

**REPORT NUMBER TR-P23001-13-NC**

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

**NISSAN MOTOR CORPORATION  
2003 NISSAN MURANO SL  
4 DOOR AWD SUV**

**NHTSA NUMBER: M35204**

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



**MARCH 4, 2003**

**FINAL REPORT**

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

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<b>16. Abstract</b>					
<p>A 35mph (56.3 km/h) frontal barrier impact was conducted on a 2003 Nissan Murano SL AWD SUV 4 Door at KARCO Engineering, LLC on 3/4/03. This test was conducted to obtain data indicant of FVMSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 56.07 km/h. The ambient temperature at the barrier face at the time of impact is 11.1 degrees Celcius. The test vehicle sustained post-impact maximum static crush of 505 mm to the right of 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	554.3	365.5
Max. Thorax Accel. (3 msec clip)		G's	60	45.3	53.9
Left Femur Force		Newtons	10009	-2592.4	-1395.8
Right Femur Force		Newtons	10009	-2891.9	-750.4
<b>17. Key Words</b>  56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2003 Nissan Murano SL AWD SUV 4 Door NHTSA No. M35204			<b>18. Distribution Statement</b>  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 M35204

#### 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 Nissan Murano SL AWD SUV at a velocity of 56.07 km/h. The test was performed at Karco Engineering, LLC on March, 4 2003.

One real-time and 19 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. 34) and the right-front passenger (position 2) ATD (Serial No. 35) were calibrated prior to this test.

Ninety Seven (97) channels of data were recorded using an on-board data acquisition system. Appendix A contains Pre and Post Test 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 505 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 and chest contacted the airbag and the abdomen had no contact. Both knees contacted the knee bolster.

The passenger's visible contact points were as follows: The passenger ATD head contacted the airbag and side curtain bag, it's chest contacted the airbag and the abdomen had no contact. The left knee contacted the glovebox and the right knee contacted the glovebox/dashboard.

Note: Passenger side curtain and air bag deployed during the frontal impact. Analysis showed it had no effect on right front side result. See Page A-17 and A-46 for photos.

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	554.3	45.3	-28.0	-2592.4	-2891.9	255.4
Passenger	365.5	53.9	-33.6	-1395.8	-750.4	287.1

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**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 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**PRIMARY IMPACT DATA**

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.07
Test Weight	kg	2028
Impact Angle	degrees	0
Average Rebound	mm	642
Maximum Static Crush	mm	505

**DOOR OPENING AND SEAT TRACK INFORMATION**

Description	Driver	Passenger
Front Door Opening	Remained closed/latched, open w/o tools	Remained closed/latched, open w/o tools
Rear Door Opening	Remained closed/latched, open w/o tools	Remained closed/latched, open w/o tools
Seat Track Shift (mm)	None	None
Seat Back Failure	None	None

**TEST DUMMY INFORMATION**

Description	Driver	Passenger
Dummy Type / Serial No.	50% Male Hybrid III / No. 34	50% Male Hybrid III / No. 35
Head Contact	Airbag	Airbag/Curtain
Chest Contact	Airbag	Airbag
Abdomen Contact	None	None
Left Knee Contact	Knee Bolster	Glovebox
Right Knee Contact	Knee Bolster	Glovebox/dashboard

**16mm MOVIE COVERAGE**

High Speed	19
Real Time	1
Total	20

**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 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**TEST VEHICLE INFORMATION**

Make	Nissan
Model	Murano
Body Style	4 Door MPV
NHTSA No.	M35204
VIN	JN8AZ08W93W210413
Color	Black
Delivery Date	2/26/2003
Odometer Reading (mi.)	80
Dealer	Empire Nissan
Transmission	4 Speed Automatic
Final Drive	AWD
Type/No. Cylinders	V-6
Engine Displacement (L)	3.5
Engine Placement	Transverse
Roof Rack	Yes
Sunroof/T-Top	Yes
Tinted Glass	Yes
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

**TEST VEHICLE OPTIONS**

Anti-Lock Brakes (ABS)	Yes
All Wheel Drive	Yes
Power Steering	Yes
Driver Airbag	Yes
Driver Side Bag	Yes
Driver Head Bag	Yes
Pass. Airbag	Yes
Pass. Side Bag	Yes
Pass. Head Bag	Yes
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	Driver Only
Other	

**DATA FROM CERTIFICATION LABEL**

Manufactured By	Nissan Motor Corporation	GVWR (kg)	2292
Date of Manufacture	December-02	GAWR Front (kg)	1216
		GAWR Rear (kg)	1136

**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)				390
Cargo Weight (RCLW) (kg)				50

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**TIRE INFORMATION**

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	308	308
Cold Pressure (kPa)	230	230
Recommend Tire Size	P235/65R18	P235/65R18
Tire Size on Vehicle	P235/65R18	P235/65R18
Tire Manufacturer	Goodyear	Goodyear
Treadwear	360	360
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	3	3
Load Index/Speed Symbol	98 S	98 S
Tire Material	Nylon/Polyester/Steel	Nylon/Polyester/Steel
DOT Safety Code Right	U2VK-3ML4702	U2VK-3ML4702
DOT Safety Code Left	U2VK-3ML4702	U2VK-3ML4702

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**TEST VEHICLE WEIGHTS**

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	542	378		588	435	
Right	kg	533	380		572	433	
Ratio	%	58.6	41.4		57.2	42.8	
Totals	kg	1075	758	1833	1160	868	2028

**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1833
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	50
Calculated Vehicle Target Weight (TVTW)	kg	2035

**TEST VEHICLE ATTITUDE AND CG**

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	844	844	853	854	1172
As Tested	mm	828	830	835	840	1211

Vehicle Wheel base (mm): 2830  
 Weight of Ballast secured in cargo area (kg): 64  
 Vehicle Components Removed: Spare tire and muffler.

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

**FUEL SYSTEM DATA**

Fuel System Capacity From Owner's Manual (L): 80.1  
 Usable Capacity Figure Furnished by COTR (L): 80.1  
 Actual Test Volume with entire fuel System Filled (L): 27.10\*  
 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: \* Note: Solvent level decreased to make target test weight.

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**SPEED TRAP DATA**

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.51 to 57.12	56.07
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	56.09
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	4488	4280	-208
Center	mm	4755	4253	-502
Right Side	mm	4488	4344	-144

**VEHICLE REBOUND FROM BARRIER**

Measured Parameter	Units	Value
Left Side	mm	700
Center	mm	677
Right Side	mm	550
Average	mm	642

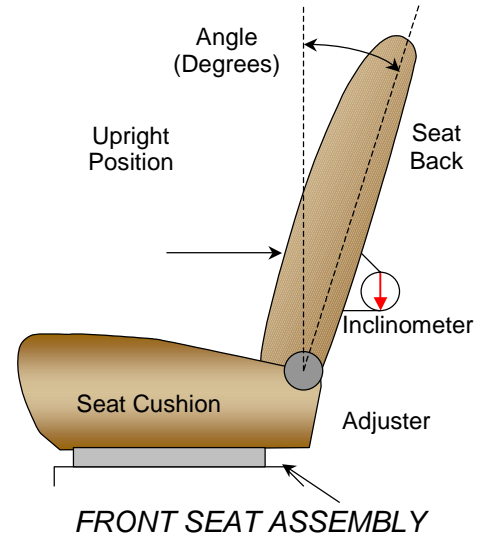
**DATA SHEET NO. 4  
TEST VEHICLE INFORMATION**

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**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	21
Passenger w/seated Dummy	21

**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	241mm	120.5mm
Passenger Seat	21	11

**SEAT BELT UPPER ANCHORAGE**

Position number one (1) is the uppermost position.

**SEAT BELT UPPER ANCHORAGE**

	Total # of Positions	Placed in Position #
Driver Seat	4	2
Passenger Seat	4	2

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

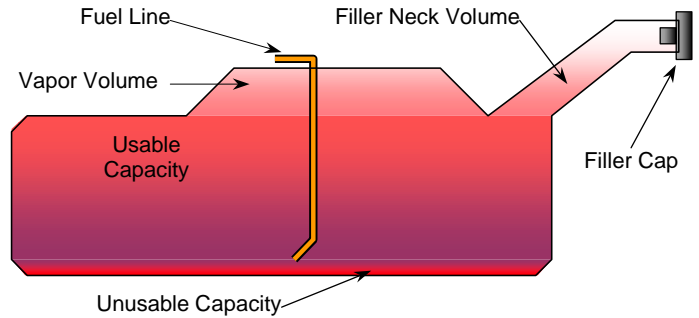
NHTSA No.: M35204  
 Test Date: 3/4/03

**FUEL TANK CAPACITY DATA**

	<b>Liters</b>
Usable Capacity of "Standard Tank"	80.1
Usable Capacity of "Optional Tank"	N/A
Usable Capacity used for FMVSS 301	75.56 to 76.84
Actual Amount of Solvent Used	27.10*

\* Note: Solvent level decreased to make target test weight

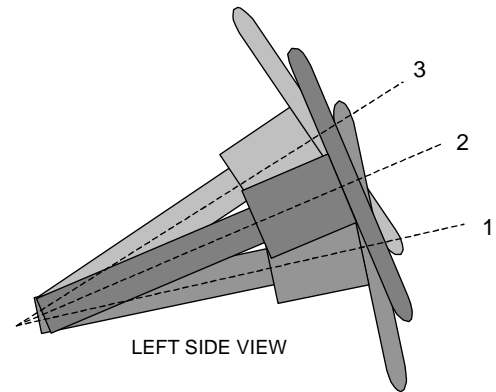
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.



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	19
Geometric center; position No. 2	28
Uppermost; position No. 3	37

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
Test Date: 3/4/03

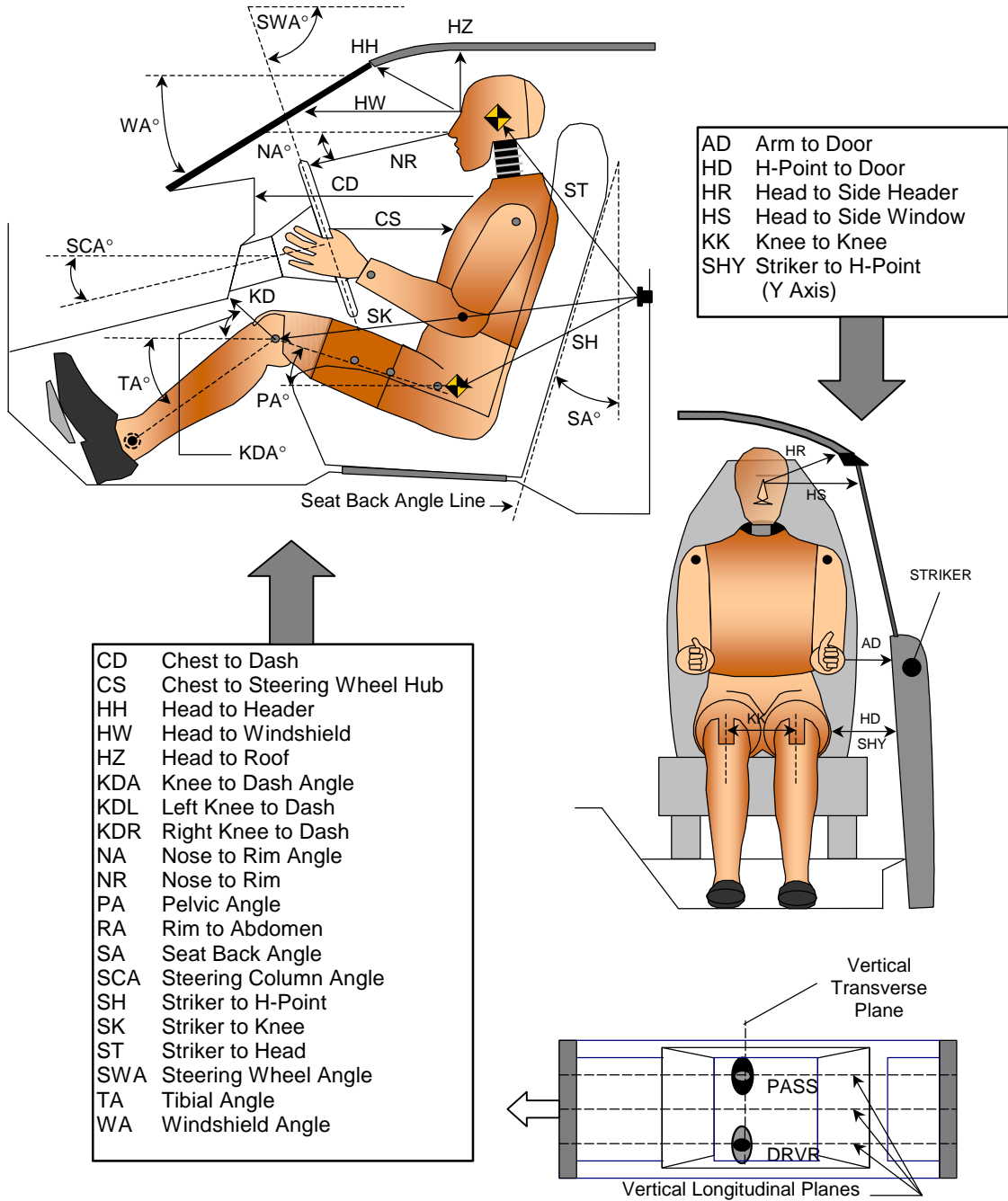
**TEST DUMMY POSITION MEASUREMENTS**

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		25		
SWA	Steering Wheel Angle		62.0		
SCA	Steering Column Angle		28.0		
SA	Seat Back Angle		21.0		21.0
HZ	Head to Roof (Z)	210	90	200	90
HH	Head to Header	445		403	
HW	Head to Windshield	840		745	
HR	Head to Side Header (Y)	310		295	
NR	Nose to Rim	453	10		
CD	Chest to Dash	580		590	
CS	Chest to Steering Hub	325			
RA	Rim to Abdomen	202			
KDL	Left Knee to Dash	222	6	200	
KDR	Right Knee to Dash	177		230	12
PA	Pelvic Angle		25		24
TA	Tibia Angle		43		42
KK	Knee to Knee (Y)	332		285	
ST	Striker to Head	650	3	650	1
SK	Striker to Knee	580	78	605	73
SH	Striker to H-Point	240		232	
SHY	Striker to H-Point (Y)	247		250	
HS	Head to Side Window	345		330	
HD	H-Point to Door (Y)	145		140	
AD	Arm to Door (Y)	118		118	

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03



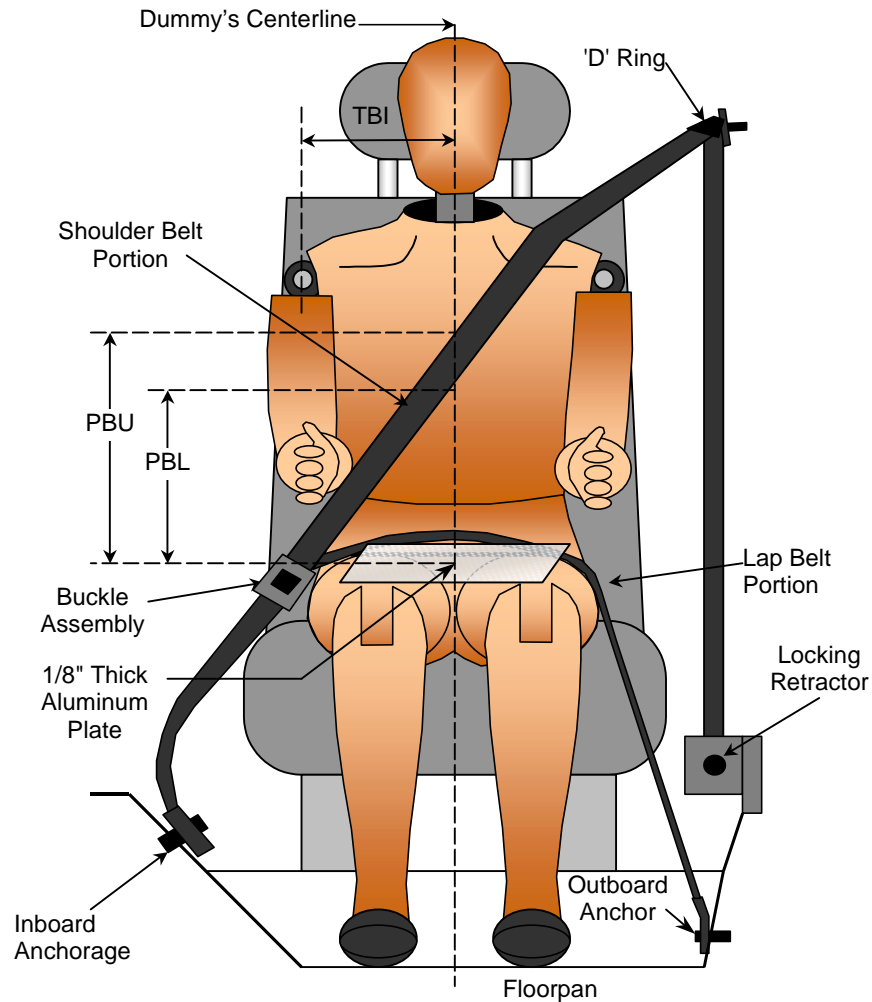
- CD Chest to Dash
- CS Chest to Steering Wheel Hub
- HH Head to Header
- HW Head to Windshield
- HZ Head to Roof
- KDA Knee to Dash Angle
- KDL Left Knee to Dash
- KDR Right Knee to Dash
- NA Nose to Rim Angle
- NR Nose to Rim
- PA Pelvic Angle
- RA Rim to Abdomen
- SA Seat Back Angle
- SCA Steering 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 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03



**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	350	320
PBL - Top surface of reference to belt lower edge	mm	280	250
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 Nissan Murano SL AWD SUV

NHTSA No.: M35204

Test Program: 2003 NHTSA 35mph NCAP

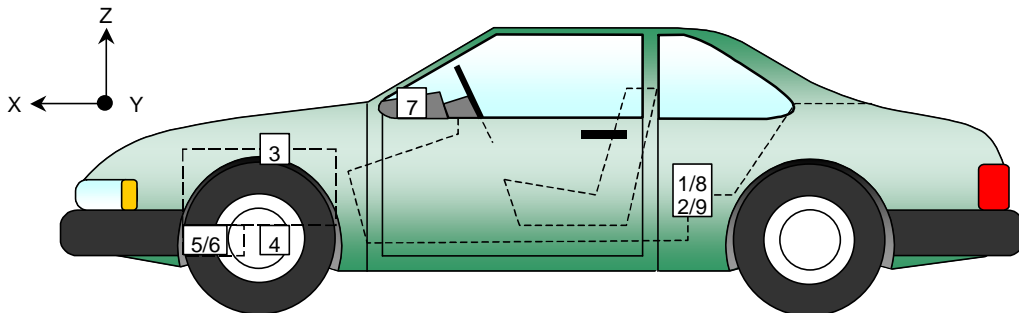
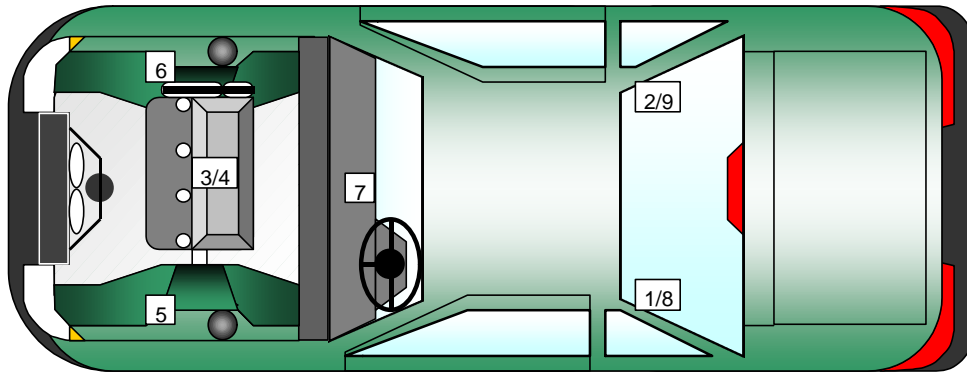
Test Date: 3/4/03

## 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	970	-660	375	G's	4.7	100.0	-44.3	45.4
2	Right Rear X-Member	970	660	375	G's	3.4	101.5	-41.7	37.6
3	Engine Top	4170	75	980	G's	30.6	37.5	-188.1	30.5 <sup>1</sup>
4	Engine Bottom	4100	330	230	G's	46.8	40.2	-165.0	26.0
5	Left Brake Caliper	3930	-465	310	G's	28.2	34.2	-109.0	39.1
6	Right Brake Caliper	3930	765	310	G's	19.9	64.2	-62.2	51.7
7	Instrument Panel	3180	0	1090	G's	13.3	99.0	-66.3	54.9
8	Left Rear X-Member (Z-Axis)	850	-660	375	G's	6.8	62.1	-6.9	14.5
9	Right Rear X-Member (Z-Axis)	850	660	375	G's	7.4	55.1	-6.3	14.8

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

1.) Channel failed at 41.6 msec.



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

Test Vehicle: 2003 Nissan Murano SL AWD SUV

NHTSA No.: M35204

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 3/4/03

**HEAD PRIMARY PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	12.3	212.4	-84.0	86.1	11.8	234.1	-50.6	75.3
Head CG	Y	G's	5.7	55.3	-4.4	46.6	6.0	53.8	-12.7	85.0
Head CG	Z	G's	26.5	59.0	-48.4	86.1	23.0	60.2	-11.1	82.1
Head CG Resultant	N/A	G's	97.0	86.1			51.5	75.3		

**CHEST PRIMARY PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	3.5	147.5	-46.3	61.6	3.1	115.5	-53.7	73.2
Chest CG	Y	G's	6.2	62.7	-3.8	81.5	6.6	68.0	-10.8	72.5
Chest CG	Z	G's	15.3	57.7	-16.0	99.9	11.2	53.7	-14.7	81.4
Chest CG Resultant	N/A	G's	47.3	61.5			54.7	73.0		

**FEMUR PEAK FORCES**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	1355.3	52.0	-2592.4	61.4	2401.6	46.3	-1395.8	64.5
Right Femur	Z	Newtons	1239.3	51.1	-2891.9	54.3	1324.0	52.7	-750.4	55.8

**SEAT BELT SENSOR PEAK VALUES**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Shoulder Belt Pullout	N/A	MM	255.4	93.1	-88.4	39.6	287.1	87.0	-58.6	34.3 <sup>3</sup>
Shoulder Belt Stretch	N/A	MM/CM	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0 <sup>1</sup>
Lap Belt Force	N/A	Newtons	10494.9	61.0	-0.1	9.1	11351.0	65.2	0.0	69.6 <sup>2</sup>
Shoulder Belt Force	N/A	Newtons	5669.8	53.6	-56.8	150.3	5523.1	50.4	-29.4	8.2

1.) Not used with pre-tensioner

3.) Passenger channel failed at 190.0 msec.

2.) Passenger channel failed at 69.6 msec.

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	554.3	57.4	90.9	48.6	365.5	53.5	89.4	40.1

**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	45.3	60.0	63.0	53.9	72.2	75.2

**DATA SHEET NO. 8...(continued)**

Test Vehicle: 2003 Nissan Murano SL AWD SUV

NHTSA No.: M35204

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 3/4/03

**PELVIC PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	13.5	92.9	-74.7	54.7	8.7	92.7	-61.4	56.1
Pelvis	Y	G's	10.8	98.6	-15.5	54.8	6.6	55.0	-8.3	96.6
Pelvis	Z	G's	2.4	26.1	-34.5	67.0	4.0	24.7	-29.9	71.4
Pelvis Resultant	N/A	G's	77.2	54.7			65.0	61.1		

**UPPER NECK PEAK FORCES AND MOMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	541.5	87.1	-531.9	144.6	299.2	66.1	-629.4	86.1
Neck Force	Y	Newtons	231.1	233.2	-203.3	116.5	107.1	26.2	-318.8	108.5
Neck Force	Z	Newtons	1543.4	68.7	-699.4	100.6	1382.5	60.4	-189.7	270.0
Neck Force Resultant	N/A	Newtons	1565.3	68.7			1405.4	65.1		
Neck Moment	X	N•m	5.4	90.7	-18.1	69.4	18.3	84.7	-15.0	71.2
Neck Moment	Y	N•m	48.7	132.6	-59.4	82.8	48.3	129.9	-72.9	80.5
Neck Moment	Z	N•m	11.7	246.9	-5.6	141.4	10.9	99.4	-8.4	145.7
Neck Moment Resultant	N/A	N•m	59.6	82.8			73.2	81.0		

**FOOT PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	14.3	99.3	-62.3	55.2	71.6	56.3	-154.0	45.4
Left Foot Aft	Z	G's	1.8	130.5	-41.1	47.0	39.2	41.9	-89.8	55.2
Left Foot Fore	Z	G's	0.0	0.0	0.0	0.0	140.9	41.6	-59.3	50.2
Right Foot Aft	X	G's	28.0	68.2	-193.4	55.7	5.9	78.0	-87.9	39.6
Right Foot Aft	Z	G's	27.5	65.2	-224.5	55.5	9.9	24.8	-51.0	43.0
Right Foot Fore	Z	G's	76.2	51.0	-274.3	53.5	24.7	151.8	-90.1	41.8

1.) Driver channel failed, no data

**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	116.4	58.1	-27.1	97.8	22.4	56.1	-37.4	44.5
Left Upper Moment	Y	N•m	40.1	59.3	-19.6	55.7	79.6	60.7	-177.5	46.6
Right Upper Moment	X	N•m	32.2	57.2	-35.6	71.5	32.2	44.9	-7.2	34.7
Right Upper Moment	Y	N•m	32.2	177.1	-221.5	56.2	34.9	55.5	-79.3	43.4
Left Lower Moment	X	N•m	42.7	92.7	-7.2	49.0	32.3	55.6	-35.0	73.8
Left Lower Moment	Y	N•m	41.8	96.2	-58.7	58.5	147.6	55.0	-279.3	46.1
Left Lower Force	Z	Newtons	159.5	121.5	-2414.5	26.6	331.0	190.1	-4520.1	56.3
Right Lower Moment	X	N•m	26.1	54.6	-33.4	63.2	57.1	57.3	-24.2	44.2
Right Lower Moment	Y	N•m	22.8	53.7	-51.6	58.7	14.0	115.1	-29.4	40.8
Right Lower Force	Z	Newtons	283.2	278.1	-10841.9	55.7	123.0	157.5	-2269.5	42.1

1.) Passenger channel failed at 64.6 msec.

**DATA SHEET NO. 8...(continued)**

Test Vehicle: 2003 Nissan Murano SL AWD SUV

NHTSA No.: M35204

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 3/4/03

**CHEST PEAK DISPLACEMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.1	2.2	-28.0	72.5	0.3	3.7	-33.6	64.5

**HEAD REDUNDANT PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	13.3	210.5	-84.7	86.0	11.3	232.1	-49.7	75.2
Head CG	Y	G's	6.8	56.2	-4.6	46.5	6.7	54.3	-13.5	84.6
Head CG	Z	G's	27.6	58.6	-49.3	86.0	22.4	60.5	-11.2	82.2
Head CG Resultant	N/A	G's	98.1	86.0			50.6	75.2		

**CHEST REDUNDANT PEAK ACCELERATIONS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	3.3	147.3	-46.1	61.2	2.9	115.2	-53.9	73.3
Chest CG	Y	G's	6.6	62.1	-3.5	47.8	7.0	68.0	-9.9	72.5
Chest CG	Z	G's	14.9	57.7	-16.2	101.4	11.1	53.8	-14.5	81.4
Chest CG Resultant	N/A	G's	47.2	61.0			54.8	73.1		

**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	545.5	57.5	90.9	48.4	361.6	53.3	89.2	39.9

**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	45.4	59.8	62.8	53.9	72.3	75.3

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
Test Date: 3/4/03

**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	350	320
PBL - Top surface of reference to belt lower edge	mm	280	250
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	655	655
Shoulder belt length as measured on ATD	mm	870	895
Lap belt length as measured on ATD	mm	875	890
Remainder of belt on reel	mm	755	845
Total belt length for continuous webbing systems	mm	3155	3285

**SHOULDER BELT SPOOL-OFF DATA**

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	N/A	N/A
As determined electronically	mm	255.4	287.1

**BELT STRETCH DATA**

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

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

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

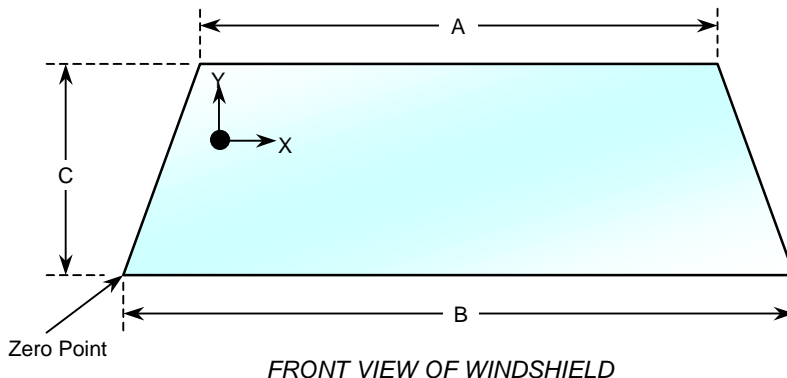
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive. No molding covers the windshield periphery at any point.

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	2360.0	2360.0	100
Right Side	2360.0	2360.0	100
Total	4720.0	4720.0	100



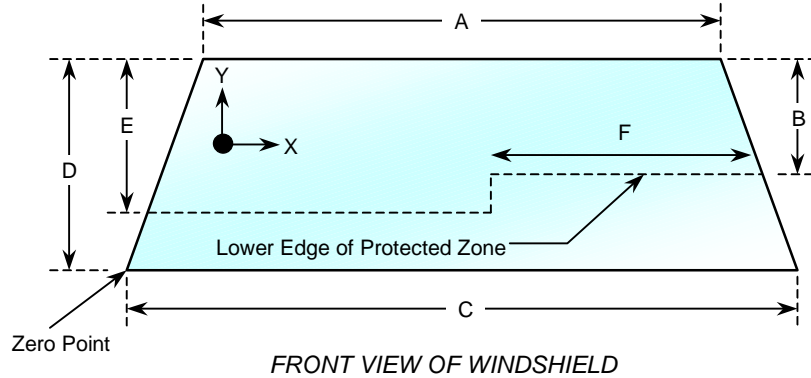
**WINDSHIELD DIMENSIONS**

Item	Units	Segment Length	Molding Width
A	mm	1300	8
B	mm	1600	0
C	mm	910	13
C	mm	910	13

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03



**WINDSHIELD AND  
 PROTECTED ZONE**

Item	Units	Value
A	mm	1300
B	mm	510
C	mm	1600
D	mm	910
E	mm	525
F	mm	410

**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 Nissan Murano SL AWD SUV  
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
Test Date: 3/4/03

Test Time: 3:15 PM

Temperature at Test Time: 11.1 Deg. C

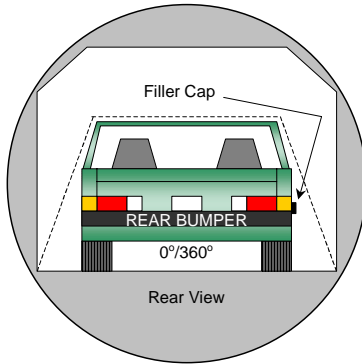
**STODDARD SOLVENT SPILLAGE MEASUREMENTS**

- 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

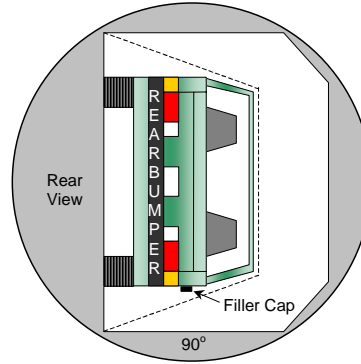
**DATA SHEET NO. 13**  
**FMVSS 301 STATIC ROLLOVER DATA**

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

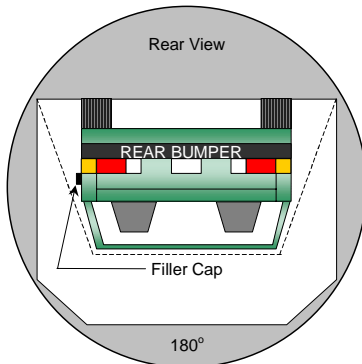
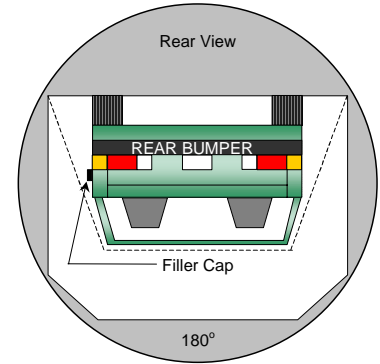
NHTSA No.: M35204  
 Test Date: 3/4/03



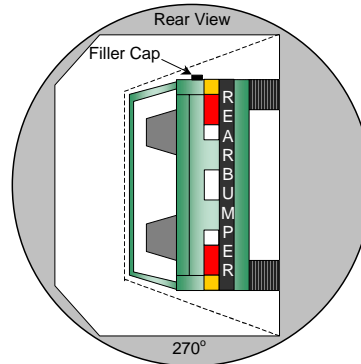
**0° to 90°**



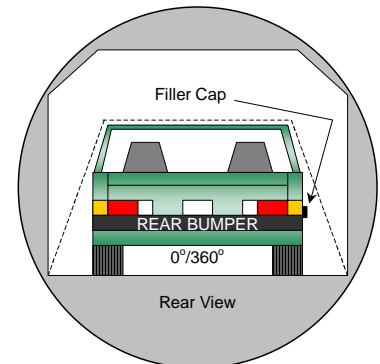
**90° to 180°**



**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....(CONTINUED)  
FMVSS 301 STATIC ROLLOVER DATA**

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**SOLVENT COLLECTION TIME TABLE IN SECONDS**

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	83	300	383
90° to 180°	79	300	379
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 Nissan Murano SL AWD SUV  
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
Test Date: 3/4/03

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4755	4253	-502
2	RSOV to front of engine	mm	4220	4075	-145
3	RSOV to firewall centerline	mm	3865	3773	-92
4	RSOV to leading edge of right door	mm	3276	3290	14
5	RSOV to leading edge of left door	mm	3276	3290	14
6	RSOV to lower leading edge of right door	mm	3226	3210	-16
7	RSOV to lower leading edge of left door	mm	3221	3220	-1
8	RSOV to upper trailing edge of right door	mm	2165	2172	7
9	RSOV to upper trailing edge of left door	mm	2163	2172	9
10	RSOV to lower trailing edge of right door	mm	2157	2142	-15
11	RSOV to lower trailing edge of left door	mm	2157	2143	-14
12	RSOV to bottom of right 'A' pillar	mm	3257	3268	11
13	RSOV to bottom of left 'A' pillar	mm	3266	3268	2
14	RSOV to firewall on right side	mm	3900	3800	-100
15	RSOV to firewall of left side	mm	3900	3860	-40
16	RSOV to steering column	mm	2859	2830	-29
17	Center of steering column to left 'A' pillar	mm	415	405	-10
18	Center of steering column to headlining	mm	420	410	-10
19	RSOV to right side of front bumper	mm	4488	4344	-144
20	RSOV to left side of front bumper	mm	4488	4280	-208
21	Length of engine block	mm	520	520	0
RD	RSOV to right side of dash panel	mm	3084	3070	-14
CD	RSOV to center of dash panel	mm	2970	2895	-75
LD	RSOV to left side of dash panel	mm	3082	3080	-2

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

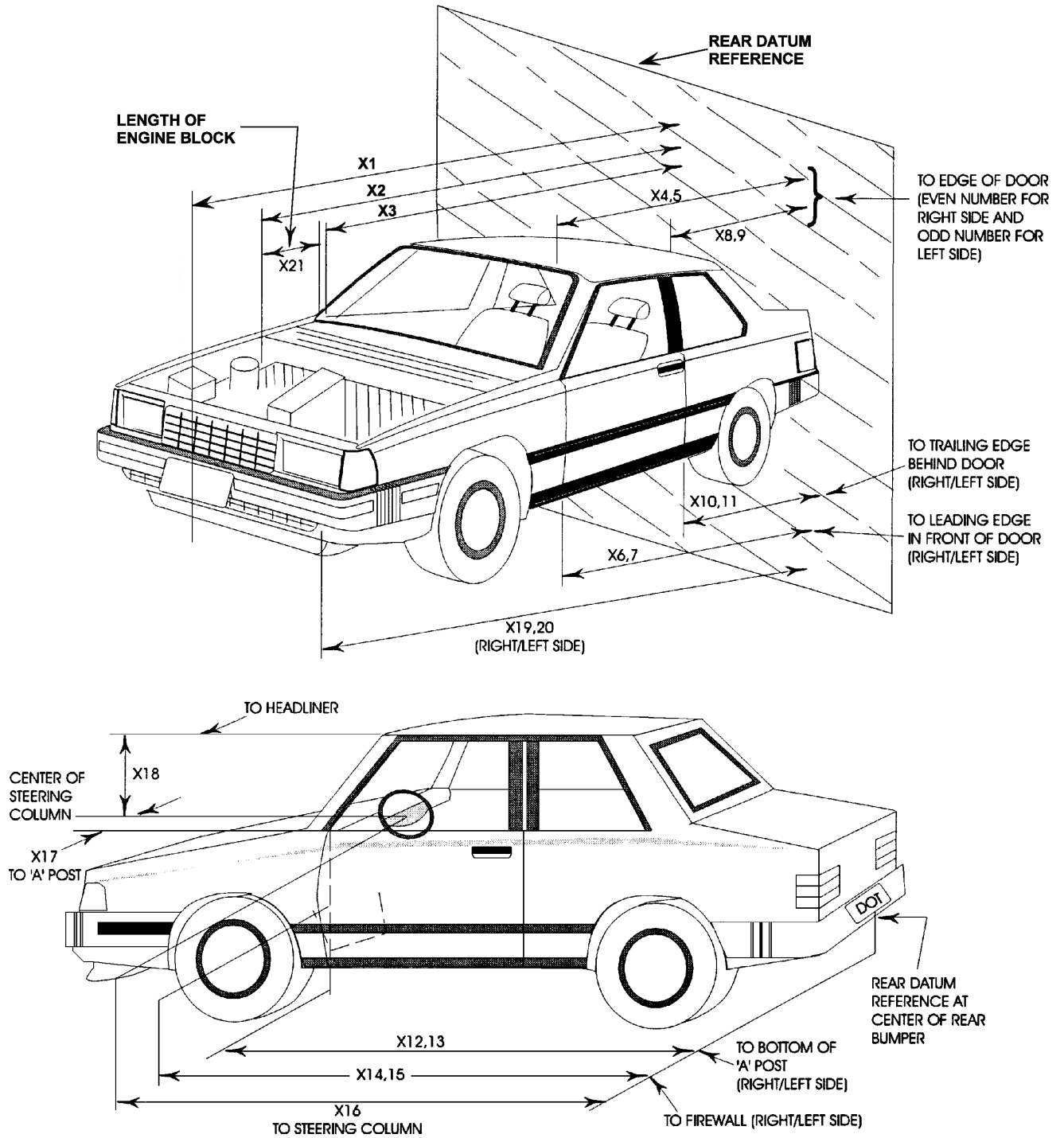
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length	mm	4755	4253	-502
2	Total Width	mm	1849	1862	13
3	Bumper Top Height	mm	776	800	24
4	Bumper Bottom Height	mm	358	315	-43
5	Longitudinal Member Top Height	mm	625	461	-164
6	Longitudinal Member Bottom Height	mm	597	376	-221
7	Distance Between Longitudinal Members	mm	620	1020	400
8	Longitudinal Member Width	mm	105	85	-20
9	Engine Top Height	mm	940	850	-90
10	Engine Bottom Height	mm	265	177	-88
11	Engine and Gear Box Width	mm	355	355	0
12	Front Bumper to Engine Distance	mm	535	190	-345
13	Front Shock Absorber Fixing Width	mm	441	432	-9
14	Bonnet Leading Edge Height	mm	905	762	-143
15	Front Schock Absorber Fixing Width	mm	1400	1154	-246
16	Front Bumper to Front Axle Distance	mm	980	540	-440
17	Front Axle to A-Pillar Distance	mm	533	454	-79
18	A-Pillar to B-Pillar Distance	mm	1145	1118	-27
19	B-Pillar to Rear Axla Distance	mm	1195	1215	20
20	B-Pillar to C-Pillar Distance	mm	831	825	-6
21	Roof Sill Bottom Height	mm	1521	1488	-33
22	Roof Sill Top Heigth	mm	1610	1605	-5
23	Floor Sill Bottom Height	mm	309	245	-64
24	Floor Sill Top Height	mm	450	420	-30

All Measurements in millimeters

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03



**DATA SHEET NO. 15**  
**CAMERA LOCATIONS**

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
Test Date: 3/4/03

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	17-70	24
2	Driver Overall	1930	8357	1321	4	7832	13	1030
2B	Driver Overall	1626	8230	1092	4	7727	17	No Time
3	Driver Close-up	1727	8230	1600	4	7724	35	990
4	3/4 Driver	6477	10185	4648	13	11052	35-85	1000
5	Steering Column	1524	8230	3404	20	8024	19	1030
6	Steering Column	1524	8230	2997	16	7925	19	1020
7	Passenger Overall	2057	-8306	1219	6	7777	14	1000
8	Passenger Close-up	1676	-8052	1291	4	7544	35	1020
9	3/4 Passenger	8026	-8941	2997	9	10326	80	900
10	Passenger Door	2438	-13106	1524	4	12576	50	No Time
11	Overhead	610	0	6172	90	N/A	13	1050
12	Driver Front	-610	406	2743	40	N/A	12	No Time
13	Passenger Front	-610	406	2743	40	N/A	13	No Time
14	Pit Engine	762	0	-1499	90	N/A	10	No Time
15	Pit Gas Tank	3658	0	-1499	15	N/A	6	No Time
16	Driver Side Child	2642	8230	2286	1	7869	35	No Time
16B	Driver Side Child	2642	6096	1524	10	5676	25	510
17	Passenger Side Child	2438	-9144	2032	1	8761	25	No Time
17B	Passenger Side Child	2743	-8331	1524	10	7894	25	DNR

X - Barrier Face Y - Monorail Centerline Z - Ground DNR = Did Not Run

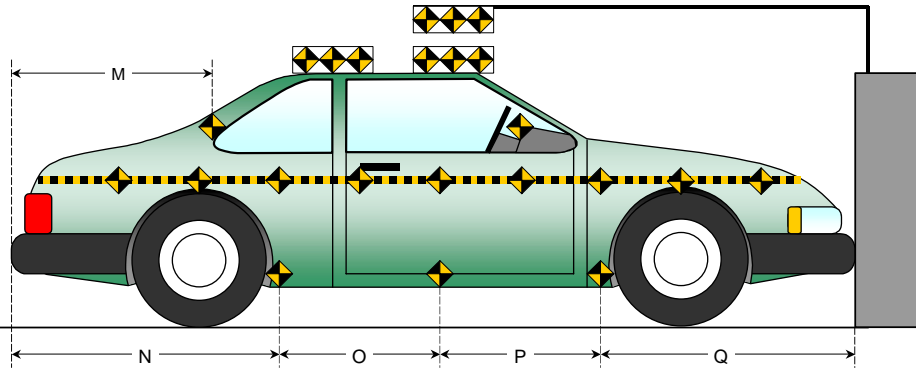
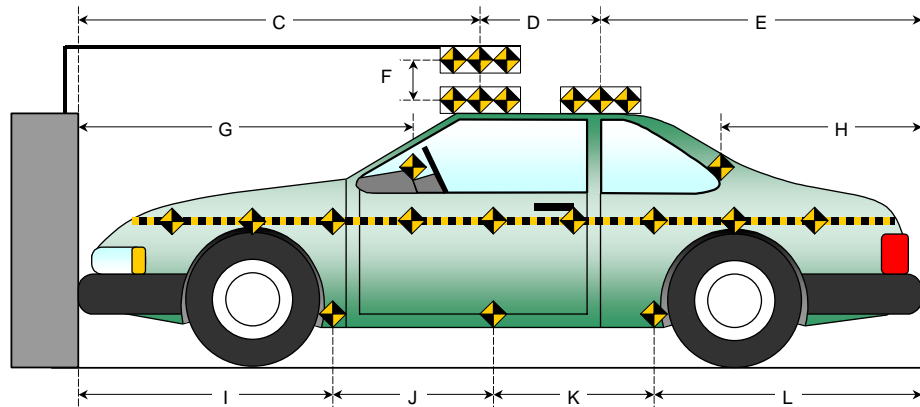
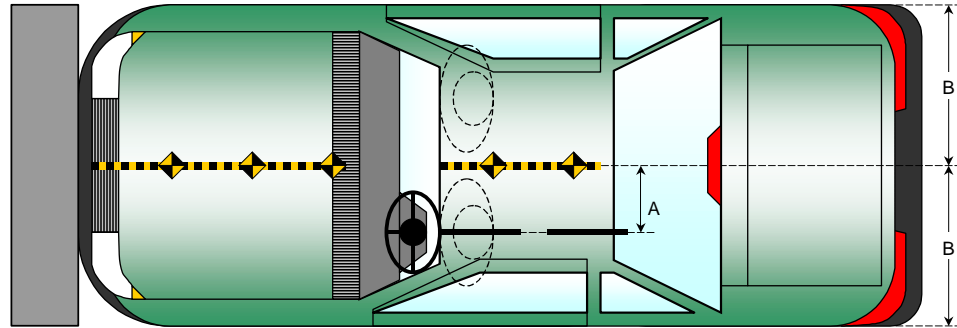
**DATA SHEET NO. 16**  
**PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

All Dimensions  
 in mm

Item	Value
A	563
B	929
C	2507
D	607
E	1465
F	155
G	1722
H	1295
I	1552
J	876
K	876
L	1495
M	1299
N	1495
O	876
P	876
Q	1552



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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

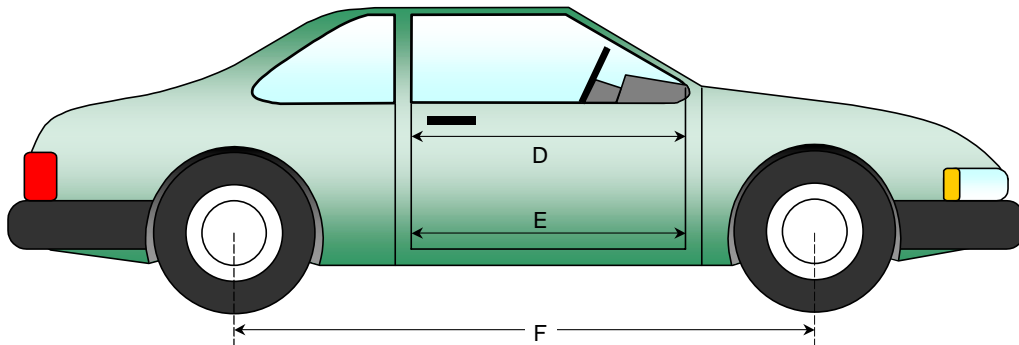
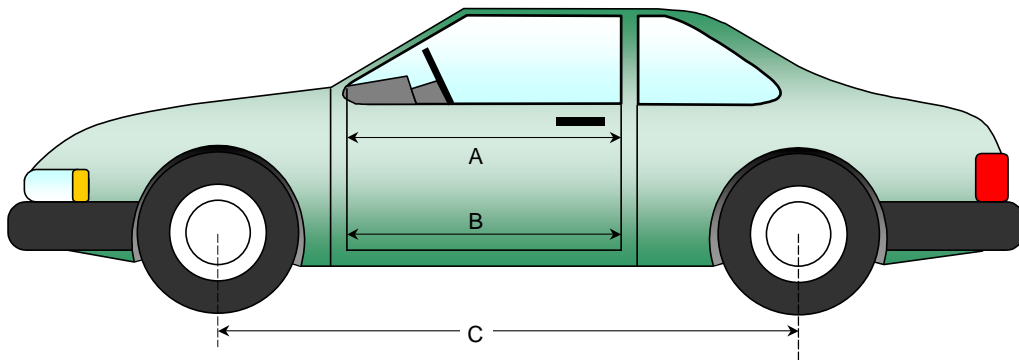
NHTSA No.: M35204  
 Test Date: 3/4/03

**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1026	1022	-4
B	Left Side Lower	mm	964	963	-1
D	Right Side Upper	mm	1026	1022	-4
E	Right Side Lower	mm	969	966	-3

**WHEELBASE MEASUREMENTS**

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheel base	mm	2830	2770	-60
F	Right Side Wheel base	mm	2830	2788	-42



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

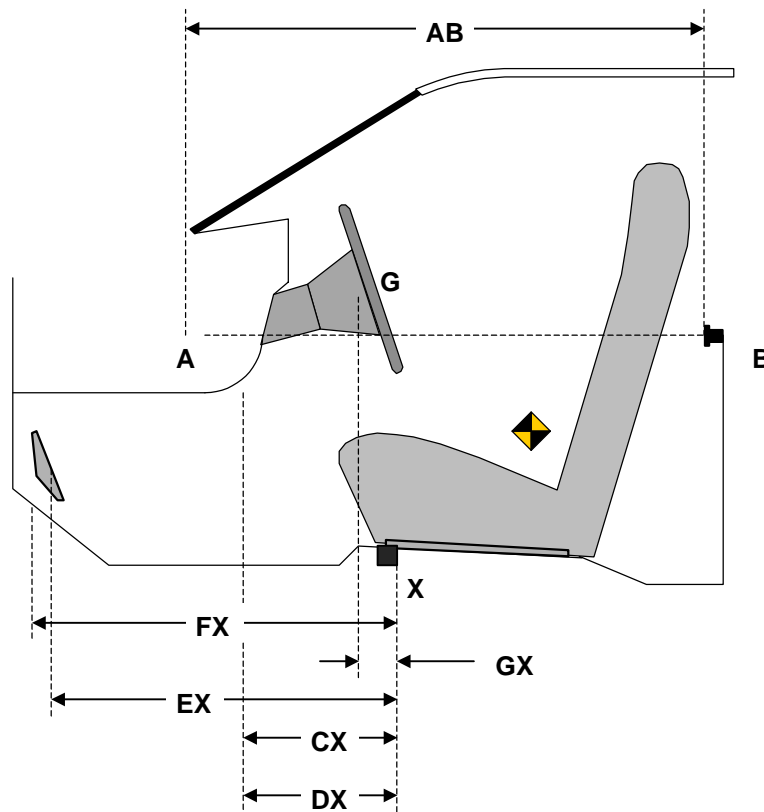
Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**DRIVER COMPARTMENT INTRUSION**

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	1026	1022	-4
CX	Left Knee Bolster to X	mm	333	330	-3
DX	Right Knee Bolster to X	mm	333	305	-28
EX	Brake Pedal to X	mm	596	470	-126
FX	Foot Rest to X	mm	615	568	-47
GX	Center of Steering Wheel Hub to X	mm	73	105	32

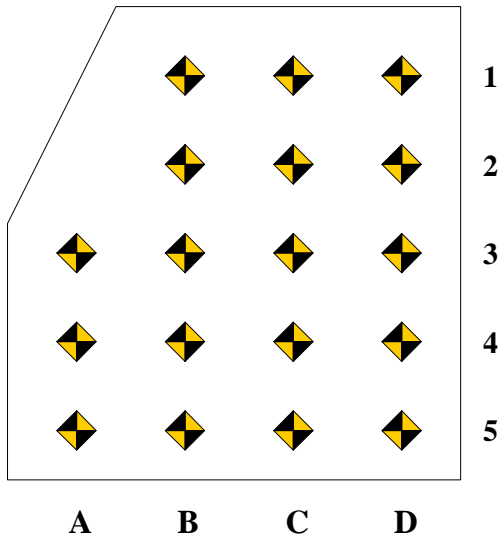
X = Left Front Seat Outboard Anchor Bolt Head



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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03



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.

**DRIVER FLOOR PAN X-AXIS**

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		698	694	694		673	672	663		-25	-22	-31
2		599	594	594		591	590	595		-8	-4	1
3	493	497	494	494	489	495	490	495	-4	-2	-4	1
4	393	397	394	394	390	397	394	394	-3	0	0	0
5	293	294	294	294	290	294	293	294	-3	0	-1	0

**DRIVER FLOOR PAN Z-AXIS**

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		5	0	3		7	2	8		2	2	5
2		-25	-55	-52		-23	-55	-58		2	0	-6
3	-60	-35	-60	-60	-74	-38	-68	-72	-14	-3	-8	-12
4	-62	-35	-60	-62	-70	-38	-70	-68	-8	-3	-10	-6
5	-60	-35	-60	-62	-60	-38	-62	-64	0	-3	-2	-2

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

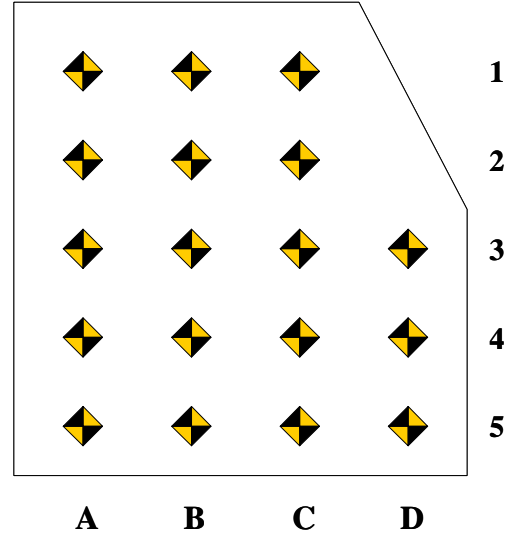
NHTSA No.: M35204  
 Test Date: 3/4/03

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	683	683	700		663	672	664		-20	-11	-36	
2	578	573	600		573	564	577		-5	-9	-23	
3	480	473	490	490	467	464	470	480	-13	-9	-20	-10
4	380	370	385	390	367	360	370	380	-13	-10	-15	-10
5	280	270	280	290	267	260	267	280	-13	-10	-13	-10

**PASSENGER FLOOR PAN Z-AXIS**

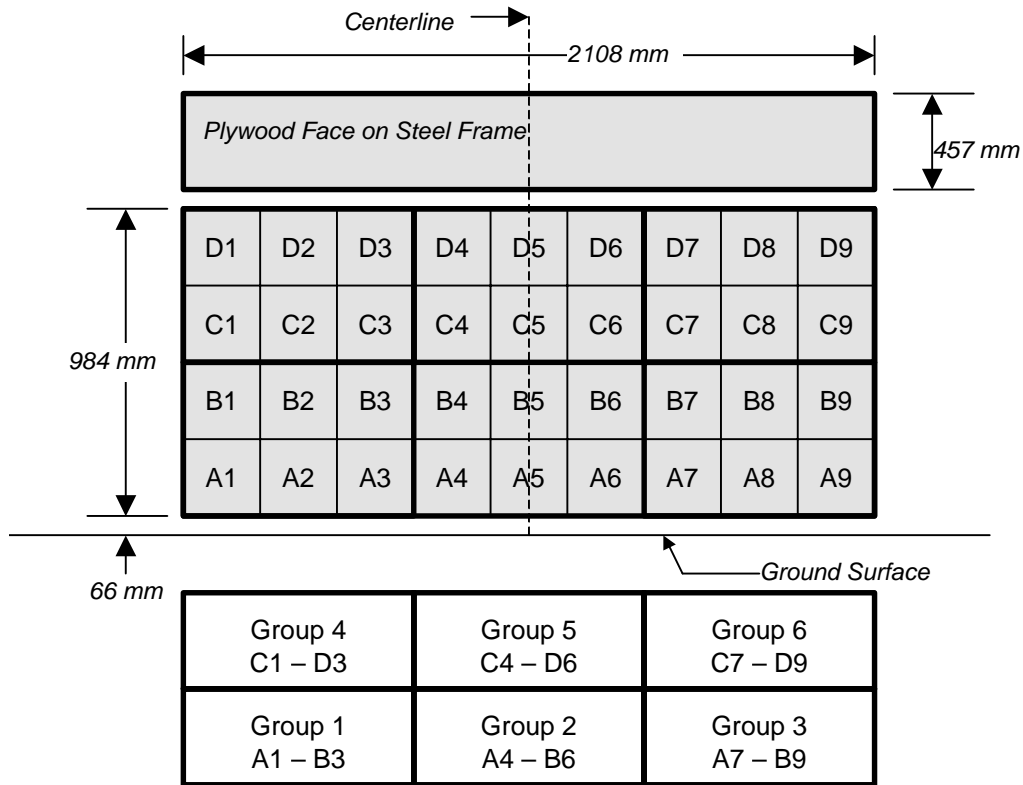
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-4	-1	11		-4	2	-8		0	3	-19	
2	-56	-31	-49		-54	-30	-5		2	1	44	
3	-59	-41	-59	-60	-56	-34	-66	-76	3	7	-7	-16
4	-60	-40	-61	-61	-54	-30	-68	-68	6	10	-7	-7
5	-60	-45	-60	-61	-48	-32	-64	-65	12	13	-4	-4

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**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 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**VEHICLE INFORMATION**

VIN: JN8AZ08W93W210413  
 Vehicle Size Category: 4 Door MPV

Wheel base (mm): 2830  
 Test Weight (kg): 2028

**ACCELEROMETER DATA**

Accelerometer Location: Left rear floor pan  
 Cal. Procedure/Interval: 6 months / drop test  
 Integration Algorithm: NHTSA Standard  
 Impact Velocity (km/h): 56.07  
 Velocity Change (km/h): 62.7

Linearity: Good

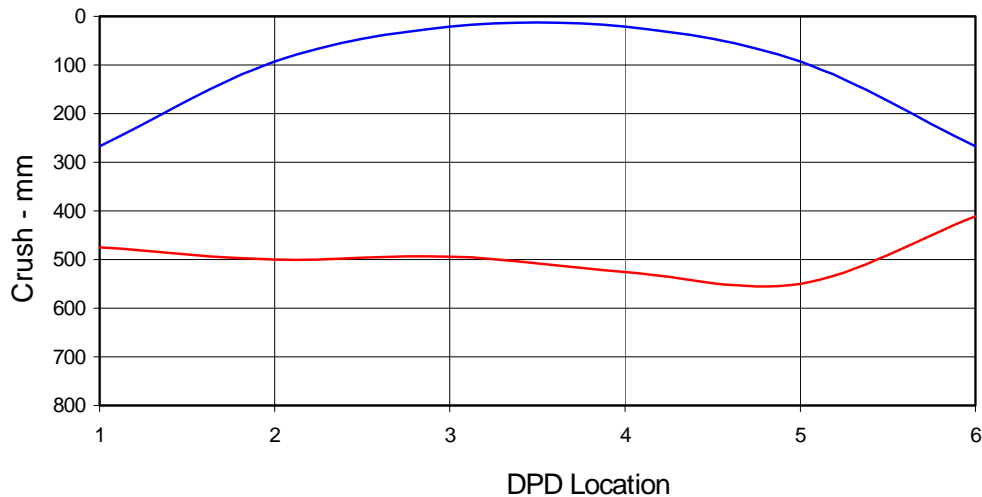
Time of Separation (msec): 66.0

**CRUSH PROFILE**

Collision Deformation Classification: 12FDEW6  
 Damage Region Length (mm): 1499

Midpoint of Damage: Vehicle Centerline  
 Impact Mode: Full Frontal

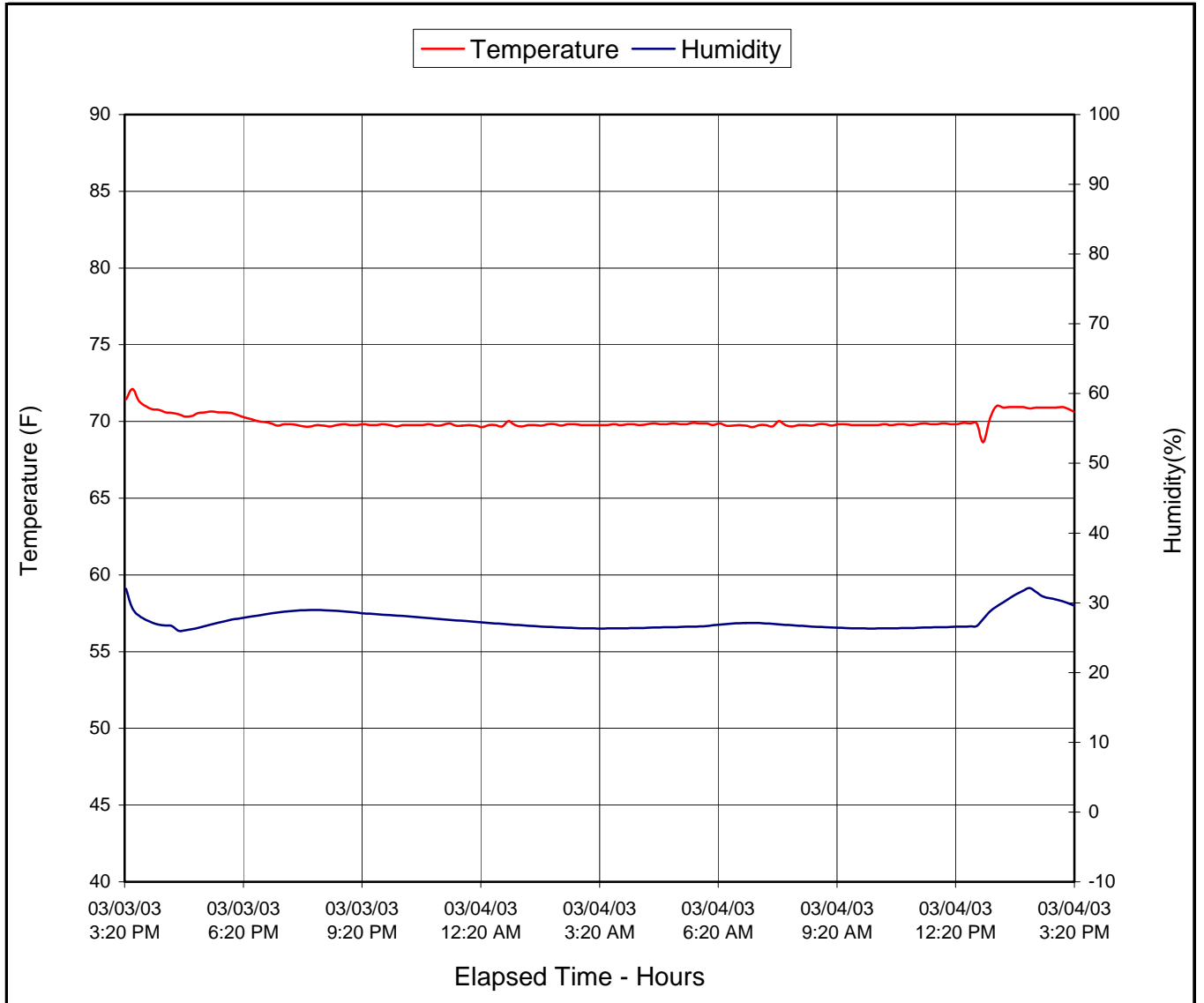
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	267	475	-208
C2	Crush zone 2 on left side	mm	93	500	-407
C3	Crush zone 3 on left side	mm	21	494	-473
C4	Crush zone 4 on right side	mm	21	526	-505
C5	Crush zone 5 on right side	mm	93	550	-457
C6	Crush zone 6 at right side	mm	267	411	-144



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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
Test Date: 3/4/03



**APPENDIX A**

**PHOTOGRAPHS**

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Figure A-1: Load Cell Location

MANUFACTURED BY  
NISSAN MOTOR CO.,LTD.

DATE 12/02

GVWR/PNBV 5053 LBS.  
GAWR/PNBE FR. 2681 LBS.  
WITH P235/65R18 TIRES,  
18x7½ RIMS.AT 33 PSI  
COLD SINGLE.

GAWR/PNBE RR. 2504 LBS.  
WITH P235/65R18 TIRES,  
18x7½ RIMS.AT 33 PSI  
COLD SINGLE.

THIS VEHICLE CONFORMS  
TO ALL APPLICABLE FED-  
ERAL MOTOR VEHICLE SA-  
FETY AND THEFT PREVEN-  
TION STANDARDS IN EFF-  
ECT ON THE DATE OF MA-  
NUFACTURE SHOWN ABOVE.



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1  
0  
4  
1  
3

JN8AZ08W93W210413

MPV

Figure A-2: Vehicle Certification Label

VEHICLE CAPACITY WEIGHT	<b>860</b> lbs	SEATING CAPACITY	FRONT AVANT	<b>2</b>	TOTAL TOTAL	SPARE TIRE ROUE DE SECOURS	kPa (psi)
POIDS UTILE DU VEHICULE	<b>390</b> kg	NOMBRE DE PLACES	REAR ARRIERE	<b>3</b>	<b>5</b>	<b>T165/90D18</b>	<b>420(60)</b>
RECOMMENDED COLD TIRE INFLATION PRESSURE. PRESSION DE GONFLAGE RECOMMANDEE DES PNEUS FROIDS.						DO NOT USE IN EXCESS OF 50 MPH, 80 km/h. SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION. UTILISATION A UNE VITESSE MAX 50 MPH, 80 km/h. POUR LES DETAILS SE REFERER AU MANUEL DU CONDUCTEUR.	
TIRE SIZE DIMENSIONS	FRONT AVANT	kPa (psi)	REAR ARRIERE	kPa (psi)			
<b>P235/65R18 104T</b>	<b>230(33)</b>		<b>230(33)</b>				
<b>9</b>							<b>CA000</b>

Figure A-3: Vehicle Tire Label



Figure A-4: Right Front  $\frac{3}{4}$  View, As Received



A-5

TR-P23001-13-NC

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 (Vehicle Moved)



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 3/4 View

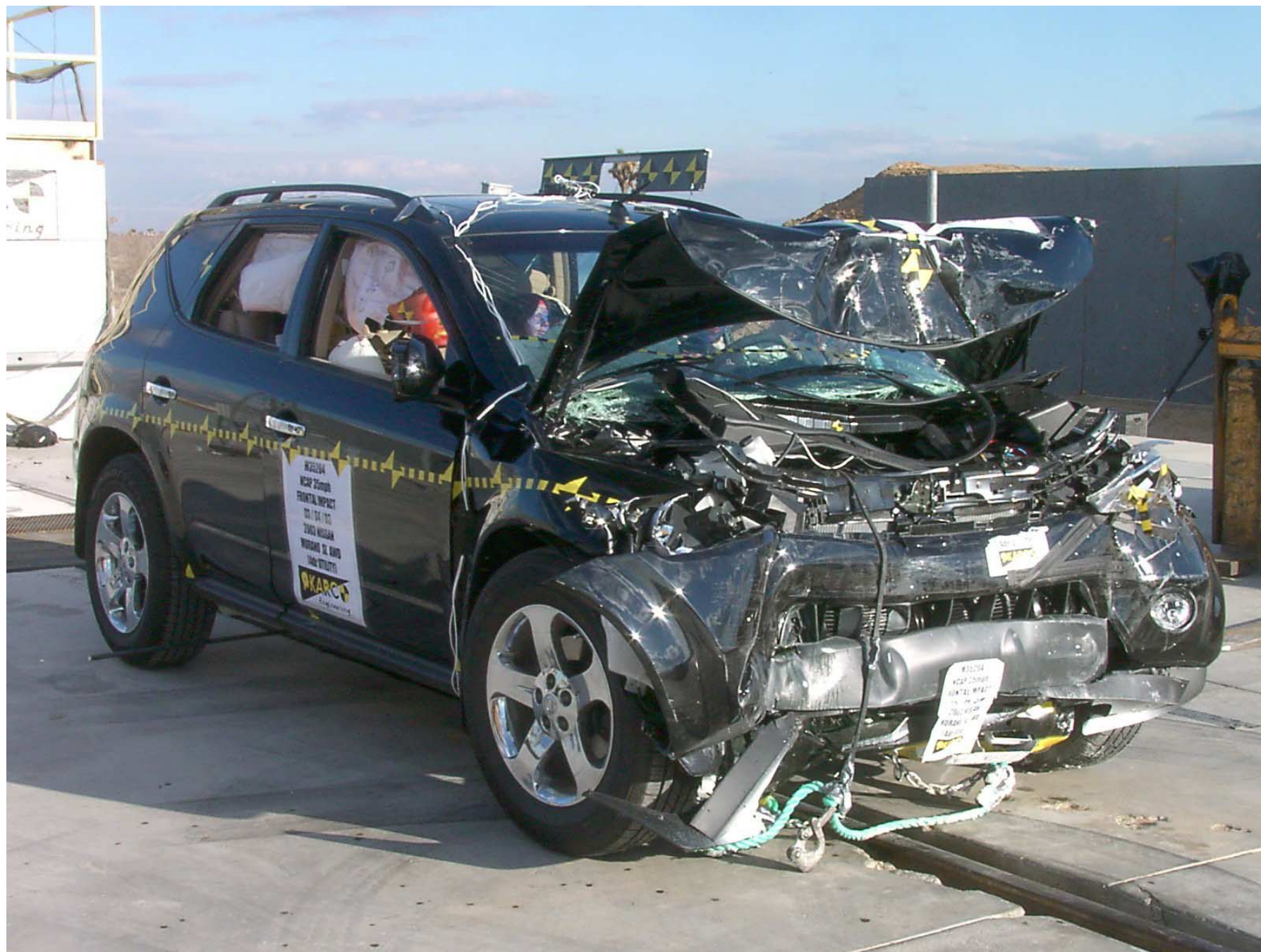


Figure A-13: Post-Test Right Front ¾ View (Vehicle Moved)



Figure A-14: Pre-Test Left Rear 3/4 View



A-15

TR-P23001-13-NC

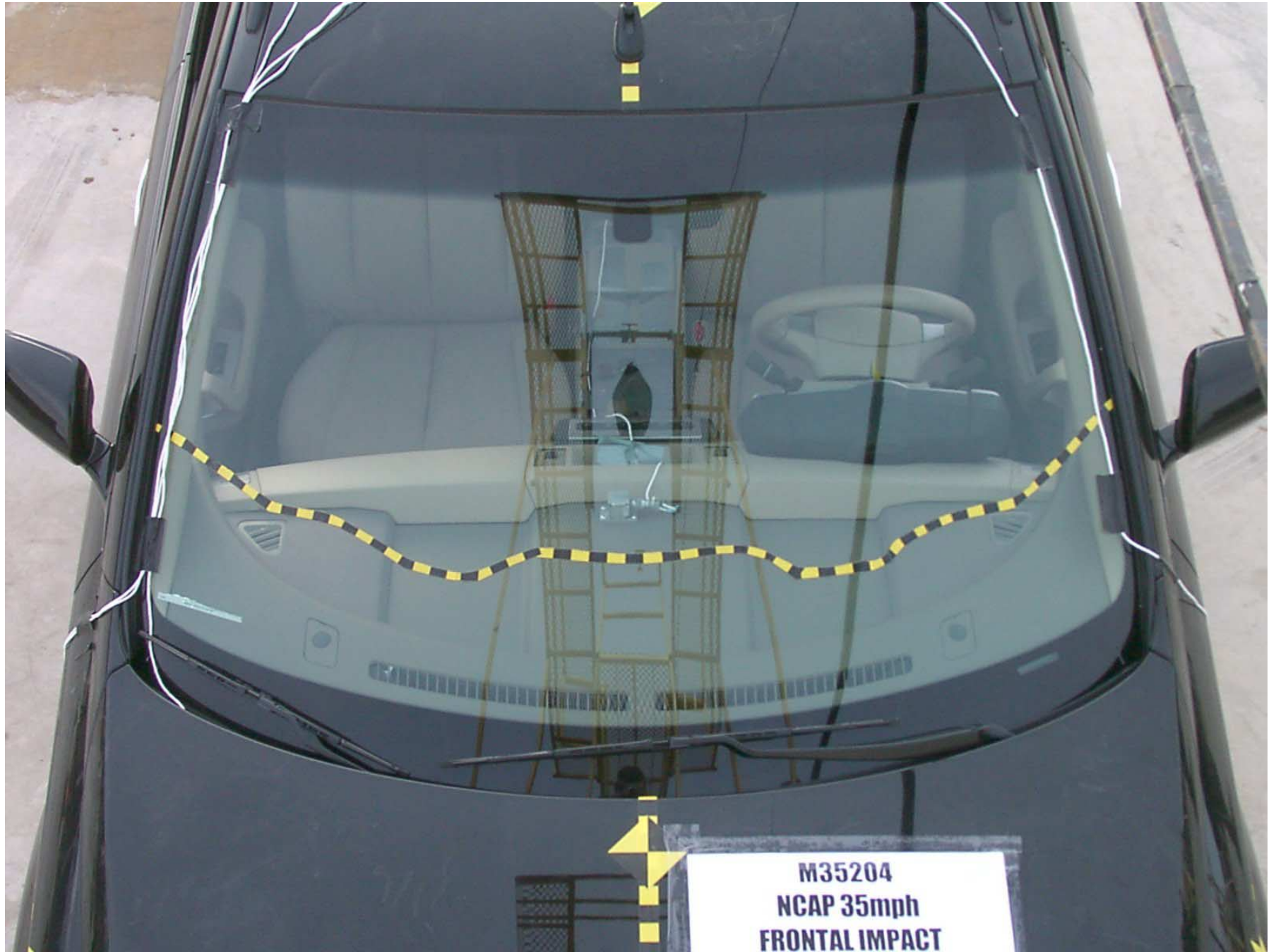
Figure A-15: Post-Test Left Rear ¾ View



Figure A-16: Left Rear  $\frac{3}{4}$  View of Doors After Impact



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



A-18

TR-P23001-13-NC

Figure A-18: Pre-Test Windshield View



Figure A-19: Post-Test Windshield View



M35204  
NCAP 35mph  
FRONTAL IMPACT  
03 / 04 / 03  
2003 NISSAN  
MURANO SL AWD  
(4dr UTILITY)

Figure A-20: Pre-Test Engine Compartment



Figure A-21: Post-Test Engine Compartment (Vehicle Moved)



Figure A-22: Pre-Test Fuel Cap



Figure A-23: Post-Test Fuel Cap



Figure A-24: Pre-Test Front Underbody View

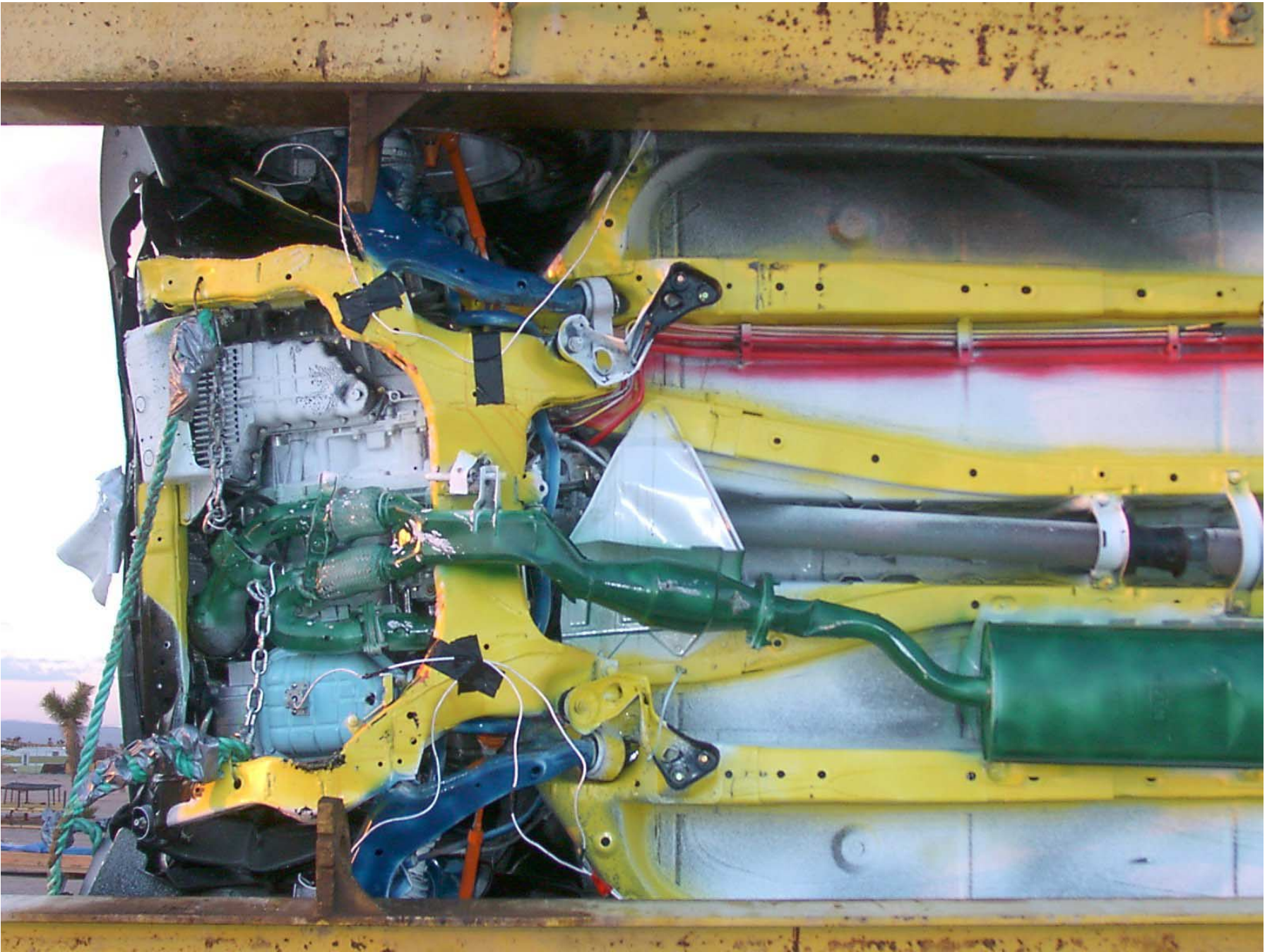


Figure A-25: Post-Test Front Underbody View

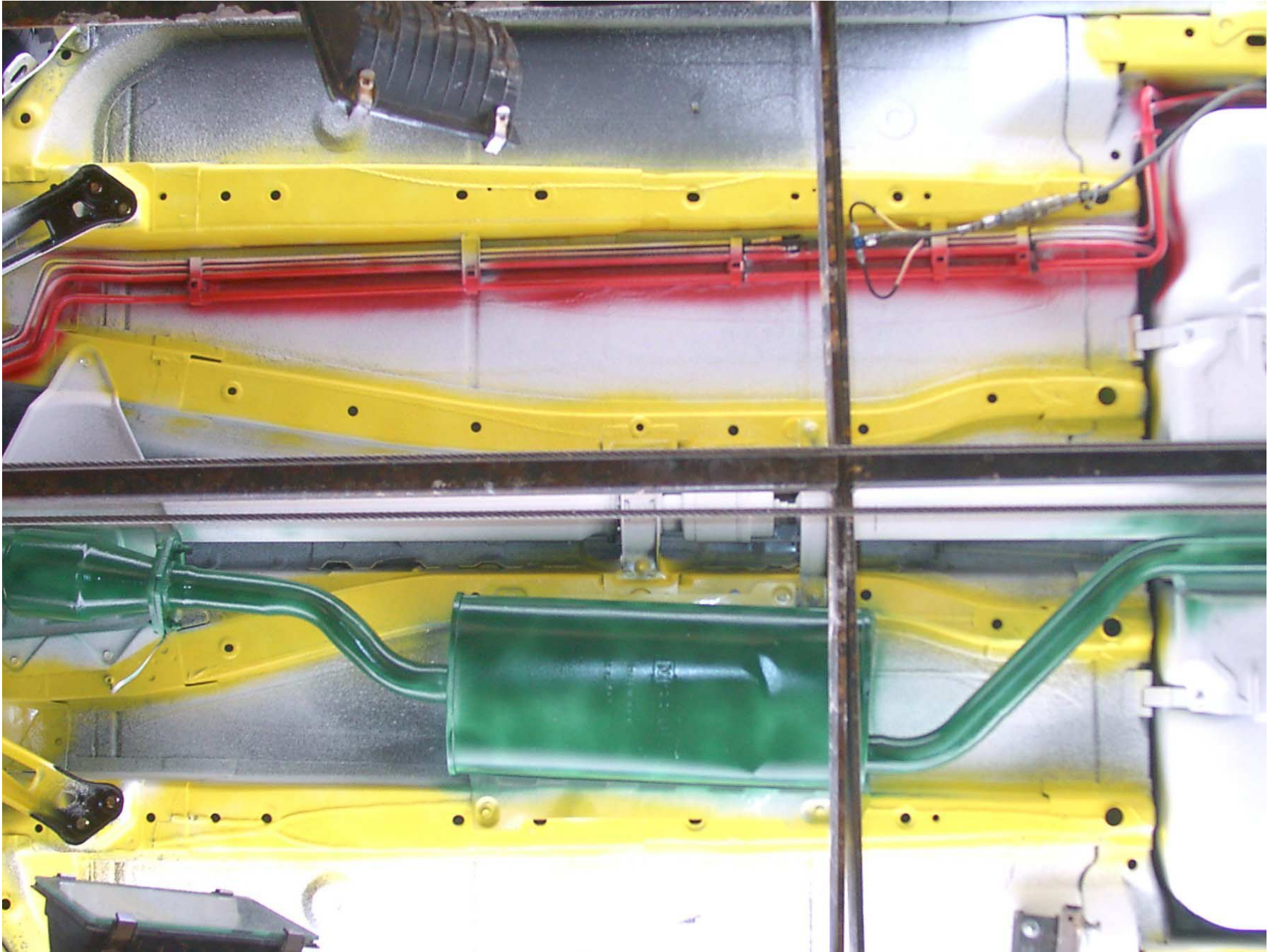


Figure A-26: Pre-Test Mid Underbody View

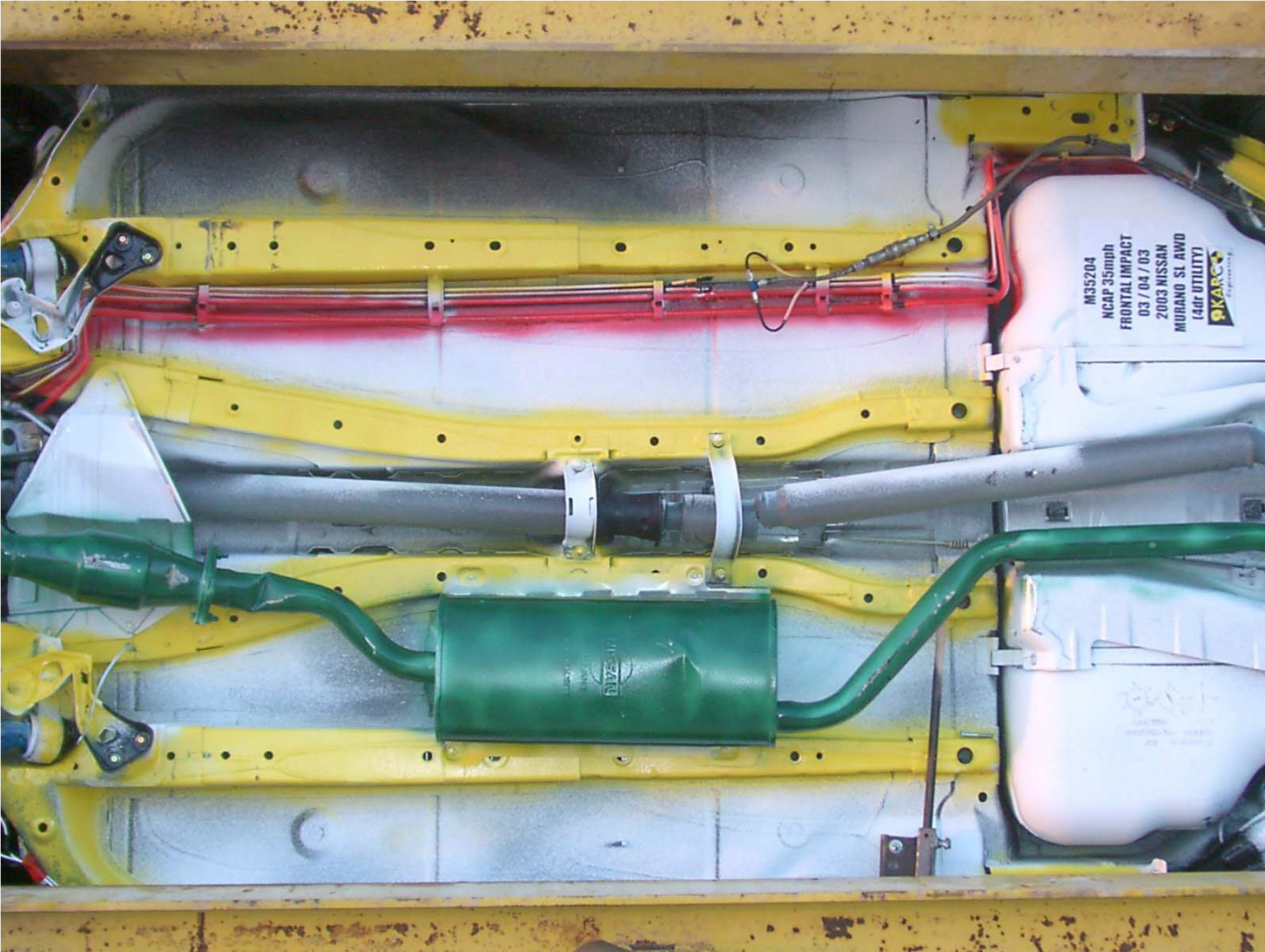


Figure A-27: Post-Test Mid Underbody View

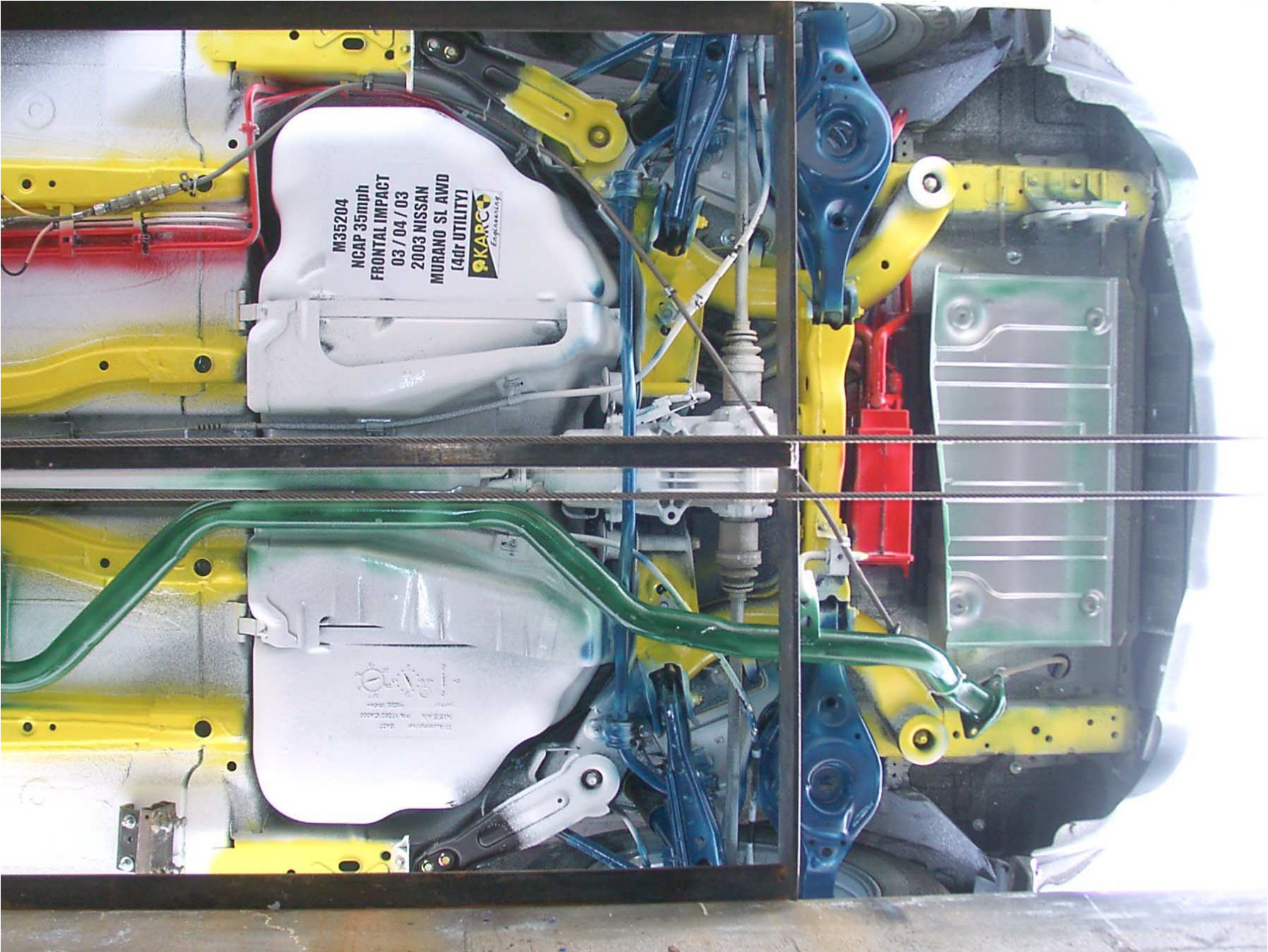


Figure A-28: Pre-Test Rear Underbody View

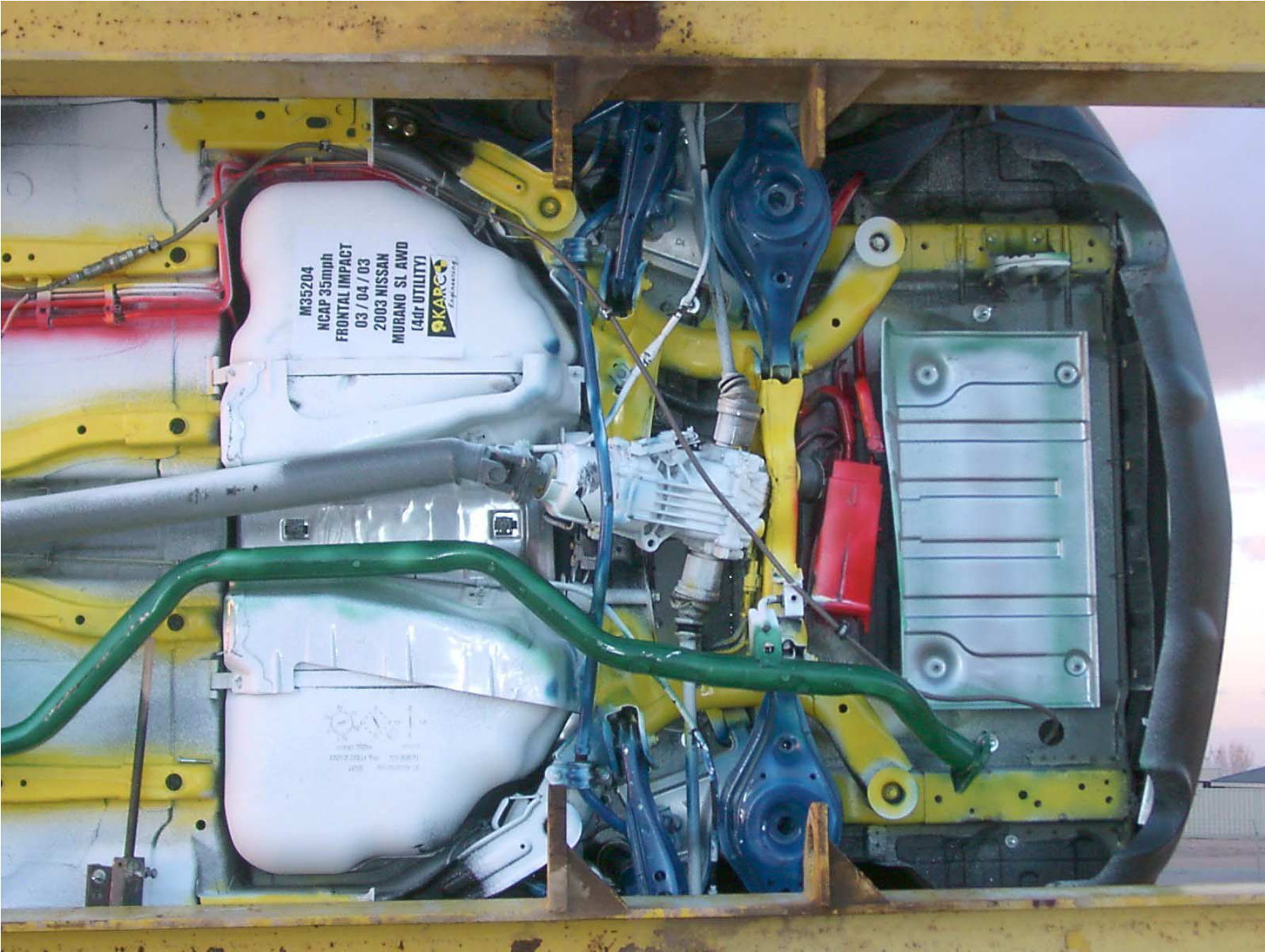


Figure A-29: Post-Test Rear Underbody View



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: Post-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

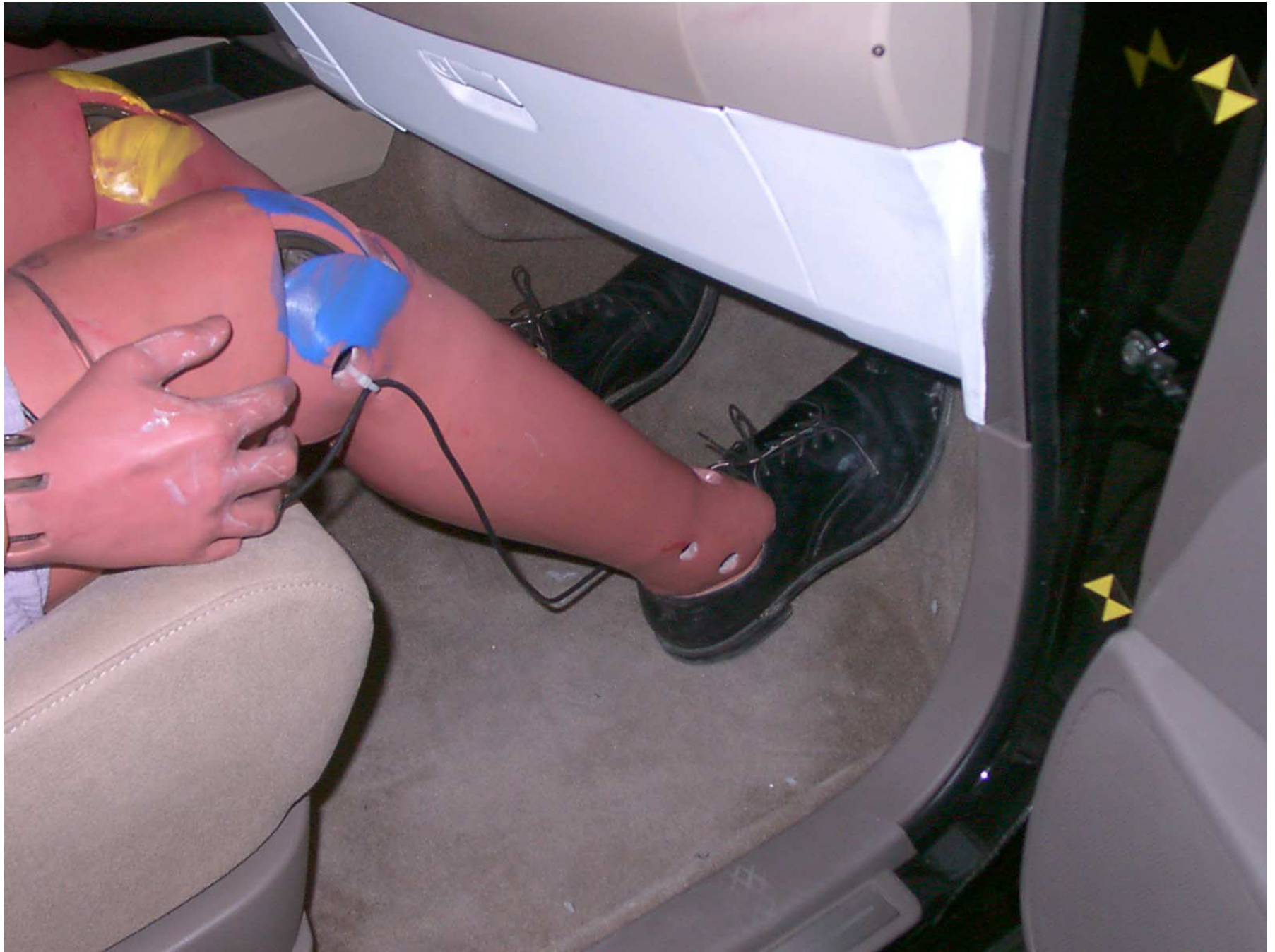


Figure A-50: Pre-Test Passenger Dummy Feet



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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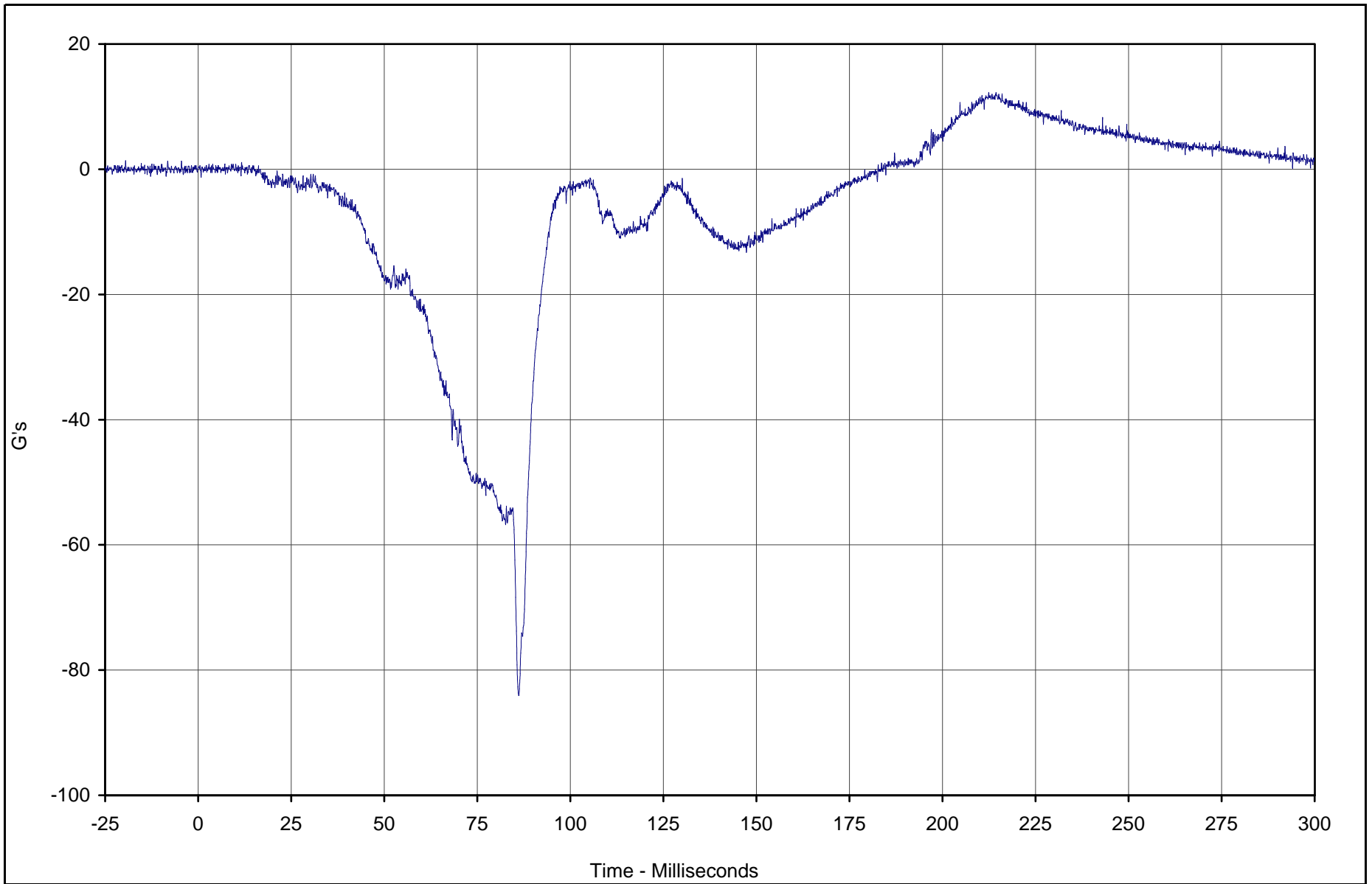
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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary X	001	FIL	G's	12.3	212.4	-84.0	86.1	1000

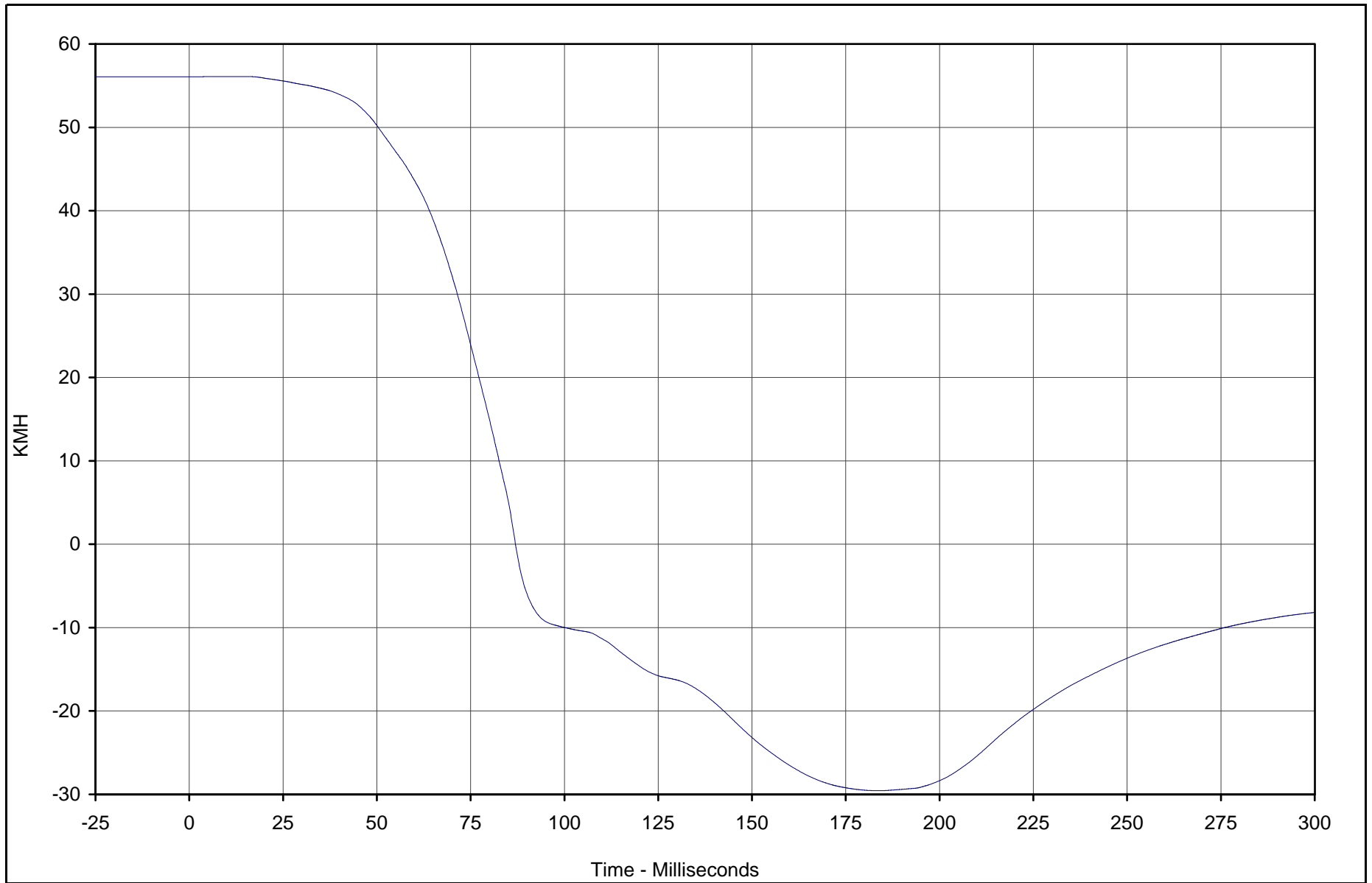


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary X Velocity	001	IN1	KMH	56.1	14.6	-29.6	183.5	180

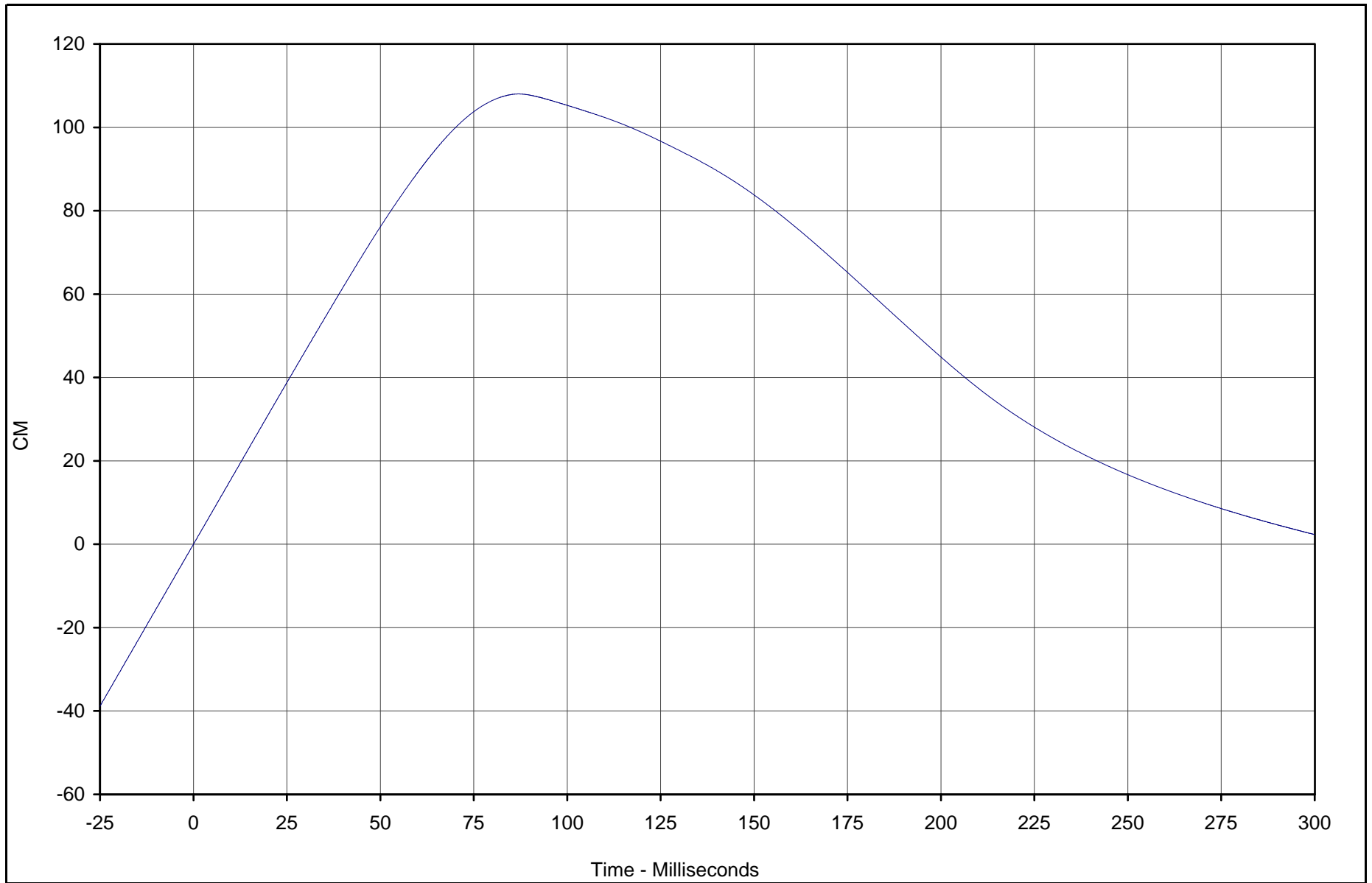


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary X Displ.	001	IN2	CM	108.0	87.0	0.0	0.0	180

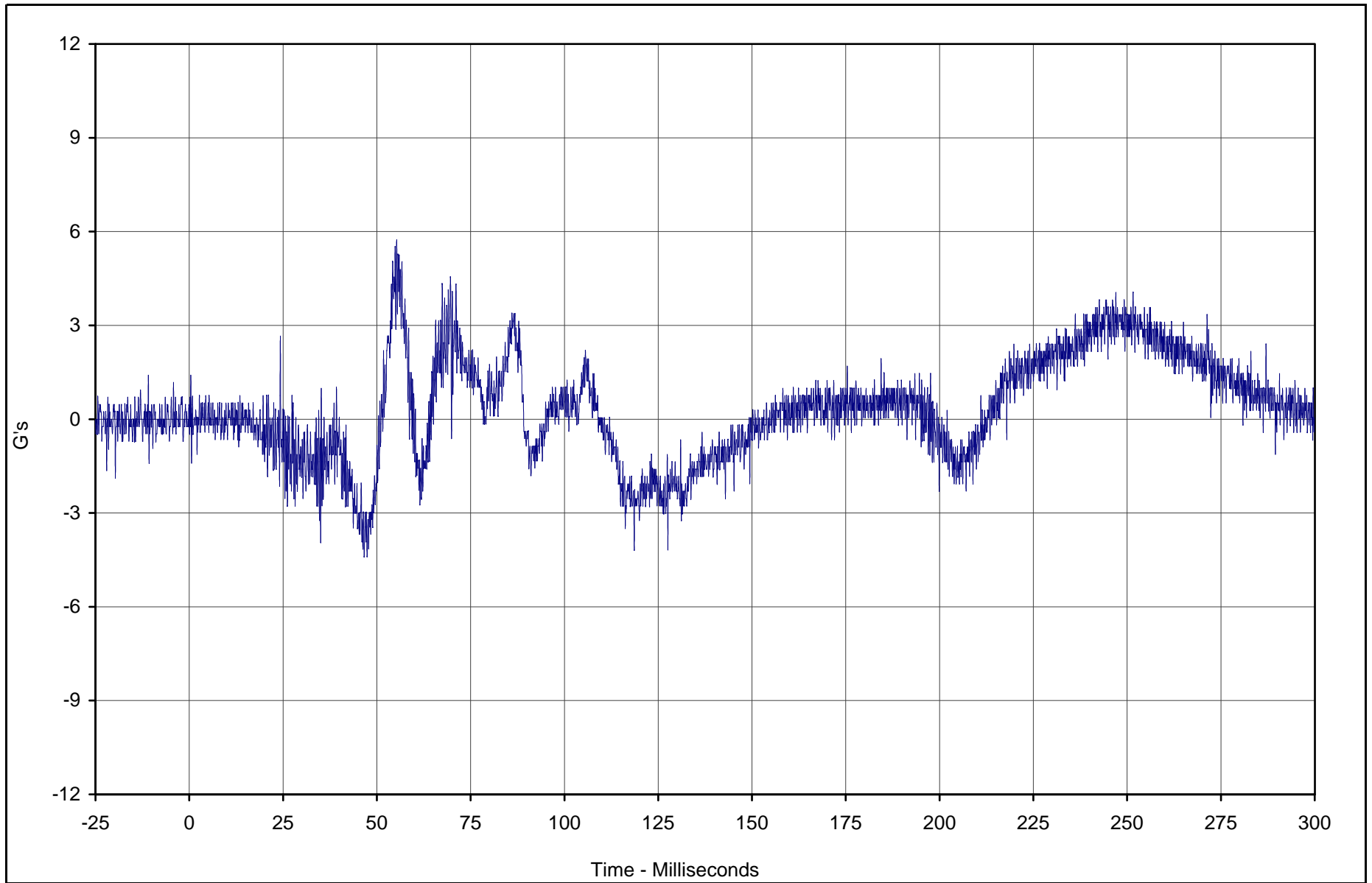


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary Y	002	FIL	G's	5.7	55.3	-4.4	46.6	1000

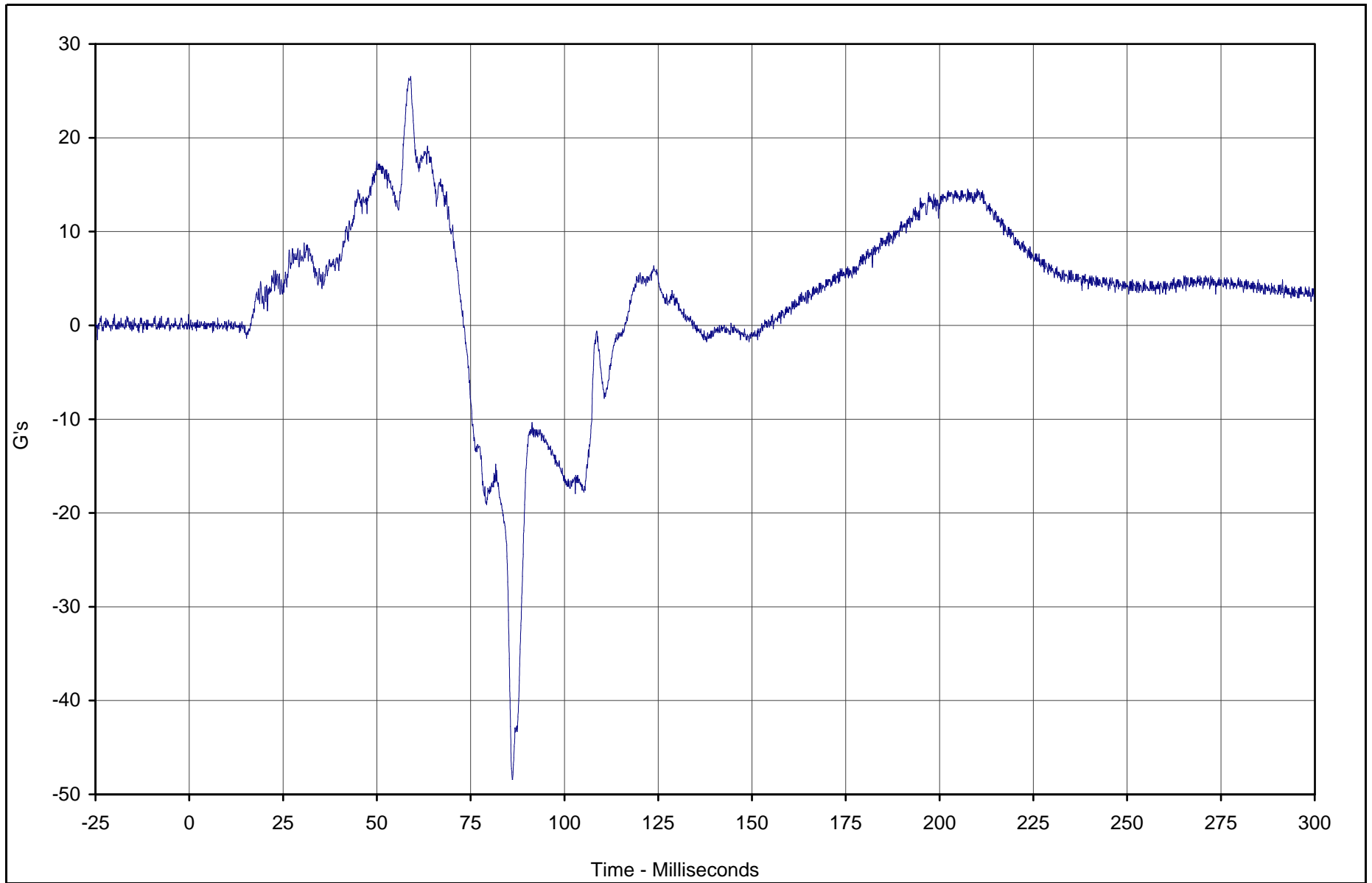


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Primary Z	003	FIL	G's	26.5	59.0	-48.4	86.1	1000

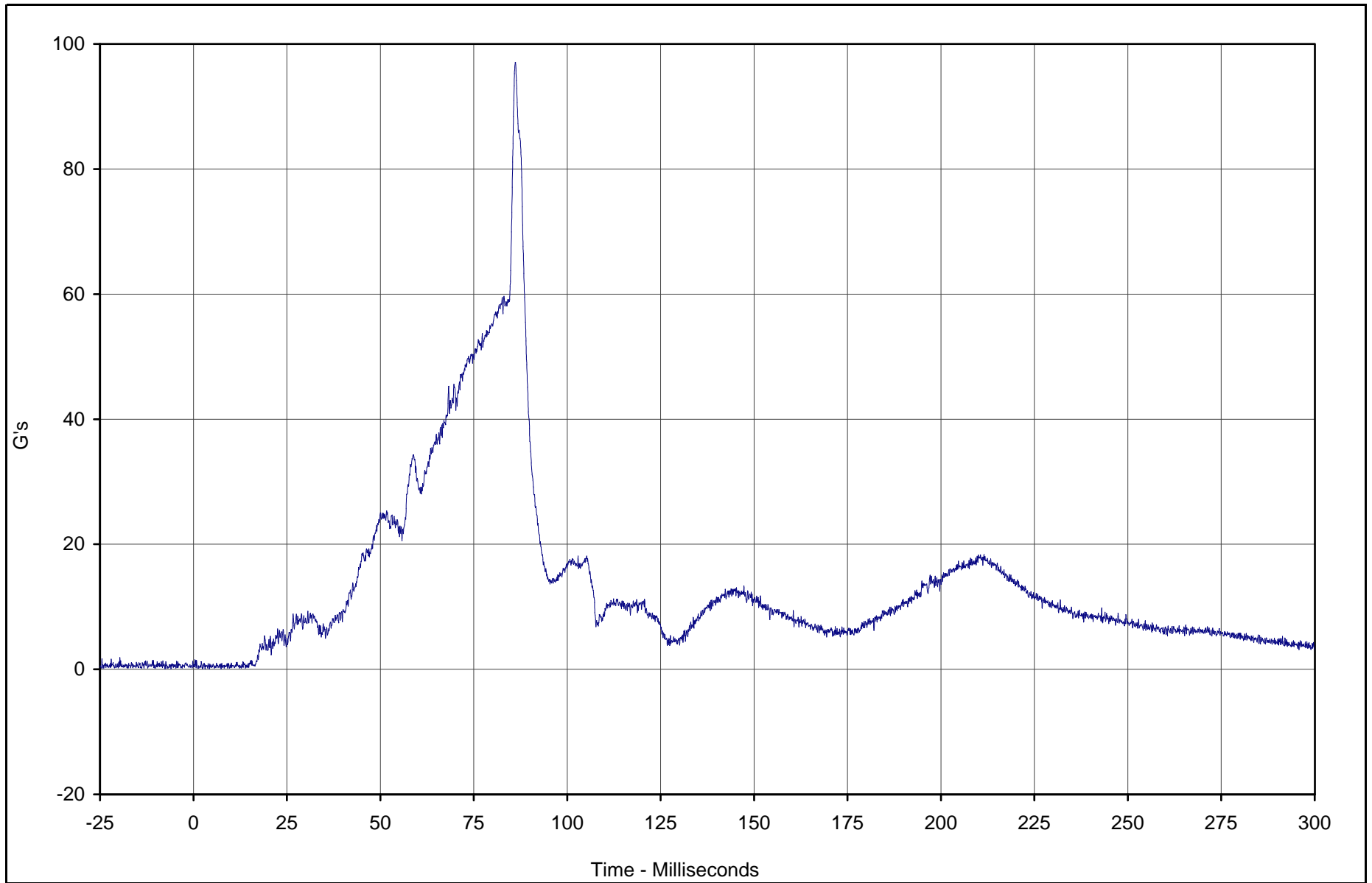


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Resultant Primary	001	RES	G's	97.0	86.1	0.1	3.1	1000

