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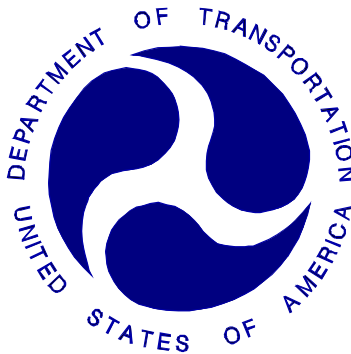
**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

TOYOTA MOTOR MANUFACTURING
2002 TOYOTA TUNDRA
ACCESS CAB 4X4

NHTSA NUMBER: M25110

VERIDIAN TEST NUMBER: 8642-NCAP-02

VERIDIAN ENGINEERING
TRANSPORTATION SCIENCES CENTER
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BUFFALO, NEW YORK 14225



January 4, 2002

FINAL REPORT

PREPARED FOR:

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National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
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16. Abstract A frontal load cell barrier test of a 2002 Toyota Tundra Access Cab 4X4 was performed at Veridian Engineering crash test facility in Buffalo, New York, on January 4, 2002. The impact velocity was 56.16 kph and the temperature at the barrier face was 21.1EC. The maximum post-test vehicle crush was 605 mm. The test vehicle was equipped with 3-point restraint systems, knee bolsters, and airbags at both the driver and right outboard passenger seating positions. With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements.					
ATD Position	HIC	Clip (g's)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)
Driver (061)	651.8	46.9	36	3785.2	5074.3
Passenger (064)	736.6	48.4	29	3944.8	2230.5
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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.16 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-01-D-32005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 56.16 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 56.3-km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated December 1999. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

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

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

Both ATDs were fully instrumented with nine accelerometer array head, chest and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, left and right knee sliders, and lower leg instrumentation. The driver (position 1) ATD (Serial No. 061) and the right-front passenger (position 2) ATD (Serial No.064) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 141 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Appendix C contains the dummy calibration data and Appendix D contains the transducer calibration dates.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 36 load cells was impacted by a 2002 Toyota Tundra Access Cab 4X4 at a velocity of 56.16 kph. The test was performed at Veridian Engineering on January 4, 2002. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The occupant data is summarized below.

	HIC	Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)	Belt Stretch (mm/m)
Driver ATD	651.8	46.9	36	3785.2	5074.3	178	10
Passenger ATD	736.6	48.4	29	3944.8	2230.5	203	10

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum vehicle static crush was 605 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

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

The 2002 Toyota Tundra Access Cab 4X4 did not exceed the requirements of FMVSS 208, FMVSS 212, FMVSS 219, and FMVSS 301. Data pertaining to these standards are presented in the data sheets.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No.:	<u>M25110</u>	Test Mode:	<u>56.3 kph Frontal Barrier</u>
Test Date:	<u>January 4, 2002</u>	Time:	<u>13:26</u> Temperature: <u>21.1</u> °C
Vehicle Make/Model/Body Style:	<u>2002 Toyota Tundra Access Cab 4X4</u>		
Vehicle Test Weight:	<u>2401</u>	kg	
Vehicle/Barrier Impact Angle:	<u>0</u>	°	
Impact Velocity:	<u>56.16</u>	kph	
Maximum Static Crush:	<u>605</u>	mm	
Vehicle Rebound:	<u>316</u>	mm	
<u>DUMMIES:</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Type:	<u>572E</u>	<u>572E</u>	
Restraint System:	<u>Seatbelt, Airbag, Knee Bolster</u>	<u>Seatbelt, Airbag, Knee Bolster</u>	
Number of Data Channels:	<u>141</u>		
Number of Cameras:	<u>1</u>	Real Time	
	<u>16</u>	High Speed	
<u>DOOR OPENING DATA:</u>	<u>Closed/Operable</u>	- Left Front	
	<u>Closed/Operable</u>	- Right Front	
Front Seat(s) Data:	<u>DRIVER</u>	<u>PASSENGER</u>	
Seat Track Failure: (mm of shift)	<u>0</u>	<u>0</u>	
Seat Back Failure:	<u>None</u>	<u>None</u>	
<u>VISIBLE DUMMY CONTACT POINTS:</u>	<u>DRIVER</u>	<u>PASSENGER</u>	
Head:	Face to the upper center of the airbag; Back of the head to the outboard half of the head restraint	Face to the center of the airbag; Back of head to the center of the head restraint	
Abdomen:	<u>None</u>	<u>None</u>	
Chest:	<u>Airbag</u>	<u>Airbag</u>	
Knees:	Left knee to knee bolster; Right knee to knee bolster	Left knee to knee bolster; Right knee to knee bolster	

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2002 Toyota Tundra Access Cab 4X4

NHTSA No. : M25110 ; VIN: 5TBBT44132S254076 ; Color: Red

Engine Data: 8 cylinders; - CID; 4.7 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: 12/21/01 ; Odometer Reading 177 km

Selling Dealer: West Herr Toyota

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

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Toyota Motor Manufacturing

Date of Manufacture 11/01

GVWR: 2735 kg; GAWR: 1433 kg FRONT; 1706 kg REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load: 240 kpa FRONT

240 kpa REAR

Recommended Tire Size: P245/70R16

* Recommended Cold Tire Pressure: 179 kpa FRONT; 200 kpa REAR

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

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) = 613.0 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 272.8 kg **

*Tire pressure used for test

** Maximum of 136.1 kg used for target weight calculation.

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

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

Right Front =	<u>585.5</u>	kg	Right Rear =	<u>444.0</u>	kg
Left Front =	<u>645.5</u>	kg	Left Rear =	<u>447.0</u>	kg
TOTAL FRONT =	<u>1231.0</u>	kg	TOTAL REAR =	<u>891.0</u>	kg
TOTAL DELIVERED WEIGHT =	<u>2122.0</u>	kg			
% of Total Front of Vehicle Weight =	<u>58.0%</u>		% of Total Rear Weight =	<u>42.0%</u>	%

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW) =	<u>2122.0</u>	kg
Rated Cargo/Luggage Weight (RCLW) =	<u>136.1</u>	kg
Weight of 2 p.572 Dummies @ 76 each =	<u>152</u>	kg
TARGET TEST WEIGHT =	<u>2410.1</u>	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 127.0 KG OF CARGO WEIGHT:

Right Front =	<u>629.0</u>	kg	Right Rear =	<u>531.0</u>	kg
Left Front =	<u>700.0</u>	kg	Left Rear =	<u>541.0</u>	kg
TOTAL FRNT =	<u>1329.0</u>	kg	TOTAL REAR =	<u>1072.0</u>	kg
TOTAL TEST WEIGHT =	<u>2401.0</u>	kg			
% of Total Front Weight =	<u>55.4%</u>	%	% of Total Rear Weight =	<u>44.6%</u>	%
Weight of Ballast Secured in Vehicle Trunk Area =	<u>0</u>	kg			
Vehicle Components Removed for Weight Reduction:	<u>Spare Tire</u>				

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED:	RF	<u>893</u>	LF	<u>880</u>	RR	<u>945</u>	LR	<u>936</u>
FULLY LOADED:	RF	<u>882</u>	LF	<u>867</u>	RR	<u>914</u>	LR	<u>900</u>
AS TESTED:	RF	<u>883</u>	LF	<u>867</u>	RR	<u>920</u>	LR	<u>905</u>
Vehicle's Wheel Base:		<u>3263</u>	mm					
Location of Vehicle's C.G.:		<u>1457</u>	mm rearward of front wheel center.					

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual =	<u>100</u>	liters
Usable Capacity Figure Furnished by COTR =	<u>99.9</u>	liters
Test Volume Range (92 to 94% of Usable Capacity) =	<u>91.91</u>	to <u>93.91</u> liters
ACTUAL TEST VOLUME=	<u>92.4</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: Filler – On left side of vehicle box forward of the rear axle; Tank – on vehicle left side of the vehicle underbody, beneath the box and forward of the rear axle; Lines – along the inside of the left frame rail.		

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test: Frontal Barrier Impact Angle: 0°
Test Date: January 4, 2002 Time: 13:26 Temperature: 21.1 °C
Vehicle NHTSA No.: M25110
Required Impact Velocity Range: 55.5 to 57.1 kph

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

Trap No. 1 = 56.16 kph; Trap No. 2 = 56.16 kph
Distance from vehicle to barrier: (1) entering trap = 813 mm
(2) exiting trap = 305 mm

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

Vehicle Length:

Pre-Test	Left = <u>5454</u> ; C/L = <u>5523</u> ; Right = <u>5456</u>
Post-Test	Left = <u>4901</u> ; C/L = <u>4918</u> ; Right = <u>4915</u>
Crush	Left = <u>553</u> ; C/L = <u>605</u> ; Right = <u>541</u>
AVERAGE	= <u>566</u> mm

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point:

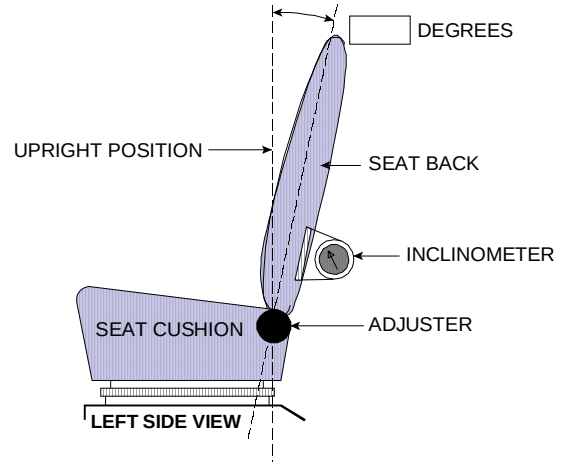
	Left = <u>323</u> ; C/L = <u>304</u> ; Right = <u>320</u>
AVERAGE	= <u>316</u> mm

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2002 Vehicle Model: Toyota Tundra Body Style : Access Cab 4X4

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



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat: 20 degrees

Measurement instructions: Where the most upright position is defined as detent 0, recline the seat to detent 5.

This position is the same as reclining the seat back 10 degrees from the most upright position.

Seat back angle for passenger's seat: 20 degrees

Measurement instructions: Where the most upright position is defined as detent 0, recline the seat to detent 5.

This position is the same as reclining the seat back 10 degrees from the most upright position.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: Where the forward most position is defined as detent 0, place the seat in detent 7. The rearmost position is detent 14 (15 positions total).

Positioning of the passenger's seat: Where the forward most position is defined as detent 0, place the seat in detent 7. The rearmost position is detent 13 (14 positions total).

3. Fuel Tank Capacity Data

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

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

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 99.9 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 92.4 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.

When ignition is placed in the "on" position, the fuel pump operates briefly. The fuel pump operates continuously while the engine is running.

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

4. STEERING COLUMN ADJUSTMENTS:

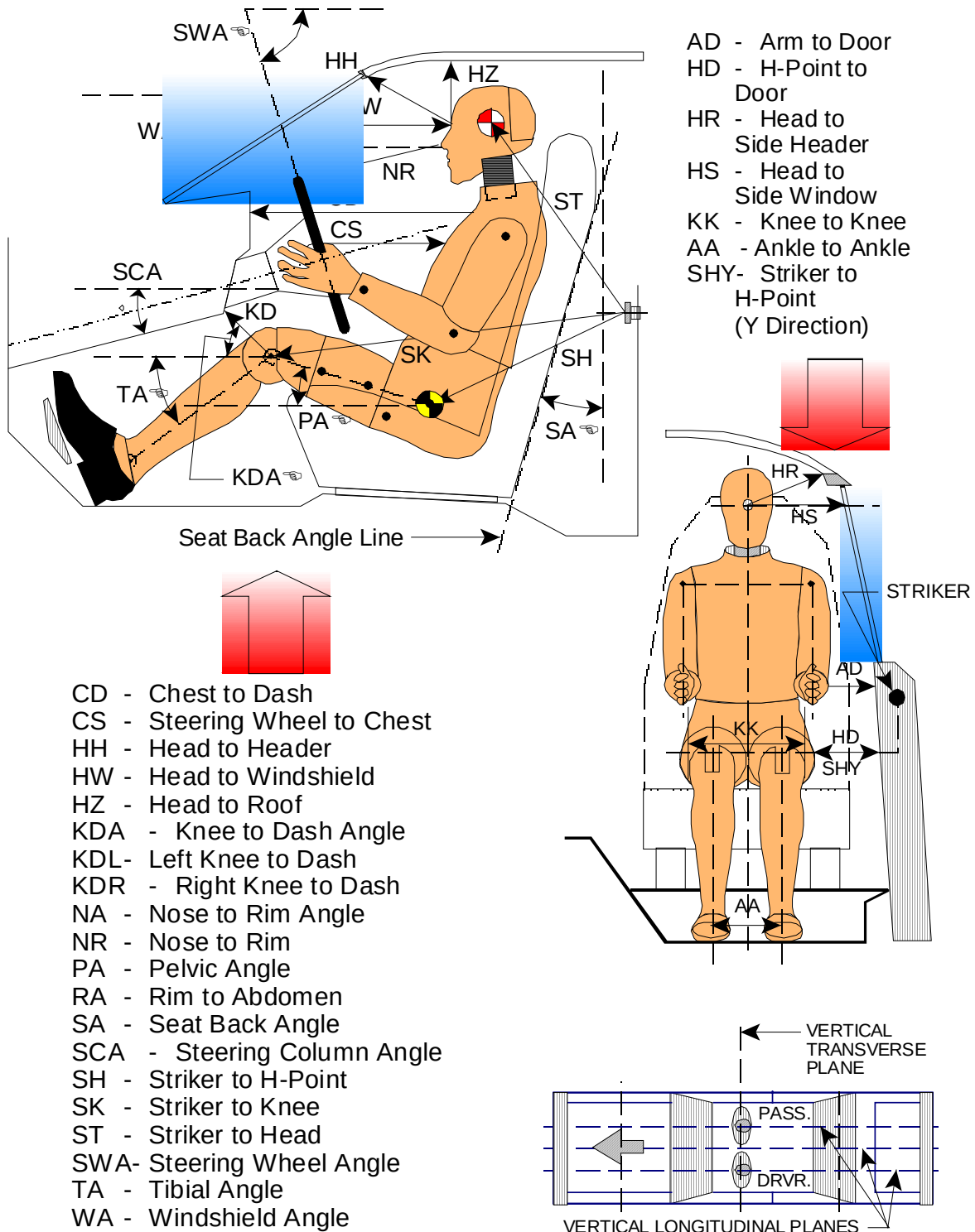
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine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

Operational Instructions: Where the upper most position is defined as detent 0, place the steering column in detent 2 (25 degrees from vertical with the vehicle rocker panels level).

5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: Where the upper most position is defined as detent 0, place the upper anchorage in detent 1 (mid position).

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



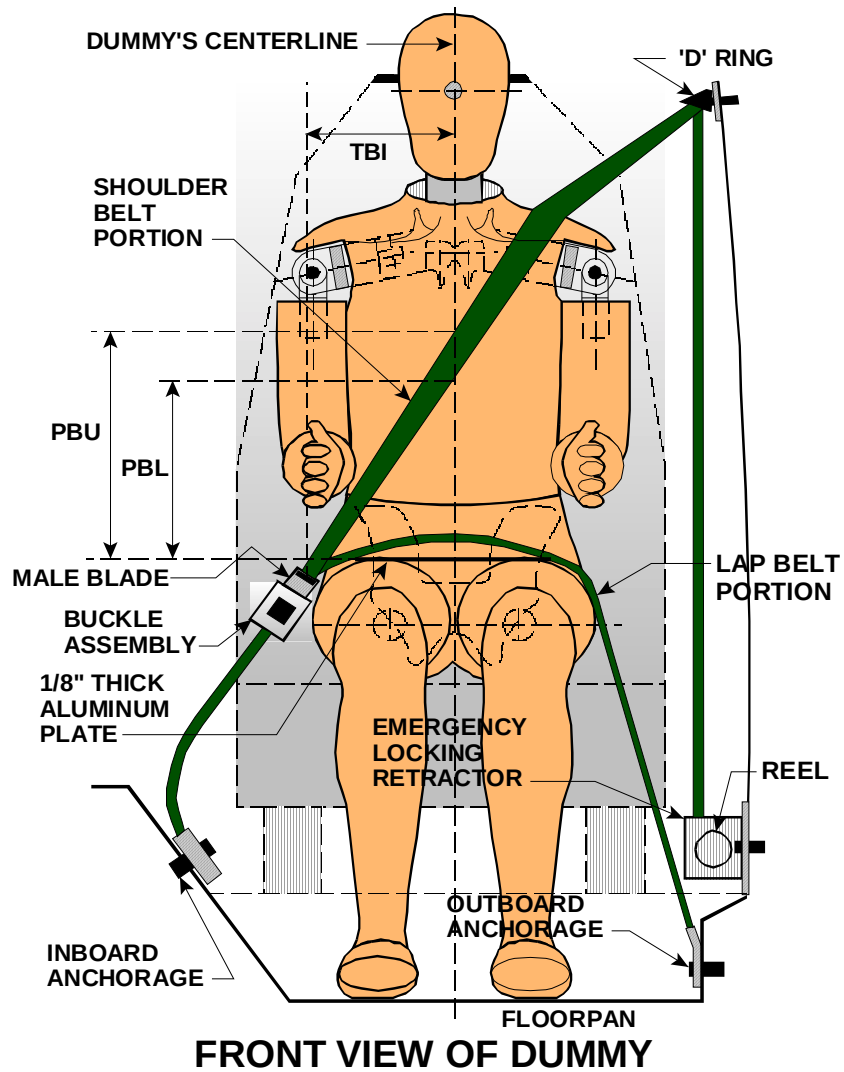
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #061)			PASS. (Serial #064)		
WA ⁰	40 deg.			N/A		
SWA ⁰	63 deg.			N/A		
SCA ⁰	22 deg.			N/A		
SA ⁰	20 deg.			20 deg.		
HZ	252			242		
HH	412			420		
HW	590			595		
HR	213			220		
NR	400	Angle	10 deg.	N/A		
CD	531			531		
CS	295			N/A		
RA	164			N/A		
KDL	185	Angle (KDA)	35 deg.	183		
KDR	183			178	Angle (KDA)	35 deg.
PA ⁰	25 deg.			25 deg.		
TA ⁰	40 deg.			39 deg.		
KK	320			200		
AA	384			225		
ST	531	Angle	23 deg.	525	Angle	23 deg.
SK	744	Angle	94 deg.	730	Angle	93 deg.
SH	385	Angle	115 deg.	372	Angle	112 deg.
SHY	260			255		
HS	313			318		
HD	188			182		
AD	105			115		

Dimensions in millimeters

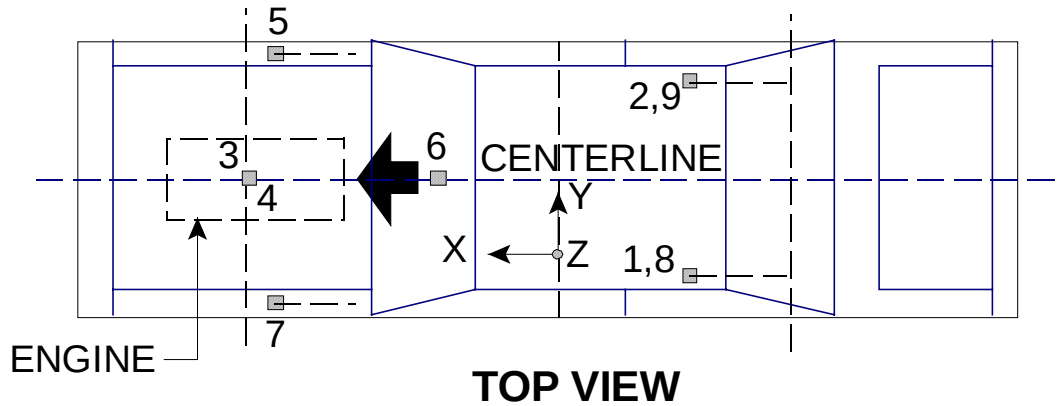
DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

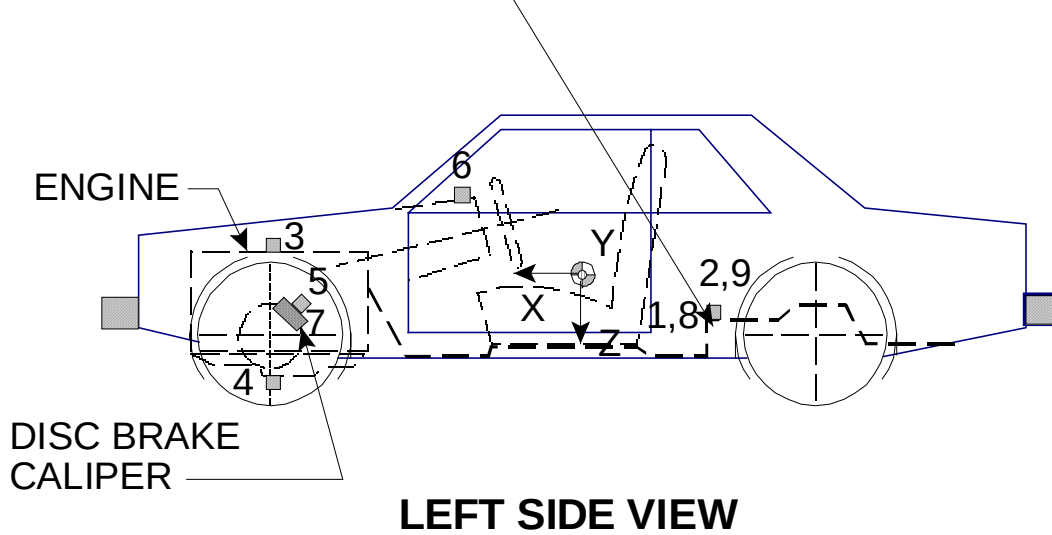


	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	362	350
PBL-- Top surface of alum. plate to belt lower edge	278	262
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



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

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

LOCATION		PRE-TEST LENGTH (mm)		
		X	Y	Z
1	Left Rear Seat Cross Member X	2779	-700	-605
2	Right Rear Seat Cross Member X	2779	718	-597
3	Top of Engine Block	4559	-104	-1073
4	Bottom of Engine	4358	75	-492
5	Disc Brake Caliper @ Right Side	4725	880	-375
6	Instrument Panel	3798	43	-1028
7	Disc Brake Caliper @Left Side	4725	-880	-375
8	Left Rear Seat Cross Member Z	2779	-700	-605
9	Right Rear Seat Cross Member Z	2779	718	-597

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Left Rear Seat Cross Member X	8.5	110.9	-40.1	33.9
2	Right Rear Seat Cross Member X	6.9	114.3	-38.9	46.5
3	Top of Engine Block	63.5	46.8	-139.3	34.8
4	Bottom of Engine	74.4	87.0	-134.6	36.4
5	Disc Brake Caliper @ Right Side	105.1	27.7	-182.3	37.4
6	Instrument Panel	96.1	29.1	-174.0	38.1
7	Disc Brake Caliper @Left Side	18.3	57.6	-73.6	49.0
8	Left Rear Seat Cross Member Z	23.8	47.1	-20.0	38.7
9	Right Rear Seat Cross Member Z	9.2	30.8	-10.4	121.8

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

Vehicle Year/Make/Model/Body Style: 2002 Toyota Tundra Access Cab 4X4

NHTSA Test No.: M25110 Test Date: January 4, 2002

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Head 9 Array X Arm Y	g	6.4	59.4	-18.1	73.6	27.6	185.4	-18.0	70.2
Head 9 Array X Arm Z	g	65.0	196.6	-9.2	125.8	53.5	185.2	-7.7	121.4
Head 9 Array Y Arm X	g	85.2	196.4	-56.4	73.9	98.1	185.2	-72.0	73.6
Head 9 Array Y Arm Z	g	35.2	46.9	-3.2	126.7	31.2	62.5	-1.9	126.0
Head 9 Array Z Arm X	g	151.4	196.5	-61.0	70.3	148.6	185.2	-75.8	80.4
Head 9 Array Z Arm Y	g	9.1	60.2	-19.3	74.0	44.8	185.1	-18.5	64.7
Head X	g	90.1	196.5	-54.3	72.9	101.9	185.1	-65.1	73.7
Head Y	g	4.6	58.5	-15.8	72.6	27.2	185.1	-14.4	87.7
Head Z	g	35.9	47.0	-2.7	126.0	30.6	72.6	-3.5	121.3
Head Resultant	g	92.9	196.4	-	-	106.9	185.1	-	-
Redundant Head X	g	92.0	196.4	-53.9	73.0	98.7	185.1	-65.6	73.7
Redundant Head Y	g	4.2	51.5	-16.7	72.1	26.9	185.1	-15.4	87.3
Redundant Head Z	g	36.2	47.2	-2.8	126.1	30.4	72.6	-3.5	119.3
Redundant Head Resultant	g	95.0	196.4	-	-	103.9	185.1	-	-
Upper Neck Fx	N	217.8	72.4	-617.5	102.1	139.3	181.6	-469.1	48.7
Upper Neck Fy	N	*	-	-379.1	77.5	3.7**	-47.1	-594.9**	55.3
Upper Neck Fz	N	1823.6	66.7	-542.5	219.0	1459.6	73.1	-640.5	212.2
Upper Neck F Resultant	N	1829.1	66.7	-	-	1511.9	72.5	-	-
Upper Neck Mx	N-m	23.1	64.3	-12.2	214.6	18.5	204.3	-22.8	65.5
Upper Neck My	N-m	46.0	123.8	-34.3	222.6	28.0	123.7	-41.5	211.1
Upper Neck Mz	N-m	11.1	63.5	-3.8	134.1	25.3	96.1	-9.0	149.6
Upper Neck M Resultant	N-m	46.3	123.8	-	-	43.1	210.9	-	-
Chest X	g	7.0	184.2	-47.8	63.8	9.6	176.1	-49.7	63.8
Chest Y	g	8.9	79.9	-6.0	43.4	4.5	173.0	-11.8	87.5
Chest Z	g	15.4	45.7	-4.8	105.8	17.9	47.9	-6.2	105.4
Chest Resultant	g	47.8	63.8	-	-	50.1	63.8	-	-

* Wire damaged at 88 ms

** Data is questionable

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

Vehicle Year/Make/Model/Body Style: 2002 Toyota Tundra Access Cab 4X4

NHTSA Test No.: M25110 Test Date: January 4, 2002

		MAXIMUM VALUE							
		Driver				Passenger			
DESCRIPTION	Unit	Pos	msec	Neg	msec	Pos	msec	Neg	msec
Redundant Chest X	g	7.1	183.9	-47.8	63.7	9.6	176.0	-50.2	63.6
Redundant Chest Y	g	9.0	80.0	-5.2	43.4	4.5	173.1	-11.4	87.3
Redundant Chest Z	g	15.6	45.7	-4.7	104.6	17.5	47.9	-6.0	105.4
Redundant Chest Resultant	g	47.8	63.7	-	-	50.6	63.8	-	-
Chest Displacement	mm	0.0	-31.2	-36.0	84.9	0.0	-49.6	-28.7	81.8
Pelvic X	g	5.8	123.0	-73.7	43.1	8.3	92.5	-73.3	54.1
Pelvic Y	g	9.8	48.3	-40.2	43.2	8.8	45.3	-9.6	51.7
Pelvic Z	g	9.5	43.4	-27.6	54.3	2.8	206.0	-28.1	68.2
Pelvic Resultant	g	84.0	43.2	-	-	77.5	54.1	-	-
Left Femur	N	1312.7	46.8	-3785.2	52.4	1439.7	48.2	-3944.8	56.9
Right Femur	N	1887.4	50.0	-5074.3	42.9	1223.8	47.8	-2230.5	59.1
Left Knee Slider Dx	mm	0.2	93.3	-0.4	240.6	1.4	79.9	-0.4	158.1
Right Knee Slider Dx	mm	0.4	93.2	-0.4	148.9	0.2	93.9	-0.8	52.4
Left Upper Tibia Mx	N-m	17.2	193.9	-27.5	70.7	9.3	77.9	-58.5	54.3
Left Upper Tibia My	N-m	19.5	113.4	-114.9	35.2	41.7	102.9	-339.3	45.1
Left Lower Tibia Fz	N	184.5	155.3	-3486.2	35.1	188.7	126.6	-6347.1	44.0
Left Lower Tibia Mx	N-m	34.7	89.2	-12.0	31.2	27.5	83.2	-23.5	47.3
Left Lower Tibia My	N-m	42.8	94.0	-29.2	65.8	43.7	53.0	-166.5	45.3
Right Upper Tibia Mx	N-m	39.3	66.0	-115.8	44.5	11.2	73.0	-31.3	59.3
Right Upper Tibia My	N-m	28.9	100.6	-398.2	42.8	18.4	119.4	-130.8	43.2
Right Lower Tibia Fz	N	449.8	50.5	-14603.5	42.7	150.6	134.8	-2435.7	41.7
Right Lower Tibia Mx	N-m	61.7	64.8	-106.9	43.7	6.9	61.6	-12.1	76.8
Right Lower Tibia My	N-m	49.1	44.3	-67.0	43.2	25.8	79.2	-68.2	43.4
Left Foot Aft Ax	g	19.3	90.0	-105.1	31.3	78.9	51.6	-298.3	44.2
Left Foot Aft Az	g	4.9	135.6	-67.5	36.4	48.5	56.1	-89.2	48.2
Left Foot Fore Az	g	75.8	54.6	-96.0	36.4	135.0	55.9	-277.9	44.0
Right Foot Aft Ax	g	33.0	50.3	-348.1	42.8	53.1	56.1	-114.0	42.2
Right Foot Aft Az	g	44.4	63.1	-468.6	41.9	11.7	37.1	-54.9	52.8
Right Foot Fore Az	g	172.2	45.0	-894.1	41.9	58.5	56.1	-85.9	40.9

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

Vehicle Year/Make/Model/Body Style: 2002 Toyota Tundra Access Cab 4X4

NHTSA Test No.: M25110 Test Date: January 4, 2002

HEAD INJURY CRITERIA (HIC)				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	651.8	58.5	90.8	46.9
Position #2 - Passenger	736.6	61.2	94.2	48.4

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

CLIP SUMMARY*				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	46.9	55.1	58.2	514.4
Position #2 - Passenger	48.4	62.3	65.3	565.7

* 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: 2002 Toyota Tundra Access Cab 4X4

NHTSA Test No.: M25110 Test Date: January 4, 2002

HEAD INJURY CRITERIA (HIC) REDUNDANT				
	HIC**	t ₁ (msec)	t ₂ (msec)	Average Acceleration t ₁ to t ₂
Position #1 - Driver	643.4	58.5	90.8	52.5
Position #2 - Passenger	758.5	61.2	94.0	55.7

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

CLIP SUMMARY* REDUNDANT				
	CLIP (g's)	t ₁ (msec)	t ₂ (msec)	CSI
Position #1 - Driver	46.8	55.0	58.1	517.8
Position #2 - Passenger	48.9	62.3	65.3	574.6

* 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>2470</u>	<u>2483</u>
Shoulder belt length as measured on Part 572 Dummy.	<u>845</u>	<u>847</u>
Lap belt length as measured on Part 572 Dummy.	<u>860</u>	<u>864</u>

SHOULDER BELT SPOOL-OFF DATA:

As determined by film analysis.	Spool-on: 57 <u>Spool-off: 178</u>	Spool-on: 57 <u>Spool-off: 203</u>
As determined mechanically.	<u>*</u>	<u>*</u>
As determined electronically.	<u>178</u>	<u>203</u>

BELT STRETCH DATA:

Measured electronically between shoulder belt load cell and the "D" ring.	<u>*</u>	<u>*</u>
Measured mechanically.	<u>10 mm/M</u>	<u>10 mm/M</u>

Dimensions in millimeters

* Seating position was equipped with pretensioning/load limiting seat belt. Transducer was not installed to prevent interference with this system.

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 20 mm molding.

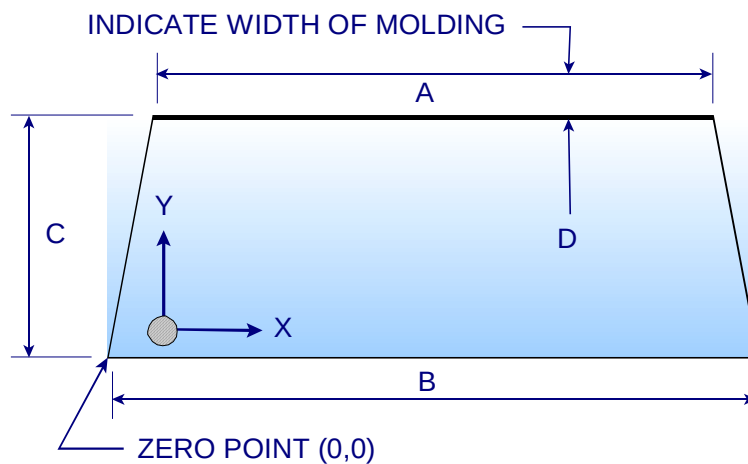
FMVSS 212 REQUIREMENTS:

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	2077.5	2077.5	100.0%
LEFT SIDE	2077.5	2077.5	100.0%
TOTAL	4155	4155	100.0%

AREA OF RETENTION FAILURE:



DIMENSIONS (mm)	
A	1285
B	1570
C	650
D	20

FRONT VIEW OF WINDSHIELD

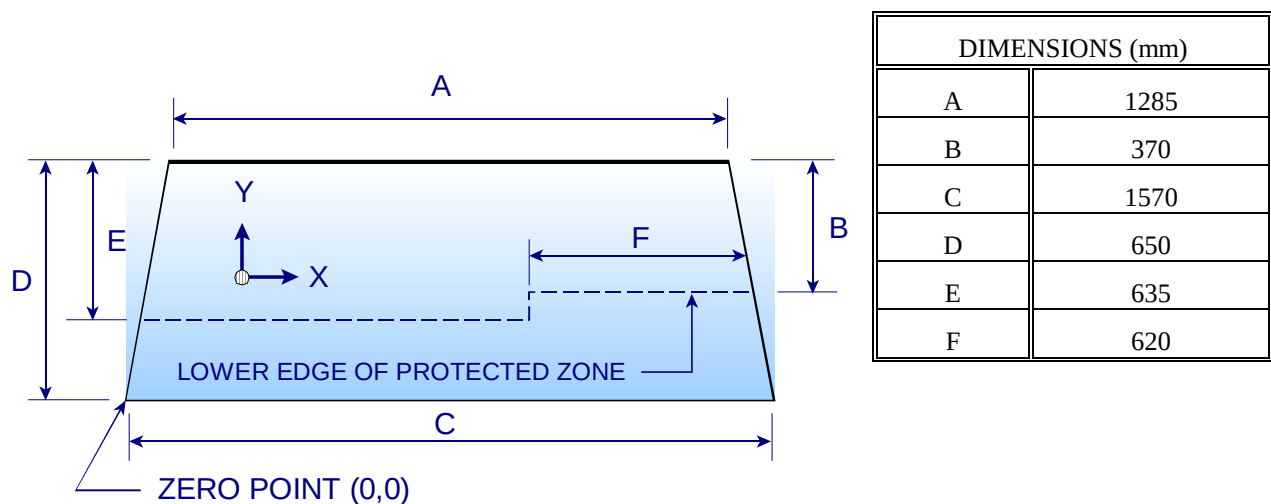
FAILURE DETAILS: None

DATA SHEET NO. 11 FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 165 mm diameter rigid sphere weighing 6.8 kg in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. The locus of points is drawn on the inner surface of the windshield contacted by the sphere across the width of the instrument panel. From the outermost contactable points extend the locus line horizontally to the edges of the windshield, then draw a line on the inner surface of the windshield below and 13 mm distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection of this line onto the outer surface of the windshield.

FMVSS 219 TEST DATA:



FRONT VIEW OF WINDSHIELD

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm: None

(Show location of penetration on the above sketch)

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

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

NHTSA TEST No.: M25110 TEST DATE: January 4, 2002

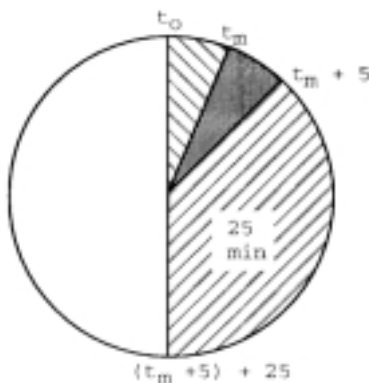
VEHICLE MAKE/MODEL: 2002 Toyota Tundra Access Cab 4X4

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

=====

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

FUEL SPILLAGE MEASUREMENT:



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

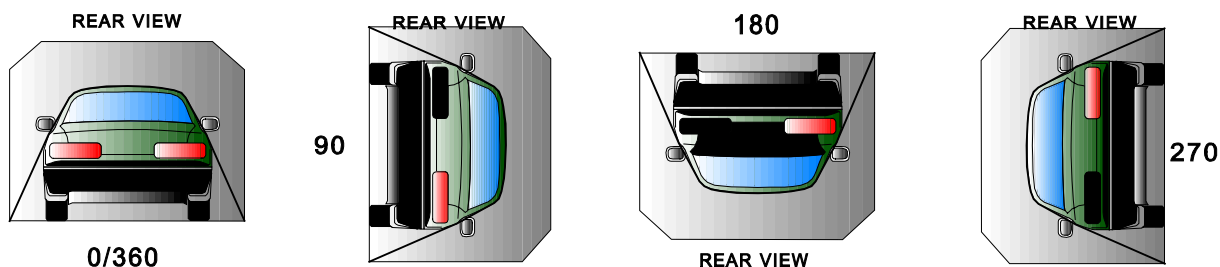
ACTUAL	MAX ALLOWED
0	28 g
0	141 g
0	28 g/min.

SOLVENT SPILLAGE DETAILS: None

DATA SHEET NO. 13 - ROLLOVER DATA

Vehicle: 2002 Toyota Tundra Access Cab 4X4

NHTSA No.: M25110



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0° - 90°	1	minutes	10	seconds	5	minutes	6	minutes	10	seconds	7	minutes
90° - 180°	1	minutes	5	seconds	5	minutes	6	minutes	5	seconds	7	minutes
180°-270°	1	minutes	12	seconds	5	minutes	6	minutes	12	seconds	7	minutes
270°-360°	1	minutes	10	seconds	5	minutes	6	minutes	10	seconds	7	minutes

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

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

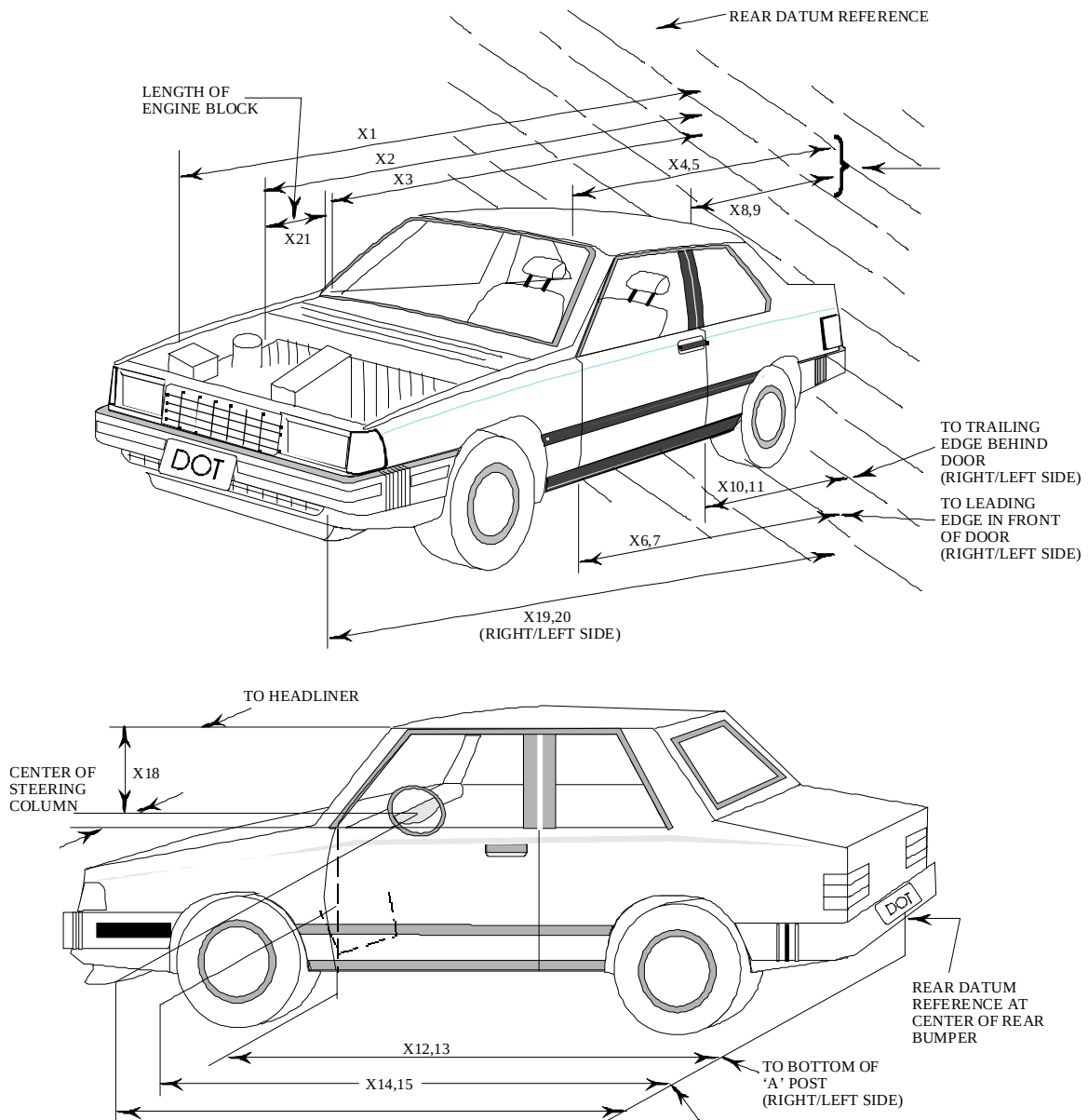
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	N/A
90° - 180°	0	0	0	N/A
180°-270°	0	0	0	N/A
270°-360°	0	0	0	N/A

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

IV. SOLVENT SPILLAGE LOCATION(S):

Rollover Stage	Spillage Location
0° - 90°	-
90° - 180°	-
180°-270°	-
270°-360°	-

DATA SHEET NO. 14 TEST VEHICLE MEASUREMENTS

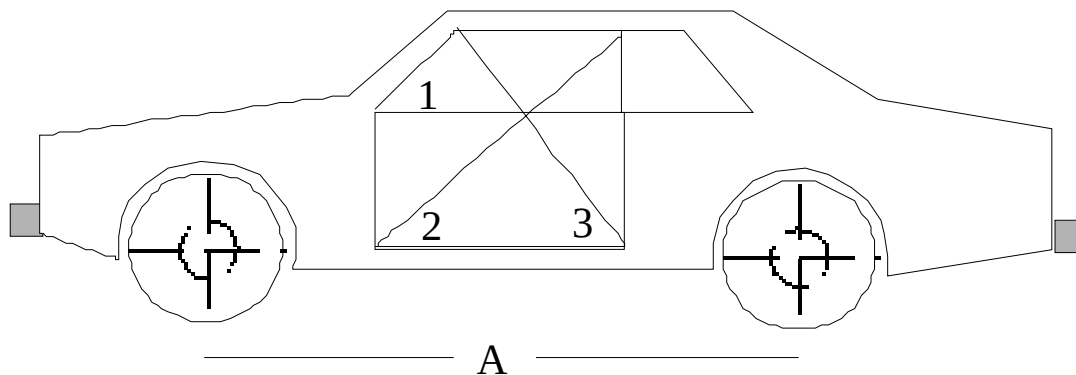


DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	5523	4918	605
X2	Rear Surface of Vehicle to Front of Engine	4955	4733	222
X3	Rear Surface of Vehicle to Firewall	4329	4244	85
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	4036	4030	6
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	4030	4026	4
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	4034	4018	16
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	4021	4013	8
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2903	2900	3
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2900	2895	5
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2892	2889	3
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2886	2875	11
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	4043	4043	0
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	4036	4031	5
X14	Rear Surface of Vehicle to Firewall, Right Side	4325	4292	33
X15	Rear Surface of Vehicle to Firewall, Left Side	4330	4279	51
X16	Rear Surface of Vehicle to Steering Column	3616	3621	-5
X17	Center of Steering Column to "A" Post	263	254	9
X18	Center of Steering Column to Headliner	425	394	31
X19	Rear Surface of Vehicle to Right Side of Front Bumper	5456	4915	541
X20	Rear Surface of Vehicle to Left Side of Front Bumper	5454	4901	553
X21	Length of Engine Block	515	510	5
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3822	3808	14
CD	Rear Surface of Vehicle to Center of Dash Panel	3817	3808	9
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3825	3820	5

All Dimensions in mm

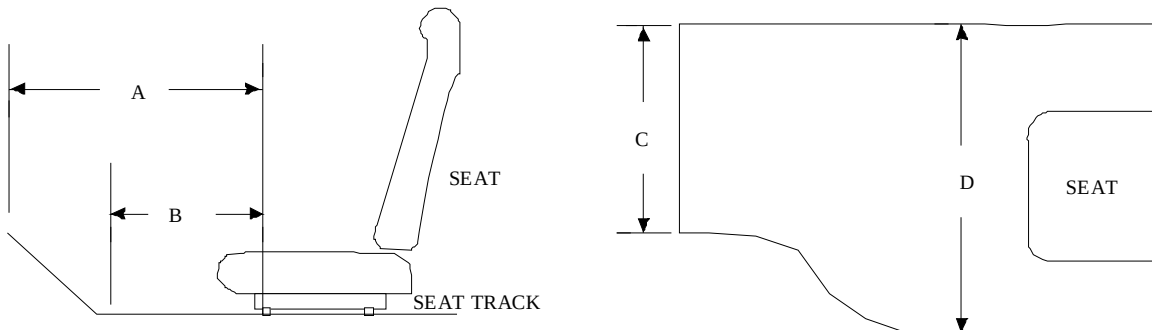
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)
 VEHICLE INTRUSION MEASUREMENTS
 DOOR OPENING WIDTH



UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	1090	1528	1259	1101	1551	1270
AFTER TEST	1094	1525	1261	1088	1542	1266
DIFFERENCE	-4	3	-2	13	9	4

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	3263	3263
AFTER TEST	3223	3208
DIFFERENCE	40	55

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



DRIVER

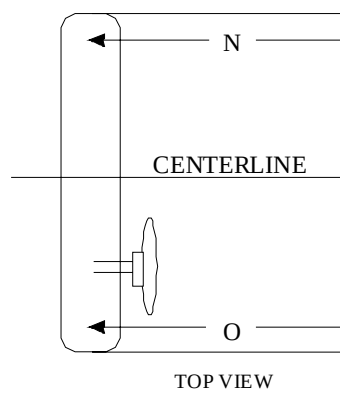
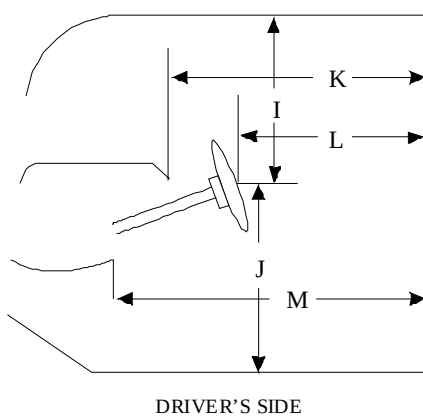
Measurement	Pre-Test	Post-Test	Difference
A	723	662	61
B	579	567	12
C	435	426	9
D	493	478	15

PASSENGER

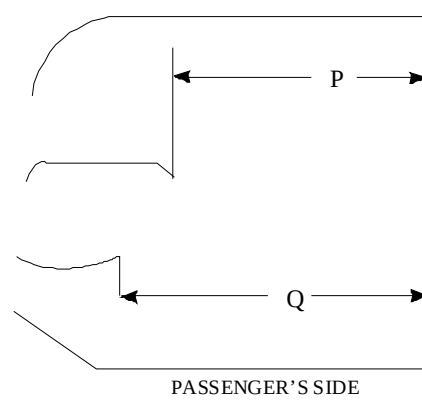
Measurement	Pre-Test	Post-Test	Difference
A	721	651	70
B	484	467	17
C	333	330	3
D	490	495	-5

Units = mm

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



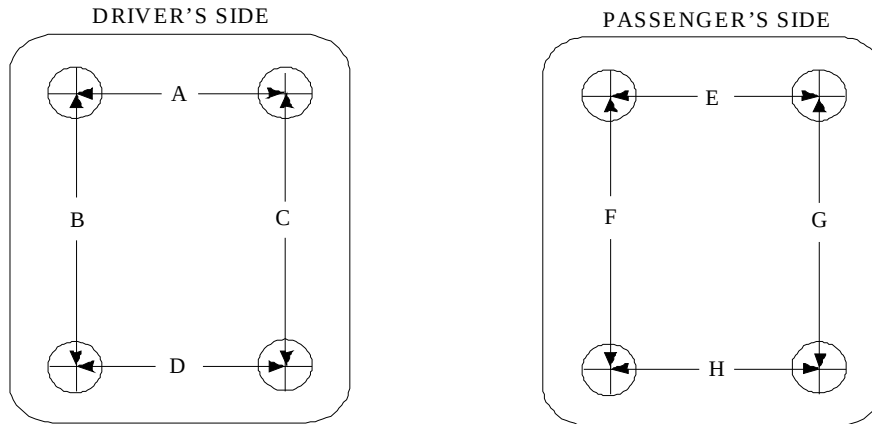
MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



Measurement	Pre-Test	Post-Test	Difference
I	425	394	31
J	667	673	-6
K	2517	2509	8
L	2301	2298	3
M	2615	2598	17
N	2507	2489	18
O	2510	2497	13
P = K (PASS.)	2644	2638	6
Q = M (PASS.)	2591	2563	28

Units = mm

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

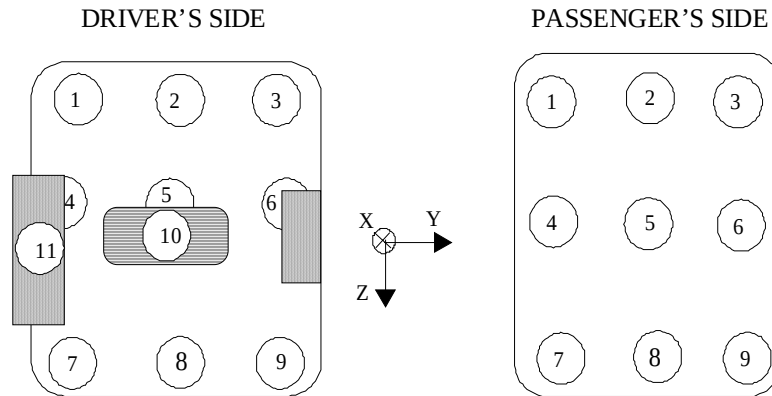


TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	435	426	9
B	446	459	-13
C	408	375	33
D	493	478	15
E	333	330	3
F	529	515	14
G	504	496	8
H	490	495	-5

Units = mm

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



Driver Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	4313	4283	30	-829	-849	20
2	4284	4213	71	-830	-862	32
3	4200	4165	35	-805	-868	63
4	4254	4228	26	-705	-711	6
5	4249	4164	85	-682	-737	55
6	4250	4143	107	-696	-742	46
7	4140	4142	-2	-592	-594	2
8	4140	4117	23	-595	-595	0
9	4141	4093	48	-599	-616	17
10	4126	4098	28	-781	-784	3
11	4194	4177	17	-721	-722	1

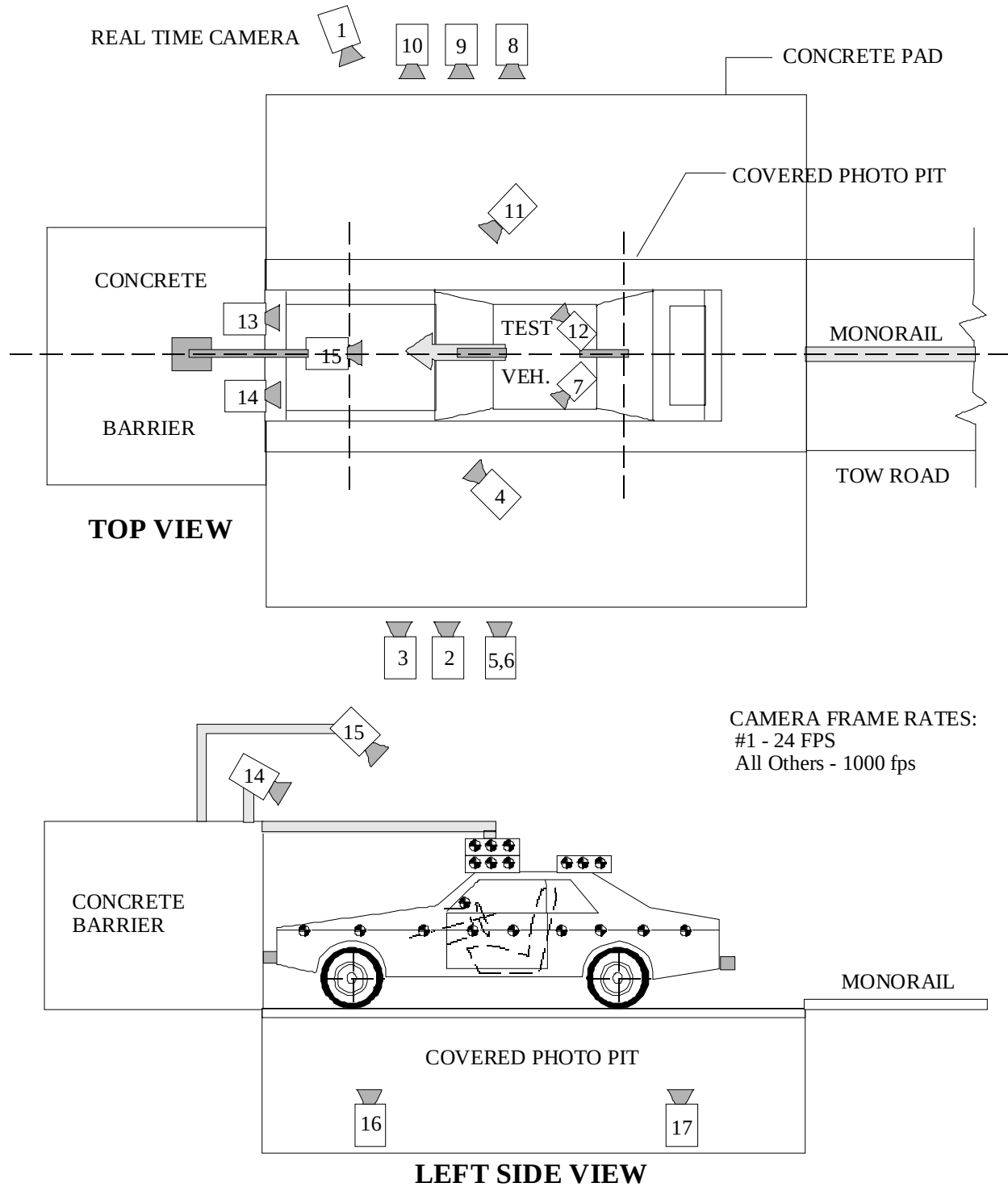
Passenger Side Toe-pan Measurements

Toe-pan Location	X Deformation (mm)			Z Deformation (mm)		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	4270	4180	90	-746	-759	13
2	4296	4223	73	-740	-798	58
3	4283	4218	65	-764	-778	14
4	4207	4097	110	-618	-684	66
5	4213	4148	65	-619	-654	35
6	4215	4177	38	-625	-636	11
7	4052	4042	10	-587	-596	9
8	4058	4039	19	-587	-574	-13
9	4056	4048	8	-594	-579	-15

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

DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS

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



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

NHTSA Test No.: M25110 Vehicle: 2002 Toyota Tundra Access Cab 4X4

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	7510	1910	1080	-2.6	7086	12.5	1010
3	Left Side View	9200	1250	1210	-1.7	8776	25	1000
4	Driver and Interior View	8319	3022	2000	-6.9	-	35	1050
5	Steering Column (Bottom)	8544	2072	1177	-1.7	8120	25	1005
6	Steering Column (Top)	8544	2072	1777	-6.5	8120	25	1010
7	Left Belt	-	-	-	-	-	8	1010
8	Overall Right Side	7750	2115	1130	-2.1	8101	12.5	1005
9	Right Side View	9145	1282	1145	-2.2	9496	25	1000
10	Right Passenger View	9120	1882	1465	-2.0	9471	35	Camera failed
11	Passenger and Interior View	8480	2725	1984	-5.9	-	35	1005
12	Right Belt	-	-	-	-	-	8	1005
13	Passenger Front View	620	-92	1987	-27.4	-	13	1010
14	Driver Front View	620	-92	1987	-27.5	-	13	1015
15	Windshield View	0	-530	3374	-48.9	-	13	1005
16	Pit View of Engine	0	615	-3048	90	-	13	1020
17	Pit View of Fuel Tank	0	2650	-3048	90	-	13	1010

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

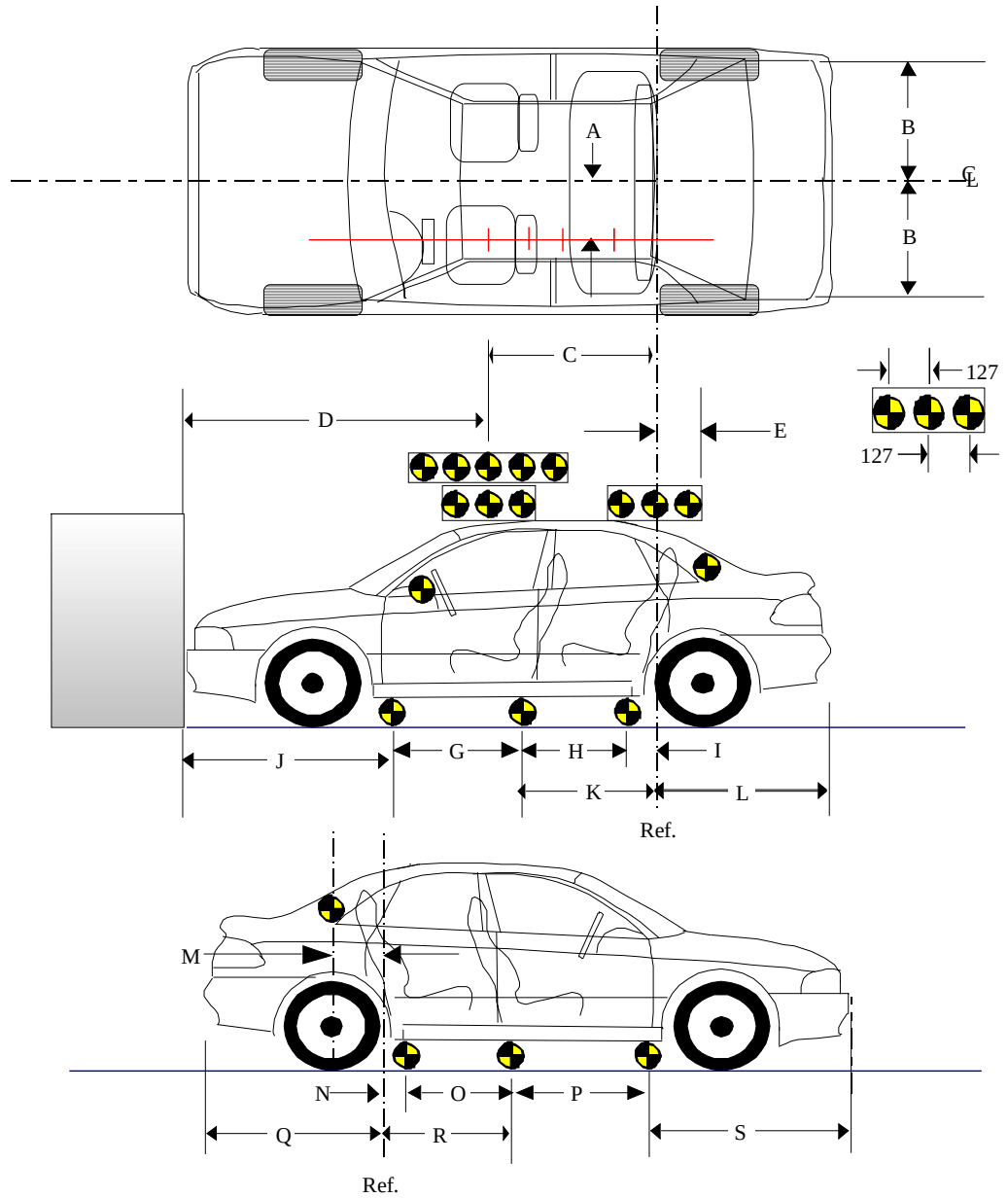
Y = film plane to impact location N.T. indicates No Timing

Z = film plane to ground

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

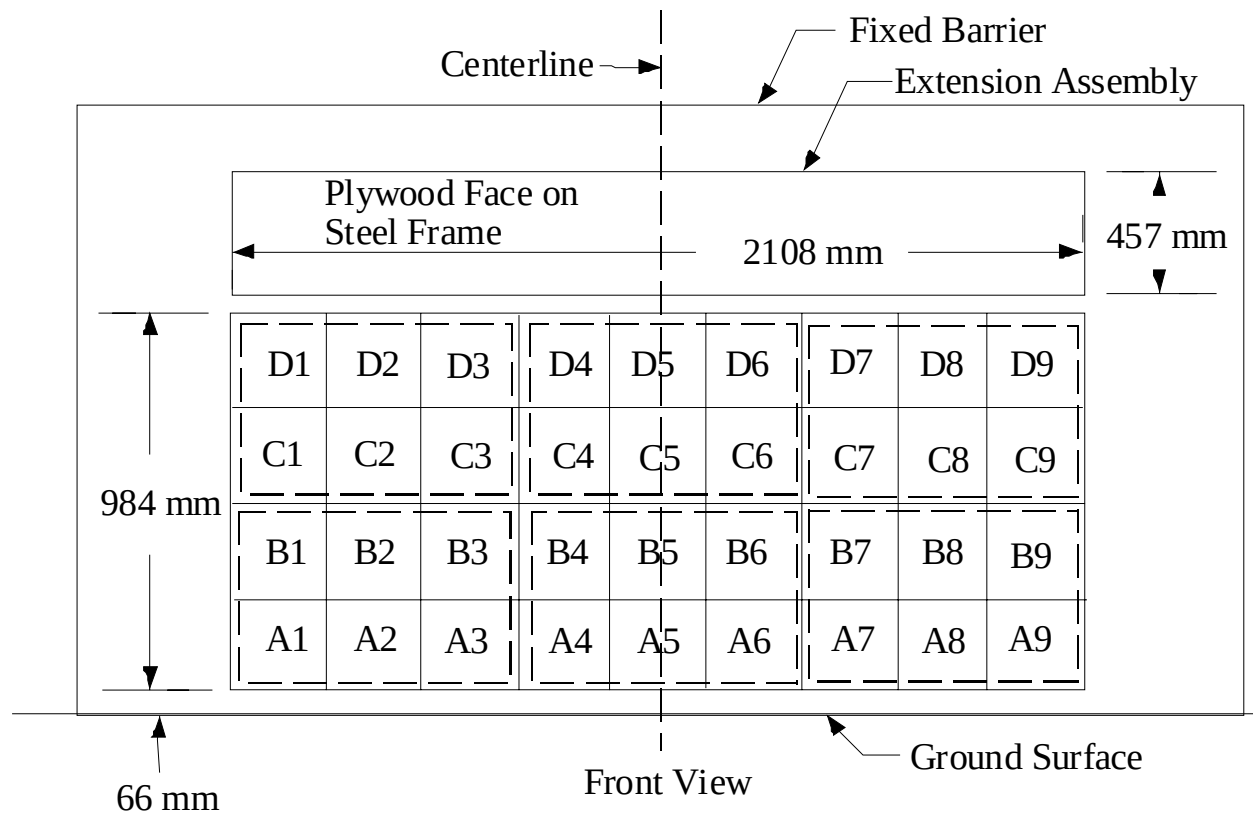
(Dimensions in millimeters)

A	427
B	775
C	1223
D	2328
E	653
F	1791
G	1042
H	1039
I	204
J	1529
K	1243
L	1708
M	649
N	201
O	1045
P	1046
Q	1715
R	1246
S	1516



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.: M25110; Test Date: January 4, 2002; Technician: Lawrence Q. Valvo

Vehicle Model Year/Make/Model: 2002 Toyota Tundra Access Cab 4X4

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

B. Size of vent holes: (mm²) 1590 -Driver 2826 -Passenger

C. Total vent area: (mm²) 3180 -Driver 5652 -Passenger

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

Driver: 640 -Height; 640 -Width; 300 -Depth

Passenger: 830 -Height; 780 -Width; 230 -Depth

E. Is the air bag tethered?

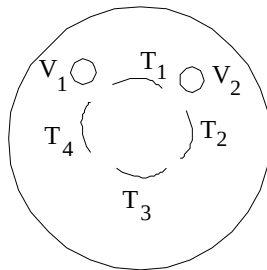
Driver: X -Yes; - -No; If yes, record length of tether- 225

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

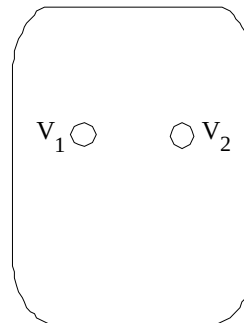
Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.

(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: 45165-0C021; 0007376; E539; 11/10/01; 341108254

Generator: TATMXY1UBUM

Passenger: Air bag: 0005778; G292; 11/10/01

Generator: F22*311212801L46*

DATA SHEET NO. 19 ACCIDENT INVESTIGATION DIVISION DATA

FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Toyota Tundra Access Cab 4X4

NHTSA Test No.: M25110 VIN: 5TBBT44132S254076

Model Year: 2002 Build Date: 11/01 Test Date: January 4, 2002

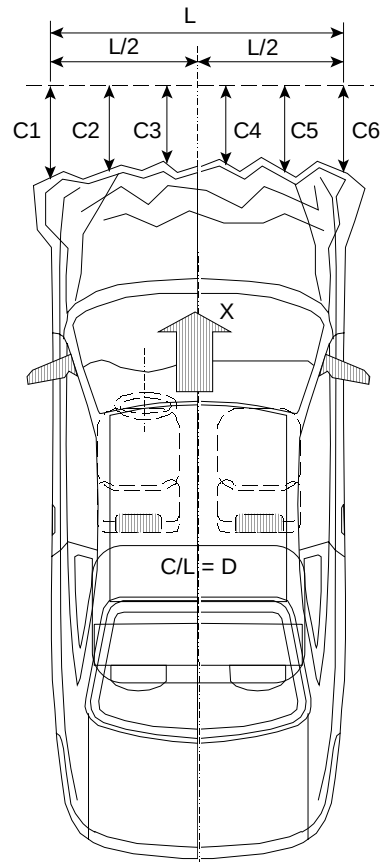
Vehicle Size Category: _____ Test Weight: 2401 kg

Vehicle Wheelbase: 3263 mm; Front Overhang: 932 mm; Overall Width: 2015 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	5302	4855	447
C2 =	5470	4893	577
C3 =	5522	4919	603
C4 =	5522	4926	596
C5 =	5475	4900	575
C6 =	5301	4860	441



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region:

L1=	<u>1728</u>	mm
L2=	<u>864</u>	mm
L5=	<u>346</u>	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

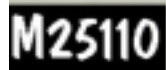


Figure A-11: POST-TEST LEFT REAR THREE-QUARTER VIEW



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

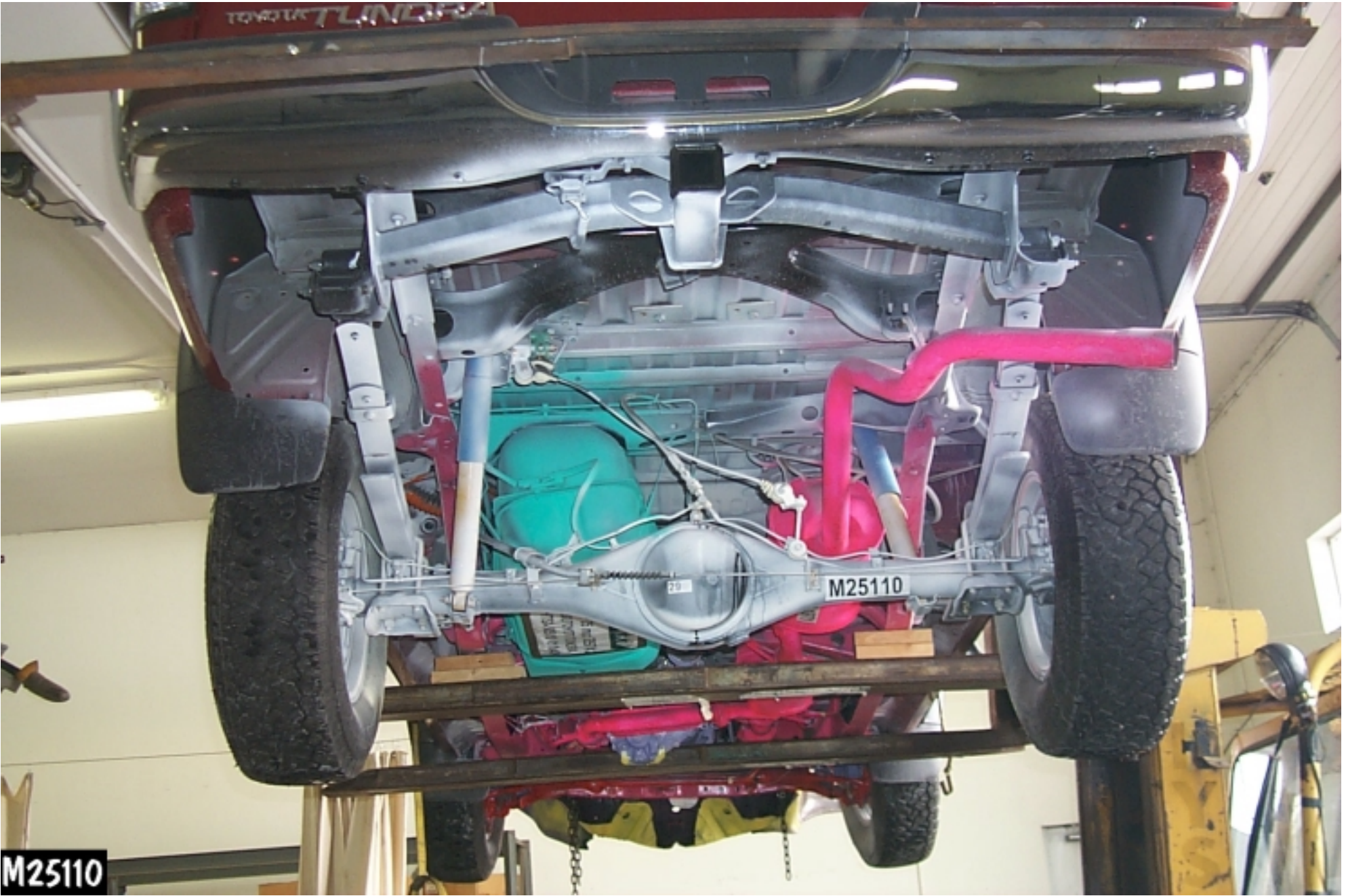


Figure A-21: POST-TEST REAR UNDERBODY VIEW



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



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. M25110

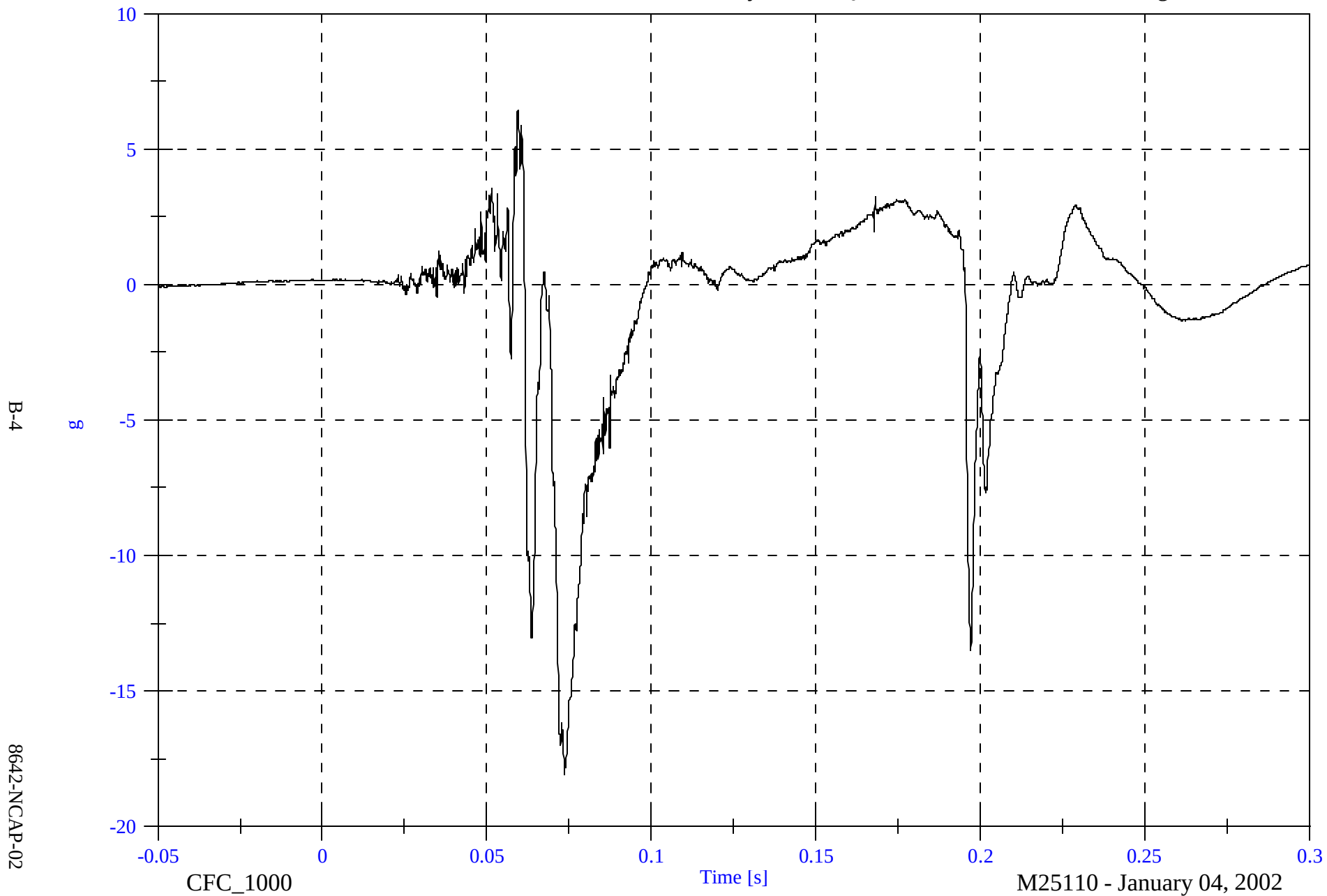
DATA TYPE	SAE FILTER CLASS (Hz)
Dummy Head Accelerations	1000
Dummy Chest Accelerations	180
Dummy Chest Displacements	60
Dummy Femur Forces	600
Dummy Belt Loads	60
Dummy Belt Displacements	180
Dummy Neck Forces	1000
Dummy Neck Moments	600
Vehicle Accelerations	60
Vehicle Velocity Integrations	180
Vehicle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

NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head 9 Array X Arm Ay

Max: 6.4 [g] at 0.059 [s]

Min: -18.1 [g] at 0.074 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

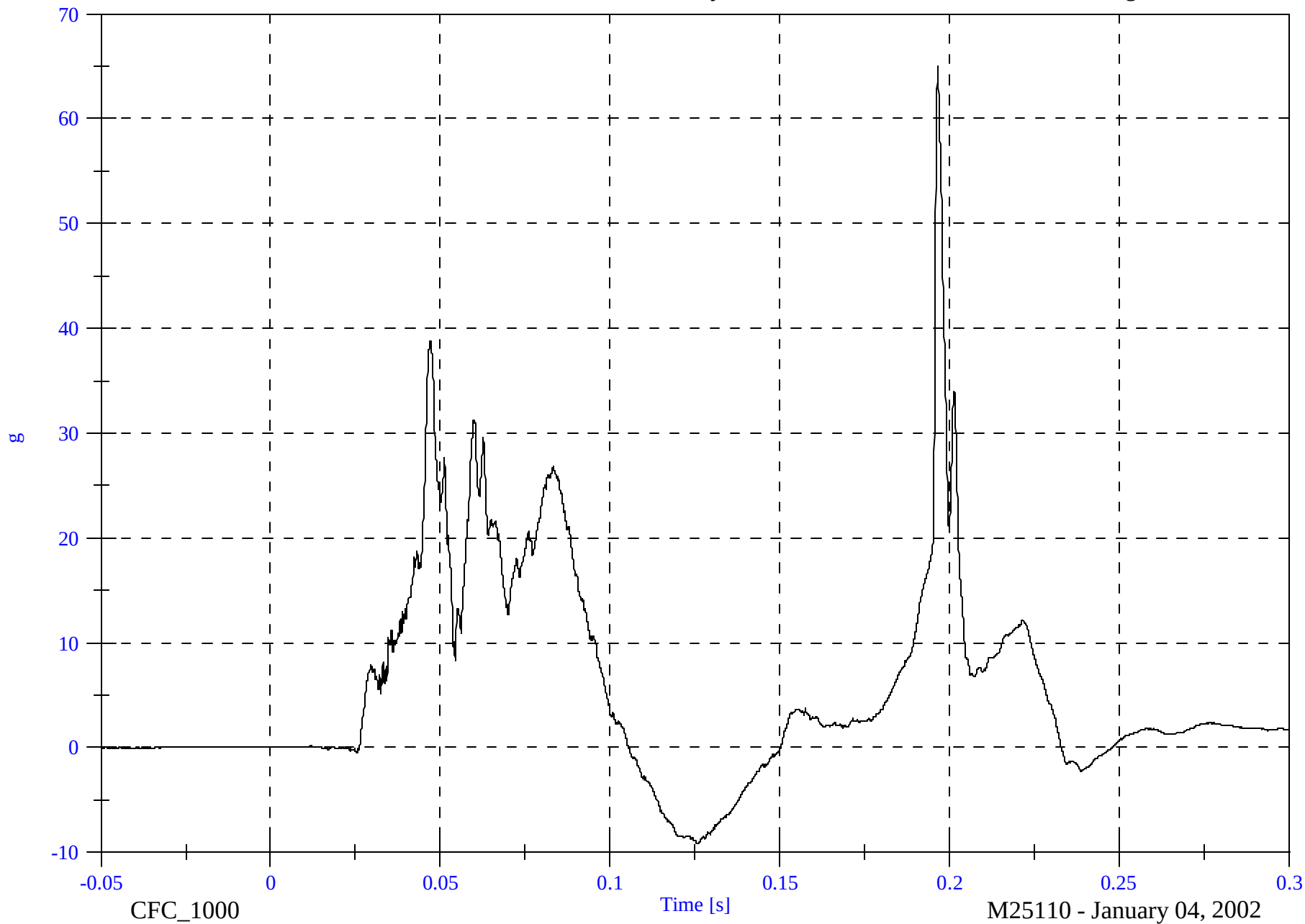
P1 Head 9 Array X Arm Az

Max: 65.0 [g] at 0.197 [s]

Min: -9.2 [g] at 0.126 [s]

B-5

8642-NCAP-02

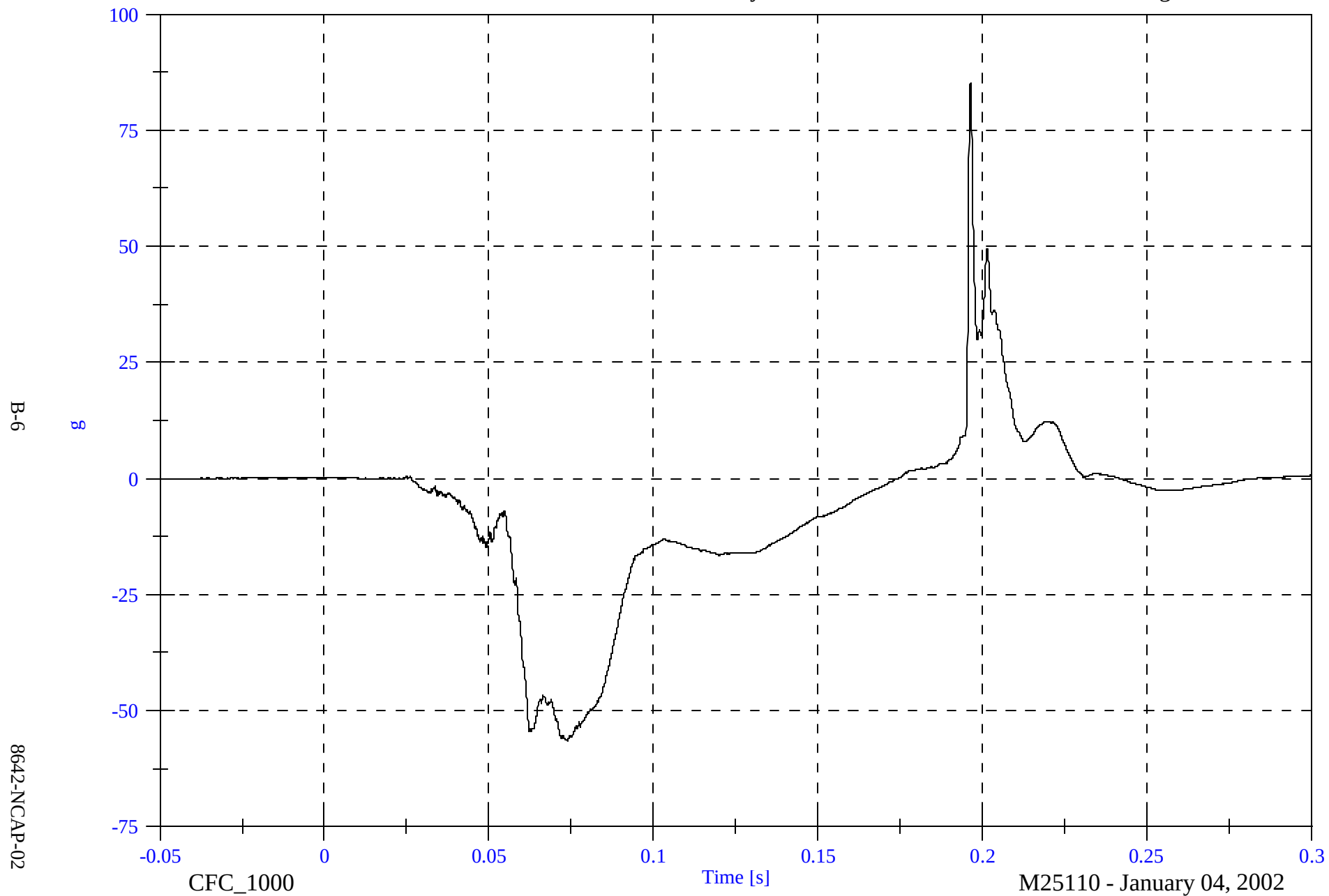


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head 9 Array Y Arm Ax

Max: 85.2 [g] at 0.196 [s]

Min: -56.4 [g] at 0.074 [s]

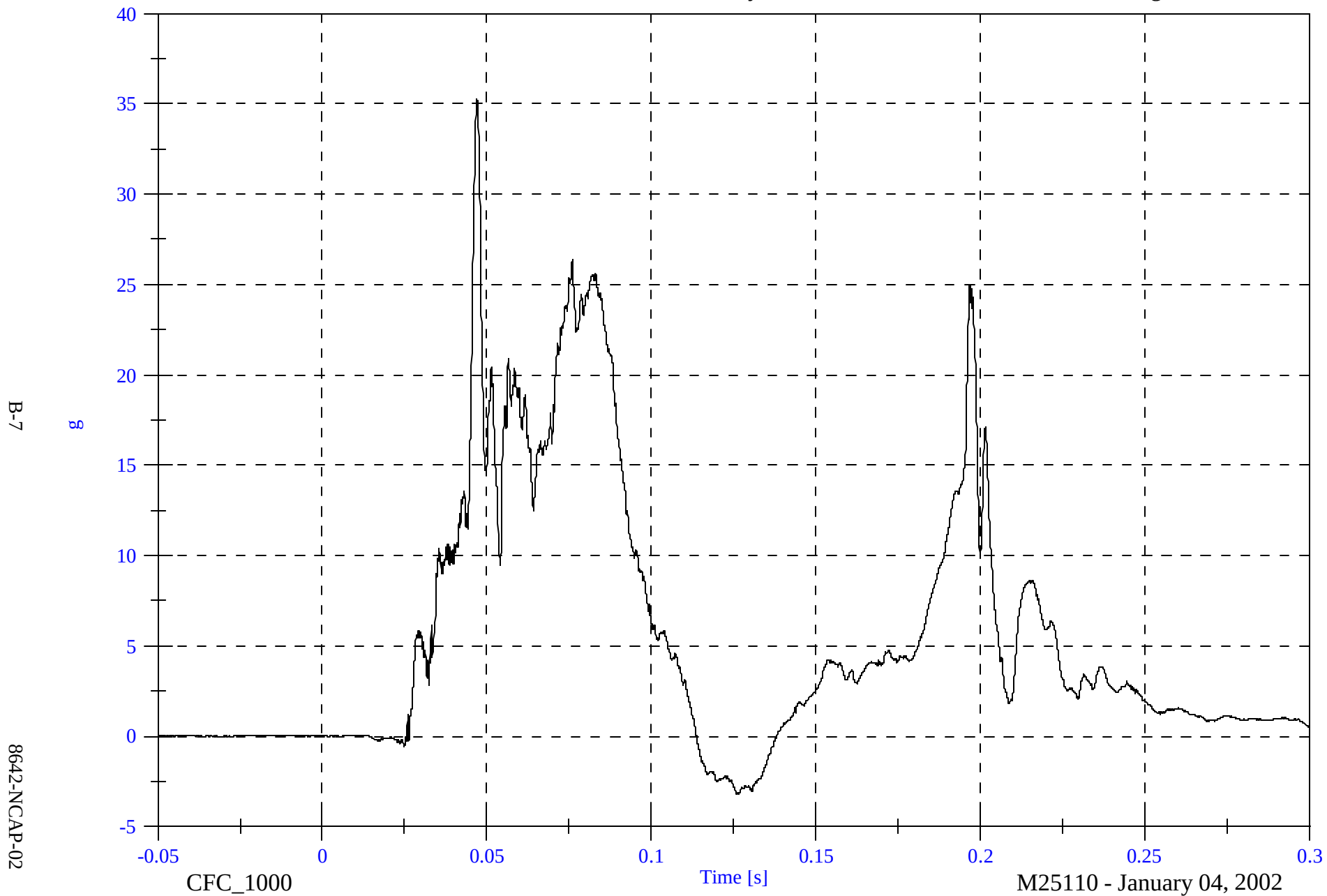


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head 9 Array Y Arm Az

Max: 35.2 [g] at 0.047 [s]

Min: -3.2 [g] at 0.127 [s]

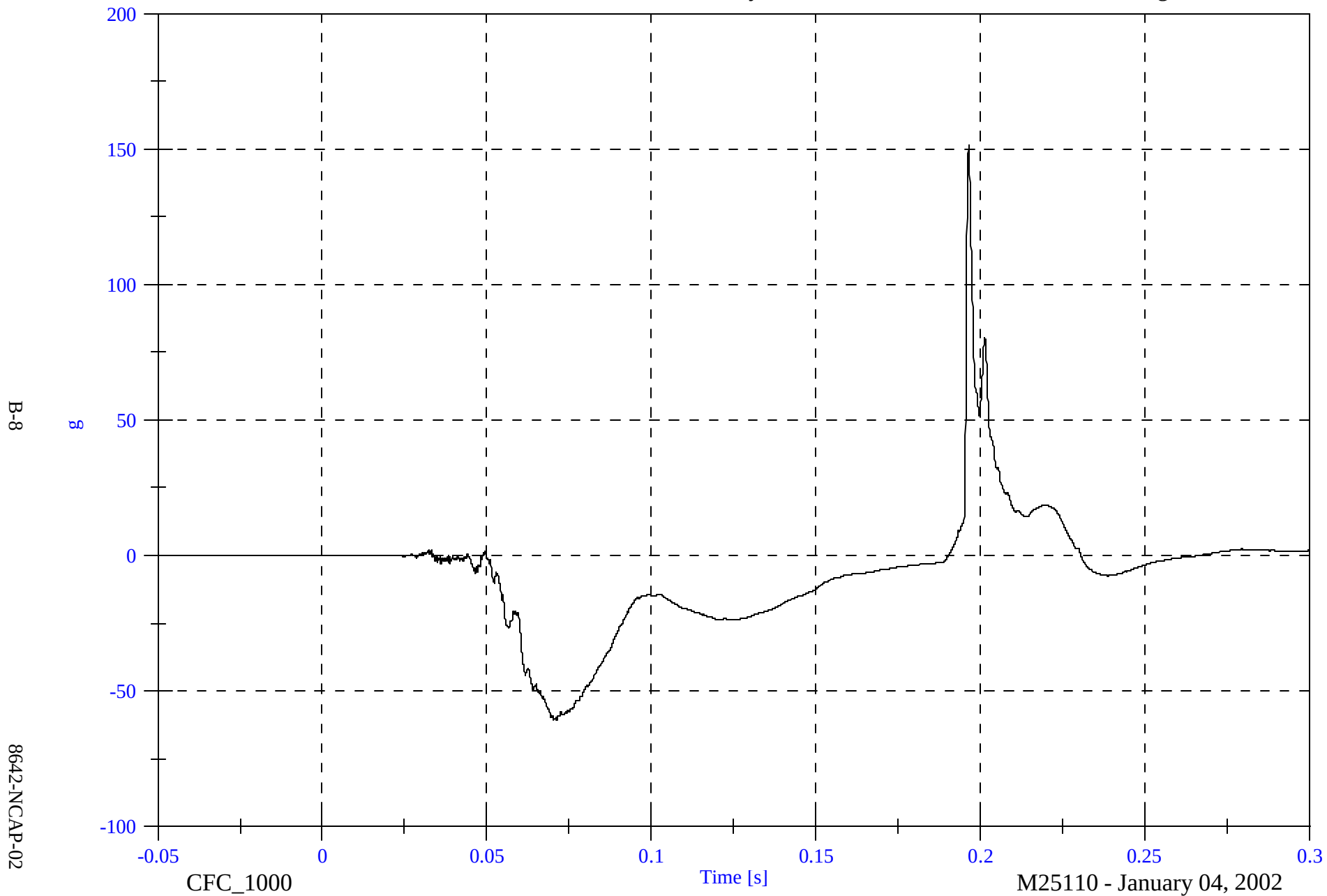


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head 9 Array Z Arm Ax

Max: 151.4 [g] at 0.197 [s]

Min: -61.0 [g] at 0.070 [s]

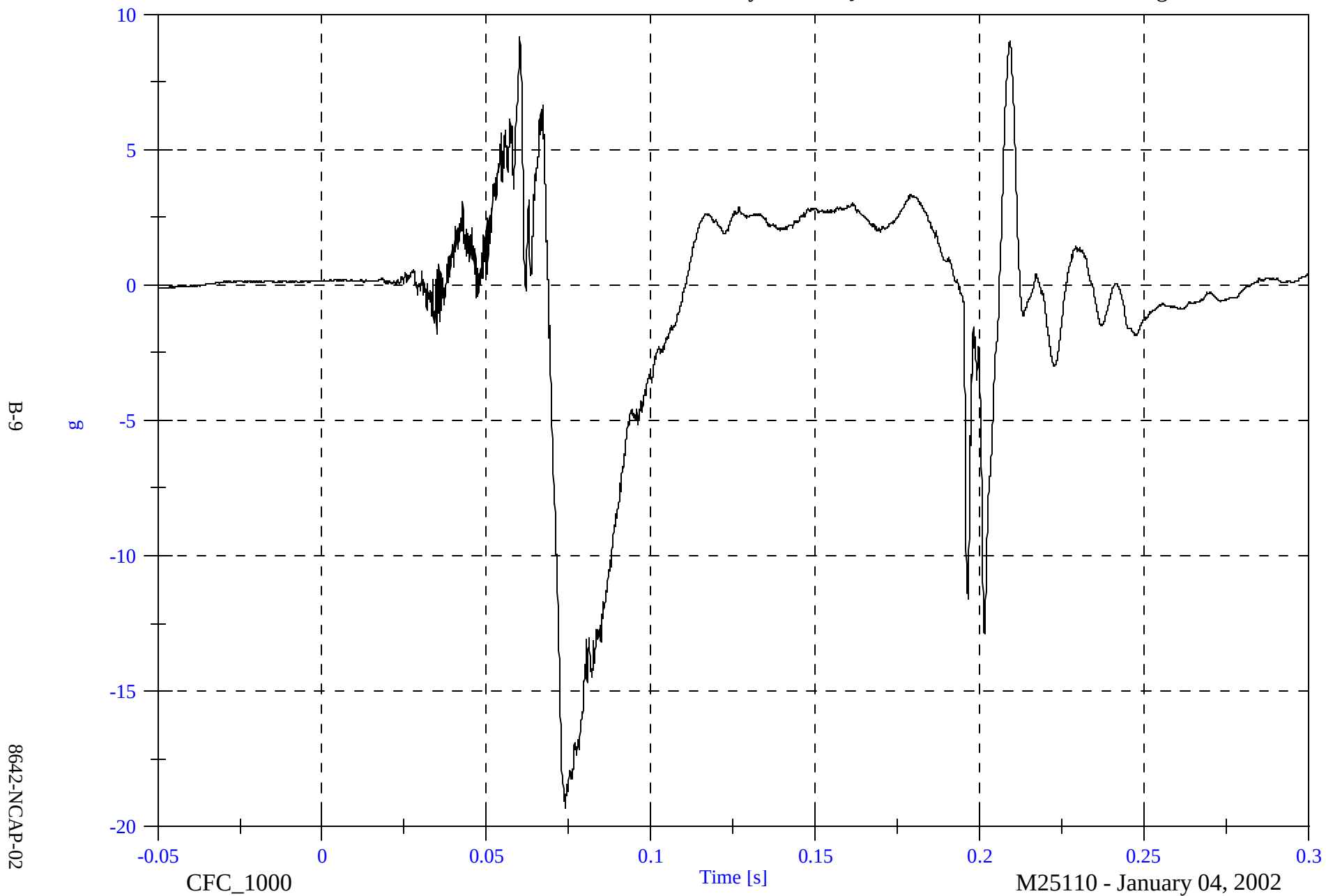


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head 9 Array Z Arm Ay

Max: 9.1 [g] at 0.060 [s]

Min: -19.3 [g] at 0.074 [s]

