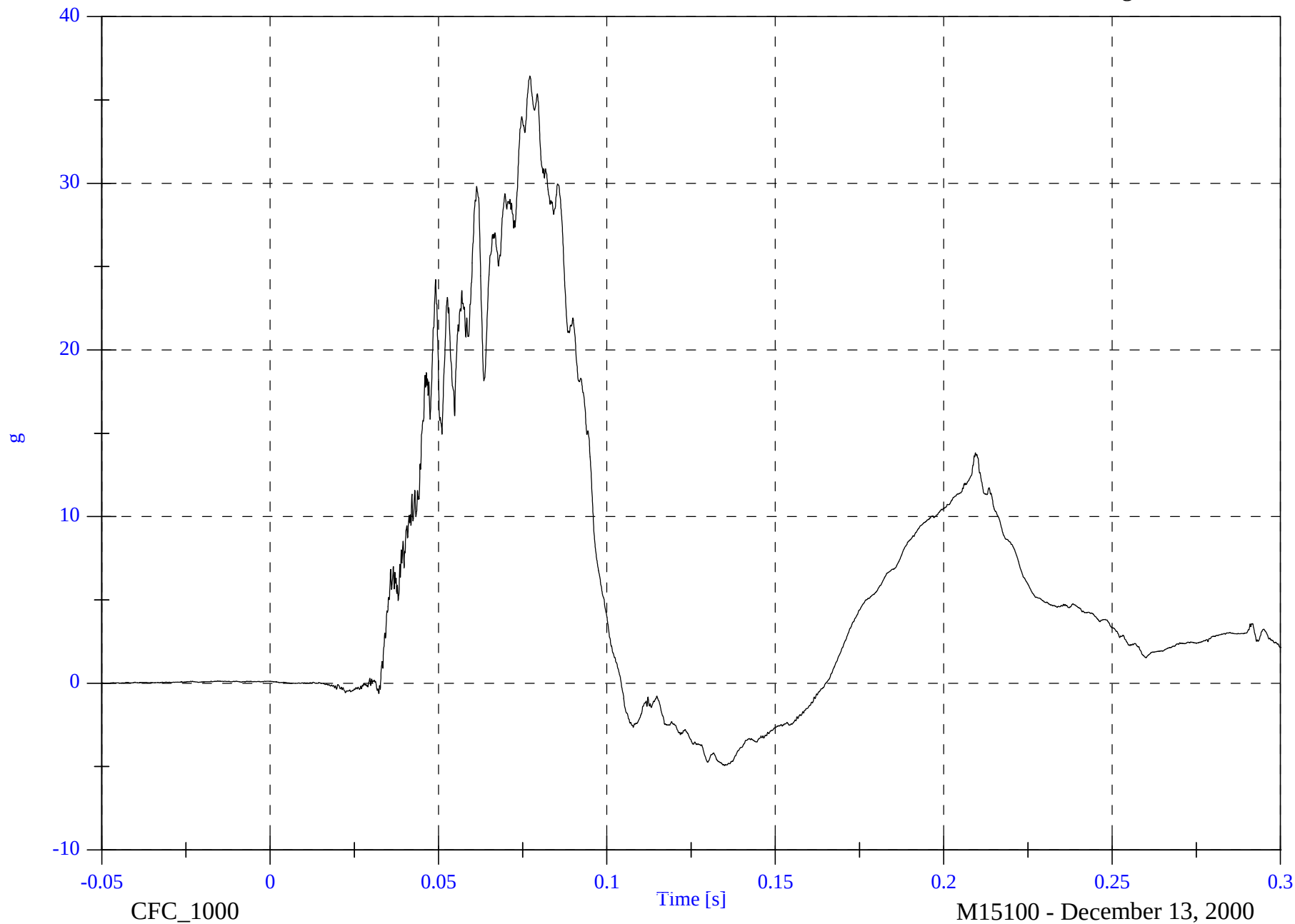
P2 Head z

Max: 36.4 [g] at 0.077 [s]

Min: -4.9 [g] at 0.135 [s]

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8602-8

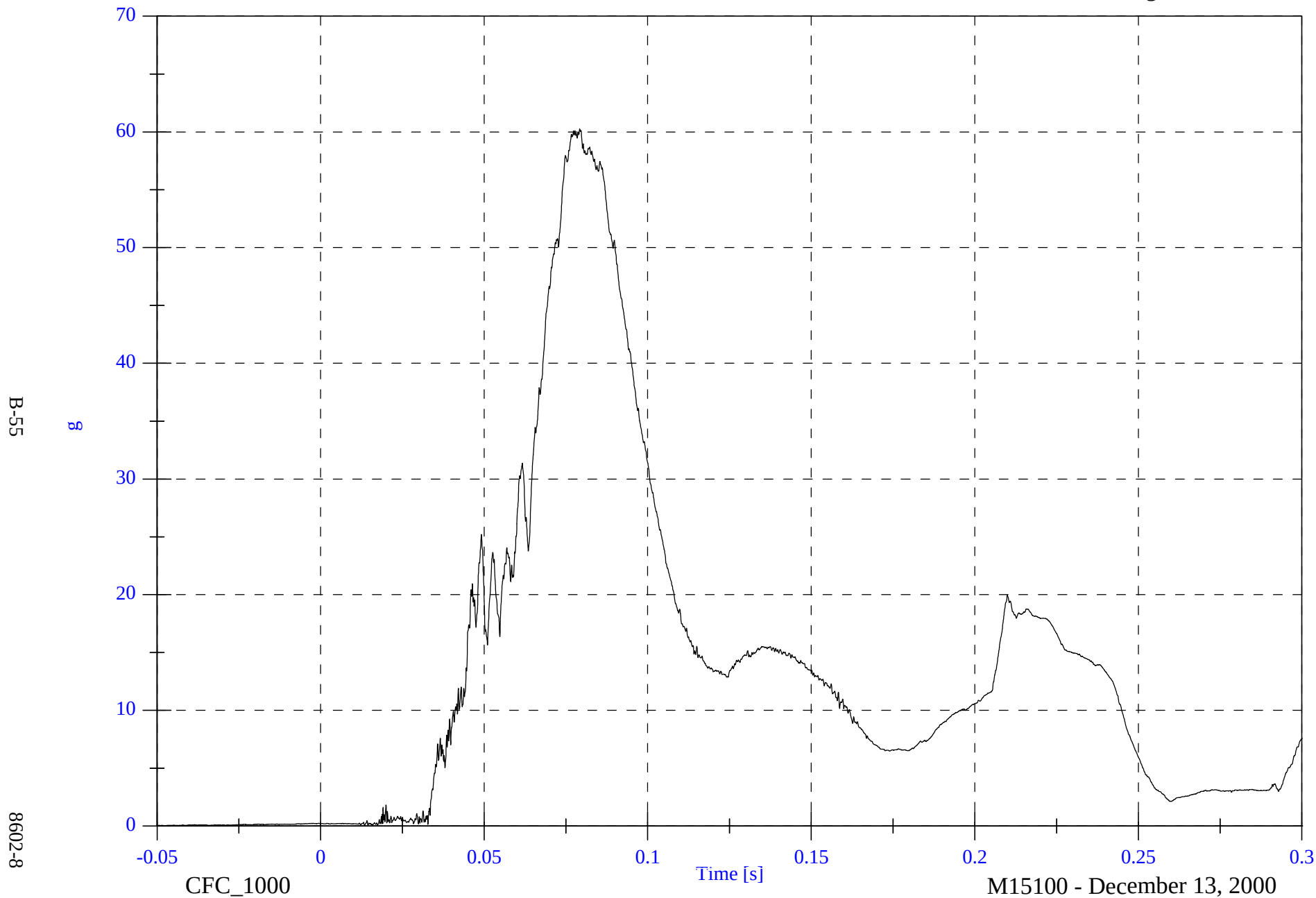


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Head Resultant

Max: 60.3 [g] at 0.079 [s]

Min: 0.0 [g] at 0.013 [s]

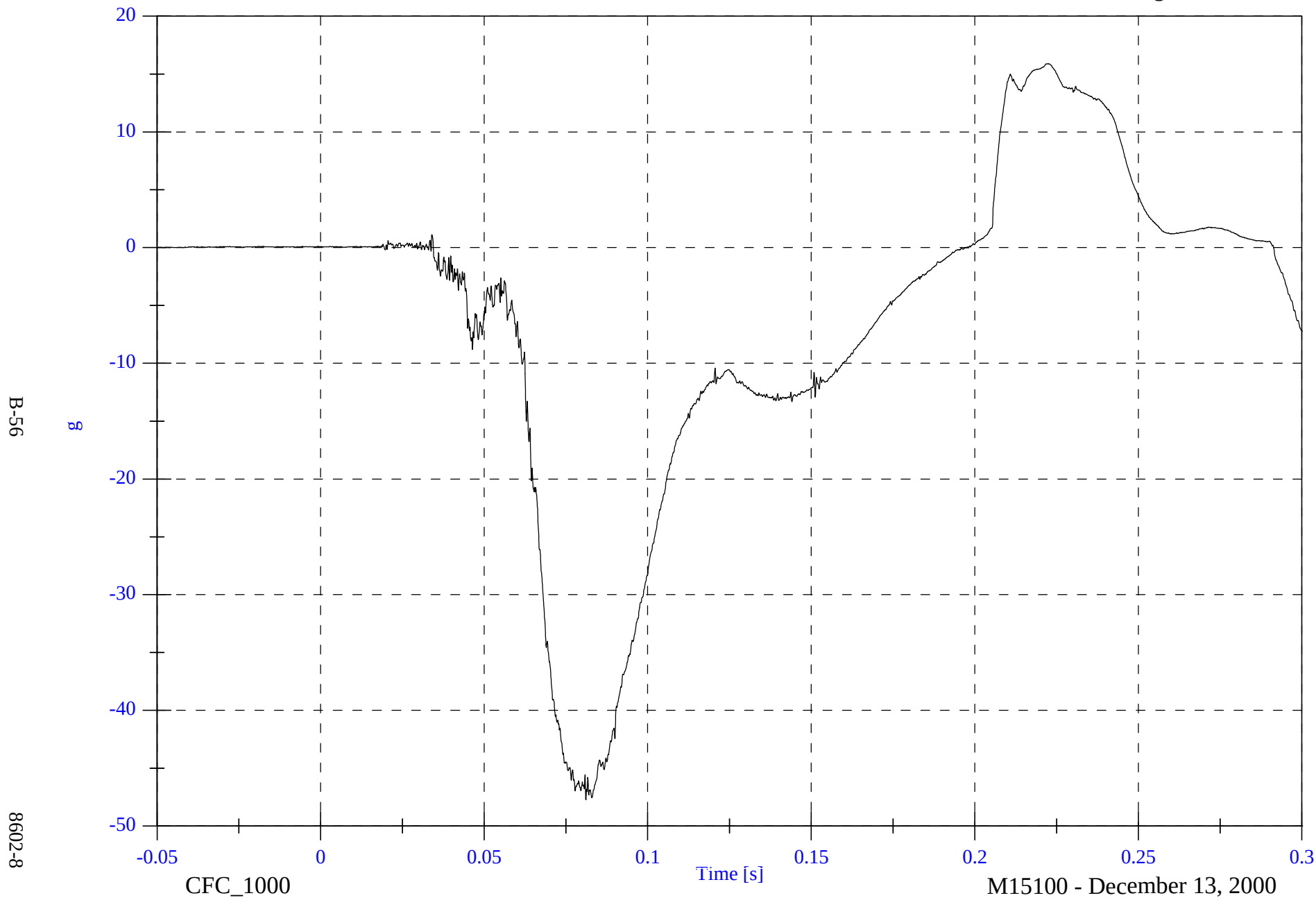


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Head Red x

Max: 15.9 [g] at 0.222 [s]

Min: -47.7 [g] at 0.081 [s]

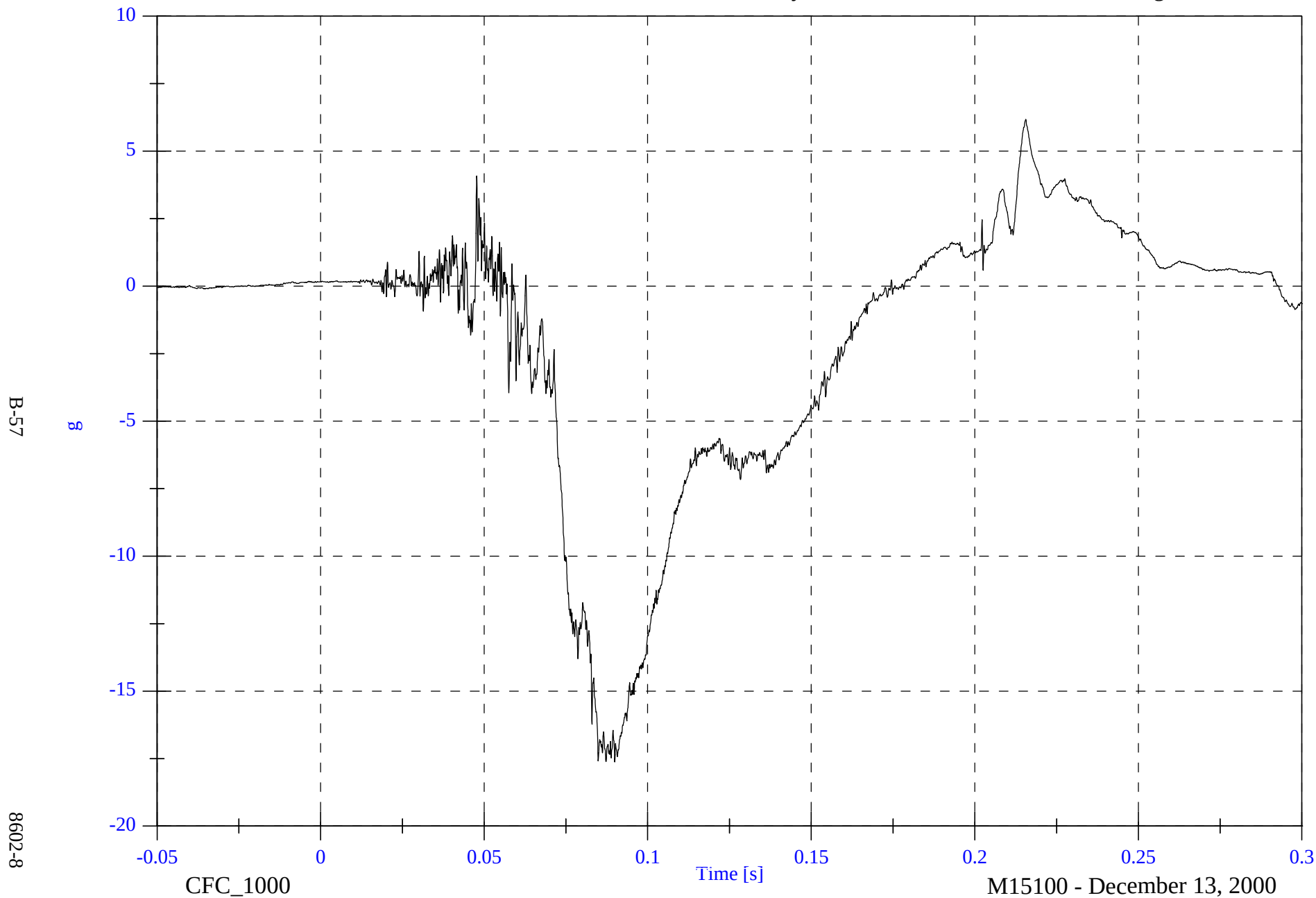


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Head Red y

Max: 6.2 [g] at 0.216 [s]

Min: -17.6 [g] at 0.090 [s]

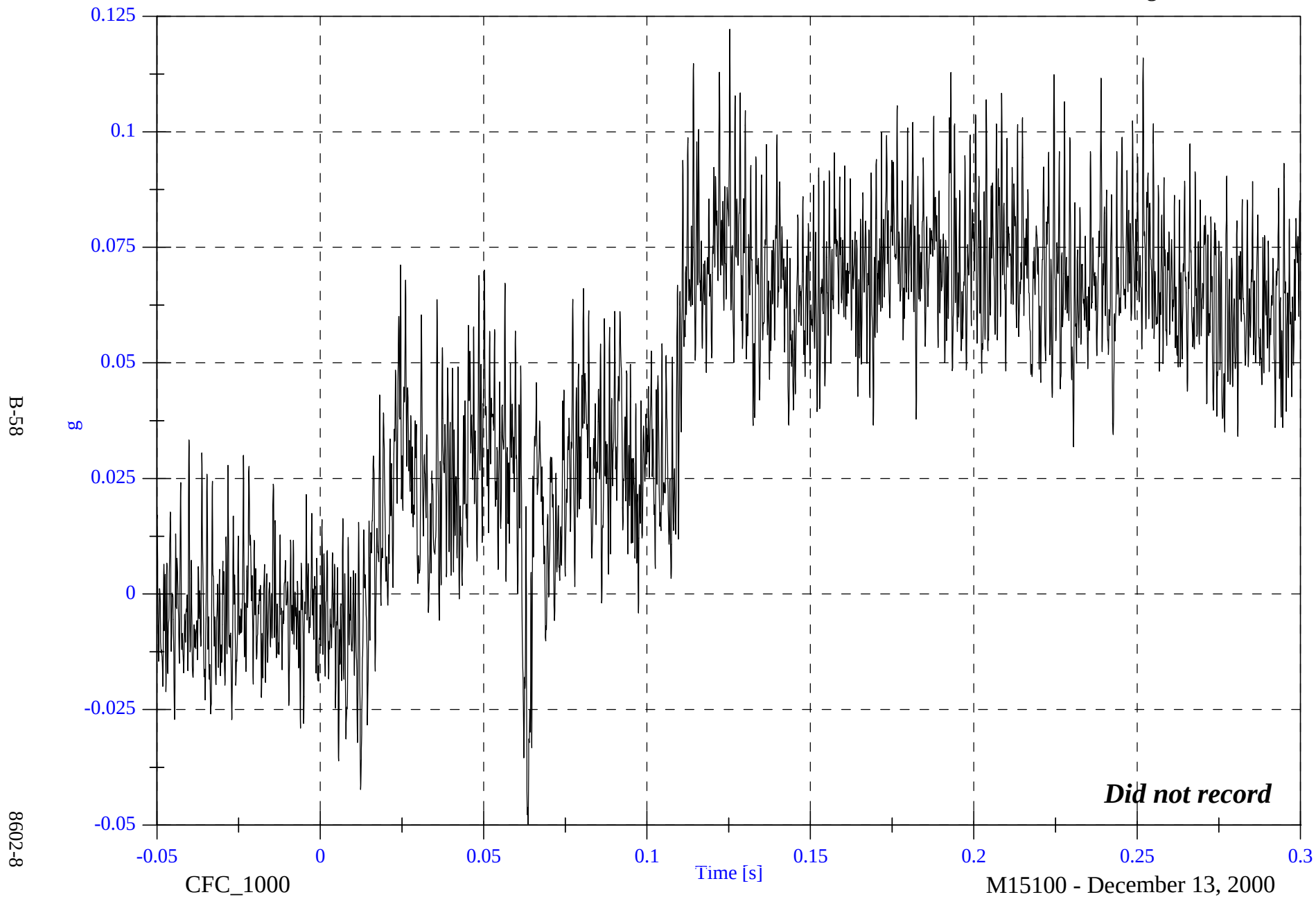


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 0.1 [g] at 0.125 [s]

Min: -0.0 [g] at 0.064 [s]

P2 Head Red z



NCAP 2001 Test #8 2001 Toyota 4Runner

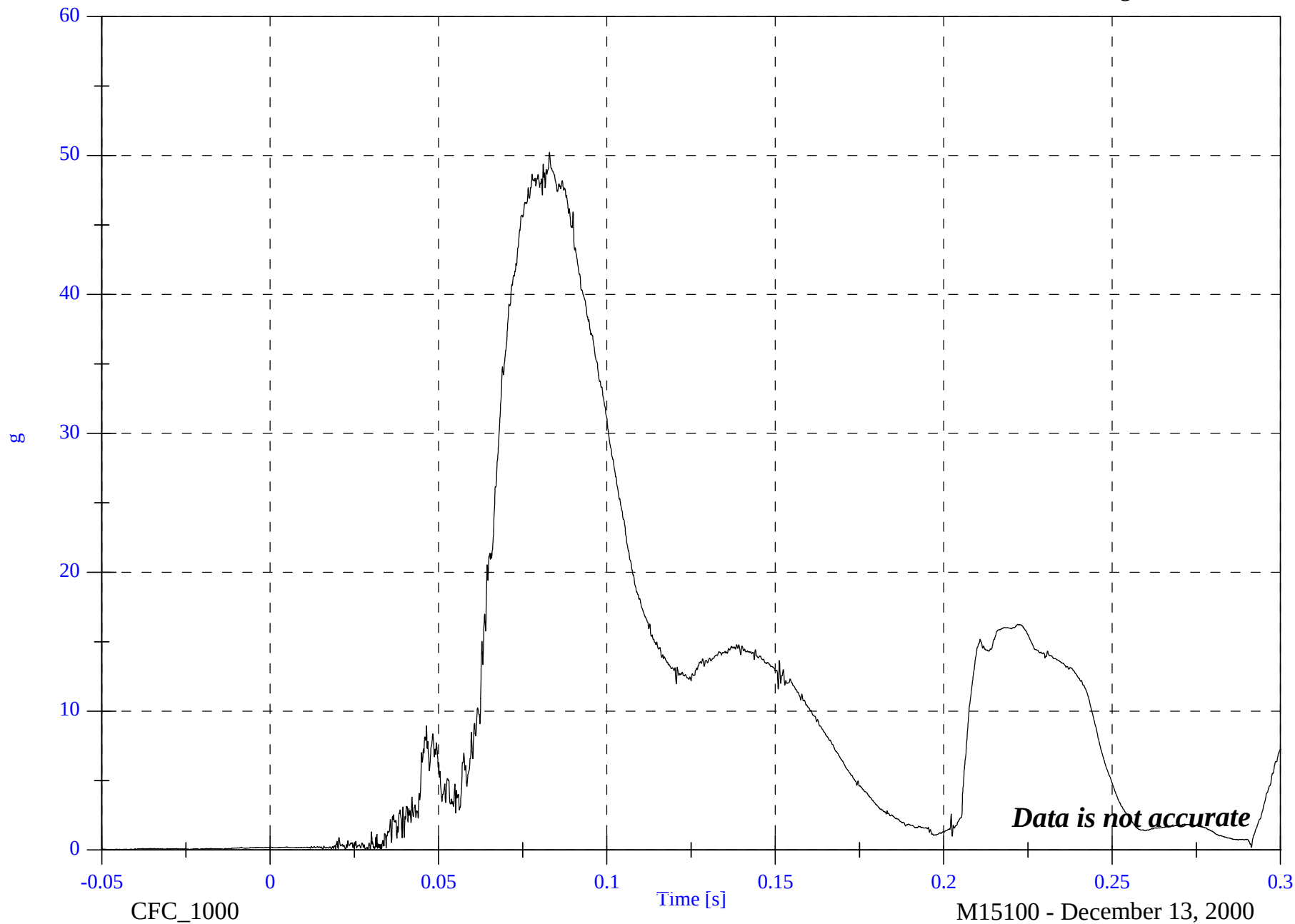
P2 Head Red Resultant

Max: 50.2 [g] at 0.083 [s]

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

B-59

8602-8

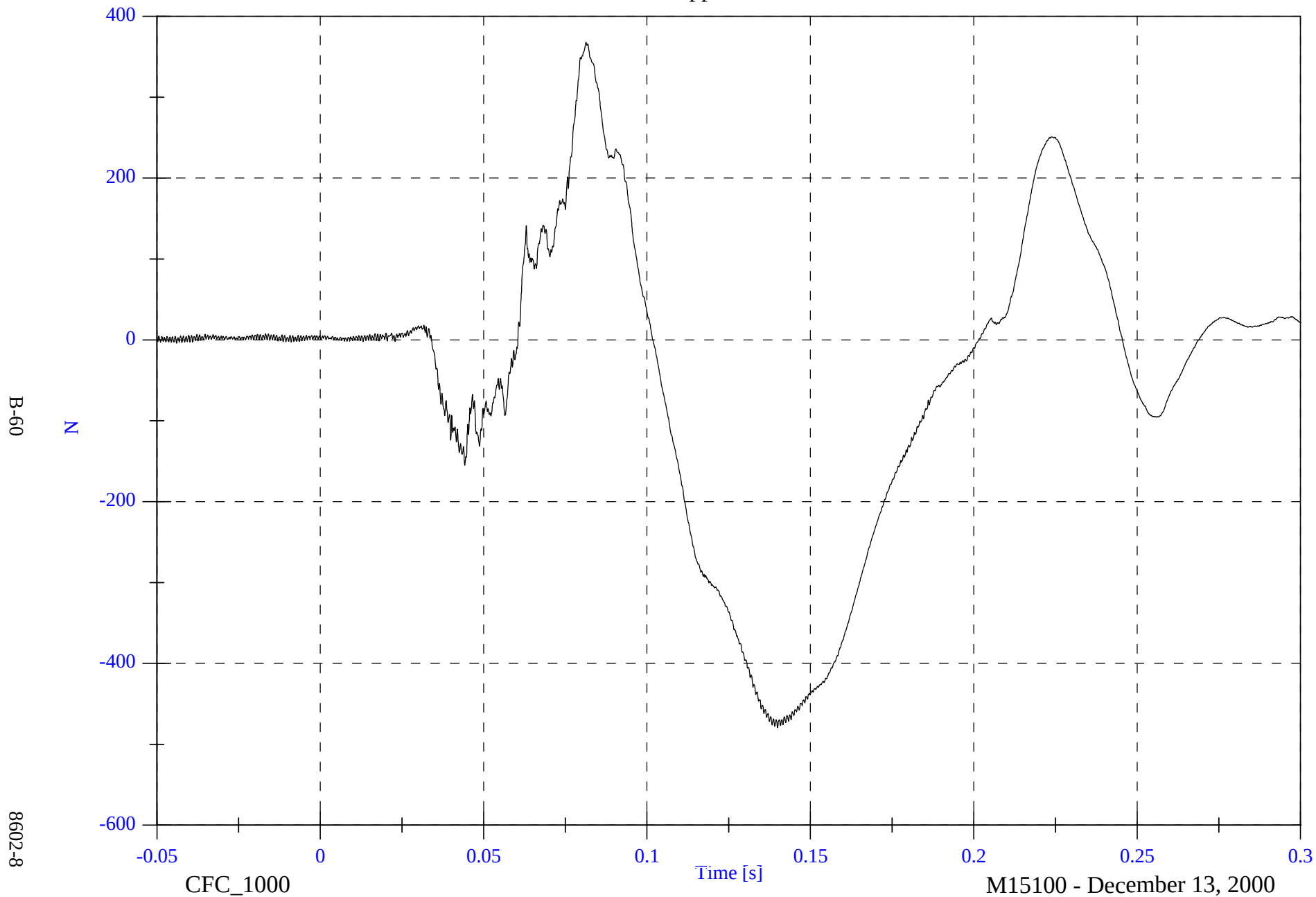


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Upper Neck Fx

Max: 367.6 [N] at 0.081 [s]

Min: -479.6 [N] at 0.140 [s]

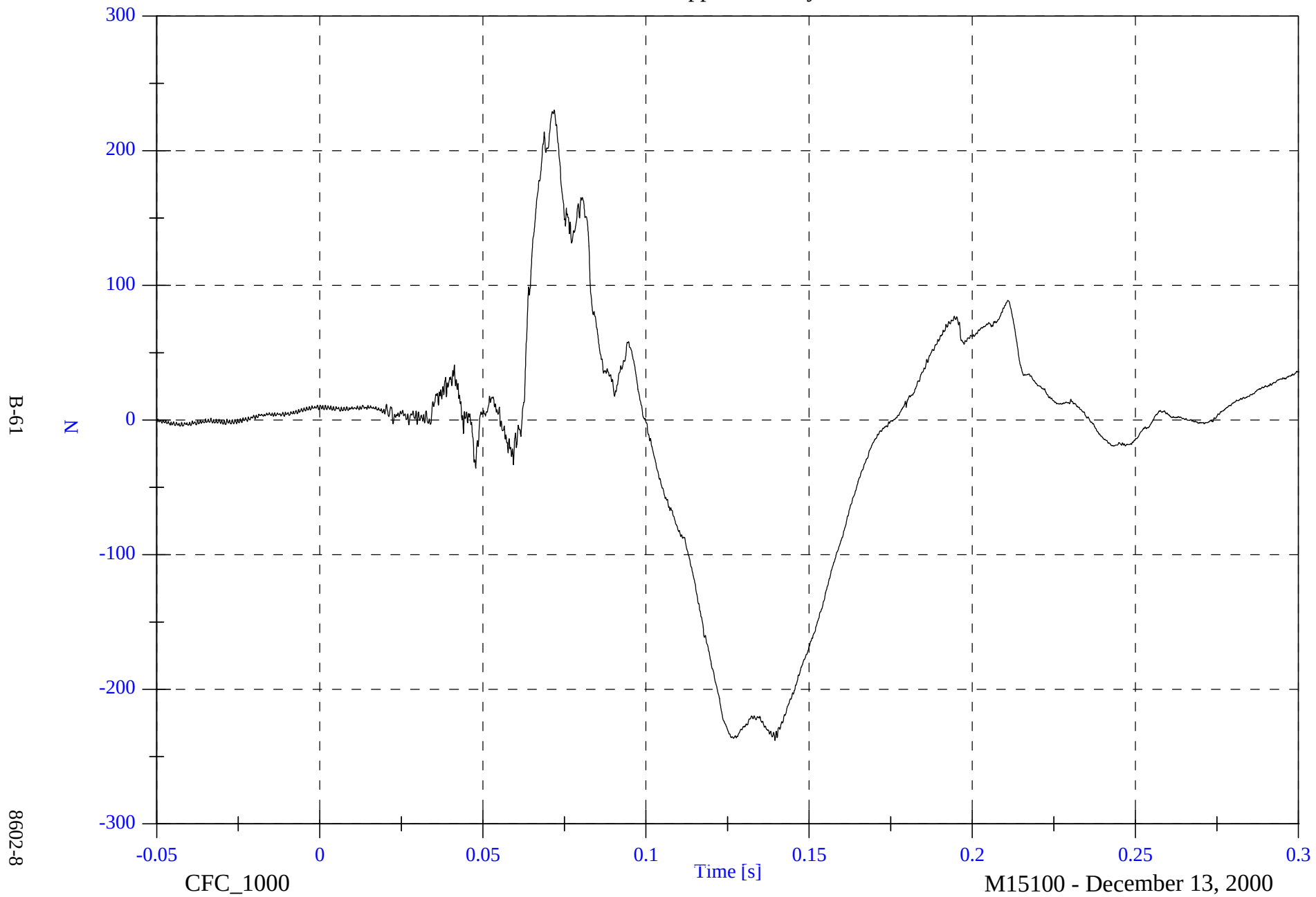


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Upper Neck Fy

Max: 230.3 [N] at 0.072 [s]

Min: -238.0 [N] at 0.140 [s]

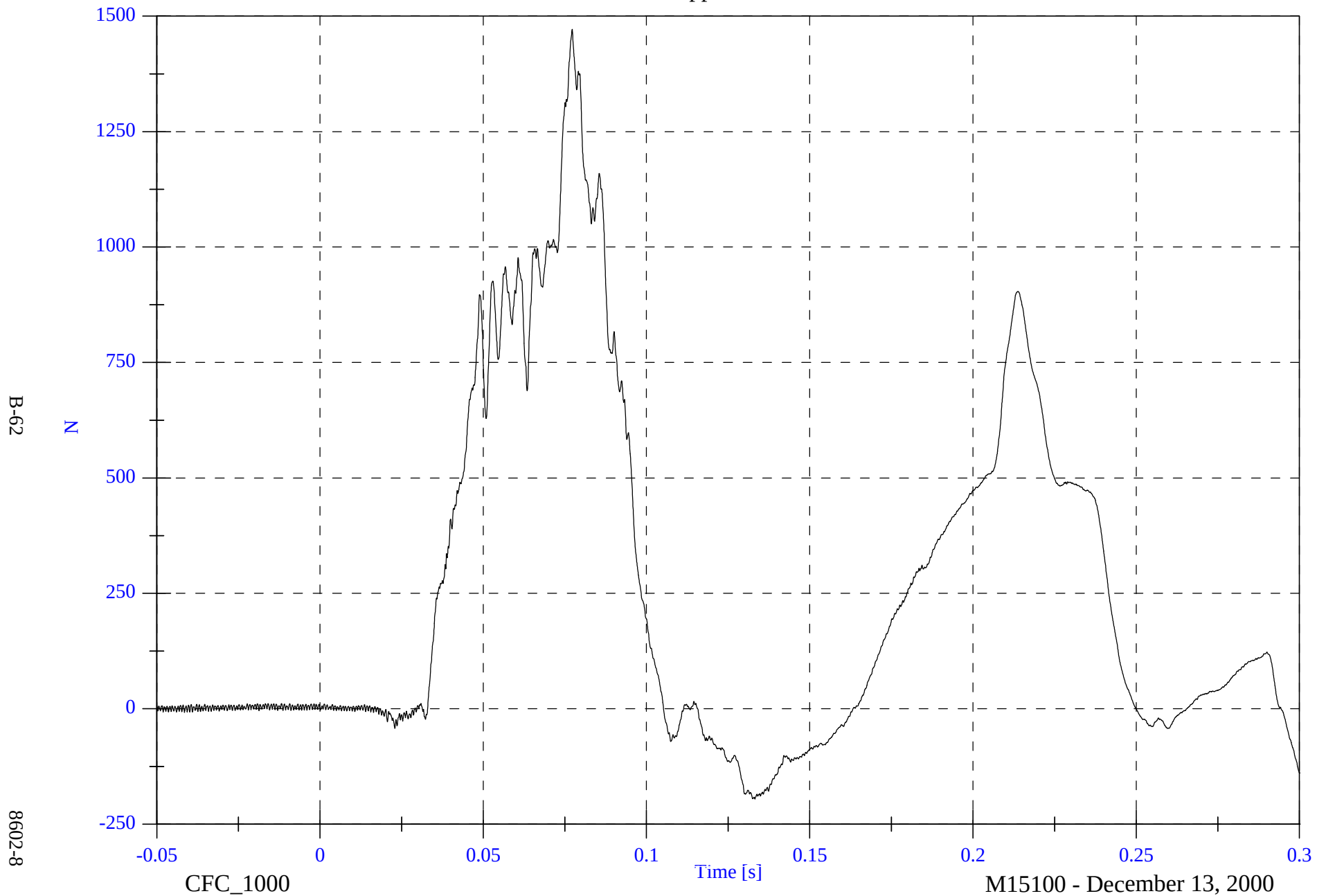


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Upper Neck Fz

Max: 1471.5 [N] at 0.077 [s]

Min: -195.6 [N] at 0.133 [s]

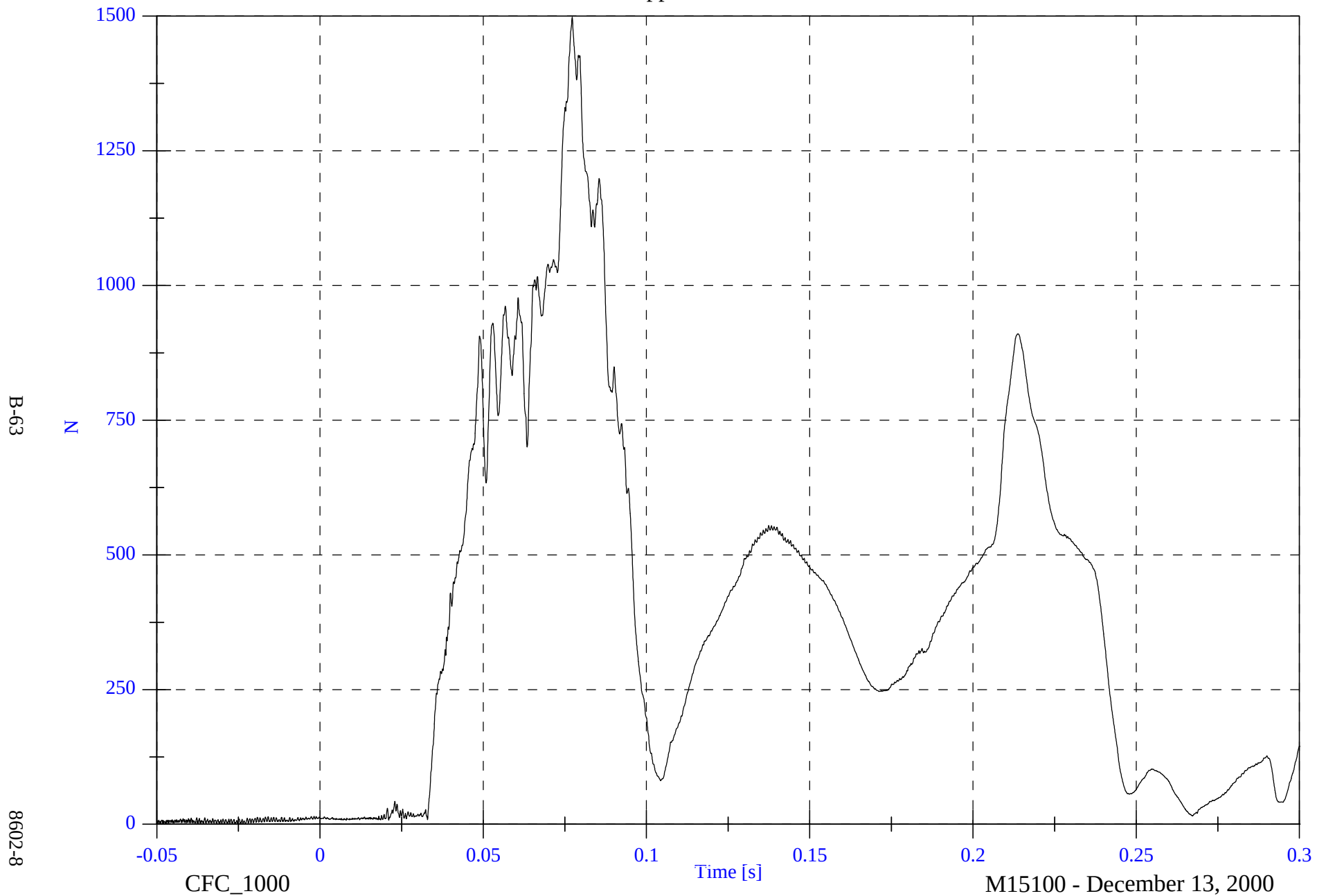


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Upper Neck F Resultant

Max: 1498.4 [N] at 0.077 [s]

Min: 0.7 [N] at -0.024 [s]



NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 30.7 [N-m] at 0.091 [s]

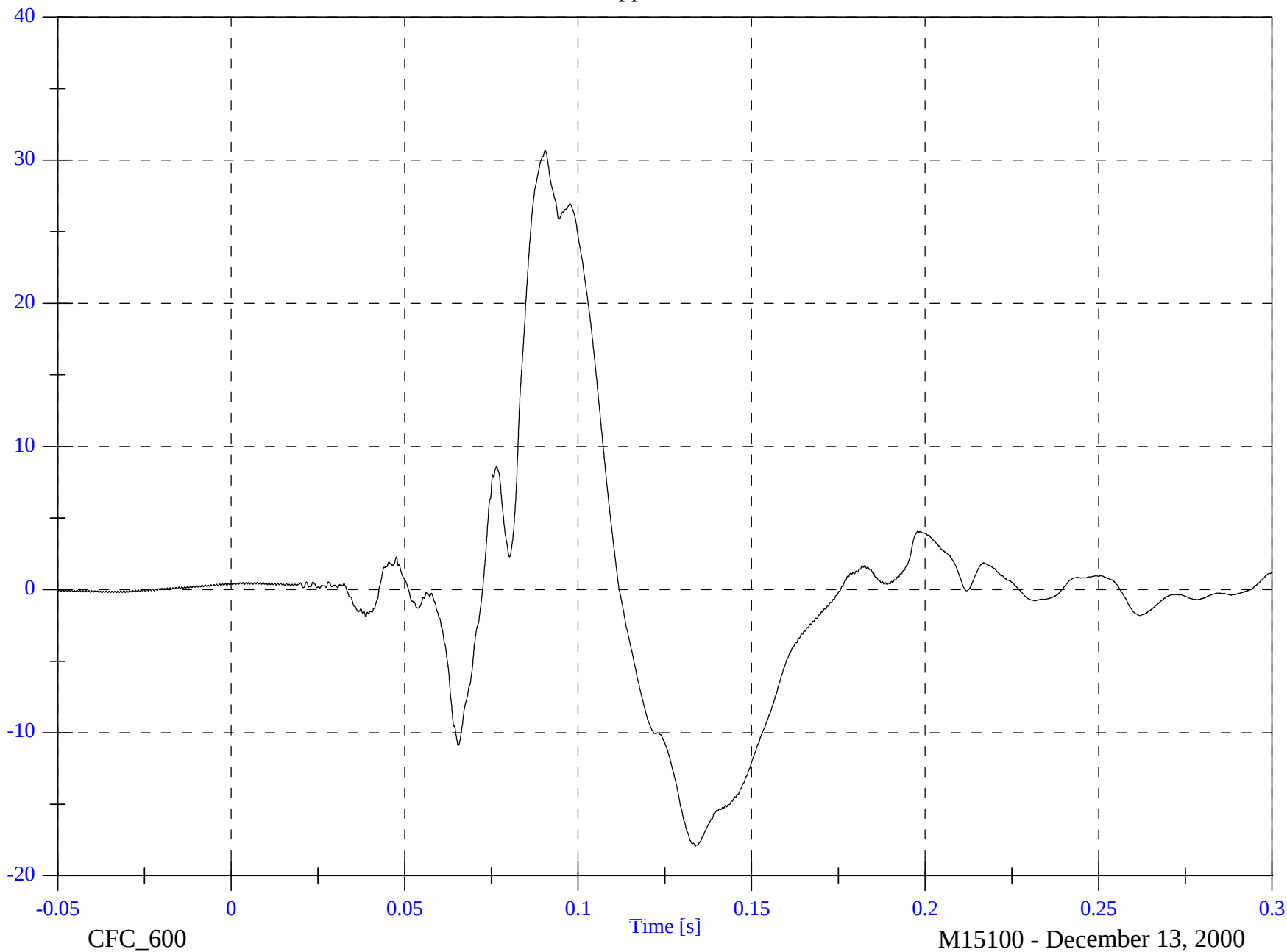
Min: -17.9 [N-m] at 0.134 [s]

P2 Upper Neck Mx

B-64

N-m

8602-8

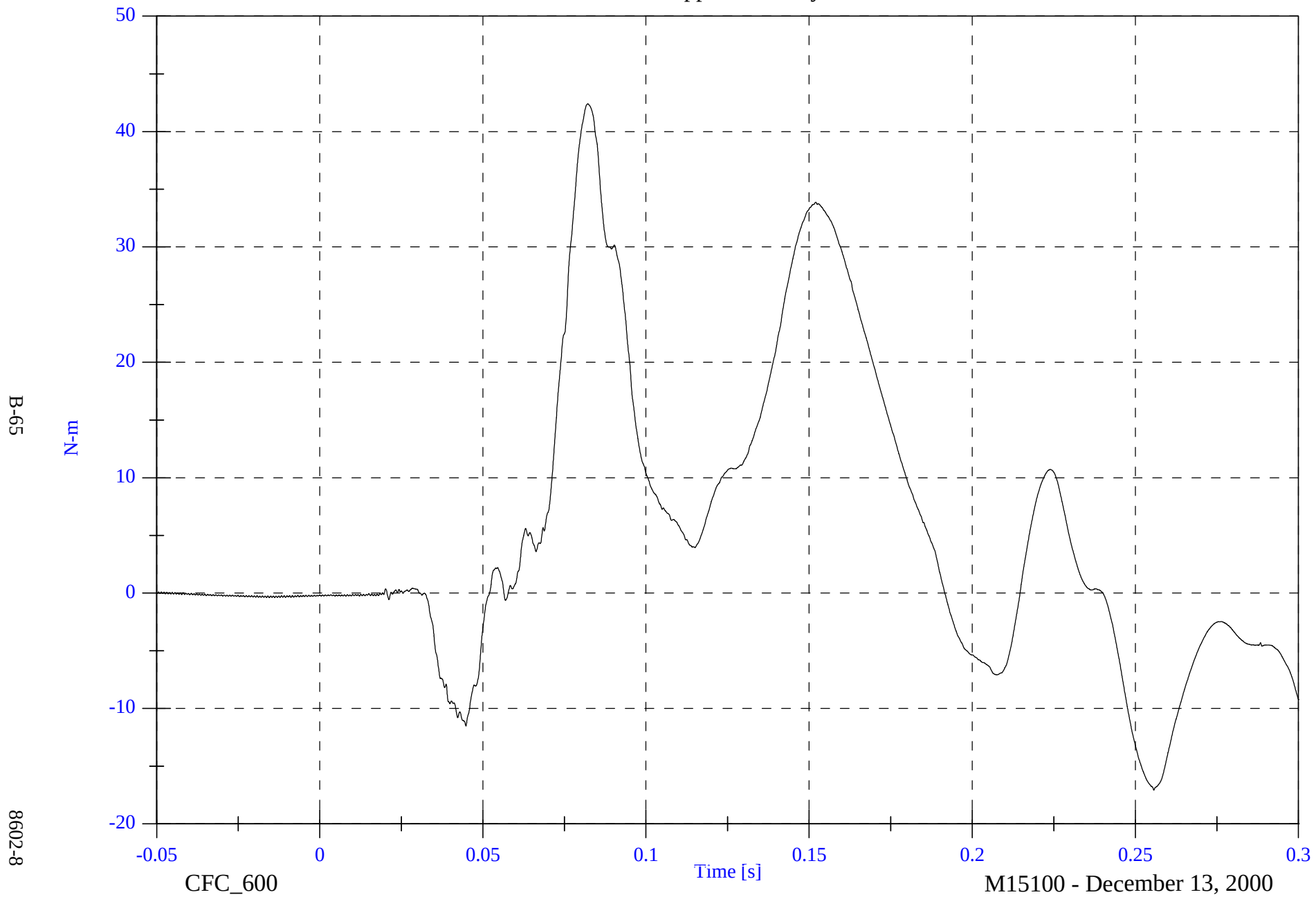


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Upper Neck My

Max: 42.4 [N-m] at 0.082 [s]

Min: -17.1 [N-m] at 0.256 [s]

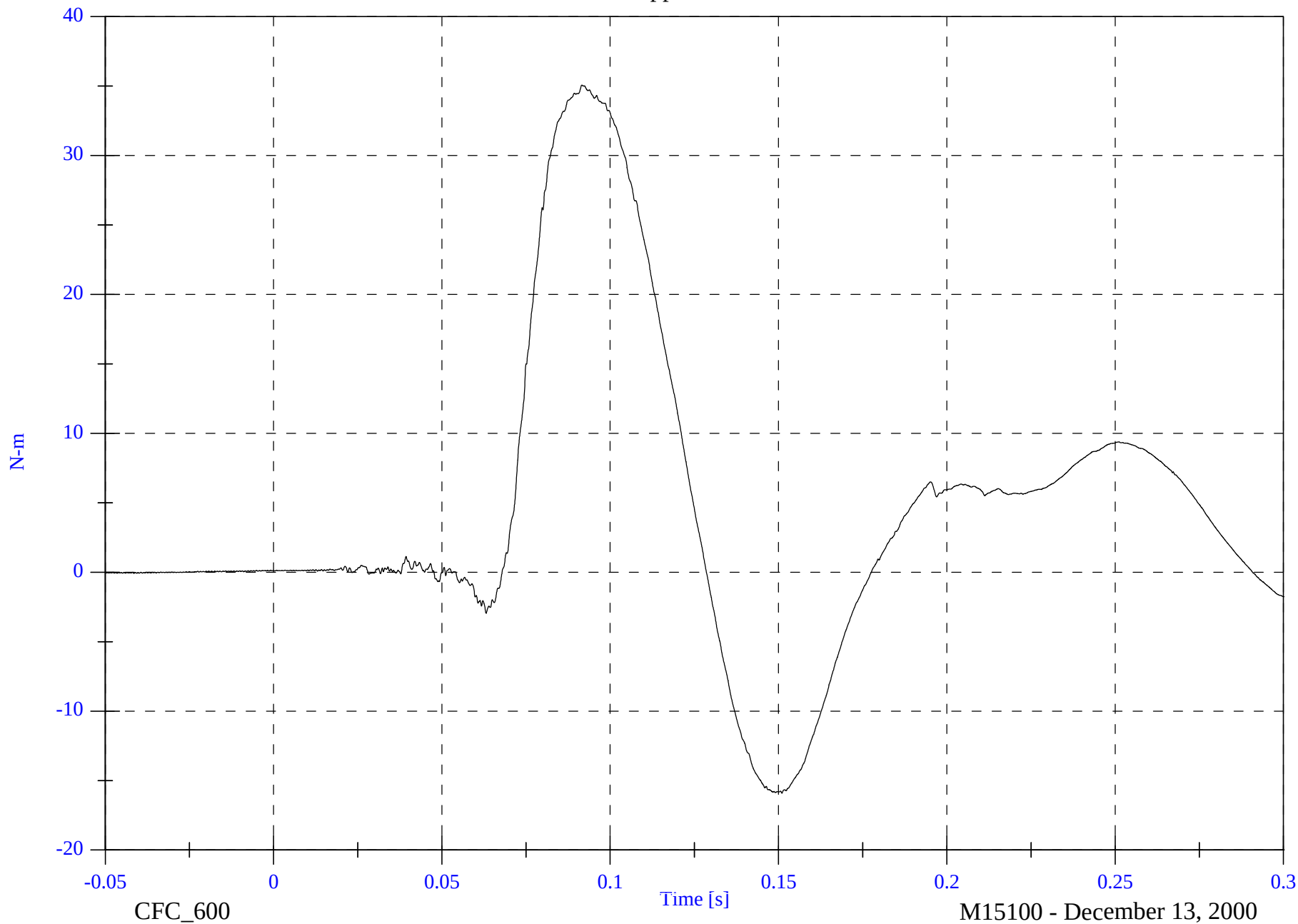


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Upper Neck Mz

Max: 35.1 [N-m] at 0.092 [s]

Min: -15.9 [N-m] at 0.151 [s]



B-66

8602-8

CFC_600

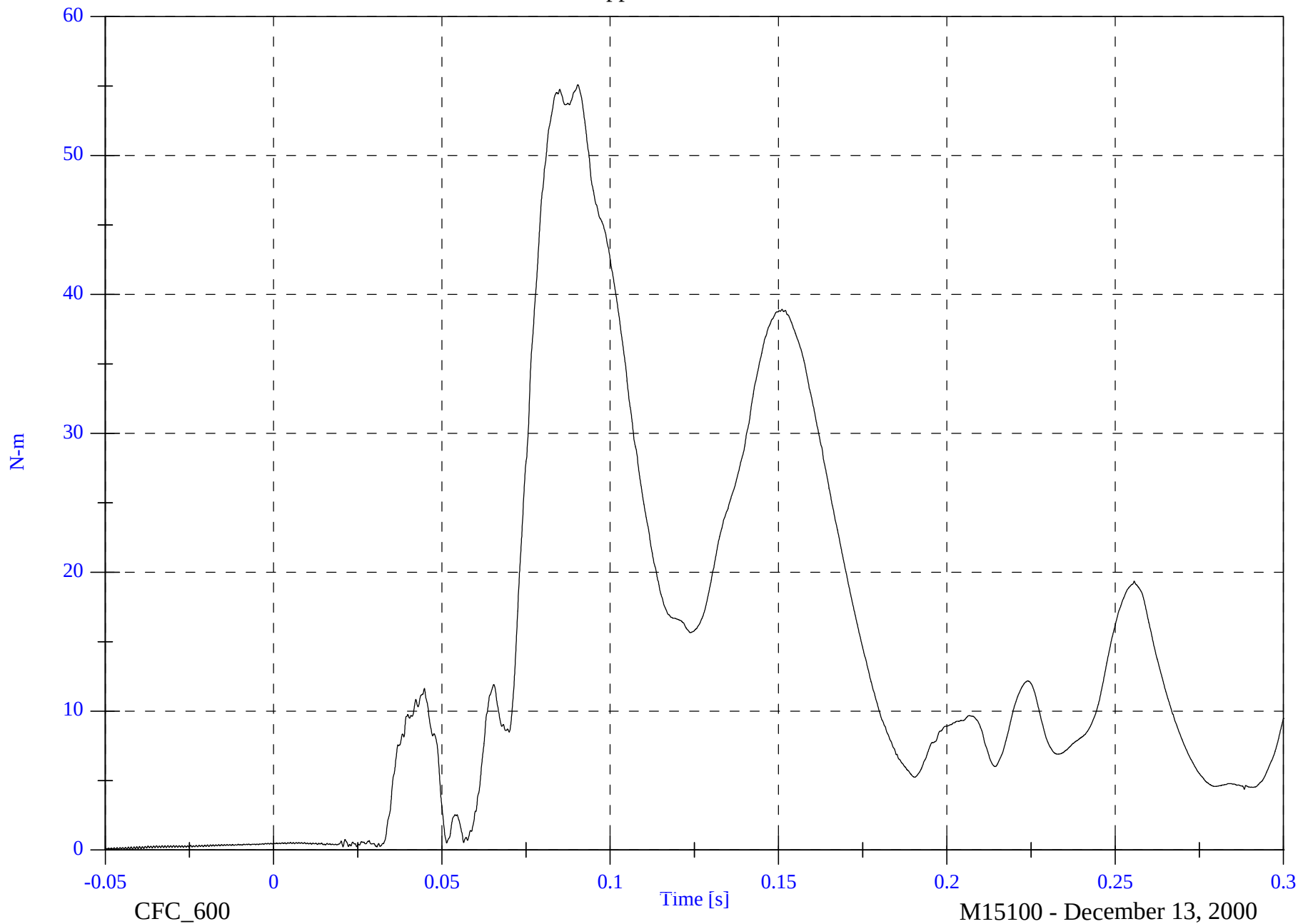
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Upper Neck M Resultant

Max: 55.1 [N-m] at 0.090 [s]

Min: 0.1 [N-m] at -0.046 [s]



B-67

8602-8

CFC_600

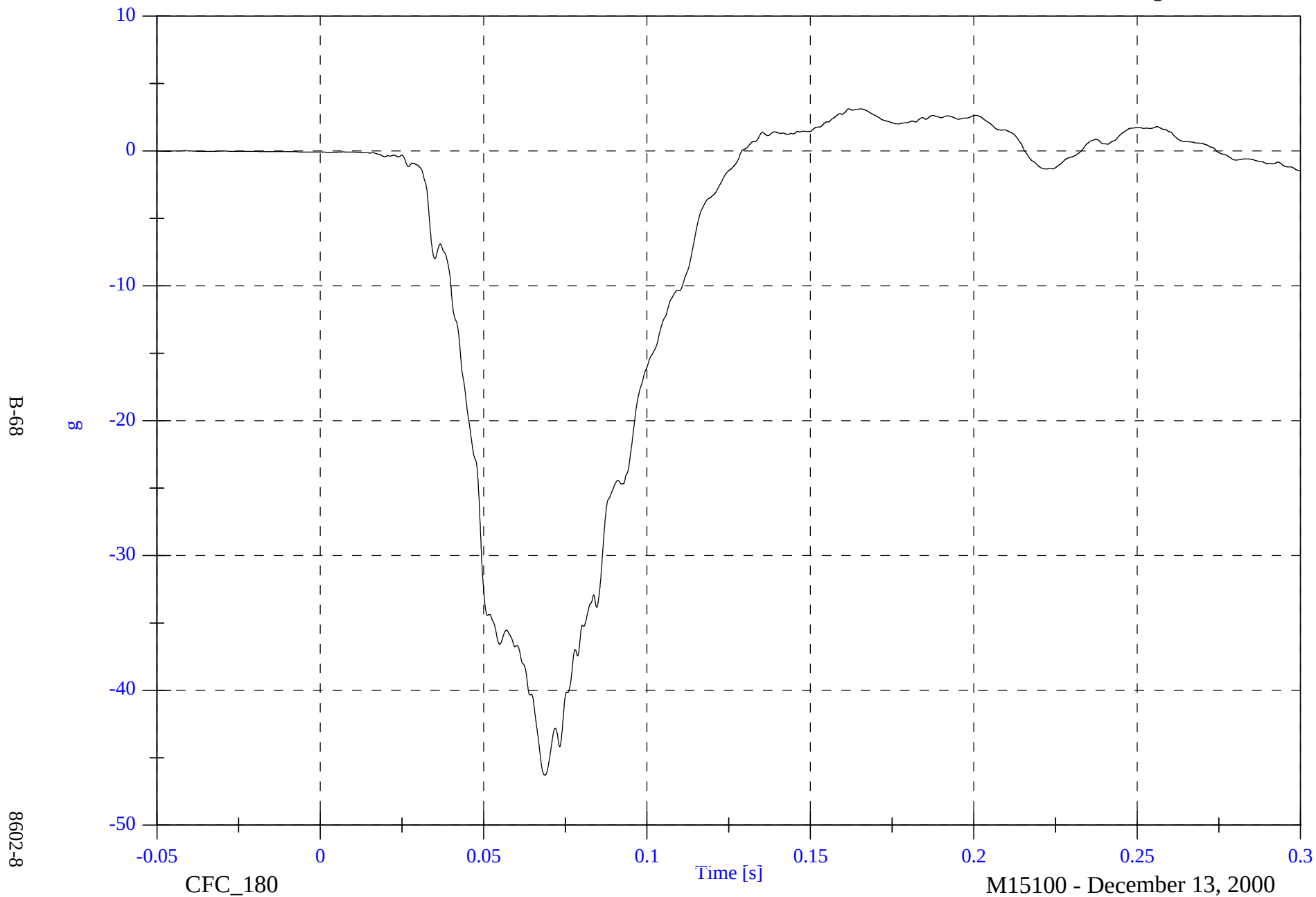
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Chest x

Max: 3.1 [g] at 0.162 [s]

Min: -46.3 [g] at 0.069 [s]