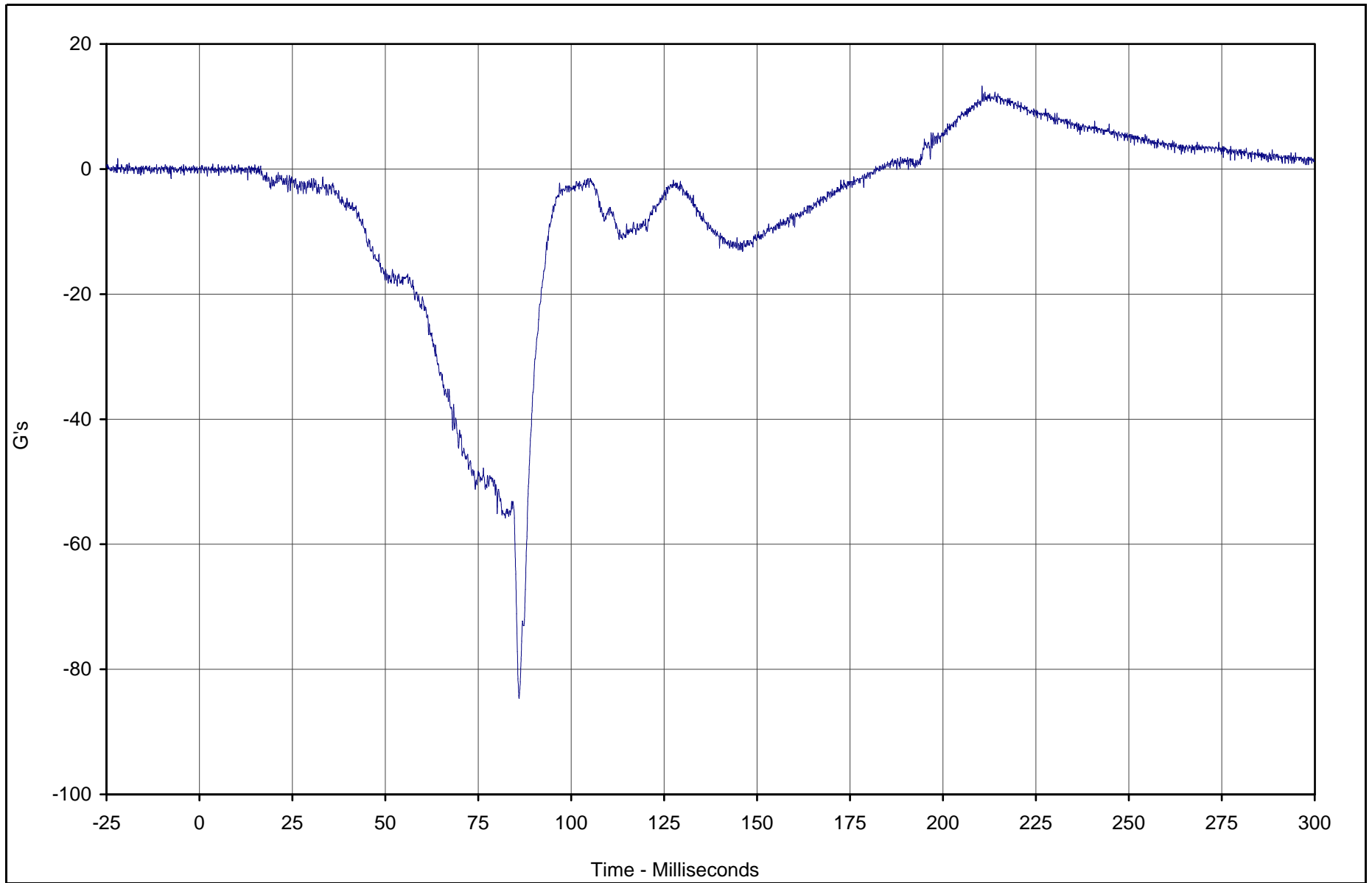


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant X	004	FIL	G's	13.3	210.5	-84.7	86.0	1000

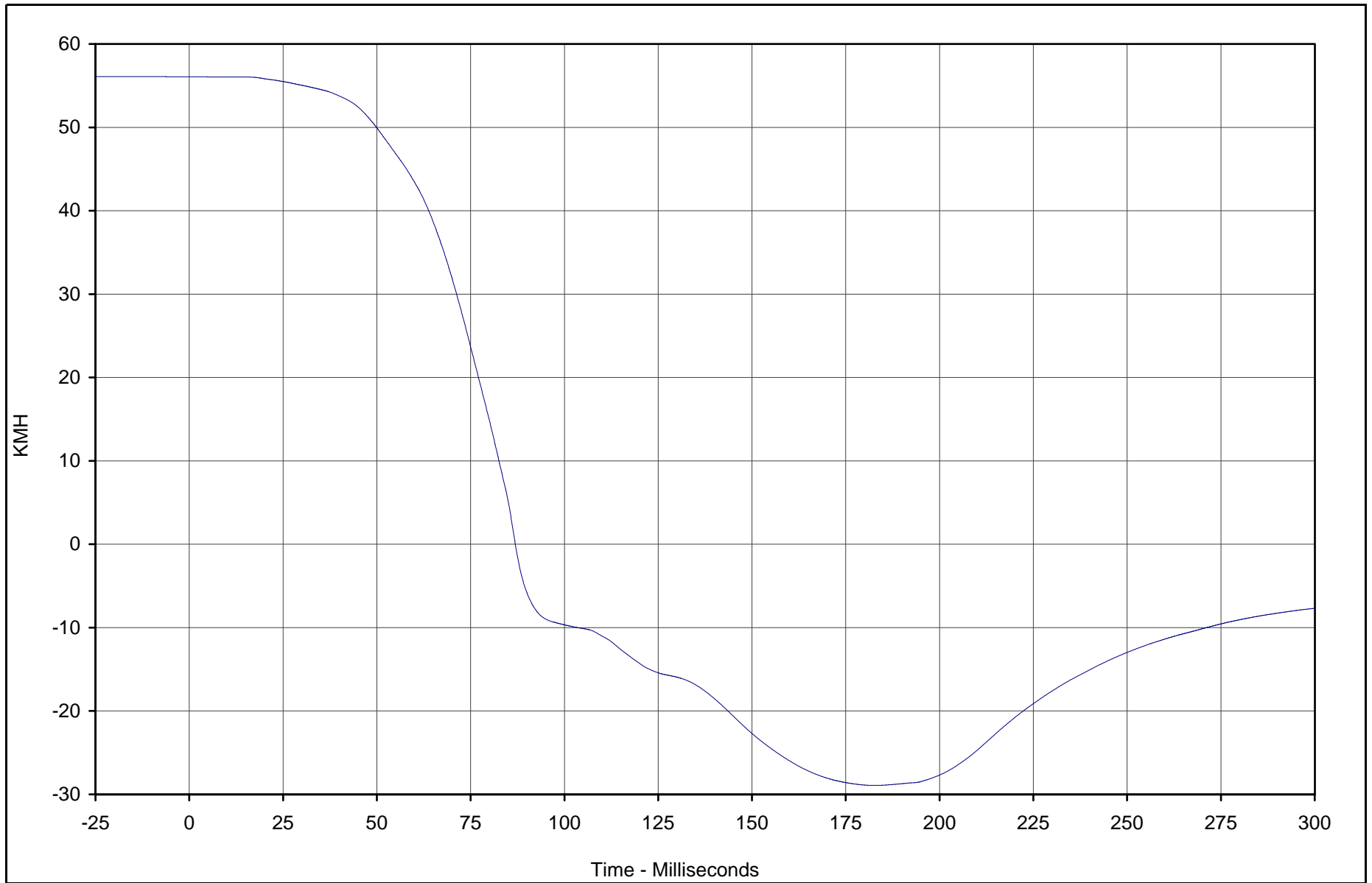


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant X Velocity	004	IN1	KMH	56.1	1.0	-28.9	182.5	180

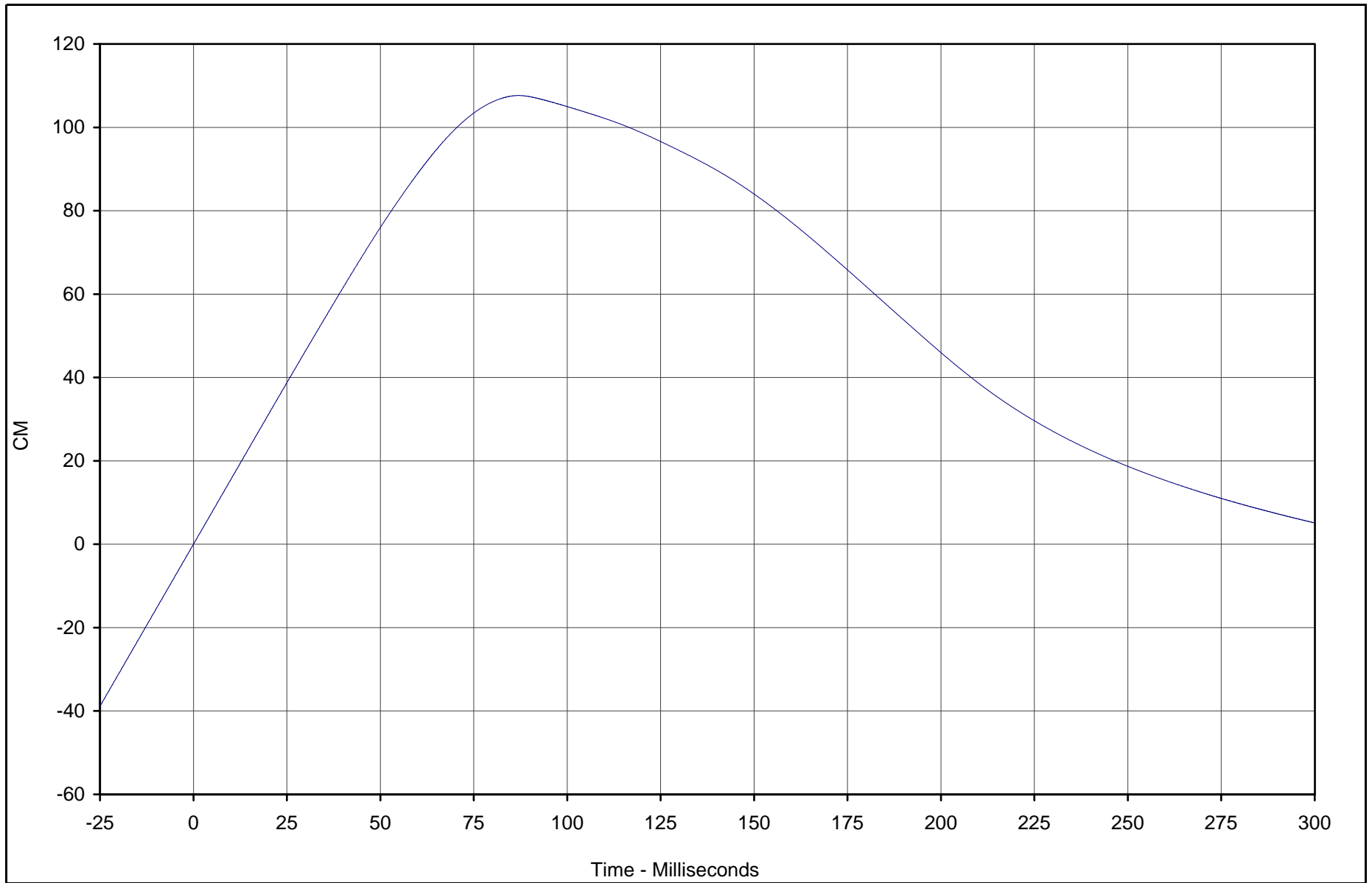


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant X Displ.	004	IN2	CM	107.6	86.9	0.0	0.0	180

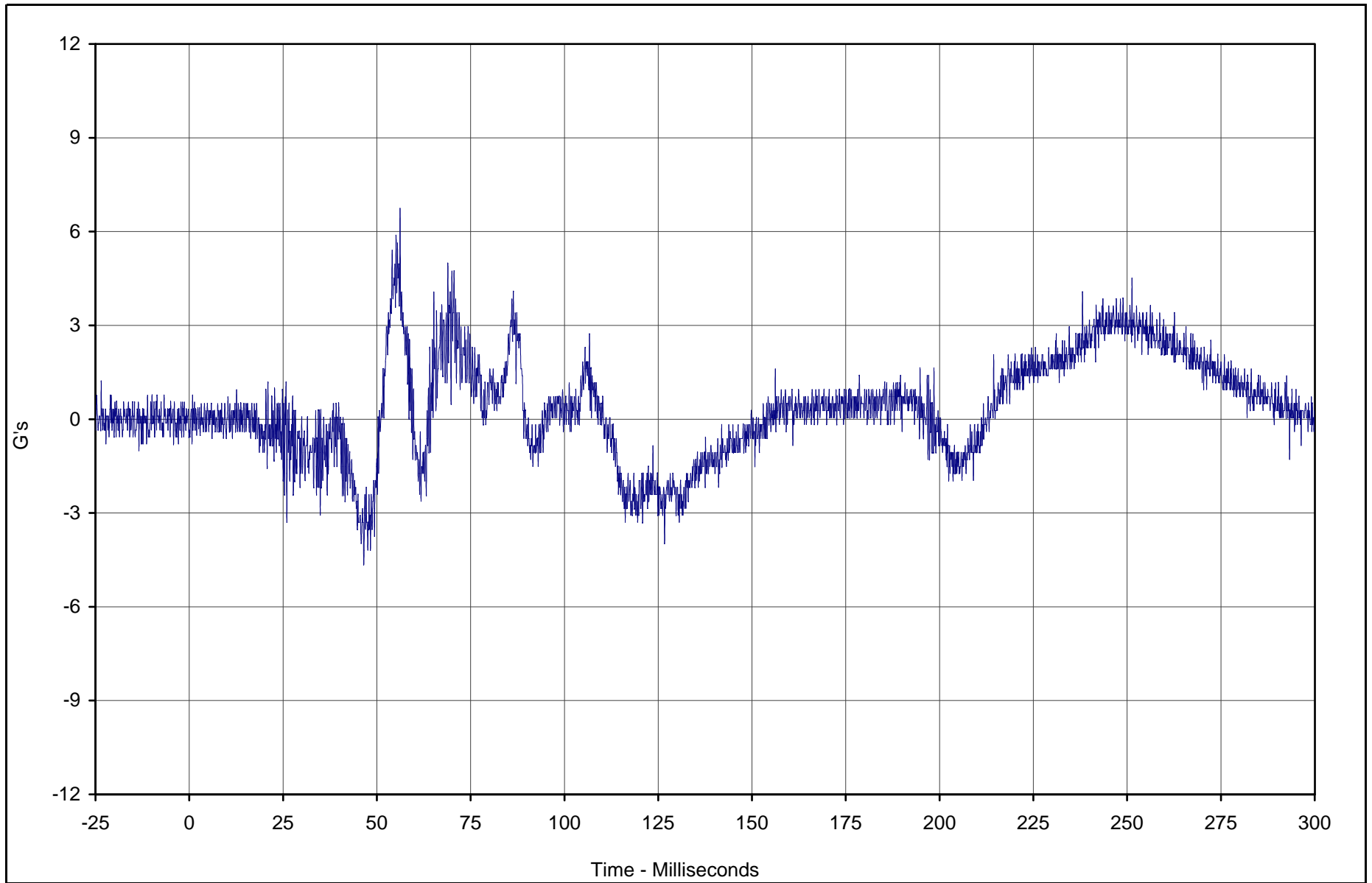


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant Y	005	FIL	G's	6.8	56.2	-4.6	46.5	1000

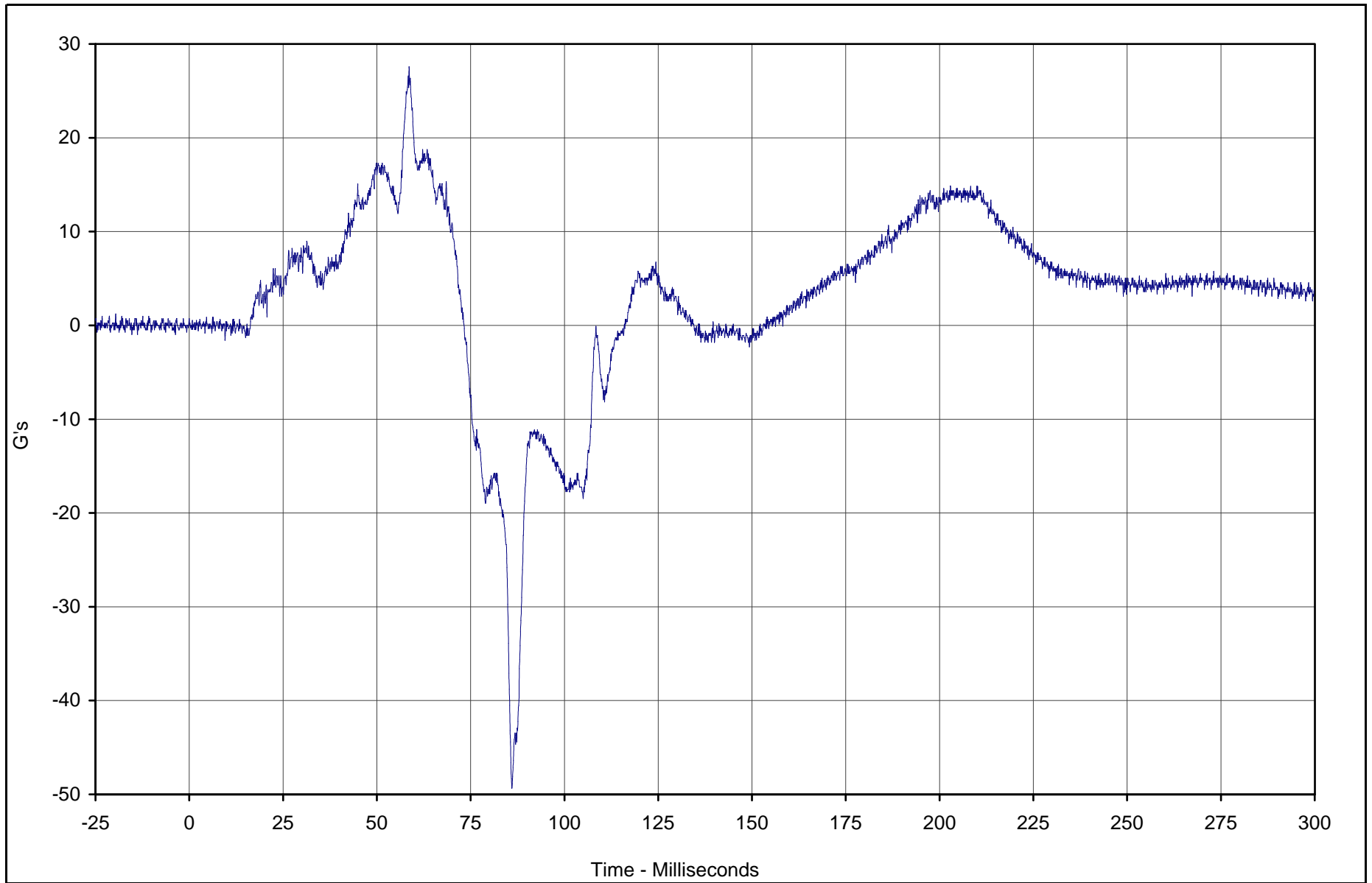


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Redundant Z	006	FIL	G's	27.6	58.6	-49.3	86.0	1000

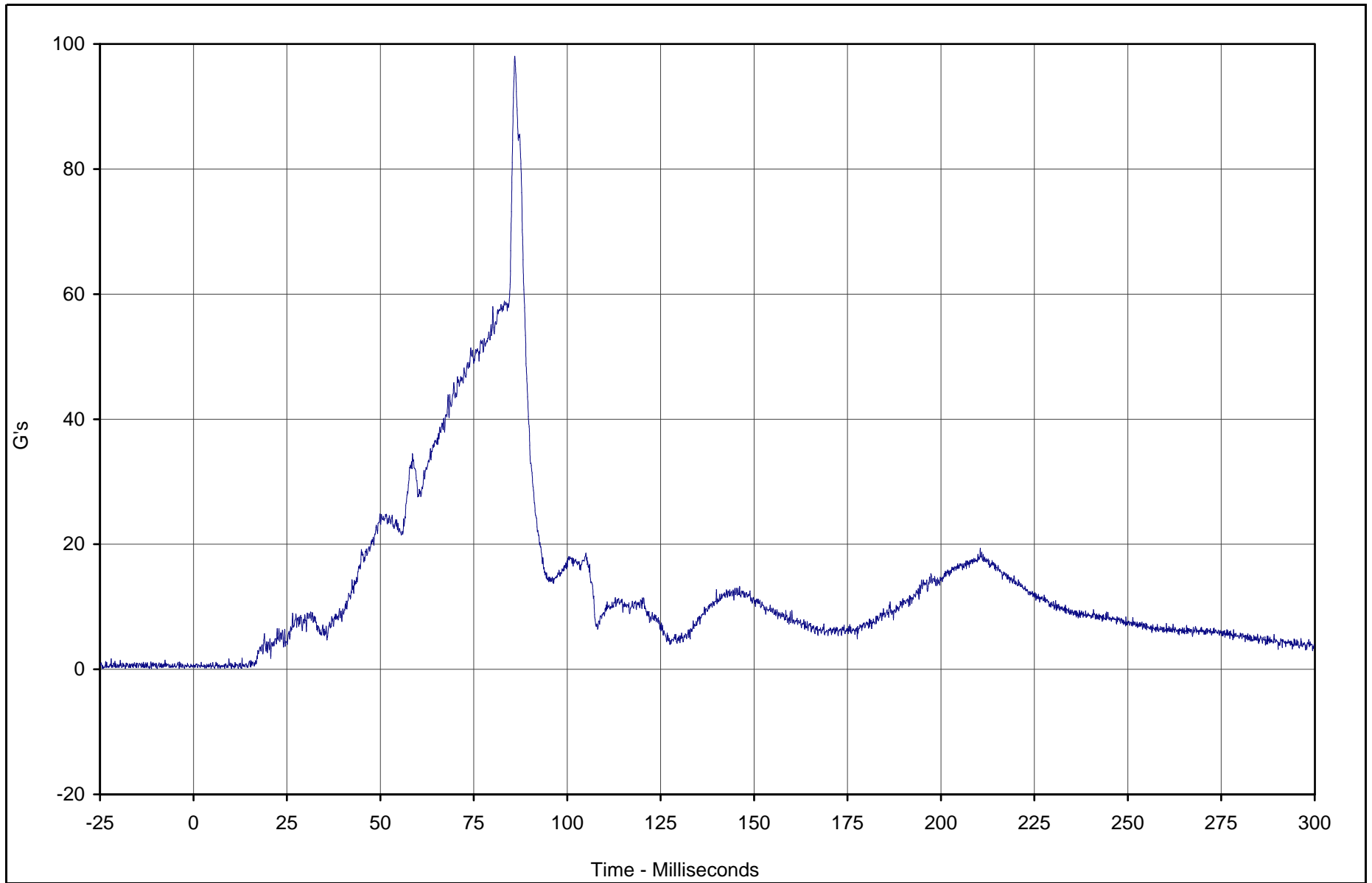


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Head Resultant Redundant	004	RES	G's	98.1	86.0	0.1	5.7	1000

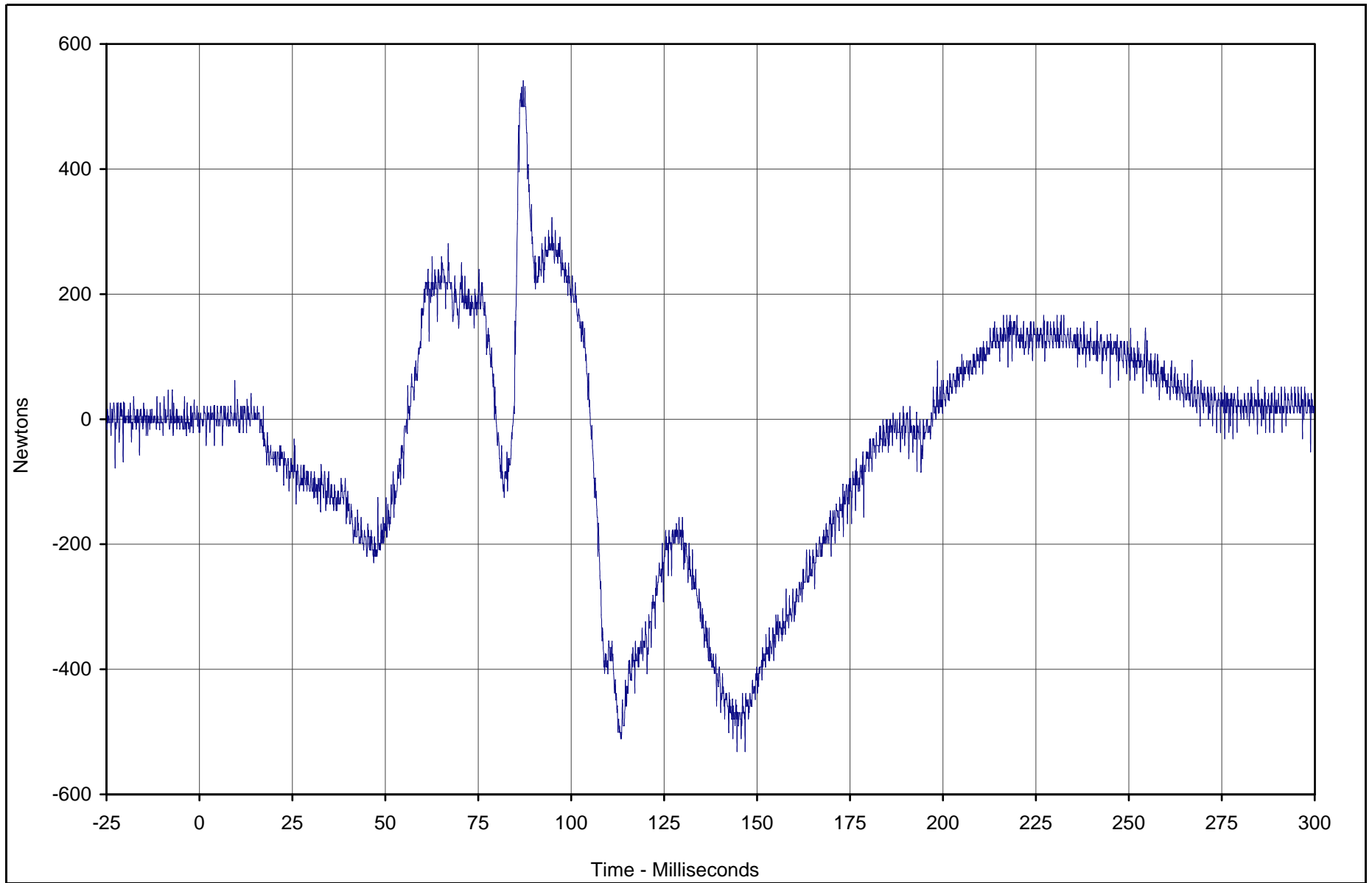


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force X	007	FIL	Newtons	541.5	87.1	-531.9	144.6	1000

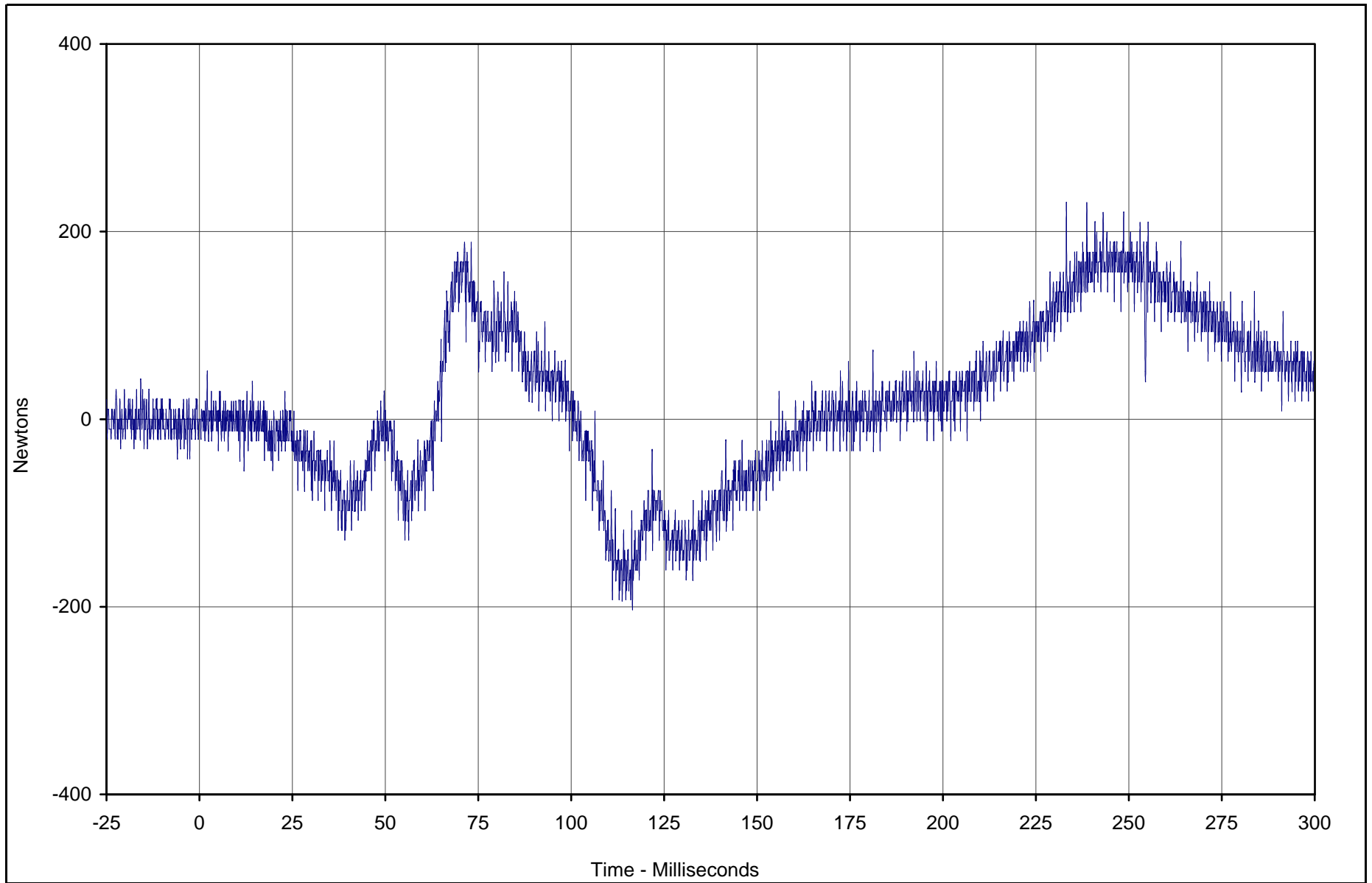


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force Y	008	FIL	Newtons	231.1	233.2	-203.3	116.5	1000

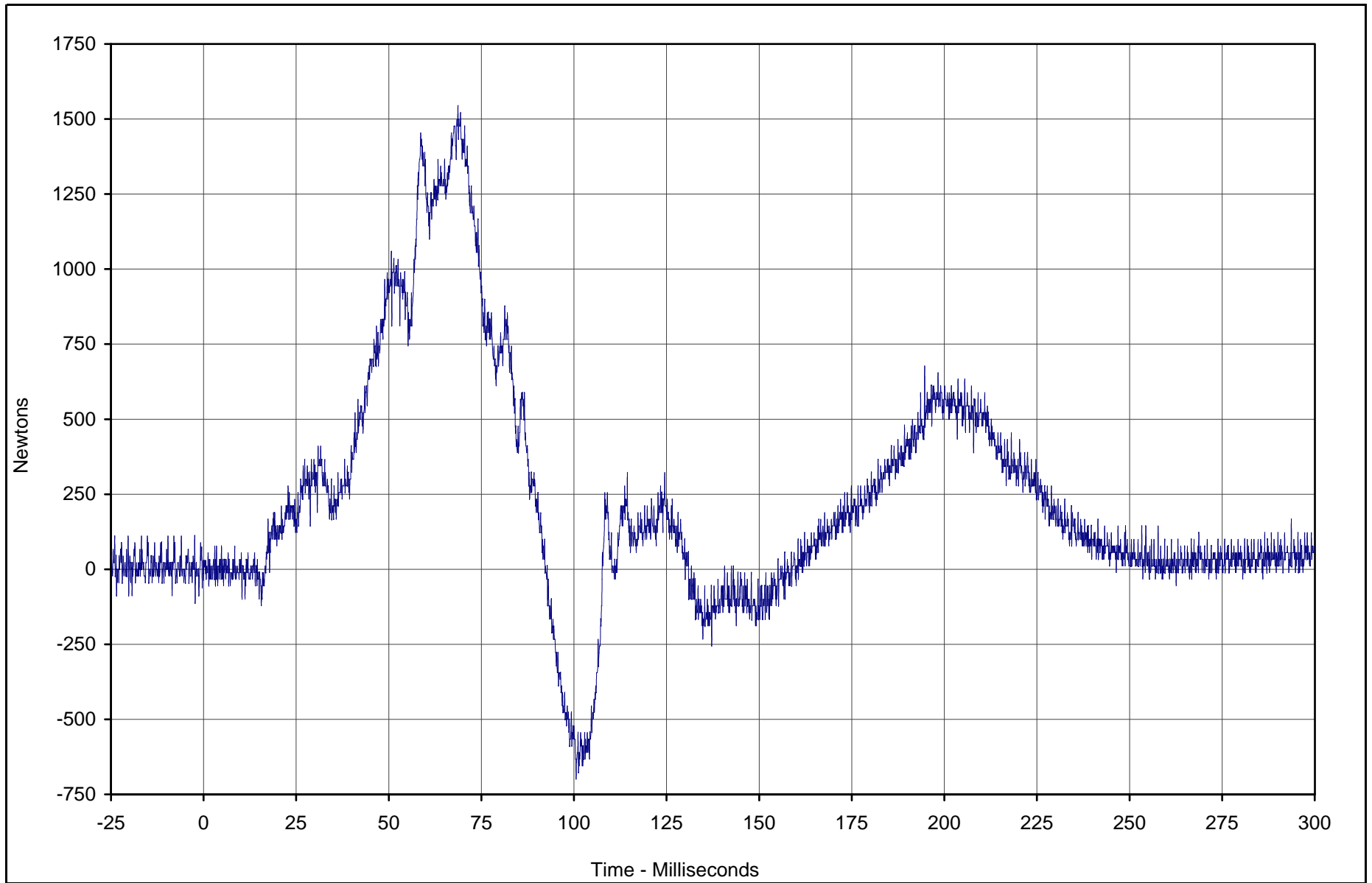


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force Z	009	FIL	Newtons	1543.4	68.7	-699.4	100.6	1000

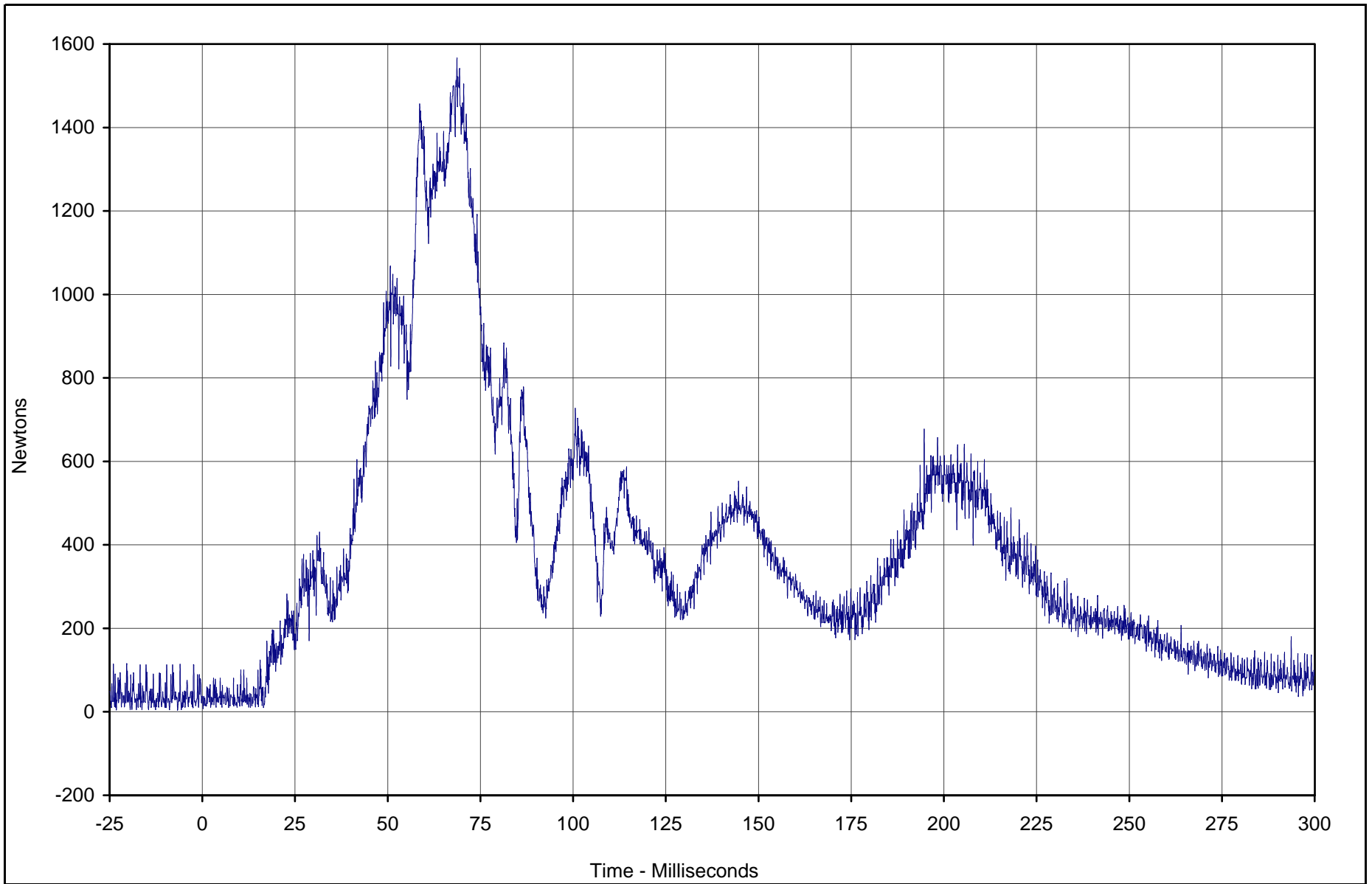


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Force Resultant	007	RES	Newtons	1565.3	68.7	7.2	0.2	1000

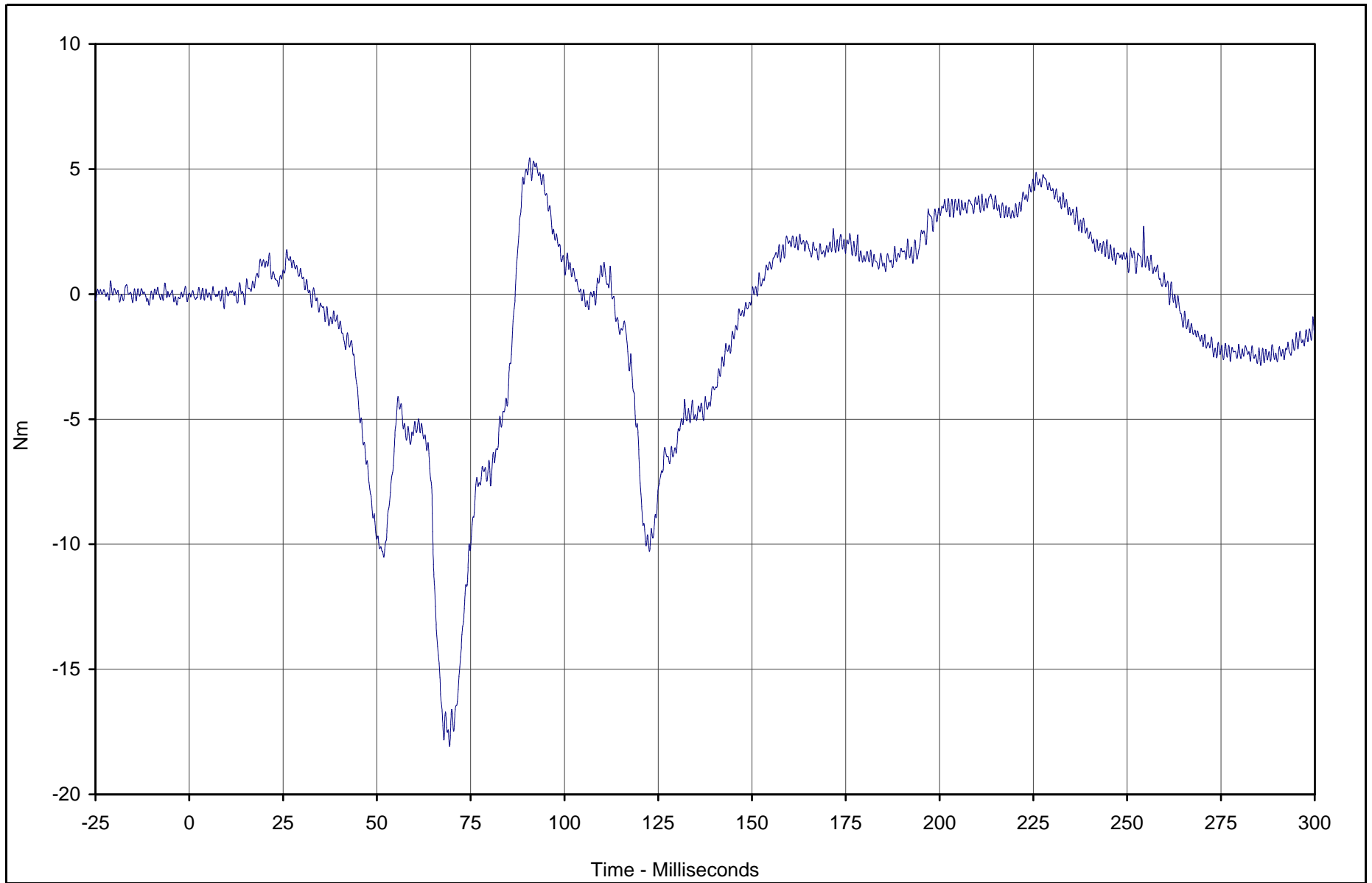


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment X	010	FIL	Nm	5.4	90.7	-18.1	69.4	600

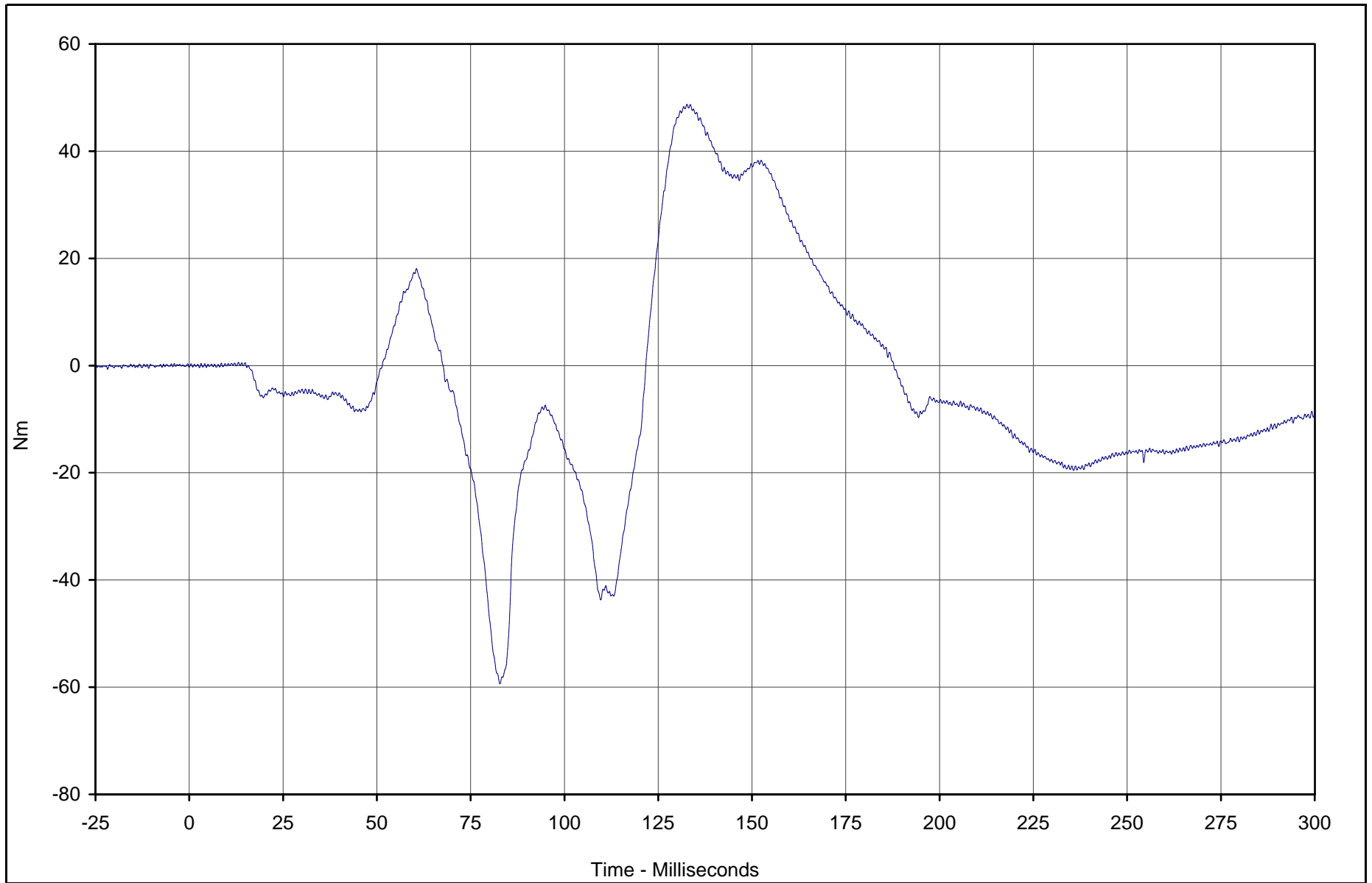


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment Y	011	FIL	Nm	48.7	132.6	-59.4	82.8	600

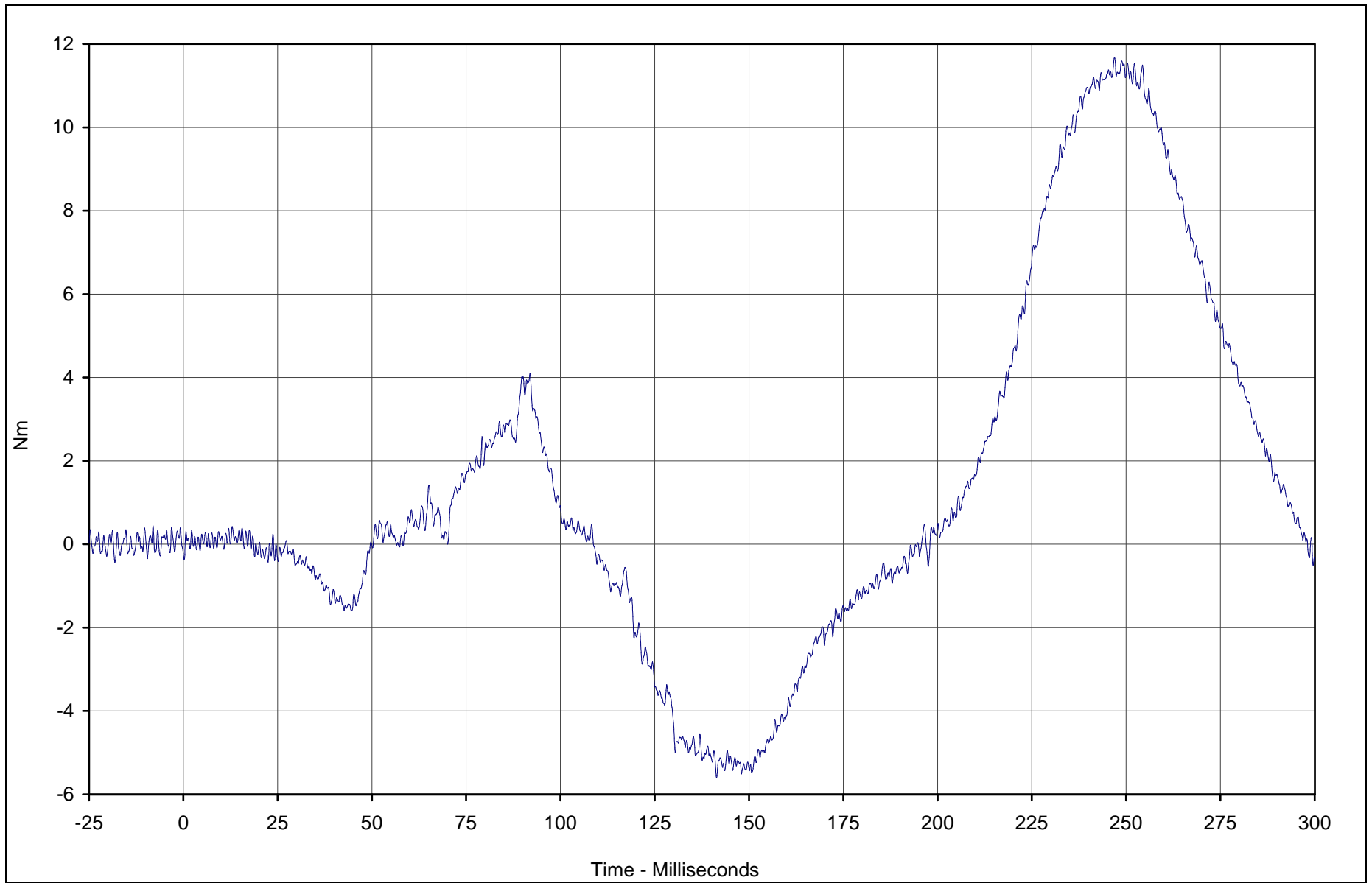


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment Z	012	FIL	Nm	11.7	246.9	-5.6	141.4	600

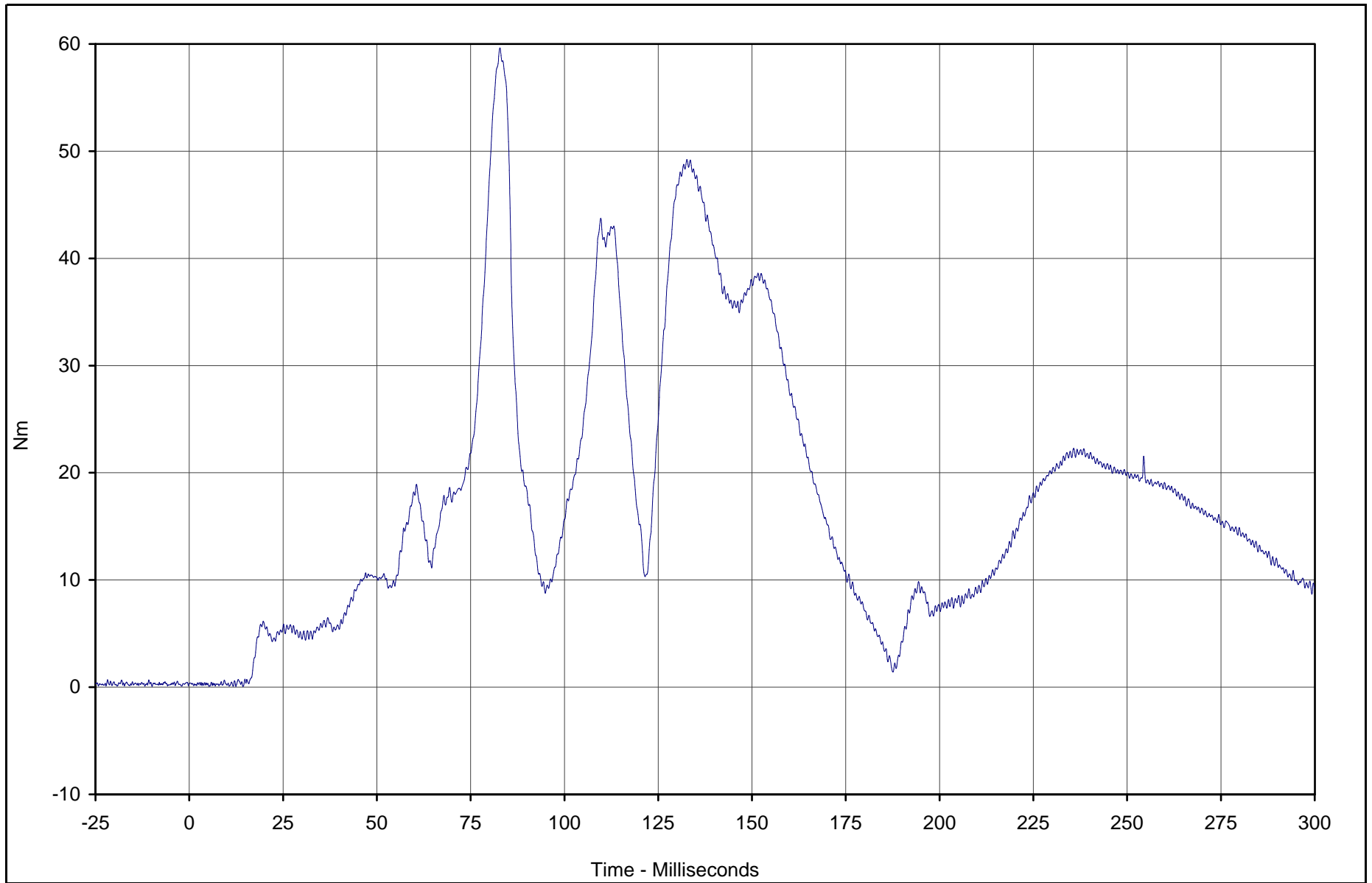


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Neck Moment Resultant	010	RES	Nm	59.6	82.8	0.1	14.3	600



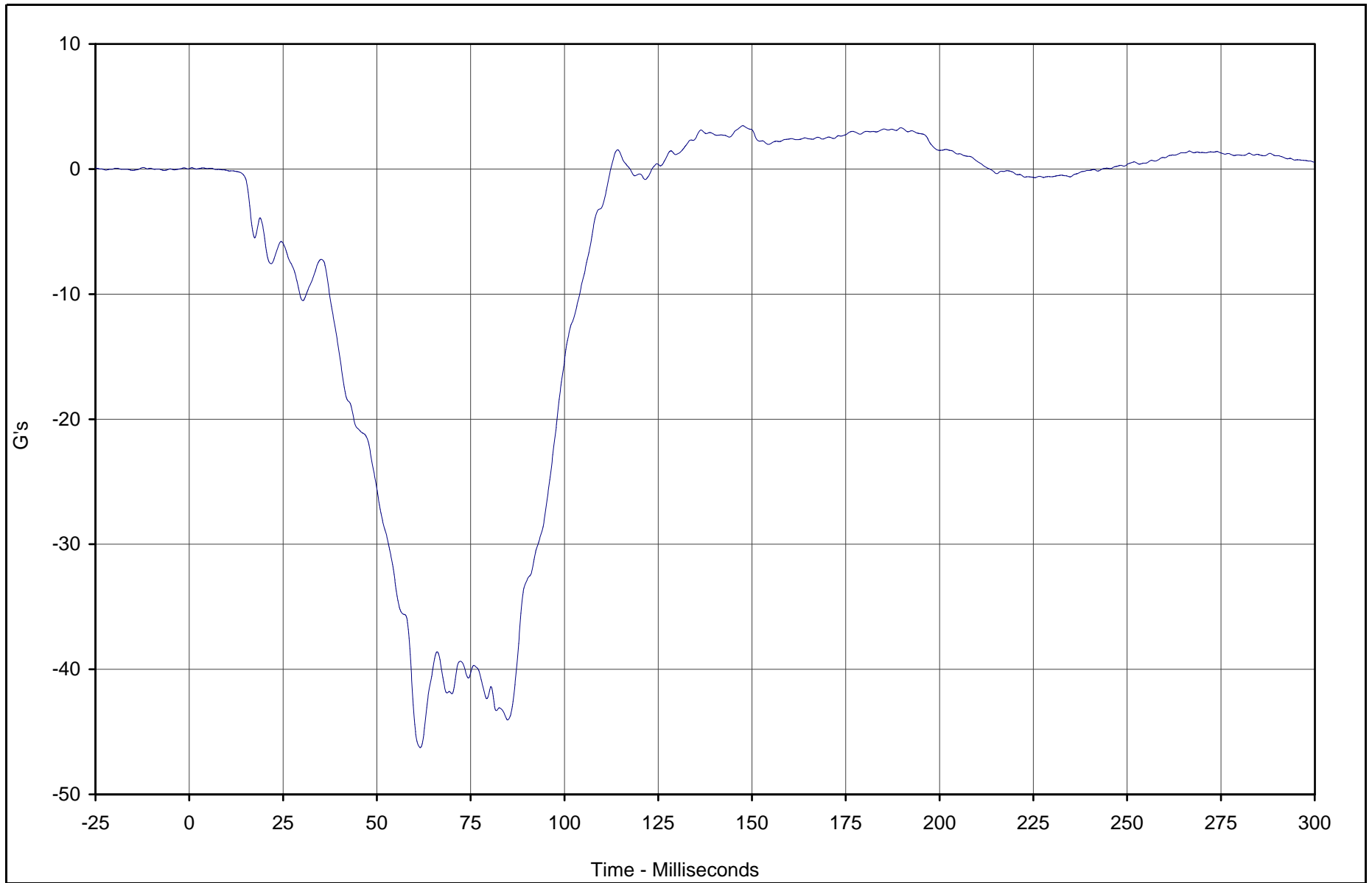
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary X	013	FIL	G's	3.5	147.5	-46.3	61.6	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

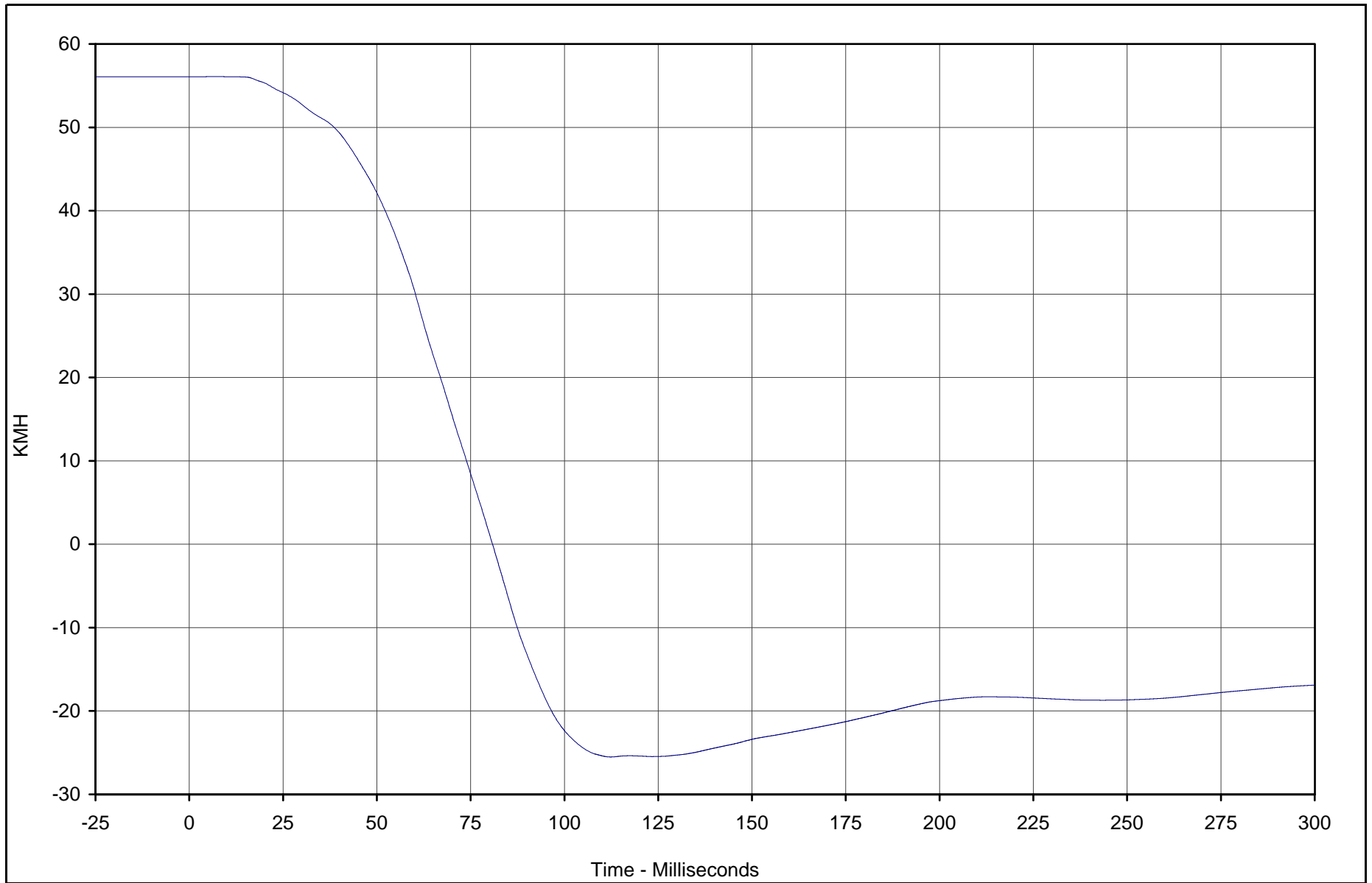
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-22

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary X Velocity	013	IN1	KMH	56.1	6.6	-25.5	112.3	180

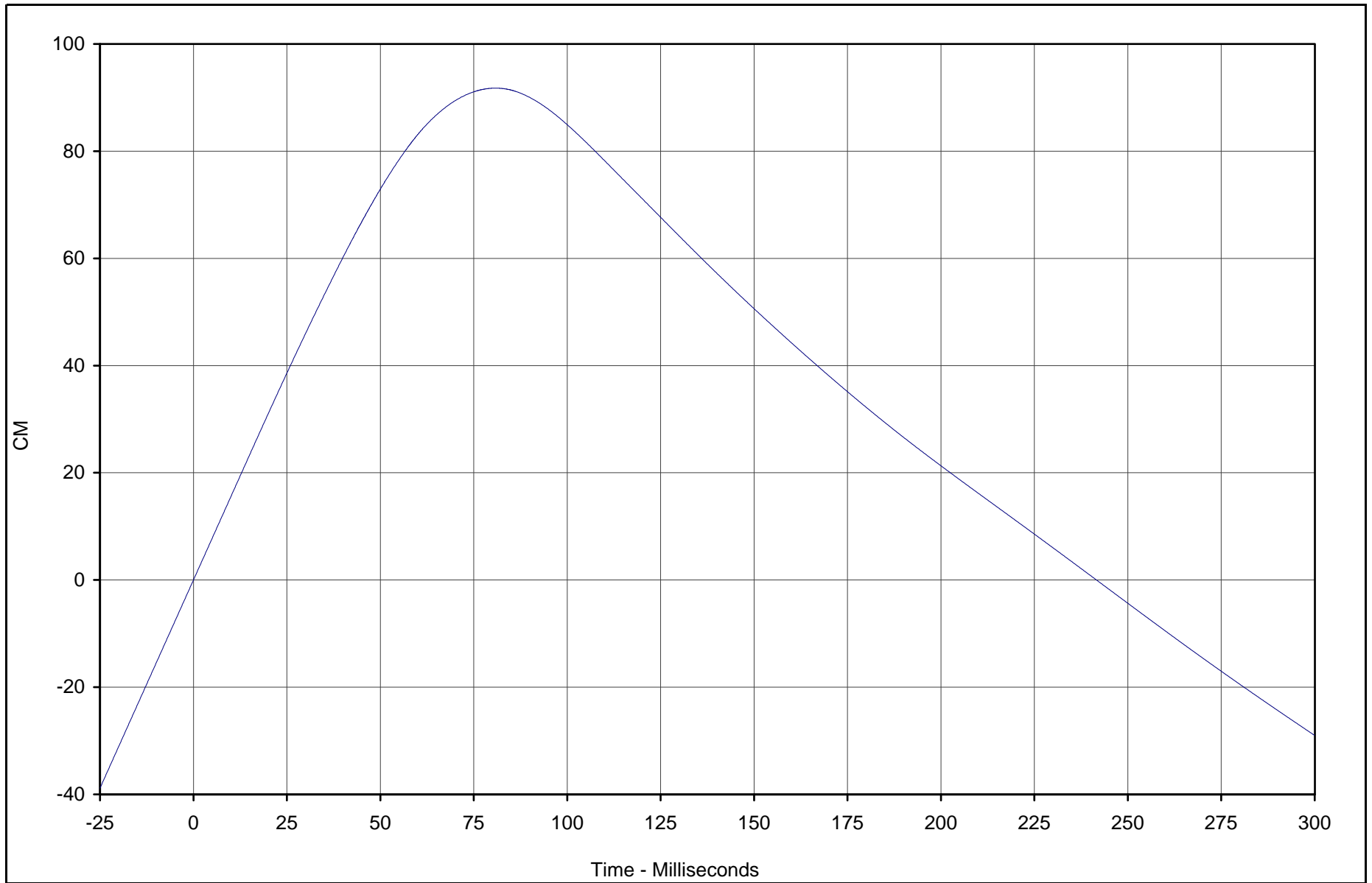


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary X Displ.	013	IN2	CM	91.8	80.8	-29.0	299.9	180

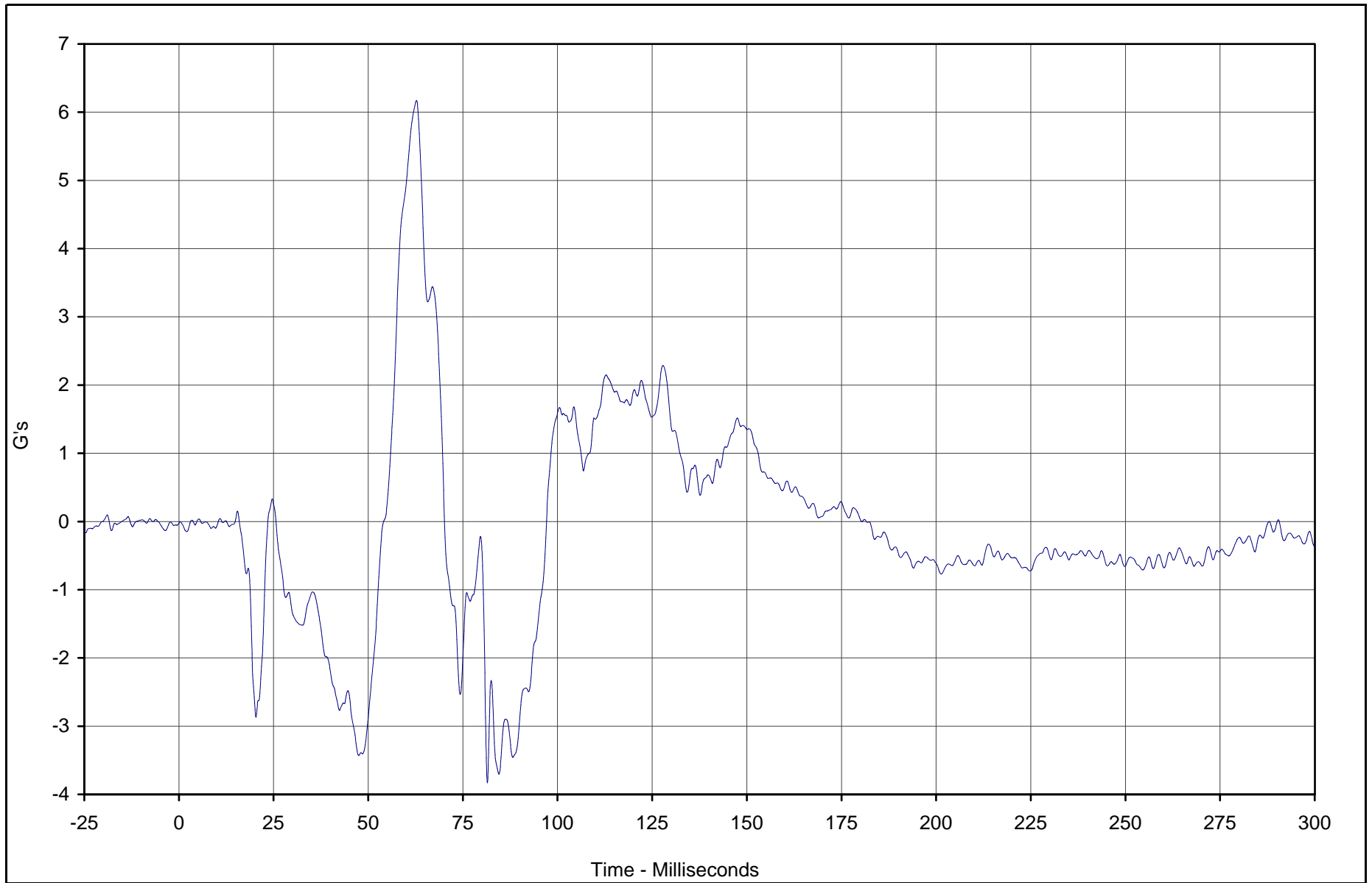


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary Y	014	FIL	G's	6.2	62.7	-3.8	81.5	180

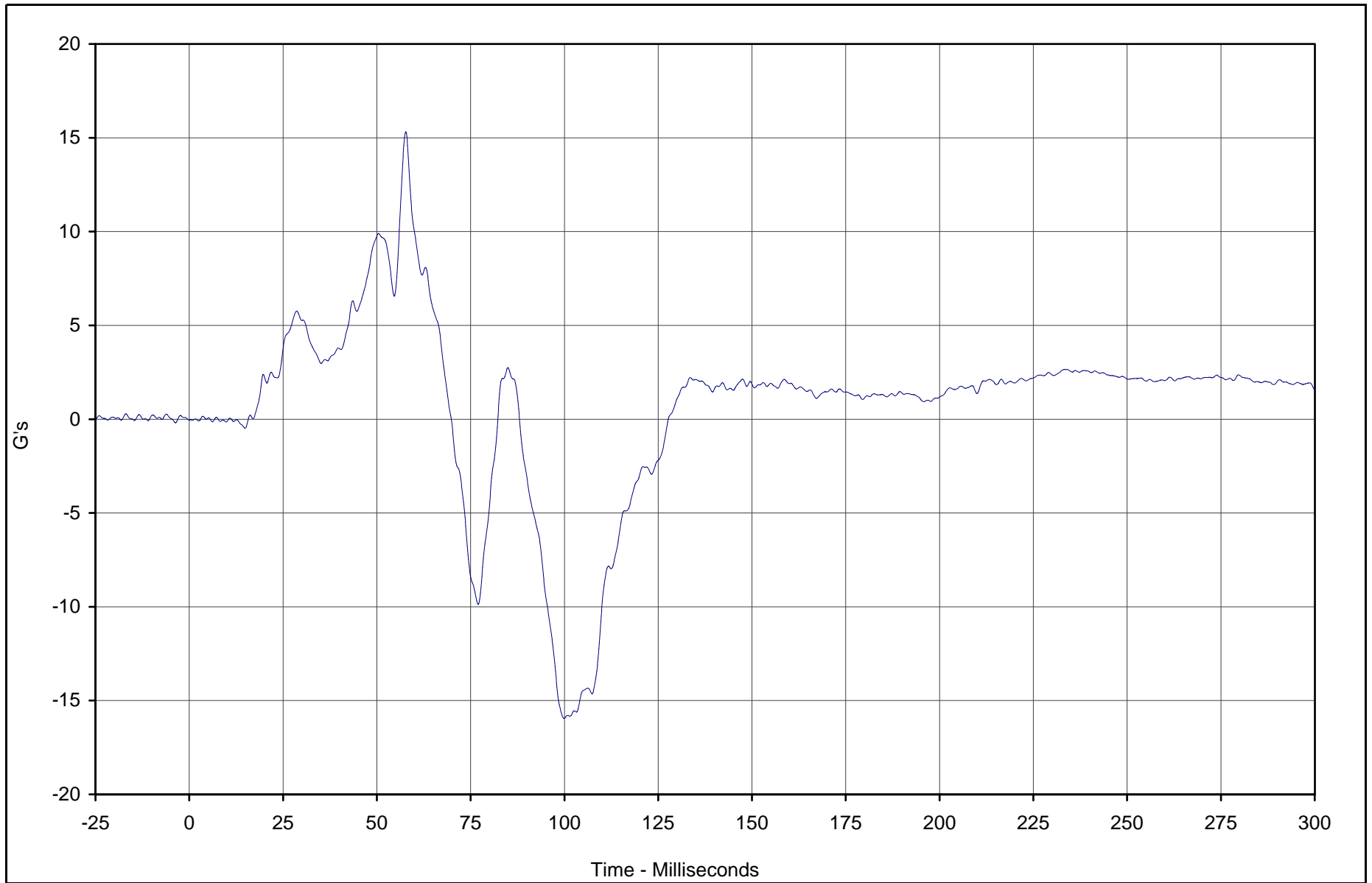


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Primary Z	015	FIL	G's	15.3	57.7	-16.0	99.9	180

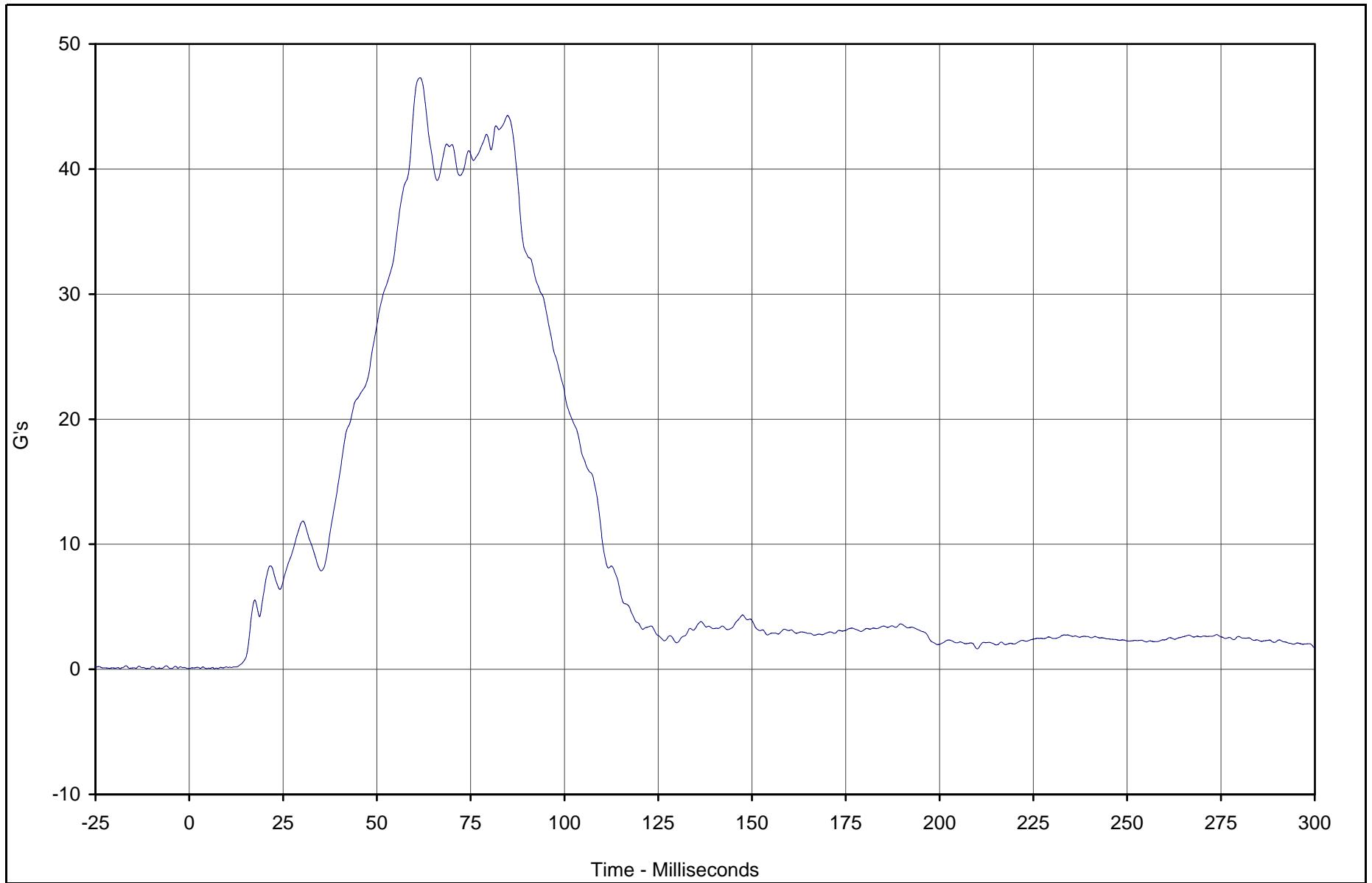


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Resultant Primary	013	RES	G's	47.3	61.5	0.0	6.7	180



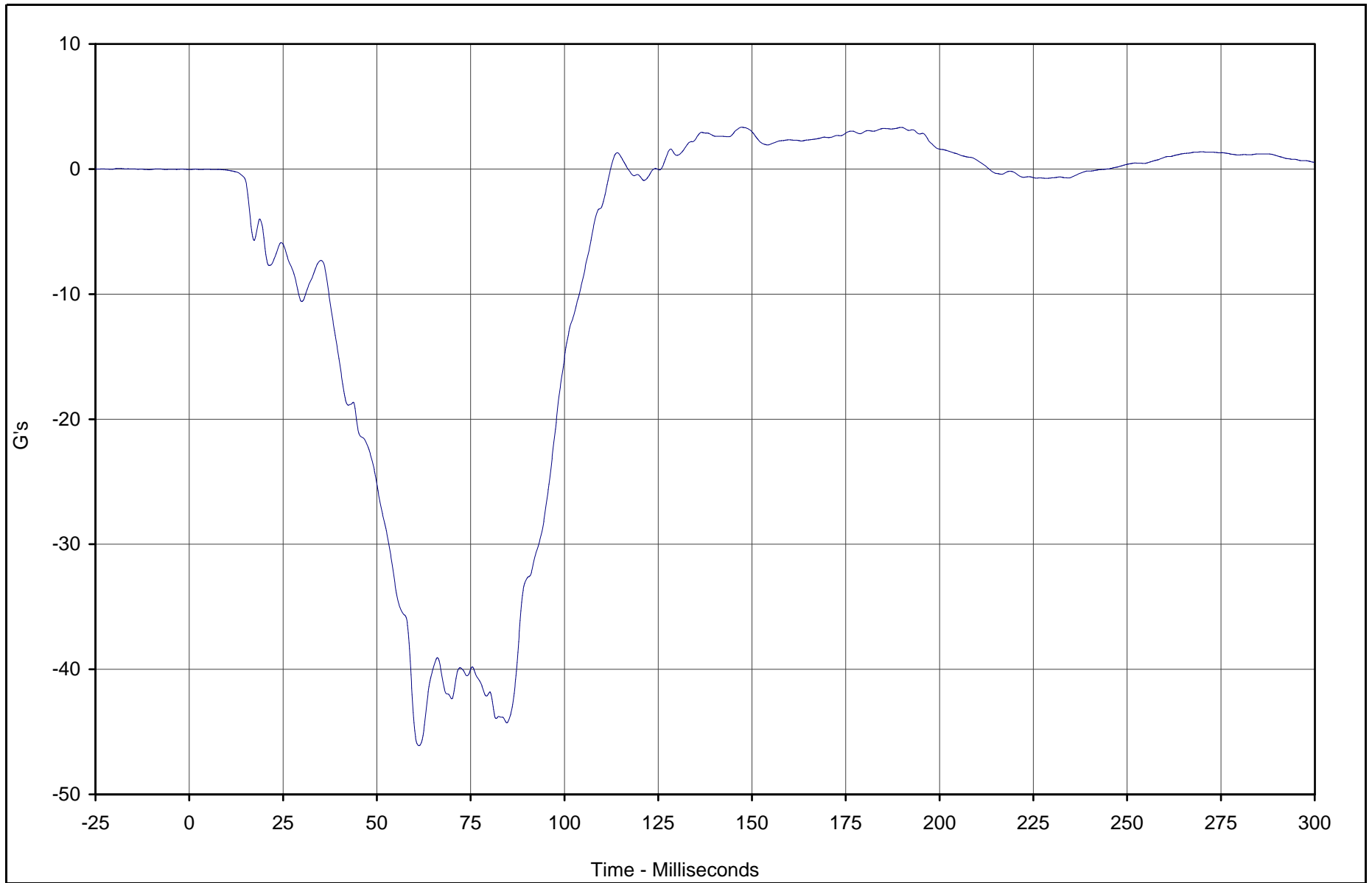
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-27



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant X	016	FIL	G's	3.3	147.3	-46.1	61.2	180



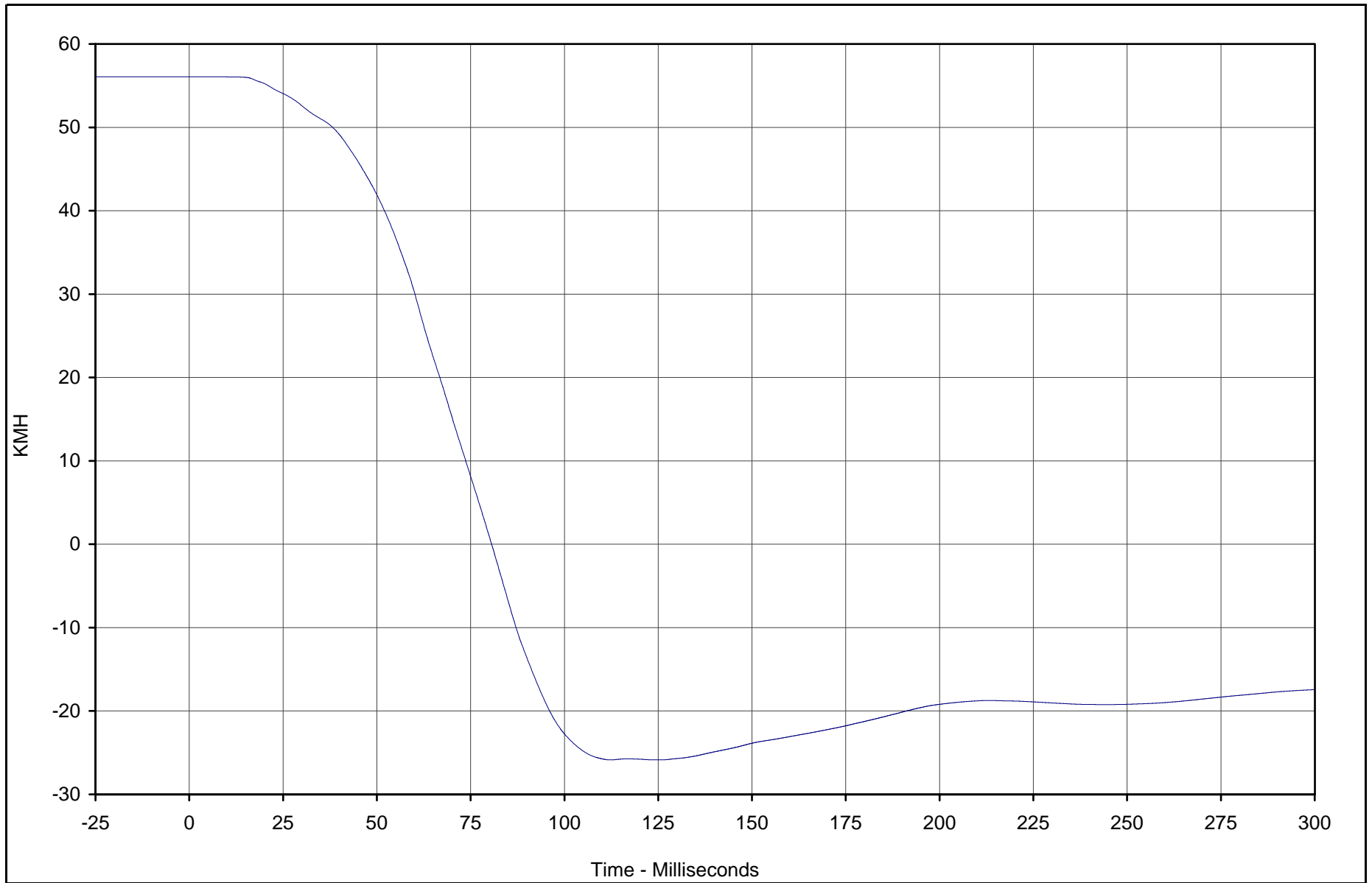
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant X Velocity	016	IN1	KMH	56.1	0.0	-25.9	112.3	180

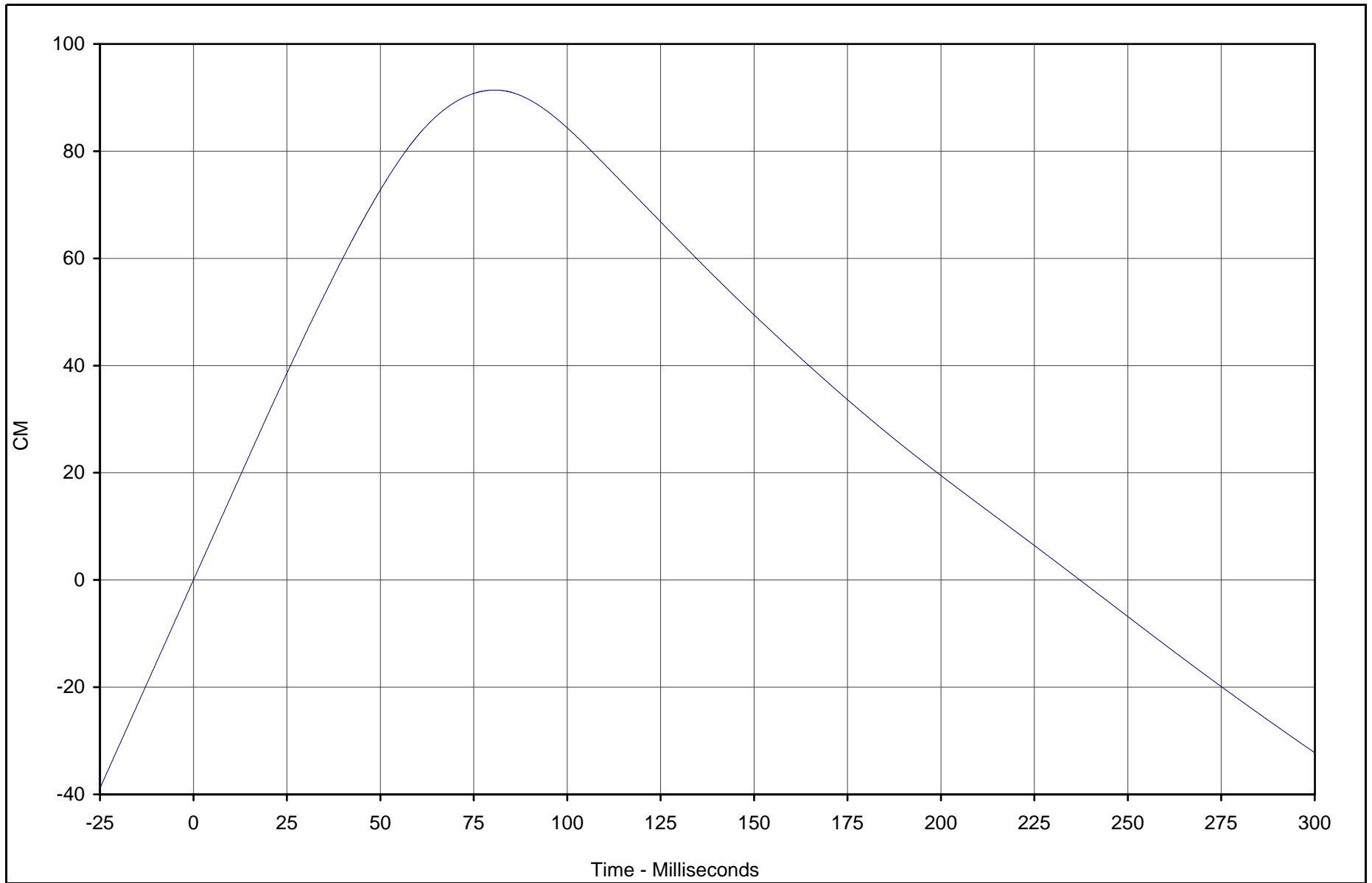


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant X Displ.	016	IN2	CM	91.4	80.6	-32.2	299.9	180

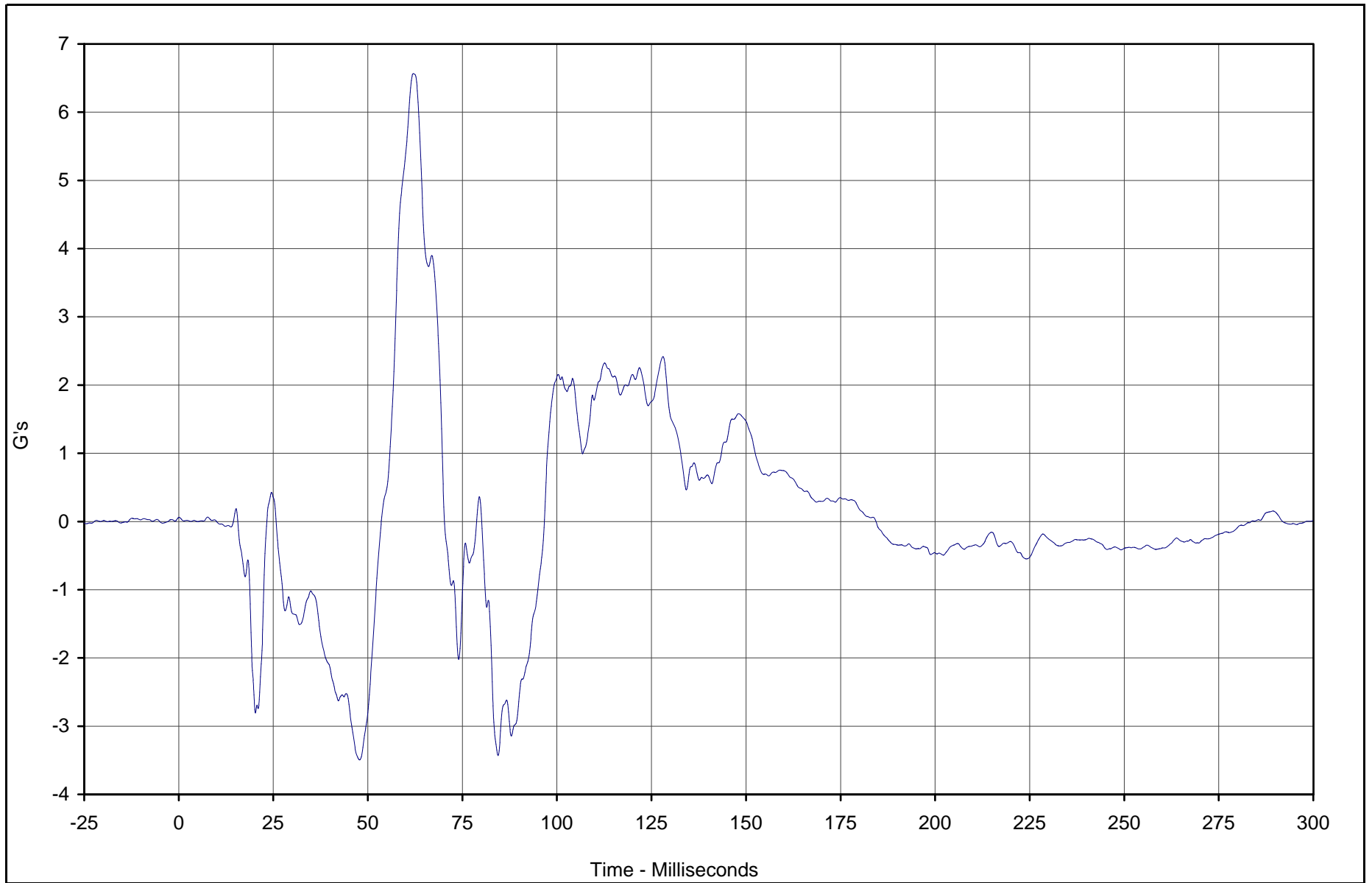


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant Y	017	FIL	G's	6.6	62.1	-3.5	47.8	180

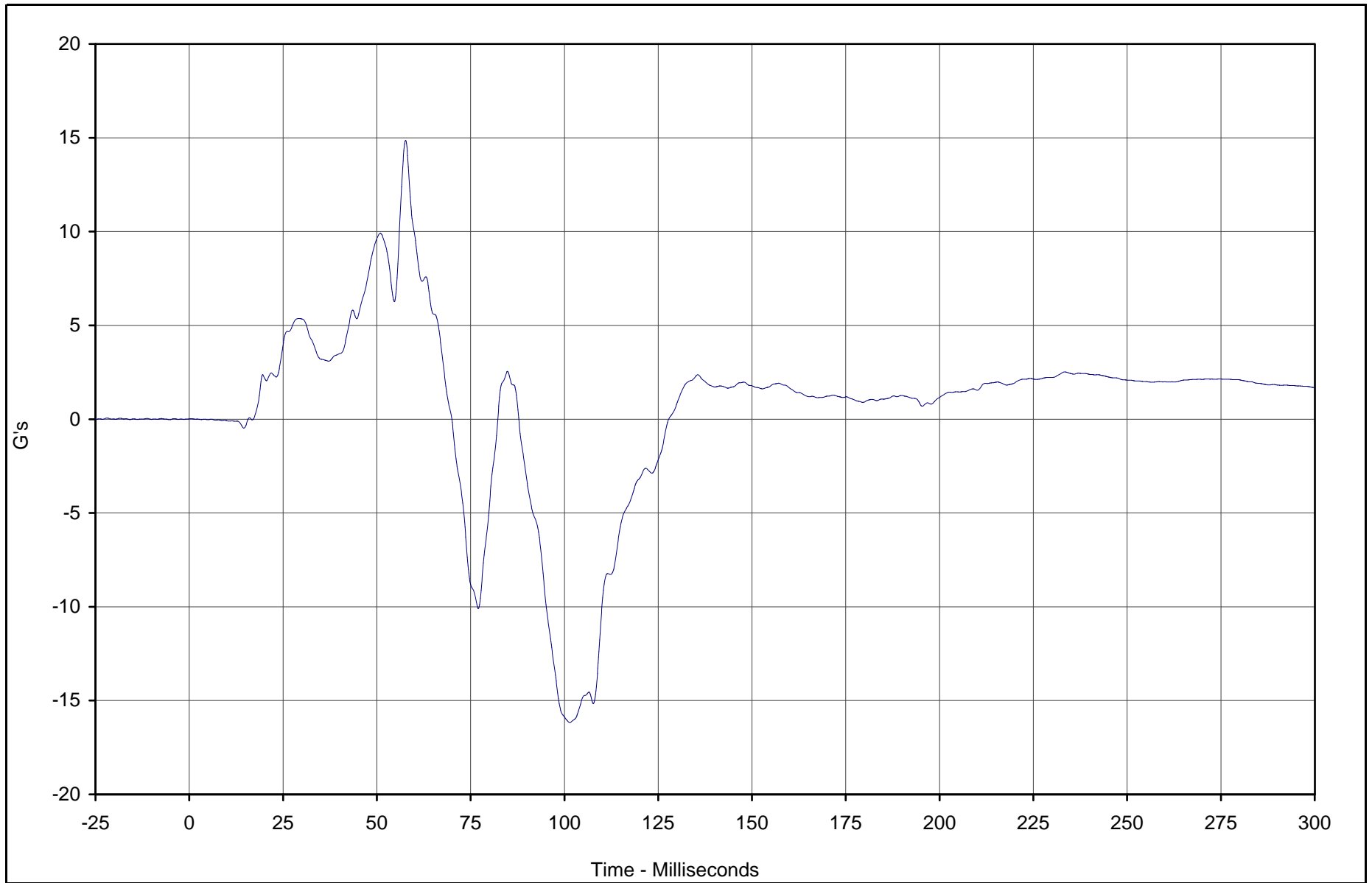


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Redundant Z	018	FIL	G's	14.9	57.7	-16.2	101.4	180

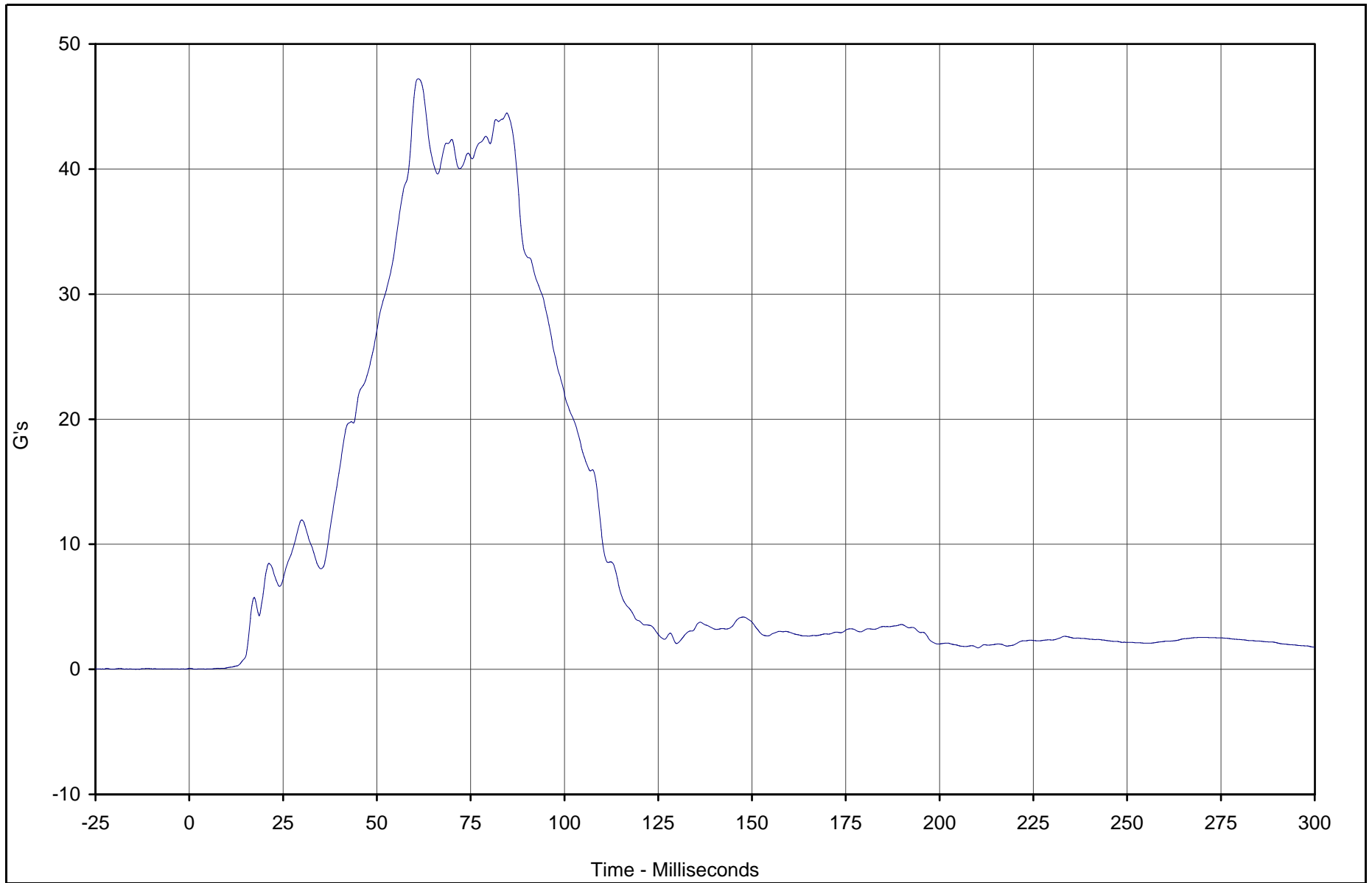


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Resultant Redundant	016	RES	G's	47.2	61.0	0.0	1.5	180

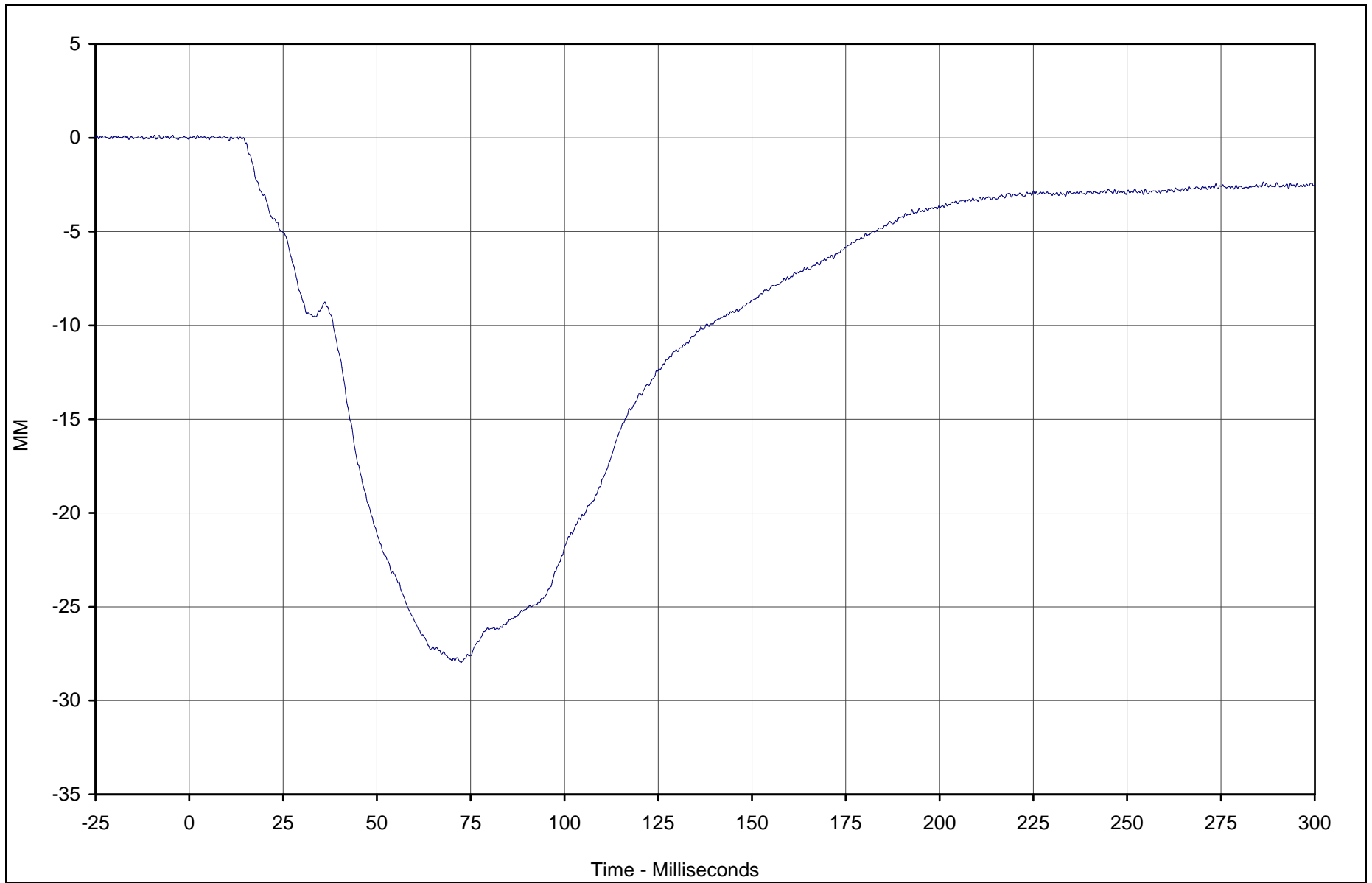


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Chest Displacement X	019	FIL	MM	0.1	2.2	-28.0	72.5	600

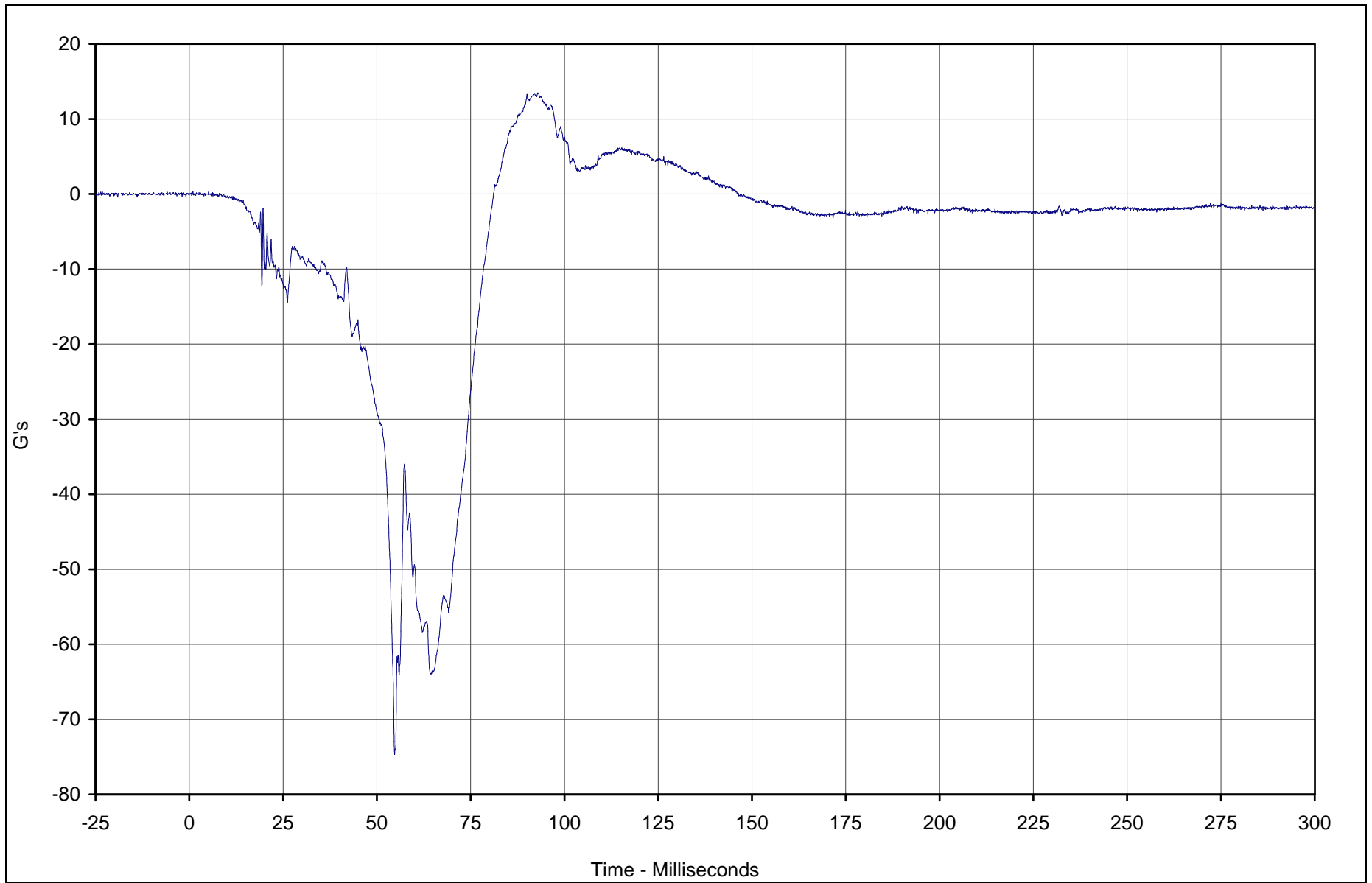


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis X	020	FIL	G's	13.5	92.9	-74.7	54.7	1000

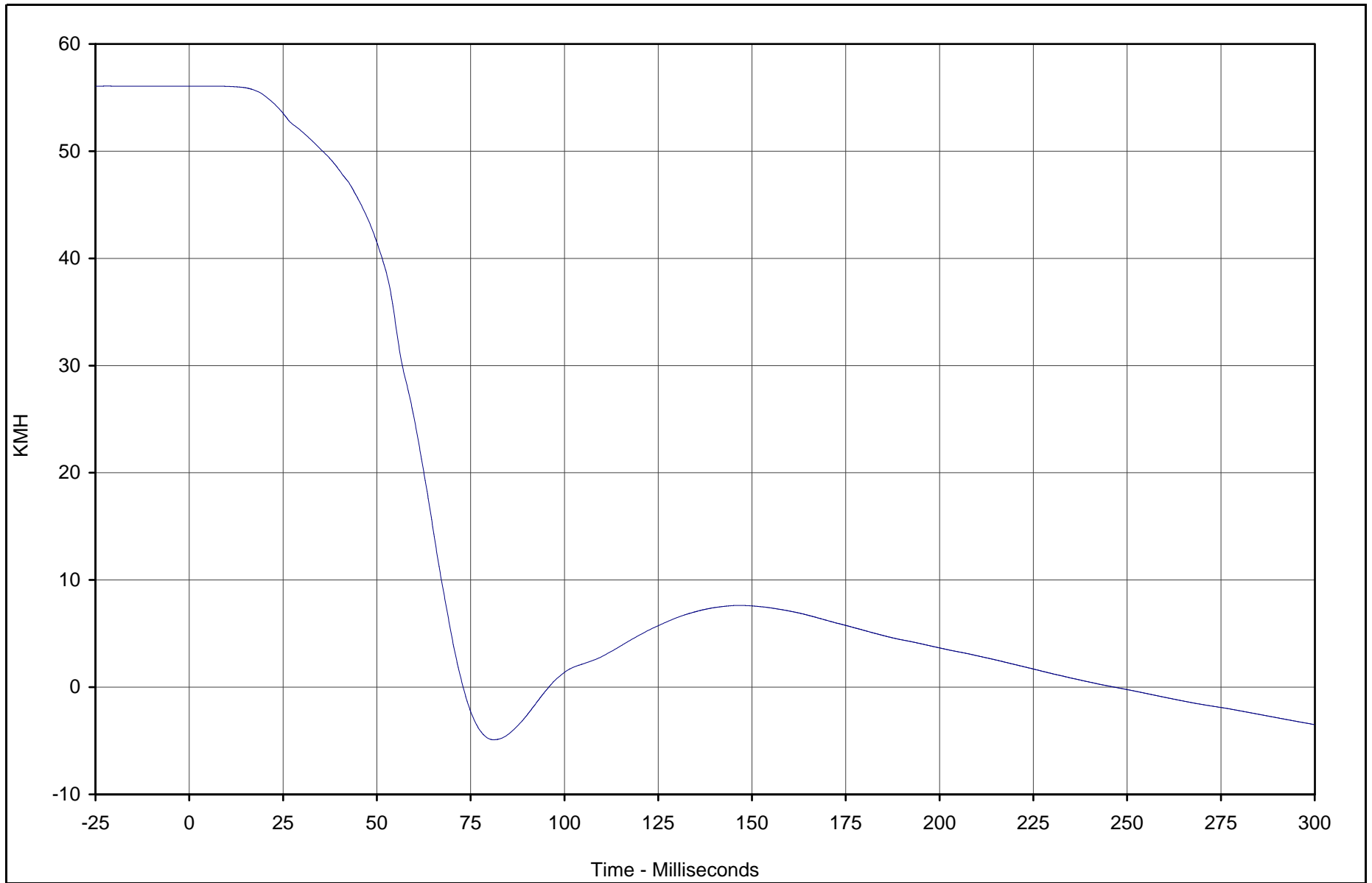


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis X Velocity	020	IN1	KMH	56.1	3.3	-4.9	81.2	180

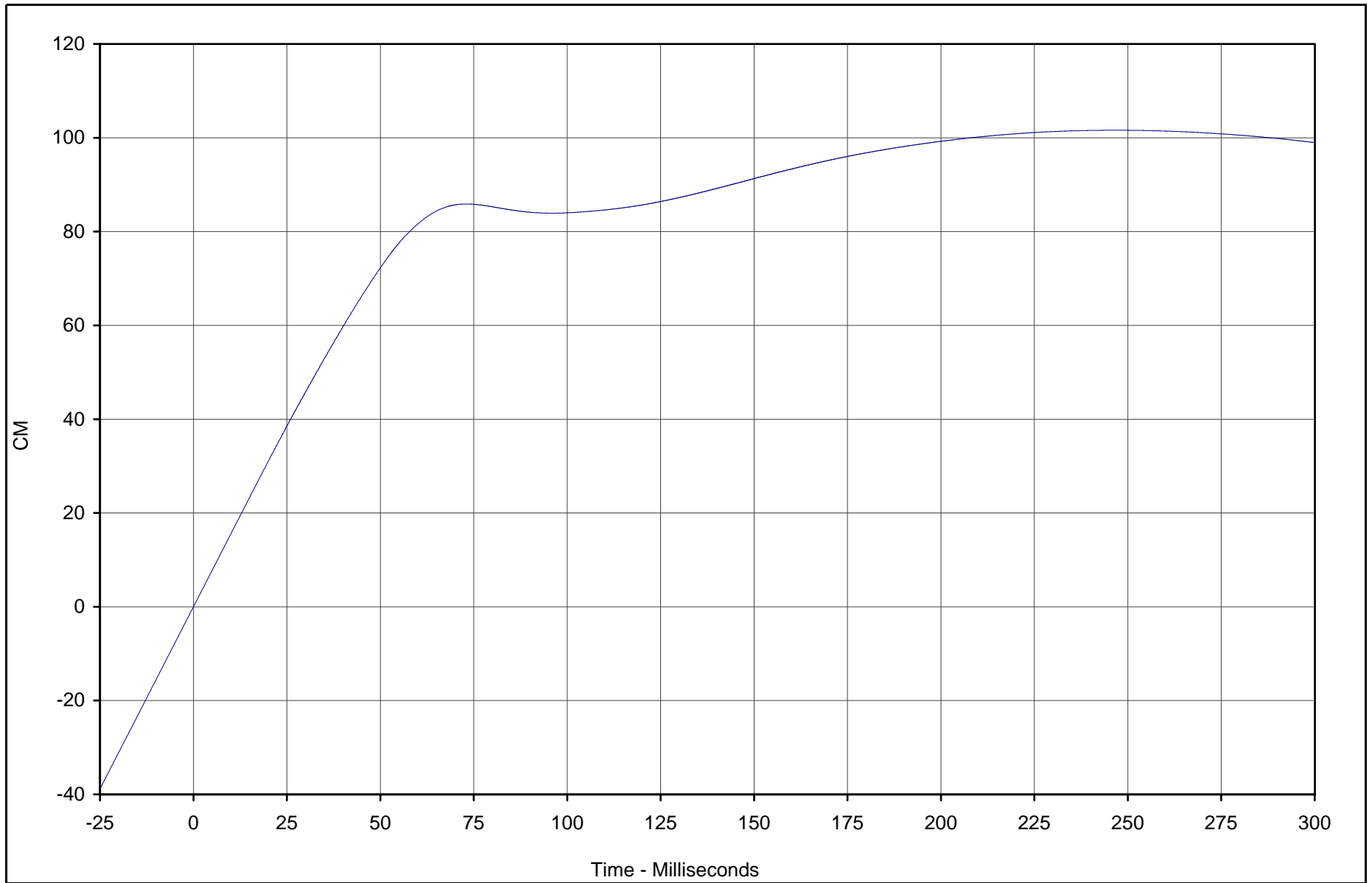


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis X Displ.	020	IN2	CM	101.6	246.6	0.0	0.0	180