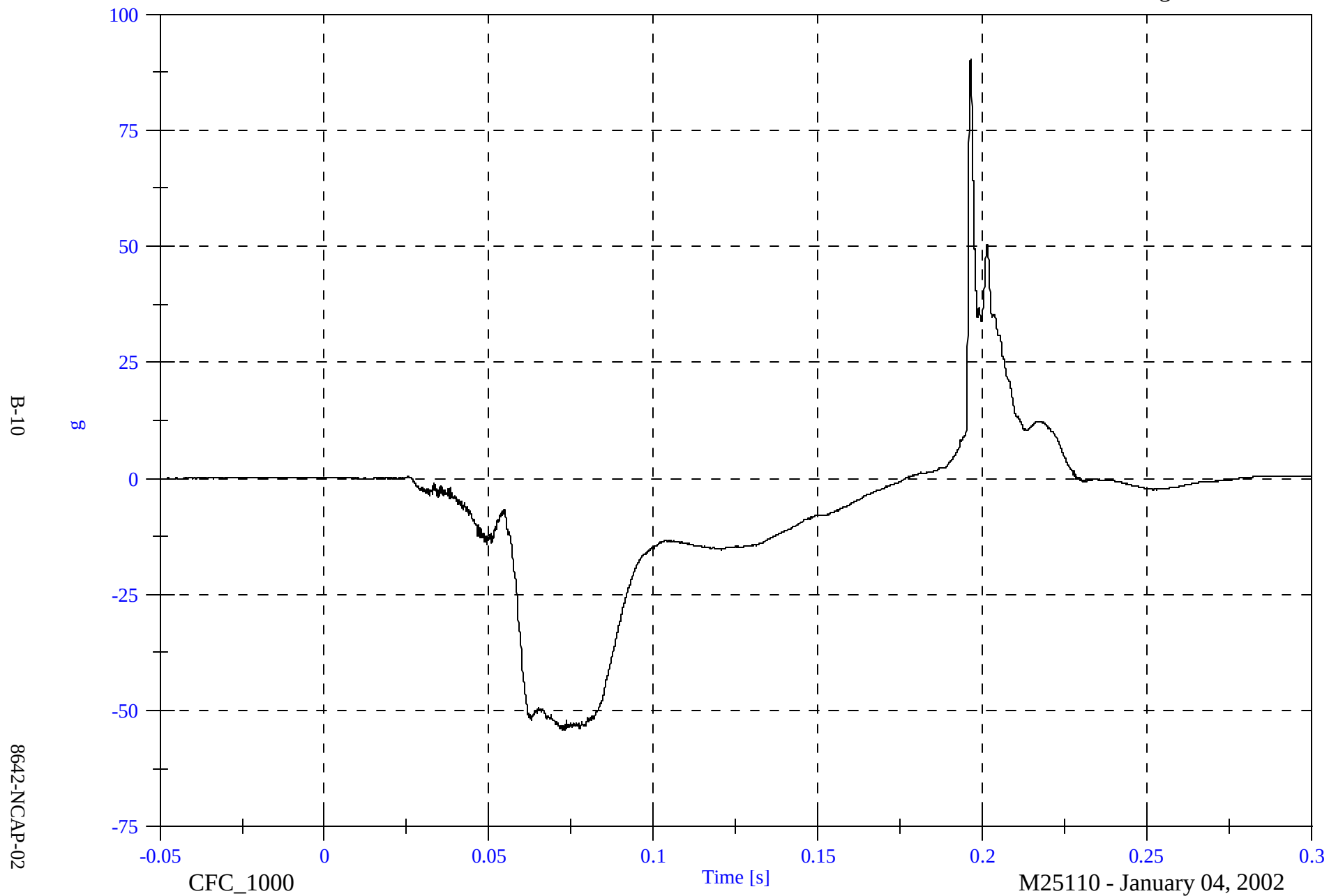


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head CG Ax

Max: 90.1 [g] at 0.196 [s]

Min: -54.3 [g] at 0.073 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

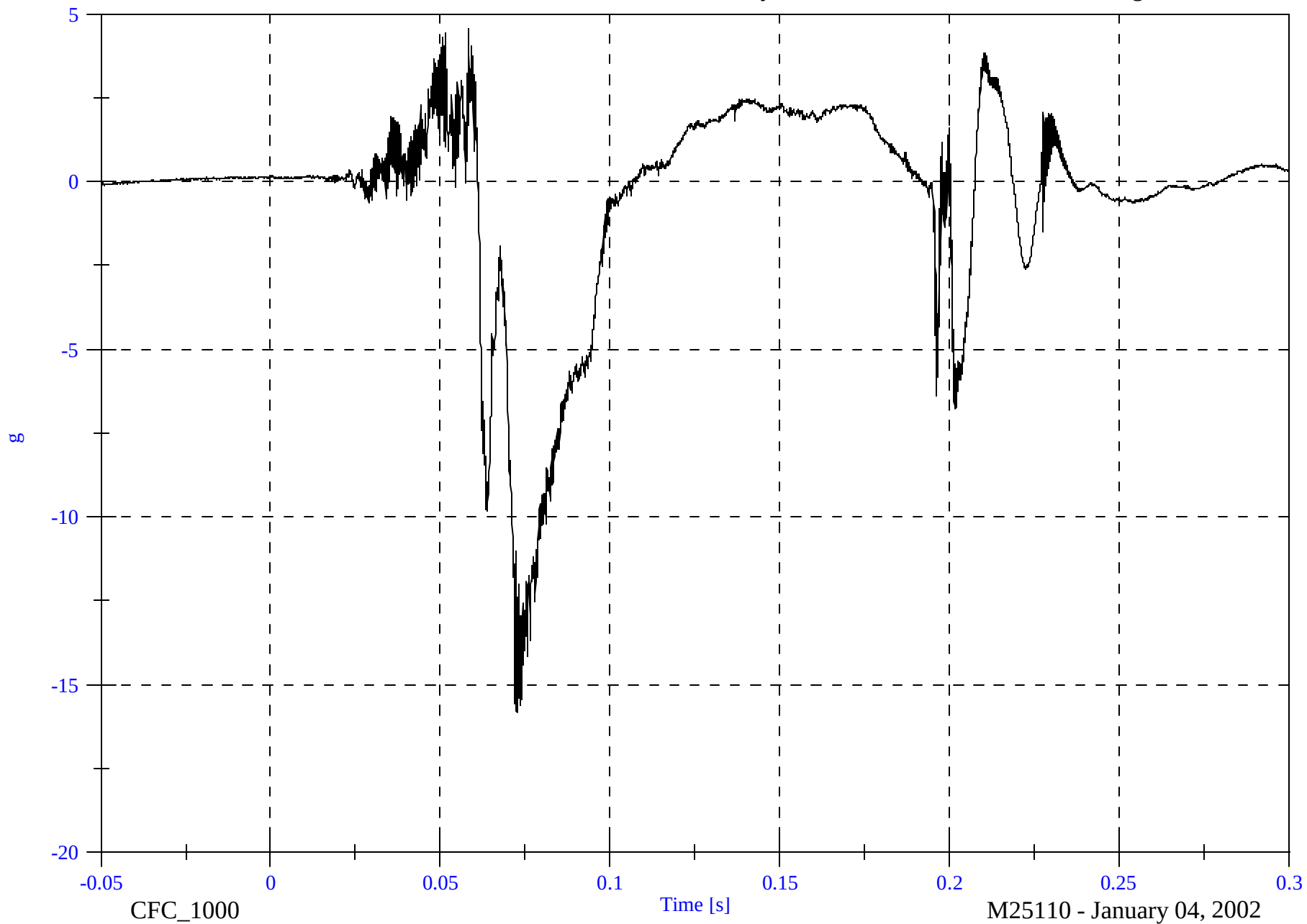
P1 Head CG Ay

Max: 4.6 [g] at 0.058 [s]

Min: -15.8 [g] at 0.073 [s]

B-11

8642-NCAP-02



NCAP - 2002 Toyota Tundra Access Cab 4X4

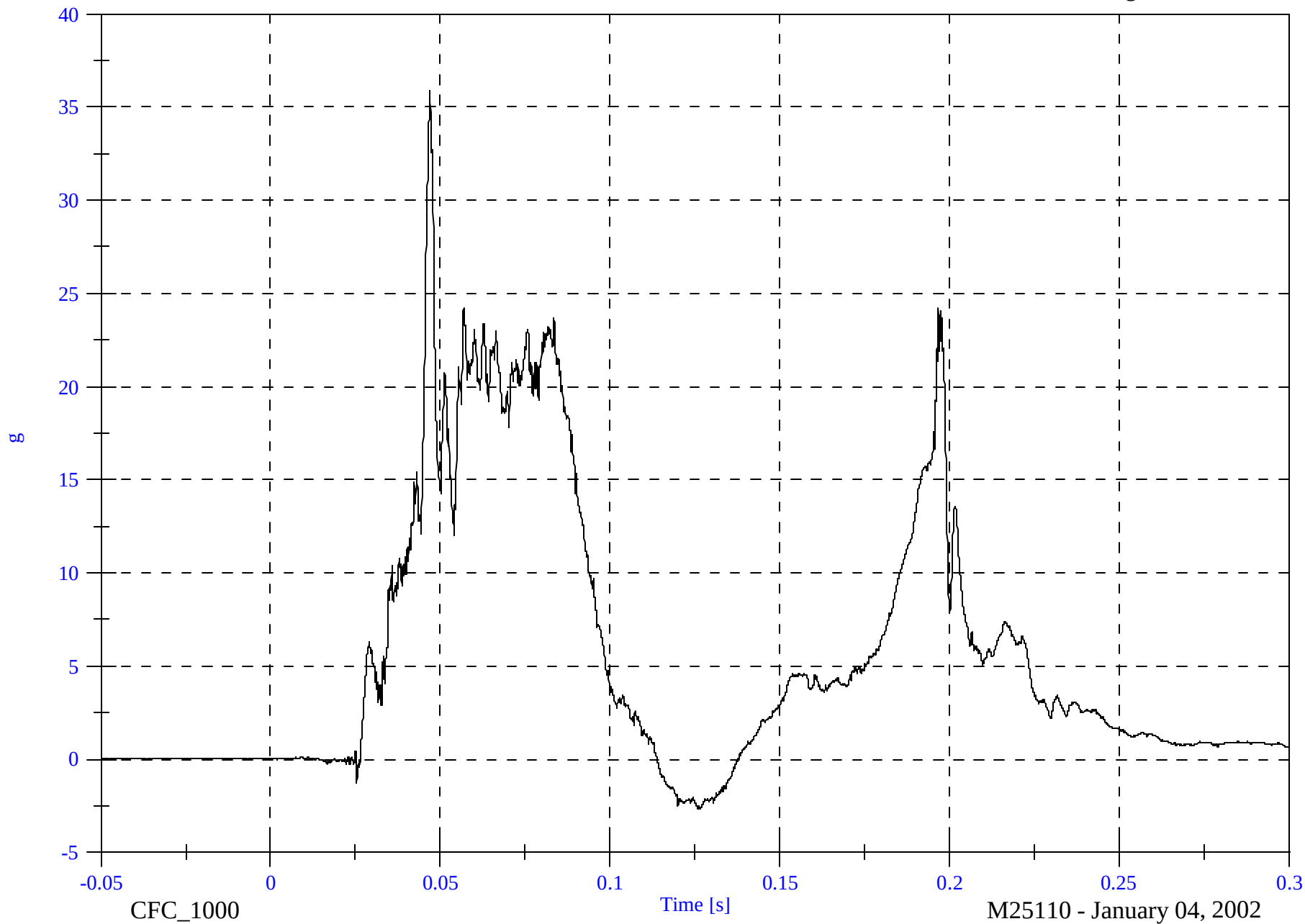
P1 Head CG Az

Max: 35.9 [g] at 0.047 [s]

Min: -2.7 [g] at 0.126 [s]

B-12

8642-NCAP-02

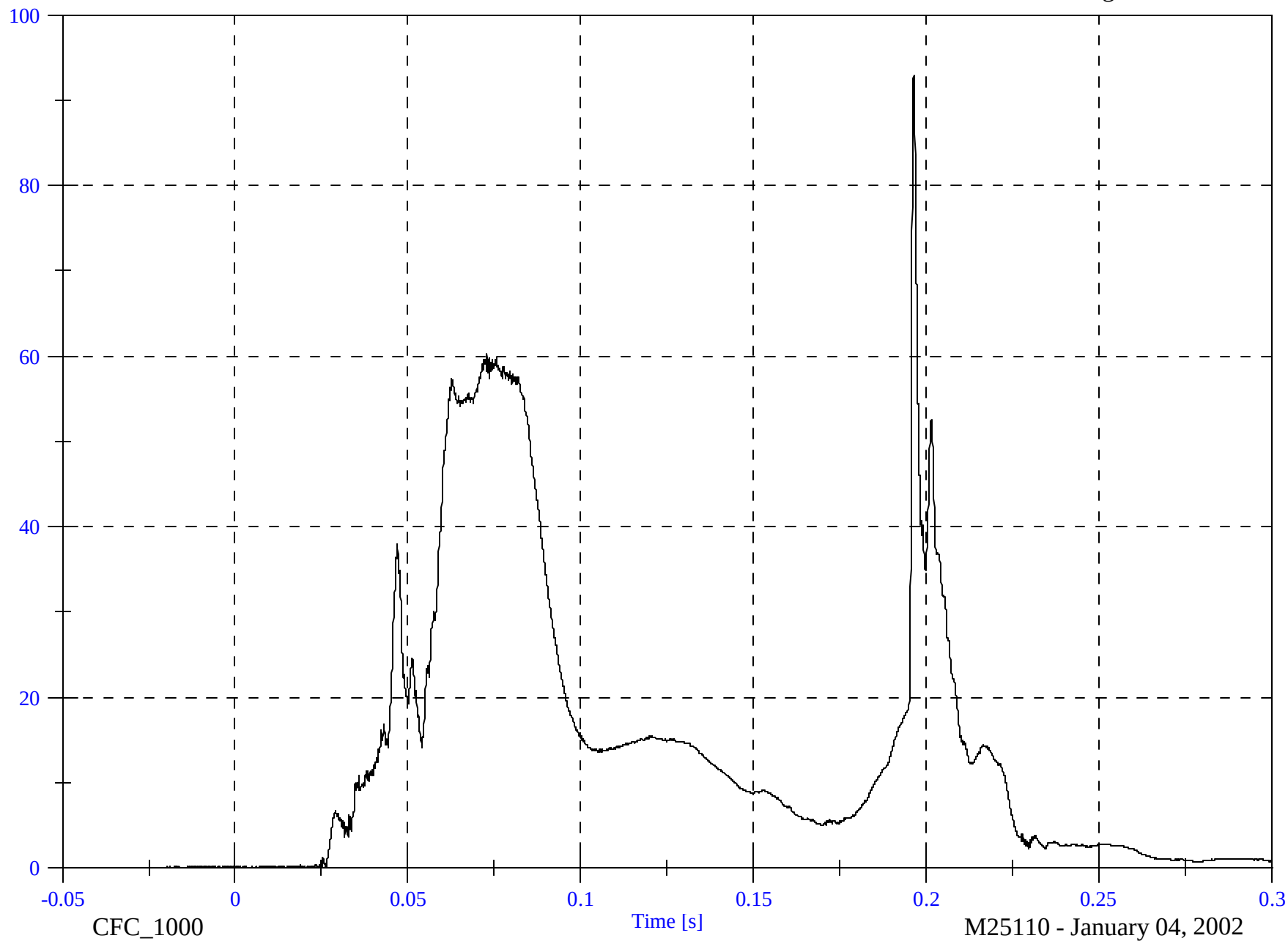


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head CG A Resultant

Max: 92.9 [g] at 0.196 [s]

Min: 0.0 [g] at -0.040 [s]



B-13

8642-NCAP-02

CFC_1000

Time [s]

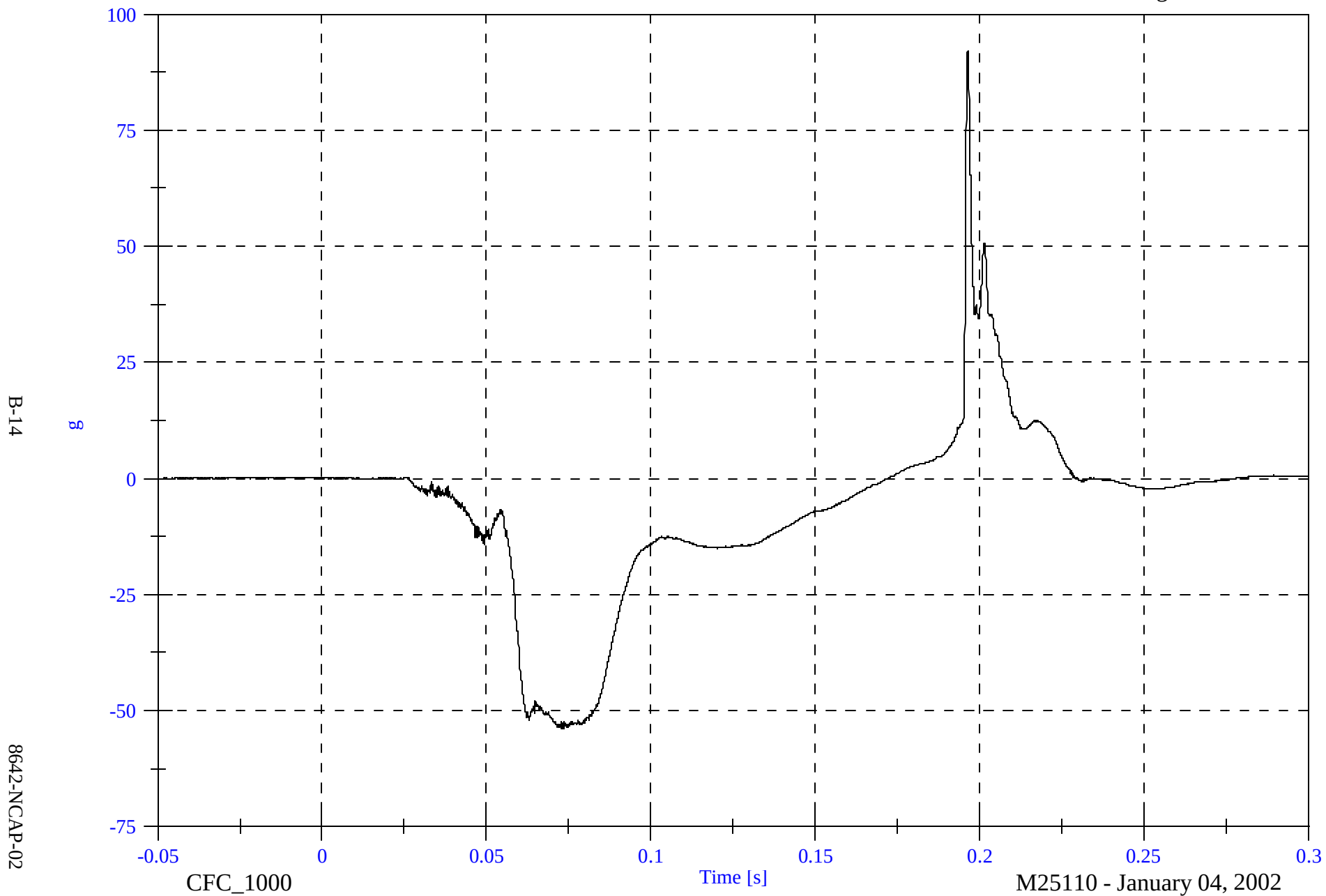
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head CG Red Ax

Max: 92.0 [g] at 0.196 [s]

Min: -53.9 [g] at 0.073 [s]

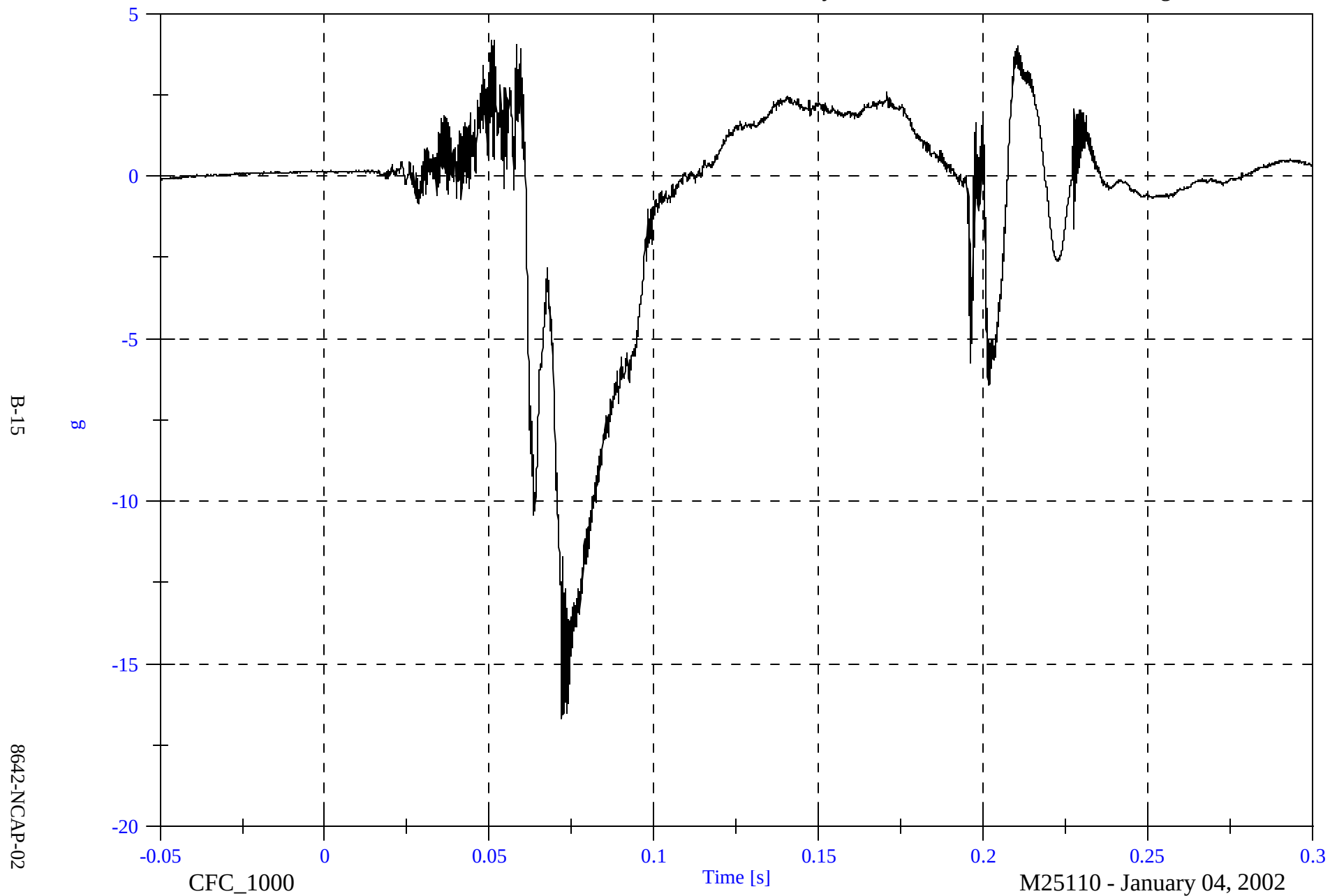


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head CG Red Ay

Max: 4.2 [g] at 0.051 [s]

Min: -16.7 [g] at 0.072 [s]

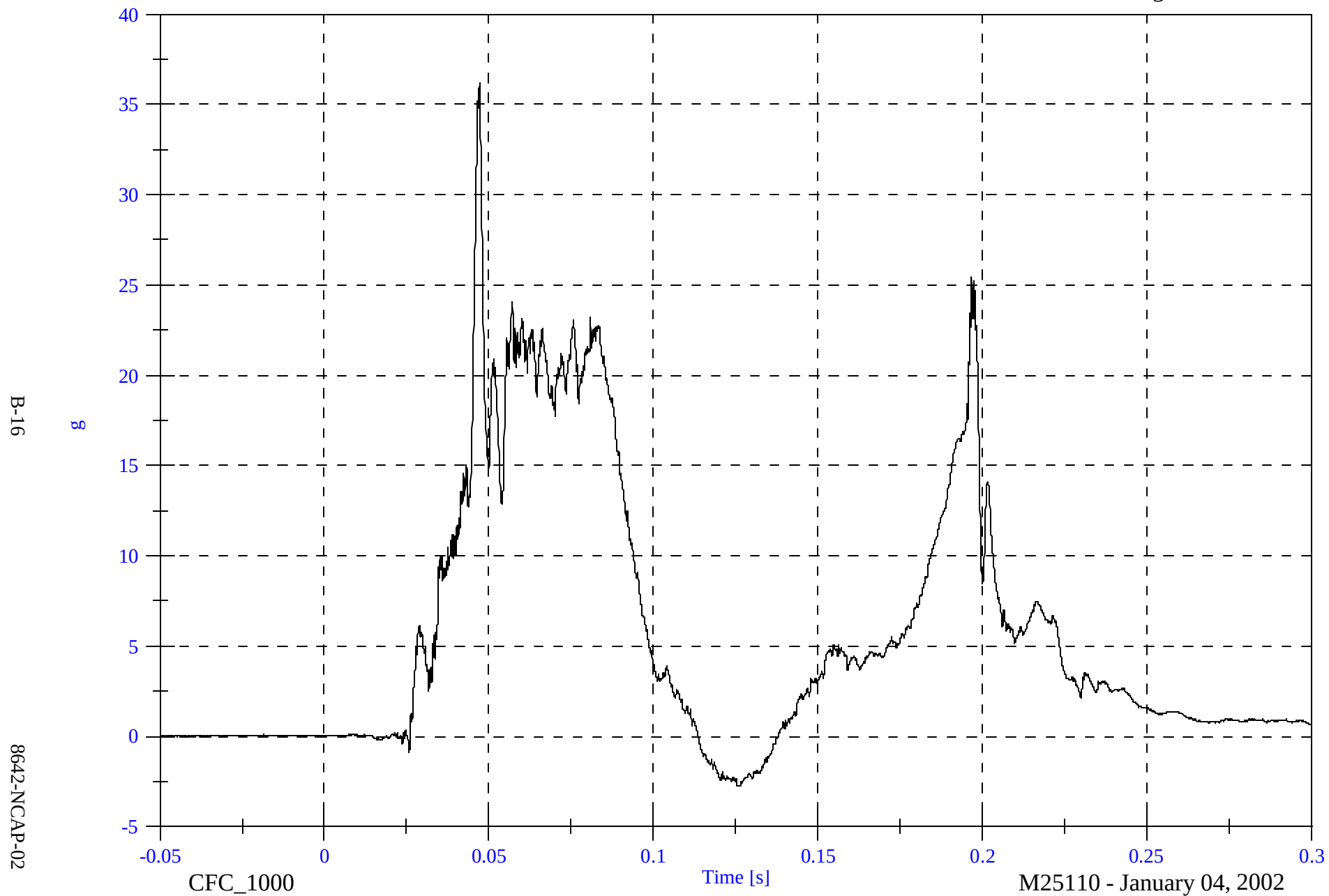


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head CG Red Az

Max: 36.2 [g] at 0.047 [s]

Min: -2.8 [g] at 0.126 [s]

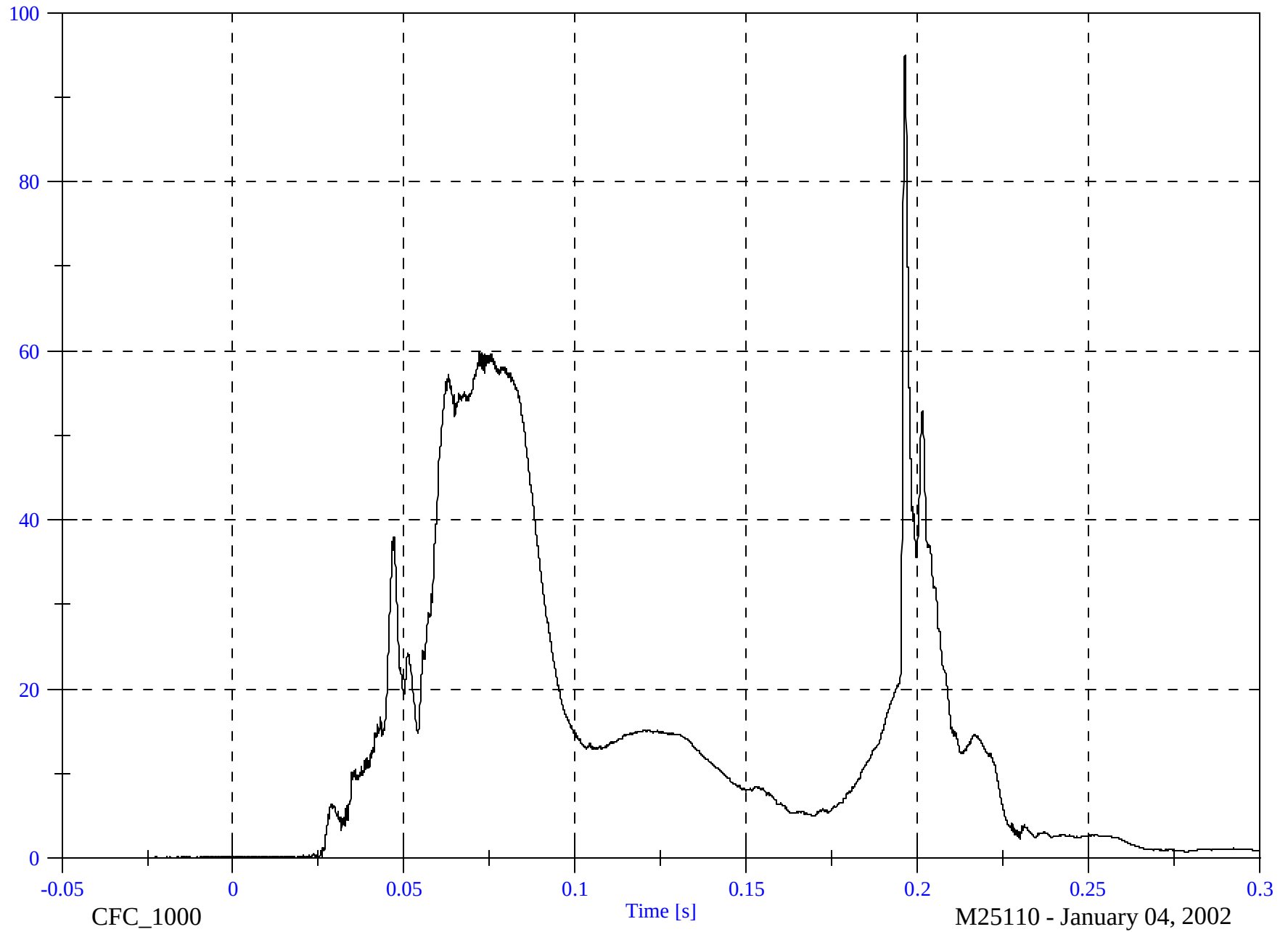


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Head CG Red A Resultant

Max: 95.0 [g] at 0.196 [s]

Min: 0.0 [g] at -0.036 [s]



B-17

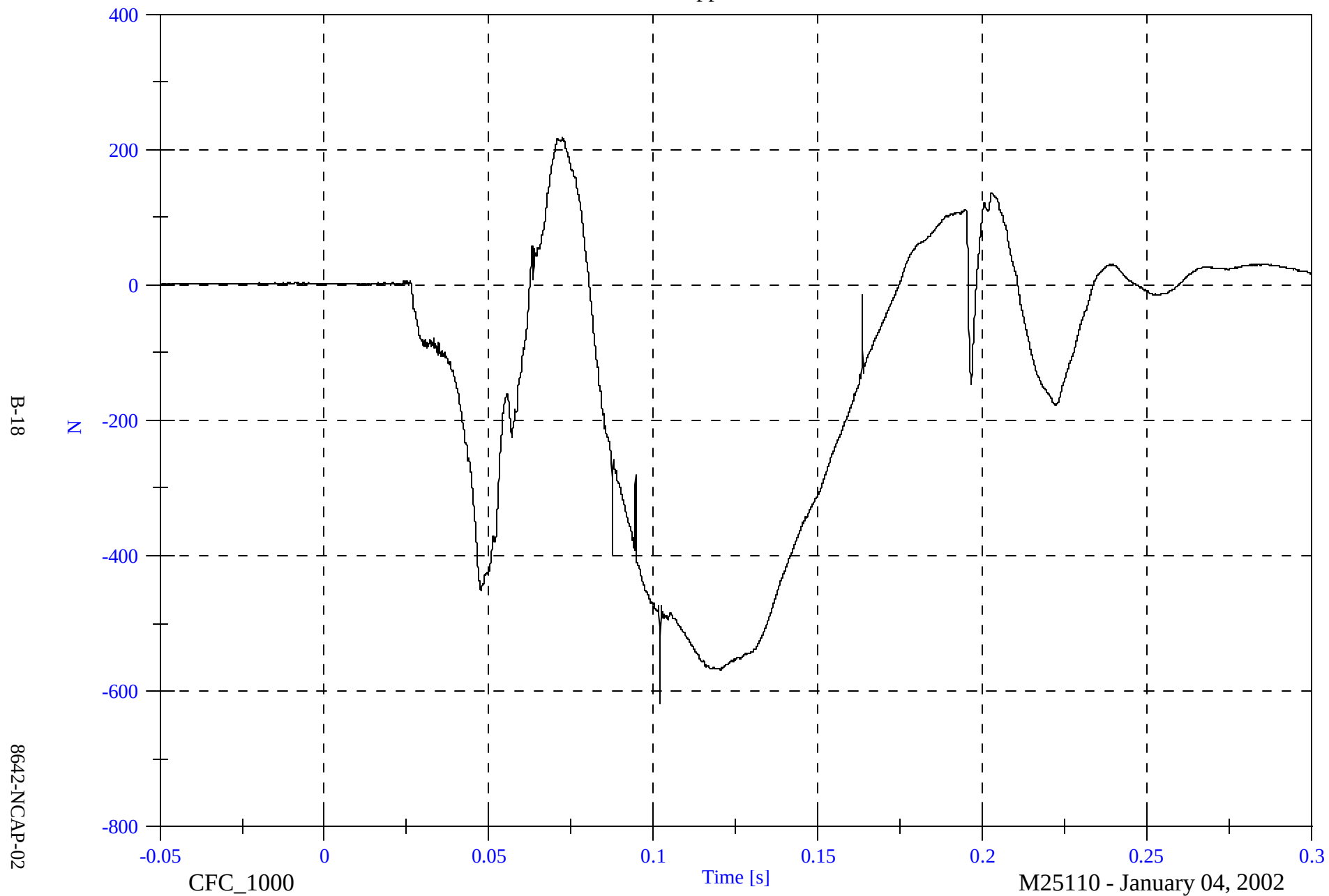
8642-NCAP-02

NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Upper Neck Fx

Max: 217.8 [N] at 0.072 [s]

Min: -617.5 [N] at 0.102 [s]

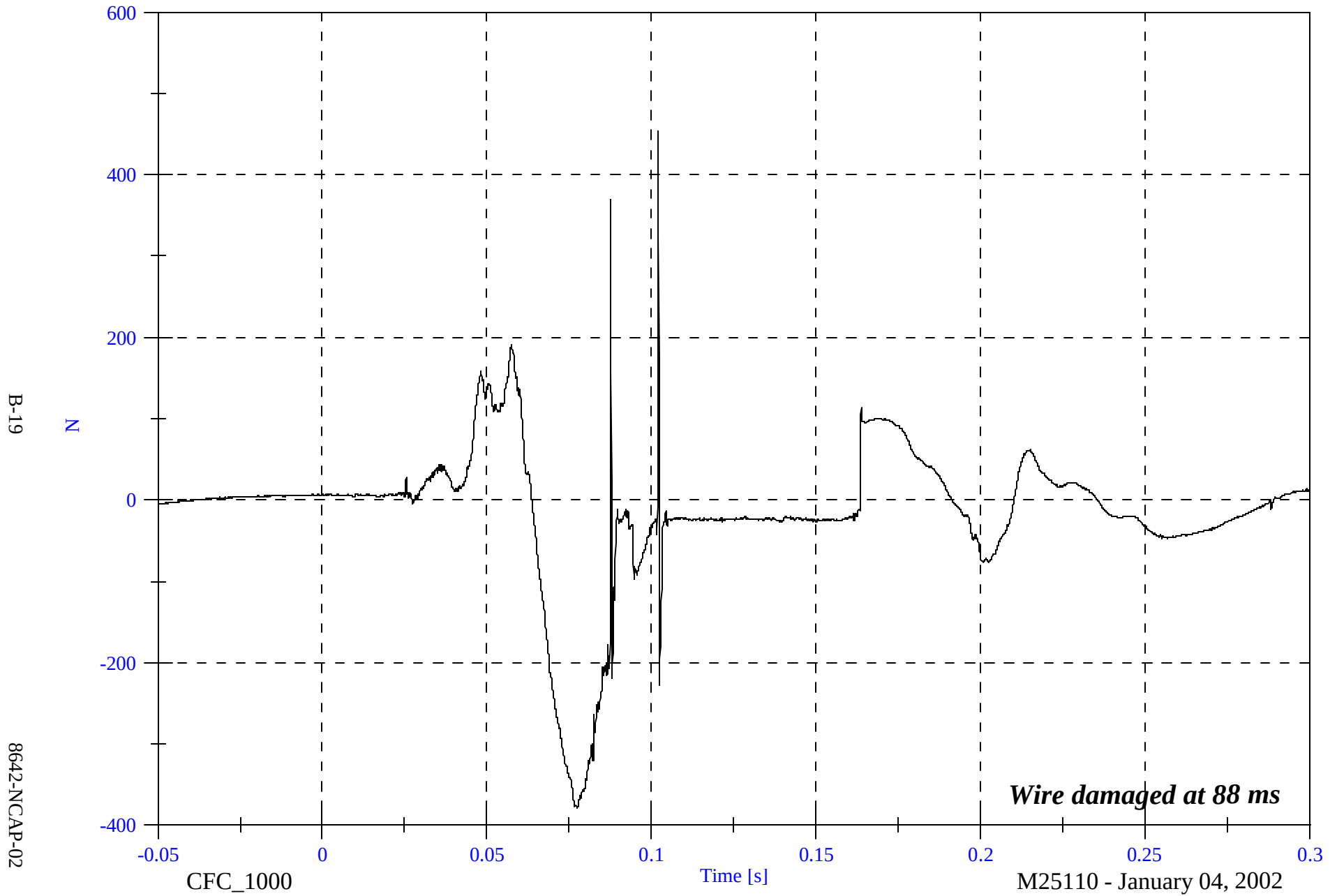


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Upper Neck Fy

Max: 453.2 [N] at 0.102 [s]

Min: -379.1 [N] at 0.078 [s]

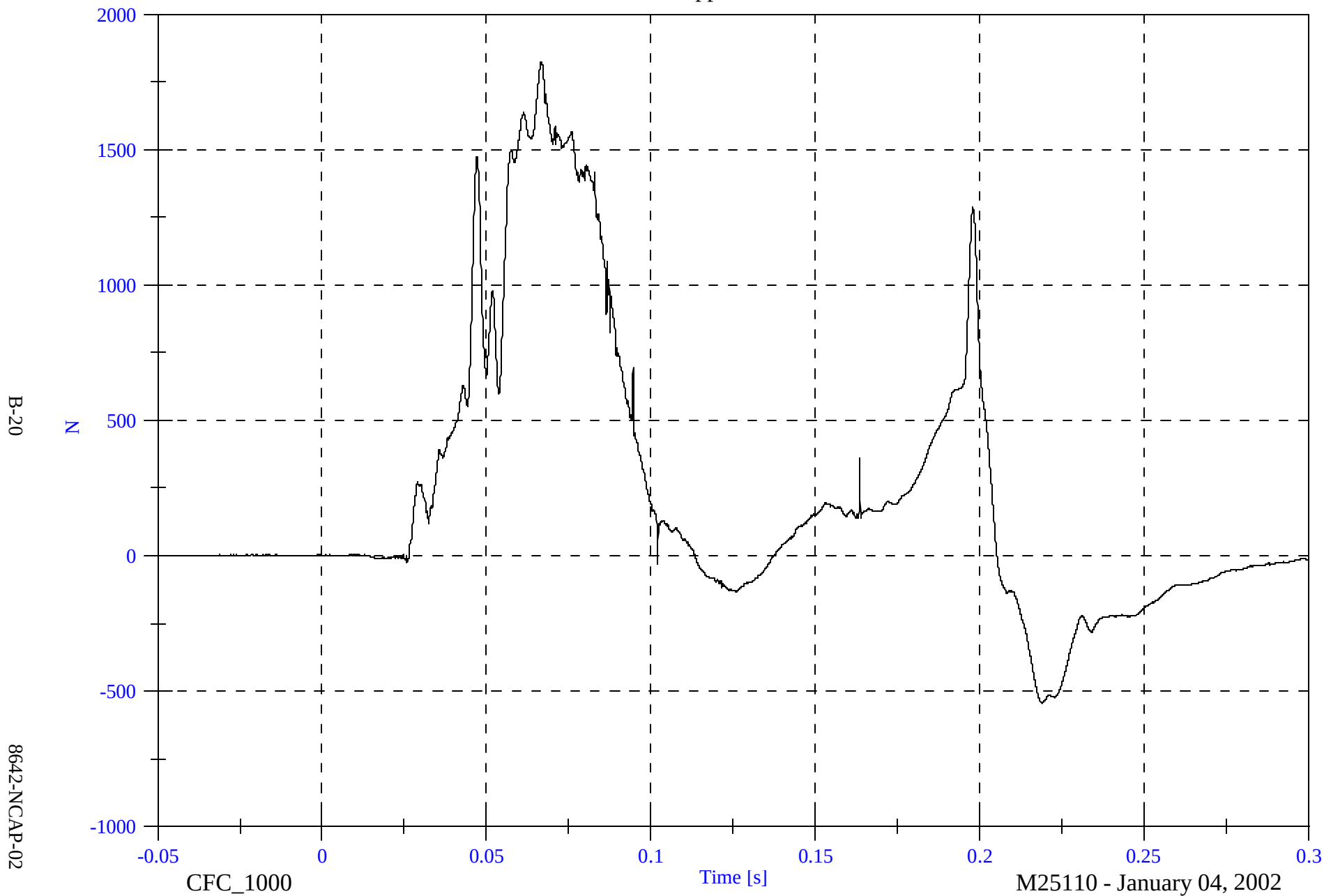


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Upper Neck Fz

Max: 1823.6 [N] at 0.067 [s]

Min: -542.5 [N] at 0.219 [s]

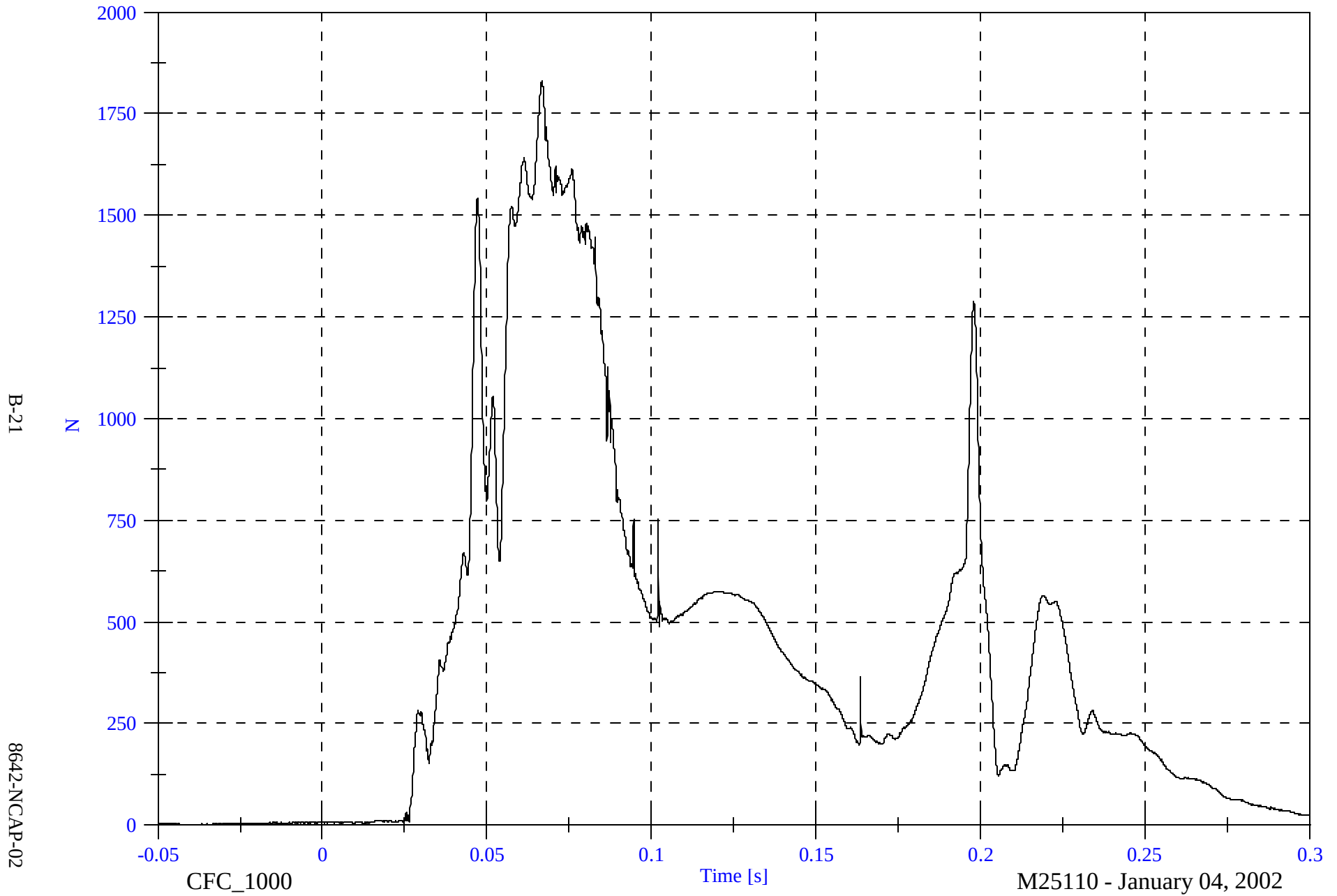


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Upper Neck F Resultant

Max: 1829.1 [N] at 0.067 [s]

Min: 0.7 [N] at -0.038 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

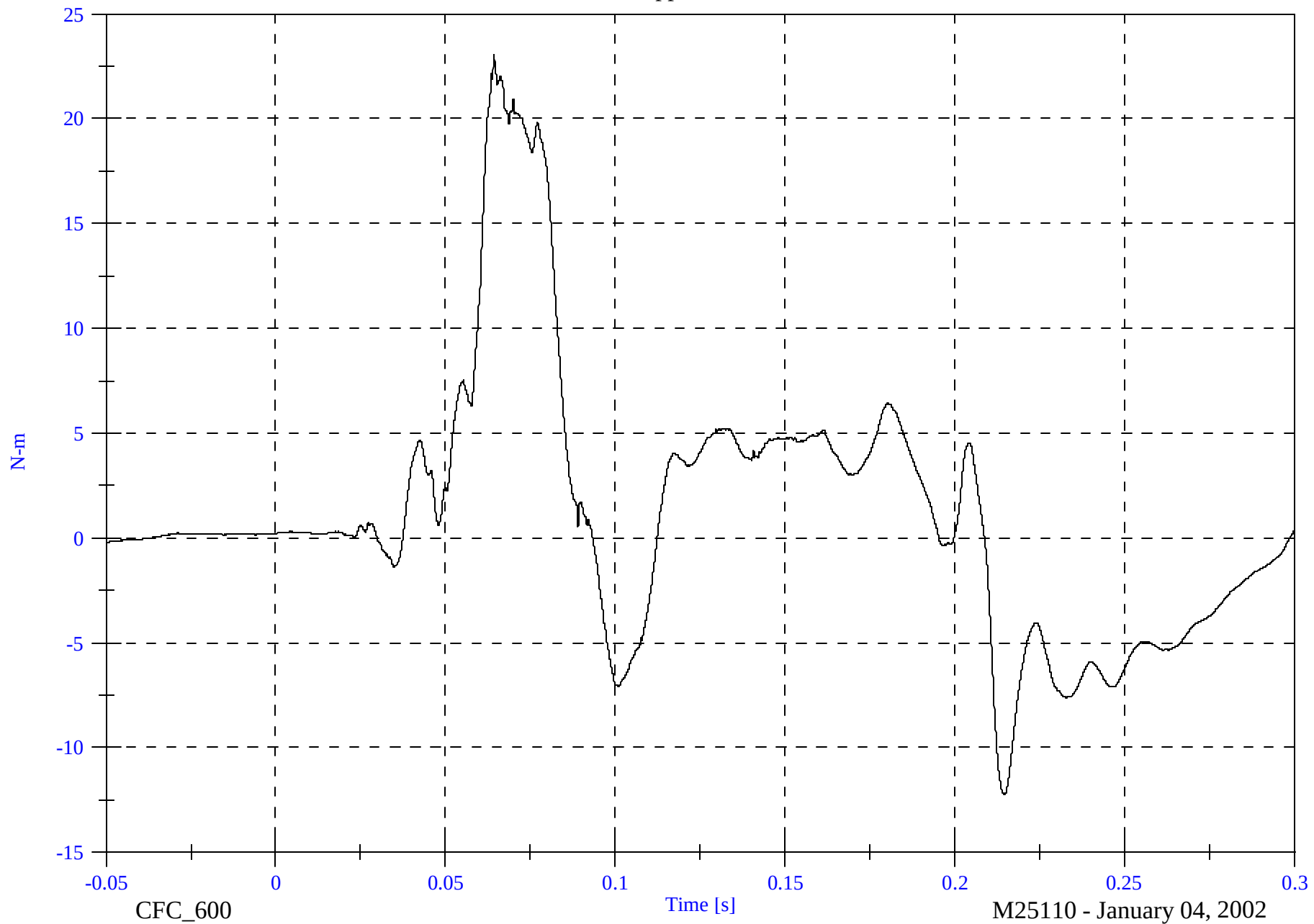
P1 Upper Neck Mx

Max: 23.1 [N-m] at 0.064 [s]

Min: -12.2 [N-m] at 0.215 [s]

B-22

8642-NCAP-02



NCAP - 2002 Toyota Tundra Access Cab 4X4

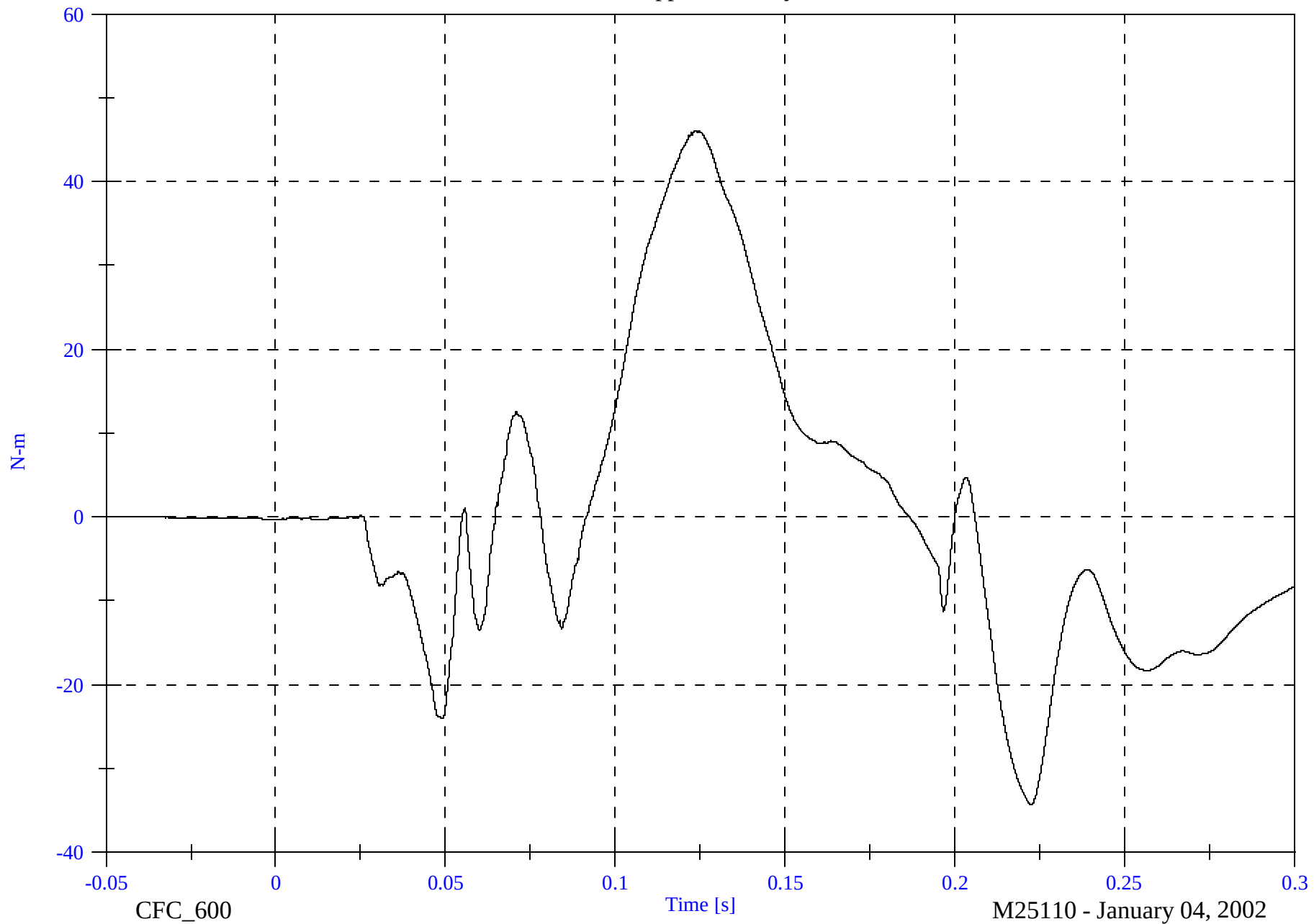
P1 Upper Neck My

Max: 46.0 [N-m] at 0.124 [s]

Min: -34.3 [N-m] at 0.223 [s]

B-23

8642-NCAP-02

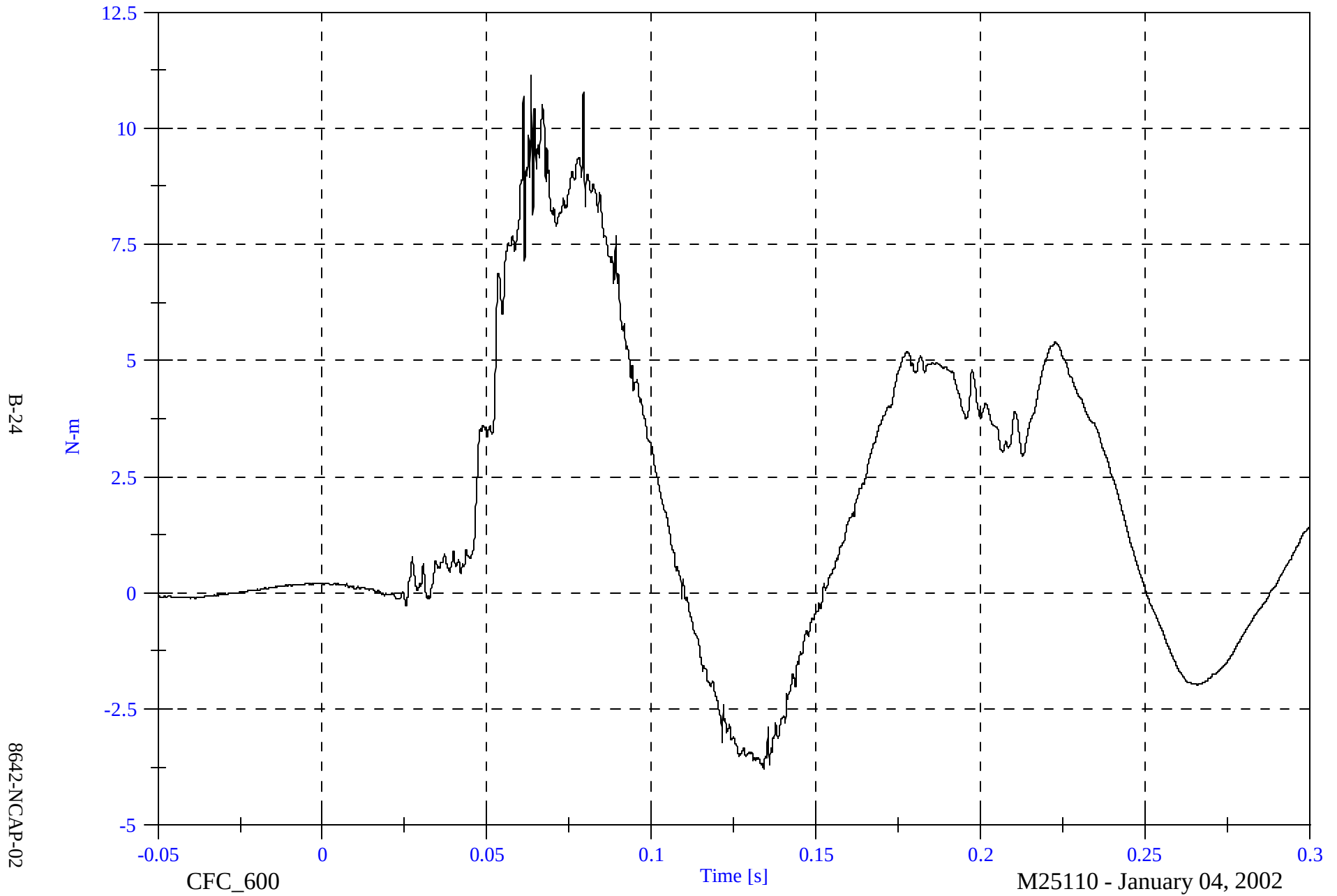


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Upper Neck Mz

Max: 11.1 [N-m] at 0.063 [s]

Min: -3.8 [N-m] at 0.134 [s]

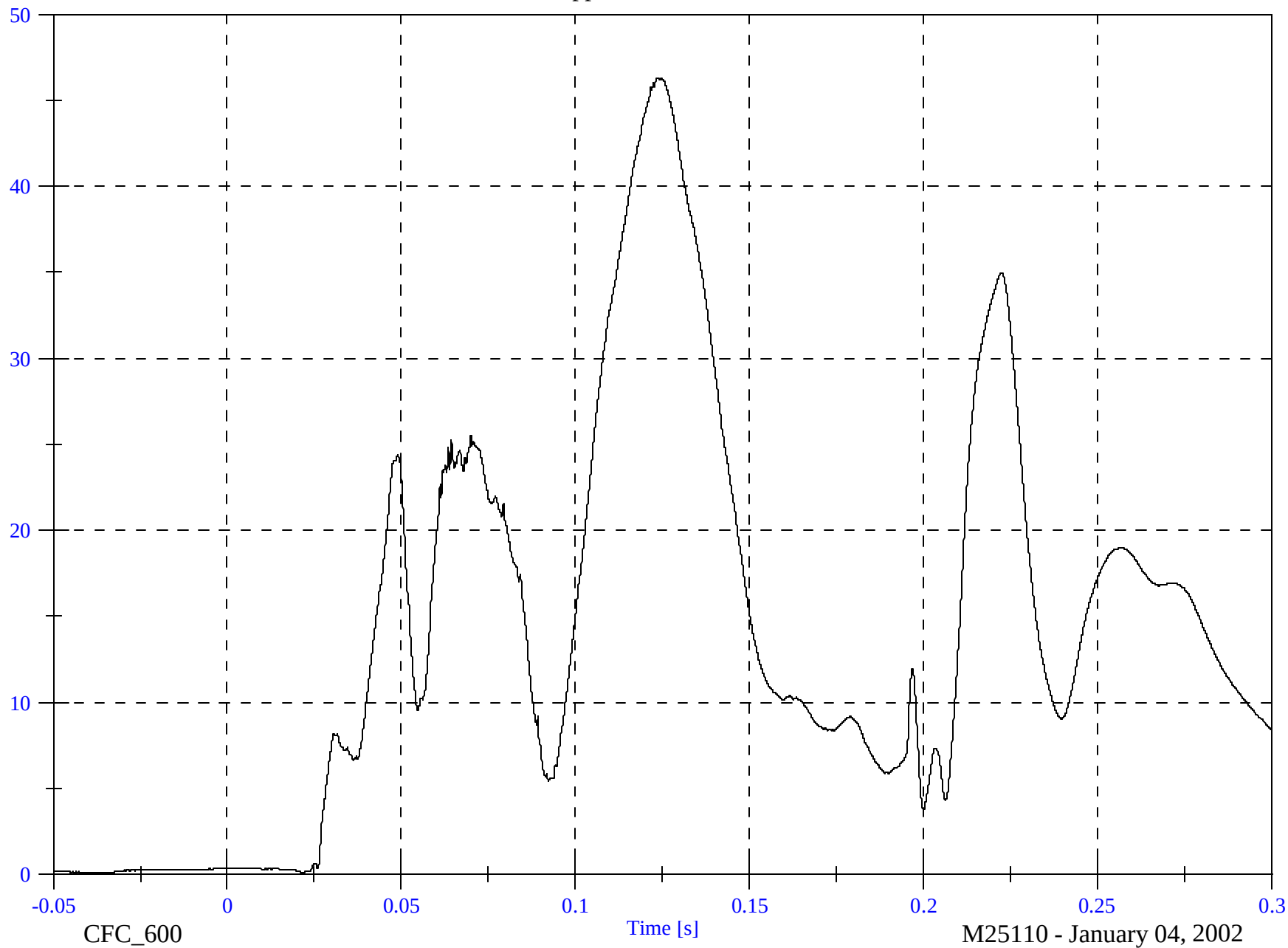


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Upper Neck M Resultant

Max: 46.3 [N-m] at 0.124 [s]

Min: 0.1 [N-m] at -0.036 [s]



B-25

8642-NCAP-02

CFC_600

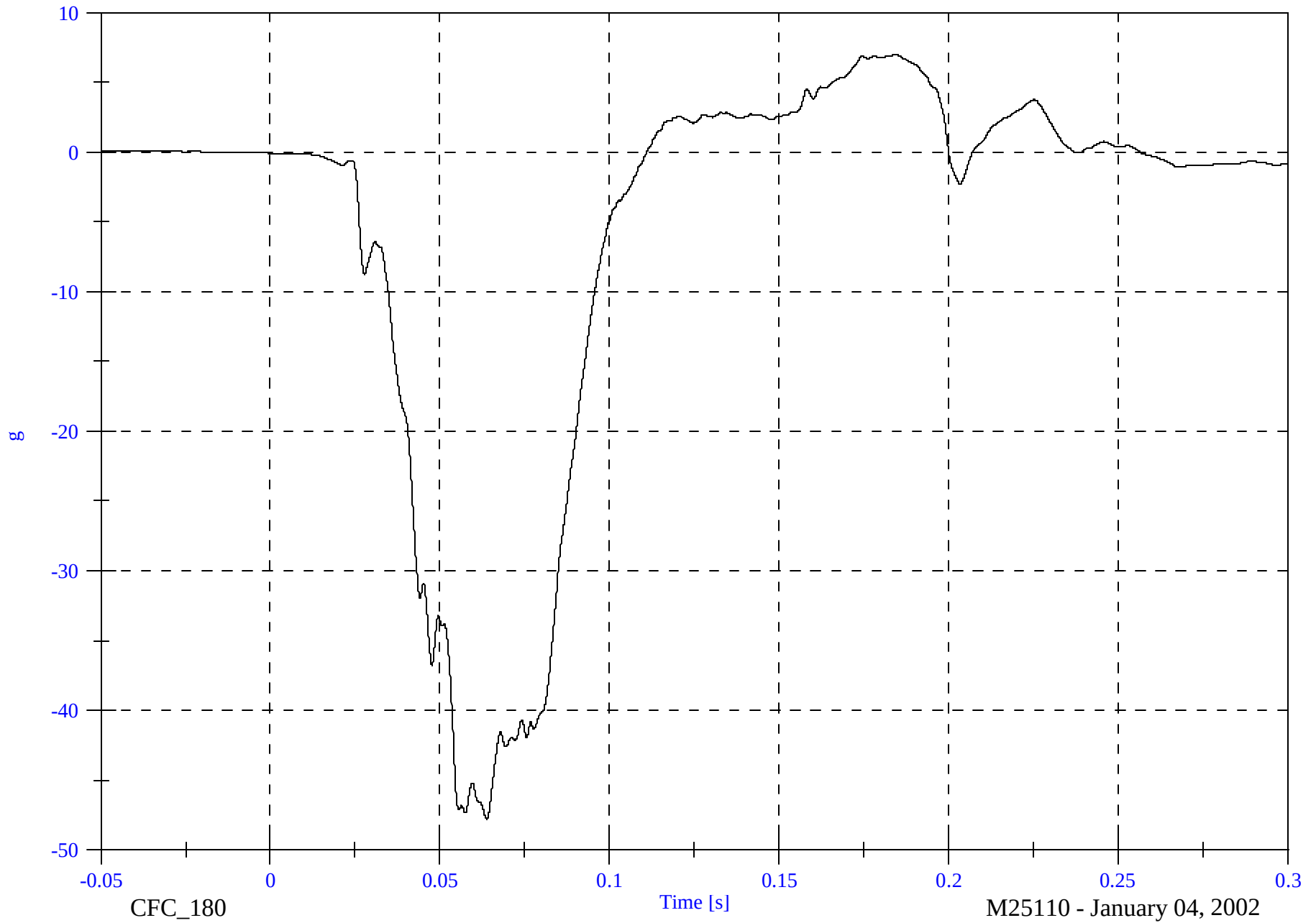
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Chest x

Max: 7.0 [g] at 0.184 [s]

Min: -47.8 [g] at 0.064 [s]



B-26

8642-NCAP-02

CFC_180

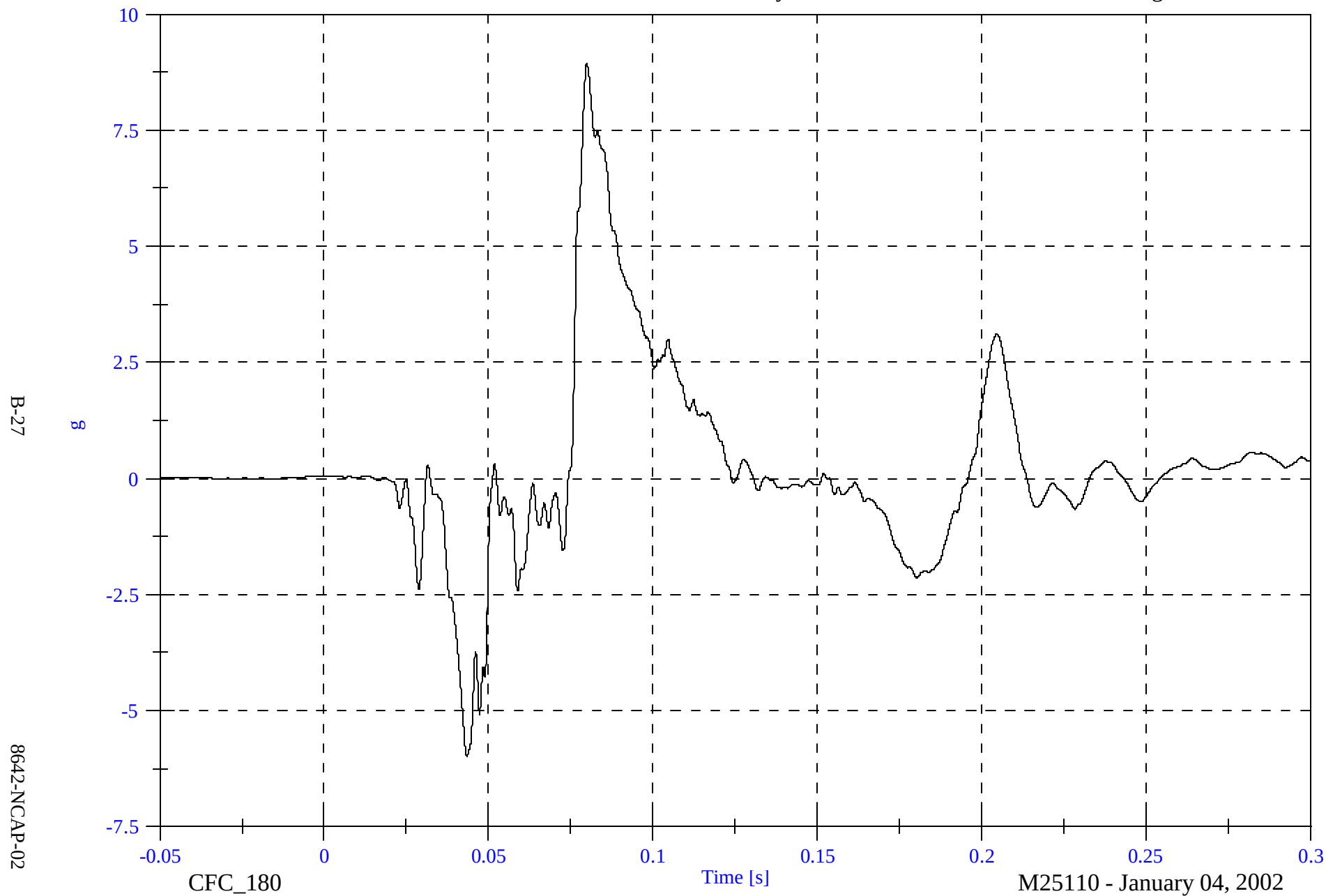
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 8.9 [g] at 0.080 [s]

Min: -6.0 [g] at 0.043 [s]

P1 Chest y



NCAP - 2002 Toyota Tundra Access Cab 4X4

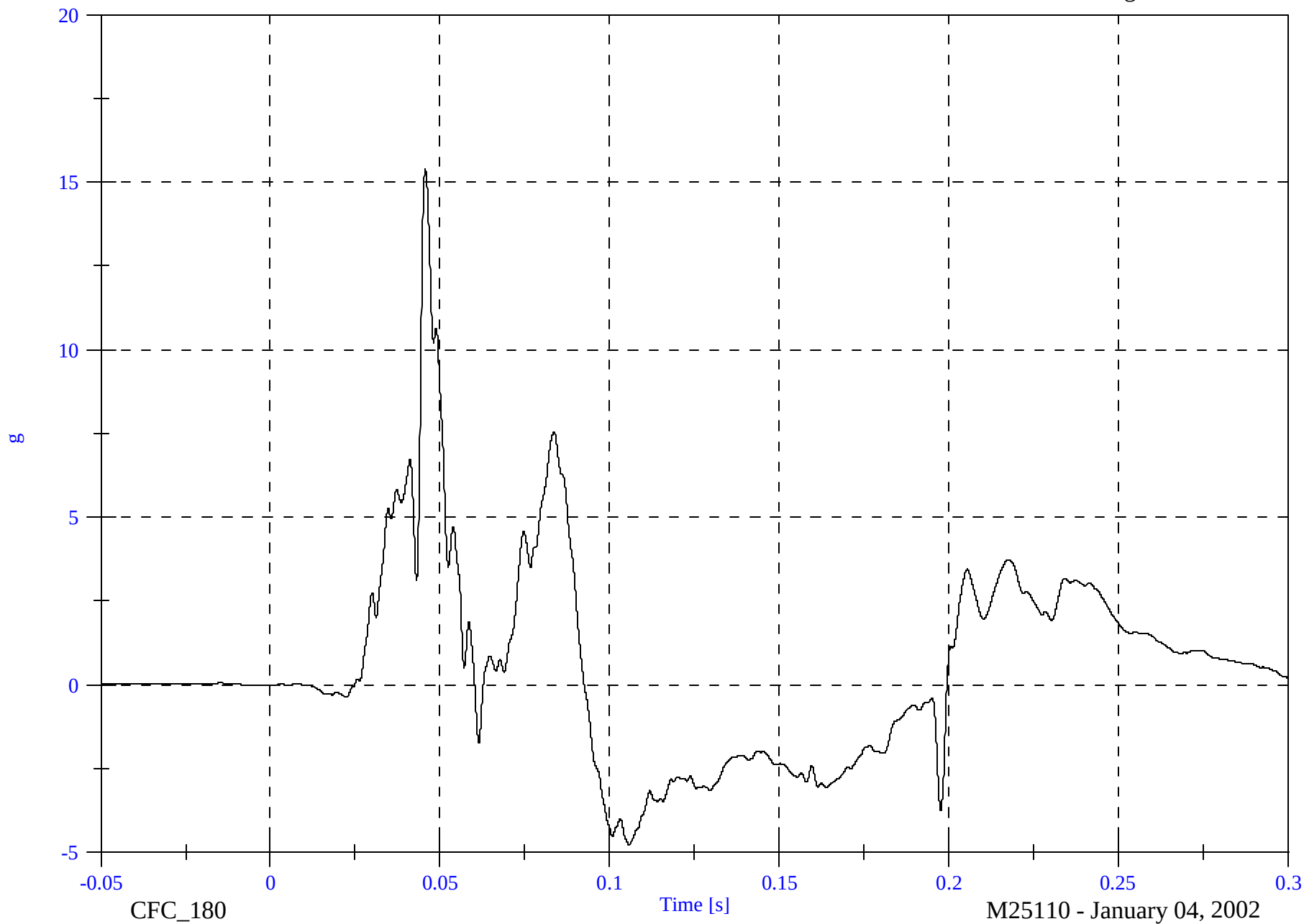
P1 Chest z

Max: 15.4 [g] at 0.046 [s]

Min: -4.8 [g] at 0.106 [s]

B-28

8642-NCAP-02



NCAP - 2002 Toyota Tundra Access Cab 4X4

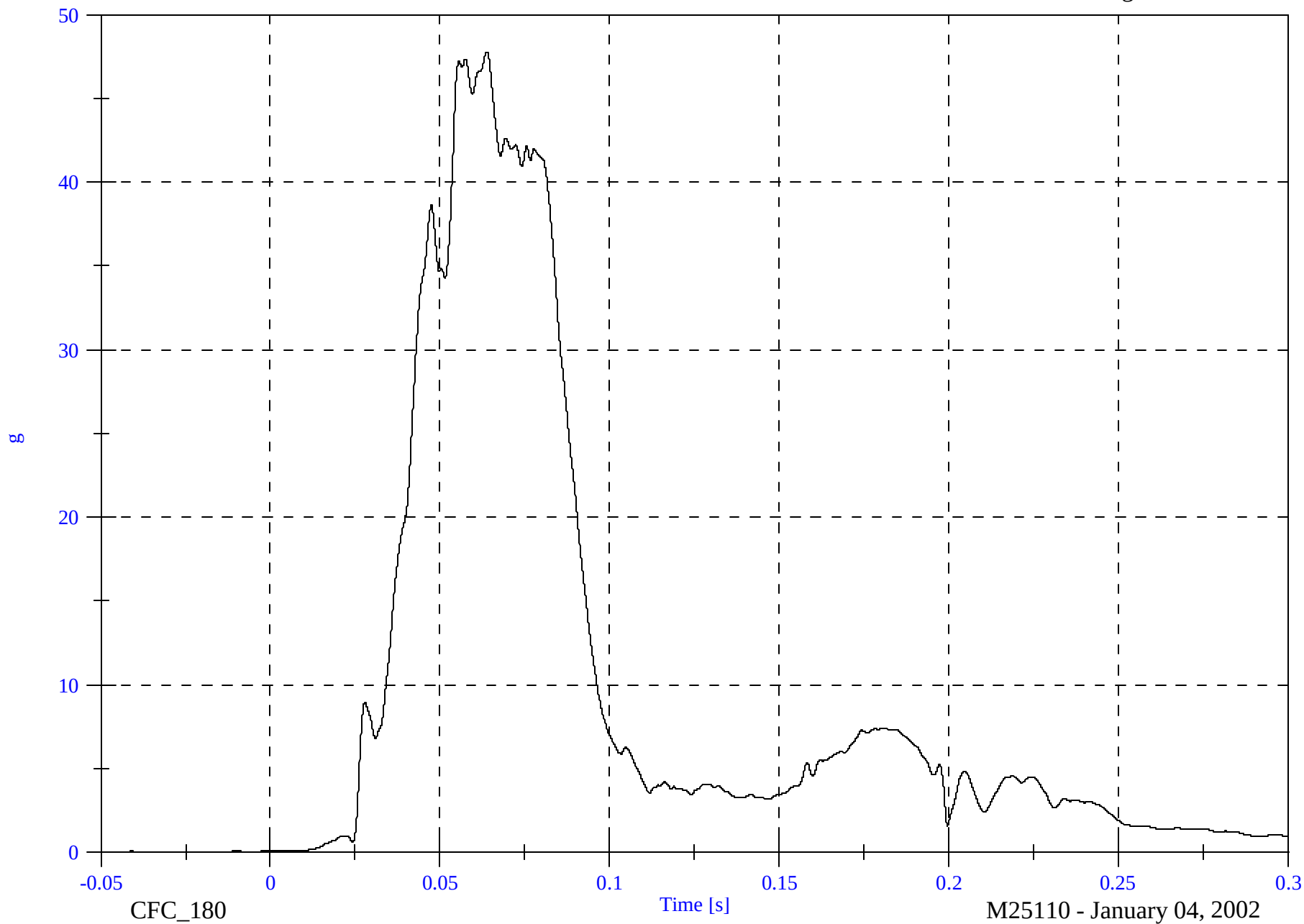
P1 Chest Resultant

Max: 47.8 [g] at 0.064 [s]

Min: 0.0 [g] at -0.020 [s]

B-29

8642-NCAP-02

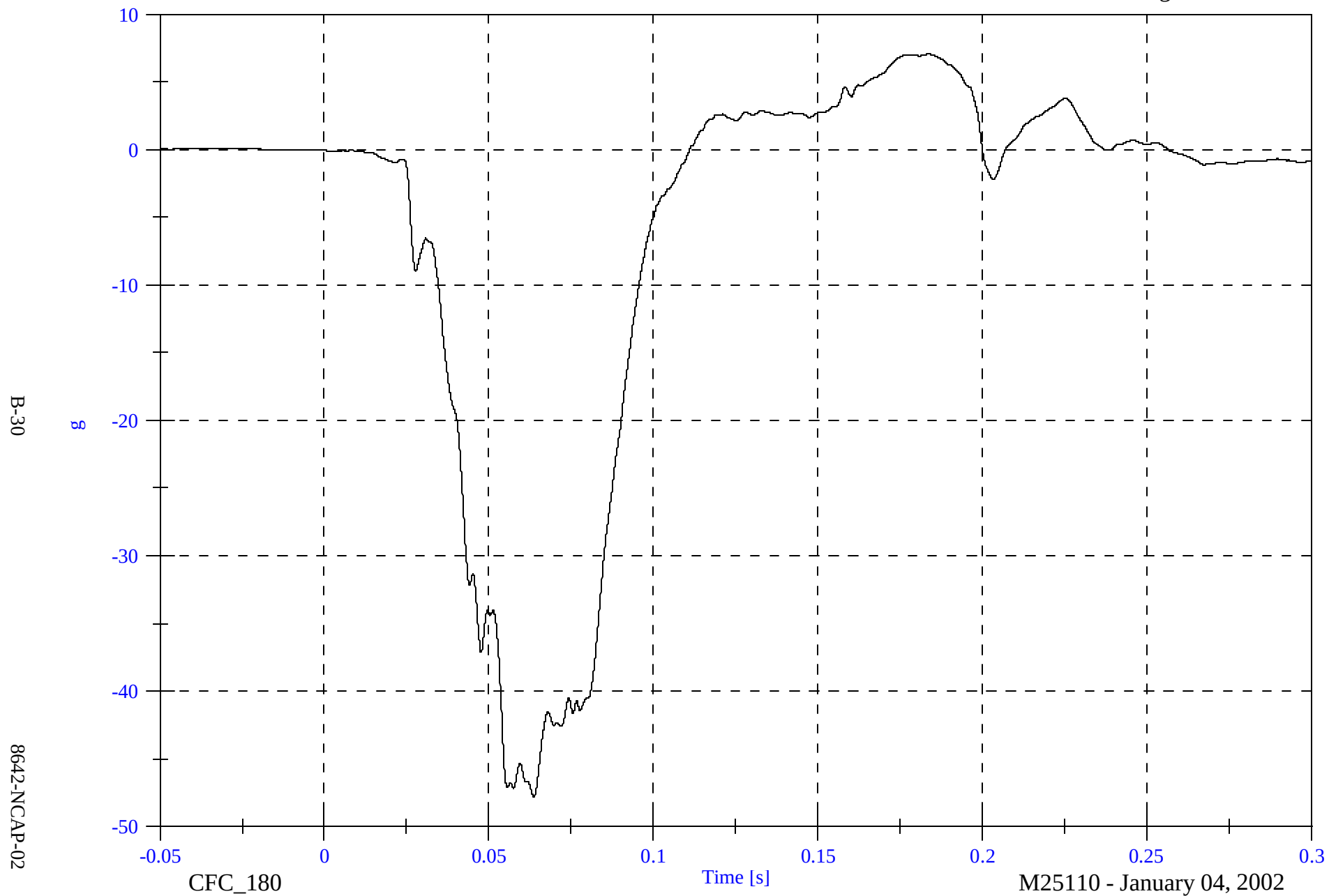


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Chest Red x

Max: 7.1 [g] at 0.184 [s]

Min: -47.8 [g] at 0.064 [s]

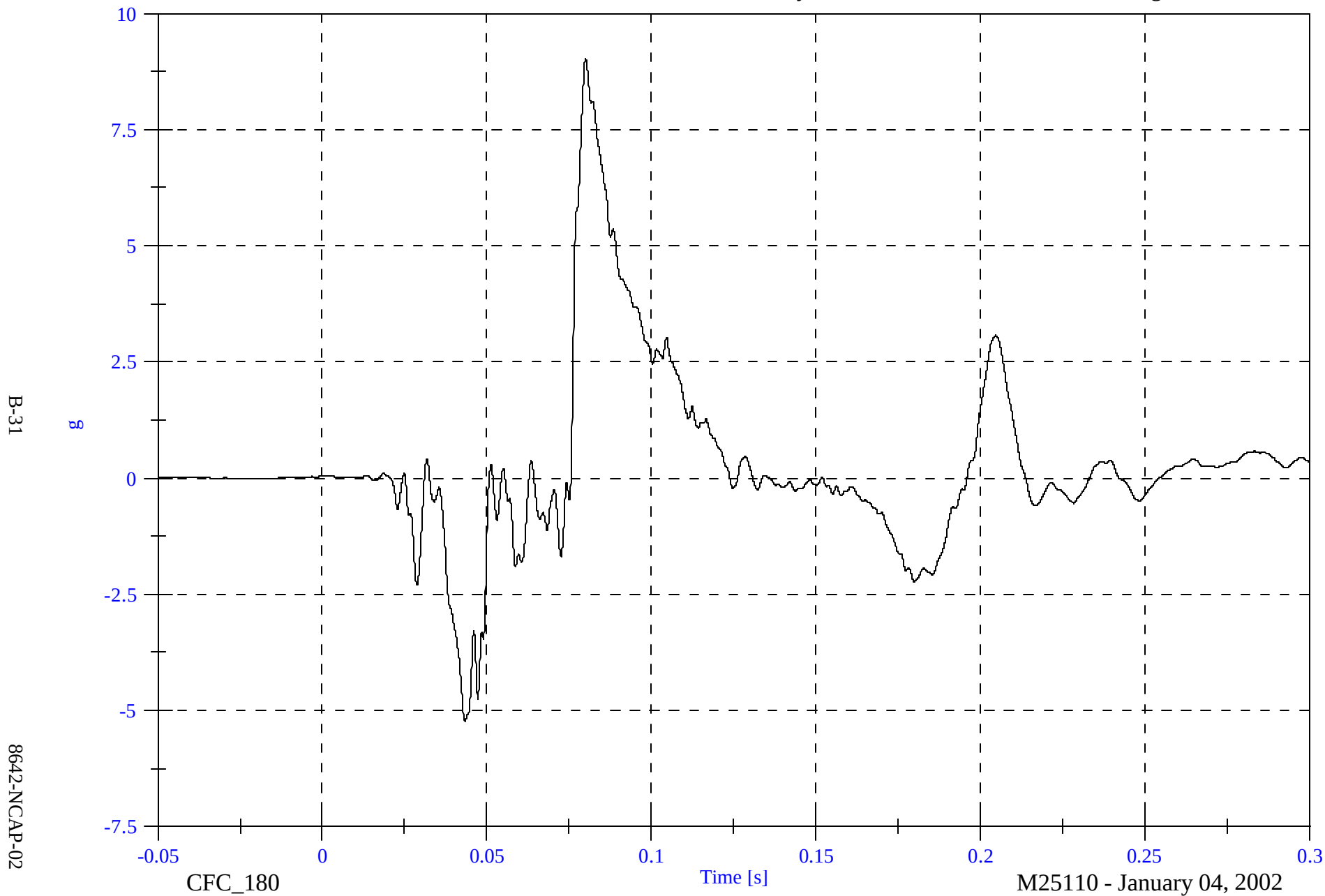


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 9.0 [g] at 0.080 [s]

Min: -5.2 [g] at 0.043 [s]

P1 Chest Red y



NCAP - 2002 Toyota Tundra Access Cab 4X4

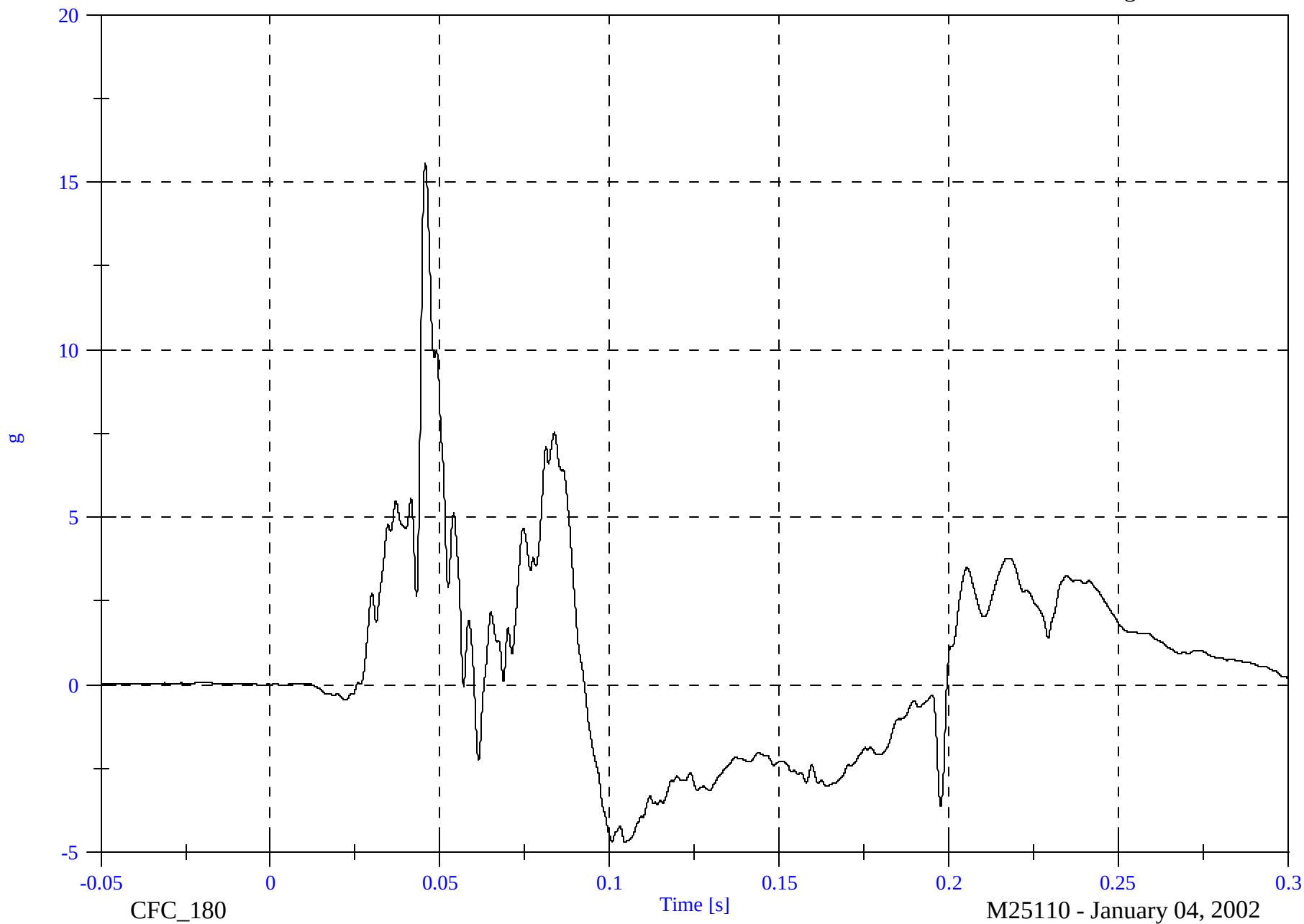
P1 Chest Red z

Max: 15.6 [g] at 0.046 [s]

Min: -4.7 [g] at 0.105 [s]

B-32

8642-NCAP-02



CFC_180

M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

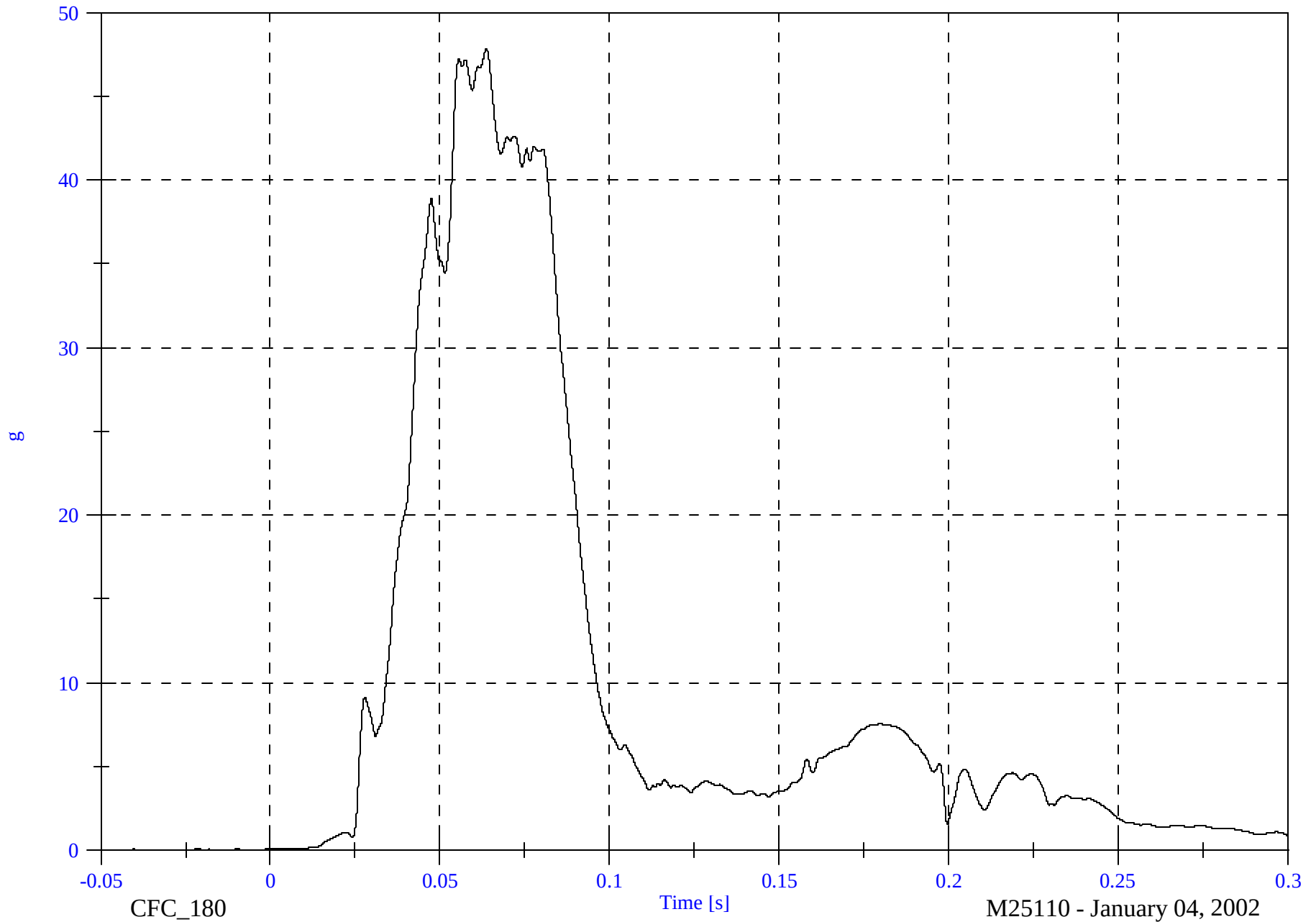
P1 Chest Red Resultant

Max: 47.8 [g] at 0.064 [s]

Min: 0.0 [g] at -0.005 [s]

B-33

8642-NCAP-02



NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Chest Compression x

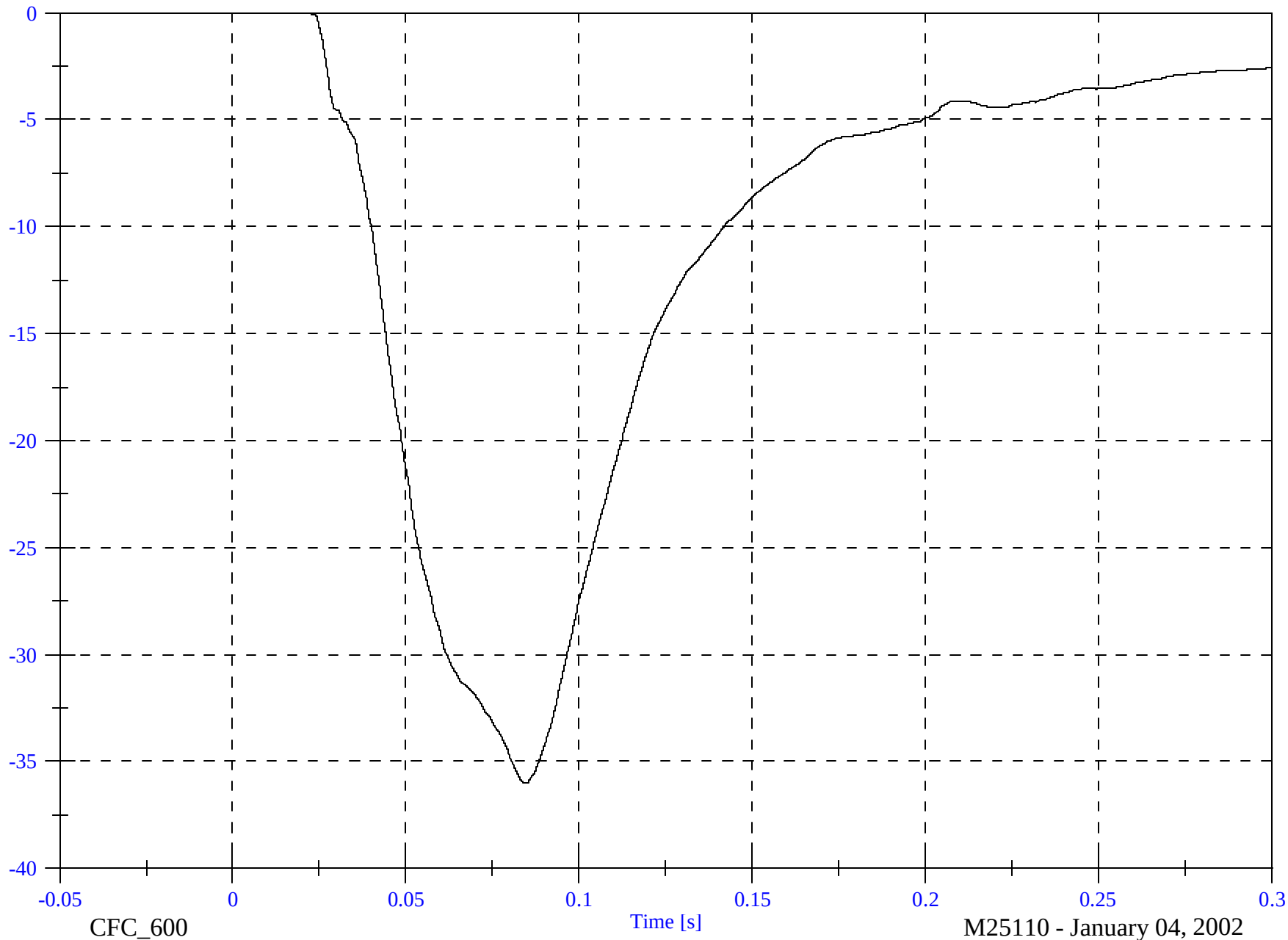
Max: 0.0 [mm] at -0.031 [s]

Min: -36.0 [mm] at 0.085 [s]