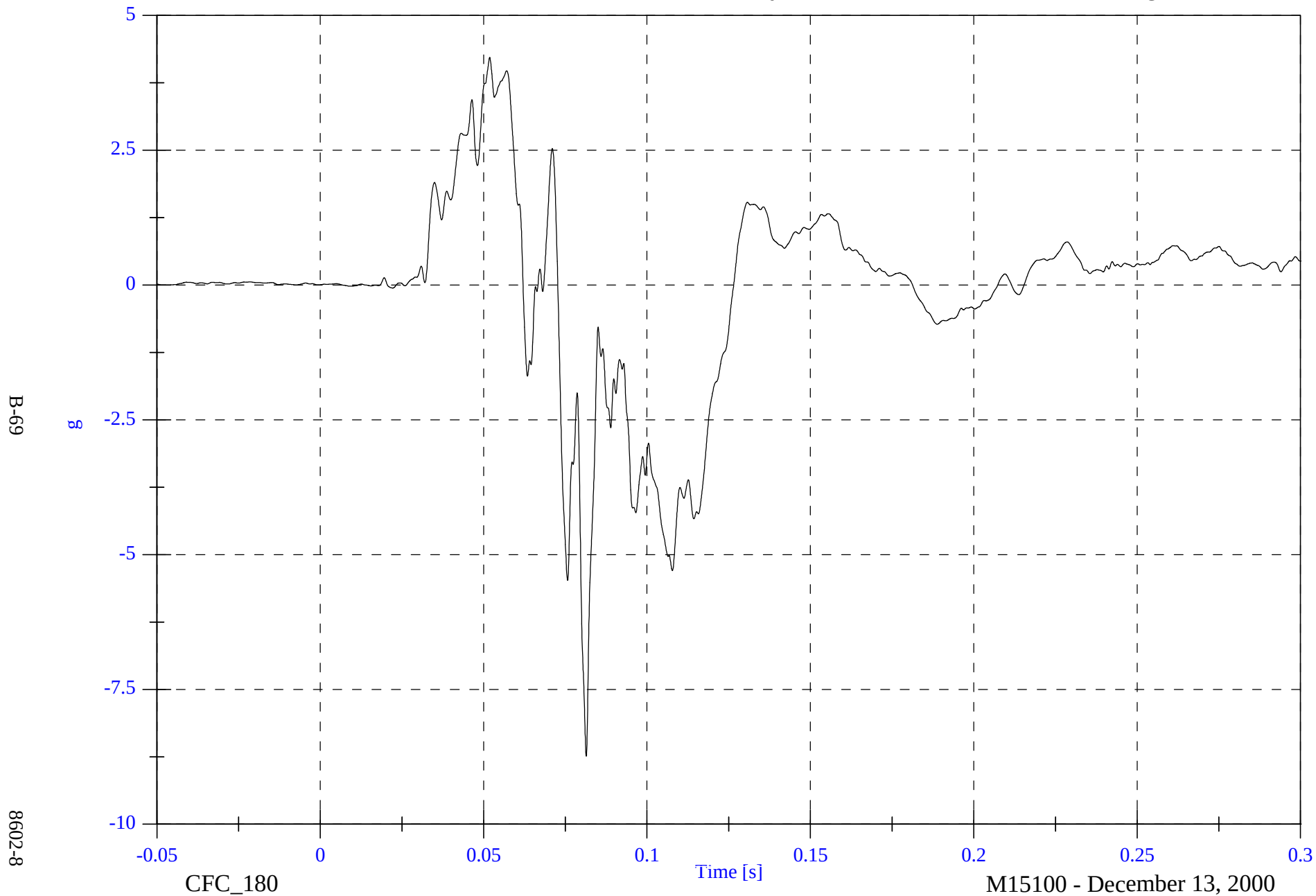


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Chest y

Max: 4.2 [g] at 0.052 [s]

Min: -8.7 [g] at 0.081 [s]

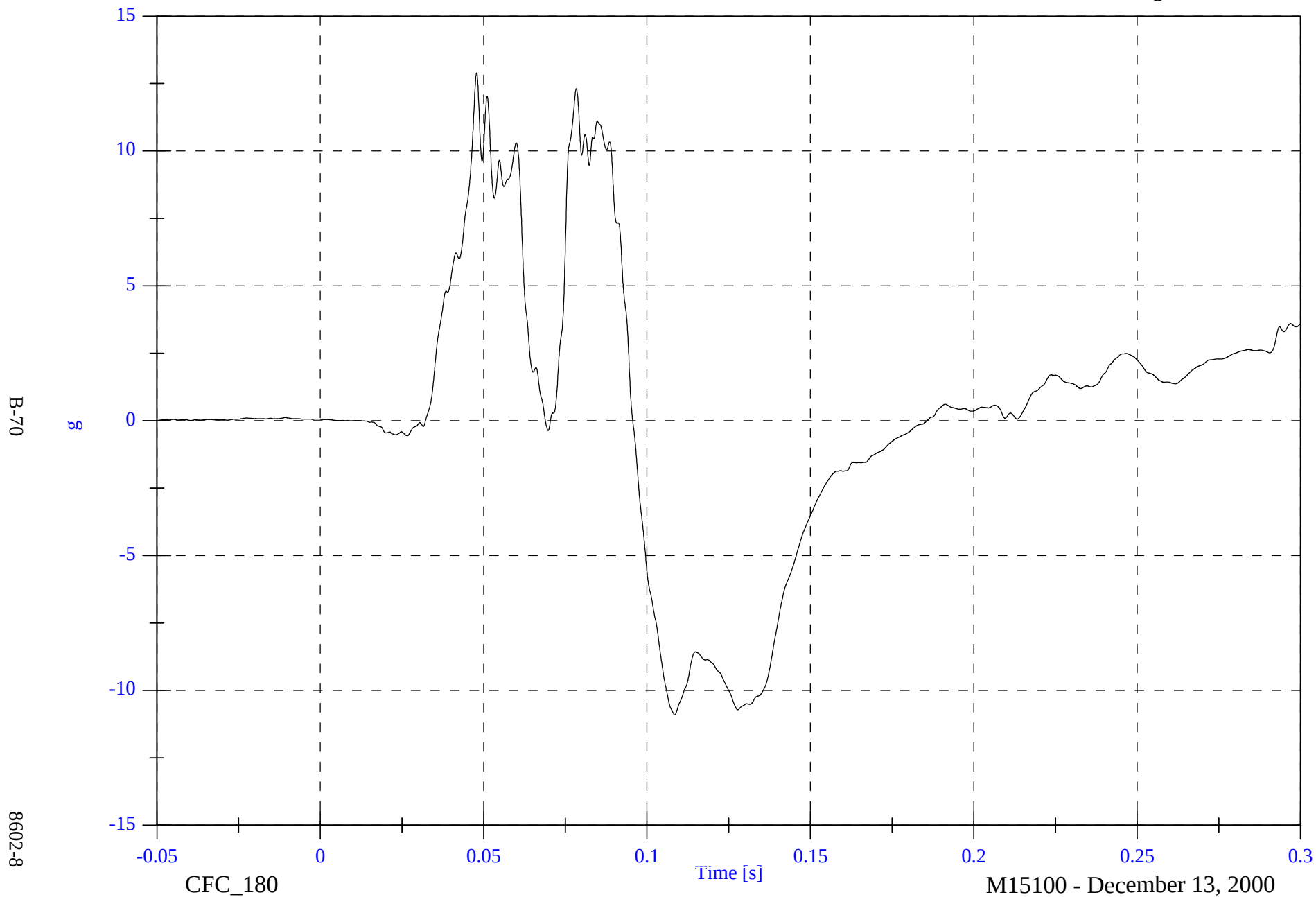


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Chest z

Max: 12.9 [g] at 0.048 [s]

Min: -10.9 [g] at 0.108 [s]



NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Chest Resultant

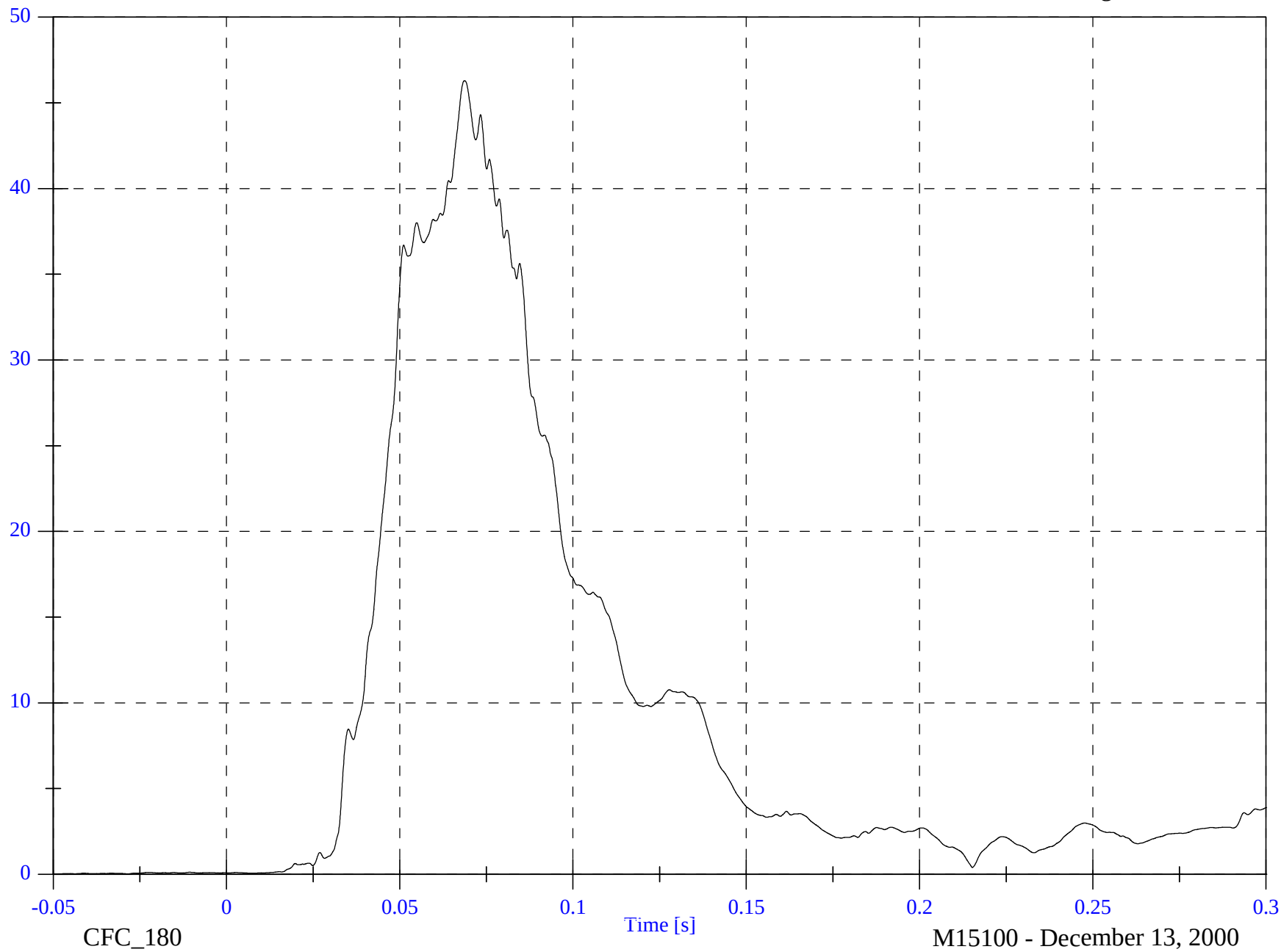
Max: 46.3 [g] at 0.069 [s]

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

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8602-8

g



CFC_180

Time [s]

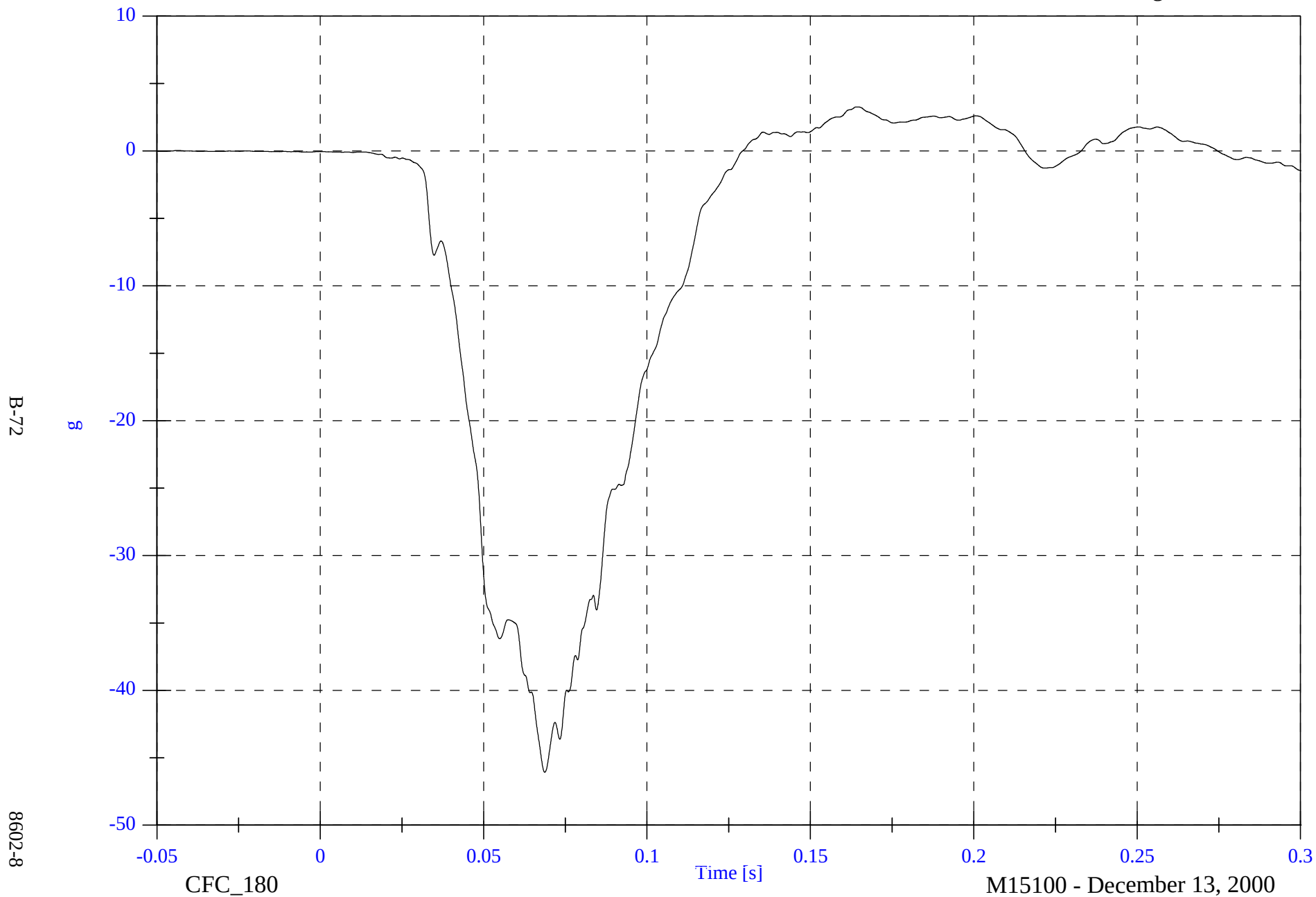
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Chest Red x

Max: 3.3 [g] at 0.164 [s]

Min: -46.1 [g] at 0.069 [s]

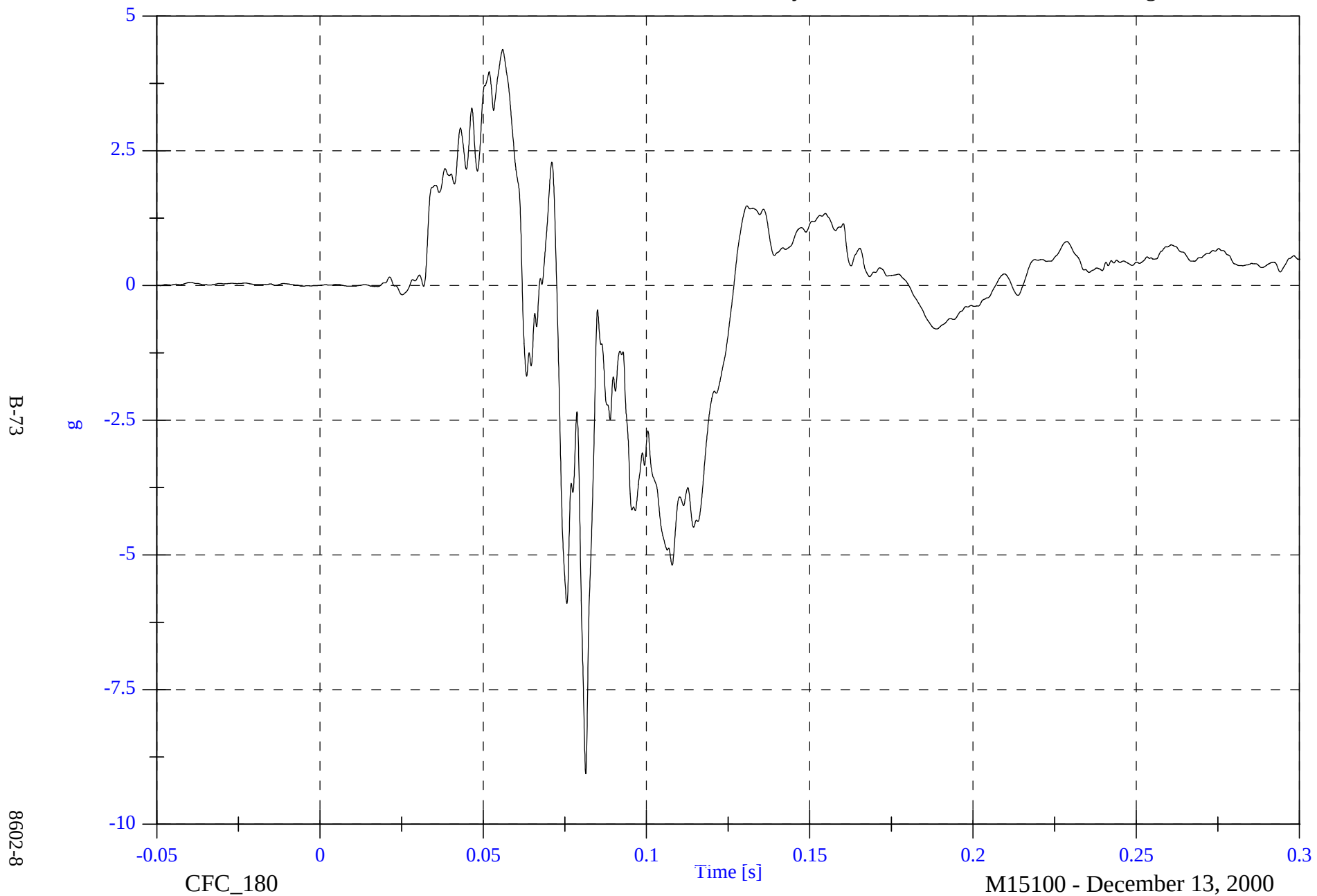


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Chest Red y

Max: 4.4 [g] at 0.056 [s]

Min: -9.1 [g] at 0.081 [s]

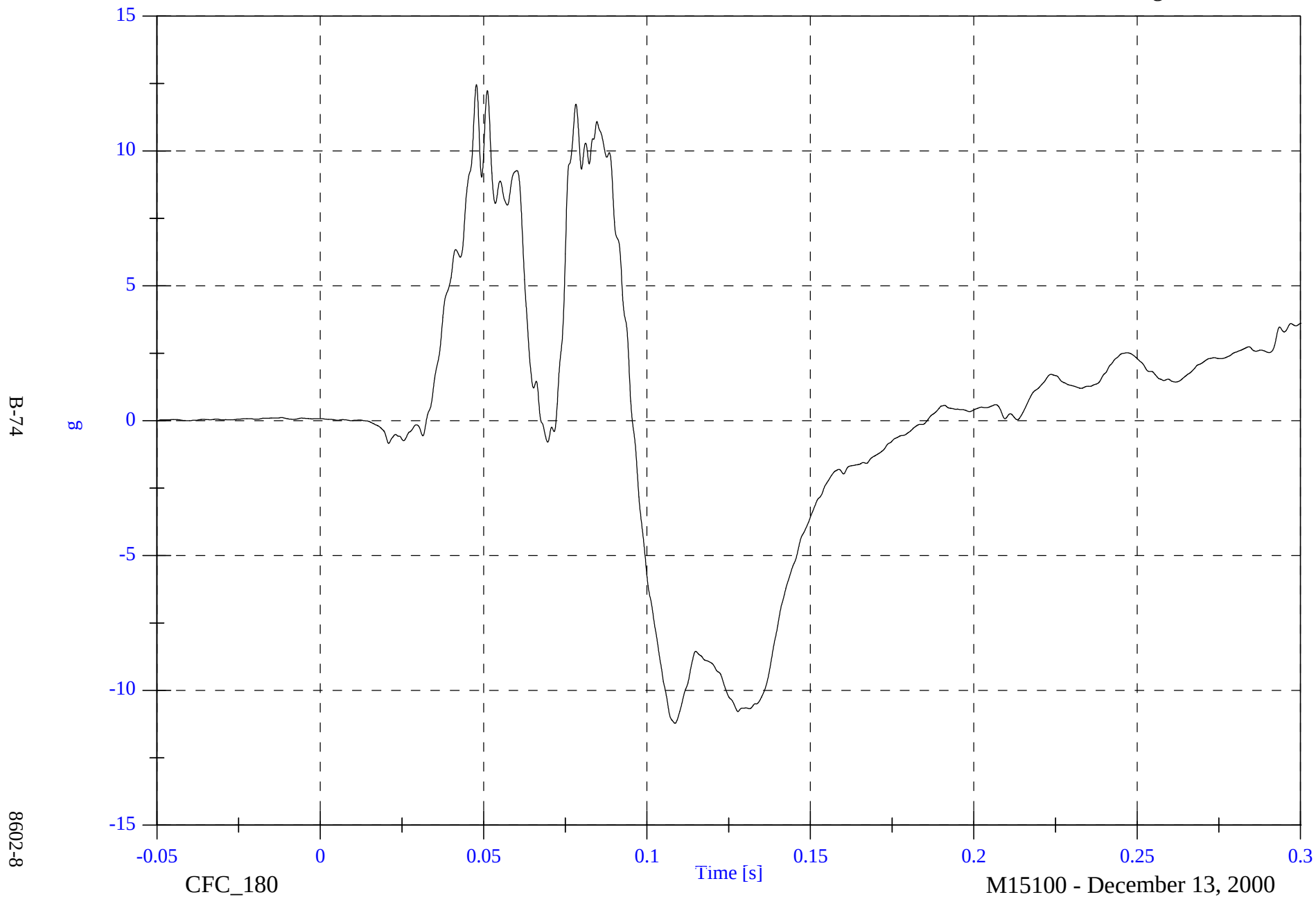


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Chest Red z

Max: 12.5 [g] at 0.048 [s]

Min: -11.2 [g] at 0.109 [s]

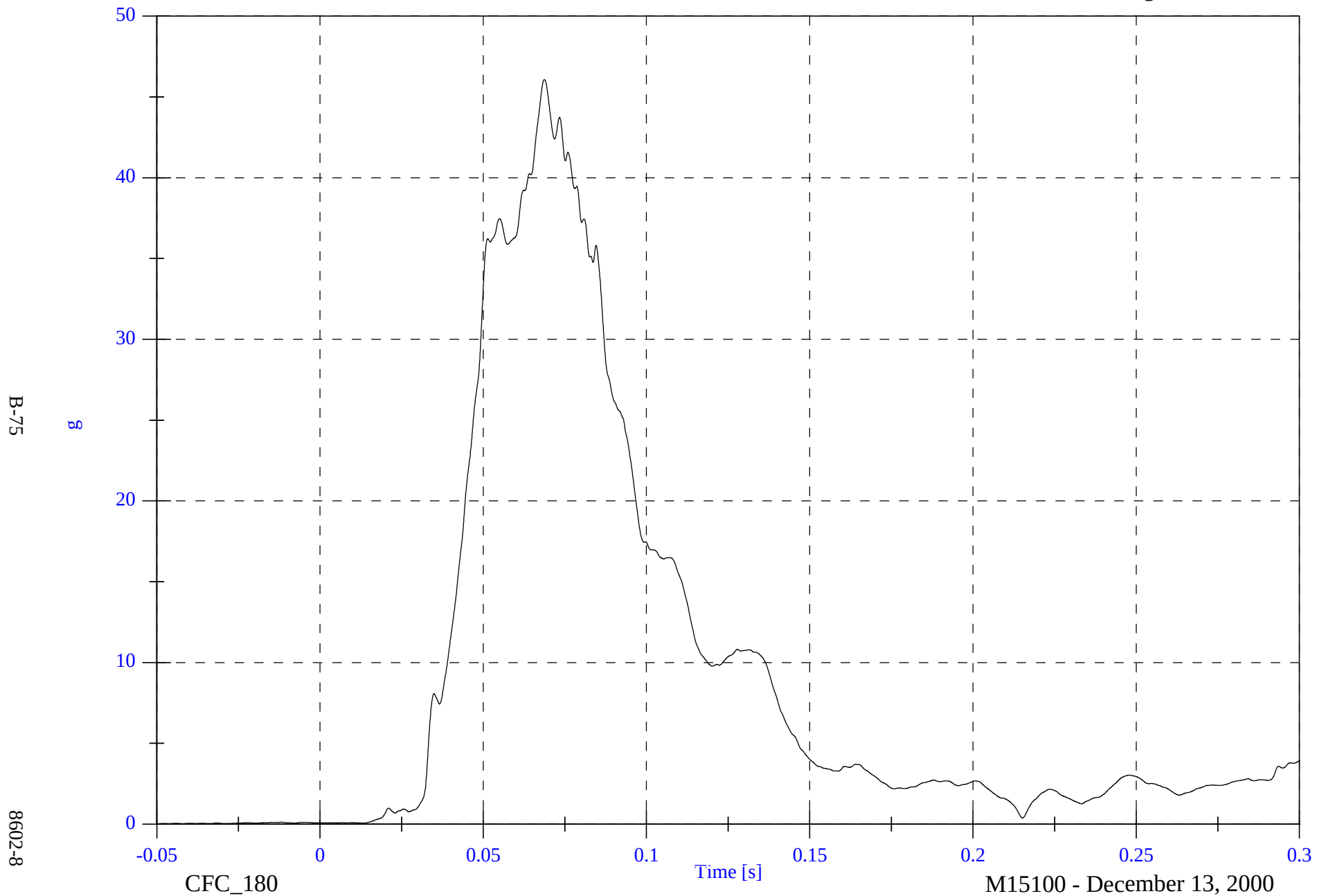


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Chest Red Resultant

Max: 46.1 [g] at 0.069 [s]

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



NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Chest Compression x

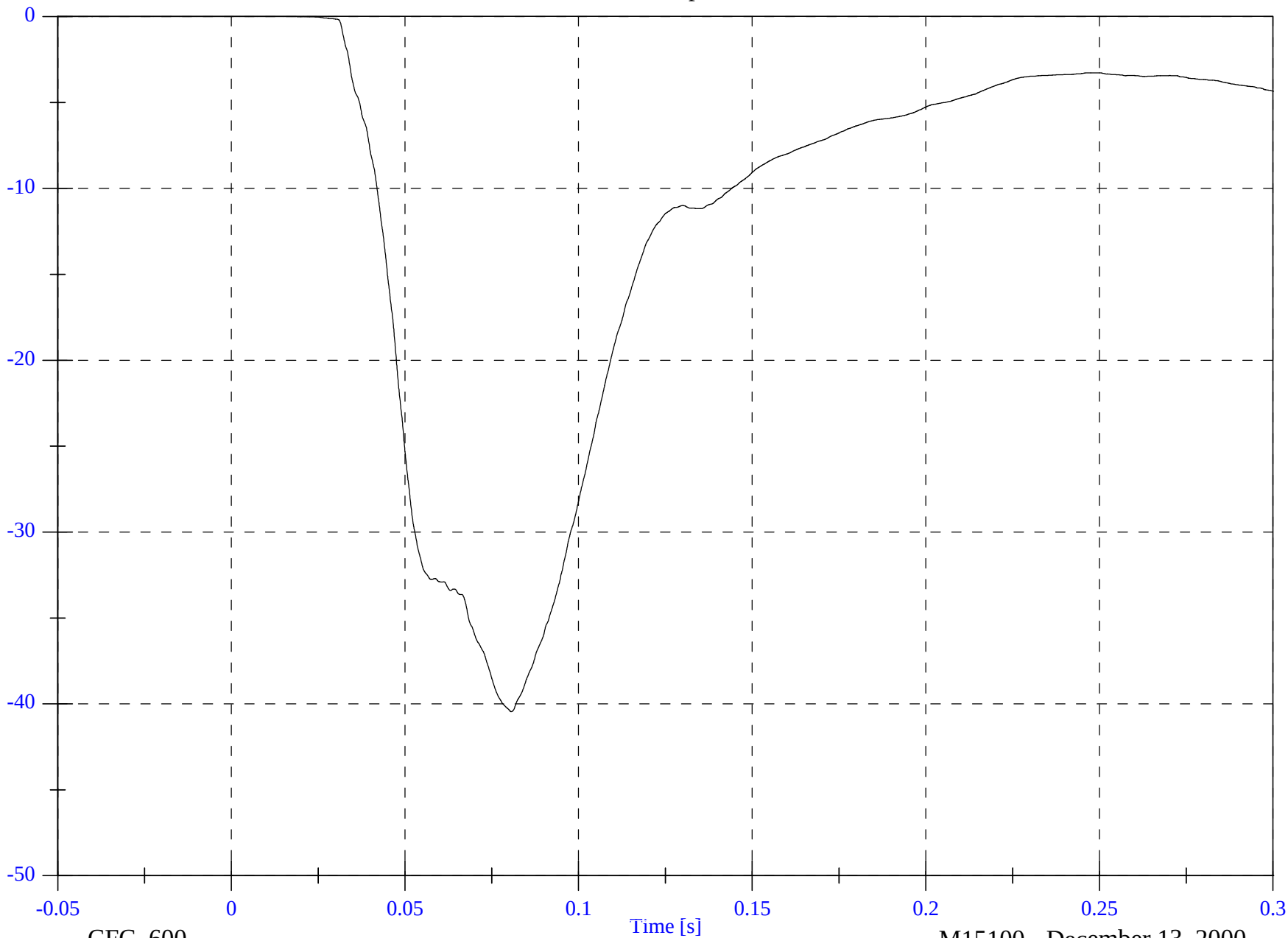
Max: 0.0 [mm] at -0.017 [s]

Min: -40.5 [mm] at 0.081 [s]

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8602-8

mm



CFC_600

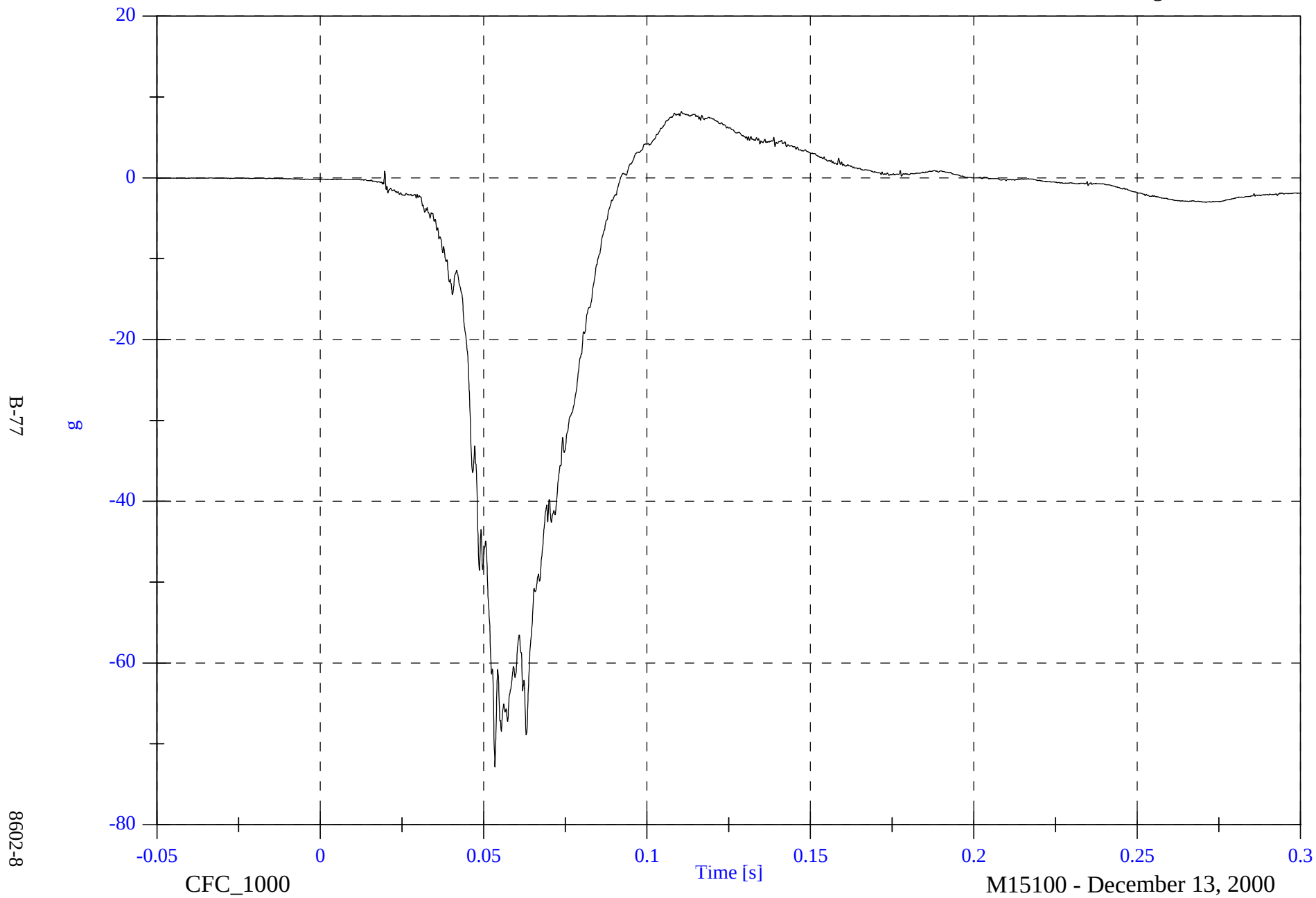
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 8.2 [g] at 0.111 [s]

Min: -72.8 [g] at 0.053 [s]

P2 Pelvic x

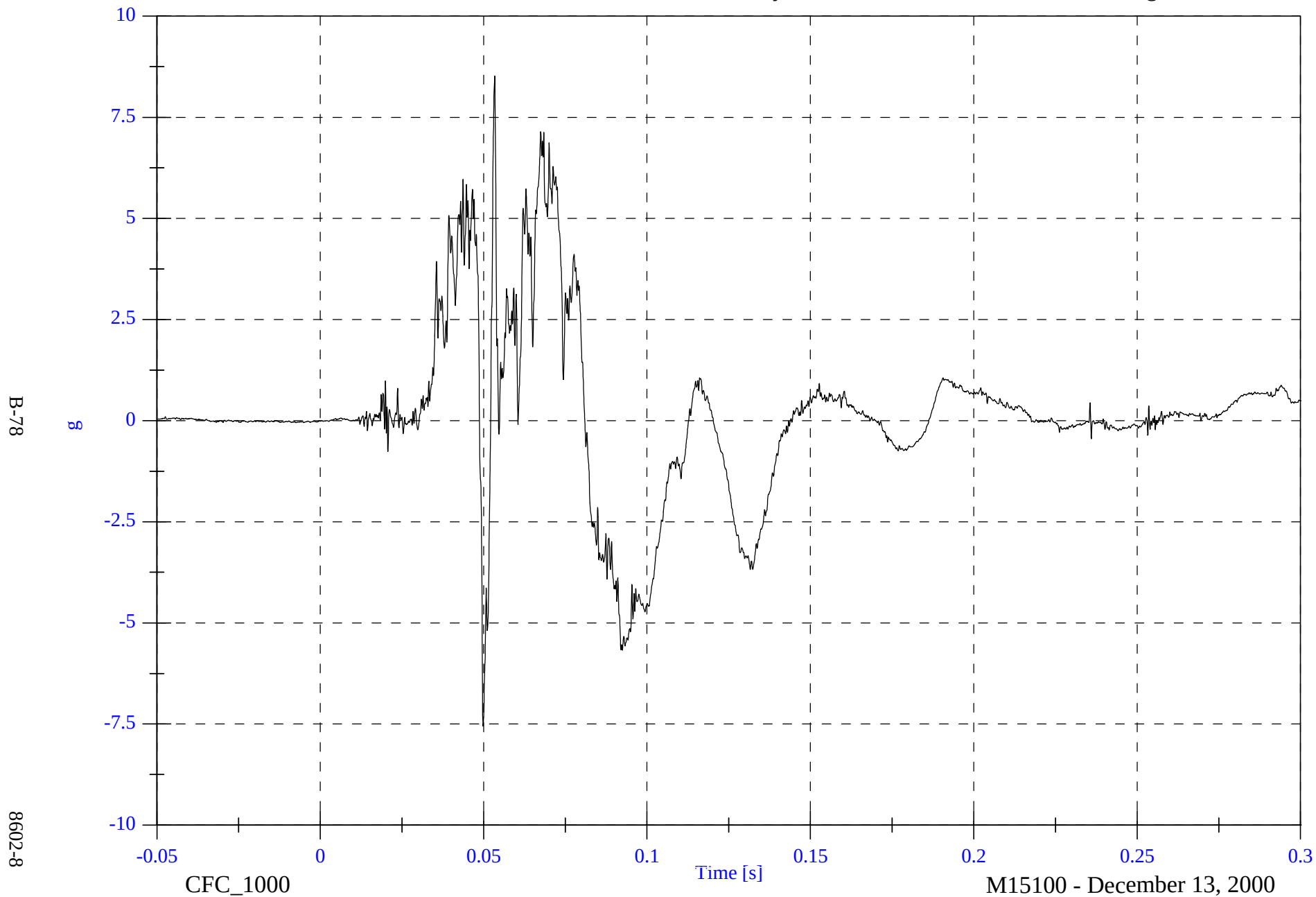


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Pelvic y

Max: 8.5 [g] at 0.053 [s]

Min: -7.6 [g] at 0.050 [s]

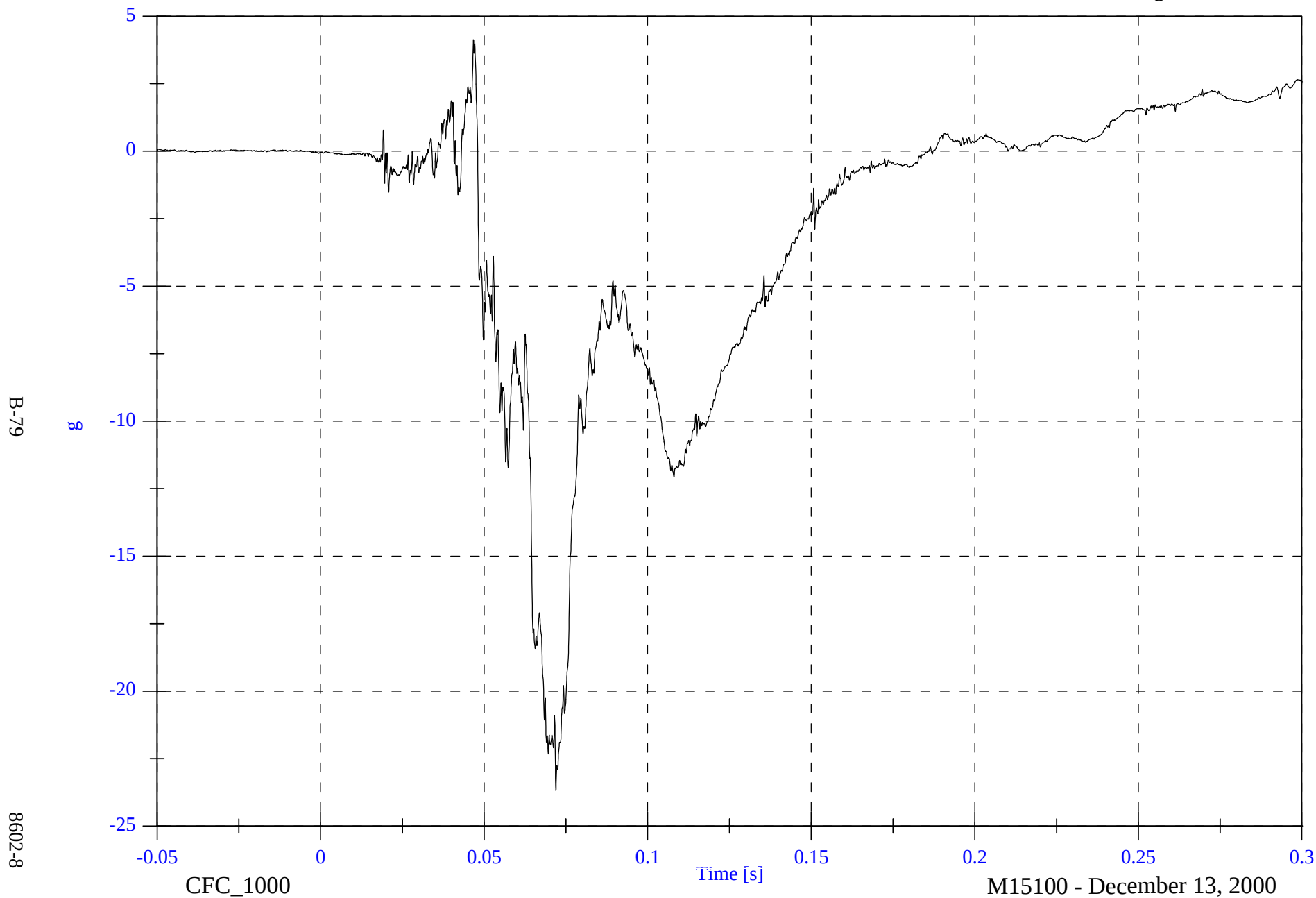


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 4.1 [g] at 0.047 [s]

Min: -23.7 [g] at 0.072 [s]

P2 Pelvic z



NCAP 2001 Test #8 2001 Toyota 4Runner

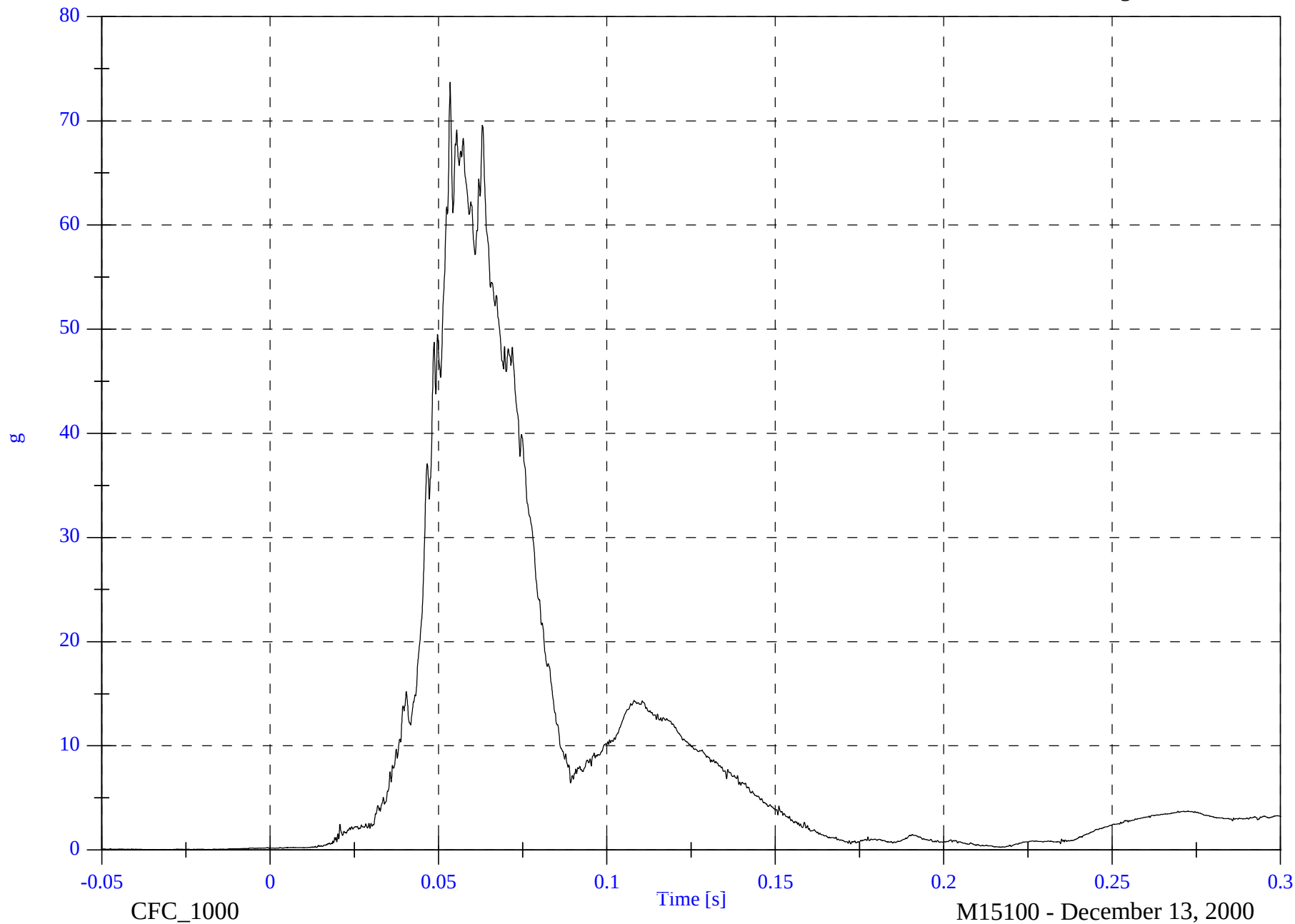
P2 Pelvic Resultant

Max: 73.7 [g] at 0.053 [s]

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

B-80

8602-8

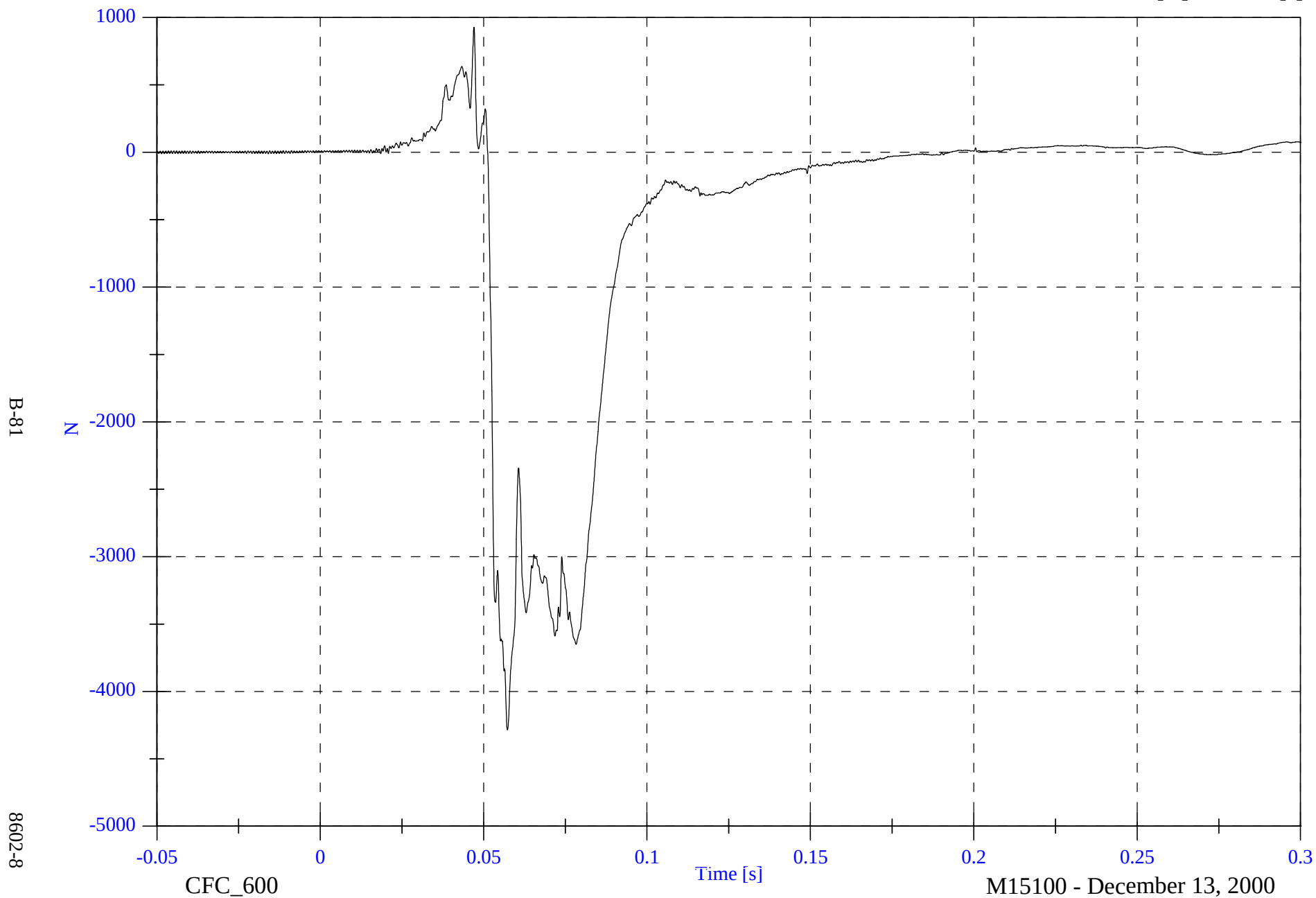


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 928.4 [N] at 0.047 [s]

Min: -4285.7 [N] at 0.057 [s]

P2 Left Femur z

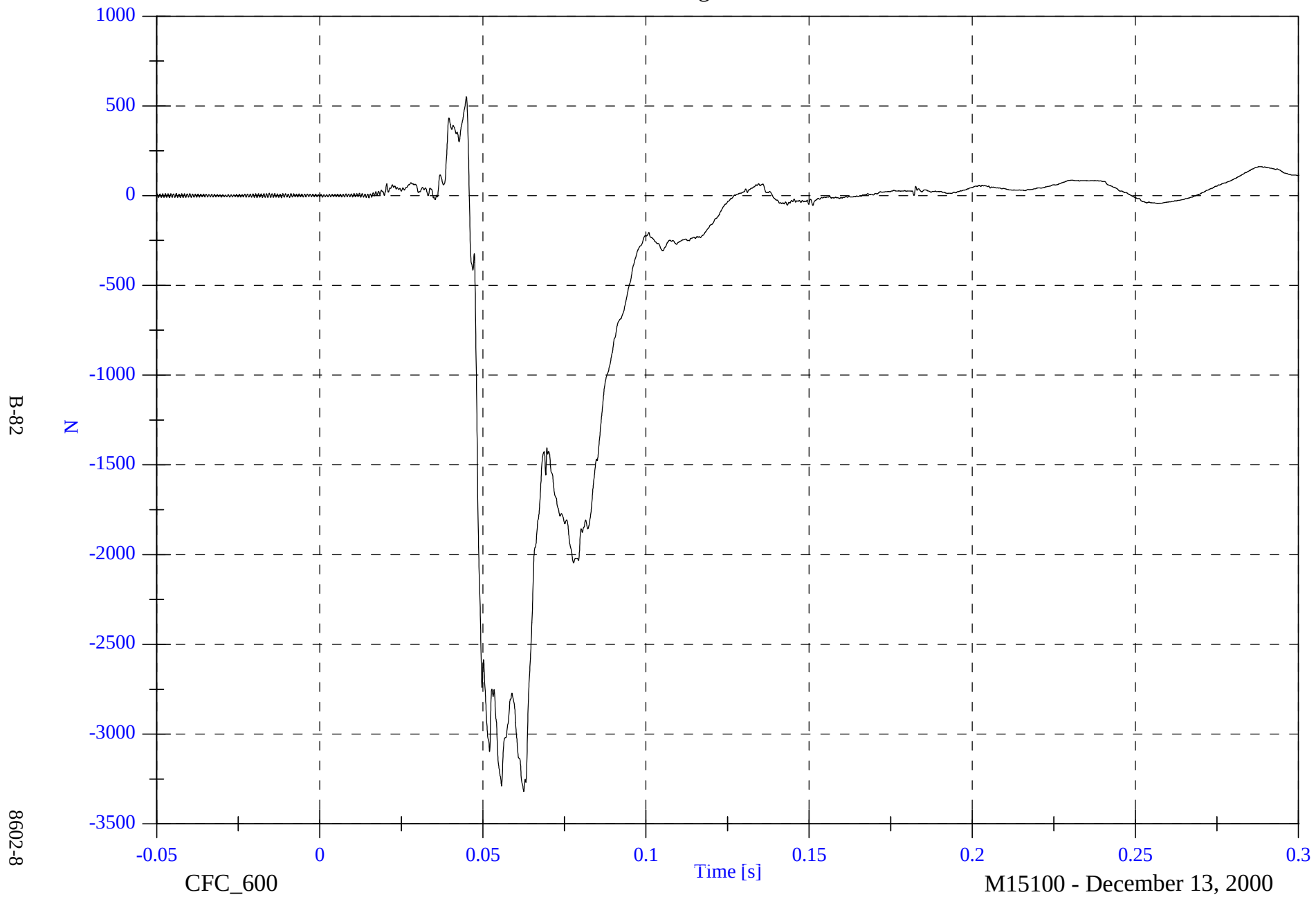


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Right Femur z

Max: 551.5 [N] at 0.045 [s]

Min: -3319.8 [N] at 0.063 [s]

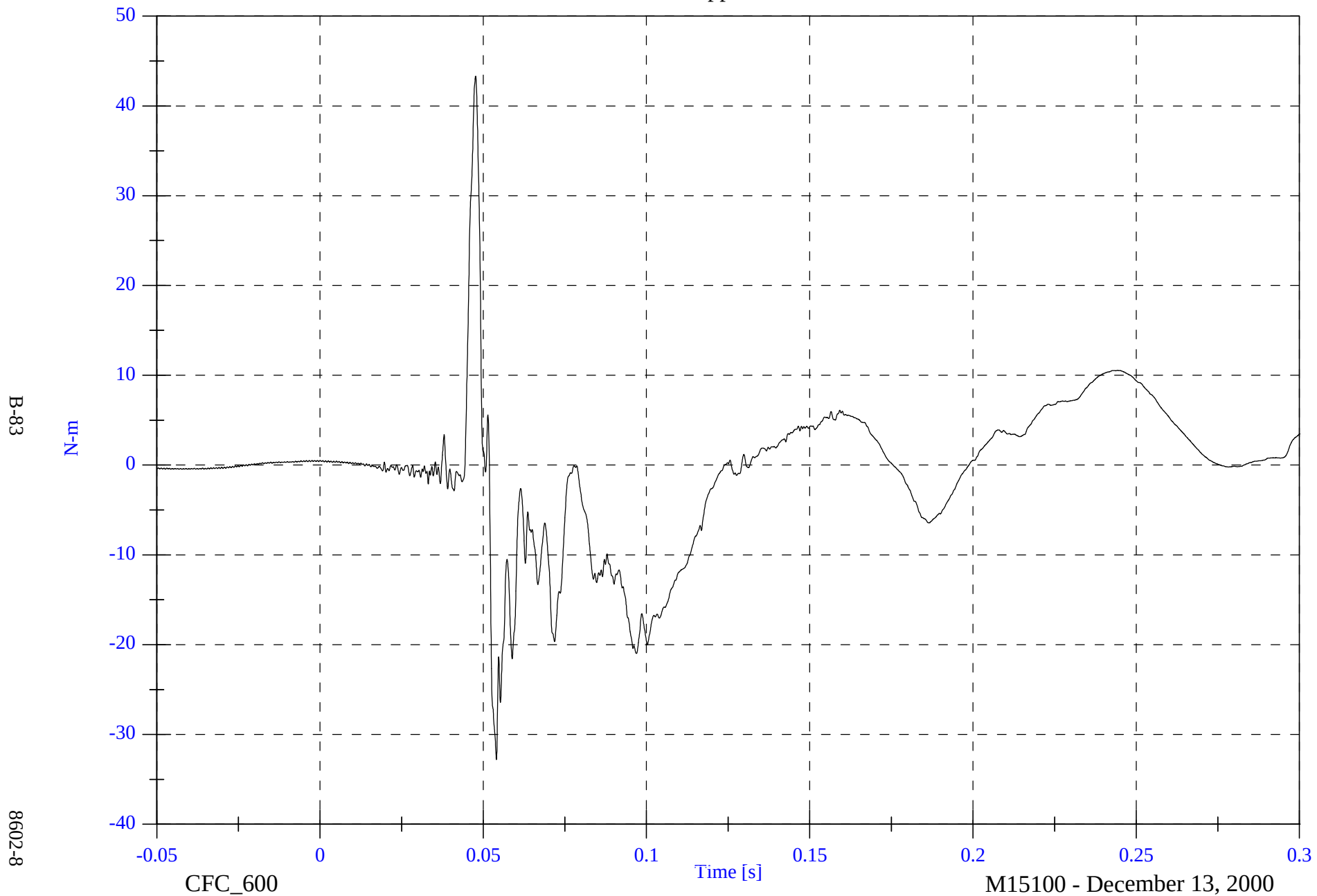


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Left Upper Tibia Mx

Max: 43.3 [N-m] at 0.048 [s]

Min: -32.8 [N-m] at 0.054 [s]