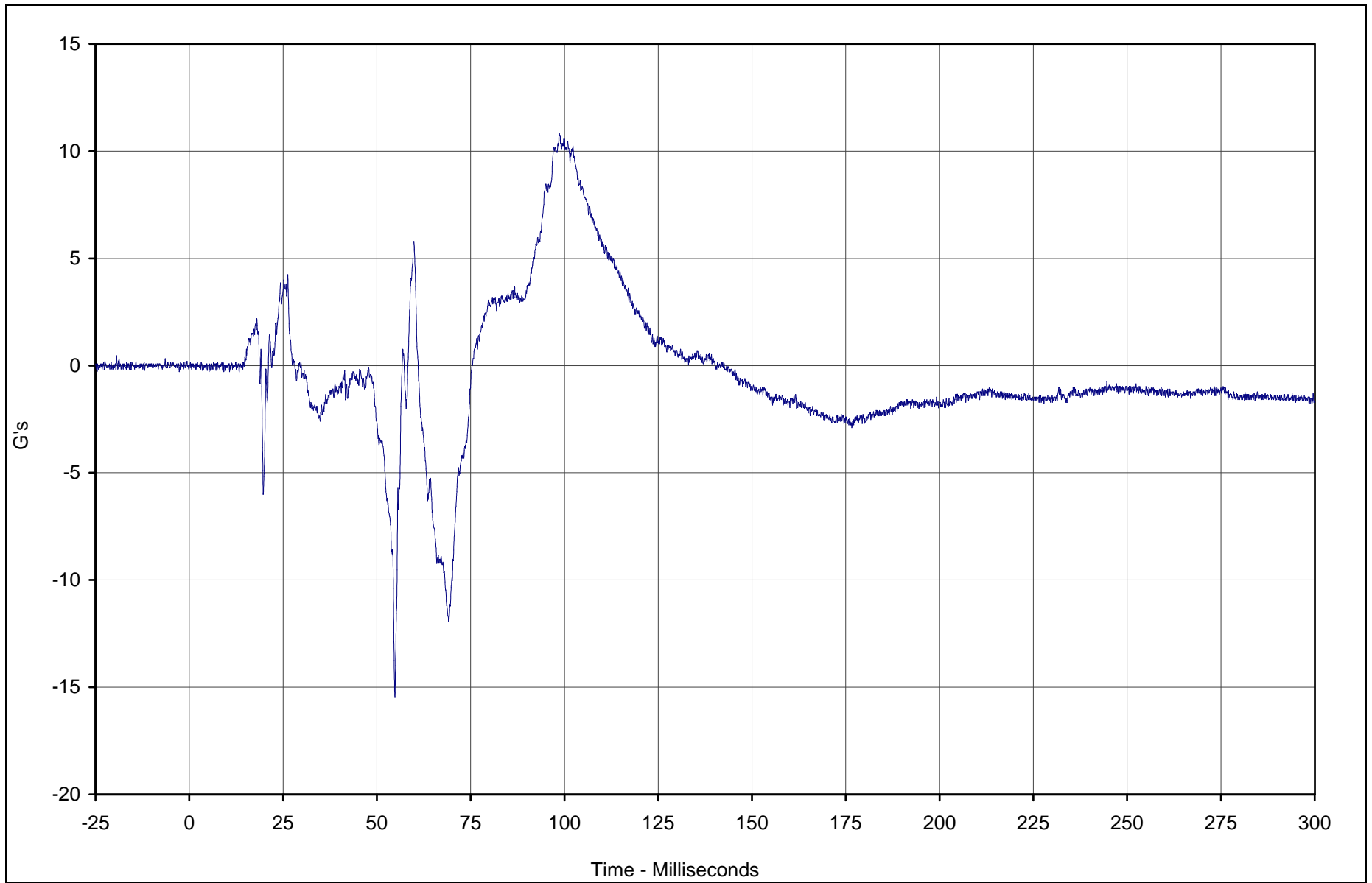


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis Y	021	FIL	G's	10.8	98.6	-15.5	54.8	1000

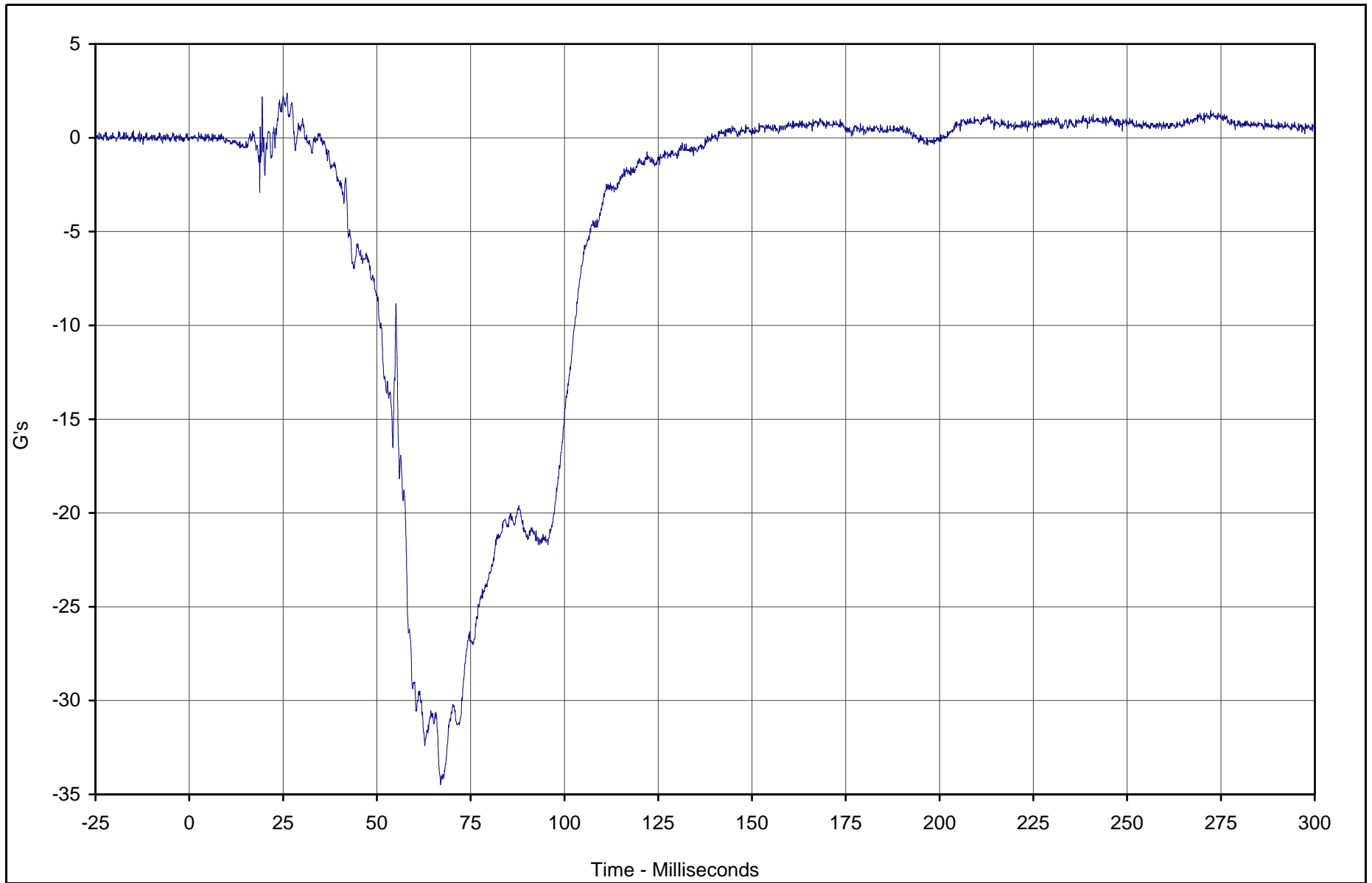


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis Z	022	FIL	G's	2.4	26.1	-34.5	67.0	1000

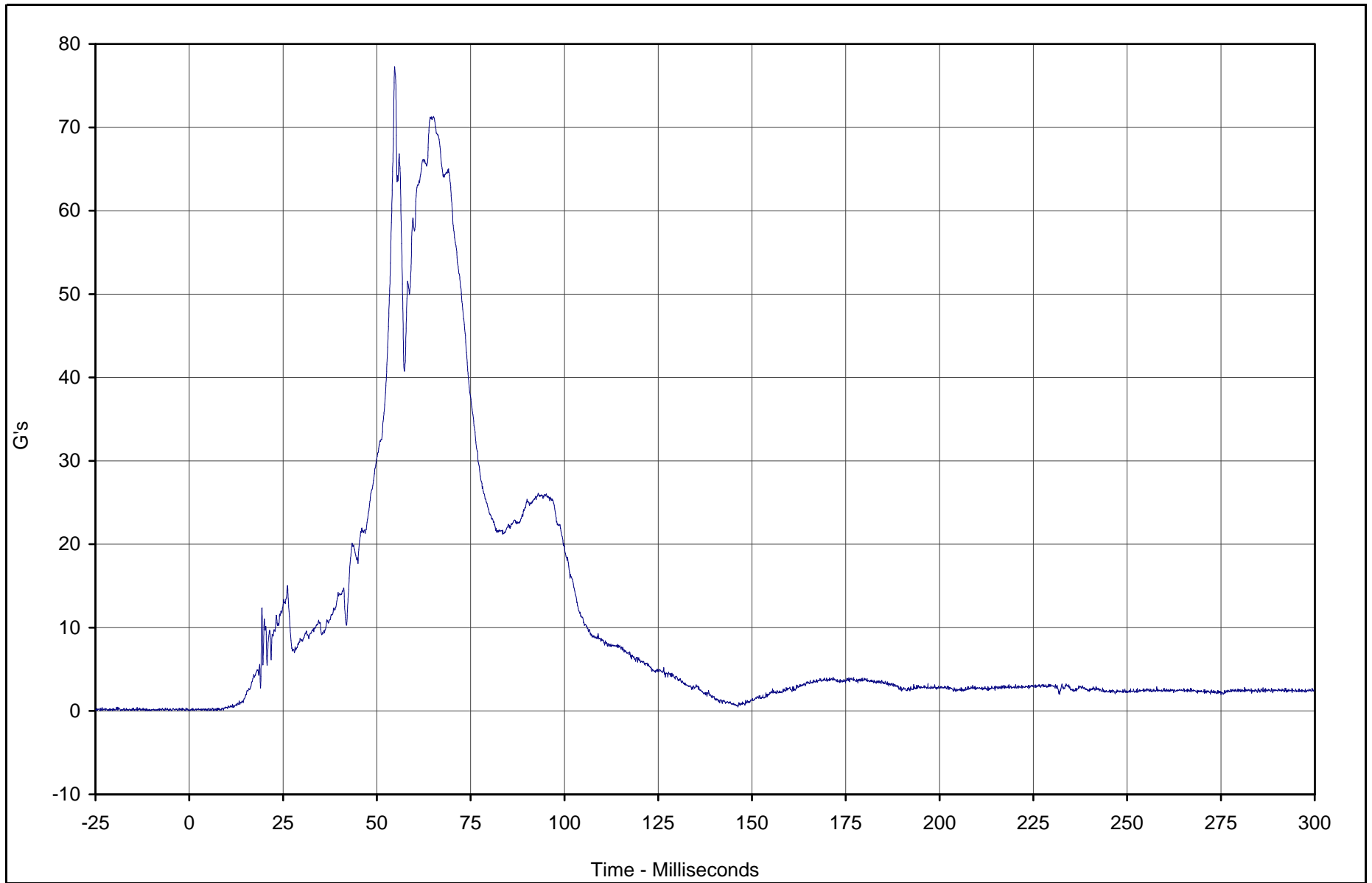


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Pelvis Resultant	023	RES	G's	77.2	54.7	0.0	6.4	1000



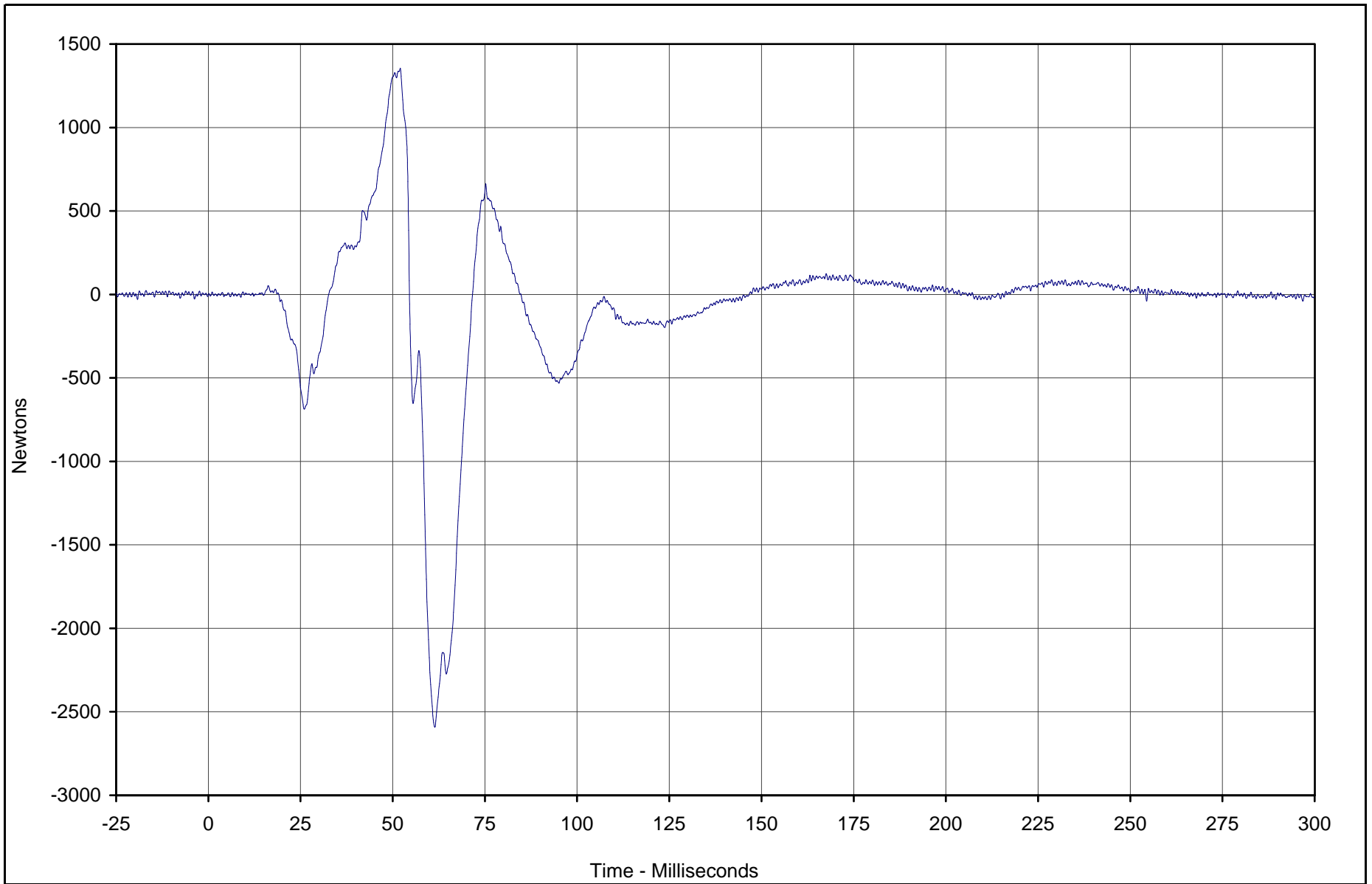
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-40



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Femur Force	023	FIL	Newtons	1355.3	52.0	-2592.4	61.4	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

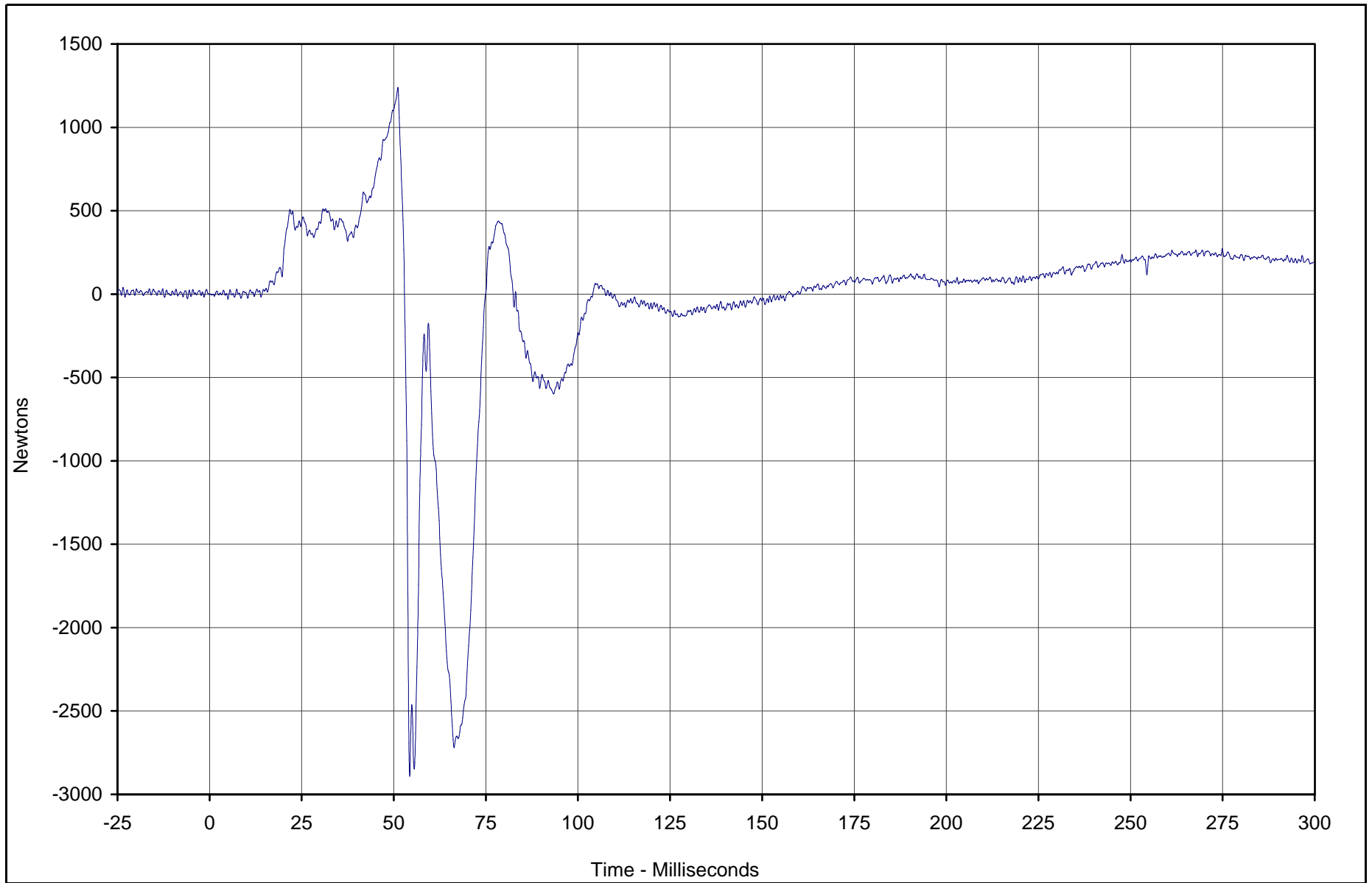
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-41



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Femur Force	024	FIL	Newtons	1239.3	51.1	-2891.9	54.3	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

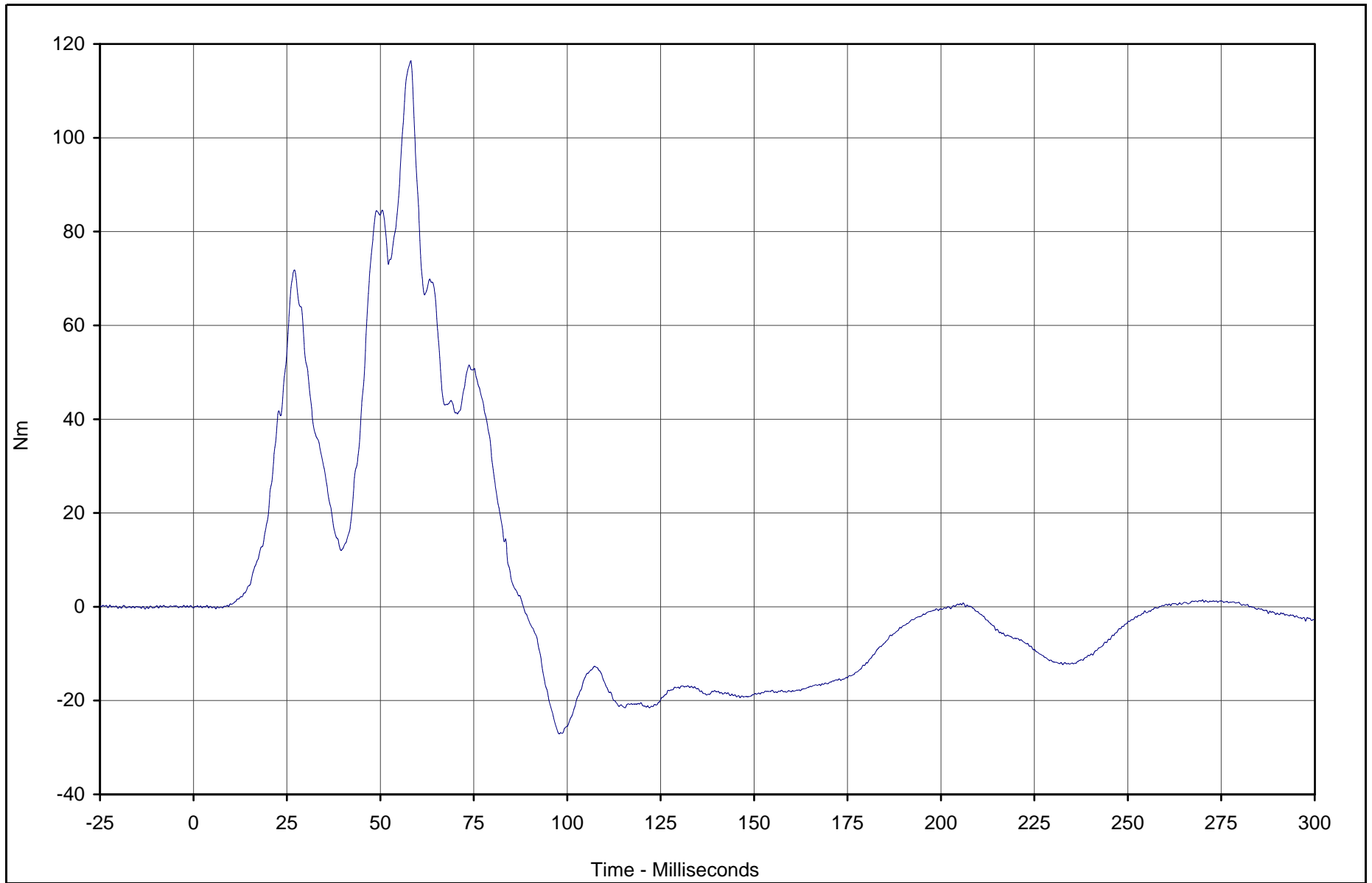
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-42



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Upper Tibia Moment X	025	FIL	Nm	116.4	58.1	-27.1	97.8	600



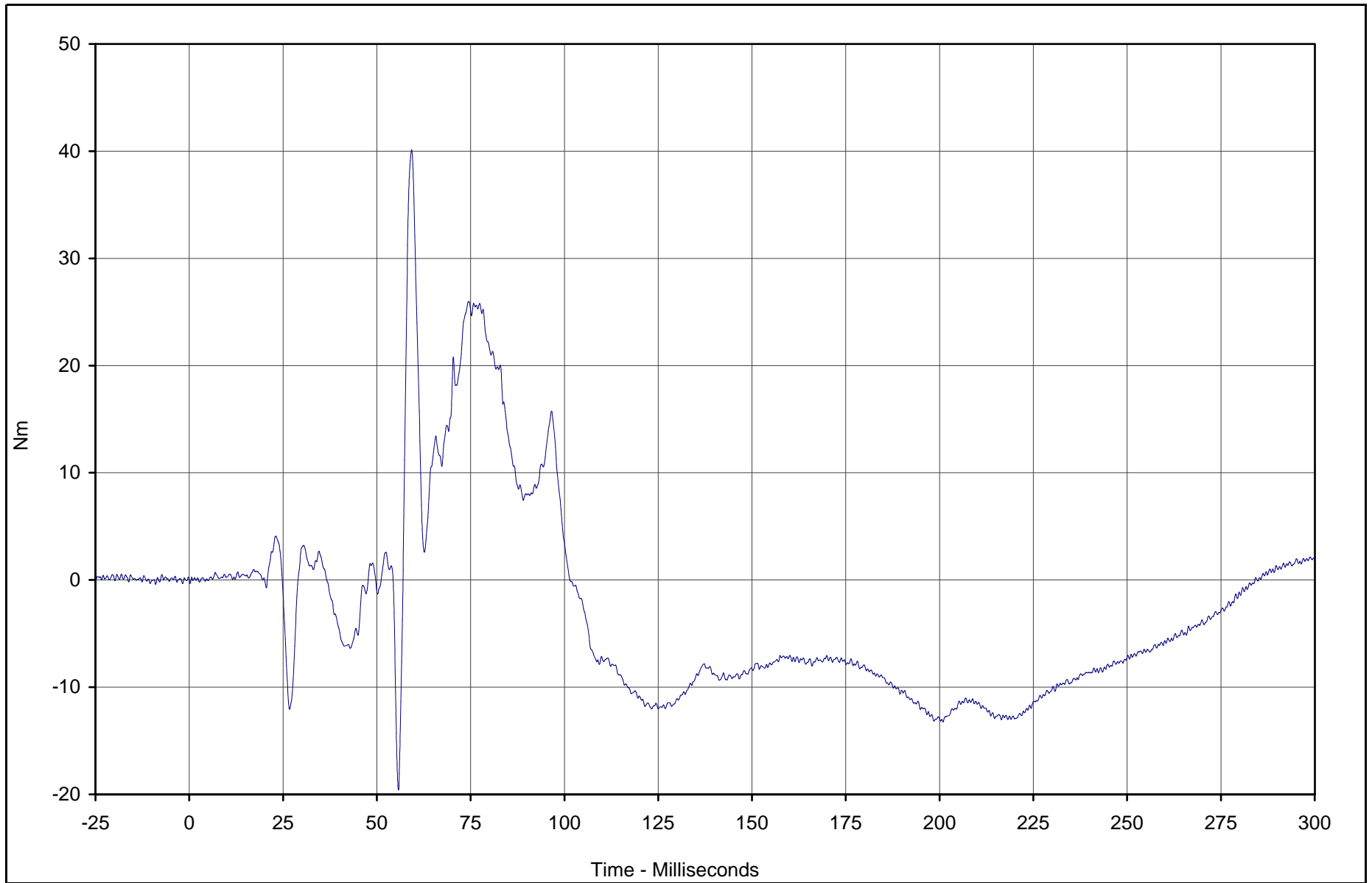
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Upper Tibia Moment Y	026	FIL	Nm	40.1	59.3	-19.6	55.7	600

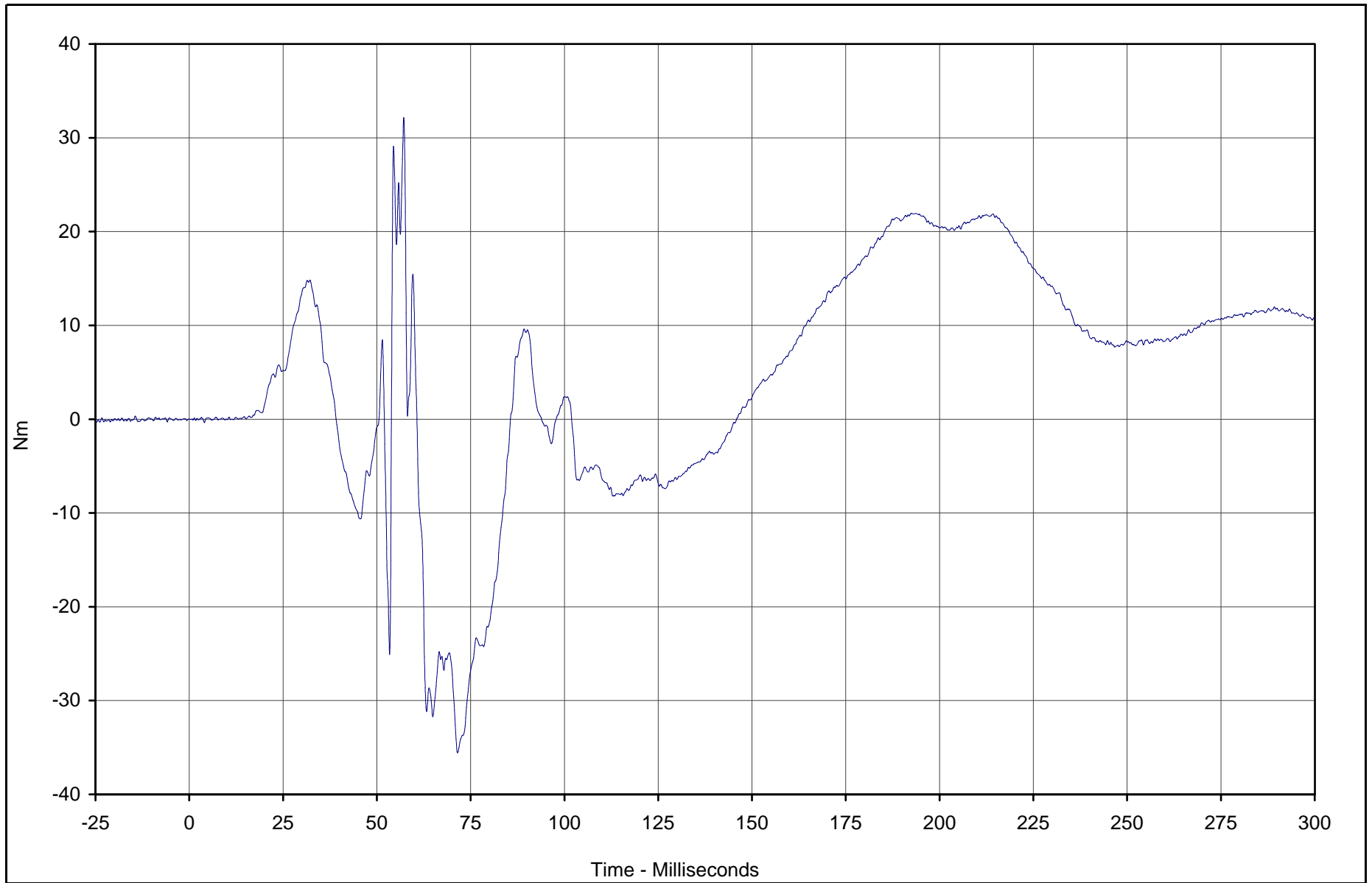


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Upper Tibia Moment X	027	FIL	Nm	32.2	57.2	-35.6	71.5	600



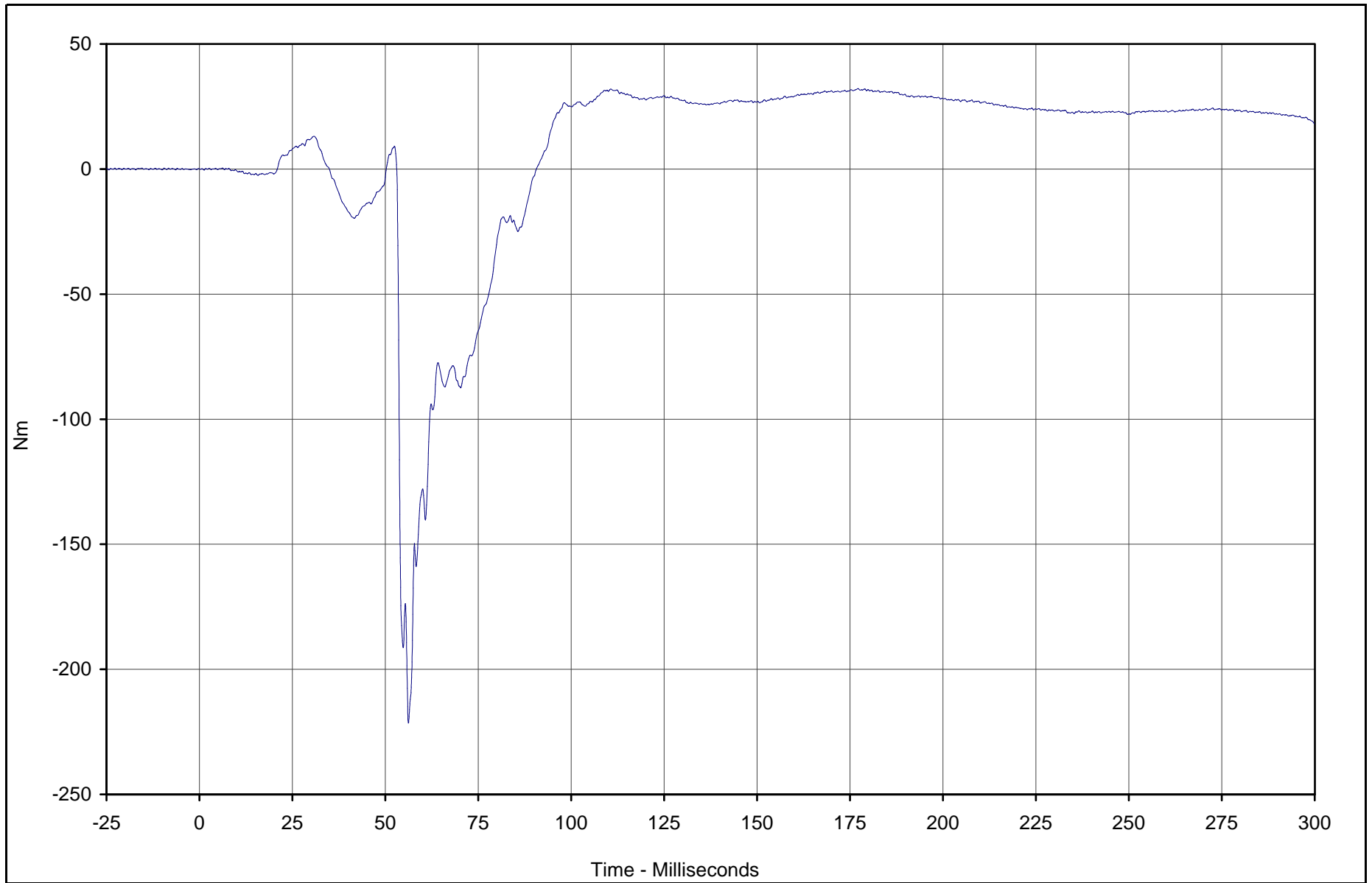
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-45



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Upper Tibia Moment Y	028	FIL	Nm	32.2	177.1	-221.5	56.2	600



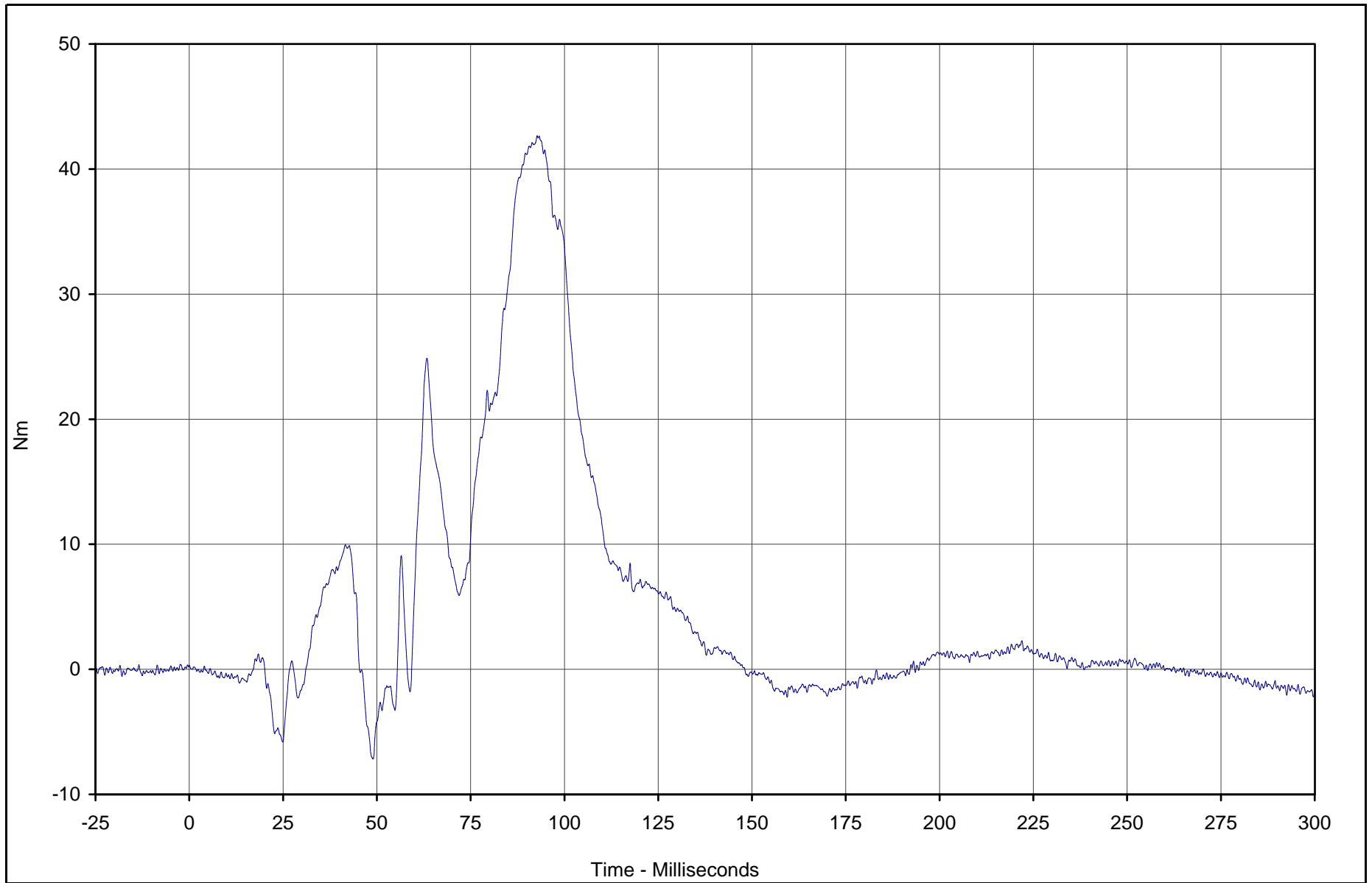
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Lower Tibia Moment X	029	FIL	Nm	42.7	92.7	-7.2	49.0	600



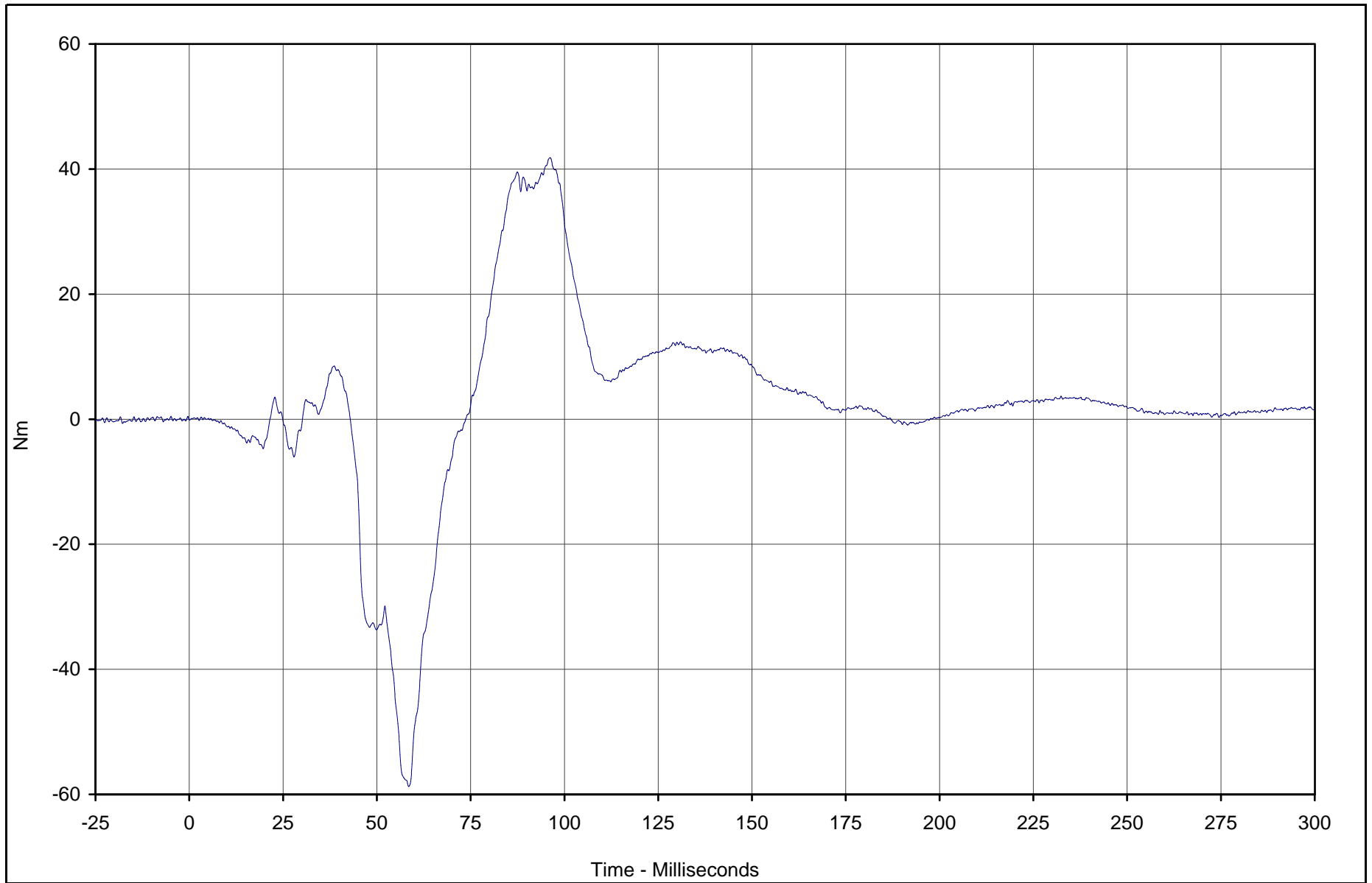
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-47



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Lower Tibia Moment Y	030	FIL	Nm	41.8	96.2	-58.7	58.5	600



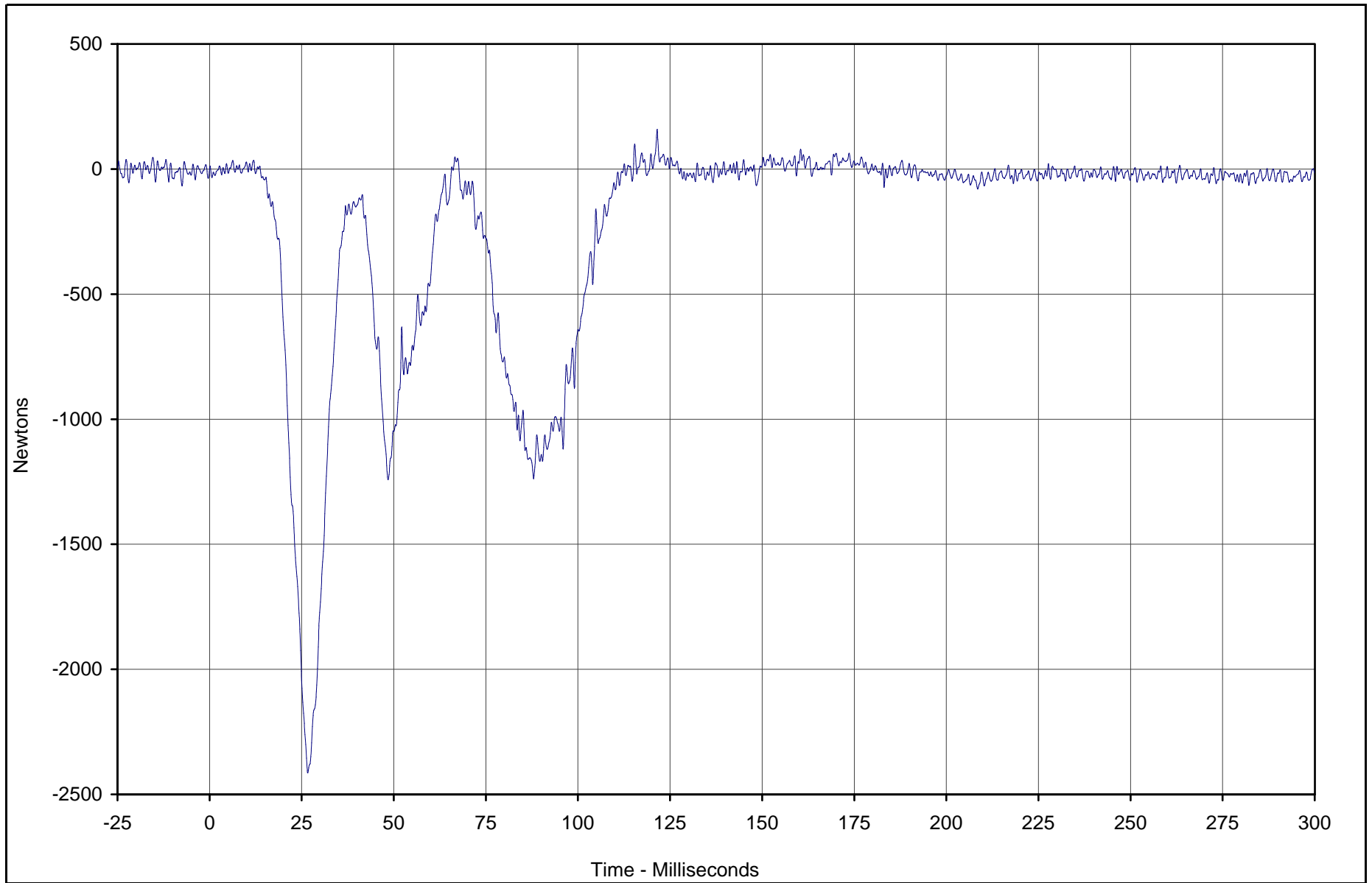
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Lower Tibia Force Z	031	FIL	Newtons	159.5	121.5	-2414.5	26.6	600

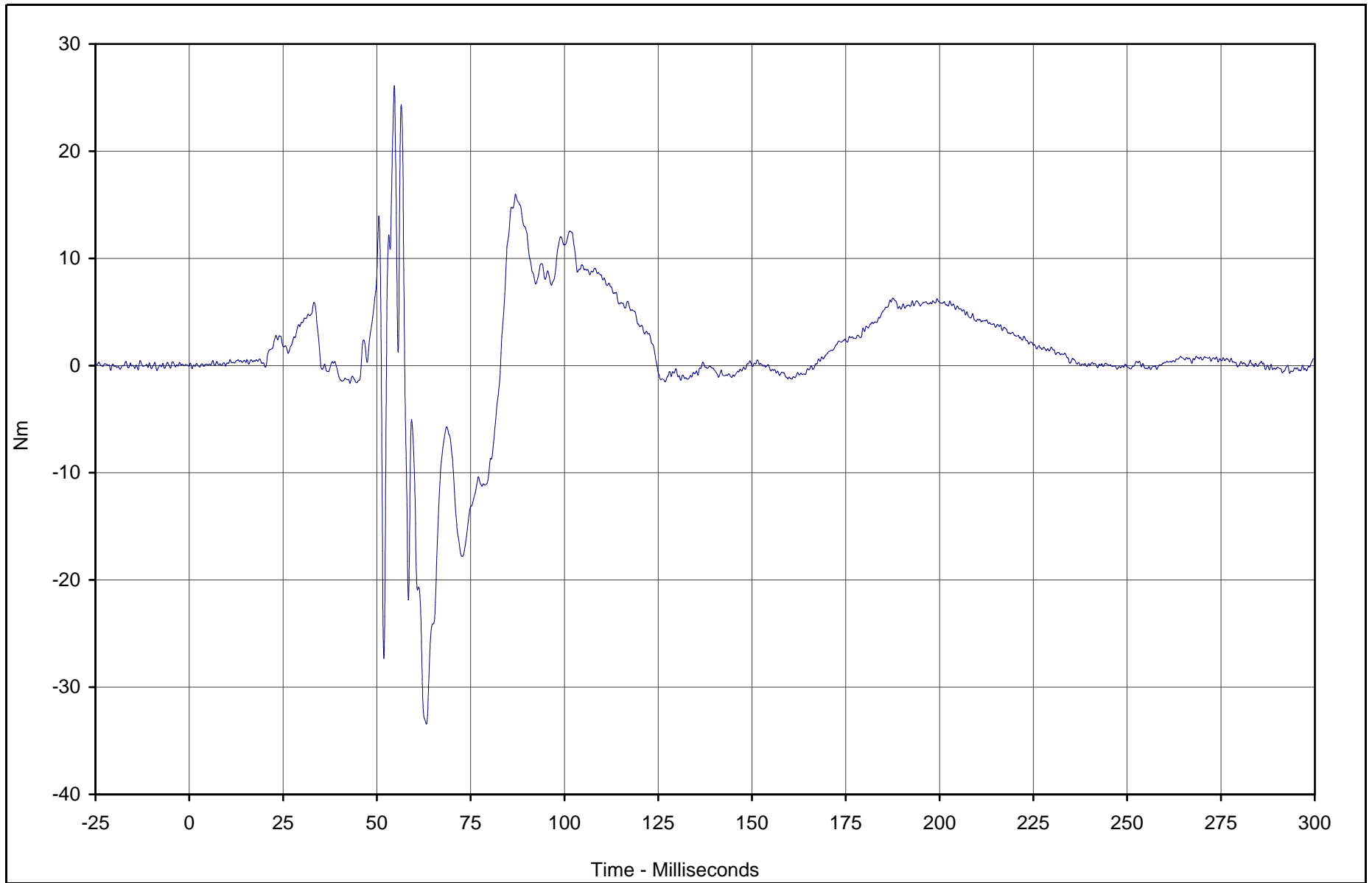


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Lower Tibia Moment X	032	FIL	Nm	26.1	54.6	-33.4	63.2	600



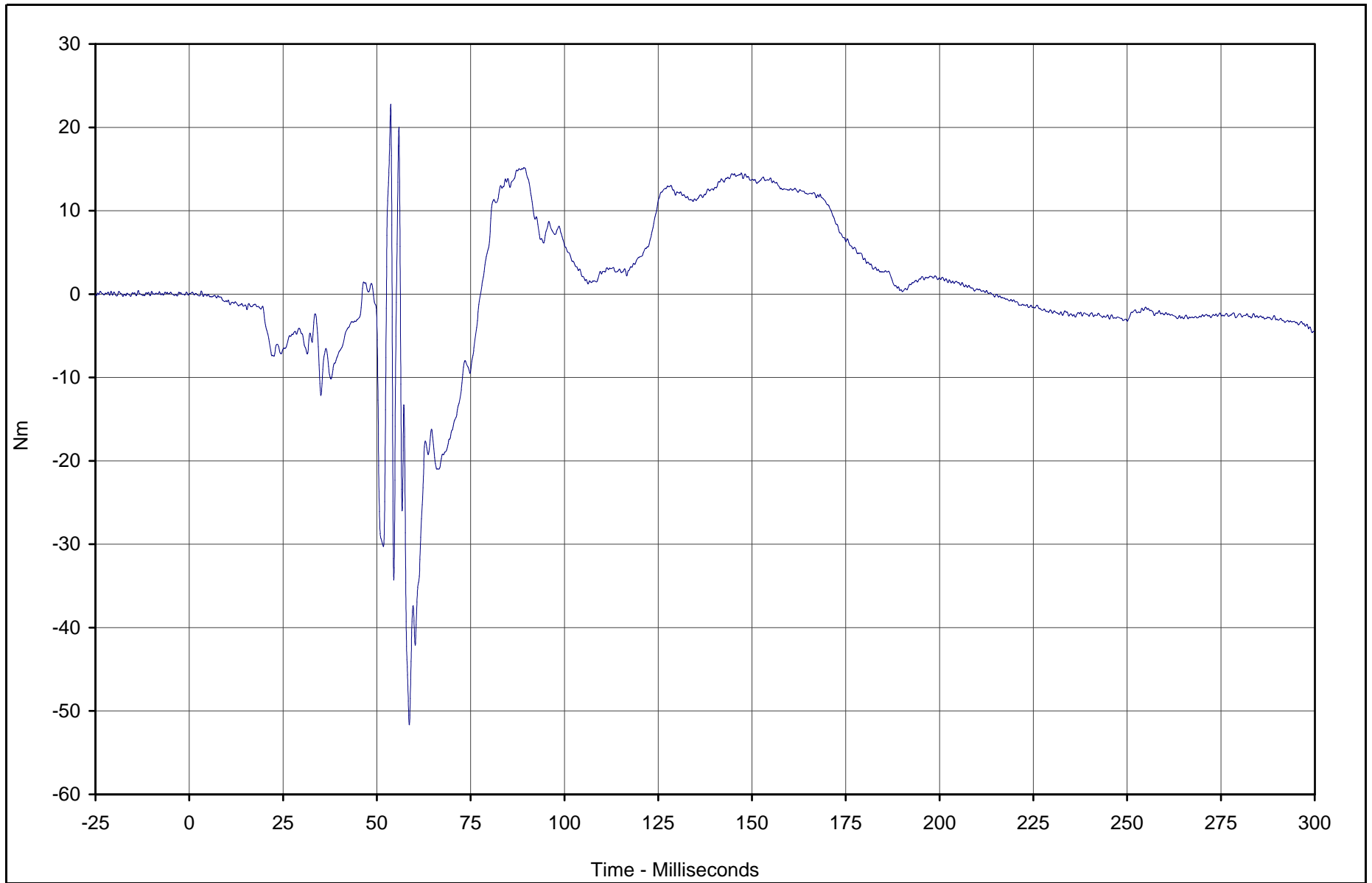
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-50



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Lower Tibia Moment Y	033	FIL	Nm	22.8	53.7	-51.6	58.7	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

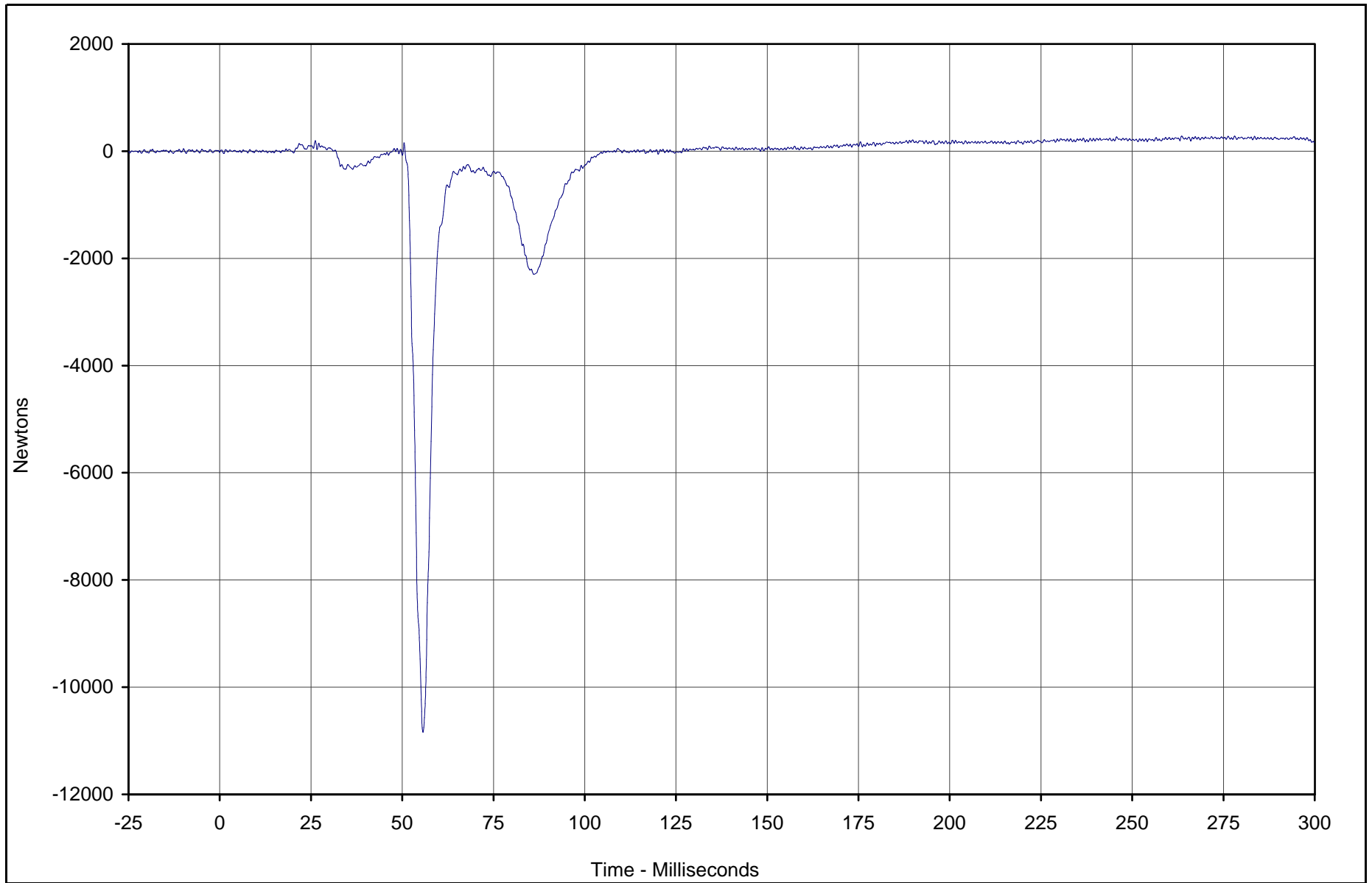
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-51

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Lower Tibia Force Z	034	FIL	Newtons	283.2	278.1	-10841.9	55.7	600



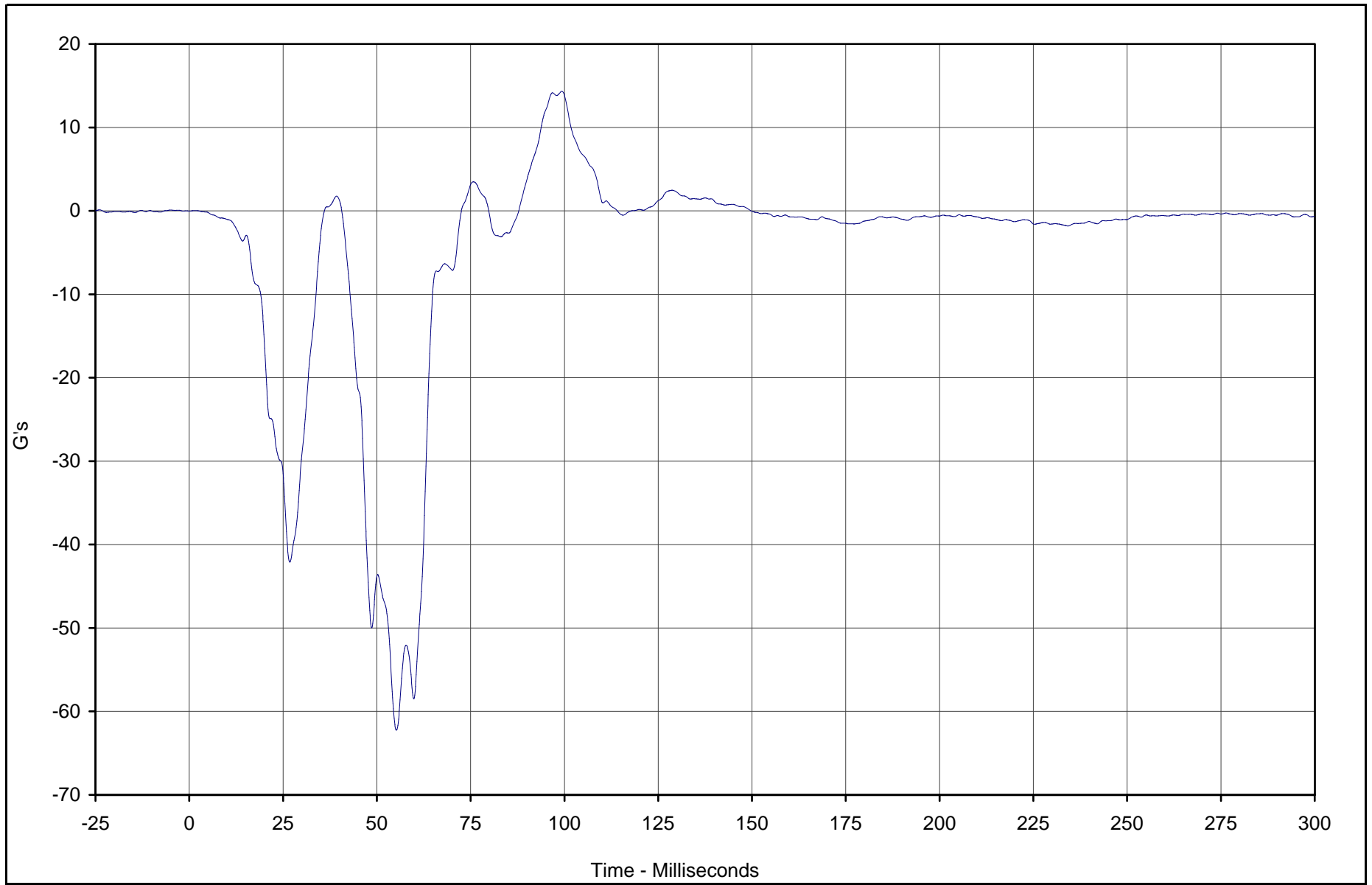
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-52



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Foot Aft X	035	FIL	G's	14.3	99.3	-62.3	55.2	180



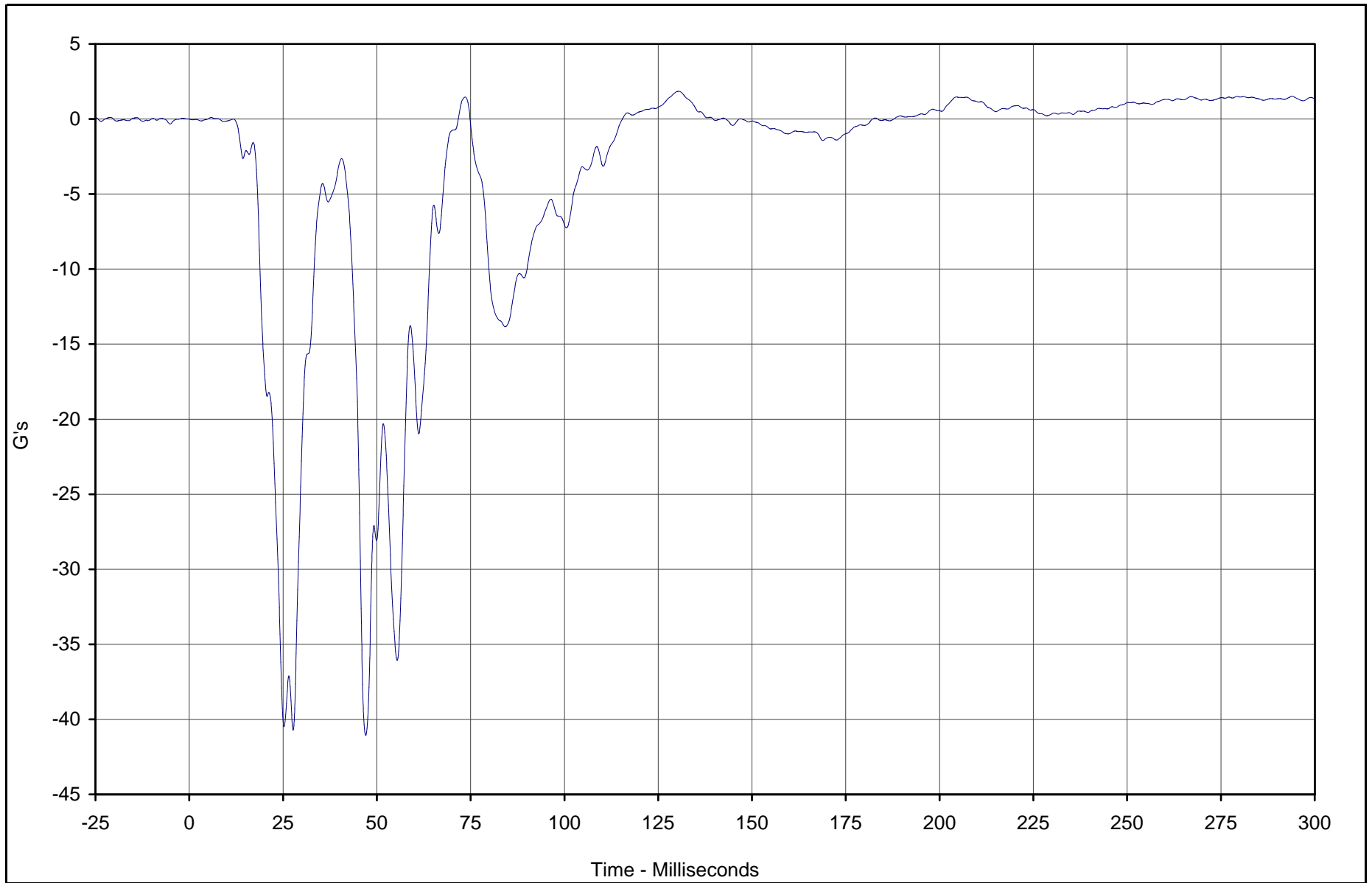
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Foot Aft Z	036	FIL	G's	1.8	130.5	-41.1	47.0	180

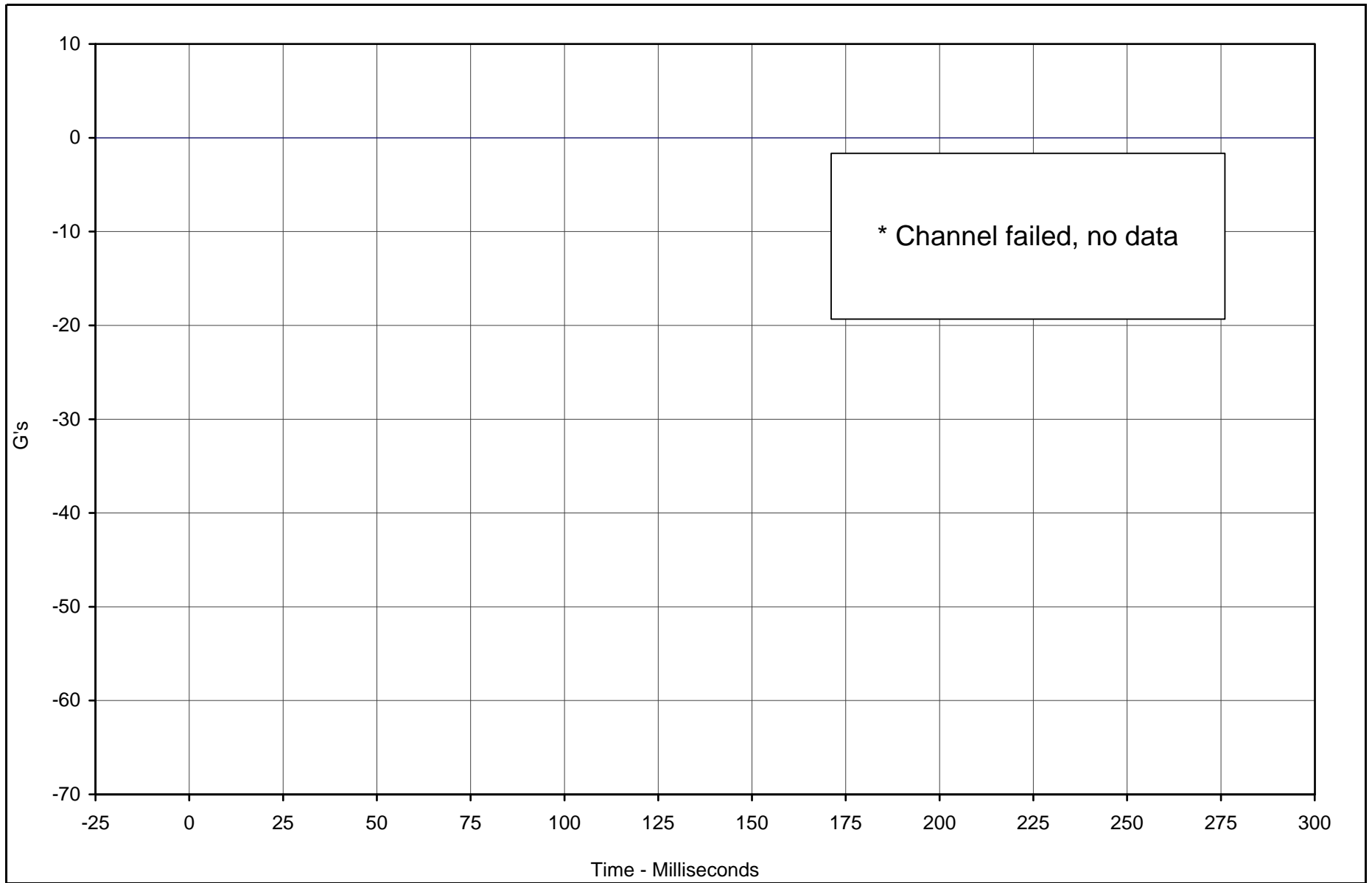


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



\* Channel failed, no data

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Left Foot Fore Z	037	FIL	G's	0.0	0.0	0.0	0.0	180



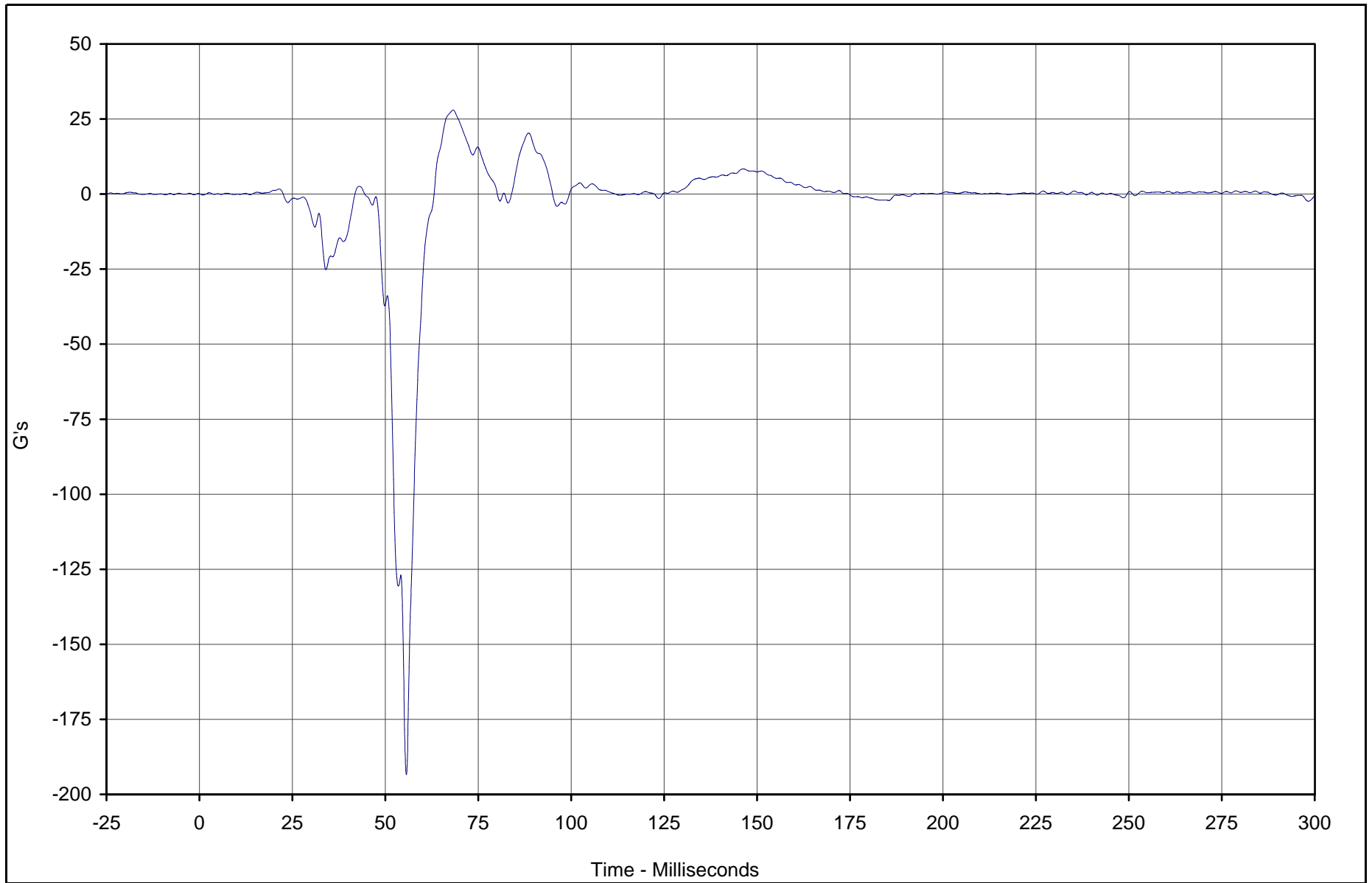
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-55



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Foot Aft X	038	FIL	G's	28.0	68.2	-193.4	55.7	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

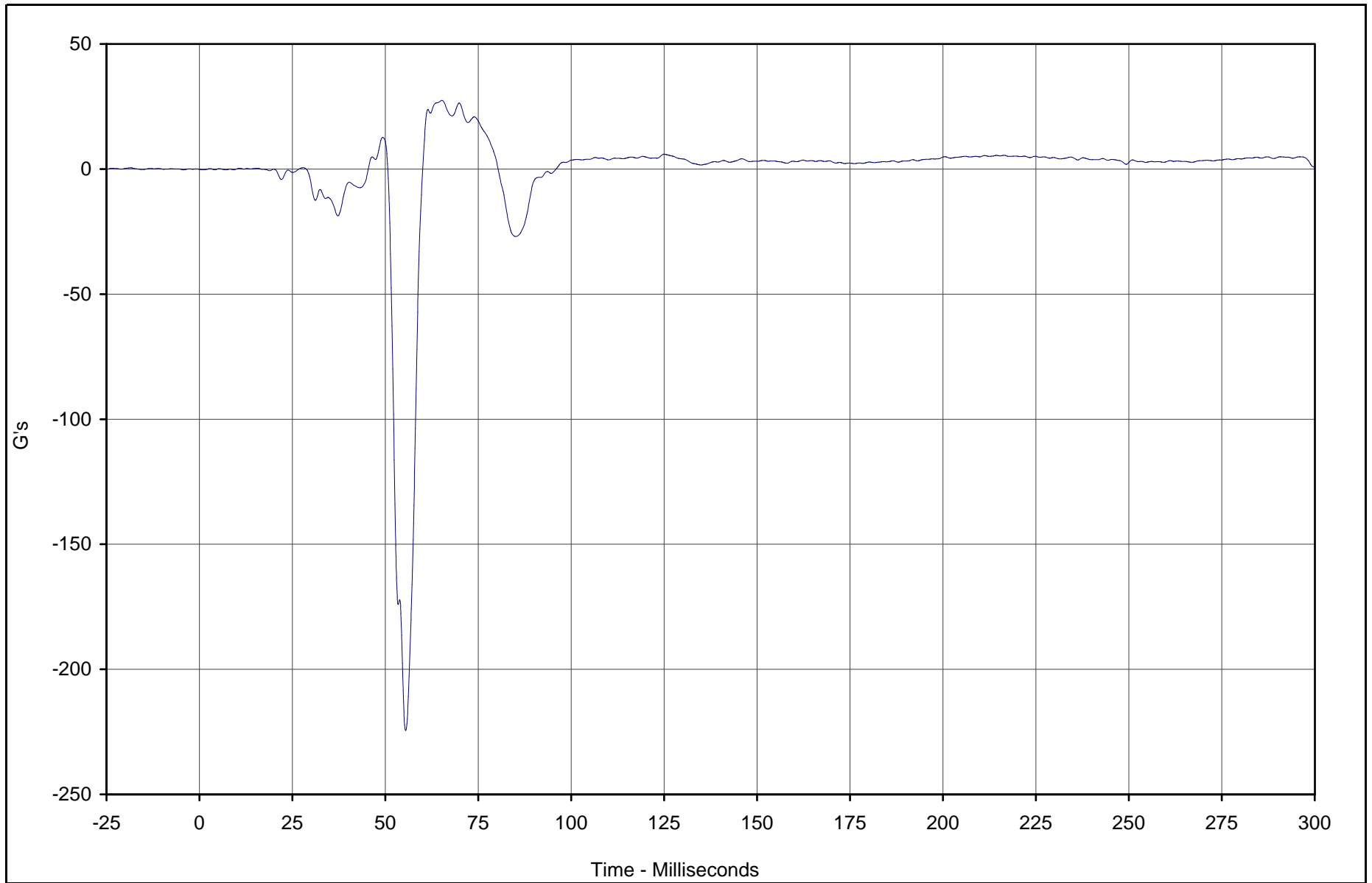
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-56

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Foot Aft Z	039	FIL	G's	27.5	65.2	-224.5	55.5	180



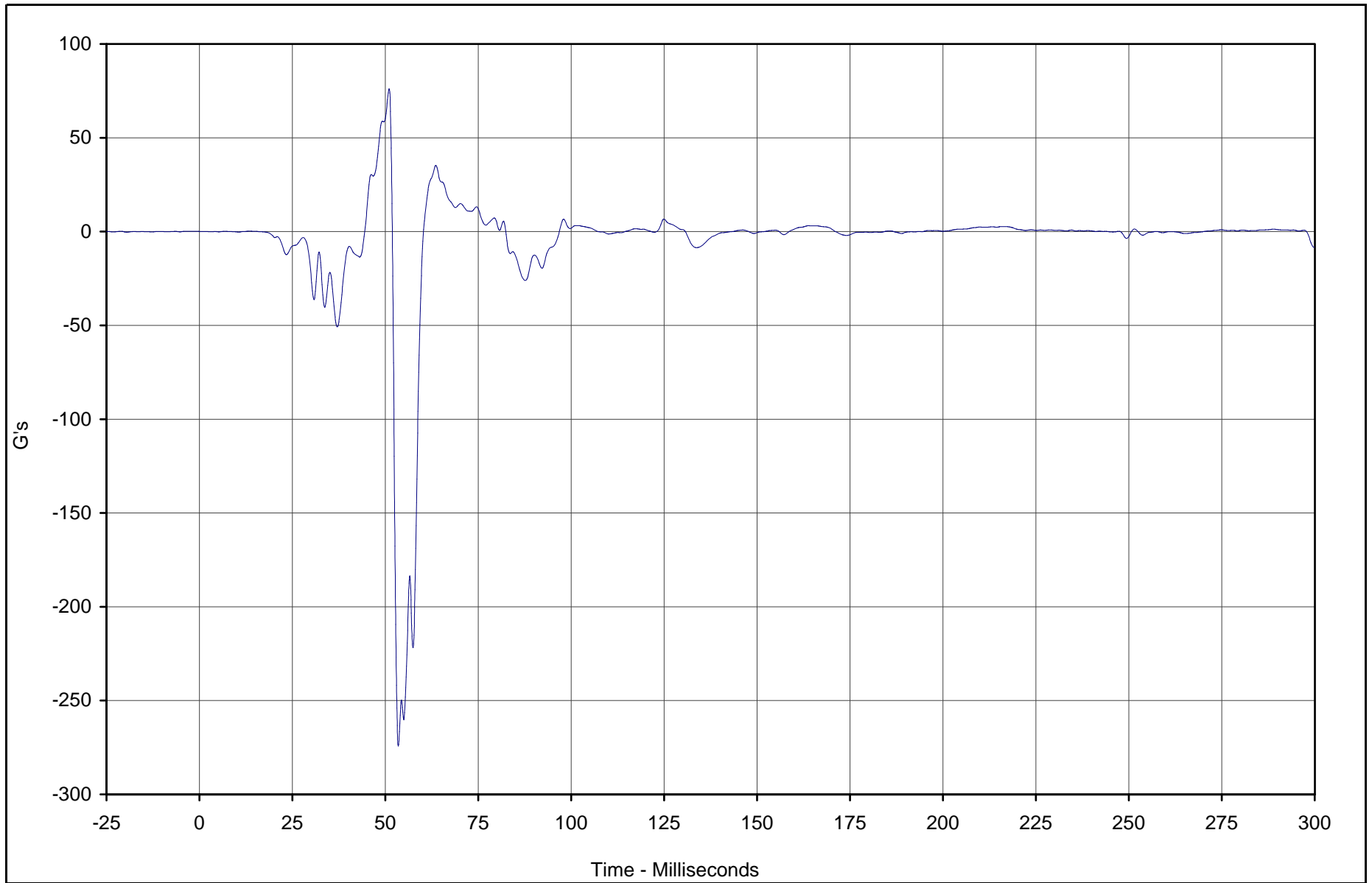
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-57



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Right Foot Fore Z	040	FIL	G's	76.2	51.0	-274.3	53.5	180



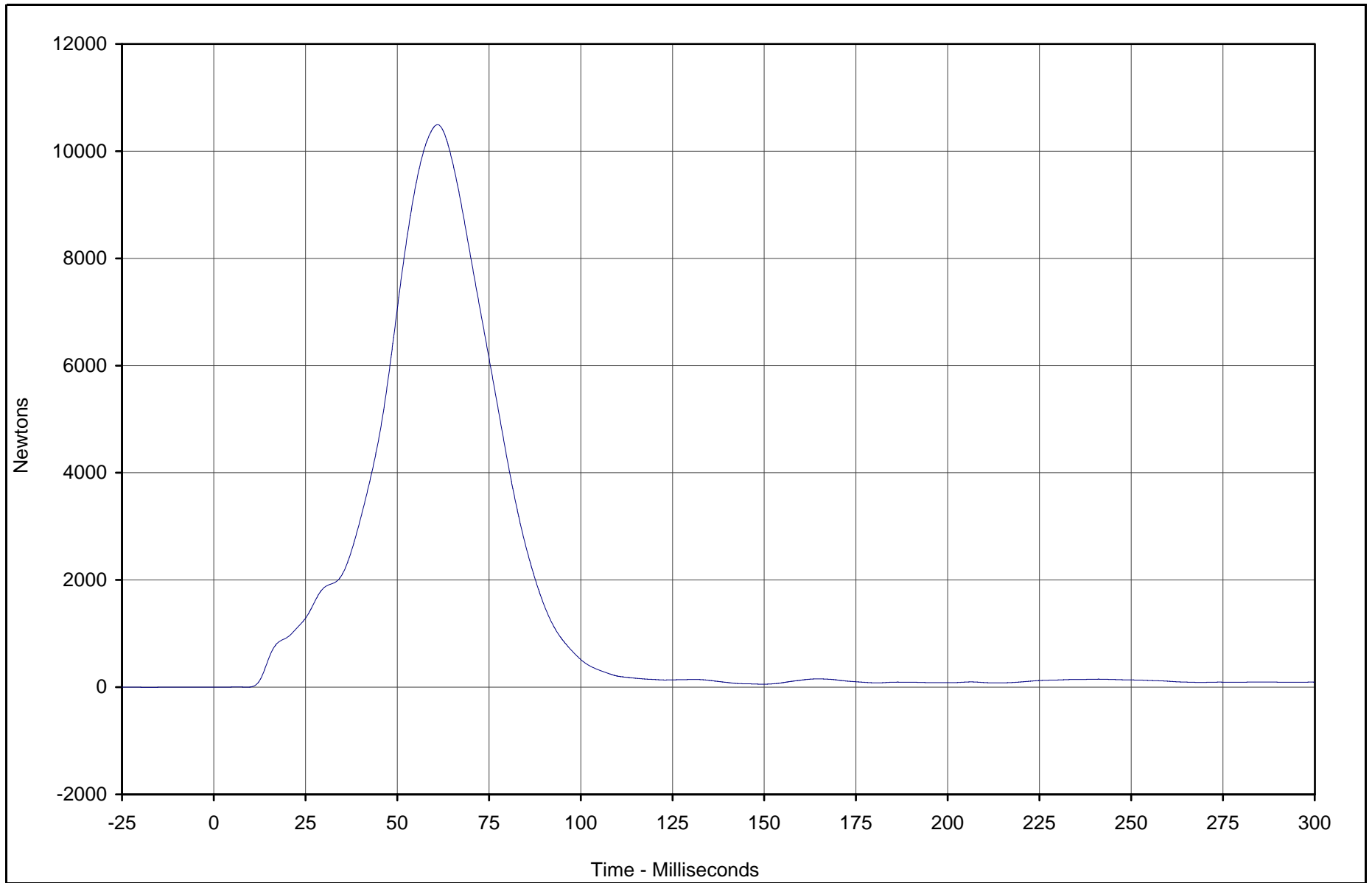
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Lap Belt Force	041	FIL	Newtons	10494.9	61.0	-0.1	9.1	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

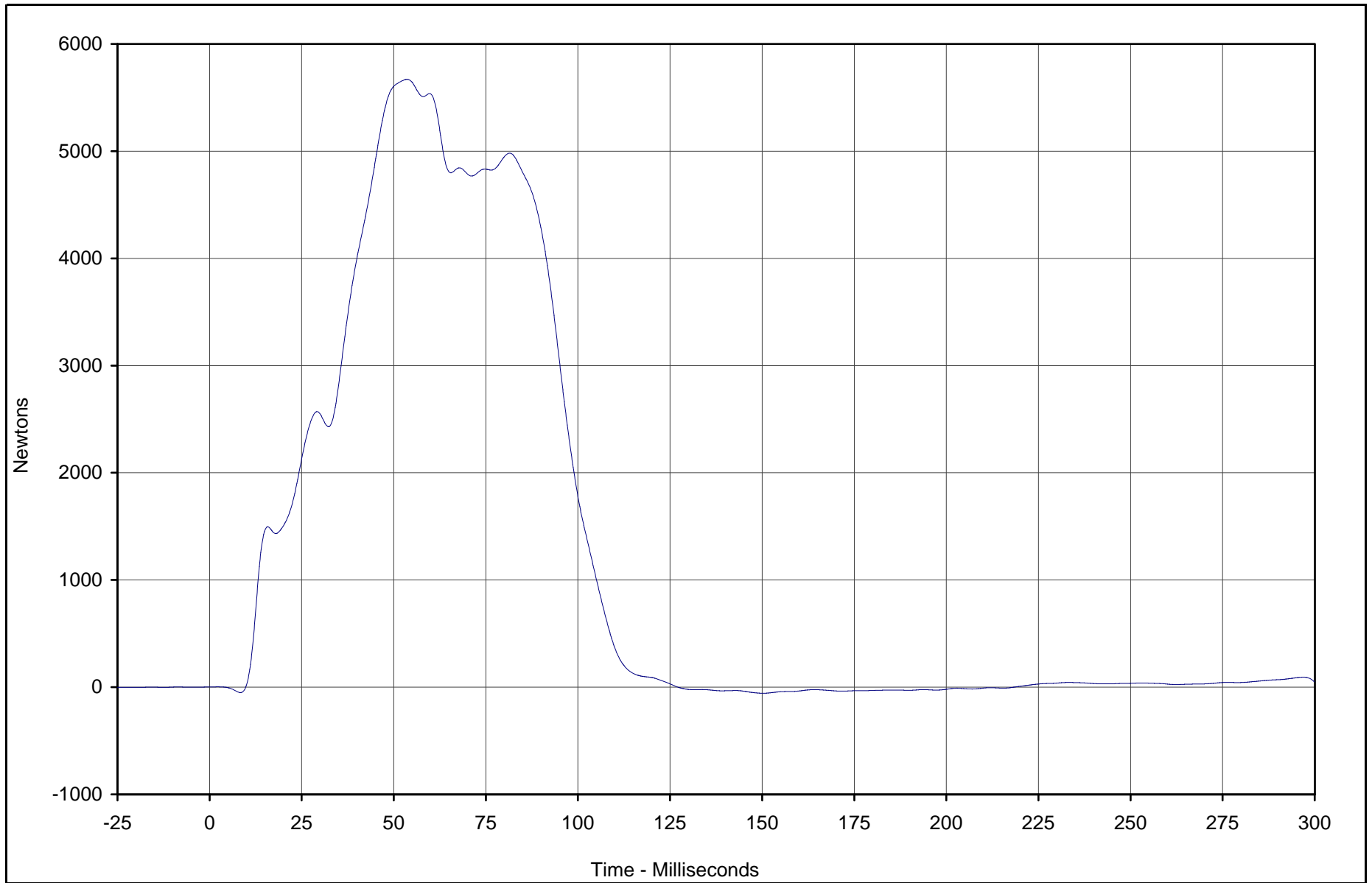
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

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TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Shoulder Belt Force	042	FIL	Newtons	5669.8	53.6	-56.8	150.3	60



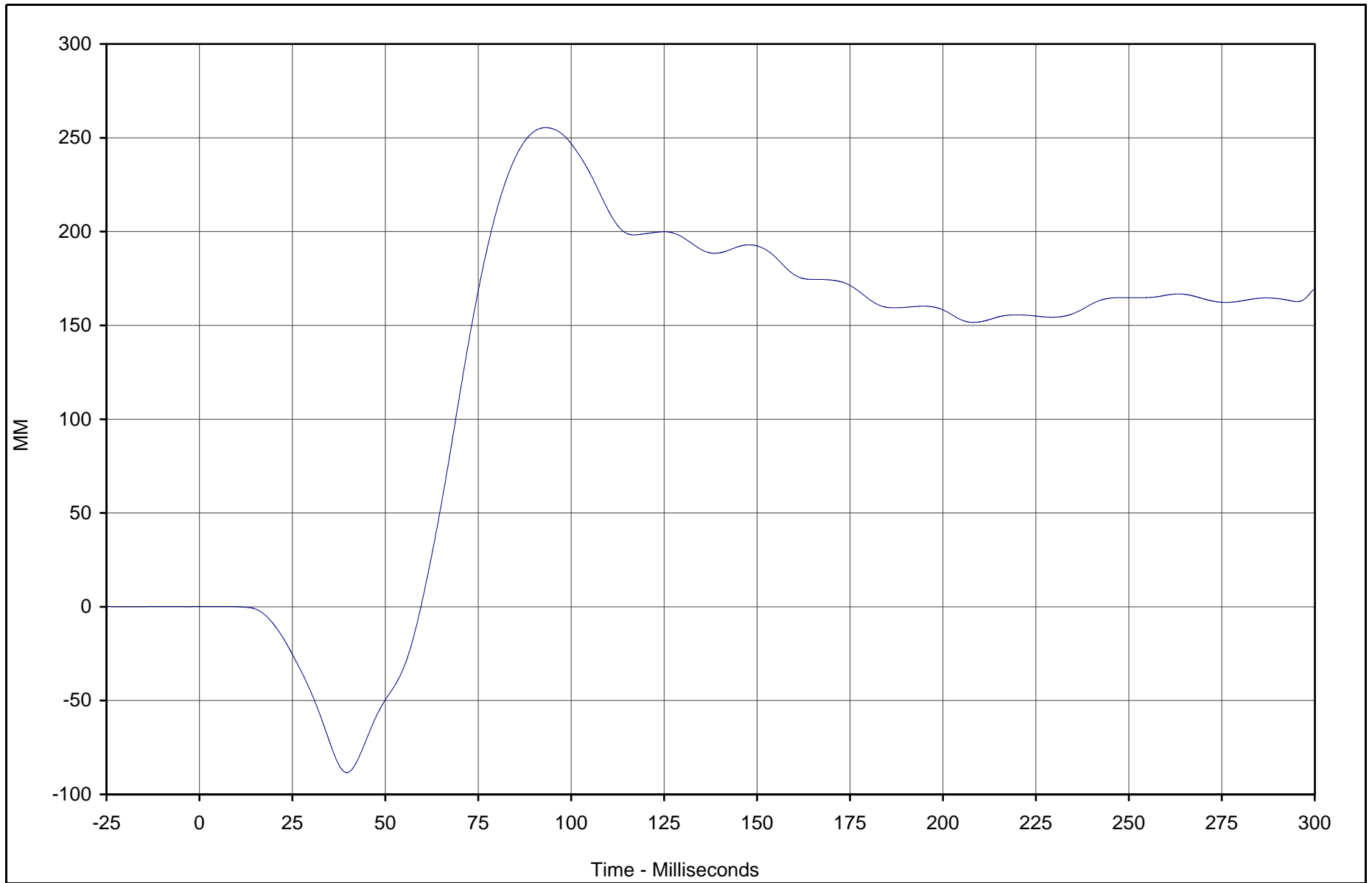
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-60



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Driver Shoulder Belt Pullout	043	FIL	MM	255.4	93.1	-88.4	39.6	60



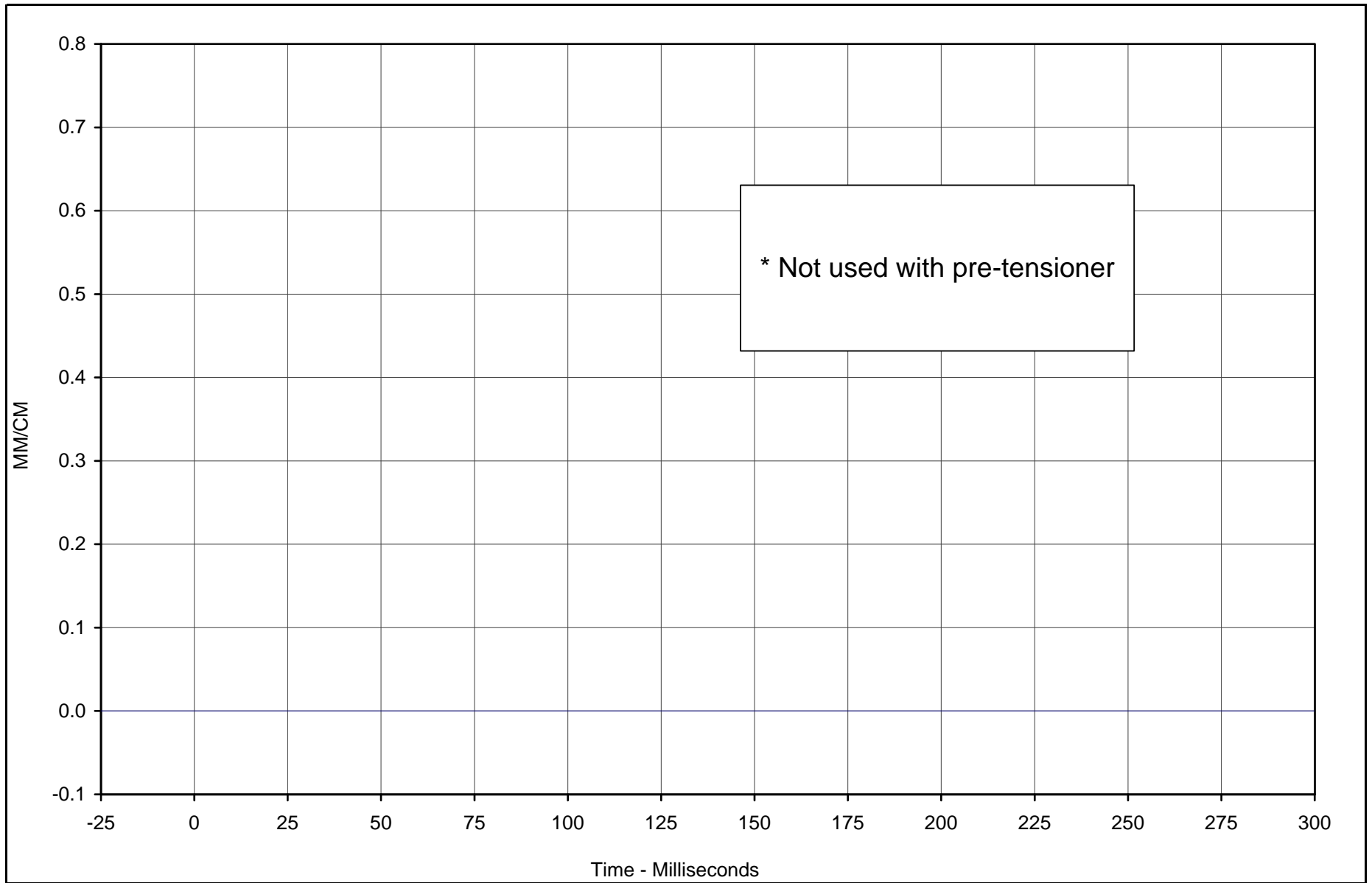
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-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 Nissan Murano SL AWD SUV

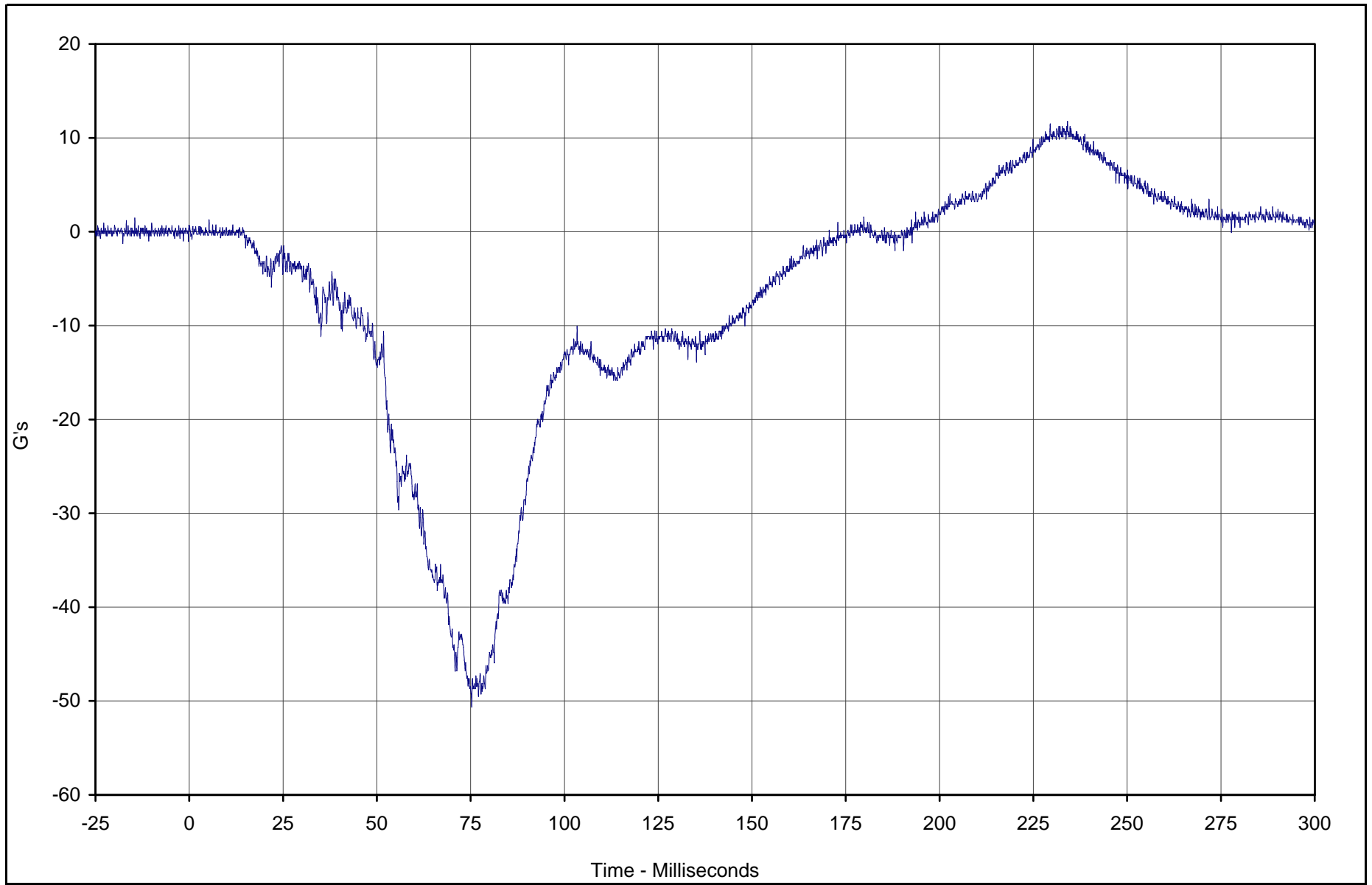
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

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TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary X	045	FIL	G's	11.8	234.1	-50.6	75.3	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

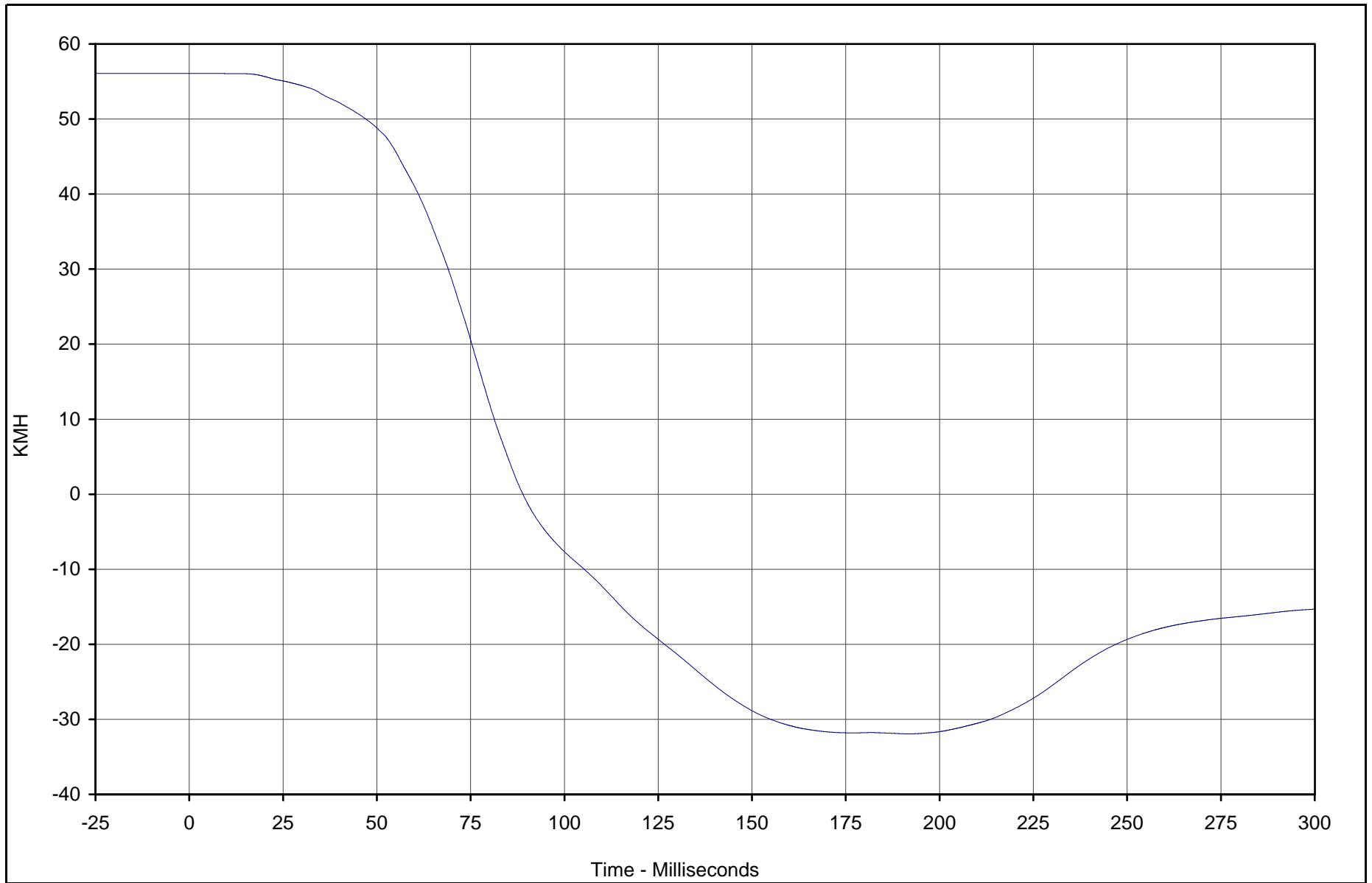
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-63

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary X Velocity	045	IN1	KMH	56.1	3.7	-31.9	192.0	180



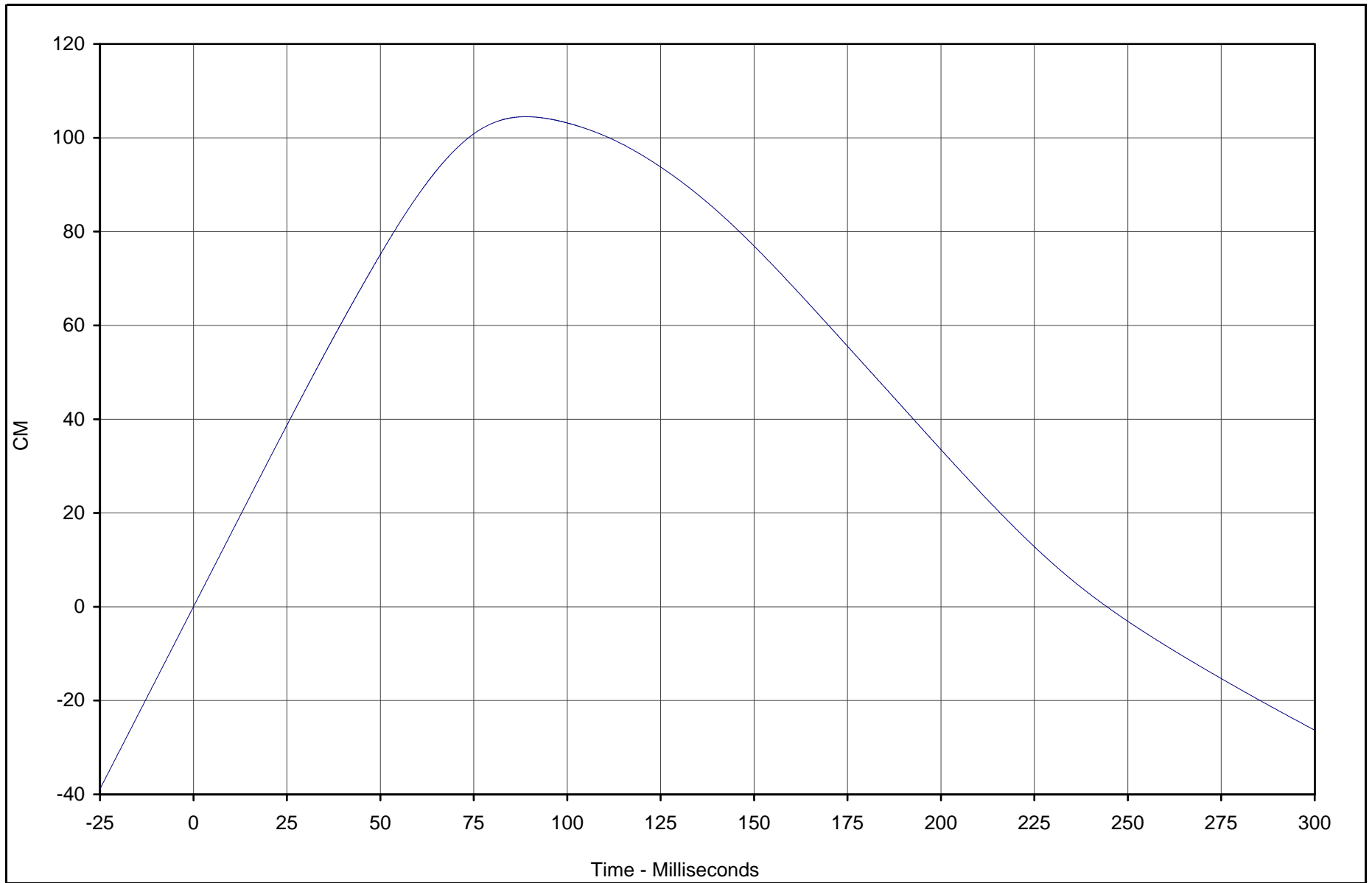
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-64



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary X Displ.	045	IN2	CM	104.5	88.9	-26.3	299.9	180



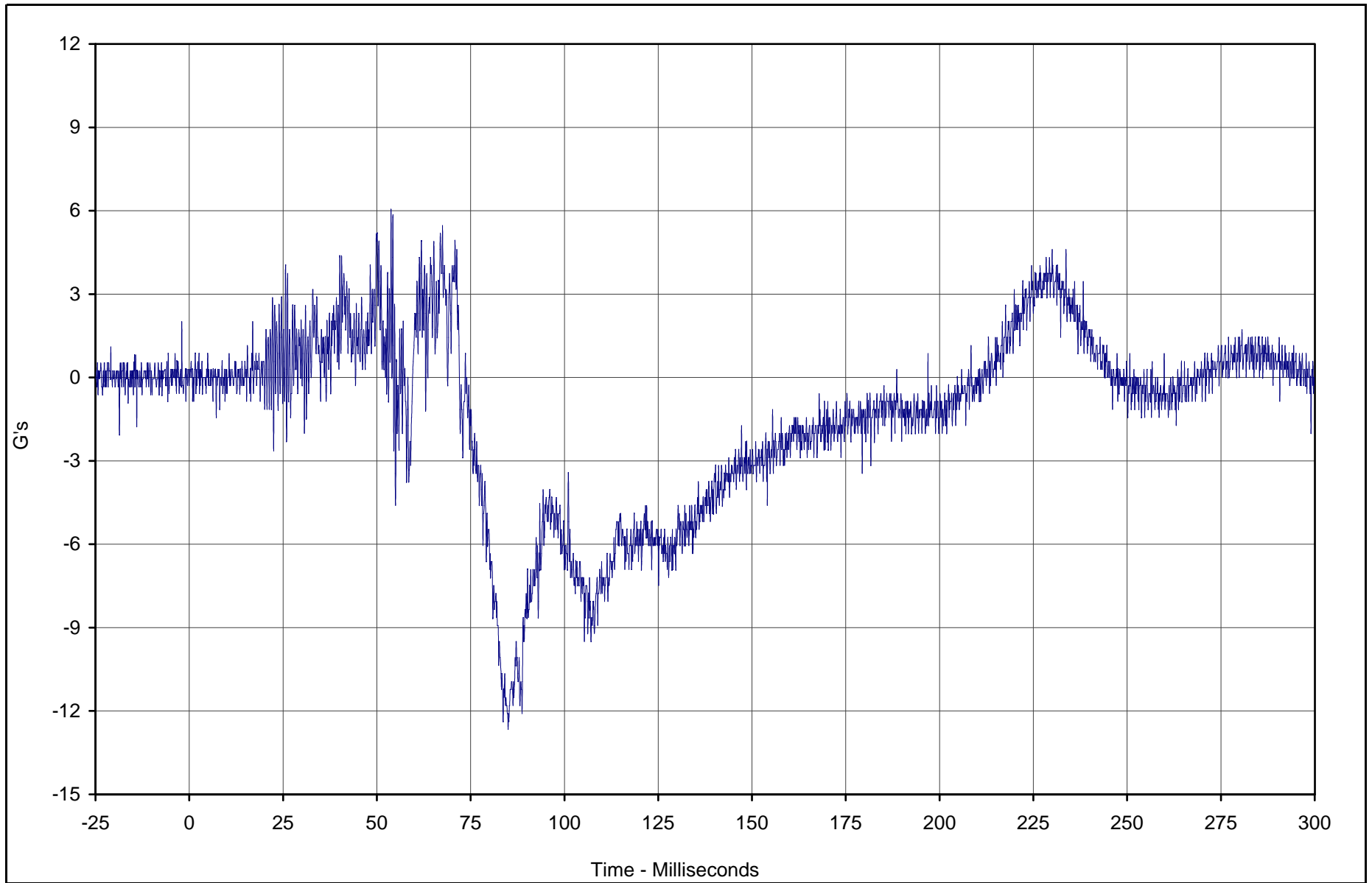
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary Y	046	FIL	G's	6.0	53.8	-12.7	85.0	1000

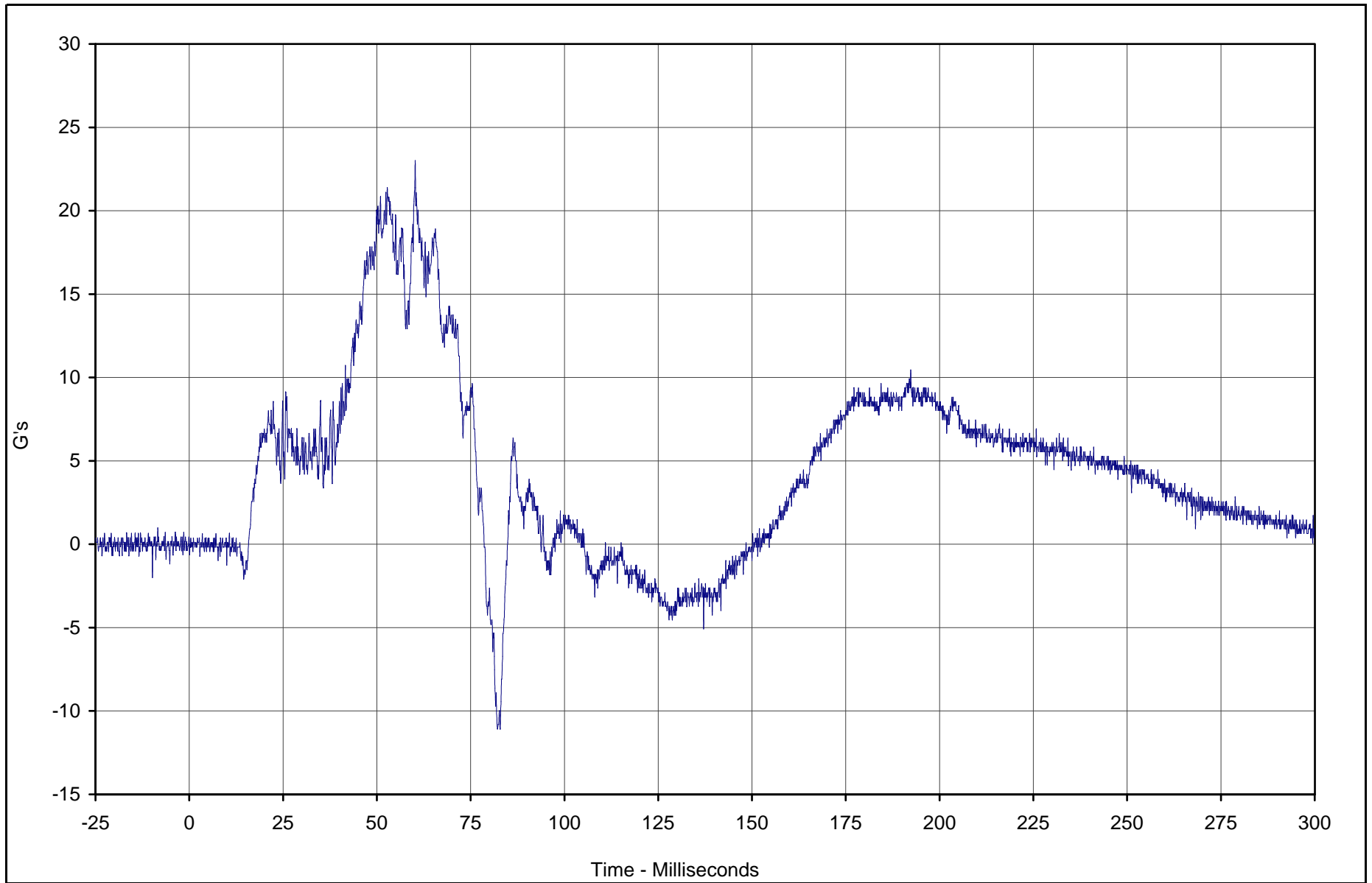


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Primary Z	047	FIL	G's	23.0	60.2	-11.1	82.1	1000

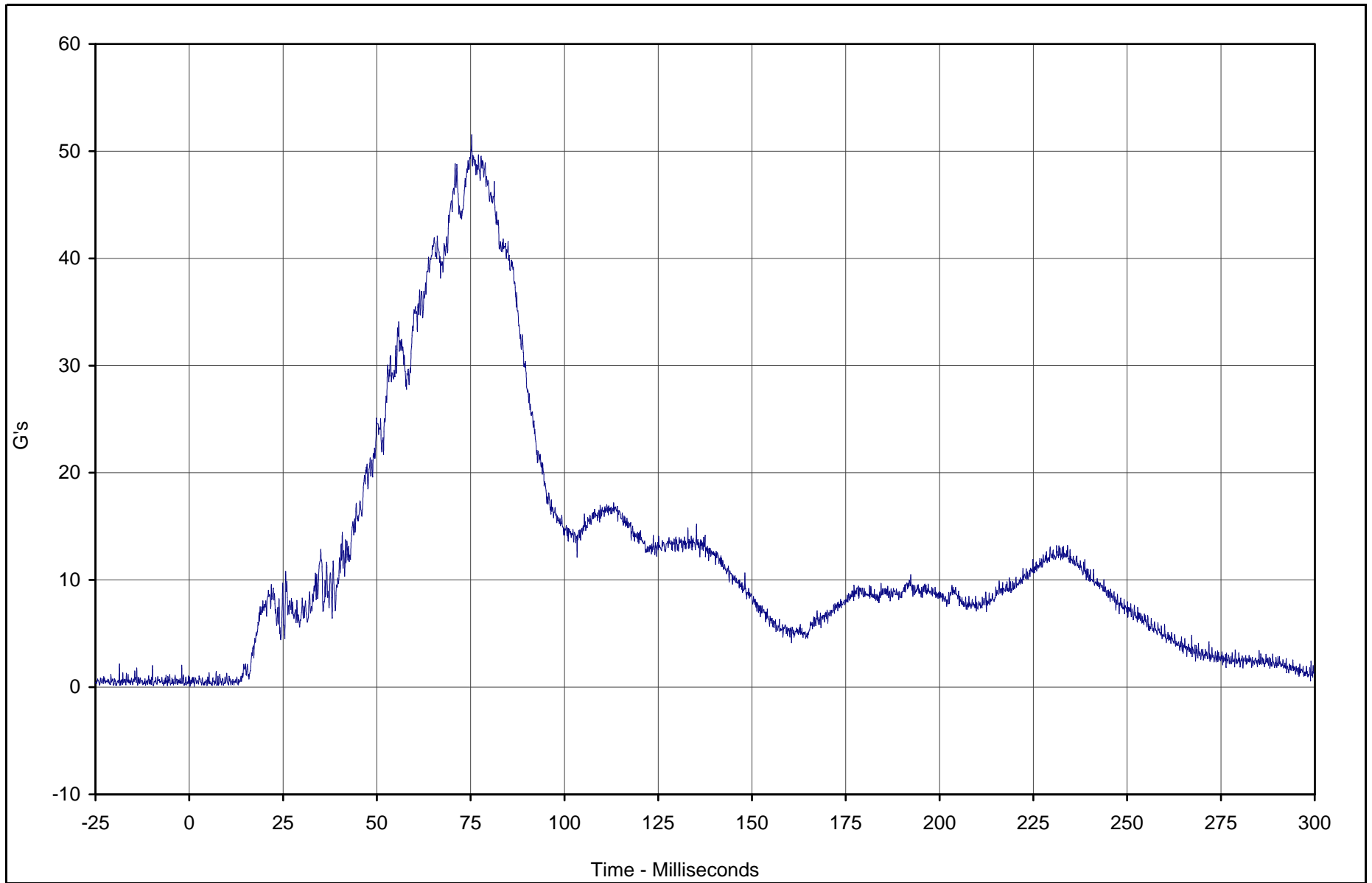


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Resultant Primary	045	RES	G's	51.5	75.3	0.1	0.2	1000