B-34

8642-NCAP-02

mm



CFC_600

M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

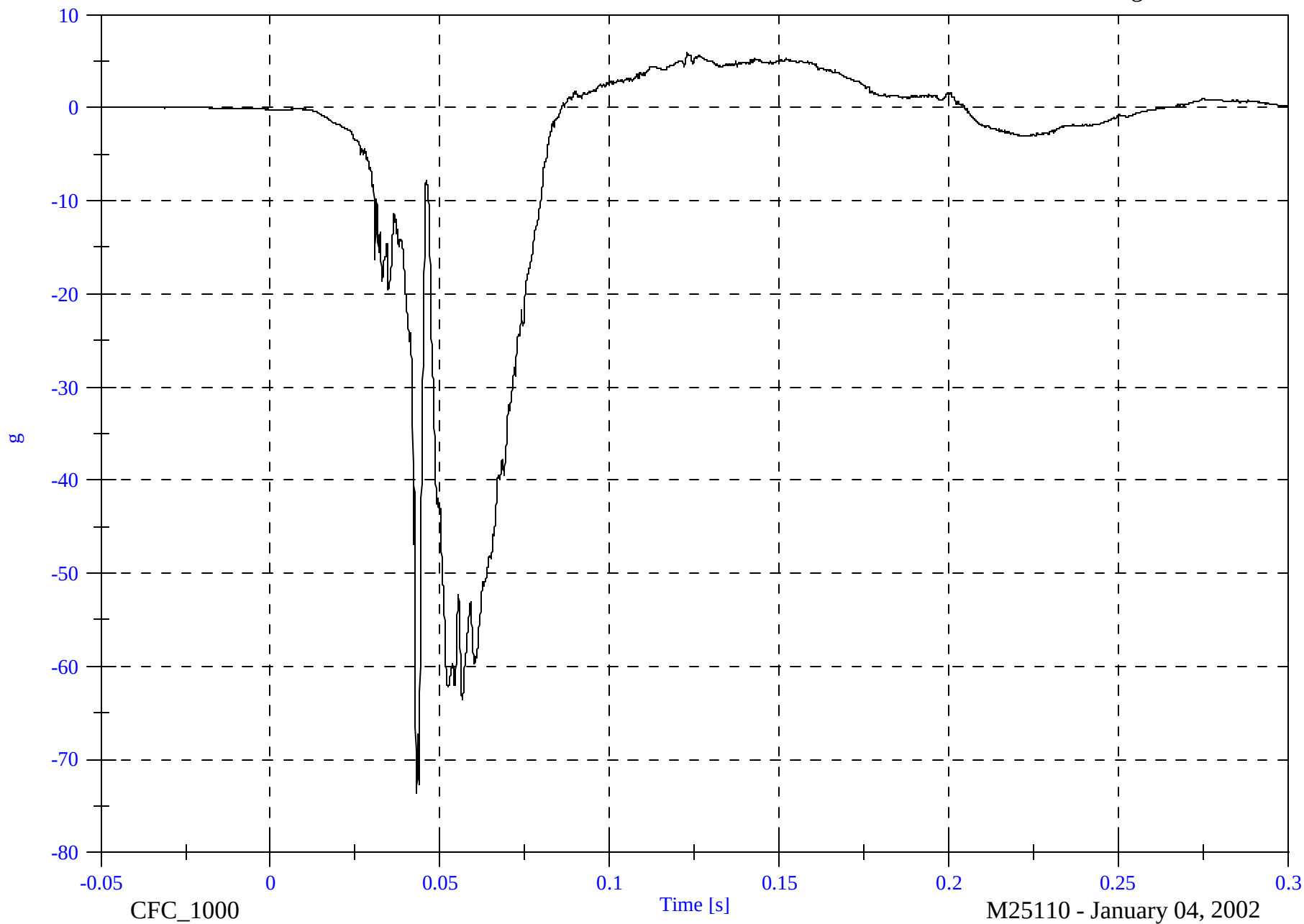
P1 Pelvic x

Max: 5.8 [g] at 0.123 [s]

Min: -73.7 [g] at 0.043 [s]

B-35

8642-NCAP-02

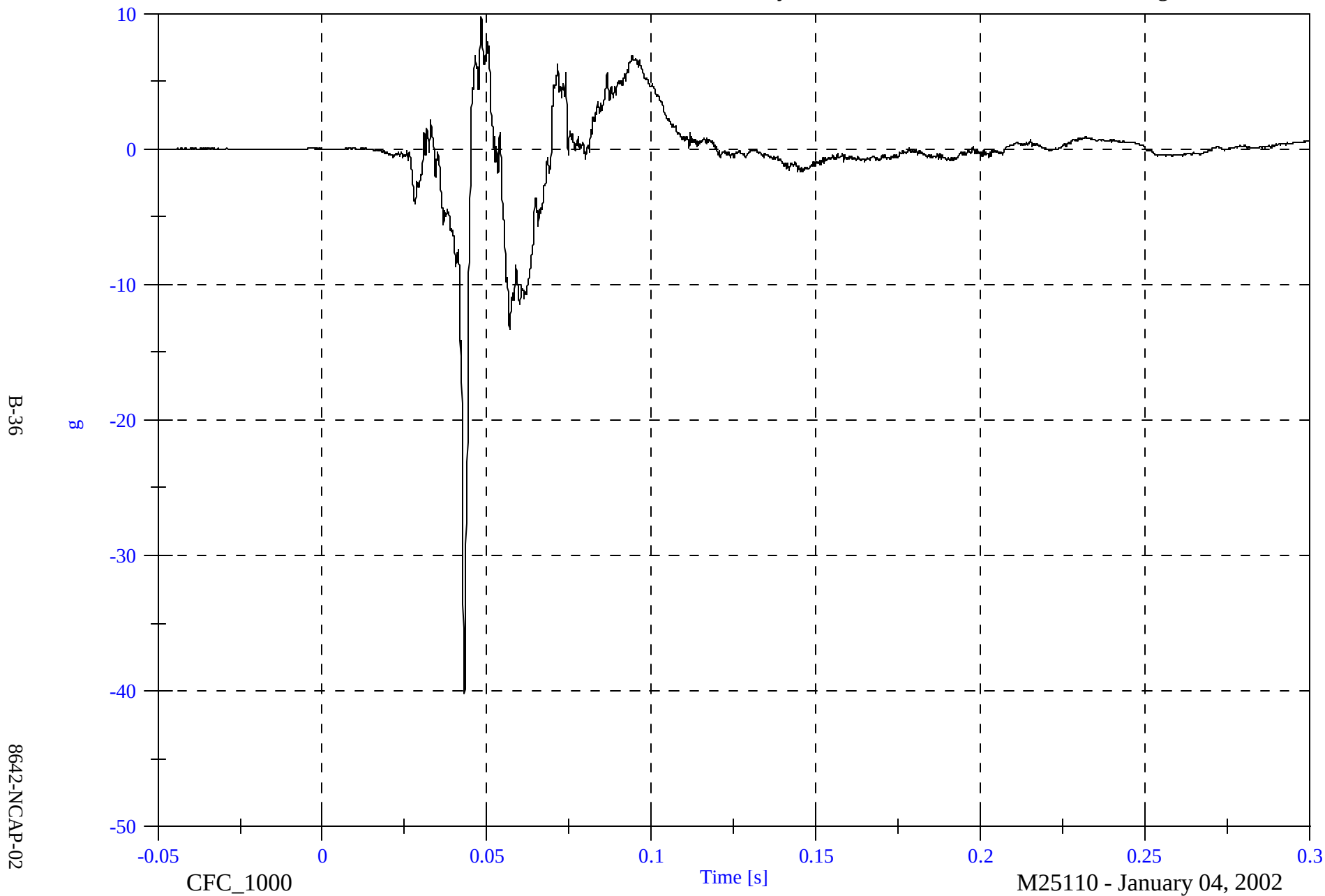


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 9.8 [g] at 0.048 [s]

Min: -40.2 [g] at 0.043 [s]

P1 Pelvic y



NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 9.5 [g] at 0.043 [s]

Min: -27.6 [g] at 0.054 [s]

P1 Pelvic z



NCAP - 2002 Toyota Tundra Access Cab 4X4

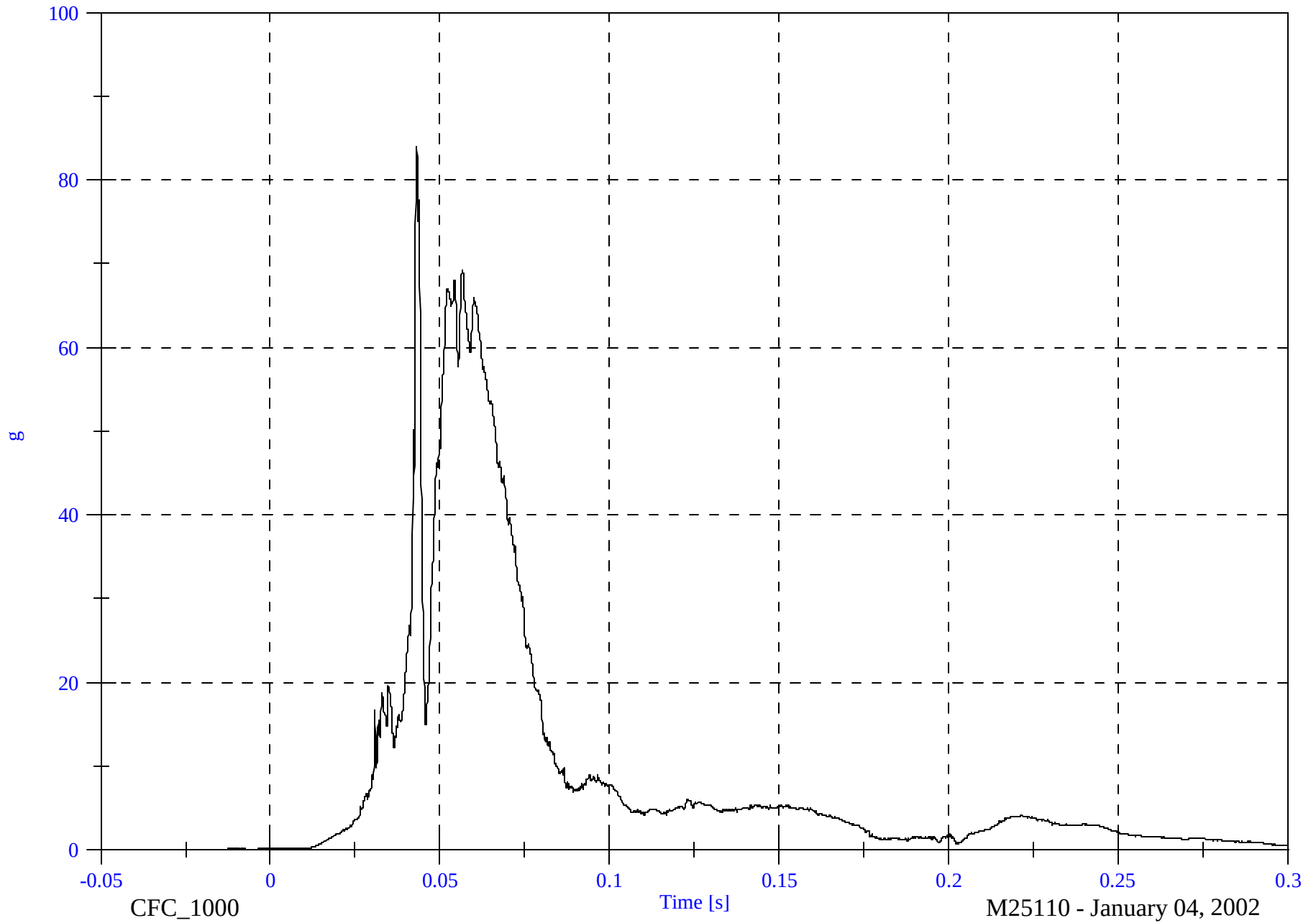
P1 Pelvic Resultant

Max: 84.0 [g] at 0.043 [s]

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

B-38

8642-NCAP-02

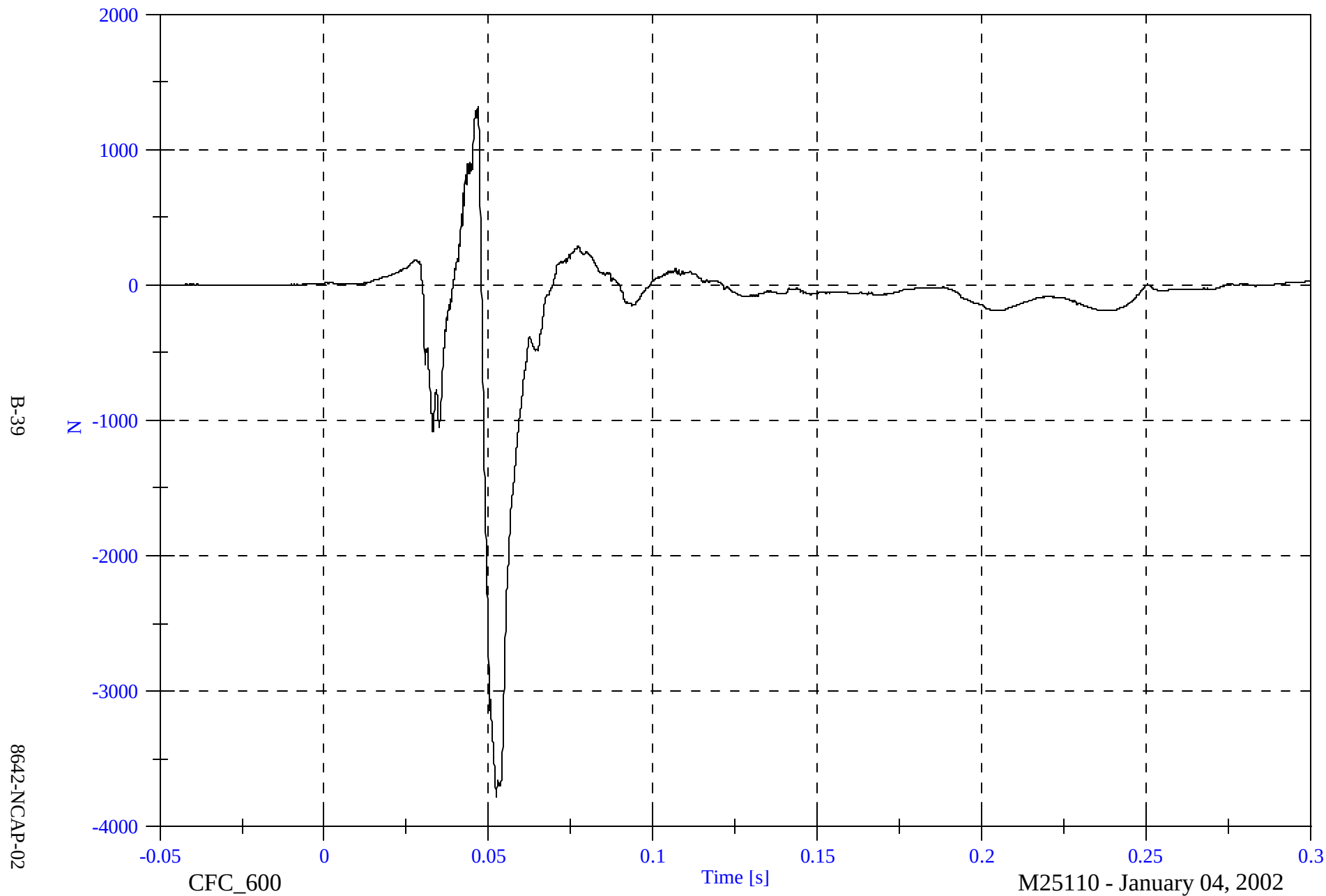


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 1312.7 [N] at 0.047 [s]

Min: -3785.2 [N] at 0.052 [s]

P1 Left Femur z

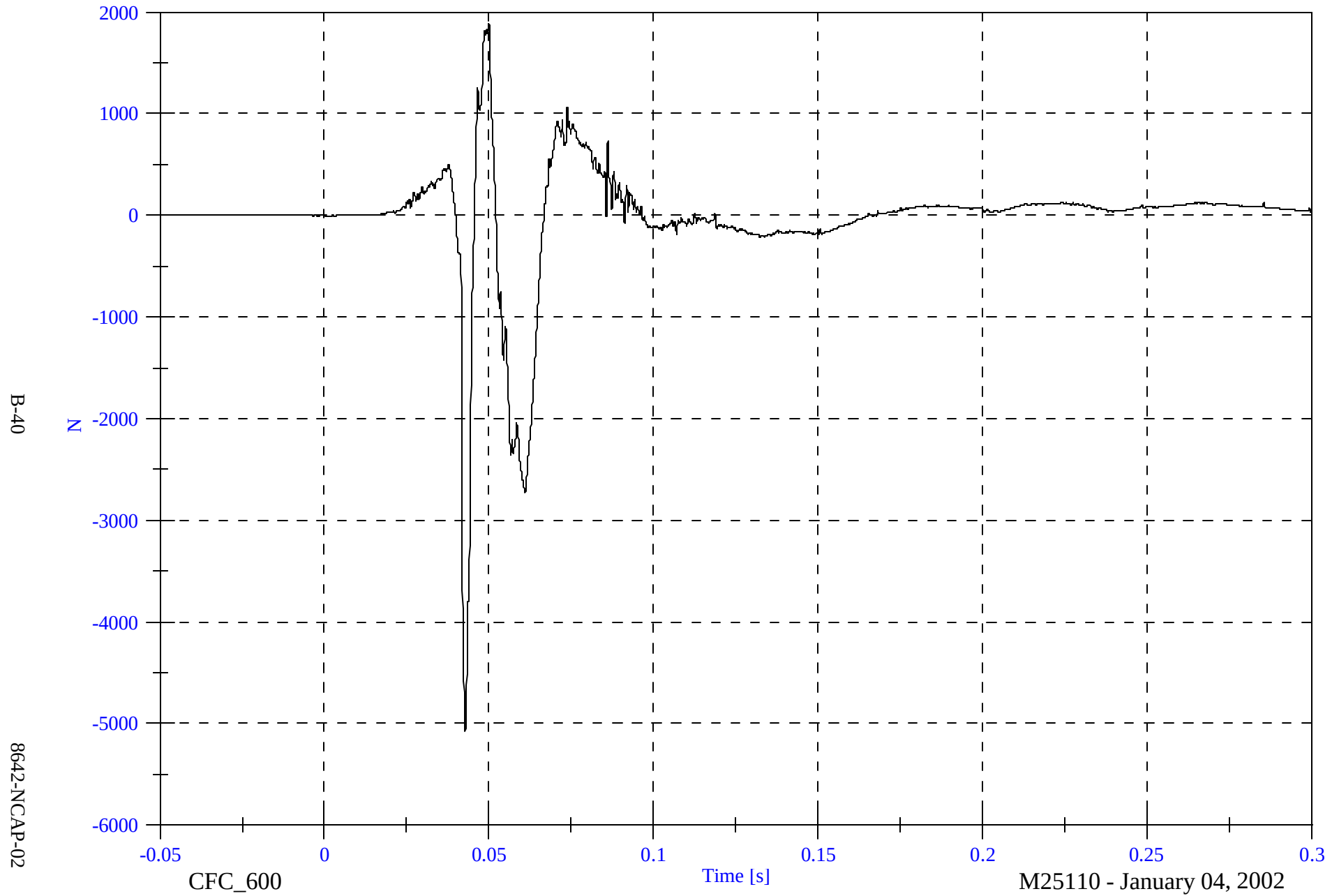


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 1887.4 [N] at 0.050 [s]

Min: -5074.3 [N] at 0.043 [s]

P1 Right Femur z

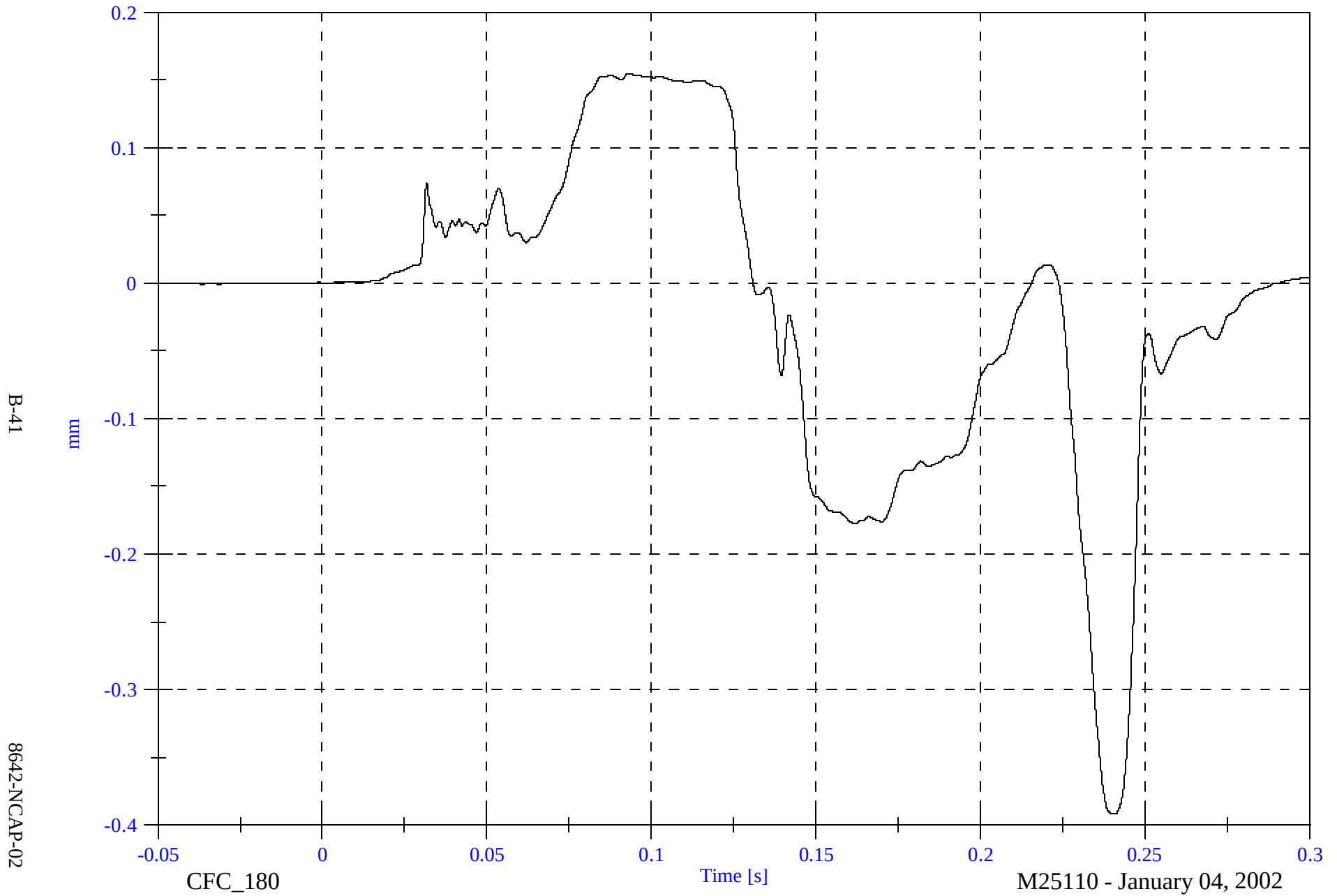


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Left Knee Shear

Max: 0.2 [mm] at 0.093 [s]

Min: -0.4 [mm] at 0.241 [s]

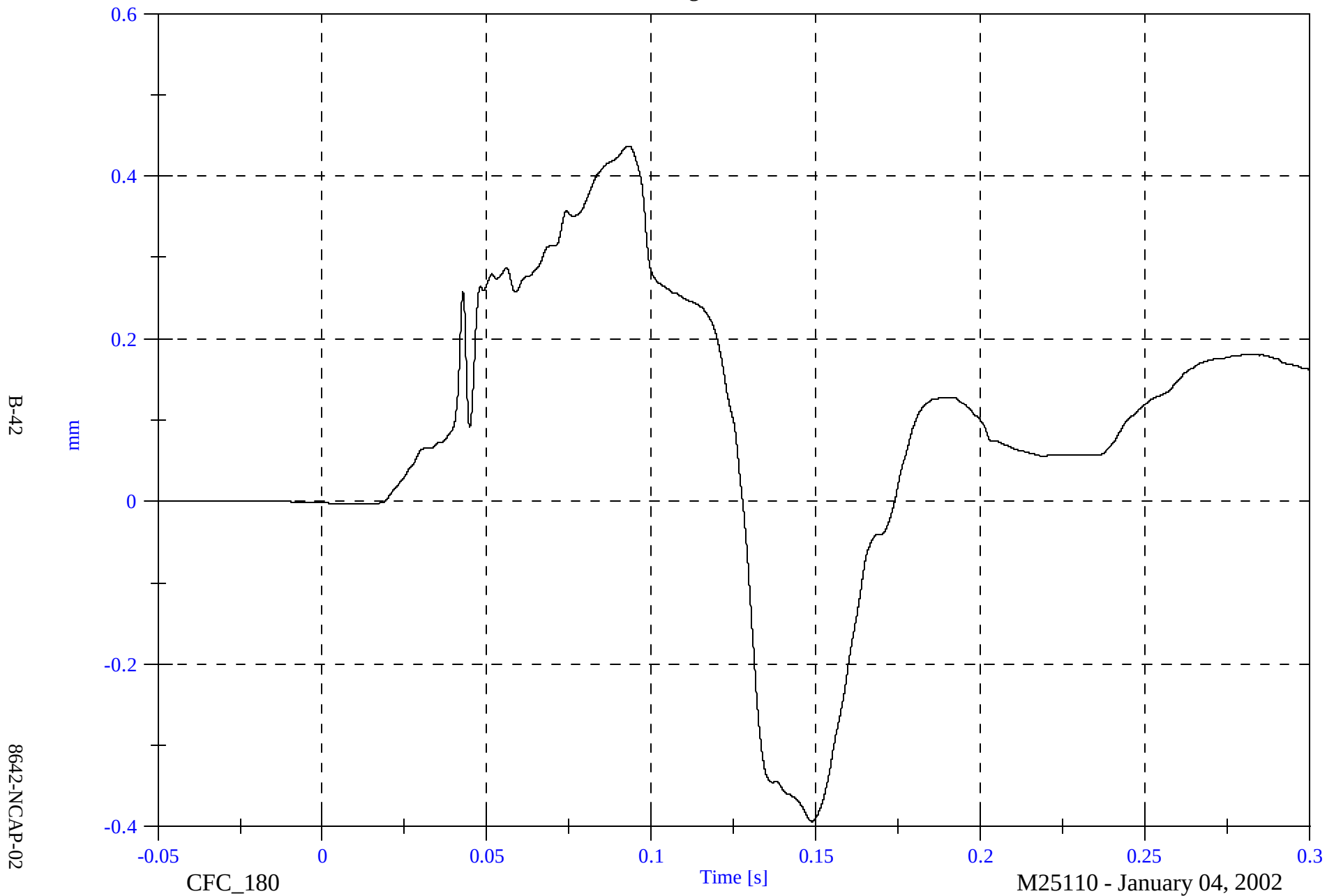


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Right Knee Shear

Max: 0.4 [mm] at 0.093 [s]

Min: -0.4 [mm] at 0.149 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

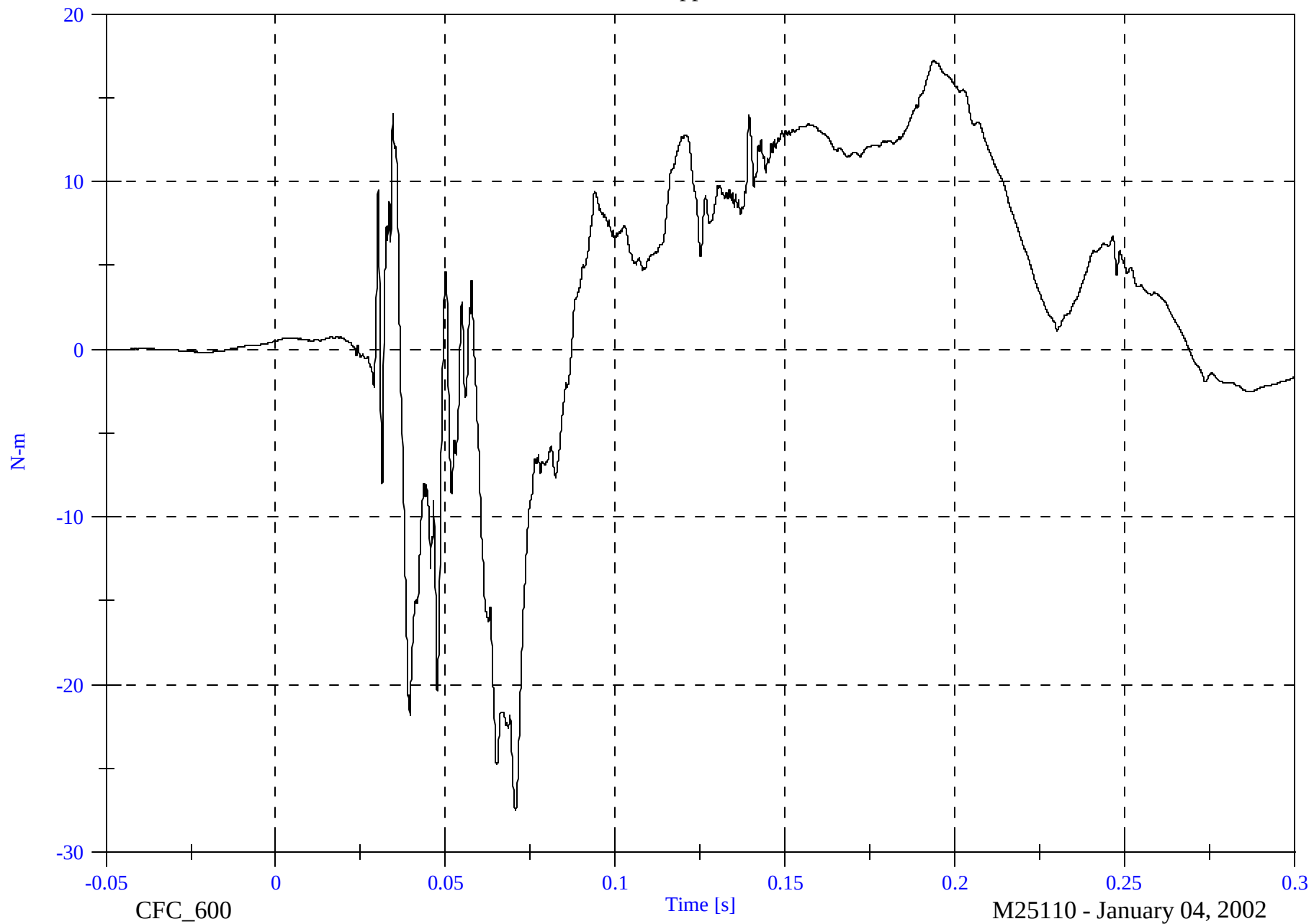
P1 Left Upper Tibia Mx

Max: 17.2 [N-m] at 0.194 [s]

Min: -27.5 [N-m] at 0.071 [s]

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8642-NCAP-02

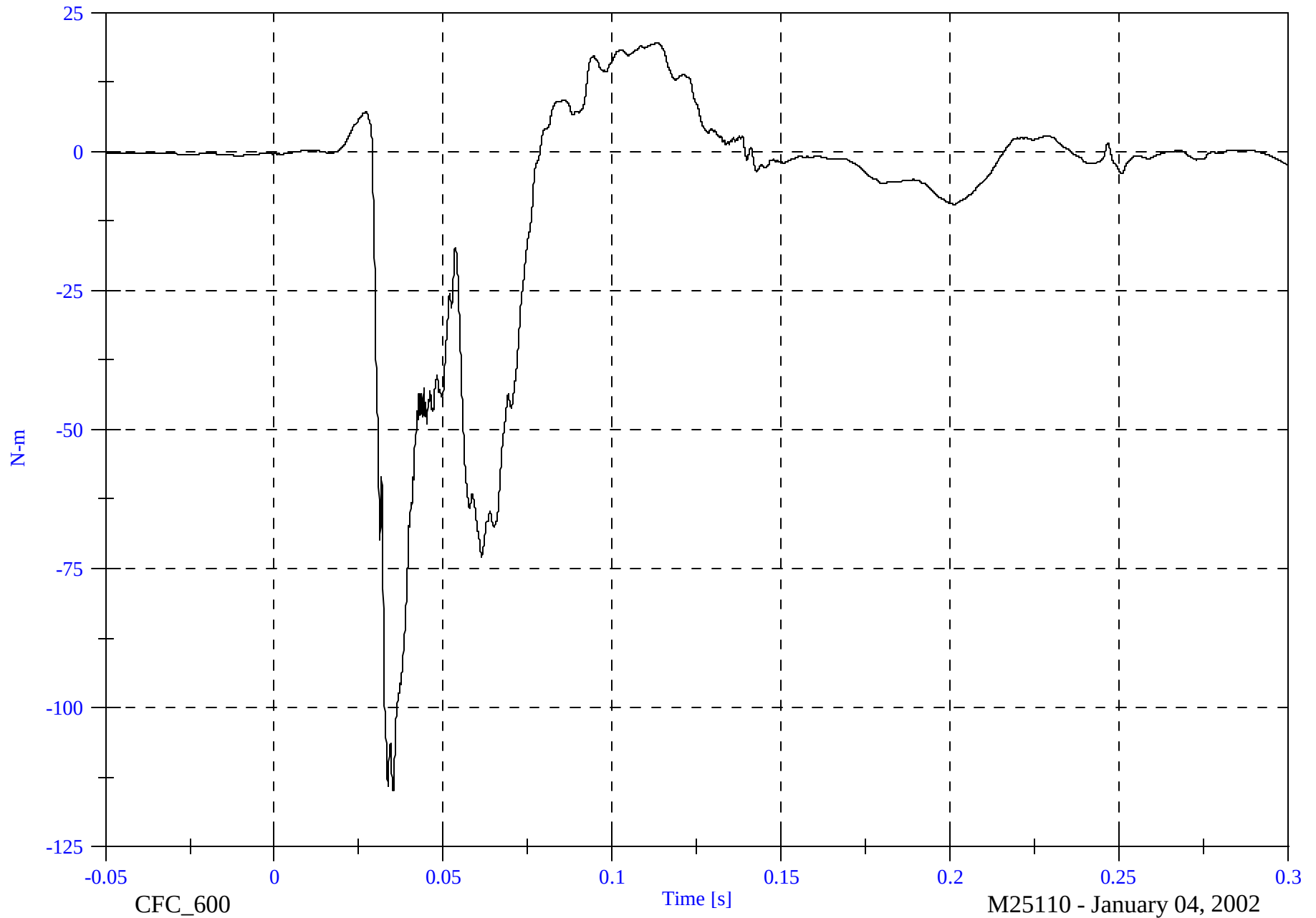


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Left Upper Tibia My

Max: 19.5 [N-m] at 0.113 [s]

Min: -114.9 [N-m] at 0.035 [s]



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CFC_600

Time [s]

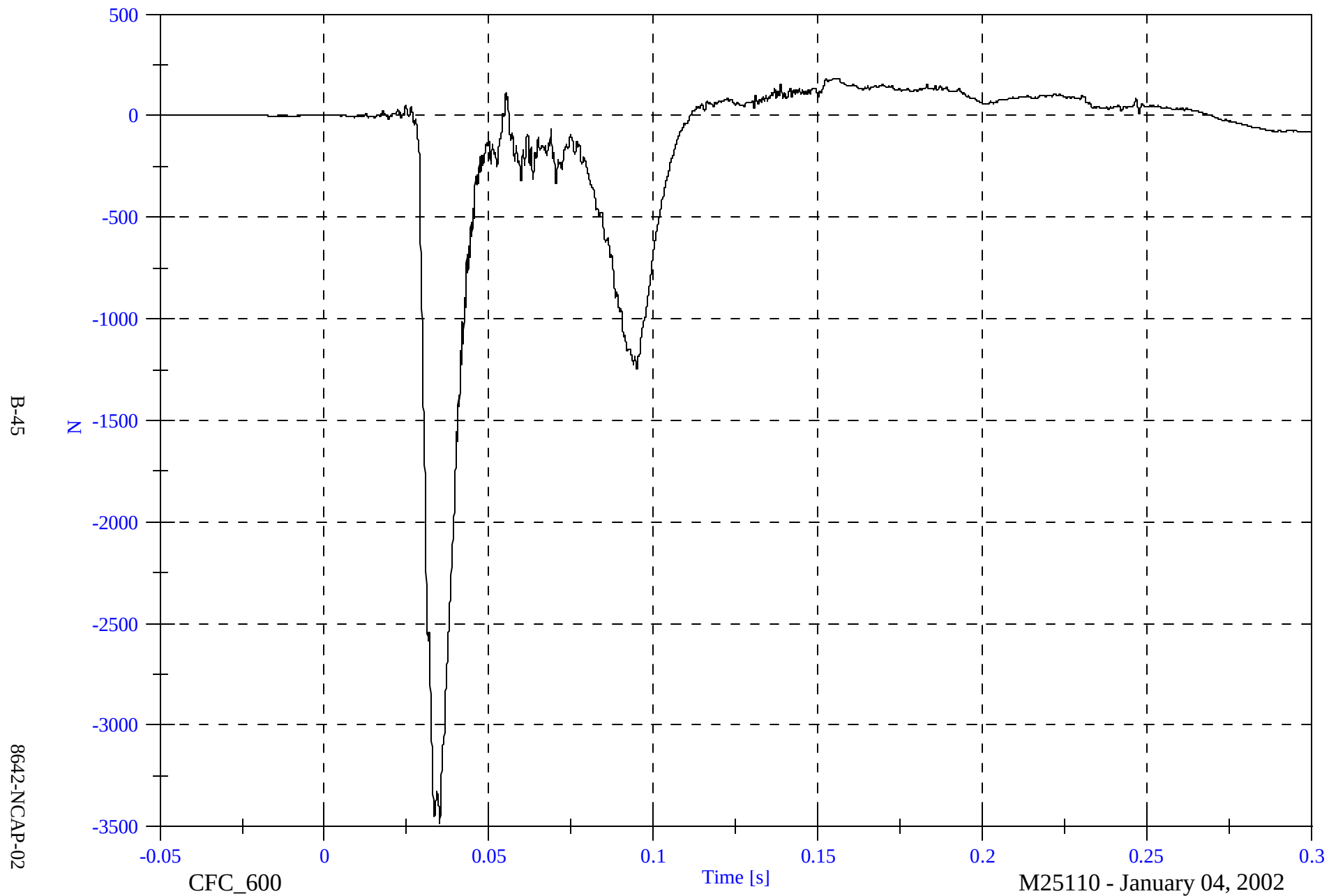
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Left Lower Tibia Fz

Max: 184.5 [N] at 0.155 [s]

Min: -3486.2 [N] at 0.035 [s]

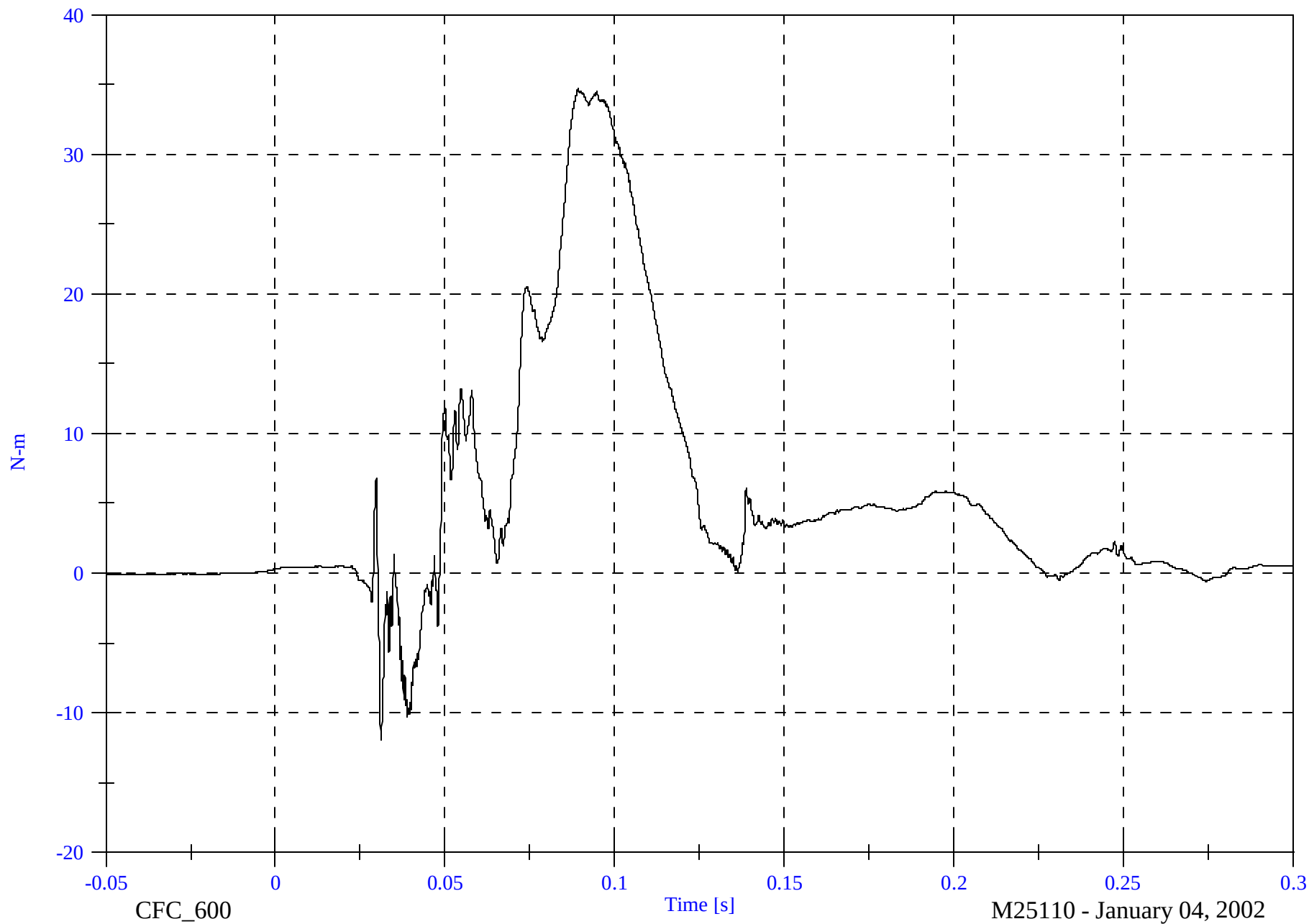


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 34.7 [N-m] at 0.089 [s]

P1 Left Lower Tibia Mx

Min: -12.0 [N-m] at 0.031 [s]



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8642-NCAP-02

CFC_600

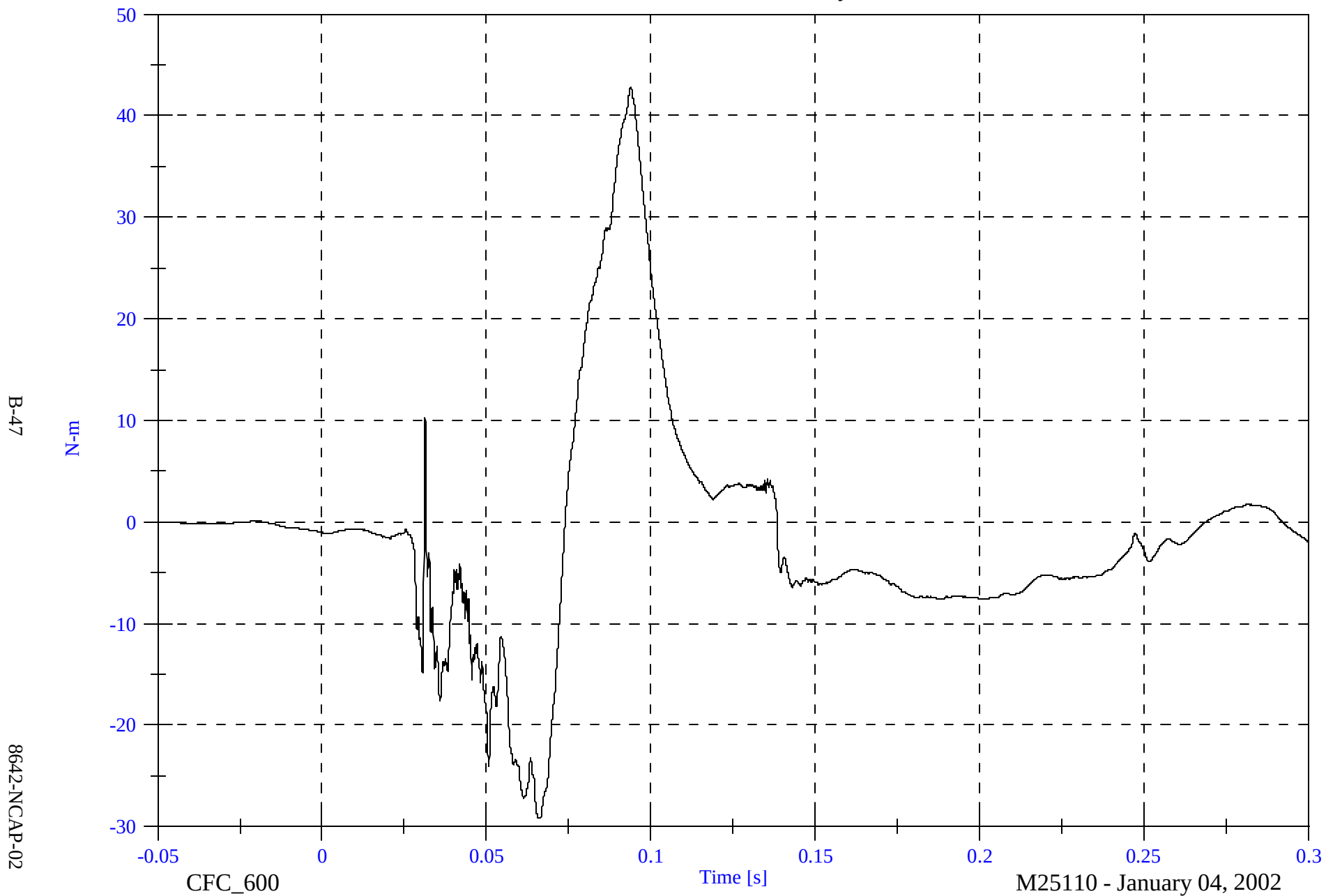
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 42.8 [N-m] at 0.094 [s]

Min: -29.2 [N-m] at 0.066 [s]

P1 Left Lower Tibia My

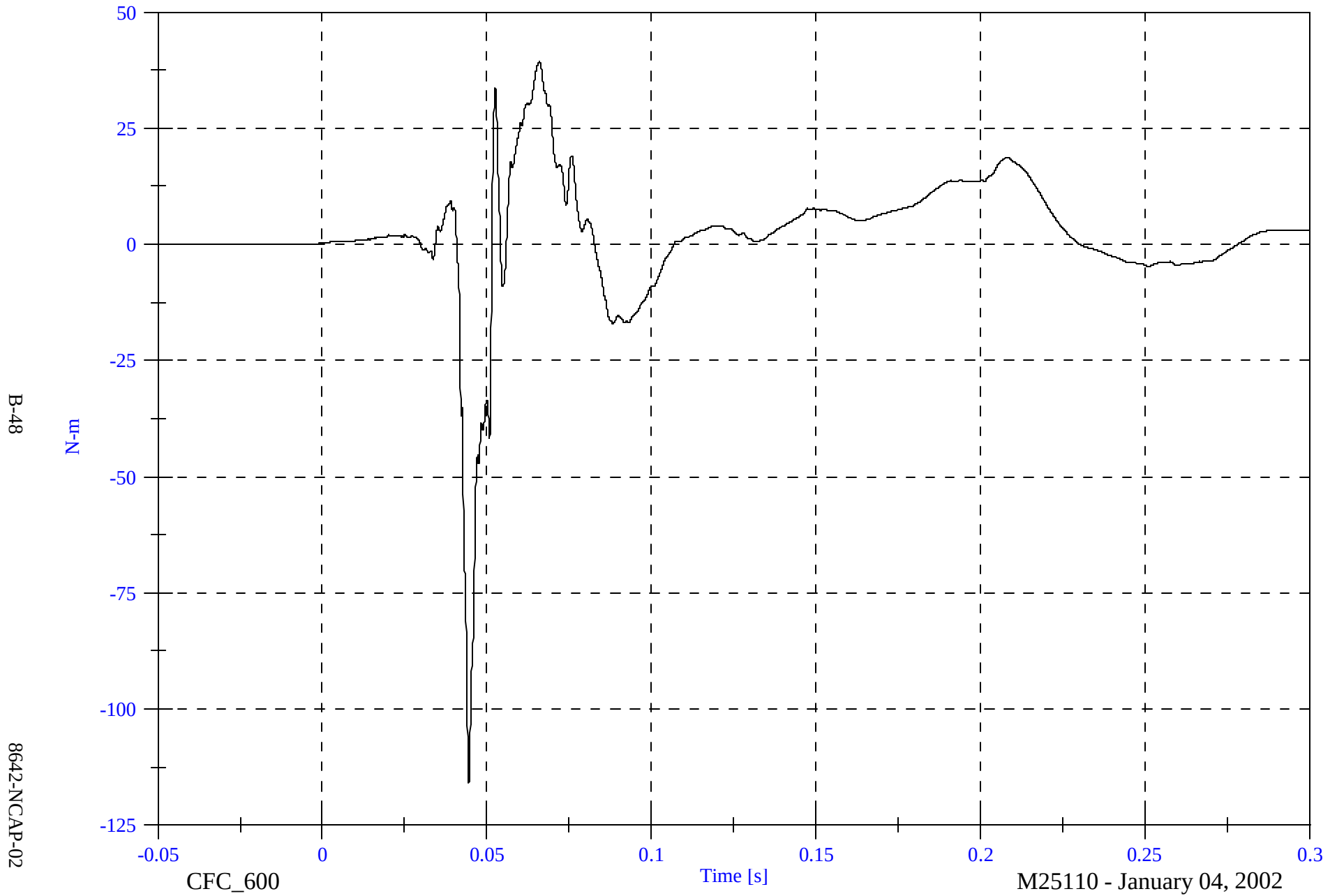


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Right Upper Tibia Mx

Max: 39.3 [N-m] at 0.066 [s]

Min: -115.8 [N-m] at 0.045 [s]

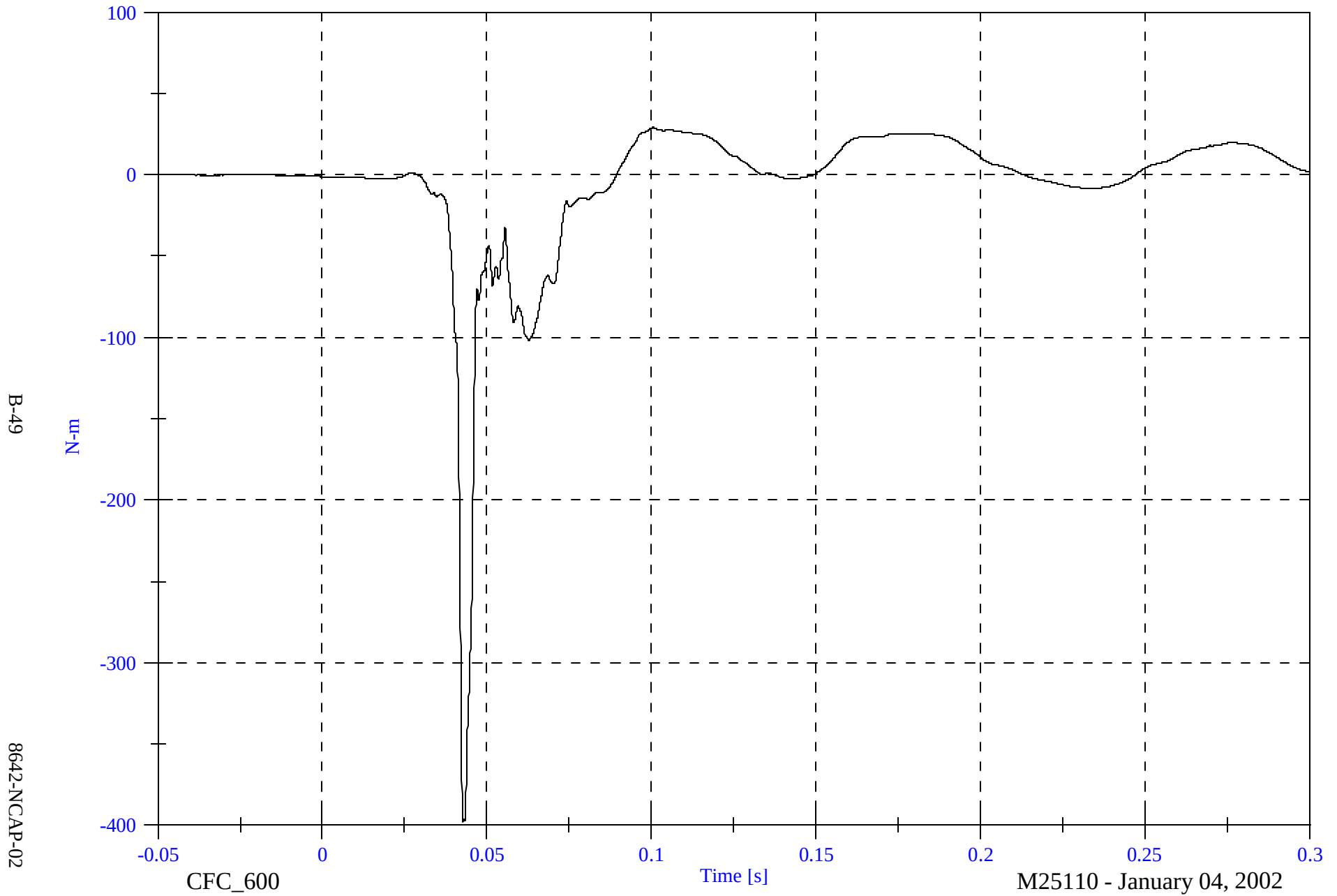


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Right Upper Tibia My

Max: 28.9 [N-m] at 0.101 [s]

Min: -398.2 [N-m] at 0.043 [s]

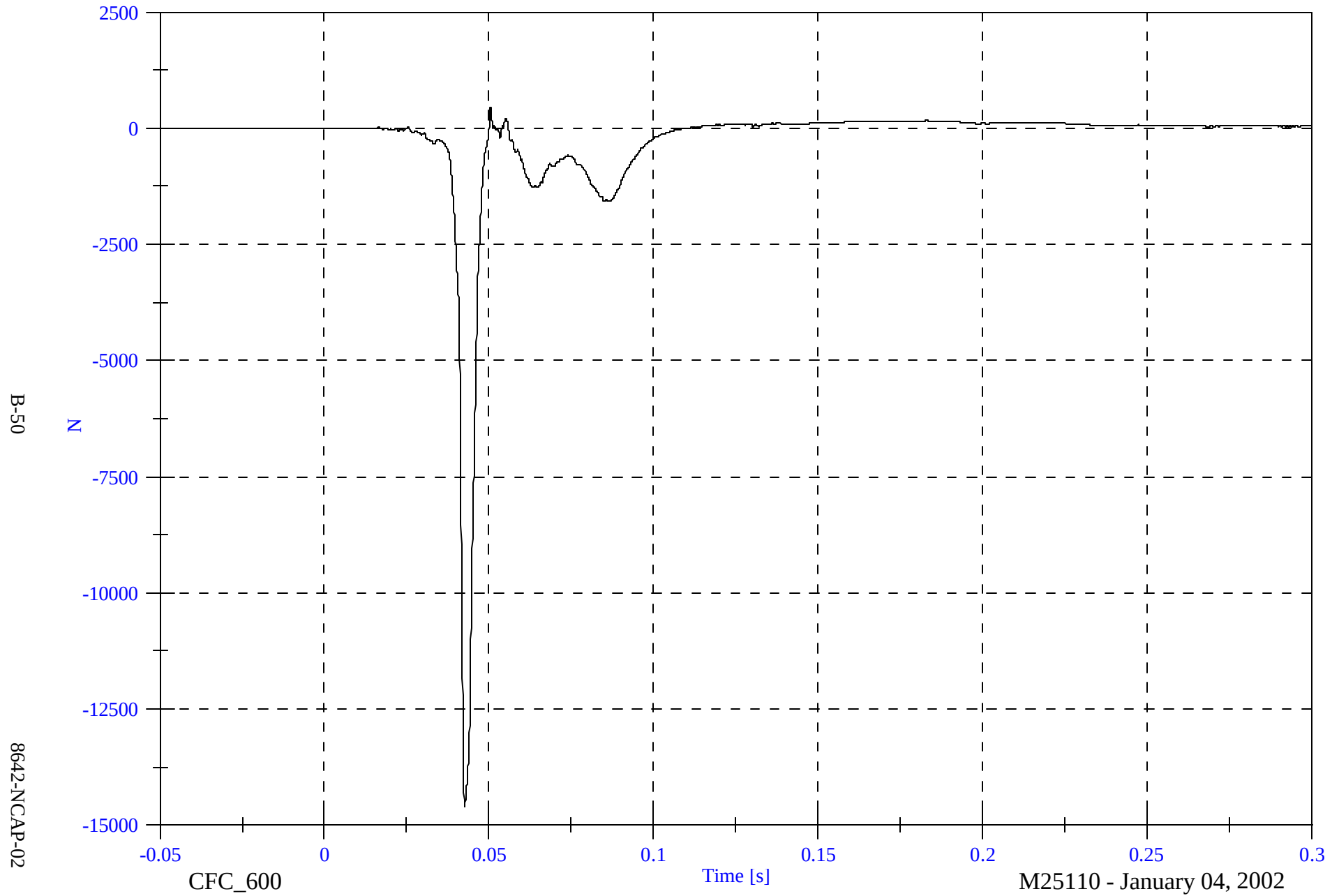


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Right Lower Tibia Fz

Max: 449.8 [N] at 0.051 [s]

Min: -14603.5 [N] at 0.043 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

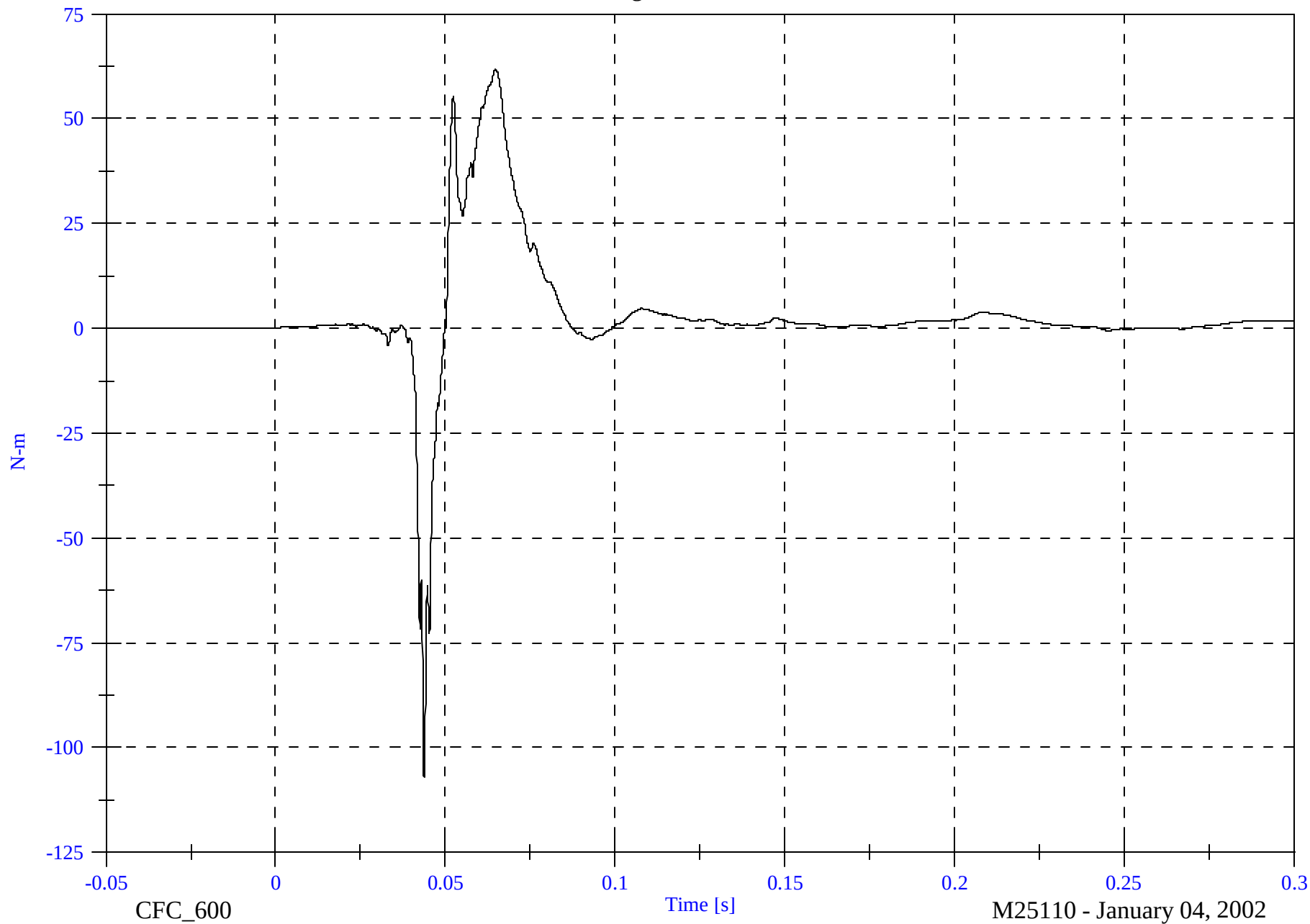
P1 Right Lower Tibia Mx

Max: 61.7 [N-m] at 0.065 [s]

Min: -106.9 [N-m] at 0.044 [s]

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8642-NCAP-02

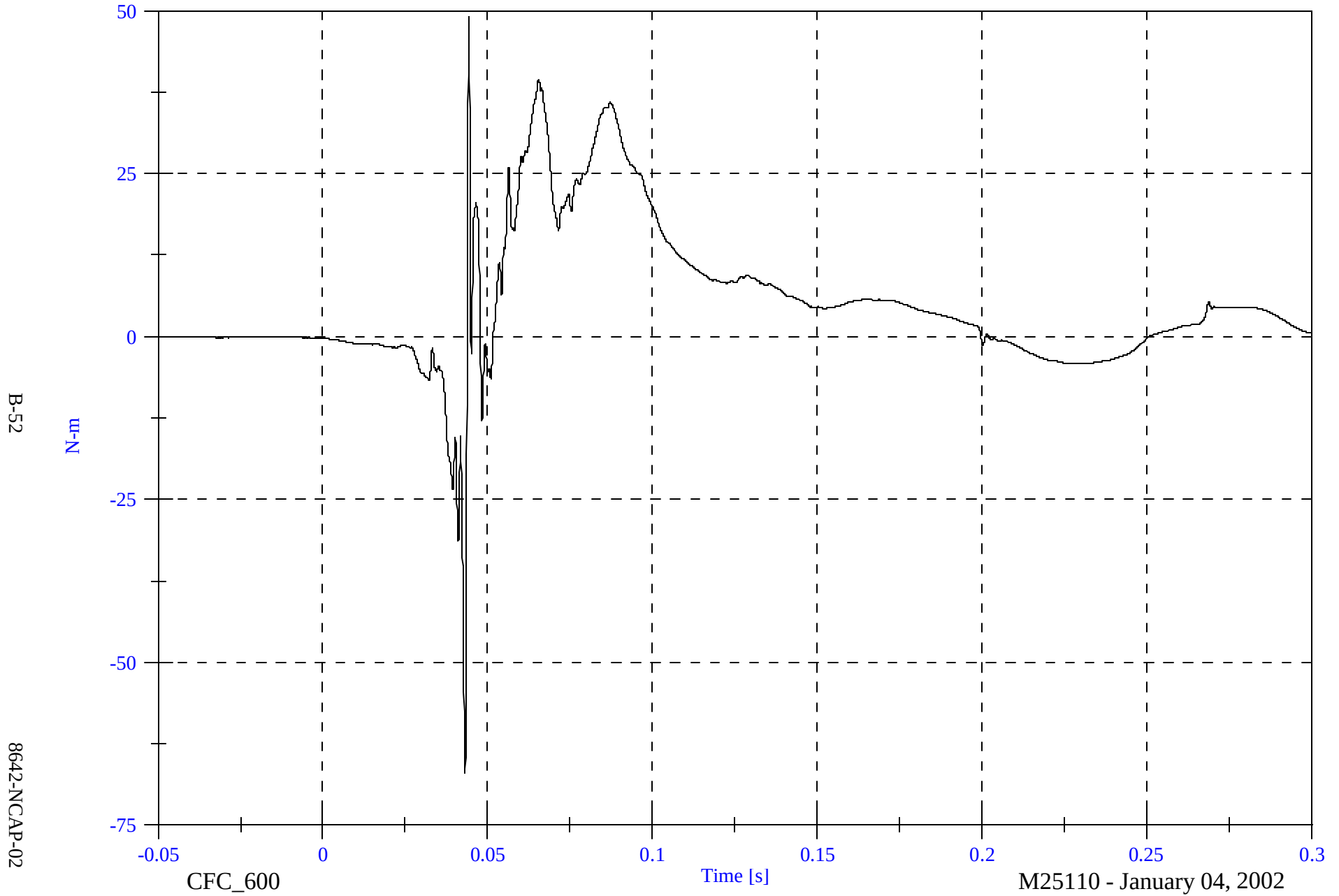


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 49.1 [N-m] at 0.044 [s]

P1 Right Lower Tibia My

Min: -67.0 [N-m] at 0.043 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

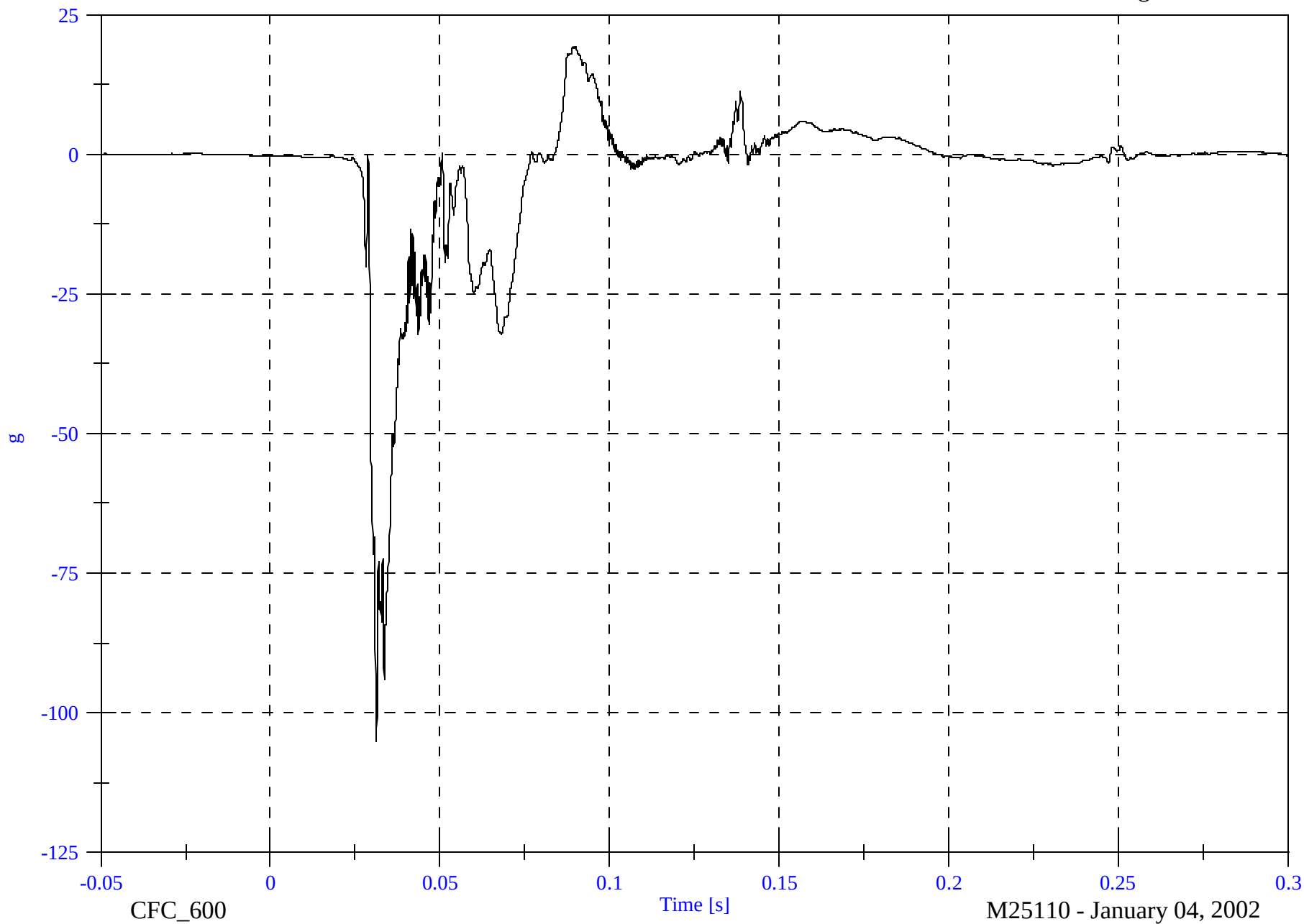
P1 Left Foot Aft x

Max: 19.3 [g] at 0.090 [s]

Min: -105.1 [g] at 0.031 [s]

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8642-NCAP-02

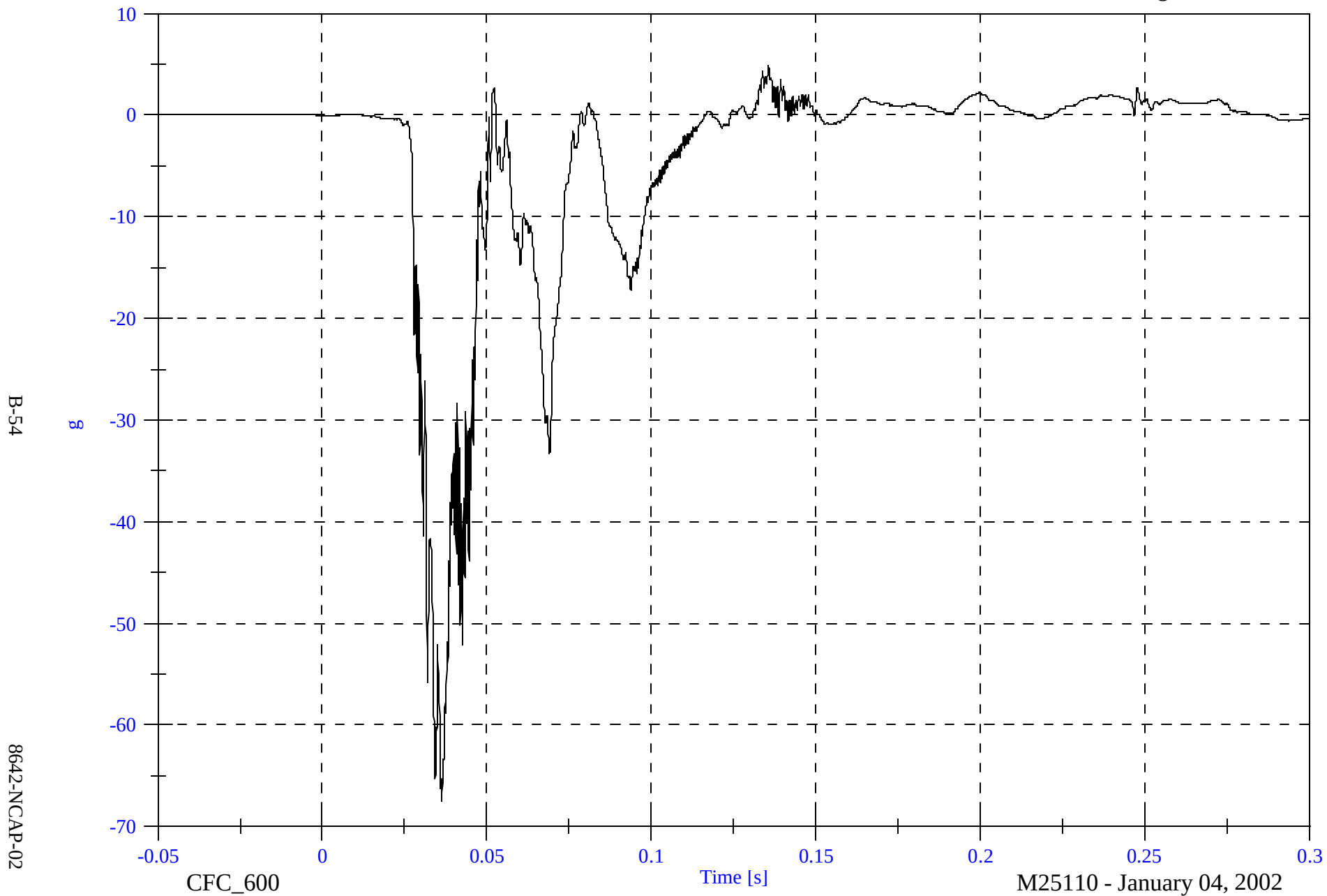


NCAP - 2002 Toyota Tundra Access Cab 4X4

P1 Left Foot Aft z

Max: 4.9 [g] at 0.136 [s]

Min: -67.5 [g] at 0.036 [s]

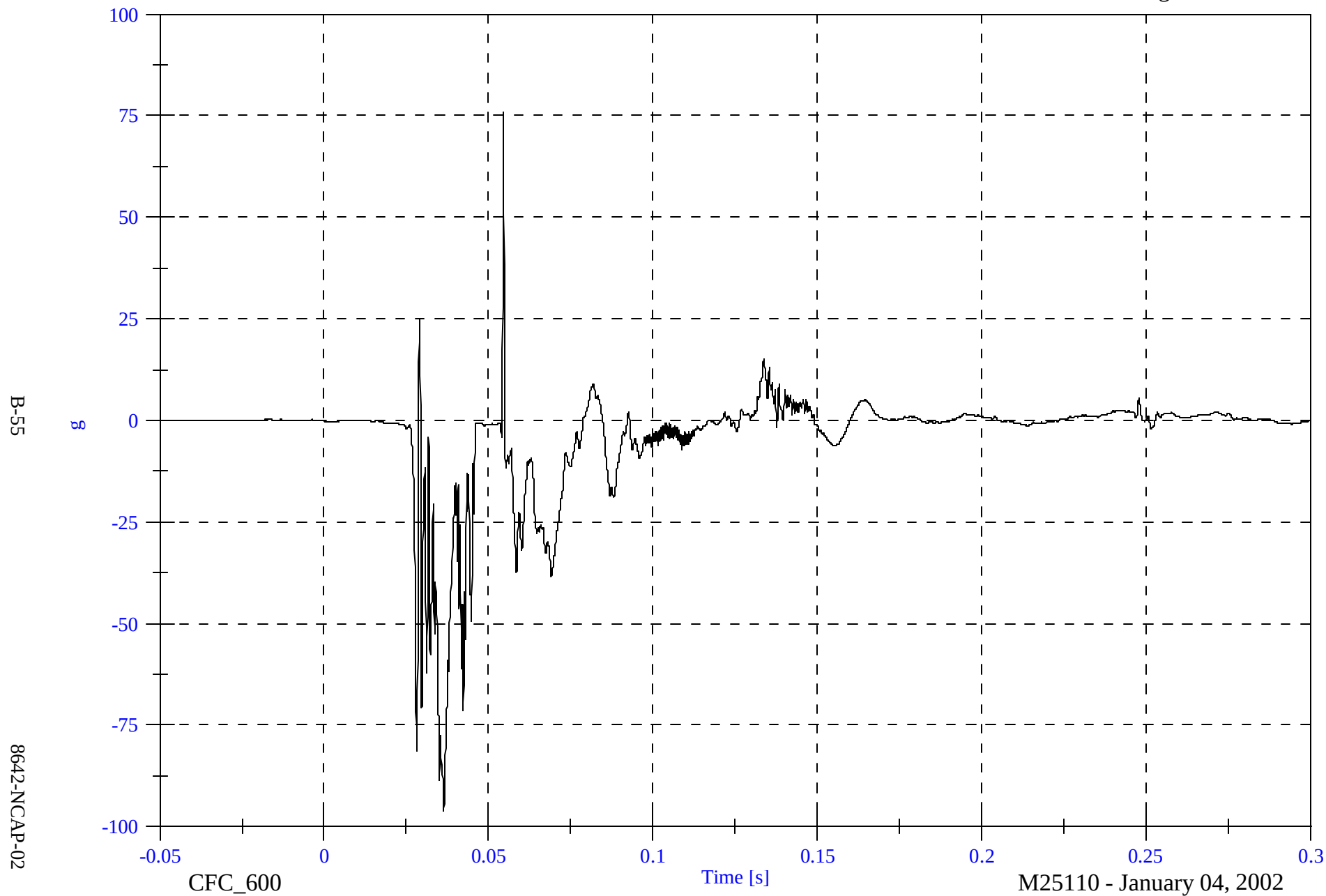


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 75.8 [g] at 0.055 [s]

Min: -96.0 [g] at 0.036 [s]

P1 Left Foot Fore z

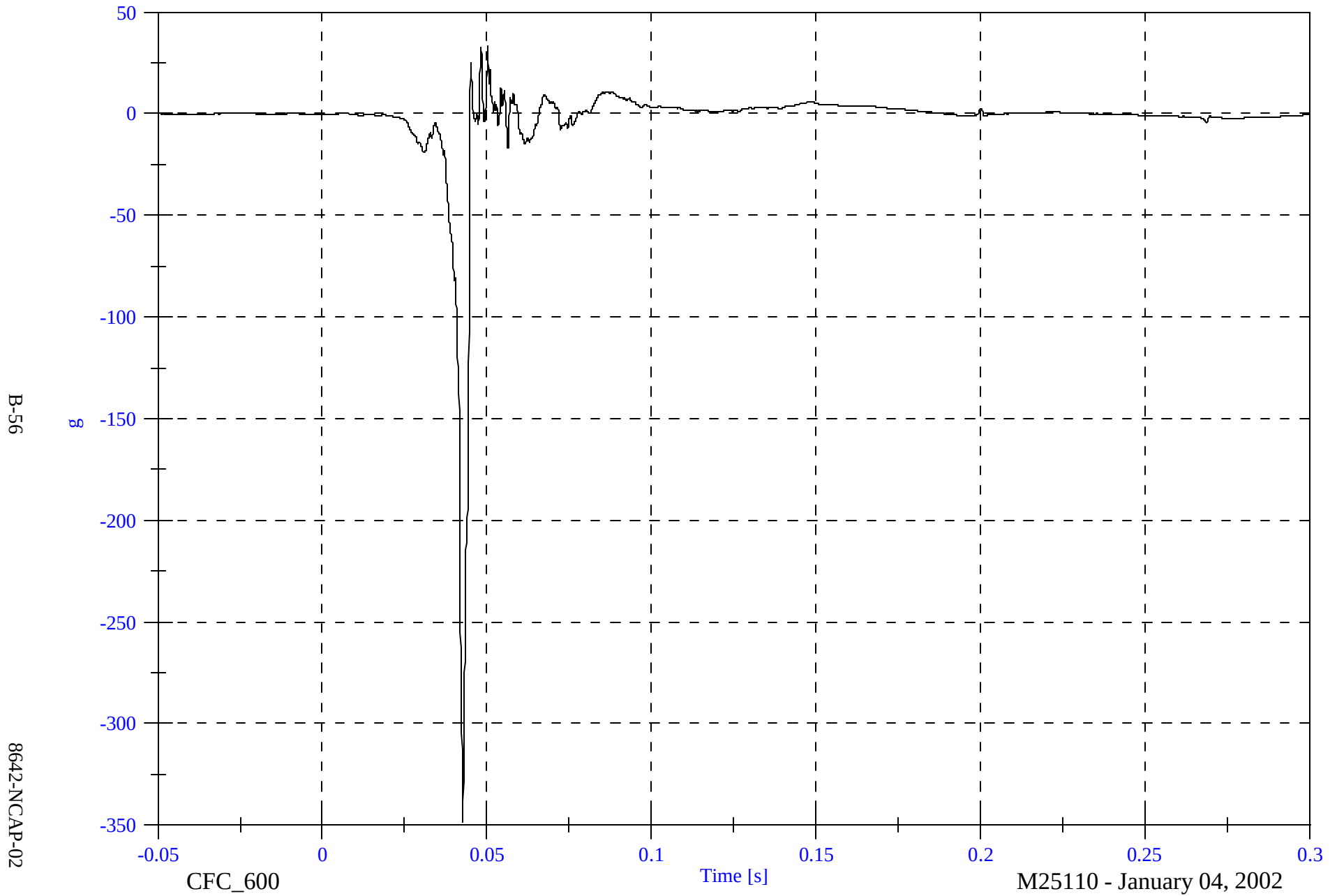


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 33.0 [g] at 0.050 [s]

Min: -348.1 [g] at 0.043 [s]

P1 Right Foot Aft x

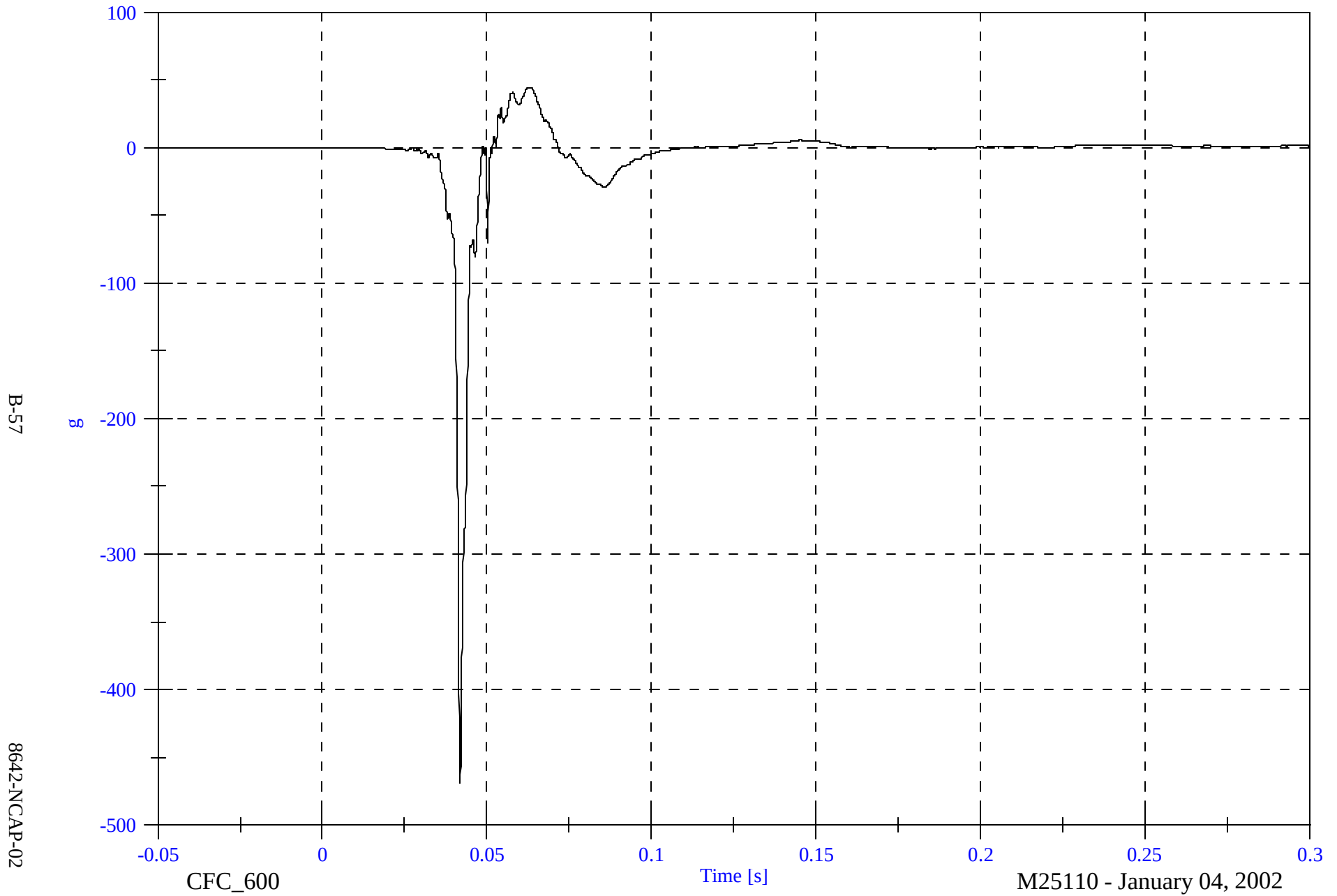


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 44.4 [g] at 0.063 [s]

Min: -468.6 [g] at 0.042 [s]

P1 Right Foot Aft z

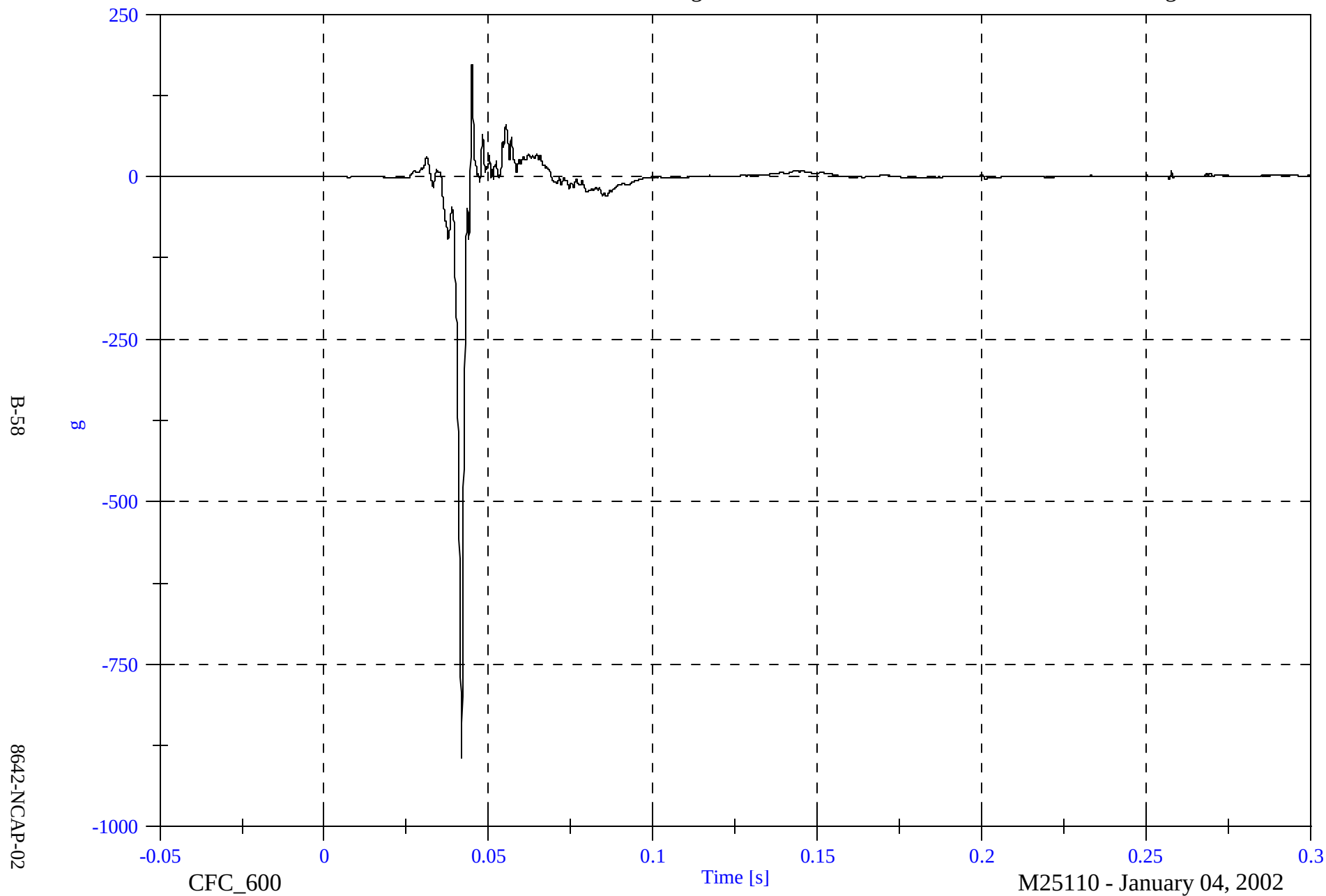


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 172.2 [g] at 0.045 [s]

Min: -894.1 [g] at 0.042 [s]

P1 Right Foot Fore z



NCAP - 2002 Toyota Tundra Access Cab 4X4

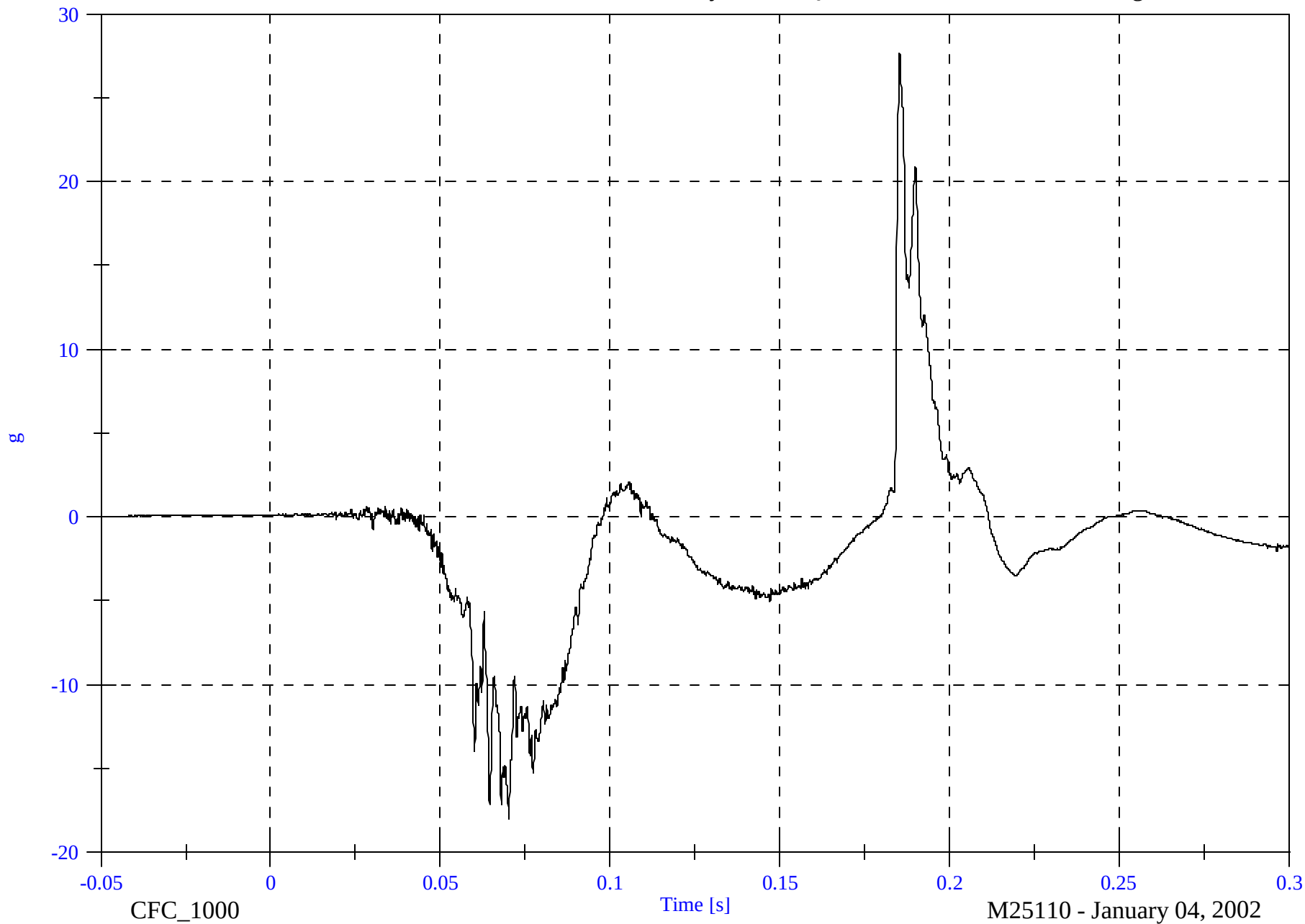
P2 Head 9 Array X Arm Ay

Max: 27.6 [g] at 0.185 [s]

Min: -18.0 [g] at 0.070 [s]

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8642-NCAP-02

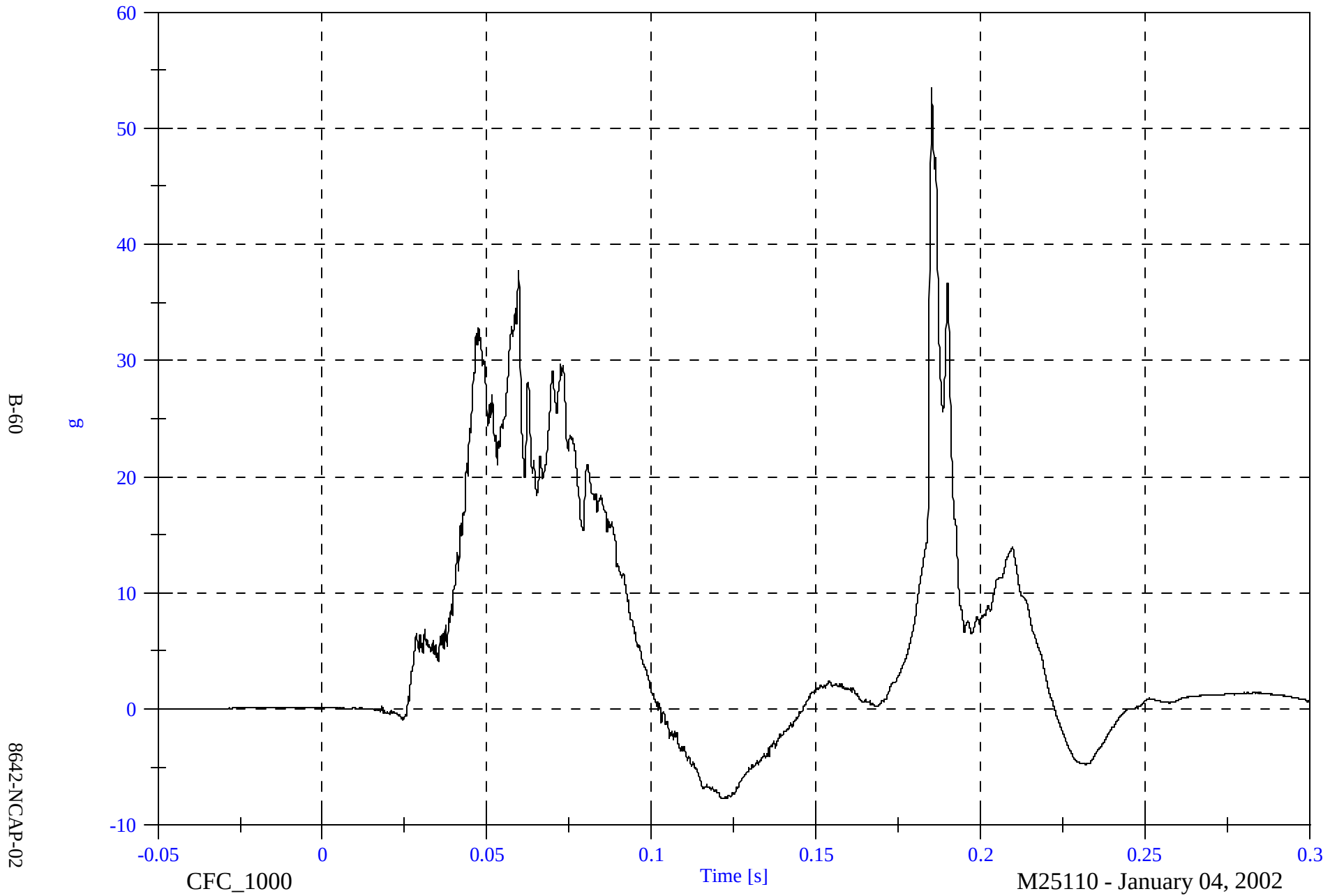


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Head 9 Array X Arm Az

Max: 53.5 [g] at 0.185 [s]

Min: -7.7 [g] at 0.121 [s]

