

**REPORT NUMBER TR-P23001-02-NC**

**NEW CAR ASSESSMENT PROGRAM  
FRONTAL BARRIER IMPACT TEST**

**TOYOTA MOTOR MANUFACTURING  
2003 TOYOTA TUNDRA SR5  
4 DOOR PICKUP**

**NHTSA NUMBER: M35112**

**PREPARED BY:  
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**DECEMBER 17, 2002**

**FINAL REPORT**

**PREPARED FOR:  
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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
RULEMAKING  
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## Technical Report Documentation Page

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		<b>15. Supplementary Notes</b>			
<b>16. Abstract</b>					
<p>A 35mph (56.3 km/h) frontal barrier impact was conducted on a 2003 Toyota Tundra SR5 Pickup at KARCO Engineering, LLC on 12/17/02. This test was conducted to obtain data indicant of FVMSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 55.88 km/h. The ambient temperature at the barrier face at the time of impact is 3.3 degrees Celsius. The test vehicle sustained post-impact maximum static crush of 601 mm at the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and second generation supplemental airbags in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:</p>					
<b>Measurement Description</b>		<b>Units</b>	<b>Threshold</b>	<b>Driver ATD</b>	<b>Pass. ATD</b>
Head Injury Criteria (HIC)		N/A	1000	434.7	495.2
Max. Thorax Accel. (3 msec clip)		G's	60	48.5	46.9
Left Femur Force		Newtons	10009	-4558.6	-3703.6
Right Femur Force		Newtons	10009	-1204.7	-2483.2
<b>17. Key Words</b>			<b>18. Distribution Statement</b>		
56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2003 Toyota Tundra SR5 4 Door Pickup NHTSA No. M35112			Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, D.C. 20590		
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**SECTION 1**  
**PURPOSE AND SUMMARY OF TEST M35112**

**1.1 PURPOSE**

This 35 mph (56.3 km/h) 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-02005. 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 30 mph (48.3 km/h) requirements.

The 35 mph (56.3 km/h) frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Test procedure.

**1.2 SUMMARY**

A load cell barrier consisting of 36 load cells was impacted by a 2003 Toyota Tundra SR5 4 Door Pickup at a velocity of 55.88 km/h. The test was performed at Karco Engineering, LLC on December 17, 2002. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

One real-time and 17 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, 50<sup>th</sup> percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head (primary and redundant), chest (primary and redundant) and pelvis triaxial accelerometers, chest displacement potentiometers, six-axis upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also placed on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 35) and the right-front passenger (position 2) ATD (Serial No. 34) were calibrated one test prior to this test.

Ninety seven (97) channels of data were recorded using an on-board data acquisition system. Appendix A contains Photographs. Appendix B contains the vehicle and dummy response data traces. Appendix C contains Load Cell Barrier information. Appendix D contains the Instrumentation Data Channel assignments. Appendix E contains the Dummy Calibration Data and Appendix F contains the Child Restraint System (CRS).

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

The maximum static crush of the vehicle was 601 mm and both the driver and the 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 driver ATD head contacted the airbag, headrest and seatback. Its chest and abdomen had no contact. Both knees contacted the steering column/dash.

The passenger's visible contact points were as follows: The passenger ATD head contacted the airbag, headrest and seatback. The chest and abdomen contacted the airbag. Both knees contacted the glove box.

Occupant injury data is contained in table below.

**OCCUPANT DATA SUMMARY**

ATD Position	HIC	Clip (g)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)
Driver	434.7	48.5	-30.2	-4558.6	-1204.7	88.5
Passenger	495.2	46.9	-28.6	-3703.6	-2483.2	94.8

**SECTION 2**  
**OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**CONVERSION FACTORS USED IN THIS REPORT\***

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in <sup>2</sup>	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	=(tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

\* Based on the Recommended Practice in SAE J916, May 85

**DATA SHEET NO. 1  
CRASH TEST SUMMARY**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

Measured Parameter	Units	Value
Velocity at Impact	km/h	55.88
Test Weight	kg	2217
Impact Angle	degrees	0
Average Rebound	mm	618
Maximum Static Crush	mm	601

**DOOR OPENING AND SEAT TRACK INFORMATION**

Description	Driver	Passenger
Front Door Opening	Remained closed, opened w/o the aid of tools	Remained Closed, opened w/o the aid of tools
Rear Door Opening	Remained closed, opened w/o the aid of tools	Remained Closed, opened w/o the aid of tools
Seat Track Shift (mm)	0	43
Seat Back Failure	None	None

**TEST DUMMY INFORMATION**

Description	Driver	Passenger
Dummy Type / Serial No.	50% Male Hybrid III / No. 35	50% Male Hybrid III / No. 34
Head Contact	Airbag/Headrest/Seatback	Airbag/Headrest/Seatback
Chest Contact	None	Airbag
Abdomen Contact	None	Airbag
Left Knee Contact	Steering Column/Dash	Glove Box
Right Knee Contact	Steering Column/Dash	Glove Box

**16mm MOVIE COVERAGE**

High Speed	17
Real Time	1
Total	18

**DATA CHANNELS**

Driver ATD Sensors	40
Passenger ATD Sensors	40
Belt Assessment Sensors	8
Vehicle Structure Accelerometers	9
Rigid Barrier Load Cells	36
Total	133

**DATA SHEET NO. 2**  
**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**TEST VEHICLE INFORMATION**

Make	Toyota
Model	Tundra SR5
Body Style	4 Door Pickup
NHTSA No.	M35112
VIN	5TBRN34193S347706
Color	Black
Delivery Date	11/13/2002
Odometer Reading (mi.)	93
Dealer	Soutar's Barstow
Transmission	5 Speed Manual
Final Drive	Rear
Type/No. Cylinders	V-6
Engine Displacement (L)	3.4
Engine Placement	Longitudinal
Roof Rack	No
Sunroof/T-Top	No
Tinted Glass	Yes
Traction Control	No
Power Brakes	Yes
Front Disc	Yes
Rear Disc	No

**TEST VEHICLE OPTIONS**

Anti-Lock Brakes (ABS)	Yes
All Wheel Drive	No
Power Steering	Yes
Driver Airbag	Yes
Driver Side Bag	No
Driver Head Bag	No
Pass. Airbag	Yes
Pass. Side Bag	No
Pass. Head Bag	No
Pre-tensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes
Center Console	Yes
Air Cond.	Yes
AM/Fm Cassette	Yes
Tilt Steering	Yes
Power Door Locks	Yes
Power Windows	Yes
Power Seats	Yes
Other	Yes

**DATA FROM CERTIFICATION LABEL**

Manufactured By	Toyota Motor Manufacturing	GWWR (kg)	2585
Date of Manufacture	September-02	GAWR Front (kg)	1433
		GAWR Rear (kg)	1706

**VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION**

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	None	
Number of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				652
Cargo Weight (RCLW) (kg)				136

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

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
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NHTSA No.: M35112  
 Test Date: 12/17/02

**TIRE INFORMATION**

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	180	200
Cold Pressure (kPa)	180	200
Recommend Tire Size	P265/70R16	P265/70R16
Tire Size on Vehicle	P265/70R16	P265/70R16
Tire Manufacturer	Dunlop	Dunlop
Treadwear	300	300
Traction	B	B
Temperature Grades	B	B
Tire Plies Sidewall	2	2
Tire Plies Body	4	4
Load Index/Speed Symbol	98 S	98 S
Tire Material	Steel/polyester	Steel/polyester
DOT Safety Code Right	DB72C48R	DB72C48R
DOT Safety Code Left	DB72C48R	DB72C48R

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

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

NHTSA No.: M35112

**TEST VEHICLE WEIGHTS**

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	549	439		605	514	
Right	kg	517	428		586	512	
Ratio	%	55.1	44.9		53.7	46.3	
Totals	kg	1066	867	1933	1191	1026	2217

**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1933
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	136
Calculated Vehicle Target Weight (TVTW)	kg	2221

**TEST VEHICLE ATTITUDE AND CG**

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	883	885	913	922	1463
As Tested	mm	863	865	898	900	1508

Vehicle Wheel base (mm): 3258

Weight of Ballast secured in cargo area (kg): 0

Vehicle Components Removed: \_\_\_\_\_

\* Ballast weight does not include cameras, instrumentation, and brake abort system.

**FUEL SYSTEM DATA**

Fuel System Capacity From Owner's Manual (L): 99.9

Usable Capacity Figure Furnished by COTR (L): 99.9

Actual Test Volume with entire fuel System Filled (L): 92.9

Test Fluid Type: Stoddard Solvent ; Specific Gravity: 0.764

Kinematic Viscosity: as per ASTM Standard D484-71 ; Color: Purple

Is Vehicle Fuel Pump Electric or Mechanical?: Electric

If electric, does pump operate with ignition switch "ON" & engine "OFF"? Yes

Fuel System Particulars: Driver side filler door, tank mounted at rear.

Test Program: 2003 NHTSA 35MPH NCAP

Test Date: 12/17/02

**DATA SHEET NO. 3  
POST IMPACT DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

NHTSA No.: M35112

Test Program: 2003 NHTSA 35MPH NCAP

Test Date: 12/17/02

**SPEED TRAP DATA**

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.51 to 57.12	55.88
Trap No. 1 Entry Distance	mm	< 1524	1524
Trap No. 1 Exit Distance	mm	< 1524	305
Trap No. 2 Velocity (Redundant)	km/h	55.51 to 57.12	55.90
Trap No. 2 Entry Distance	mm	< 1524	1524
Trap No. 2 Exit Distance	mm	< 1524	305

**VEHICLE STATIC CRUSH**

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	5405	5004	-401
Center	mm	5545	4944	-601
Right Side	mm	5405	5157	-248

**VEHICLE REBOUND FROM BARRIER**

Measured Parameter	Units	Value
Left Side	mm	715
Center	mm	580
Right Side	mm	560
Average	mm	618

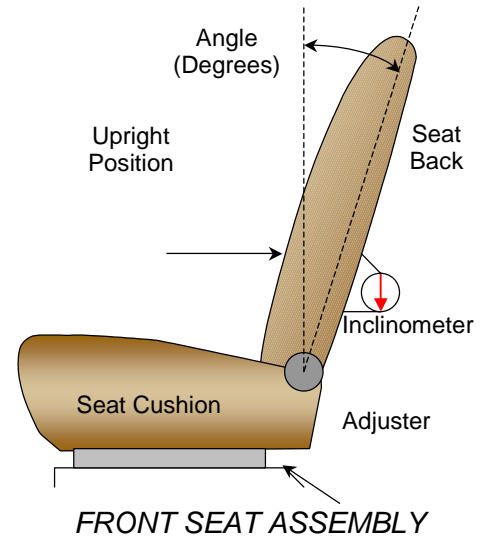
**DATA SHEET NO. 4  
TEST VEHICLE INFORMATION**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**NOMINAL DESIGN RIDING POSITION**

The driver and passenger seat backs are positioned to the manufacturers designated angle. The procedure is as follows: A special application tool with pointed probes is inserted through the fabric to make contact with the rigid portion of the lower seat frame assembly, approximately 13 inches above the pivot point of the seat back. An inclinometer is placed against the flat surface of the tool and the seat back angle is measured directly from the dial face.



**SEAT BACK ANGLES**

	Deg.
Driver w/seated Dummy	10
Passenger w/seated Dummy	10

**SEAT FORE/AFT POSITIONS**

The first or forward most position is counted as number one (1). The fore/aft position is set aft of the middle position for both the driver and passenger.

**SEAT FORE/AFT POSITIONING**

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	15	8
Passenger Seat	14	8

**SEAT BELT UPPER ANCHORAGE**

Position number one (1) is the uppermost position.

**SEAT BELT UPPER ANCHORAGE**

	Total # of Positions	Placed in Position #
Driver Seat	3	2
Passenger Seat	3	2

**DATA SHEET NO. 4...(CONTINUED)**  
**TEST VEHICLE INFORMATION**

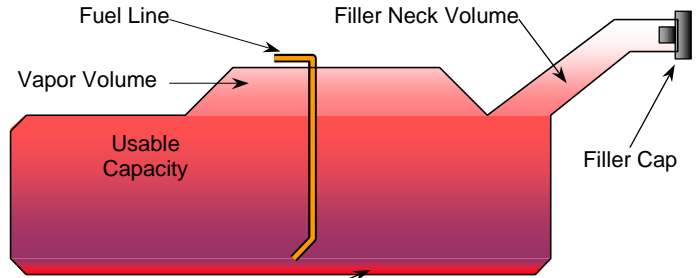
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**FUEL TANK CAPACITY DATA**

	<b>Liters</b>
Usable Capacity of "Standard Tank"	99.9
Usable Capacity of "Optional Tank"	N/A
Usable Capacity used for FMVSS 301	91.91 to 93.92
Actual Amount of Solvent Used	92.9

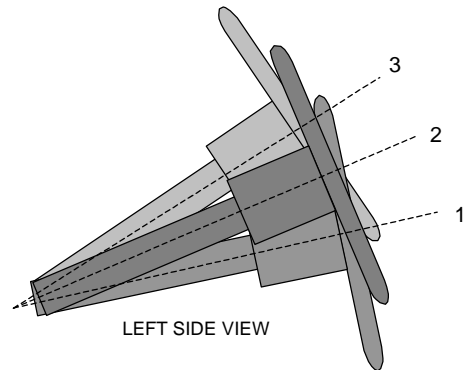
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the right rear fender. The standard fuel tank occupies the area under the rear seat. Fuel lines run inside the right frame rail to the engine compartment.



VEHICLE FUEL TANK ASSEMBLY

**STEERING COLUMN ADJUSTMENT**

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

**STEERING COLUMN POSITIONS**

	<b>Degrees</b>
Lowermost; position No. 1	18
Geometric center; position No. 2	26
Uppermost; position No. 3	34

**DATA SHEET NO. 5**  
**DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
Test Program: 2003 NHTSA 35MPH NCAP

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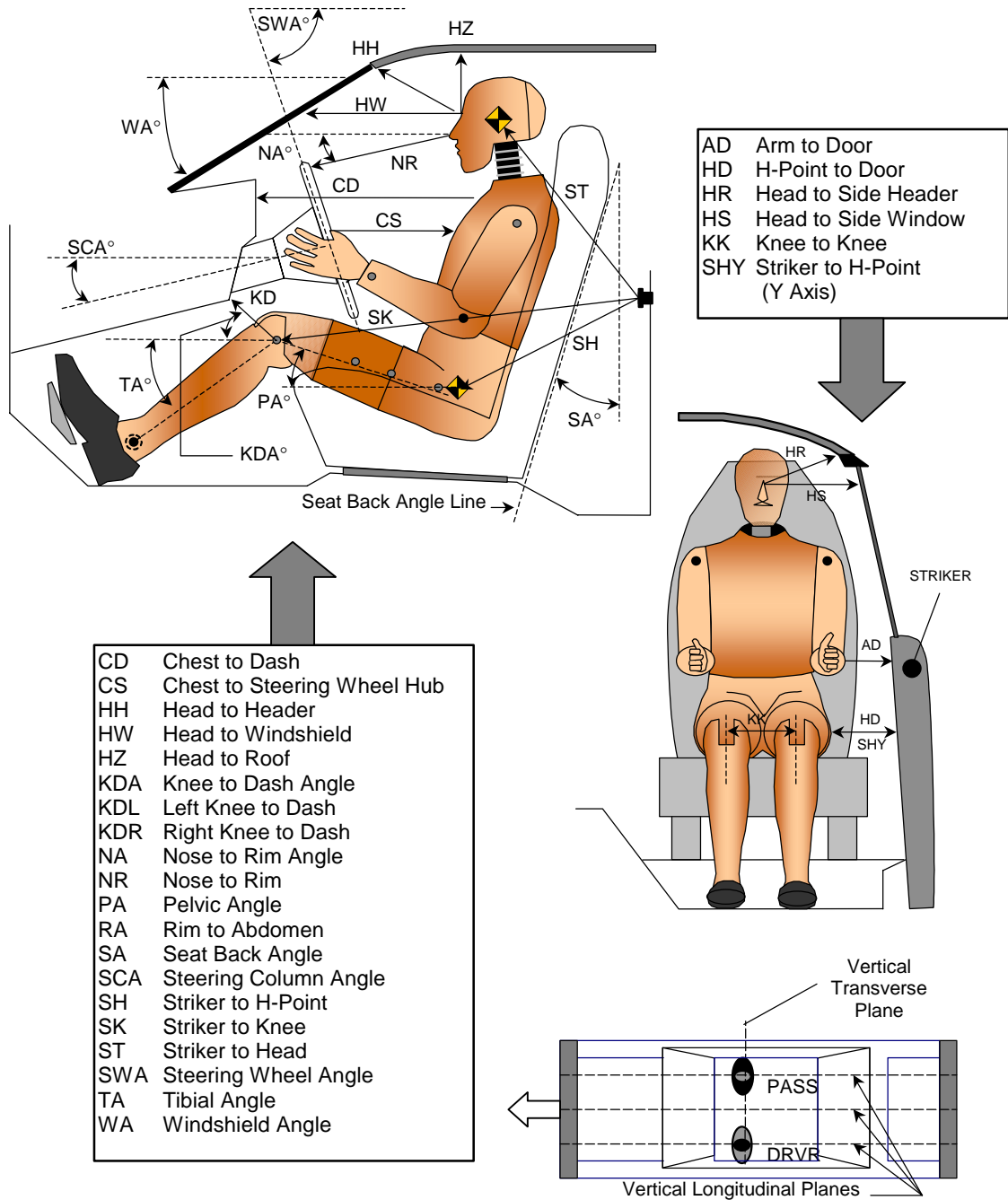
**TEST DUMMY POSITION MEASUREMENTS**

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		51		
SWA	Steering Wheel Angle		64		
SCA	Steering Column Angle		26		
SA	Seat Back Angle		10		10
HZ	Head to Roof (Z)	240	90	230	90
HH	Head to Header	400		400	
HW	Head to Windshield	578		580	
HR	Head to Side Header (Y)	278		262	
NR	Nose to Rim	372	14		
CD	Chest to Dash	520		540	
CS	Chest to Steering Hub	253			
RA	Rim to Abdomen	154			
KDL	Left Knee to Dash	165	13	145	
KDR	Right Knee to Dash	240		170	13
PA	Pelvic Angle		25		34
TA	Tibia Angle		42		
KK	Knee to Knee (Y)	290		295	
ST	Striker to Head	775	3	770	4
SK	Striker to Knee	563	68	575	66
SH	Striker to H-Point	380		372	
SHY	Striker to H-Point (Y)	245		253	
HS	Head to Side Window	328		315	
HD	H-Point to Door (Y)	185		178	
AD	Arm to Door (Y)	110		98	

**DATA SHEET NO. 5...(CONTINUED)**  
**DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
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 Test Date: 12/17/02



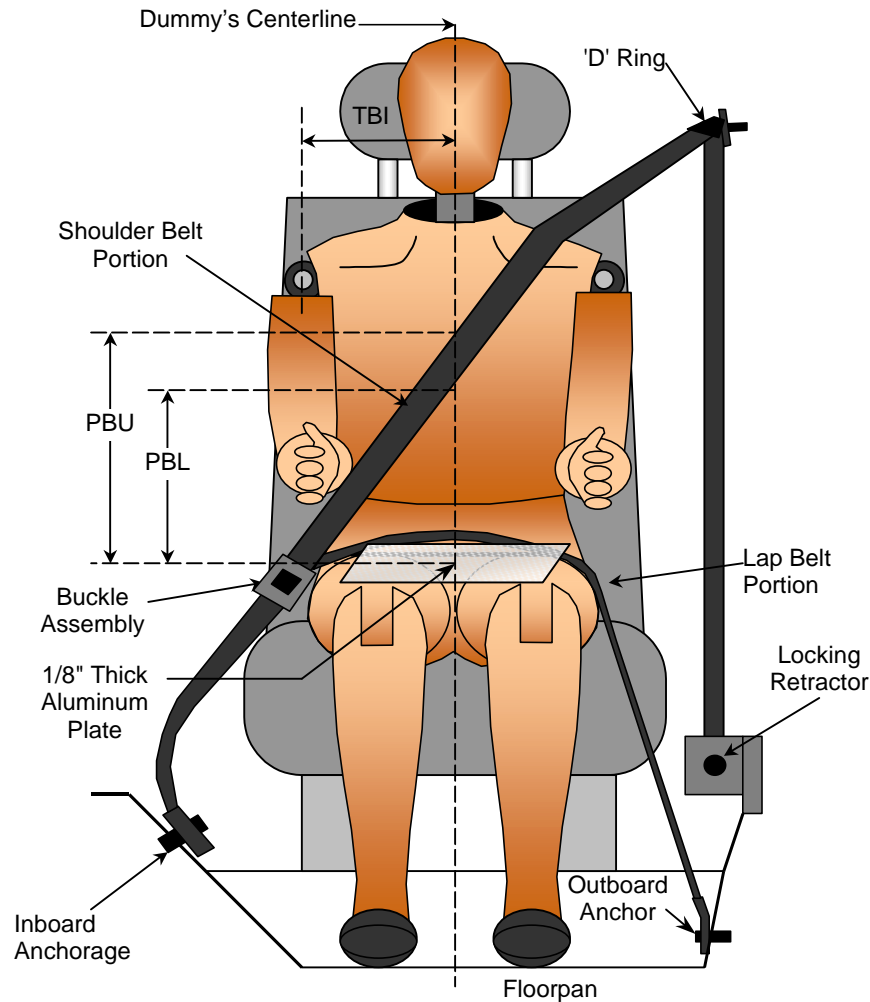
- CD Chest to Dash
- CS Chest to Steering Wheel Hub
- HH Head to Header
- HW Head to Windshield
- HZ Head to Roof
- KDA Knee to Dash Angle
- KDL Left Knee to Dash
- KDR Right Knee to Dash
- NA Nose to Rim Angle
- NR Nose to Rim
- PA Pelvic Angle
- RA Rim to Abdomen
- SA Seat Back Angle
- SCA Steering Column Angle
- SH Striker to H-Point
- SK Striker to Knee
- ST Striker to Head
- SWA Steering Wheel Angle
- TA Tibial Angle
- WA Windshield Angle

**DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS**

**DATA SHEET NO. 6**  
**SEATBELT POSITIONING DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02



**SEAT BELT POSITIONING MEASUREMENTS**

Measurement Description	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	235	235
PBU - Top surface of reference to belt upper edge	mm	265	270
PBL - Top surface of reference to belt lower edge	mm	200	200
Lap Belt tension	Newton's	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

**DATA SHEET NO. 7**  
**VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY**

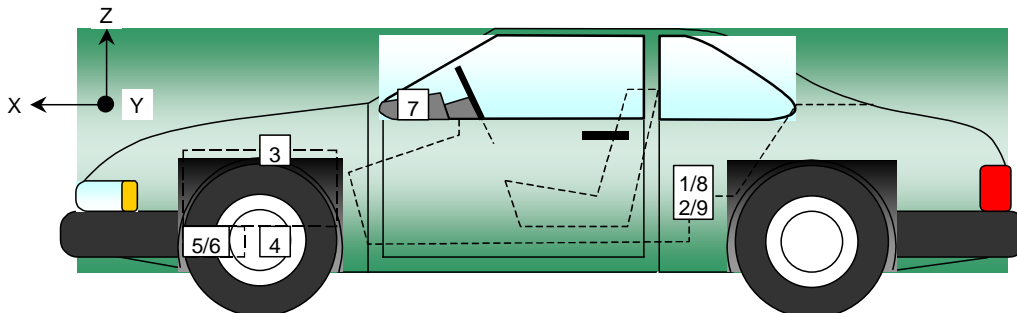
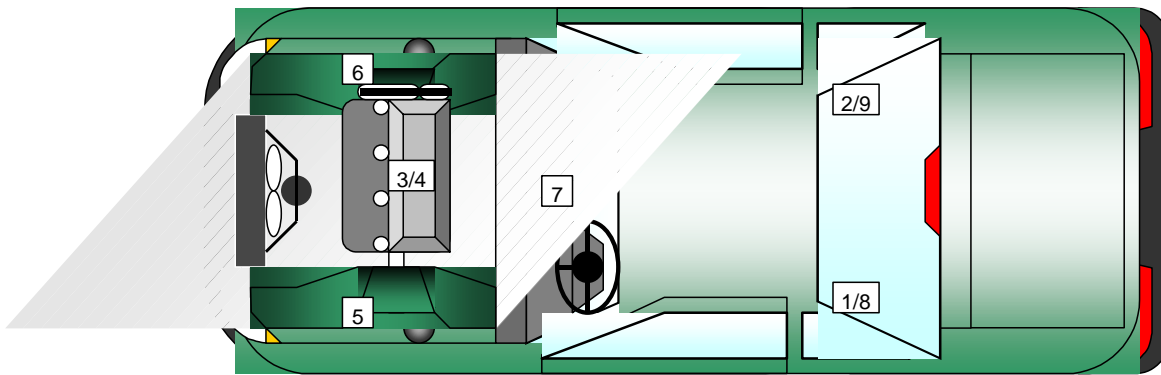
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
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**VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS**

No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member	2520	-685	710	G's	2.4	115.0	-54.9	33.0
2	Right Rear X-Member	2520	685	710	G's	7.0	115.8	-53.0	33.4
3	Engine Top	4560	-95	145	G's	40.8	50.3	-116.5	37.7
4	Engine Bottom	4700	0	310	G's	16.4	48.9	-86.3	40.6
5	Left Brake Caliper	4770	-675	440	G's	58.4	56.4	-125.3	37.1
6	Right Brake Caliper	4770	675	440	G's	72.5	57.0	-120.6	49.1
7	Instrument Panel	3830	20	325	G's	17.1	95.9	-59.8	68.3
8	Left Rear X-Member (Z-Axis)	2715	-670	695	G's	23.2	24.9	-26.7	30.3
9	Right Rear X-Member (Z-Axis)	2715	670	695	G's	17.8	40.1	-20.2	45.8

Reference Planes: X=From Rear Surface of Vehicle, Y=Vehicle Centerline, Z=Ground Plane



**DATA SHEET NO. 8**  
**HYBRID III ATD INJURY CRITERIA AND SENSOR DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
Test Date: 12/17/02

**HEAD PRIMARY PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	73.6	202.7	-46.9	73.4	55.7	197.8	-55.7	73.7
Head CG	Y	G's	9.3	202.7	-12.3	67.9	8.7	202.0	-10.2	197.7
Head CG	Z	G's	30.0	56.9	-3.3	122.4	22.0	58.6	-5.8	24.9
Head CG Resultant	N/A	G's	78.7	202.7			58.4	72.2		

**CHEST PRIMARY PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.3	163.4	-50.0	58.8	7.6	171.2	-47.6	63.6
Chest CG	Y	G's	5.6	46.9	-2.4	69.6	5.4	170.5	-19.8	82.9
Chest CG	Z	G's	12.9	51.9	-9.9	93.2	8.8	43.5	-8.2	80.6
Chest CG Resultant	N/A	G's	50.5	58.6			48.2	67.2		

**FEMUR PEAK FORCES**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	286.0	40.8	-4558.6	50.0	2371.6	49.6	-3703.6	56.9
Right Femur	Z	Newtons	1598.5	44.9	-1204.7	49.8	556.8	47.6	-2483.2	59.2

**SEAT BELT SENSOR PEAK VALUES**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Shoulder Belt Pullout	N/A	MM	88.5	79.4	-40.4	39.8	94.8	83.1	-20.9	40.0
Shoulder Belt Stretch	N/A	MM/CM	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
Lap Belt Force	N/A	Newtons	7599.2	55.1	-7.4	158.4	7823.1	58.4	1.9	0.0
Shoulder Belt Force	N/A	Newtons	5661.2	70.8	-23.7	158.4	6328.6	78.9	-8.9	160.8

1.) Not used with pre-tensioner

**PRIMARY HEAD INJURY CRITERIA (HIC)**

Location	Driver				Passenger			
	HIC	T <sup>1</sup>	T <sup>2</sup>	Avg G	HIC	T <sup>1</sup>	T <sup>2</sup>	Avg G
Head CG Primary	434.7	53.4	89.3	42.9	495.2	57.4	93.3	45.2

**PRIMARY CHEST CLIP (3MSEC)**

Location	Driver			Passenger		
	CLIP	T <sup>1</sup>	T <sup>2</sup>	CLIP	T <sup>1</sup>	T <sup>2</sup>
Chest CG Primary	48.5	57.3	60.3	46.9	62.5	65.5

### DATA SHEET NO. 8...(CONTINUED)

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

NHTSA No.: M35112

Test Program: 2003 NHTSA 35MPH NCAP

Test Date: 12/17/02

#### PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	7.1	154.5	-64.4	49.8	5.7	146.5	-76.8	56.8
Pelvis	Y	G's	4.4	101.5	-6.2	64.9	4.2	37.9	-9.9	75.0
Pelvis	Z	G's	3.6	220.4	-23.3	75.6	3.2	232.4	-27.3	68.2
Pelvis Resultant	N/A	G's	66.1	49.8			79.4	56.8		

#### UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	186.6	67.0	-756.8	113.2	176.0	201.3	-486.7	50.4
Neck Force	Y	Newtons	171.3	54.8	-150.2	82.3	233.1	211.1	-243.7	59.2
Neck Force	Z	Newtons	1976.6	61.2	-678.2	229.7	1229.6	57.0	-762.6	231.7
Neck Force Resultant	N/A	Newtons	1976.8	61.2			1262.5	57.0		
Neck Moment	X	N•m	18.8	64.5	-6.4	107.2	9.8	286.3	-12.7	67.2
Neck Moment	Y	N•m	60.4	120.8	-40.9	230.3	28.2	109.2	-19.2	86.3
Neck Moment	Z	N•m	7.3	92.7	-4.6	135.4	12.7	103.3	-10.3	70.4
Neck Moment Resultant	N/A	N•m	60.4	120.8			31.2	109.3		

#### FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	25.6	75.0	-84.6	32.5	64.4	55.7	-235.2	47.6
Left Foot Aft	Z	G's	5.5	60.7	-67.1	34.7	26.5	64.5	-78.3	46.4
Left Foot Fore	Z	G's	37.3	60.6	-136.2	29.7	63.3	57.2	-197.1	48.3
Right Foot Aft	X	G's	37.8	51.7	-162.7	43.5	21.1	67.5	-141.4	51.1
Right Foot Aft	Z	G's	31.0	53.9	-170.8	44.6	2.7	159.7	-65.4	52.3
Right Foot Fore	Z	G's	101.0	54.3	-316.7	44.1	25.6	47.5	-105.7	52.8

#### UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Upper Moment	X	N•m	19.7	82.7	-27.4	55.6	27.3	65.3	-59.3	48.7
Left Upper Moment	Y	N•m	31.8	157.8	-123.0	56.6	32.1	138.1	-198.7	49.7
Right Upper Moment	X	N•m	48.7	56.2	-27.6	44.4	71.8	50.4	-26.1	167.8
Right Upper Moment	Y	N•m	28.8	162.4	-210.0	45.3	10.4	62.5	-33.9	51.3
Left Lower Moment	X	N•m	41.3	80.6	-11.8	56.0	49.4	72.9	-35.9	48.0
Left Lower Moment	Y	N•m	37.9	76.7	-62.7	56.3	58.3	54.1	-109.6	48.0
Left Lower Force	Z	Newtons	132.3	138.2	-3174.2	34.4	192.0	159.3	-4134.9	47.1
Right Lower Moment	X	N•m	18.4	44.2	-61.3	56.0	7.9	231.3	-47.9	60.1
Right Lower Moment	Y	N•m	159.8	66.1	-145.9	45.4	38.8	74.4	-51.5	50.9
Right Lower Force	Z	Newtons	220.6	177.6	-3201.4	49.5	121.0	174.2	-1909.9	50.5

**DATA SHEET NO. 8...(CONTINUED)**Test Vehicle: 2003 Toyota Tundra SR5 4 Door PickupNHTSA No.: M35112Test Program: 2003 NHTSA 35MPH NCAPTest Date: 12/17/02**CHEST PEAK DISPLACEMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.1	18.9	-30.2	81.0	0.2	0.4	-28.6	80.0

**HEAD REDUNDANT PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	73.7	202.6	-47.1	73.0	55.9	197.8	-56.3	74.0
Head CG	Y	G's	8.8	202.5	-10.7	67.8	7.9	201.9	-10.6	197.5
Head CG	Z	G's	29.7	56.5	-3.7	124.0	21.8	58.7	-7.3	24.9
Head CG Resultant	N/A	G's	79.0	202.6			58.8	197.8		

**CHEST REDUNDANT PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	4.2	163.2	-50.4	58.6	6.9	171.6	-47.0	63.4
Chest CG	Y	G's	5.2	47.1	-1.9	41.3	5.6	170.3	-18.6	82.4
Chest CG	Z	G's	12.1	51.9	-9.5	93.1	8.0	47.7	-8.3	81.2
Chest CG Resultant	N/A	G's	50.7	58.5			47.7	67.5		

**REDUNDANT HEAD INJURY CRITERIA (HIC)**

Location	Driver				Passenger			
	HIC	T <sup>1</sup>	T <sup>2</sup>	Avg G	HIC	T <sup>1</sup>	T <sup>2</sup>	Avg G
Head CG Redundant	427.1	53.1	89.0	42.6	509.5	58.0	93.9	45.8

**REDUNDANT CHEST CLIP (3MSEC)**

Location	Driver			Passenger		
	CLIP	T <sup>1</sup>	T <sup>2</sup>	CLIP	T <sup>1</sup>	T <sup>2</sup>
Chest CG Redundant	48.4	57.2	60.2	46.7	66.5	69.5

**DATA SHEET NO. 9**  
**SEATBELT ASSESSMENT TEST DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
Test Date: 12/17/02

**SEAT BELT PLACEMENT MEASUREMENTS**

Measurement Description	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	235	235
PBU - Top surface of reference to belt upper edge	mm	265	270
PBL - Top surface of reference to belt lower edge	mm	200	200
Lap Belt tension	Newton's	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

**BELT LENGTH DATA**

Measurement Description	Units	Driver	Passenger
Retractor reel to 'D' ring	mm	810	810
Shoulder belt length as measured on ATD	mm	845	820
Lap belt length as measured on ATD	mm	890	870
Remainder of belt on reel	mm	700	760
Total belt length for continuous webbing systems	mm	3245	3260

**SHOULDER BELT SPOOL-OFF DATA**

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	0.0	0.0
As determined electronically	mm	88.5	94.8

**BELT STRETCH DATA**

Measurement Description	Units	Driver	Passenger
Electronically between shoulder belt load cell and "D" ring	mm/cm	*	*
Mechanically	mm/cm	0.00	0.00

\*Not used with shoulder belt pre-tensioner systems.

**DATA SHEET NO. 10**  
**SUMMARY OF FMVSS 212 DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

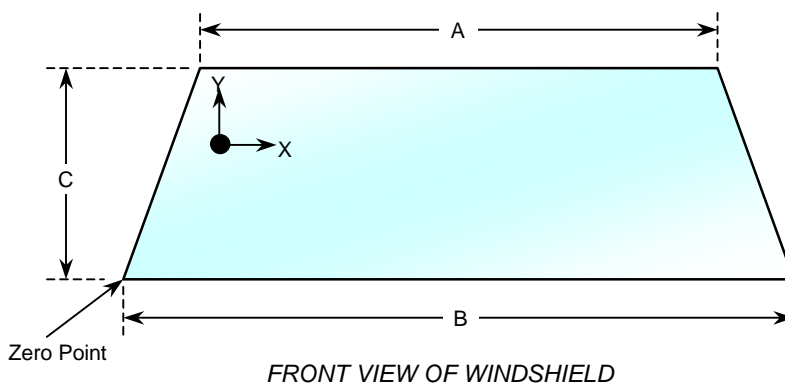
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive. No molding covers the windshield periphery at any point.

The standard requires that the posttest retention measurement be a minimum of 75 percent of the pretest total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles that are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.1 °C

**WINDSHIELD PERIPHERY MEASUREMENTS**

Measurement	Pre-Test(mm)	Post-Test (mm)	% of Retention
Left Side	2065.5	2065.5	100
Right Side	2065.5	2065.5	100
Total	4131.0	4131.0	100



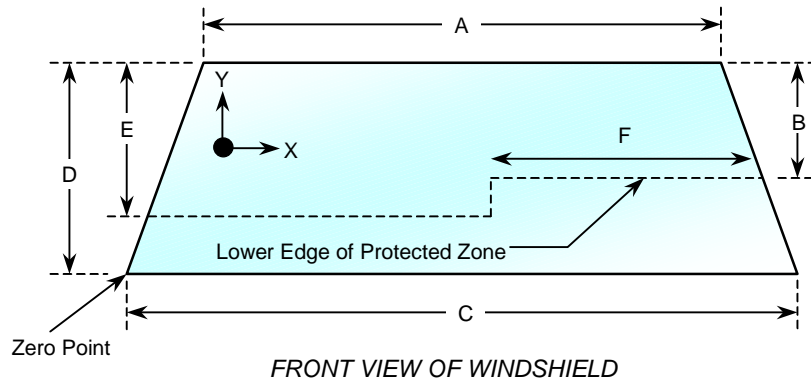
**WINDSHIELD DIMENSIONS**

Item	Units	Segment Length	Molding Width
A	mm	1285	20
B	mm	1572	10
C	mm	792	30
C	mm	792	30

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

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02



**WINDSHIELD AND  
 PROTECTED ZONE**

Item	Units	Value
A	mm	1285
B	mm	357
C	mm	1572
D	mm	637
E	mm	410
F	mm	560

**AREA OF PROTECTED ZONE FAILURES**

- A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 in. by a vehicle component other than one that is normally in contact with the windshield.

X	Y
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

- B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

X	Y
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

**DATA SHEET NO. 12**  
**FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
Test Date: 12/17/02

Test Time: 3:35 PM

Temperature at Test Time: 3.3 Deg. C

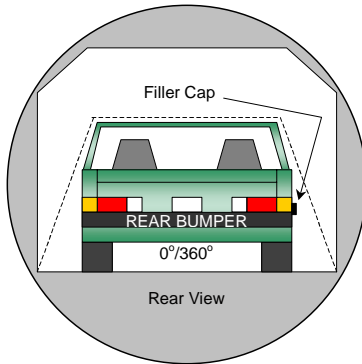
**STODDARD SOLVENT SPILLAGE MEASUREMENTS**

- A. From impact until vehicle motion ceases: 0.0 oz.  
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0.0 oz.  
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0.0 oz.  
(Maximum Allowable = 1 oz./minute)
- D. Spillage Location Details: No leakage occurred

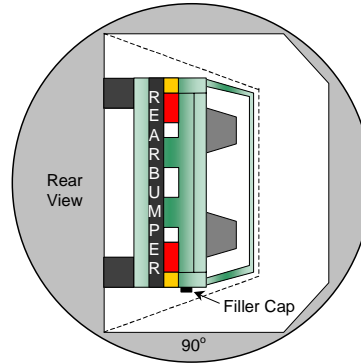
**DATA SHEET NO. 13**  
**FMVSS 301 STATIC ROLLOVER DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

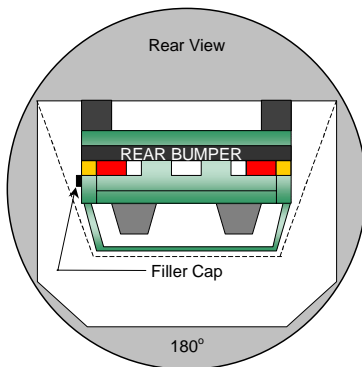
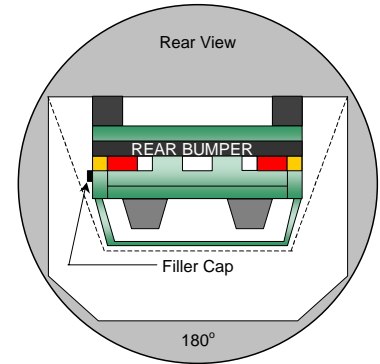
NHTSA No.: M35112  
 Test Date: 12/17/02



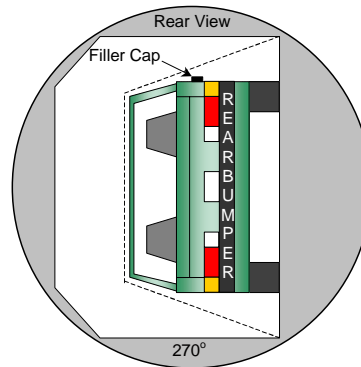
**0° to 90°**



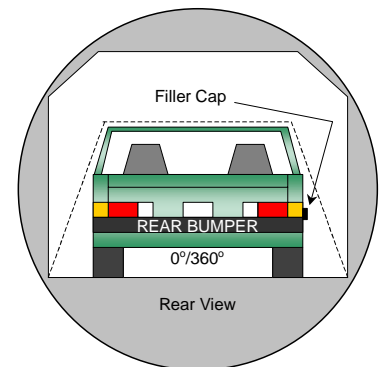
**90° to 180°**



**180° to 270°**



**270° to 360°**



1. The specified fixture rollover rate for each 90° of rotation is 60 to 120 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. No solvent leakage occurred during rollover.

**DATA SHEET NO. 13  
FMVSS 301 STATIC ROLLOVER DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**SOLVENT COLLECTION TIME TABLE IN SECONDS**

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	82	300	382
90° to 180°	81	300	381
180° to 270°	78	300	378
270° to 360°	80	300	380

**FMVSS 301 SPILLAGE REQUIREMENT TABLE (oz.)**

First 5 minutes	5.0
Sixth Minute	1.0
Seventh minute	1.0
Eighth Minute	1.0

**ACTUAL TEST VEHICLE SOLVENT SPILLAGE (oz.)**

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

**SOLVENT SPILLAGE LOCATION TABLE**

Test Phase	SPILLAGE LOCATION
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

**DATA SHEET NO. 14**  
**VEHICLE MEASUREMENTS**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
Test Date: 12/17/02

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	5545	4944	-601
2	RSOV to front of engine	mm	4805	4691	-114
3	RSOV to firewall centerline	mm	4325	4304	-21
4	RSOV to leading edge of right door	mm	4064	4093	29
5	RSOV to leading edge of left door	mm	4067	4094	27
6	RSOV to lower leading edge of right door	mm	4032	4037	5
7	RSOV to lower leading edge of left door	mm	4032	4041	9
8	RSOV to upper trailing edge of right door	mm	2908	2938	30
9	RSOV to upper trailing edge of left door	mm	2910	2940	30
10	RSOV to lower trailing edge of right door	mm	2902	2906	4
11	RSOV to lower trailing edge of left door	mm	2900	2908	8
12	RSOV to bottom of right 'A' pillar	mm	4031	4051	20
13	RSOV to bottom of left 'A' pillar	mm	4036	4061	25
14	RSOV to firewall on right side	mm	4325	4339	14
15	RSOV to firewall of left side	mm	4327	4341	14
16	RSOV to steering column	mm	3590	3660	70
17	Center of steering column to left 'A' pillar	mm	390	380	-10
18	Center of steering column to headlining	mm	435	394	-41
19	RSOV to right side of front bumper	mm	5405	5157	-248
20	RSOV to left side of front bumper	mm	5405	5004	-401
21	Length of engine block	mm	465	465	0
RD	RSOV to right side of dash panel	mm	3947	3859	-88
CD	RSOV to center of dash panel	mm	3815	3852	37
LD	RSOV to left side of dash panel	mm	3871	3897	26

**DATA SHEET NO. 14.....(CONTINUED)**  
**VEHICLE STRUCTURAL MEASUREMENTS**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
Test Date: 12/17/02

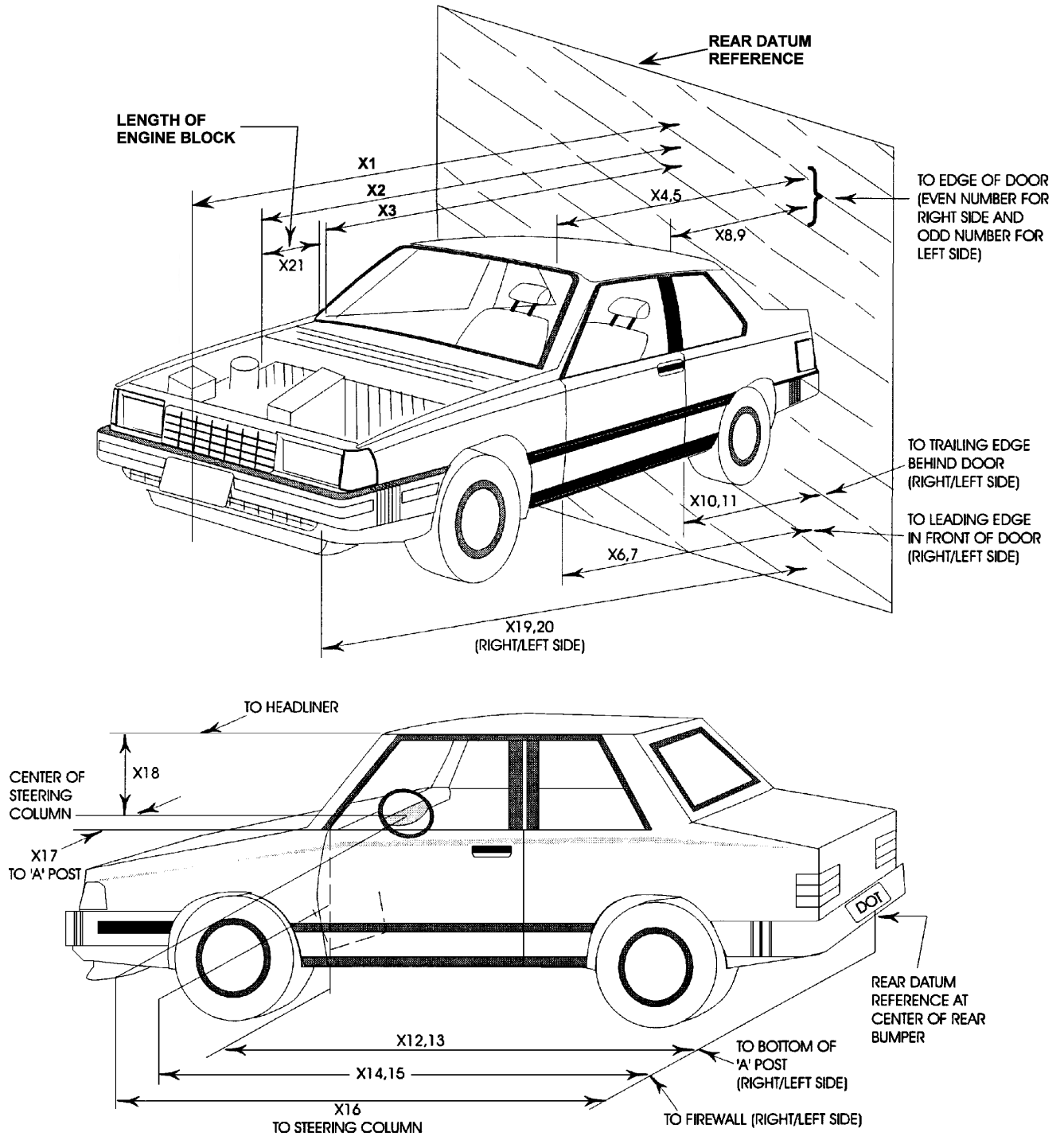
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length	mm	5545	4944	-601
2	Total Width	mm	1882	1874	-8
3	Bumper Top Height	mm	800	820	20
4	Bumper Bottom Height	mm	370	383	13
5	Longitudinal Member Top Height	mm	578	635	57
6	Longitudinal Member Bottom Height	mm	970	556	-414
7	Distance Between Longitudinal Members	mm	78	945	867
8	Longitudinal Member Width	mm	1168	1185	17
9	Engine Top Height	mm	381	416	35
10	Engine Bottom Height	mm	540	520	-20
11	Engine and Gear Box Width	mm	813	415	-398
12	Front Bumper to Engine Distance	mm	344	369	25
13	Front Shock Absorber Fixing Width	mm	830	1090	260
14	Bonnet Leading Edge Height	mm	1130	1130	0
15	Front Shock Absorber Fixing Width	mm	947	668	-279
16	Front Bumper to Front Axle Distance	mm	626	425	-201
17	Front Axle to A-Pillar Distance	mm	1200	1094	-106
18	A-Pillar to B-Pillar Distance	mm	1540	1560	20
19	B-Pillar to Rear Axla Distance	mm	635	685	50
20	B-Pillar to C-Pillar Distance	mm	1710	1703	-7
21	Roof Sill Bottom Height	mm	1769	1754	-15
22	Roof Sill Top Height	mm	427	371	-56
23	Floor Sill Bottom Height	mm	595	470	-125
24	Floor Sill Top Height	mm	0	0	0

All Measurements in millimeters

**DATA SHEET NO. 14...(CONTINUED)**  
**VEHICLE MEASUREMENTS**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02



**DATA SHEET NO. 15  
CAMERA LOCATIONS**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

No.	Camera View	Location (mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Right Side, Real Time	18288	-22860	2540	10	N/A	12-70	24
2	Driver Overall	1930	8357	1321	4	7849	13	900
2B	Driver Overall	1626	8230	1092	4	7747	17	920
3	Driver Close-up	1727	8230	1600	4	7722	35	1000
4	3/4 Driver (Shoulder)	6477	10185	4648	13	10947	35-80	1000
5	Driver Steering Column	1524	8230	3404	20	7950	19	1040
6	Driver Steering Column	1524	8230	2997	16	7874	19	1040
7	Passenger Overall	2057	-8306	1600	6	7772	24	1020
8	Passenger Close-up	1676	-8052	1600	4	7544	35	1030
9	3/4 Passenger (Shoulder)	8026	-8941	2947	9	10236	80	910
10	Passenger Door	2540	-8306	1600	4	7772	35	900
11	Overhead	610	0	6172	90	N/A	13	1120
12	Driver Front	-610	381	2743	40	N/A	13	930
13	Passenger Front	-610	-432	2743	40	N/A	12	990
14	Pit Engine	610	0	-499	90	N/A	19	820
15	Pit Gas Tank	2743	0	-1499	90	N/A	24	700
16	Rear Child Driver Side	2946	-711	1676	25	1092	13	700
17	Rear Child Passenger Side	2946	711	1676	25	1092	13	880

X - Barrier Face    Y - Monorail Centerline    Z - Ground

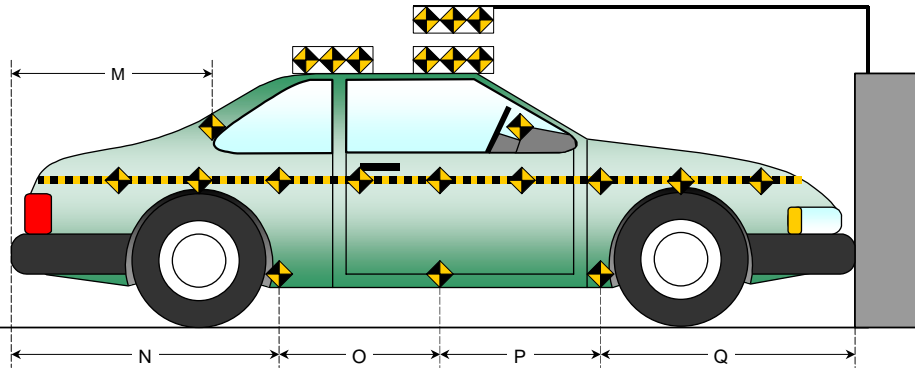
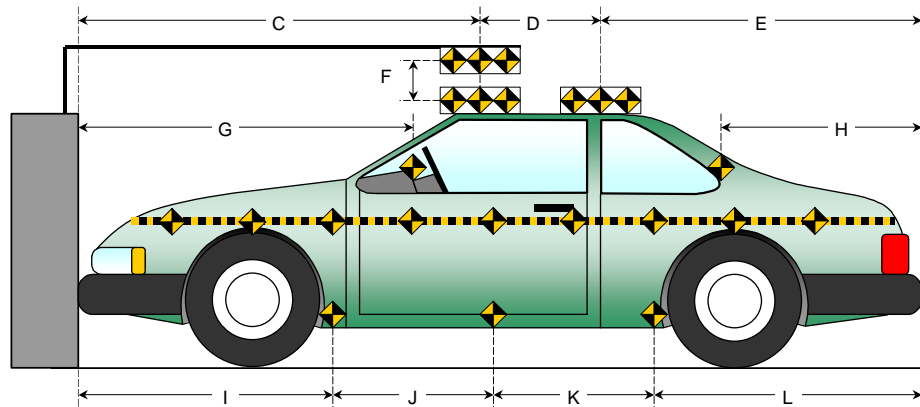
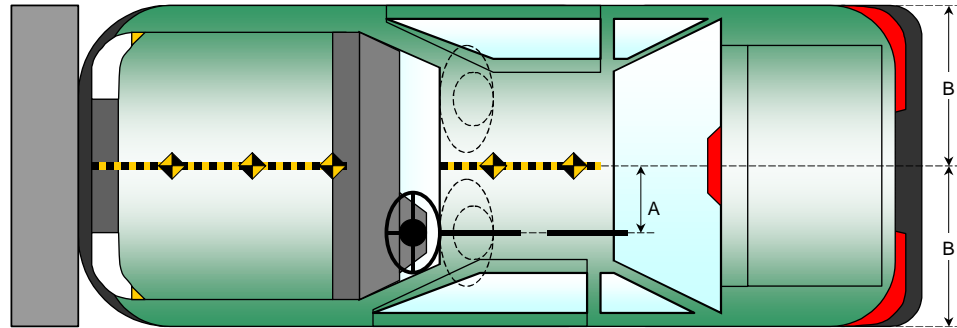
**DATA SHEET NO. 16**  
**PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

All Dimensions  
 in mm

Item	Value
A	454
B	978
C	2185
D	610
E	2761
F	155
G	1905
H	2303
I	1500
J	1095
K	1095
L	1873
M	2315
N	1870
O	1094
P	1094
Q	1490



**DATA SHEET NO. 17**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

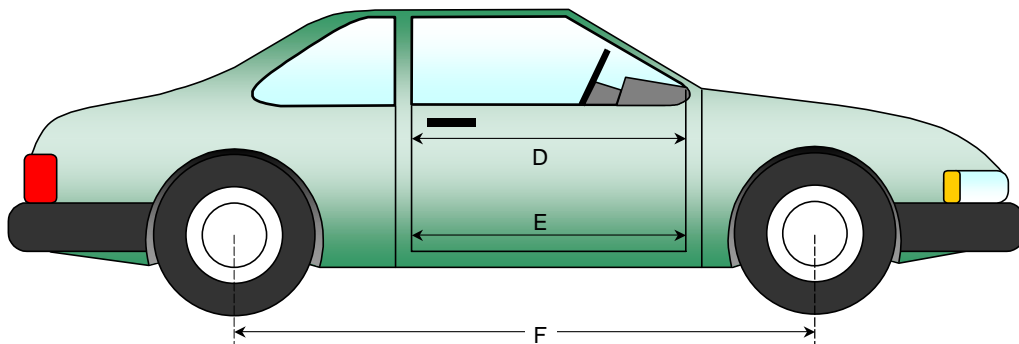
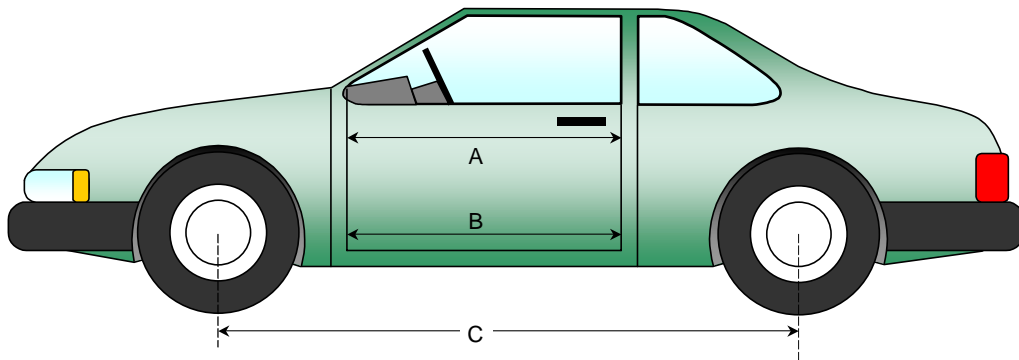
NHTSA No.: M35112  
 Test Date: 12/17/02

**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1092	1094	2
B	Left Side Lower	mm	1091	1084	-7
D	Right Side Upper	mm	1090	1087	-3
E	Right Side Lower	mm	1091	1089	-2

**WHEELBASE MEASUREMENTS**

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheel base	mm	3258	3209	-49
F	Right Side Wheel base	mm	3258	3194	-64



**DATA SHEET NO. 17...(CONTINUED)**  
**VEHICLE INTRUSION MEASUREMENTS**

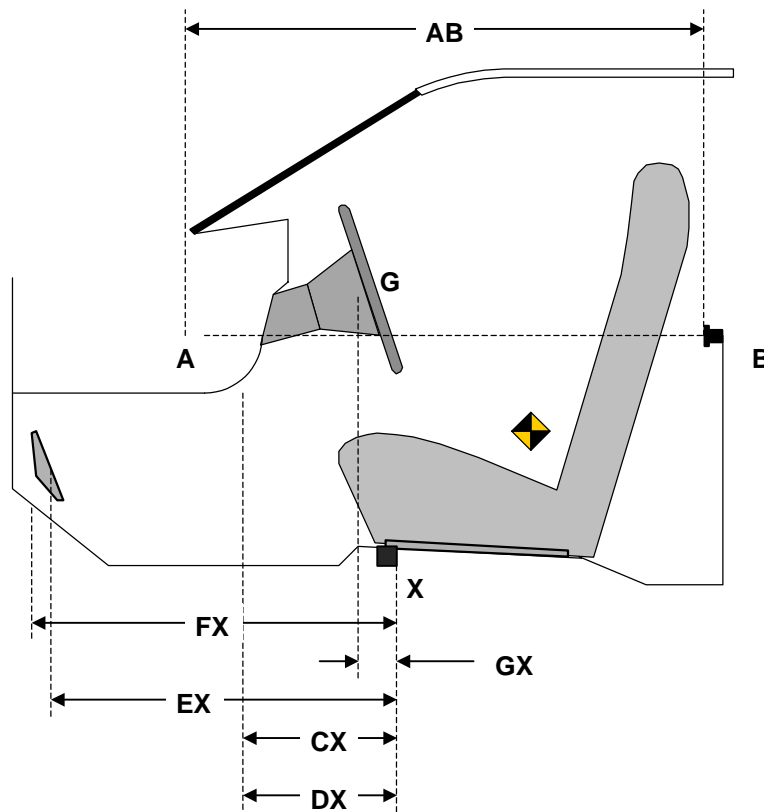
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**DRIVER COMPARTMENT INTRUSION**

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	1092	1094	2
CX	Left Knee Bolster to X	mm	273	288	15
DX	Right Knee Bolster to X	mm	261	271	10
EX	Brake Pedal to X	mm	538	571	33
FX	Foot Rest to X	mm	600	606	6
GX	Center of Steering Wheel Hub to X	mm	40	75	35

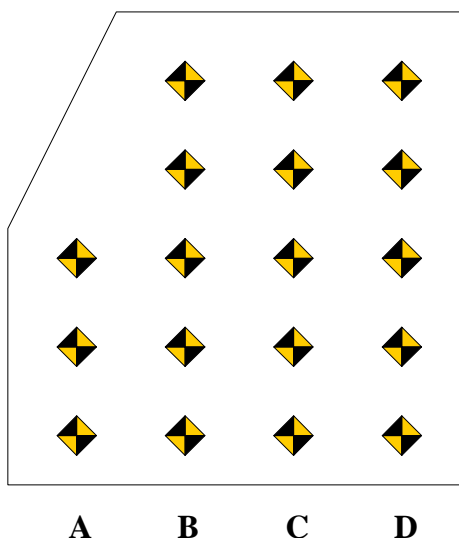
X = Left Front Seat Outboard Anchor Bolt Head



**DATA SHEET NO. 17...(CONTINUED)**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02



1 Measurement reference point for X and Z-axis is the forward outboard seat mounting bolt.

2 Columns A through D are evenly spaced.

3 Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.

**DRIVER FLOOR PAN X-AXIS**

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		698	698	692		673	661	654		-25	-37	-38
2		634	634	632		616	612	615		-18	-22	-17
3	540	538	541	540	546	553	555	546	6	15	14	6
4	440	438	438	438	449	449	450	449	9	11	12	11
5	340	339	339	337	349	349	350	348	9	10	11	11

**DRIVER FLOOR PAN Z-AXIS**

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		77	68	69		68	73	70		-9	5	1
2		-5	-5	-5		-11	-8	-20		-6	-3	-15
3	-35	-40	-37	-37	-62	-70	-55	-41	-27	-30	-18	-4
4	-42	-42	-50	-48	-58	-61	-63	-50	-16	-19	-13	-2
5	-48	-48	-48	-44	-75	-67	-55	-45	-27	-19	-7	-1

**DATA SHEET NO. 17...(CONTINUED)  
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

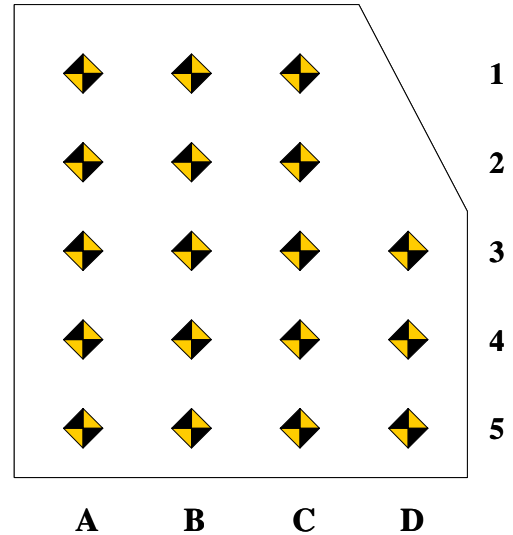
NHTSA No.: M35112  
 Test Date: 12/17/02

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



**PASSENGER FLOOR PAN X-AXIS**

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	655	645	648		625	614	633		-30	-31	-15	
2	551	542	545		545	539	538		-6	-3	-7	
3	451	442	444	444	445	444	442	444	-6	2	-2	0
4	351	343	345	345	345	344	345	348	-6	1	0	3
5	244	238	244	245	240	239	245	248	-4	1	1	3

**PASSENGER FLOOR PAN Z-AXIS**

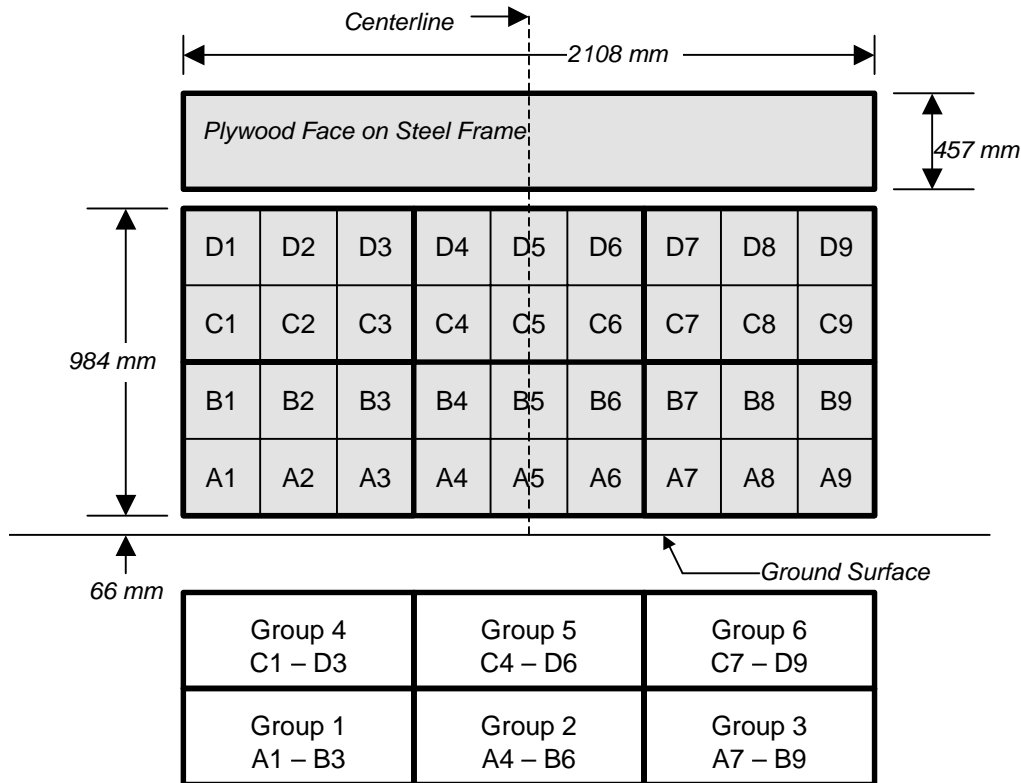
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-20	-20	-18		9	9	-15		29	29	3	
2	-45	-47	-46		-19	-39	-68		26	8	-22	
3	-60	-58	-55	-61	-56	-66	-59	-70	4	-8	-4	-9
4	-55	-56	-54	-56	-45	-55	-67	-64	10	1	-13	-8
5	-64	-59	-60	-55	-49	-53	-63	-61	15	6	-3	-6

**DATA SHEET NO. 18  
FIXED BARRIER LOAD CELL LOCATIONS**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**36 Load Cell Rigid Barrier (NHTSA Standard)  
Load Cell Locations on Fixed Barrier**



6 Groups of 6 Load Cells Each

The Data is presented in Appendix C with the following requirements:

- 1.) Data from 36 individual load cells
- 2.) Sum data from 6 groupings shown above (6 cells/group)
- 3.) Total or sum of all 36 individual load cells
- 4.) Sum of all 36 individual load cells vs. vehicle dynamic crush

**DATA SHEET NO. 19**  
**ACCIDENT INVESTIGATION DIVISION DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**VEHICLE INFORMATION**

VIN: 5TBRN34193S347706  
 Vehicle Size Category: 4 Door Pickup

Wheel base (mm): 3258  
 Test Weight (kg): 4888

**ACCELEROMETER DATA**

Accelerometer Location: Left rear floor pan  
 Cal. Procedure/Interval: 6 months / drop test  
 Integration Algorithm: NHTSA Standard  
 Impact Velocity (km/h): 55.88  
 Velocity Change (km/h): 67.51

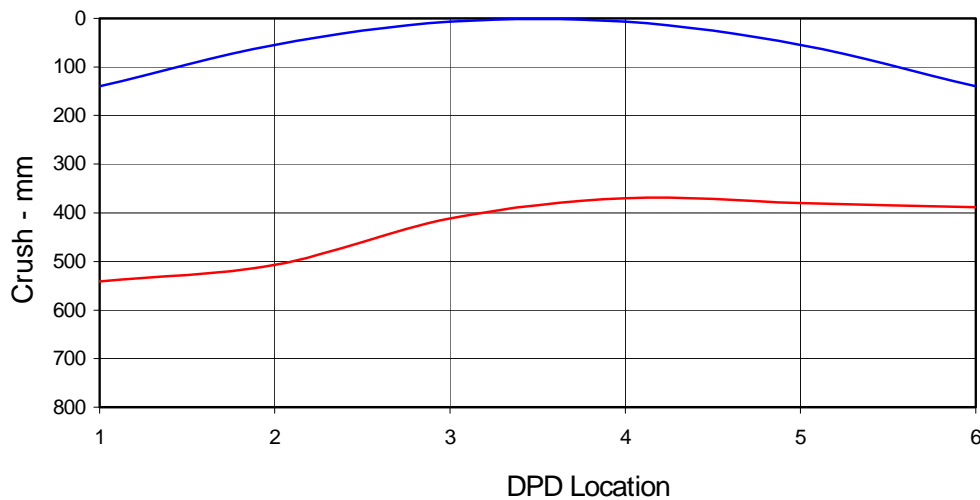
Linearity: Good

Time of Separation (msec): 78.1

**CRUSH PROFILE**

Collision Deformation Classification: 12FDEW6 Midpoint of Damage: Vehicle Centerline  
 Damage Region Length (mm): 1535 Impact Mode: Full Frontal

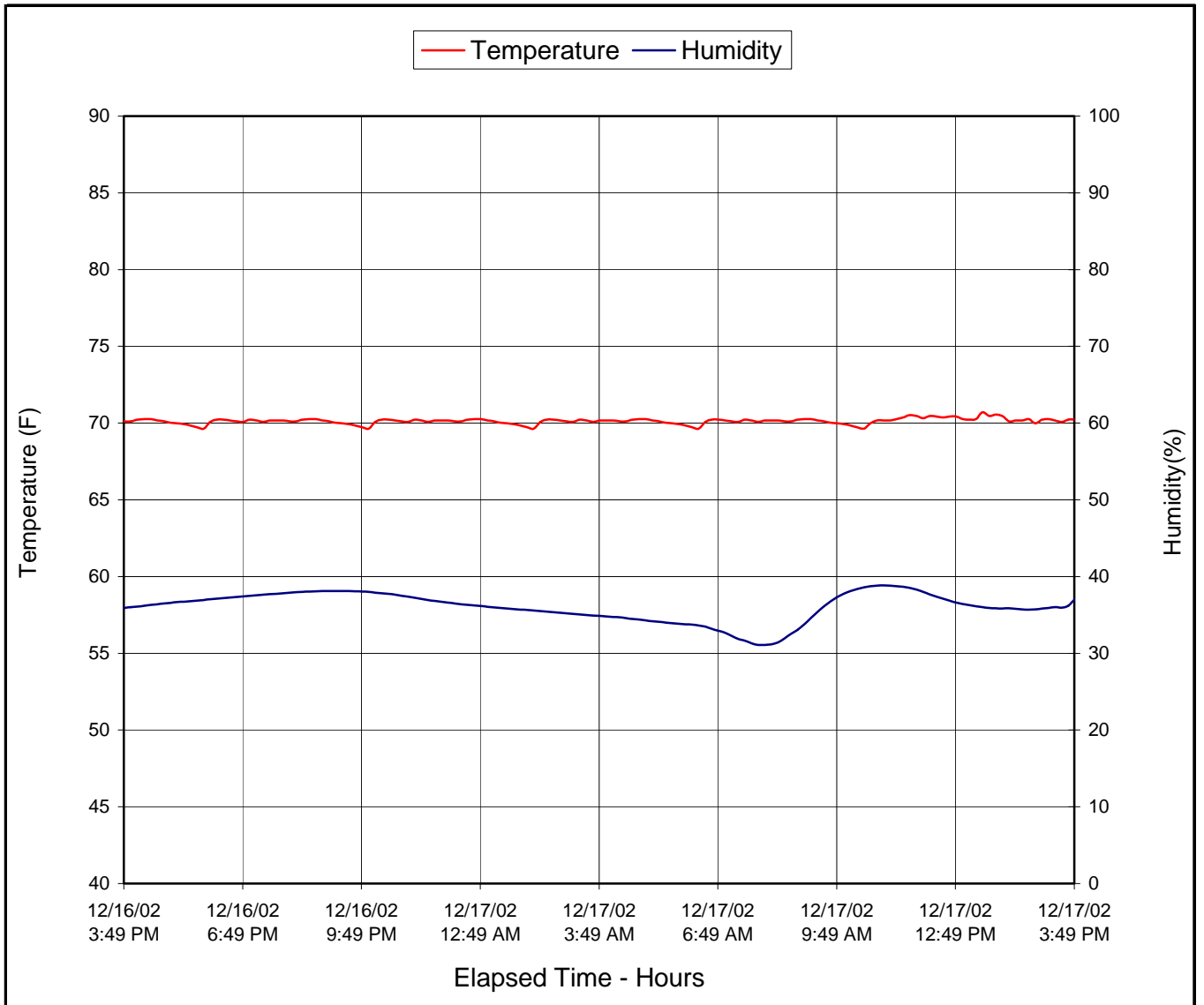
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	140	541	-401
C2	Crush zone 2 on left side	mm	55	507	-452
C3	Crush zone 3 on left side	mm	7	412	-405
C4	Crush zone 4 on right side	mm	7	370	-363
C5	Crush zone 5 on right side	mm	55	380	-325
C6	Crush zone 6 at right side	mm	140	388	-248



**DATA SHEET NO. 20**  
**DUMMY/VEHICLE TEMPERATURE STABILIZATION**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
Test Program: 2003 NHTSA 35MPH NCAP

NHTSA No.: M35112  
Test Date: 12/17/02



**APPENDIX A  
PHOTOGRAPHS**

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Figure A-1: Load Cell Location

MFD. BY: TOYOTA MOTOR MANUFACTURING, INDIANA, INC.  
DATE 09/02 GVWR: 2585KG (5700LB)  
GAWR: FRT. 1433KG (3160LB) WITH P265/70R16 TIRES.  
16X7J RIMS. AT 180KPA (26PSI) COLD.  
RR. 1706KG (3760LB) WITH P265/70R16 TIRES.  
16X7J RIMS. AT 200KPA (29PSI) COLD.  
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR  
VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT  
ON THE DATE OF MANUFACTURE SHOWN ABOVE.

5TBRN34193S347706 TRUCK

VCK30L ARMSKA  
C/TR 202/FC11  
A/TM A02A/  
R150



NO. 374

Figure A-2: Vehicle Certification Label

RECOMMENDED COLD TIRE INFLATION PRESSURE (kPa) PRESSION DE PNEUS (psi)		
TIRE SIZE DIMENSIONS	FRONT AV	REAR AR
P245/70R16 106S	180 (26)	240 (35)
P265/70R16 111S	180 (26)	200 (29)
See Owner's Manual for additional information. Voir le Manuel du Propriétaire pour de plus amples informations.		
0C010		KH

Figure A-3: Vehicle Tire Label



Figure A-4: Right Front ¾ View, As Received



Figure A-5: Left Rear  $\frac{3}{4}$  View, as Received



Figure A-6: Pre-Test Front View



Figure A-7: Post-Test Front View



Figure A-8: Pre-Test Left Side View



Figure A-9: Post-Test Left Side View



Figure A-10: Pre-Test Right Side View



Figure A-11: Post-Test Right Side View



Figure A-12: Pre-Test Right Front ¾ View



Figure A-13: Post-Test Right Front  $\frac{3}{4}$  View



Figure A-14: Pre-Test Left Rear ¾ View



Figure A-15: Post-Test Left Rear ¾ View



Figure A-16: Left Rear ¾ View of Doors After Impact



Figure A-17: Right Rear ¾ View of Doors After Impact



Figure A-18: Pre-Test Windshield View



Figure A-19: Post-Test Windshield View



Figure A-20: Pre-Test Engine Compartment

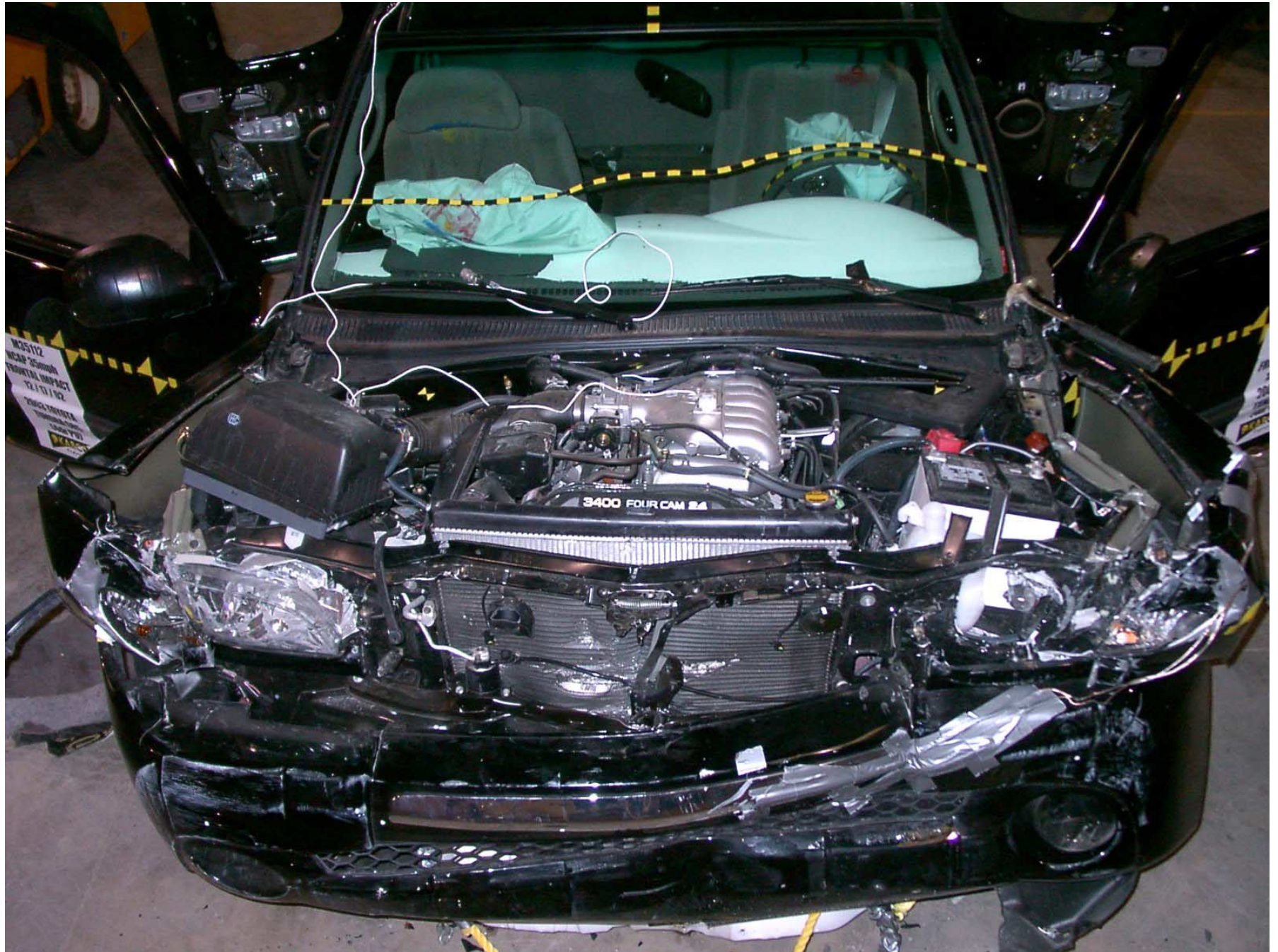


Figure A-21: Post-Test Engine Compartment

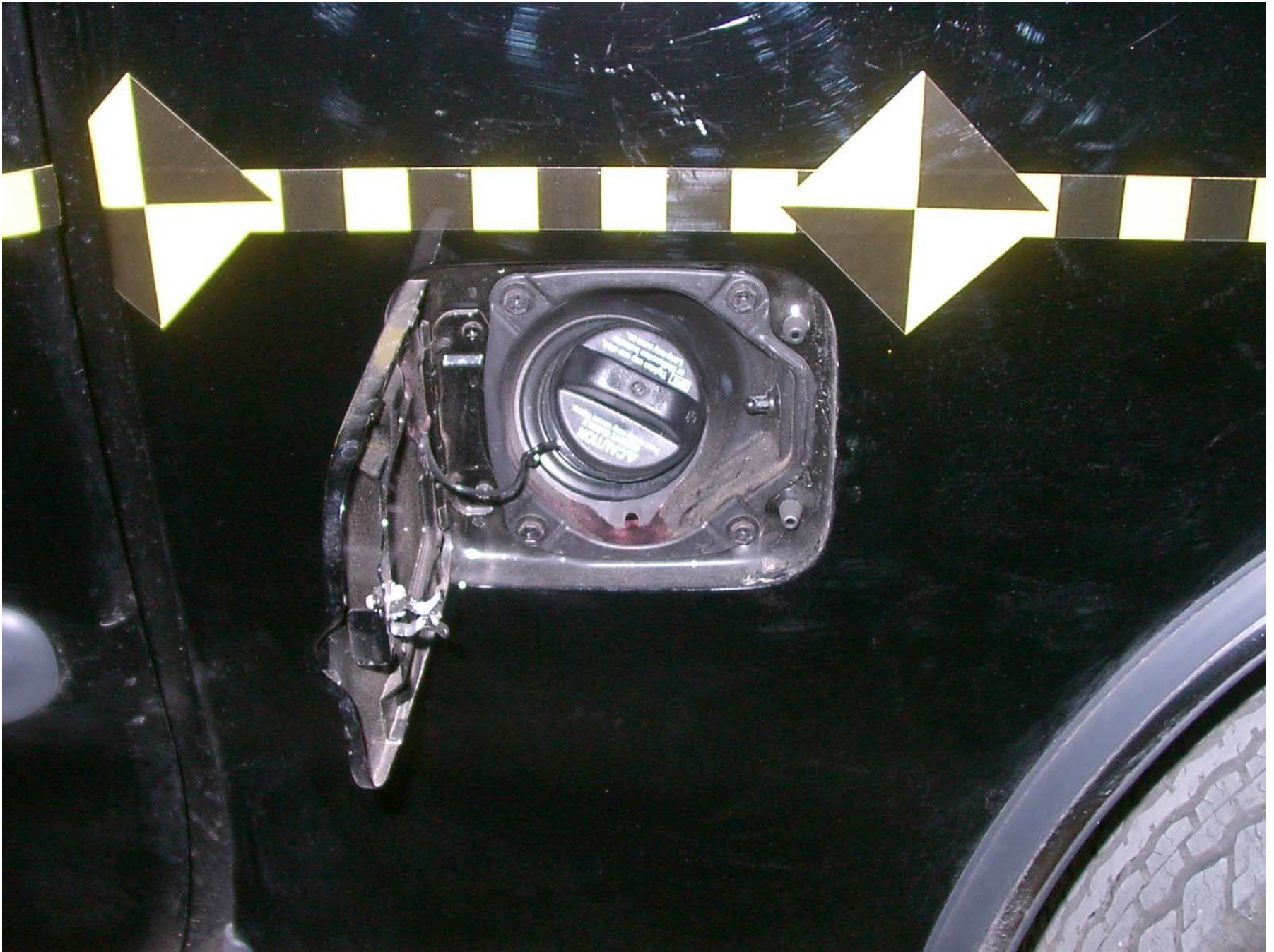


Figure A-22: Pre-Test Fuel Cap



Figure A-23: Post-Test Fuel Cap

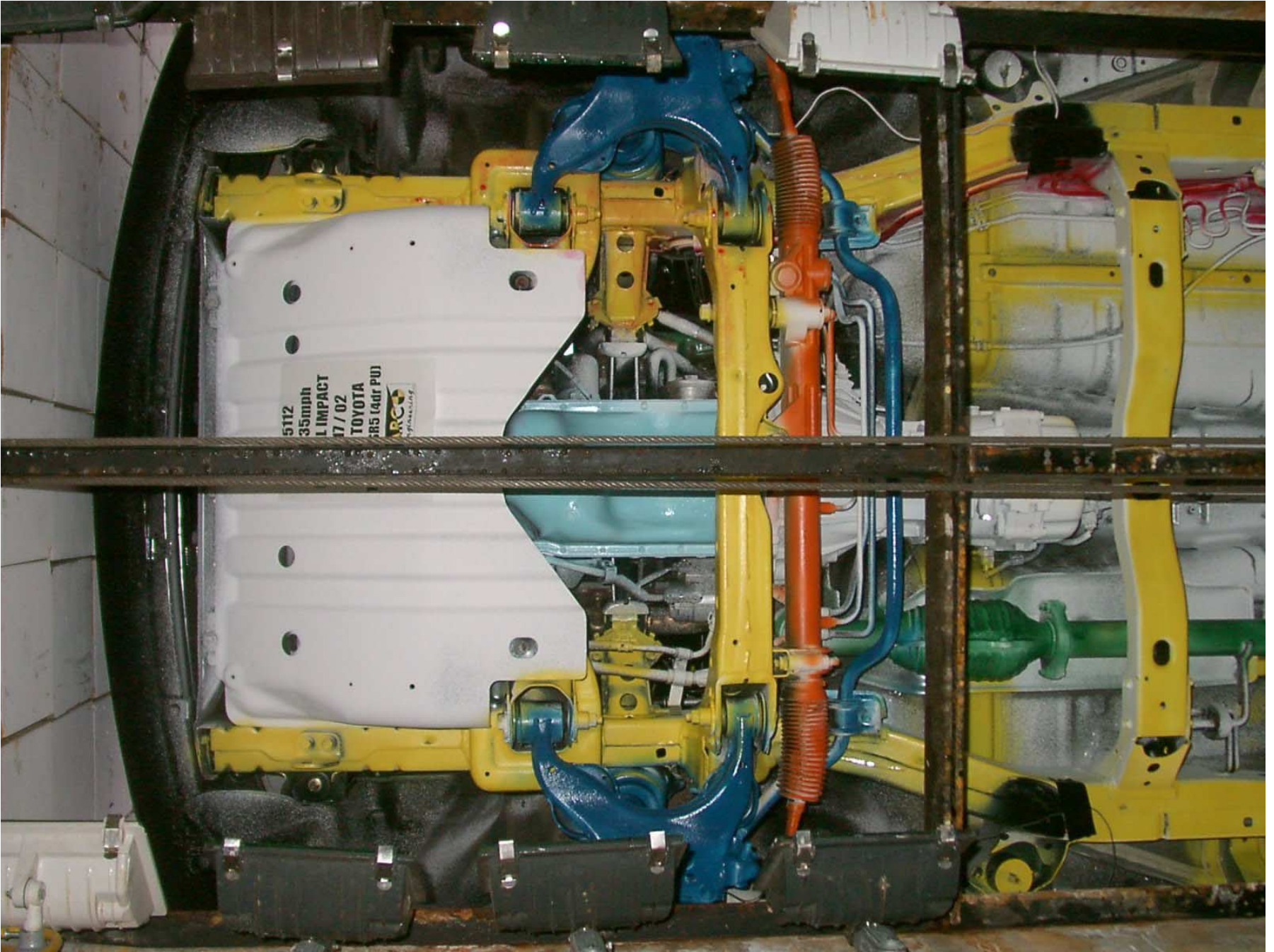


Figure A-24: Pre-Test Front Underbody View

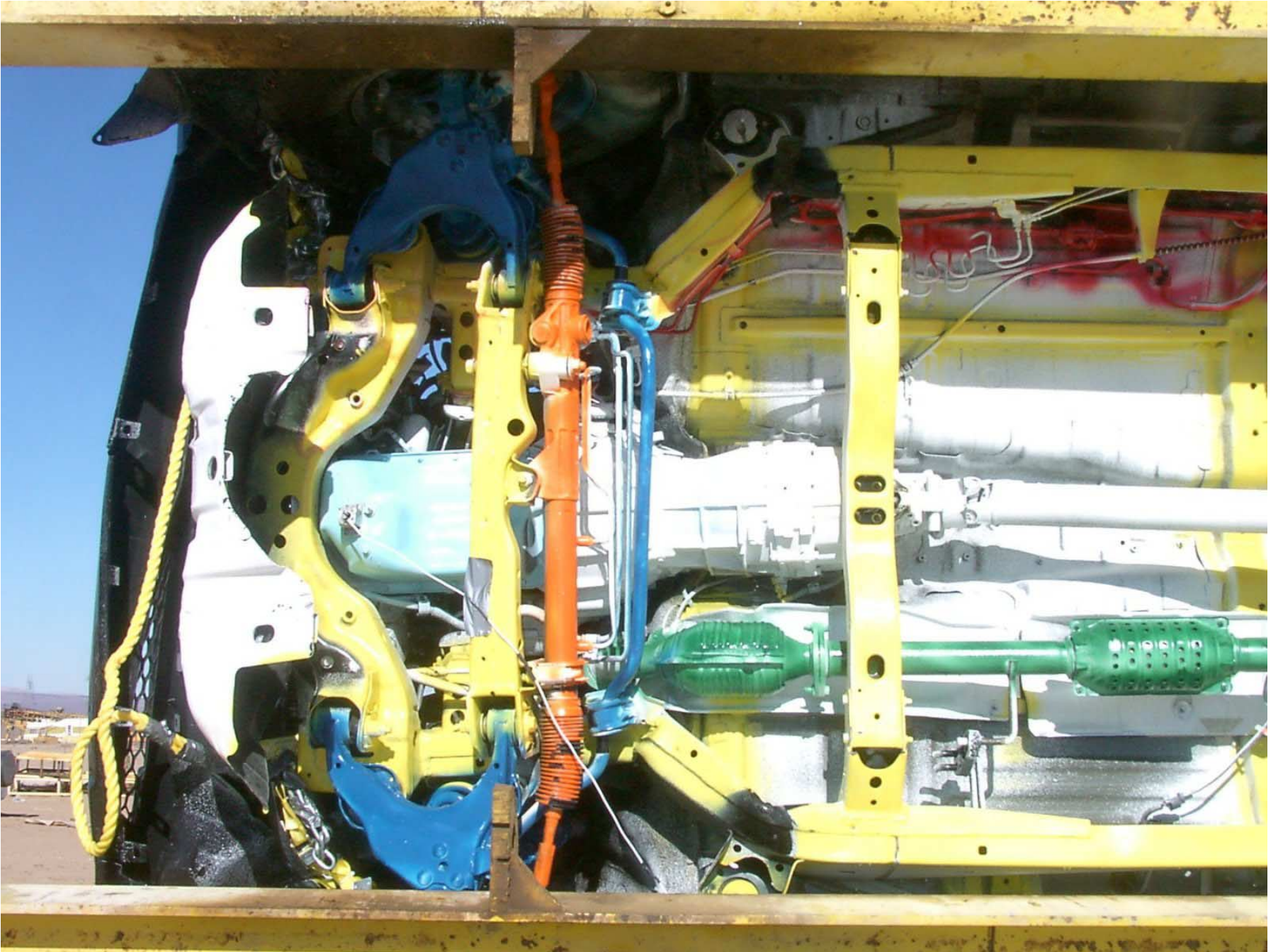


Figure A-25: Post-Test Front Underbody View



Figure A-26: Pre-Test Mid Underbody View

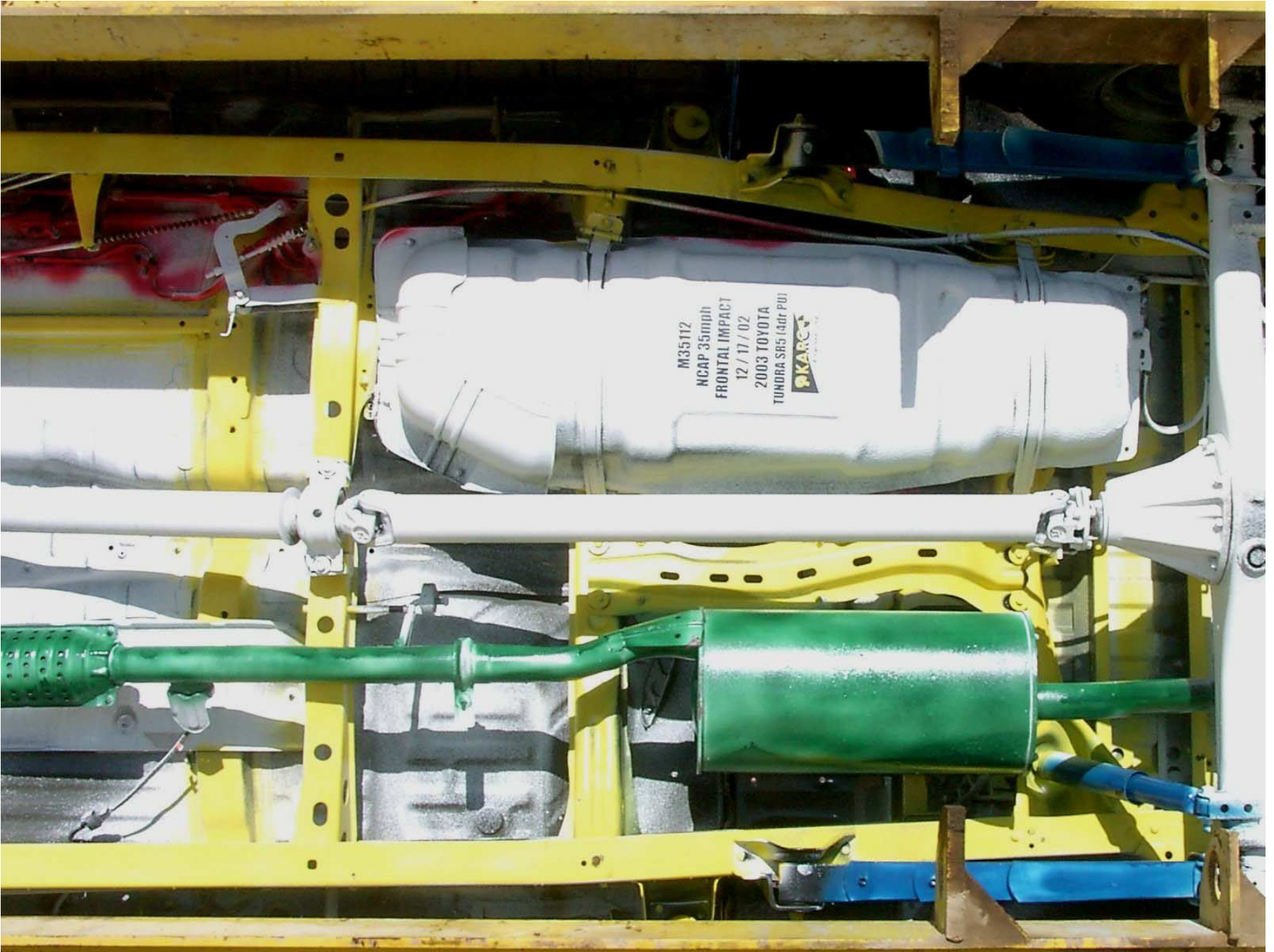


Figure A-27: Post-Test Mid Underbody View

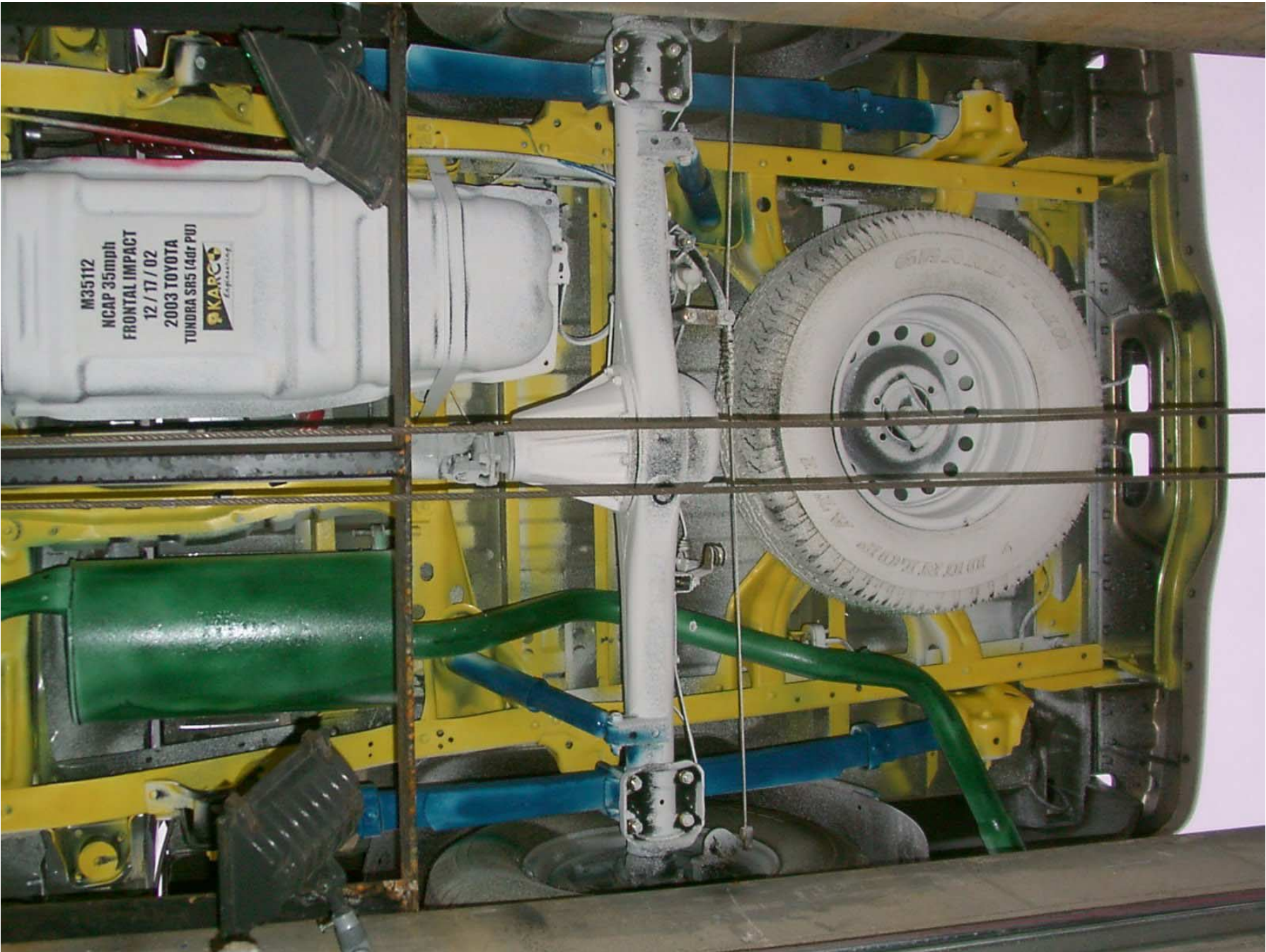


Figure A-28: Pre-Test Rear Underbody View

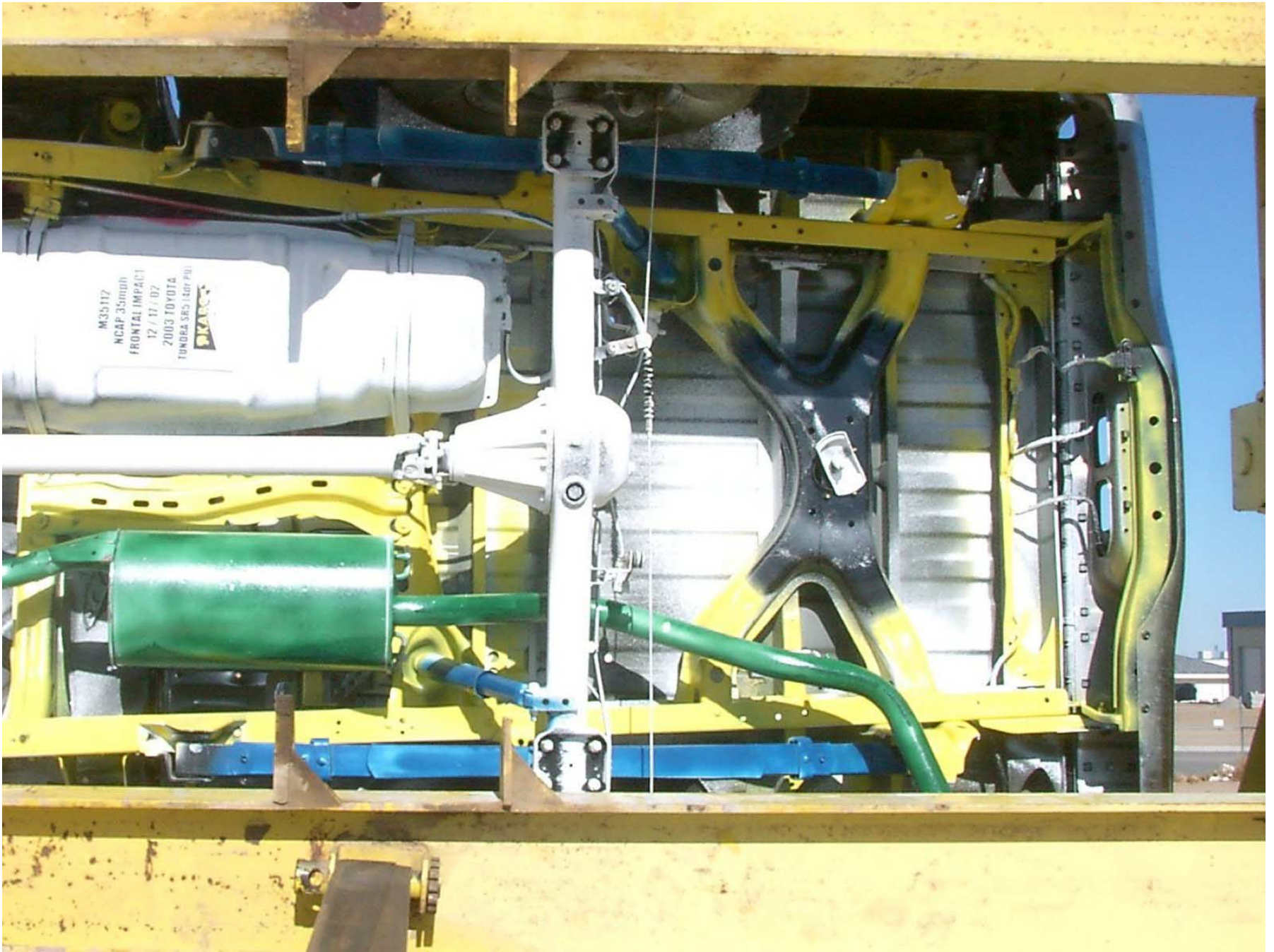


Figure A-29: Post-Test Rear Underbody View

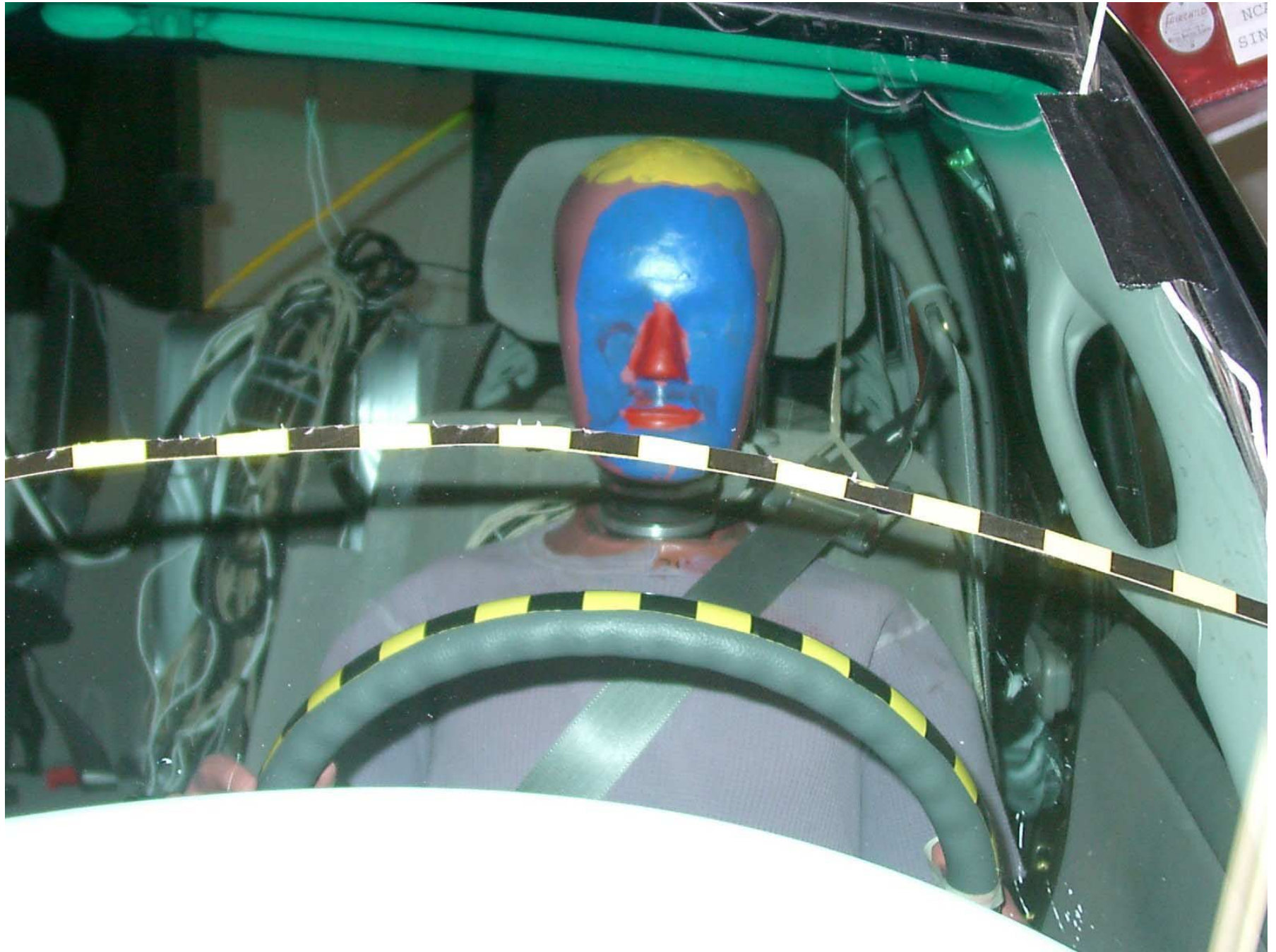


Figure A-30: Pre-Test Driver Dummy Front View (Head Position)



Figure A-31: Post-Test Driver Dummy Front View (Head Position)



Figure A-32: Pre-Test Driver Dummy Front Through Window



Figure A-33: Post-Test Driver Dummy Front Through Window



Figure A-34: Pre-Test Driver Dummy Door Open



Figure A-35: Post-Test Driver Dummy Door Open

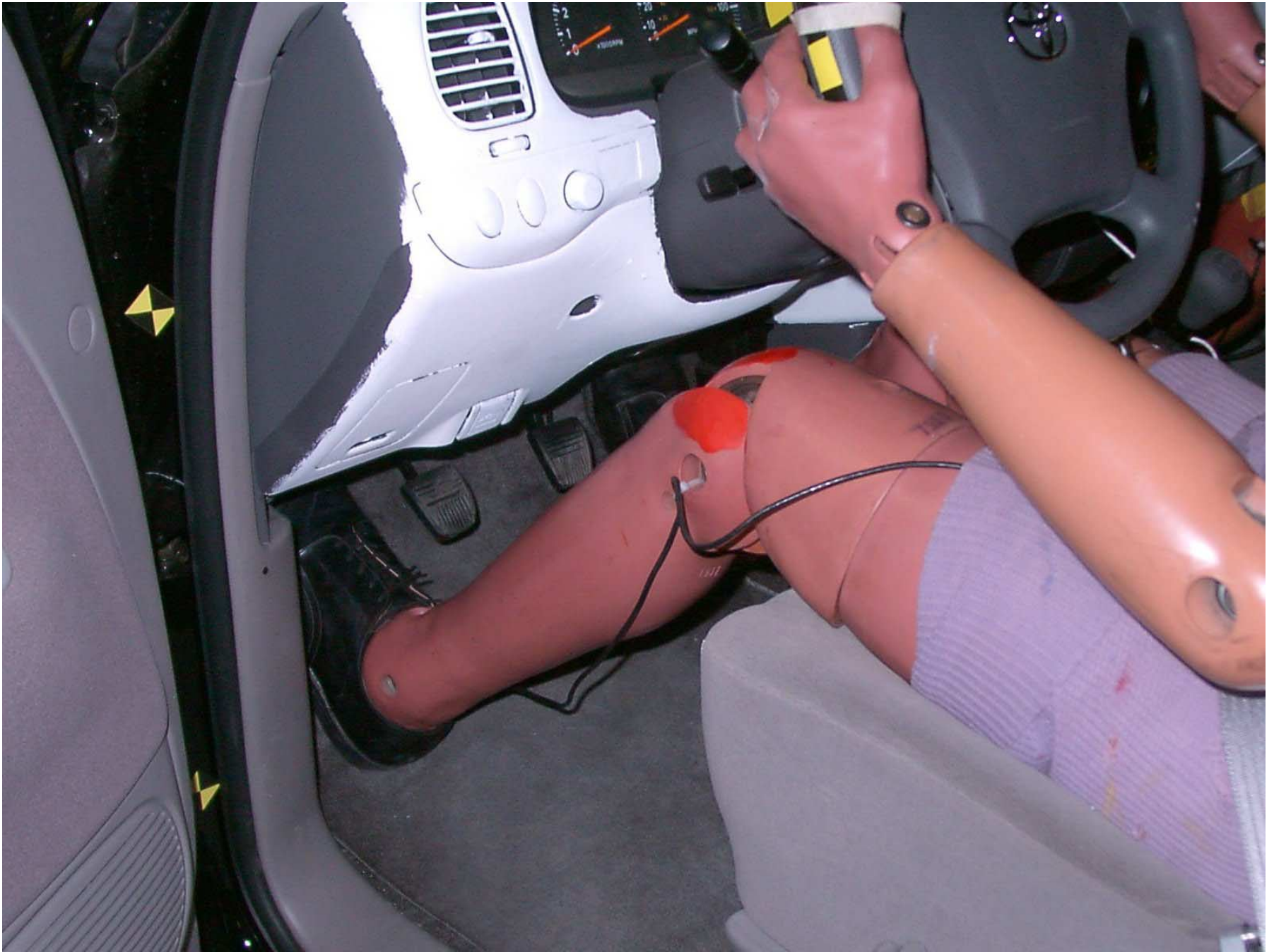


Figure A-36: Pre-Test Driver Dummy Feet



Figure A-37: Post-Test Driver Dummy Feet



Figure A-38: Pre-Test Driver Side Knee Bolster

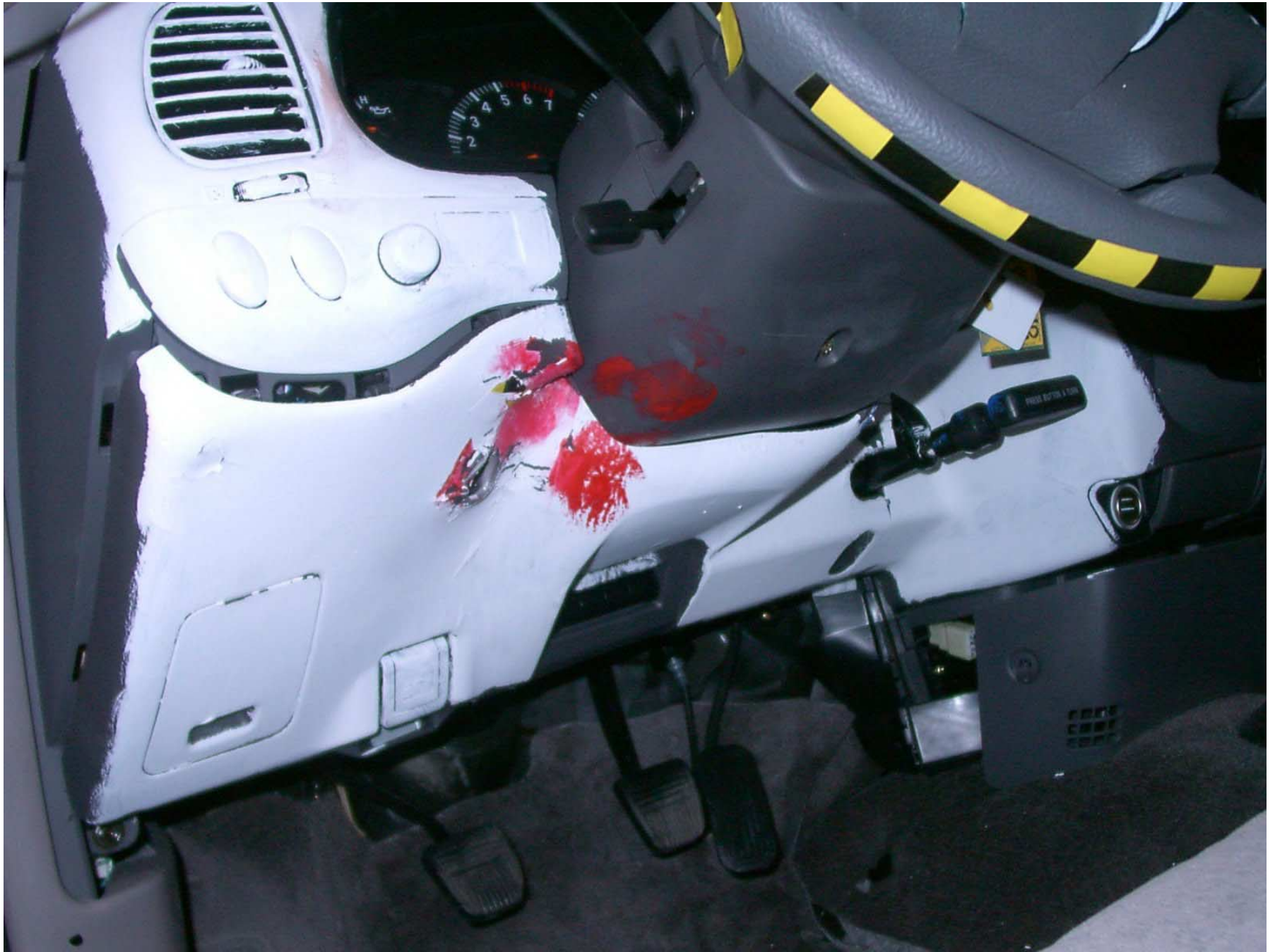


Figure A-39: Post-Test Driver Side Knee Bolster



Figure A-40: Pre-Test Driver Side Floor Pan



Figure A-41: Post-Test Driver Side Floor Pan



Figure A-42: Post-Test Driver Dummy Head

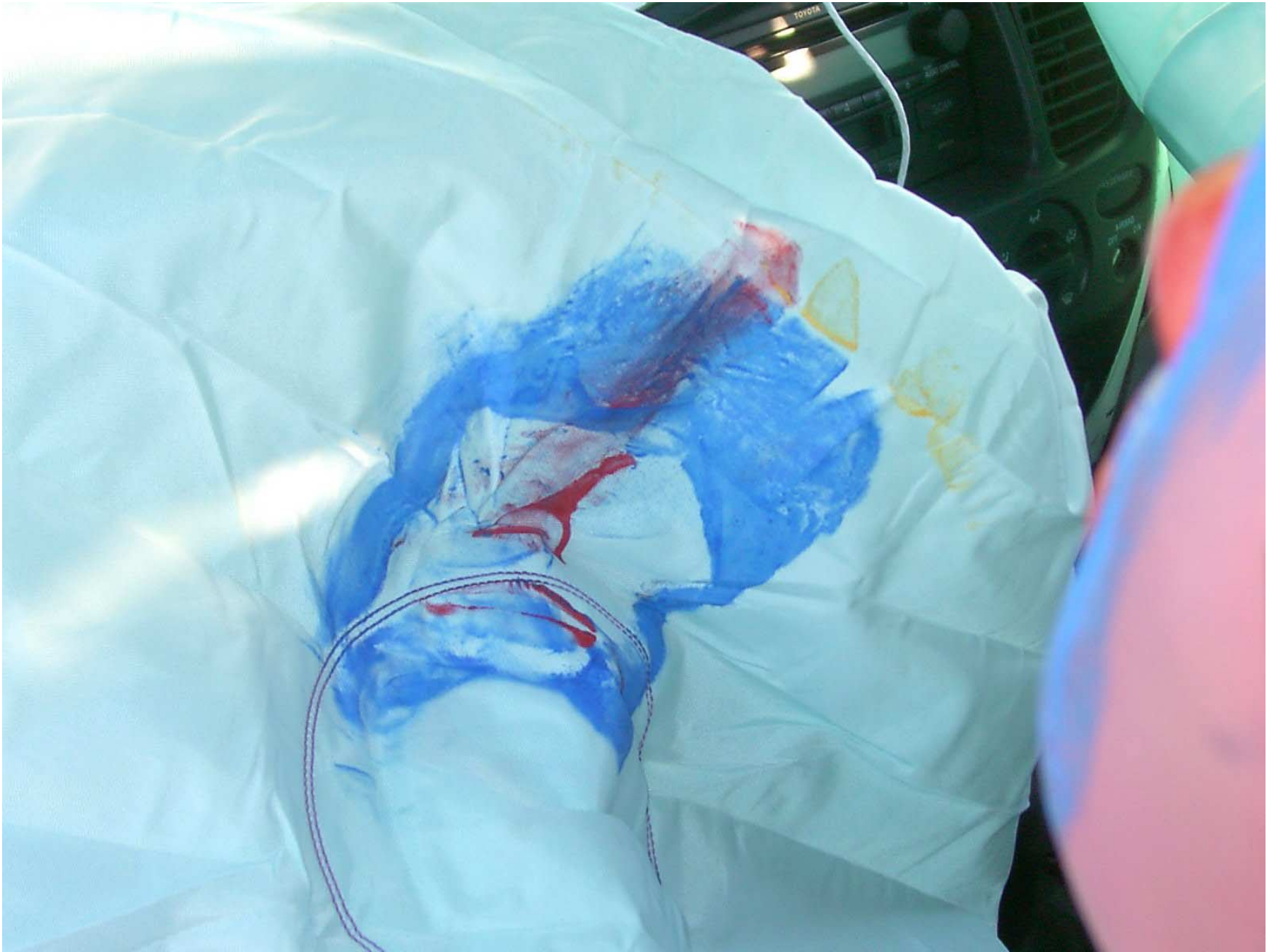


Figure A-43: Post-Test Driver Dummy Contact to Air Bag



Figure A-44: Pre-Test Passenger Dummy Front View (Head Position)



Figure A-45: Post-Test Passenger Dummy Front View (Head Position)



Figure A-46: Pre-Test Passenger Dummy Front Through Window



Figure A-47: Post-Test Passenger Dummy Front Through Window



Figure A-48: Pre-Test Passenger Dummy Door Open



Figure A-49: Post-Test Passenger Dummy Door Open



Figure A-50: Pre-Test Passenger Dummy Feet



Figure A-51: Post-Test Passenger Dummy Feet

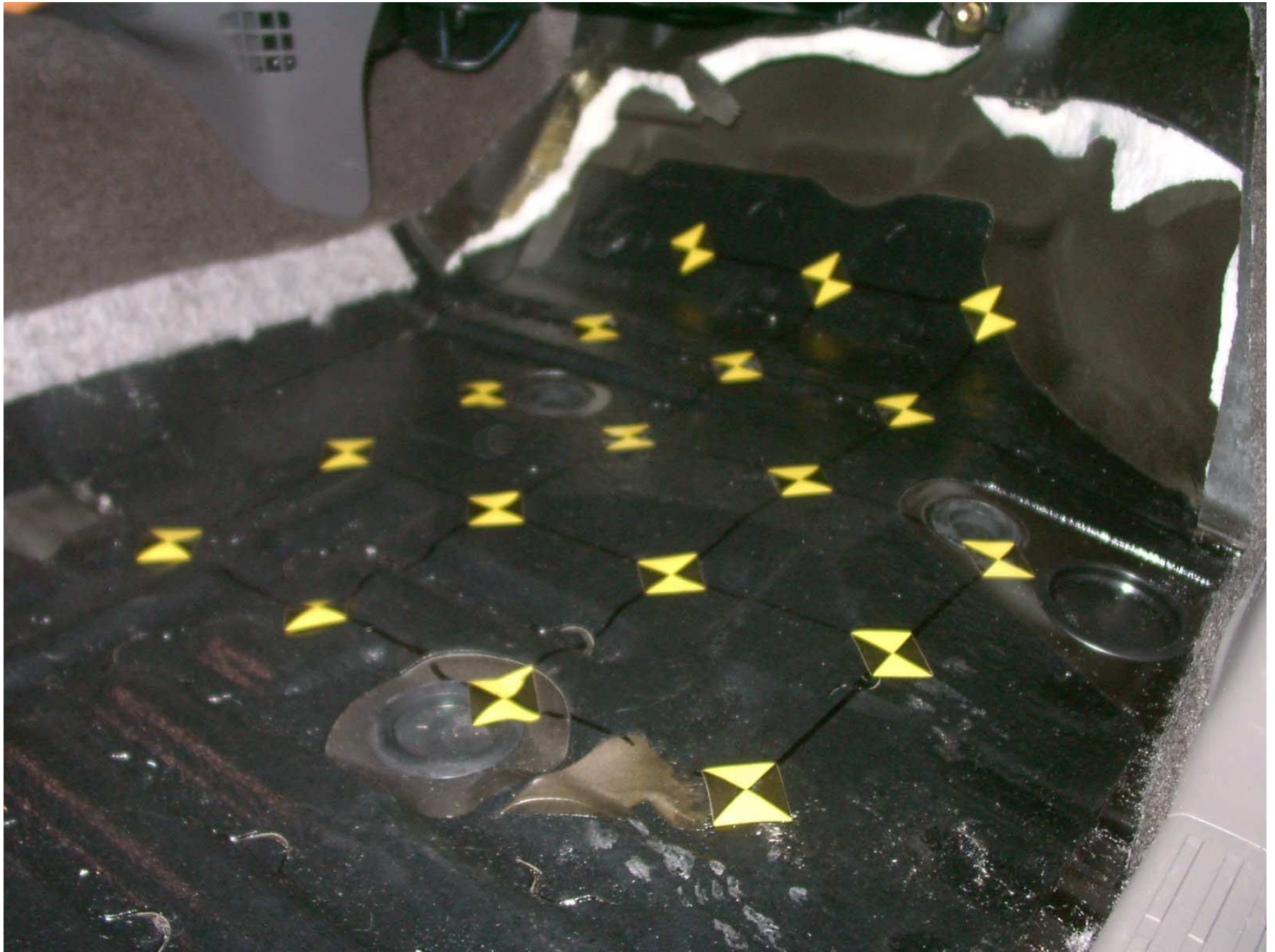


Figure A-52: Pre-Test Passenger Side Floor Pan



Figure A-53: Post-Test Passenger Side Floor Pan



Figure A-54: Pre-Test Passenger Side Knee Bolster



Figure A-55: Post-Test Passenger Side Knee Bolster



Figure A-56: Post-Test Passenger Dummy Head



Figure A-57: Post-Test Passenger Dummy Contact to Air Bag



Figure A-58: Vehicle on Rollover Device



Figure A-59: Vehicle During Impact

**APPENDIX B  
DATA PLOTS**

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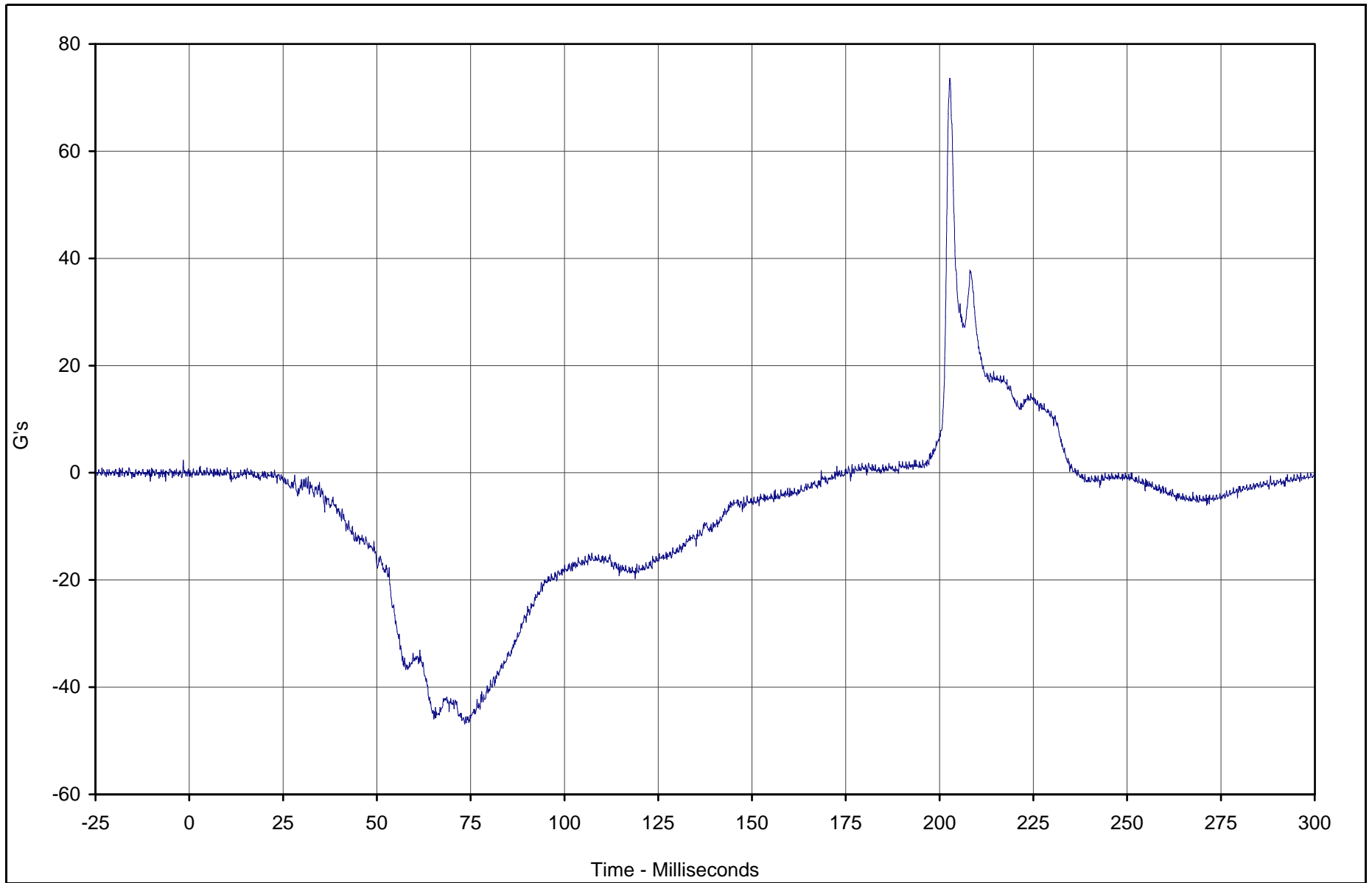
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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary X	001	FIL	G's	73.6	202.7	-46.9	73.4	1000



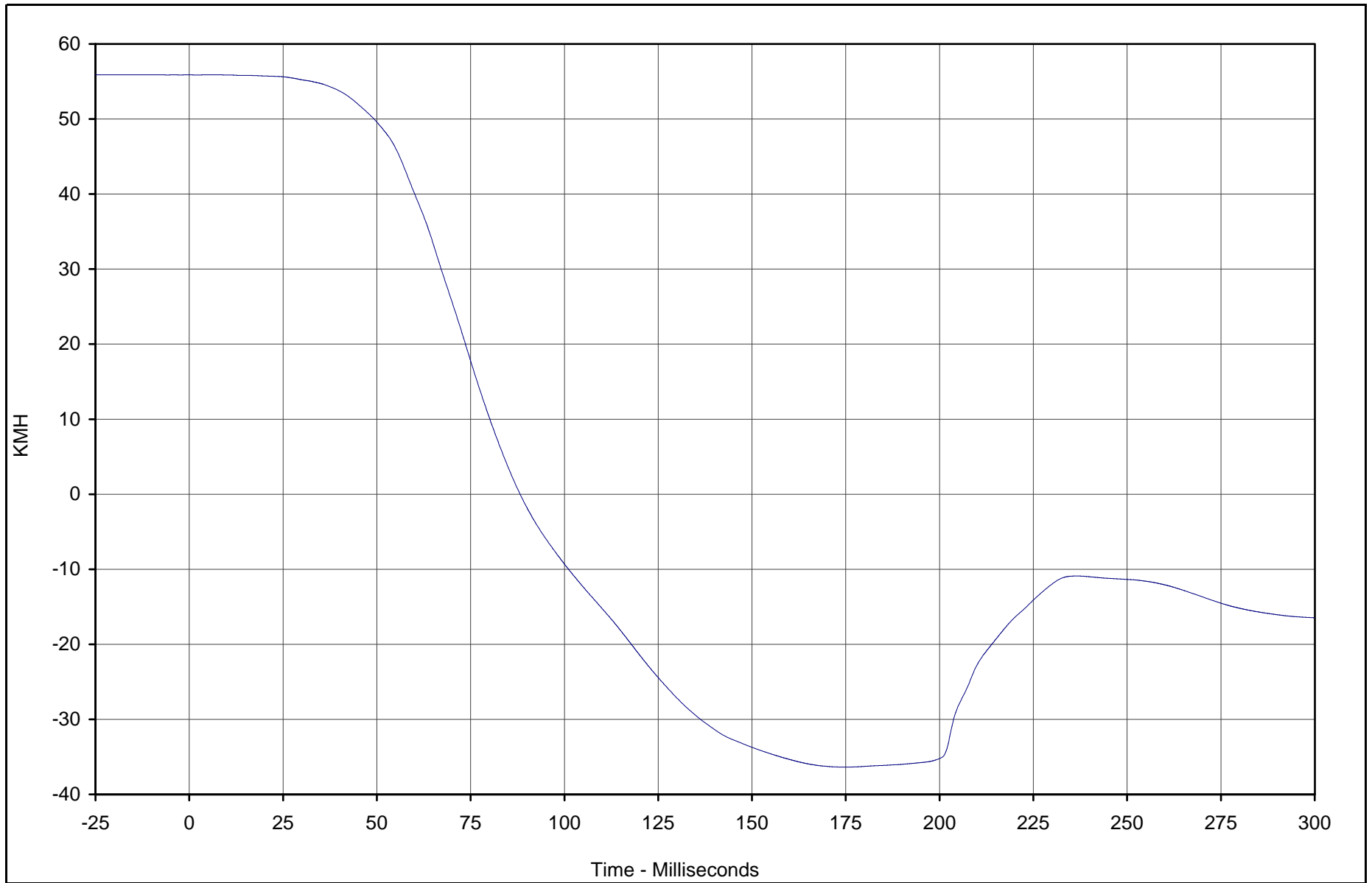
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary X Velocity	001	IN1	KMH	55.9	0.0	-36.4	174.8	180

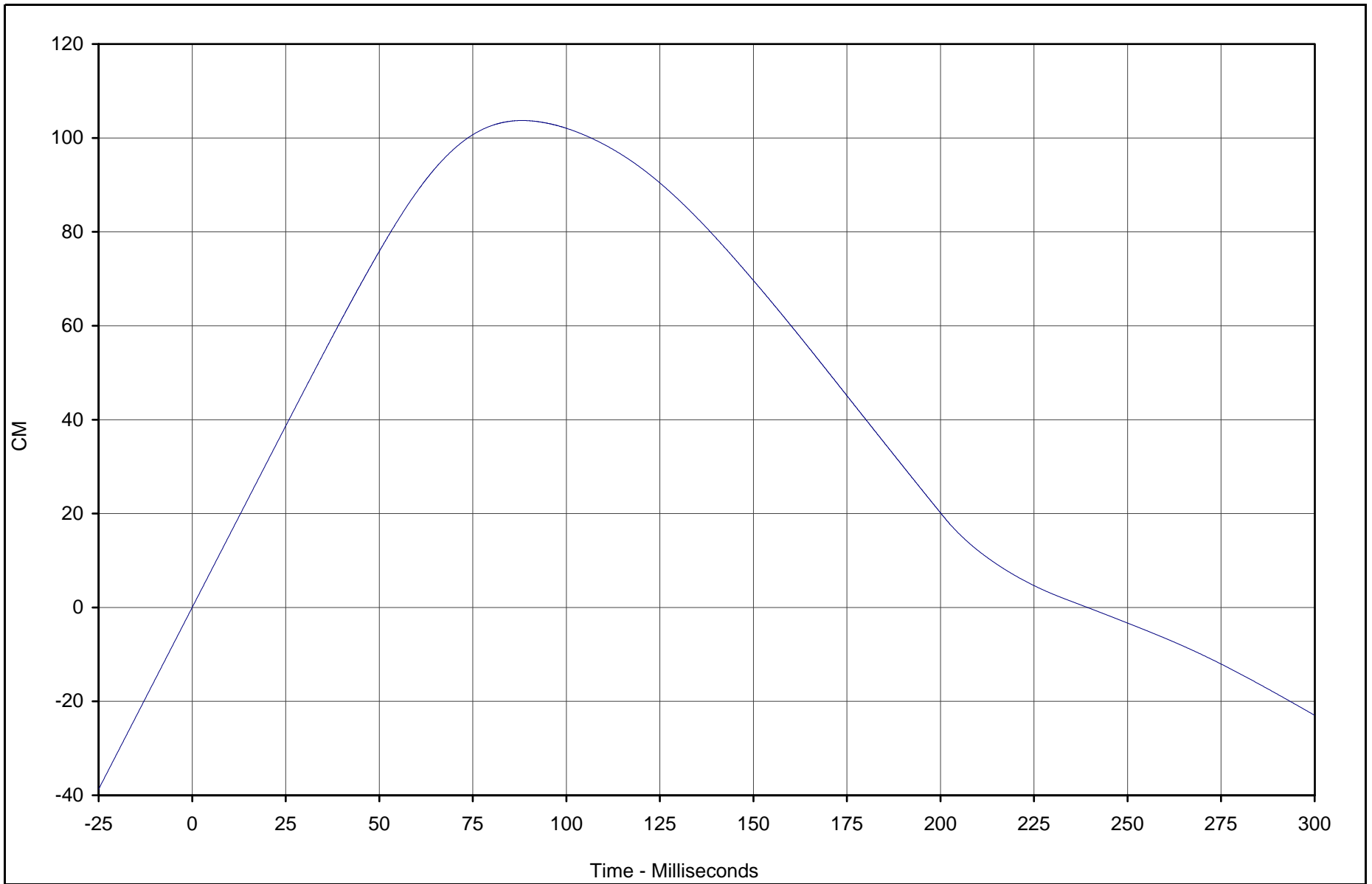


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary X Displ.	001	IN2	CM	103.7	88.2	-22.9	299.9	180

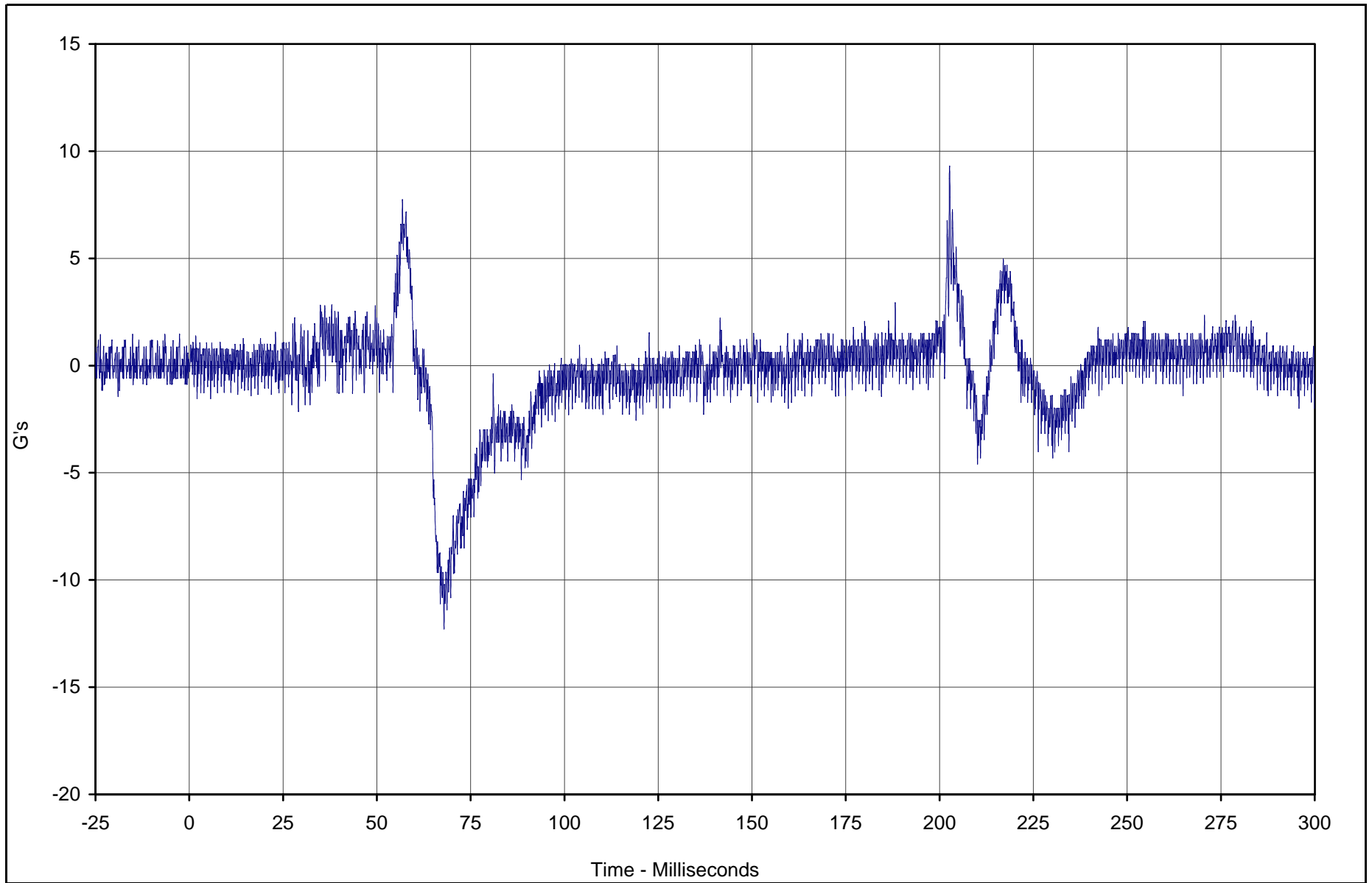


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary Y	002	FIL	G's	9.3	202.7	-12.3	67.9	1000

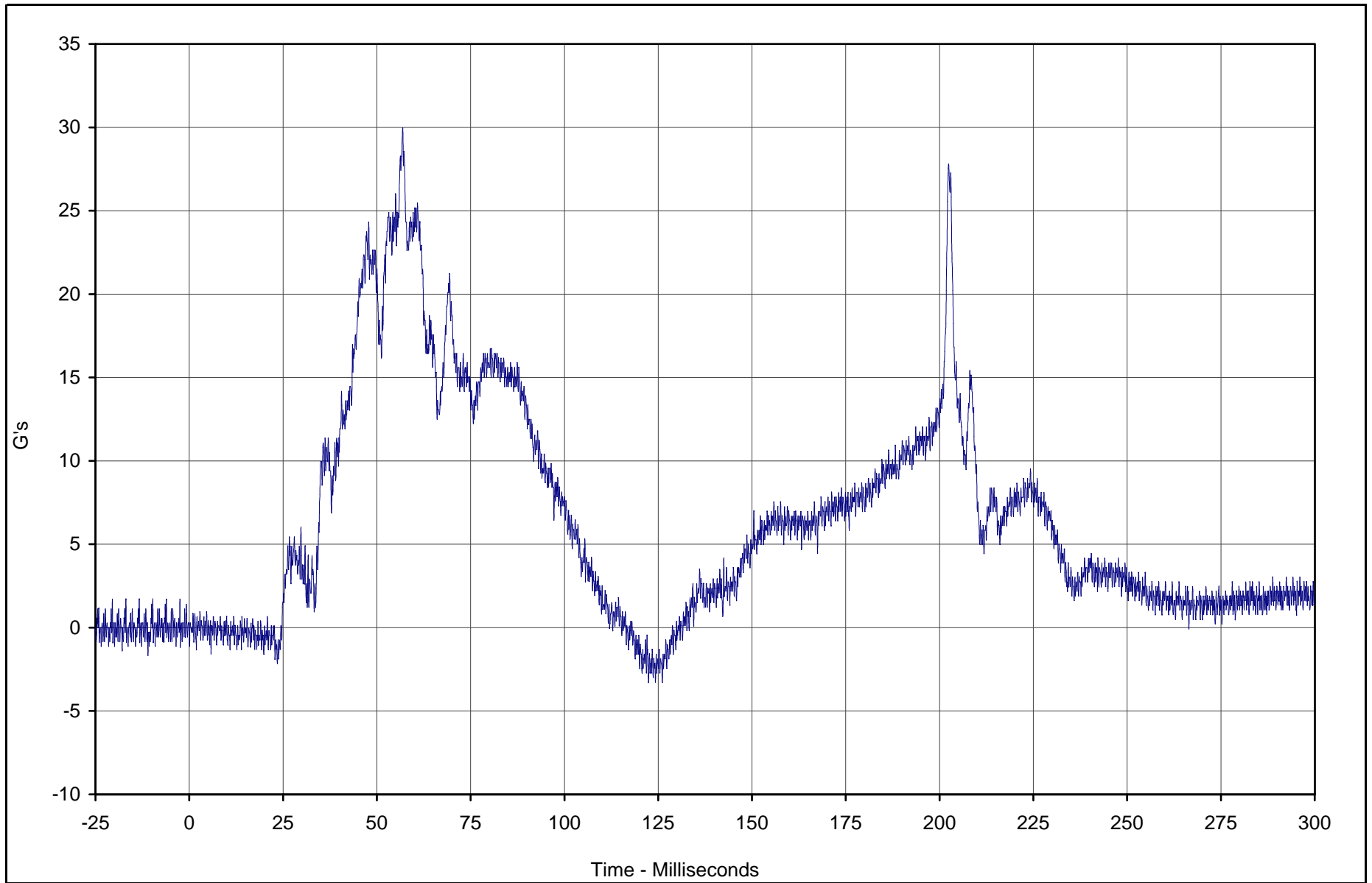


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary Z	003	FIL	G's	30.0	56.9	-3.3	122.4	1000

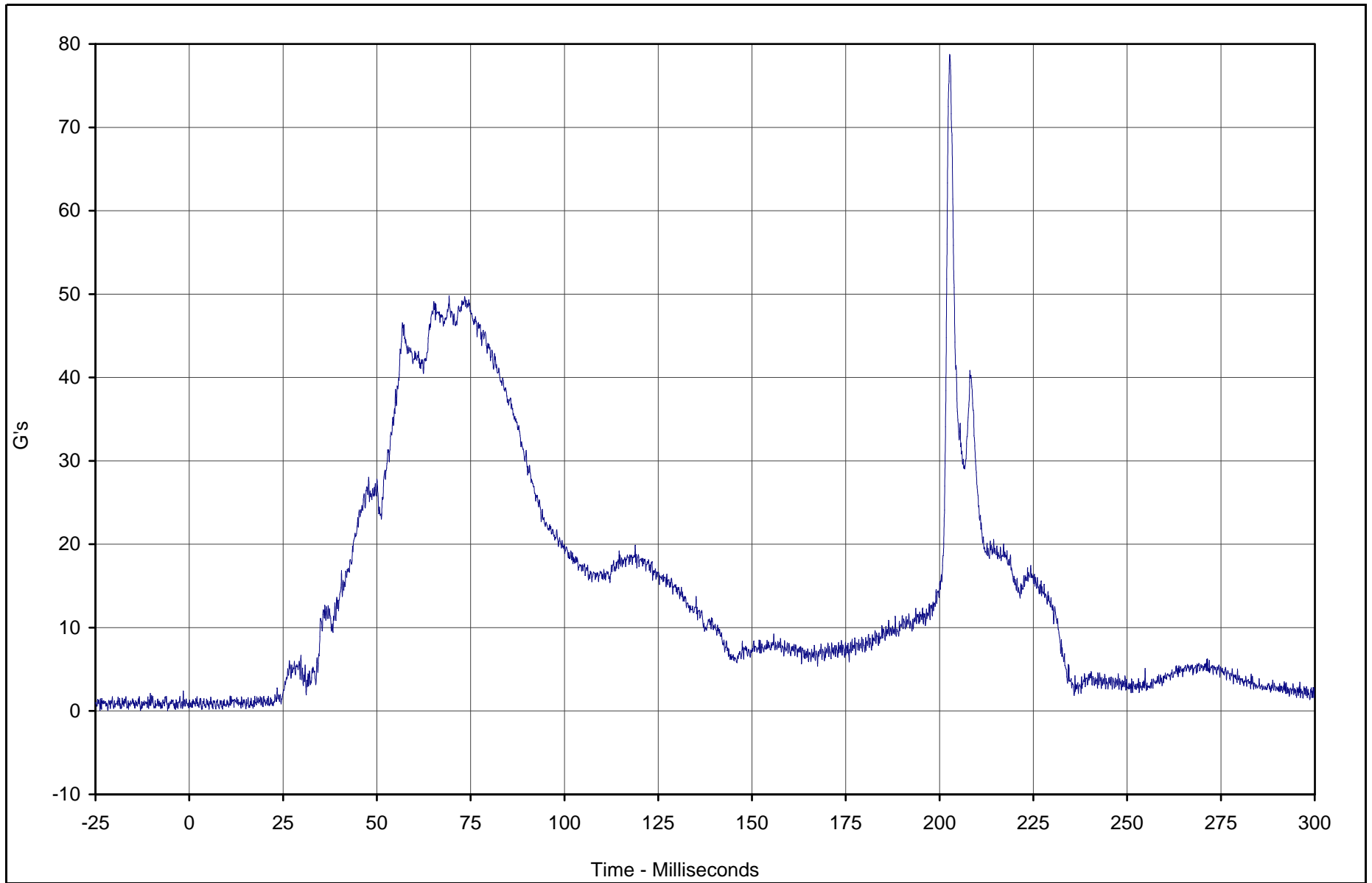


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Resultant Primary	001	RES	G's	78.7	202.7	0.2	3.3	1000

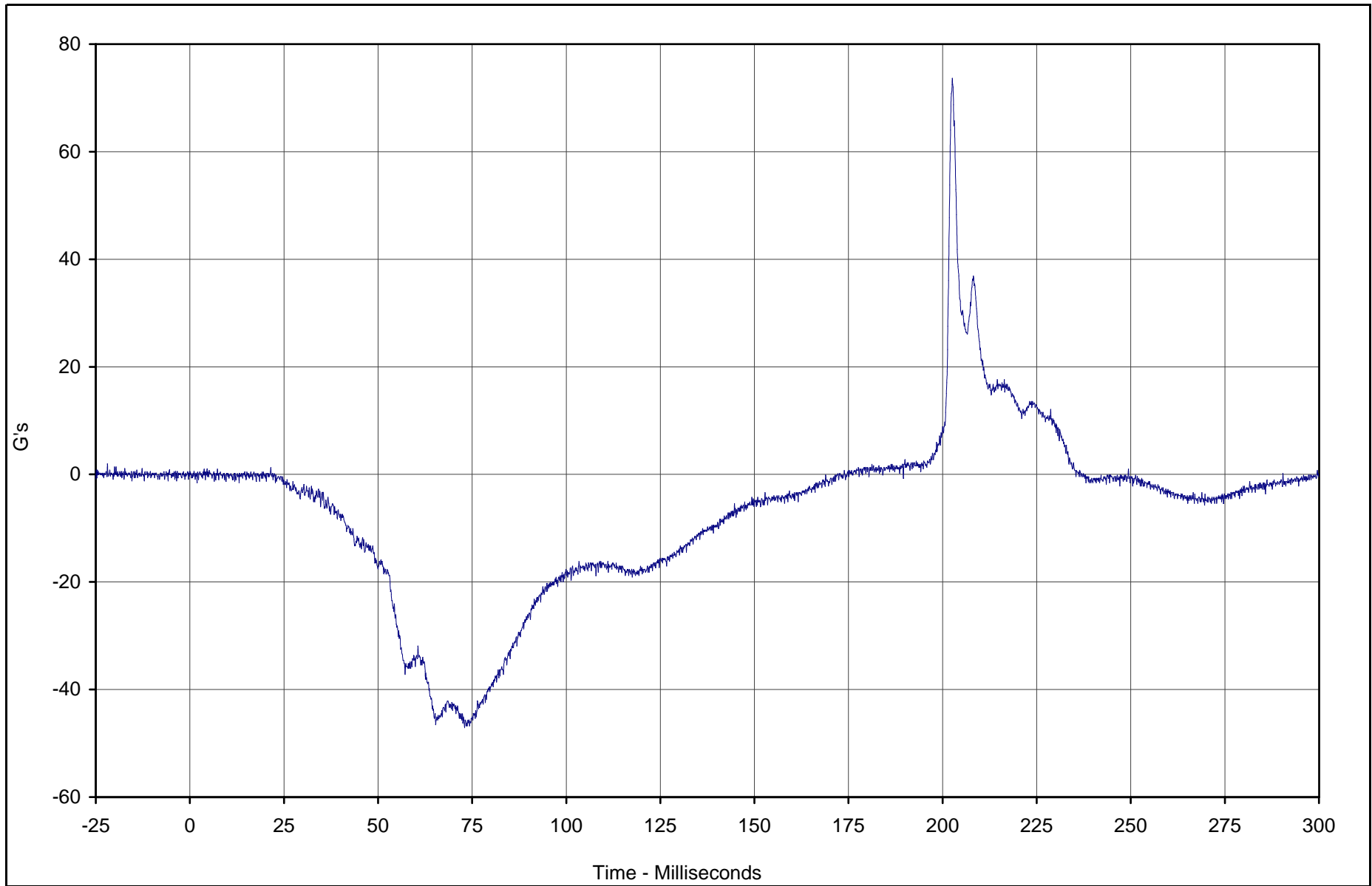


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant X	004	FIL	G's	73.7	202.6	-47.1	73.0	1000

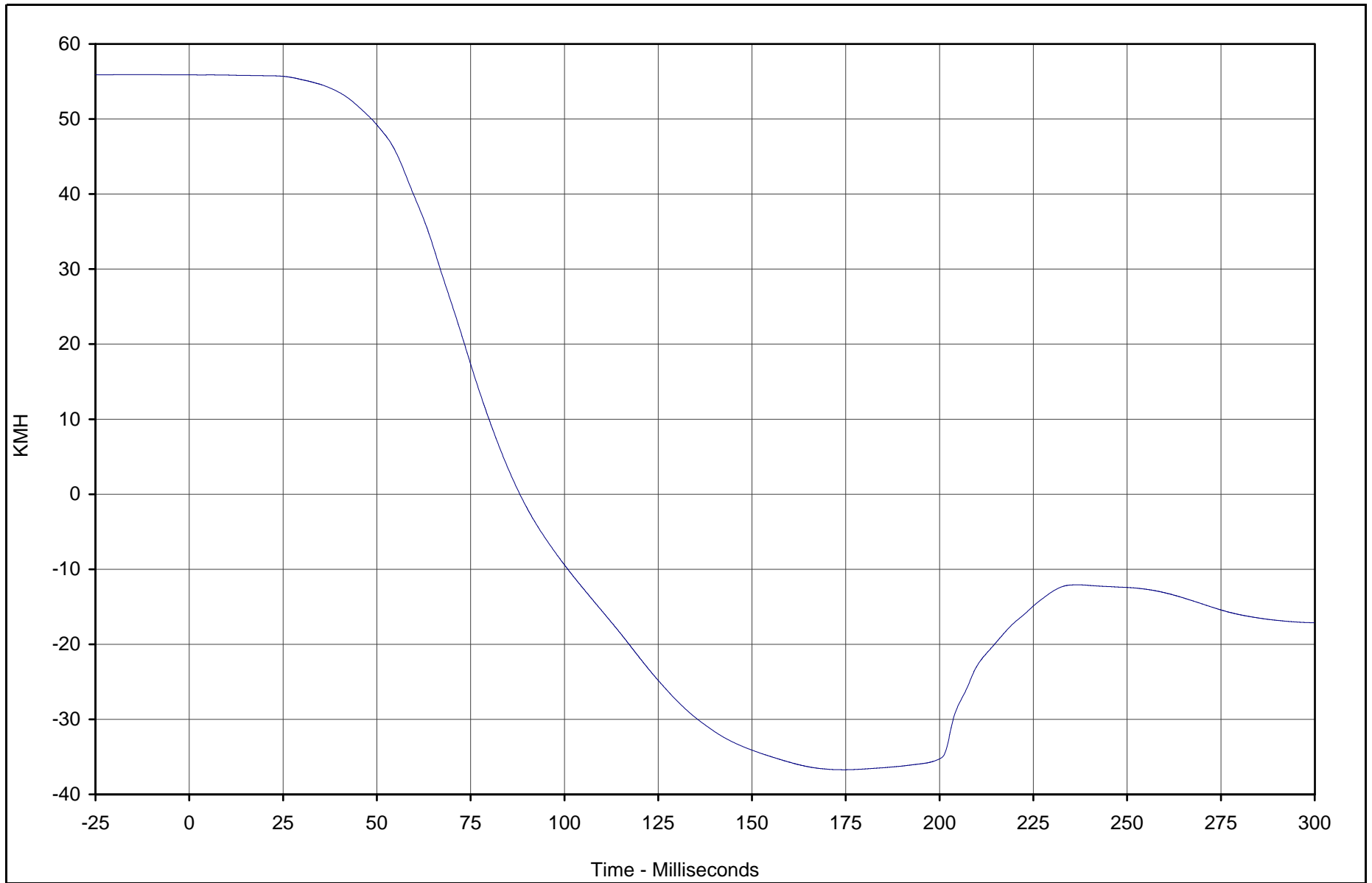


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant X Velocity	004	IN1	KMH	55.9	0.0	-36.7	174.6	180

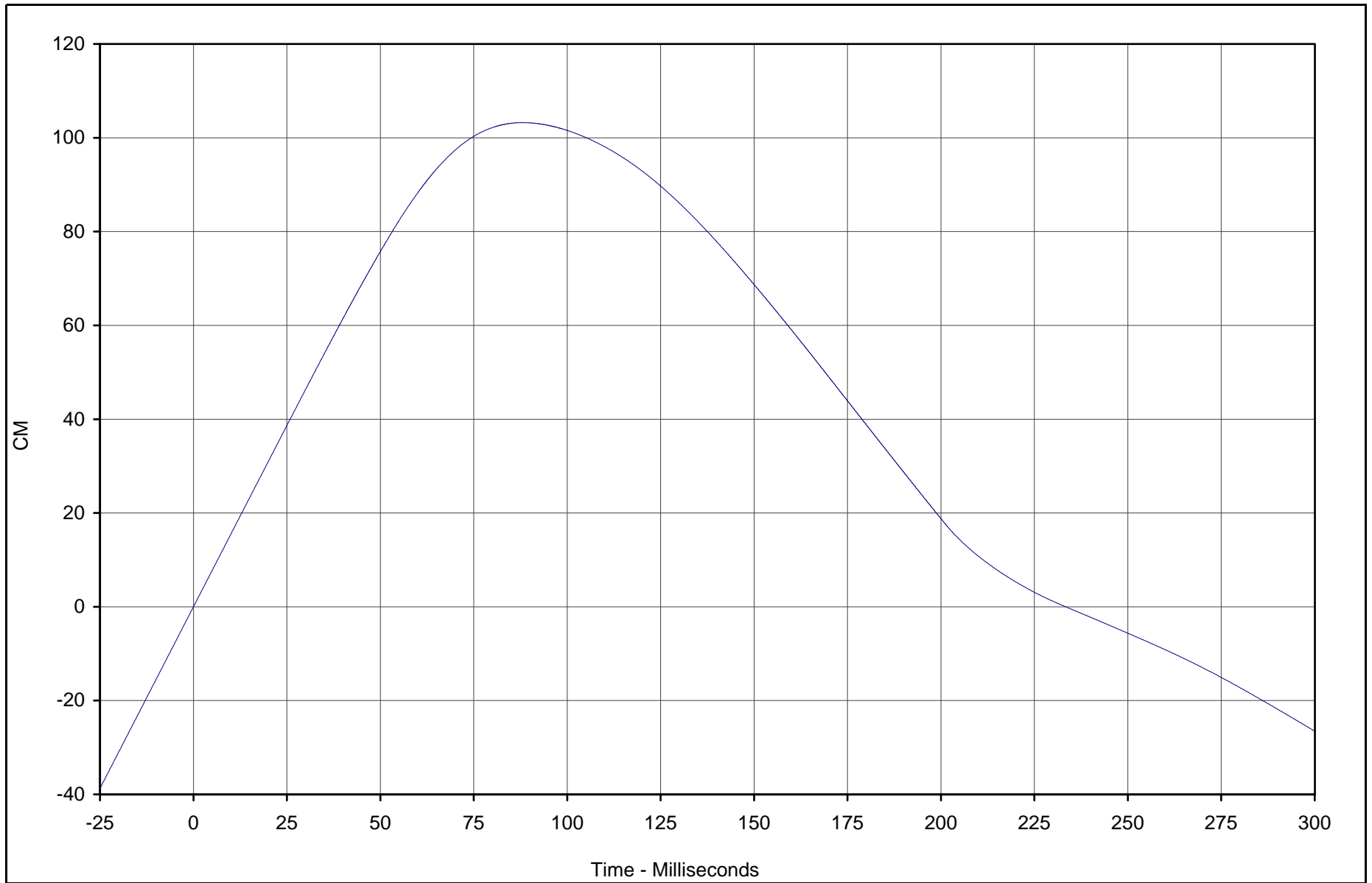


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant X Displ.	004	IN2	CM	103.2	88.1	-26.5	299.9	180



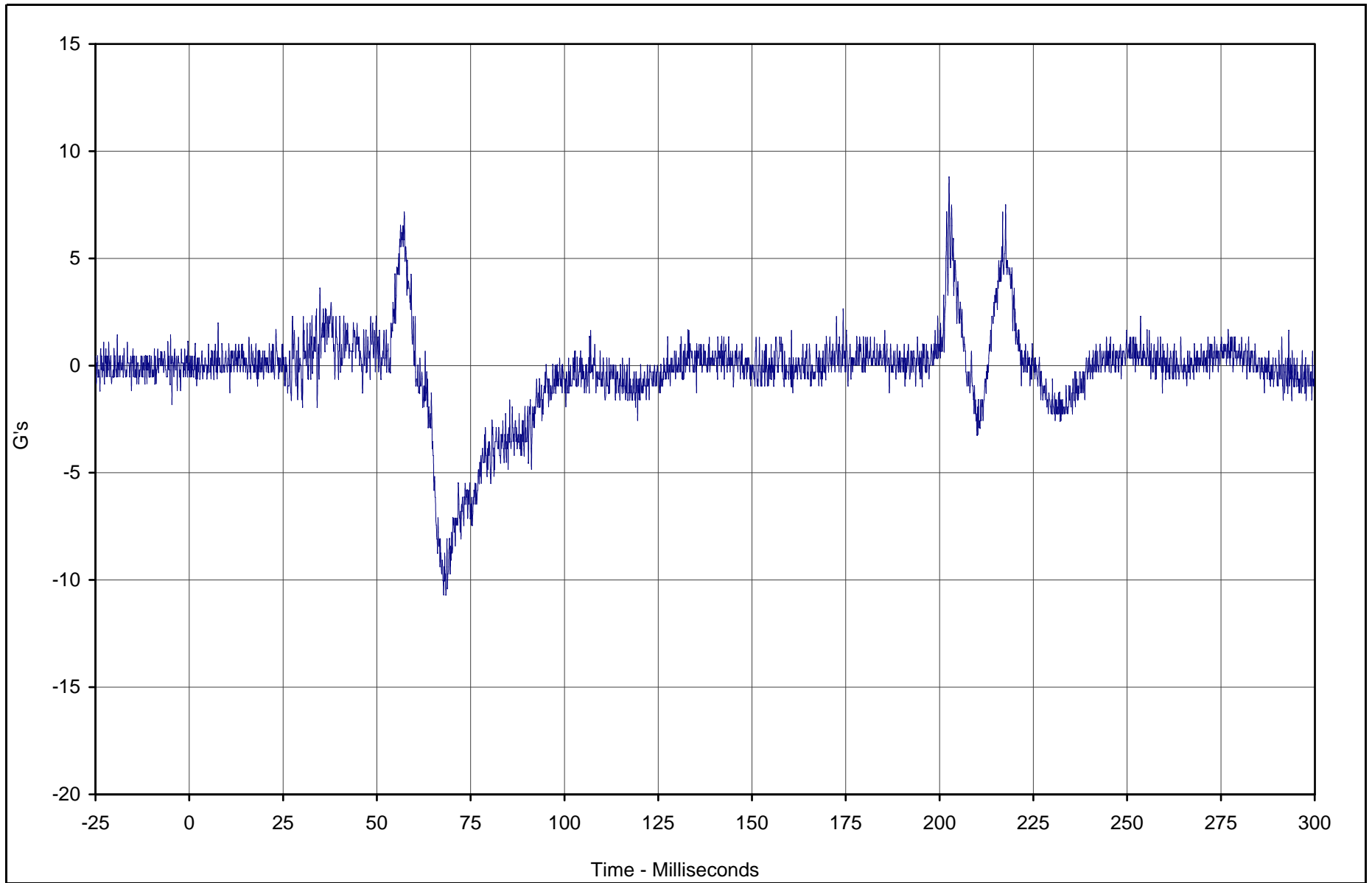
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant Y	005	FIL	G's	8.8	202.5	-10.7	67.8	1000



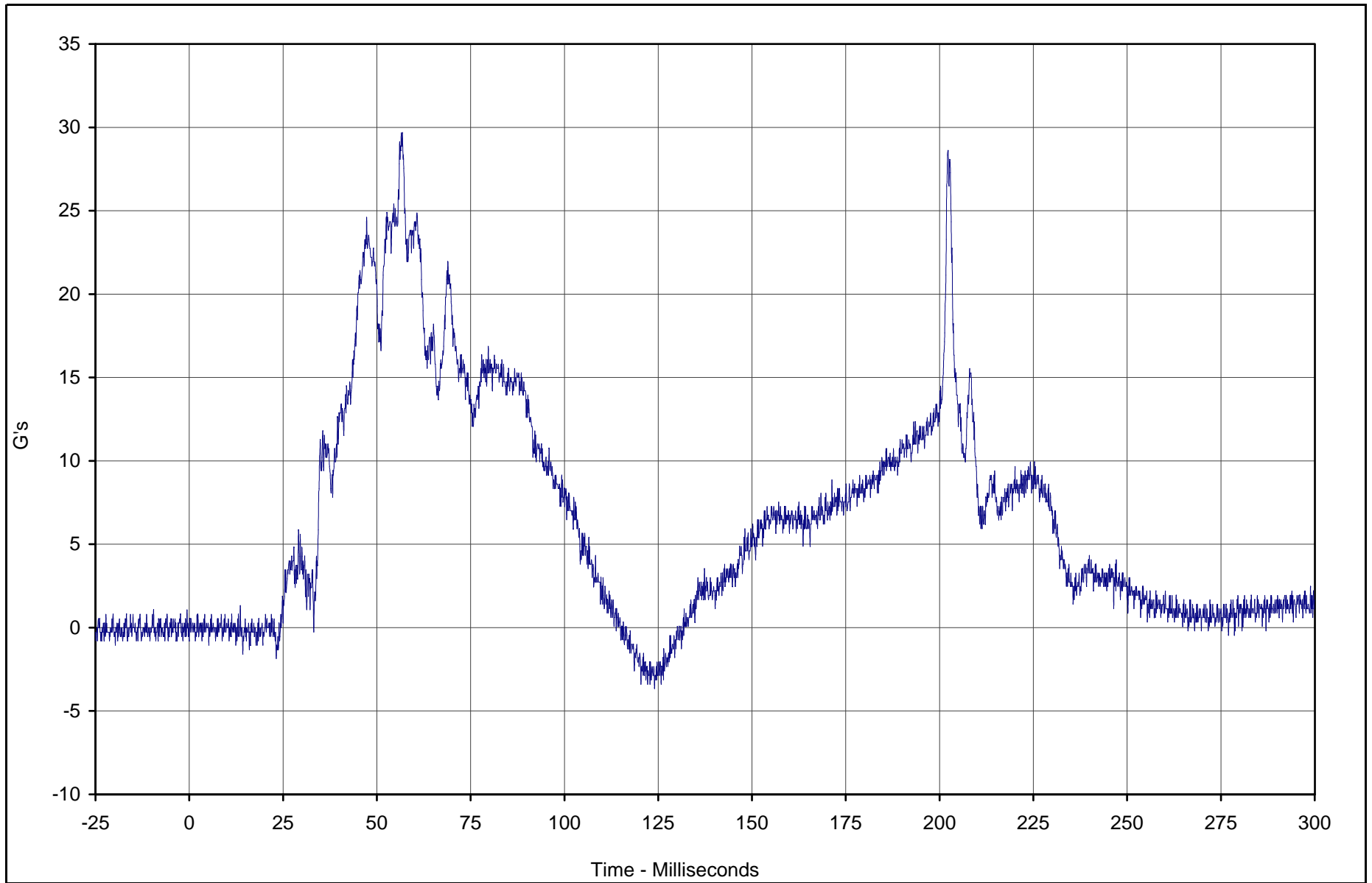
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant Z	006	FIL	G's	29.7	56.5	-3.7	124.0	1000

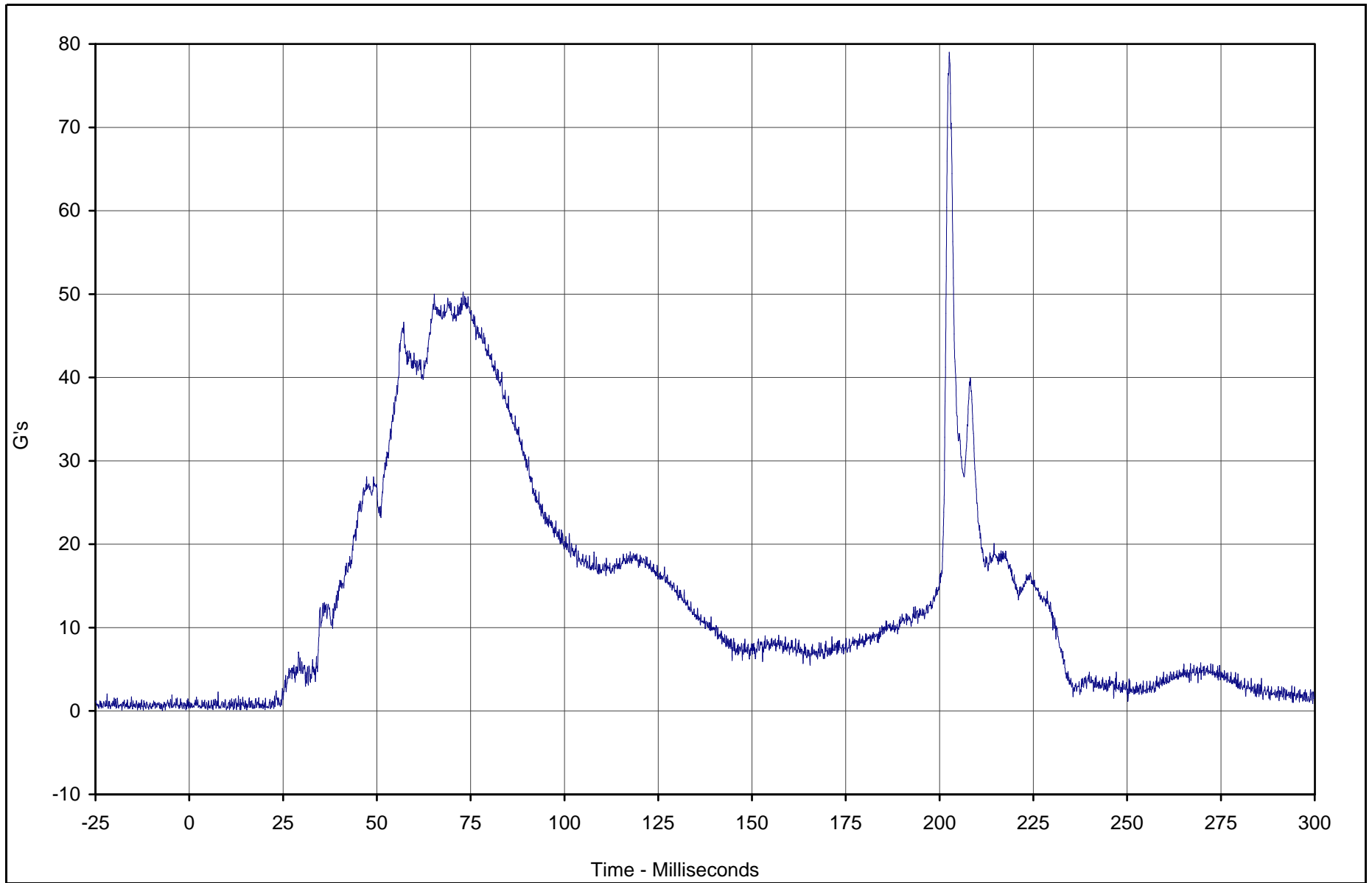


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Resultant Redundant	004	RES	G's	79.0	202.6	0.1	4.9	1000

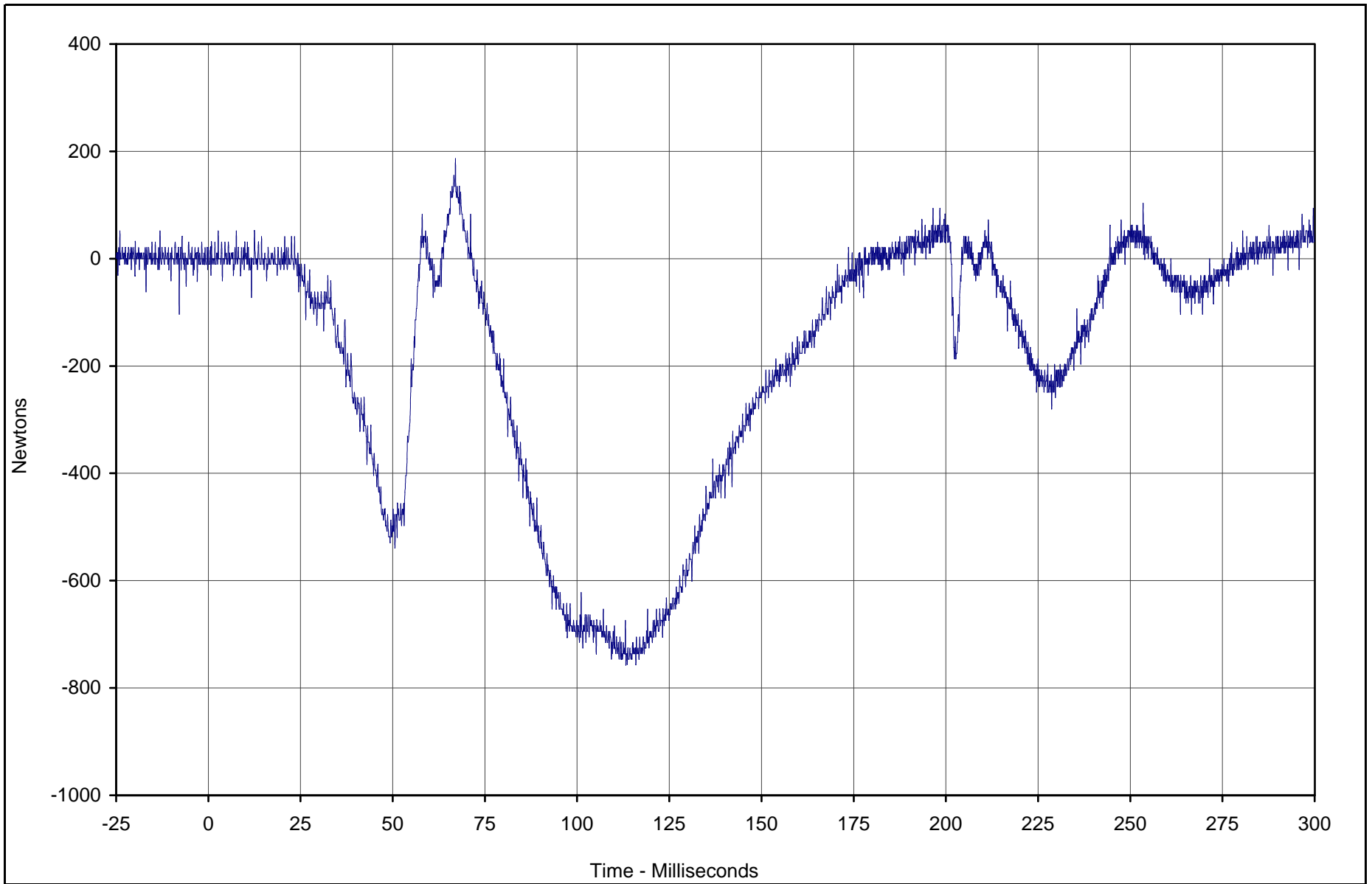


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force X	007	FIL	Newtons	186.6	67.0	-756.8	113.2	1000