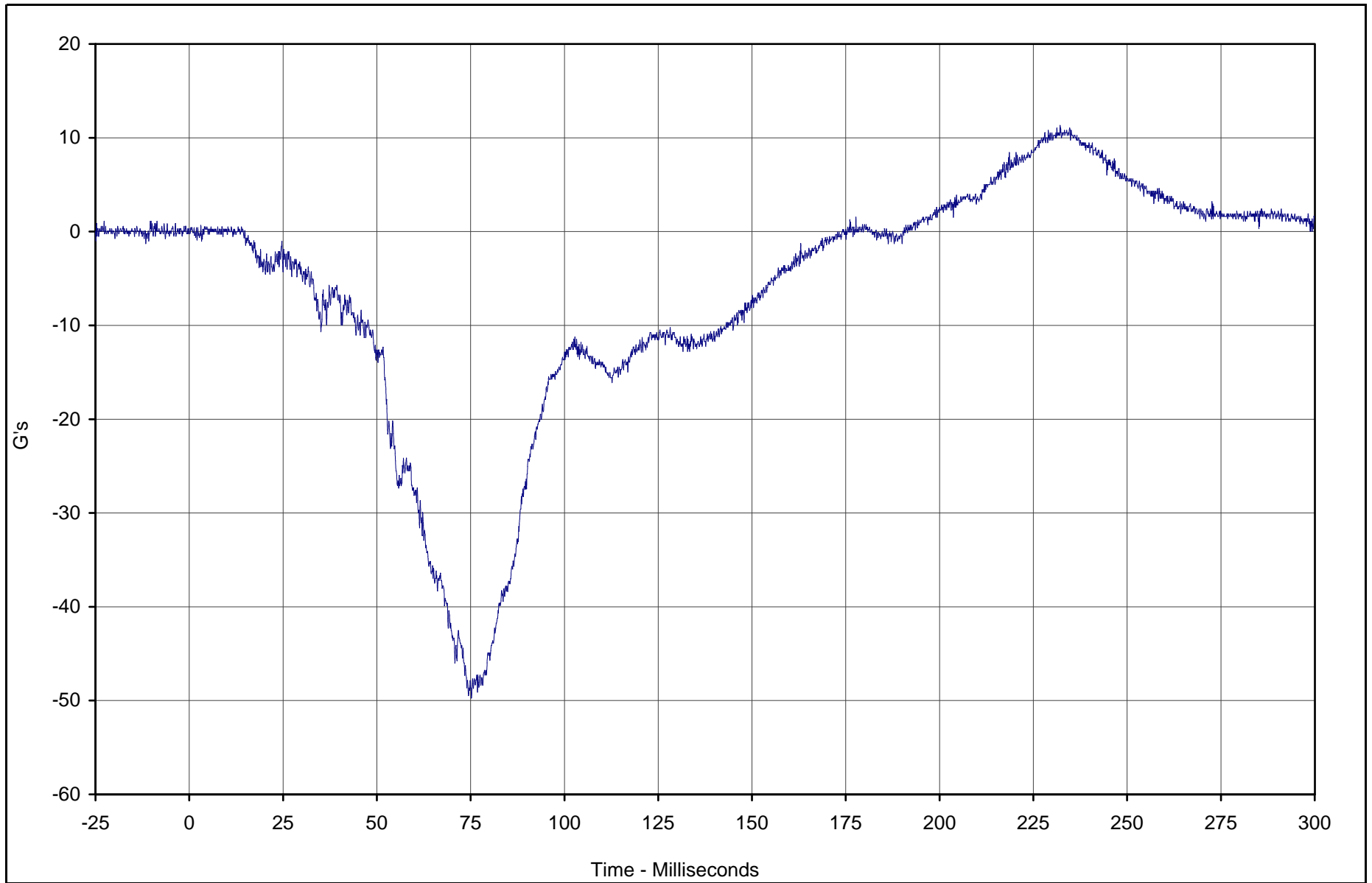


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant X	048	FIL	G's	11.3	232.1	-49.7	75.2	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

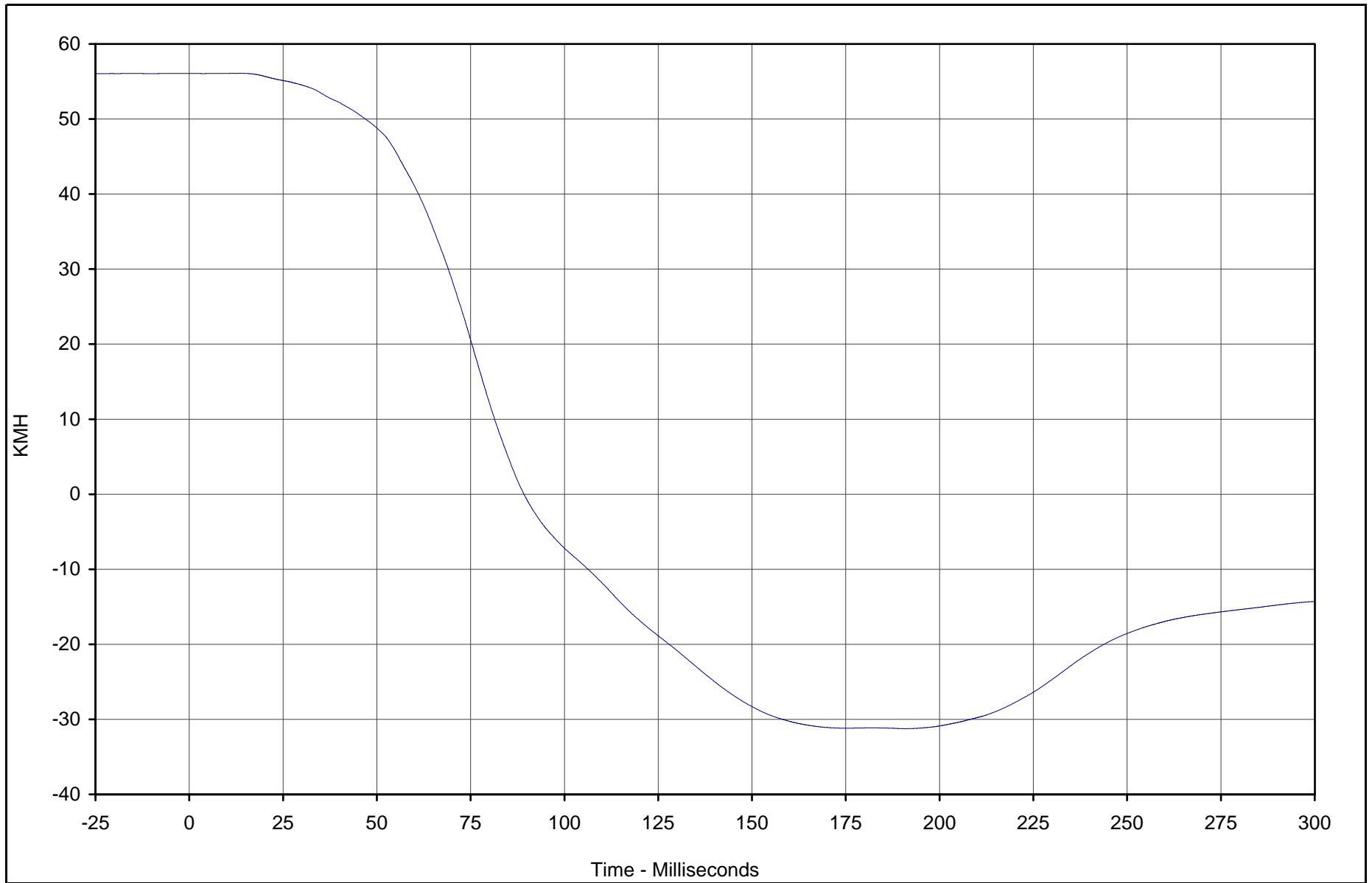
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-69

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant X Velocity	048	IN1	KMH	56.1	14.1	-31.2	190.7	180



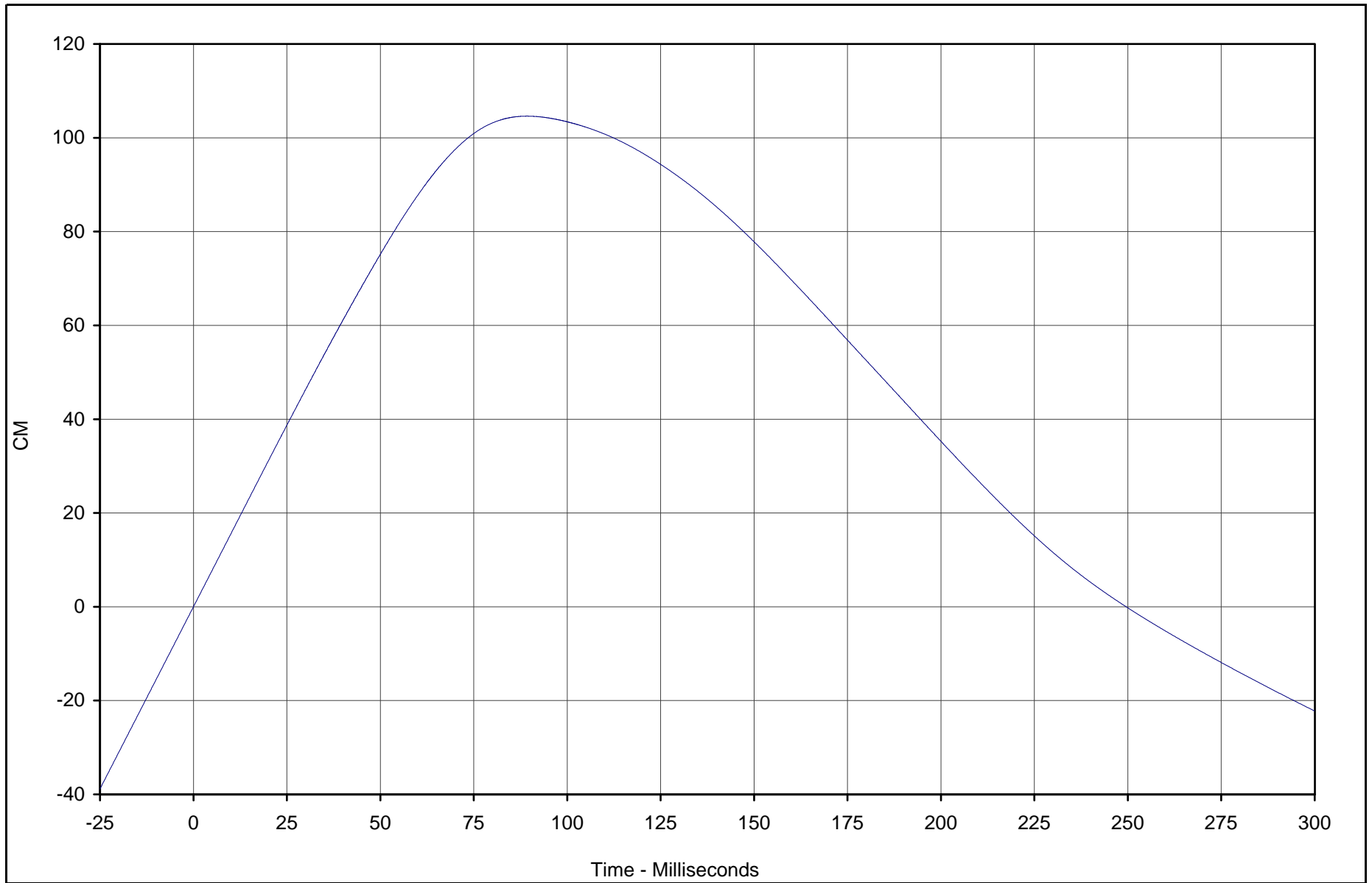
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-70



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant X Displ.	048	IN2	CM	104.6	89.2	-22.2	299.9	180



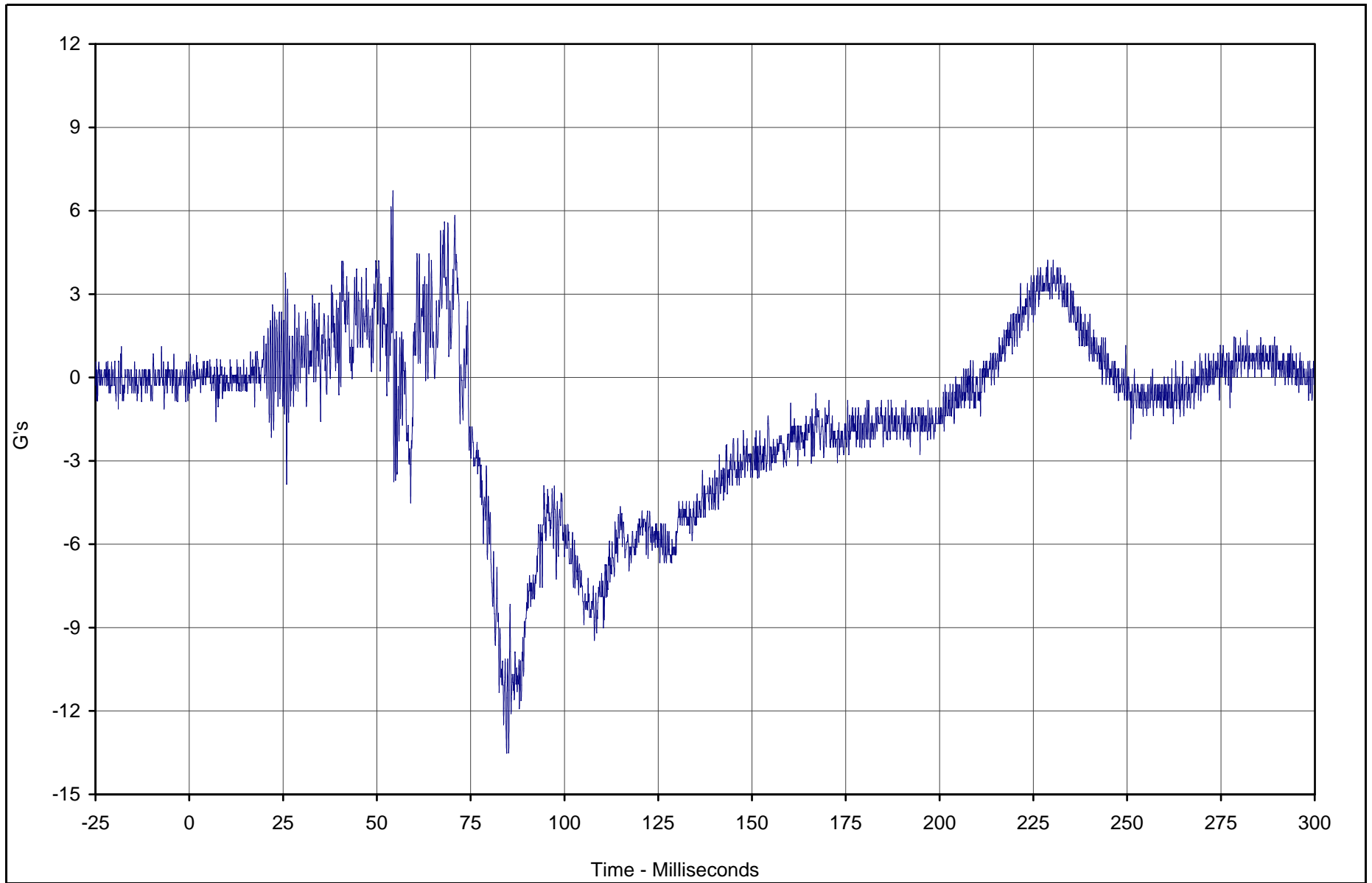
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant Y	049	FIL	G's	6.7	54.3	-13.5	84.6	1000

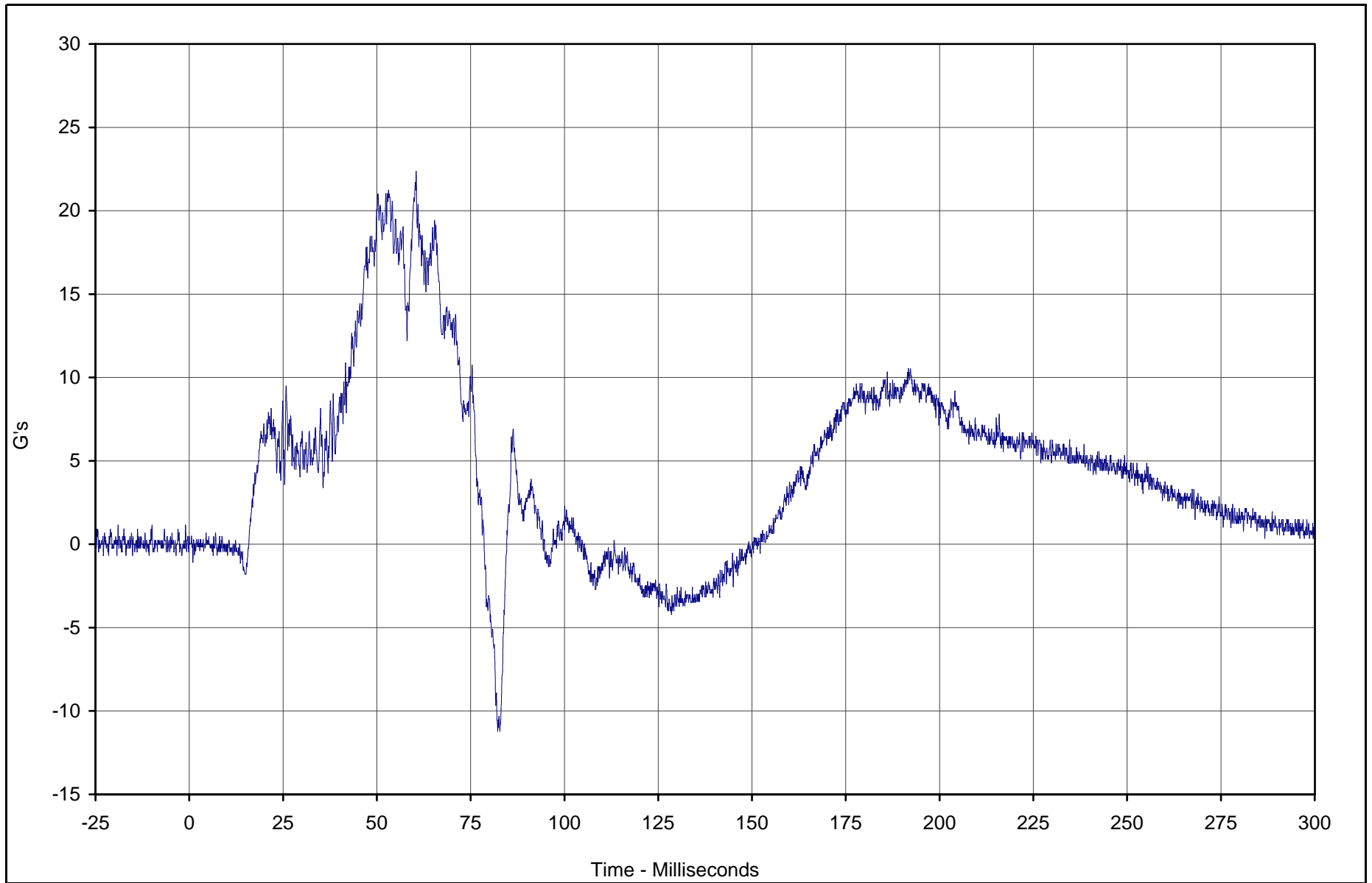


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Redundant Z	050	FIL	G's	22.4	60.5	-11.2	82.2	1000

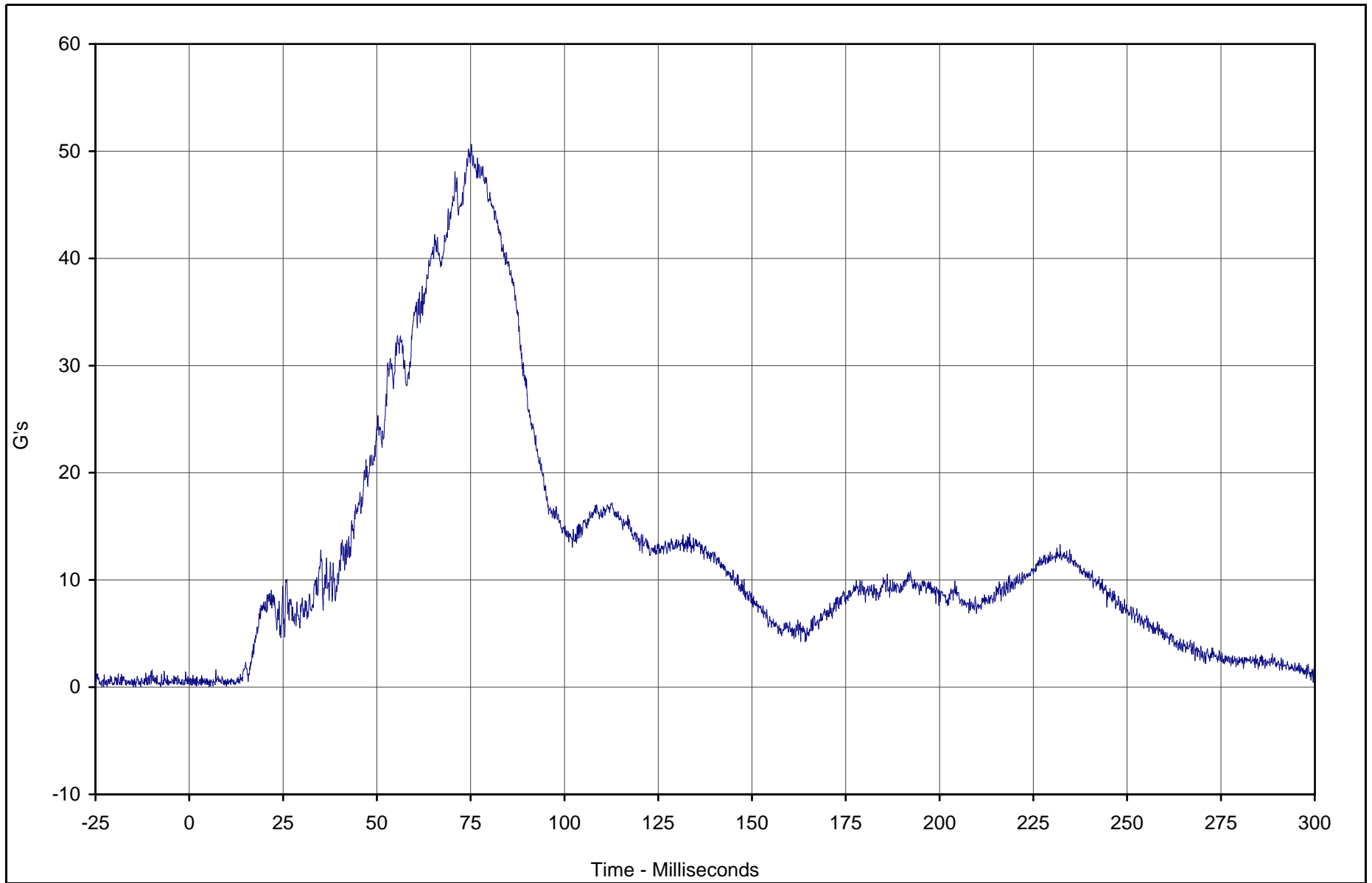


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Head Resultant Redundant	048	RES	G's	50.6	75.2	0.0	5.3	1000



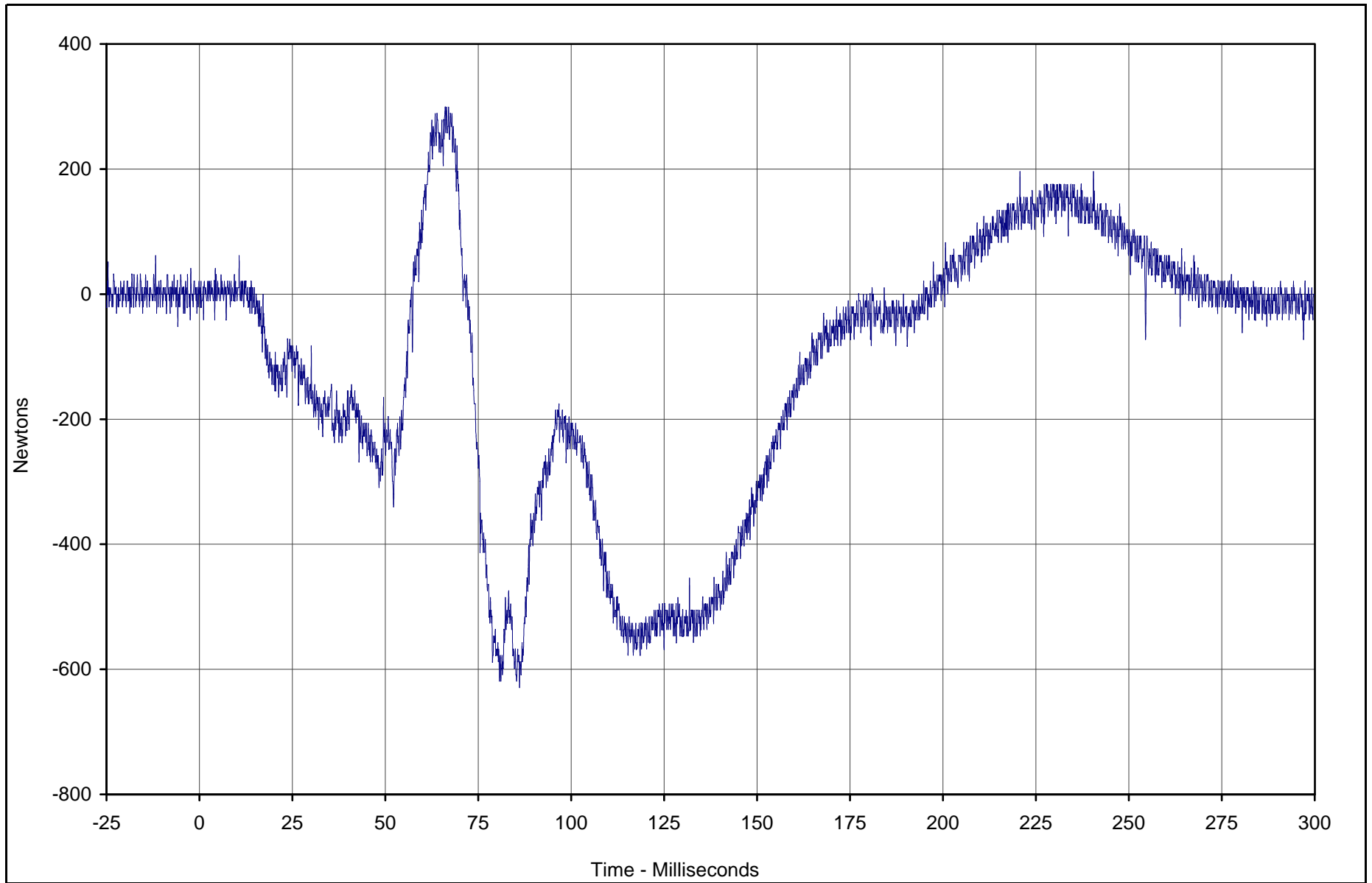
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force X	051	FIL	Newtons	299.2	66.1	-629.4	86.1	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

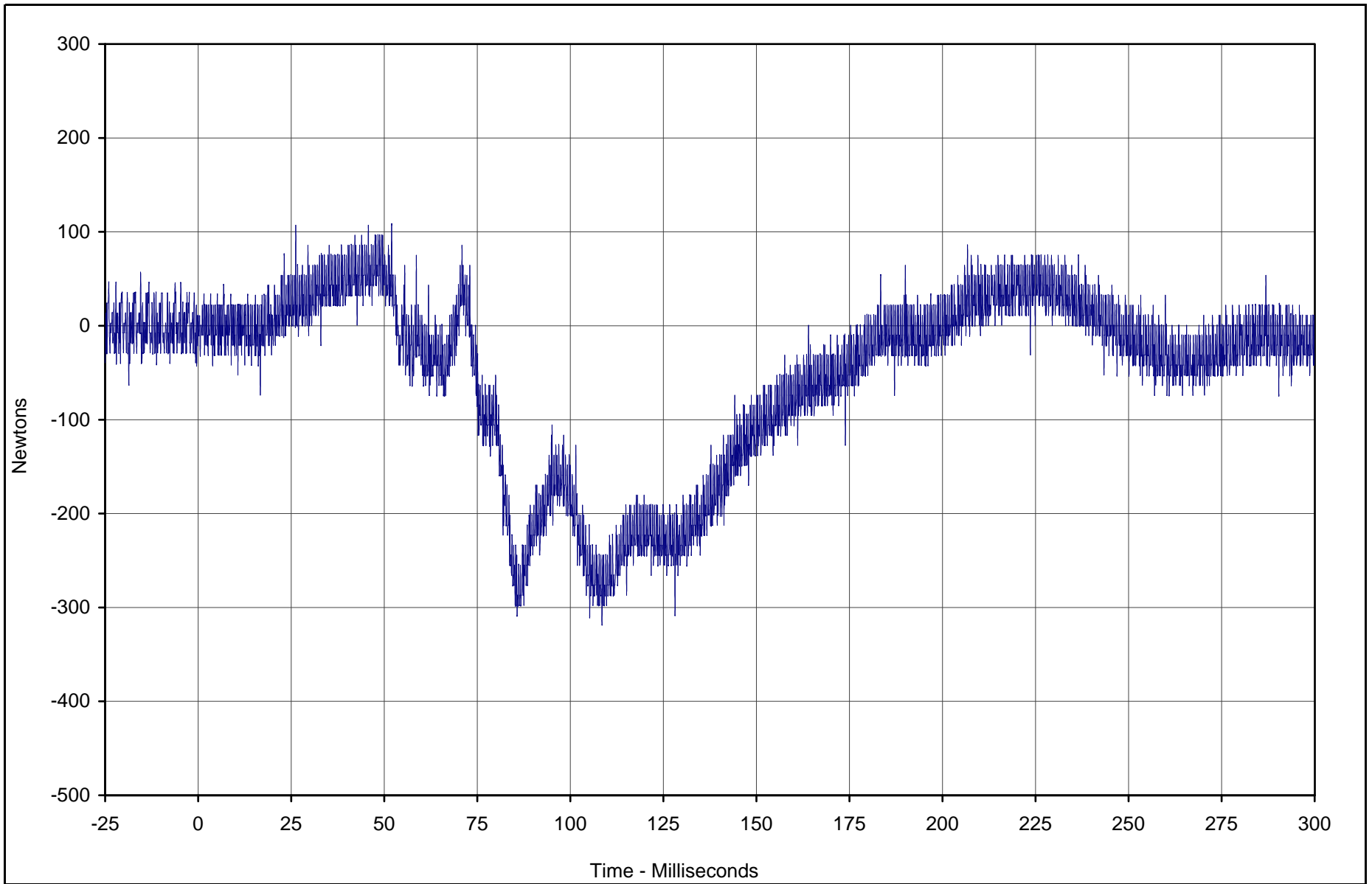
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-75



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force Y	052	FIL	Newtons	107.1	26.2	-318.8	108.5	1000



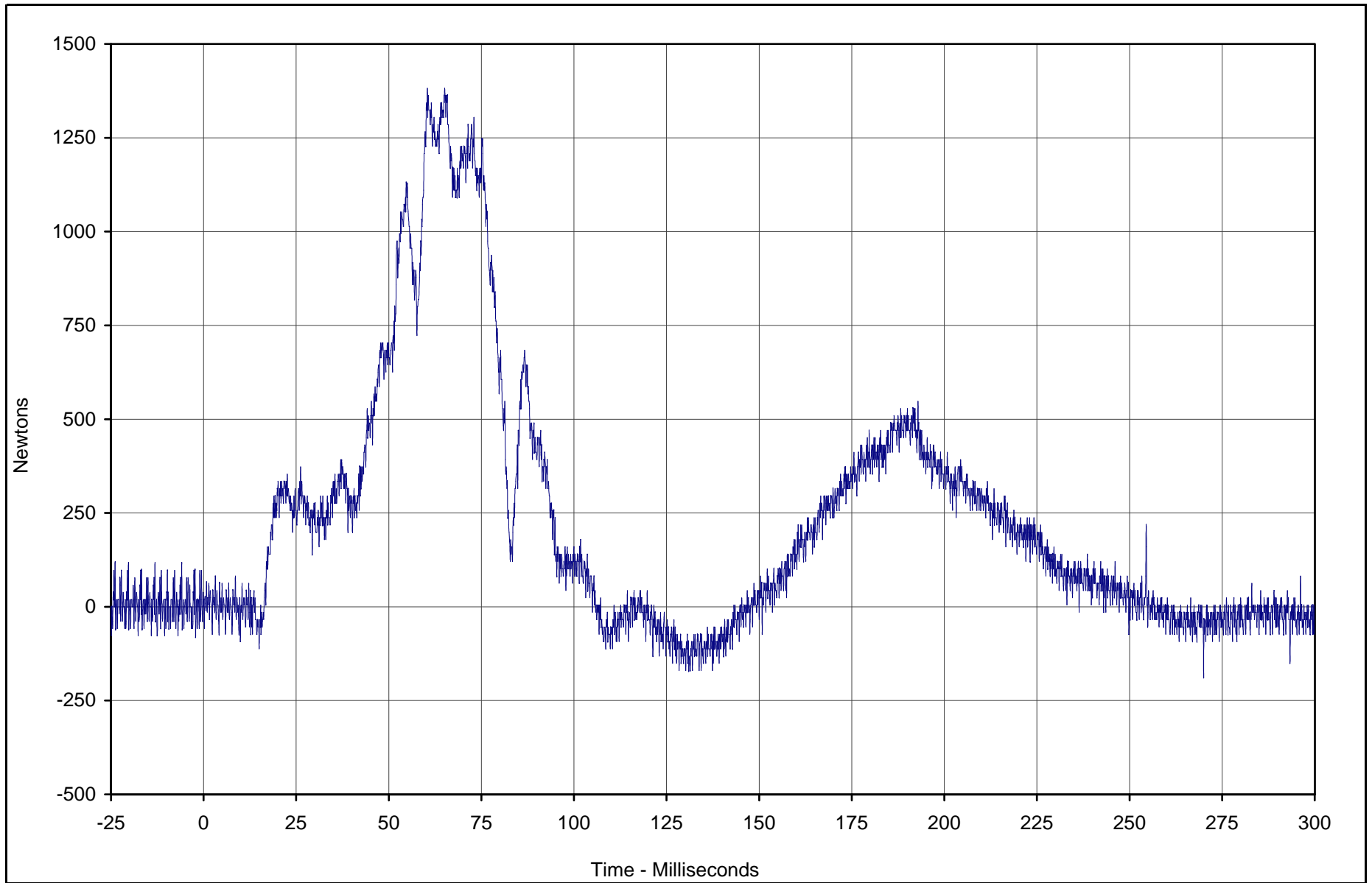
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force Z	053	FIL	Newtons	1382.5	60.4	-189.7	270.0	1000



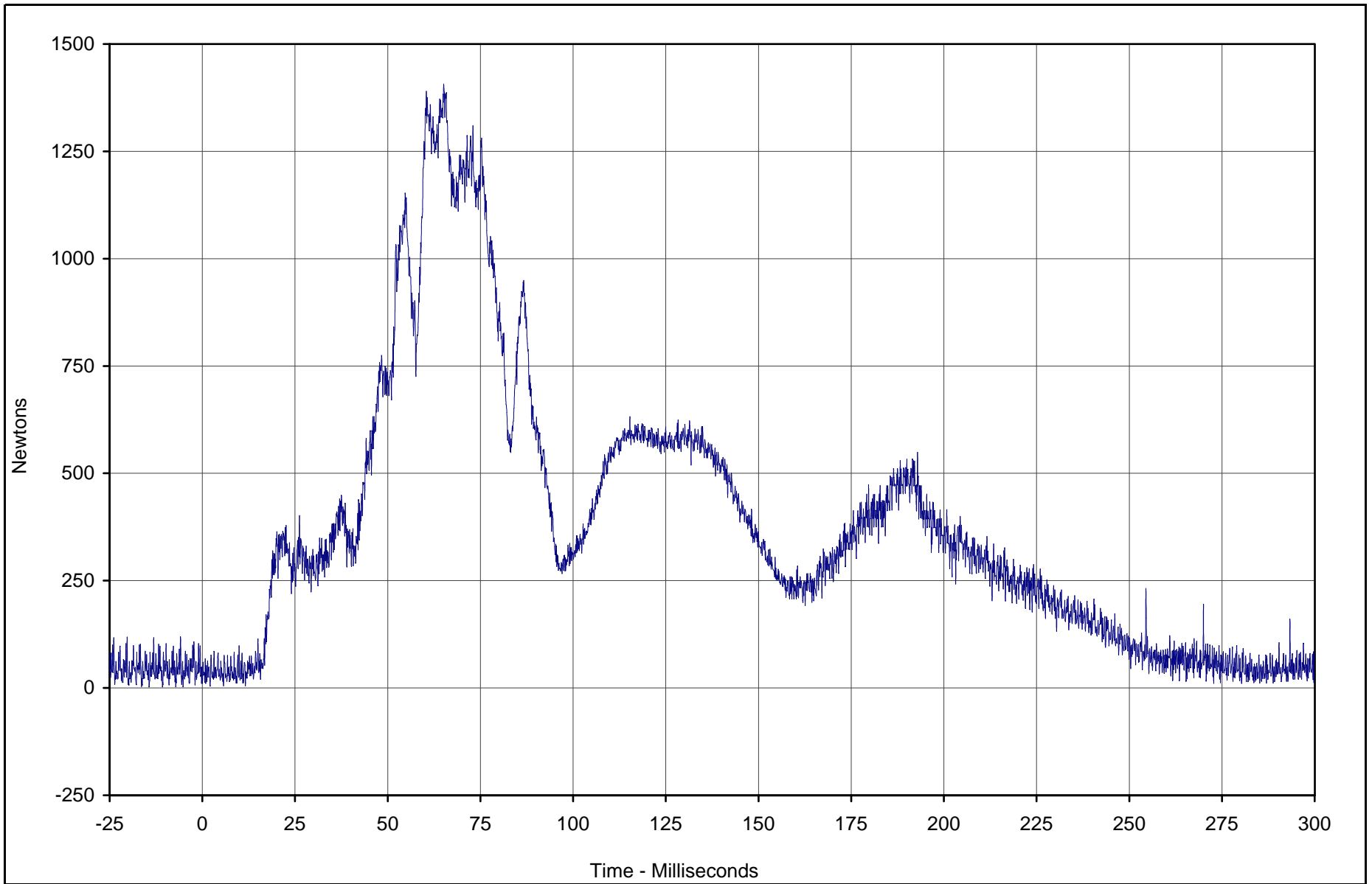
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-77



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Force Resultant	051	RES	Newtons	1405.4	65.1	4.5	2.1	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

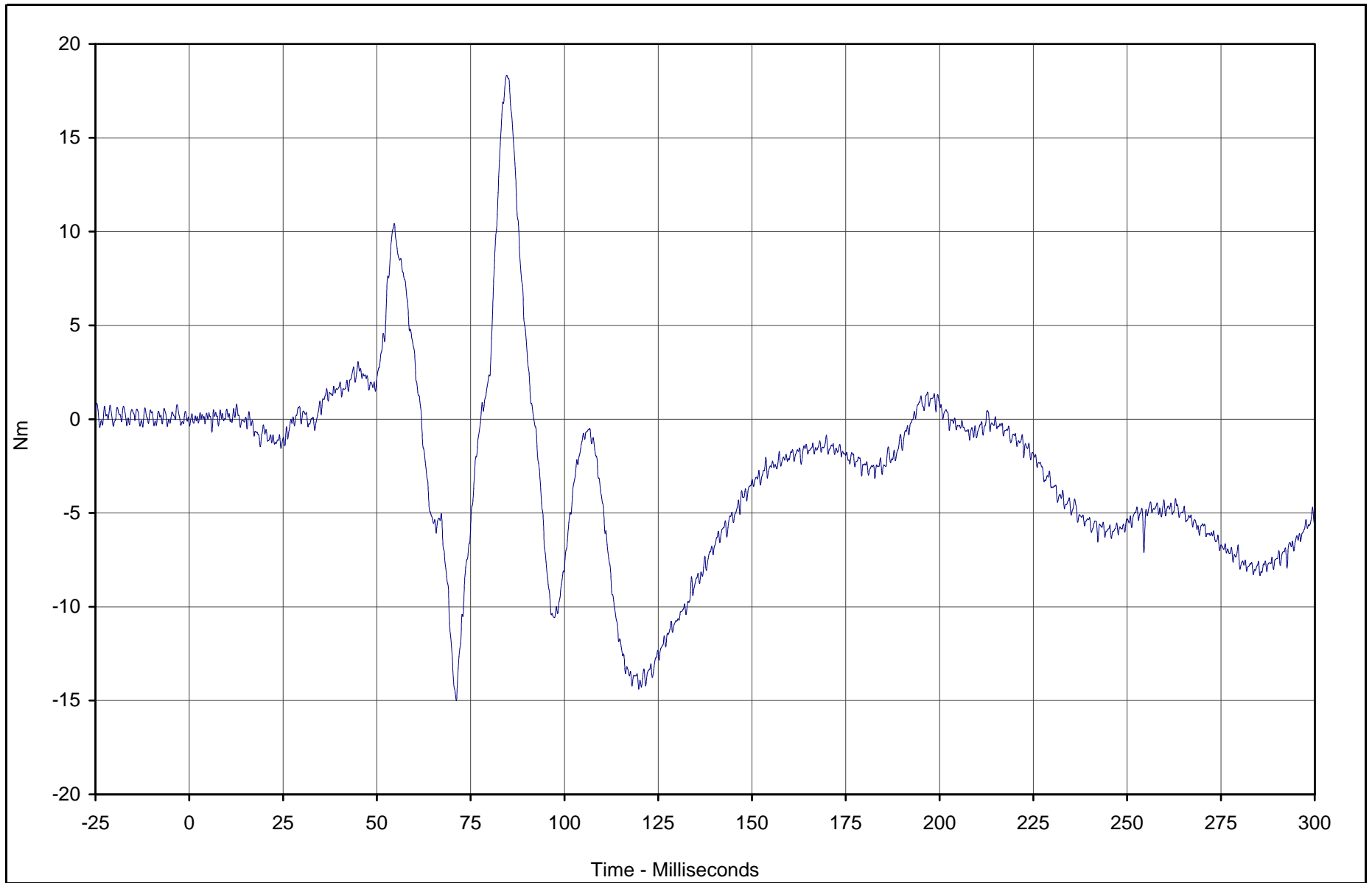
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-78



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment X	054	FIL	Nm	18.3	84.7	-15.0	71.2	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

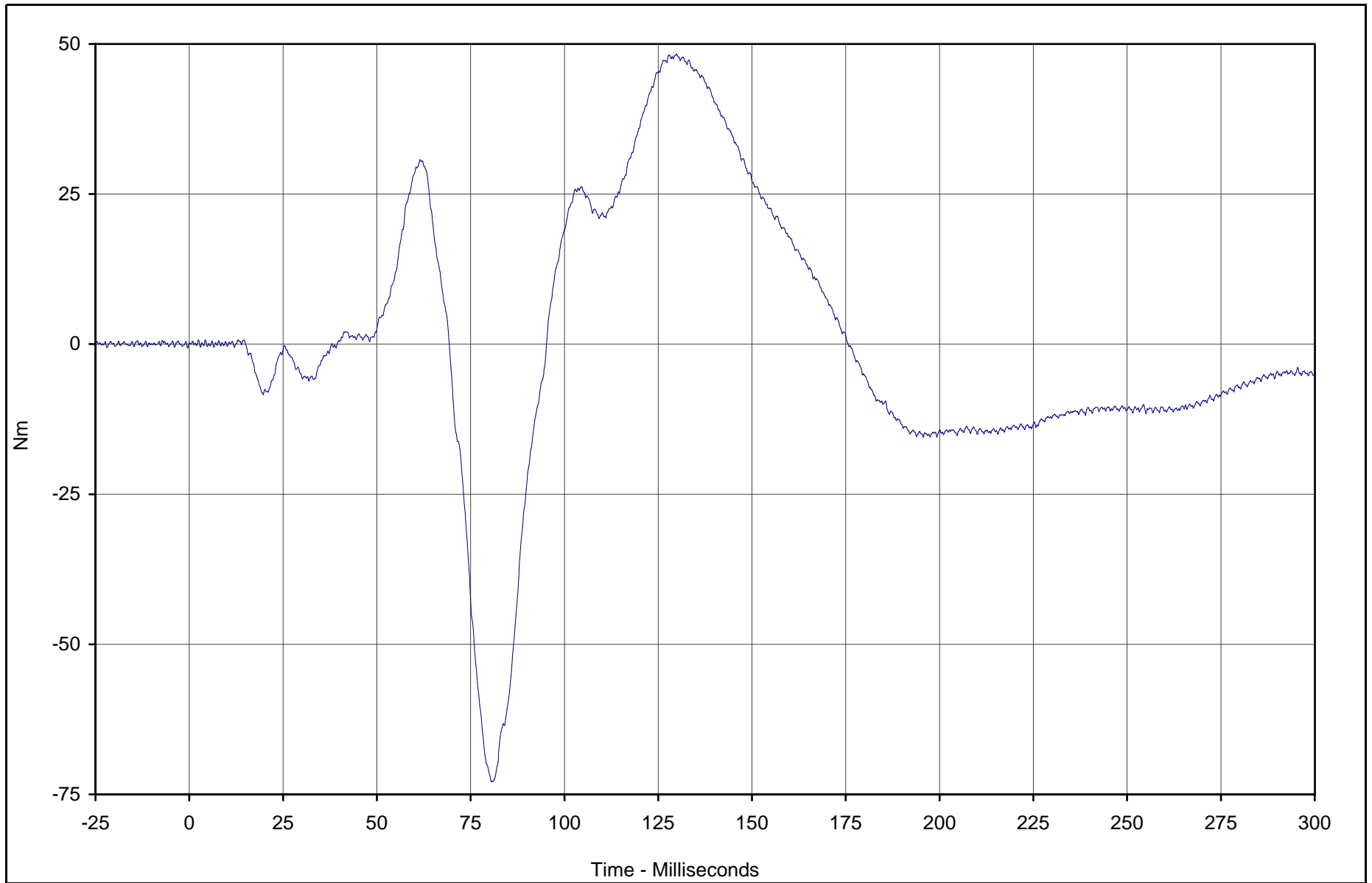
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-79



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment Y	055	FIL	Nm	48.3	129.9	-72.9	80.5	600



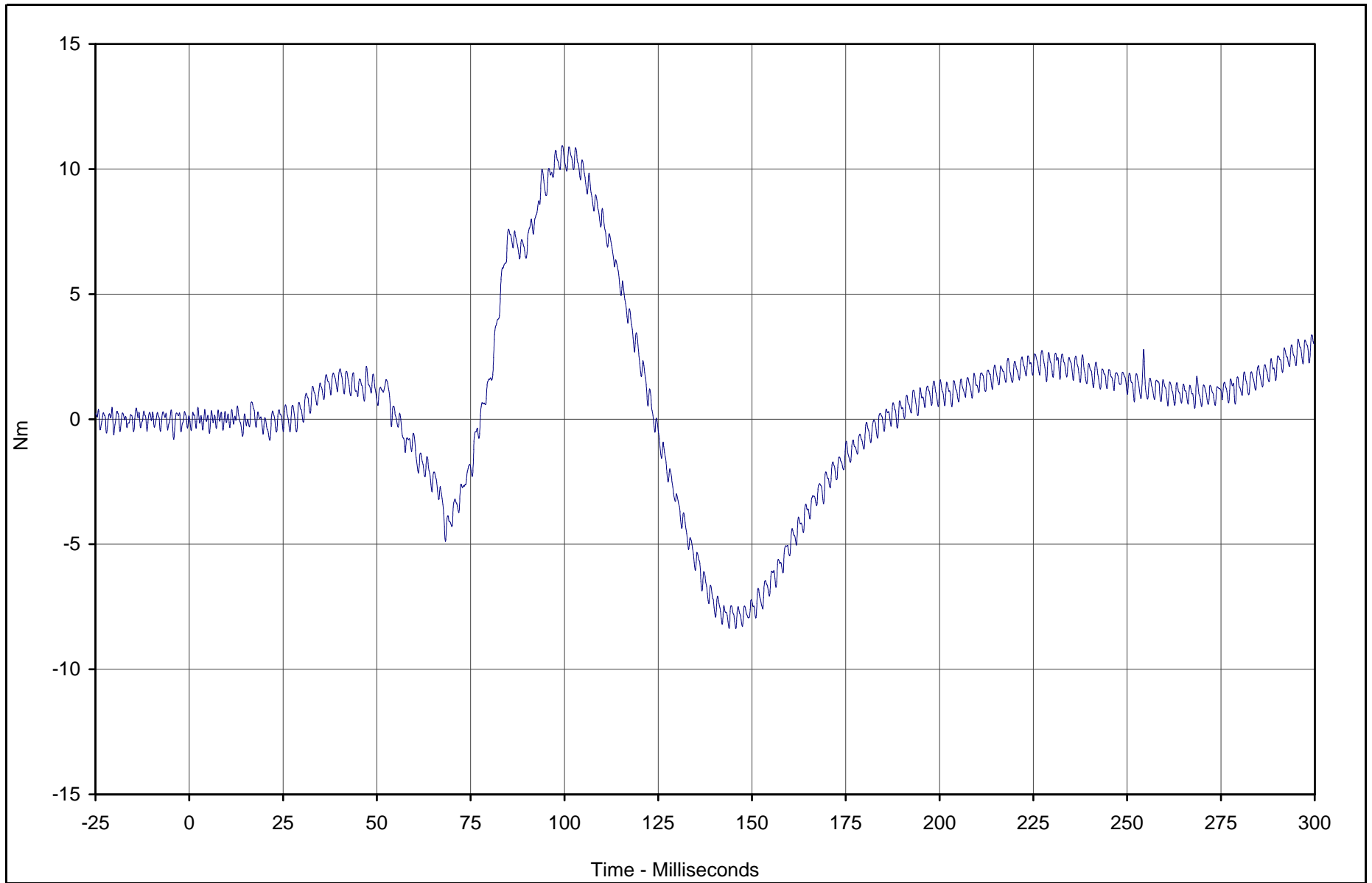
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment Z	056	FIL	Nm	10.9	99.4	-8.4	145.7	600

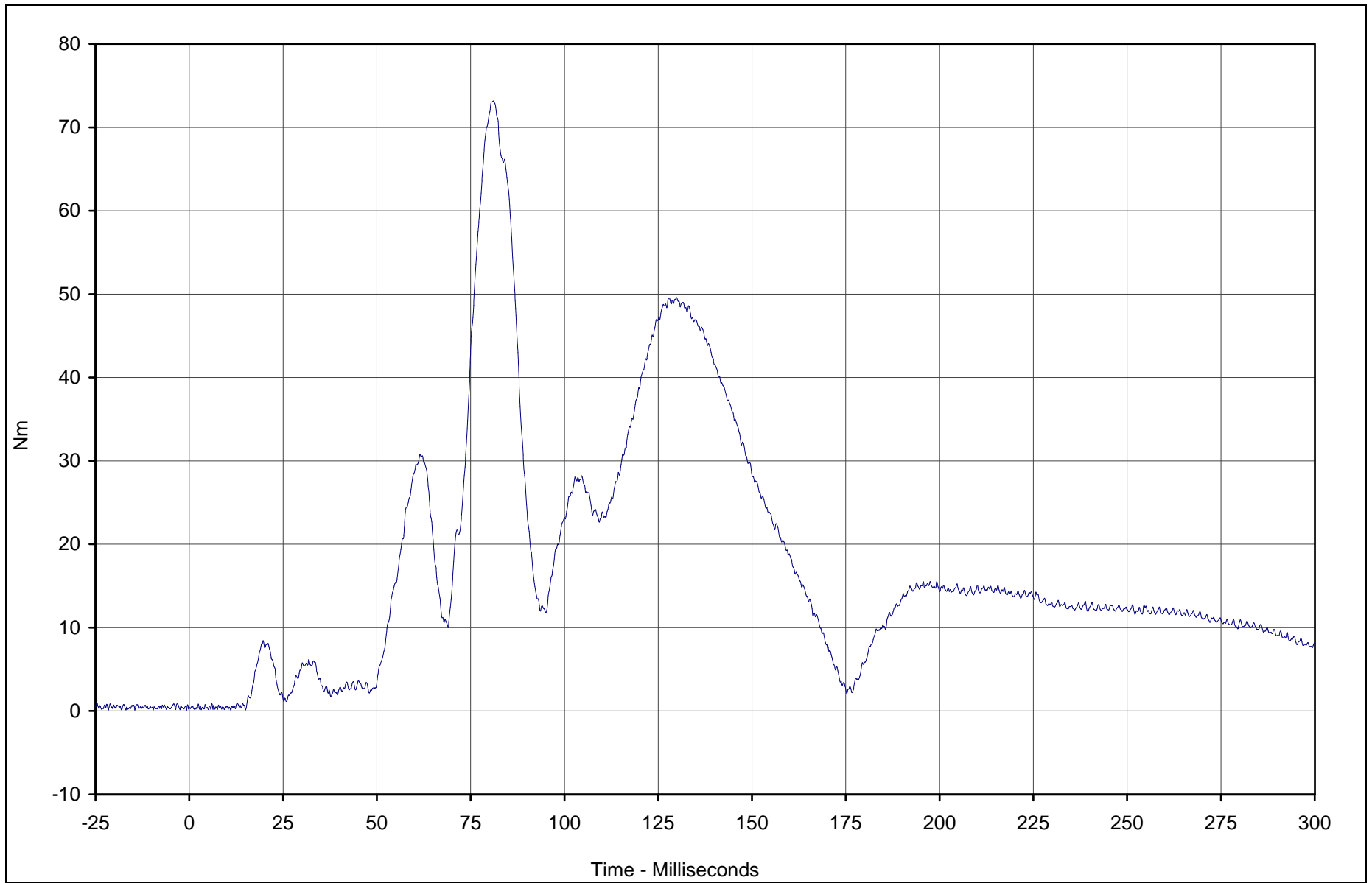


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Neck Moment Resultant	054	RES	Nm	73.2	81.0	0.1	11.1	600

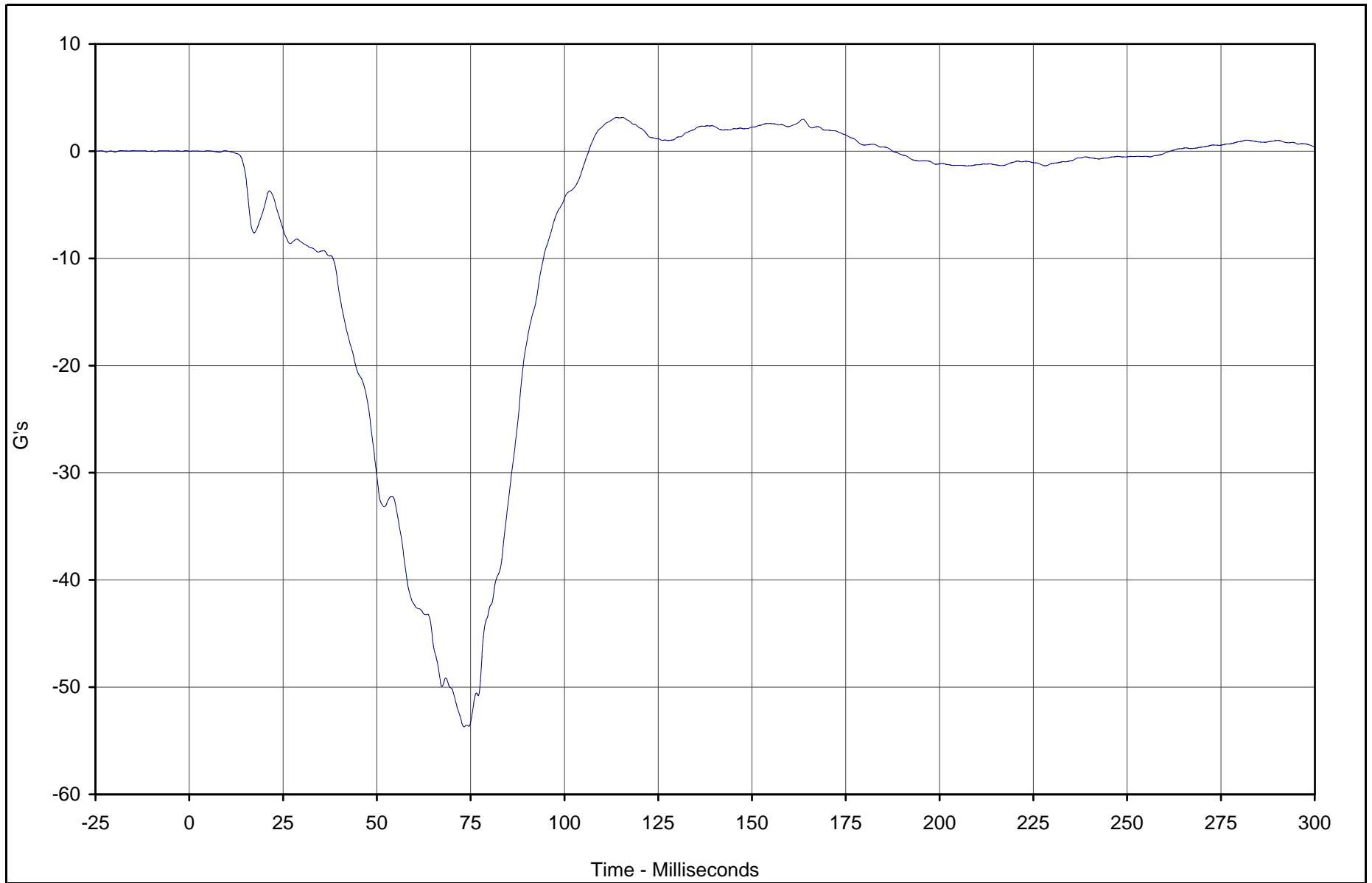


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary X	057	FIL	G's	3.1	115.5	-53.7	73.2	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

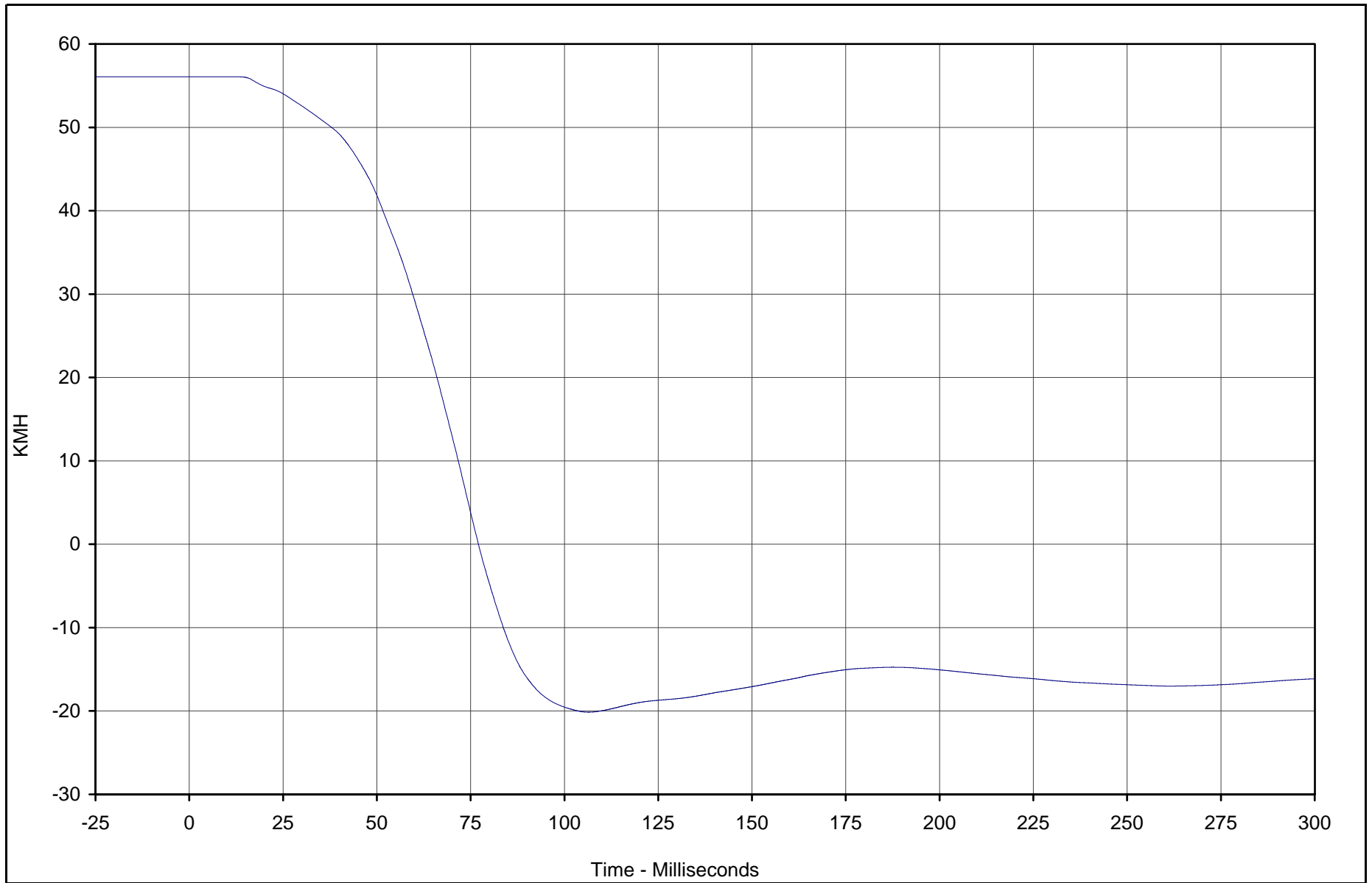
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-83

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary X Velocity	057	IN1	KMH	56.1	6.2	-20.1	106.5	180

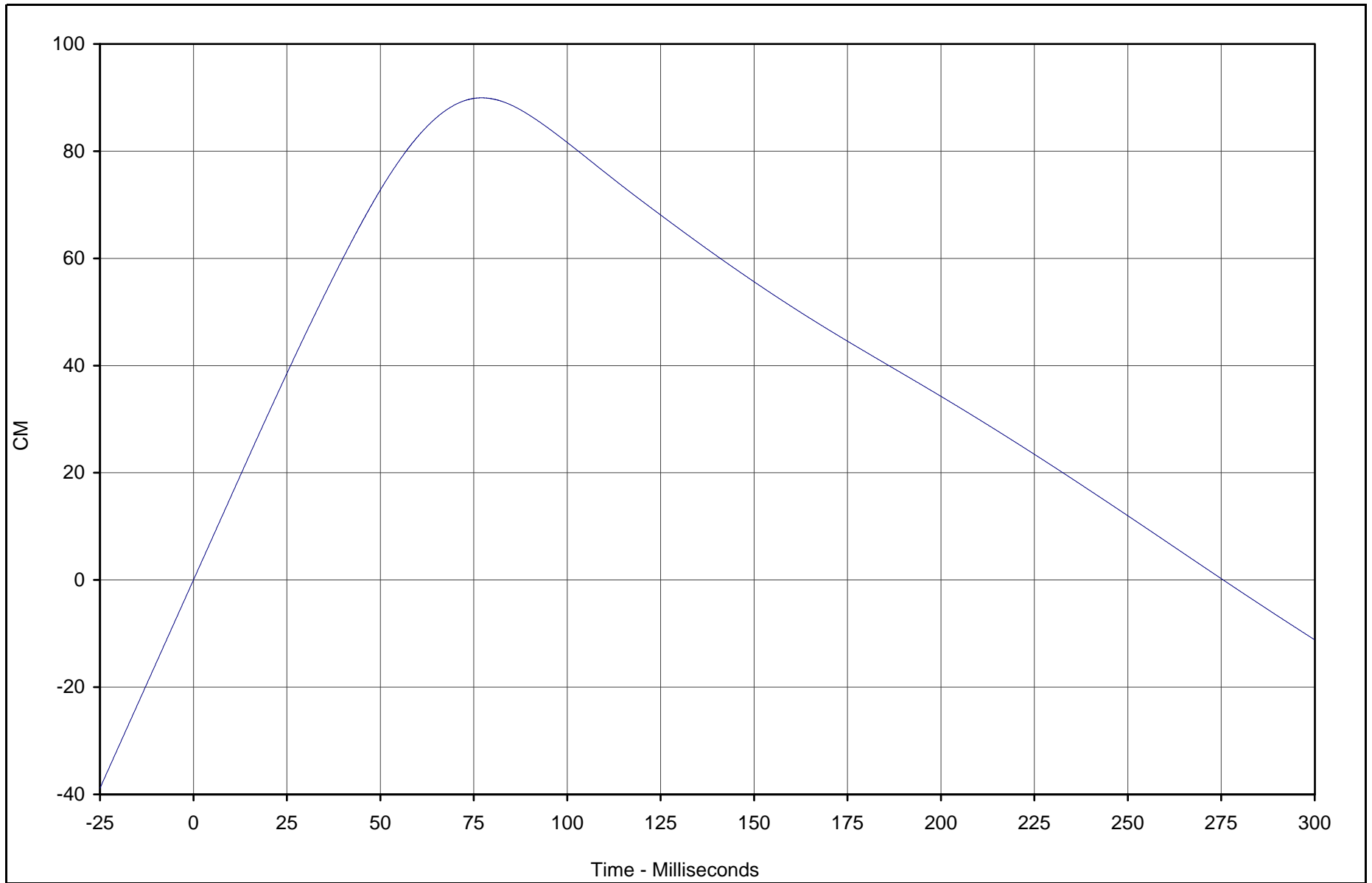


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary X Displ.	057	IN2	CM	90.0	77.1	-11.1	299.9	180

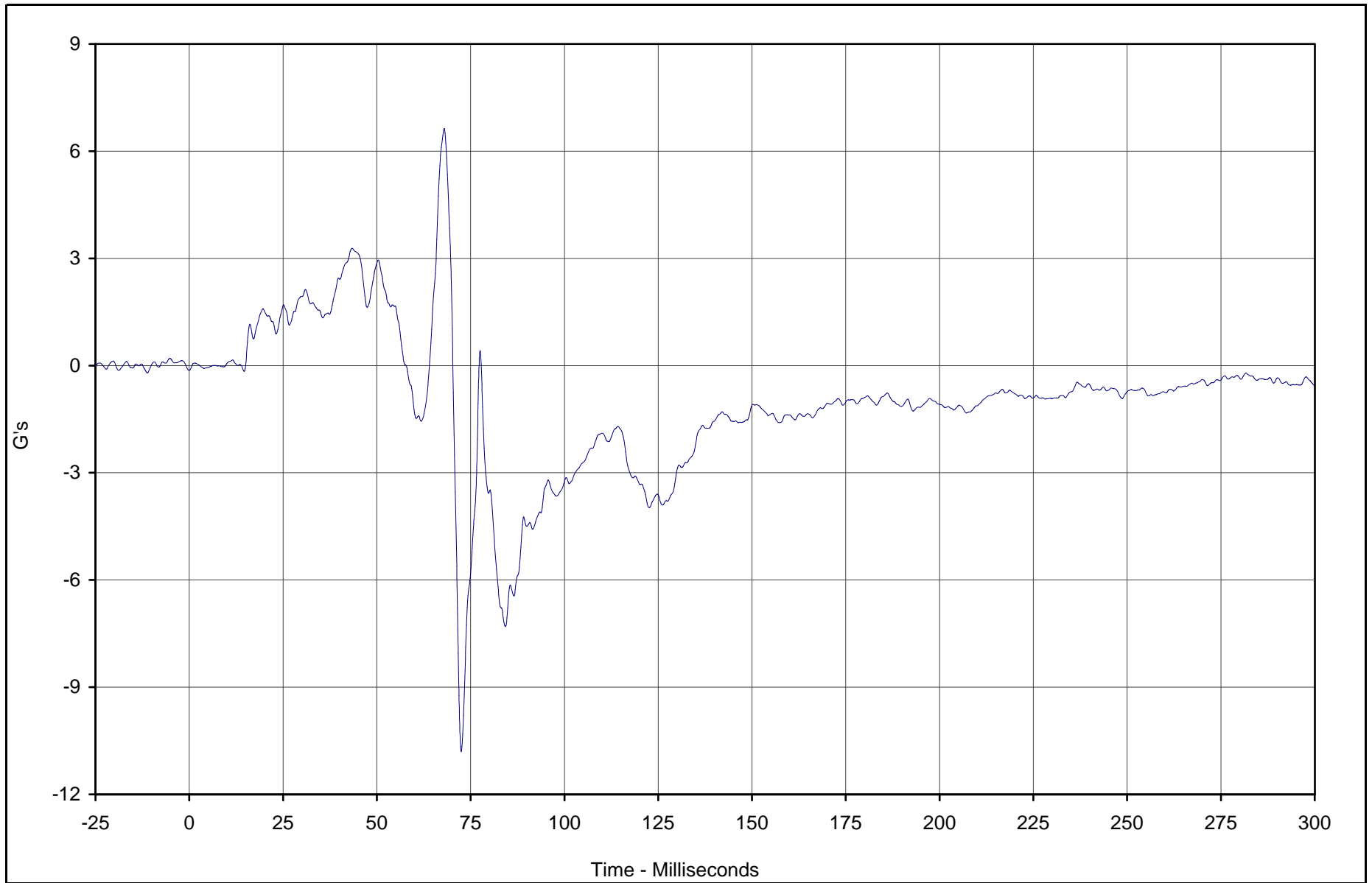


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary Y	058	FIL	G's	6.6	68.0	-10.8	72.5	180

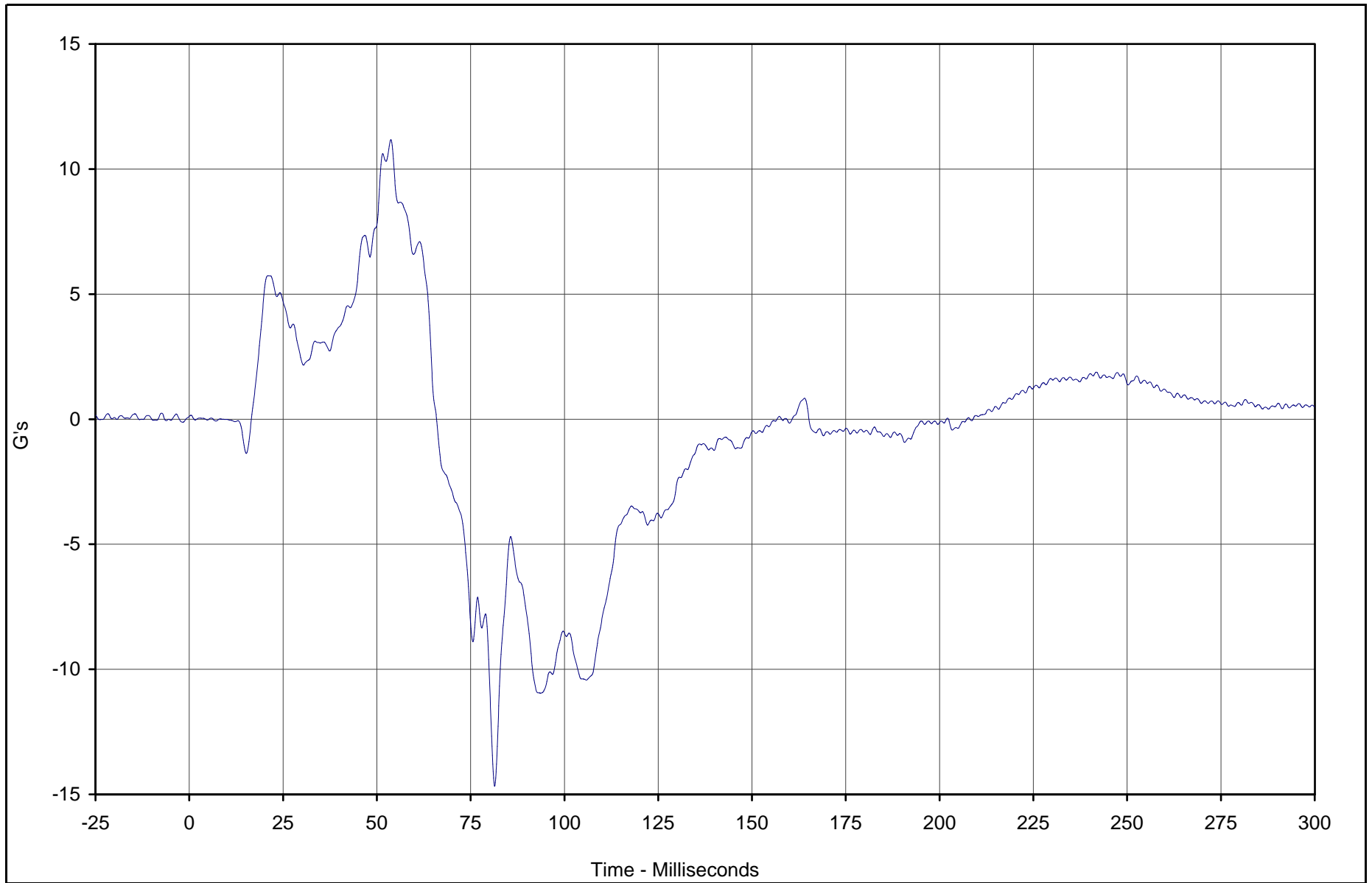


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Primary Z	059	FIL	G's	11.2	53.7	-14.7	81.4	180



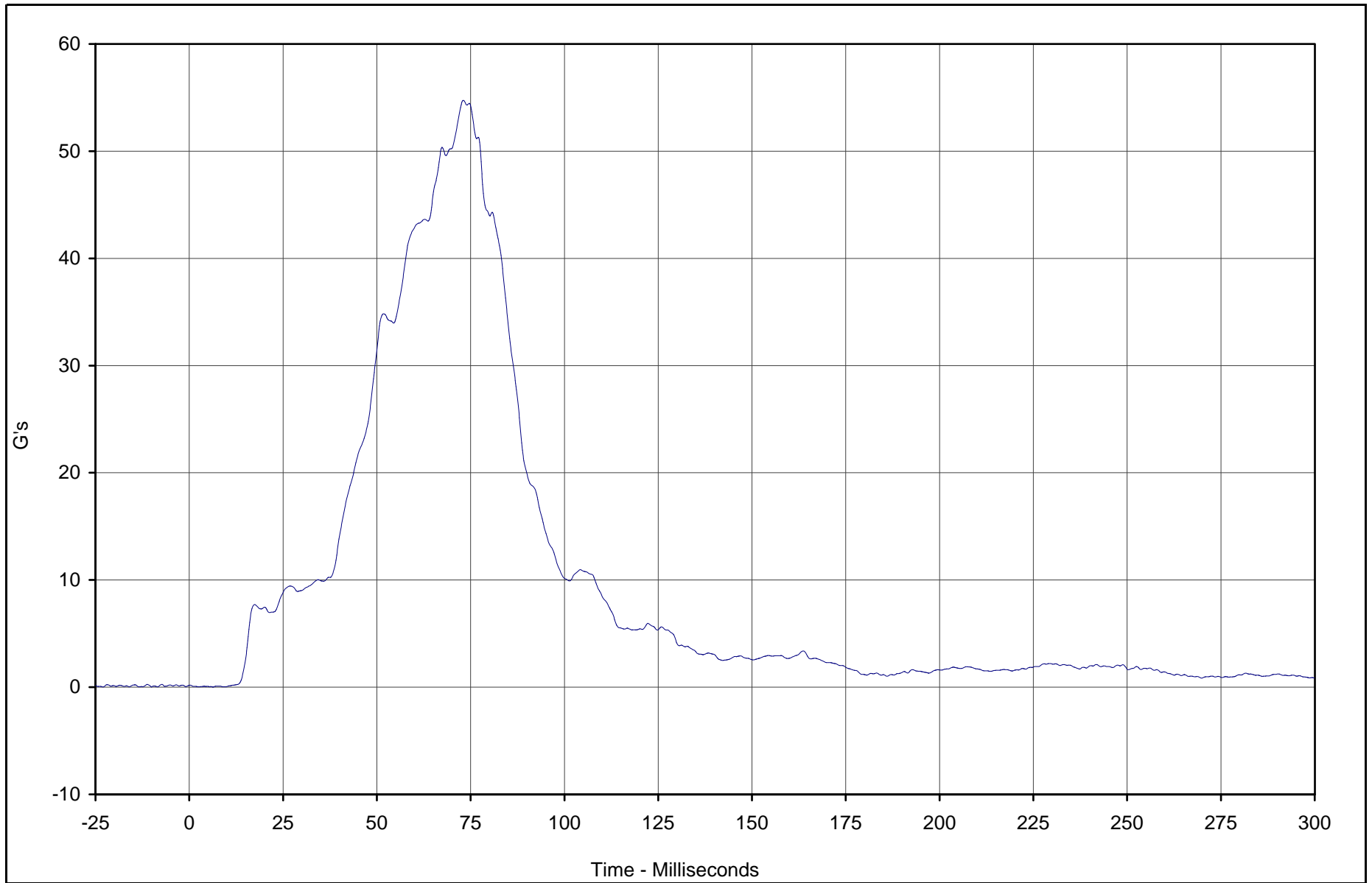
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-87



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Resultant Primary	057	RES	G's	54.7	73.0	0.0	6.3	180



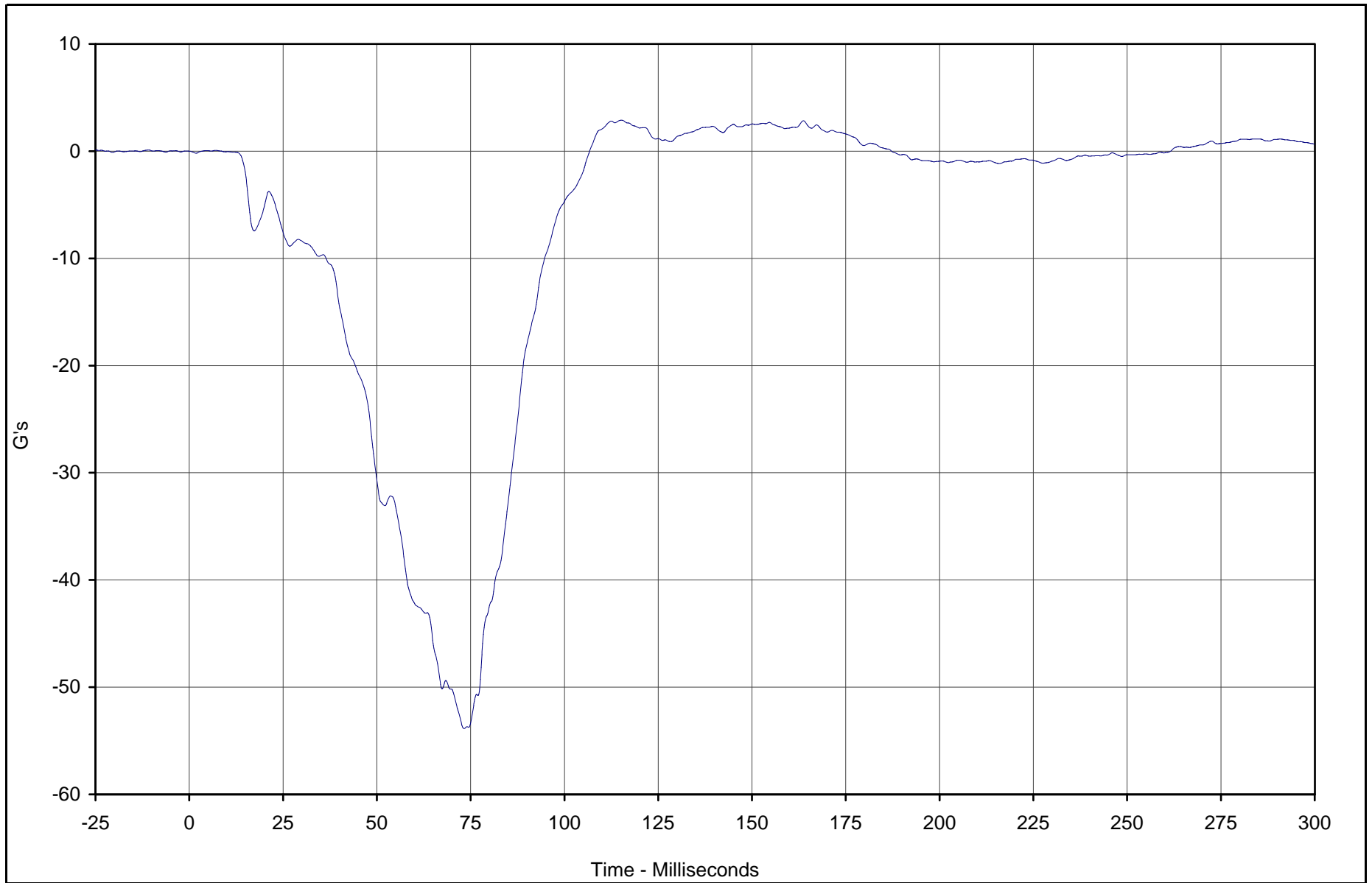
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant X	060	FIL	G's	2.9	115.2	-53.9	73.3	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

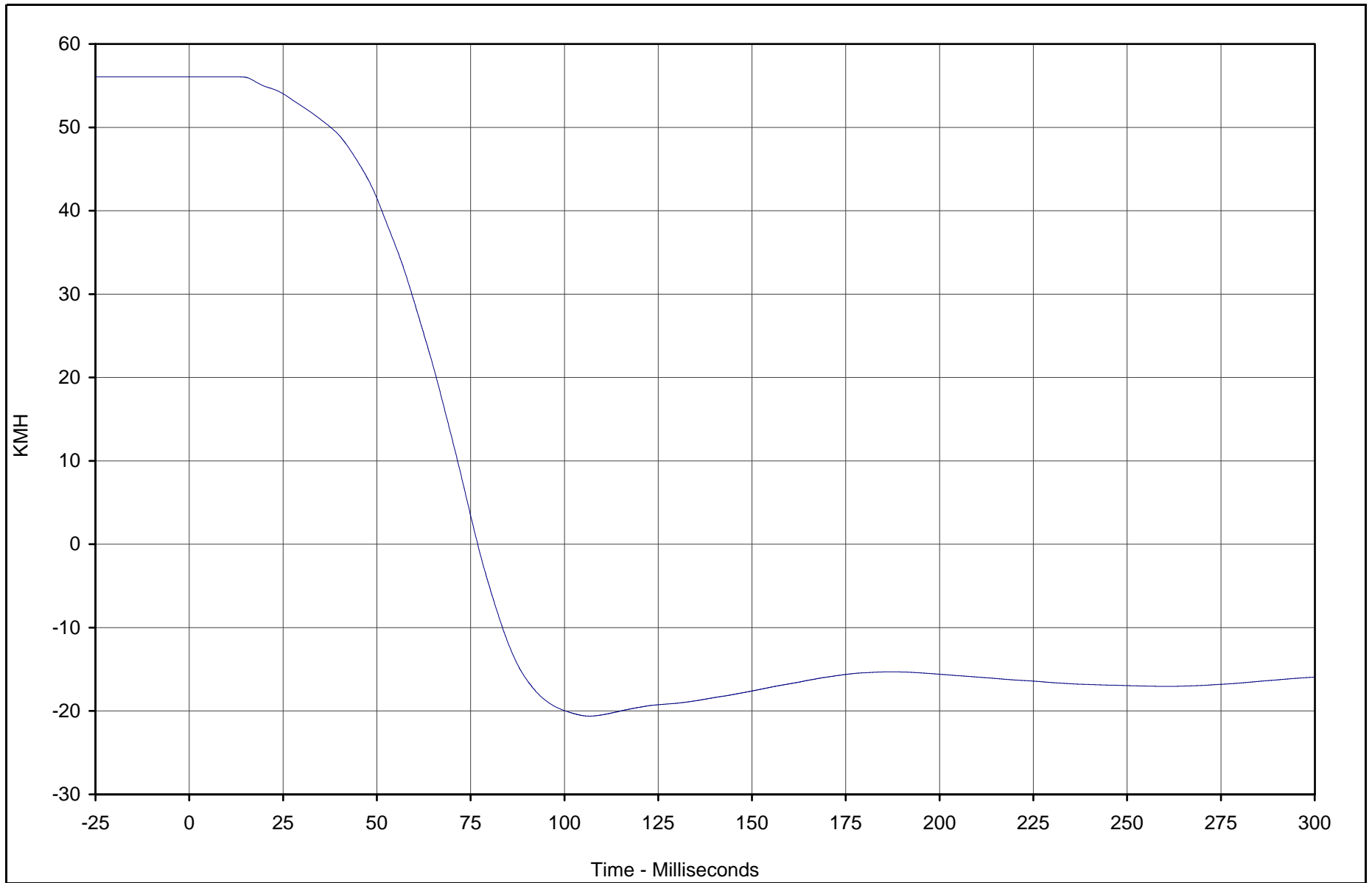
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-89

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant X Velocity	060	IN1	KMH	56.1	0.1	-20.6	106.7	180



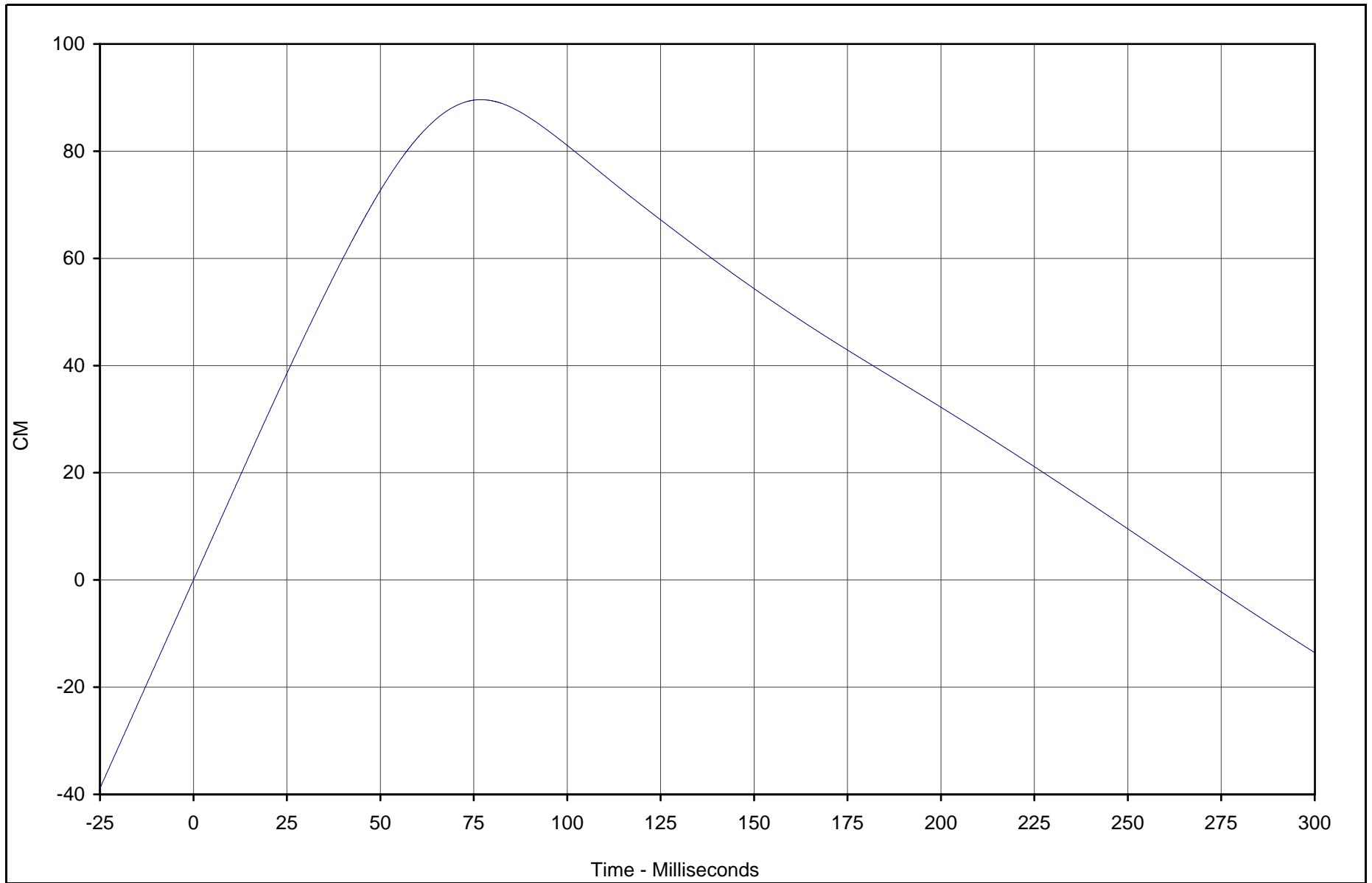
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-90



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant X Displ.	060	IN2	CM	89.6	76.9	-13.5	299.9	180

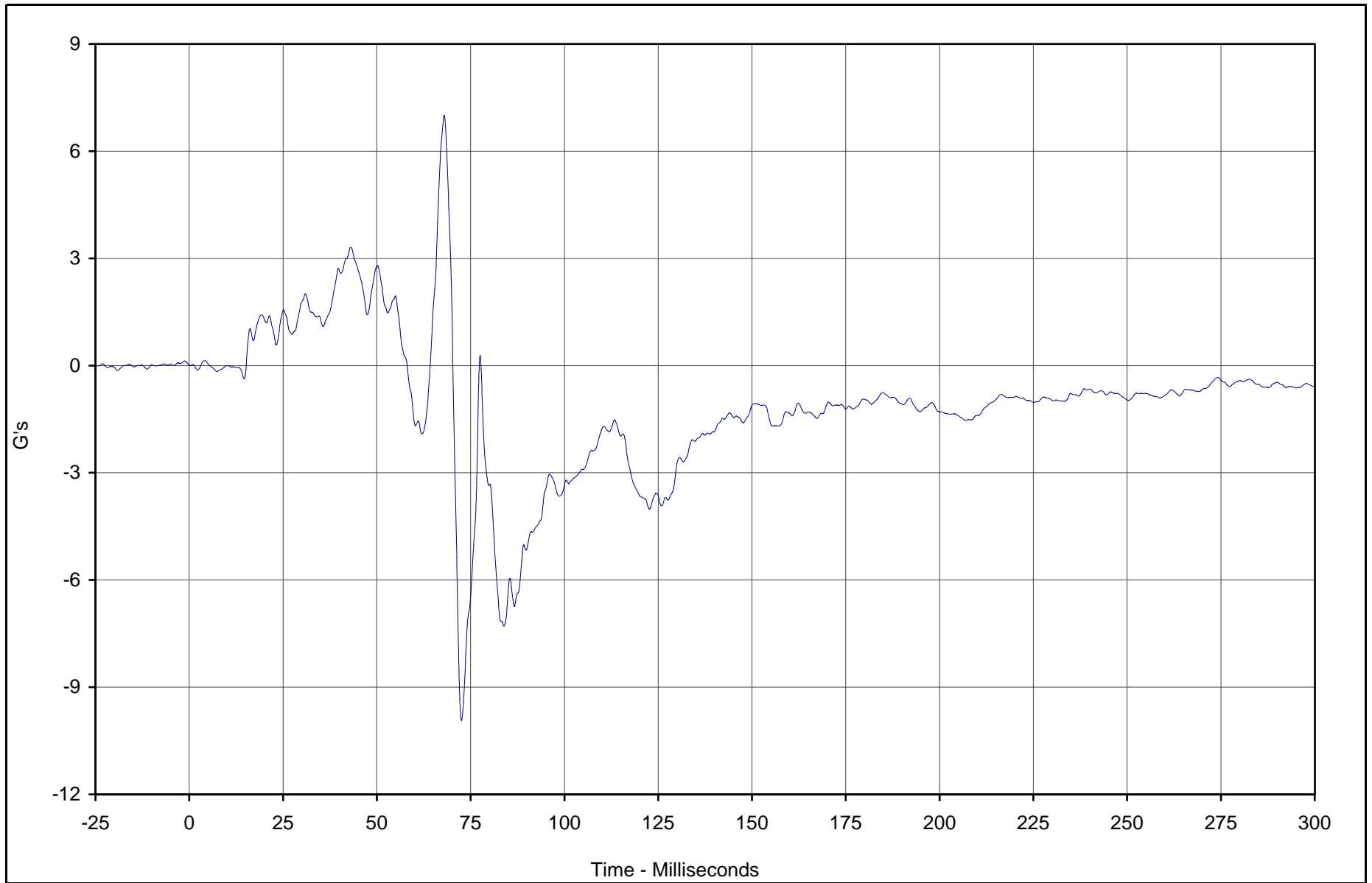


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant Y	061	FIL	G's	7.0	68.0	-9.9	72.5	180



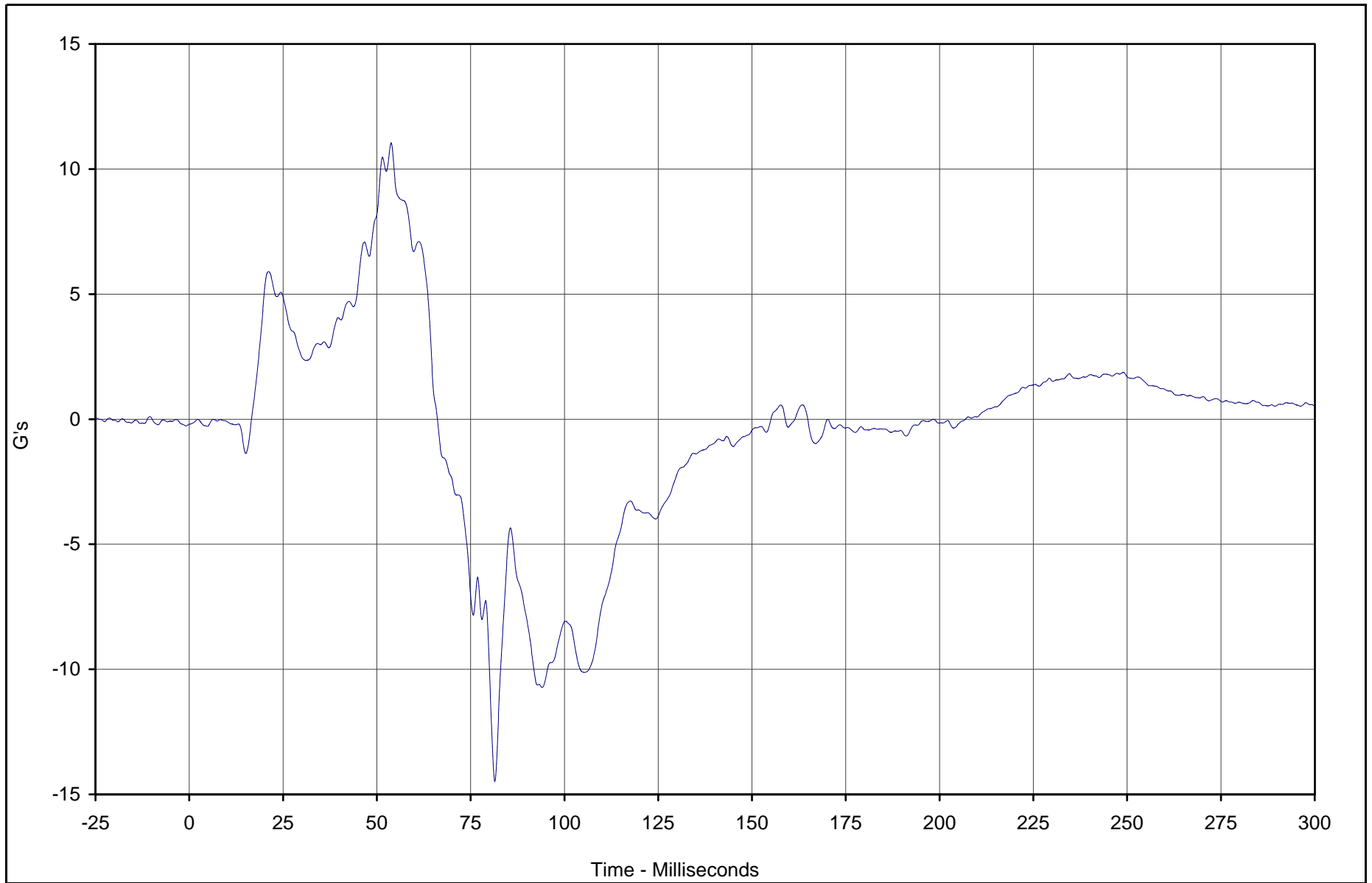
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-92



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Redundant Z	062	FIL	G's	11.1	53.8	-14.5	81.4	180



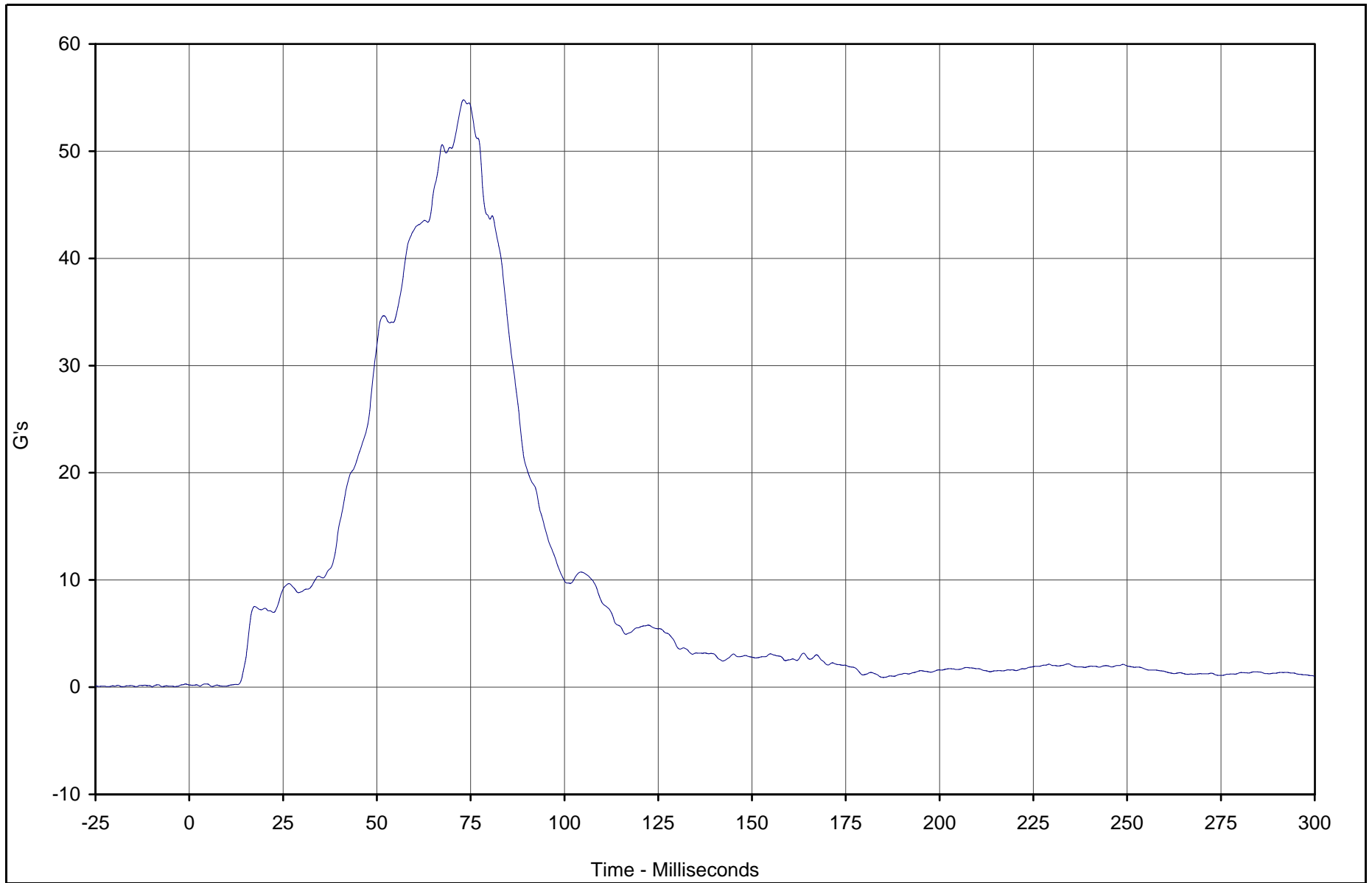
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Resultant Redundant	060	RES	G's	54.8	73.1	0.1	6.1	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

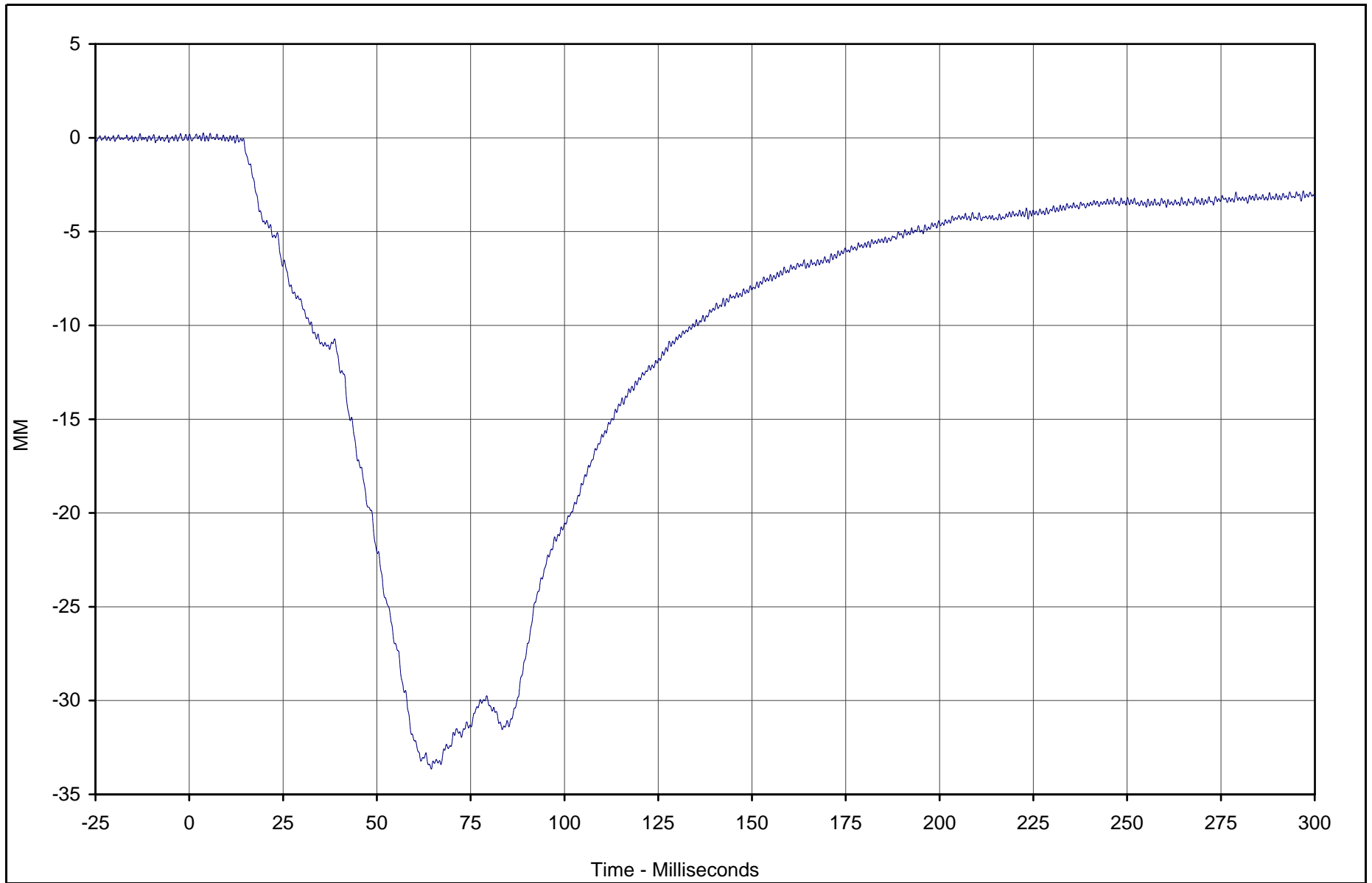
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-94

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Chest Displacement X	063	FIL	MM	0.3	3.7	-33.6	64.5	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

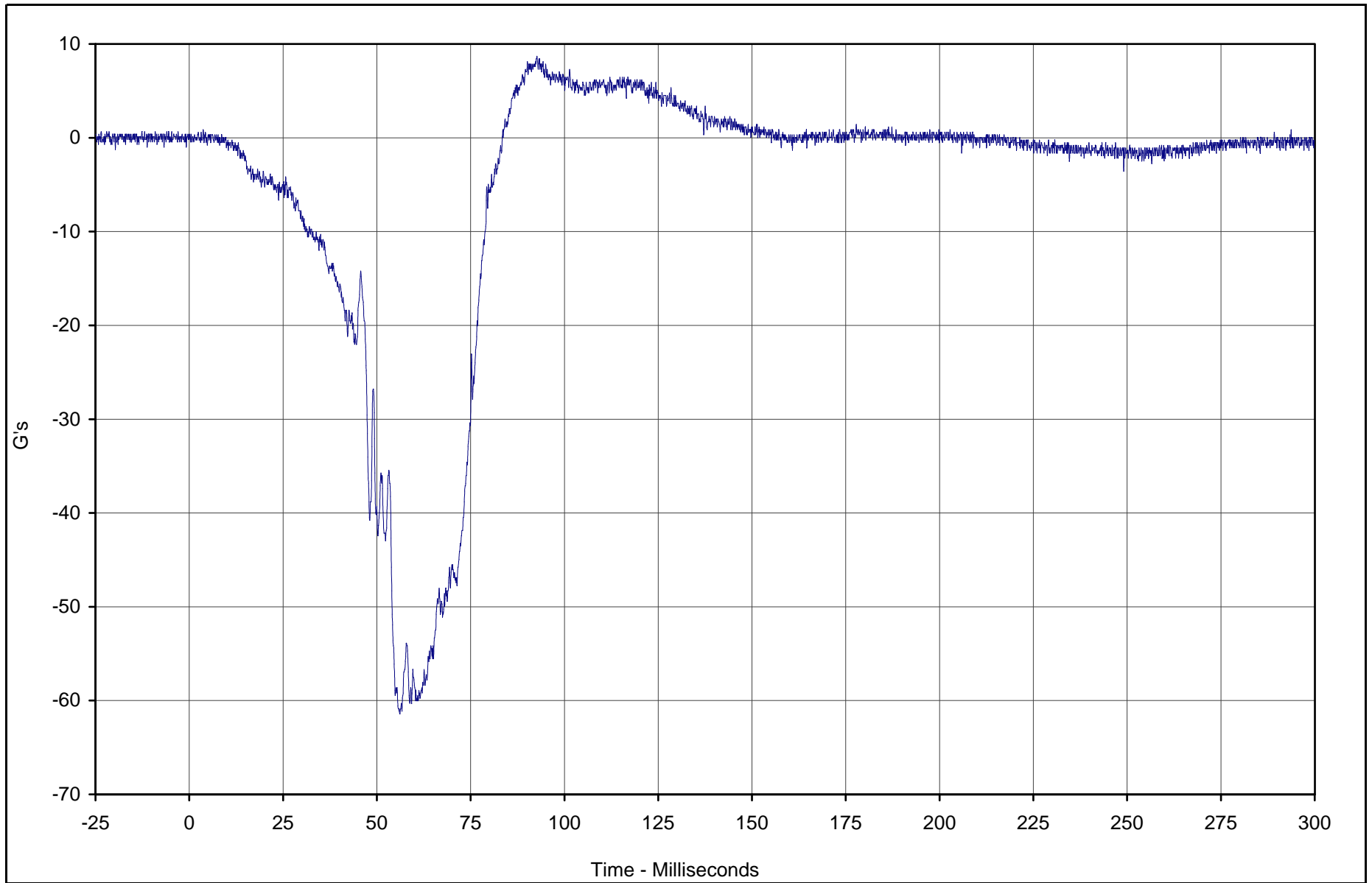
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-95

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis X	064	FIL	G's	8.7	92.7	-61.4	56.1	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

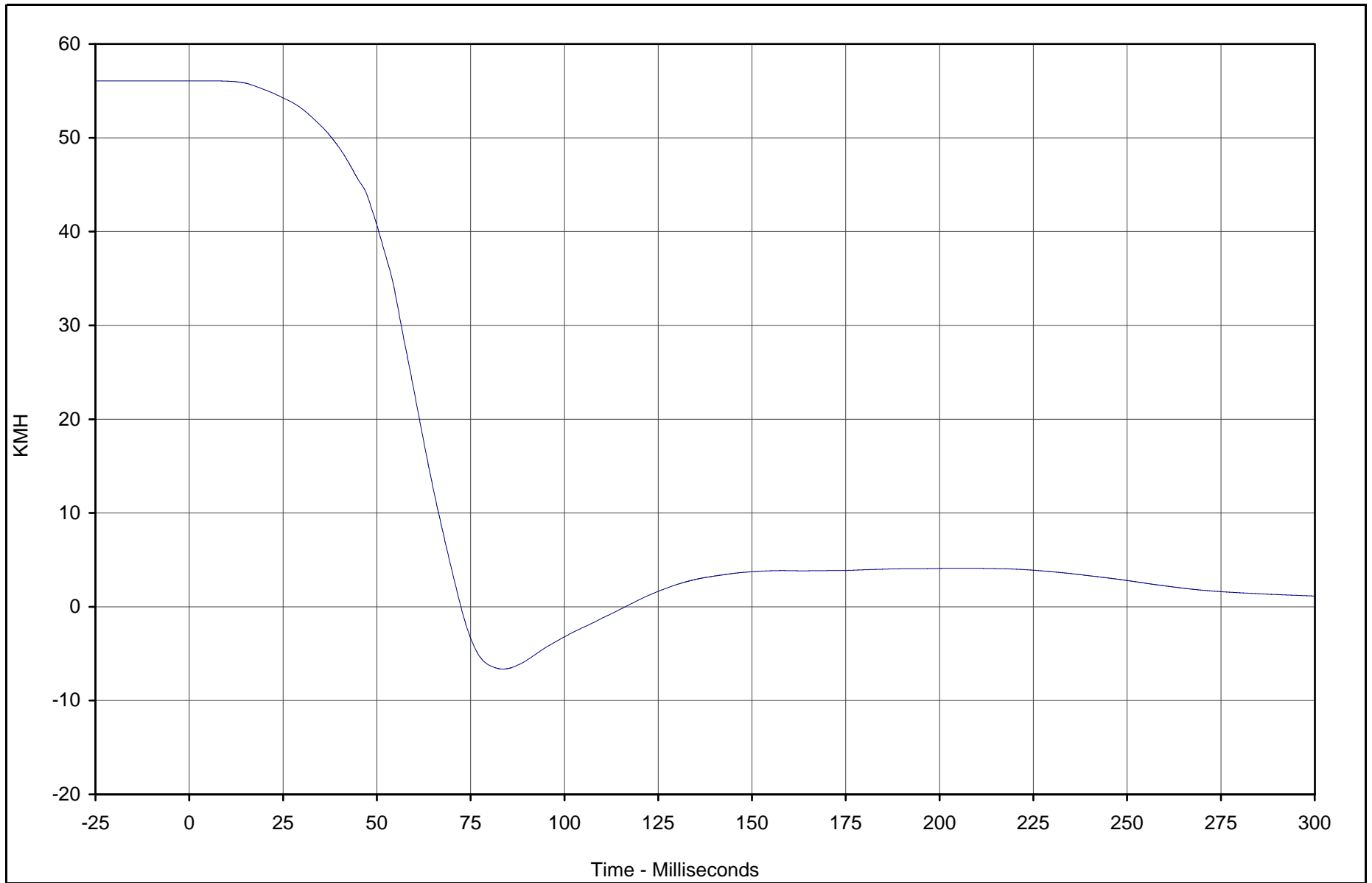
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-96

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis X Velocity	064	IN1	KMH	56.1	0.0	-6.6	83.5	180



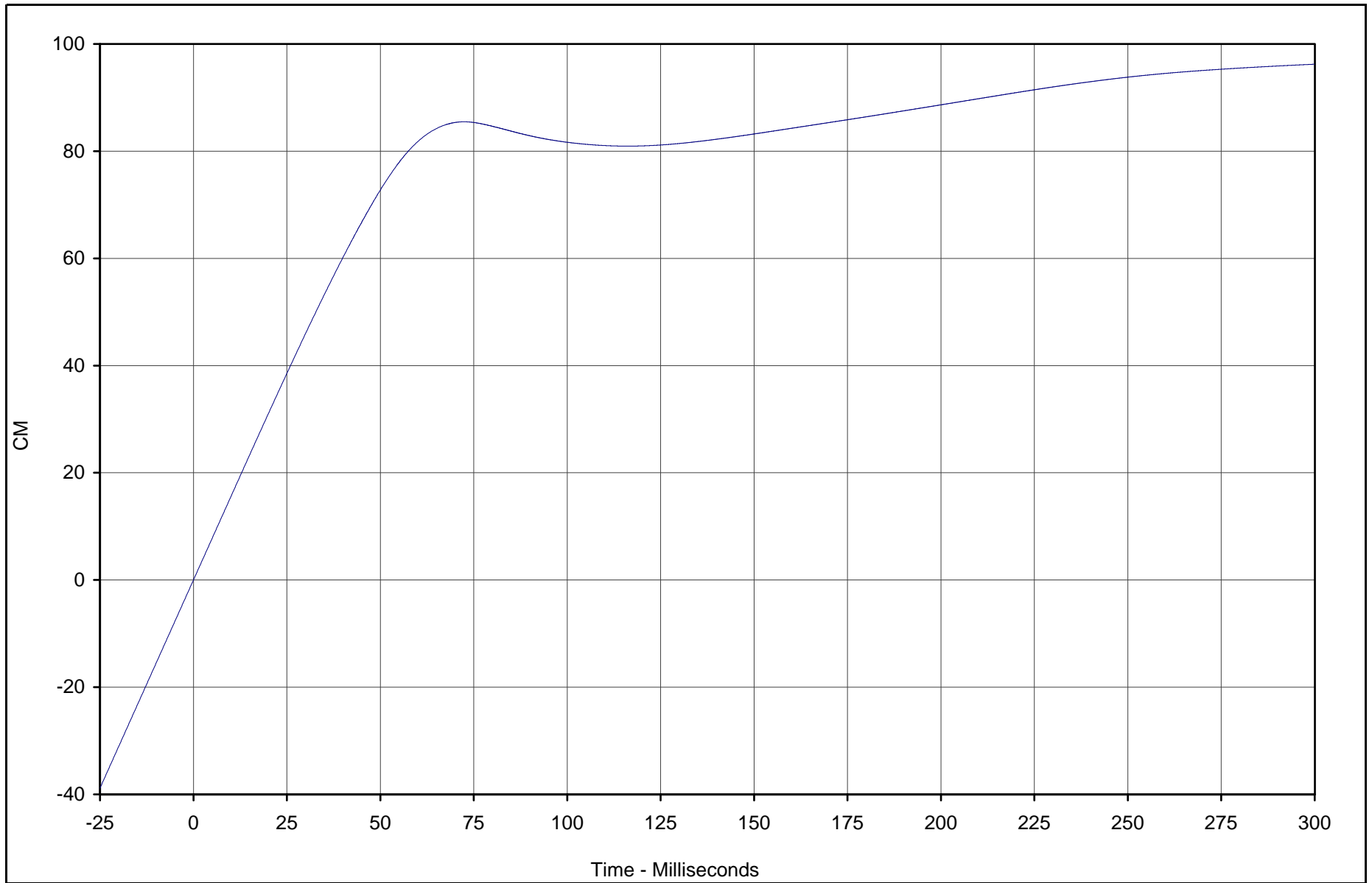
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-97



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis X Displ.	064	IN2	CM	96.2	299.9	0.0	0.0	180



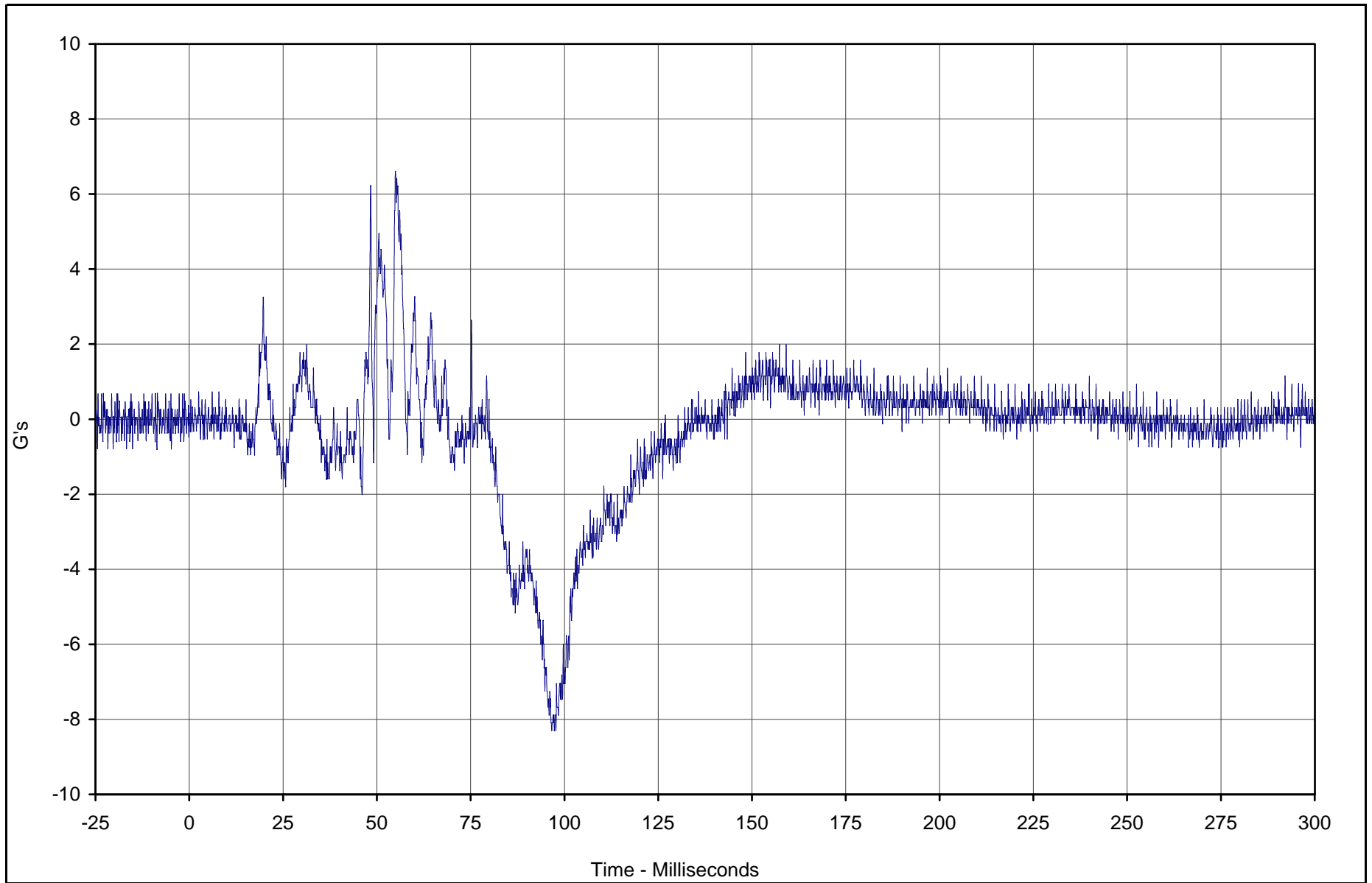
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis Y	065	FIL	G's	6.6	55.0	-8.3	96.6	1000