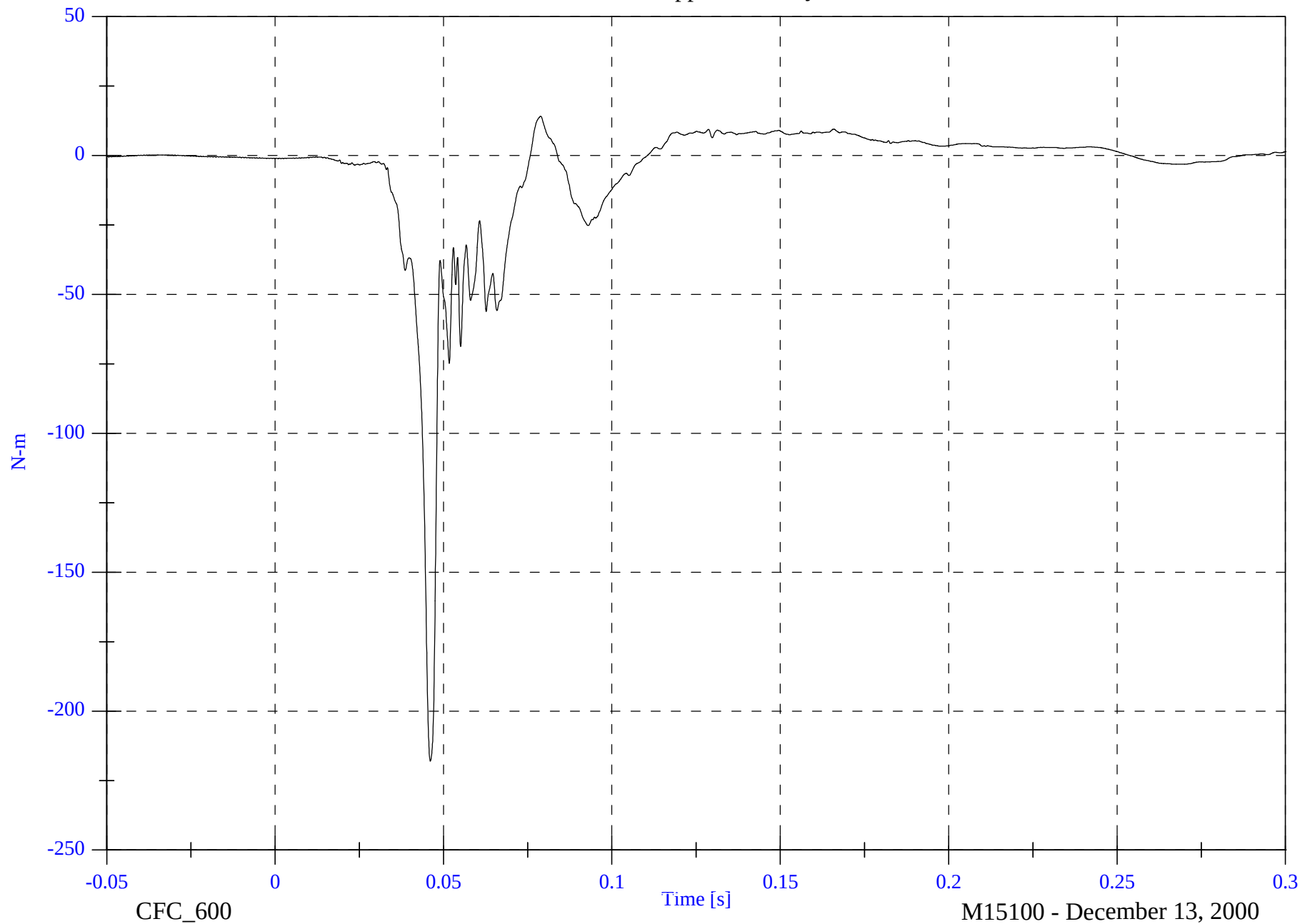


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Left Upper Tibia My

Max: 14.2 [N-m] at 0.079 [s]

Min: -218.1 [N-m] at 0.046 [s]



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8602-8

CFC_600

Time [s]

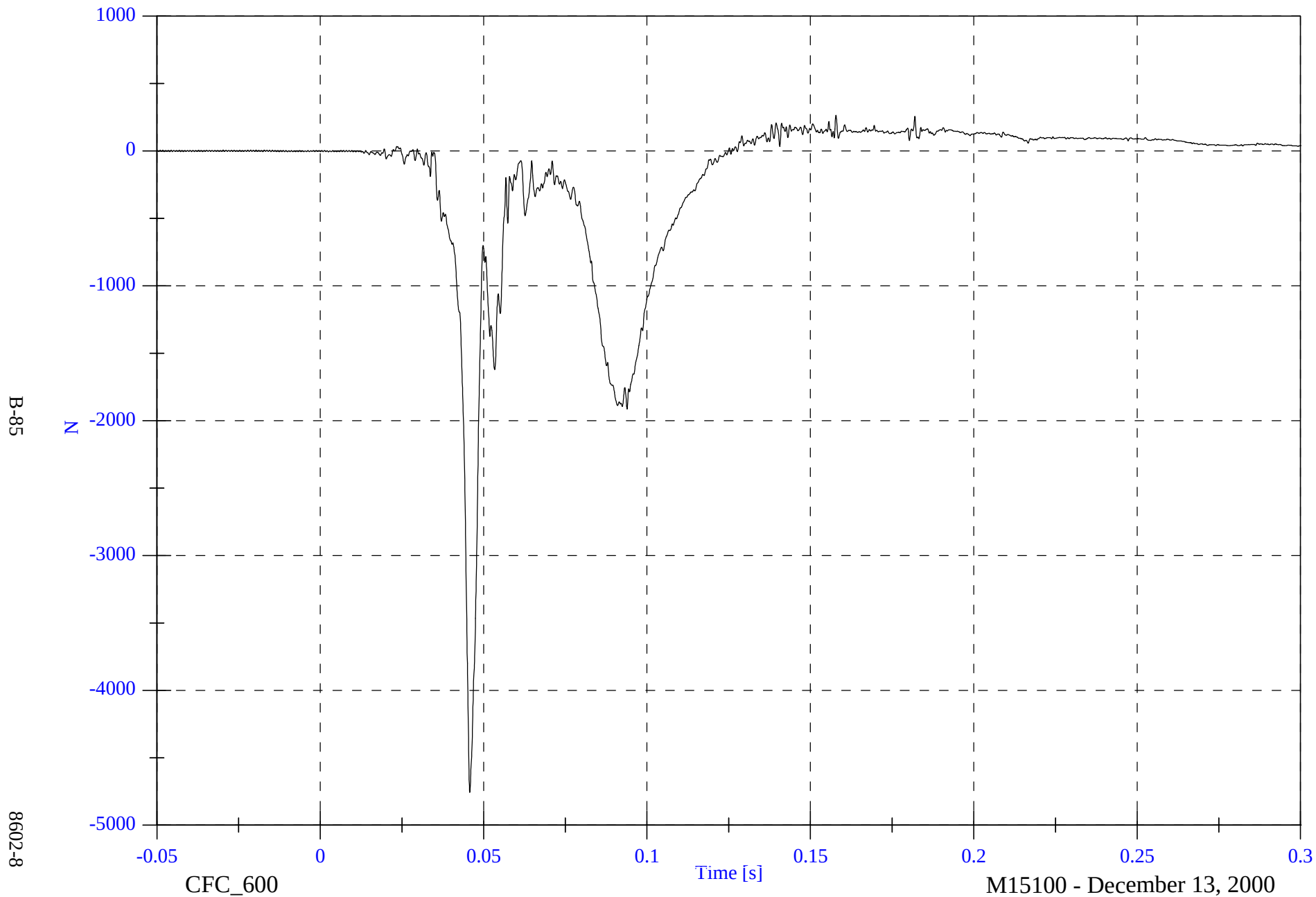
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Left Lower Tibia Fz

Max: 265.7 [N] at 0.158 [s]

Min: -4757.0 [N] at 0.046 [s]

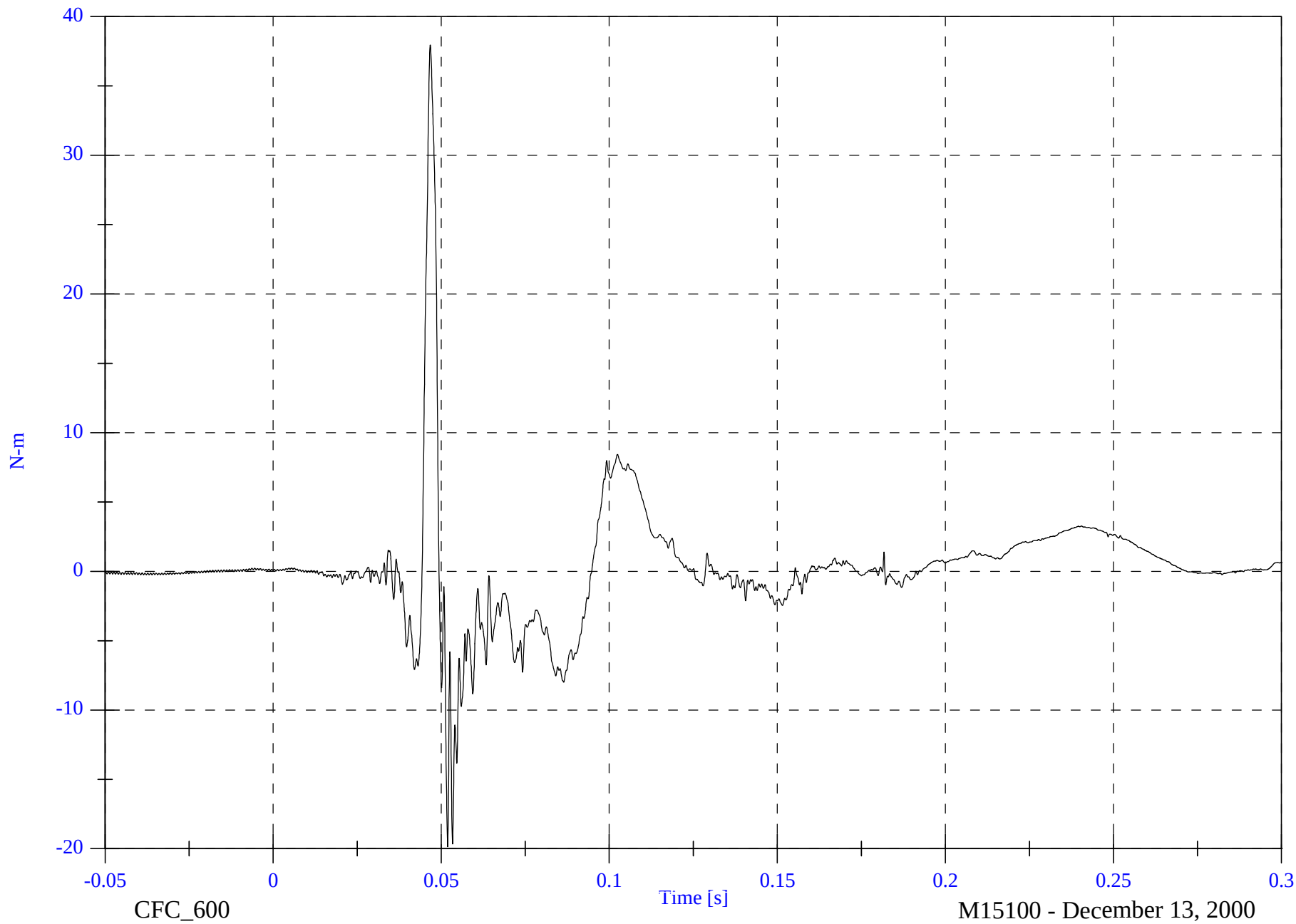


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Left Lower Tibia Mx

Max: 38.0 [N-m] at 0.047 [s]

Min: -19.9 [N-m] at 0.052 [s]



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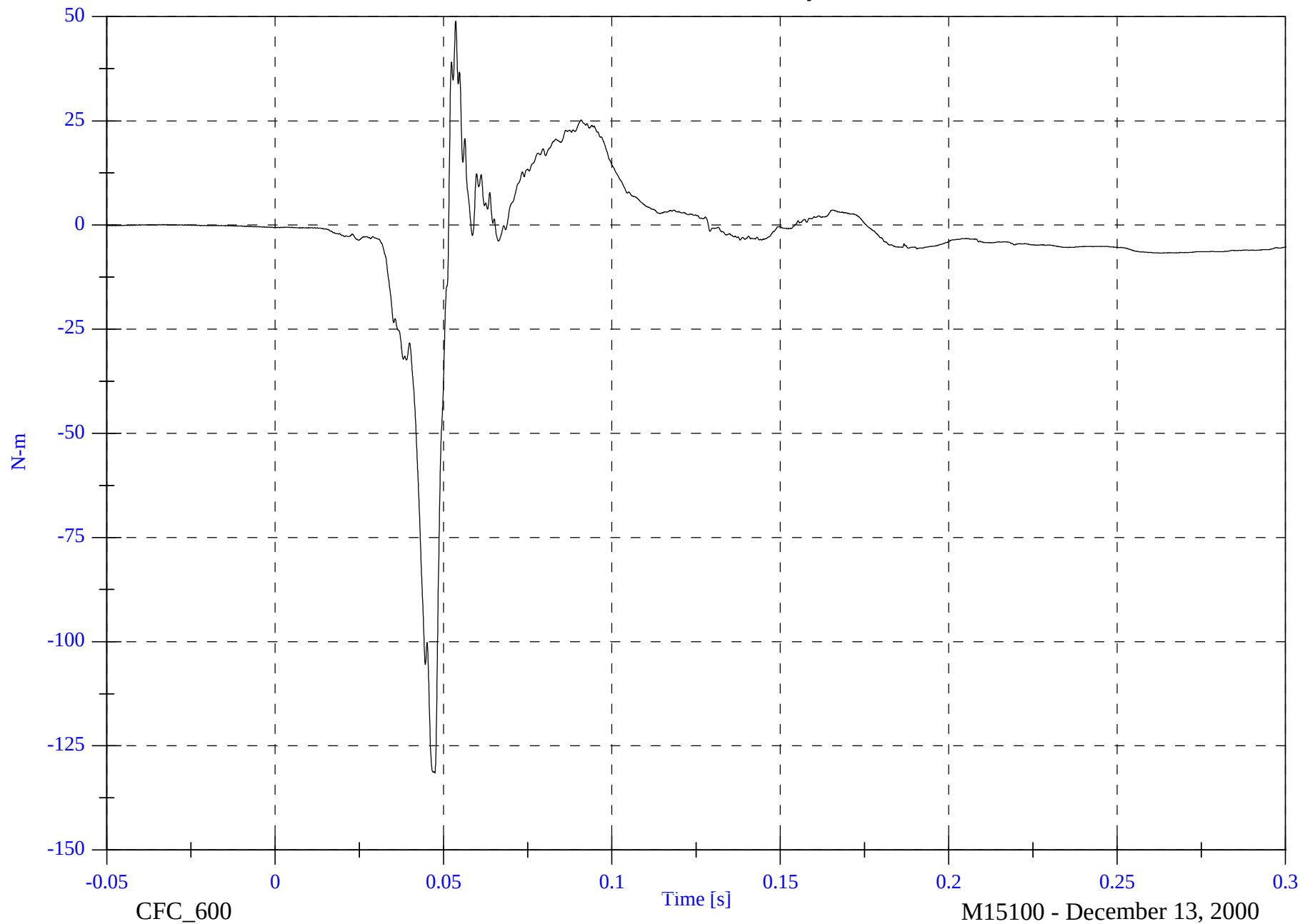
8602-8

NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Left Lower Tibia My

Max: 48.9 [N-m] at 0.054 [s]

Min: -131.6 [N-m] at 0.047 [s]

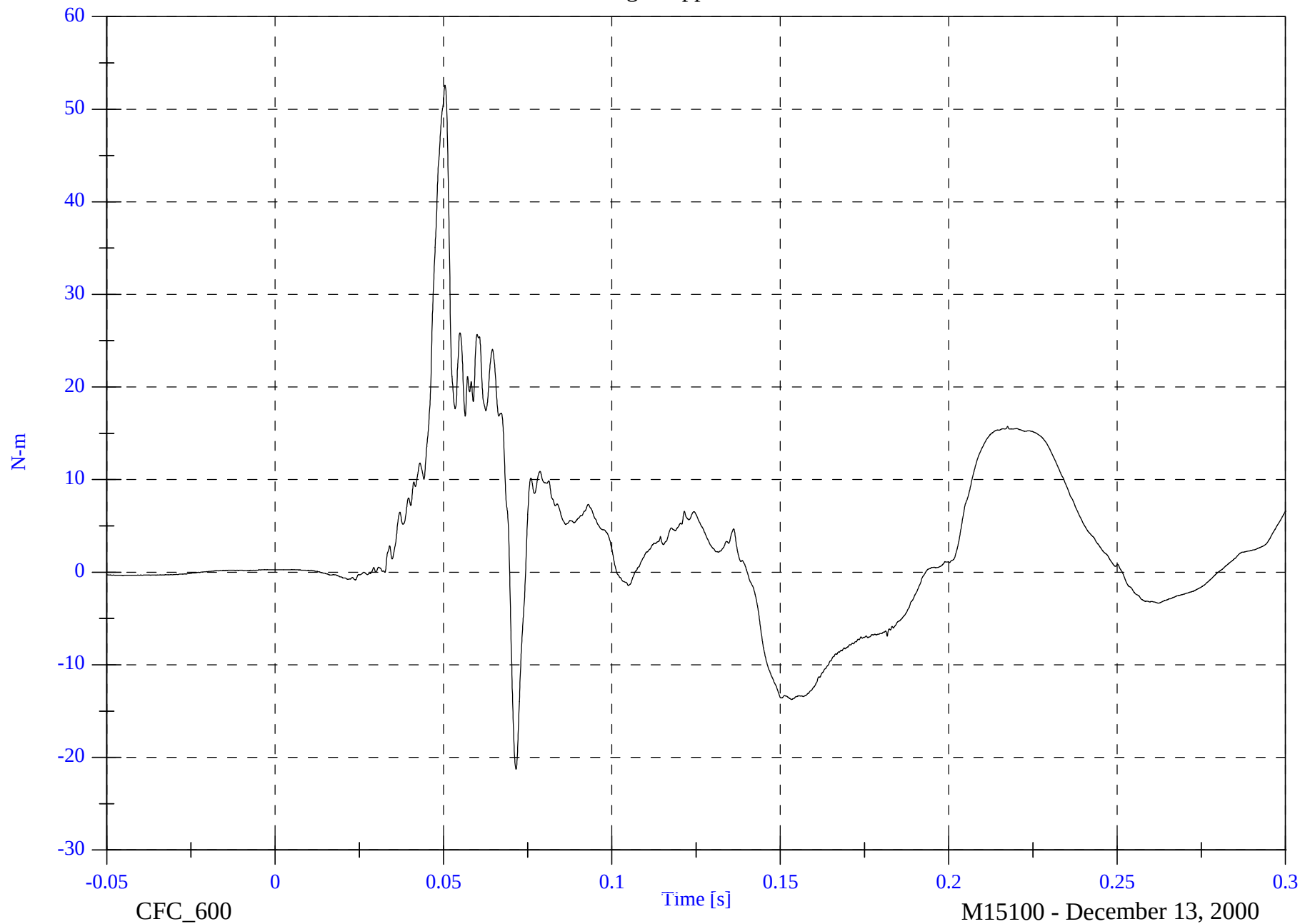


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Right Upper Tibia Mx

Max: 52.6 [N-m] at 0.050 [s]

Min: -21.3 [N-m] at 0.072 [s]

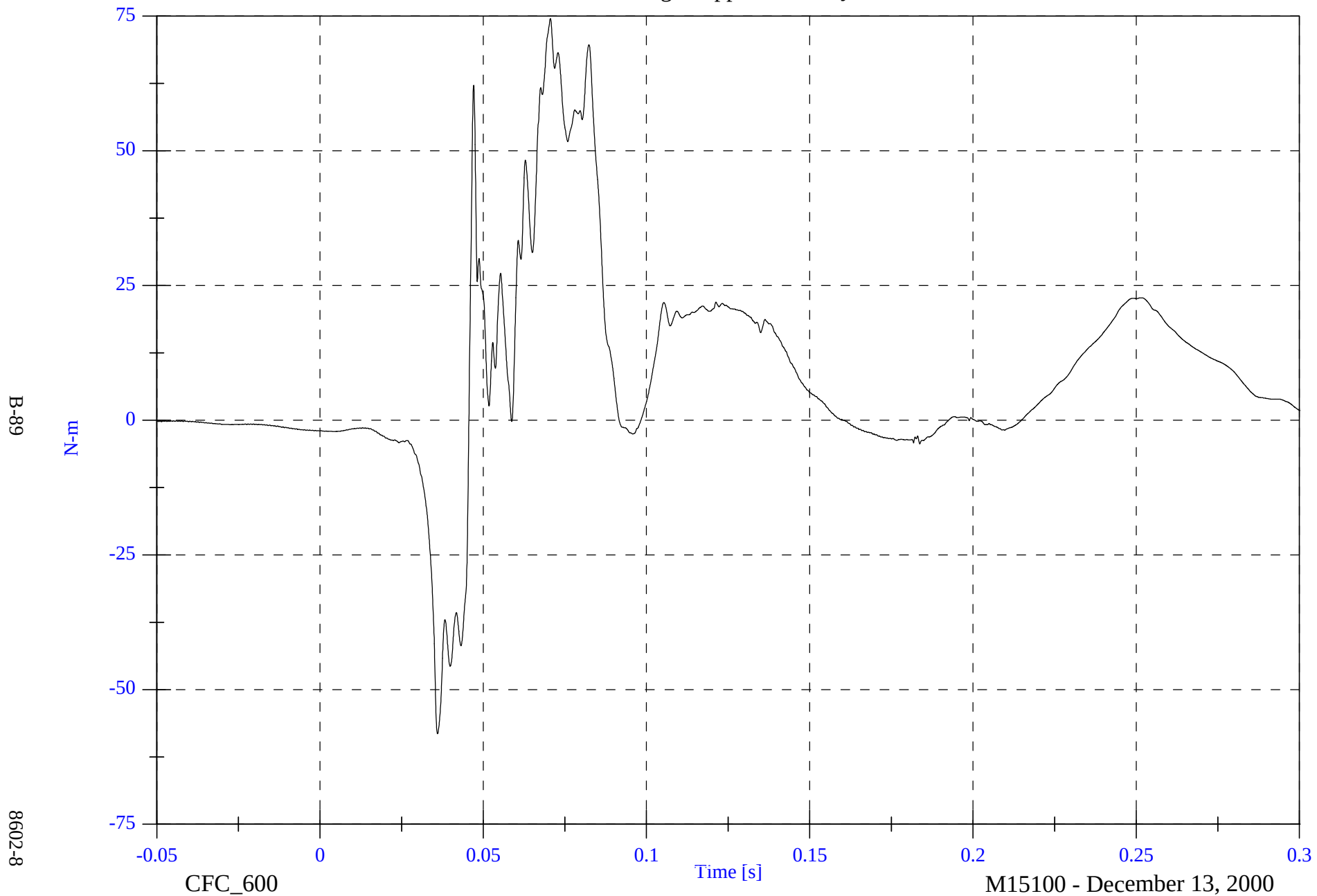


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Right Upper Tibia My

Max: 74.6 [N-m] at 0.071 [s]

Min: -58.2 [N-m] at 0.036 [s]

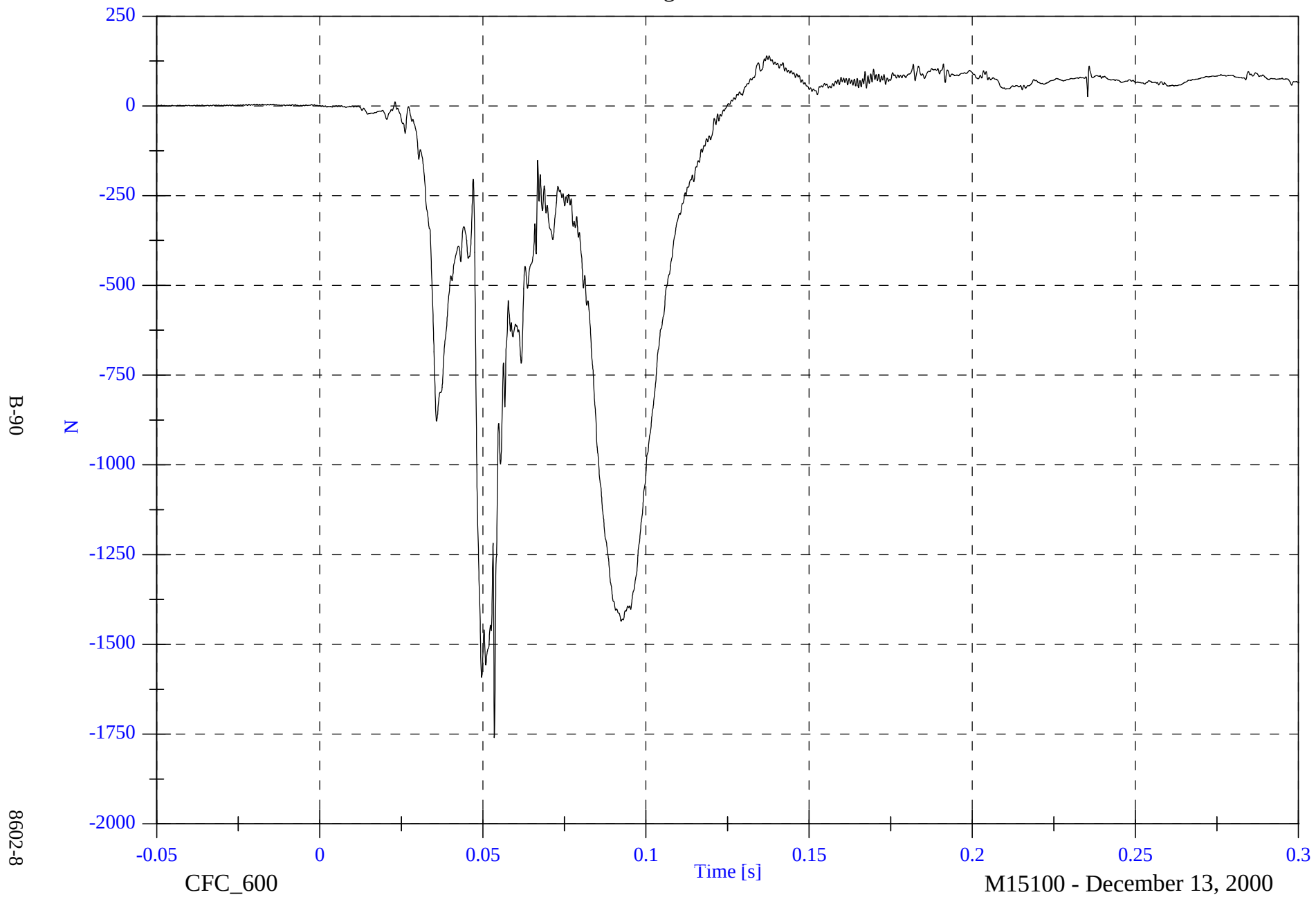


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Right Lower Tibia Fz

Max: 139.2 [N] at 0.137 [s]

Min: -1759.8 [N] at 0.054 [s]

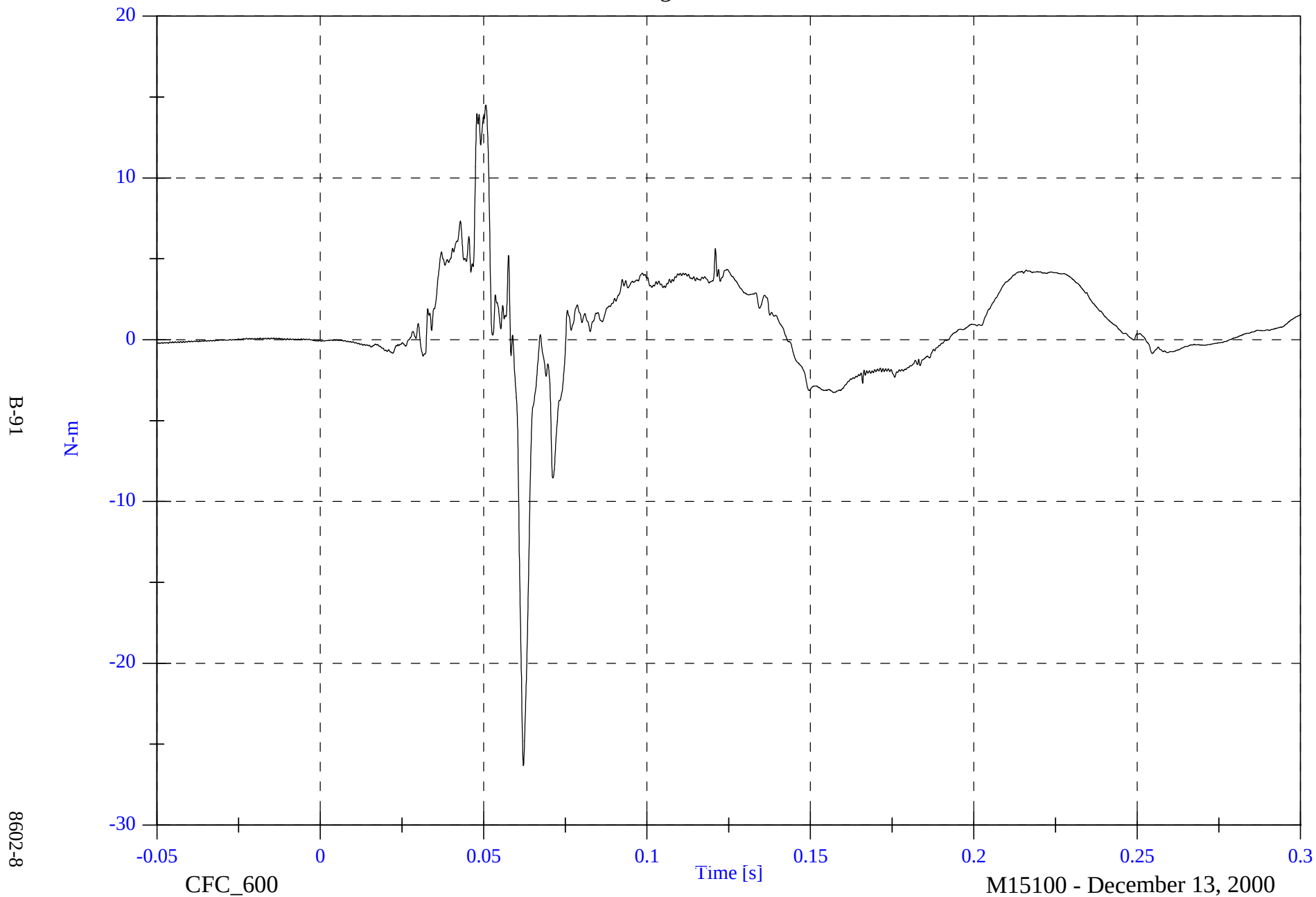


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Right Lower Tibia Mx

Max: 14.5 [N-m] at 0.051 [s]

Min: -26.3 [N-m] at 0.062 [s]

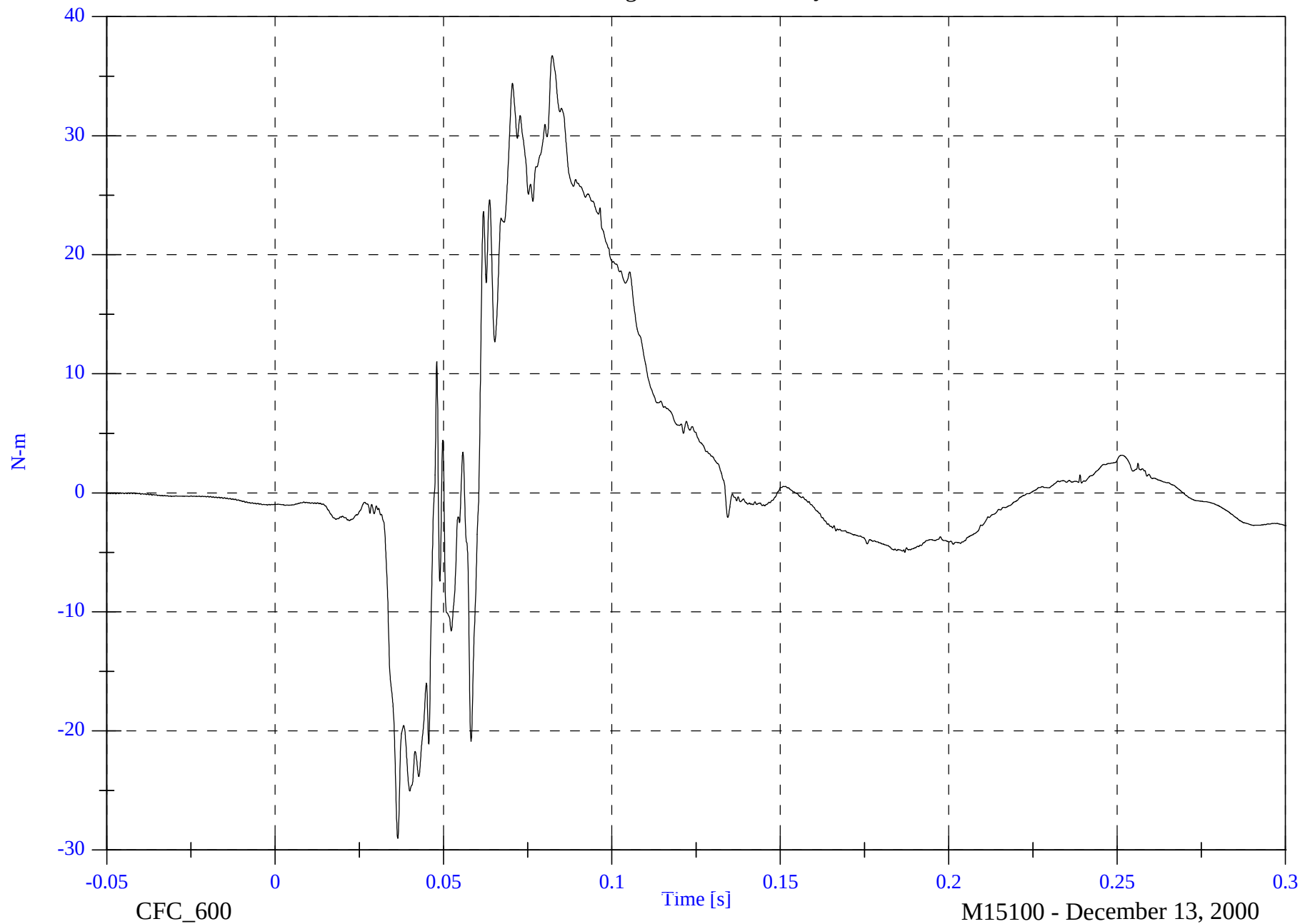


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Right Lower Tibia My

Max: 36.7 [N-m] at 0.082 [s]

Min: -29.0 [N-m] at 0.036 [s]



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8602-8

CFC_600

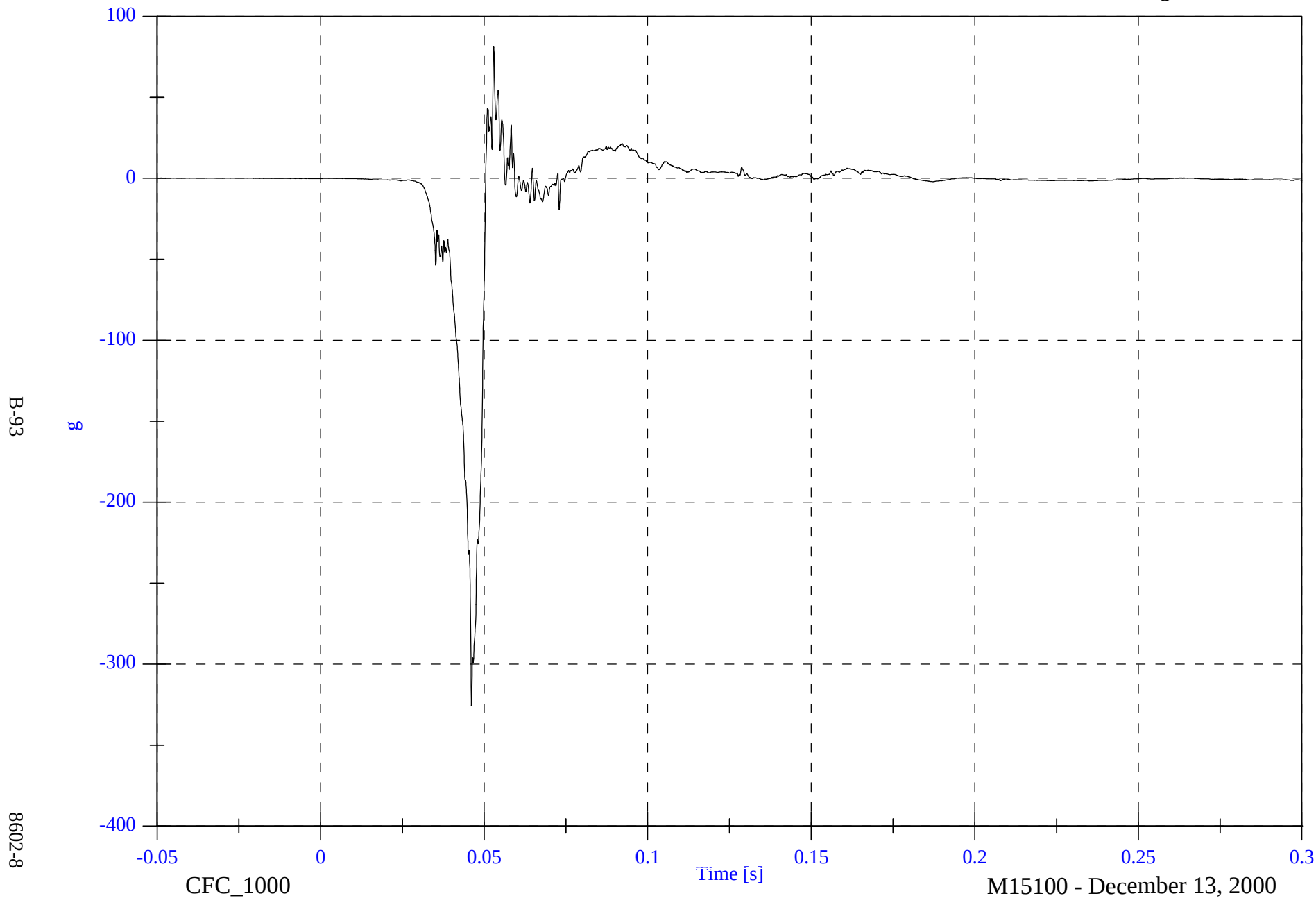
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 81.1 [g] at 0.053 [s]

Min: -325.9 [g] at 0.046 [s]

P2 Left Foot Aft x

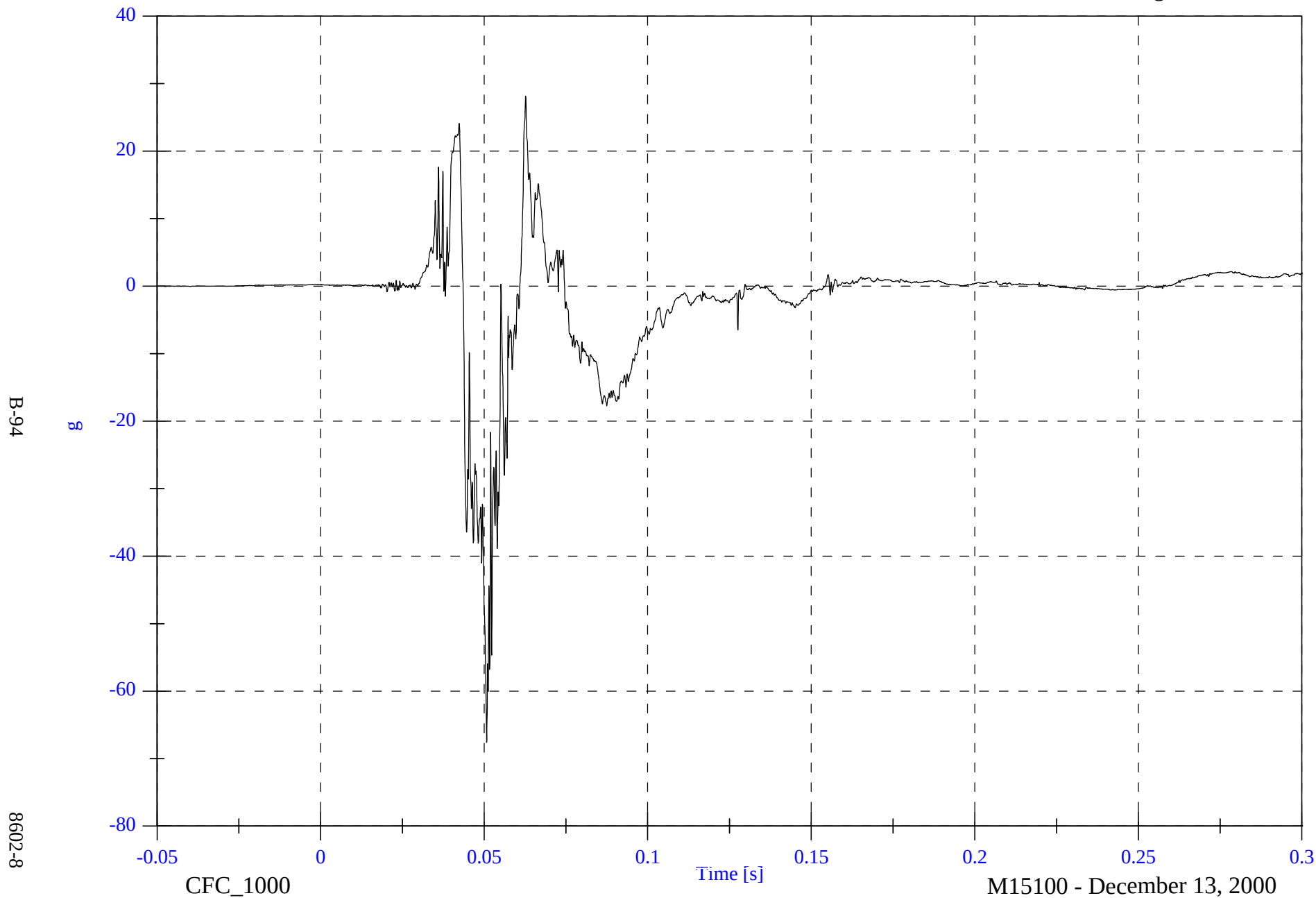


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Left Foot Aft z

Max: 28.1 [g] at 0.063 [s]

Min: -67.6 [g] at 0.051 [s]

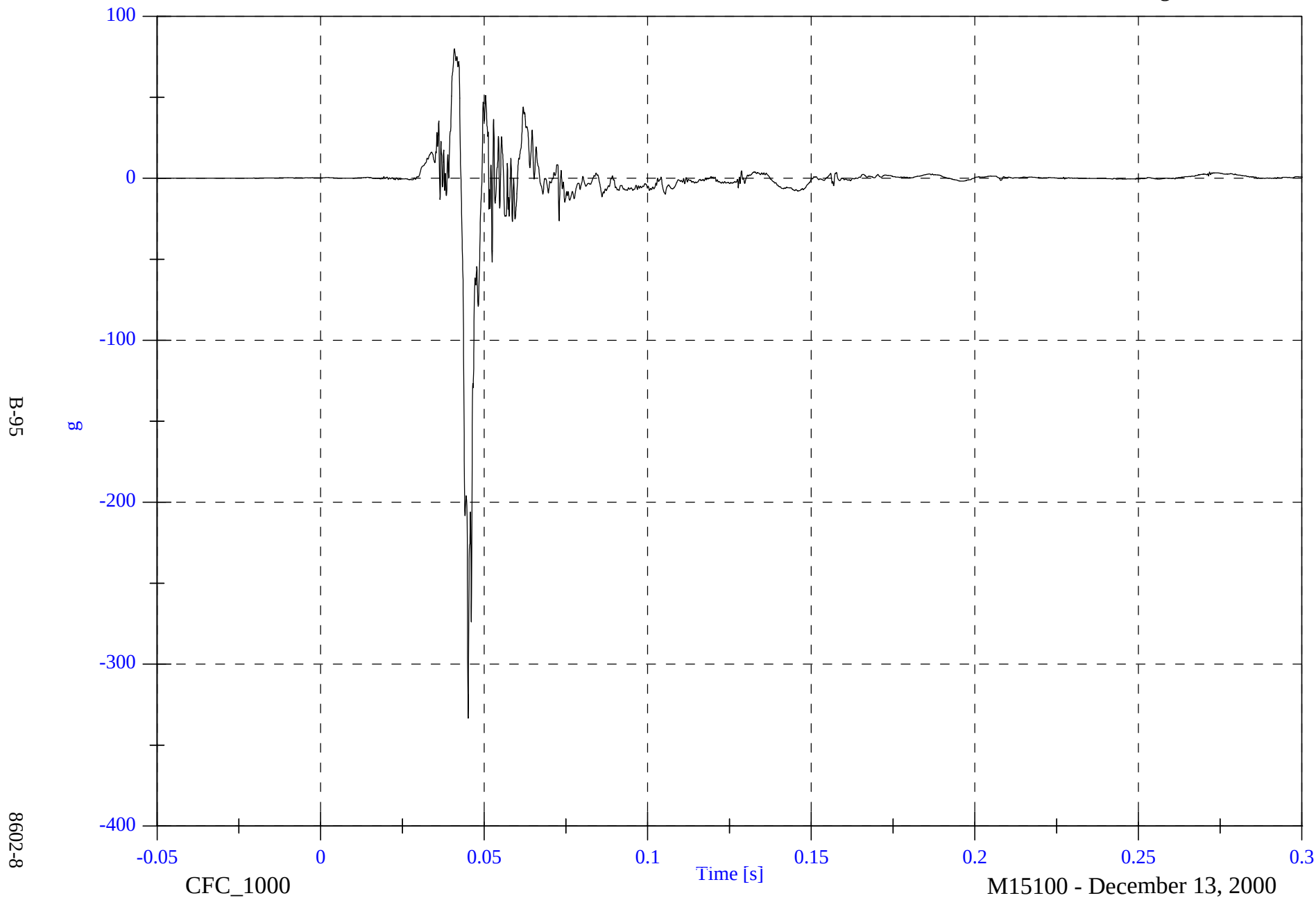


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 79.9 [g] at 0.041 [s]

Min: -333.4 [g] at 0.045 [s]

P2 Left Foot Fore z

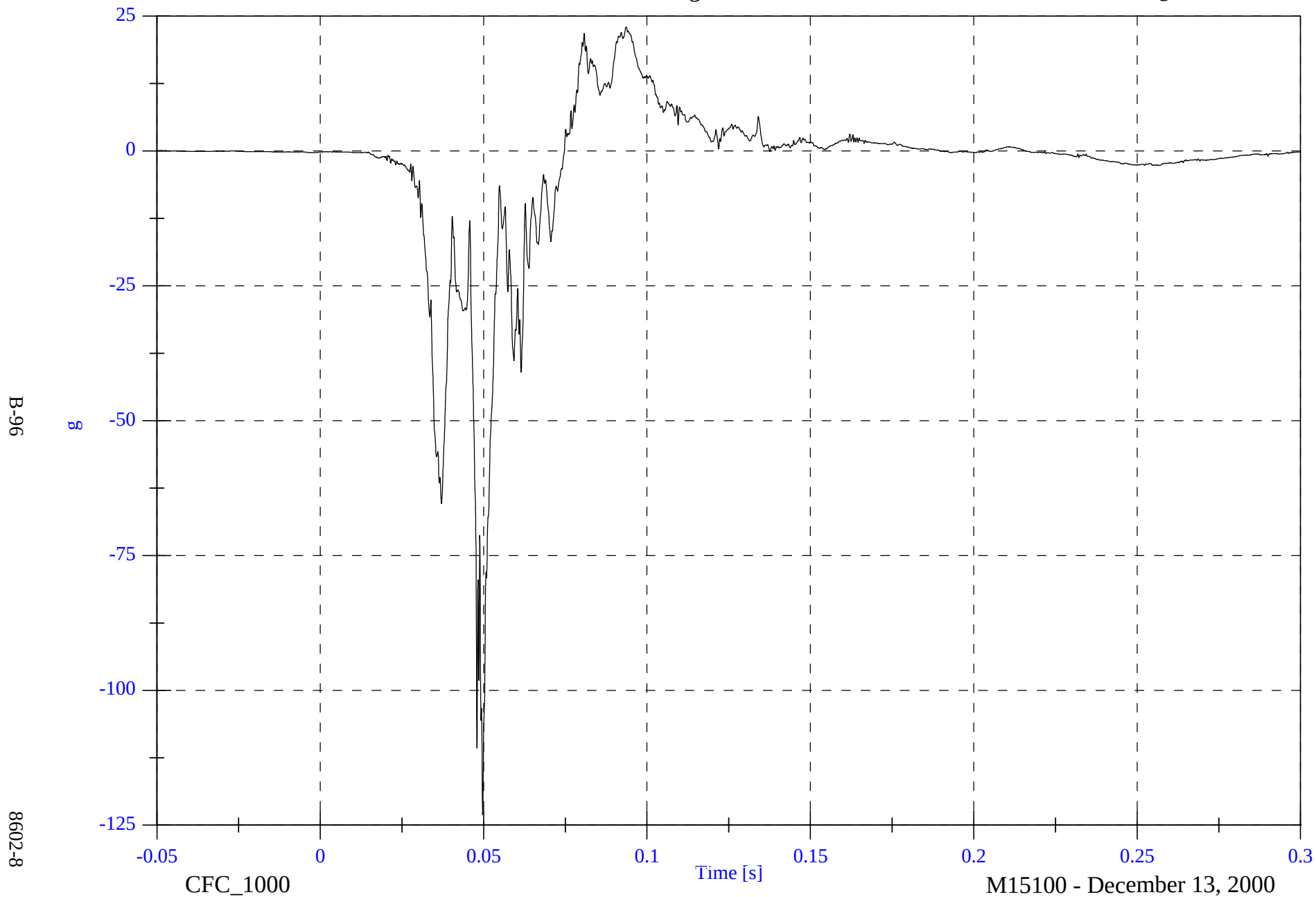


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 23.0 [g] at 0.094 [s]

Min: -123.1 [g] at 0.050 [s]

P2 Right Foot Aft x

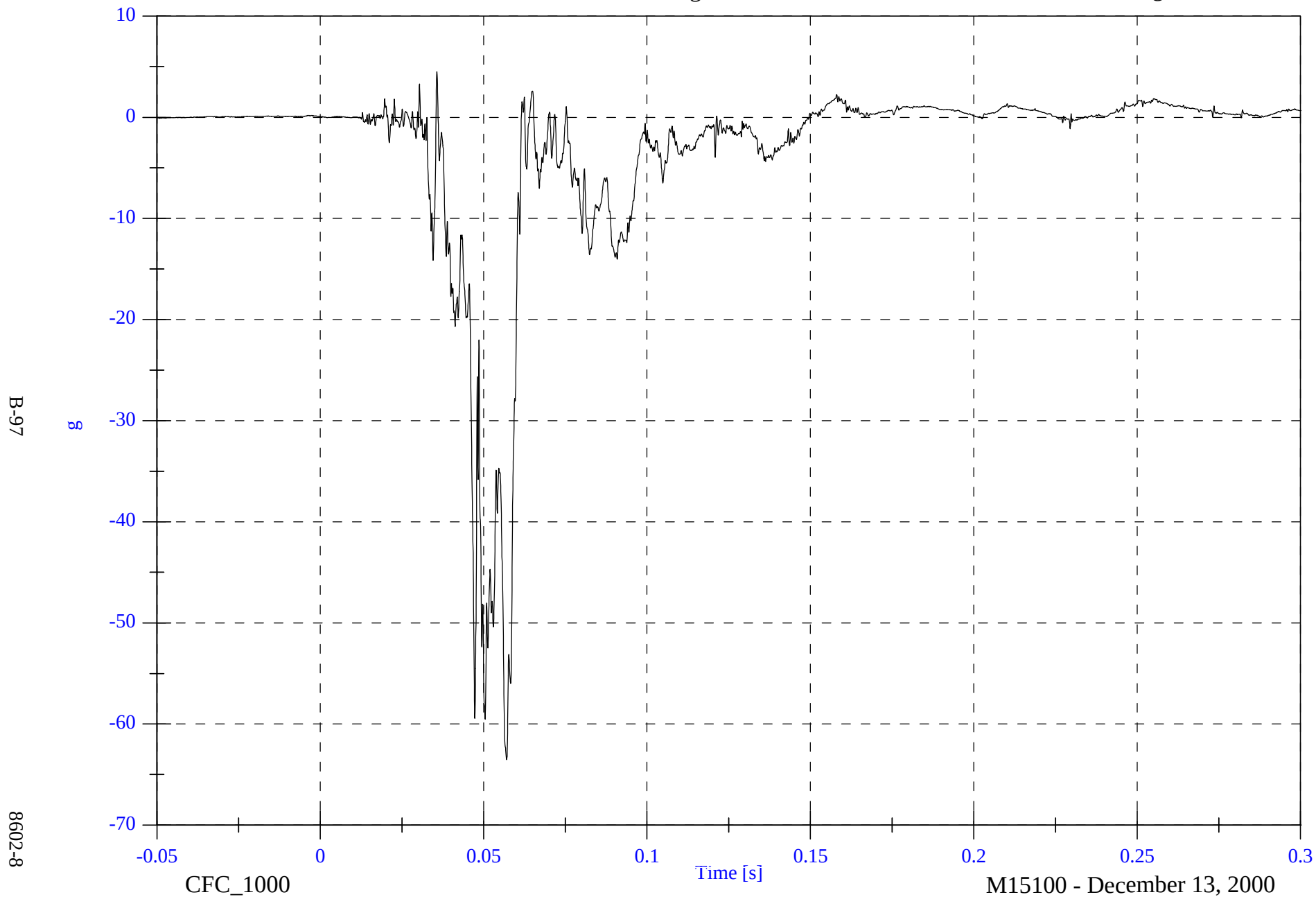


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Right Foot Aft z

Max: 4.5 [g] at 0.036 [s]

Min: -63.5 [g] at 0.057 [s]

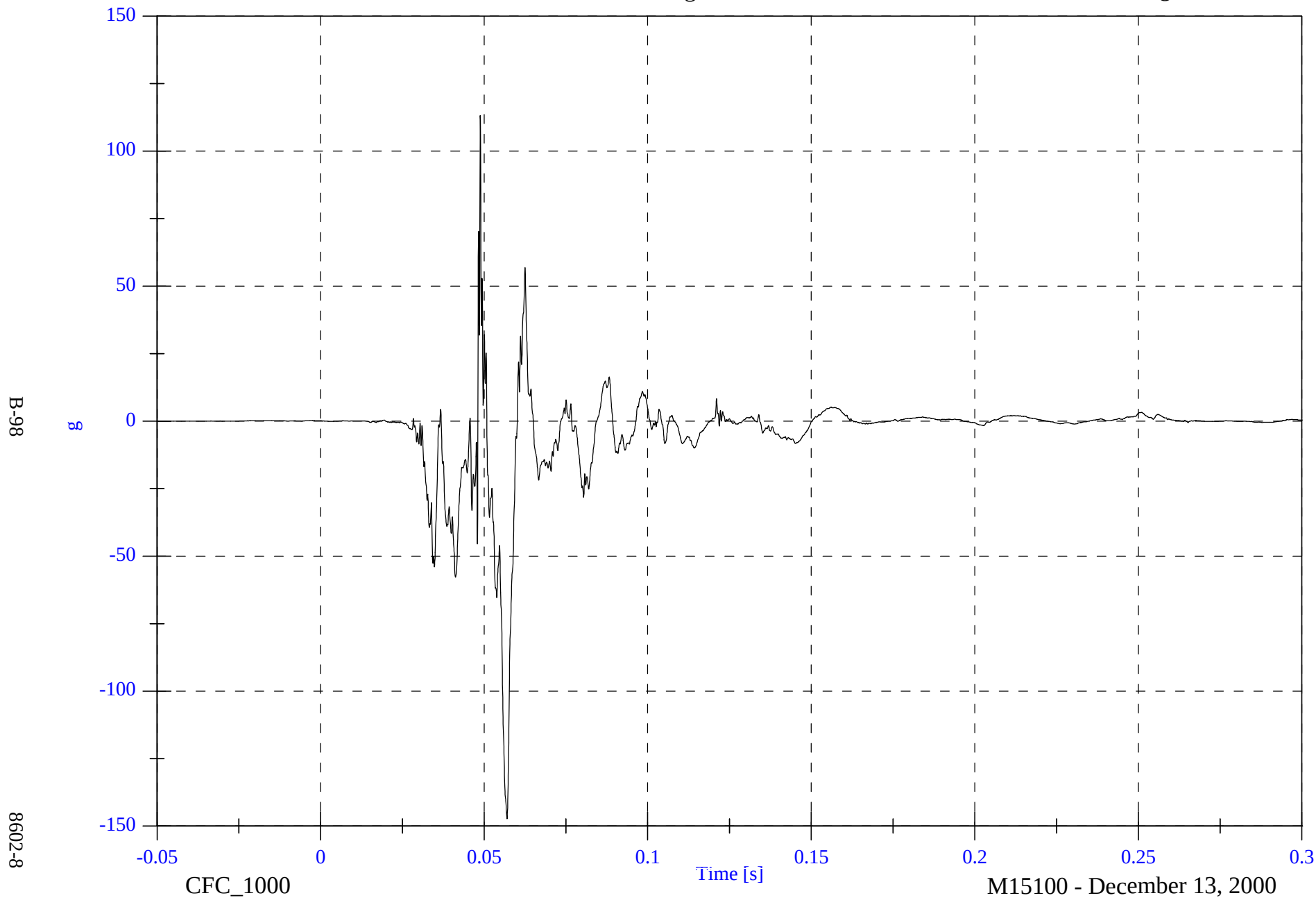


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 113.2 [g] at 0.049 [s]

Min: -147.3 [g] at 0.057 [s]

P2 Right Foot Fore z

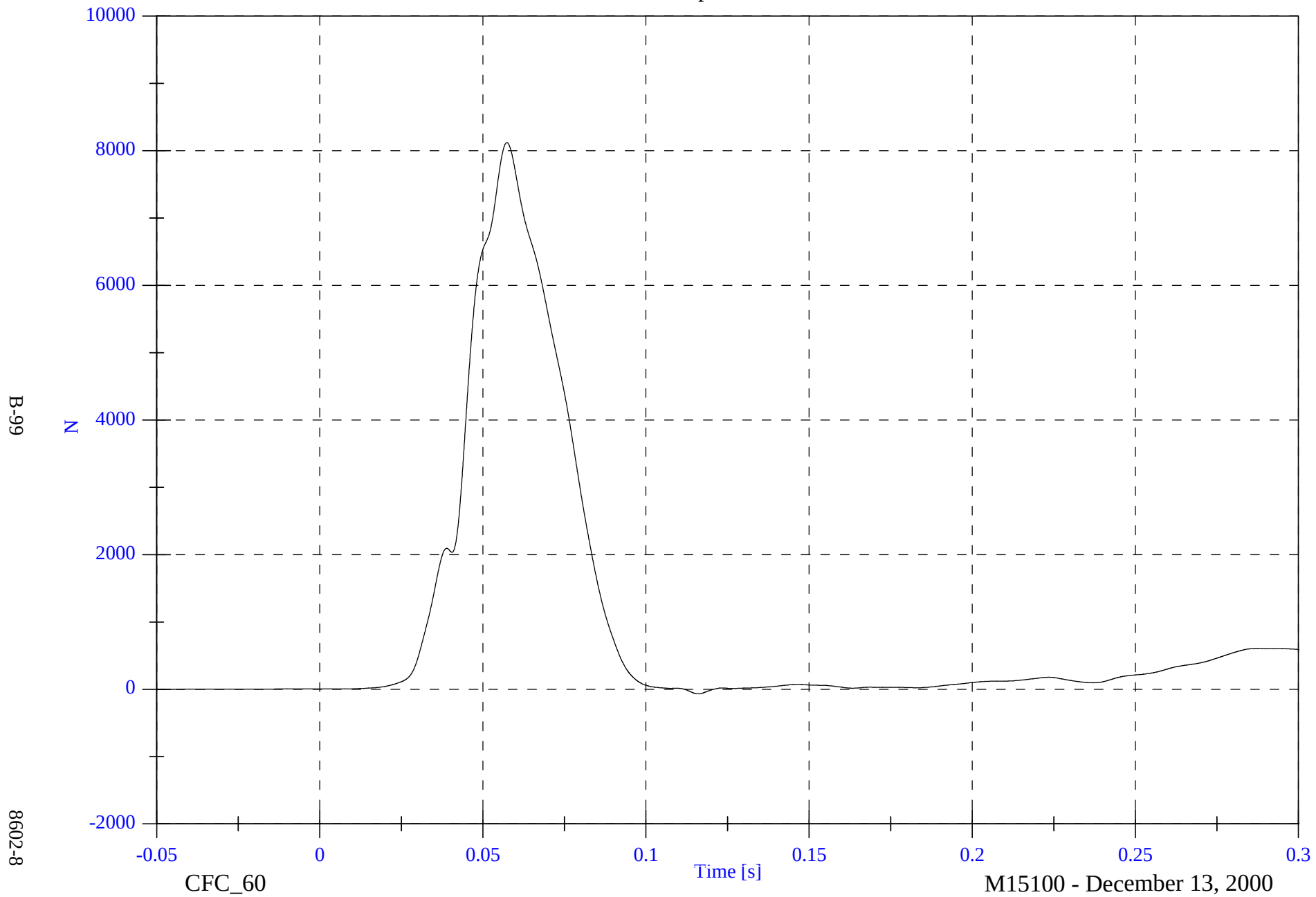


NCAP 2001 Test #8 2001 Toyota 4Runner

P2 Lap Belt Force

Max: 8121.4 [N] at 0.057 [s]