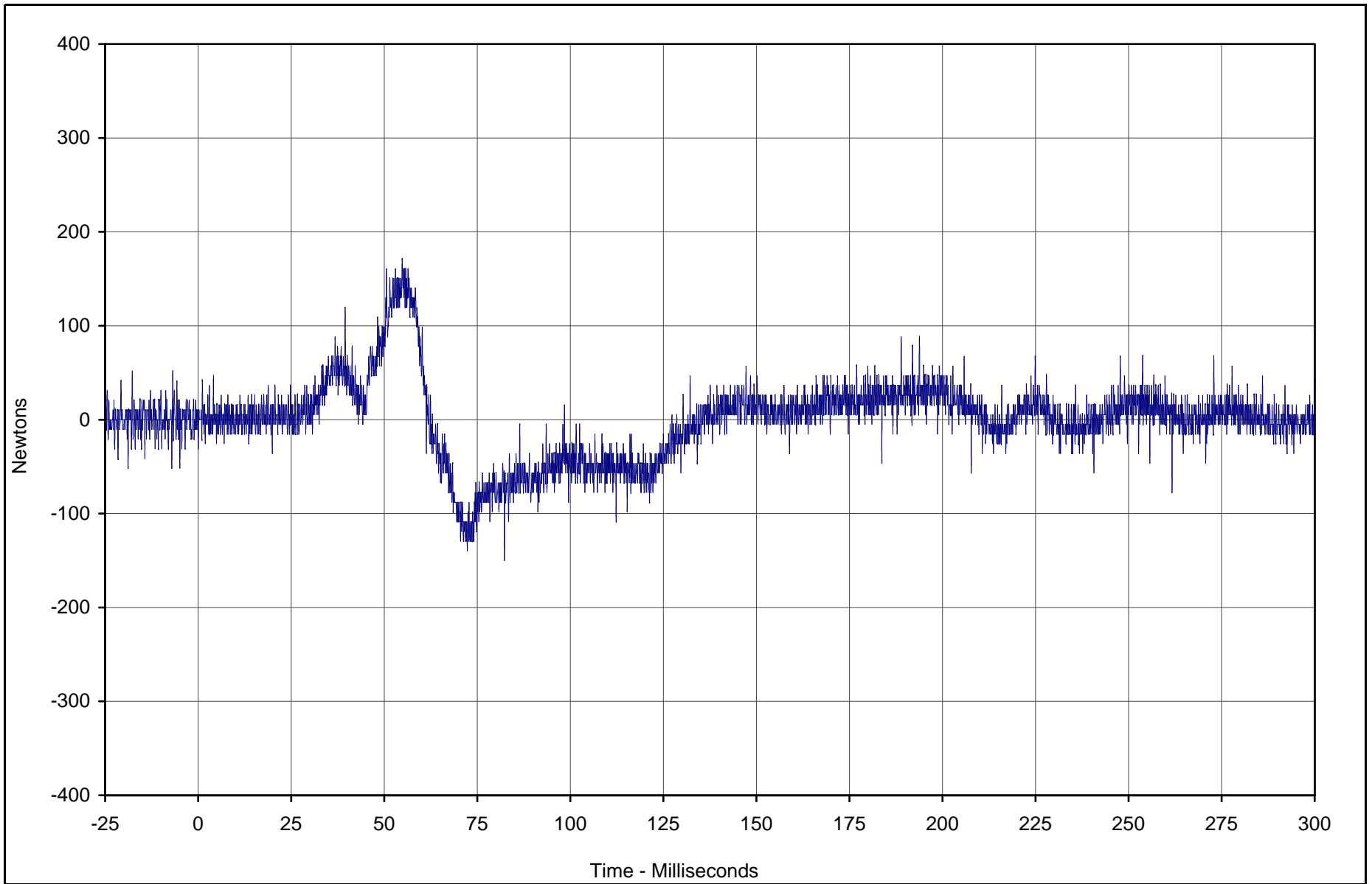


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force Y	008	FIL	Newtons	171.3	54.8	-150.2	82.3	1000

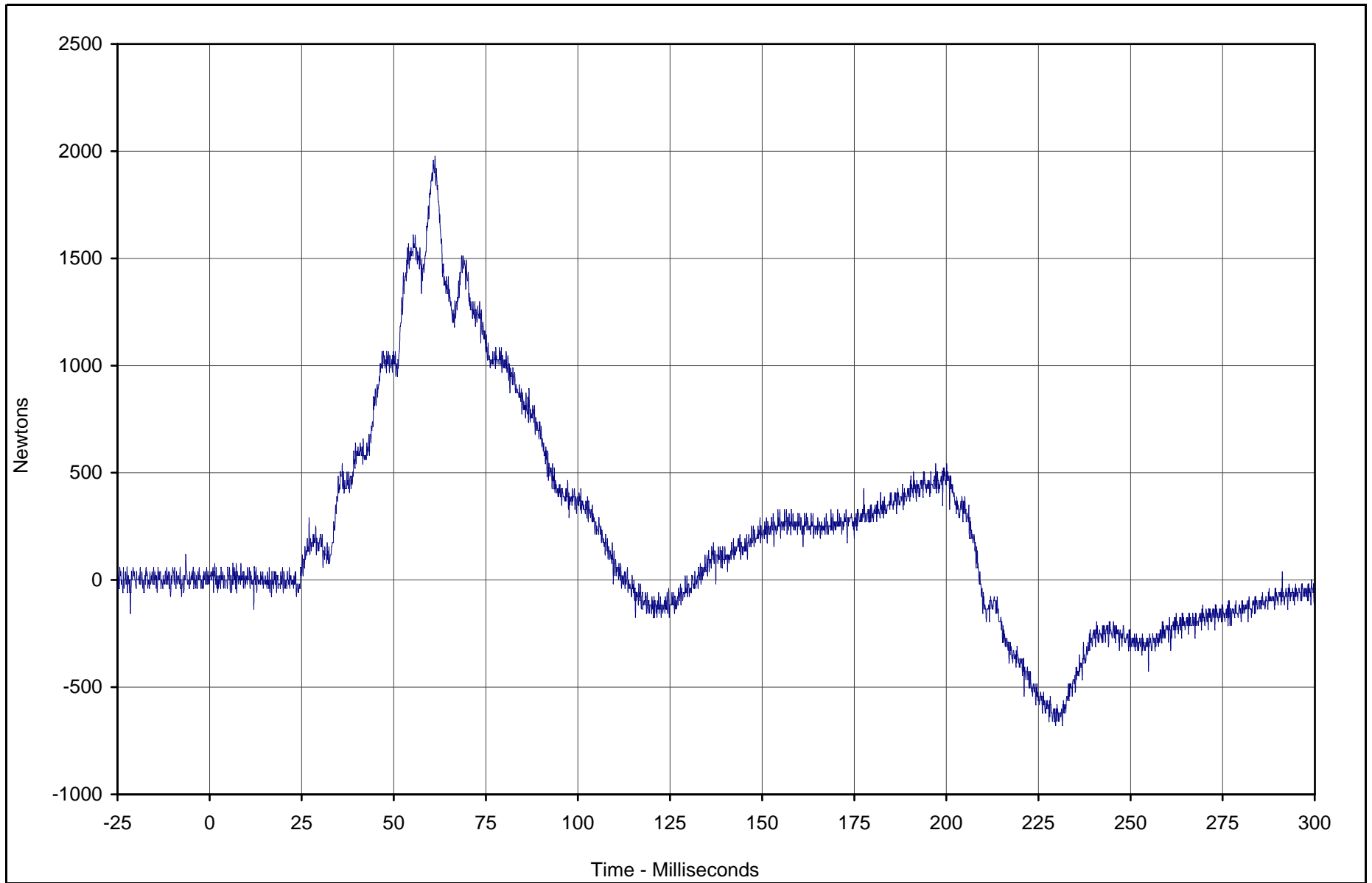


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force Z	009	FIL	Newtons	1976.6	61.2	-678.2	229.7	1000

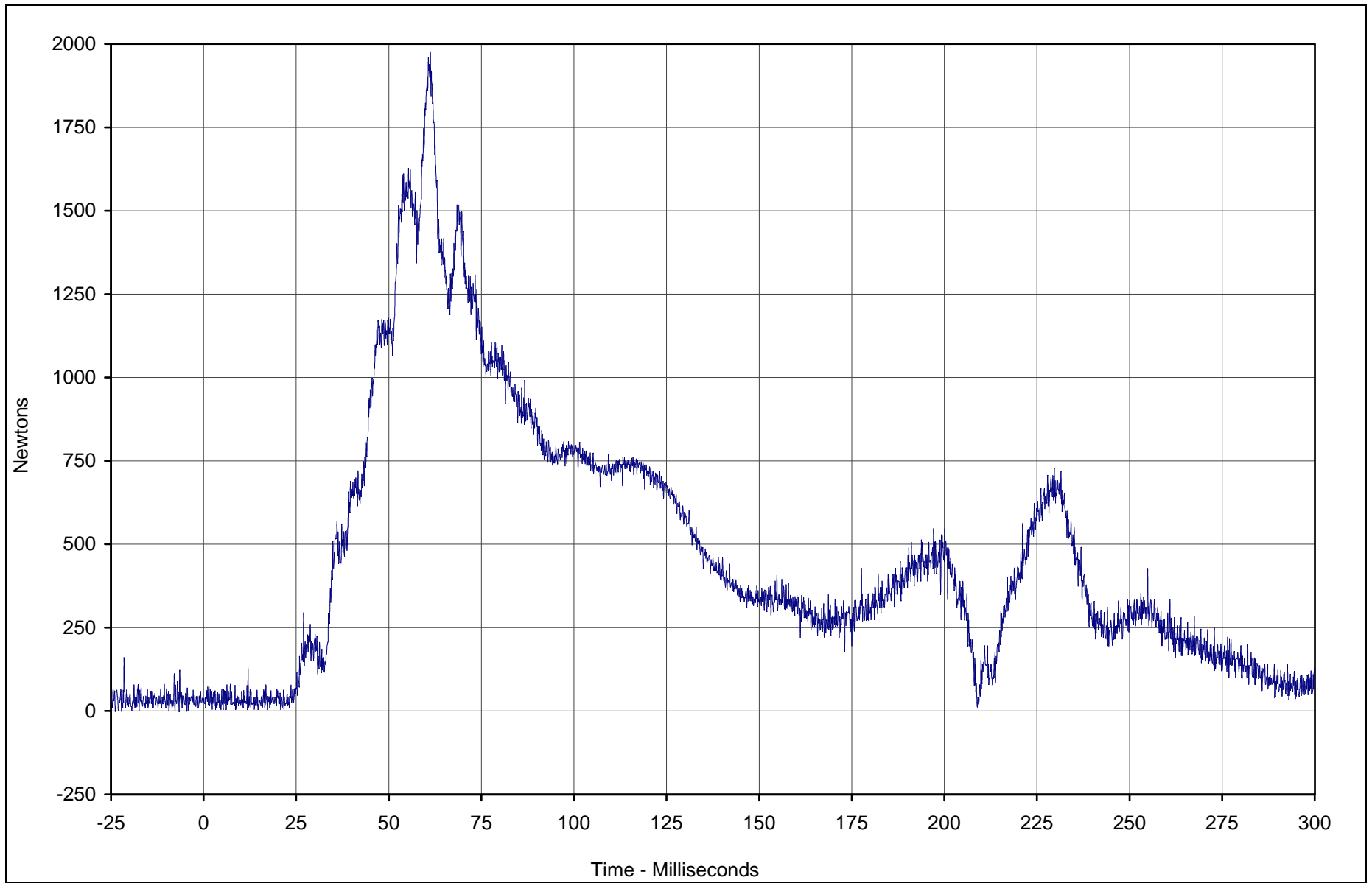


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force Resultant	007	RES	Newtons	1976.8	61.2	5.0	2.3	1000

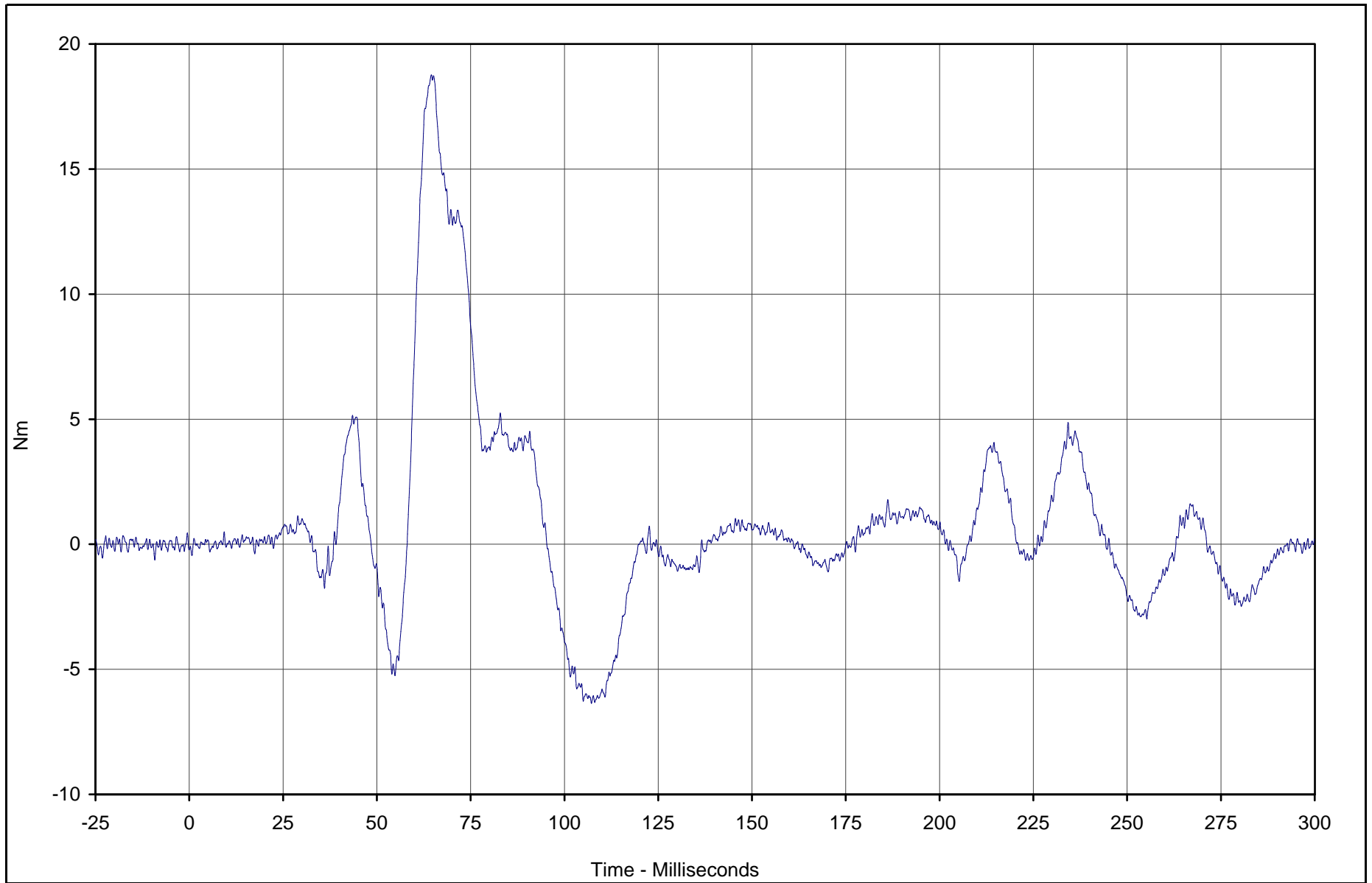


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment X	010	FIL	Nm	18.8	64.5	-6.4	107.2	600

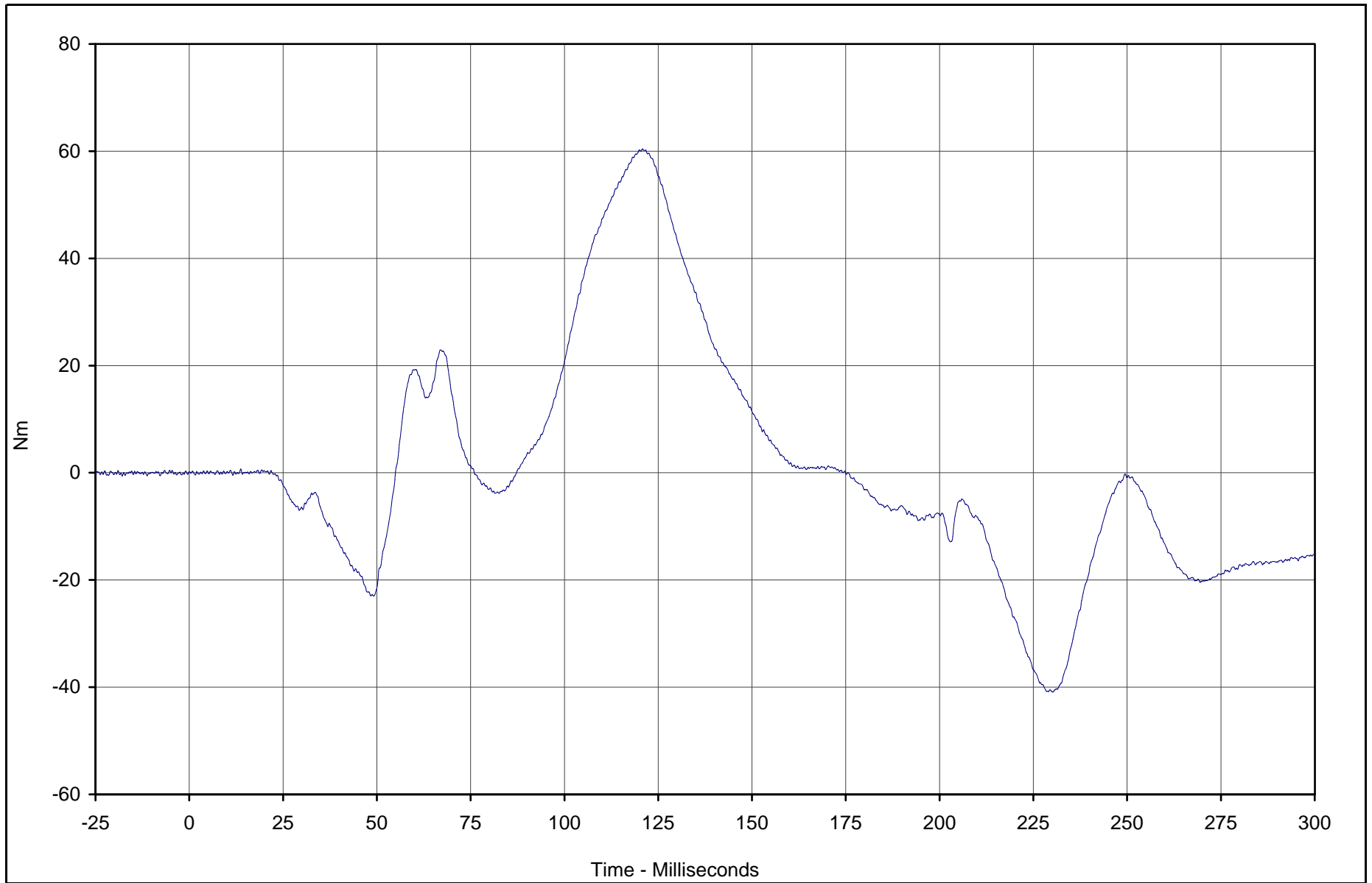


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment Y	011	FIL	Nm	60.4	120.8	-40.9	230.3	600

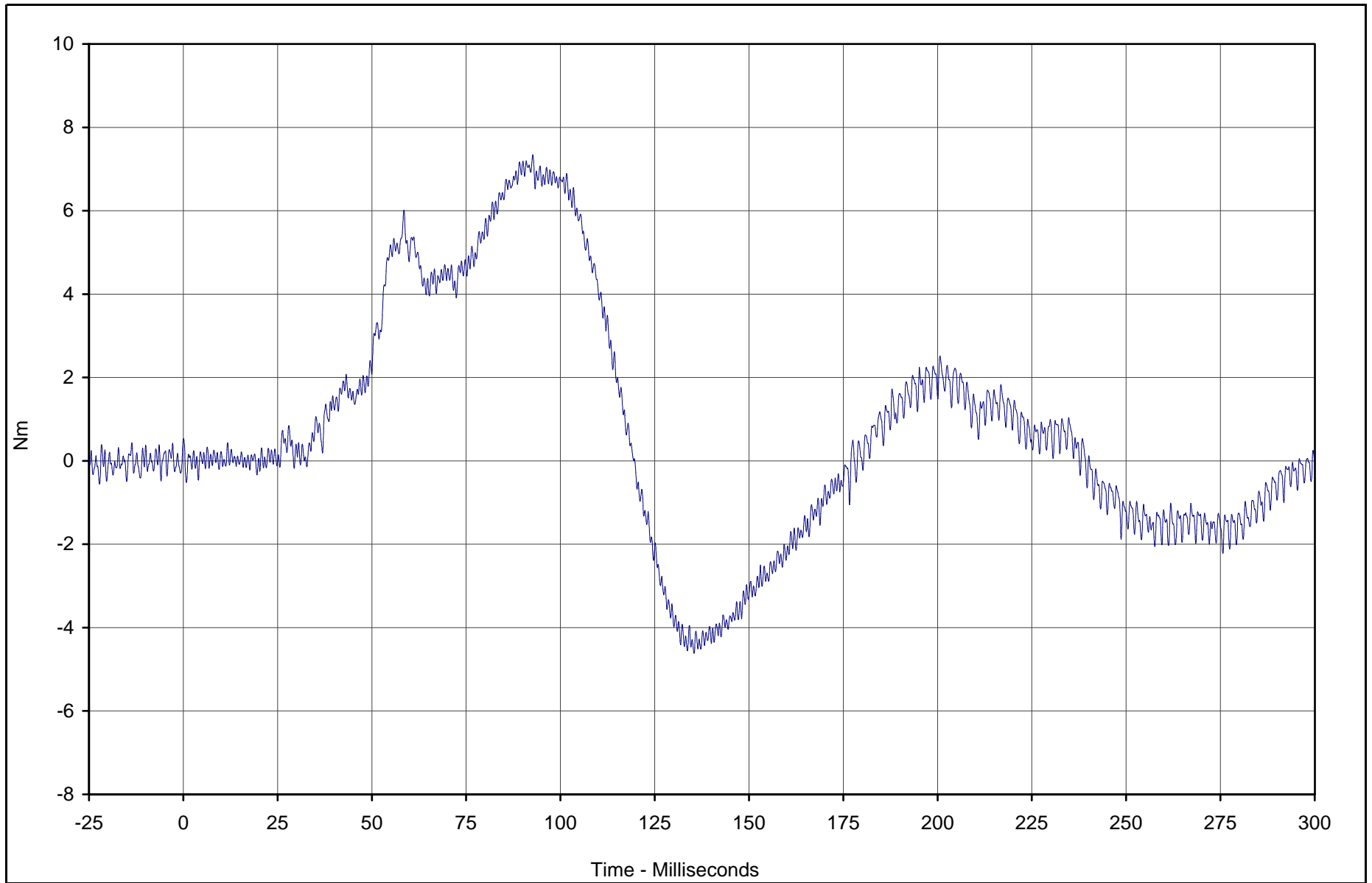


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment Z	012	FIL	Nm	7.3	92.7	-4.6	135.4	600

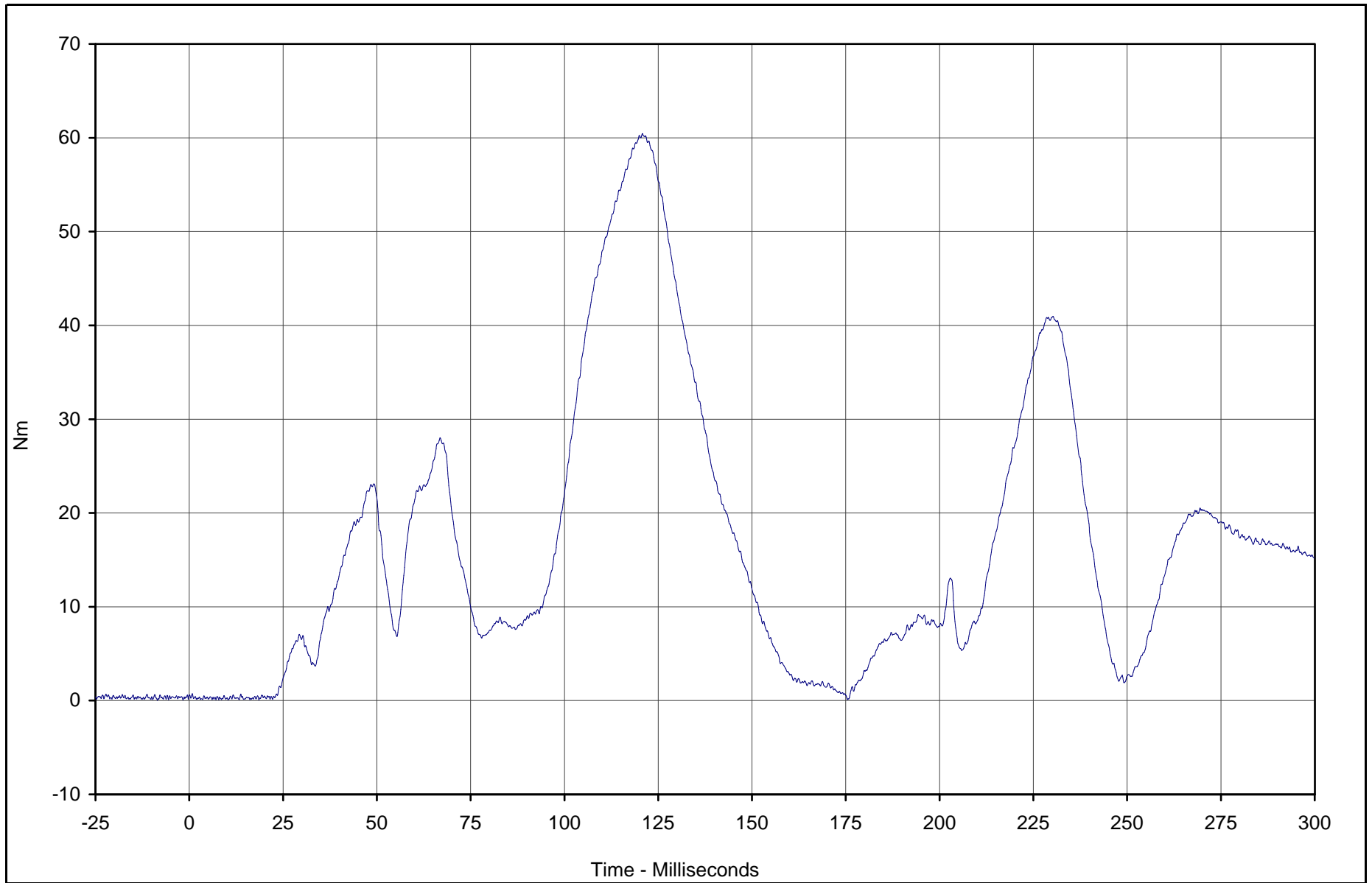


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment Resultant	010	RES	Nm	60.4	120.8	0.1	18.6	600

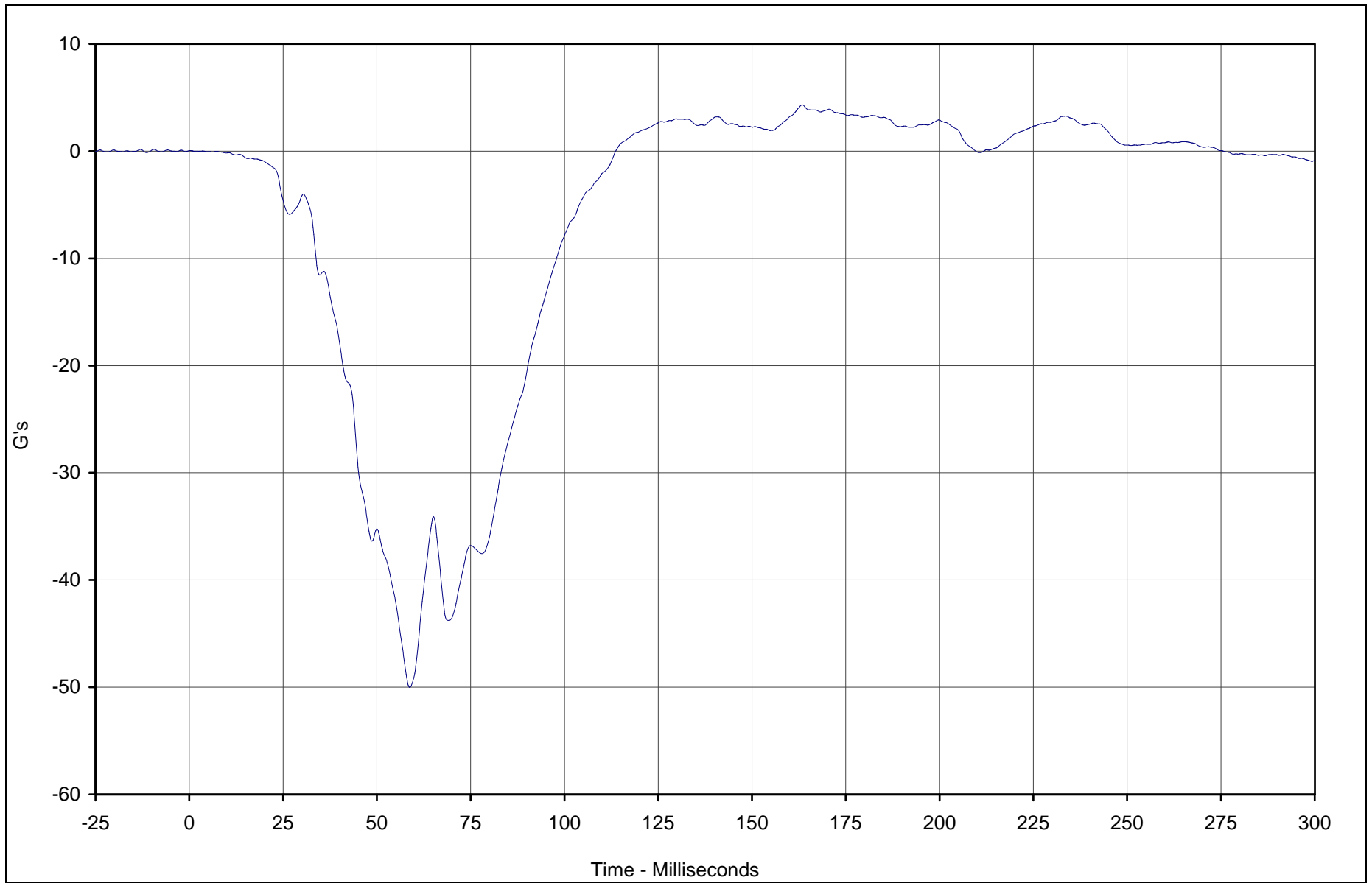


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary X	013	FIL	G's	4.3	163.4	-50.0	58.8	180



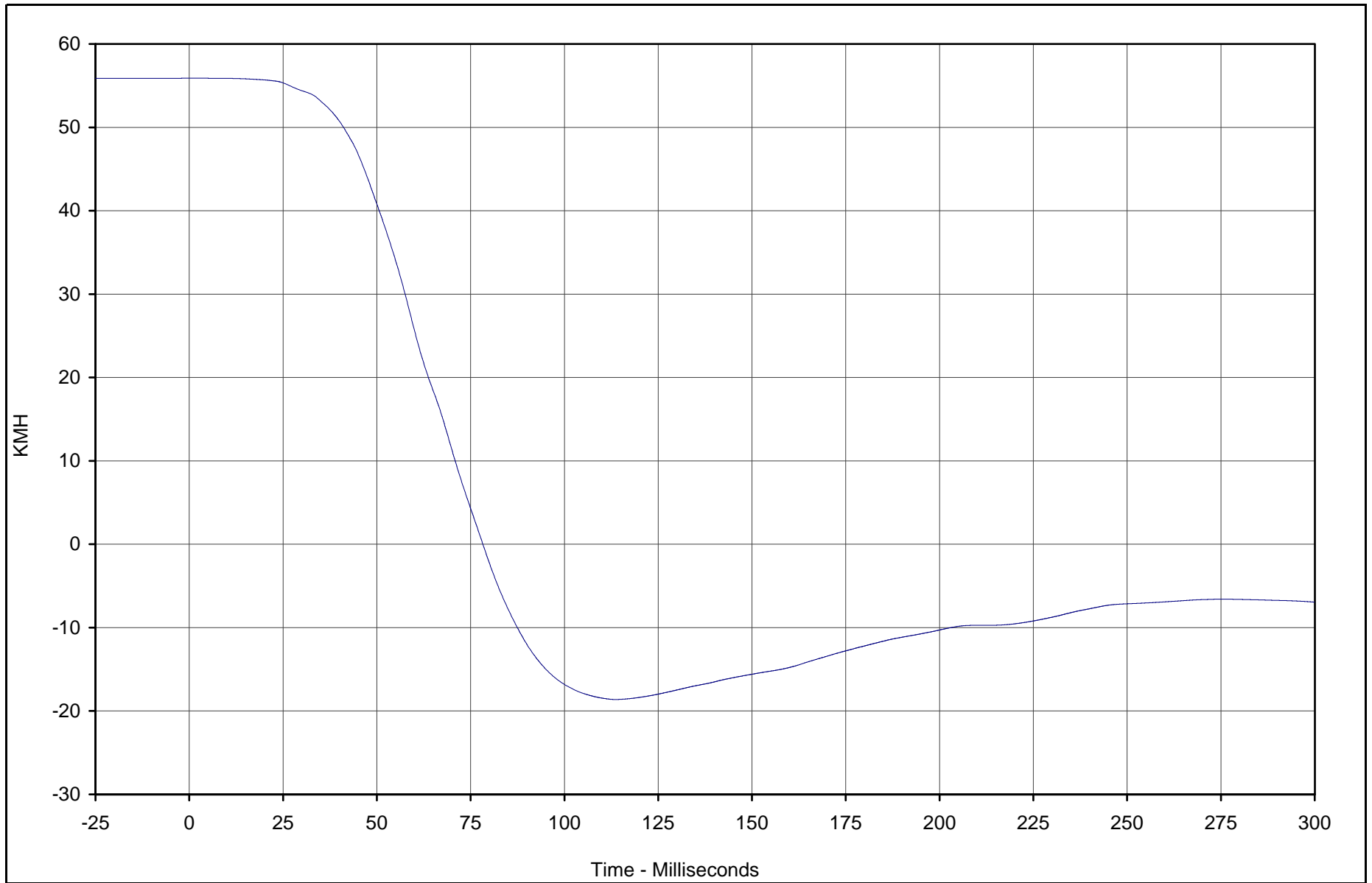
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary X Velocity	013	IN1	KMH	55.9	1.1	-18.6	113.7	180



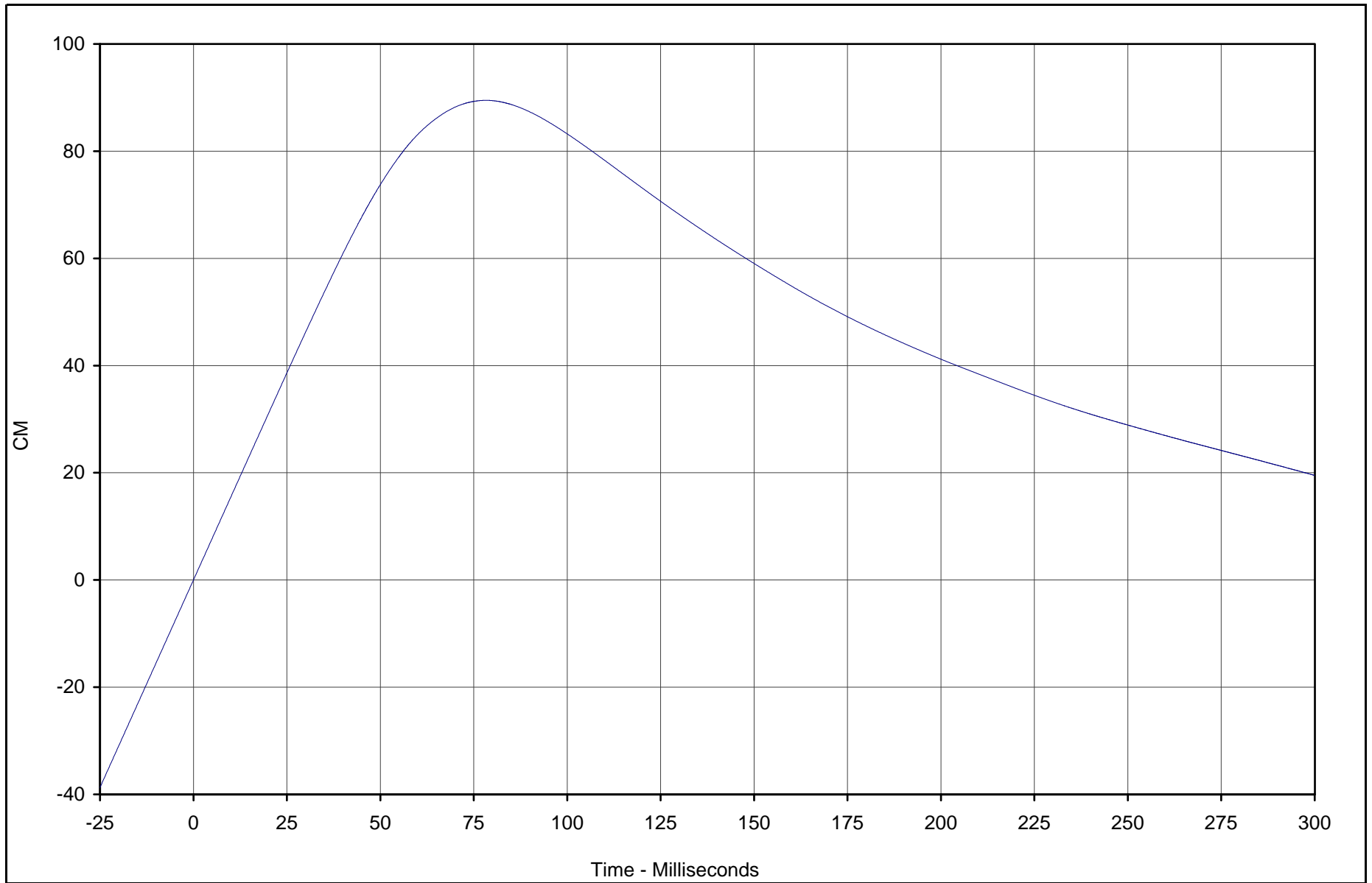
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary X Displ.	013	IN2	CM	89.5	78.3	0.0	0.0	180

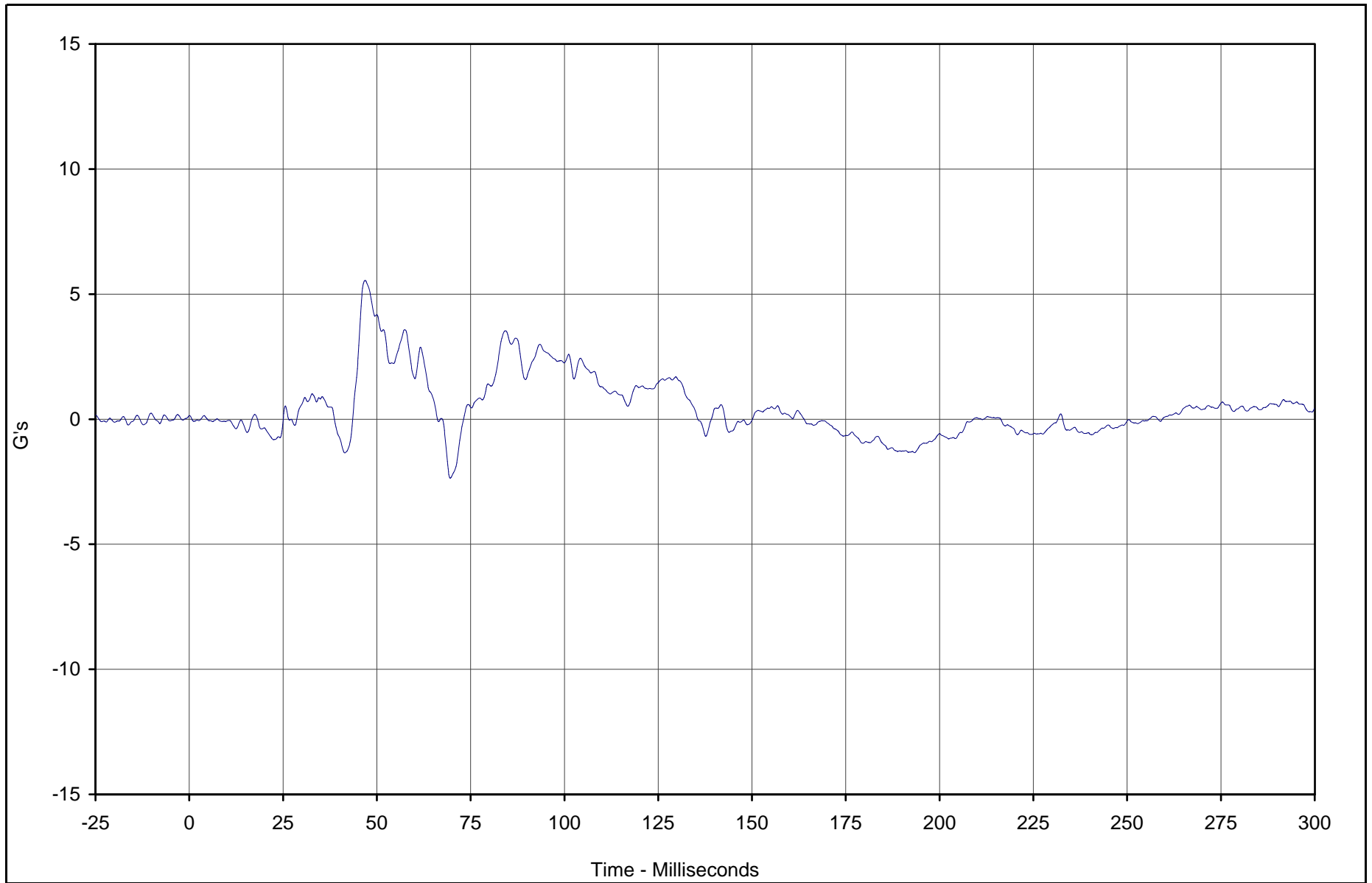


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary Y	014	FIL	G's	5.6	46.9	-2.4	69.6	180



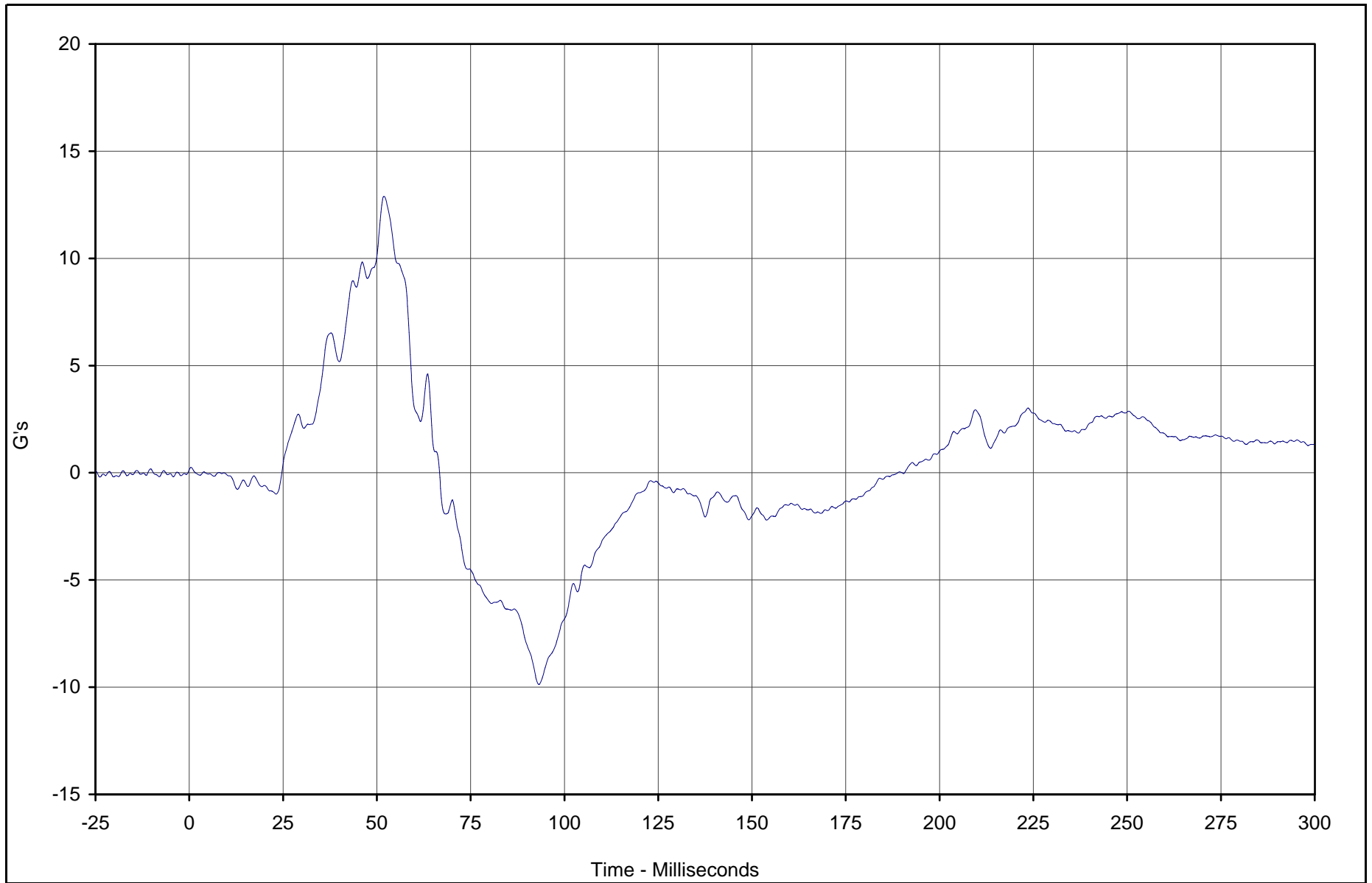
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary Z	015	FIL	G's	12.9	51.9	-9.9	93.2	180



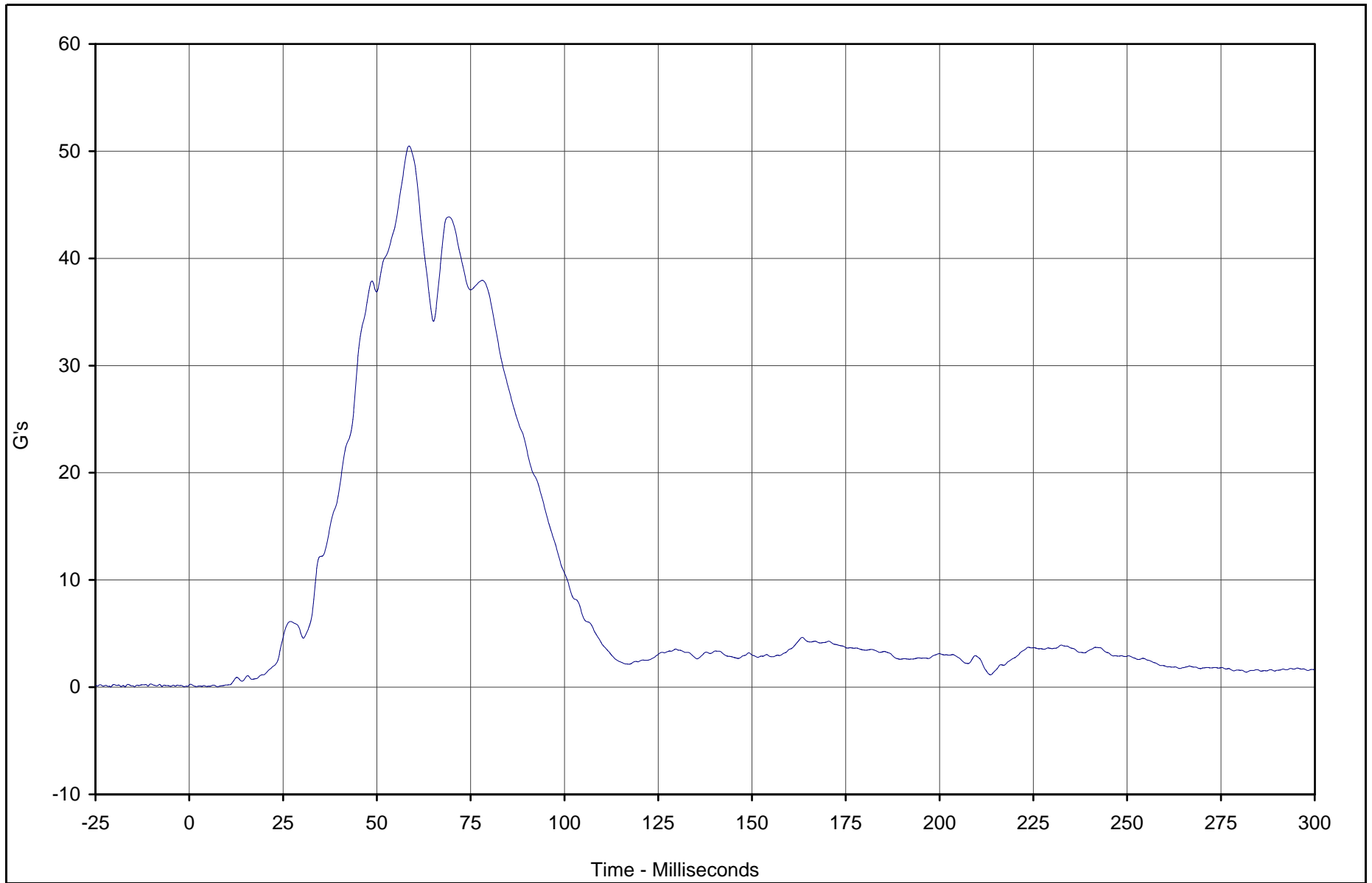
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Resultant Primary	013	RES	G's	50.5	58.6	0.0	7.5	180

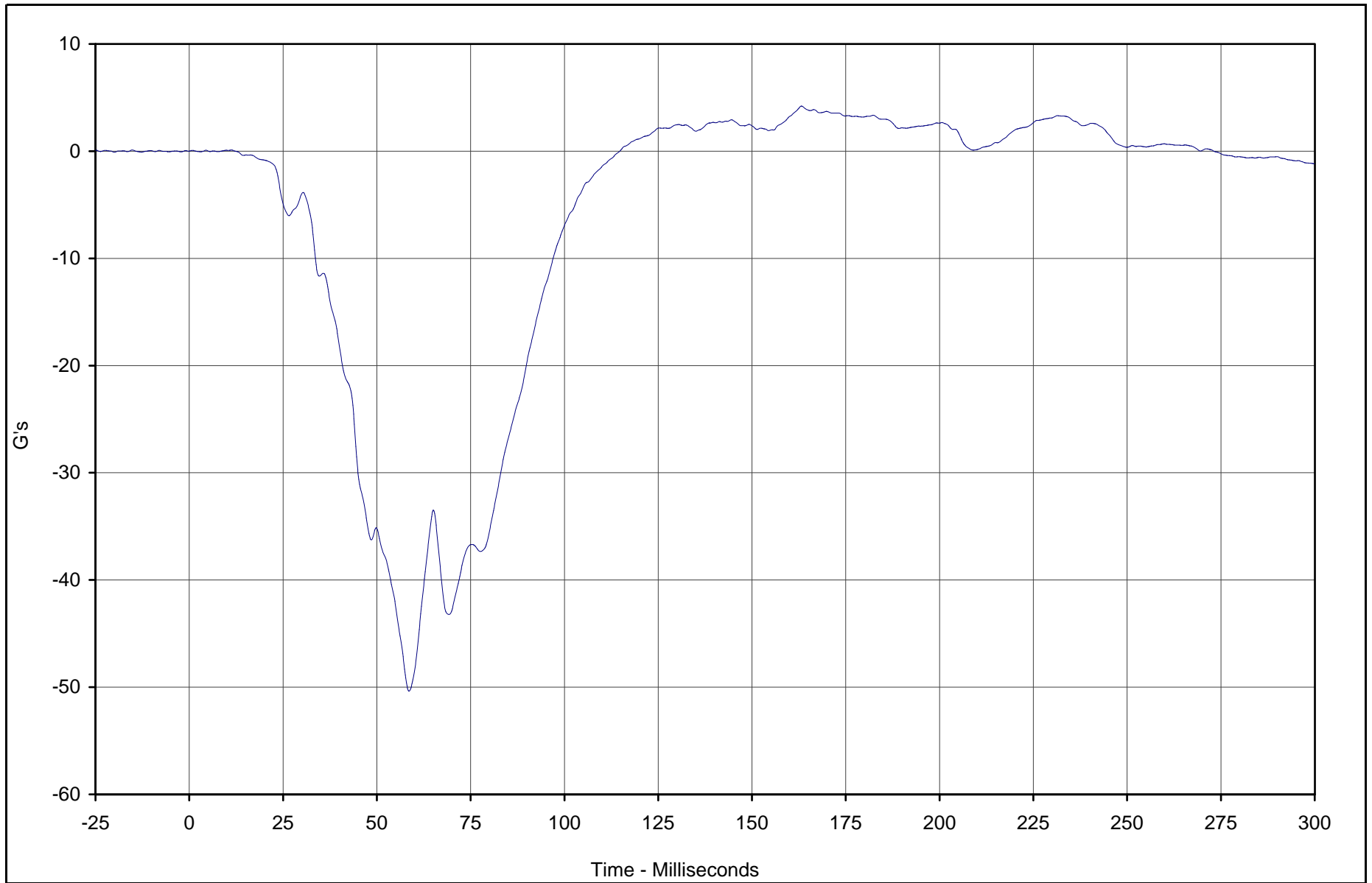


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant X	016	FIL	G's	4.2	163.2	-50.4	58.6	180



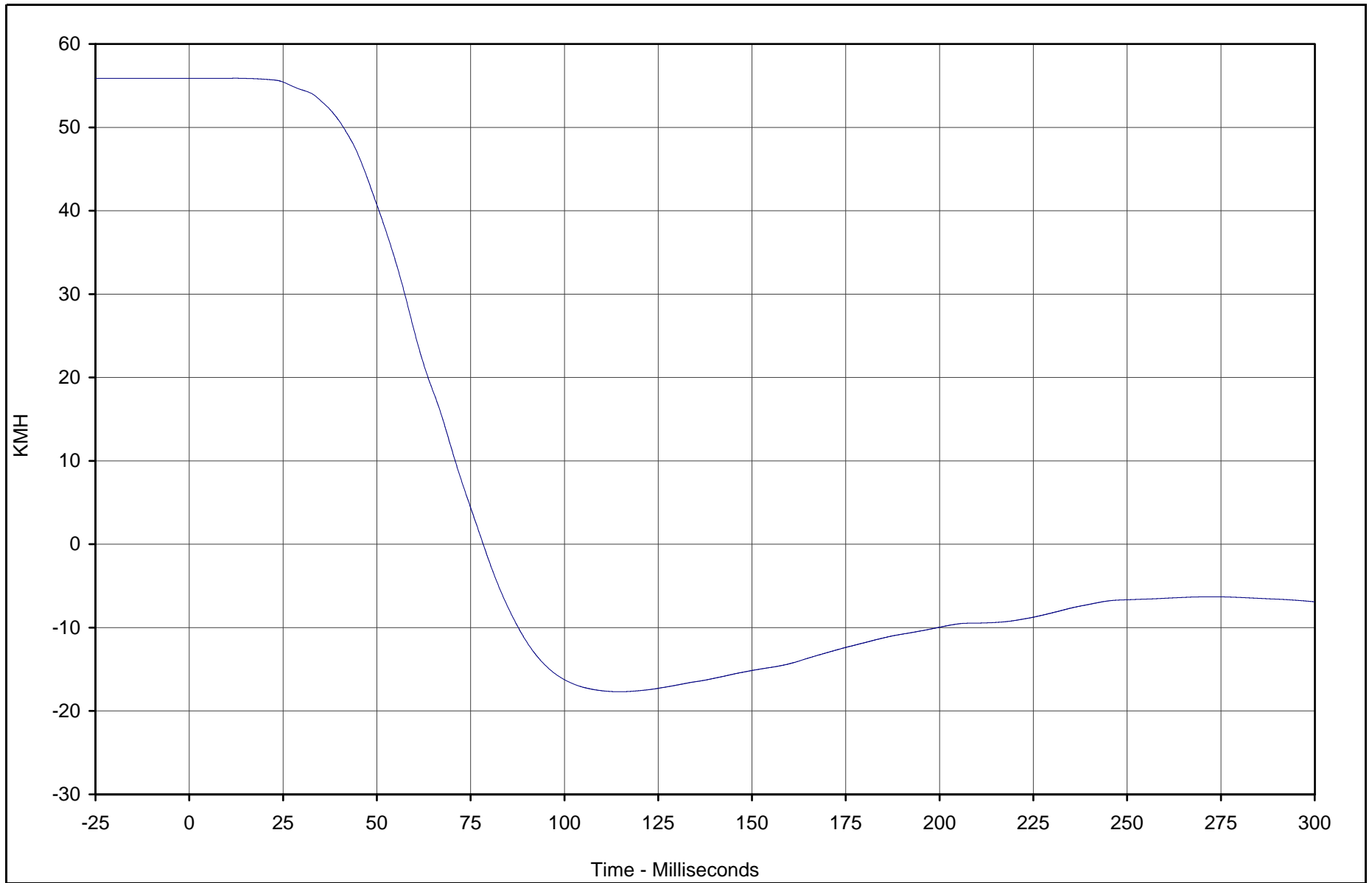
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant X Velocity	016	IN1	KMH	55.9	12.2	-17.7	114.8	180



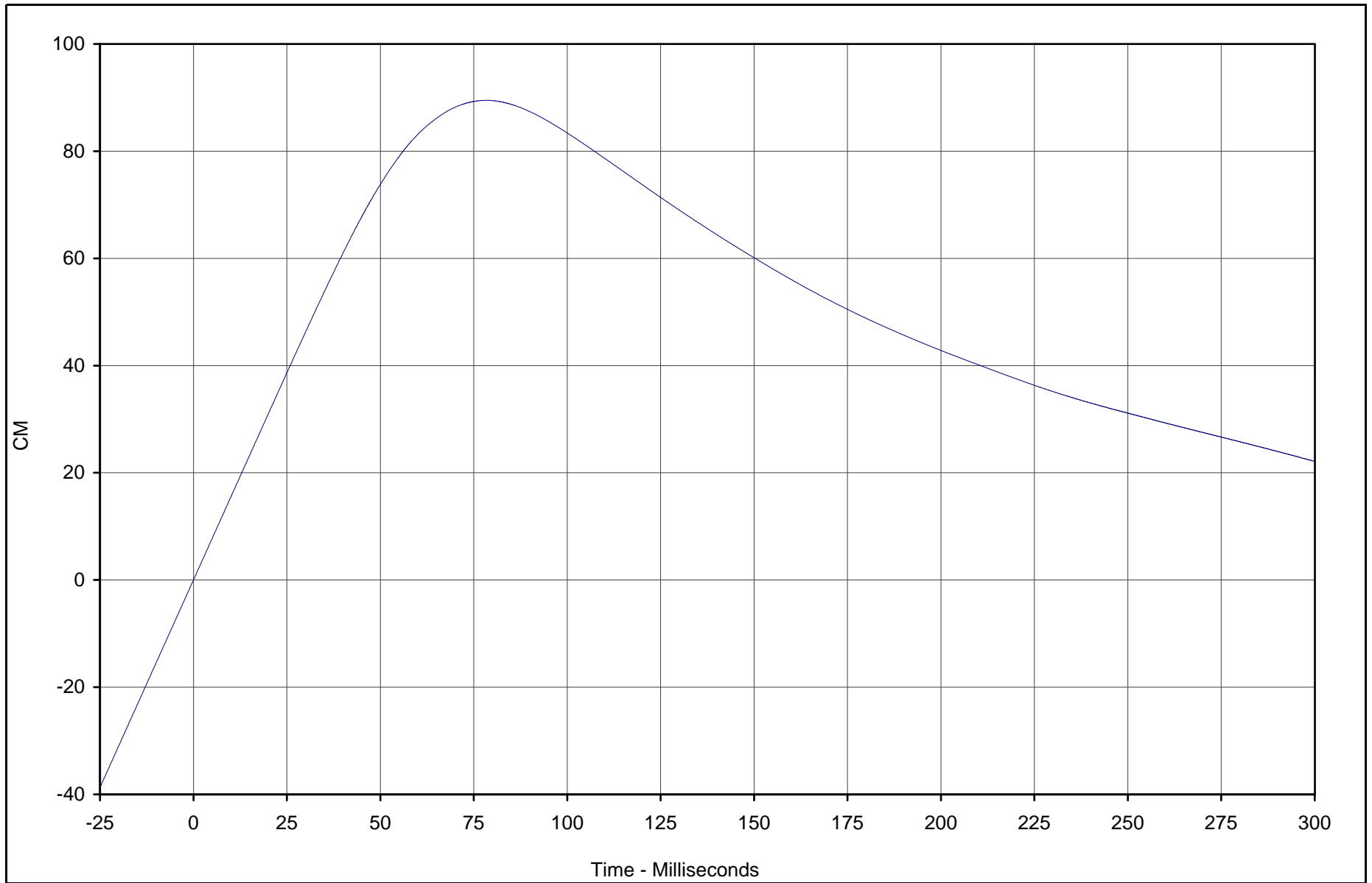
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant X Displ.	016	IN2	CM	89.5	78.4	0.0	0.0	180

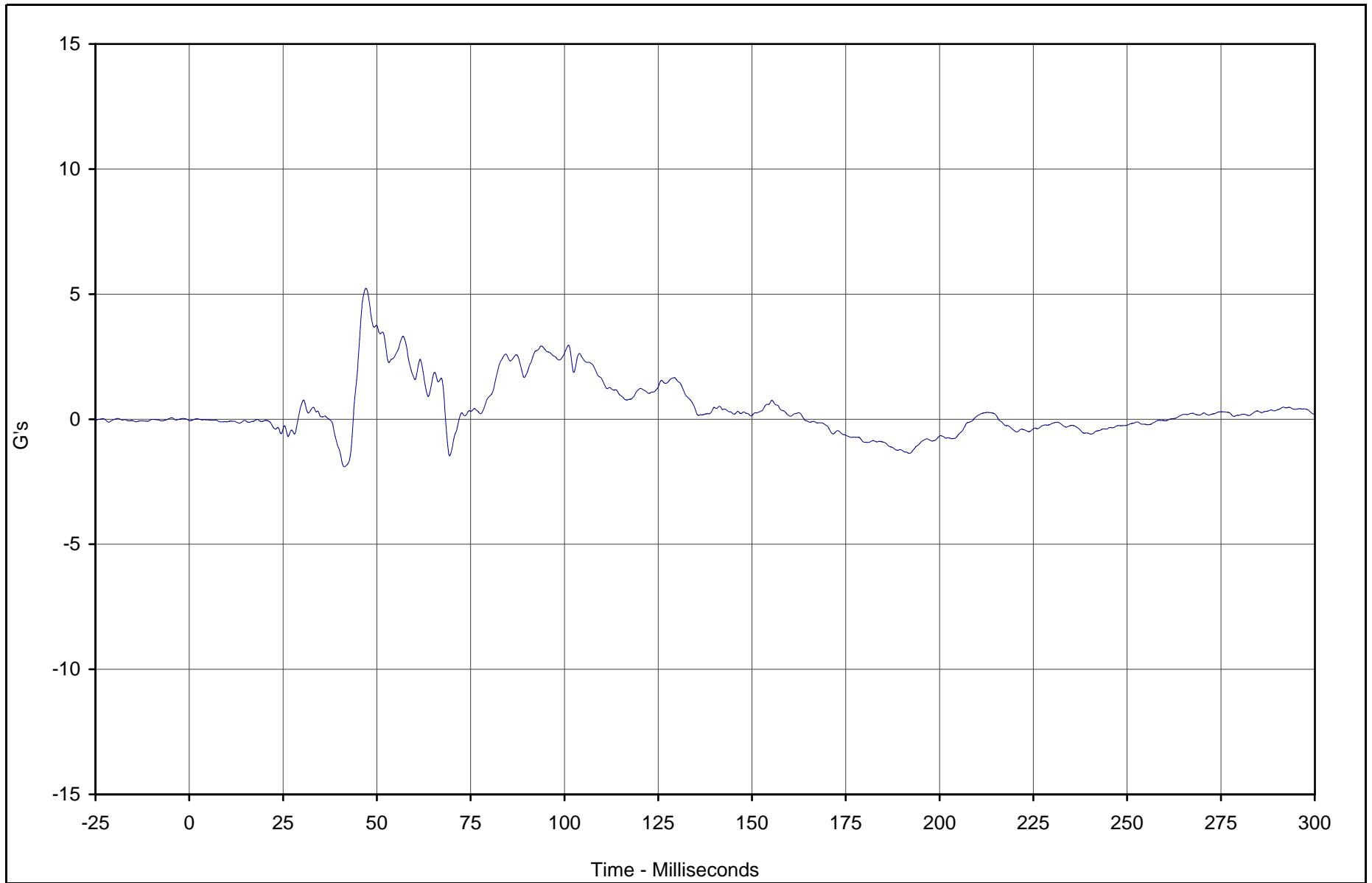


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant Y	017	FIL	G's	5.2	47.1	-1.9	41.3	180

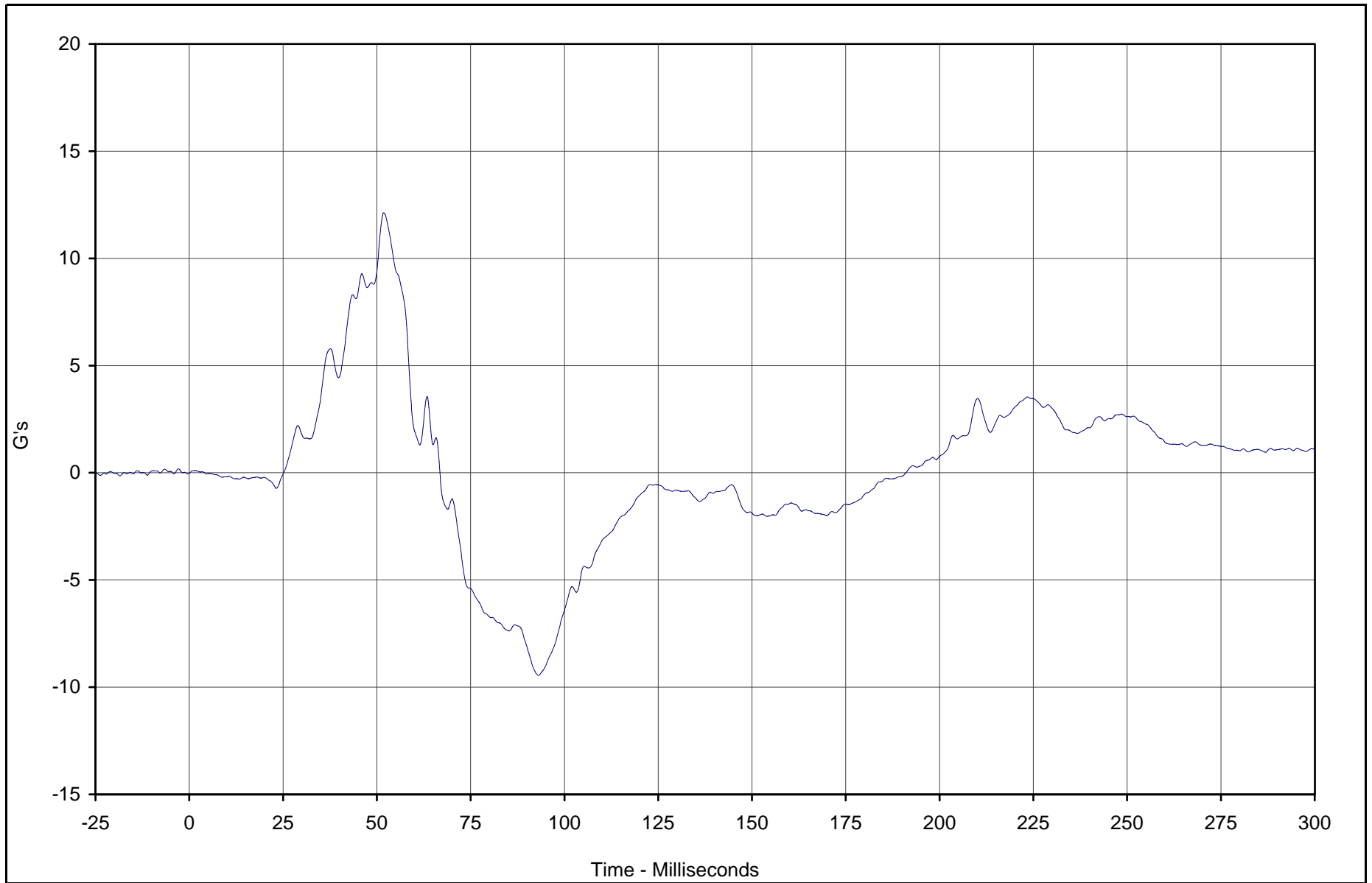


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant Z	018	FIL	G's	12.1	51.9	-9.5	93.1	180

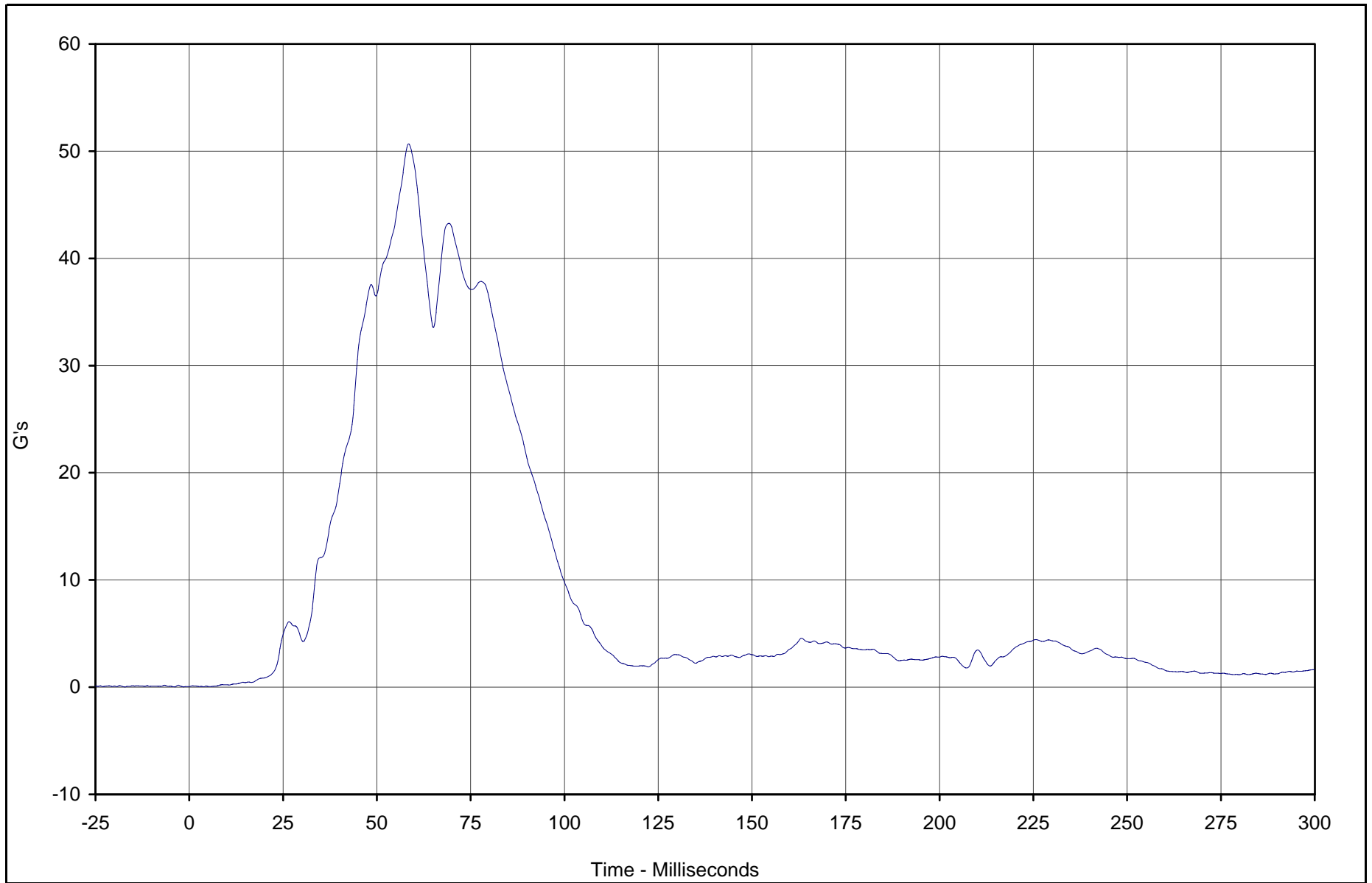


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Resultant Redundant	016	RES	G's	50.7	58.5	0.0	3.9	180

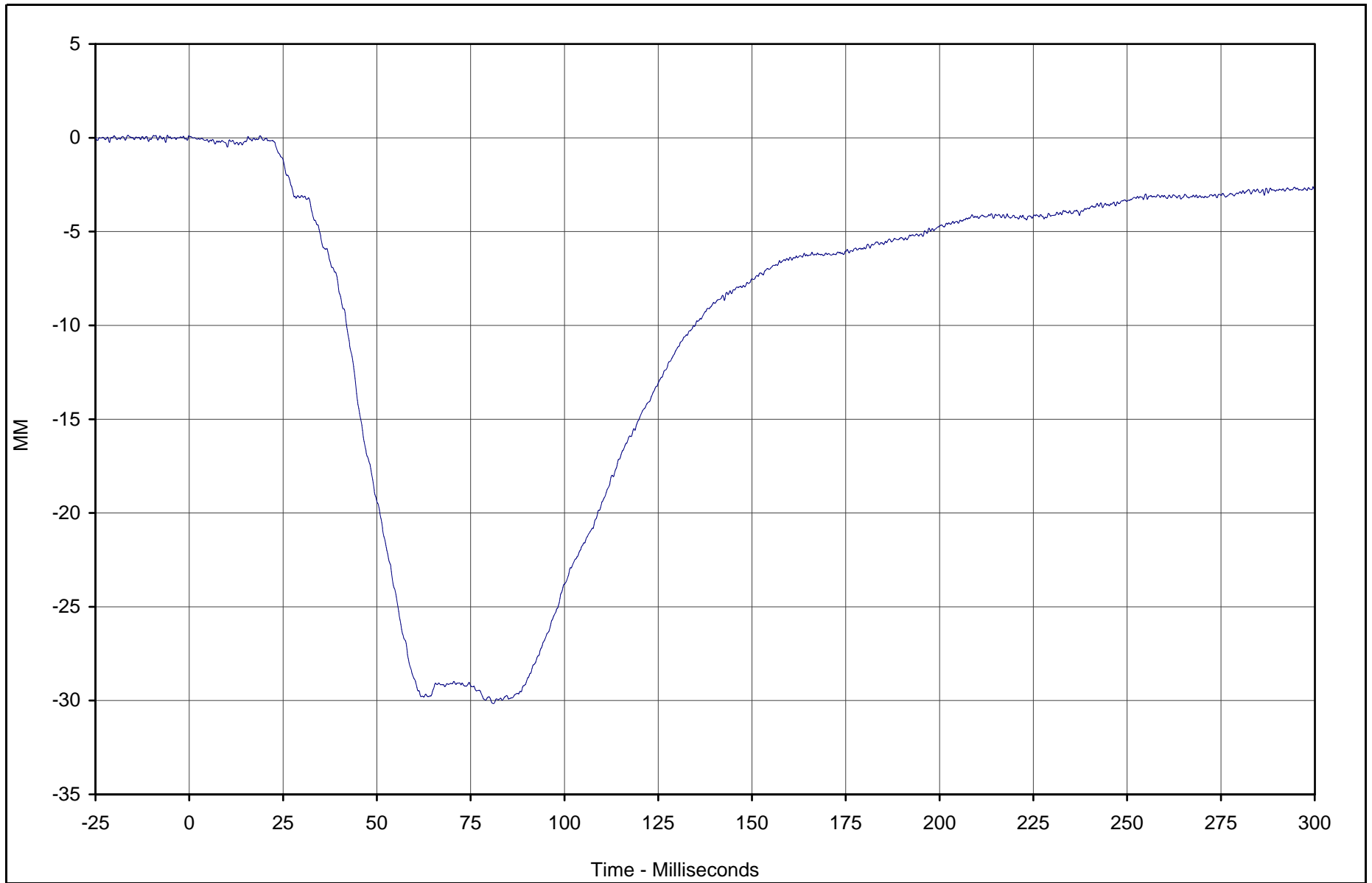


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Displacement X	019	FIL	MM	0.1	18.9	-30.2	81.0	600

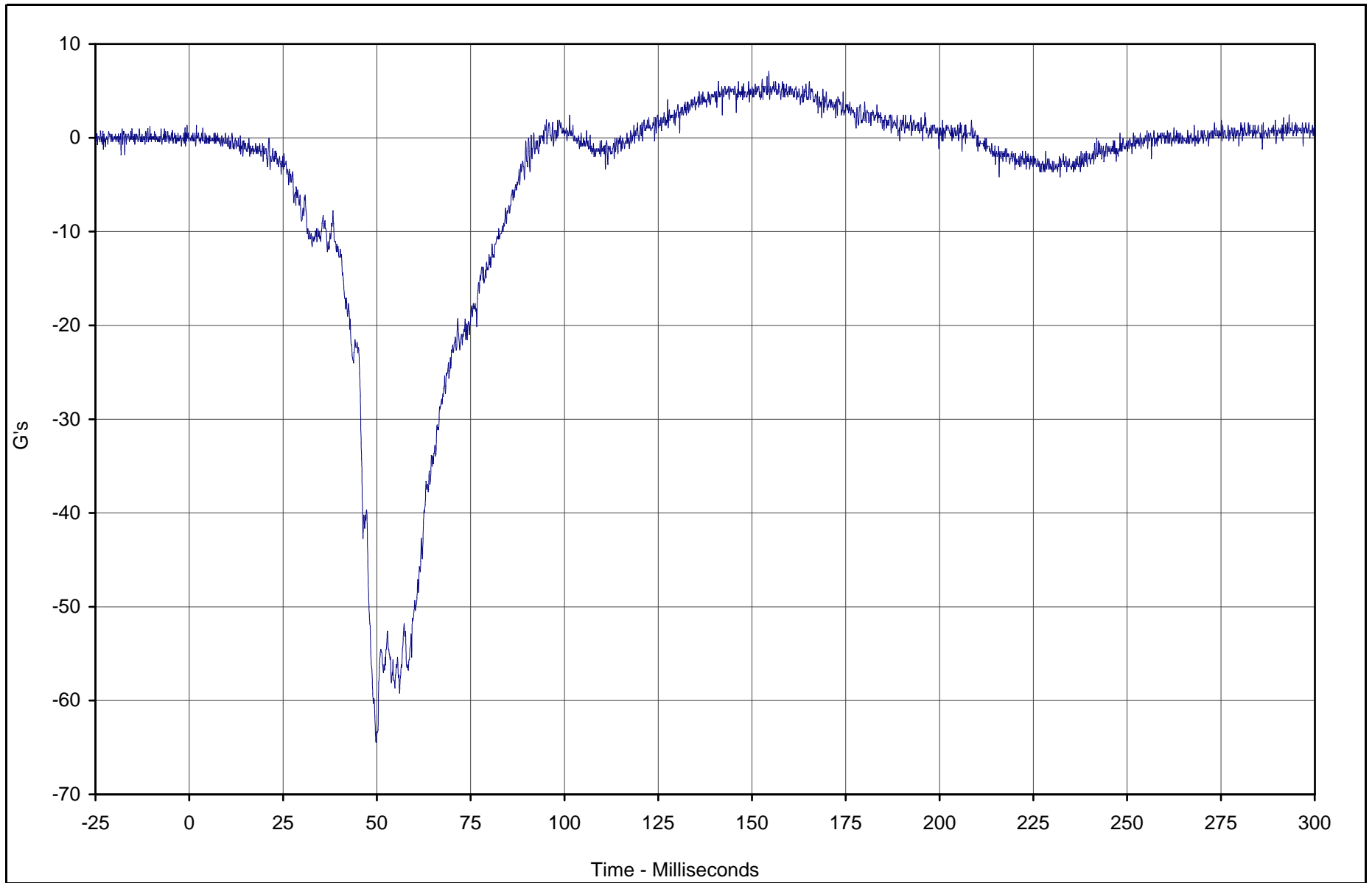


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis X	020	FIL	G's	7.1	154.5	-64.4	49.8	1000

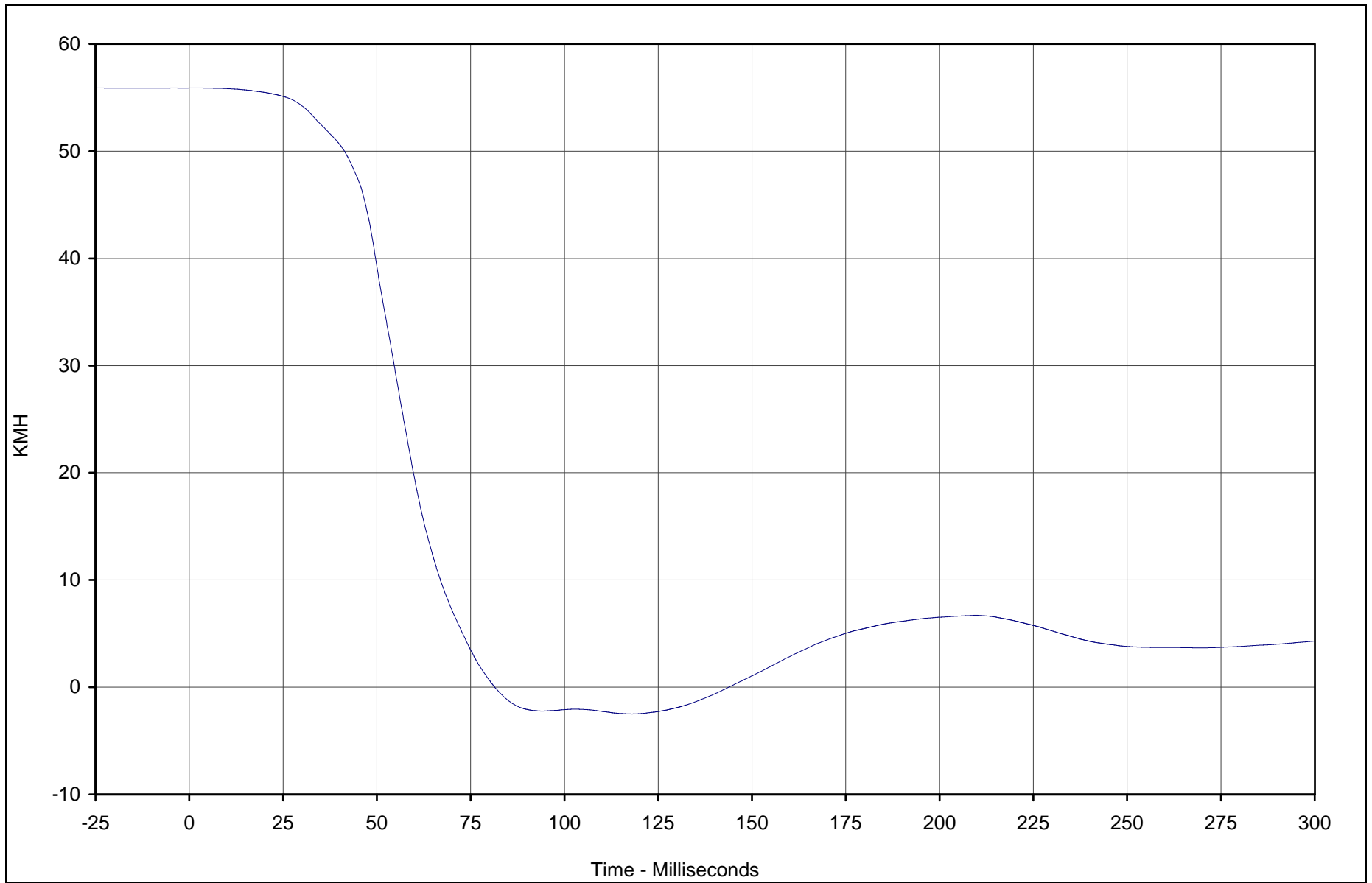


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis X Velocity	020	IN1	KMH	55.9	0.4	-2.5	118.0	180

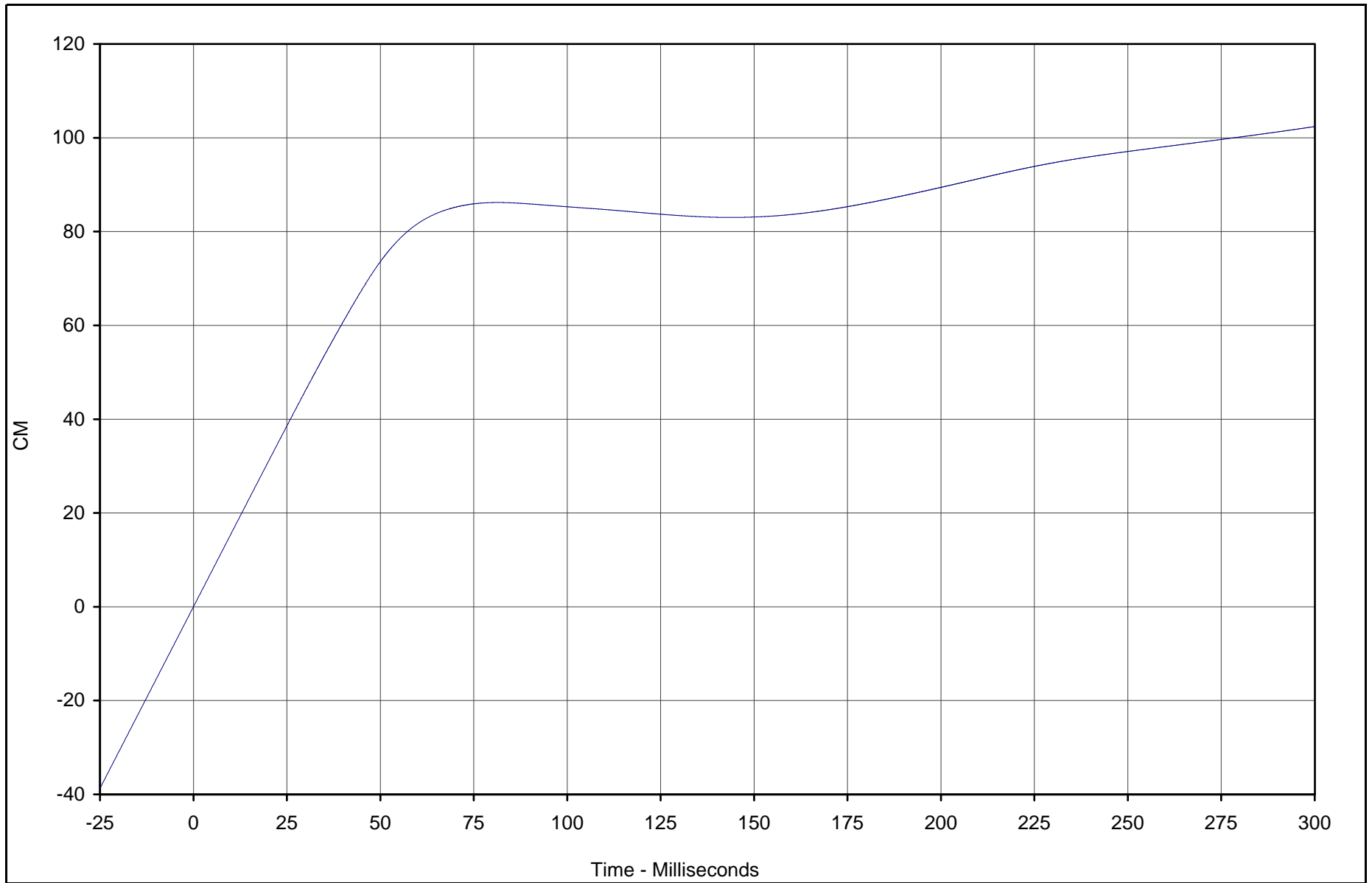


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis X Displ.	020	IN2	CM	102.4	299.9	0.0	0.0	180

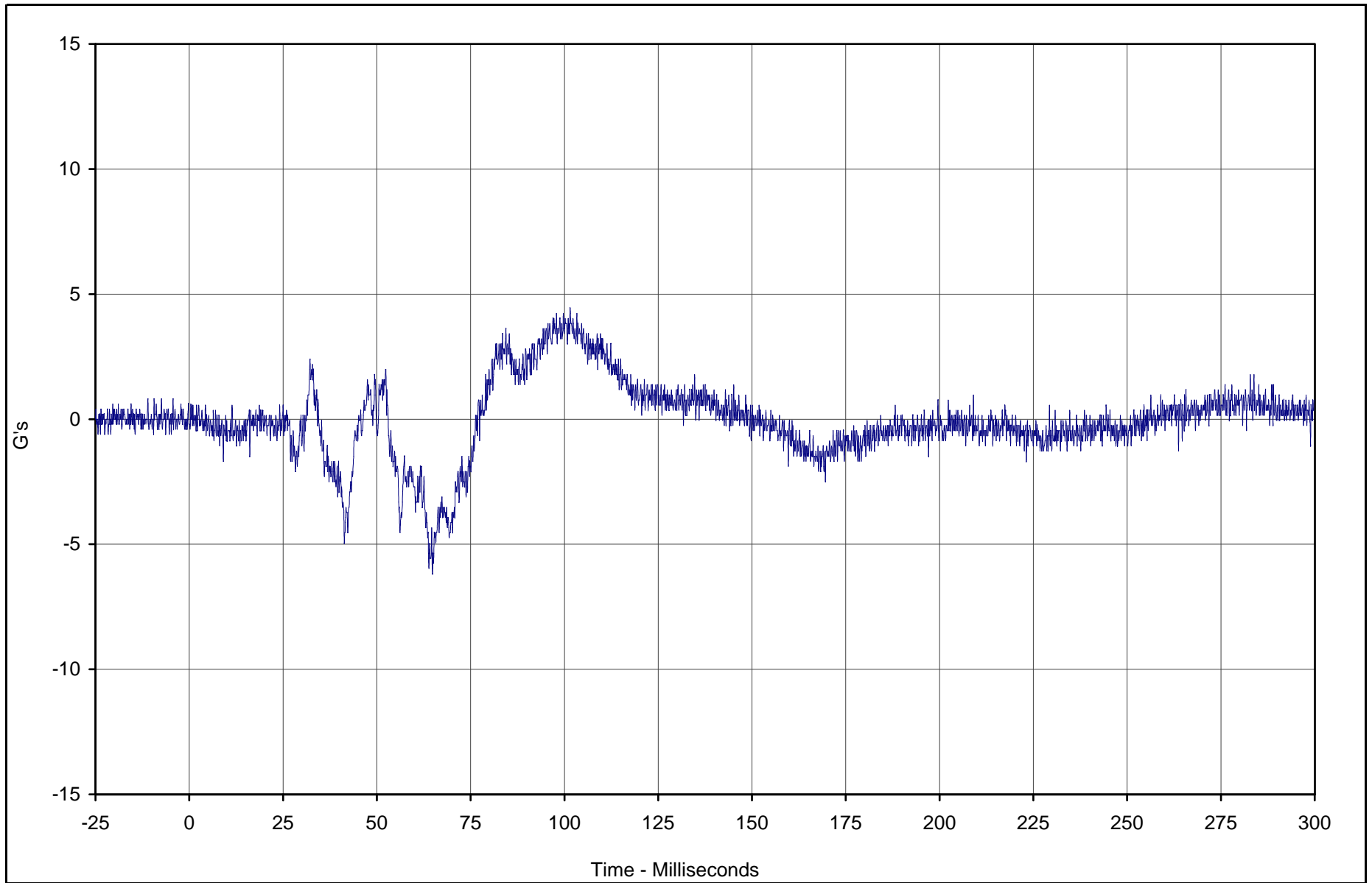


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis Y	021	FIL	G's	4.4	101.5	-6.2	64.9	1000

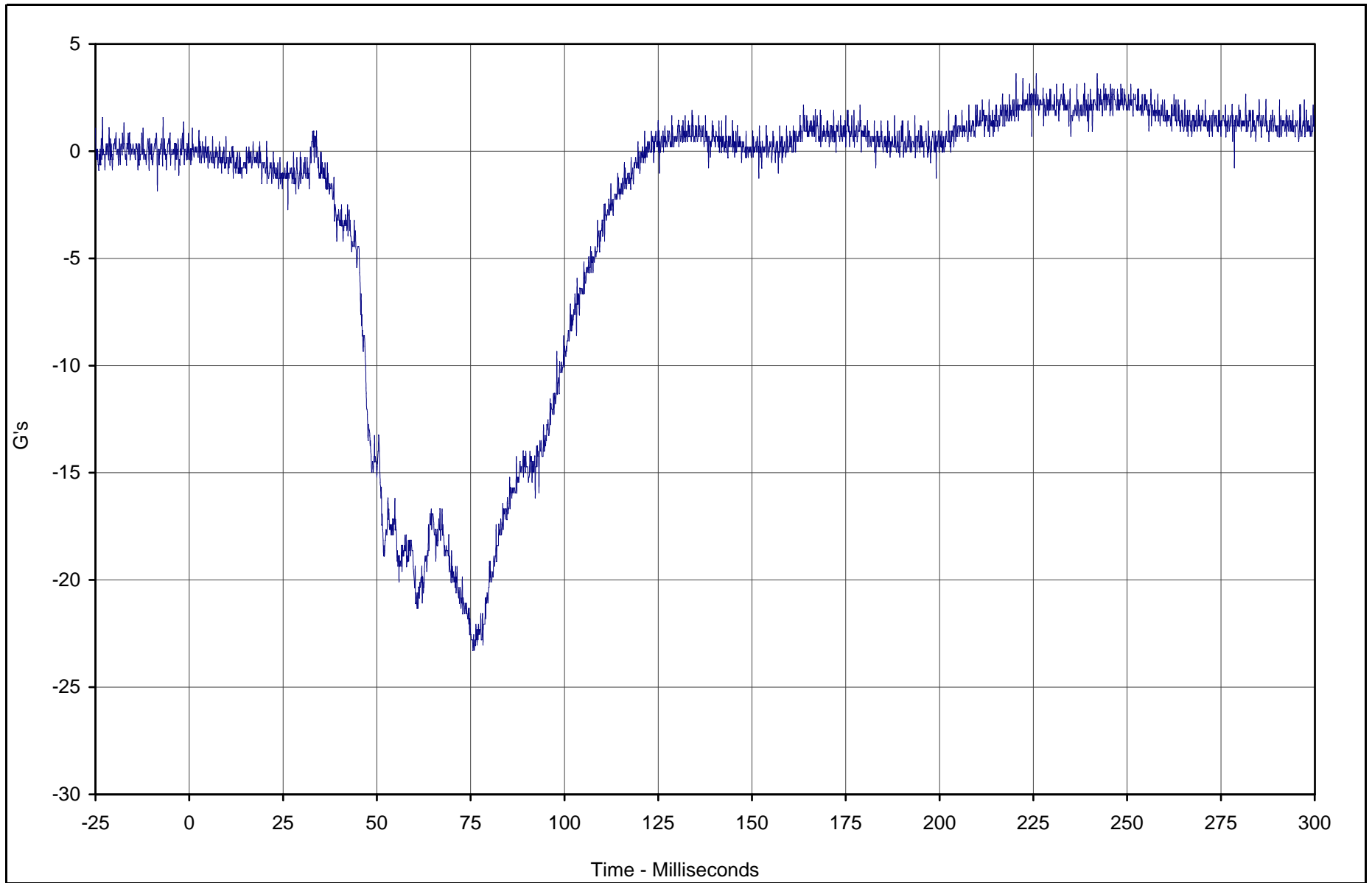


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis Z	022	FIL	G's	3.6	220.4	-23.3	75.6	1000

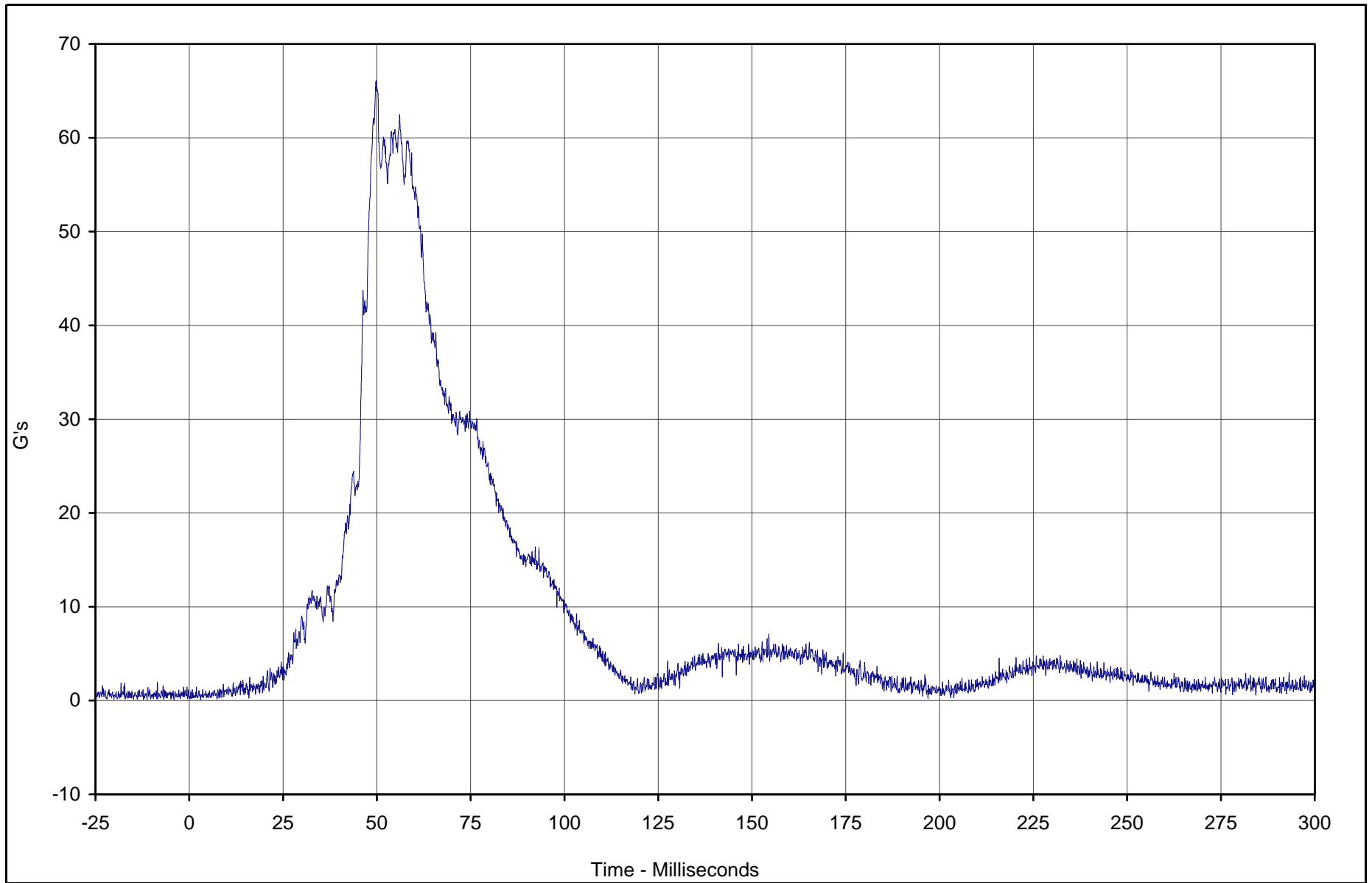


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis Resultant	023	RES	G's	66.1	49.8	0.1	3.0	1000



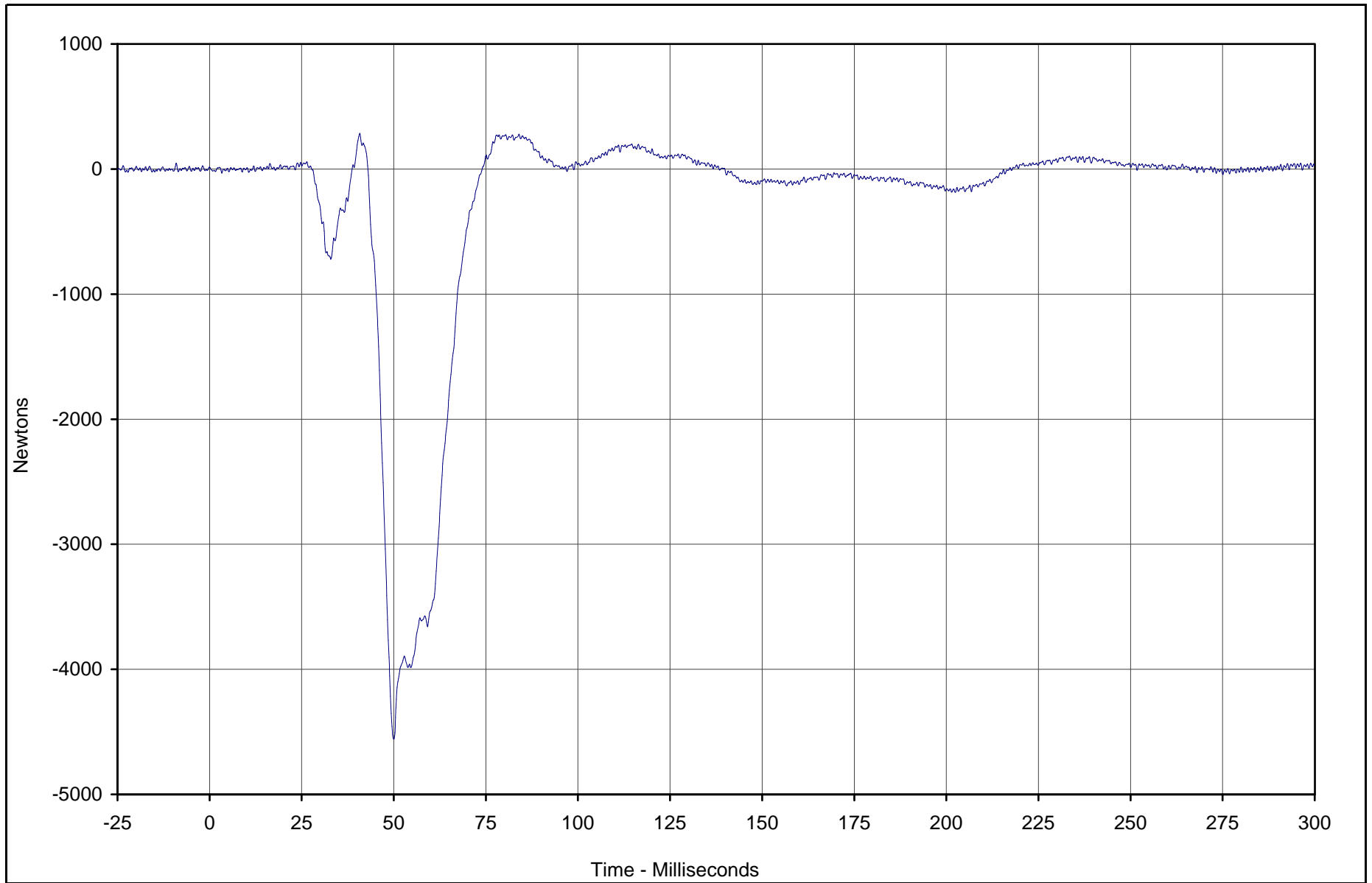
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Femur Force	023	FIL	Newtons	286.0	40.8	-4558.6	50.0	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

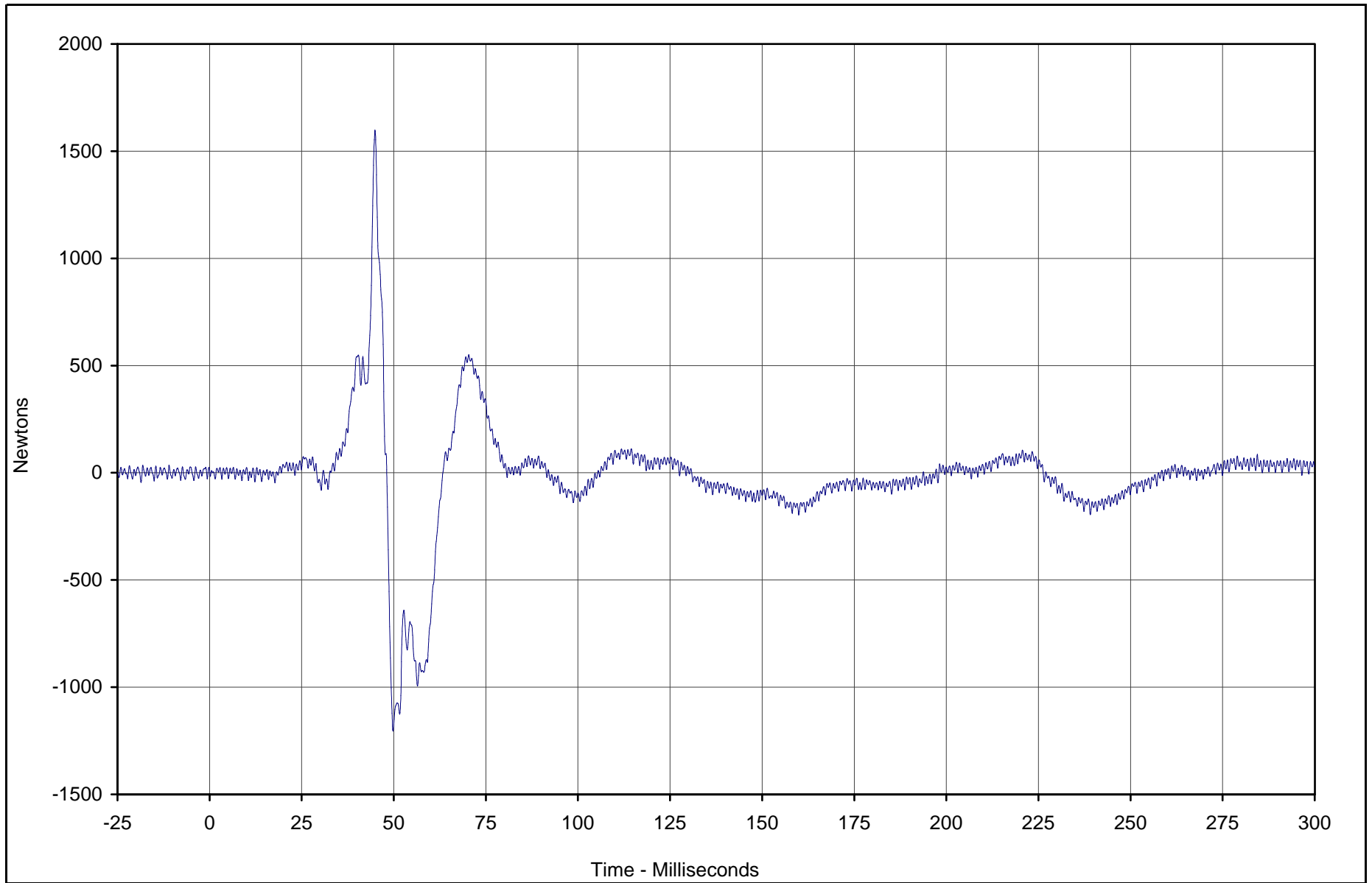
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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B-41



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Femur Force	024	FIL	Newtons	1598.5	44.9	-1204.7	49.8	600



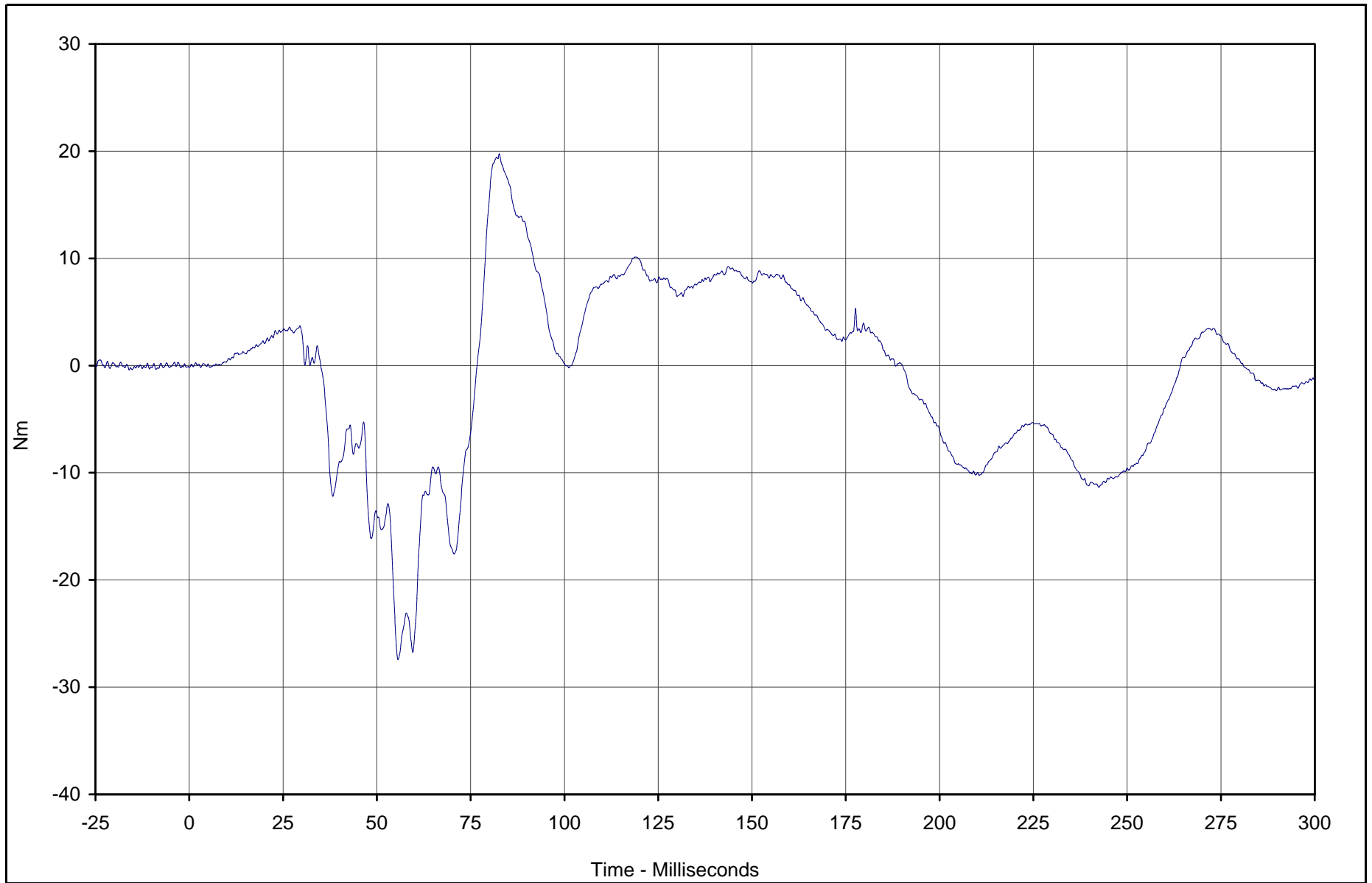
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Upper Tibia Moment X	025	FIL	Nm	19.7	82.7	-27.4	55.6	600

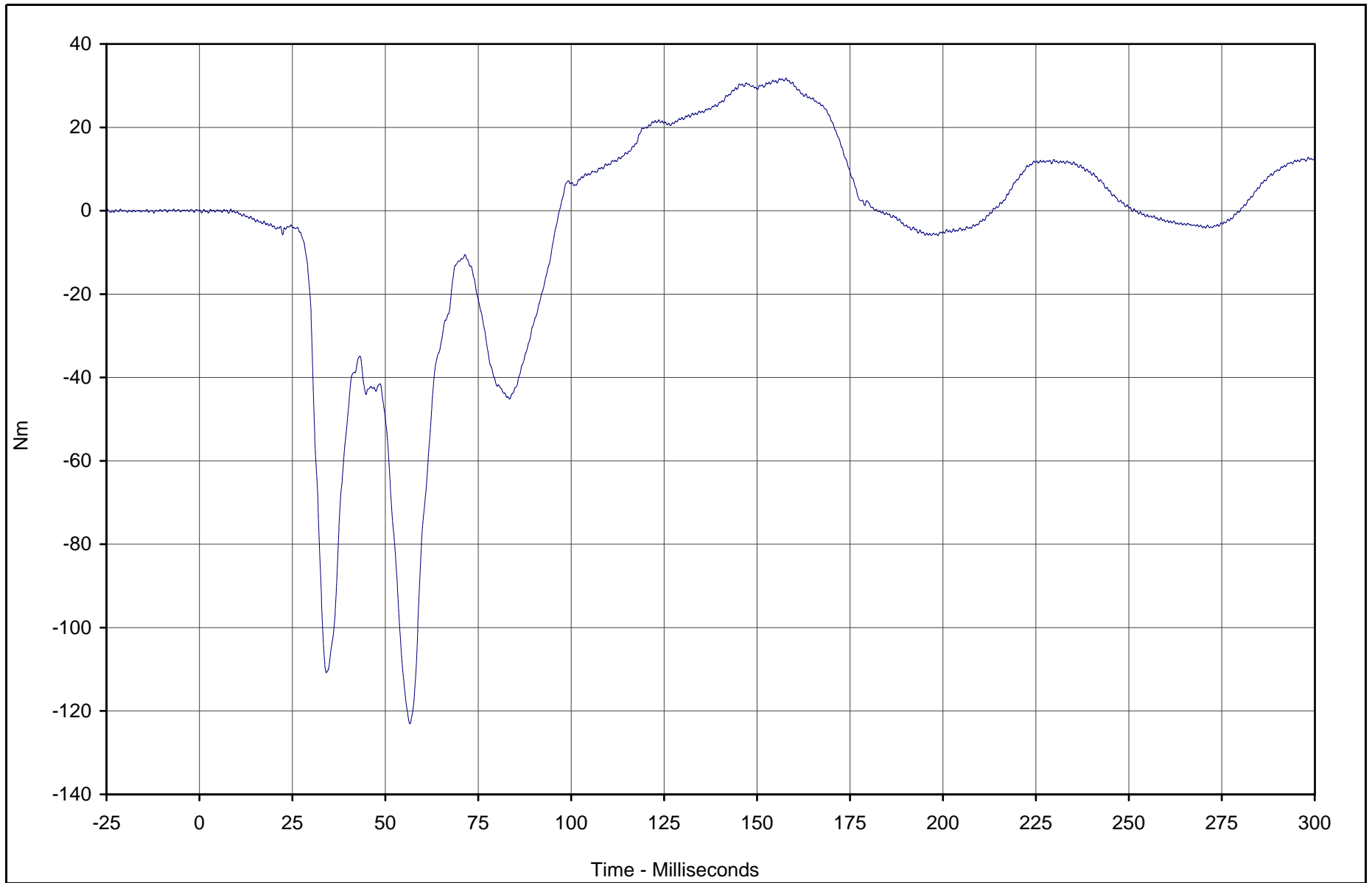


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Upper Tibia Moment Y	026	FIL	Nm	31.8	157.8	-123.0	56.6	600



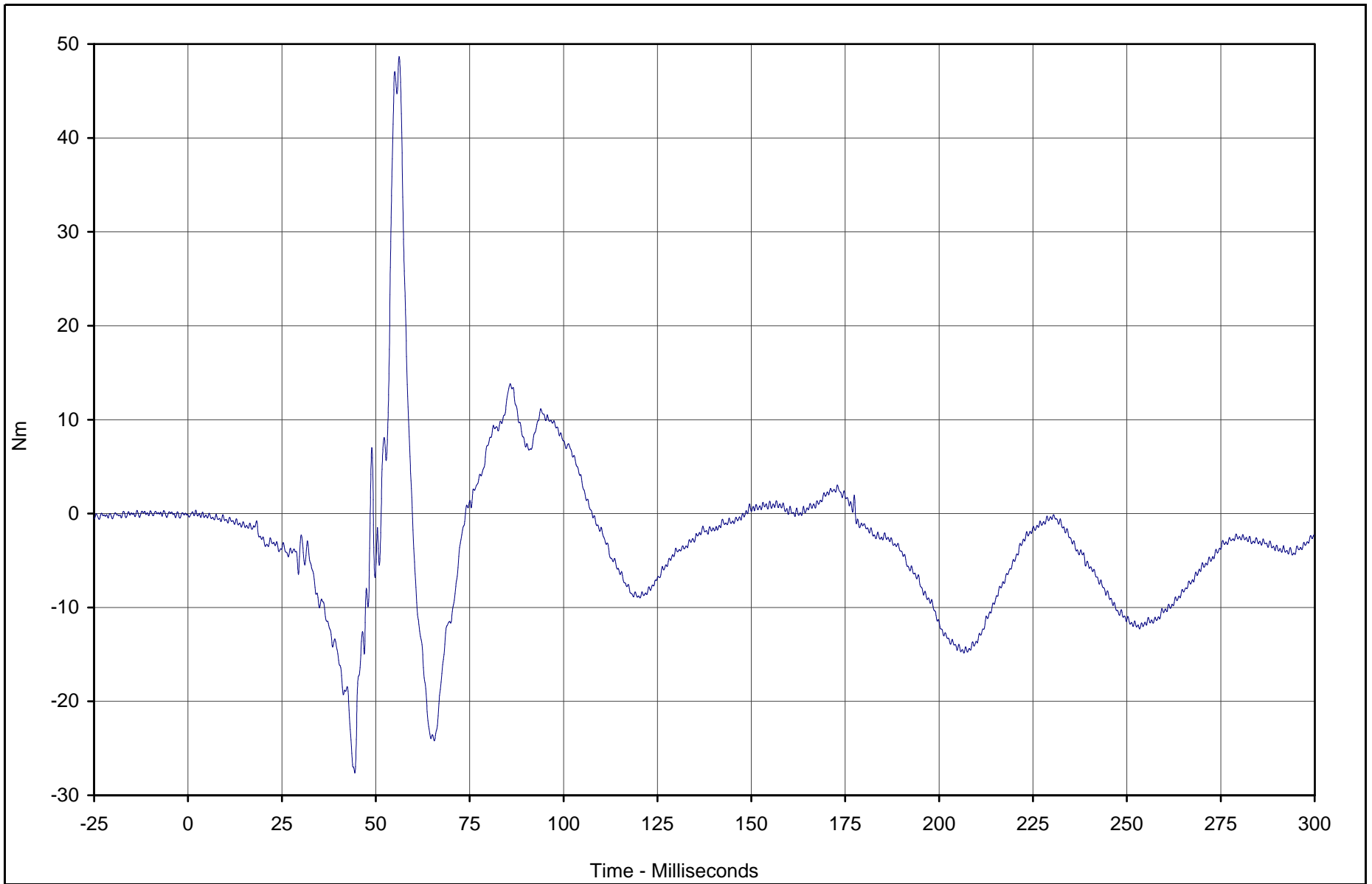
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-44



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Upper Tibia Moment X	027	FIL	Nm	48.7	56.2	-27.6	44.4	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

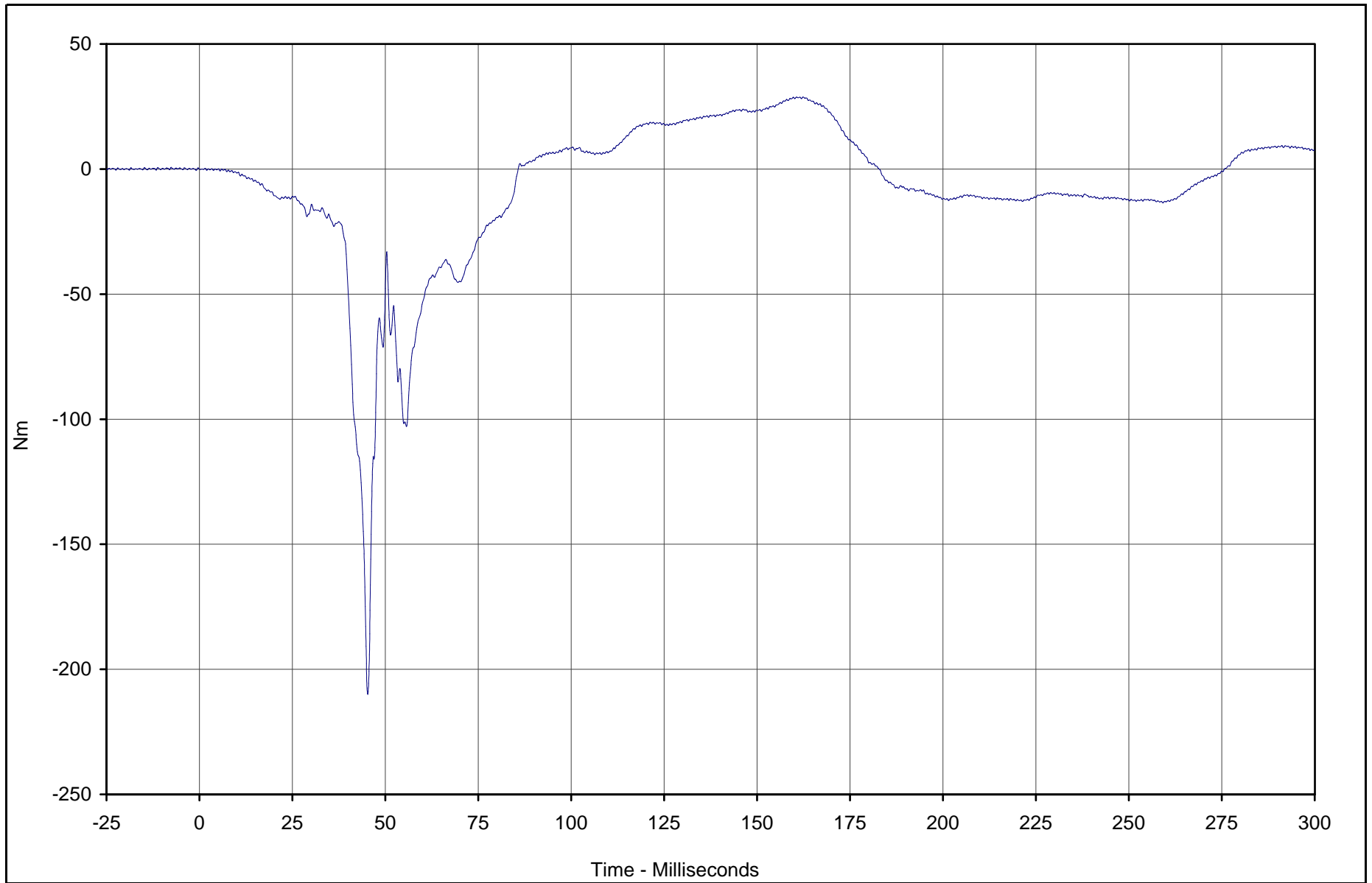
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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B-45



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Upper Tibia Moment Y	028	FIL	Nm	28.8	162.4	-210.0	45.3	600



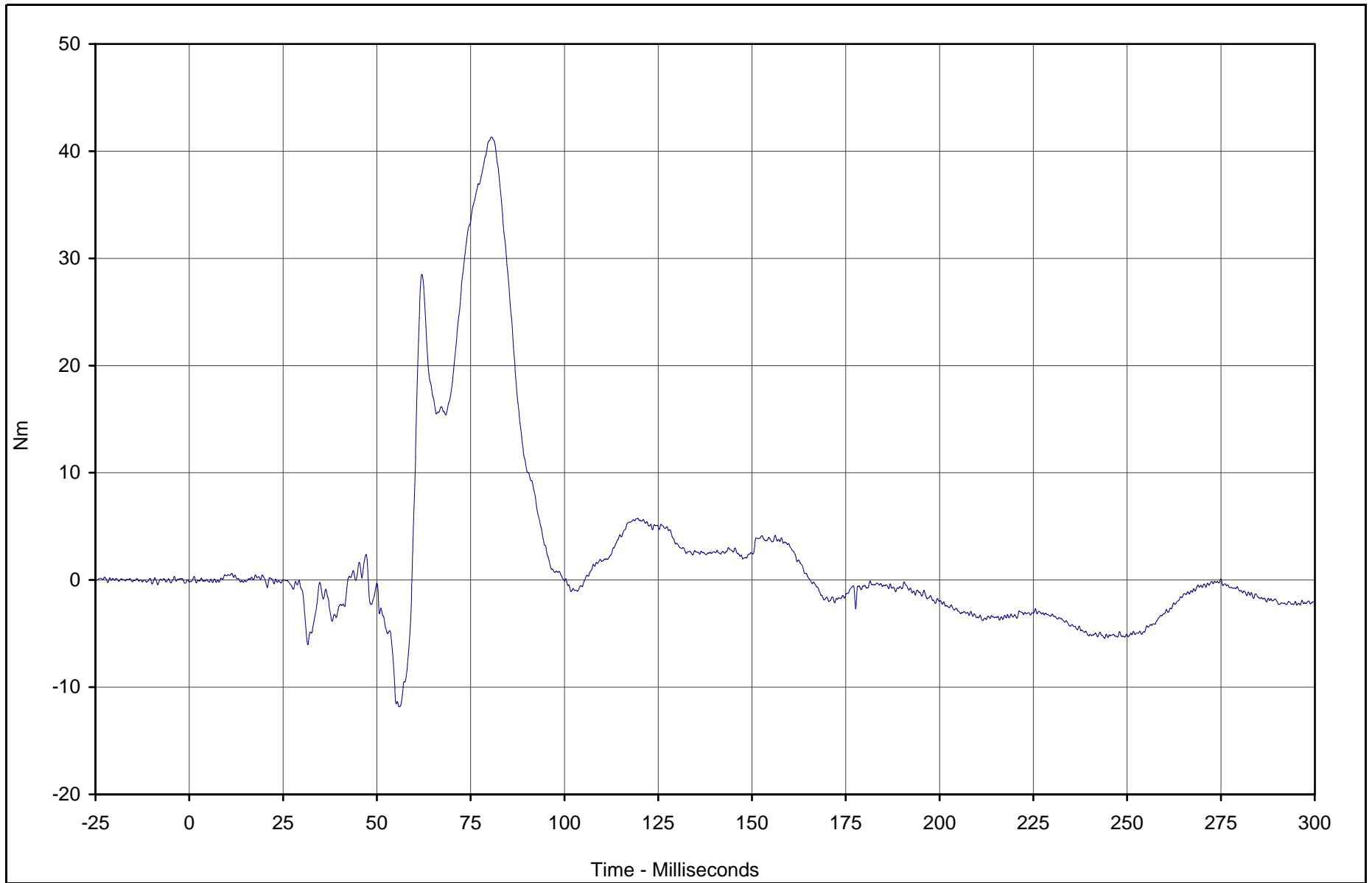
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Lower Tibia Moment X	029	FIL	Nm	41.3	80.6	-11.8	56.0	600



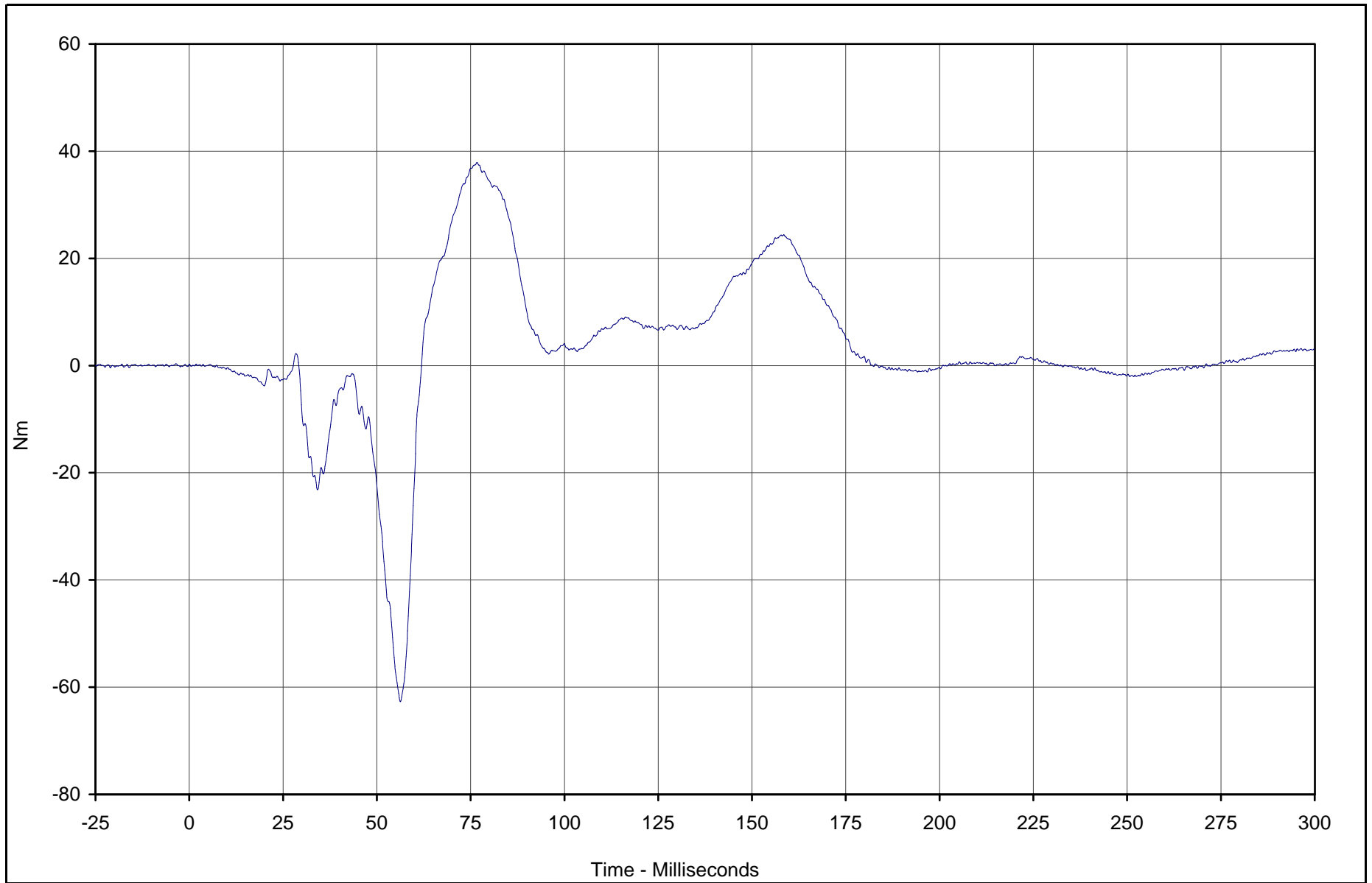
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Lower Tibia Moment Y	030	FIL	Nm	37.9	76.7	-62.7	56.3	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

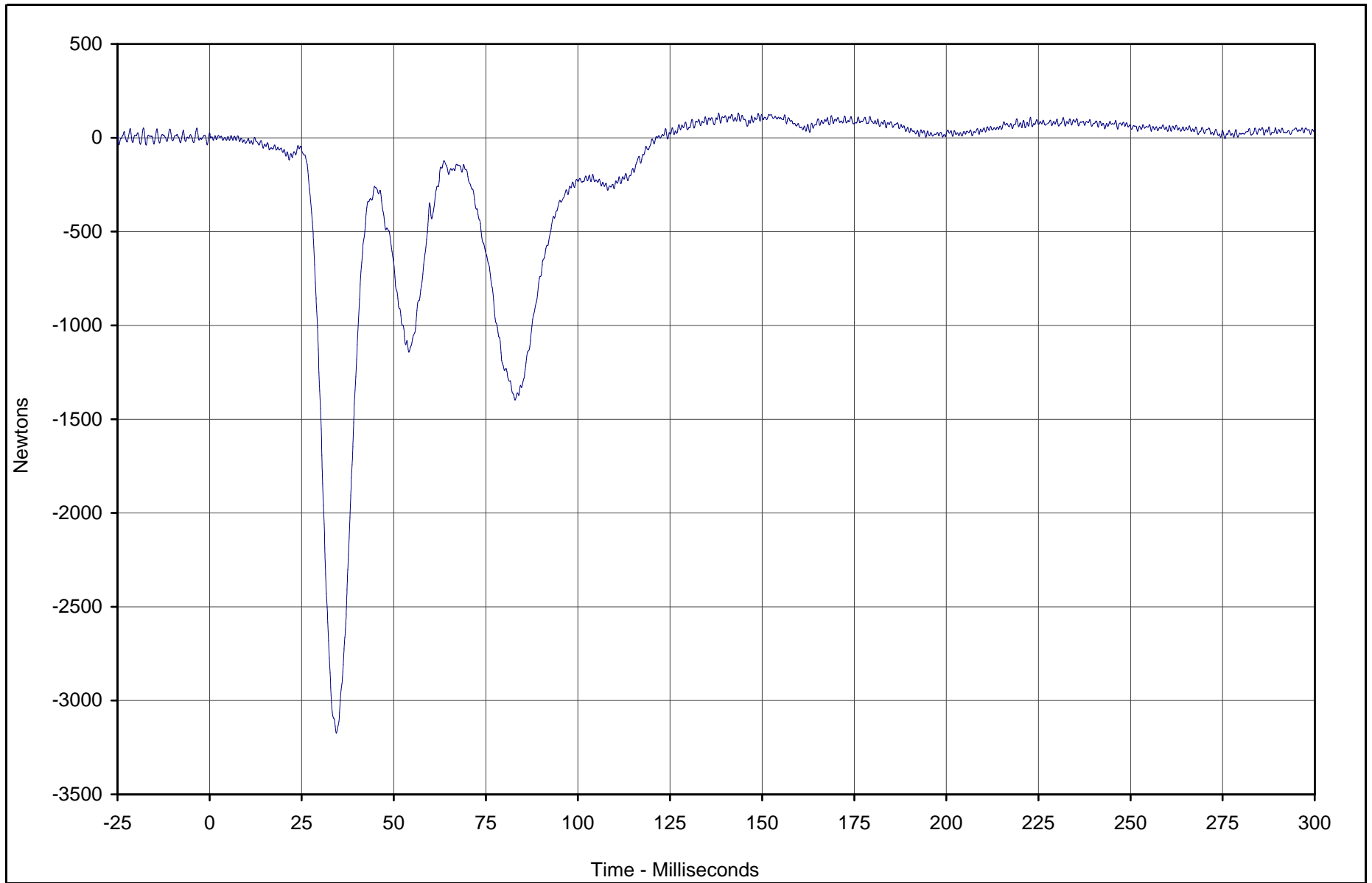
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Lower Tibia Force Z	031	FIL	Newtons	132.3	138.2	-3174.2	34.4	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

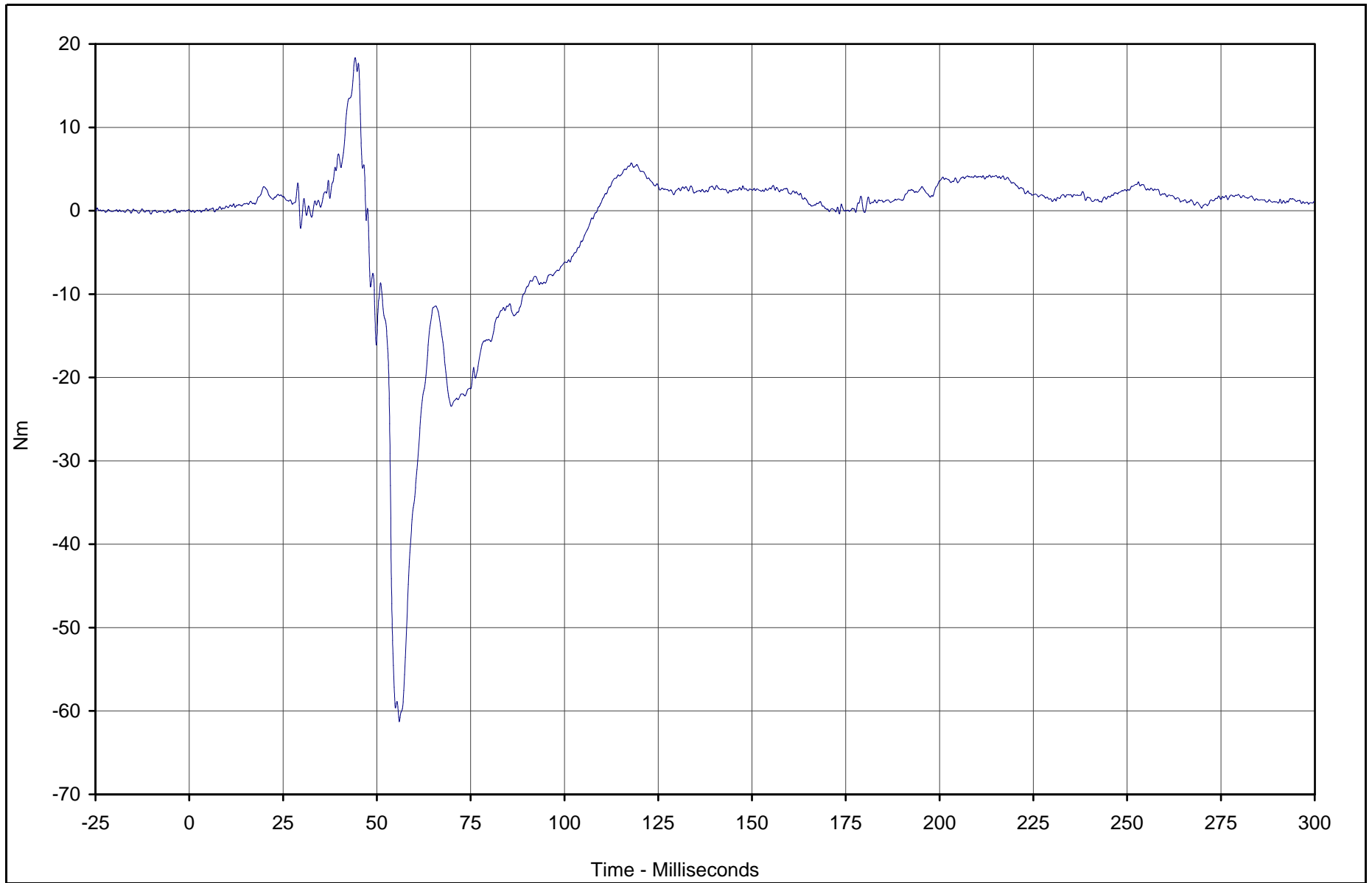
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Lower Tibia Moment X	032	FIL	Nm	18.4	44.2	-61.3	56.0	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

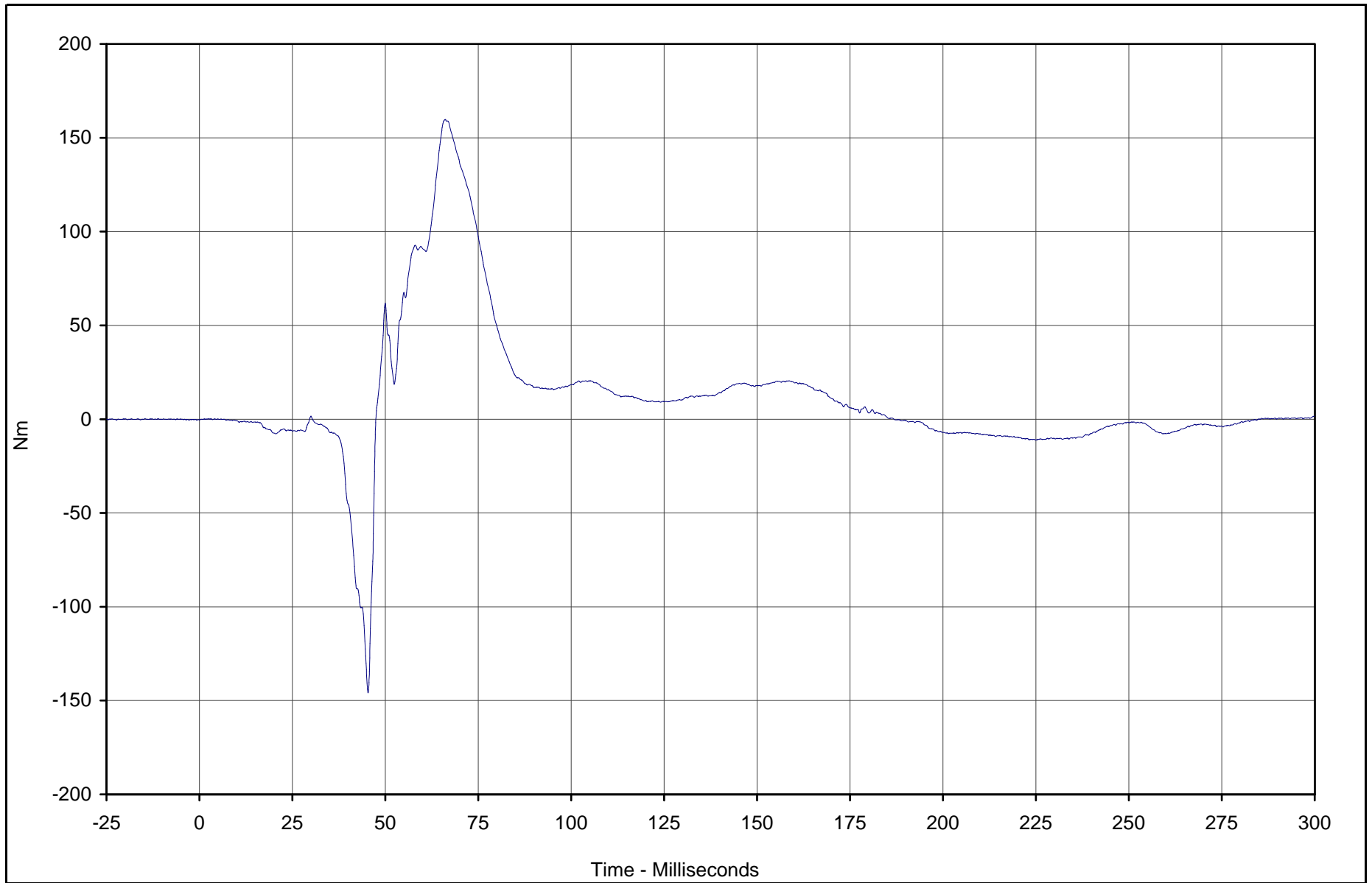
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Lower Tibia Moment Y	033	FIL	Nm	159.8	66.1	-145.9	45.4	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

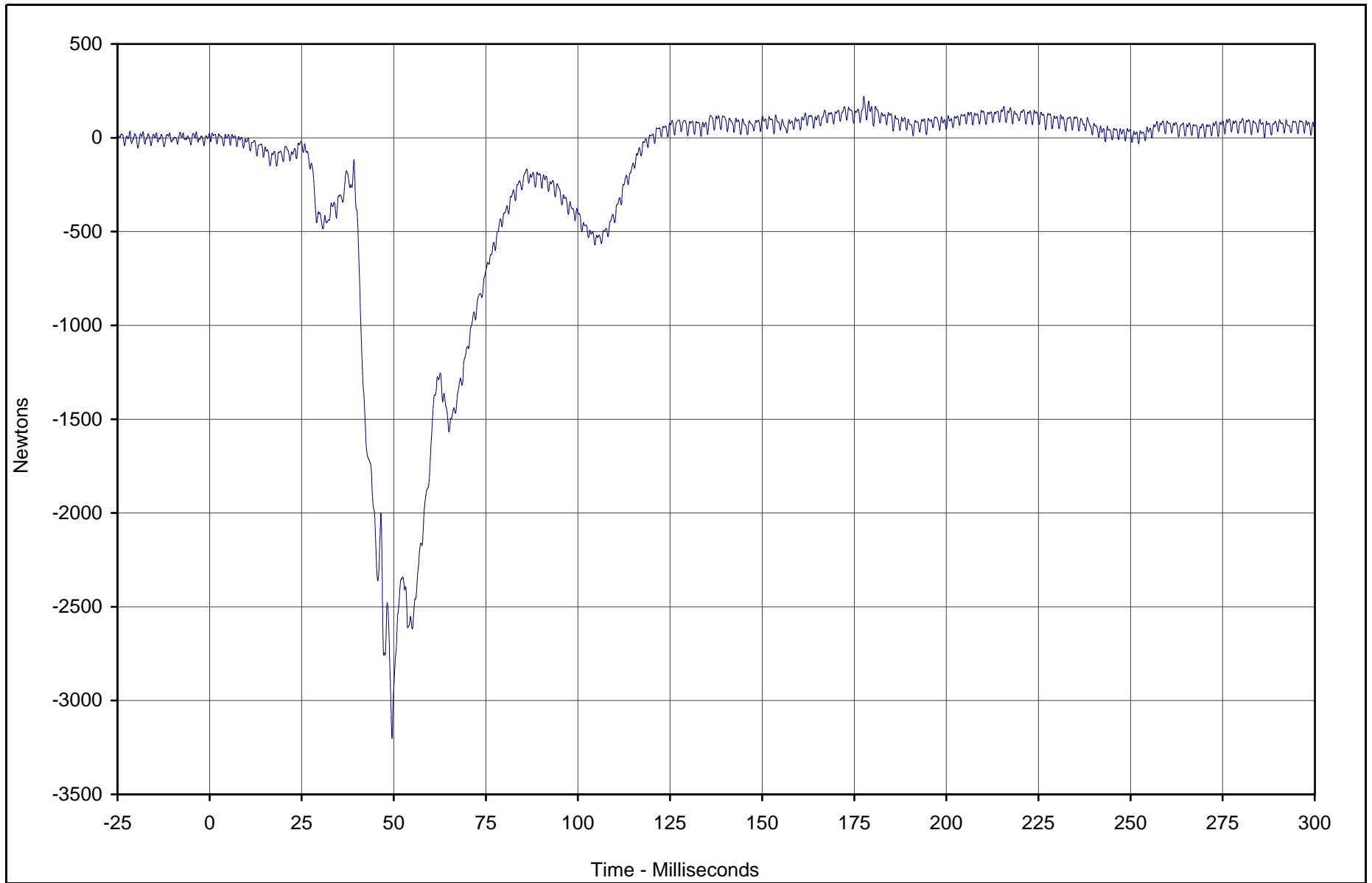
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Lower Tibia Force Z	034	FIL	Newtons	220.6	177.6	-3201.4	49.5	600



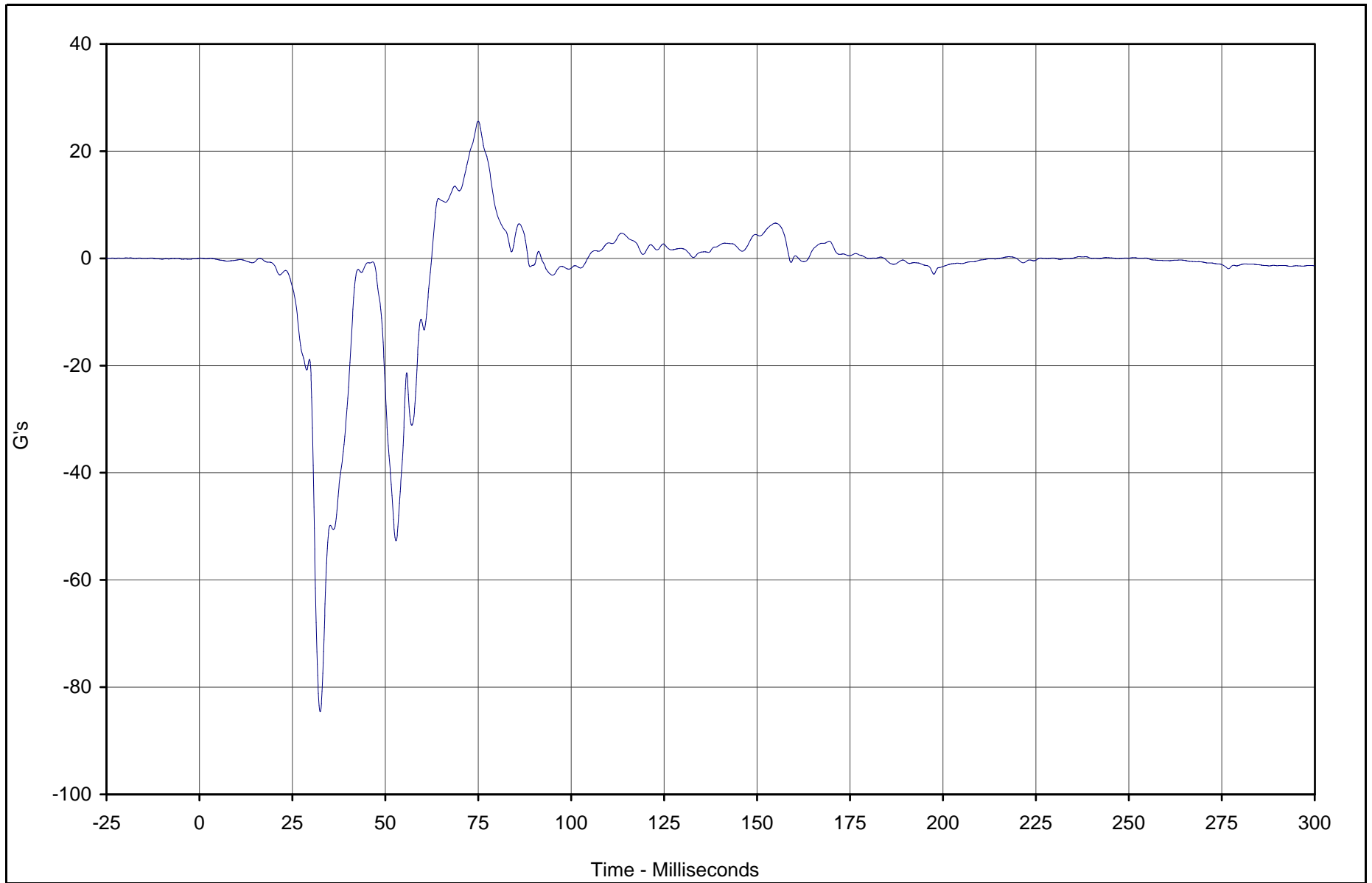
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Foot Aft X	035	FIL	G's	25.6	75.0	-84.6	32.5	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

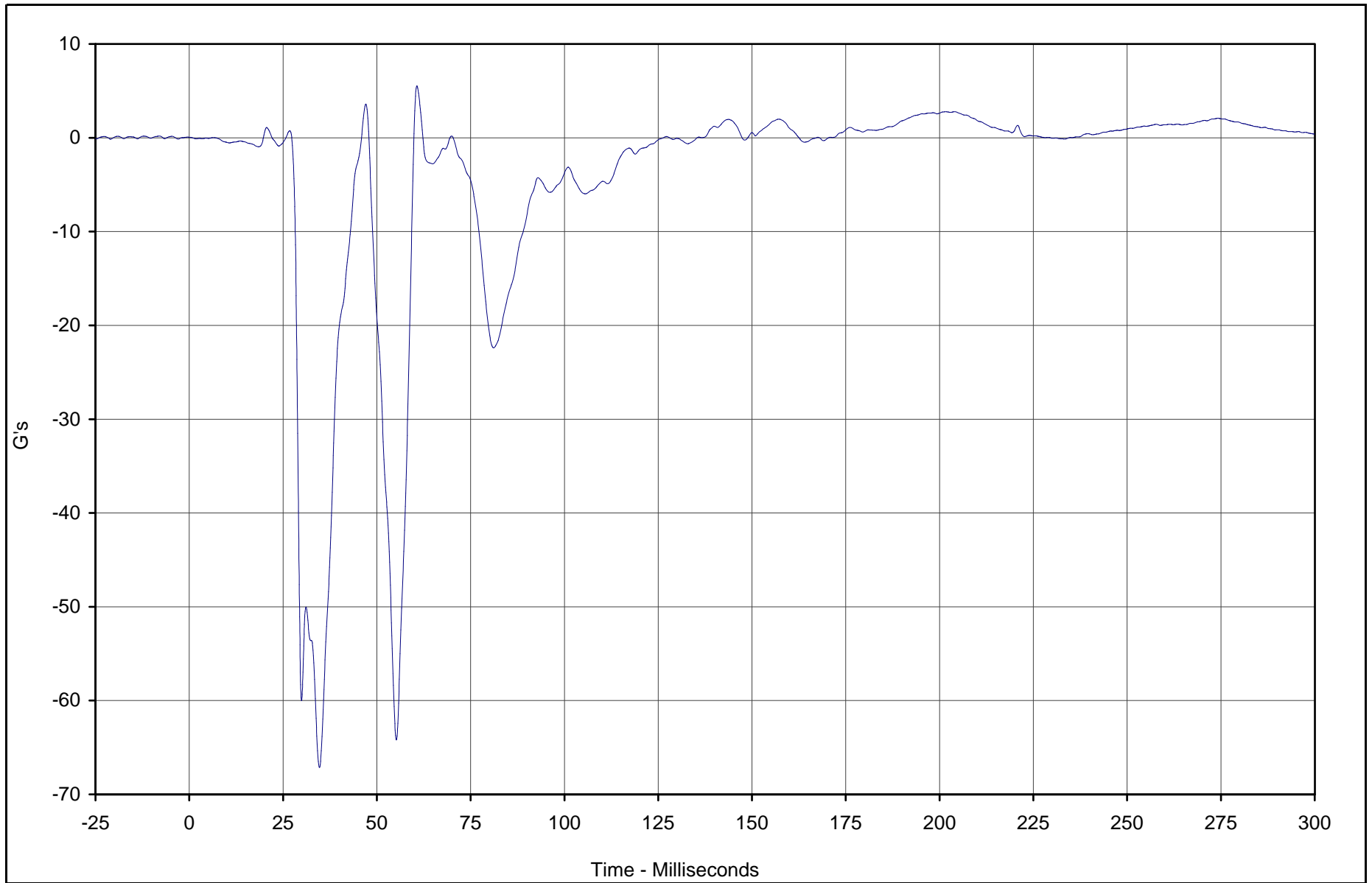
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Foot Aft Z	036	FIL	G's	5.5	60.7	-67.1	34.7	180

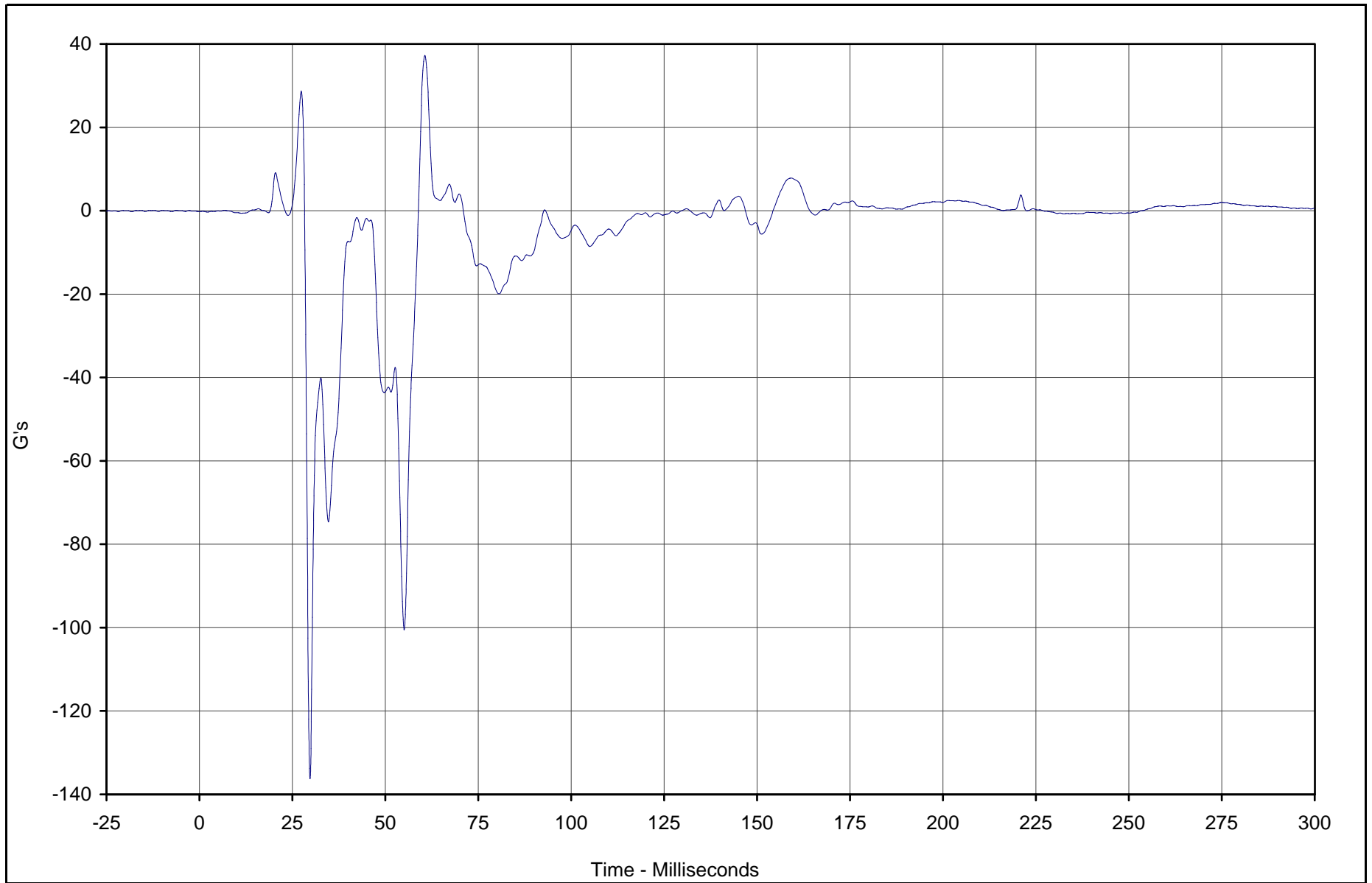


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Foot Fore Z	037	FIL	G's	37.3	60.6	-136.2	29.7	180

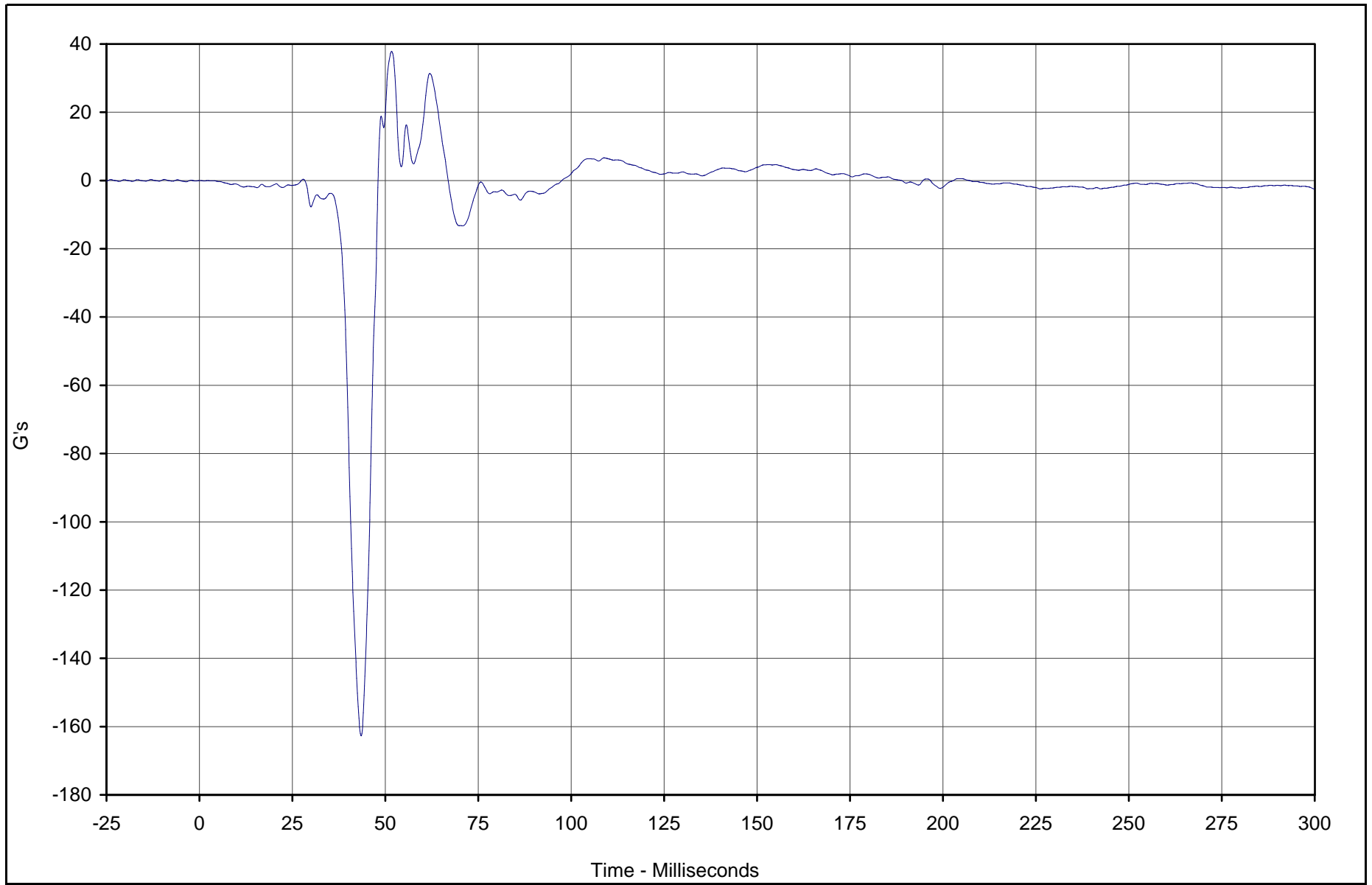


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Foot Aft X	038	FIL	G's	37.8	51.7	-162.7	43.5	180

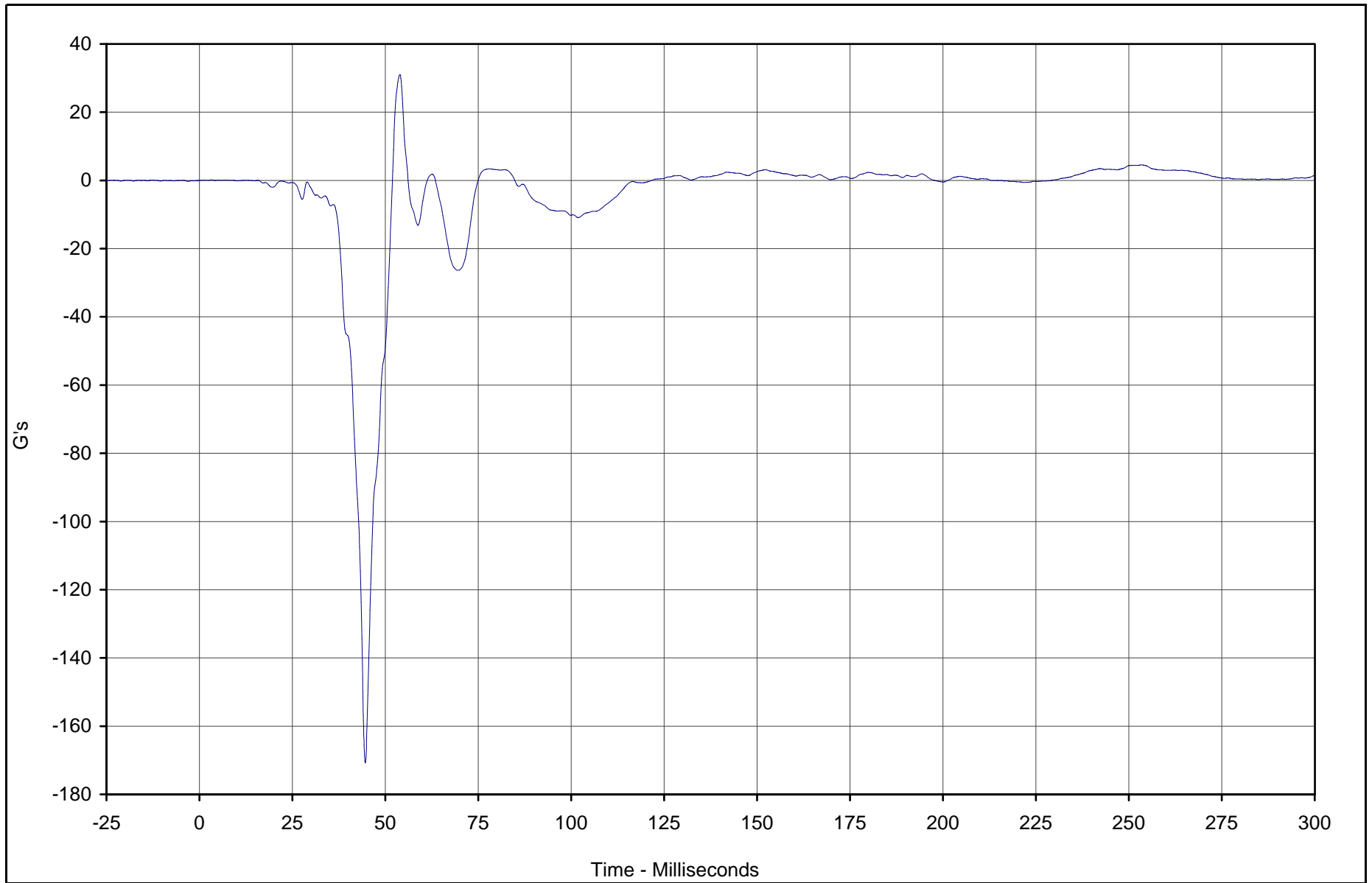


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Foot Aft Z	039	FIL	G's	31.0	53.9	-170.8	44.6	180



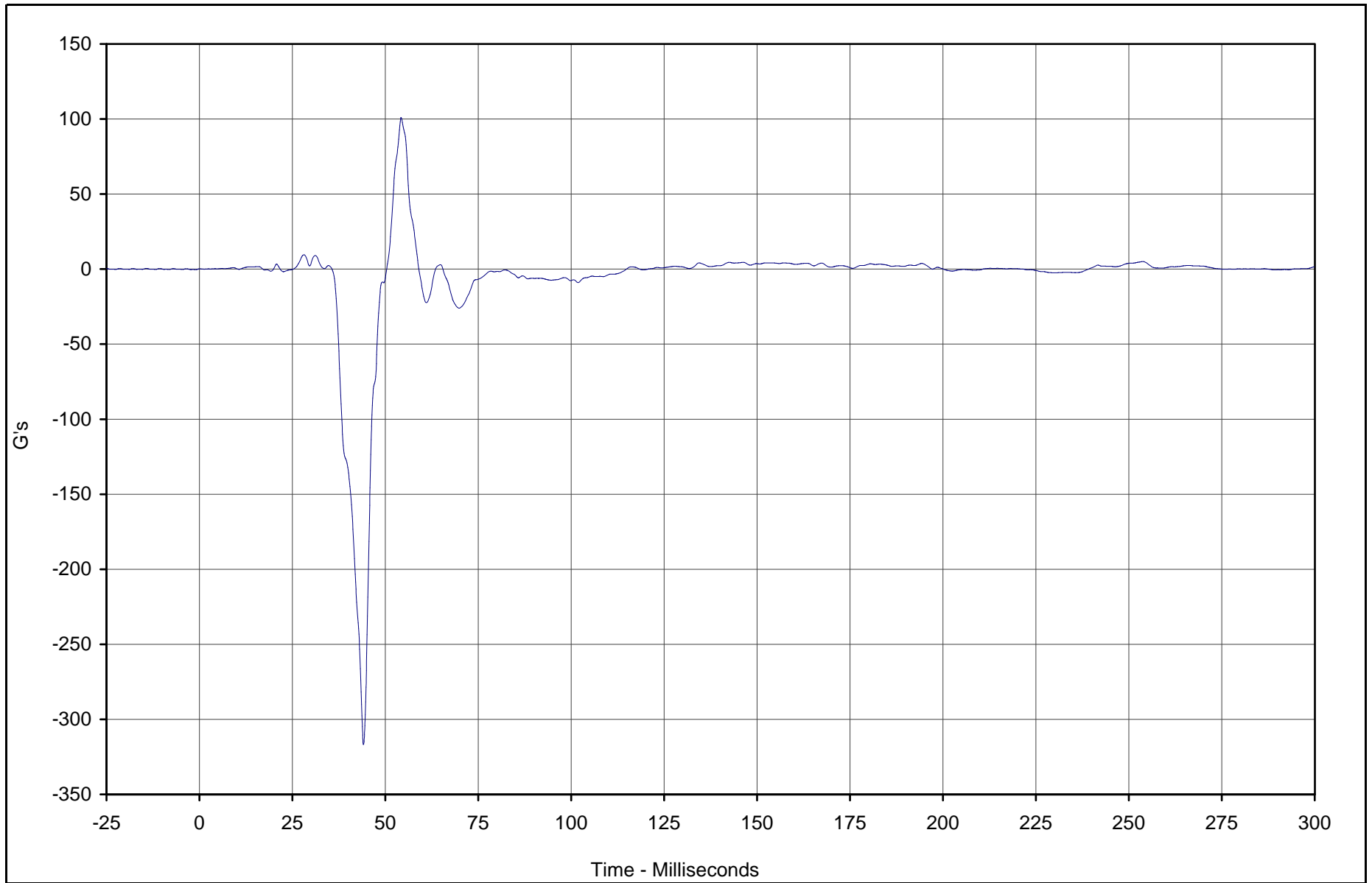
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Foot Fore Z	040	FIL	G's	101.0	54.3	-316.7	44.1	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