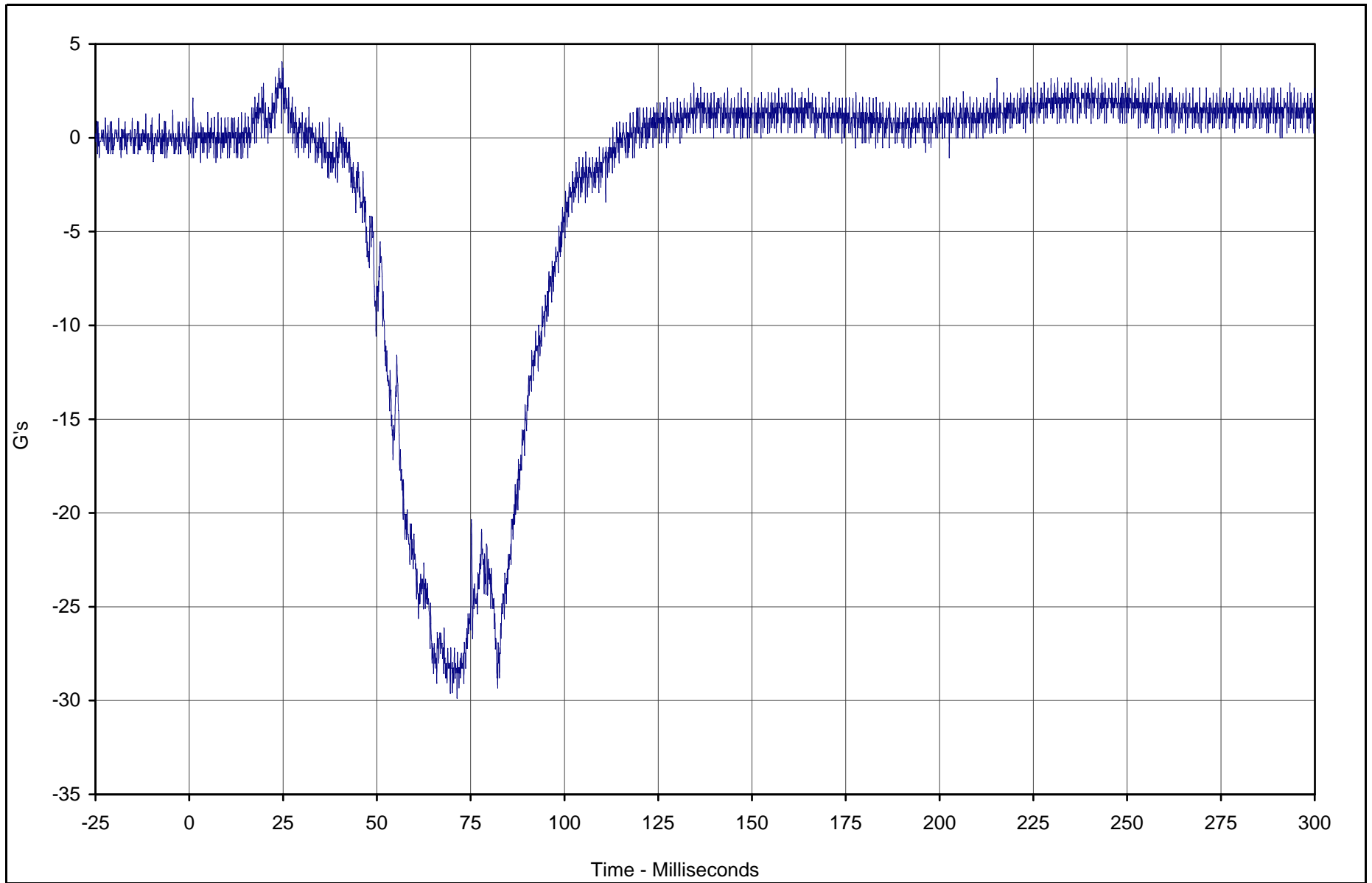
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-99



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis Z	066	FIL	G's	4.0	24.7	-29.9	71.4	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

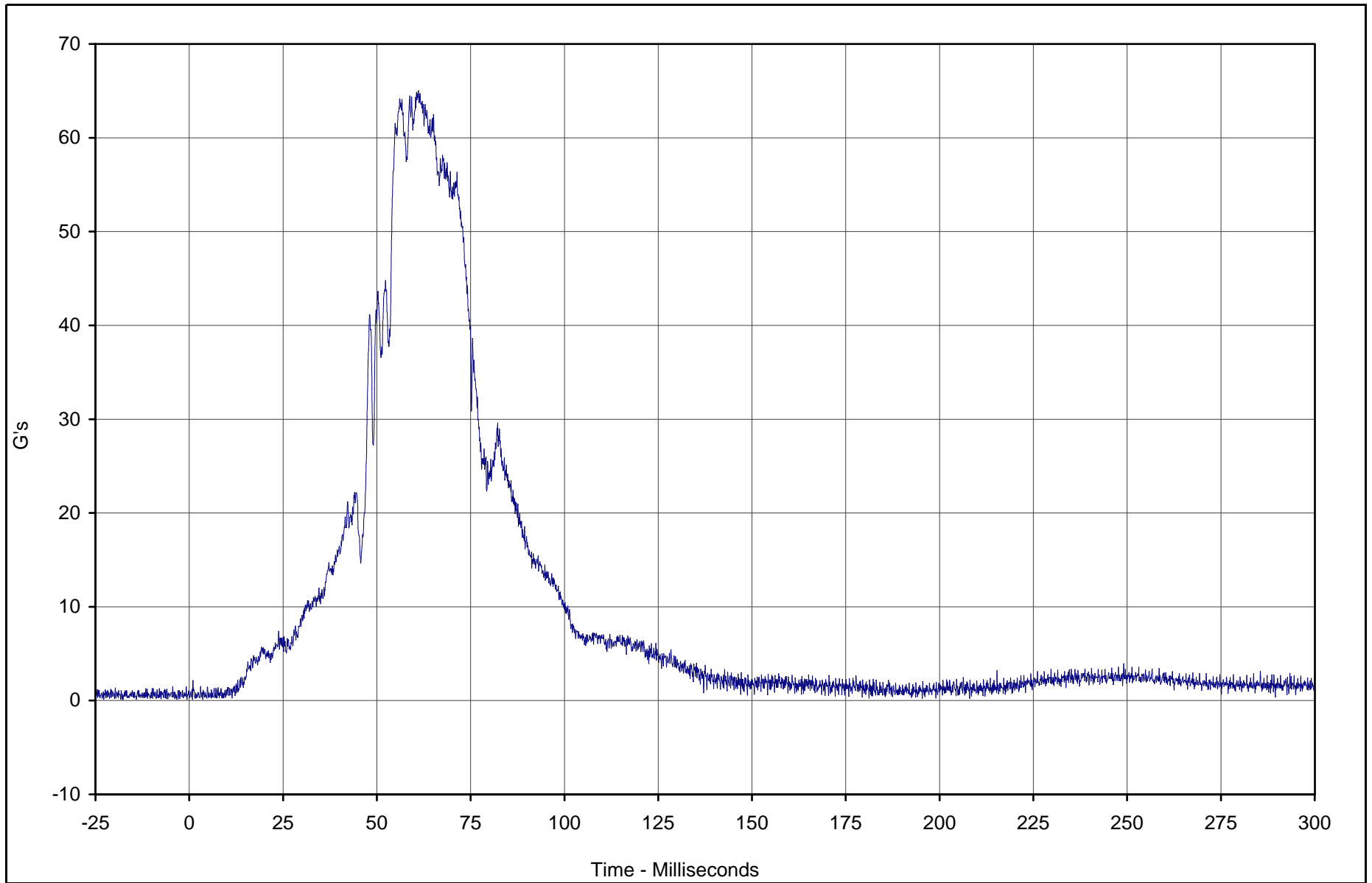
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-100



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Pelvis Resultant	066	RES	G's	65.0	61.1	0.1	3.6	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

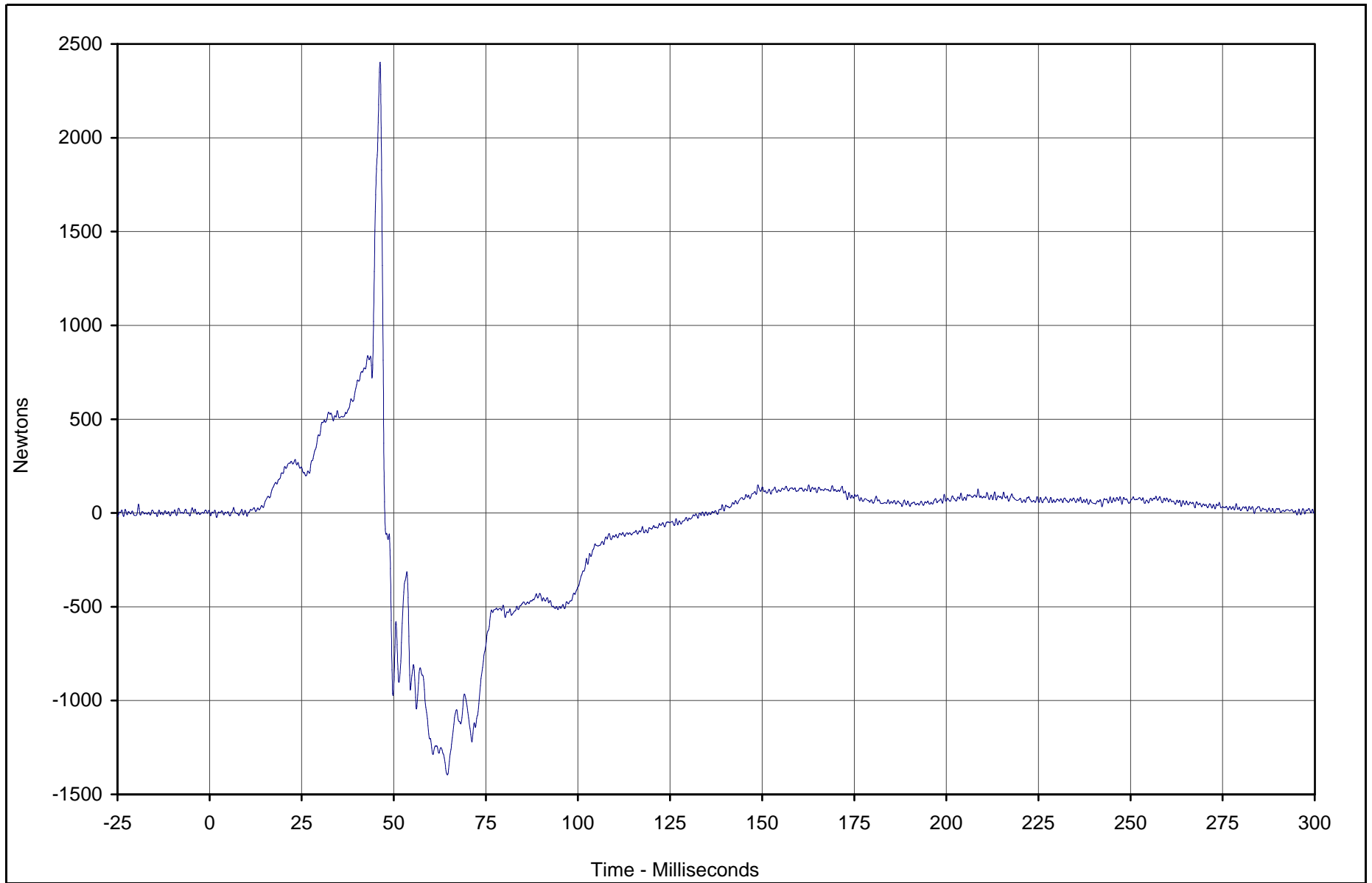
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-101



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Femur Force	067	FIL	Newtons	2401.6	46.3	-1395.8	64.5	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

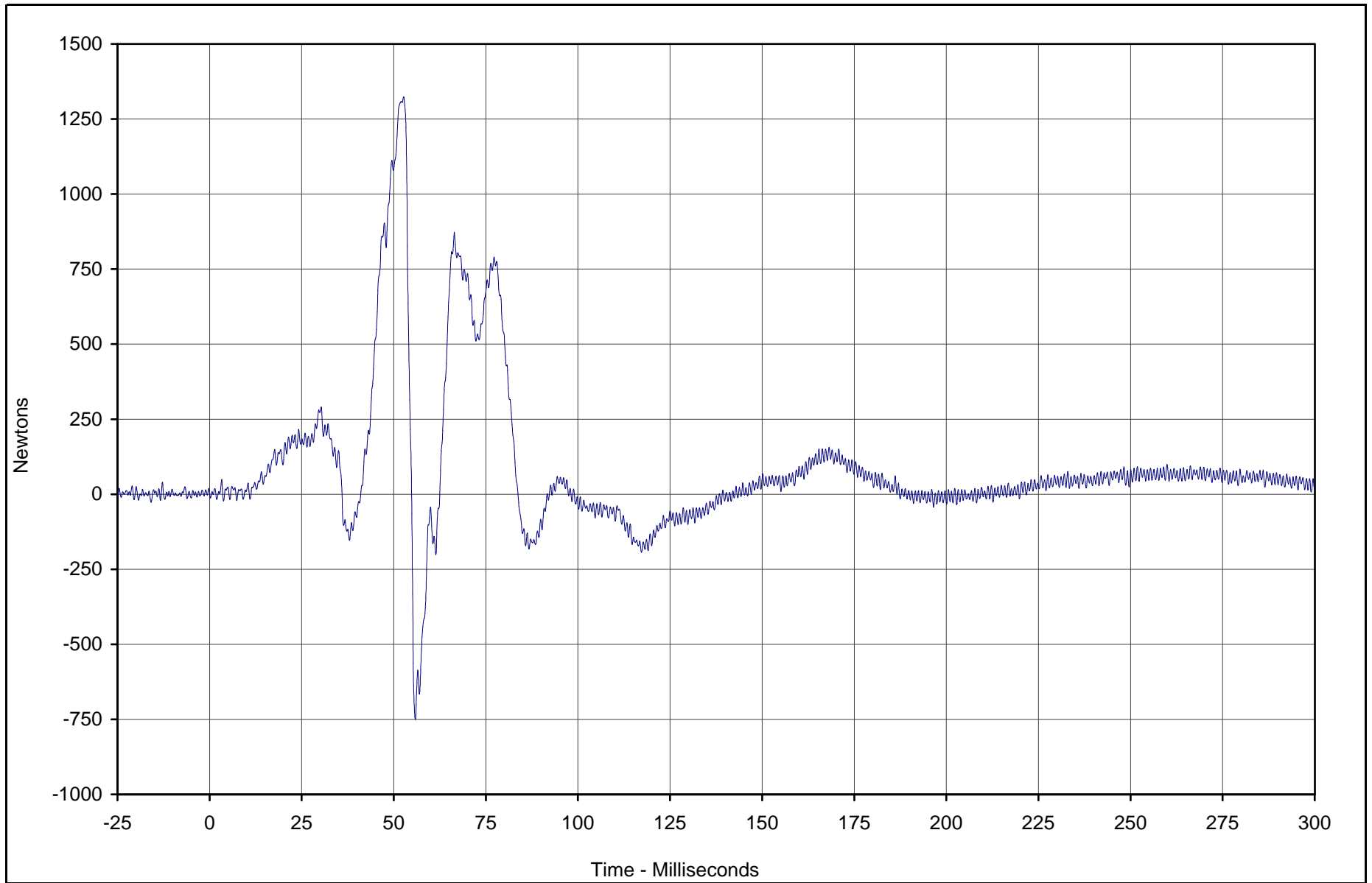
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-102



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Femur Force	068	FIL	Newtons	1324.0	52.7	-750.4	55.8	600



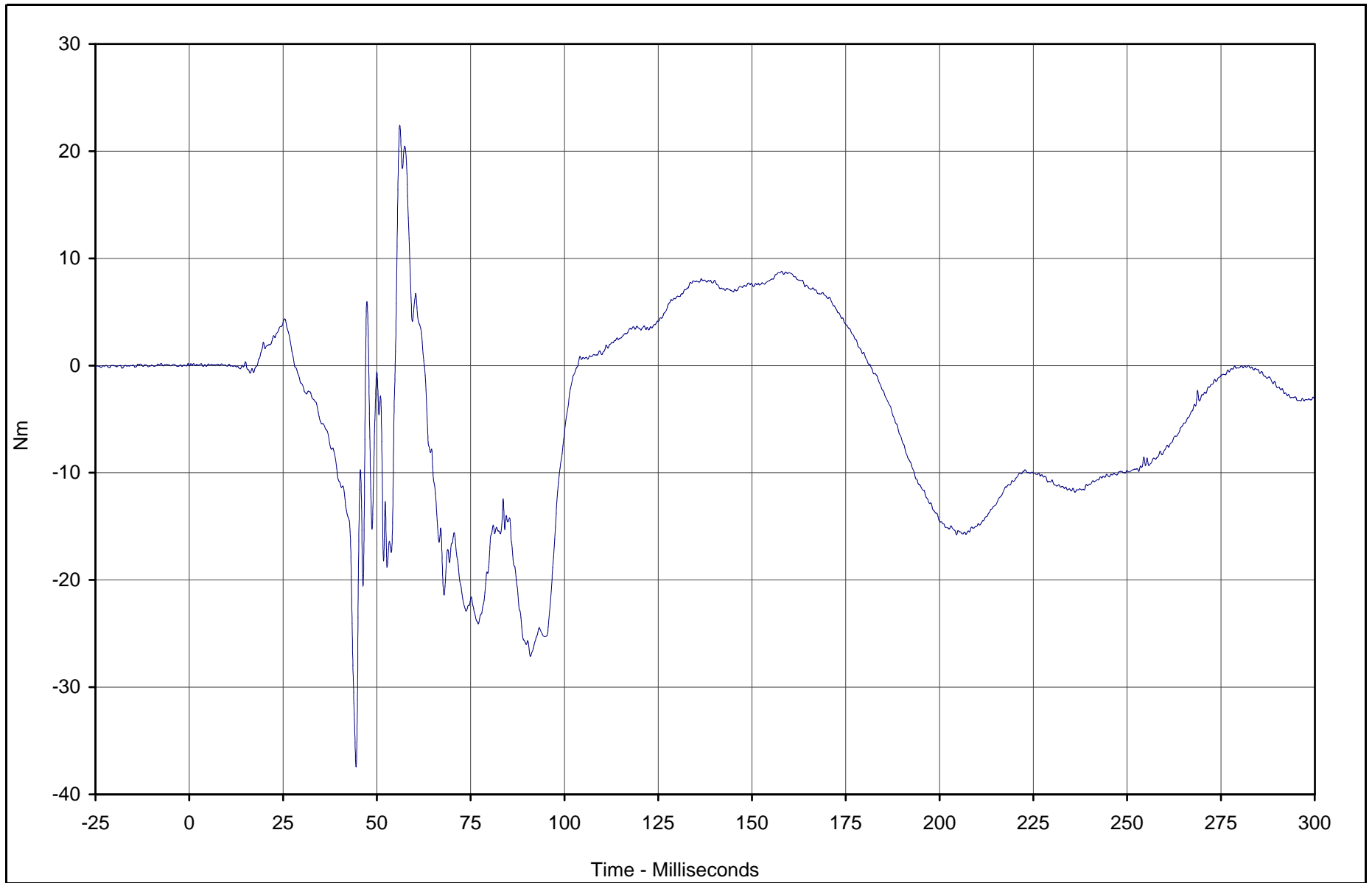
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Upper Tibia Moment X	069	FIL	Nm	22.4	56.1	-37.4	44.5	600



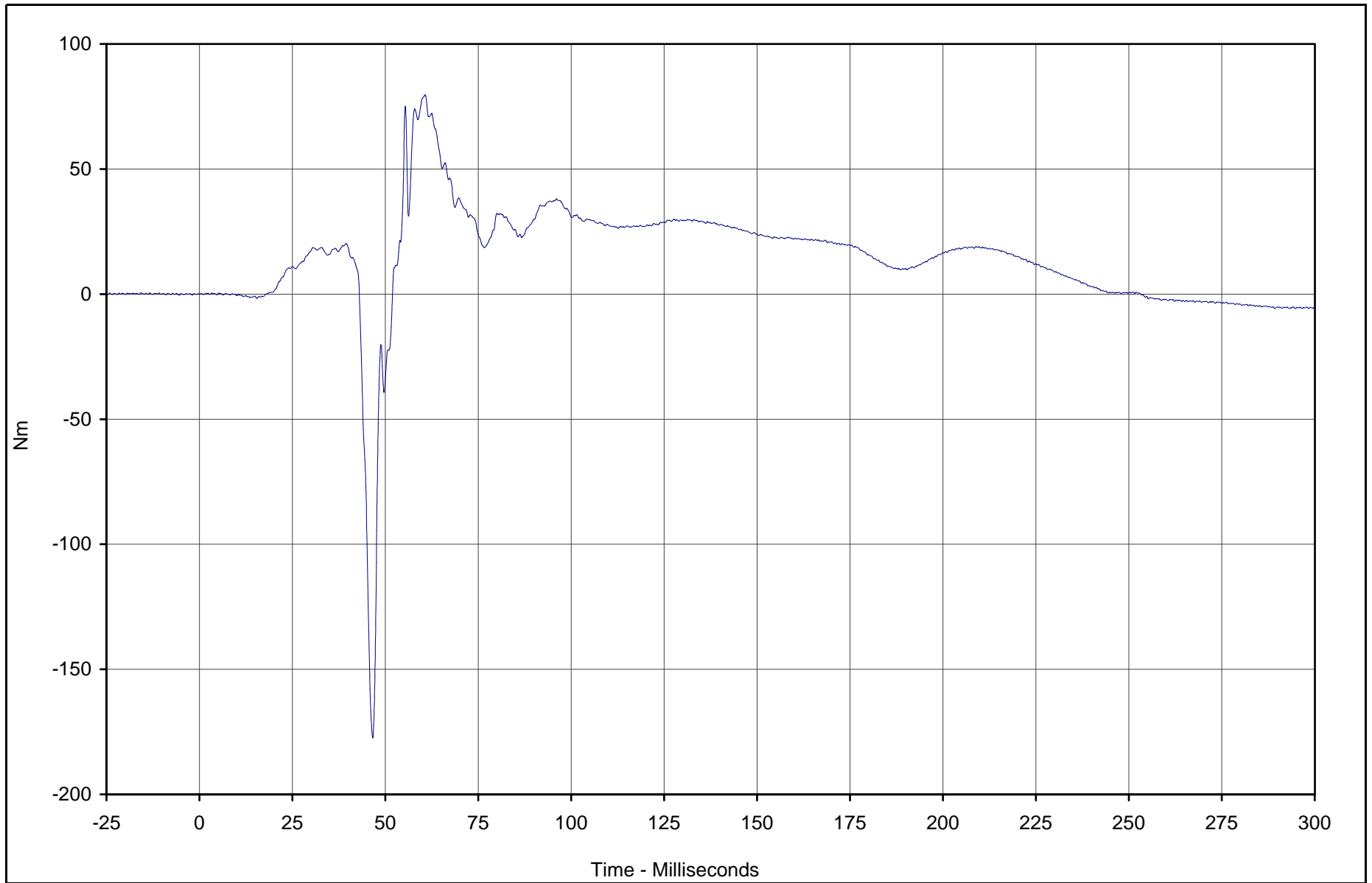
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-104



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Upper Tibia Moment Y	070	FIL	Nm	79.6	60.7	-177.5	46.6	600



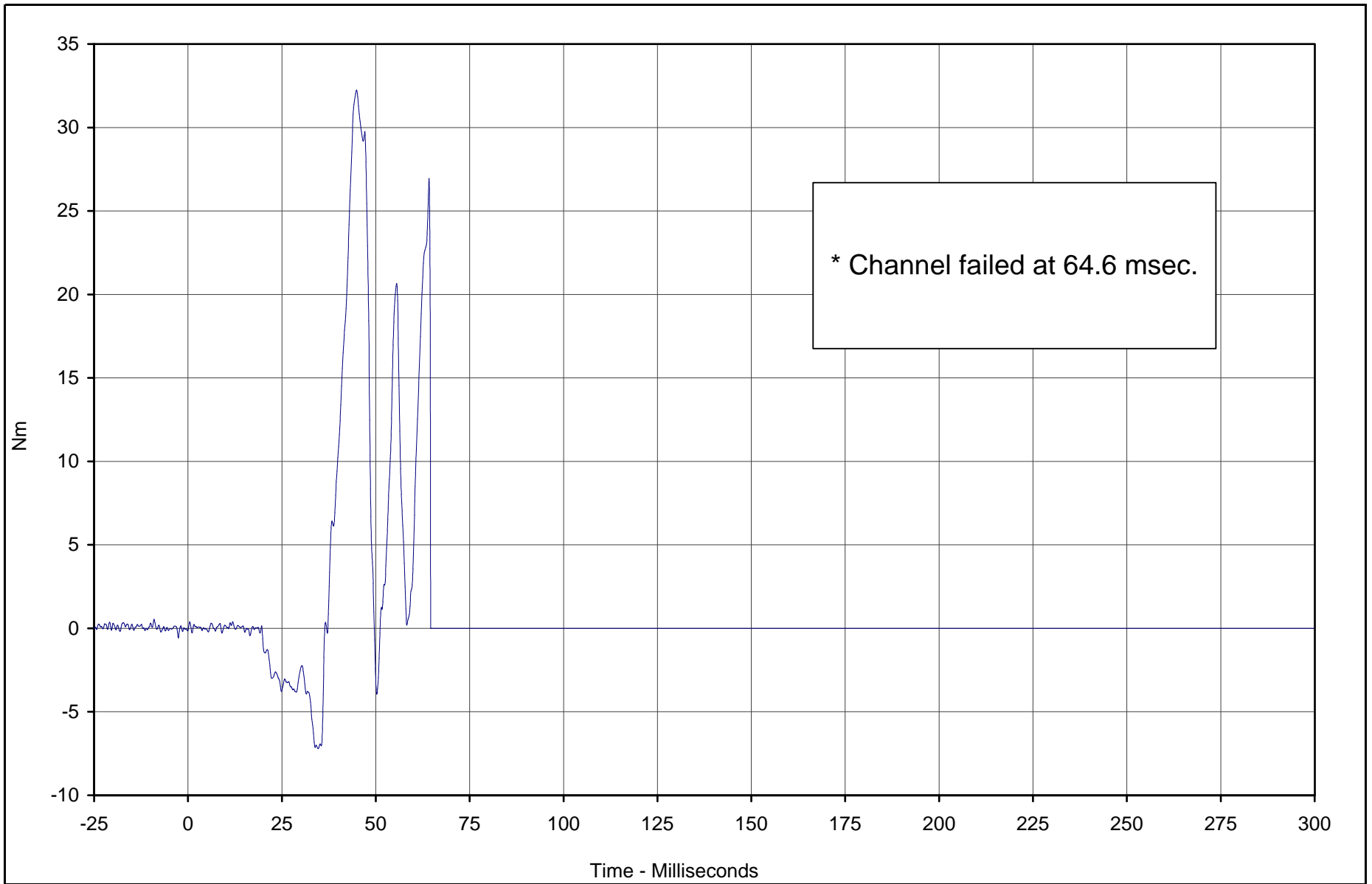
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



\* Channel failed at 64.6 msec.

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Upper Tibia Moment X	071	FIL	Nm	32.2	44.9	-7.2	34.7	600

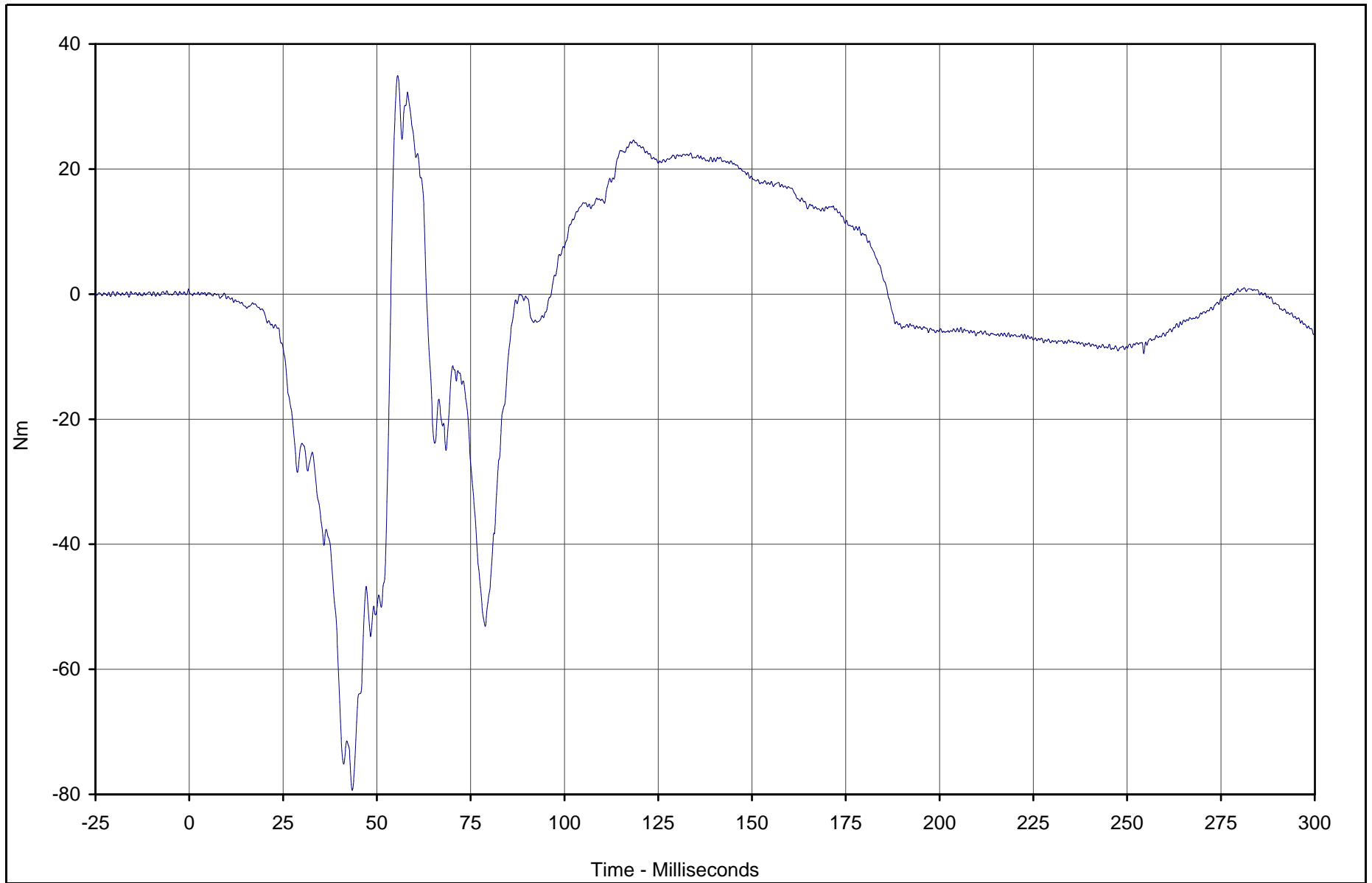


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Upper Tibia Moment Y	072	FIL	Nm	34.9	55.5	-79.3	43.4	600



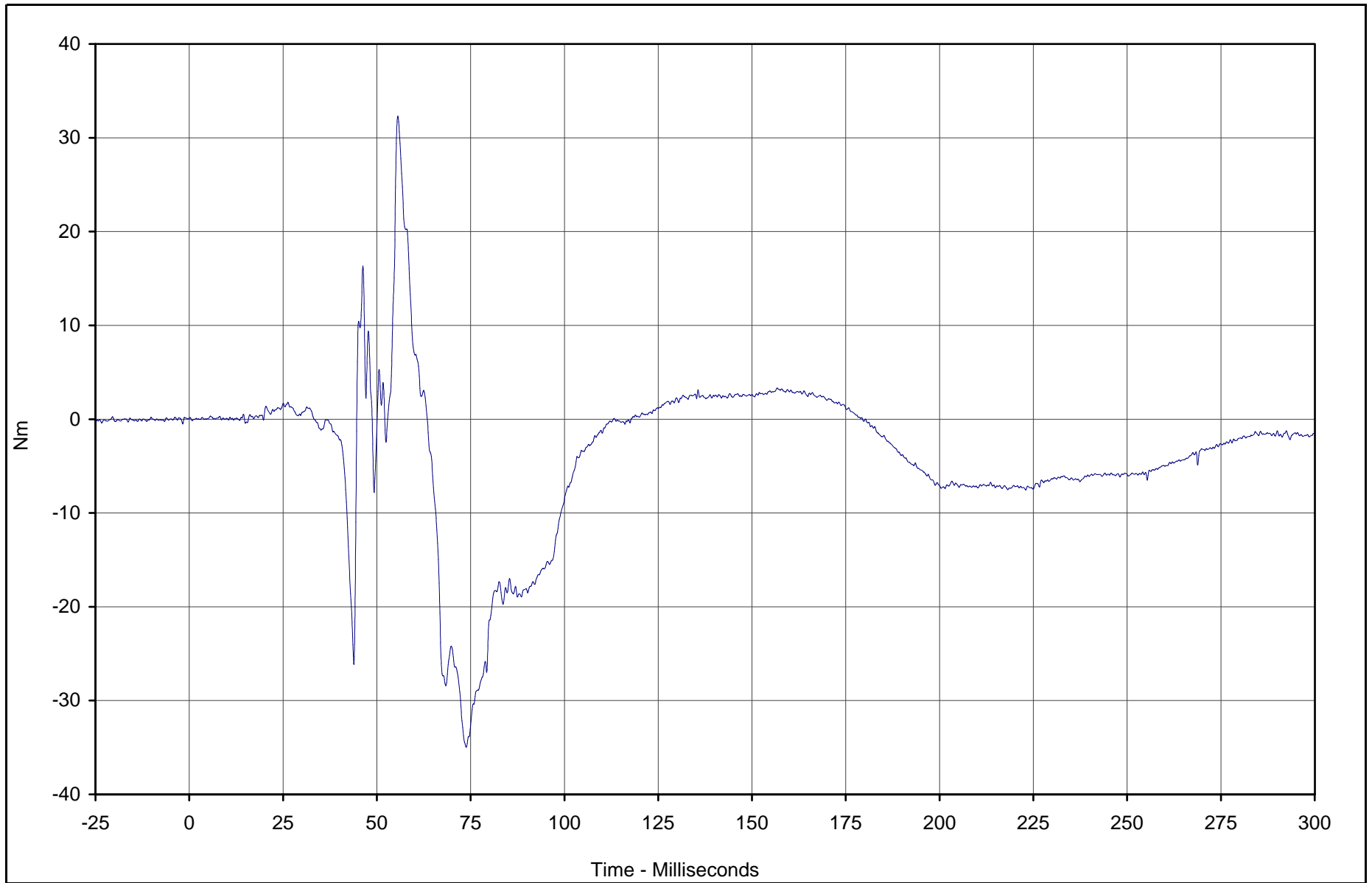
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-107



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Lower Tibia Moment X	073	FIL	Nm	32.3	55.6	-35.0	73.8	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

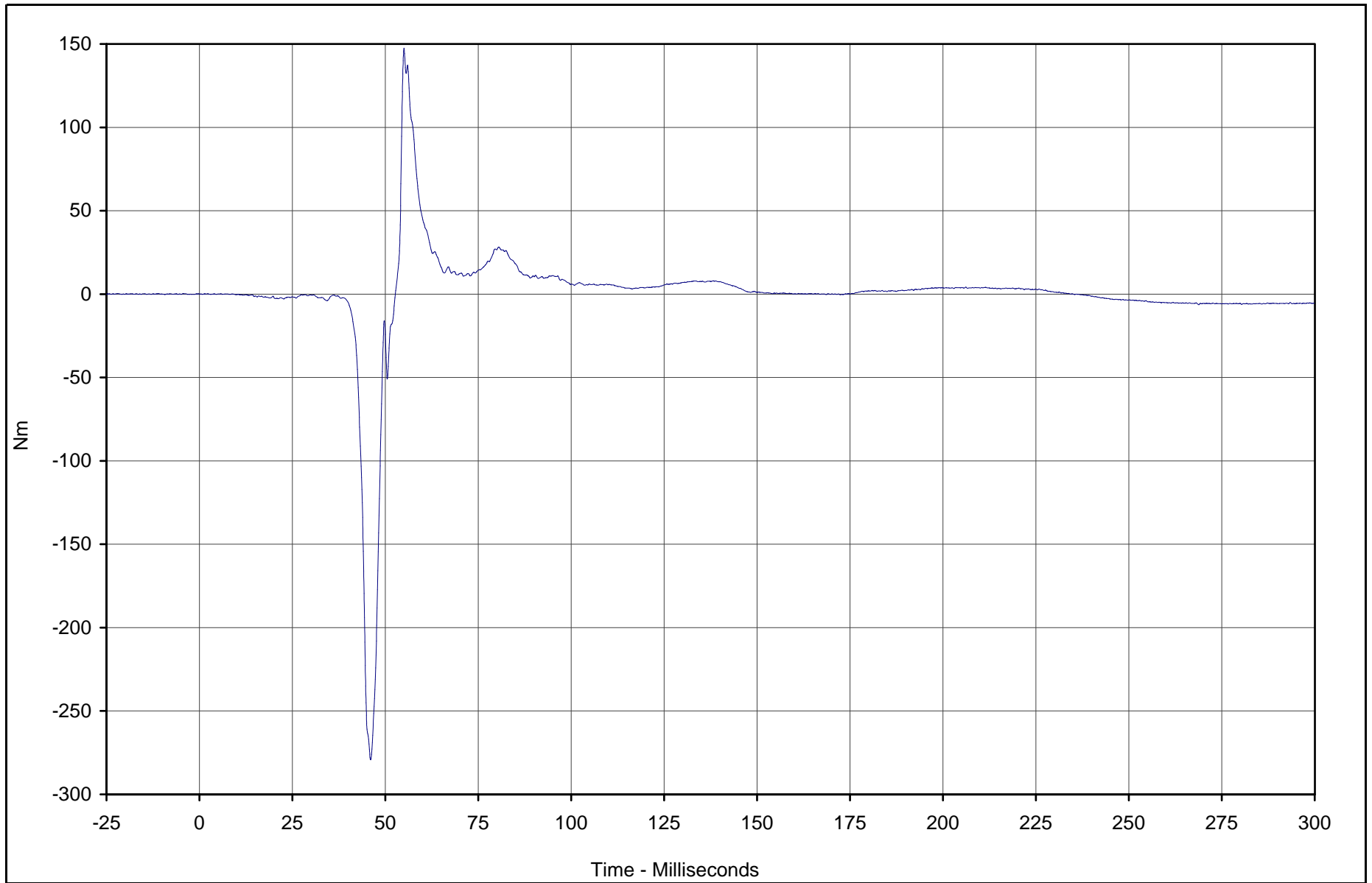
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-108



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Lower Tibia Moment Y	074	FIL	Nm	147.6	55.0	-279.3	46.1	600



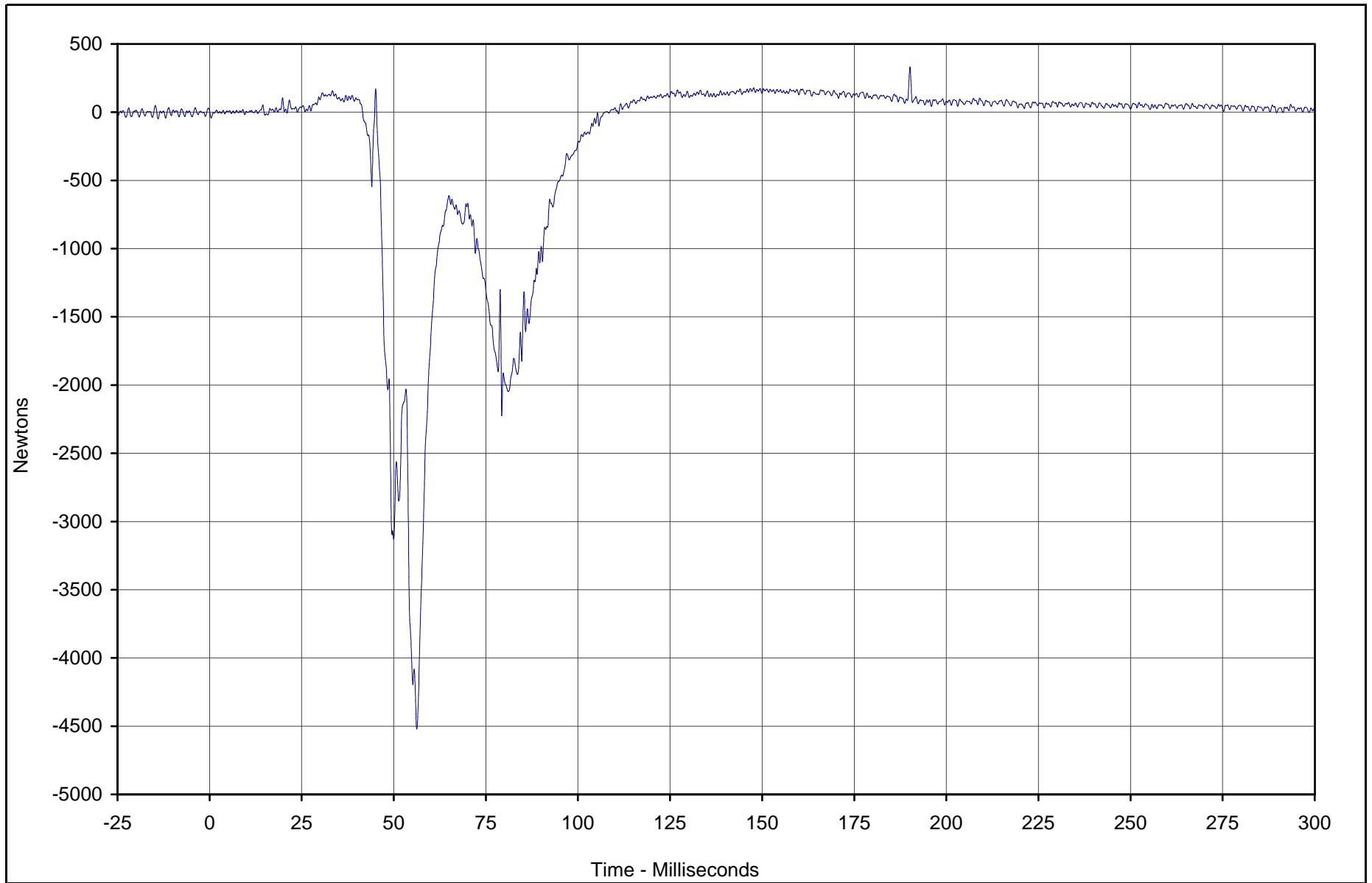
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-109



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Lower Tibia Force Z	075	FIL	Newtons	331.0	190.1	-4520.1	56.3	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

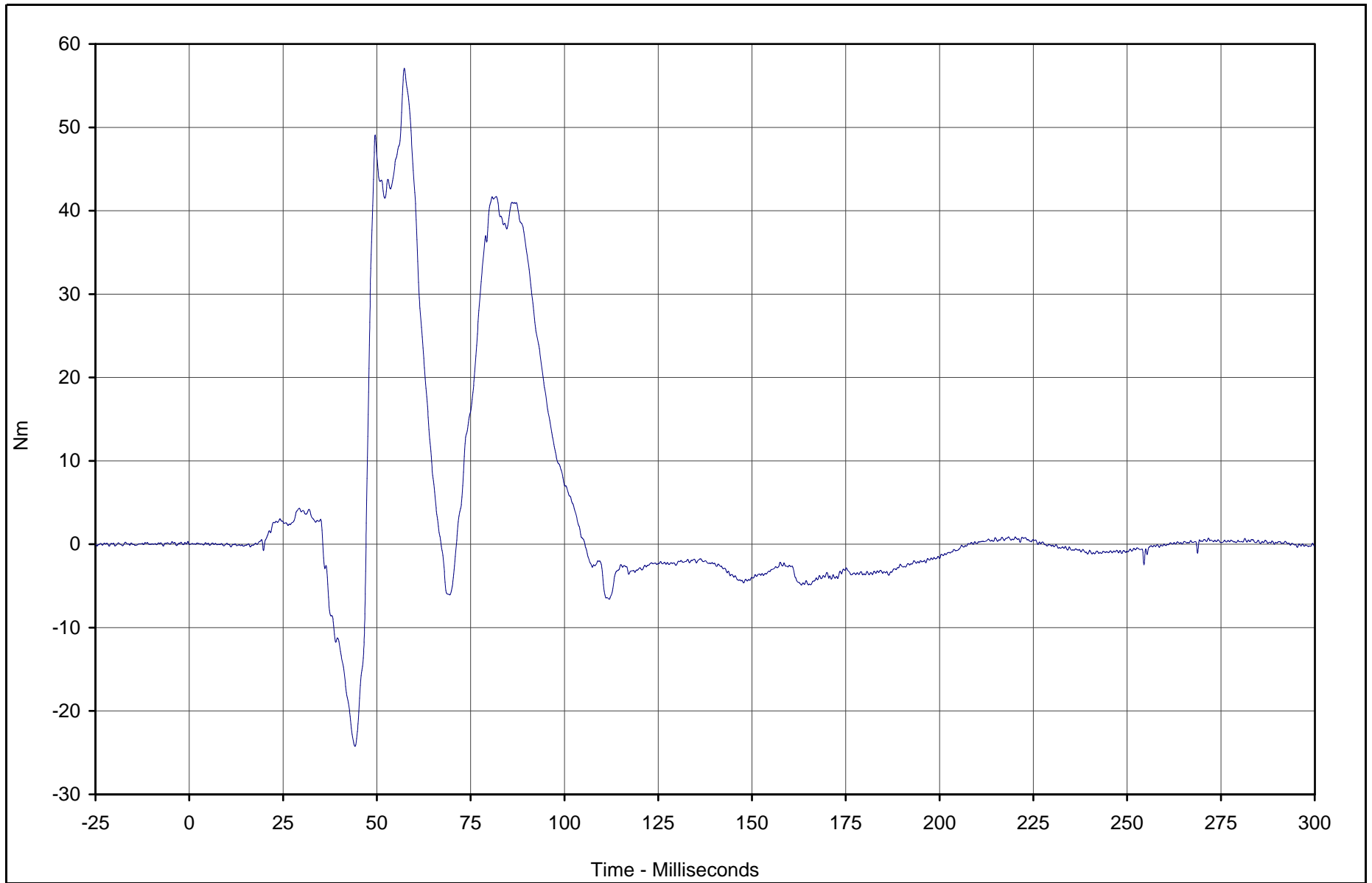
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-110



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Lower Tibia Moment X	076	FIL	Nm	57.1	57.3	-24.2	44.2	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

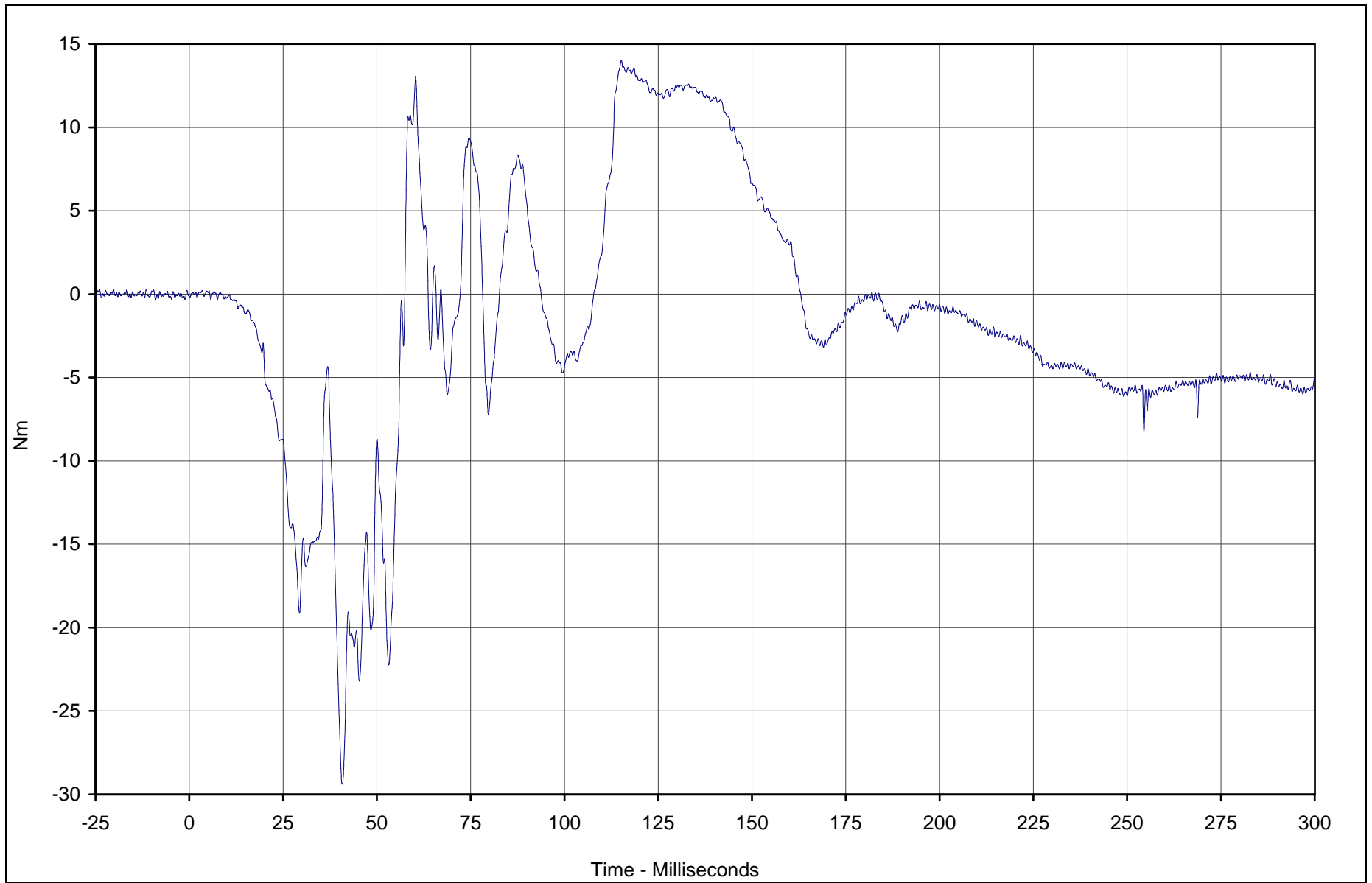
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-111



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Lower Tibia Moment Y	077	FIL	Nm	14.0	115.1	-29.4	40.8	600



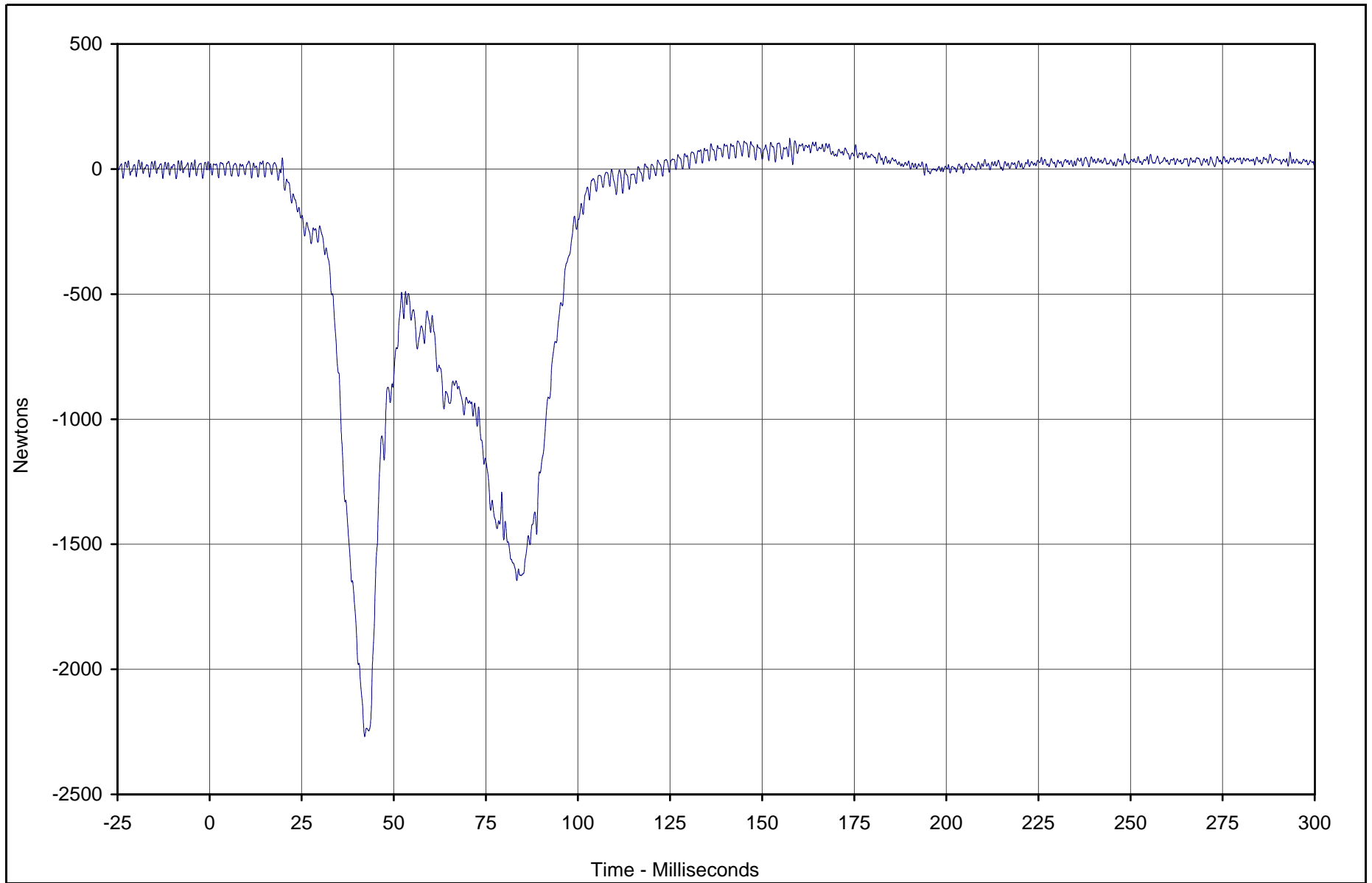
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-112



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right lower Tibia Force Z	078	FIL	Newtons	123.0	157.5	-2269.5	42.1	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

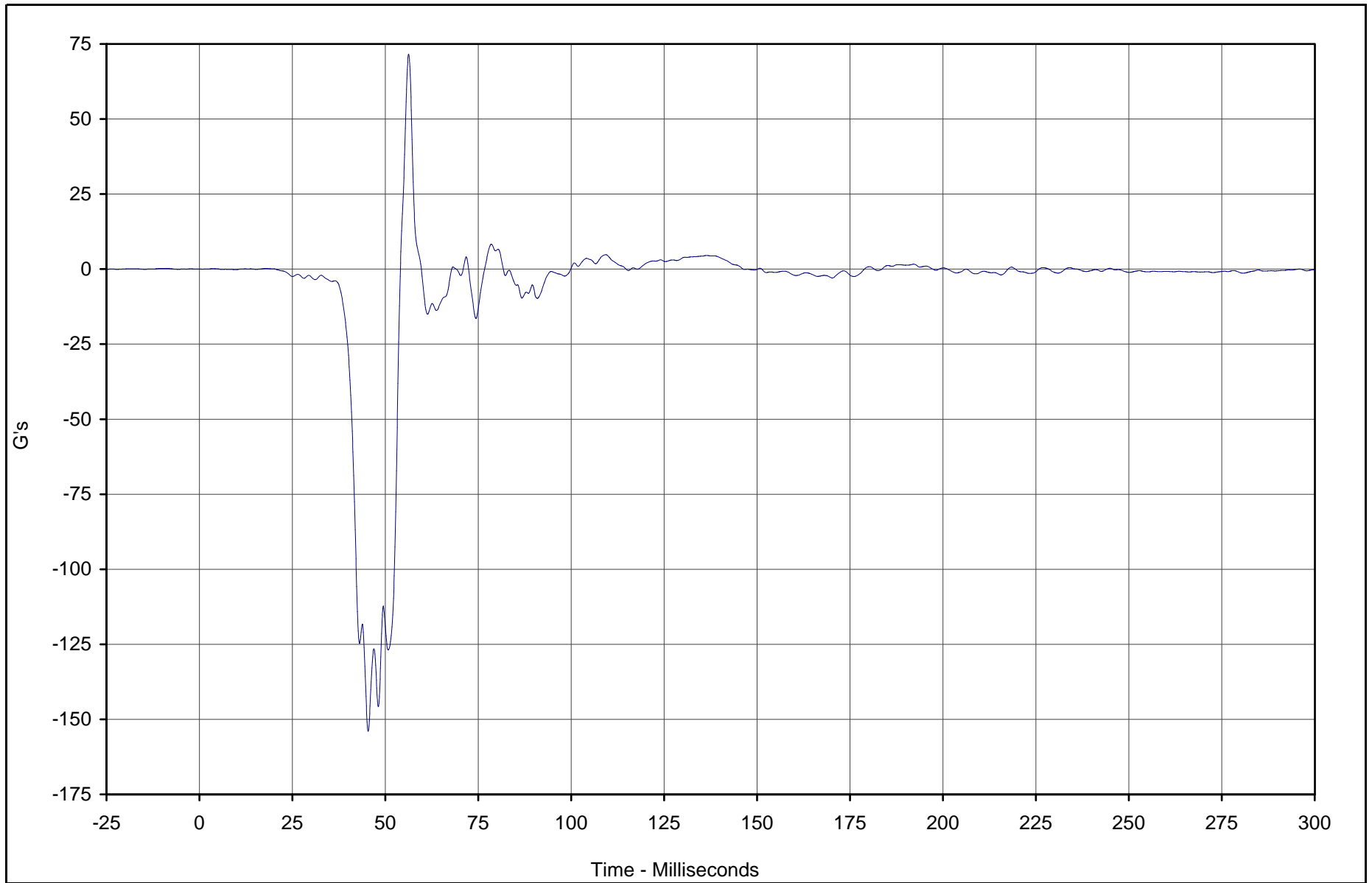
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-113



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Foot Aft X	079	FIL	G's	71.6	56.3	-154.0	45.4	180

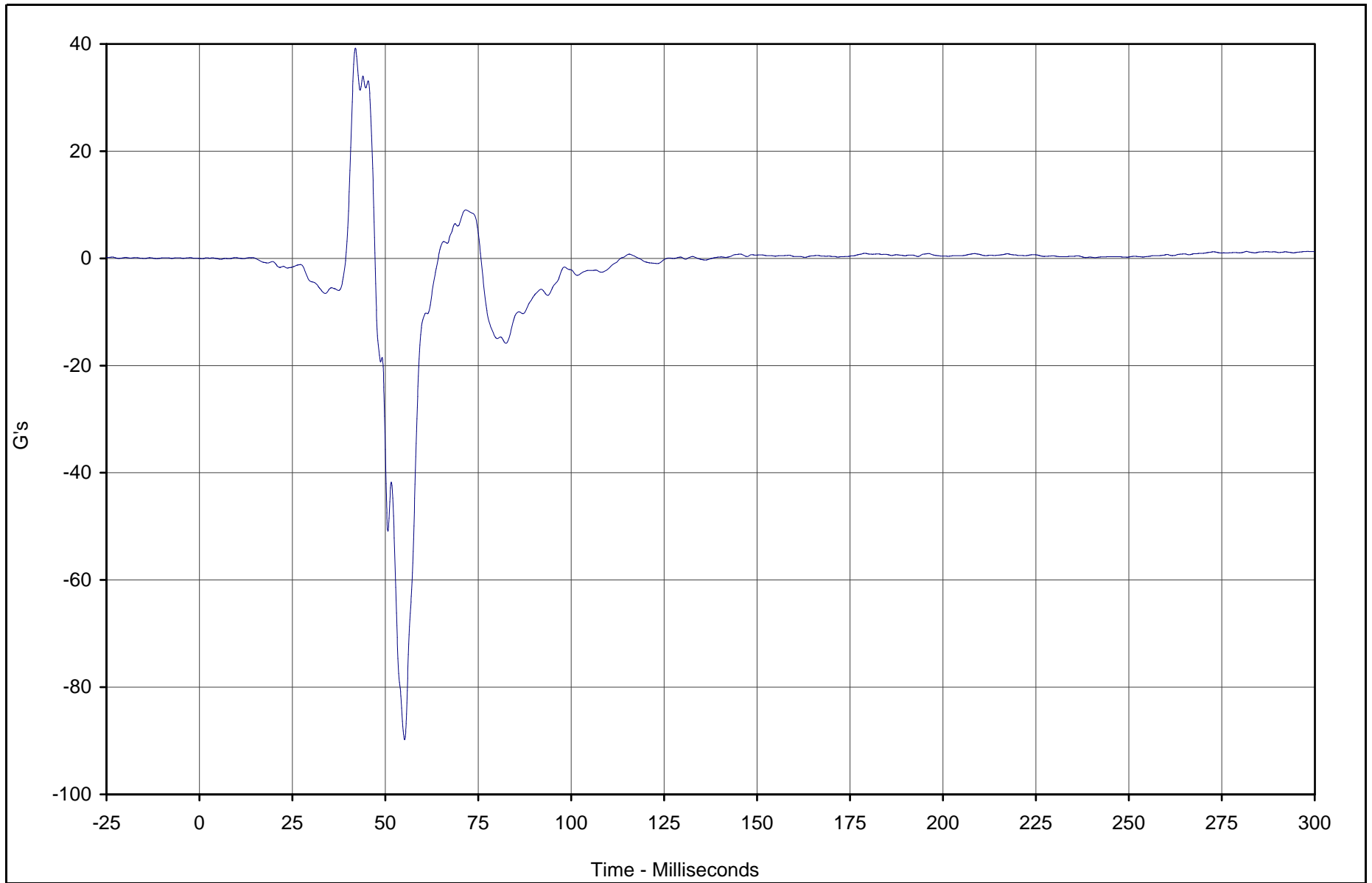


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Foot Aft Z	080	FIL	G's	39.2	41.9	-89.8	55.2	180

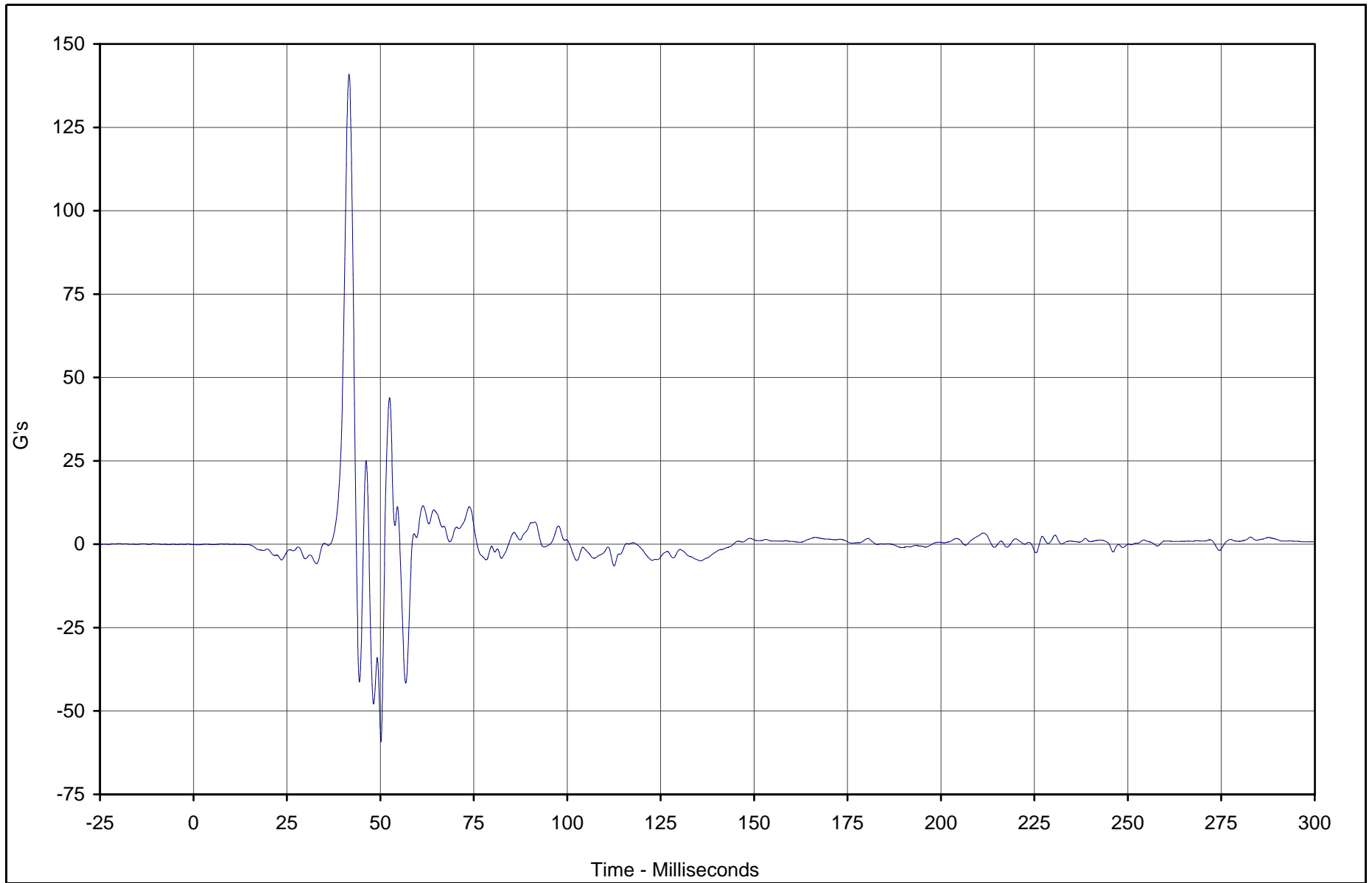


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Left Foot Fore Z	081	FIL	G's	140.9	41.6	-59.3	50.2	180

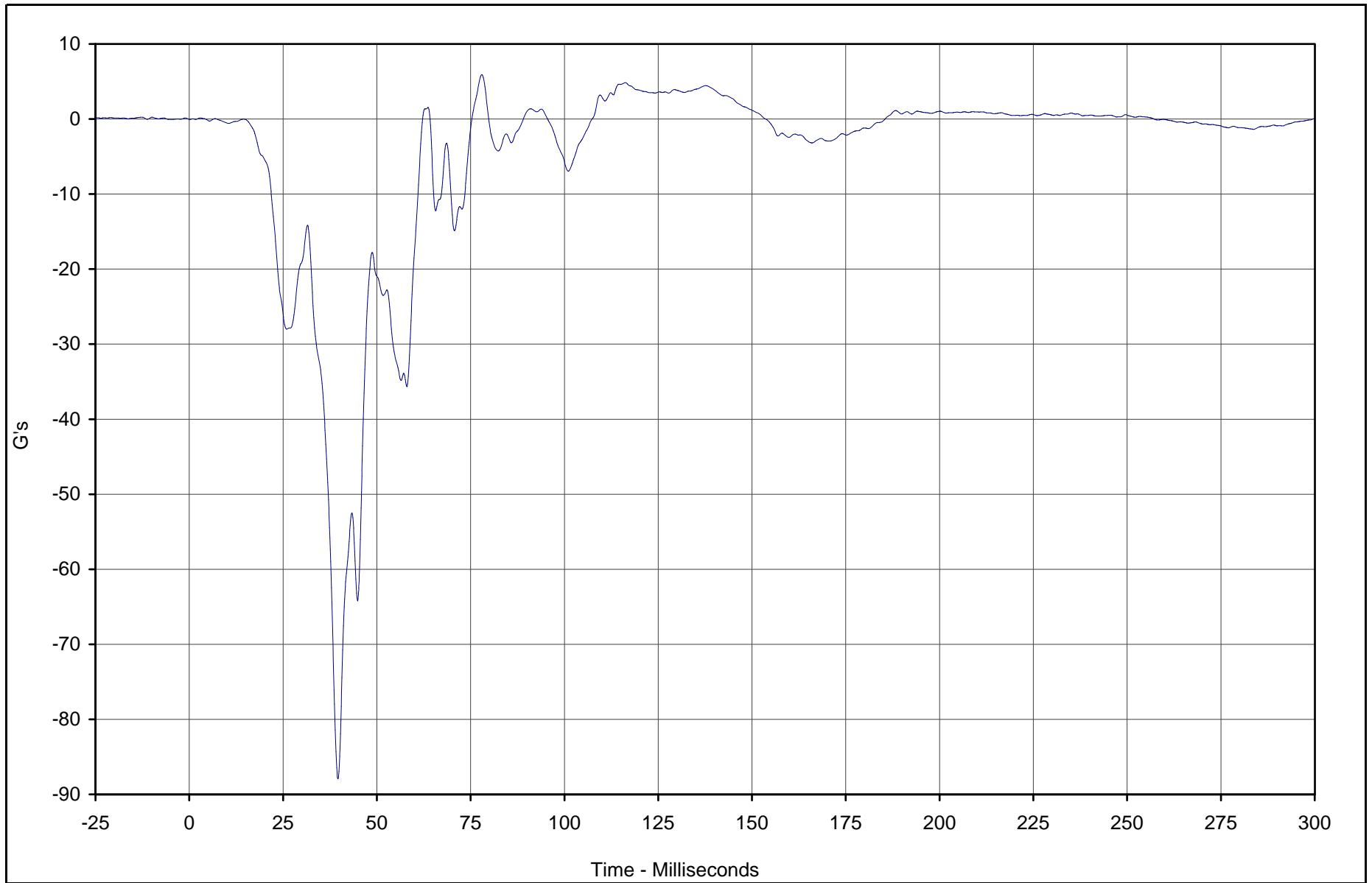


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Foot Aft X	082	FIL	G's	5.9	78.0	-87.9	39.6	180



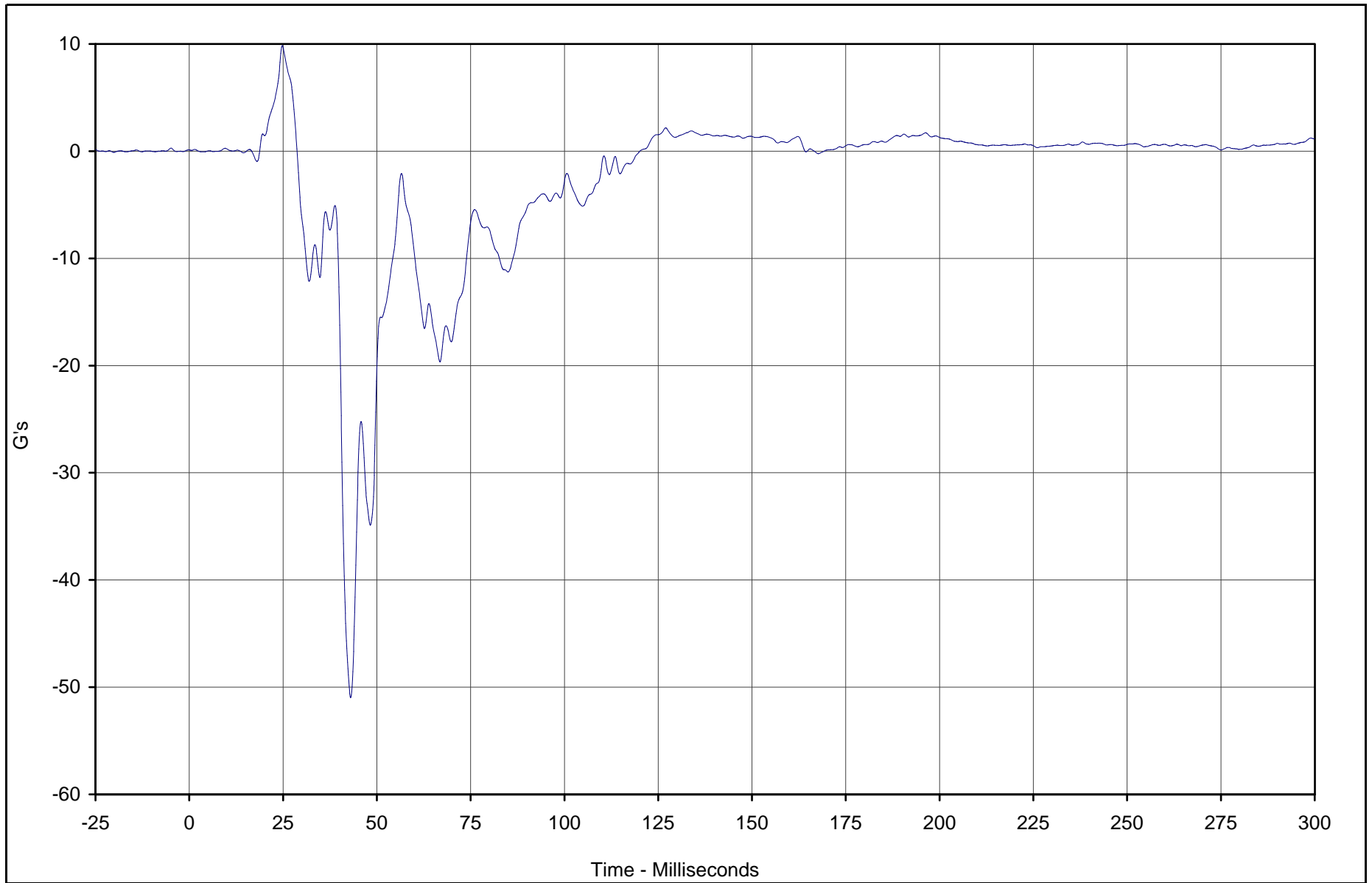
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-117



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Foot Aft Z	083	FIL	G's	9.9	24.8	-51.0	43.0	180



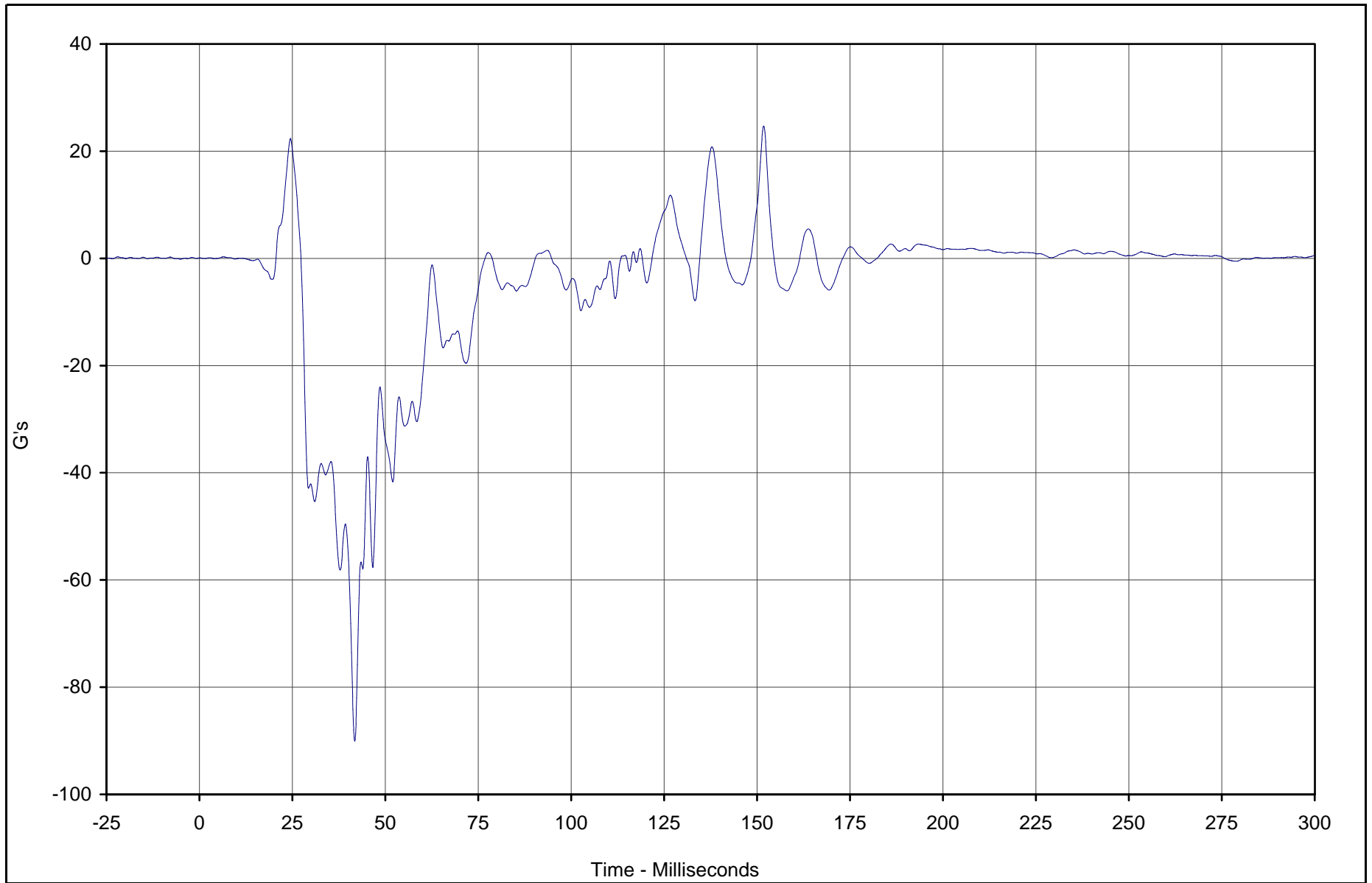
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Right Foot Fore Z	084	FIL	G's	24.7	151.8	-90.1	41.8	180

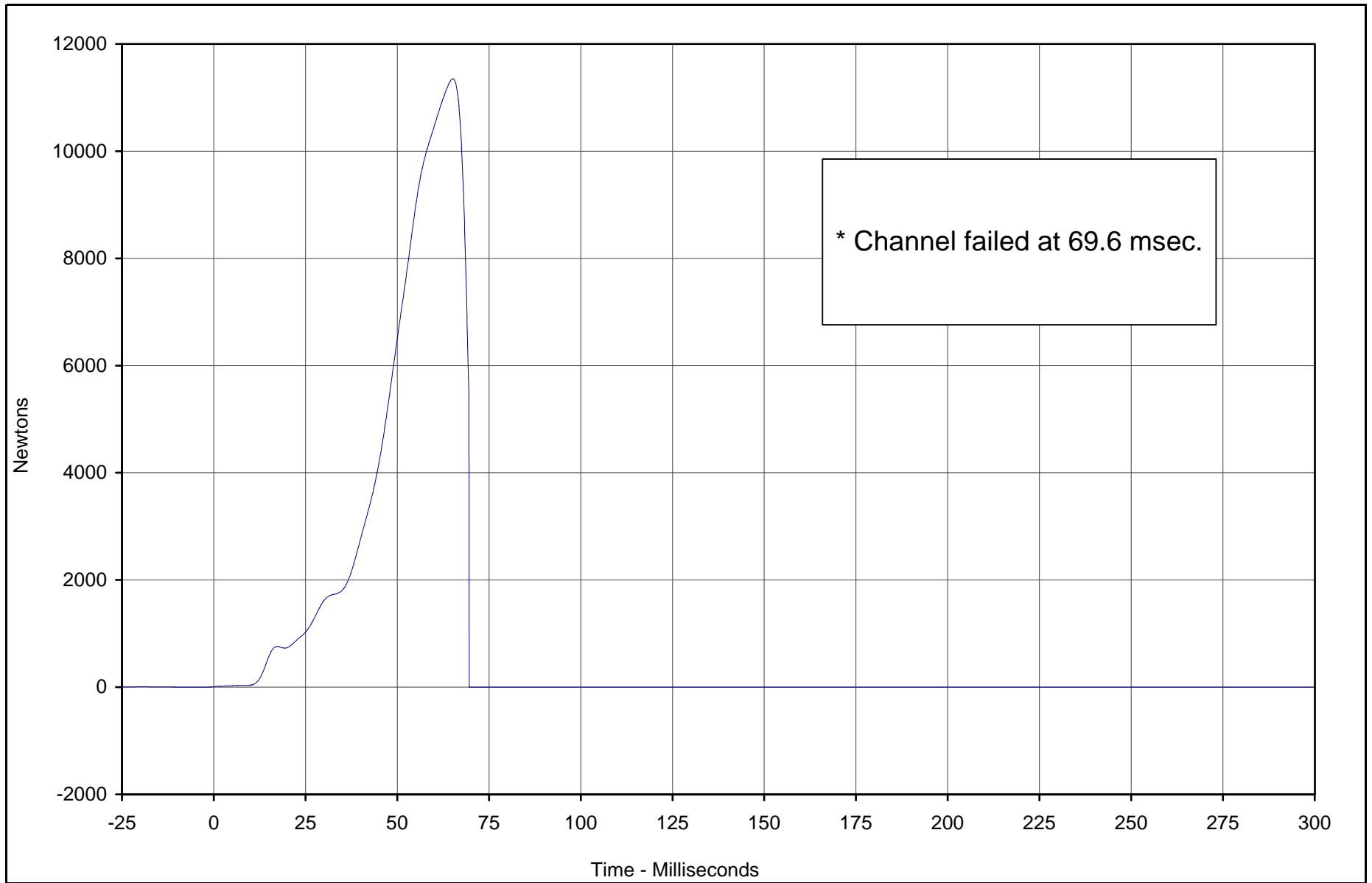


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



\* Channel failed at 69.6 msec.

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Lap Belt Force	085	FIL	Newtons	11351.0	65.2	0.0	69.6	60



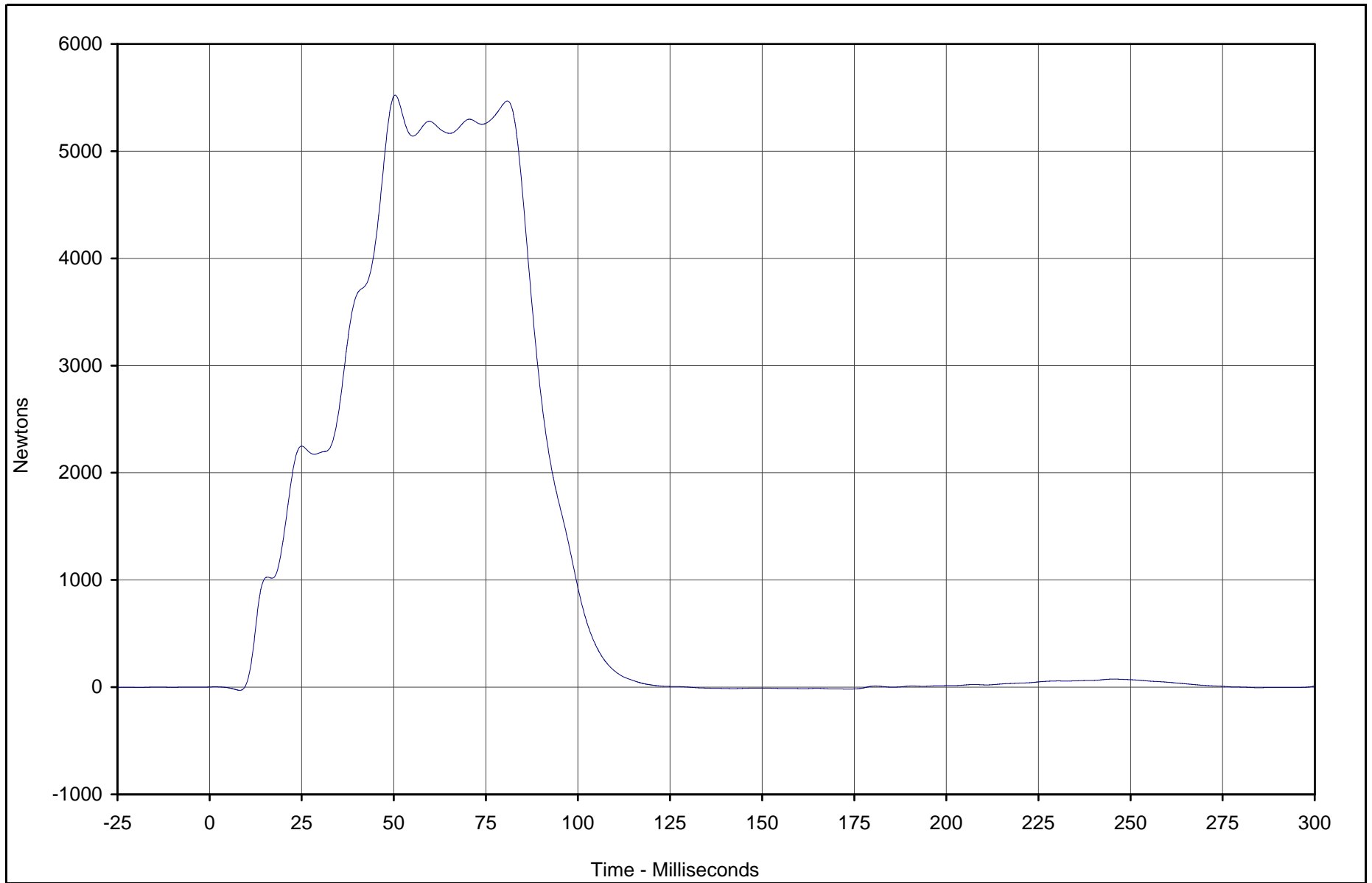
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-120



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Shoulder Belt Force	086	FIL	Newtons	5523.1	50.4	-29.4	8.2	60



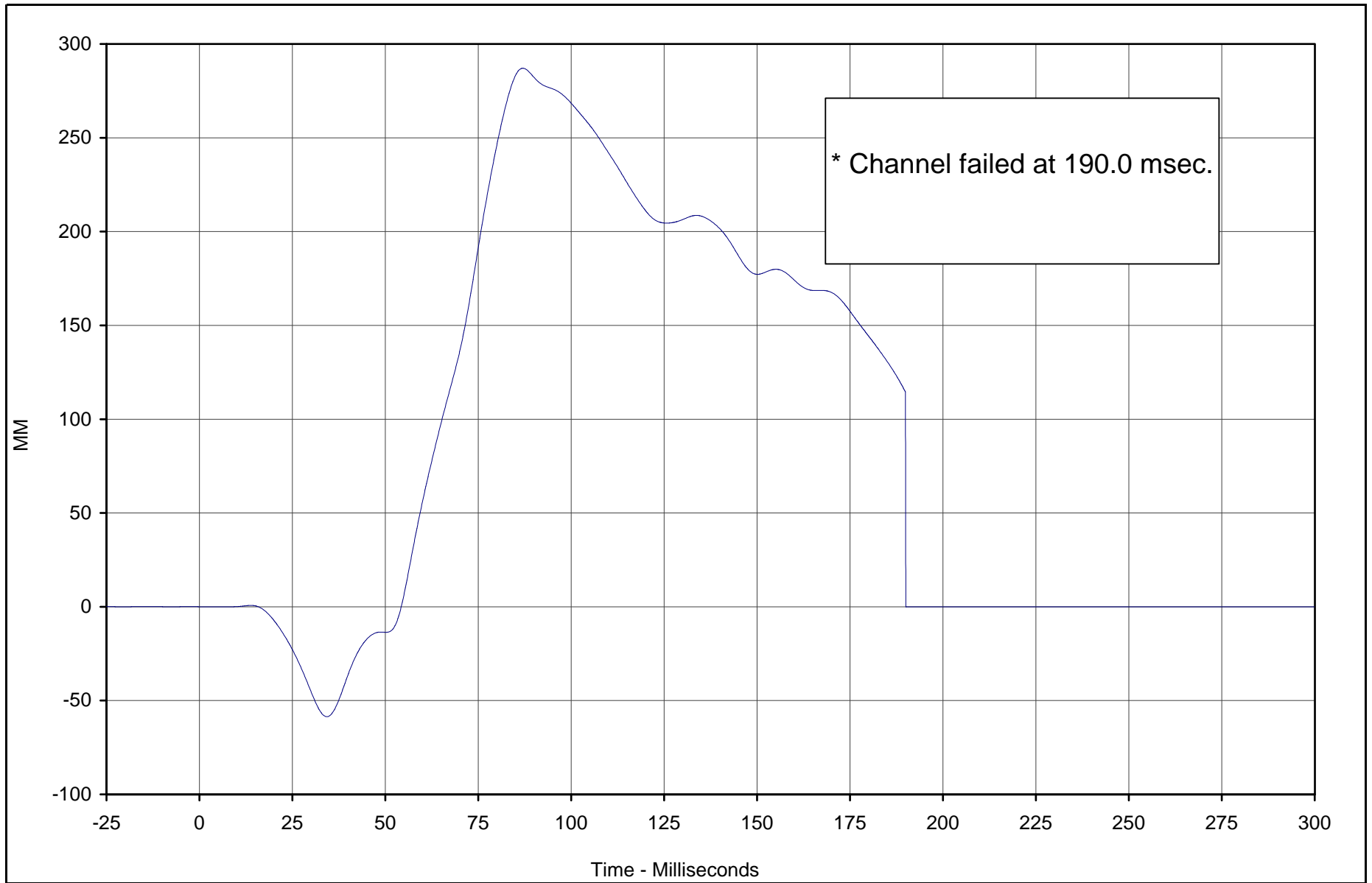
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



\* Channel failed at 190.0 msec.

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Passenger Shoulder Belt Pullout	087	FIL	MM	287.1	87.0	-58.6	34.3	60



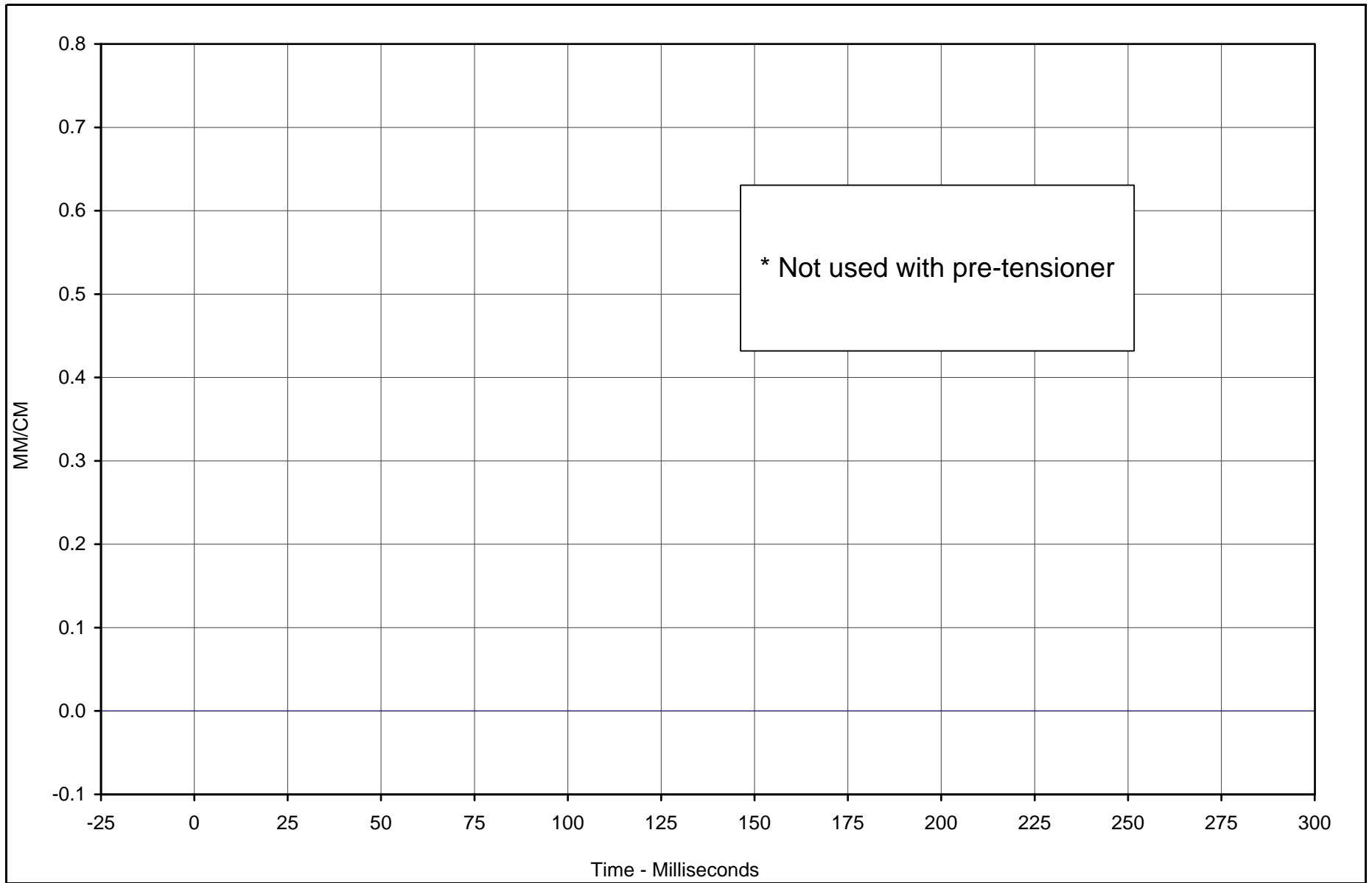
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

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 Nissan Murano SL AWD SUV

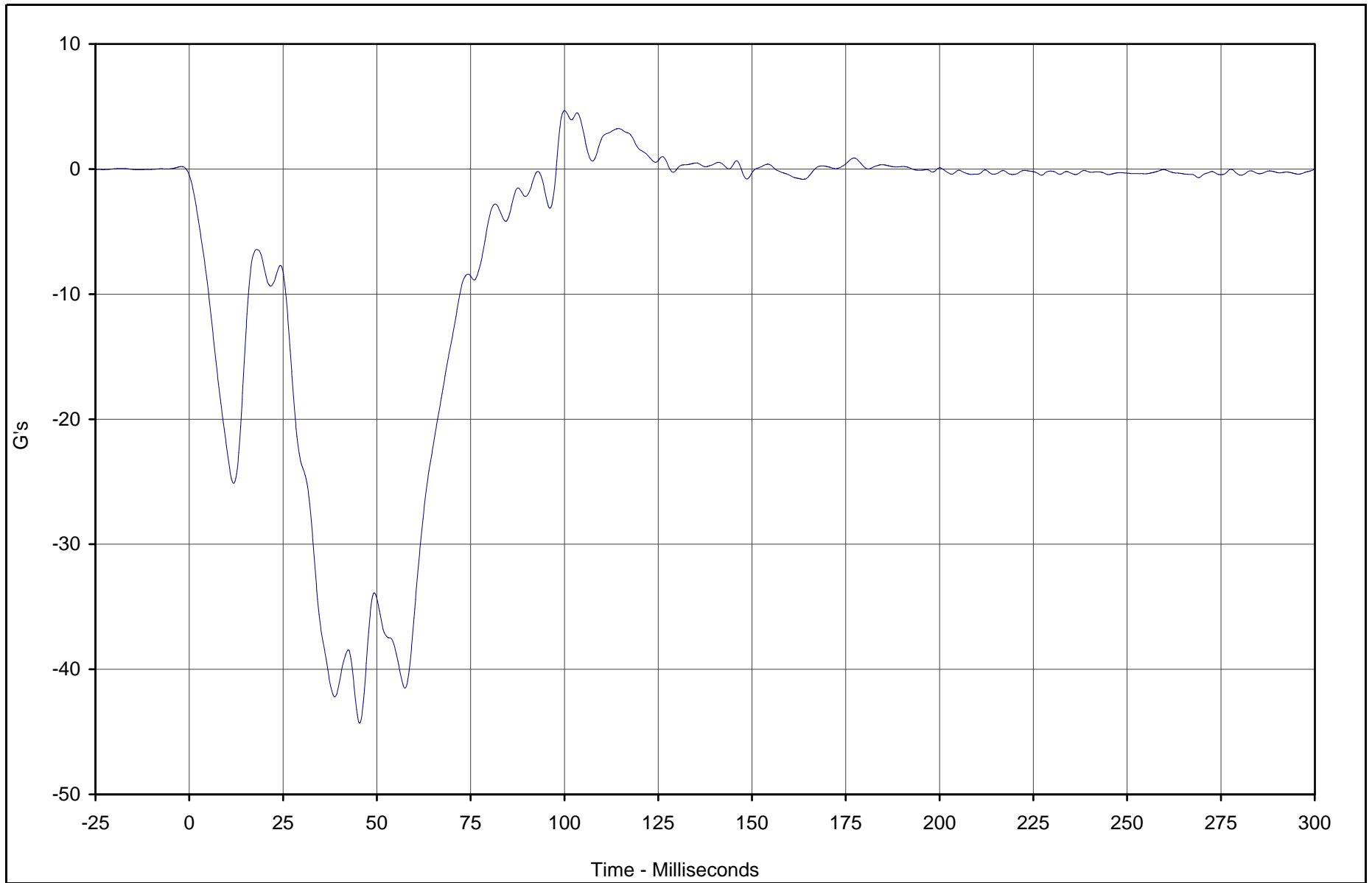
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-123



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear X	089	FIL	G's	4.7	100.0	-44.3	45.4	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

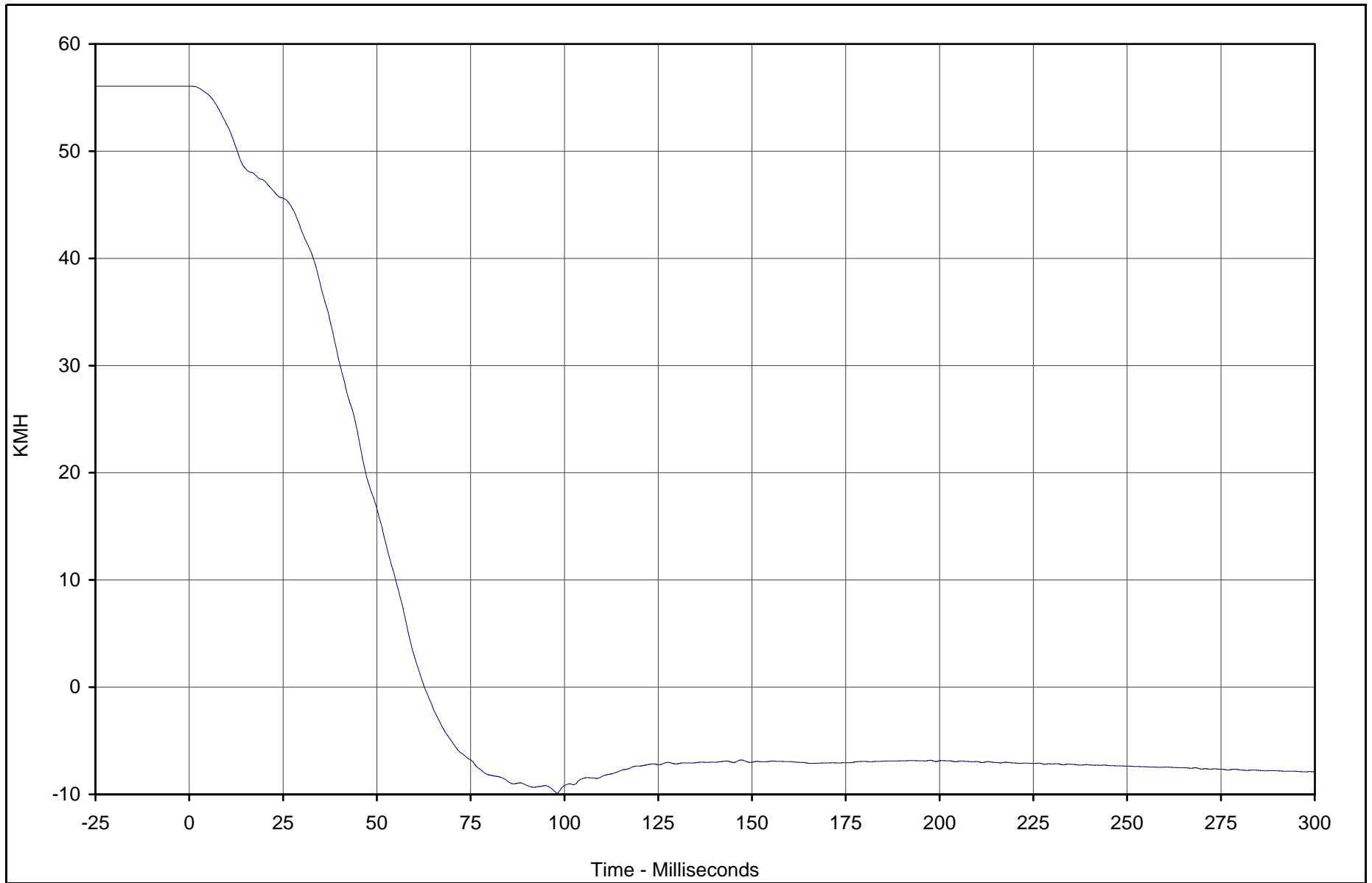
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-124



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear X Velocity	089	IN1	KMH	56.1	0.3	-9.9	98.0	180



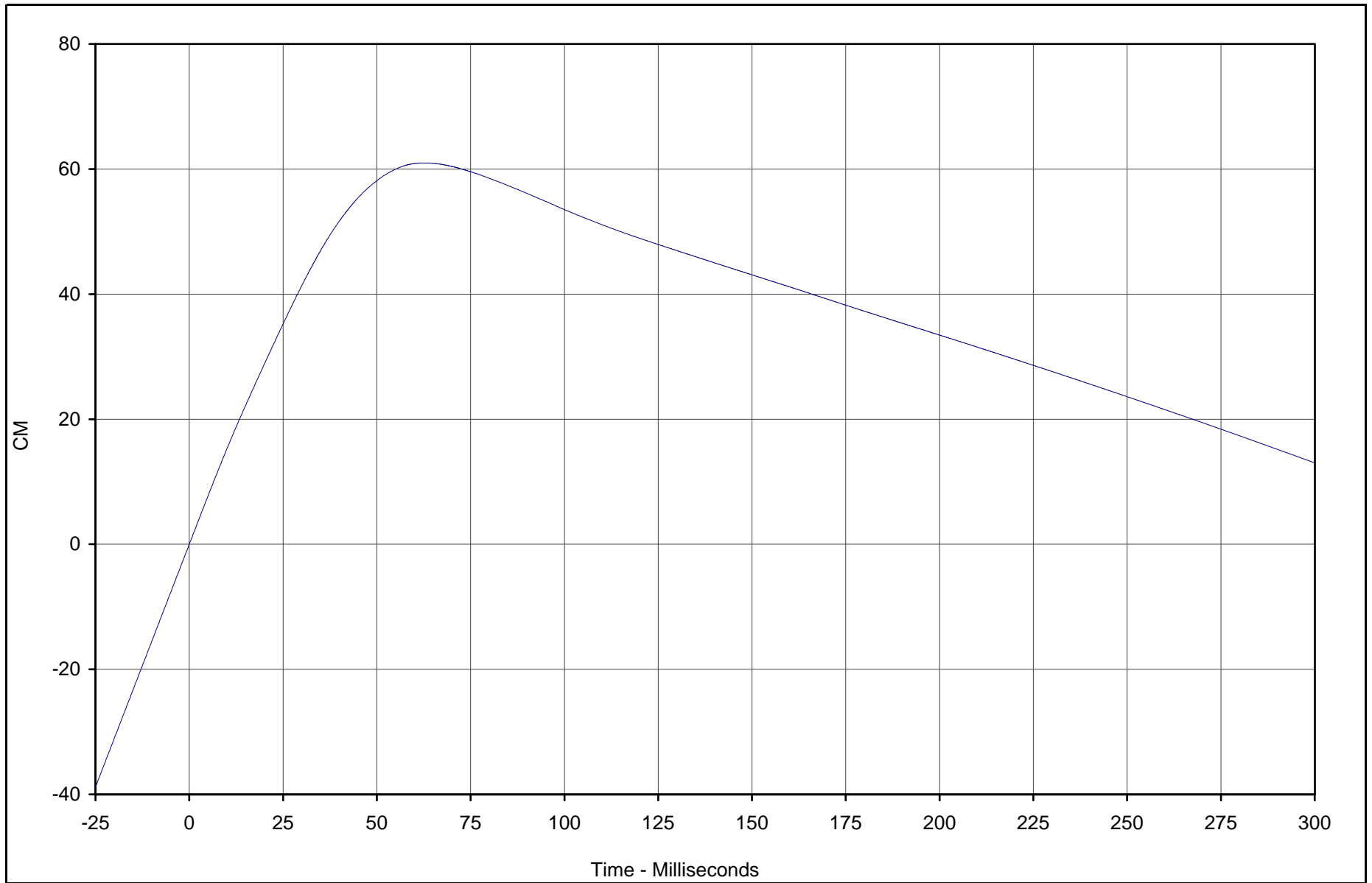
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-125



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear X Displ.	089	IN2	CM	61.0	62.7	0.0	0.0	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

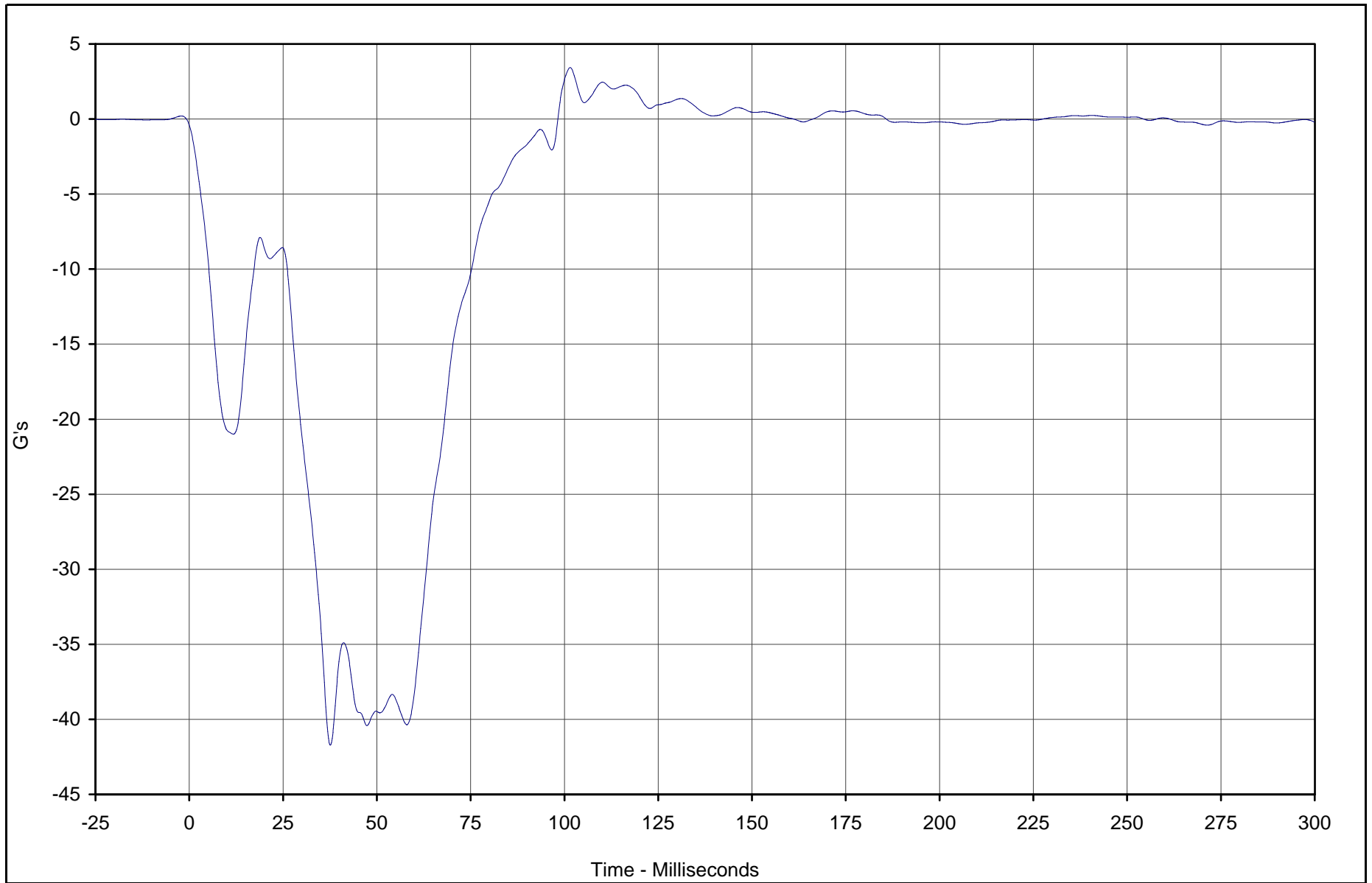
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-126



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear X	090	FIL	G's	3.4	101.5	-41.7	37.6	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

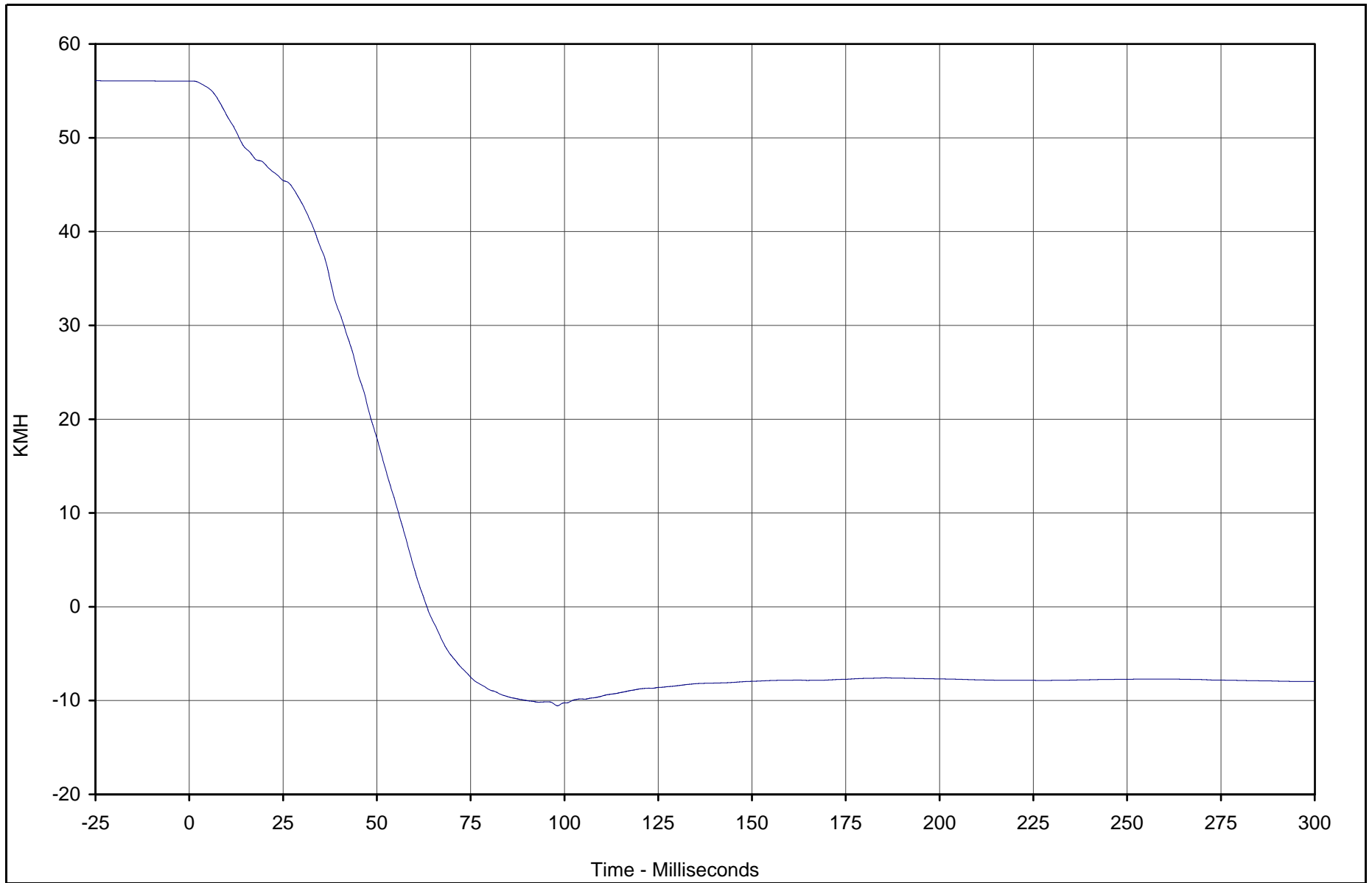
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-127



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear X Velocity	090	IN1	KMH	56.0	0.6	-10.6	98.1	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

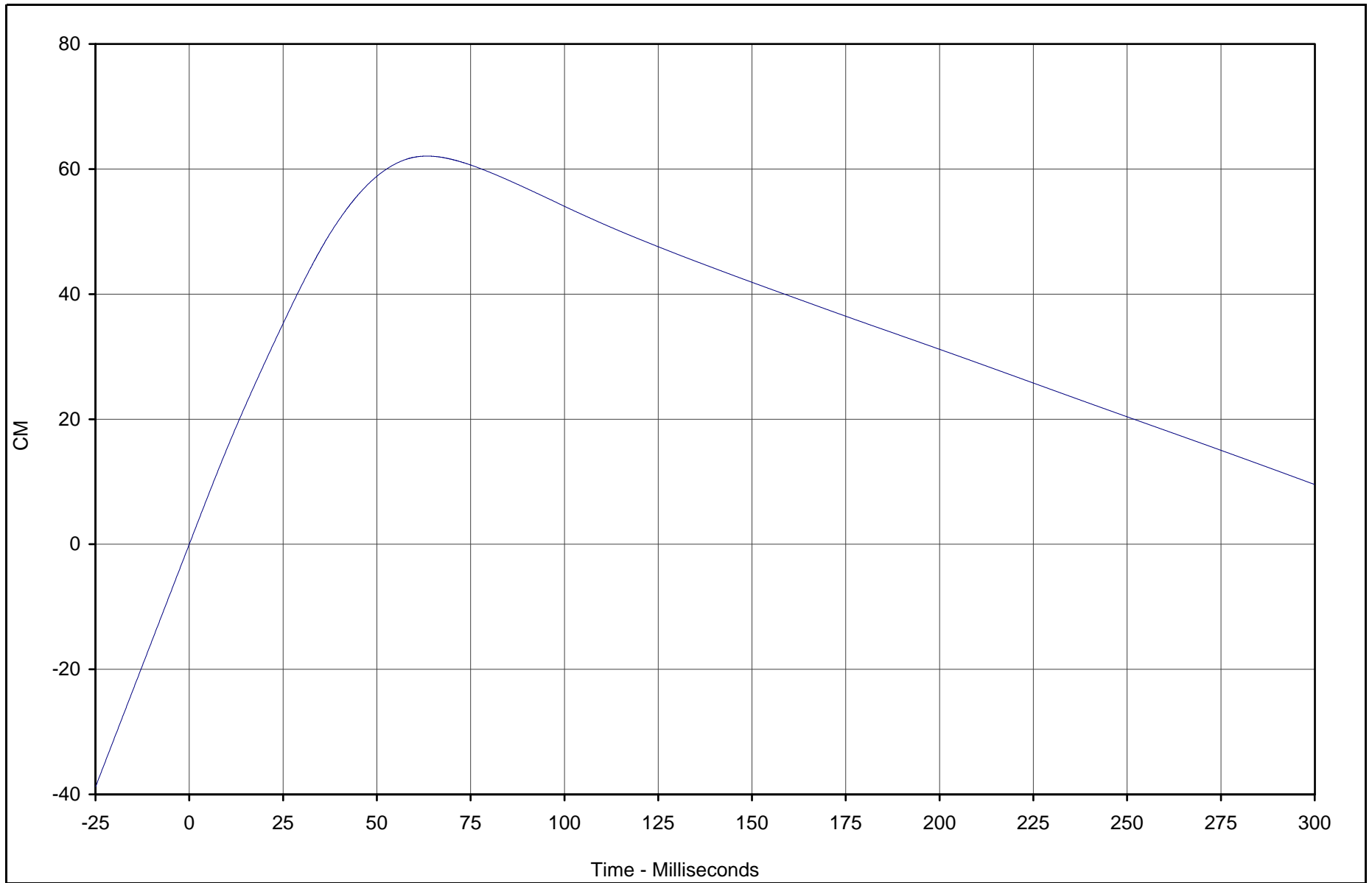
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-128



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear X Displ.	090	IN2	CM	62.1	63.3	0.0	0.0	180

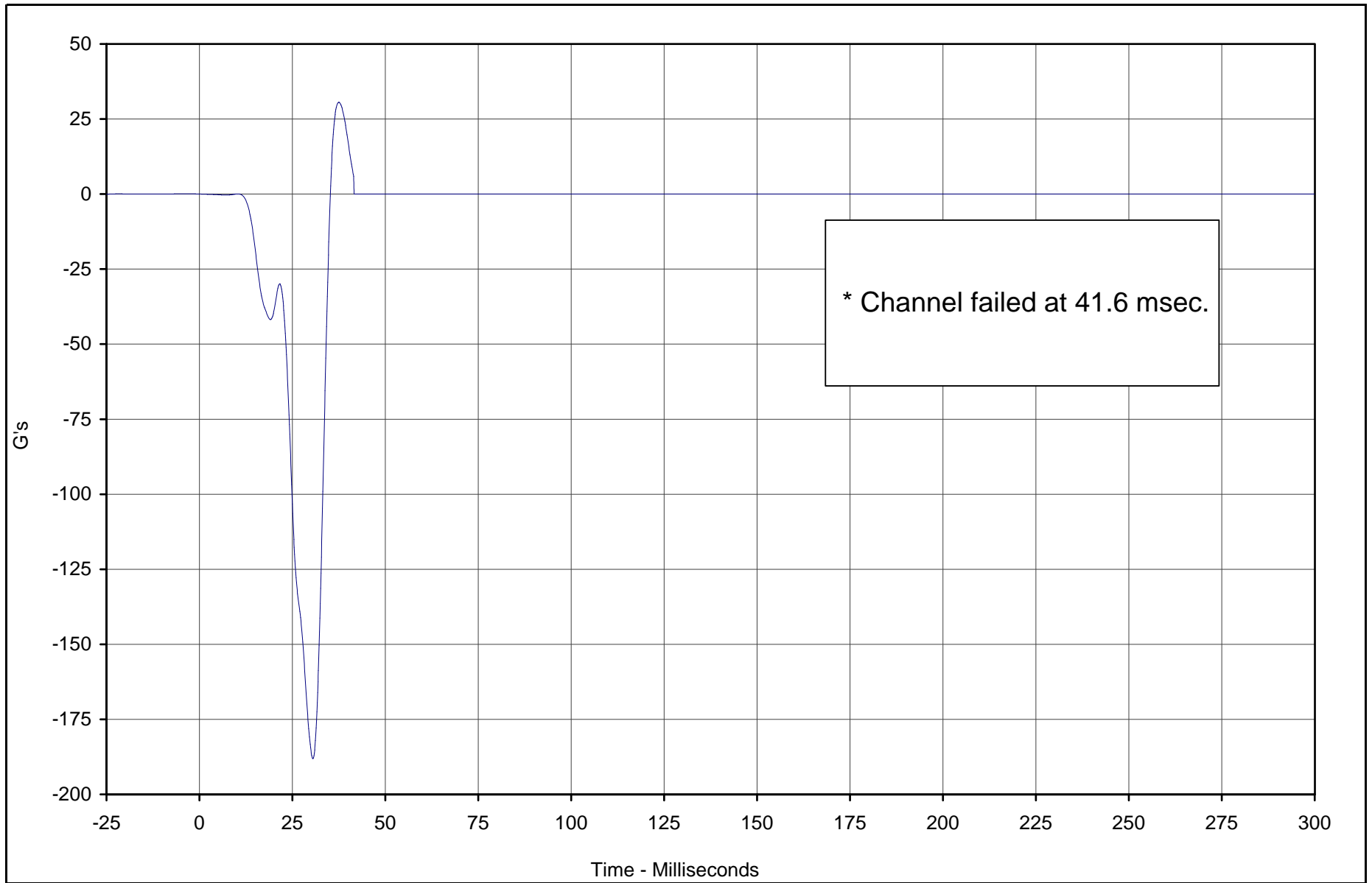


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



\* Channel failed at 41.6 msec.