Min: -69.5 [N] at 0.116 [s]

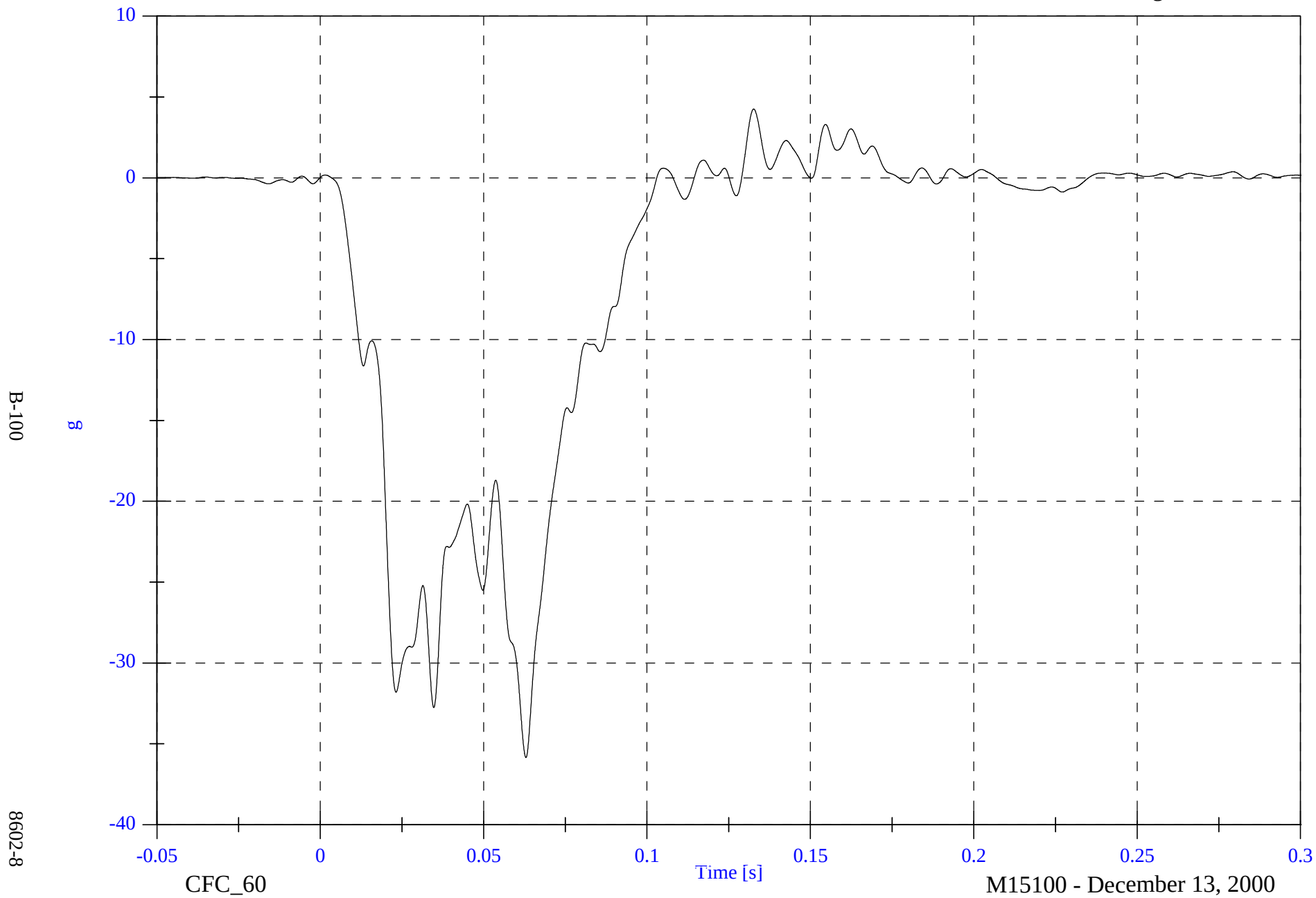


NCAP 2001 Test #8 2001 Toyota 4Runner

Left Rear #1x

Max: 4.3 [g] at 0.133 [s]

Min: -35.8 [g] at 0.063 [s]



NCAP 2001 Test #8 2001 Toyota 4Runner

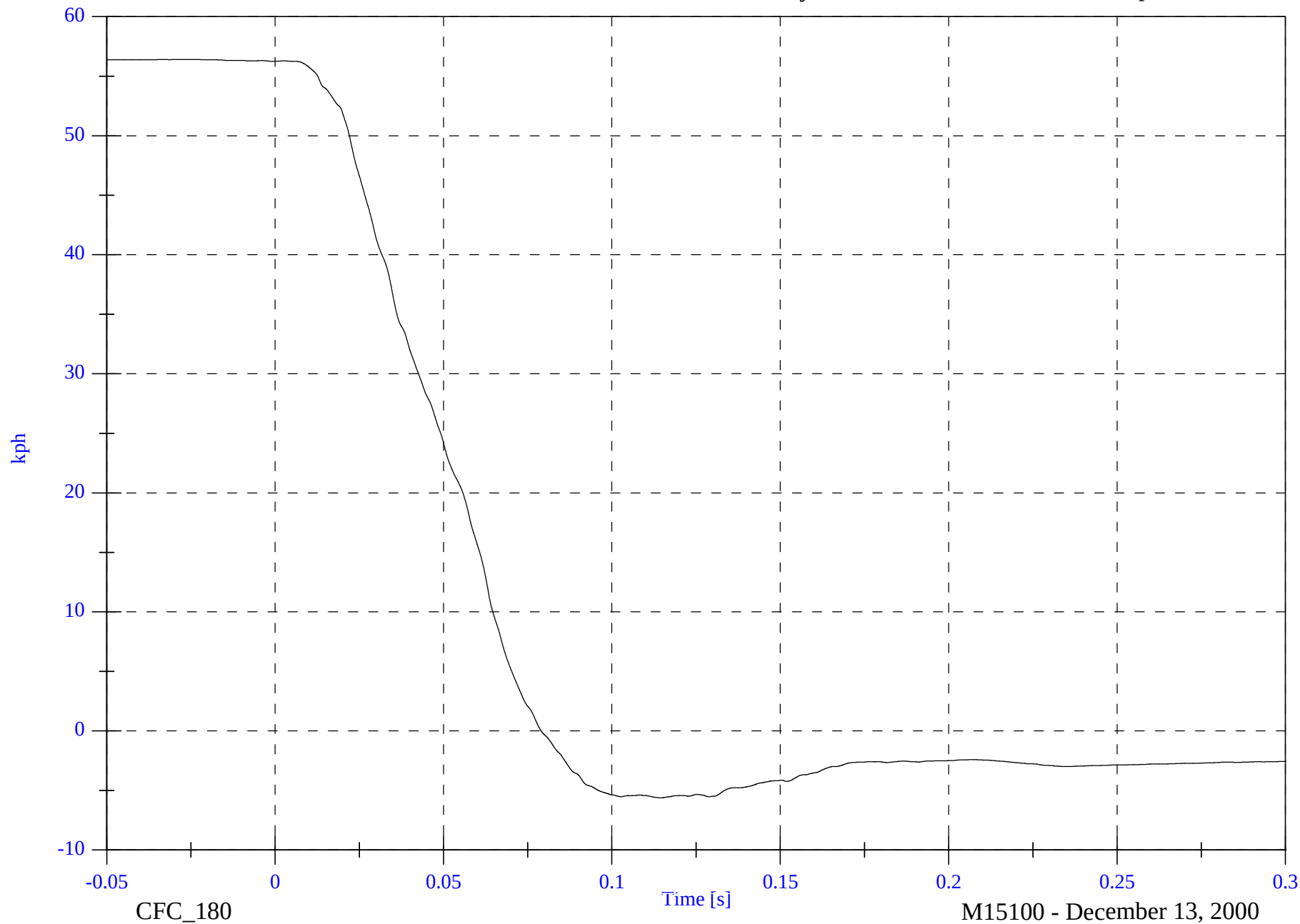
Max: 56.4 [kph] at -0.027 [s]

Left Rear #1x Velocity

Min: -5.6 [kph] at 0.114 [s]

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8602-8

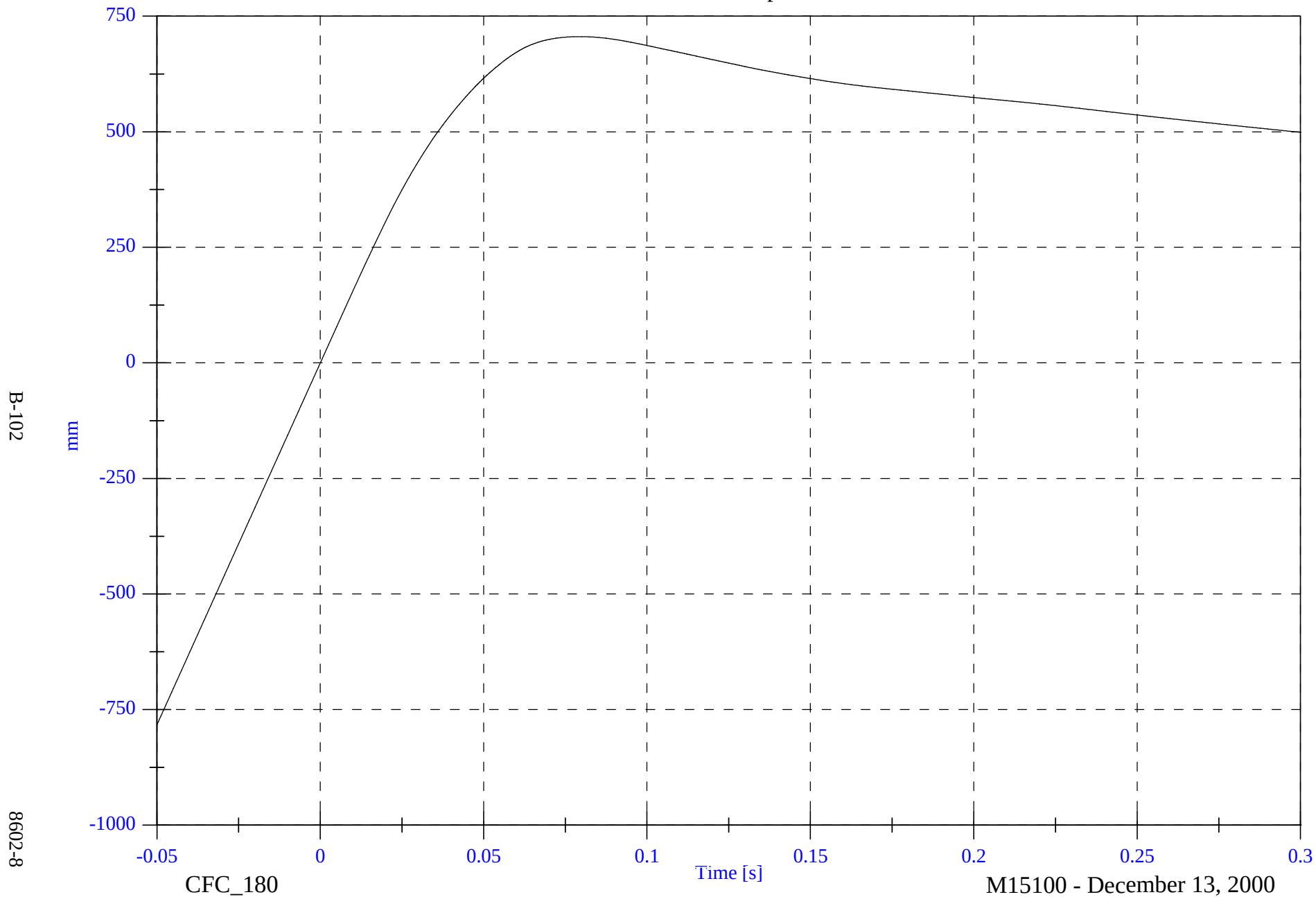


NCAP 2001 Test #8 2001 Toyota 4Runner

Left Rear #1x Displacement

Max: 705.8 [mm] at 0.079 [s]

Min: -782.8 [mm] at -0.050 [s]

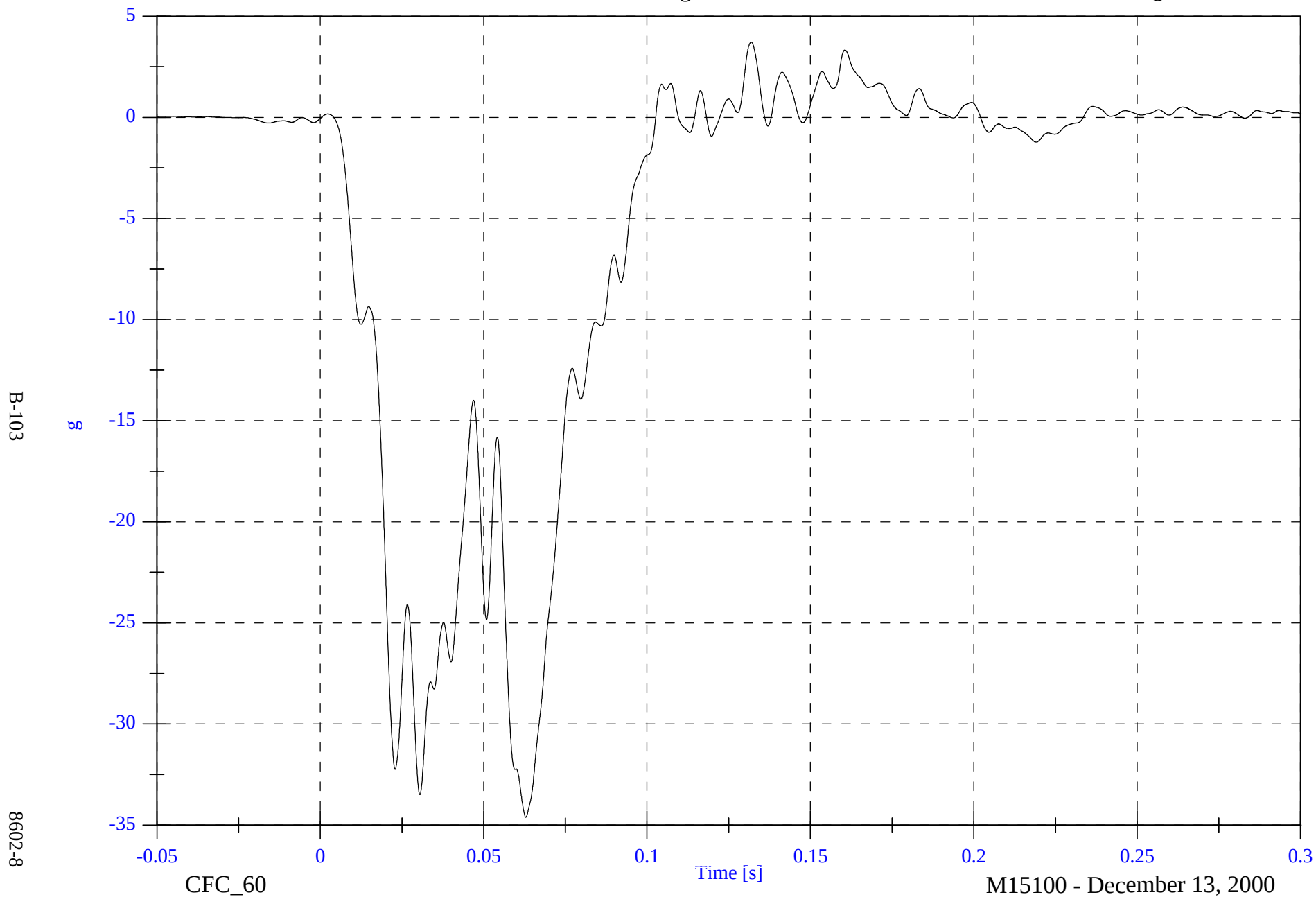


NCAP 2001 Test #8 2001 Toyota 4Runner

Right Rear #2x

Max: 3.7 [g] at 0.132 [s]

Min: -34.6 [g] at 0.063 [s]



NCAP 2001 Test #8 2001 Toyota 4Runner

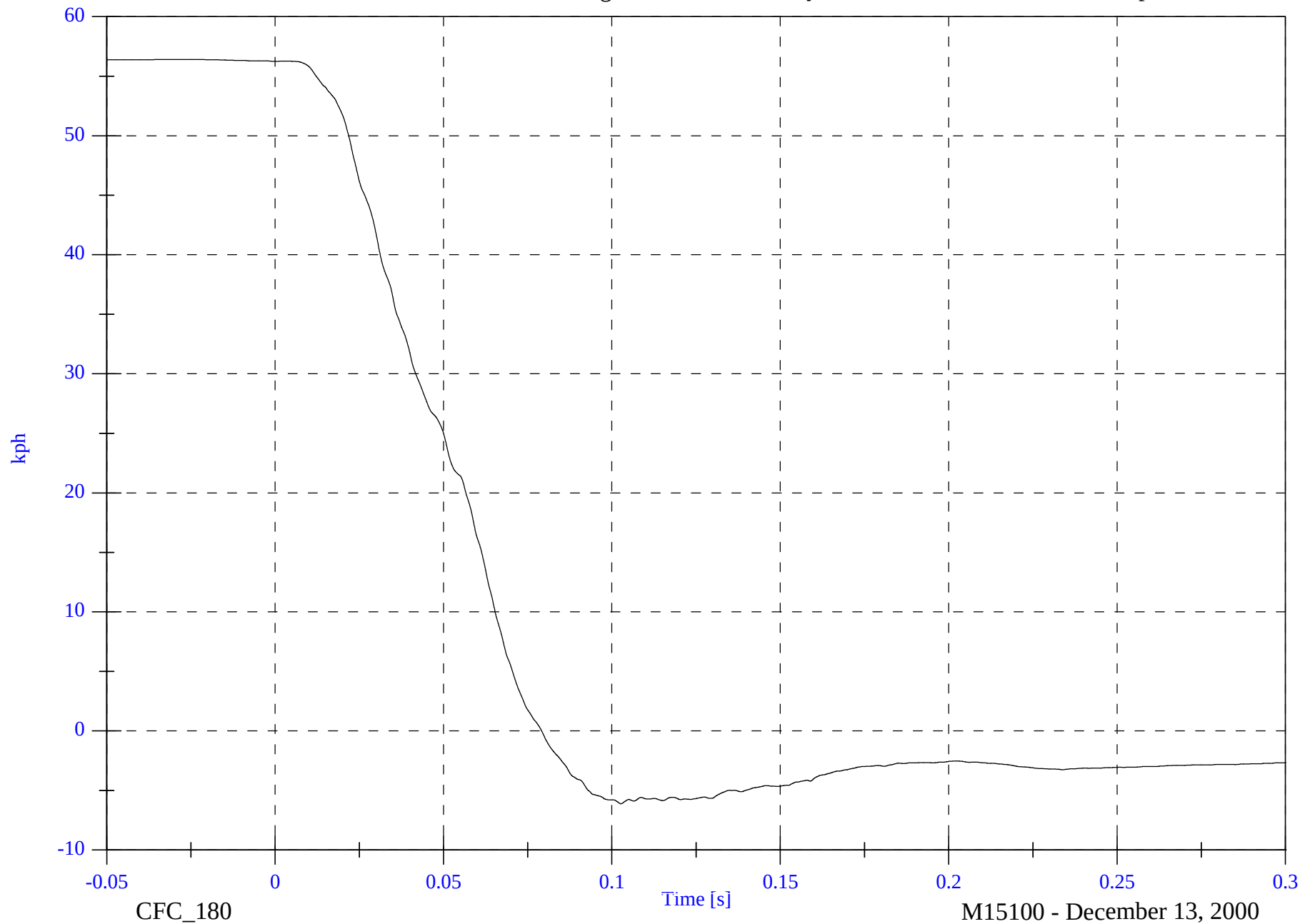
Max: 56.4 [kph] at -0.030 [s]

Right Rear #2x Velocity

Min: -6.1 [kph] at 0.103 [s]

B-104

8602-8

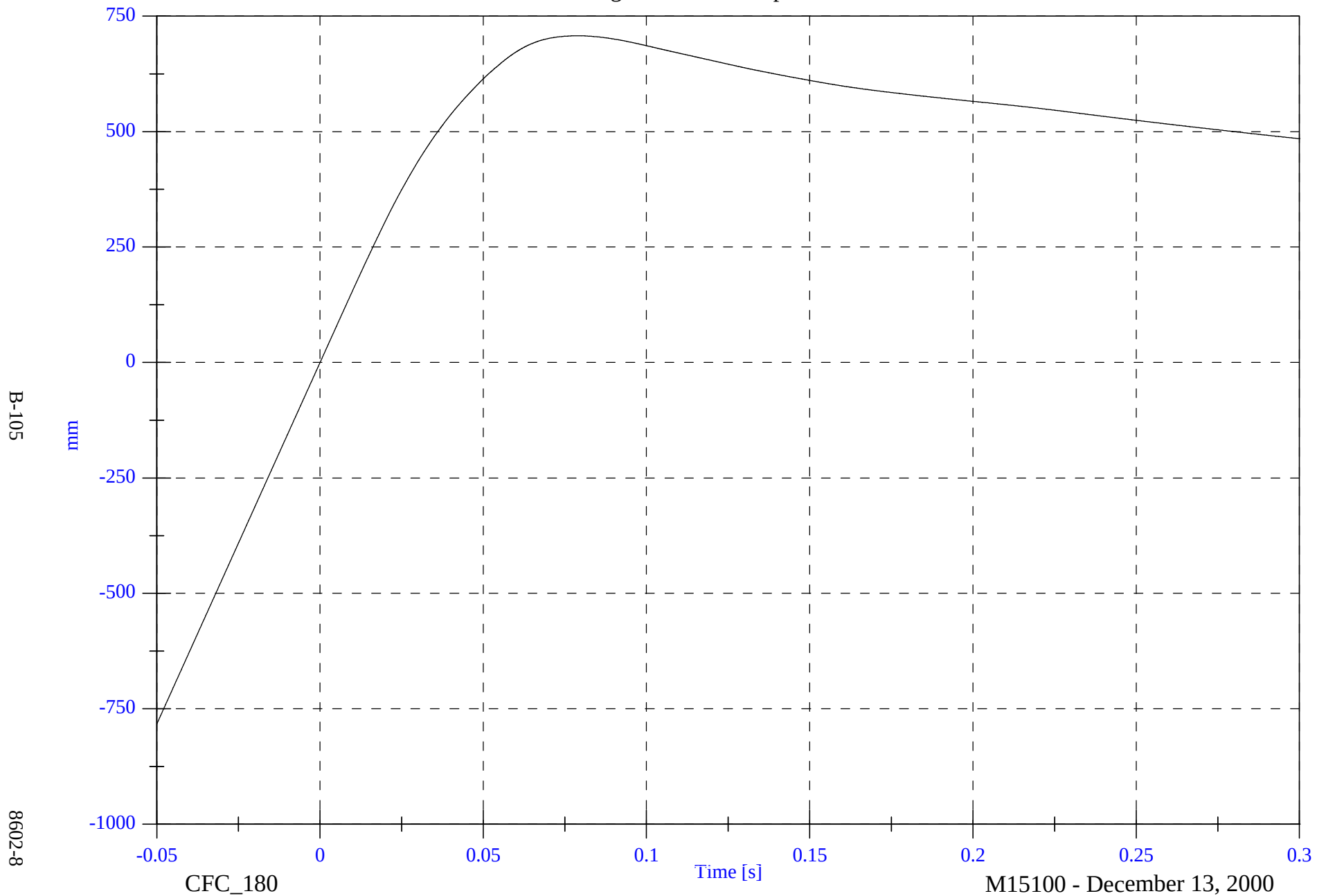


NCAP 2001 Test #8 2001 Toyota 4Runner

Right Rear #2x Displacement

Max: 707.6 [mm] at 0.079 [s]

Min: -782.9 [mm] at -0.050 [s]

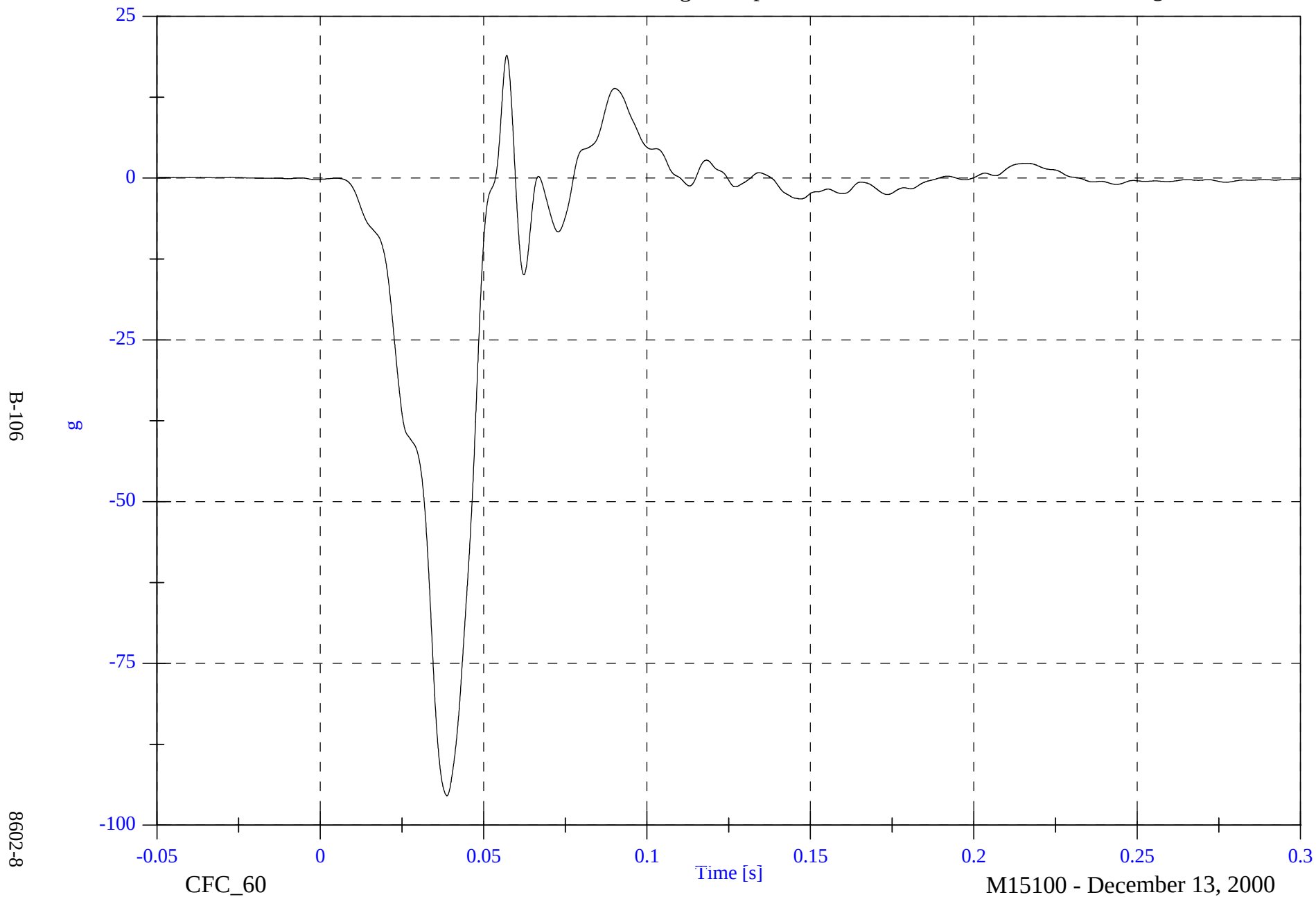


NCAP 2001 Test #8 2001 Toyota 4Runner

Engine Top #3x

Max: 19.0 [g] at 0.057 [s]

Min: -95.5 [g] at 0.039 [s]

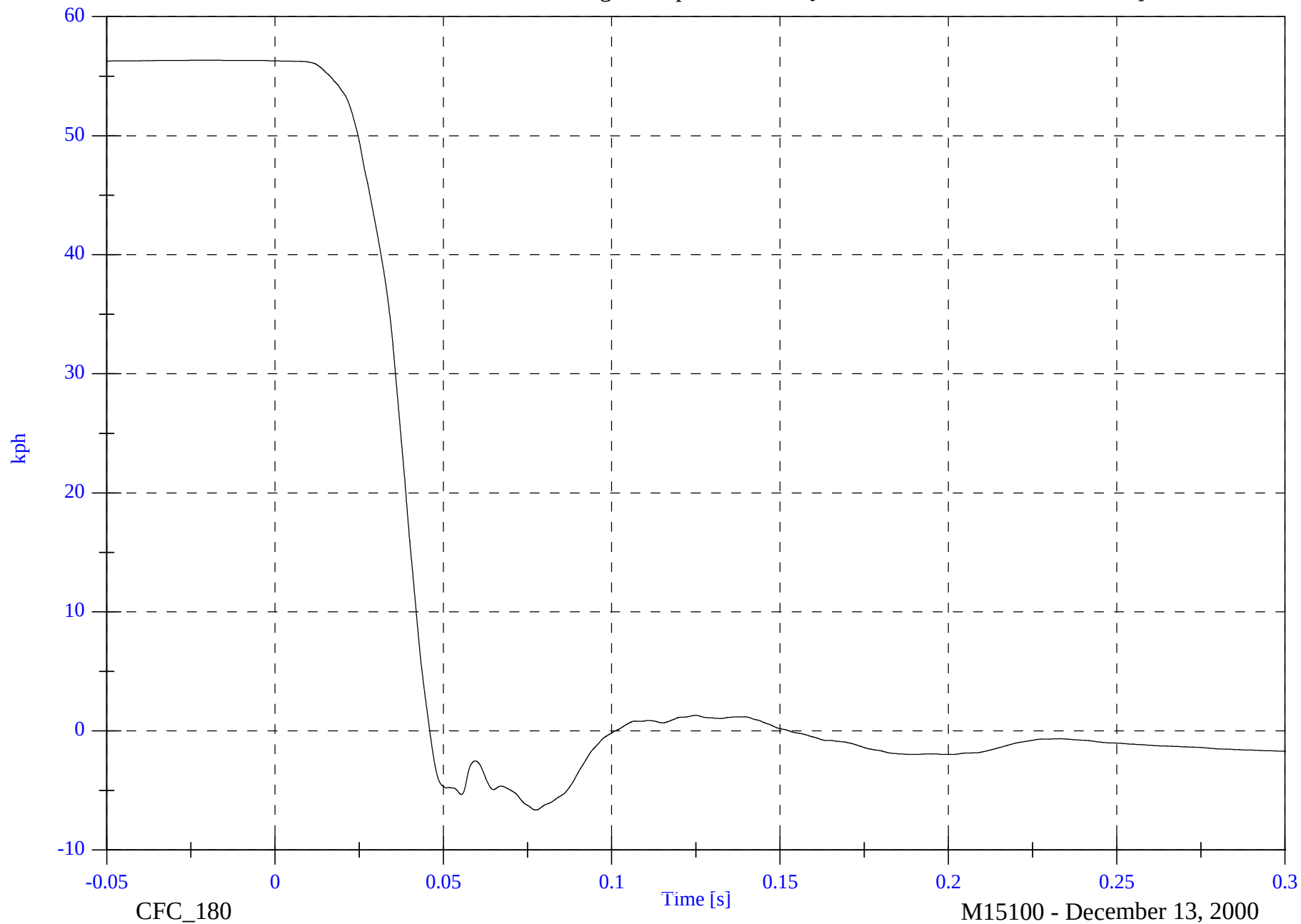


NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 56.3 [kph] at -0.022 [s]

Engine Top #3x Velocity

Min: -6.7 [kph] at 0.077 [s]



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8602-8

CFC_180

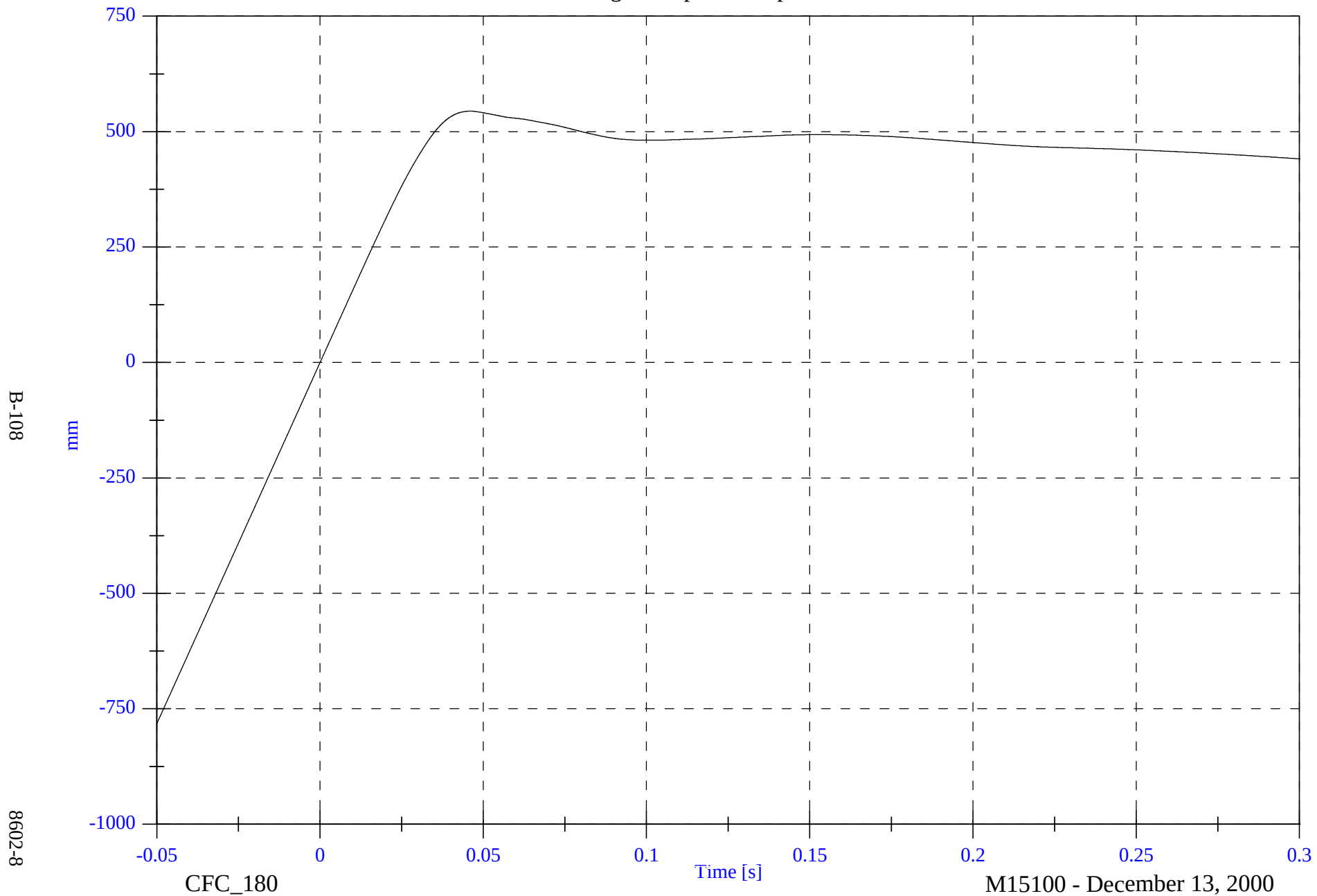
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

Engine Top #3x Displacement

Max: 544.3 [mm] at 0.046 [s]

Min: -782.2 [mm] at -0.050 [s]

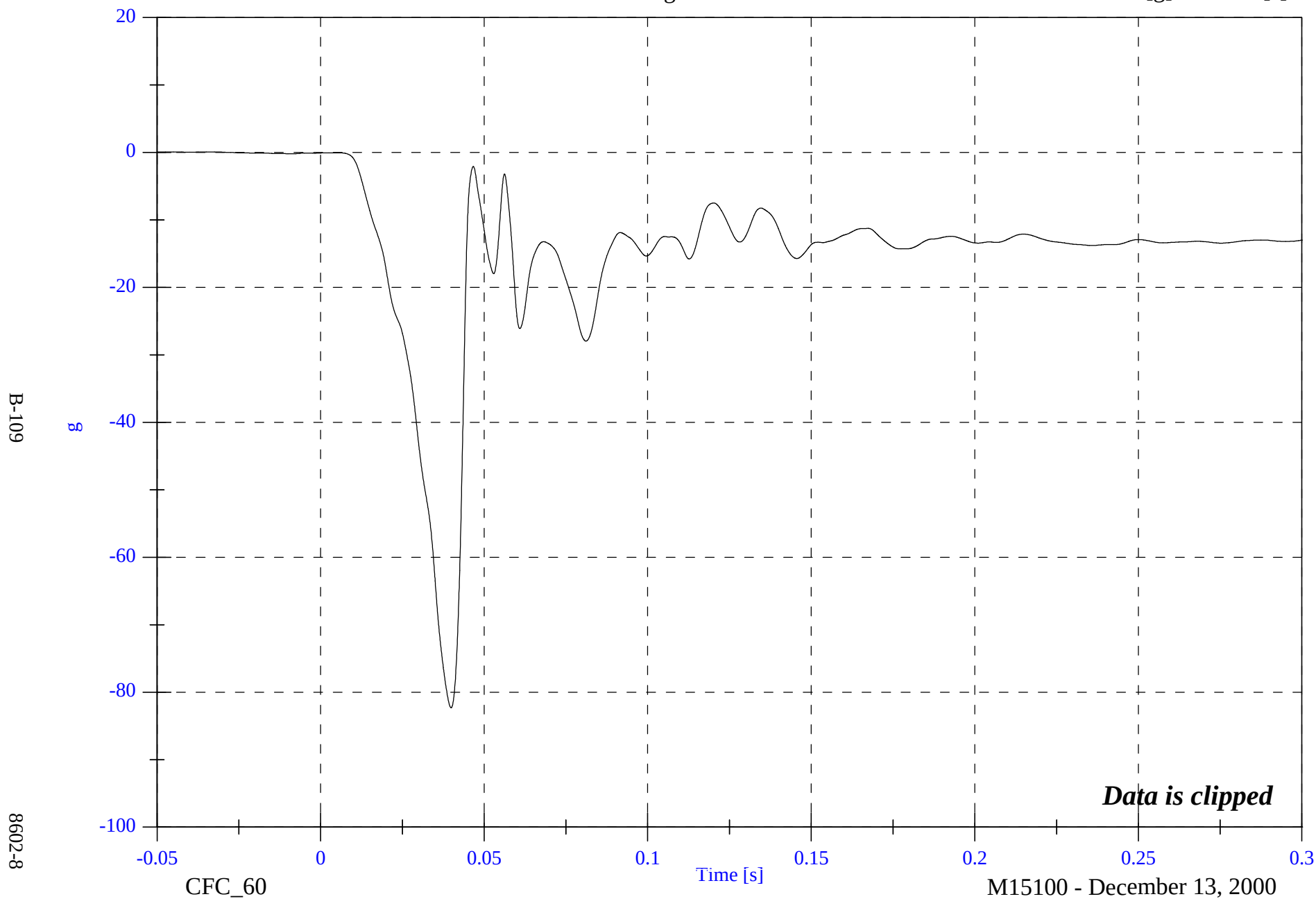


NCAP 2001 Test #8 2001 Toyota 4Runner

Engine Bottom #4x

Max: 0.1 [g] at -0.048 [s]

Min: -82.3 [g] at 0.040 [s]

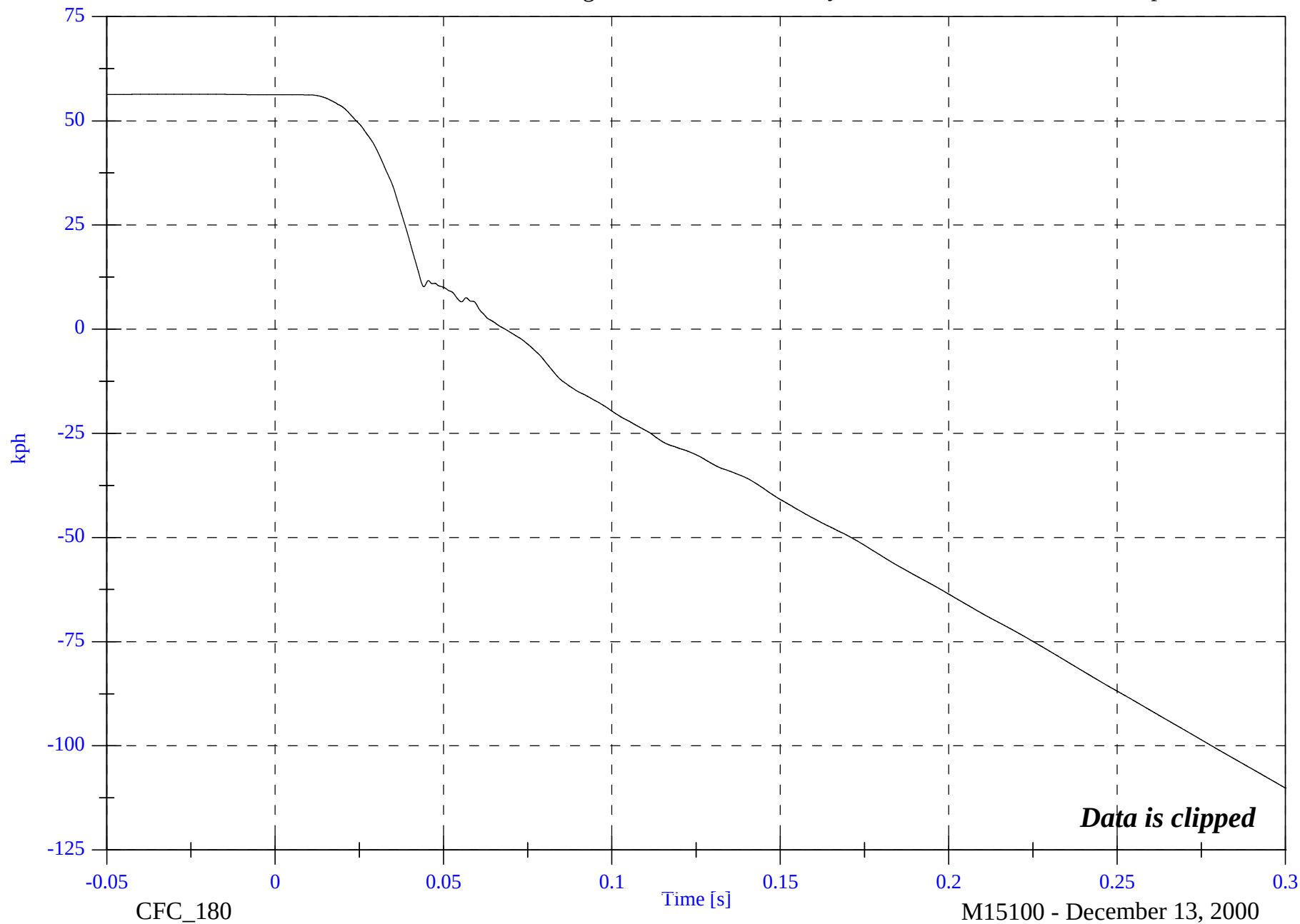


NCAP 2001 Test #8 2001 Toyota 4Runner

Engine Bottom #4x Velocity

Max: 56.4 [kph] at -0.027 [s]

Min: -110.1 [kph] at 0.300 [s]



B-110

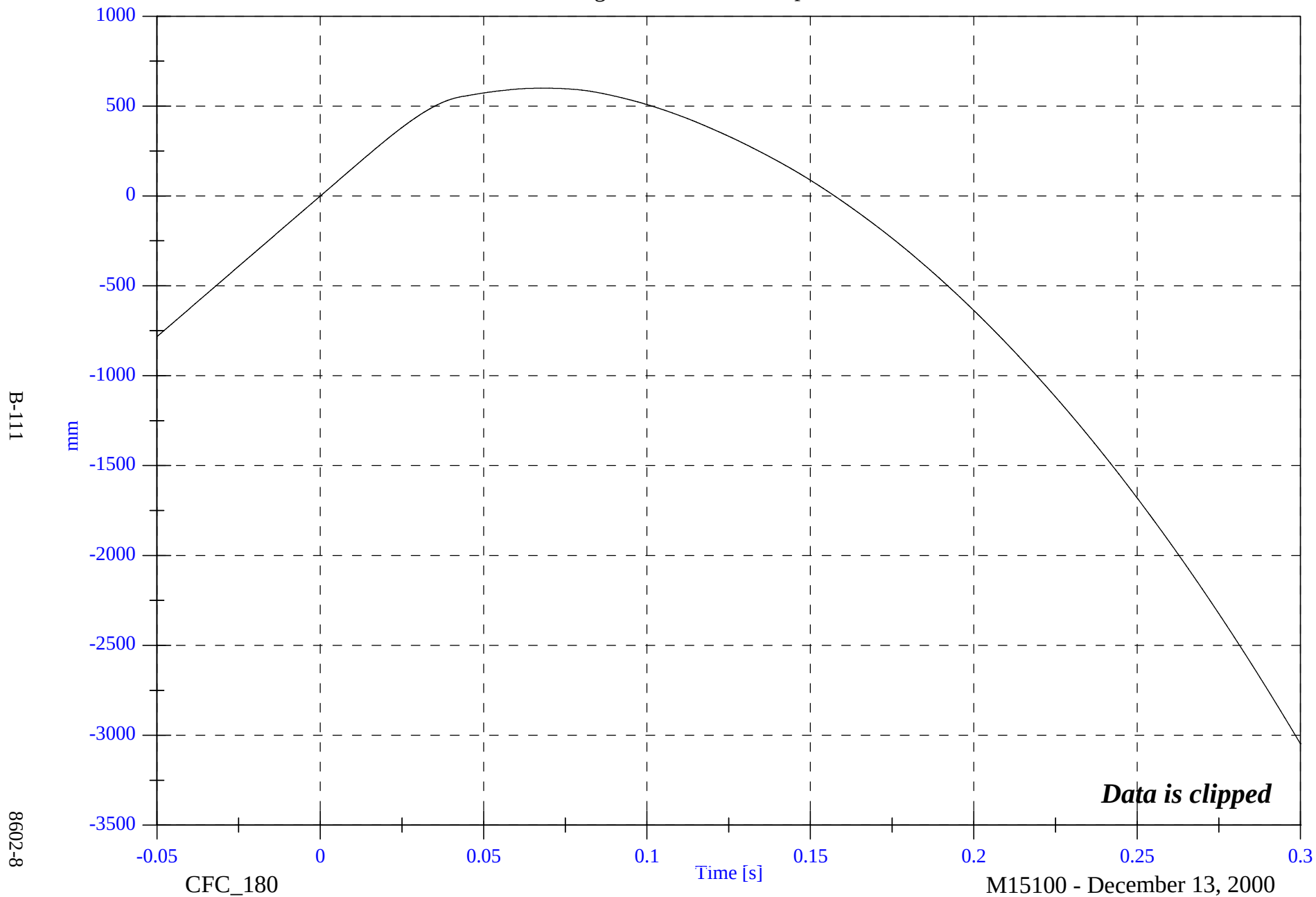
8602-8

NCAP 2001 Test #8 2001 Toyota 4Runner

Engine Bottom #4x Displacement

Max: 599.7 [mm] at 0.068 [s]

Min: -3047.2 [mm] at 0.300 [s]



8602-8

NCAP 2001 Test #8 2001 Toyota 4Runner

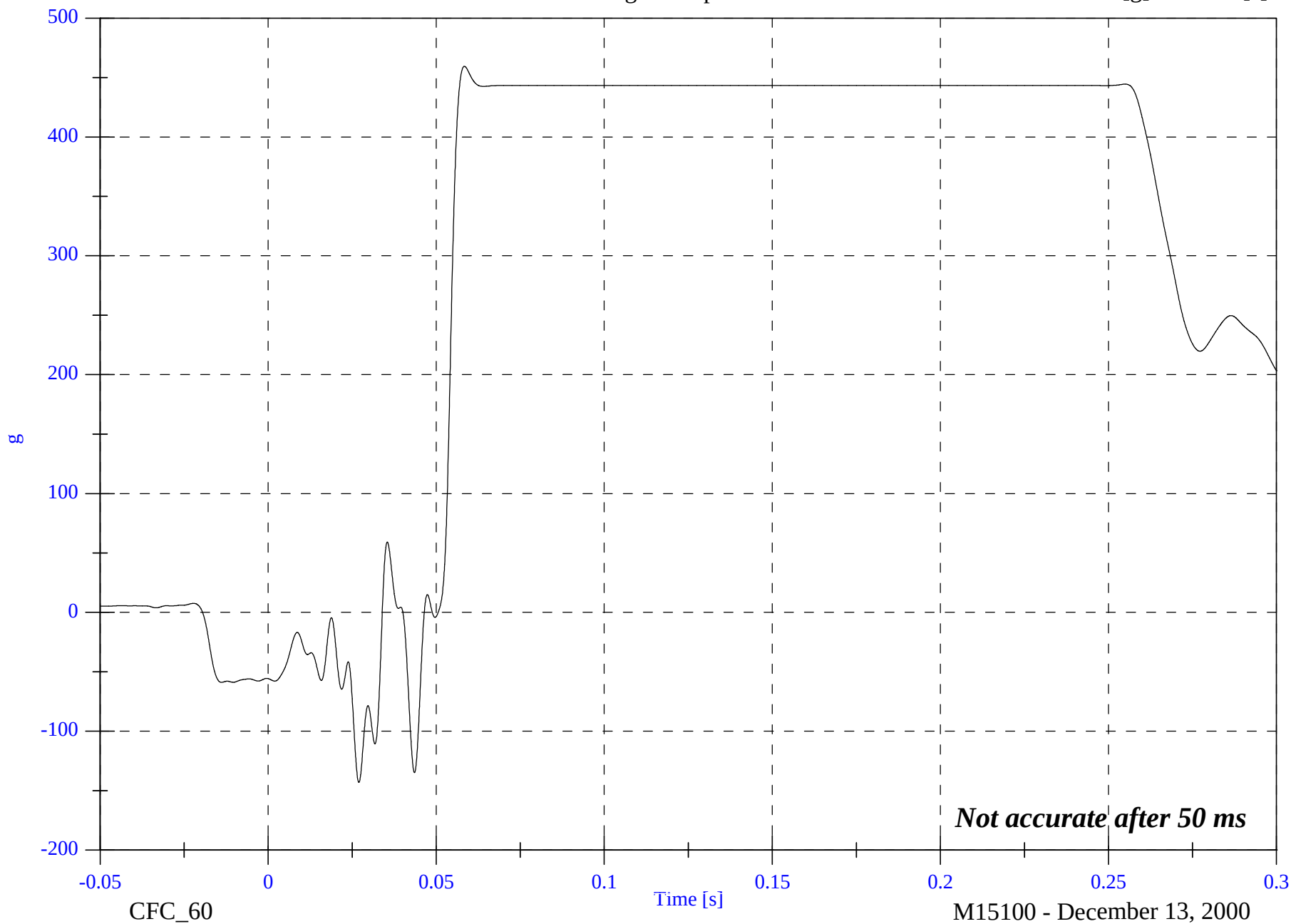
Right Caliper #5x

Max: 459.5 [g] at 0.058 [s]

Min: -143.2 [g] at 0.027 [s]

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8602-8



NCAP 2001 Test #8 2001 Toyota 4Runner

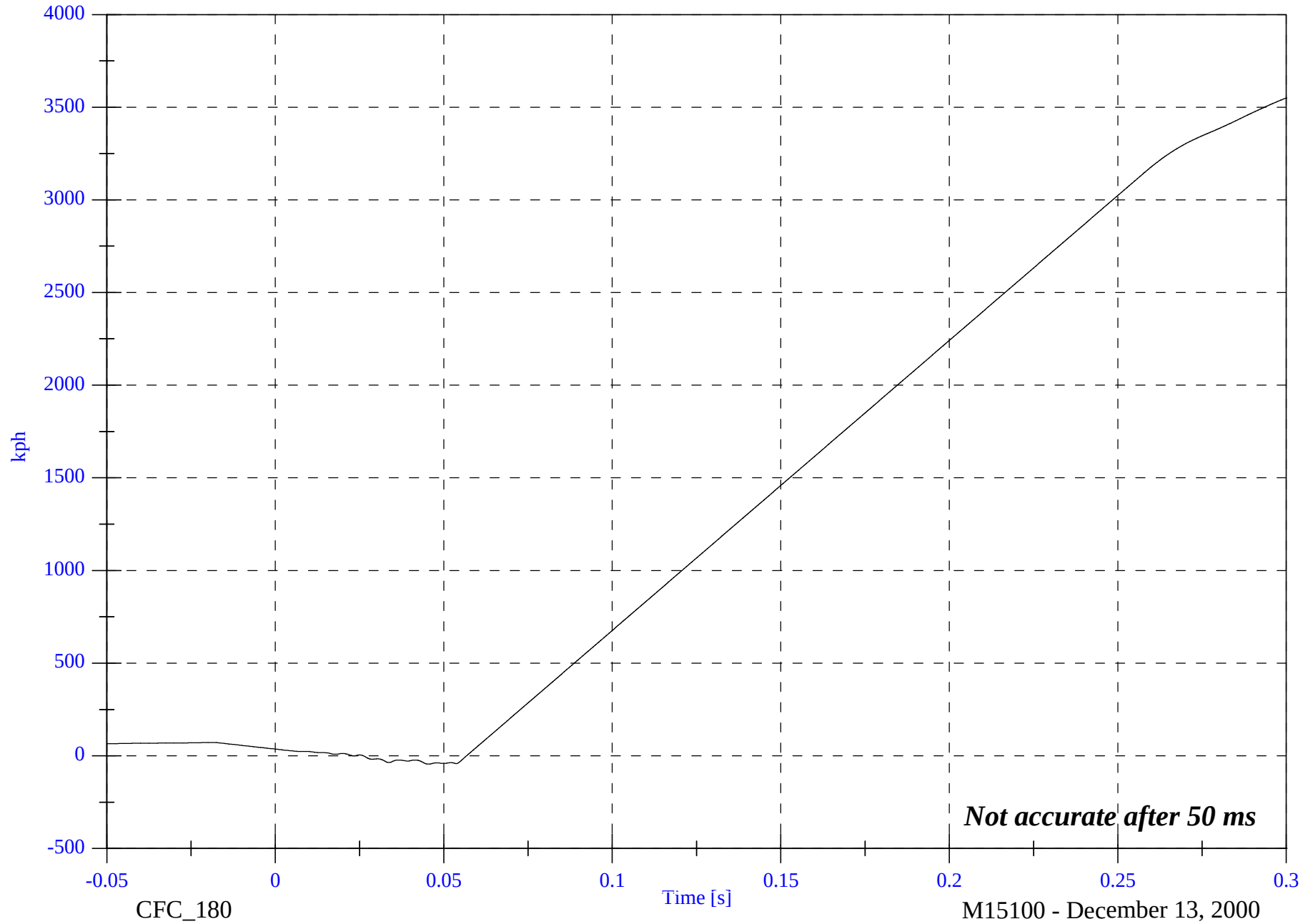
Right Caliper #5x Velocity

Max: 3550.0 [kph] at 0.300 [s]

Min: -44.8 [kph] at 0.045 [s]

B-113

8602-8

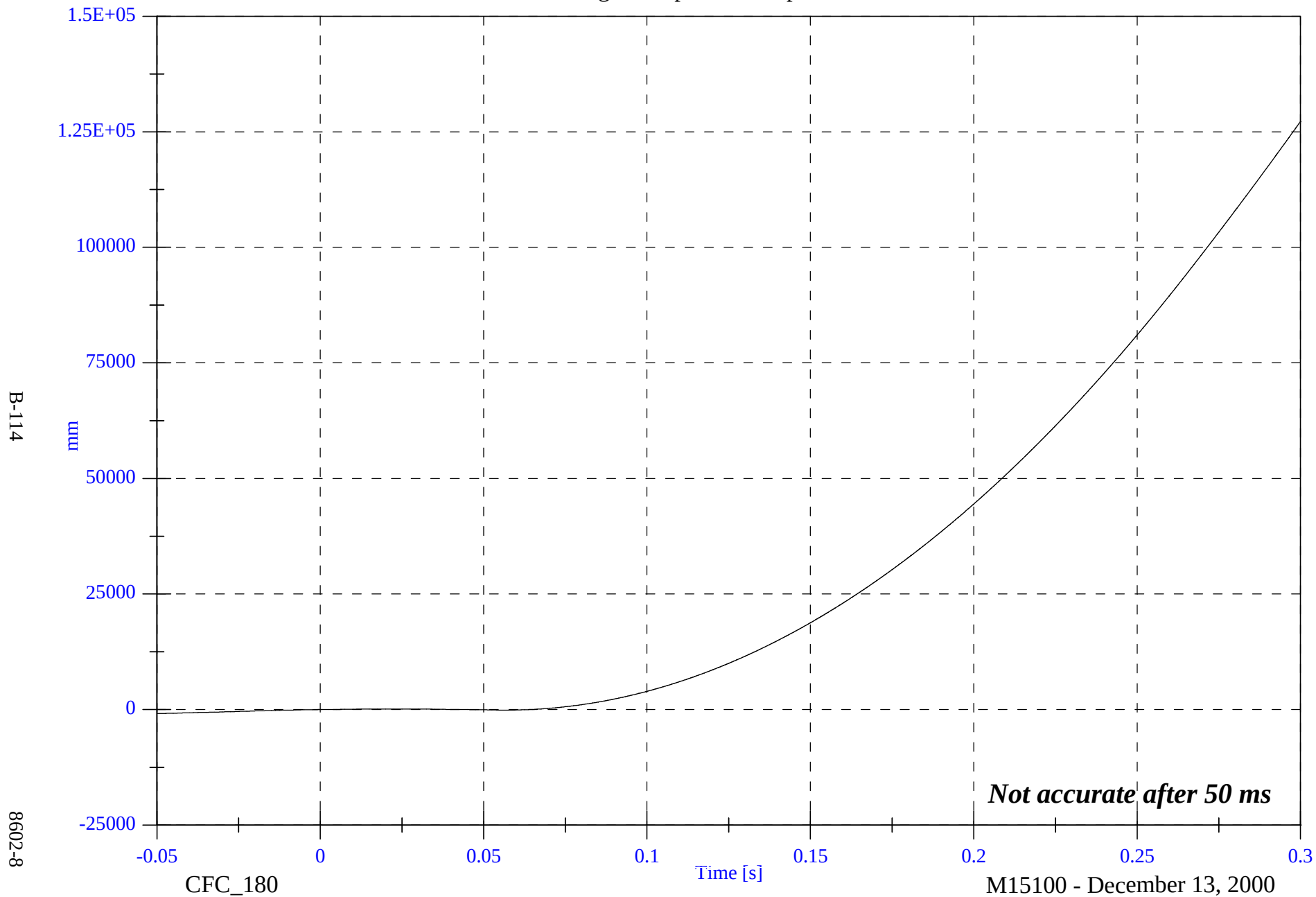


NCAP 2001 Test #8 2001 Toyota 4Runner

Right Caliper #5x Displacement

Max: 127195.3 [mm] at 0.300 [s]