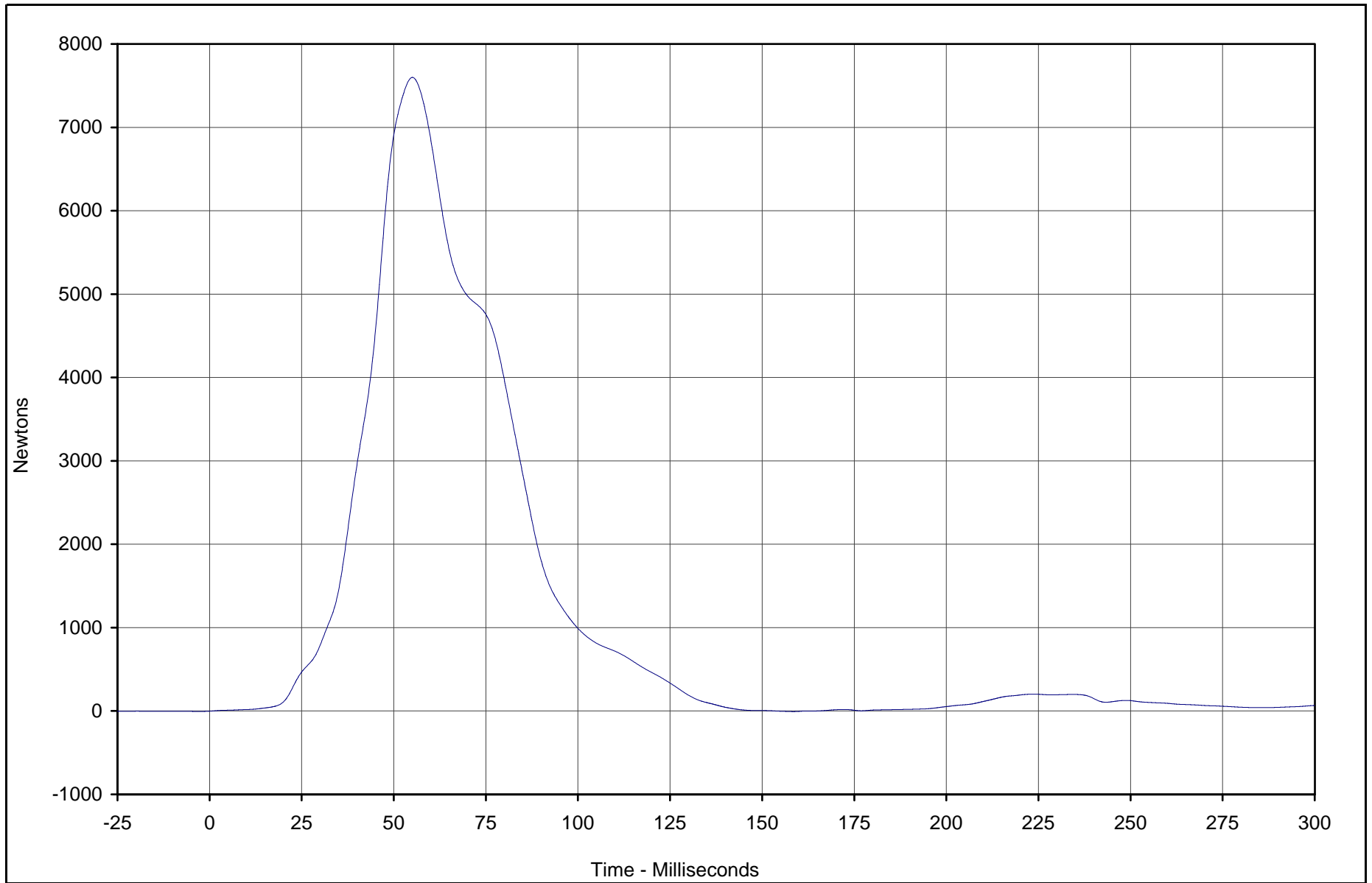
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Lap Belt Force	041	FIL	Newtons	7599.2	55.1	-7.4	158.4	60

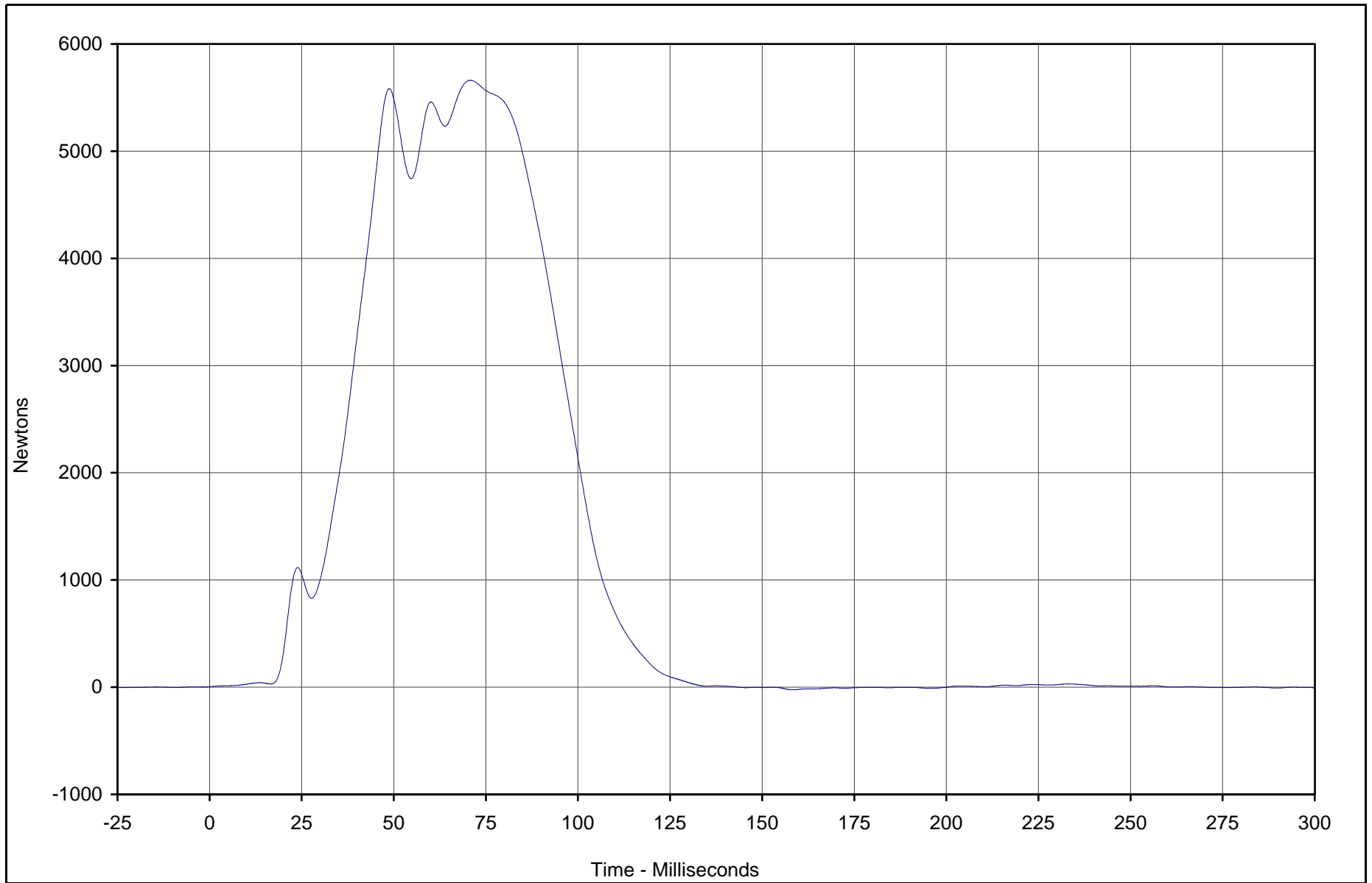


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Shoulder Belt Force	042	FIL	Newtons	5661.2	70.8	-23.7	158.4	60



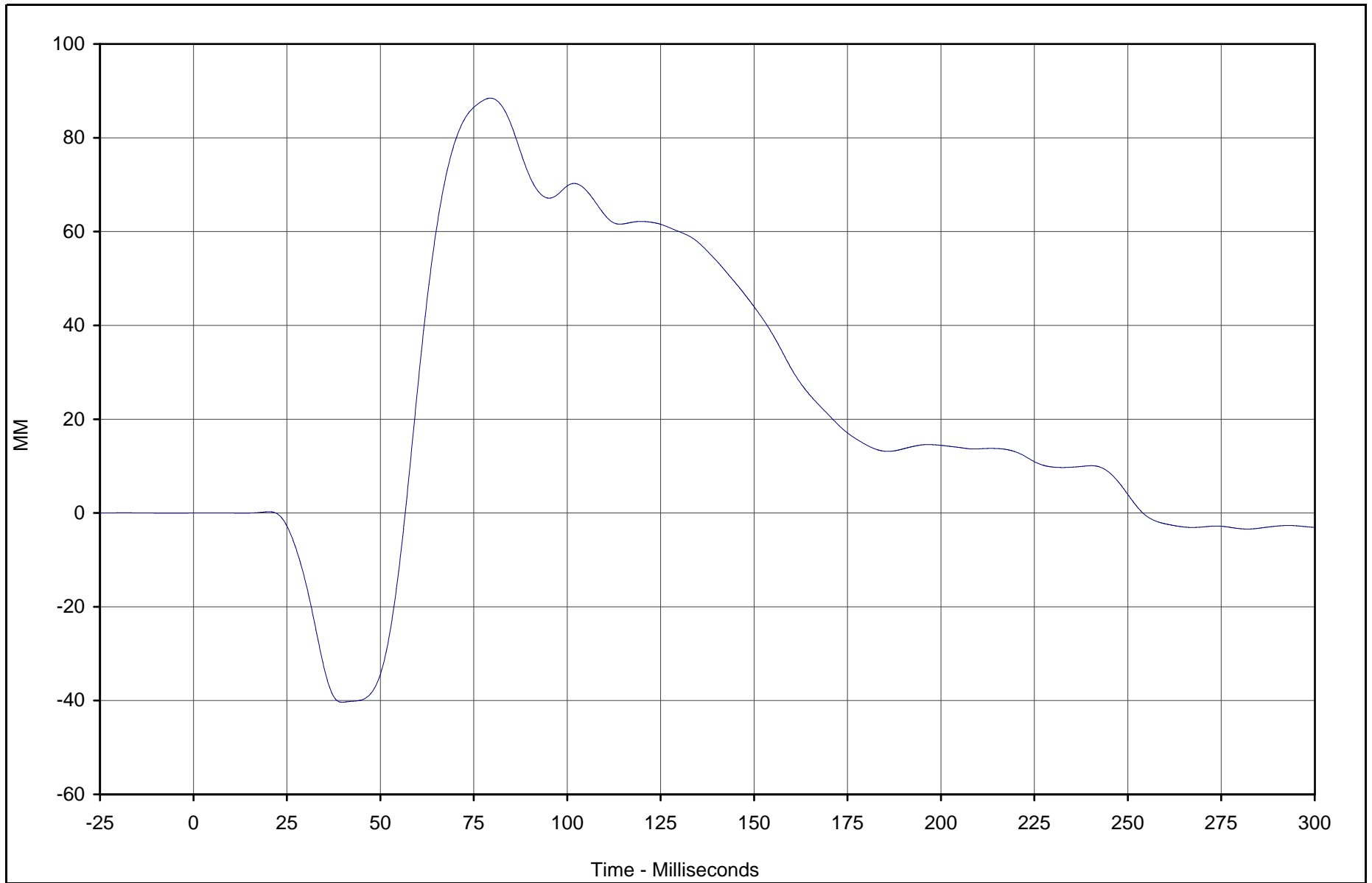
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Shoulder Belt Pullout	043	FIL	MM	88.5	79.4	-40.4	39.8	60



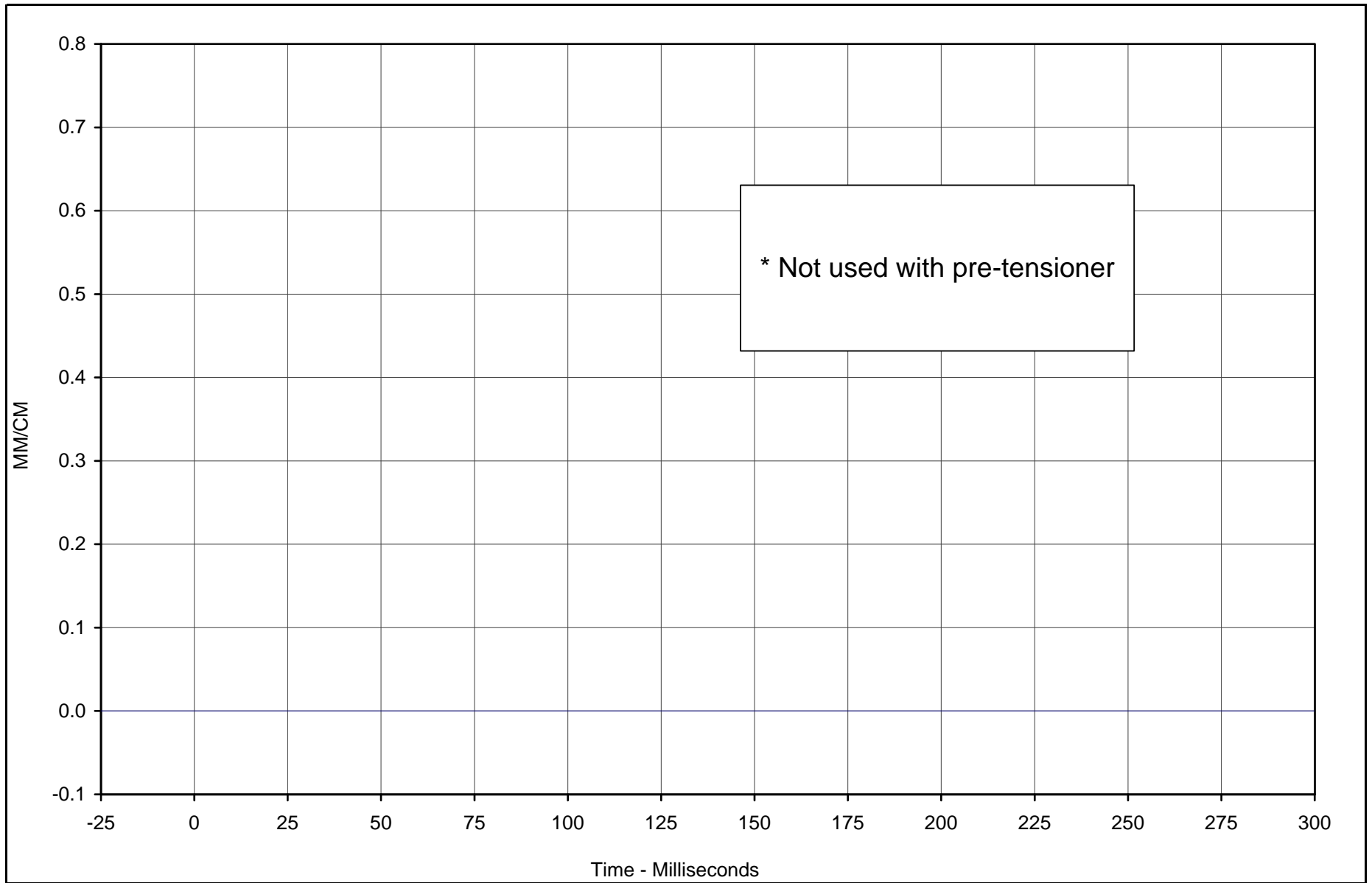
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



\* Not used with pre-tensioner

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Shoulder Belt Elongation	044	FIL	MM/CM	0.00	0.0	0.00	0.0	60



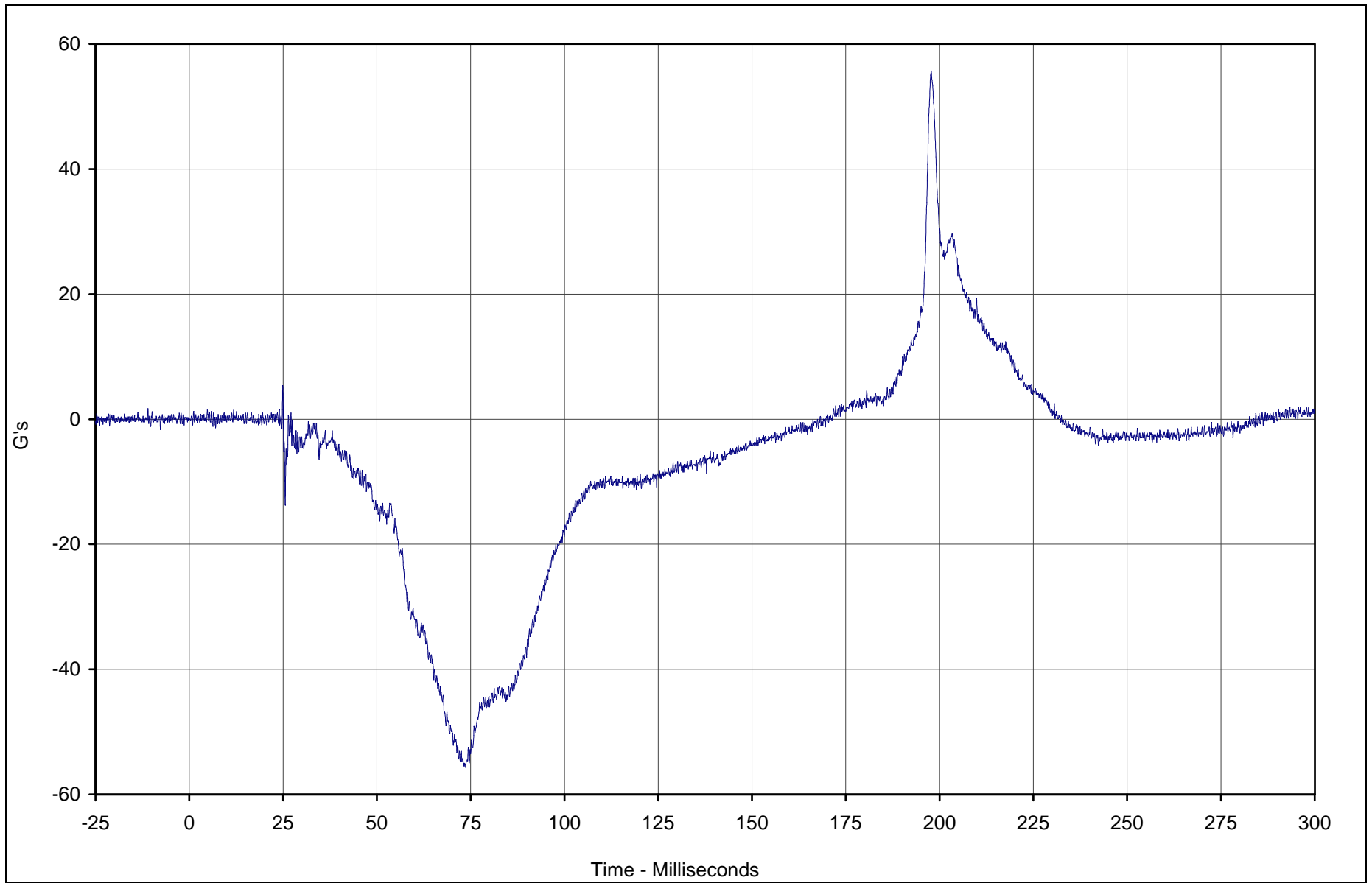
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary X	045	FIL	G's	55.7	197.8	-55.7	73.7	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

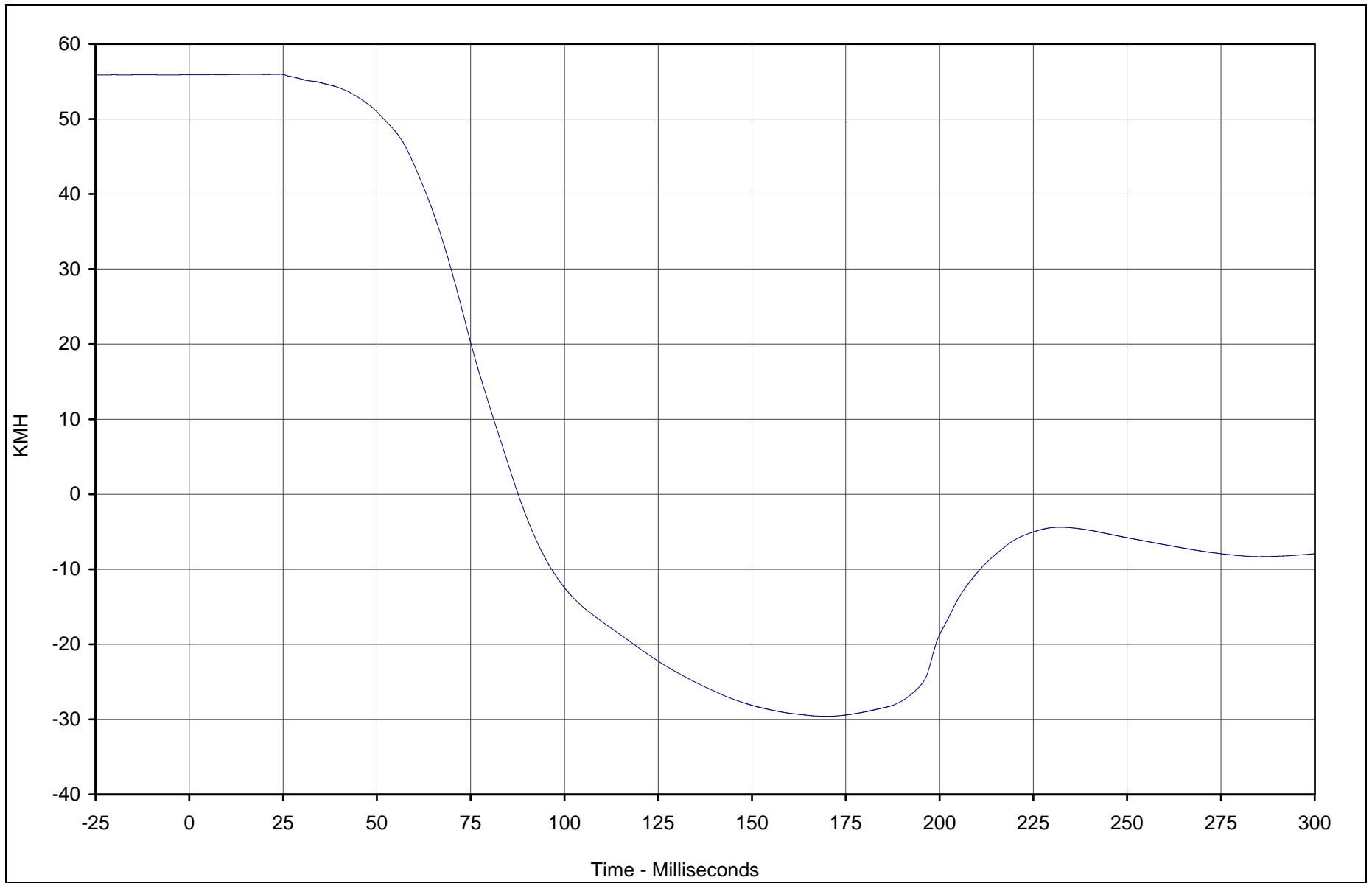
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary X Velocity	045	IN1	KMH	56.0	24.4	-29.6	170.1	180



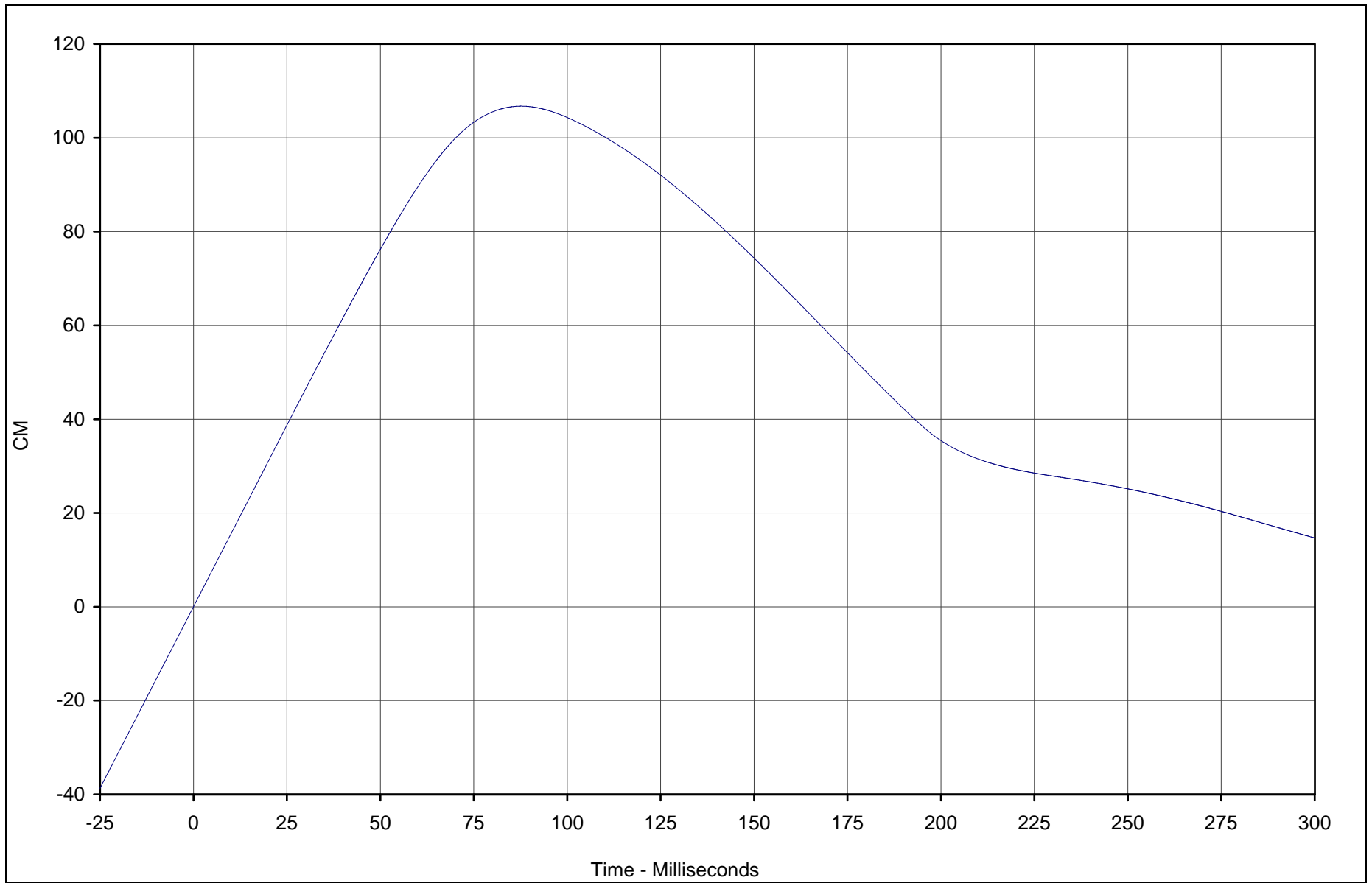
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-64



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary X Displ.	045	IN2	CM	106.7	87.7	0.0	0.0	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

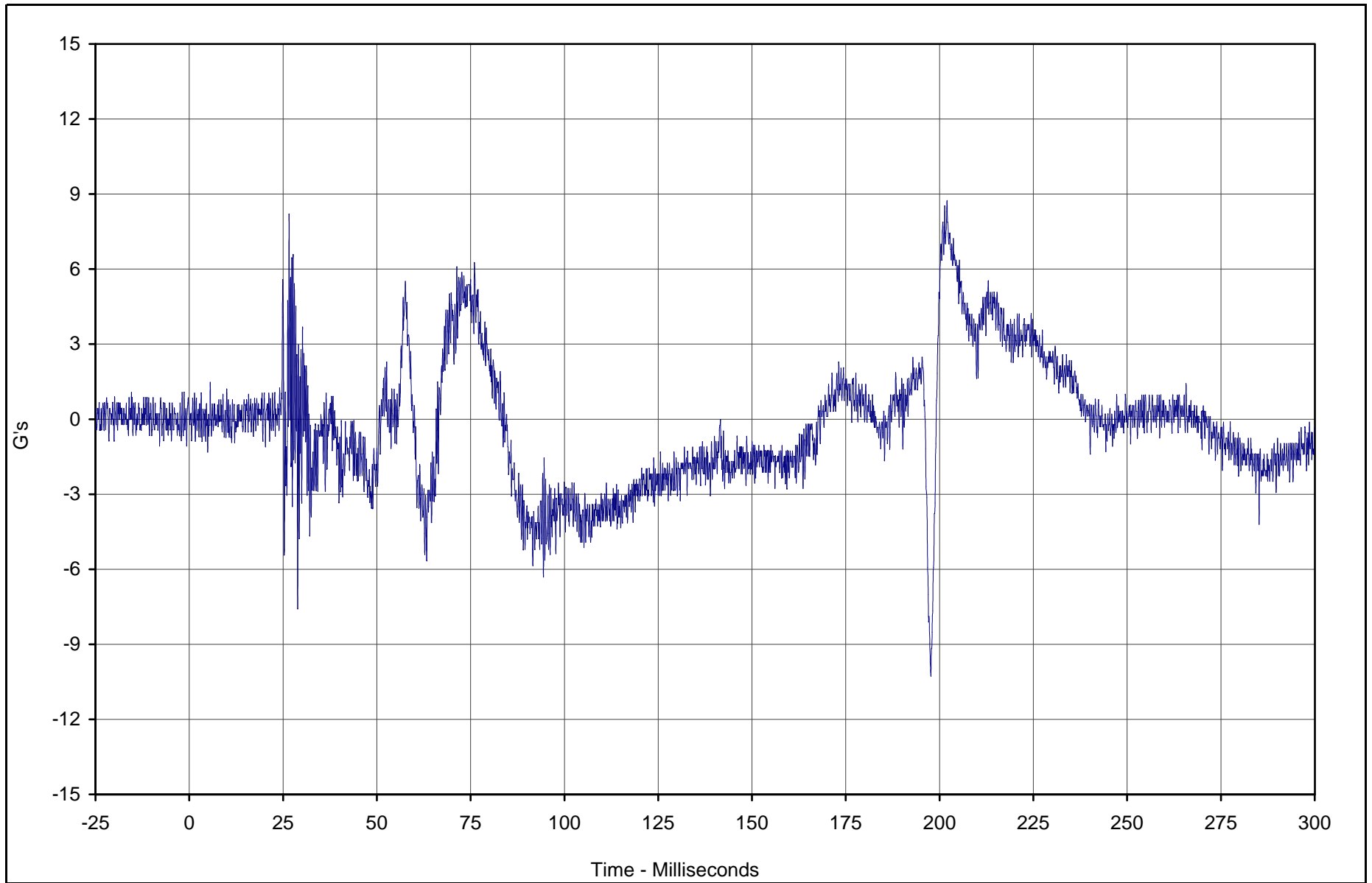
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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B-65



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary Y	046	FIL	G's	8.7	202.0	-10.2	197.7	1000



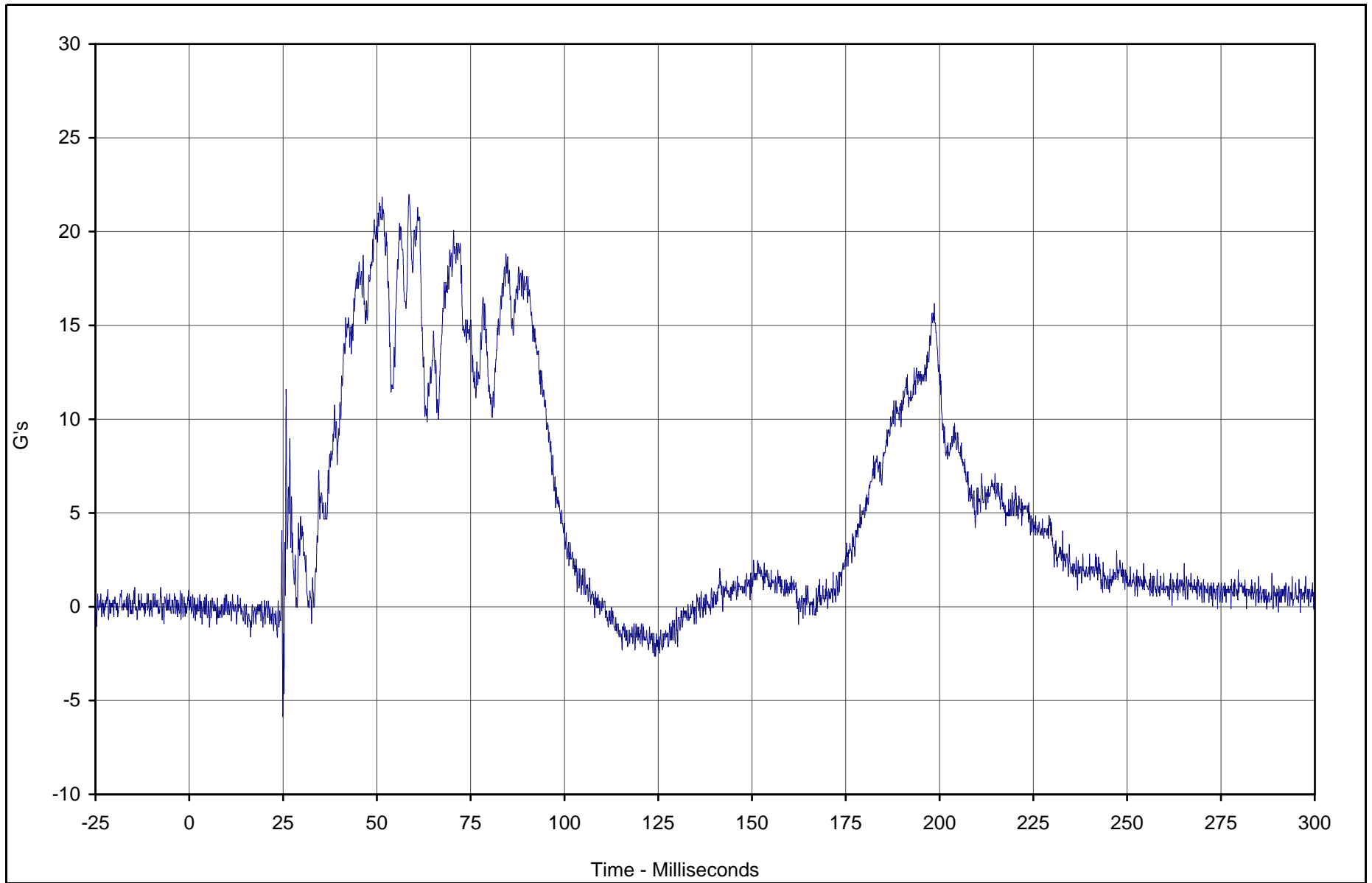
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary Z	047	FIL	G's	22.0	58.6	-5.8	24.9	1000

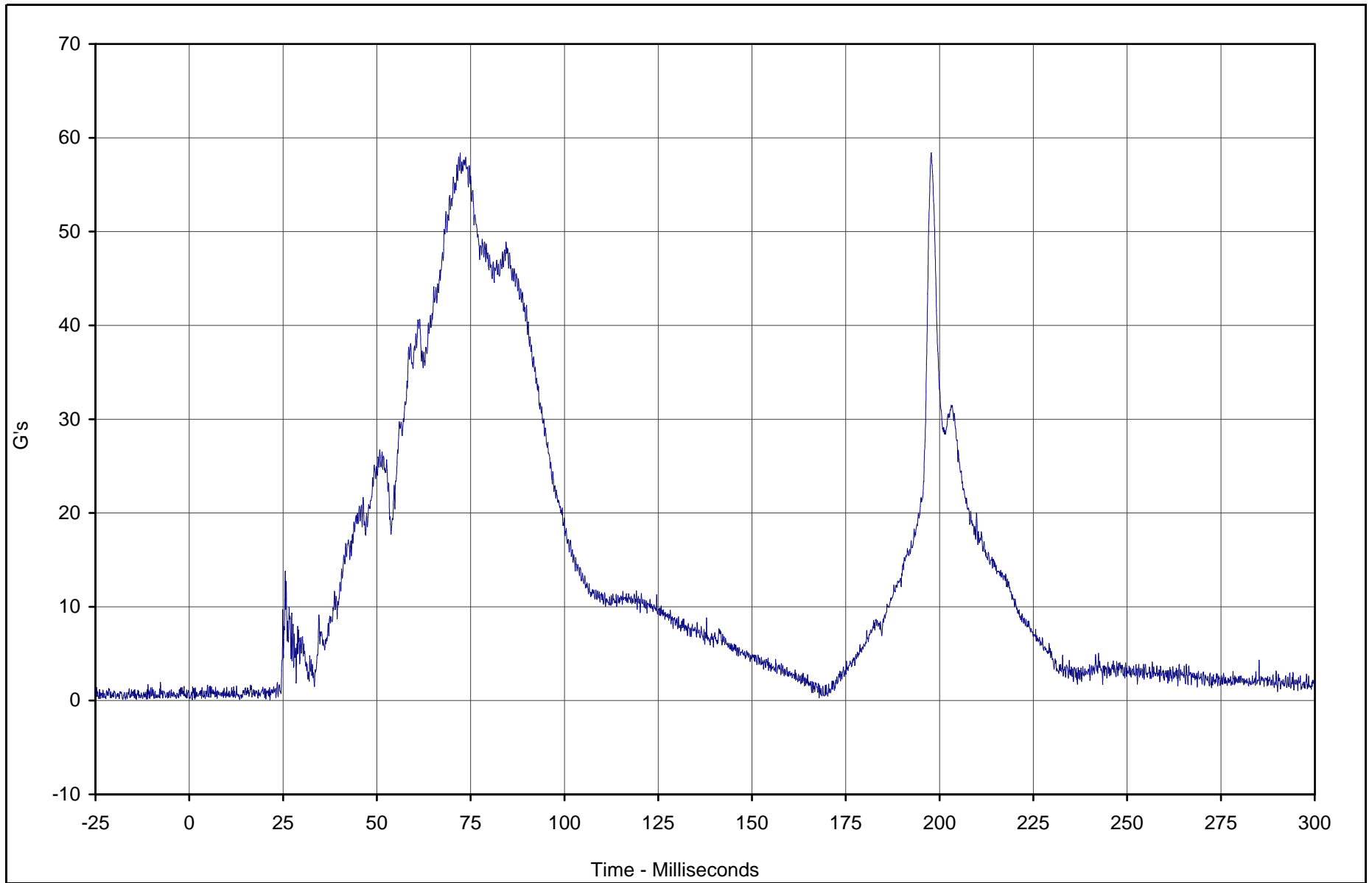


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Resultant Primary	045	RES	G's	58.4	72.2	0.1	21.5	1000

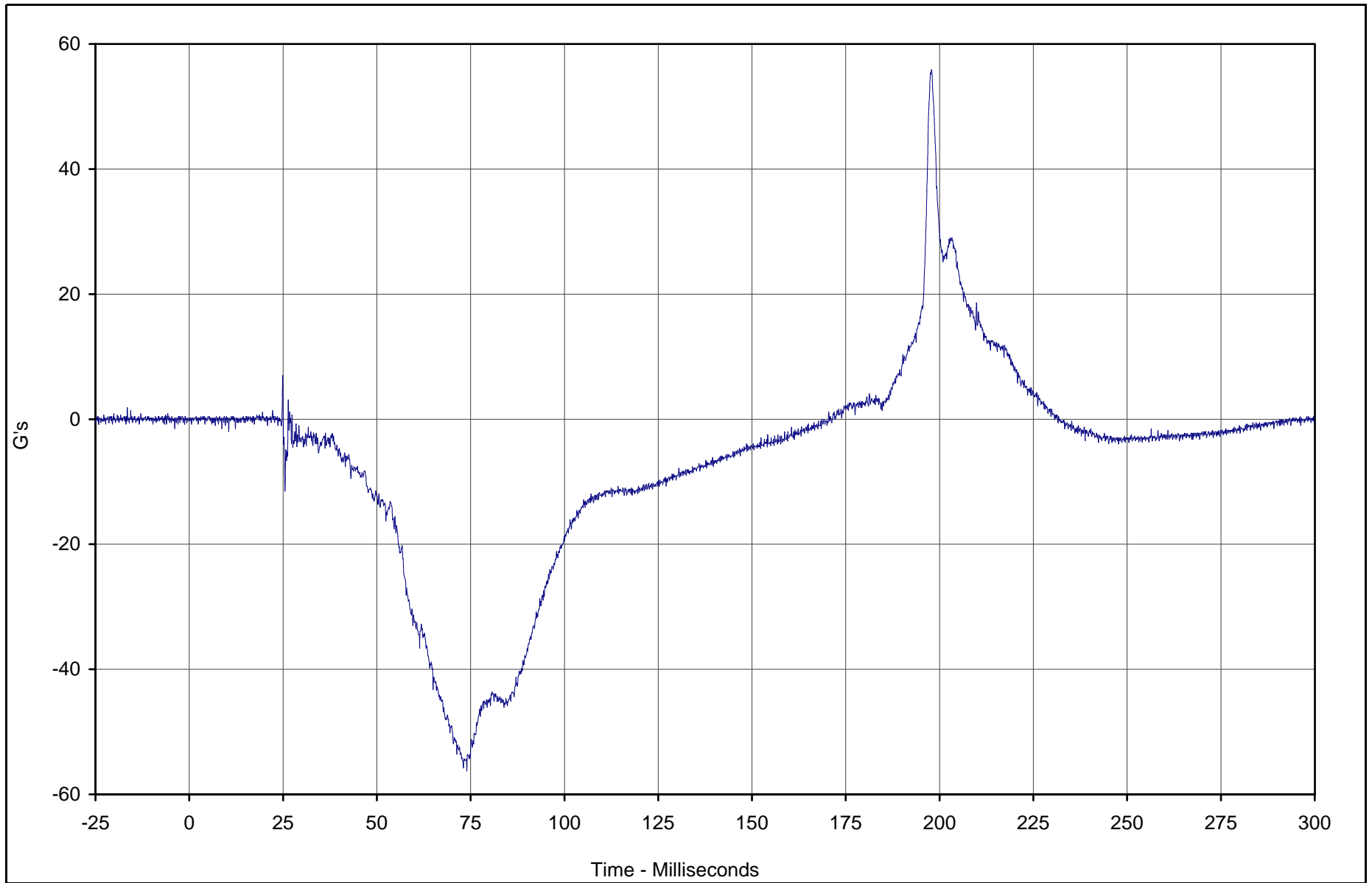


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant X	048	FIL	G's	55.9	197.8	-56.3	74.0	1000

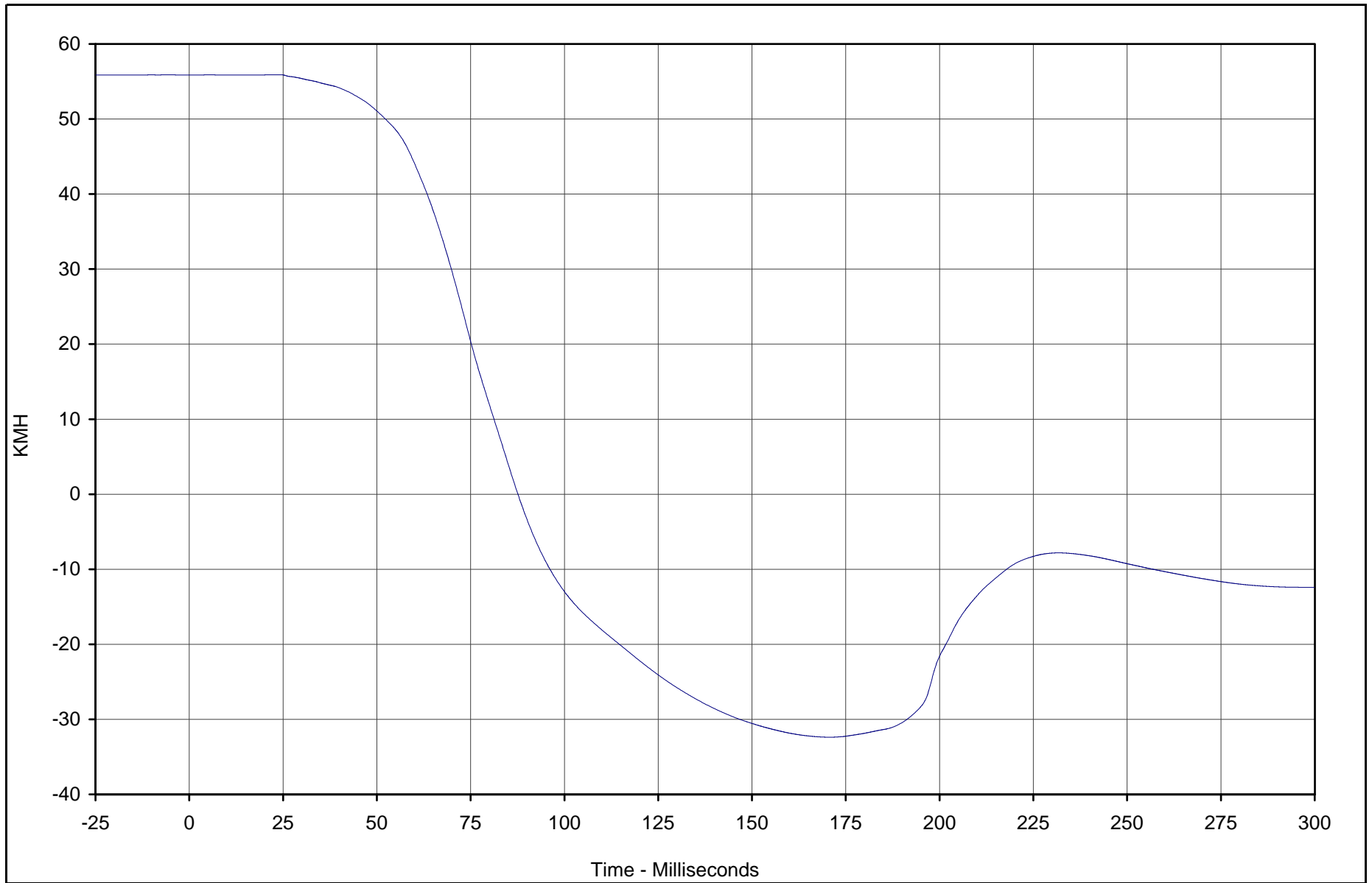


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant X Velocity	048	IN1	KMH	55.9	24.3	-32.4	170.6	180



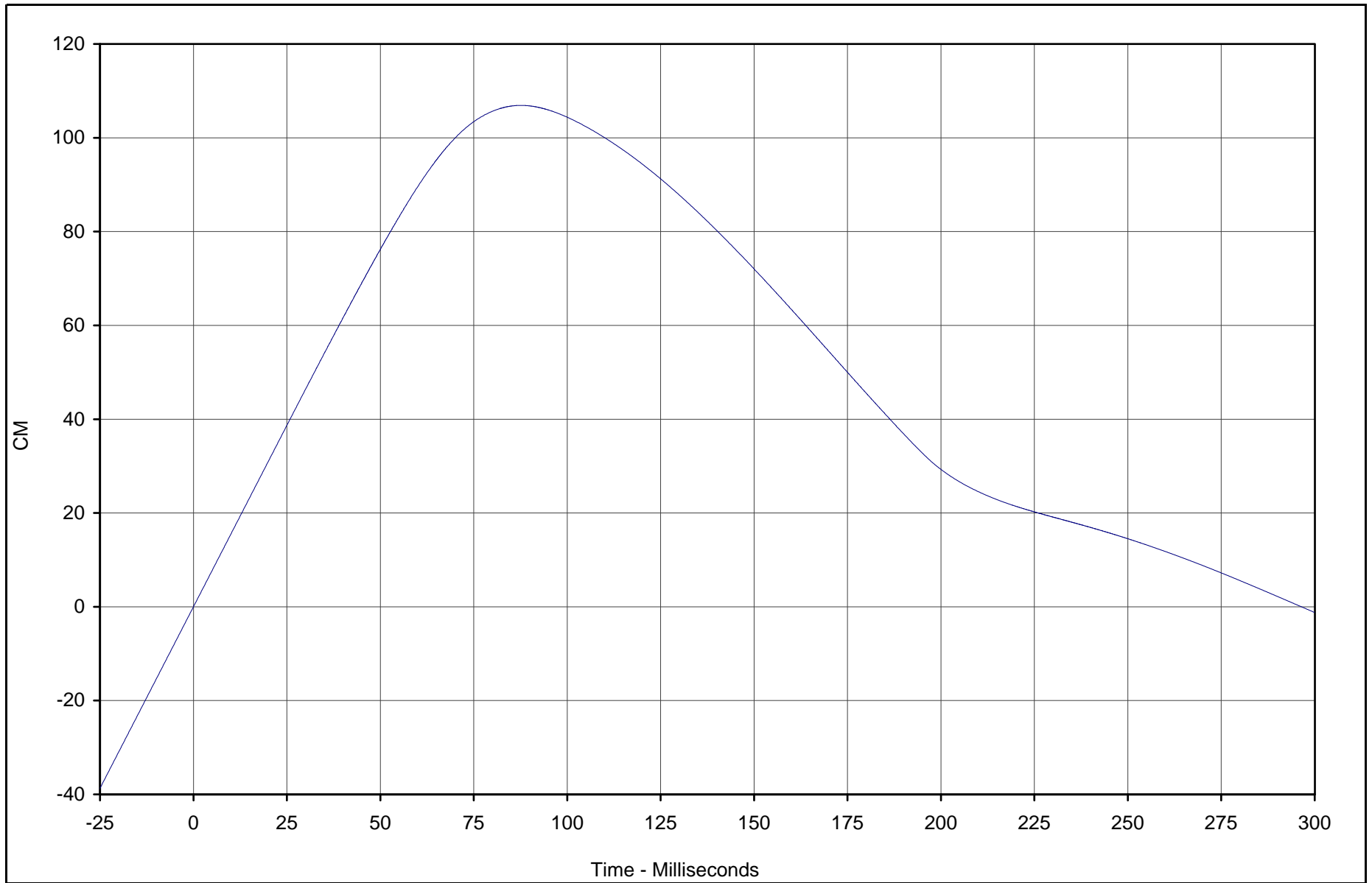
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant X Displ.	048	IN2	CM	106.9	87.6	-1.2	299.9	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

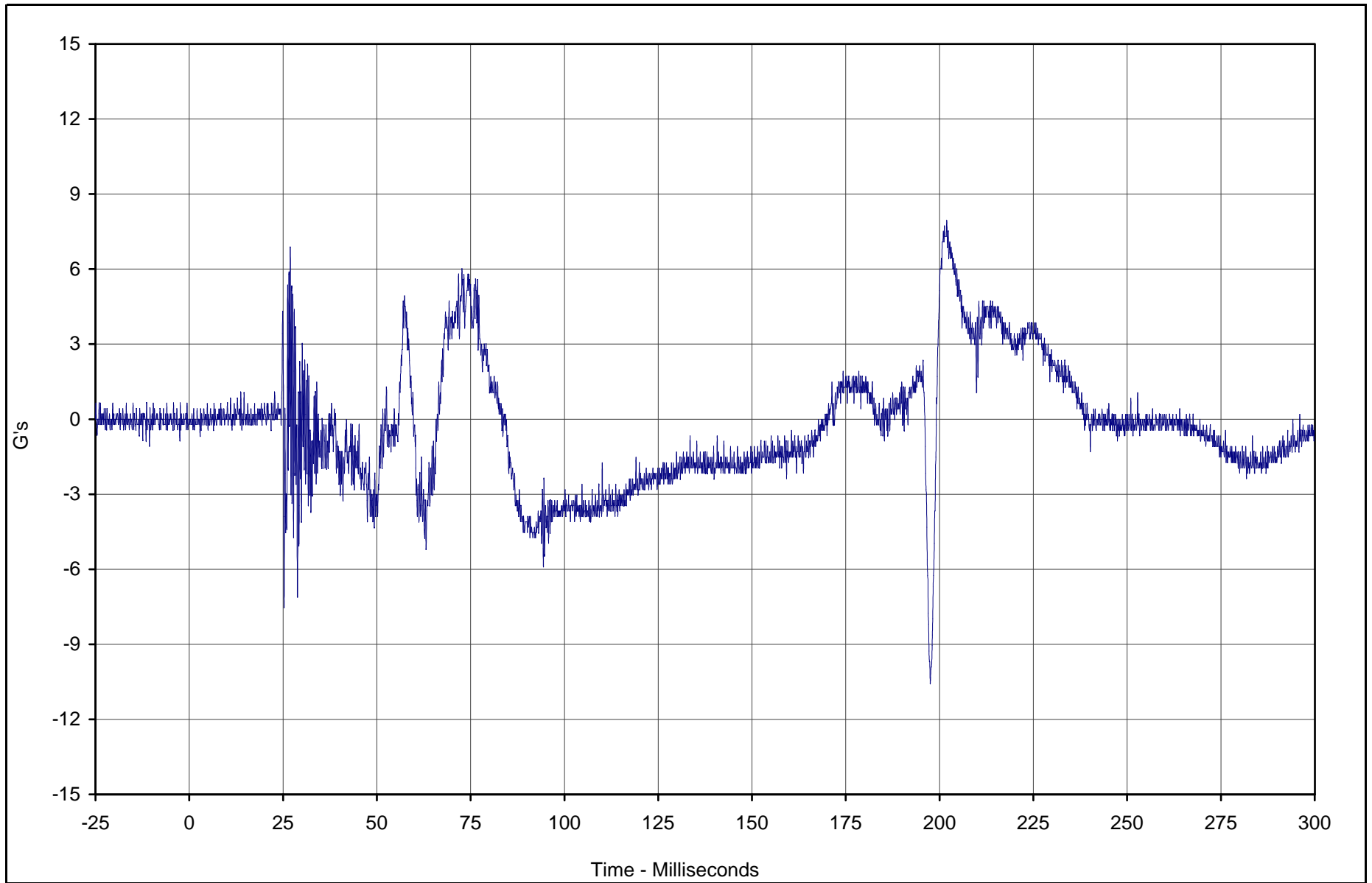
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-71



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant Y	049	FIL	G's	7.9	201.9	-10.6	197.5	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

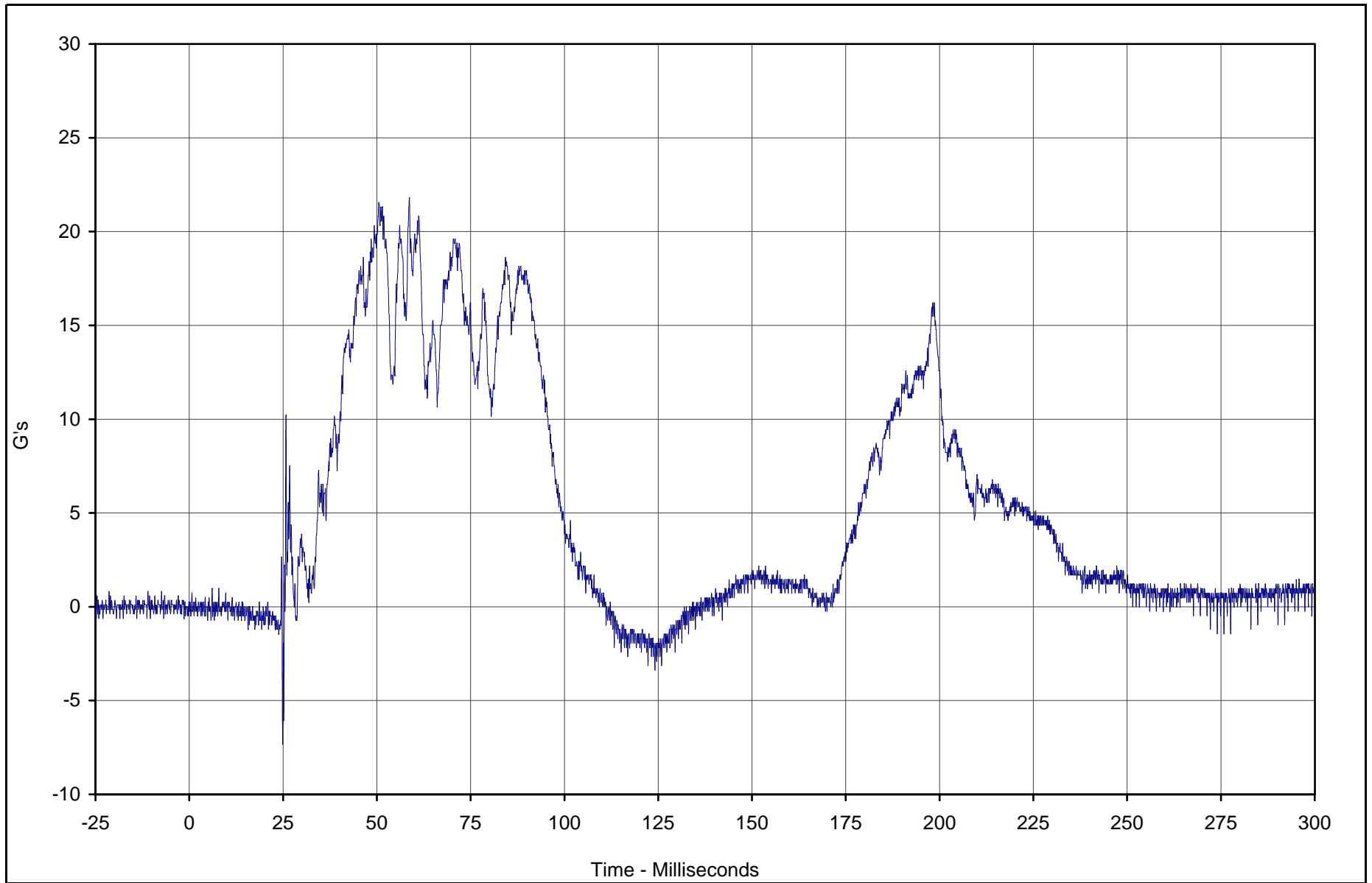
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-72



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant Z	050	FIL	G's	21.8	58.7	-7.3	24.9	1000



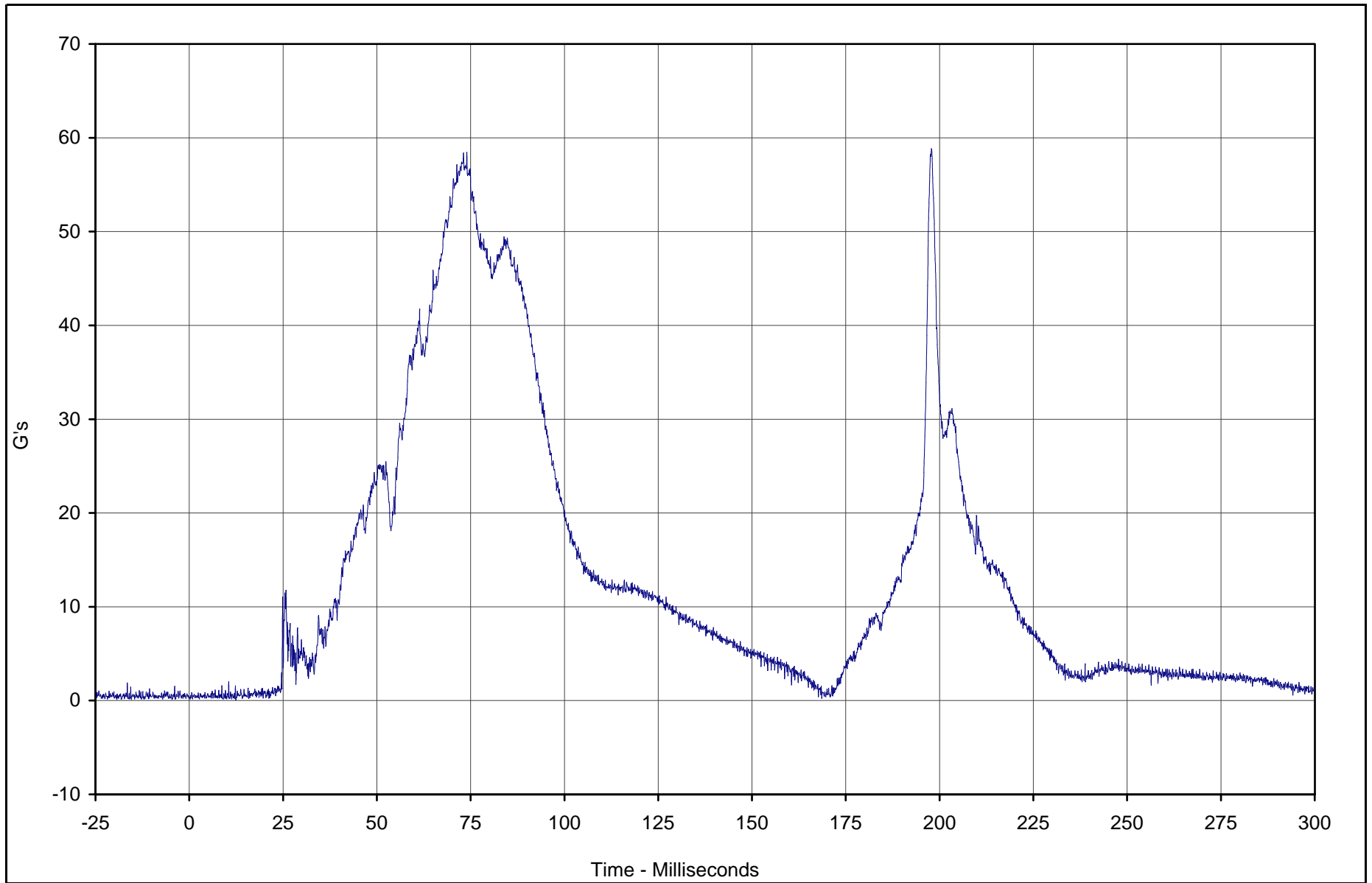
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Resultant Redundant	048	RES	G's	58.8	197.8	0.1	12.4	1000



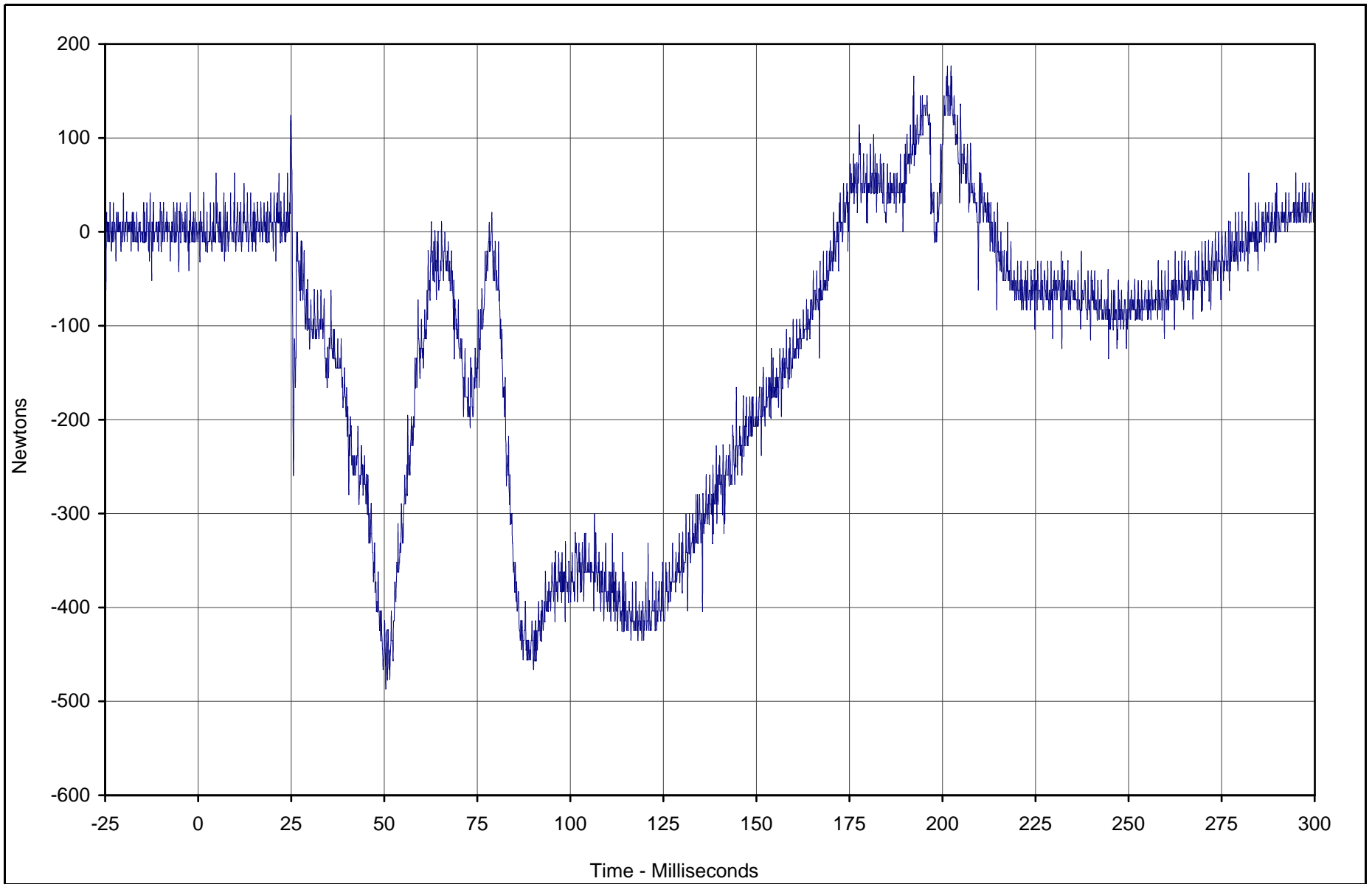
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-74



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force X	051	FIL	Newtons	176.0	201.3	-486.7	50.4	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

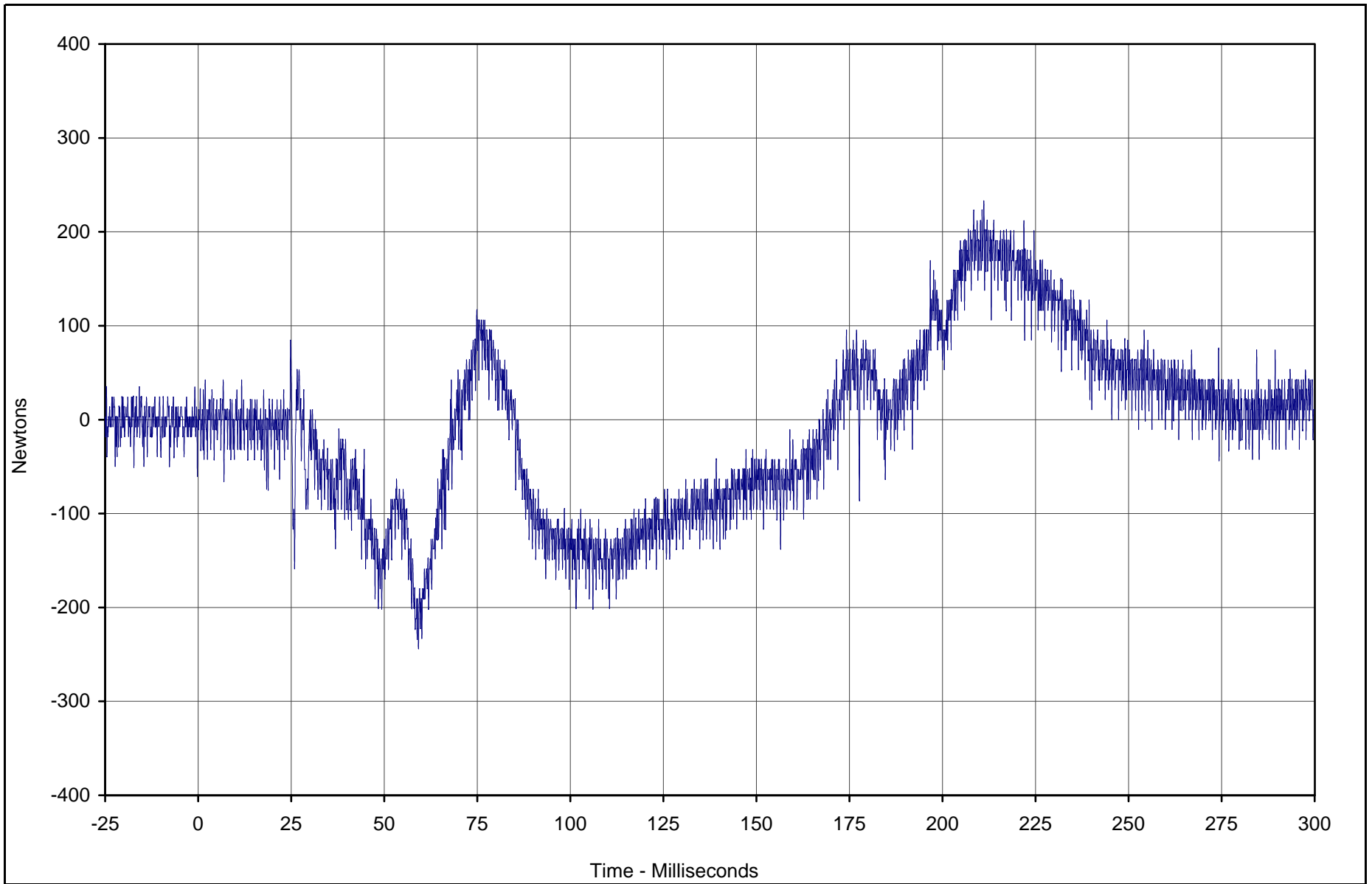
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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B-75



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force Y	052	FIL	Newtons	233.1	211.1	-243.7	59.2	1000



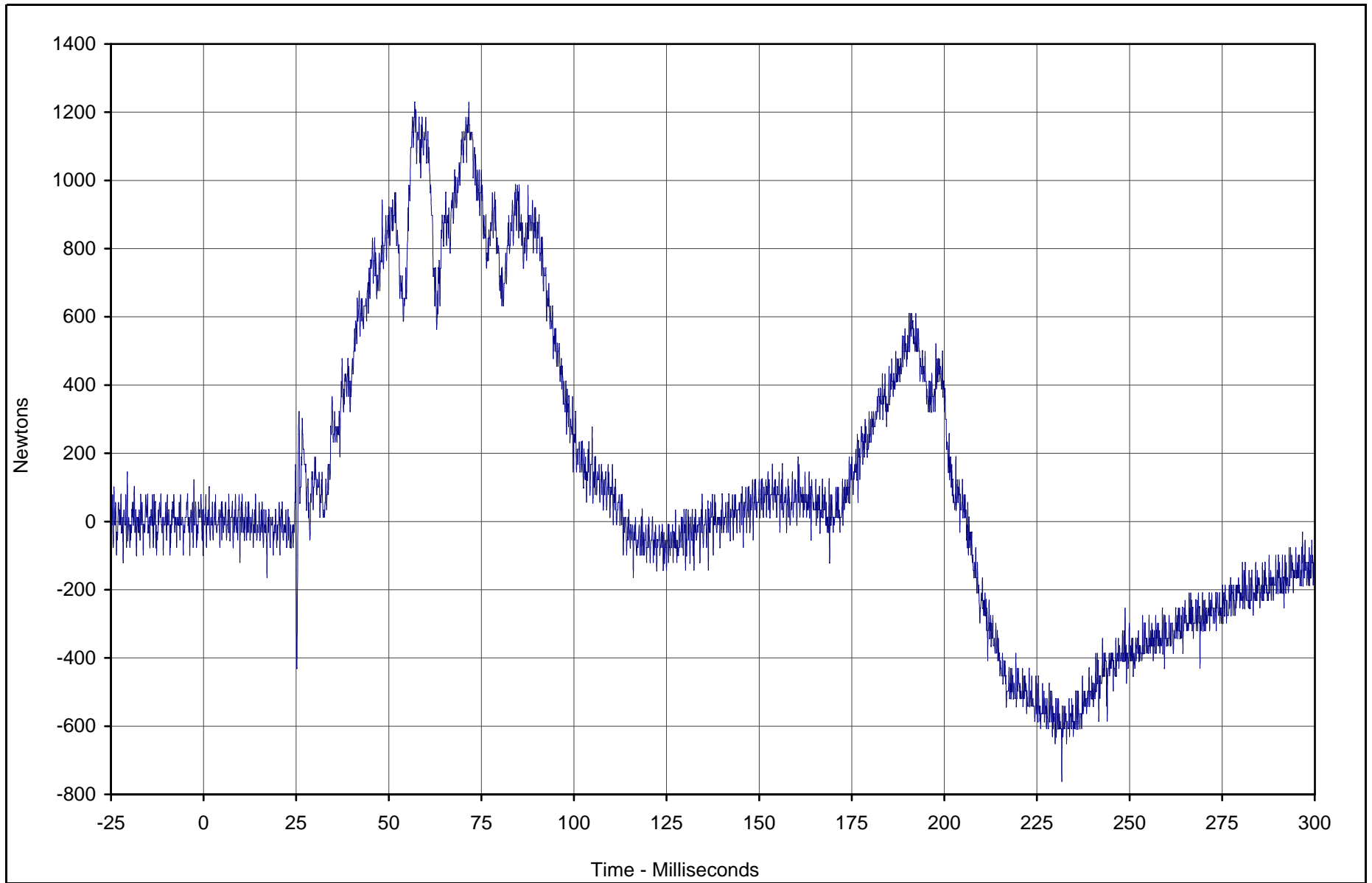
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force Z	053	FIL	Newtons	1229.6	57.0	-762.6	231.7	1000

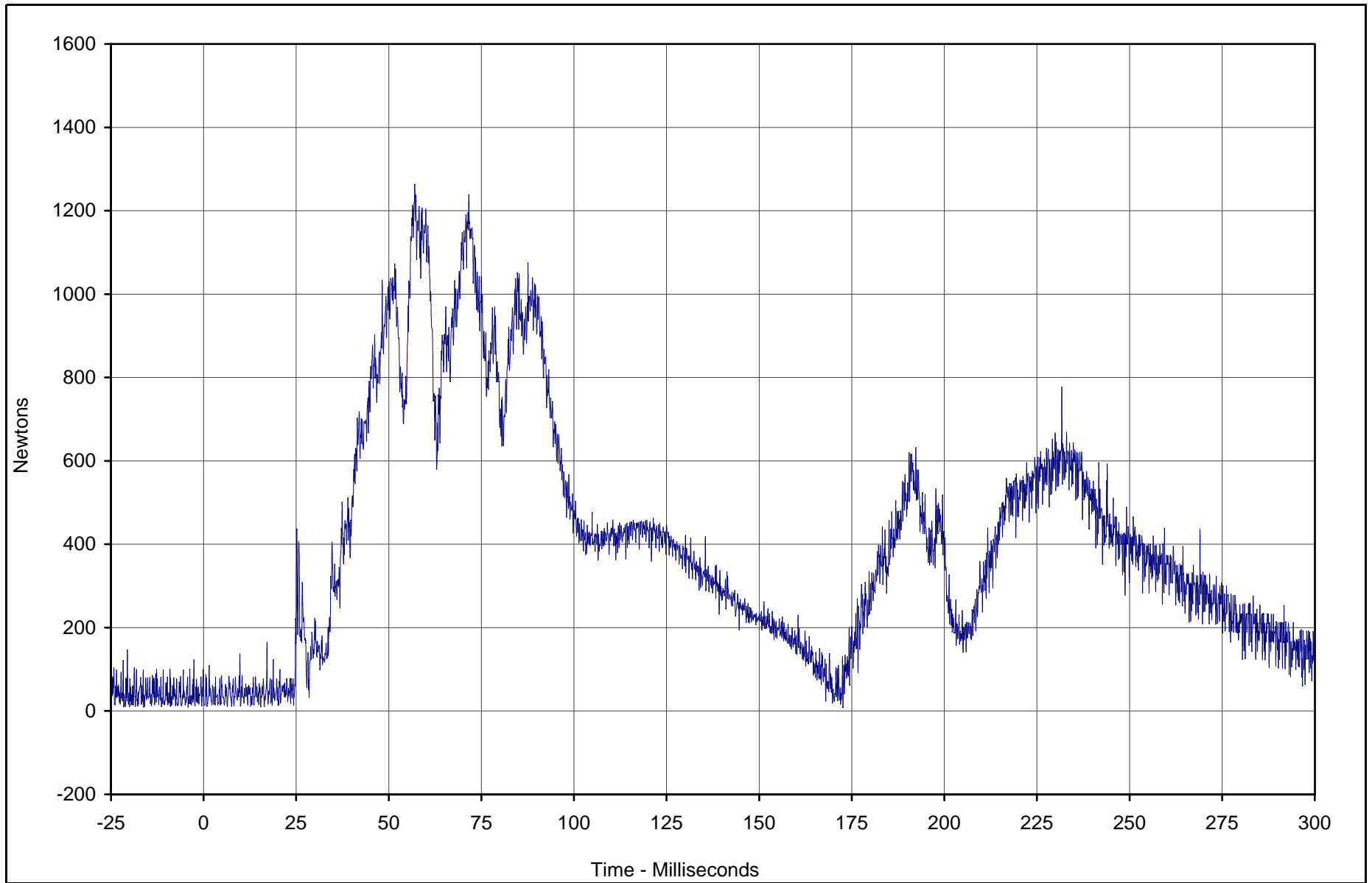


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force Resultant	051	RES	Newtons	1262.5	57.0	10.0	6.4	1000



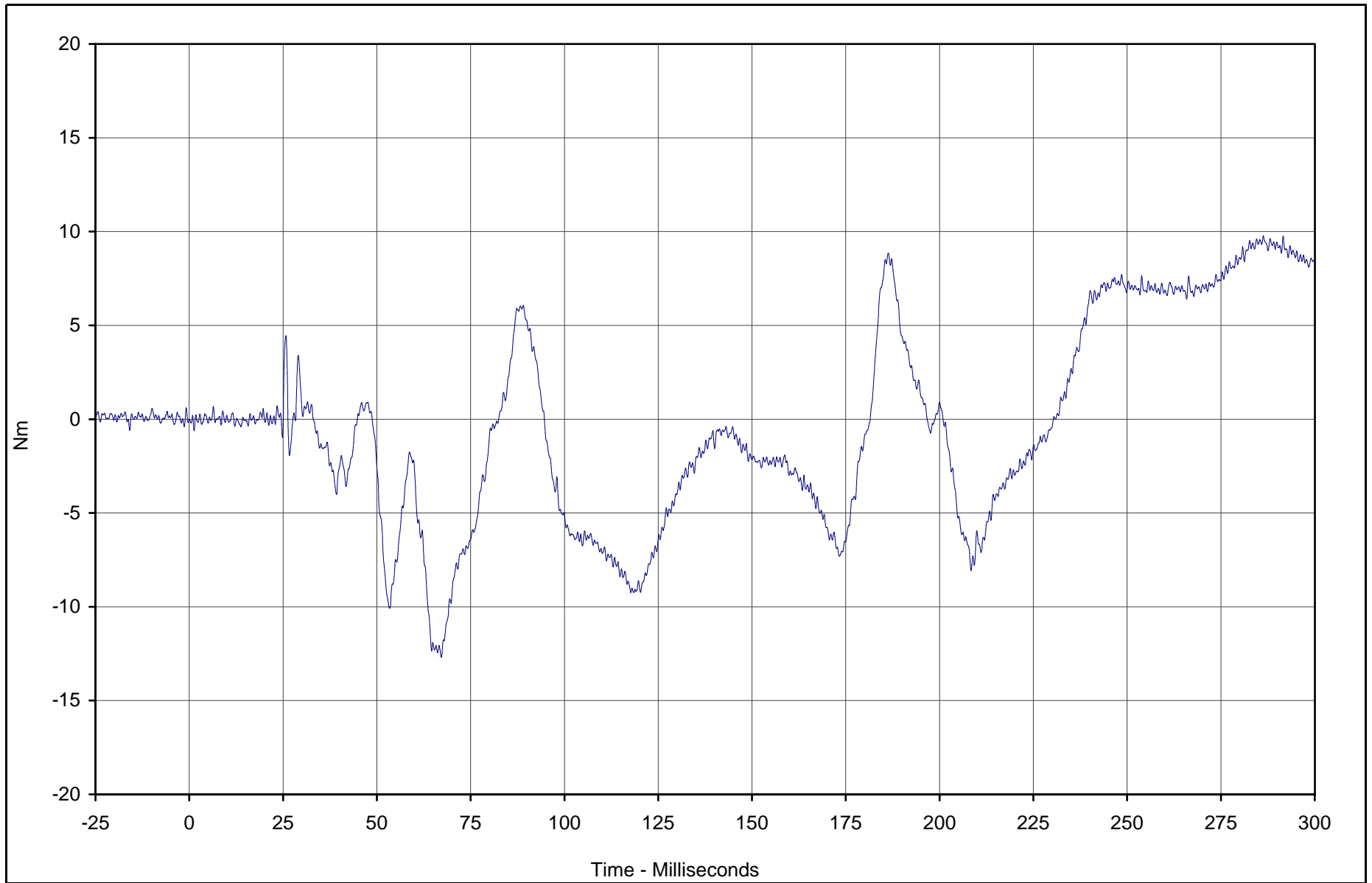
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment X	054	FIL	Nm	9.8	286.3	-12.7	67.2	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

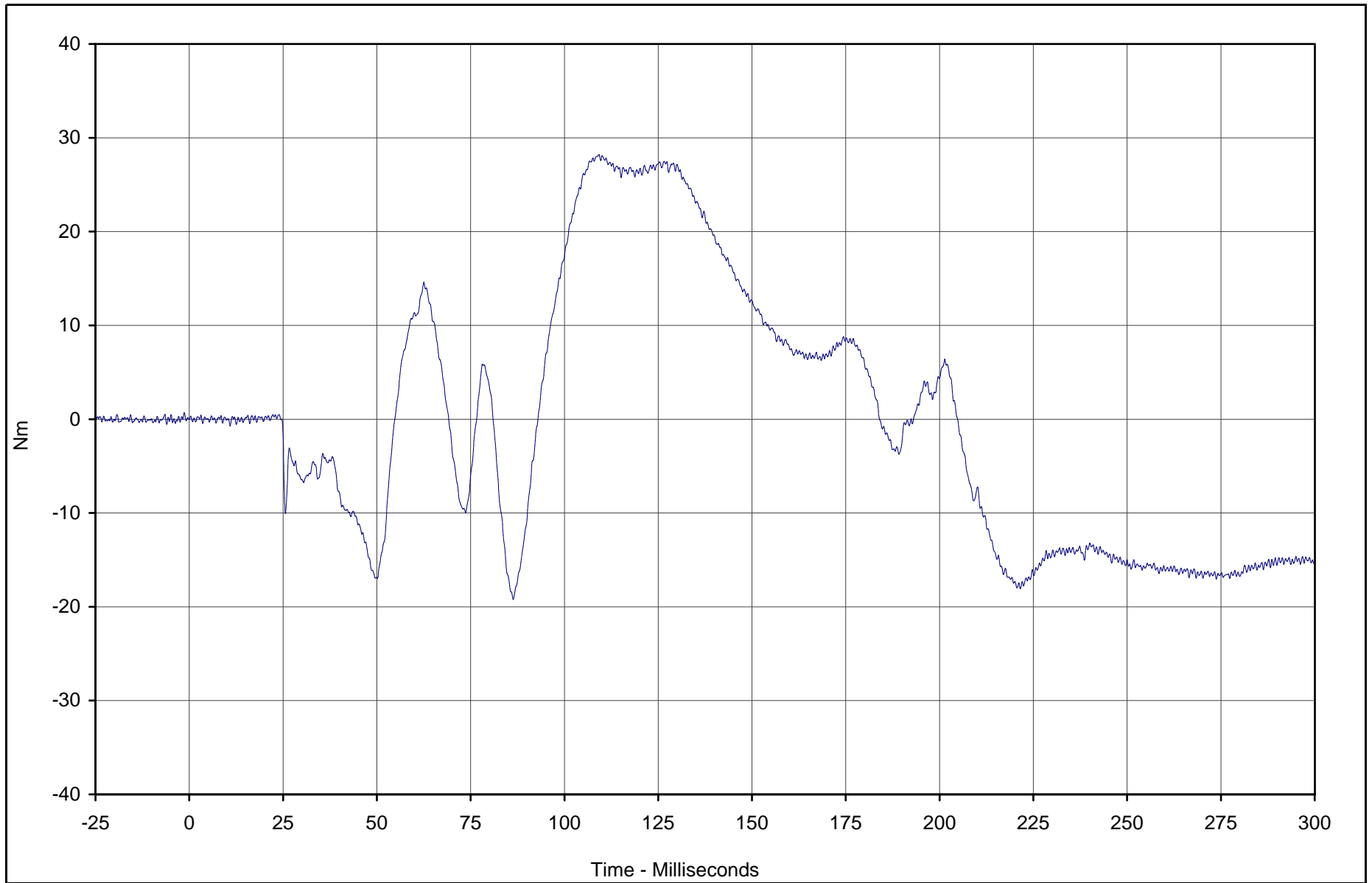
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-79



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment Y	055	FIL	Nm	28.2	109.2	-19.2	86.3	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

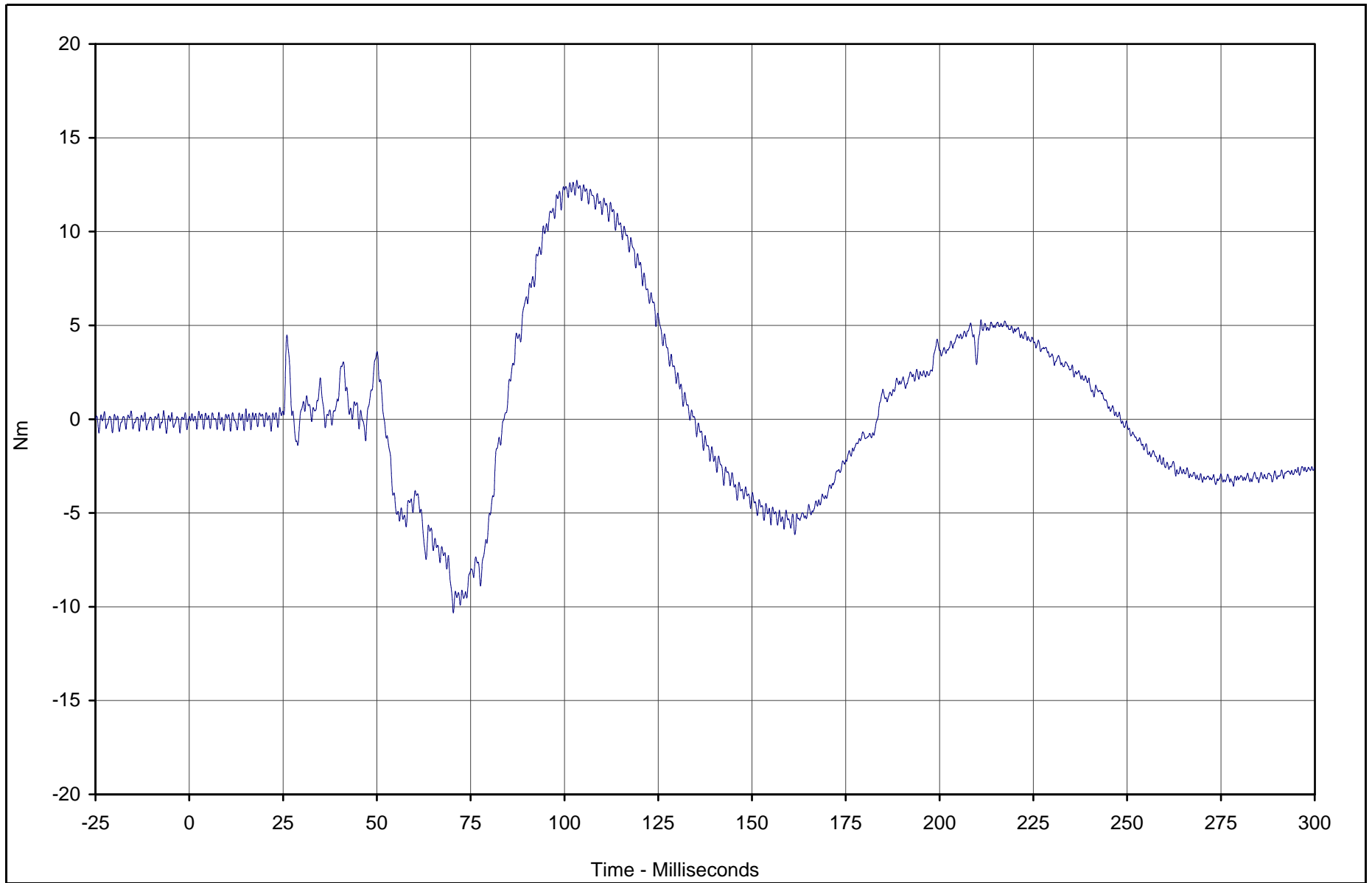
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-80



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment Z	056	FIL	Nm	12.7	103.3	-10.3	70.4	600



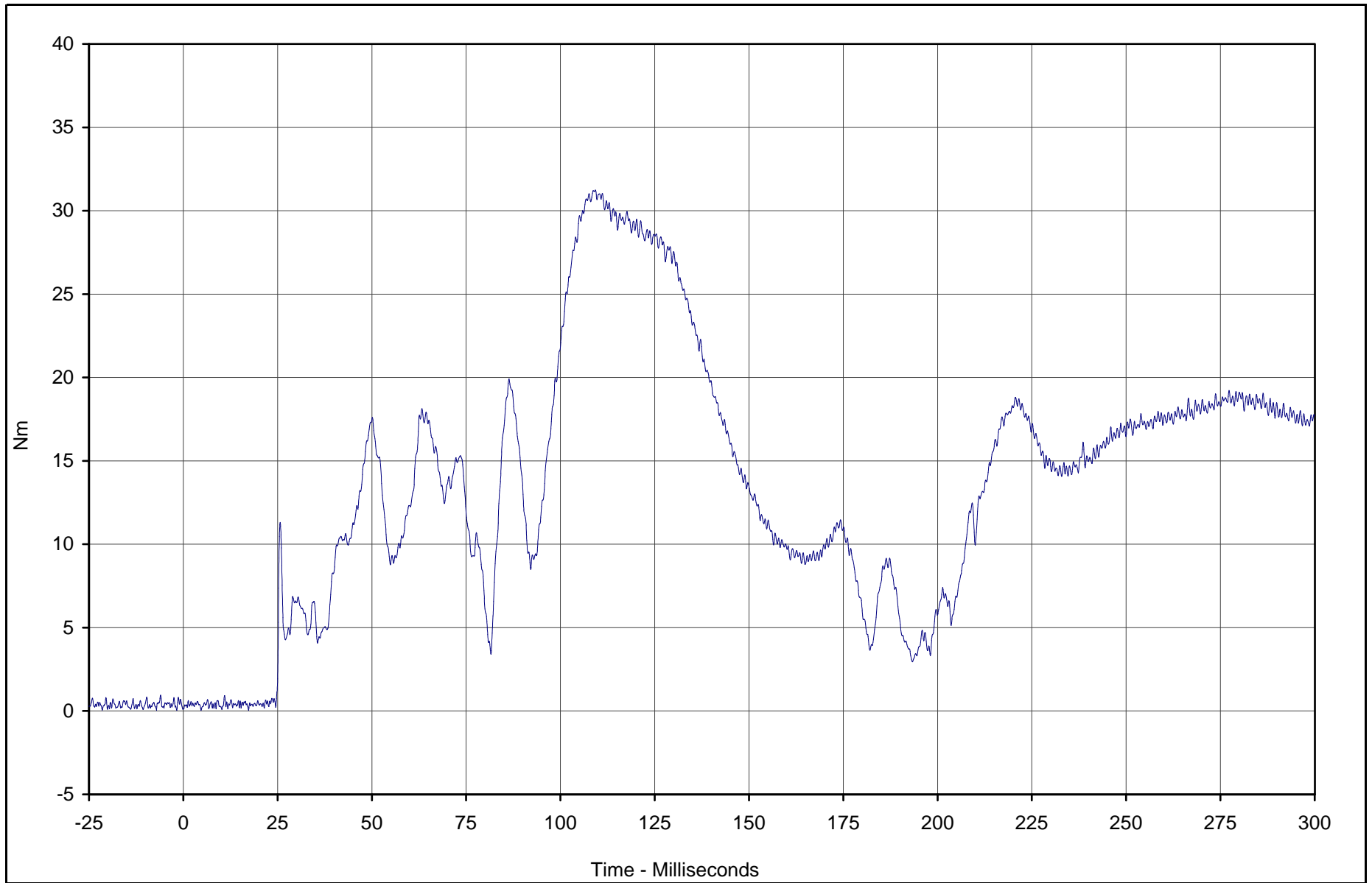
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment Resultant	054	RES	Nm	31.2	109.3	0.0	4.7	600



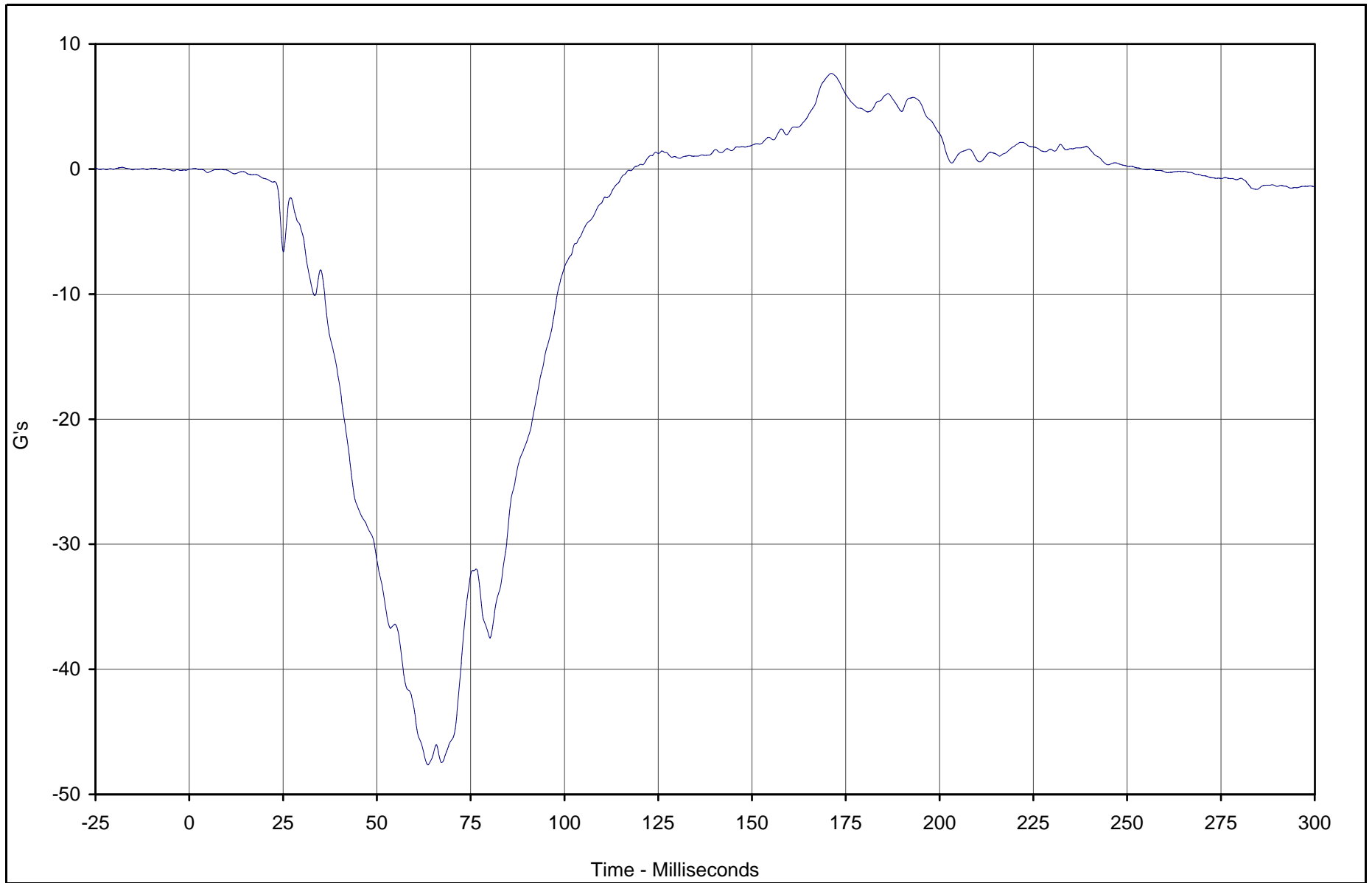
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-82



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary X	057	FIL	G's	7.6	171.2	-47.6	63.6	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

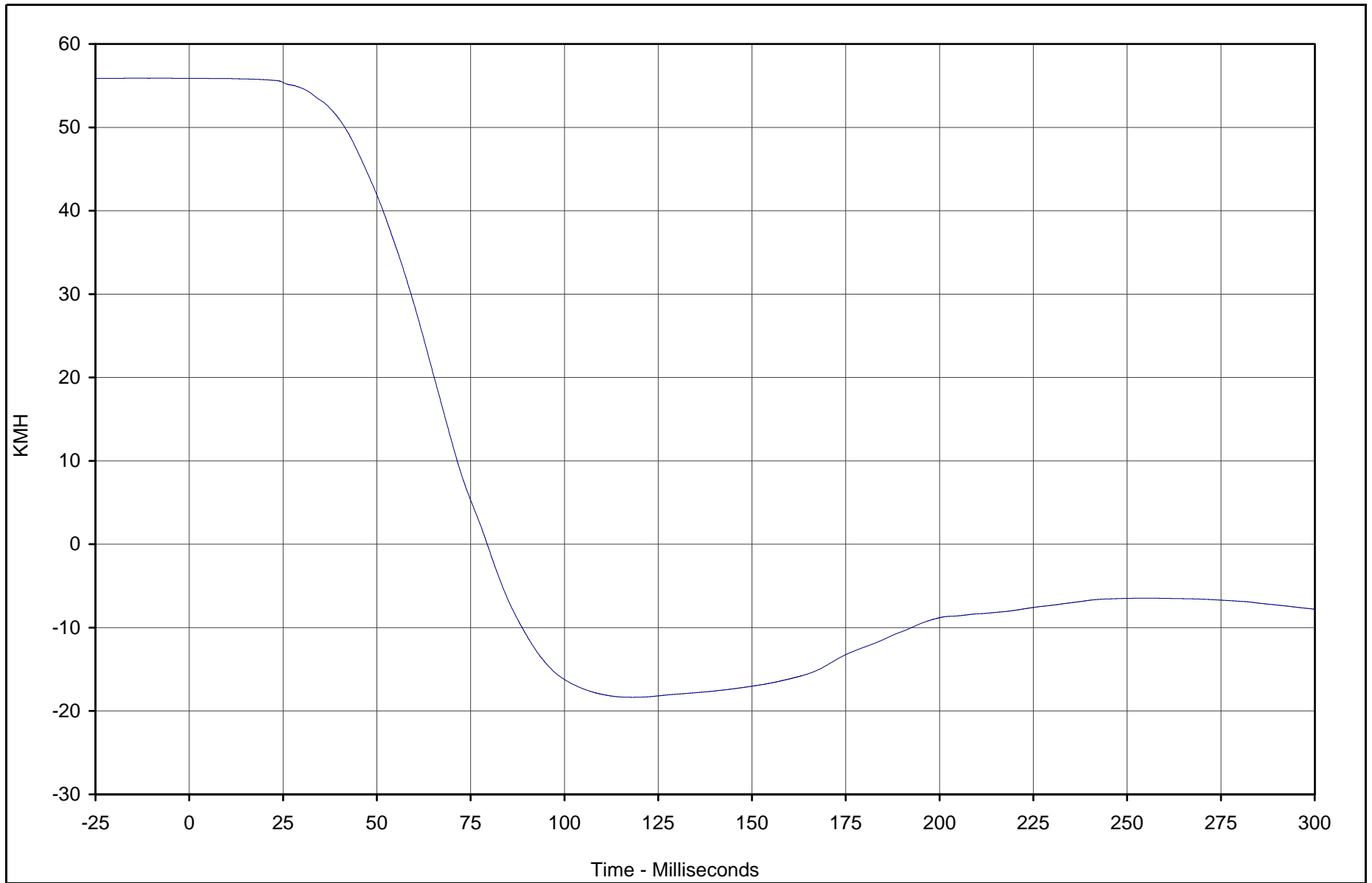
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-83



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary X Velocity	057	IN1	KMH	55.9	2.1	-18.4	118.2	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

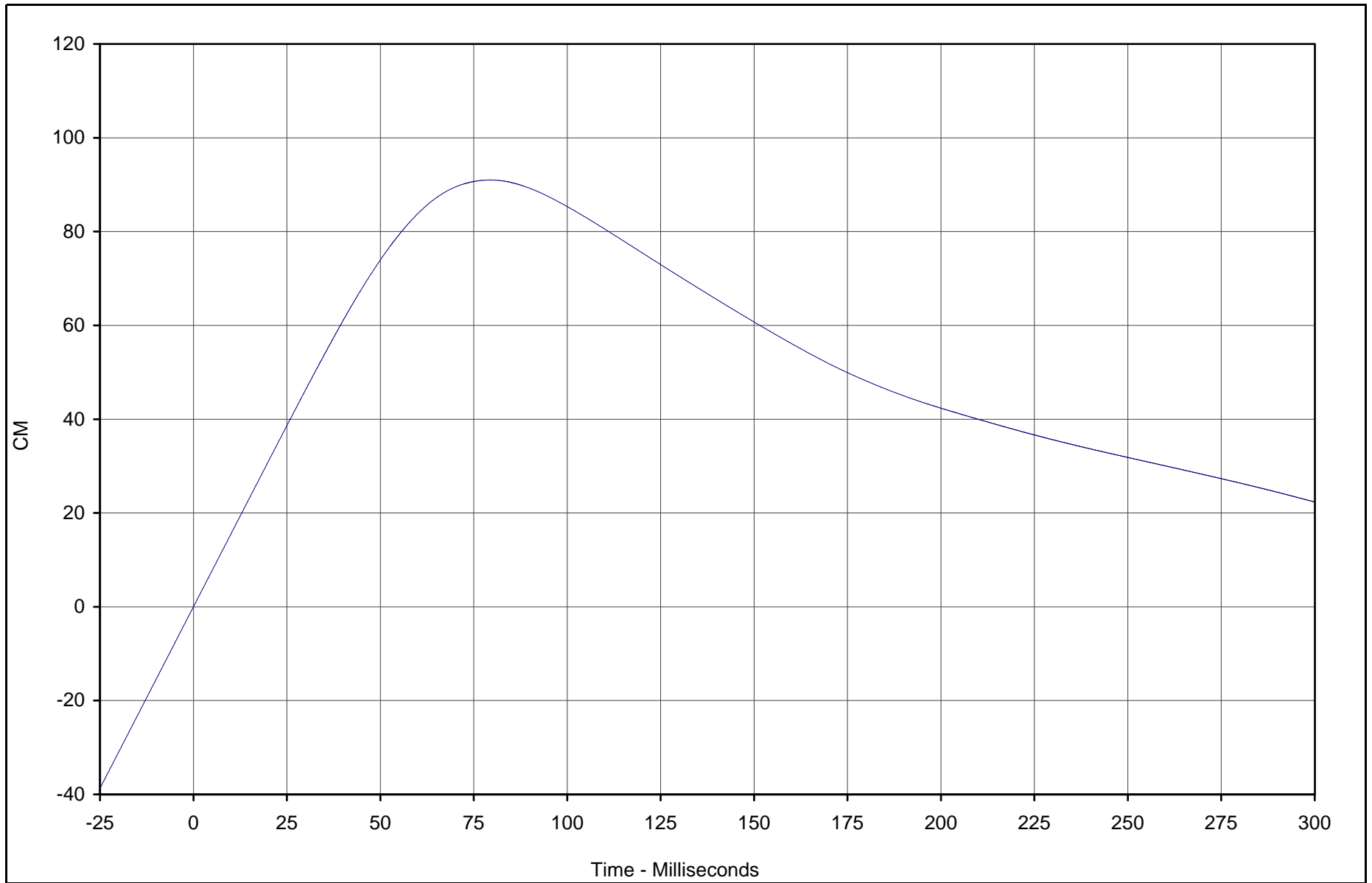
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-84



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary X Displ.	057	IN2	CM	91.0	79.4	0.0	0.0	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

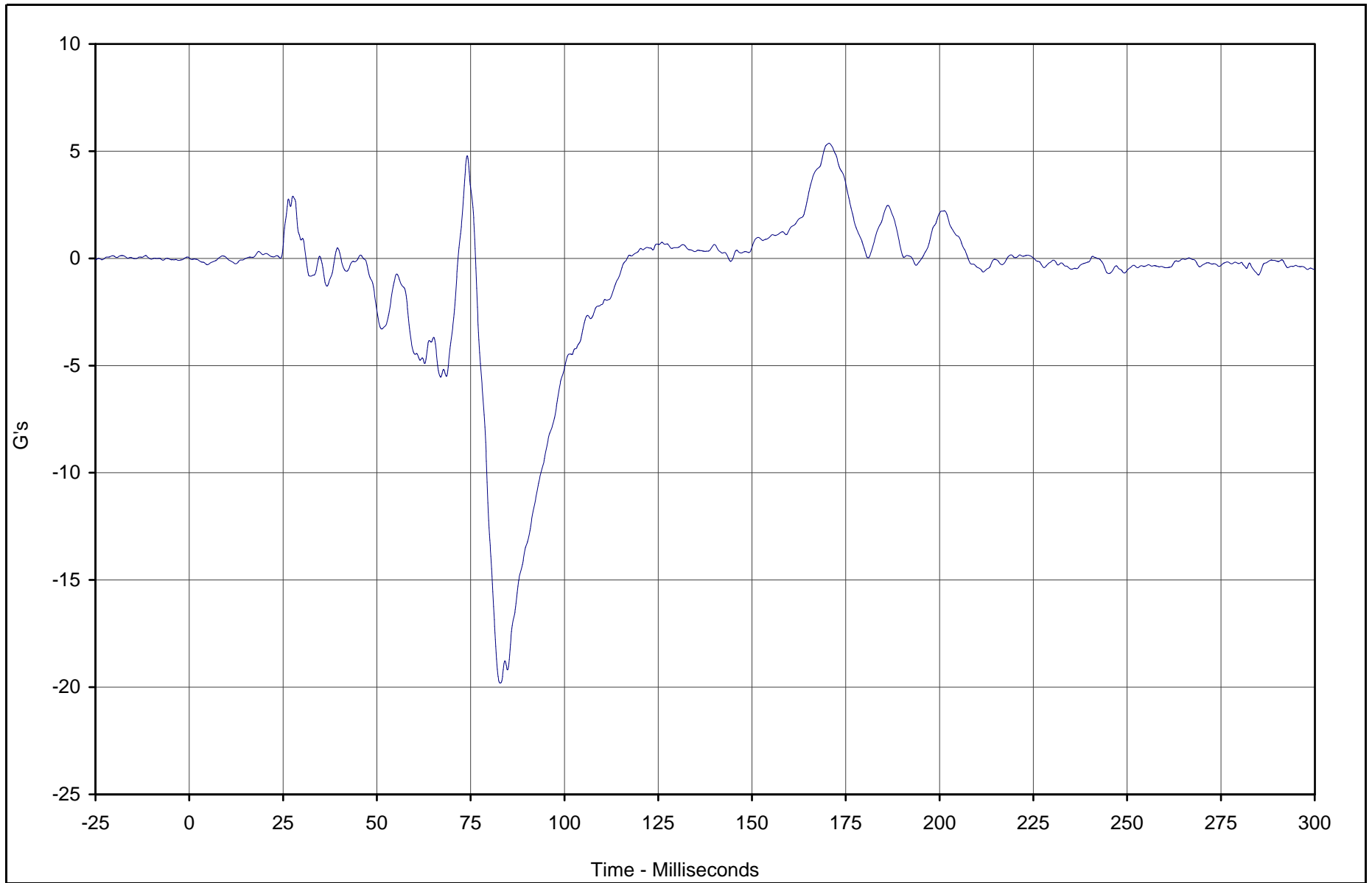
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-85

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary Y	058	FIL	G's	5.4	170.5	-19.8	82.9	180

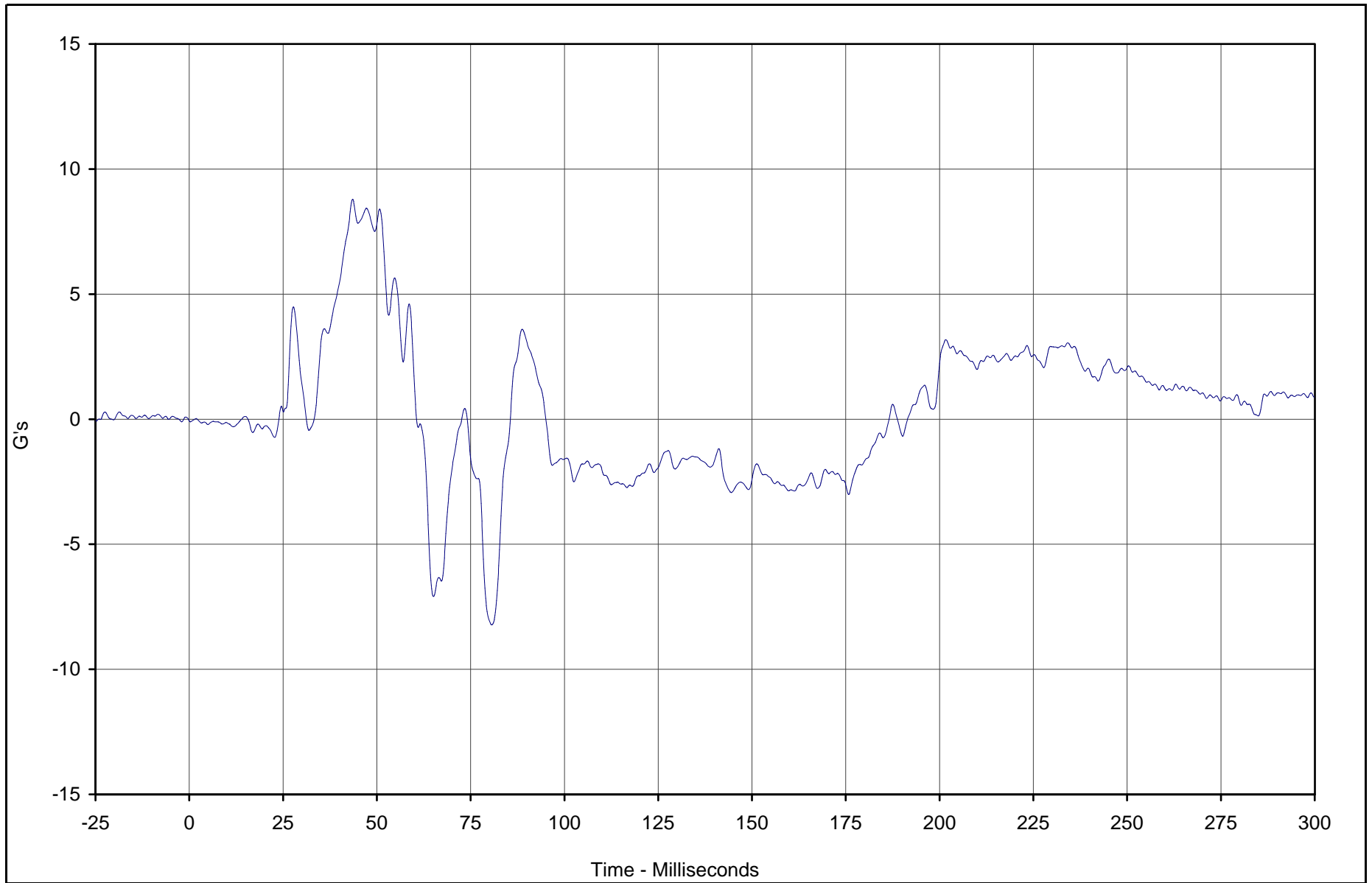


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary Z	059	FIL	G's	8.8	43.5	-8.2	80.6	180



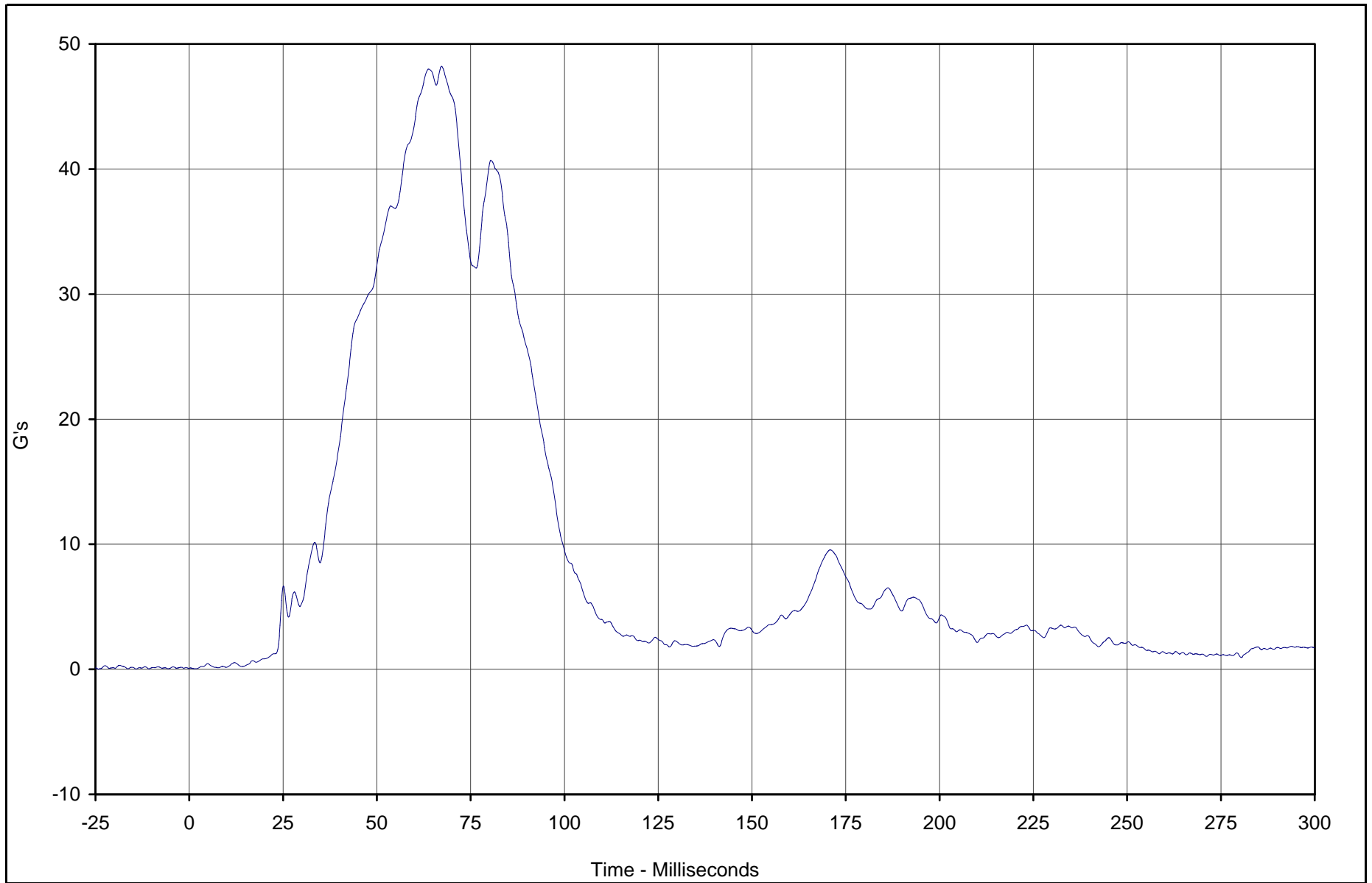
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-87



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Resultant Primary	057	RES	G's	48.2	67.2	0.1	2.0	180



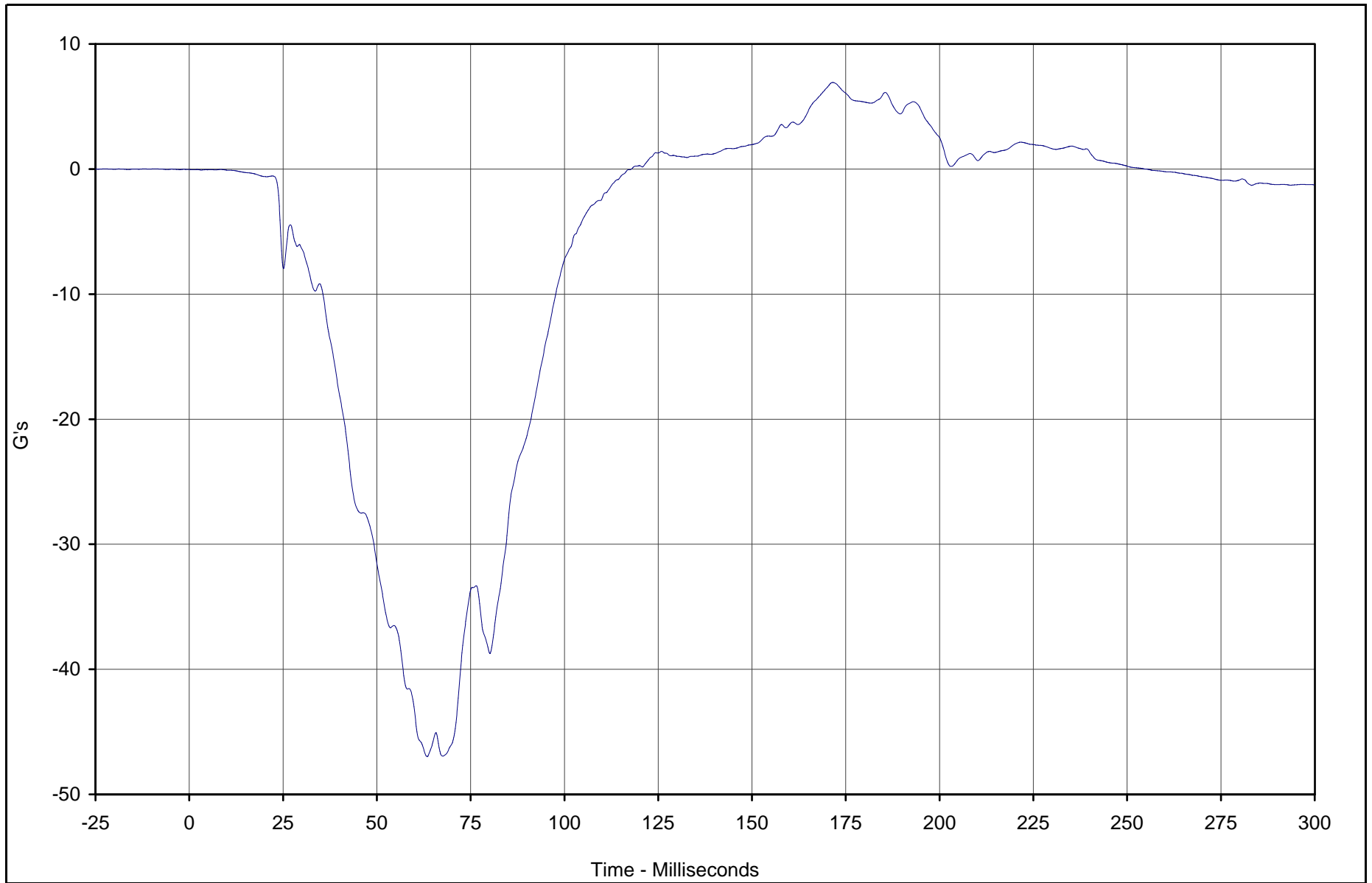
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant X	060	FIL	G's	6.9	171.6	-47.0	63.4	180

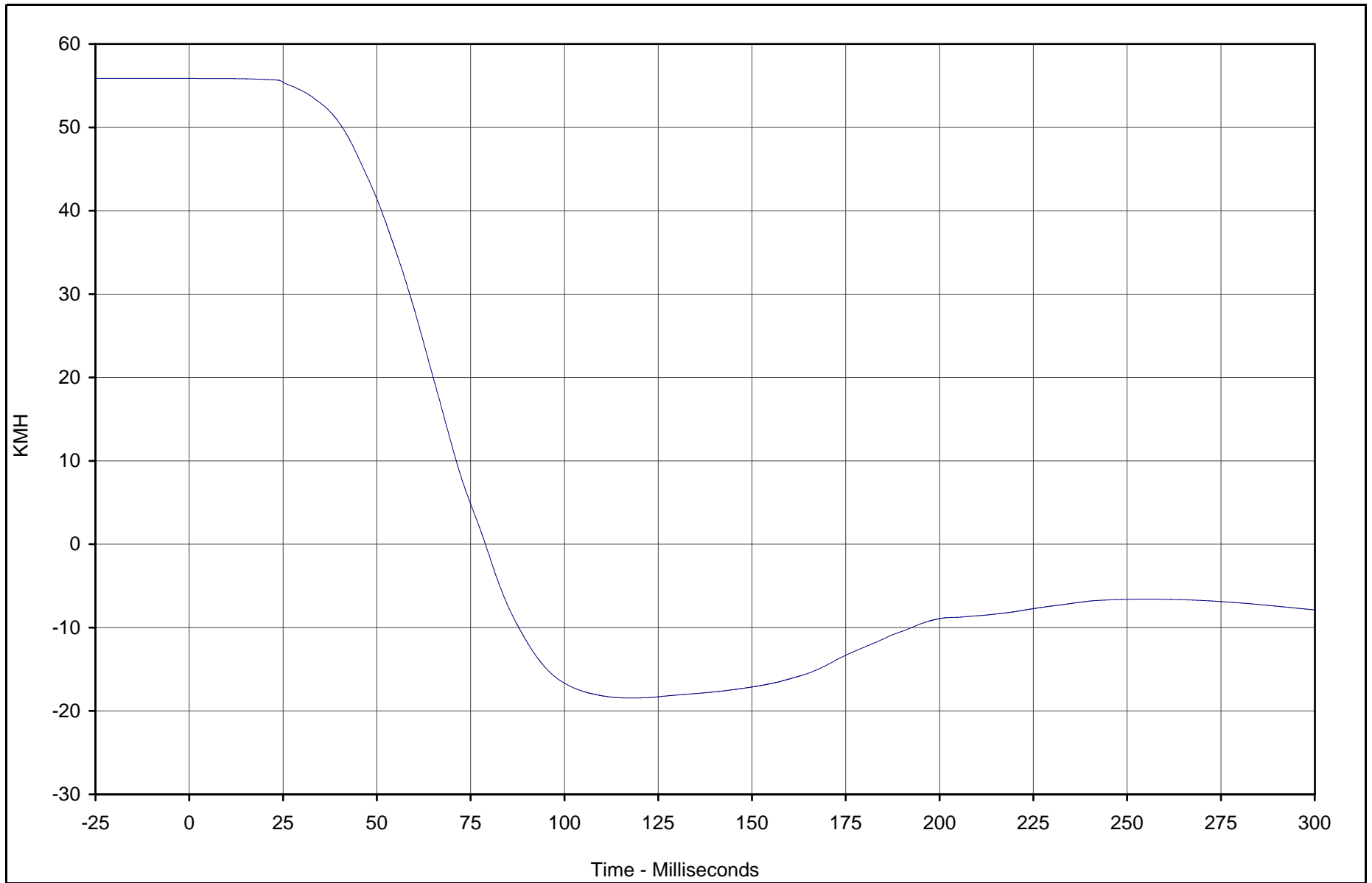


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant X Velocity	060	IN1	KMH	55.9	0.0	-18.4	117.9	180



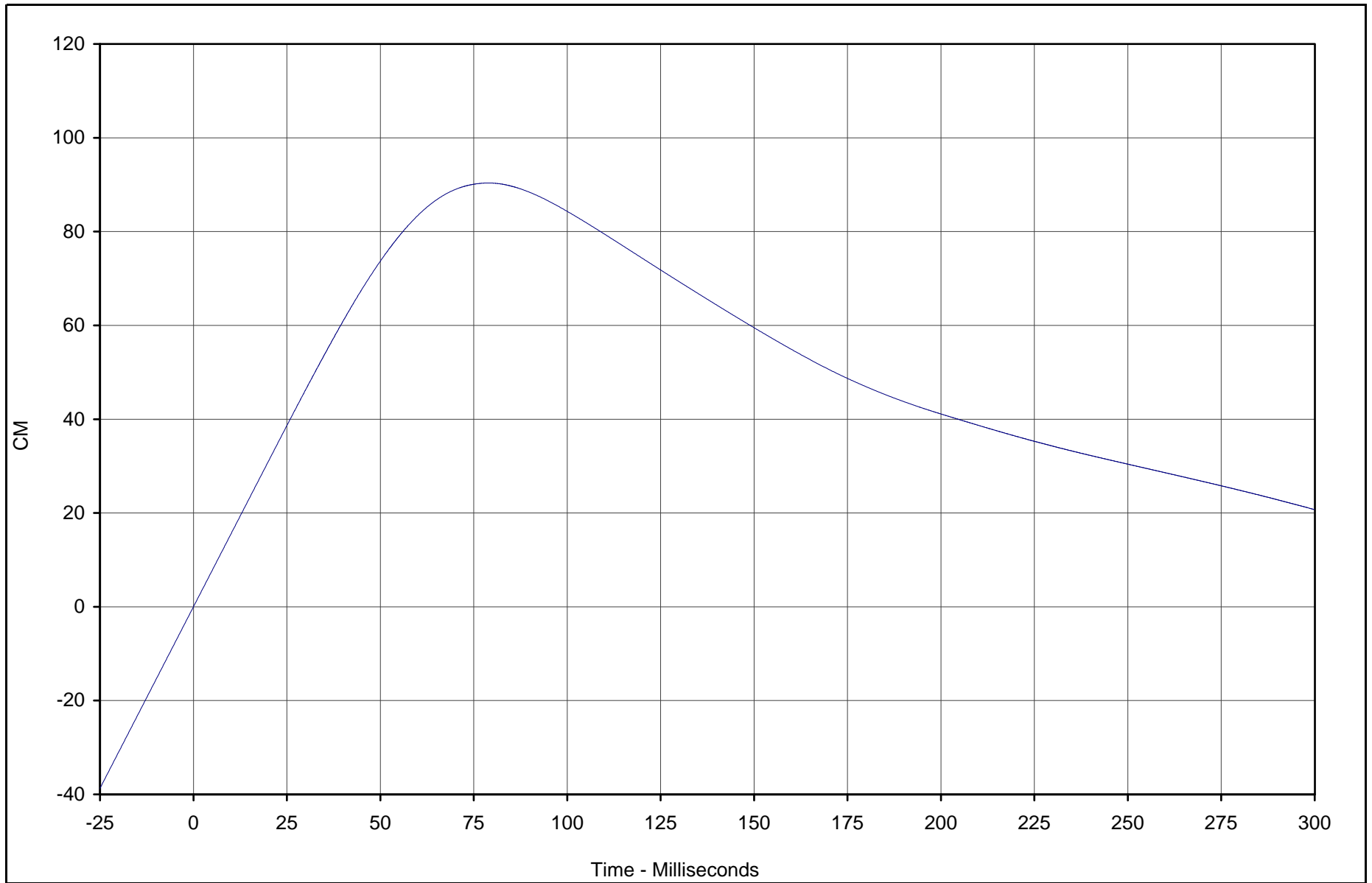
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-90



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant X Displ.	060	IN2	CM	90.4	78.9	0.0	0.0	180



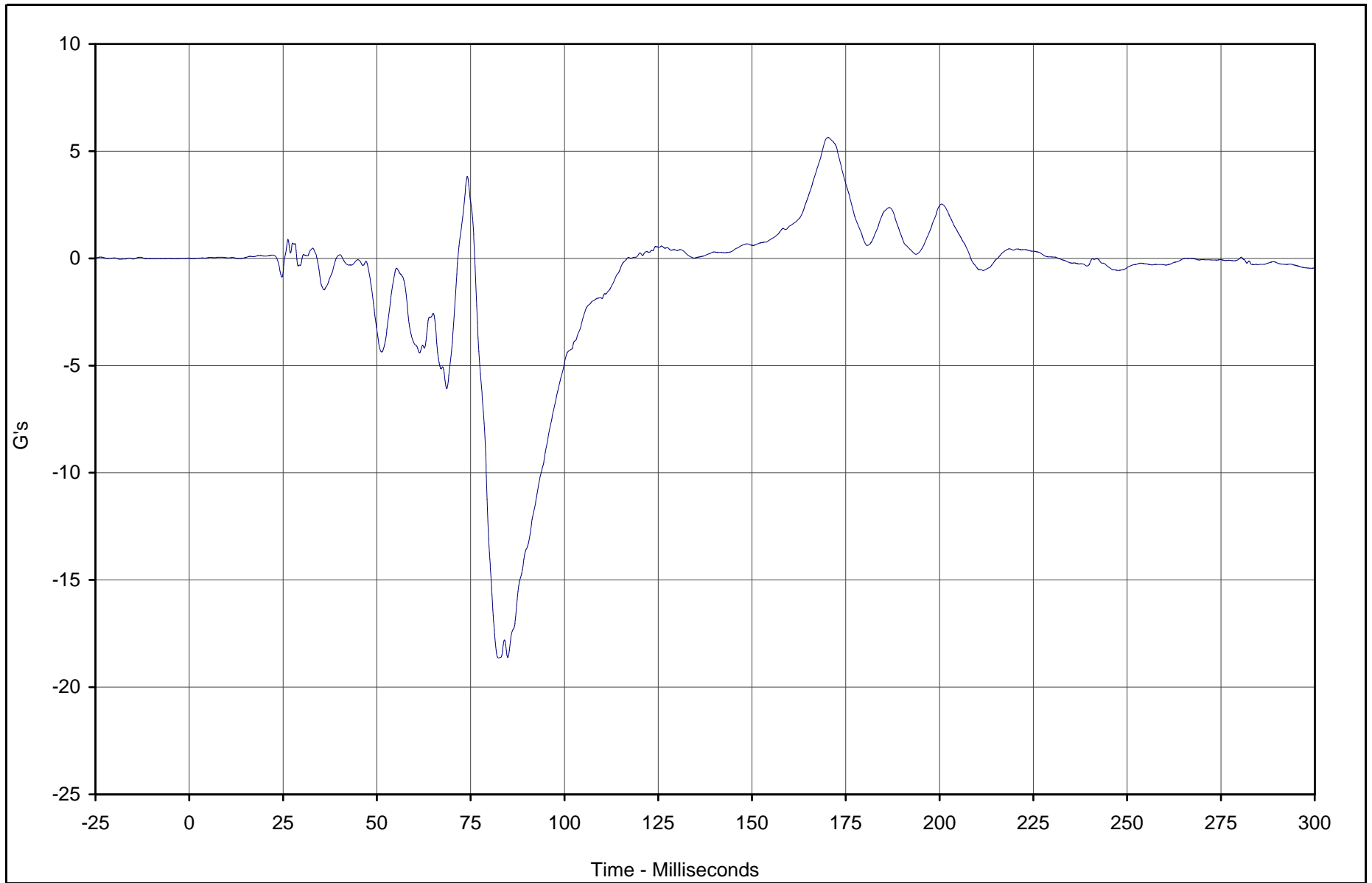
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant Y	061	FIL	G's	5.6	170.3	-18.6	82.4	180



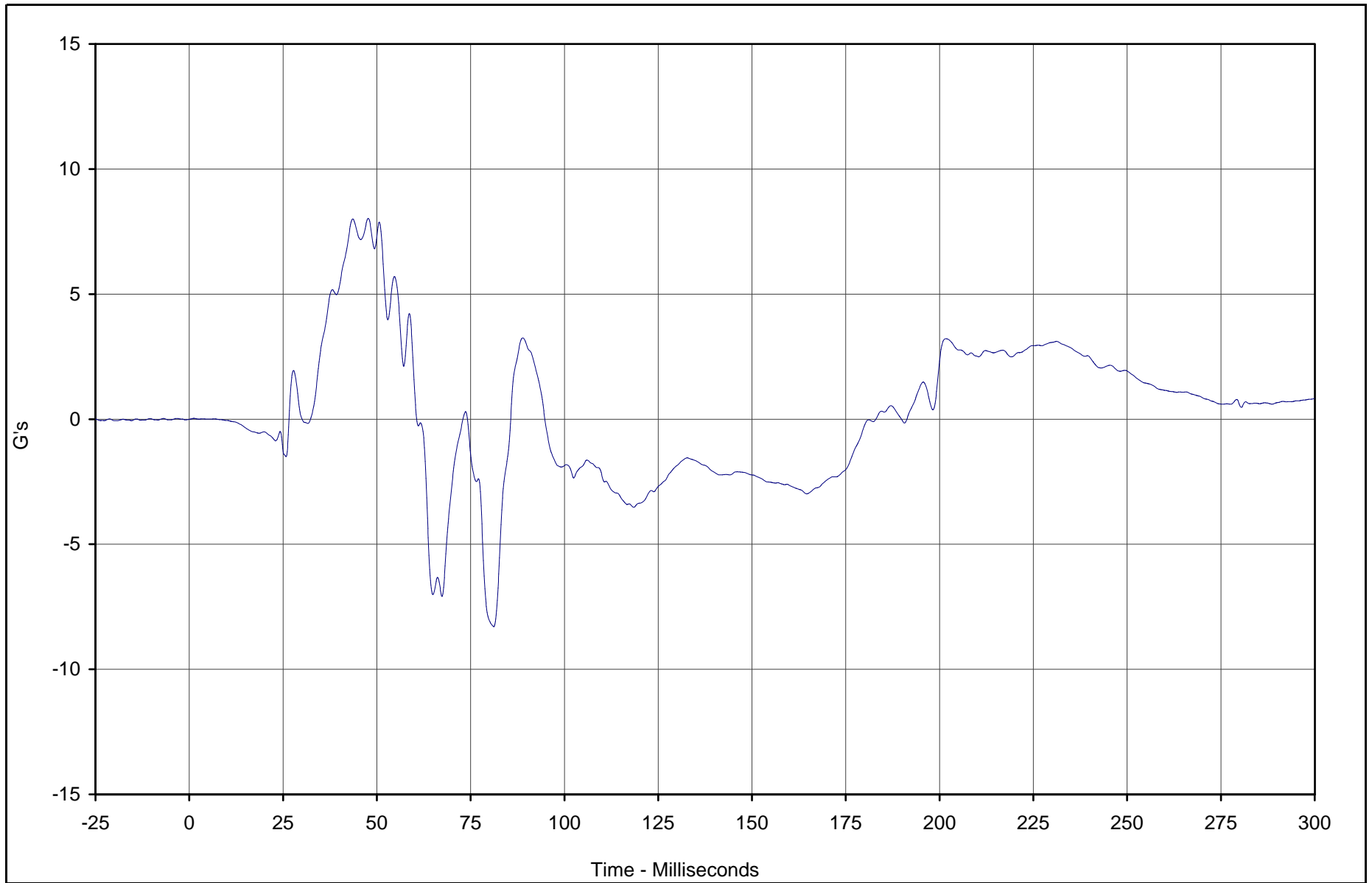
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-92



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant Z	062	FIL	G's	8.0	47.7	-8.3	81.2	180



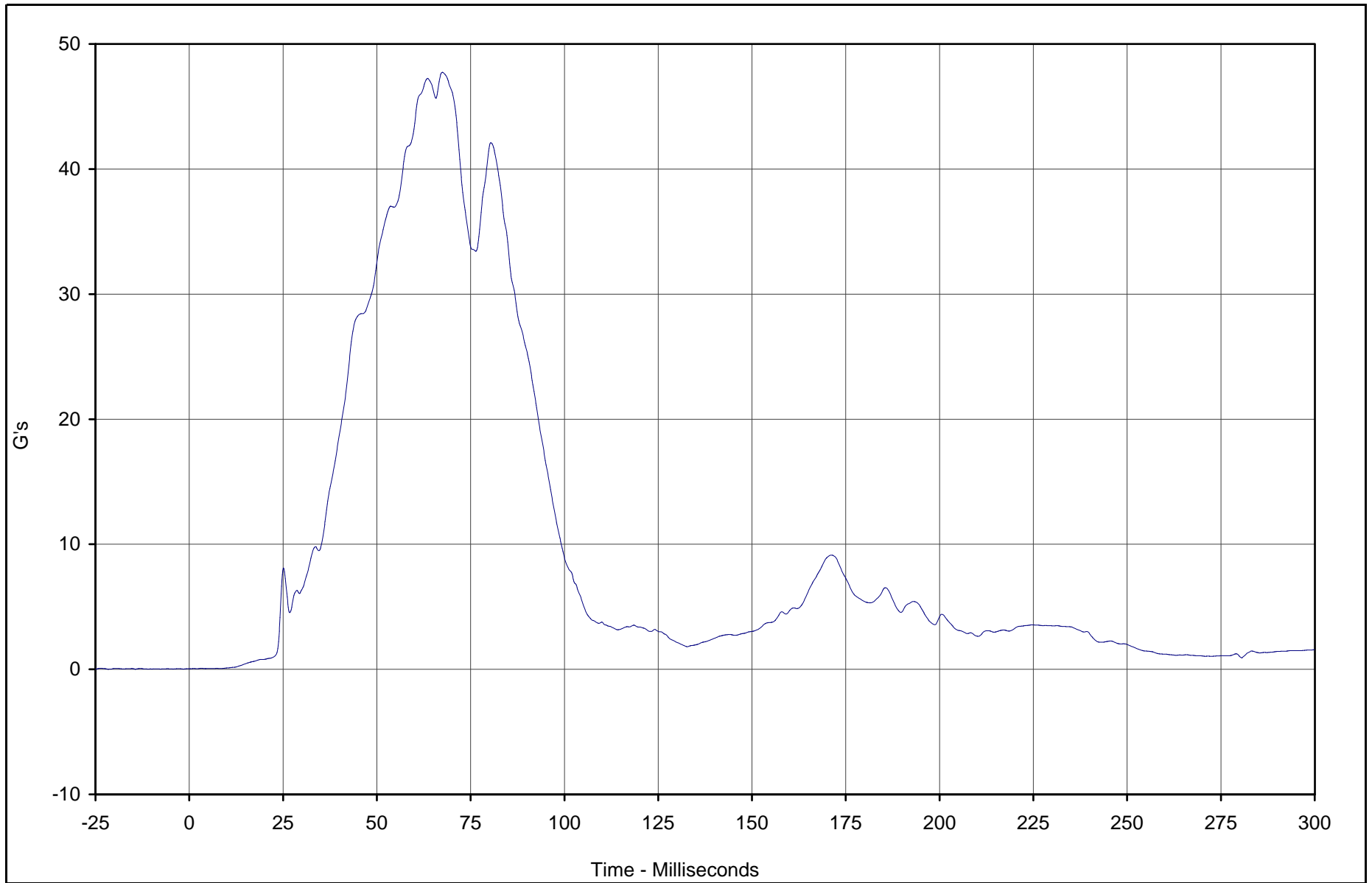
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Resultant Redundant	060	RES	G's	47.7	67.5	0.0	0.2	180



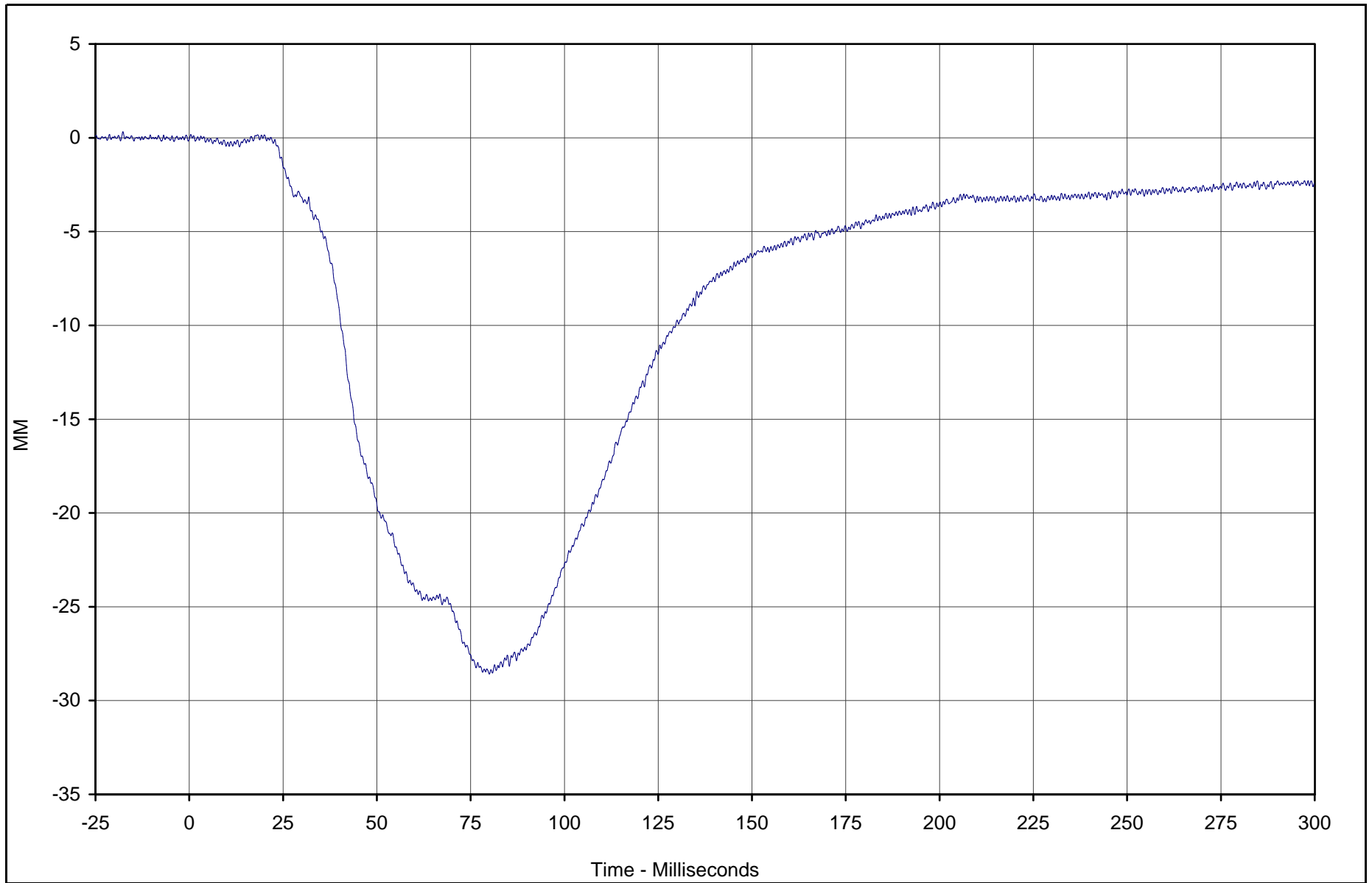
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-94



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Displacement X	063	FIL	MM	0.2	0.4	-28.6	80.0	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

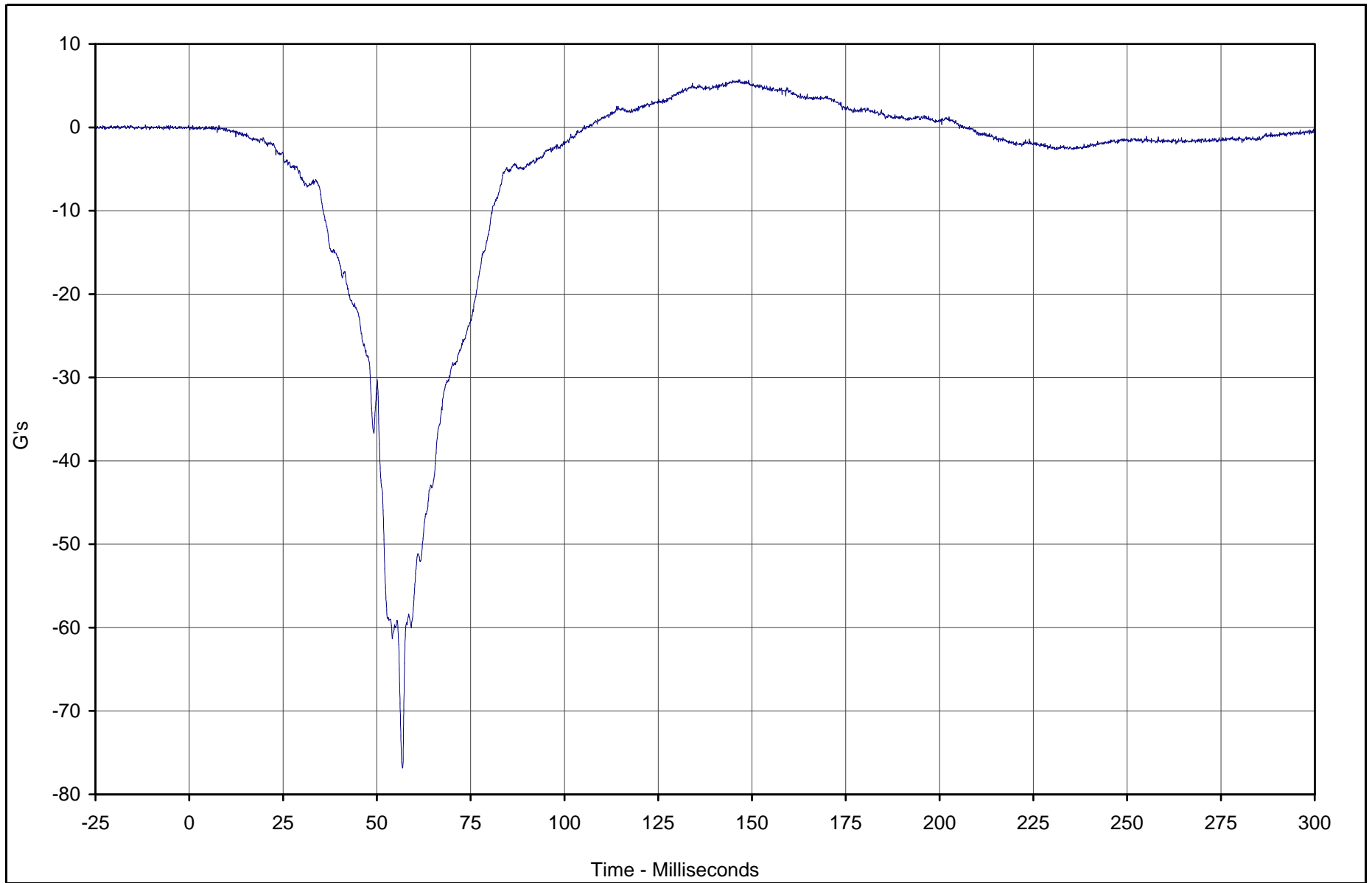
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-95

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis X	064	FIL	G's	5.7	146.5	-76.8	56.8	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

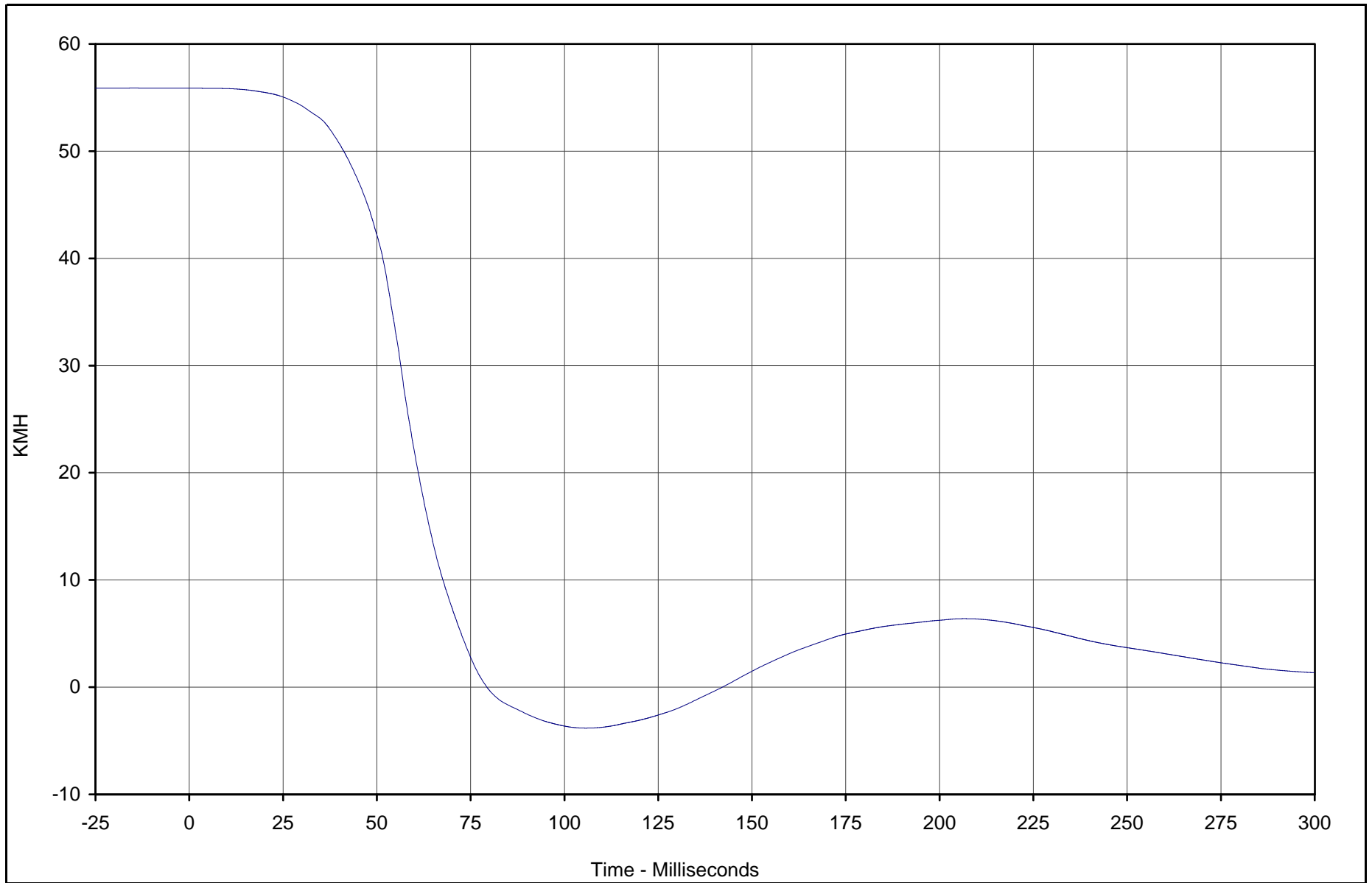
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-96

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis X Velocity	064	IN1	KMH	55.9	0.0	-3.8	105.7	180



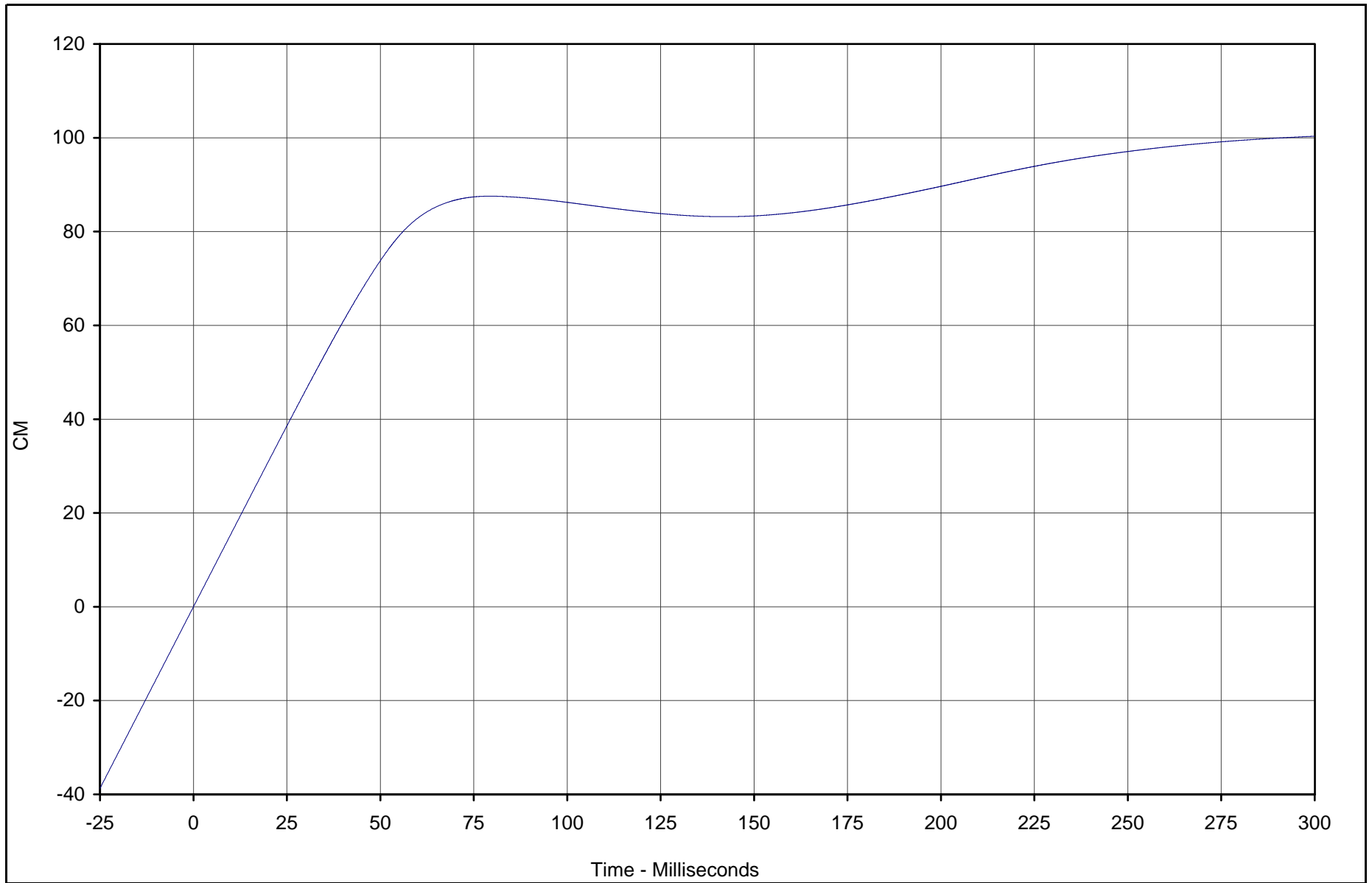
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-97



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis X Displ.	064	IN2	CM	100.3	299.9	0.0	0.0	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

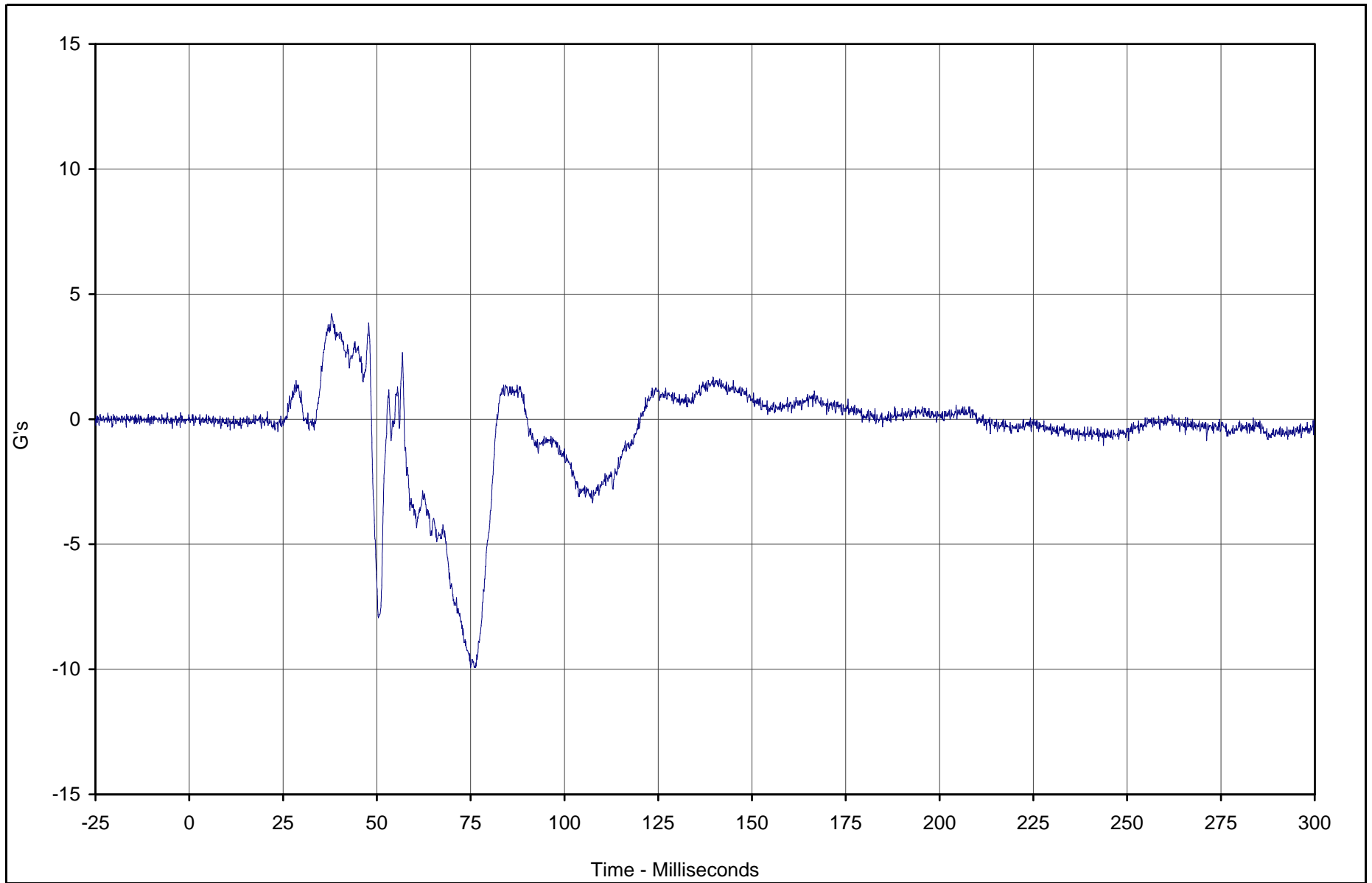
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-98

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis Y	065	FIL	G's	4.2	37.9	-9.9	75.0	1000

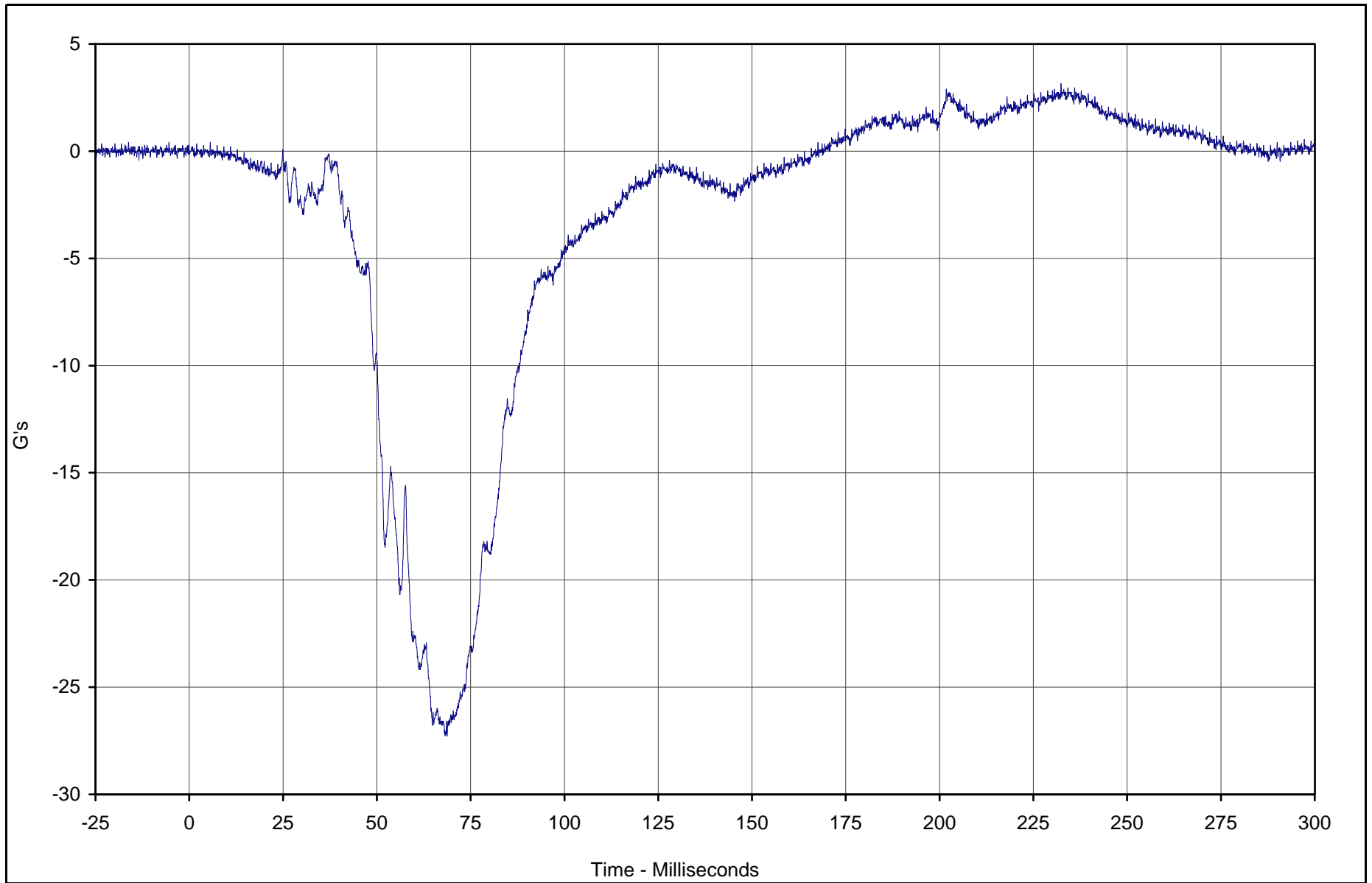


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis Z	066	FIL	G's	3.2	232.4	-27.3	68.2	1000



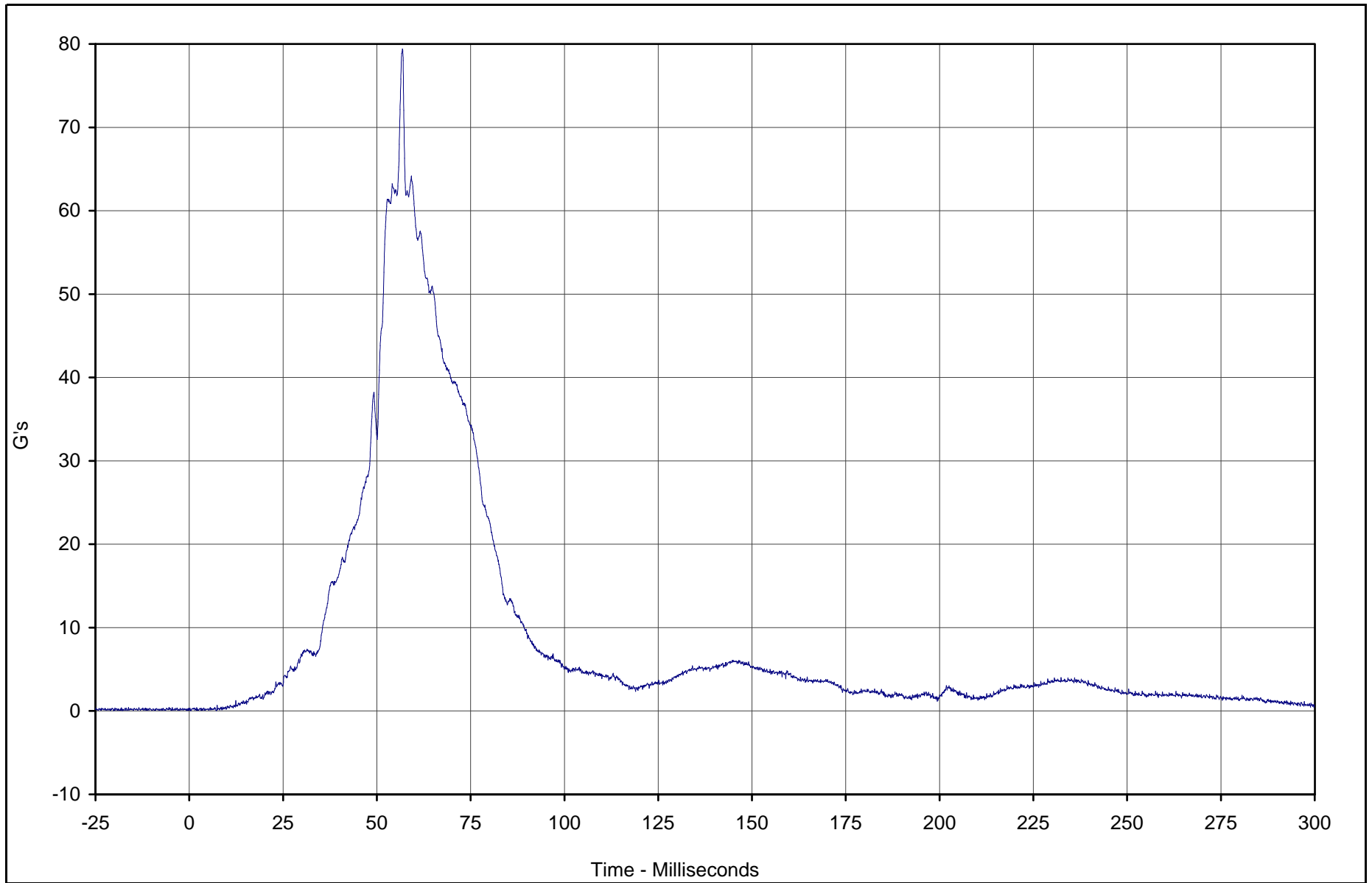
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-100



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis Resultant	066	RES	G's	79.4	56.8	0.0	7.2	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

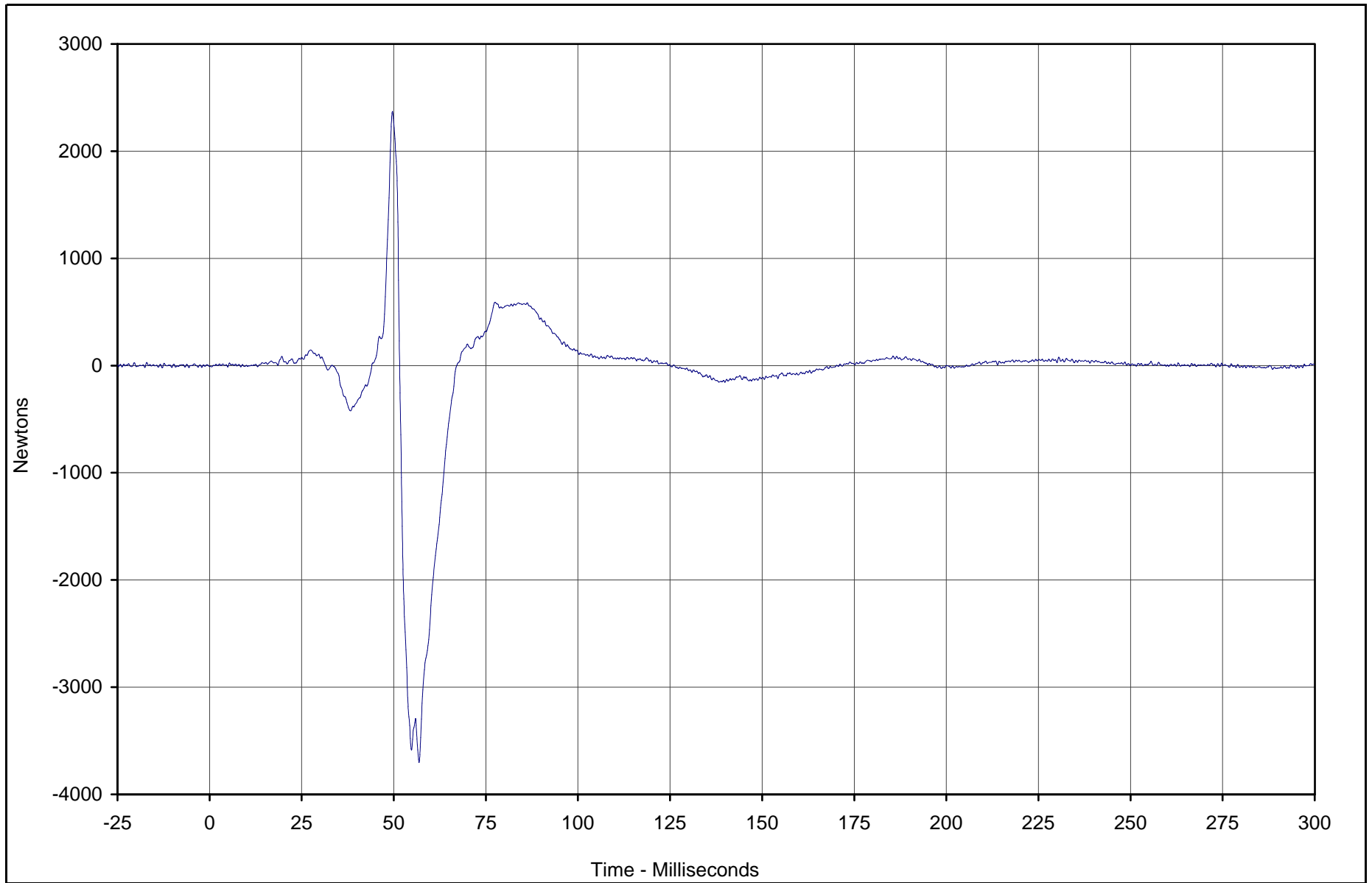
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-101



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Femur Force	067	FIL	Newtons	2371.6	49.6	-3703.6	56.9	600



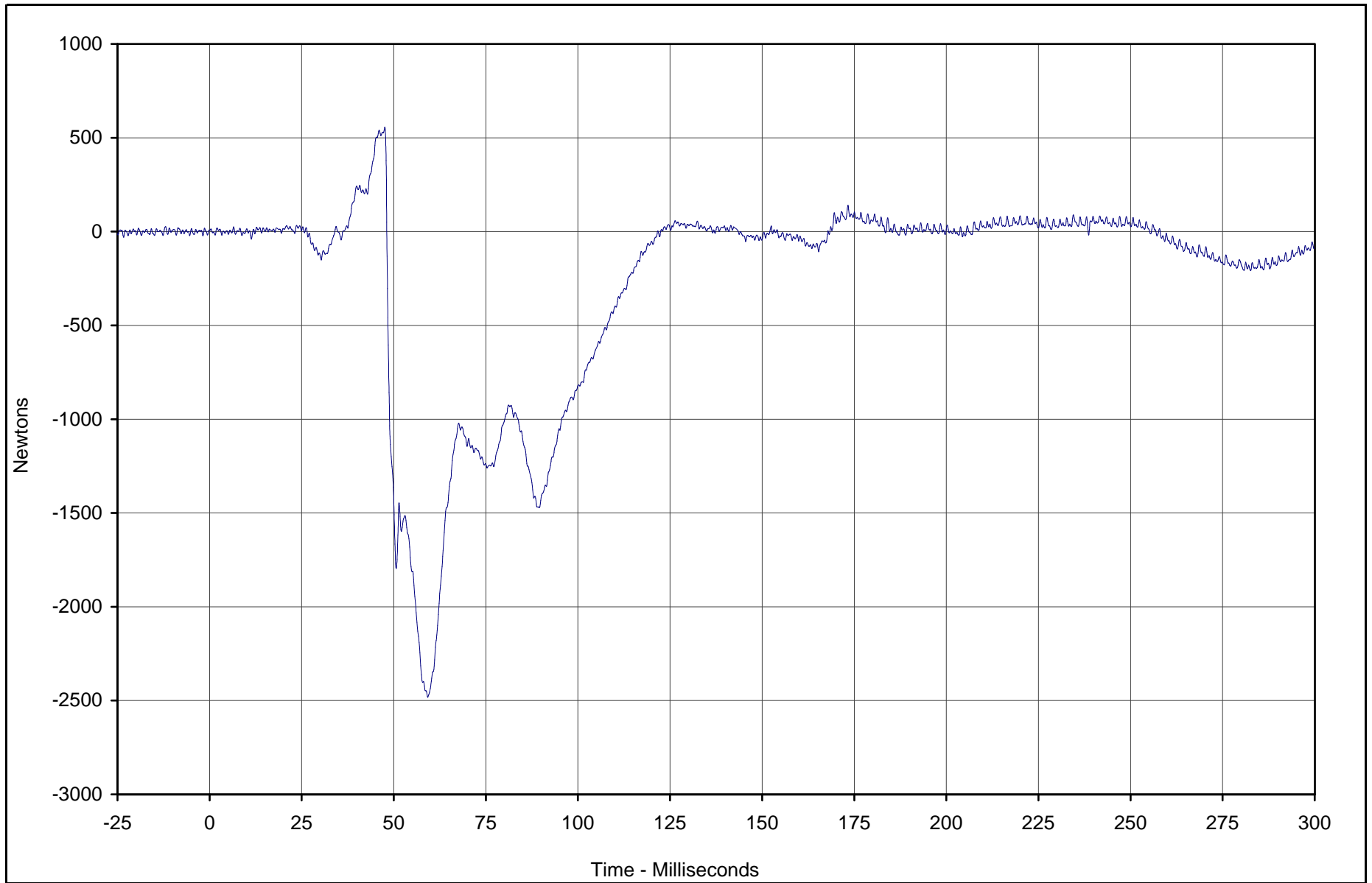
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-102