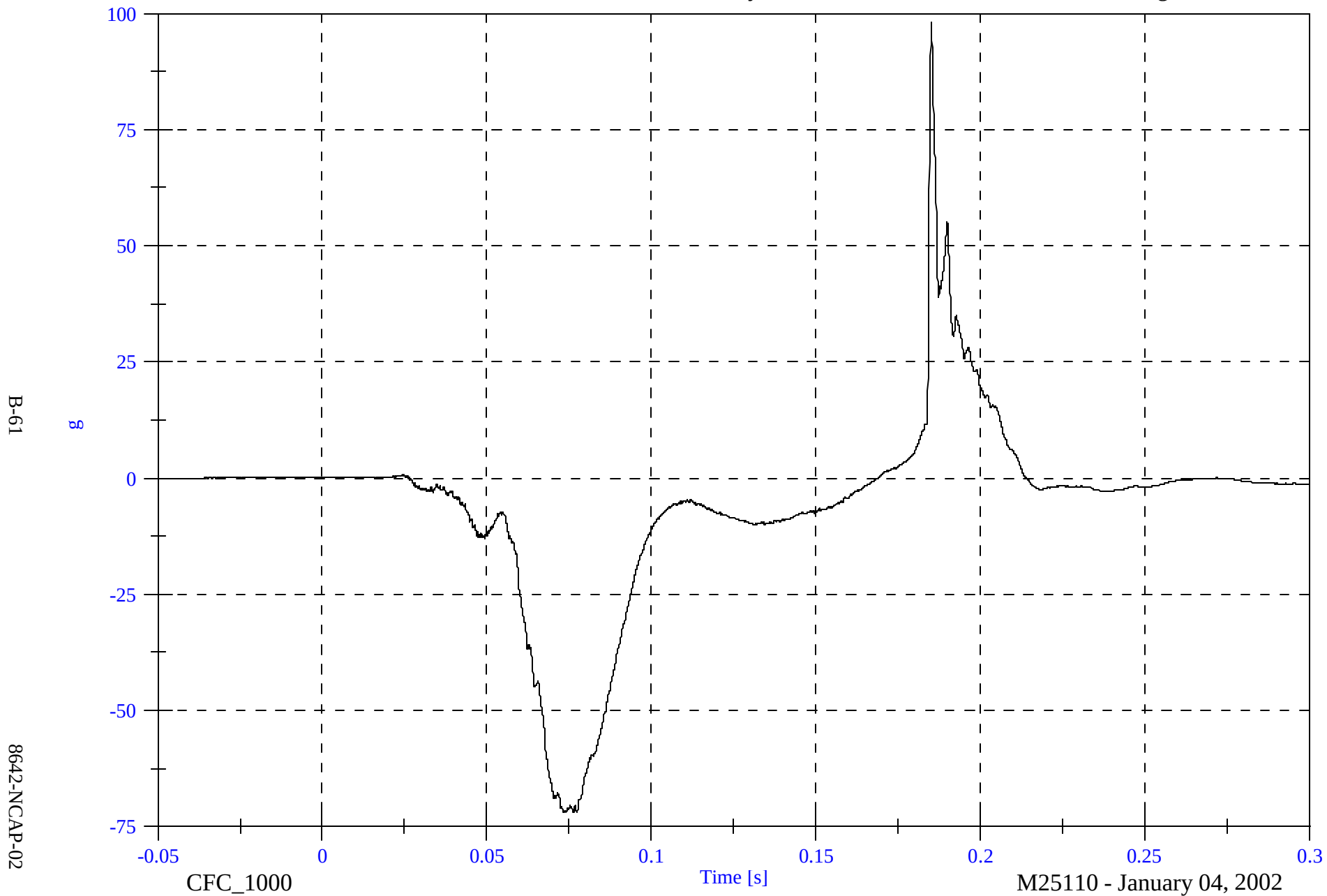


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Head 9 Array Y Arm Ax

Max: 98.1 [g] at 0.185 [s]

Min: -72.0 [g] at 0.074 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

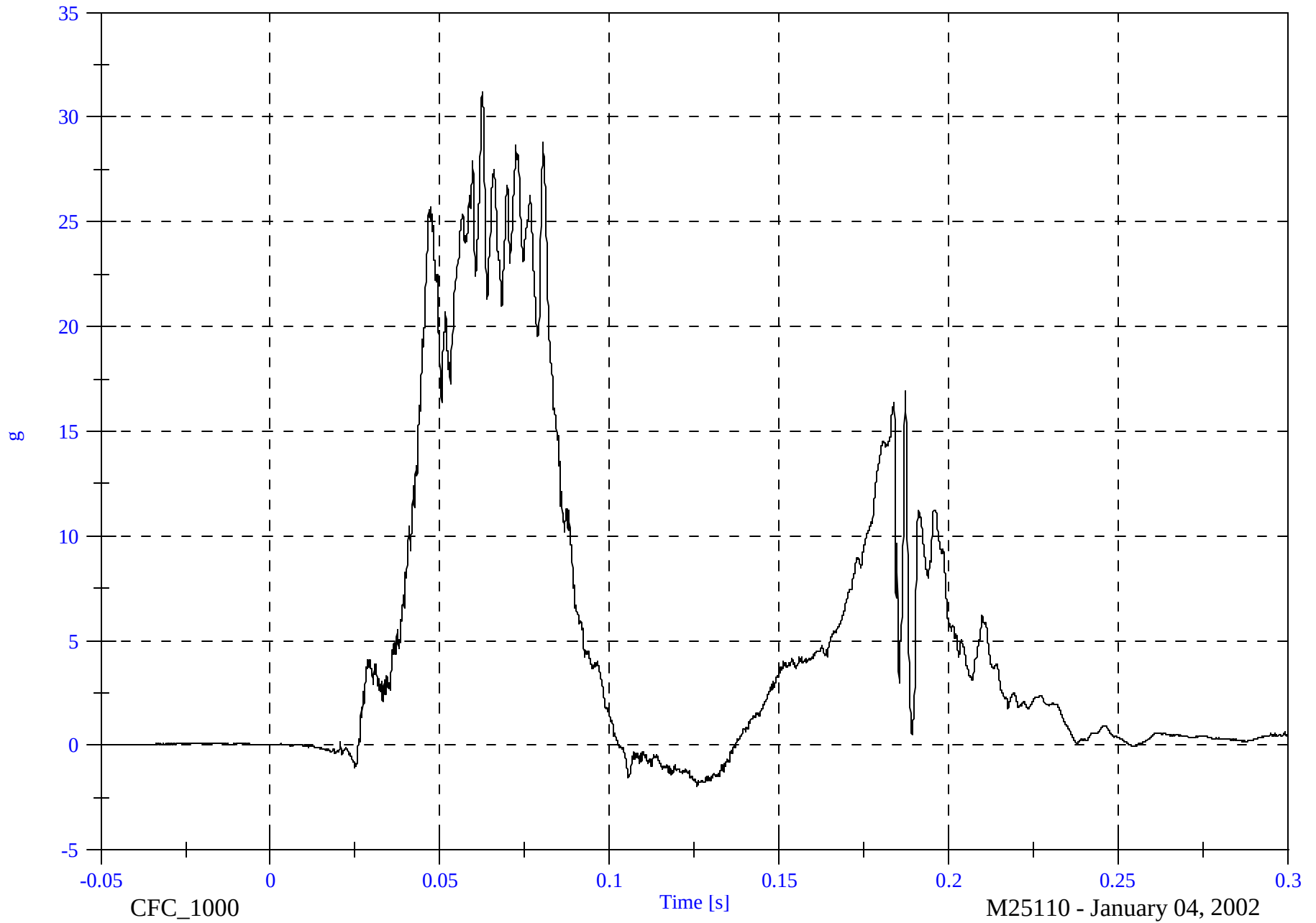
P2 Head 9 Array Y Arm Az

Max: 31.2 [g] at 0.063 [s]

Min: -1.9 [g] at 0.126 [s]

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8642-NCAP-02

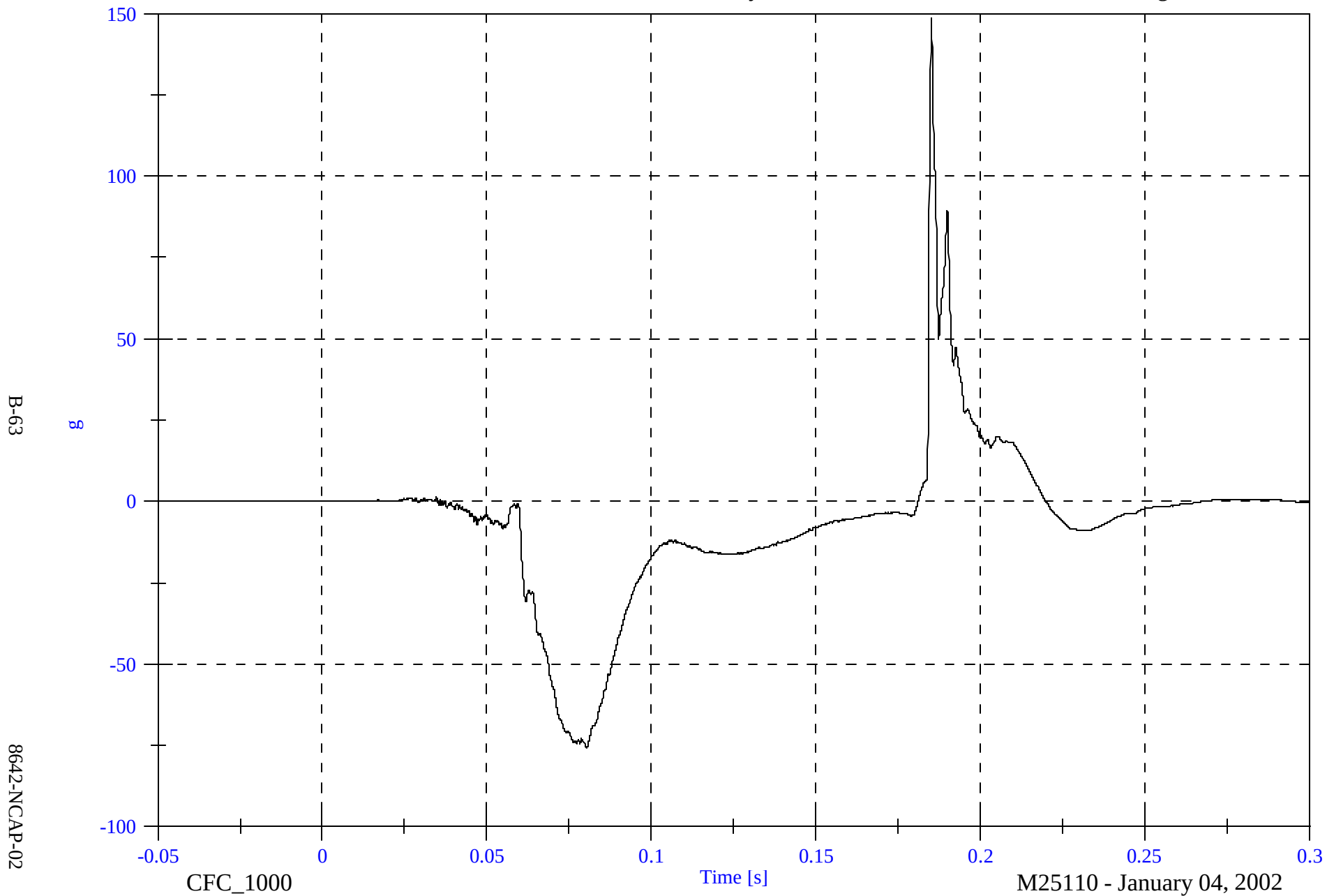


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Head 9 Array Z Arm Ax

Max: 148.6 [g] at 0.185 [s]

Min: -75.8 [g] at 0.080 [s]

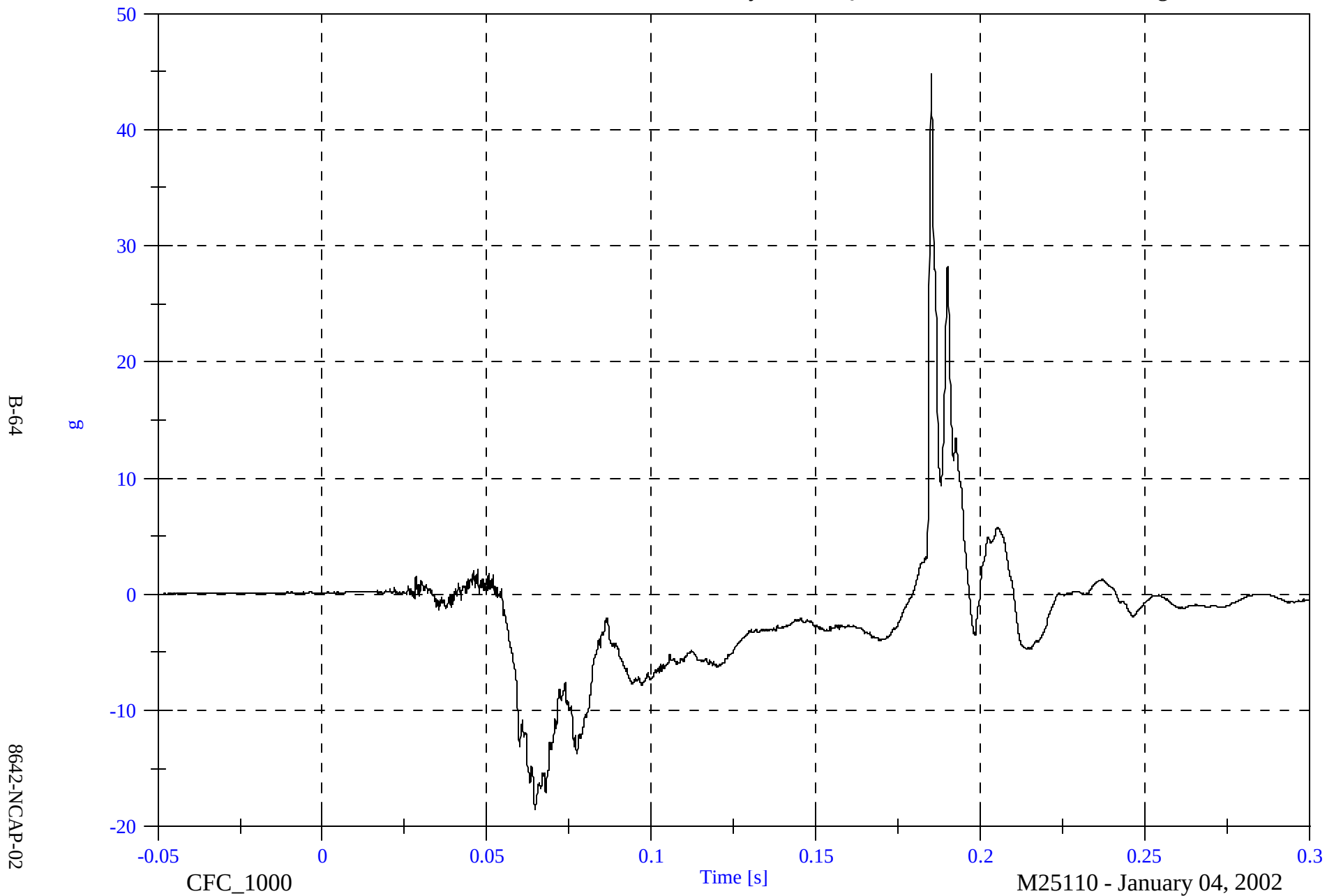


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Head 9 Array Z Arm Ay

Max: 44.8 [g] at 0.185 [s]

Min: -18.5 [g] at 0.065 [s]

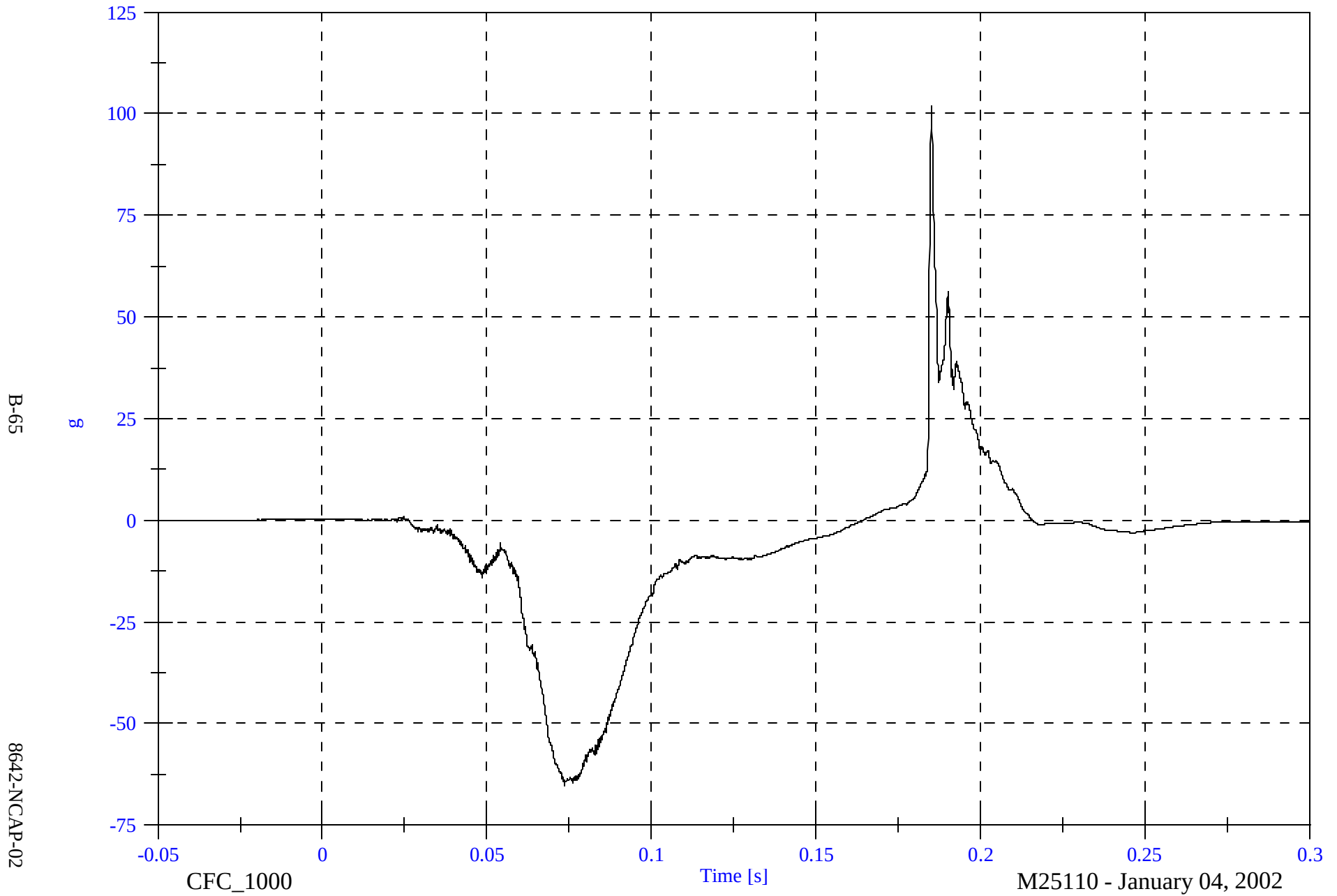


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Head CG Ax

Max: 101.9 [g] at 0.185 [s]

Min: -65.1 [g] at 0.074 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

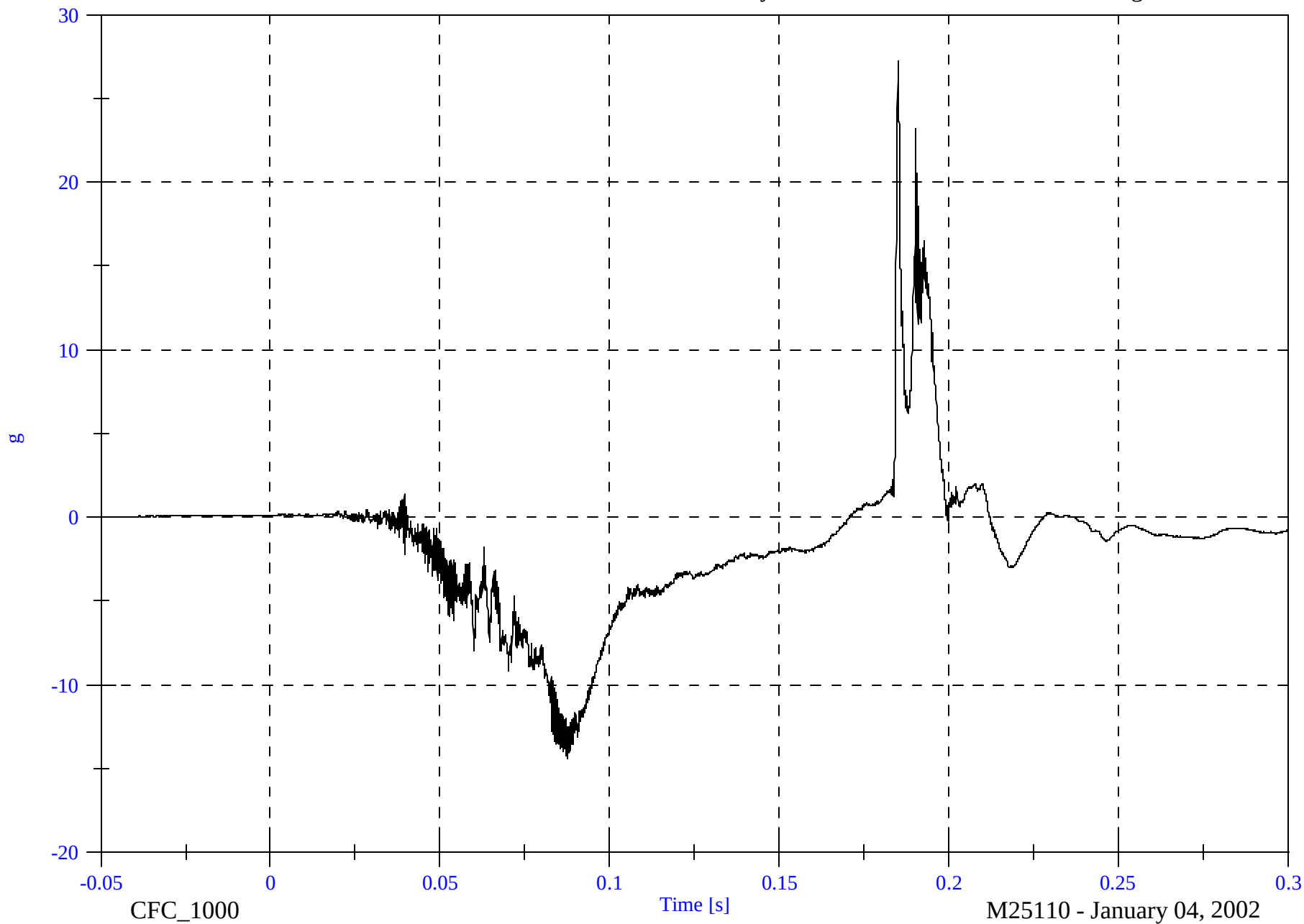
P2 Head CG Ay

Max: 27.2 [g] at 0.185 [s]

Min: -14.4 [g] at 0.088 [s]

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NCAP - 2002 Toyota Tundra Access Cab 4X4

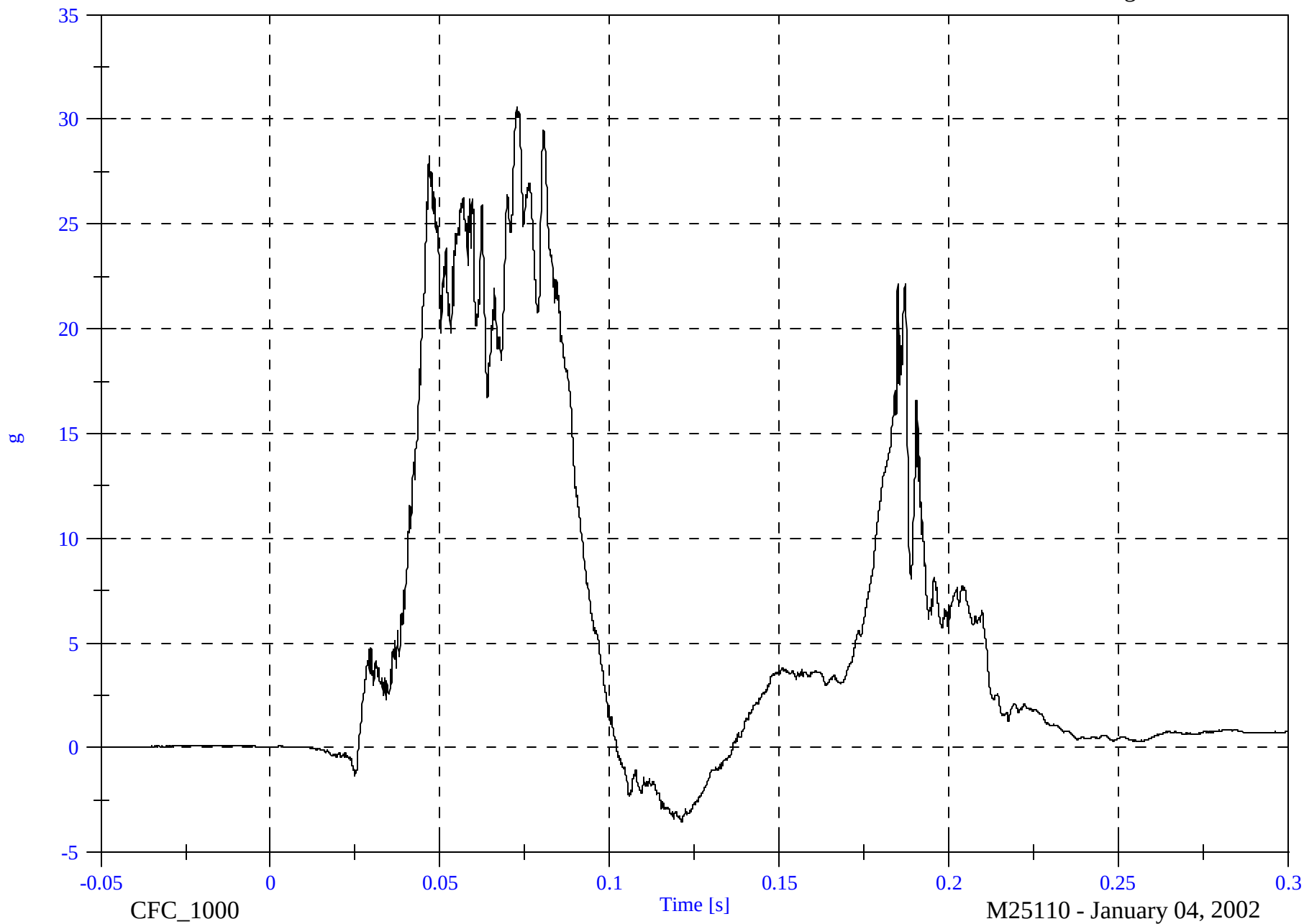
P2 Head CG Az

Max: 30.6 [g] at 0.073 [s]

Min: -3.5 [g] at 0.121 [s]

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NCAP - 2002 Toyota Tundra Access Cab 4X4

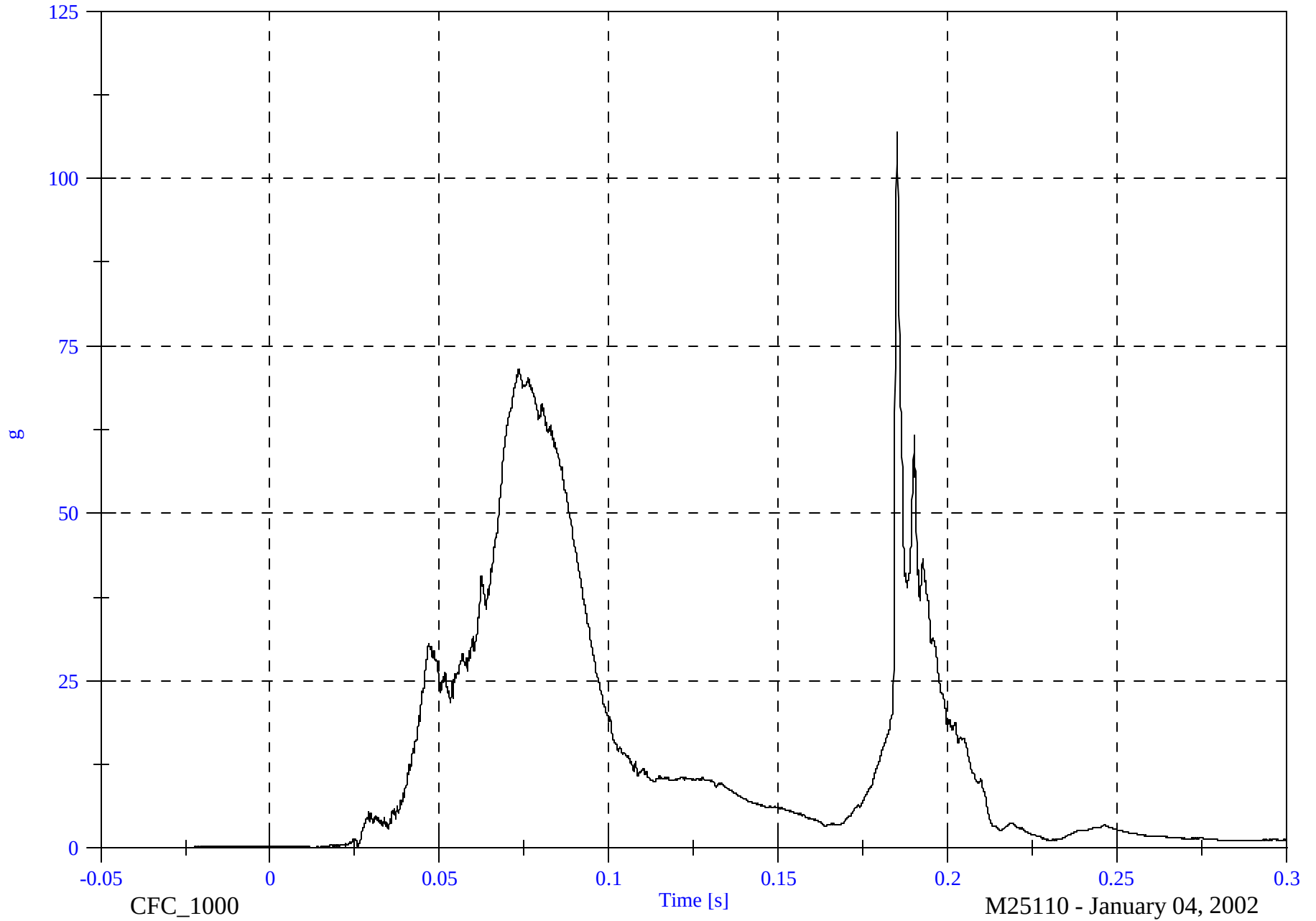
P2 Head CG A Resultant

Max: 106.9 [g] at 0.185 [s]

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

B-68

8642-NCAP-02

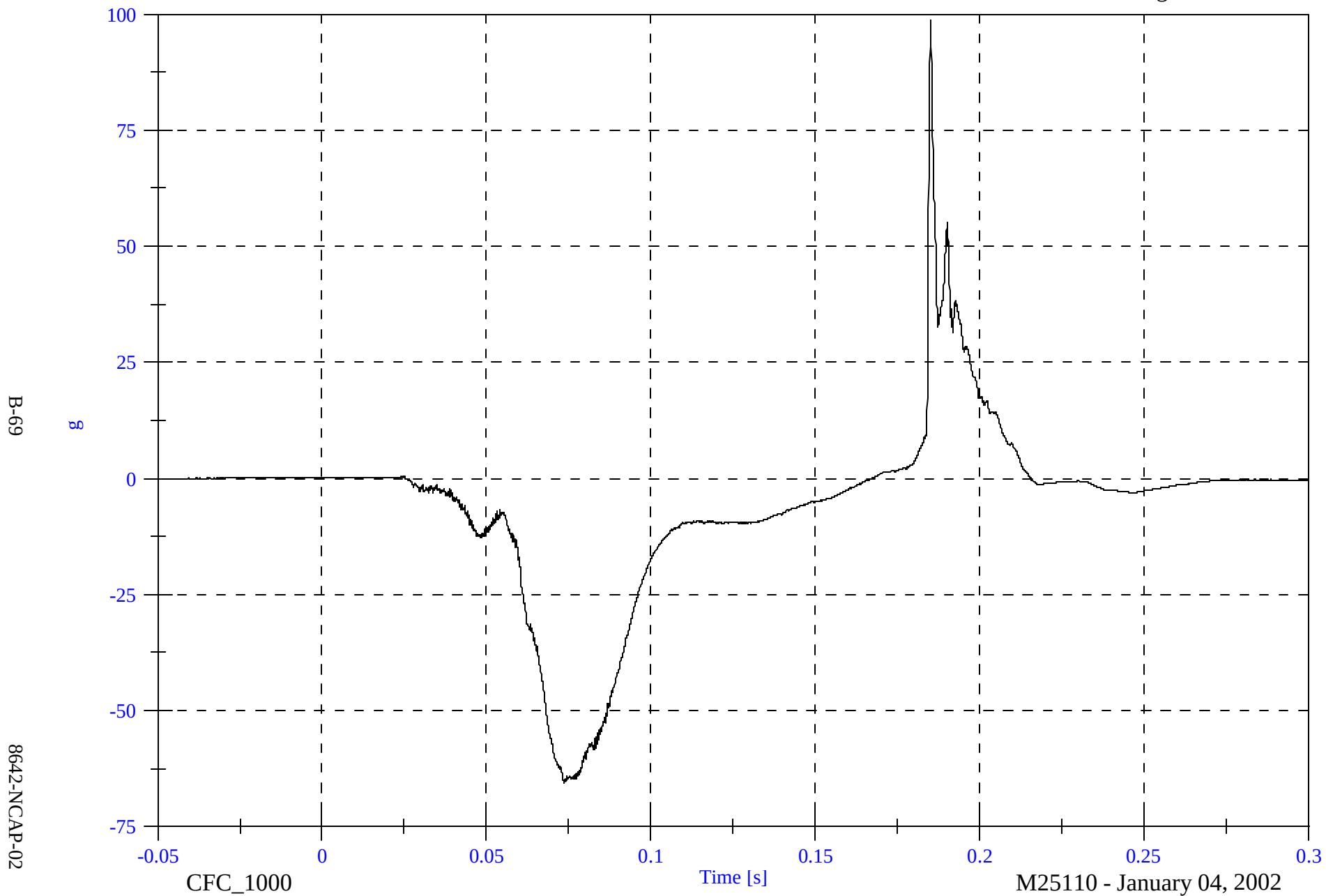


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Head CG Red Ax

Max: 98.7 [g] at 0.185 [s]

Min: -65.6 [g] at 0.074 [s]

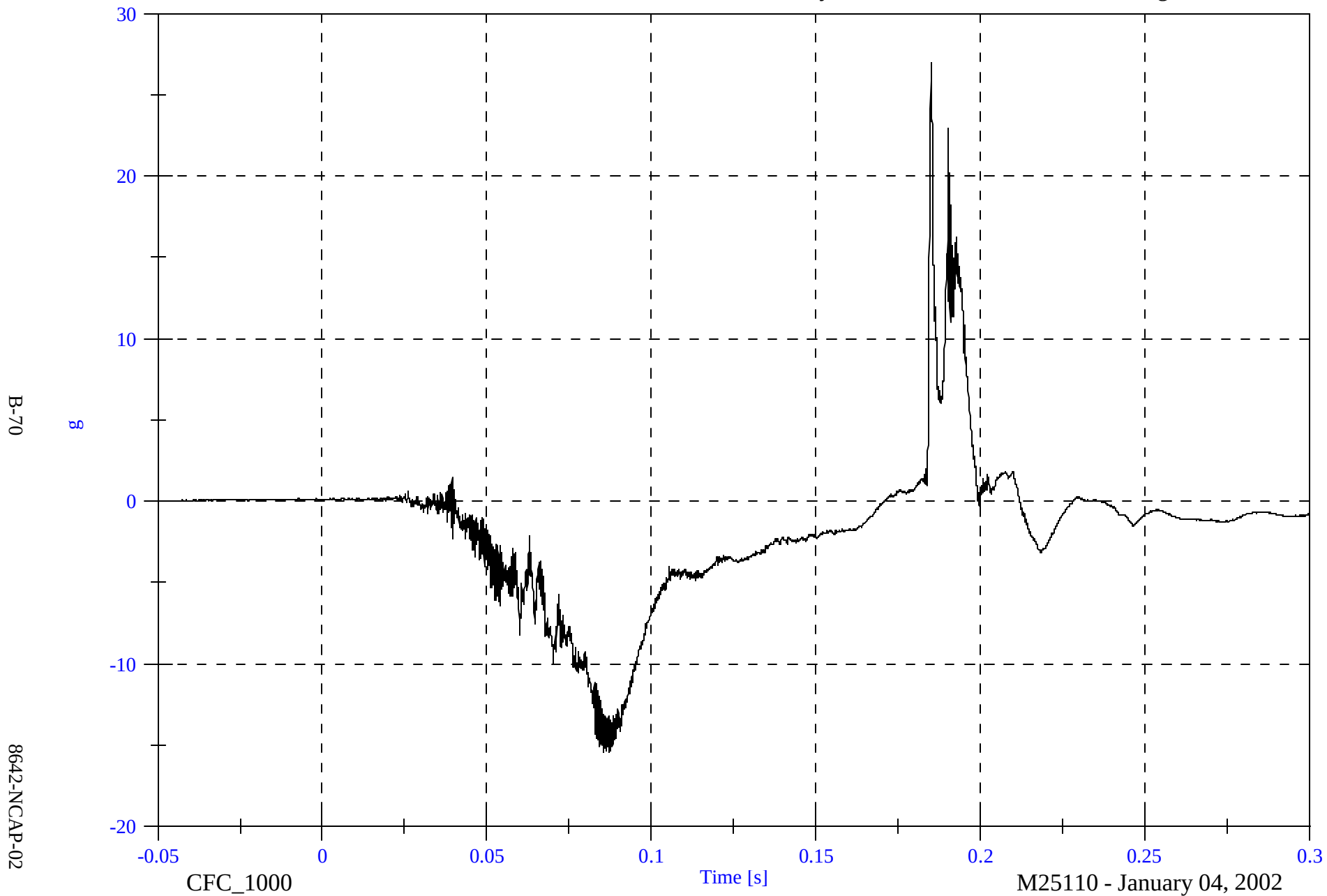


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Head CG Red Ay

Max: 26.9 [g] at 0.185 [s]

Min: -15.4 [g] at 0.087 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Head CG Red Az

Max: 30.4 [g] at 0.073 [s]

Min: -3.5 [g] at 0.119 [s]

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8642-NCAP-02



NCAP - 2002 Toyota Tundra Access Cab 4X4

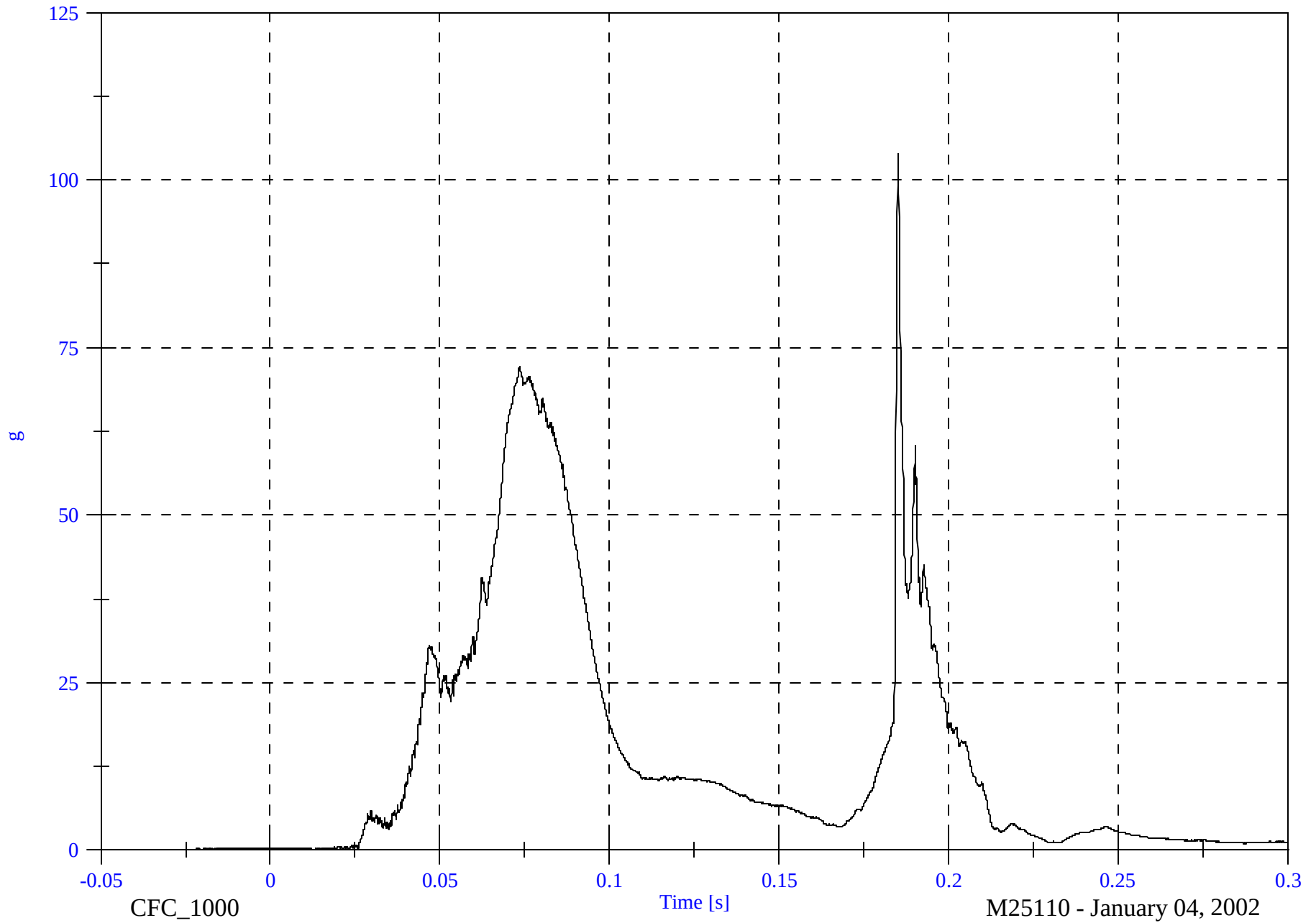
P2 Head CG Red A Resultant

Max: 103.9 [g] at 0.185 [s]

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

B-72

8642-NCAP-02

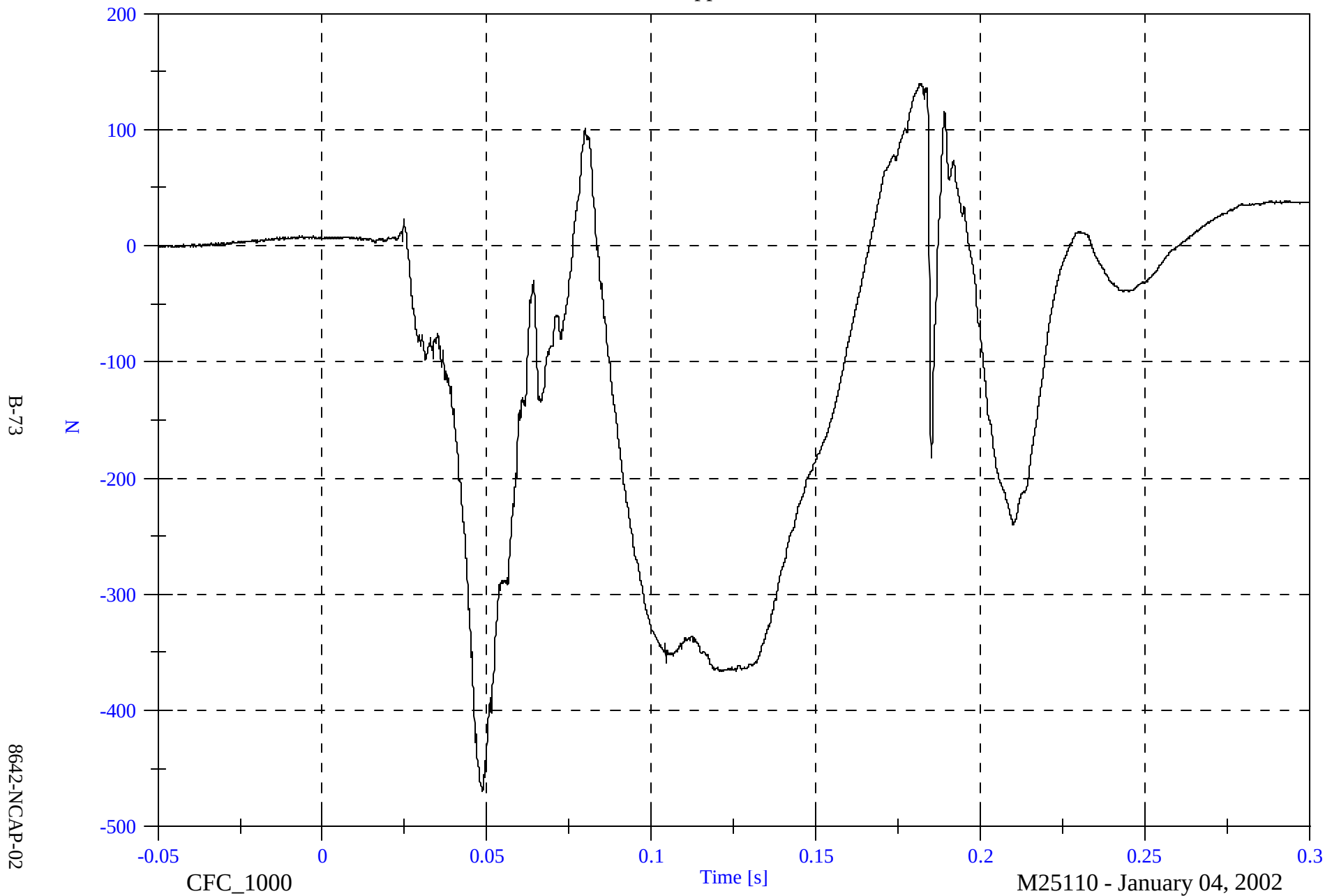


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Upper Neck Fx

Max: 139.3 [N] at 0.182 [s]

Min: -469.1 [N] at 0.049 [s]

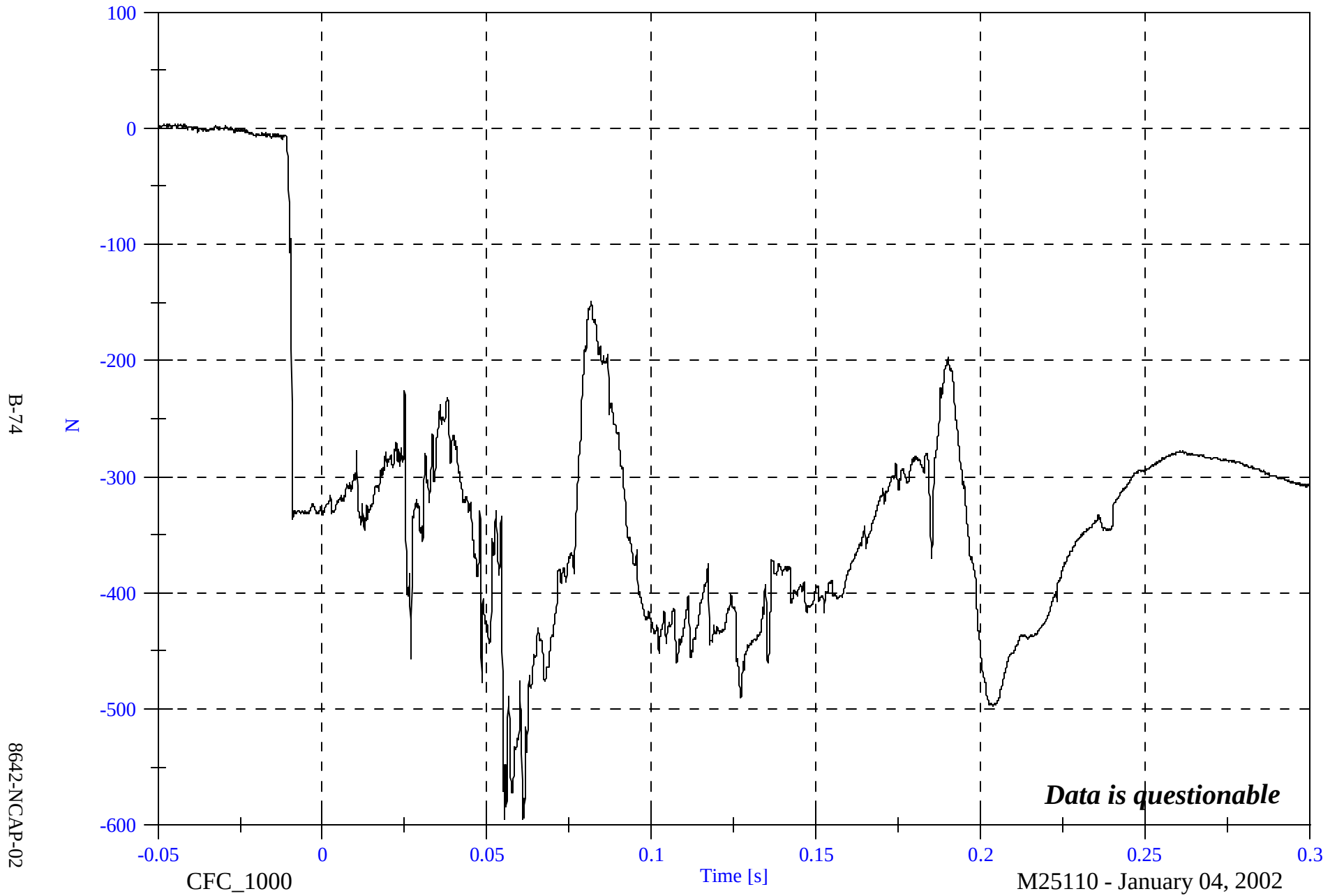


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Upper Neck Fy

Max: 3.7 [N] at -0.047 [s]

Min: -594.9 [N] at 0.055 [s]

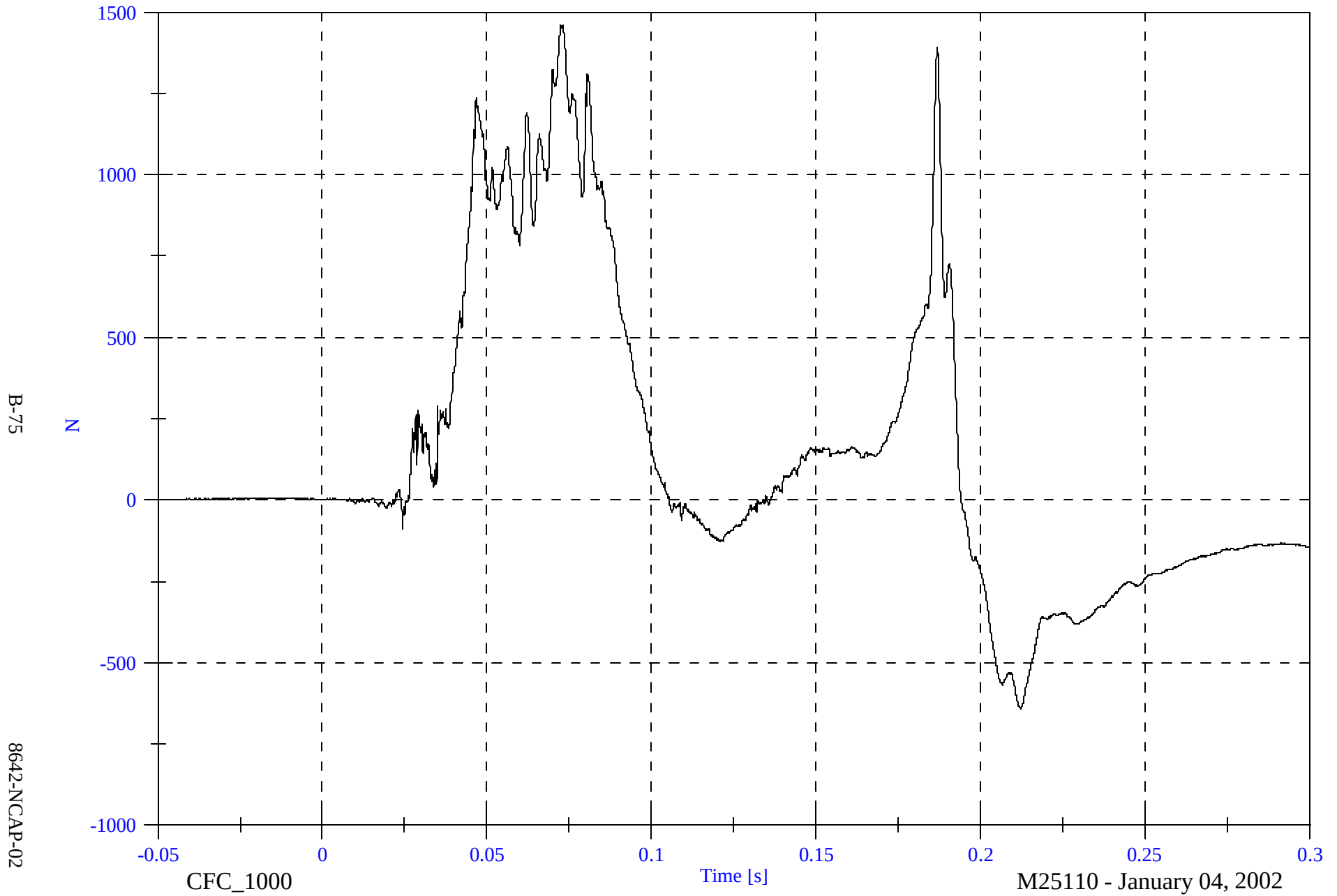


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Upper Neck Fz

Max: 1459.6 [N] at 0.073 [s]

Min: -640.5 [N] at 0.212 [s]

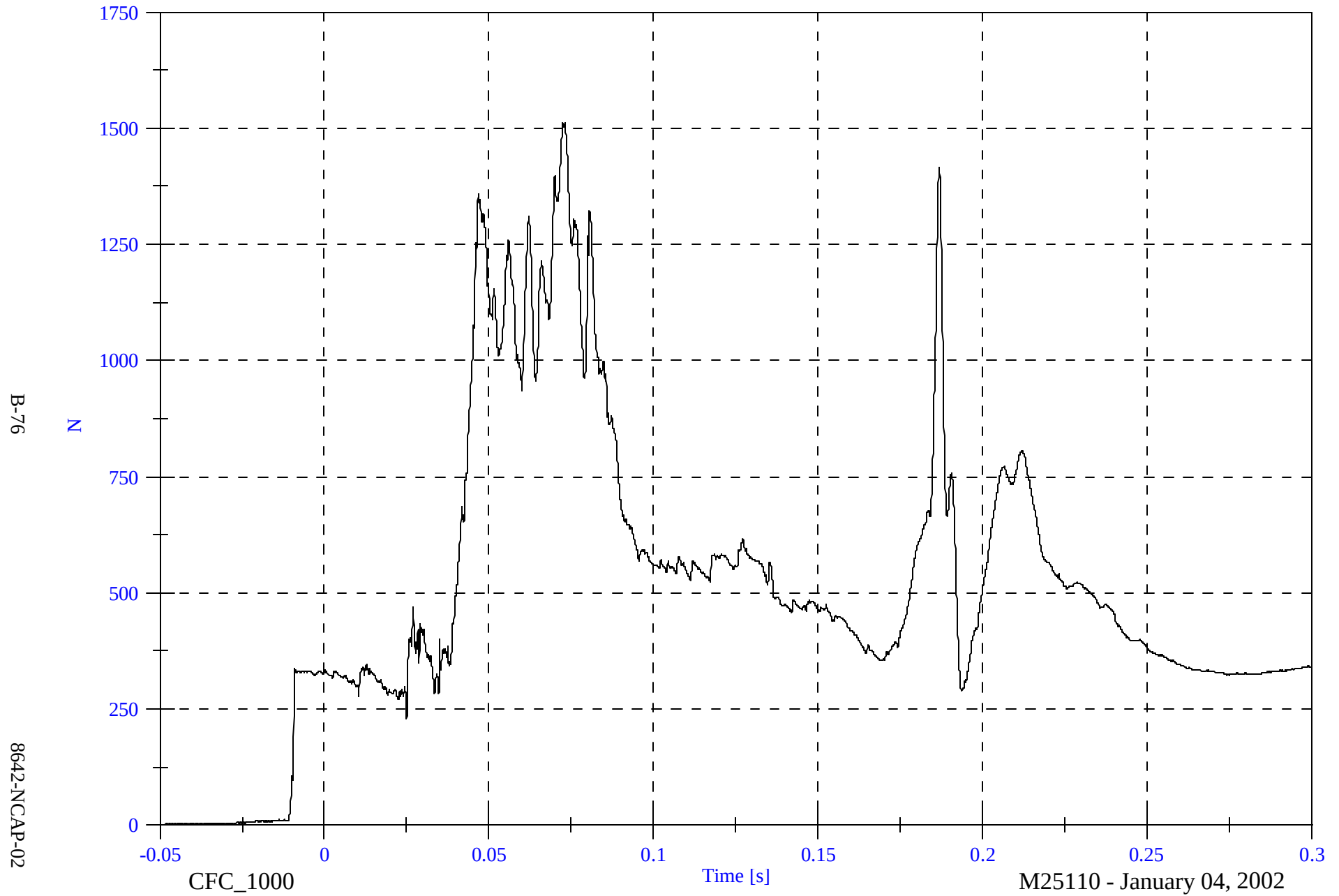


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Upper Neck F Resultant

Max: 1511.9 [N] at 0.072 [s]

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

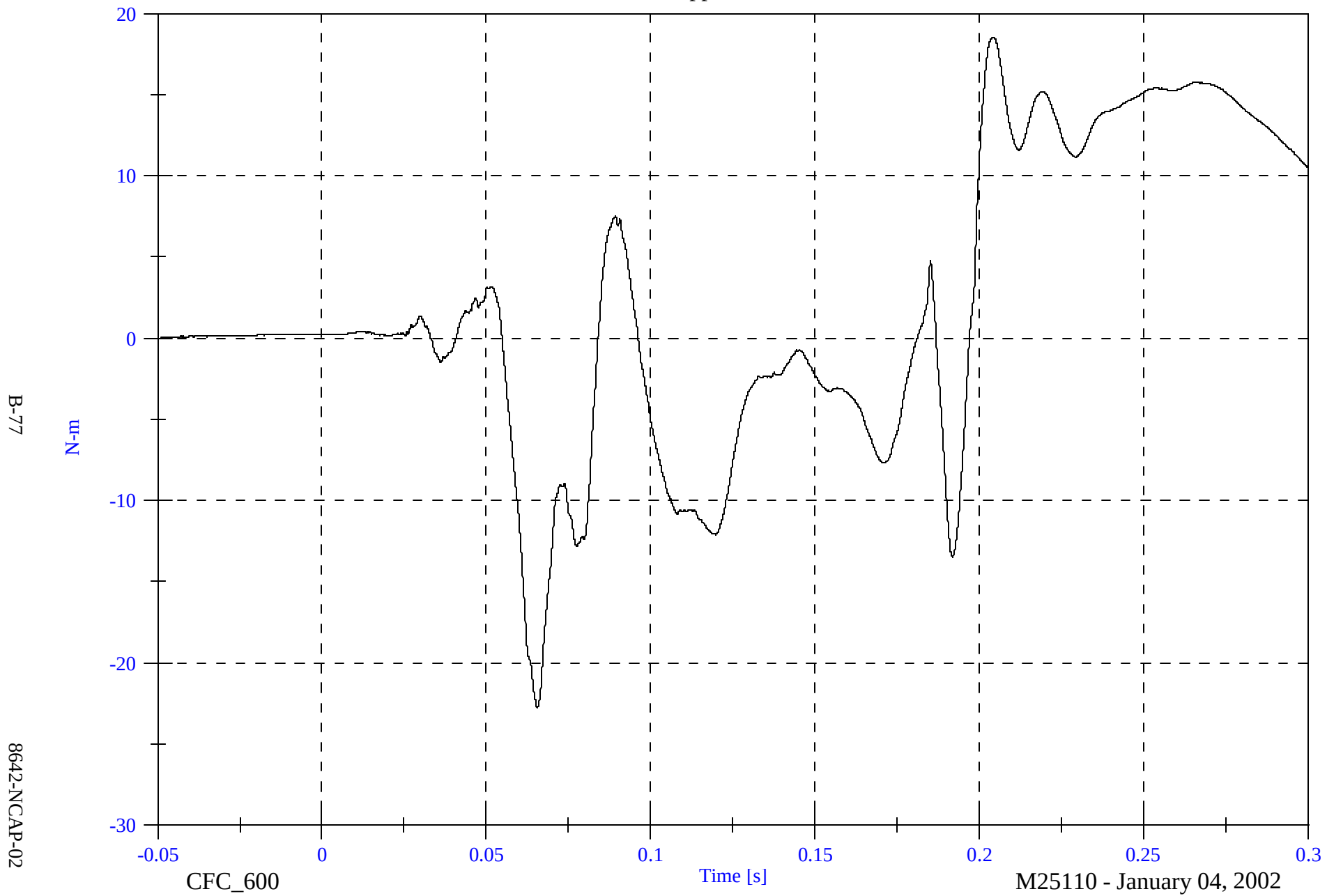


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Upper Neck Mx

Max: 18.5 [N-m] at 0.204 [s]

Min: -22.8 [N-m] at 0.066 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

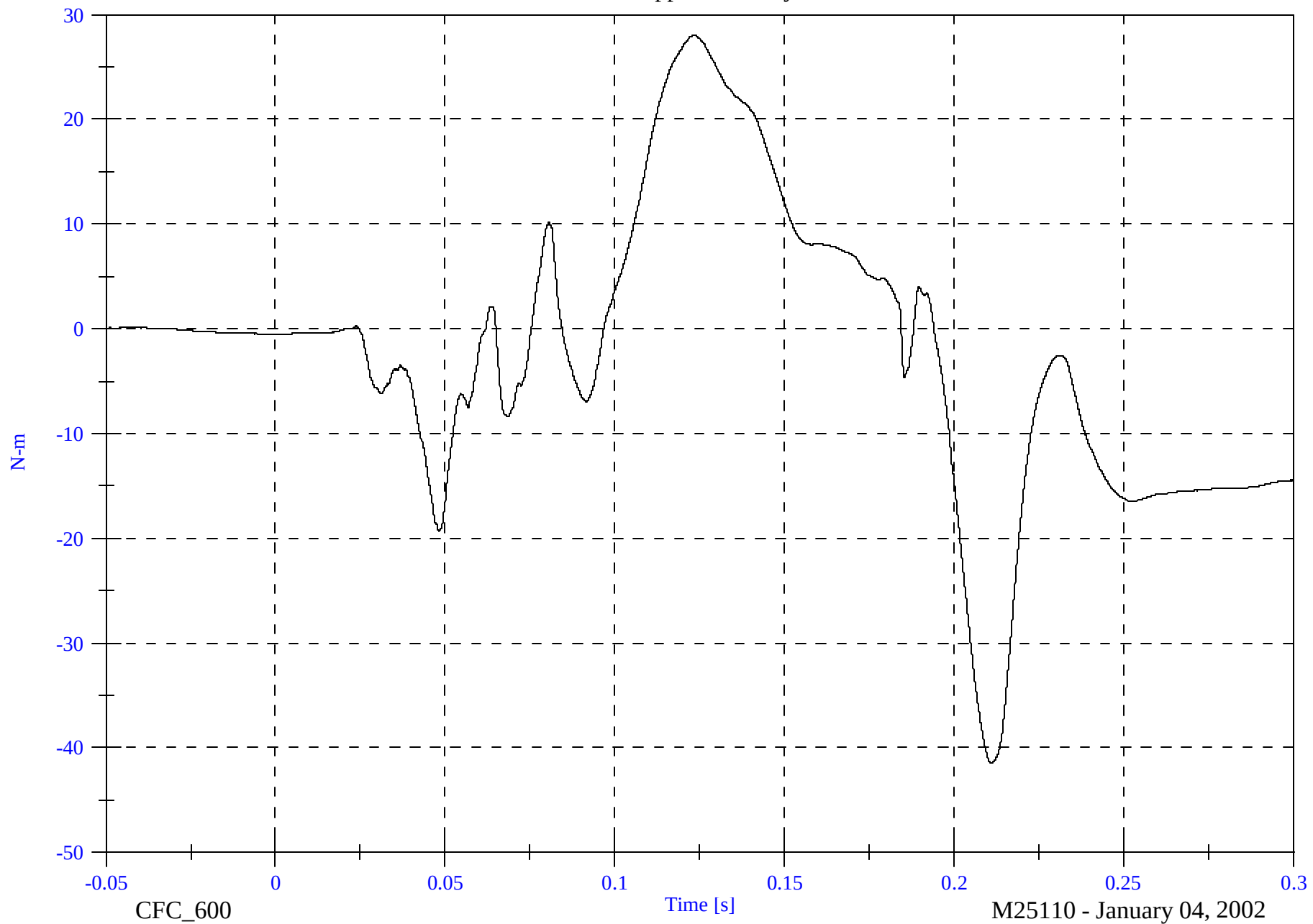
P2 Upper Neck My

Max: 28.0 [N-m] at 0.124 [s]

Min: -41.5 [N-m] at 0.211 [s]

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8642-NCAP-02



NCAP - 2002 Toyota Tundra Access Cab 4X4

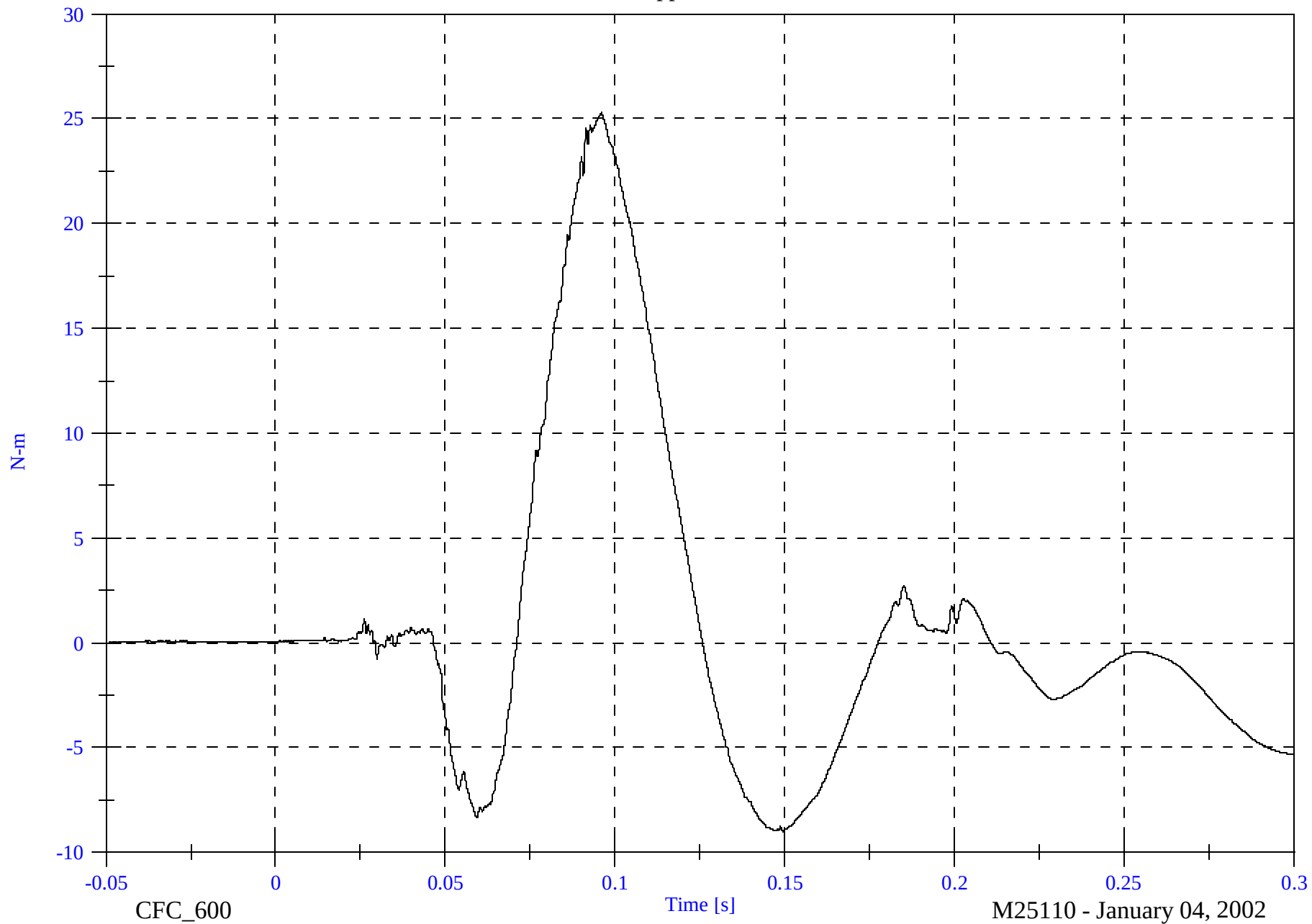
P2 Upper Neck Mz

Max: 25.3 [N-m] at 0.096 [s]

Min: -9.0 [N-m] at 0.150 [s]

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8642-NCAP-02



NCAP - 2002 Toyota Tundra Access Cab 4X4

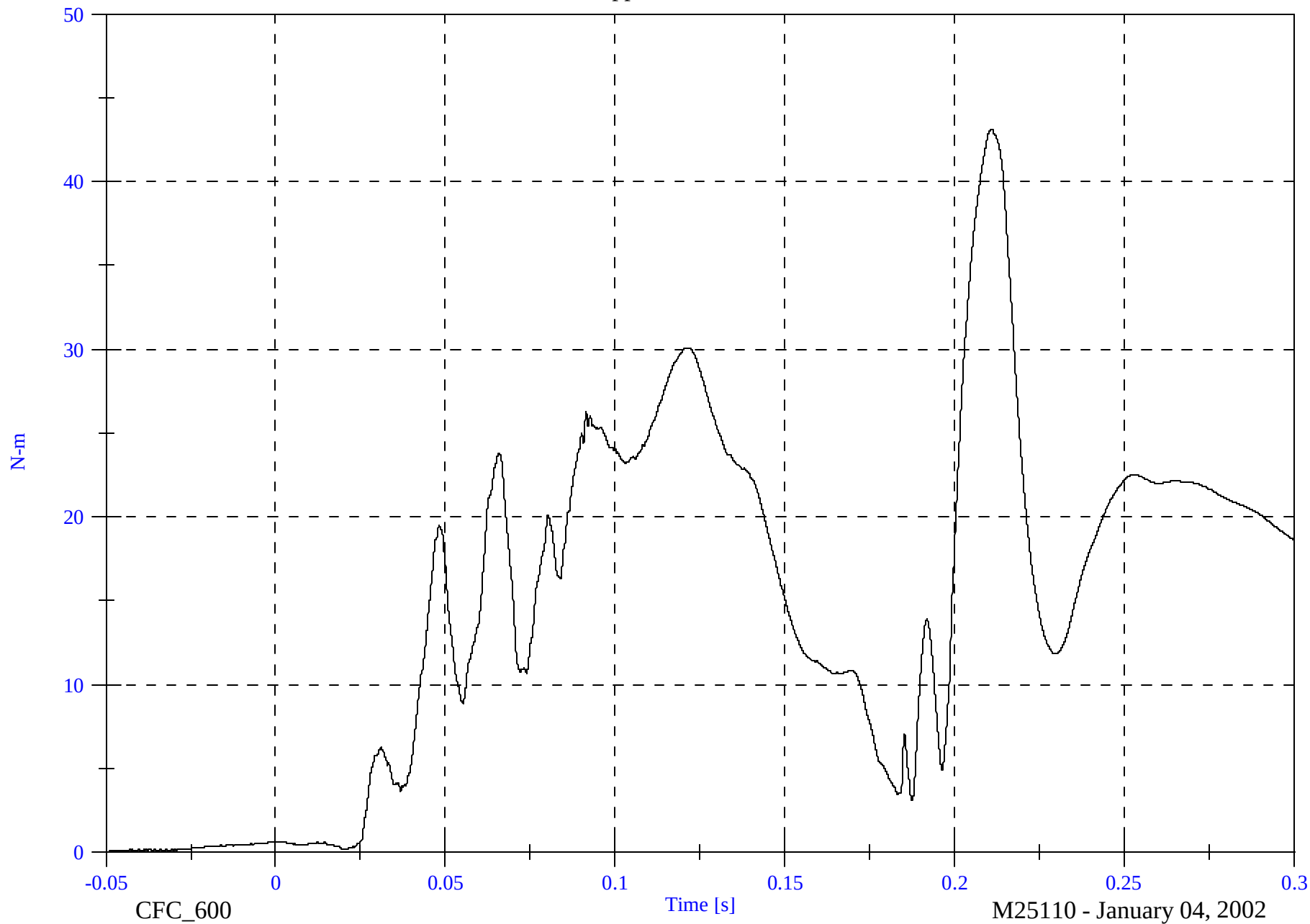
P2 Upper Neck M Resultant

Max: 43.1 [N-m] at 0.211 [s]

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

B-80

8642-NCAP-02

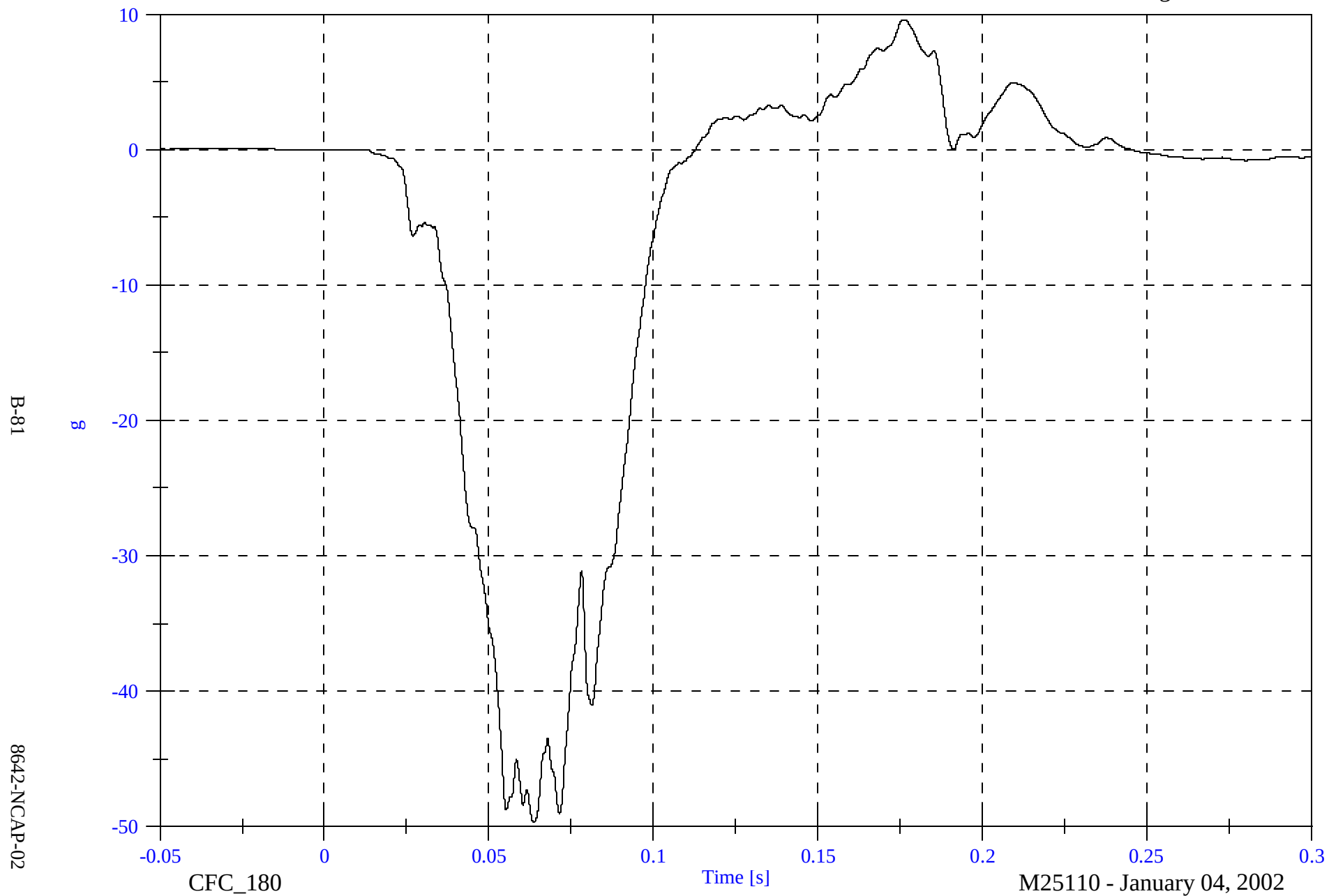


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 9.6 [g] at 0.176 [s]

Min: -49.7 [g] at 0.064 [s]

P2 Chest x

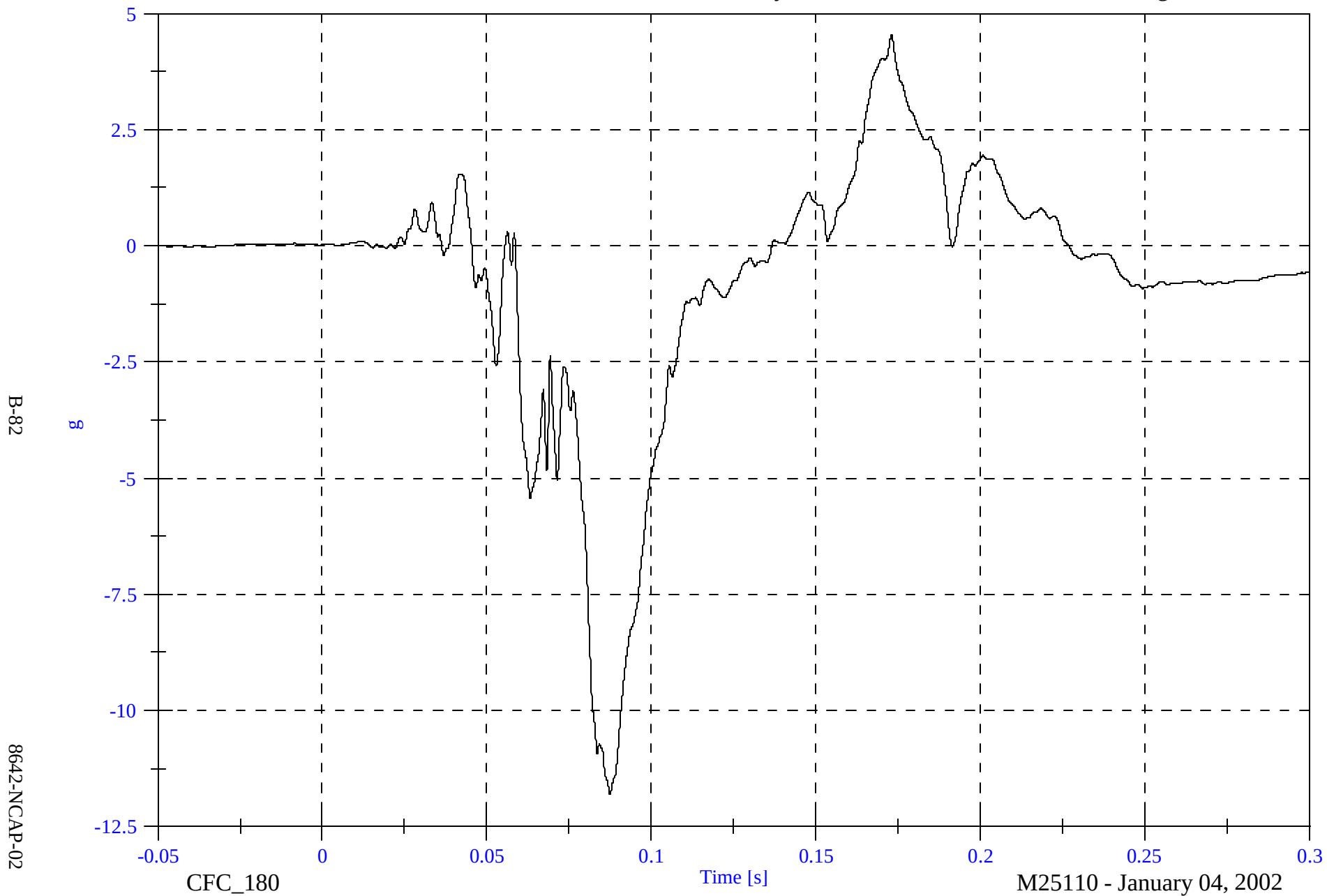


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Chest y

Max: 4.5 [g] at 0.173 [s]

Min: -11.8 [g] at 0.088 [s]

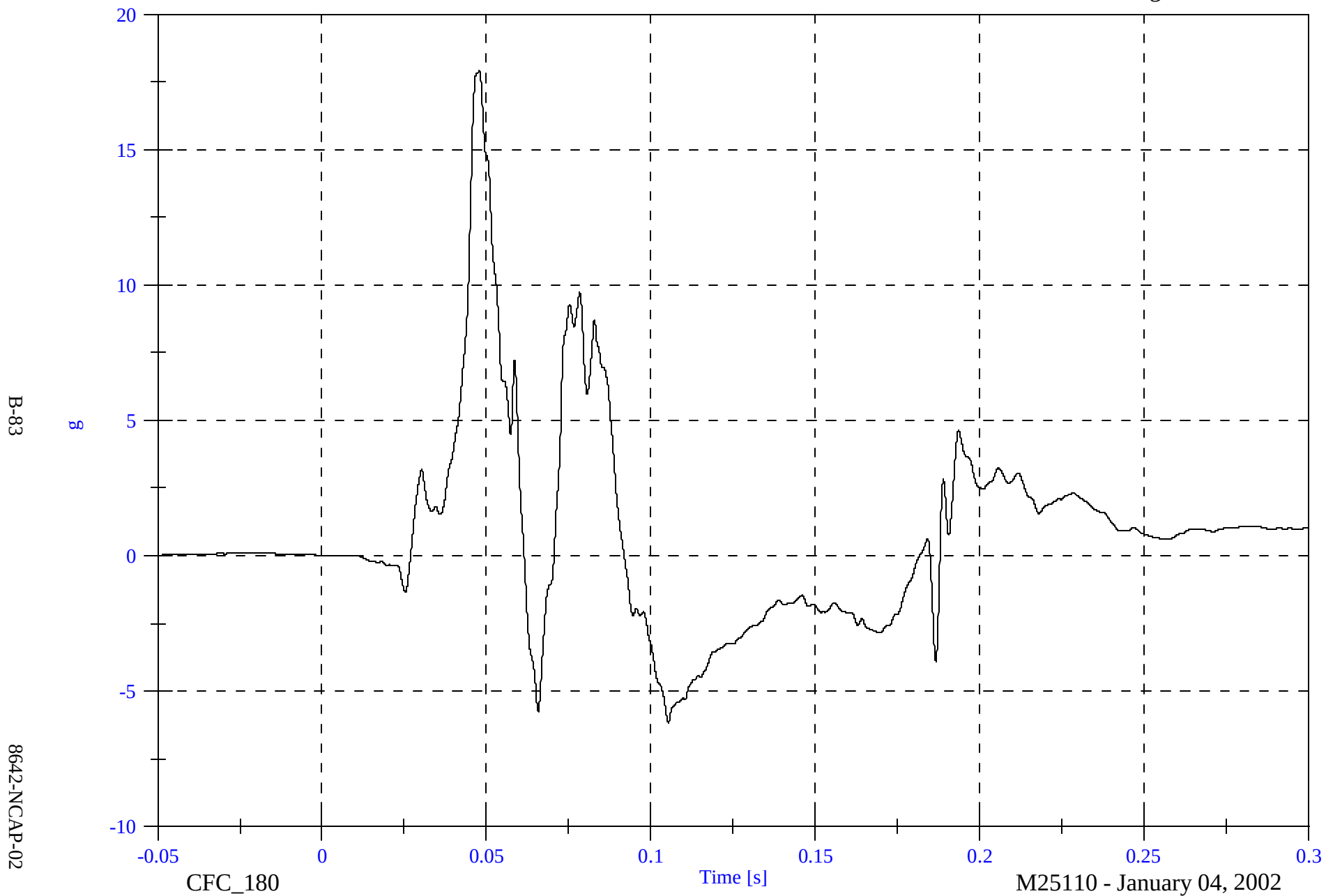


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 17.9 [g] at 0.048 [s]

P2 Chest z

Min: -6.2 [g] at 0.105 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

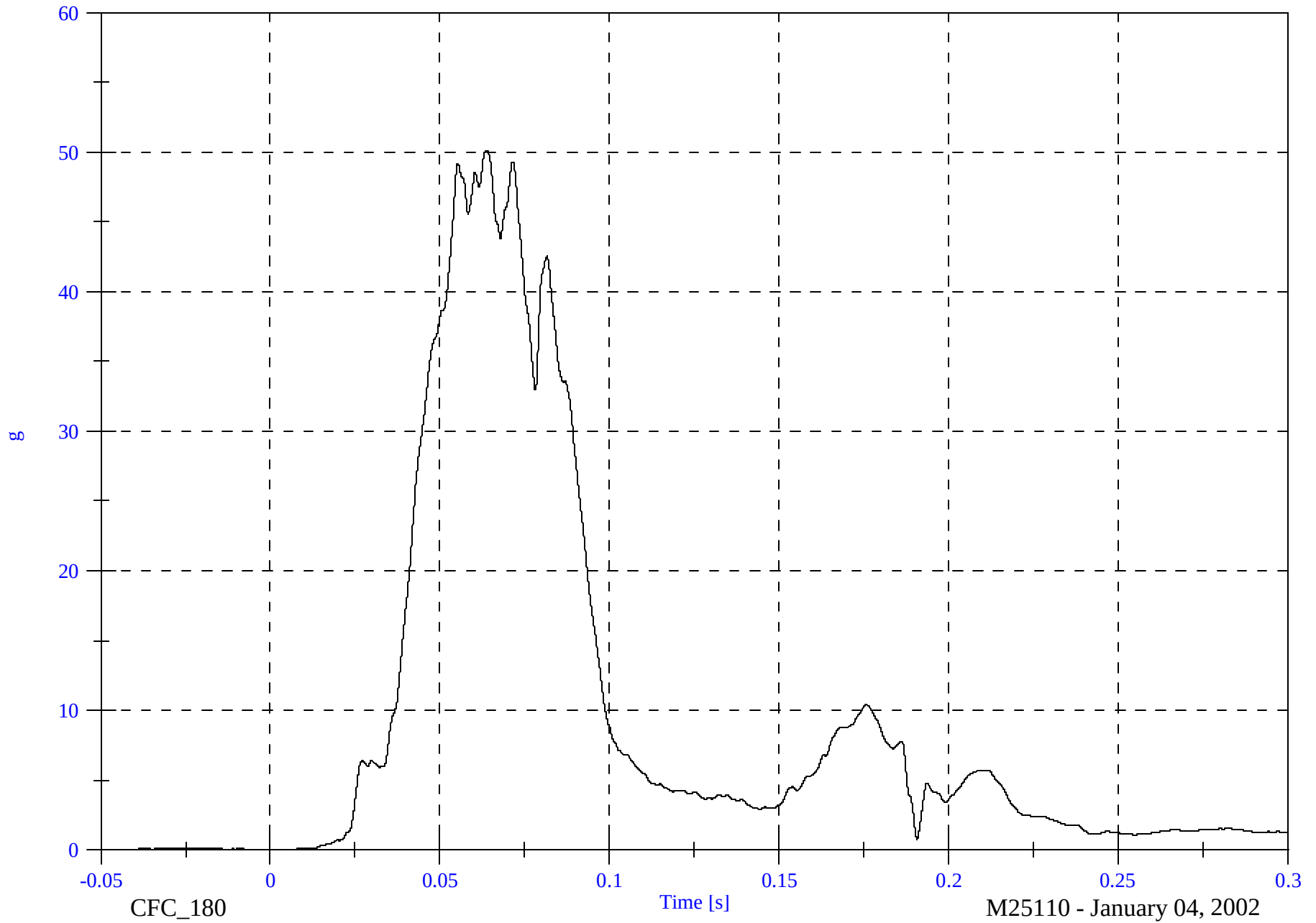
P2 Chest Resultant

Max: 50.1 [g] at 0.064 [s]

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

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8642-NCAP-02

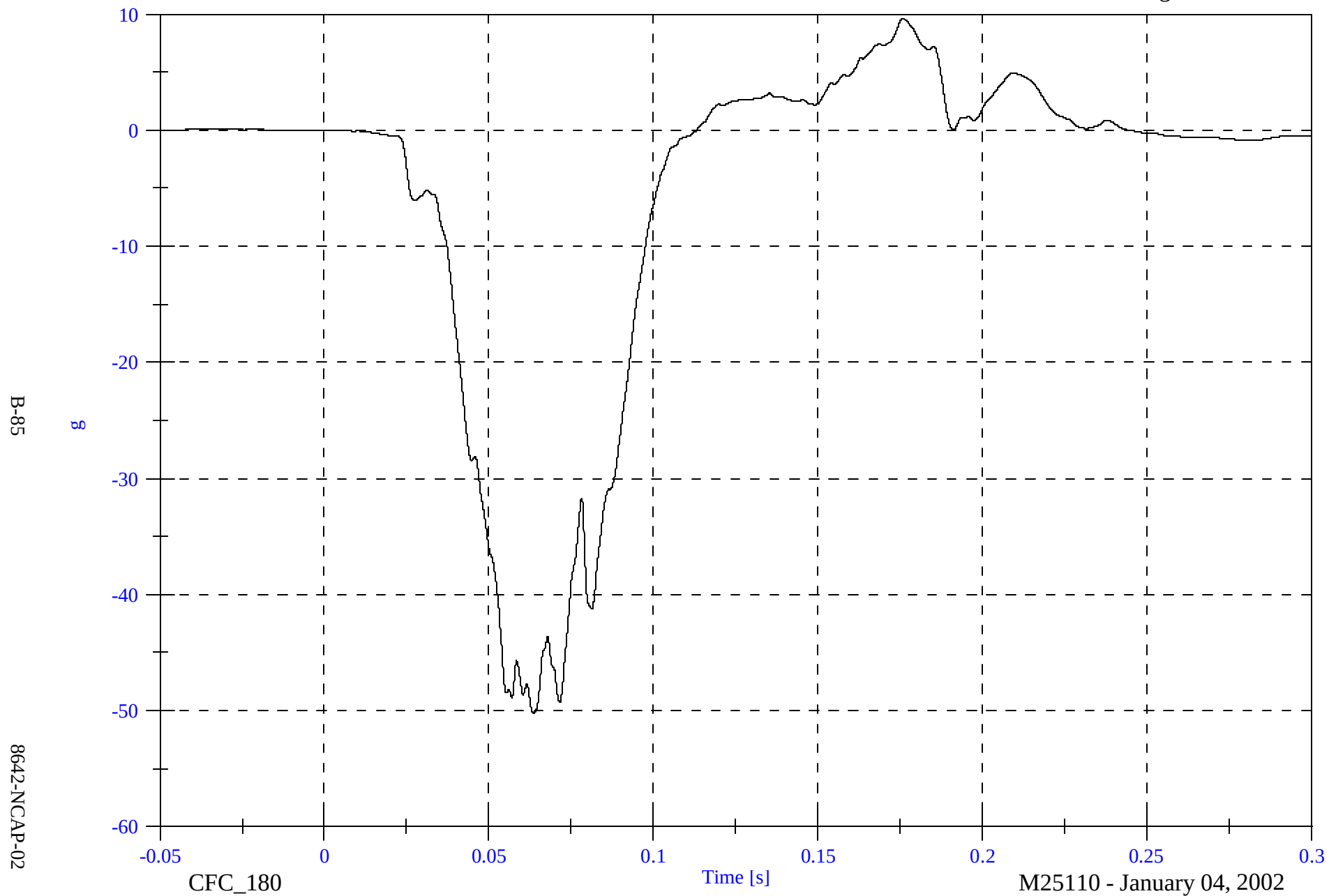


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Chest Red x

Max: 9.6 [g] at 0.176 [s]

Min: -50.2 [g] at 0.064 [s]

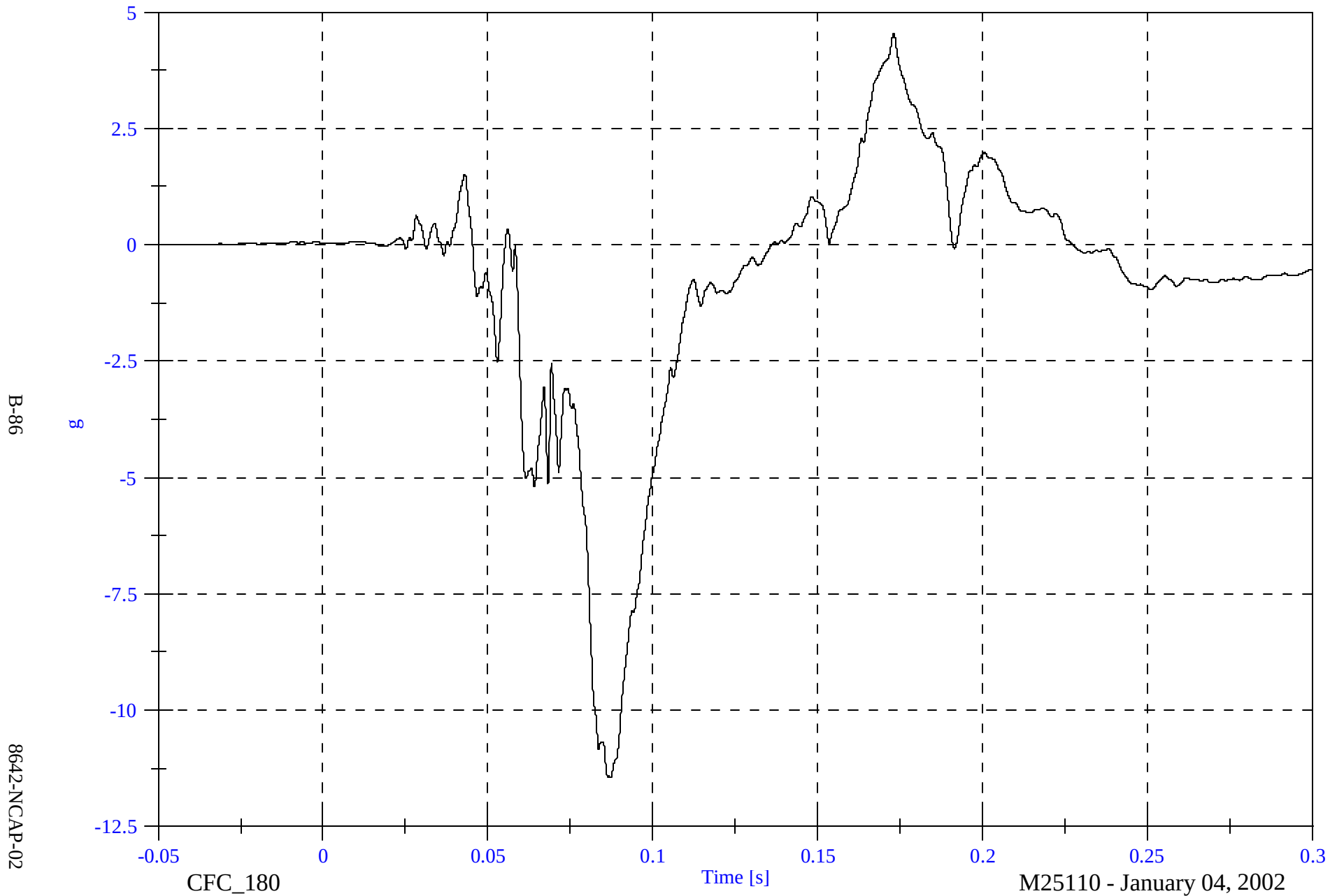


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Chest Red y

Max: 4.5 [g] at 0.173 [s]