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Top	091	FIL	G's	30.6	37.5	-188.1	30.5	60

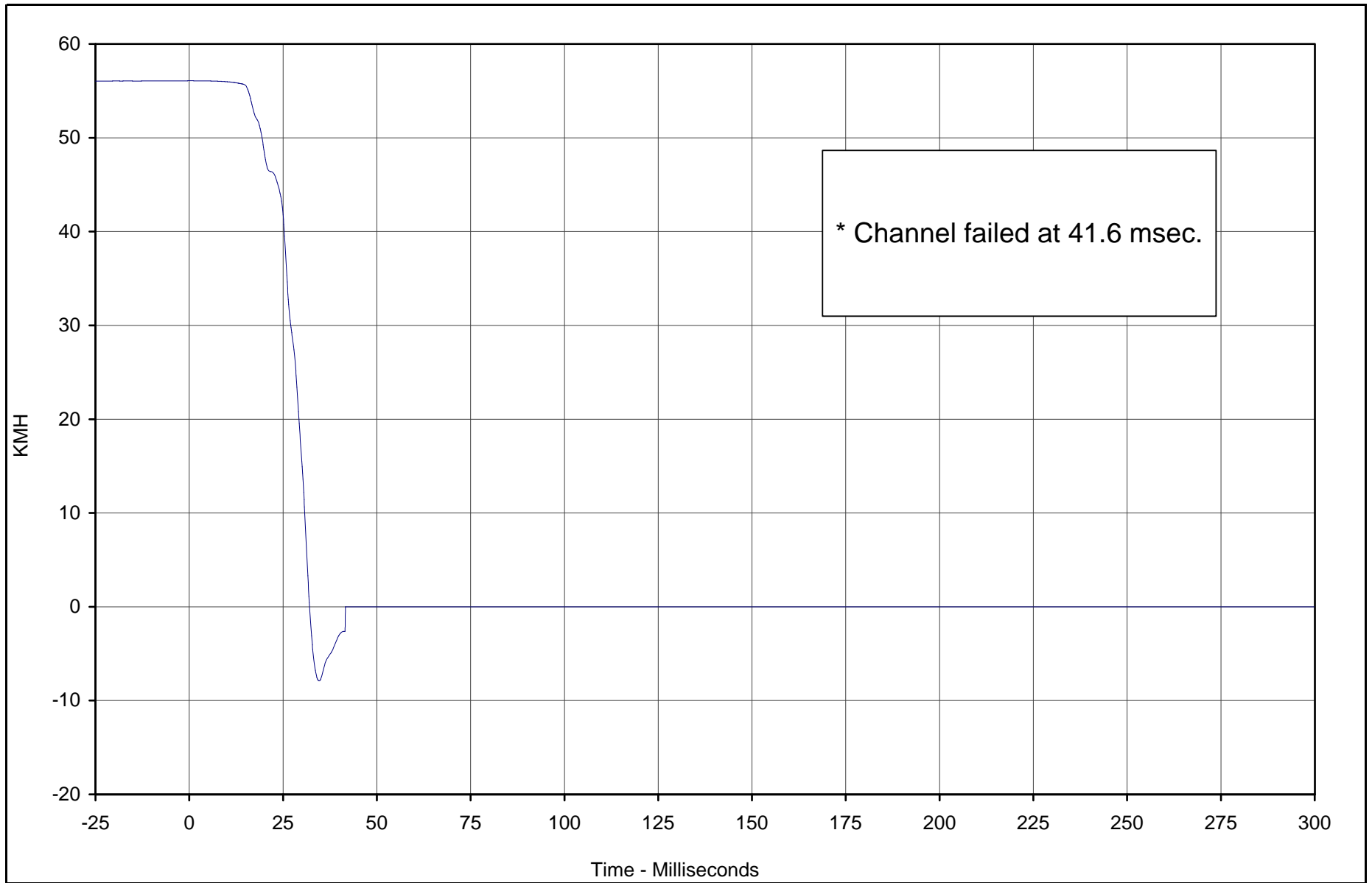


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



\* Channel failed at 41.6 msec.

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Top Velocity	091	IN1	KMH	56.1	0.8	-7.9	34.6	180

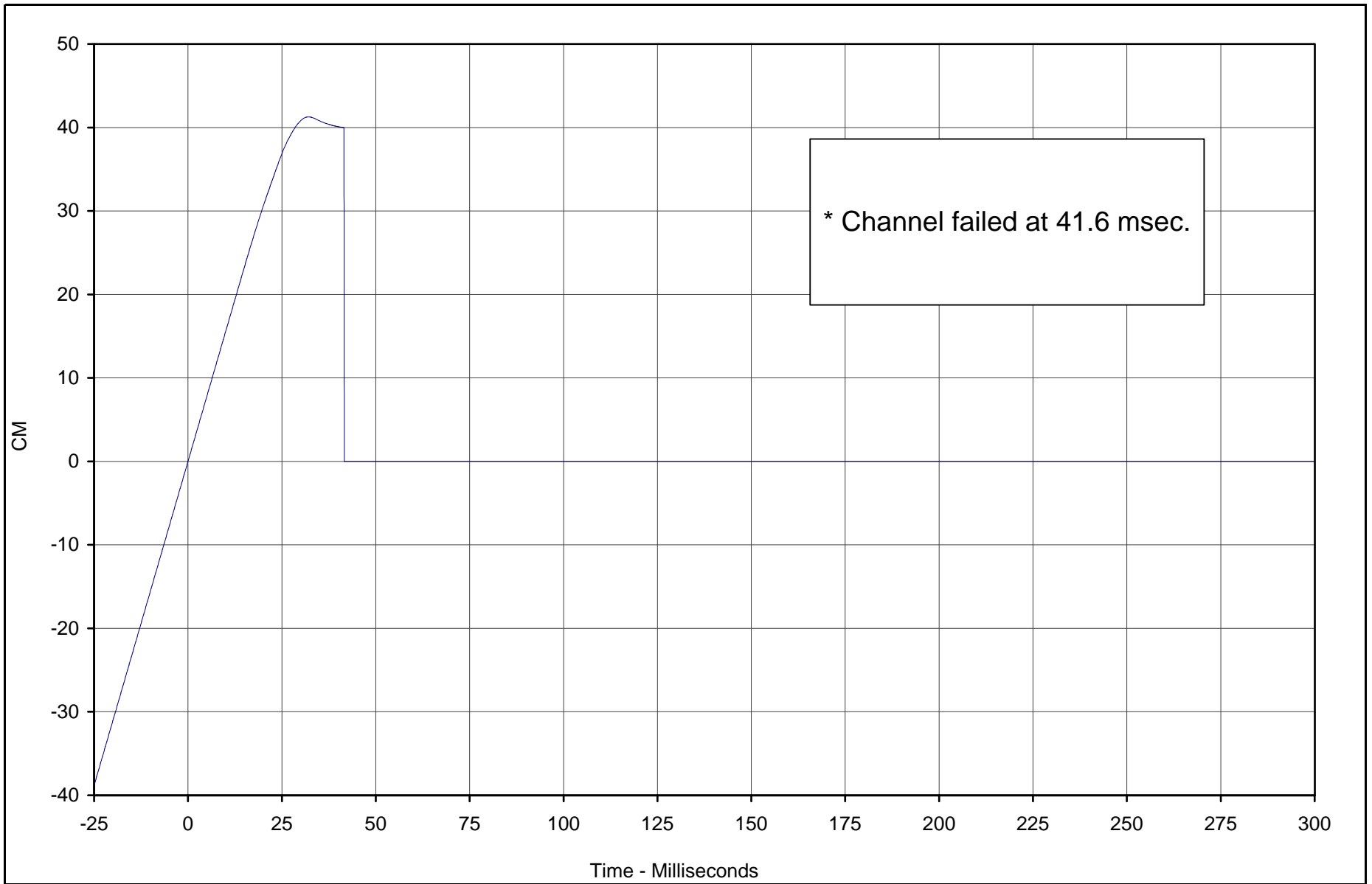


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



\* Channel failed at 41.6 msec.

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Top Displacement	091	IN2	CM	41.3	32.1	0.0	41.6	180



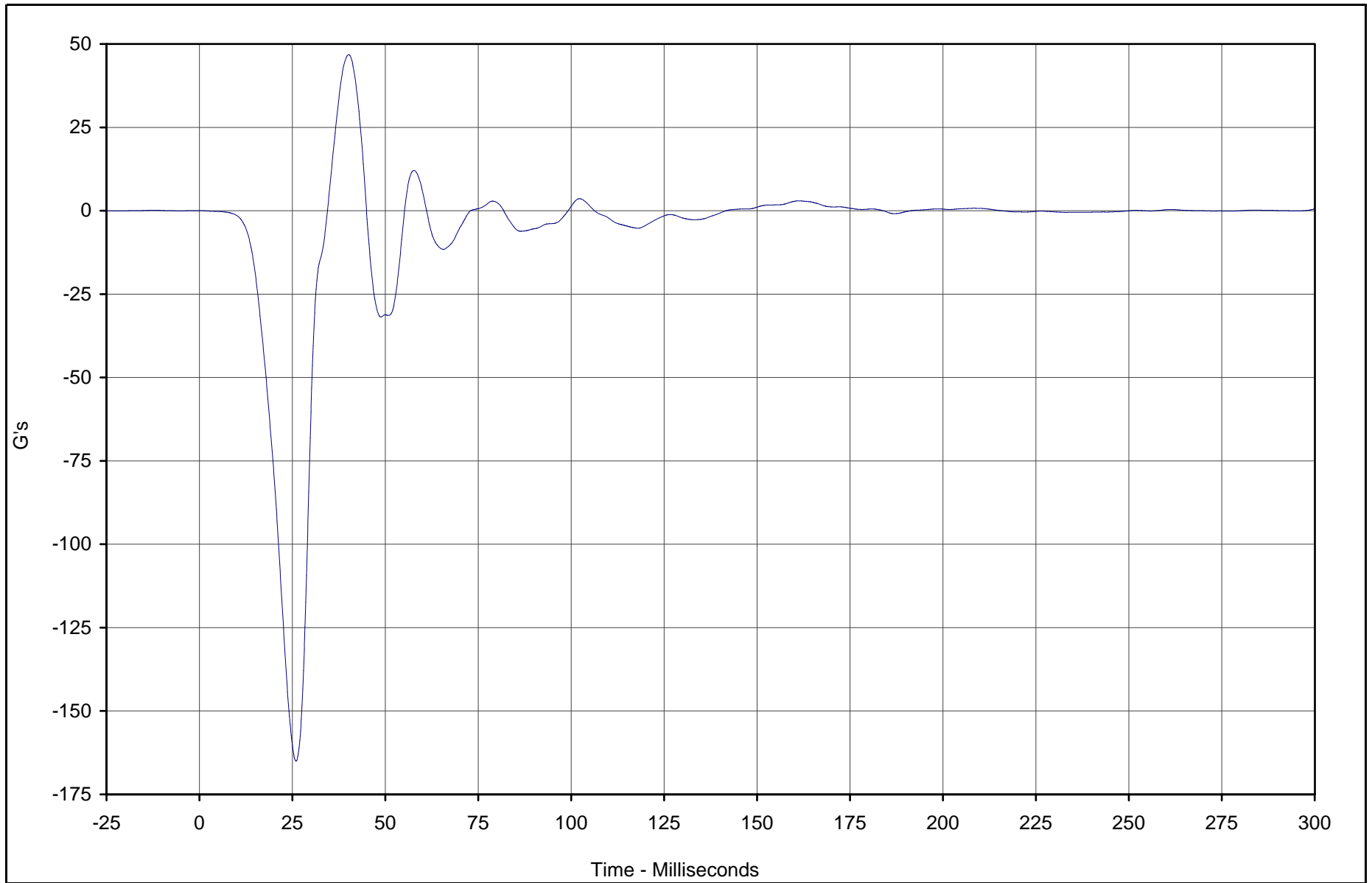
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-132



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Bottom	092	FIL	G's	46.8	40.2	-165.0	26.0	60



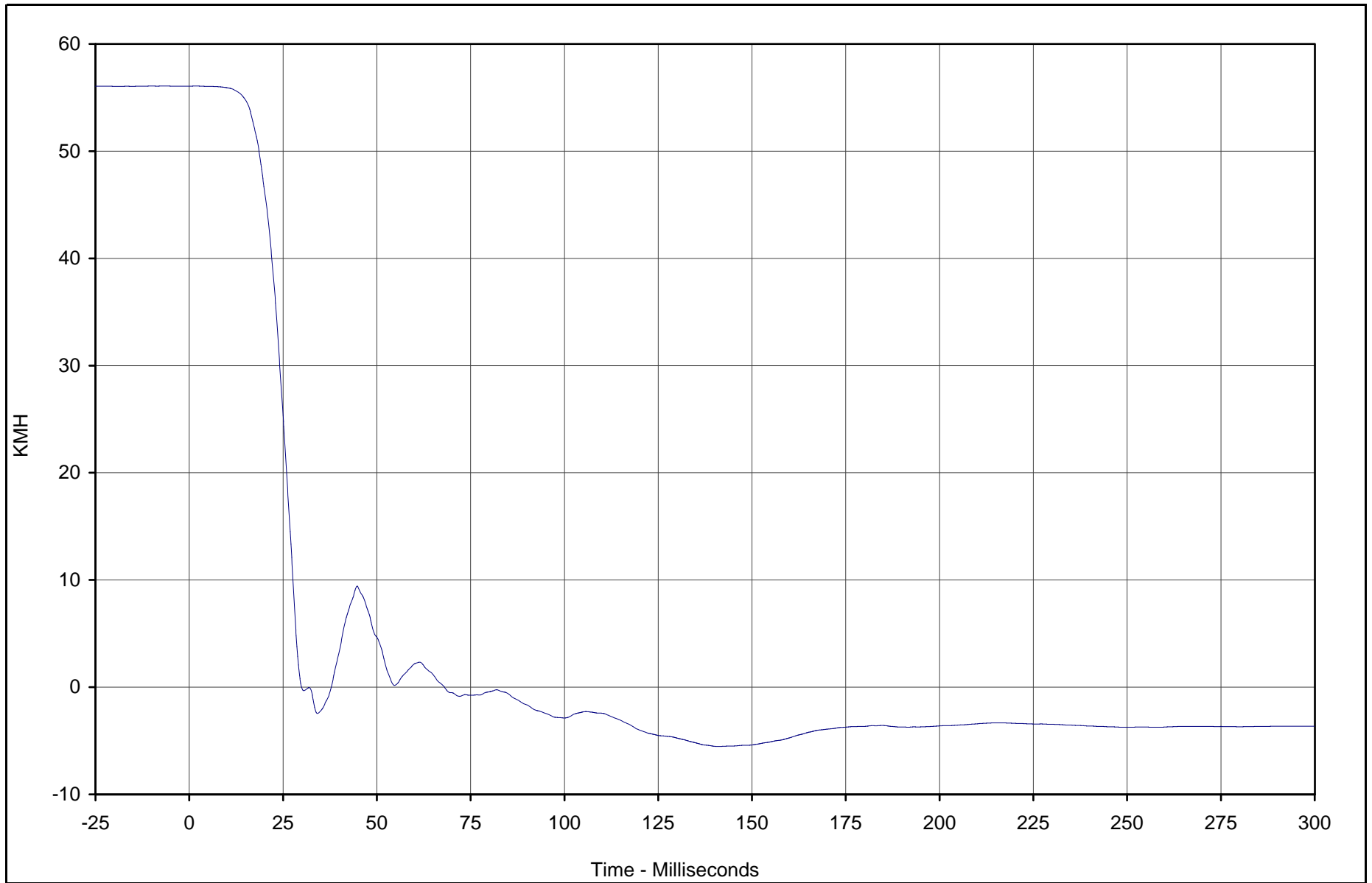
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-133



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Bottom Velocity	092	IN1	KMH	56.1	1.8	-5.5	140.8	180



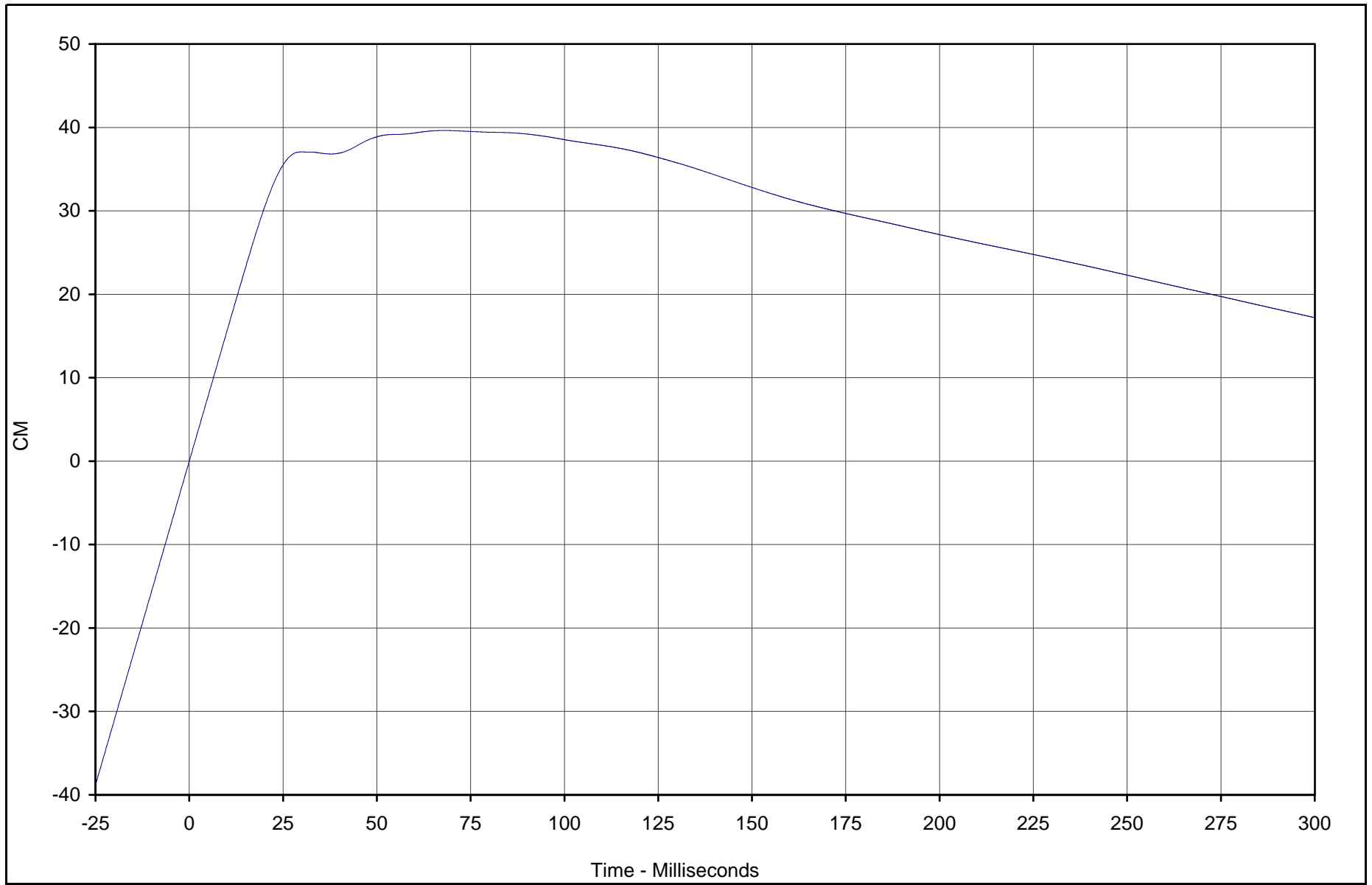
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-134



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Engine Bottom Displacement	092	IN2	CM	39.6	68.0	0.0	0.0	180



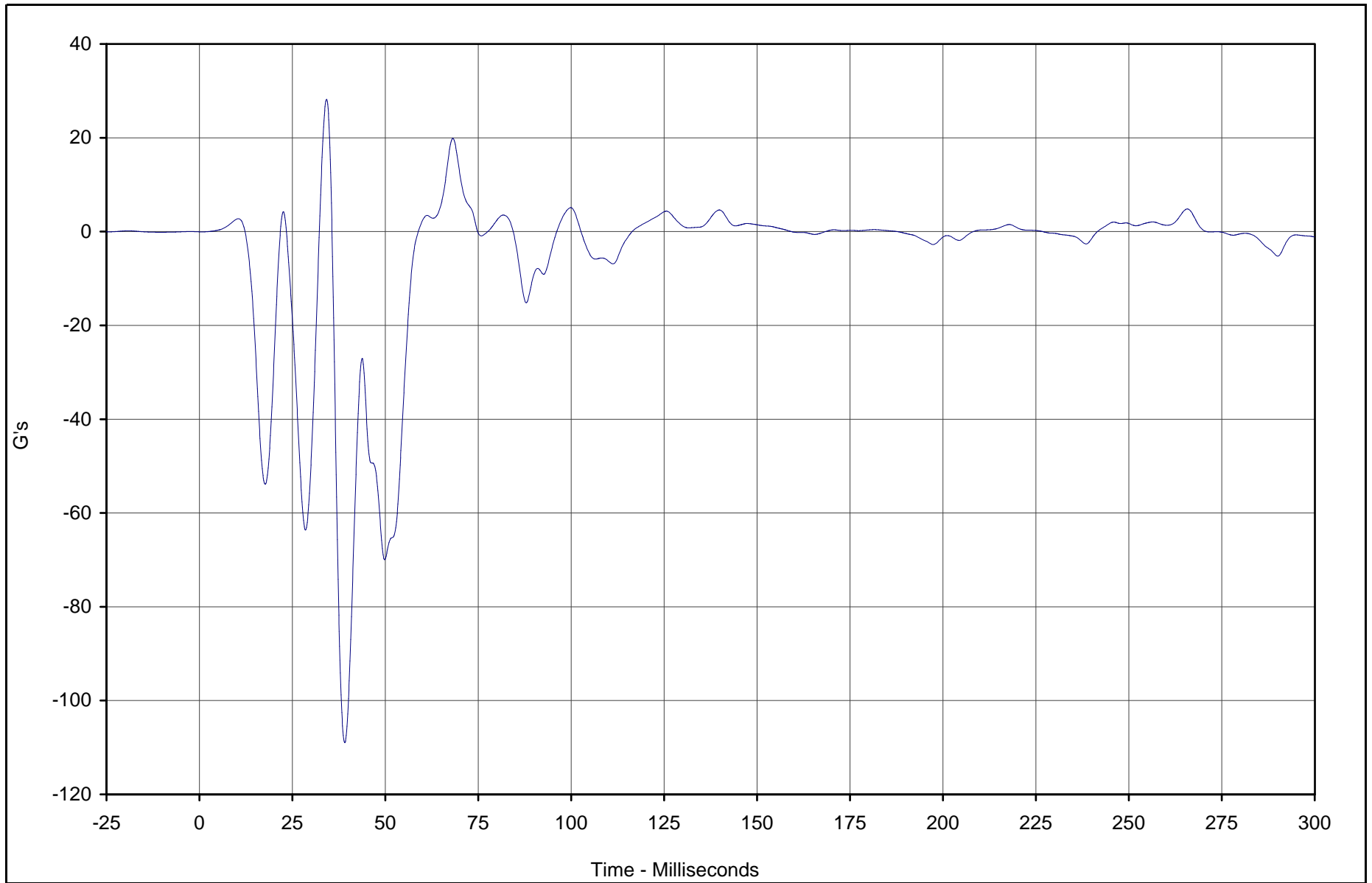
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-135



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Brake Caliper	093	FIL	G's	28.2	34.2	-109.0	39.1	60



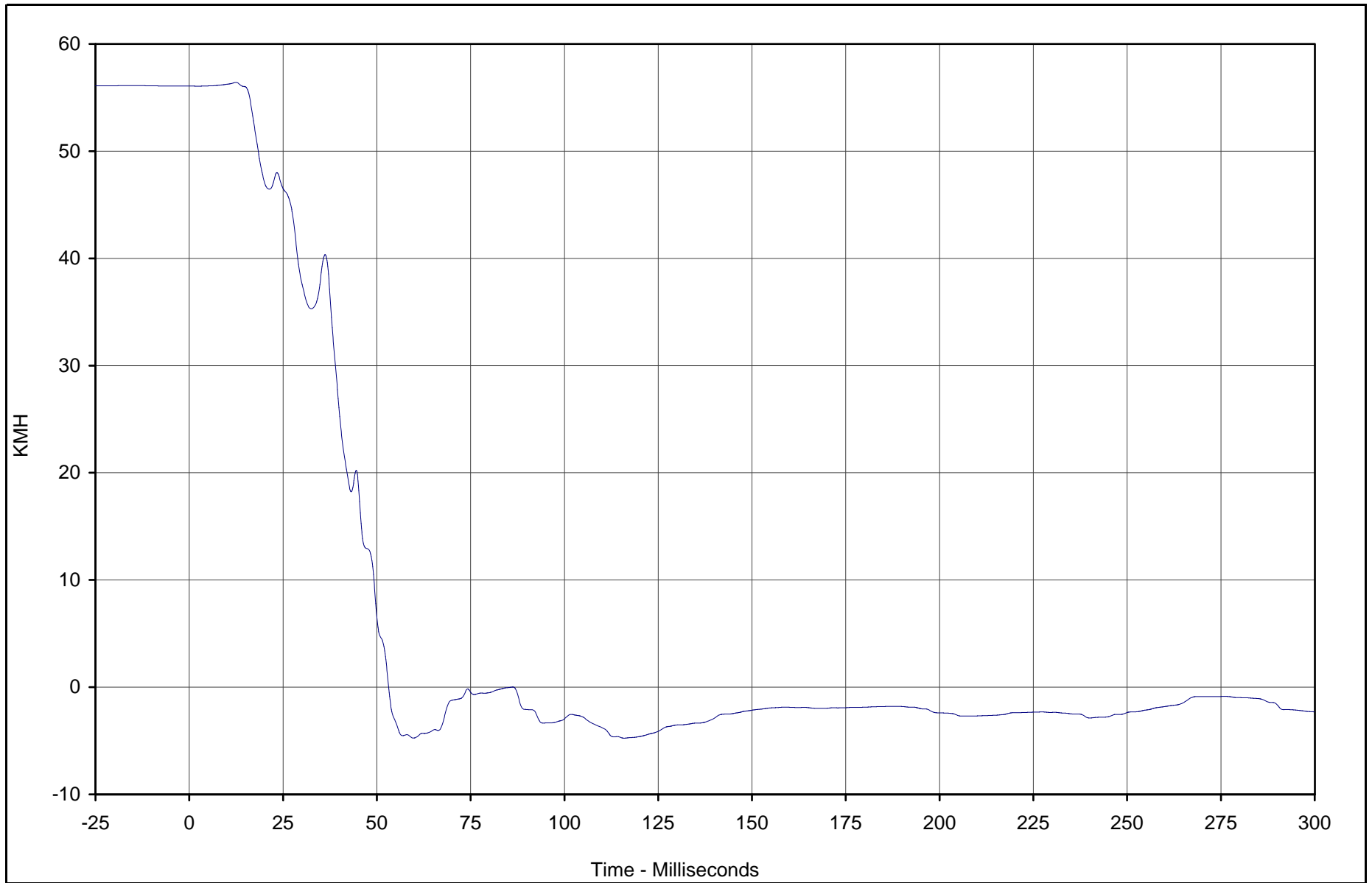
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-136



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Brake Caliper Velocity	093	IN1	KMH	56.4	12.4	-4.8	115.9	180



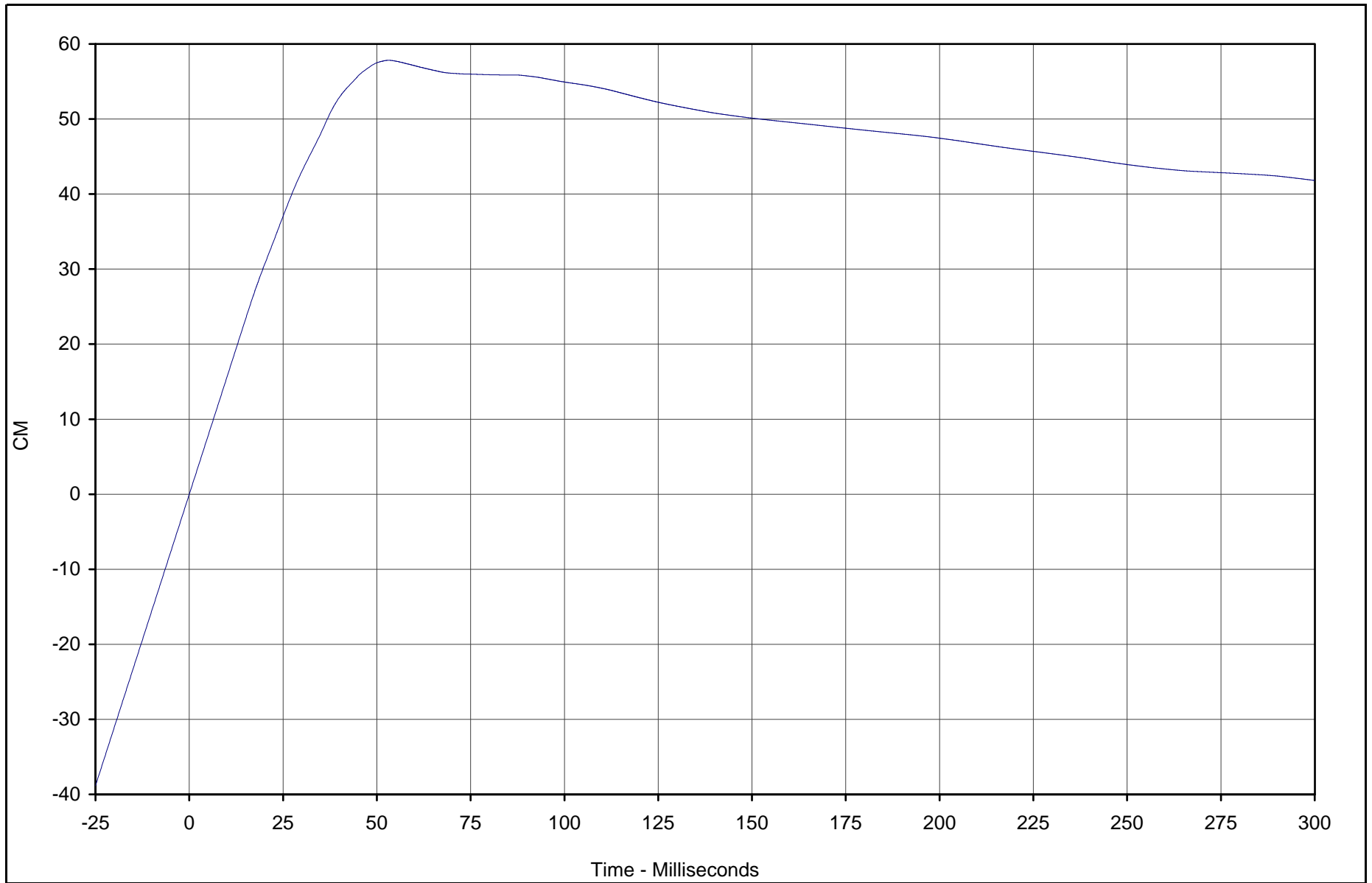
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-137



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Brake Caliper Displ.	093	IN2	CM	57.8	53.1	0.0	0.0	180

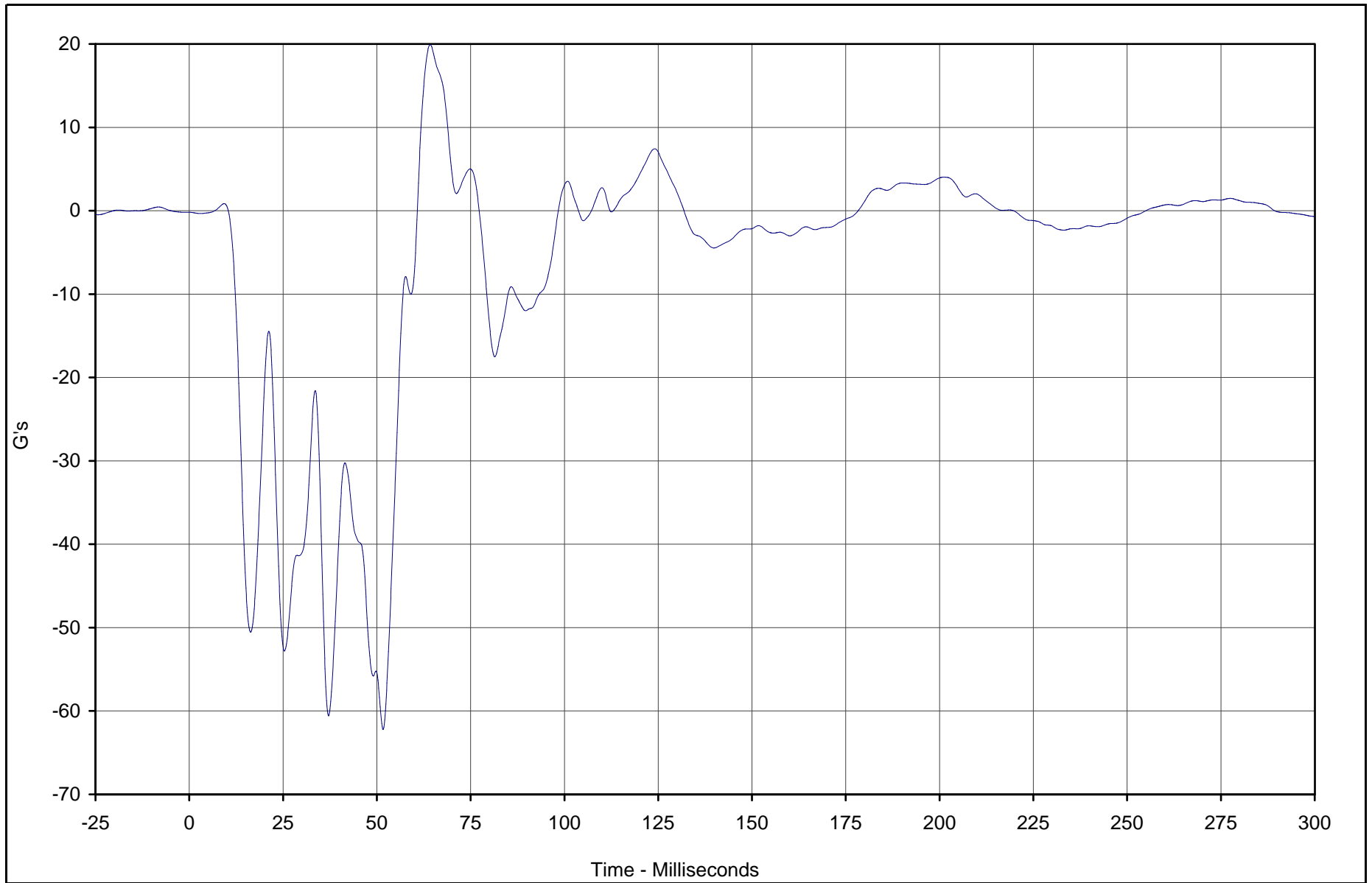


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Brake Caliper	094	FIL	G's	19.9	64.2	-62.2	51.7	60



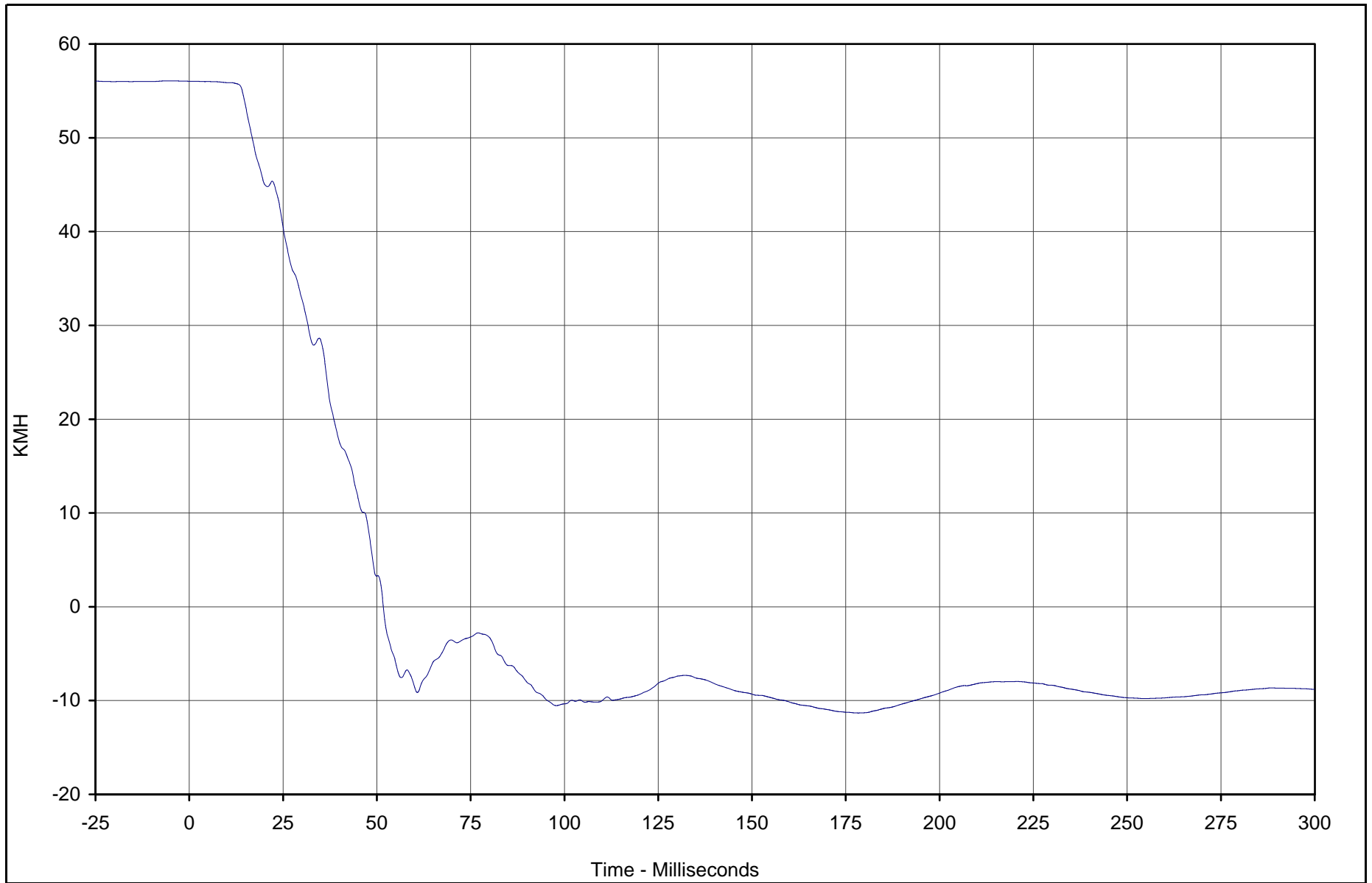
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-139



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Brake Caliper Velocity	094	IN1	KMH	56.0	1.0	-11.3	178.4	180



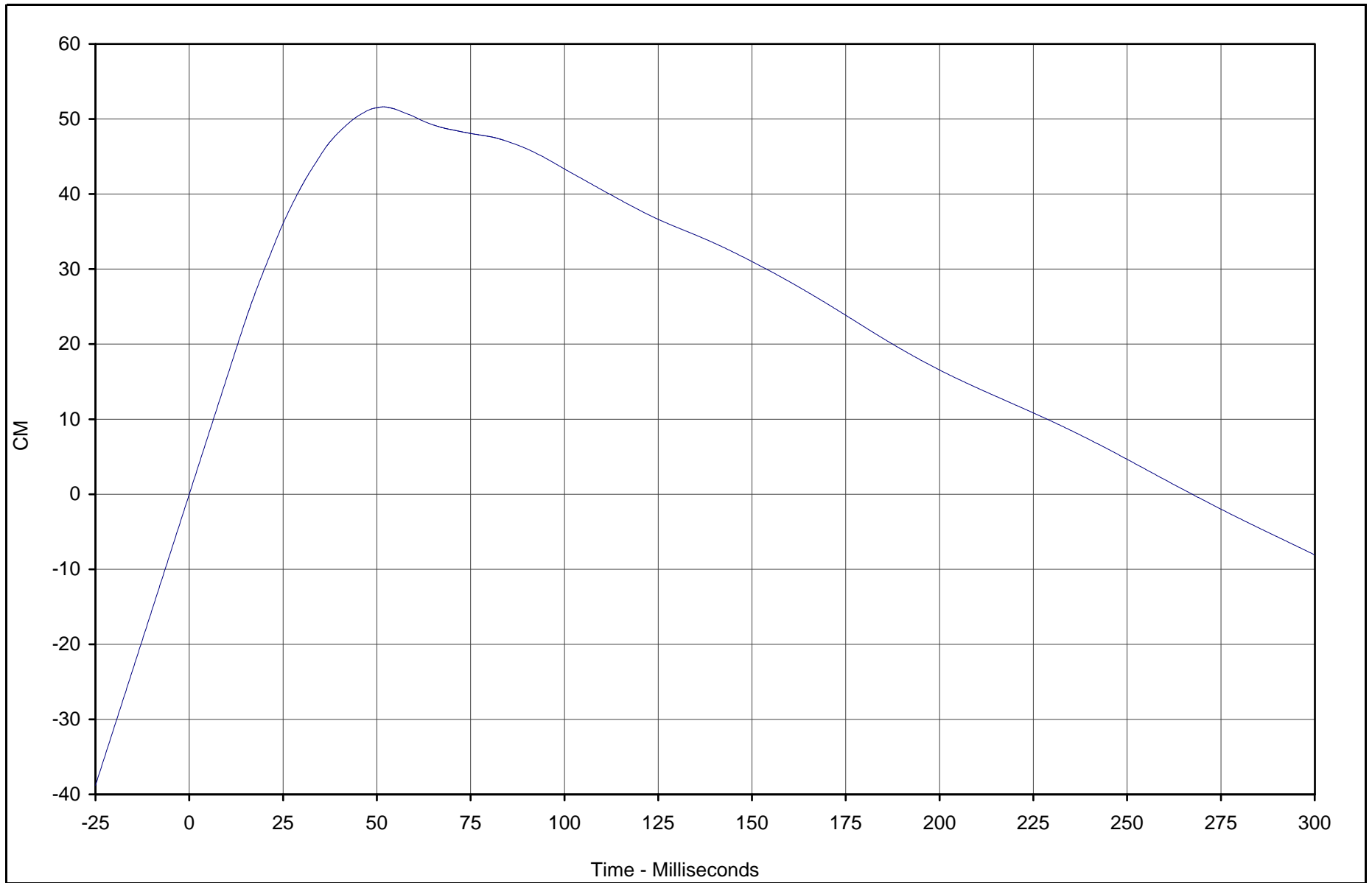
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-140



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Brake Caliper Displ.	094	IN2	CM	51.6	51.7	-8.1	299.9	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

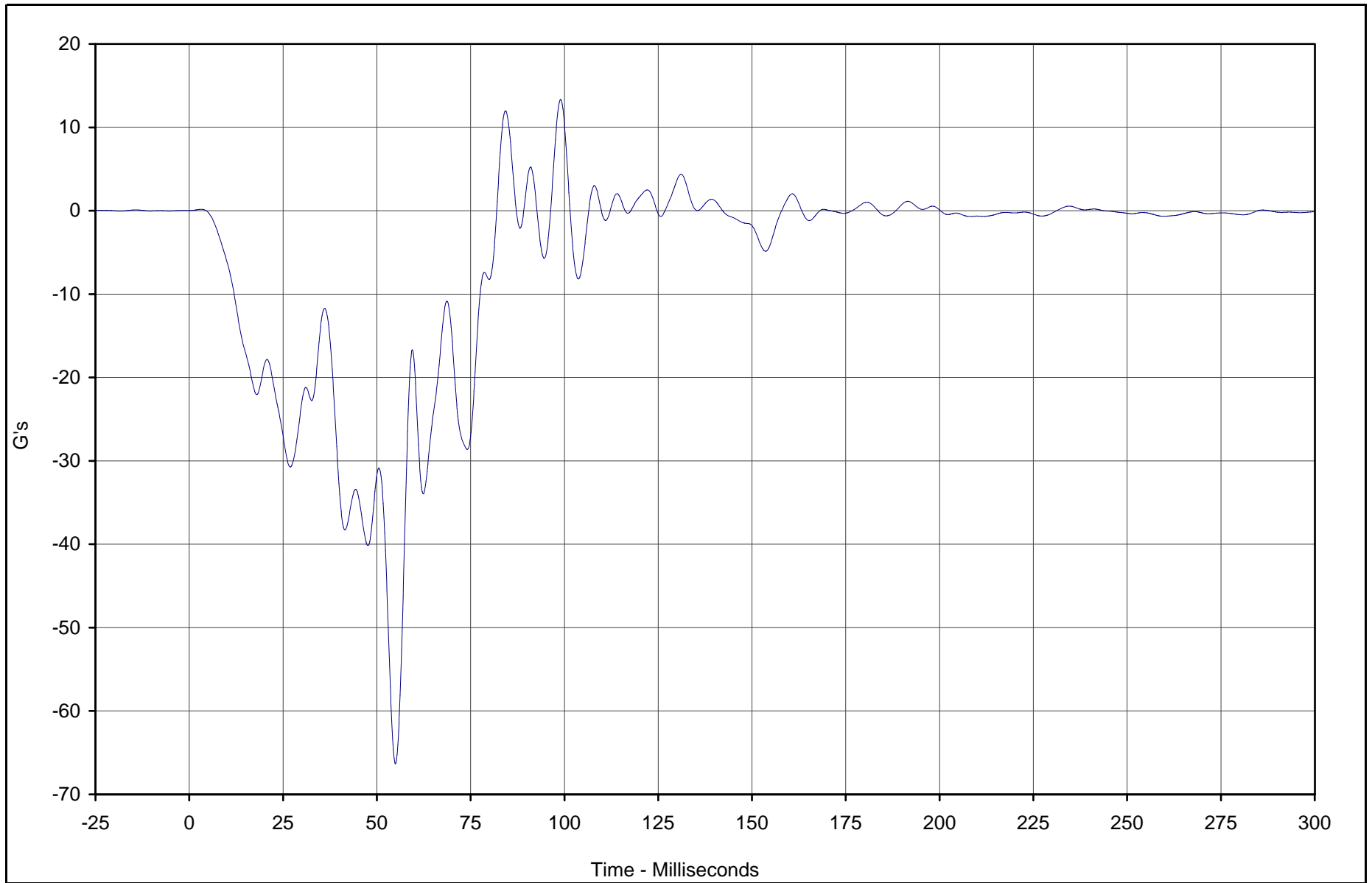
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-141



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Instrument Panel	095	FIL	G's	13.3	99.0	-66.3	54.9	60



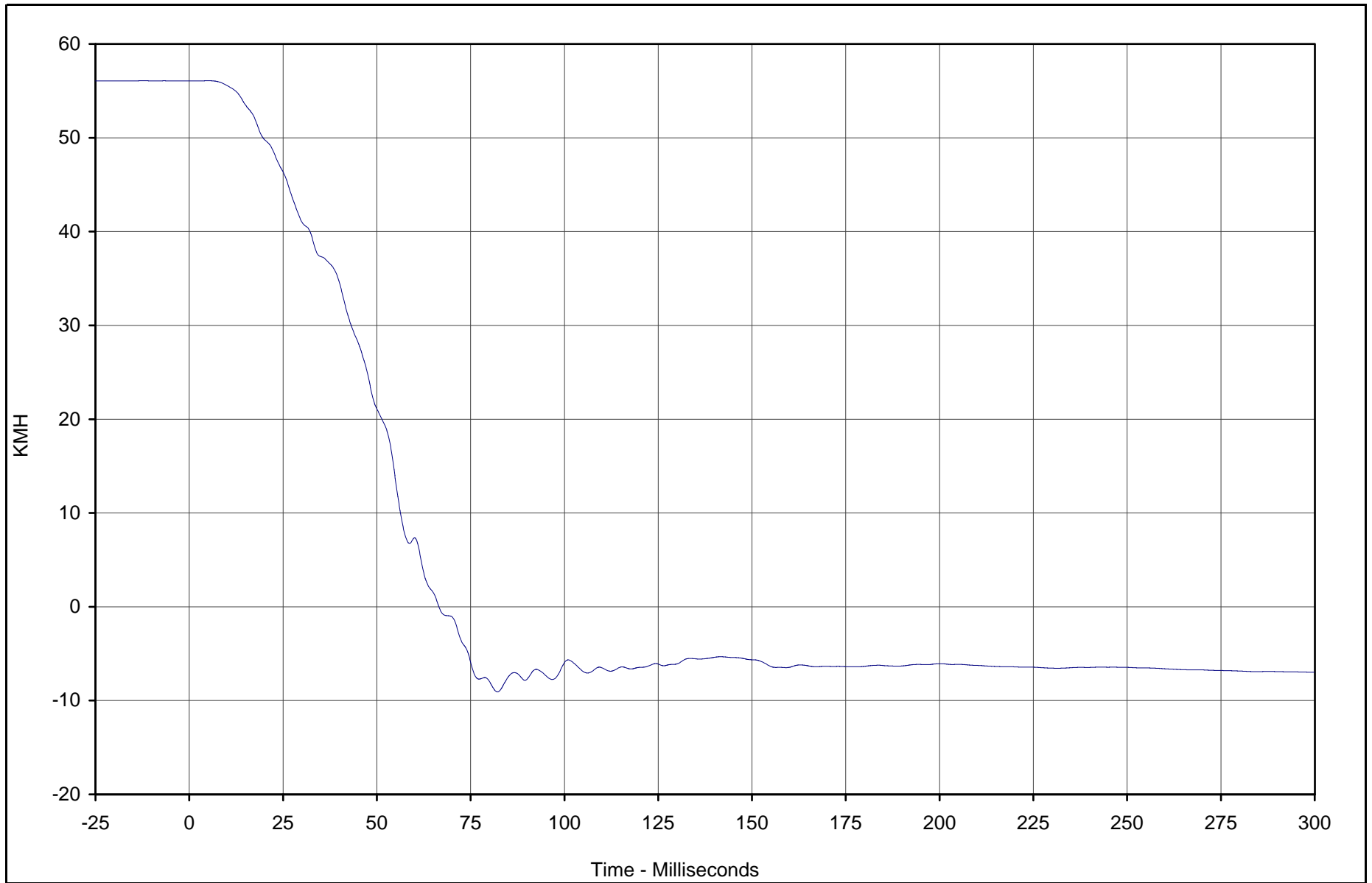
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-142



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Instrument Panel Velocity	095	IN1	KMH	56.1	5.2	-9.1	82.2	180



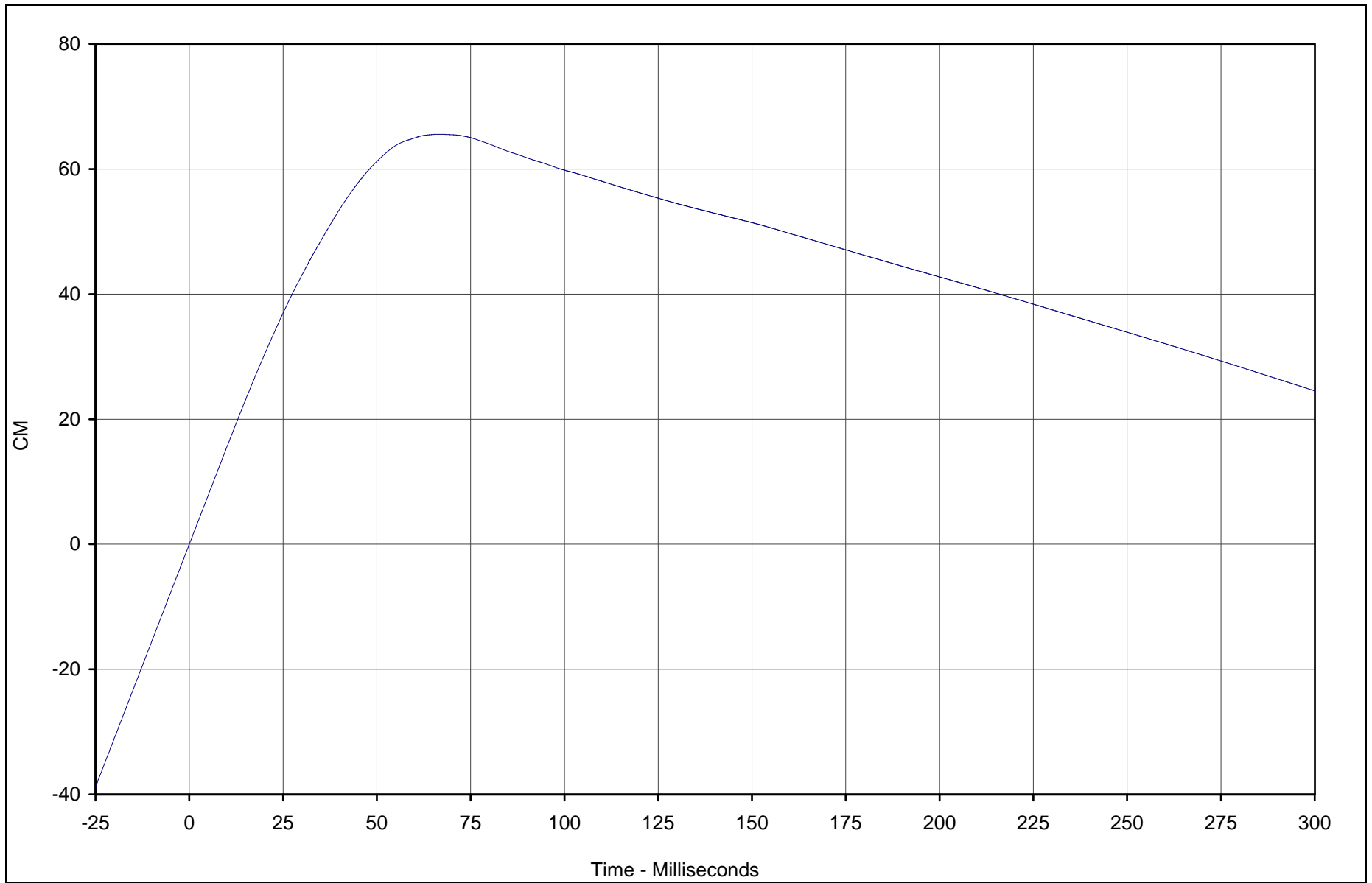
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-143



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Instrument Panel Displacement	095	IN2	CM	65.6	66.5	0.0	0.0	180



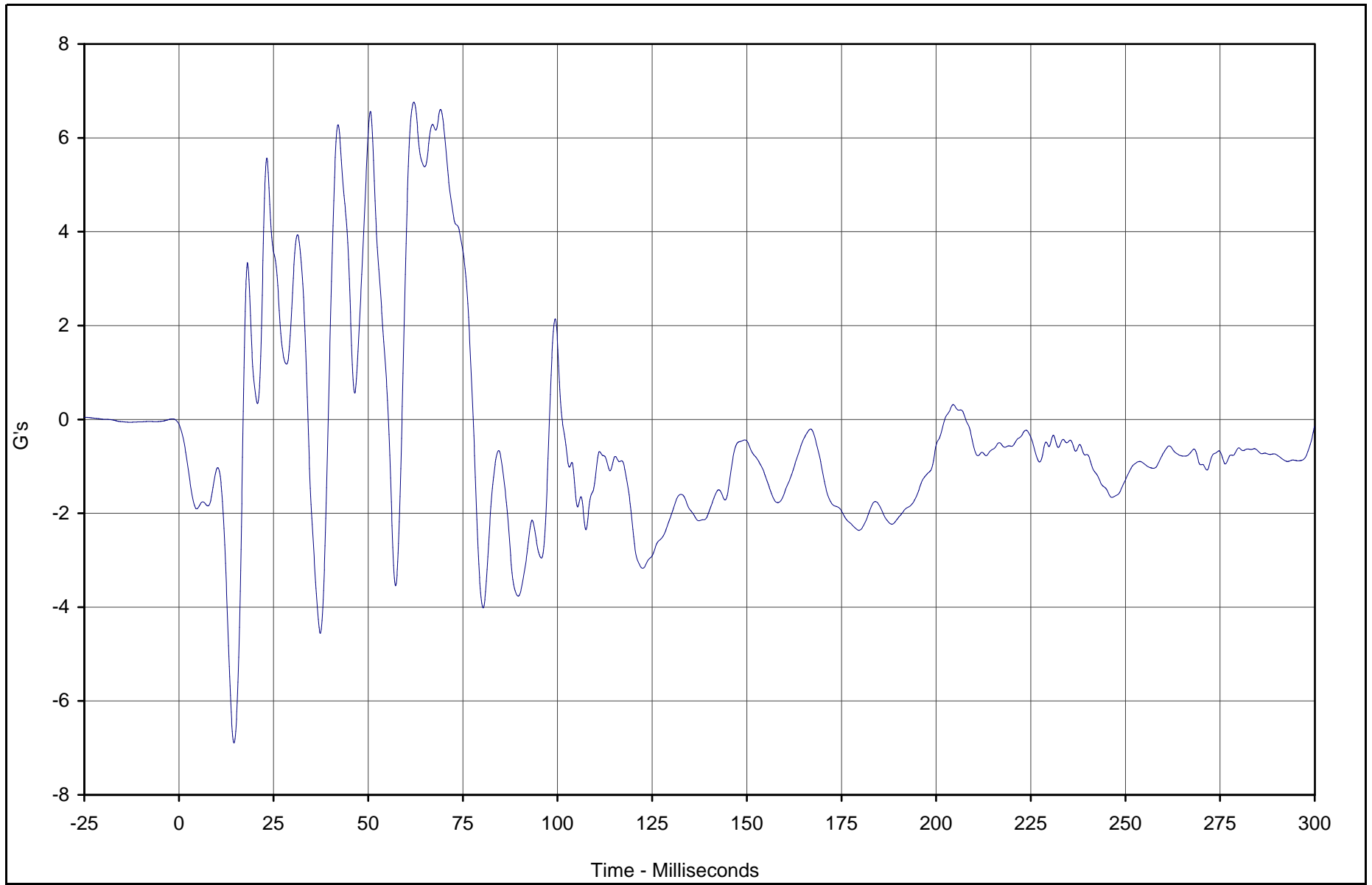
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-144



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear Z	096	FIL	G's	6.8	62.1	-6.9	14.5	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

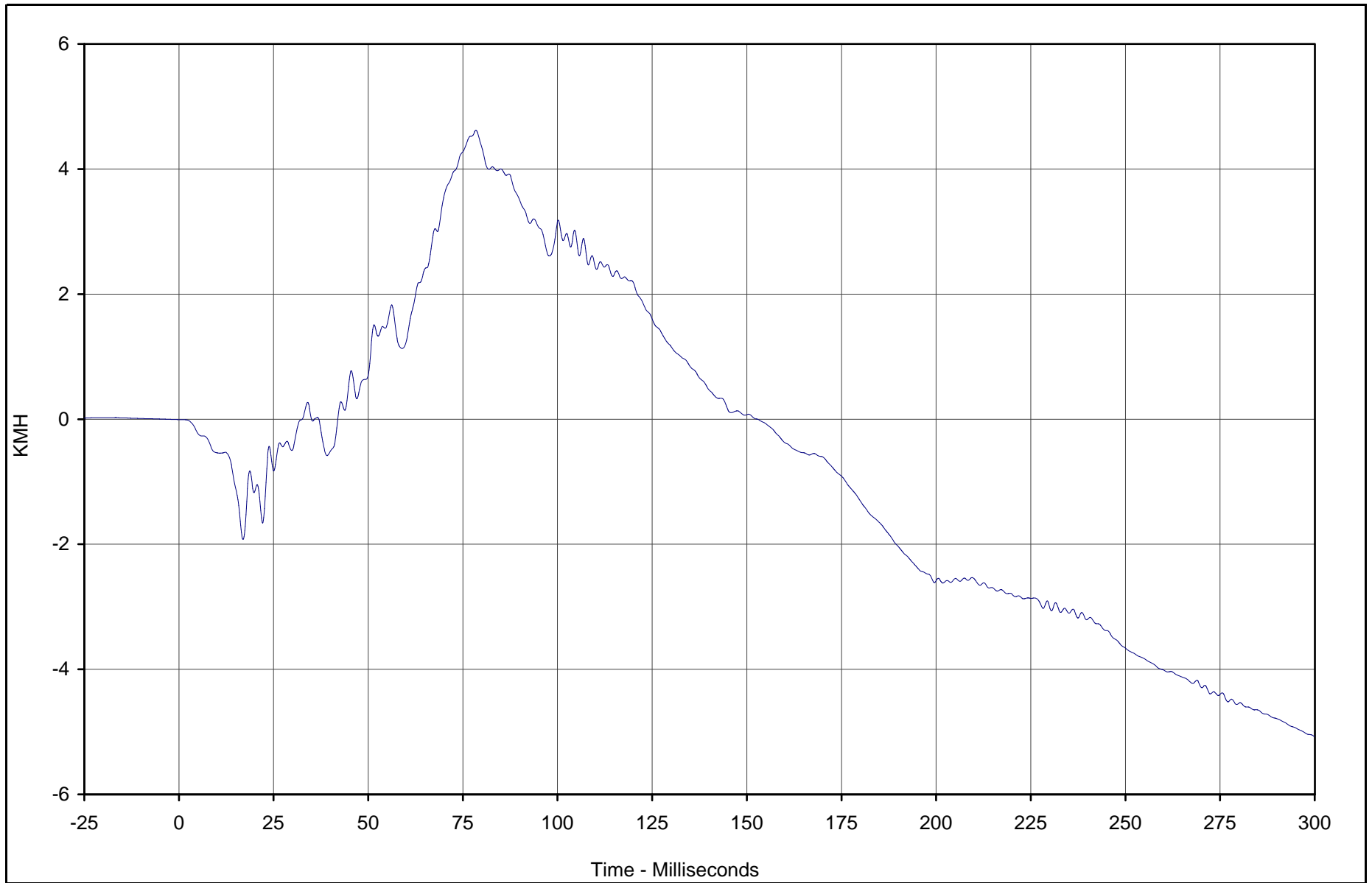
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-145



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear Z Velocity	096	IN1	KMH	4.6	78.5	-5.1	299.9	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

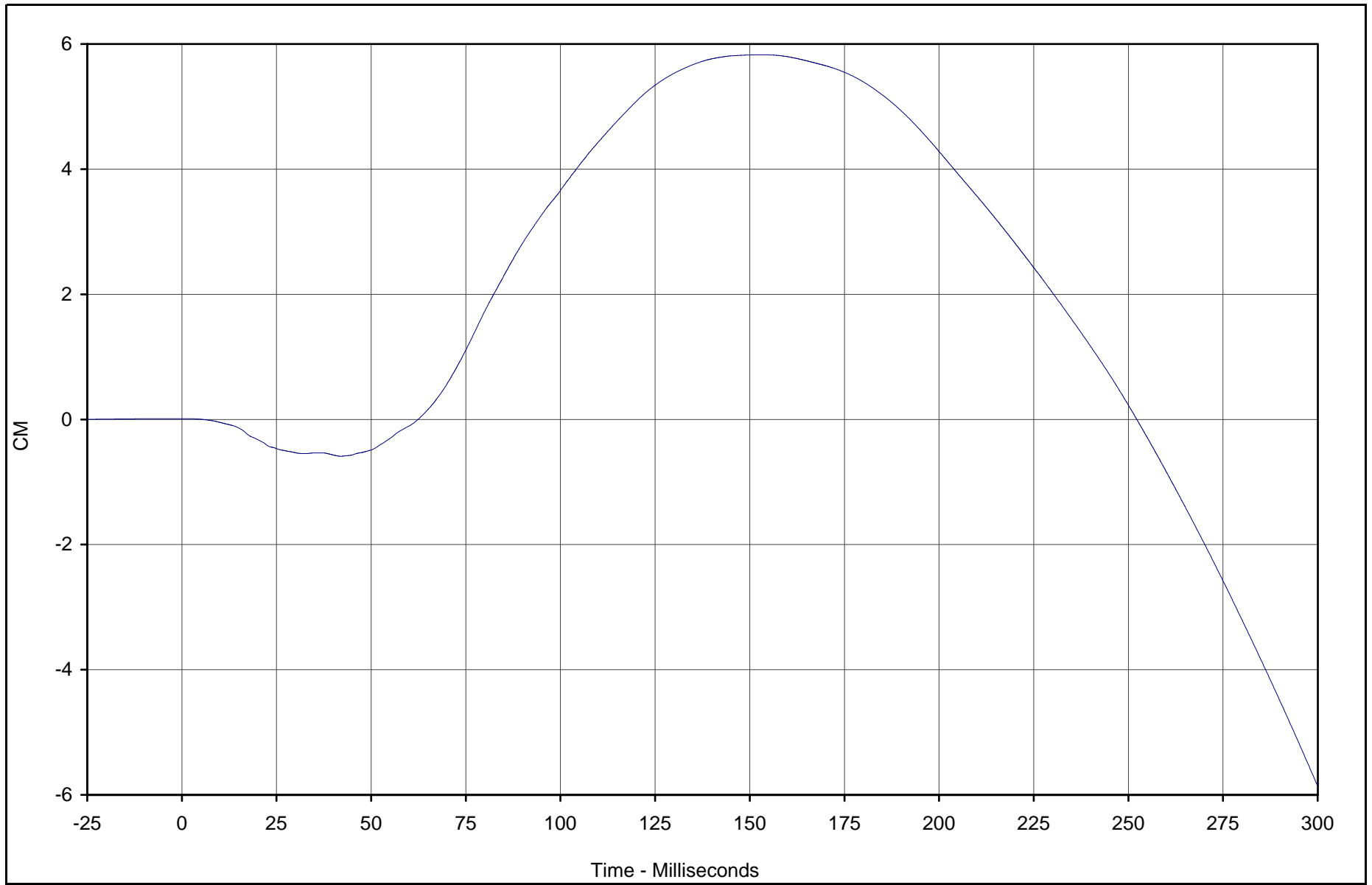
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-146



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Left Rear Z Displ.	096	IN2	CM	5.8	152.7	-5.8	299.9	180



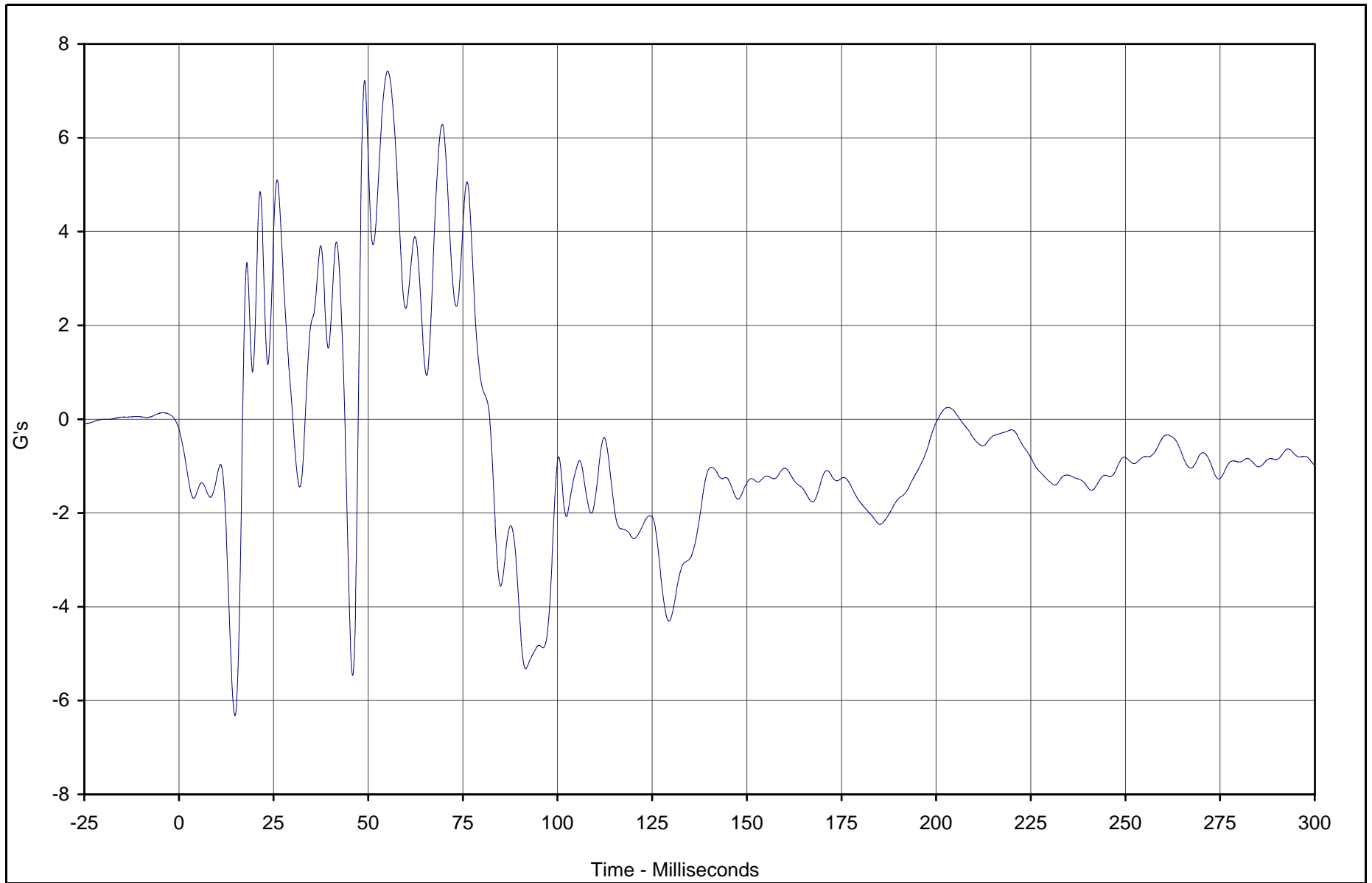
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

B-147



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear Z	097	FIL	G's	7.4	55.1	-6.3	14.8	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

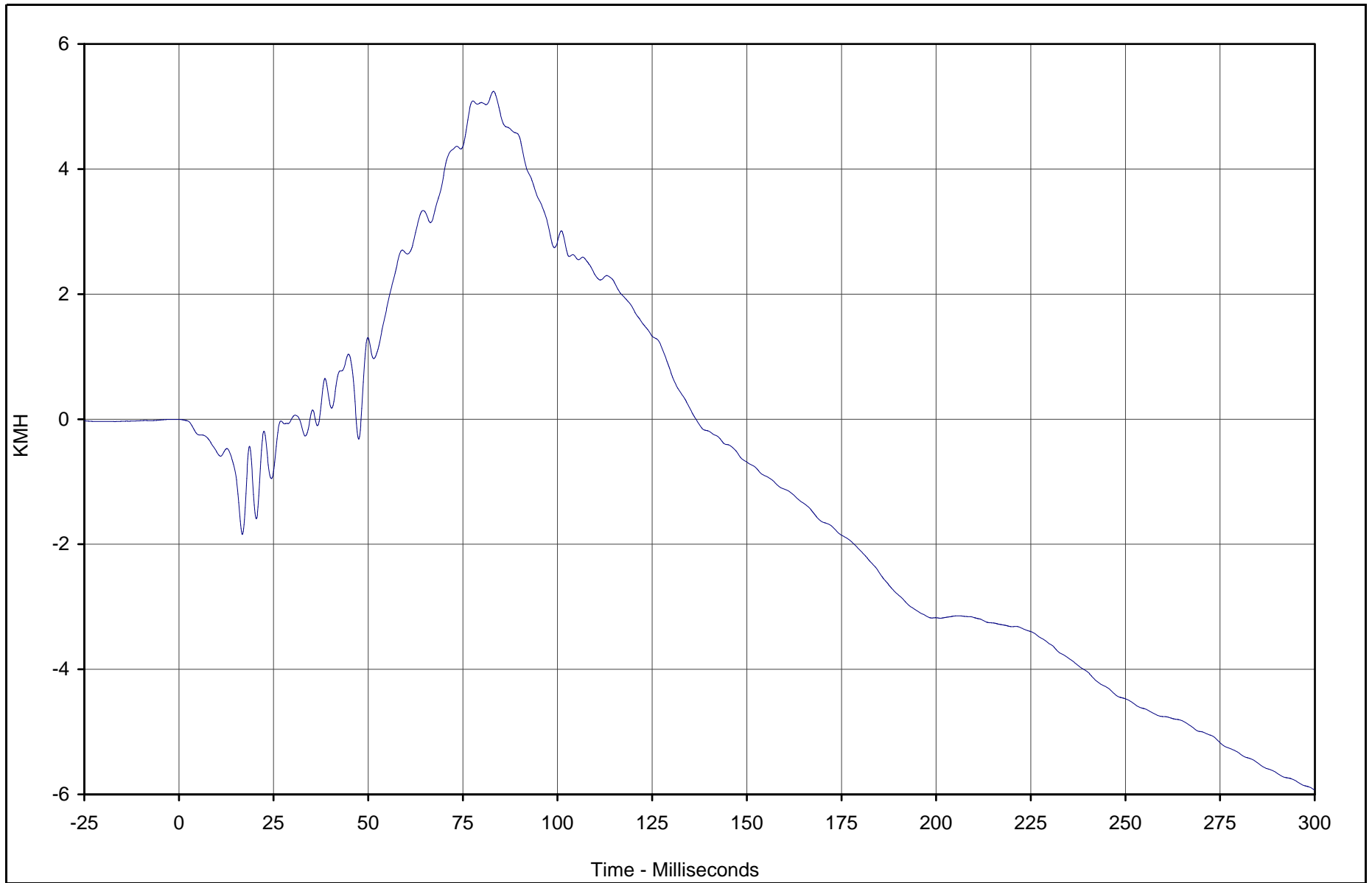
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-148



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear Z Velocity	097	IN1	KMH	5.2	83.1	-5.9	299.9	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

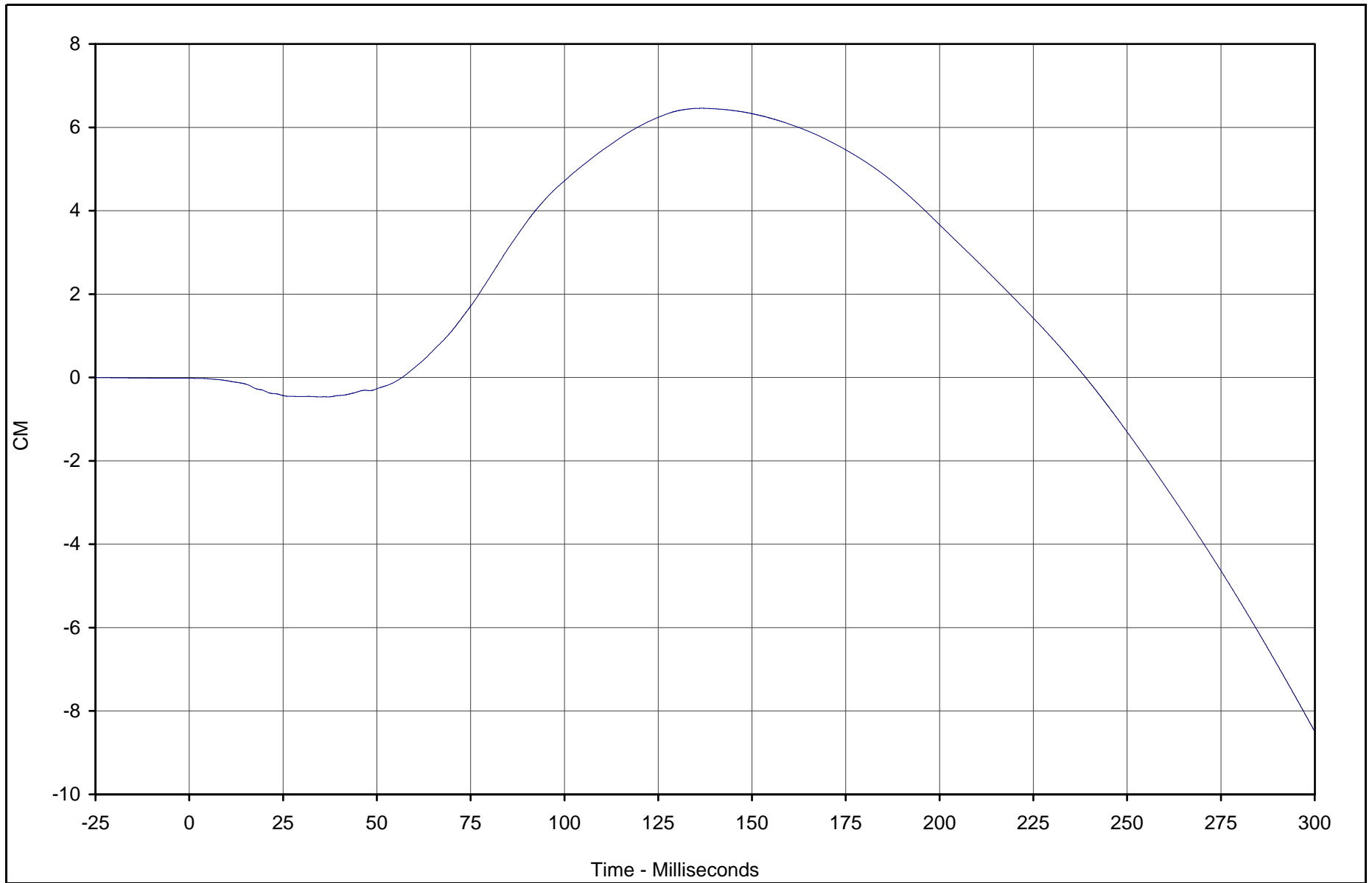
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

B-149



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Vehicle Right Rear Z Displ.	097	IN2	CM	6.5	136.6	-8.5	299.9	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

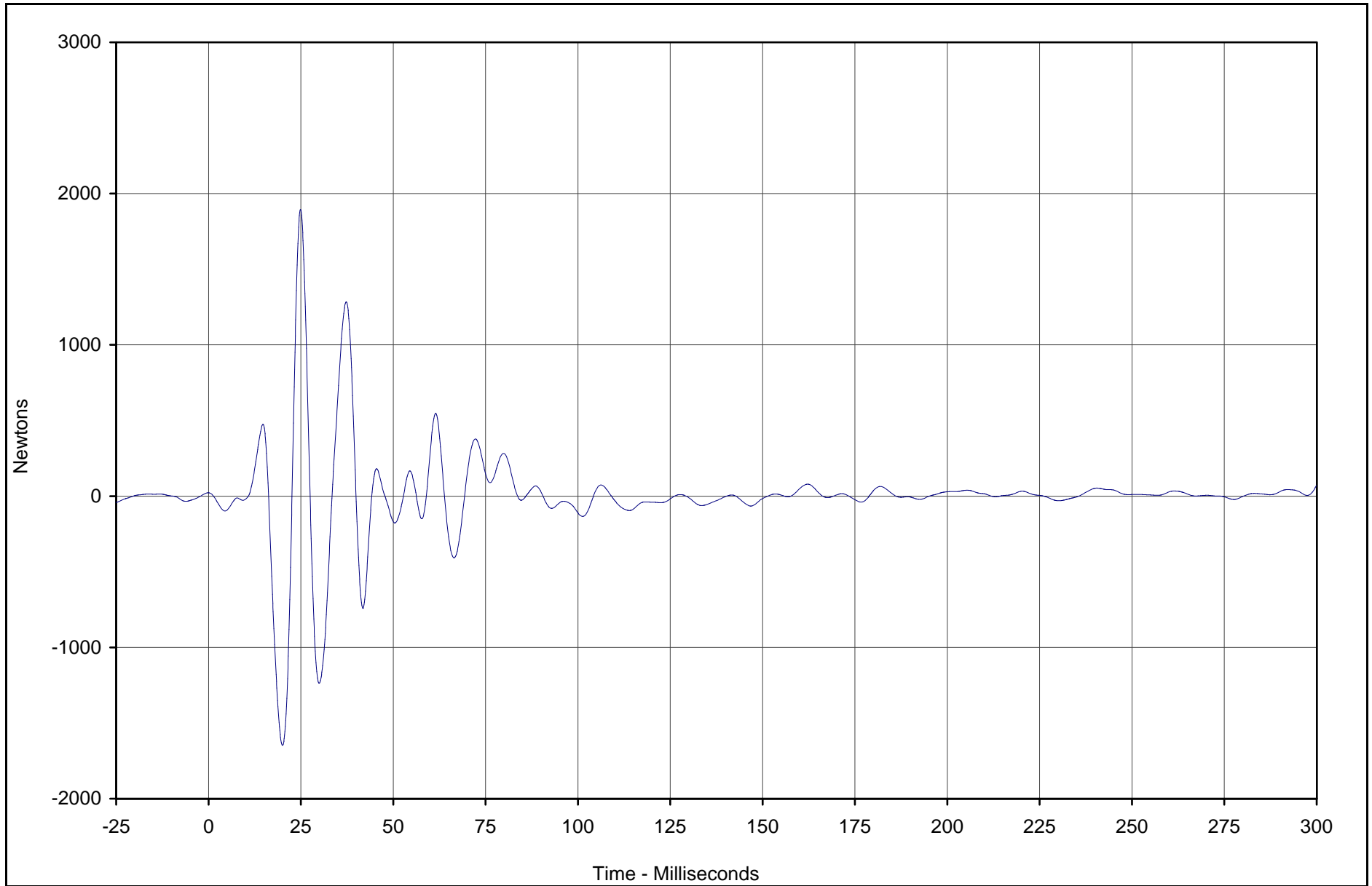
Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

## **APPENDIX C**

### **LOAD CELL BARRIER DATA PLOTS**

C-1



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A1	098	FIL	Newtons	1895.5	24.9	-1647.2	20.0	60



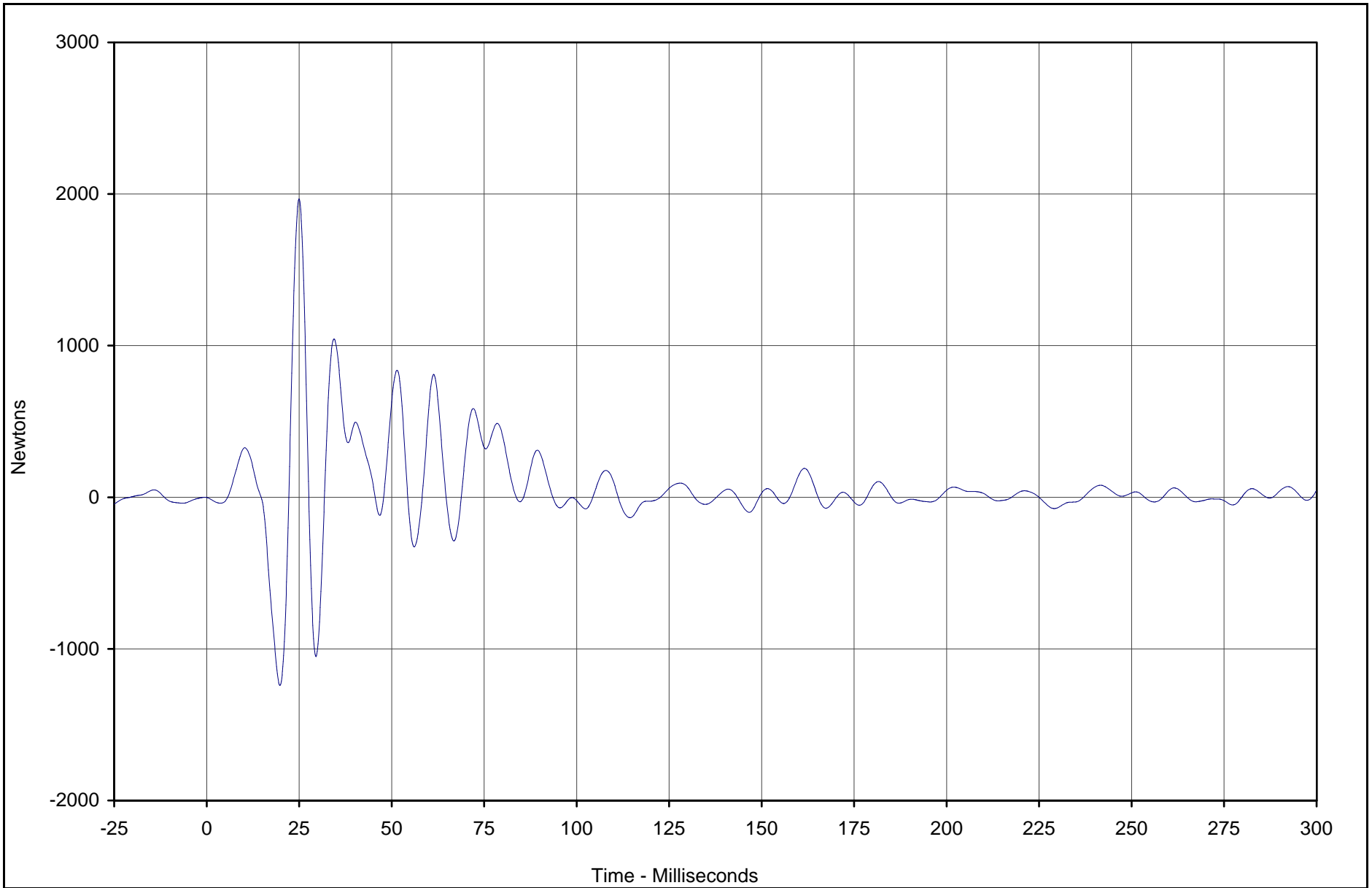
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-2



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A2	099	FIL	Newtons	1967.0	25.0	-1241.2	19.8	60



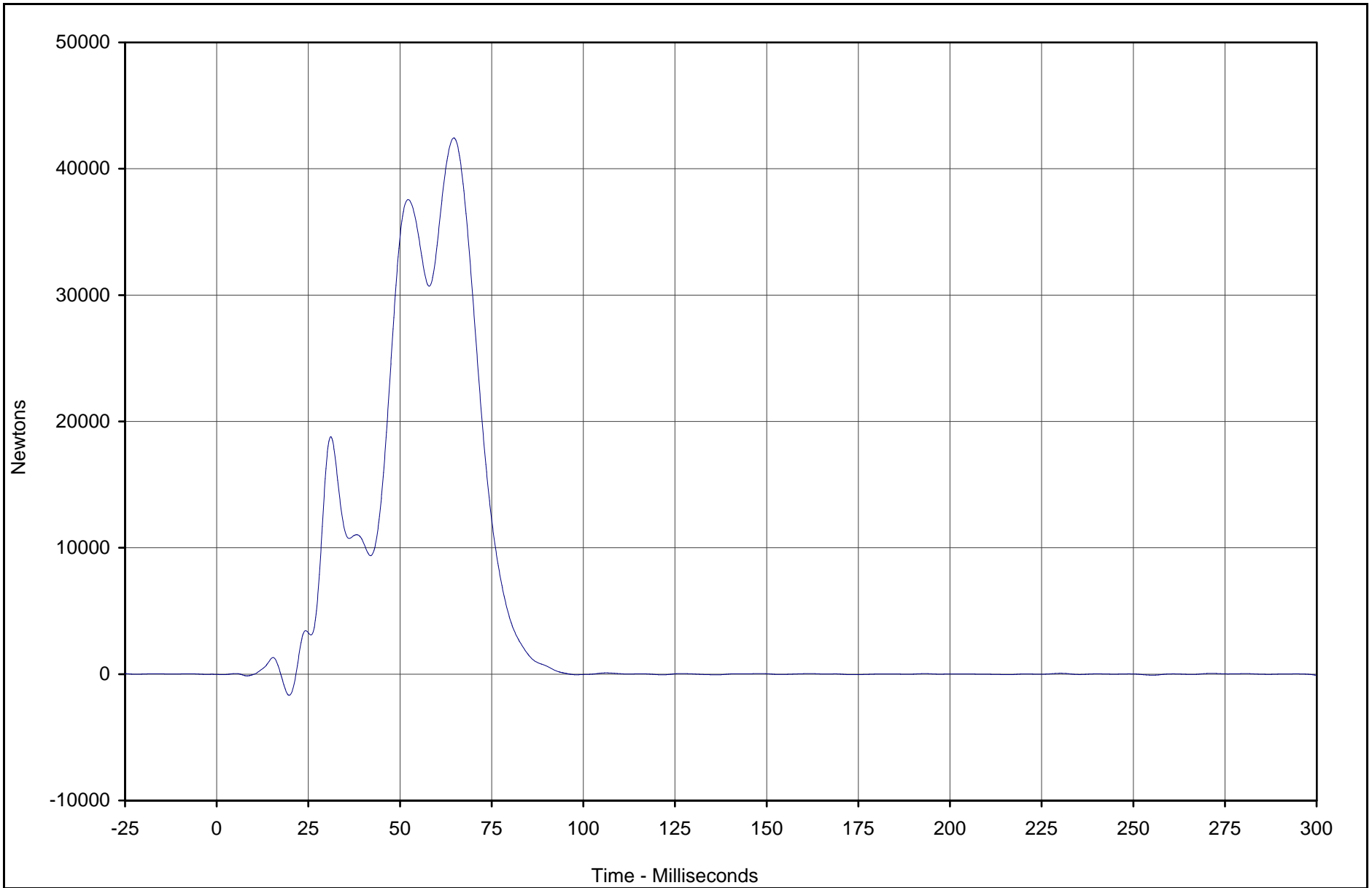
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-3



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A3	100	FIL	Newtons	42442.5	64.7	-1674.8	19.8	60

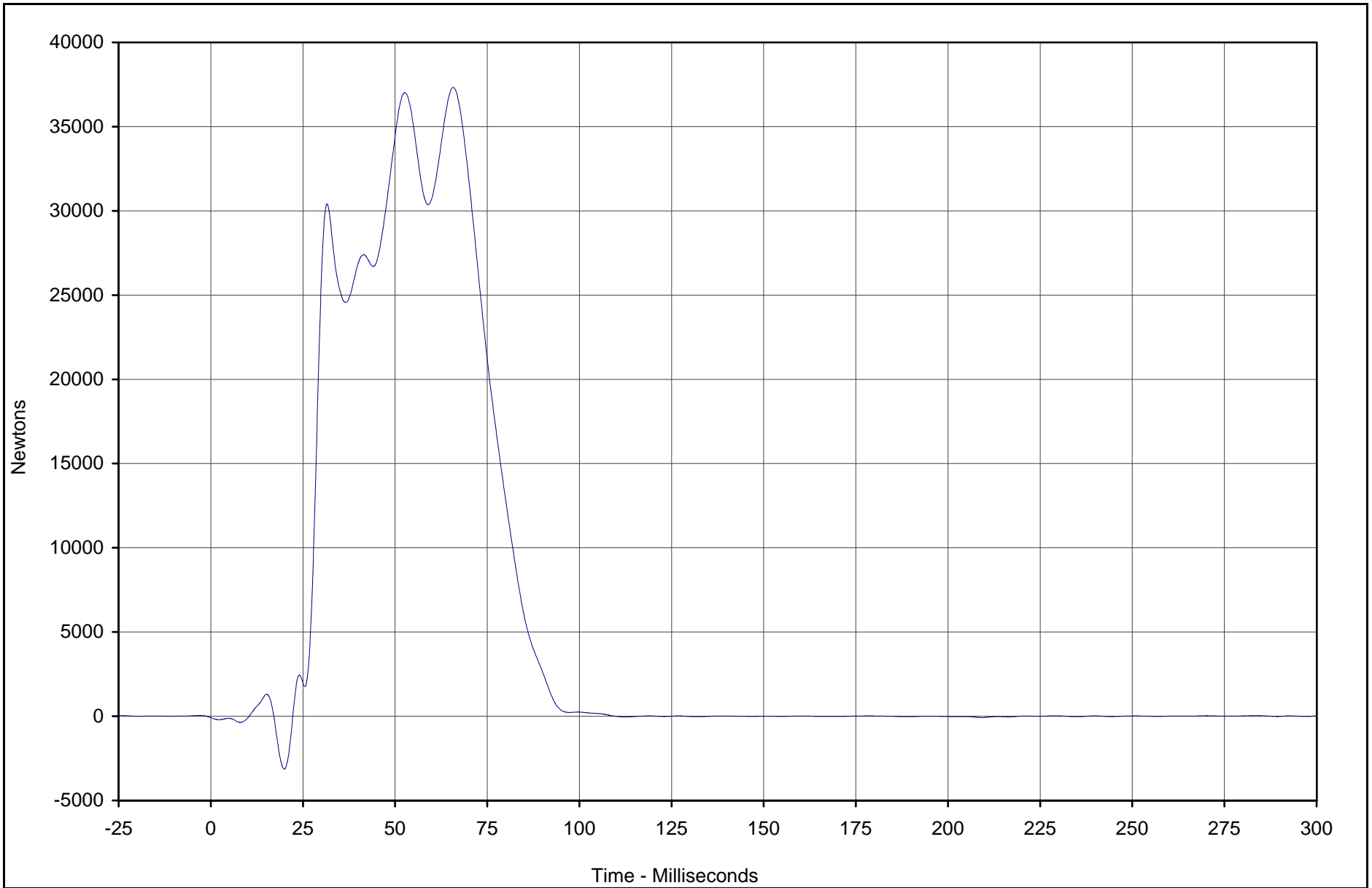


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A4	101	FIL	Newtons	37330.8	65.8	-3138.5	19.9	60



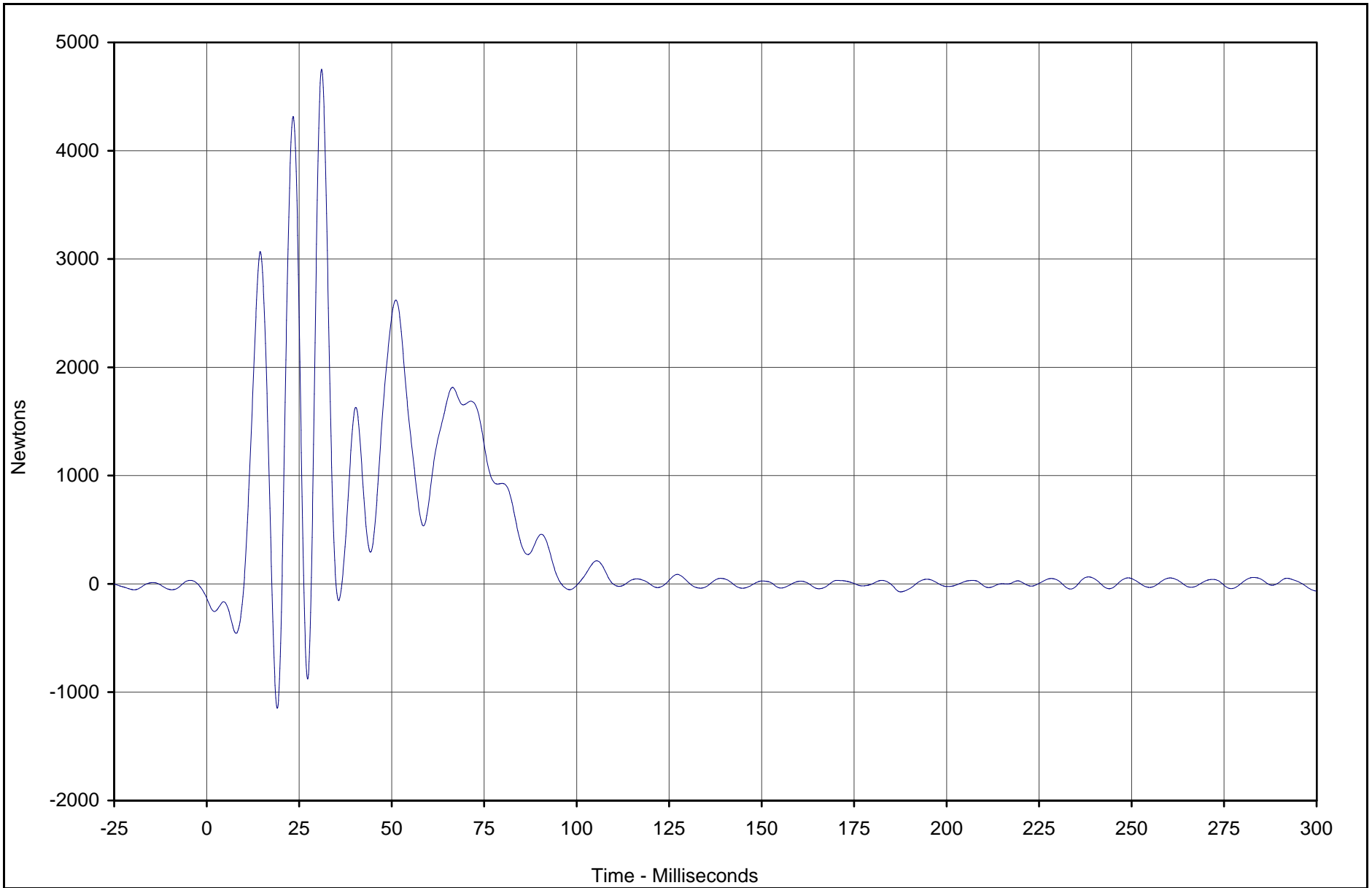
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-5



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A5	102	FIL	Newtons	4751.7	31.1	-1148.5	19.1	60

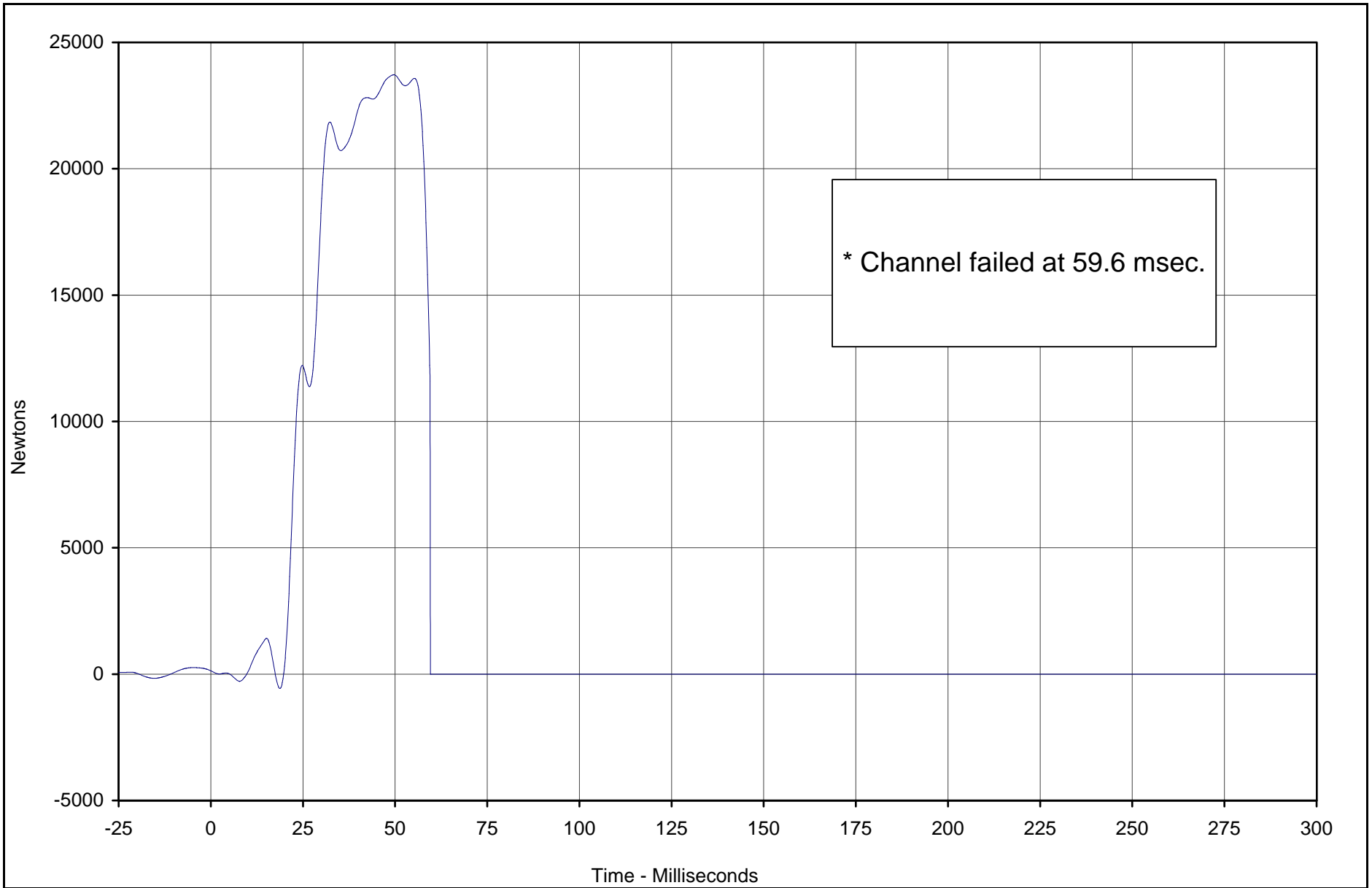


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



\* Channel failed at 59.6 msec.