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Femur Force	068	FIL	Newtons	556.8	47.6	-2483.2	59.2	600



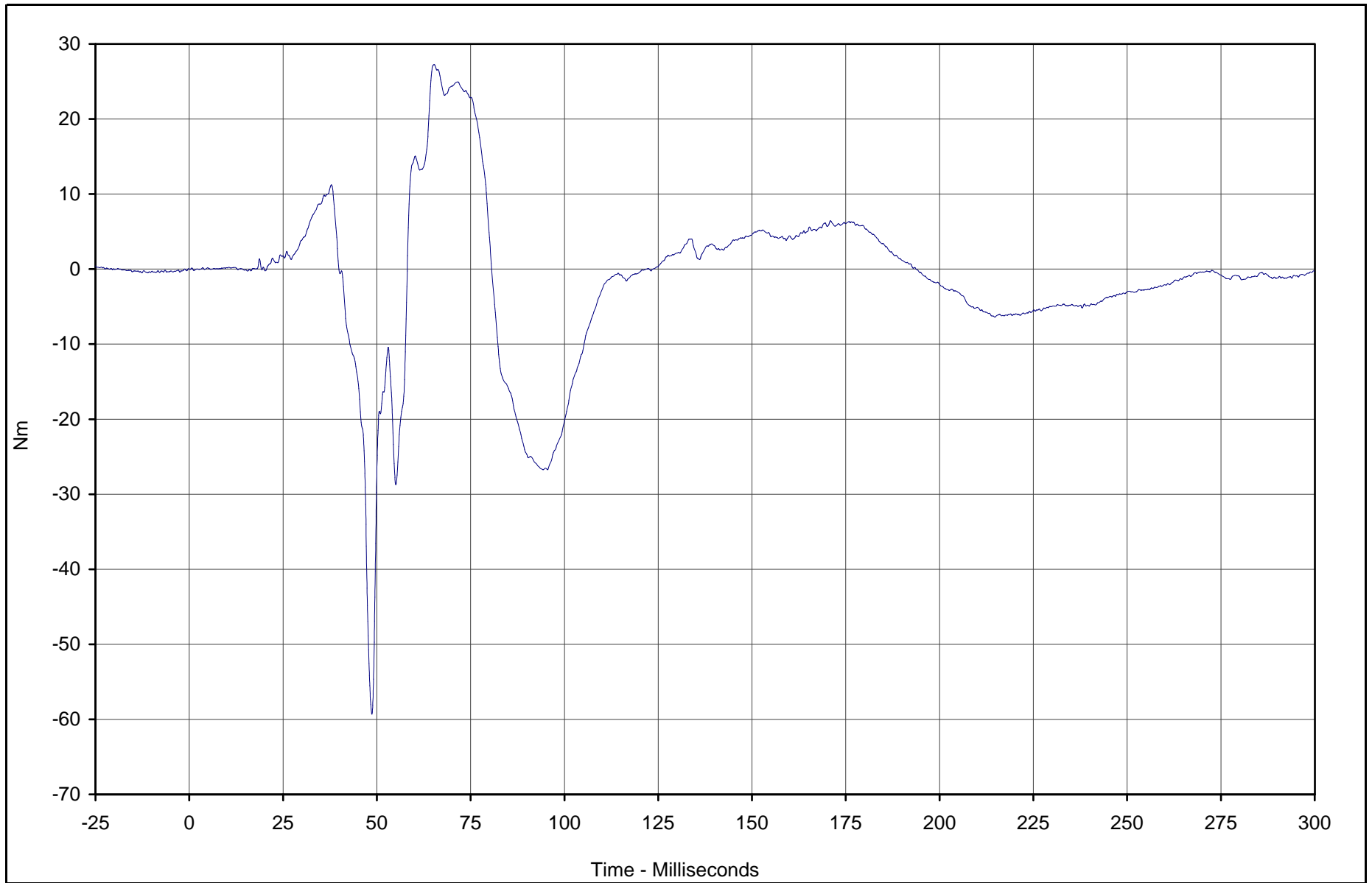
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Upper Tibia Moment X	069	FIL	Nm	27.3	65.3	-59.3	48.7	600



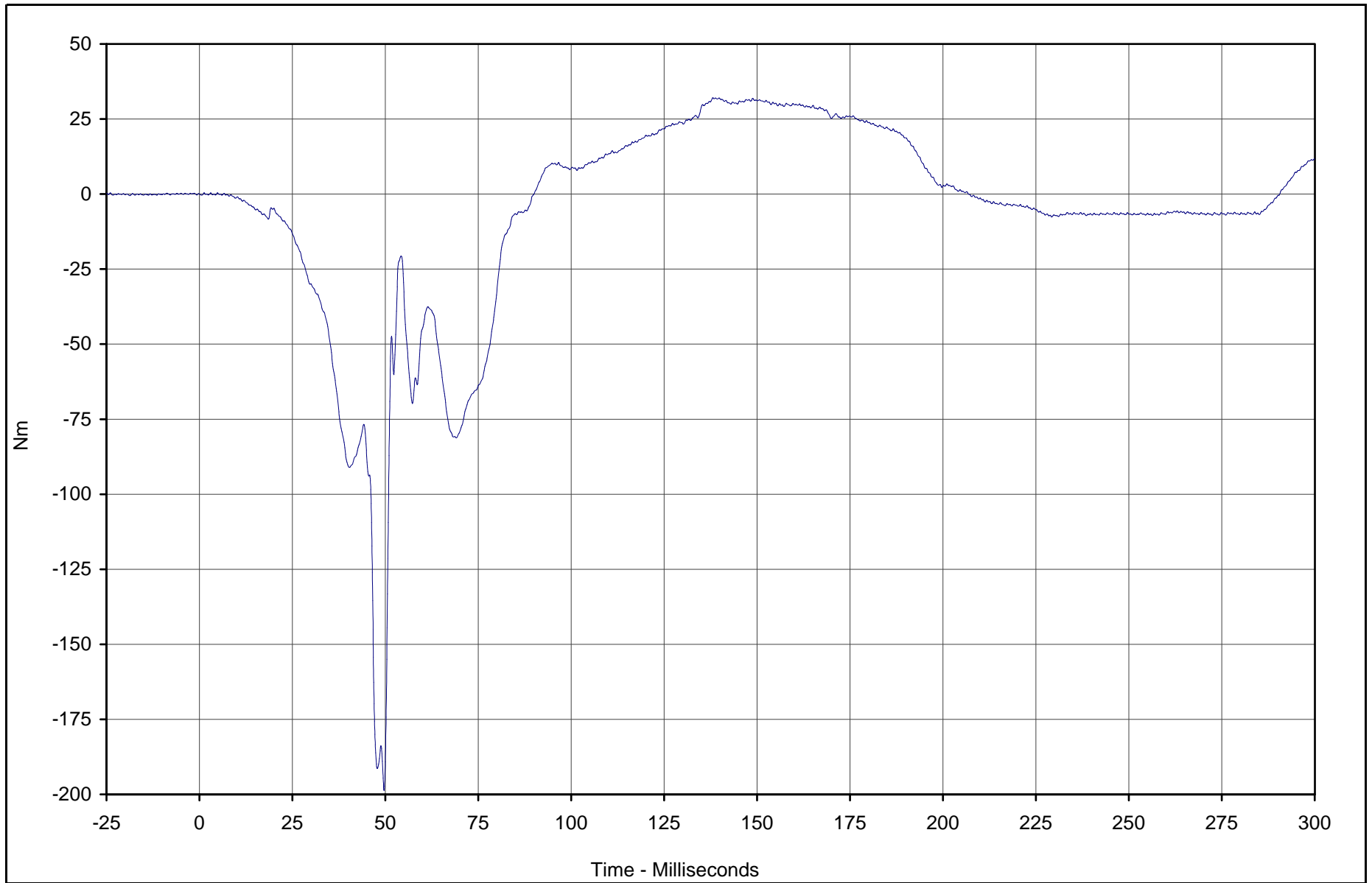
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-104



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Upper Tibia Moment Y	070	FIL	Nm	32.1	138.1	-198.7	49.7	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

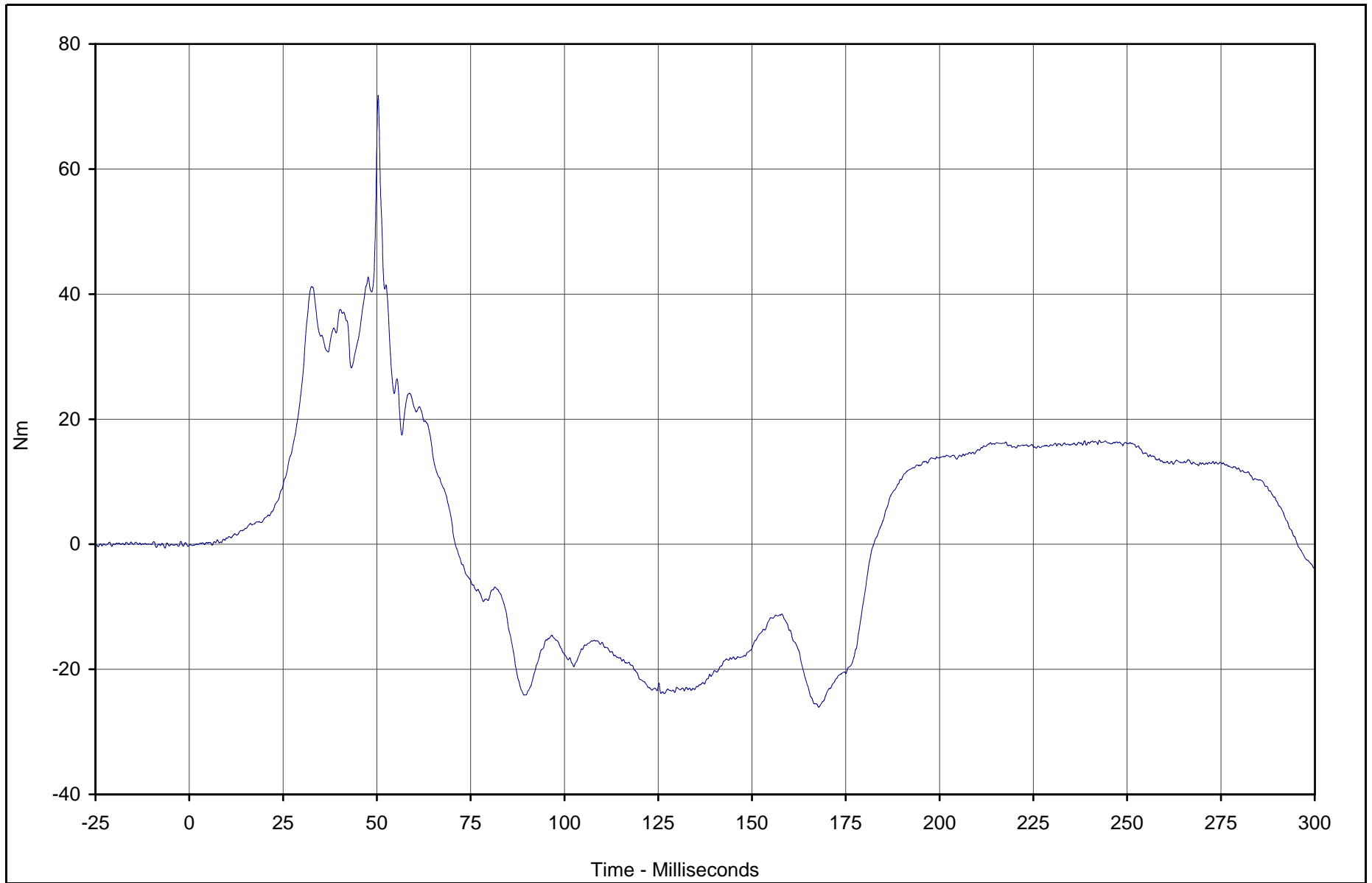
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-105



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Upper Tibia Moment X	071	FIL	Nm	71.8	50.4	-26.1	167.8	600



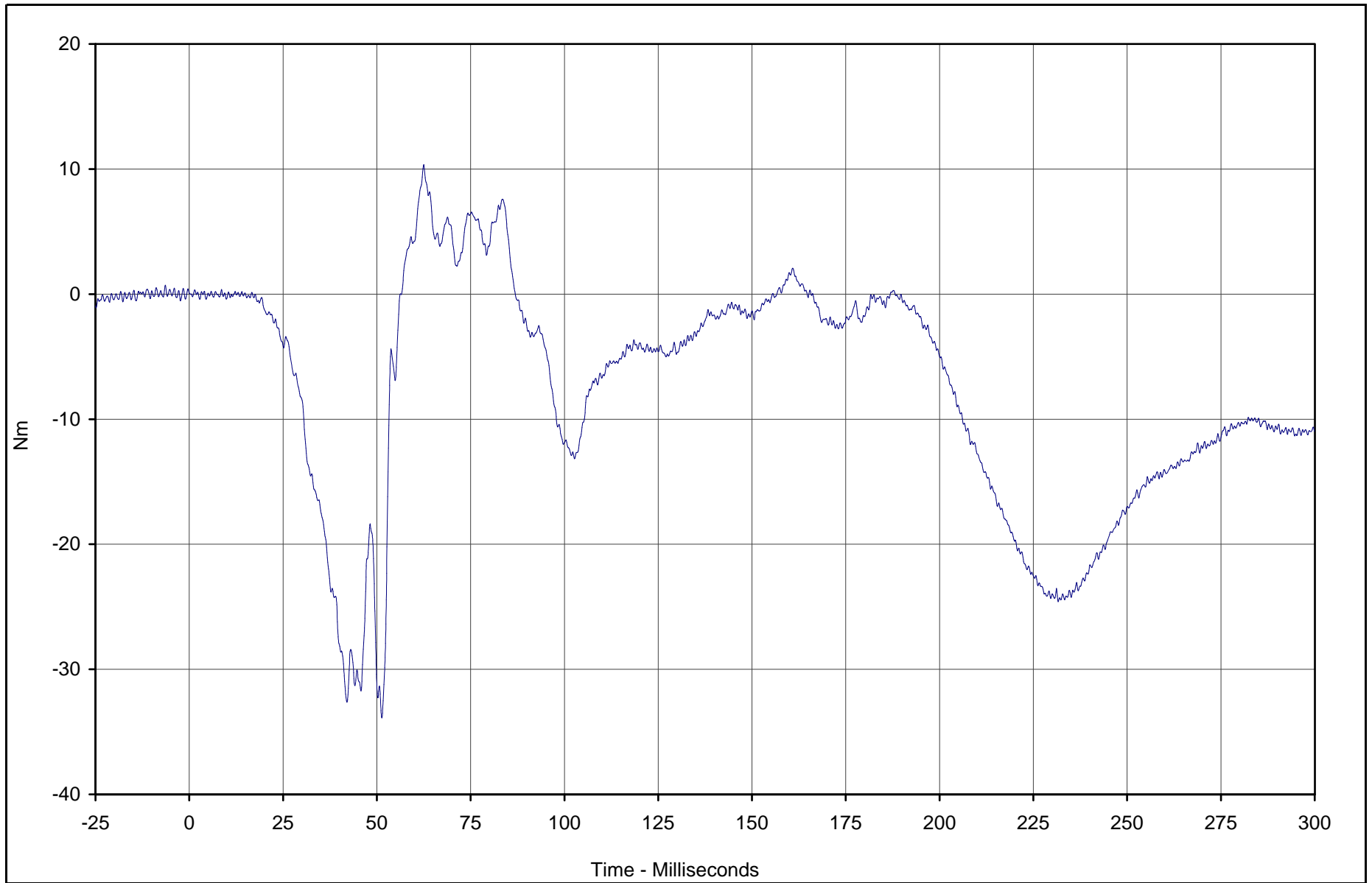
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Upper Tibia Moment Y	072	FIL	Nm	10.4	62.5	-33.9	51.3	600



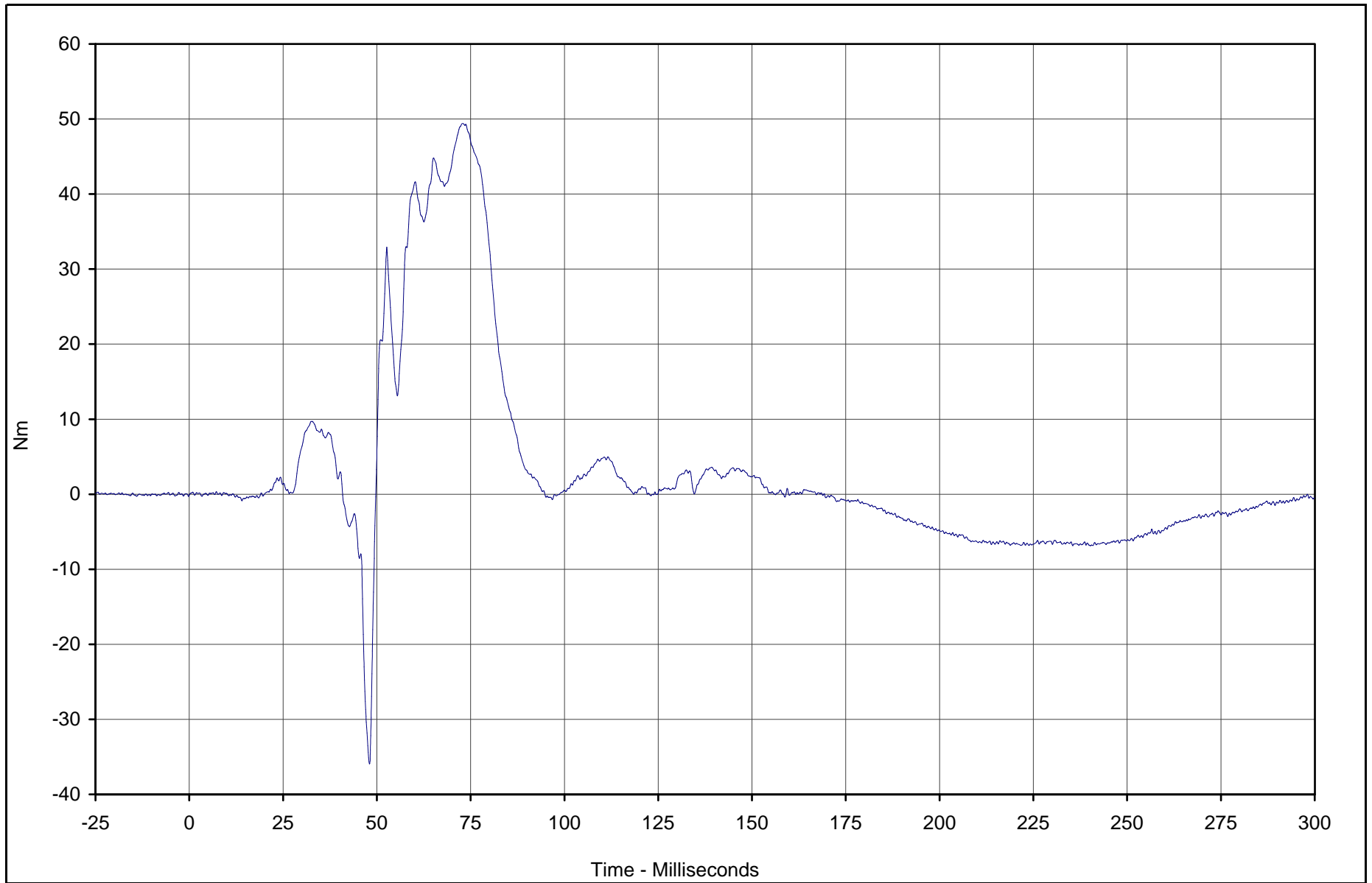
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-107



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Lower Tibia Moment X	073	FIL	Nm	49.4	72.9	-35.9	48.0	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

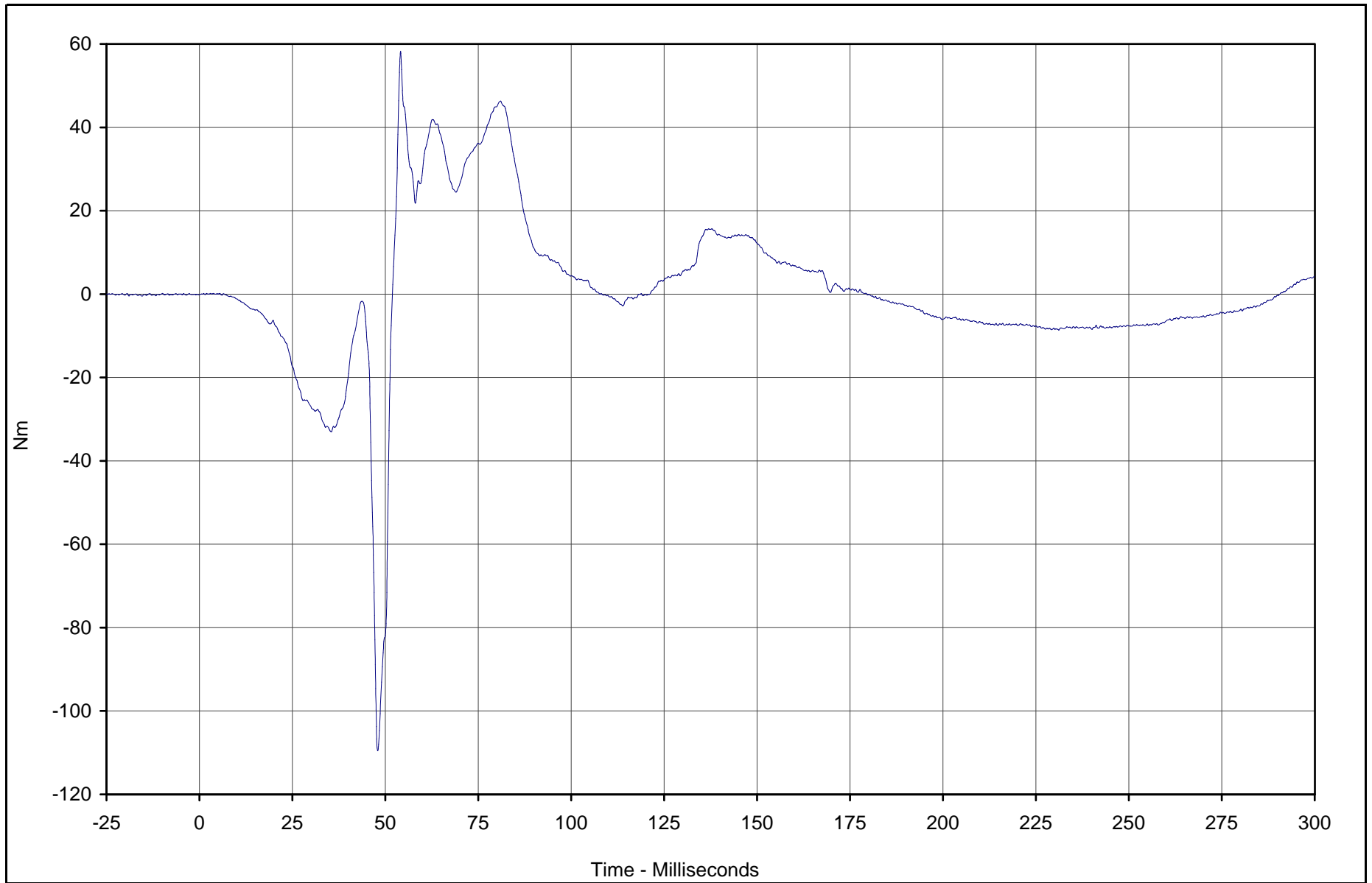
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-108



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Lower Tibia Moment Y	074	FIL	Nm	58.3	54.1	-109.6	48.0	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

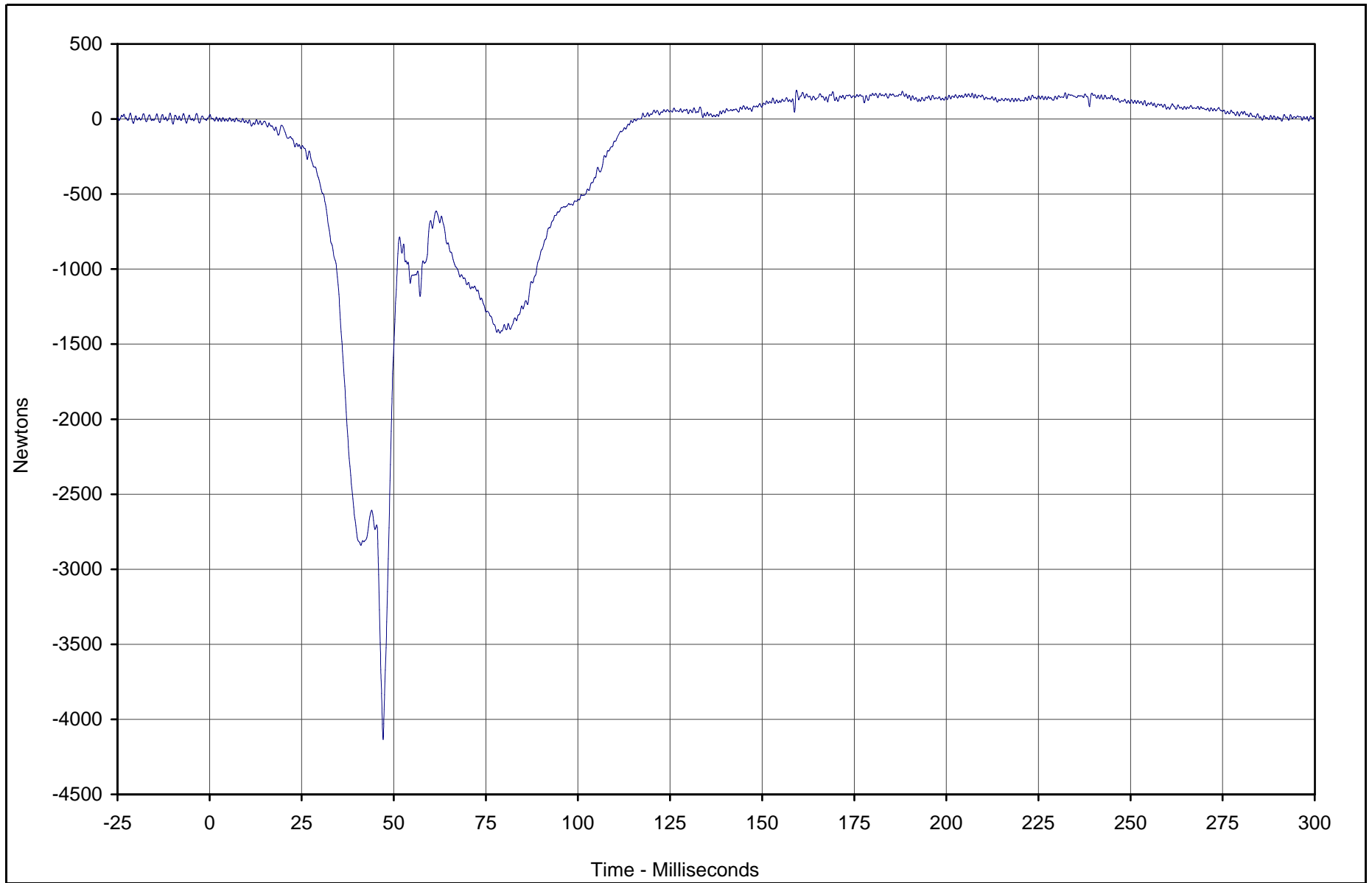
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-109

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Lower Tibia Force Z	075	FIL	Newtons	192.0	159.3	-4134.9	47.1	600

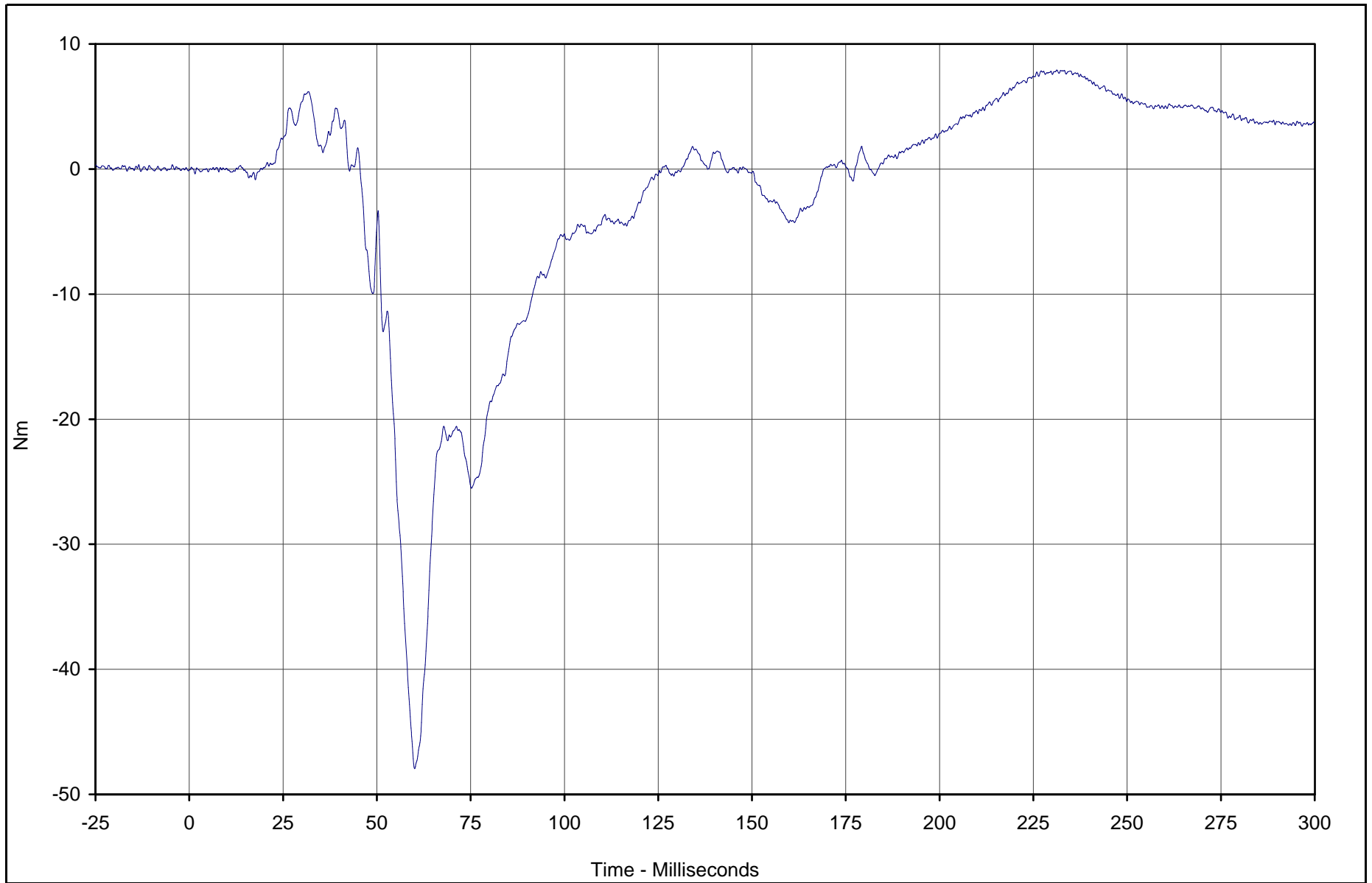


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Lower Tibia Moment X	076	FIL	Nm	7.9	231.3	-47.9	60.1	600



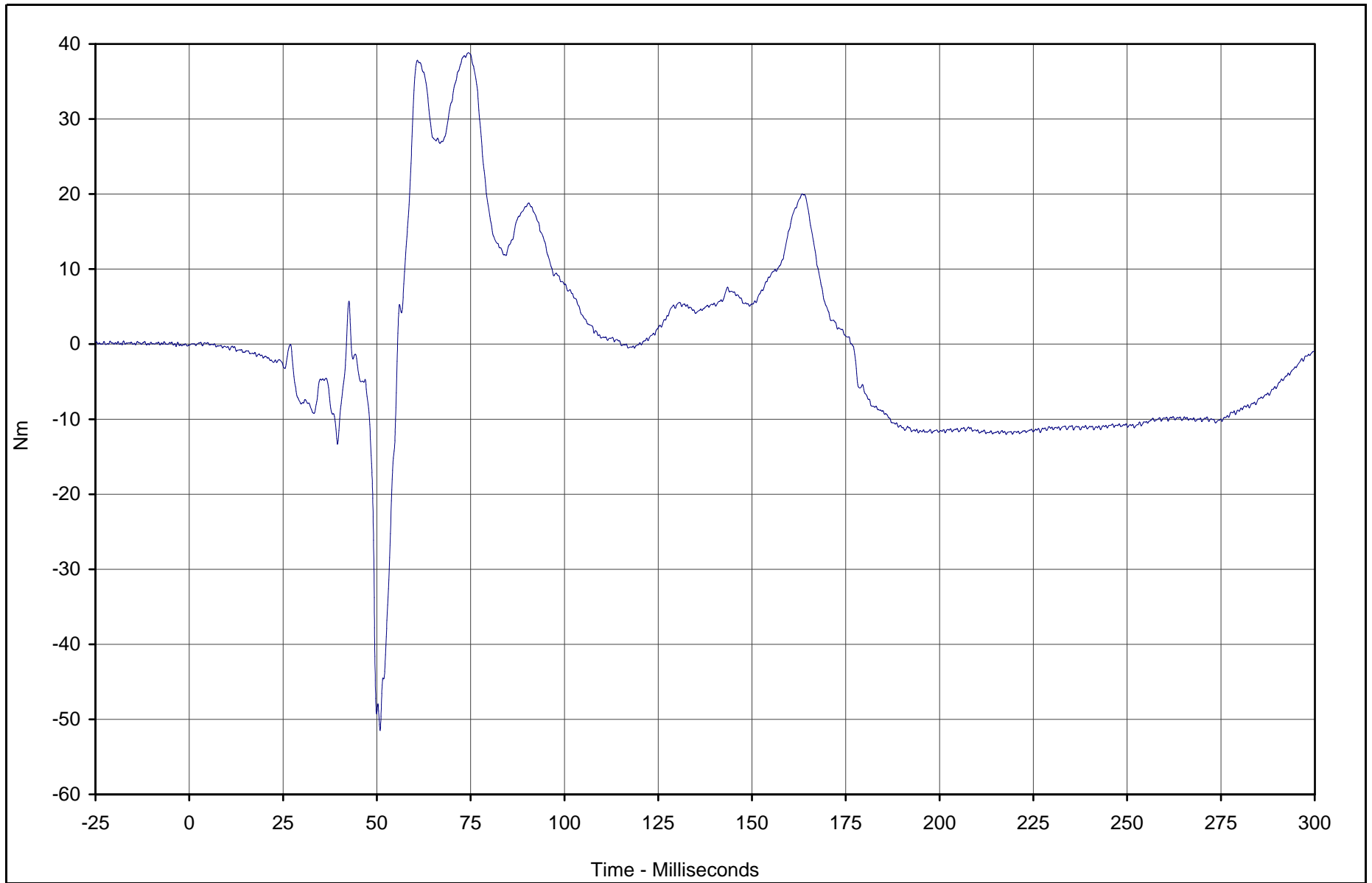
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-111



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Lower Tibia Moment Y	077	FIL	Nm	38.8	74.4	-51.5	50.9	600



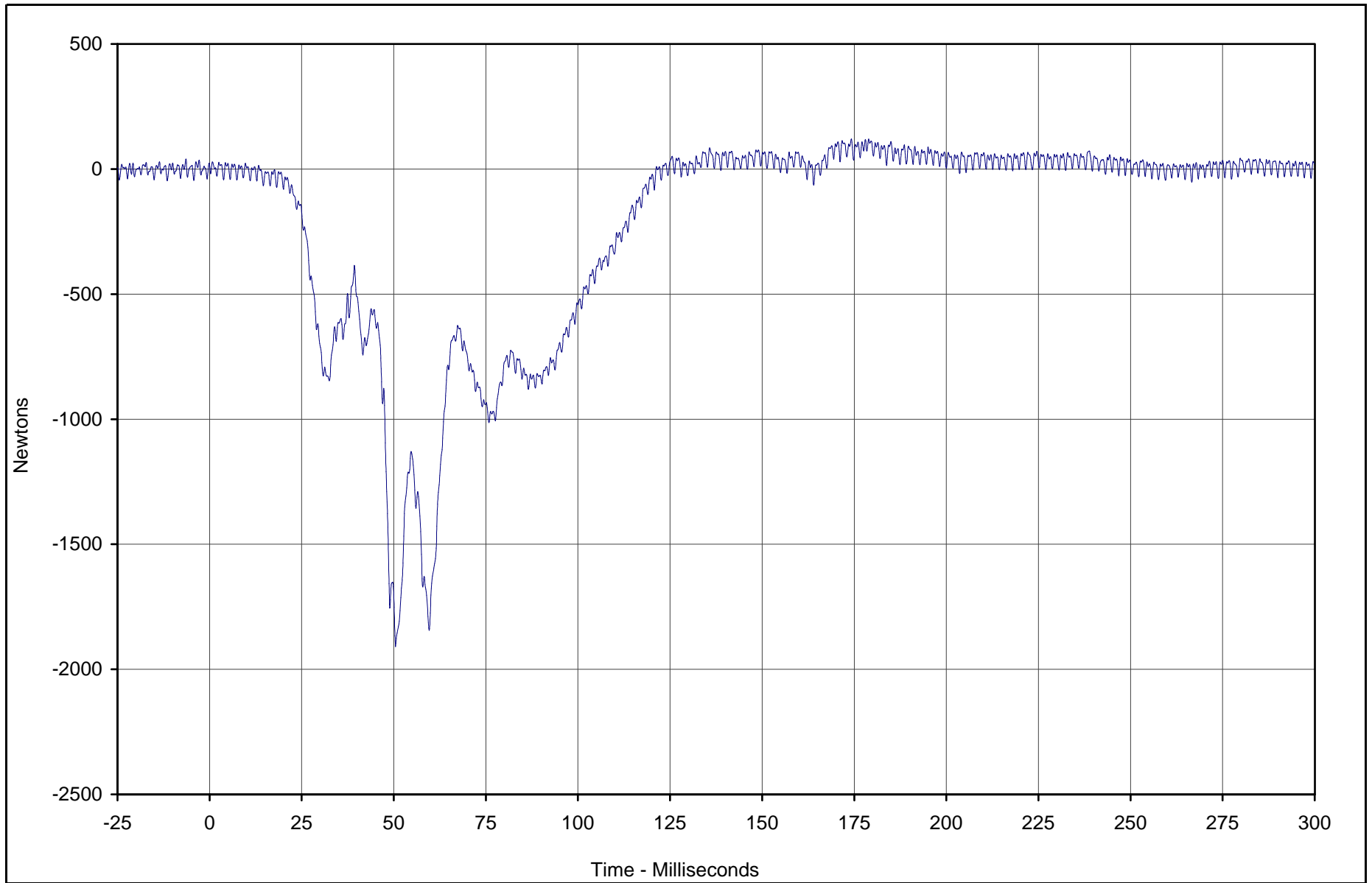
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right lower Tibia Force Z	078	FIL	Newtons	121.0	174.2	-1909.9	50.5	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

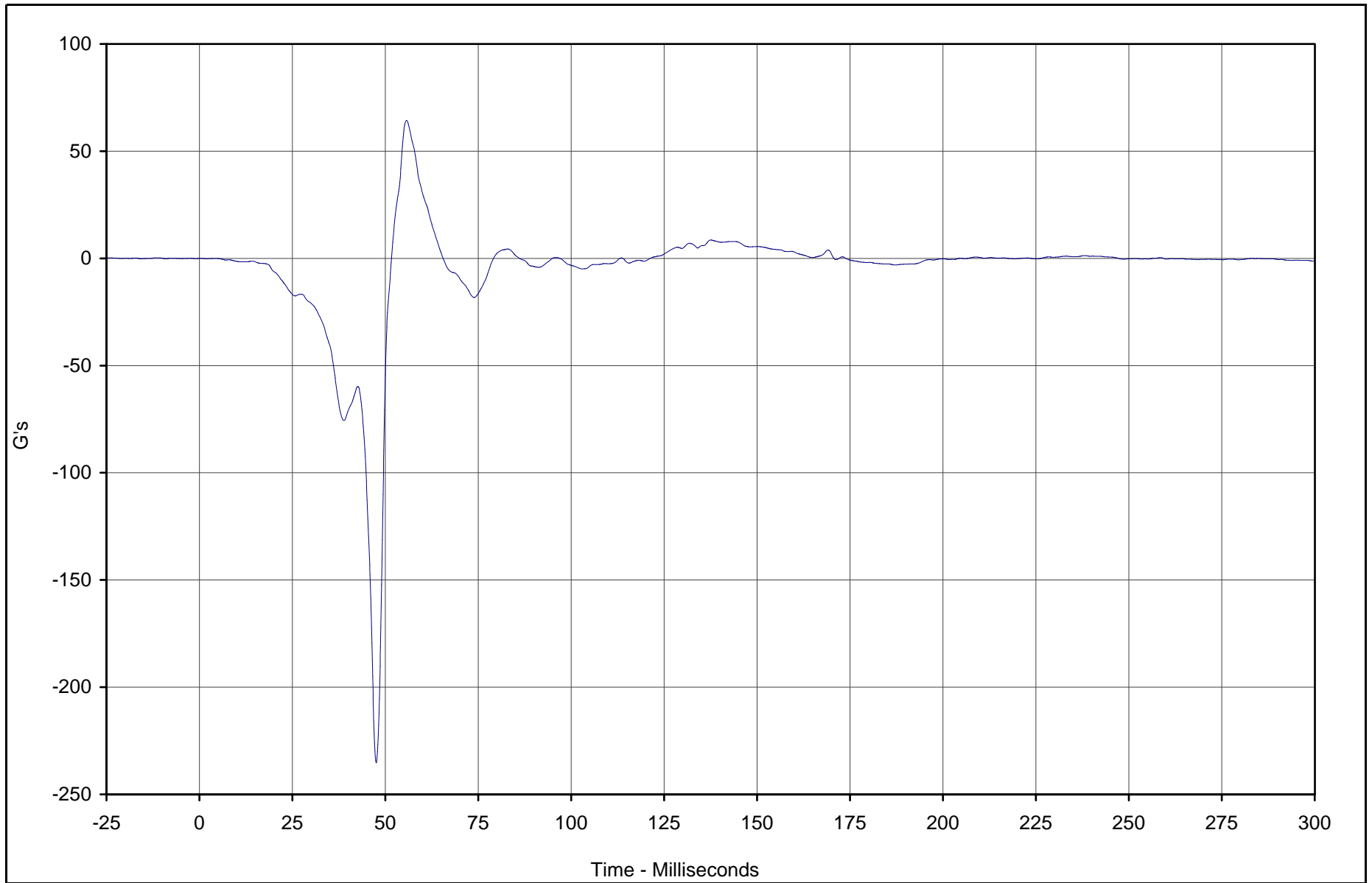
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-113



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Foot Aft X	079	FIL	G's	64.4	55.7	-235.2	47.6	180



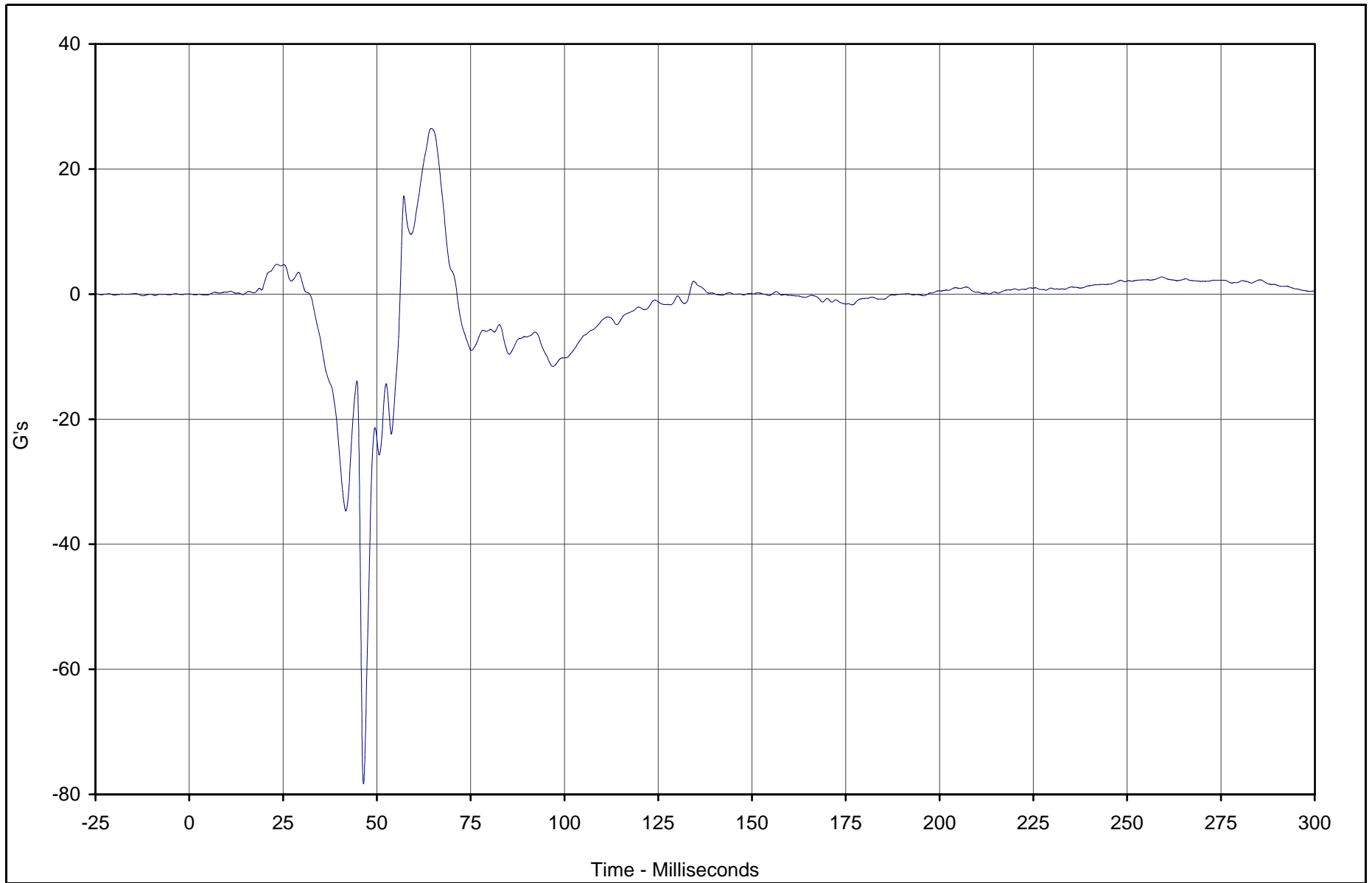
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Foot Aft Z	080	FIL	G's	26.5	64.5	-78.3	46.4	180



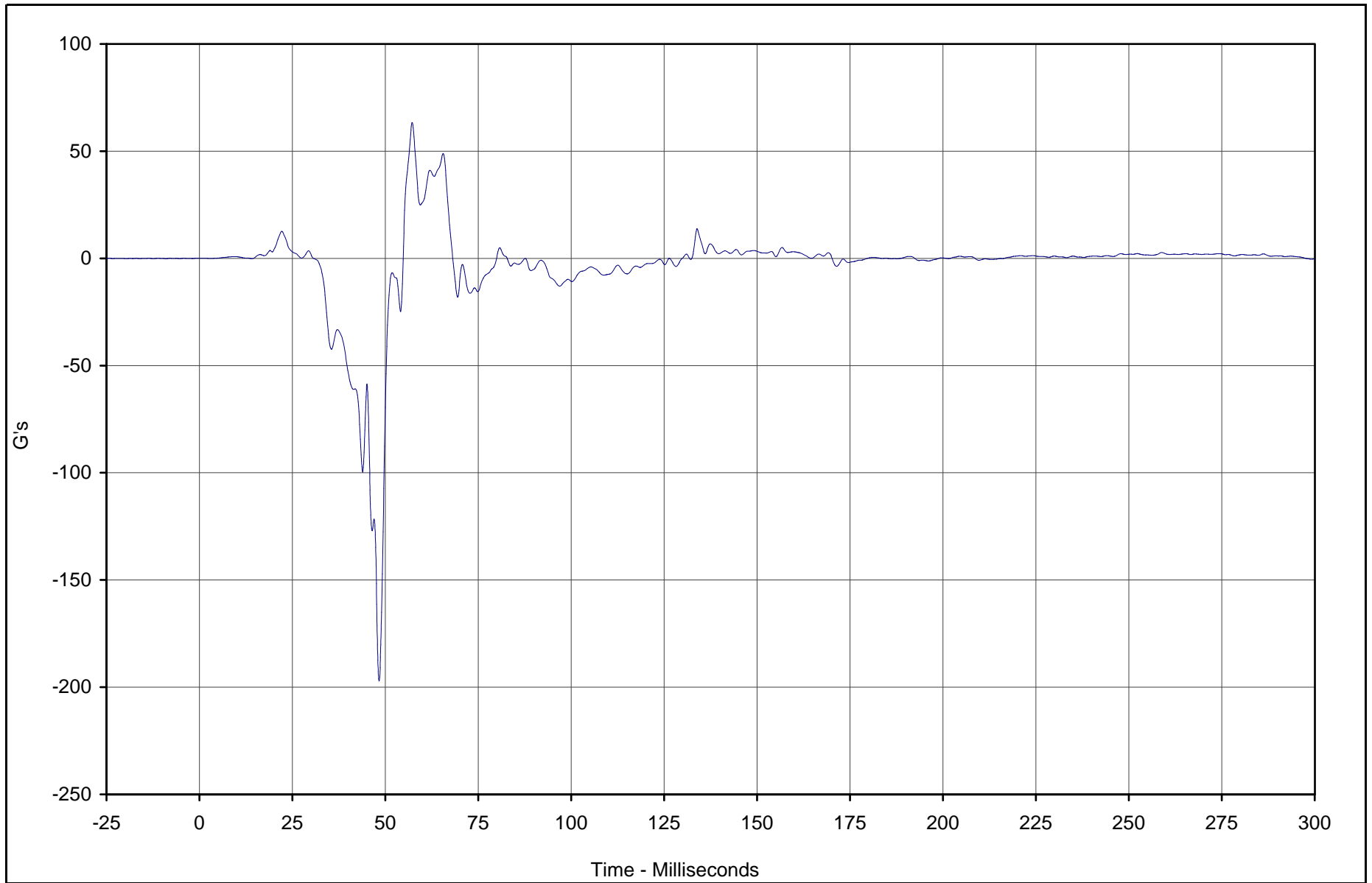
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Foot Fore Z	081	FIL	G's	63.3	57.2	-197.1	48.3	180



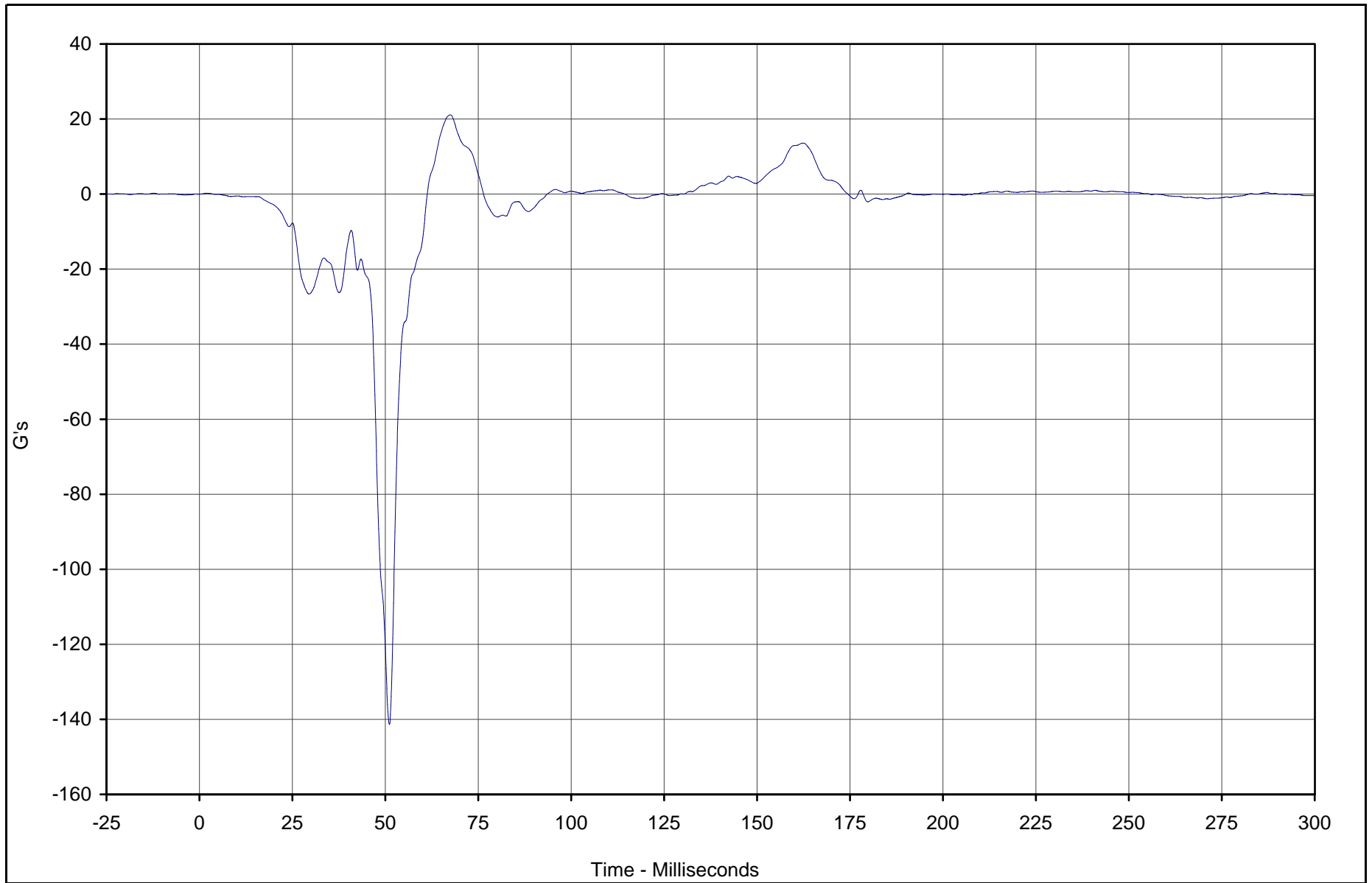
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Foot Aft X	082	FIL	G's	21.1	67.5	-141.4	51.1	180



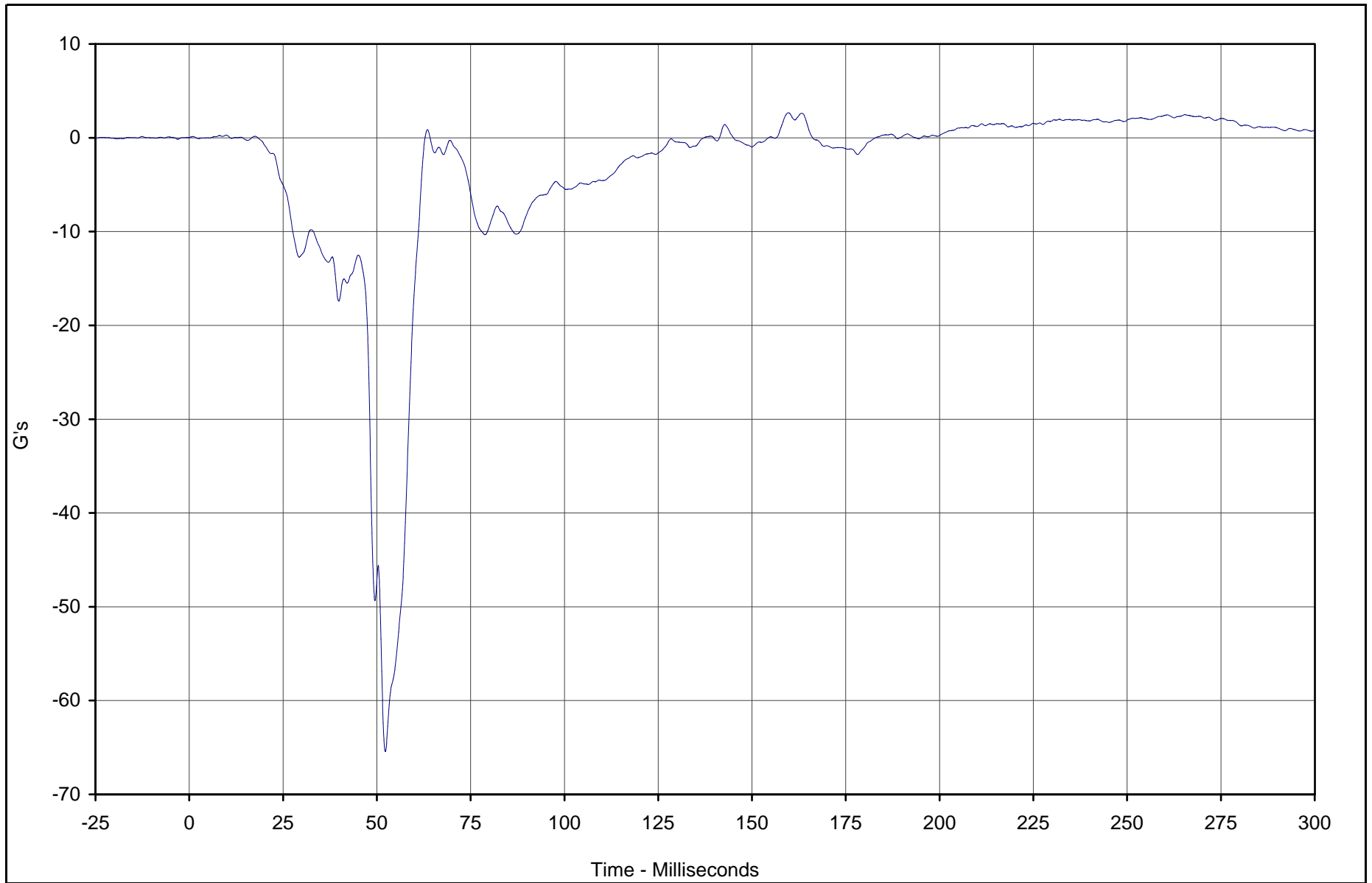
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Foot Aft Z	083	FIL	G's	2.7	159.7	-65.4	52.3	180



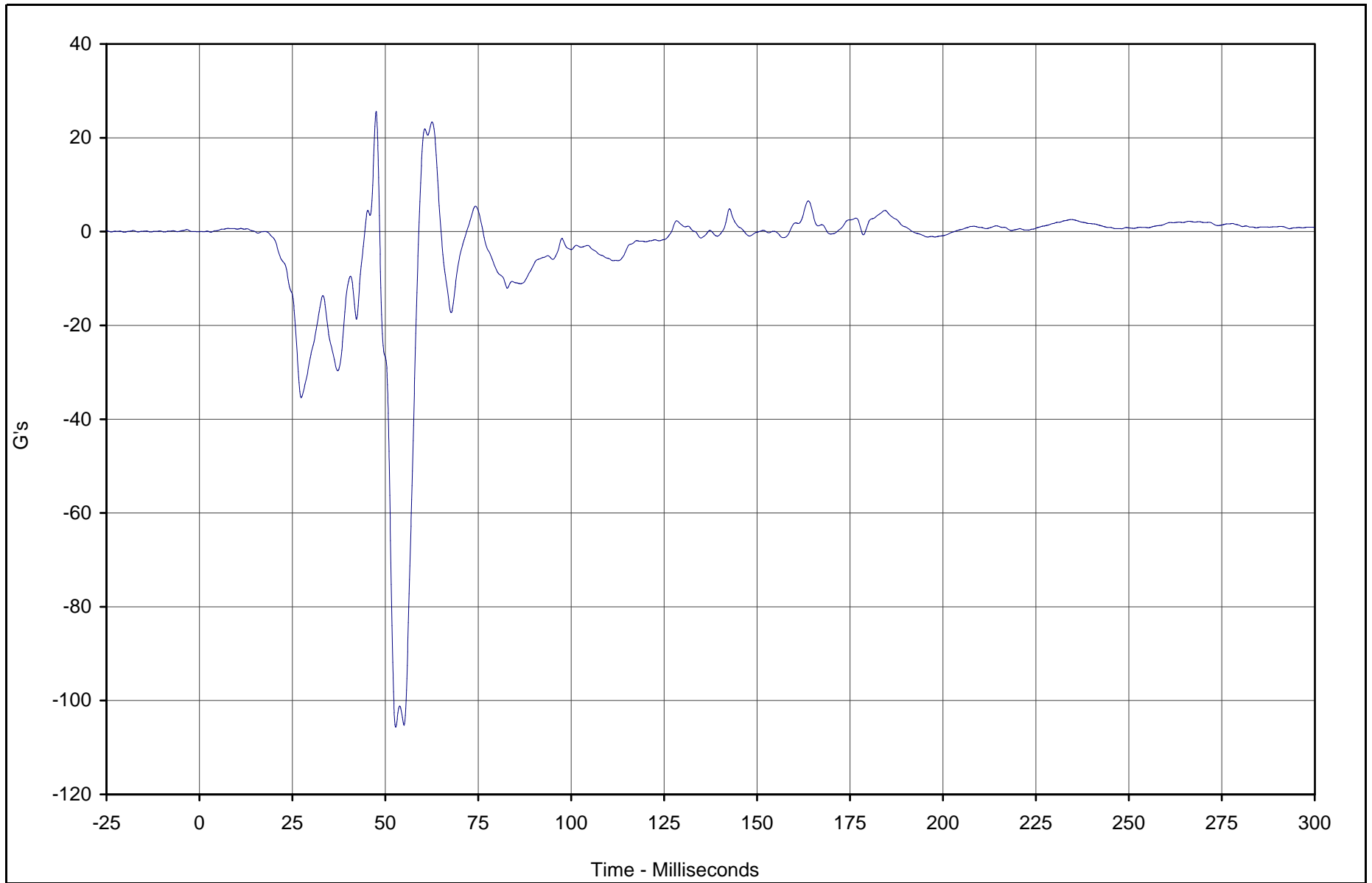
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Foot Fore Z	084	FIL	G's	25.6	47.5	-105.7	52.8	180

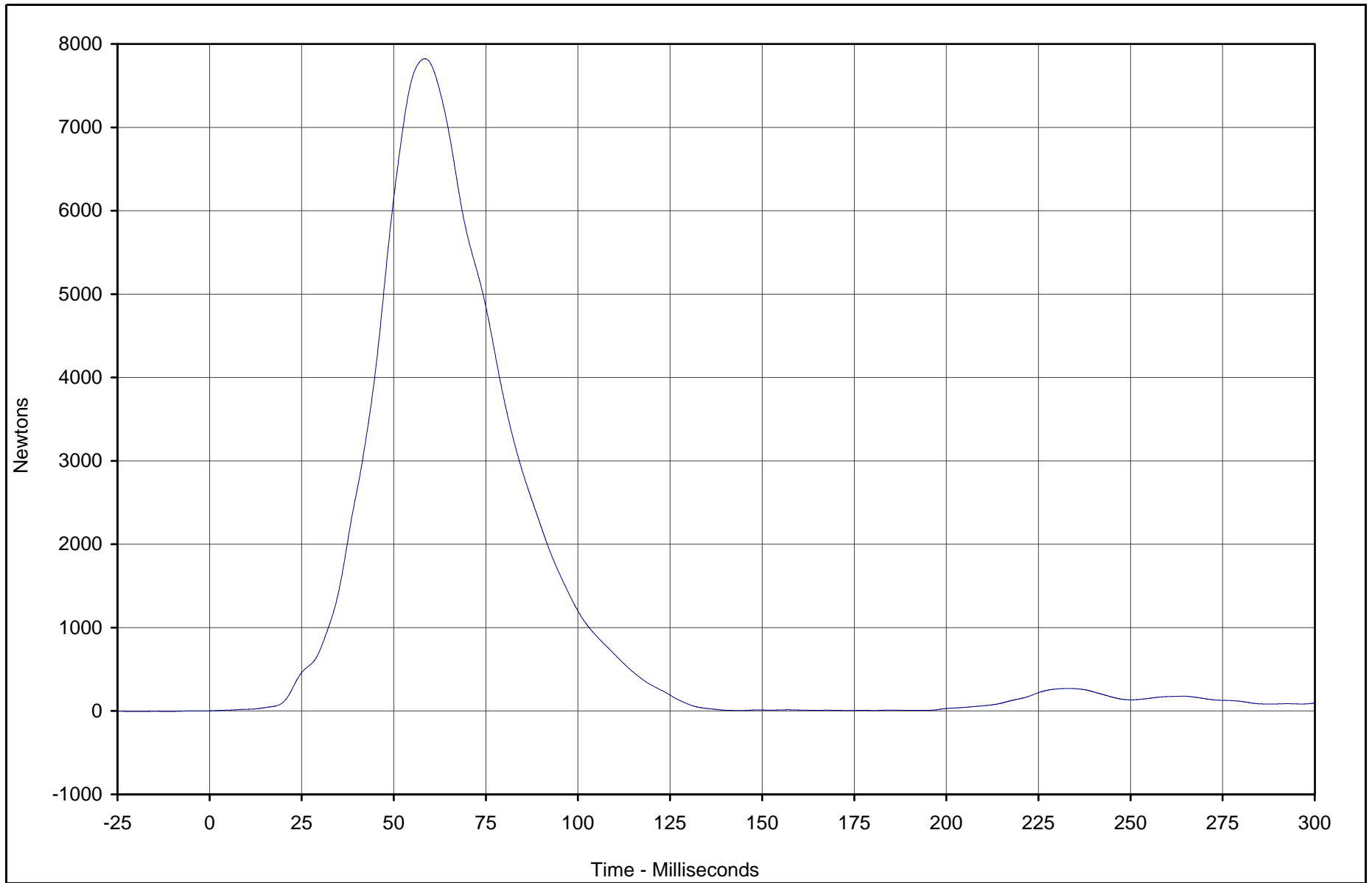


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Lap Belt Force	085	FIL	Newtons	7823.1	58.4	1.9	0.0	60



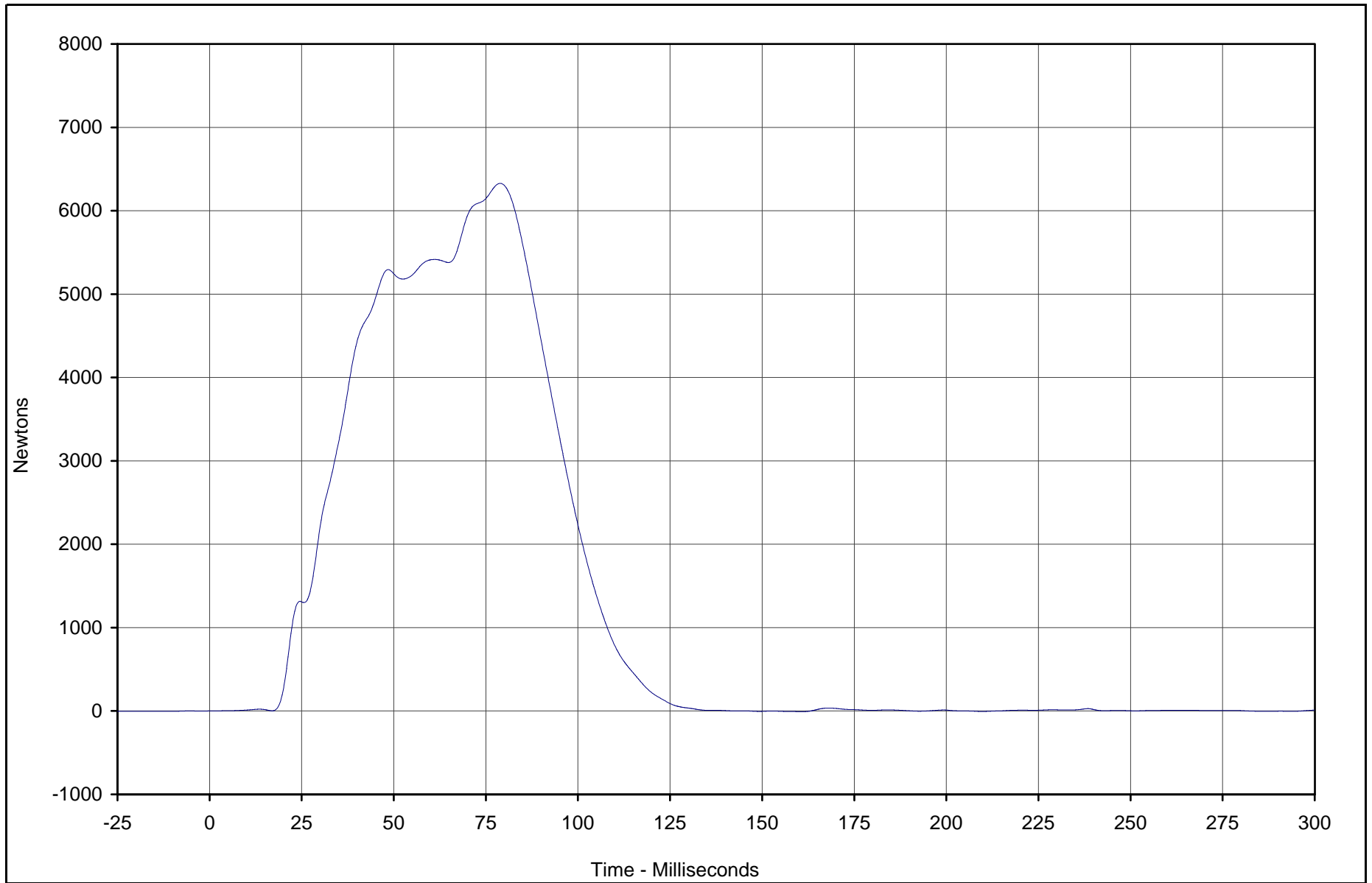
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-120



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Shoulder Belt Force	086	FIL	Newtons	6328.6	78.9	-8.9	160.8	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

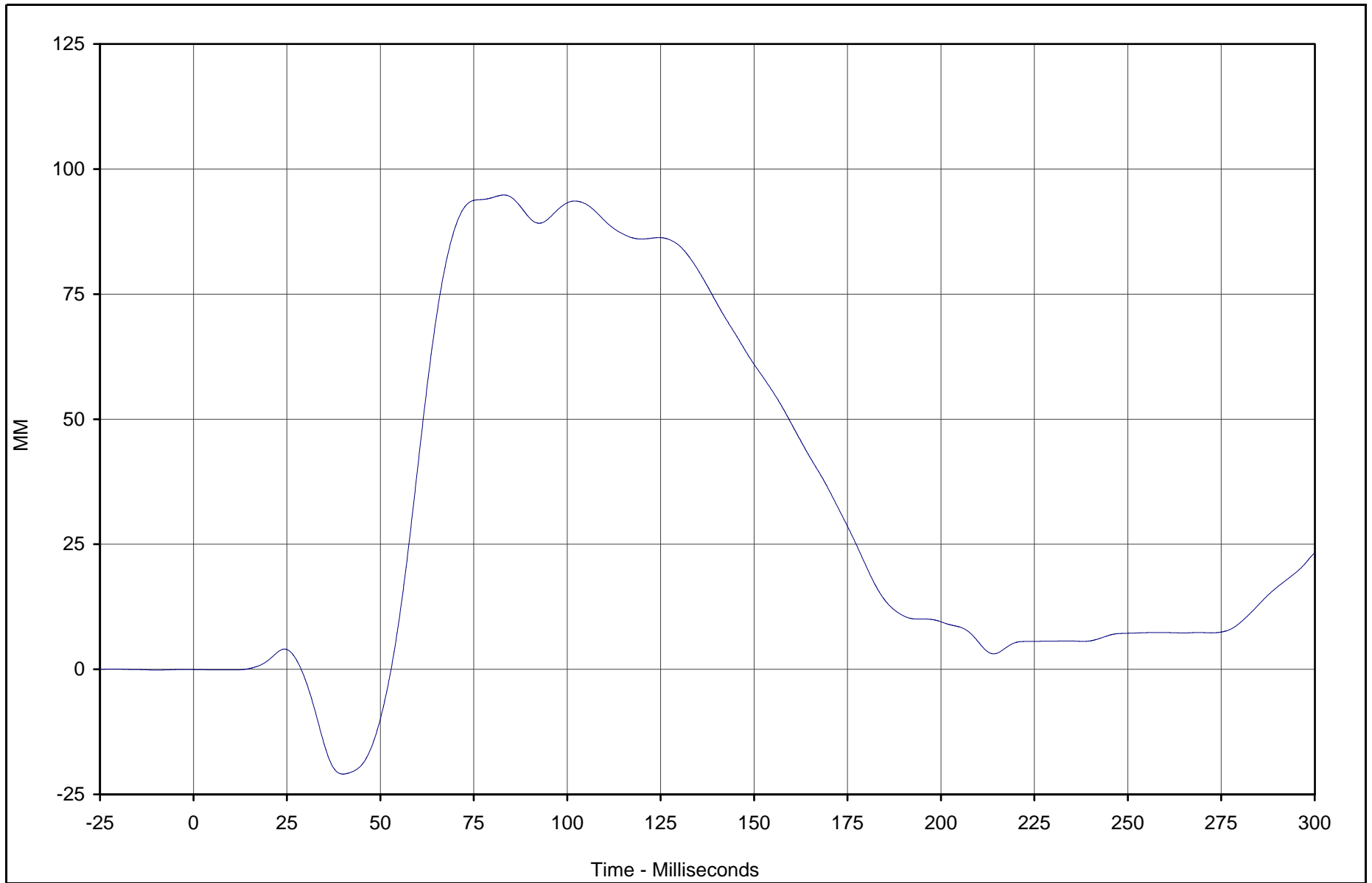
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-121



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Shoulder Belt Pullout	087	FIL	MM	94.8	83.1	-20.9	40.0	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

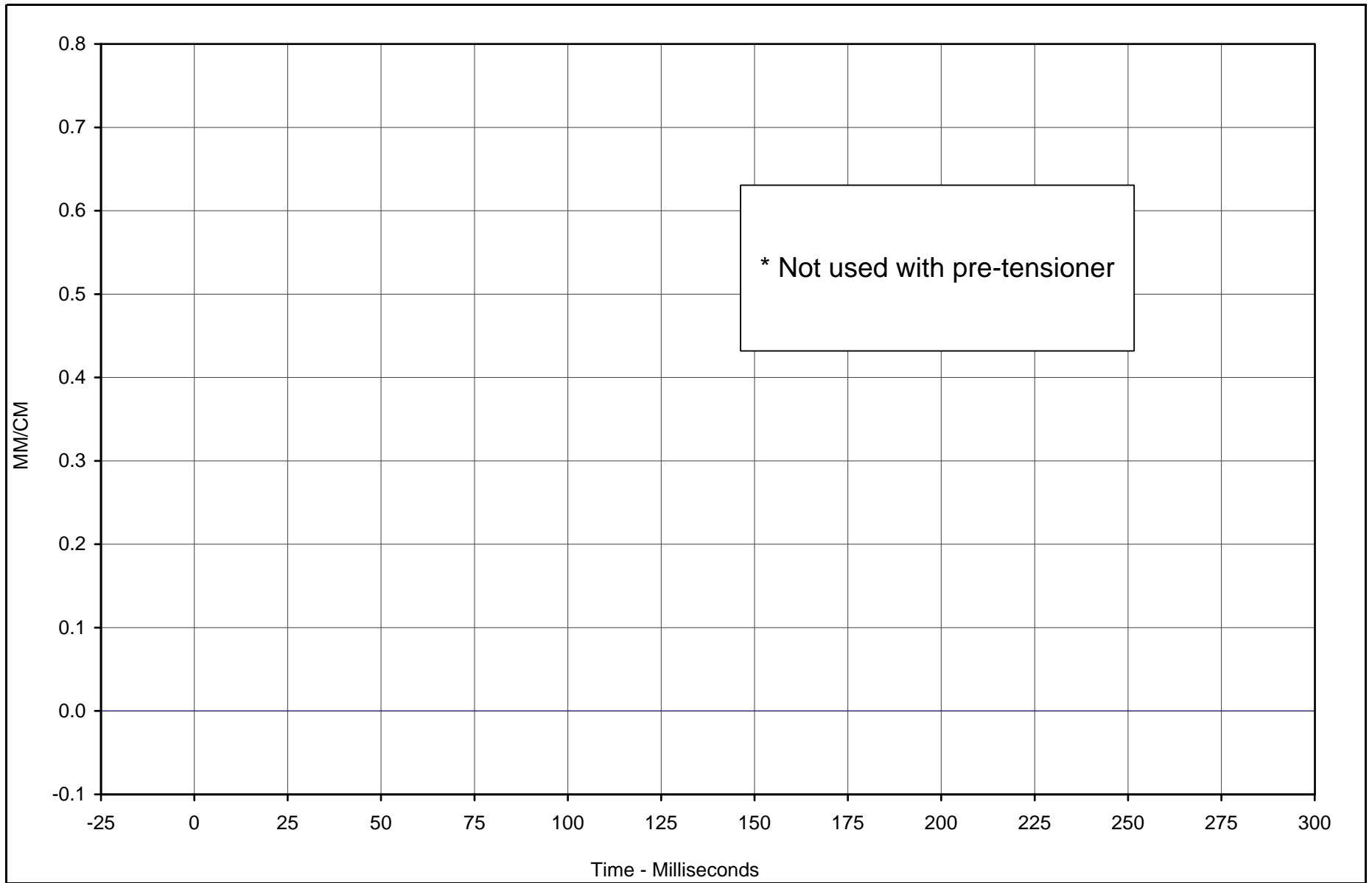
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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B-122



\* Not used with pre-tensioner

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Shoulder Belt Elongation	088	FIL	MM/CM	0.00	0.0	0.00	0.0	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

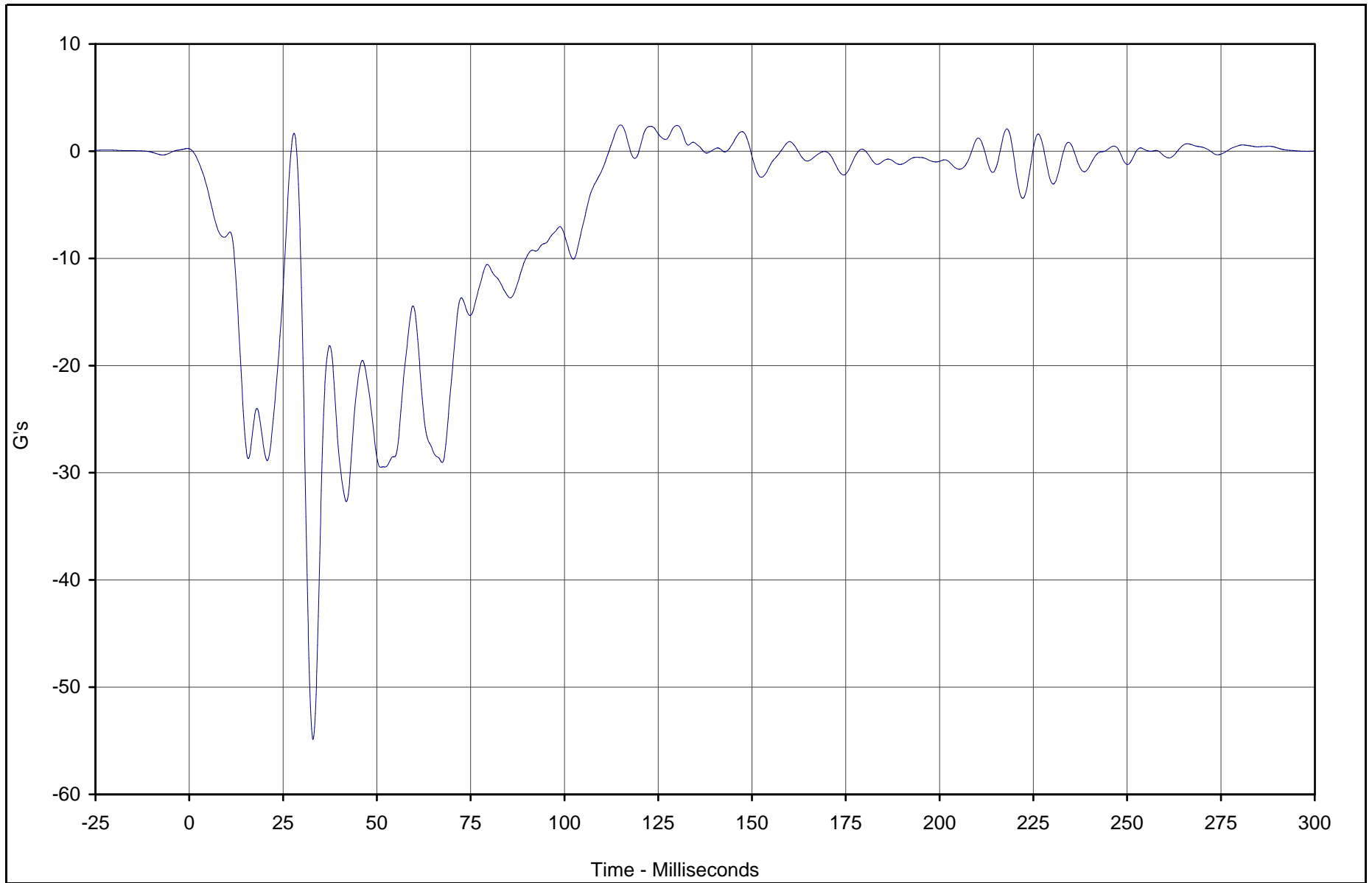
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-123

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear X	089	FIL	G's	2.4	115.0	-54.9	33.0	60



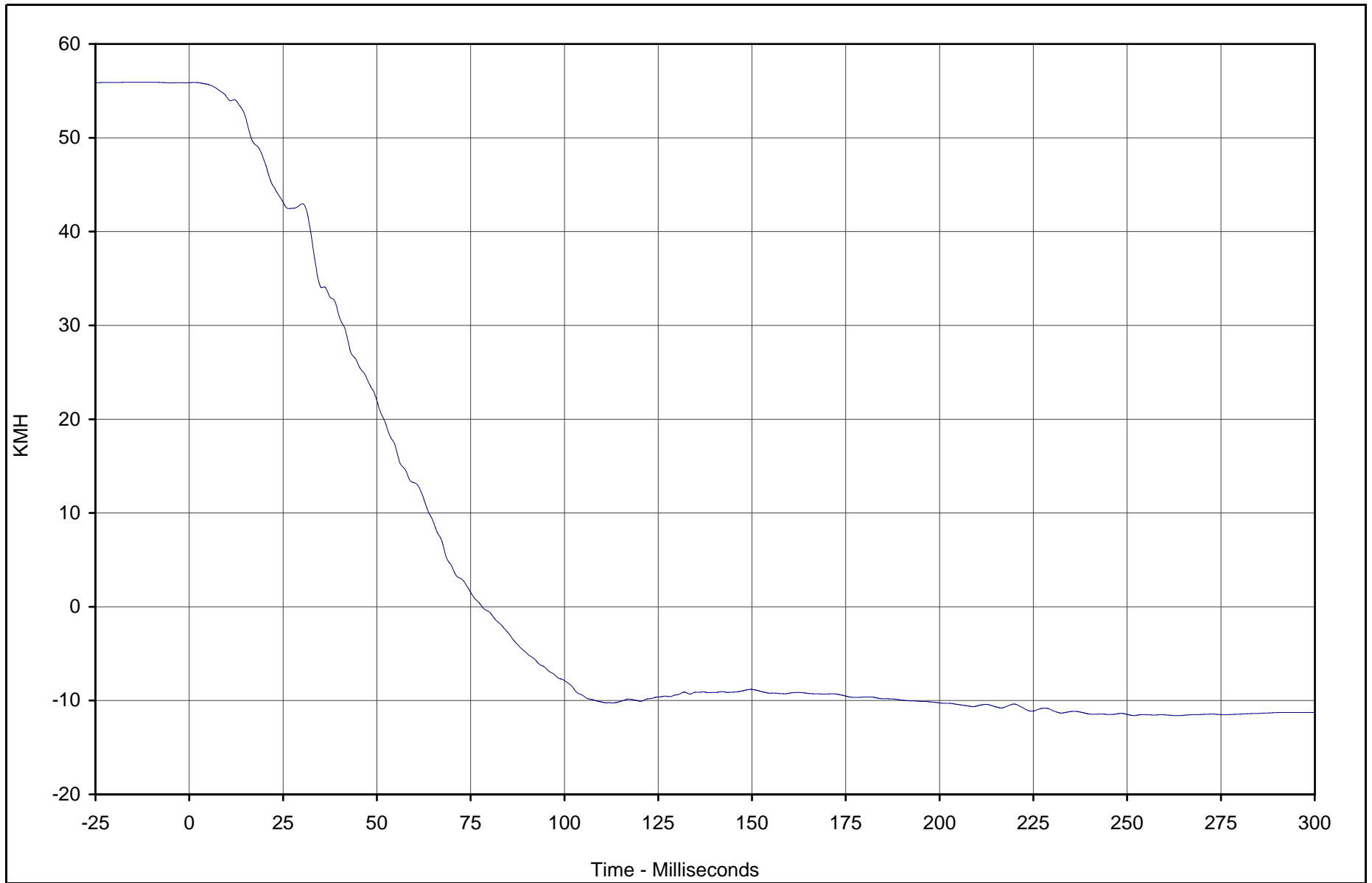
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-124



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear X Velocity	089	IN1	KMH	55.9	1.5	-11.6	263.3	180



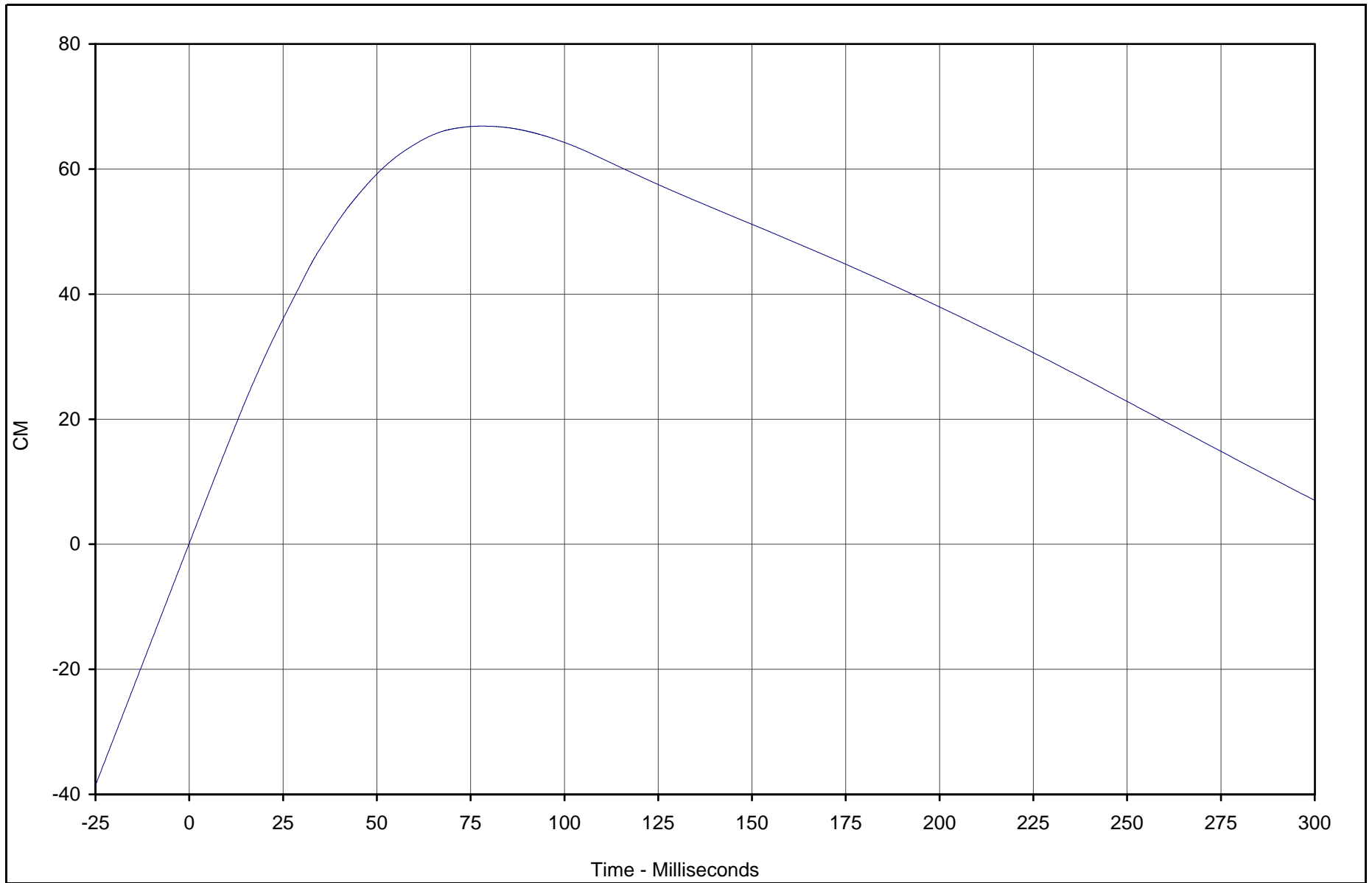
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear X Displ.	089	IN2	CM	66.9	78.1	0.2	0.0	180



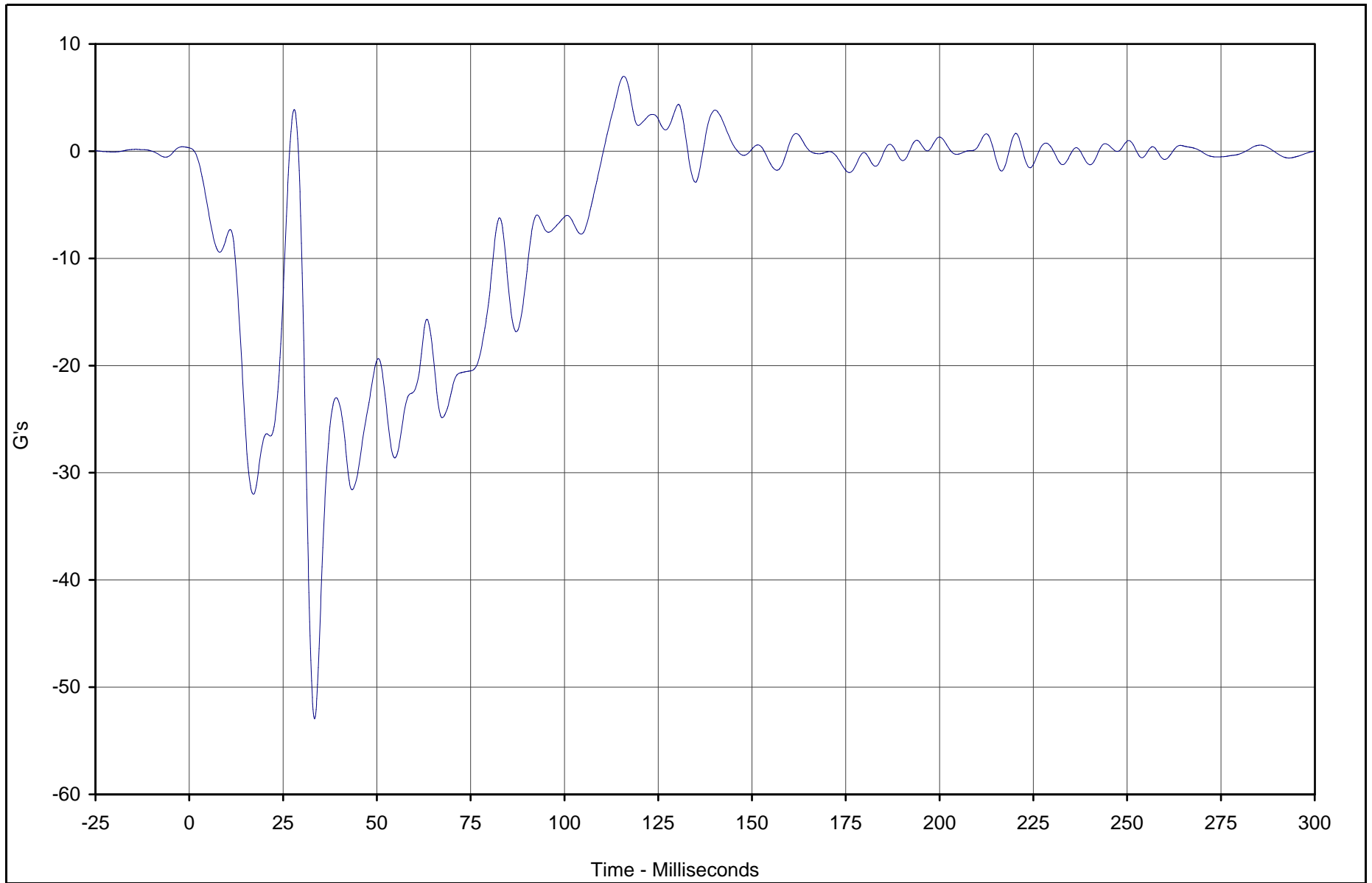
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear X	090	FIL	G's	7.0	115.8	-53.0	33.4	60



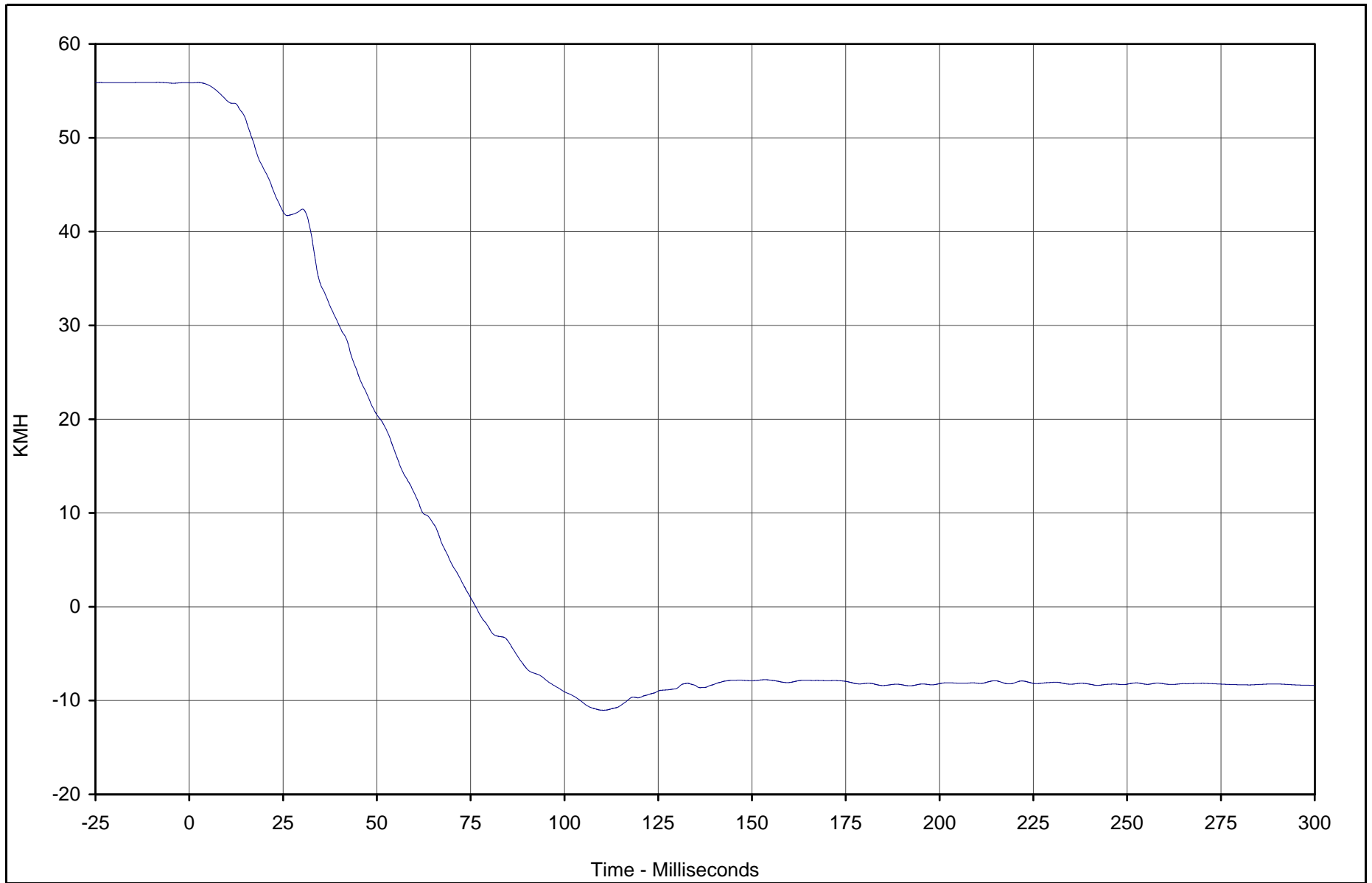
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-127



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear X Velocity	090	IN1	KMH	55.9	2.4	-11.0	110.4	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

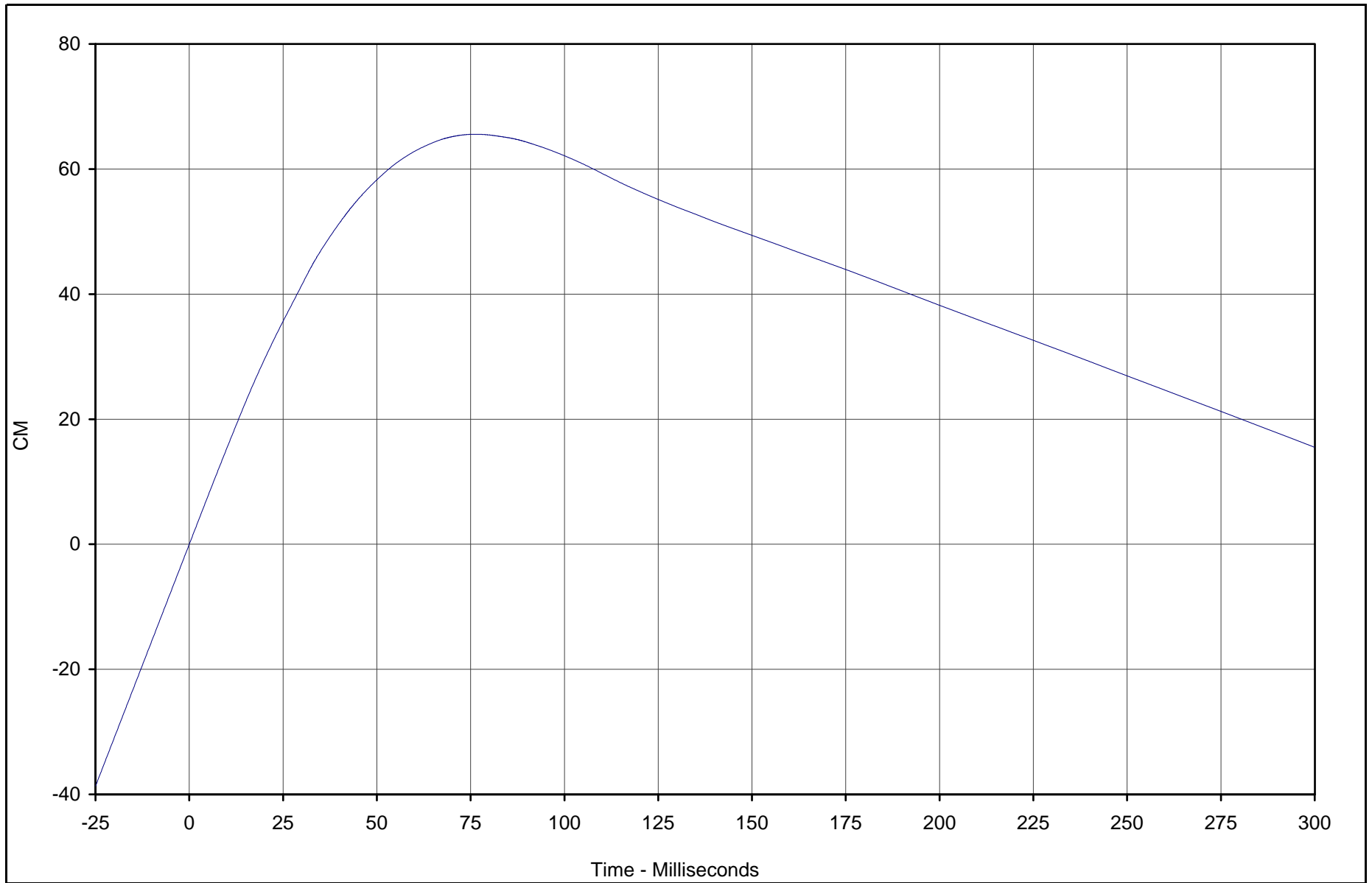
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear X Displ.	090	IN2	CM	65.6	76.4	0.0	0.0	180



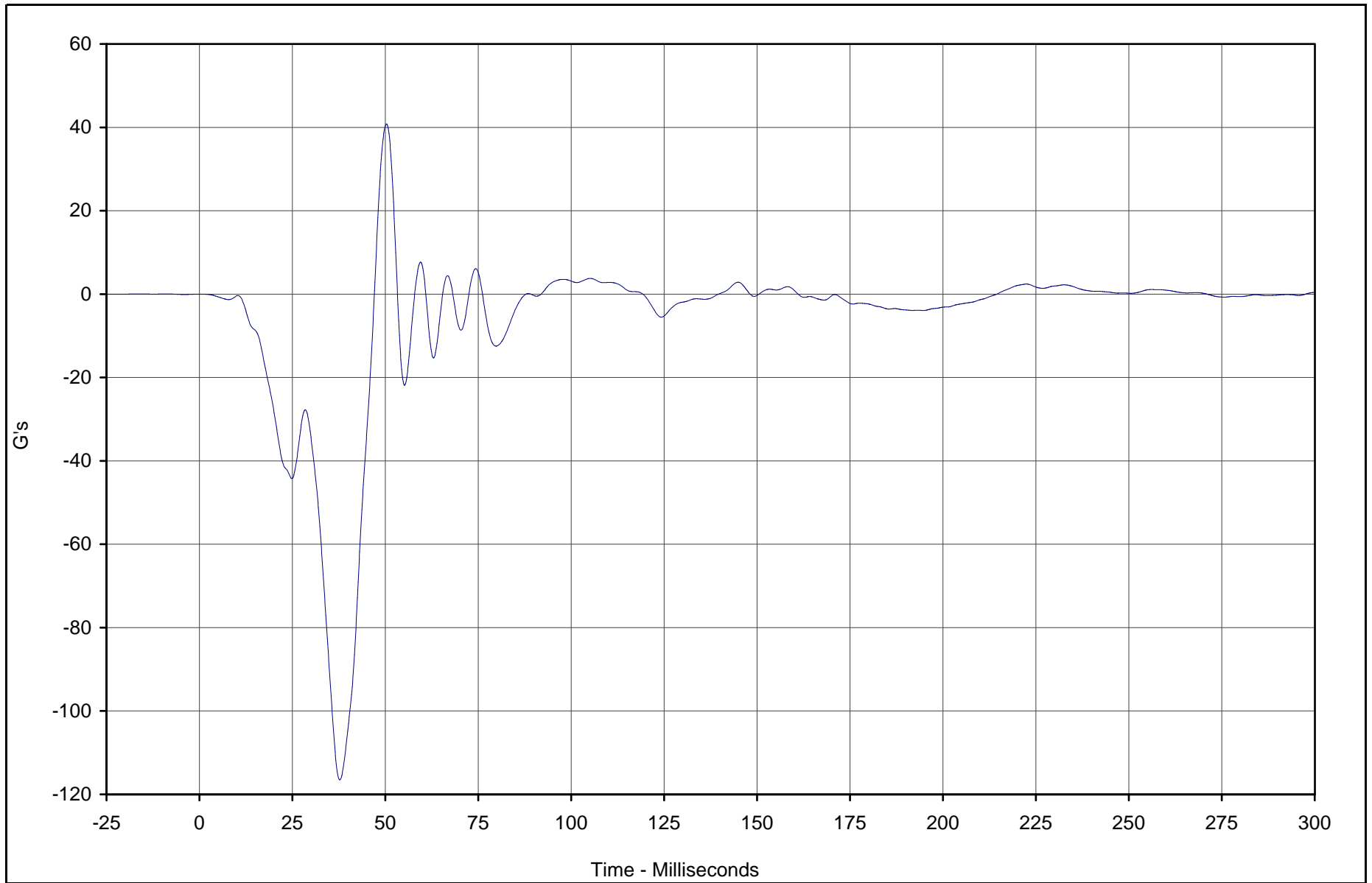
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Top	091	FIL	G's	40.8	50.3	-116.5	37.7	60



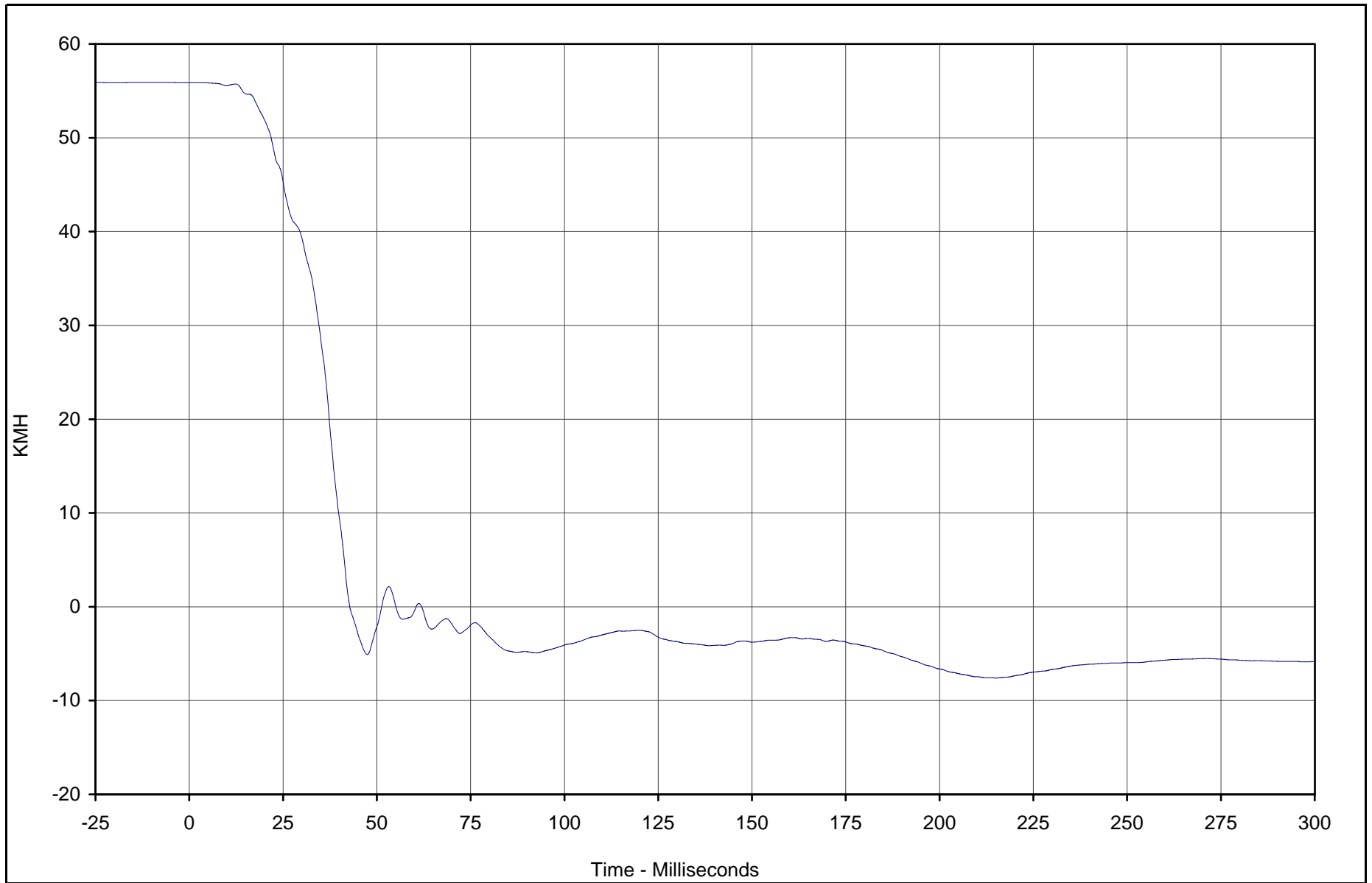
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-130



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Top Velocity	091	IN1	KMH	55.9	0.0	-7.6	215.0	180



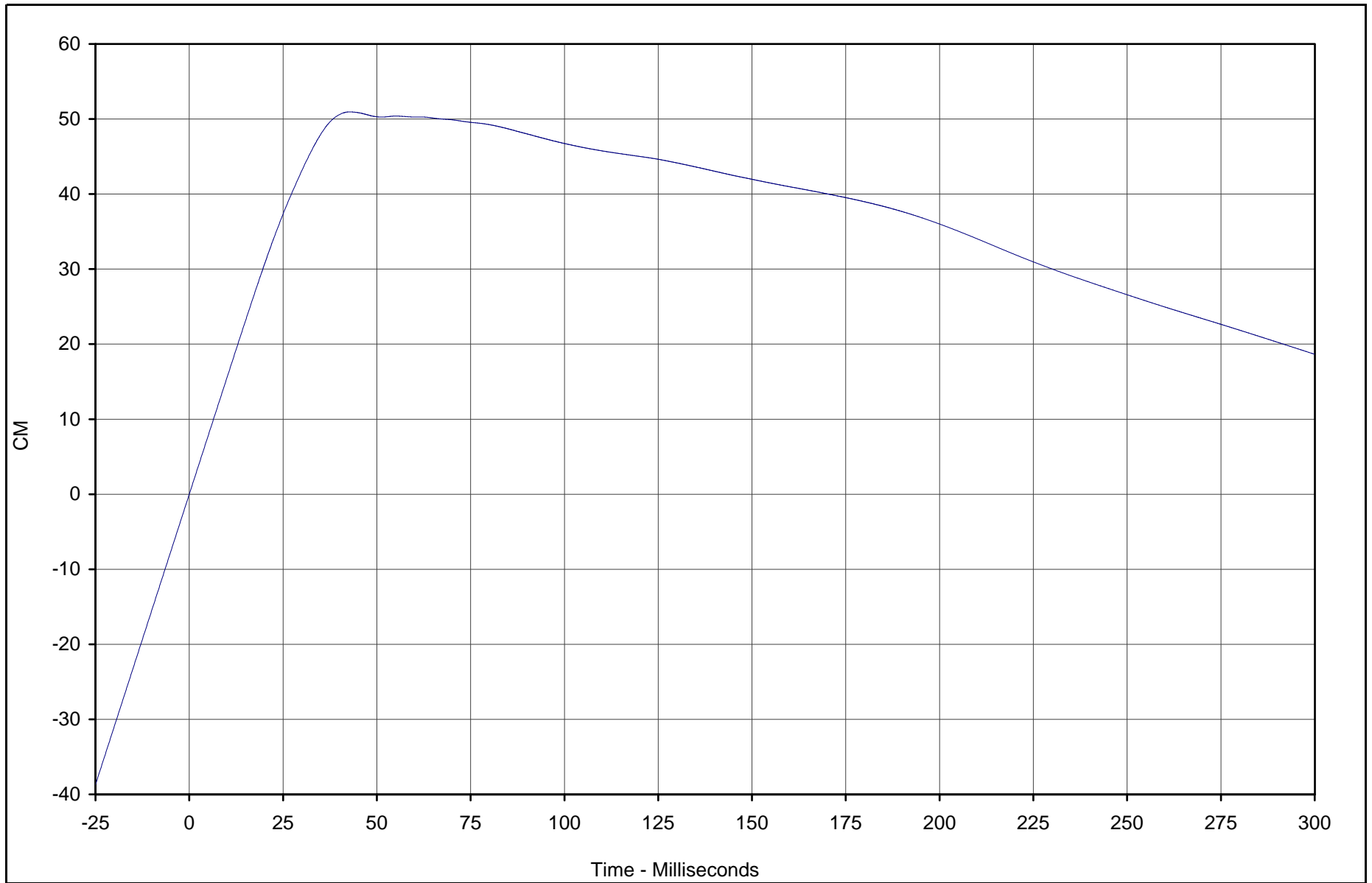
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-131



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Top Displacement	091	IN2	CM	50.9	42.8	0.0	0.0	180



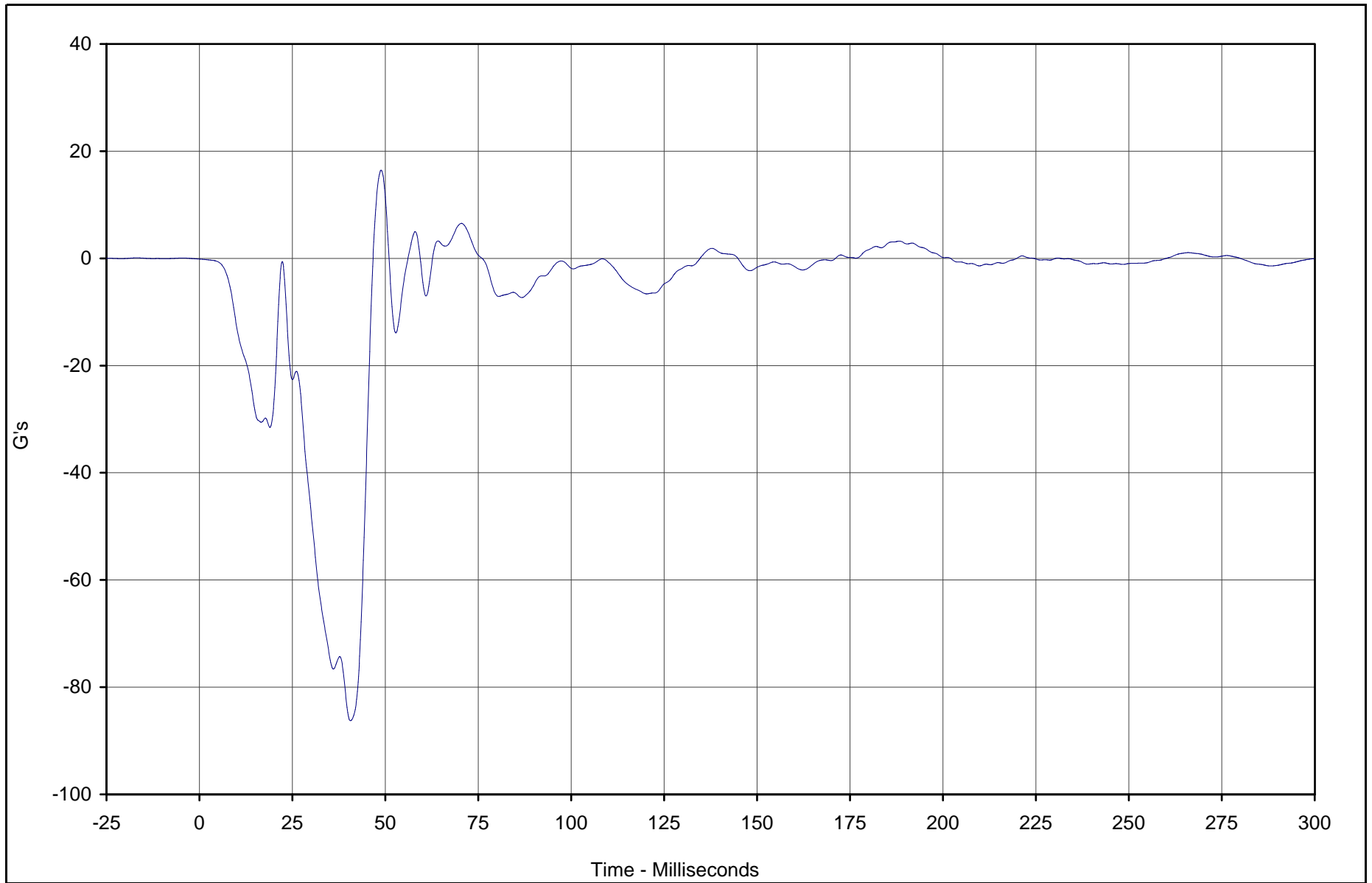
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Bottom	092	FIL	G's	16.4	48.9	-86.3	40.6	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

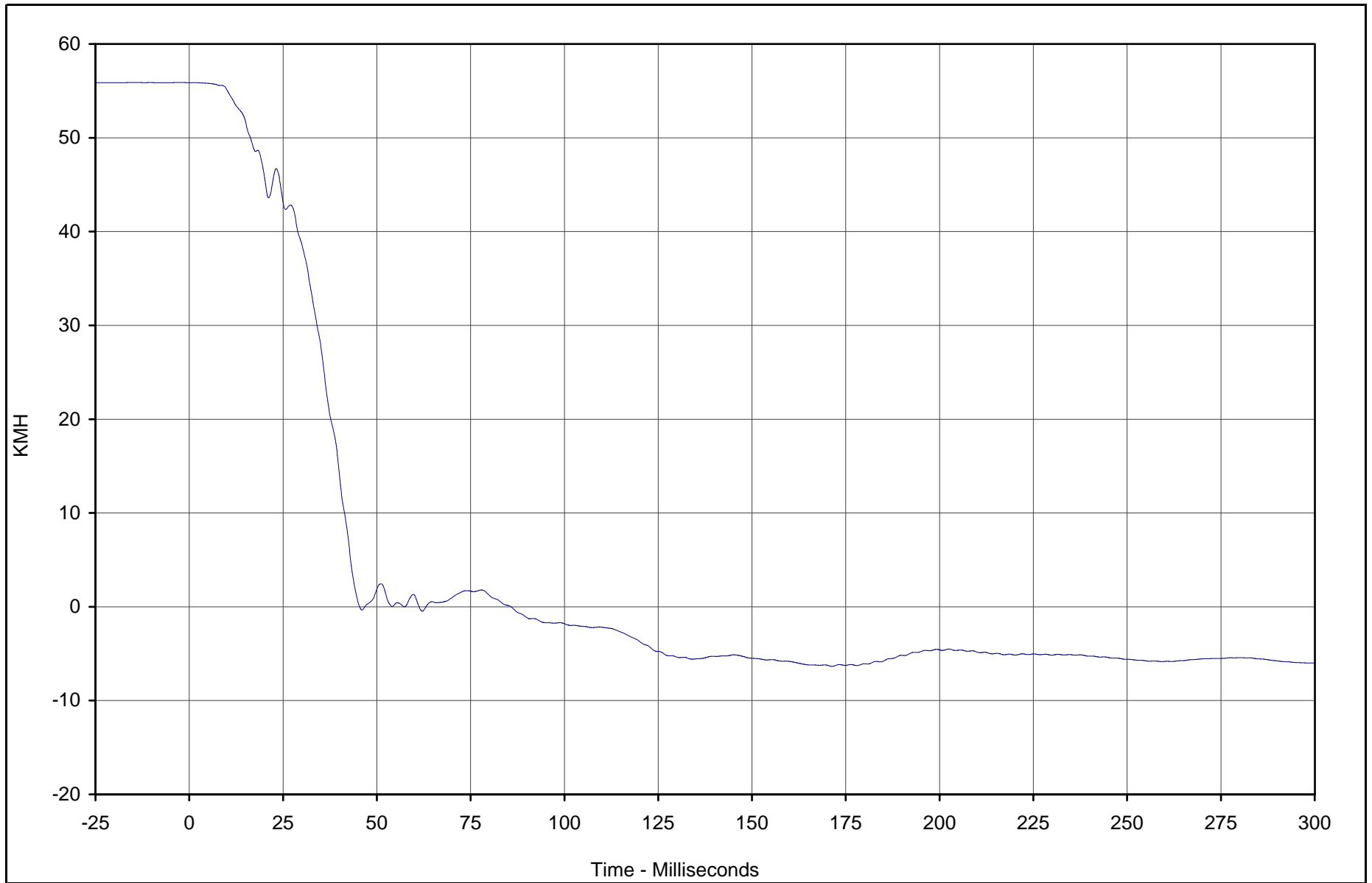
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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B-133



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Bottom Velocity	092	IN1	KMH	55.9	0.0	-6.3	171.3	180



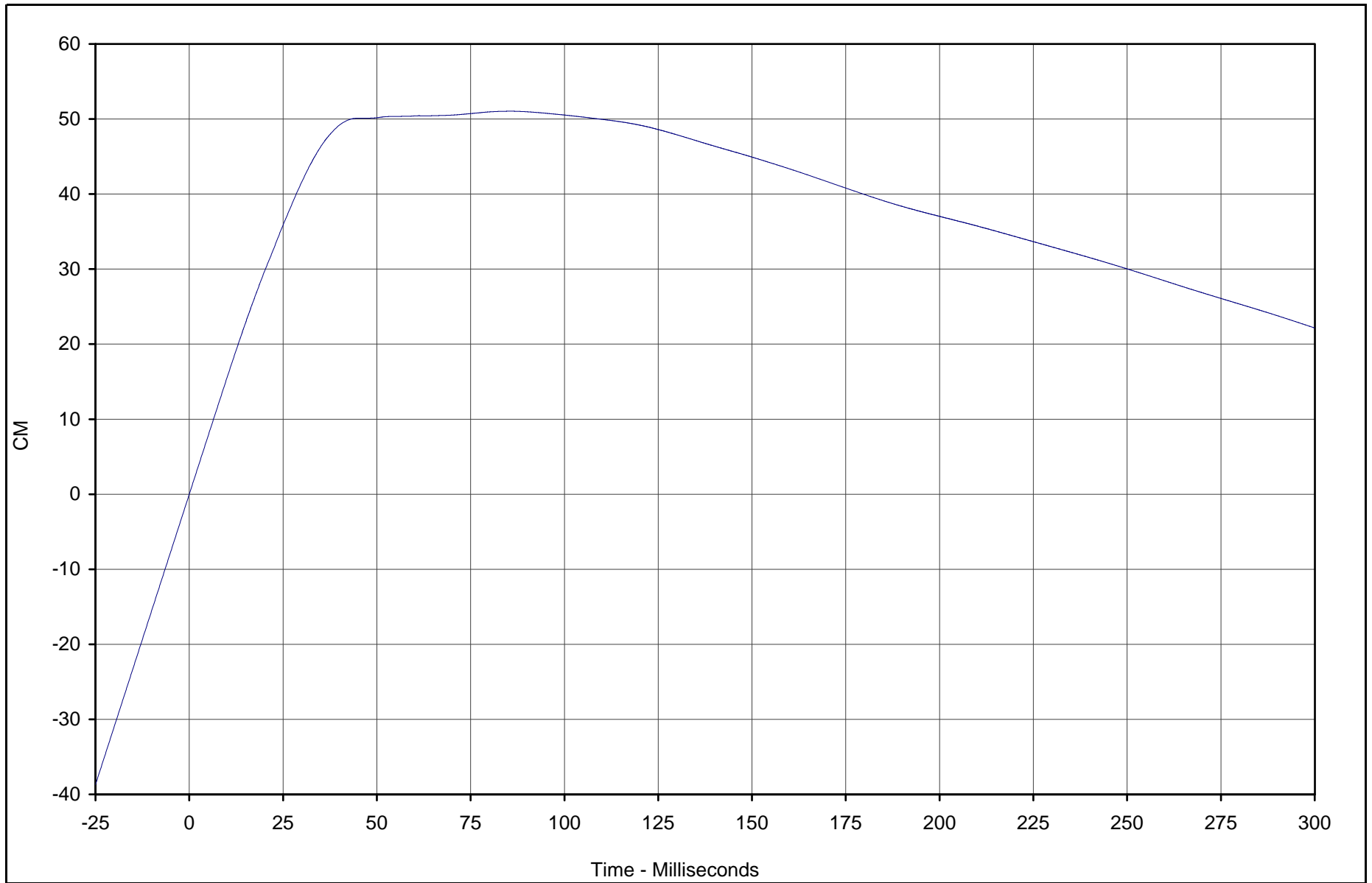
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-134



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Bottom Displacement	092	IN2	CM	51.0	85.7	0.0	0.0	180



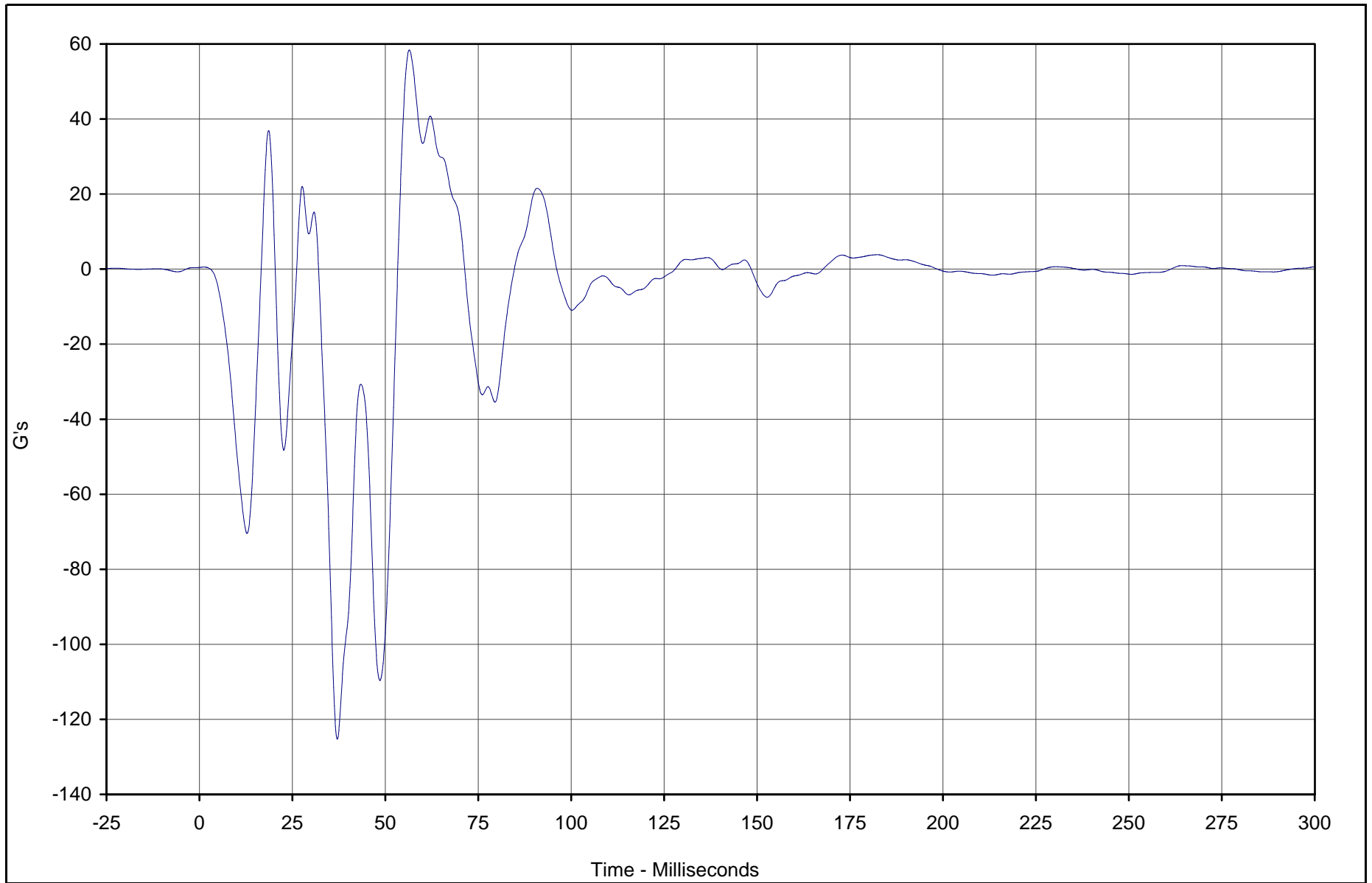
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-135



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Brake Caliper	093	FIL	G's	58.4	56.4	-125.3	37.1	60



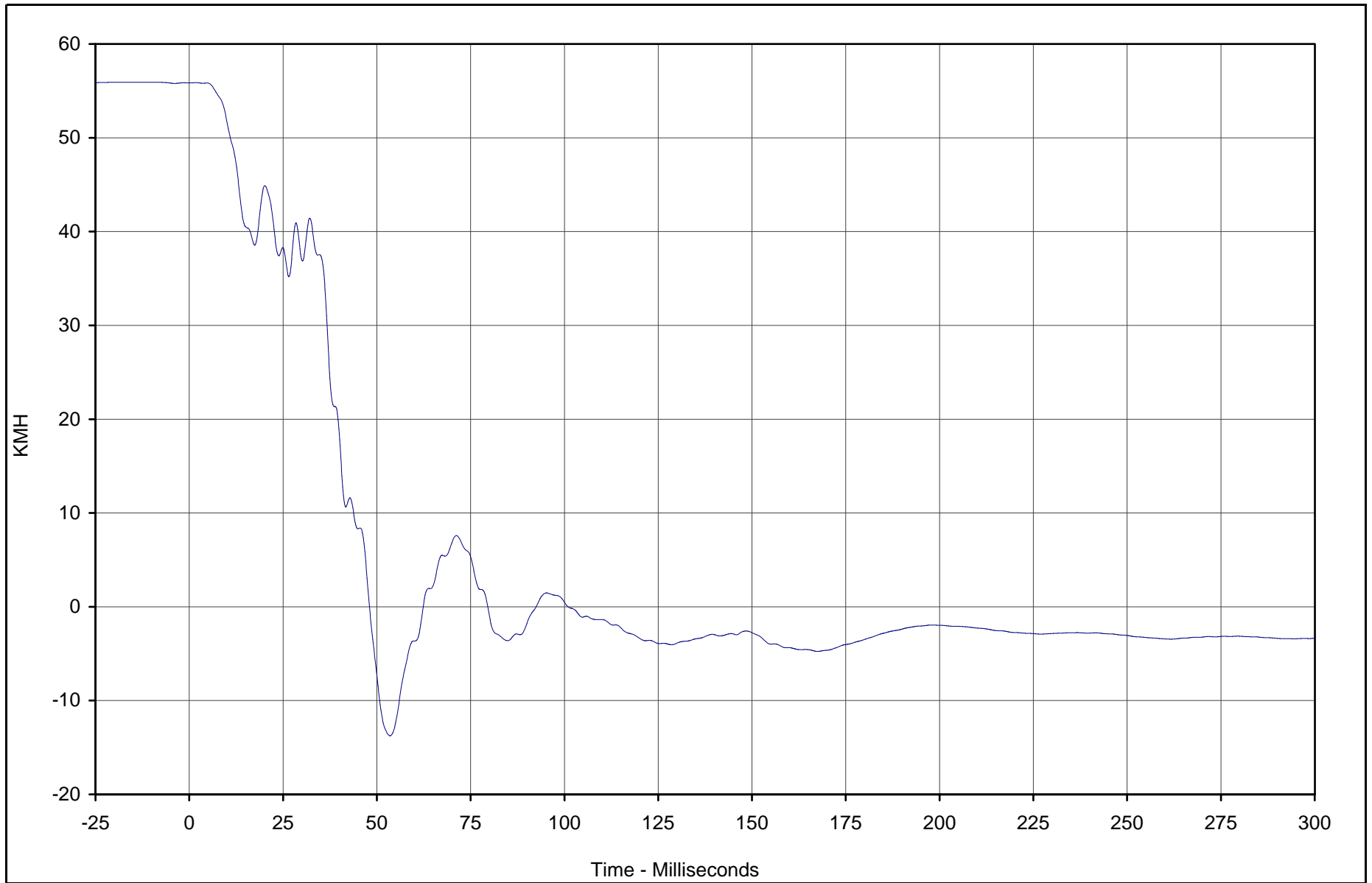
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-136



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Brake Caliper Velocity	093	IN1	KMH	55.9	1.8	-13.8	53.5	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-137



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Brake Caliper Displ.	093	IN2	CM	49.4	48.0	0.0	0.0	180



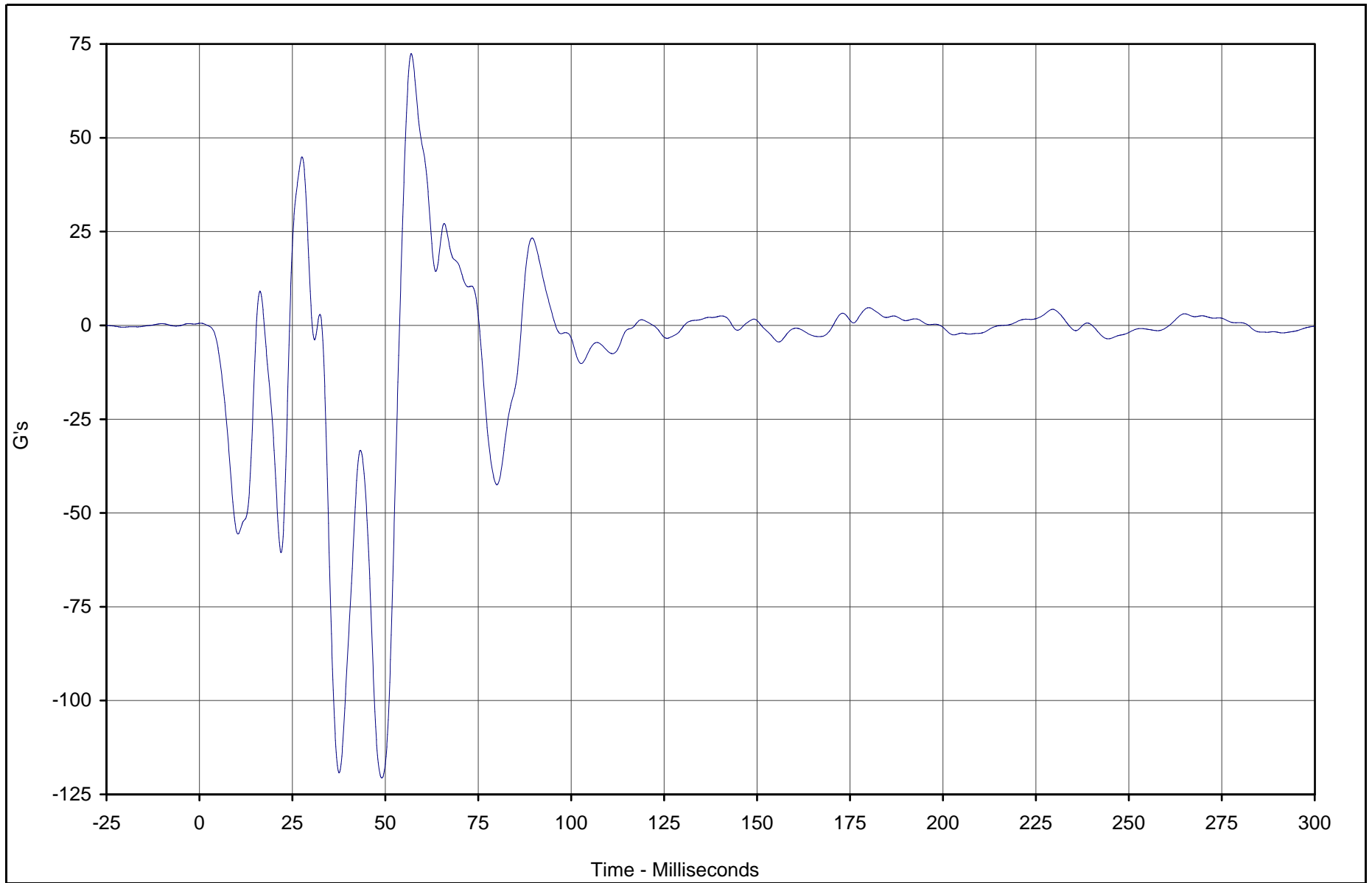
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-138



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Brake Caliper	094	FIL	G's	72.5	57.0	-120.6	49.1	60



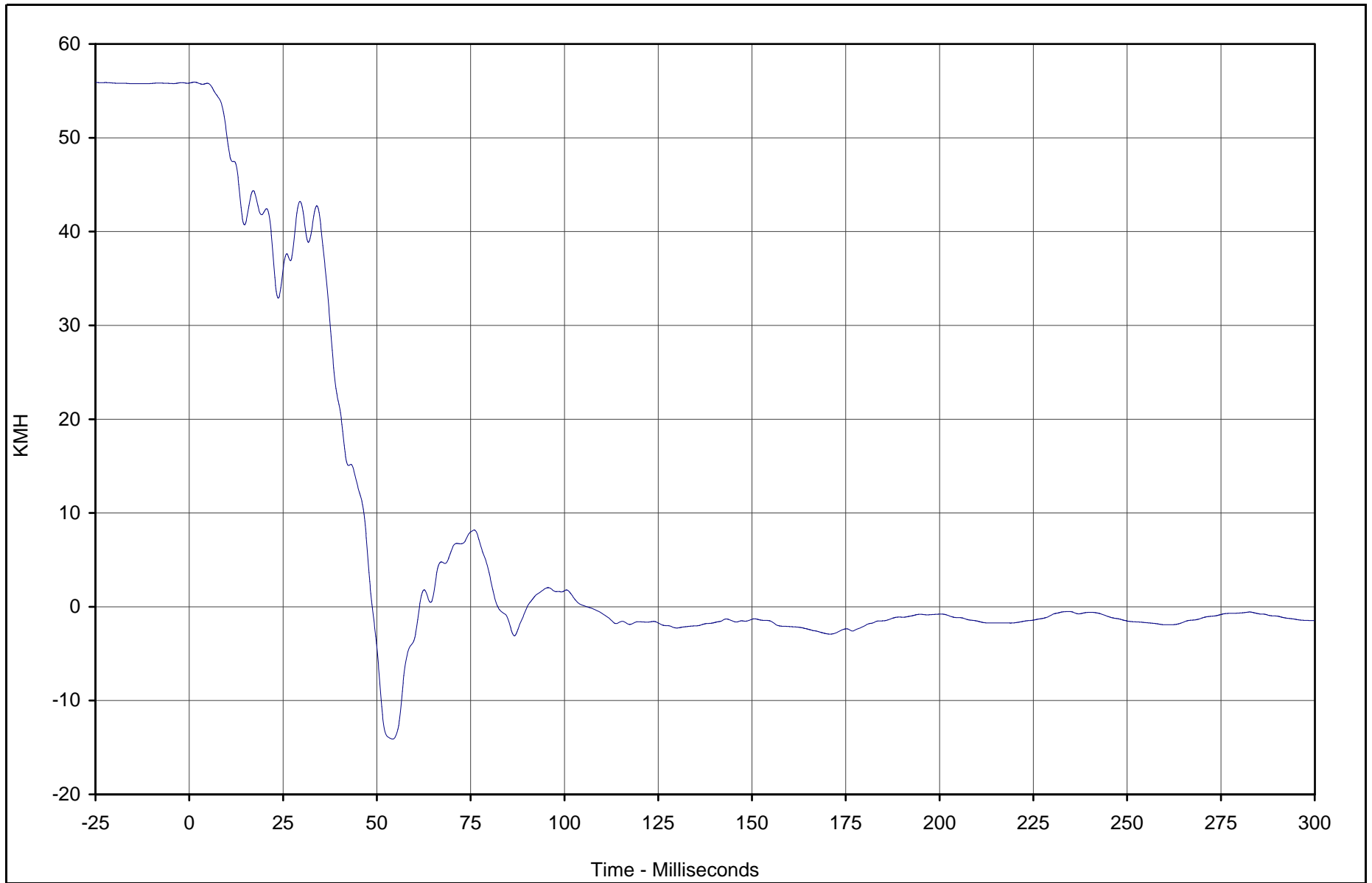
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-139



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Brake Caliper Velocity	094	IN1	KMH	55.9	1.4	-14.1	54.2	180



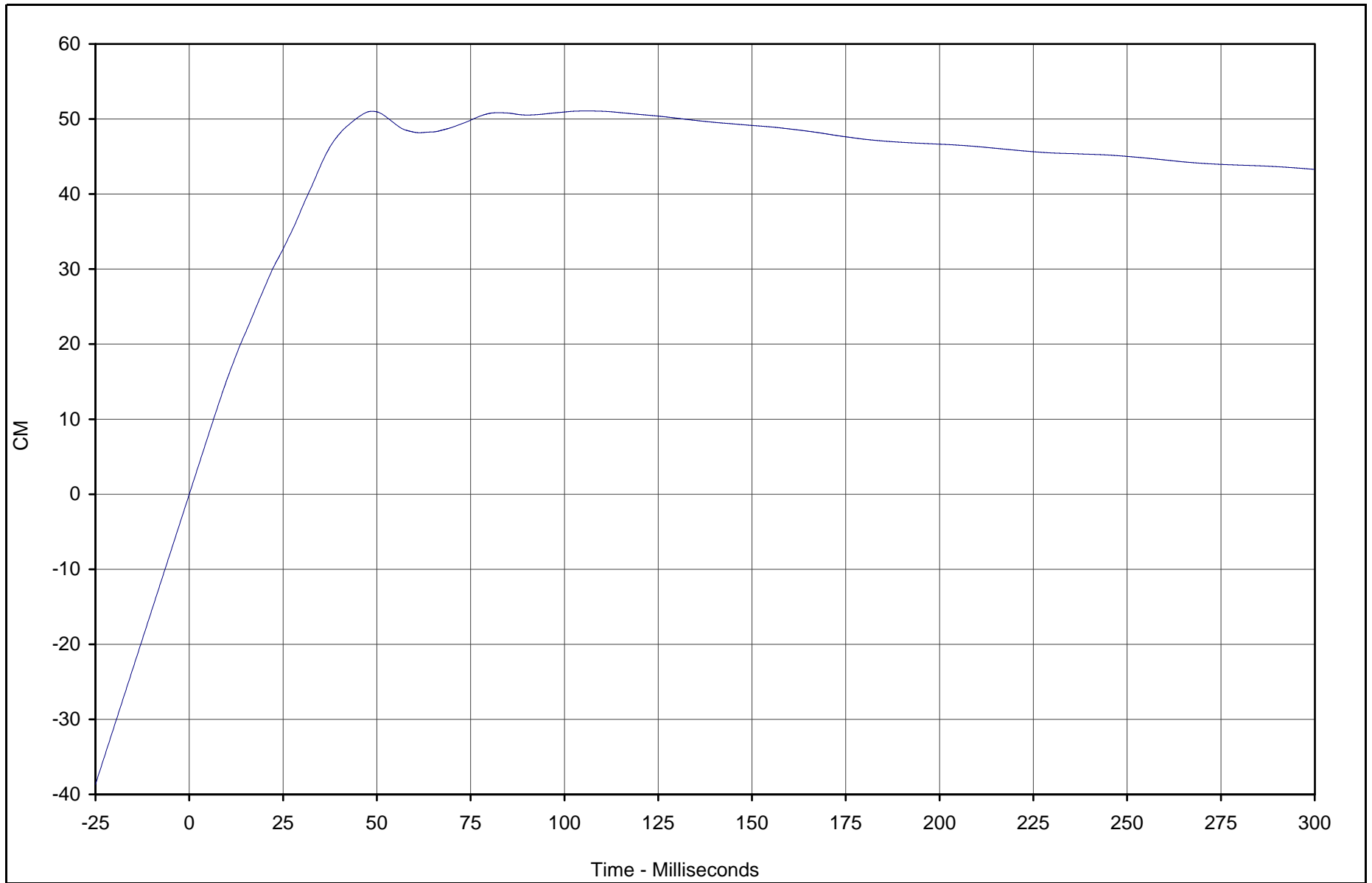
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-140



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Brake Caliper Displ.	094	IN2	CM	51.1	106.0	0.0	0.0	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

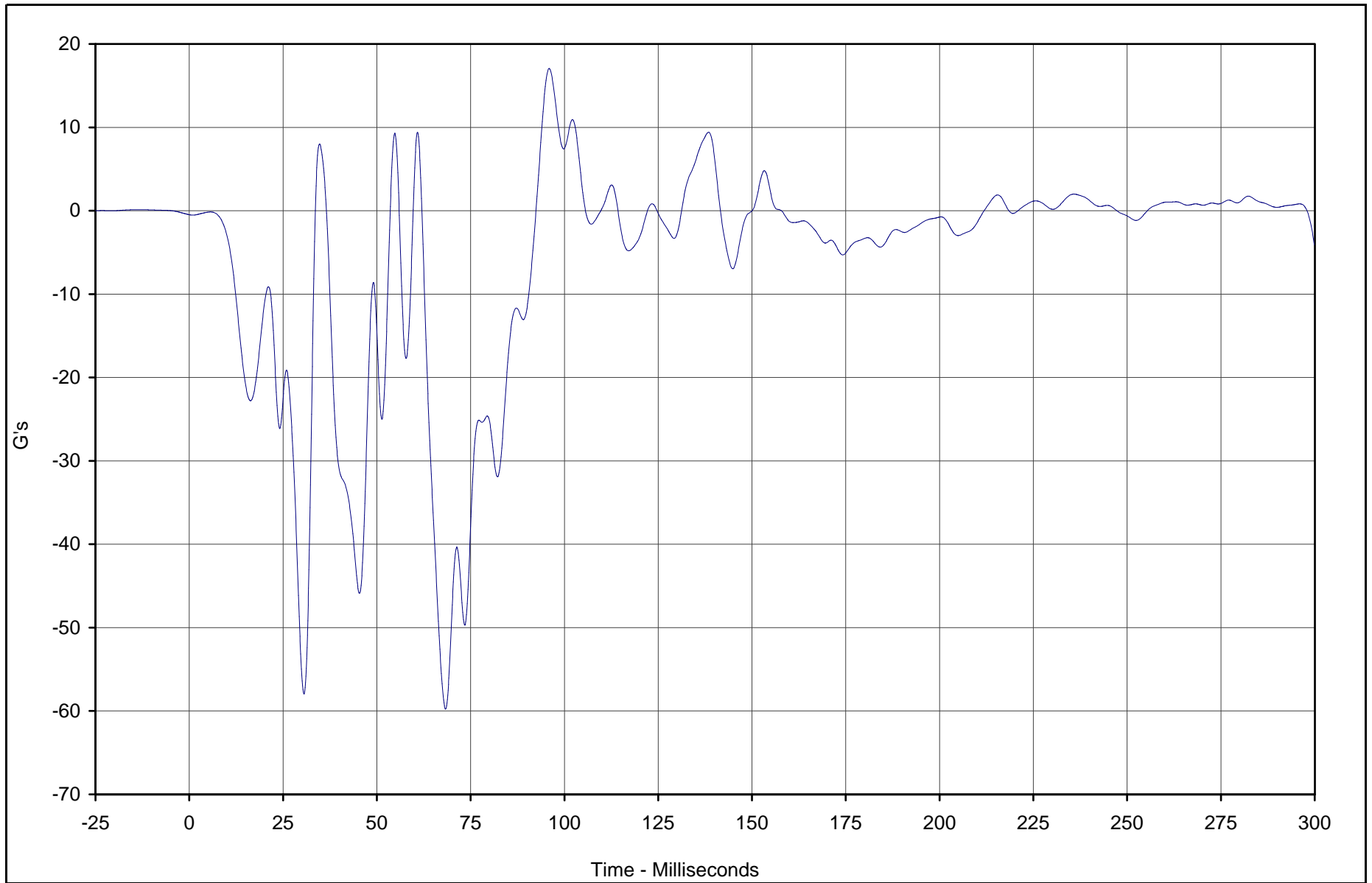
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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B-141



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Instrument Panel	095	FIL	G's	17.1	95.9	-59.8	68.3	60



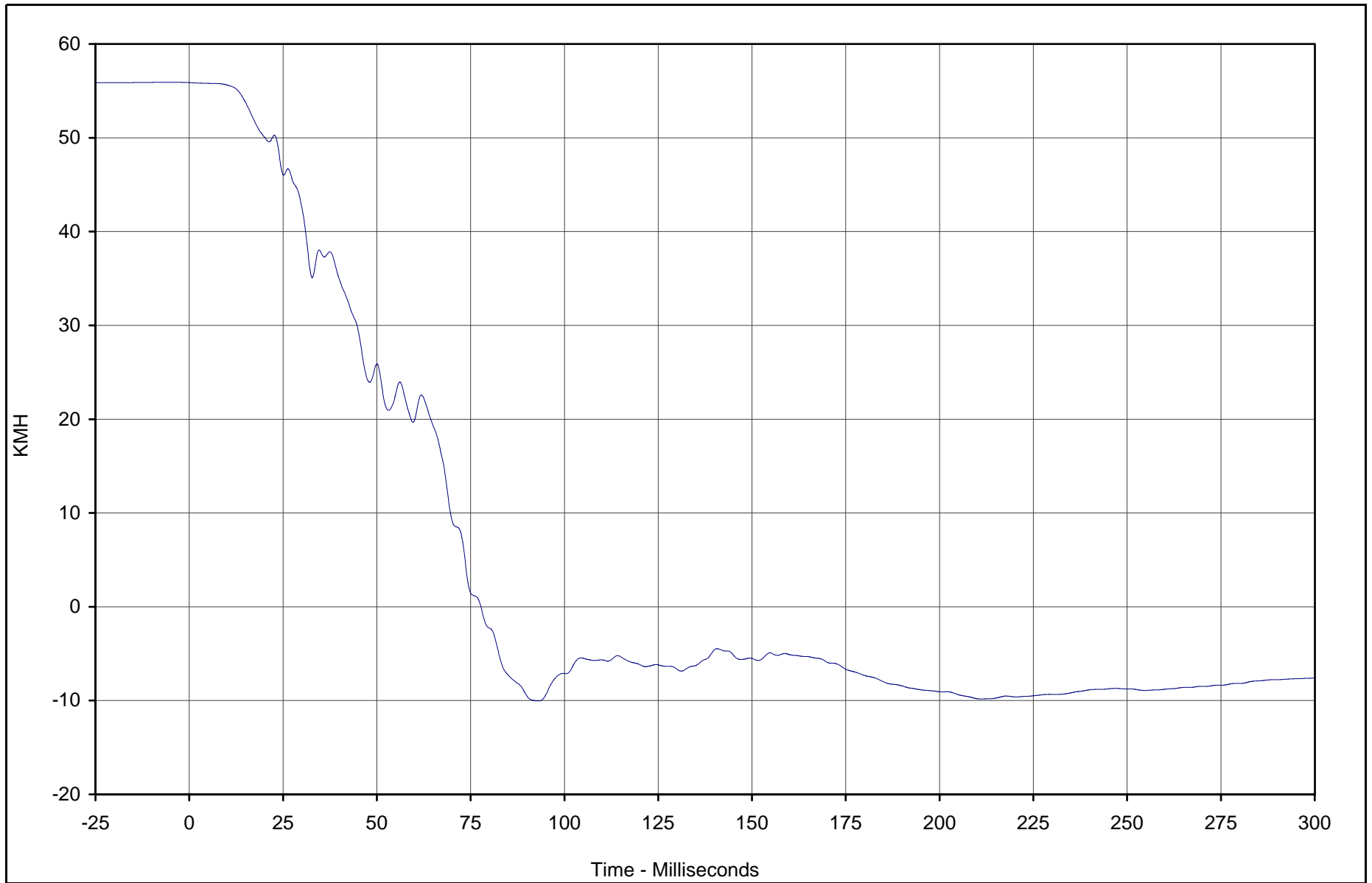
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

B-142



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Instrument Panel Velocity	095	IN1	KMH	55.9	0.0	-10.0	93.1	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

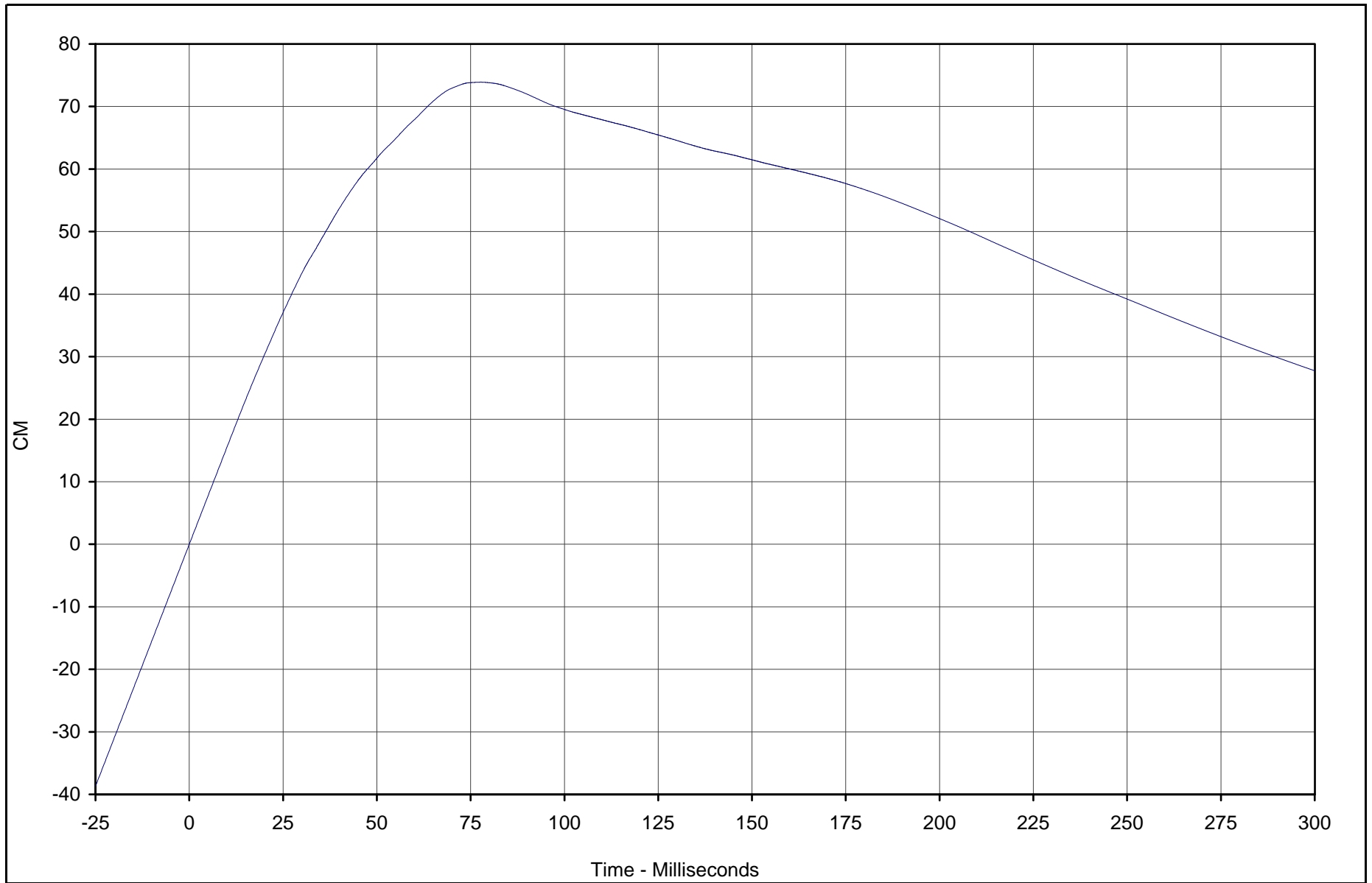
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-143



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Instrument Panel Displacement	095	IN2	CM	73.9	77.7	0.0	0.0	180



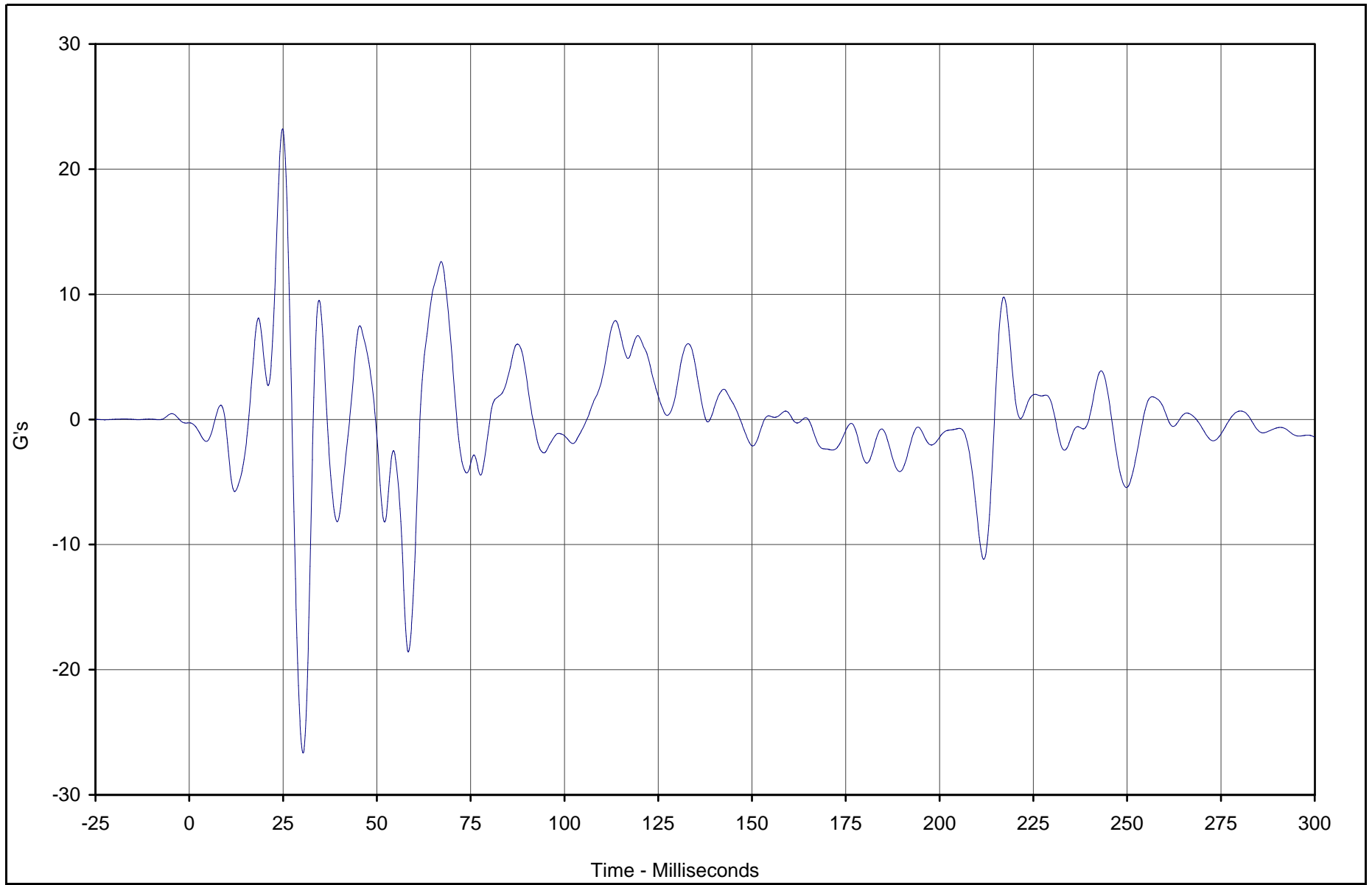
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear Z	096	FIL	G's	23.2	24.9	-26.7	30.3	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

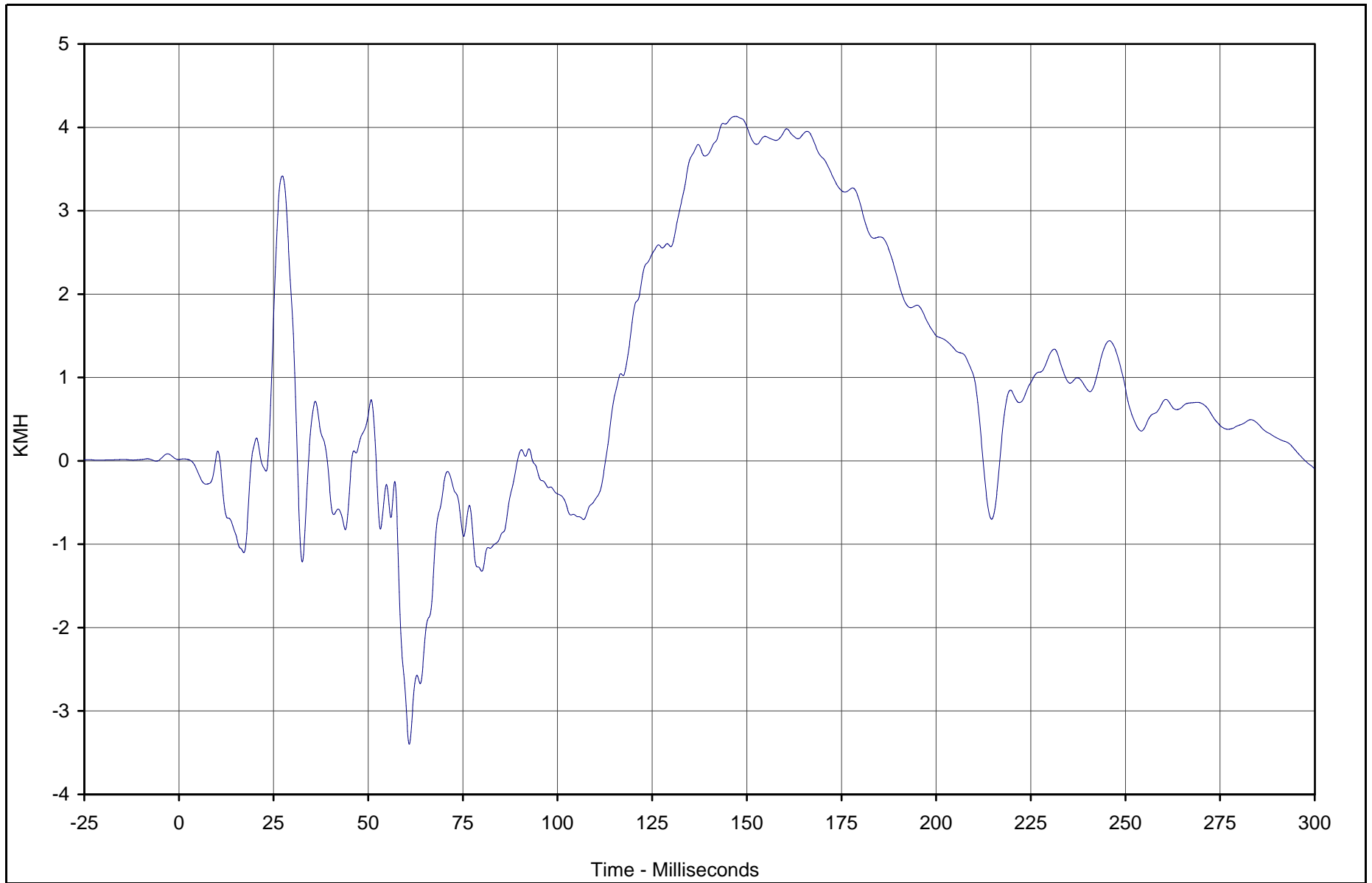
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-145



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear Z Velocity	096	IN1	KMH	4.1	147.1	-3.4	60.8	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

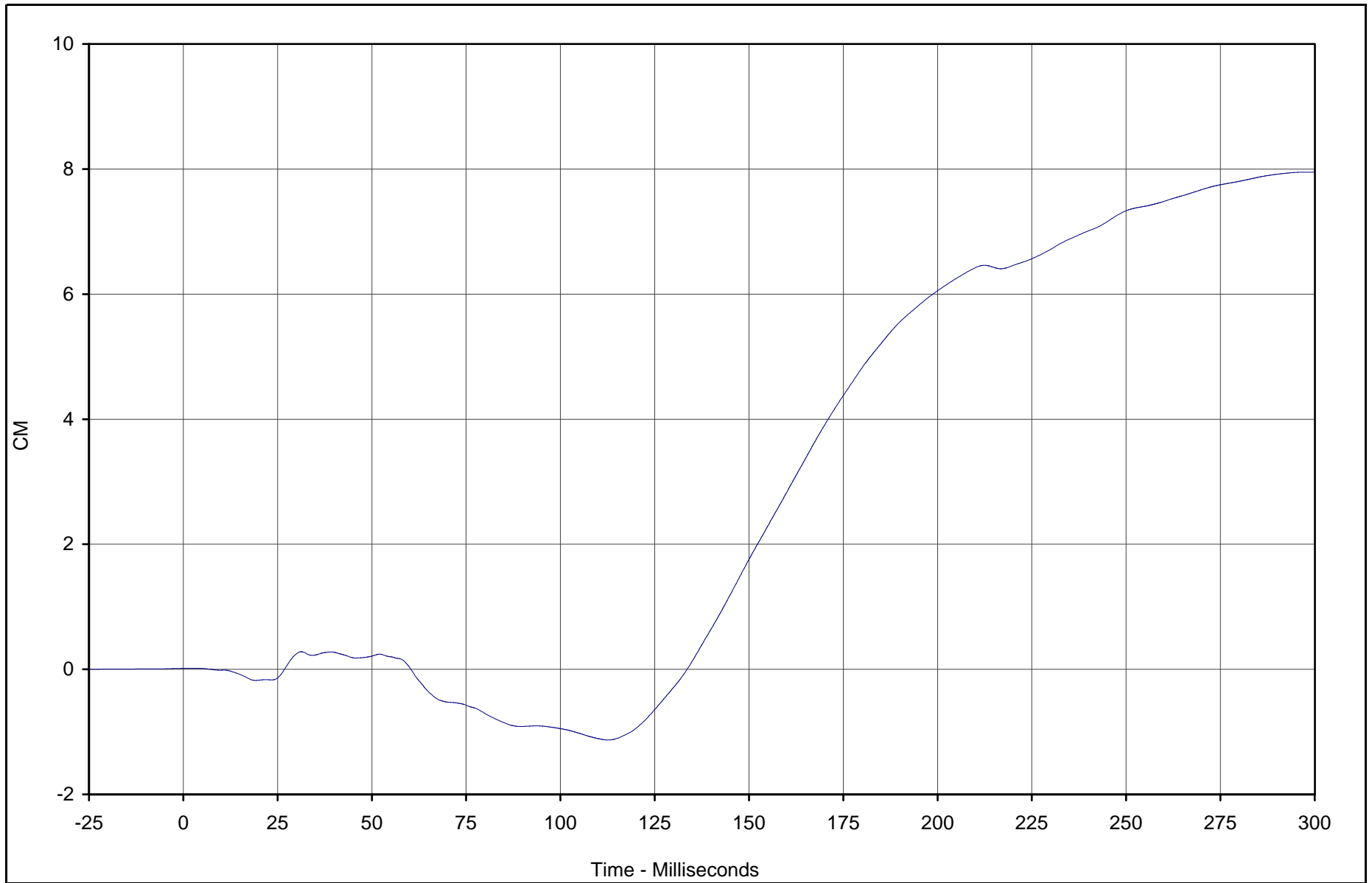
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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B-146



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear Z Displ.	096	IN2	CM	8.0	297.5	-1.1	112.7	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

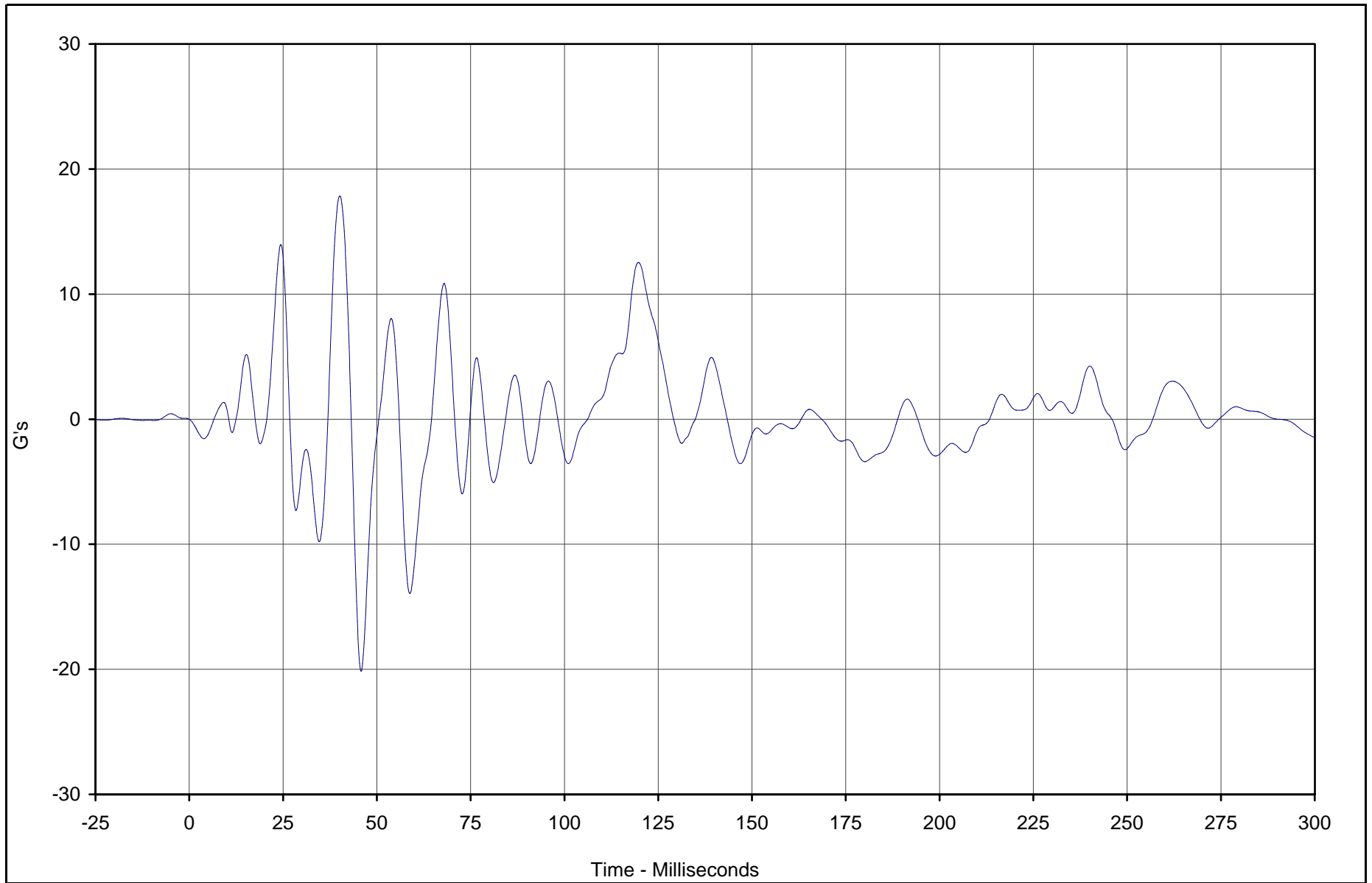
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-147