Min: -881.1 [mm] at -0.050 [s]

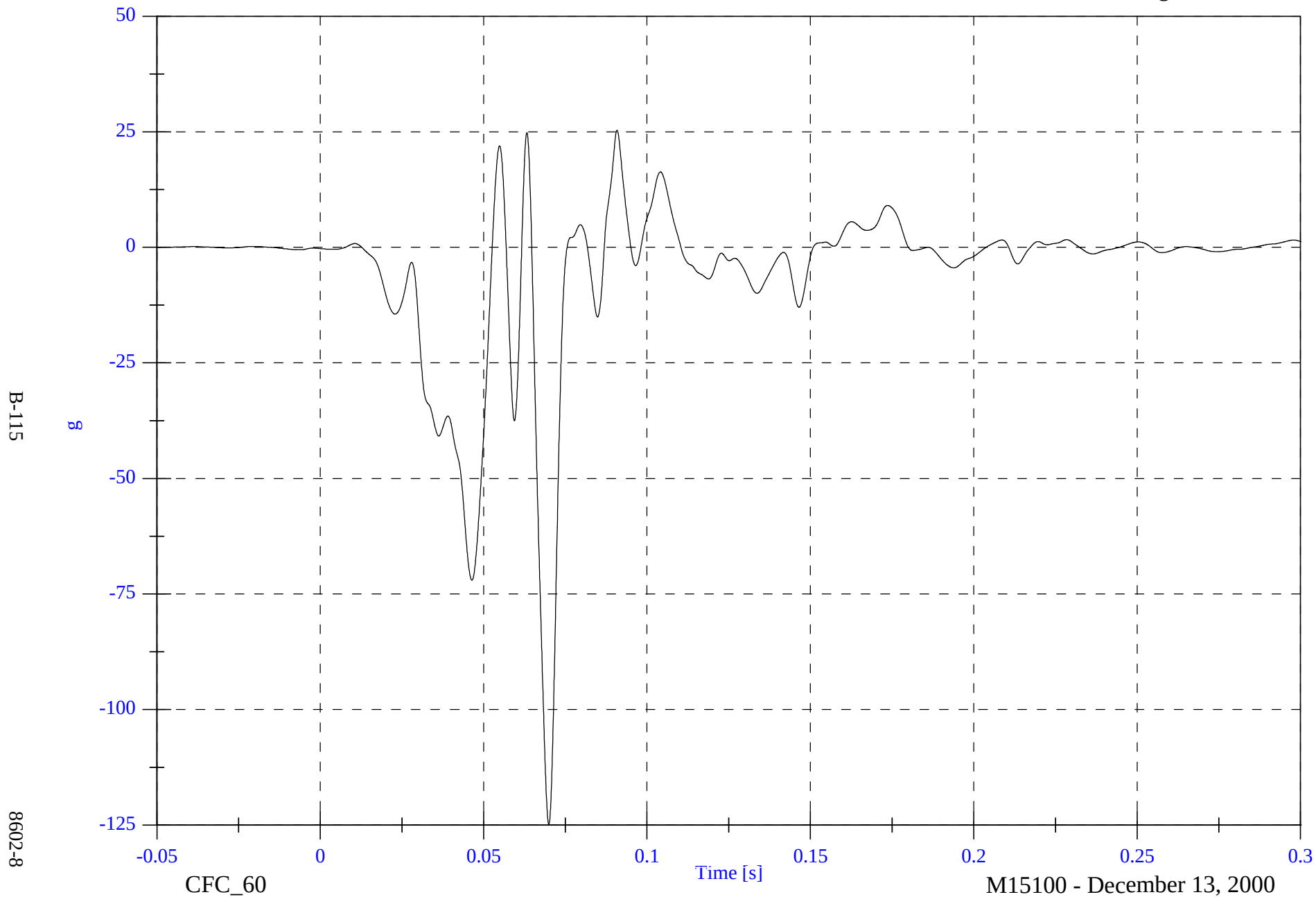


NCAP 2001 Test #8 2001 Toyota 4Runner

Instrument Panel #6x

Max: 25.3 [g] at 0.091 [s]

Min: -124.9 [g] at 0.070 [s]

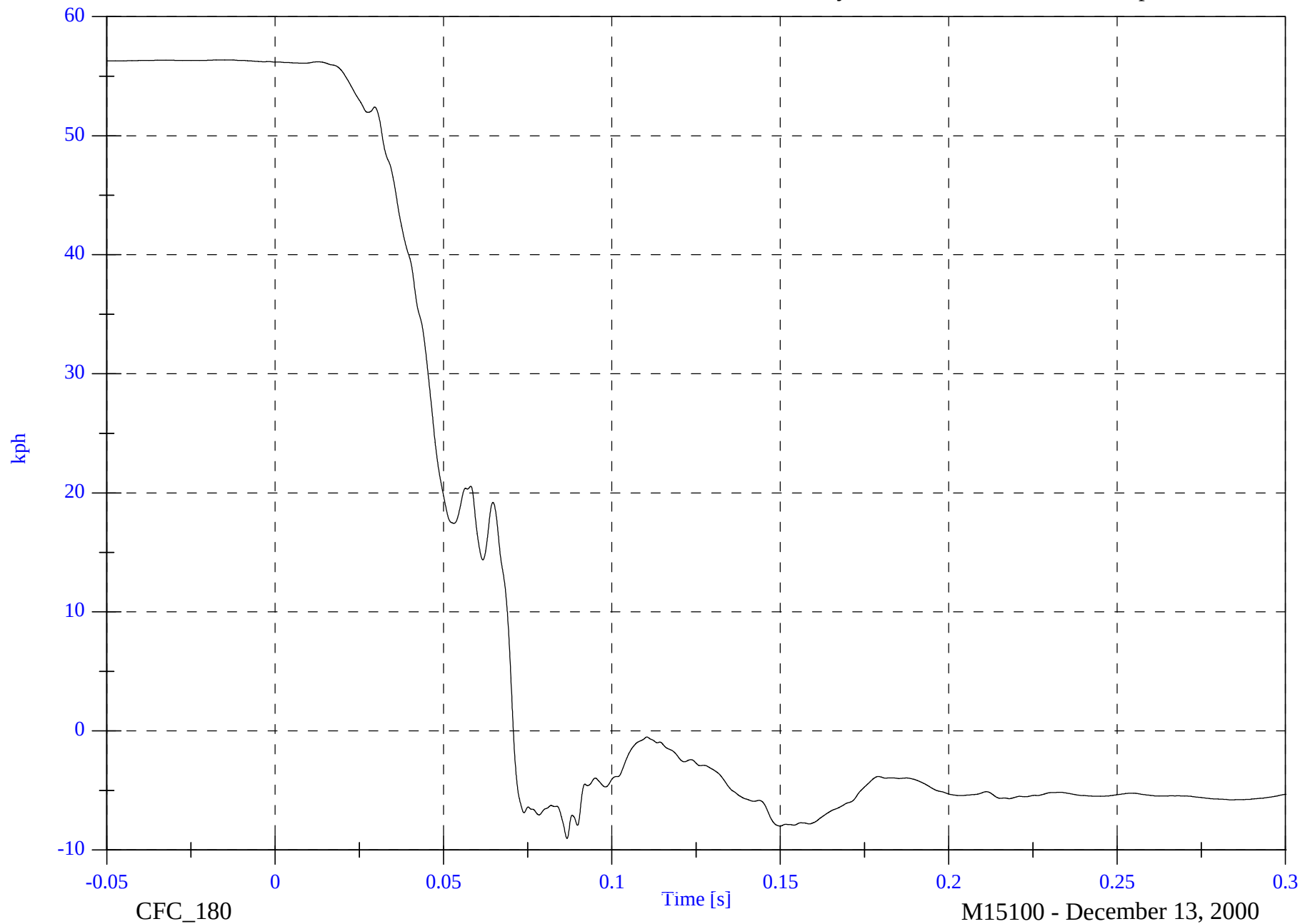


NCAP 2001 Test #8 2001 Toyota 4Runner

Instrument Panel #6x Velocity

Max: 56.4 [kph] at -0.013 [s]

Min: -9.0 [kph] at 0.087 [s]



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CFC_180

Time [s]

M15100 - December 13, 2000

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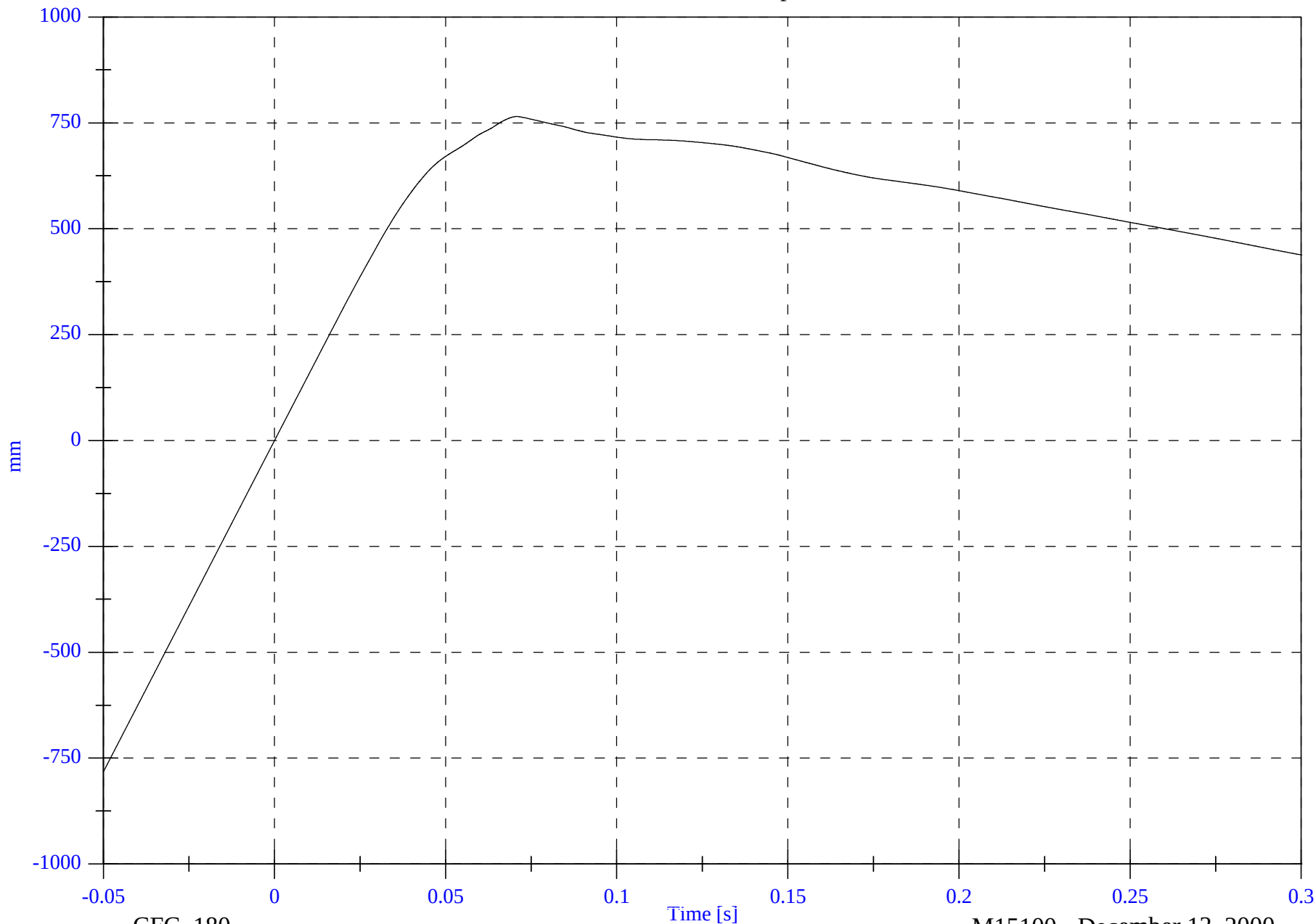
Instrument Panel #6x Displacement

Max: 764.8 [mm] at 0.071 [s]

Min: -782.1 [mm] at -0.050 [s]

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8602-8



CFC_180

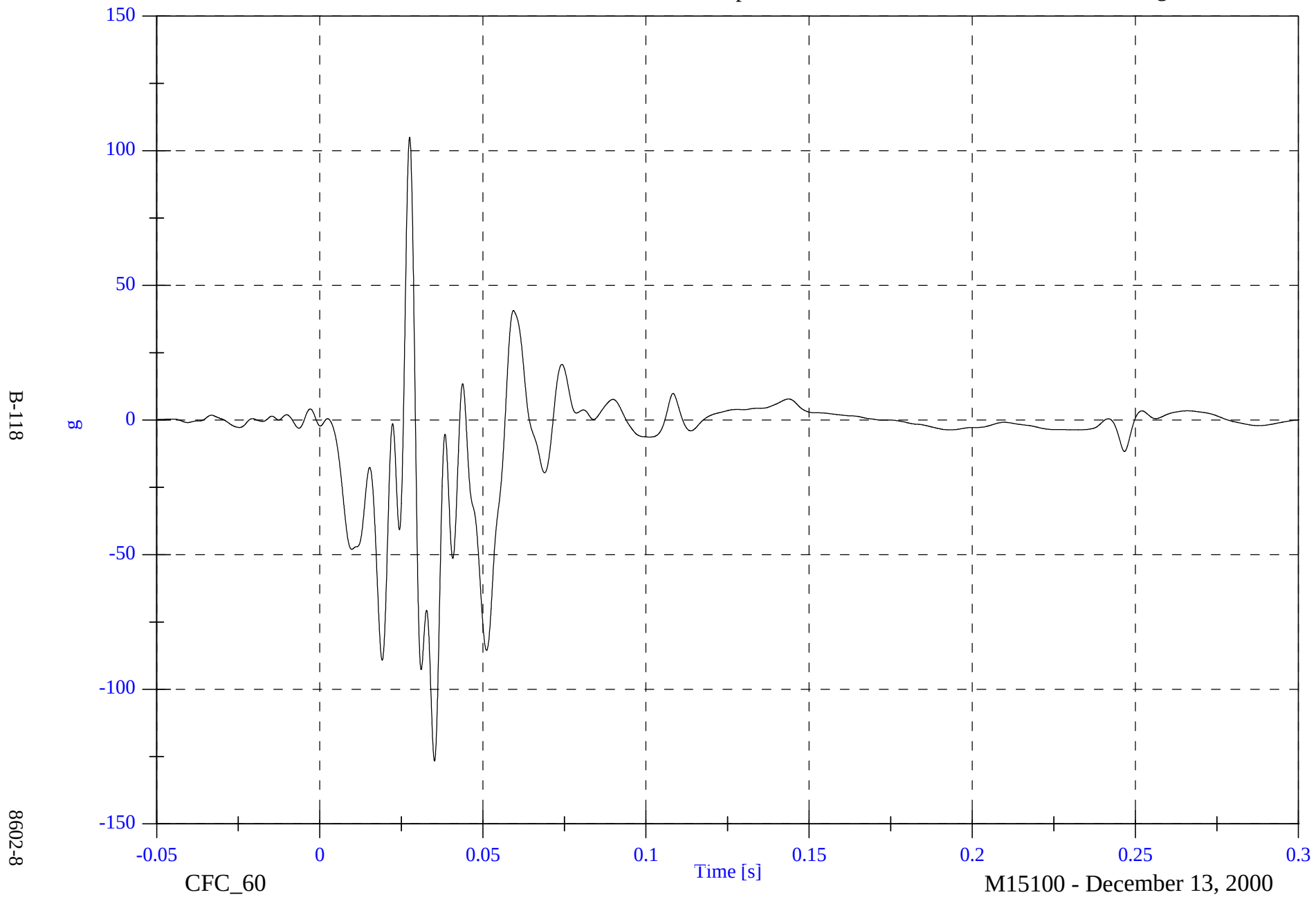
M15100 - December 13, 2000

NCAP 2001 Test #8 2001 Toyota 4Runner

Left Caliper #7x

Max: 105.0 [g] at 0.028 [s]

Min: -126.7 [g] at 0.035 [s]

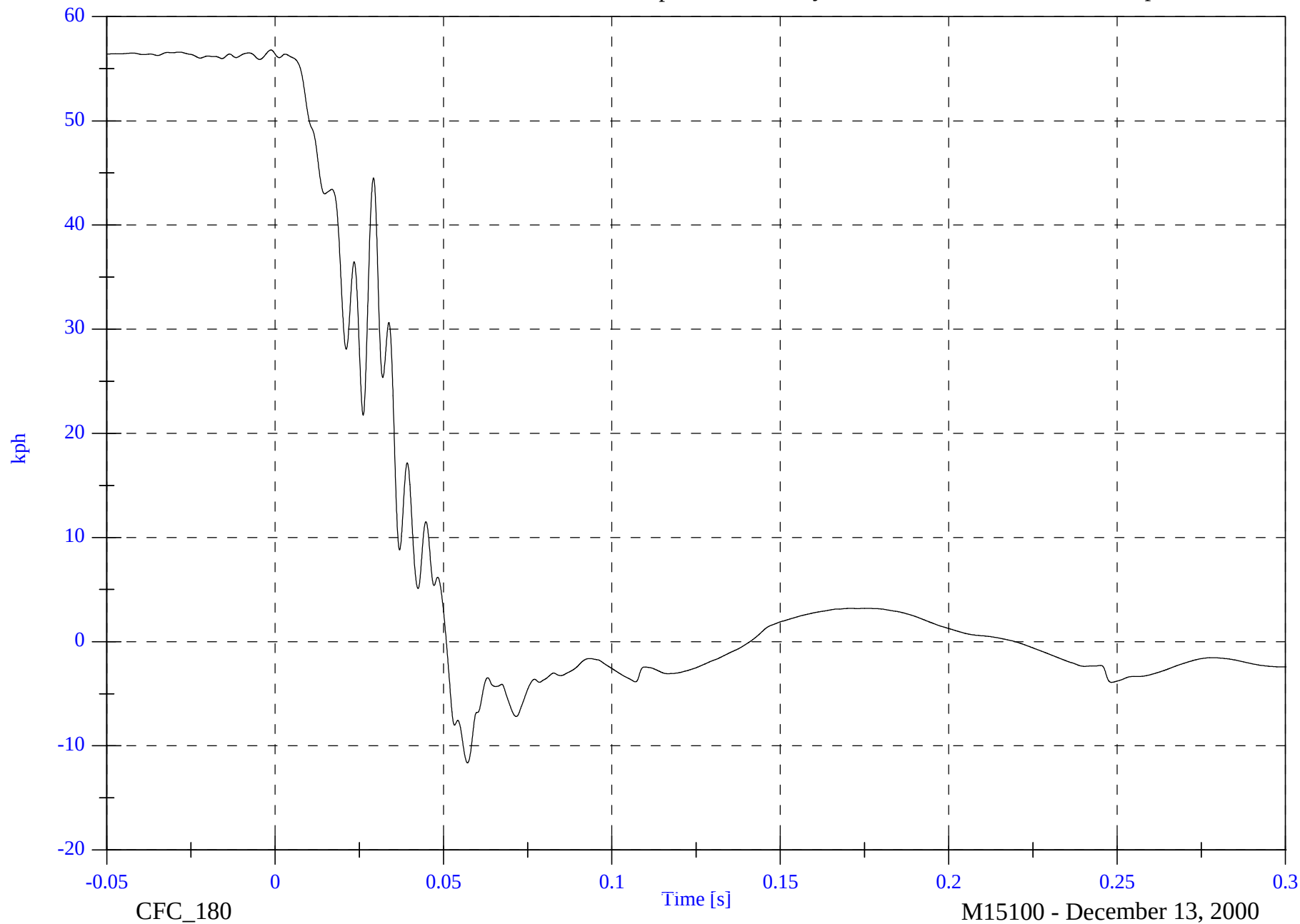


NCAP 2001 Test #8 2001 Toyota 4Runner

Left Caliper #7x Velocity

Max: 56.8 [kph] at -0.001 [s]

Min: -11.6 [kph] at 0.057 [s]



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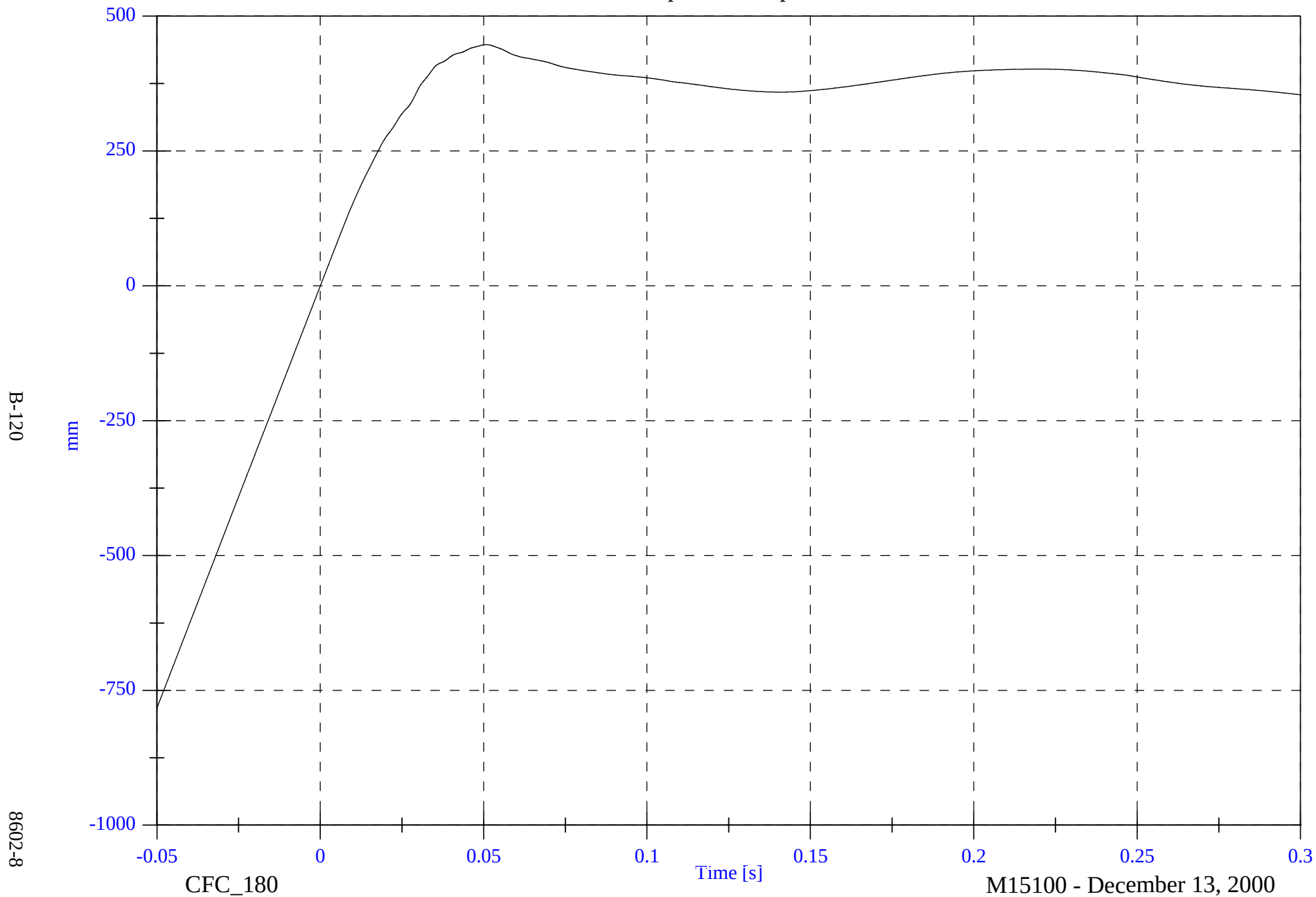
8602-8

NCAP 2001 Test #8 2001 Toyota 4Runner

Left Caliper #7x Displacement

Max: 447.1 [mm] at 0.051 [s]

Min: -782.7 [mm] at -0.050 [s]

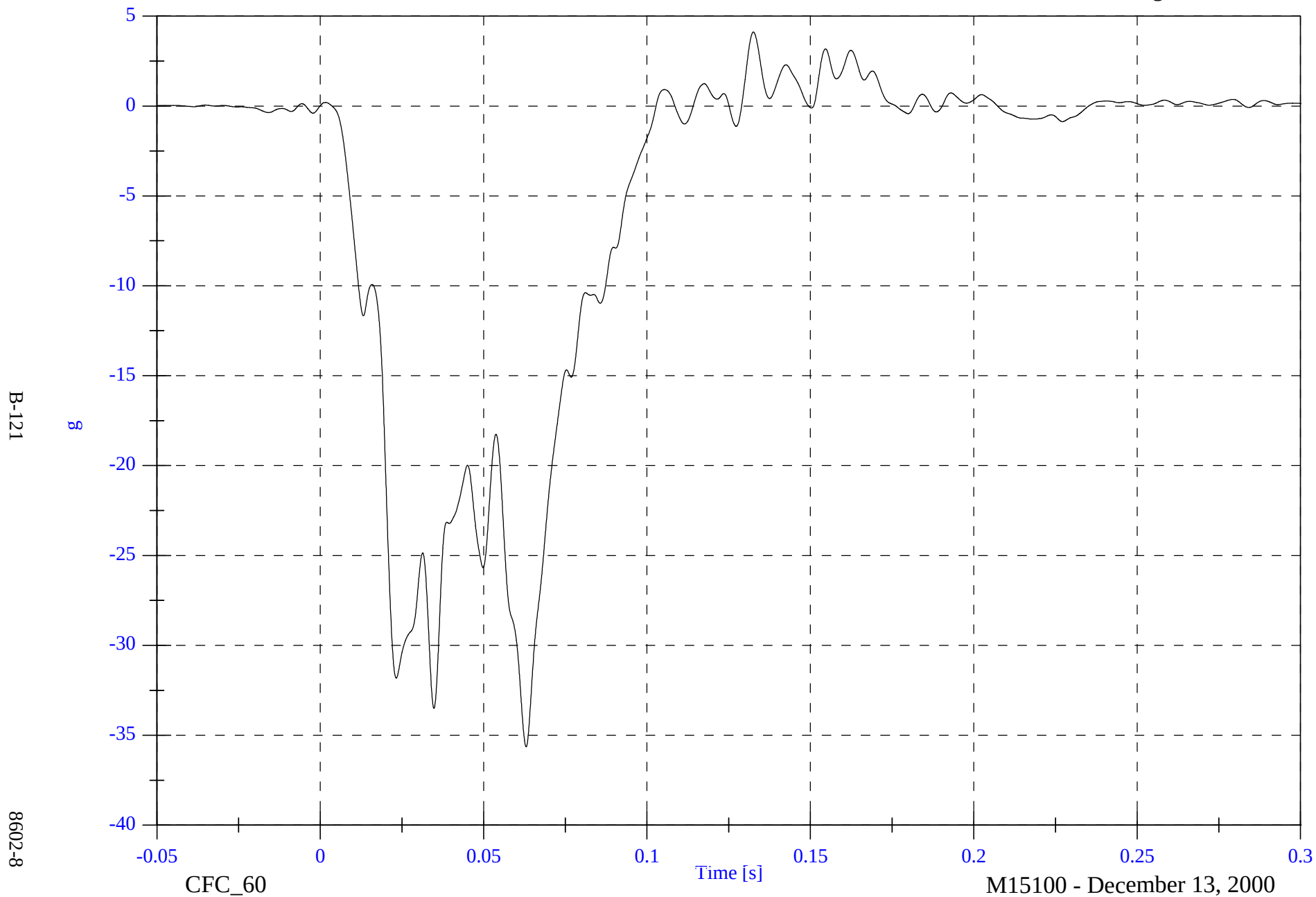


NCAP 2001 Test #8 2001 Toyota 4Runner

Left Rear Red #8x

Max: 4.1 [g] at 0.133 [s]

Min: -35.6 [g] at 0.063 [s]

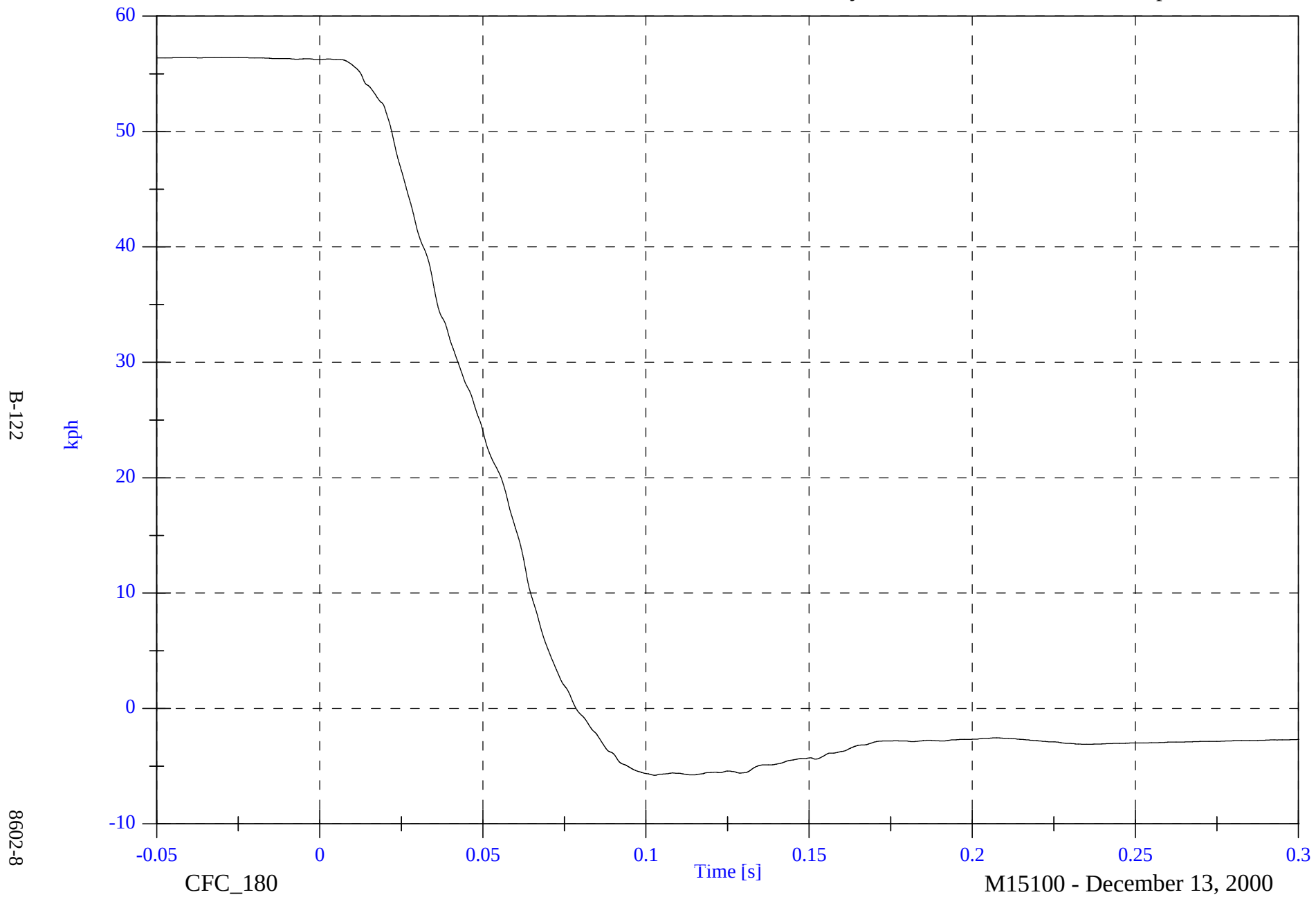


NCAP 2001 Test #8 2001 Toyota 4Runner

Left Rear Red #8x Velocity

Max: 56.4 [kph] at -0.028 [s]

Min: -5.8 [kph] at 0.103 [s]

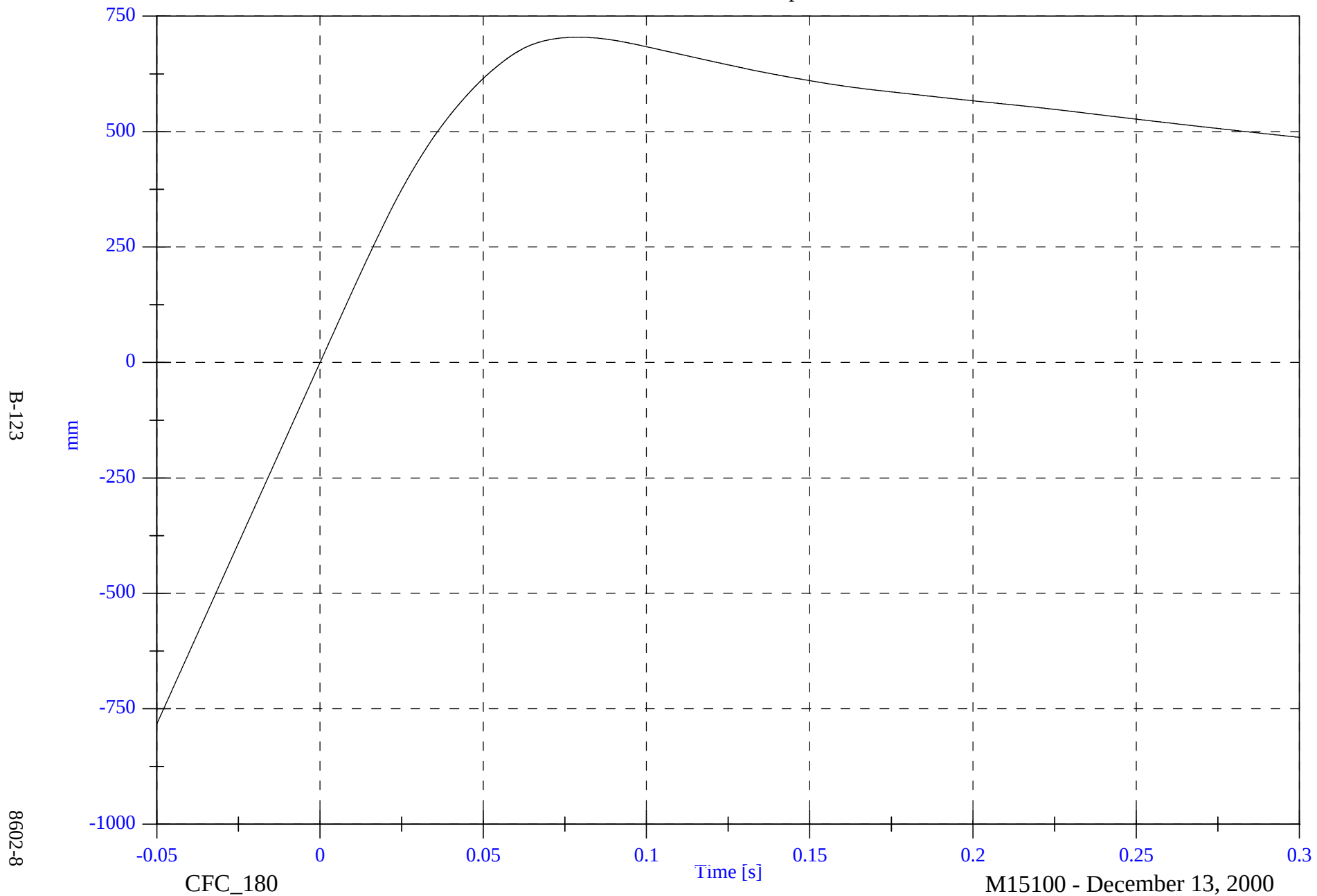


NCAP 2001 Test #8 2001 Toyota 4Runner

Left Rear Red #8x Displacement

Max: 704.5 [mm] at 0.079 [s]

Min: -782.9 [mm] at -0.050 [s]

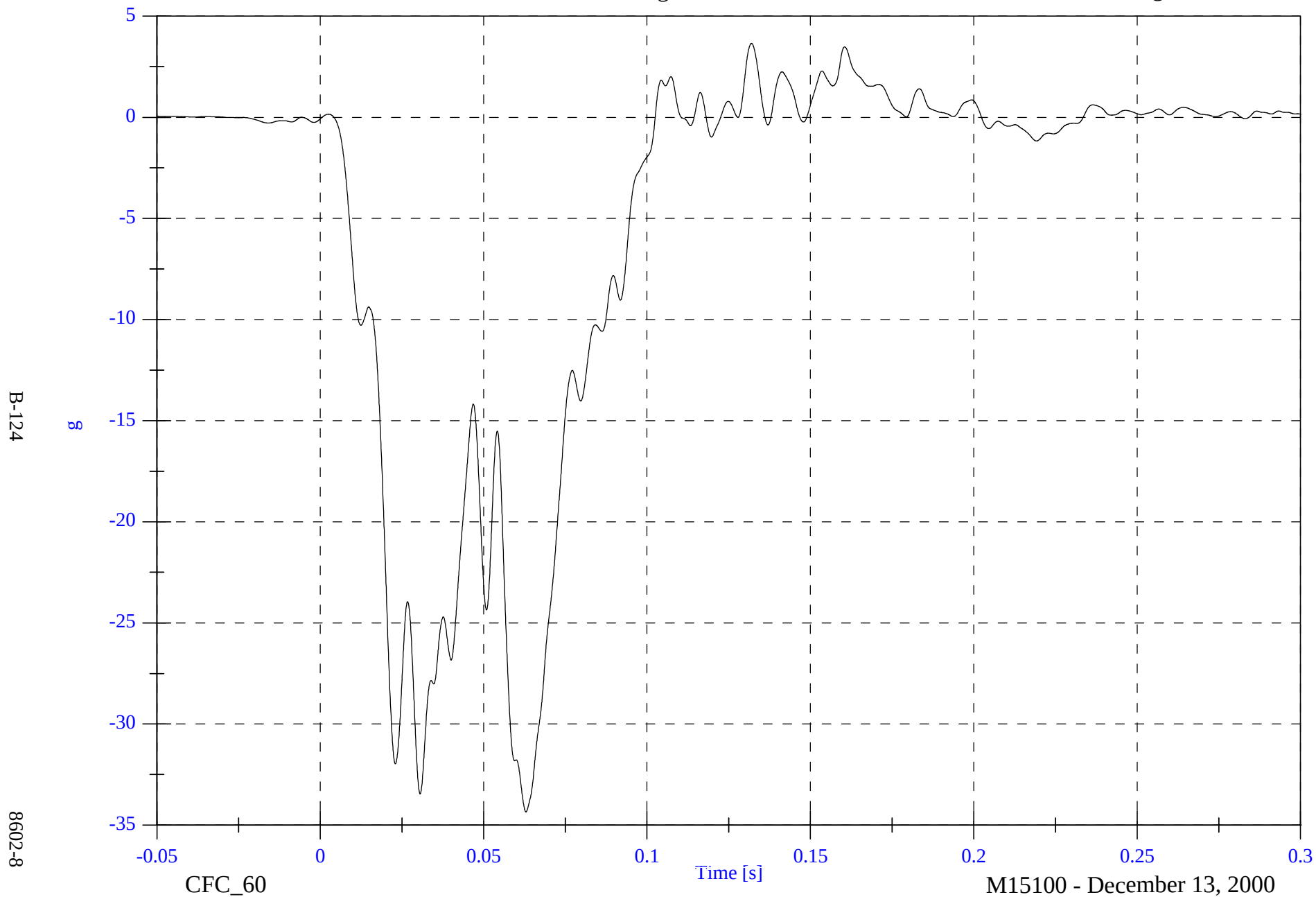


NCAP 2001 Test #8 2001 Toyota 4Runner

Right Rear Red #9x

Max: 3.7 [g] at 0.132 [s]

Min: -34.3 [g] at 0.063 [s]

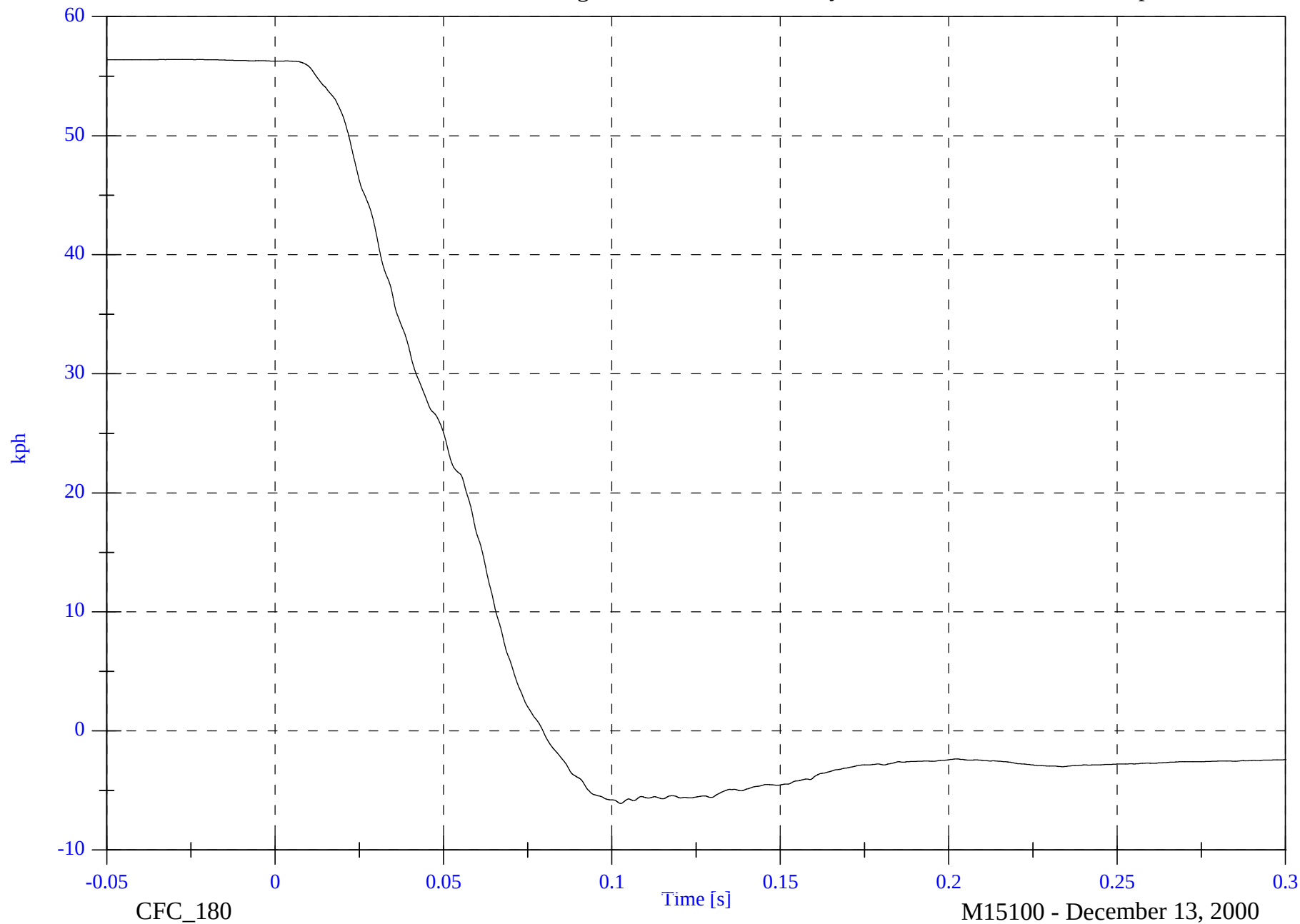


NCAP 2001 Test #8 2001 Toyota 4Runner

Right Rear Red #9x Velocity

Max: 56.4 [kph] at -0.030 [s]

Min: -6.1 [kph] at 0.103 [s]



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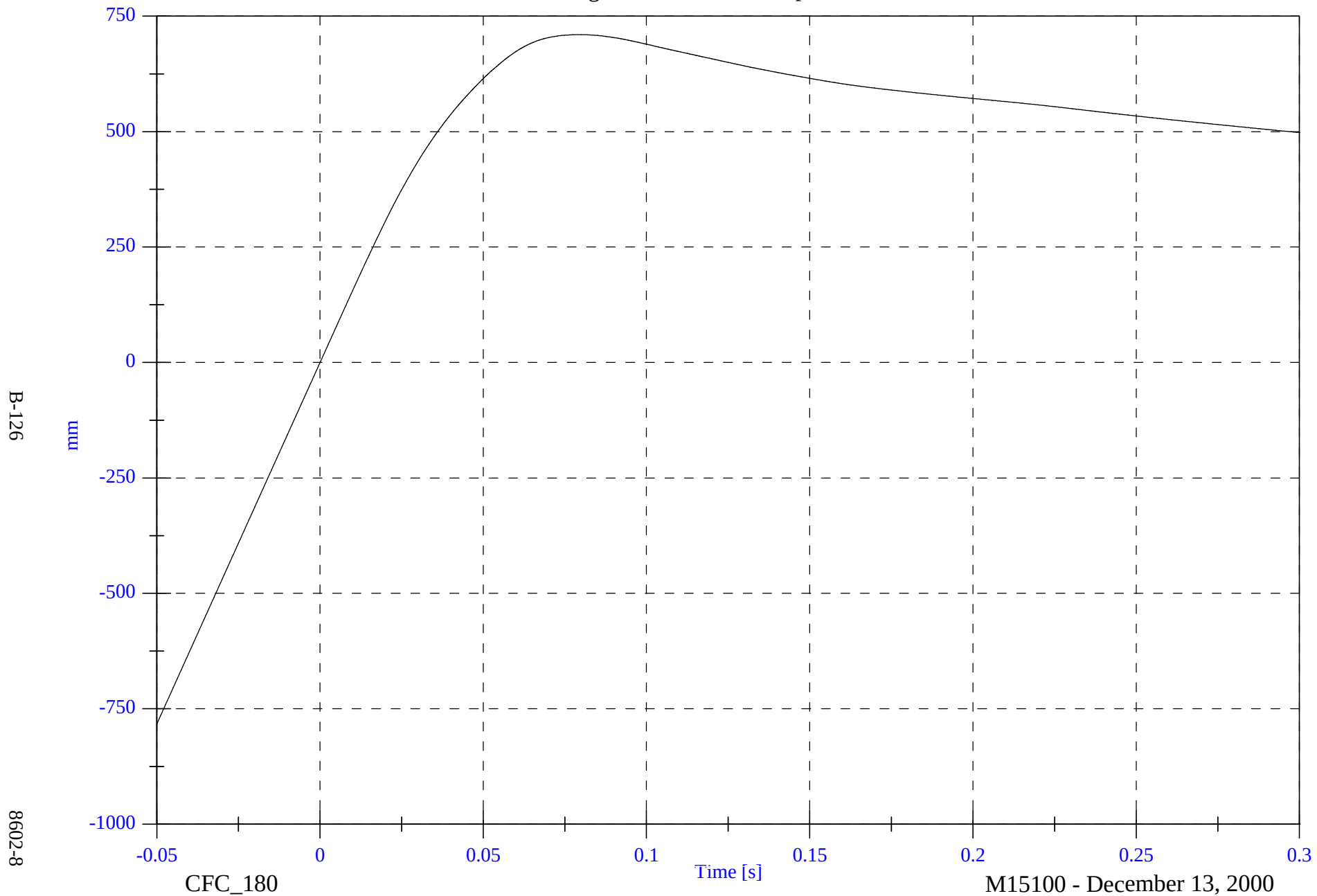
8602-8

NCAP 2001 Test #8 2001 Toyota 4Runner

Max: 710.1 [mm] at 0.080 [s]

Right Rear Red #9x Displacement

Min: -782.9 [mm] at -0.050 [s]



B-126

8602-8

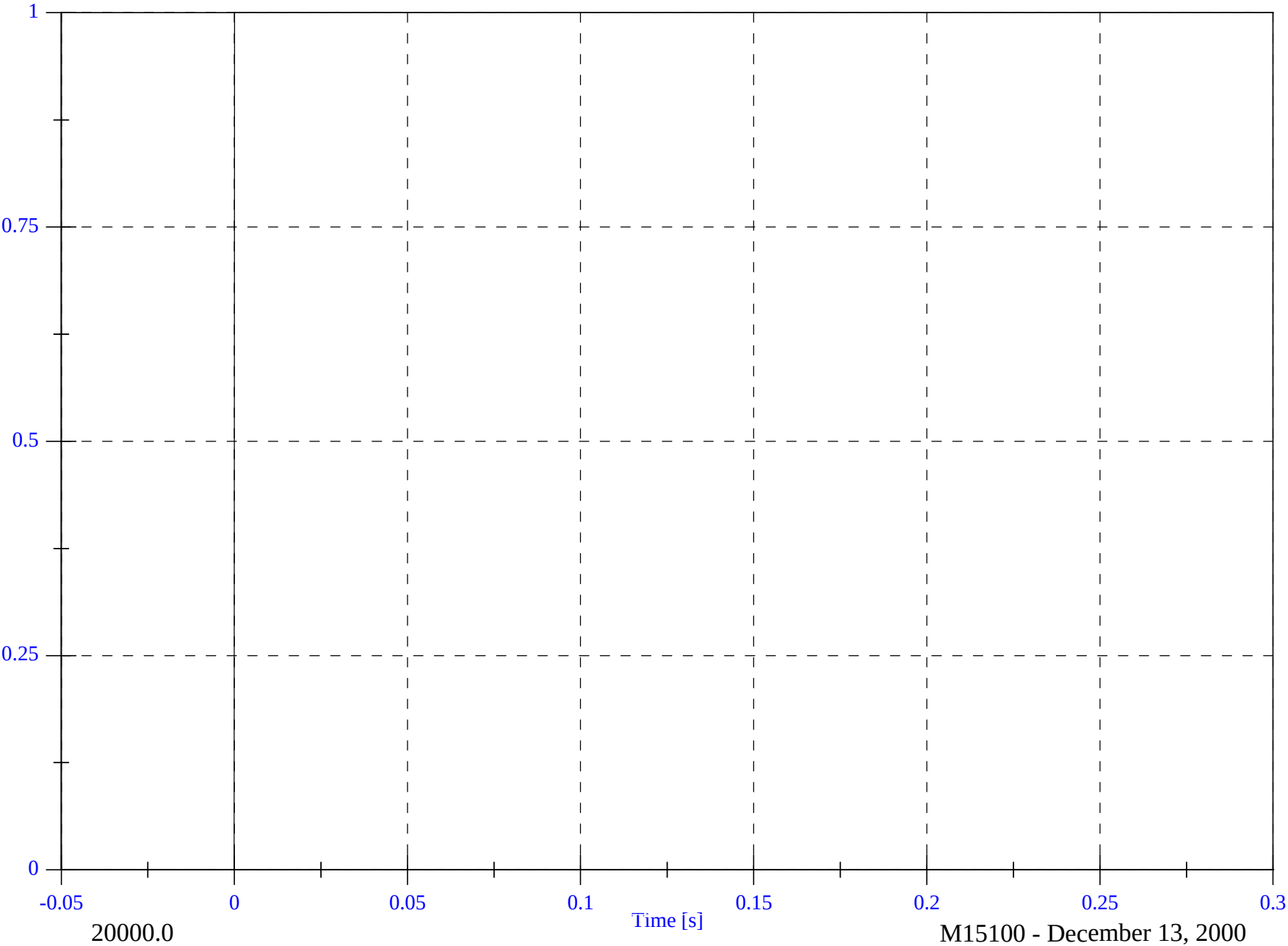
CFC_180

M15100 - December 13, 2000

Contact Time

B-127

8602-8

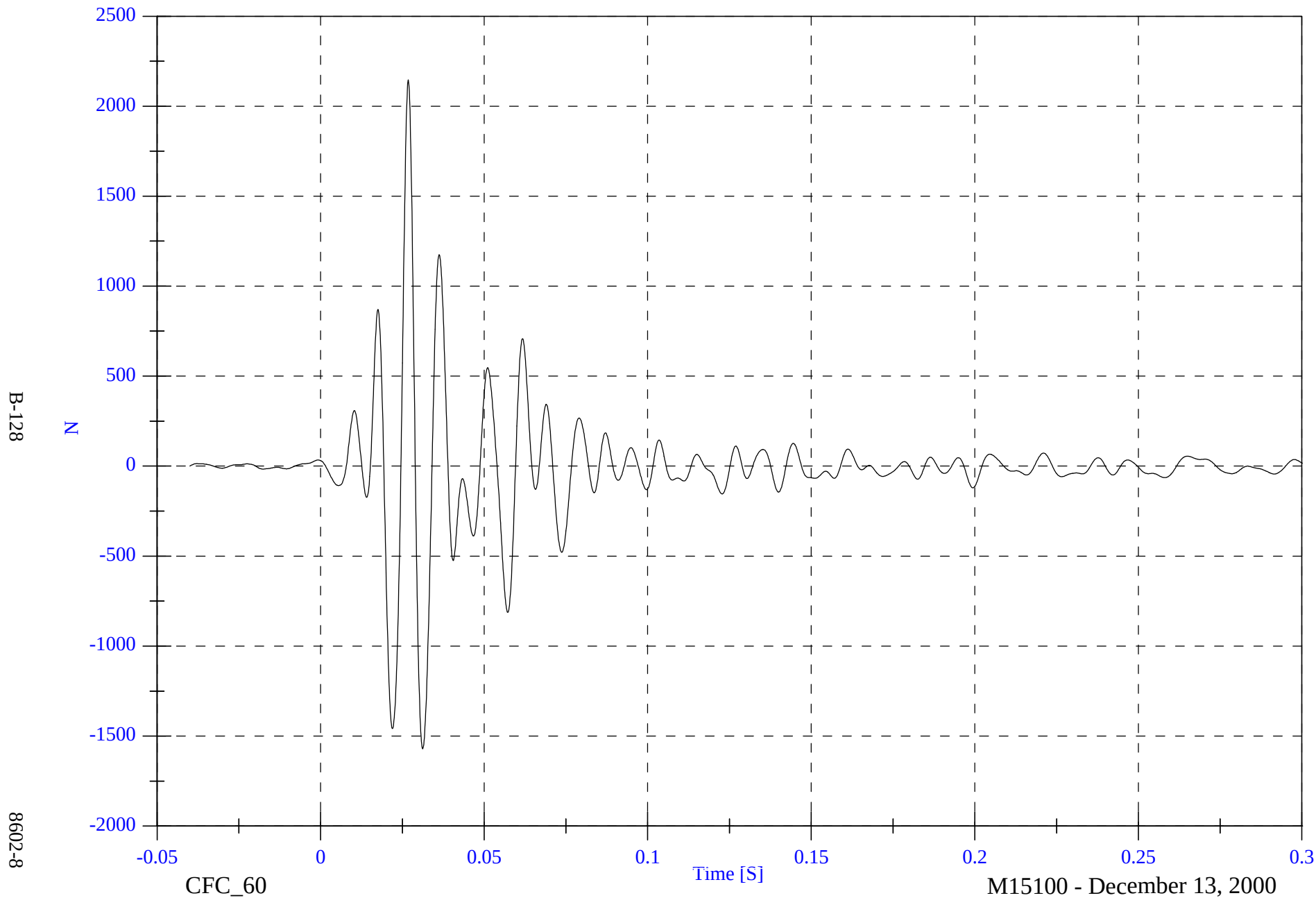


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell A1 Fx

Max: 2146.4 [N] at 0.027 [S]

Min: -1571.2 [N] at 0.031 [S]