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A6	103	FIL	Newtons	23719.0	49.7	-564.4	18.7	60



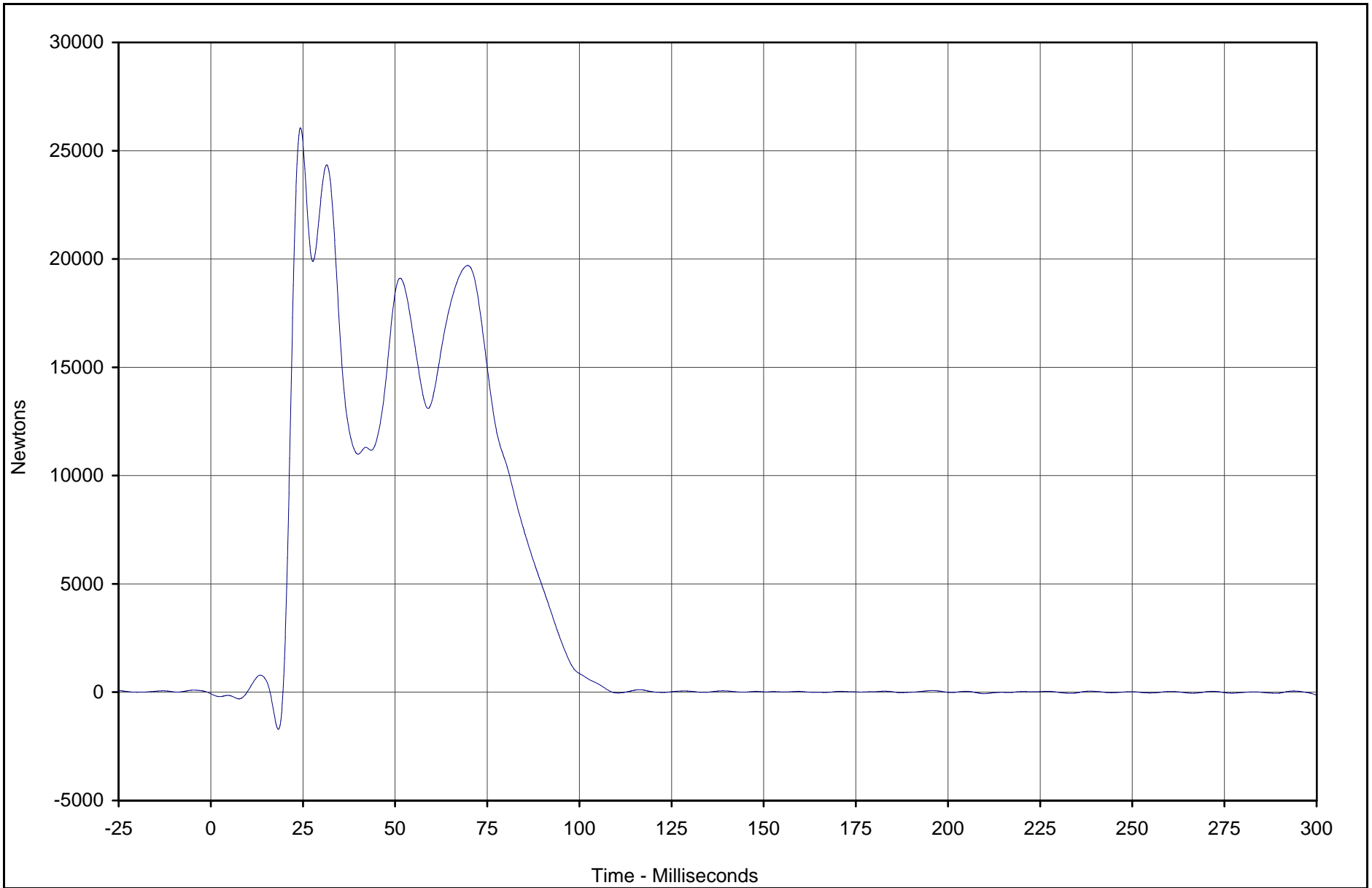
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-7



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A7	104	FIL	Newtons	26052.1	24.3	-1718.3	18.3	60

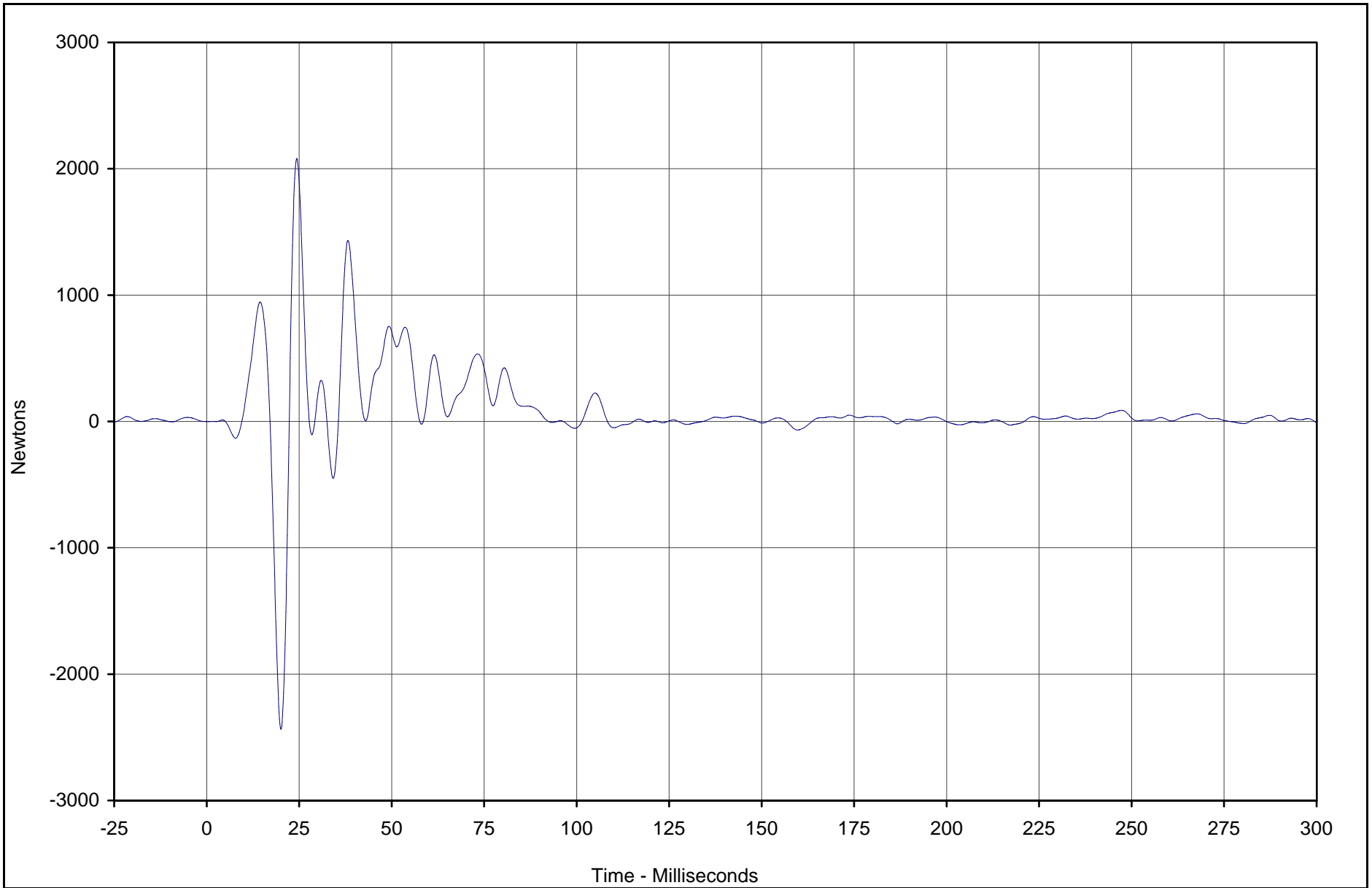


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A8	105	FIL	Newtons	2080.6	24.4	-2435.9	20.1	60

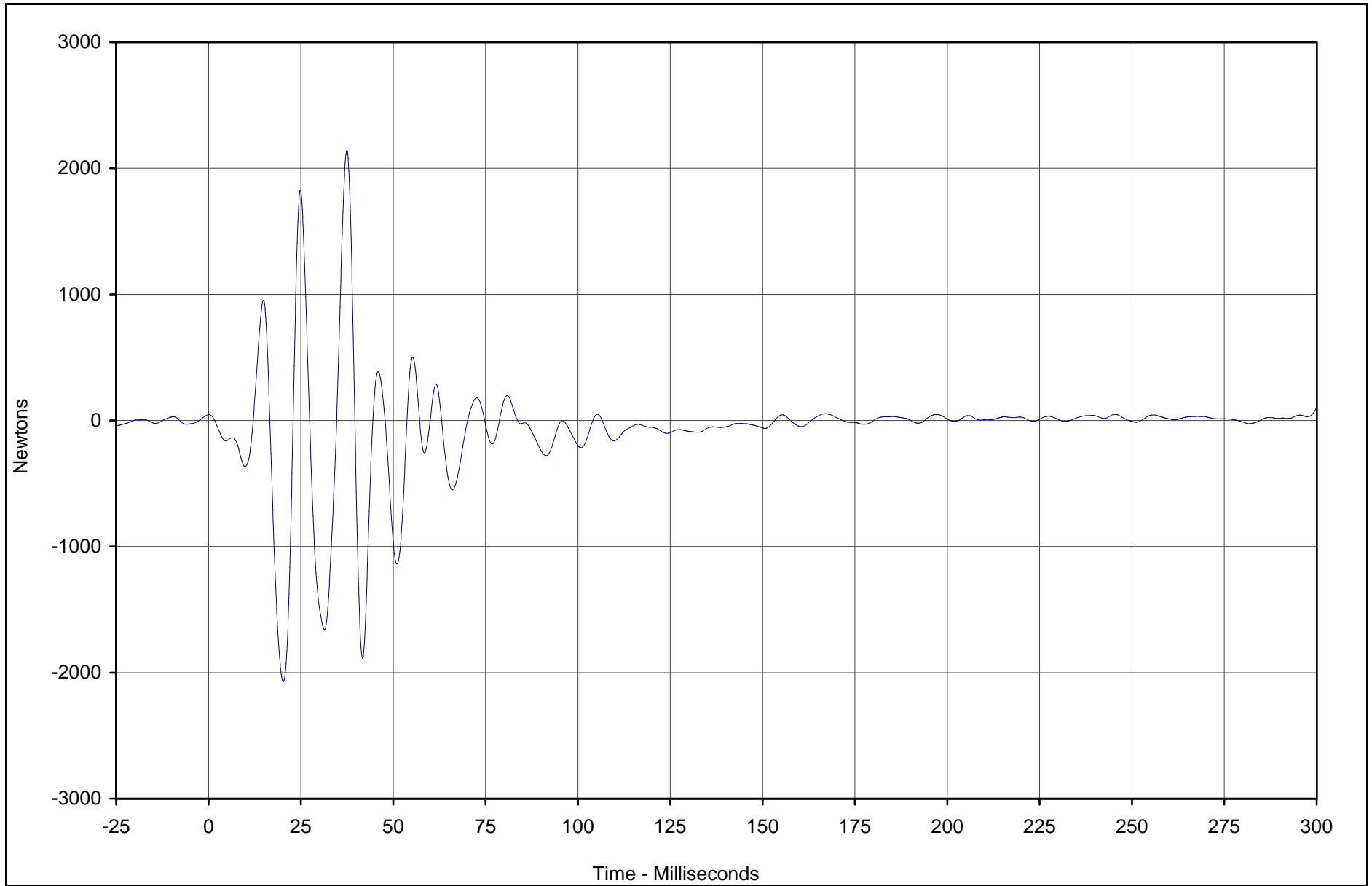


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force A9	106	FIL	Newtons	2141.5	37.5	-2072.2	20.2	60



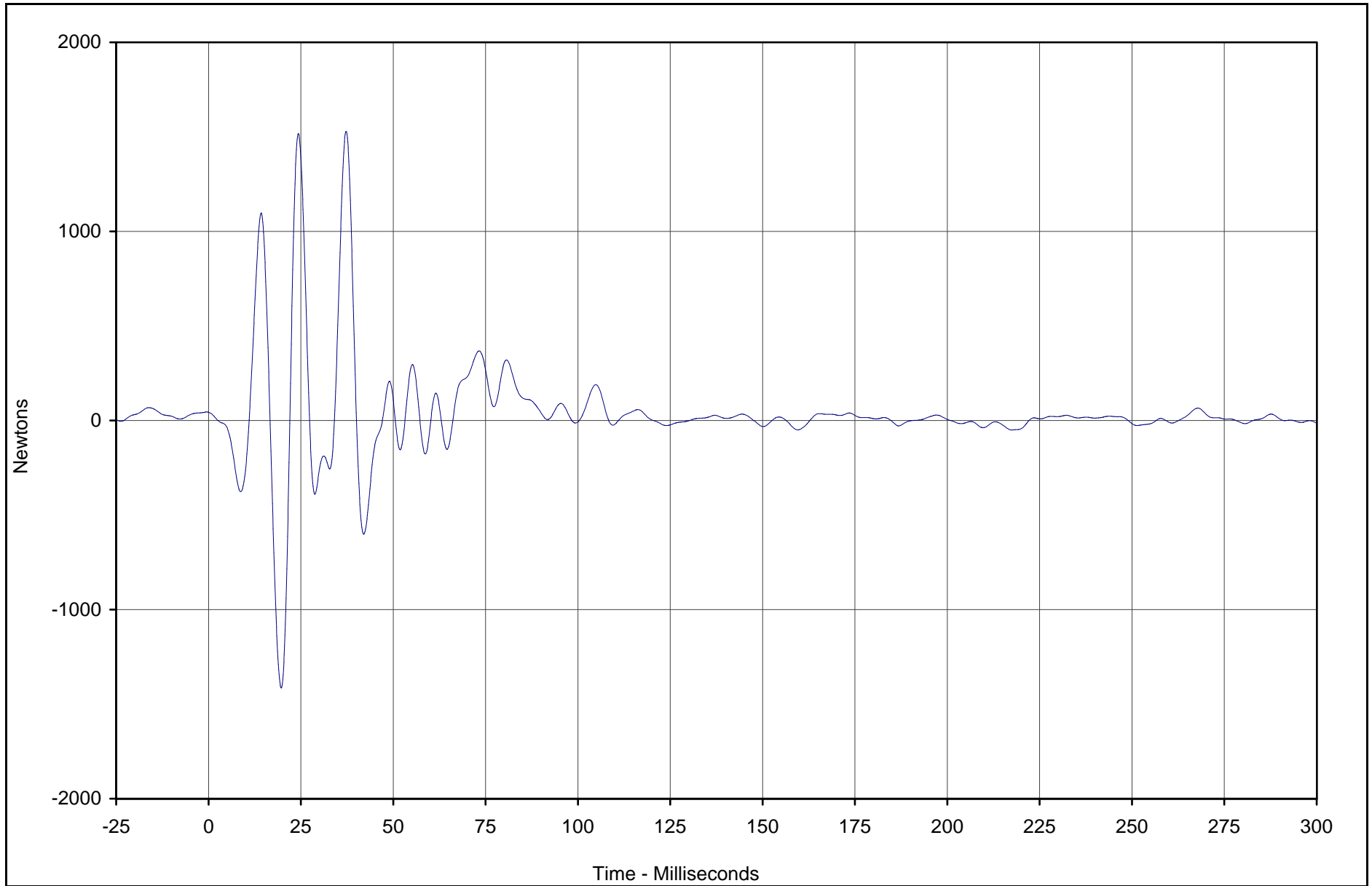
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-10



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B1	107	FIL	Newtons	1528.7	37.2	-1414.4	19.7	60



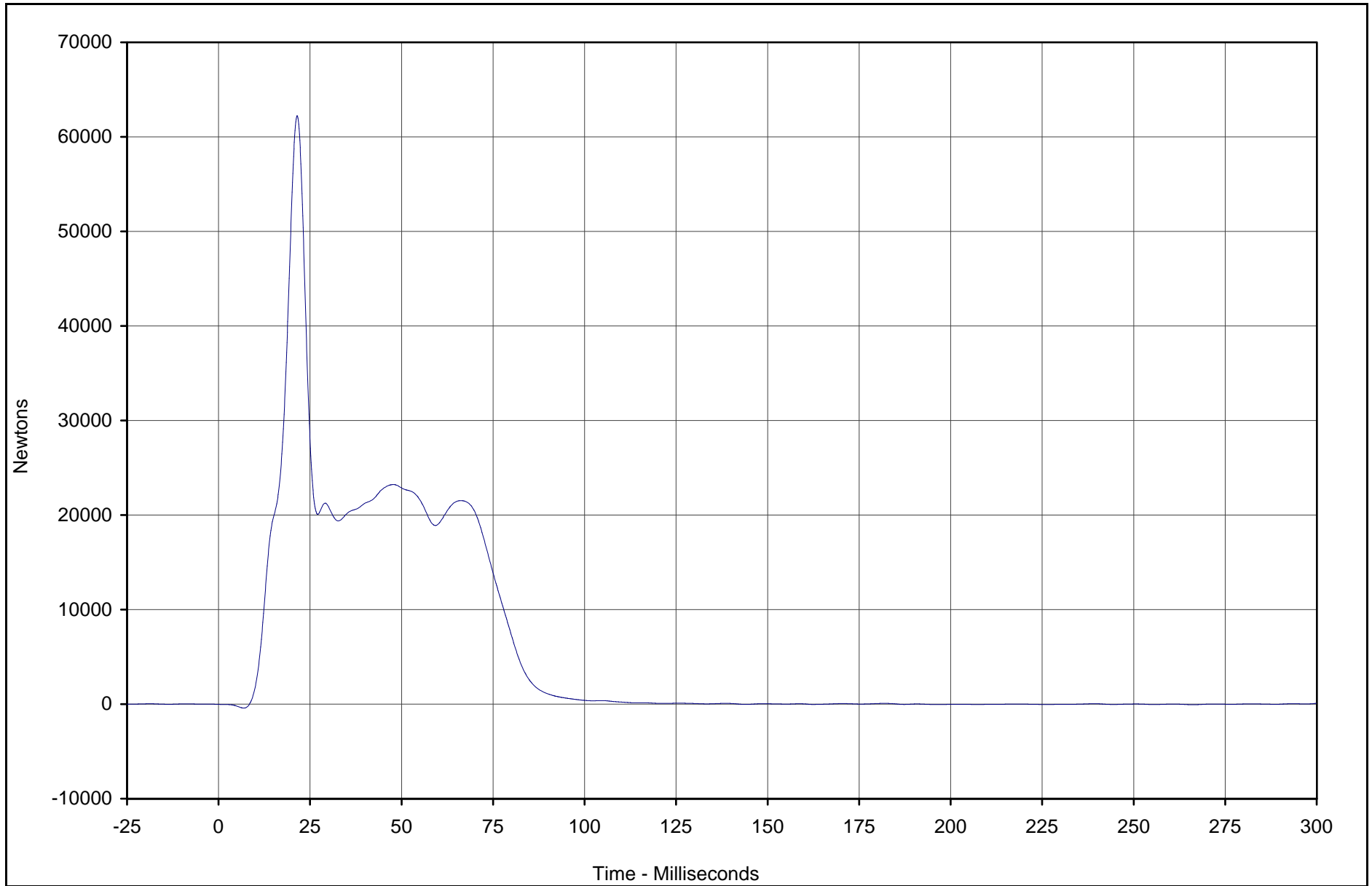
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-11



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B2	108	FIL	Newtons	62245.3	21.5	-414.6	6.9	60



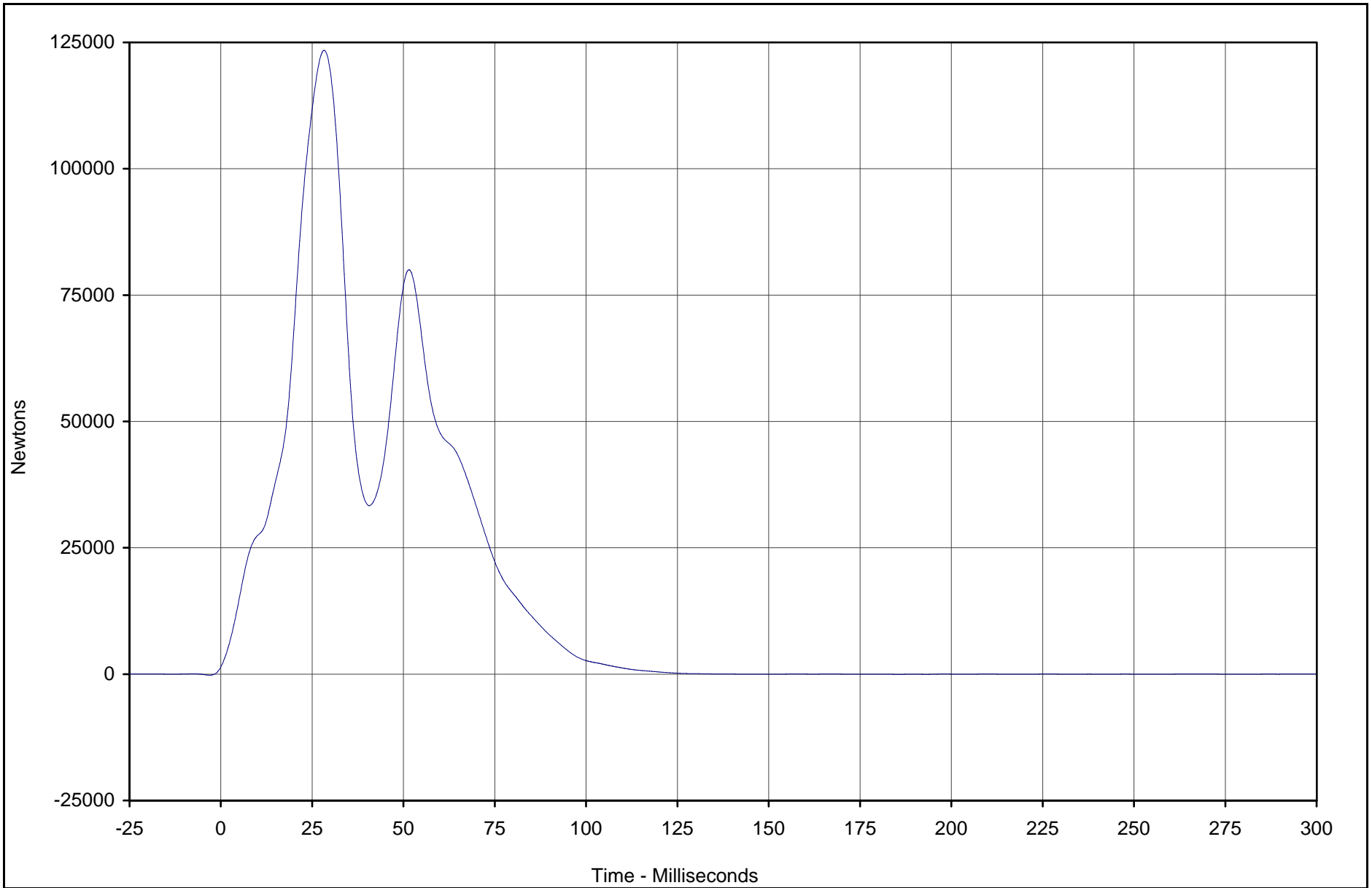
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-12



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B3	109	FIL	Newtons	123425.6	28.3	-46.6	185.6	60

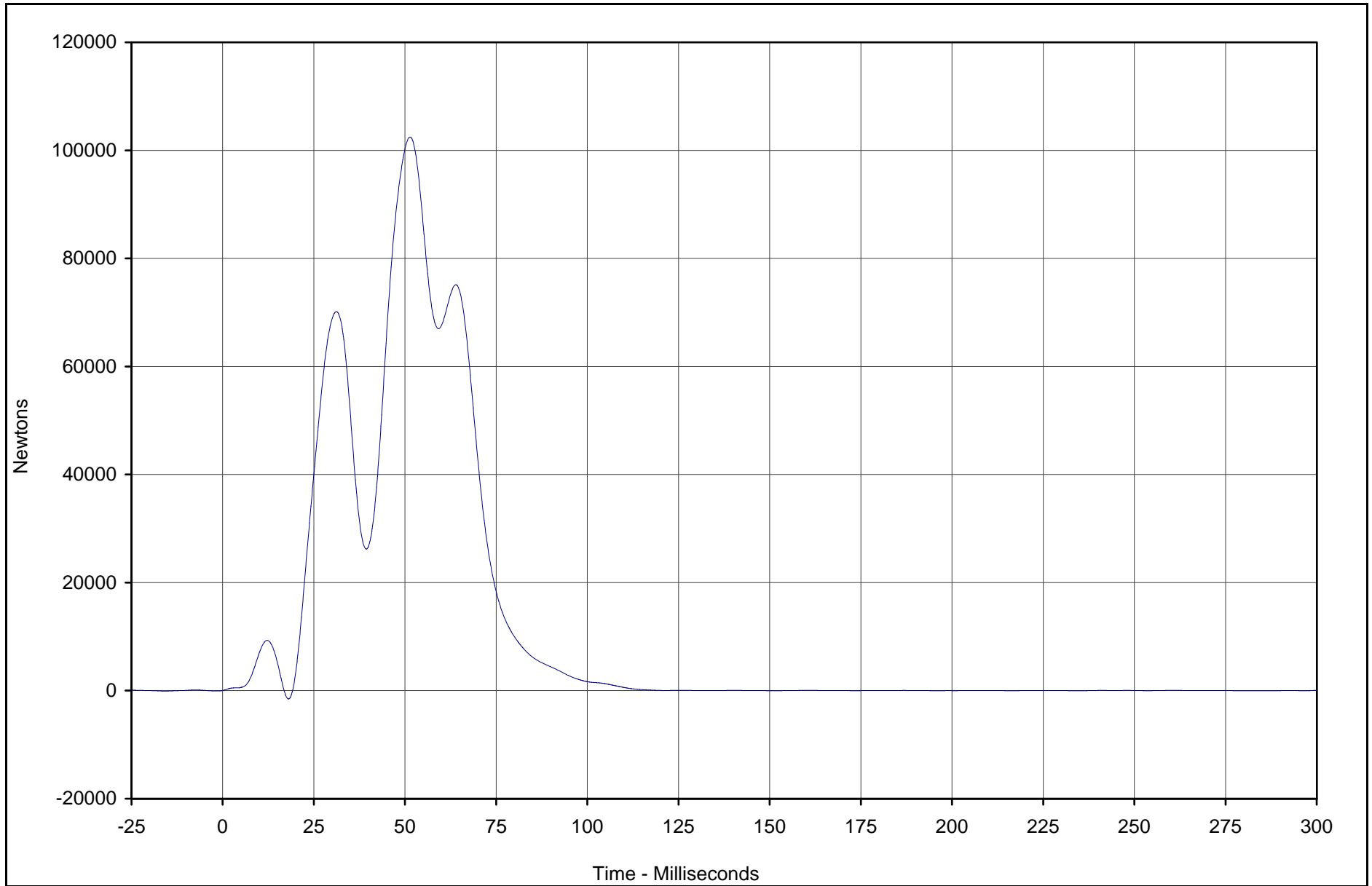


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B4	110	FIL	Newtons	102481.2	51.4	-1545.4	18.1	60



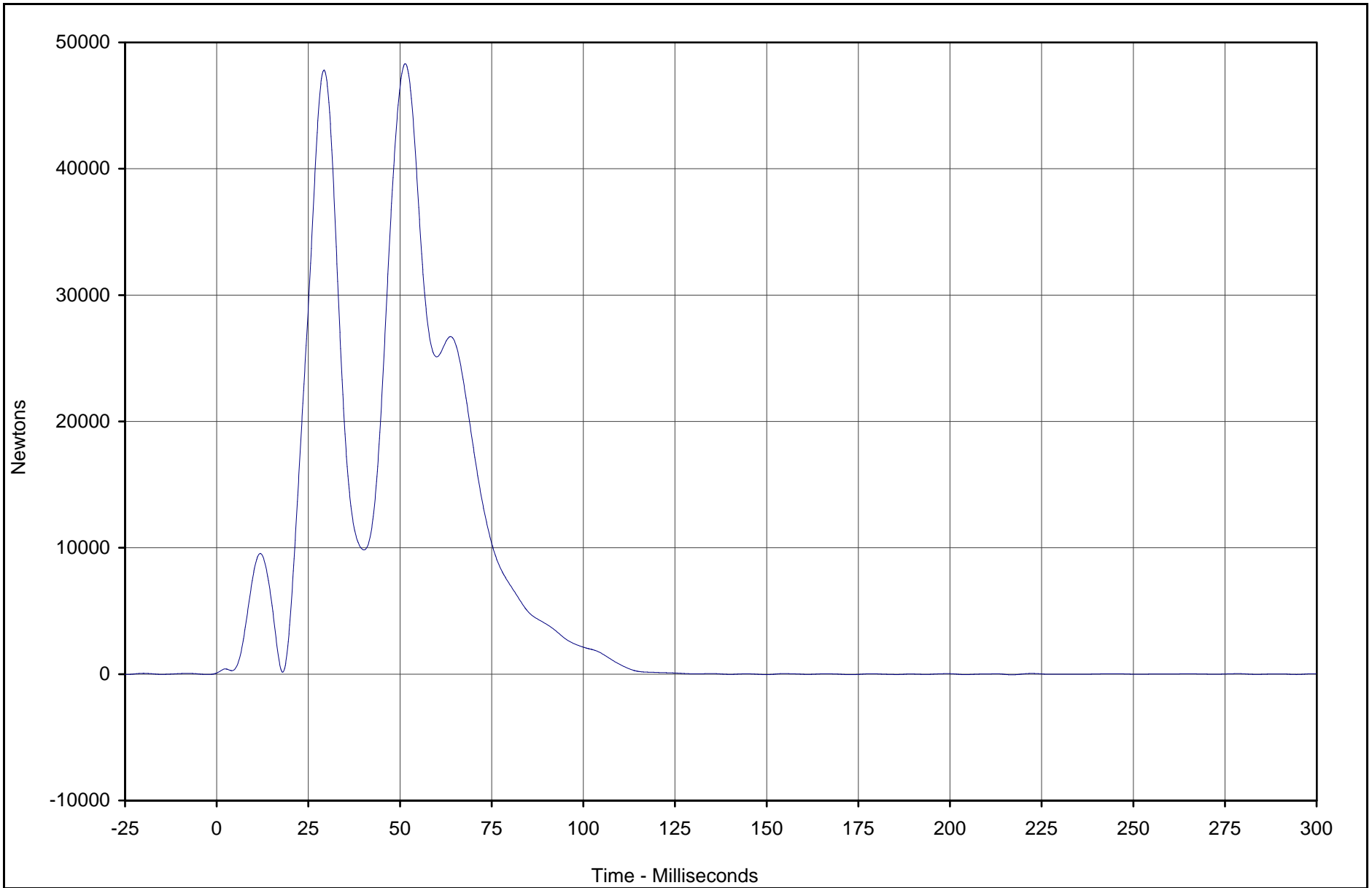
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-14



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B5	111	FIL	Newtons	48312.3	51.4	-58.8	216.9	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

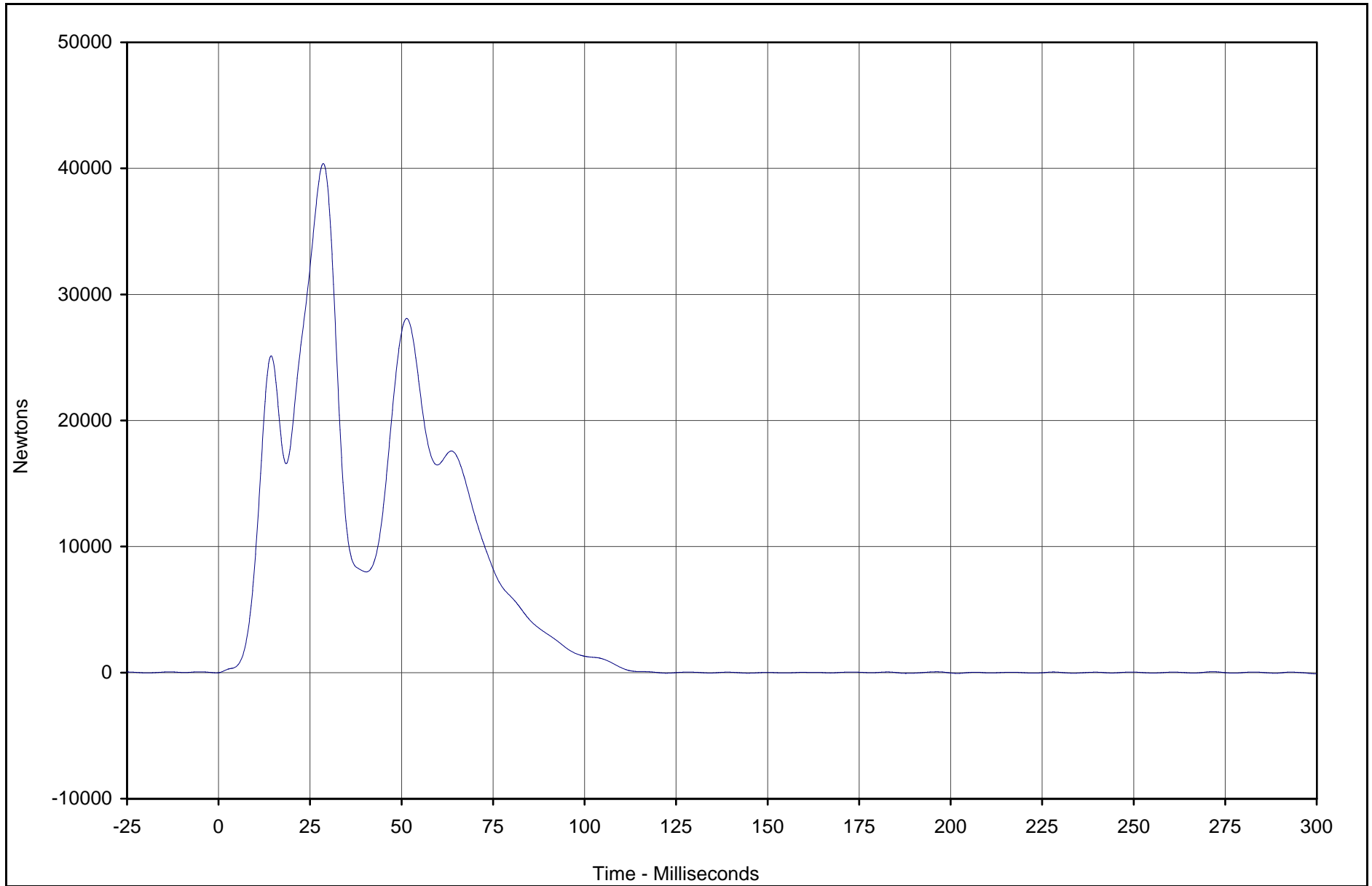
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-15

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B6	112	FIL	Newtons	40388.5	28.6	-105.0	299.9	60

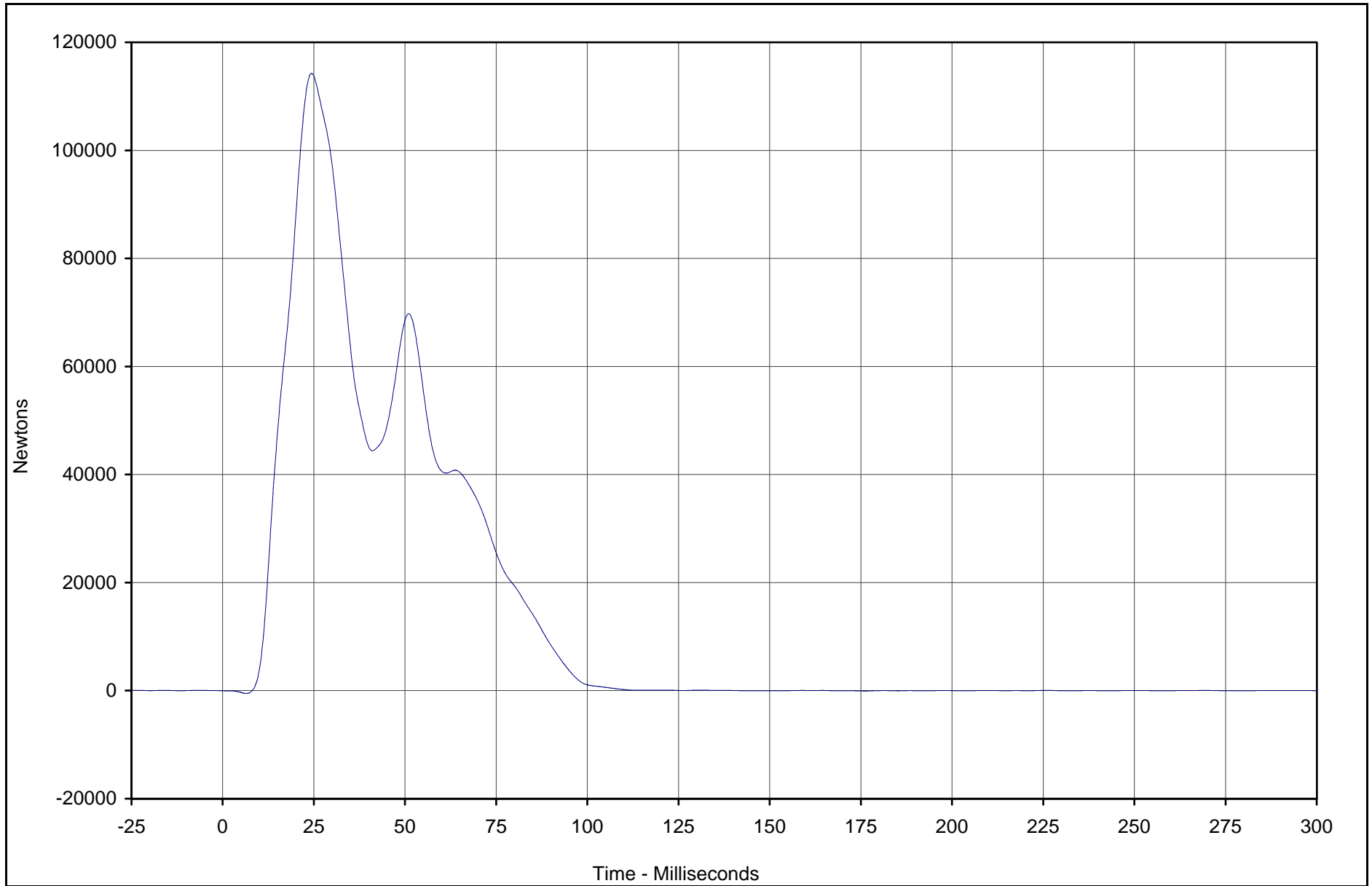


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B7	113	FIL	Newtons	114258.7	24.4	-528.2	6.5	60



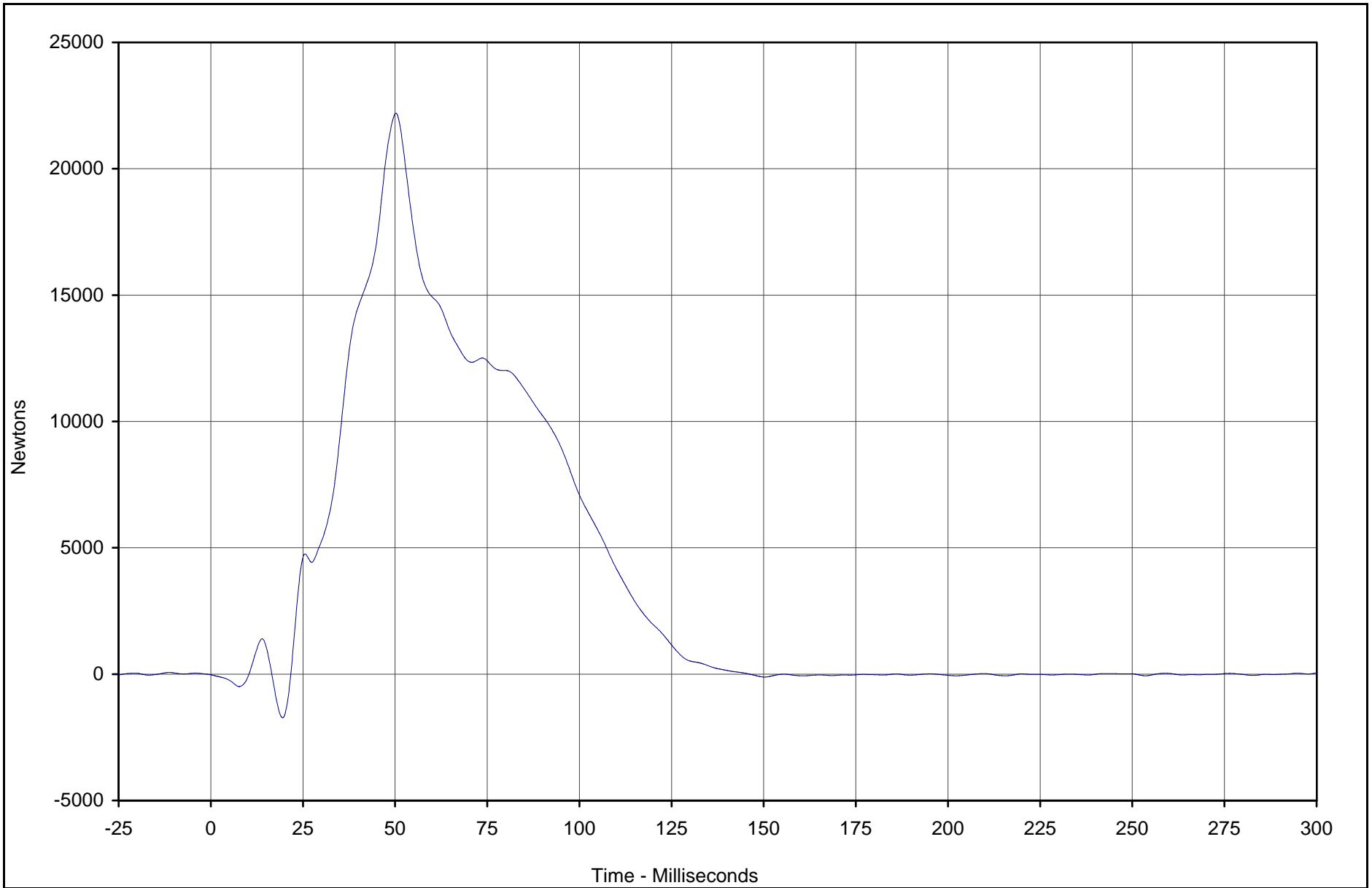
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-17



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B8	114	FIL	Newtons	22196.5	50.2	-1730.9	19.5	60

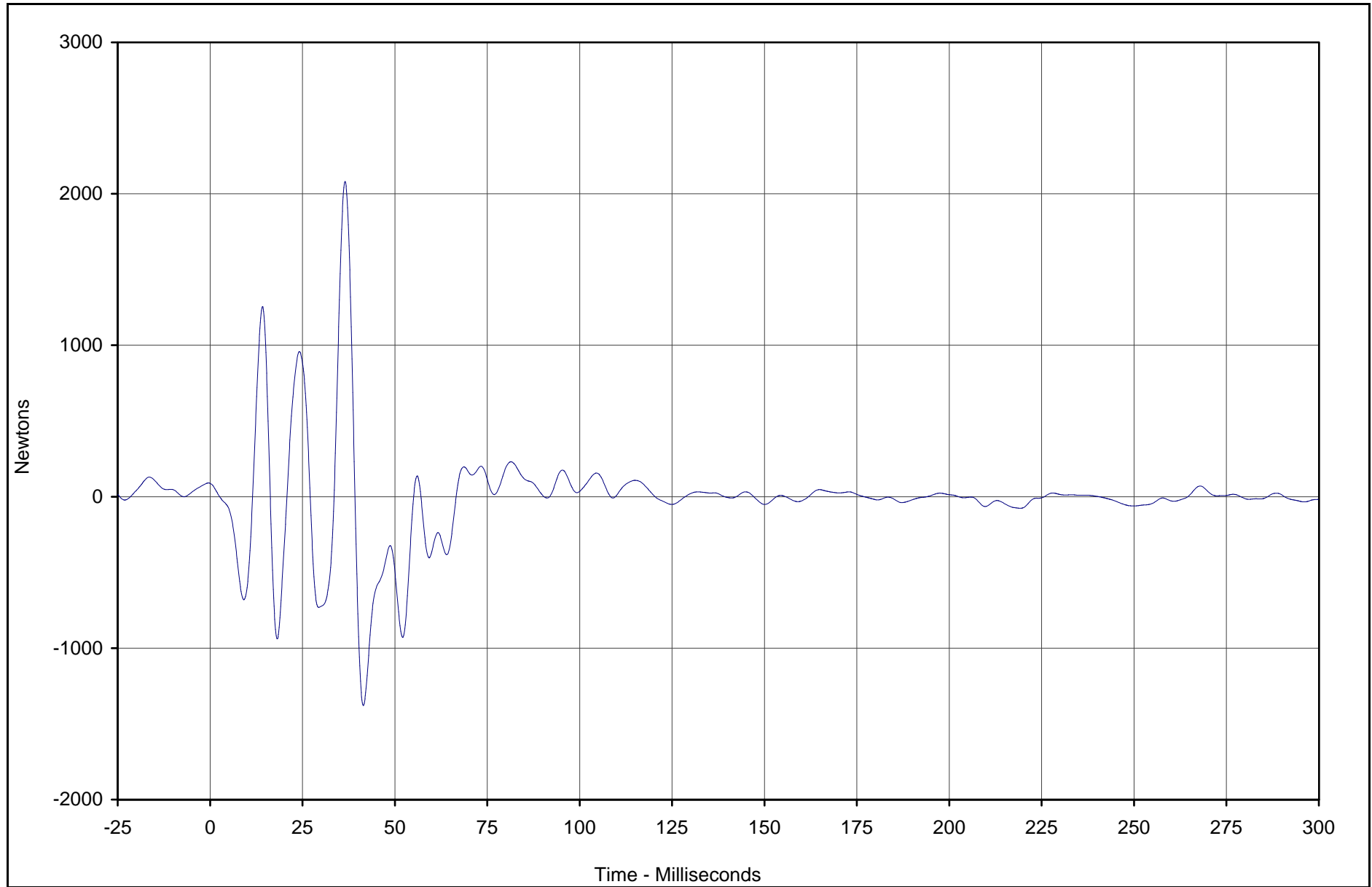


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force B9	115	FIL	Newtons	2081.4	36.5	-1378.3	41.5	60



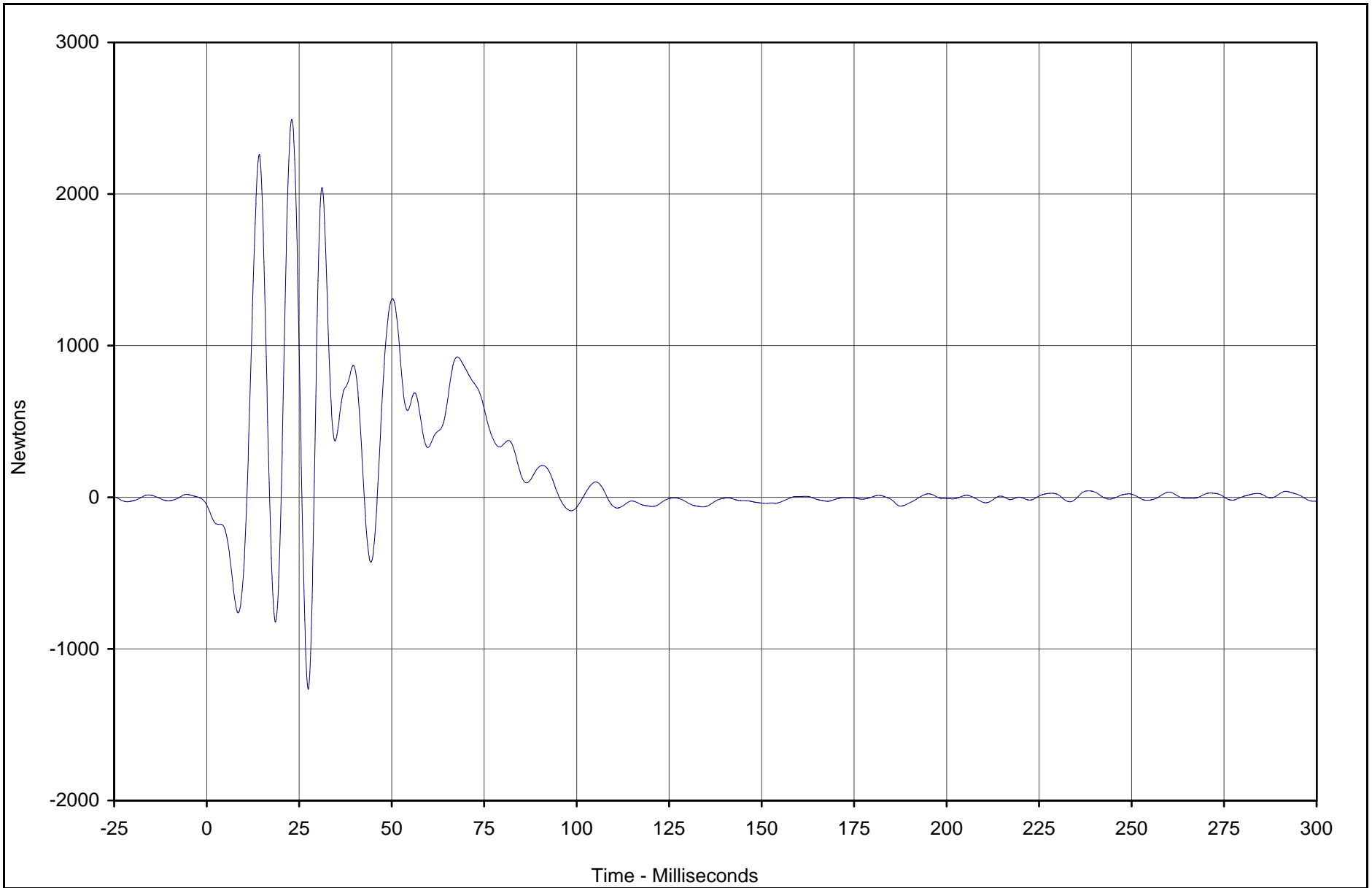
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-19



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C1	116	FIL	Newtons	2492.6	23.0	-1265.9	27.5	60



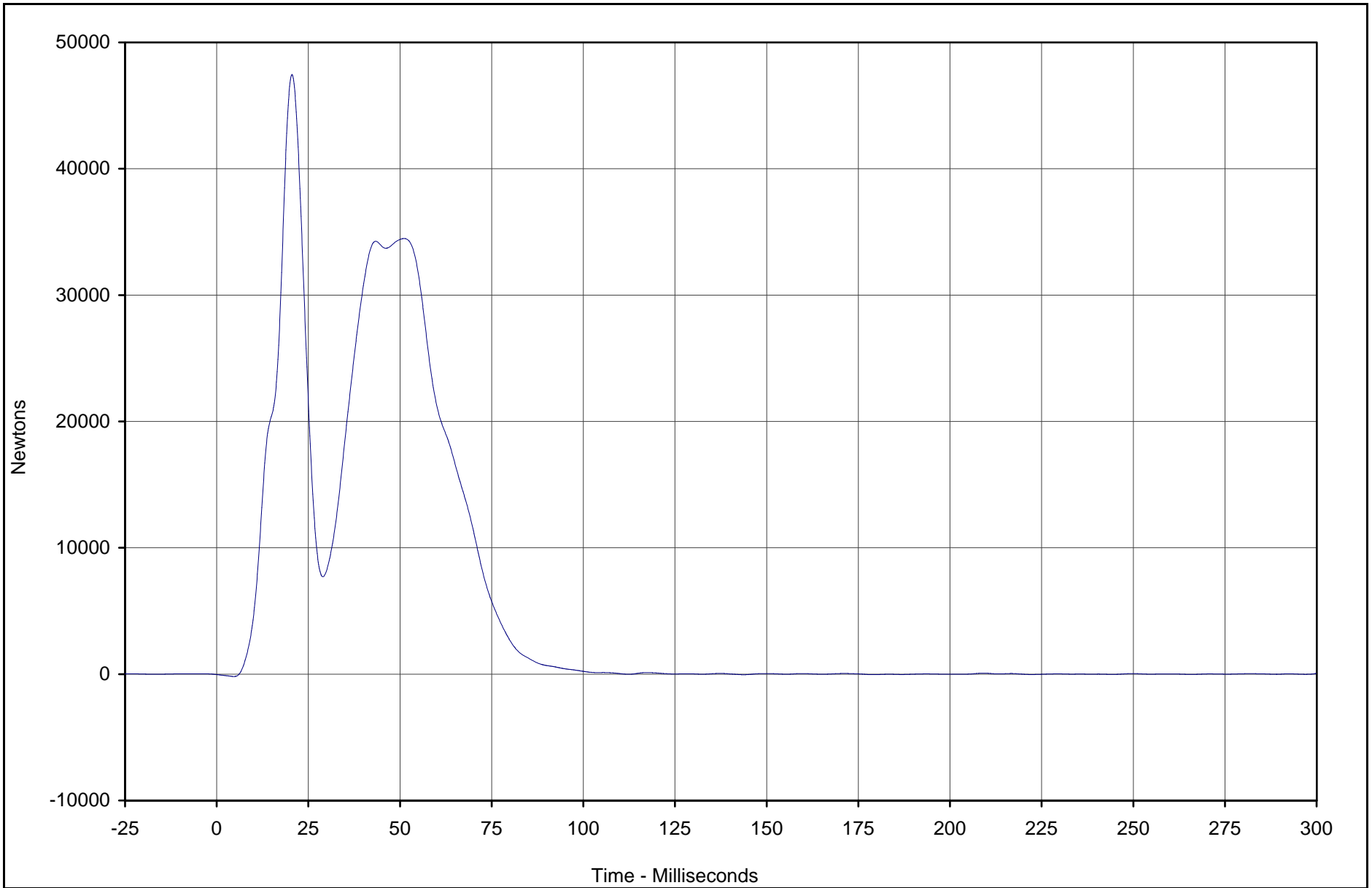
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-20



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C2	117	FIL	Newtons	47454.5	20.5	-189.6	4.6	60

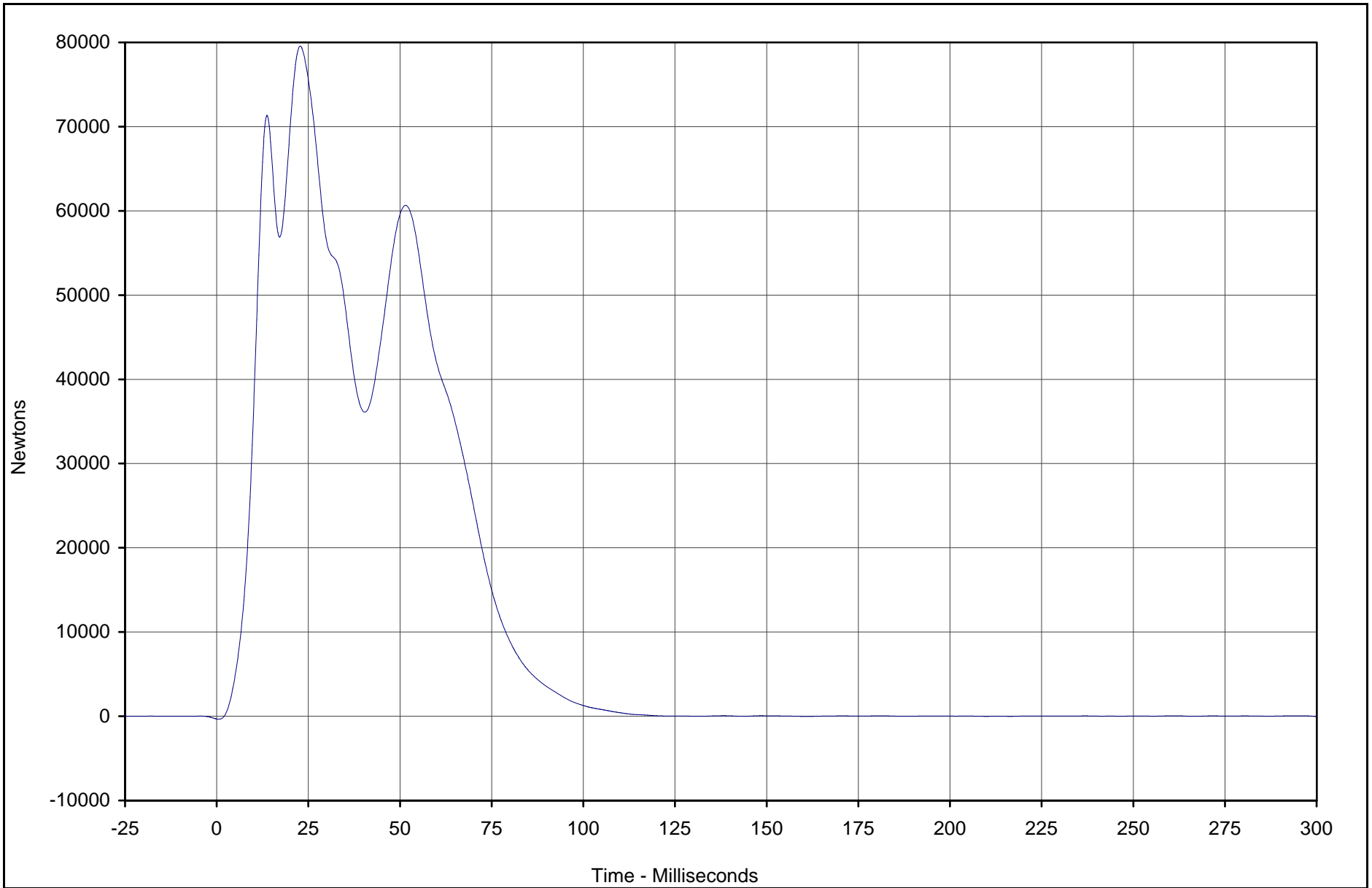


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C3	118	FIL	Newtons	79552.2	22.8	-355.3	0.6	60



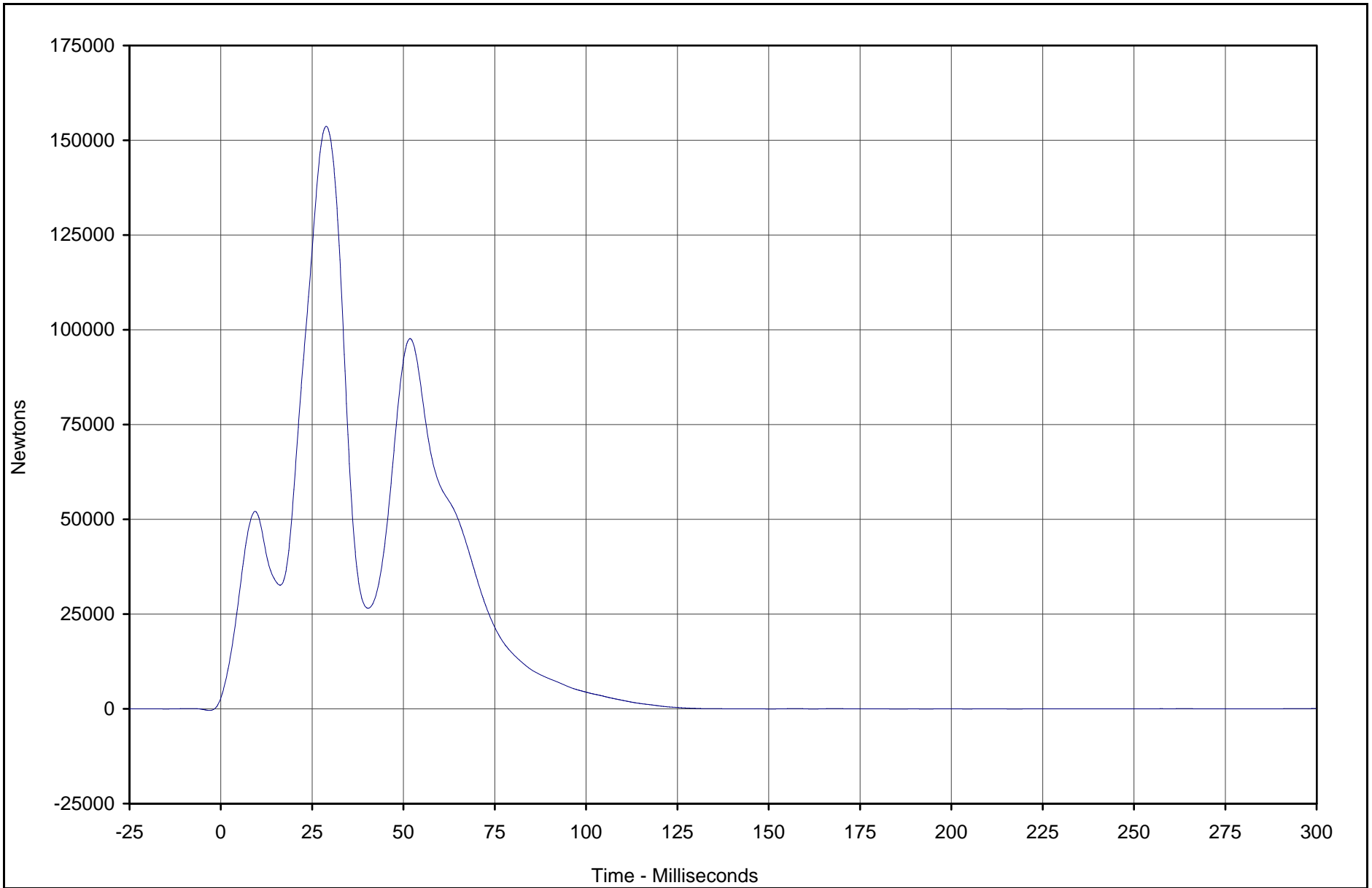
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-22



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C4	119	FIL	Newtons	153681.8	28.8	-61.0	186.1	60

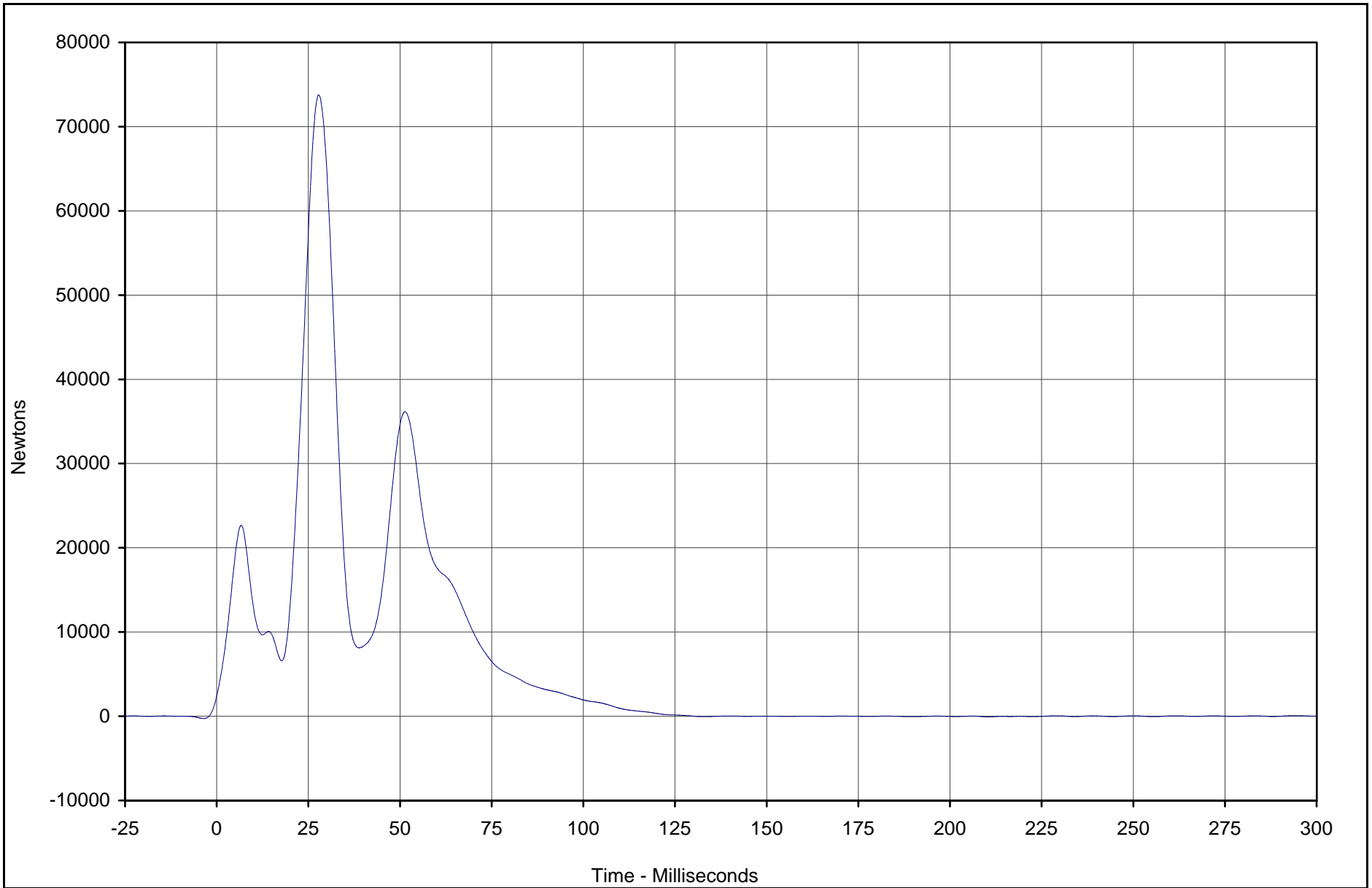


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C5	120	FIL	Newtons	73760.2	27.8	-79.4	210.4	60

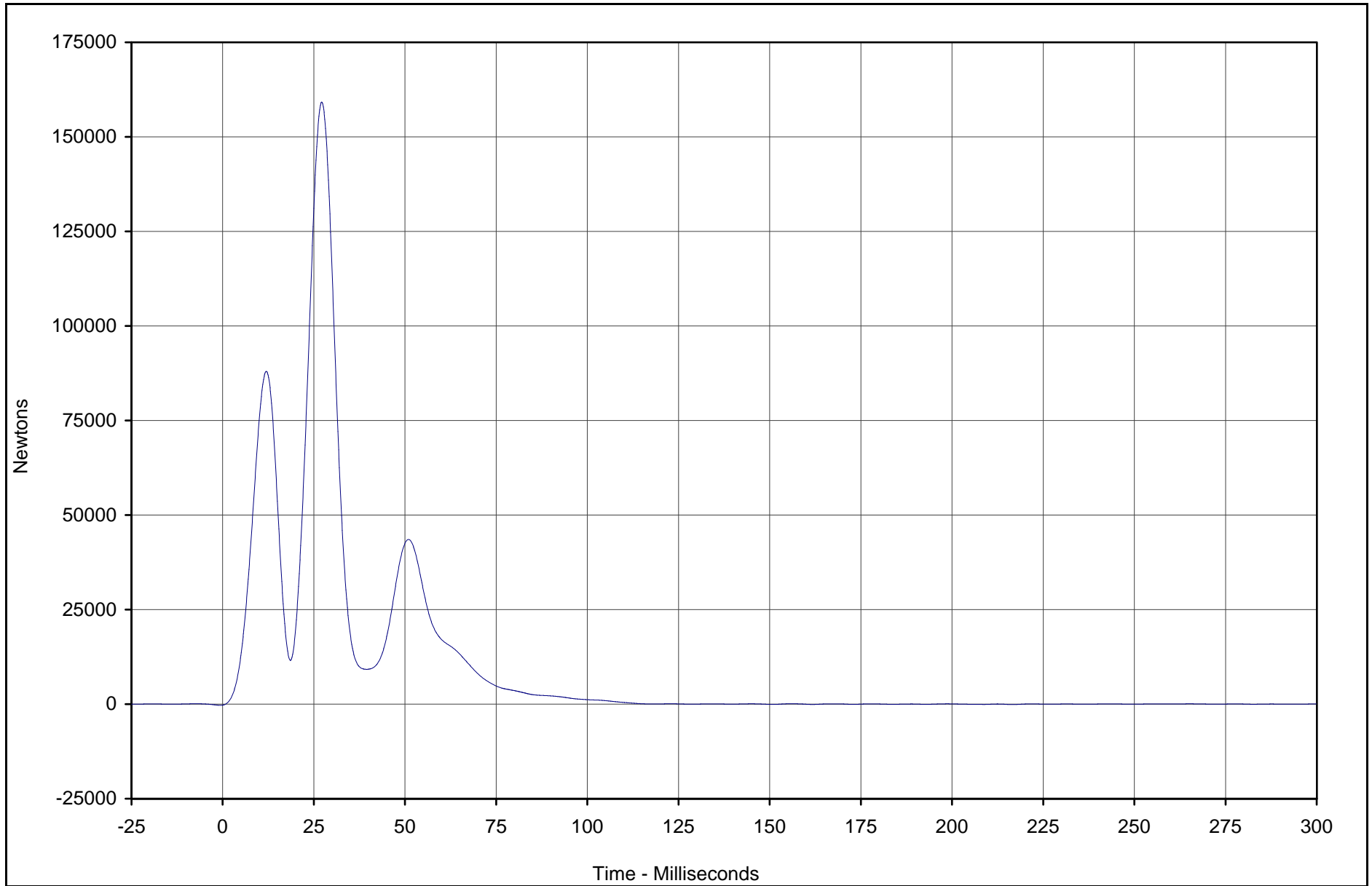


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C6	121	FIL	Newtons	159188.3	27.2	-273.3	0.0	60



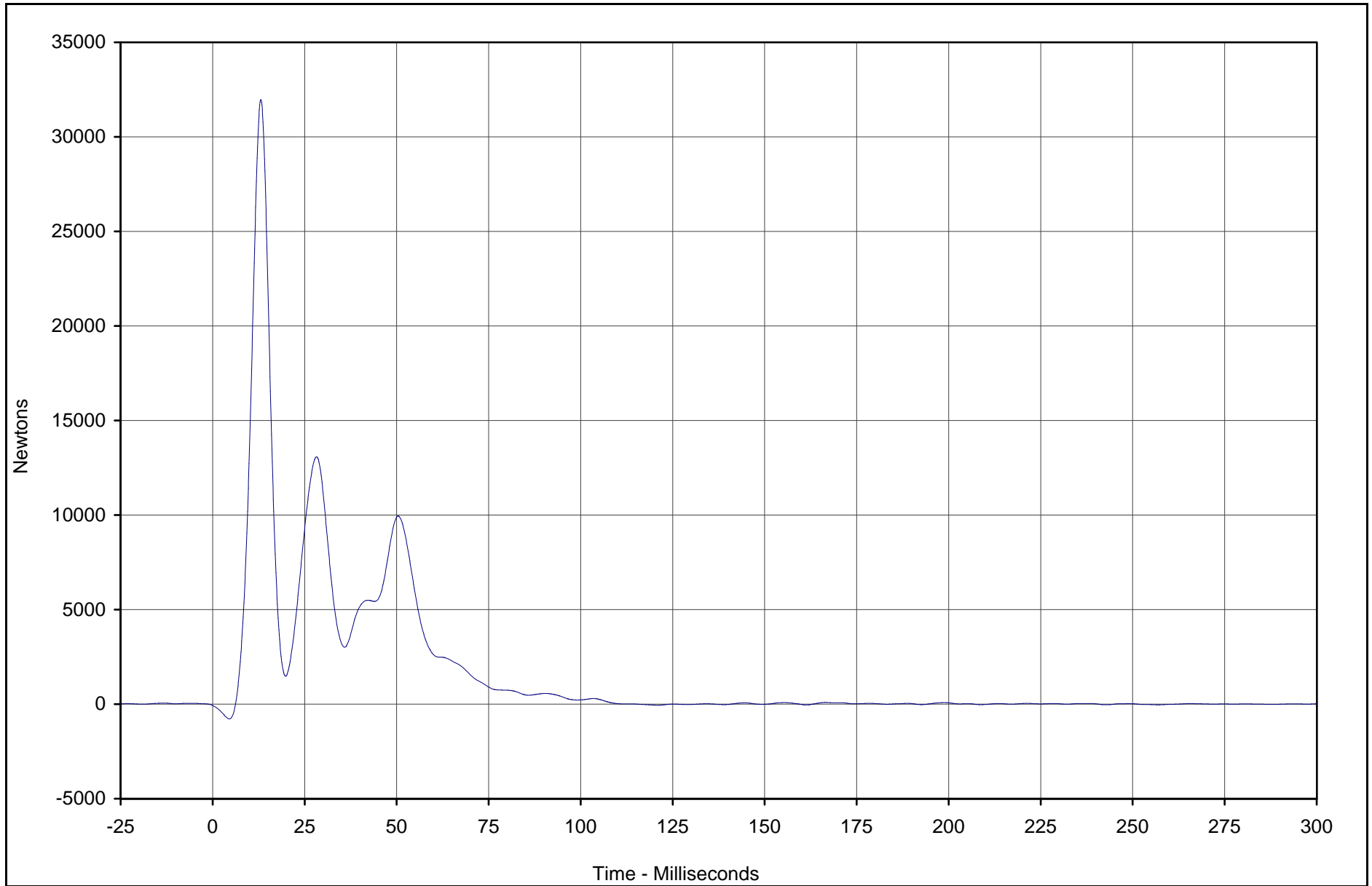
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-25



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C7	122	FIL	Newtons	31972.9	13.1	-781.4	4.5	60

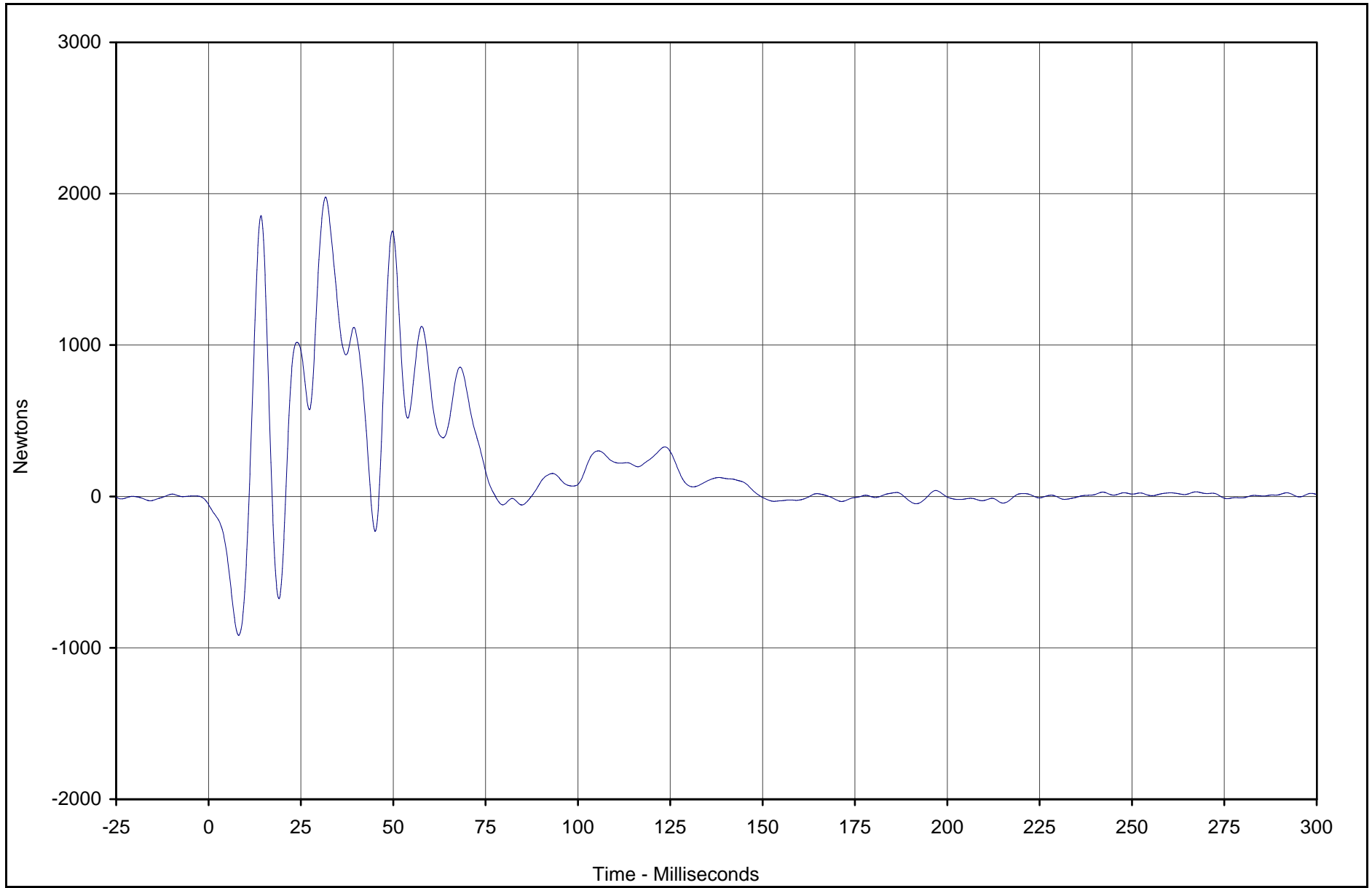


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C8	123	FIL	Newtons	1978.8	31.7	-917.6	8.2	60



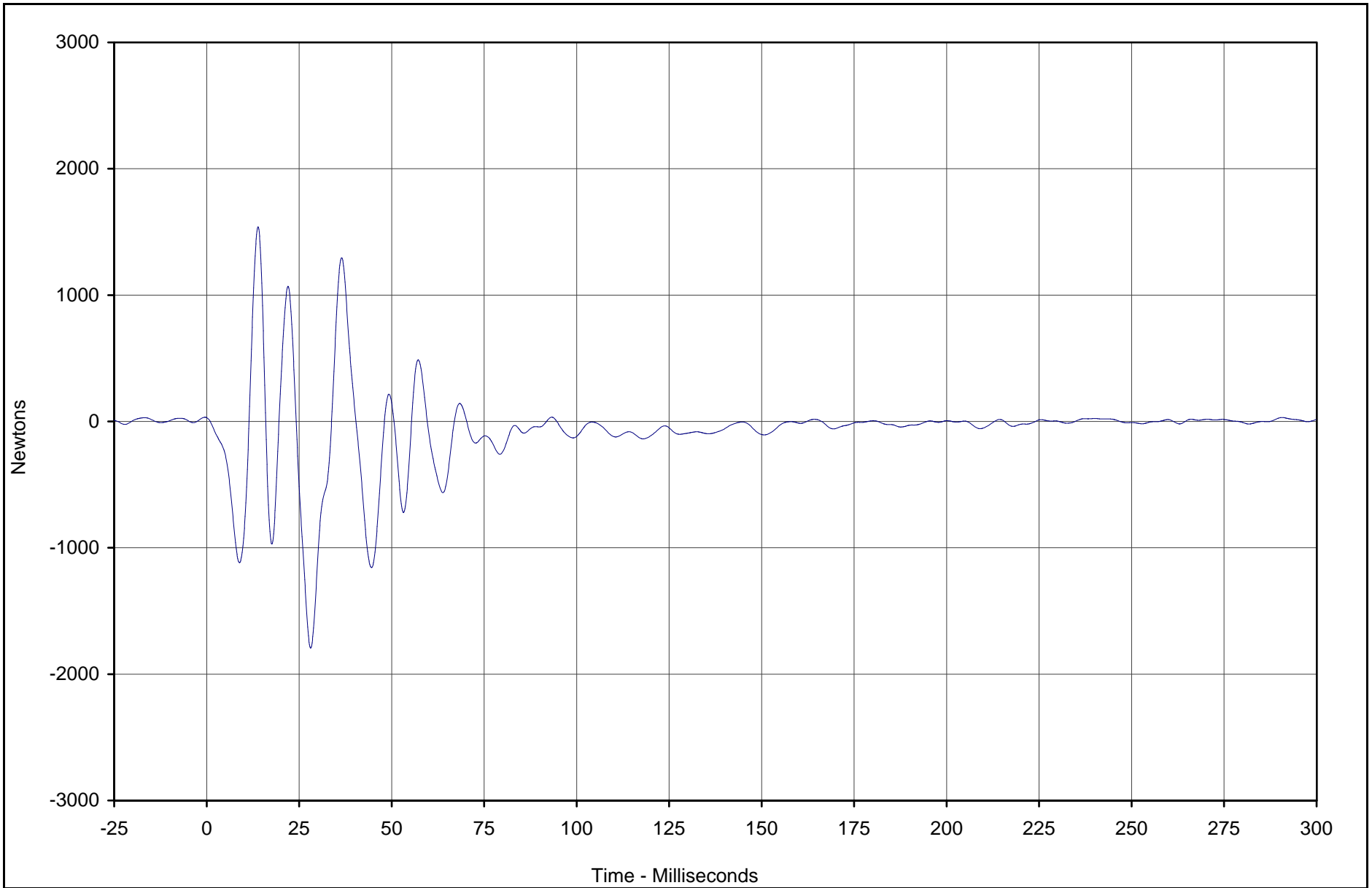
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-27



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force C9	124	FIL	Newtons	1540.6	13.9	-1793.7	28.1	60



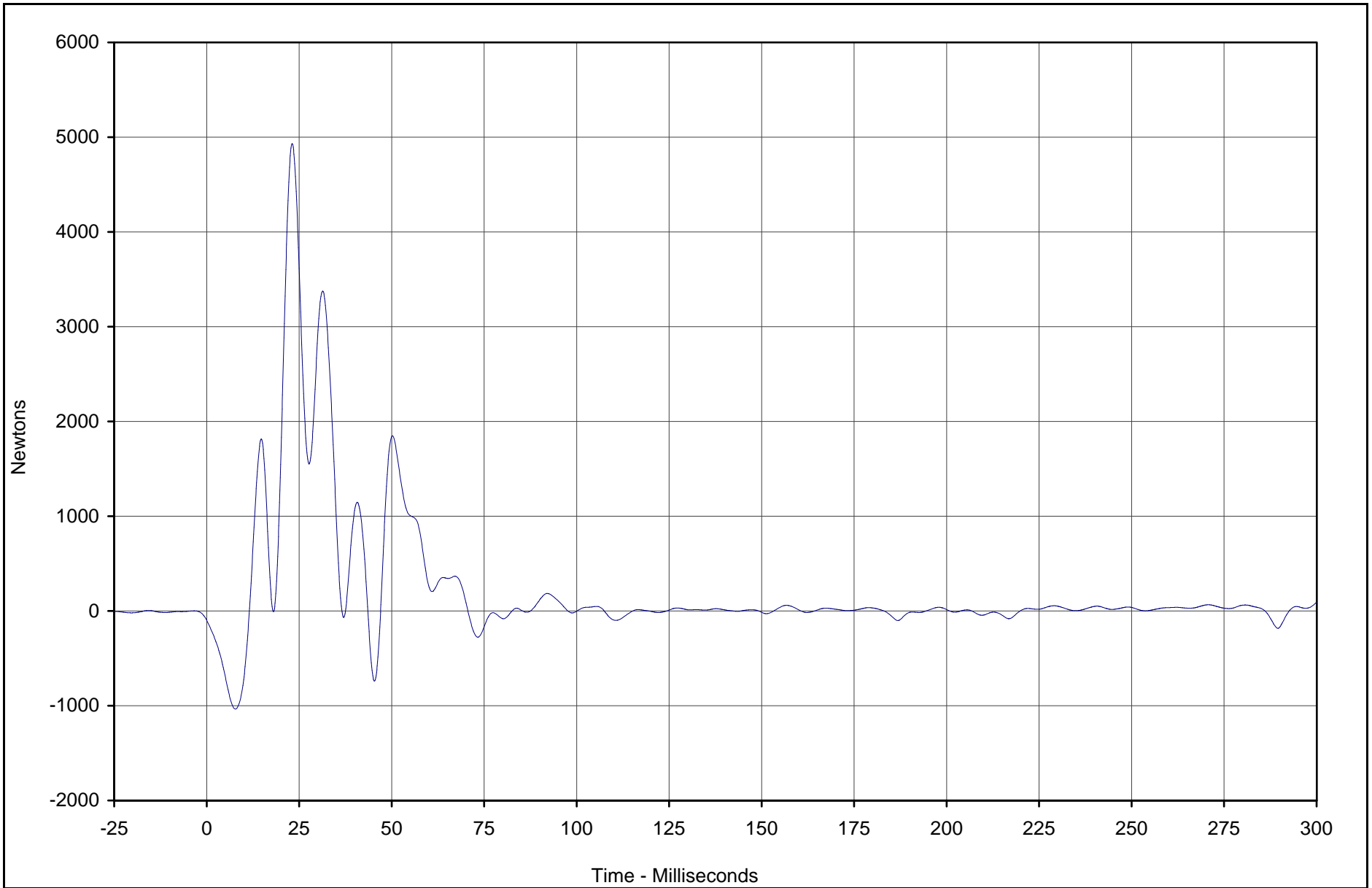
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-28



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D1	125	FIL	Newtons	4931.4	23.1	-1035.4	7.8	60



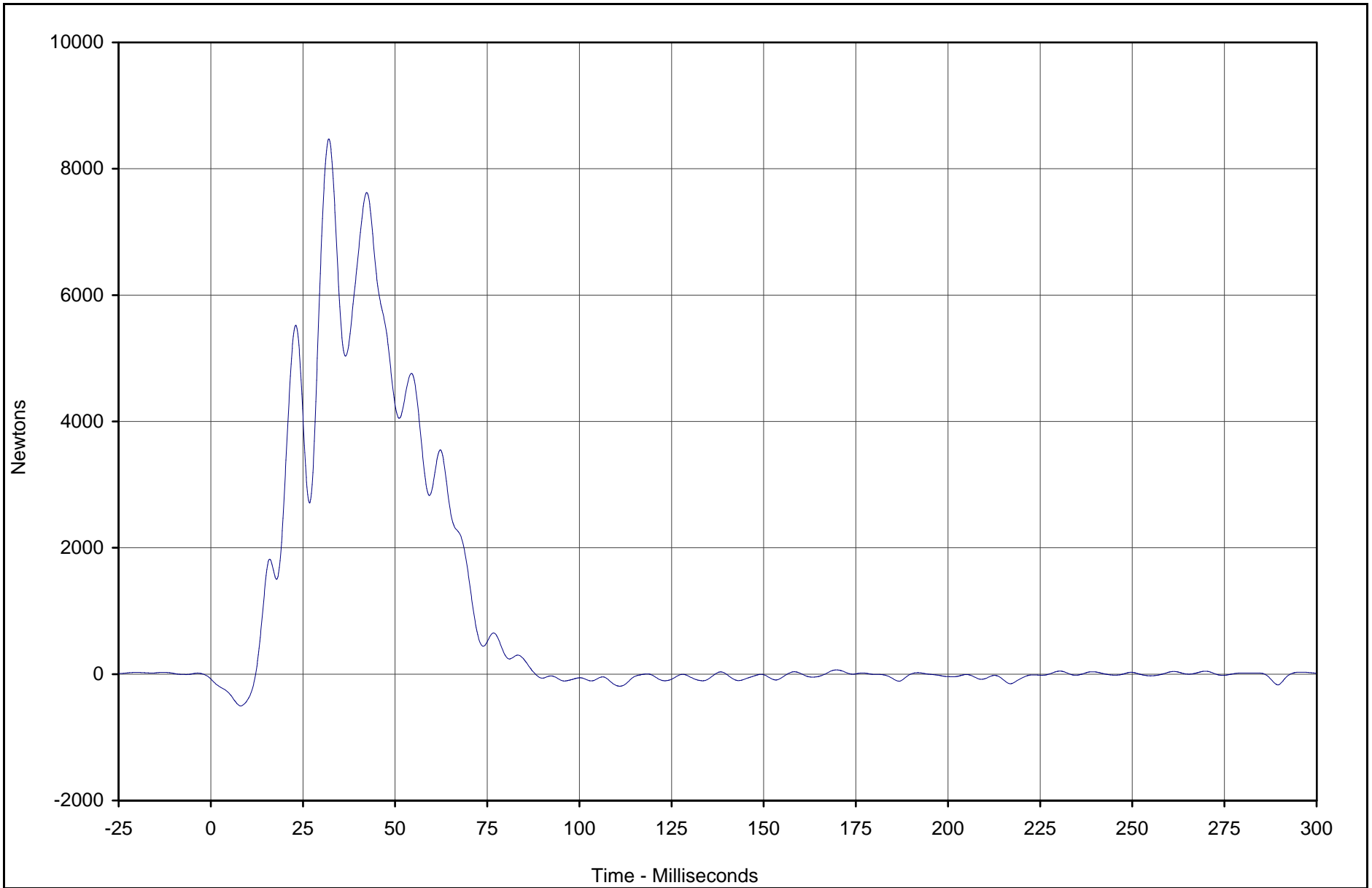
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-29



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D2	126	FIL	Newtons	8472.2	32.0	-503.7	8.1	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

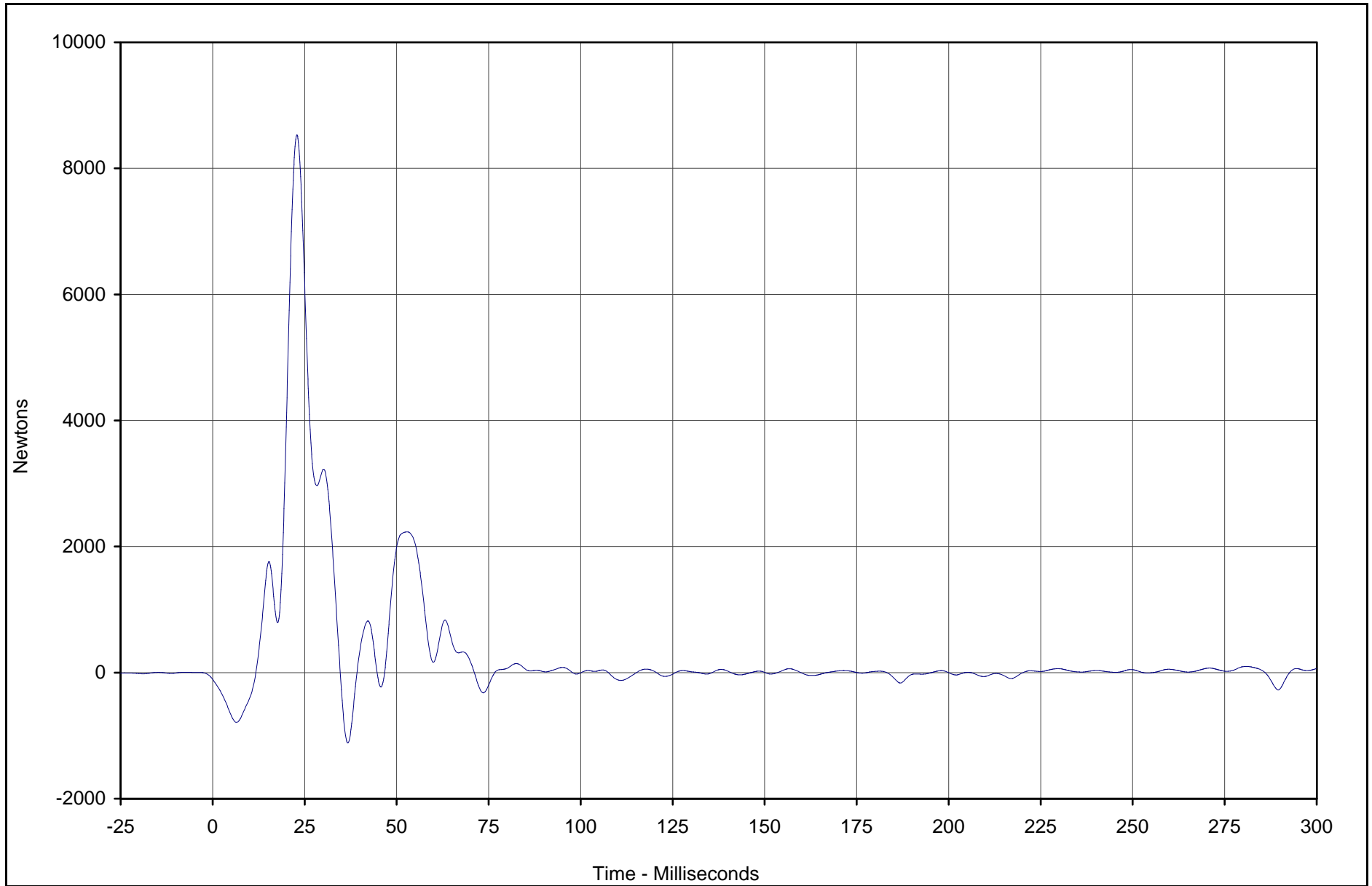
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-30

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D3	127	FIL	Newtons	8532.5	22.9	-1115.3	36.7	60



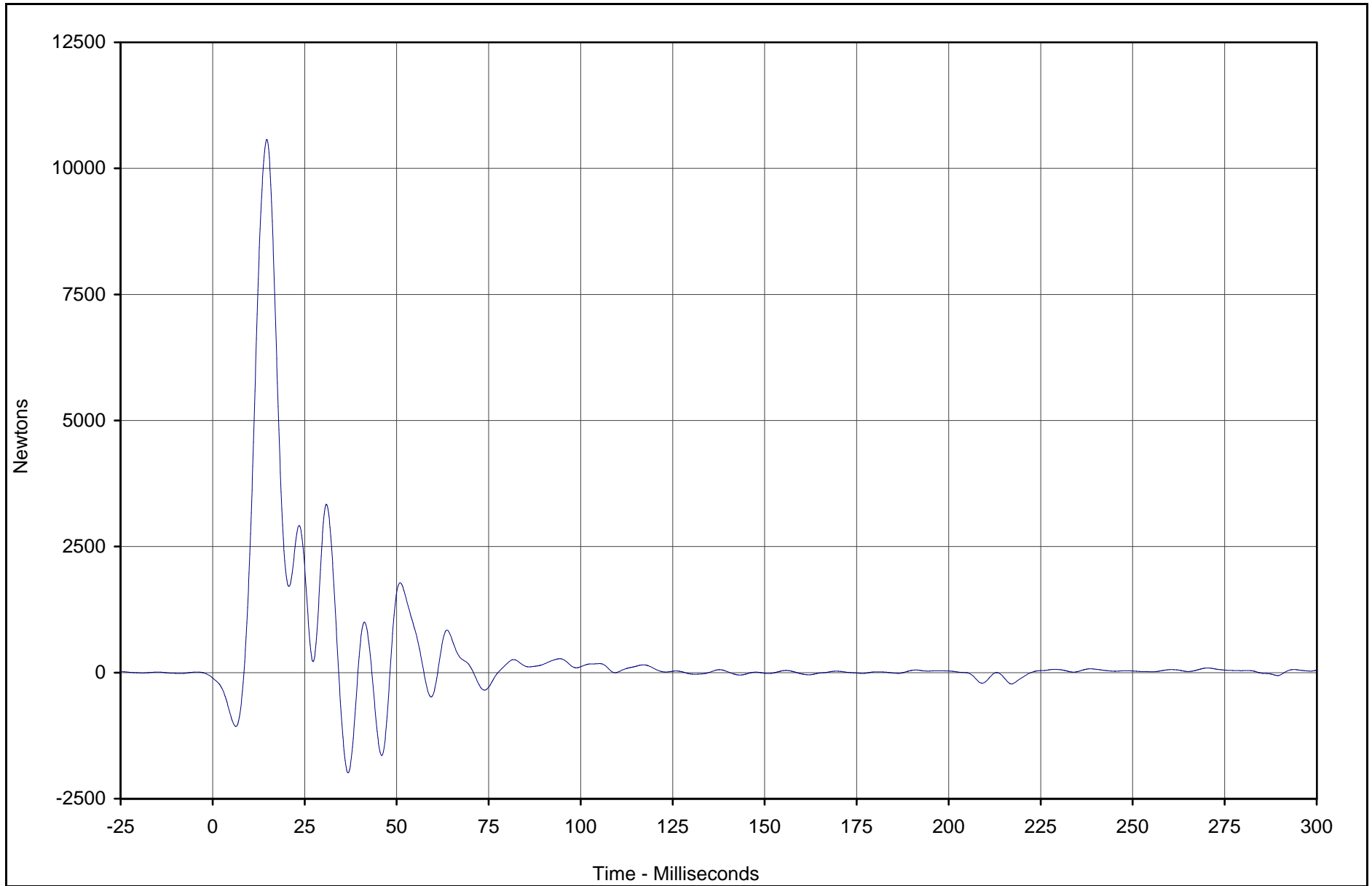
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-31



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D4	128	FIL	Newtons	10574.9	14.7	-1988.1	36.8	60

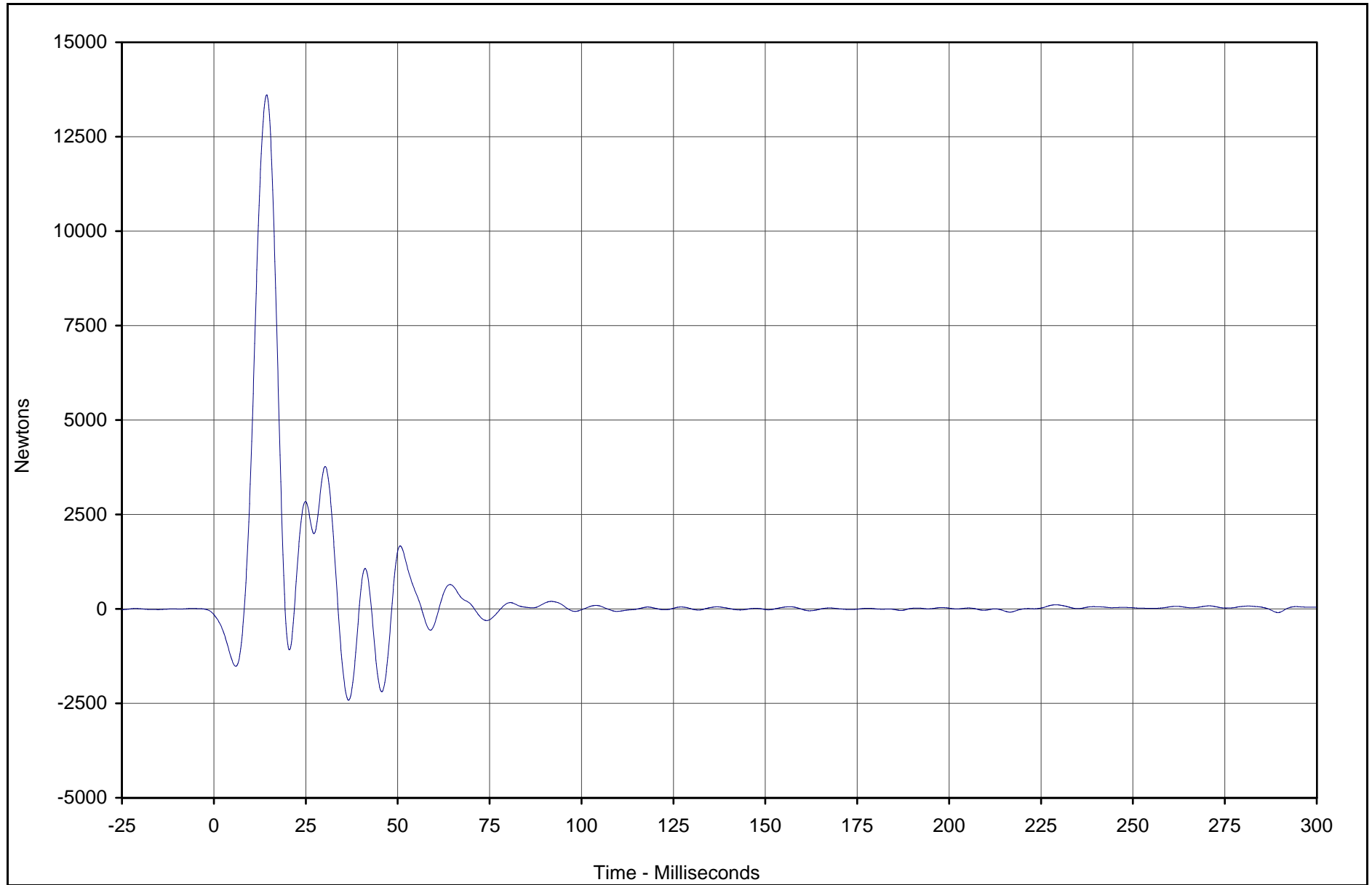


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D5	129	FIL	Newtons	13608.0	14.4	-2418.3	36.6	60

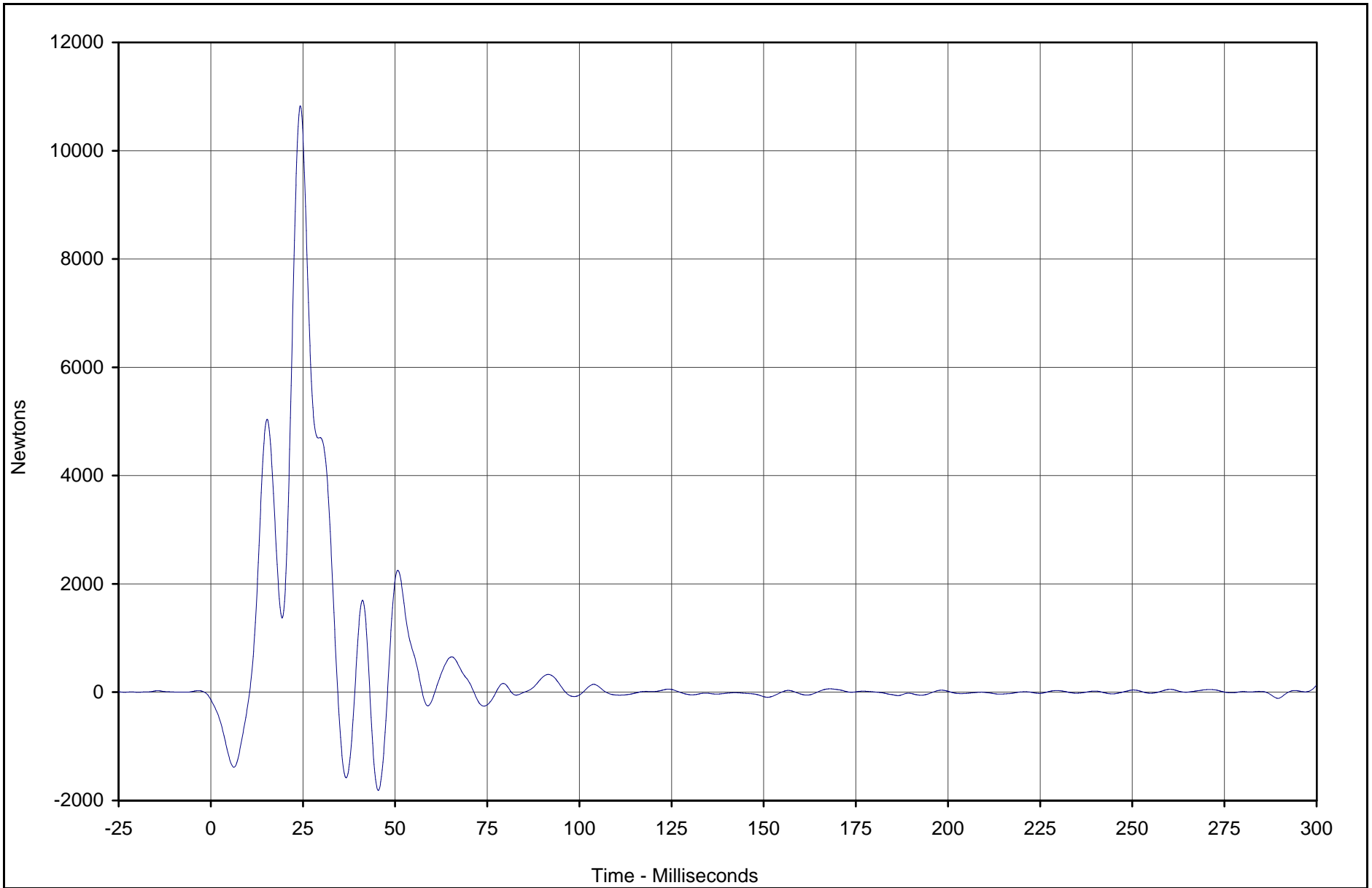


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D6	130	FIL	Newtons	10828.6	24.3	-1813.2	45.4	60



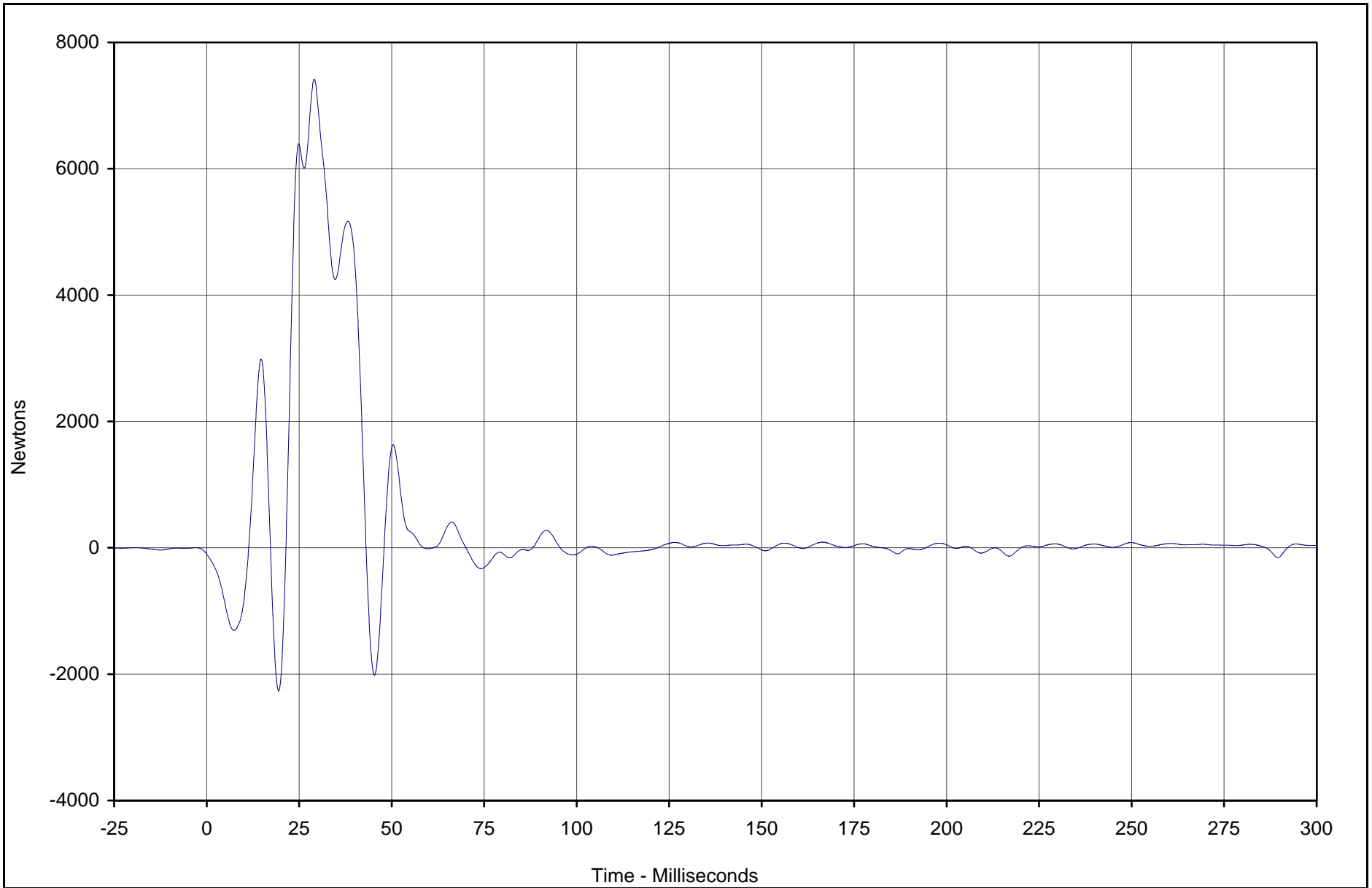
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-34



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D7	131	FIL	Newtons	7416.8	29.1	-2266.5	19.4	60



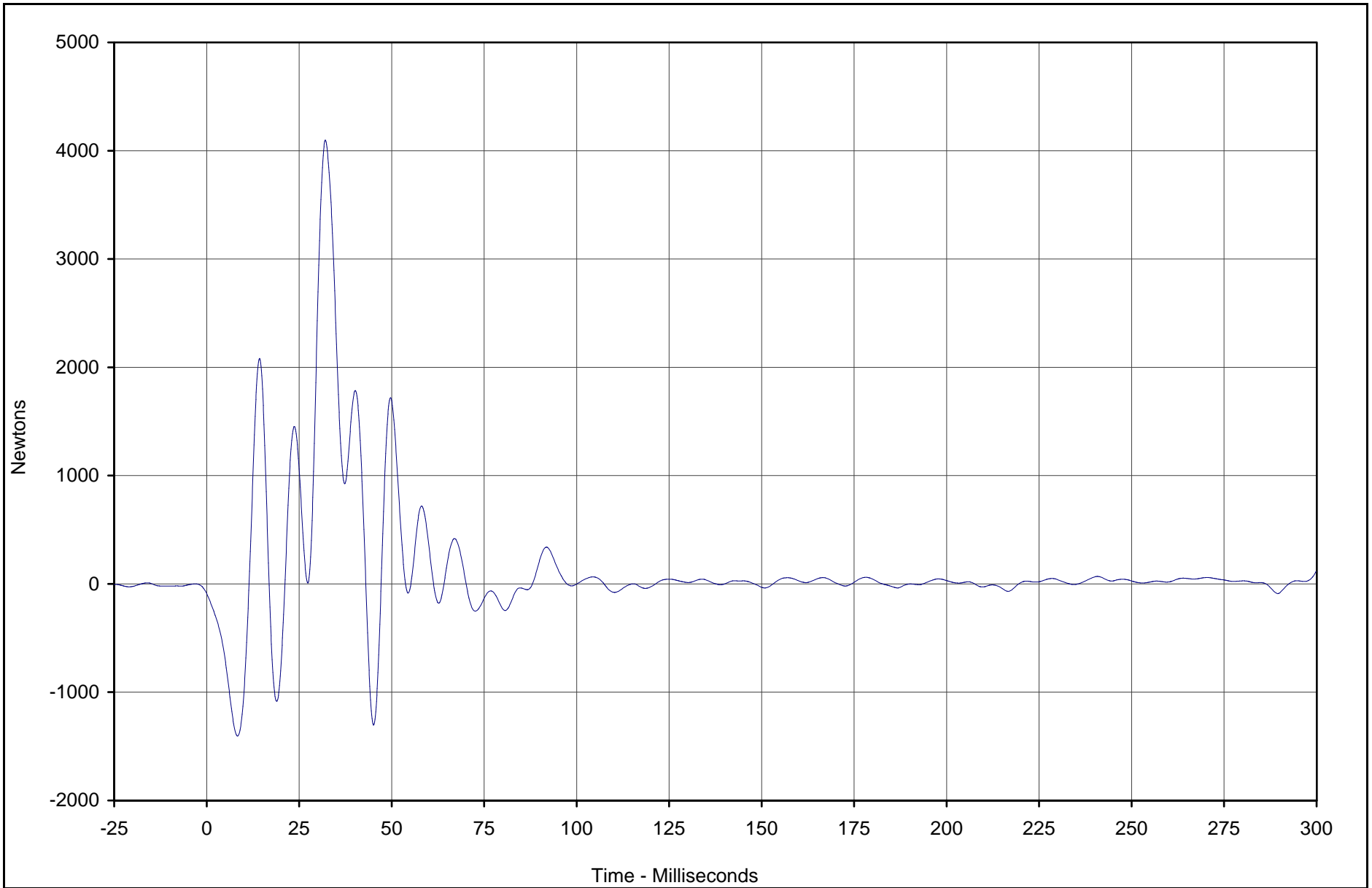
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-35



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D8	132	FIL	Newtons	4097.3	32.1	-1404.9	8.3	60

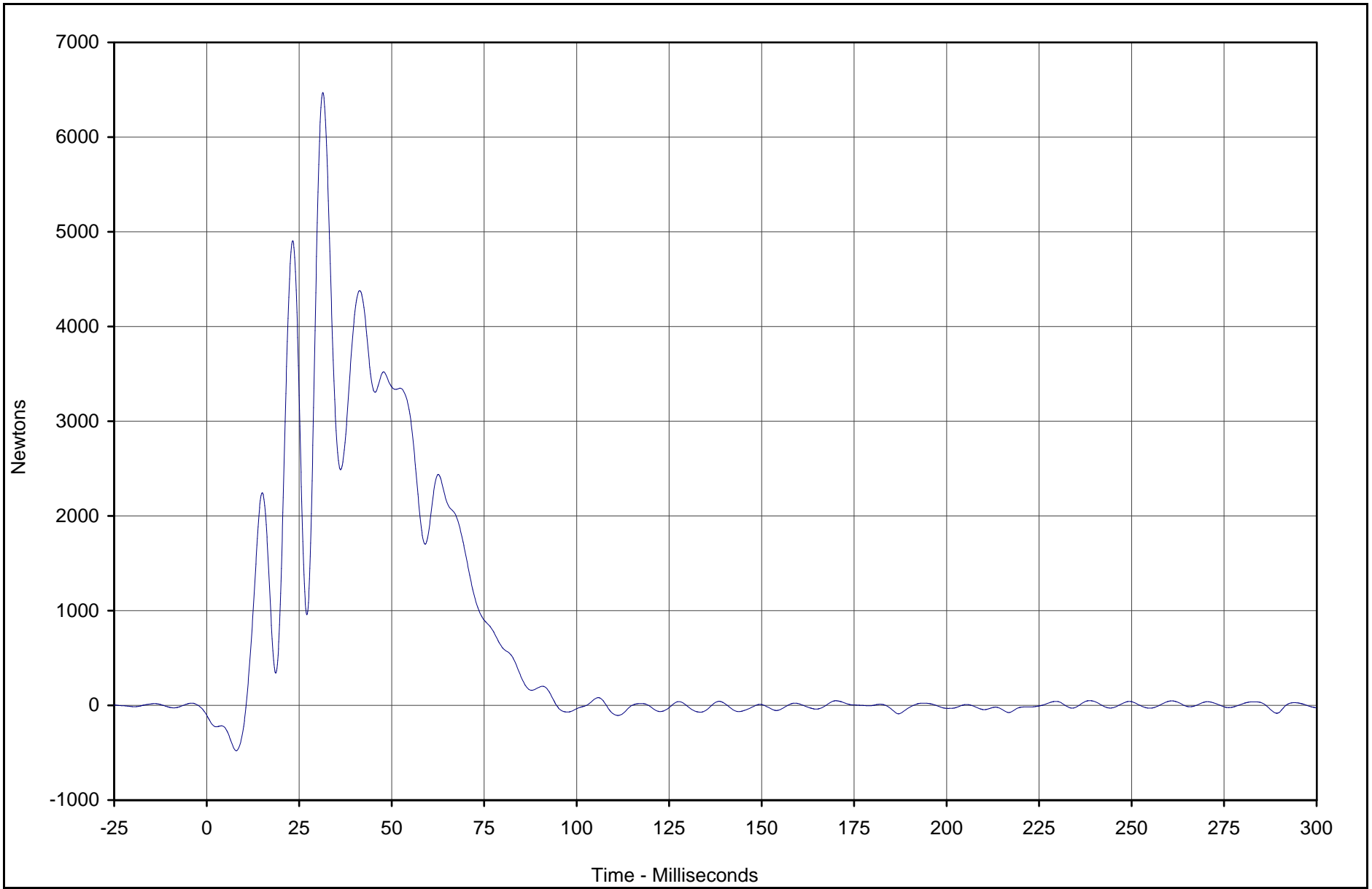


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force D9	133	FIL	Newtons	6469.9	31.4	-479.7	8.0	60

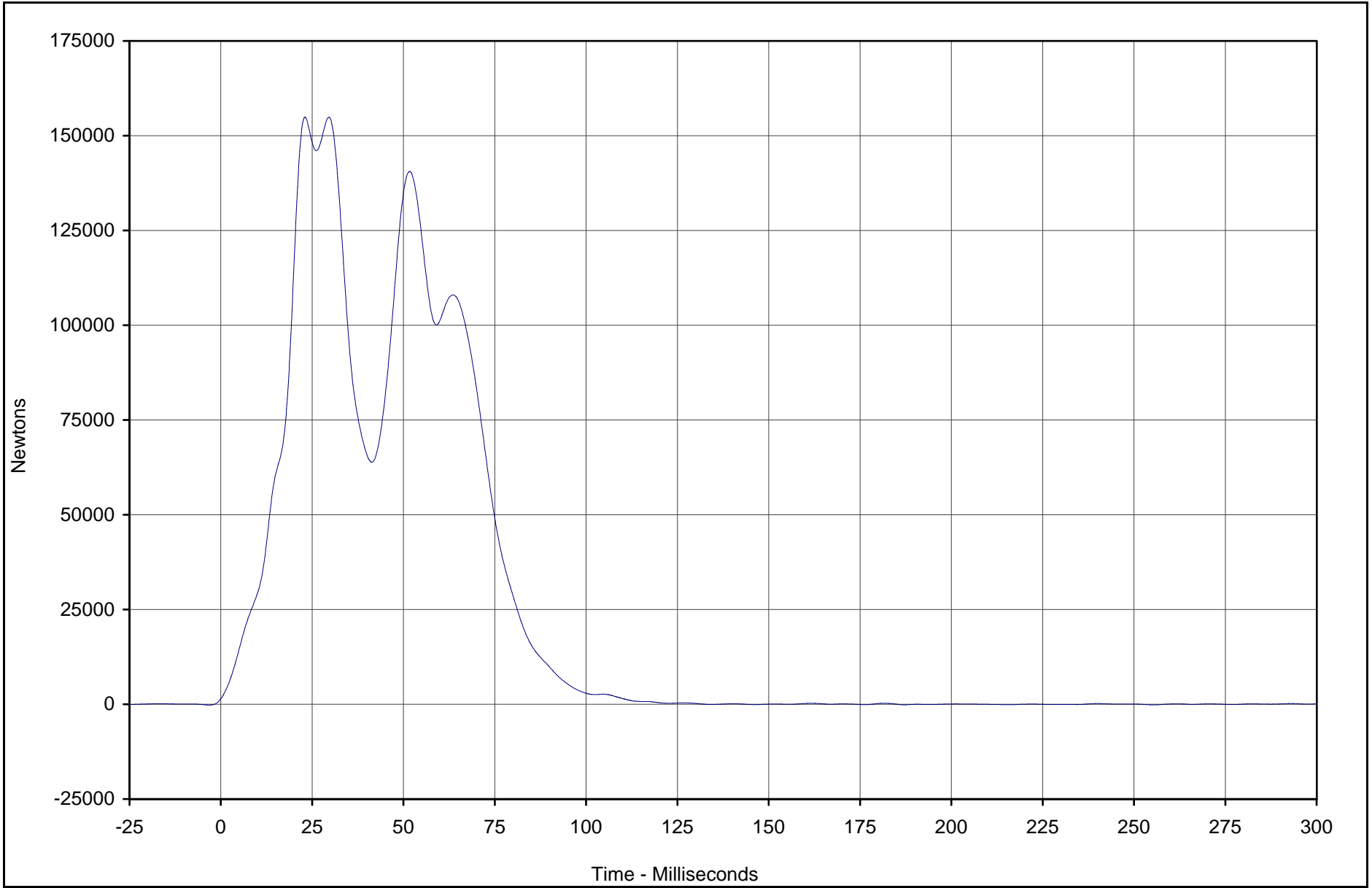


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 1	001	SUM	Newtons	154918.0	23.0	-159.7	255.4	60

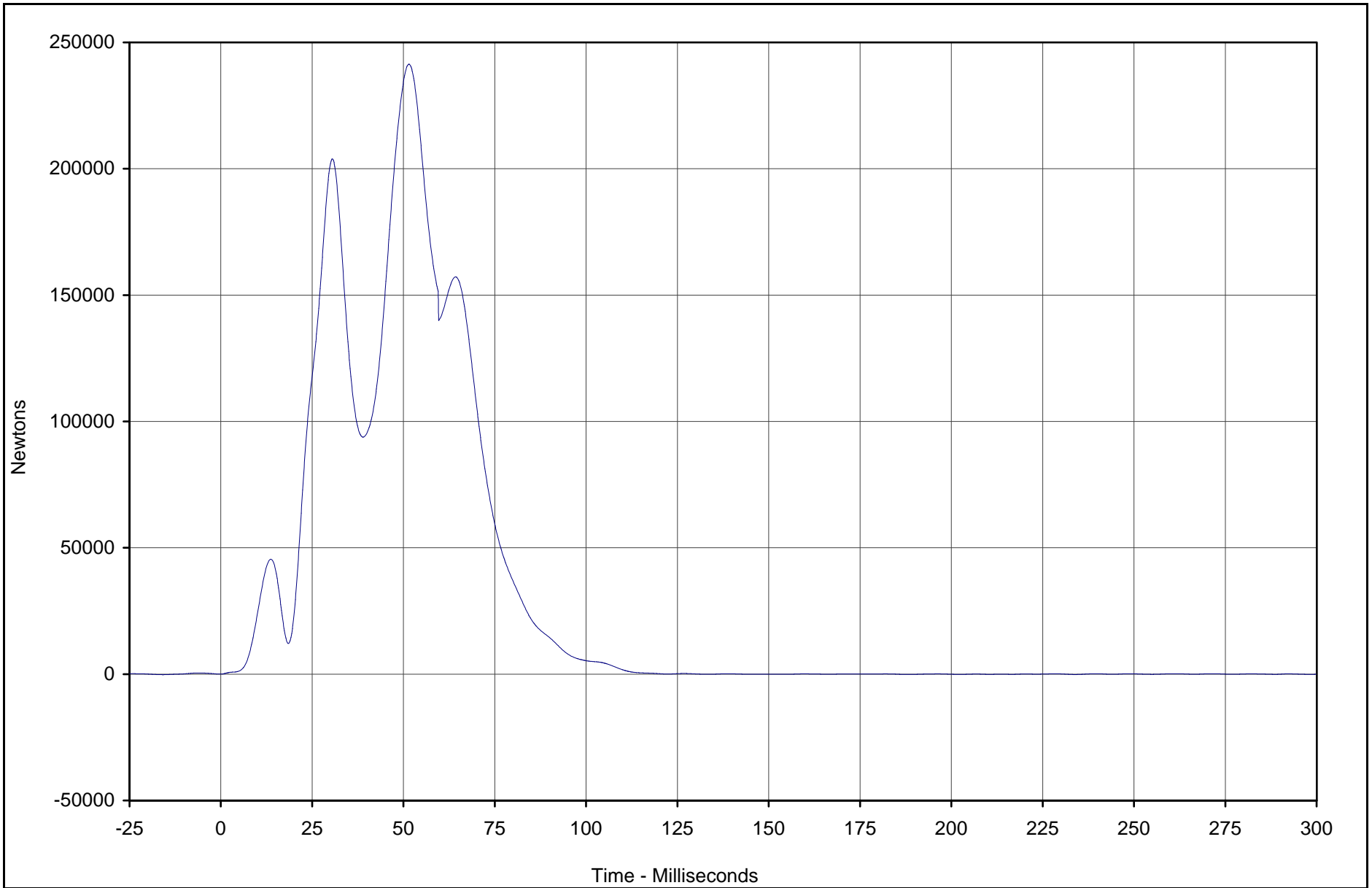


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 2	002	SUM	Newtons	241390.0	51.5	-152.0	233.9	60



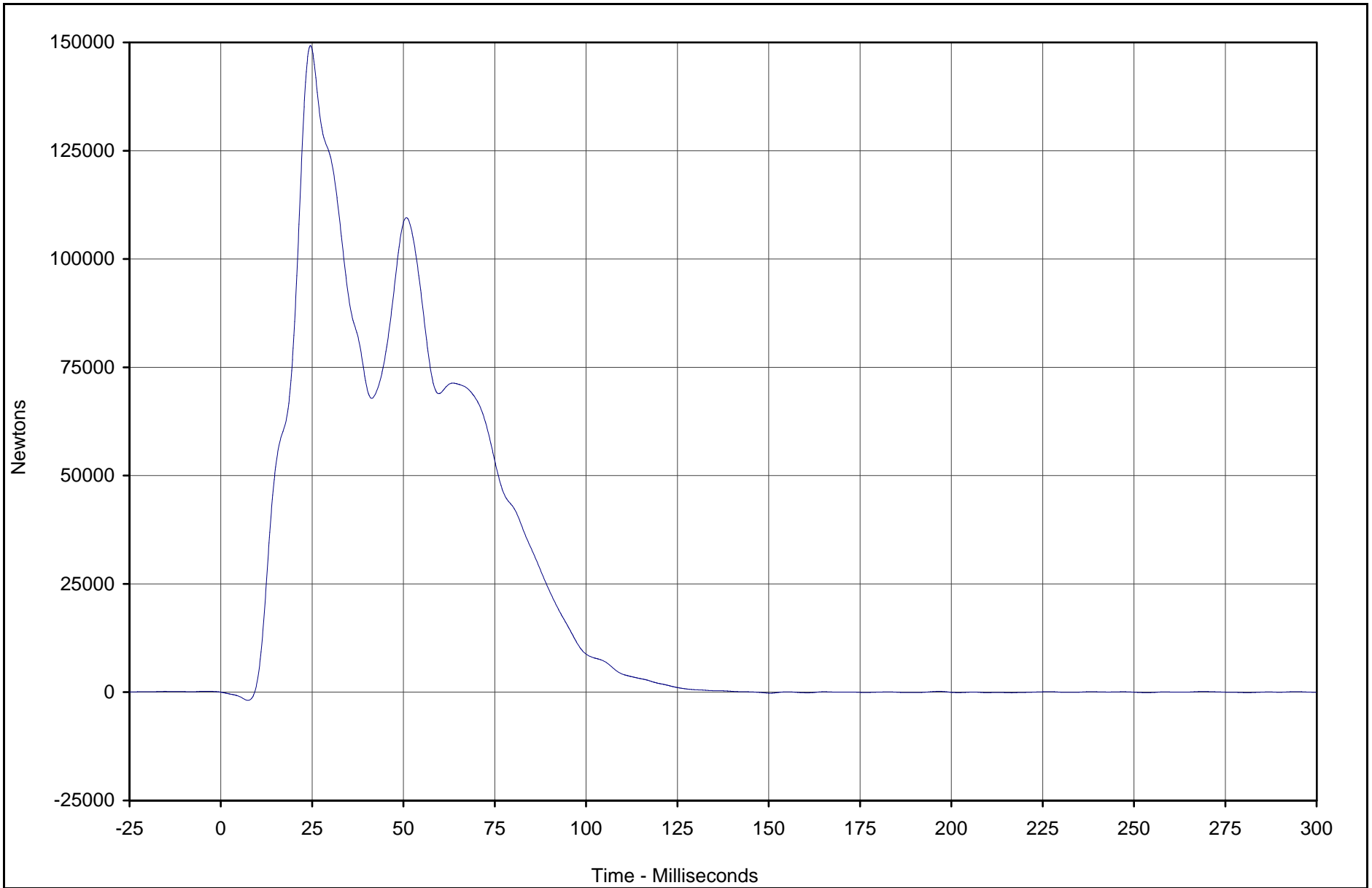
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-39



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 3	003	SUM	Newtons	149265.4	24.5	-1884.9	7.4	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

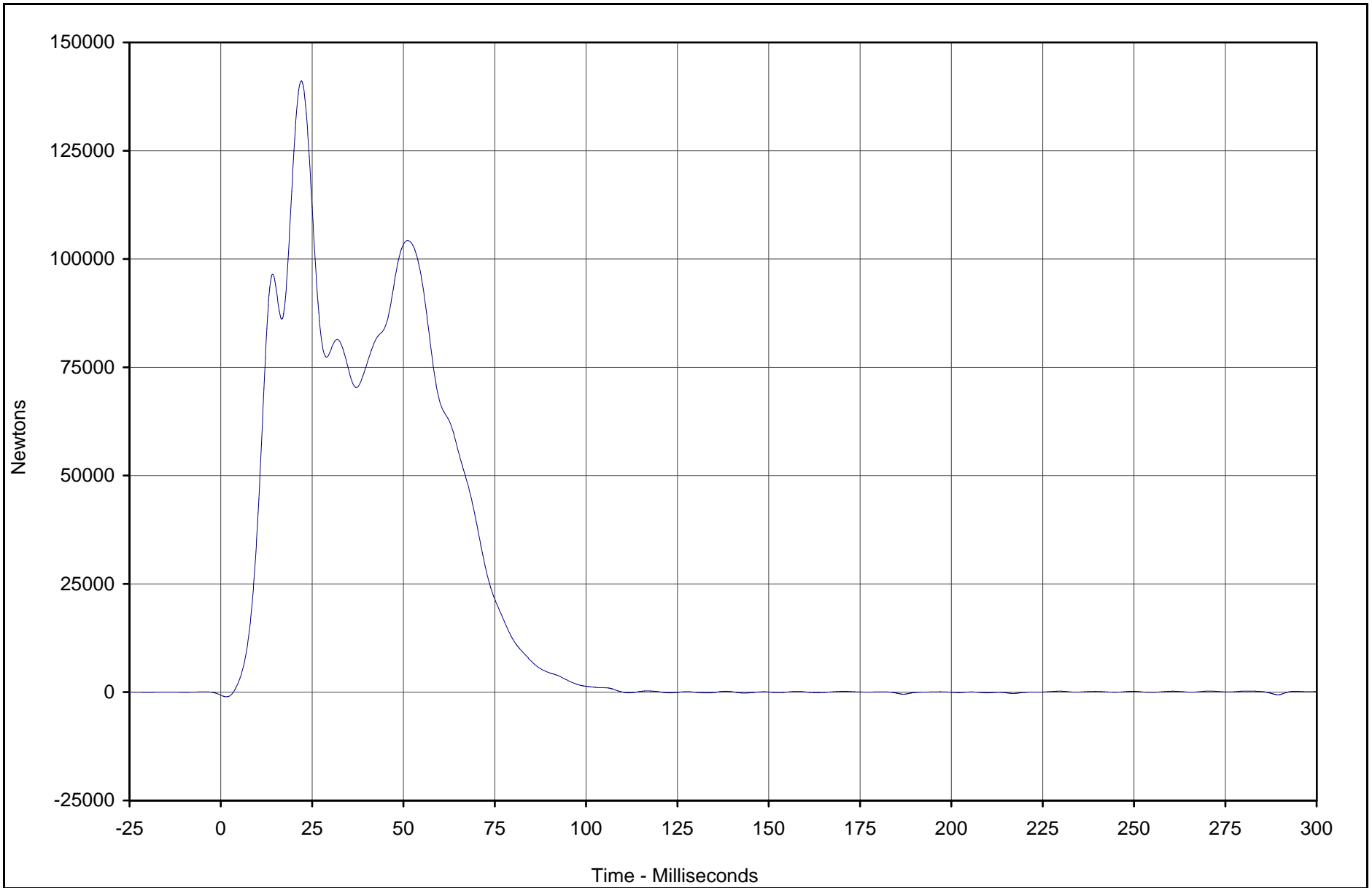
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-40

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 4	004	SUM	Newtons	141109.3	22.0	-1071.7	1.5	60



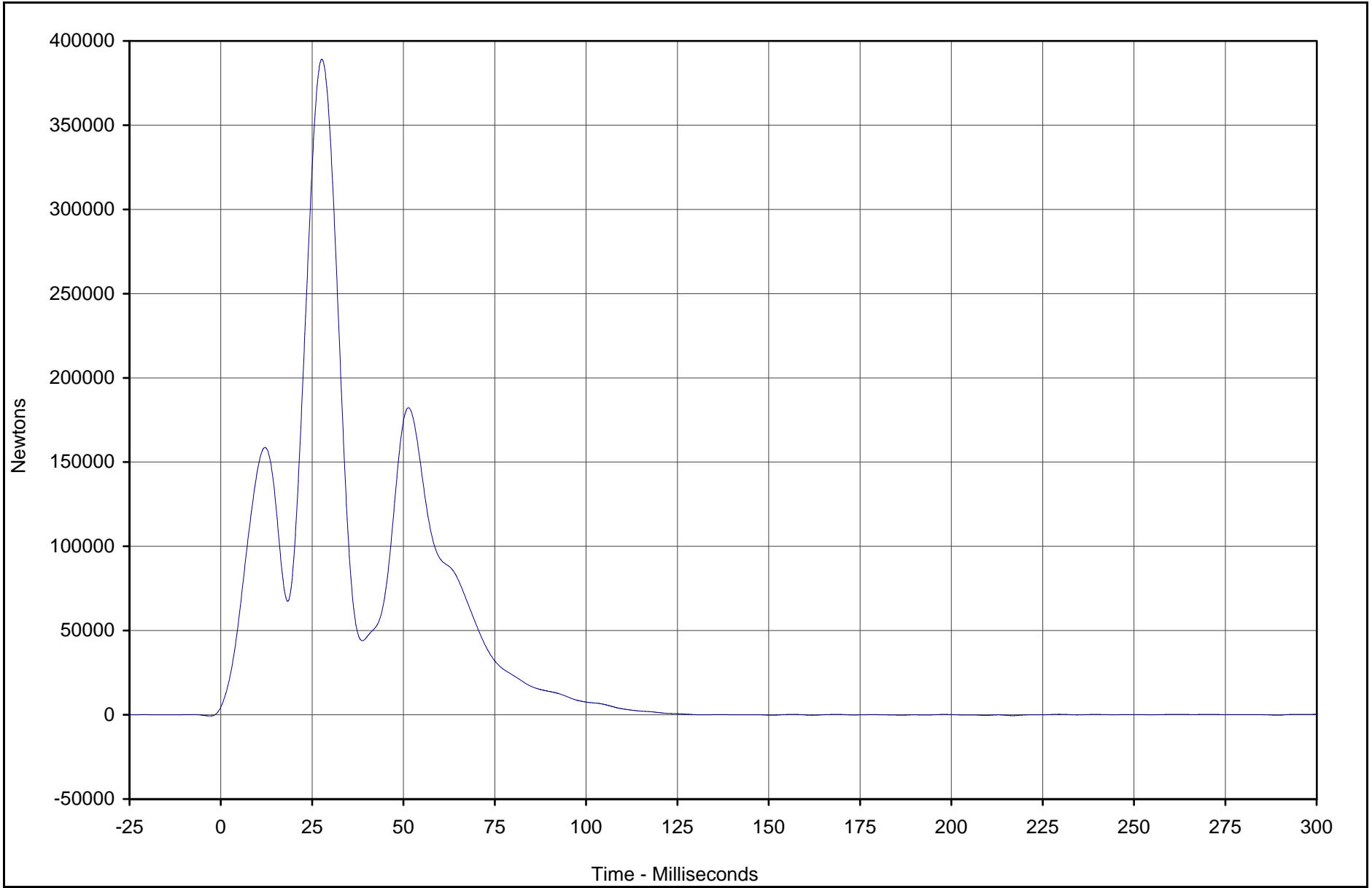
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-41



TR-P23001-1-3-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 5	005	SUM	Newtons	389111.0	27.7	-533.4	216.8	60



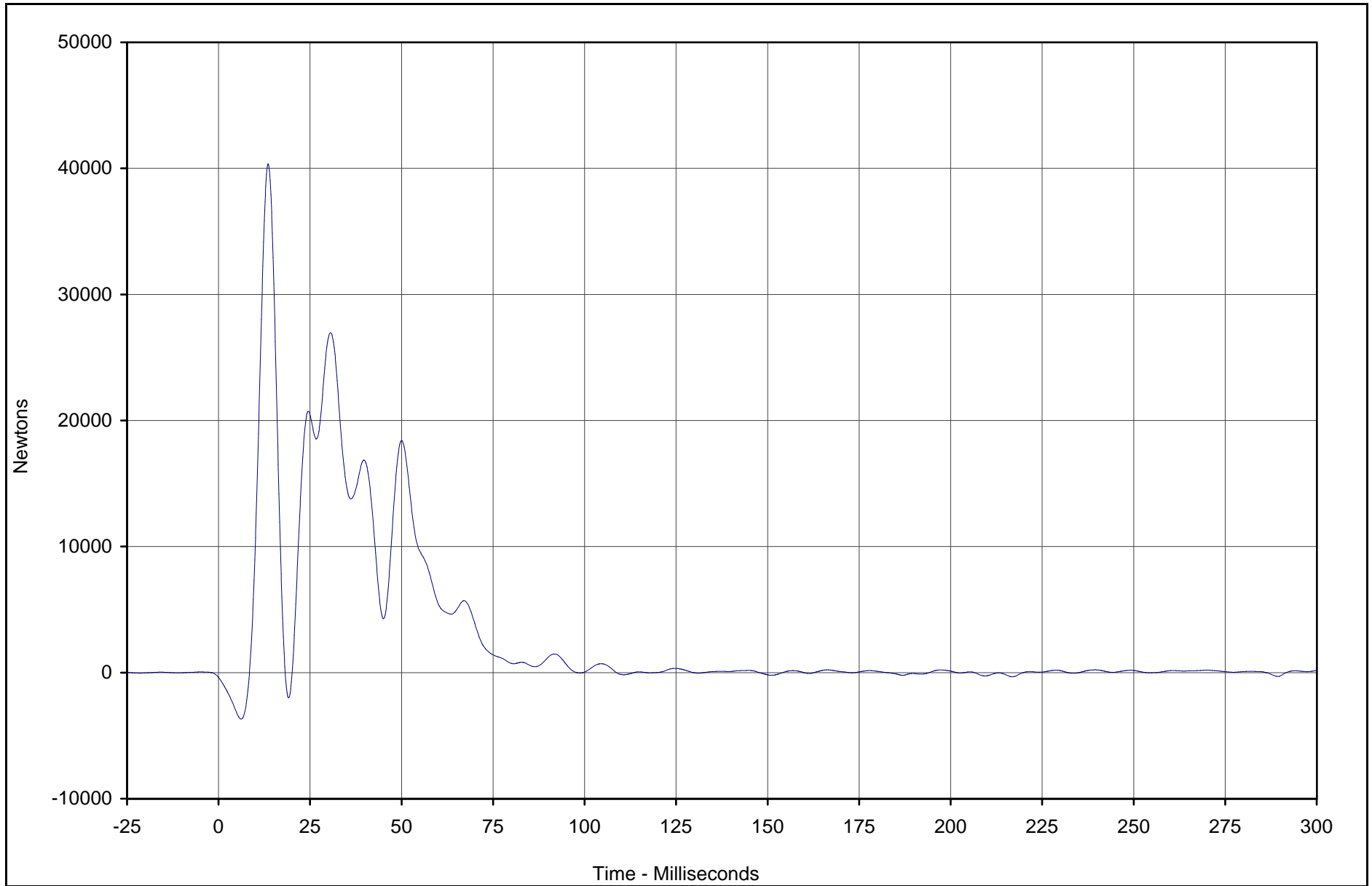
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-42



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Sum Group 6	006	SUM	Newtons	40357.7	13.5	-3685.9	6.2	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

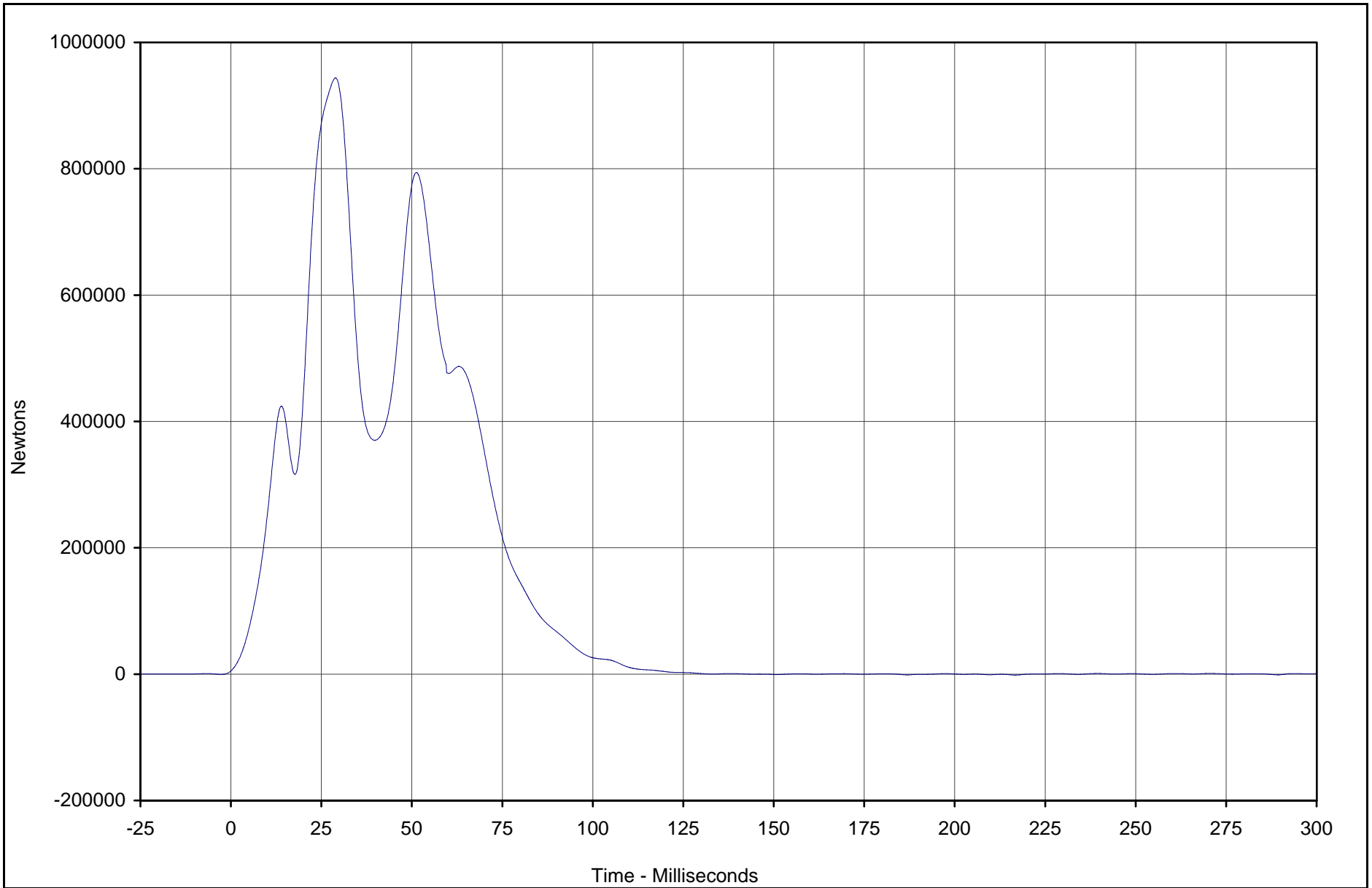
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

C-43



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Barrier Force Total Sum	007	SUM	Newtons	943844	28.9	-1502.8	216.8	60



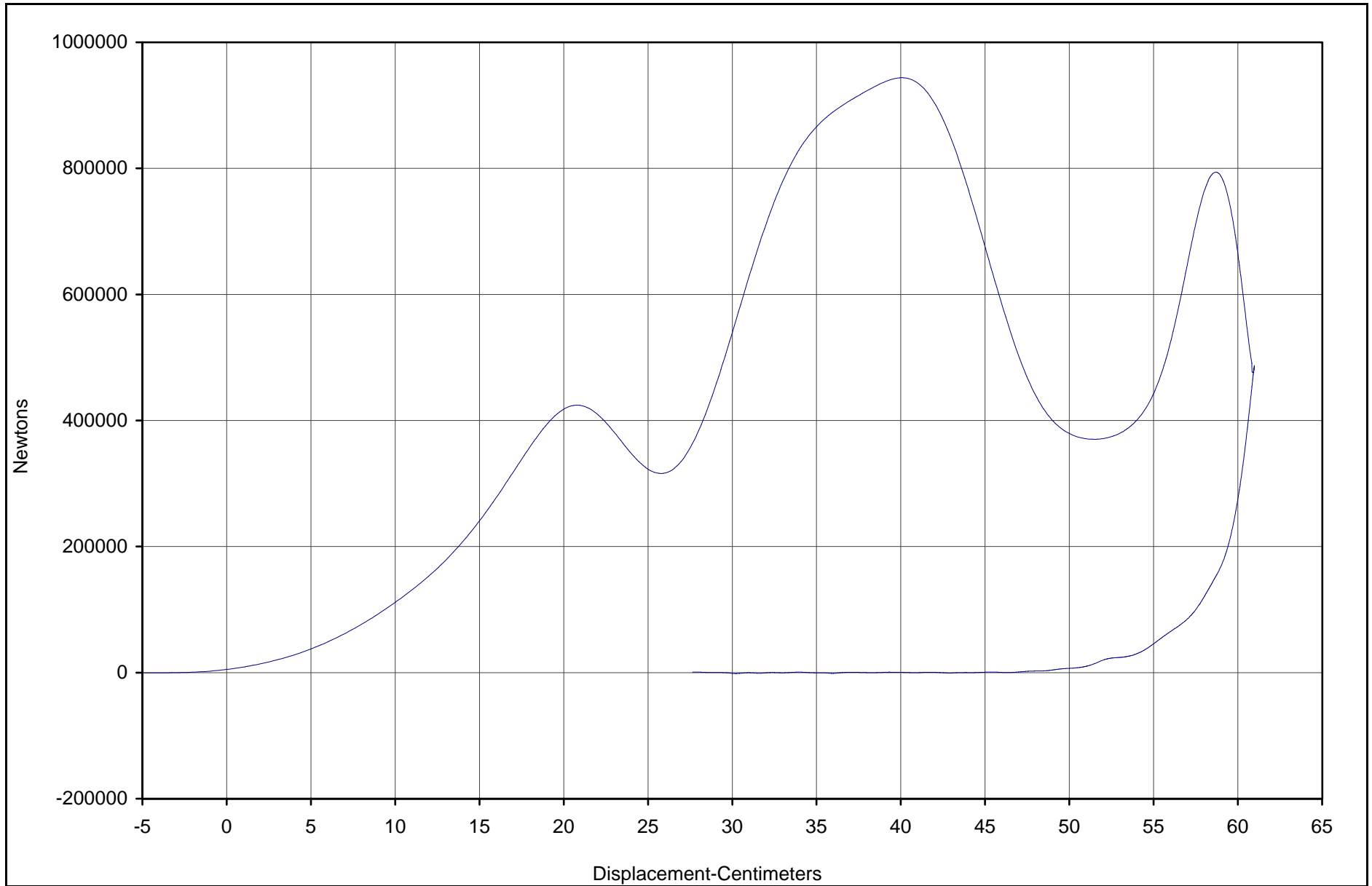
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

C-44



Curve Description	CURNO	Type	Units	Max	CM	Energy (Joules)	SAE Class
Barrier Force Total Sum vs. Displ.	001	XVY	Newtons	943844	40.1	264597	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

## BARRIER LOAD CELL SUMMARY DATA

Test Vehicle: 2003 Nissan Murano SL AWD SUV

NHTSA No.: M35204

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 3/4/03

Location	Units	Max	Time	Min	Time
Barrier Force A1	Newtons	1895.5	24.9	-1647.2	20.0
Barrier Force A2	Newtons	1967.0	25.0	-1241.2	19.8
Barrier Force A3	Newtons	42442.5	64.7	-1674.8	19.8
Barrier Force A4	Newtons	37330.8	65.8	-3138.5	19.9
Barrier Force A5	Newtons	4751.7	31.1	-1148.5	19.1
Barrier Force A6	Newtons	23719.0	49.7	-564.4	18.7
Barrier Force A7	Newtons	26052.1	24.3	-1718.3	18.3
Barrier Force A8	Newtons	2080.6	24.4	-2435.9	20.1
Barrier Force A9	Newtons	2141.5	37.5	-2072.2	20.2
Barrier Force B1	Newtons	1528.7	37.2	-1414.4	19.7
Barrier Force B2	Newtons	62245.3	21.5	-414.6	6.9
Barrier Force B3	Newtons	123425.6	28.3	-46.6	185.6
Barrier Force B4	Newtons	102481.2	51.4	-1545.4	18.1
Barrier Force B5	Newtons	48312.3	51.4	-58.8	216.9
Barrier Force B6	Newtons	40388.5	28.6	-105.0	299.9
Barrier Force B7	Newtons	114258.7	24.4	-528.2	6.5
Barrier Force B8	Newtons	22196.5	50.2	-1730.9	19.5
Barrier Force B9	Newtons	2081.4	36.5	-1378.3	41.5
Barrier Force C1	Newtons	2492.6	23.0	-1265.9	27.5
Barrier Force C2	Newtons	47454.5	20.5	-189.6	4.6
Barrier Force C3	Newtons	79552.2	22.8	-355.3	0.6
Barrier Force C4	Newtons	153681.8	28.8	-61.0	186.1
Barrier Force C5	Newtons	73760.2	27.8	-79.4	210.4
Barrier Force C6	Newtons	159188.3	27.2	-273.3	0.0
Barrier Force C7	Newtons	31972.9	13.1	-781.4	4.5
Barrier Force C8	Newtons	1978.8	31.7	-917.6	8.2
Barrier Force C9	Newtons	1540.6	13.9	-1793.7	28.1
Barrier Force D1	Newtons	4931.4	23.1	-1035.4	7.8
Barrier Force D2	Newtons	8472.2	32.0	-503.7	8.1
Barrier Force D3	Newtons	8532.5	22.9	-1115.3	36.7
Barrier Force D4	Newtons	10574.9	14.7	-1988.1	36.8
Barrier Force D5	Newtons	13608.0	14.4	-2418.3	36.6
Barrier Force D6	Newtons	10828.6	24.3	-1813.2	45.4
Barrier Force D7	Newtons	7416.8	29.1	-2266.5	19.4
Barrier Force D8	Newtons	4097.3	32.1	-1404.9	8.3
Barrier Force D9	Newtons	6469.9	31.4	-479.7	8.0
Barrier Force Sum Group 1	Newtons	154918.0	23.0	-159.7	255.4
Barrier Force Sum Group 2	Newtons	241390.0	51.5	-152.0	233.9
Barrier Force Sum Group 3	Newtons	149265.4	24.5	-1884.9	7.4
Barrier Force Sum Group 4	Newtons	141109.3	22.0	-1071.7	1.5
Barrier Force Sum Group 5	Newtons	389111.0	27.7	-533.4	216.8
Barrier Force Sum Group 6	Newtons	40357.7	13.5	-3685.9	6.2
Barrier Force Total Sum	Newtons	943843.6	28.9	-1502.8	216.8

1.) Channel failed at 59.6 msec.