Min: -11.4 [g] at 0.087 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

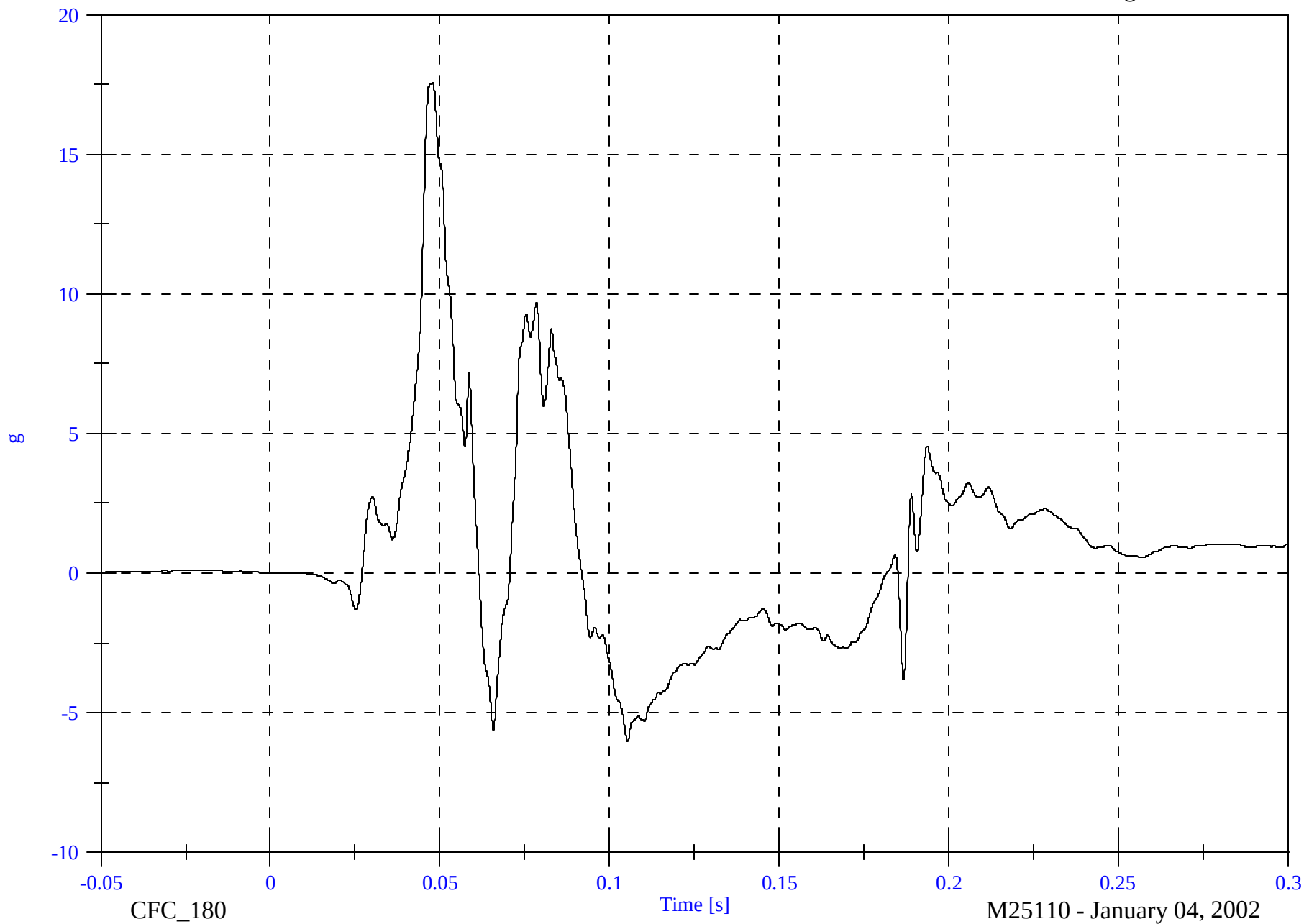
P2 Chest Red z

Max: 17.5 [g] at 0.048 [s]

Min: -6.0 [g] at 0.105 [s]

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8642-NCAP-02



NCAP - 2002 Toyota Tundra Access Cab 4X4

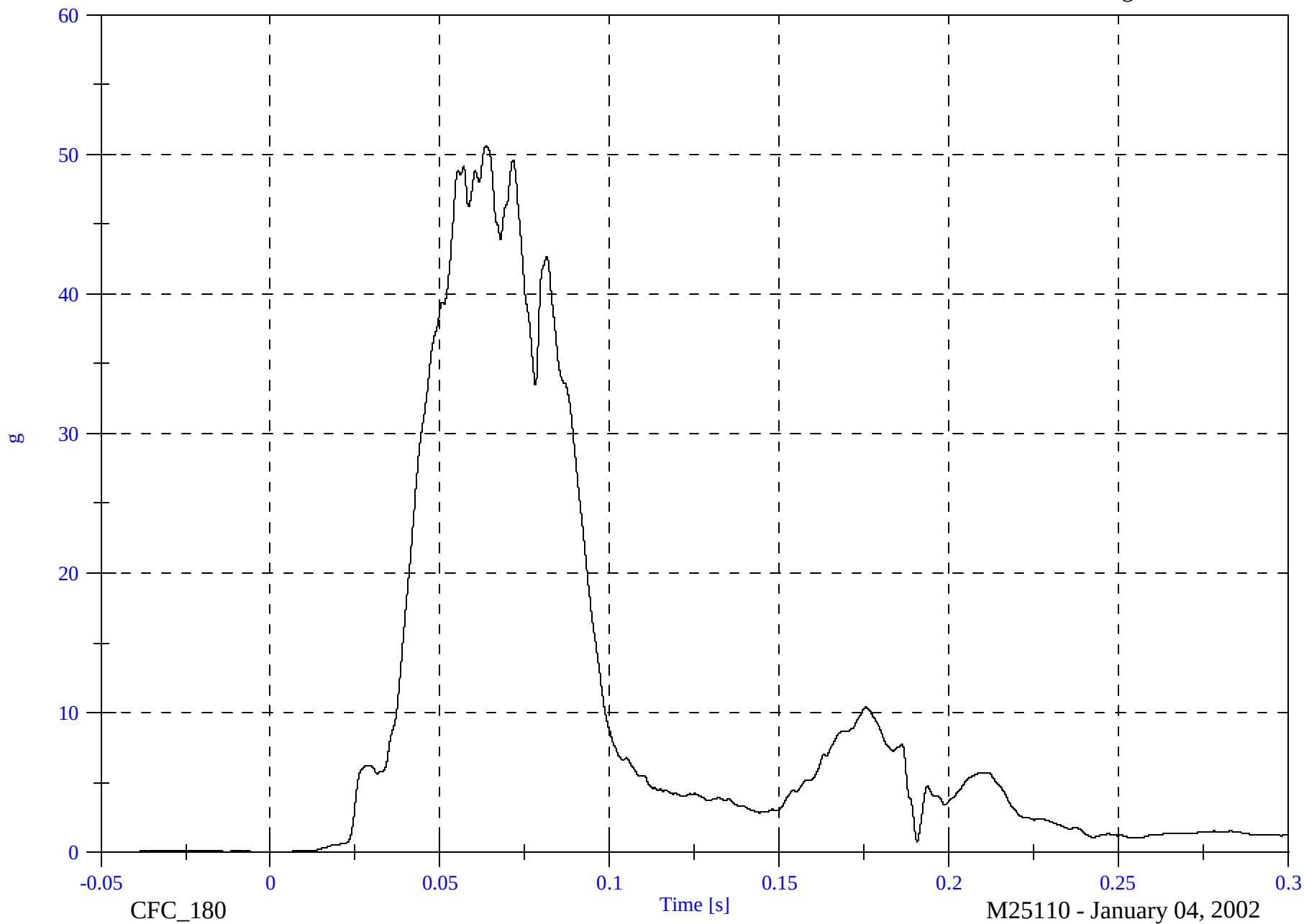
P2 Chest Red Resultant

Max: 50.6 [g] at 0.064 [s]

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

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8642-NCAP-02



NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Chest Compression x

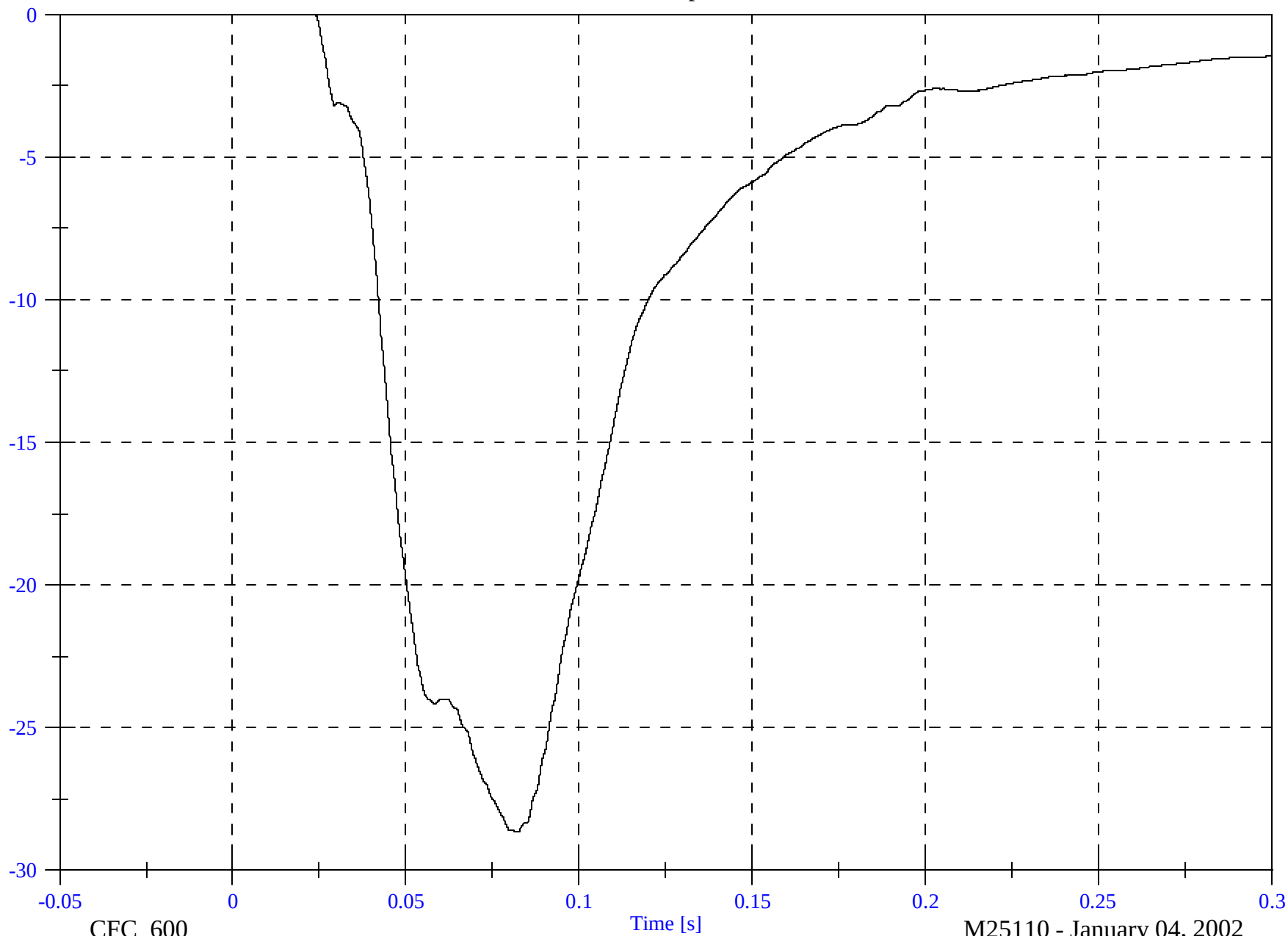
Max: 0.0 [mm] at -0.050 [s]

Min: -28.7 [mm] at 0.082 [s]

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8642-NCAP-02

mm



CFC_600

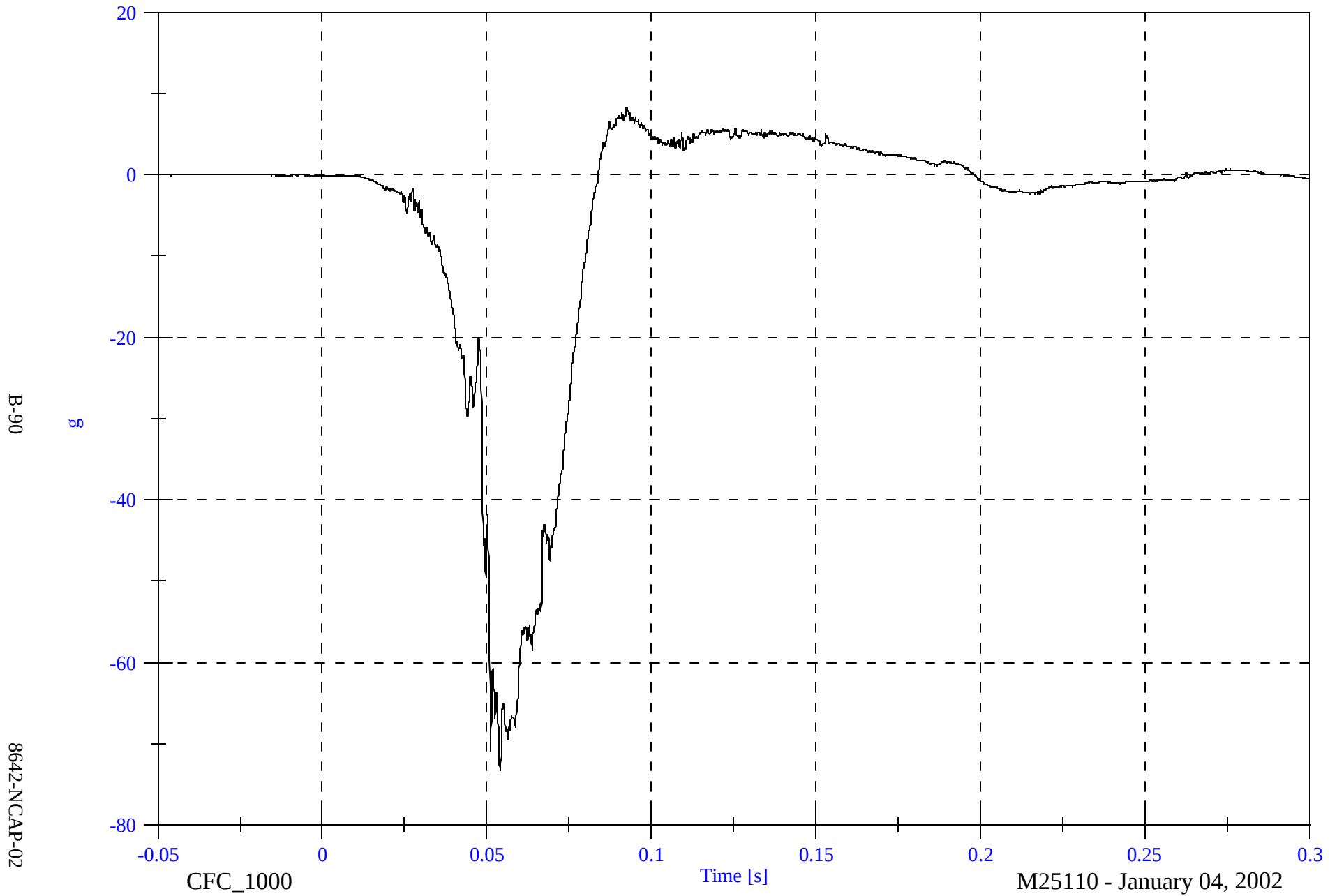
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 8.3 [g] at 0.093 [s]

Min: -73.3 [g] at 0.054 [s]

P2 Pelvic x

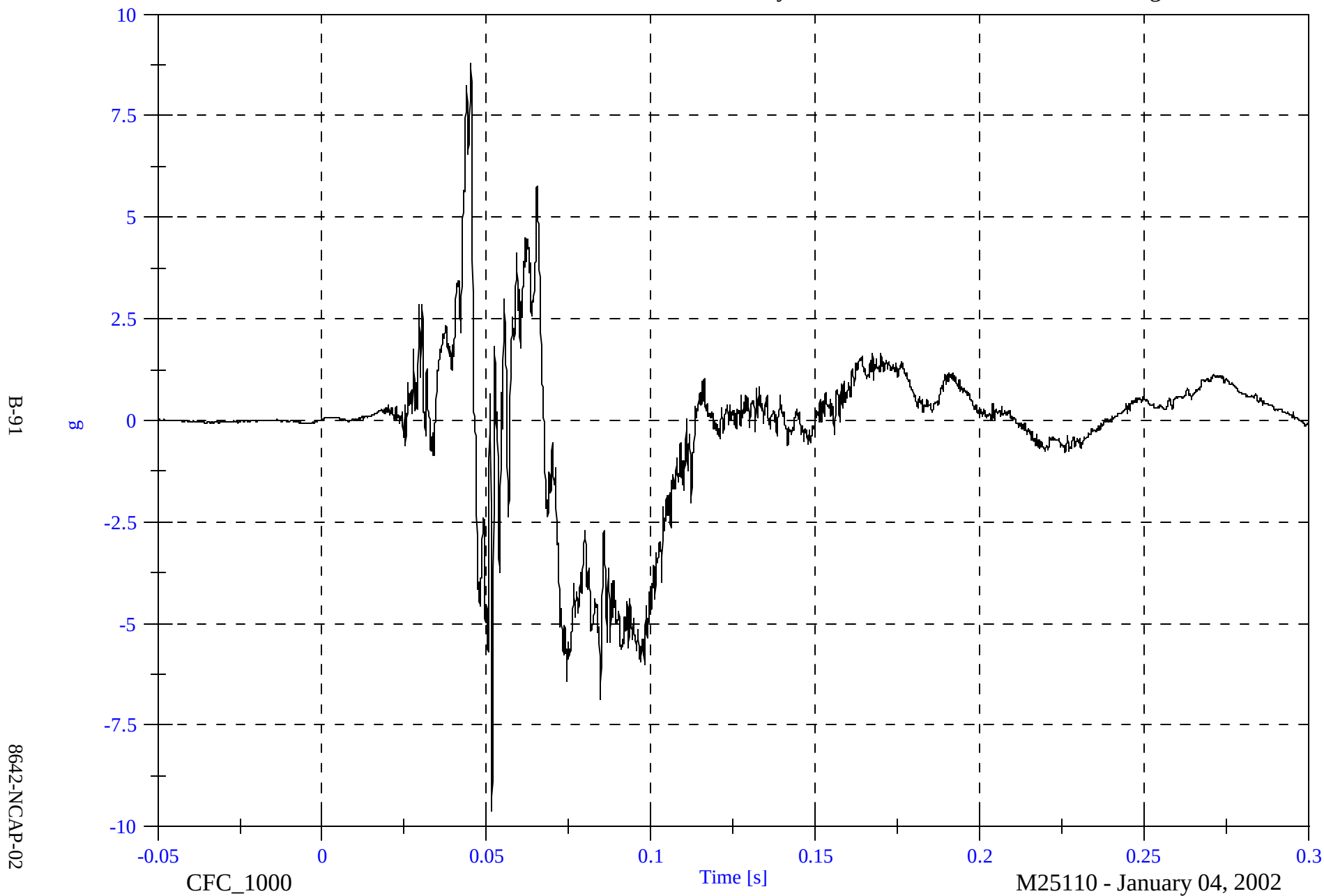


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 8.8 [g] at 0.045 [s]

Min: -9.6 [g] at 0.052 [s]

P2 Pelvic y

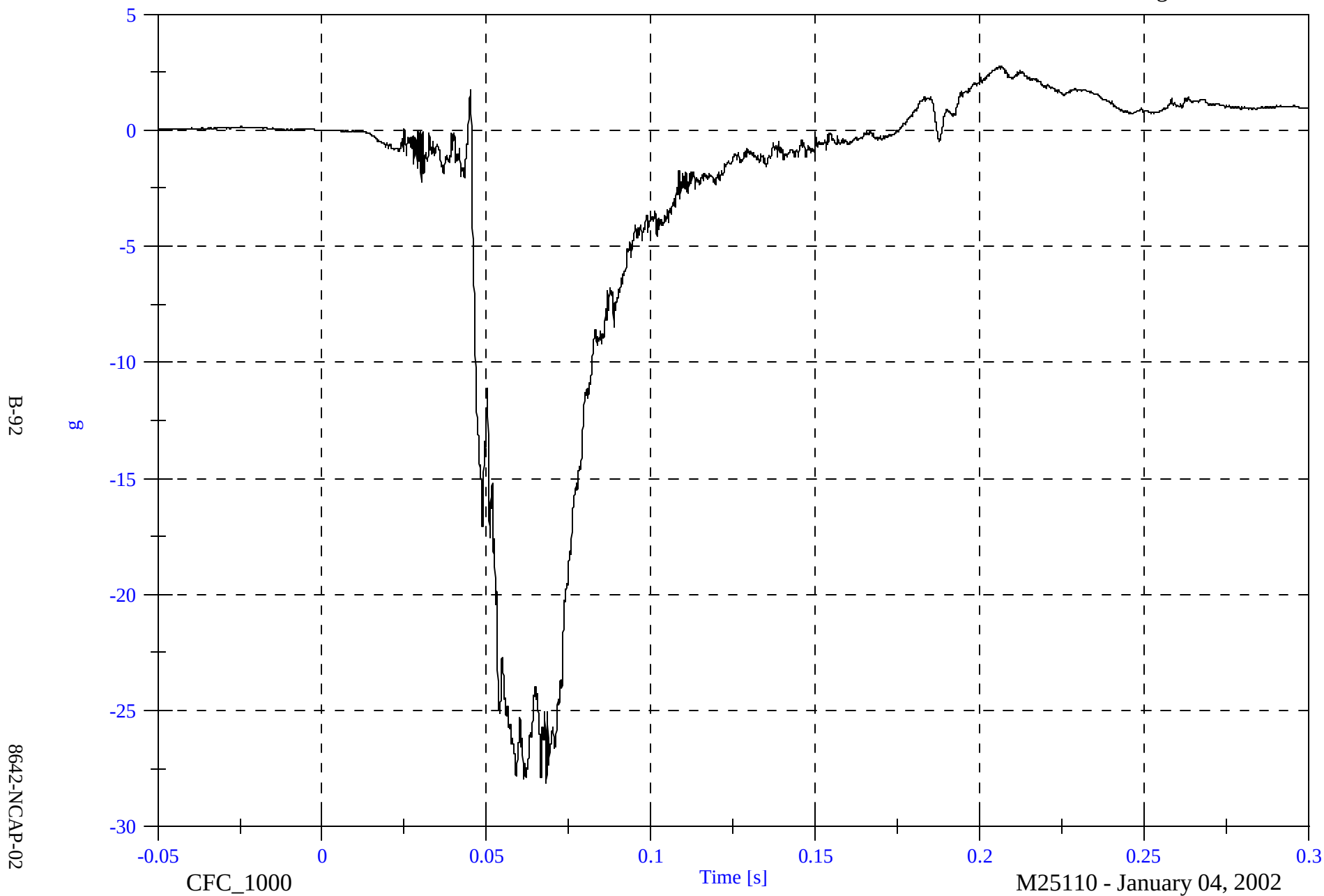


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 2.8 [g] at 0.206 [s]

Min: -28.1 [g] at 0.068 [s]

P2 Pelvic z



NCAP - 2002 Toyota Tundra Access Cab 4X4

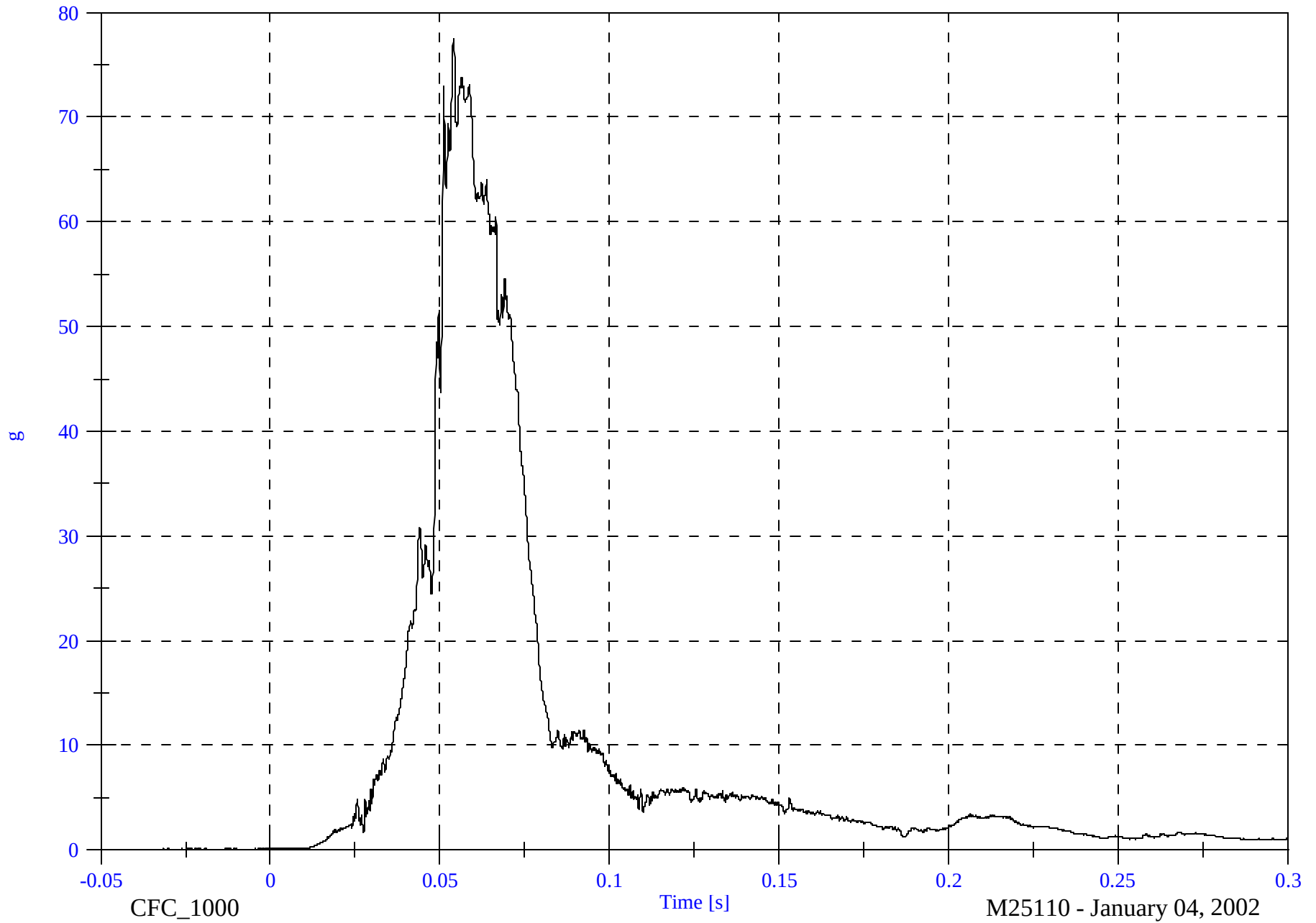
P2 Pelvic Resultant

Max: 77.5 [g] at 0.054 [s]

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

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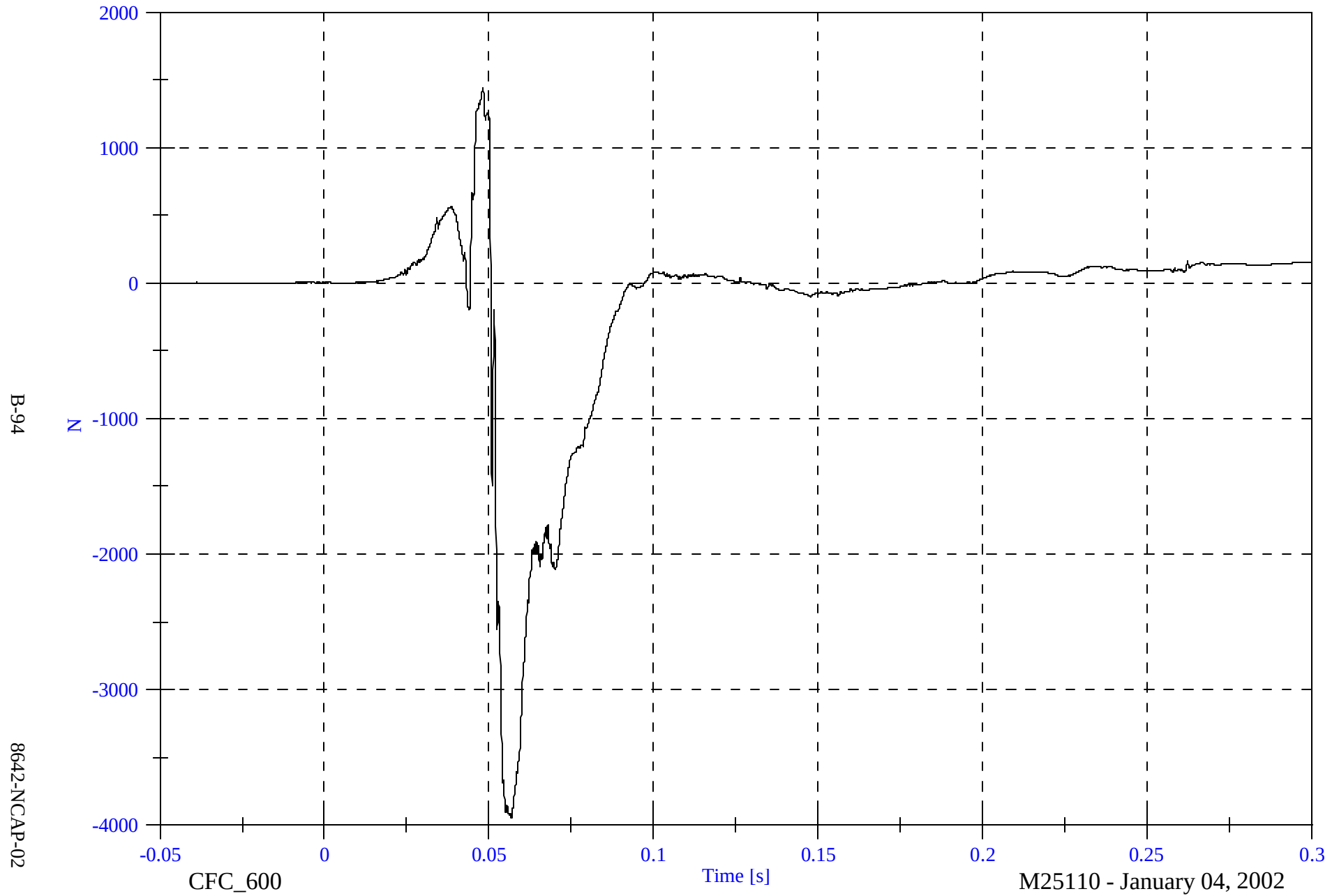


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 1439.7 [N] at 0.048 [s]

Min: -3944.8 [N] at 0.057 [s]

P2 Left Femur z

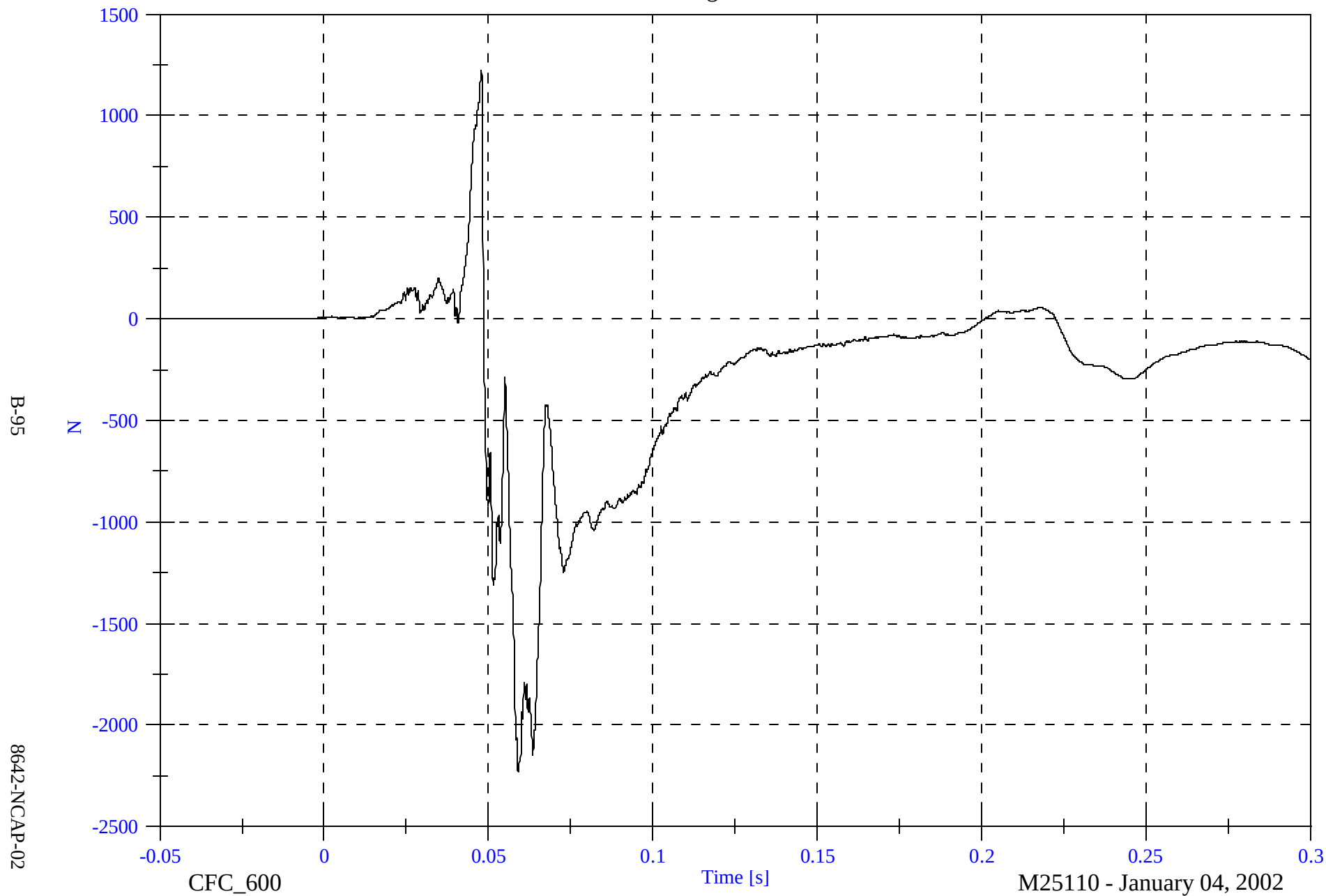


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Right Femur z

Max: 1223.8 [N] at 0.048 [s]

Min: -2230.5 [N] at 0.059 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Left Knee Shear

Max: 1.4 [mm] at 0.080 [s]

Min: -0.4 [mm] at 0.158 [s]

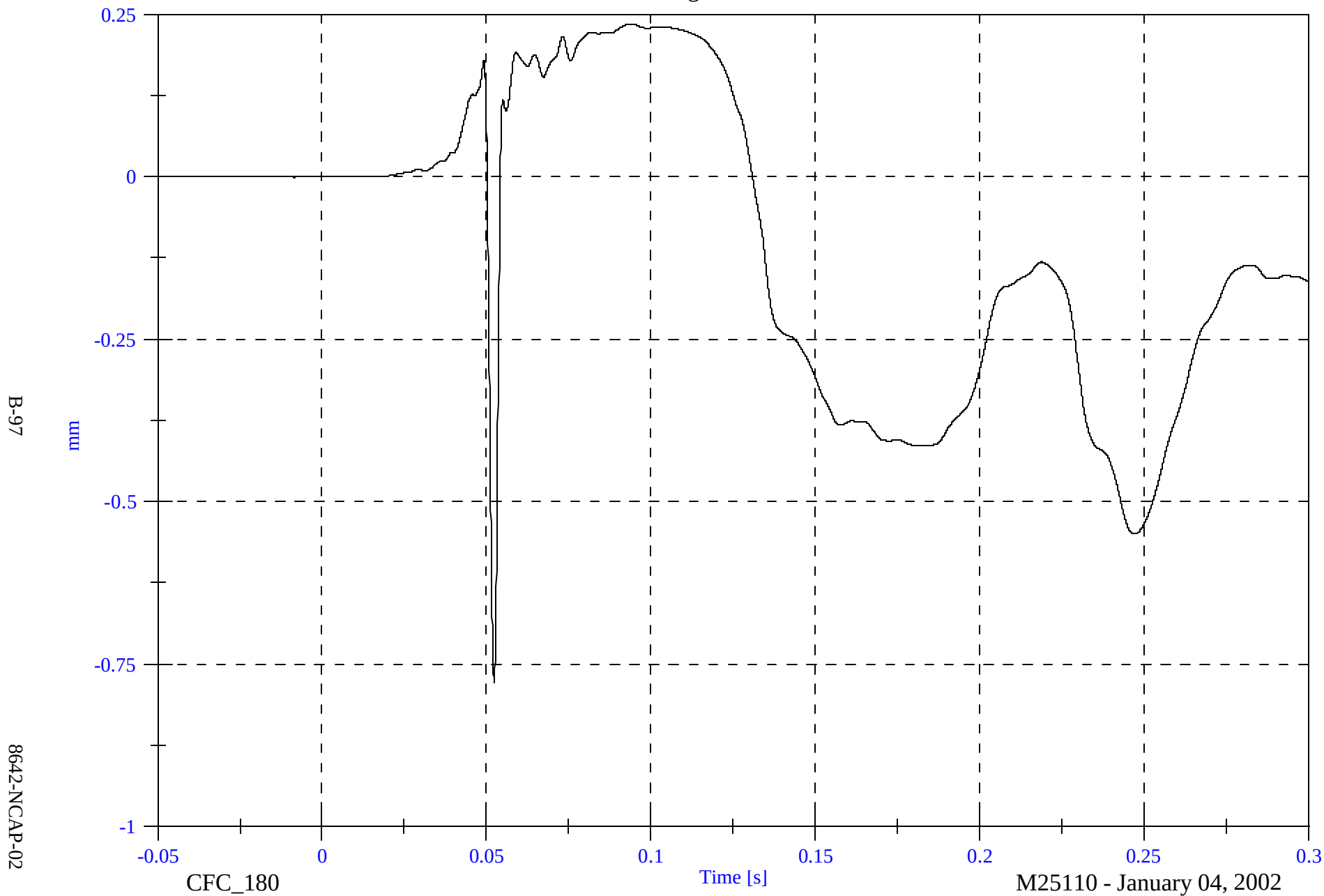


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Right Knee Shear

Max: 0.2 [mm] at 0.094 [s]

Min: -0.8 [mm] at 0.052 [s]

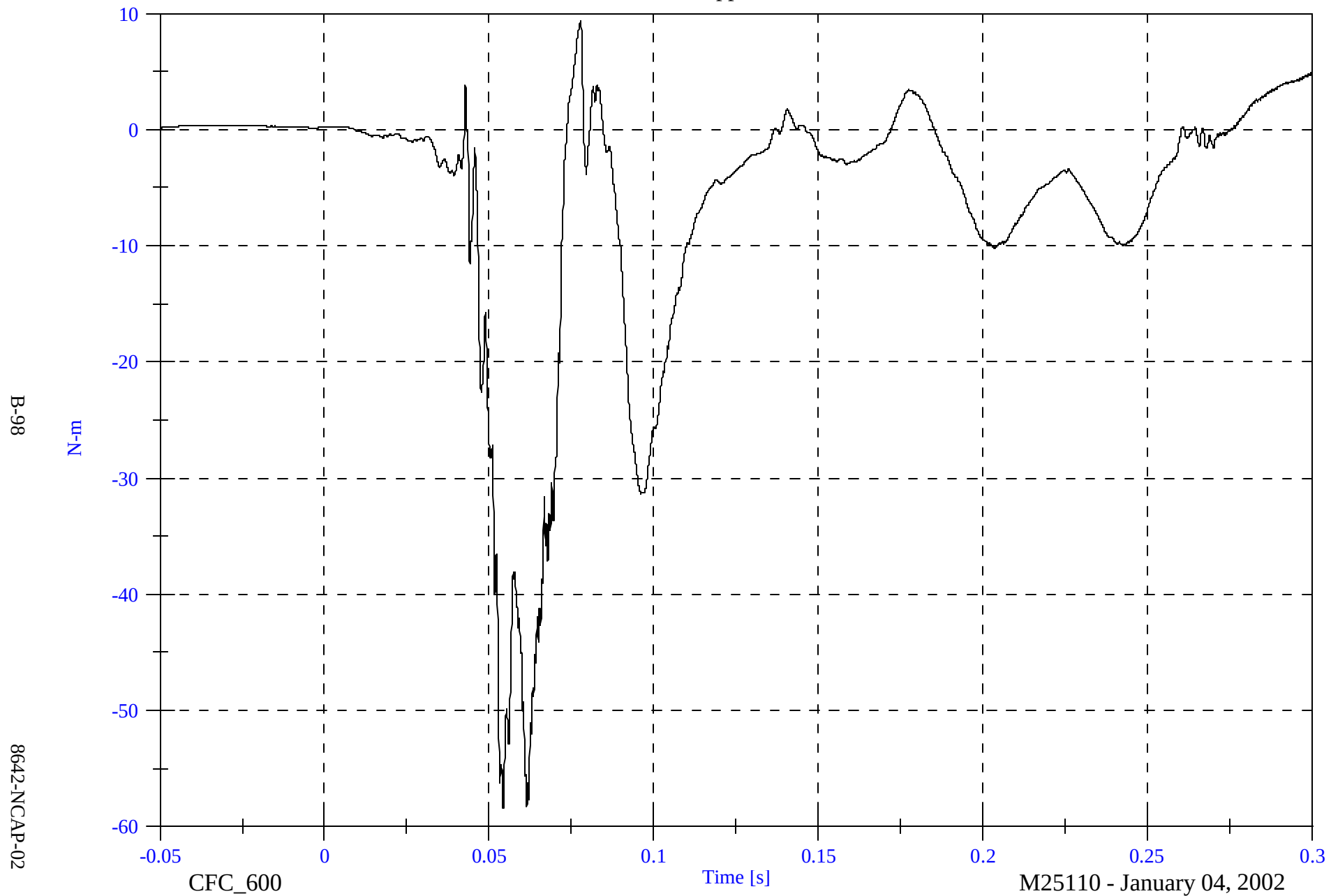


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Left Upper Tibia Mx

Max: 9.3 [N-m] at 0.078 [s]

Min: -58.5 [N-m] at 0.054 [s]

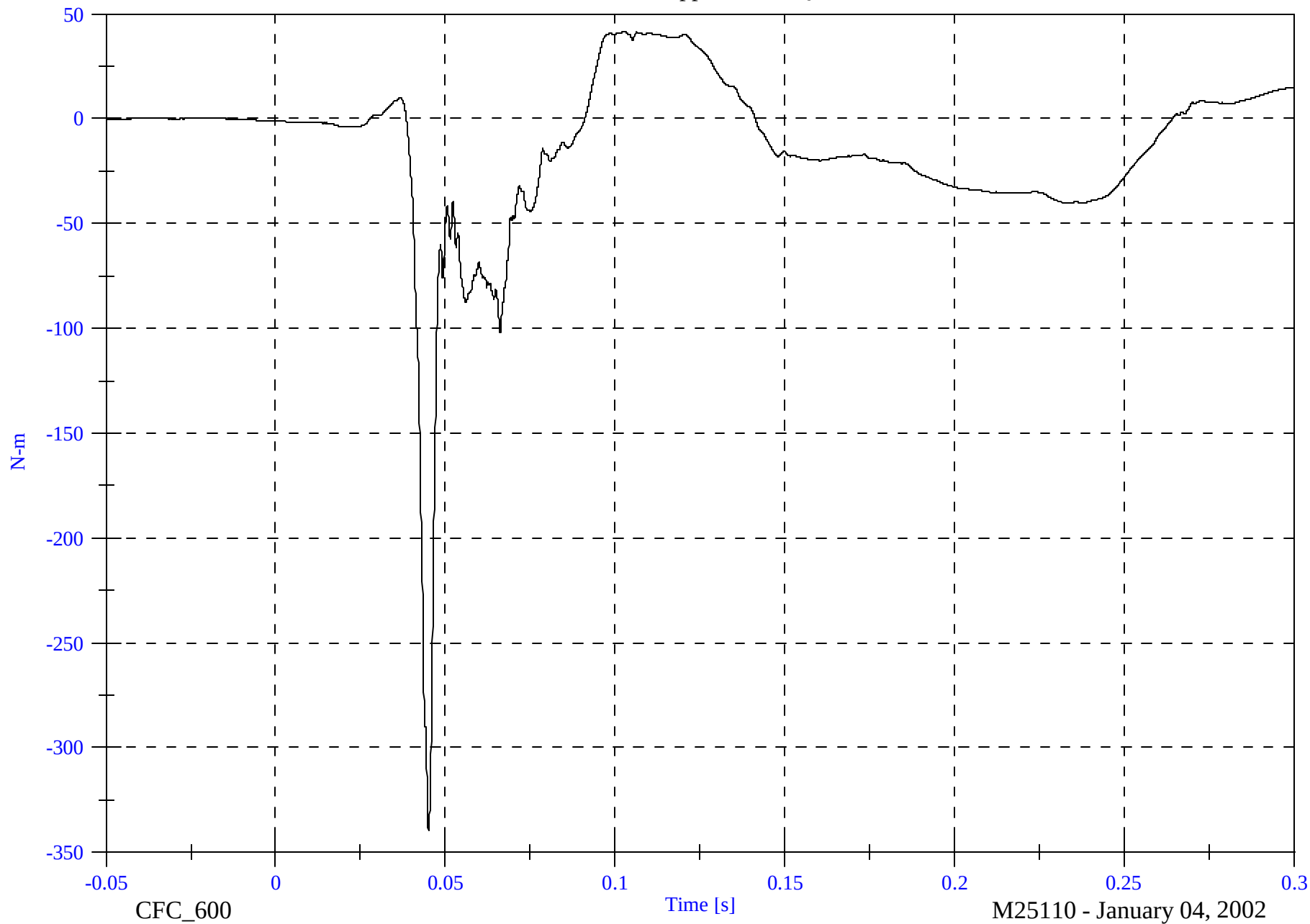


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Left Upper Tibia My

Max: 41.7 [N-m] at 0.103 [s]

Min: -339.3 [N-m] at 0.045 [s]



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8642-NCAP-02

CFC_600

Time [s]

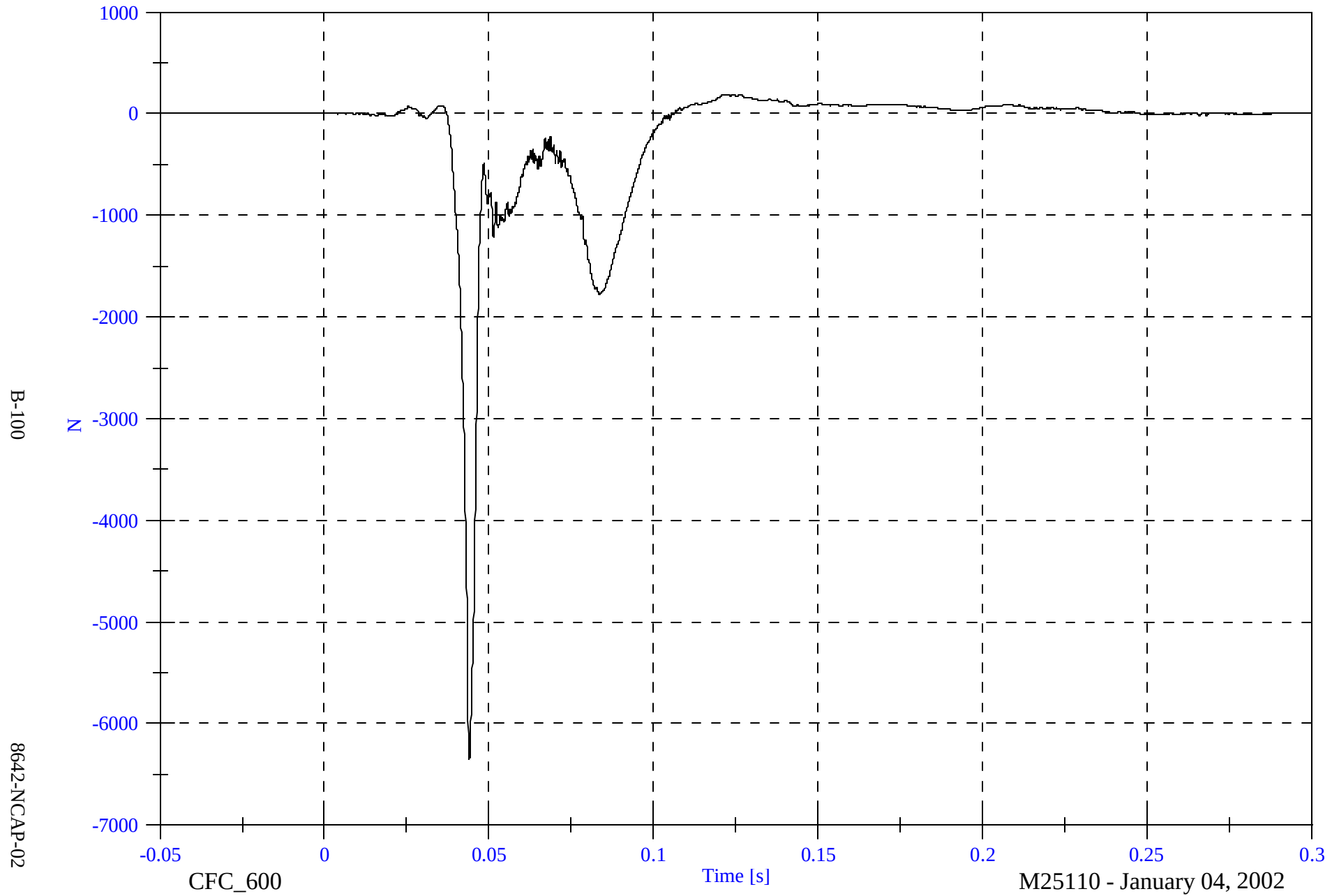
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Left Lower Tibia Fz

Max: 188.7 [N] at 0.127 [s]

Min: -6347.1 [N] at 0.044 [s]

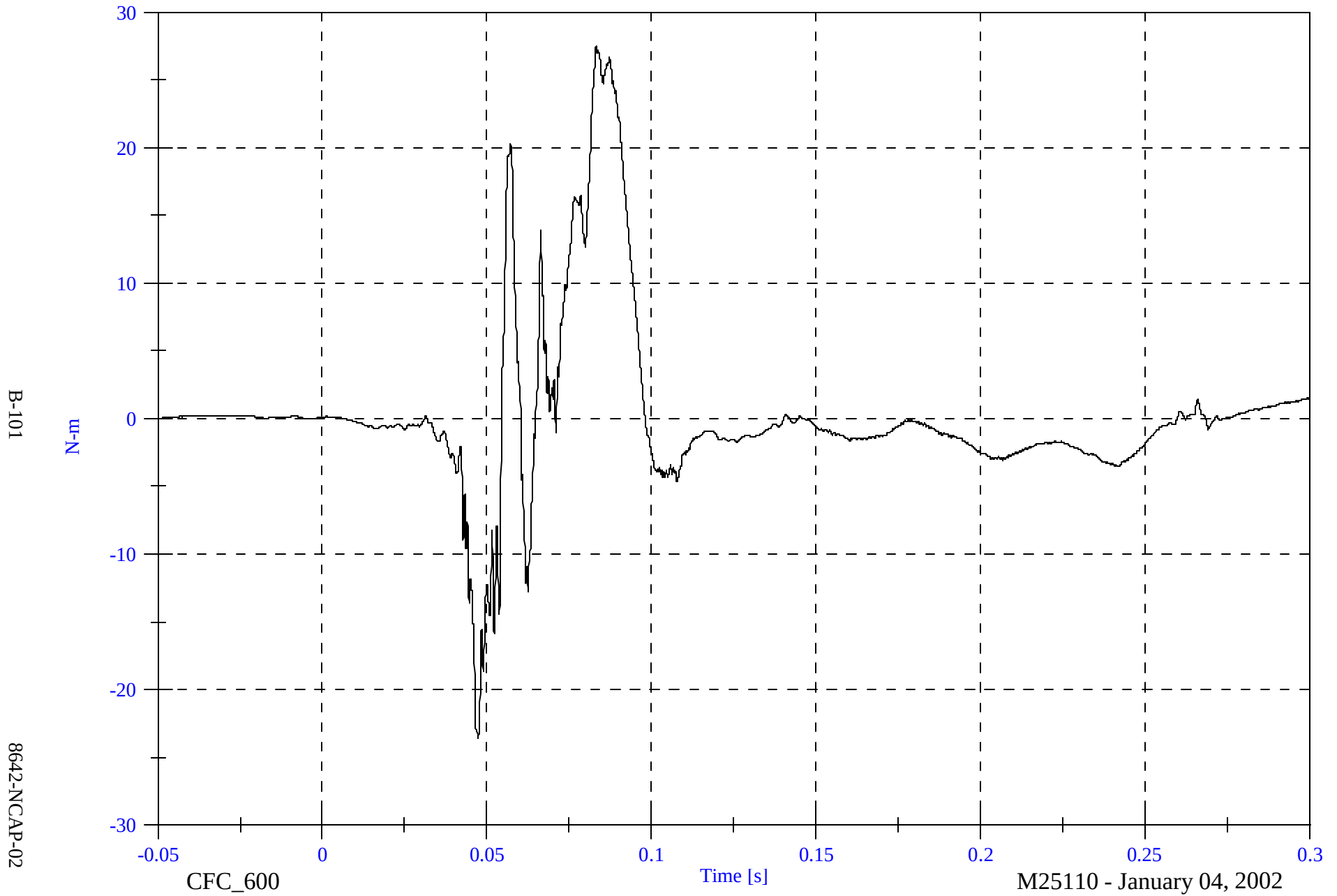


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Left Lower Tibia Mx

Max: 27.5 [N-m] at 0.083 [s]

Min: -23.5 [N-m] at 0.047 [s]

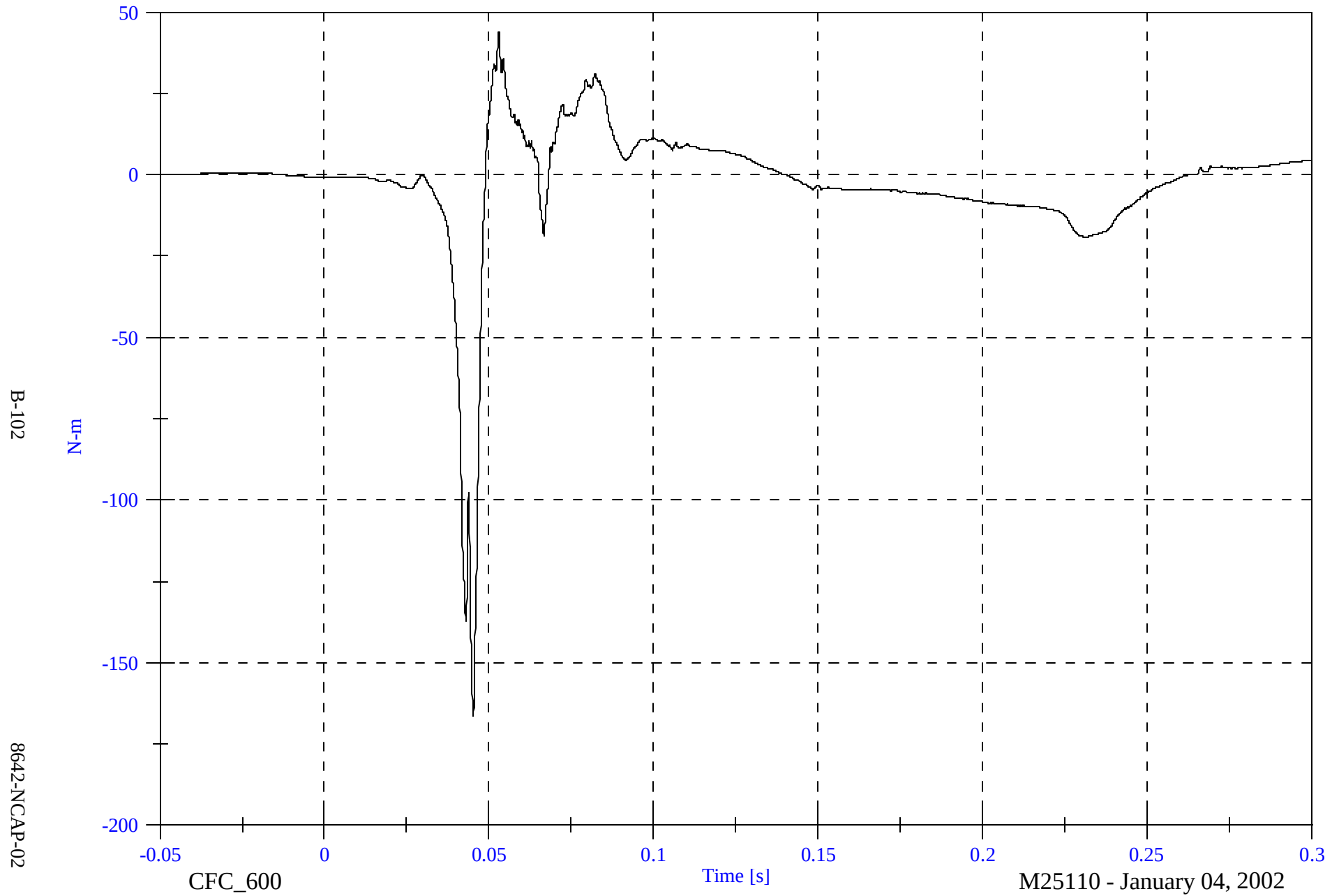


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Left Lower Tibia My

Max: 43.7 [N-m] at 0.053 [s]

Min: -166.5 [N-m] at 0.045 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

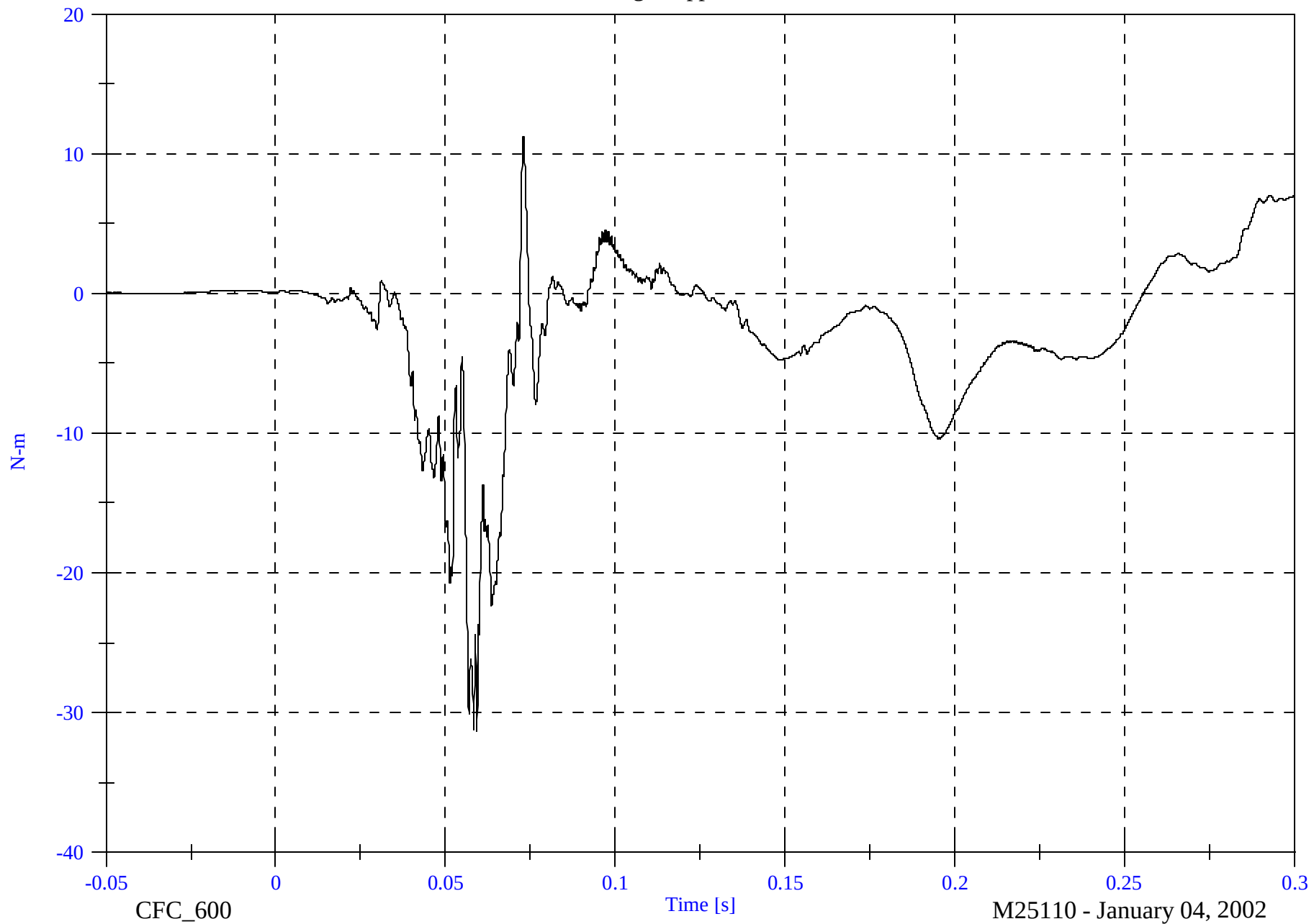
P2 Right Upper Tibia Mx

Max: 11.2 [N-m] at 0.073 [s]

Min: -31.3 [N-m] at 0.059 [s]

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CFC_600

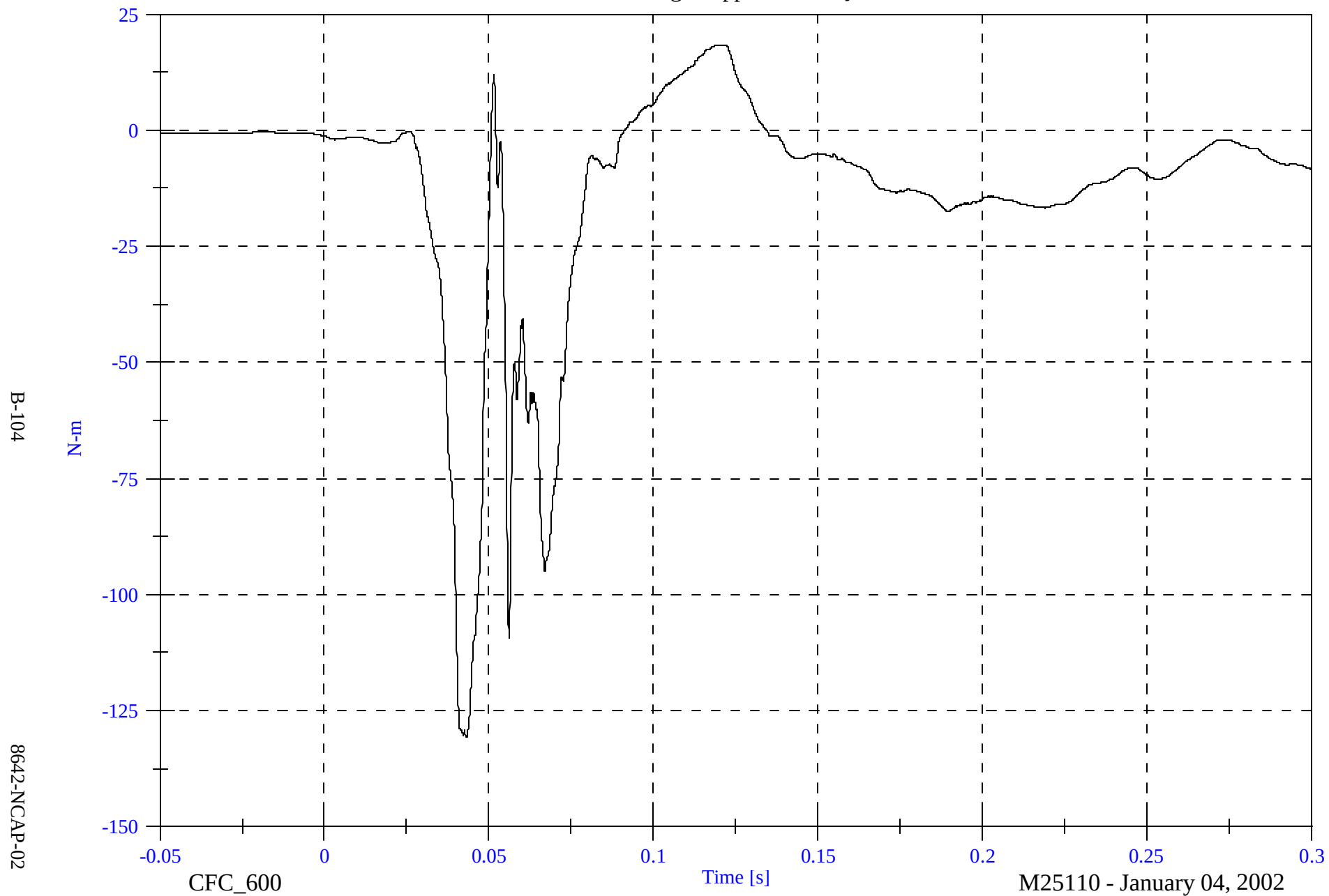
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 18.4 [N-m] at 0.119 [s]

Min: -130.8 [N-m] at 0.043 [s]

P2 Right Upper Tibia My

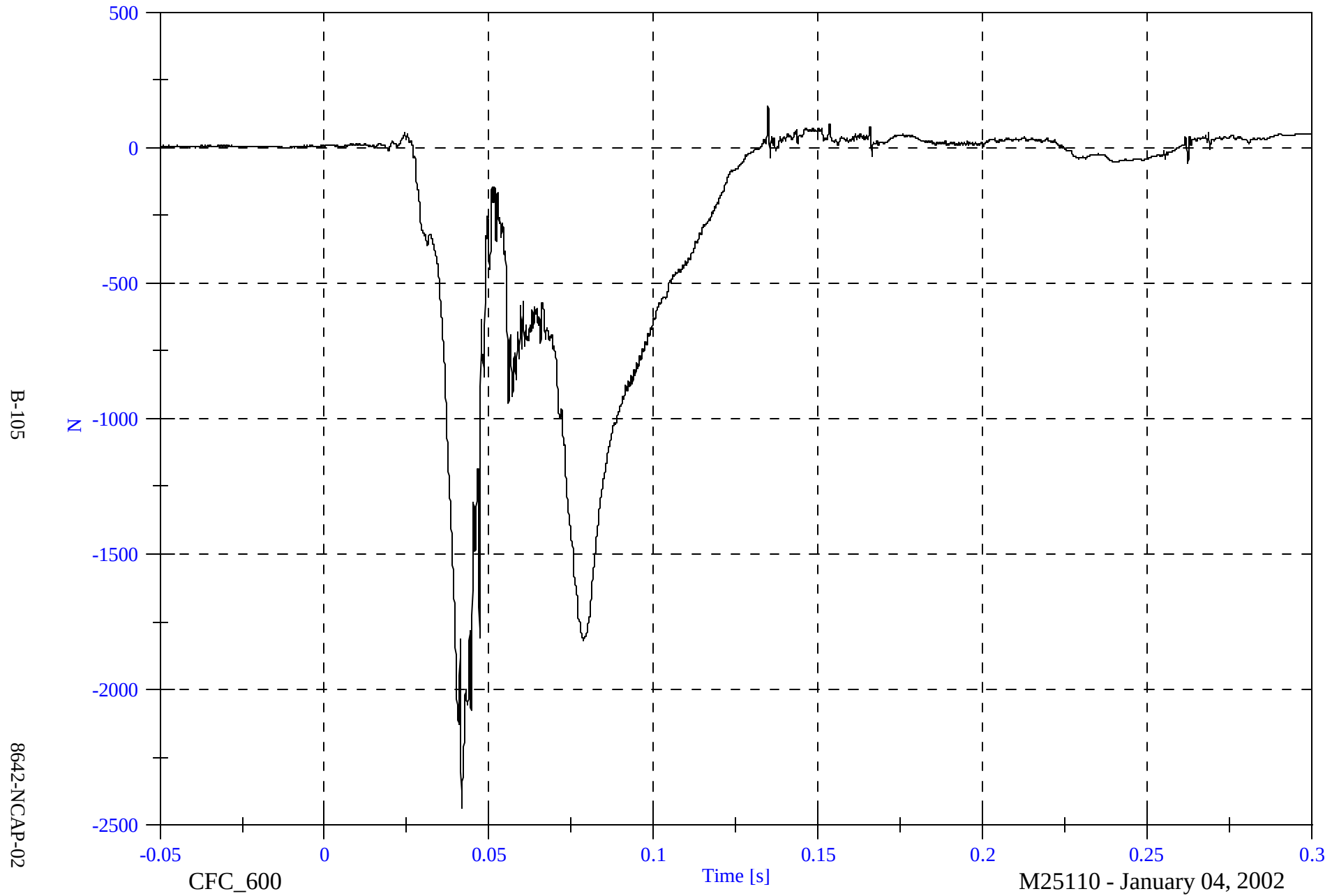


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Right Lower Tibia Fz

Max: 150.6 [N] at 0.135 [s]

Min: -2435.7 [N] at 0.042 [s]

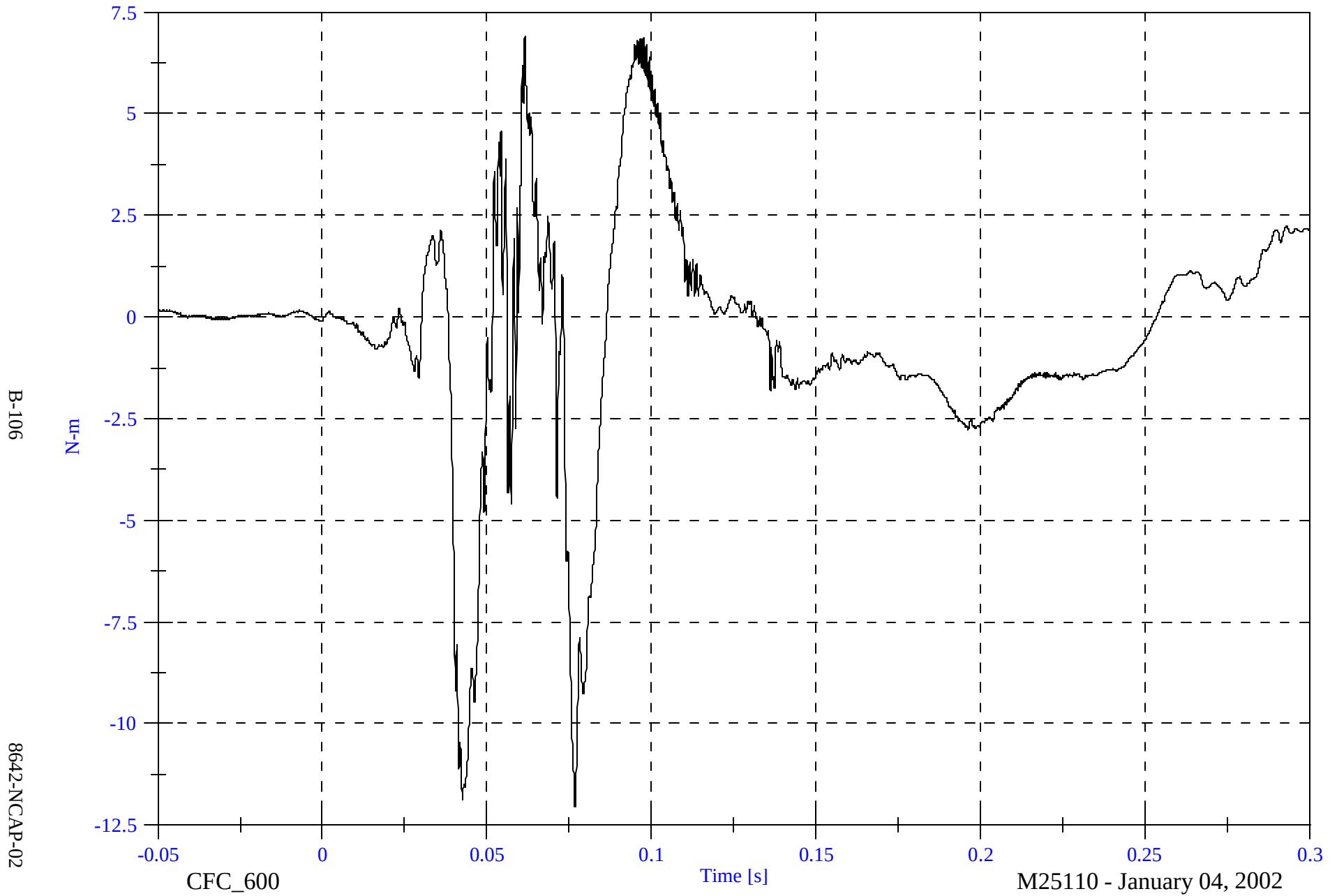


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 6.9 [N-m] at 0.062 [s]

Min: -12.1 [N-m] at 0.077 [s]

P2 Right Lower Tibia Mx

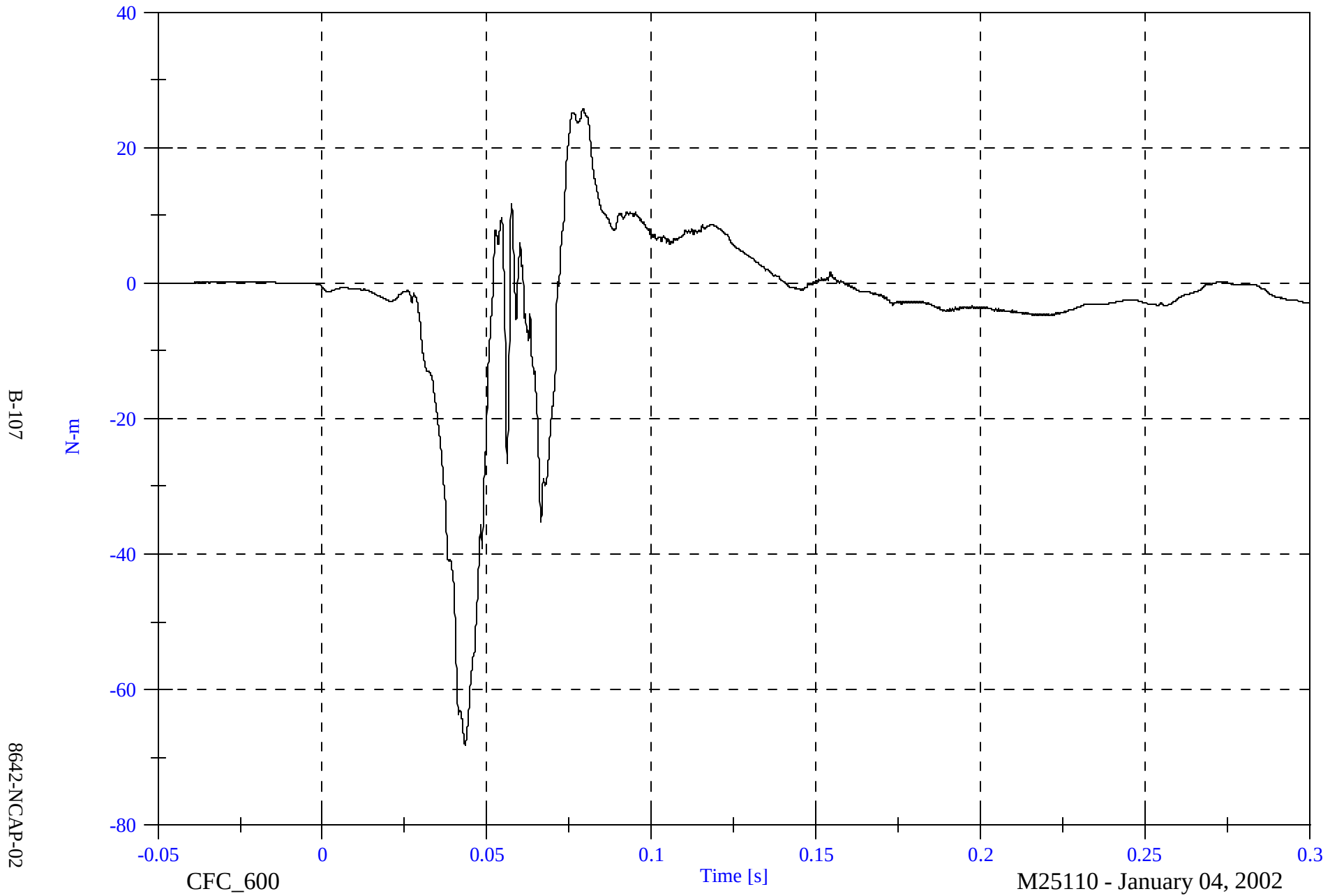


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Right Lower Tibia My

Max: 25.8 [N-m] at 0.079 [s]

Min: -68.2 [N-m] at 0.043 [s]

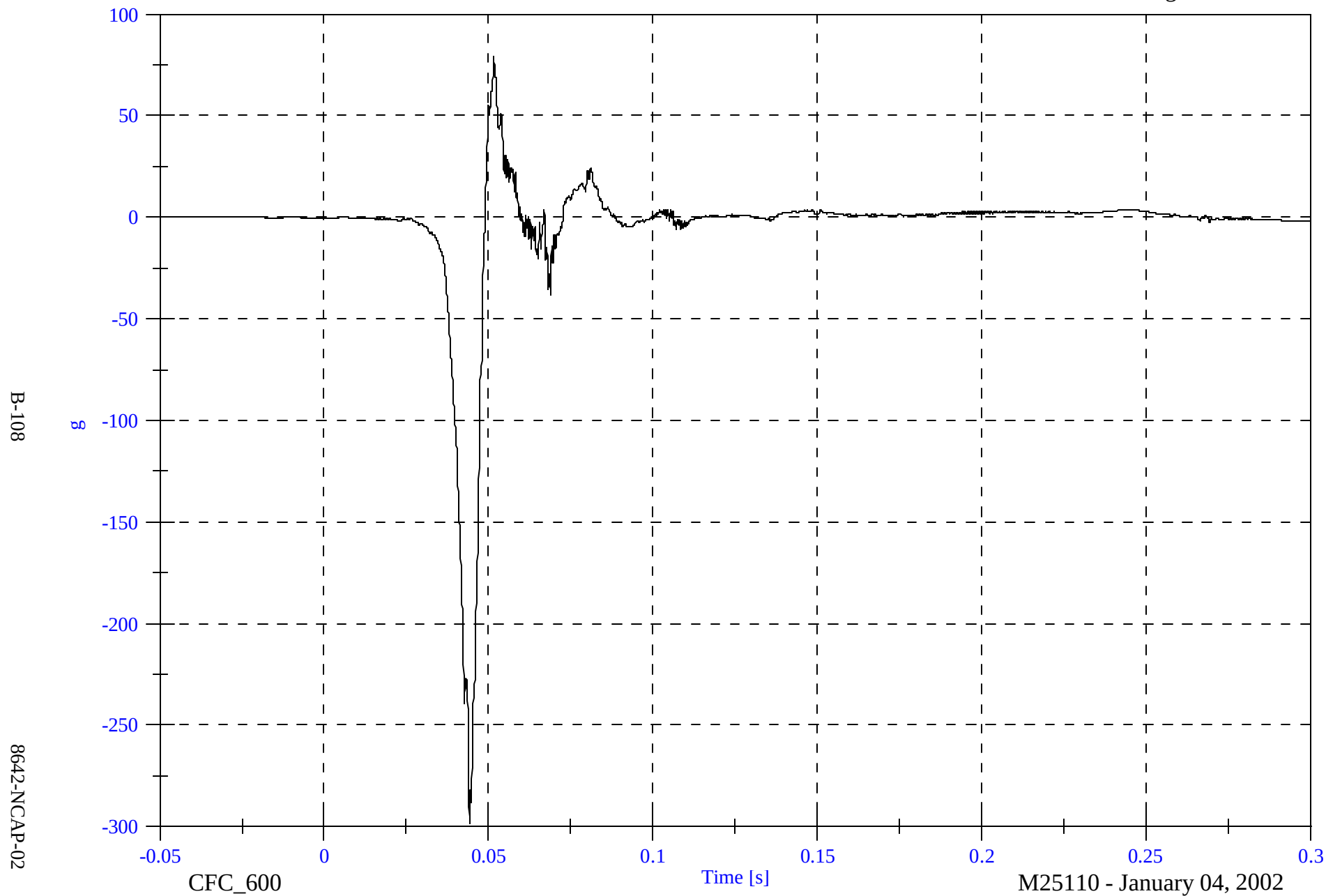


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 78.9 [g] at 0.052 [s]

Min: -298.3 [g] at 0.044 [s]

P2 Left Foot Aft x



NCAP - 2002 Toyota Tundra Access Cab 4X4

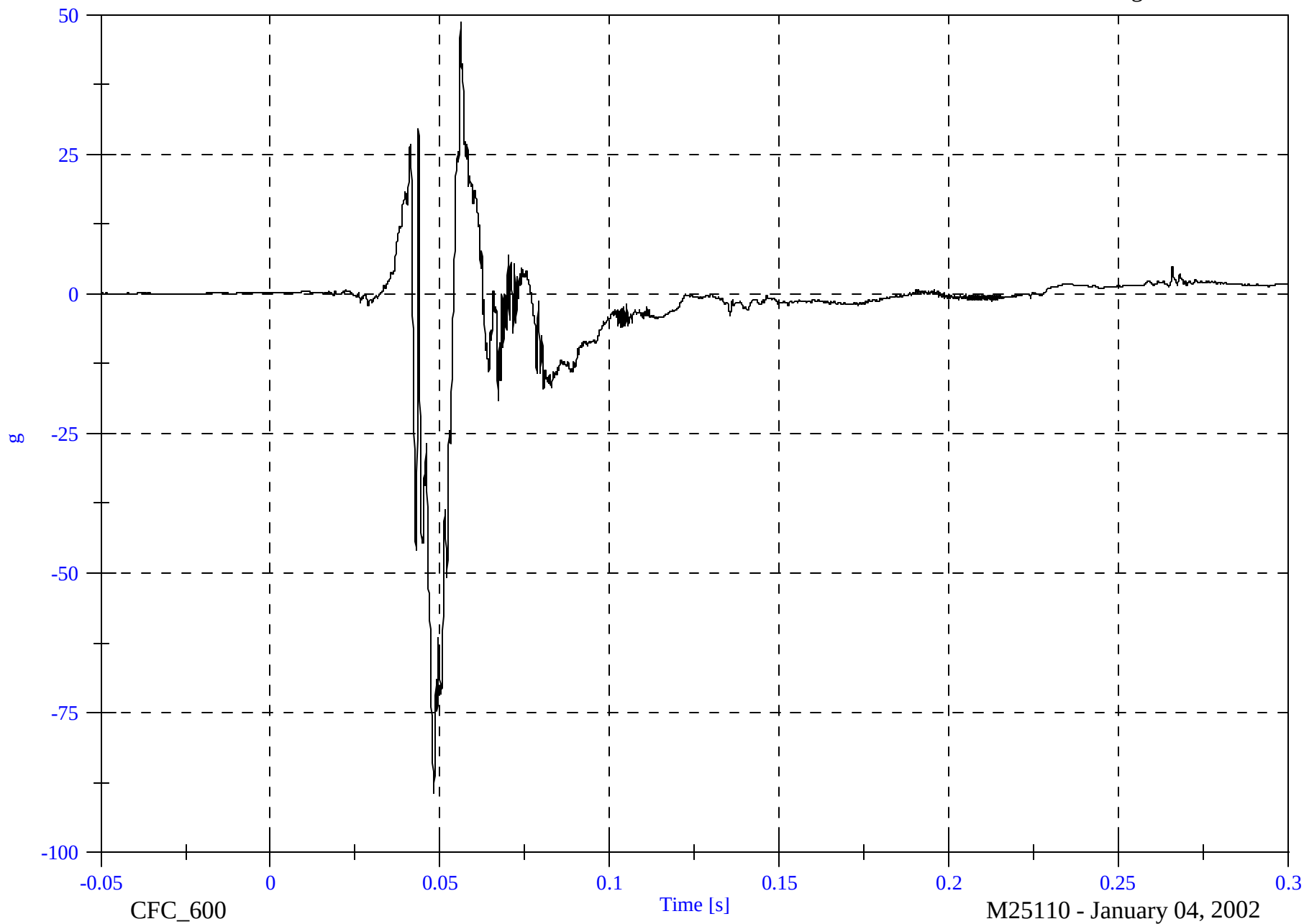
P2 Left Foot Aft z

Max: 48.5 [g] at 0.056 [s]

Min: -89.2 [g] at 0.048 [s]

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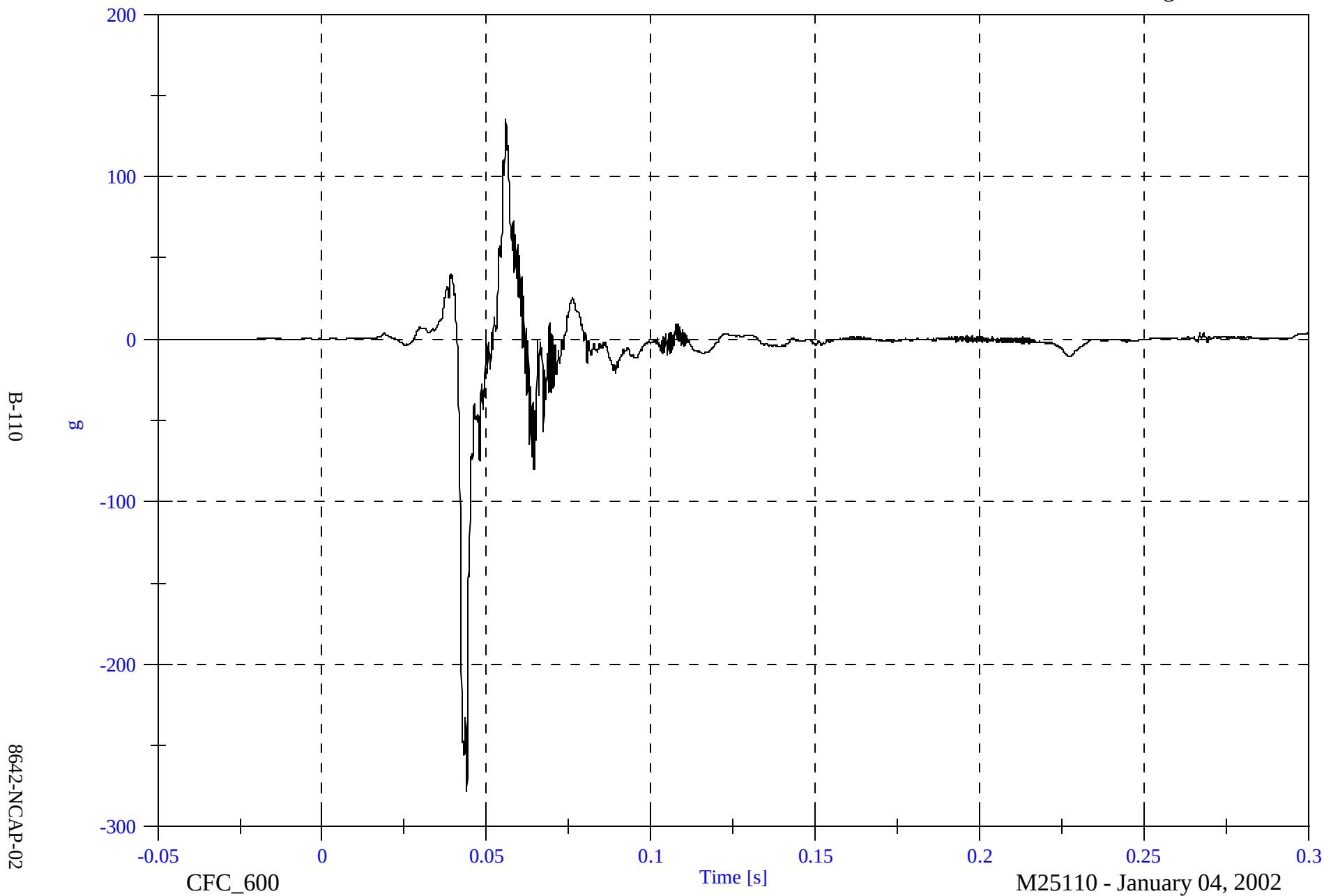


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Left Foot Fore z

Max: 135.0 [g] at 0.056 [s]

Min: -277.9 [g] at 0.044 [s]

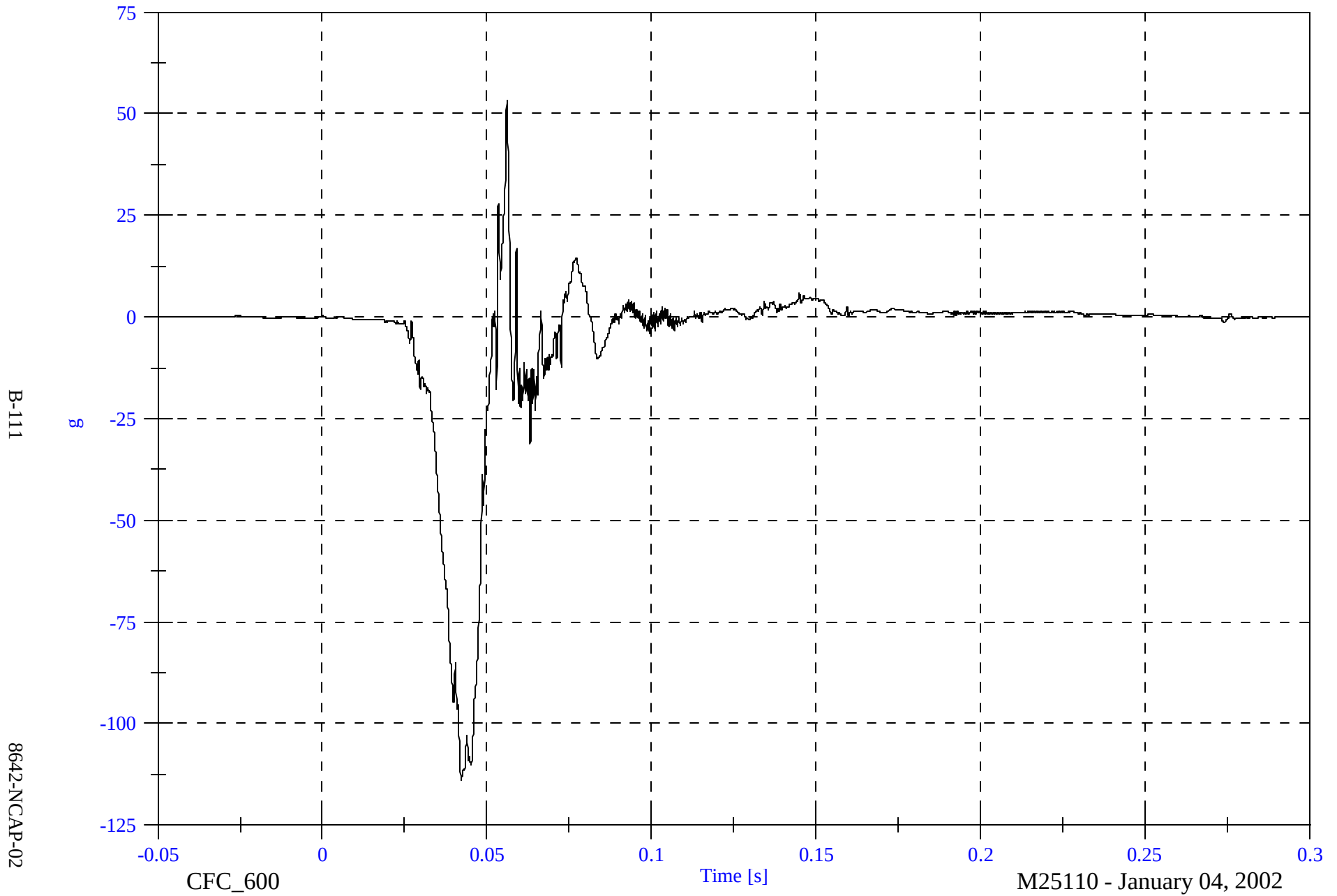


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 53.1 [g] at 0.056 [s]

Min: -114.0 [g] at 0.042 [s]

P2 Right Foot Aft x

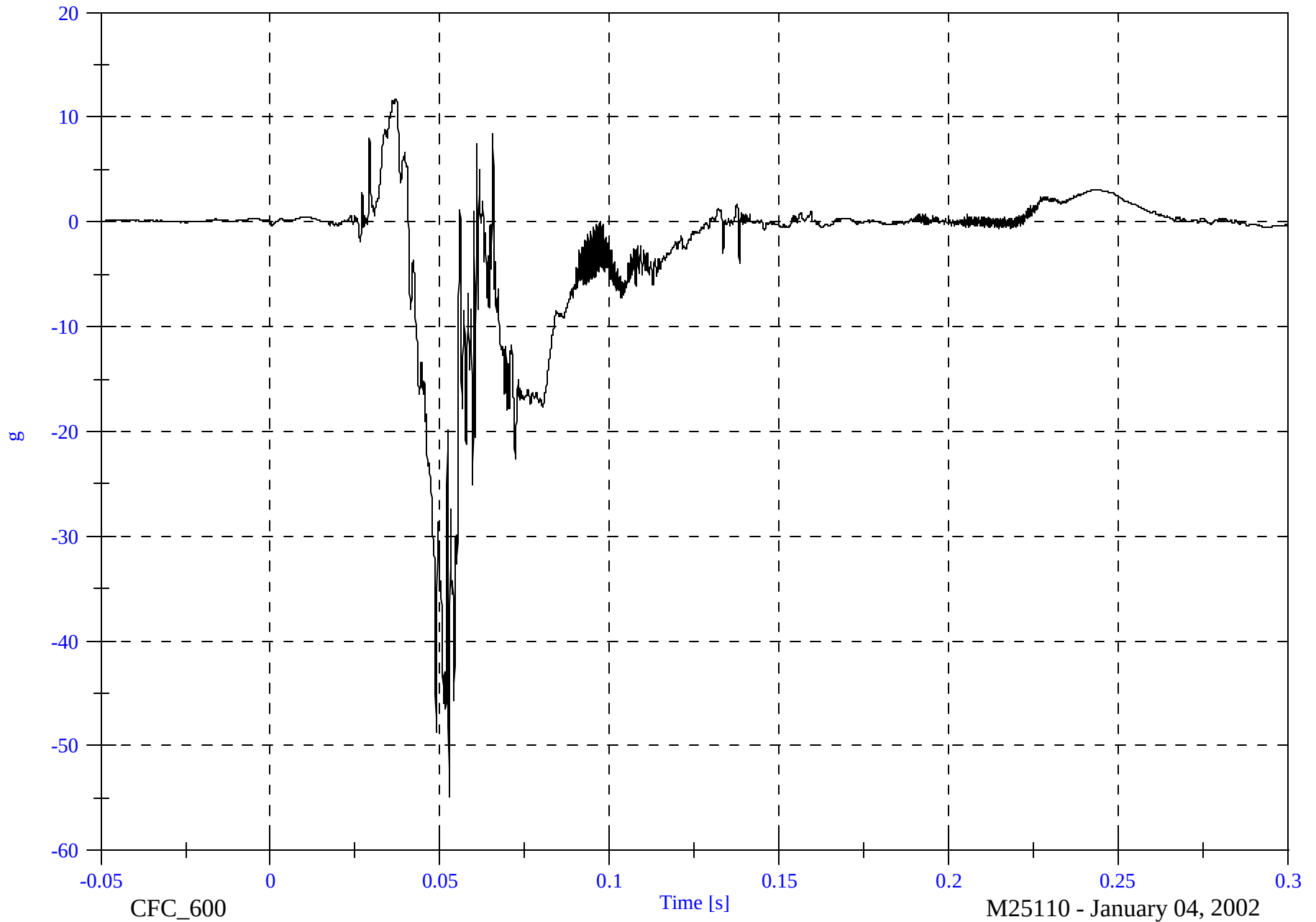


NCAP - 2002 Toyota Tundra Access Cab 4X4

P2 Right Foot Aft z

Max: 11.7 [g] at 0.037 [s]

Min: -54.9 [g] at 0.053 [s]



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8642-NCAP-02

CFC_600

Time [s]