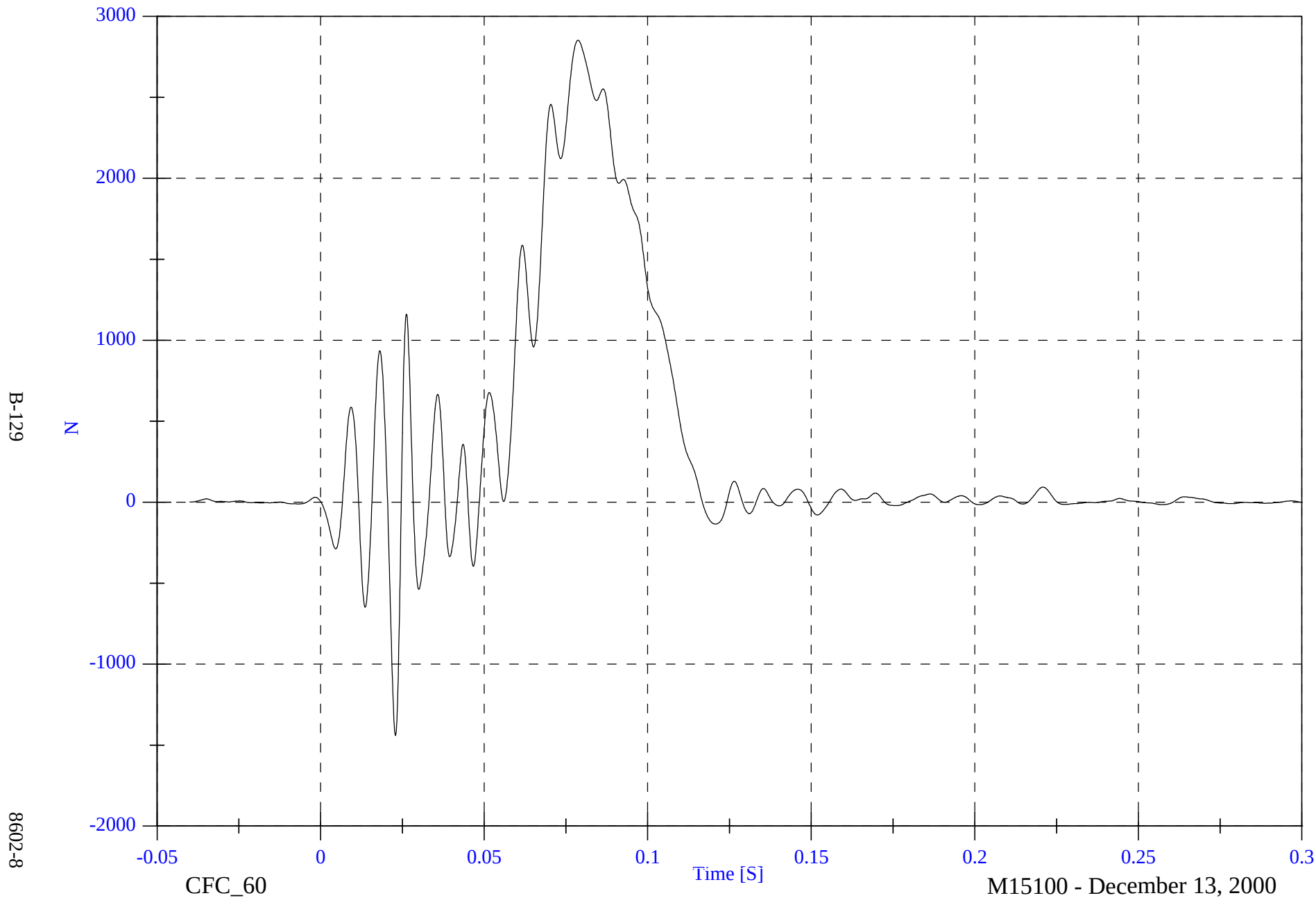


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell A2 Fx

Max: 2851.6 [N] at 0.079 [S]

Min: -1441.1 [N] at 0.023 [S]

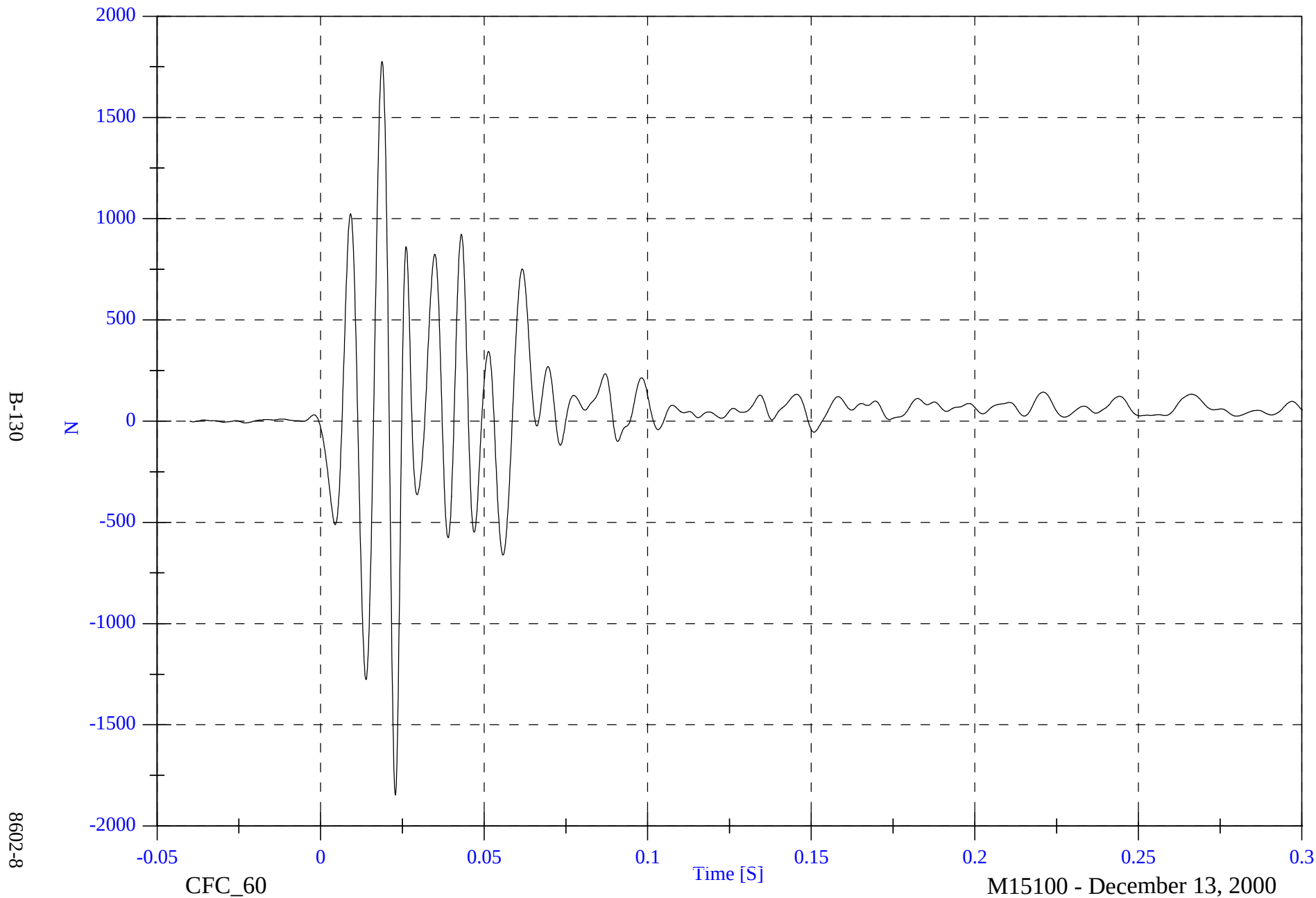


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell A3 Fx

Max: 1776.7 [N] at 0.019 [S]

Min: -1848.1 [N] at 0.023 [S]

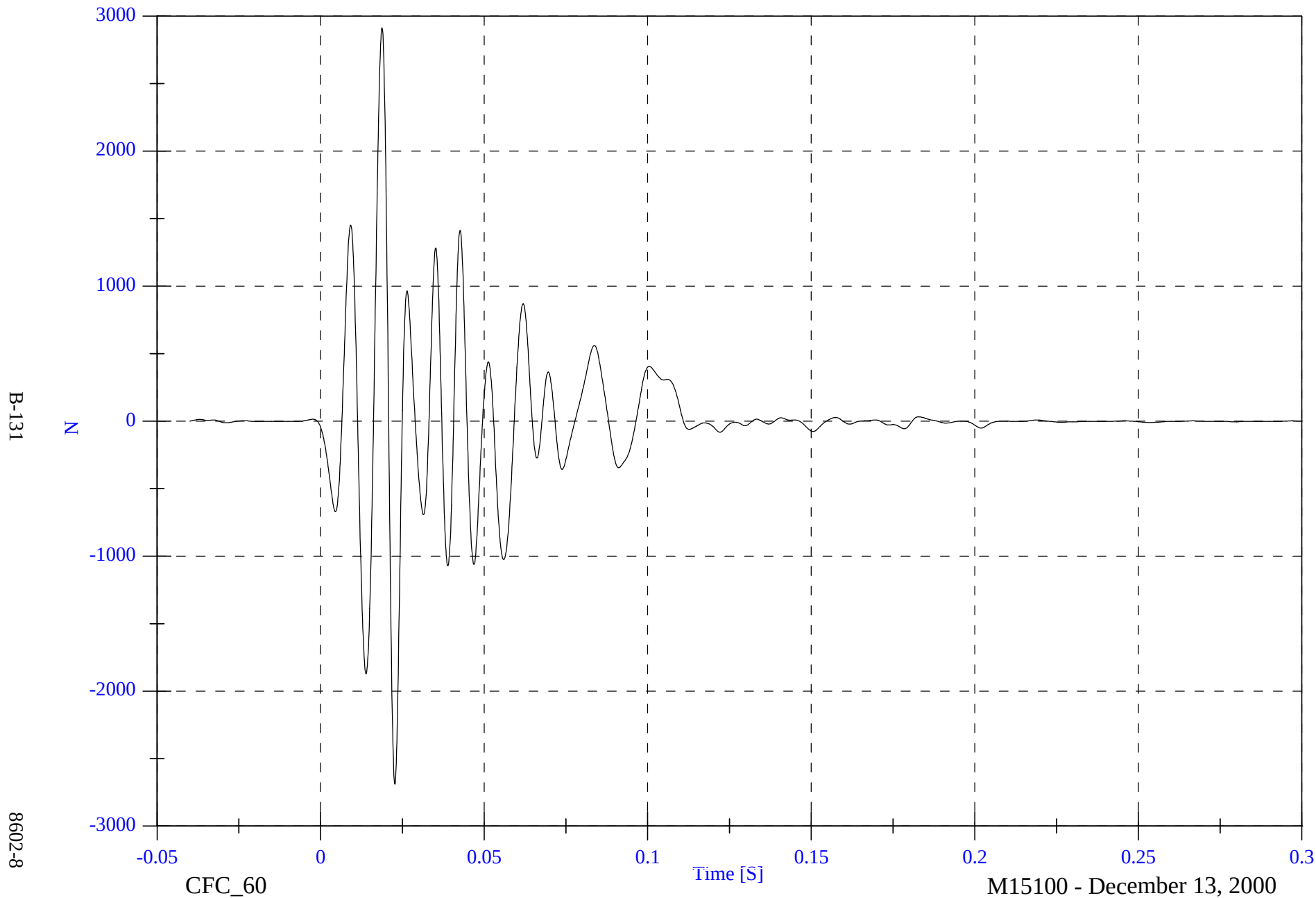


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell A4 Fx

Max: 2913.8 [N] at 0.019 [S]

Min: -2691.1 [N] at 0.023 [S]

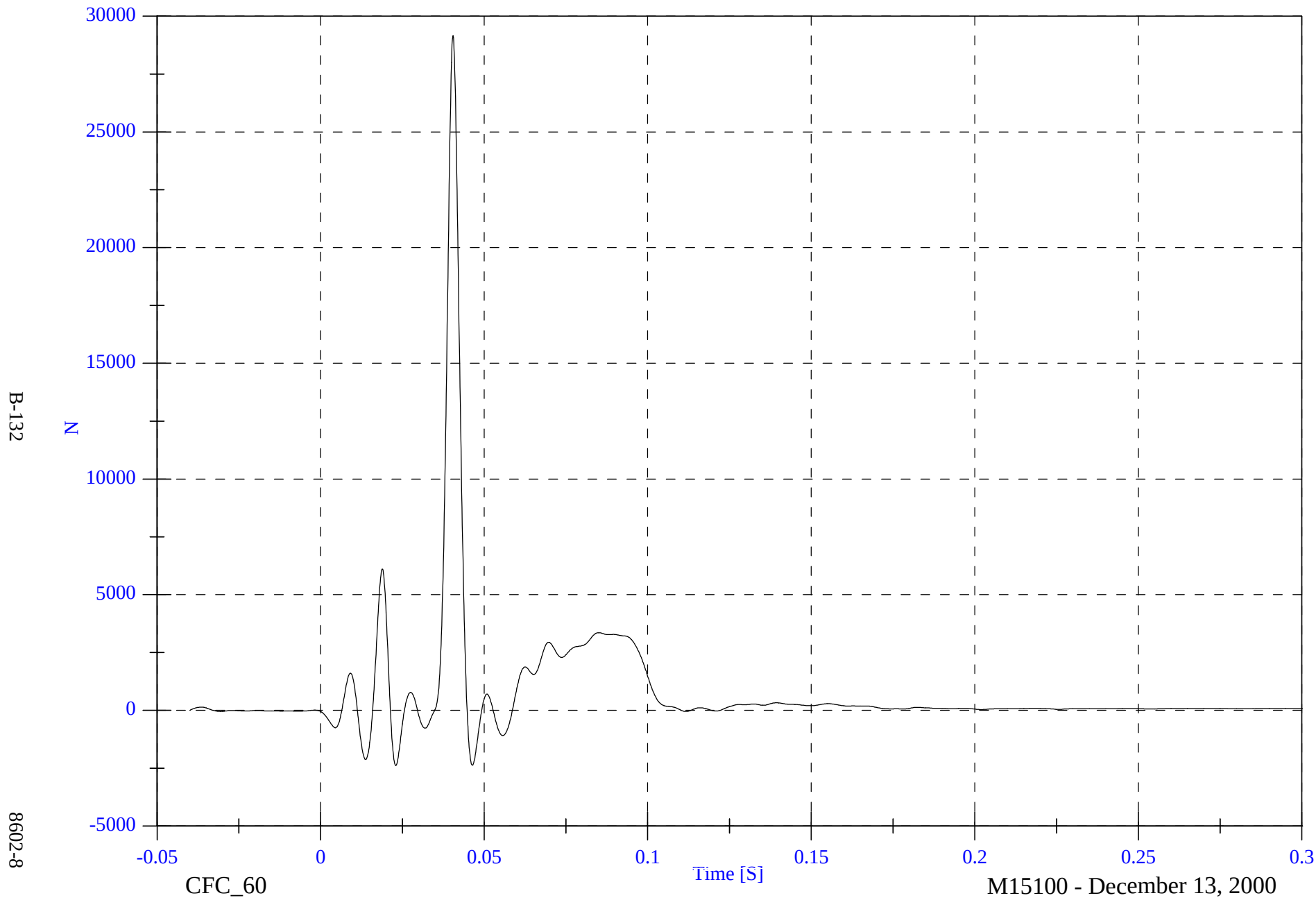


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell A5 Fx

Max: 29156.9 [N] at 0.040 [S]

Min: -2383.8 [N] at 0.023 [S]

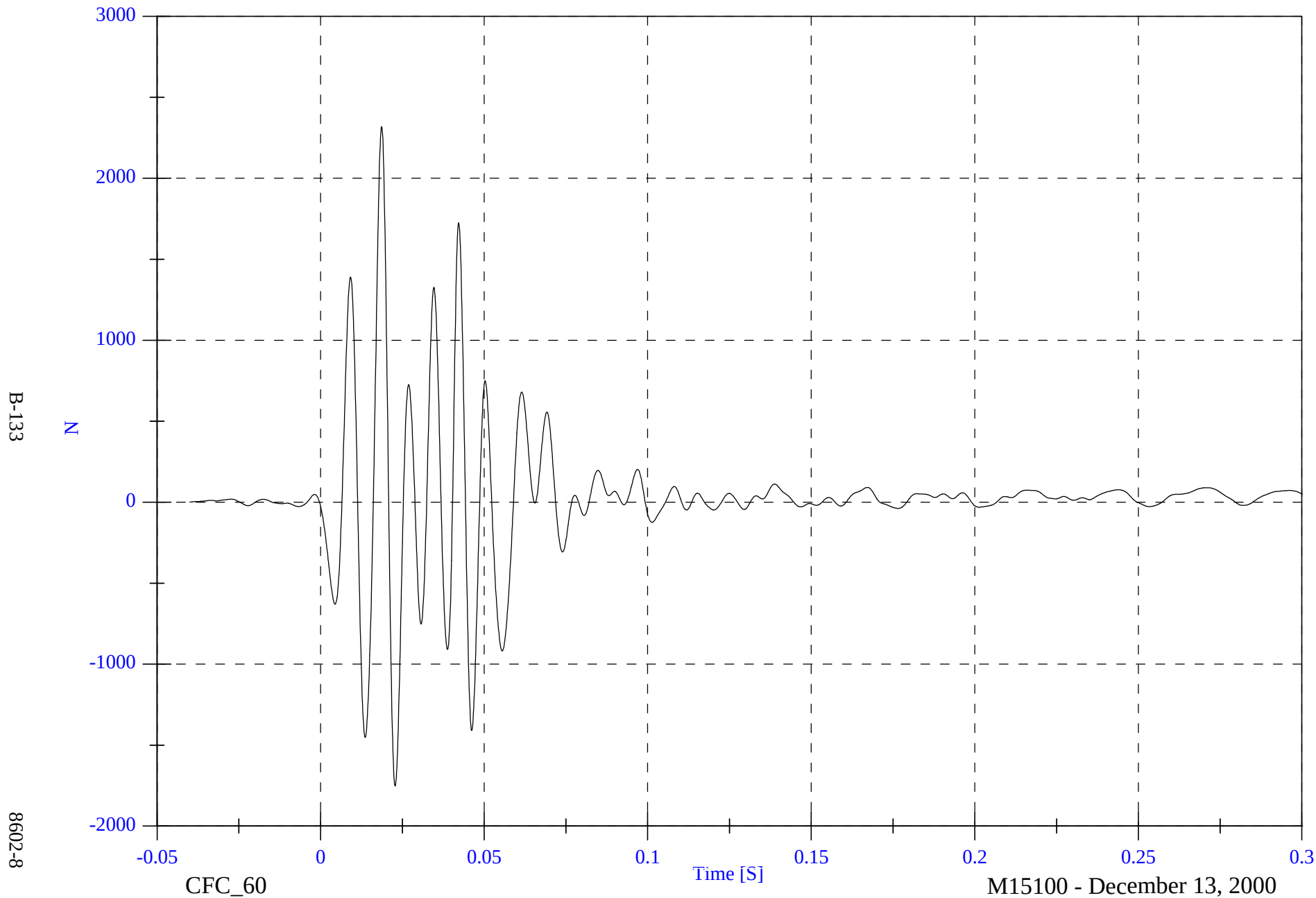


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell A6 Fx

Max: 2318.8 [N] at 0.019 [S]

Min: -1753.0 [N] at 0.023 [S]

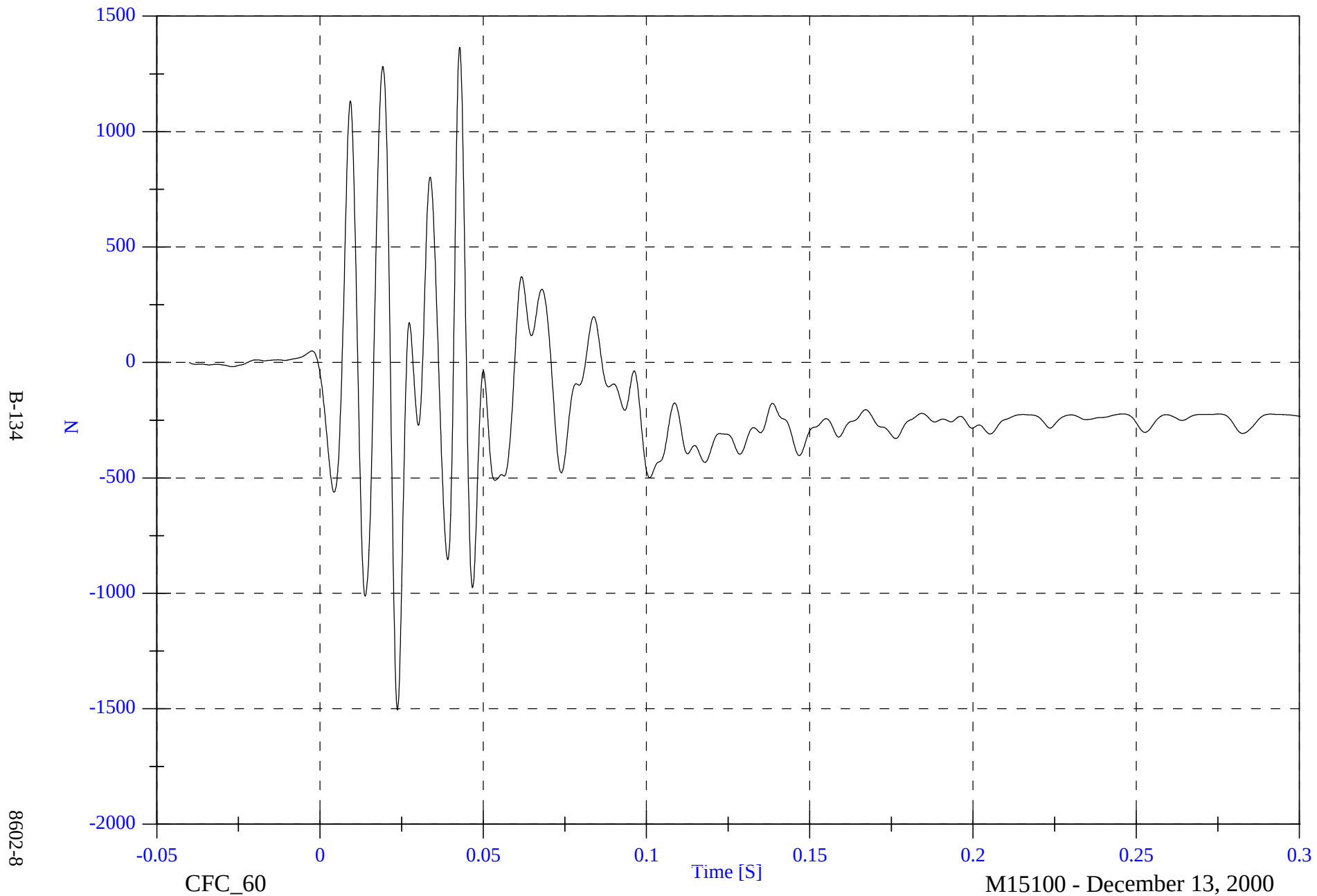


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell A7 Fx

Max: 1365.6 [N] at 0.043 [S]

Min: -1505.6 [N] at 0.024 [S]

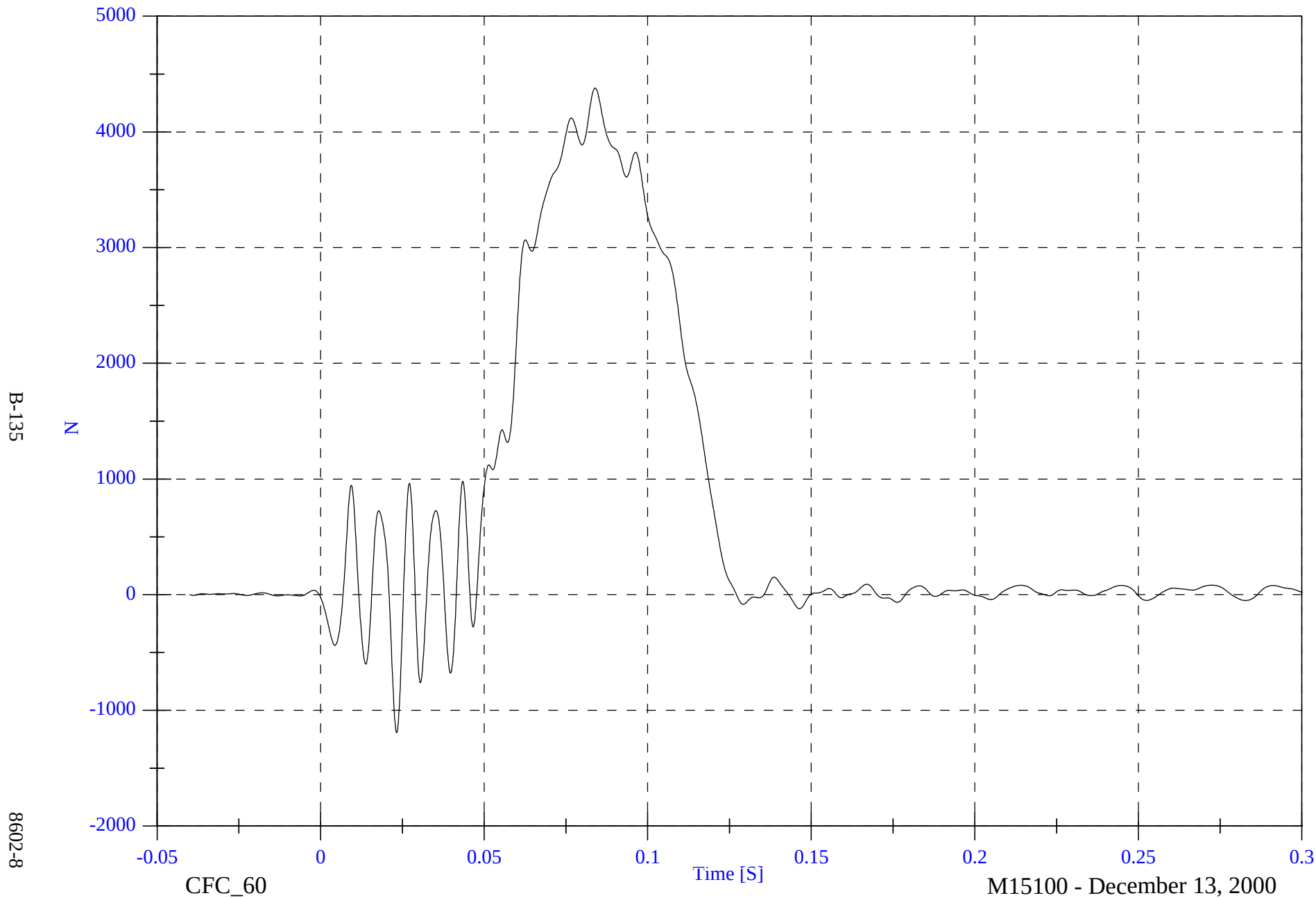


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell A8 Fx

Max: 4378.9 [N] at 0.084 [S]

Min: -1192.6 [N] at 0.023 [S]

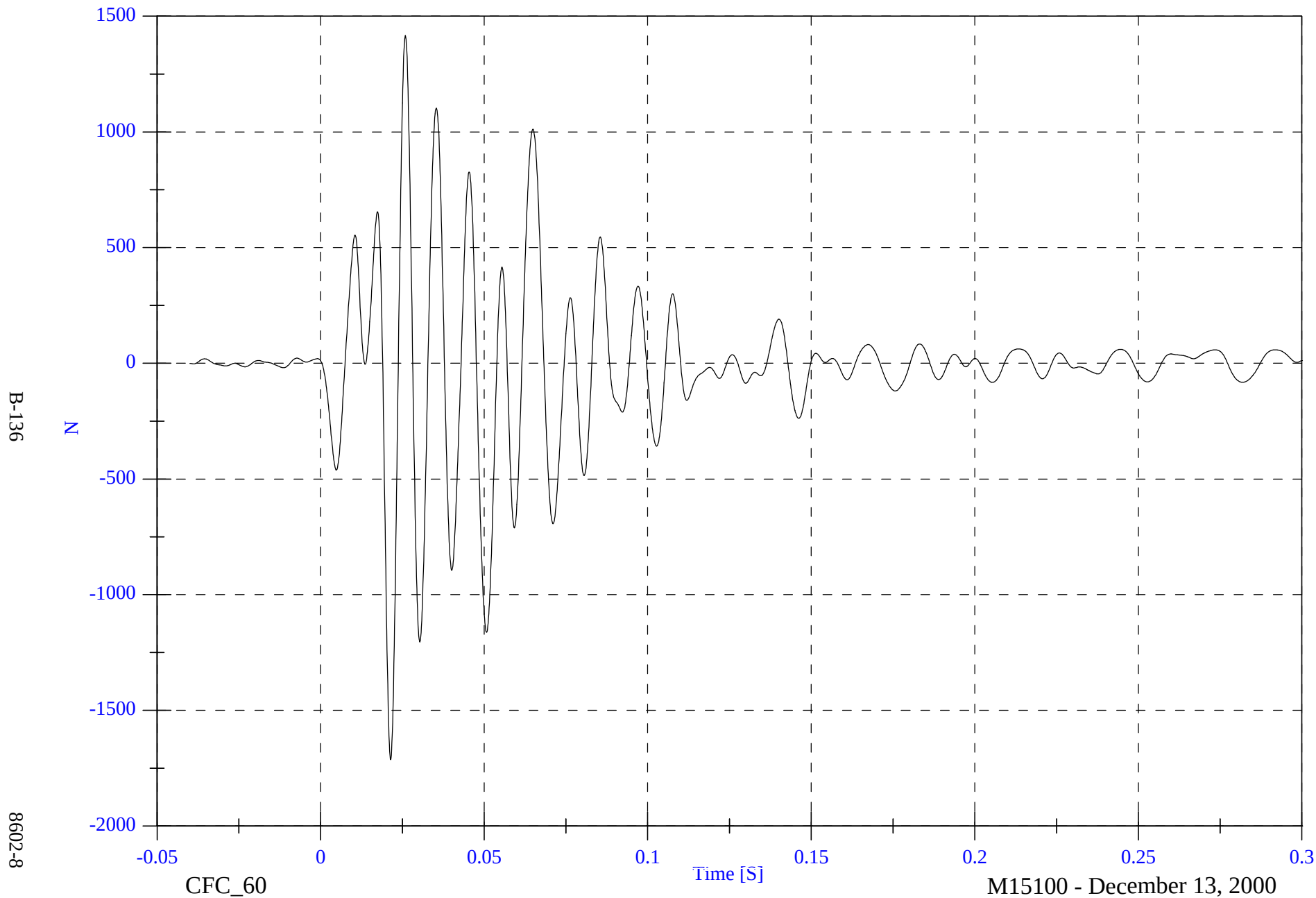


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell A9 Fx

Max: 1416.6 [N] at 0.026 [S]

Min: -1713.5 [N] at 0.021 [S]

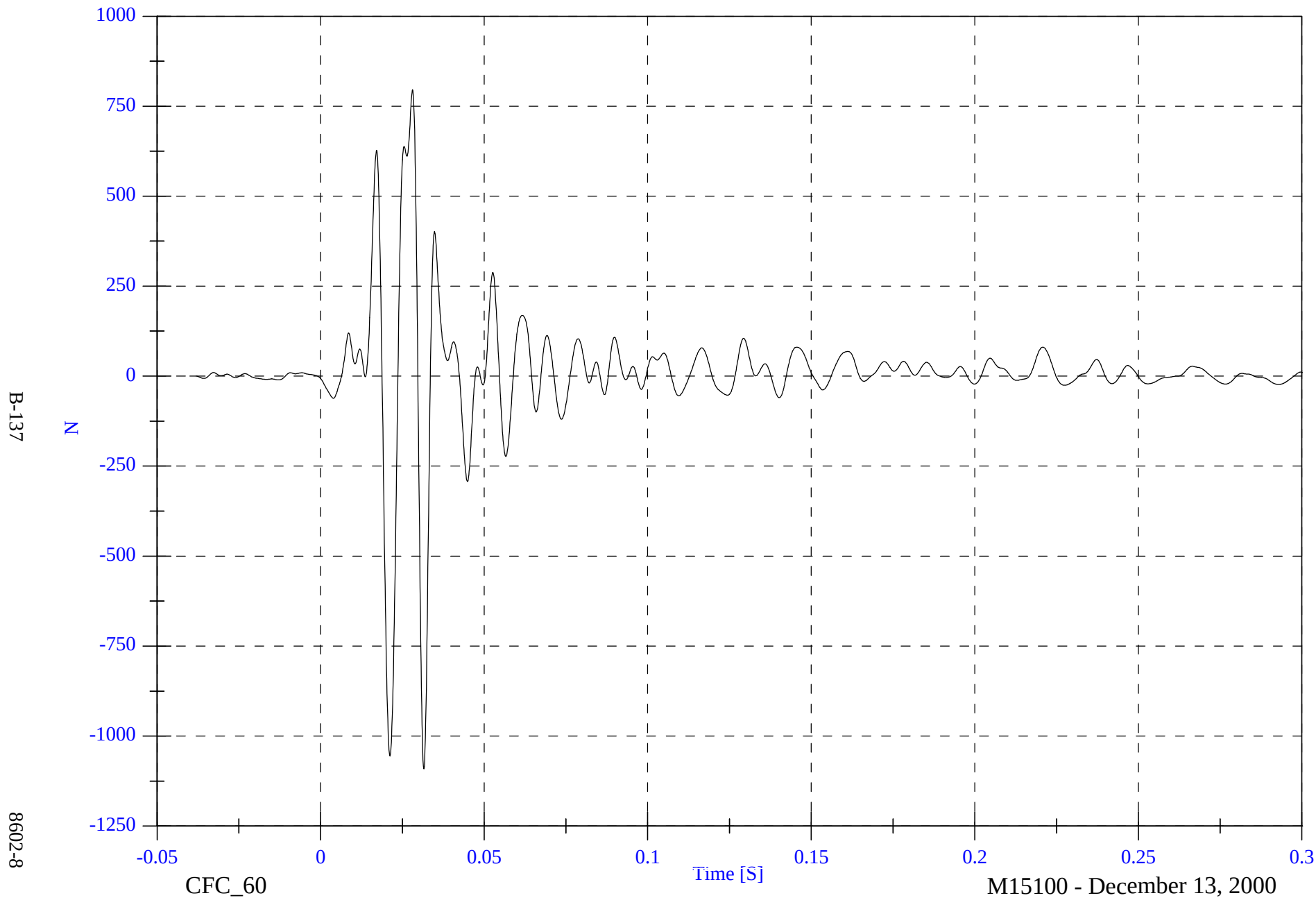


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell B1 Fx

Max: 795.8 [N] at 0.028 [S]

Min: -1091.7 [N] at 0.031 [S]

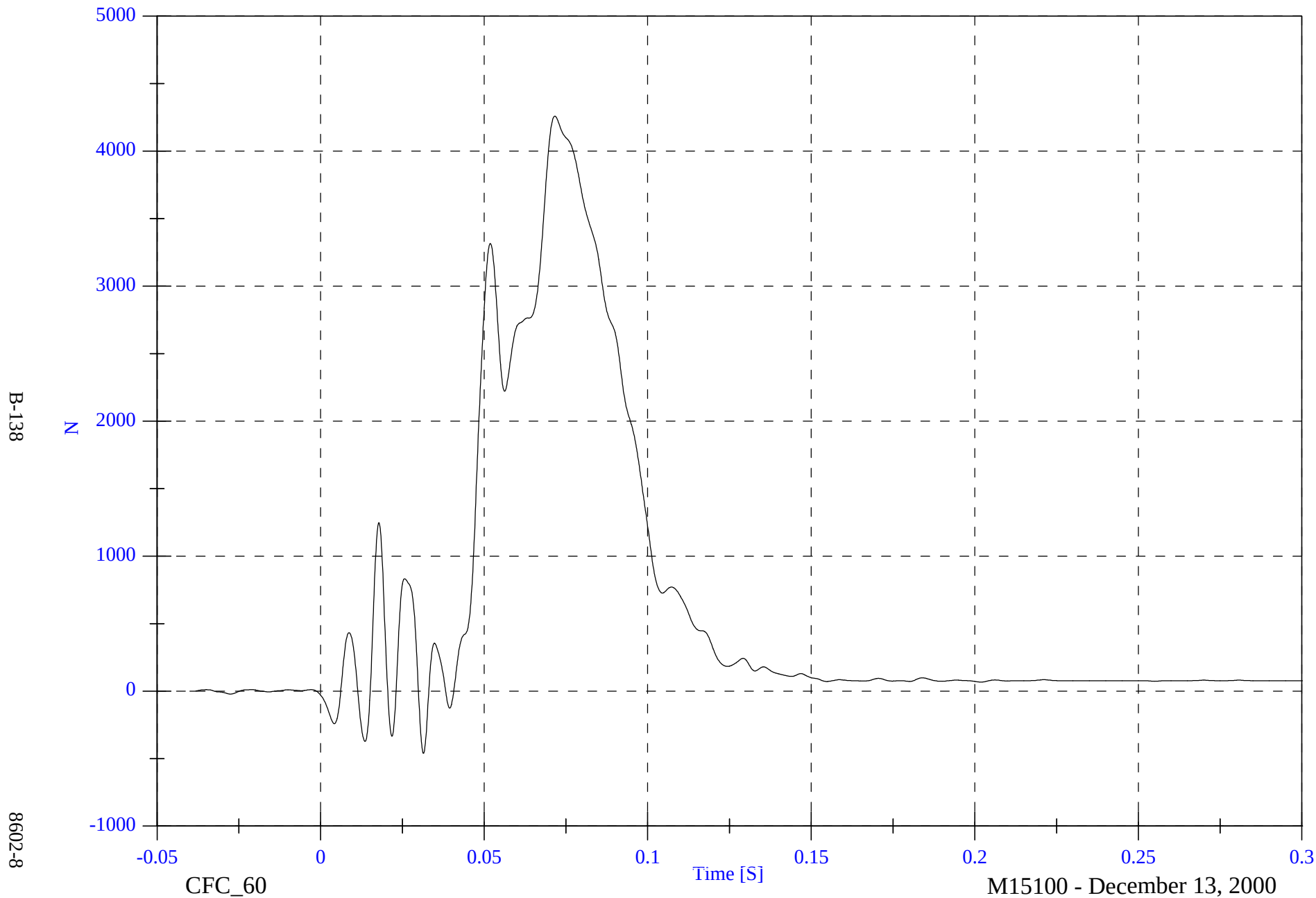


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell B2 Fx

Max: 4260.0 [N] at 0.072 [S]

Min: -460.8 [N] at 0.031 [S]

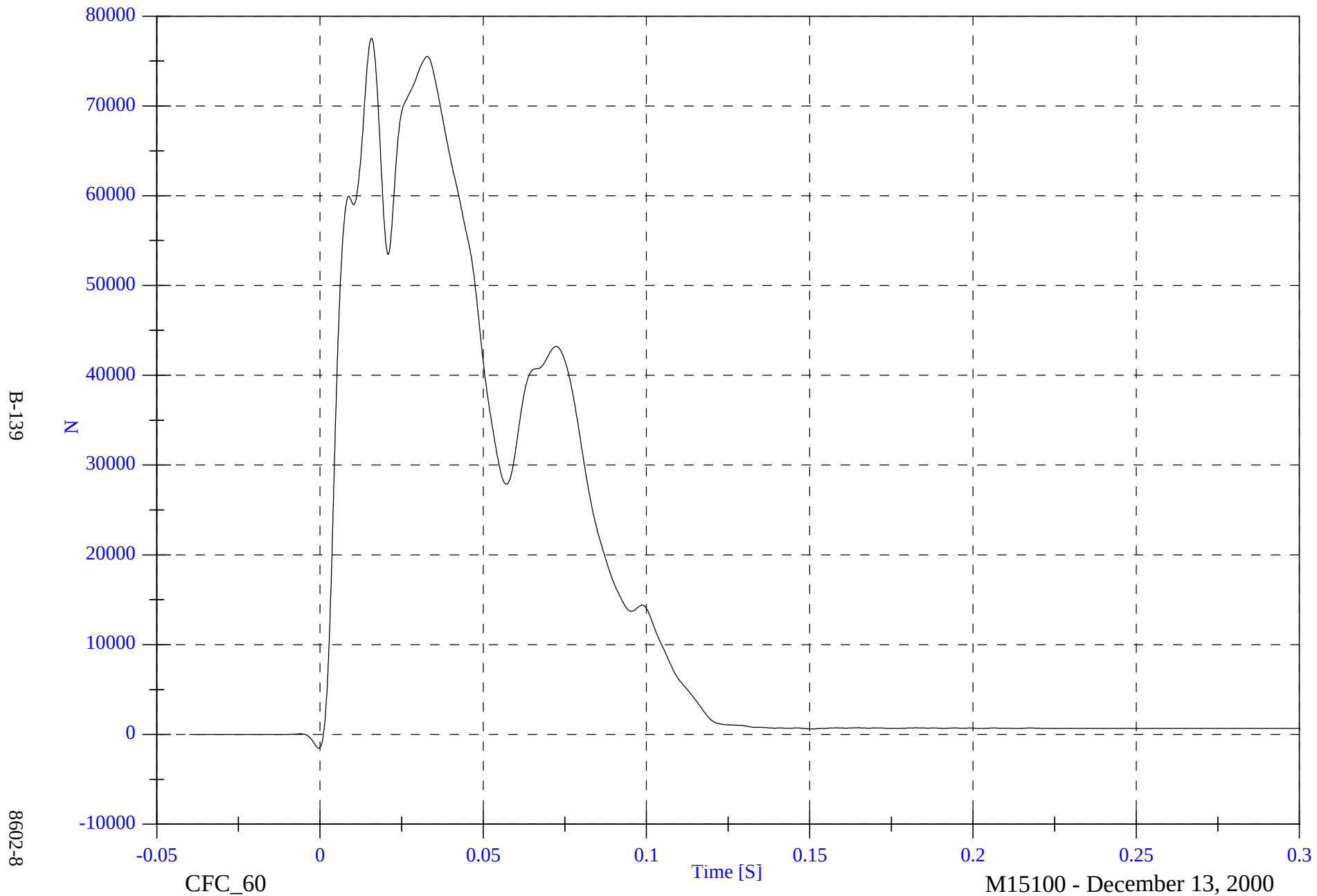


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell B3 Fx

Max: 77548.4 [N] at 0.016 [S]

Min: -1532.3 [N] at -0.000 [S]

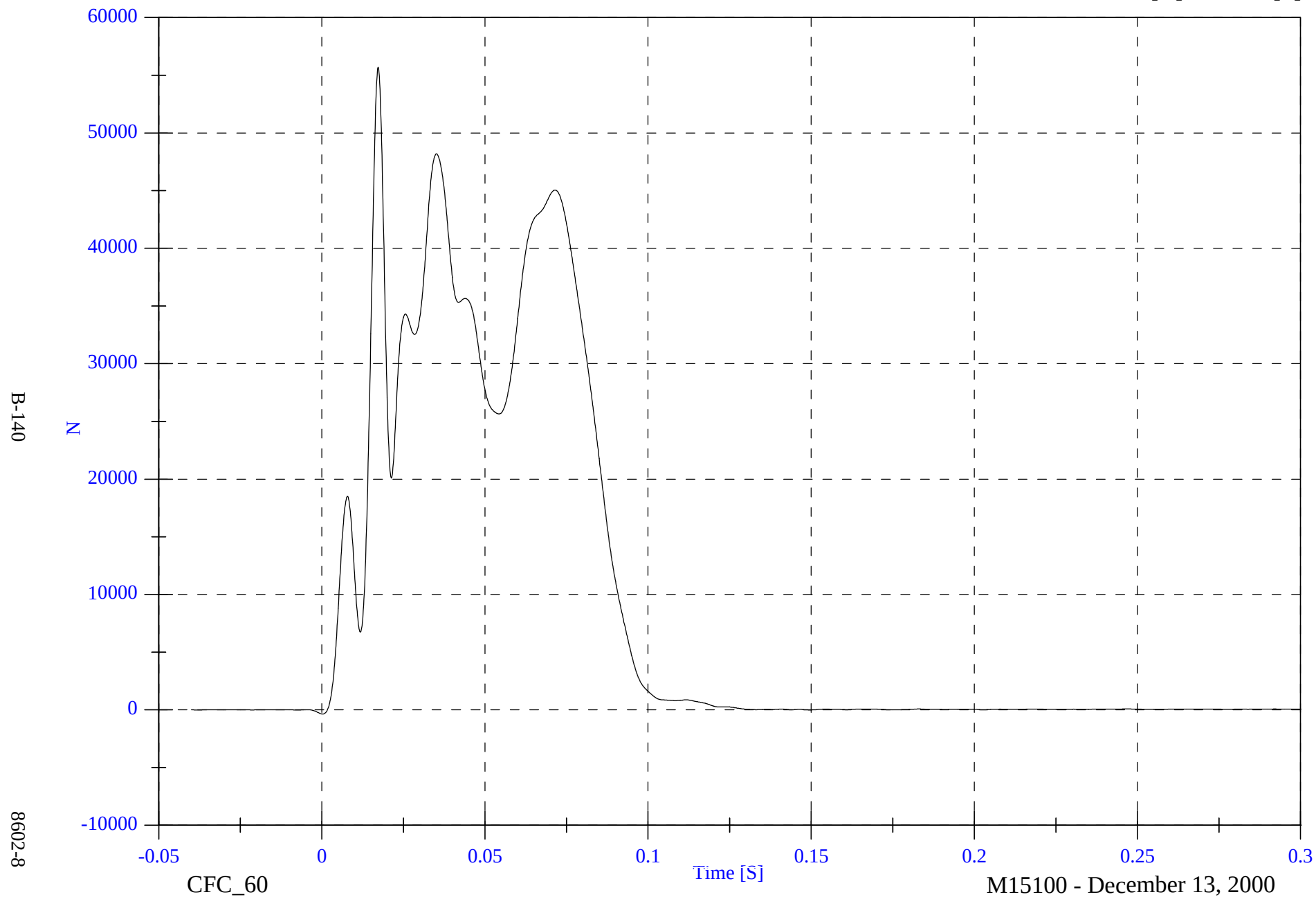


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell B4 Fx

Max: 55697.0 [N] at 0.017 [S]

Min: -367.4 [N] at 0.000 [S]

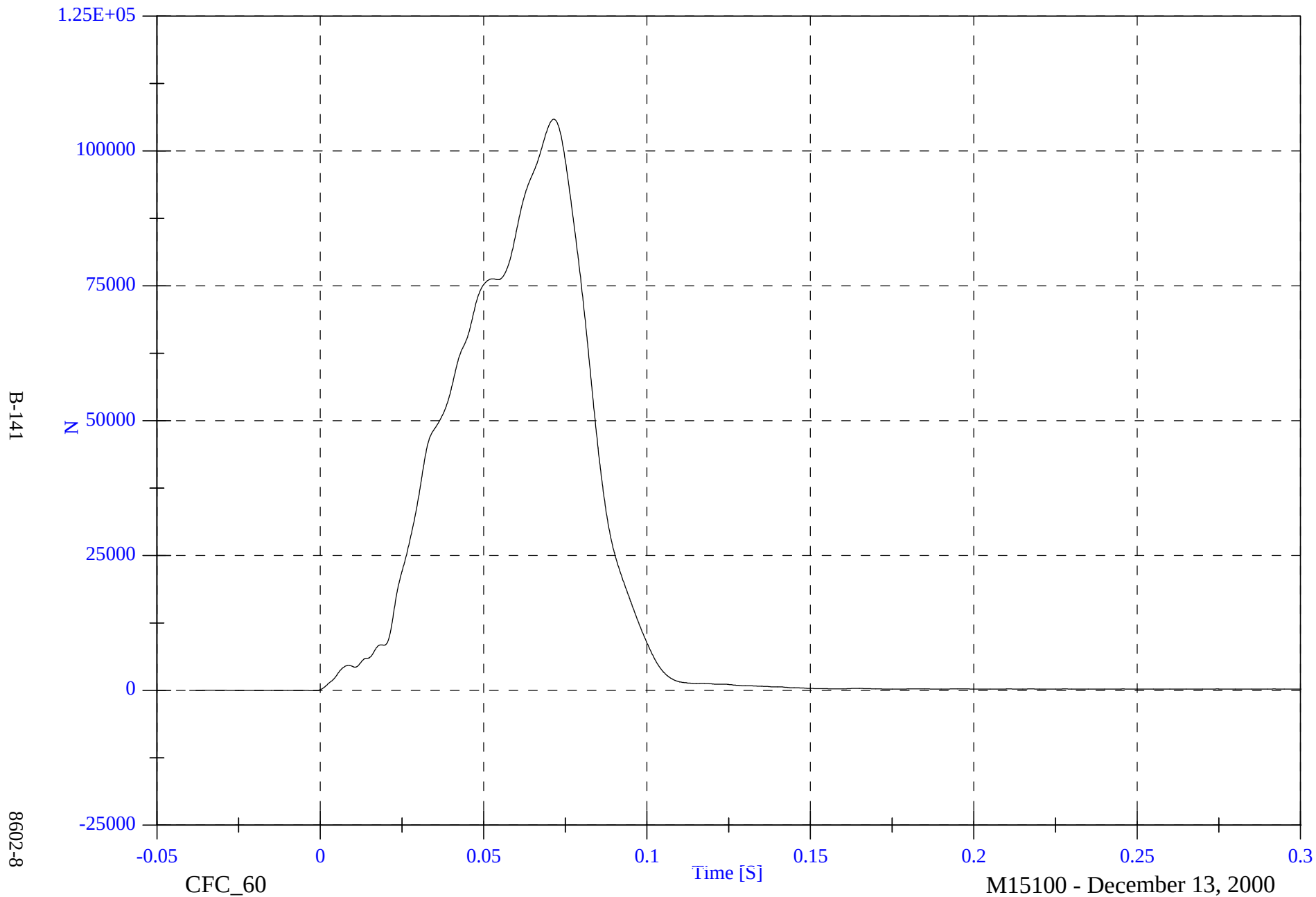


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell B5 Fx

Max: 105887.2 [N] at 0.071 [S]

Min: -69.0 [N] at -0.002 [S]

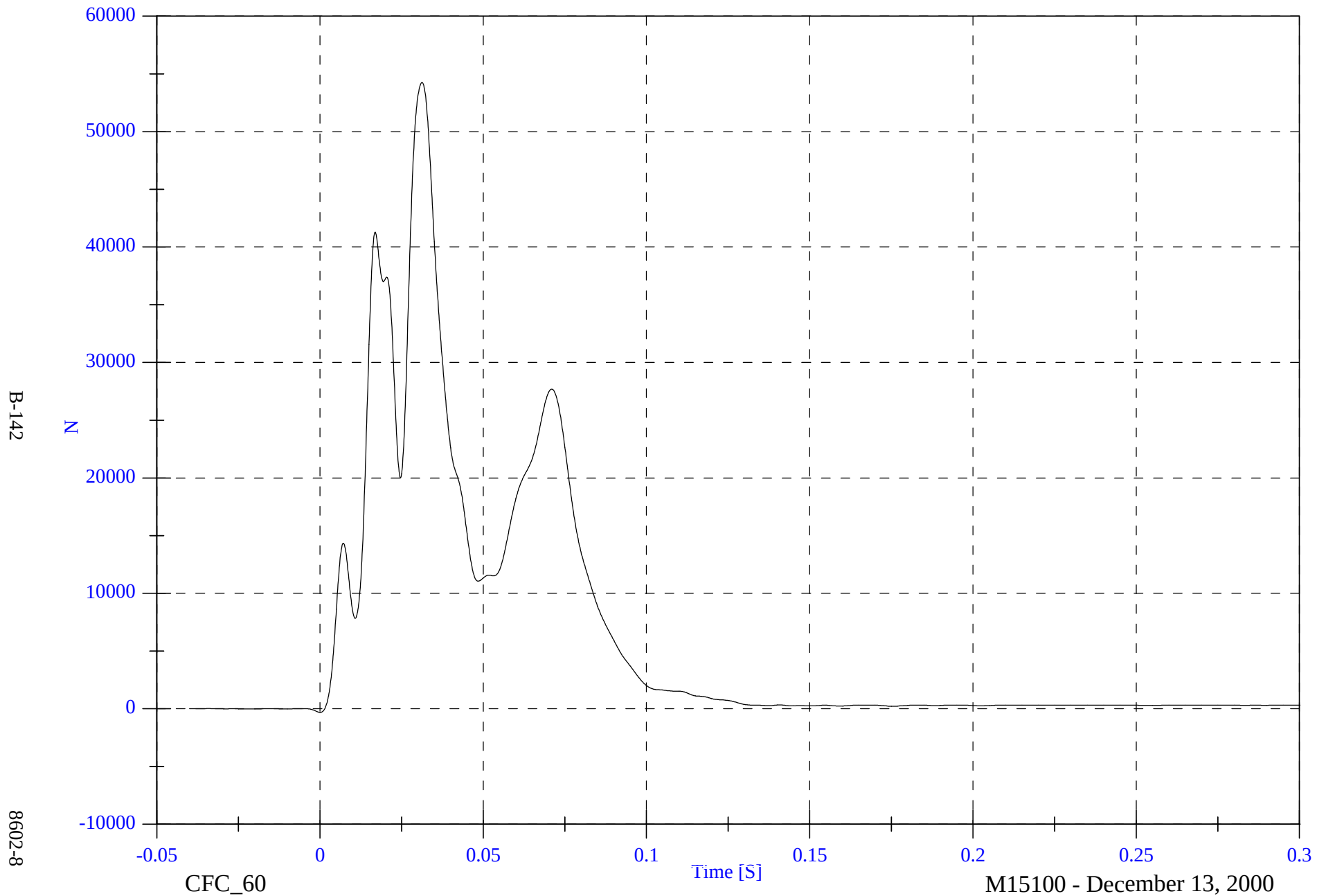


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell B6 Fx

Max: 54254.5 [N] at 0.031 [S]

Min: -314.1 [N] at -0.000 [S]

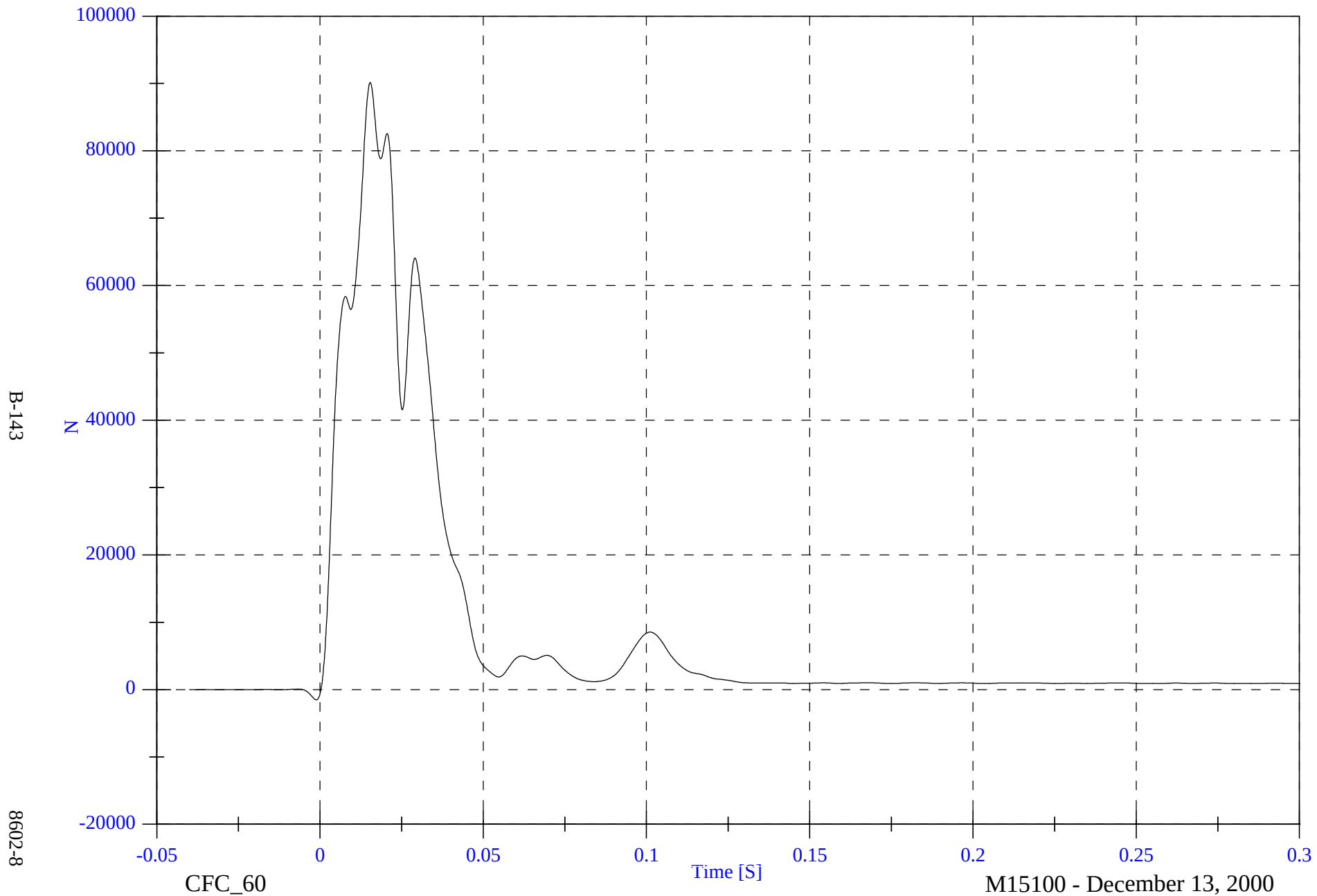


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell B7 Fx

Max: 90133.0 [N] at 0.015 [S]

Min: -1527.0 [N] at -0.001 [S]

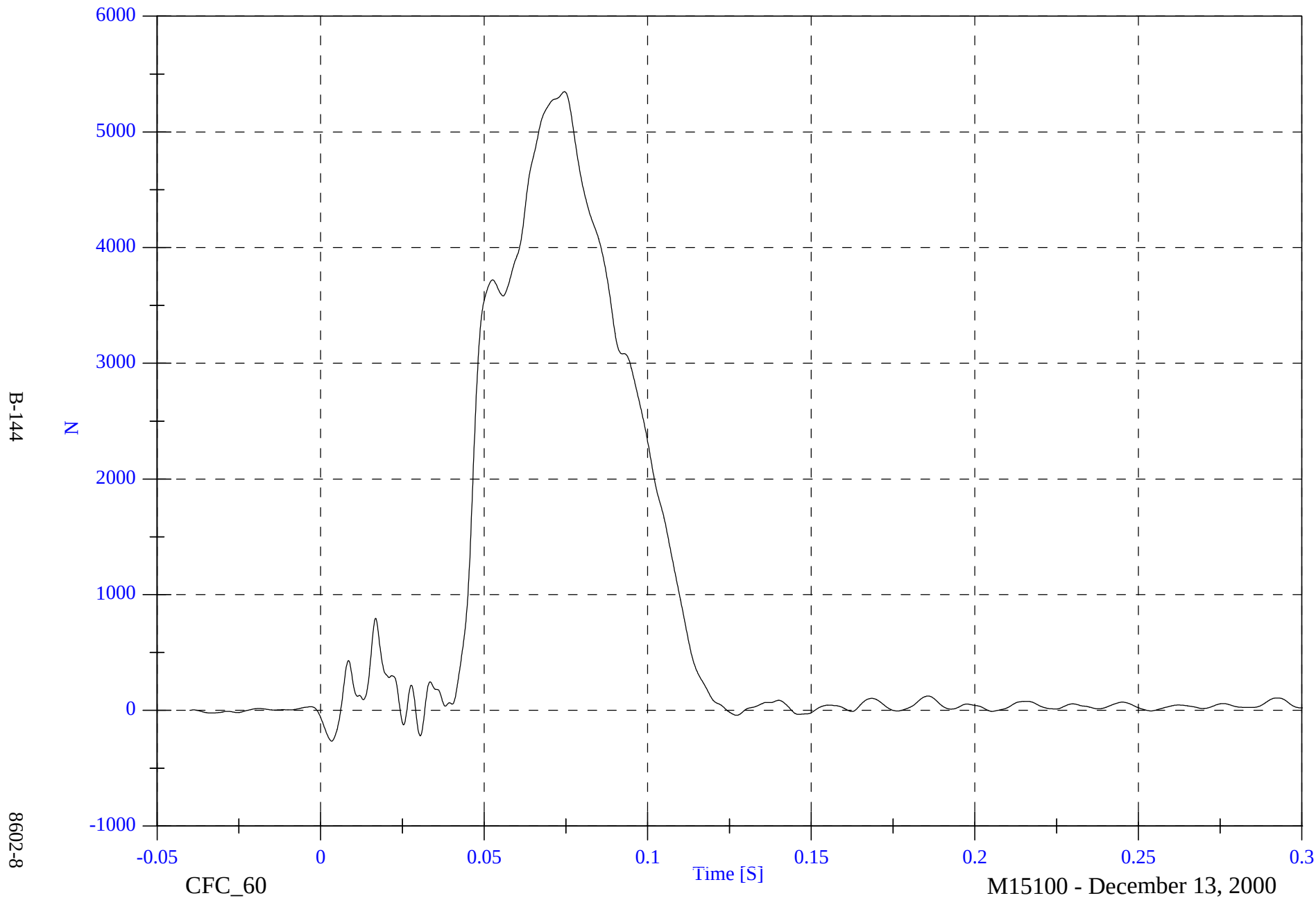


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell B8 Fx

Max: 5347.5 [N] at 0.074 [S]