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear Z	097	FIL	G's	17.8	40.1	-20.2	45.8	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

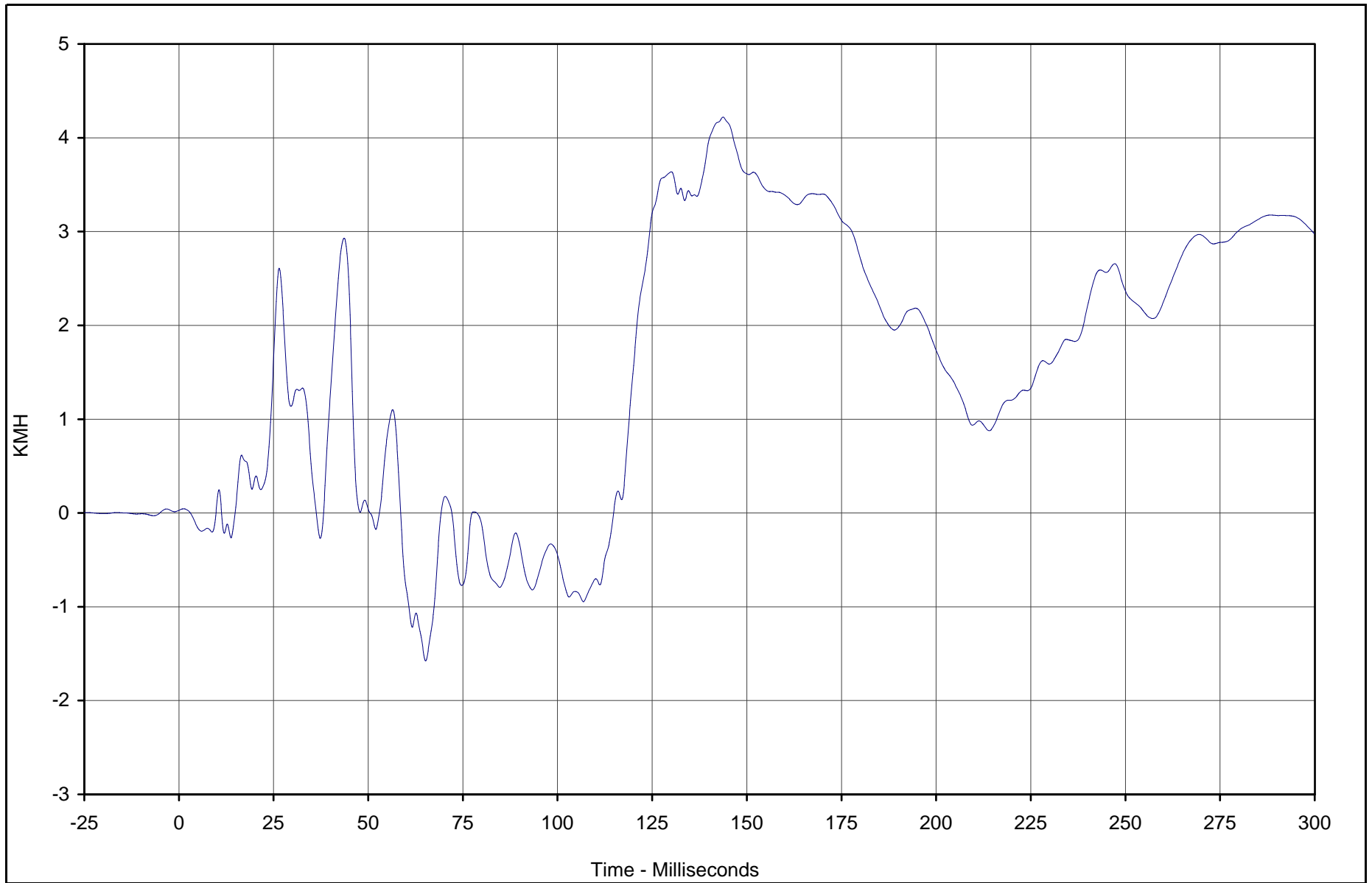
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

B-148



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear Z Velocity	097	IN1	KMH	4.2	143.7	-1.6	65.2	180



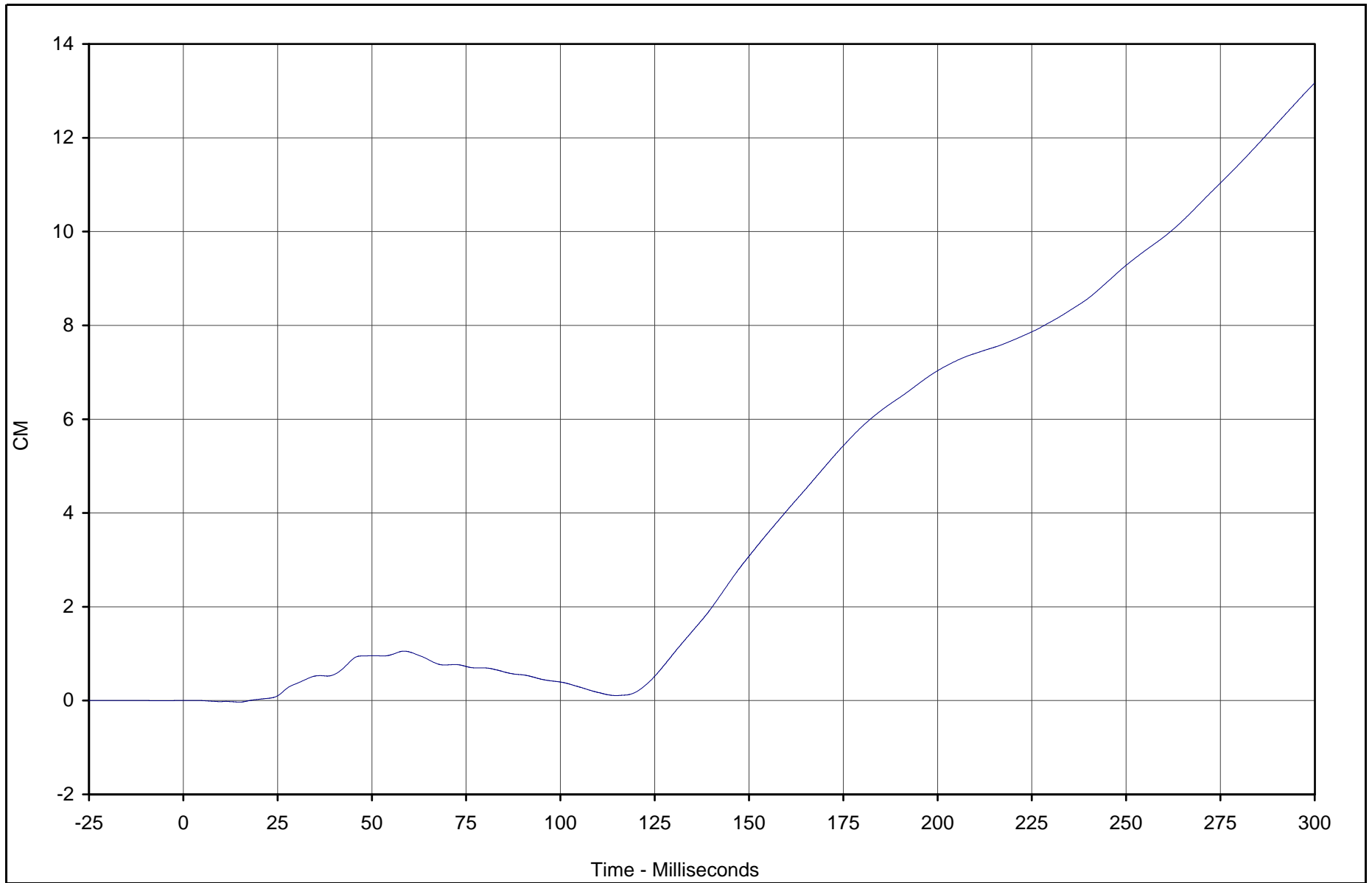
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear Z Displ.	097	IN2	CM	13.2	299.9	0.0	14.8	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

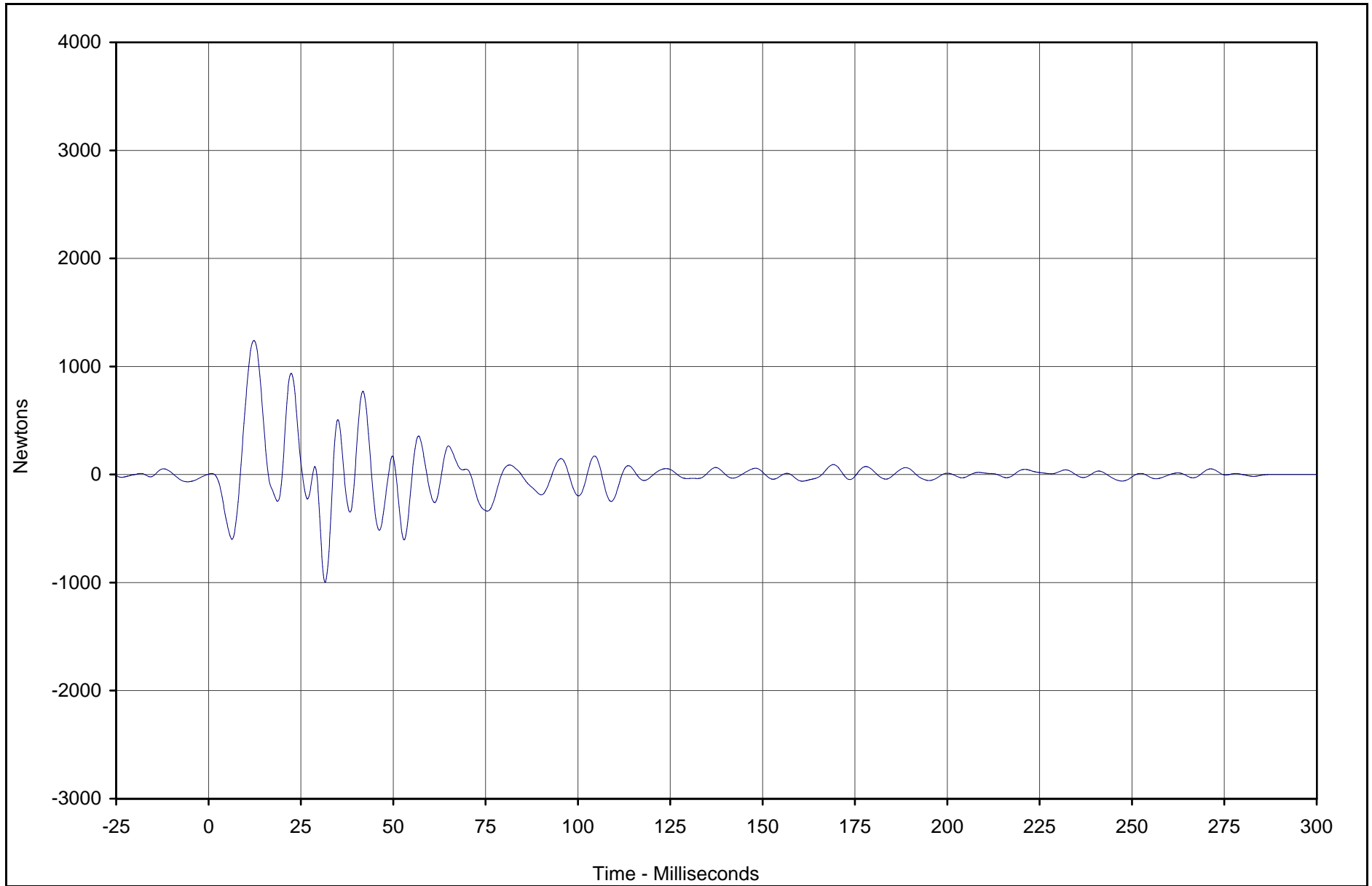
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

**APPENDIX C**  
**LOAD CELL BARRIER DATA PLOTS**

C-1



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A1	098	FIL	Newtons	1240.7	12.3	-996.9	31.6	60



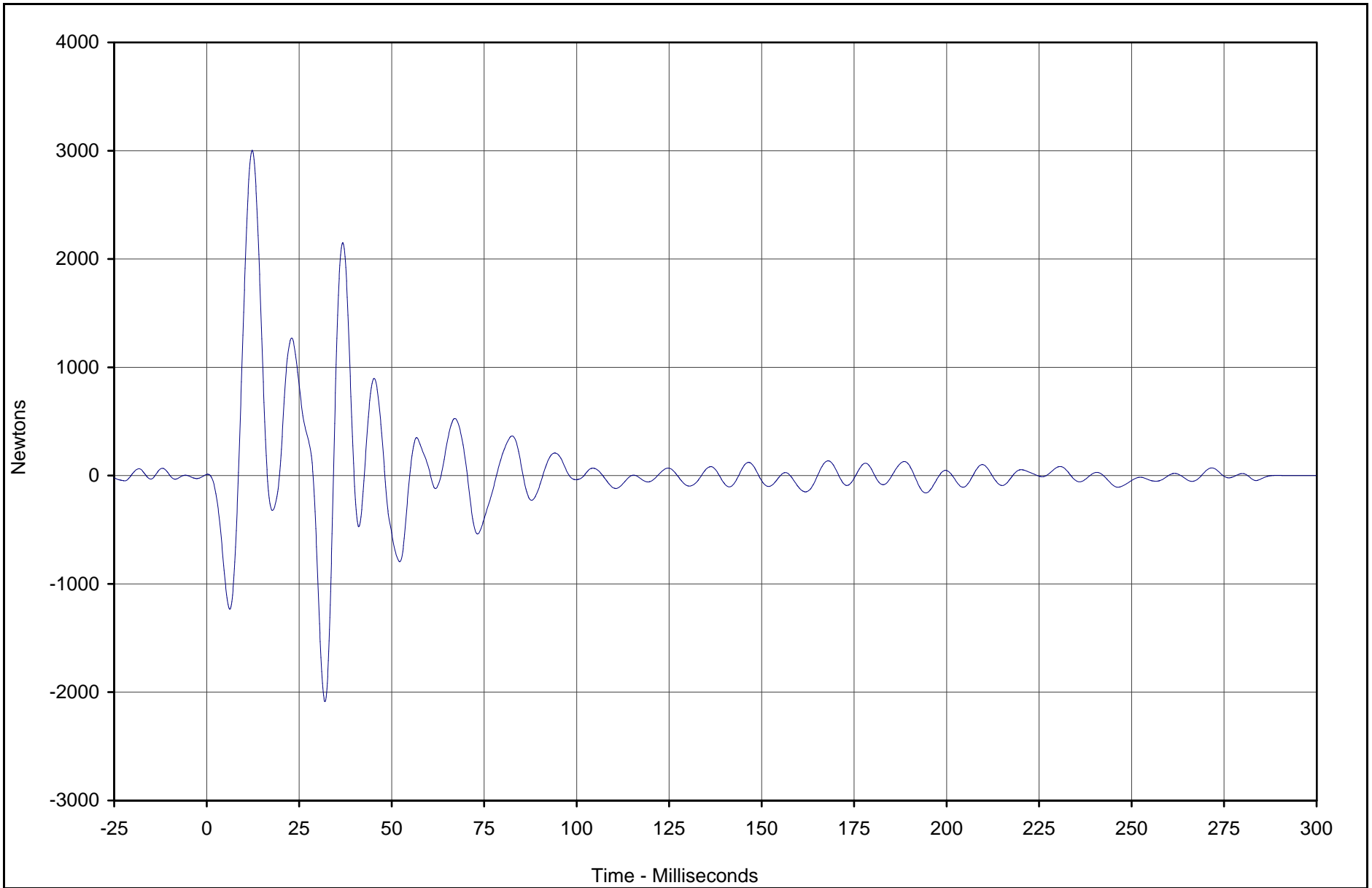
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

C-2



TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A2	099	FIL	Newtons	3004.8	12.3	-2087.8	32.0	60

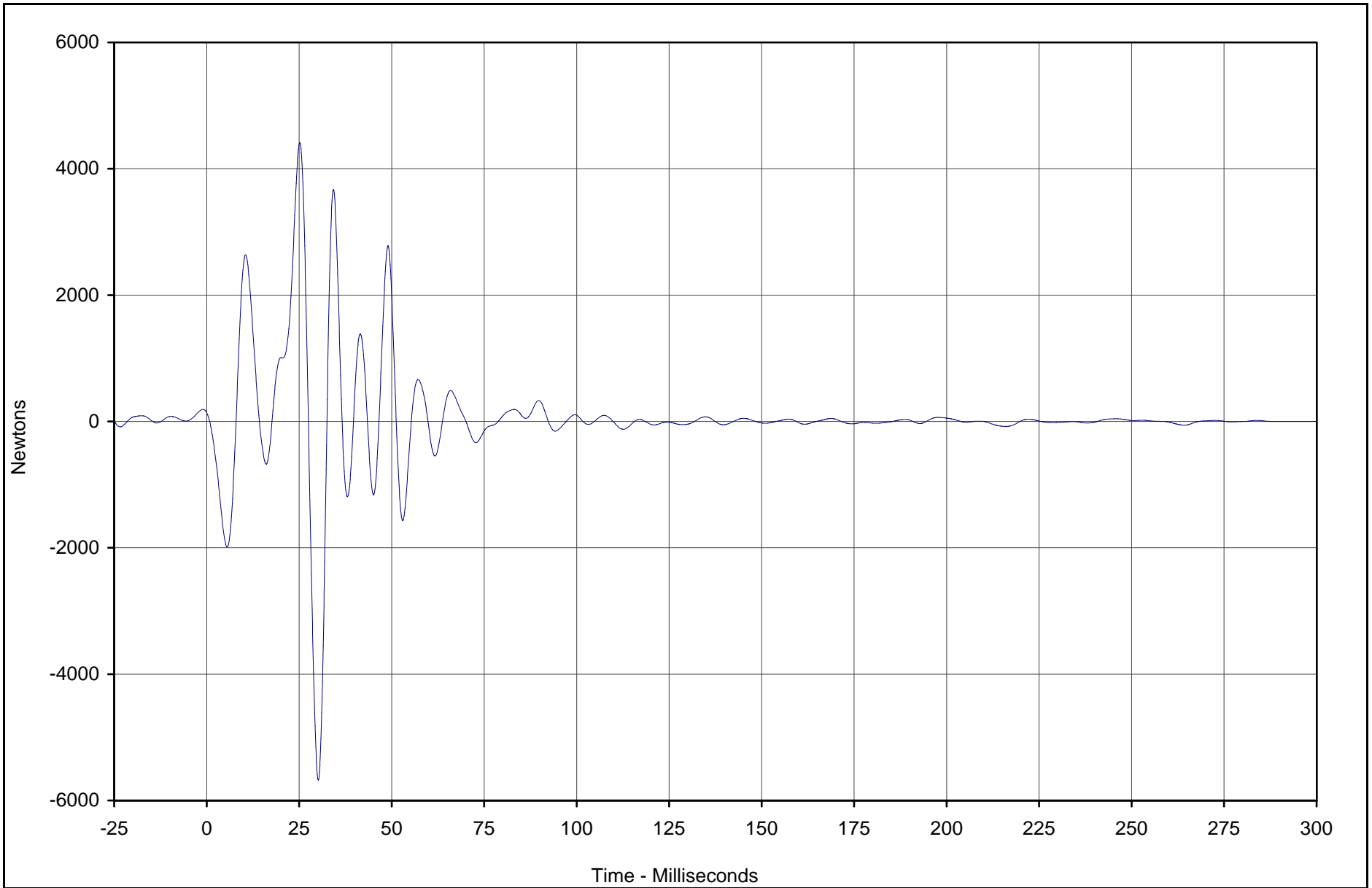


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A3	100	FIL	Newtons	4414.8	25.2	-5678.9	30.2	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

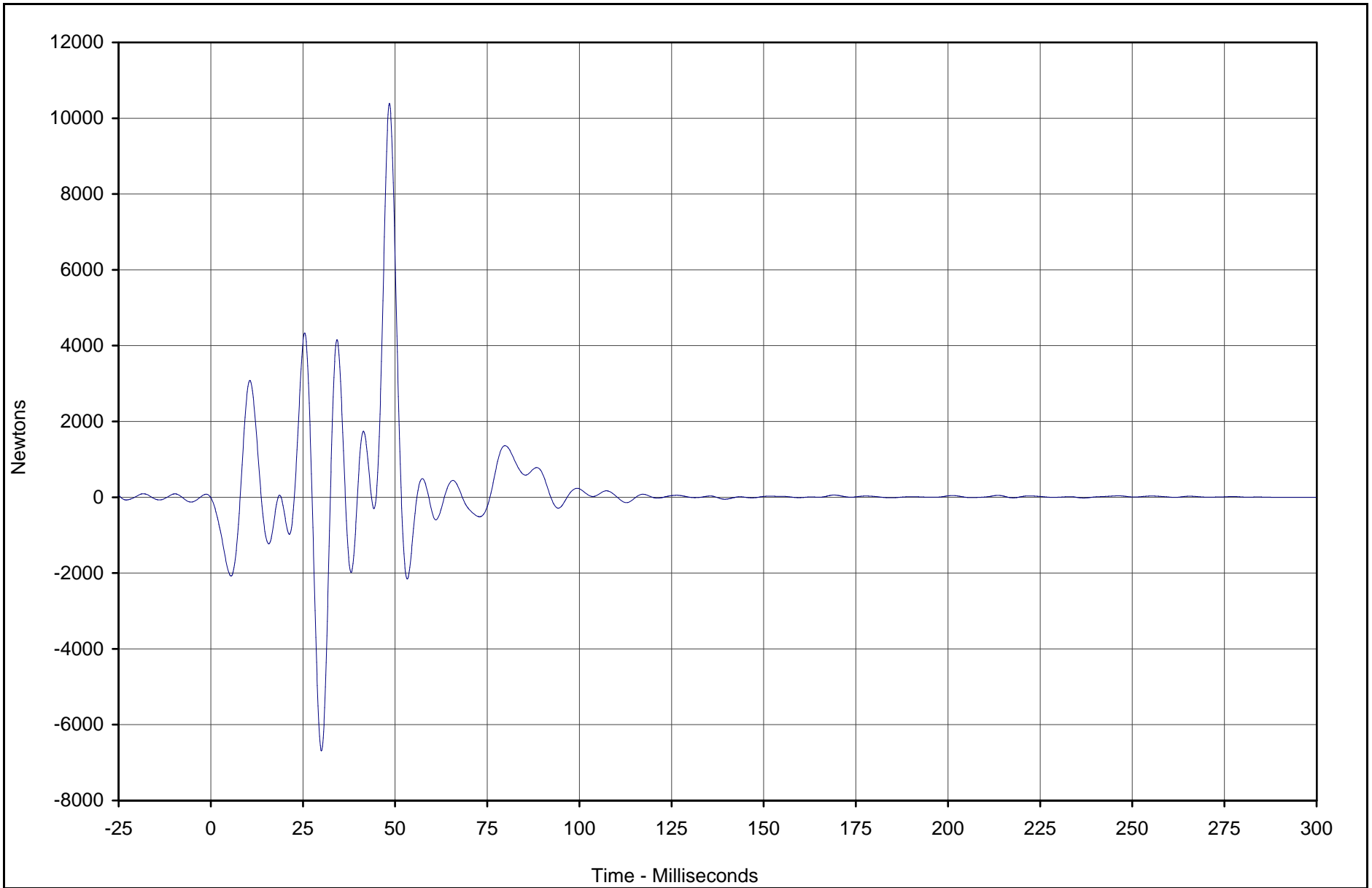
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

C-4

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A4	101	FIL	Newtons	10389.9	48.5	-6693.3	30.0	60

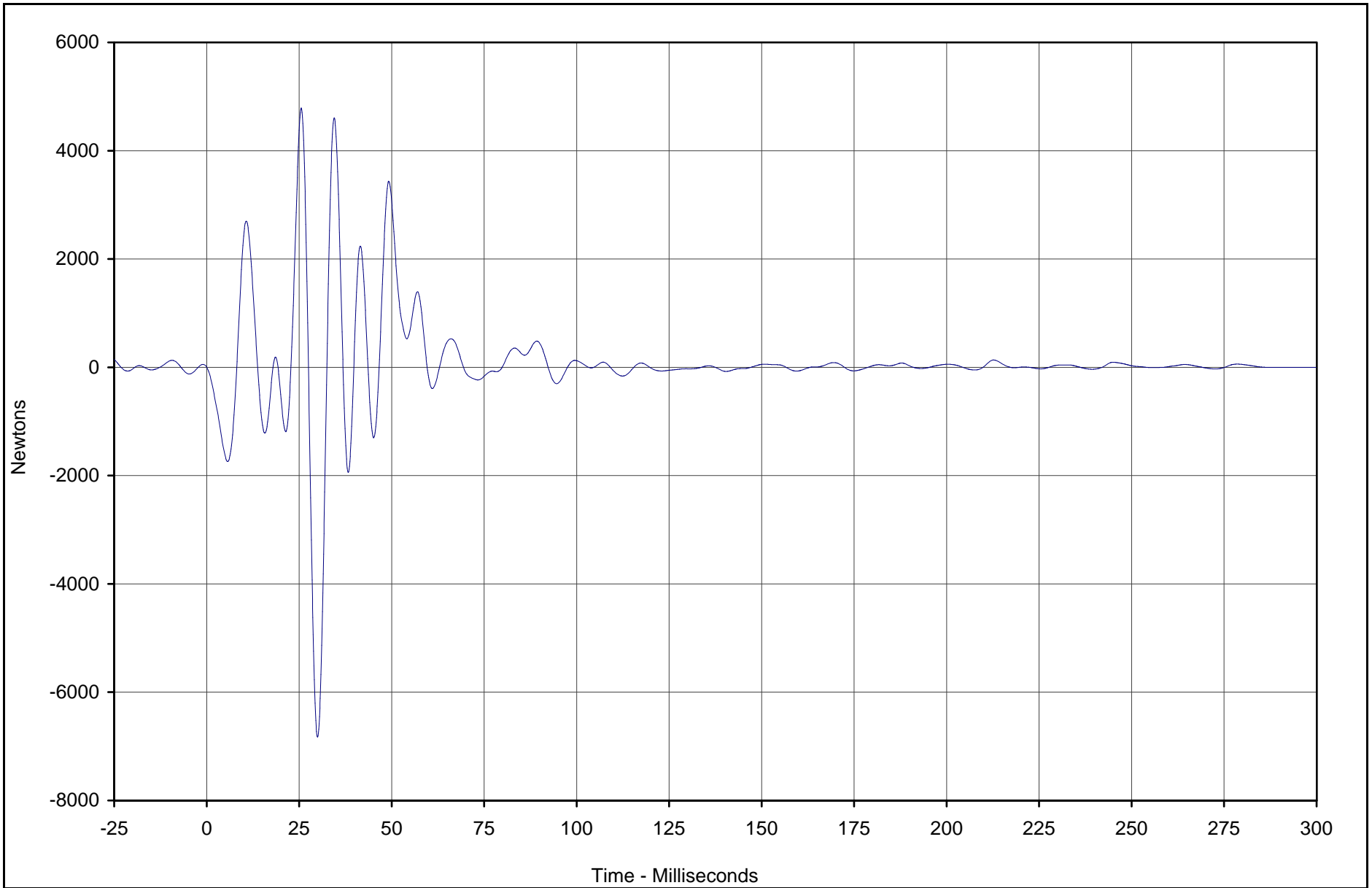


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A5	102	FIL	Newtons	4788.4	25.6	-6828.6	30.0	60

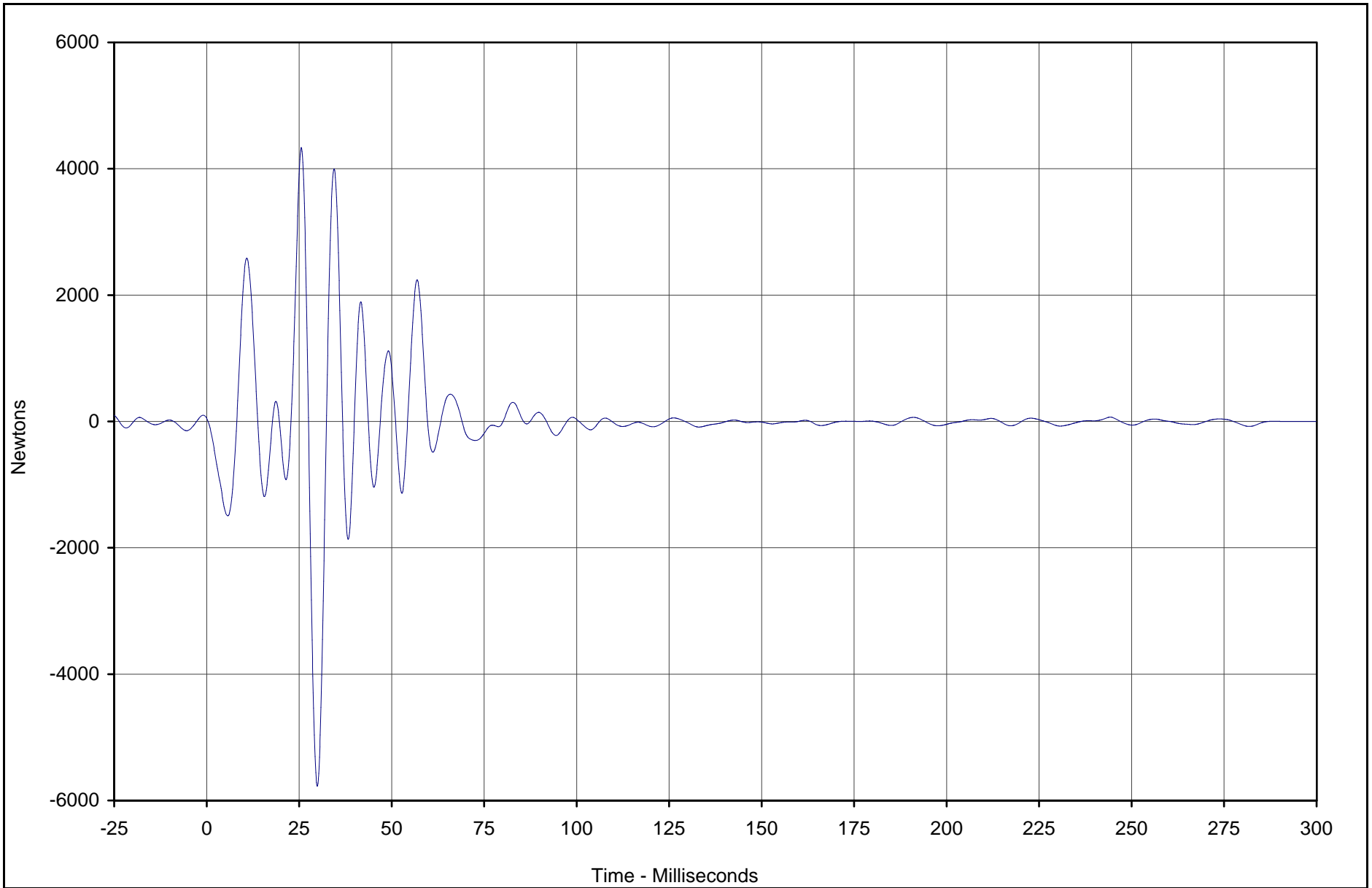


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A6	103	FIL	Newtons	4335.3	25.6	-5773.9	29.9	60

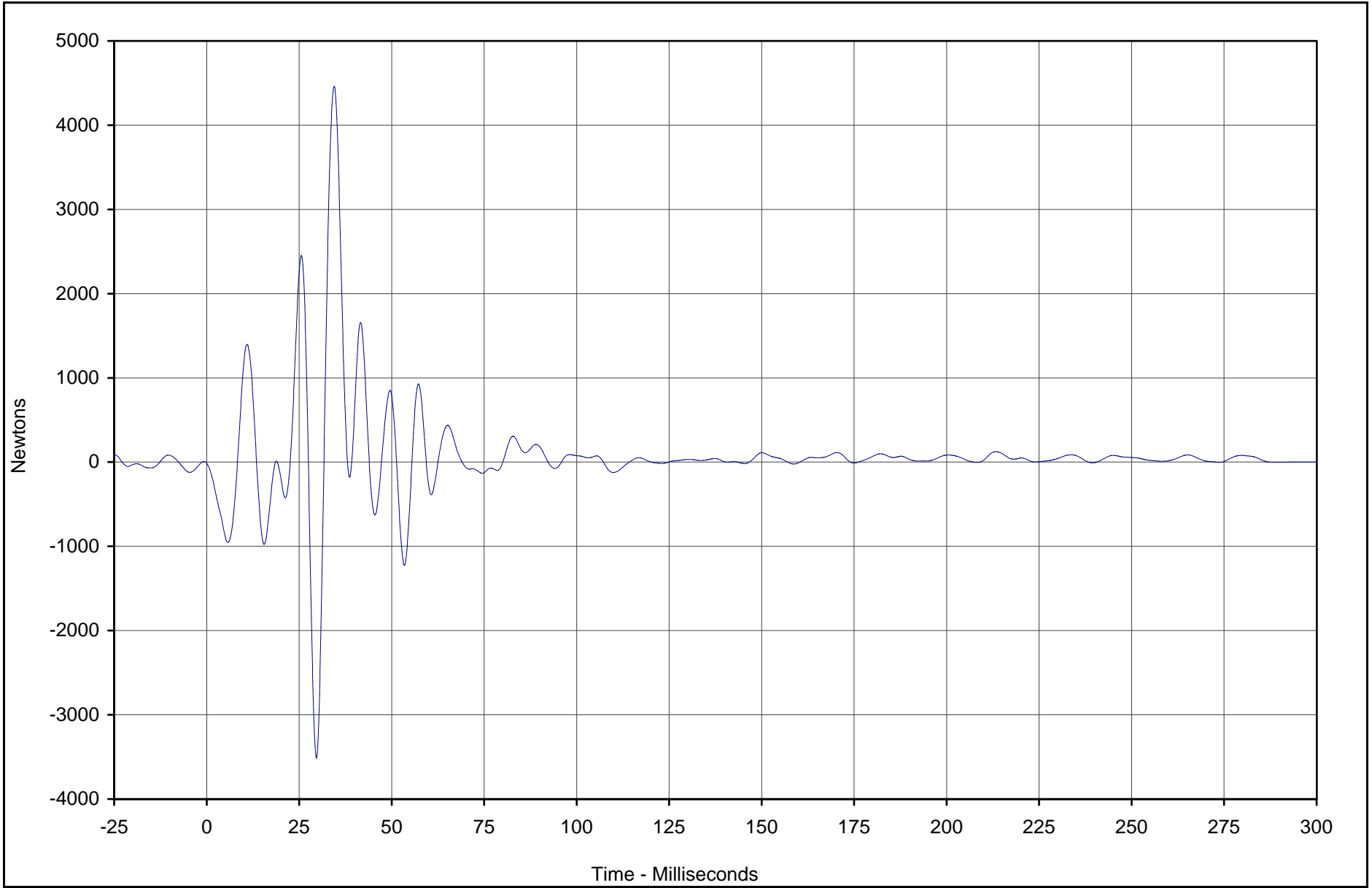


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A7	104	FIL	Newtons	4461.6	34.5	-3515.6	29.7	60

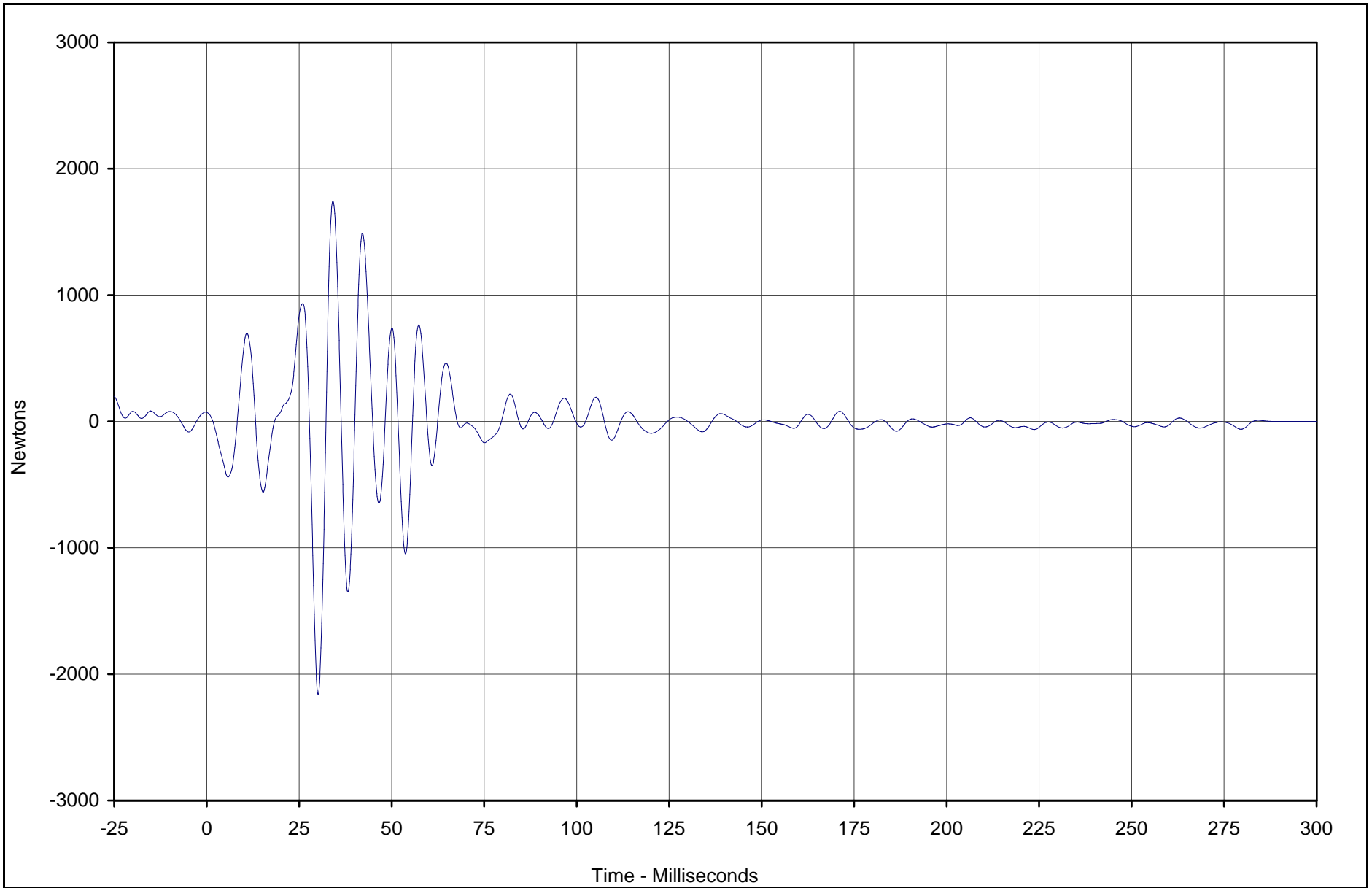


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A8	105	FIL	Newtons	1741.7	34.1	-2160.1	30.1	60

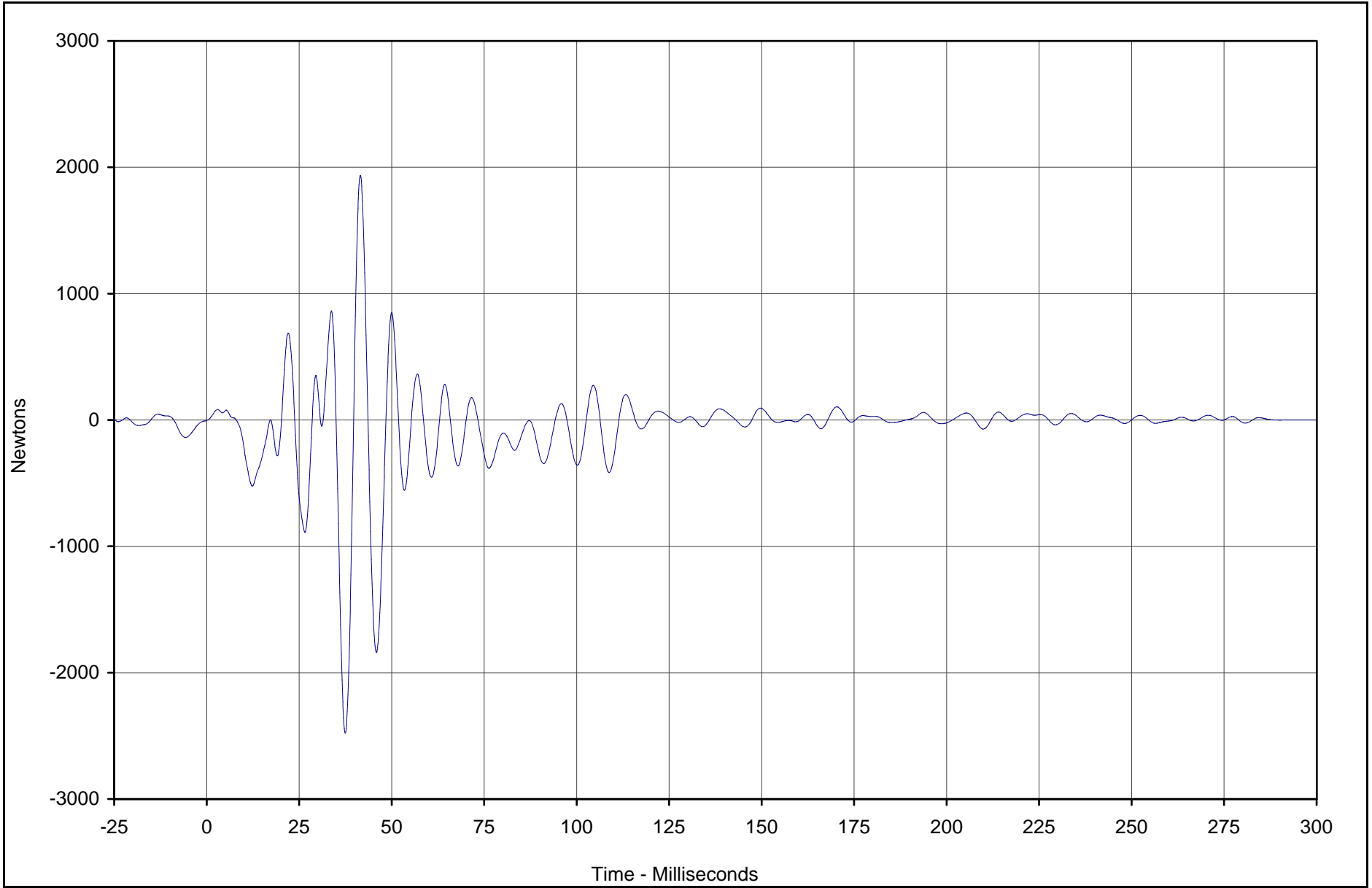


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

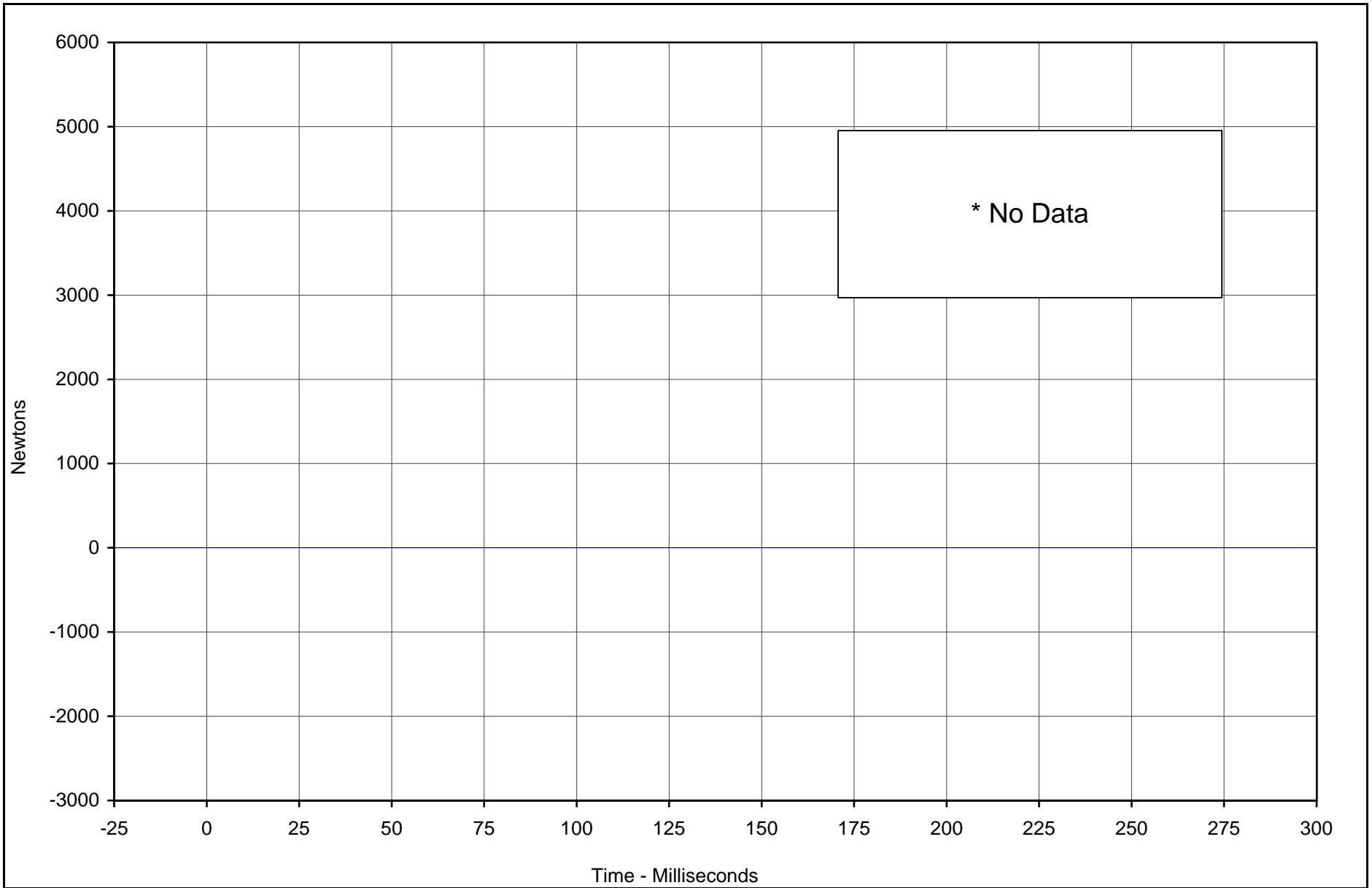


Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A9	106	FIL	Newtons	1936.4	41.5	-2477.9	37.5	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35mph NCAP

Test Date: 12/17/02  
 NHTSA No.: M35112



\* No Data

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B1	107	FIL	Newtons	0.0	0.0	0.0	0.0	60



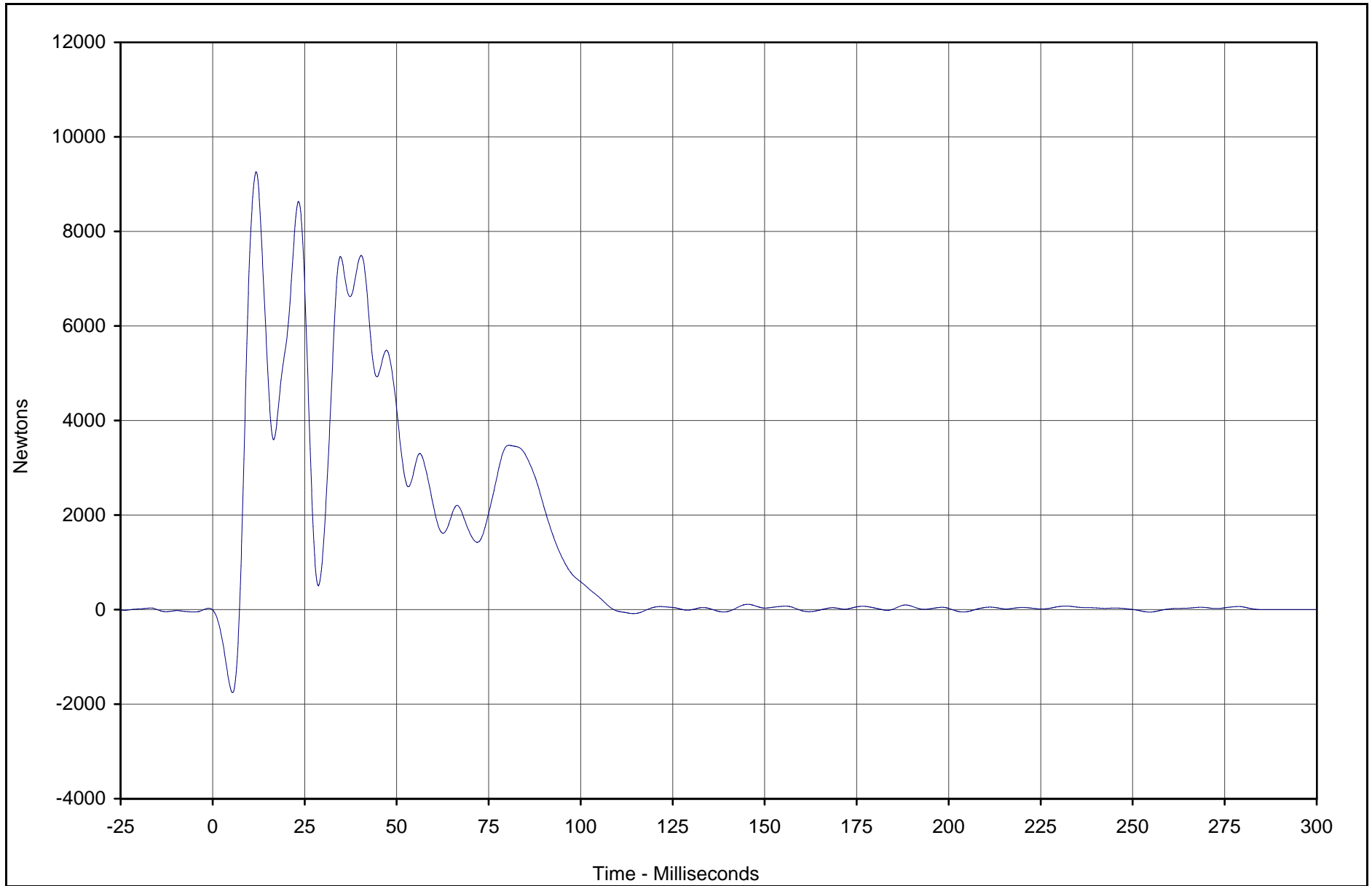
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B2	108	FIL	Newtons	9261.5	11.8	-1756.6	5.4	60



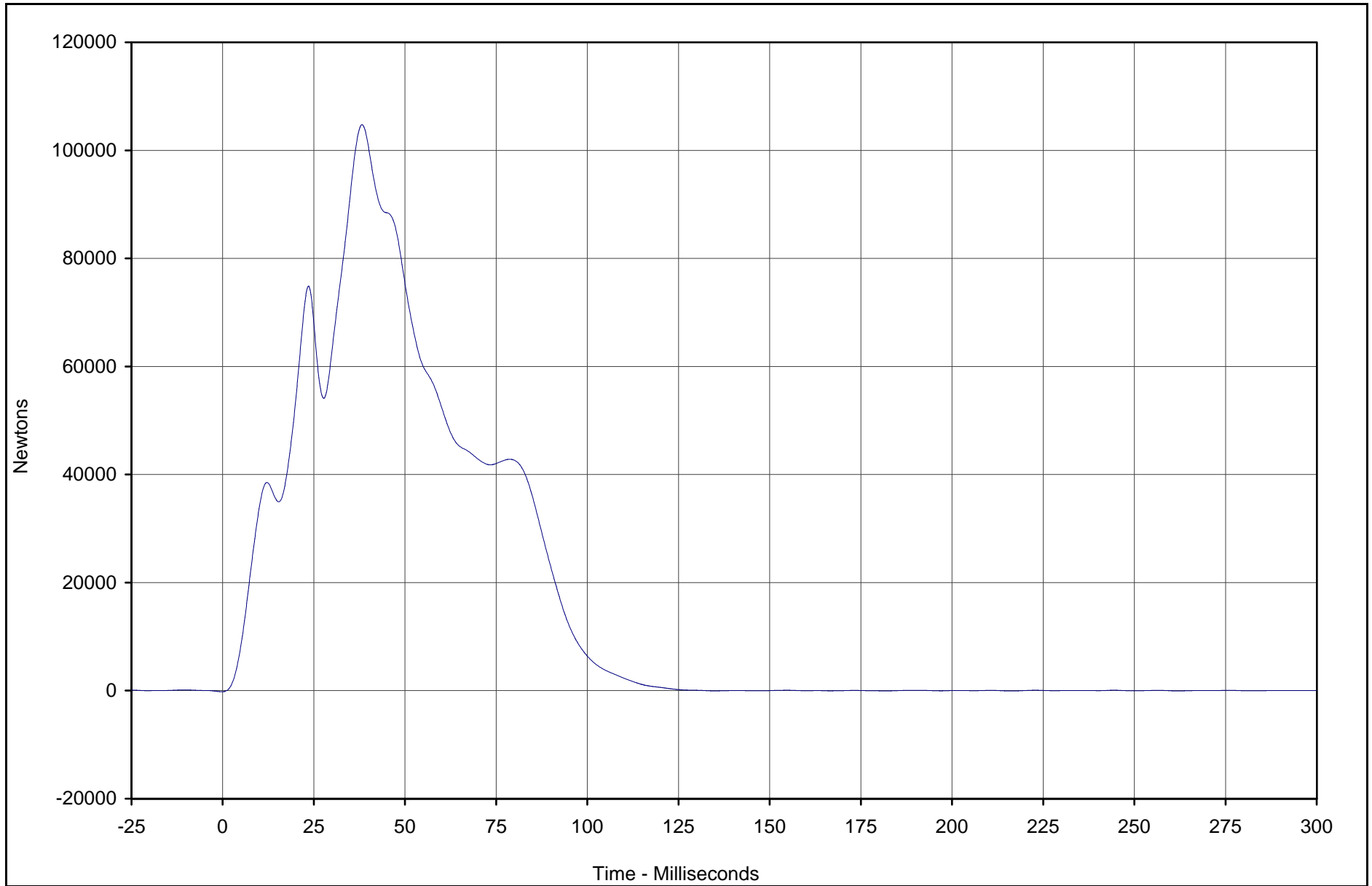
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B3	109	FIL	Newtons	104754.9	38.2	-209.2	0.0	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

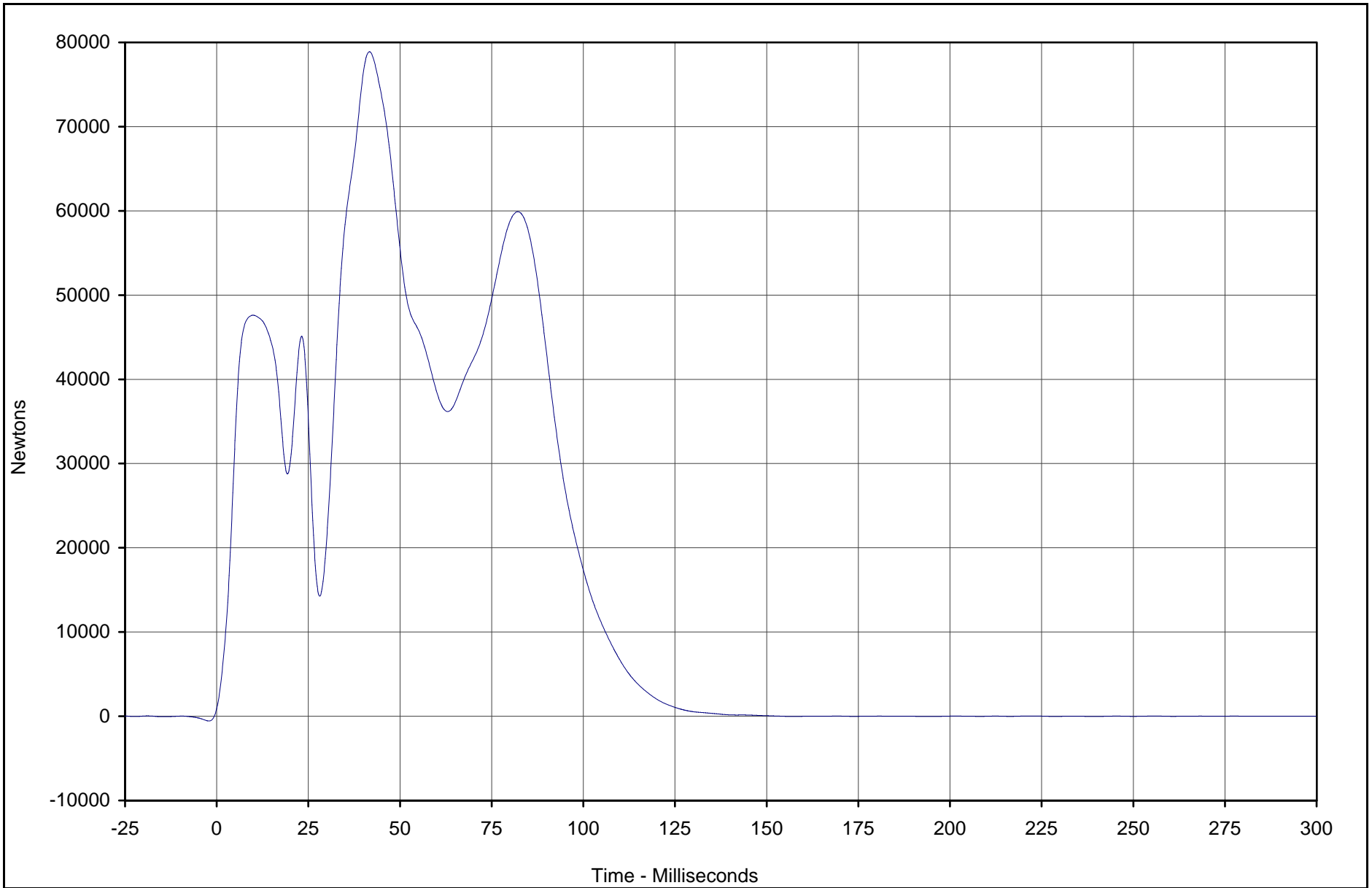
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B4	110	FIL	Newtons	78895.8	41.7	-28.4	239.7	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

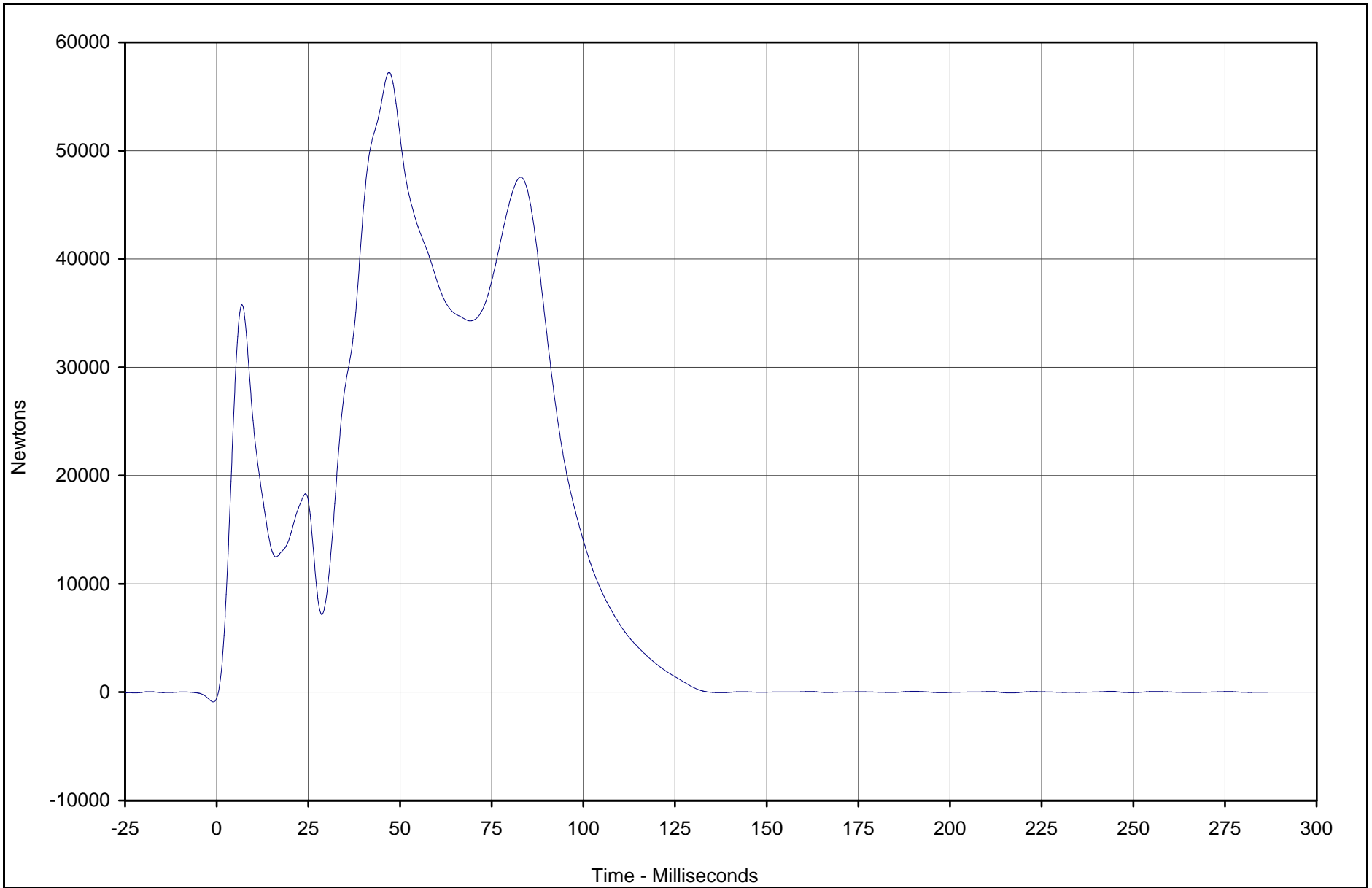
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B5	111	FIL	Newtons	57234.8	47.0	-539.1	0.0	60

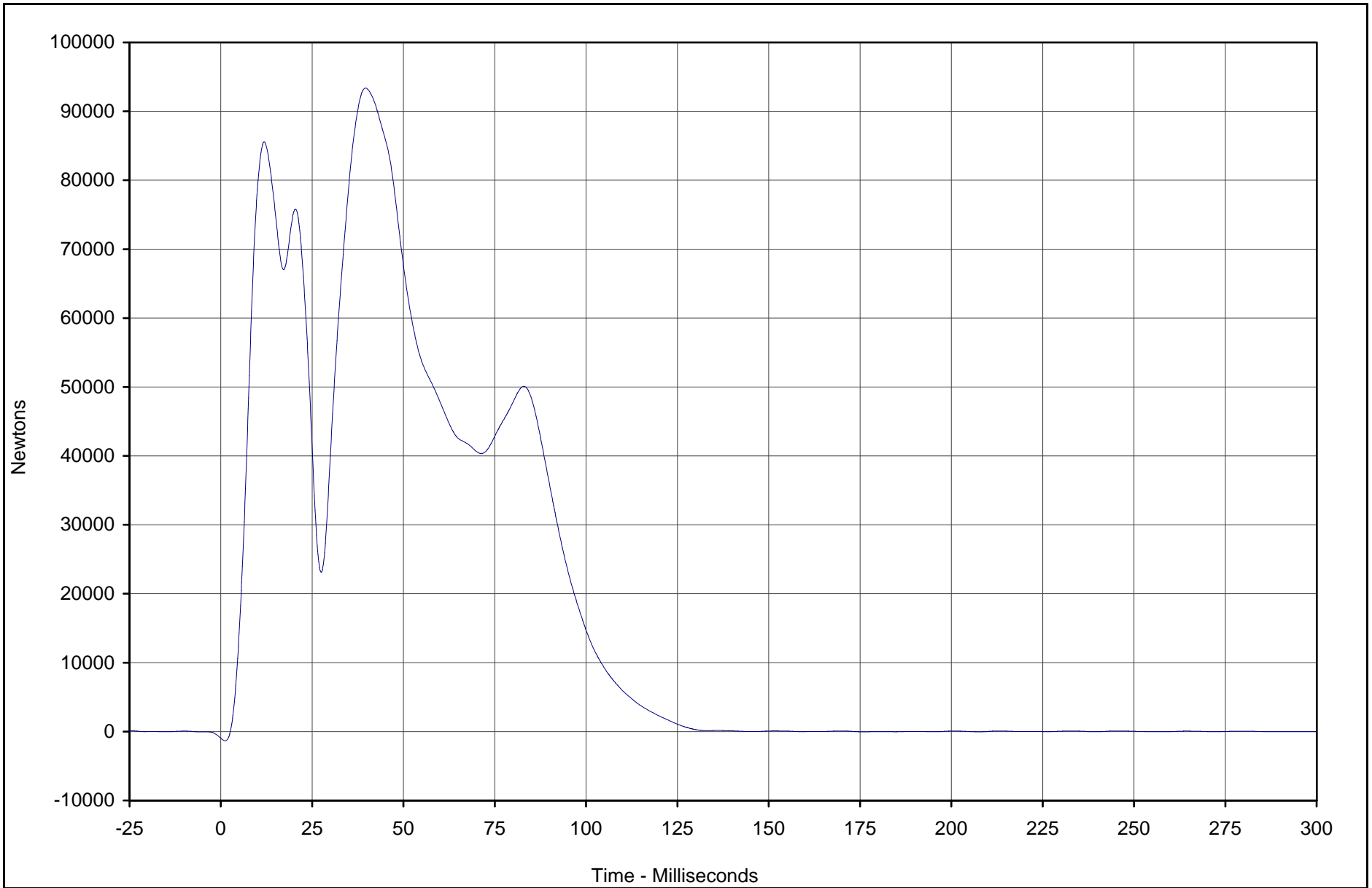


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B6	112	FIL	Newtons	93373.2	39.6	-1331.4	1.2	60

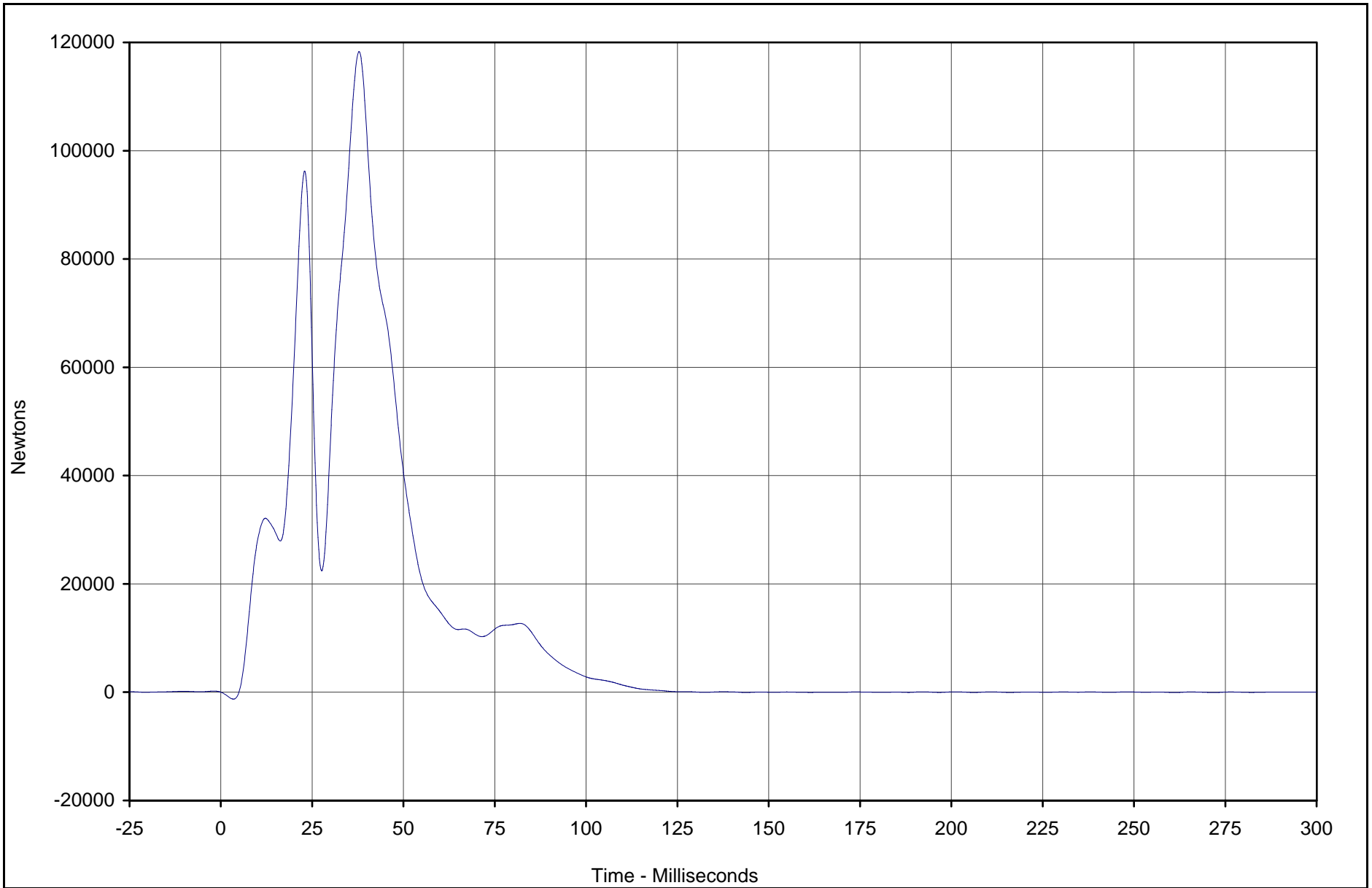


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B7	113	FIL	Newtons	118308.1	37.8	-1276.1	3.4	60

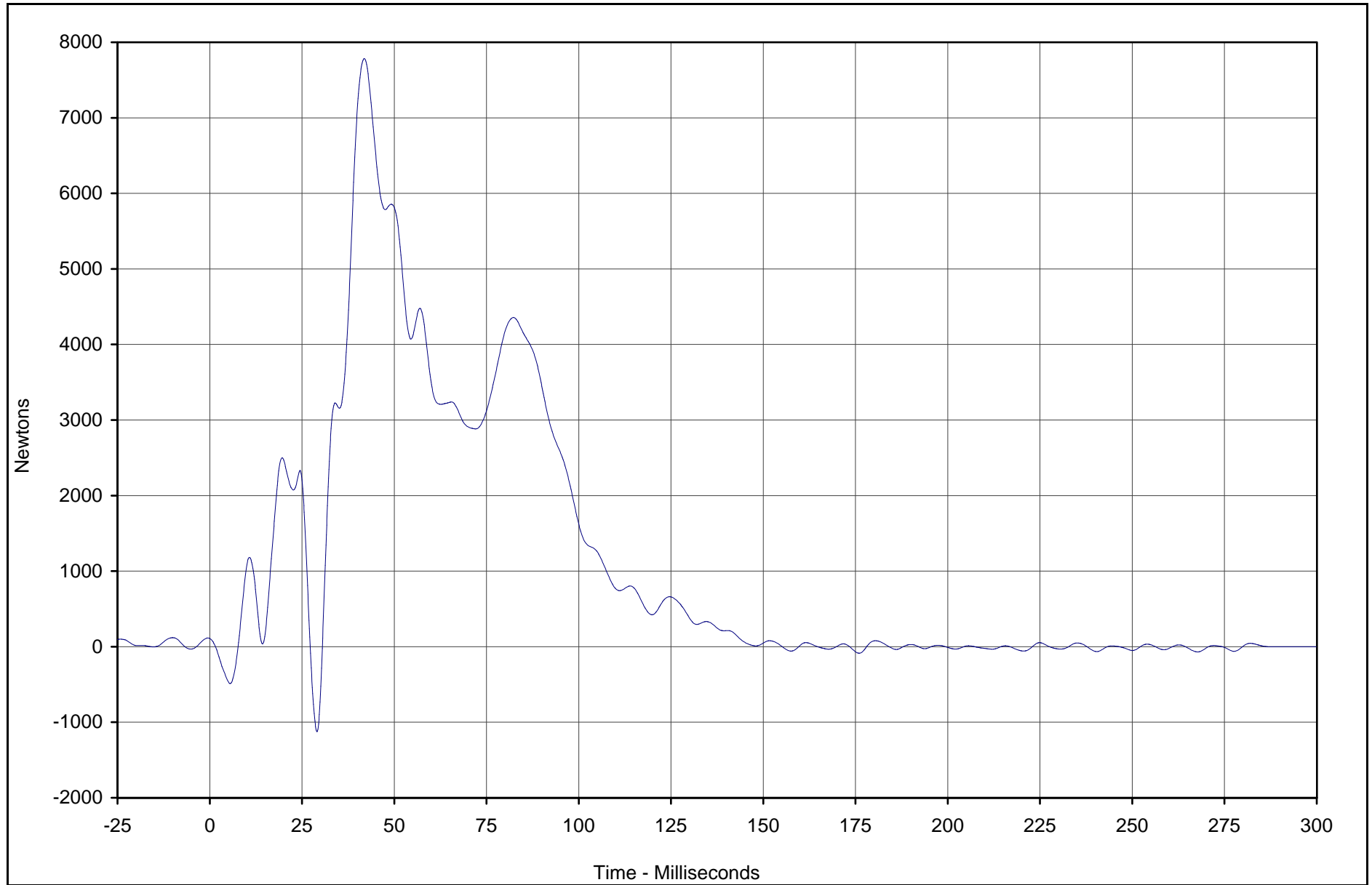


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B8	114	FIL	Newtons	7784.4	41.9	-1124.6	29.1	60

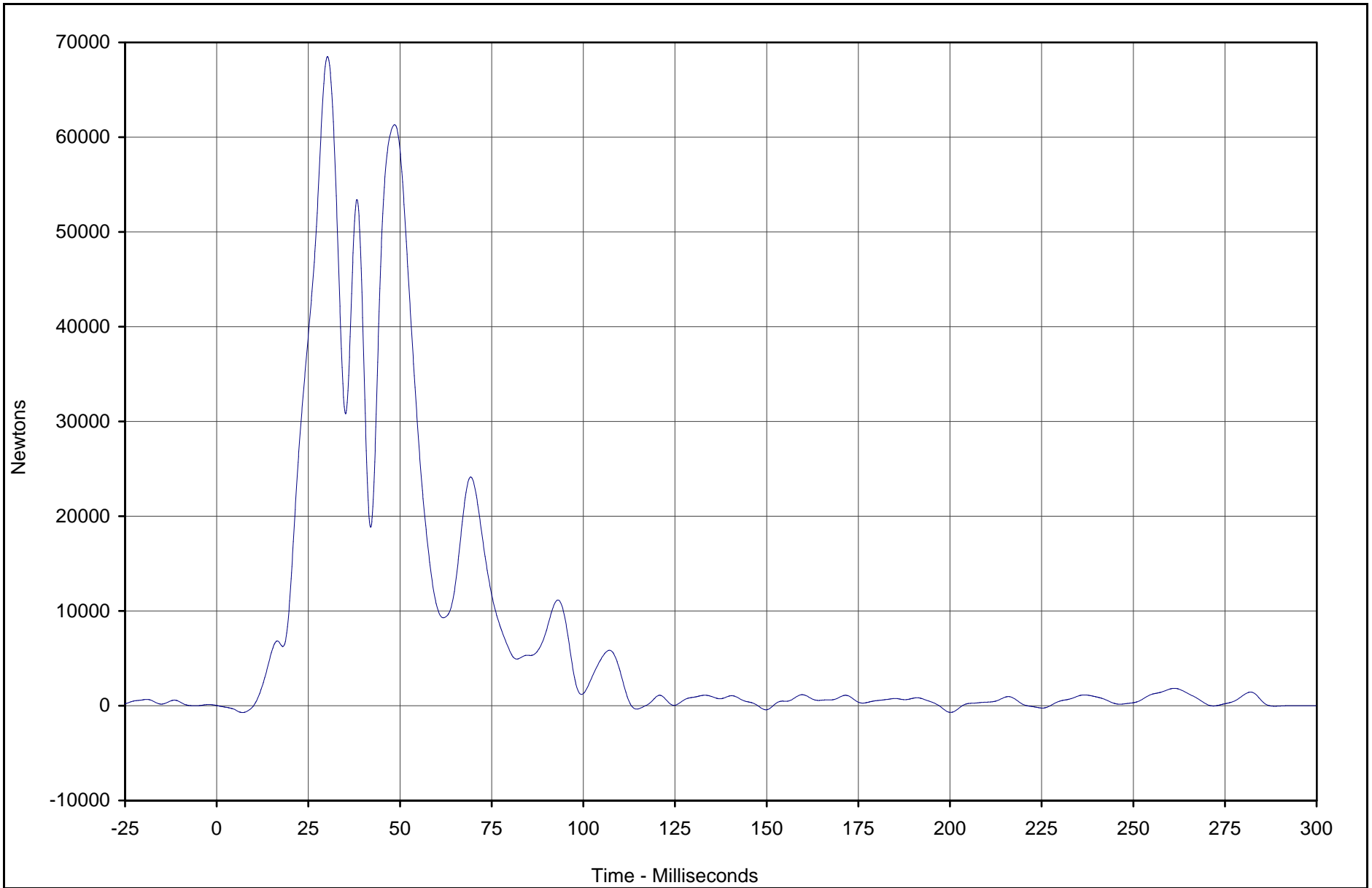


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B9	115	FIL	Newtons	68521.8	30.2	-718.9	7.1	60

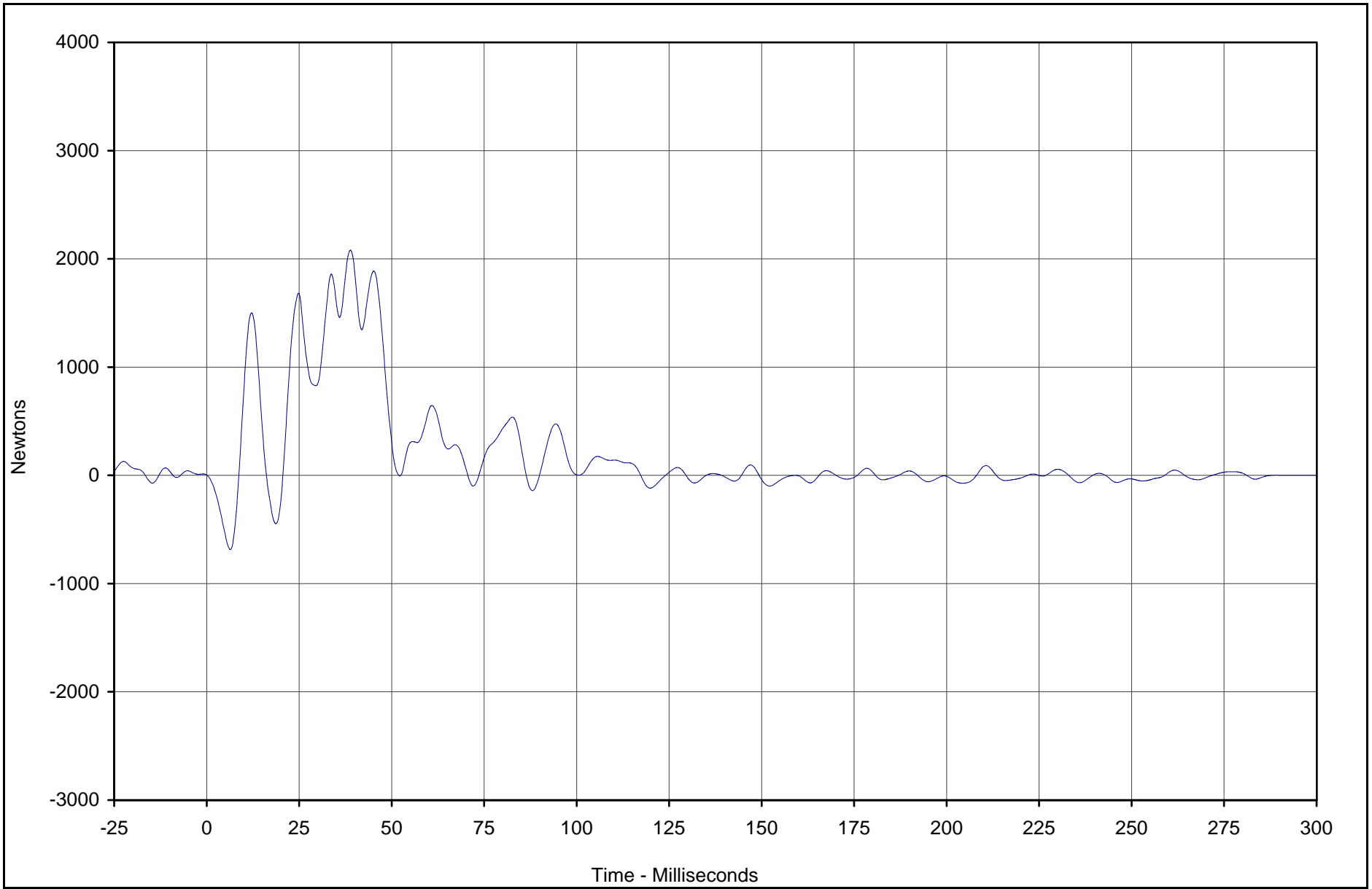


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C1	116	FIL	Newtons	2080.4	38.9	-685.7	6.4	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

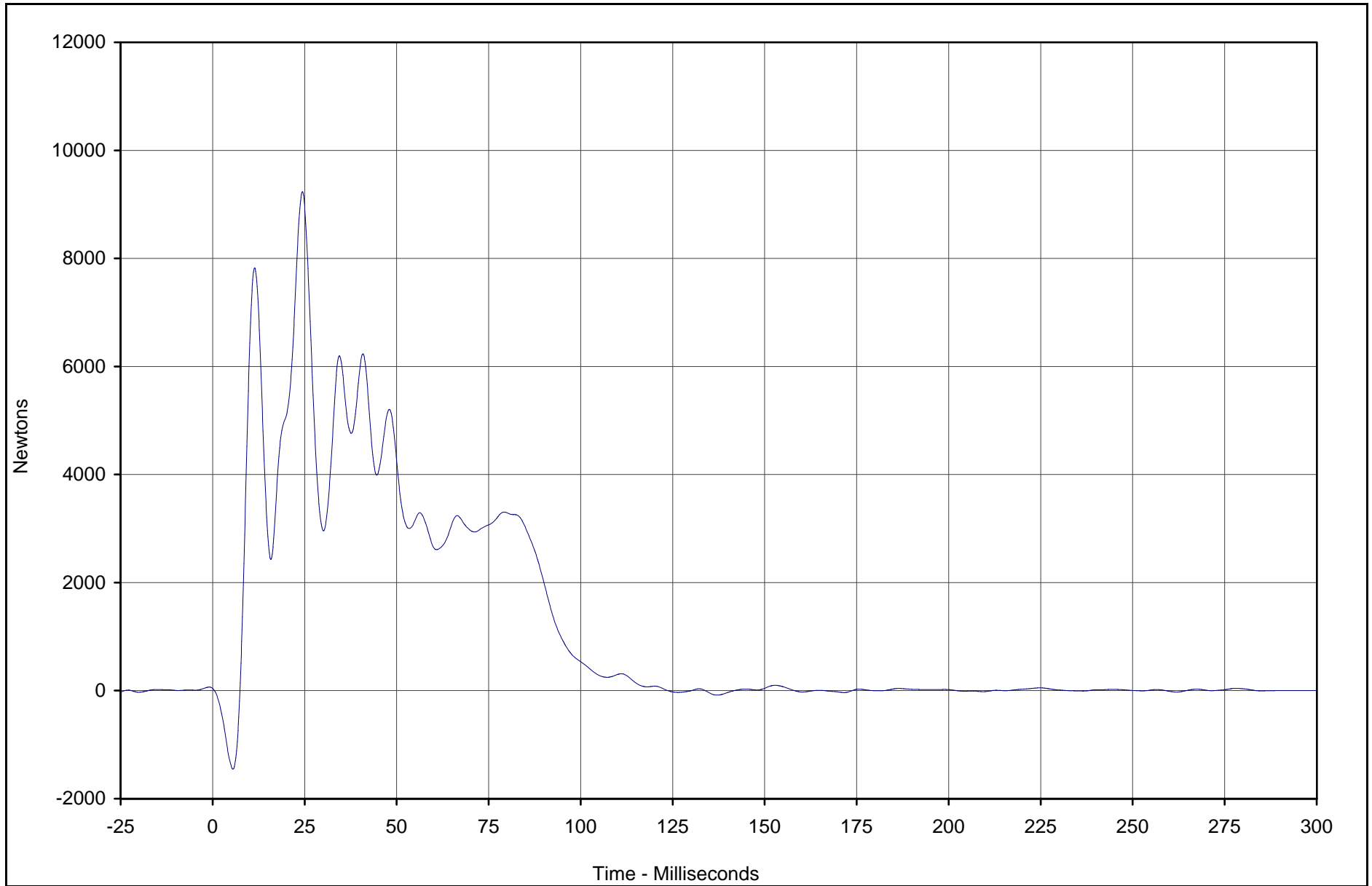
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C2	117	FIL	Newtons	9235.1	24.4	-1453.8	5.5	60

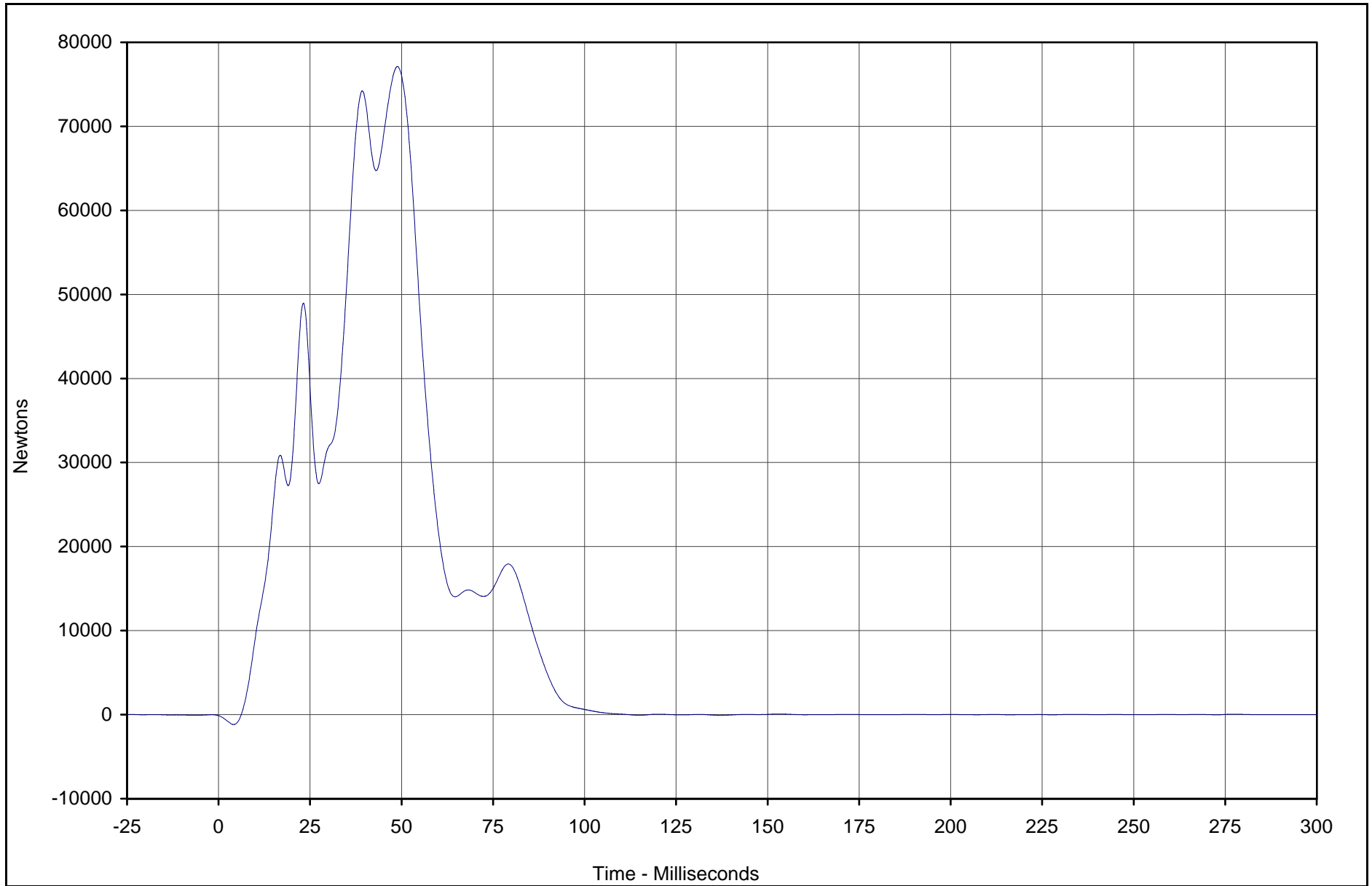


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C3	118	FIL	Newtons	77118.4	48.9	-1174.4	4.1	60

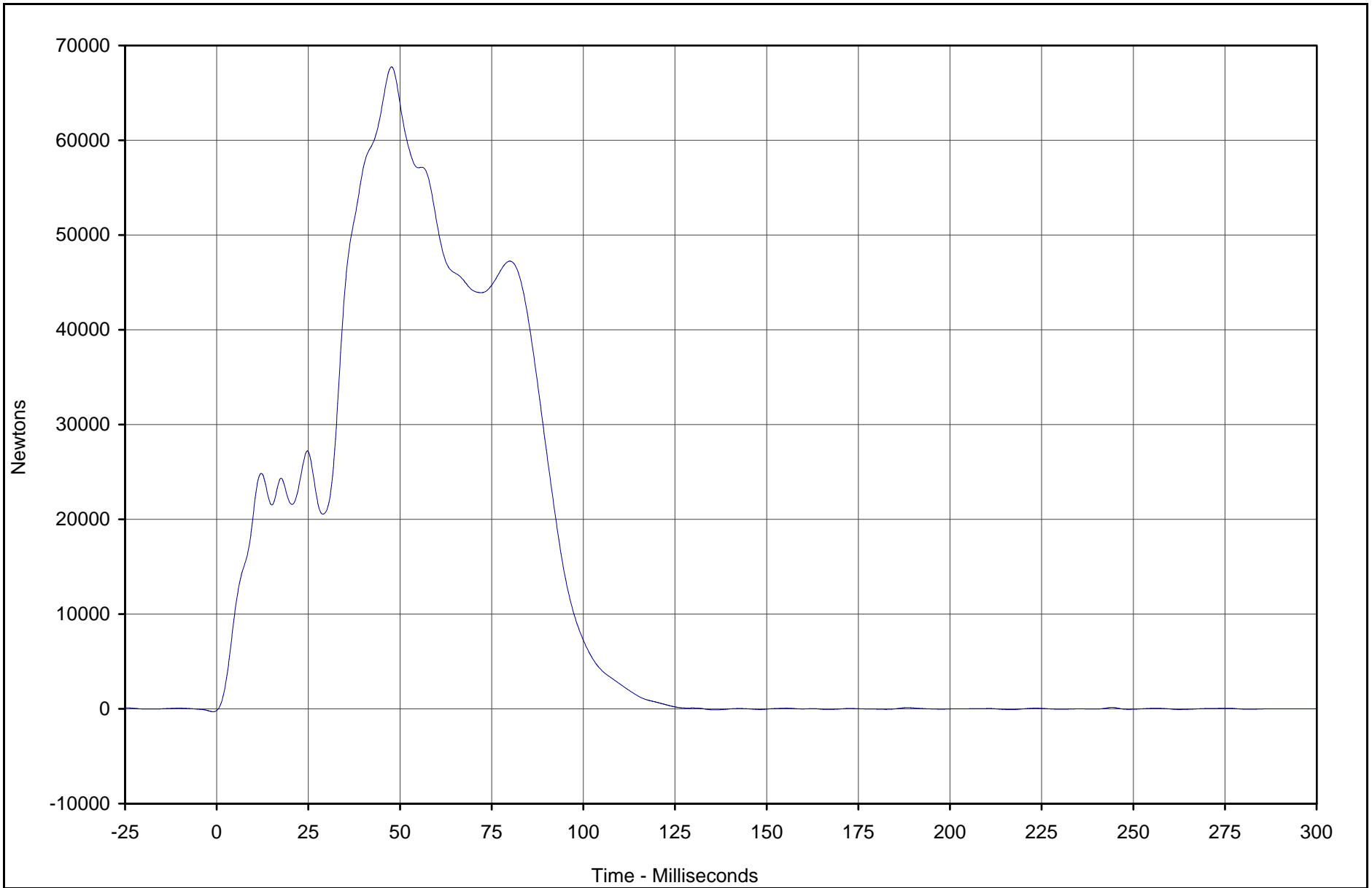


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C4	119	FIL	Newtons	67745.9	47.7	-181.6	0.0	60

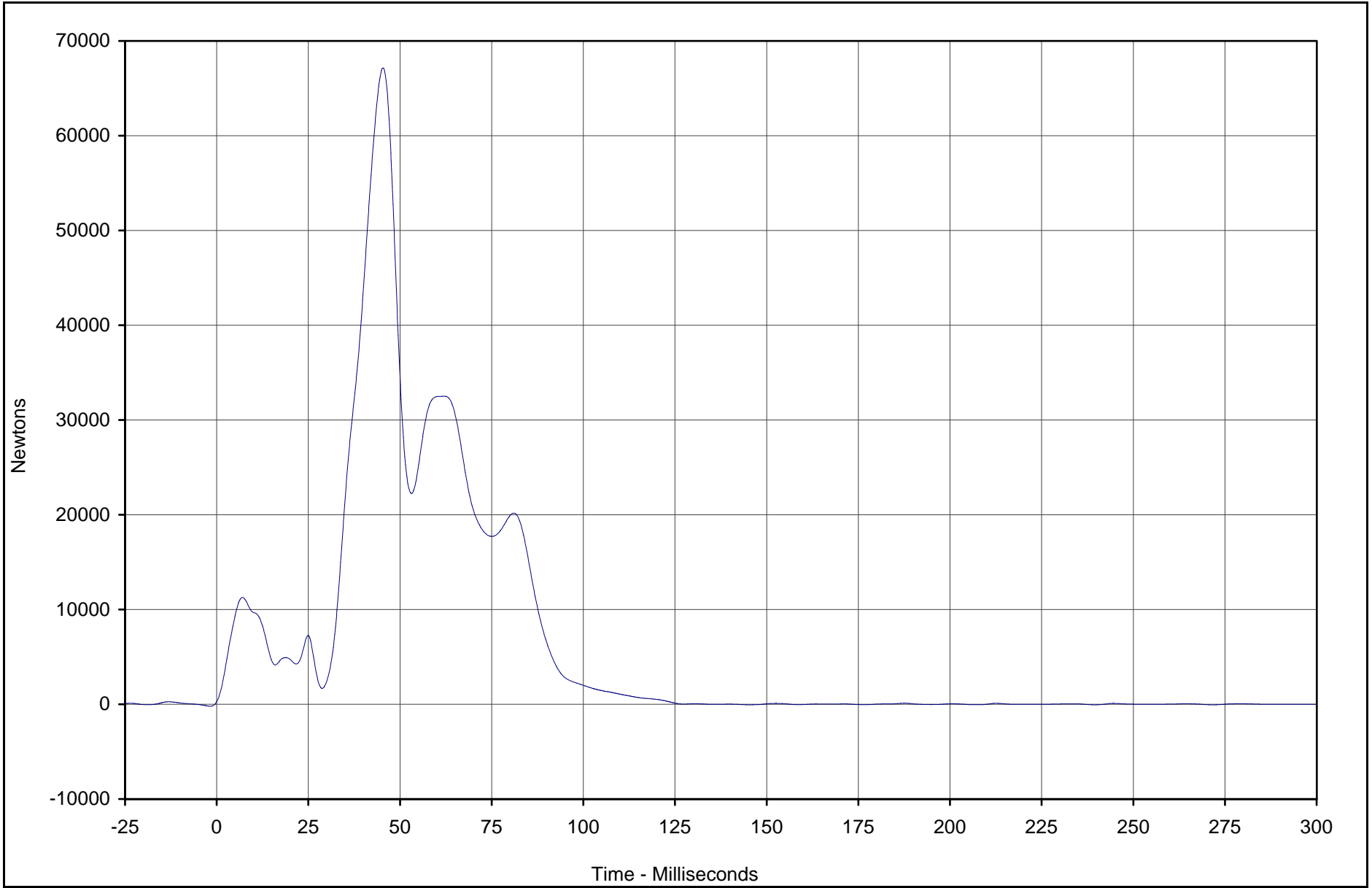


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C5	120	FIL	Newtons	67155.0	45.3	-56.9	271.6	60

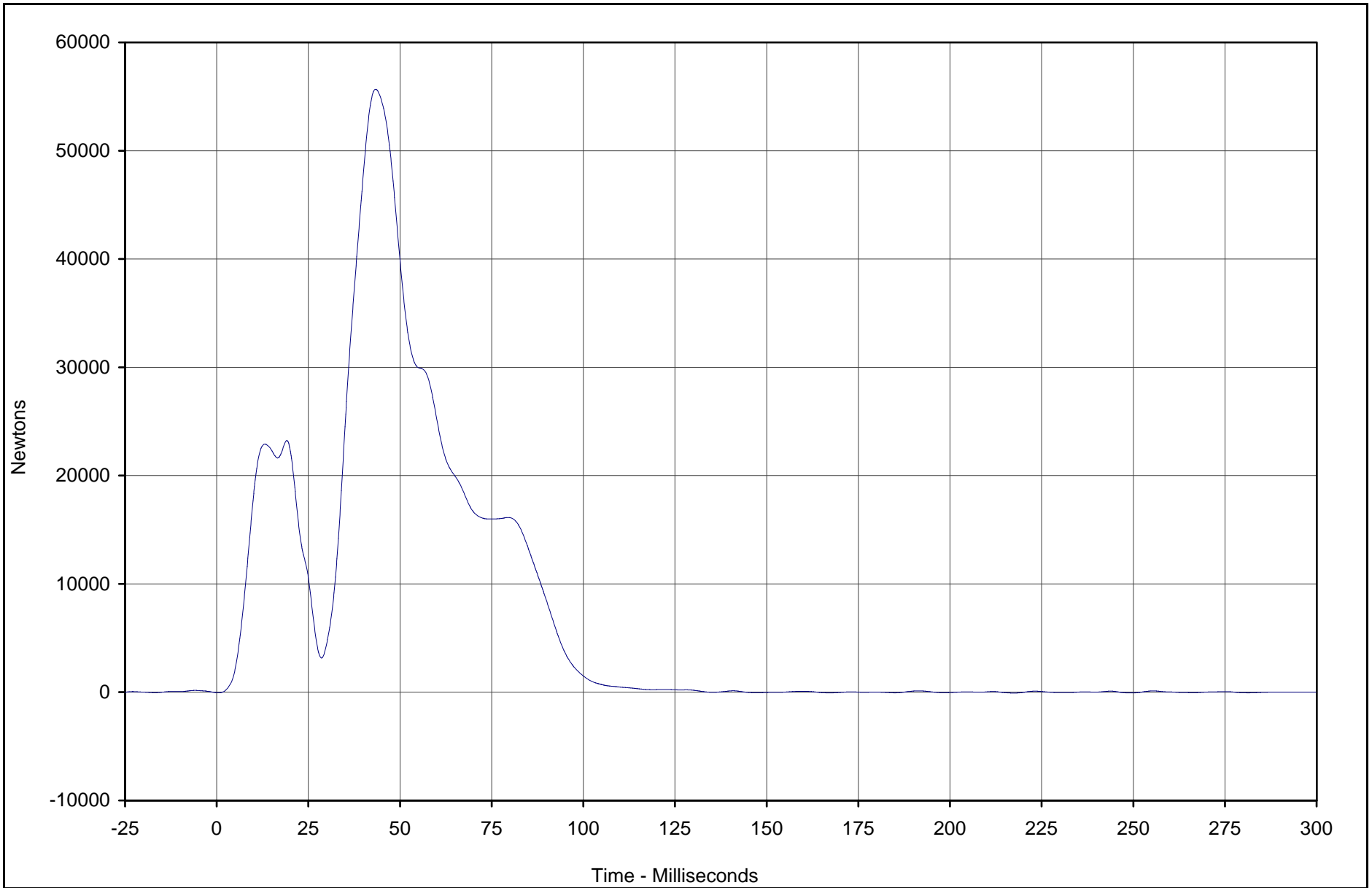


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C6	121	FIL	Newtons	55677.4	43.3	-81.3	217.4	60

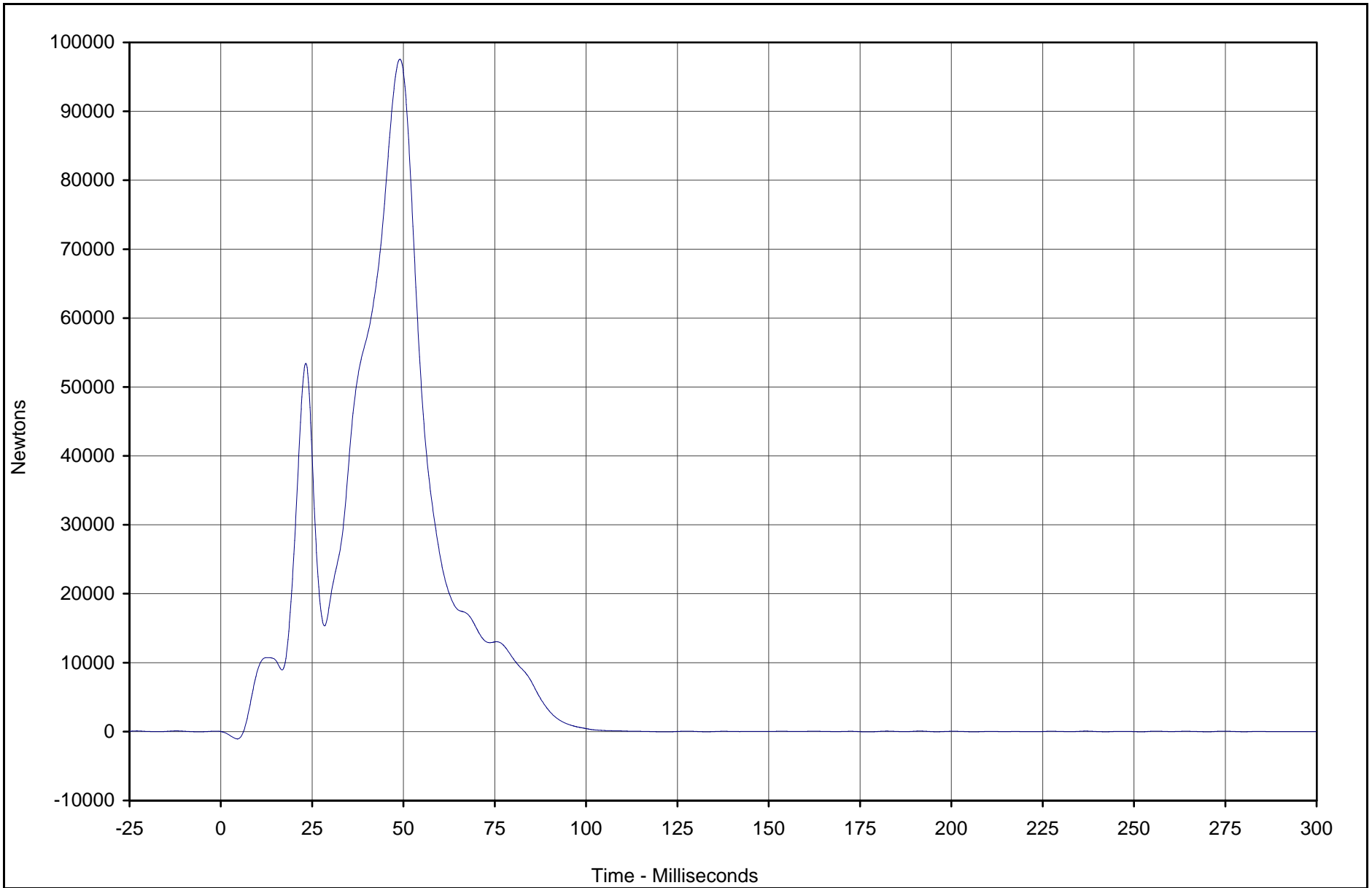


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C7	122	FIL	Newtons	97574.3	49.0	-1066.5	4.5	60

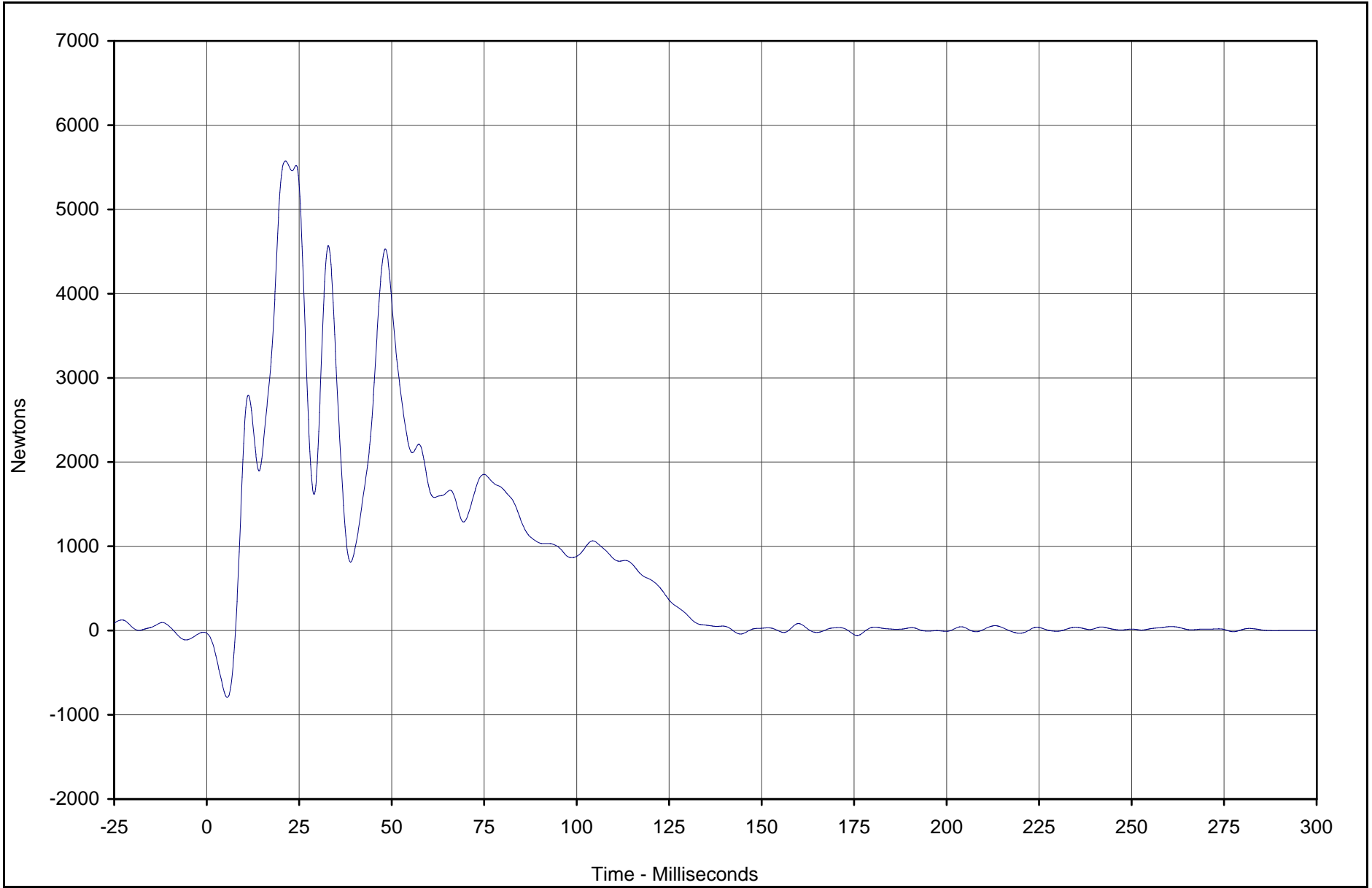


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C8	123	FIL	Newtons	5573.6	21.3	-791.1	5.5	60

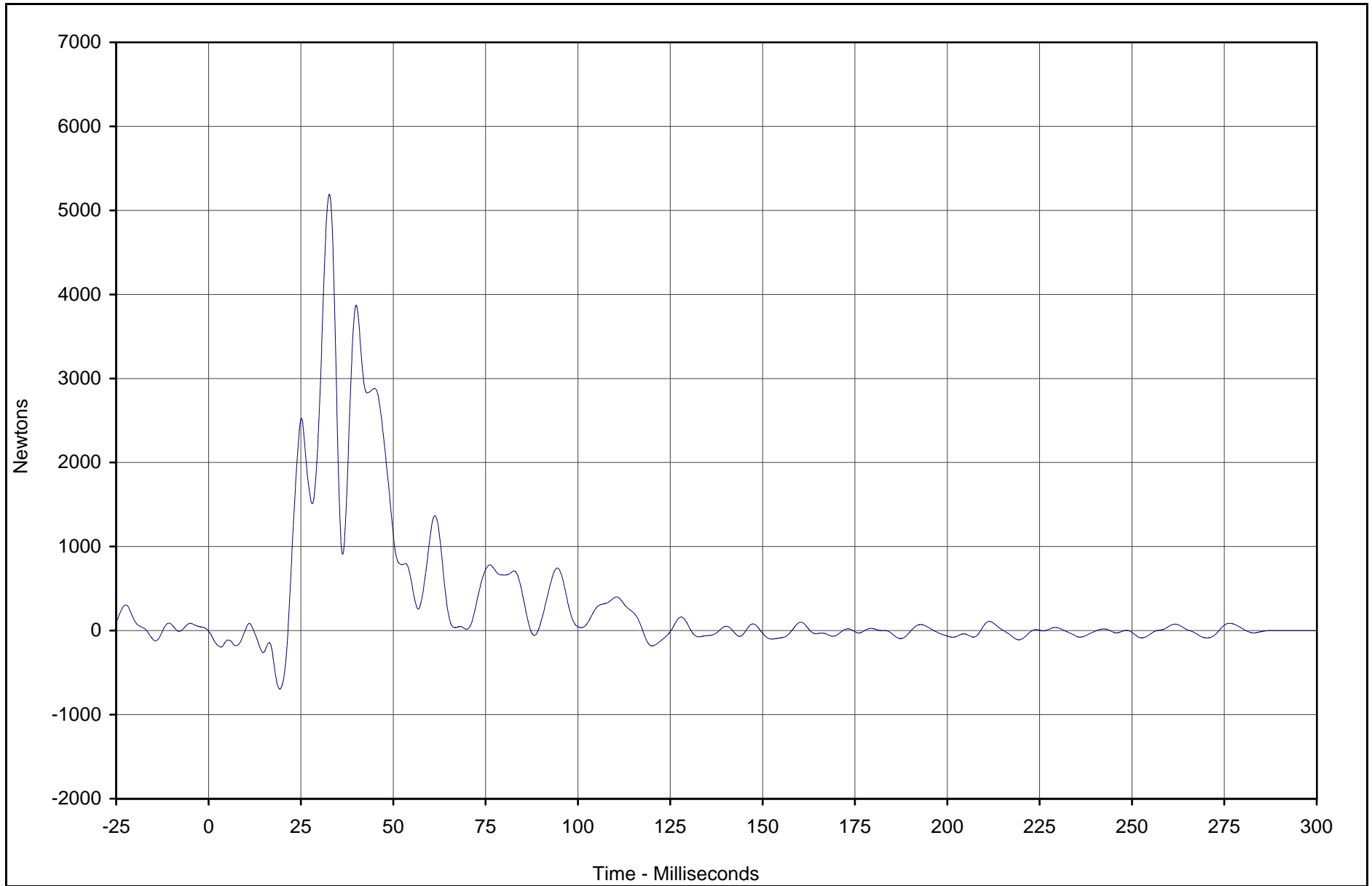


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C9	124	FIL	Newtons	5193.3	32.7	-695.4	19.3	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

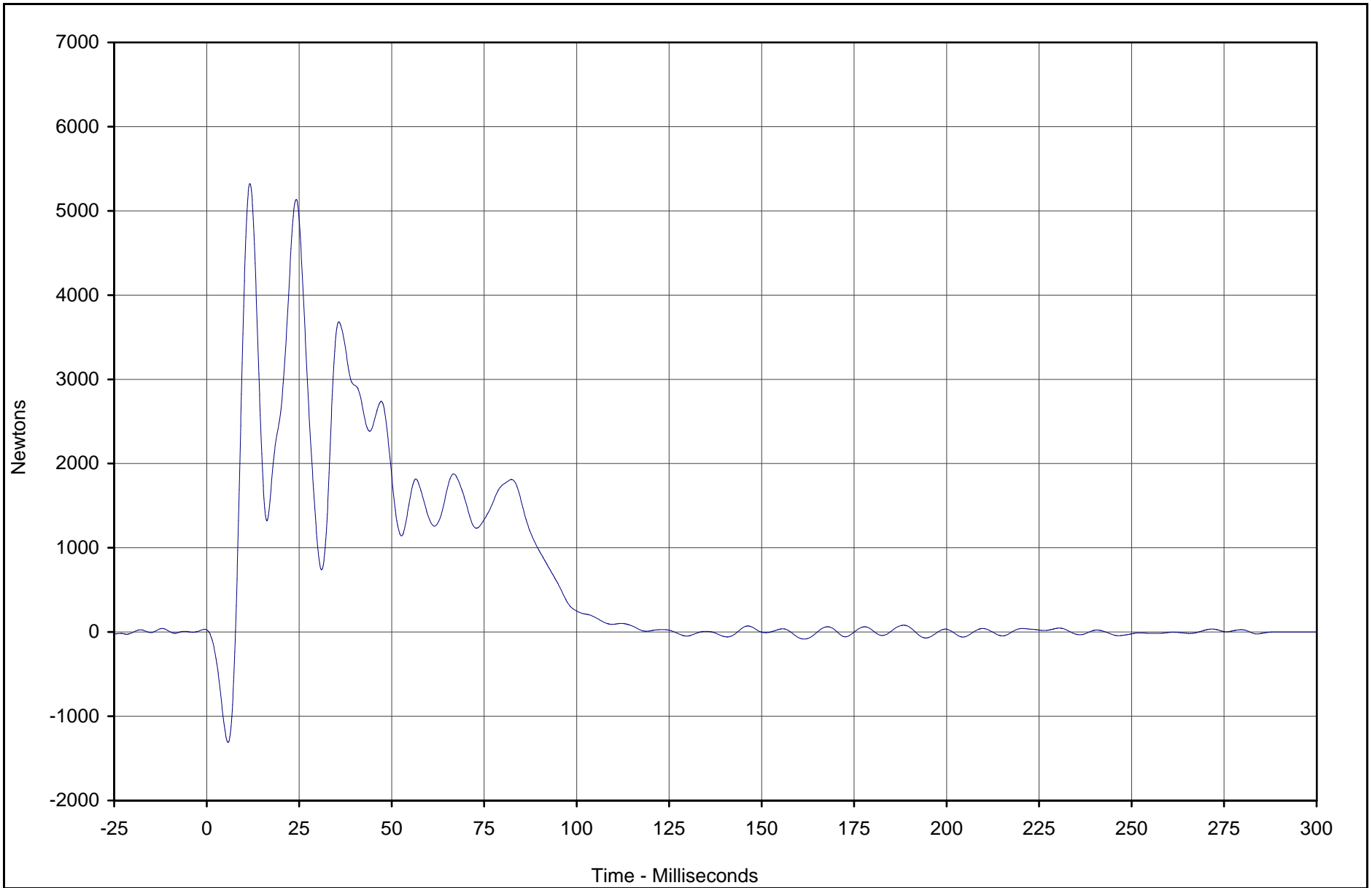
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D1	125	FIL	Newtons	5323.5	11.7	-1310.3	5.8	60



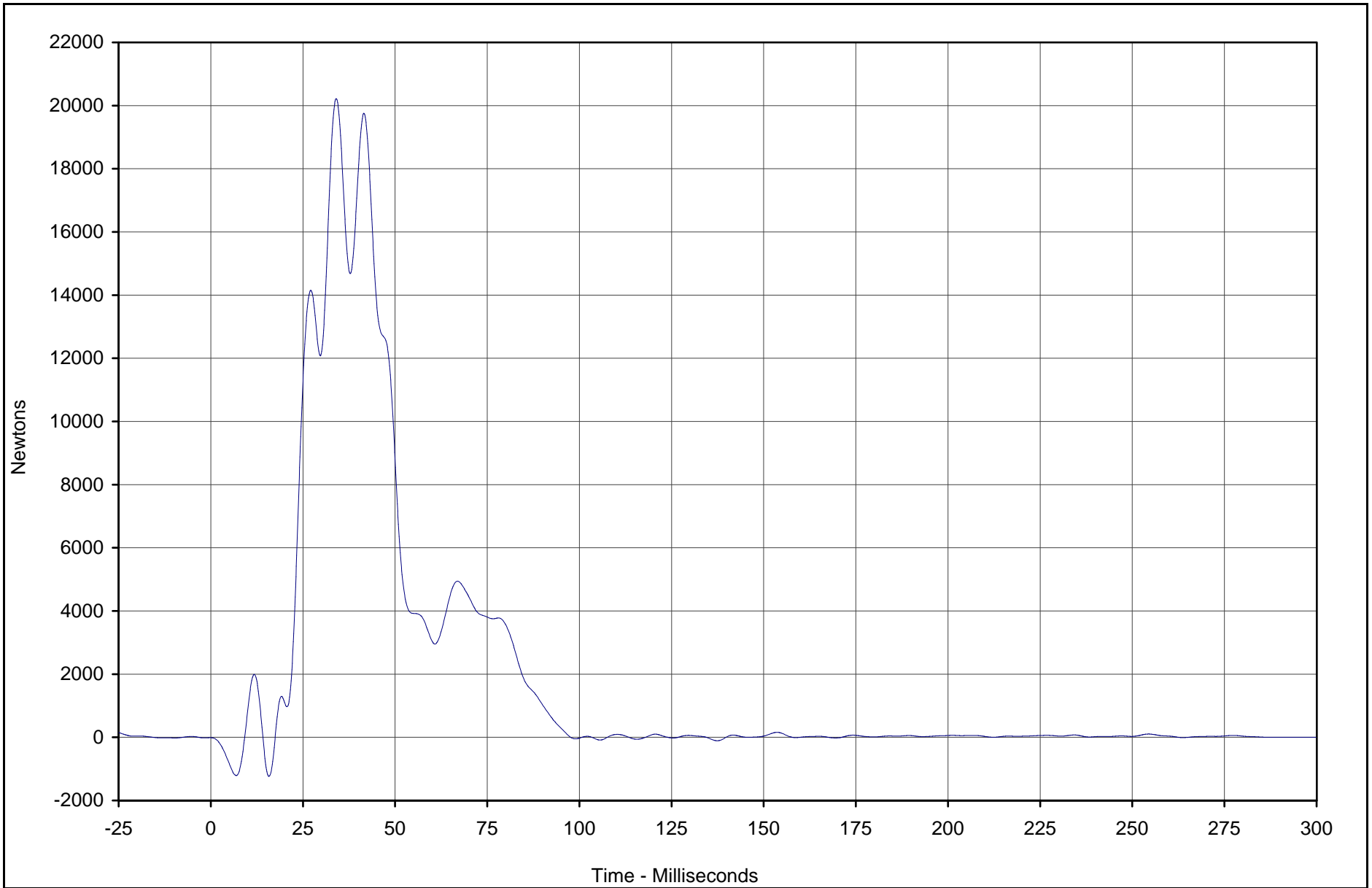
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D2	126	FIL	Newtons	20221.1	34.0	-1234.0	15.8	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

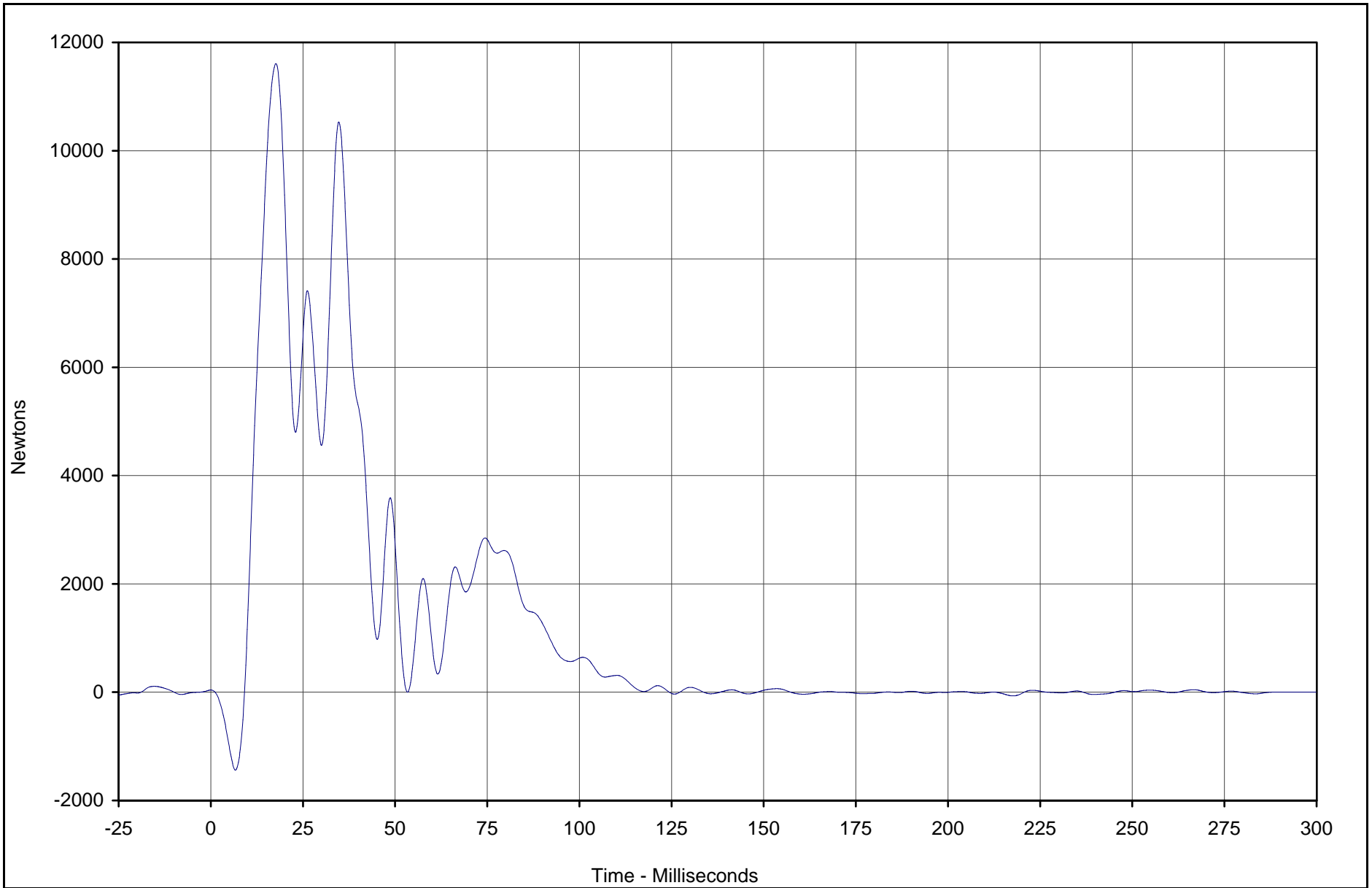
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D3	127	FIL	Newtons	11609.4	17.7	-1439.7	6.7	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

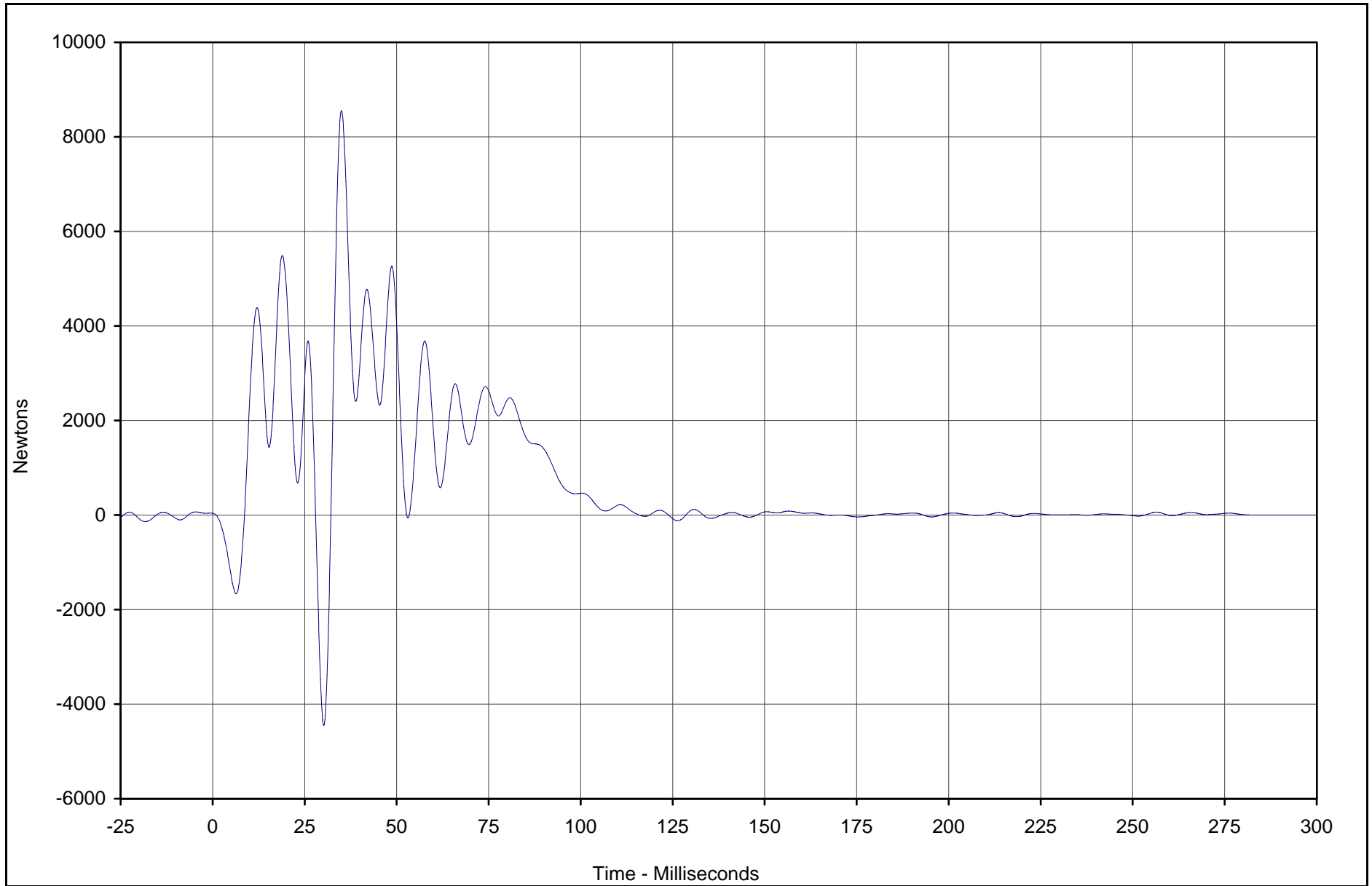
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D4	128	FIL	Newtons	8553.1	35.0	-4452.7	30.2	60

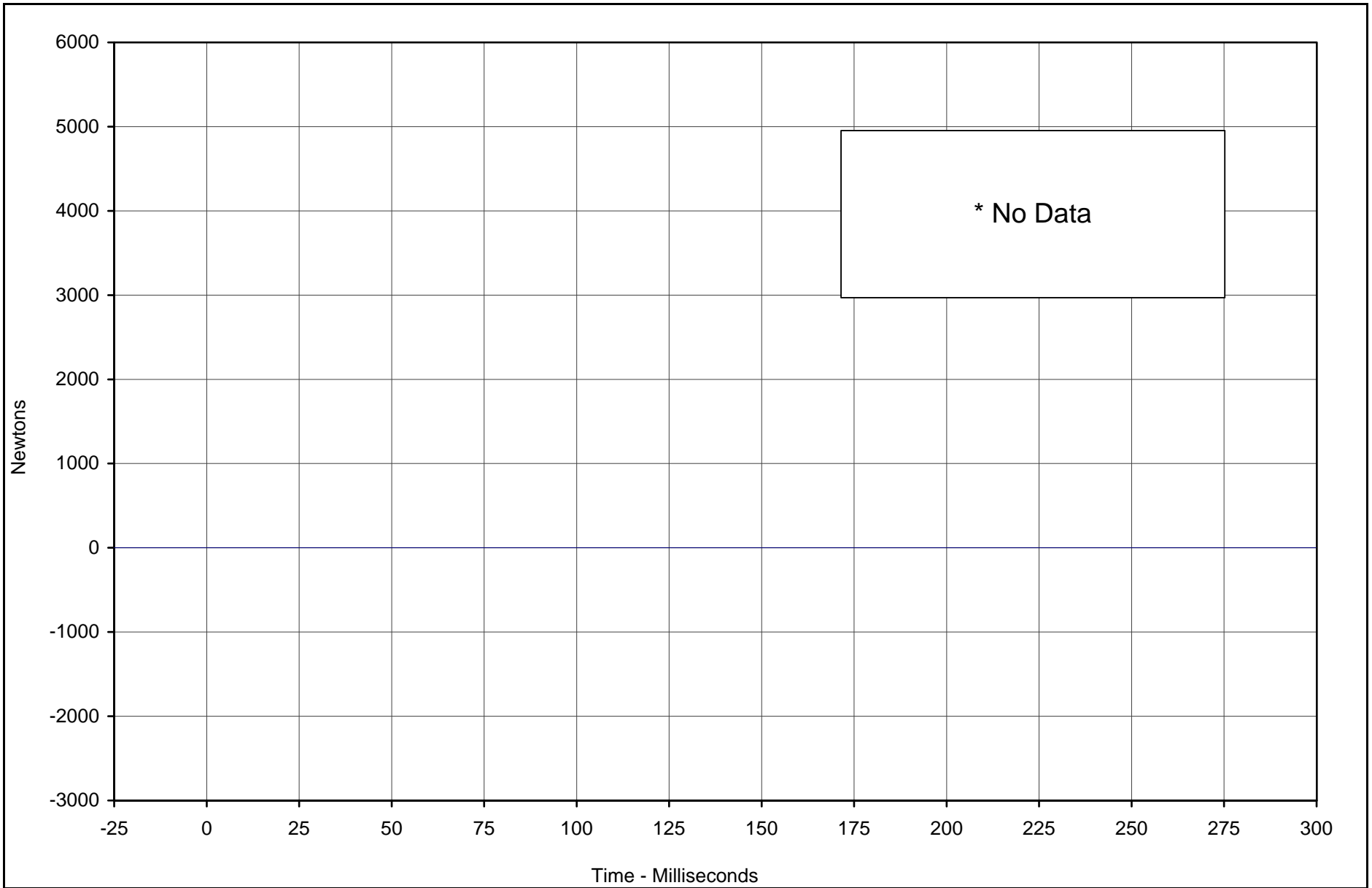


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



\* No Data

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D5	129	FIL	Newtons	0.0	0.0	0.0	0.0	60

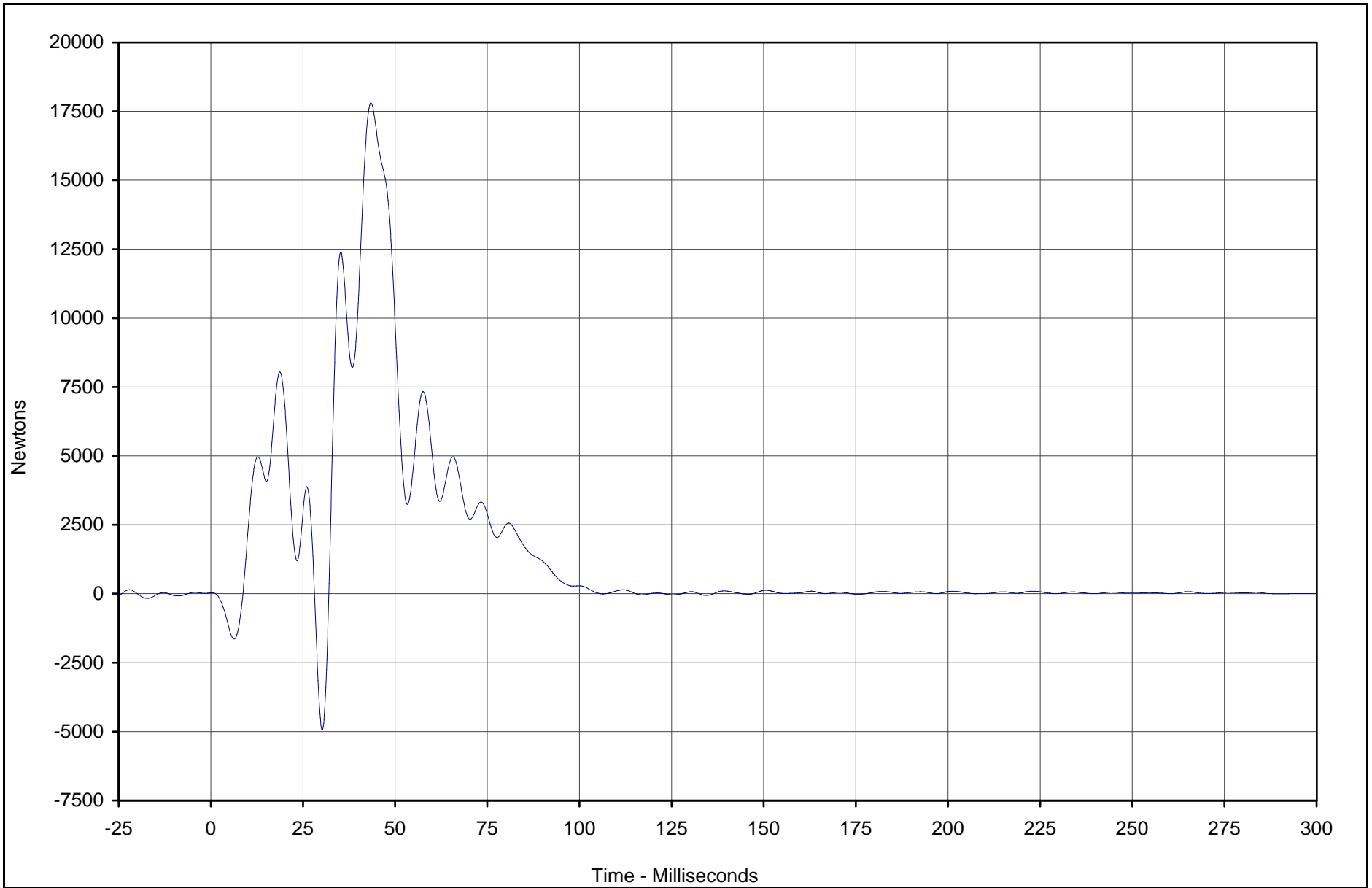


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D6	130	FIL	Newtons	17805.4	43.4	-4933.8	30.2	60

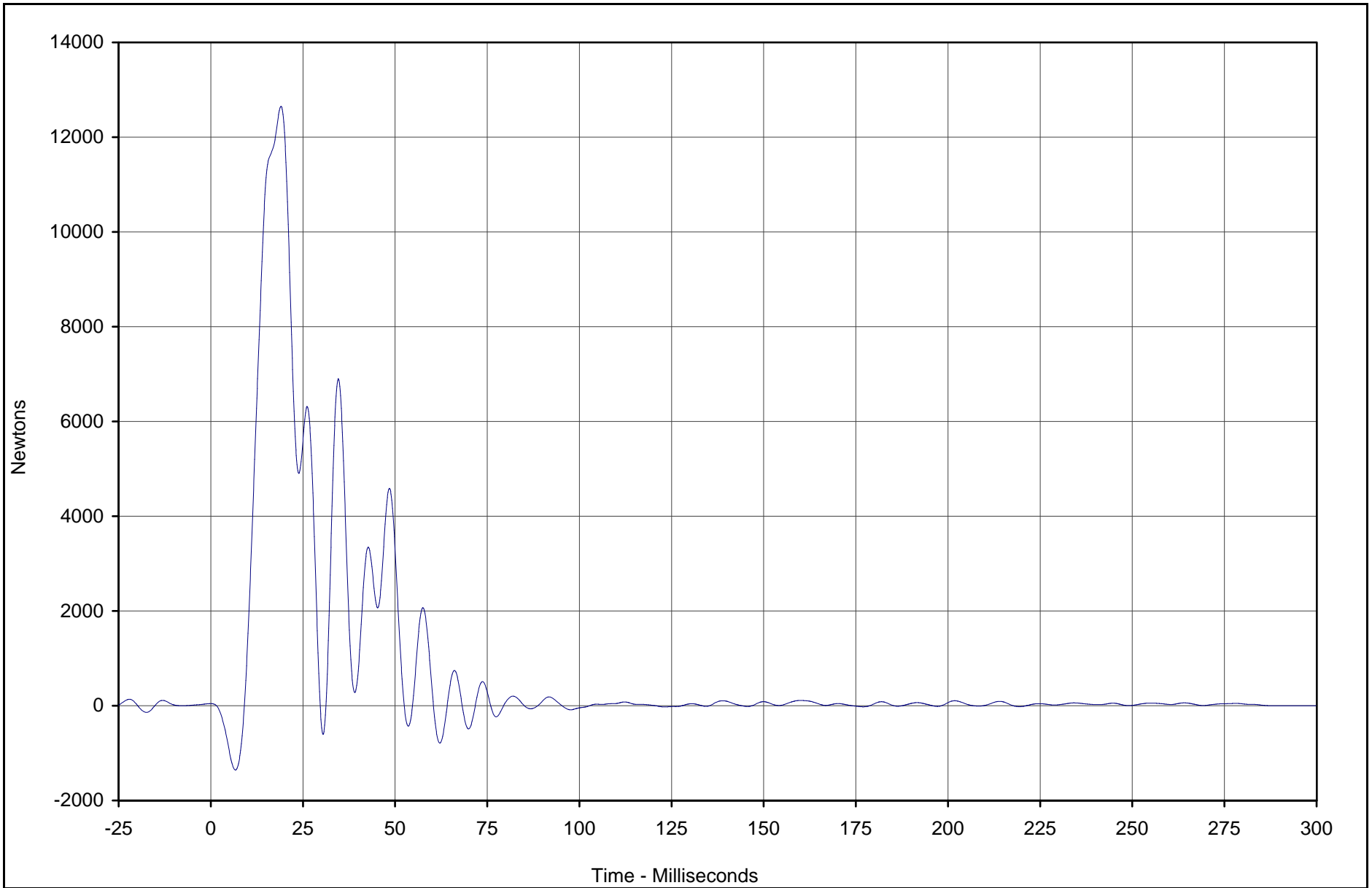


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D7	131	FIL	Newtons	12650.3	19.1	-1356.2	6.7	60

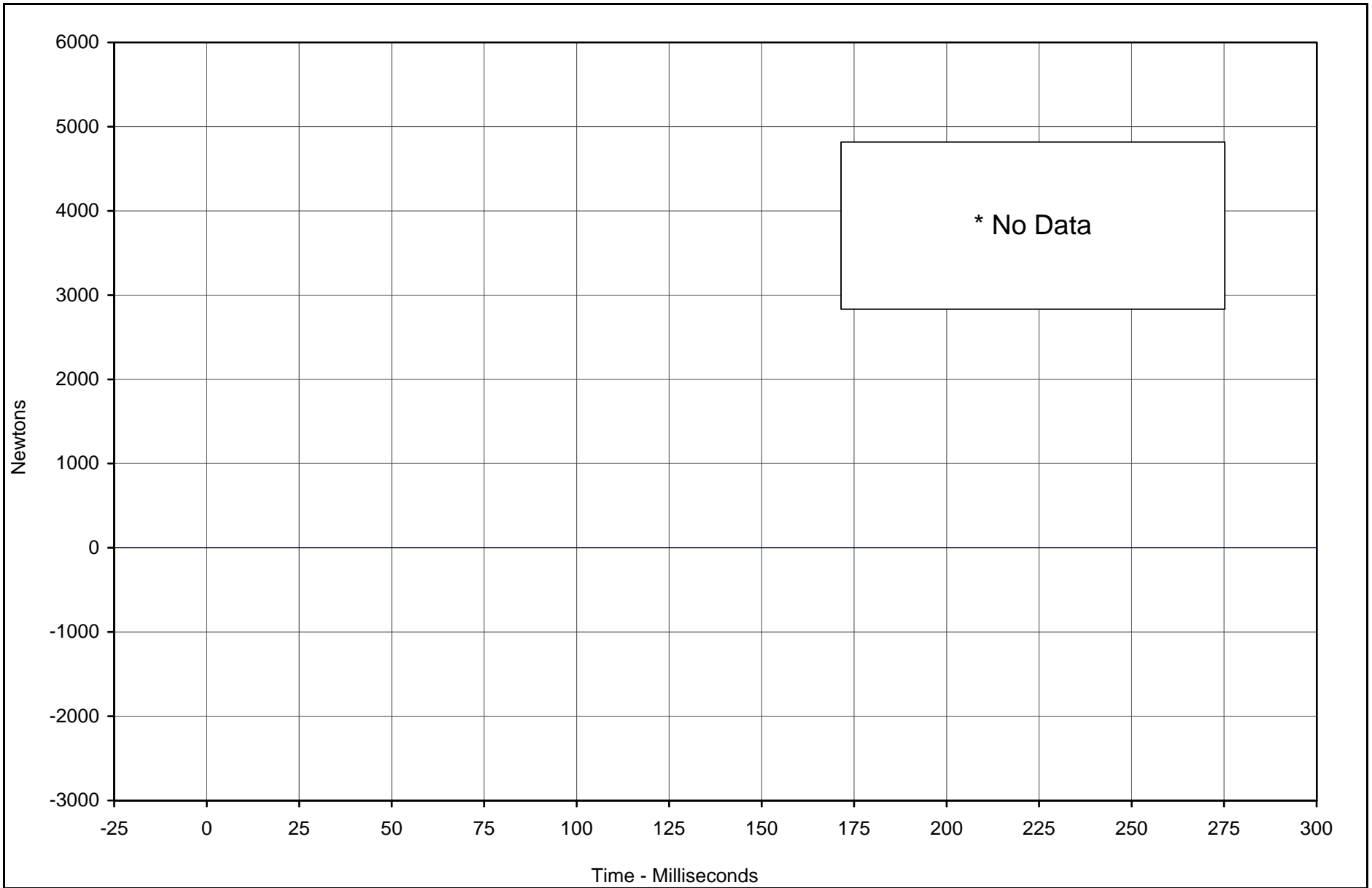


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



\* No Data

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D8	132	FIL	Newtons	0.0	0.0	0.0	0.0	60

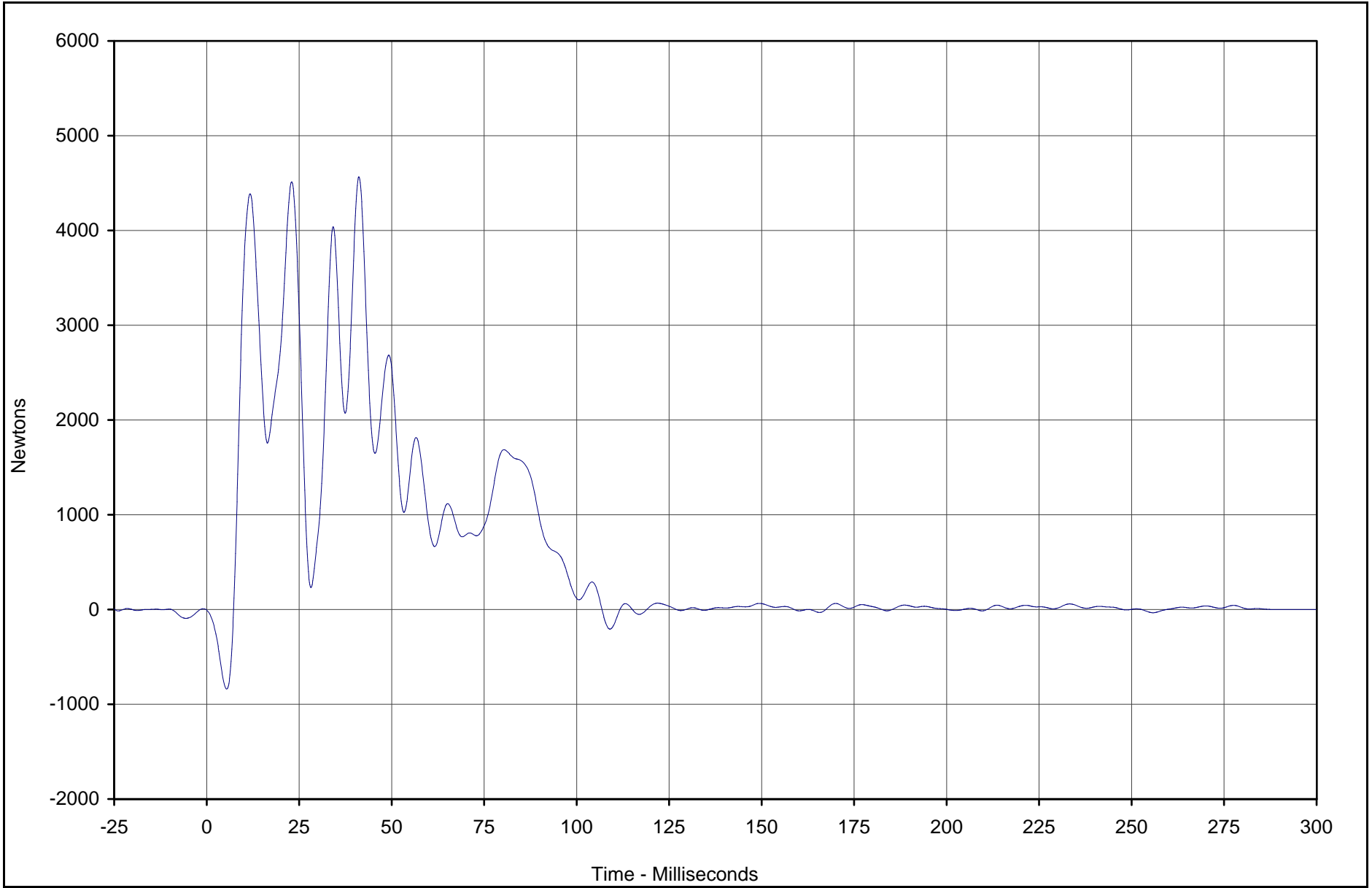


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D9	133	FIL	Newtons	4566.3	41.1	-839.6	5.4	60

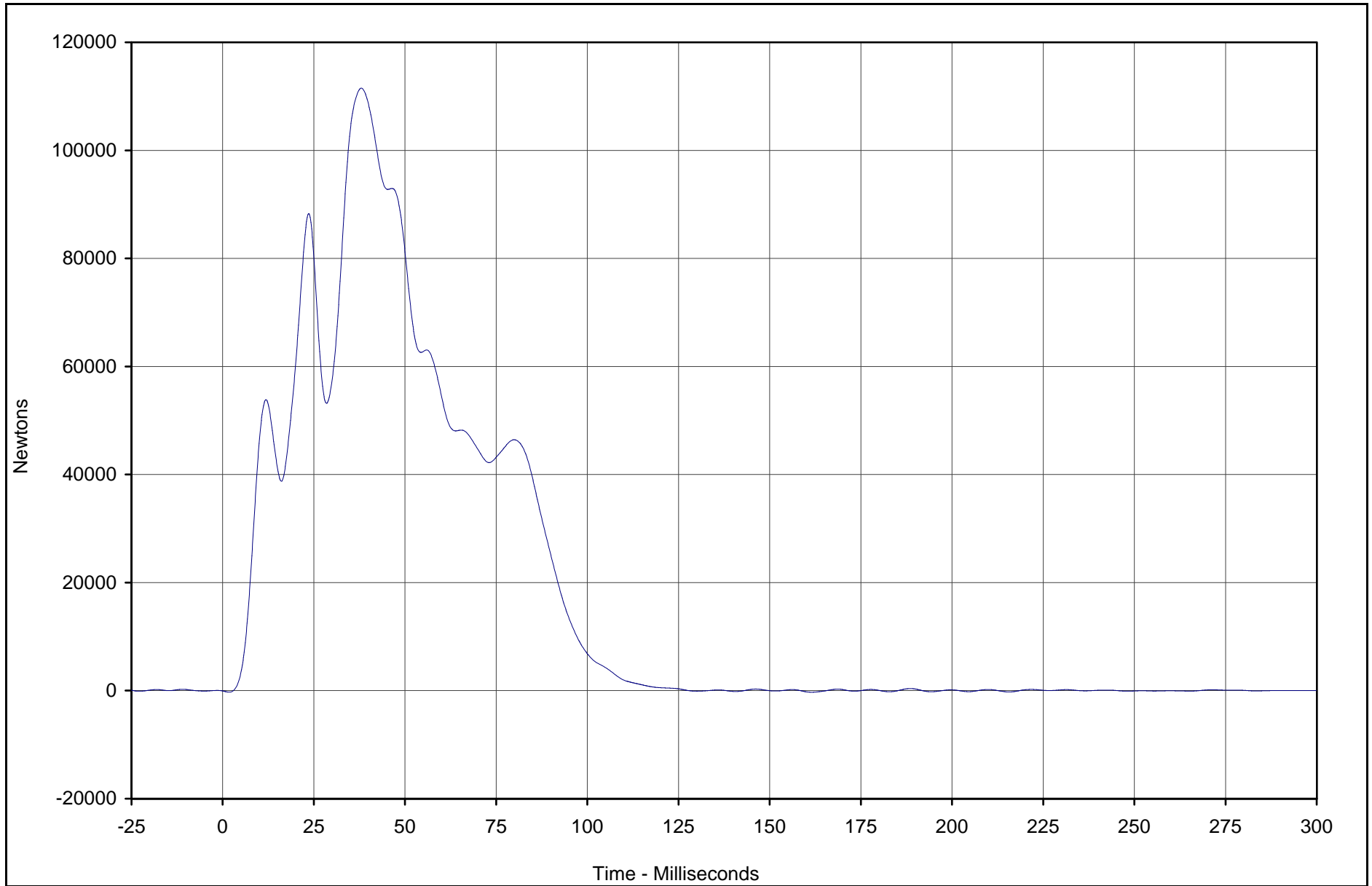


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 1	001	SUM	Newtons	111520.6	38.0	-301.6	161.5	60

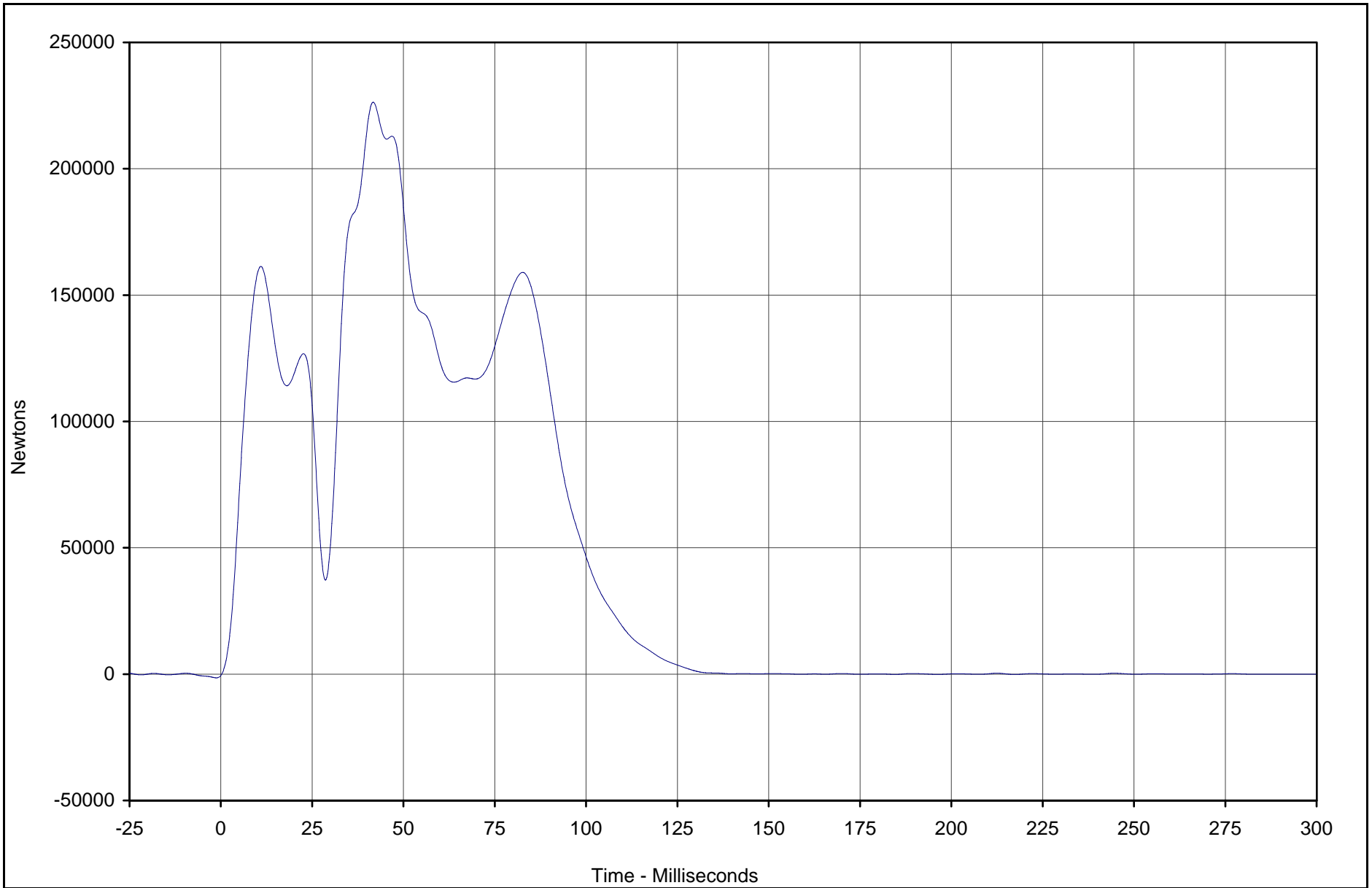


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 2	002	SUM	Newtons	226352.7	41.7	-553.8	0.0	60

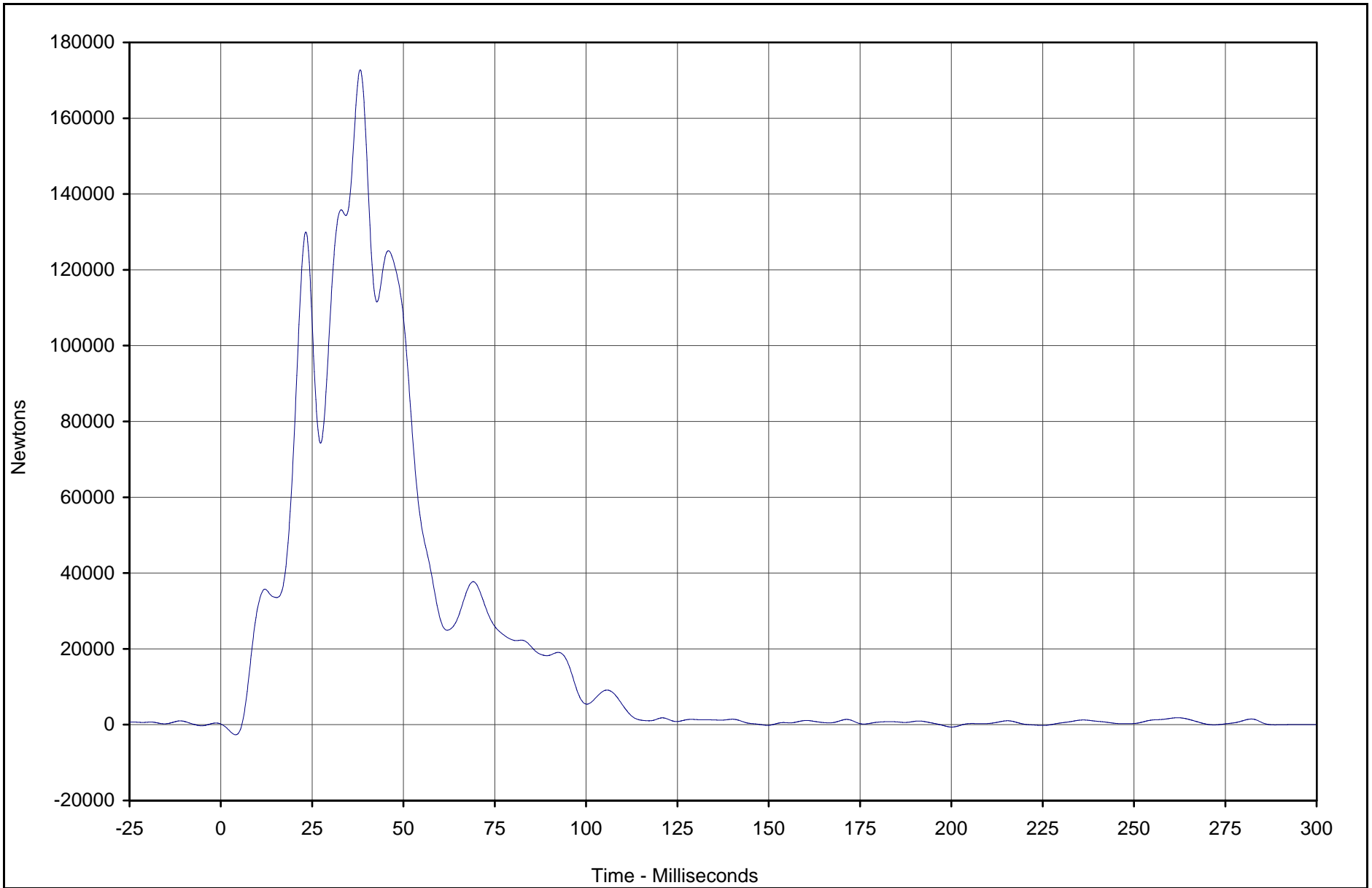


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 3	003	SUM	Newtons	172753.9	38.2	-2656.0	4.0	60

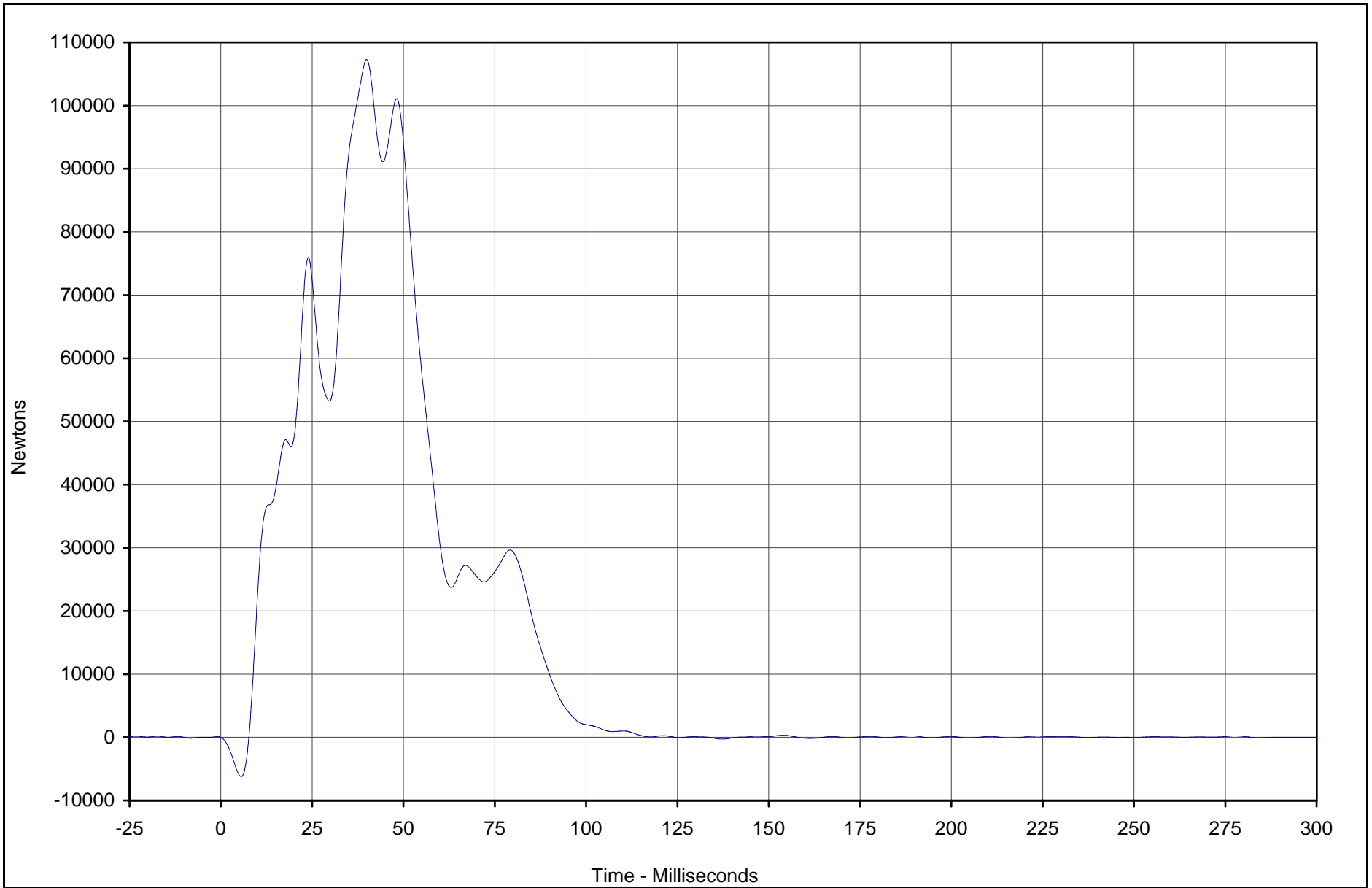


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 4	004	SUM	Newtons	107296.1	39.9	-6222.9	5.6	60

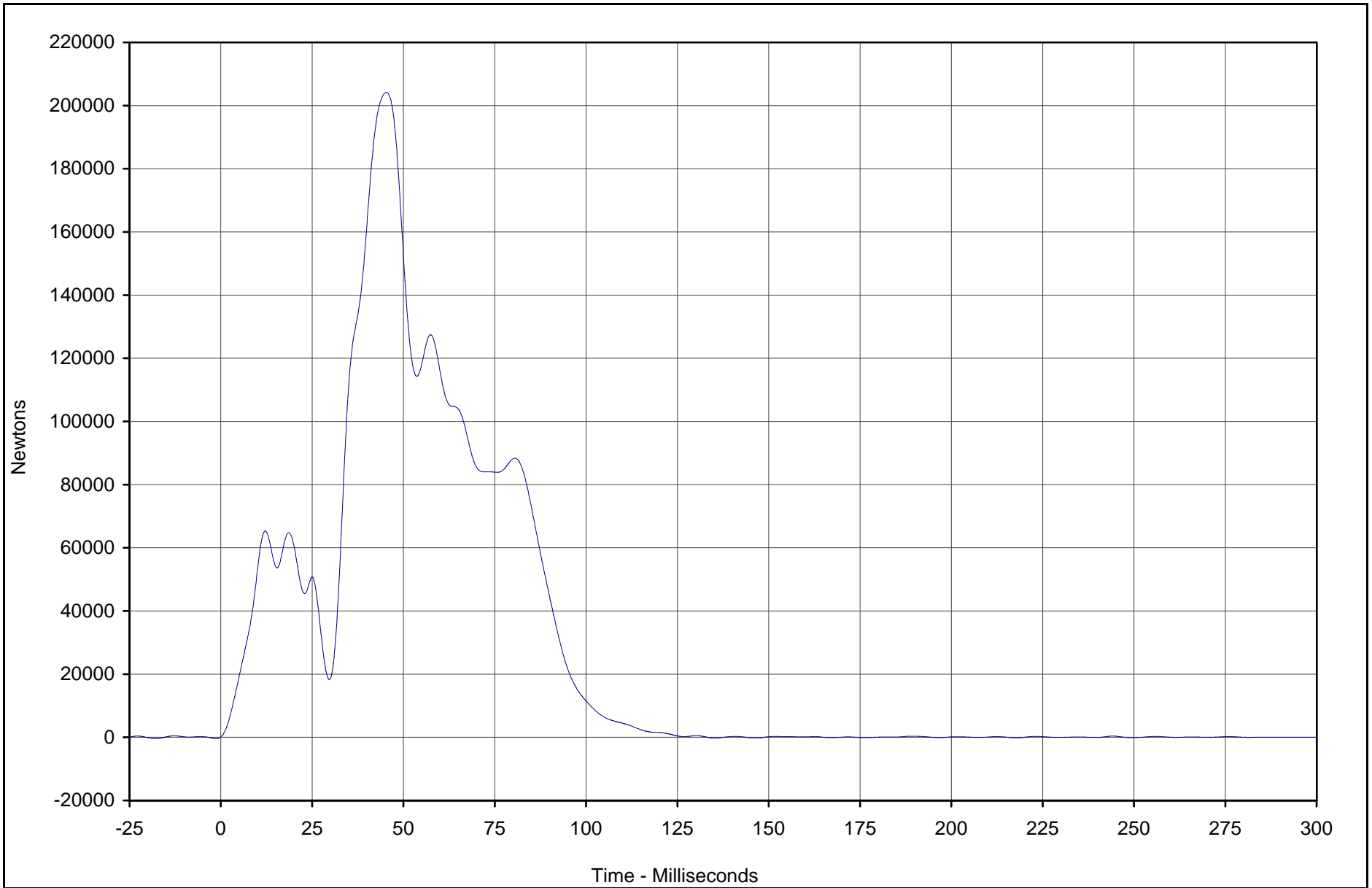


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 5	005	SUM	Newtons	204152.9	45.3	-244.9	135.2	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

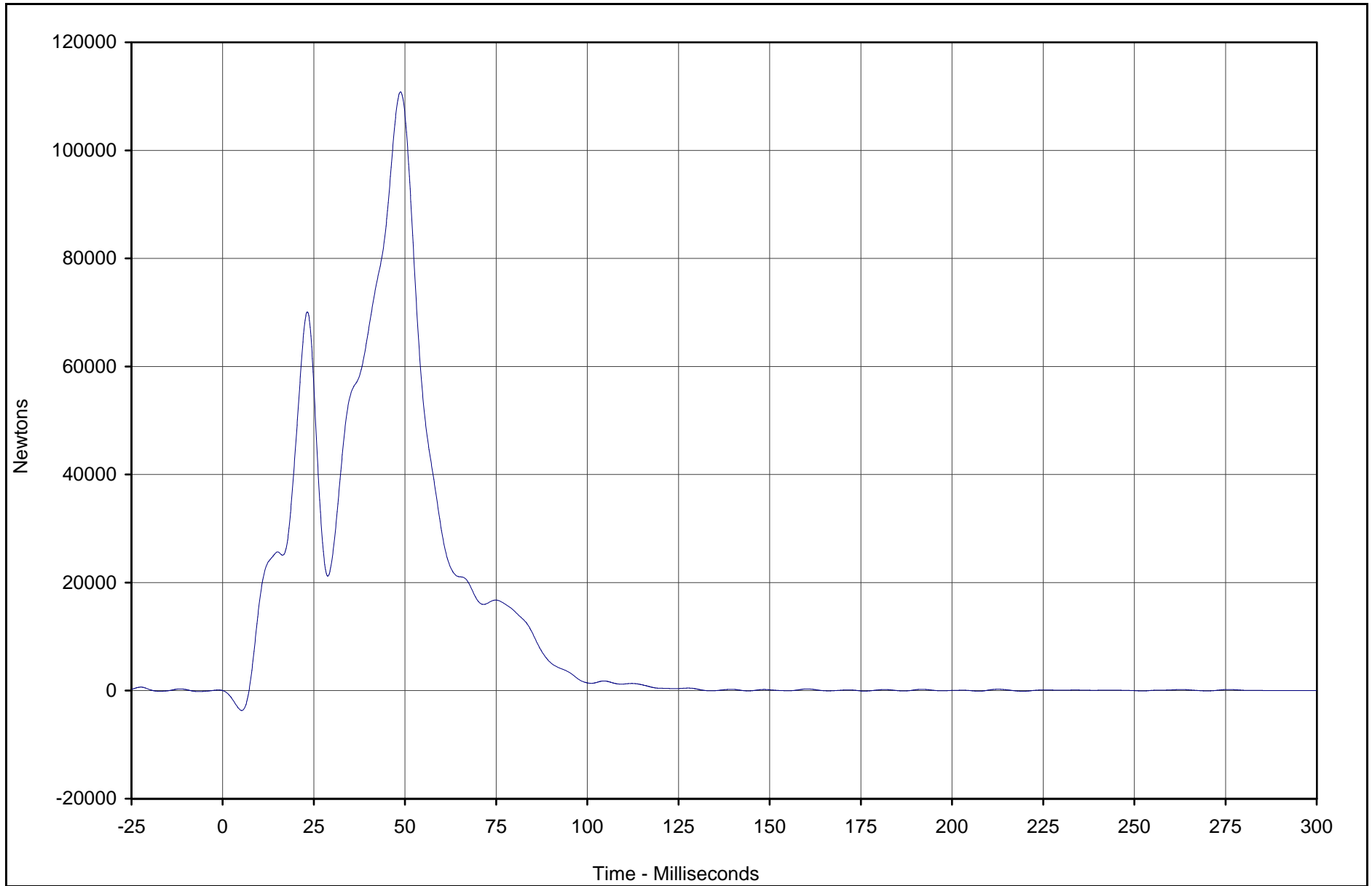
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 6	006	SUM	Newtons	110821.3	48.8	-3673.0	5.2	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