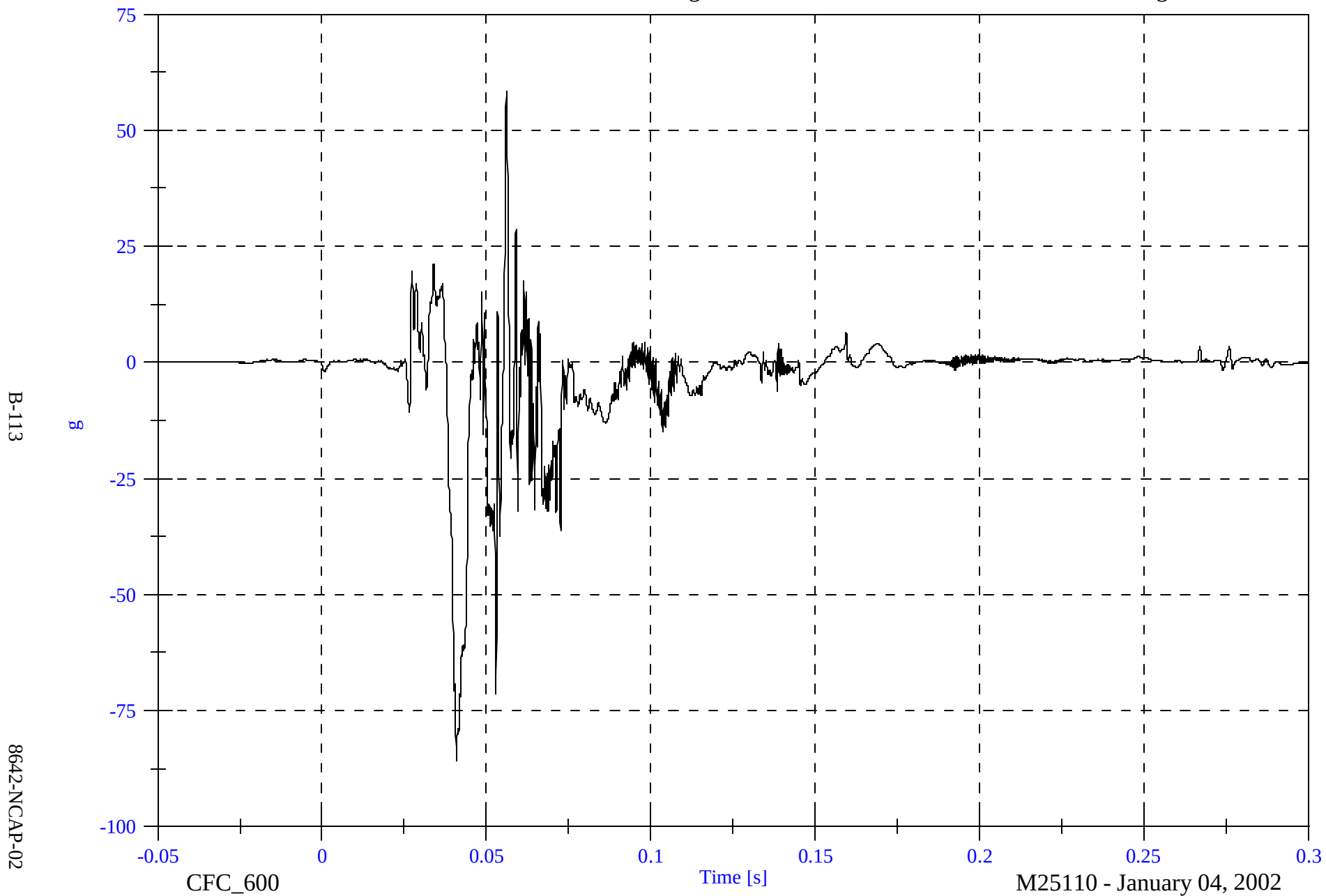
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 58.5 [g] at 0.056 [s]

Min: -85.9 [g] at 0.041 [s]

P2 Right Foot Fore z

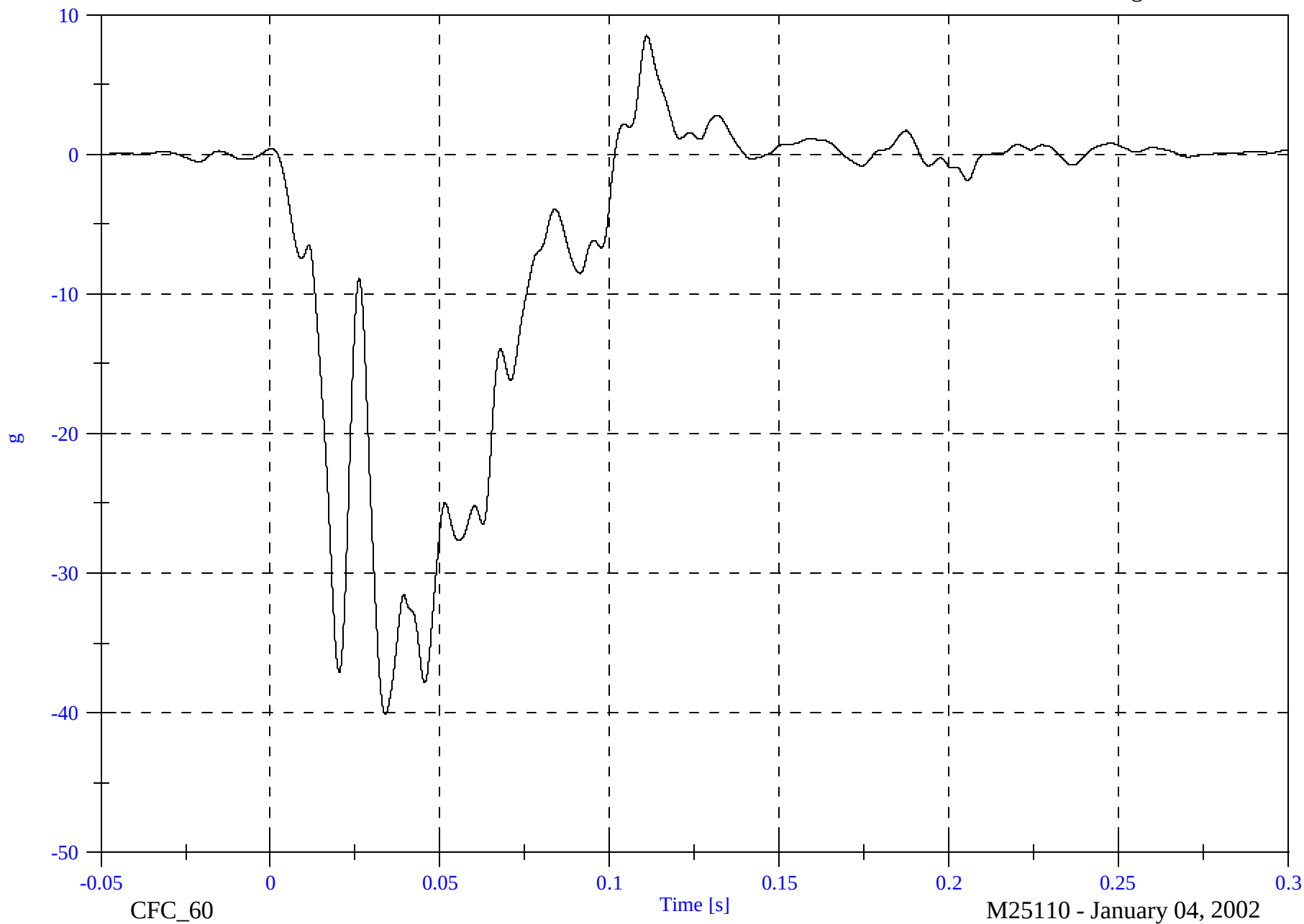


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 8.5 [g] at 0.111 [s]

Min: -40.1 [g] at 0.034 [s]

Left Rear #1x



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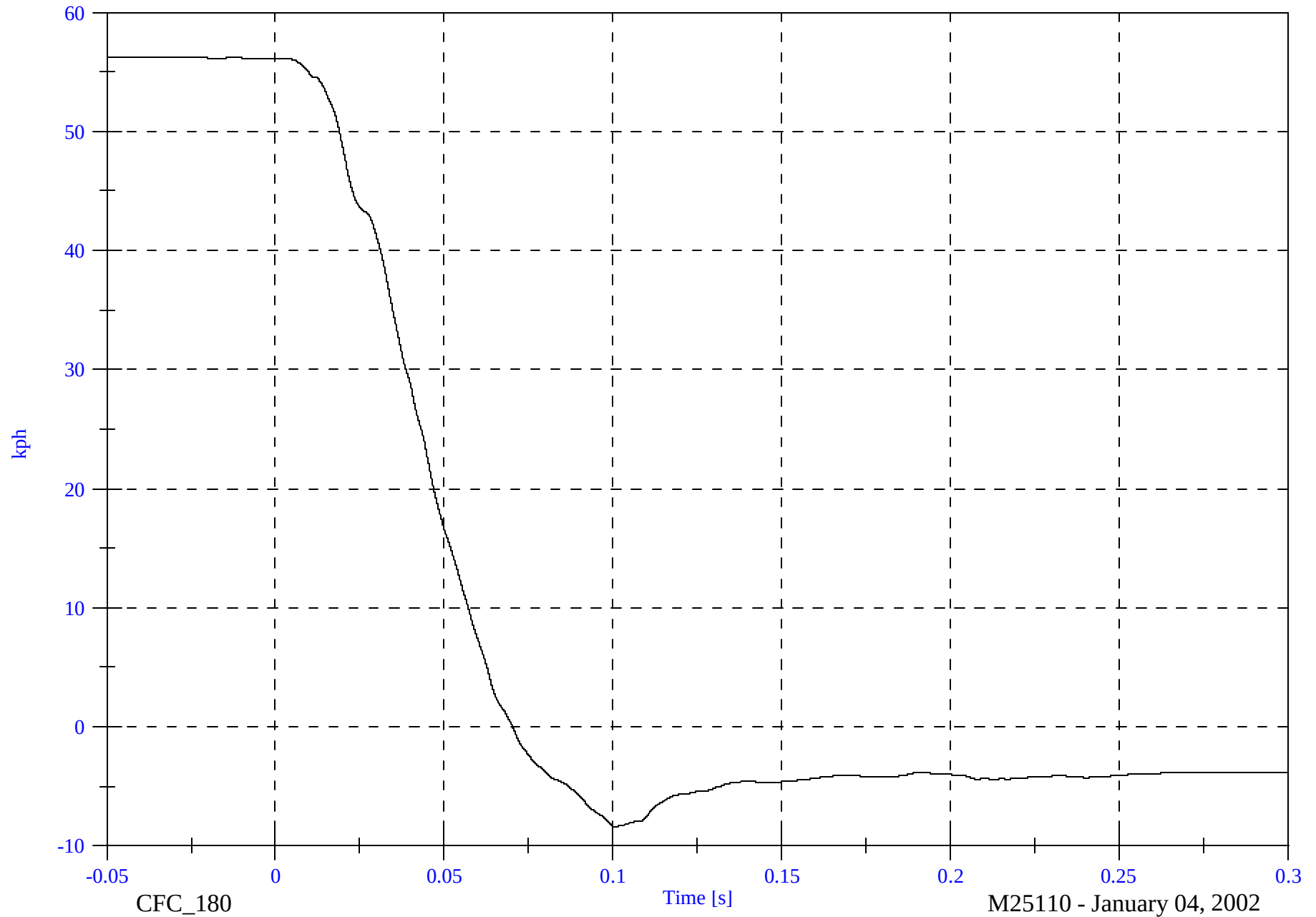
8642-NCAP-02

NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 56.3 [kph] at -0.028 [s]

Left Rear #1x Velocity

Min: -8.4 [kph] at 0.100 [s]



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8642-NCAP-02

CFC_180

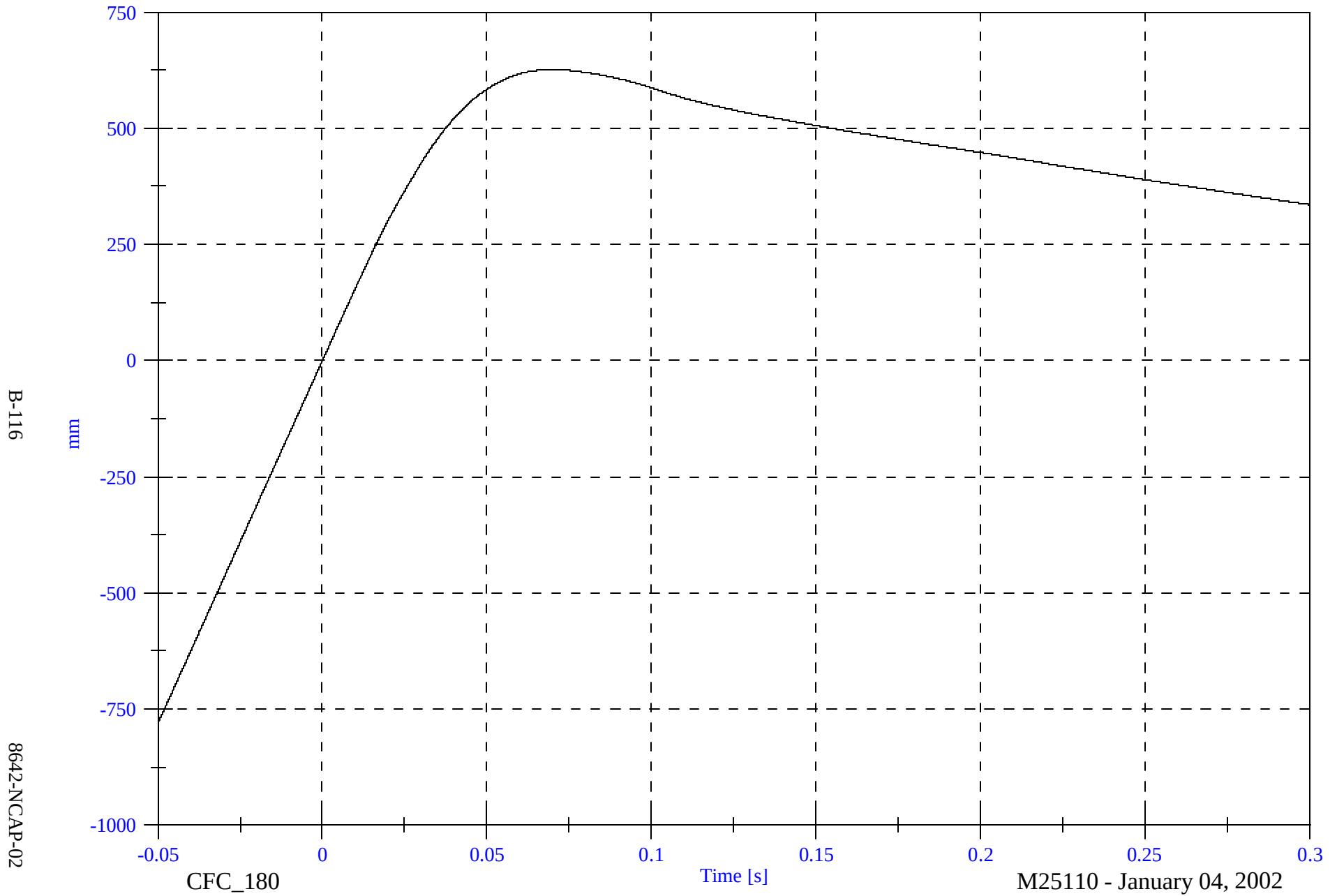
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Left Rear #1x Displacement

Max: 626.0 [mm] at 0.070 [s]

Min: -780.4 [mm] at -0.050 [s]

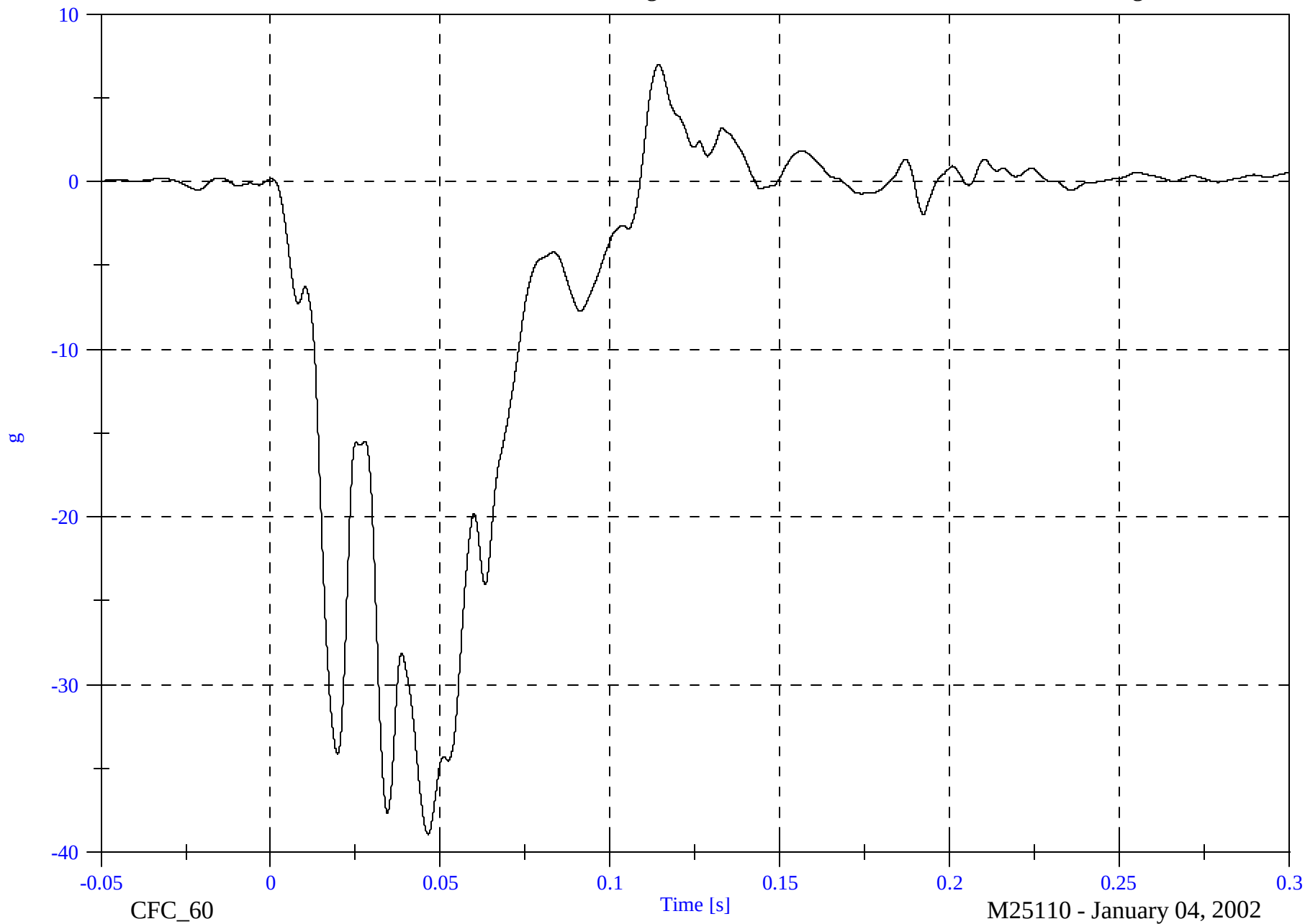


NCAP - 2002 Toyota Tundra Access Cab 4X4

Right Rear #2x

Max: 6.9 [g] at 0.114 [s]

Min: -38.9 [g] at 0.046 [s]



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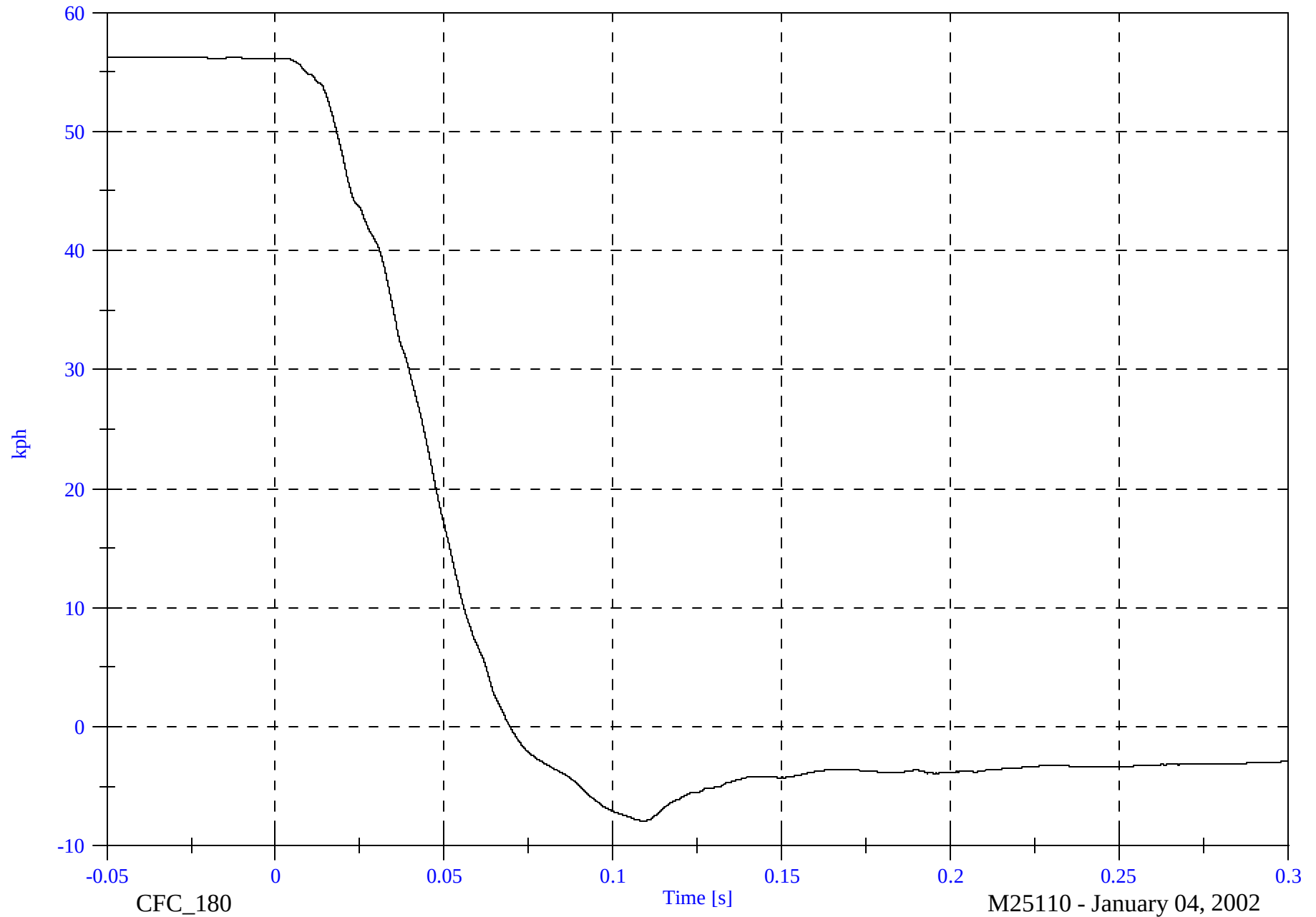
8642-NCAP-02

NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 56.2 [kph] at -0.027 [s]

Right Rear #2x Velocity

Min: -7.9 [kph] at 0.110 [s]



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CFC_180

M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

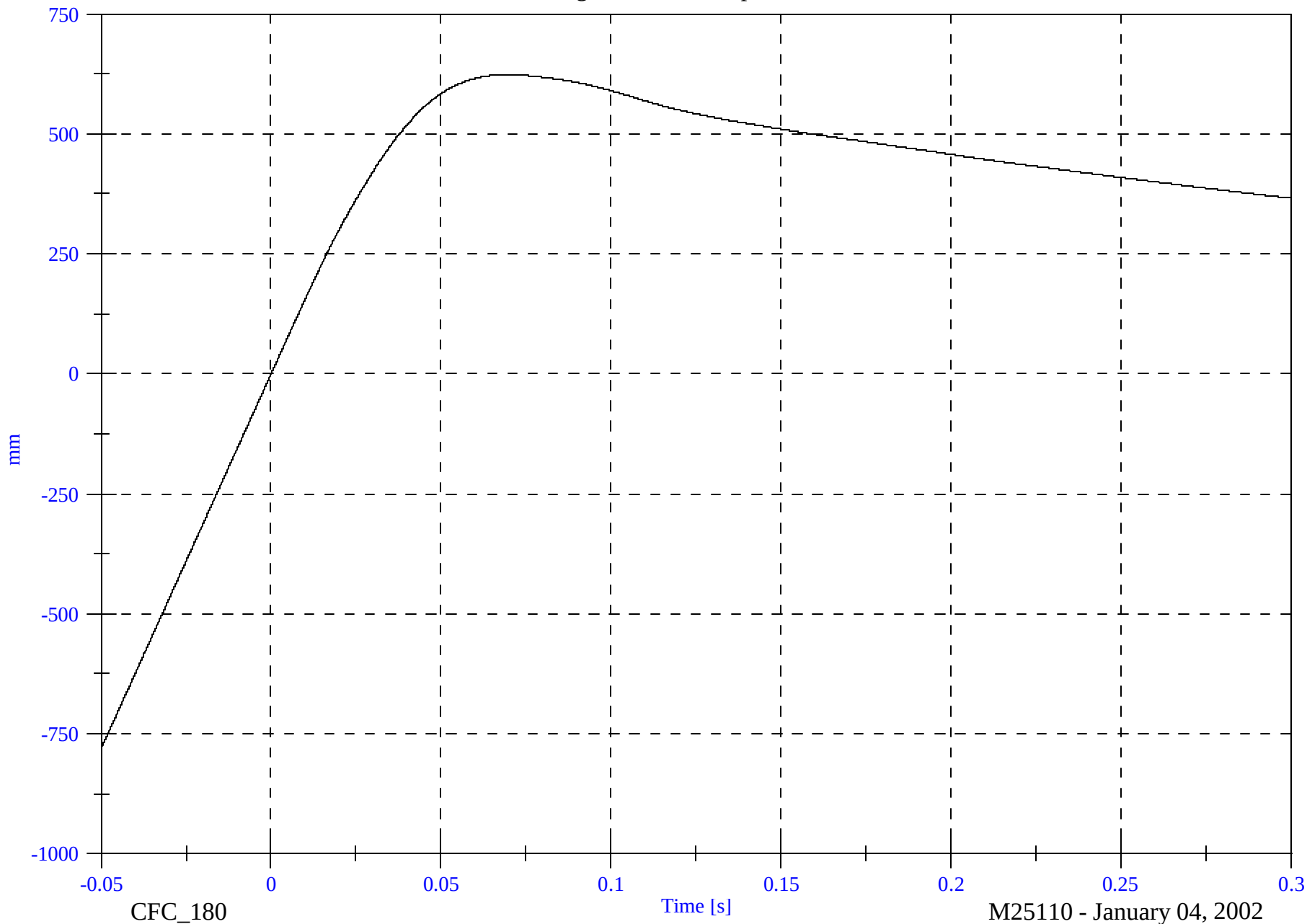
Right Rear #2x Displacement

Max: 623.3 [mm] at 0.070 [s]

Min: -780.4 [mm] at -0.050 [s]

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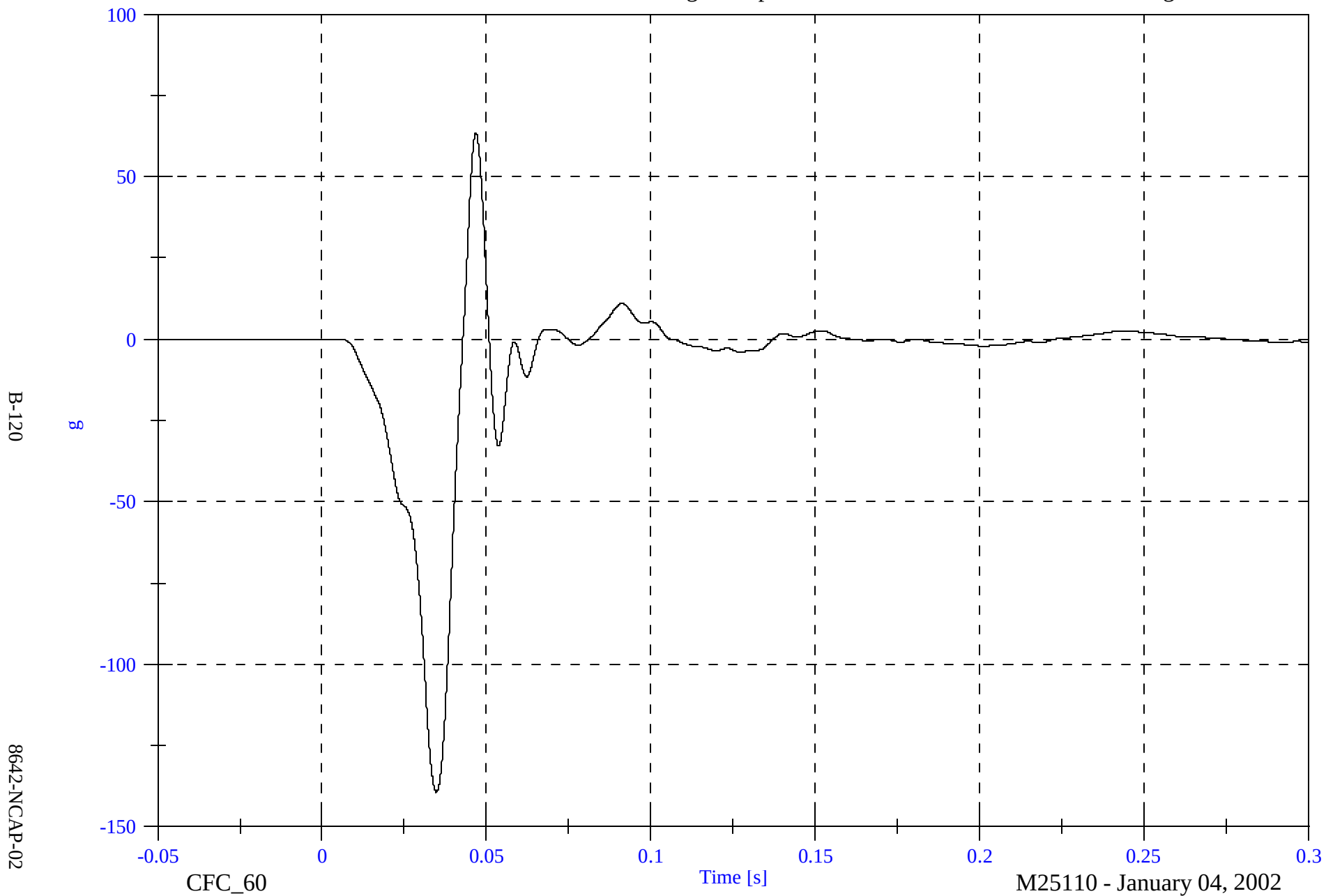


NCAP - 2002 Toyota Tundra Access Cab 4X4

Engine Top #3x

Max: 63.5 [g] at 0.047 [s]

Min: -139.3 [g] at 0.035 [s]

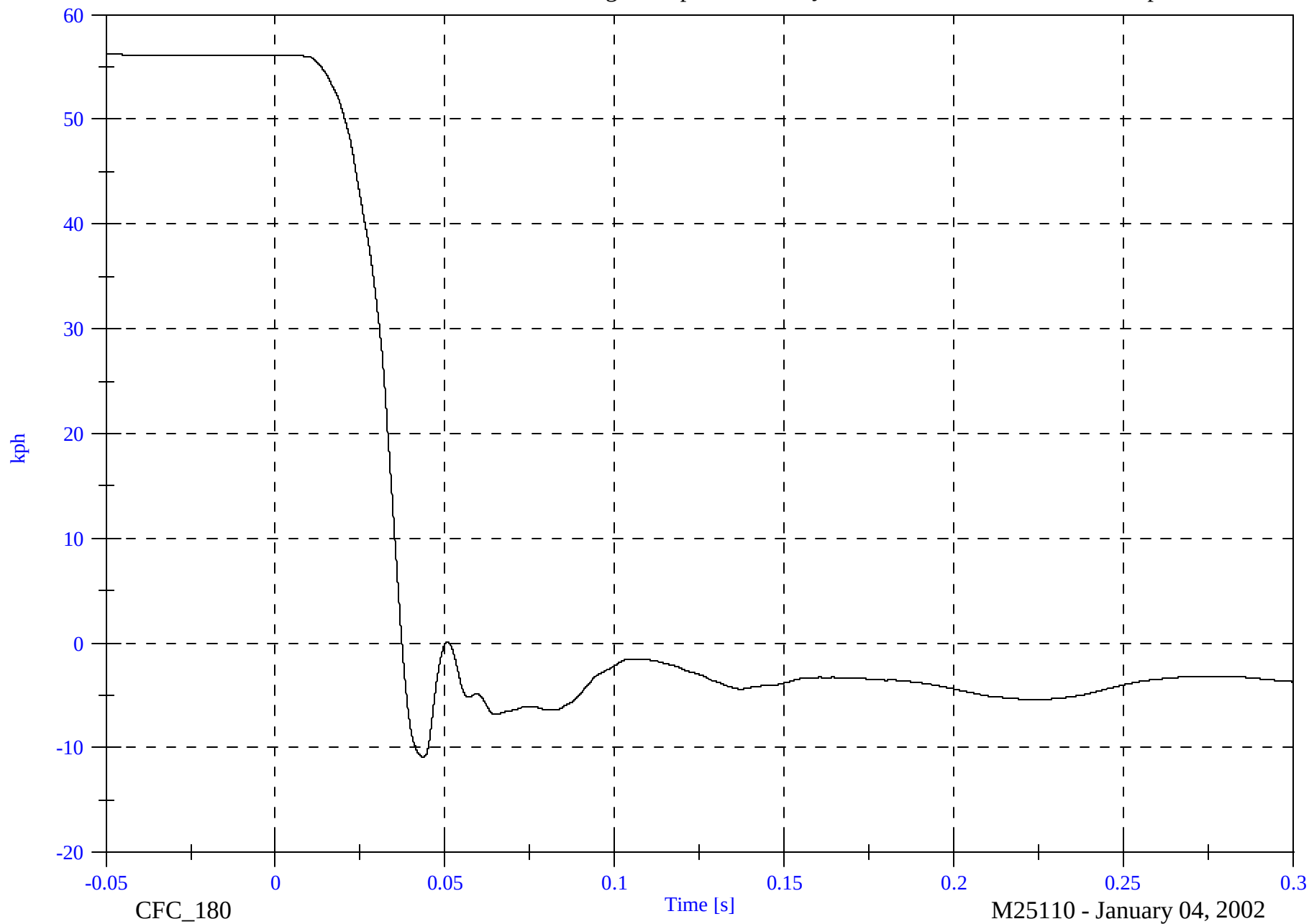


NCAP - 2002 Toyota Tundra Access Cab 4X4

Engine Top #3x Velocity

Max: 56.2 [kph] at -0.050 [s]

Min: -10.9 [kph] at 0.044 [s]



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CFC_180

Time [s]

M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

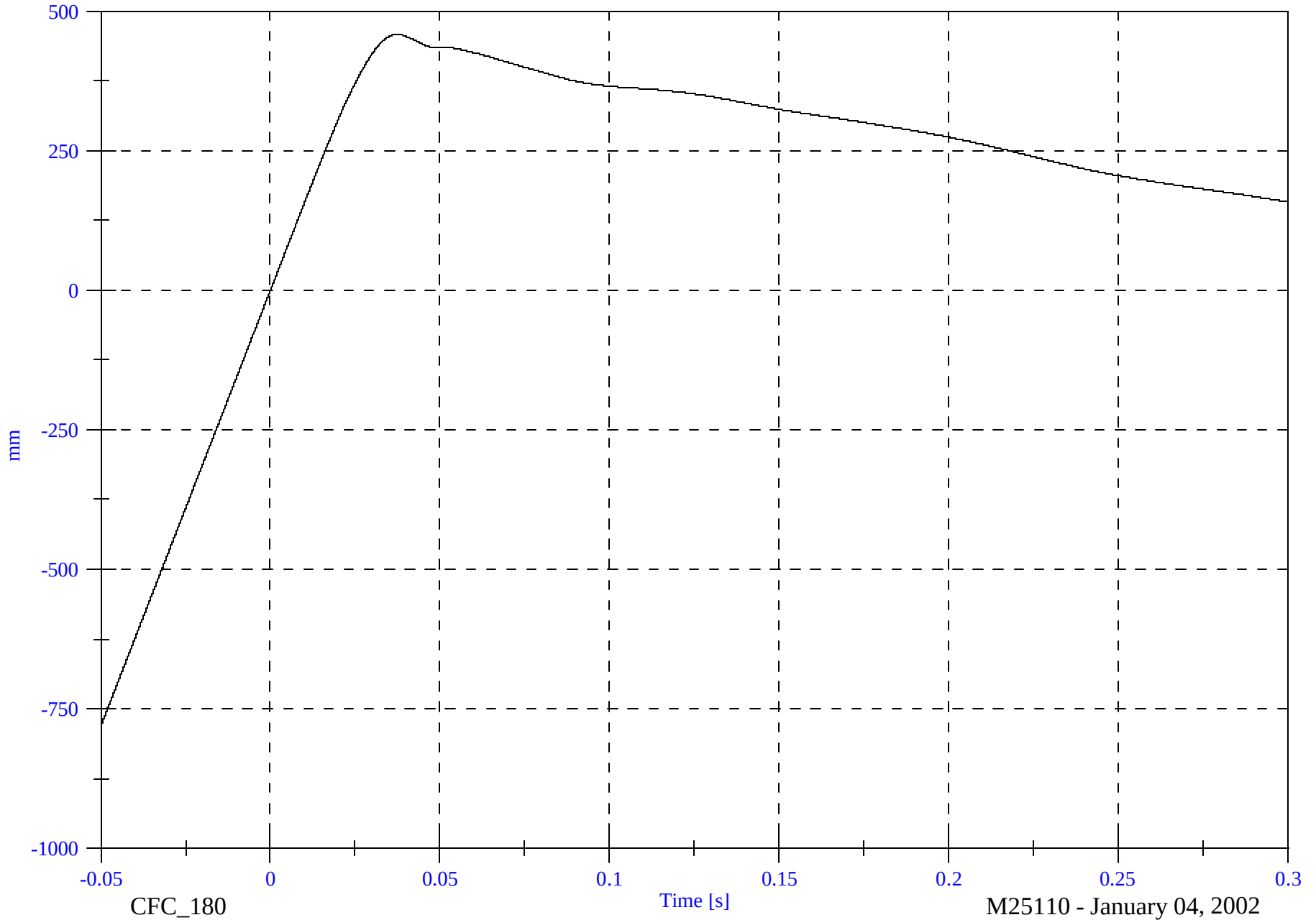
Engine Top #3x Displacement

Max: 457.9 [mm] at 0.037 [s]

Min: -779.9 [mm] at -0.050 [s]

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CFC_180

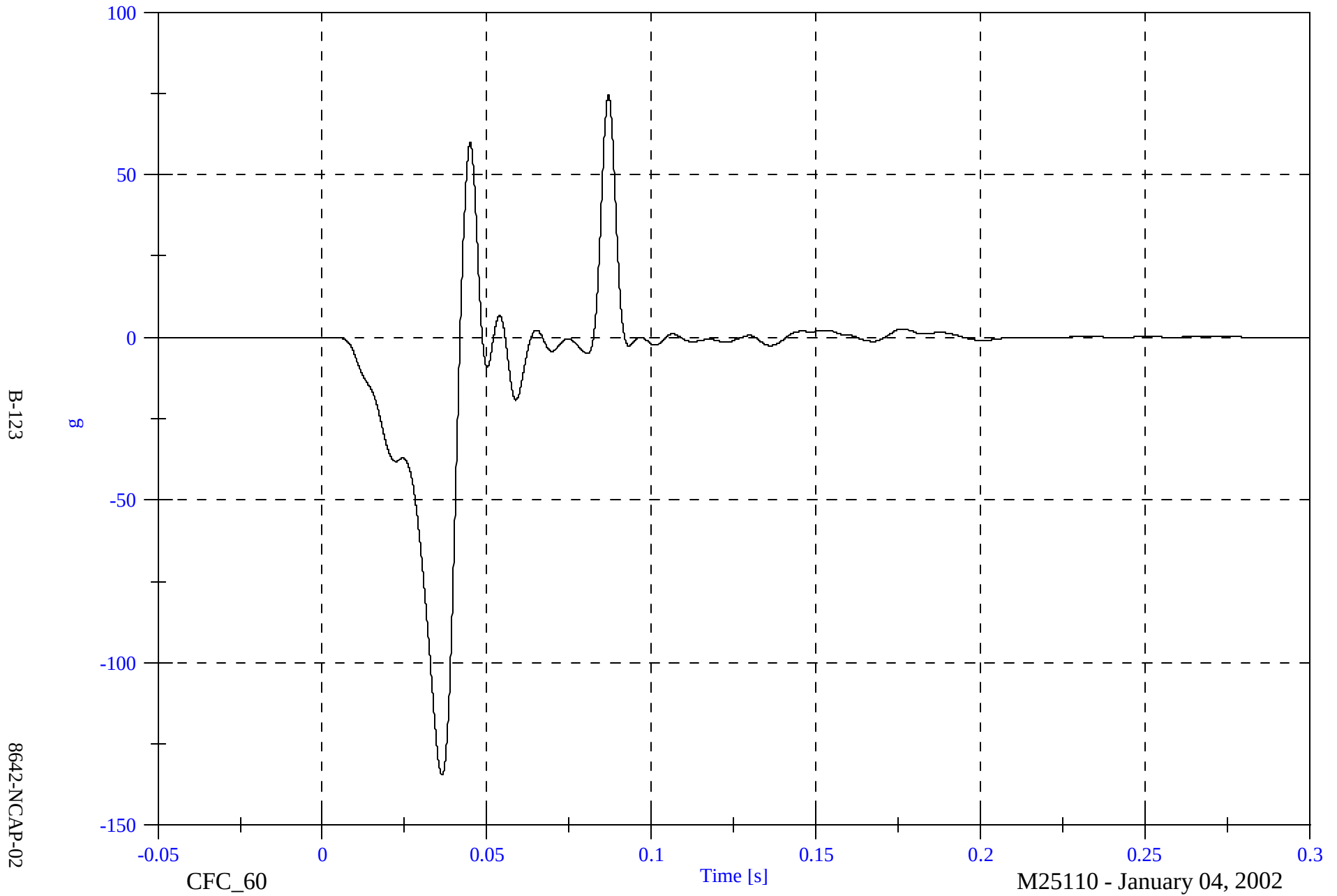
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Engine Bottom #4x

Max: 74.4 [g] at 0.087 [s]

Min: -134.6 [g] at 0.036 [s]

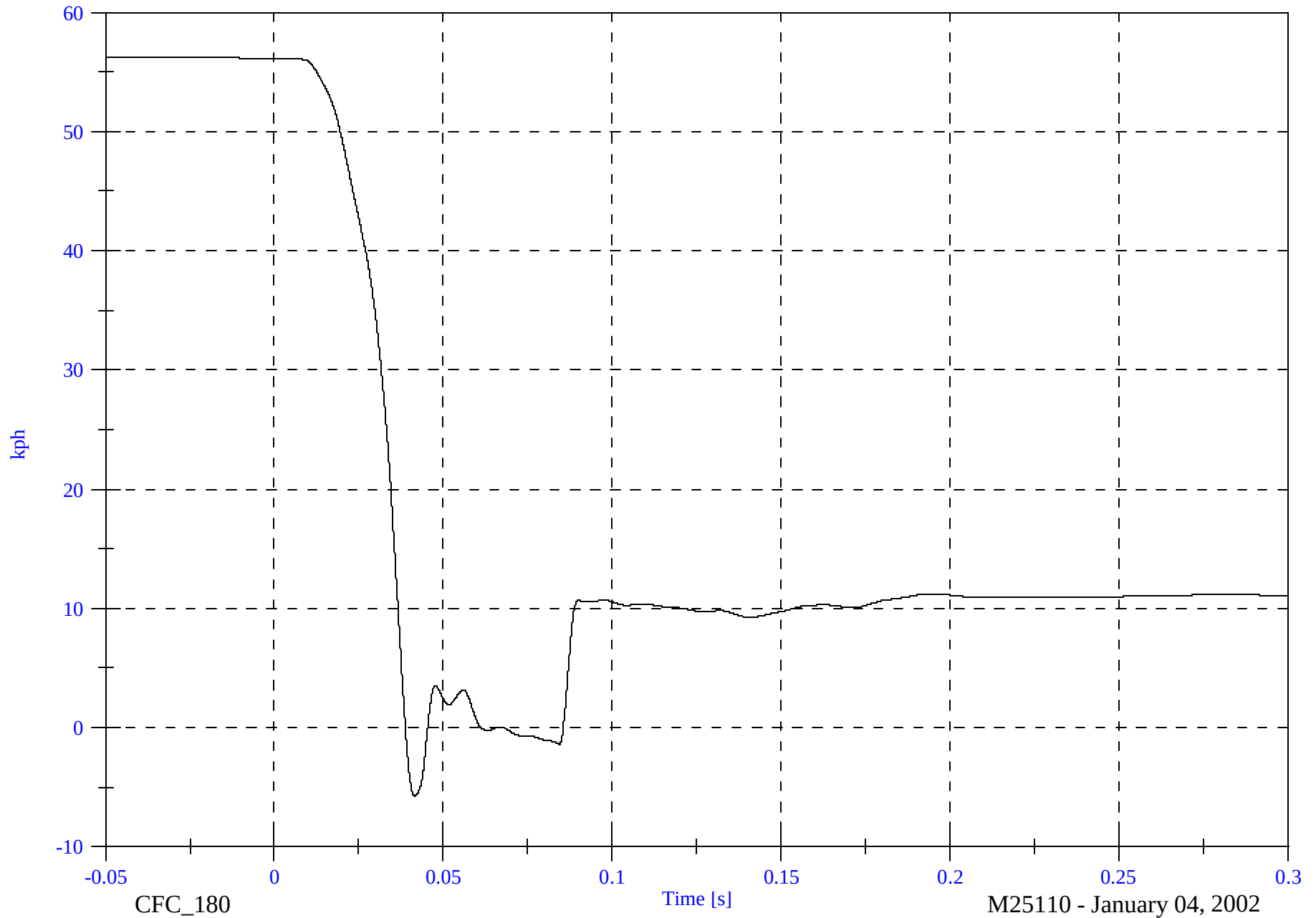


NCAP - 2002 Toyota Tundra Access Cab 4X4

Engine Bottom #4x Velocity

Max: 56.2 [kph] at -0.041 [s]

Min: -5.8 [kph] at 0.042 [s]



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8642-NCAP-02

CFC_180

Time [s]

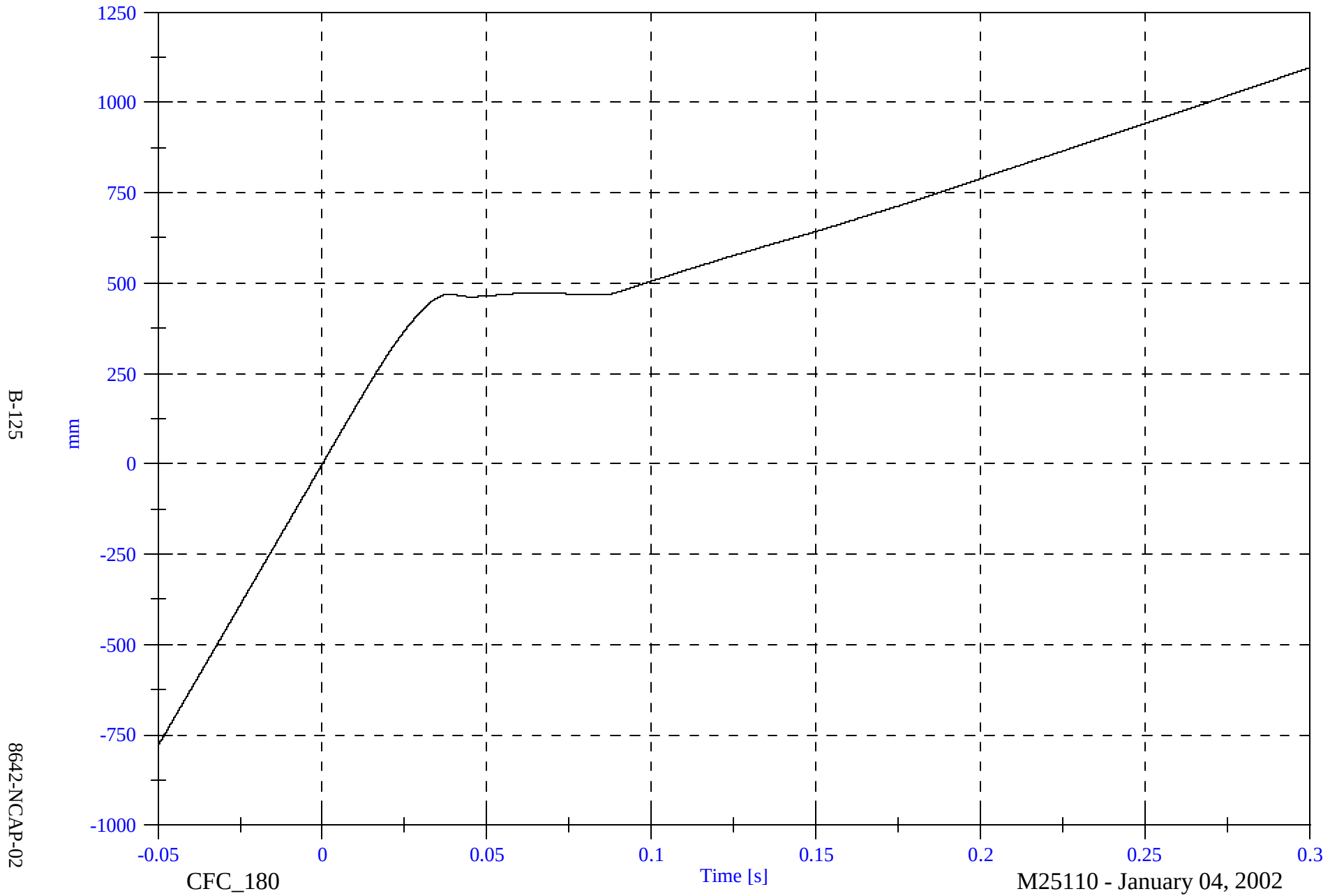
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Engine Bottom #4x Displacement

Max: 1094.9 [mm] at 0.300 [s]

Min: -780.4 [mm] at -0.050 [s]

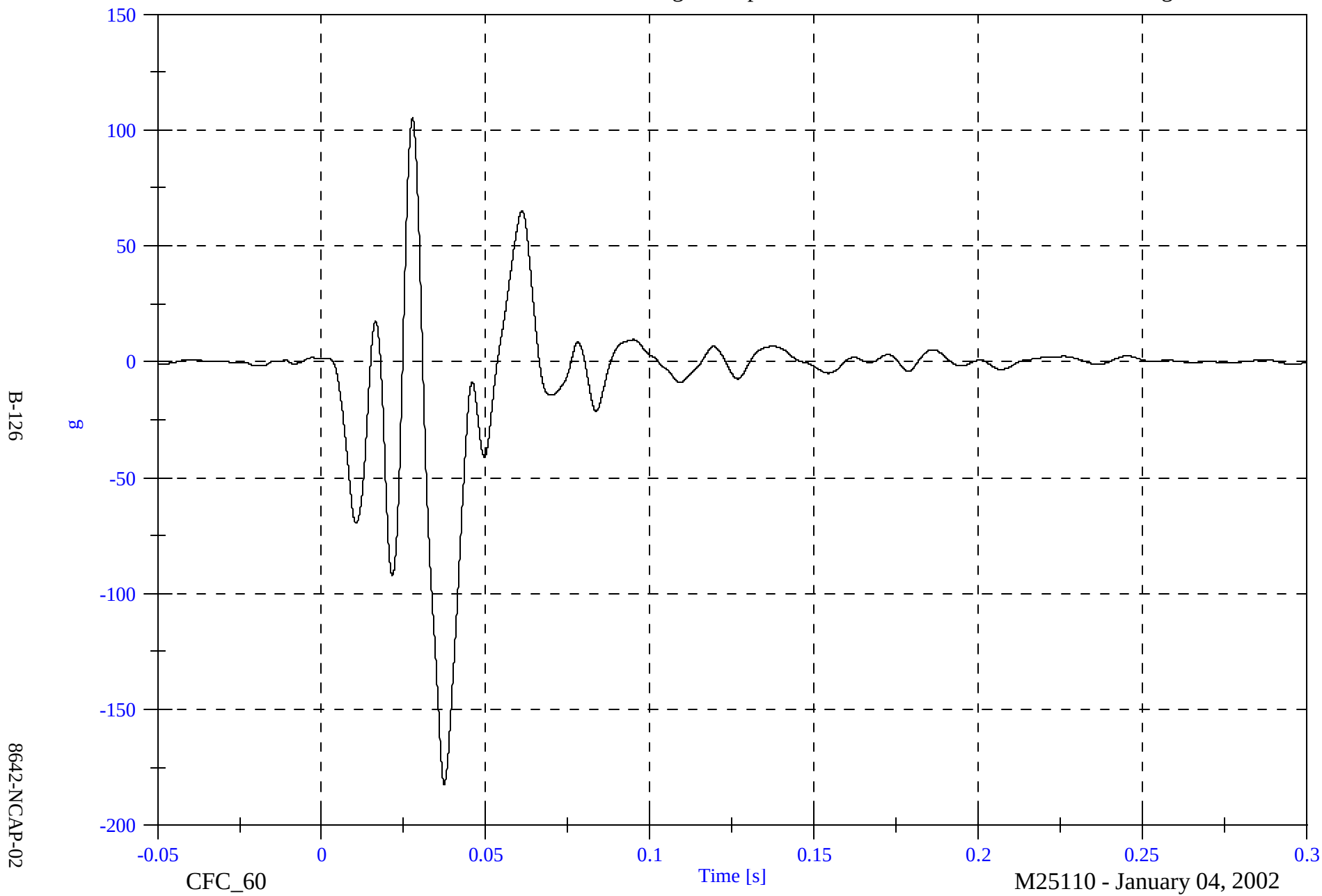


NCAP - 2002 Toyota Tundra Access Cab 4X4

Right Caliper #5x

Max: 105.1 [g] at 0.028 [s]

Min: -182.3 [g] at 0.037 [s]

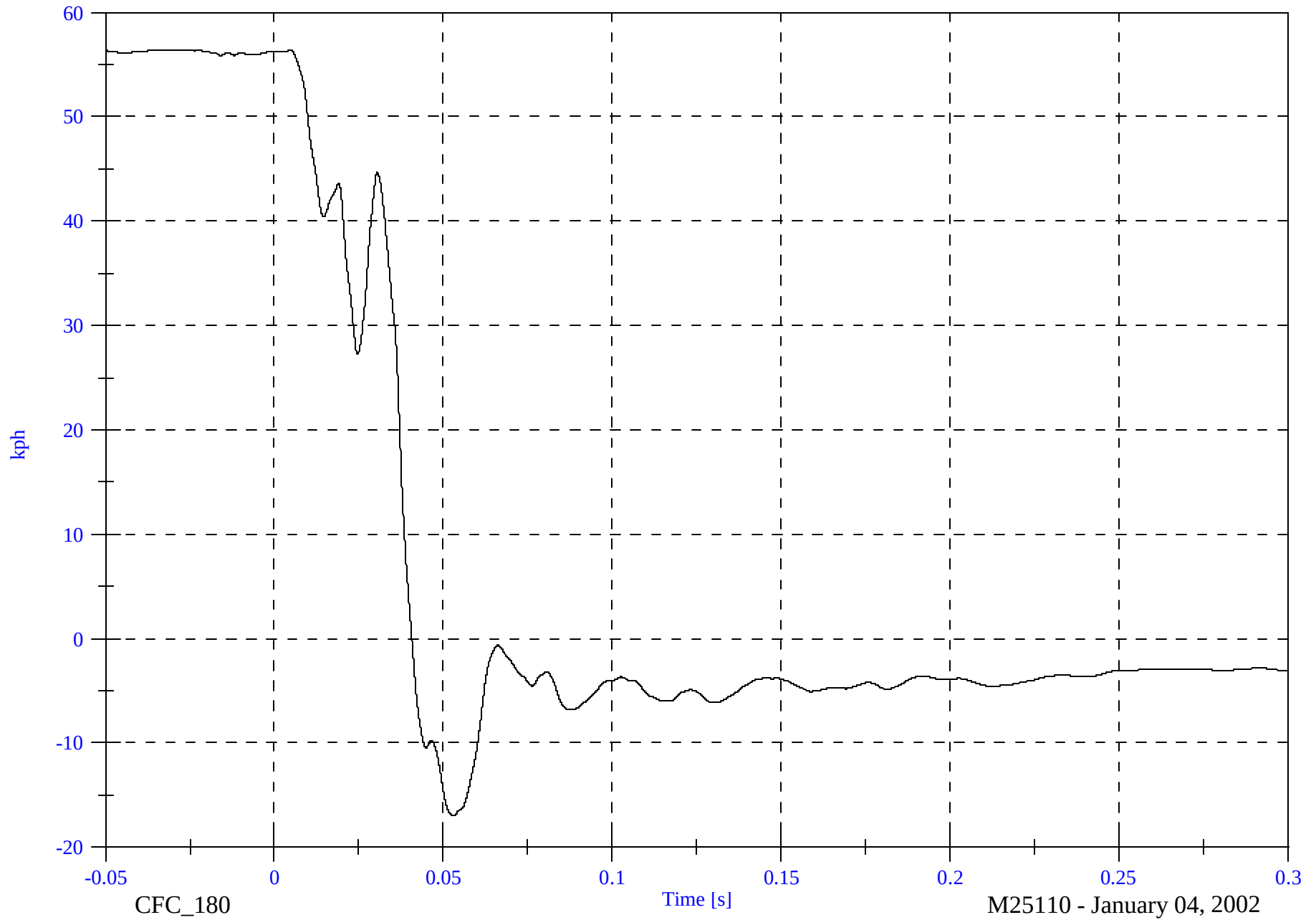


NCAP - 2002 Toyota Tundra Access Cab 4X4

Right Caliper #5x Velocity

Max: 56.4 [kph] at 0.005 [s]

Min: -17.0 [kph] at 0.053 [s]



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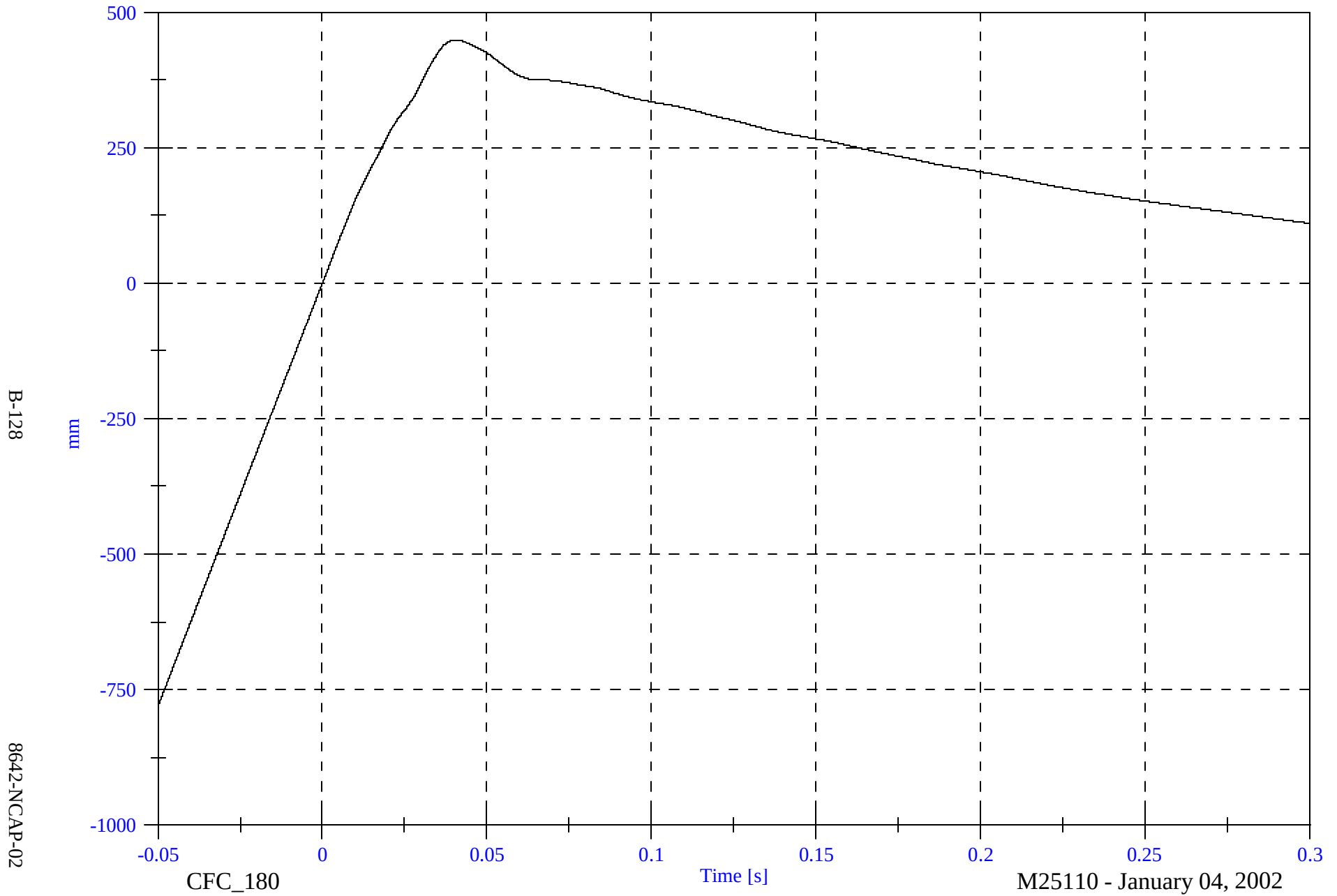
8642-NCAP-02

NCAP - 2002 Toyota Tundra Access Cab 4X4

Right Caliper #5x Displacement

Max: 448.1 [mm] at 0.041 [s]

Min: -780.4 [mm] at -0.050 [s]

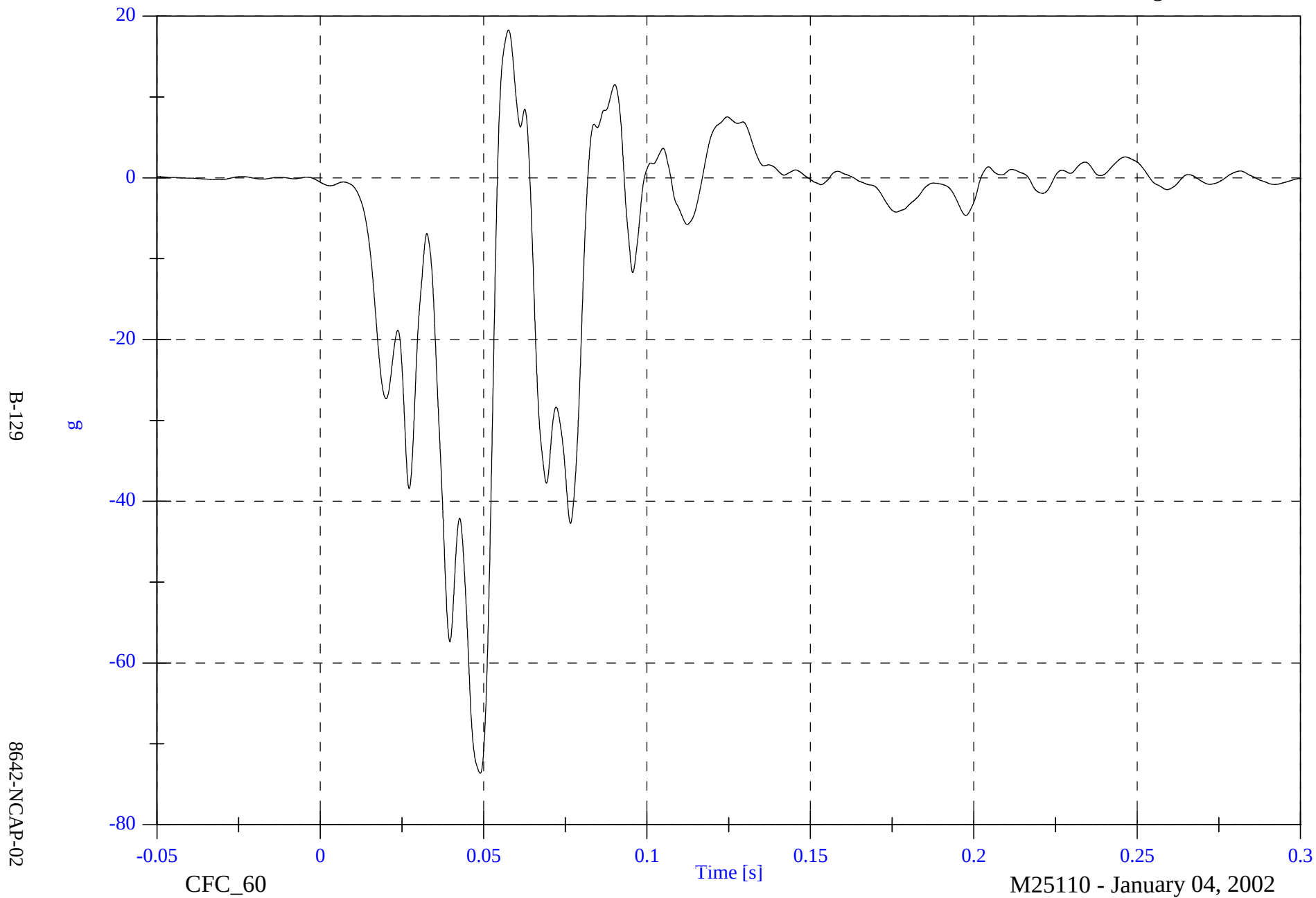


NCAP - 2002 Toyota Tundra Access Cab 4X4

Instrument Panel #6x

Max: 18.3 [g] at 0.058 [s]

Min: -73.6 [g] at 0.049 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

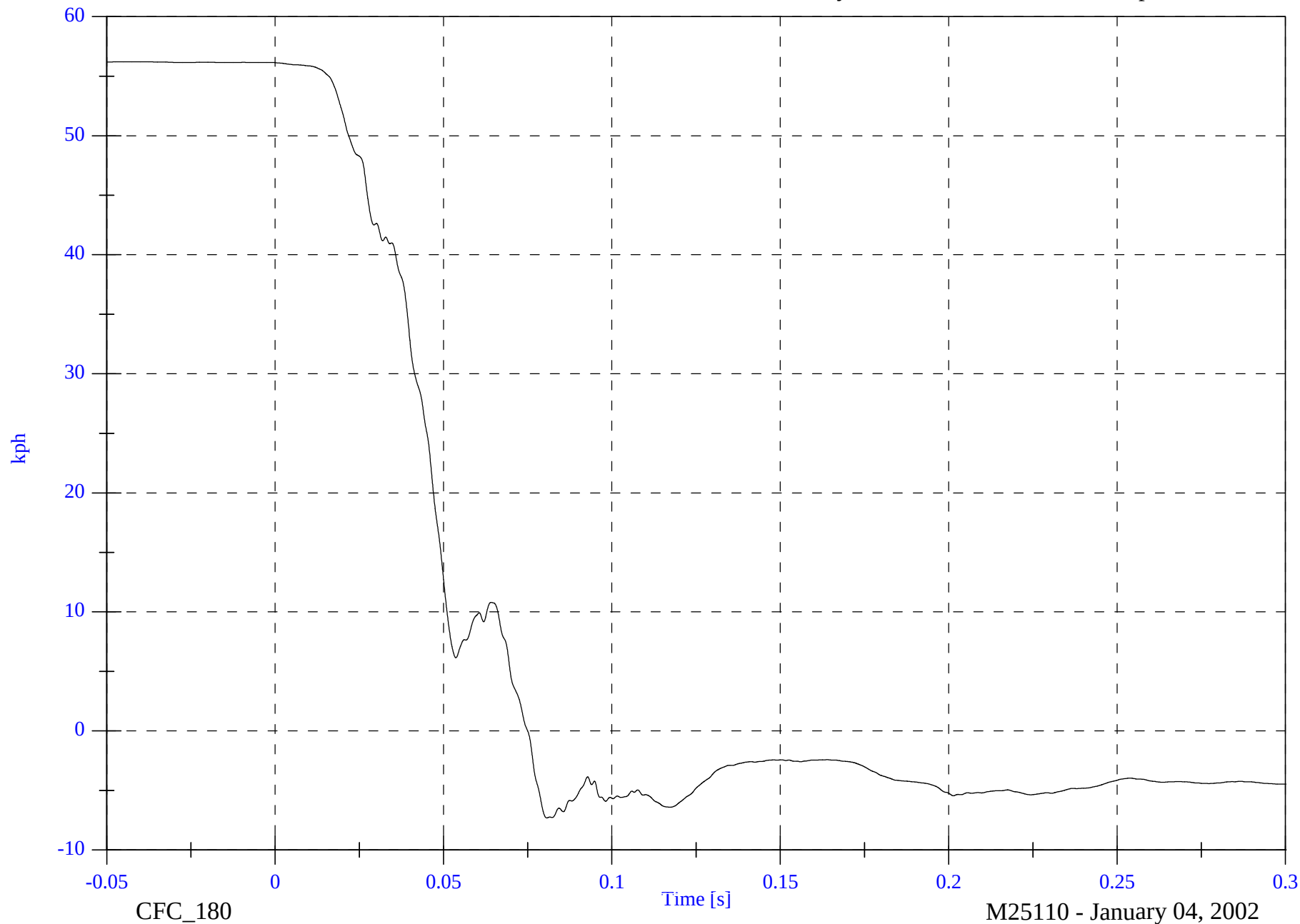
Instrument Panel #6x Velocity

Max: 56.2 [kph] at -0.042 [s]

Min: -7.3 [kph] at 0.081 [s]

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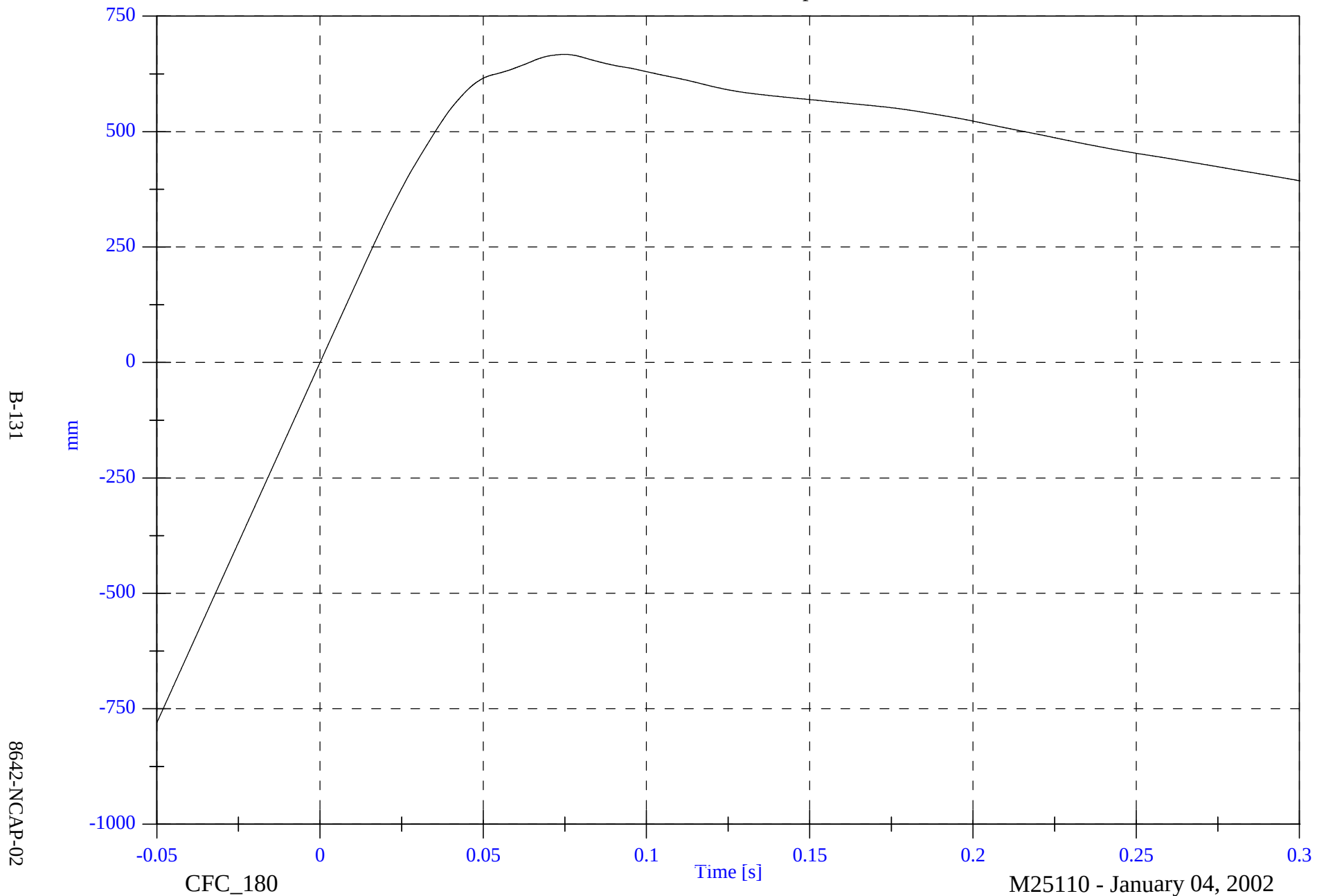


NCAP - 2002 Toyota Tundra Access Cab 4X4

Instrument Panel #6x Displacement

Max: 667.1 [mm] at 0.075 [s]

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



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CFC_180

Time [s]

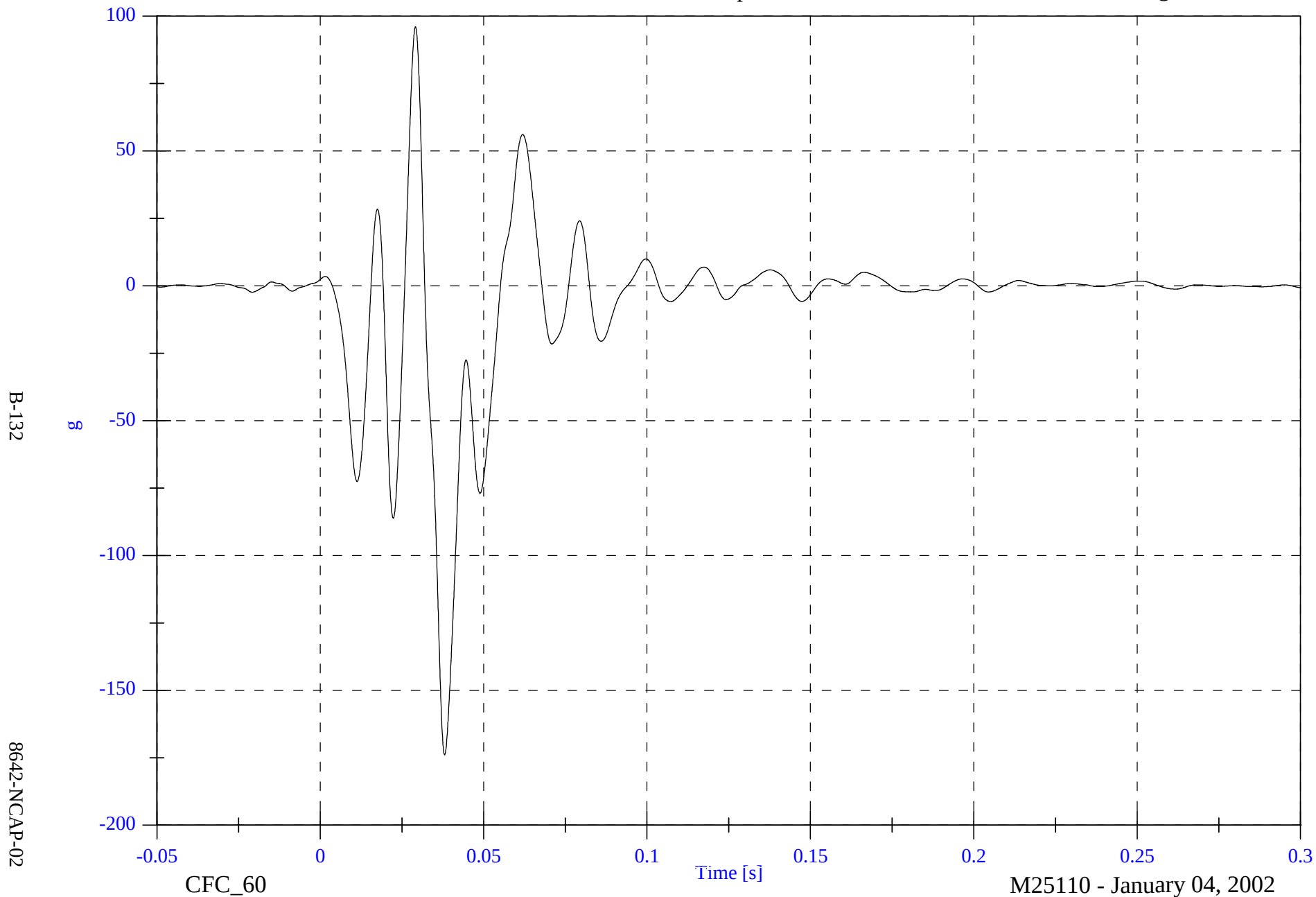
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Left Caliper #7x

Max: 96.1 [g] at 0.029 [s]

Min: -174.0 [g] at 0.038 [s]

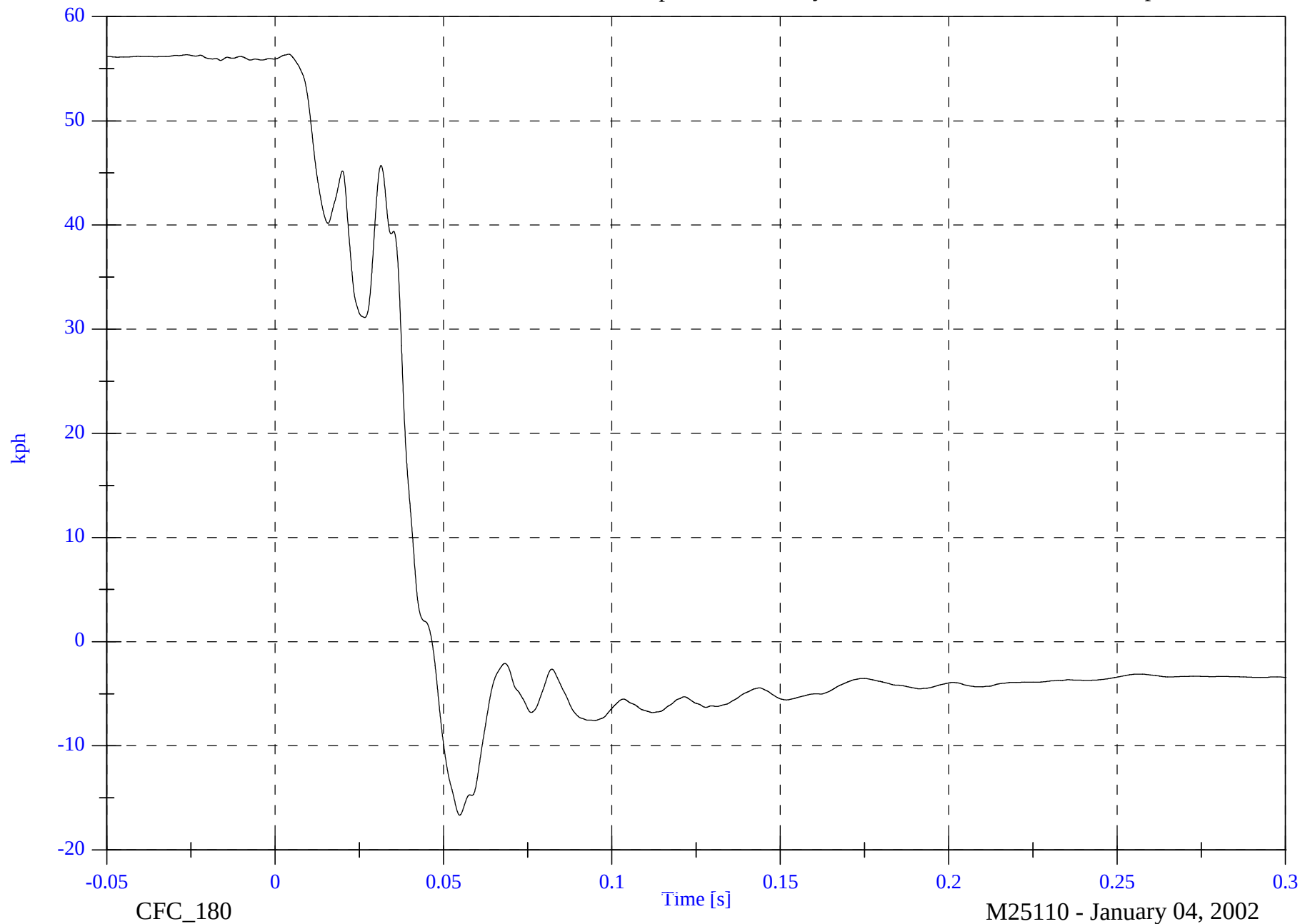


NCAP - 2002 Toyota Tundra Access Cab 4X4

Left Caliper #7x Velocity

Max: 56.4 [kph] at 0.004 [s]

Min: -16.7 [kph] at 0.055 [s]



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CFC_180

Time [s]

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NCAP - 2002 Toyota Tundra Access Cab 4X4

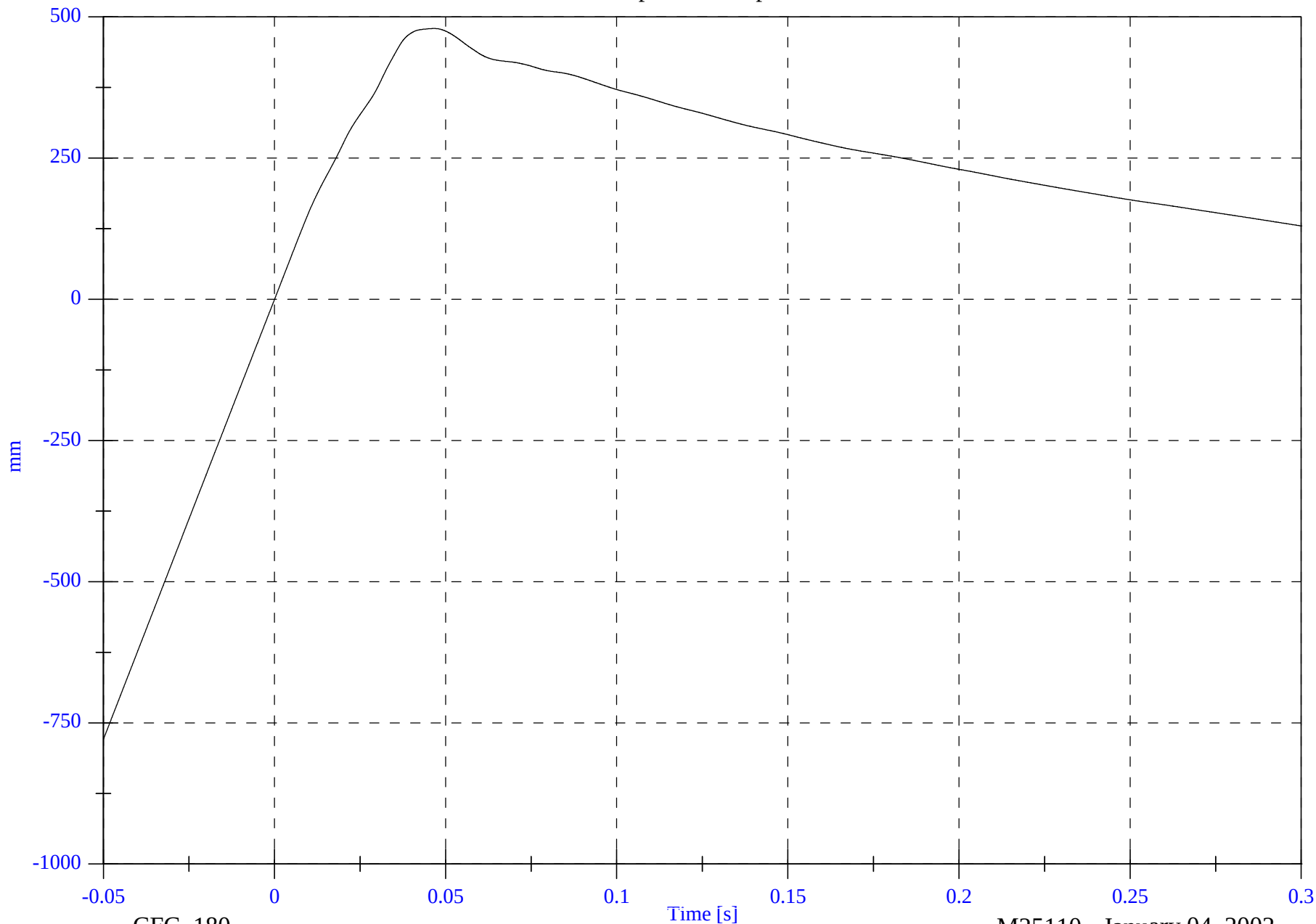
Left Caliper #7x Displacement

Max: 479.5 [mm] at 0.047 [s]

Min: -779.2 [mm] at -0.050 [s]

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CFC_180

M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

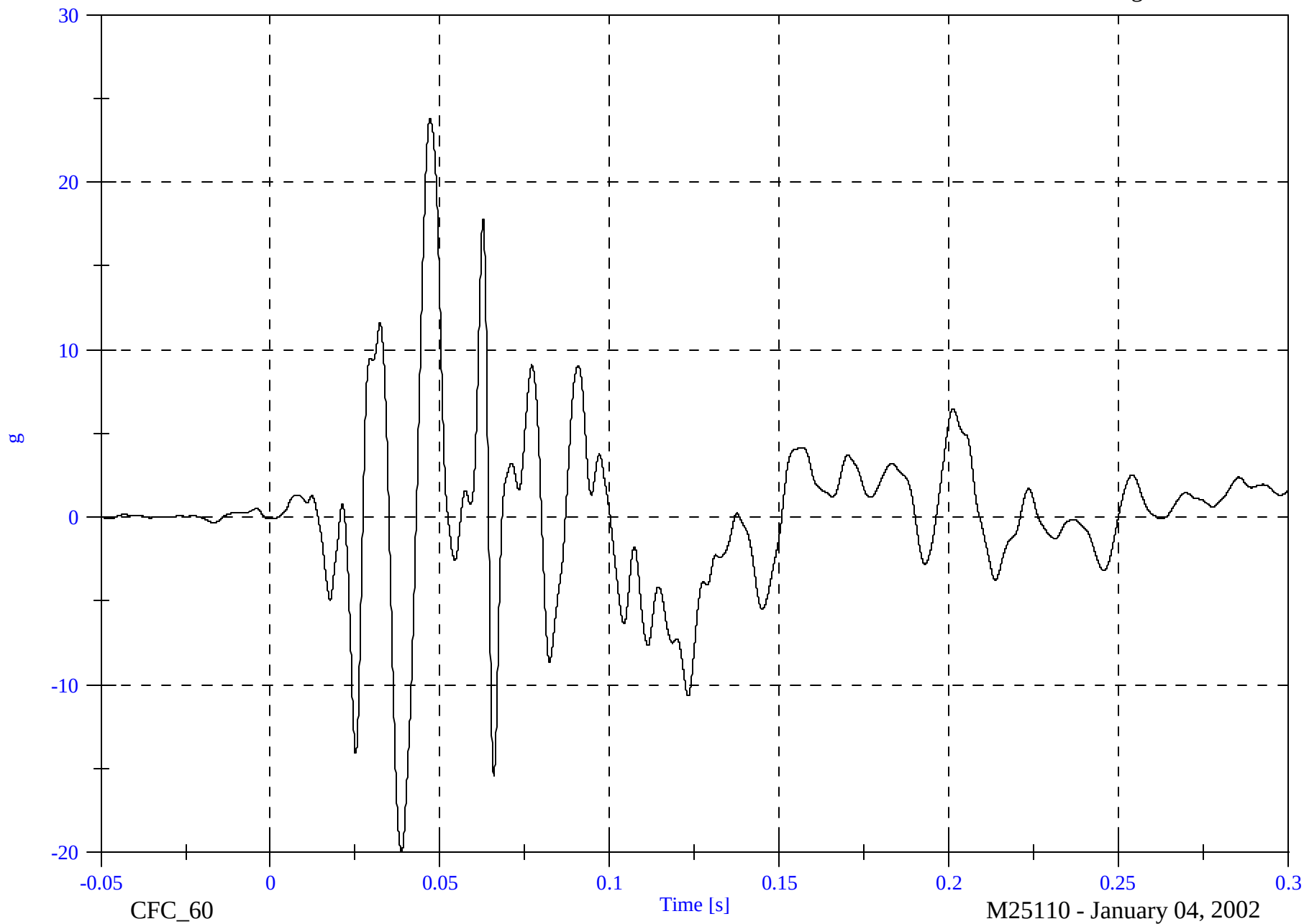
Left Rear #8z

Max: 23.8 [g] at 0.047 [s]

Min: -20.0 [g] at 0.039 [s]

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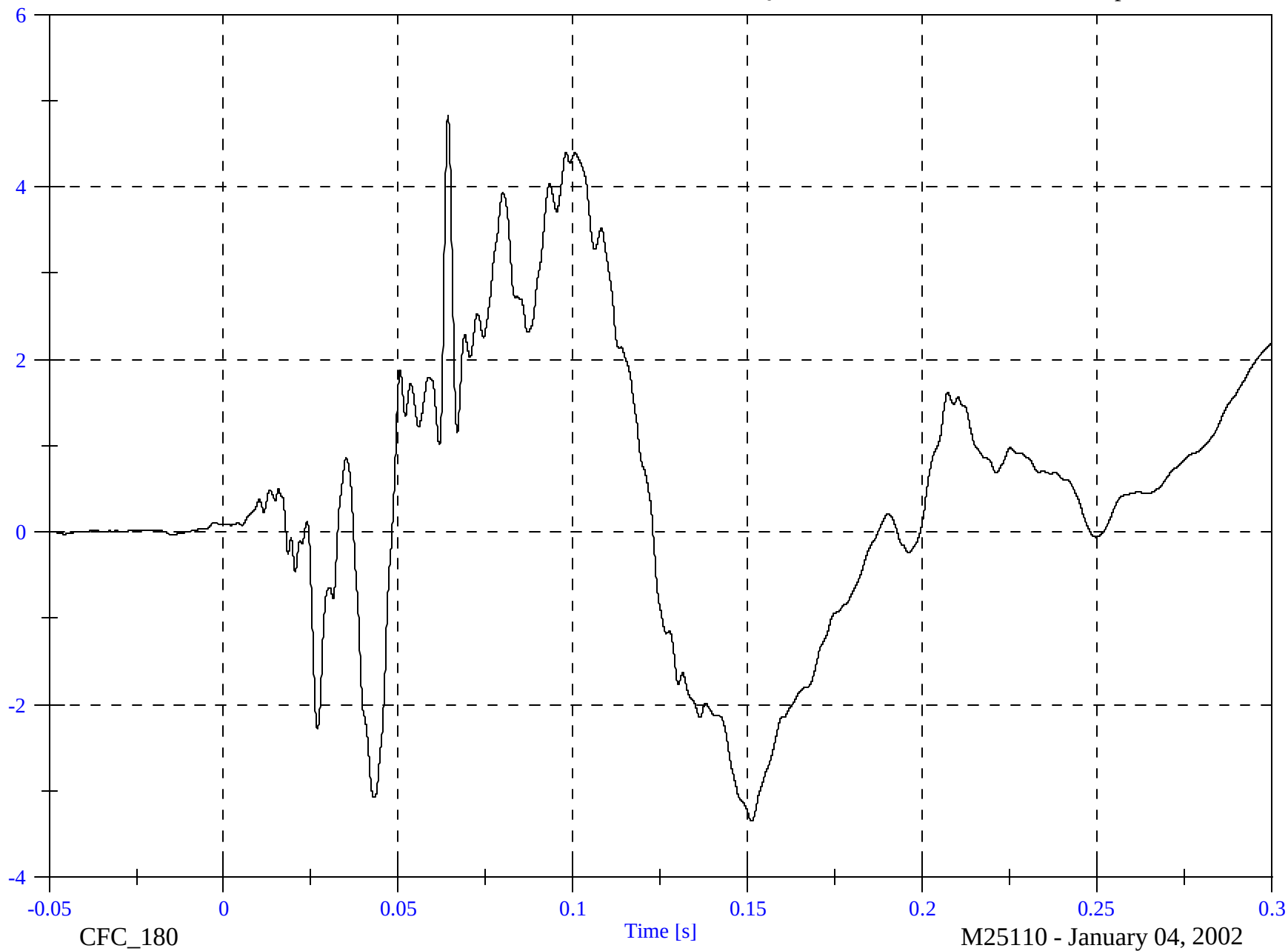


NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 4.8 [kph] at 0.064 [s]

Left Rear #8z Velocity

Min: -3.3 [kph] at 0.151 [s]



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8642-NCAP-02

CFC_180

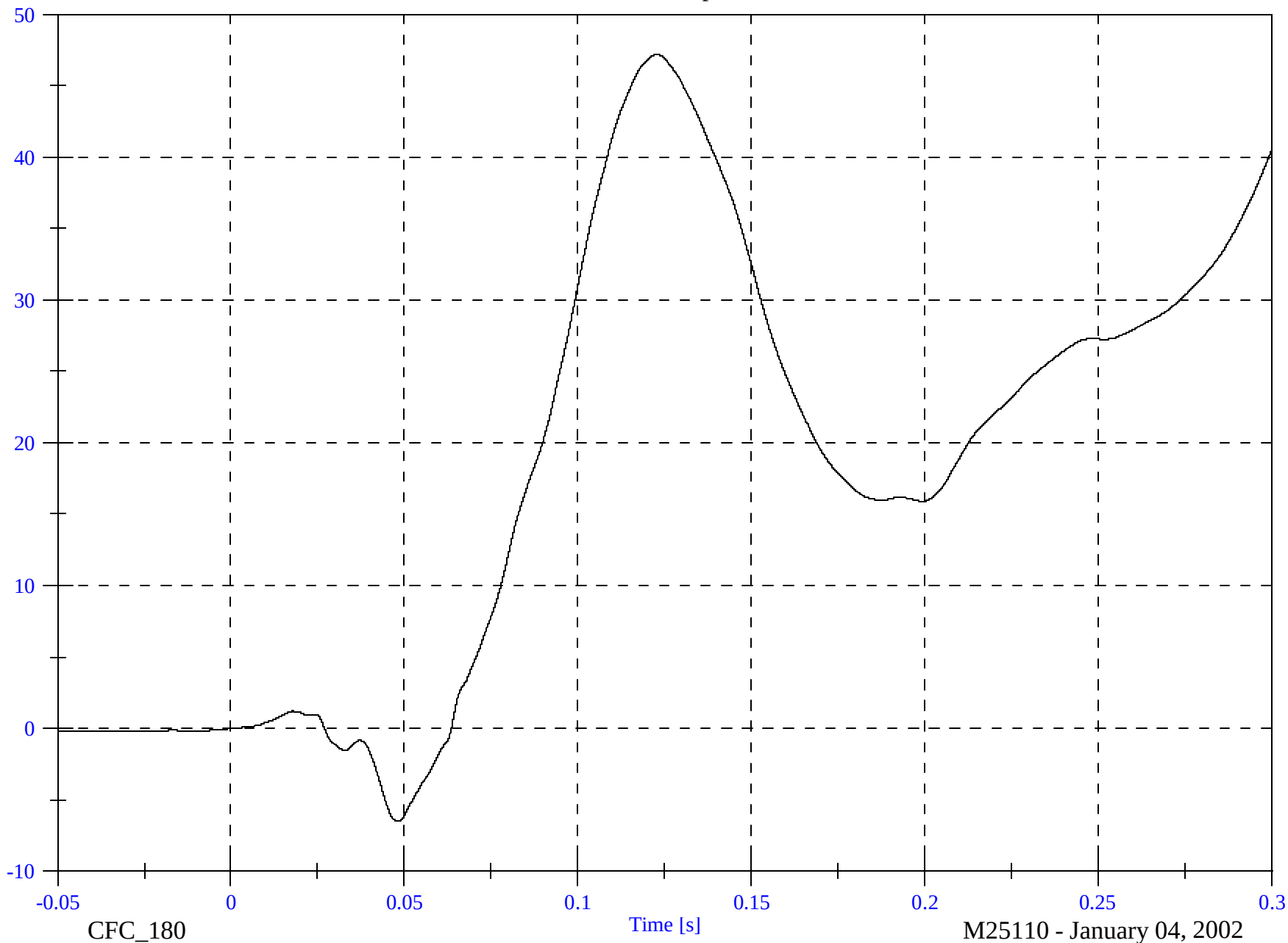
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Left Rear #8z Displacement

Max: 47.2 [mm] at 0.123 [s]

Min: -6.5 [mm] at 0.048 [s]