Min: -265.6 [N] at 0.003 [S]

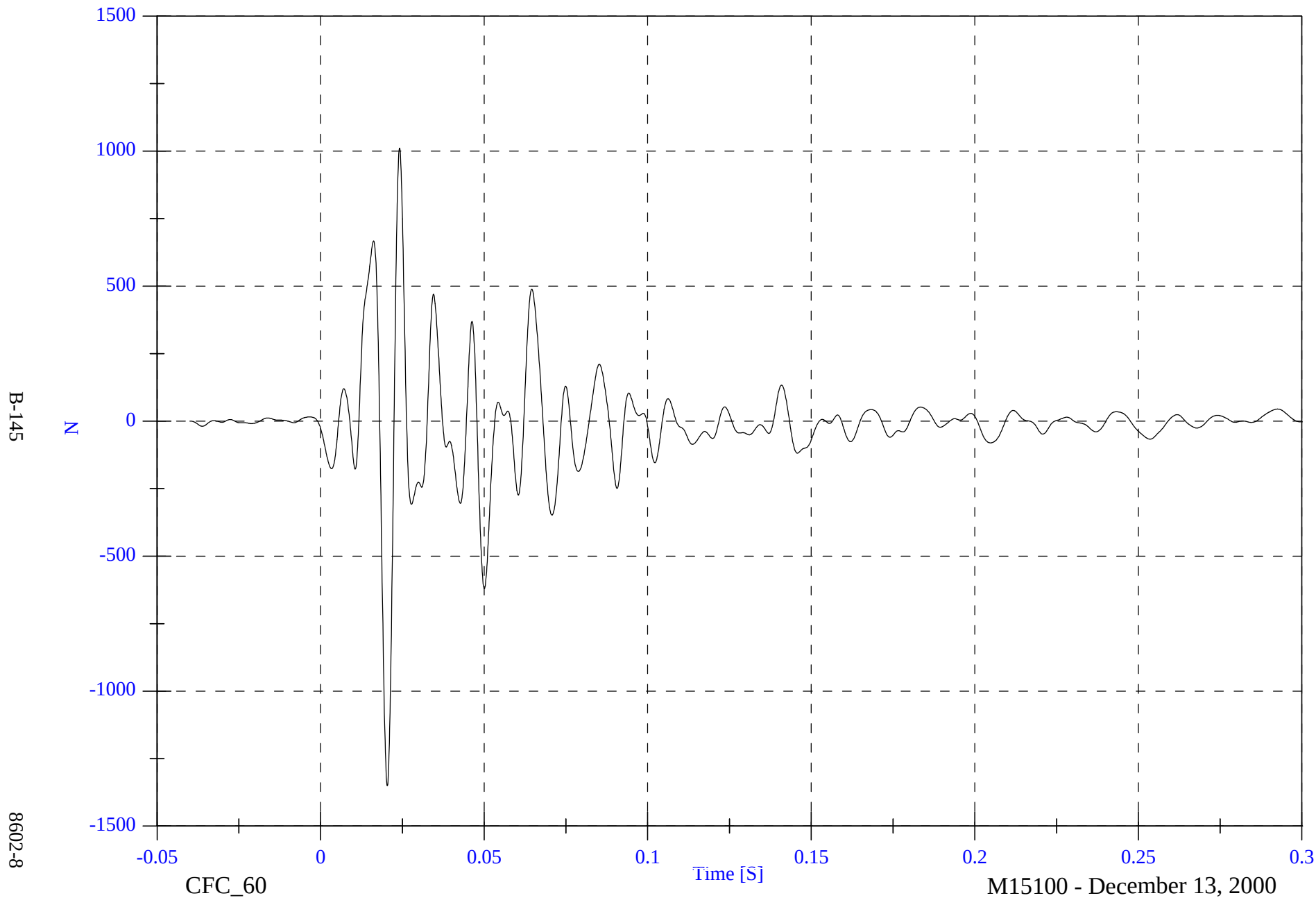


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell B9 Fx

Max: 1011.6 [N] at 0.024 [S]

Min: -1351.2 [N] at 0.020 [S]

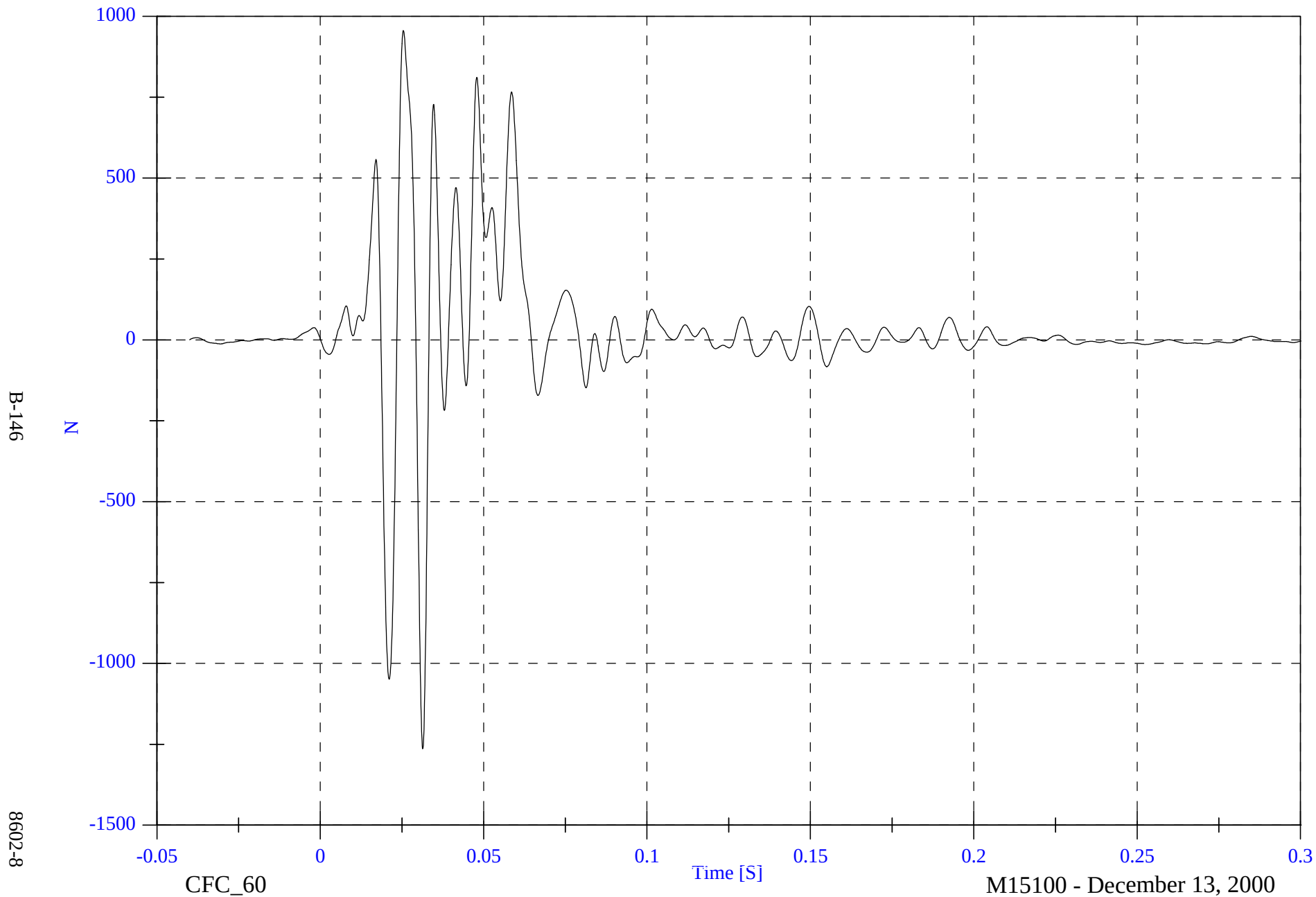


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell C1 Fx

Max: 956.0 [N] at 0.025 [S]

Min: -1264.2 [N] at 0.031 [S]

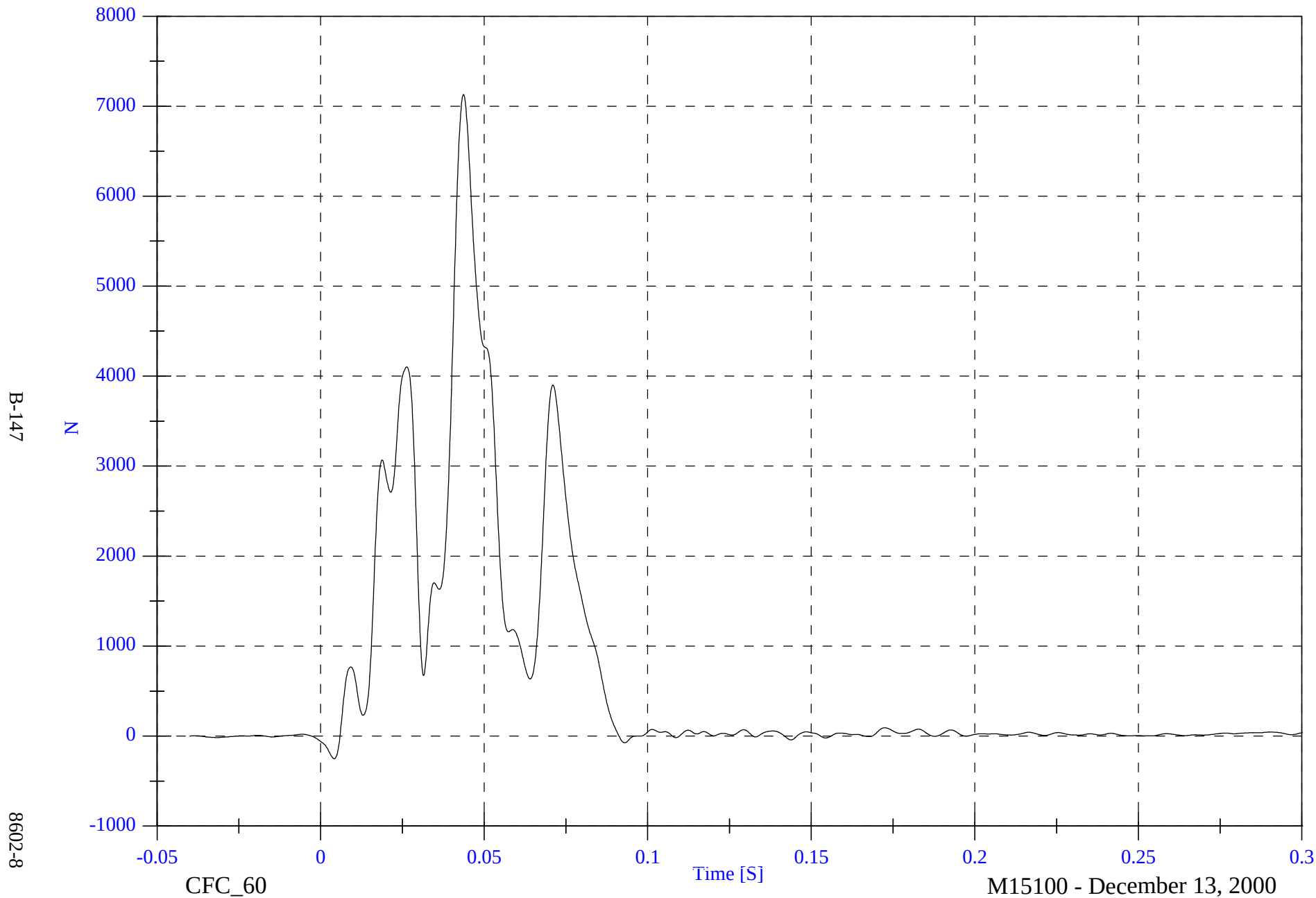


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell C2 Fx

Max: 7130.5 [N] at 0.044 [S]

Min: -252.2 [N] at 0.004 [S]

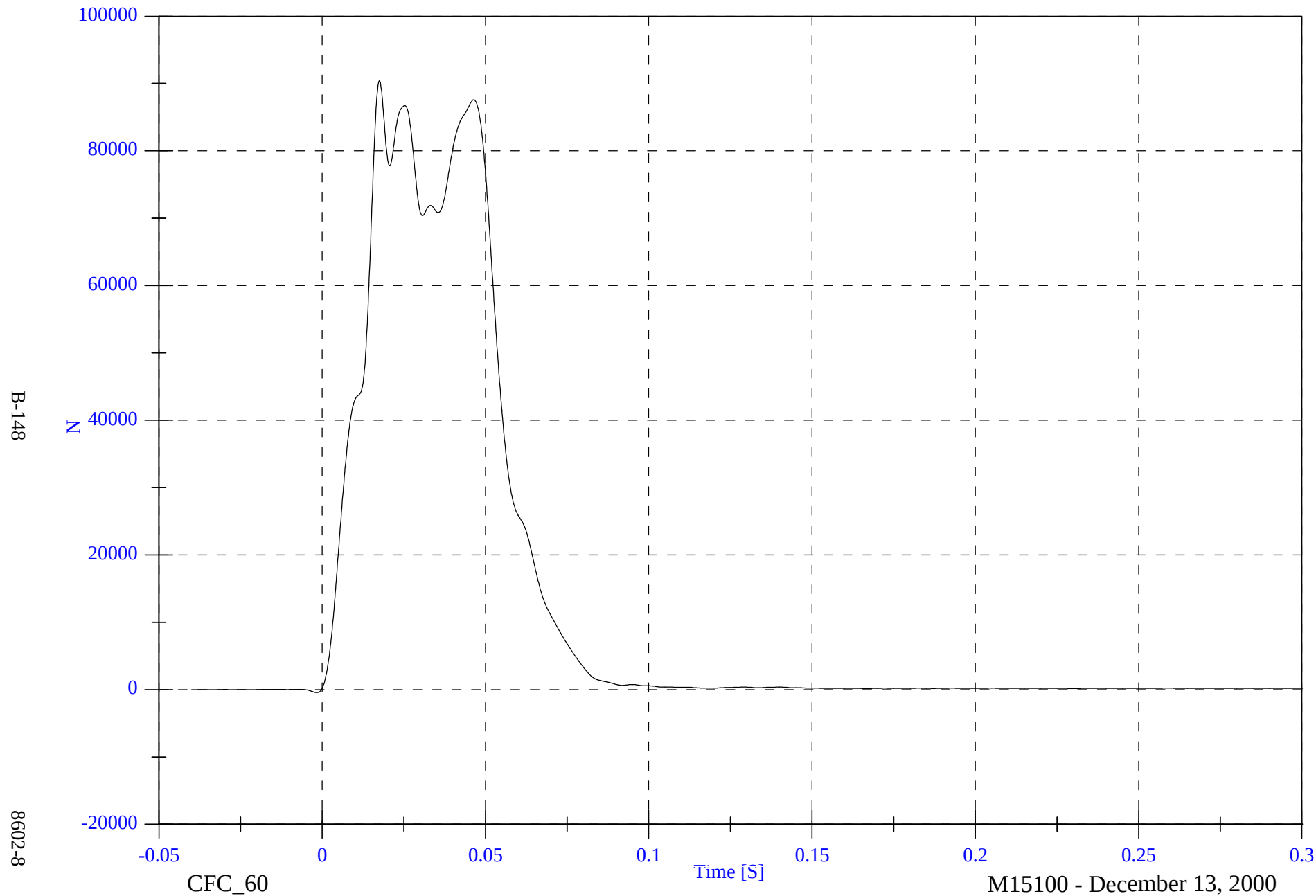


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell C3 Fx

Max: 90427.9 [N] at 0.017 [S]

Min: -456.6 [N] at -0.002 [S]

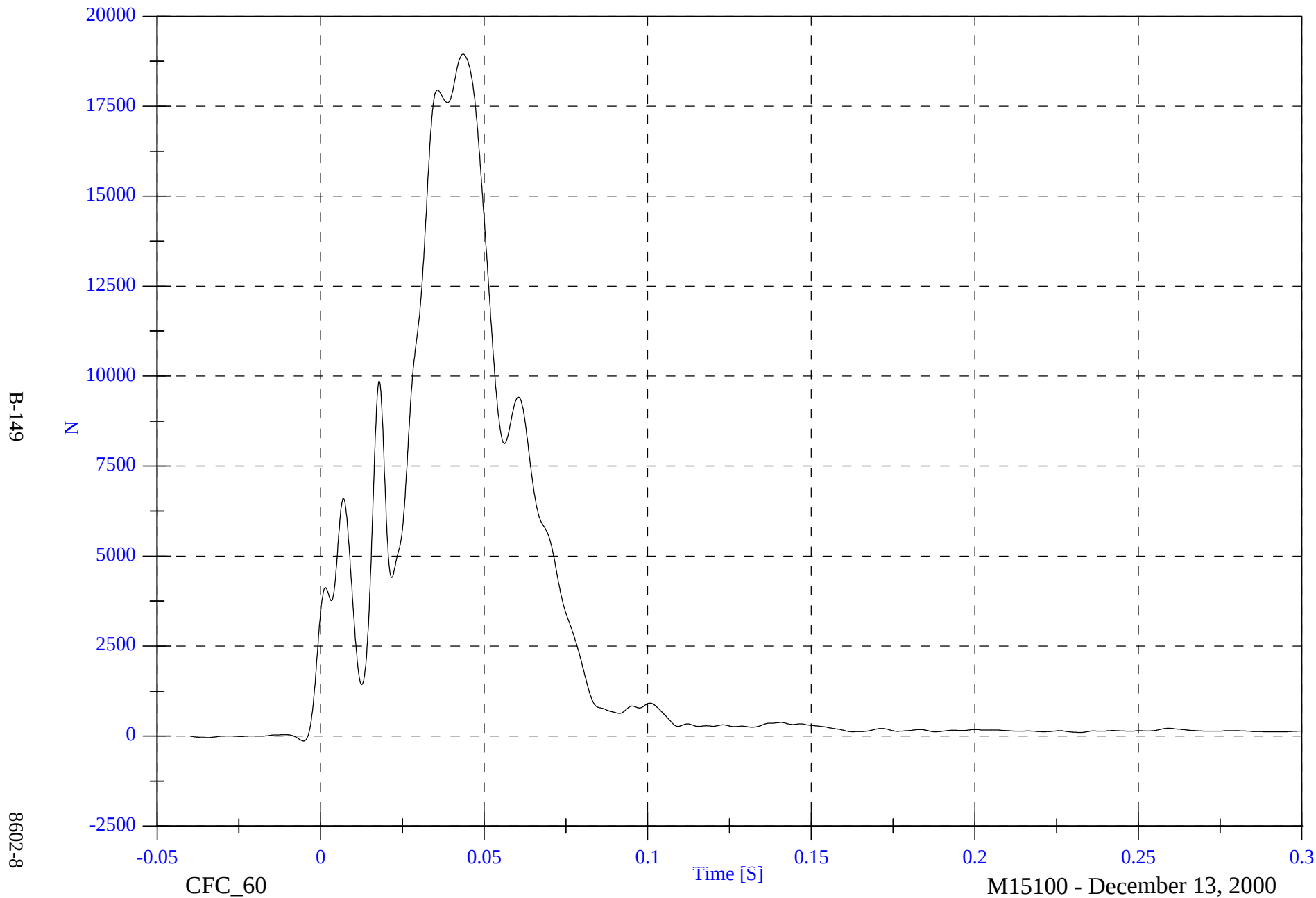


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell C4 Fx

Max: 18949.5 [N] at 0.044 [S]

Min: -137.5 [N] at -0.005 [S]

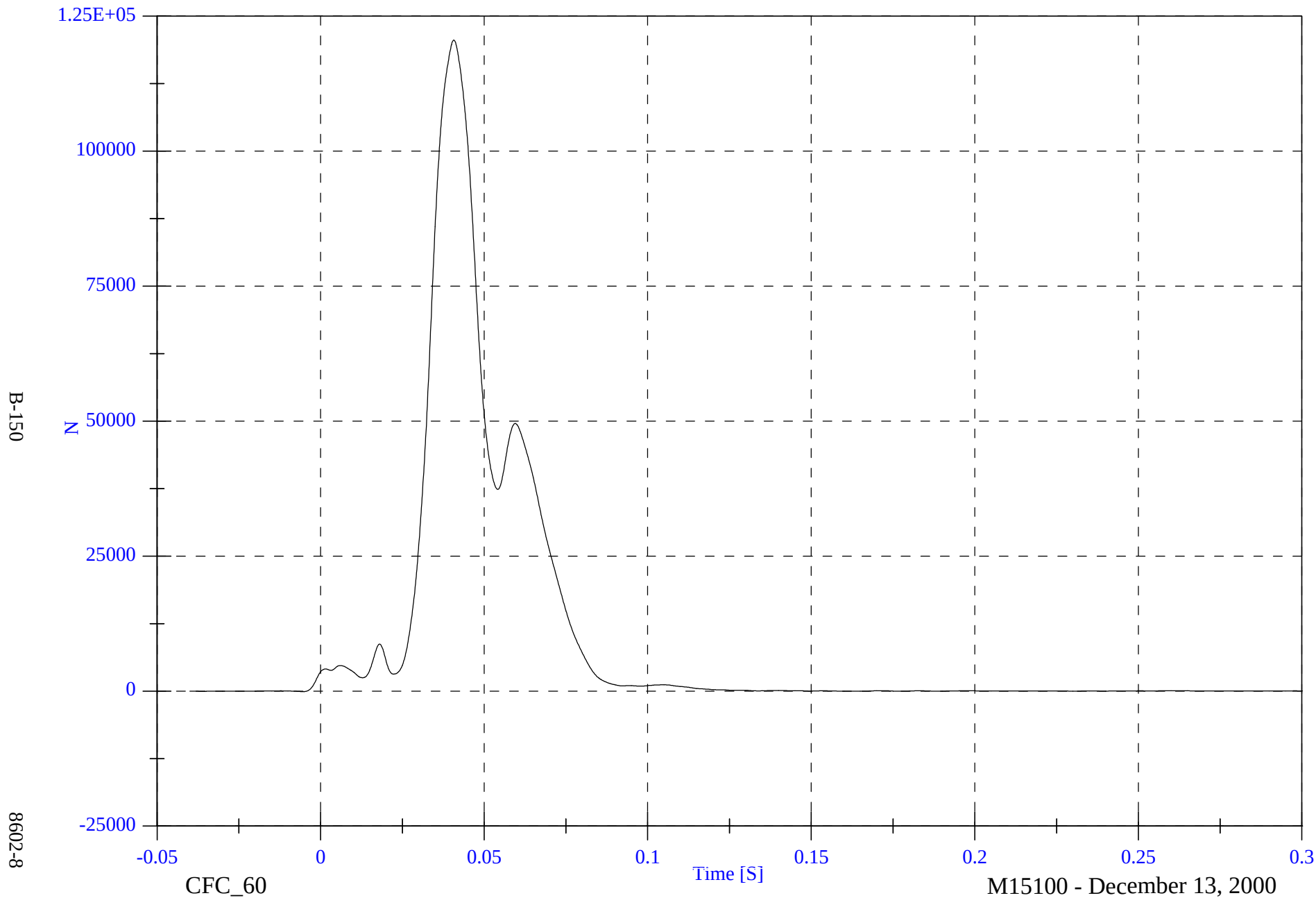


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell C5 Fx

Max: 120579.0 [N] at 0.041 [S]

Min: -116.4 [N] at -0.006 [S]

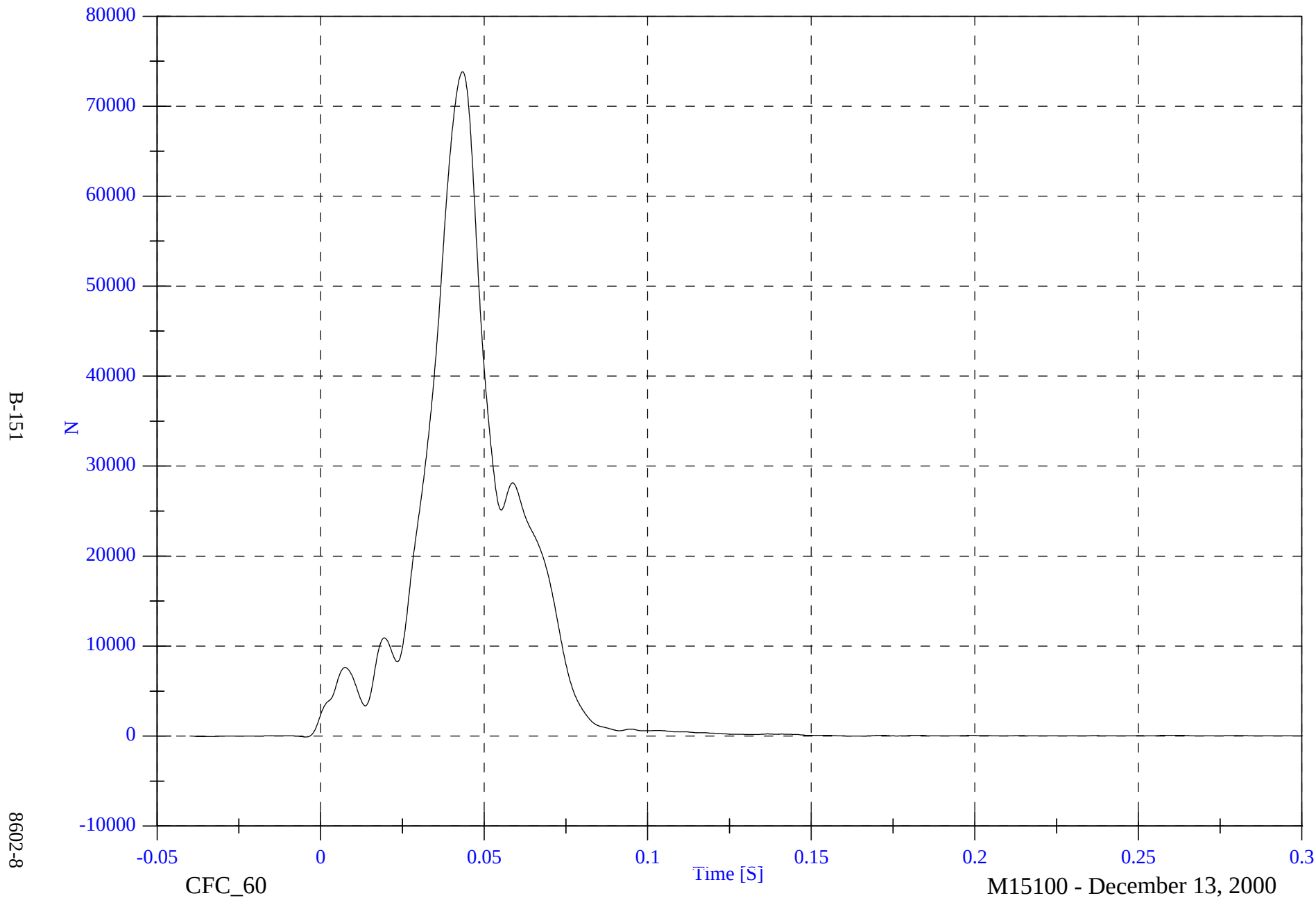


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell C6 Fx

Max: 73835.4 [N] at 0.043 [S]

Min: -98.8 [N] at -0.005 [S]

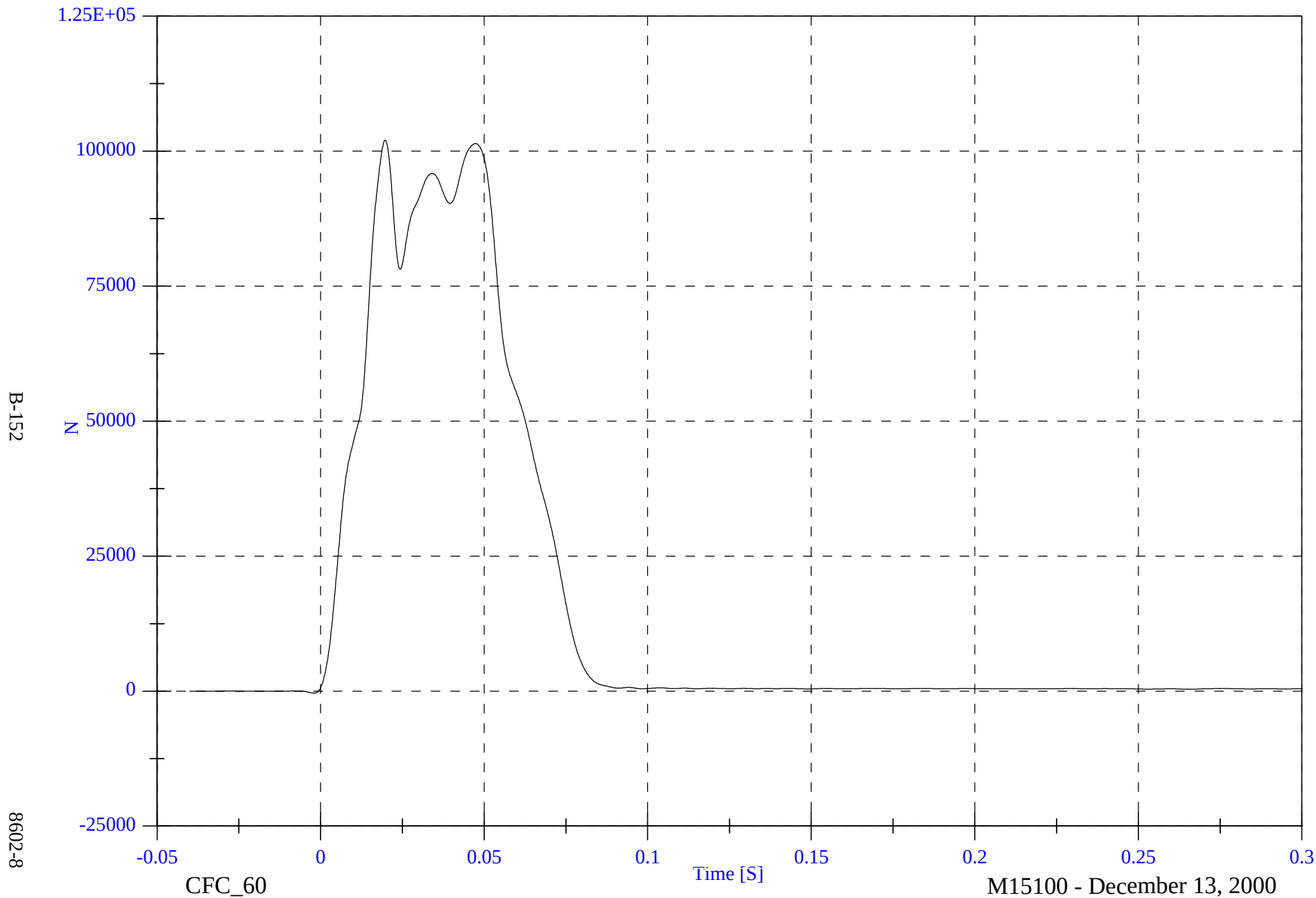


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell C7 Fx

Max: 102032.9 [N] at 0.020 [S]

Min: -381.3 [N] at -0.002 [S]

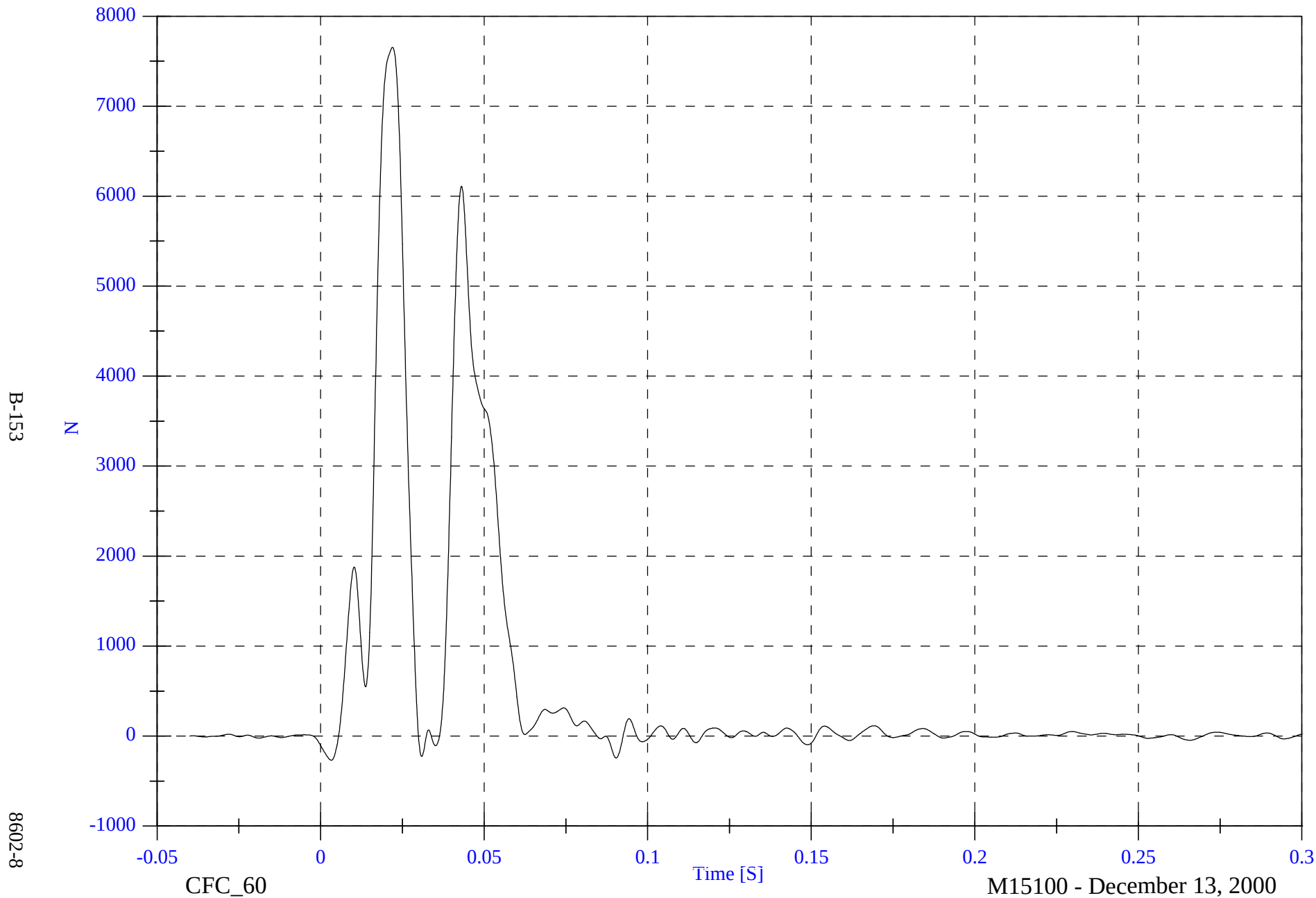


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell C8 Fx

Max: 7653.3 [N] at 0.022 [S]

Min: -268.6 [N] at 0.003 [S]

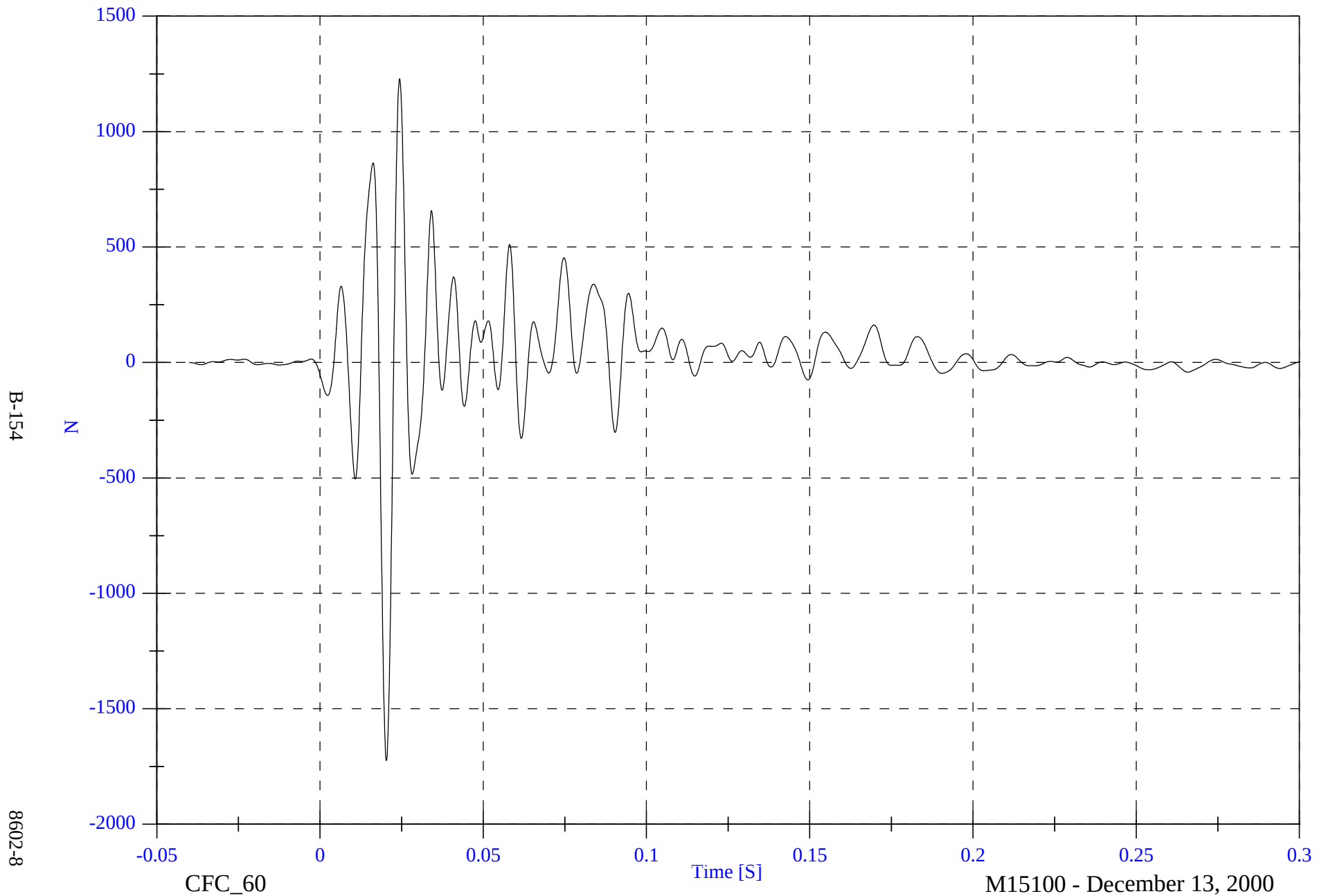


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell C9 Fx

Max: 1229.2 [N] at 0.024 [S]

Min: -1724.3 [N] at 0.020 [S]

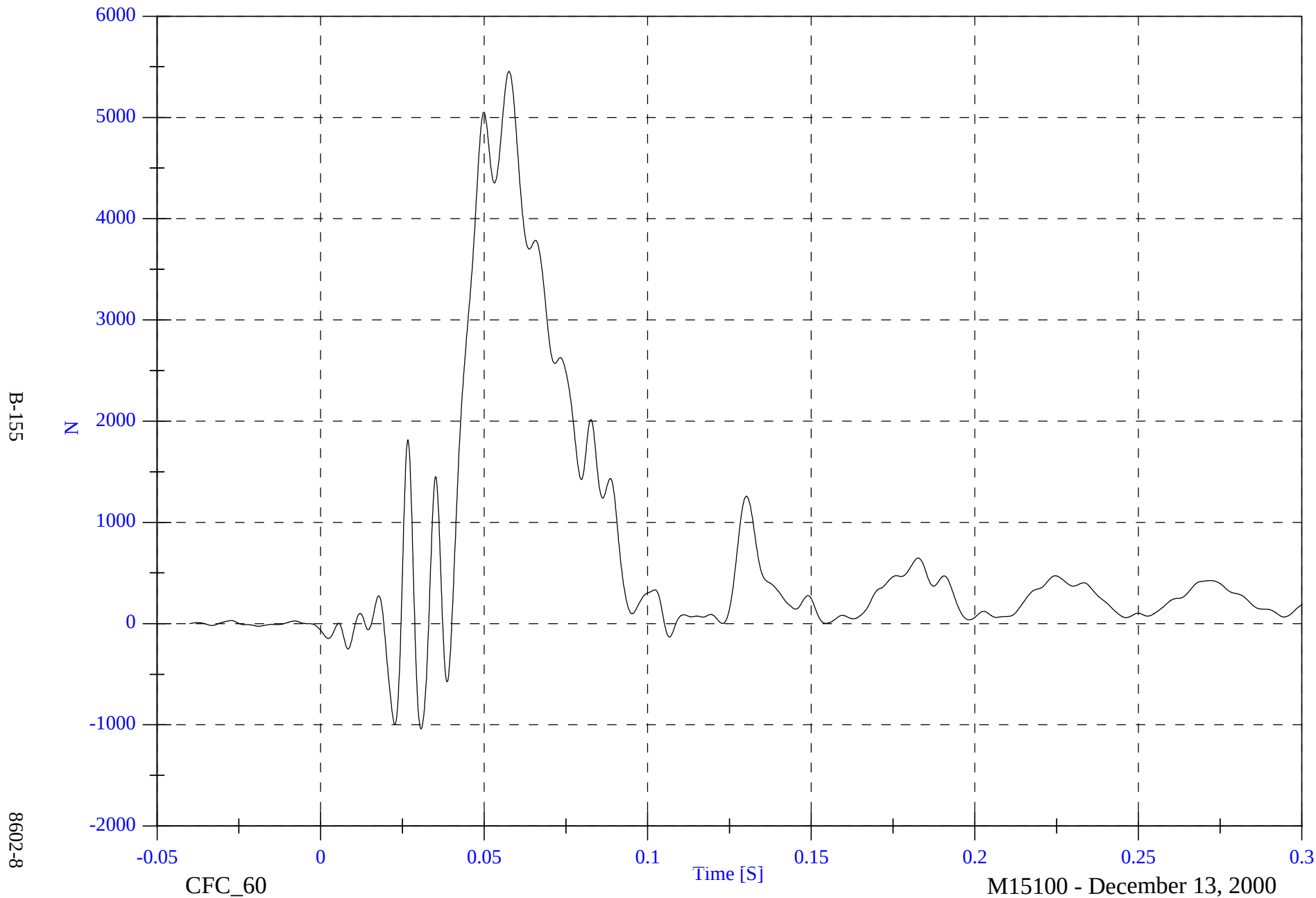


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell D1 Fx

Max: 5455.5 [N] at 0.058 [S]

Min: -1039.9 [N] at 0.031 [S]

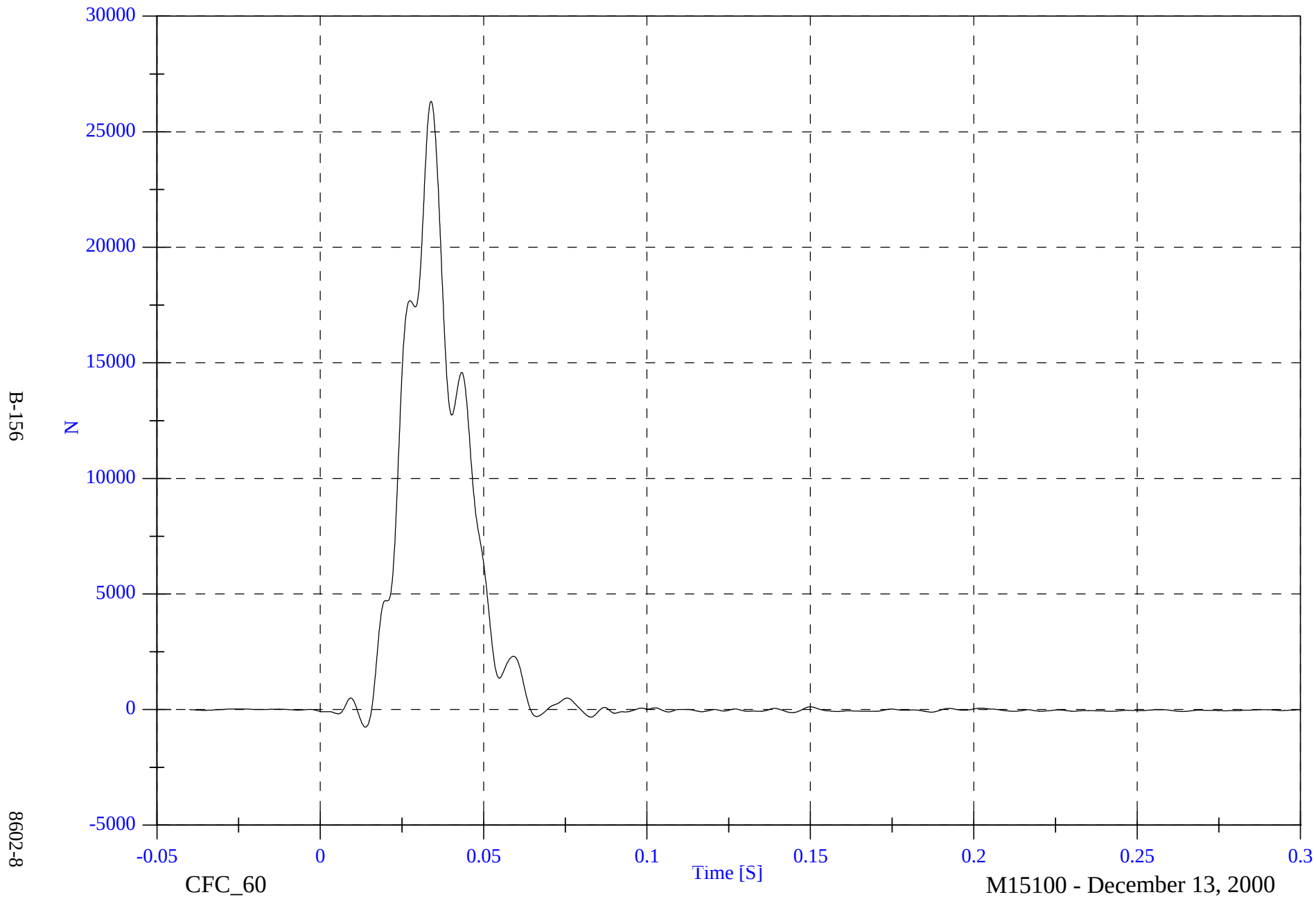


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell D2 Fx

Max: 26323.0 [N] at 0.034 [S]

Min: -759.9 [N] at 0.014 [S]

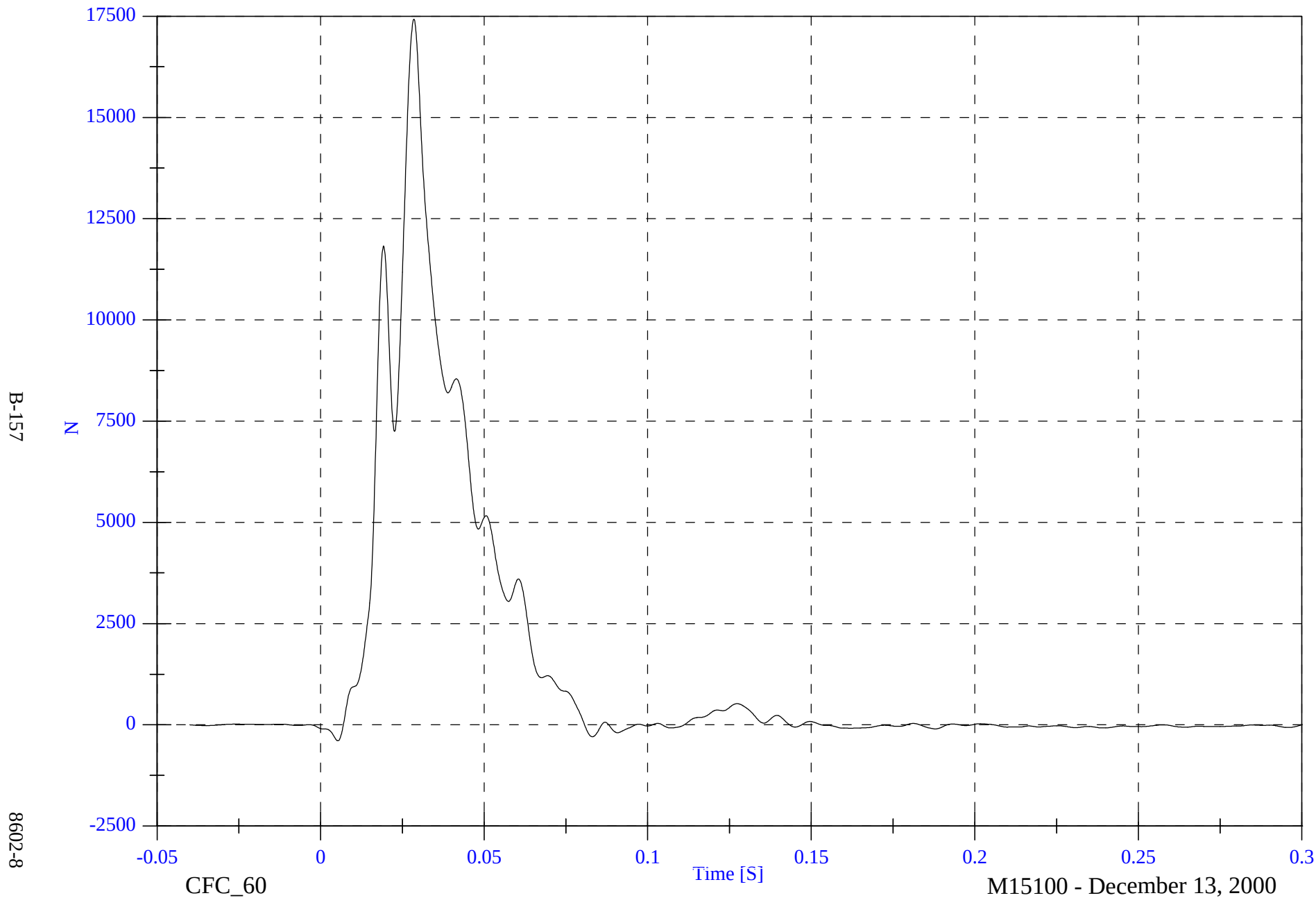


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell D3 Fx

Max: 17428.2 [N] at 0.028 [S]

Min: -394.8 [N] at 0.005 [S]

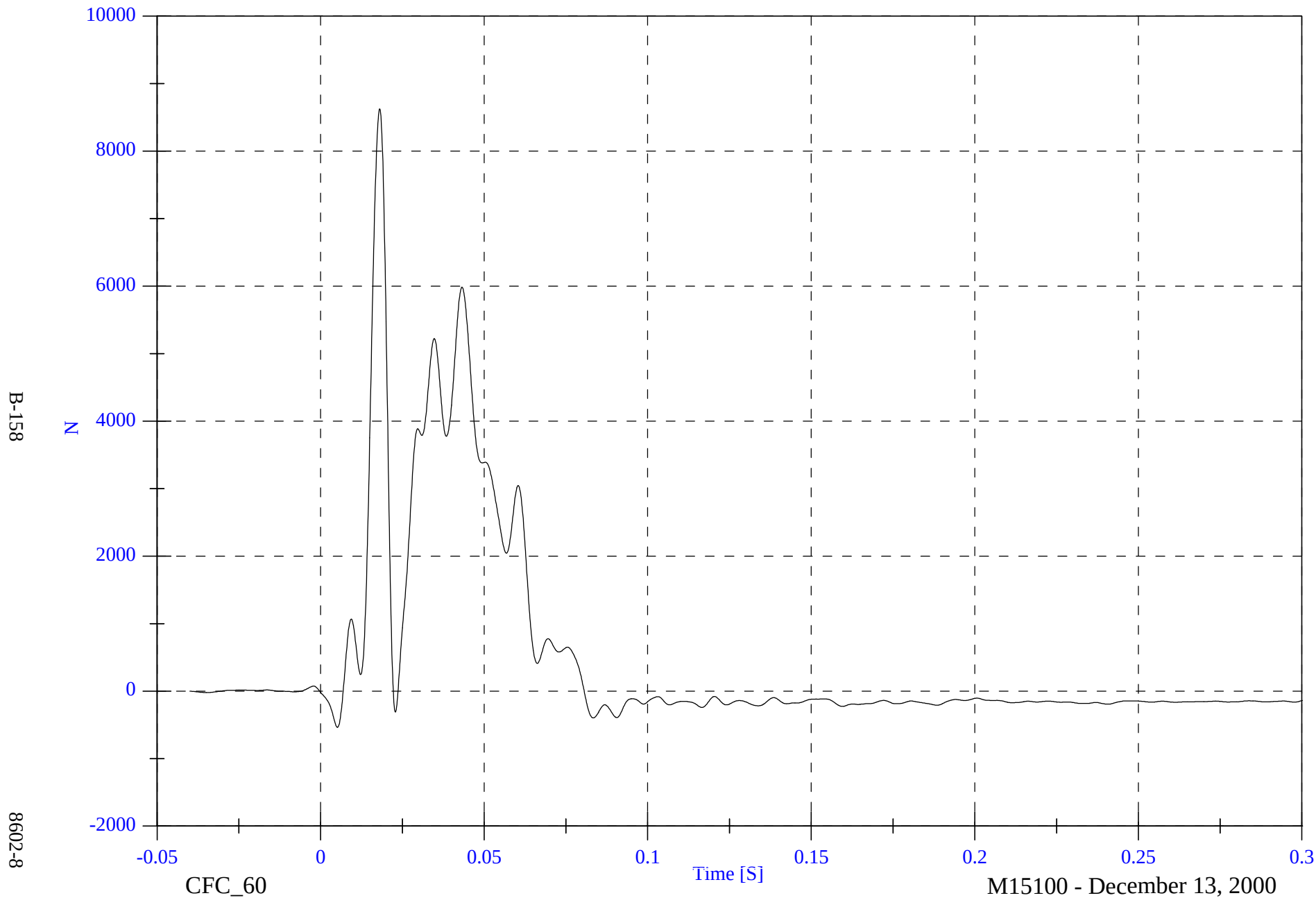


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell D4 Fx

Max: 8627.0 [N] at 0.018 [S]

Min: -537.1 [N] at 0.005 [S]

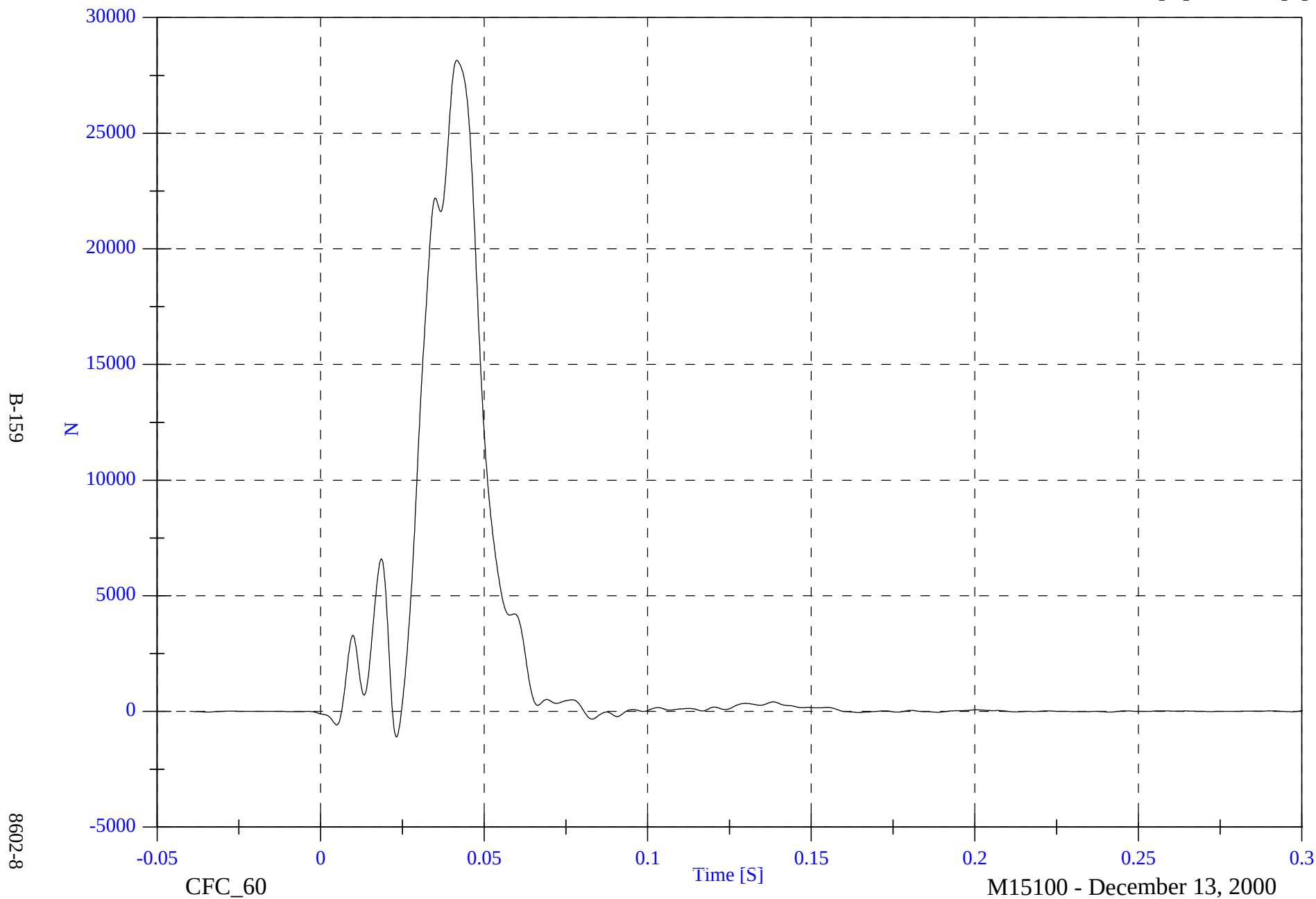


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell D5 Fx

Max: 28152.7 [N] at 0.042 [S]