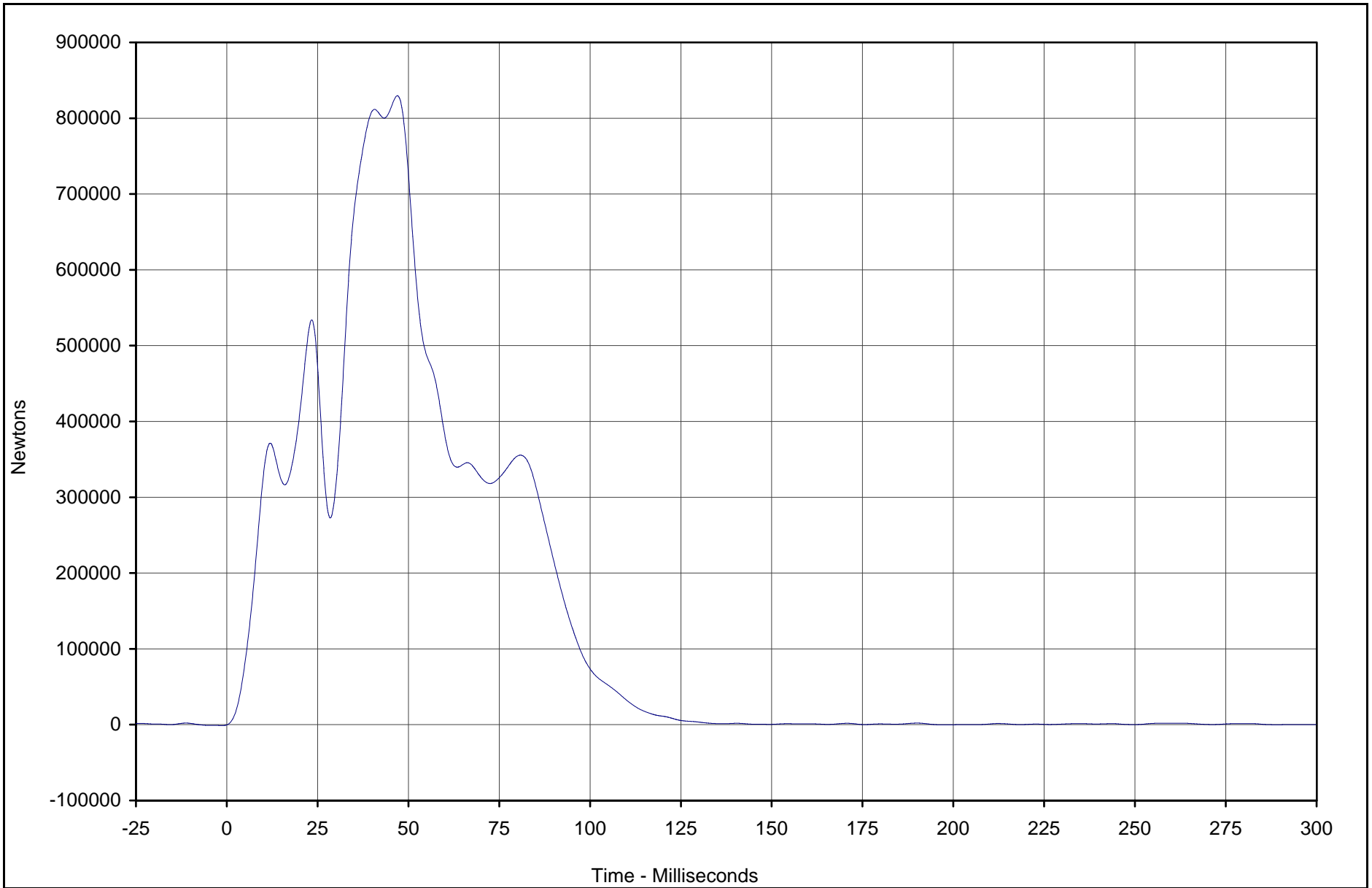
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Total Sum	007	SUM	Newtons	829712	47.0	-317.0	0.0	60



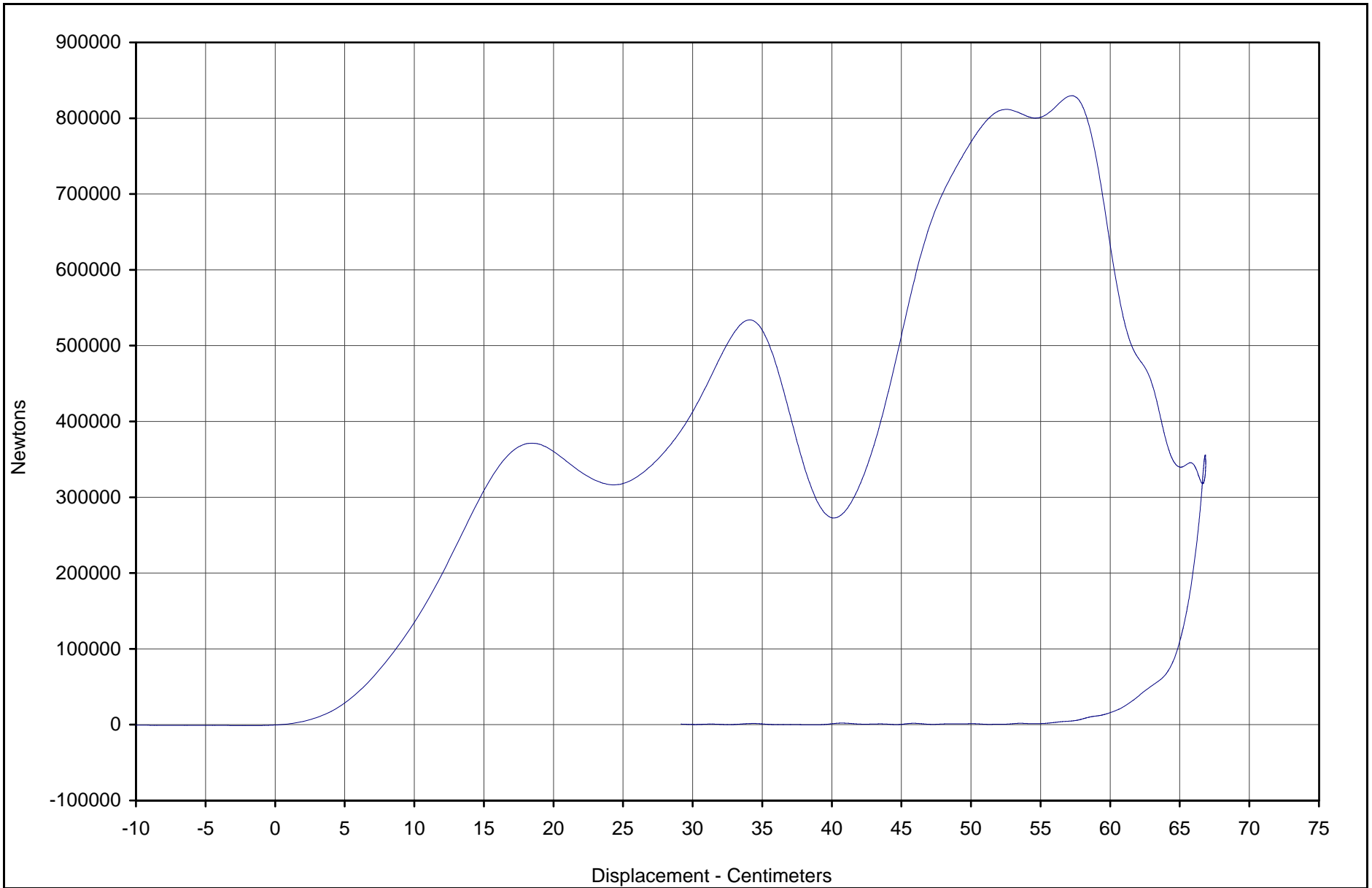
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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Curve Description	CURNO	Type	Units	Max	CM	Energy (Joules)	SAE Class
Barrier Force Total Sum vs. Displ.	001	XVY	Newtons	829712	57.3	264336	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

### BARRIER LOAD CELL SUMMARY DATA

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

NHTSA No.: M35112

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 12/17/02

Location	Units	Max	Time	Min	Time
Barrier Force A1	Newtons	1240.7	12.3	-996.9	31.6
Barrier Force A2	Newtons	3004.8	12.3	-2087.8	32.0
Barrier Force A3	Newtons	4414.8	25.2	-5678.9	30.2
Barrier Force A4	Newtons	10389.9	48.5	-6693.3	30.0
Barrier Force A5	Newtons	4788.4	25.6	-6828.6	30.0
Barrier Force A6	Newtons	4335.3	25.6	-5773.9	29.9
Barrier Force A7	Newtons	4461.6	34.5	-3515.6	29.7
Barrier Force A8	Newtons	1741.7	34.1	-2160.1	30.1
Barrier Force A9	Newtons	1936.4	41.5	-2477.9	37.5
Barrier Force B1	Newtons	0.0	0.0	0.0	0.0
Barrier Force B2	Newtons	9261.5	11.8	-1756.6	5.4
Barrier Force B3	Newtons	104754.9	38.2	-209.2	0.0
Barrier Force B4	Newtons	78895.8	41.7	-28.4	239.7
Barrier Force B5	Newtons	57234.8	47.0	-539.1	0.0
Barrier Force B6	Newtons	93373.2	39.6	-1331.4	1.2
Barrier Force B7	Newtons	118308.1	37.8	-1276.1	3.4
Barrier Force B8	Newtons	7784.4	41.9	-1124.6	29.1
Barrier Force B9	Newtons	68521.8	30.2	-718.9	7.1
Barrier Force C1	Newtons	2080.4	38.9	-685.7	6.4
Barrier Force C2	Newtons	9235.1	24.4	-1453.8	5.5
Barrier Force C3	Newtons	77118.4	48.9	-1174.4	4.1
Barrier Force C4	Newtons	67745.9	47.7	-181.6	0.0
Barrier Force C5	Newtons	67155.0	45.3	-56.9	271.6
Barrier Force C6	Newtons	55677.4	43.3	-81.3	217.4
Barrier Force C7	Newtons	97574.3	49.0	-1066.5	4.5
Barrier Force C8	Newtons	5573.6	21.3	-791.1	5.5
Barrier Force C9	Newtons	5193.3	32.7	-695.4	19.3
Barrier Force D1	Newtons	5323.5	11.7	-1310.3	5.8
Barrier Force D2	Newtons	20221.1	34.0	-1234.0	15.8
Barrier Force D3	Newtons	11609.4	17.7	-1439.7	6.7
Barrier Force D4	Newtons	8553.1	35.0	-4452.7	30.2
Barrier Force D5	Newtons	0.0	0.0	0.0	0.0
Barrier Force D6	Newtons	17805.4	43.4	-4933.8	30.2
Barrier Force D7	Newtons	12650.3	19.1	-1356.2	6.7
Barrier Force D8	Newtons	0.0	0.0	0.0	0.0
Barrier Force D9	Newtons	4566.3	41.1	-839.6	5.4
Barrier Force Sum Group 1	Newtons	111520.6	38.0	-301.6	161.5
Barrier Force Sum Group 2	Newtons	226352.7	41.7	-553.8	0.0
Barrier Force Sum Group 3	Newtons	172753.9	38.2	-2656.0	4.0
Barrier Force Sum Group 4	Newtons	107296.1	39.9	-6222.9	5.6
Barrier Force Sum Group 5	Newtons	204152.9	45.3	-244.9	135.2
Barrier Force Sum Group 6	Newtons	110821.3	48.8	-3673.0	5.2
Barrier Force Total Sum	Newtons	829712.2	47.0	-317.0	0.0

\* No Data

**APPENDIX D**  
**INSTRUMENTATION DATA CHANNEL ASSIGNMENTS**

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D. Serial Number 35  
12/17/02  
2003 Toyota Tundra SR5 4 Door Pickup**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD, PRIMARY	X	GPAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
2	HEAD, PRIMARY	Y	GPAC002	Accel., 1/2 bridge	Endevco	7264-2000	G
3	HEAD, PRIMARY	Z	GPAC003	Accel., 1/2 bridge	Endevco	7264-2000	G
4	HEAD, REDUNDANT	X	GPAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
5	HEAD, REDUNDANT	Y	GPAC021	Accel., 1/2 bridge	Endevco	7264-2000	G
6	HEAD, REDUNDANT	Z	GPAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
7	NECK FORCE	X	GPUN01FX	Load cell, six axis neck	R. A. Denton	1716A	N
8	NECK FORCE	Y	GPUN01FY	Load cell, six axis neck	R. A. Denton	1716A	N
9	NECK FORCE	Z	GPUN01FZ	Load cell, six axis neck	R. A. Denton	1716A	N
10	NECK MOMENT	X	GPUN01MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
11	NECK MOMENT	Y	GPUN01MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
12	NECK MOMENT	Z	GPUN01MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
13	CHEST , PRIMARY	X	GPAC005	Accel., 1/2 bridge	Endevco	7264-2000	G
14	CHEST , PRIMARY	Y	GPAC011	Accel., 1/2 bridge	Endevco	7264-2000	G
15	CHEST , PRIMARY	Z	GPAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
16	CHEST , REDUNDANT	X	GPAC034	Accel., 1/2 bridge	Endevco	7264-2000	G
17	CHEST , REDUNDANT	Y	GPAC023	Accel., 1/2 bridge	Endevco	7264-2000	G
18	CHEST , REDUNDANT	Z	GPAC020	Accel., 1/2 bridge	Endevco	7264-2000	G
19	CHEST DISPLACEMENT	X	GPCP002	Rotary Pot Chest	Servo	14CBI	MM
20	PELVIS, PRIMARY	X	GPAC025	Accel., 1/2 bridge	Endevco	7264-2000	G
21	PELVIS, PRIMARY	Y	GPAC022	Accel., 1/2 bridge	Endevco	7264-2000	G
22	PELVIS, PRIMARY	Z	GPAC019	Accel., 1/2 bridge	Endevco	7264-2000	G
23	LEFT FEMUR FORCE	Z	KEFF003	Load cell, Femur	R.A. Denton	2121	N
24	RIGHT FEMUR FORCE	Z	KEFF004	Load cell, Femur	R.A. Denton	2121	N

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**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D. Serial Number 35  
12/17/02  
2003 Toyota Tundra SR5 4 Door Pickup**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
25	UP. TIBIA LEFT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
26	UP. TIBIA LEFT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
27	UP. TIBIA RIGHT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
28	UP. TIBIA RIGHT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
29	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
30	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
31	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
32	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
33	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
34	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
35	FOOT LEFT, AFT	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
36	FOOT LEFT, AFT	Z	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
37	FOOT LEFT, FORE	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
38	FOOT RIGHT, AFT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT RIGHT, AFT	Z	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT RIGHT, FORE	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
41	LAP BELT FORCE	X	KELC001	Load cell, Seat belt	Lebow	3371	N
42	SHOULDER BELT FORCE	X	KELC002	Load cell, Seat belt	Lebow	3371	N
43	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
44	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Passenger A.T.D. Serial Number 34  
12/17/02  
2003 Toyota Tundra SR5 4 Door Pickup**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
45	HEAD, PRIMARY	X	KEAC039	Accel.,1/2 bridge	Endevco	7264-2000	G
46	HEAD, PRIMARY	Y	KEAC038	Accel.,1/2 bridge	Endevco	7264-2000	G
47	HEAD, PRIMARY	Z	KEAC027	Accel.,1/2 bridge	Endevco	7264-2000	G
48	HEAD, REDUNDANT	X	KEAC031	Accel.,1/2 bridge	Endevco	7264-2000	G
49	HEAD, REDUNDANT	Y	KEAC032	Accel.,1/2 bridge	Endevco	7264-2000	G
50	HEAD, REDUNDANT	Z	KEAC026	Accel.,1/2 bridge	Endevco	7264-2000	G
51	NECK FORCE	X	GPUN02FX	Load cell, six axis neck	R. A. Denton	1716A	N
52	NECK FORCE	Y	GPUN02FY	Load cell, six axis neck	R. A. Denton	1716A	N
53	NECK FORCE	Z	GPUN02FZ	Load cell, six axis neck	R. A. Denton	1716A	N
54	NECK MOMENT	X	GPUN02MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
55	NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
56	NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
57	CHEST , PRIMARY	X	GPAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
58	CHEST , PRIMARY	Y	GPAC024	Accel., 1/2 bridge	Endevco	7264-2000	G
59	CHEST , PRIMARY	Z	GPAC029	Accel., 1/2 bridge	Endevco	7264-2000	G
60	CHEST , REDUNDANT	X	KEAC023	Accel.,1/2 bridge	Endevco	7264-200	G
61	CHEST , REDUNDANT	Y	KEAC022	Accel.,1/2 bridge	Endevco	7264-200	G
62	CHEST , REDUNDANT	Z	KEAC024	Accel.,1/2 bridge	Endevco	7264-200	G
63	CHEST DISPLACEMENT	X	GPCP001	Rotary Pot Chest	Servo	14CBI	MM
64	PELVIS, PRIMARY	X	KEAC019	Accel.,1/2 bridge	Endevco	7264-200	G
65	PELVIS, PRIMARY	Y	KEAC020	Accel.,1/2 bridge	Endevco	7264-200	G
66	PELVIS, PRIMARY	Z	KEAC021	Accel.,1/2 bridge	Endevco	7264-200	G
67	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2121	N
68	RIGHT FEMUR FORCE	Z	KEFF002	Load cell, Femur	R.A. Denton	2121	N

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Passenger A.T.D. Serial Number 34  
12/17/02  
2003 Toyota Tundra SR5 4 Door Pickup**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
70	UP. TIBIA LEFT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
71	UP. TIBIA RIGHT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
72	UP. TIBIA RIGHT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
73	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
74	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
75	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
76	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
77	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
78	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
79	FOOT LEFT, AFT	X	KEIC003X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT, AFT	Z	KEIC003Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT, FORE	Z	KEIC003Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT, AFT	X	KEIC004X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT, AFT	Z	KEIC004Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT, FORE	Z	KEIC004Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	X	KELC003	Load cell, Seat belt	Lebow	3371	N
86	SHOULDER BELT FORCE	X	KELC004	Load cell, Seat belt	Lebow	3371	N
87	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	CM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Vehicle Accelerometers  
12/17/02  
2003 Toyota Tundra SR5 4 Door Pickup**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	Left Rear	X	KEVA002	Accel., Pre-Amp	I.C.S/Karco	3031-500	G
90	Right Rear	X	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	Engine Top	X	KEVA009	Accel., Vehicle block	I.C. Sensor	3031-500	G
92	Engine Bottom	X	KEVA007	Accel., Vehicle block	I.C. Sensor	3031-500	G
93	Left Brake Caliper	X	KEVA008	Accel., Vehicle block	I.C. Sensor	3031-500	G
94	Right Brake Caliper	X	KEVA012	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	Instrument Panel	X	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	G
96	Left Rear	Z	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
97	Right Rear	Z	KEVA010	Accel., Vehicle block	I.C. Sensor	3031-200	G

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Rigid Load Cell Barrier  
12/17/02  
2003 Toyota Tundra SR5 4 Door Pickup**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
98	BARRIER FORCE A1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
99	BARRIER FORCE A2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
100	BARRIER FORCE A3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
101	BARRIER FORCE A4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
102	BARRIER FORCE A5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
103	BARRIER FORCE A6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
104	BARRIER FORCE A7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
105	BARRIER FORCE A8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
106	BARRIER FORCE A9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
107	BARRIER FORCE B1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
108	BARRIER FORCE B2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
109	BARRIER FORCE B3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
110	BARRIER FORCE B4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
111	BARRIER FORCE B5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
112	BARRIER FORCE B6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
113	BARRIER FORCE B7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
114	BARRIER FORCE B8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
115	BARRIER FORCE B9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Rigid Load Cell Barrier  
12/17/02  
2003 Toyota Tundra SR5 4 Door Pickup**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
116	BARRIER FORCE C1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
117	BARRIER FORCE C2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
118	BARRIER FORCE C3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
119	BARRIER FORCE C4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
120	BARRIER FORCE C5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
121	BARRIER FORCE C6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
122	BARRIER FORCE C7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
123	BARRIER FORCE C8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
124	BARRIER FORCE C9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
125	BARRIER FORCE D1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
126	BARRIER FORCE D2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
127	BARRIER FORCE D3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
128	BARRIER FORCE D4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
129	BARRIER FORCE D5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
130	BARRIER FORCE D6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
131	BARRIER FORCE D7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
132	BARRIER FORCE D8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
133	BARRIER FORCE D9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N

**APPENDIX E**  
**DUMMY CALIBRATION DATA**



## Calibration Data Sheet Hybrid III 50th Percentile Male Knee Impact Test

ATD Serial No.: 034

Location: Left Knee

Test I.D.: KK07A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.13	Pass
Peak Probe Force	N	4715 to 5782	5038	Pass
Overall Test Results				Pass

ATD Serial No.: 034

Location: Right Knee

Test I.D.: KK07B

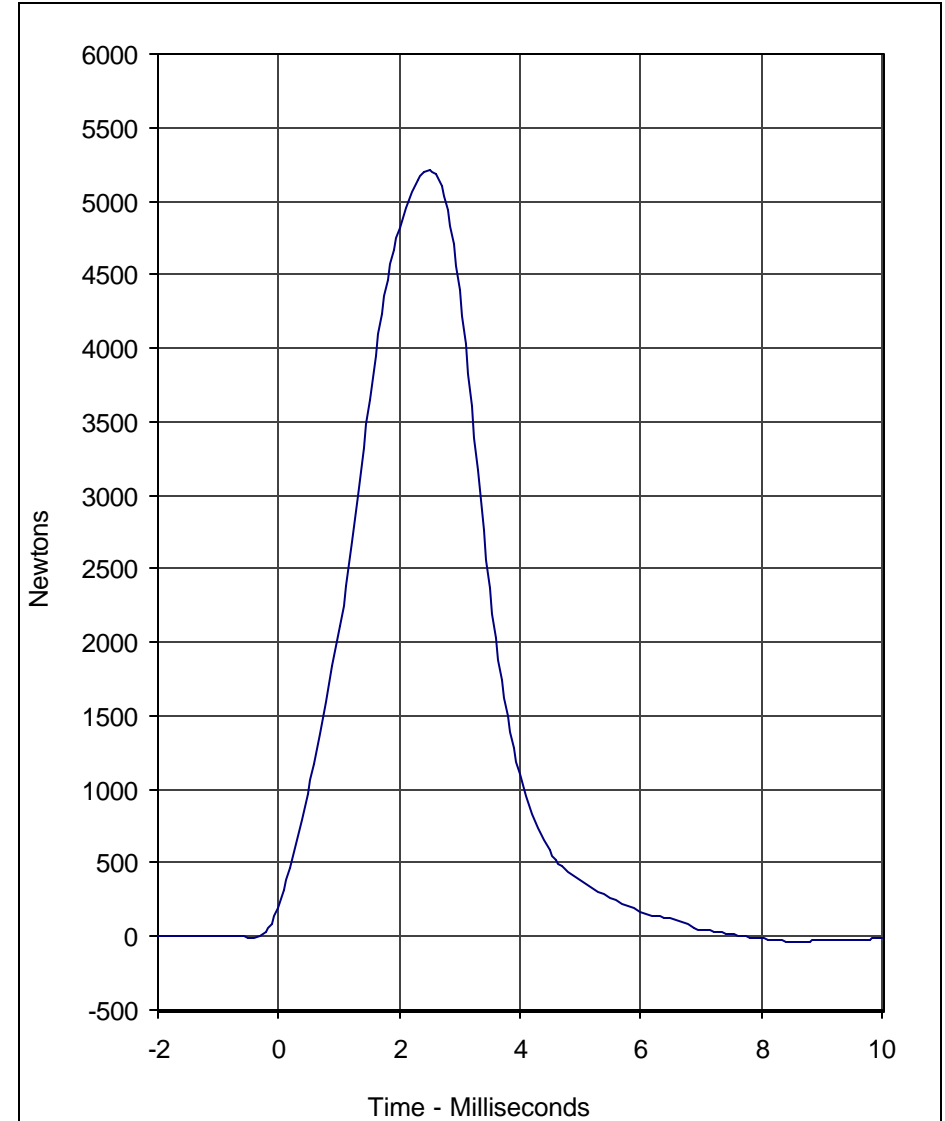
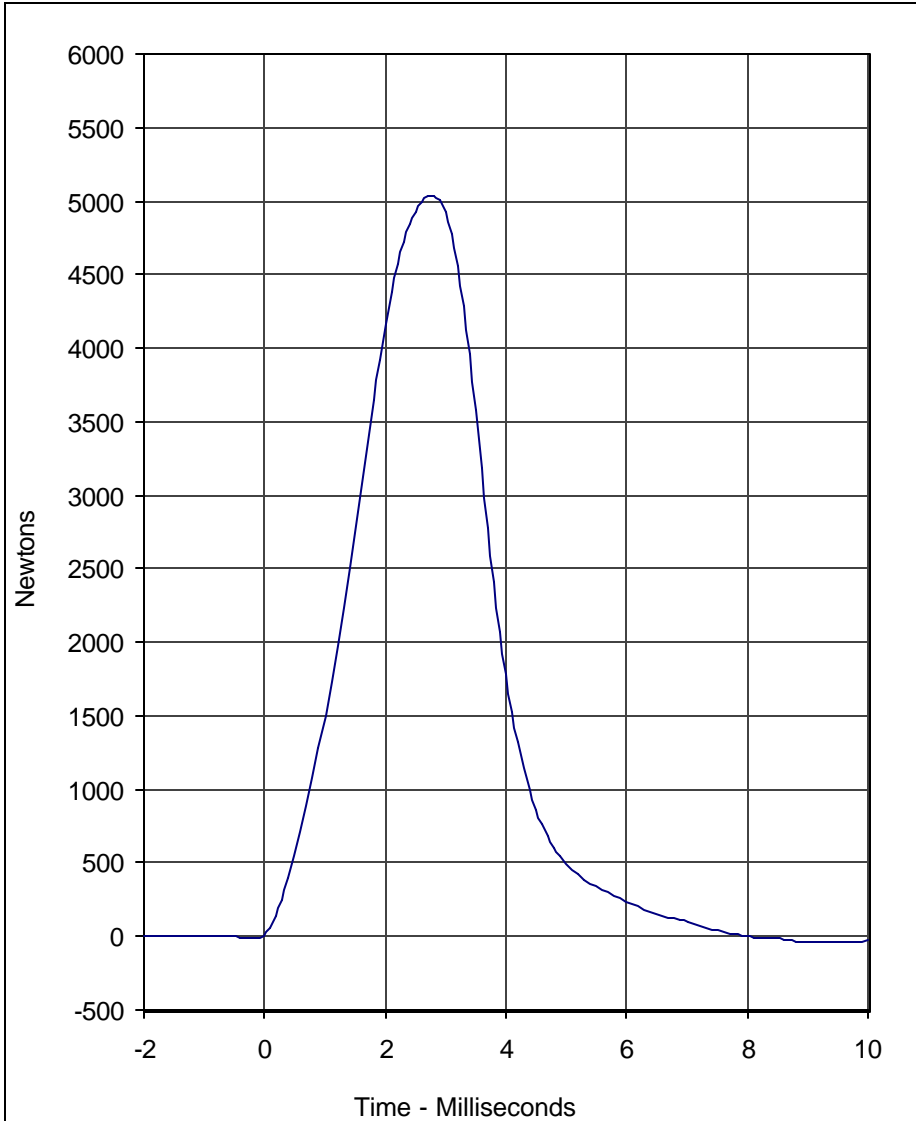
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5218	Pass
Overall Test Results				Pass

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Laboratory Technician

December 2, 2002  
\_\_\_\_\_  
Test Date

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TR-P23001-02-NC



Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Left Knee	KK07A	001	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5038.0	2.8	-37.9	9.1	600

Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Right Knee	KK07B	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5218.0	2.5	-37.7	8.6	600

Test Program: Hybrid III 50th Percentile Male Knee Impact Test  
 Test Date: 12/2/02

A.T.D. Serial No.: 034





## Calibration Data Sheet Hybrid III 50th Percentile Male Head Drop Test

ATD Serial No.: 034

Test I.D.: HD10C

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	232.6	Pass
Peak Lateral Acceleration	G's	≤15.0	9.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

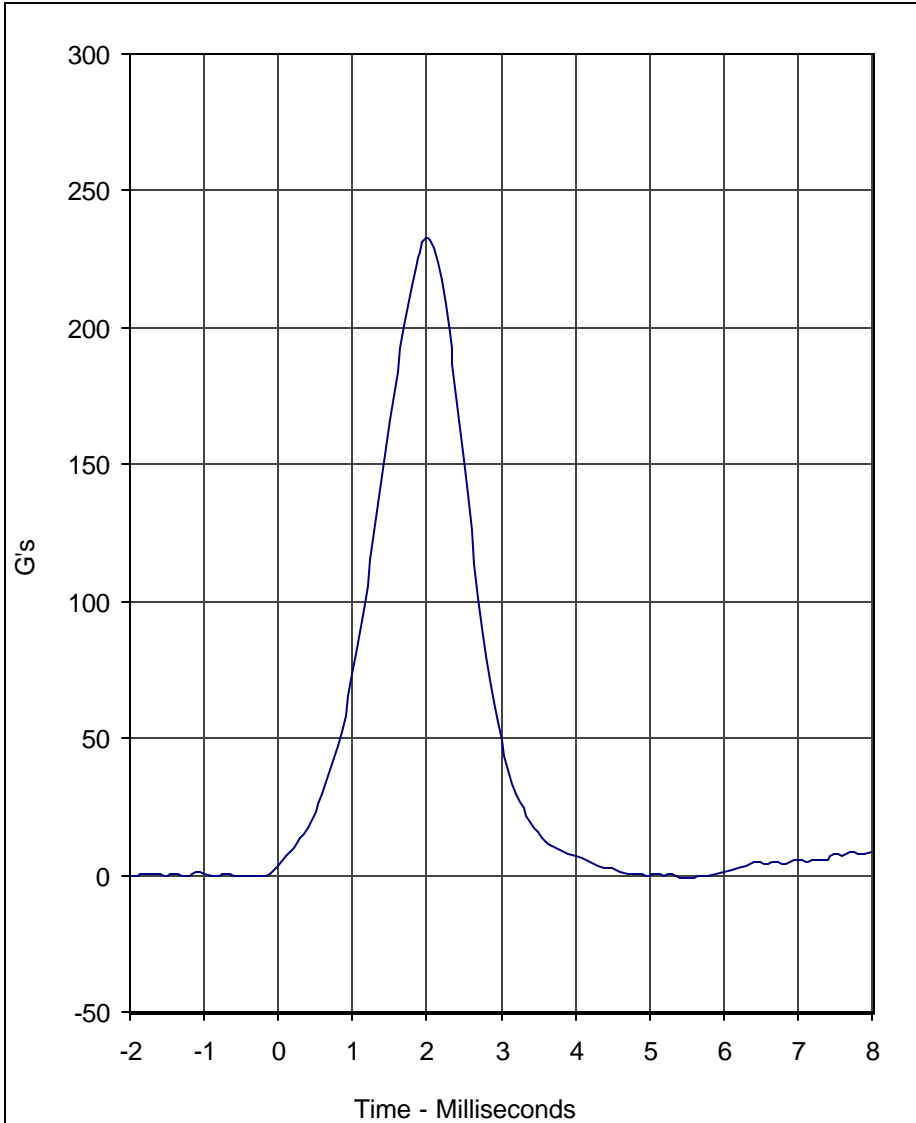
E-3

TR-P23001-02-NC

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Laboratory Technician

December 3, 2002

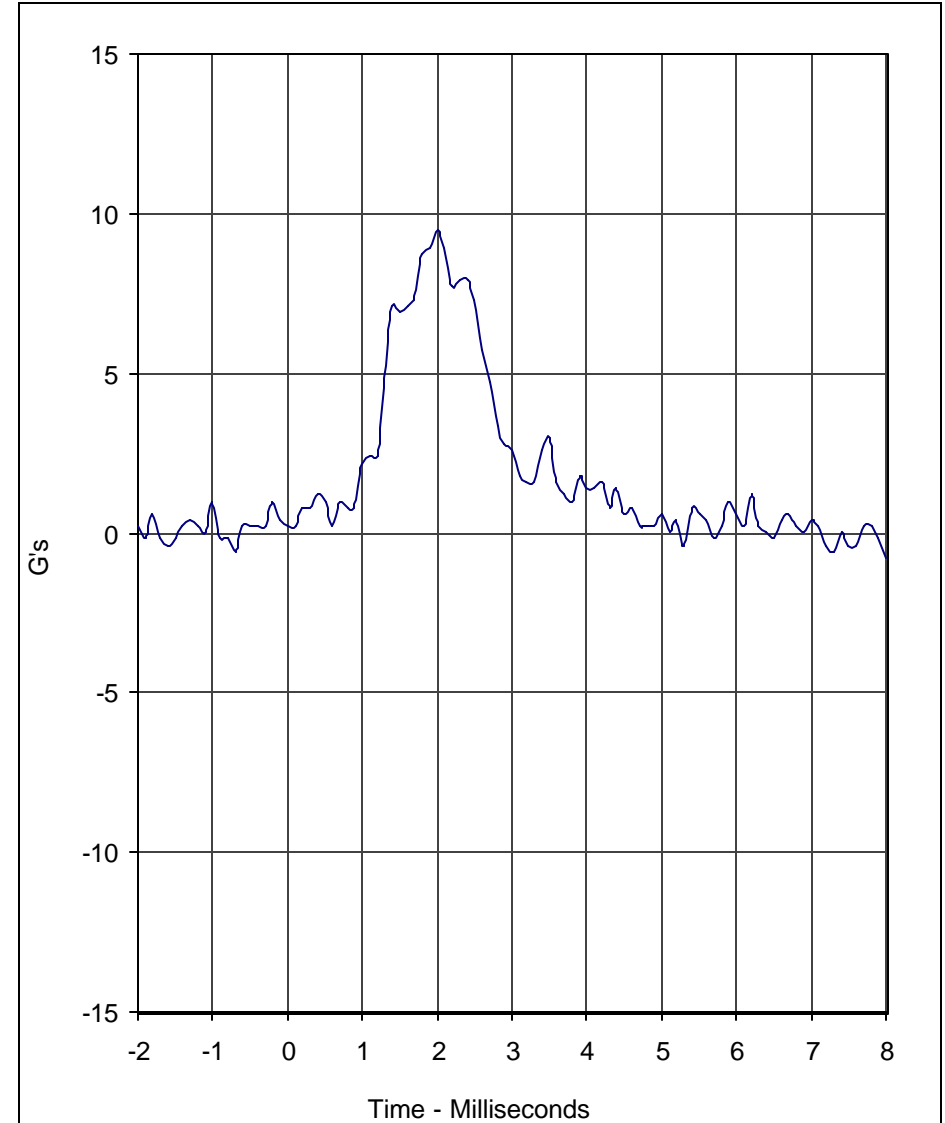
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	232.6	2.0	-0.8	5.4	1000

Test Program: Hybrid III 50th Percentile Male Head Drop Test  
 Test Date: 12/3/02



Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	9.5	2.0	-0.6	-0.7	1000

A.T.D. Serial No.: 034  
 Test I.D.: HD10C





## Calibration Data Sheet Hybrid III 50th Percentile Male Thorax Impact Test

ATD Serial No.: 034

Test I.D.: CH06E

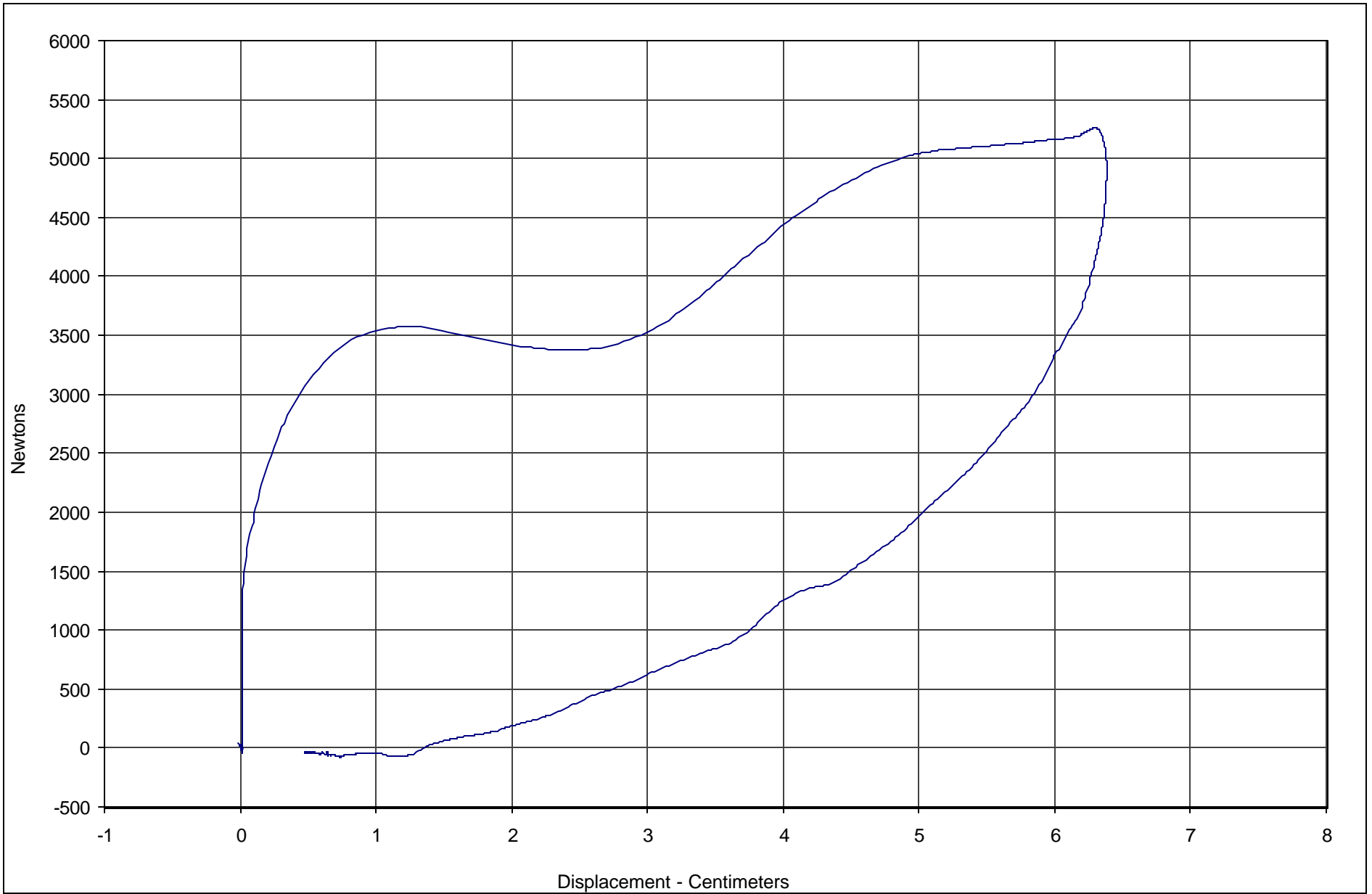
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	Newtons	5159 to 5893	5262	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.38	Pass
Internal Hysteresis	%	69 to 85	73.2	Pass
Overall Test Results				Pass

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TR-P23001-02-NC

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Laboratory Technician

December 4, 2002  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type	Hysteresis	Peak Chest Displ.	Peak Probe Force	SAE Class
Probe Force vs. Chest Displacement	001	FIL	73.2	6.38	5262.5	180



Test Program: Hybrid III 50th Percentile Male Thorax Impact

A.T.D. Serial No.: 034

Test Date: 12/4/02

Test I.D.: CH06E



## Calibration Data Sheet Hybrid III 50th Percentile Male Neck Flexion Test

ATD Serial No.: 034

Test I.D.: NF07B

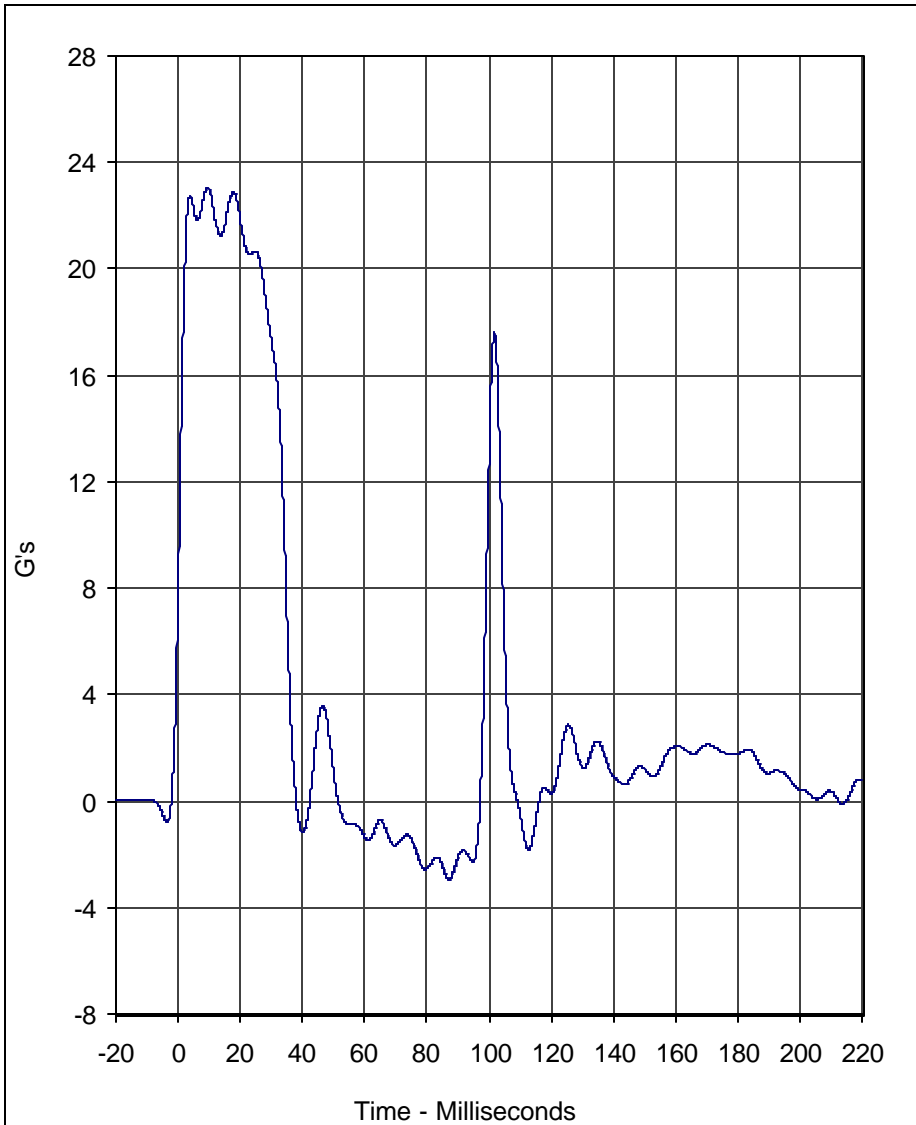
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.07	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.0	Pass
	20 Msec.	G's	17.6 to 22.6	21.8	Pass
	30 Msec.	G's	12.5 to 18.5	17.3	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.6	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	35.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	64.7	Pass
	Time	Msec.	57.0 to 64.0	60.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	117.5	Pass
Moment About Occipital Condyle	Maximum	Nm	84.1 to 108.5	84.9	Pass
	Time	Msec.	47.0 to 58.0	47.3	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	102.8	Pass
Overall Test Results					Pass

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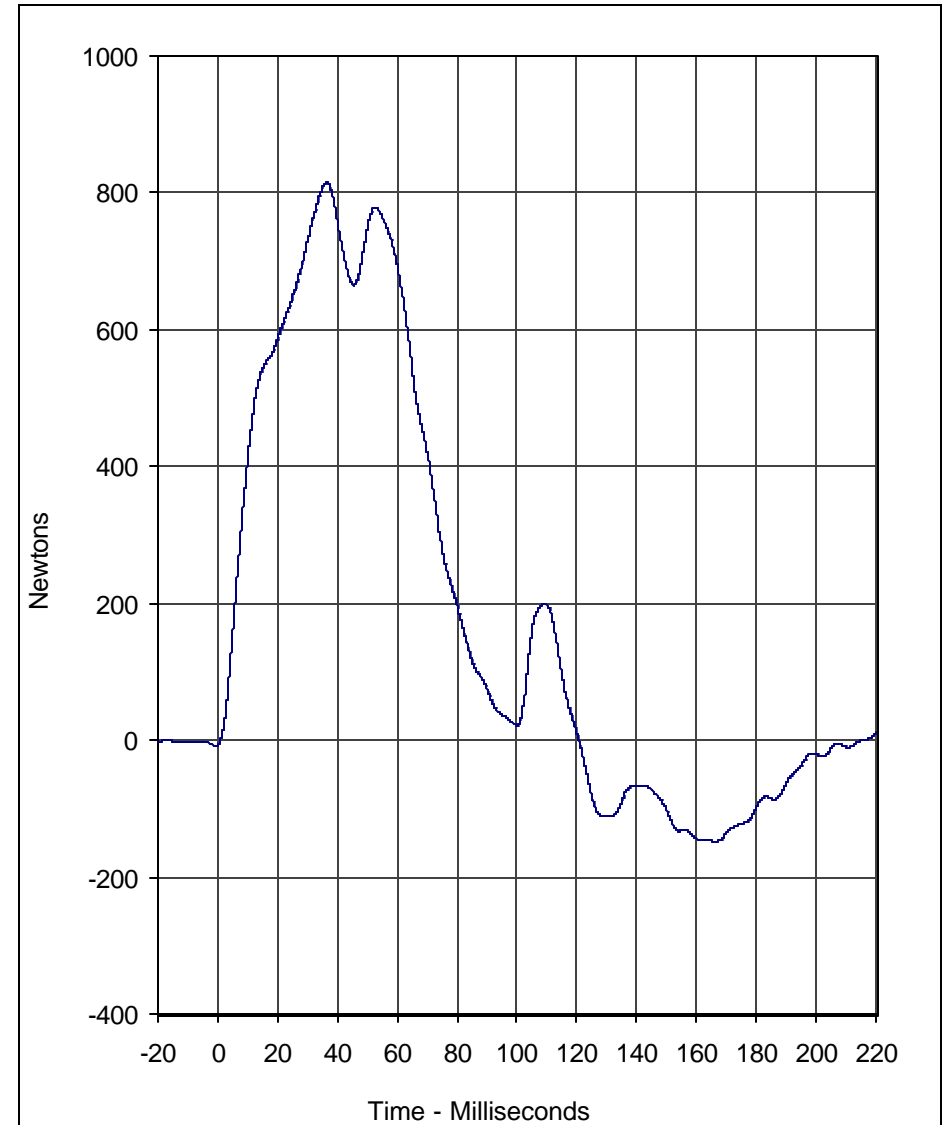
December 3, 2002  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	23.1	9.4	-2.9	87.1	60

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test  
 Test Date: 12/3/02

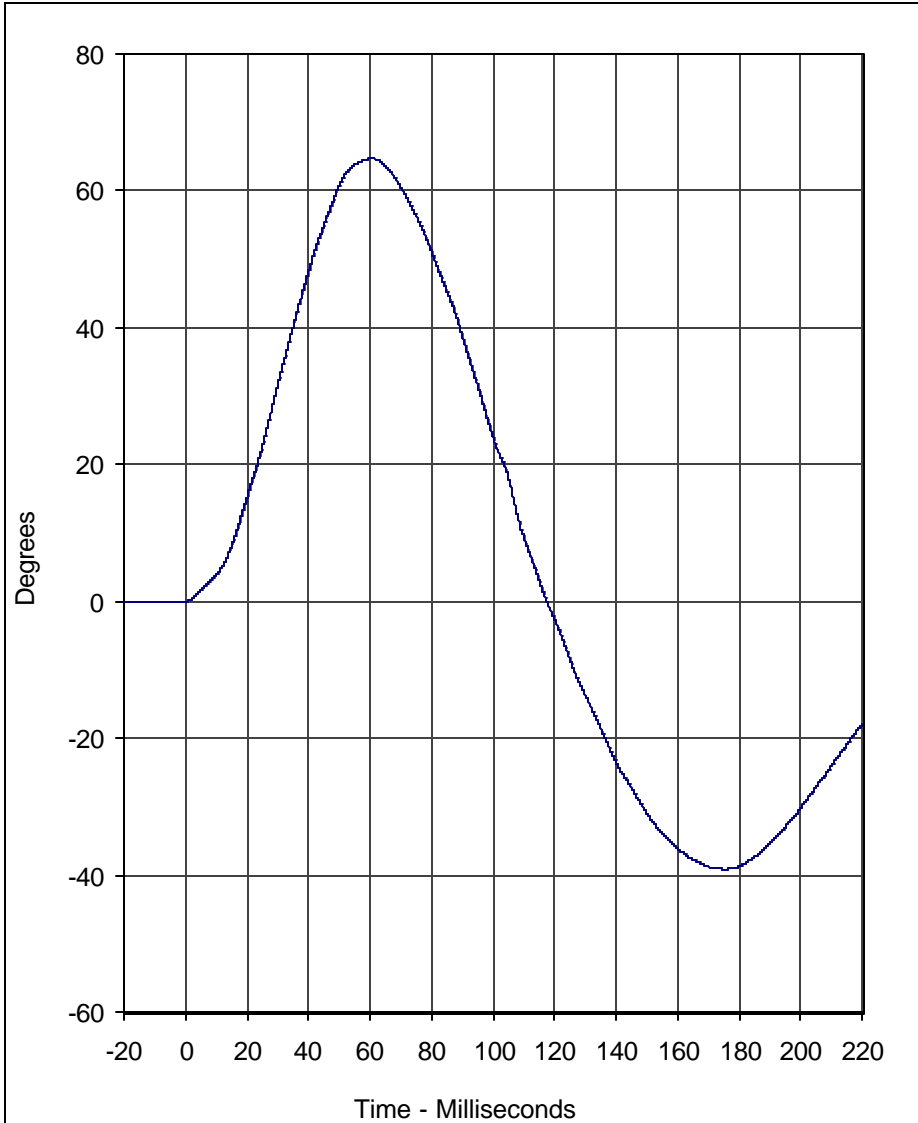


Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	815.1	36.4	-148.4	166.4	60

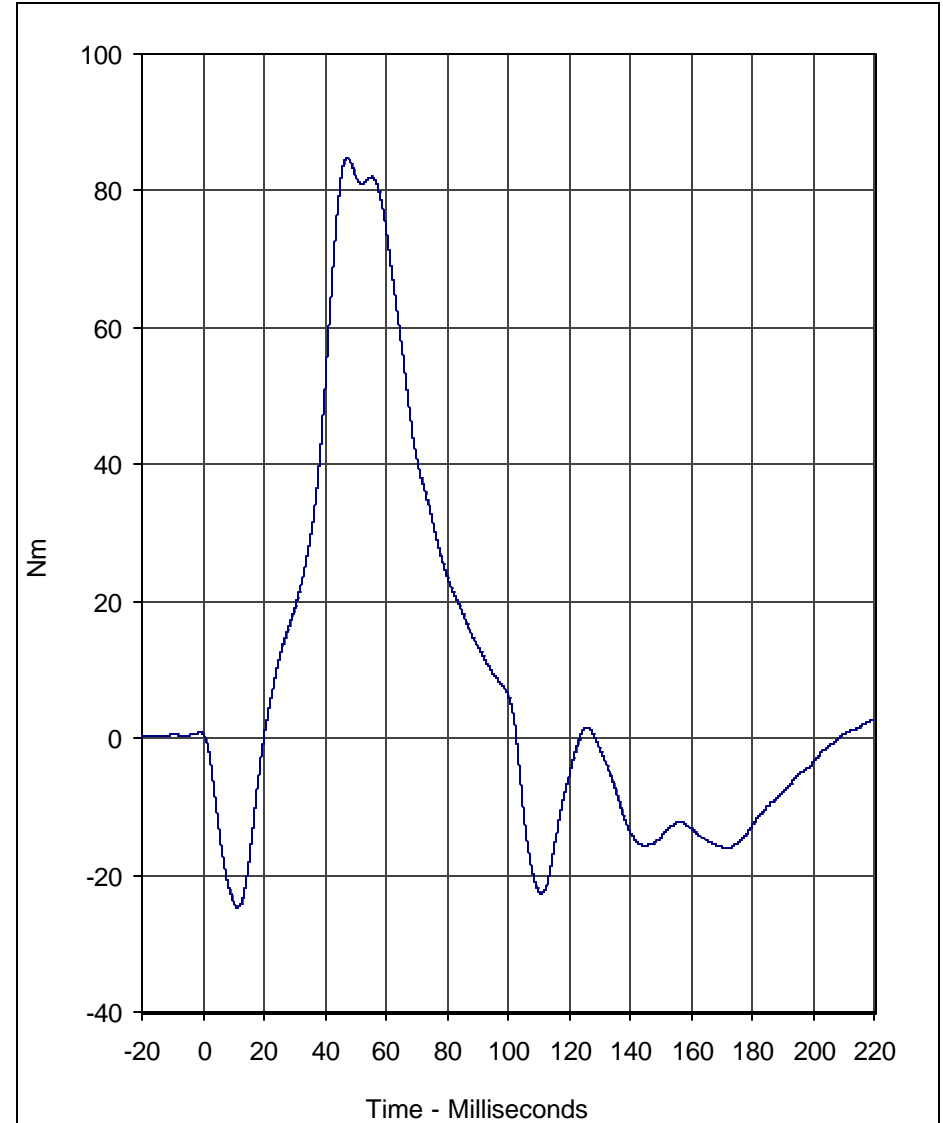
A.T.D. Serial No.: 034  
 Test I.D.: NF07B





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	64.7	60.7	-39.1	175.6	60



Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	84.9	47.3	-24.8	11.4	60

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test  
 Test Date: 12/3/02

A.T.D. Serial No.: 034  
 Test I.D.: NF07B





## Calibration Data Sheet Hybrid III 50th Percentile Male Neck Extension Test

ATD Serial No.: 034

Test I.D.: NE07B

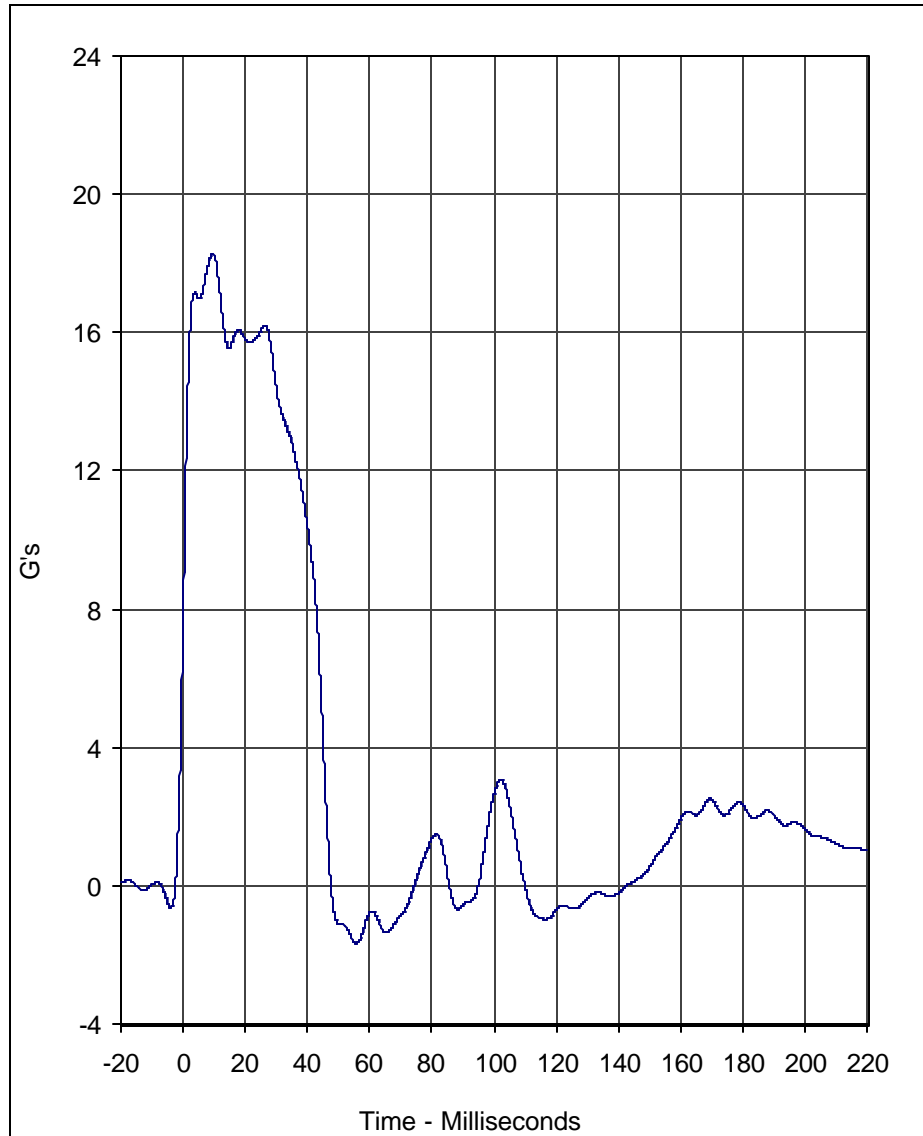
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.2	Pass
	20 Msec.	G's	14.0 to 19.0	15.8	Pass
	30 Msec.	G's	11.0 to 16.0	14.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	44.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	85.6	Pass
	Time	Msec.	72.0 to 82.0	80.6	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	156.5	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to- 79.9	-60.7	Pass
	Time	Msec.	65.0 to 79.0	65.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	135.9	Pass
Overall Test Results					Pass

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Laboratory Technician

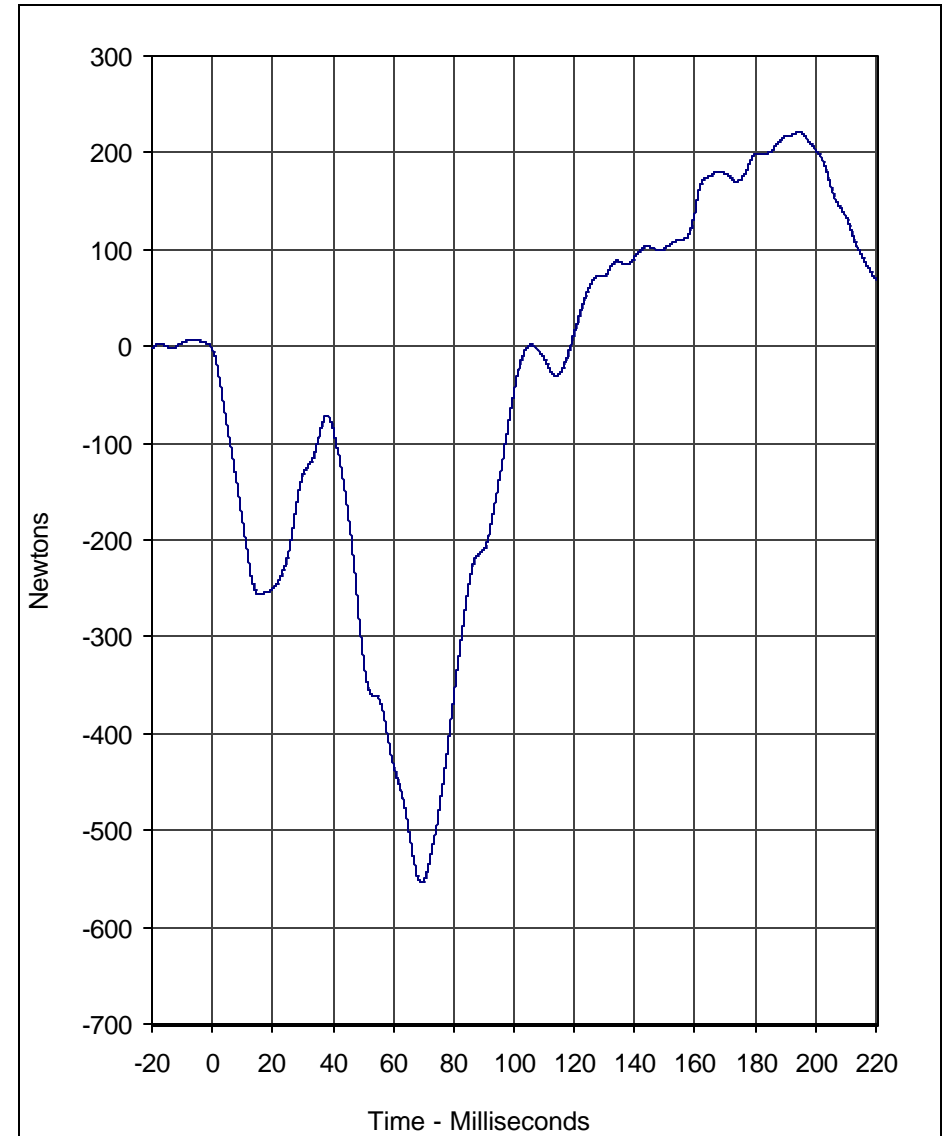
December 3, 2002  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	18.3	9.5	-1.7	55.7	60

Test Program: Hybrid III 50th Percentile Male Neck Extension Test  
 Test Date: 12/3/02

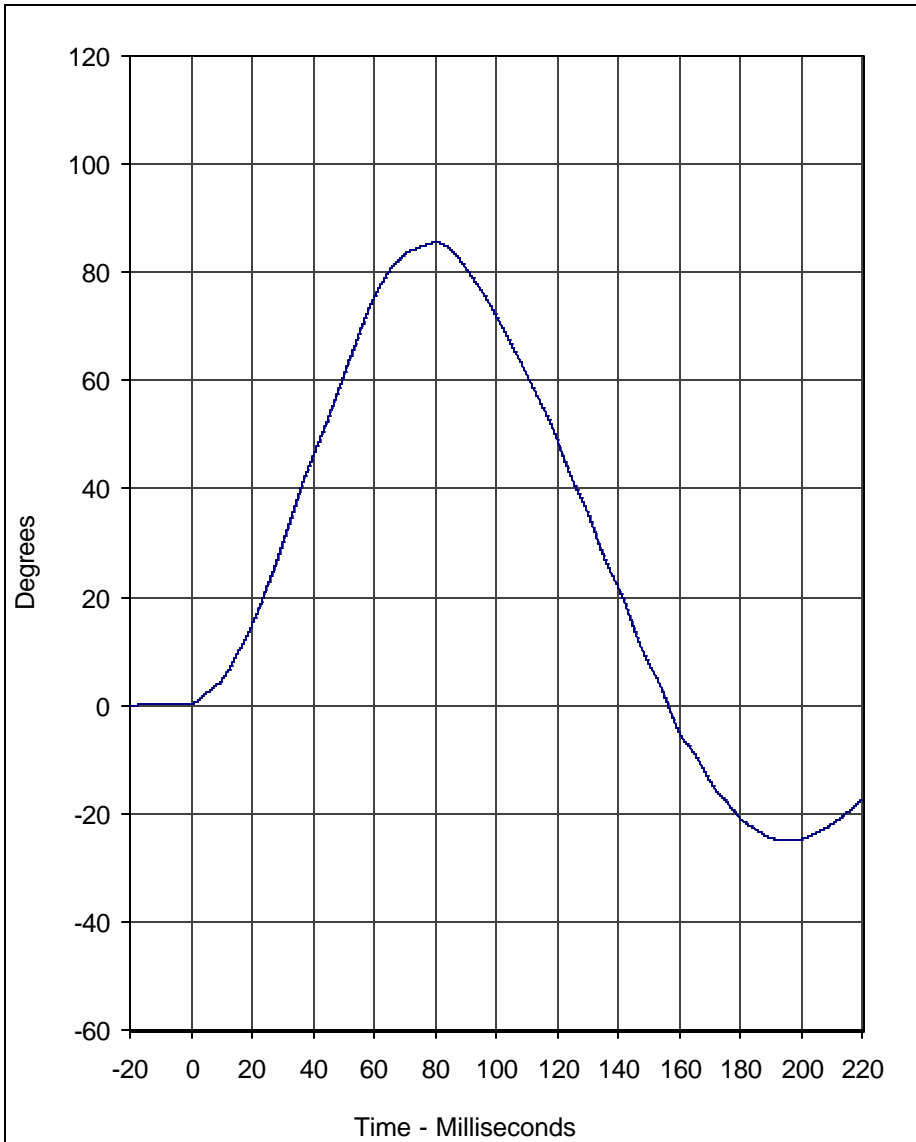


Curve Description	CURNO	Type
Neck Force X	002	FIL

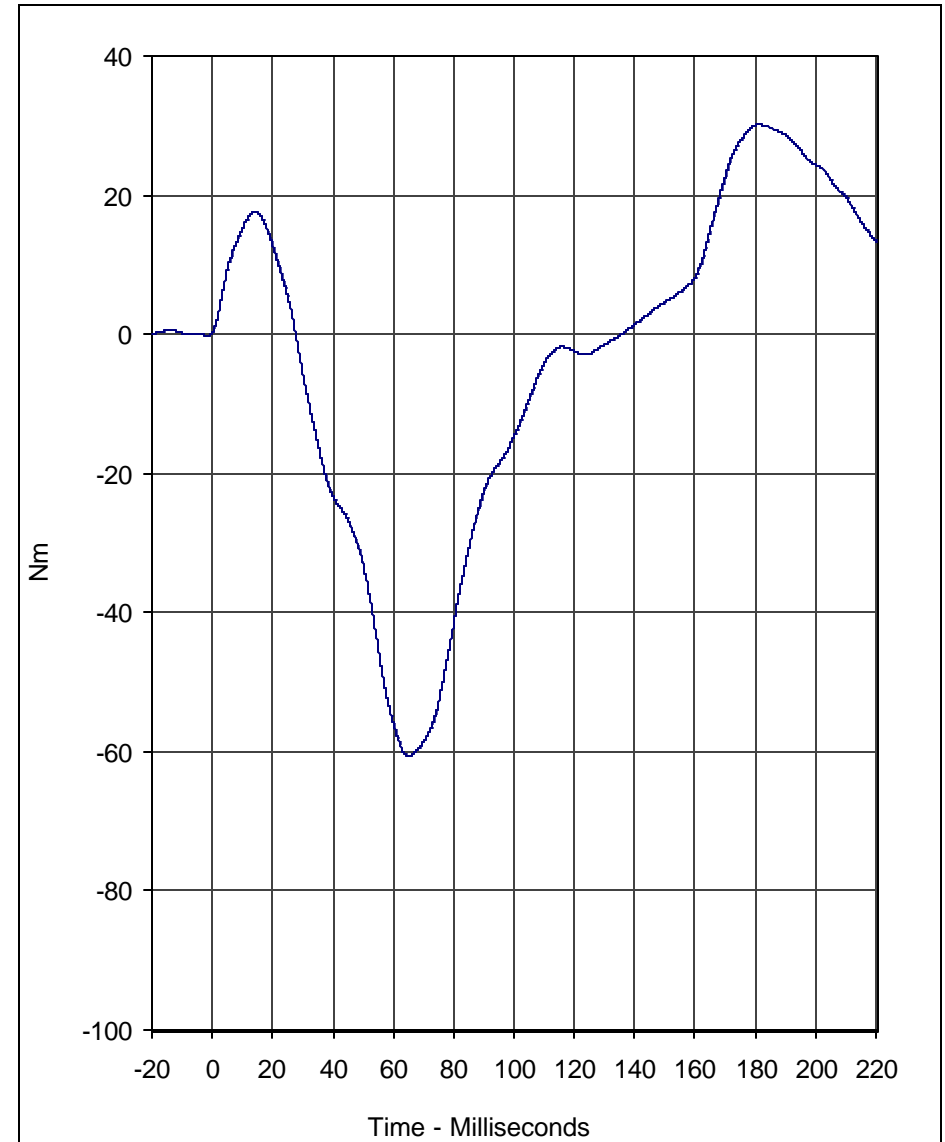
Units	Max	Time	Min	Time	SAE Class
Newtons	221.8	194.9	-554.2	69.4	60

A.T.D. Serial No.: 034  
 Test I.D.: NE07B





Curve Description				CURNO	Type
"D" Plane Rotation				003	FIL
Units	Max	Time	Min	Time	SAE Class
Degrees	85.6	80.6	-25.0	196.5	60



Curve Description				CURNO	Type
Moment About Occipital Condyle				004	FIL
Units	Max	Time	Min	Time	SAE Class
Nm	30.1	181.2	-60.7	65.1	60

Test Program: Hybrid III 50th Percentile Male Neck Extension Test  
 Test Date: 12/3/02

A.T.D. Serial No.: 034  
 Test I.D.: NE07B





# Calibration Data Sheet

## Hybrid III 50th Percentile Male

### External Measurements

ATD Serial No.: 034

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	885	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	90	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	295	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	340	Pass
J - Elbow rest height	mm	190 to 211	195	Pass
K - Buttock to knee length	mm	579 to 604	600	Pass
L - Popliteal length	mm	429 to 455	445	Pass
M - Knee pivot height	mm	485 to 500	495	Pass
N - Buttock popliteal length	mm	452 to 477	475	Pass
O - Chest depth	mm	213 to 229	220	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	100	Pass
Y - Chest circumference	mm	970 to 1001	990	Pass
Z - Waist circumference	mm	836 to 866	850	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
			Overall Test Results	Pass

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Laboratory Technician

December 5, 2002  
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Test Date

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TR-P23001-02-NC



## Calibration Data Sheet Hybrid III 50th Percentile Male Knee Impact Test

ATD Serial No.: 035

Location: Left Knee

Test I.D.: KK07C

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	5220	Pass
Overall Test Results				Pass

ATD Serial No.: 035

Location: Right Knee

Test I.D.: KK07D

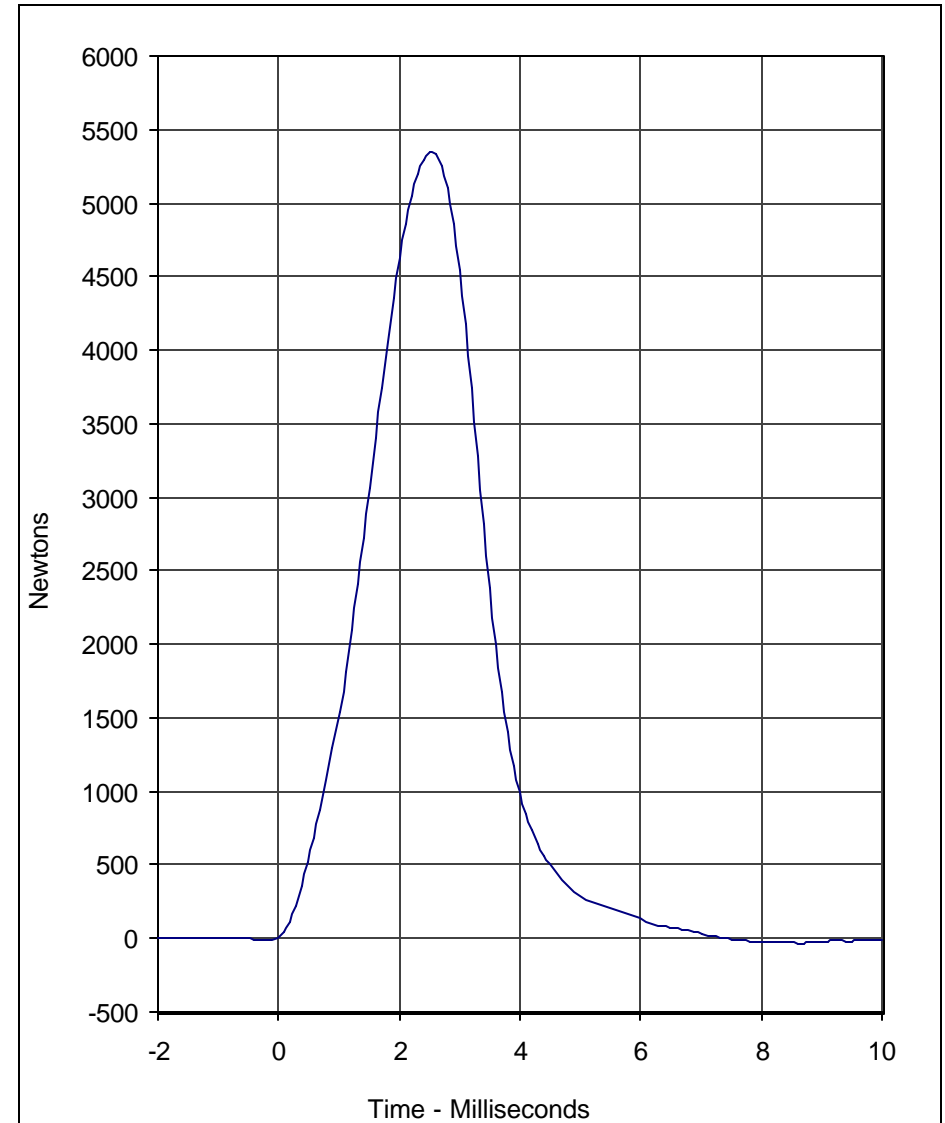
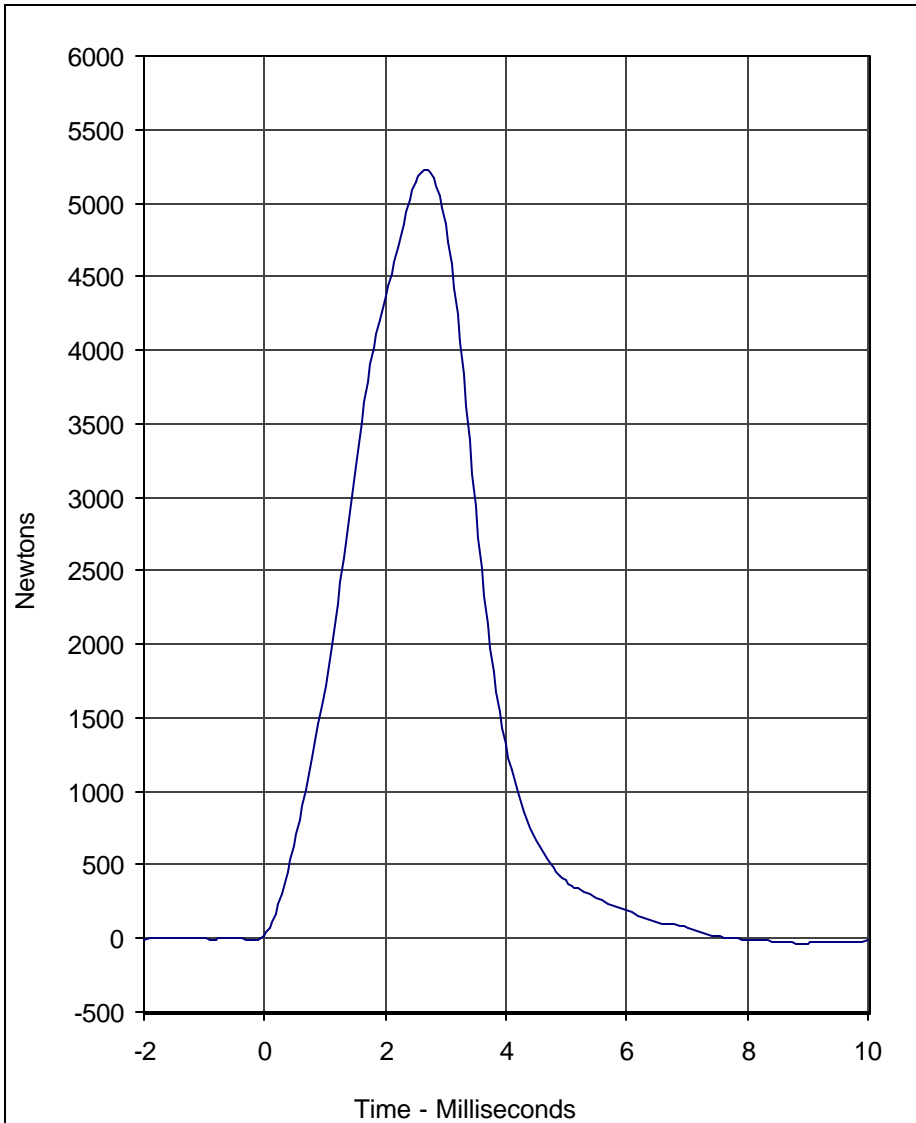
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5343	Pass
Overall Test Results				Pass

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Laboratory Technician

December 2, 2002  
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Test Date

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Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Left Knee	KK07C	001	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5220.4	2.7	-32.8	8.9	600

Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Right Knee	KK07D	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5342.8	2.5	-32.6	8.7	600

Test Program: Hybrid III 50th Percentile Male Knee Impact Test  
 Test Date: 12/2/02

A.T.D. Serial No.: 035





## Calibration Data Sheet Hybrid III 50th Percentile Male Head Drop Test

ATD Serial No.: 035

Test I.D.: HD10D

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	237.8	Pass
Peak Lateral Acceleration	G's	≤15.0	2.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

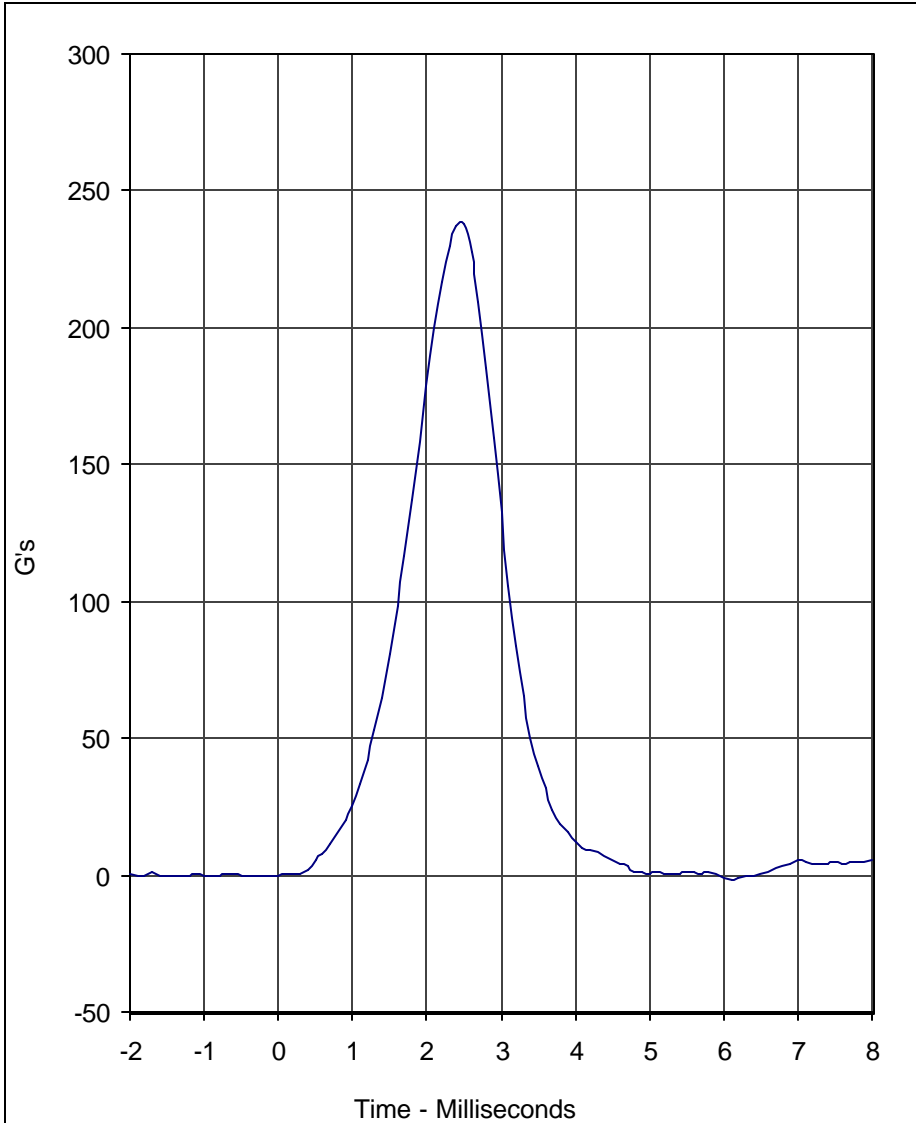
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Laboratory Technician

December 3, 2002

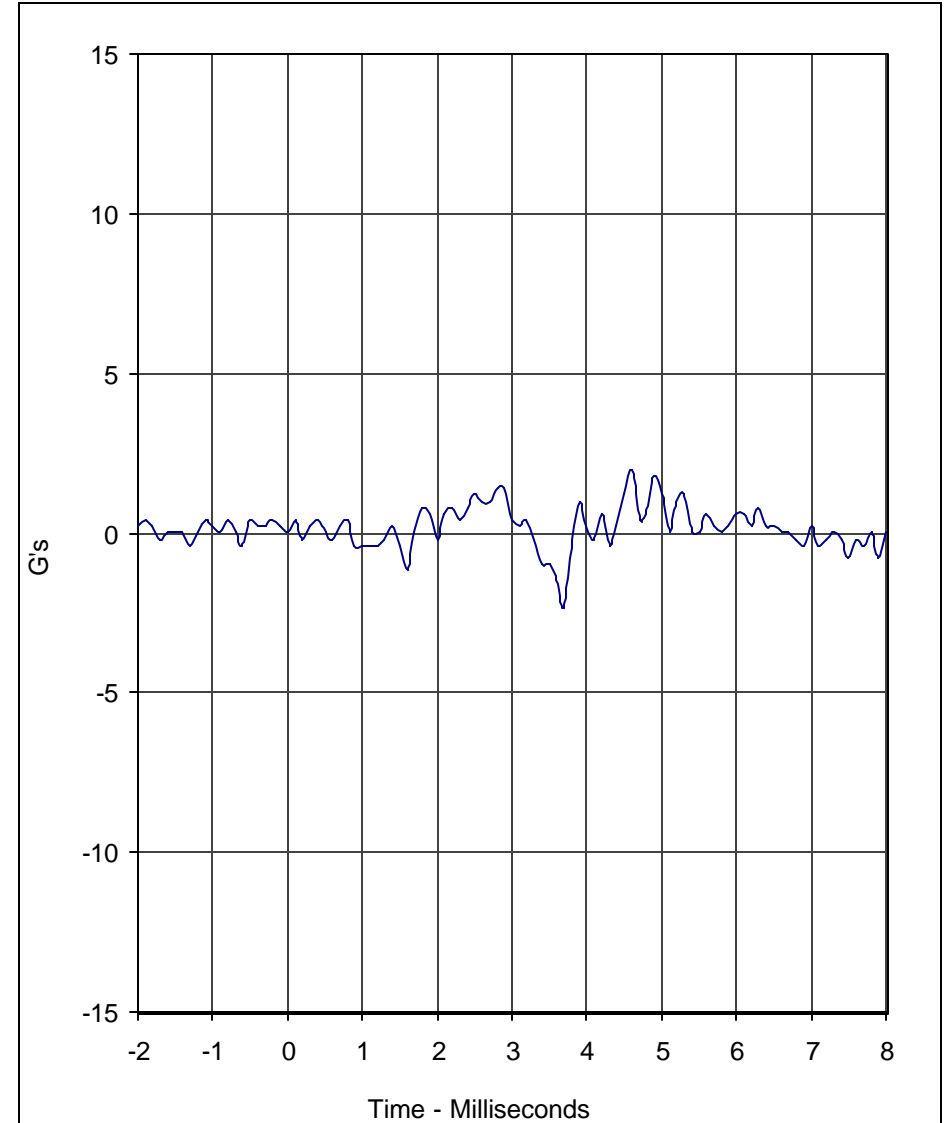
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Test Date



Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	237.8	2.5	-0.9	6.0	1000

Test Program: Hybrid III 50th Percentile Male Head Drop Test  
 Test Date: 12/3/02



Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	2.0	4.6	-2.4	3.7	1000

A.T.D. Serial No.: 035  
 Test I.D.: HD10D





## Calibration Data Sheet Hybrid III 50th Percentile Male Thorax Impact Test

ATD Serial No.: 035

Test I.D.: CH07B

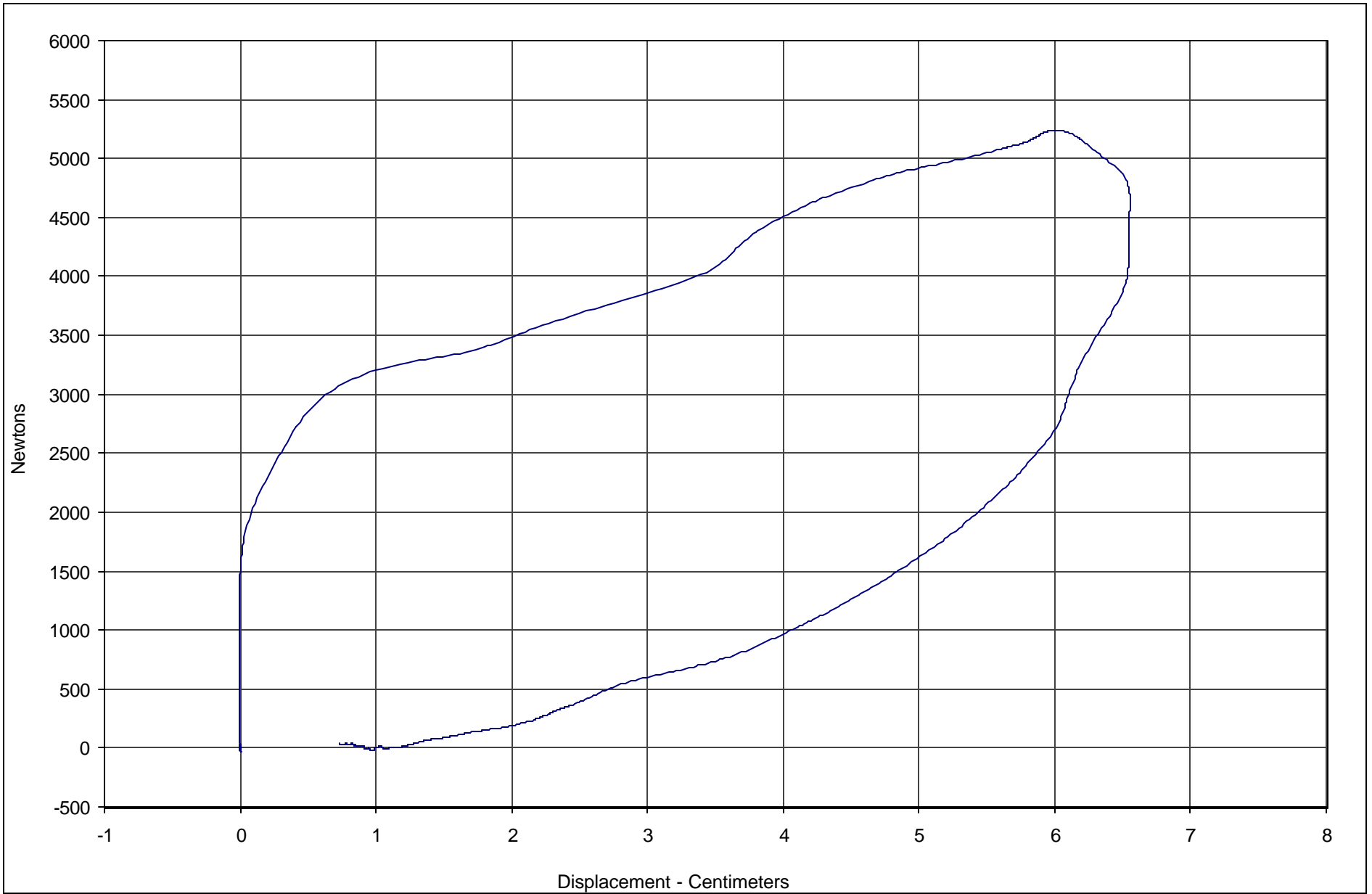
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.64	Pass
Peak Probe Force	Newtons	5159 to 5893	5243	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.55	Pass
Internal Hysteresis	%	69 to 85	75.4	Pass
Overall Test Results				Pass

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Laboratory Technician

December 4, 2002  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type	Hysteresis	Peak Chest Displ.	Peak Probe Force	SAE Class
Probe Force vs. Chest Displacement	001	FIL	75.4	6.55	5242.9	180



Test Program: Hybrid III 50th Percentile Male Thorax Impact

A.T.D. Serial No.: 035

Test Date: 12/4/02

Test I.D.: CH07B



## Calibration Data Sheet Hybrid III 50th Percentile Male Neck Flexion Test

ATD Serial No.: 035

Test I.D.: NF10C

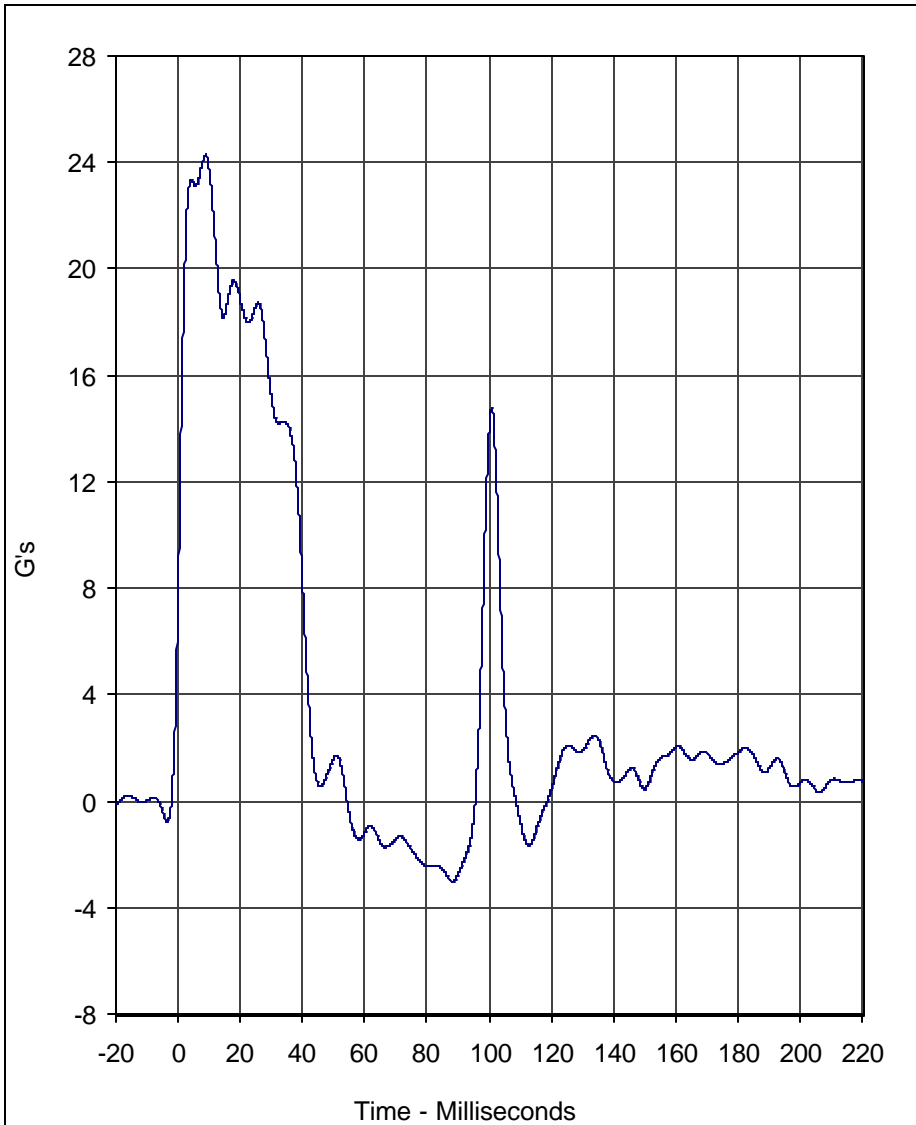
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.11	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.7	Pass
	20 Msec.	G's	17.6 to 22.6	18.9	Pass
	30 Msec.	G's	12.5 to 18.5	15.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	15.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	41.4	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	69.1	Pass
	Time	Msec.	57.0 to 64.0	62.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	119.1	Pass
Moment About Occipital Condyle	Maximum	Nm	84.1 to 108.5	86.0	Pass
	Time	Msec.	47.0 to 58.0	55.4	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	103.4	Pass
Overall Test Results					Pass

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Laboratory Technician

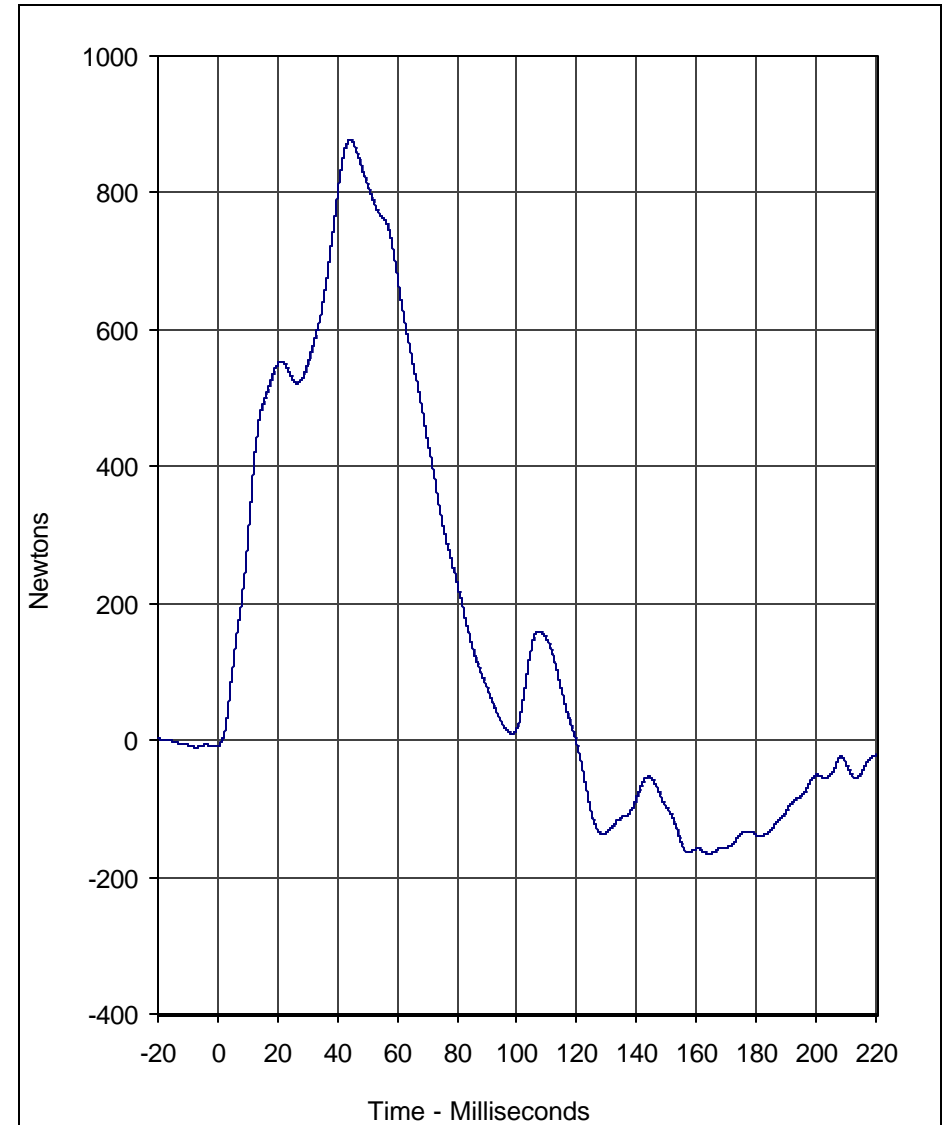
December 3, 2002  
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Test Date



Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	24.3	8.8	-3.0	88.2	60

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test  
 Test Date: 12/3/02

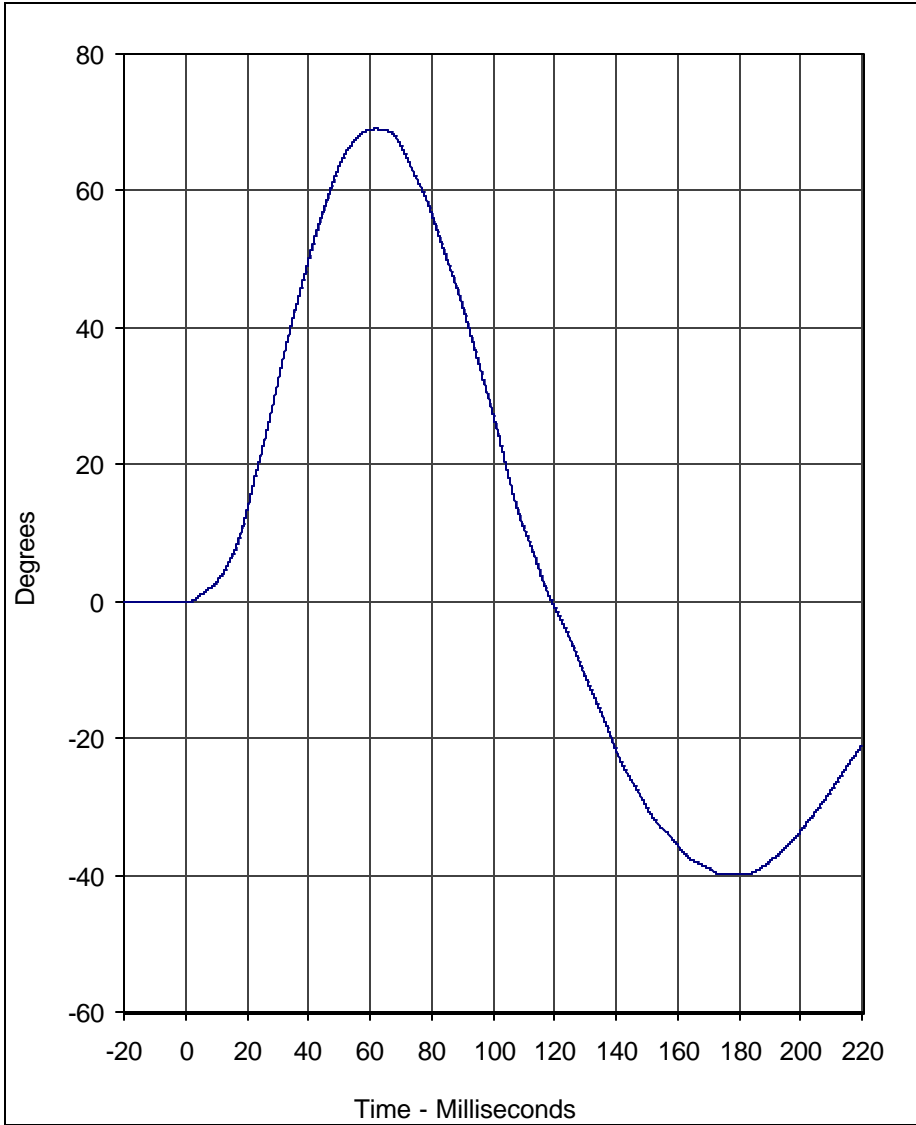


Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	877.0	44.2	-166.3	164.2	60

A.T.D. Serial No.: 035  
 Test I.D.: NF10C

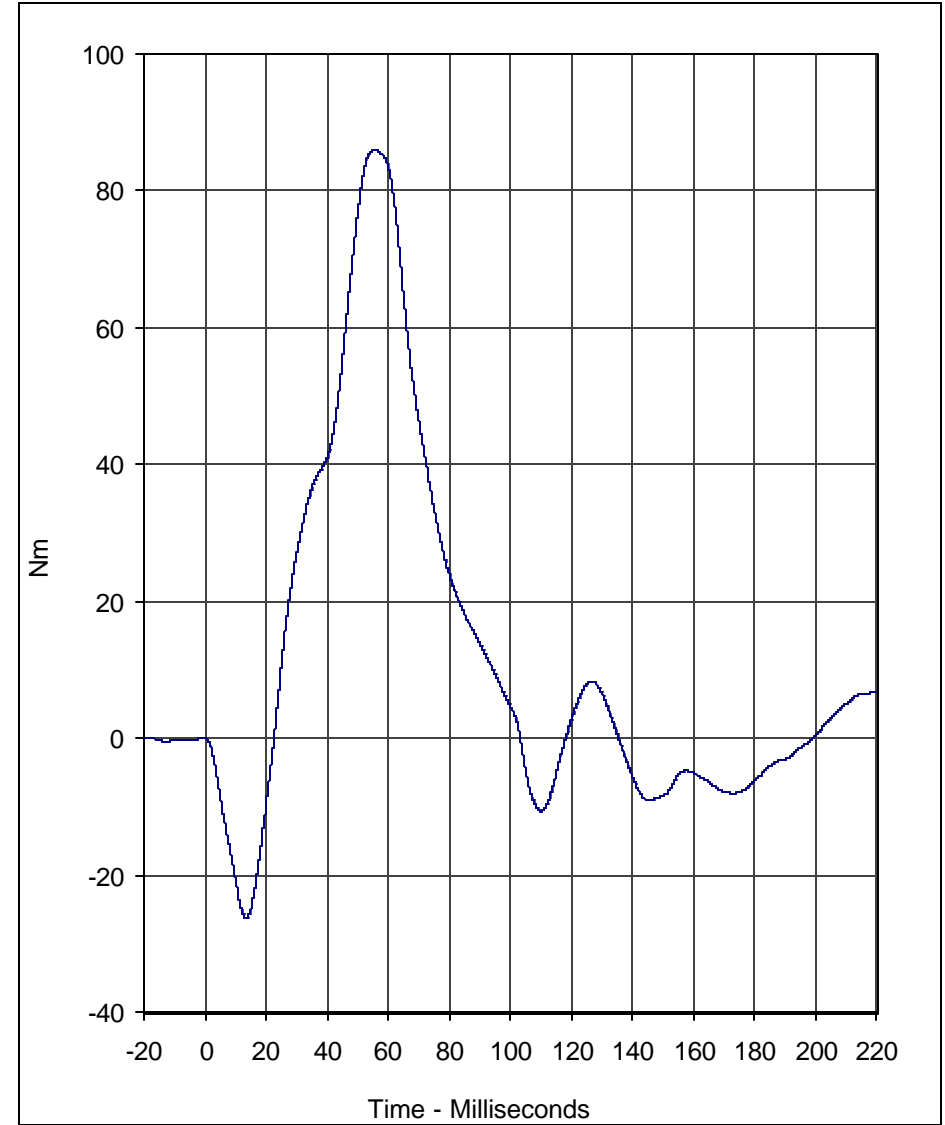




Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	69.1	62.0	-40.0	175.9	60

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test  
 Test Date: 12/3/02



Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	86.0	55.4	-26.2	13.5	60

A.T.D. Serial No.: 035  
 Test I.D.: NF10C





## Calibration Data Sheet Hybrid III 50th Percentile Male Neck Extension Test

ATD Serial No.: 035

Test I.D.: NE10C

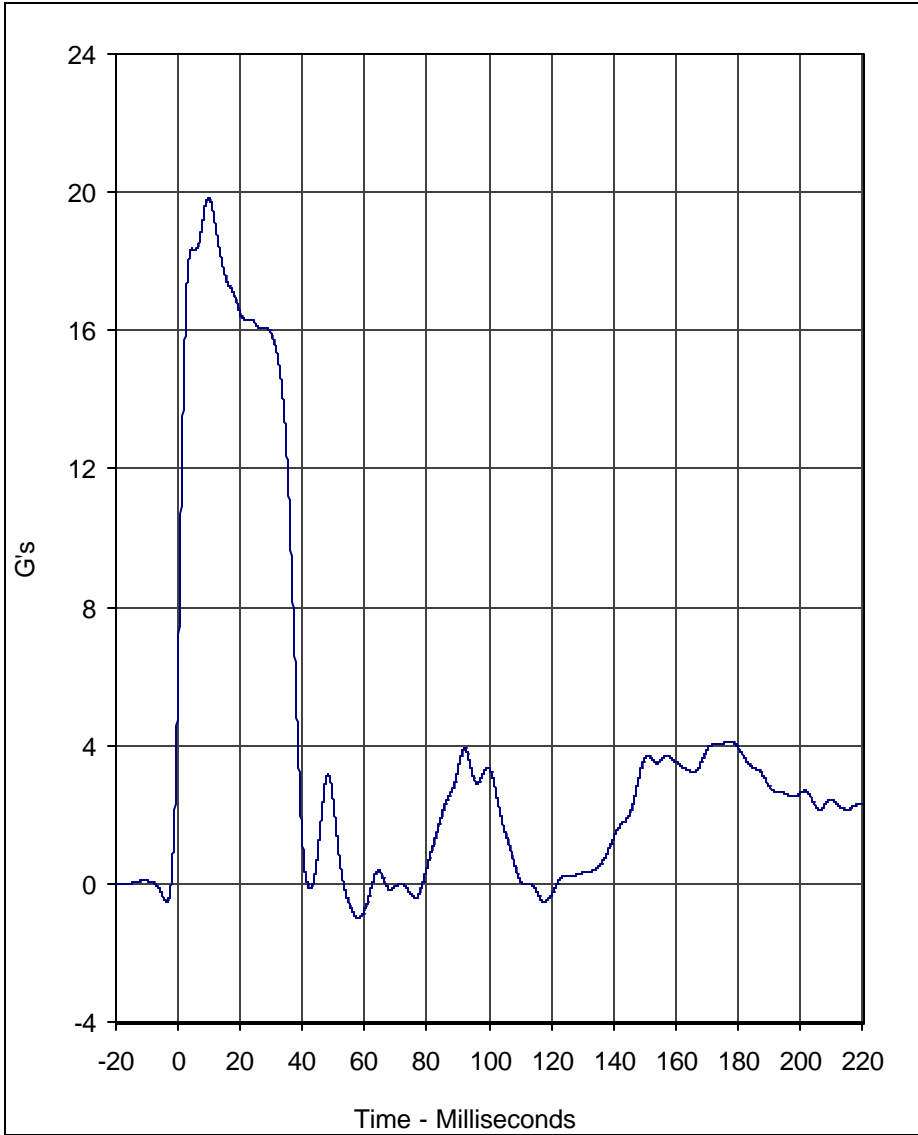
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.02	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.8	Pass
	20 Msec.	G's	14.0 to 19.0	16.5	Pass
	30 Msec.	G's	11.0 to 16.0	15.9	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.9	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	38.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.2	Pass
	Time	Msec.	72.0 to 82.0	77.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	149.8	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to- 79.9	-74.6	Pass
	Time	Msec.	65.0 to 79.0	67.4	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	139.0	Pass
Overall Test Results					Pass

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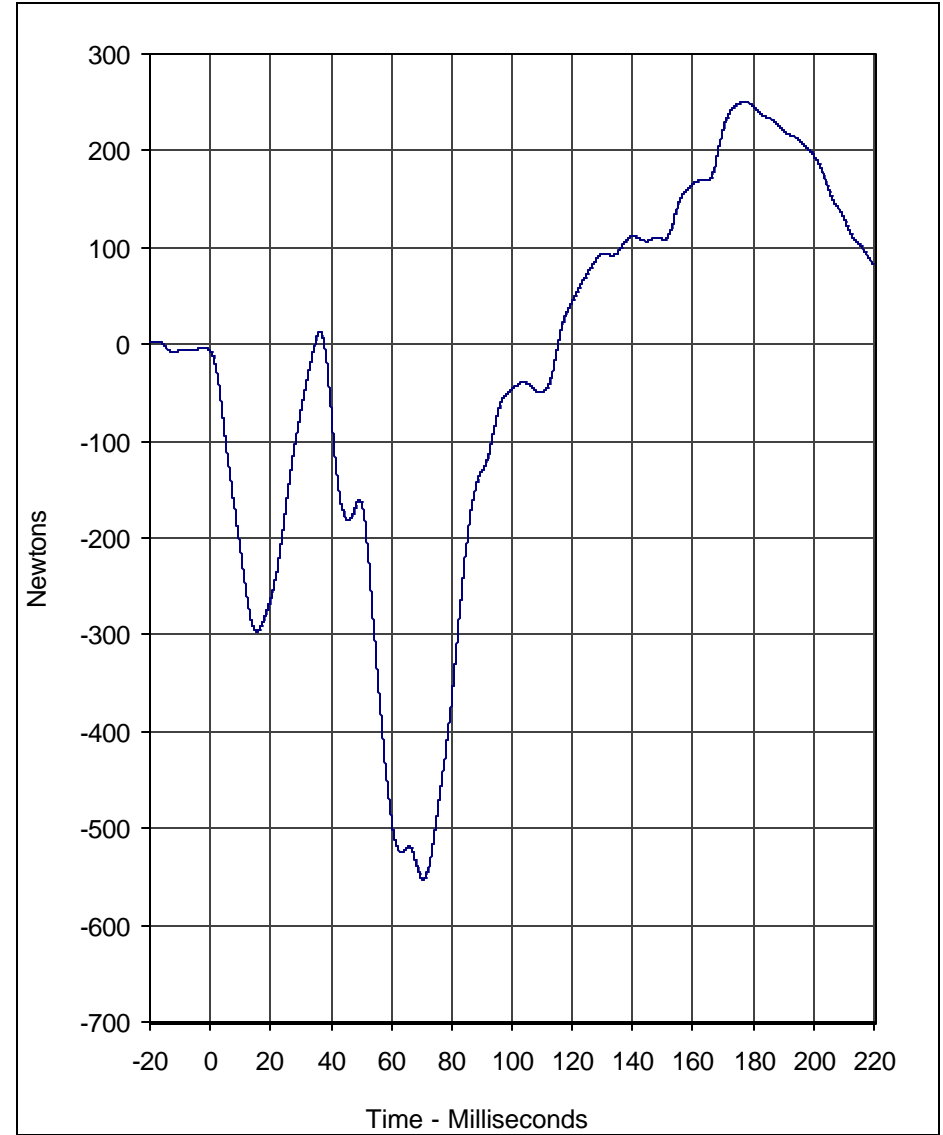
December 3, 2002  
\_\_\_\_\_  
Test Date



Curve Description				CURNO	Type
Pendulum Deceleration				001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	19.8	9.8	-1.0	58.0	60

Test Program: Hybrid III 50th Percentile Male Neck Extension Test  
 Test Date: 12/3/02

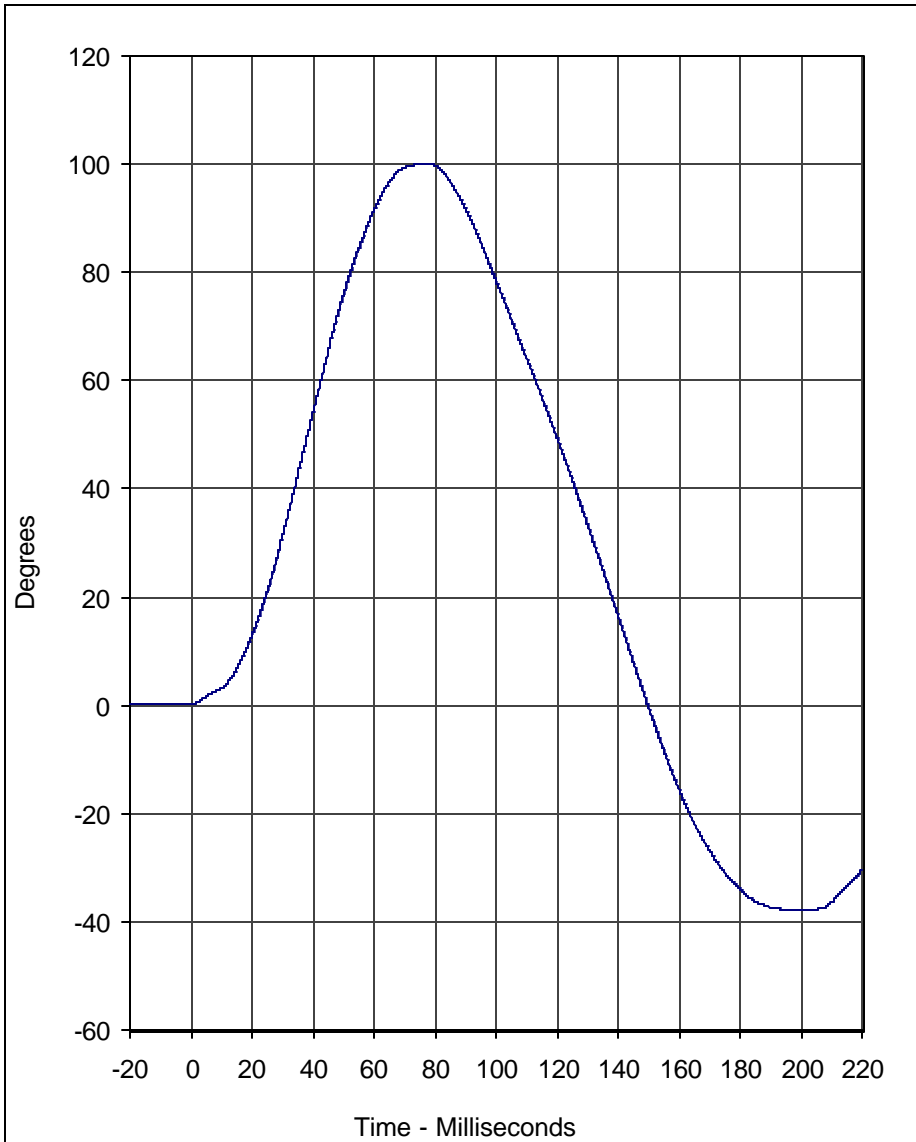


Curve Description				CURNO	Type
Neck Force X				002	FIL

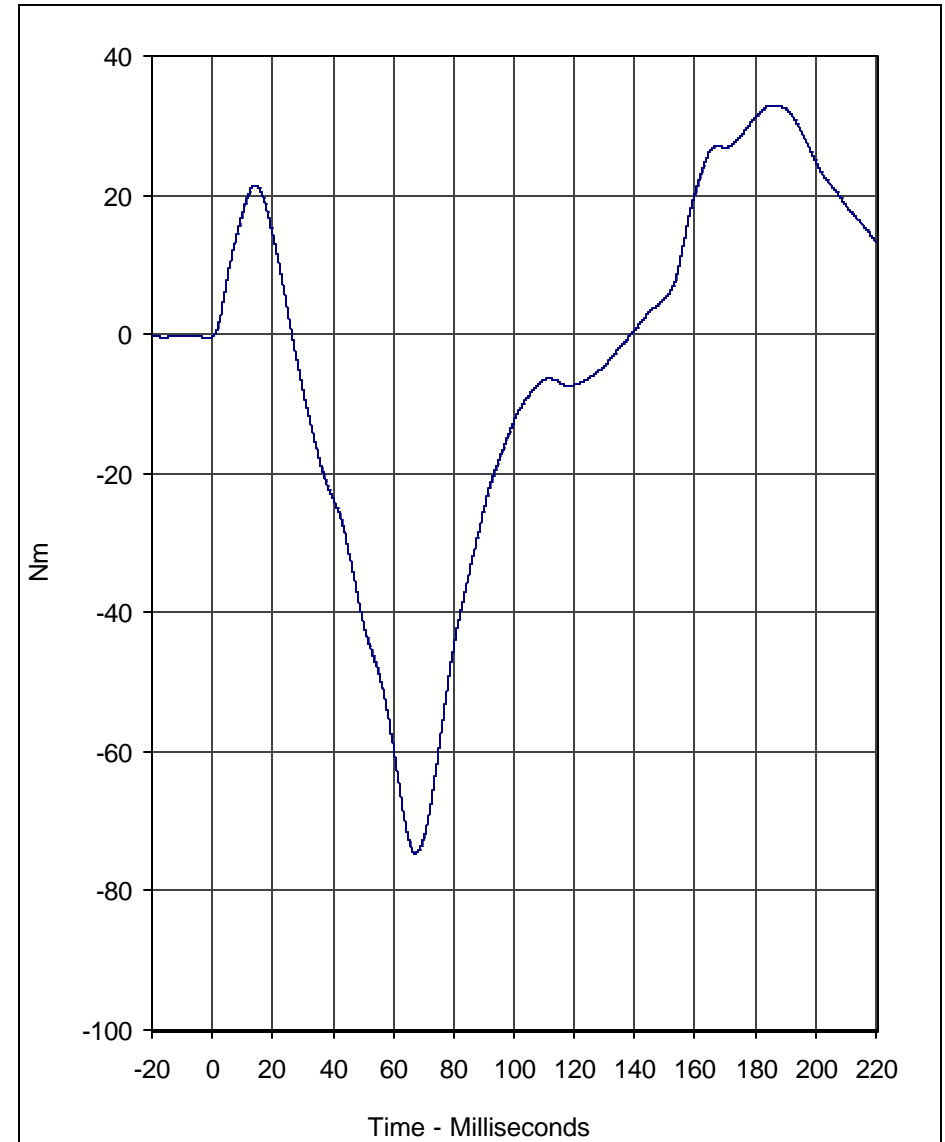
Units	Max	Time	Min	Time	SAE Class
Newtons	250.3	177.2	-552.5	70.6	60

A.T.D. Serial No.: 035  
 Test I.D.: NE10C





Curve Description				CURNO	Type
"D" Plane Rotation				003	FIL
Units	Max	Time	Min	Time	SAE Class
Degrees	100.2	77.4	-37.9	199.6	60



Curve Description				CURNO	Type
Moment About Occipital Condyle				004	FIL
Units	Max	Time	Min	Time	SAE Class
Nm	32.9	186.1	-74.6	67.4	60

Test Program: Hybrid III 50th Percentile Male Neck Extension Test  
 Test Date: 12/3/02

A.T.D. Serial No.: 035  
 Test I.D.: NE10C





## Calibration Data Sheet Hybrid III 50th Percentile Male External Measurements

ATD Serial No.: 035

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	880	Pass
B - Shoulder pivot height	mm	505 to 521	505	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	90	Pass
F - Thigh clearance	mm	140 to 155	145	Pass
G - Elbow back to wrist pivot	mm	290 to 305	300	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	200	Pass
K - Buttock to knee length	mm	579 to 604	585	Pass
L - Popliteal length	mm	429 to 455	440	Pass
M - Knee pivot height	mm	485 to 500	495	Pass
N - Buttock popliteal length	mm	452 to 477	460	Pass
O - Chest depth	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	255	Pass
V - Shoulder breadth	mm	422 to 437	435	Pass
W - Foot breadth	mm	91 to 107	100	Pass
Y - Chest circumference	mm	970 to 1001	990	Pass
Z - Waist circumference	mm	836 to 866	850	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results				Pass

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Laboratory Technician

December 5, 2002  
\_\_\_\_\_  
Test Date

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TR-P23001-02-NC

**APPENDIX F**  
**CHILD RESTRAINT SYSTEM**

**REPORT NUMBER TR-P23001-02-NC**

**NEW CAR ASSESSMENT PROGRAM  
FRONTAL BARRIER IMPACT TEST**

**TOYOTA MOTOR MANUFACTURING  
2003 TOYOTA TUNDRA SR5  
4 DOOR PICKUP**

**NHTSA NUMBER: M35112**

**PREPARED BY:  
KARCO ENGINEERING, LLC  
9270 HOLLY ROAD  
ADELANTO, CALIFORNIA 92301**



**DECEMBER 17, 2002**

**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
RULEMAKING  
OFFICE OF CRASHWORTHINESS STANDARDS  
MAIL CODE: NVS-111  
400 SEVENTH STREET, SW, ROOM 5311  
WASHINGTON, D.C. 20590**

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-01-D-02005.

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Prepared by: \_\_\_\_\_  
Mr. James E. Gorth, Project Engineer  
KARCO Engineering, LLC

Date: December 30, 2002

Reviewed by: \_\_\_\_\_  
Mr. Jerry L. Kratzke, Director of Operations  
KARCO Engineering, LLC

Date: December 30, 2002

Approved by: \_\_\_\_\_  
Mr. Frank D. Richardson, Program Manager  
KARCO Engineering, LLC

Date: December 30, 2002

FINAL REPORT ACCEPTED BY:

\_\_\_\_\_  
Manager, New Car Assessment Program

\_\_\_\_\_  
Date of Acceptance

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COTR, NCAP Frontal Impact Program

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## Technical Report Documentation Page

<b>1. Report No.</b> TR-P23001-02-NC	<b>2. Government Accession No.</b>	<b>3. Recipients Catalog No.</b>		
<b>4. Title and Subtitle</b> Final Report of CRS Evenflo Vanguard V and Graco Platinum Cargo NHTSA No. M35112		<b>5. Report Date</b> December 30, 2002		
		<b>6. Performing Organization Code</b> KAR		
<b>7. Authors</b> Mr. James E. Gorth, Project Engineer, Karco Mr. Frank Richardson, Project Manager, Karco		<b>8. Performing Organization Report No.</b> TR-P23001-02-NC		
		<b>10. Work Unit No.</b>		
<b>9. Performing Organization Name and Address</b> KARCO Engineering, LLC 9270 Holly Road Adelanto, CA 92301		<b>11. Contract or Grant No.</b> DTNH22-01-D-02005		
		<b>13. Type of Report and Period Covered</b> Final Test Report Option Year 2		
<b>12. Sponsoring Agency Name and Address</b> U.S. Department of Transportation National Highway Traffic Safety Administration Rulemaking Office of Crashworthiness Standards Mail Code: NVS-111 400 Seventh Street, SW, Room 5311 Washington, D.C 20590		<b>14. Sponsoring Agency Code</b>  DOT/NHTSA/NRM/OCS/NVS-111		
		<b>15. Supplementary Notes</b>		
<b>16. Abstract</b>				
<p>The subject CRS Evenflo Vanguard V and Graco Platinum Cargo was conducted in conjunction with a full vehicle frontal load cell barrier test conducted in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the determination of CRS crashworthiness. This test was conducted at Karco Engineering, LLC on DECEMBER 17, 2002.</p>				
<b>Measurement Description</b>		<b>Units</b>	<b>Driver ATD</b>	<b>Pass. ATD</b>
Head Injury Criteria (HIC36)		N/A	604.4	672.6
Head Injury Criteria (HIC15)		N/A	337.3	383.2
Max. Thorax Accel. (3 msec clip)		G's	48.3	44.6
Peak Chest Displacment		mm	-19.7	-13.1
<b>17. Key Words</b>			<b>18. Distribution Statement</b>	
56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2003 Toyota Tundra SR5 4 Door Pickup NHTSA No. M35112			Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, D.C. 20590	
<b>19. Security Classification (this report)</b>		<b>20. Security Classification (this page)</b>		<b>21. No. Pages</b>
Unclassified		Unclassified		147
<b>22. Price</b>				

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**SECTION F-1**  
**PURPOSE AND SUMMARY OF TEST M30106**

**1.1 PURPOSE**

The purpose of this test is to obtain CRS performance data during an NCAP (35mph) frontal impact test.

The 55.88 km/h NCAP frontal impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

**1.2 SUMMARY**

The three-year-old child dummies were instrumented with head, chest, and pelvic triaxial accelerometers. In addition, chest displacement, and upper and lower six axial neck force and moment load cell sensors were utilized. Triaxial accelerometers were installed on the CRS and a load cell on the upper tether.

The right rear (Position 3) child dummy (Serial No. 139) and the left rear (Position 4) child dummy (Serial No. 082) were calibrated prior to this test. Child dummy certification information is found in Section F-5.

The left rear child dummy's HIC was 604.4, maximum chest deceleration over 3 msec was 48.3 g's and the right rear child dummy's HIC was 672.6, maximum chest deceleration over 3 msec was 44.6 g's.

**CHILD DUMMY VALUES**

	<b>HIC36 Values</b>	<b>HIC15 Values</b>	<b>3 Msec Chest Clip</b>	<b>Peak Chest Disp.</b>
Left Rear Child	604.4	337.3	48.3	-19.7
Right Rear Child	672.6	383.2	44.6	-13.1

**SECTION F-1  
DATA SHEET NO.1.....CRASH TEST SUMMARY**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**TEST DUMMY INFORMATION**

Description	Position # 3 CRS	Position # 4 CRS
Manufacturer	Evenflo	Graco
Model Name	Vanguard 5	Platinum Cargo
Serial No.	3691331 P1	8489ALE
Type	Latch	Latch
Forward/Rearward	Forward	Forward

**VISIBLE DUMMY CONTACT POINTS**

Description	Position # 3 CRS	Position # 4 CRS
Head Contact	Chin to Chest	Chin to Retainer Clip
Chest Contact	Harness	Harness
Abdomen Contact	Harness	Harness
Left Knee Contact	None	None
Right Knee Contact	None	None
Left Toe Contact	Seatback	Seatback
Right Toe Contact	Seatback	Seatback

**POST TEST DOOR OPENING**

Description	Front	Rear
Left Side Doors	Remained closed; opened w/o tools	Remained closed; opened w/o tools
Right Side Doors	Remained closed; opened w/o tools	Remained closed; opened w/o tools
Hatch/Other Door	N/A	N/A

**POST TEST SEAT DATA**

Location	Seat Movement (mm)	Seat Back Failure
Left Front	None	None
Right Front	None	None
Left Rear	None	None
Right Rear	None	None

**CAMERA COVERAGE**

High Speed	2
Real Time	0
Total	2

**SECTION F-1**  
**DATA SHEET NO. 2.....CRS PARAMETER DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**TEST VEHICLE WEIGHTS**

	Units	As Delivered			As Tested		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	549	439		605	514	
Right	kg	517	428		586	512	
Ratio	%	55.1	44.9		53.7	46.3	
Totals	kg	1066	867	1933	1191	1026	2217

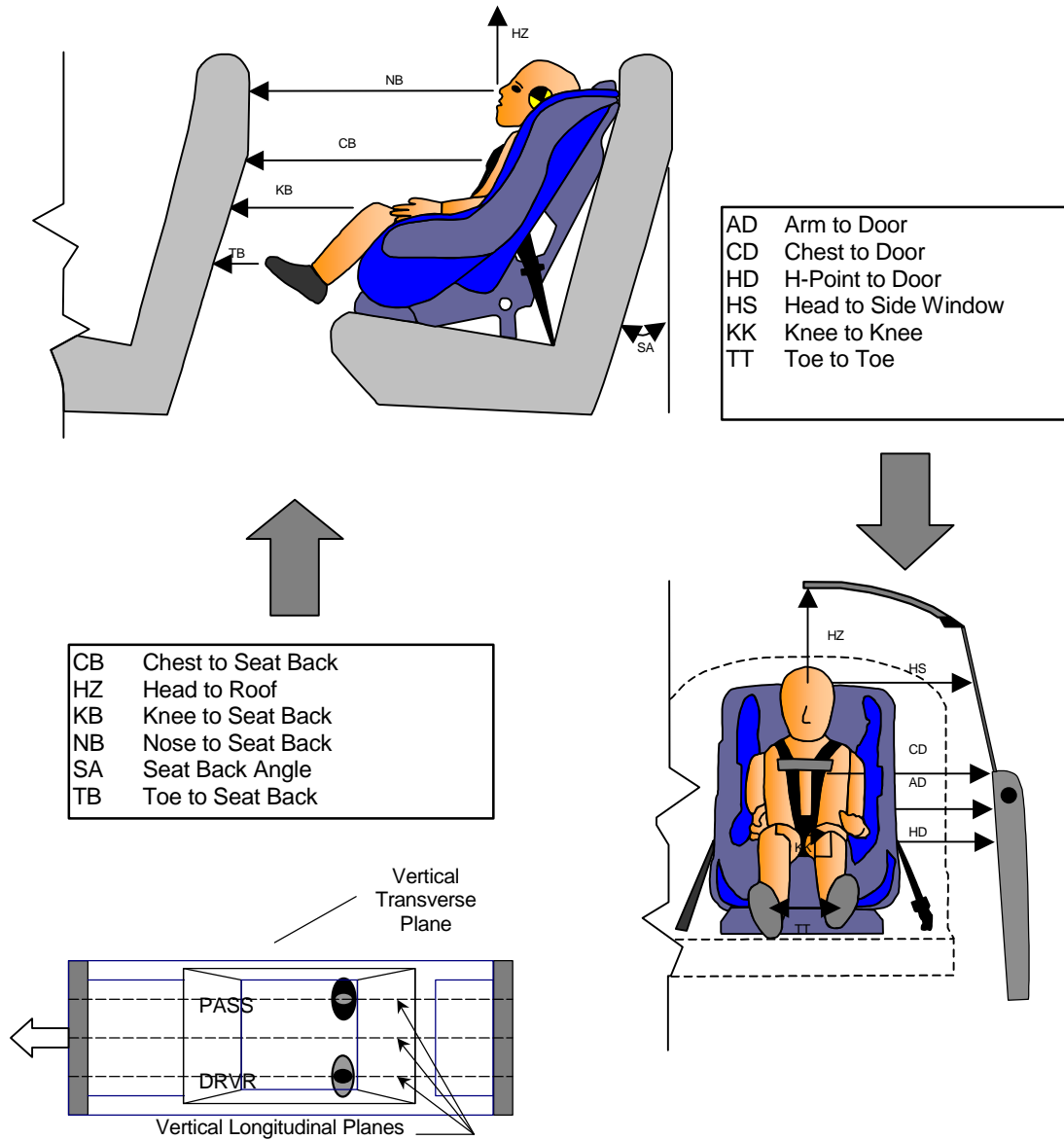
**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value
Total Delivered Weight ( <i>UVW</i> )	kg	1933
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight ( <i>RCLW</i> )	kg	136
Calculated Vehicle Target Weight ( <i>TVT</i> )	kg	2221

**SECTION F-1**  
**DATA SHEET NO. 3 .....CHILD DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02



**DUMMY MEASUREMENTS FOR REAR SEAT OCCUPANTS**

**SECTION F-1**

**DATA SHEET NO. 3 .....CHILD DUMMY POSITIONING IN VEHICLE...(continued)**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**CHILD DUMMY POSITION MEASUREMENTS**

Code	Measurement	Units	P3 CRS (3691331 P1)		P4 CRS (8489ALE)	
			Pre-Test	Post-test	Pre-Test	Post-test
SA	Seat Back Angle	mm	8	0	8	0
HZ	Head to Roof (Z)	mm	368	330	370	340
CD	Chest to Dash	mm	400	395	380	360
KK	Knee to Knee (Y)	mm	270	245	219	230
HS	Head to Side Window	mm	300	300	264	250
HD	H-Point to Door (Y)	mm	358	360	400	405
AD	Arm to Door (Y)	mm	378	355	385	340
NB	Nose to Seat Back	mm	353	332	370	350
CB	Chest to Seat Back	mm	155	175	125	125
FF	Foot to Foot	mm	135	190	142	110
KB-LEFT	Knee to Seat Back	mm	128	162	180	190
KB-RIGHT	Knee to Seat Back	mm	160	165	180	188
TB-LEFT	Toe to Seat Back	mm	15	0	20	0
TB-RIGHT	Toe to Seat Back	mm	15	0	25	0

**DATA SHEET NO. 4 - 3 YEAR OLD HYBRID III ATD INJURY CRITERIA AND SENSOR DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

NHTSA No.: M35112

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 12/17/02

**HEAD PRIMARY PEAK ACCELERATIONS**

Location	Axis	Units	Left Rear Child				Right Rear Child			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	42.7	201.0	-38.3	89.6	70.0	187.0	-29.2	99.4
Head CG	Y	G's	23.0	89.6	-7.4	201.8	8.9	185.3	-6.1	99.5
Head CG	Z	G's	55.6	78.0	-2.4	39.0	56.5	77.9	-7.9	40.5
Head CG Resultant	N/A	G's	61.3	89.4			70.4	187.0		

**PRIMARY HEAD INJURY CRITERAS (HIC)**

Location	Left Rear Child				Right Rear Child			
	HIC	T <sup>1</sup>	T <sup>2</sup>	Avg G	HIC	T <sup>1</sup>	T <sup>2</sup>	Avg G
Head CG Primary (HIC36)	604.4	61.3	97.3	48.9	672.6	65.3	101.3	51.1
Head CG Primary (HIC15)	337.3	75.8	90.8		383.2	71.2	86.2	

**CHEST PRIMARY PEAK ACCELERATIONS**

Location	Axis	Units	Left Rear Child				Right Rear Child			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	9.9	181.2	-38.4	55.7	7.6	176.4	-35.1	60.5
Chest CG	Y	G's	2.1	70.6	-3.6	54.5	6.7	47.7	-3.4	186.4
Chest CG	Z	G's	15.6	85.4	-31.2	55.9	18.4	85.8	-29.5	57.6
Chest CG Resultant	N/A	G's	49.6	55.8			45.5	59.8		

**PRIMARY CHEST CLIP (3MSEC)**

Location	Left Rear Child			Right Rear Child		
	CLIP	T <sup>1</sup>	T <sup>2</sup>	CLIP	T <sup>1</sup>	T <sup>2</sup>
Chest CG Primary	48.3	54.6	57.6	44.6	58.3	61.3

**CHEST PEAK DISPLACEMENTS**

Location	Axis	Units	Left Rear Child				Right Rear Child			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.0	15.0	-19.7	94.6	0.0	11.9	-13.1	61.2

**PELVIC PEAK ACCELERATIONS**

Location	Axis	Units	Left Rear Child				Right Rear Child			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	8.9	151.6	-52.6	55.4	9.1	160.1	-43.4	59.0
Pelvis	Y	G's	5.8	152.7	-3.3	52.0	6.9	140.0	-6.6	70.8
Pelvis	Z	G's	9.7	205.7	-31.8	54.8	8.5	190.6	-28.4	56.6
Pelvis Resultant	N/A	G's	61.4	55.4			51.4	56.7		

**DATA SHEET NO. 4...(continued)**Test Vehicle: 2003 Toyota Tundra SR5 4 Door PickupNHTSA No.: M35112Test Program: 2003 NHTSA 35mph NCAPTest Date: 12/17/02**UPPER NECK PEAK FORCES AND MOMENTS**

Location	Axis	Units	Left Rear Child				Right Rear Child			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	127.5	186.5	-604.7	101.7	94.1	182.1	-732.4	98.1
Neck Force	Y	Newtons	57.6	210.2	-60.9	70.9	103.6	65.4	-54.5	195.3
Neck Force	Z	Newtons	1560.2	81.5	-126.6	211.2	1570.2	89.4	-209.3	40.5
Neck Force Resultant	N/A	Newtons	1625.5	81.5			1695.6	92.2		
Neck Moment	X	Nm	4.5	202.3	-5.7	74.1	7.7	69.1	-4.9	202.9
Neck Moment	Y	Nm	5.2	183.4	-14.8	214.6	7.2	275.2	-15.5	195.3
Neck Moment	Z	Nm	3.4	208.4	-1.3	272.1	2.6	101.2	-2.5	202.3
Neck Moment Resultant	N/A	Nm	15.1	214.6			15.7	195.4		

**LOWER NECK PEAK FORCES AND MOMENTS**

Location	Axis	Units	Left Rear Child				Right Rear Child			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	180.9	185.6	-1110.3	83.8	99.2	182.2	-691.0	66.0
Neck Force	Y	Newtons	130.8	74.1	-28.2	201.0	43.4	187.5	-64.5	96.0
Neck Force	Z	Newtons	980.1	78.2	-201.9	117.7	1241.2	76.6	-378.0	50.3
Neck Force Resultant	N/A	Newtons	1452.1	81.3			1365.3	76.6		
Neck Moment	X	Nm	8.3	210.1	-11.2	72.4	17.1	66.2	-7.9	197.8
Neck Moment	Y	Nm	99.7	88.4	-12.0	193.3	104.3	93.6	-6.0	182.1
Neck Moment	Z	Nm	3.1	234.9	-9.6	72.2	7.3	69.3	-2.7	139.5
Neck Moment Resultant	N/A	Nm	99.7	88.4			104.6	93.5		

**CHILD SEAT TETHER BELT SENSOR PEAK VALUES**

Location	Axis	Units	Left Rear Child				Right Rear Child			
			Max	Time	Min	Time	Max	Time	Min	Time
Tether Belt Force	N/A	Newtons	184.4	39.8	-31.9	268.4	232.0	61.6	-52.1	299.1

**CHILD SEAT ACCELEROMETER PEAK VALUES**

Location	Axis	Units	Left Rear Child				Right Rear Child			
			Max	Time	Min	Time	Max	Time	Min	Time
Child Seat	X	G's	10.4	199.5	-52.4	58.4	7.9	168.7	-46.0	54.0
Child Seat	Y	G's	9.4	141.5	-9.2	62.0	3.2	152.5	-5.4	50.5
Child Seat	Z	G's	19.8	140.8	-17.7	217.9	11.6	117.0	-14.2	206.6
Child Seat Resultant	N/A	G's	53.8	58.6			46.1	53.9		

**SECTION F-1**  
**DATA SHEET NO. 5.....CRS PERFORMANCE DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

**CRS PERFORMANCE DATA**

Location	P3 CRS (3691331 P1)		P4 CRS (8489ALE)	
	Damage	Remarks	Damage	Remarks
Upper Tether Strap	No	None	No	None
Upper Tether Buckle	No	None	Yes	Clip Unlatched
Upper Tether Hook	No	None	No	None
Veh. Upper Tether Anchor	No	None	No	None
Lower Anchor Strap	No	None	No	None
Lower Anchor Buckle	No	None	No	None
Lower Anchor Hooks	No	None	No	None
Veh. Lower CRS Anchors	No	None	No	None
5 Point Harness Connections	No	None	No	None
Cracks on CRS	No	None	No	None
Fabric Tears on CRS	No	None	No	None
Vehicle Seat Structure	No	None	No	None
Vehicle Seat Fabric Tears	No	None	No	None

**SECTION F-1  
DATA SHEET NO. 6.....CRS CAMERA DATA**

Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112  
 Test Date: 12/17/02

No.	Camera View	Location (mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Rear Child Driver Side	2946	-711	1676	25	1092	13	700
2	Rear Child Passenger Side	2946	711	1676	25	1092	13	850

X - Barrier Face    Y - Monorail Centerline    Z - Ground

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Manufactured in 13NOV02

Model # 3691331 P1

PRODUCT AFTER DECEMBER

Figure F2-1: Close-up View Position 3 CRS Label



Figure F2-2: Pre-Test Frontal View of Position 3 CRS



Figure F2-3: Post-Test Frontal View of Position 3 CRS



Figure F2-4: Pre-Test Rear View of Position 3 CRS



Figure F2-5: Post-Test Rear View of Position 3 CRS



Figure F2-6: Pre-Test Left Side View of Position 3 CRS



Figure F2-7: Post-Test Left Side View of Position 3 CRS



Figure F2-8: Pre-Test Right Side View of Position 3 CRS



Figure F2-9: Post-Test Right Side View of Position 3 CRS



Figure F2-10: Pre-Test Position 3 Front View



Figure F2-11: Post-Test Position 3 Front View



Figure F2-12: Pre-Test Position 3 Left Side View



Figure F2-13: Post-Test Position 3 Left Side View



Figure F2-14: Pre-Test Position 3 Right Side View



Figure F2-16: Post-Test Position 3 Right Side View



Figure F2-16: Close-up View Position 4 CRS Label



Figure F2-17: Pre-Test Frontal View of Position 4 CRS



Figure F2-18: Post-Test Frontal View of Position 4 CRS



Figure F2-19: Pre-Test Rear View of Position 4 CRS



Figure F2-20: Post-Test Rear View of Position 4 CRS



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Figure F2-22: Post-Test Left Side View of Position 4 CRS



Figure F2-23: Pre-Test Right Side View of Position 4 CRS



Figure F2-24: Post-Test Right Side View of Position 4 CRS



Figure F2-25: Pre-Test Position 4 Front View



Figure F2-26: Post-Test Position 4 Front View



Figure F2-27: Pre-Test Position 4 Left Side View



Figure F2-28: Post-Test Position 4 Left Side View



Figure F2-29: Pre-Test Position 4 Right Side View



Figure F2-30: Post-Test Position 4 Right Side View



Figure F2-31: Post-Test Position 4 Retaining Clip

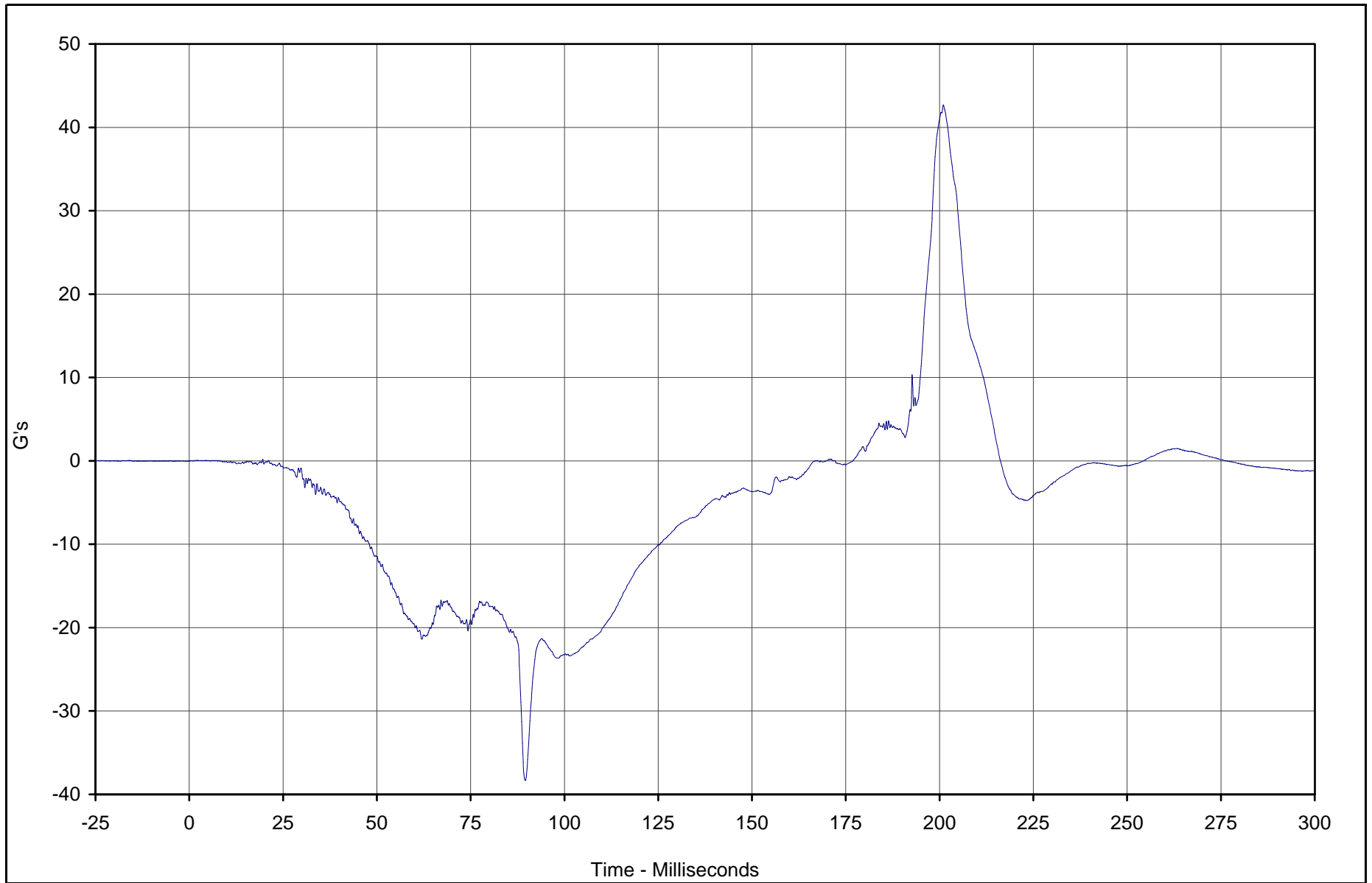
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F3-67	Right Rear Child Car Seat Z	F3-67
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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Head X	134	FIL	G's	42.7	201.0	-38.3	89.6	1000

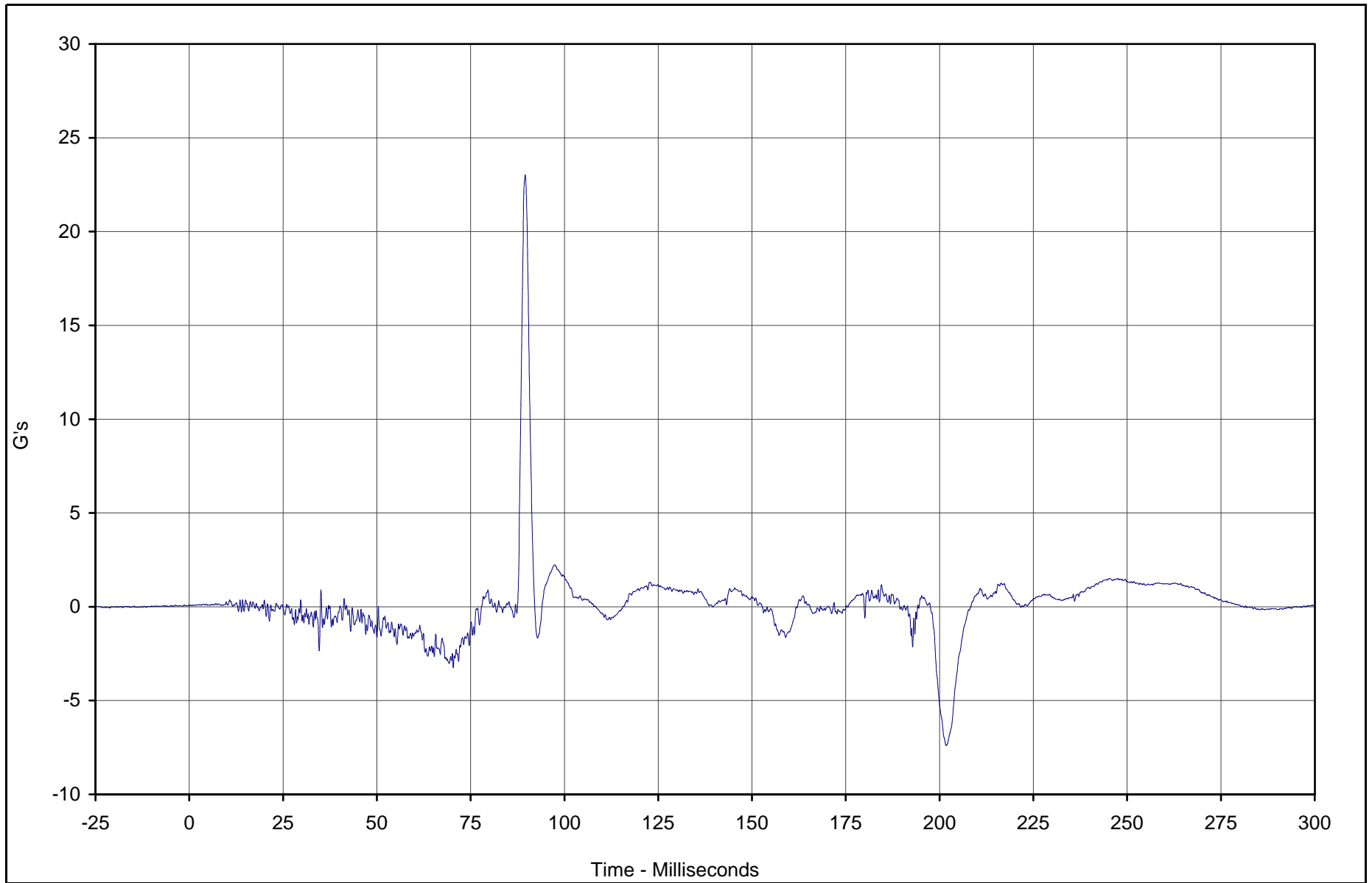


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Head Y	135	FIL	G's	23.0	89.6	-7.4	201.8	1000

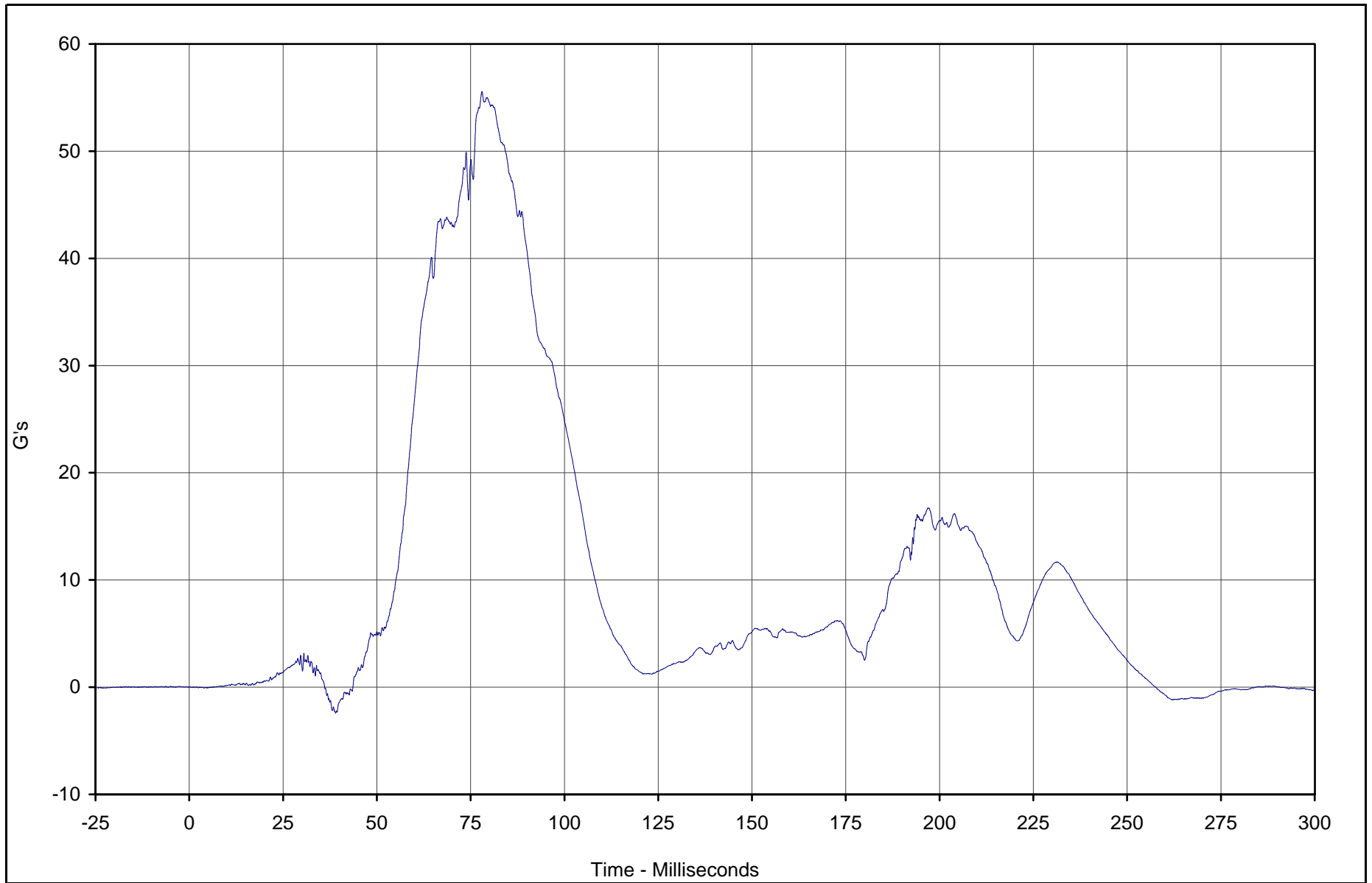


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Head Z	136	FIL	G's	55.6	78.0	-2.4	39.0	1000

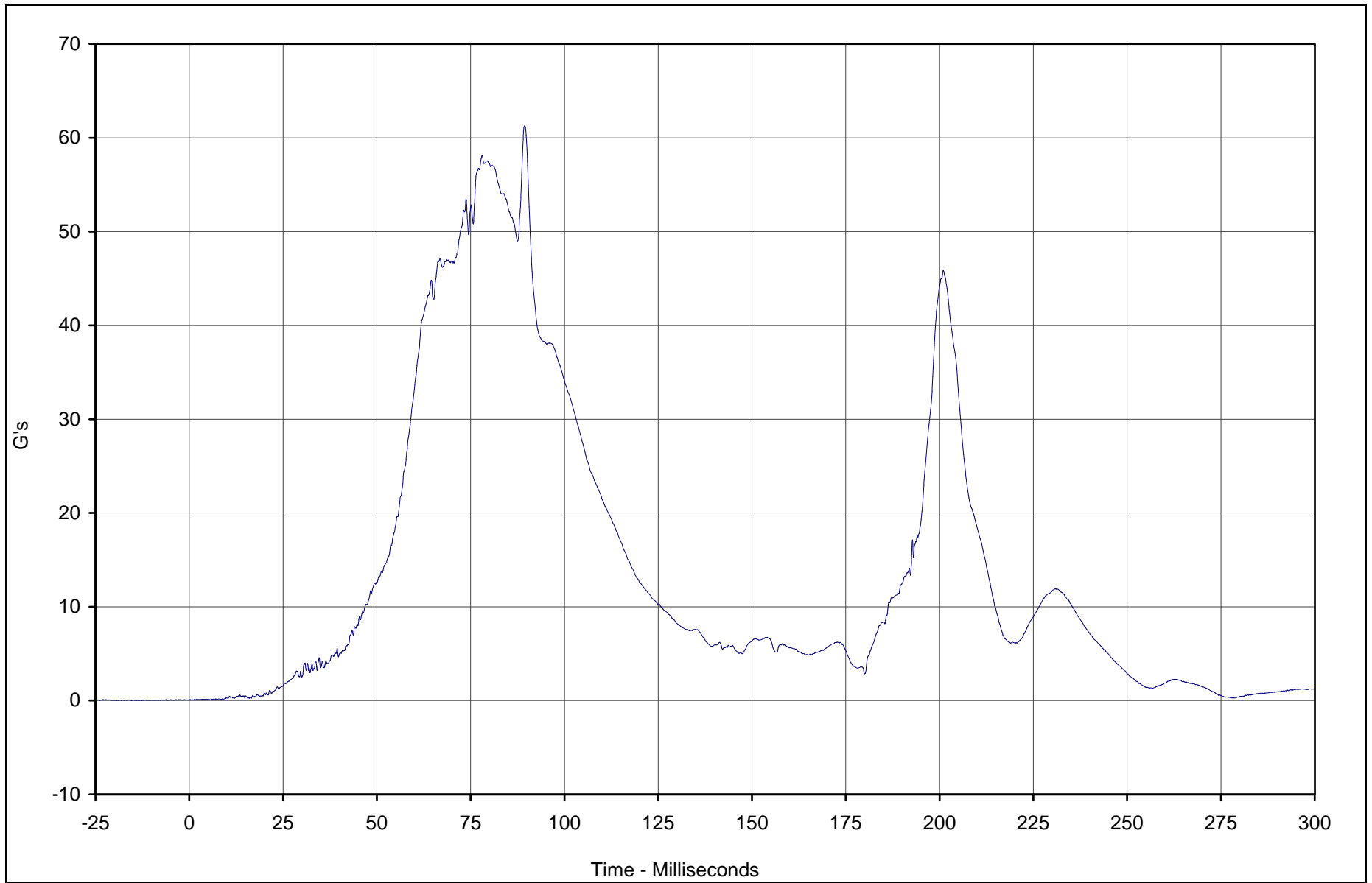


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Head Resultant	134	RES	G's	61.3	89.4	0.1	0.5	1000

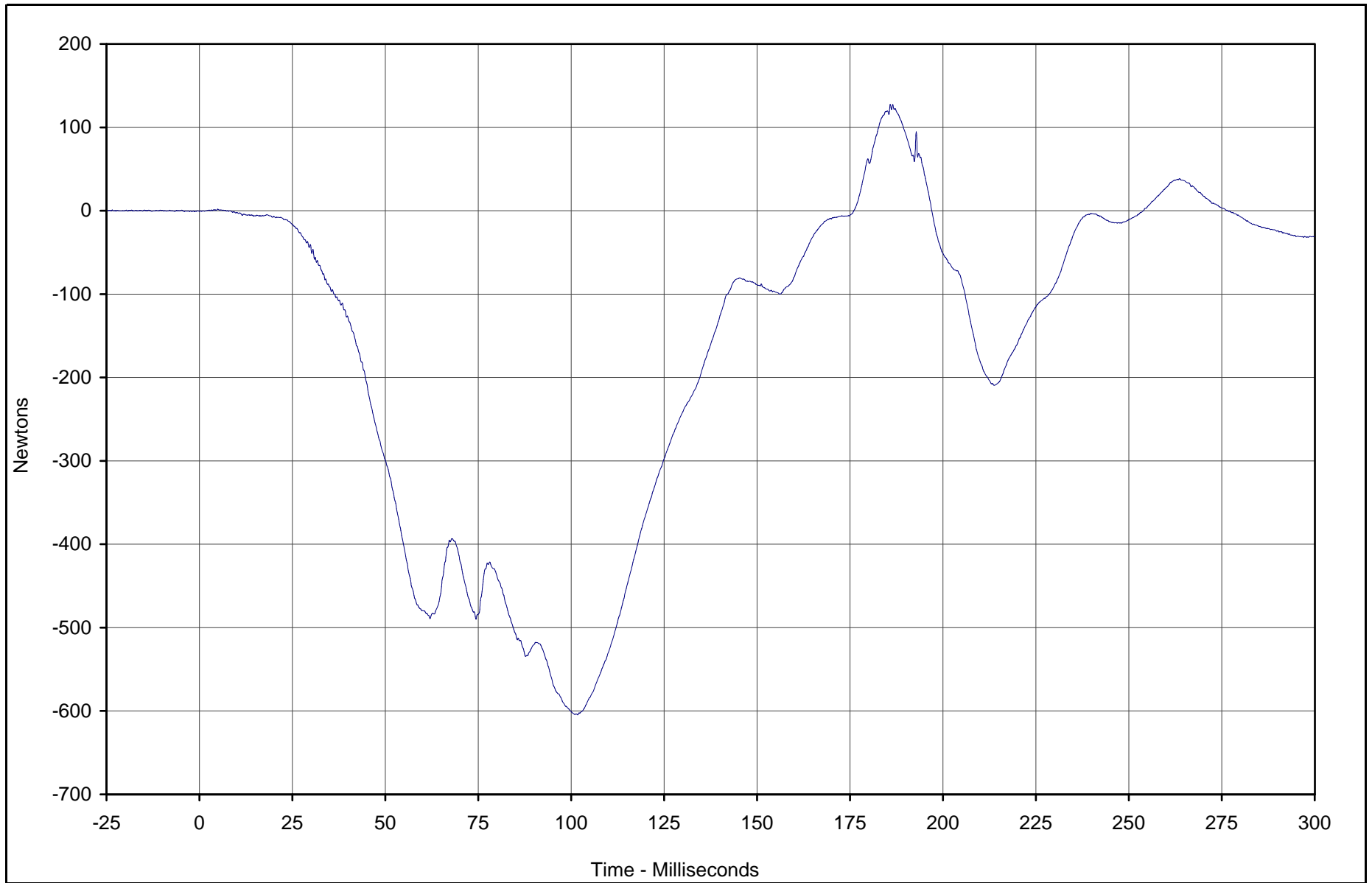


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Upper Neck Force X	137	FIL	Newtons	127.5	186.5	-604.7	101.7	1000

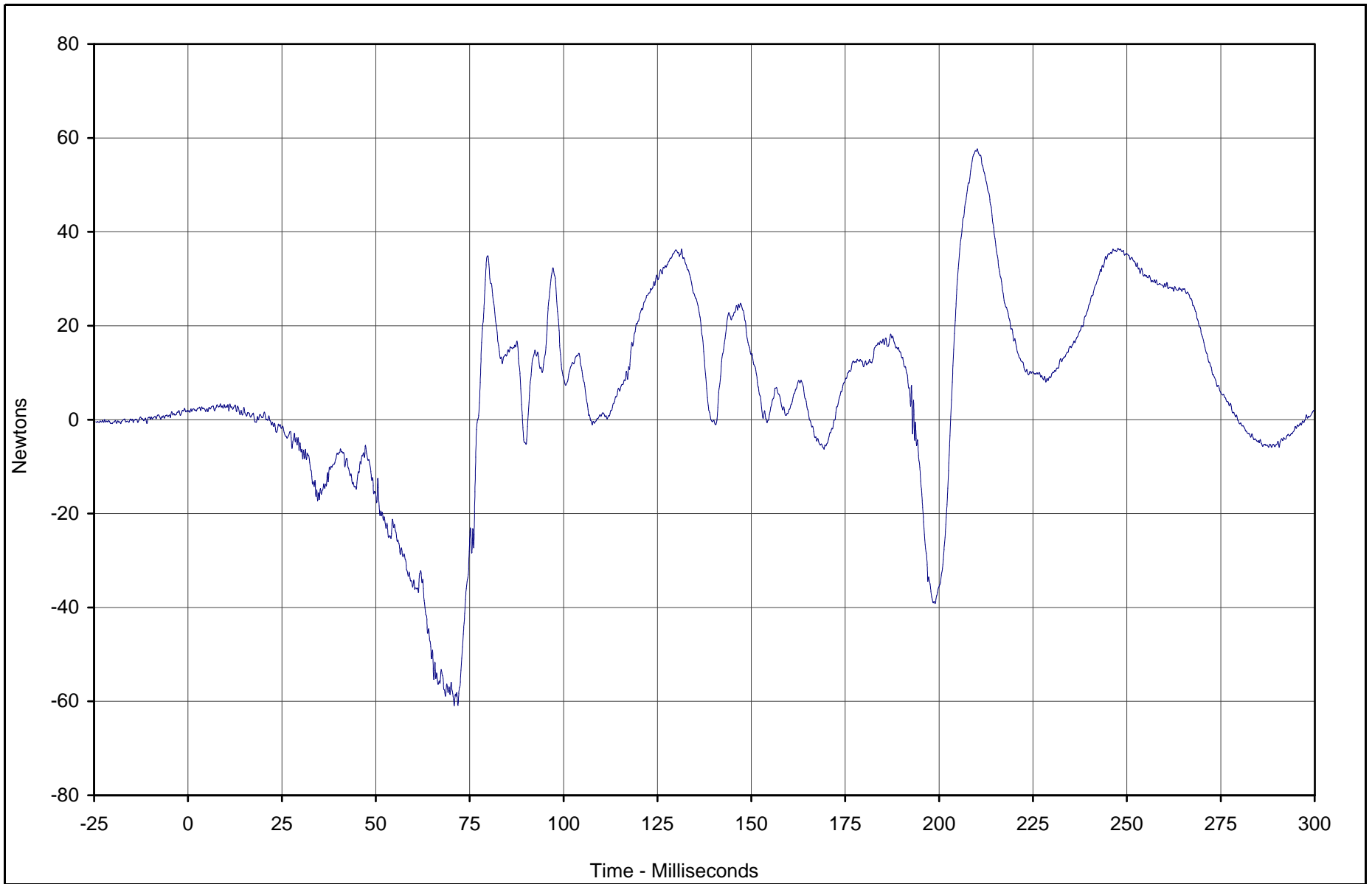


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Upper Neck Force Y	138	FIL	Newtons	57.6	210.2	-60.9	70.9	1000

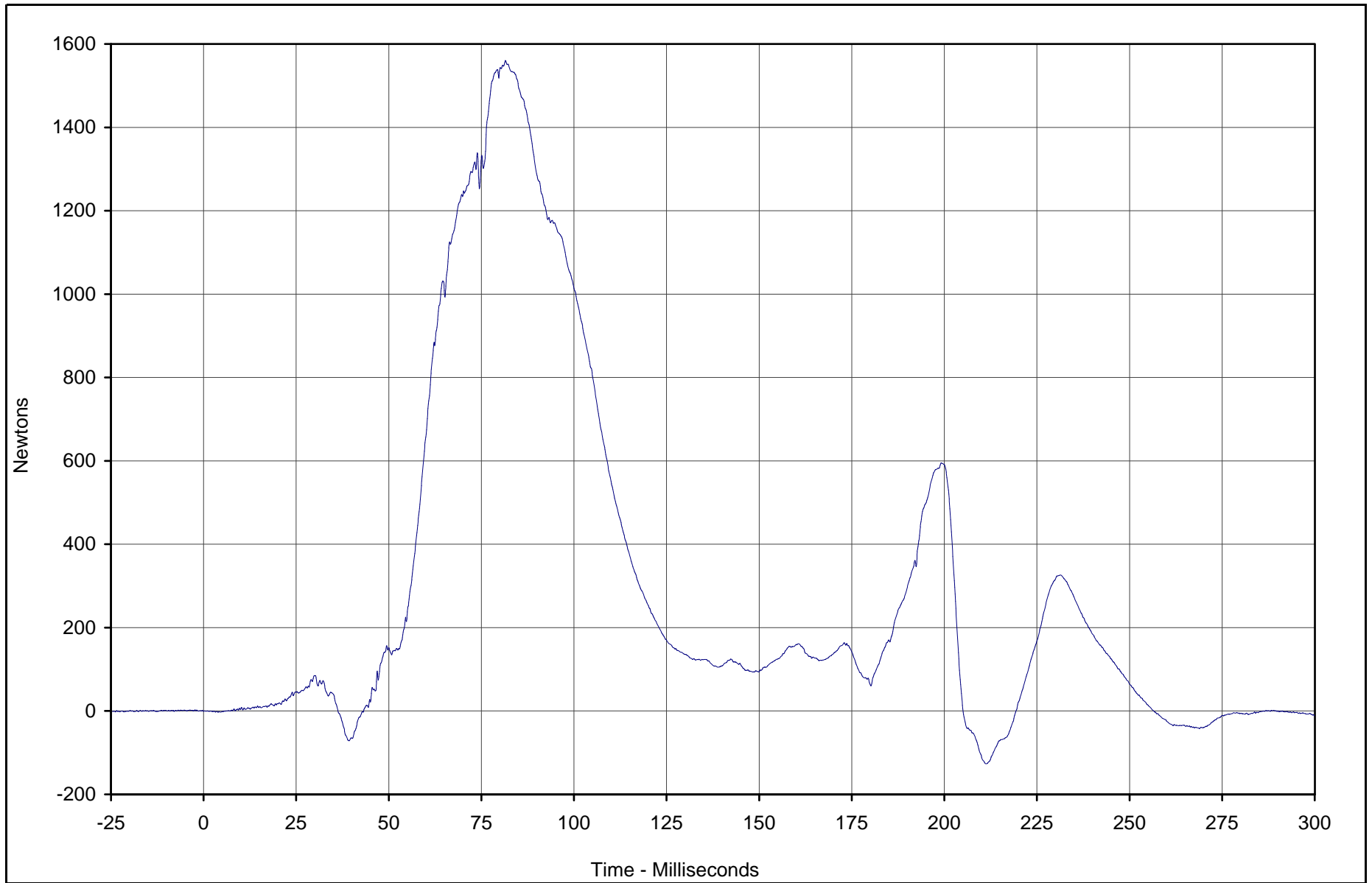


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Upper Neck Force Z	139	FIL	Newtons	1560.2	81.5	-126.6	211.2	1000

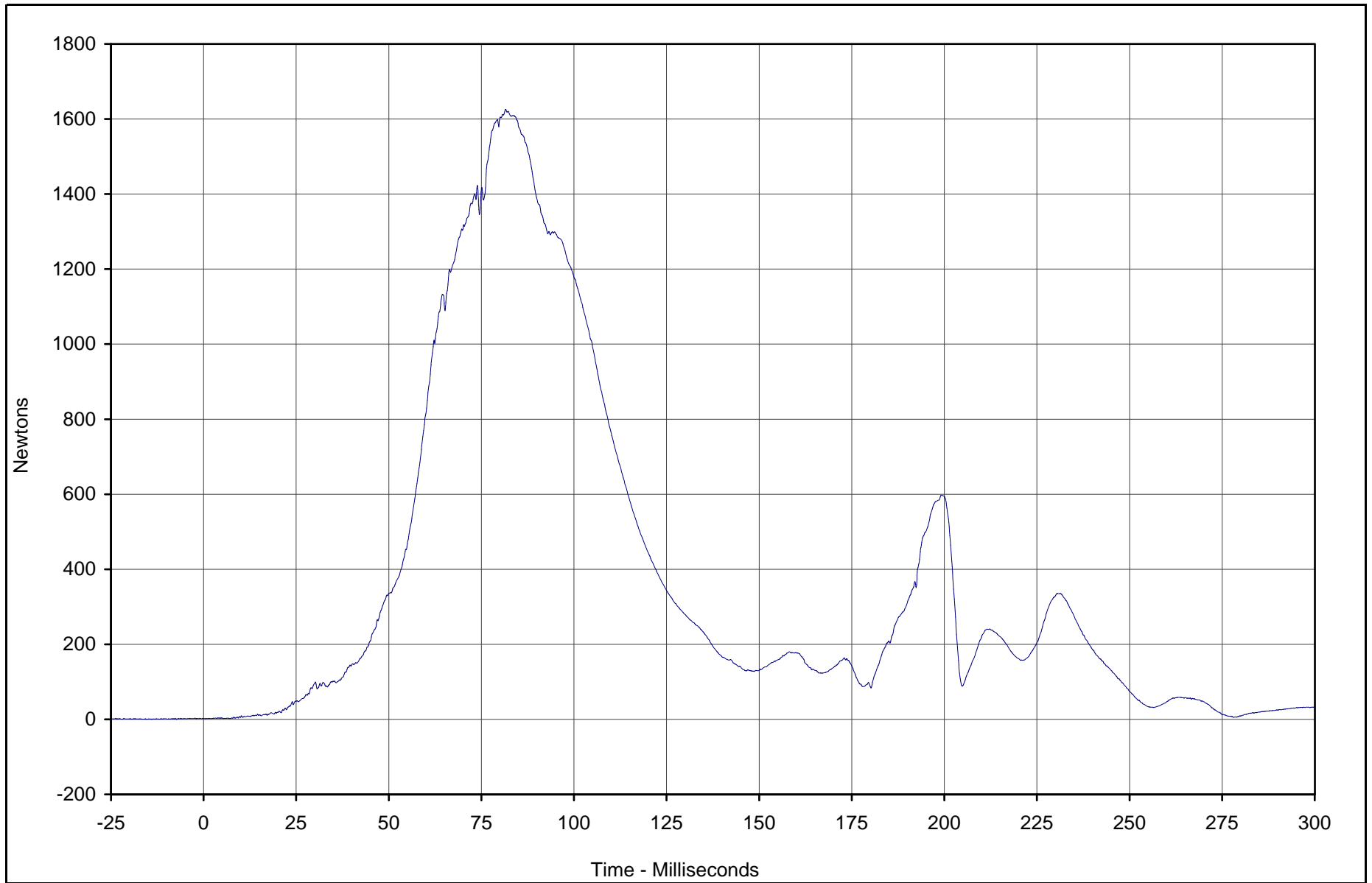


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Upper Neck Force Res.	137	RES	Newtons	1625.5	81.5	1.7	0.4	1000

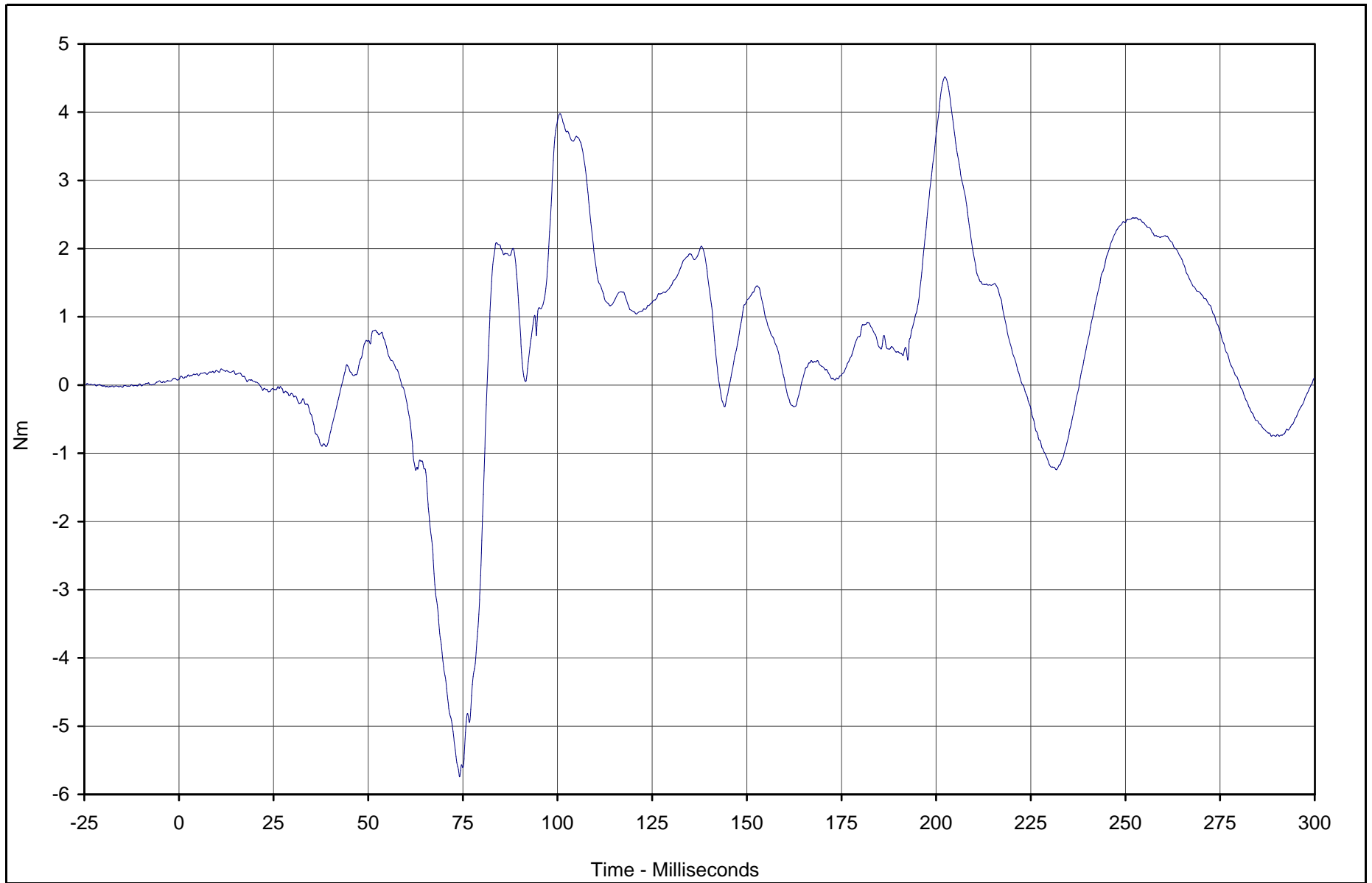


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Upper Neck Moment X	140	FIL	Nm	4.5	202.3	-5.7	74.1	600