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8642-NCAP-02

CFC_180

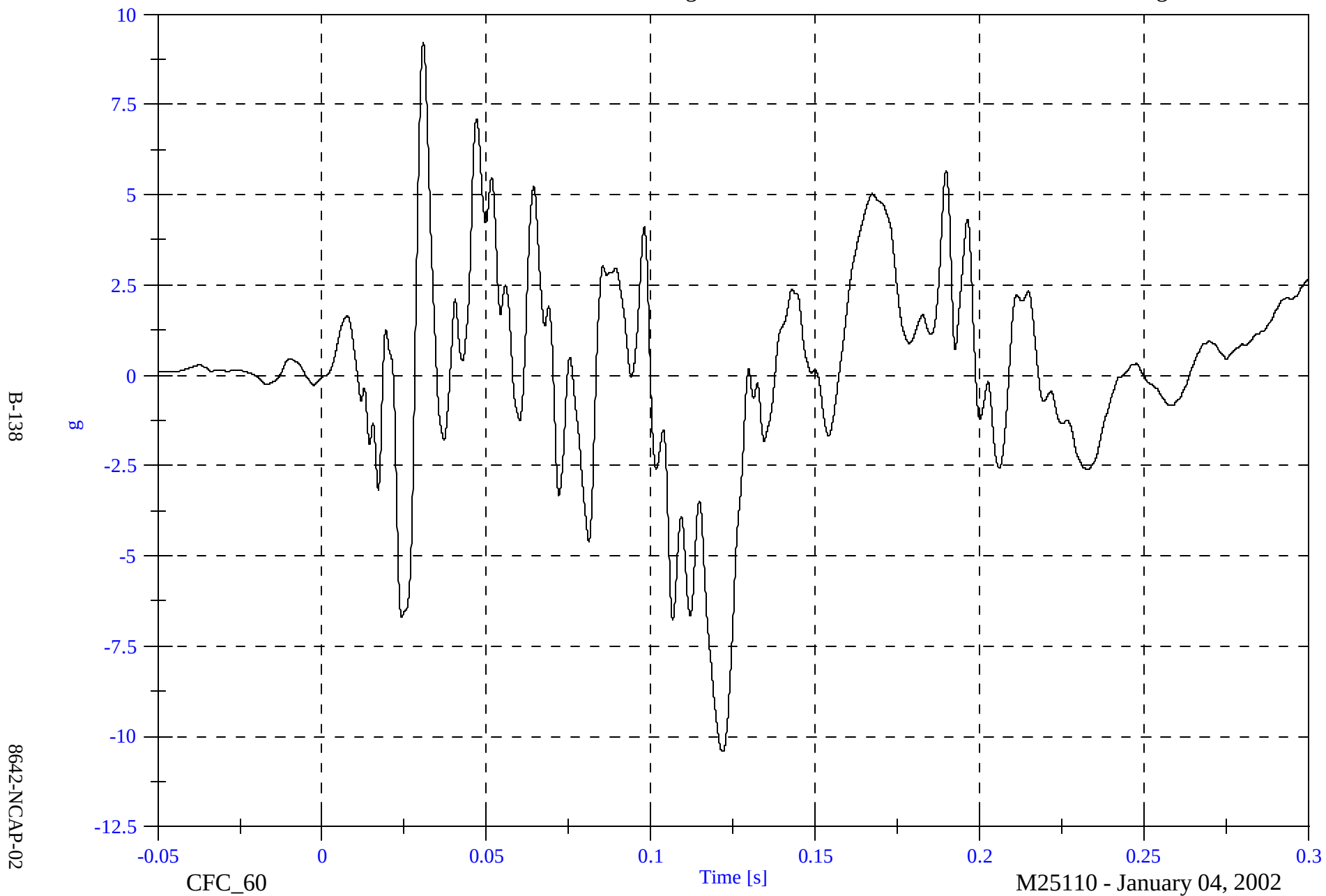
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Right Rear #9z

Max: 9.2 [g] at 0.031 [s]

Min: -10.4 [g] at 0.122 [s]



NCAP - 2002 Toyota Tundra Access Cab 4X4

Max: 3.3 [kph] at 0.100 [s]

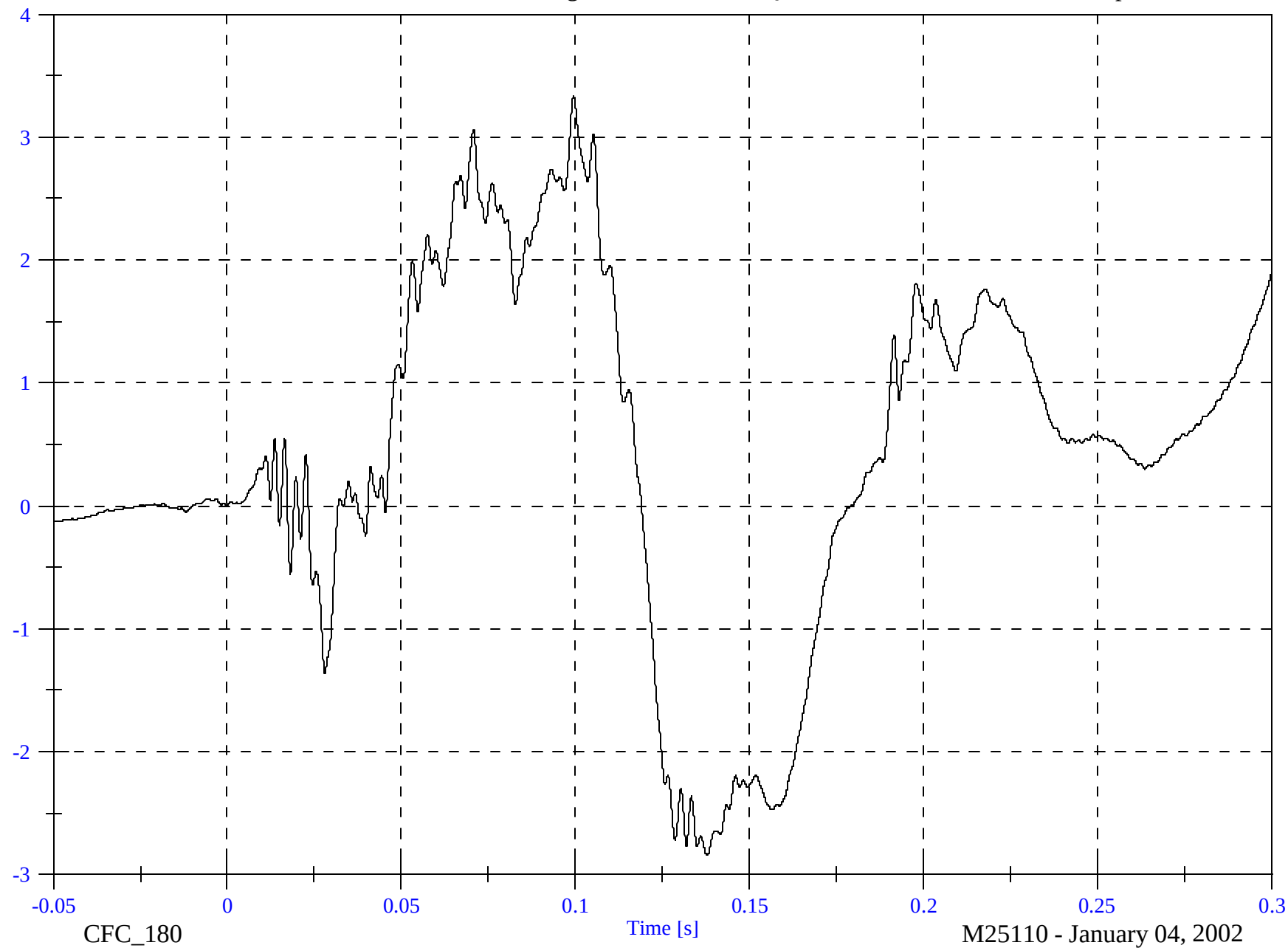
Right Rear #9z Velocity

Min: -2.8 [kph] at 0.138 [s]

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kph

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CFC_180

Time [s]

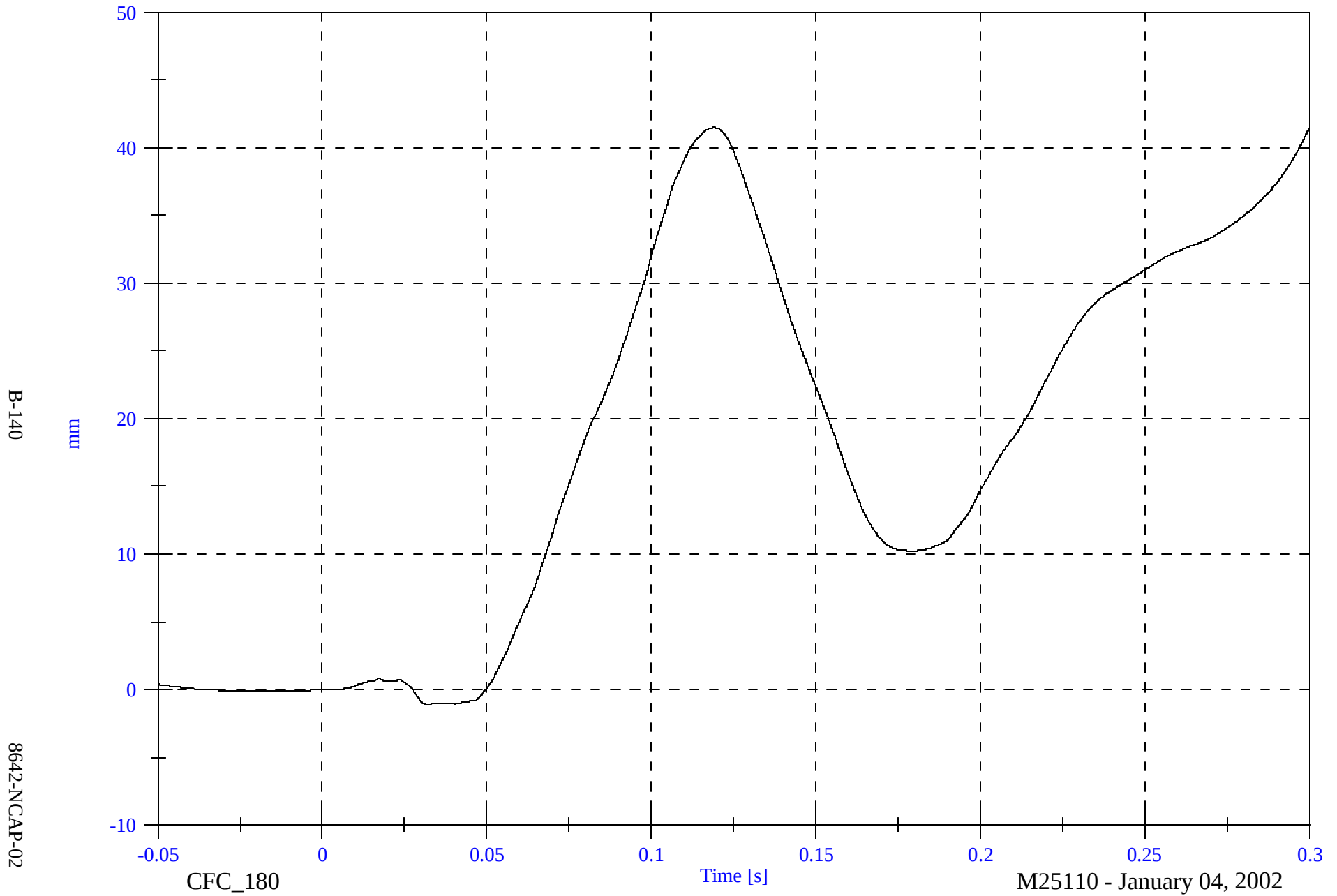
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Right Rear #9z Displacement

Max: 41.5 [mm] at 0.119 [s]

Min: -1.1 [mm] at 0.032 [s]

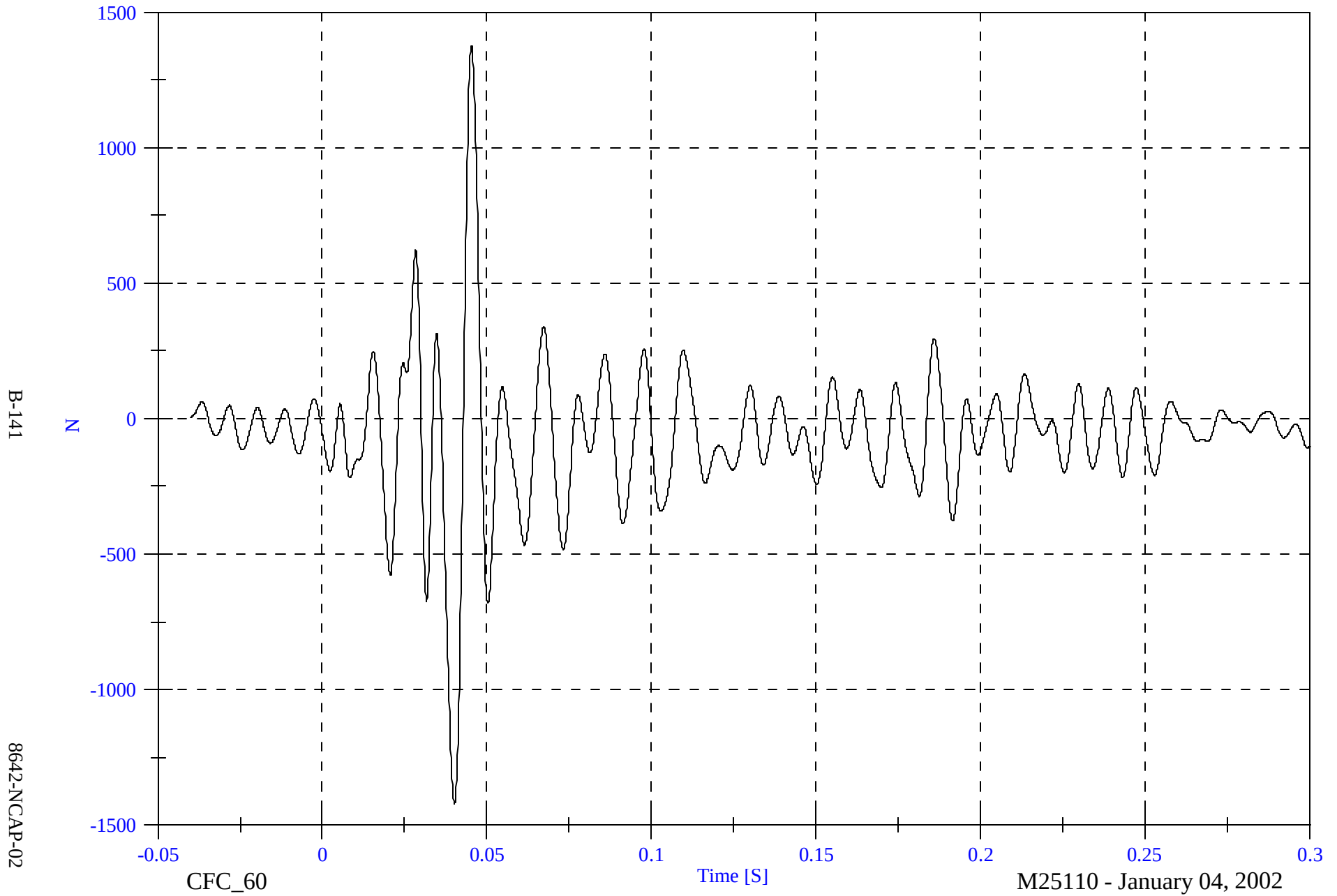


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell A1 Fx

Max: 1376.5 [N] at 0.045 [S]

Min: -1418.5 [N] at 0.040 [S]

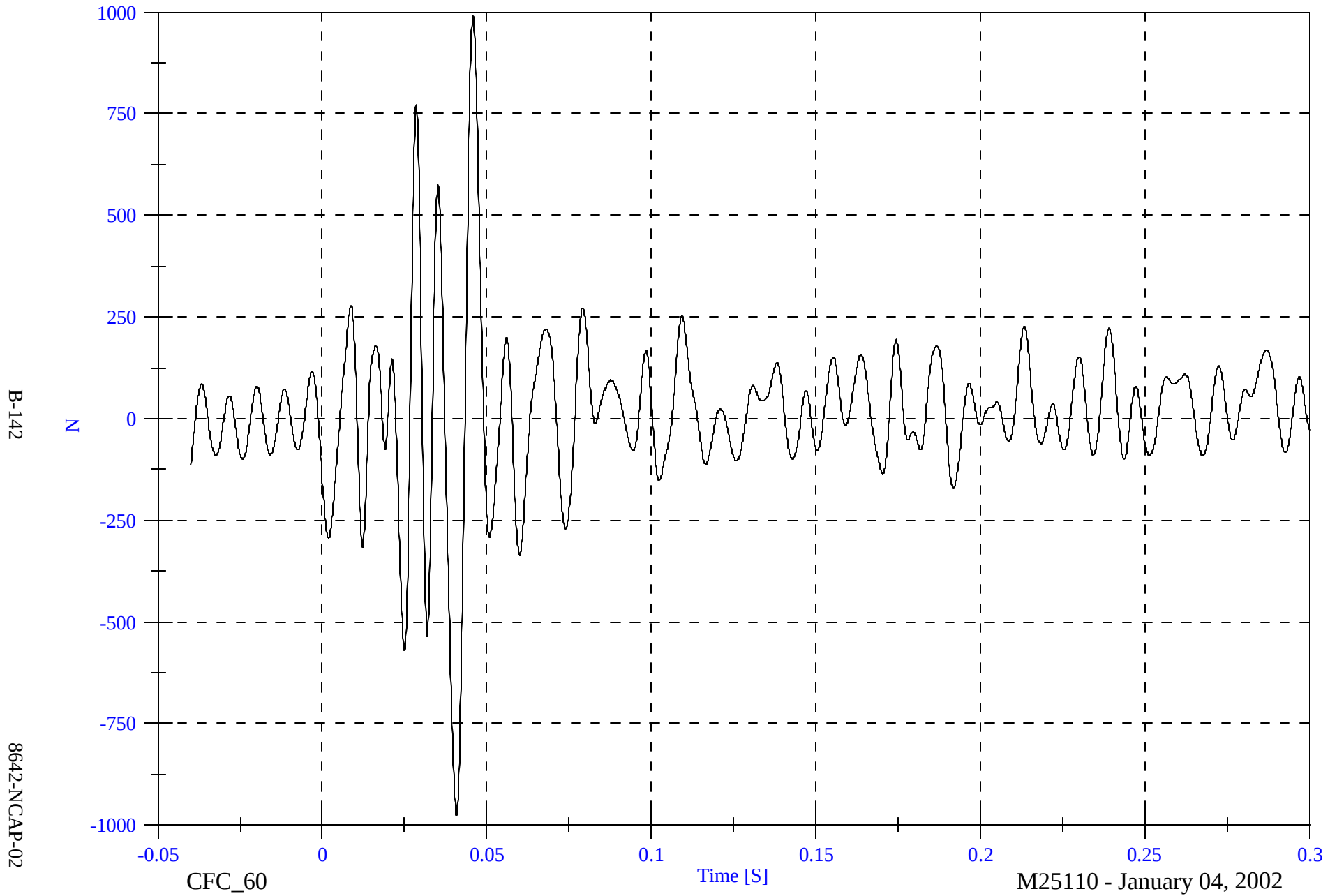


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell A2 Fx

Max: 991.4 [N] at 0.046 [S]

Min: -974.0 [N] at 0.041 [S]

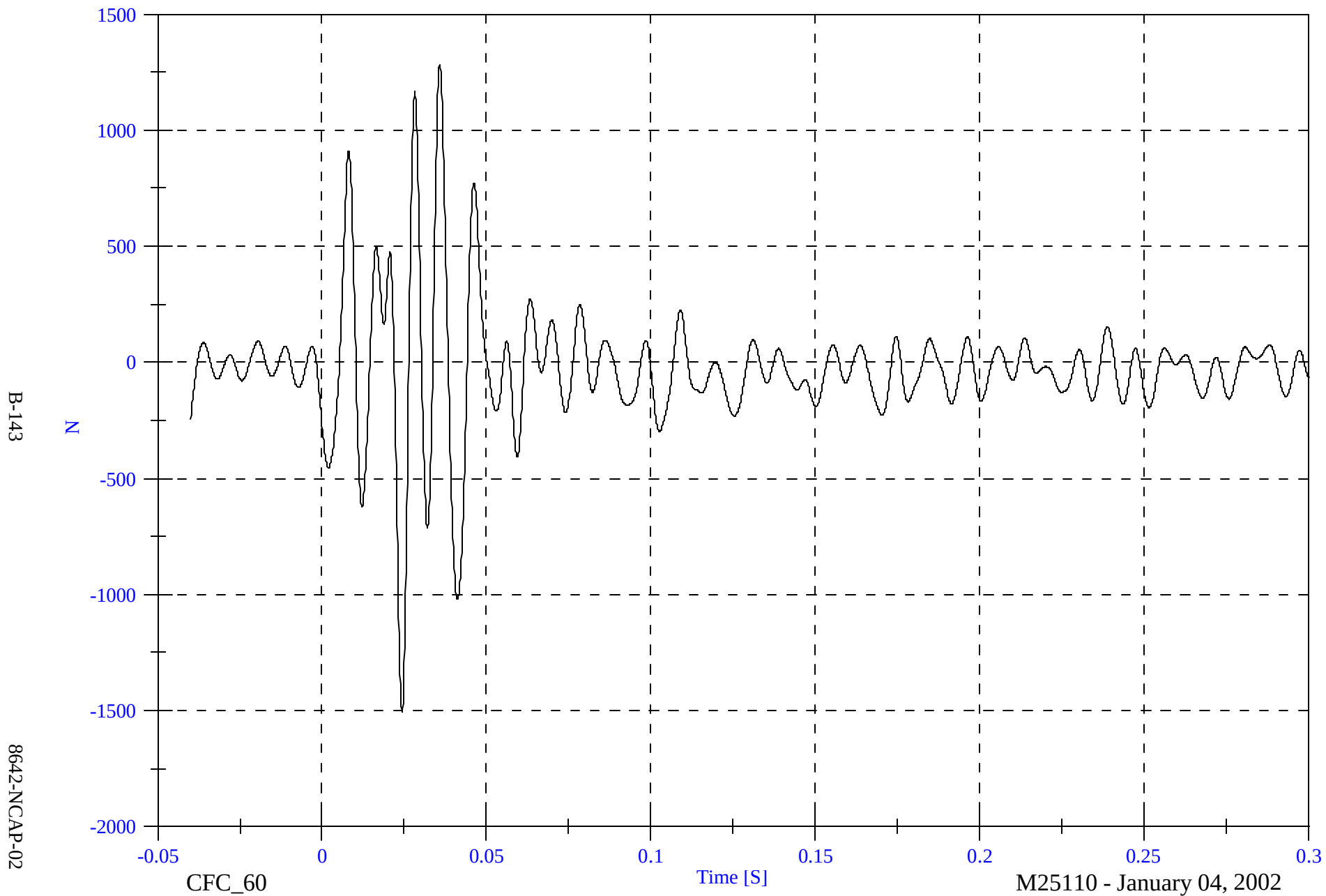


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell A3 Fx

Max: 1281.7 [N] at 0.036 [S]

Min: -1505.9 [N] at 0.024 [S]



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CFC_60

Time [S]

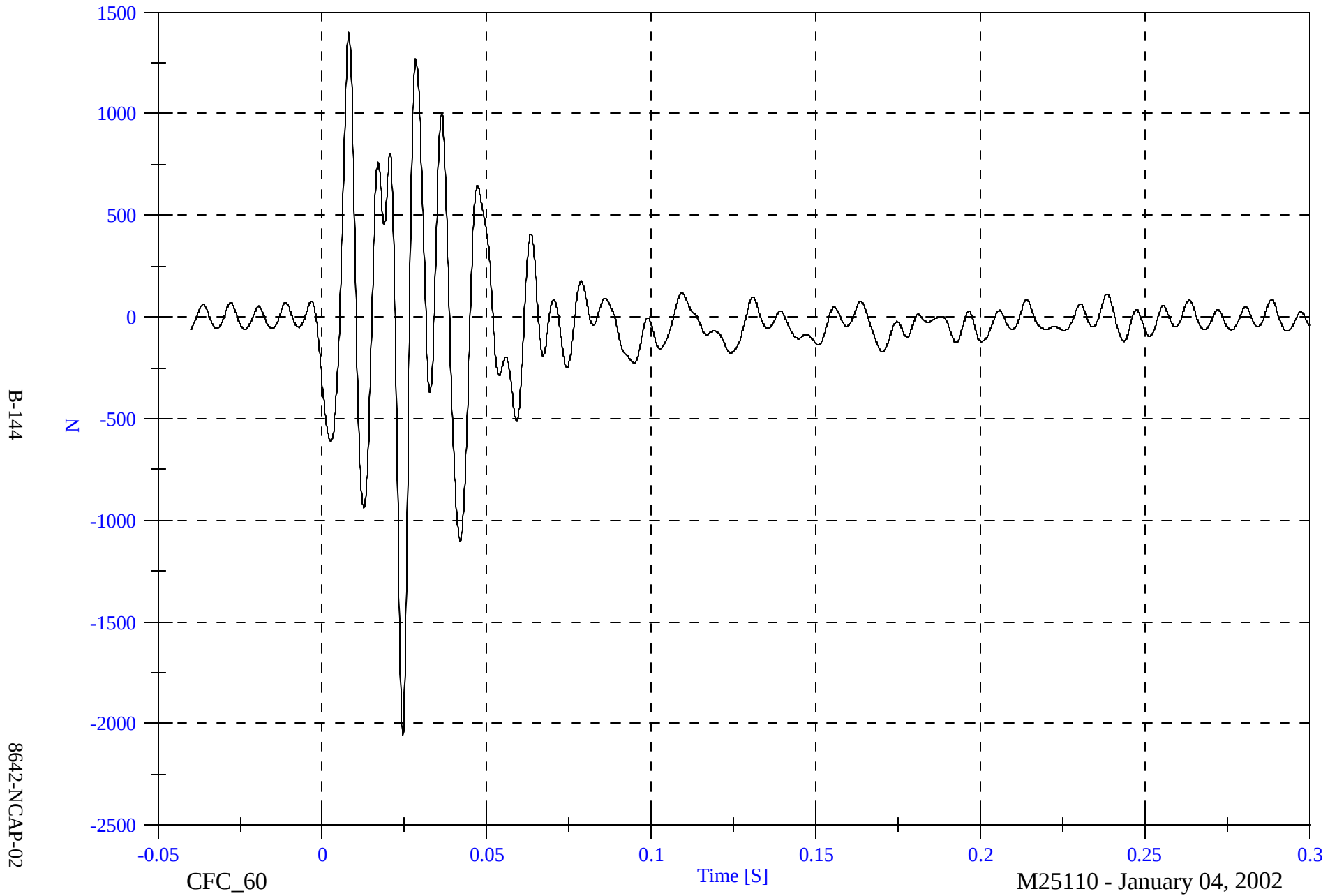
M25110 - January 04, 2002

NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell A4 Fx

Max: 1397.6 [N] at 0.008 [S]

Min: -2060.8 [N] at 0.024 [S]

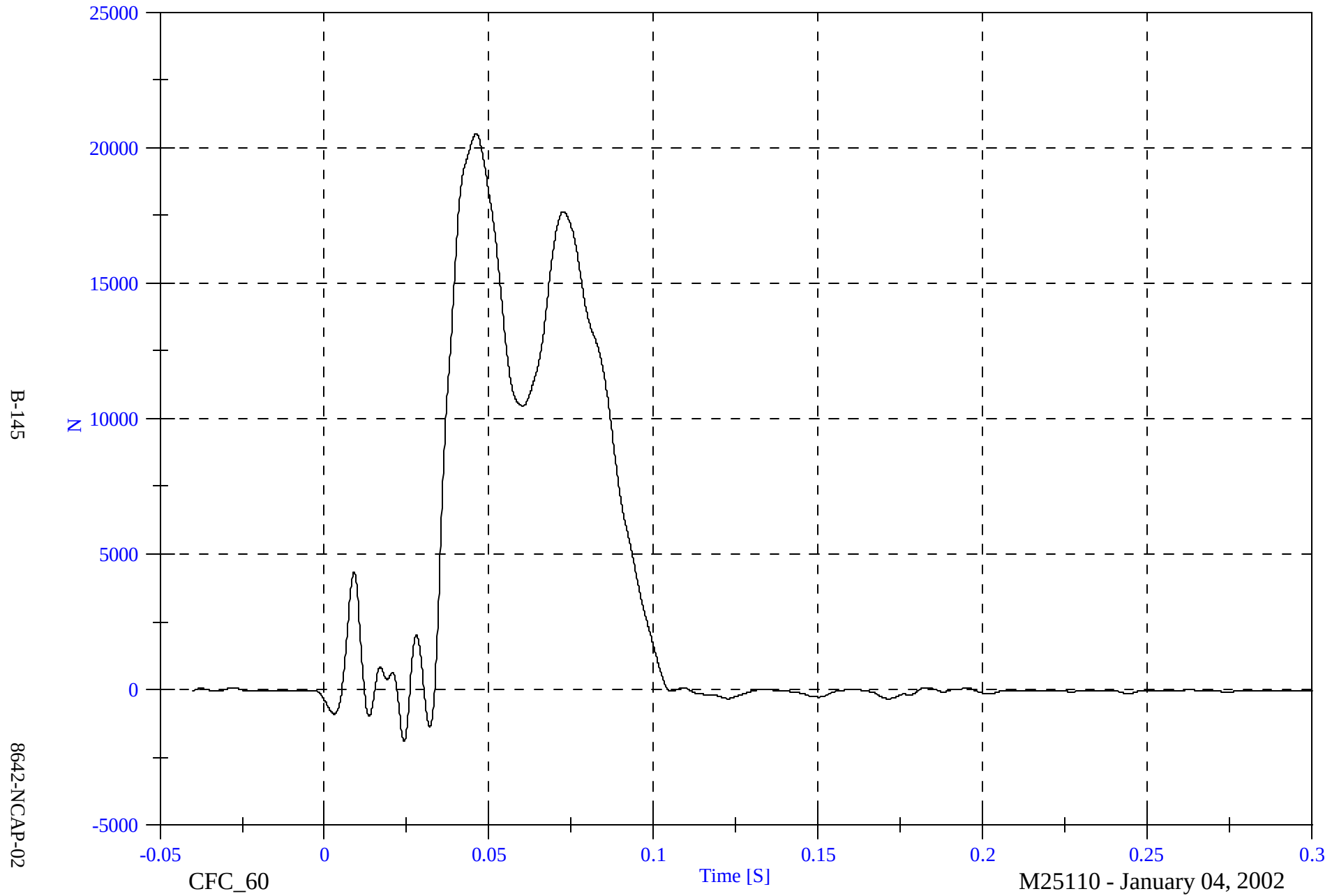


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell A5 Fx

Max: 20519.2 [N] at 0.046 [S]

Min: -1911.9 [N] at 0.024 [S]

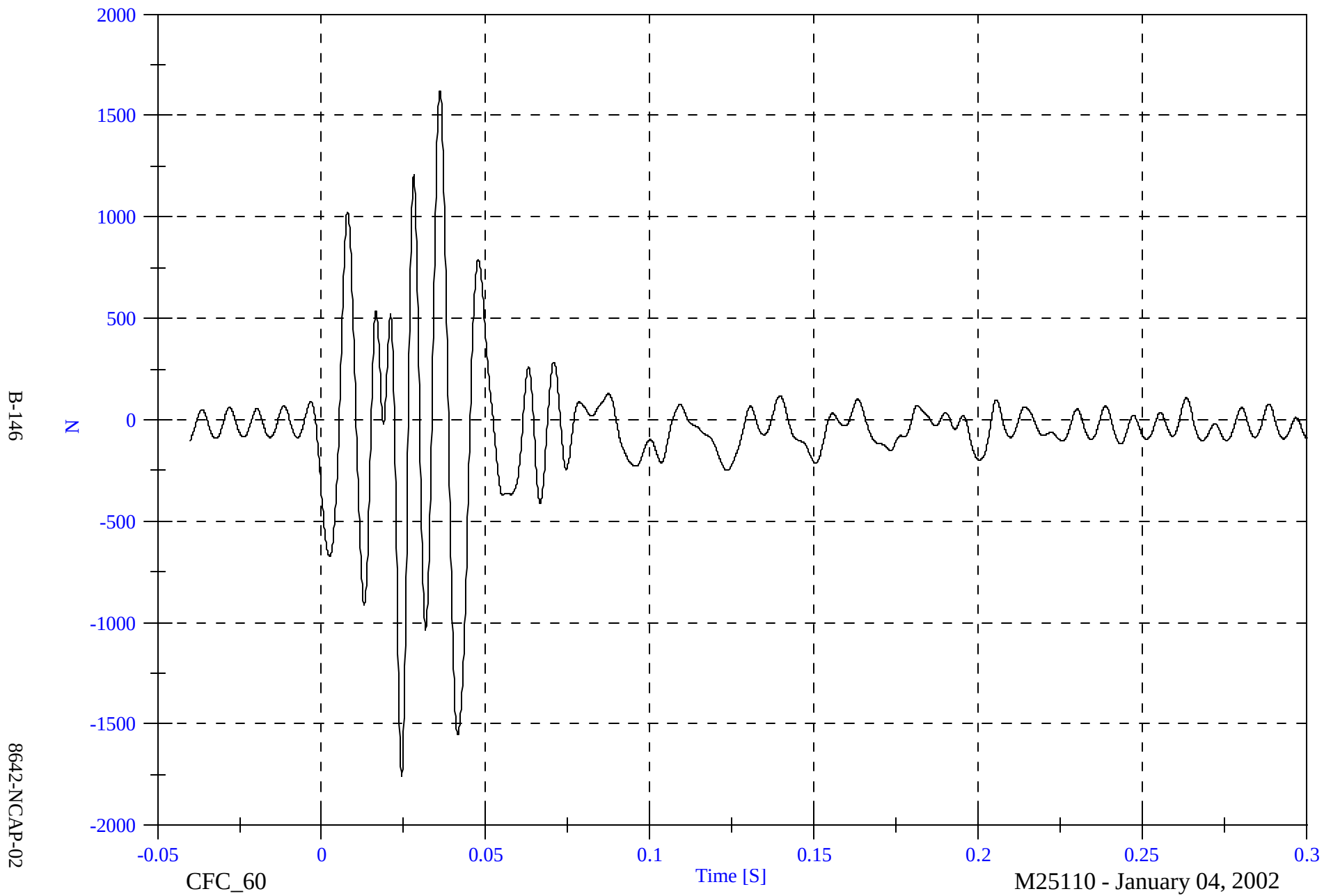


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell A6 Fx

Max: 1619.9 [N] at 0.036 [S]

Min: -1754.1 [N] at 0.024 [S]

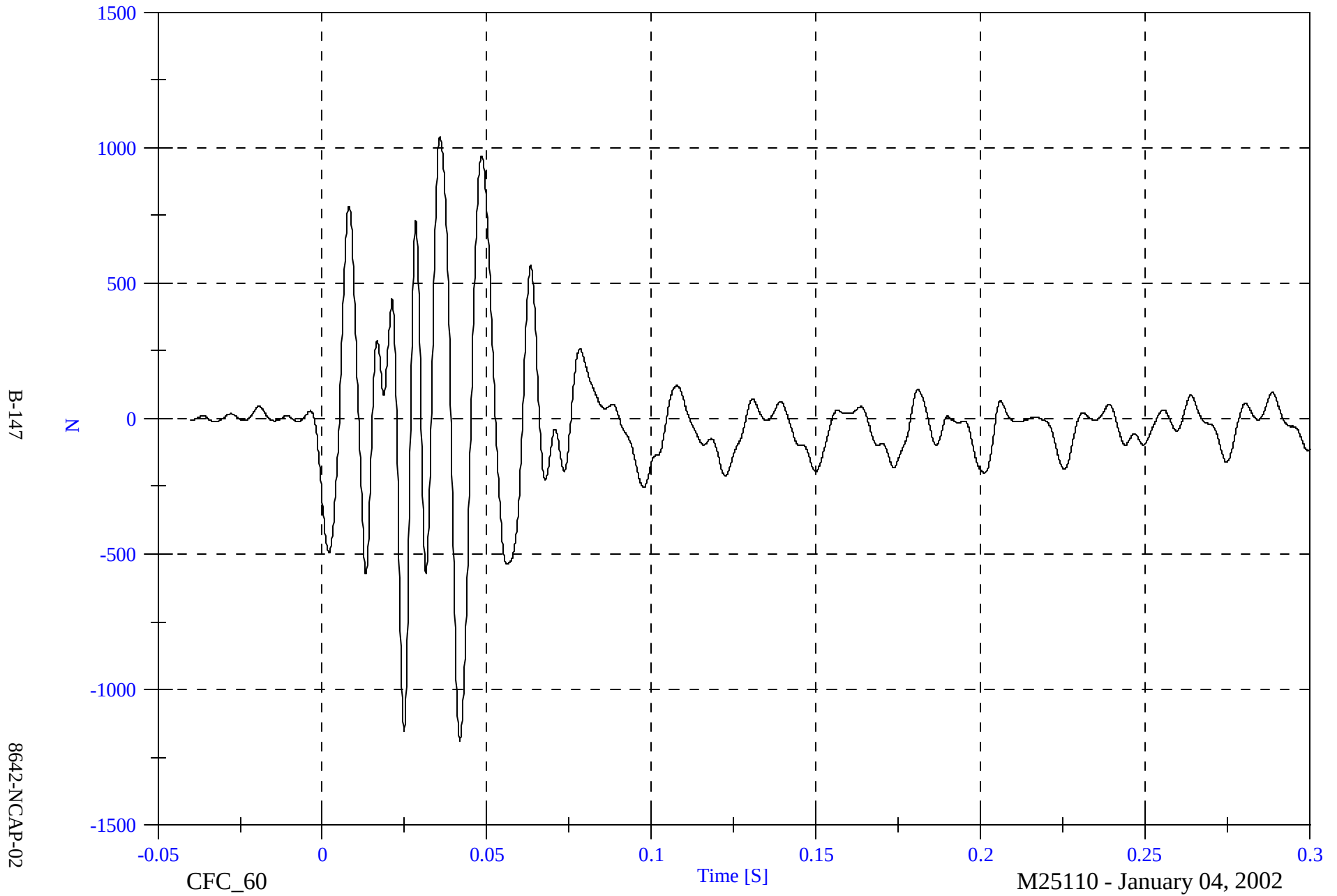


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell A7 Fx

Max: 1037.6 [N] at 0.036 [S]

Min: -1187.3 [N] at 0.042 [S]

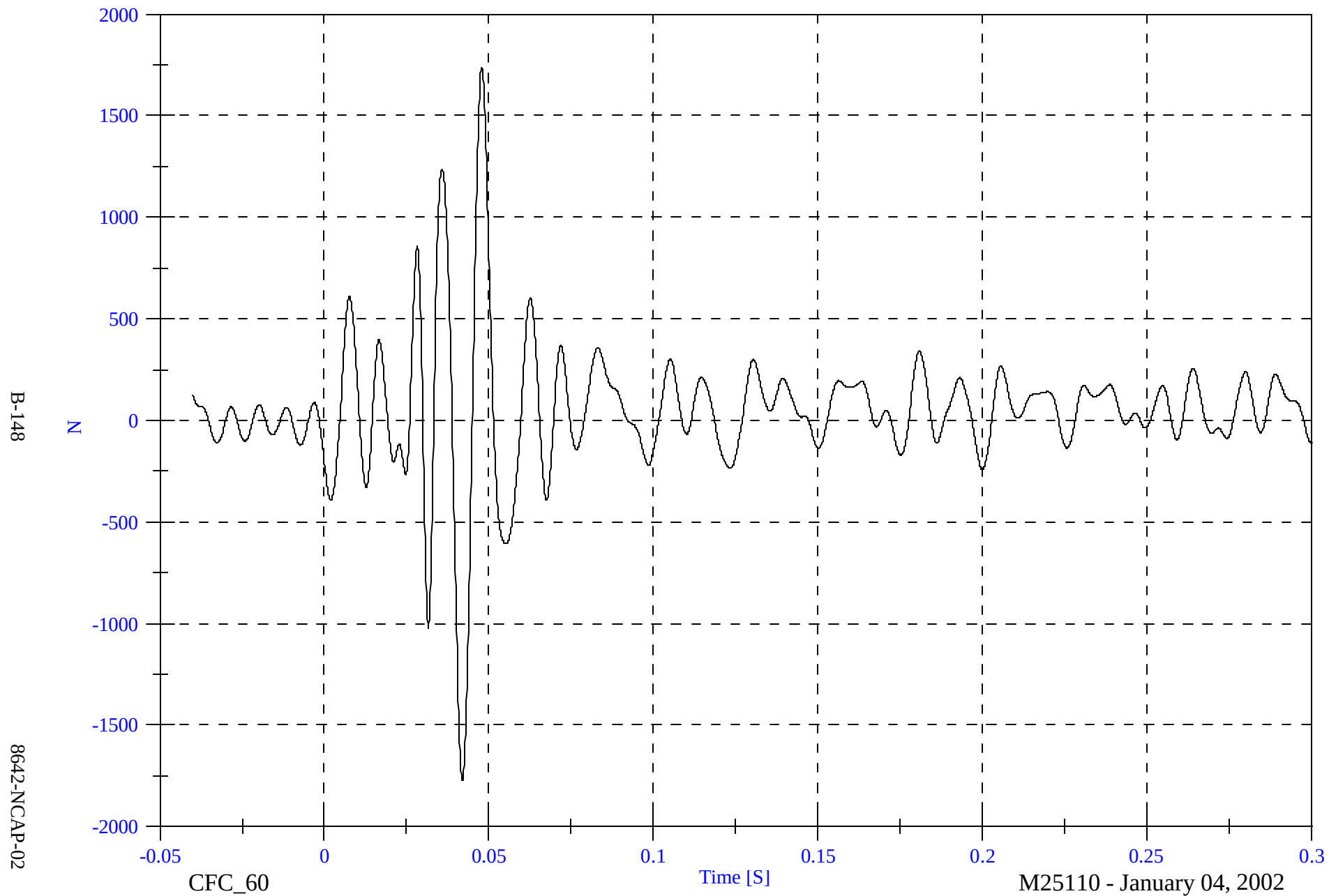


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell A8 Fx

Max: 1739.4 [N] at 0.048 [S]

Min: -1773.8 [N] at 0.042 [S]

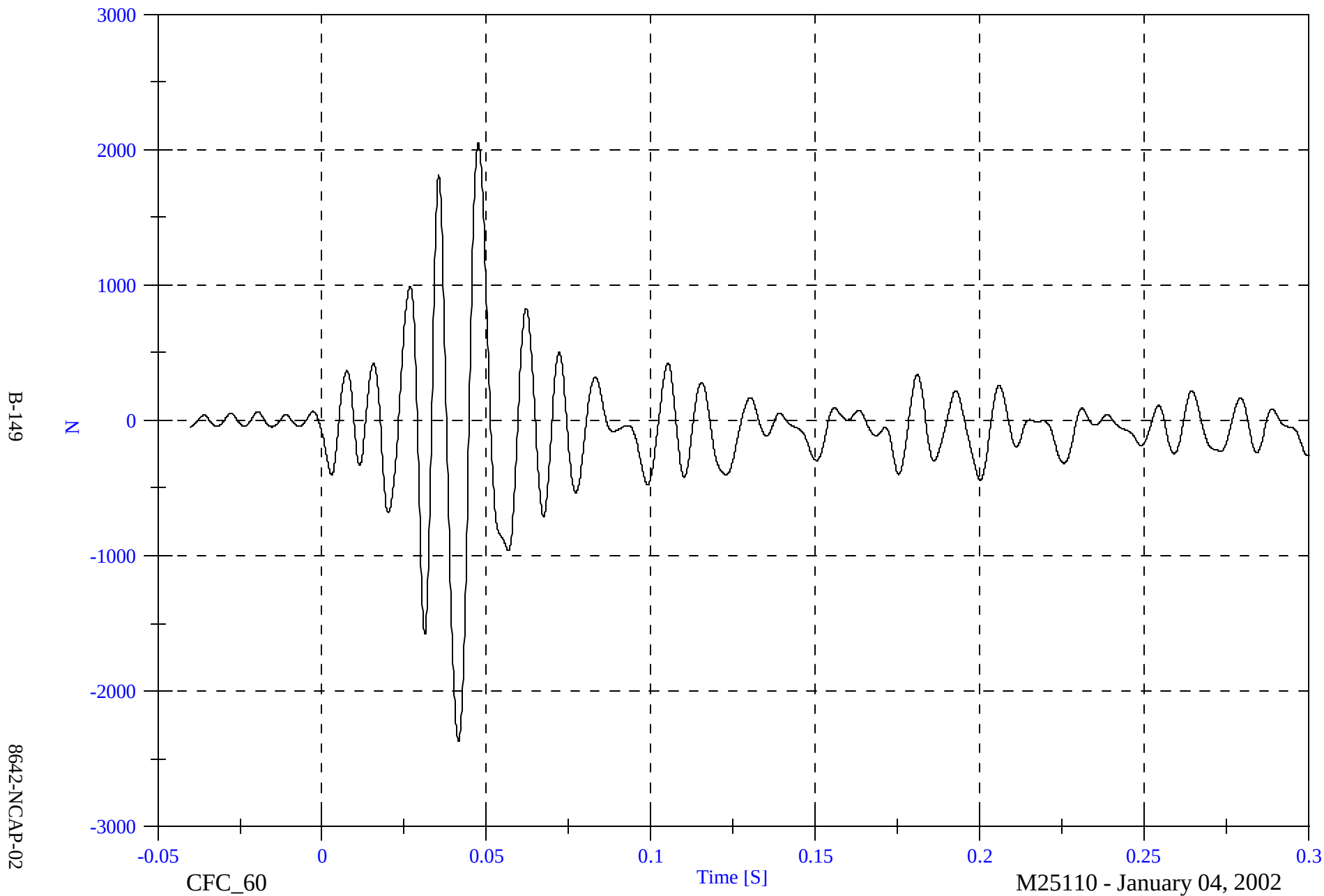


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell A9 Fx

Max: 2048.8 [N] at 0.047 [S]

Min: -2367.0 [N] at 0.041 [S]

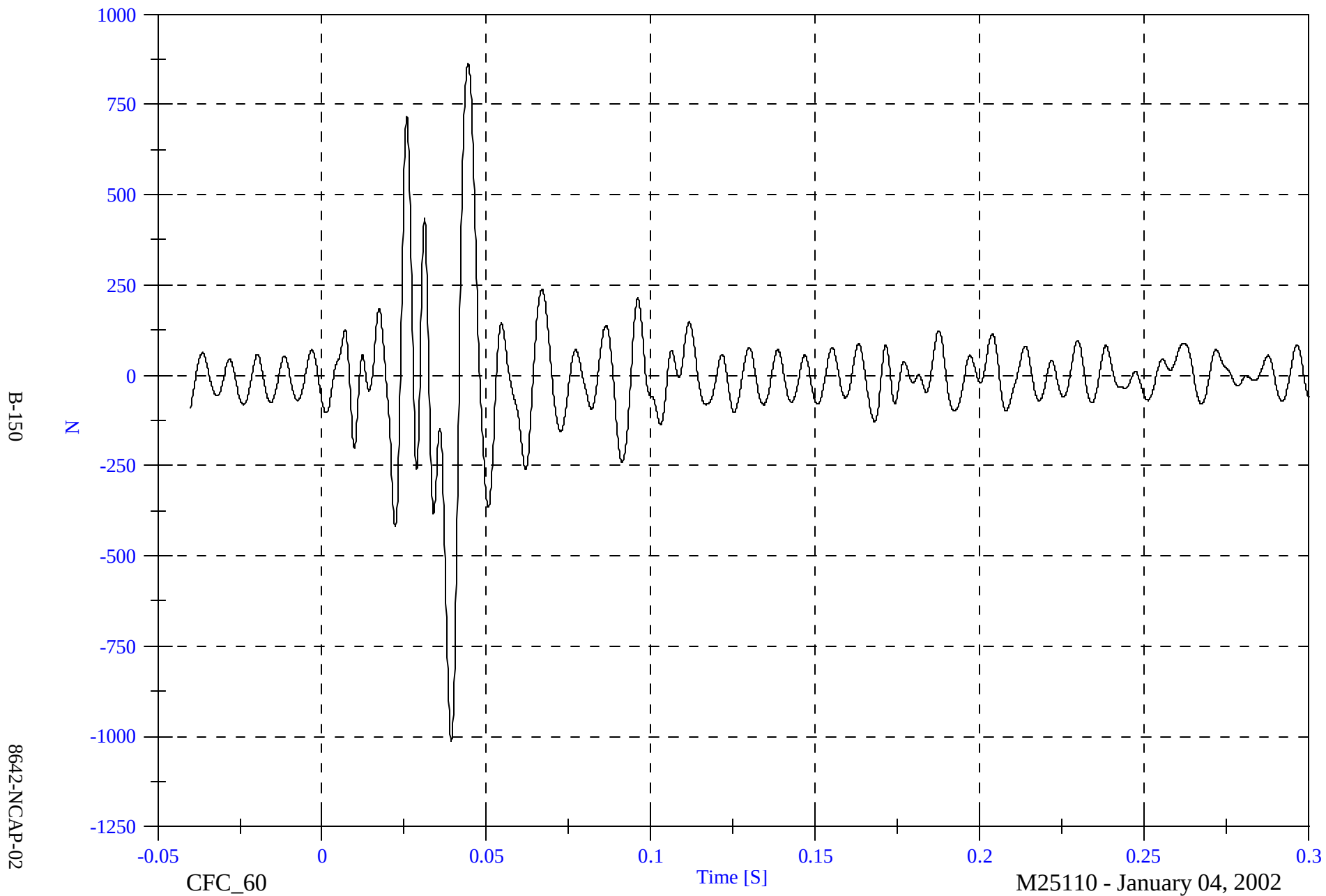


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell B1 Fx

Max: 864.1 [N] at 0.044 [S]

Min: -1012.3 [N] at 0.039 [S]

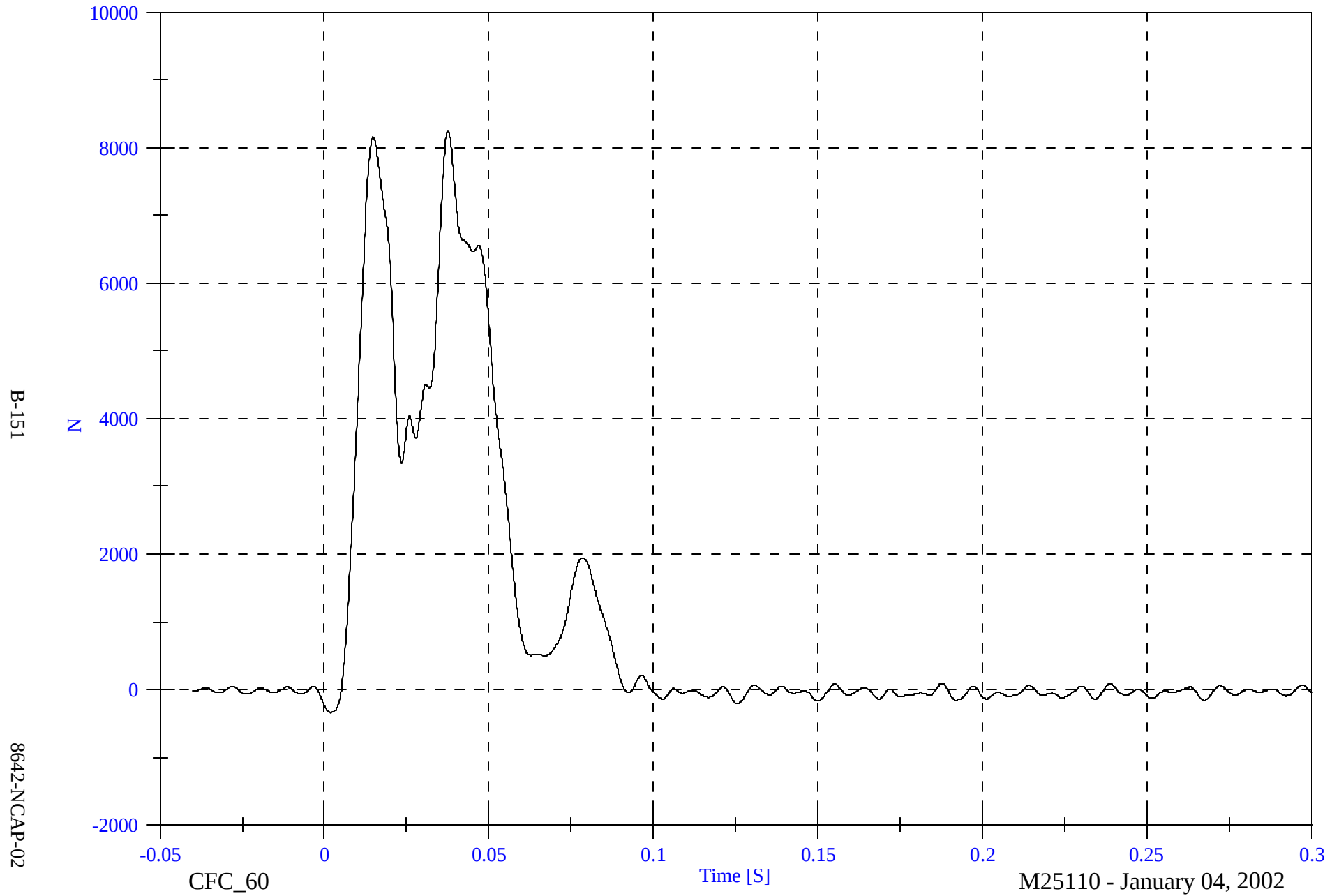


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell B2 Fx

Max: 8242.2 [N] at 0.038 [S]

Min: -337.0 [N] at 0.002 [S]

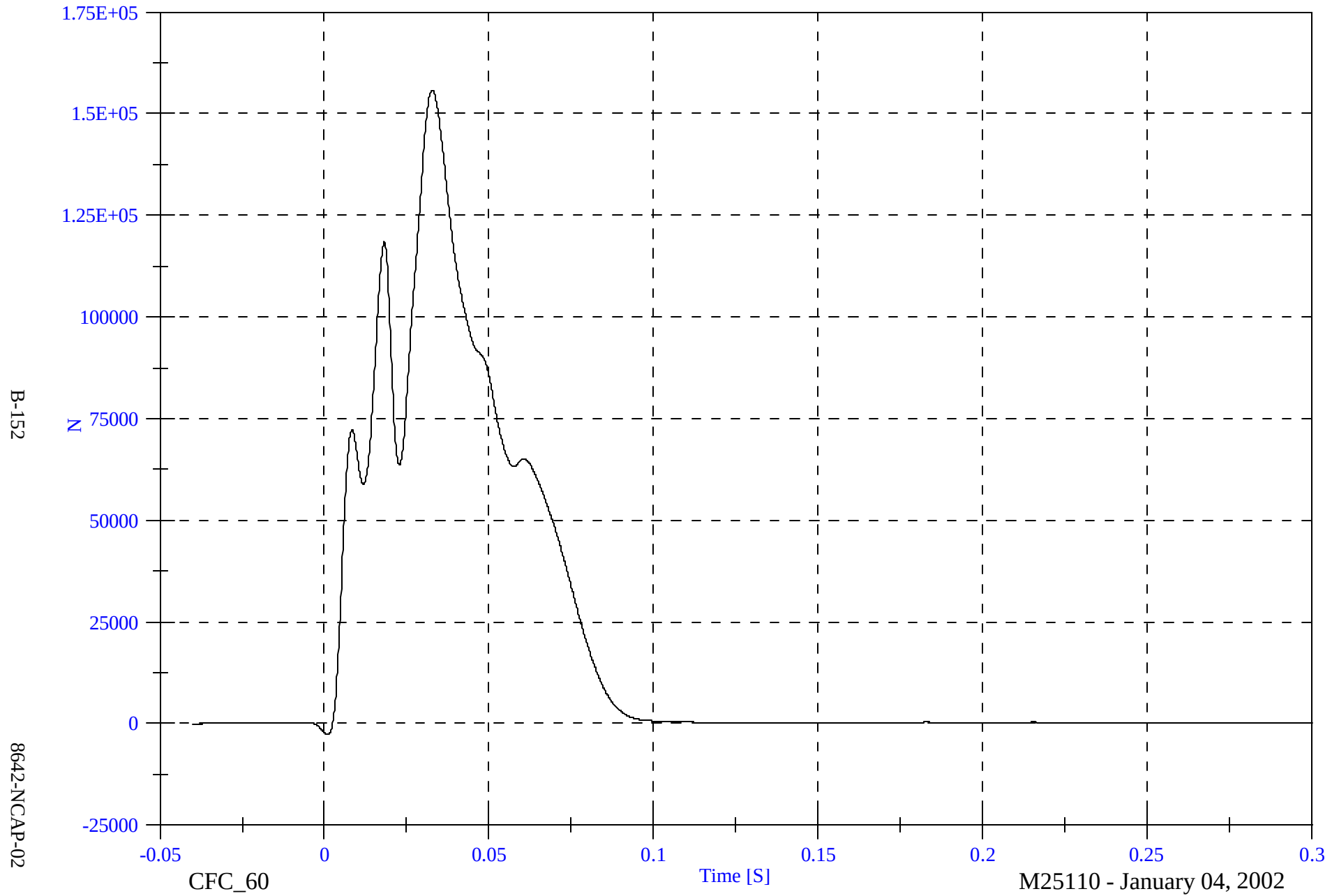


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell B3 Fx

Max: 155686.8 [N] at 0.033 [S]

Min: -2696.1 [N] at 0.001 [S]

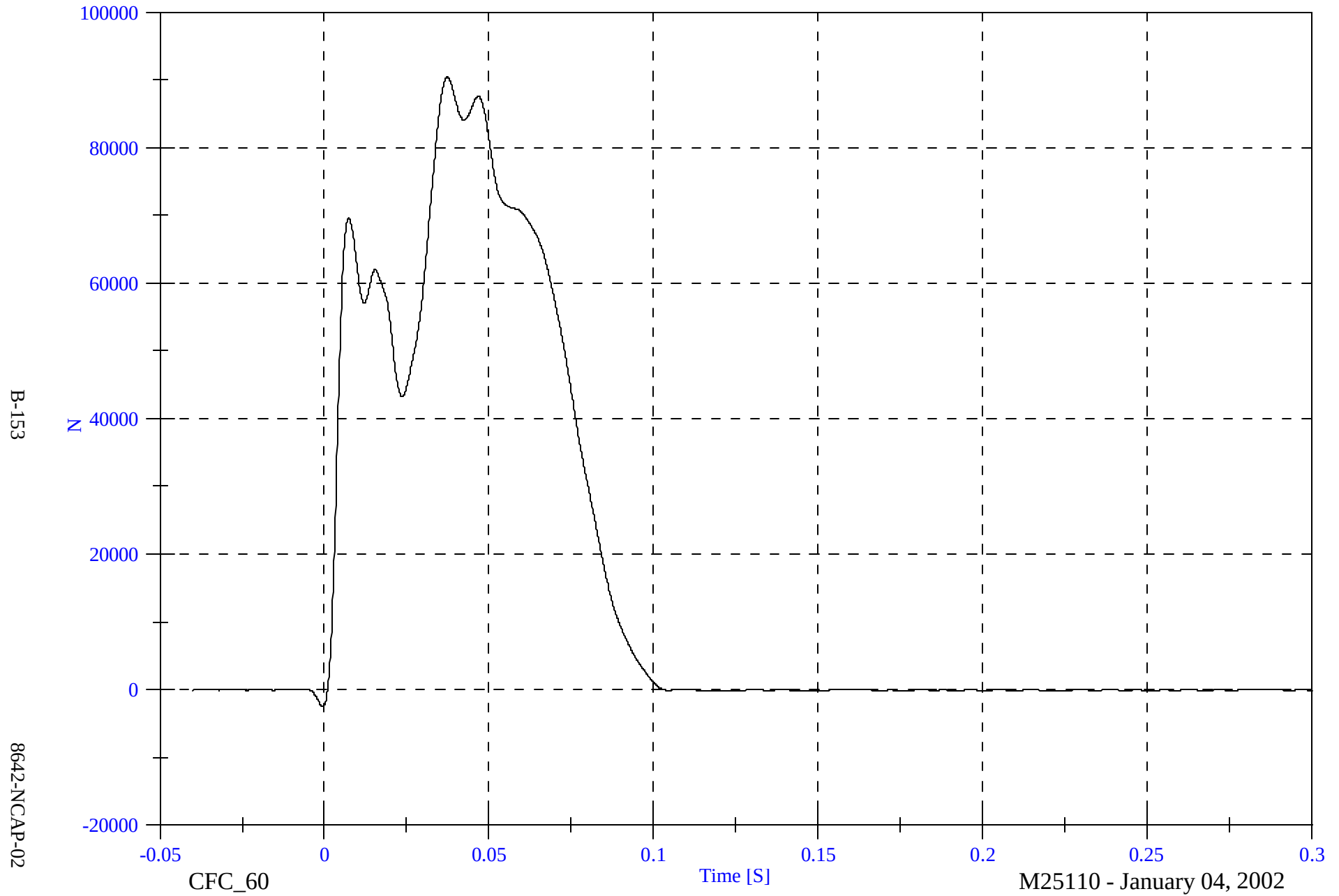


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell B4 Fx

Max: 90404.1 [N] at 0.037 [S]

Min: -2485.3 [N] at -0.001 [S]

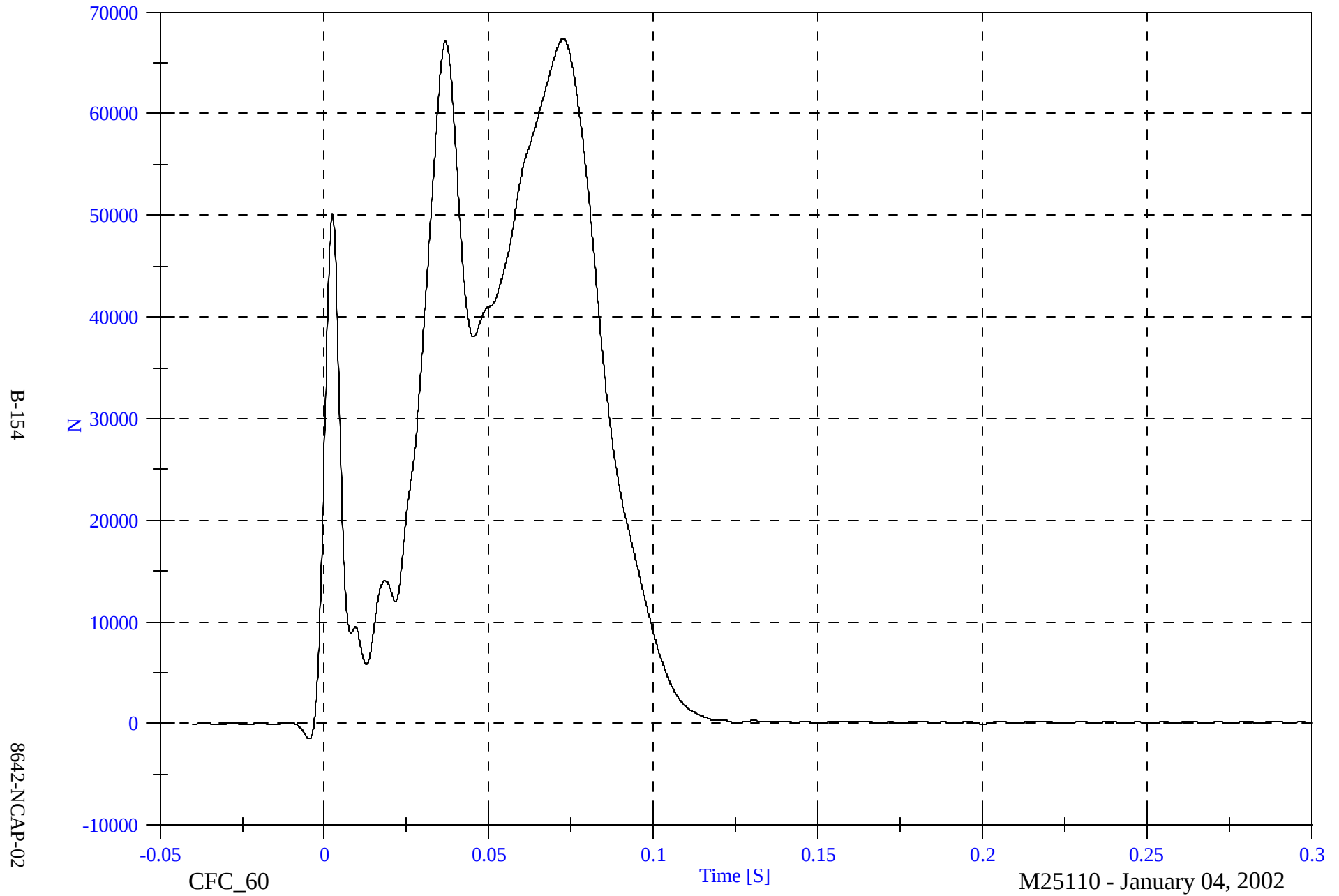


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell B5 Fx

Max: 67346.6 [N] at 0.073 [S]

Min: -1473.8 [N] at -0.005 [S]

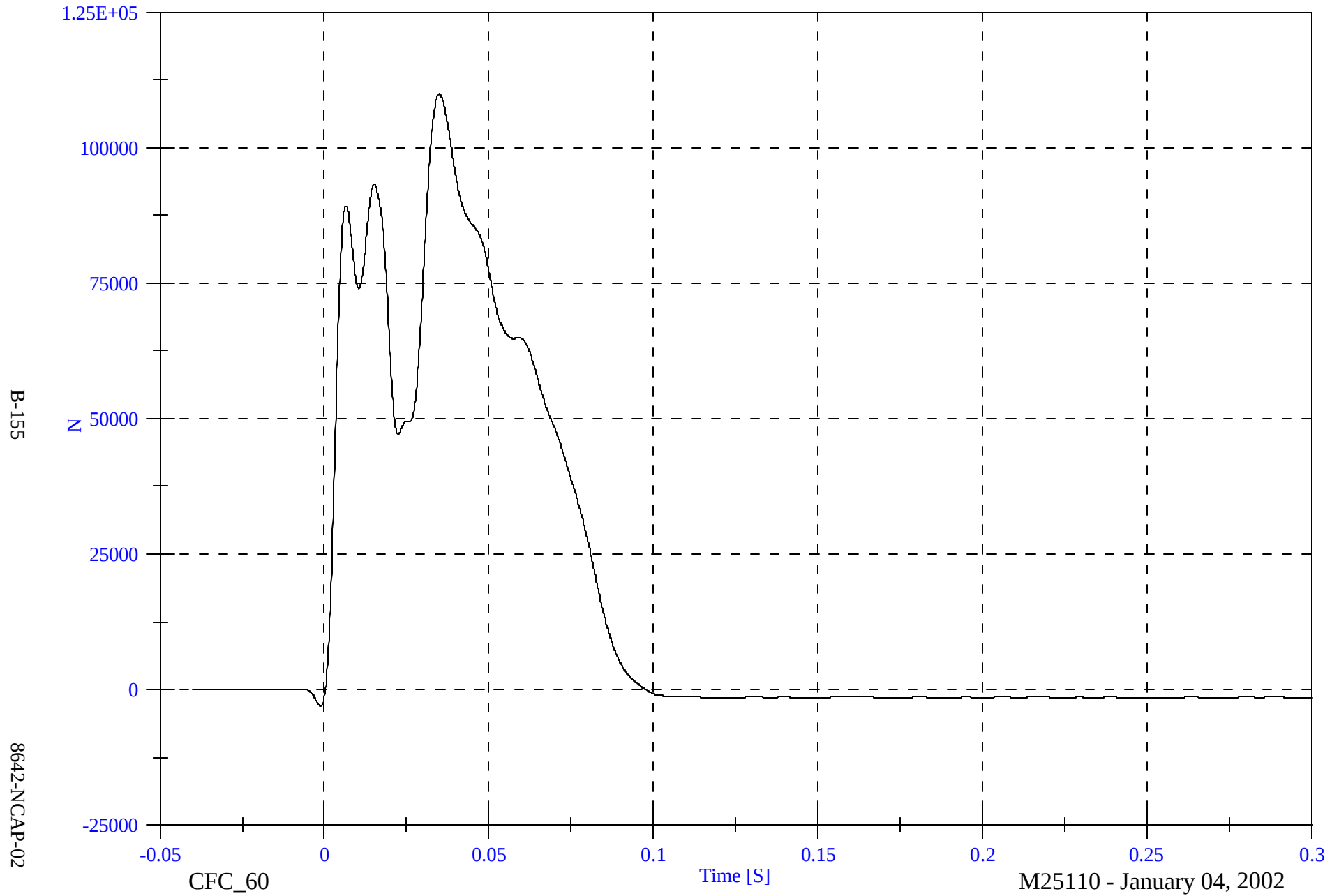


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell B6 Fx

Max: 109866.0 [N] at 0.035 [S]

Min: -3004.8 [N] at -0.001 [S]

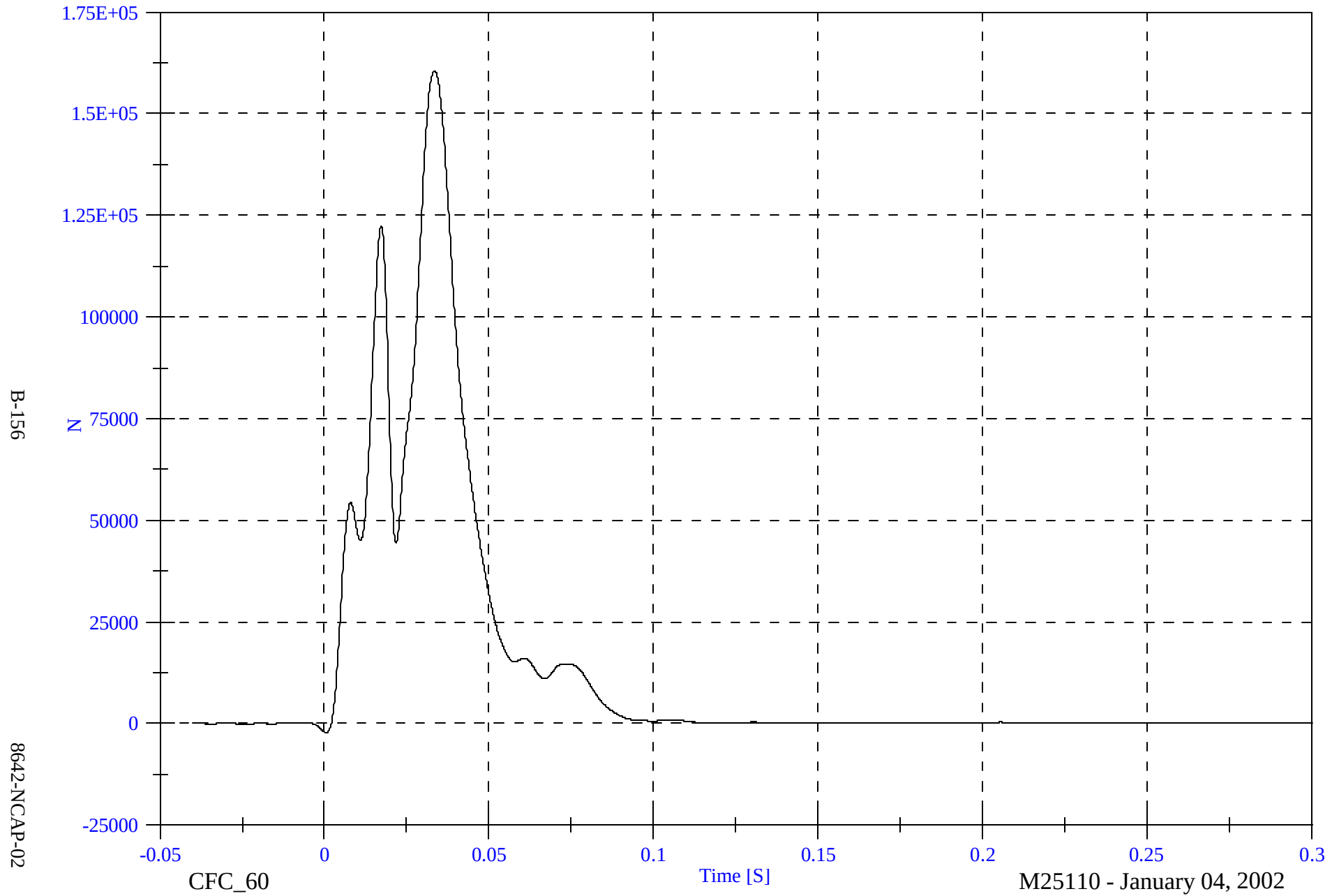


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell B7 Fx

Max: 160563.2 [N] at 0.033 [S]

Min: -2173.8 [N] at 0.000 [S]

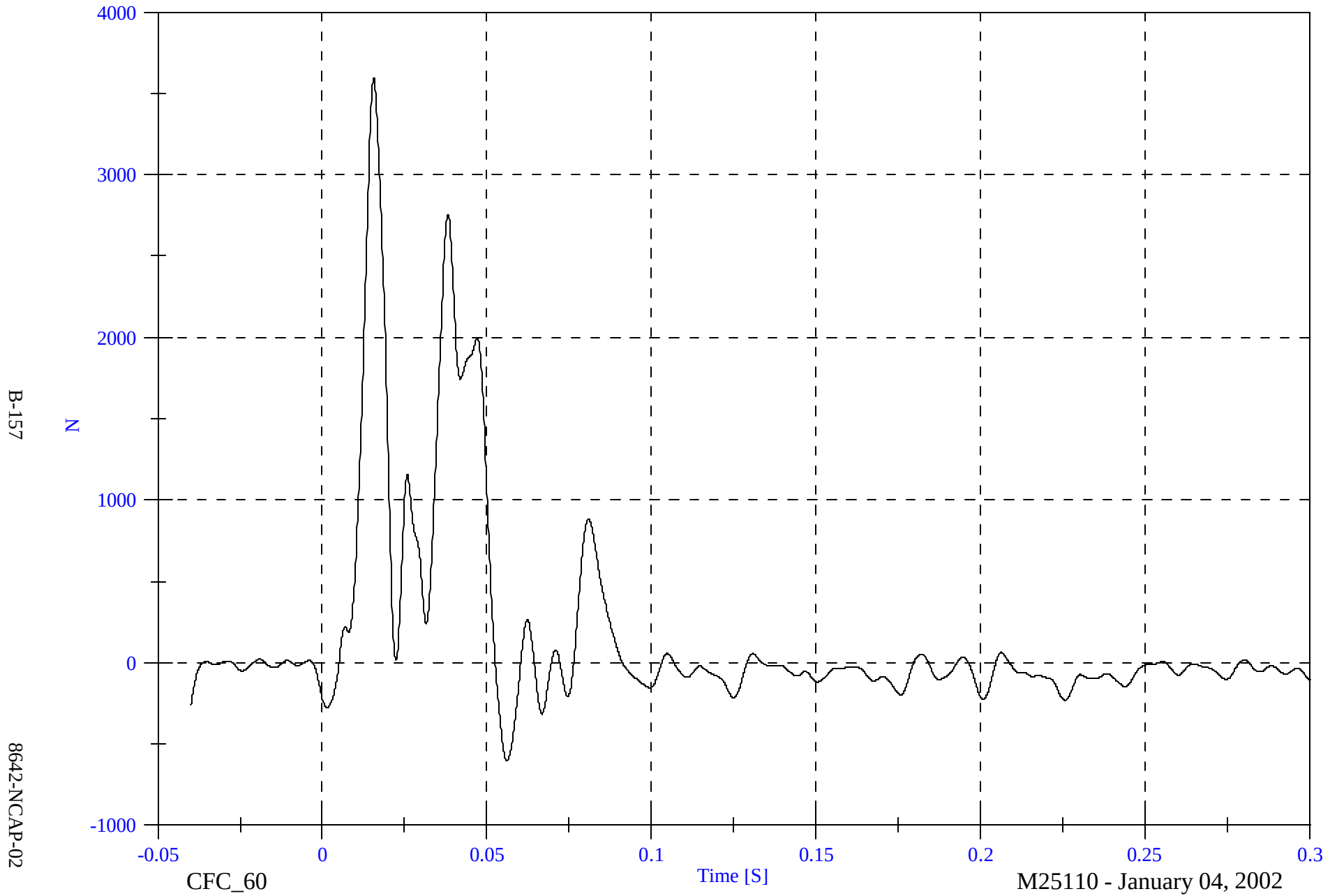


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell B8 Fx

Max: 3591.8 [N] at 0.016 [S]

Min: -605.6 [N] at 0.056 [S]

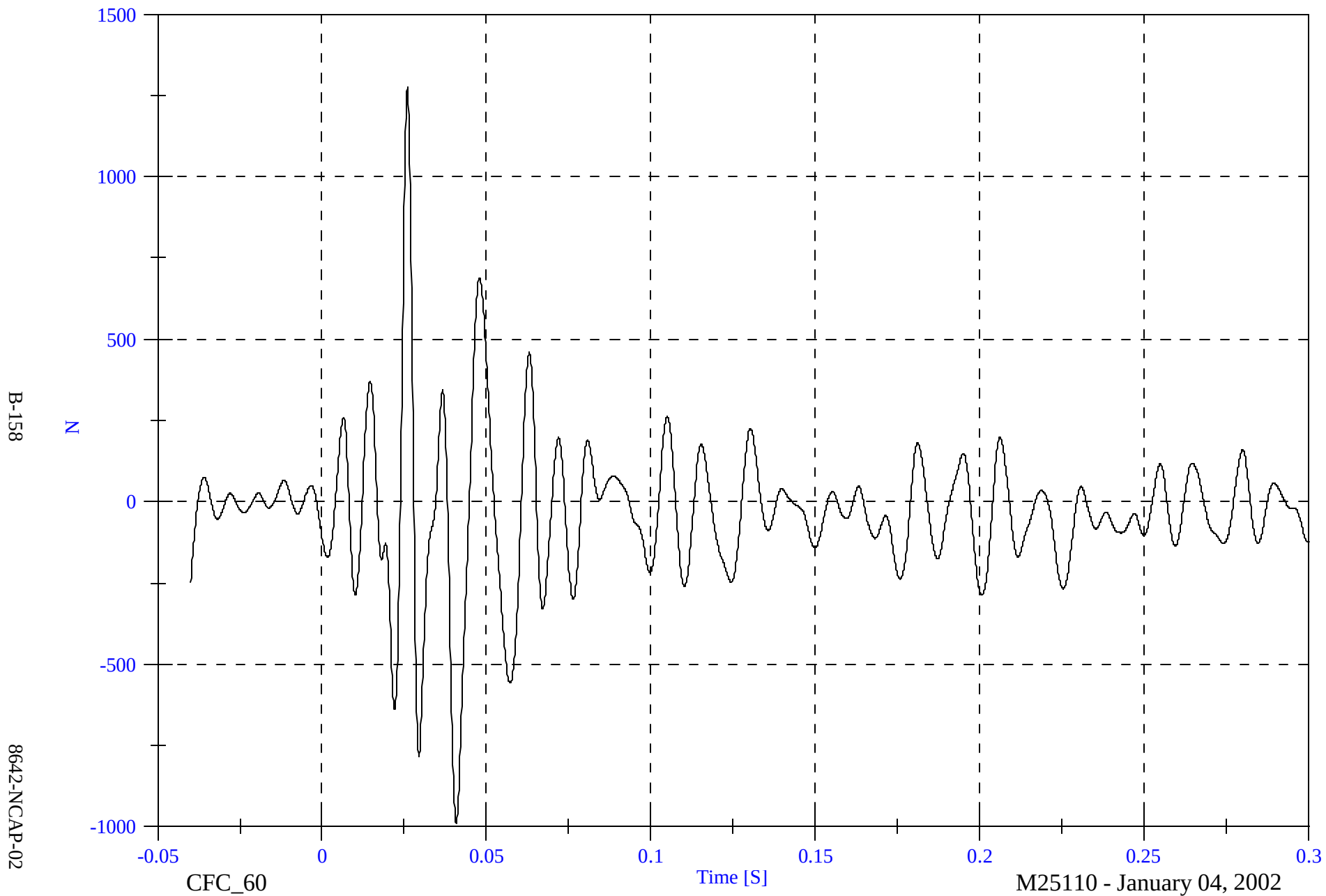


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell B9 Fx

Max: 1273.0 [N] at 0.026 [S]

Min: -988.9 [N] at 0.041 [S]

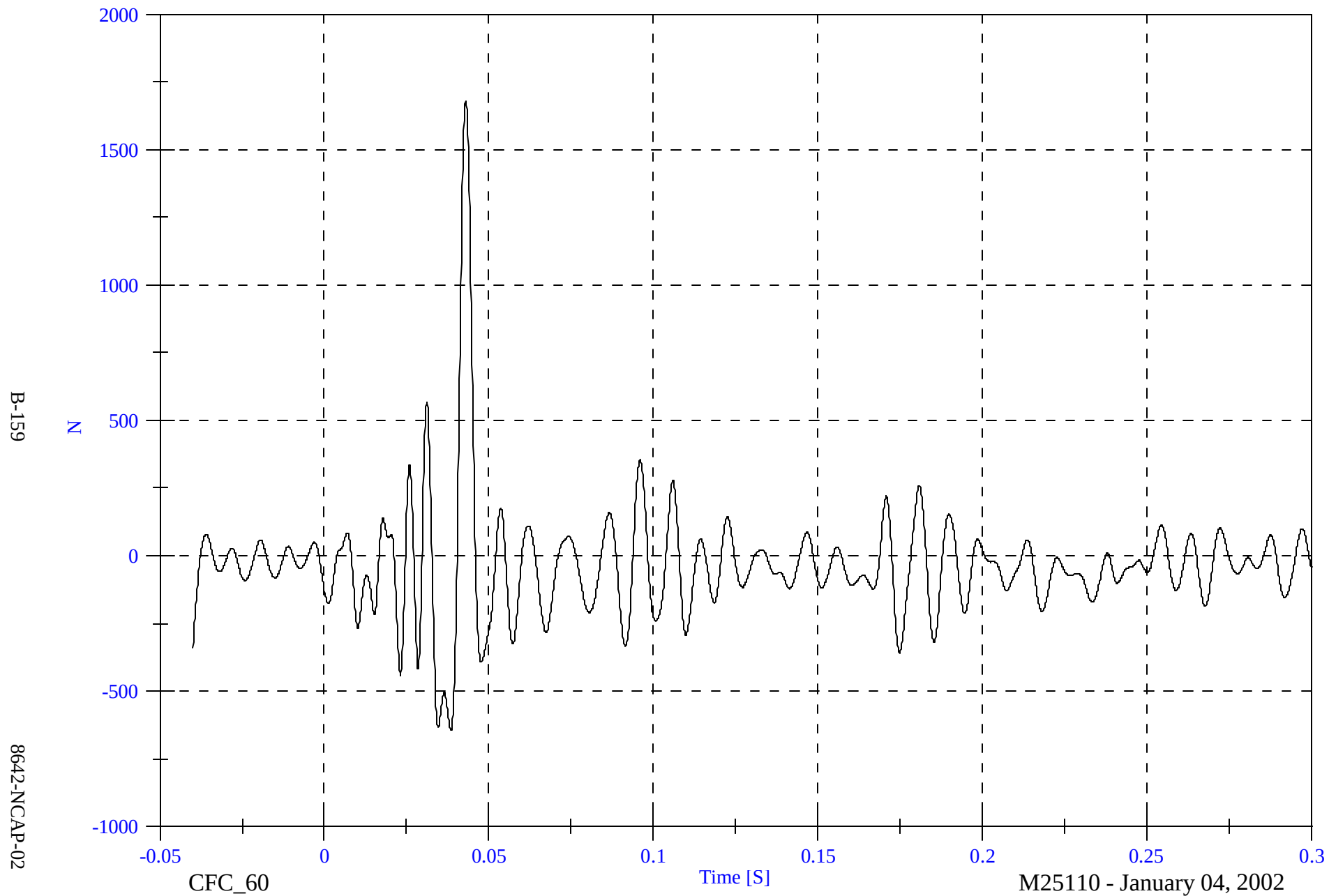


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell C1 Fx

Max: 1680.3 [N] at 0.043 [S]

Min: -645.3 [N] at 0.038 [S]

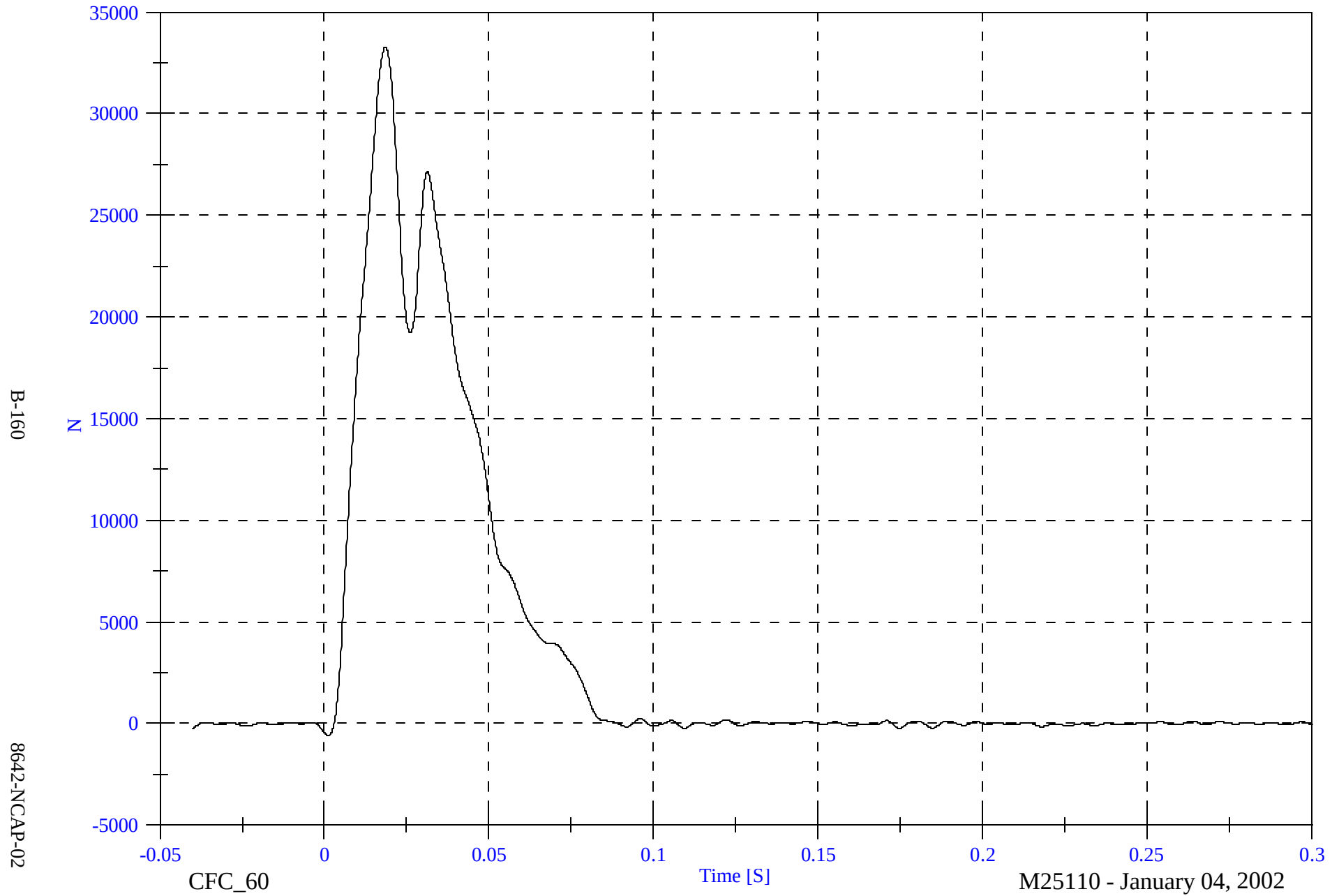


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell C2 Fx

Max: 33257.1 [N] at 0.018 [S]

Min: -591.5 [N] at 0.001 [S]

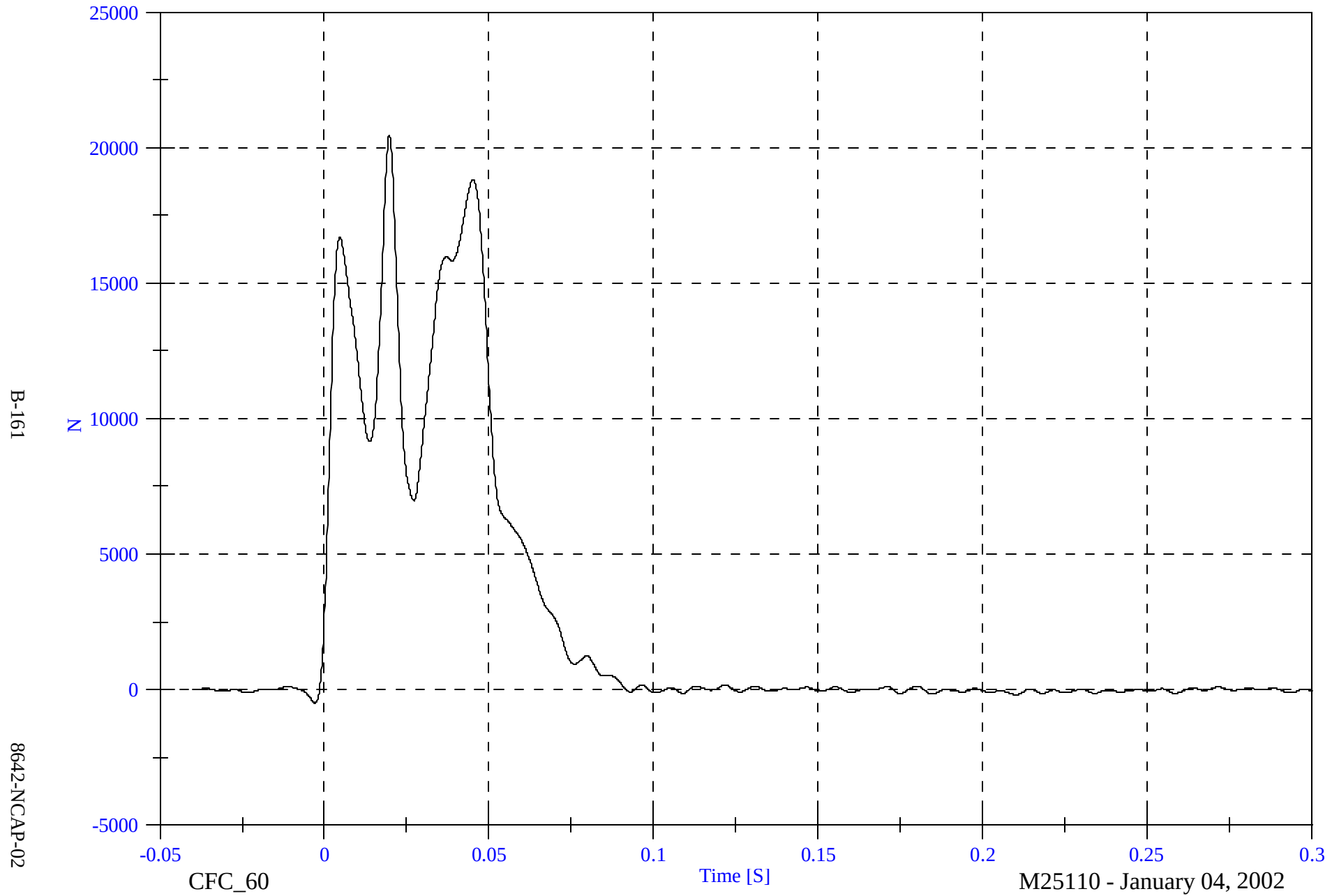


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell C3 Fx

Max: 20464.0 [N] at 0.020 [S]

Min: -480.3 [N] at -0.003 [S]

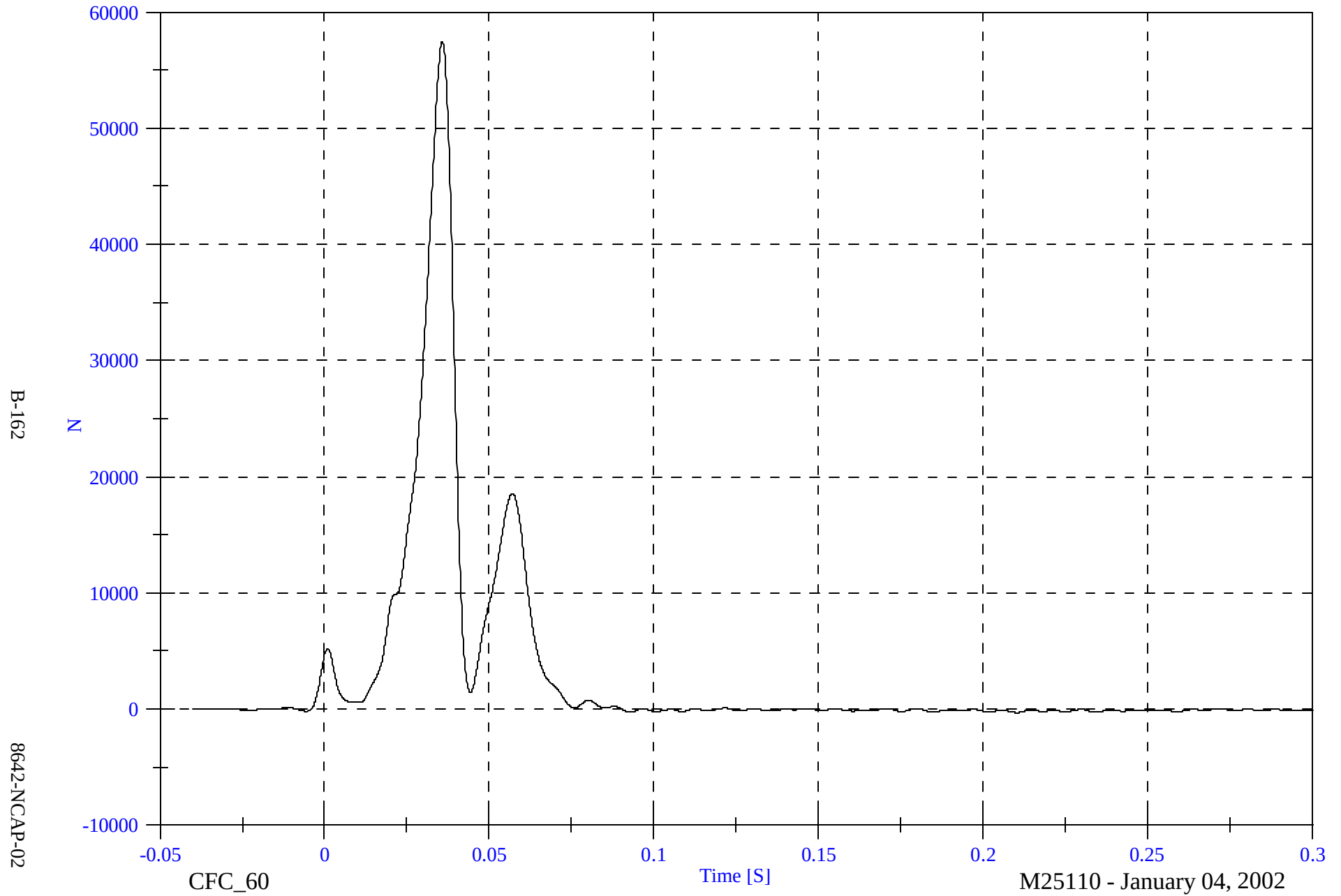


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell C4 Fx

Max: 57414.6 [N] at 0.036 [S]

Min: -308.0 [N] at 0.210 [S]