Min: -1103.7 [N] at 0.023 [S]

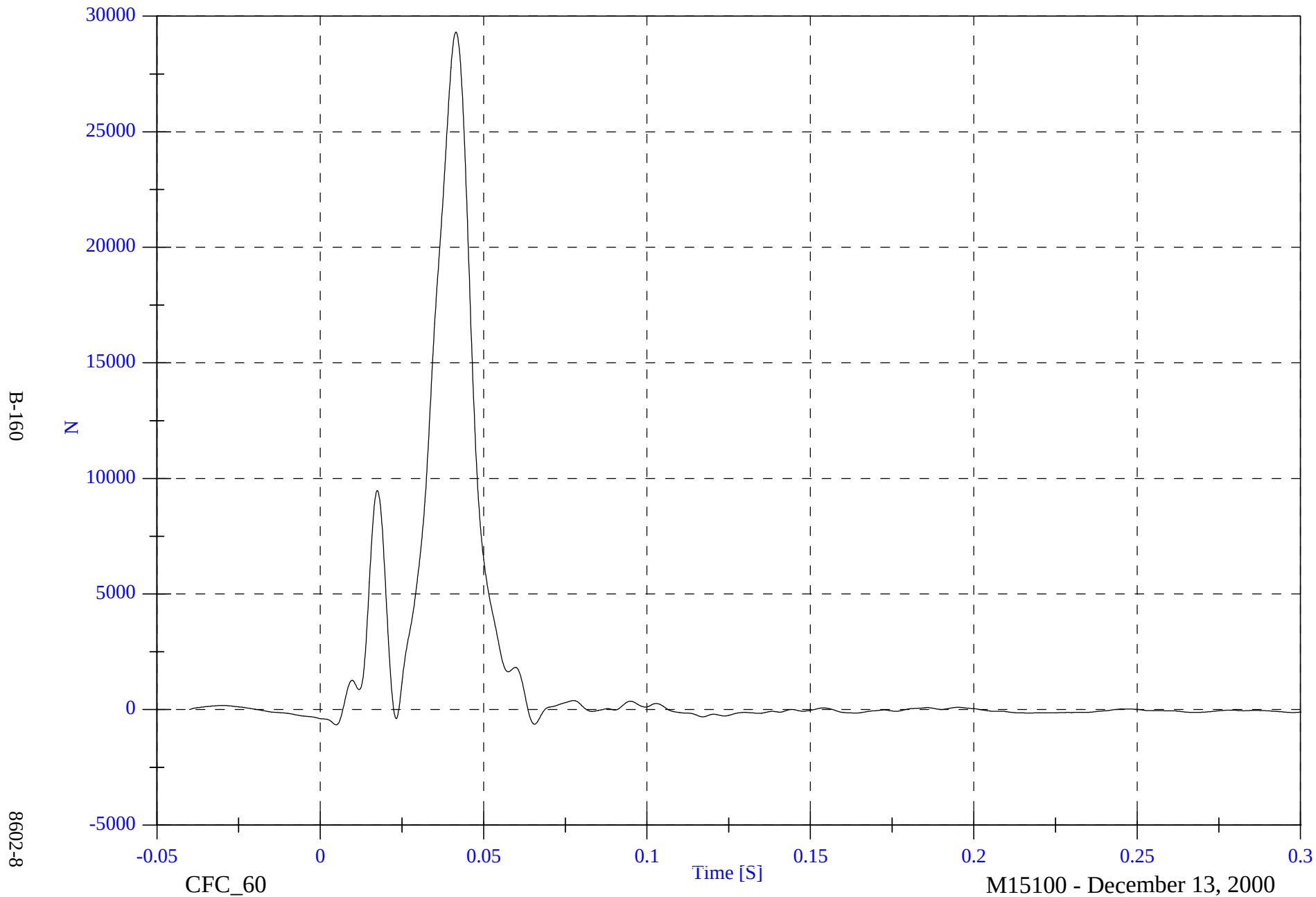


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell D6 Fx

Max: 29315.3 [N] at 0.041 [S]

Min: -662.7 [N] at 0.005 [S]

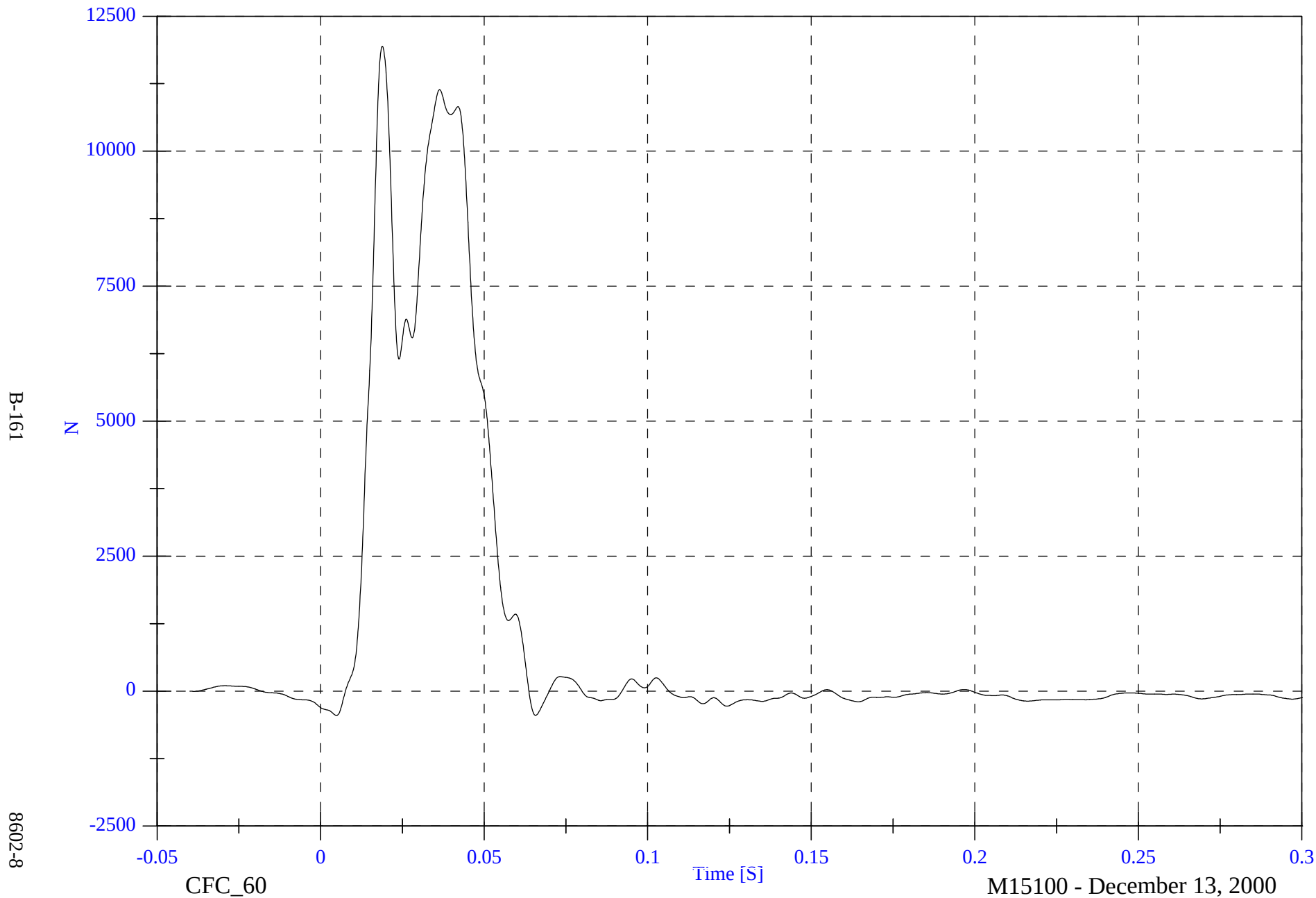


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell D7 Fx

Max: 11942.0 [N] at 0.019 [S]

Min: -451.2 [N] at 0.005 [S]

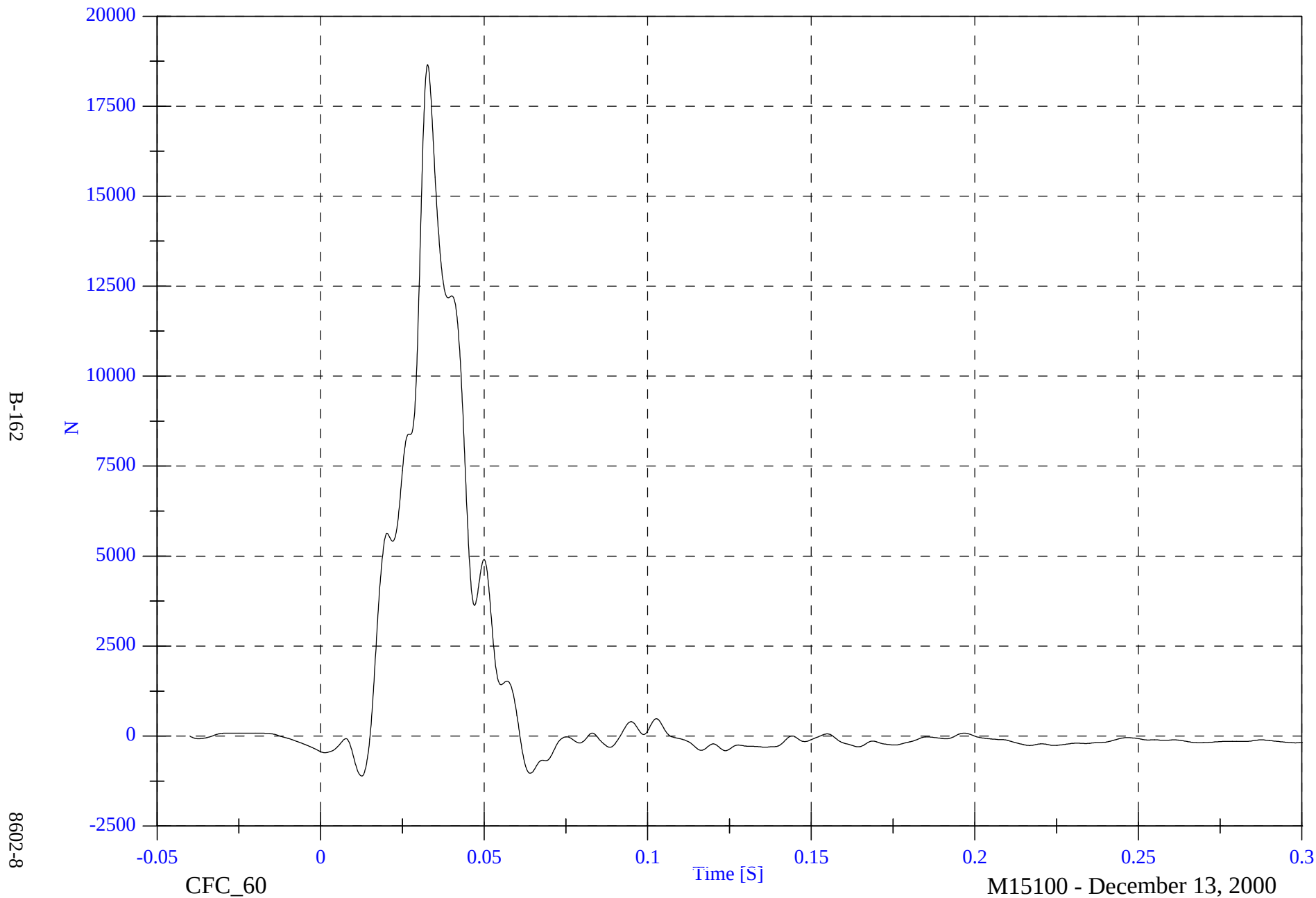


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell D8 Fx

Max: 18657.7 [N] at 0.033 [S]

Min: -1110.6 [N] at 0.013 [S]

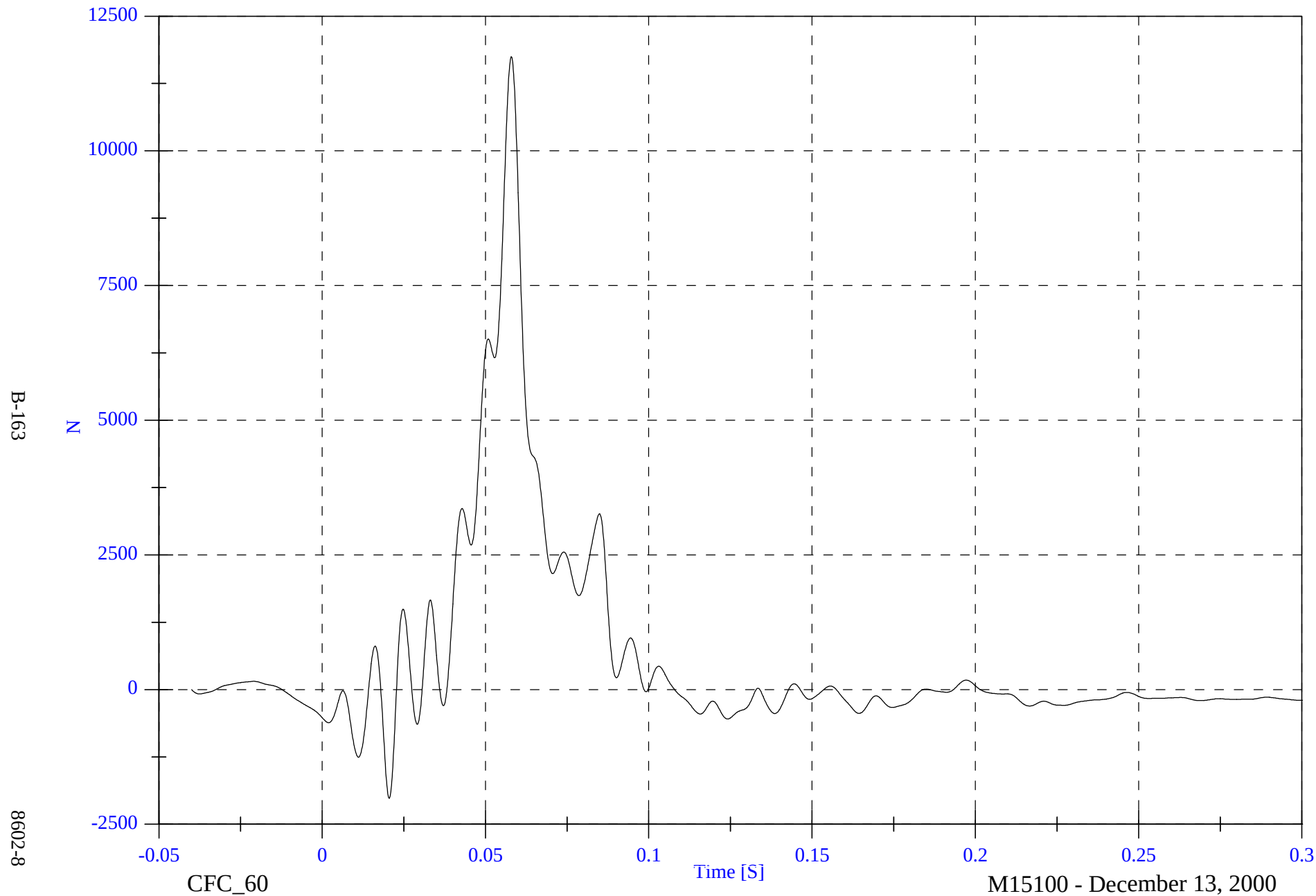


NCAP Test #8 2001 Toyota 4-Runner

Barrier Load Cell D9 Fx

Max: 11749.8 [N] at 0.058 [S]

Min: -2019.4 [N] at 0.020 [S]

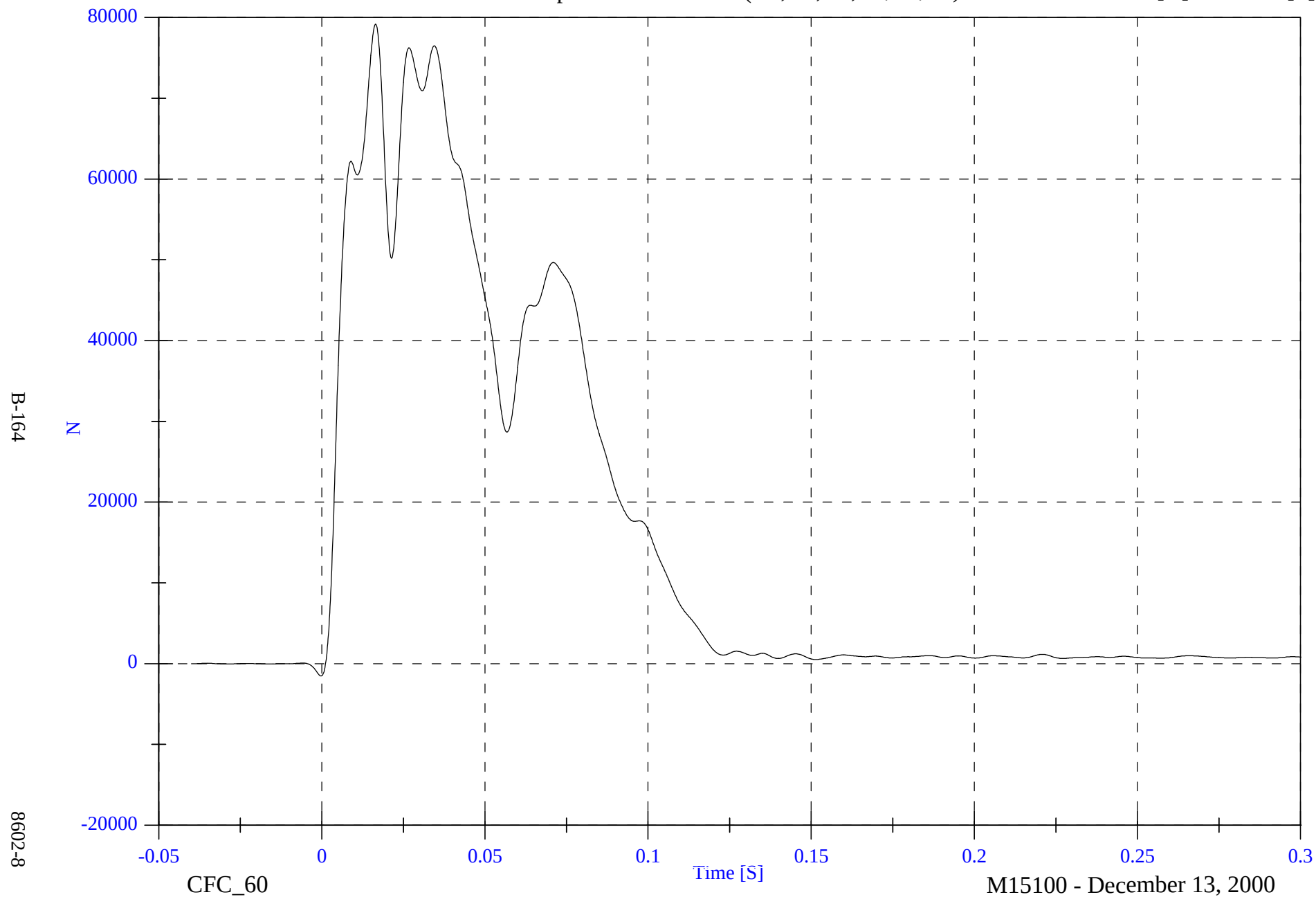


NCAP Test #8 2001 Toyota 4-Runner

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

Max: 79187.8 [N] at 0.016 [S]

Min: -1524.5 [N] at -0.000 [S]

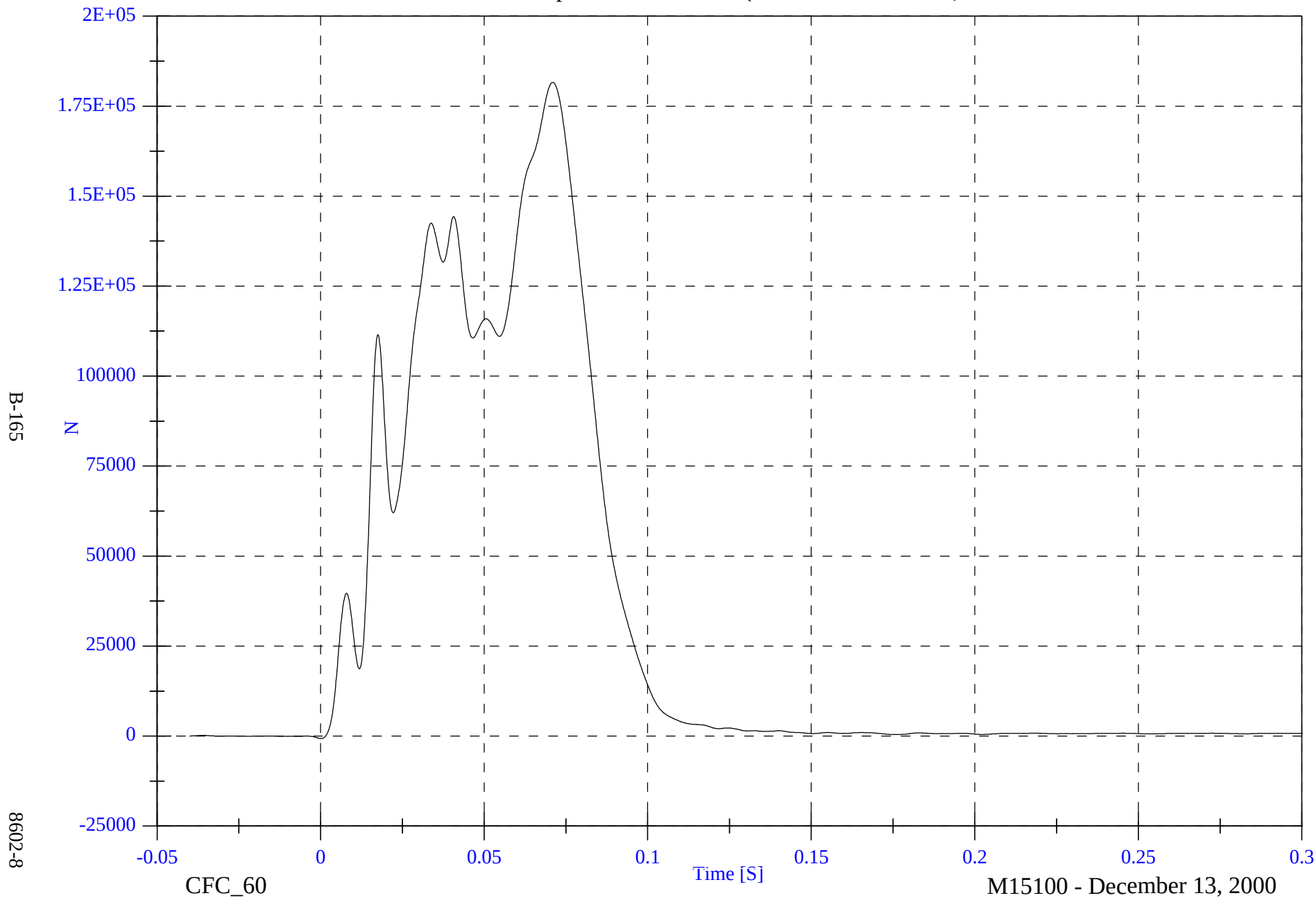


NCAP Test #8 2001 Toyota 4-Runner

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

Max: 181622.1 [N] at 0.071 [S]

Min: -688.0 [N] at 0.000 [S]

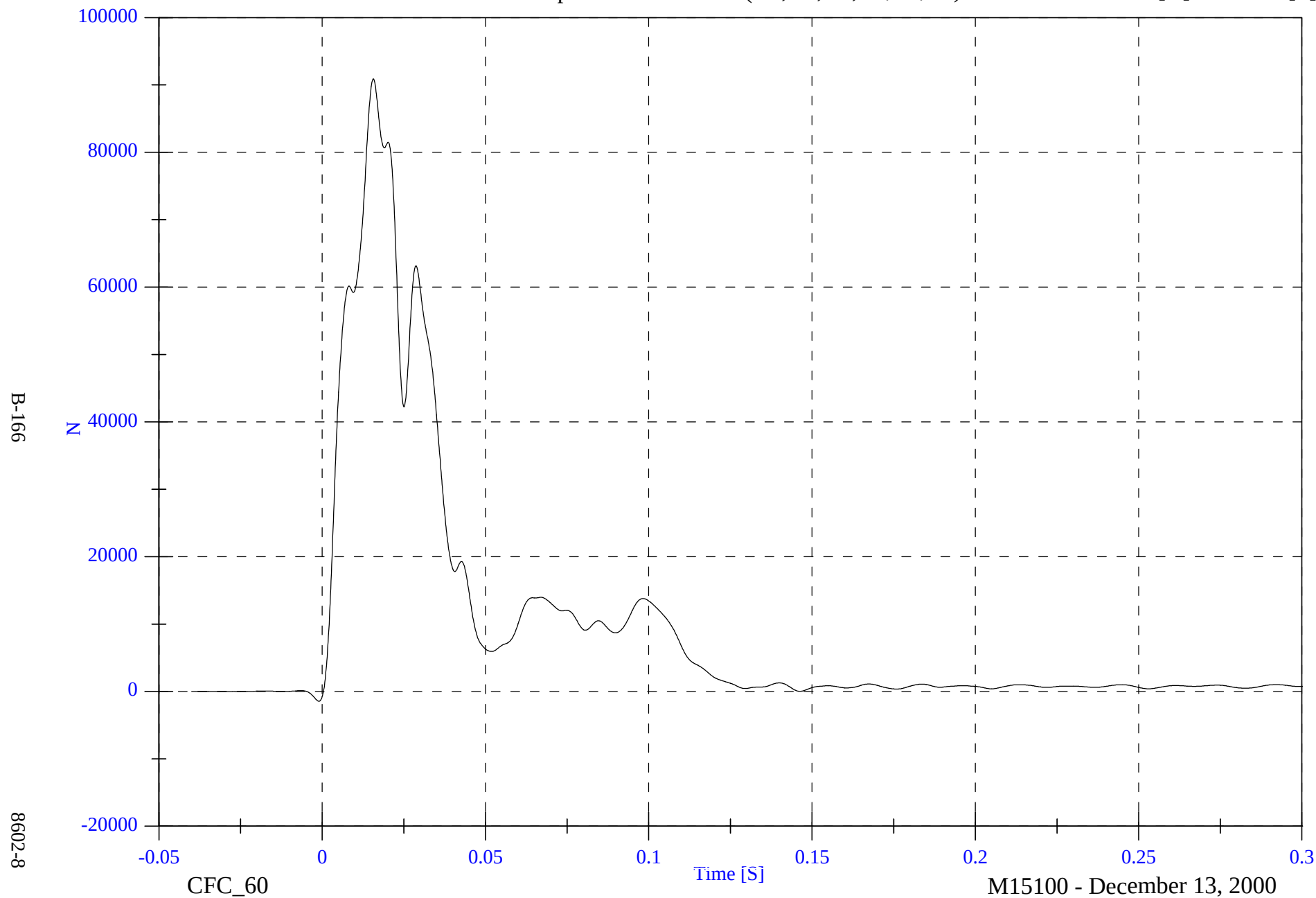


NCAP Test #8 2001 Toyota 4-Runner

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

Max: 90901.4 [N] at 0.016 [S]

Min: -1460.6 [N] at -0.001 [S]

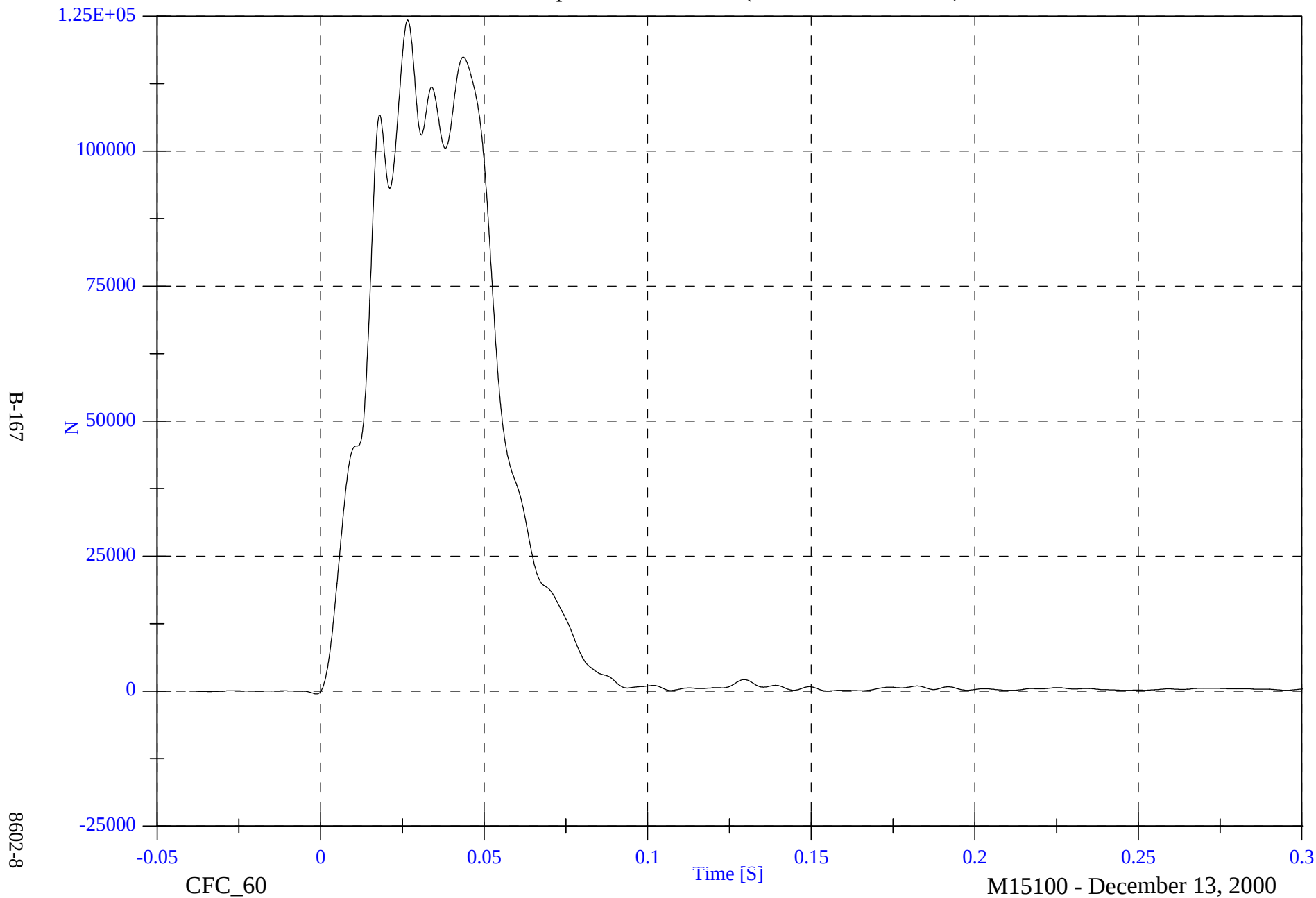


NCAP Test #8 2001 Toyota 4-Runner

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

Max: 124300.3 [N] at 0.027 [S]

Min: -532.2 [N] at -0.001 [S]

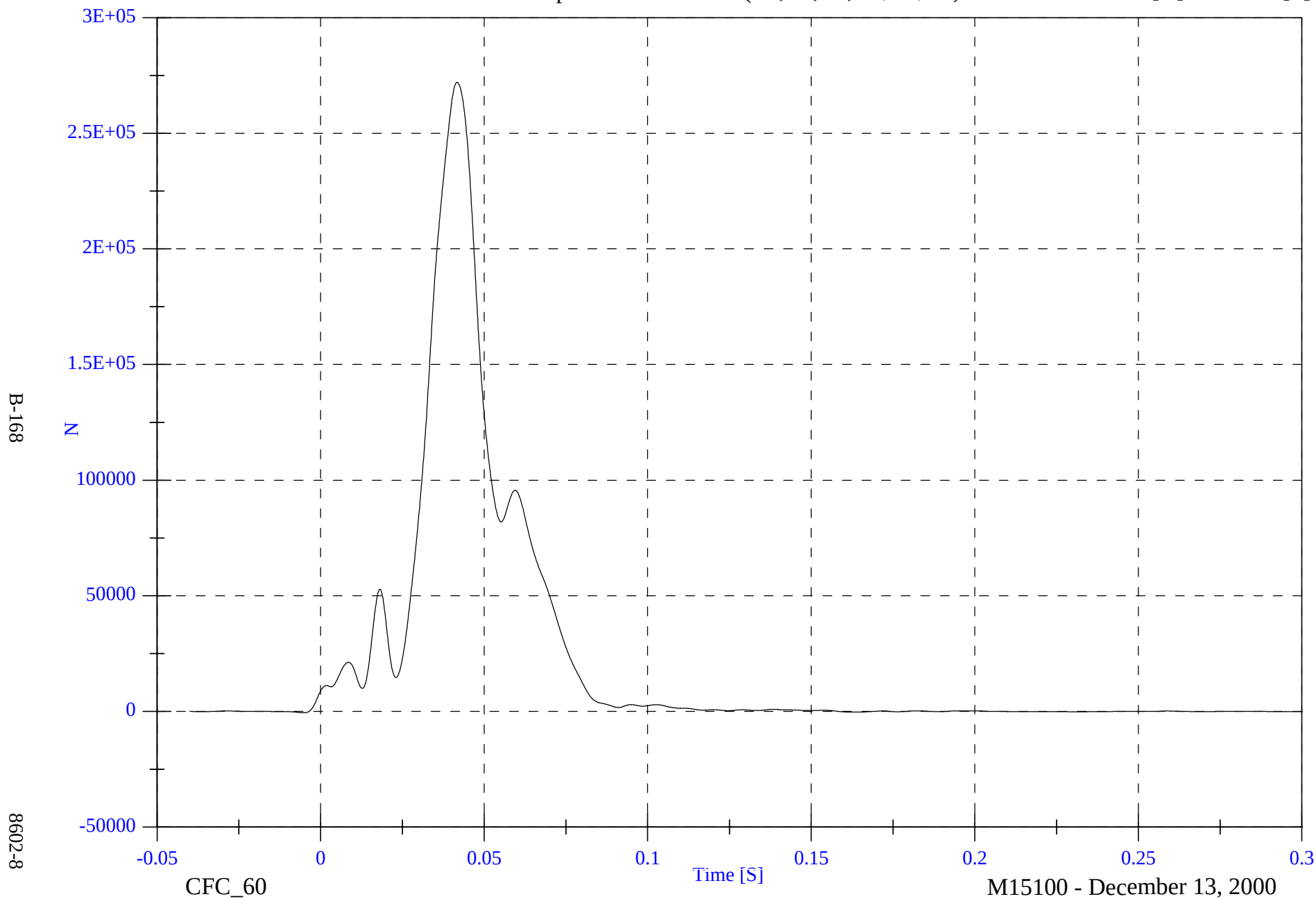


NCAP Test #8 2001 Toyota 4-Runner

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

Max: 272067.1 [N] at 0.042 [S]

Min: -607.8 [N] at -0.005 [S]

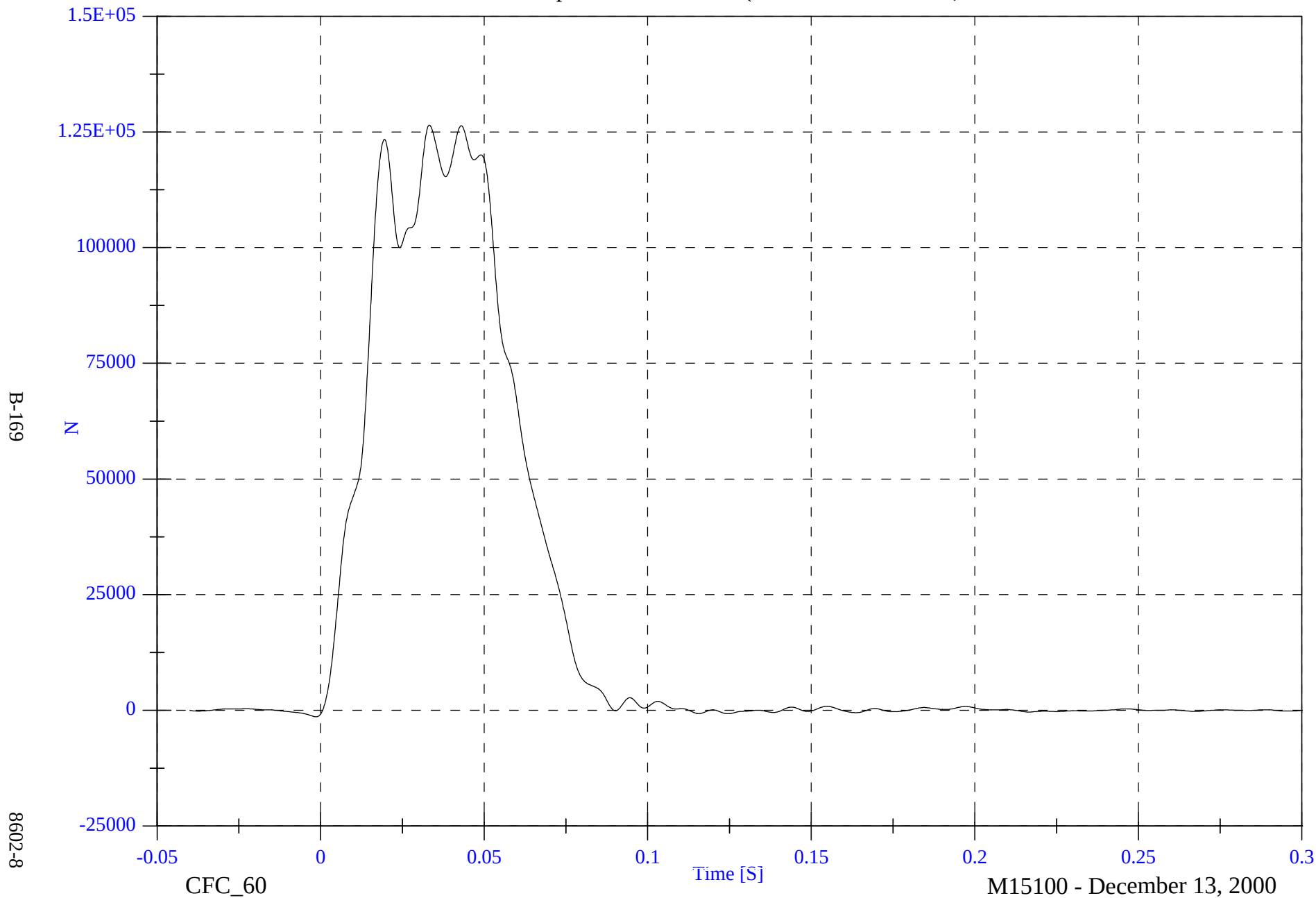


NCAP Test #8 2001 Toyota 4-Runner

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

Max: 126466.9 [N] at 0.033 [S]

Min: -1388.4 [N] at -0.001 [S]

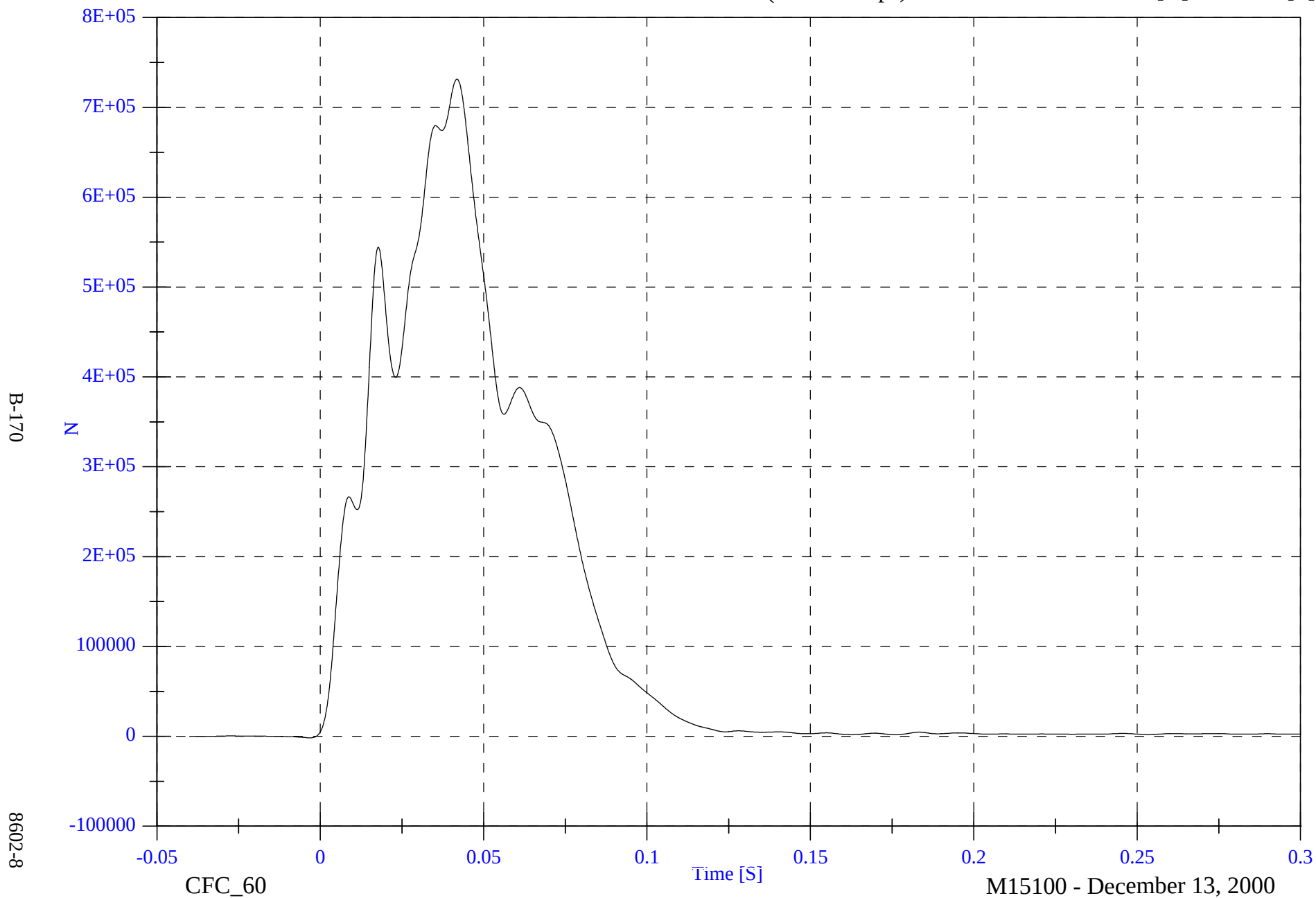


NCAP Test #8 2001 Toyota 4-Runner

Total Load Cell Sum (All 6 Groups)

Max: 731501.0 [N] at 0.042 [S]

Min: -1722.6 [N] at -0.003 [S]



APPENDIX C

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

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

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

Dummy serial numbers and certification dates are:

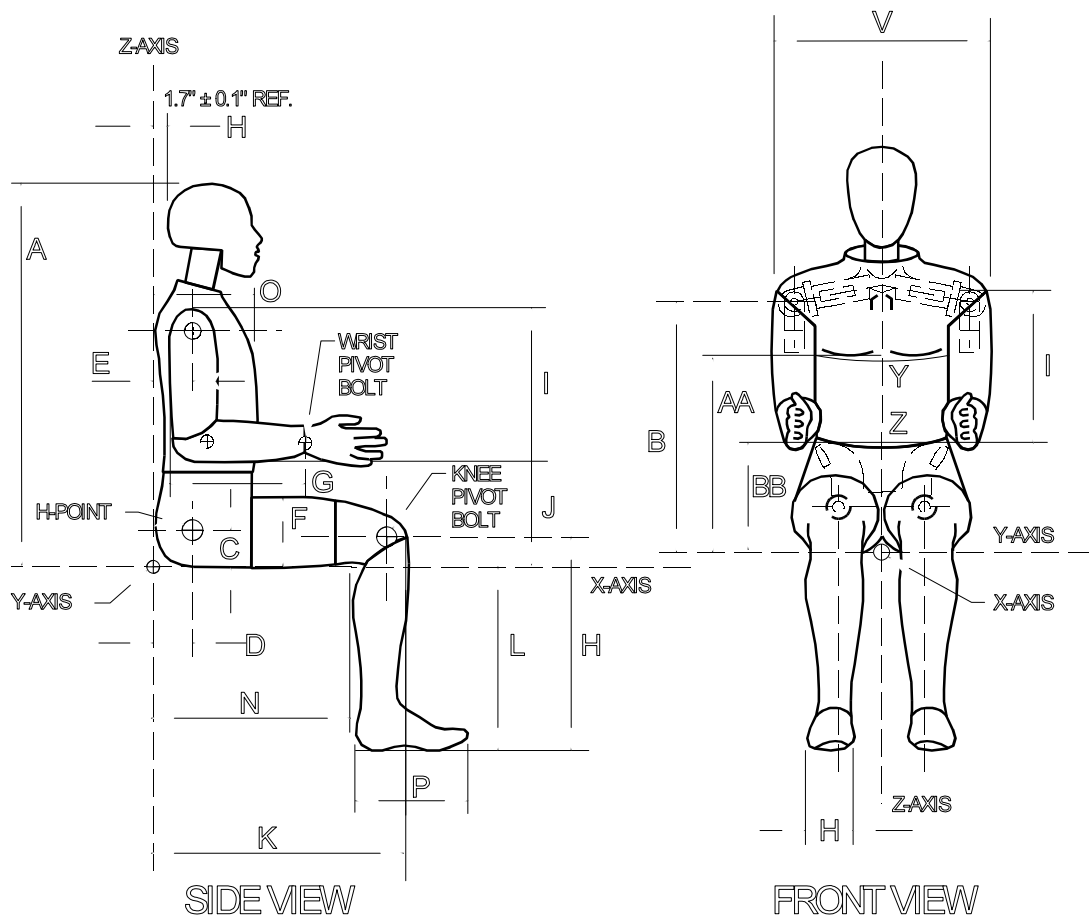
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	064	12/07/00
#2/Right Front Passenger	061	11/28/00

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

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS SPECIFICATIONS



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

PART 572E
HEAD DROP TEST

Dummy Serial Number 064
Sequential Test Number 4
Date 12/06/2000
Workfile 064400.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	71.0
Relative Humidity	10% - 70%	32.0
Peak Resultant Acceleration	225-275 G's	260.65
Peak Lateral Acceleration	15 G's Max	2.59
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	4	
Date	12/06/2000	6 Axis Neck Transducer
Workfile	064400.nfl	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	71.0
Relative Humidity		10% - 70%	32.0
Impact Velocity		22.60 - 23.40 Ft/s	22.82
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.56
	20 ms	17.60 - 22.60 G's	19.85
	30 ms	12.50 - 18.50 G's	15.49
Max Pendulum G's Above 30 ms		29 G's Max	15.49
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	39.75
D Plane Rotation	Max	64 - 78 Deg	71.05
	Time	57 - 64 ms	59.75
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	70.89
	Time	47 - 58 ms	53.88
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	121.38
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	101.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Sequential Test Number	4	
Date	12/06/2000	6 Axis Neck Transducer
Workfile	064400.nex	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	71.0
Relative Humidity		10% - 70%	32.0
Impact Velocity		19.50 - 20.30 Ft/s	19.58
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.01
	20 ms	14.00 - 19.00 G's	16.53
	30 ms	11.00 - 16.00 G's	13.73
Max Pendulum G's Above 30 ms		22 G's Max	13.73
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	41.00
D Plane Rotation	Max	81 - 106 Deg	98.23
	Time	72 - 82 ms	73.00
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-52.77
	Time	65 - 79 ms	68.25
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	147.50
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	139.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 4
Date 12/07/2000
Workfile 064400.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	71.0
Relative Humidity	10% - 70%	30.0
Pendulum Velocity	21.6 - 22.4 Ft/s	21.6
Maximum Deflection	2.50 - 2.86 in	2.80
Maximum Resistive Force	1160 - 1325 Lbs	1213.37
Internal Hysteresis	69 - 85 %	74.72

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 4
Date 112/07/2000
Workfile 064400.lf / 064400.rf

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	30.0
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1222.48
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	30.0
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1200.74

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 4
Date 12/07/2000

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			71
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	38.9
Waist Circumference	Z	32.9 - 34.1 in	33.5
Chest Depth	O	8.4 - 9.0 in	8.6
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.3
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 061
Sequential Test Number 3
Date 11/27/2000
Workfile 061300.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	30.0
Peak Resultant Acceleration	225-275 G's	228.49
Peak Lateral Acceleration	15 G's Max	6.65
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061	
Sequential Test Number	3	
Date	11/27/2000	6 Axis Neck Transducer
Workfile	061300.nfl	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	30.0
Impact Velocity		22.60 - 23.40 Ft/s	22.88
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.71
	20 ms	17.60 - 22.60 G's	21.37
	30 ms	12.50 - 18.50 G's	16.00
Max Pendulum G's Above 30 ms		29 G's Max	16.00
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.12
D Plane Rotation	Max	64 - 78 Deg	72.01
	Time	57 - 64 ms	62.62
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	77.18
	Time	47 - 58 ms	51.75
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	118.50
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061	
Sequential Test Number	3	
Date	11/27/00	6 Axis Neck Transducer
Workfile	061300.nex	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	30.0
Impact Velocity		19.50 - 20.30 Ft/s	19.58
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.37
	20 ms	14.00 - 19.00 G's	16.74
	30 ms	11.00 - 16.00 G's	12.73
Max Pendulum G's Above 30 ms		22 G's Max	12.73
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	41.75
D Plane Rotation	Max	81 - 106 Deg	101.25
	Time	72 - 82 ms	74.50
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-53.38
	Time	65 - 79 ms	67.38
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	150.75
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	142.12

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 3
Date 11/28/00
Workfile 061300.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	30.0
Pendulum Velocity	21.6 - 22.4 Ft/s	21.7
Maximum Deflection	2.50 - 2.86 in	2.84
Maximum Resistive Force	1160 - 1325 Lbs	1195.55
Internal Hysteresis	69 - 85 %	73.20

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 3
Date 11/28/2000
Workfile 061300.lf / 061300.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	6.9
Peak Knee Impact Force	1060 - 1300 Lbs	1278.98
RIGHT 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	1285.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Sequential Test Number 3
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	39.2
Waist Circumference	Z	32.9 - 34.1 in	33.5
Chest Depth	O	8.4 - 9.0 in	8.5
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.8
Thigh Clearance	F	5.5 - 6.1 in	6.1
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	17.7
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	7.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.4
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician: B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENDEVCO	AC-P12587	15-Sep-00	15-Mar-01
	Y	ENDEVCO	AC-P16625	21-Nov-00	21-May-01
	Z	ENDEVCO	AC-P16662	13-Sep-00	13-Mar-01
Head	X (R)	ENDEVCO	AC-P14388	15-Sep-00	15-Mar-01
	Y (R)	ENDEVCO	AC-P16597	21-Nov-00	21-May-01
	Z (R)	ENDEVCO	AC-P17236	13-Sep-00	13-Mar-01
Neck Load Cell	X	DENTON	LC-440Fx	16-Nov-00	16-May-01
	Y	DENTON	LC-440Fy	15-Nov-00	15-May-01
	Z	DENTON	LC-440Fz	16-Nov-00	16-May-01
Neck Moment	X	DENTON	LC-440Mx	16-Nov-00	16-May-01
	Y	DENTON	LC-440My	16-Nov-00	16-May-01
	Z	DENTON	LC-440Mz	16-Nov-00	16-May-01
Chest	X	ENDEVCO	AC-P16583	06-Sep-00	06-Mar-01
	Y	ENDEVCO	AC-P16585	06-Sep-00	06-Mar-01
	Z	ENDEVCO	AC-P16576	06-Sep-00	06-Mar-01
Chest	X (R)	ENDEVCO	AC-P15526	06-Sep-00	06-Mar-01
	Y (R)	ENDEVCO	AC-P16587	06-Sep-00	06-Mar-01
	Z (R)	ENDEVCO	AC-P15534	06-Sep-00	06-Mar-01
Chest Deflection Gauge Hybrid III Use Only		SERVO	DS-064	07-Dec-00	07-Jun-01
Pelvic	X	ENDEVCO	AC-P13323	20-Nov-00	20-May-01
	Y	ENDEVCO	AC-P13331	20-Nov-00	20-May-01
	Z	ENDEVCO	AC-P13356	20-Nov-00	20-May-01

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell		GSE	LC-954	01-Dec-00	01-Jun-01
Right Femur Load Cell		GSE	LC-955	01-Dec-00	01-Jun-01
Left Upper Tibia	Mx	DENTON	LC-045Mx	04-Nov-00	04-May-01
	My	DENTON	LC-045My	04-Nov-00	04-May-01
Left Lower Tibia	Fz	DENTON	LC-125Fz	04-Nov-00	04-May-01
	Mx	DENTON	LC-125Mx	04-Nov-00	04-May-01
	My	DENTON	LC-125My	04-Nov-00	04-May-01
Right Upper Tibia	Mx	DENTON	LC-038Mx	09-Nov-00	09-May-01
	My	DENTON	LC-038My	09-Nov-00	09-May-01
Right Lower Tibia	Fz	DENTON	LC-124Fz	09-Nov-00	09-May-01
	Mx	DENTON	LC-124Mx	09-Nov-00	09-May-01
	My	DENTON	LC-124My	09-Nov-00	09-May-01
Left Foot Rear	X	ENDEVCO	AC-P16951	02-Oct-00	02-Apr-01
	Z	ENDEVCO	AC-P17152	02-Oct-00	02-Apr-01
Left Foot Front	Z	ENDEVCO	AC-P16975	02-Oct-00	02-Apr-01
Right Foot Rear	X	ENDEVCO	AC-J31042	07-Nov-00	07-May-01
	Z	ENDEVCO	AC-J32176	07-Nov-00	07-May-01
Right Foot Front	Z	ENDEVCO	AC-J31009	08-Nov-00	08-May-01
Lap Belt Load Cells		LEBOW	LC-707	01-Dec-00	01-Jun-01

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENDEVCO	AC-J33019	30-Nov-00	30-May-01
	Y	ENDEVCO	AC-J33127	30-Nov-00	30-May-01
	Z	ENDEVCO	AC-J32782	30-Nov-00	30-May-01
Head	X (R)	ENDEVCO	AC-J31060	30-Nov-00	30-May-01
	Y (R)	ENDEVCO	AC-J31050	30-Nov-00	30-May-01
	Z (R)	ENDEVCO	AC-J32143	30-Nov-00	30-May-01
Neck Load Cell	X	DENTON	LC-205Fx	28-Aug-00	28-Feb-01
	Y	DENTON	LC-205Fy	28-Aug-00	28-Feb-01
	Z	DENTON	LC-205Fz	28-Aug-00	28-Feb-01
Neck Moment	X	DENTON	LC-205Mx	28-Aug-00	28-Feb-01
	Y	DENTON	LC-205My	28-Aug-00	28-Feb-01
	Z	DENTON	LC-205Mz	28-Aug-00	28-Feb-01
Chest	X	ENDEVCO	AC-J33351	30-Nov-00	30-May-01
	Y	ENDEVCO	AC-J32787	30-Nov-00	30-May-01
	Z	ENDEVCO	AC-J32838	30-Nov-00	30-May-01
Chest	X (R)	ENDEVCO	AC-J32791	30-Nov-00	30-May-01
	Y (R)	ENDEVCO	AC-J33156	30-Nov-00	30-May-01
	Z (R)	ENDEVCO	AC-J33020	30-Nov-00	30-May-01
Chest Deflection Gauge		SERVO	DS-061	10-Nov-00	10-May-01
Hybrid III Use Only					
Pelvic	X	ENDEVCO	AC-J32383	04-Aug-00	04-Feb-01
	Y	ENDEVCO	AC-J32186	04-Aug-00	04-Feb-01
	Z	ENDEVCO	AC-J32098	04-Aug-00	04-Feb-01

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell		GSE	LC-419	01-Dec-00	01-Jun-01
Right Femur Load Cell		GSE	LC-723	01-Dec-00	01-Jun-01
Left Upper Tibia	Mx	DENTON	LC-016Mx	09-Nov-00	09-May-01
	My	DENTON	LC-016My	09-Nov-00	09-May-01
Left Lower Tibia	Fz	DENTON	LC-123Fz	09-Nov-00	09-May-01
	Mx	DENTON	LC-123Mx	09-Nov-00	09-May-01
	My	DENTON	LC-123My	09-Nov-00	09-May-01
Right Upper Tibia	Mx	DENTON	LC-023Mx	09-Nov-00	09-May-01
	My	DENTON	LC-023My	09-Nov-00	09-May-01
Right Lower Tibia	Fz	DENTON	LC-111Fz	09-Nov-00	09-May-01
	Mx	DENTON	LC-111Mx	09-Nov-00	09-May-01
	My	DENTON	LC-111My	09-Nov-00	09-May-01
Left Foot Rear	X	ENDEVCO	AC-APA30	06-Jul-00	06-Jan-01
	Z	ENDEVCO	AC-J31026	21-Sep-00	21-Mar-01
Left Foot Front	Z	ENDEVCO	AC-J32831	06-Jul-00	06-Jan-01
Right Foot Rear	X	ENDEVCO	AC-J32832	14-Jul-00	14-Jan-01
	Z	ENDEVCO	AC-J33376	06-Jul-00	06-Jan-01
Right Foot Front	Z	ENDEVCO	AC-J18400	28-Sep-00	28-Mar-01
Lap Belt Load Cells		LEBOW	LC-712	01-Dec-00	01-Jun-01

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS

(6 Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember	ICS	AC-D29	14-Aug-00	14-Feb-01
Right Rear Seat Crossmember	ICS	AC-D61	14-Aug-00	14-Feb-01
Top of Engine	ENDEVCO	AC-A13883	27-Nov-00	27-May-01
Bottom of Engine	ENTRAN	AC-D03	31-Aug-00	01-Mar-01
Right Disc Brake Caliper	ENDEVCO	AC-A14342	15-Nov-00	15-May-01
Instrument Panel	ENDEVCO	AC-A14261	15-Nov-00	15-May-01
Left Disc Brake Caliper	ENDEVCO	AC-A14126	27-Nov-00	27-May-01
Left Seat Rear Crossmember (R)	ICS	AC-D82	17-Aug-00	17-Feb-01
Right Seat Rear Crossmember (R)	ICS	AC-Y17	25-Aug-00	25-Feb-01