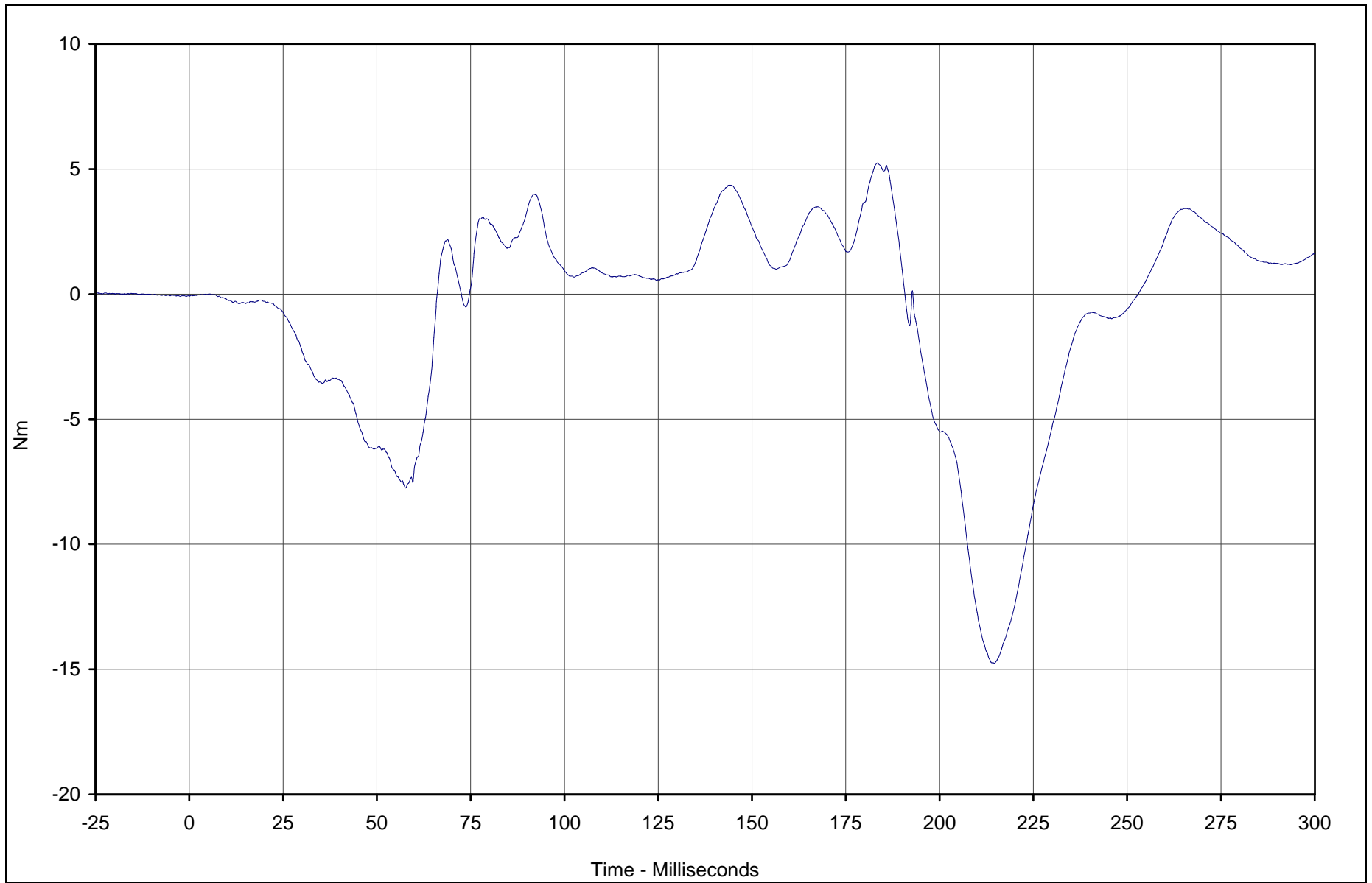
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

F3-10



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Upper Neck Moment Y	141	FIL	Nm	5.2	183.4	-14.8	214.6	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

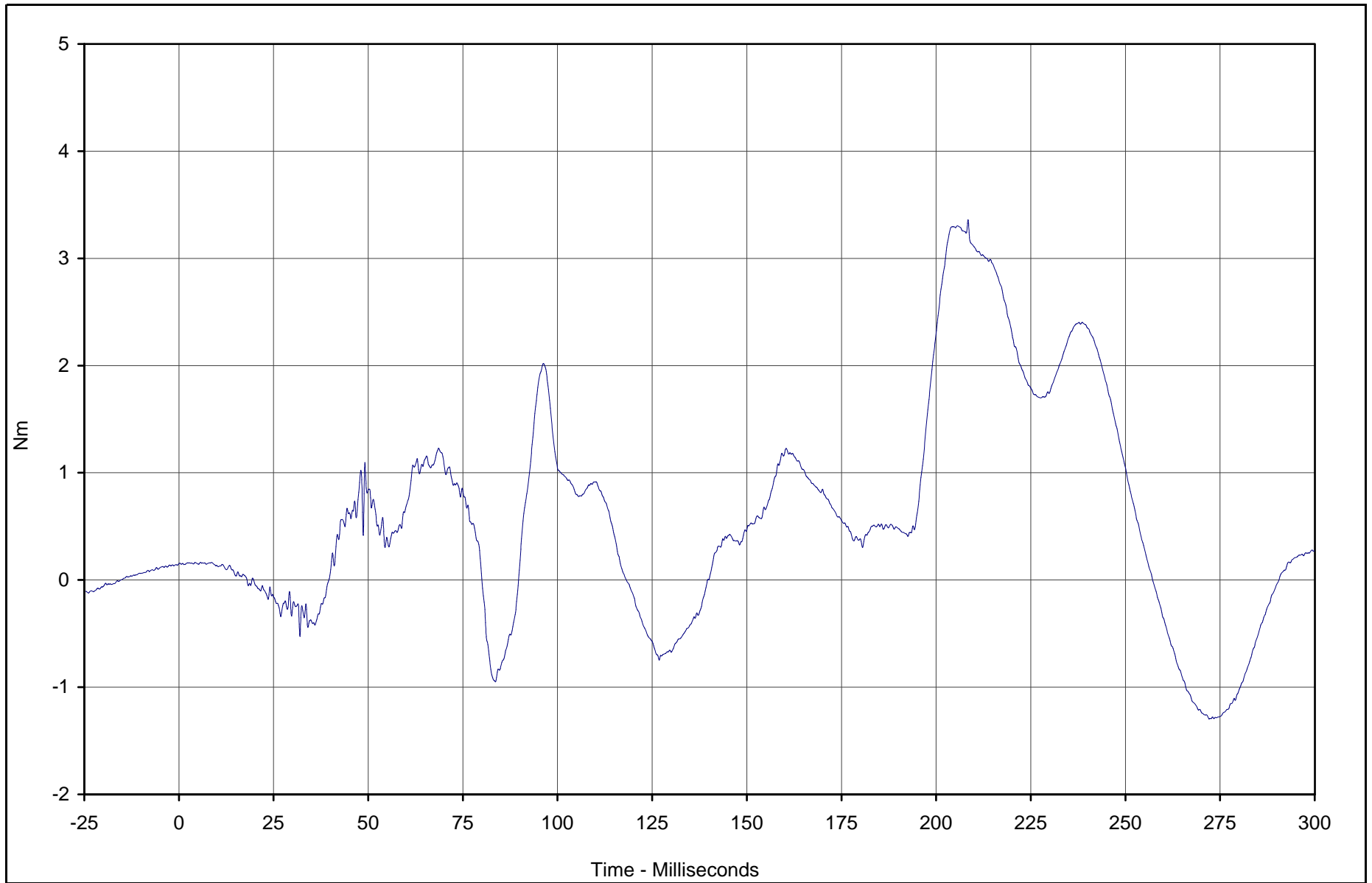
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

F3-11



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Upper Neck Moment Z	142	FIL	Nm	3.4	208.4	-1.3	272.1	600



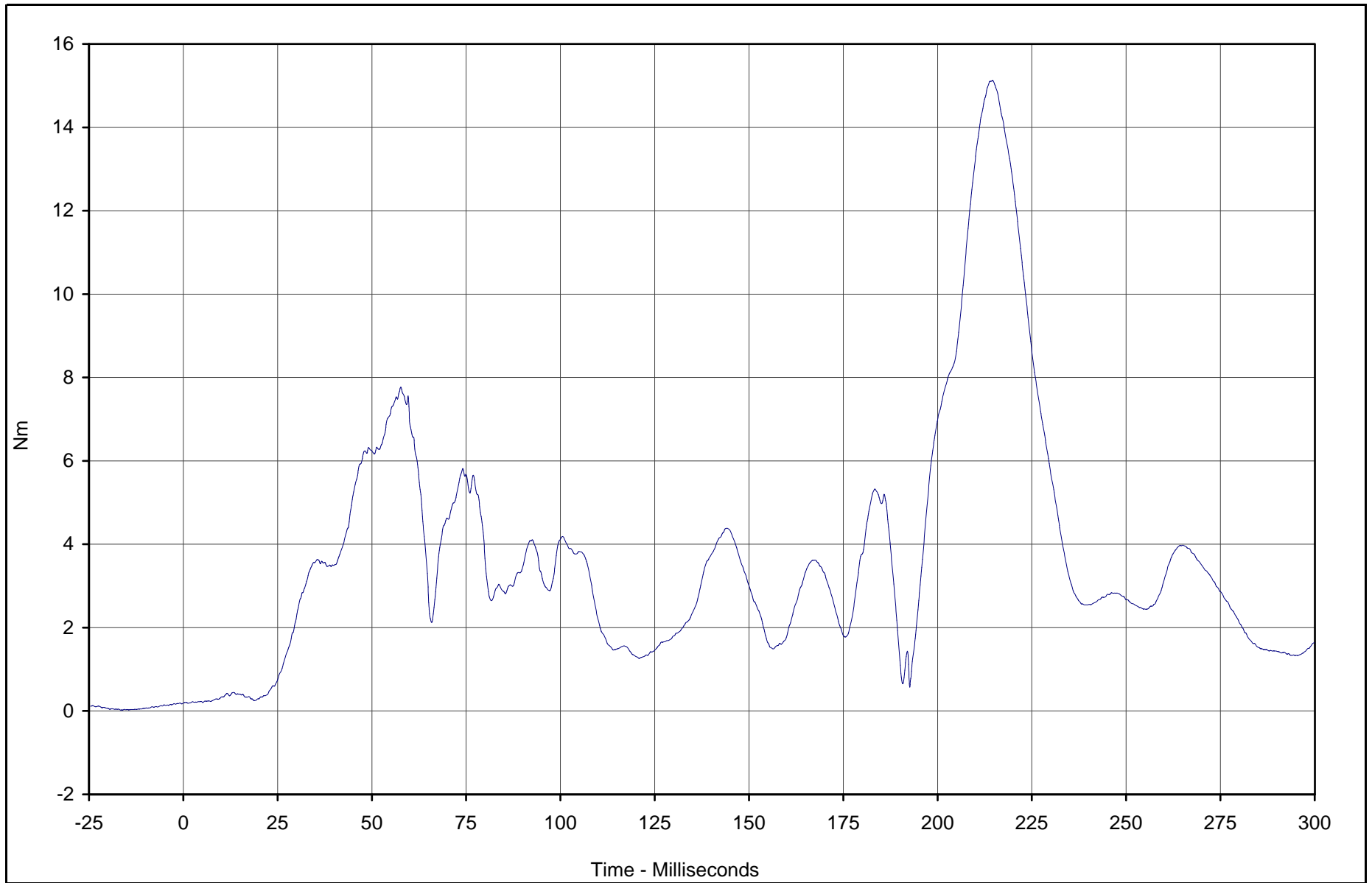
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Upper Neck Mom Res.	140	RES	Nm	15.1	214.6	0.2	1.3	600

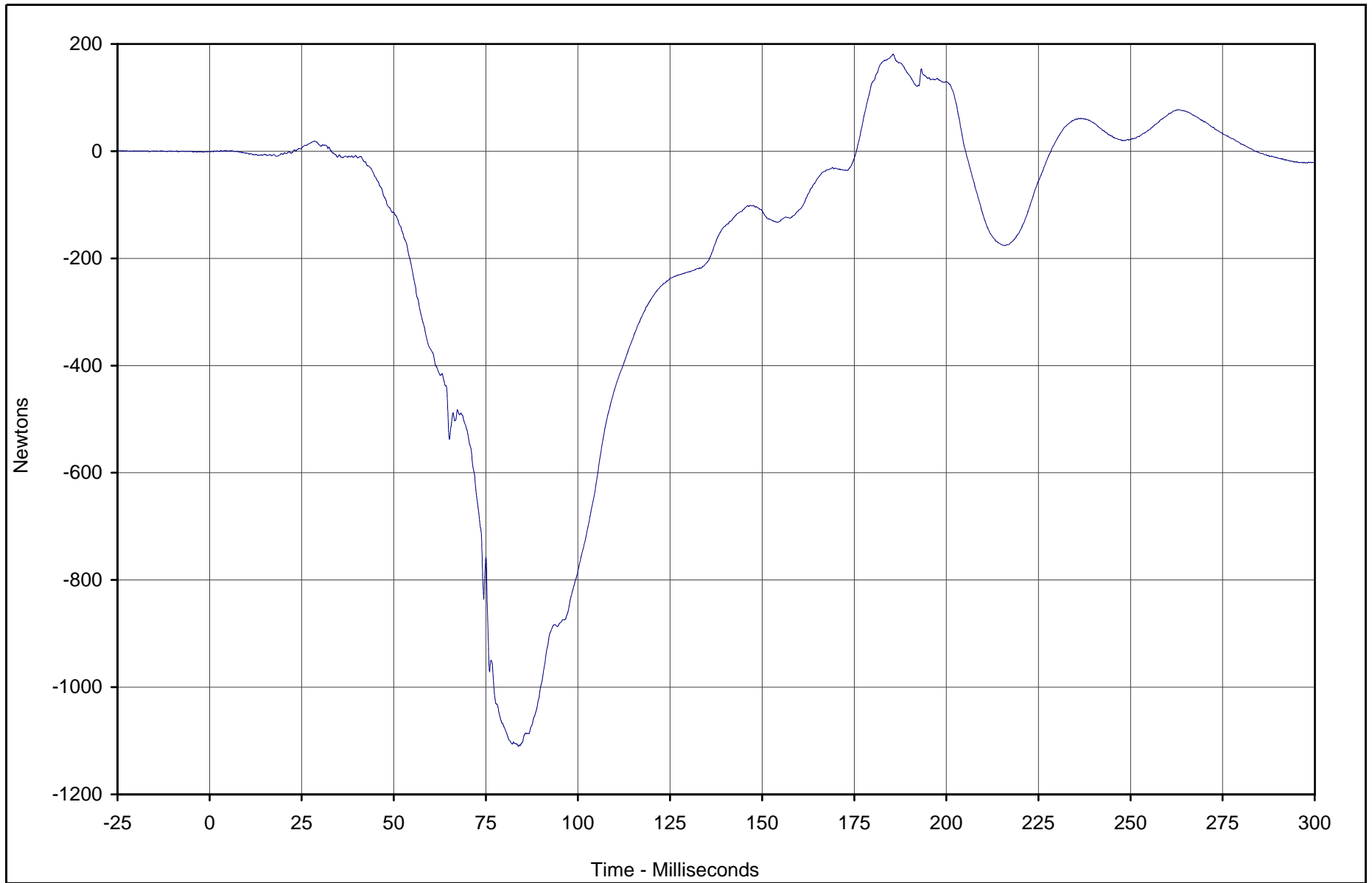


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Lower Neck Force X	143	FIL	Newtons	180.9	185.6	-1110.3	83.8	1000

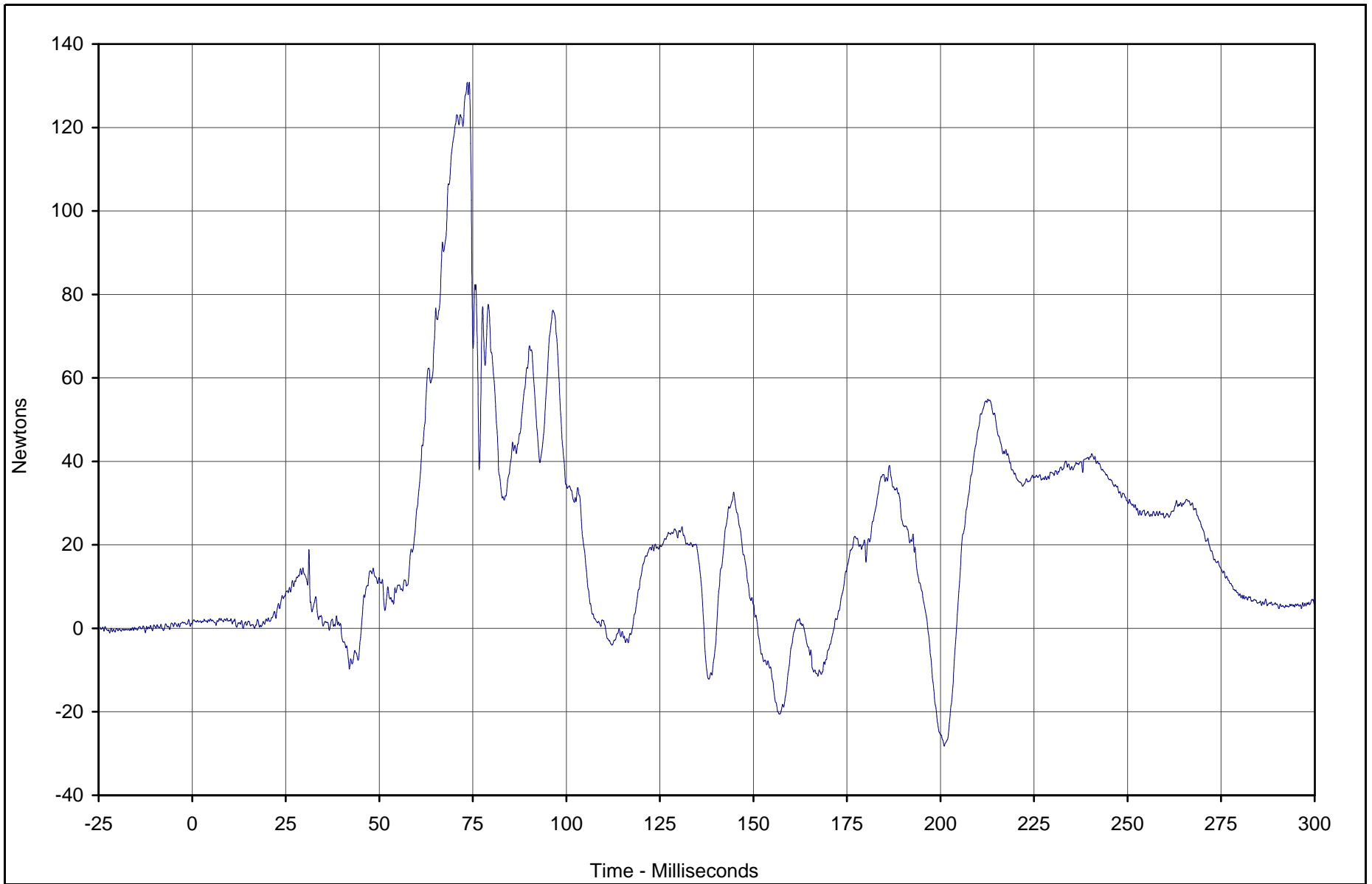


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Lower Neck Force Y	144	FIL	Newtons	130.8	74.1	-28.2	201.0	1000

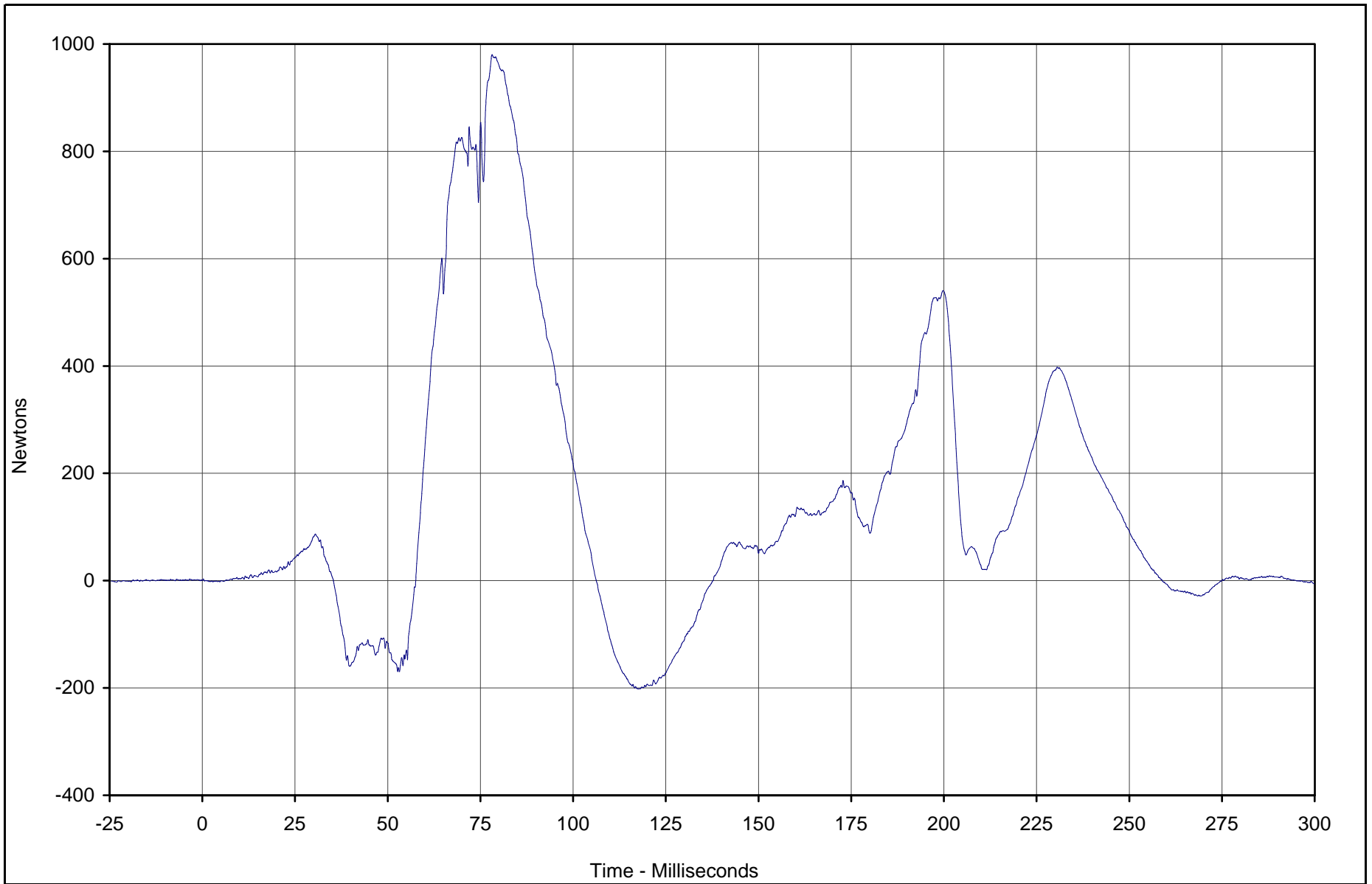


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Lower Neck Force Z	145	FIL	Newtons	980.1	78.2	-201.9	117.7	1000

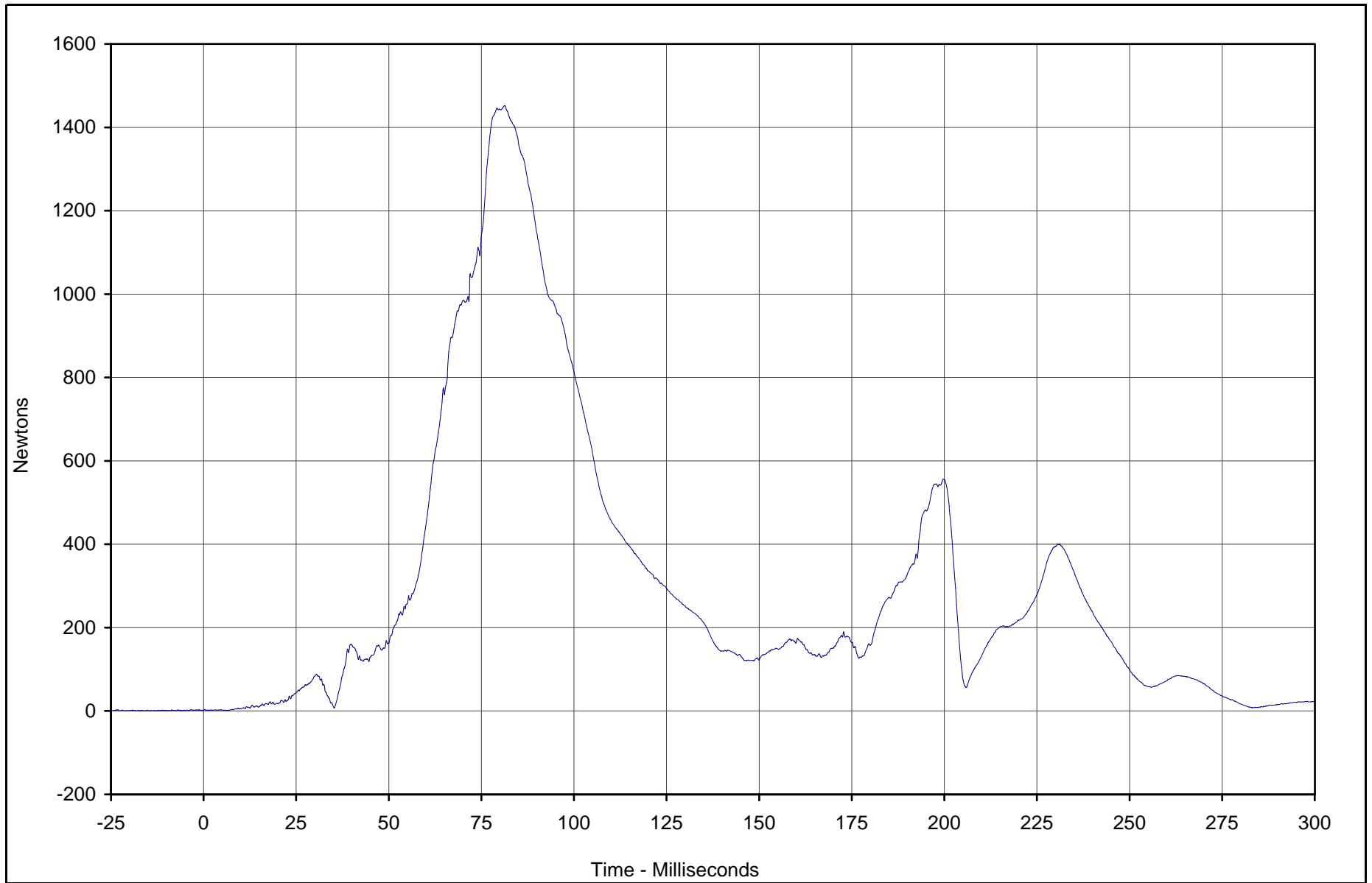


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Lower Neck Force Res.	143	RES	Newtons	1452.1	81.3	1.0	0.0	1000

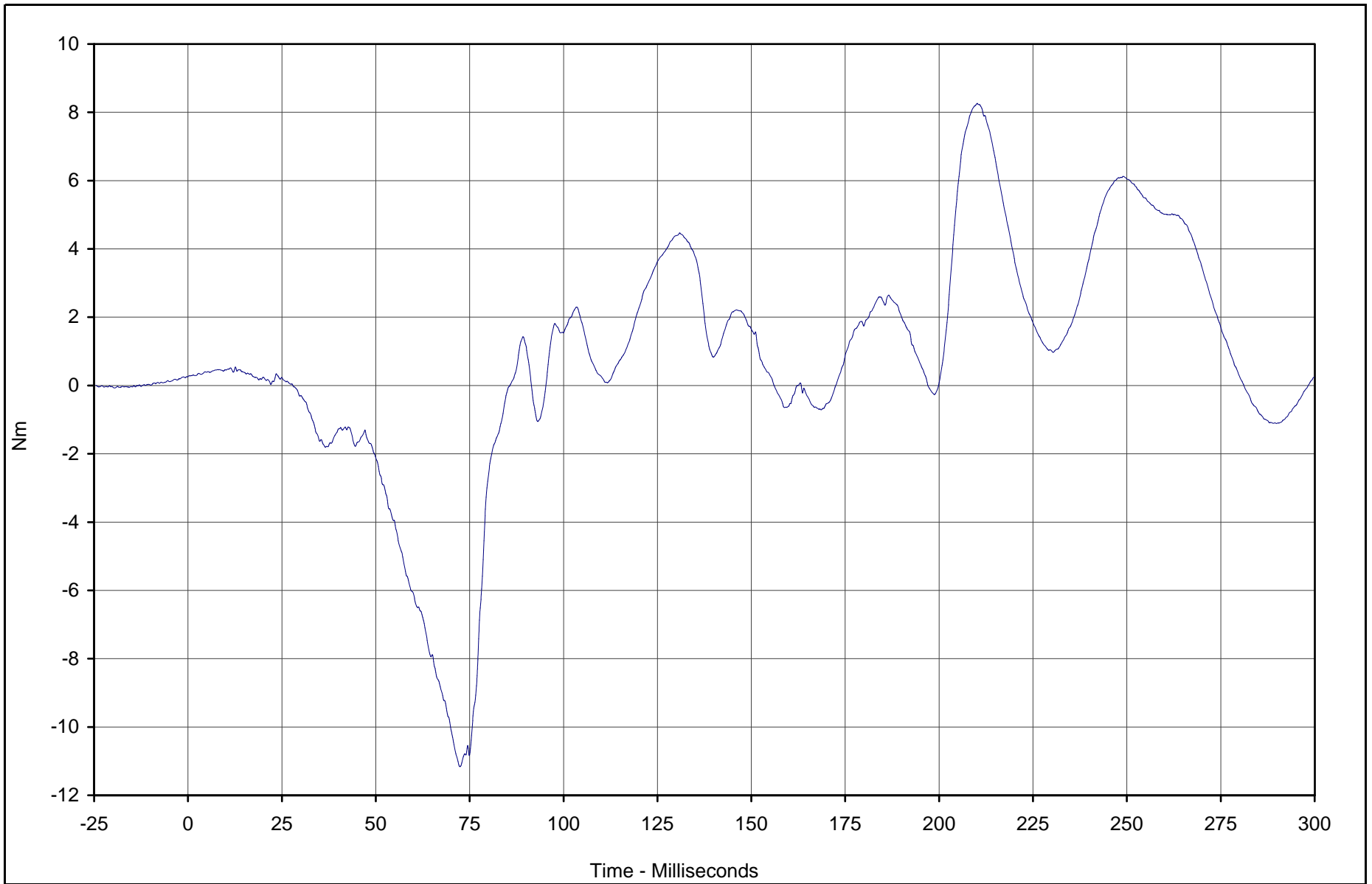


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Lower Neck Moment X	146	FIL	Nm	8.3	210.1	-11.2	72.4	600

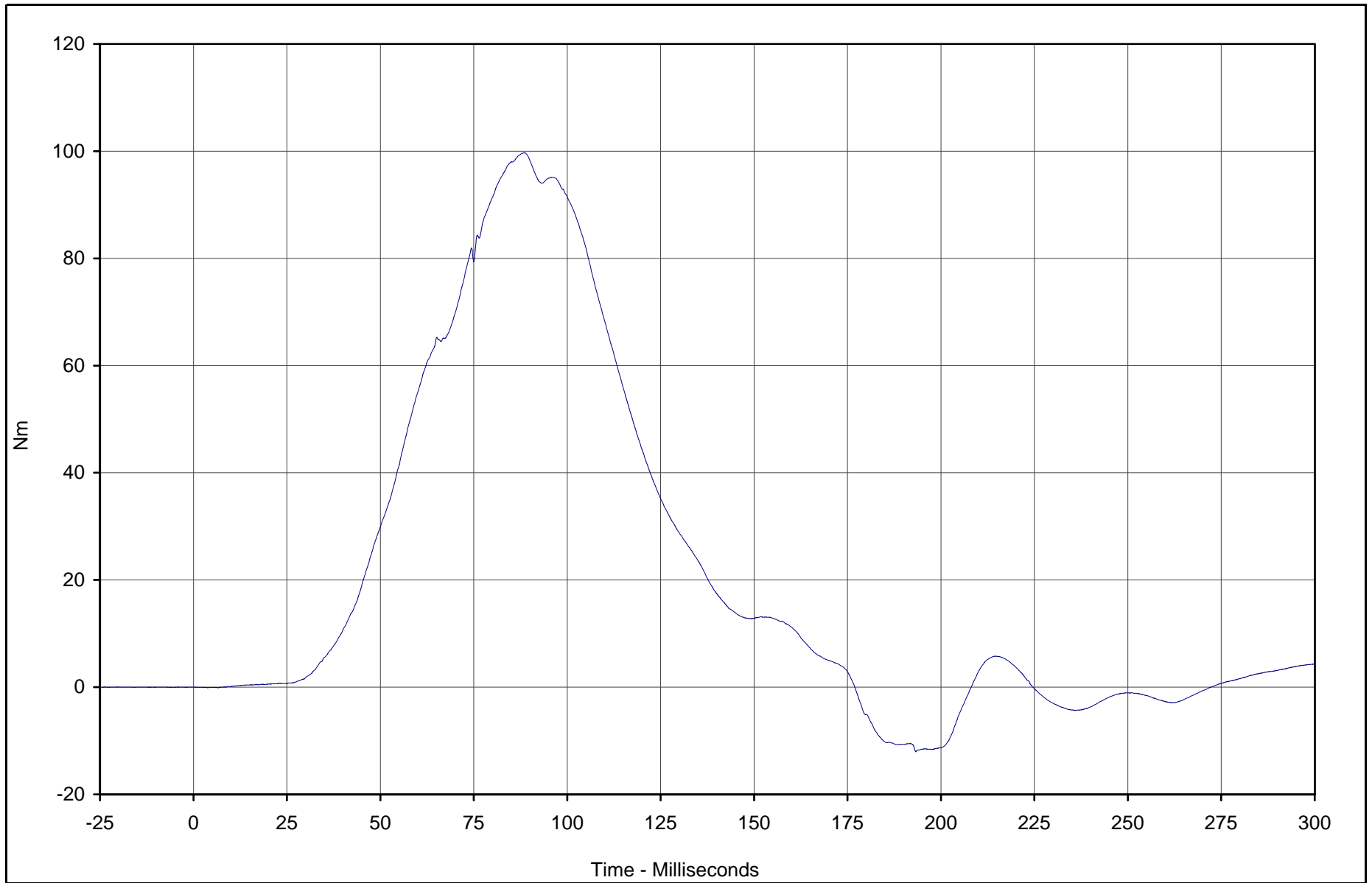


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Lower Neck Moment Y	147	FIL	Nm	99.7	88.4	-12.0	193.3	600

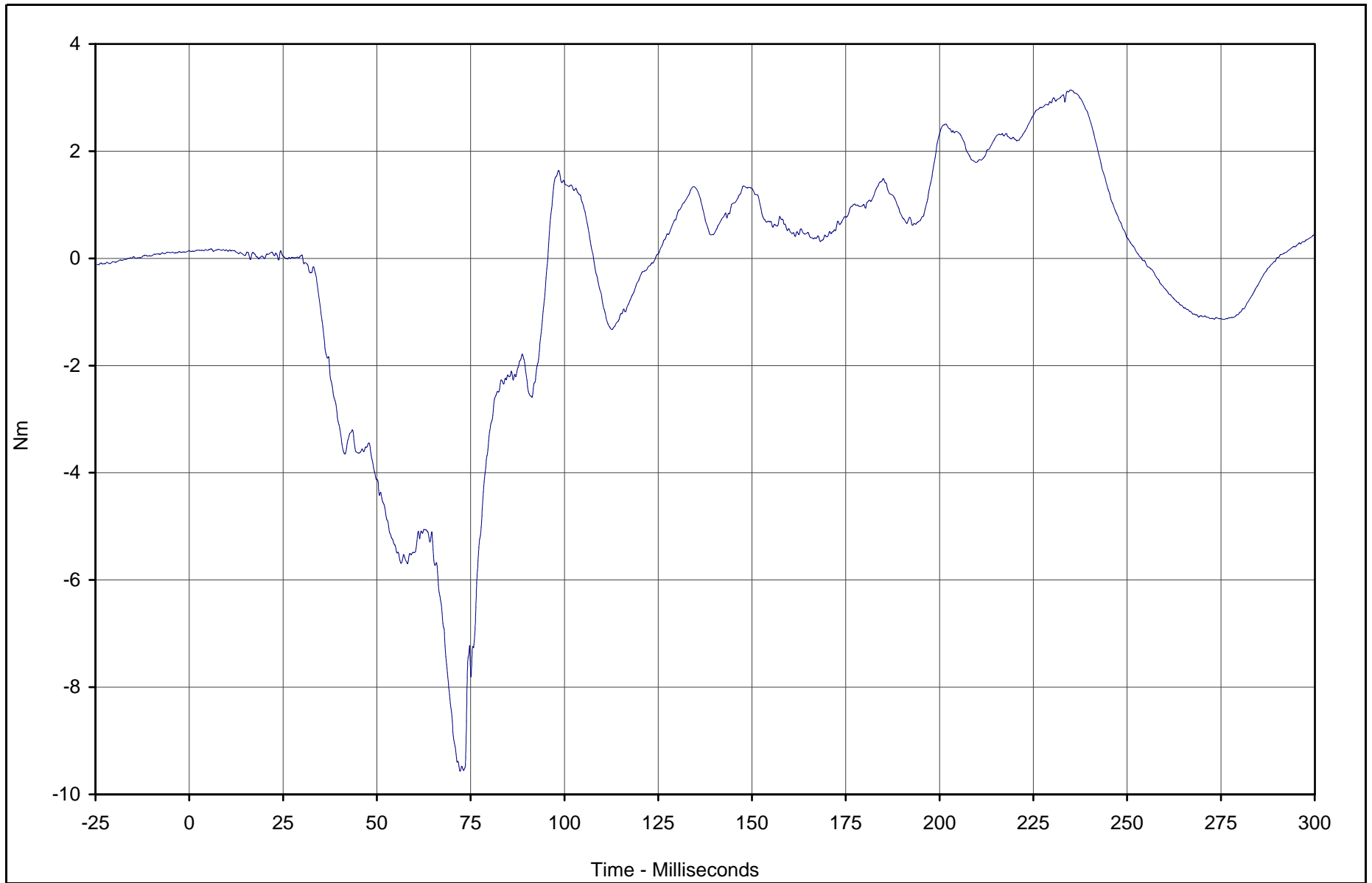


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Lower Neck Moment Z	148	FIL	Nm	3.1	234.9	-9.6	72.2	600



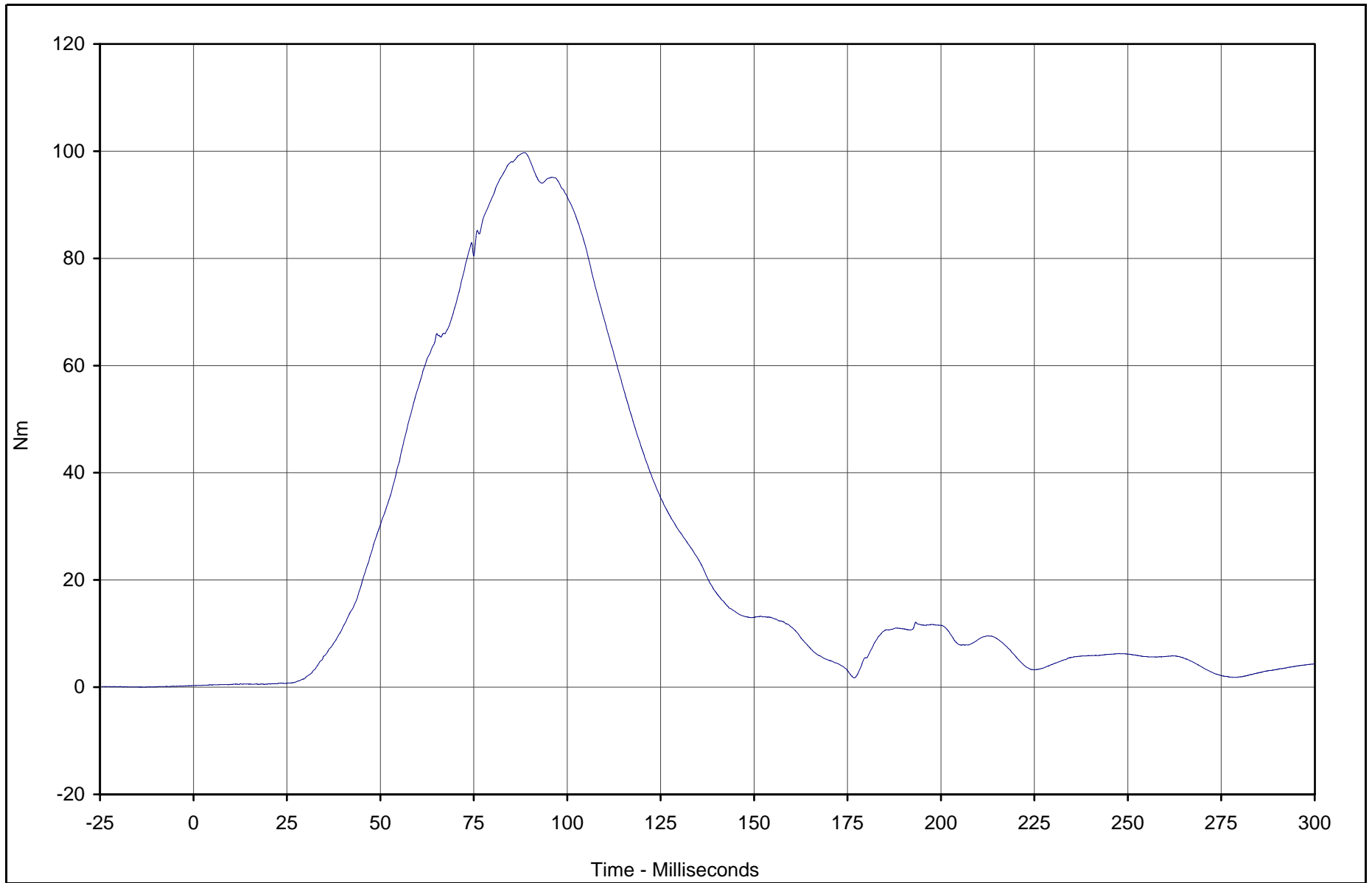
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

F3-20



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Lower Neck Mom Res.	146	RES	Nm	99.7	88.4	0.3	0.0	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

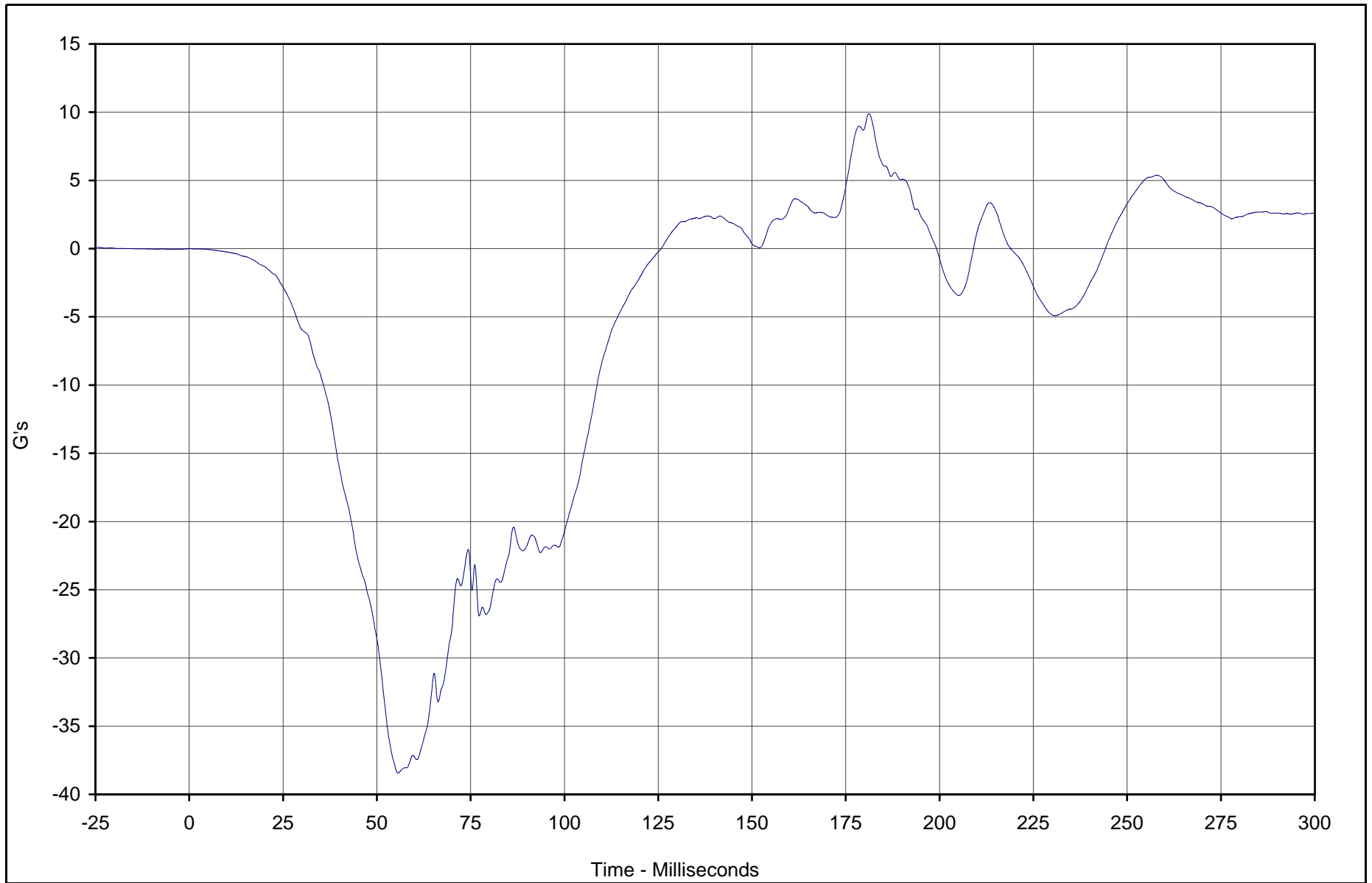
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

F3-21



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Chest X	149	FIL	G's	9.9	181.2	-38.4	55.7	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

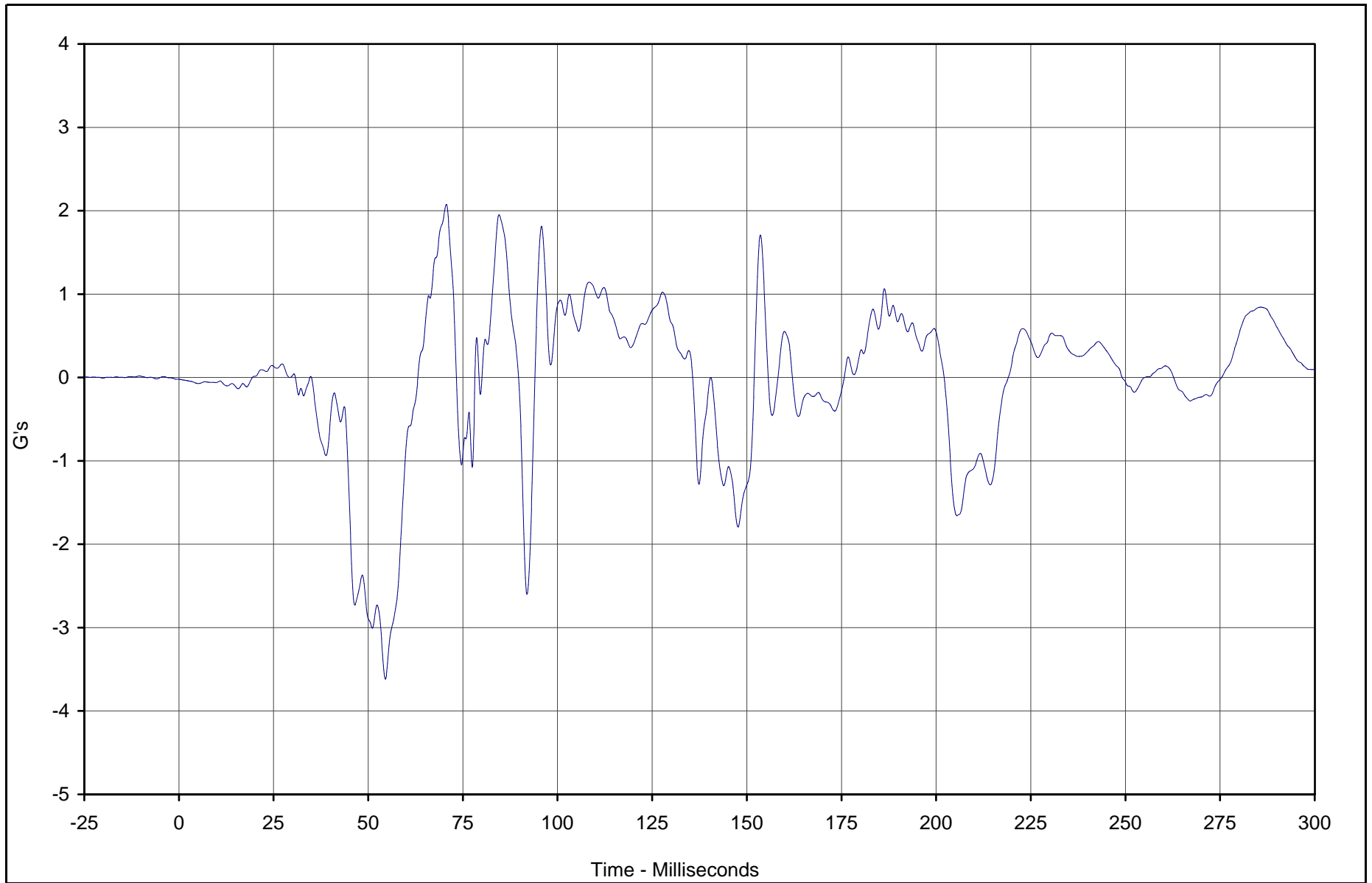
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

F3-22



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Chest Y	150	FIL	G's	2.1	70.6	-3.6	54.5	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

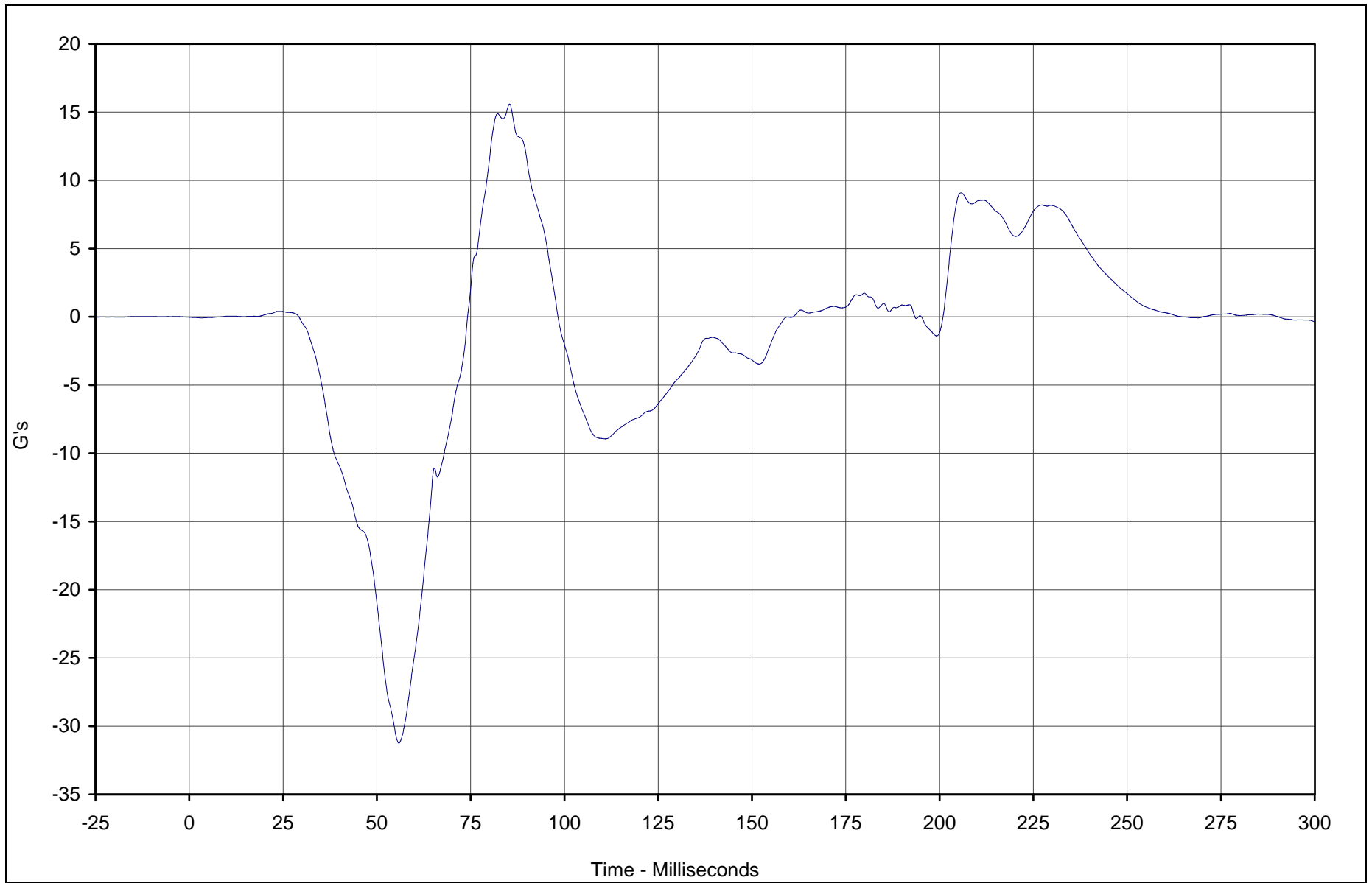
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

F3-23



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Chest Z	151	FIL	G's	15.6	85.4	-31.2	55.9	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

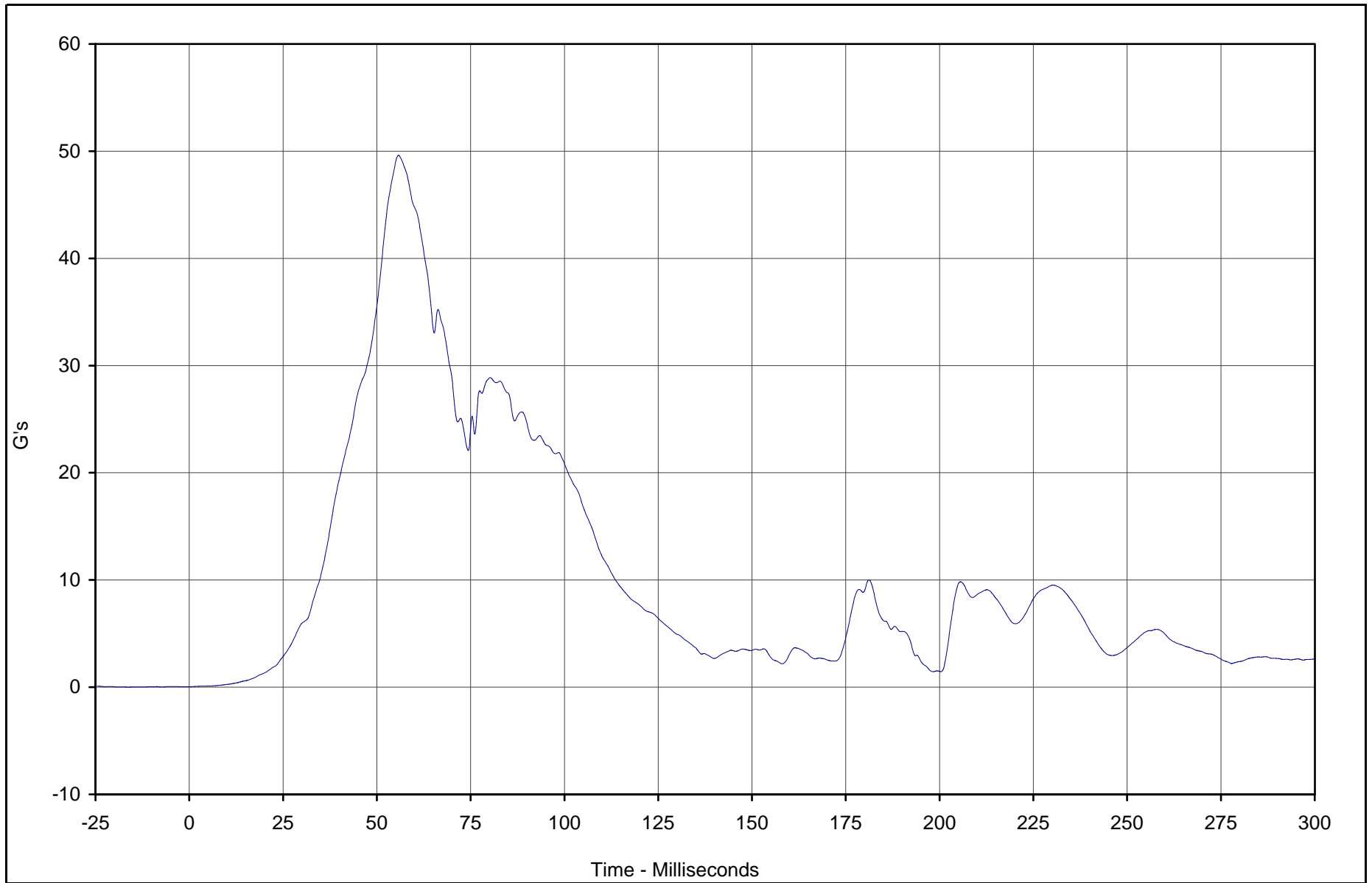
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

F3-24



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Chest Resultant	149	RES	G's	49.6	55.8	0.0	0.0	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

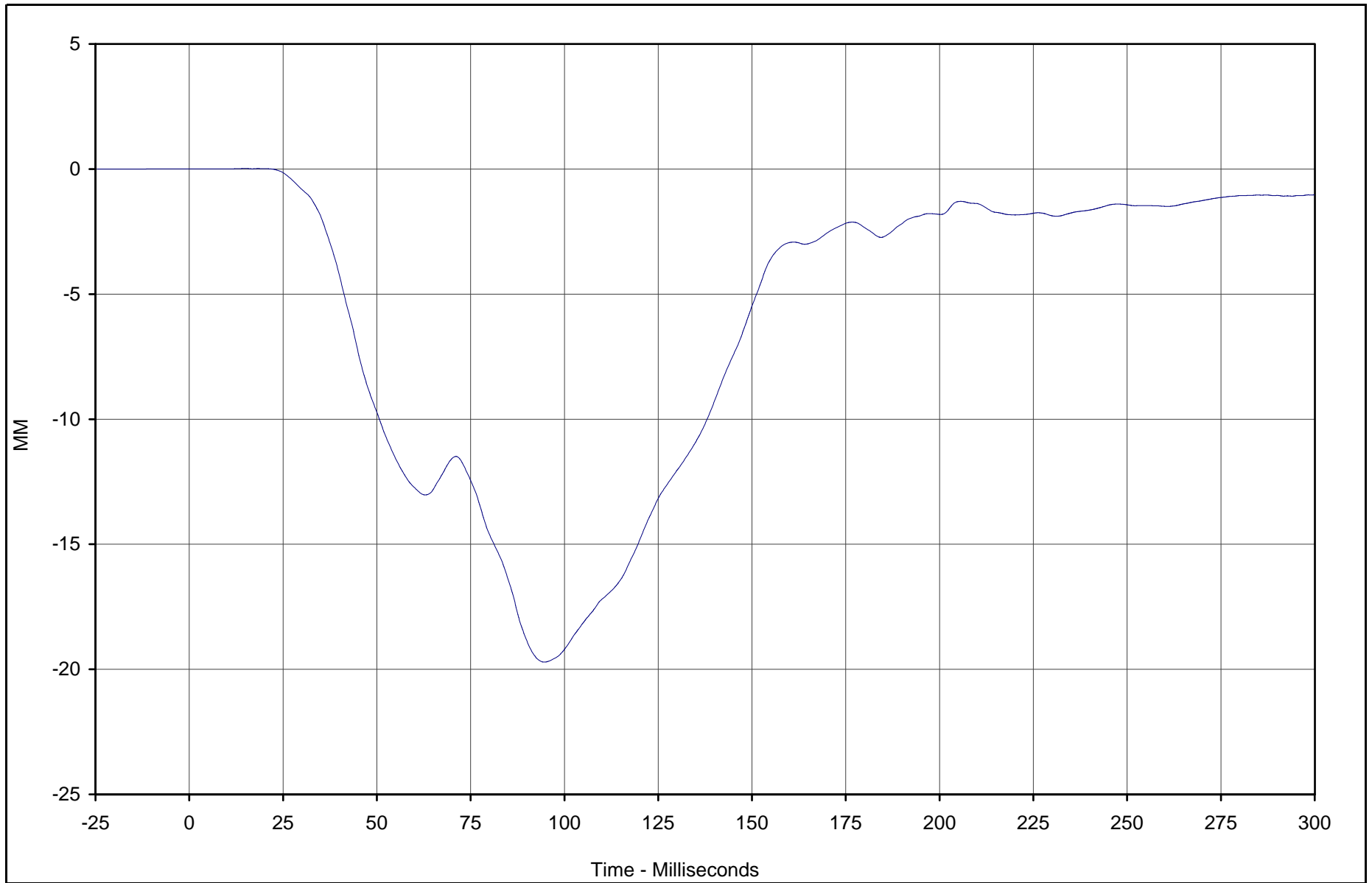
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-25



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Chest Deflection	152	FIL	MM	0.0	15.0	-19.7	94.6	180



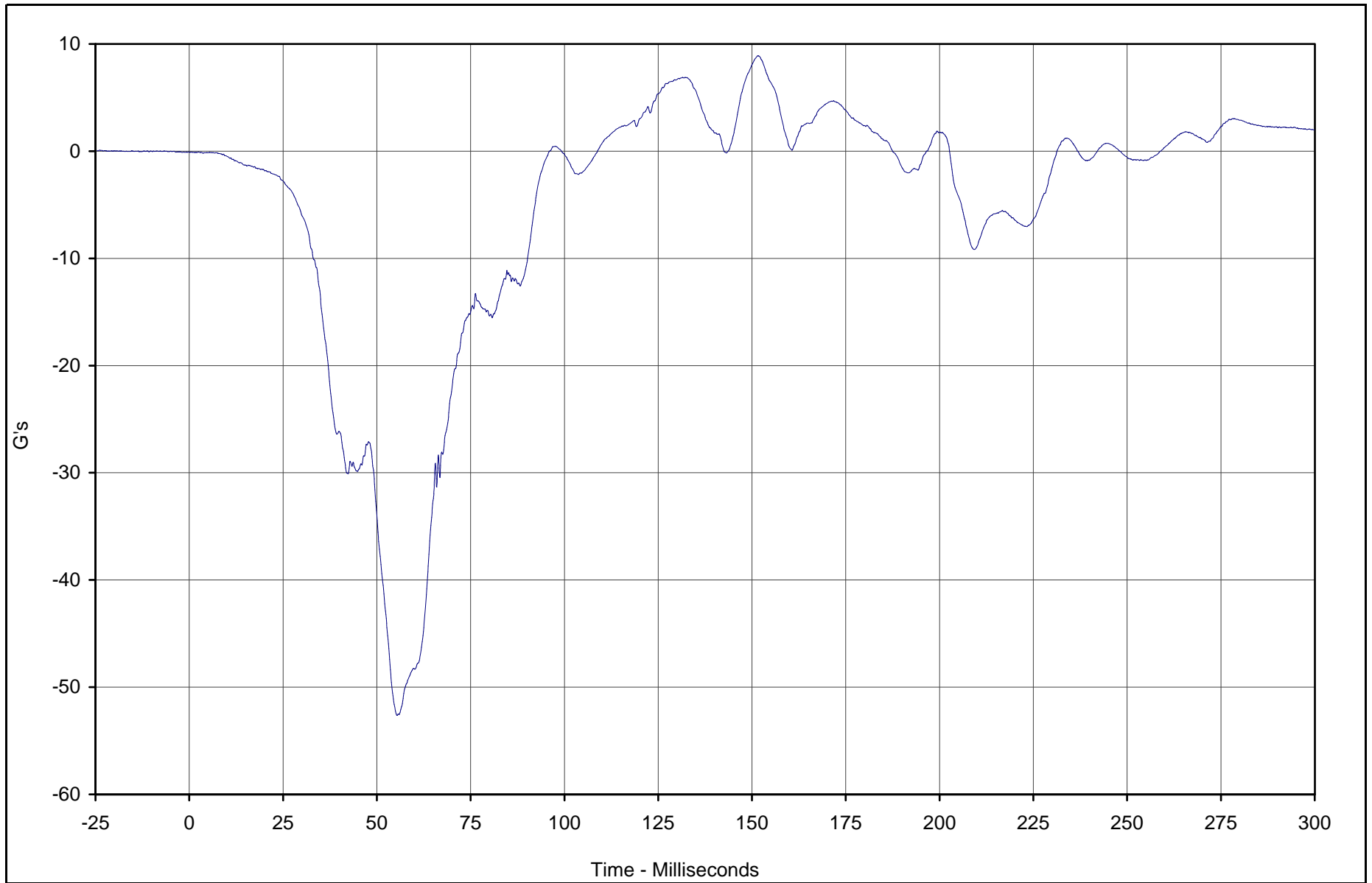
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Pelvis X	153	FIL	G's	8.9	151.6	-52.6	55.4	1000



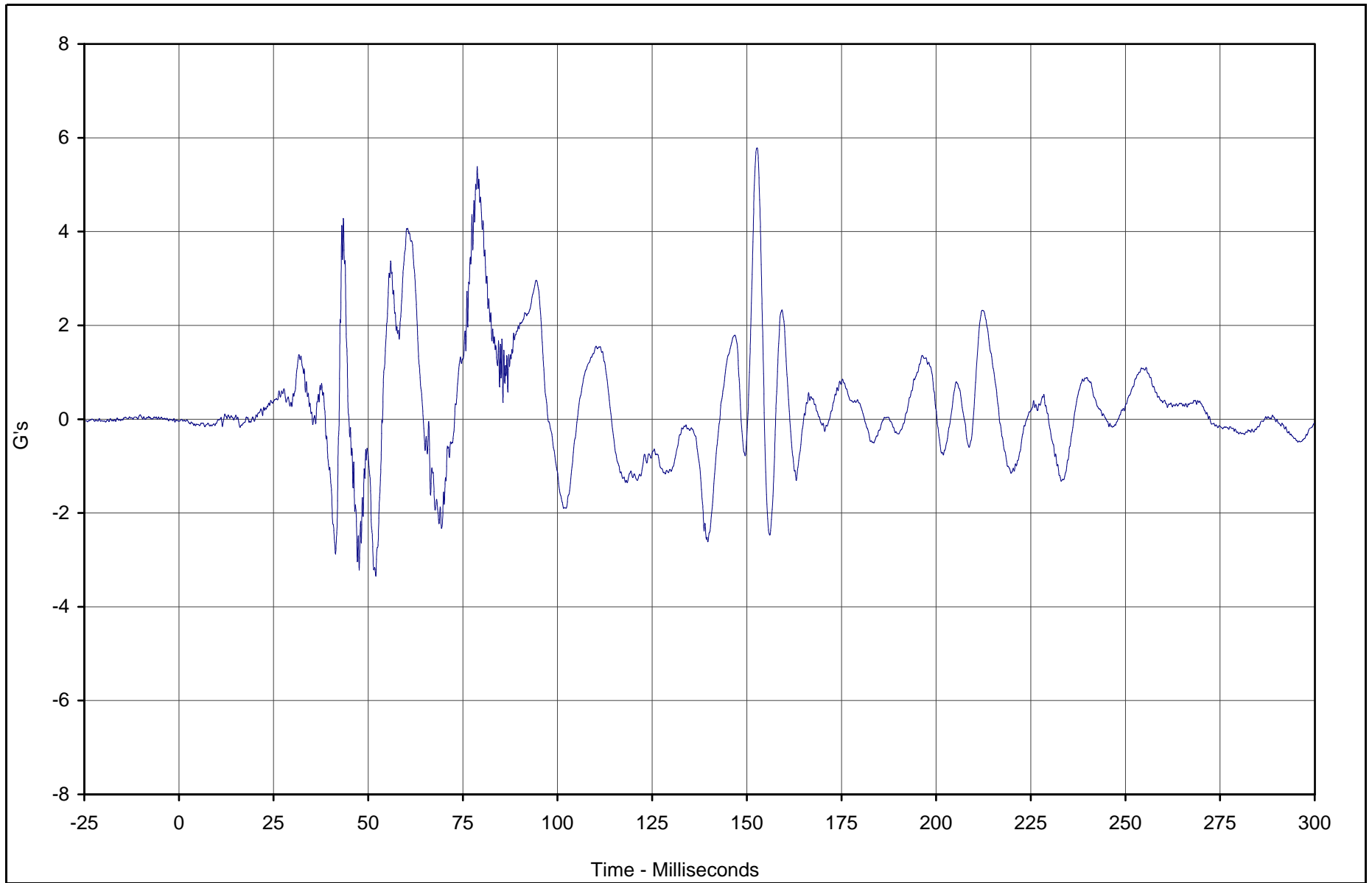
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

F3-27



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Pelvis Y	154	FIL	G's	5.8	152.7	-3.3	52.0	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

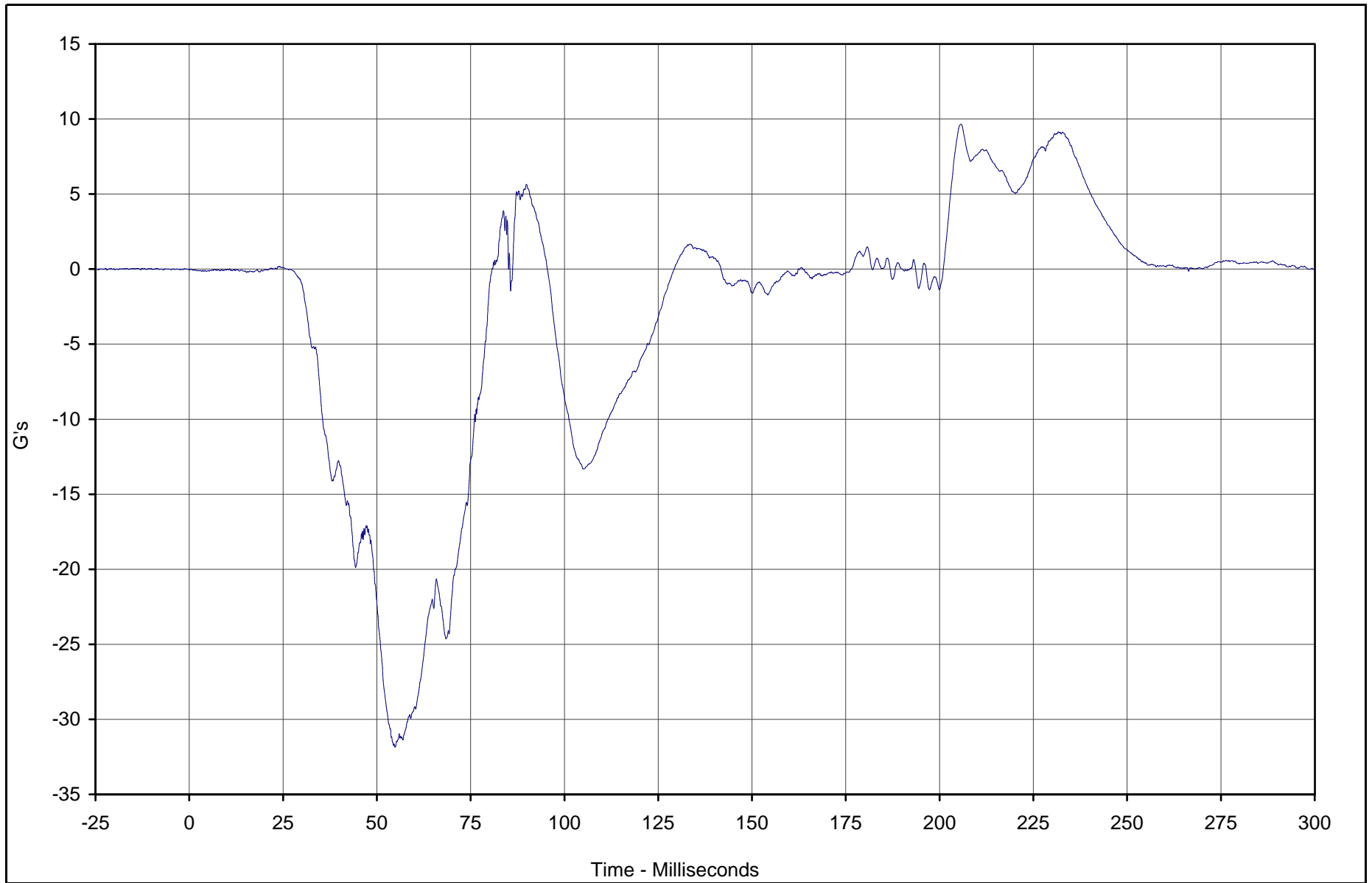
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-28



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Pelvis Z	155	FIL	G's	9.7	205.7	-31.8	54.8	1000



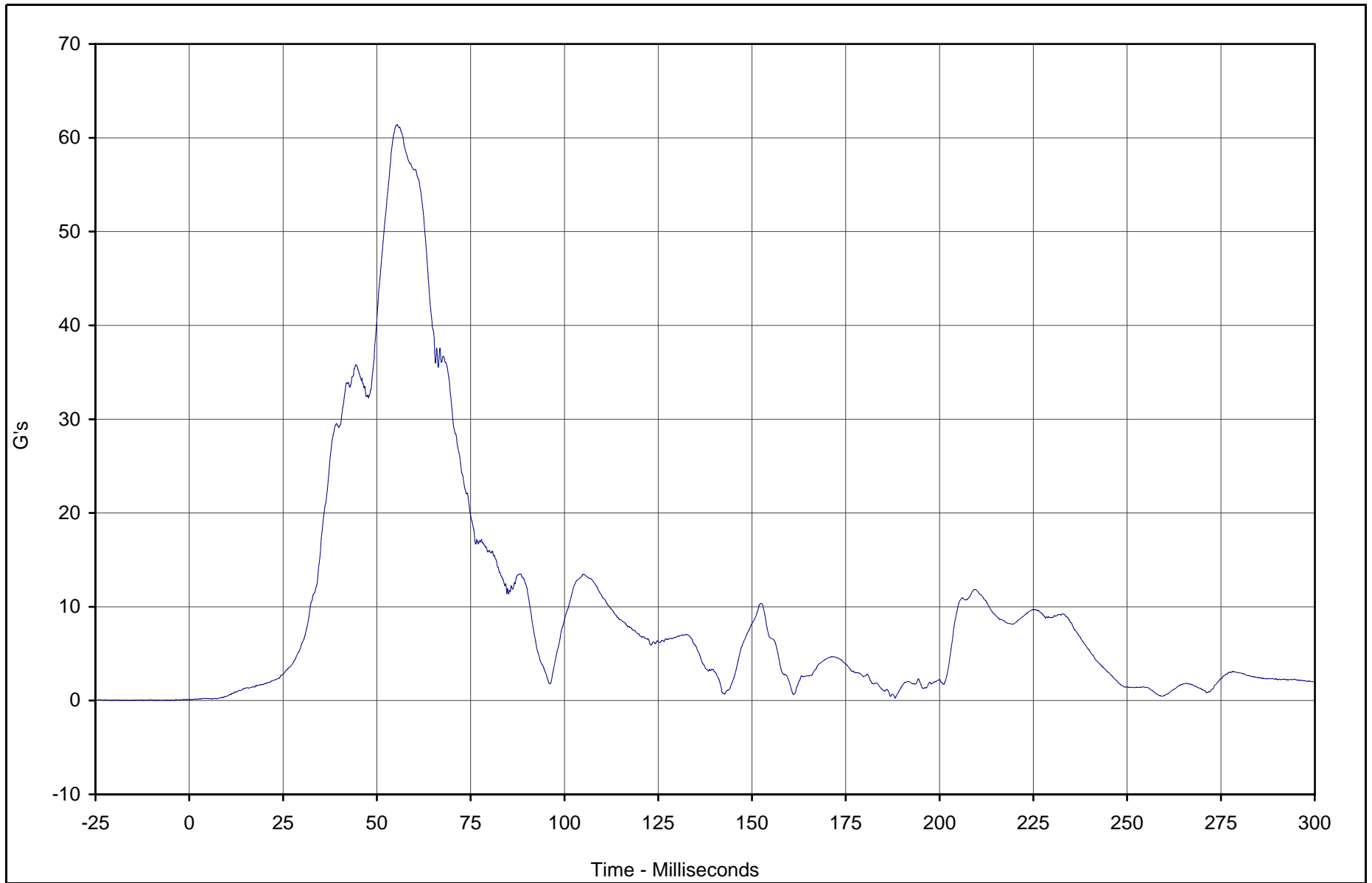
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Pelvis Resultant	153	RES	G's	61.4	55.4	0.1	0.5	1000



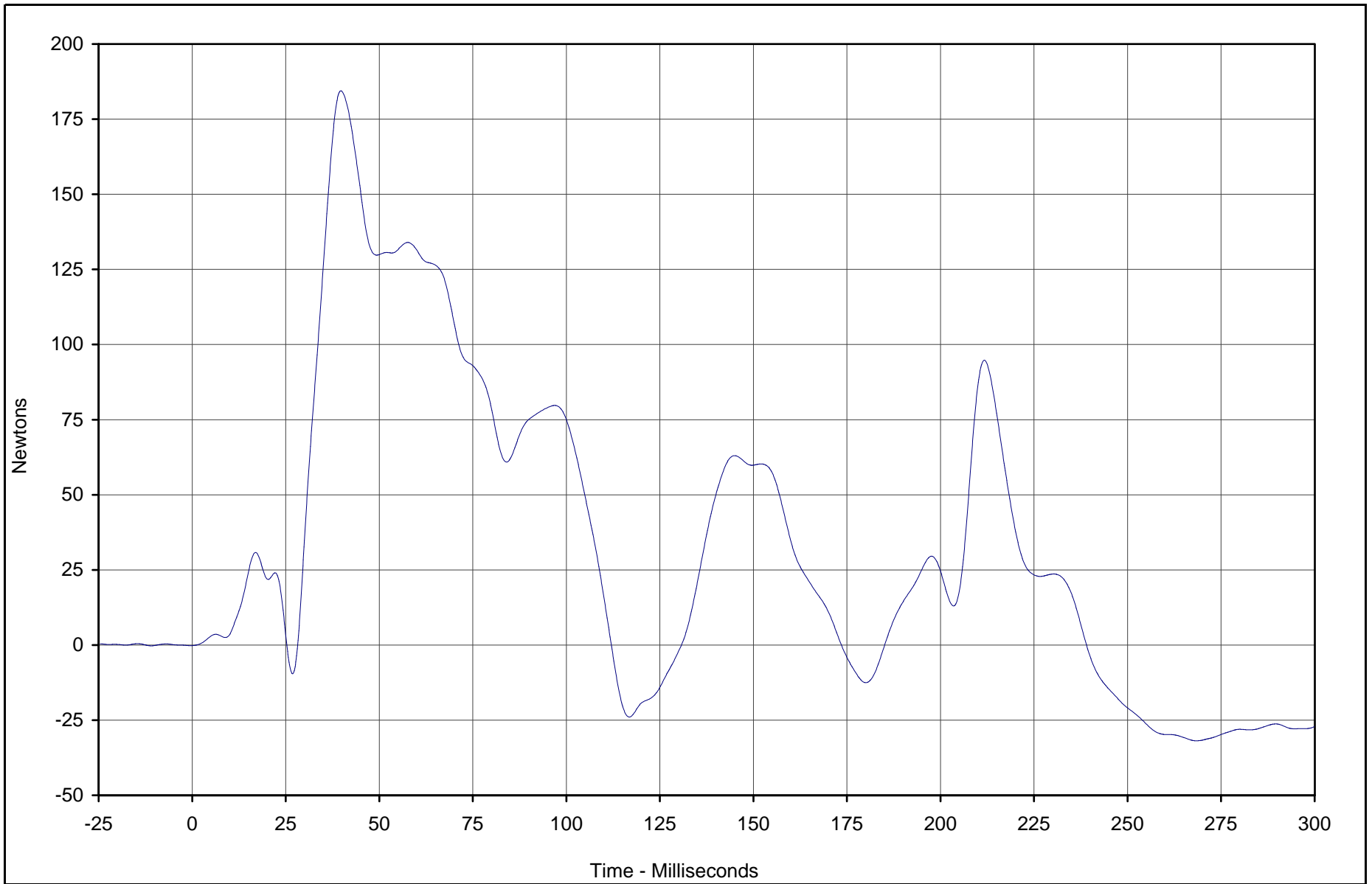
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

F3-30



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Seat Tether Load	156	FIL	Newtons	184.4	39.8	-31.9	268.4	60



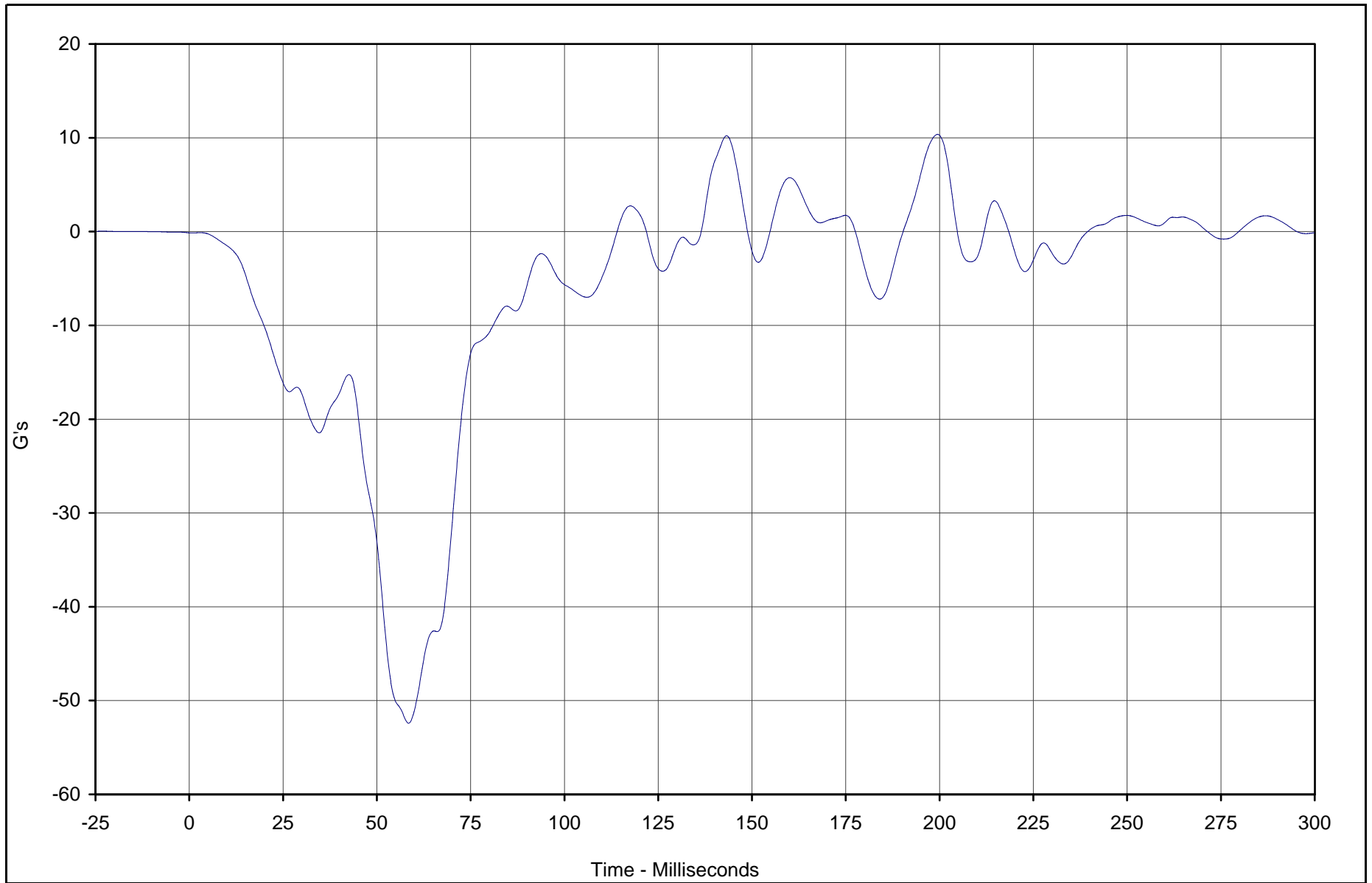
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Car Seat X	157	FIL	G's	10.4	199.5	-52.4	58.4	60



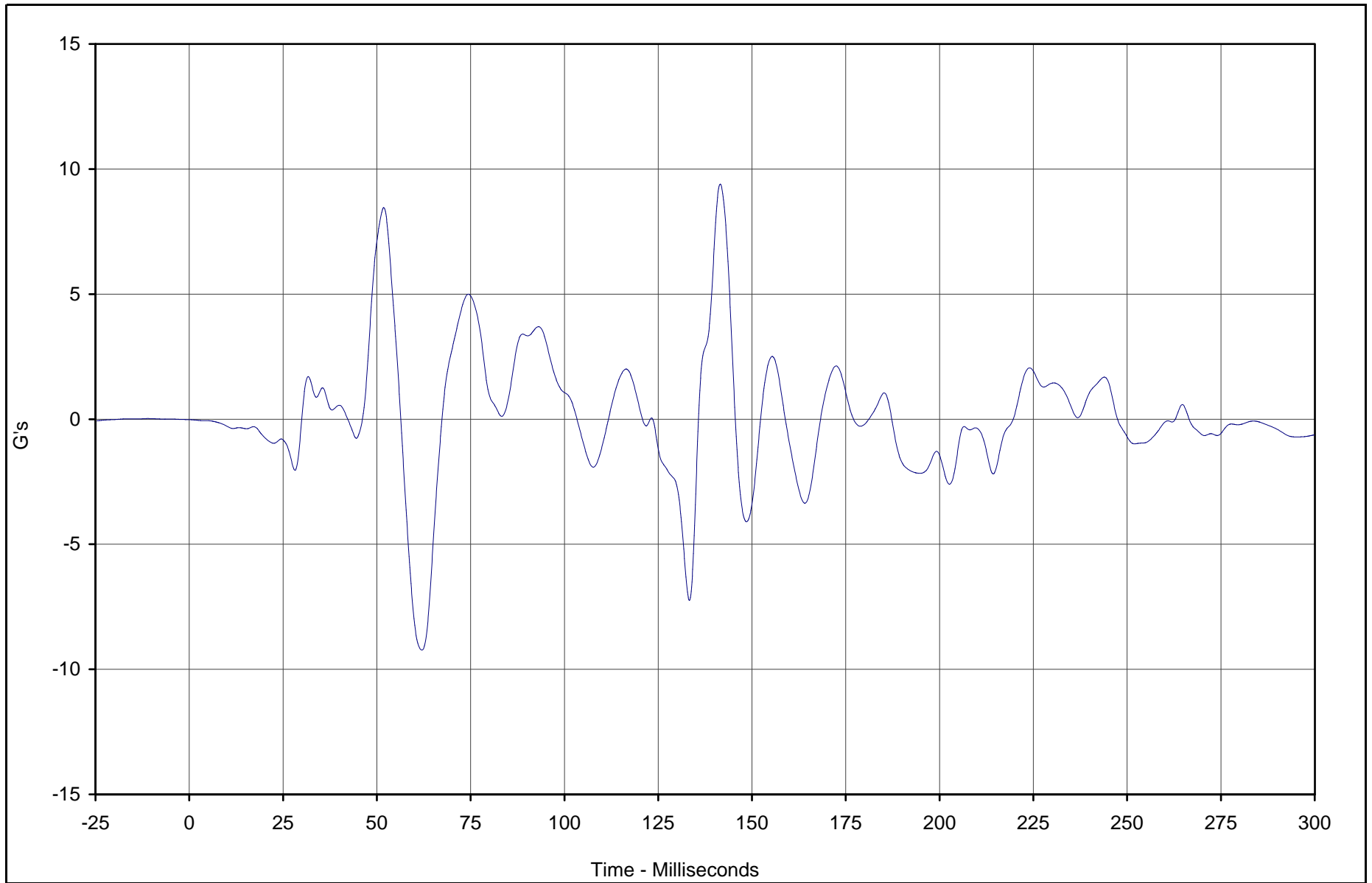
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

F3-32



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Car Seat Y	158	FIL	G's	9.4	141.5	-9.2	62.0	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

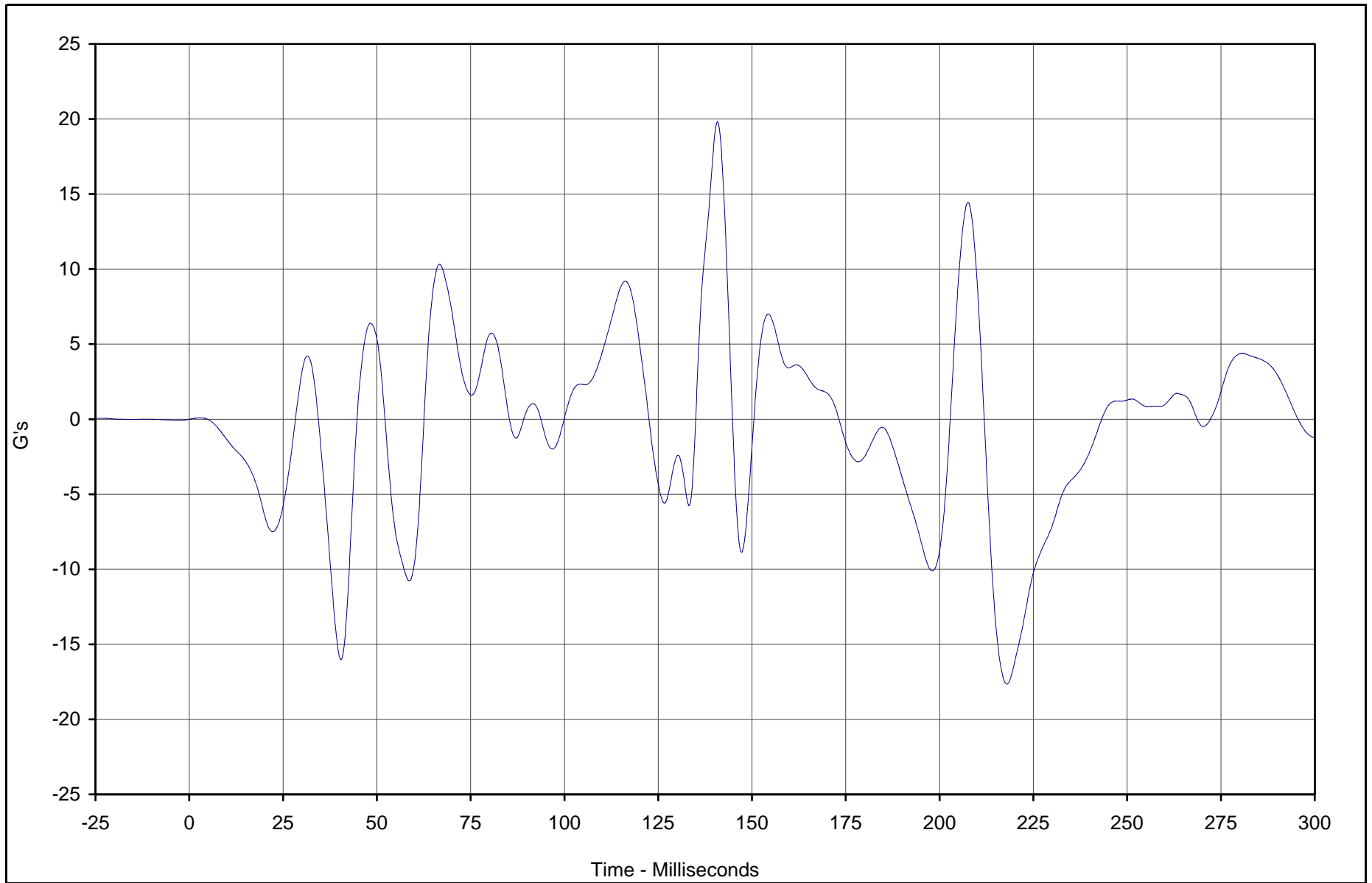
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-33



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Car Seat Z	159	FIL	G's	19.8	140.8	-17.7	217.9	60



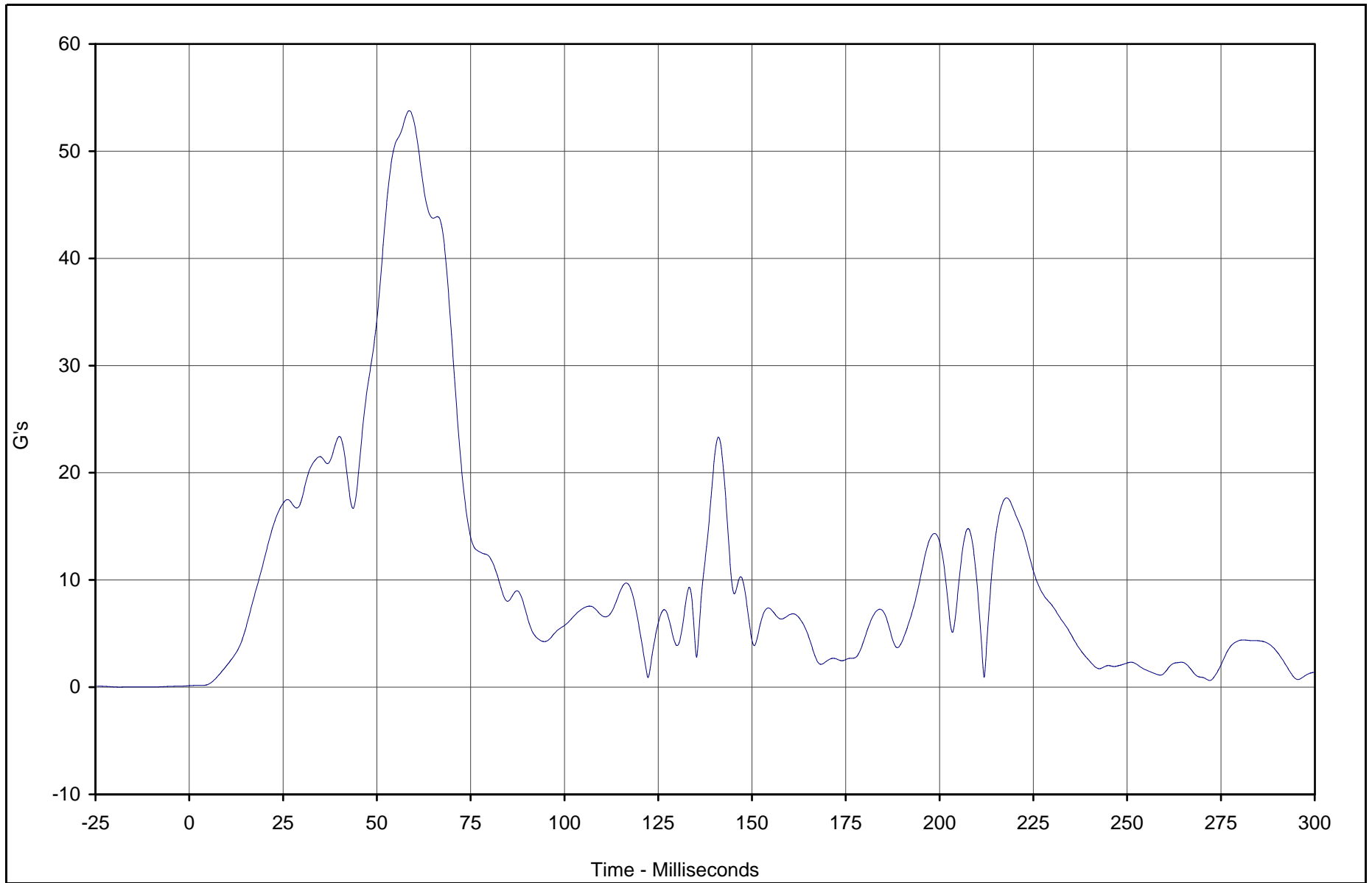
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear Child Car Seat Resultant	157	RES	G's	53.8	58.6	0.1	0.0	60



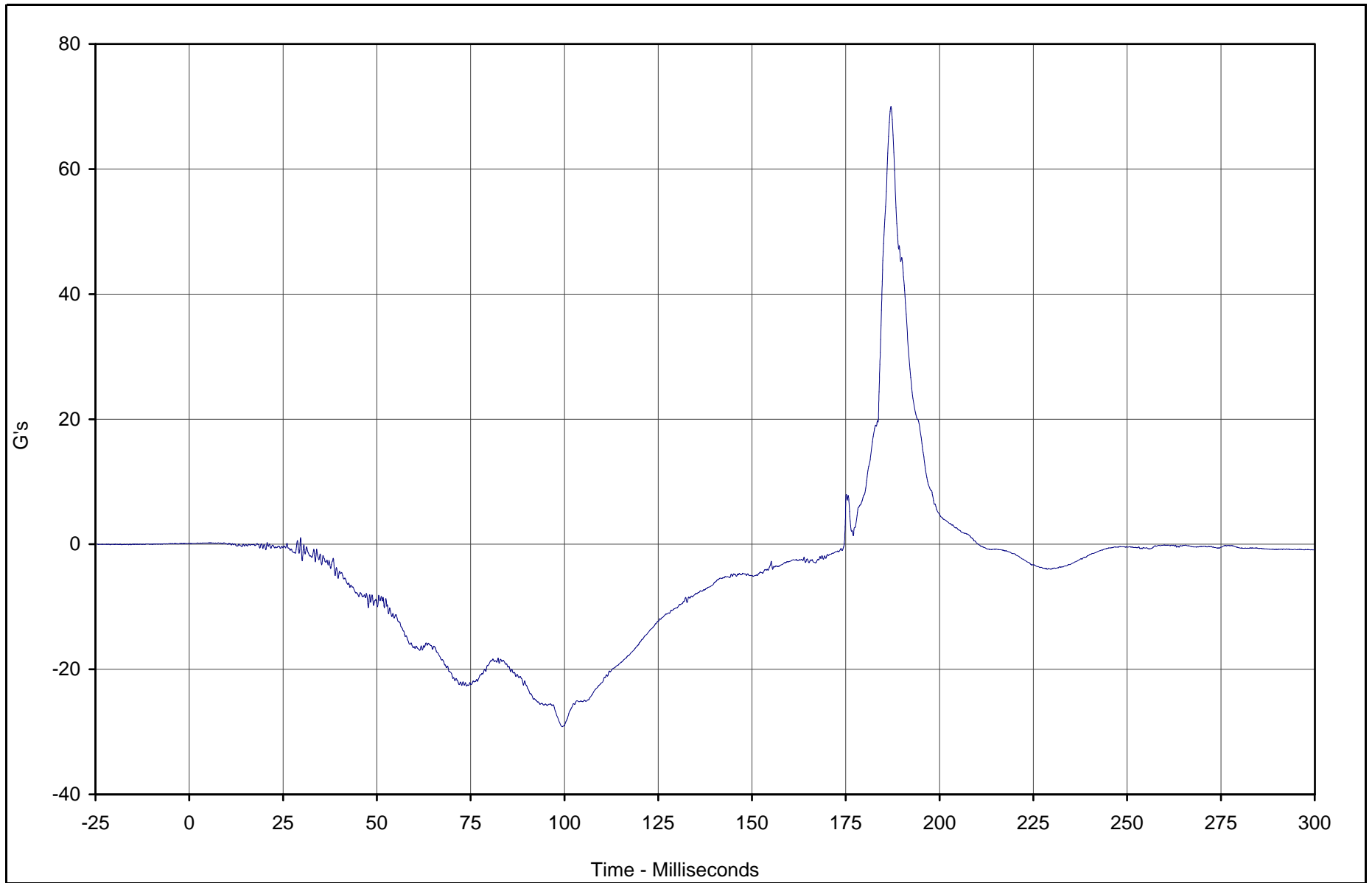
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

F3-35



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Head X	160	FIL	G's	70.0	187.0	-29.2	99.4	1000



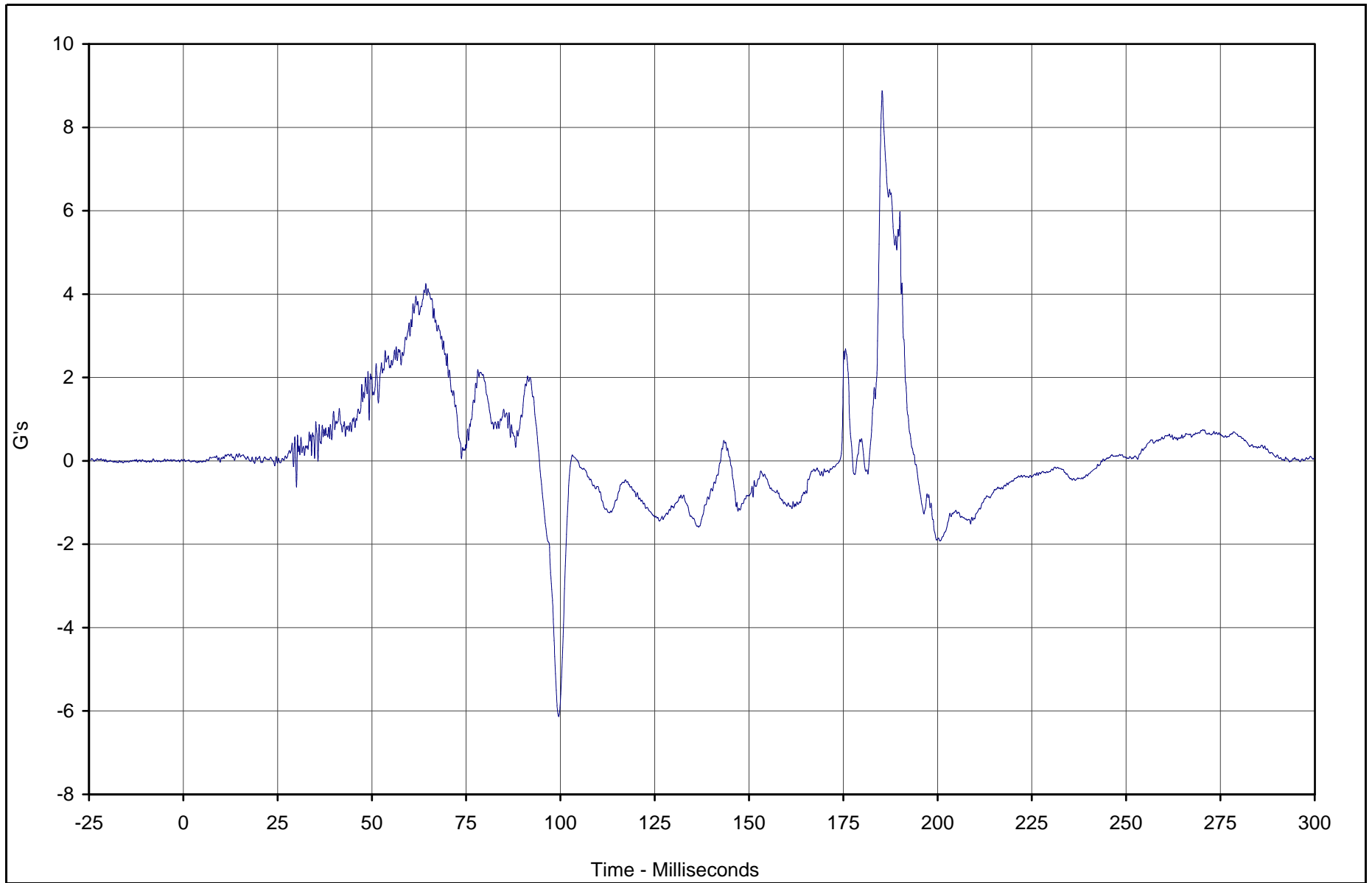
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Head Y	161	FIL	G's	8.9	185.3	-6.1	99.5	1000

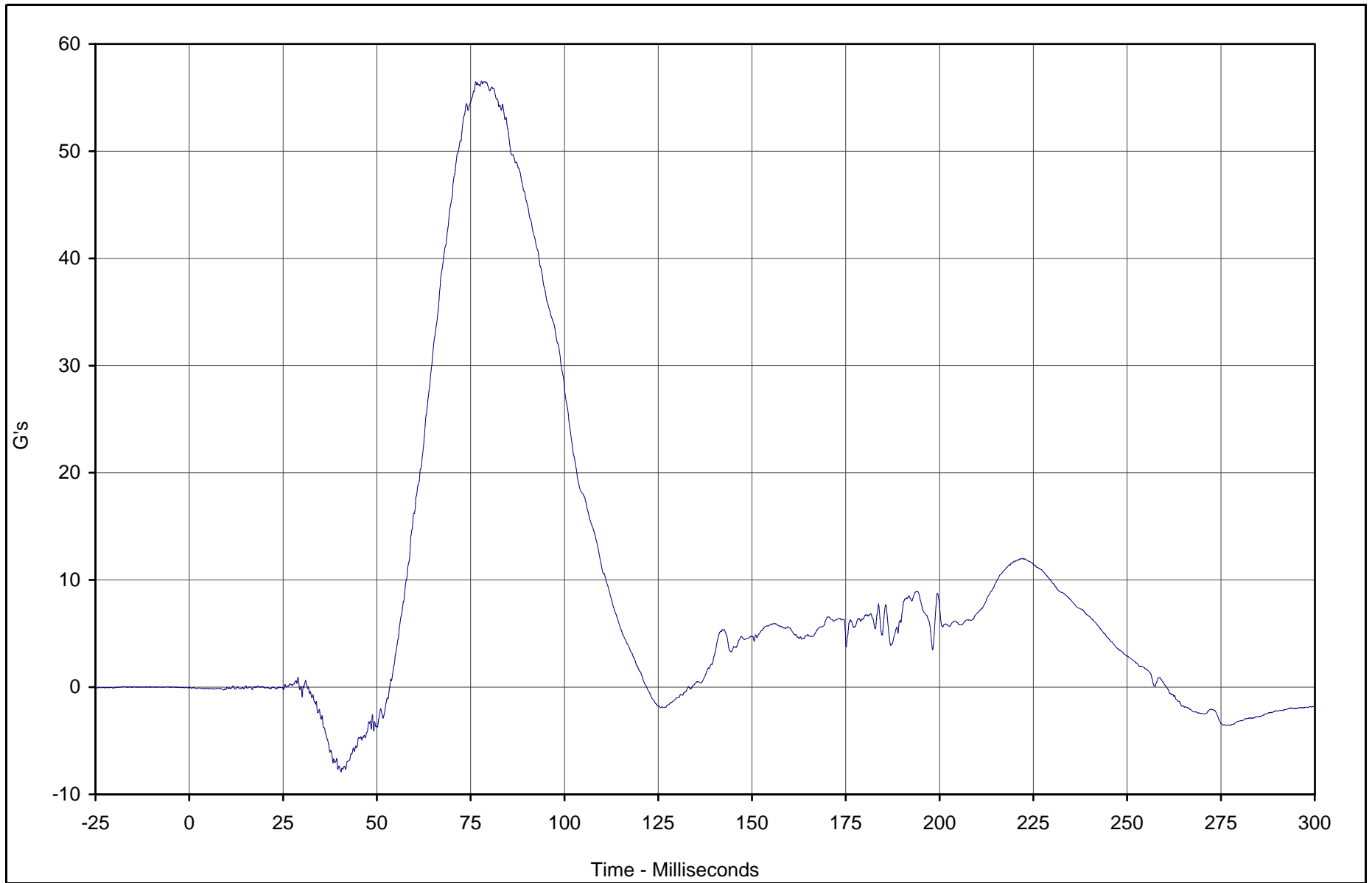


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Head Z	162	FIL	G's	56.5	77.9	-7.9	40.5	1000

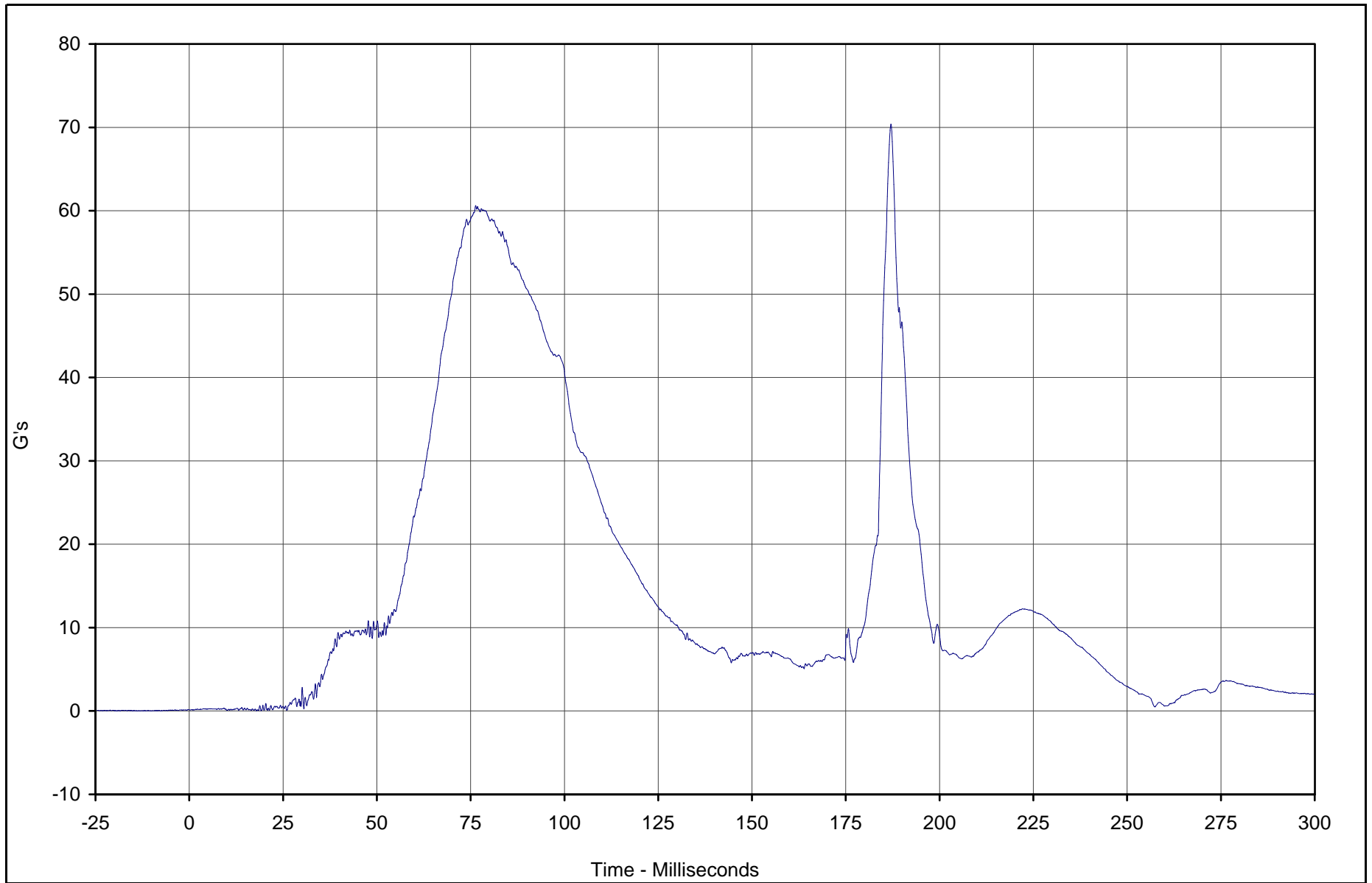


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Head Resultant	160	RES	G's	70.4	187.0	0.0	17.9	1000

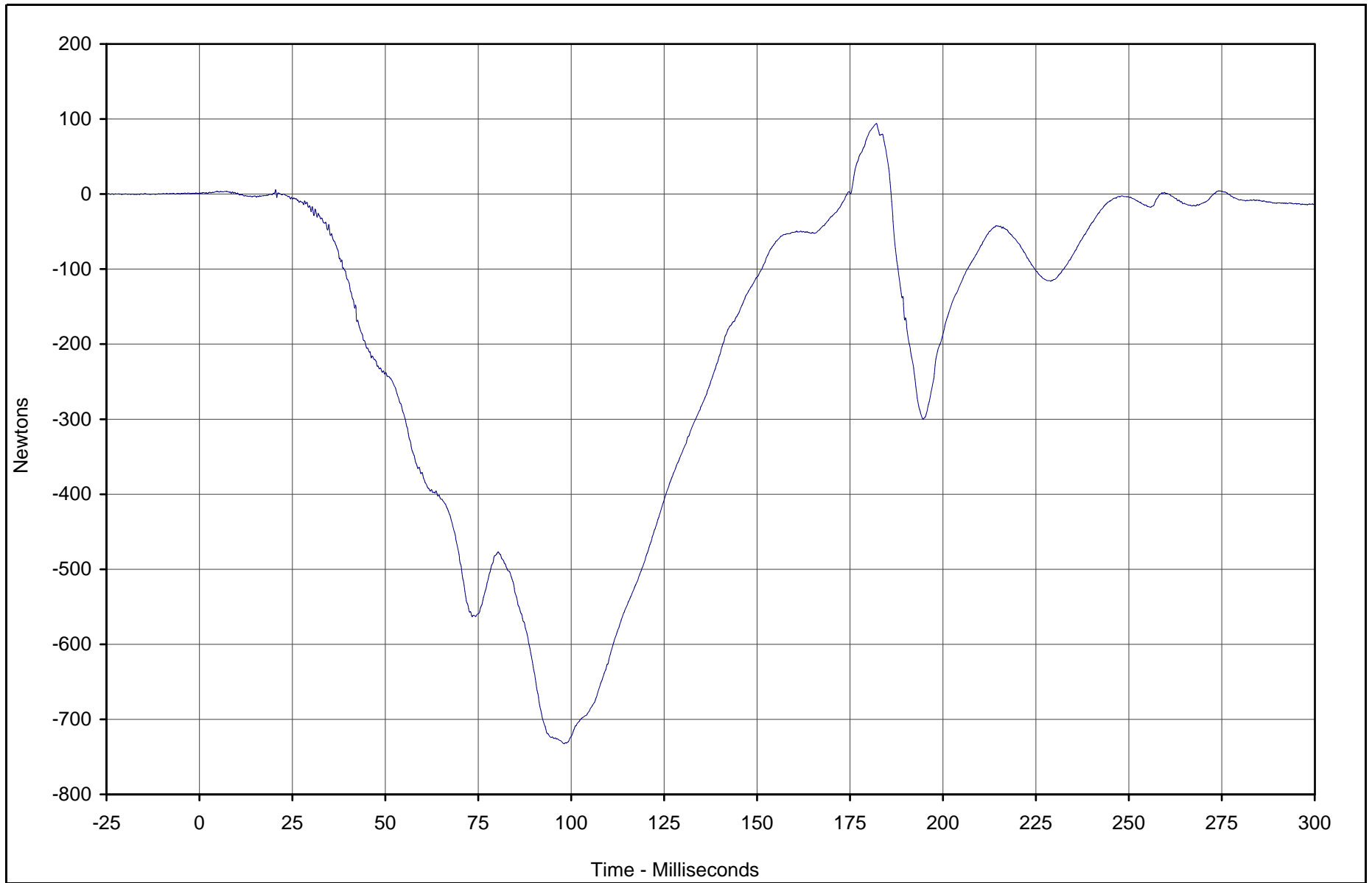


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Upper Neck Force X	163	FIL	Newtons	94.1	182.1	-732.4	98.1	1000



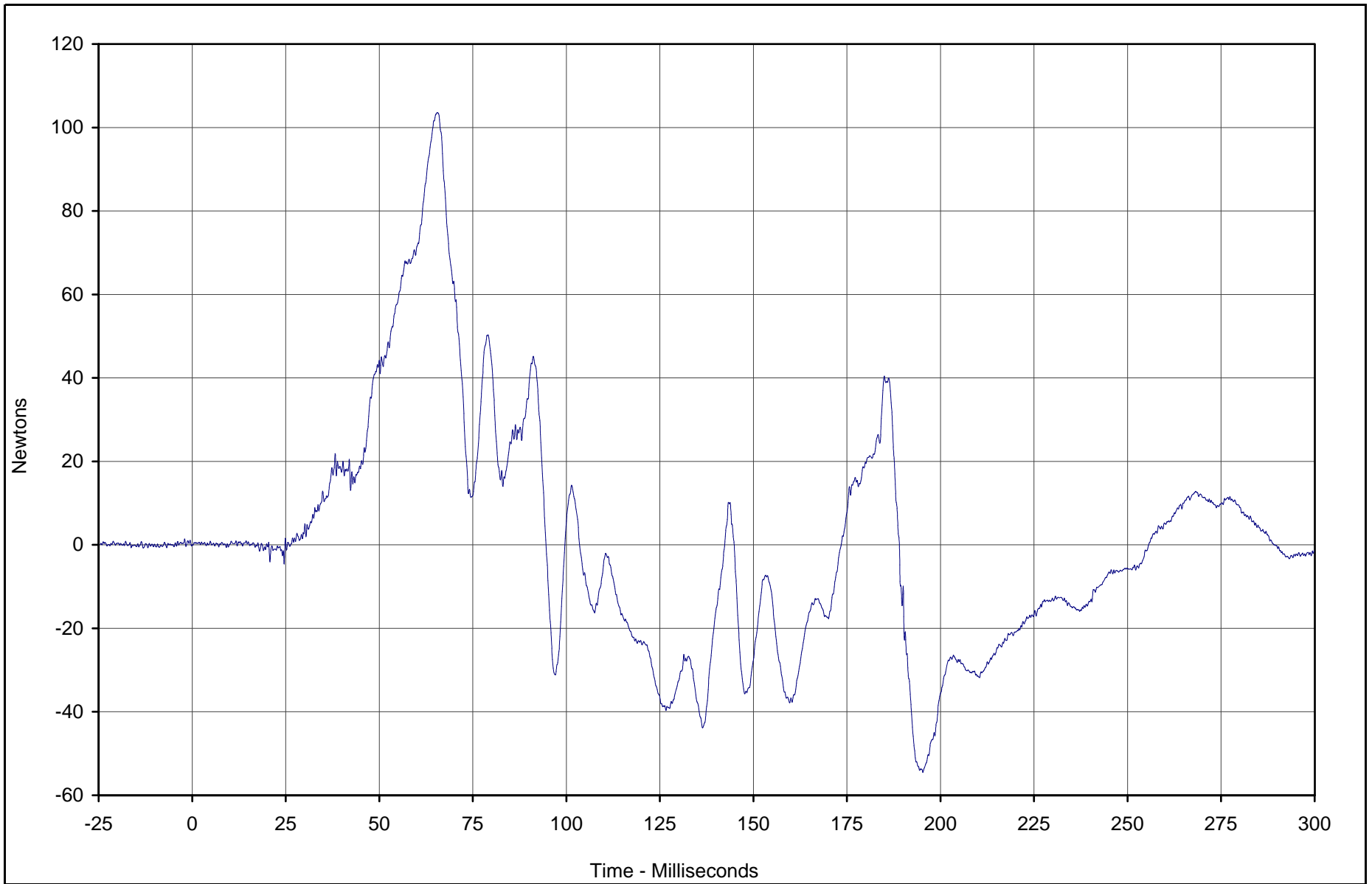
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

F3-40



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Upper Neck Force Y	164	FIL	Newtons	103.6	65.4	-54.5	195.3	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

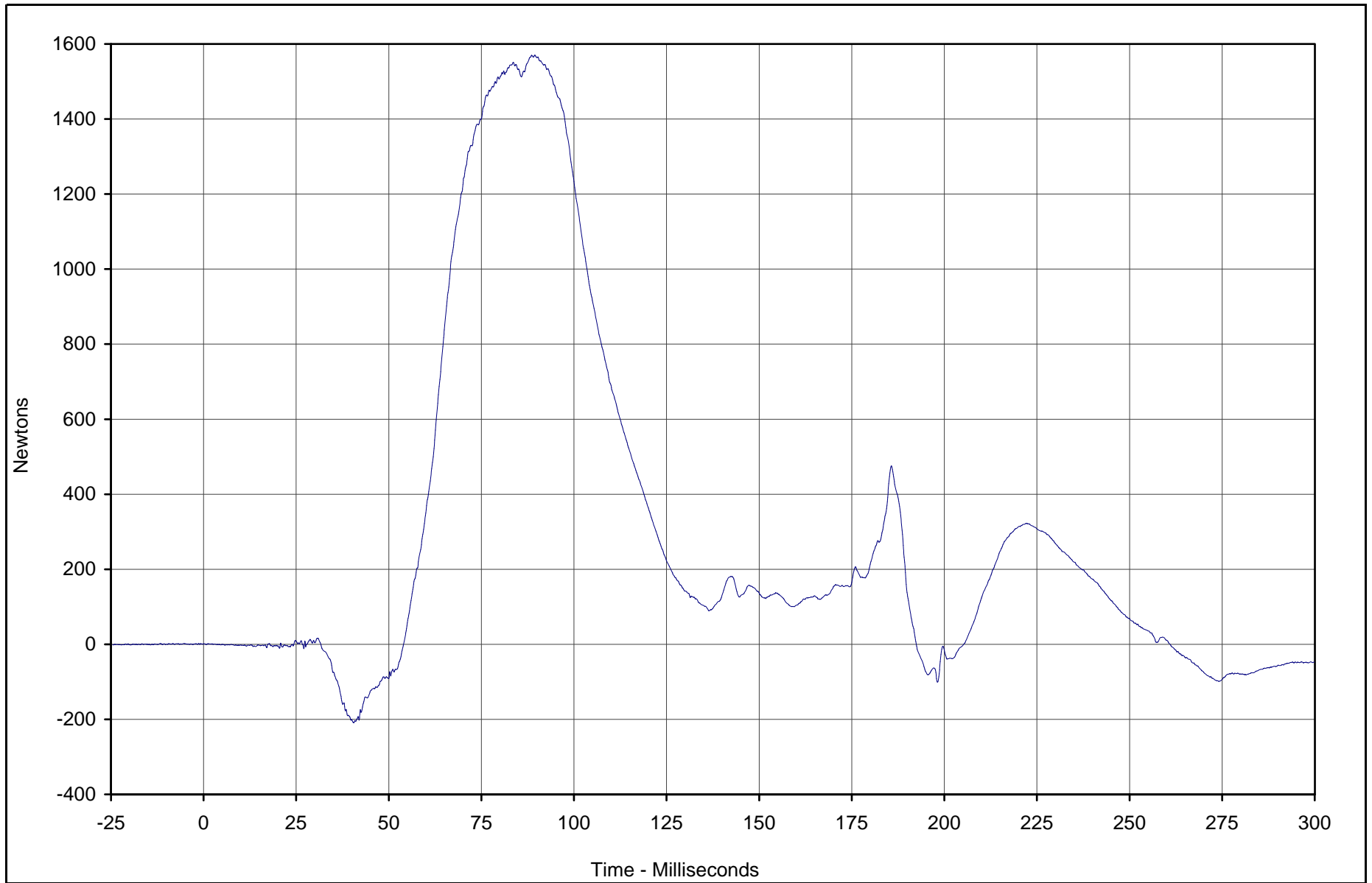
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-41



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Upper Neck Force Z	165	FIL	Newtons	1570.2	89.4	-209.3	40.5	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

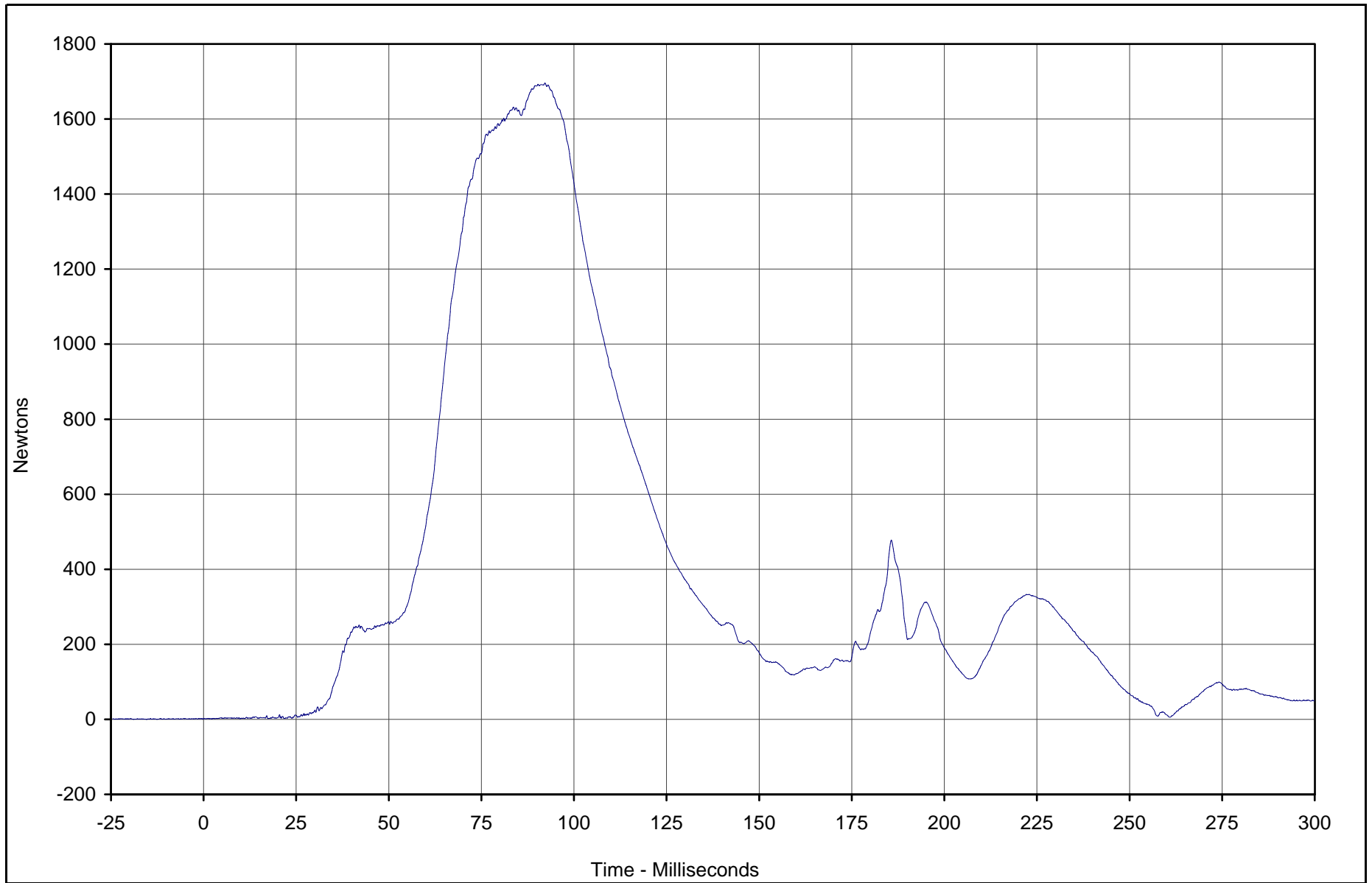
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

F3-42



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Upper Neck Force Res.	163	RES	Newtons	1695.6	92.2	1.0	2.1	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

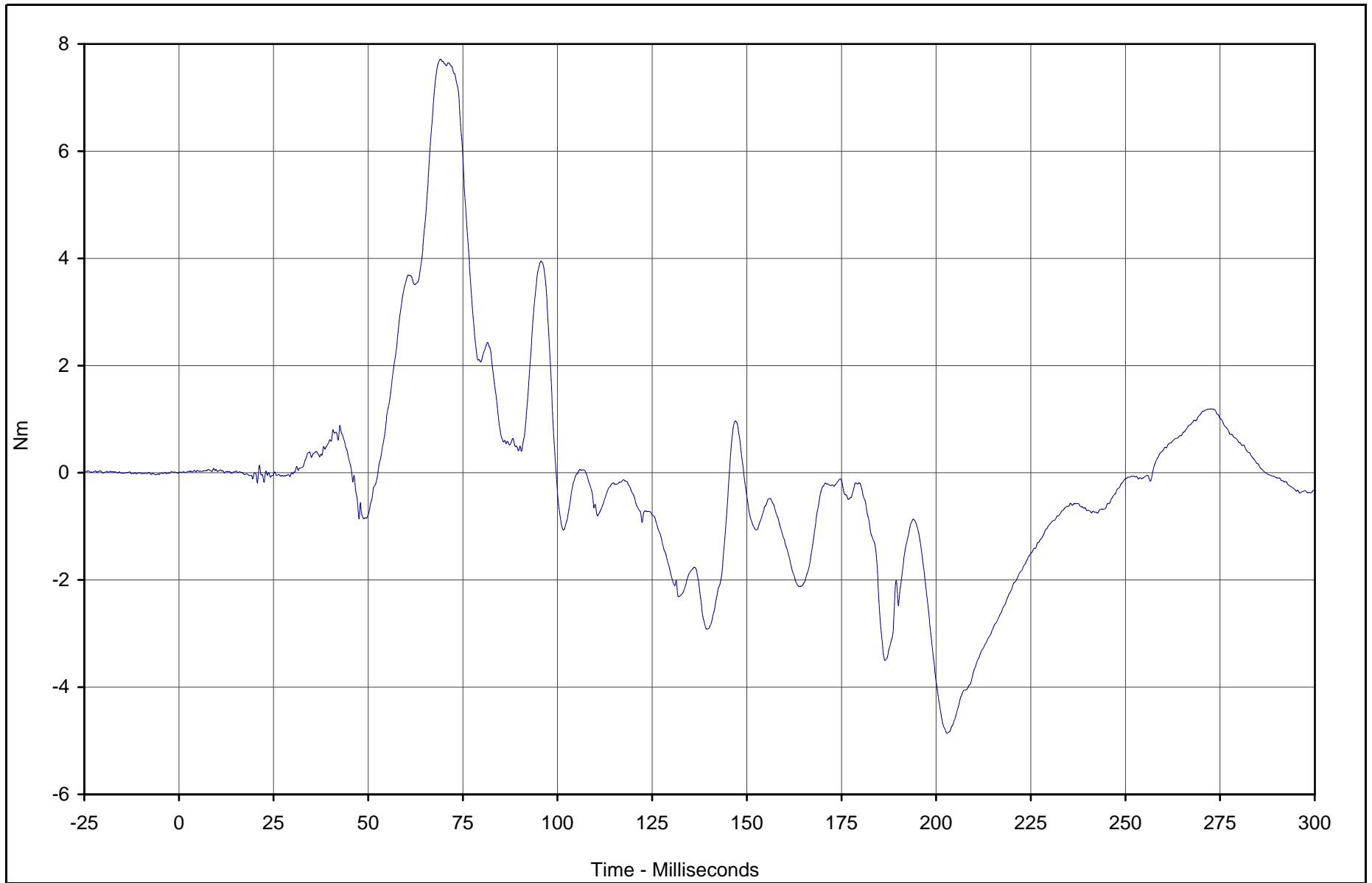
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

F3-43



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Upper Neck Moment X	166	FIL	Nm	7.7	69.1	-4.9	202.9	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

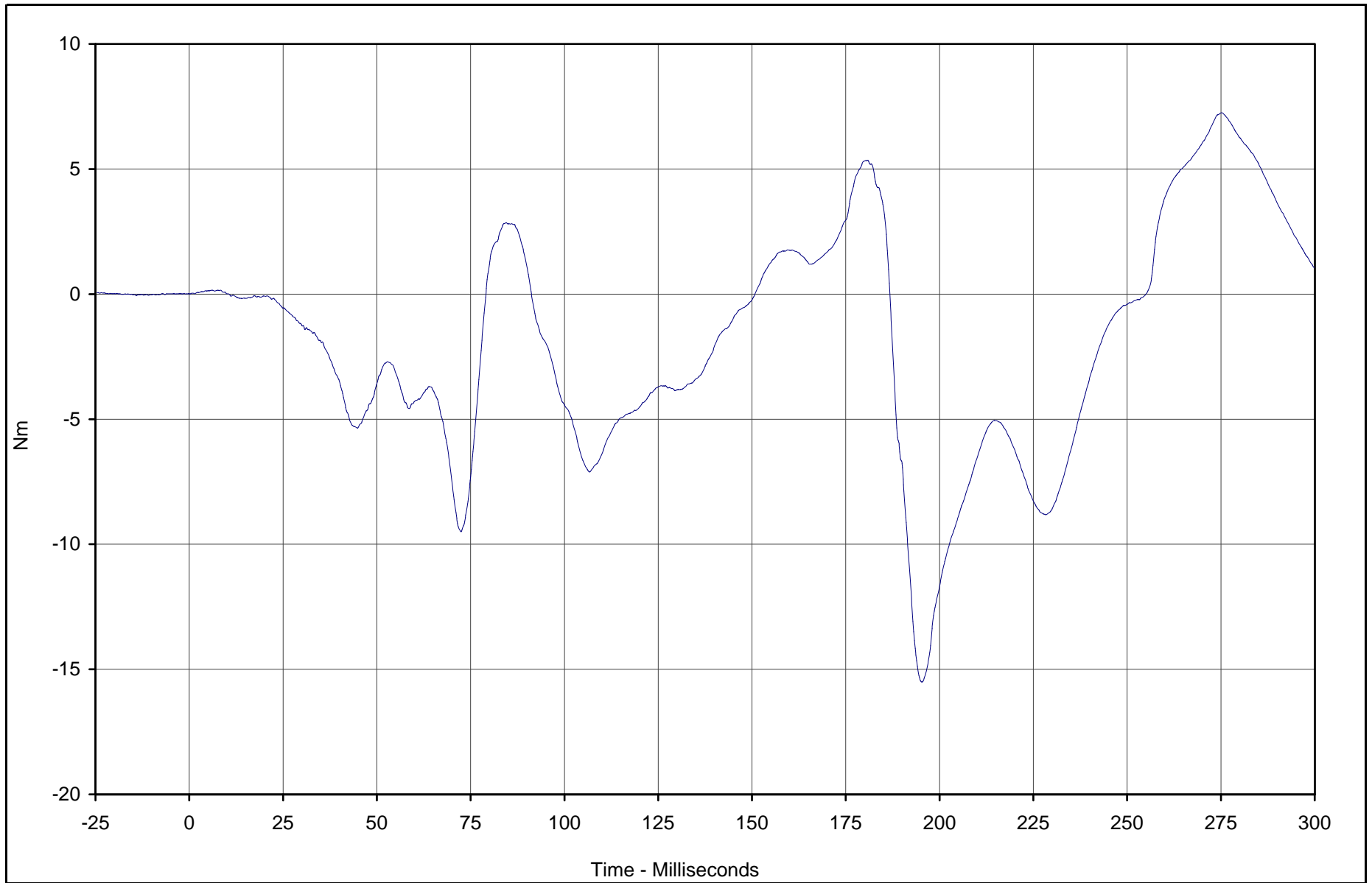
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

F3-44



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Upper Neck Moment Y	167	FIL	Nm	7.2	275.2	-15.5	195.3	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

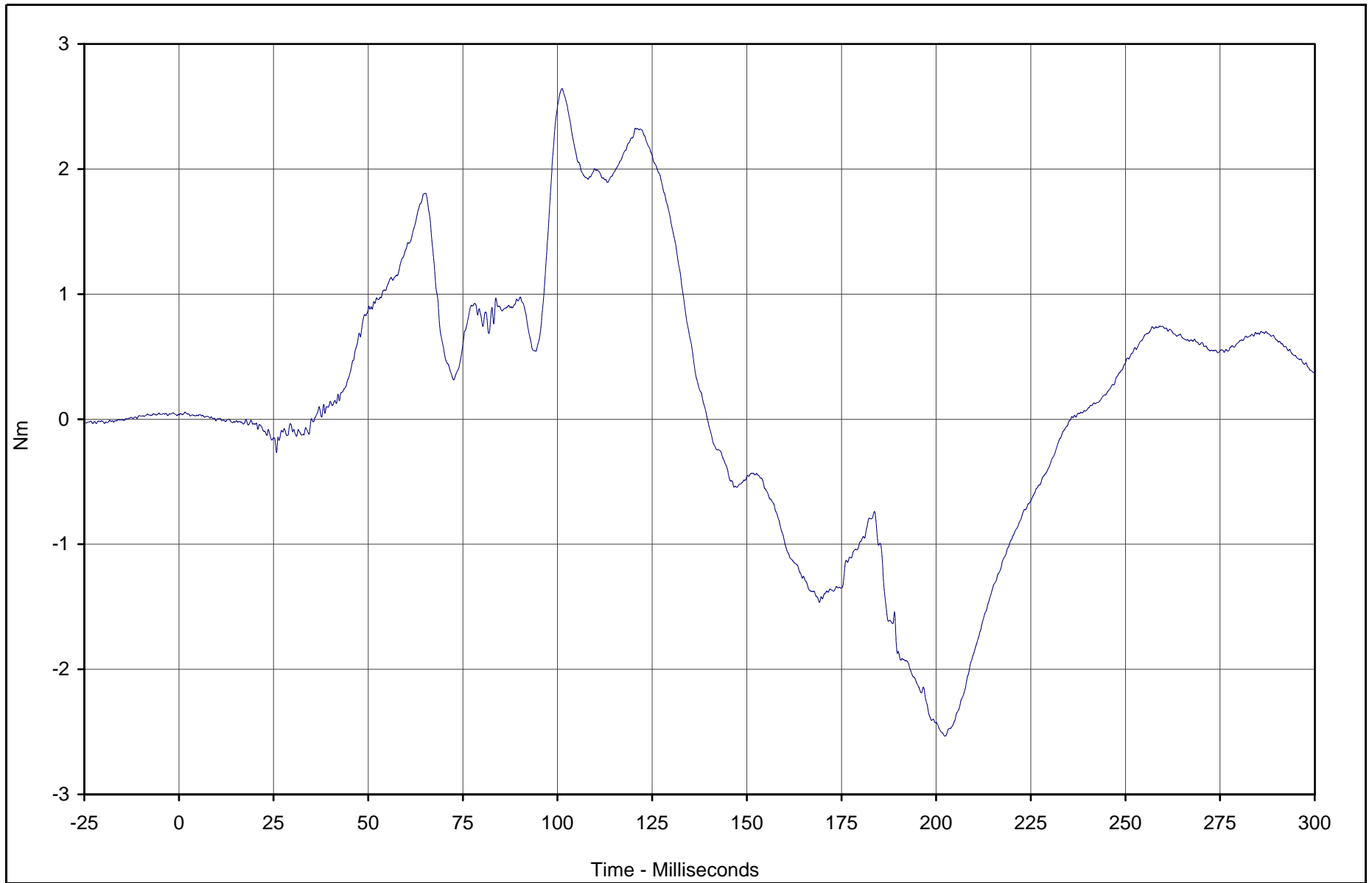
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

F3-45



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Upper Neck Moment Z	168	FIL	Nm	2.6	101.2	-2.5	202.3	600



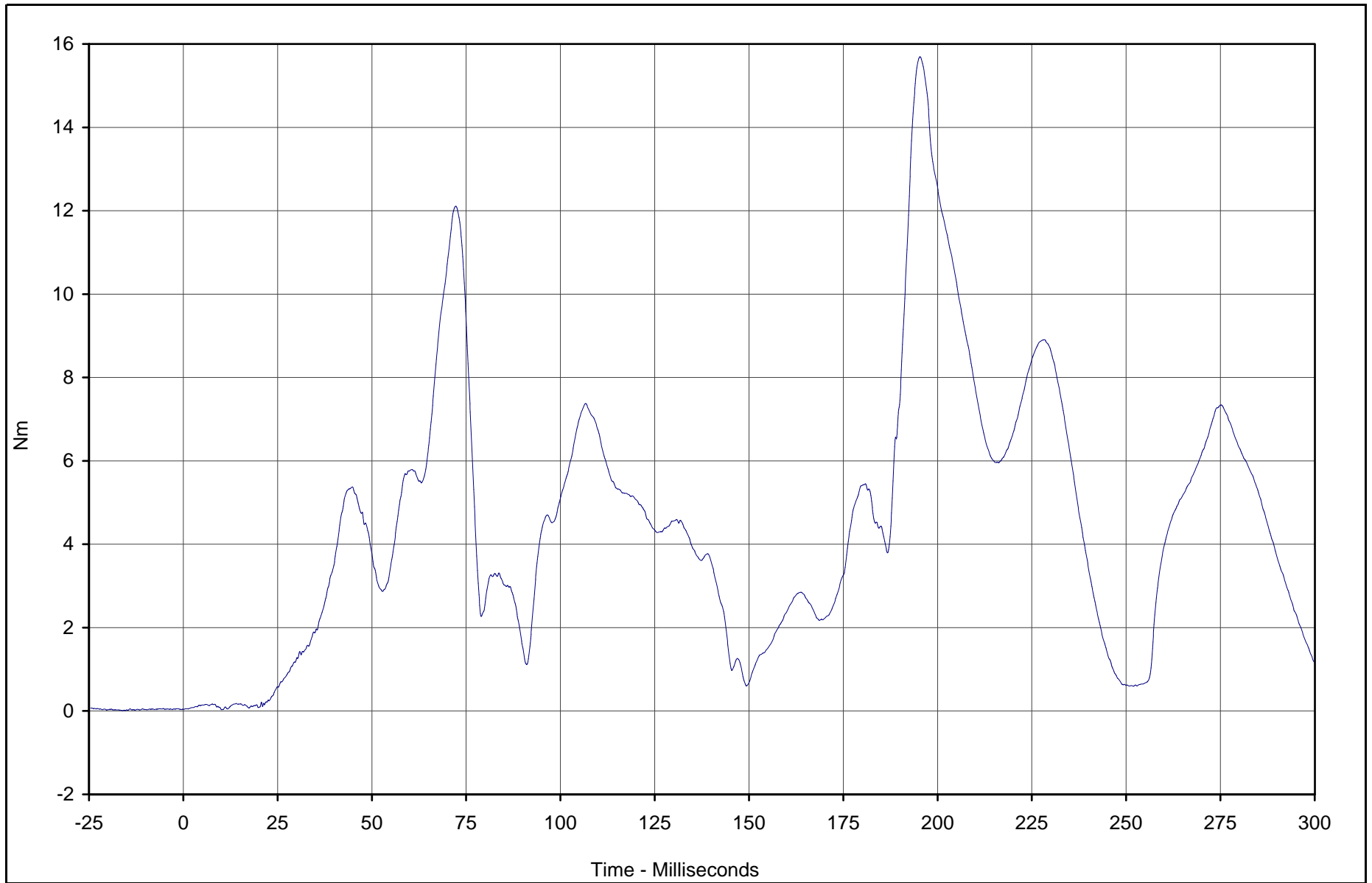
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Upper Neck Mom Res.	166	RES	Nm	15.7	195.4	0.0	10.2	600



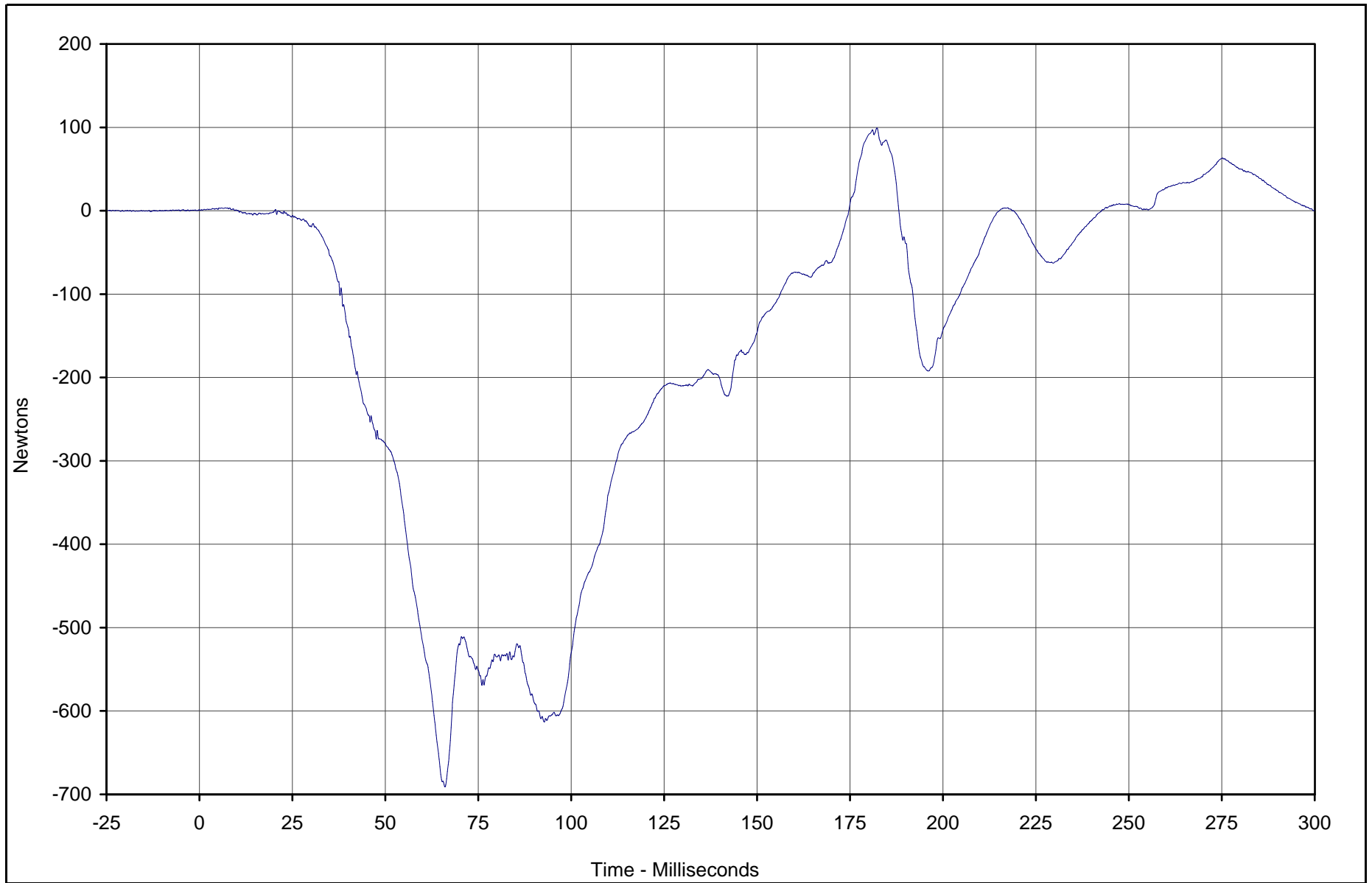
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

F3-47



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Lower Neck Force X	169	FIL	Newtons	99.2	182.2	-691.0	66.0	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

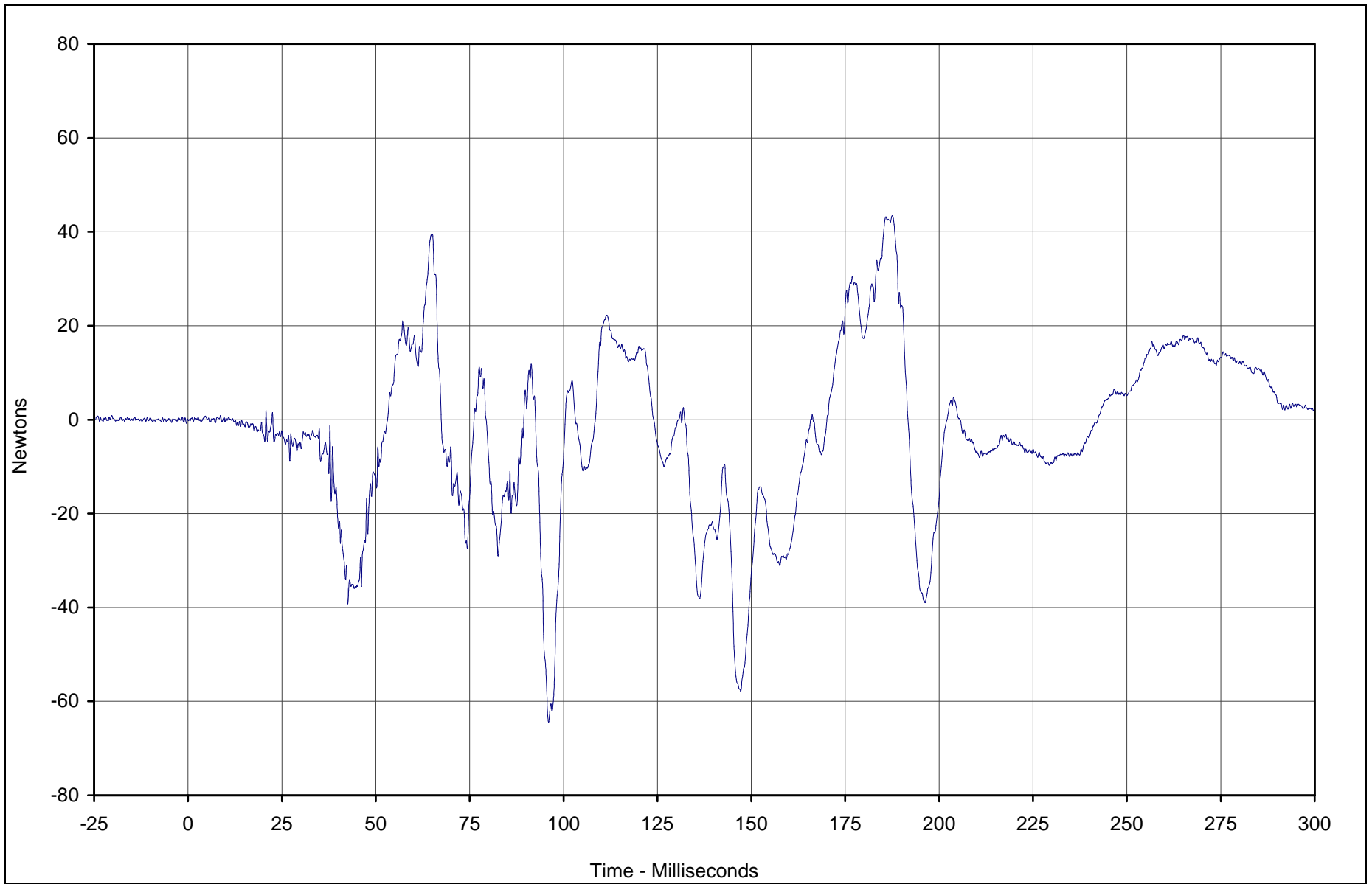
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC

F3-48



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Lower Neck Force Y	170	FIL	Newtons	43.4	187.5	-64.5	96.0	1000



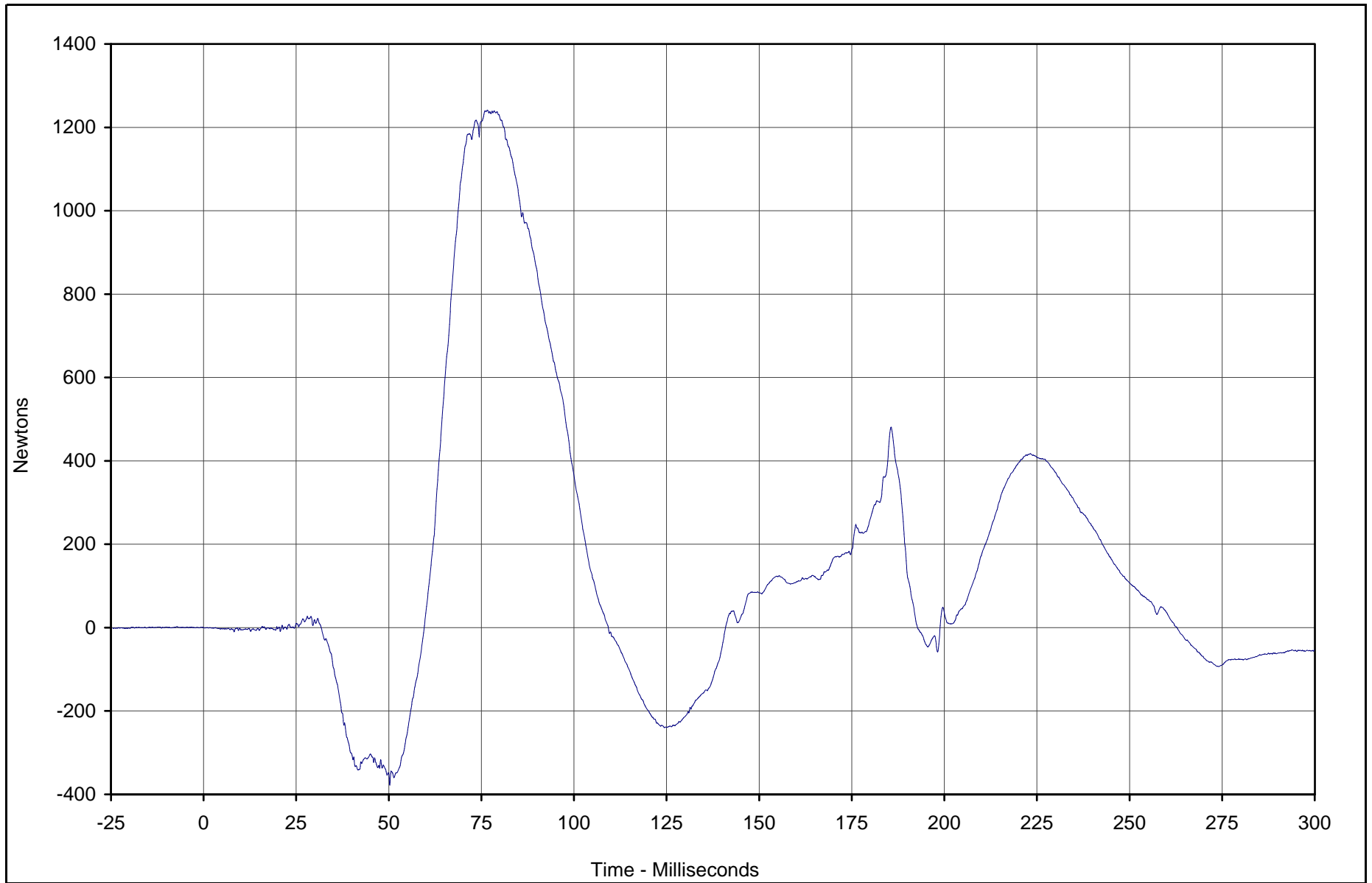
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Lower Neck Force Z	171	FIL	Newtons	1241.2	76.6	-378.0	50.3	1000

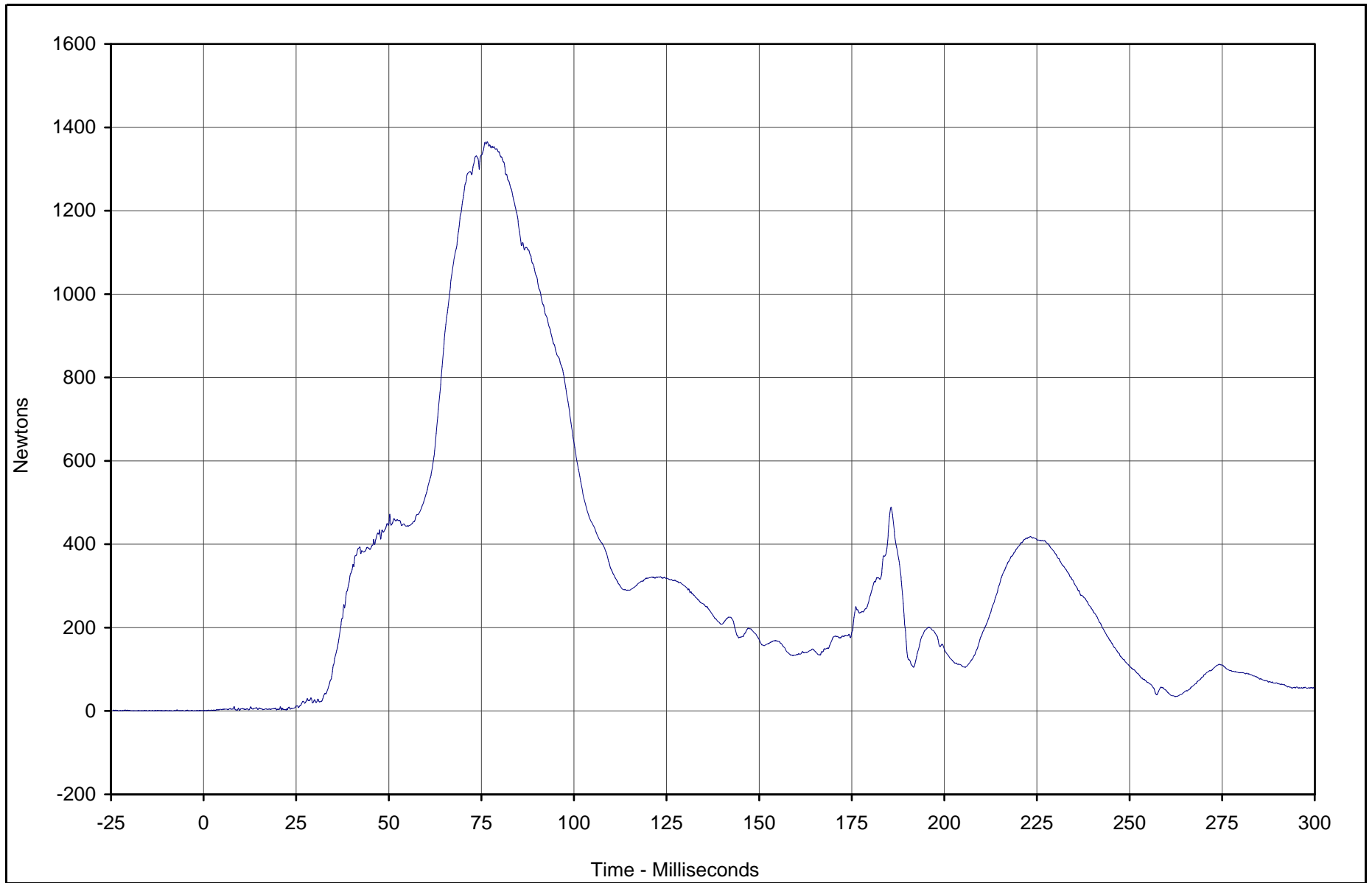


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Lower Neck Force Res.	169	RES	Newtons	1365.3	76.6	0.8	0.1	1000



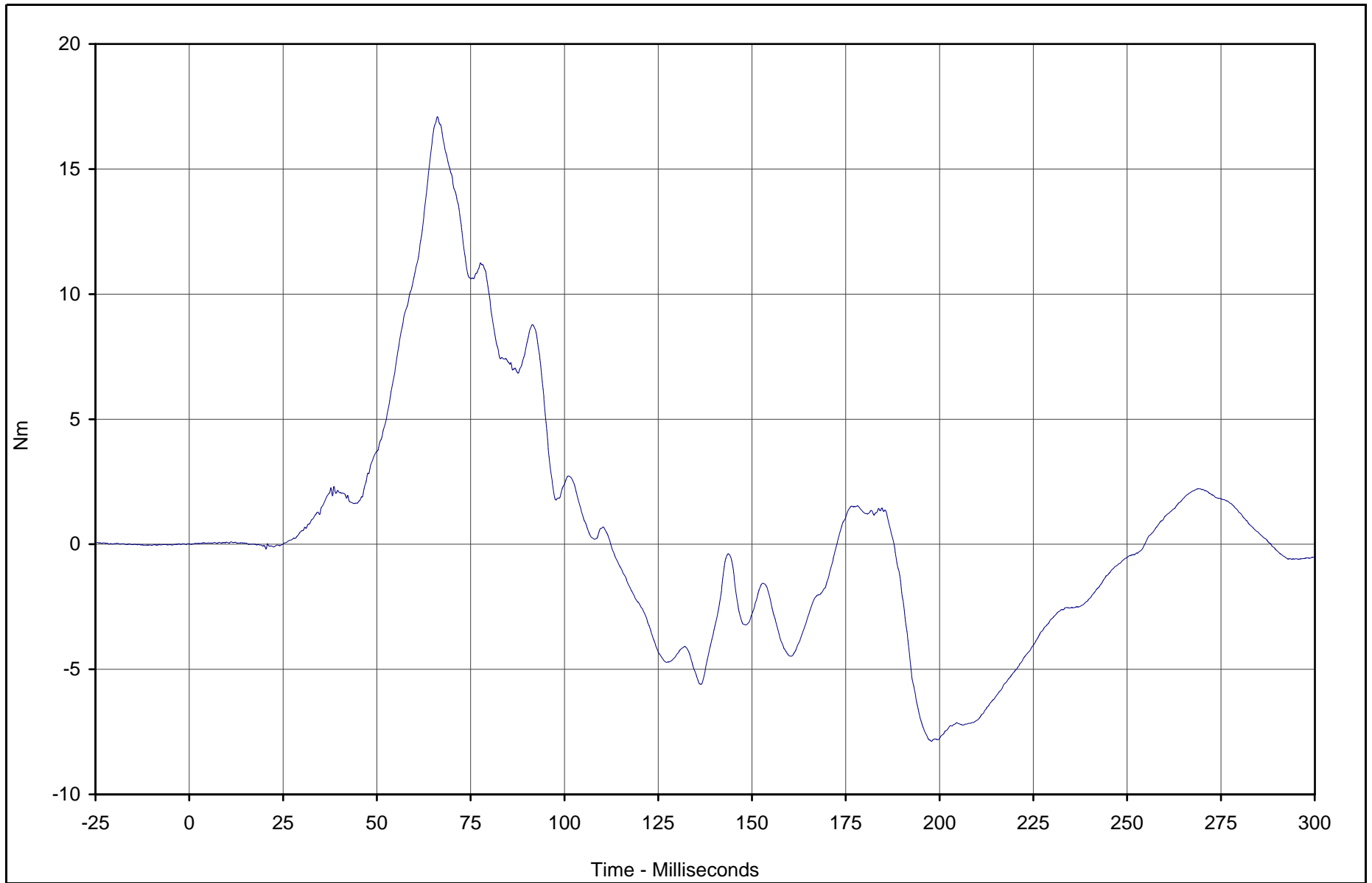
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

F3-51



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Lower Neck Moment X	172	FIL	Nm	17.1	66.2	-7.9	197.8	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

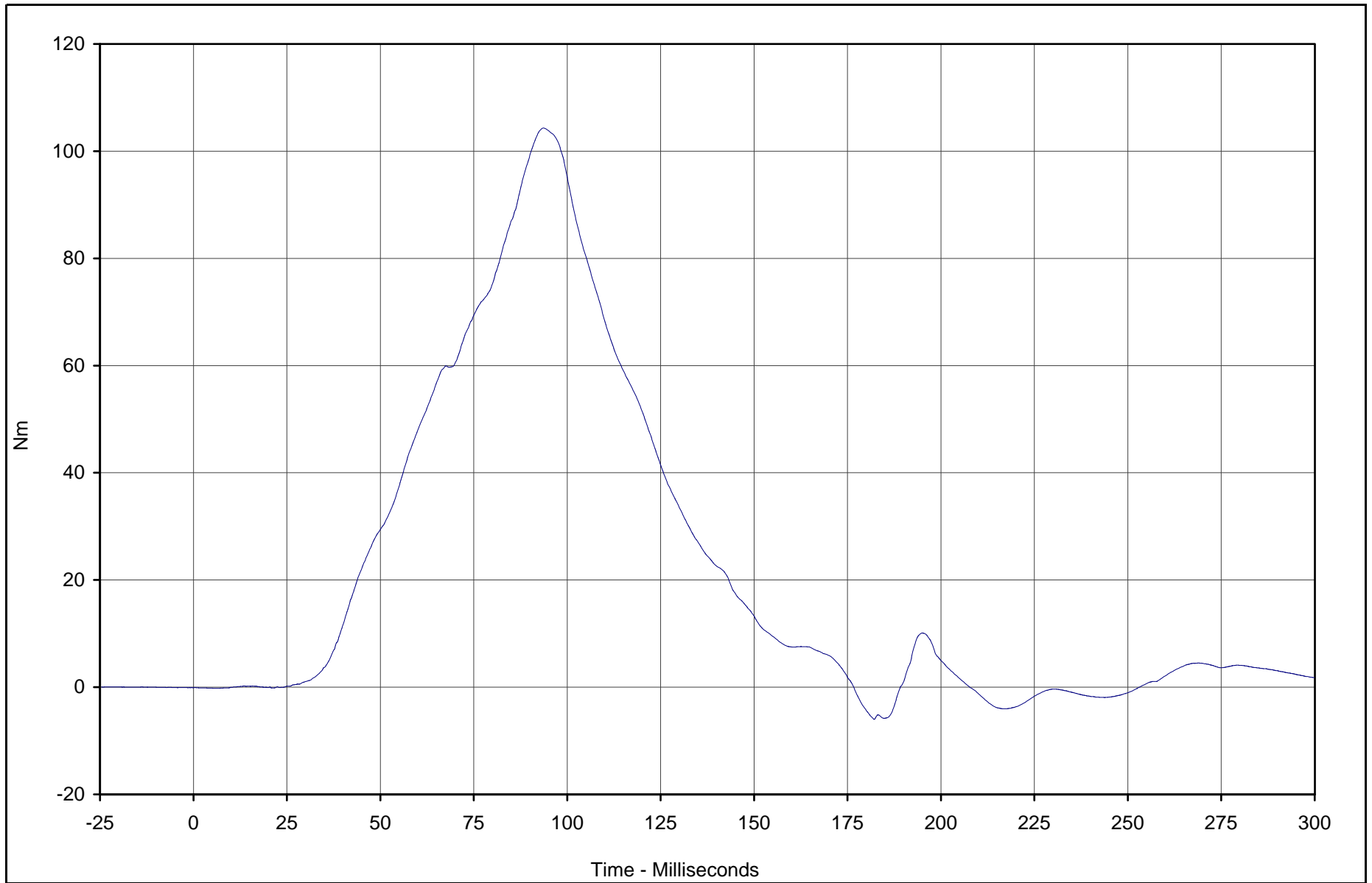
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-52



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Lower Neck Moment Y	173	FIL	Nm	104.3	93.6	-6.0	182.1	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

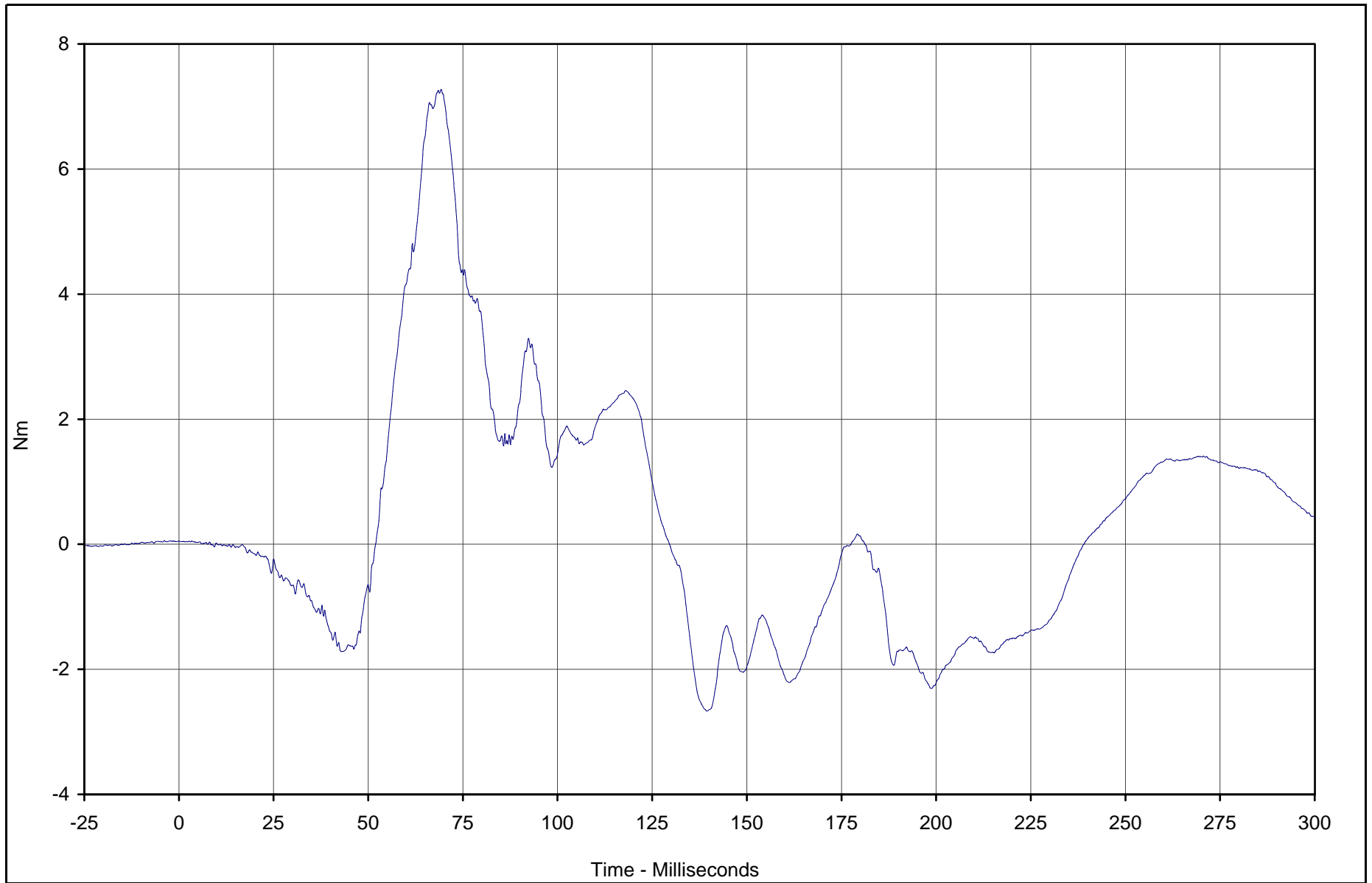
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-53