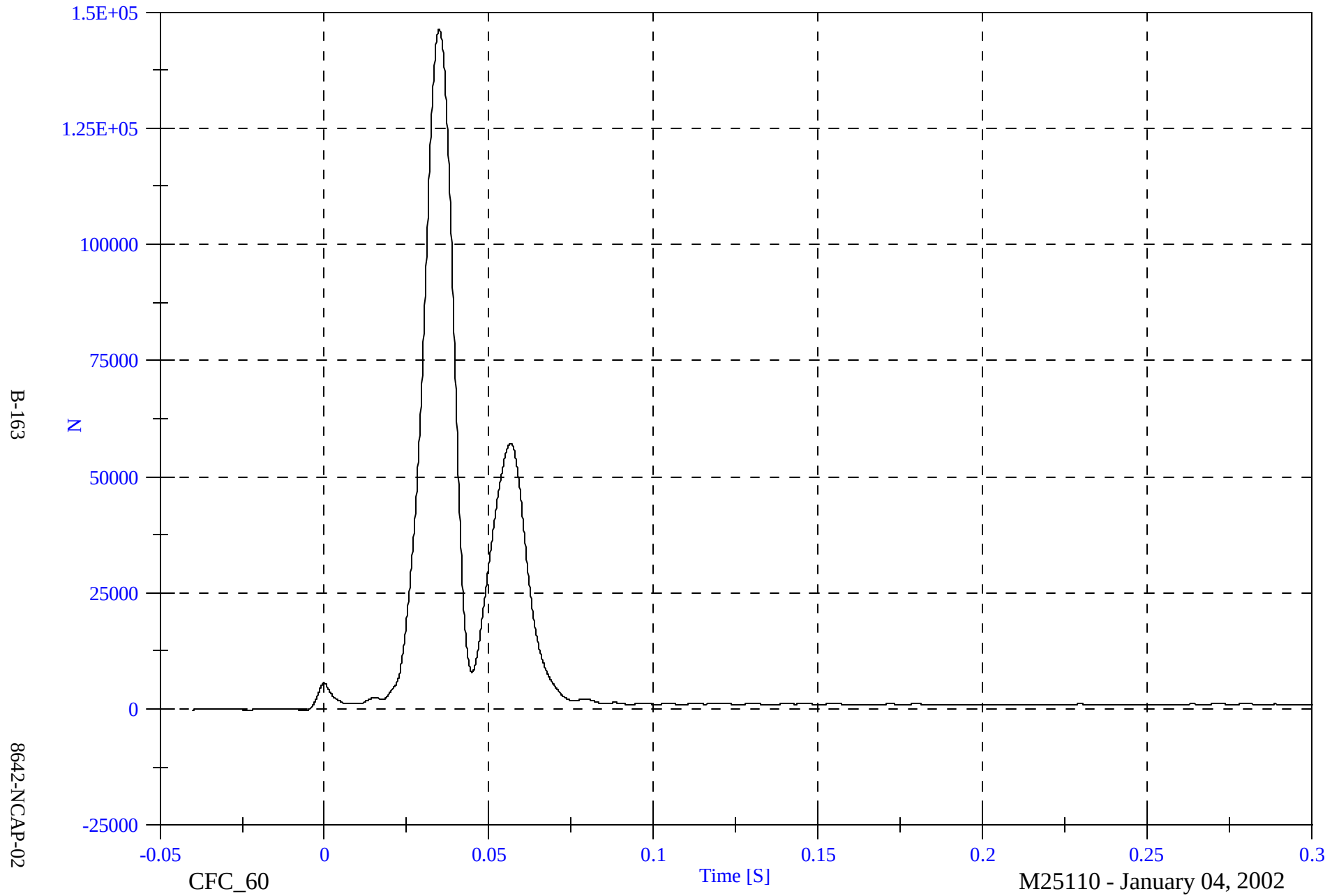


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell C5 Fx

Max: 146229.1 [N] at 0.035 [S]

Min: -265.6 [N] at -0.006 [S]

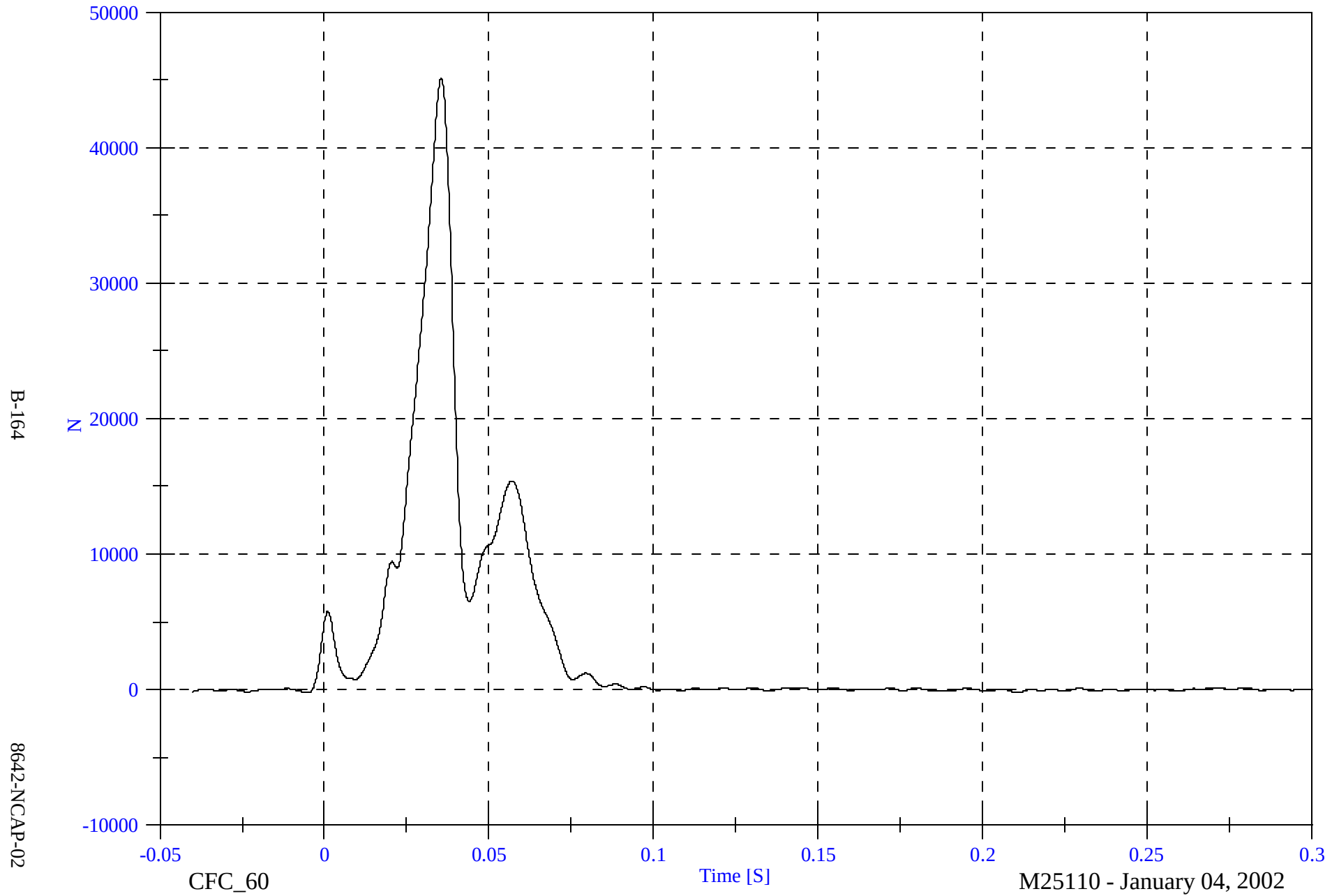


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell C6 Fx

Max: 45107.5 [N] at 0.035 [S]

Min: -233.0 [N] at -0.005 [S]

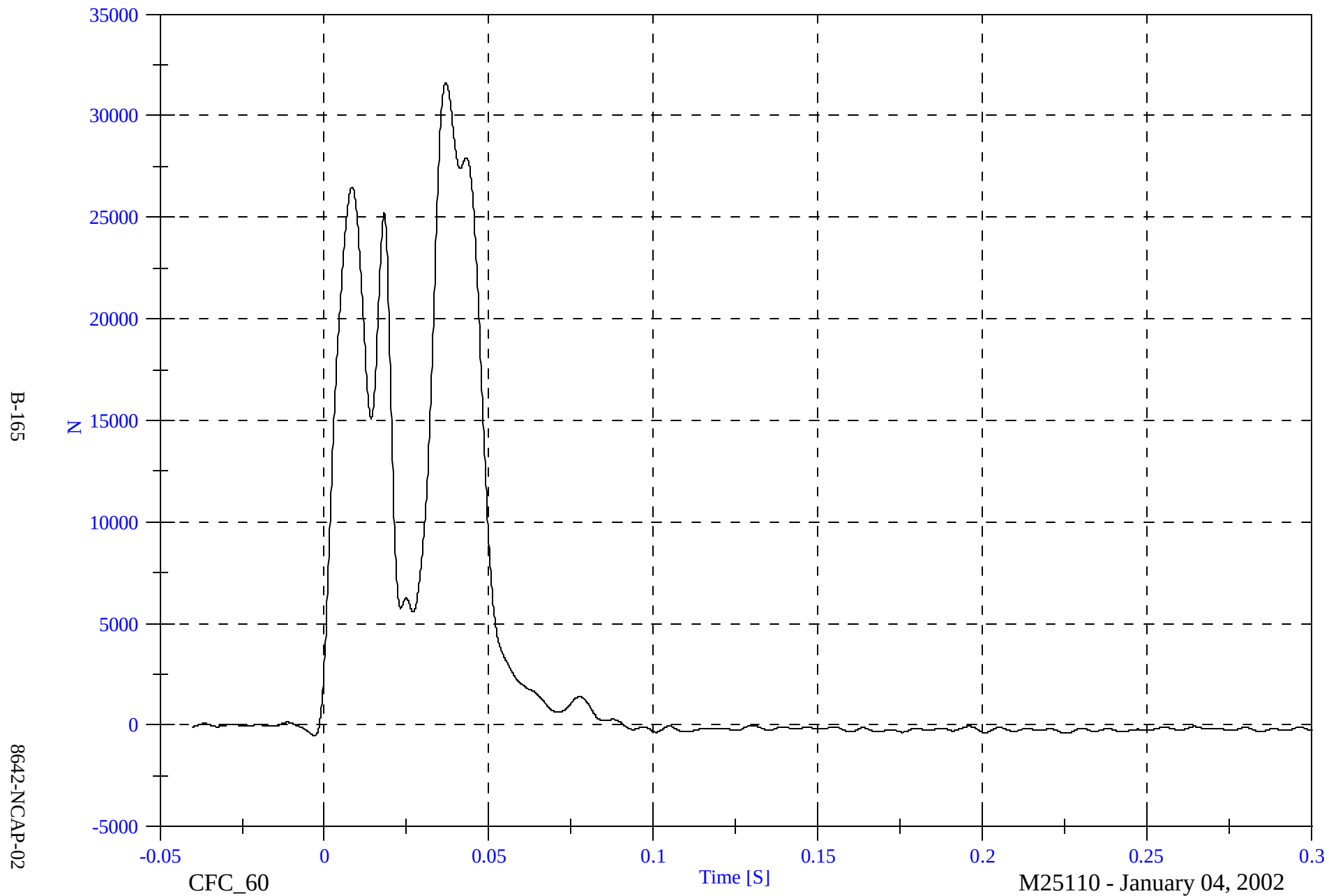


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell C7 Fx

Max: 31636.1 [N] at 0.037 [S]

Min: -529.4 [N] at -0.003 [S]

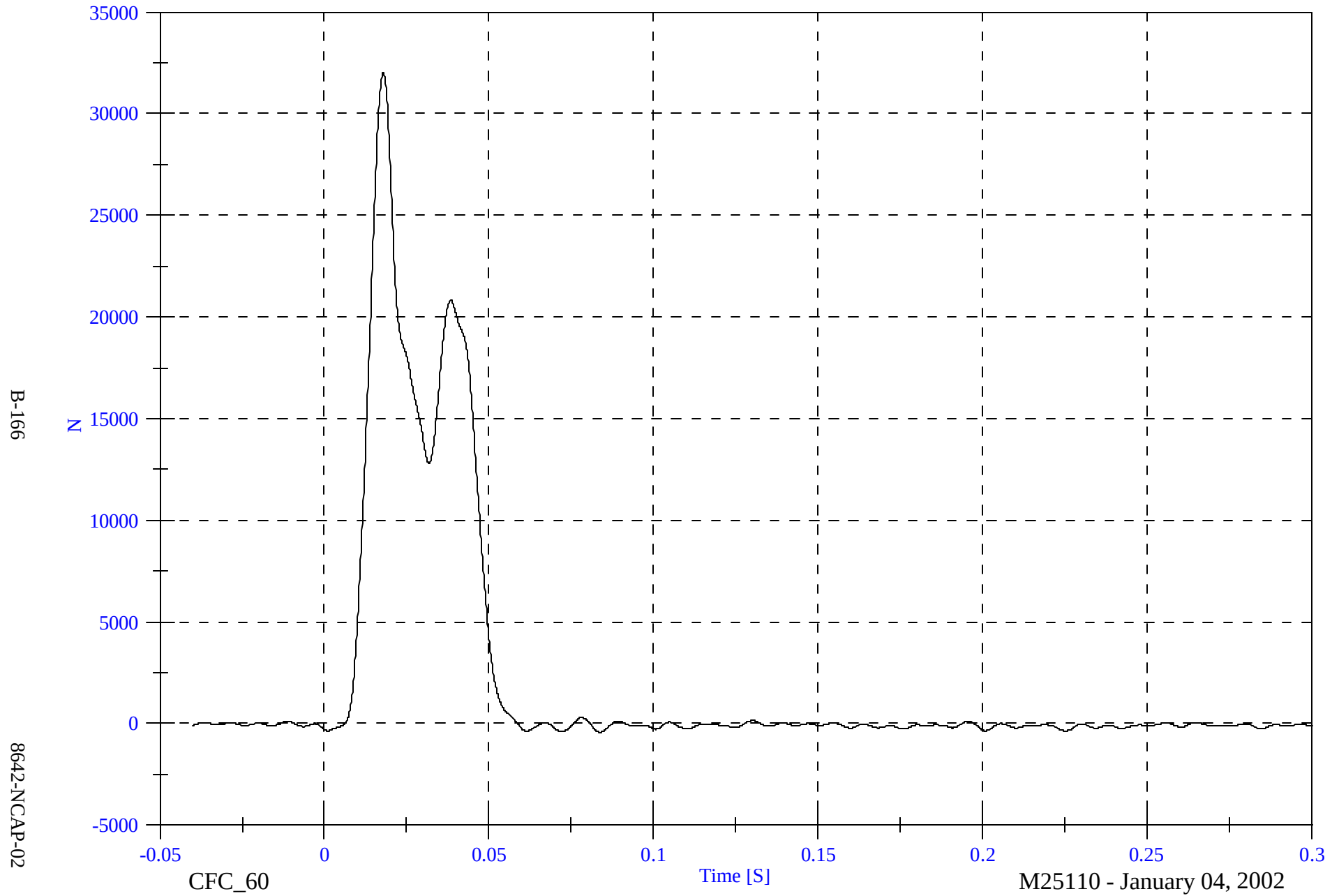


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell C8 Fx

Max: 32019.9 [N] at 0.018 [S]

Min: -420.4 [N] at 0.084 [S]

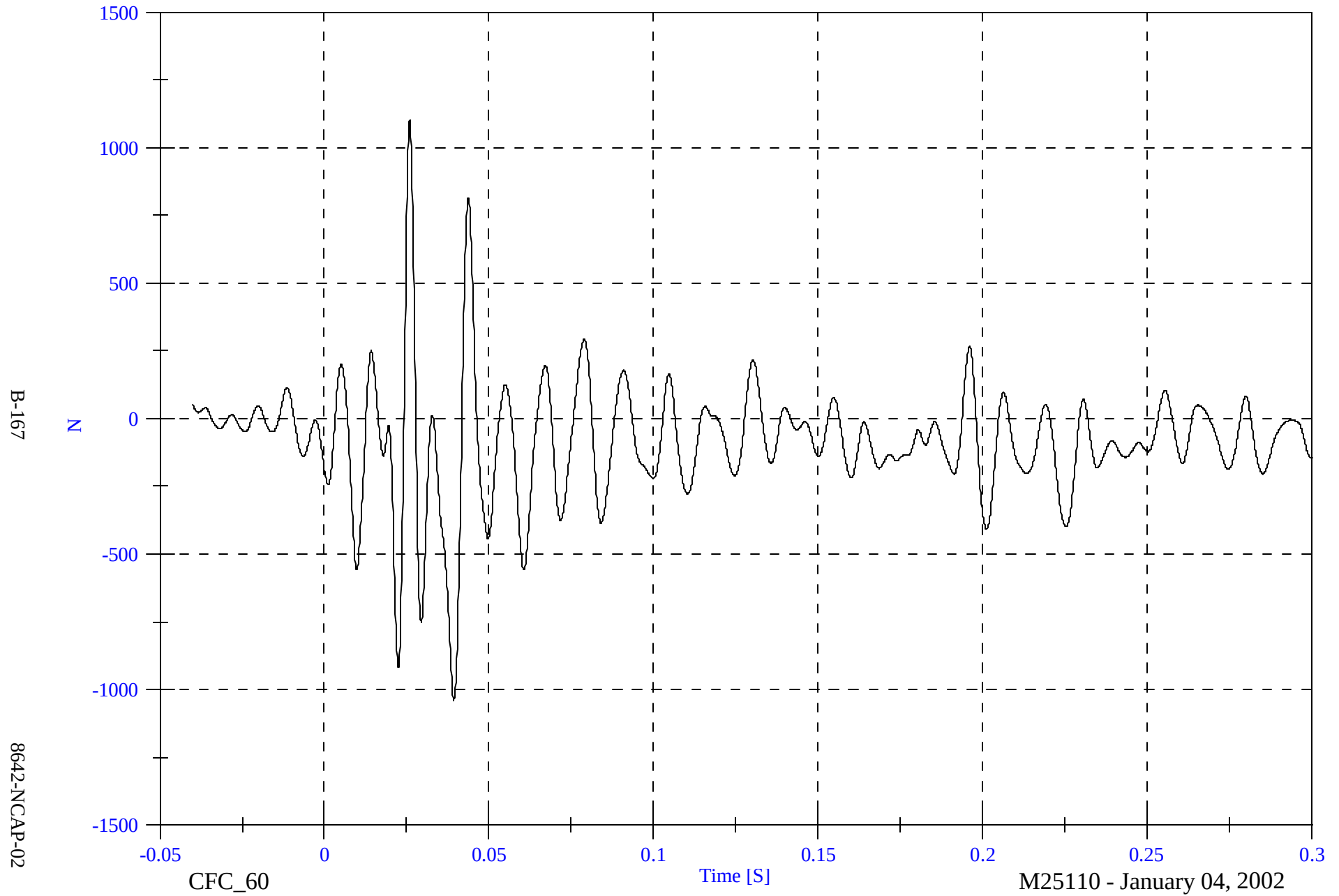


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell C9 Fx

Max: 1101.8 [N] at 0.026 [S]

Min: -1038.2 [N] at 0.039 [S]

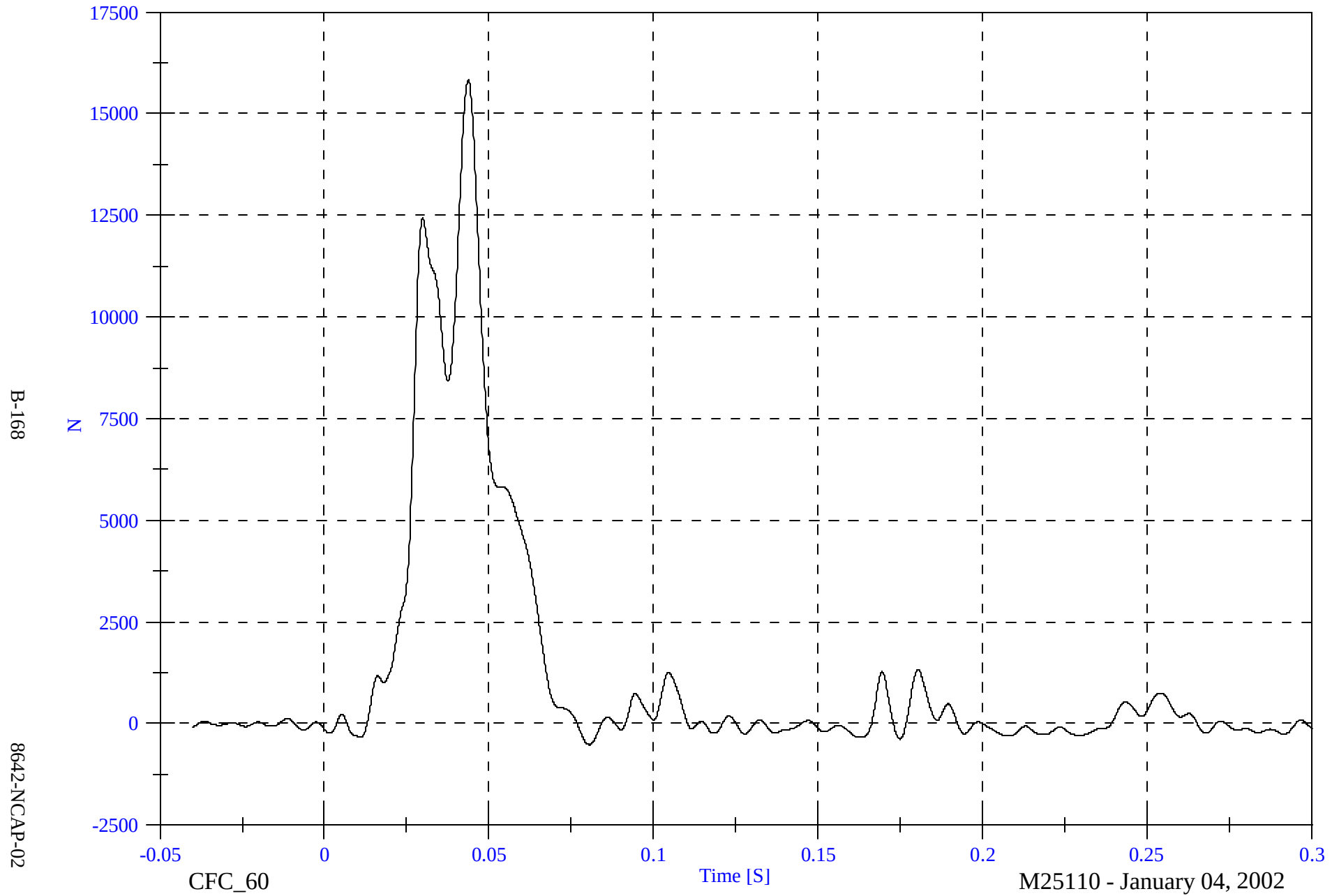


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell D1 Fx

Max: 15823.4 [N] at 0.044 [S]

Min: -515.3 [N] at 0.080 [S]

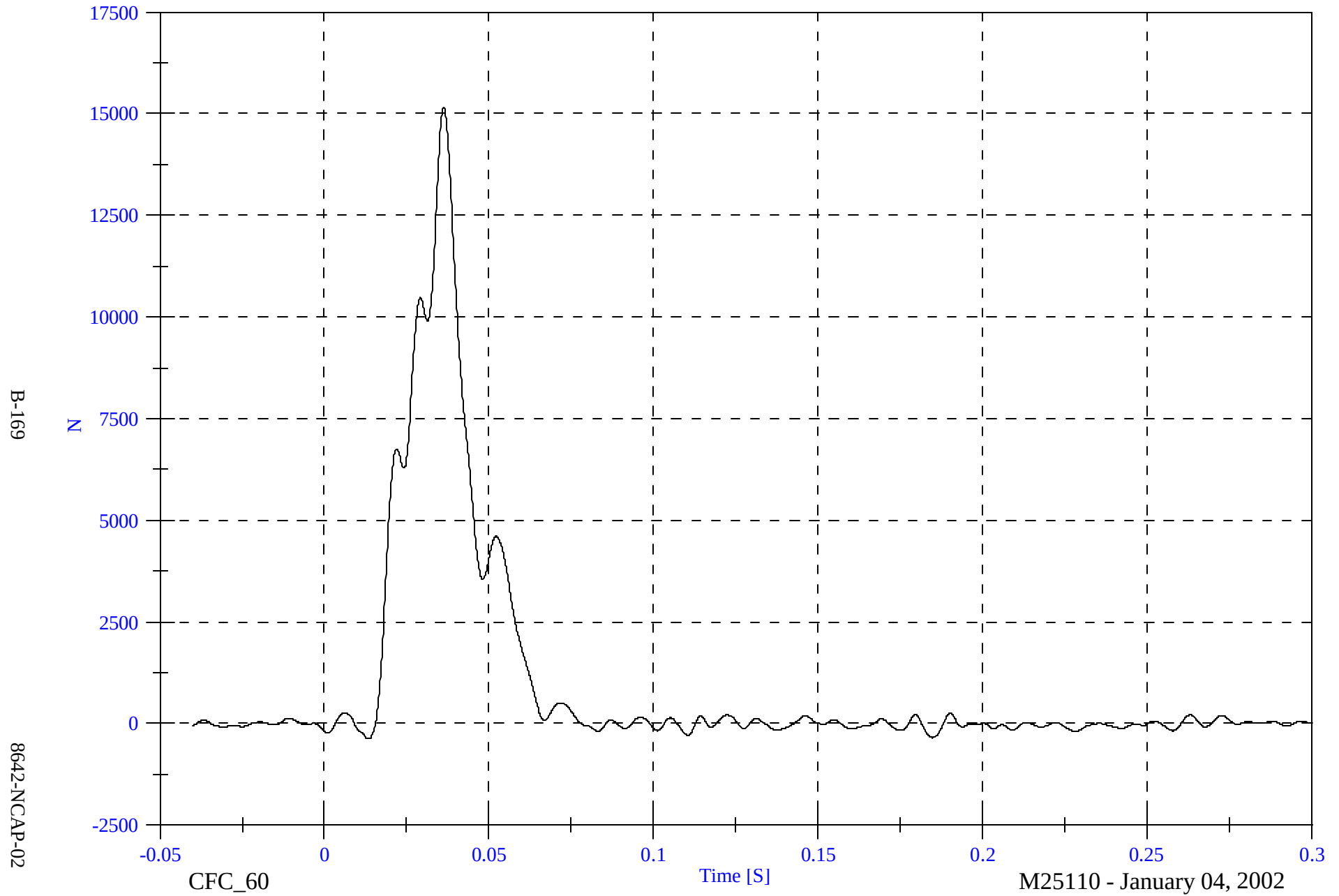


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell D2 Fx

Max: 15151.7 [N] at 0.036 [S]

Min: -378.0 [N] at 0.013 [S]

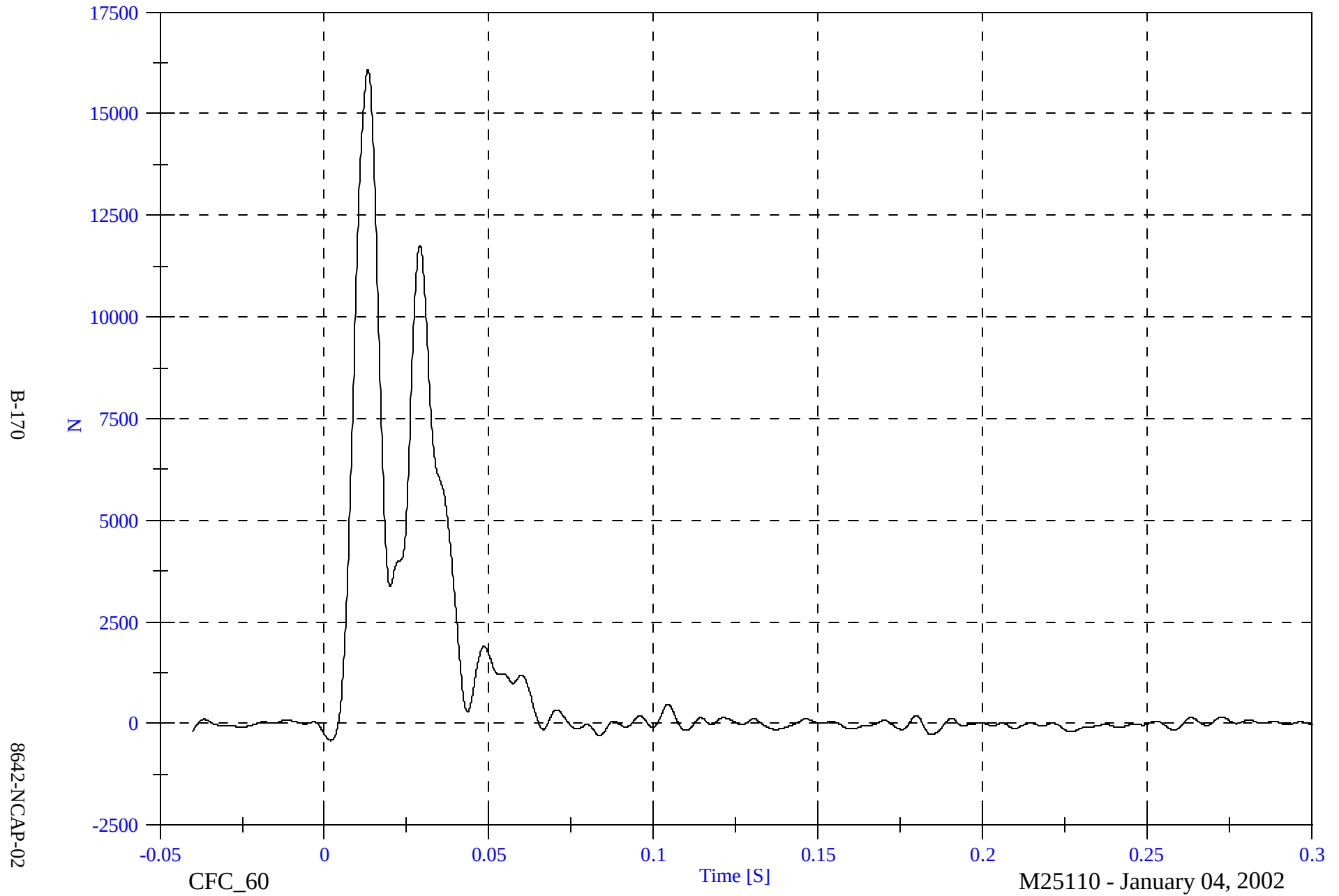


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell D3 Fx

Max: 16074.1 [N] at 0.013 [S]

Min: -414.2 [N] at 0.002 [S]

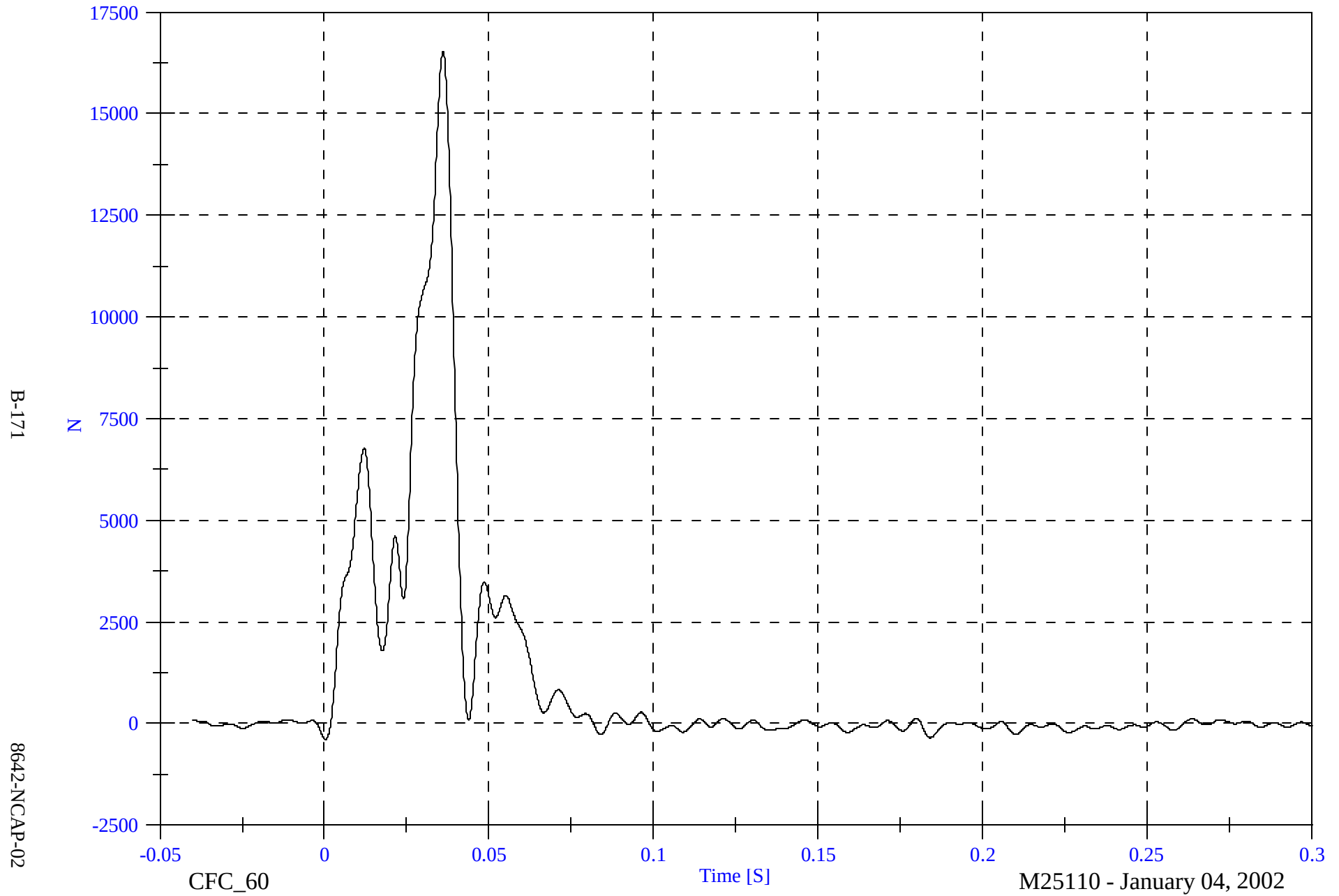


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell D4 Fx

Max: 16527.9 [N] at 0.036 [S]

Min: -384.6 [N] at 0.000 [S]

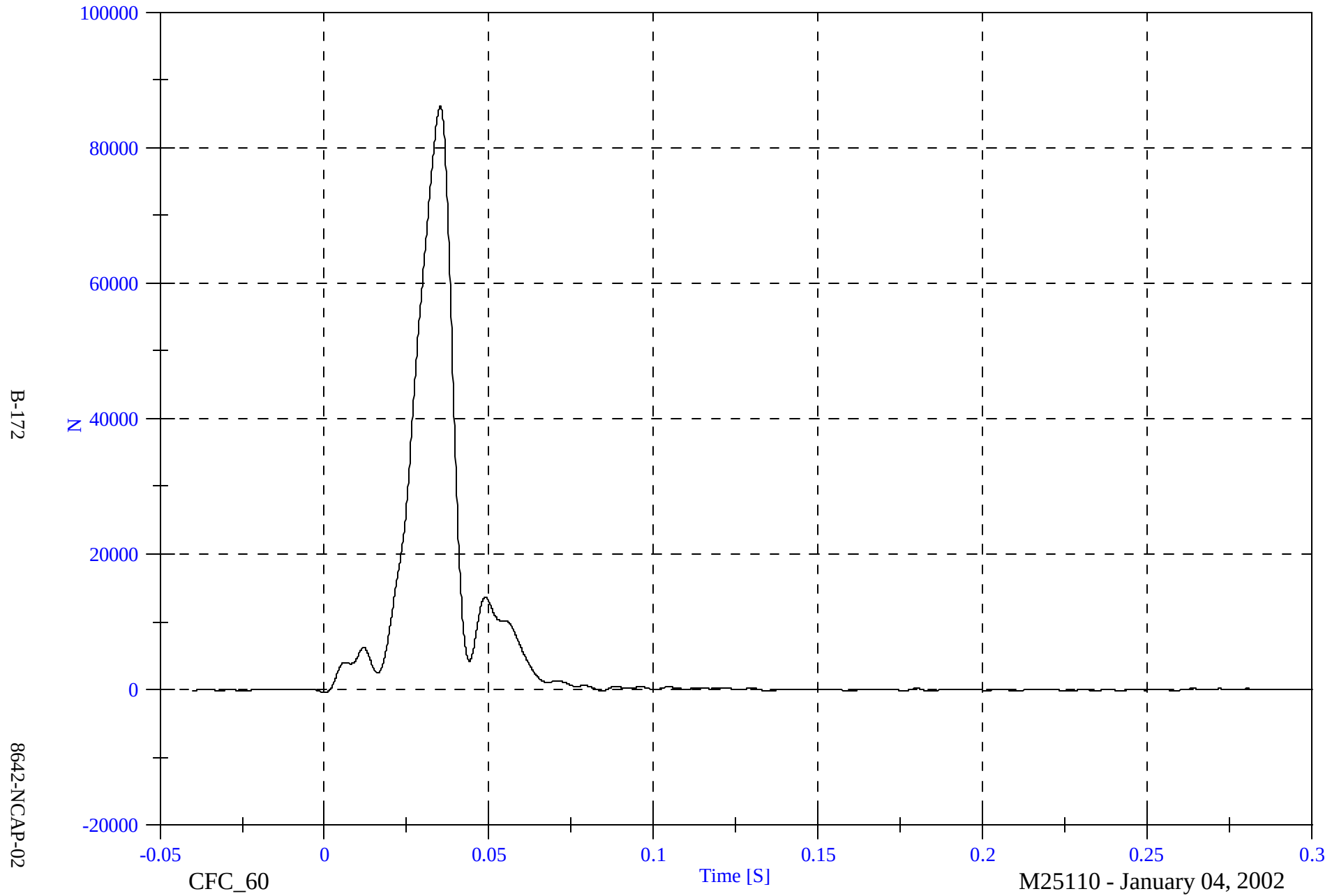


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell D5 Fx

Max: 86062.9 [N] at 0.035 [S]

Min: -415.4 [N] at -0.000 [S]

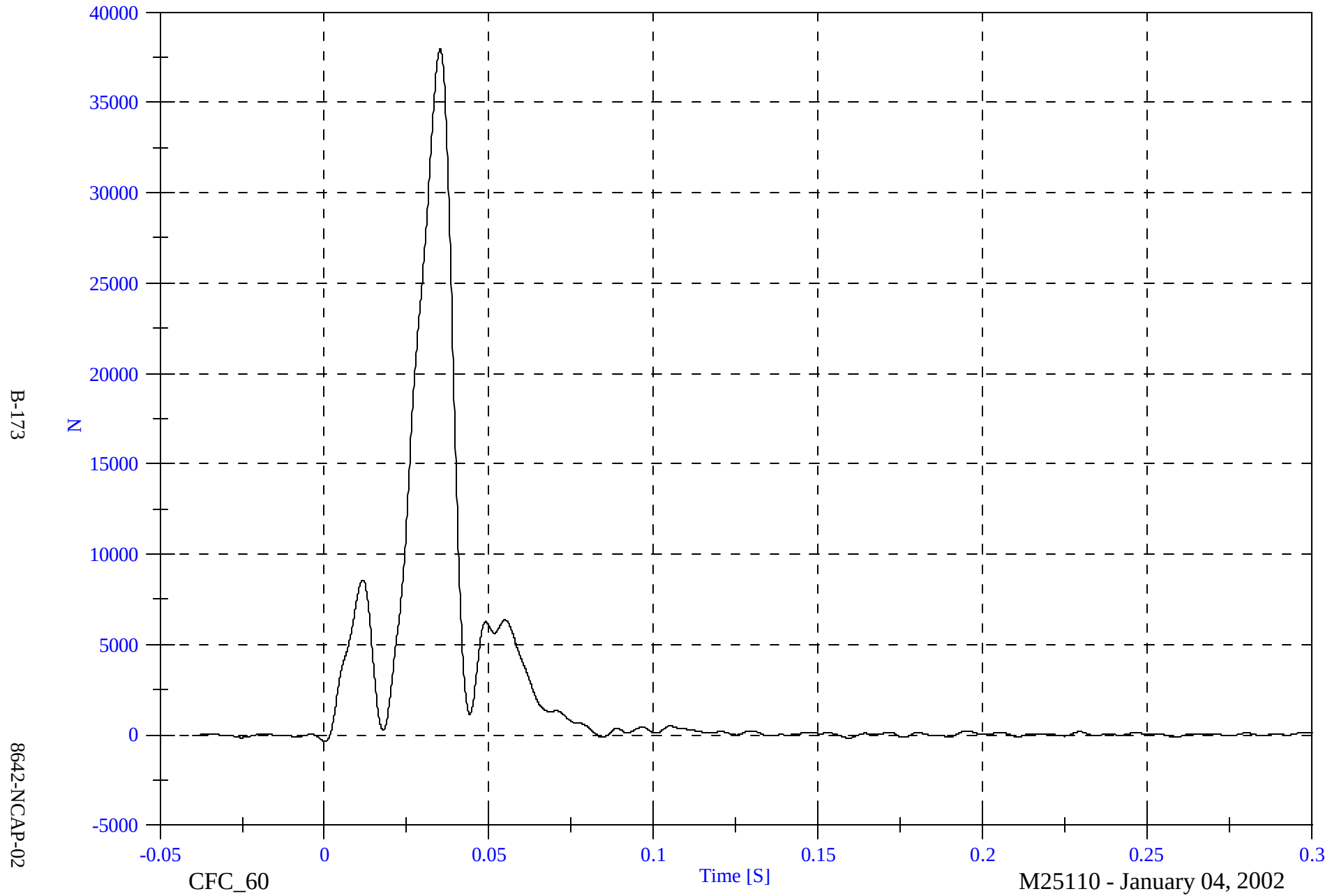


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell D6 Fx

Max: 37953.0 [N] at 0.035 [S]

Min: -373.4 [N] at 0.000 [S]

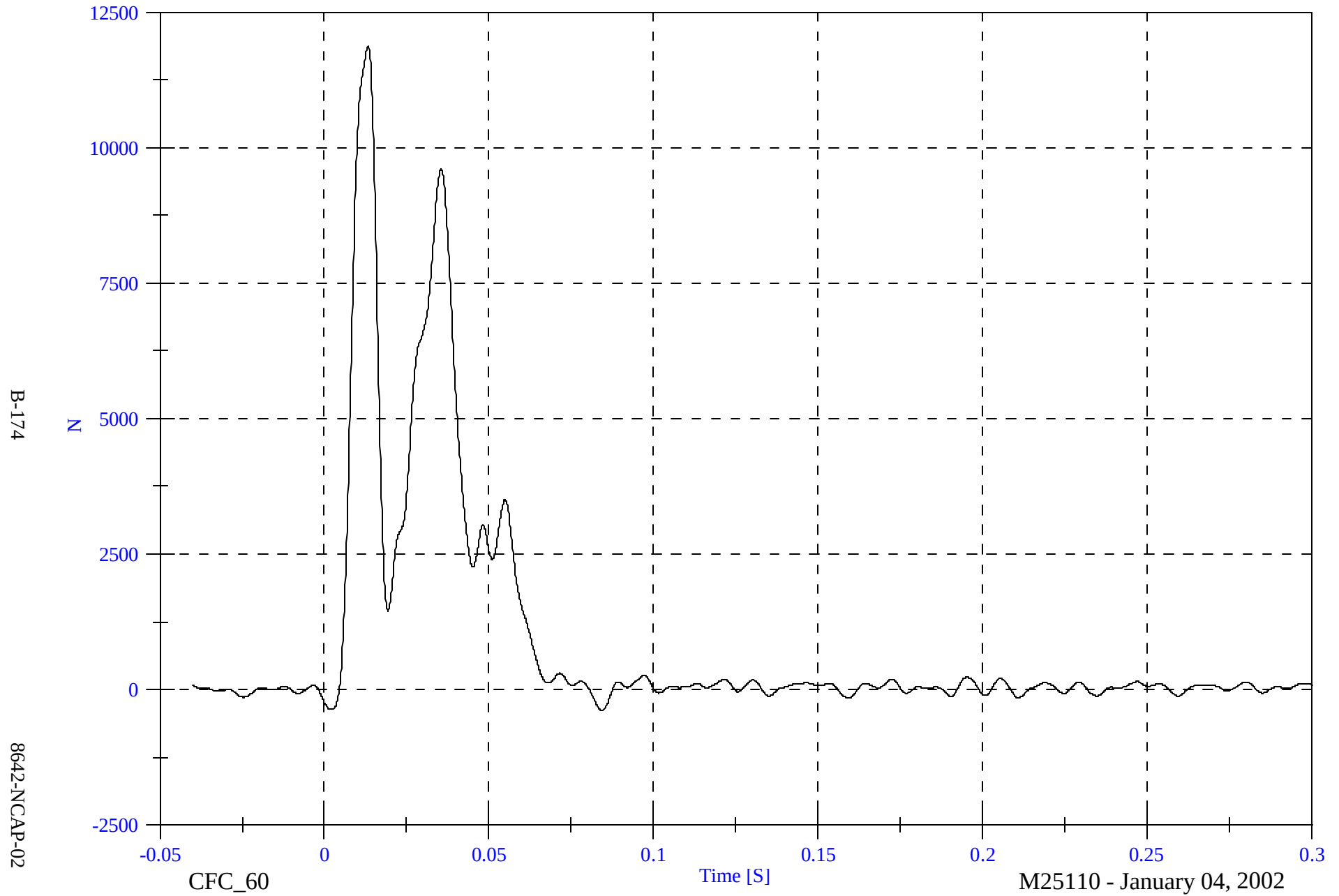


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell D7 Fx

Max: 11861.4 [N] at 0.013 [S]

Min: -379.2 [N] at 0.084 [S]

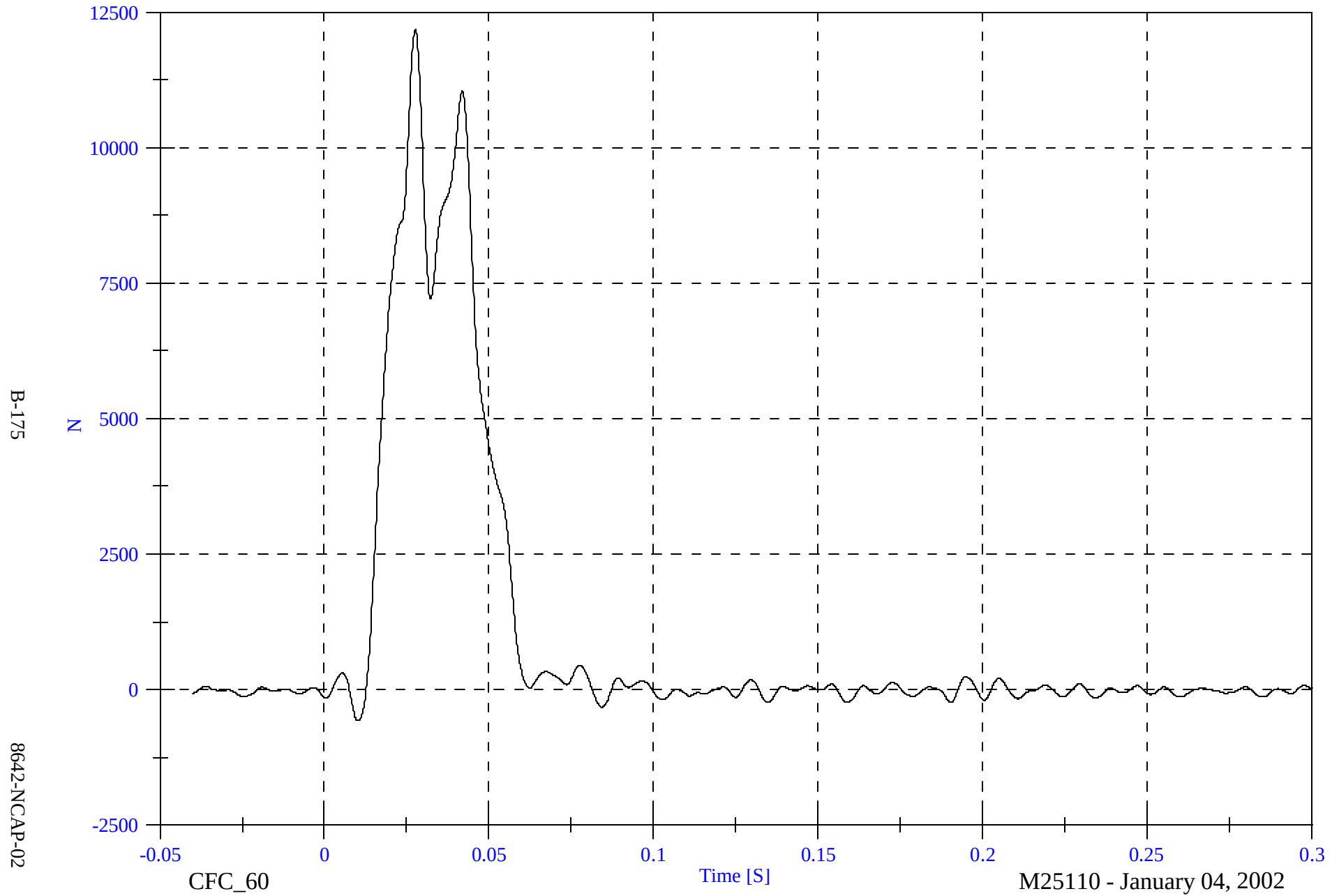


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell D8 Fx

Max: 12171.3 [N] at 0.028 [S]

Min: -571.5 [N] at 0.010 [S]

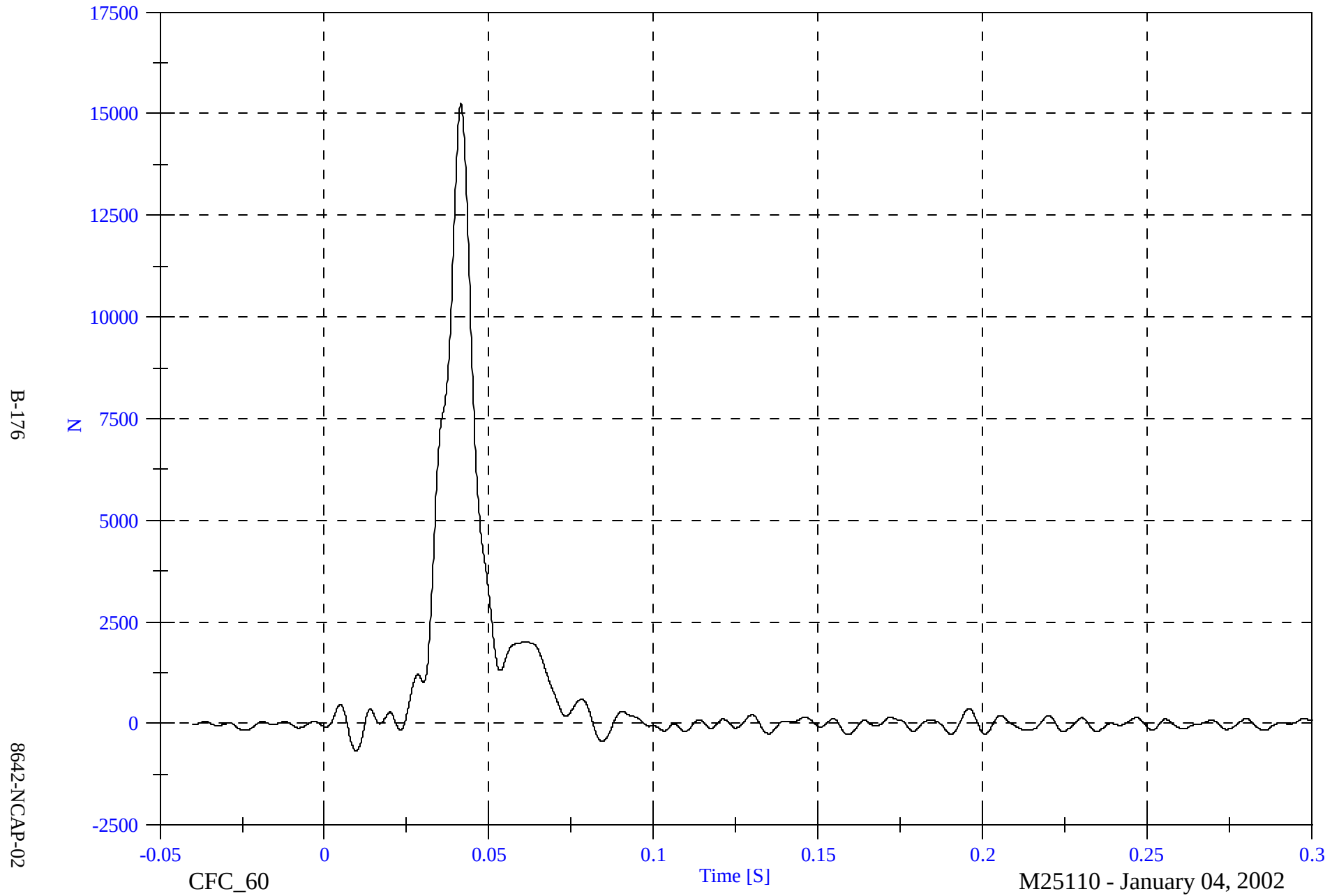


NCAP - 2002 Toyota Tundra Access Cab 4X4

Barrier Load Cell D9 Fx

Max: 15242.4 [N] at 0.041 [S]

Min: -676.3 [N] at 0.010 [S]

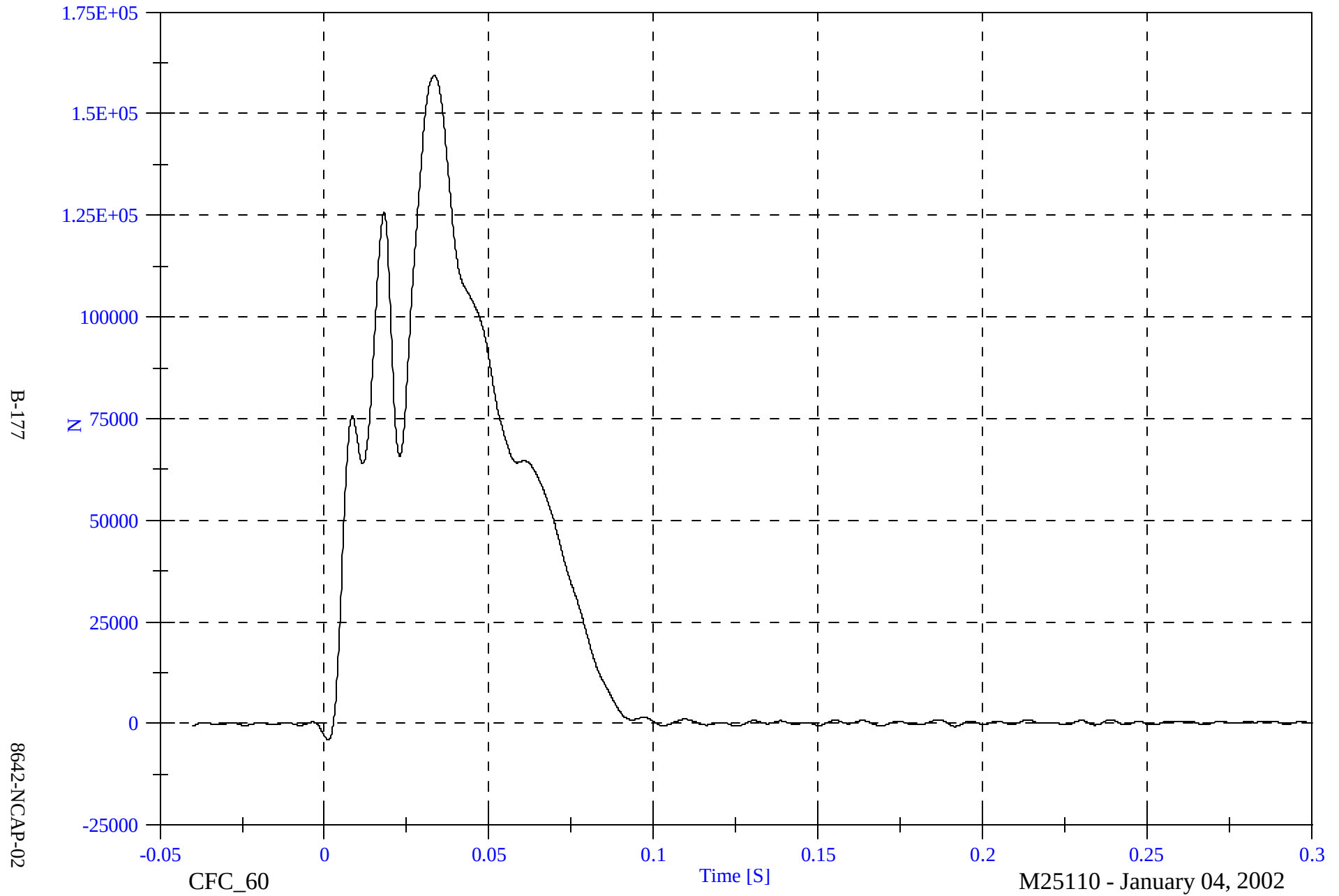


NCAP - 2002 Toyota Tundra Access Cab 4X4

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

Max: 159346.4 [N] at 0.033 [S]

Min: -3926.5 [N] at 0.001 [S]

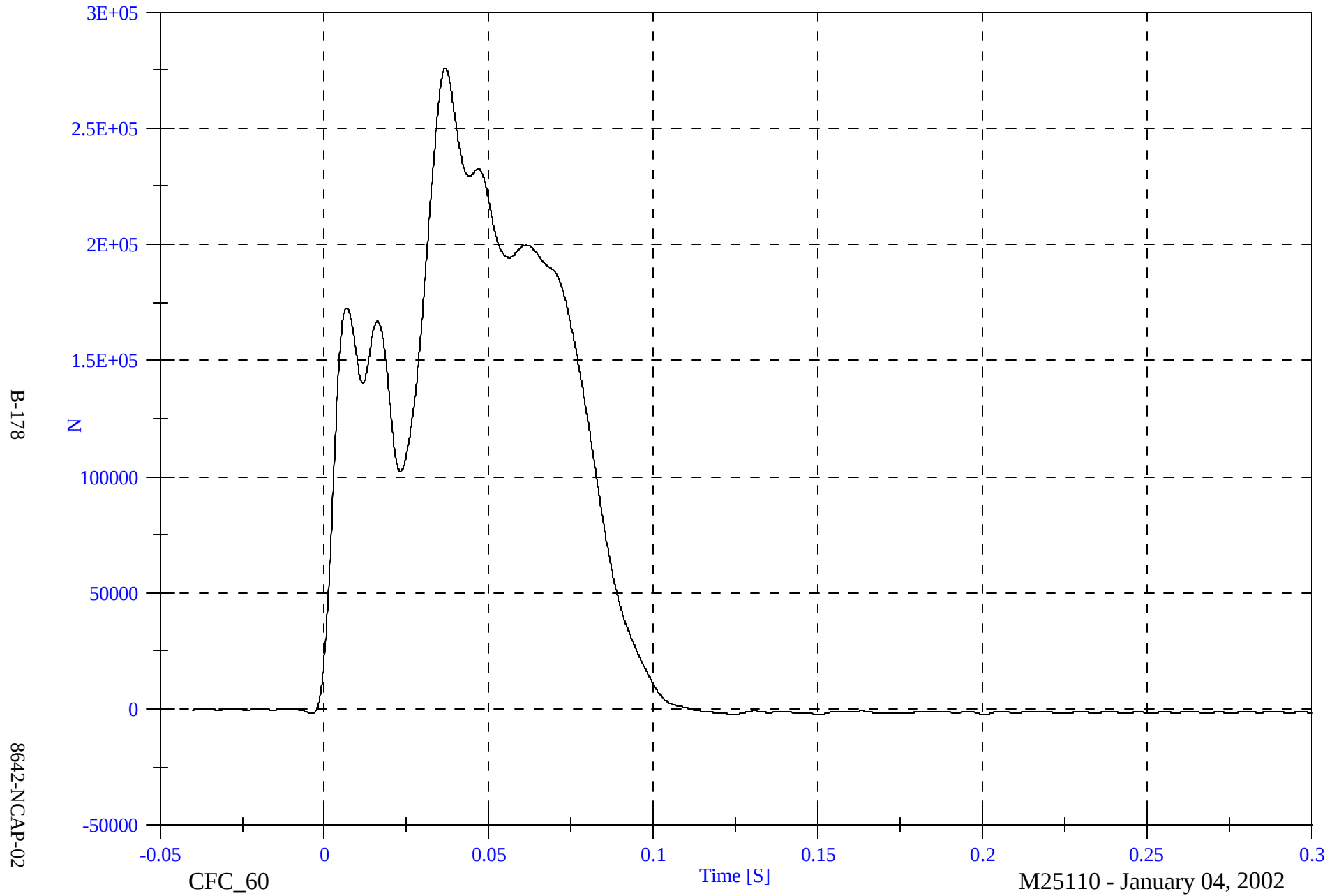


NCAP - 2002 Toyota Tundra Access Cab 4X4

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

Max: 276026.7 [N] at 0.037 [S]

Min: -2343.0 [N] at 0.124 [S]

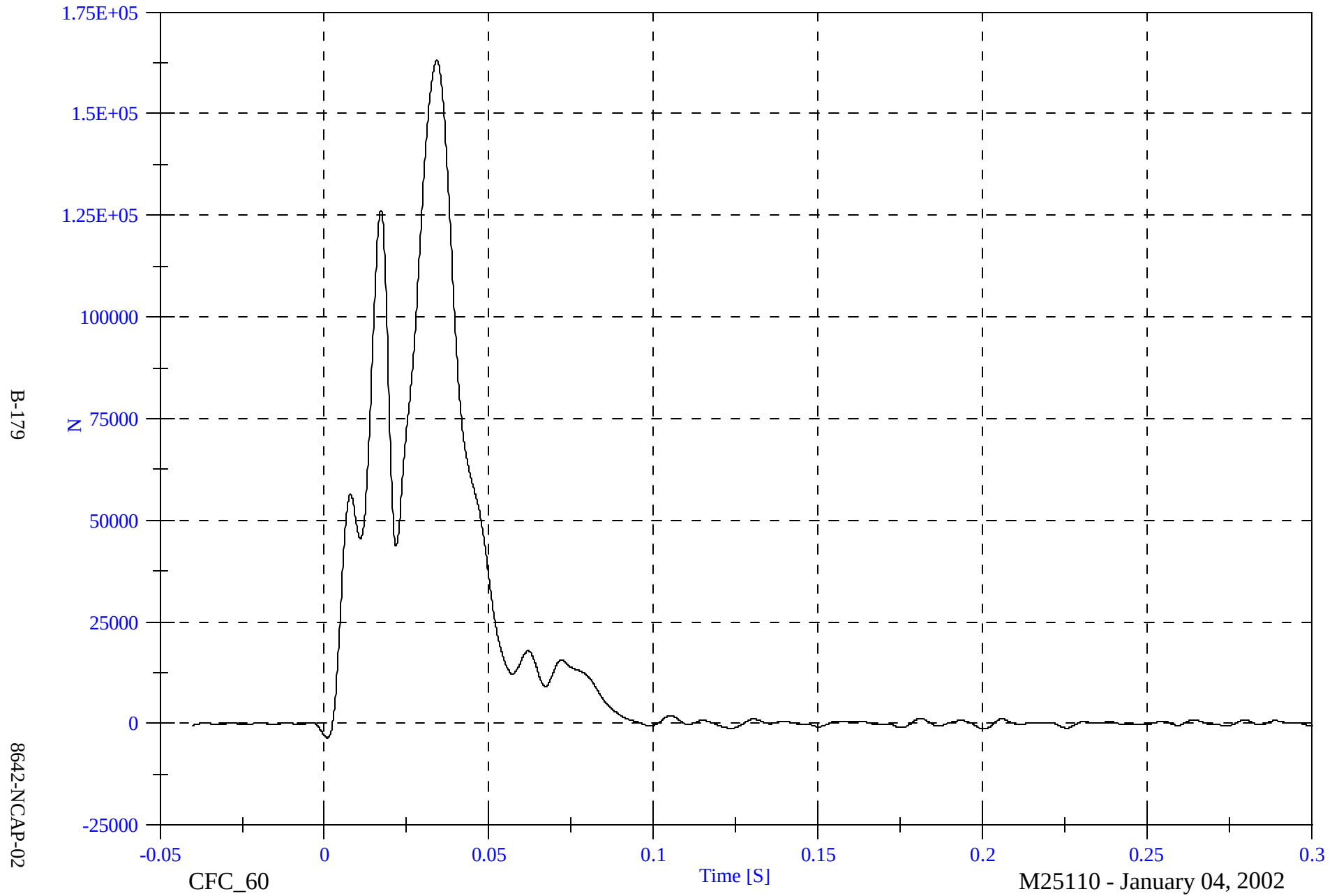


NCAP - 2002 Toyota Tundra Access Cab 4X4

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

Max: 163103.4 [N] at 0.034 [S]

Min: -3472.4 [N] at 0.001 [S]

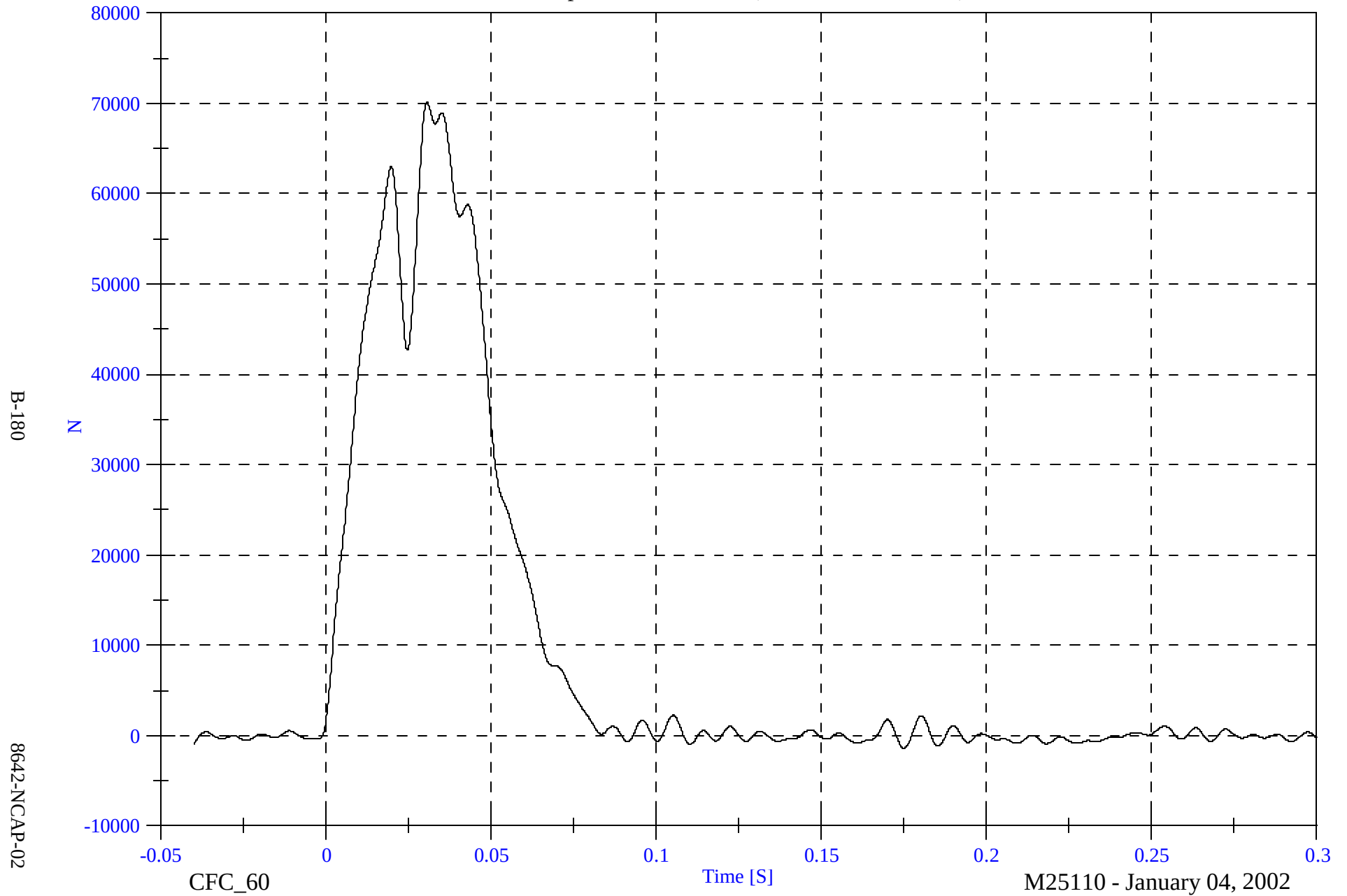


NCAP - 2002 Toyota Tundra Access Cab 4X4

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

Max: 70141.8 [N] at 0.031 [S]

Min: -1407.8 [N] at 0.175 [S]

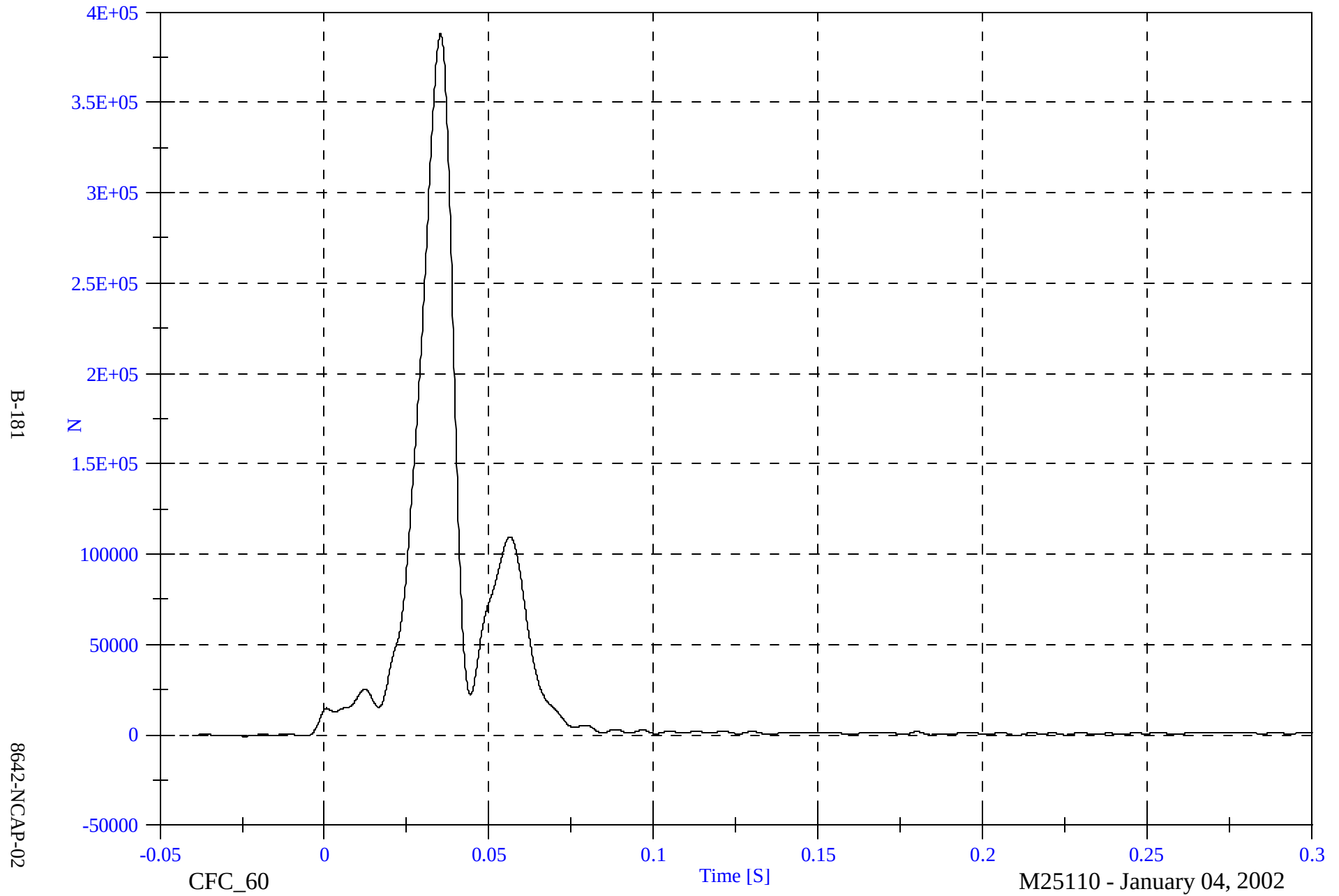


NCAP - 2002 Toyota Tundra Access Cab 4X4

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

Max: 387780.2 [N] at 0.035 [S]

Min: -764.7 [N] at -0.024 [S]

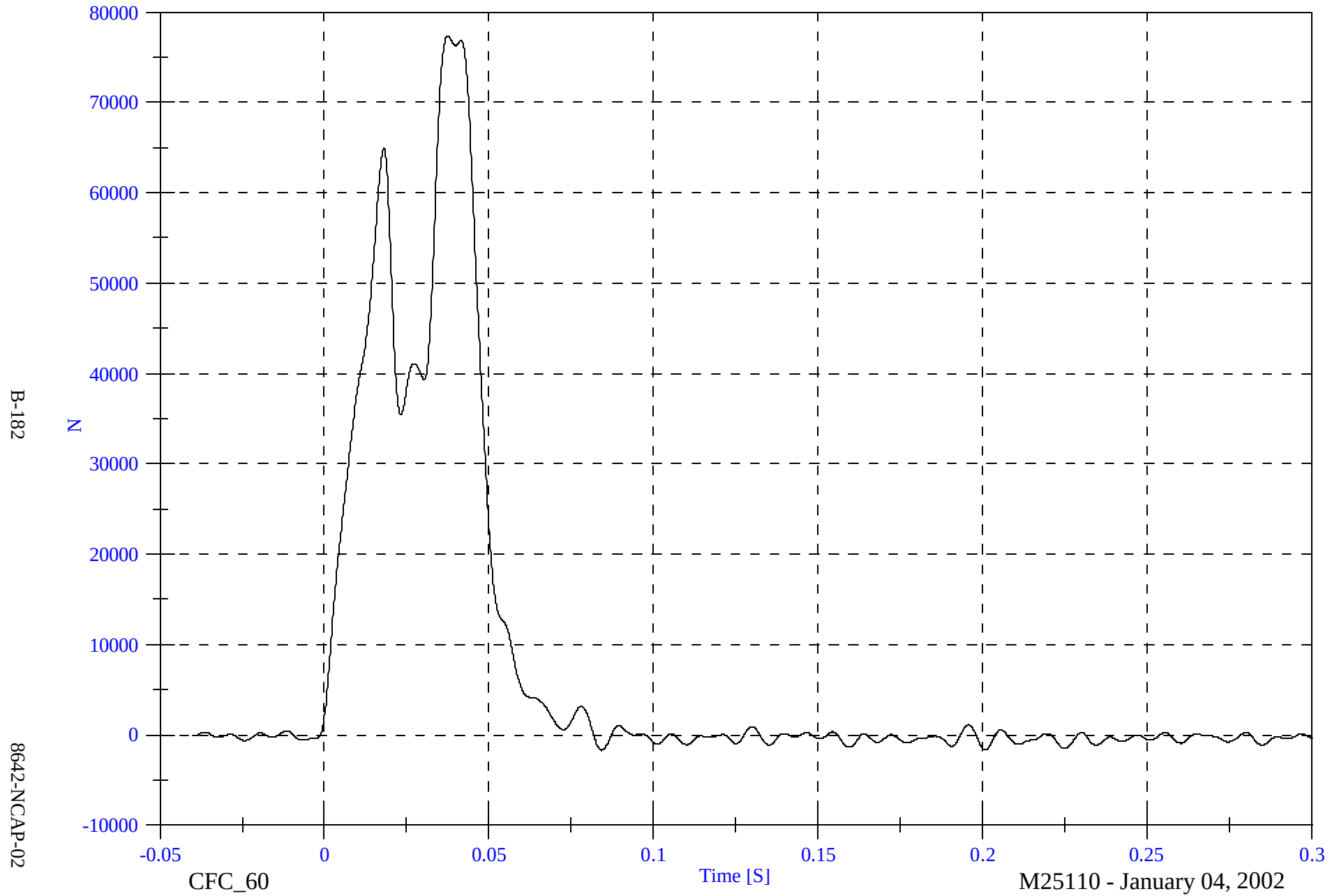


NCAP - 2002 Toyota Tundra Access Cab 4X4

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

Max: 77324.2 [N] at 0.037 [S]

Min: -1687.6 [N] at 0.084 [S]

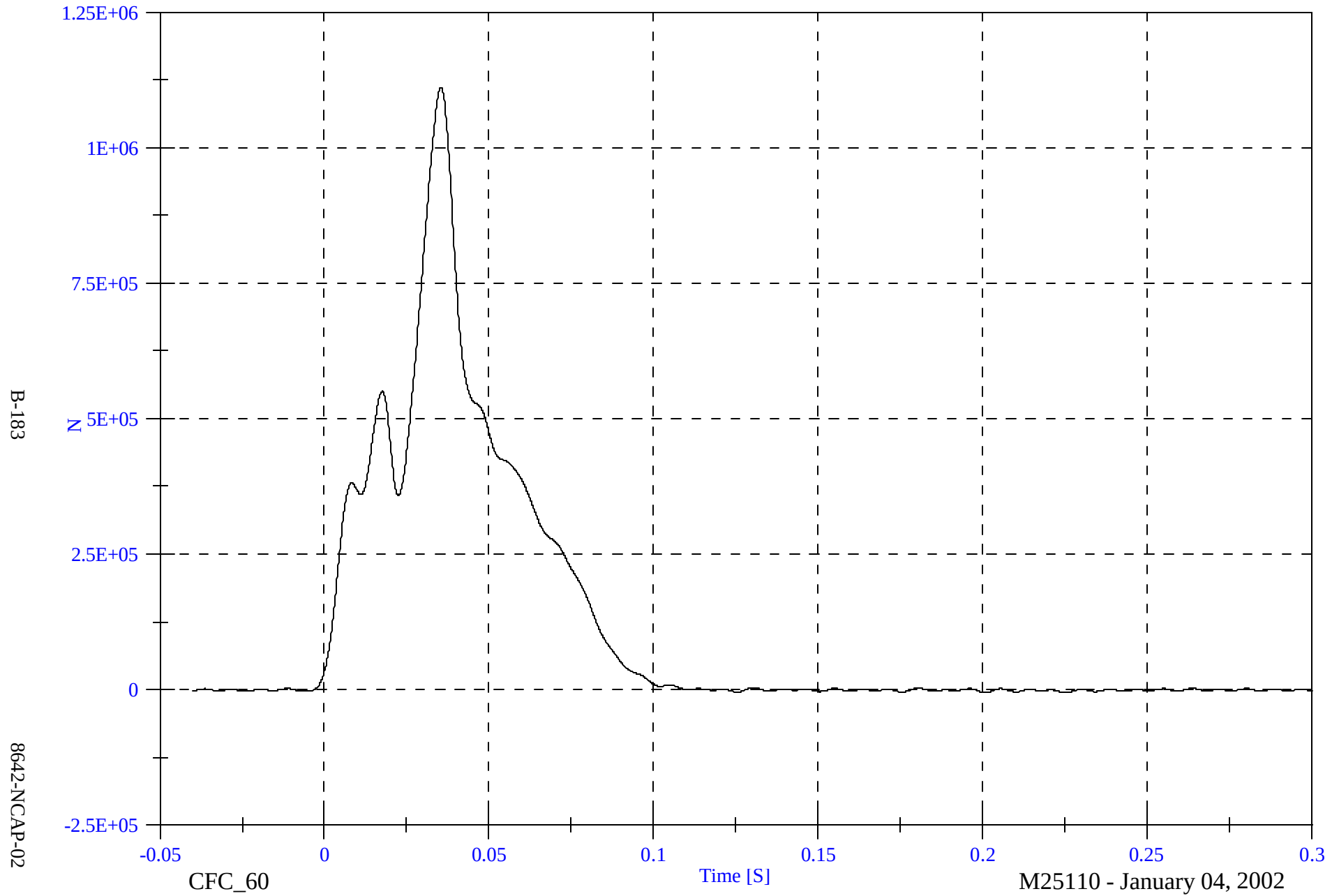


NCAP - 2002 Toyota Tundra Access Cab 4X4

Total Load Cell Sum (All 6 Groups)

Max: 1110951.9 [N] at 0.035 [S]

Min: -5287.6 [N] at 0.225 [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:

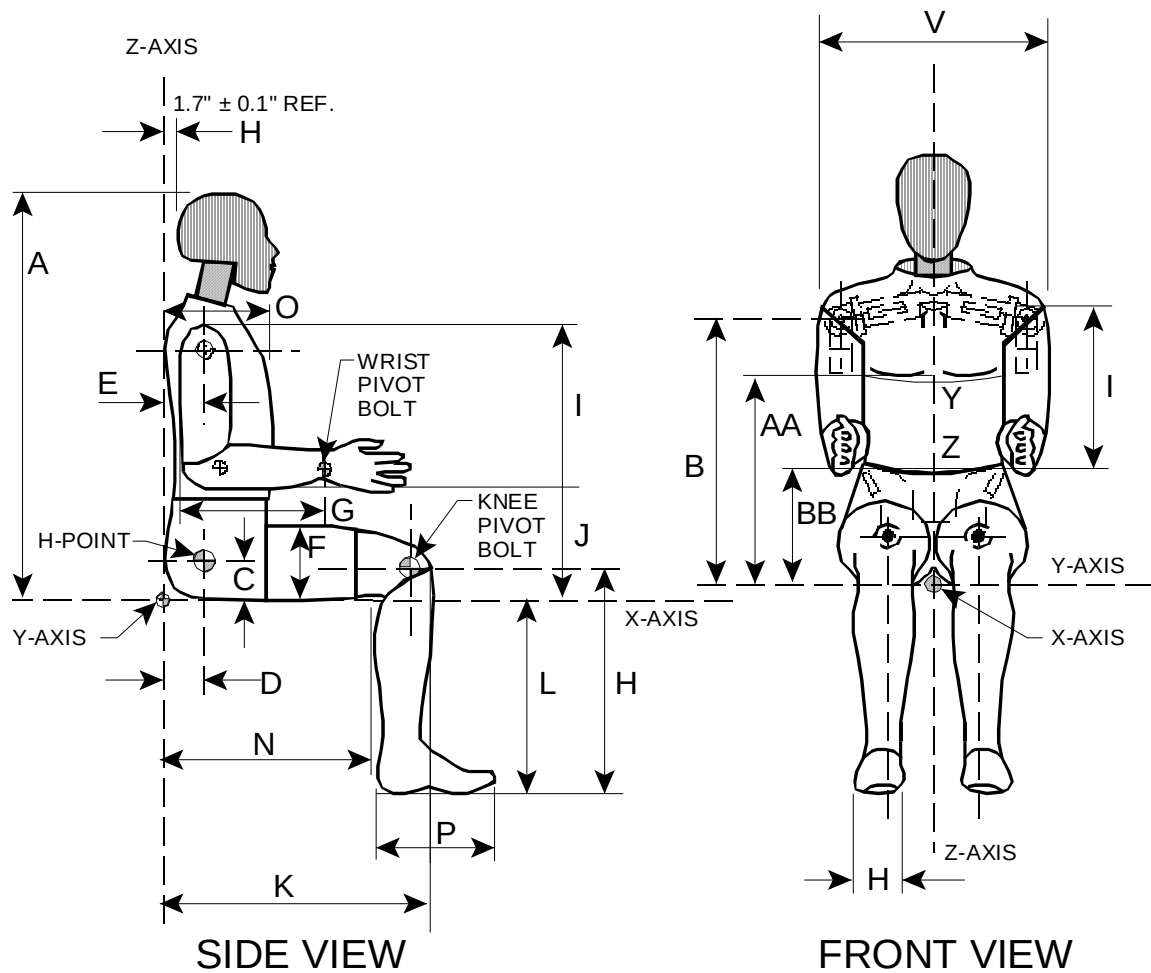
<u>Position No./Location</u>	<u>Serial No.</u>	<u>Completion Date</u>
#1/Driver	061	10/24/01
#2/Right Front Passenger	064	10/24/01

Electronic Test Equipment

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

DUMMY CONFIGURATION DIMENSIONS

EXTERNAL DIMENSIONS SPECIFICATIONS



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

PART 572E
HEAD DROP TEST

Dummy Serial Number 061
Sequential Test Number 2
Date October 18, 2001
Workfile 016201.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	31
Peak Resultant Acceleration	225-275 G's	229.30
Peak Lateral Acceleration	15 G's Max	8.79
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061	
Sequential Test Number	2	
Date	October 22, 2001	6 Axis Neck Transducer
Workfile	061201.nfl	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	29
Impact Velocity		22.60 - 23.40 Ft/s	23.12
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.14
	20 ms	17.60 - 22.60 G's	20.25
	30 ms	12.50 - 18.50 G's	17.08
Max Pendulum G's Above 30 ms		29 G's Max	17.08
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	40.88
D Plane Rotation	Max	64 - 78 Deg	70.27
	Time	57 - 64 ms	59.88
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	79.52
	Time	47 - 58 ms	52.38
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	113.88
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.12

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061	
Sequential Test Number	2	
Date	October 22, 2001	6 Axis Neck Transducer
Workfile	061201.nex	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	29
Impact Velocity		19.50 - 20.30 Ft/s	19.85
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.14
	20 ms	14.00 - 19.00 G's	17.32
	30 ms	11.00 - 16.00 G's	14.26
Max Pendulum G's Above 30 ms		22 G's Max	14.26
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	43.12
D Plane Rotation	Max	81 - 106 Deg	94.32
	Time	72 - 82 ms	75.62
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-46.45
	Time	65 - 79 ms	71.25
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	153.50
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	135.12

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 2
Date October 24, 2001
Workfile 061201.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	32.0
Pendulum Velocity	21.6 - 22.4 Ft/s	22.2
Maximum Deflection	2.50 - 2.86 in	2.70
Maximum Resistive Force	1160 - 1325 Lbs	1162.38
Internal Hysteresis	69 - 85 %	79.62

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 061
Sequential Test Number 2
Date October 24, 2001
Workfile 061201.lf/061201.rf

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	32.0
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1192.79
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	32.0
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1123.70

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Sequential Test Number 2
Date October 24, 2001

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			31
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	8.4
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.9
Thigh Clearance	F	5.5 - 6.1 in	6.1
Buttock Knee Length	K	22.8 - 23.8 in	23.6
Buttock Popliteal Length	N	17.8 - 18.8 in	18.4
Popliteal Height	L	16.9 - 17.9 in	17.7
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
Elbow Rest Height	J	7.5 - 8.3 in	7.7
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

PART 572E
HEAD DROP TEST

Dummy Serial Number 064
Sequential Test Number 2
Date October 18, 2001
Workfile 064201.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70.0
Relative Humidity	10% - 70%	31.0
Peak Resultant Acceleration	225-275 G's	252.15
Peak Lateral Acceleration	15 G's Max	10.67
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	2	
Date	October 23, 2001	6 Axis Neck Transducer
Workfile	064201.nfl	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	32.0
Impact Velocity		22.60 - 23.40 Ft/s	23.12
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.81
	20 ms	17.60 - 22.60 G's	21.05
	30 ms	12.50 - 18.50 G's	16.86
Max Pendulum G's Above 30 ms		29 G's Max	16.86
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	39.75
D Plane Rotation	Max	64 - 78 Deg	71.90
	Time	57 - 64 ms	59.12
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	77.55
	Time	47 - 58 ms	52.12
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	113.62
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	2	
Date	October 23, 2001	6 Axis Neck Transducer
Workfile	064201.nex	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70.0
Relative Humidity		10% - 70%	33.0
Impact Velocity		19.50 - 20.30 Ft/s	19.66
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.64
	20 ms	14.00 - 19.00 G's	17.07
	30 ms	11.00 - 16.00 G's	14.31
Max Pendulum G's Above 30 ms		22 G's Max	14.31
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	42.88
D Plane Rotation	Max	81 - 106 Deg	96.10
	Time	72 - 82 ms	75.38
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-45.20
	Time	65 - 79 ms	72.75
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	155.62
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	135.25

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 2
Date October 24, 2001
Workfile 064201.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70.0
Relative Humidity	10% - 70%	32.0
Pendulum Velocity	21.6 - 22.4 Ft/s	22.2
Maximum Deflection	2.50 - 2.86 in	2.68
Maximum Resistive Force	1160 - 1325 Lbs	1175.14
Internal Hysteresis	69 - 85 %	74.19

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 064
Sequential Test Number 2
Date October 24, 2001
Workfile 064201.lf/064201.rf

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	32.0
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1200.36
RIGHT KNEE		
Temperature	66 - 78 Deg F	70.0
Relative Humidity	10% - 70%	32.0
Probe Velocity	6.8 - 7.0 Ft/s	7.0
Peak Knee Impact Force	1060 - 1300 Lbs	1118.79

Remarks:

Laboratory Technician:

B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 2
Date October 24, 2001

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			31
Location for Chest Circumference	AA	16.9 - 17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	33.6
Chest Depth	O	8.4 - 9.0 in	8.6
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

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array X Arm Y		ENDEVCO	AC-P18558	08/28/01	02/26/02
Head 9 Array X Arm Z		ENDEVCO	AC-P19212	08/28/01	02/26/02
Head 9 Array Y Arm X		ENDEVCO	AC-P19197	08/28/01	02/26/02
Head 9 Array Y Arm Z		ENDEVCO	AC-P18738	08/29/01	02/27/02
Head 9 Array Z Arm X		ENDEVCO	AC-P19217	08/28/01	02/26/02
Head 9 Array Z Arm Y		ENDEVCO	AC-P18739	08/29/01	02/27/02
Head	X	ENDEVCO	AC-P23276	10/01/01	04/01/02
	Y	ENDEVCO	AC-P22943	10/01/01	04/01/02
	Z	ENDEVCO	AC-P23134	09/24/01	03/25/02
Head	X (R)	ENDEVCO	AC-P23288	10/01/01	04/01/02
	Y (R)	ENDEVCO	AC-P23471	10/01/01	04/01/02
	Z (R)	ENDEVCO	AC-P18948	10/01/01	04/01/02
Neck Load Cell	X	DENTON	LC-205FX	07/12/01	01/10/02
	Y	DENTON	LC-205FY	07/12/01	01/10/02
	Z	DENTON	LC-205FZ	07/12/01	01/10/02
Neck Moment	X	DENTON	LC-205MX	07/12/01	01/10/02
	Y	DENTON	LC-205MY	07/12/01	01/10/02
	Z	DENTON	LC-205MZ	07/12/01	01/10/02
Chest	X	ENDEVCO	AC-P21373	09/24/01	03/25/02
	Y	ENDEVCO	AC-P22639	10/01/01	04/01/02
	Z	ENDEVCO	AC-P21297	09/24/01	03/25/02
Chest	X (R)	ENDEVCO	AC-P21171	09/24/01	03/25/02
	Y (R)	ENDEVCO	AC-P23136	10/11/01	04/11/02
	Z (R)	ENDEVCO	AC-P23128	09/24/01	03/25/02
Chest Deflection Gauge		SERVO	DS-061	10/16/01	04/16/02
Pelvic	X	ENDEVCO	AC-P21441	09/24/01	03/25/02
	Y	ENDEVCO	AC-P19246	09/24/01	03/25/02
	Z	ENDEVCO	AC-P21516	09/24/01	03/25/02

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell		GSE	LC-659	07/24/01	01/22/02
Right Femur Load Cell		GSE	LC-723	07/24/01	01/22/02
Left Knee Shear		SPACEAGE CONTROL	DS-821	12/07/01	06/07/02
Right Knee Shear		SPACEAGE CONTROL	DS-817	12/07/01	06/07/02
Left Upper Tibia	Mx	DENTON	LC-016MX	09/05/01	03/06/02
	My	DENTON	LC-016MY	09/05/01	03/06/02
Left Lower Tibia	Fz	DENTON	LC-123FZ	09/05/01	03/06/02
	Mx	DENTON	LC-123MX	09/05/01	03/06/02
	My	DENTON	LC-123MY	09/05/01	03/06/02
Right Upper Tibia	Mx	DENTON	LC-023MX	09/05/01	03/06/02
	My	DENTON	LC-023MY	09/05/01	03/06/02
Right Lower Tibia	Fz	DENTON	LC-111 FZ	09/05/01	03/06/02
	Mx	DENTON	LC-111 MX	09/05/01	03/06/02
	My	DENTON	LC-111 MY	09/05/01	03/06/02
Left Foot Rear	X	ENDEVCO	AC-P19343	08/27/01	02/25/02
	Z	ENDEVCO	AC-P16583	08/27/01	02/25/02
Left Foot Front	Z	ENDEVCO	AC-P18728	08/27/01	02/25/02
Right Foot Rear	X	ENDEVCO	AC-P18628	08/27/01	02/25/02
	Z	ENDEVCO	AC-P18741	08/27/01	02/25/02
Right Foot Front	Z	ENDEVCO	AC-P16587	08/27/01	02/25/02

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array X Arm Y		ENDEVCO	AC-P17531	08/29/01	02/27/02
Head 9 Array X Arm Z		ENDEVCO	AC-P14965	08/29/01	02/27/02
Head 9 Array Y Arm X		ENDEVCO	AC-P17563	08/29/01	02/27/02
Head 9 Array Y Arm Z		ENDEVCO	AC-P18551	08/29/01	02/27/02
Head 9 Array Z Arm X		ENDEVCO	AC-P17539	08/29/01	02/27/02
Head 9 Array Z Arm Y		ENDEVCO	AC-P18718	08/29/01	02/27/02
Head	X	ENDEVCO	AC-P23138	09/24/01	03/25/02
	Y	ENDEVCO	AC-P19111	09/24/01	03/25/02
	Z	ENDEVCO	AC-P21392	09/24/01	03/25/02
Head	X (R)	ENDEVCO	AC-P19253	09/24/01	03/25/02
	Y (R)	ENDEVCO	AC-P21135	09/24/01	03/25/02
	Z (R)	ENDEVCO	AC-P23161	09/24/01	03/25/02
Neck Load Cell	X	DENTON	LC-440FX	07/11/01	01/09/02
	Y	DENTON	LC-440FY	07/11/01	01/09/02
	Z	DENTON	LC-440FZ	07/11/01	01/09/02
Neck Moment	X	DENTON	LC-440MX	07/12/01	01/10/02
	Y	DENTON	LC-440MY	07/12/01	01/10/02
	Z	DENTON	LC-440MZ	07/11/01	01/09/02
Chest	X	ENDEVCO	AC-P23155	09/24/01	03/25/02
	Y	ENDEVCO	AC-P23358	10/01/01	04/01/02
	Z	ENDEVCO	AC-P23282	10/01/01	04/01/02
Chest	X (R)	ENDEVCO	AC-P21484	09/24/01	03/25/02
	Y (R)	ENDEVCO	AC-P16951	08/30/01	02/28/02
	Z (R)	ENDEVCO	AC-P21399	09/24/01	03/25/02
Chest Deflection Gauge		SERVO	DS-064	10/17/01	04/17/02
Pelvic	X	ENDEVCO	AC-P23174	09/24/01	03/25/02
	Y	ENDEVCO	AC-P23164	09/24/01	03/25/02
	Z	ENDEVCO	AC-P23137	09/24/01	03/25/02

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell		GSE	LC-954	07/24/01	01/22/02
Right Femur Load Cell		GSE	LC-955	07/24/01	01/22/02
Left Knee Shear		SPACEAGE CONTROL	DS-819	12/07/01	06/07/02
Right Knee Shear		SPACEAGE CONTROL	DS-815	12/07/01	06/07/02
Left Upper Tibia	Mx	DENTON	LC-045MX	09/05/01	03/06/02
	My	DENTON	LC-045MY	09/05/01	03/06/02
Left Lower Tibia	Fz	DENTON	LC-125FZ	09/05/01	03/06/02
	Mx	DENTON	LC-125MX	09/05/01	03/06/02
	My	DENTON	LC-125MY	09/05/01	03/06/02
Right Upper Tibia	Mx	DENTON	LC-038MX	09/05/01	03/06/02
	My	DENTON	LC-038MY	09/05/01	03/06/02
Right Lower Tibia	Fz	DENTON	LC-124FZ	09/05/01	03/06/02
	Mx	DENTON	LC-124MX	09/05/01	03/06/02
	My	DENTON	LC-124MY	09/05/01	03/06/02
Left Foot Rear	X	ENDEVCO	AC-J30491	08/28/01	02/26/02
	Z	ENDEVCO	AC-J31026	08/28/01	02/26/02
Left Foot Front	Z	ENDEVCO	AC-J32831	08/28/01	02/26/02
Right Foot Rear	X	ENDEVCO	AC-J33376	08/28/01	02/26/02
	Z	ENDEVCO	AC-J32832	08/28/01	02/26/02
Right Foot Front	Z	ENDEVCO	AC-J31095	08/28/01	02/26/02

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember	ICS	AC-D41	09/25/01	03/26/02
Right Rear Seat Crossmember	ICS	AC-D61	10/30/01	04/30/02
Top of Engine	ICS	AC-D36	10/30/01	04/30/02
Bottom of Engine	ENDEVCO	AC-A13513	08/29/01	02/27/02
Right Disc Brake Caliper	ENDEVCO	AC-B11408	08/29/01	02/27/02
Instrument Panel	ENDEVCO	AC-B10827	08/29/01	02/27/02
Left Disc Brake Caliper	ENDEVCO	AC-J24754	09/25/01	03/26/02
Left Seat Rear Crossmember (R)	ENDEVCO	AC-J27927	10/05/01	04/05/02
Right Seat Rear Crossmember (R)	ENDEVCO	AC-J32791	08/20/01	02/18/02