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Lower Neck Moment Z	174	FIL	Nm	7.3	69.3	-2.7	139.5	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

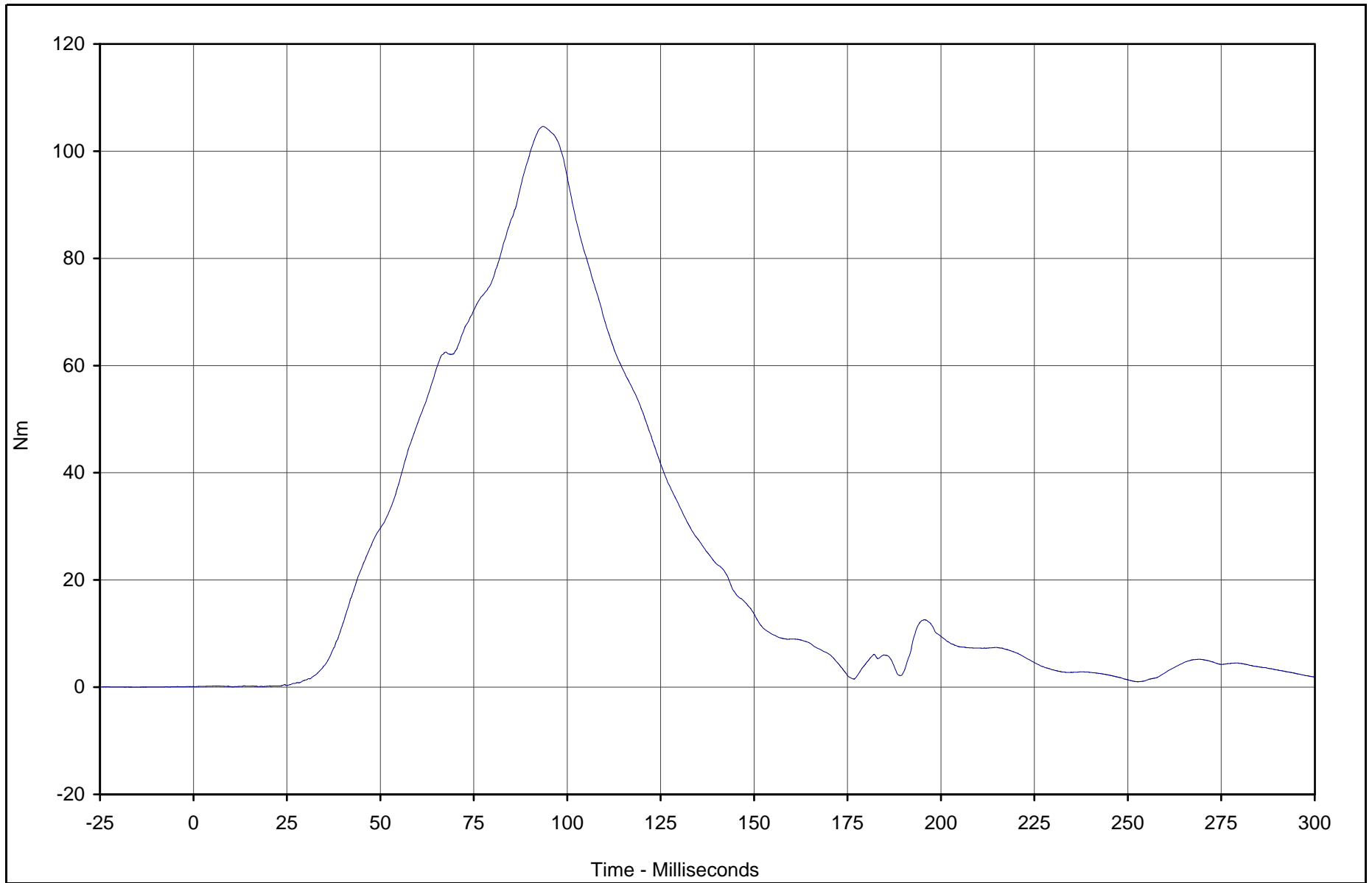
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-54



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Lower Neck Mom Res.	172	RES	Nm	104.6	93.5	0.1	10.6	600



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

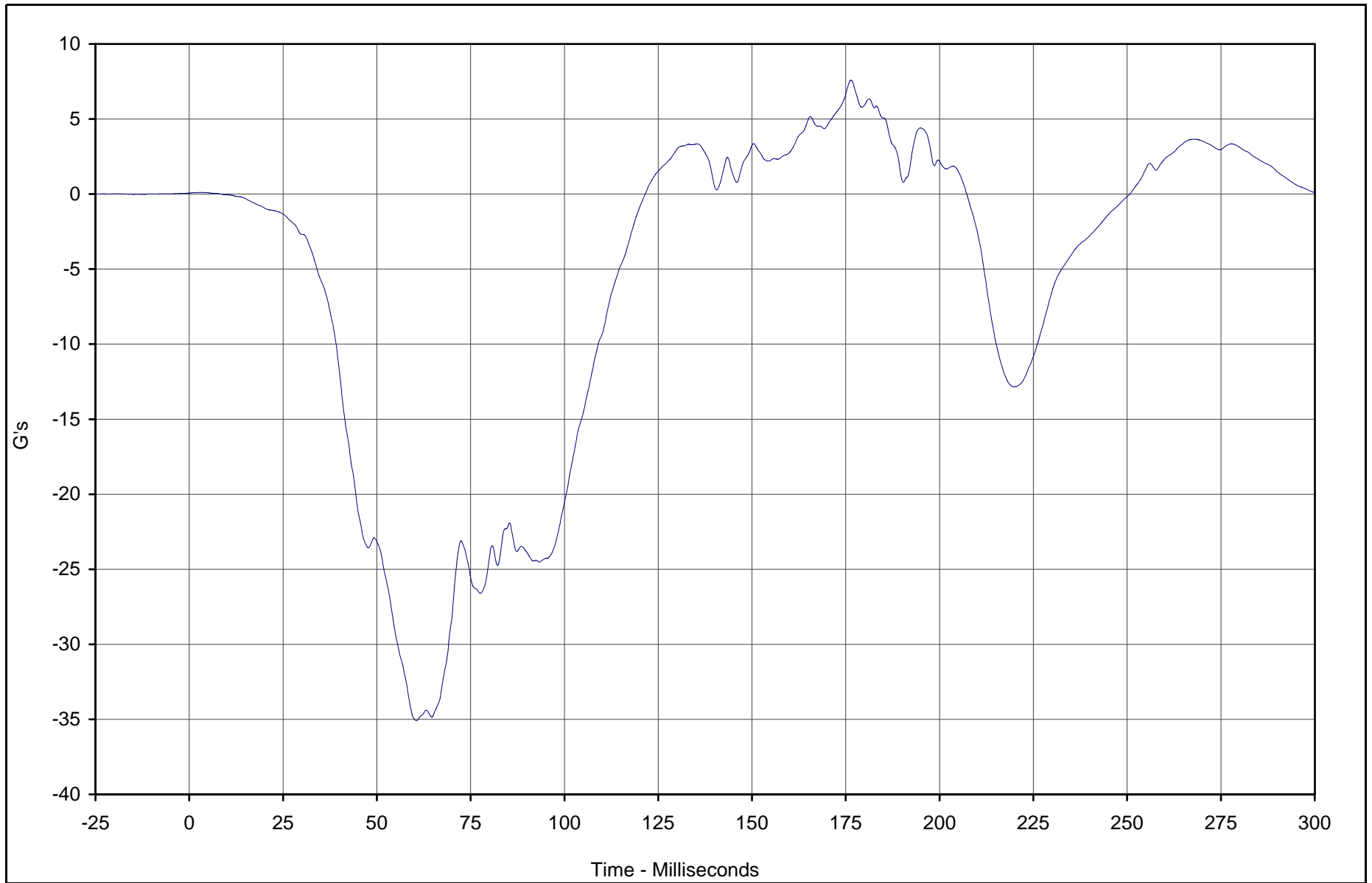
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-55



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Chest X	175	FIL	G's	7.6	176.4	-35.1	60.5	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

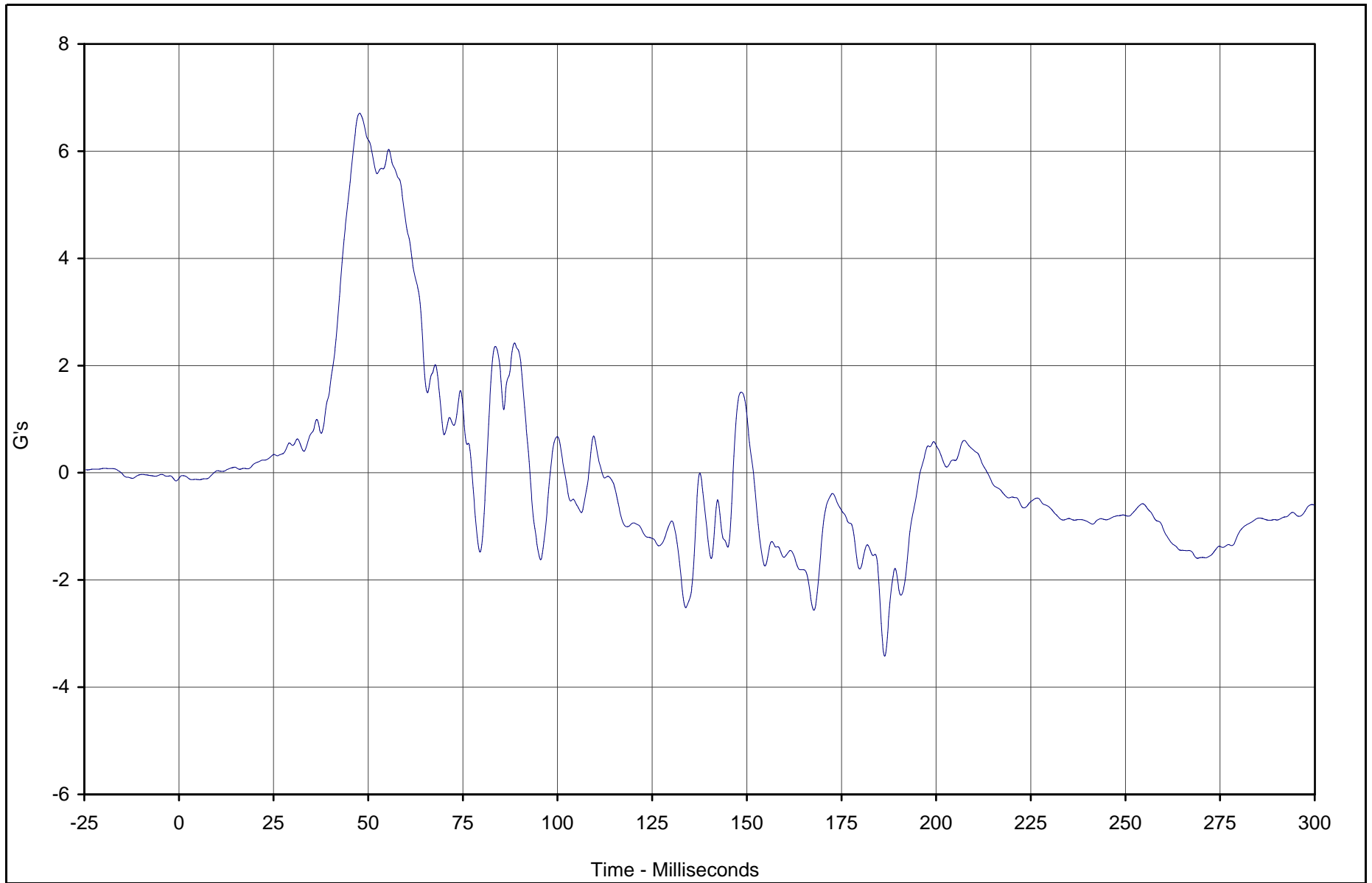
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-56



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Chest Y	176	FIL	G's	6.7	47.7	-3.4	186.4	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

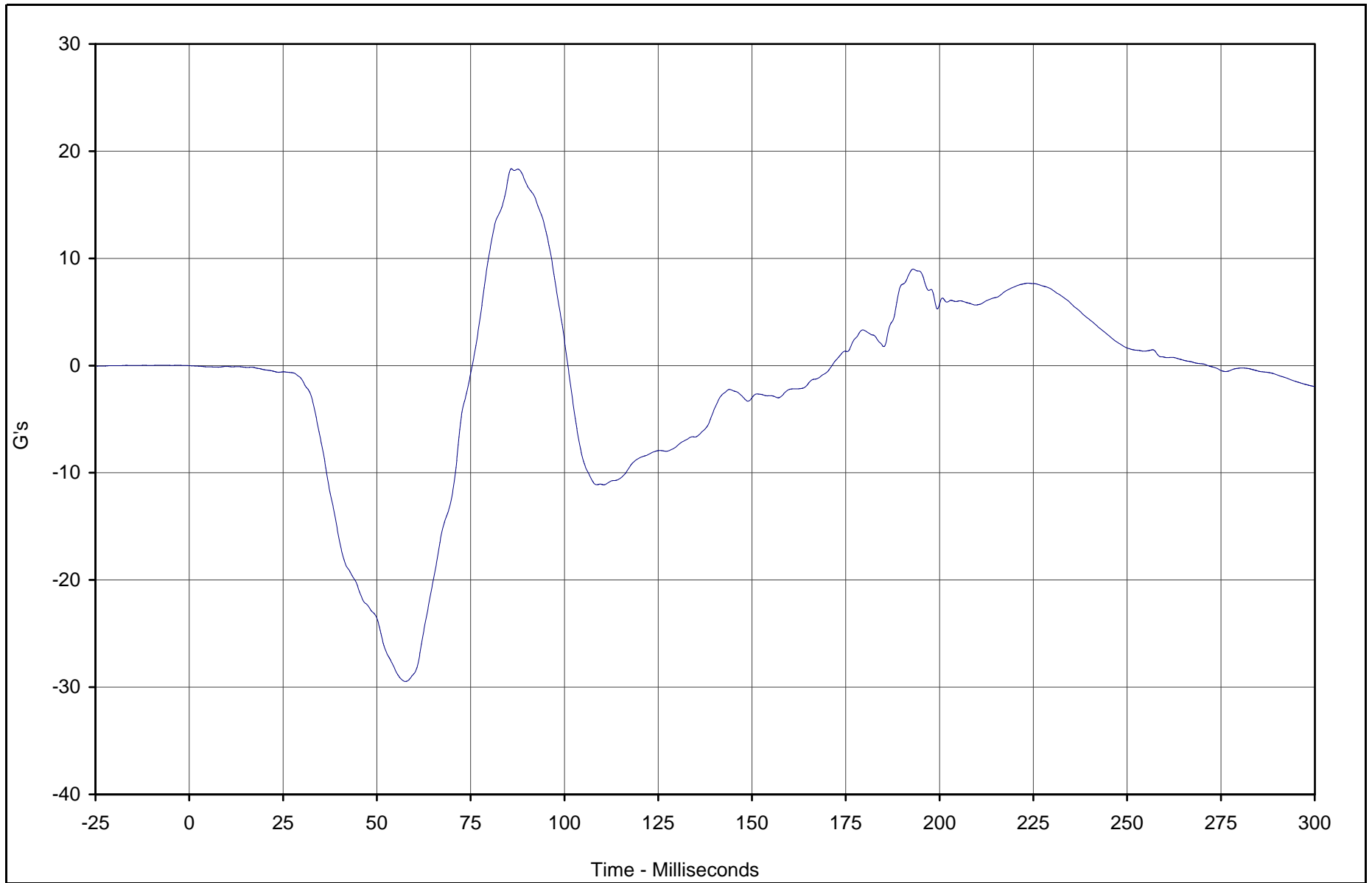
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-57



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Chest Z	177	FIL	G's	18.4	85.8	-29.5	57.6	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

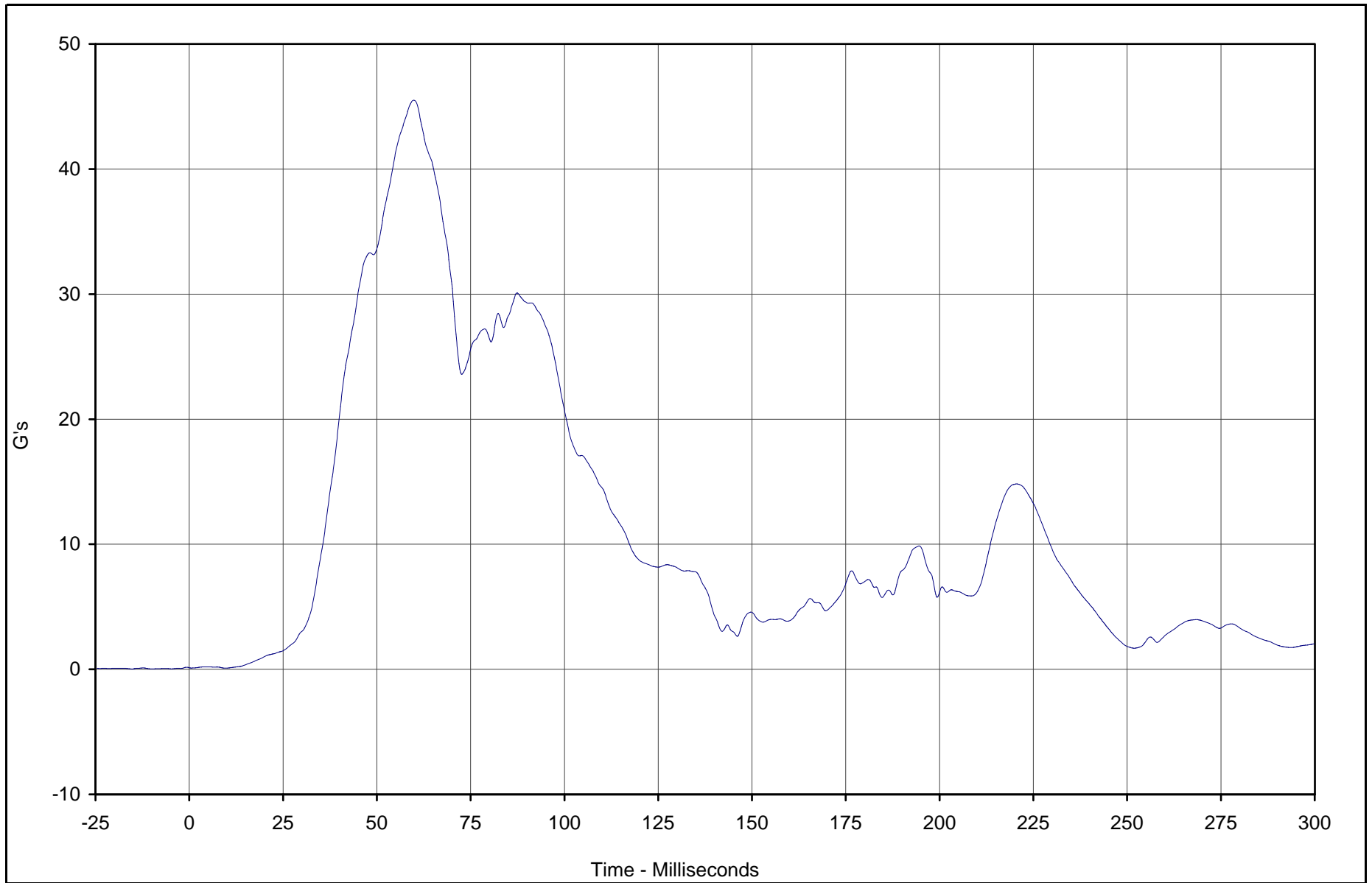
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-58



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Chest Resultant	177	RES	G's	45.5	59.8	0.1	9.6	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

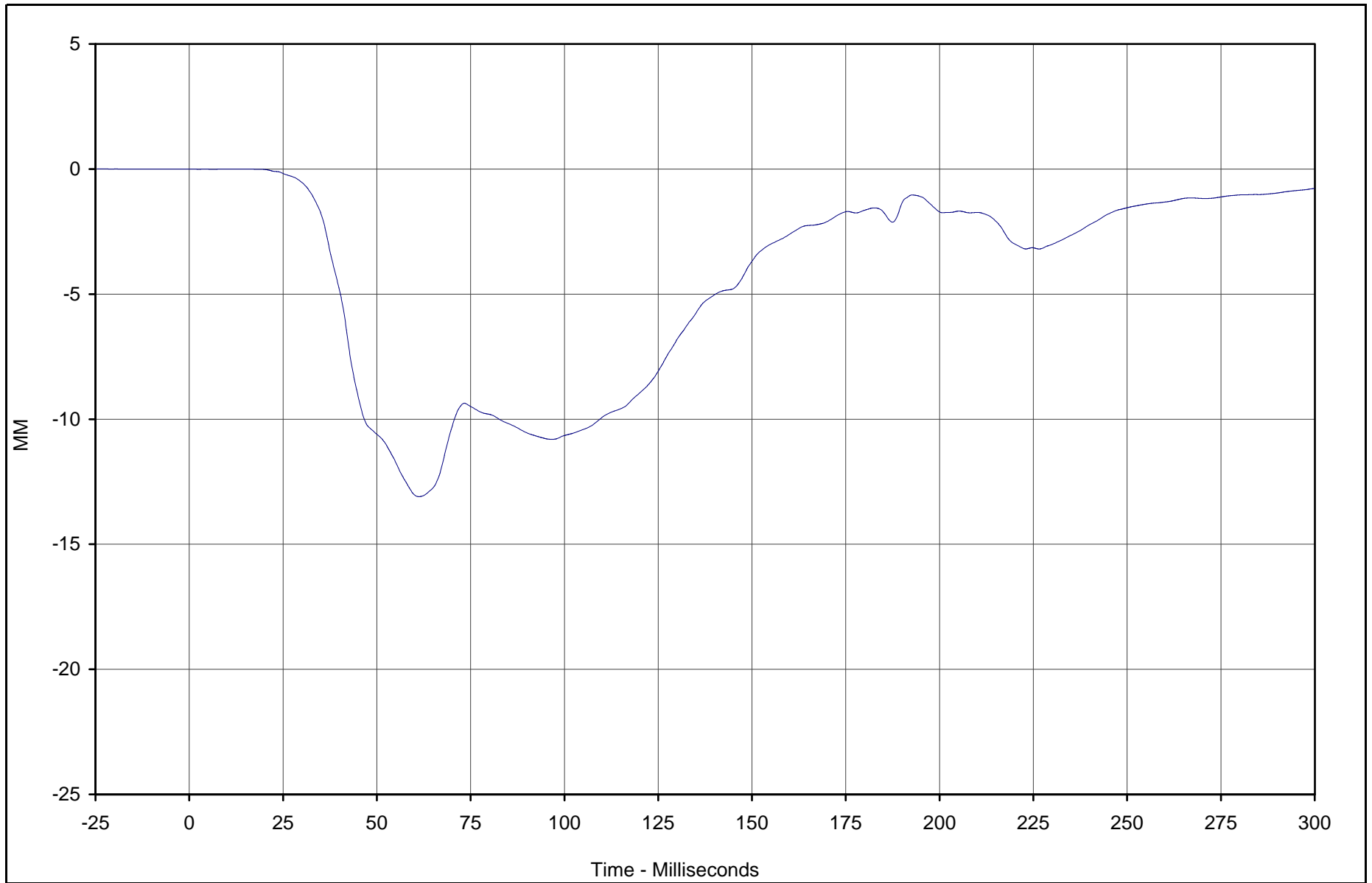
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-59



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Chest Deflection	178	FIL	MM	0.0	11.9	-13.1	61.2	180



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

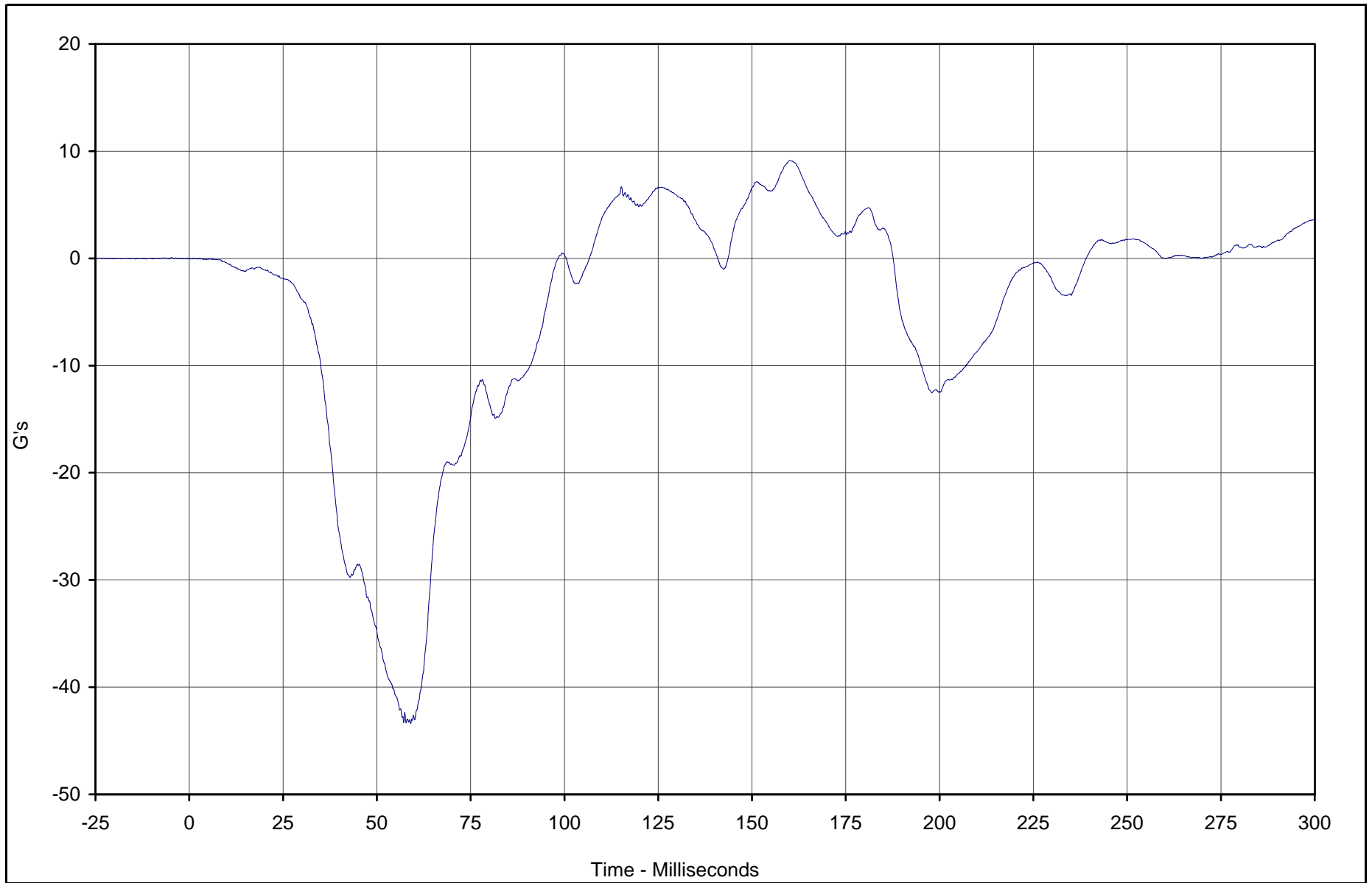
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-60



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Pelvis X	179	FIL	G's	9.1	160.1	-43.4	59.0	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

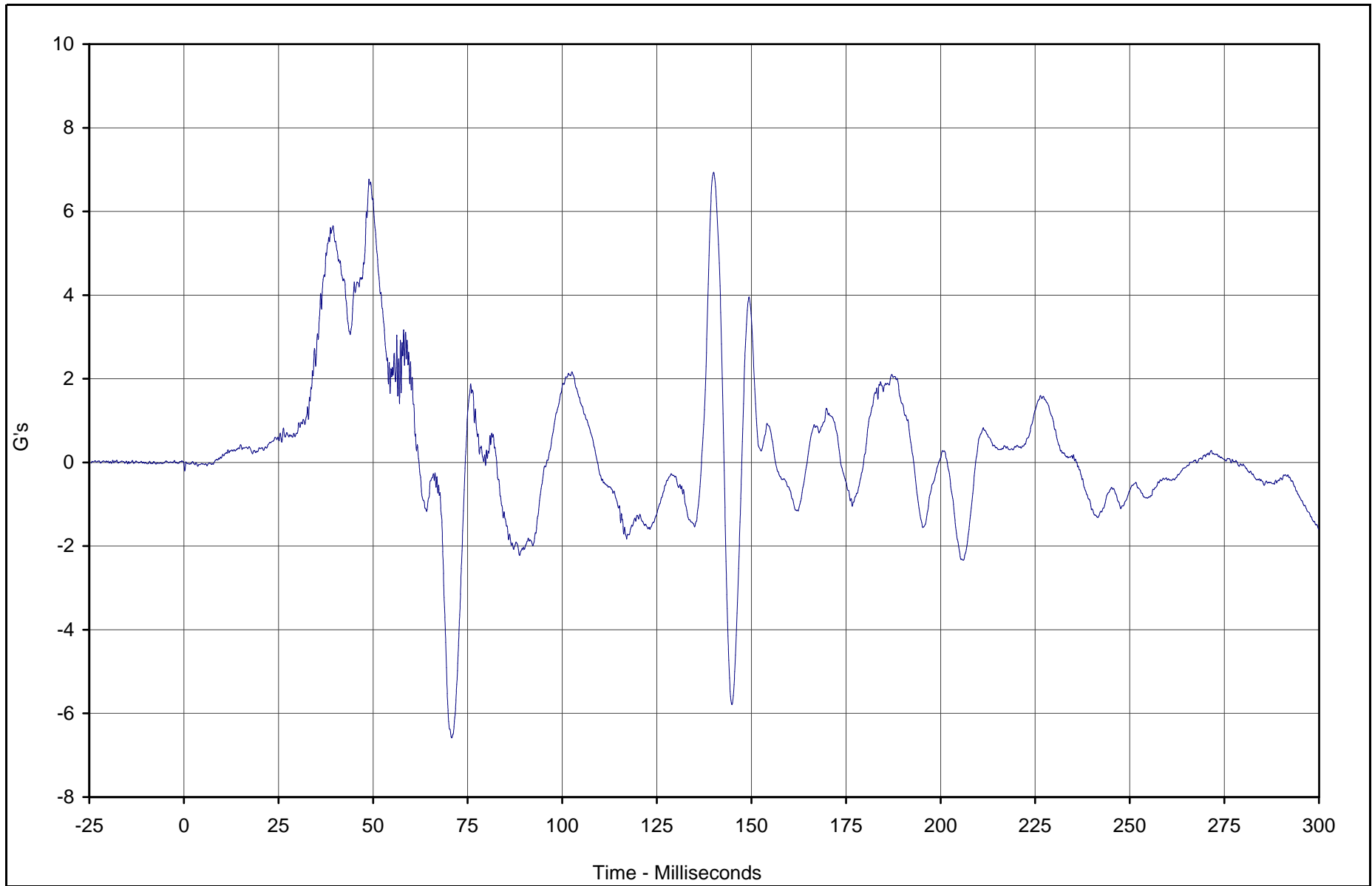
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-61



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Pelvis Y	180	FIL	G's	6.9	140.0	-6.6	70.8	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

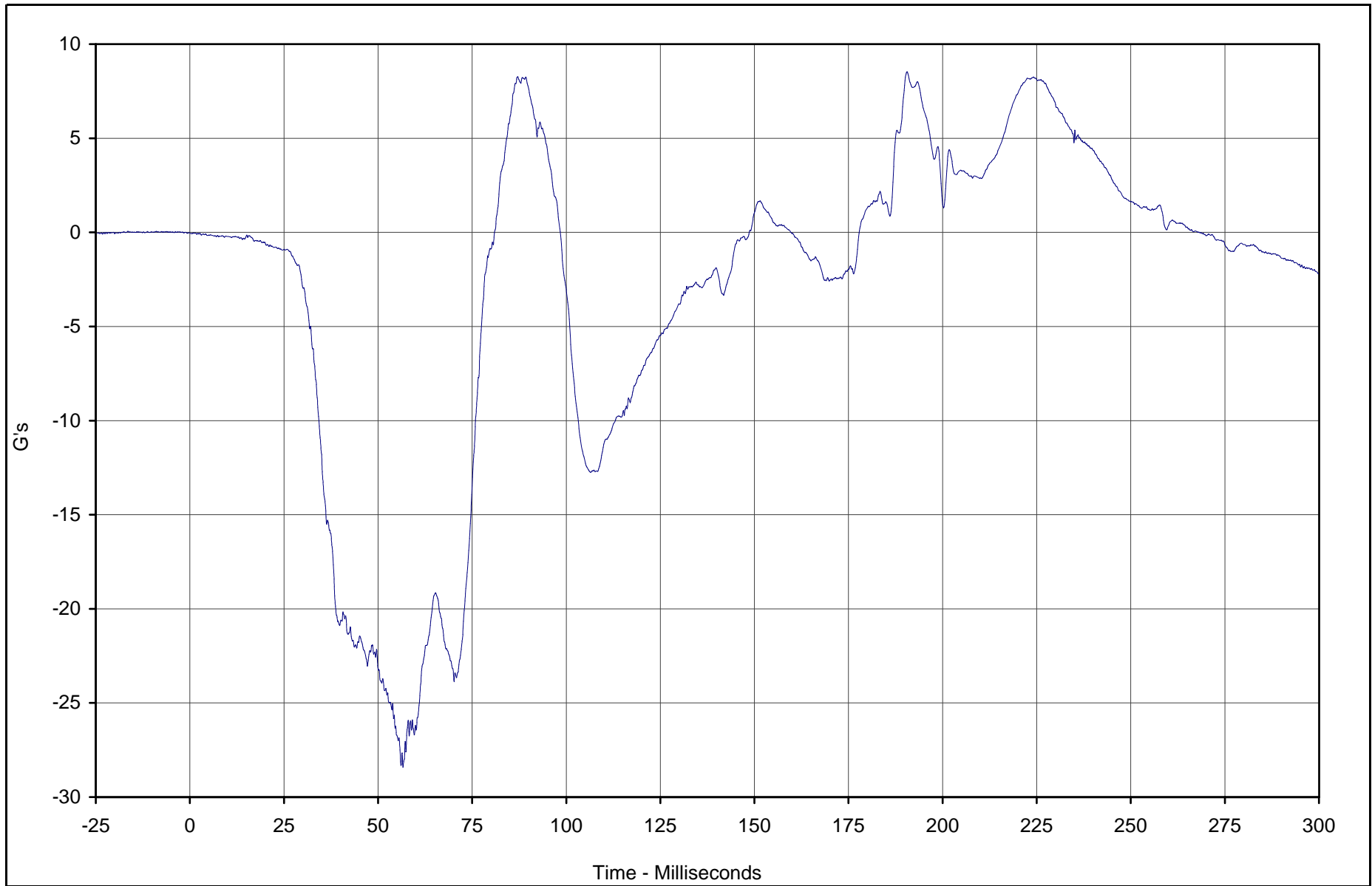
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-62



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Pelvis Z	181	FIL	G's	8.5	190.6	-28.4	56.6	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

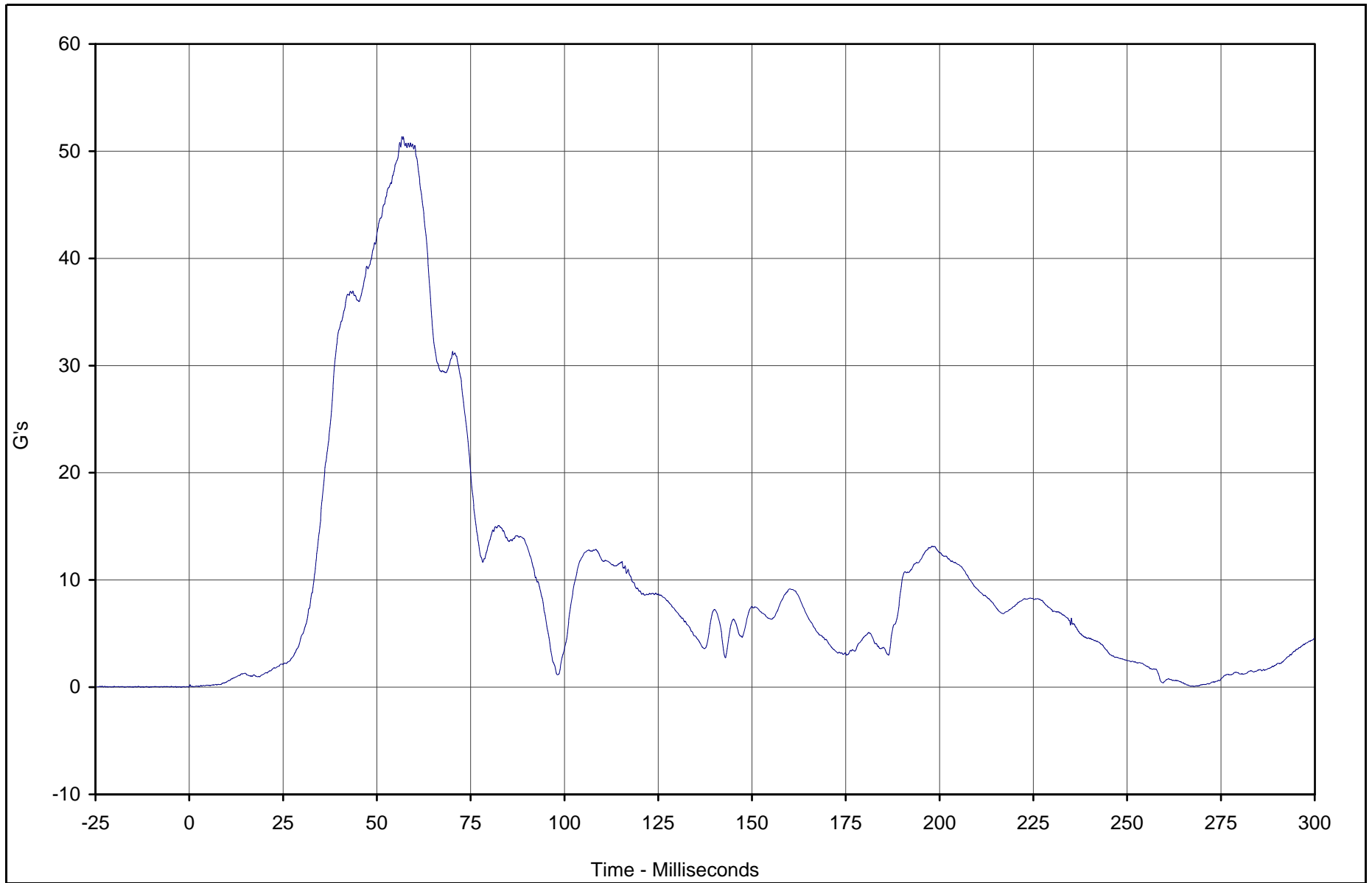
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-63



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Pelvis Resultant	179	RES	G's	51.4	56.7	0.0	1.1	1000



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

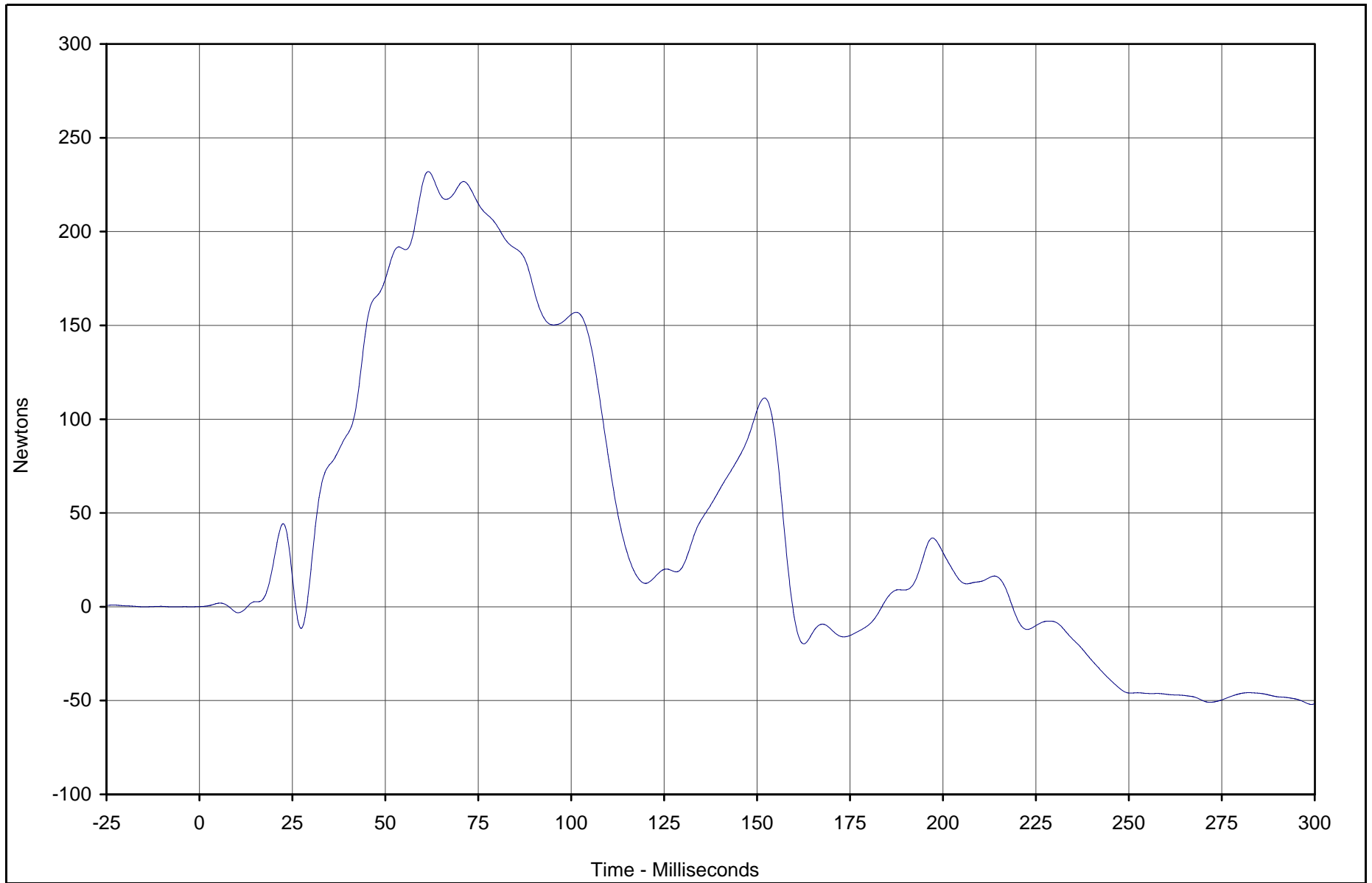
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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TR-P23001-02-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Seat Tether Load	182	FIL	Newtons	232.0	61.6	-52.1	299.1	60



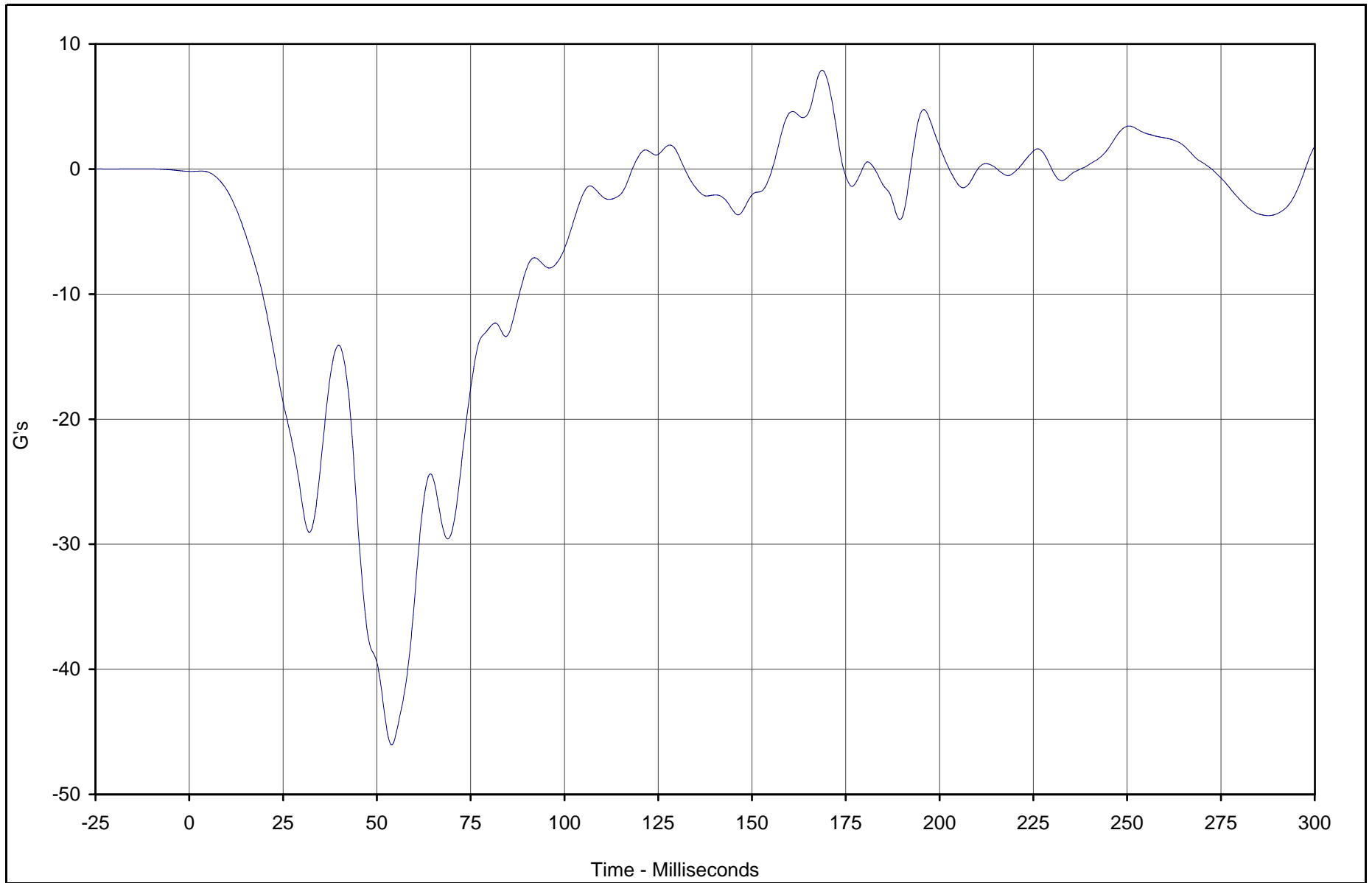
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

F3-65



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Car Seat X	183	FIL	G's	7.9	168.7	-46.0	54.0	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

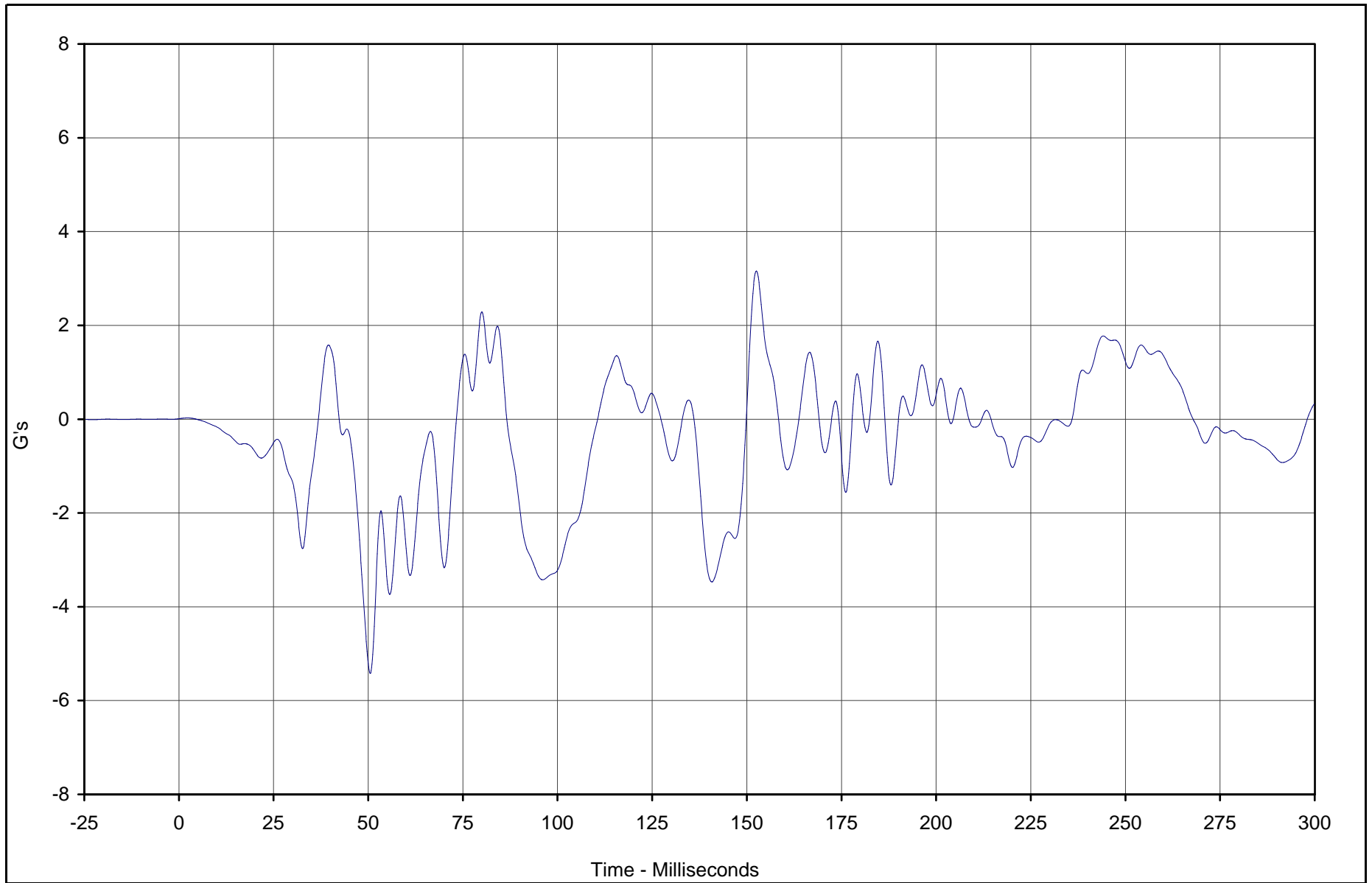
Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

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F3-66



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Car Seat Y	184	FIL	G's	3.2	152.5	-5.4	50.5	60



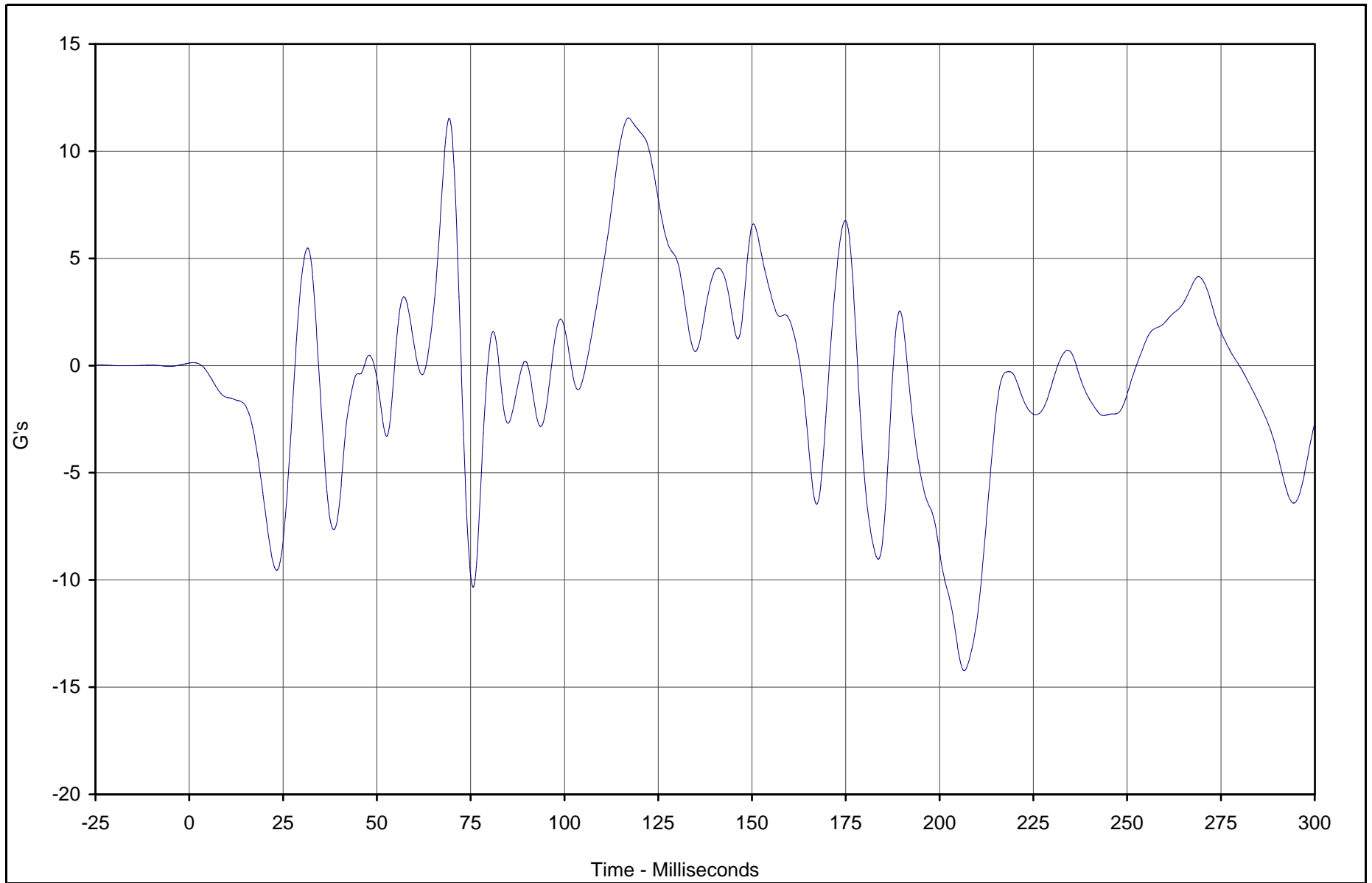
Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

TR-P23001-02-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Car Seat Z	185	FIL	G's	11.6	117.0	-14.2	206.6	60

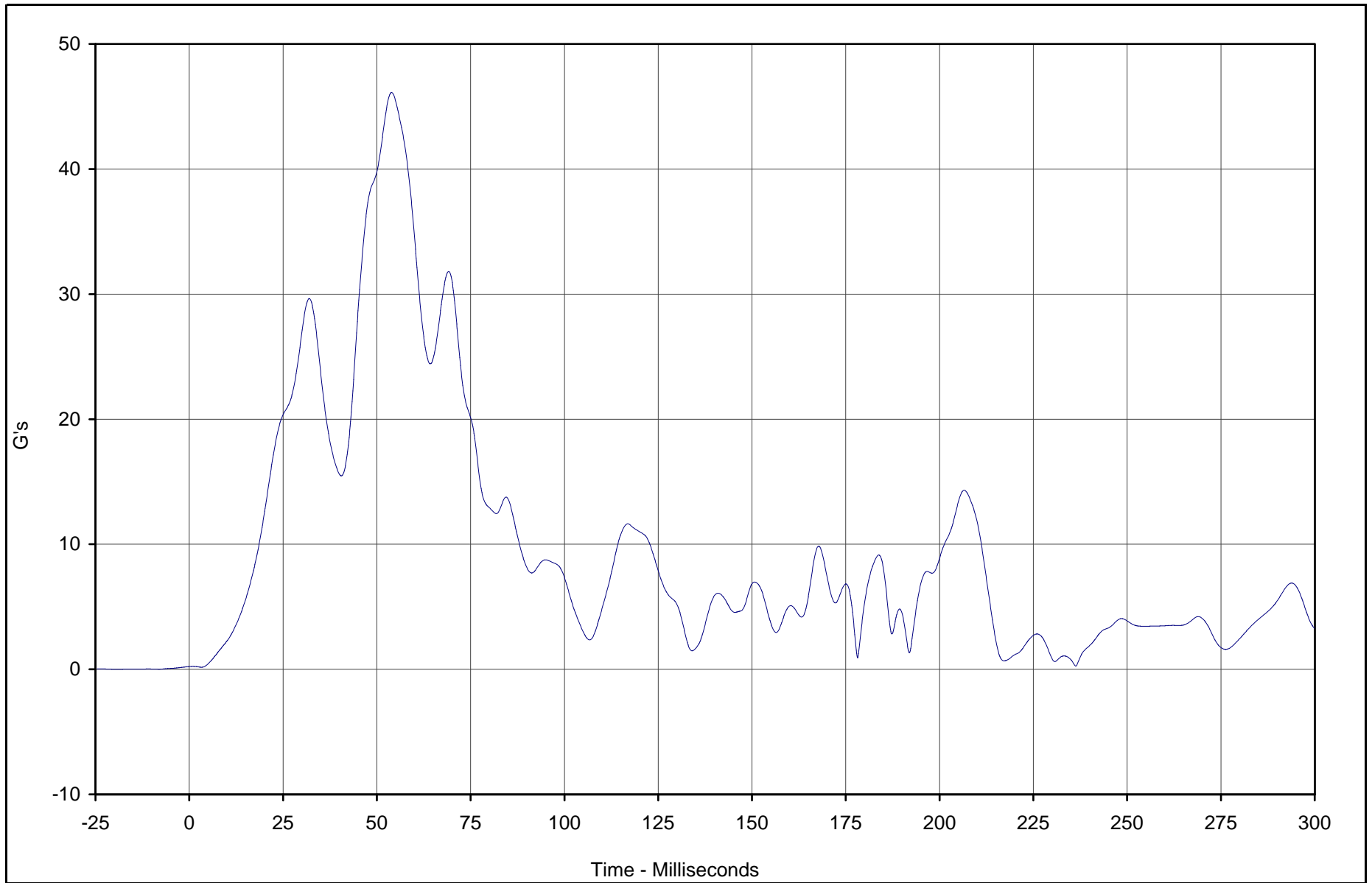


Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear Child Car Seat Resultant	183	RES	G's	46.1	53.9	0.2	3.3	60



Test Vehicle: 2003 Toyota Tundra SR5 4 Door Pickup

Test Date: 12/17/02

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35112

SECTION F-4  
CHILD DUMMY INSTRUMENTATION INFORMATION

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Left Rear Child A.T.D. Serial Number 082  
12/17/02  
2003 Toyota Tundra SR5 4 Door Pickup**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
134	HEAD, PRIMARY	X	GPAC050	Accel.,1/2 bridge	Endevco	7264-2000	G
135	HEAD, PRIMARY	Y	GPAC051	Accel.,1/2 bridge	Endevco	7264-2000	G
136	HEAD, PRIMARY	Z	GPAC052	Accel.,1/2 bridge	Endevco	7264-2000	G
137	UPPER NECK FORCE	X	082UNFX	Load cell, six axis neck	R. A. Denton	IF-234	N
138	UPPER NECK FORCE	Y	082UNFY	Load cell, six axis neck	R. A. Denton	IF-234	N
139	UPPER NECK FORCE	Z	082UNFZ	Load cell, six axis neck	R. A. Denton	IF-234	N
140	UPPER NECK MOMENT	X	082UNMX	Load cell, six axis neck	R. A. Denton	IF-234	Nm
141	UPPER NECK MOMENT	Y	082UNMY	Load cell, six axis neck	R. A. Denton	IF-234	Nm
142	UPPER NECK MOMENT	Z	082UNMZ	Load cell, six axis neck	R. A. Denton	IF-234	Nm
143	LOWER NECK FORCE	X	082LNFX	Load cell, six axis neck	R. A. Denton	3303	N
144	LOWER NECK FORCE	Y	082LNFY	Load cell, six axis neck	R. A. Denton	3303	N
145	LOWER NECK FORCE	Z	082LNFZ	Load cell, six axis neck	R. A. Denton	3303	N
146	LOWER NECK MOMENT	X	082LNMX	Load cell, six axis neck	R. A. Denton	3303	Nm
147	LOWER NECK MOMENT	Y	082LNMY	Load cell, six axis neck	R. A. Denton	3303	Nm
148	LOWER NECK MOMENT	Z	082LNMZ	Load cell, six axis neck	R. A. Denton	3303	Nm
149	CHEST , PRIMARY	X	2116-A11	Accel., Full Bridge	Entran	2000JF	G
150	CHEST , PRIMARY	Y	2116-A14	Accel., Full Bridge	Entran	2000JF	G
151	CHEST , PRIMARY	Z	2116-A23	Accel., Full Bridge	Entran	2000JF	G
152	CHEST DISPLACEMENT	X	082CP	Rotary Pot Chest	Servo	14CBI	MM
153	PELVIS, PRIMARY	X	2116-A12	Accel., Full Bridge	Entran	2000JF	G
154	PELVIS, PRIMARY	Y	2116-A19	Accel., Full Bridge	Entran	2000JF	G
155	PELVIS, PRIMARY	Z	2116-A17	Accel., Full Bridge	Entran	2000JF	G
156	CAR SEAT TETHER	X	BL112	Load cell, Seat belt	FGP	FN4060	N
157	CAR SEAT	X	KETX1A	Accel.,1/2 bridge	Endevco	7264-200	G
158	CAR SEAT	Y	KETX1B	Accel.,1/2 bridge	Endevco	7264-200	G
159	CAR SEAT	Z	KETX1C	Accel.,1/2 bridge	Endevco	7264-200	G

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**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Right Rear Child A.T.D. Serial Number 139  
12/17/02  
2003 Toyota Tundra SR5 4 Door Pickup**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
160	HEAD, PRIMARY	X	GPAC047	Accel.,1/2 bridge	Endevco	7264-2000	G
161	HEAD, PRIMARY	Y	GPAC048	Accel.,1/2 bridge	Endevco	7264-2000	G
162	HEAD, PRIMARY	Z	GPAC049	Accel.,1/2 bridge	Endevco	7264-2000	G
163	UPPER NECK FORCE	X	139UNFX	Load cell, six axis neck	R. A. Denton	IF-234	N
164	UPPER NECK FORCE	Y	139UNFY	Load cell, six axis neck	R. A. Denton	IF-234	N
165	UPPER NECK FORCE	Z	139UNFZ	Load cell, six axis neck	R. A. Denton	IF-234	N
166	UPPER NECK MOMENT	X	139UNMX	Load cell, six axis neck	R. A. Denton	IF-234	Nm
167	UPPER NECK MOMENT	Y	139UNMY	Load cell, six axis neck	R. A. Denton	IF-234	Nm
168	UPPER NECK MOMENT	Z	139UNMZ	Load cell, six axis neck	R. A. Denton	IF-234	Nm
169	LOWER NECK FORCE	X	139LNFX	Load cell, six axis neck	R. A. Denton	3303	N
170	LOWER NECK FORCE	Y	139LNFY	Load cell, six axis neck	R. A. Denton	3303	N
171	LOWER NECK FORCE	Z	139LNFZ	Load cell, six axis neck	R. A. Denton	3303	N
172	LOWER NECK MOMENT	X	139LNMX	Load cell, six axis neck	R. A. Denton	3303	Nm
173	LOWER NECK MOMENT	Y	139LNMY	Load cell, six axis neck	R. A. Denton	3303	Nm
174	LOWER NECK MOMENT	Z	139LNMZ	Load cell, six axis neck	R. A. Denton	3303	Nm
175	CHEST , PRIMARY	X	2116-A01	Accel., Full Bridge	Entran	2000JF	G
176	CHEST , PRIMARY	Y	2116-A06	Accel., Full Bridge	Entran	2000JF	G
177	CHEST , PRIMARY	Z	2116-A07	Accel., Full Bridge	Entran	2000JF	G
178	CHEST DISPLACEMENT	X	139CP	Rotary Pot Chest	Servo	14CBI	MM
179	PELVIS, PRIMARY	X	2116-N07	Accel., Full Bridge	Entran	2000JF	G
180	PELVIS, PRIMARY	Y	2116-A03	Accel., Full Bridge	Entran	2000JF	G
181	PELVIS, PRIMARY	Z	2116-A17	Accel., Full Bridge	Entran	2000JF	G
182	CAR SEAT TETHER	X	BL113	Load cell, Seat belt	FGP	FN4060	N
183	CAR SEAT	X	KETX4A	Accel.,1/2 bridge	Endevco	7264-200	G
184	CAR SEAT	Y	KETX4B	Accel.,1/2 bridge	Endevco	7264-200	G
185	CAR SEAT	Z	KETX4C	Accel.,1/2 bridge	Endevco	7264-200	G

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SECTION F-5  
CHILD DUMMY CALIBRATION INFORMATION



# Calibration Data Sheet Hybrid III 3 Year Old Head Drop Test

ATD Serial No.: 082

Test I.D.: 3H01A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 280.0	269.6	Pass
Peak Lateral Acceleration	G's	≤15.0	7.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<10	3.7	Pass
Overall Test Results				Pass

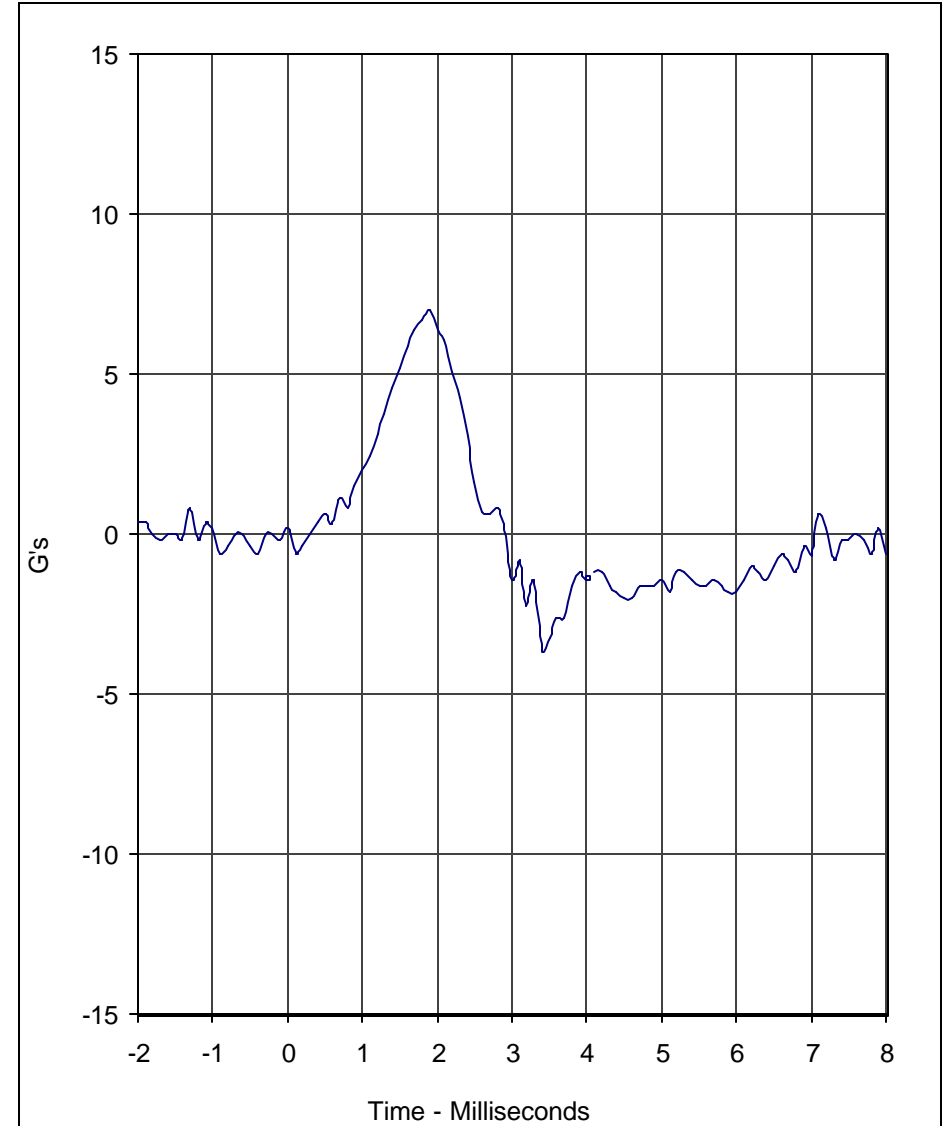
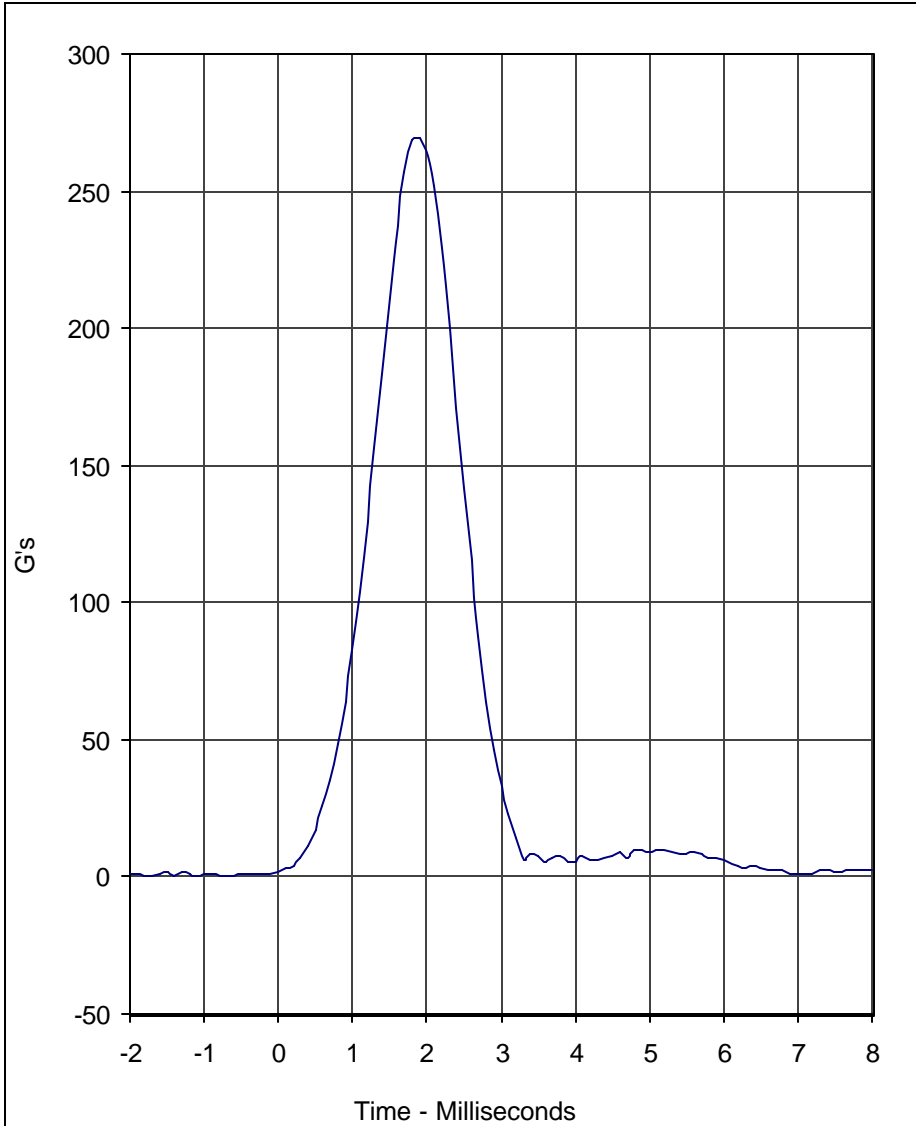
F5-1

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Test Date



Curve Description				CURNO	Type
Head Resultant				001	RES

Curve Description				CURNO	Type
Head Y				002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	269.6	1.9	0.4	-0.7	1000

Units	Max	Time	Min	Time	SAE Class
G's	7.0	1.9	-3.6	3.4	1000

Test Program: Hybrid III 3 Year Old Head Drop Test  
 Test Date: 12/4/02

A.T.D. Serial No.: 082  
 Test I.D.: 3H01A





# Calibration Data Sheet

## Hybrid III 3 Year Old Thorax Impact Test

ATD Serial No.: 082

Test I.D.: CH12A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.9 to 6.1	5.96	Pass
Peak Chest Compression	MM	32 to 38	34.9	Pass
Peak Probe Force Between 32 and 38 MM	Newtons	680 to 810	775.2	Pass
Peak Probe Force Between 12.5 and 32 MM	Newtons	≤860	770.6	Pass
Internal Hysteresis	%	65 to 85	69.3	Pass
Overall Test Results				Pass

F5-3

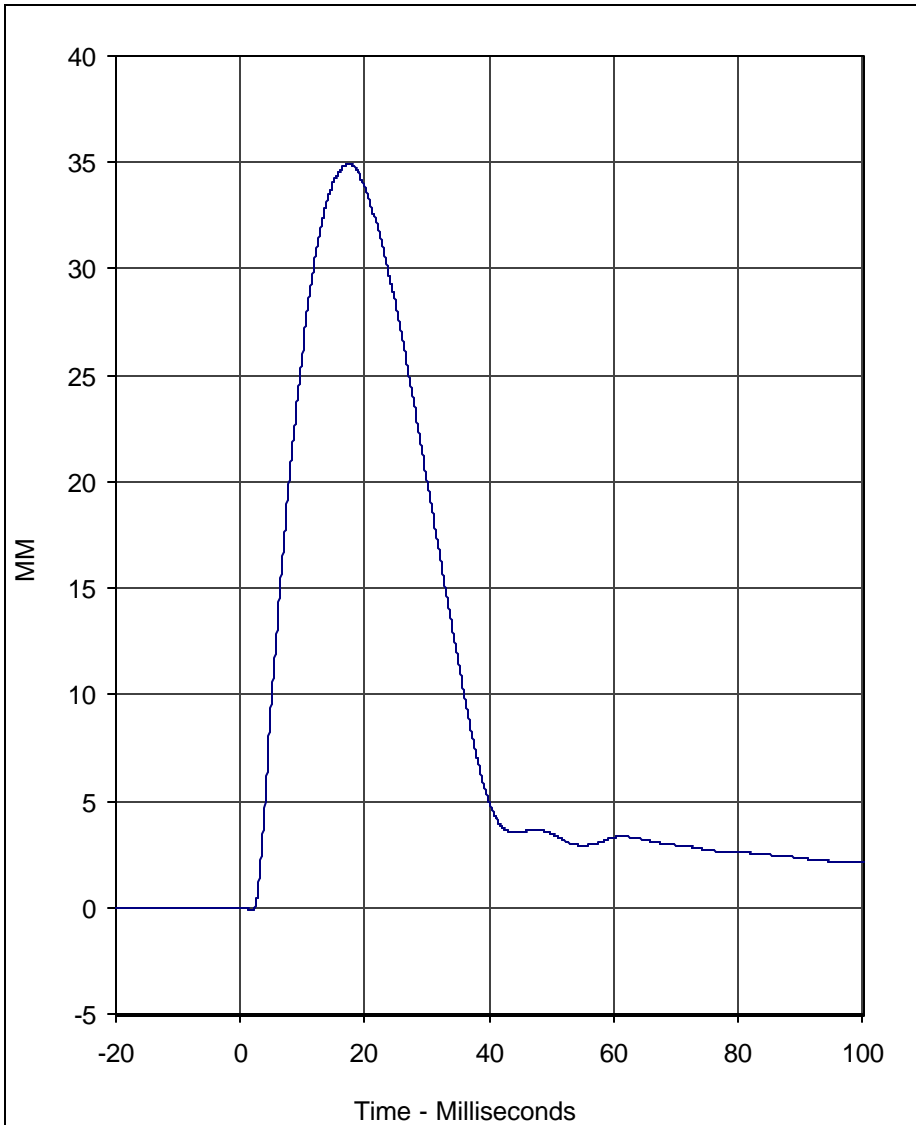
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Laboratory Technician

December 6, 2002  
\_\_\_\_\_  
Test Date

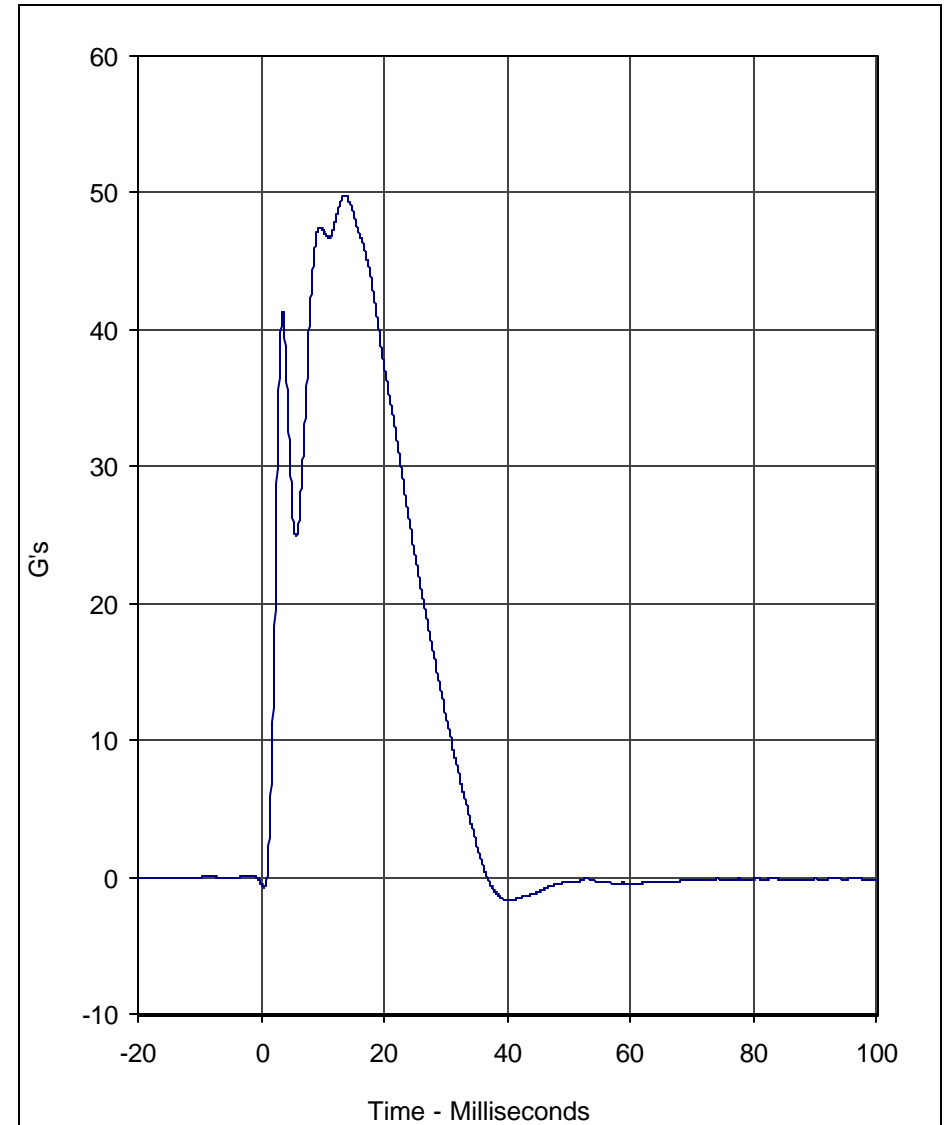
F5-4

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Curve Description	CURNO	Type
Chest Compression	001	FIL

Units	Max	Time	Min	Time	SAE Class
MM	34.9	17.5	-0.1	1.8	180



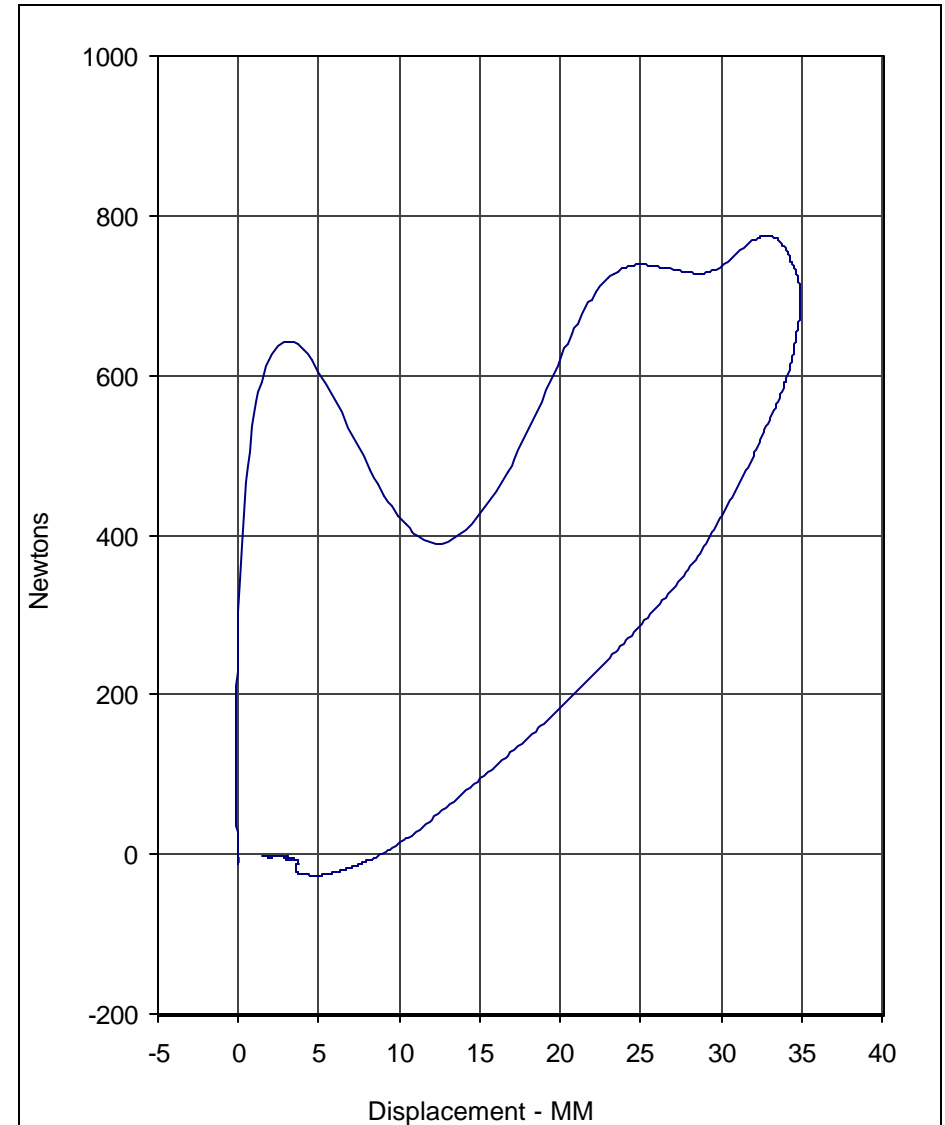
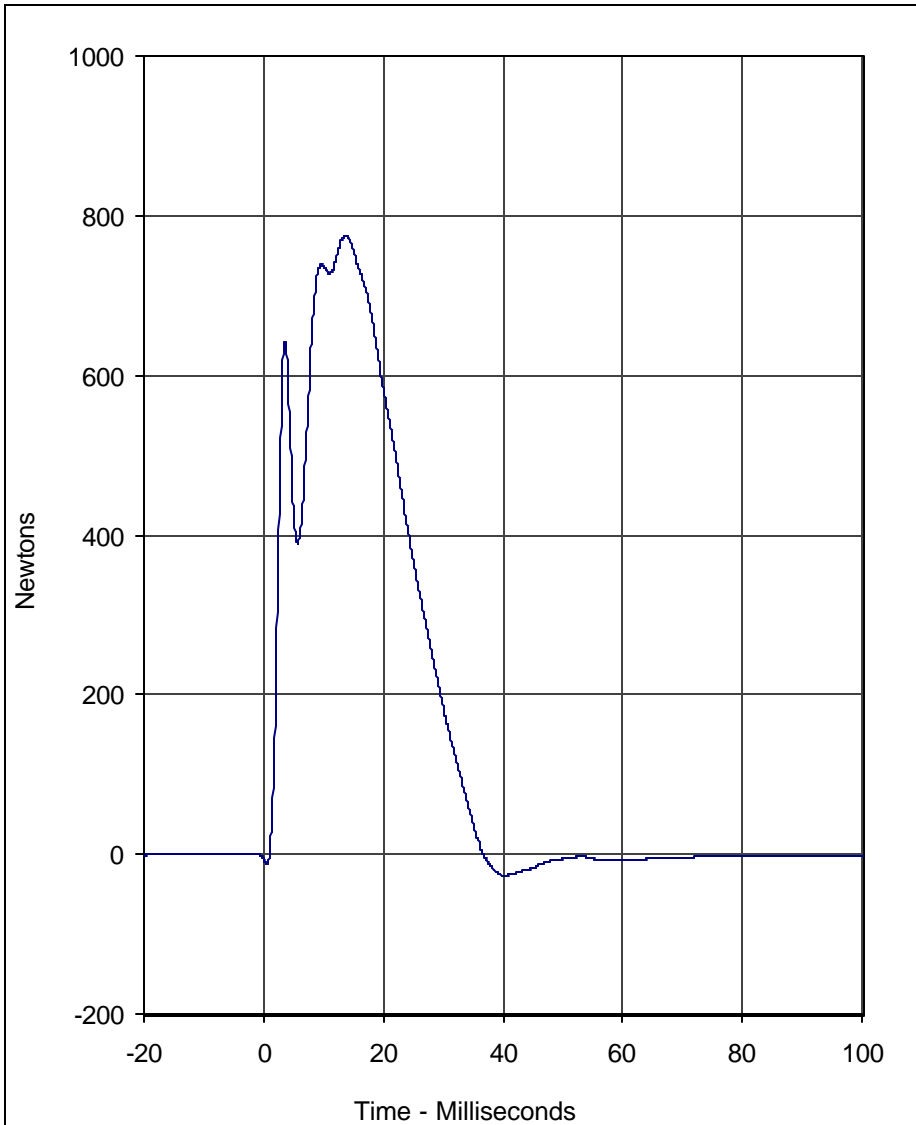
Curve Description	CURNO	Type
Probe Acceleration	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	49.8	13.7	-1.7	40.2	180

Test Program: Hybrid III 3 Year Old Thorax Impact  
 Test Date: 12/6/02

A.T.D. Serial No.: 082  
 Test I.D.: CH12A





Curve Description	CURNO	Type
Probe Force	003	FIL

Curve Description	CURNO	Type
Probe Force vs. Chest Displacement	004	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	775.2	13.7	-26.7	40.2	180

Units	Hysteresis	SAE Class
%	69.3	180

Test Program: Hybrid III 3 Year Old Thorax Impact  
 Test Date: 12/6/02

A.T.D. Serial No.: 082  
 Test I.D.: CH12A





# Calibration Data Sheet

## Hybrid III 3 Year Old Neck Flexion Test

ATD Serial No.: 082

Test I.D.: 3F01A

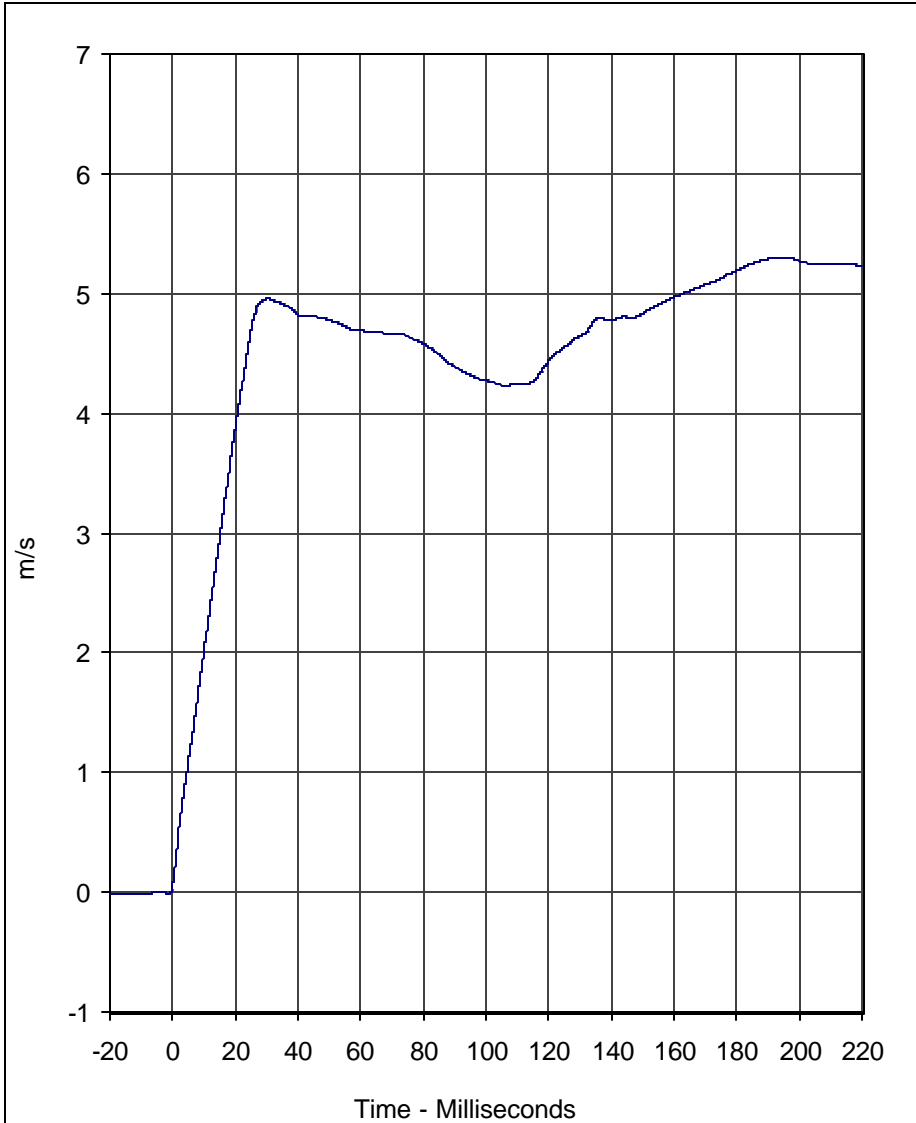
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.40 to 5.60	5.43	Pass
Pendulum Deceleration	10 Msec.	m/s	2.0 to 2.7	2.01	Pass
	20 Msec.	m/s	3.0 to 4.0	3.9	Pass
	30 Msec.	m/s	4.0 to 5.1	5.0	Pass
"D" Plane Rotation	Maximum	Degrees	70.0 to 82.0	75.9	Pass
Peak Moment in Rotation	Maximum	Nm	42.0 to 53.0	44.4	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	75.6	Pass
Overall Test Results					Pass

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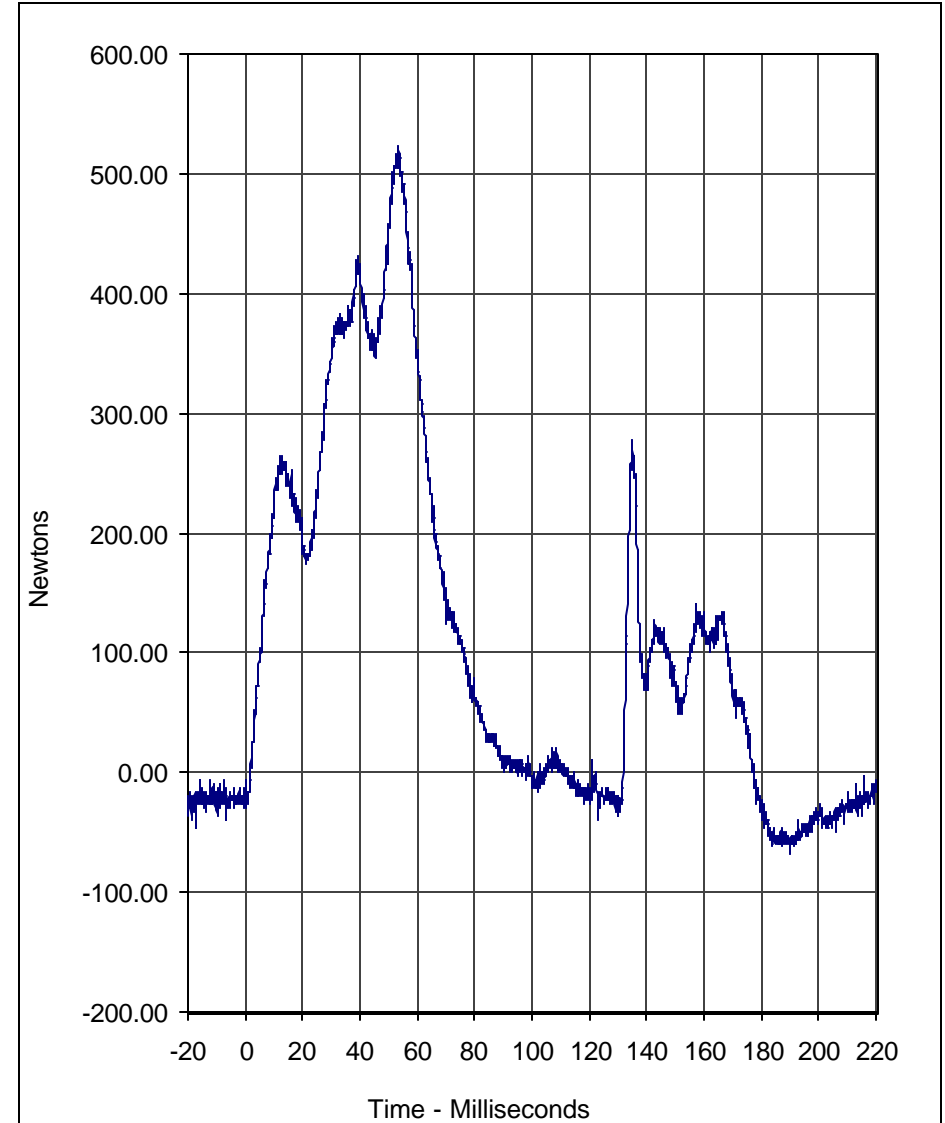
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Laboratory Technician

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\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	5.3	196.0	0.0	-1.2	180



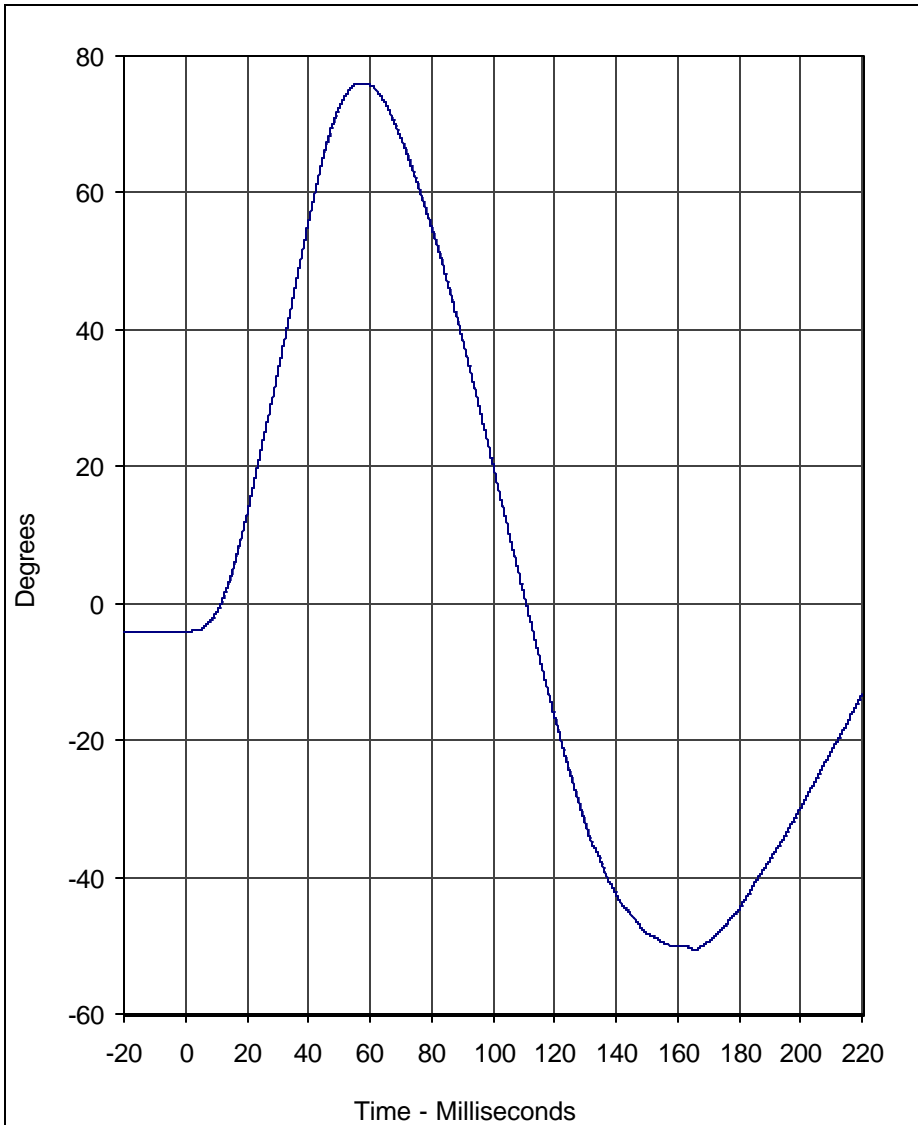
Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	523.6	53.1	-68.7	190.0	1000

Test Program: 3 Year Old Hybrid III Neck Flexion Test  
 Test Date: 12/5/02

A.T.D. Serial No.: 082  
 Test I.D.: 3F01A

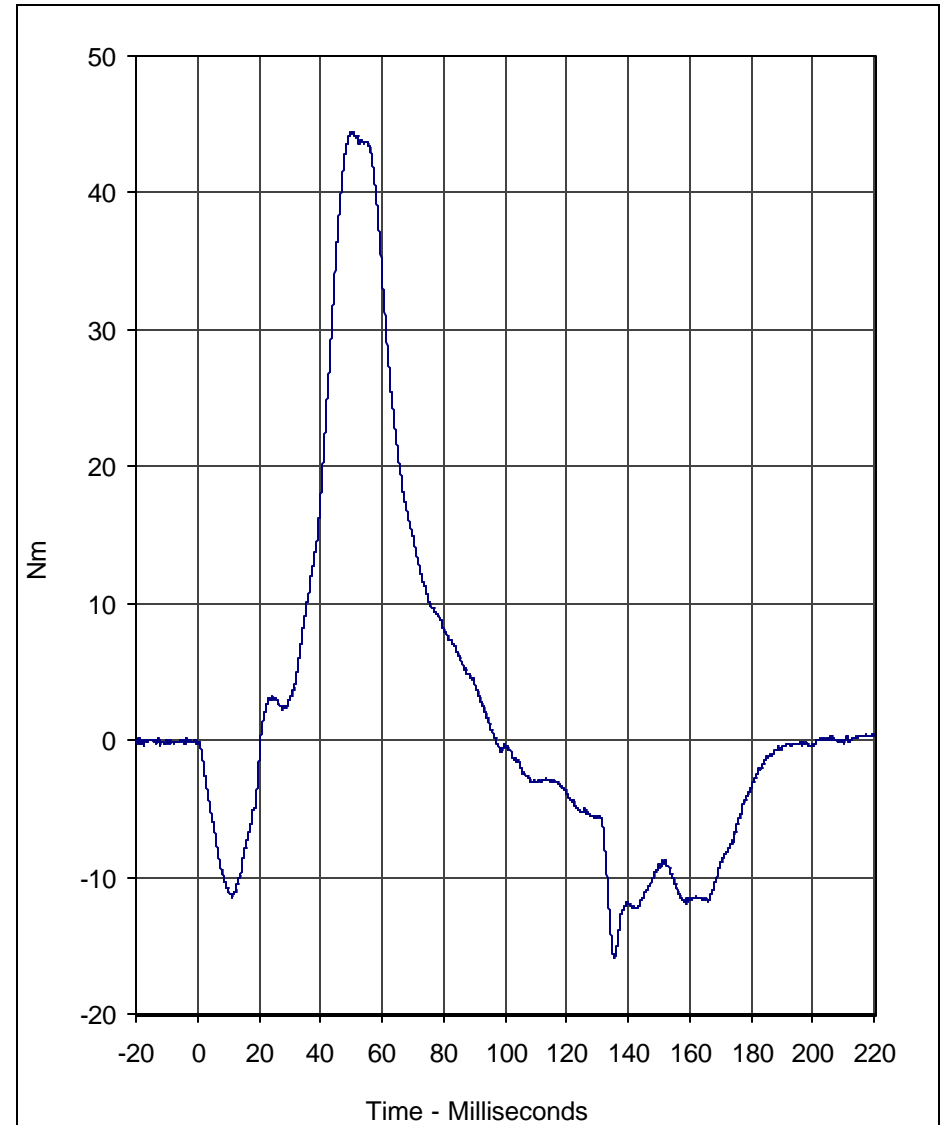




Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	75.9	56.5	-50.6	165.7	180

Test Program: 3 Year Old Hybrid III Neck Flexion Test  
 Test Date: 12/5/02



Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	44.4	49.7	-15.8	135.7	600

A.T.D. Serial No.: 082  
 Test I.D.: 3F01A





# Calibration Data Sheet

## Hybrid III 3 Year Old Neck Extension Test

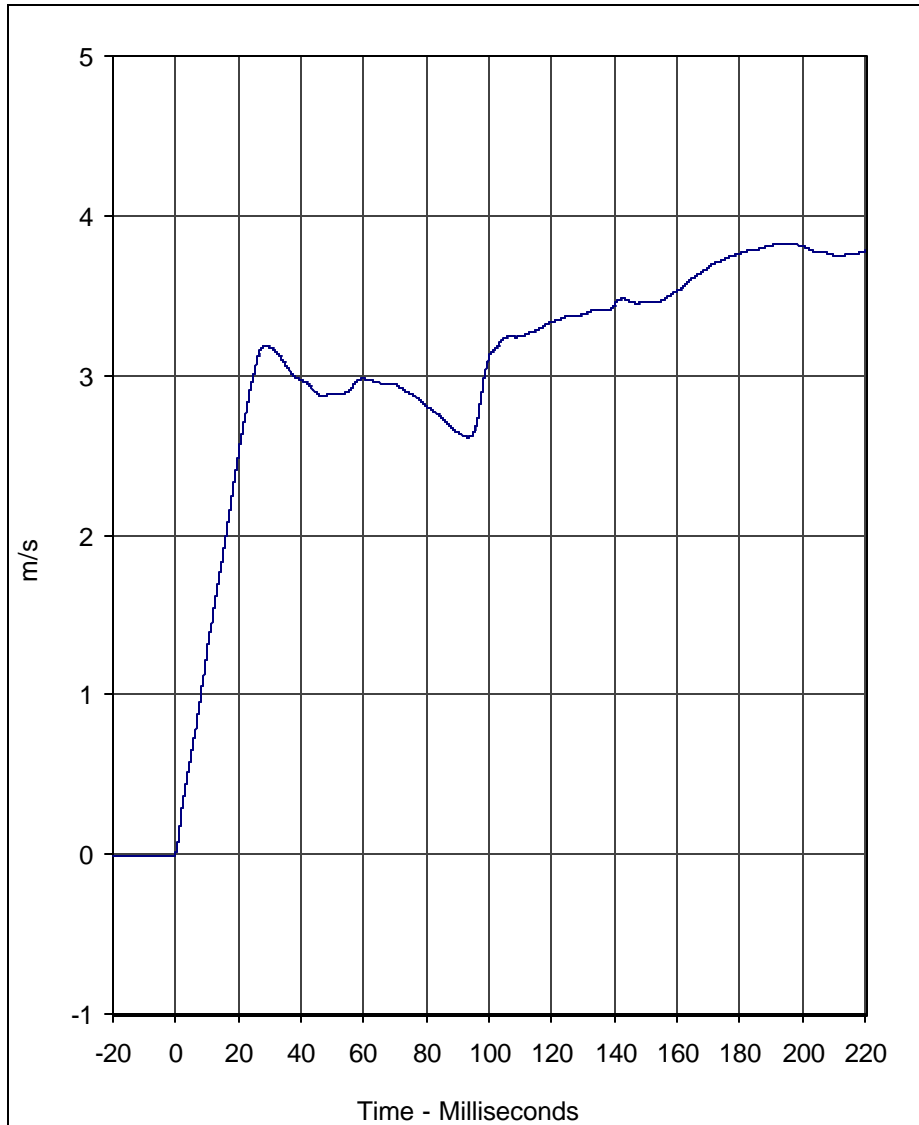
ATD Serial No.: 082

Test I.D.: 3E01B

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.55 to 3.75	3.60	Pass
Pendulum Deceleration	10 Msec.	m/s	1.0 to 1.4	1.3	Pass
	20 Msec.	m/s	1.9 to 2.5	2.5	Pass
	30 Msec.	m/s	2.8 to 3.5	3.2	Pass
"D" Plane Rotation	Maximum	Degrees	83.0 to 93.0	84.2	Pass
Peak Moment in Rotation	Maximum	Nm	-43.7 to -53.3	-47.0	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	77.8	Pass
Overall Test Results					Pass

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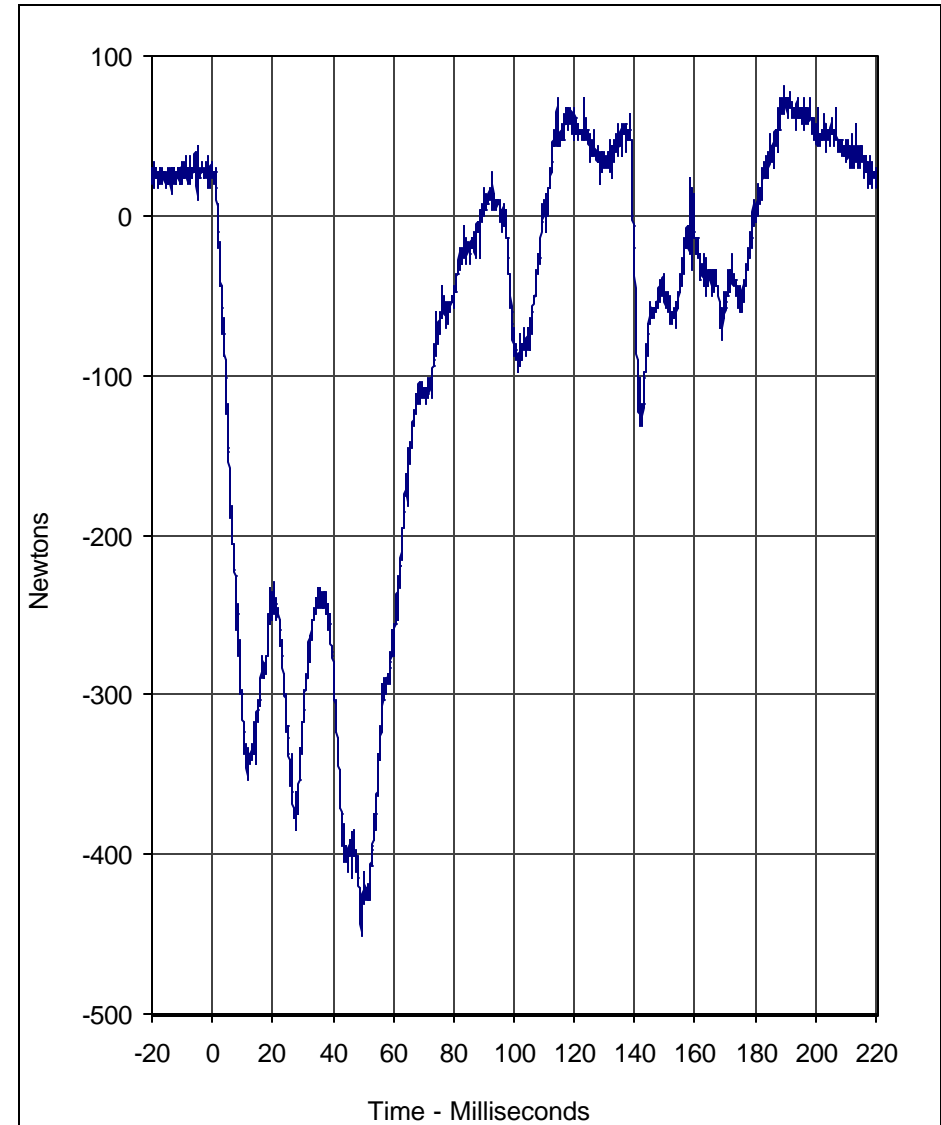
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Test Date



Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	3.8	194.0	0.0	-0.6	180

Test Program: 3 Year Old Hybrid III Neck Extension Test  
 Test Date: 12/5/02

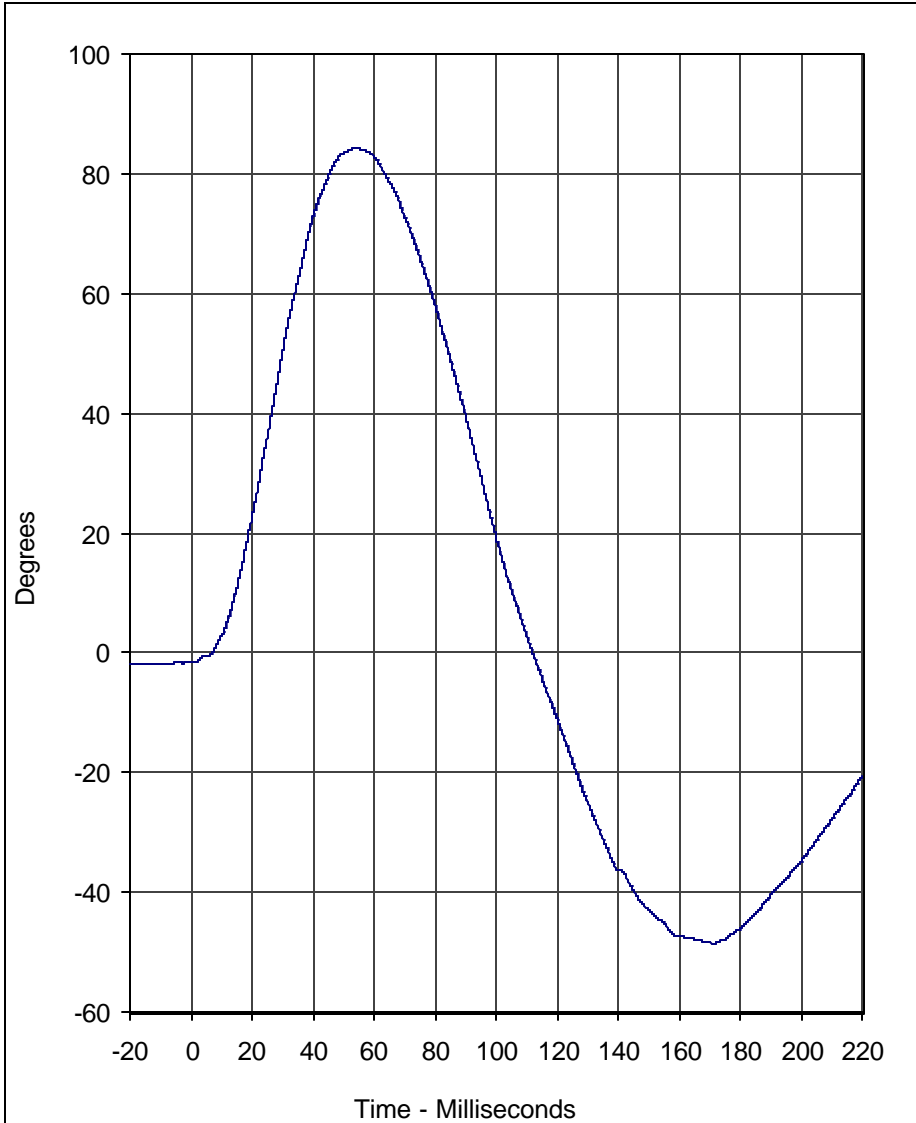


Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	80.9	189.4	-451.7	49.3	1000

A.T.D. Serial No.: 082  
 Test I.D.: 3E01B

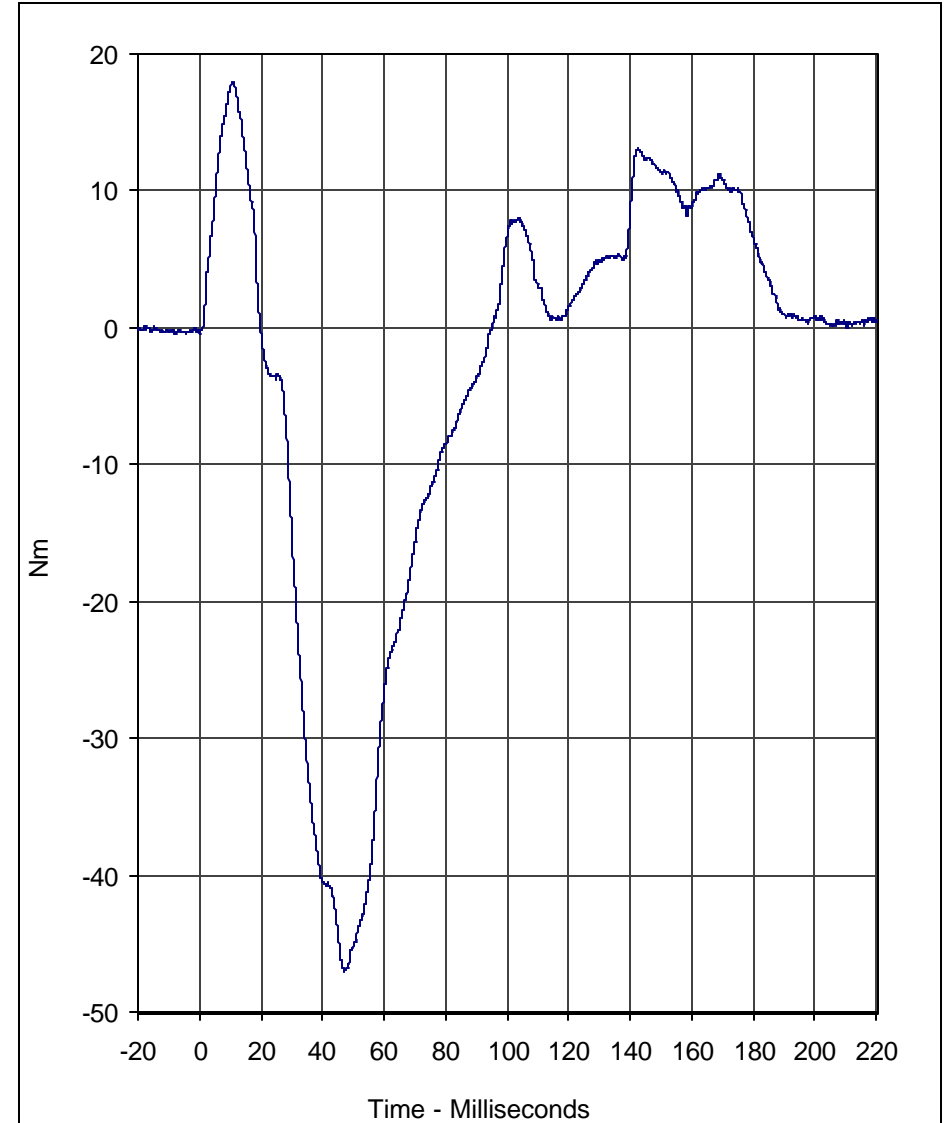




Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	84.2	53.7	-48.6	171.3	180

Test Program: 3 Year Old Hybrid III Neck Extension Test  
 Test Date: 12/5/02



Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	18.0	10.6	-47.0	47.1	600

A.T.D. Serial No.: 082  
 Test I.D.: 3E01B





# Calibration Data Sheet

## Hybrid III 3 Year Old

### Torso Flexion Test

ATD Serial No.: 082

Test I.D.: TF001

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Initial reference plane angle	Degrees	≤15.0	3.7	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	130.0 to 180.0	151.7	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	1.0	Pass
Final reference plane angle	Degrees	+/-10	3.1	Pass
Overall Test Results				Pass

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Test Date



# Calibration Data Sheet Hybrid III 3 Year Old External Measurements

ATD Serial No.: 082

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	539 to 554	545	Pass
B - Shoulder pivot height	mm	307 to 323	320	Pass
C - "H" point height	mm	34 to 45	40	Pass
D - "H" point from backline	mm	57 to 67	60	Pass
E - Shoulder pivot from back	mm	61 to 71	65	Pass
F - Thigh clearance	mm	81 to 91	85	Pass
G - Elbow back to wrist pivot	mm	247 to 263	255	Pass
H - Skull cap to back line	mm	48 to 58	50	Pass
I - Shoulder to elbow length	mm	185 to 201	190	Pass
J - Elbow rest height	mm	134 to 149	135	Pass
K - Buttock to knee length	mm	285 to 300	295	Pass
L - Popliteal length	mm	219 to 234	225	Pass
M - Knee pivot height	mm	242 to 257	250	Pass
N - Buttock popliteal length	mm	218 to 233	230	Pass
O - Chest depth with jacket	mm	139 to 154	145	Pass
P - Foot length	mm	138 to 148	140	Pass
R - Buttock to knee pivot length	mm	251 to 262	255	Pass
S - Head Breadth	mm	128 to 144	140	Pass
T - Head Depth	mm	167 to 183	175	Pass
U - Hip breadth	mm	201 to 216	210	Pass
V - Shoulder breadth	mm	237 to 252	250	Pass
W - Foot breadth	mm	54 to 64	60	Pass
X - Head circumference	mm	500 to 516	515	Pass
Y - Chest circumference with jacket	mm	527 to 553	545	Pass
Z - Waist circumference	mm	527 to 553	535	Pass
AA - Location for chest circumference	mm	249 to 259	255	Pass
BB - Location for waist circumference	mm	160 to 170	165	Pass
Overall Test Results				Pass

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Test Date



## Calibration Data Sheet Hybrid III 3 Year Old Head Drop Test

ATD Serial No.: 139

Test I.D.: 3H01B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 280.0	267.2	Pass
Peak Lateral Acceleration	G's	≤15.0	2.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<10	3.6	Pass
Overall Test Results				Pass

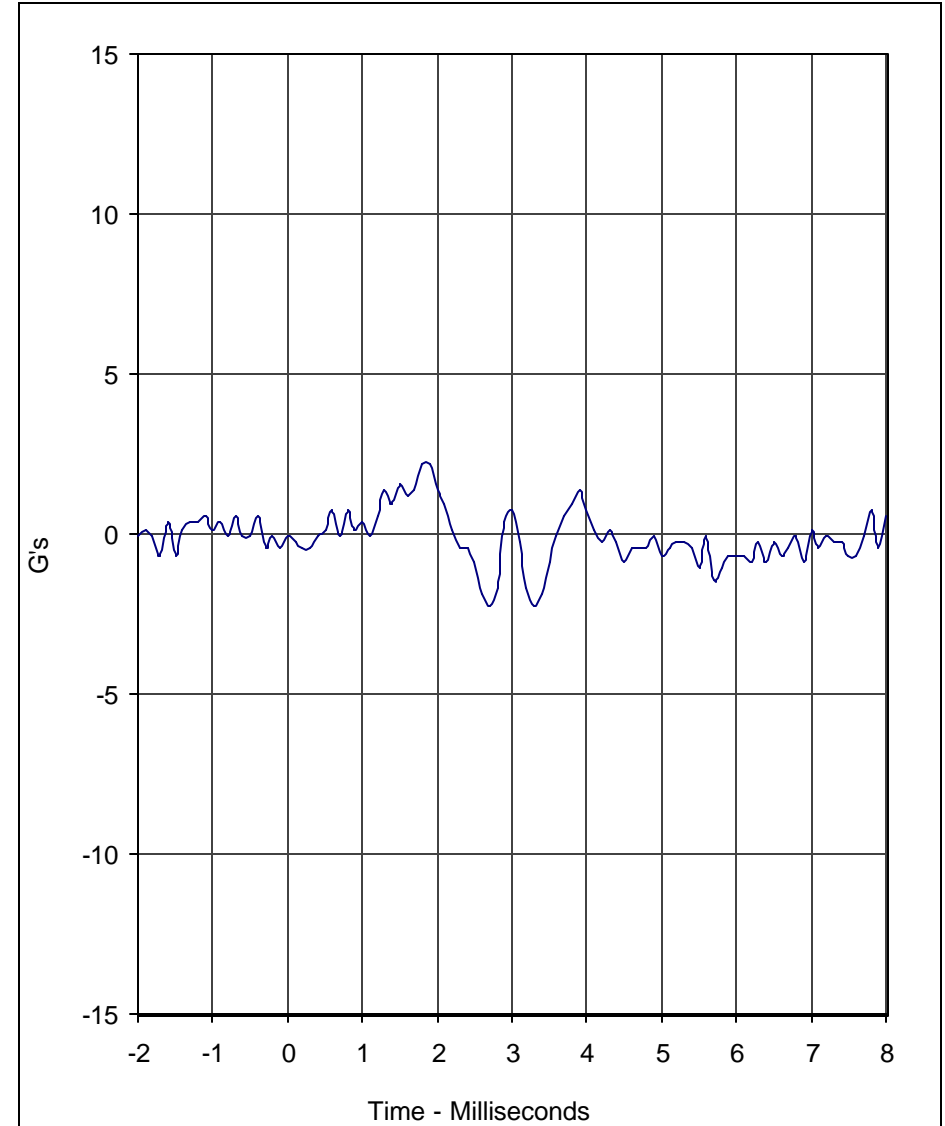
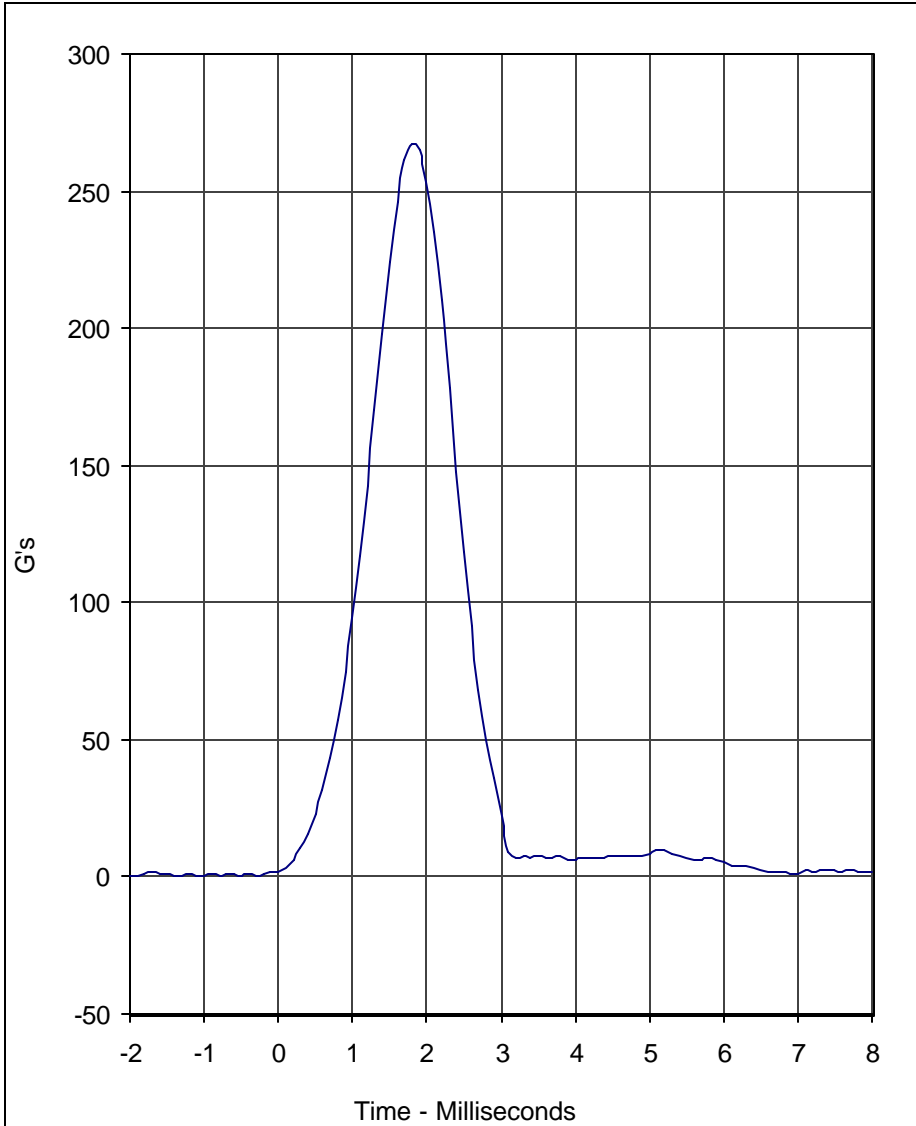
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Test Date



Curve Description	CURNO	Type
Head Resultant	001	RES

Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	267.2	1.8	0.2	-1.9	1000

Units	Max	Time	Min	Time	SAE Class
G's	2.2	1.8	-2.3	2.7	1000

Test Program: Hybrid III 3 Year Old Head Drop Test  
 Test Date: 12/4/02

A.T.D. Serial No.: 139  
 Test I.D.: 3H01B





# Calibration Data Sheet

## Hybrid III 3 Year Old

### Thorax Impact Test

ATD Serial No.: 139

Test I.D.: CH12B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.9 to 6.1	5.93	Pass
Peak Chest Compression	MM	32 to 38	37.3	Pass
Peak Probe Force Between 32 and 38 MM	Newtons	680 to 810	804.8	Pass
Peak Probe Force Between 12.5 and 32 MM	Newtons	≤860	774.1	Pass
Internal Hysteresis	%	65 to 85	70.7	Pass
Overall Test Results				Pass

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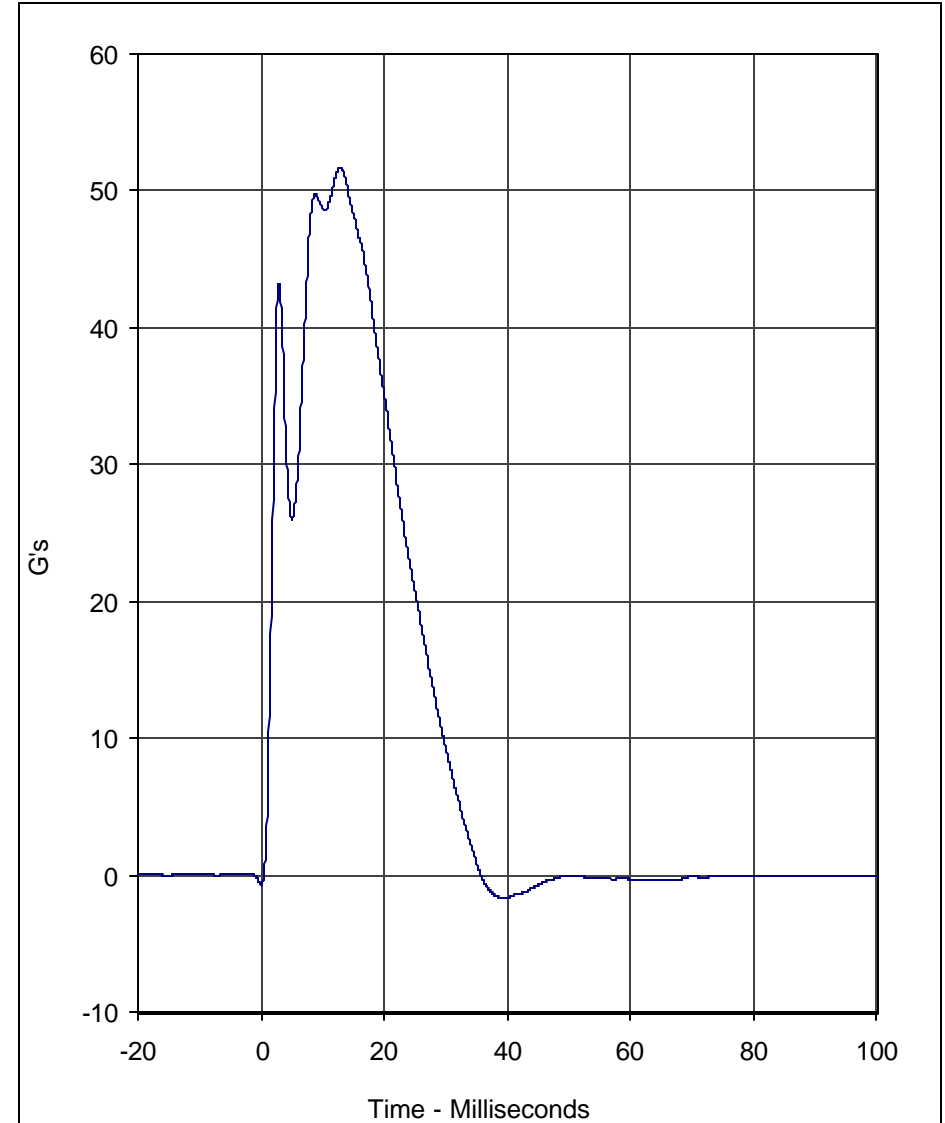
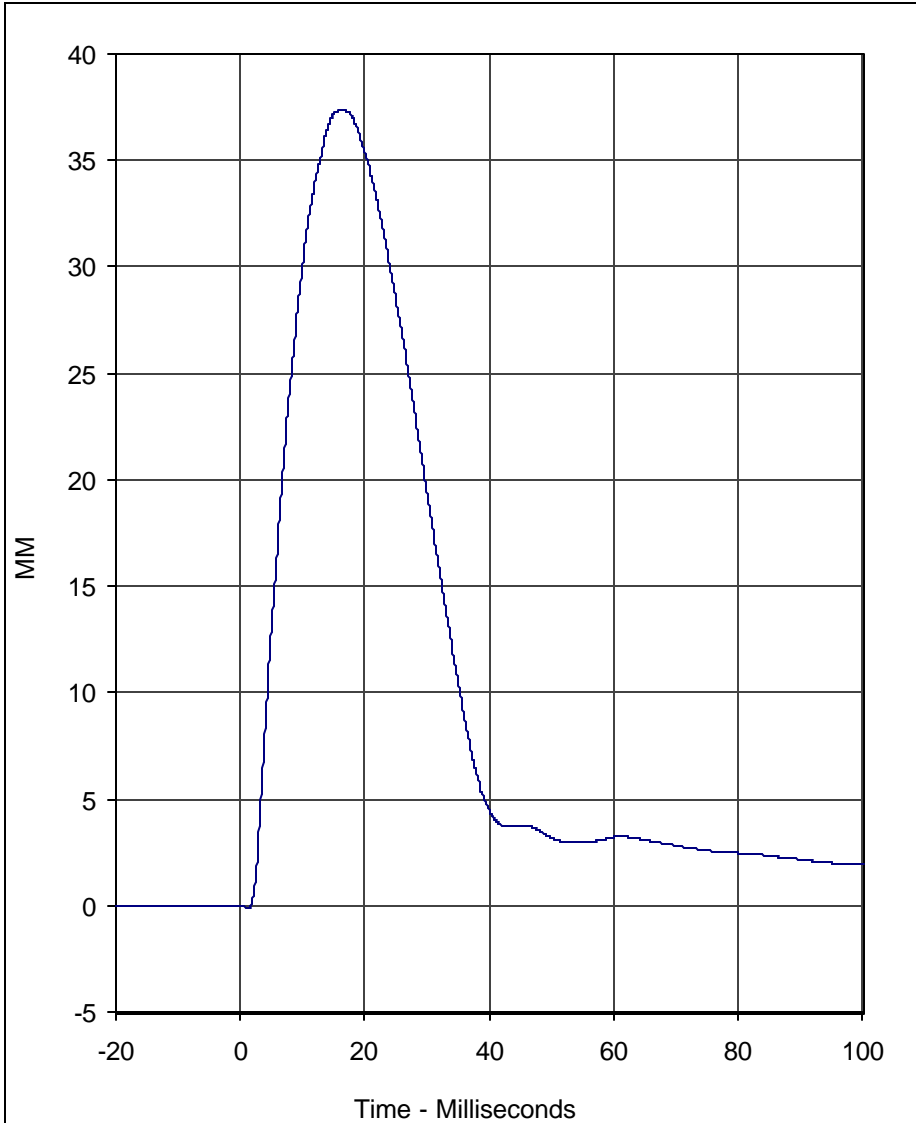
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Curve Description	CURNO	Type
Chest Compression	001	FIL

Curve Description	CURNO	Type
Probe Acceleration	002	FIL

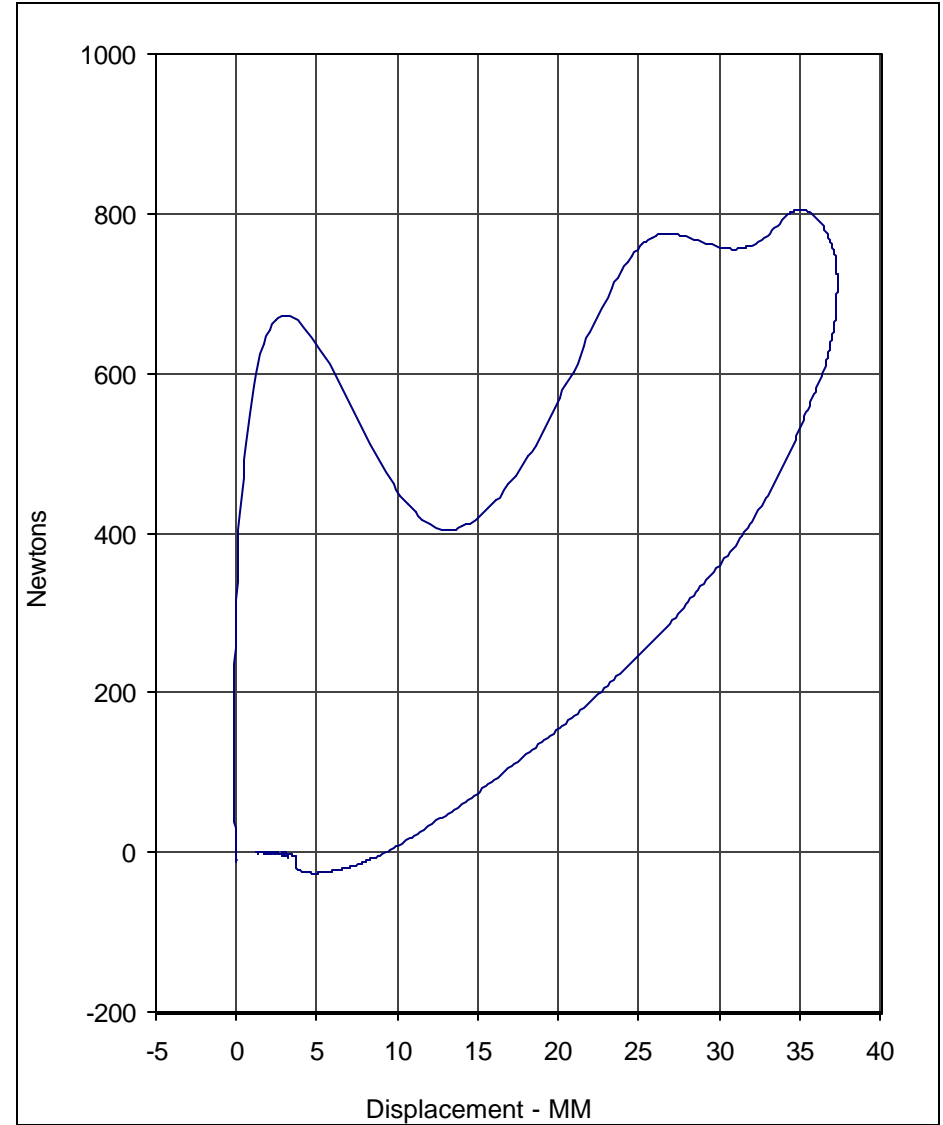
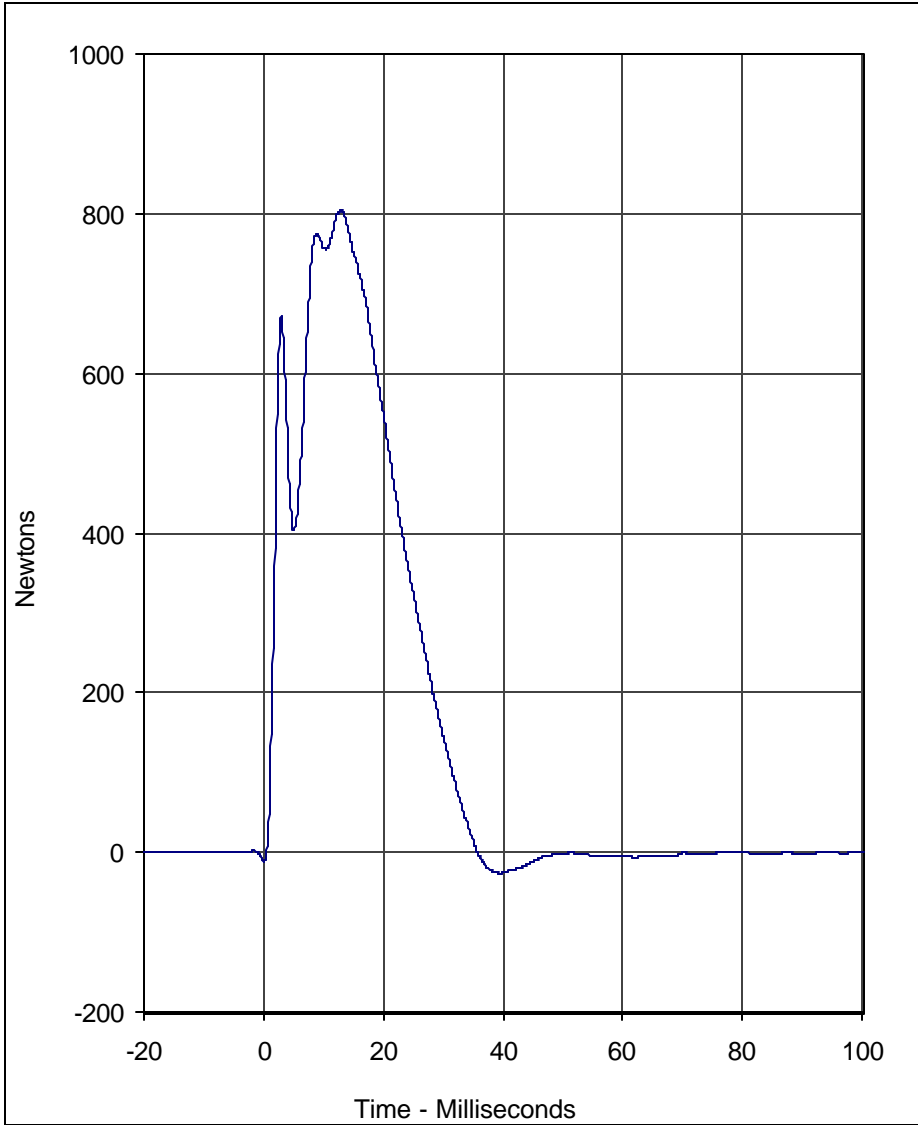
Units	Max	Time	Min	Time	SAE Class
MM	37.3	16.4	-0.1	1.3	180

Units	Max	Time	Min	Time	SAE Class
G's	51.7	12.9	-1.7	39.5	180

Test Program: Hybrid III 3 Year Old Thorax Impact  
 Test Date: 12/5/02

A.T.D. Serial No.: 139  
 Test I.D.: CH12B





Curve Description	CURNO	Type
Probe Force	003	FIL

Curve Description	CURNO	Type
Probe Force vs. Chest Displacement	004	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	804.8	12.9	-26.0	39.5	180

Units	Hysteresis	SAE Class
%	70.7	180

Test Program: Hybrid III 3 Year Old Thorax Impact  
 Test Date: 12/5/02

A.T.D. Serial No.: 139  
 Test I.D.: CH12B





# Calibration Data Sheet

## Hybrid III 3 Year Old Neck Flexion Test

ATD Serial No.: 139

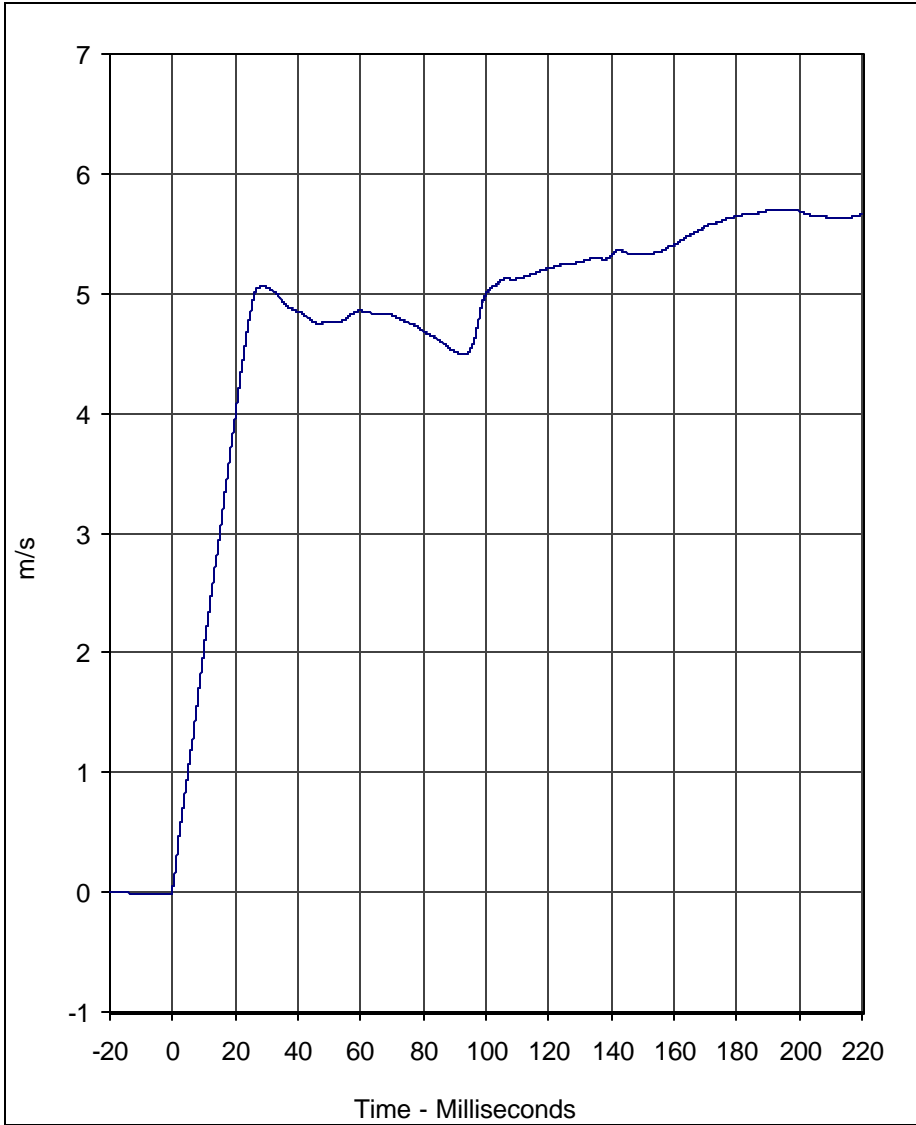
Test I.D.: 3F01B

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.40 to 5.60	5.55	Pass
Pendulum Deceleration	10 Msec.	m/s	2.0 to 2.7	2.0	Pass
	20 Msec.	m/s	3.0 to 4.0	4.0	Pass
	30 Msec.	m/s	4.0 to 5.1	5.1	Pass
"D" Plane Rotation	Maximum	Degrees	70.0 to 82.0	75.9	Pass
Peak Moment in Rotation	Maximum	Nm	42.0 to 53.0	45.7	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	77.4	Pass
Overall Test Results					Pass

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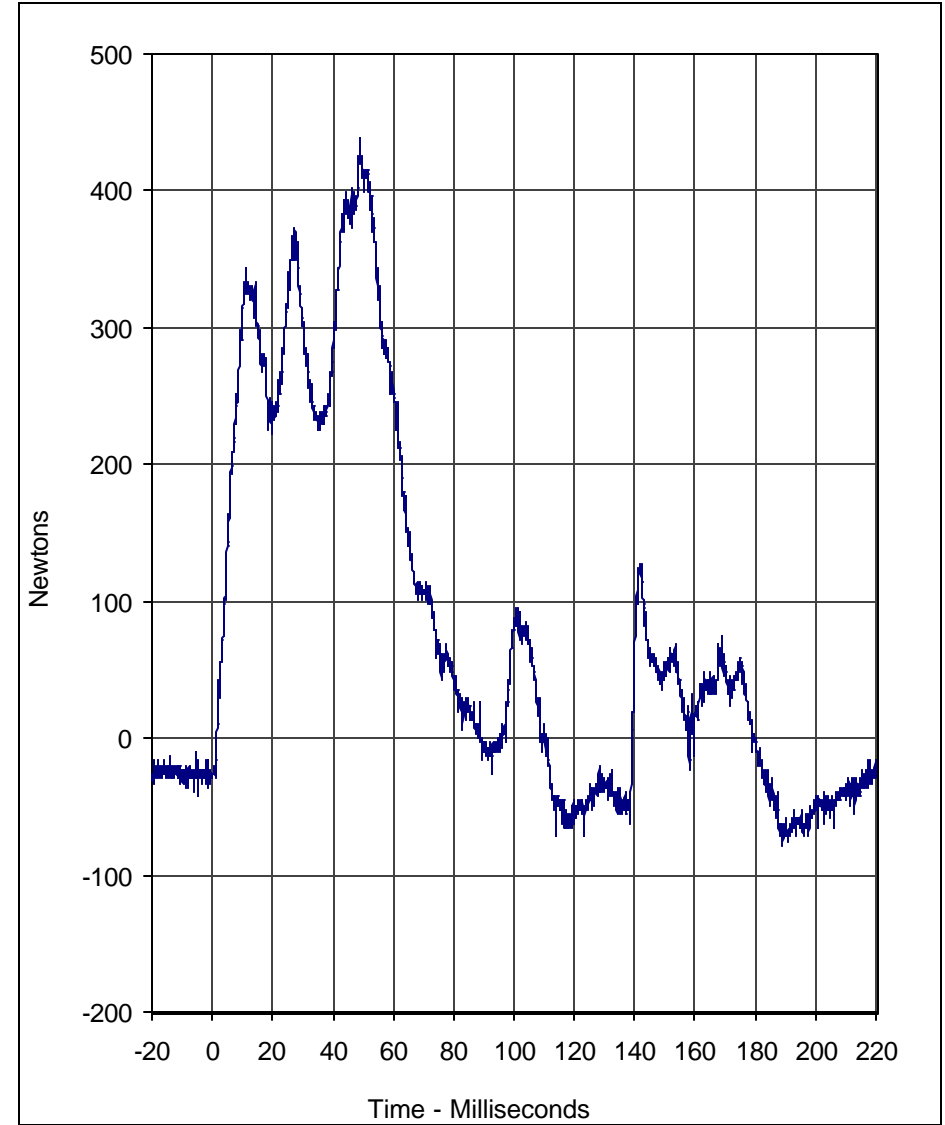
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Test Date



Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	5.7	193.8	0.0	-0.9	180



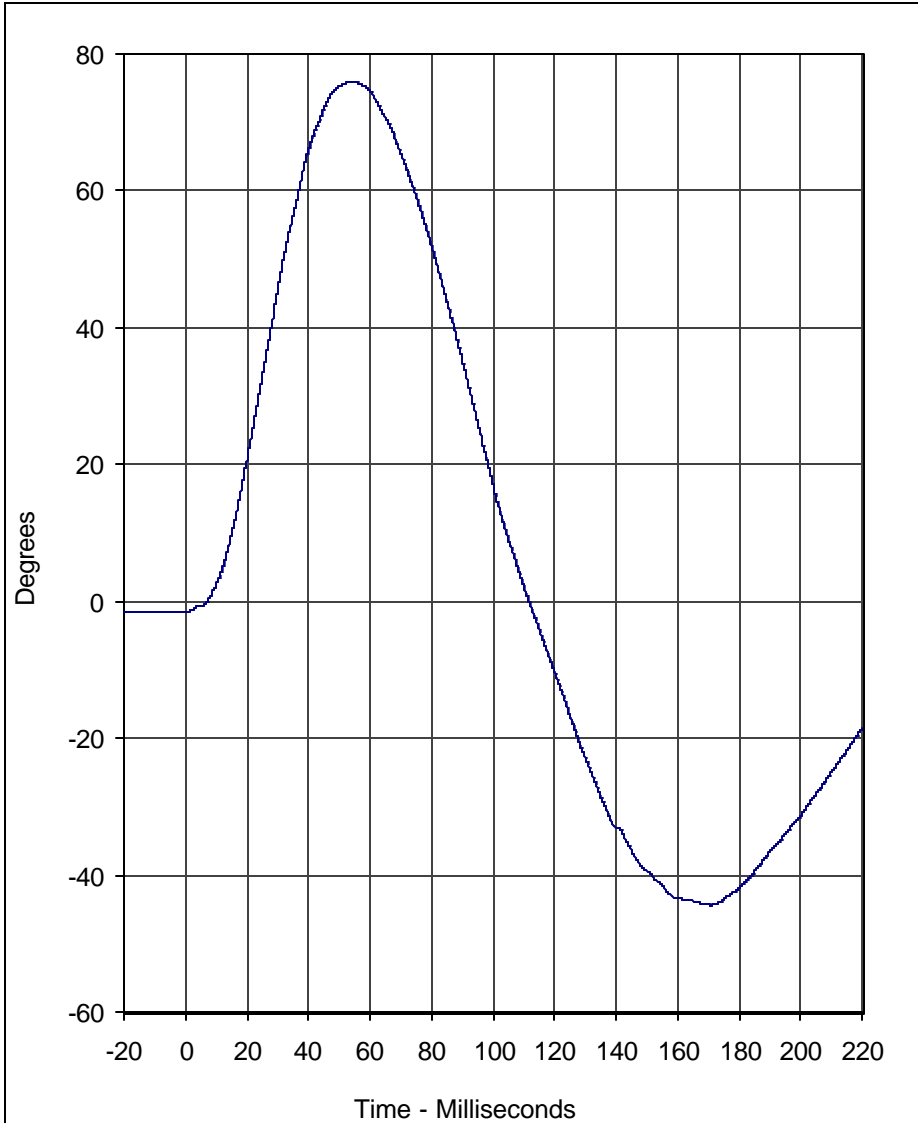
Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	438.5	49.0	-78.5	189.1	1000

Test Program: 3 Year Old Hybrid III Neck Flexion Test  
 Test Date: 12/5/02

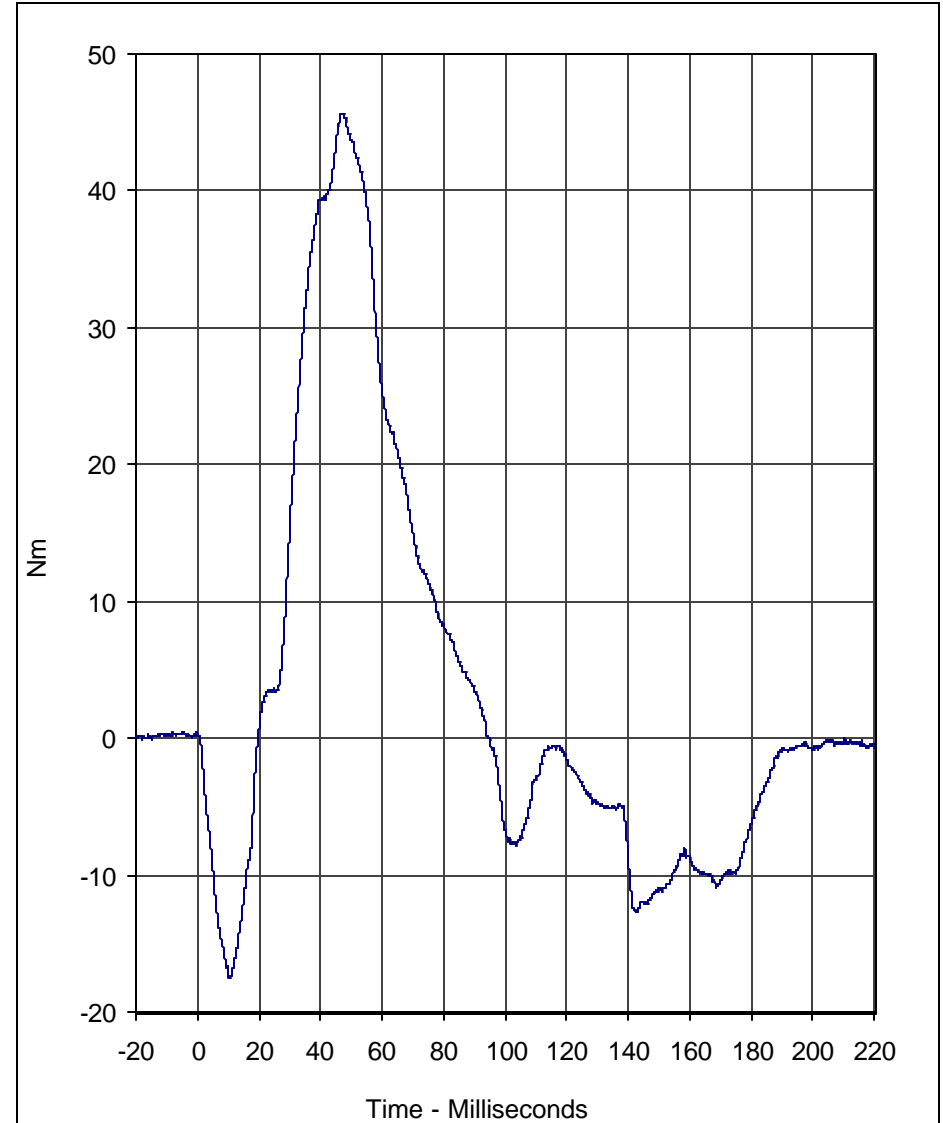
A.T.D. Serial No.: 139  
 Test I.D.: 3F01B





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	75.9	53.6	-44.4	171.1	180



Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	45.7	46.9	-17.5	10.4	600

Test Program: 3 Year Old Hybrid III Neck Flexion Test  
 Test Date: 12/5/02

A.T.D. Serial No.: 139  
 Test I.D.: 3F01B





# Calibration Data Sheet

## Hybrid III 3 Year Old

### Neck Extension Test

ATD Serial No.: 139

Test I.D.: 3E01A

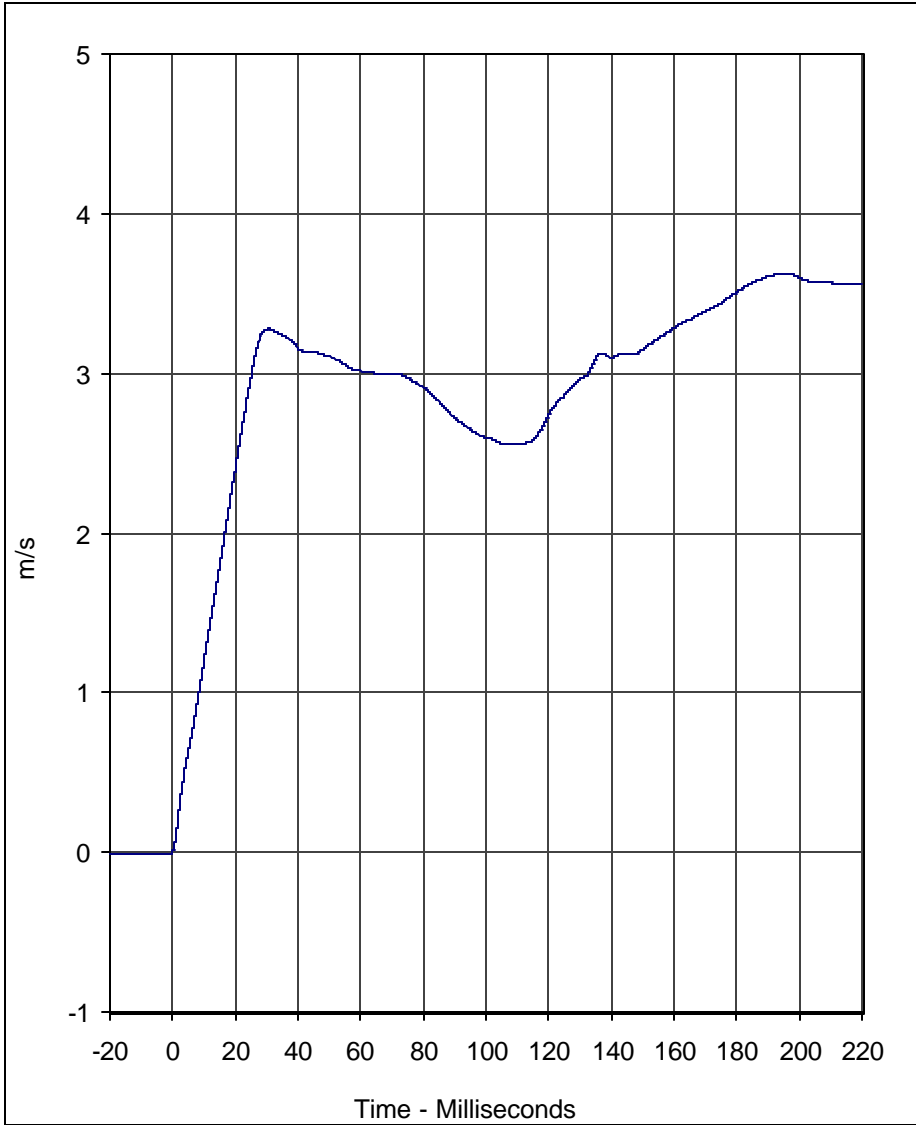
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.55 to 3.75	3.60	Pass
Pendulum Deceleration	10 Msec.	m/s	1.0 to 1.4	1.2	Pass
	20 Msec.	m/s	1.9 to 2.5	2.4	Pass
	30 Msec.	m/s	2.8 to 3.5	3.3	Pass
"D" Plane Rotation	Maximum	Degrees	83.0 to 93.0	83.5	Pass
Peak Moment in Rotation	Maximum	Nm	-43.7 to -53.3	-50.2	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	79.7	Pass
Overall Test Results					Pass

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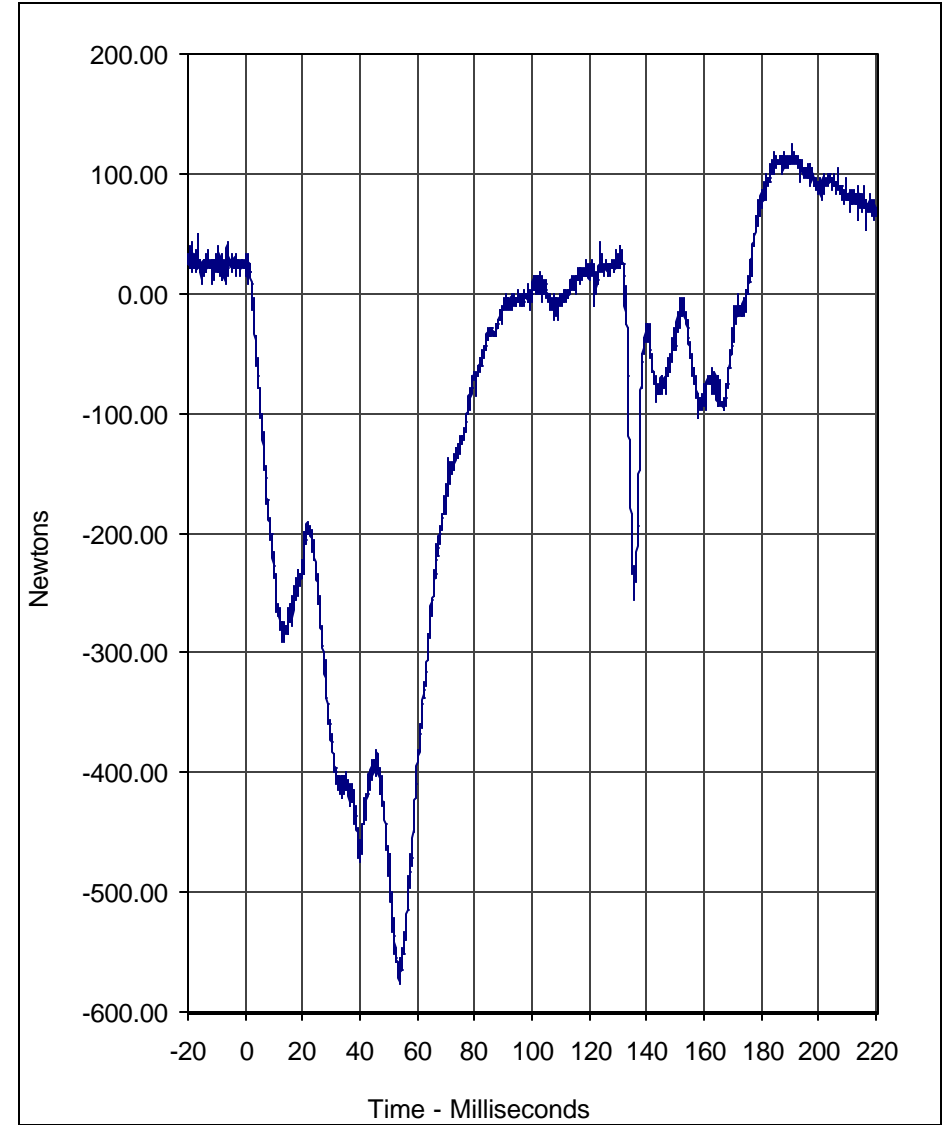
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Laboratory Technician

December 5, 2002  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	3.6	196.6	0.0	-17.2	180



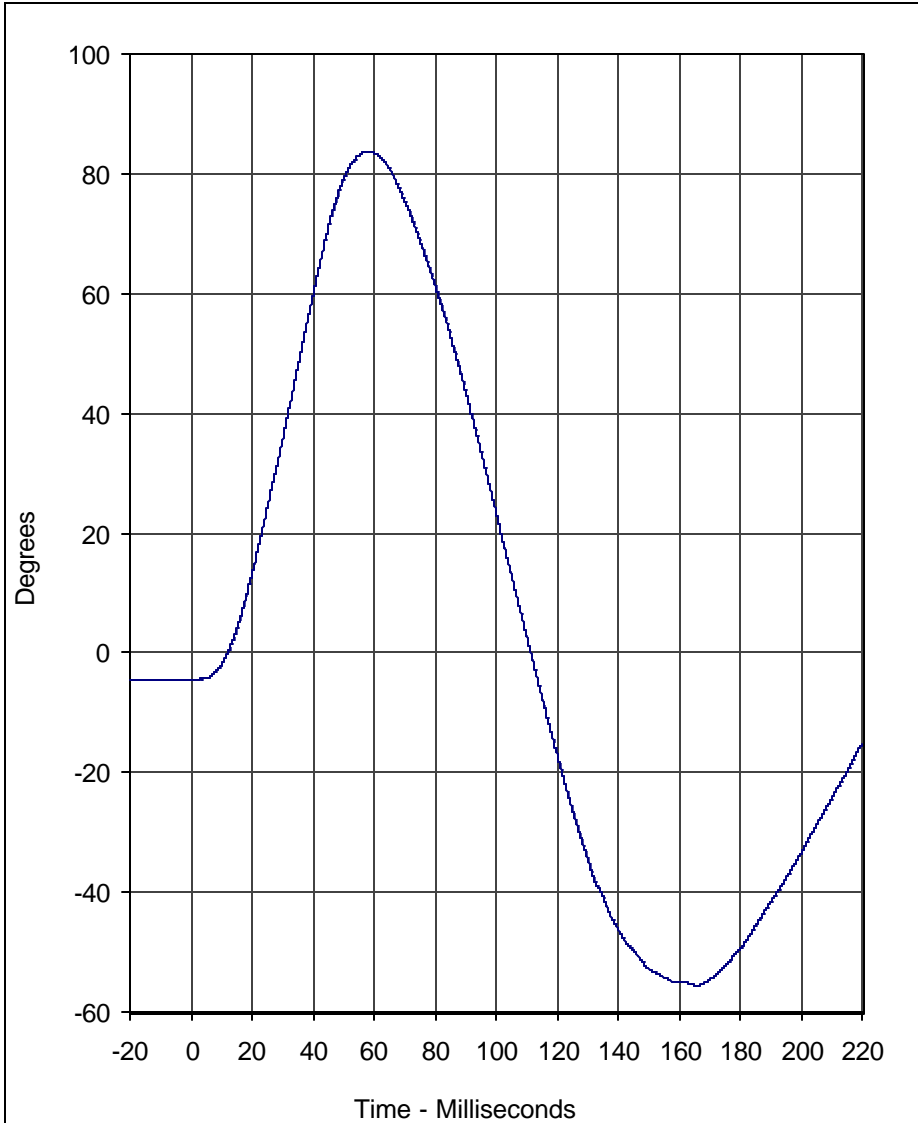
Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	125.6	190.6	-576.0	53.7	1000

Test Program: 3 Year Old Hybrid III Neck Extension Test  
 Test Date: 12/5/02

A.T.D. Serial No.: 139  
 Test I.D.: 3E01A

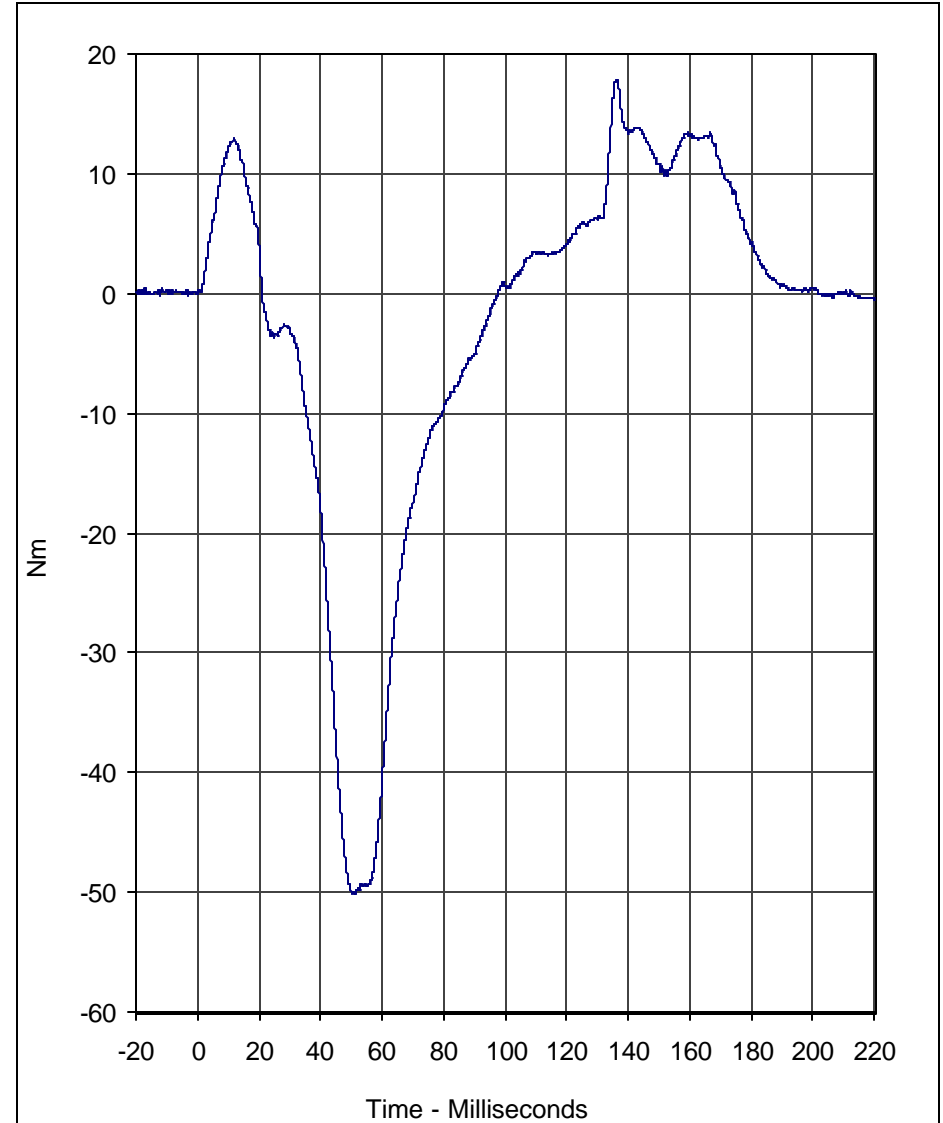




Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	83.5	57.1	-55.7	166.3	180

Test Program: 3 Year Old Hybrid III Neck Extension Test  
 Test Date: 12/5/02



Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	17.9	136.3	-50.2	50.3	600

A.T.D. Serial No.: 139  
 Test I.D.: 3E01A





# Calibration Data Sheet Hybrid III 3 Year Old Torso Flexion Test

ATD Serial No.: 082

Test I.D.: TF001

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Initial reference plane angle	Degrees	≤15.0	4.2	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	130.0 to 180.0	162.4	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	1.2	Pass
Final reference plane angle	Degrees	+/-10	6.2	Pass
Overall Test Results				Pass

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Laboratory Technician

December 6, 2002

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Test Date



# Calibration Data Sheet Hybrid III 3 Year Old External Measurements

ATD Serial No.: 139

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	539 to 554	550	Pass
B - Shoulder pivot height	mm	307 to 323	315	Pass
C - "H" point height	mm	34 to 45	40	Pass
D - "H" point from backline	mm	57 to 67	60	Pass
E - Shoulder pivot from back	mm	61 to 71	65	Pass
F - Thigh clearance	mm	81 to 91	85	Pass
G - Elbow back to wrist pivot	mm	247 to 263	260	Pass
H - Skull cap to back line	mm	48 to 58	50	Pass
I - Shoulder to elbow length	mm	185 to 201	195	Pass
J - Elbow rest height	mm	134 to 149	140	Pass
K - Buttock to knee length	mm	285 to 300	290	Pass
L - Popliteal length	mm	219 to 234	230	Pass
M - Knee pivot height	mm	242 to 257	250	Pass
N - Buttock popliteal length	mm	218 to 233	225	Pass
O - Chest depth with jacket	mm	139 to 154	150	Pass
P - Foot length	mm	138 to 148	140	Pass
R - Buttock to knee pivot length	mm	251 to 262	260	Pass
S - Head Breadth	mm	128 to 144	135	Pass
T - Head Depth	mm	167 to 183	180	Pass
U - Hip breadth	mm	201 to 216	215	Pass
V - Shoulder breadth	mm	237 to 252	245	Pass
W - Foot breadth	mm	54 to 64	60	Pass
X - Head circumference	mm	500 to 516	510	Pass
Y - Chest circumference with jacket	mm	527 to 553	550	Pass
Z - Waist circumference	mm	527 to 553	545	Pass
AA - Location for chest circumference	mm	249 to 259	255	Pass
BB - Location for waist circumference	mm	160 to 170	160	Pass
Overall Test Results				Pass

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Laboratory Technician

December 6, 2002  
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Test Date