## **APPENDIX D**

### **INSTRUMENTATION DATA CHANNEL ASSIGNMENTS**

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D. Serial Number 34  
3/4/03  
2003 Nissan Murano SL AWD SUV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD, PRIMARY	X	KEAC039	Accel.,1/2 bridge	Endevco	7264-2000	G
2	HEAD, PRIMARY	Y	KEAC038	Accel.,1/2 bridge	Endevco	7264-2000	G
3	HEAD, PRIMARY	Z	KEAC027	Accel.,1/2 bridge	Endevco	7264-2000	G
4	HEAD, REDUNDANT	X	KEAC031	Accel.,1/2 bridge	Endevco	7264-2000	G
5	HEAD, REDUNDANT	Y	KEAC032	Accel.,1/2 bridge	Endevco	7264-2000	G
6	HEAD, REDUNDANT	Z	KEAC026	Accel.,1/2 bridge	Endevco	7264-2000	G
7	NECK FORCE	X	GPUN02FX	Load cell, six axis neck	R. A. Denton	1716A	N
8	NECK FORCE	Y	GPUN02FY	Load cell, six axis neck	R. A. Denton	1716A	N
9	NECK FORCE	Z	GPUN02FZ	Load cell, six axis neck	R. A. Denton	1716A	N
10	NECK MOMENT	X	GPUN02MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
11	NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
12	NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
13	CHEST , PRIMARY	X	GPAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
14	CHEST , PRIMARY	Y	GPAC024	Accel., 1/2 bridge	Endevco	7264-2000	G
15	CHEST , PRIMARY	Z	GPAC029	Accel., 1/2 bridge	Endevco	7264-2000	G
16	CHEST , REDUNDANT	X	KEAC023	Accel.,1/2 bridge	Endevco	7264-200	G
17	CHEST , REDUNDANT	Y	KEAC022	Accel.,1/2 bridge	Endevco	7264-200	G
18	CHEST , REDUNDANT	Z	KEAC024	Accel.,1/2 bridge	Endevco	7264-200	G
19	CHEST DISPLACEMENT	X	GPCP001	Rotary Pot Chest	Servo	14CBI	MM
20	PELVIS, PRIMARY	X	KEAC019	Accel.,1/2 bridge	Endevco	7264-200	G
21	PELVIS, PRIMARY	Y	KEAC020	Accel.,1/2 bridge	Endevco	7264-200	G
22	PELVIS, PRIMARY	Z	KEAC021	Accel.,1/2 bridge	Endevco	7264-200	G
23	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2121	N
24	RIGHT FEMUR FORCE	Z	KEFF002	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 34  
3/4/03  
2003 Nissan Murano SL AWD SUV**

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	KEIC003X	Accel., Foot Triax	I.C. Sensor	3031-500	G
36	FOOT LEFT, AFT	Z	KEIC003Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
37	FOOT LEFT, FORE	Z	KEIC003Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
38	FOOT RIGHT, AFT	X	KEIC004X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT RIGHT, AFT	Z	KEIC004Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT RIGHT, FORE	Z	KEIC004Z	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	CM
44	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

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TR-P23001-13-NC

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Passenger A.T.D. Serial Number 35  
3/4/03  
2003 Nissan Murano SL AWD SUV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
45	HEAD, PRIMARY	X	GPAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
46	HEAD, PRIMARY	Y	GPAC002	Accel., 1/2 bridge	Endevco	7264-2000	G
47	HEAD, PRIMARY	Z	GPAC003	Accel., 1/2 bridge	Endevco	7264-2000	G
48	HEAD, REDUNDANT	X	GPAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
49	HEAD, REDUNDANT	Y	GPAC021	Accel., 1/2 bridge	Endevco	7264-2000	G
50	HEAD, REDUNDANT	Z	GPAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
51	NECK FORCE	X	GPUN01FX	Load cell, six axis neck	R. A. Denton	1716A	N
52	NECK FORCE	Y	GPUN01FY	Load cell, six axis neck	R. A. Denton	1716A	N
53	NECK FORCE	Z	GPUN01FZ	Load cell, six axis neck	R. A. Denton	1716A	N
54	NECK MOMENT	X	GPUN01MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
55	NECK MOMENT	Y	GPUN01MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
56	NECK MOMENT	Z	GPUN01MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
57	CHEST , PRIMARY	X	GPAC005	Accel., 1/2 bridge	Endevco	7264-2000	G
58	CHEST , PRIMARY	Y	GPAC011	Accel., 1/2 bridge	Endevco	7264-2000	G
59	CHEST , PRIMARY	Z	GPAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
60	CHEST , REDUNDANT	X	GPAC034	Accel., 1/2 bridge	Endevco	7264-2000	G
61	CHEST , REDUNDANT	Y	GPAC023	Accel., 1/2 bridge	Endevco	7264-2000	G
62	CHEST , REDUNDANT	Z	GPAC020	Accel., 1/2 bridge	Endevco	7264-2000	G
63	CHEST DISPLACEMENT	X	GPCP002	Rotary Pot Chest	Servo	14CBI	MM
64	PELVIS, PRIMARY	X	GPAC025	Accel., 1/2 bridge	Endevco	7264-2000	G
65	PELVIS, PRIMARY	Y	GPAC022	Accel., 1/2 bridge	Endevco	7264-2000	G
66	PELVIS, PRIMARY	Z	GPAC019	Accel., 1/2 bridge	Endevco	7264-2000	G
67	LEFT FEMUR FORCE	Z	KEFF003	Load cell, Femur	R.A. Denton	2121	N
68	RIGHT FEMUR FORCE	Z	KEFF004	Load cell, Femur	R.A. Denton	2121	N

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Passenger A.T.D. Serial Number 35  
3/4/03  
2003 Nissan Murano SL AWD SUV**

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	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT, AFT	Z	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT, FORE	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT, AFT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT, AFT	Z	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT, FORE	Z	KEIC001Z	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	MM
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  
3/4/03  
2003 Nissan Murano SL AWD SUV**

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  
3/4/03  
2003 Nissan Murano SL AWD SUV**

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  
3/4/03  
2003 Nissan Murano SL AWD SUV**

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.: LK06A

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	5343	Pass
Overall Test Results				Pass

ATD Serial No.: 034

Location: Right Knee

Test I.D.: LK06C

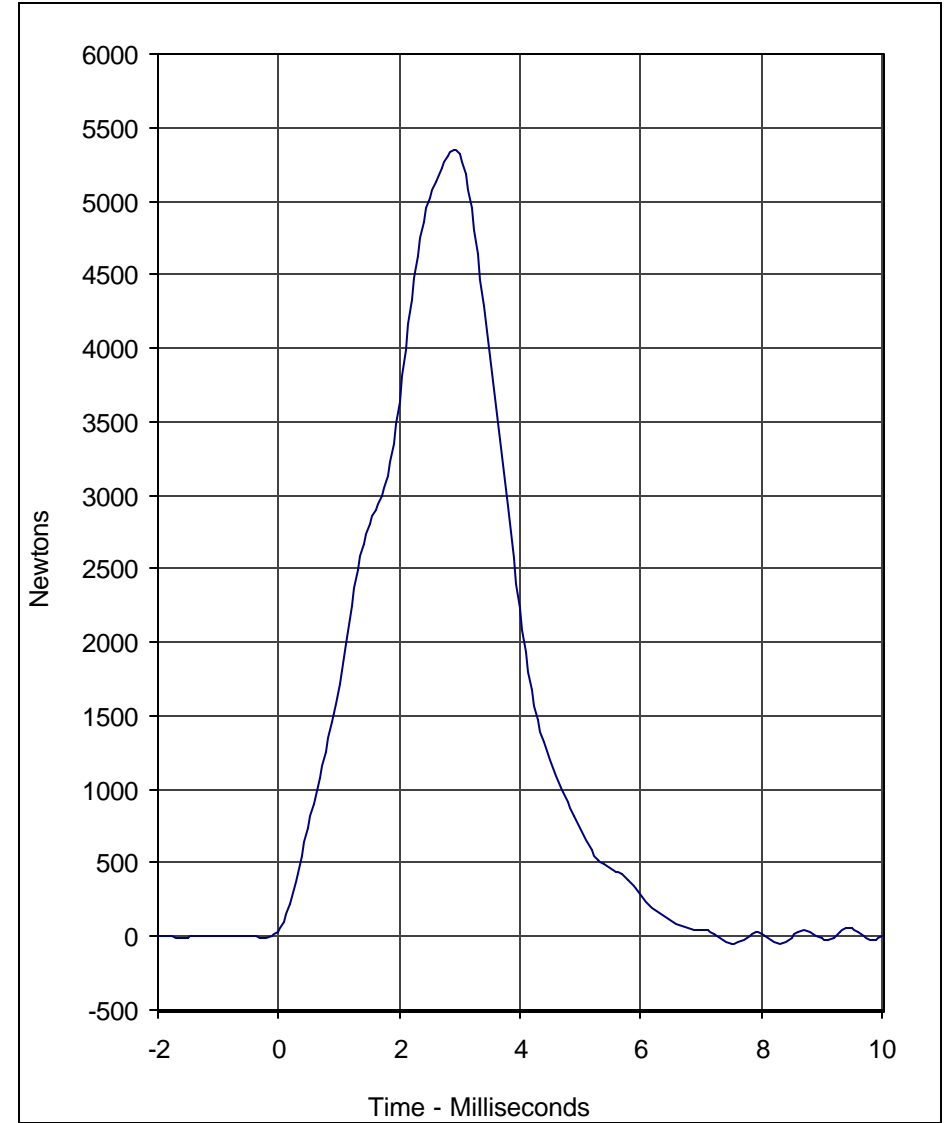
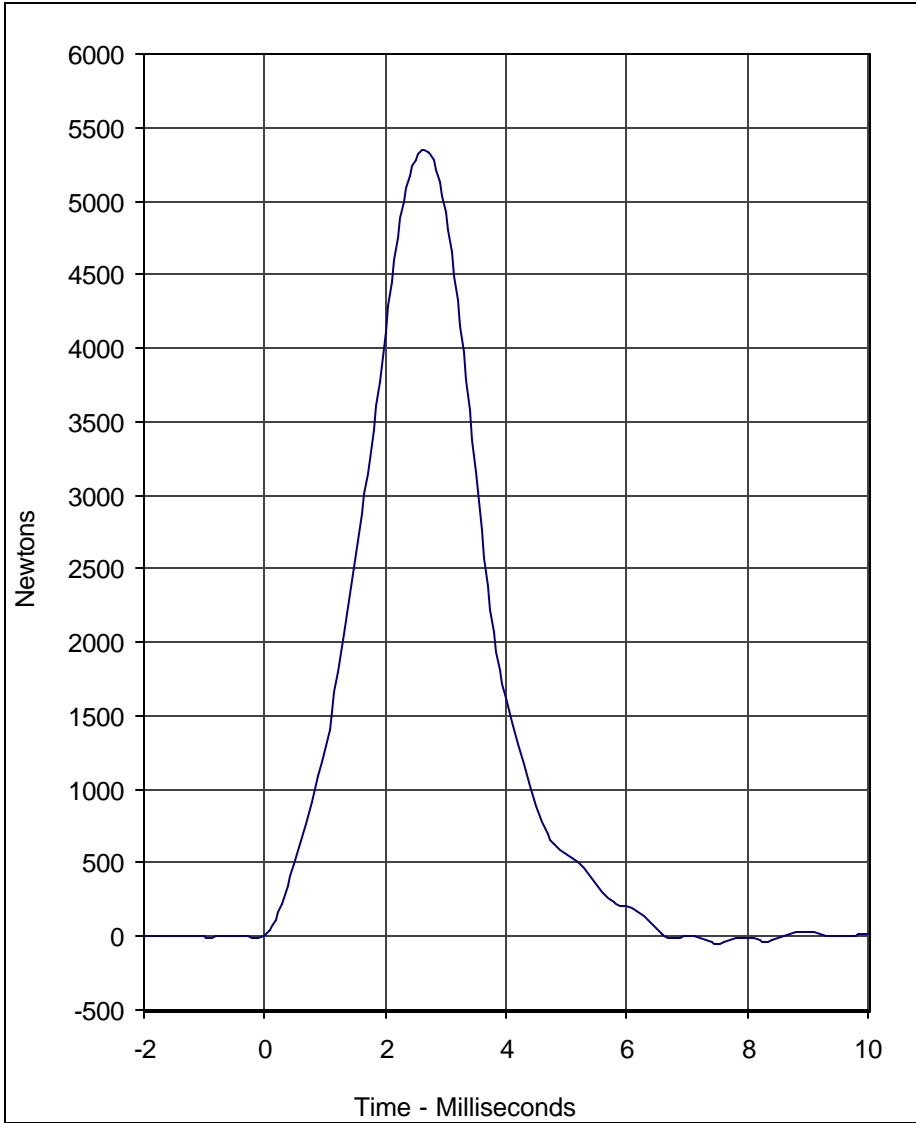
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5351	Pass
Overall Test Results				Pass

\_\_\_\_\_  
Laboratory Technician

March 1, 2003  
\_\_\_\_\_  
Test Date

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TR-P23001-13-NC



Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Left Knee	LK06A	001	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5343.1	2.6	-48.5	7.5	600

Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Right Knee	LK06C	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5350.5	2.9	-52.7	8.3	600

Test Program: Hybrid III 50th Percentile Male Knee Impact Test  
 Test Date: 3/1/03

A.T.D. Serial No.: 034





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

ATD Serial No.: 034

Test I.D.: HD01E

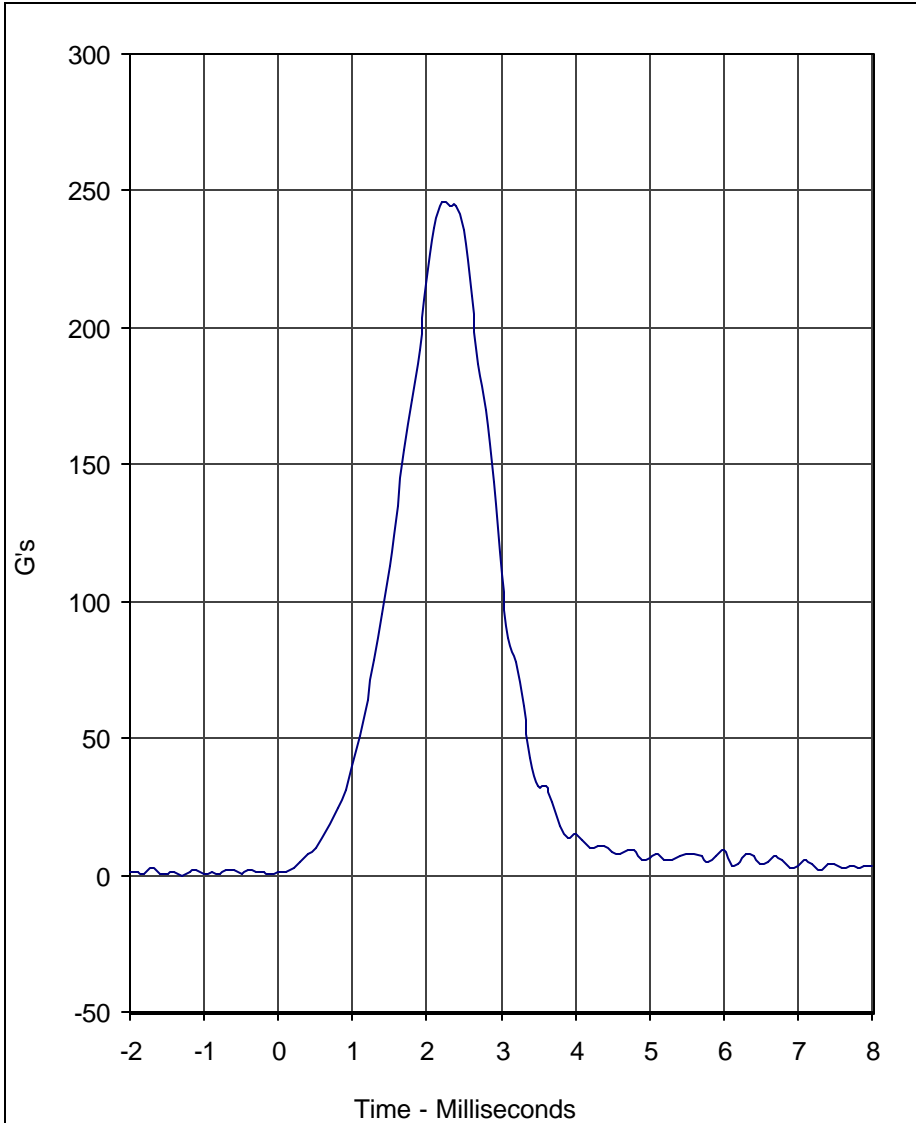
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	245.6	Pass
Peak Lateral Acceleration	G's	≤15.0	4.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

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TR-P23001-13-NC

\_\_\_\_\_  
Laboratory Technician

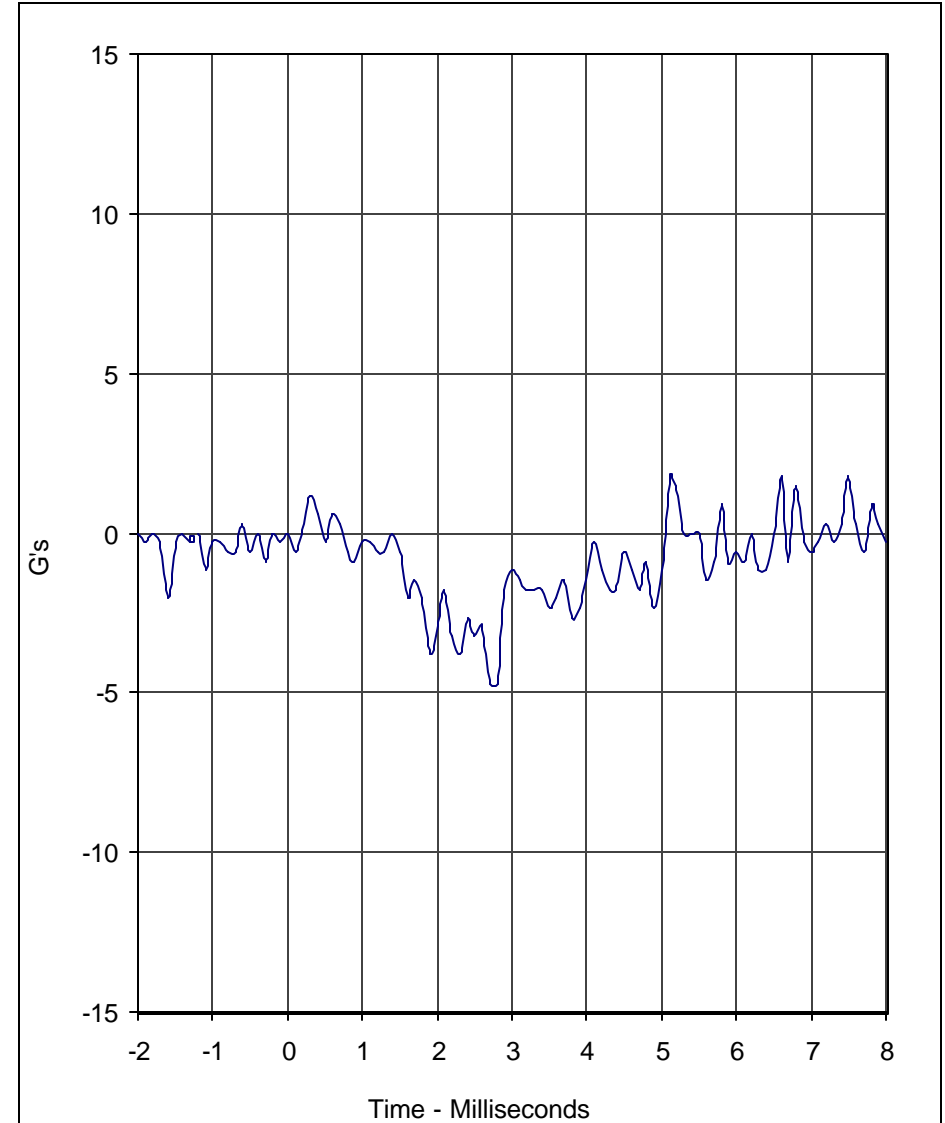
March 1, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	245.6	2.2	0.0	-1.3	1000

Test Program: Hybrid III 50th Percentile Male Head Drop Test  
 Test Date: 3/1/03



Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	1.8	5.1	-4.7	2.7	1000

A.T.D. Serial No.: 034  
 Test I.D.: HD01E





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

ATD Serial No.: 034

Test I.D.: CH01E

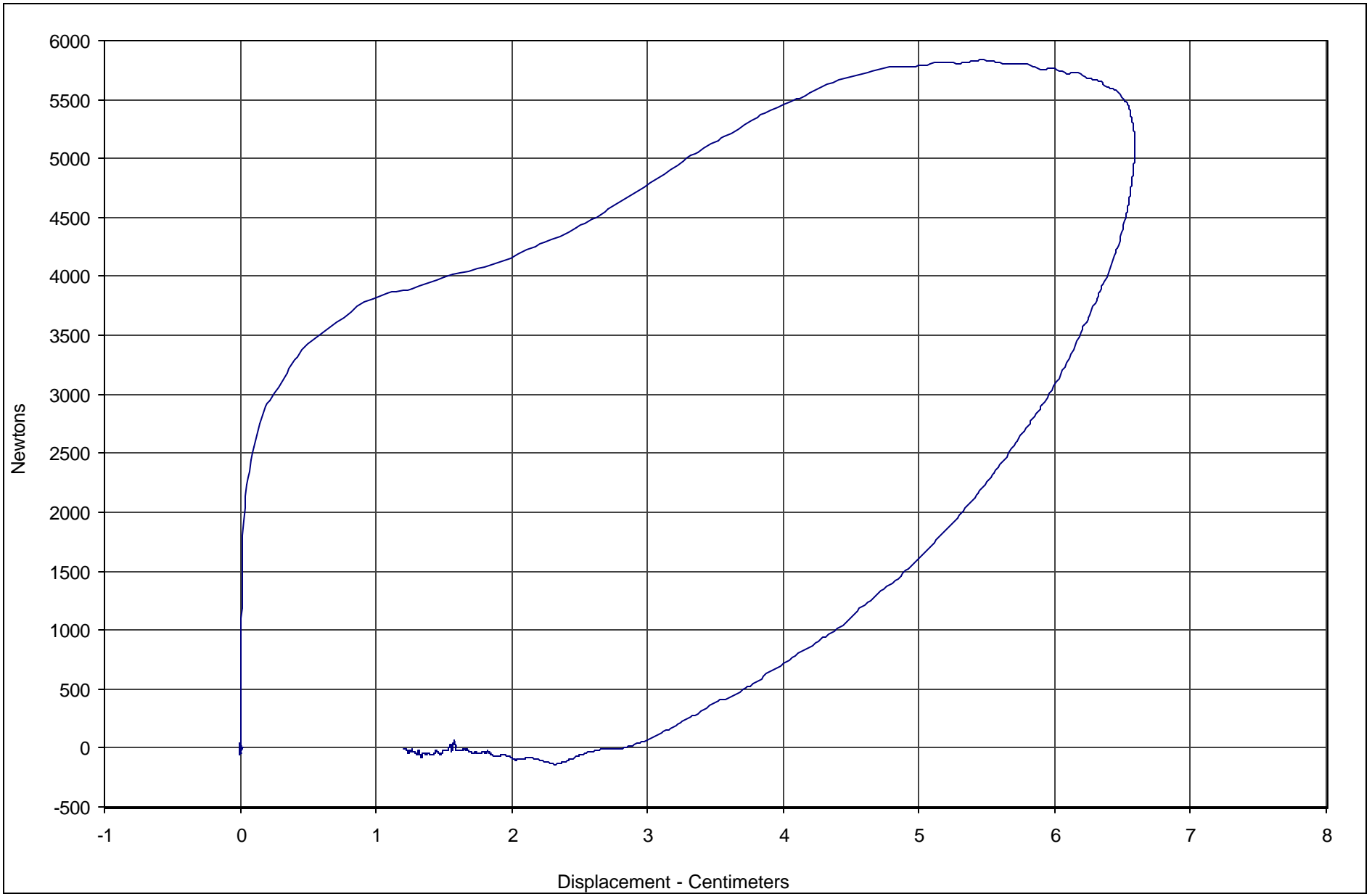
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.60	Pass
Peak Probe Force	Newtons	5159 to 5893	5835	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.59	Pass
Internal Hysteresis	%	69 to 85	80.9	Pass
Overall Test Results				Pass

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TR-P23001-13-NC

\_\_\_\_\_  
Laboratory Technician

March 2, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type	Hysteresis	Peak Chest Displ.	Peak Probe Force	SAE Class
Probe Force vs. Chest Displacement	001	FIL	80.9	6.59	5834.8	180



Test Program: Hybrid III 50th Percentile Male Thorax Impact

A.T.D. Serial No.: 034

Test Date: 3/2/03

Test I.D.: CH01E



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

ATD Serial No.: 034

Test I.D.: NF00A

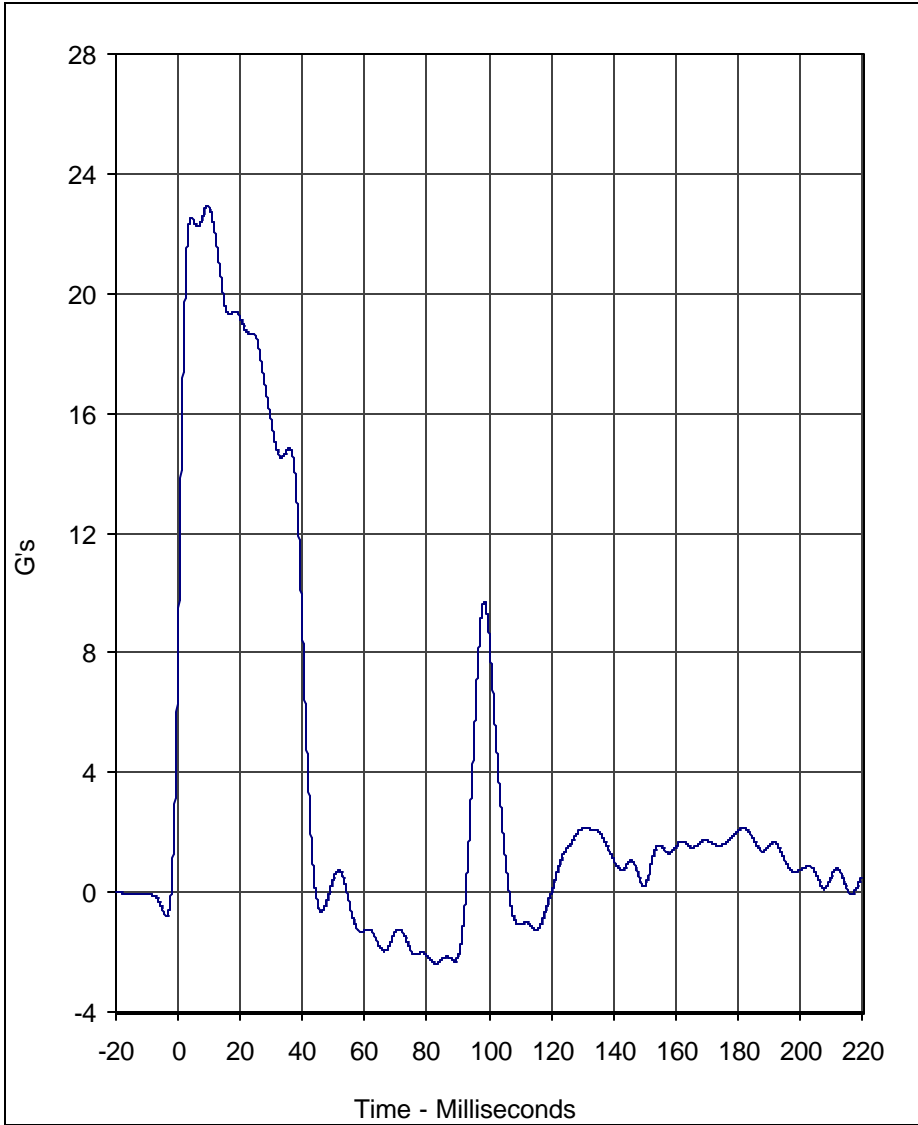
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.01	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.9	Pass
	20 Msec.	G's	17.6 to 22.6	19.2	Pass
	30 Msec.	G's	12.5 to 18.5	15.7	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	15.7	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	65.2	Pass
	Time	Msec.	57.0 to 64.0	63.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	124.2	Pass
Moment About Occipital Condyle	Maximum	Nm	84.1 to 108.5	86.3	Pass
	Time	Msec.	47.0 to 58.0	57.4	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	101.6	Pass
Overall Test Results					Pass

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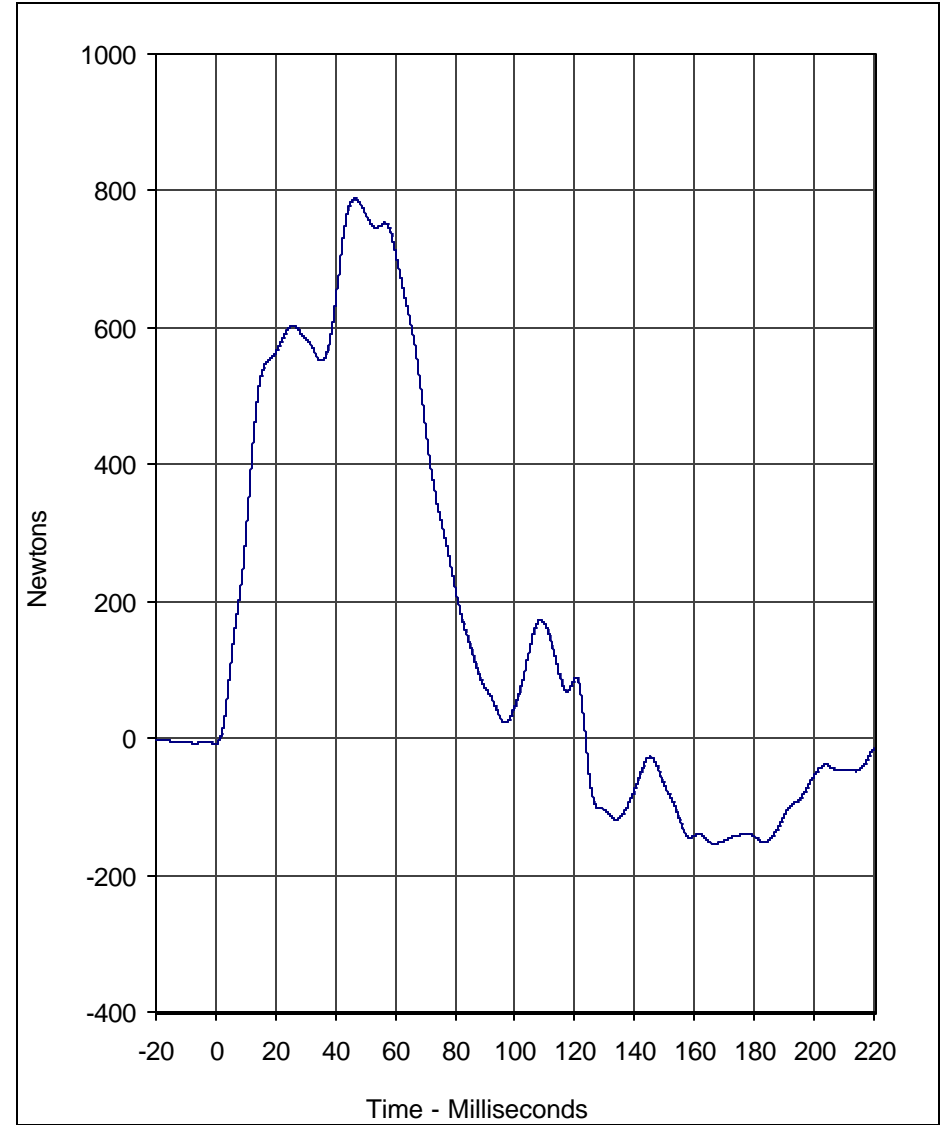
March 1, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	22.9	9.5	-2.4	82.9	60

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test  
 Test Date: 3/1/03

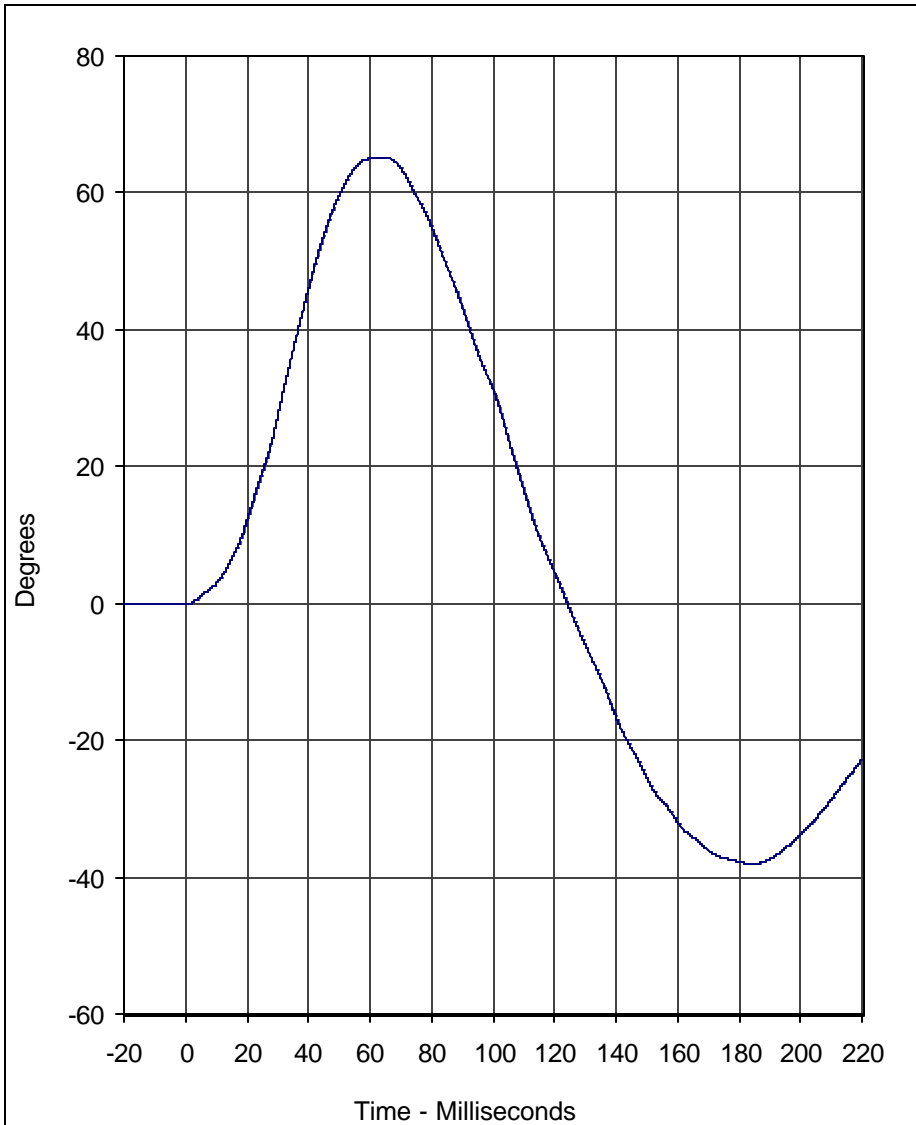


Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	788.3	46.4	-154.5	166.7	60

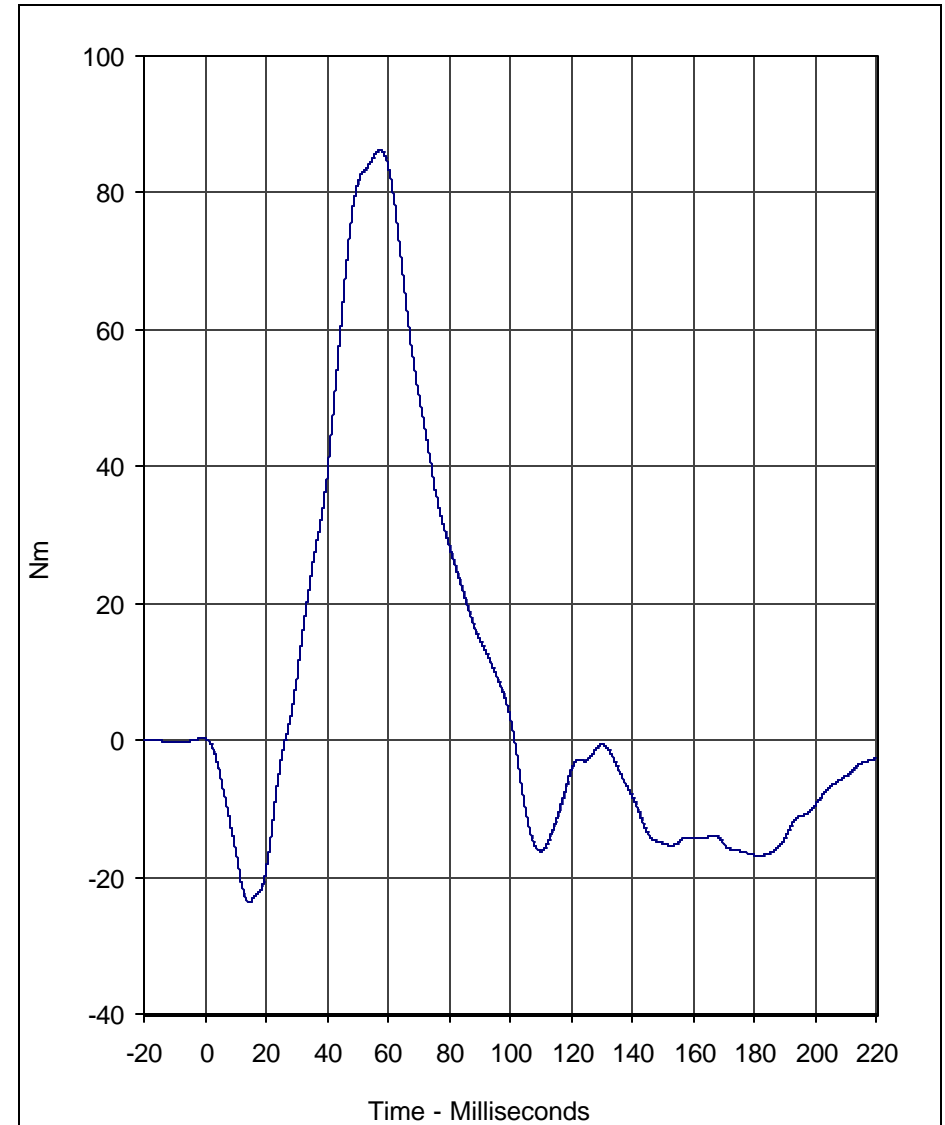
A.T.D. Serial No.: 034  
 Test I.D.: NF00A





Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	65.2	63.5	-38.0	184.5	60



Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	86.3	57.4	-23.7	14.4	60

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test  
 Test Date: 3/1/03

A.T.D. Serial No.: 034  
 Test I.D.: NF00A





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

ATD Serial No.: 034

Test I.D.: NE04A

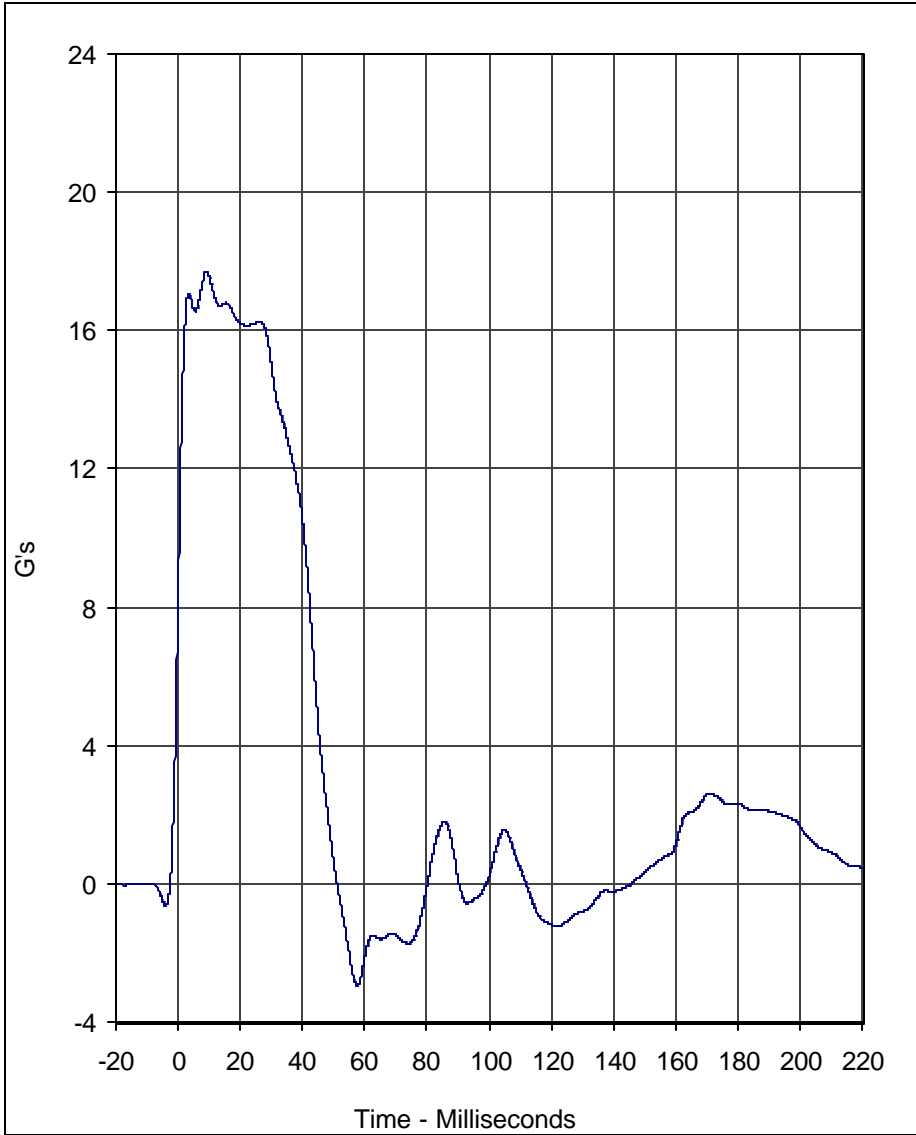
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.6	Pass
	20 Msec.	G's	14.0 to 19.0	16.2	Pass
	30 Msec.	G's	11.0 to 16.0	15.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	44.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	90.5	Pass
	Time	Msec.	72.0 to 82.0	79.8	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	153.5	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to- 79.9	-64.5	Pass
	Time	Msec.	65.0 to 79.0	66.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	139.1	Pass
Overall Test Results					Pass

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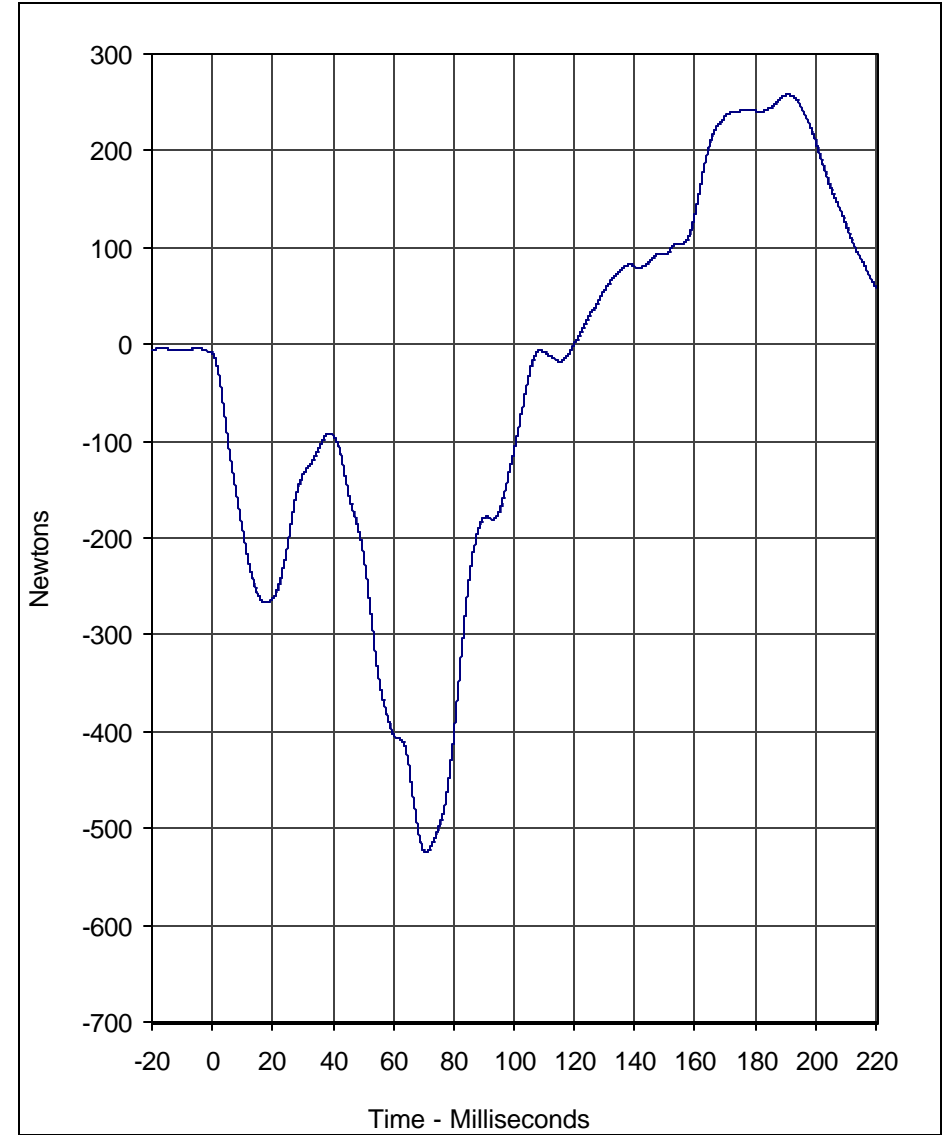
\_\_\_\_\_  
Laboratory Technician

March 2, 2003  
\_\_\_\_\_  
Test Date



Curve Description				CURNO	Type
Pendulum Deceleration				001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	17.7	9.1	-3.0	57.6	60



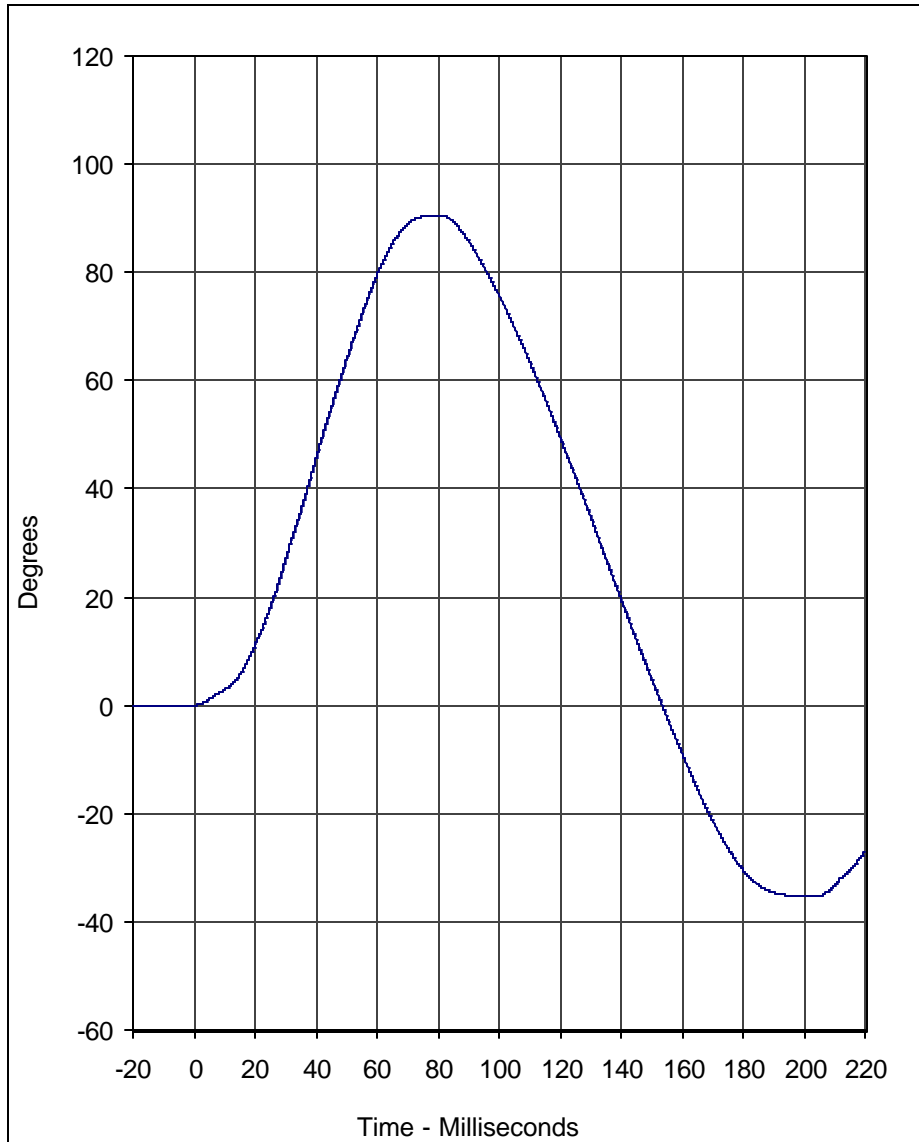
Curve Description				CURNO	Type
Neck Force X				002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	257.9	190.9	-525.3	70.8	60

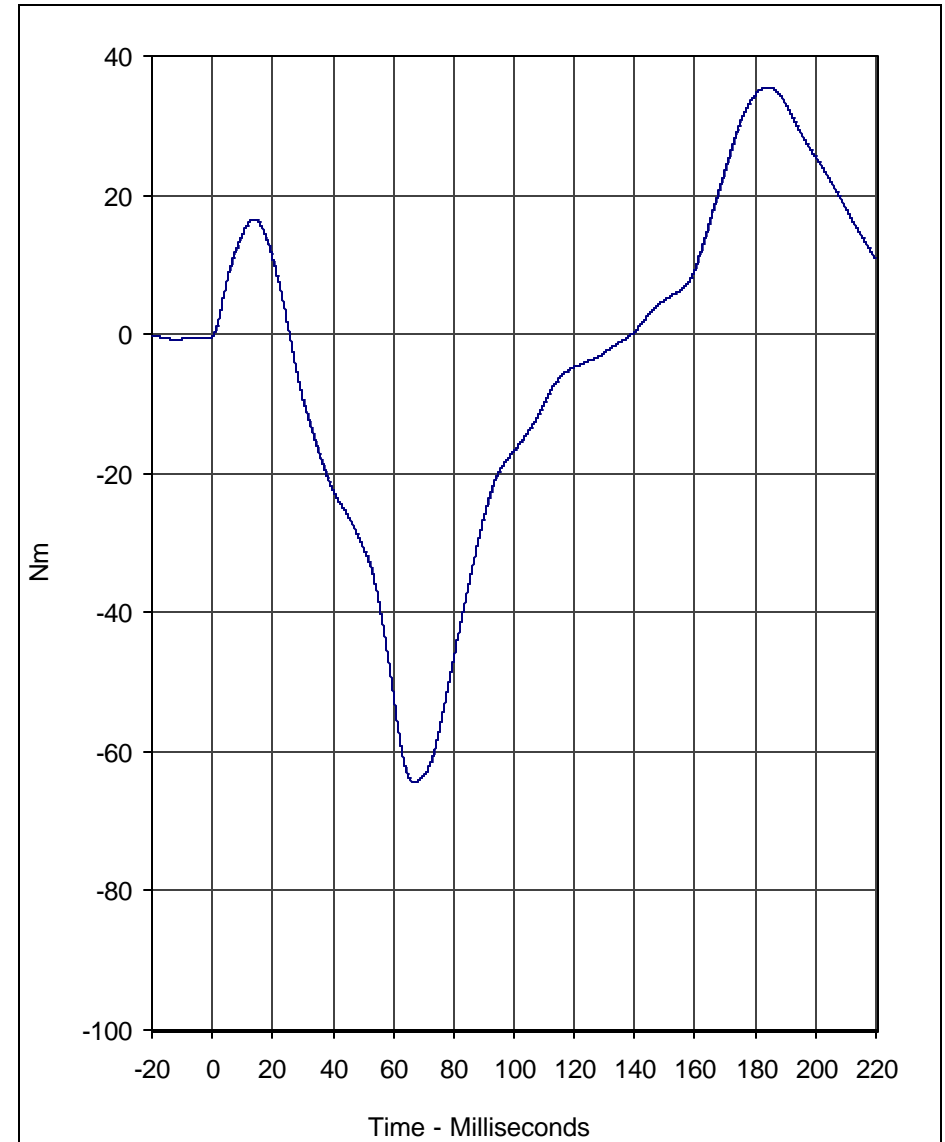
Test Program: Hybrid III 50th Percentile Male Neck Extension Test  
 Test Date: 3/2/03

A.T.D. Serial No.: 034  
 Test I.D.: NE04A





Curve Description				CURNO	Type
"D" Plane Rotation				003	FIL
Units	Max	Time	Min	Time	SAE Class
Degrees	90.5	79.8	-35.3	203.5	60



Curve Description				CURNO	Type
Moment About Occipital Condyle				004	FIL
Units	Max	Time	Min	Time	SAE Class
Nm	35.5	184.4	-64.5	66.9	60

Test Program: Hybrid III 50th Percentile Male Neck Extension Test  
 Test Date: 3/2/03

A.T.D. Serial No.: 034  
 Test I.D.: NE04A





# 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	880	Pass
B - Shoulder pivot height	mm	505 to 521	520	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	210	Pass
K - Buttock to knee length	mm	579 to 604	600	Pass
L - Popliteal length	mm	429 to 455	450	Pass
M - Knee pivot height	mm	485 to 500	490	Pass
N - Buttock popliteal length	mm	452 to 477	465	Pass
O - Chest depth	mm	213 to 229	215	Pass
P - Foot length	mm	251 to 267	265	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	975	Pass
Z - Waist circumference	mm	836 to 866	860	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

March 3, 2003  
\_\_\_\_\_  
Test Date

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

ATD Serial No.: 035

Location: Left Knee

Test I.D.: LK10A

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	5620	Pass
Overall Test Results				Pass

ATD Serial No.: 035

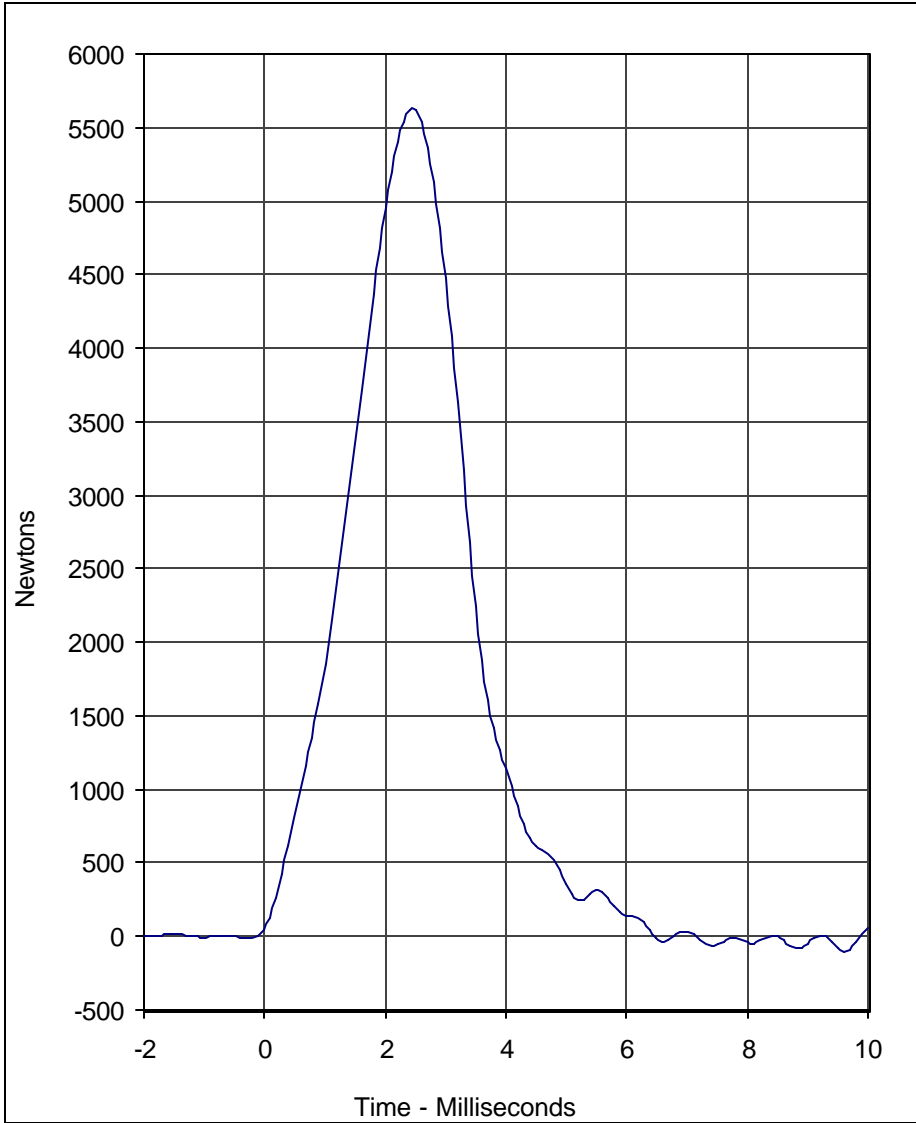
Location: Right Knee

Test I.D.: LK10B

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	5532	Pass
Overall Test Results				Pass

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Laboratory Technician

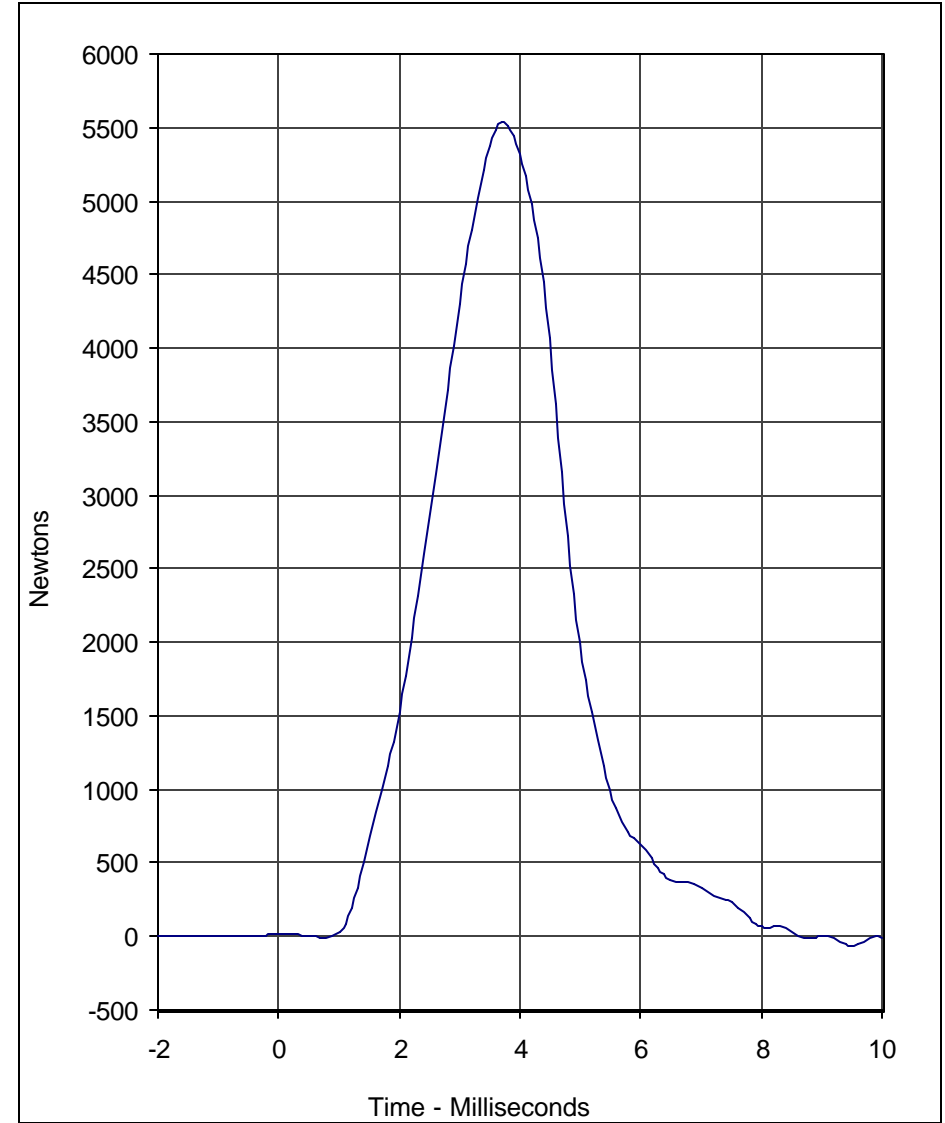
March 1, 2003  
\_\_\_\_\_  
Test Date



Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Left Knee	LK10A	001	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5620.1	2.4	-103.8	9.6	600



Curve Description	Location	Test I.D.	CURNO	Type
Probe Force	Right Knee	LK10B	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	5532.0	3.7	-64.8	9.5	600

Test Program: Hybrid III 50th Percentile Male Knee Impact Test  
 Test Date: 3/1/03

A.T.D. Serial No.: 035





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

ATD Serial No.: 035

Test I.D.: HD09A

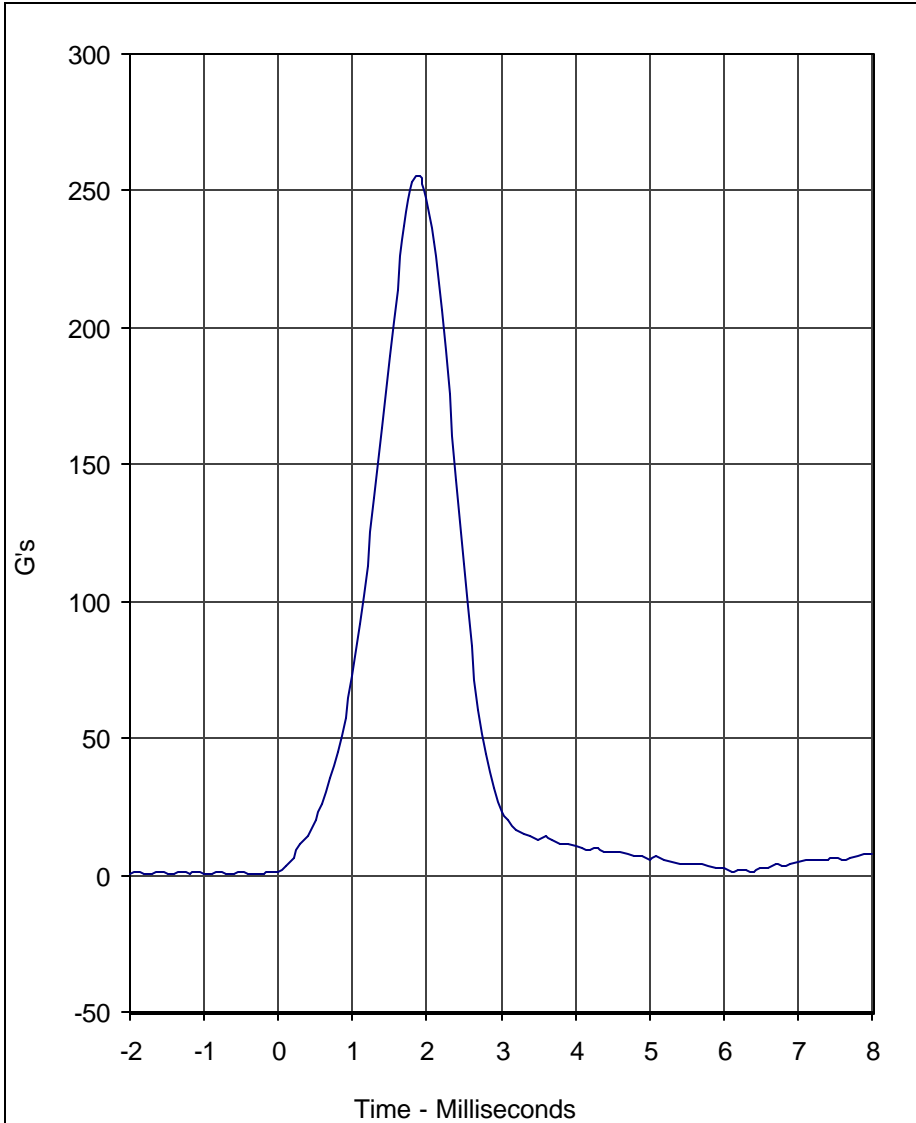
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	255.3	Pass
Peak Lateral Acceleration	G's	≤15.0	7.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

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Laboratory Technician

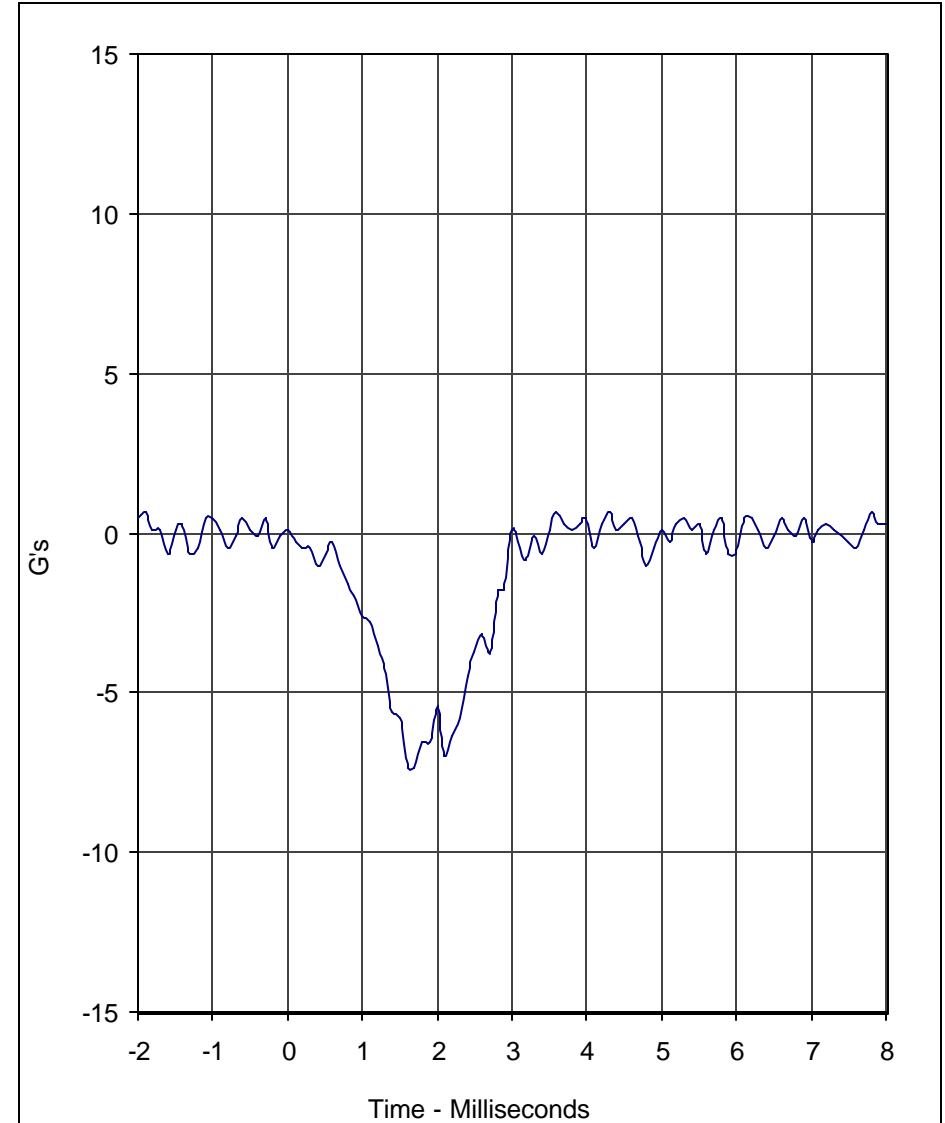
March 1, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	255.3	1.9	0.3	-1.5	1000

Test Program: Hybrid III 50th Percentile Male Head Drop Test  
 Test Date: 3/1/03



Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	0.7	-1.9	-7.3	1.6	1000

A.T.D. Serial No.: 035  
 Test I.D.: HD09A





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

ATD Serial No.: 035

Test I.D.: CH01F

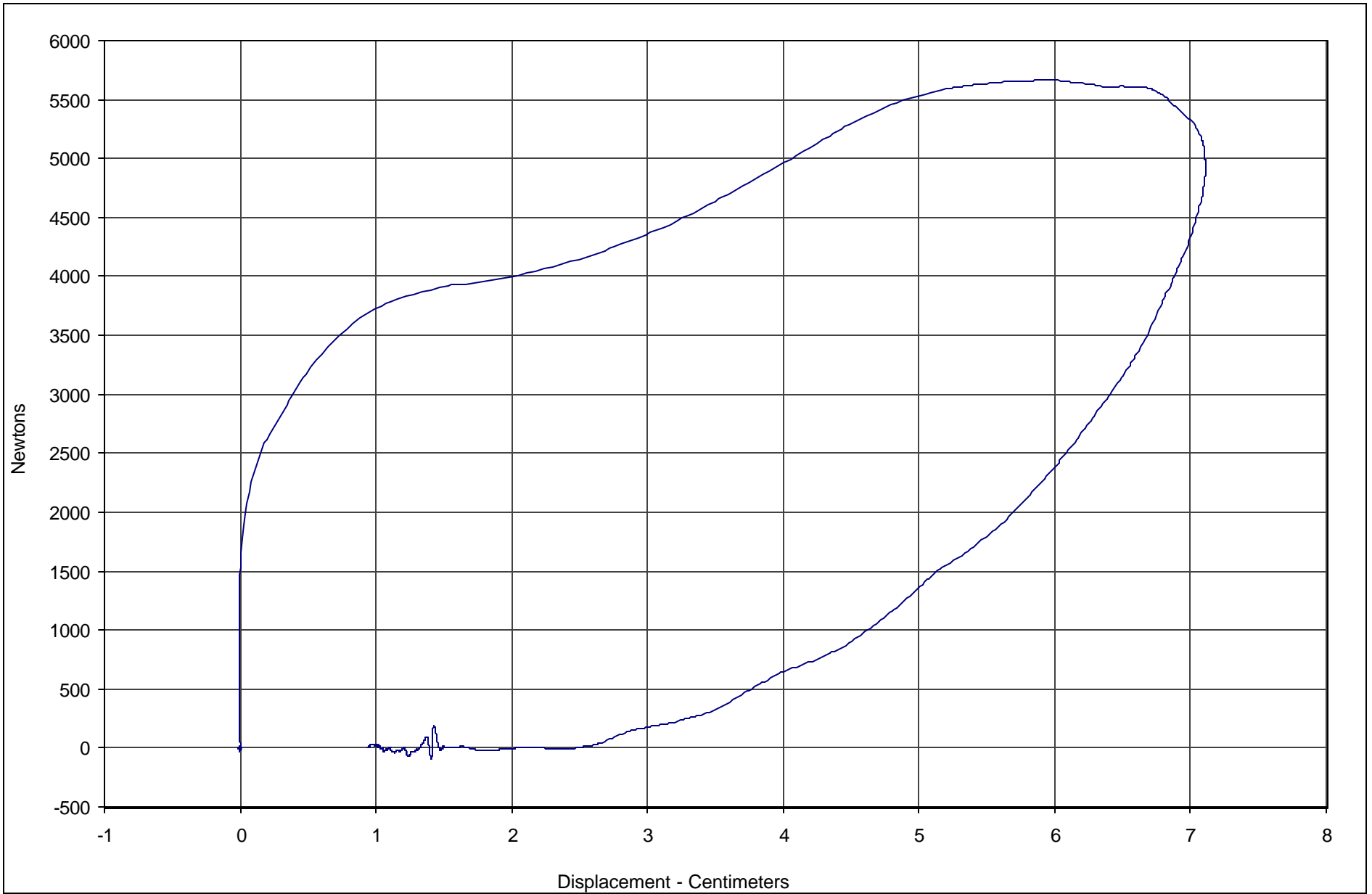
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.74	Pass
Peak Probe Force	Newtons	5159 to 5893	5665	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	7.11	Pass
Internal Hysteresis	%	69 to 85	78.9	Pass
Overall Test Results				Pass

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\_\_\_\_\_  
Laboratory Technician

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March 2, 2003  
Test Date



Curve Description	CURNO	Type	Hysteresis	Peak Chest Displ.	Peak Probe Force	SAE Class
Probe Force vs. Chest Displacement	001	FIL	78.9	7.11	5665.3	180



Test Program: Hybrid III 50th Percentile Male Thorax Impact

A.T.D. Serial No.: 035

Test Date: 3/2/03

Test I.D.: CH01F



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

ATD Serial No.: 035

Test I.D.: NF00B

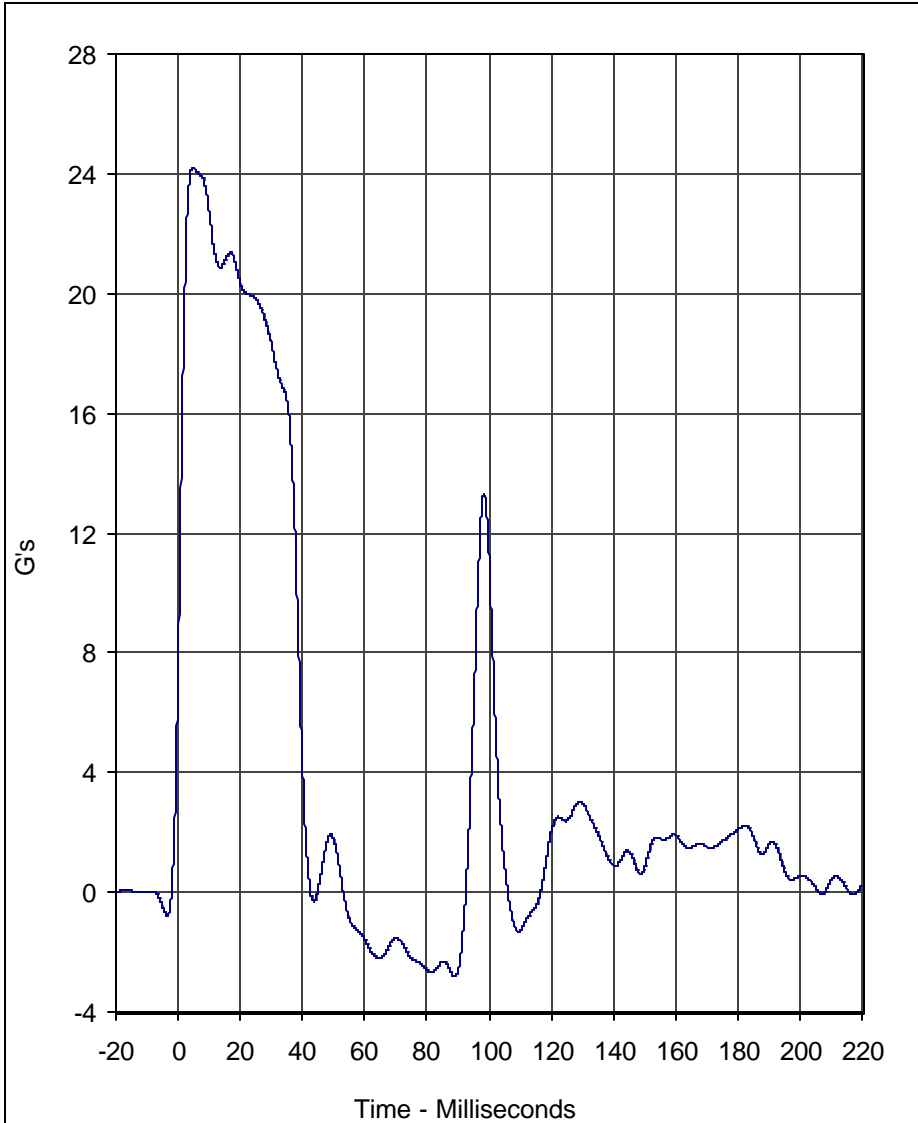
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.04	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.7	Pass
	20 Msec.	G's	17.6 to 22.6	20.3	Pass
	30 Msec.	G's	12.5 to 18.5	18.3	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.3	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	39.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	65.2	Pass
	Time	Msec.	57.0 to 64.0	63.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	124.2	Pass
Moment About Occipital Condyle	Maximum	Nm	84.1 to 108.5	87.8	Pass
	Time	Msec.	47.0 to 58.0	52.8	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	98.8	Pass
Overall Test Results					Pass

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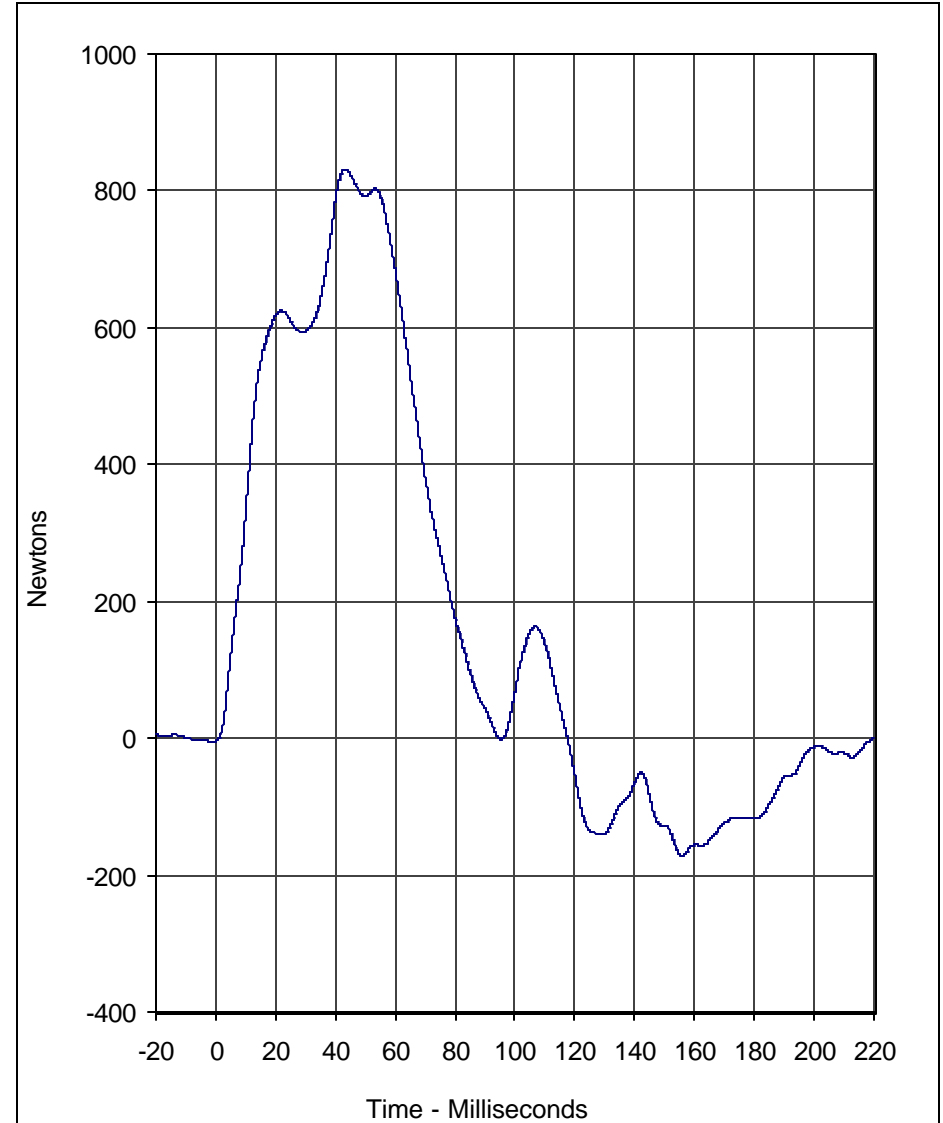
\_\_\_\_\_  
Laboratory Technician

March 1, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	24.2	4.8	-2.8	89.0	60



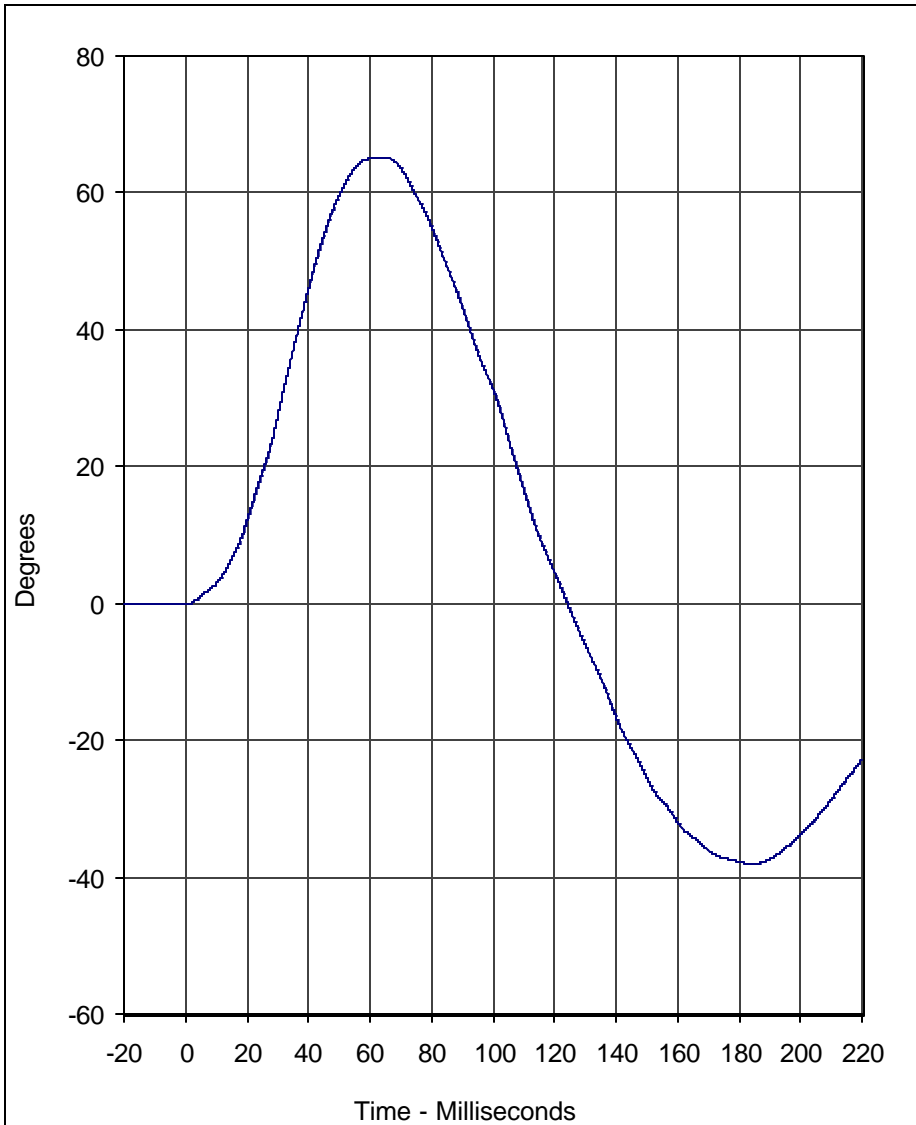
Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	831.2	43.2	-171.6	155.8	60

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test  
 Test Date: 3/1/03

A.T.D. Serial No.: 035  
 Test I.D.: NF00B

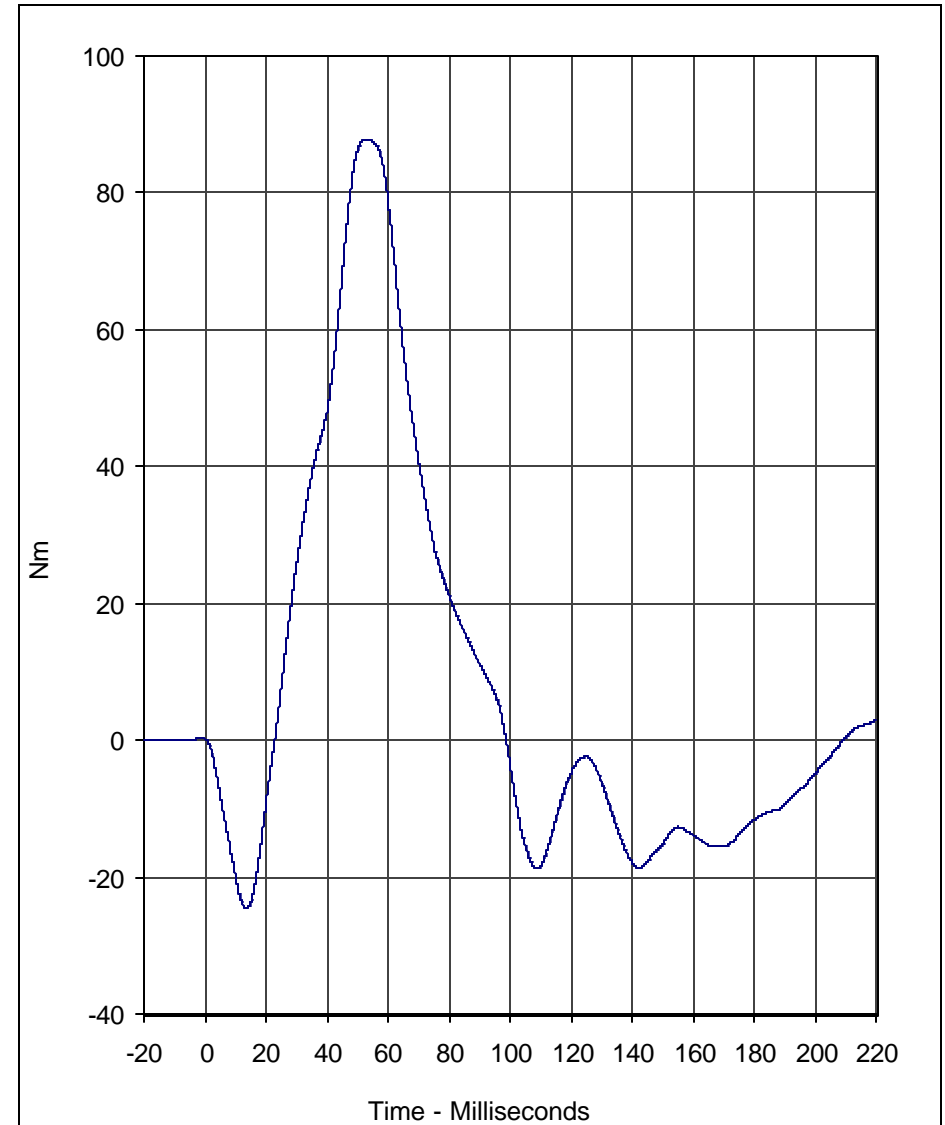




Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	65.2	63.5	-38.0	184.5	60

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test  
 Test Date: 3/1/03



Curve Description	CURNO	Type
Moment About Occipital Condyle	004	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	87.8	52.8	-24.6	13.5	60

A.T.D. Serial No.: 035  
 Test I.D.: NF00B





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

ATD Serial No.: 035

Test I.D.: NE04B

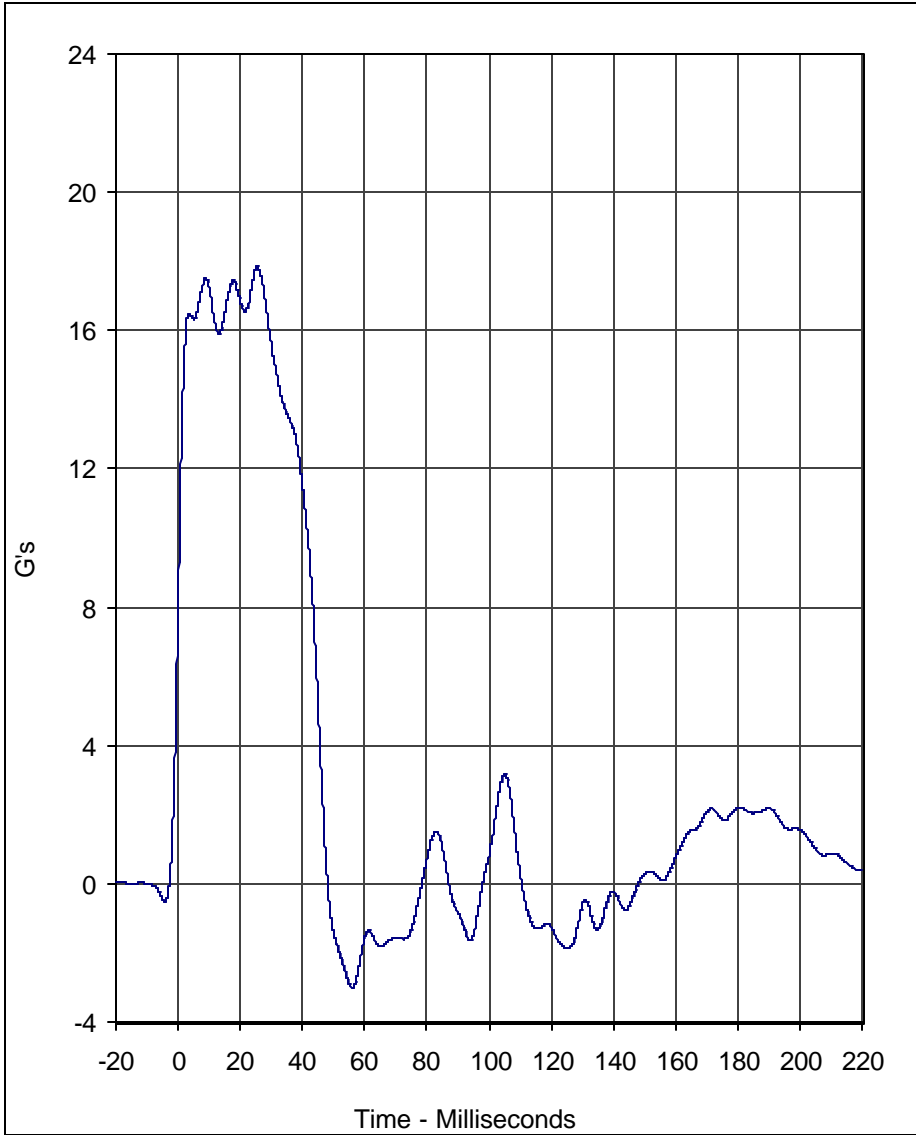
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.2	Pass
	20 Msec.	G's	14.0 to 19.0	16.9	Pass
	30 Msec.	G's	11.0 to 16.0	15.6	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.6	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	45.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	91.2	Pass
	Time	Msec.	72.0 to 82.0	78.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	158.8	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to- 79.9	-69.3	Pass
	Time	Msec.	65.0 to 79.0	68.4	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	137.1	Pass
Overall Test Results					Pass

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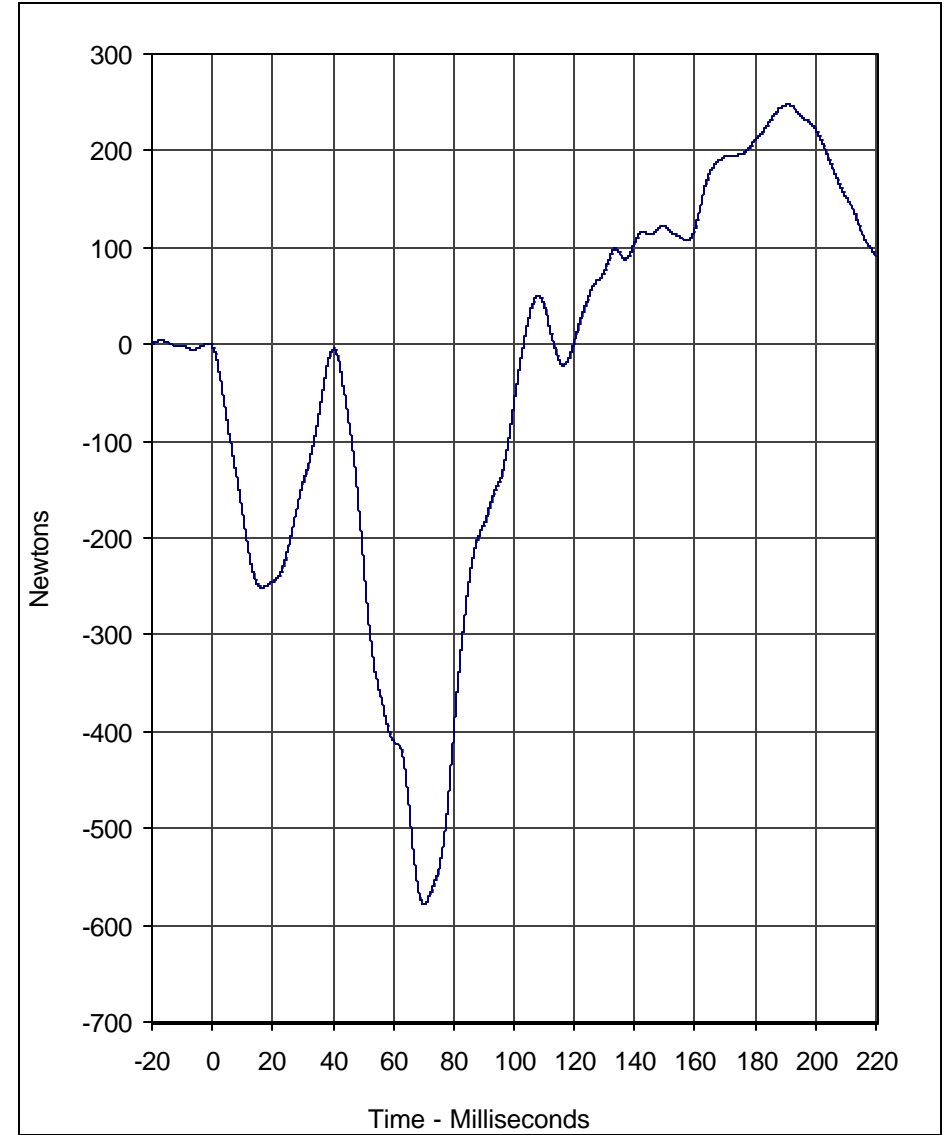
\_\_\_\_\_  
Laboratory Technician

March 2, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Deceleration	001	FIL

Units	Max	Time	Min	Time	SAE Class
G's	17.8	25.4	-3.0	56.0	60



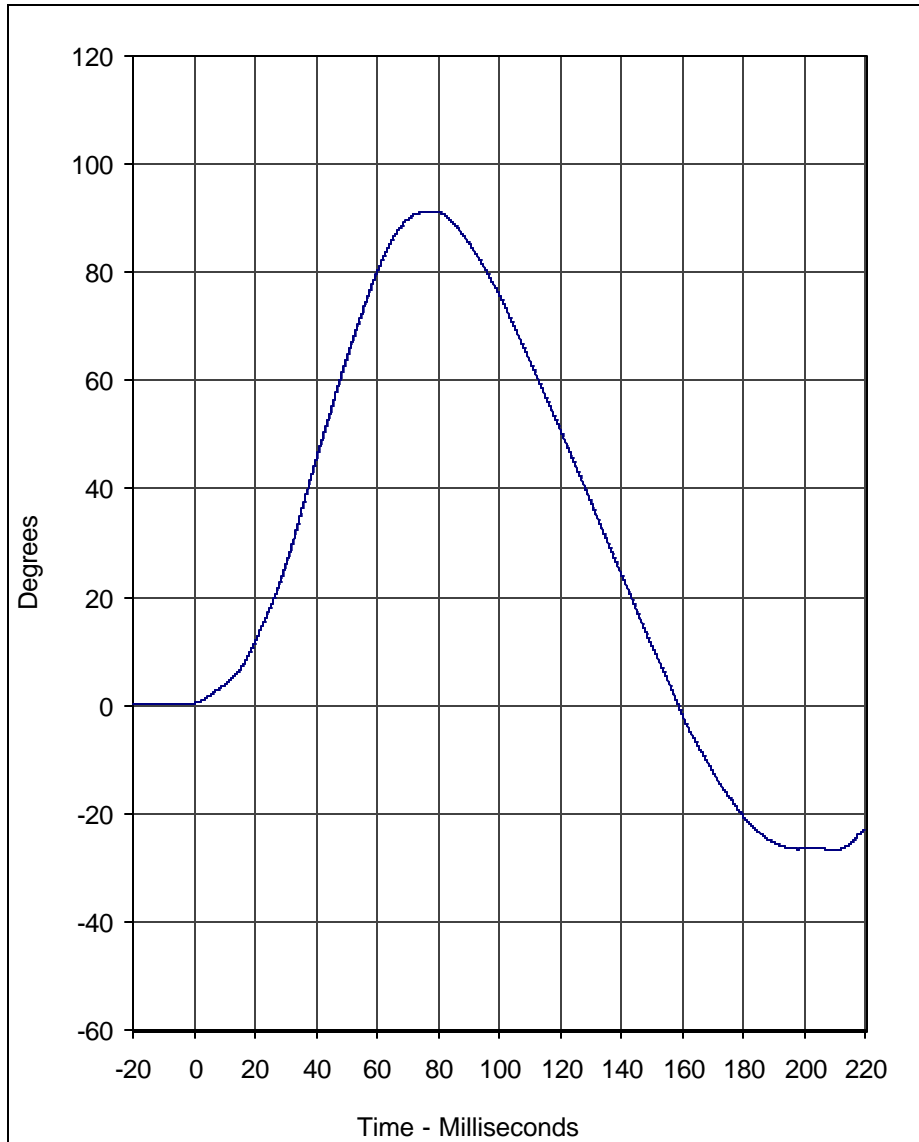
Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	247.8	190.8	-578.2	70.2	60

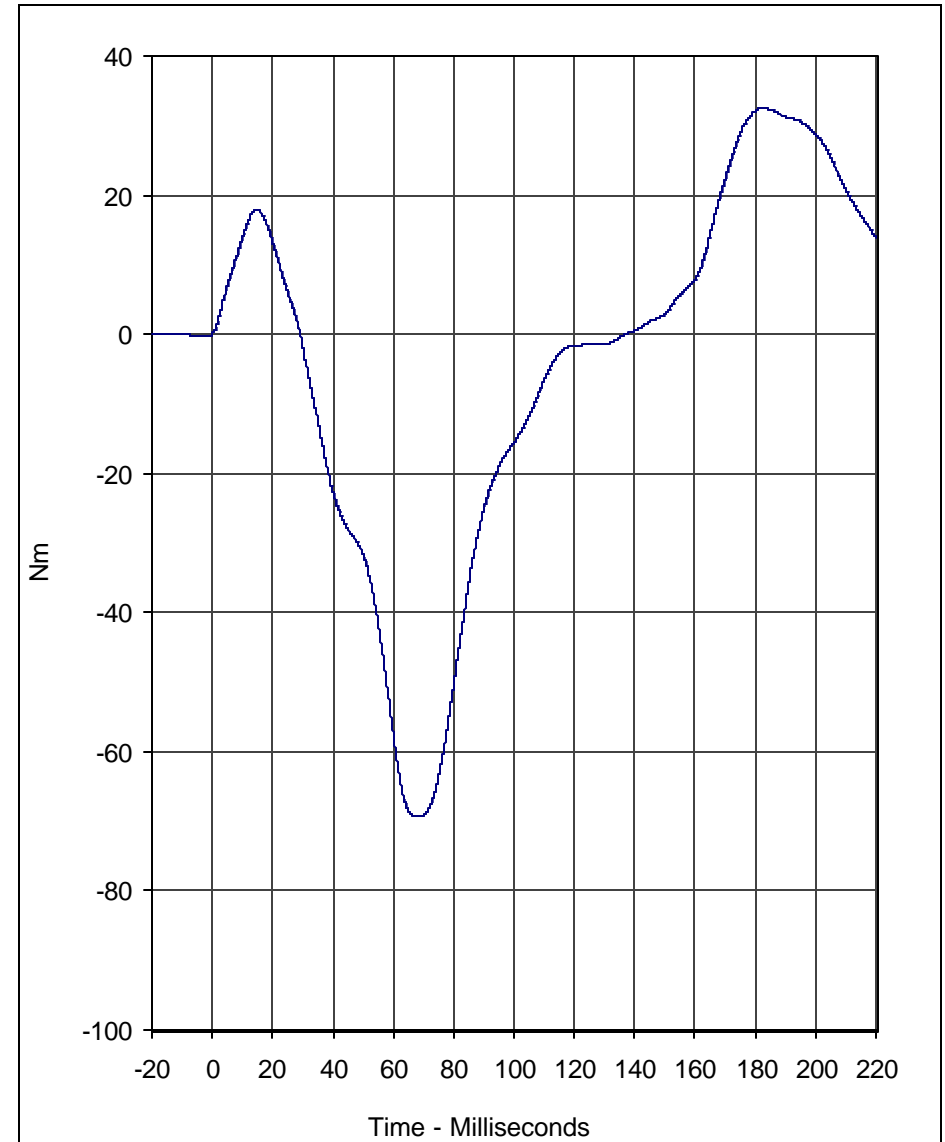
Test Program: Hybrid III 50th Percentile Male Neck Extension Test  
 Test Date: 3/2/03

A.T.D. Serial No.: 035  
 Test I.D.: NE04B





Curve Description				CURNO	Type
"D" Plane Rotation				003	FIL
Units	Max	Time	Min	Time	SAE Class
Degrees	91.2	78.4	-26.7	210.6	60



Curve Description				CURNO	Type
Moment About Occipital Condyle				004	FIL
Units	Max	Time	Min	Time	SAE Class
Nm	32.5	182.6	-69.3	68.4	60

Test Program: Hybrid III 50th Percentile Male Neck Extension Test  
 Test Date: 3/2/03

A.T.D. Serial No.: 035  
 Test I.D.: NE04B





## 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	510	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	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	195	Pass
K - Buttock to knee length	mm	579 to 604	595	Pass
L - Popliteal length	mm	429 to 455	440	Pass
M - Knee pivot height	mm	485 to 500	500	Pass
N - Buttock popliteal length	mm	452 to 477	465	Pass
O - Chest depth	mm	213 to 229	215	Pass
P - Foot length	mm	251 to 267	265	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	1000	Pass
Z - Waist circumference	mm	836 to 866	860	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

\_\_\_\_\_  
Laboratory Technician

March 3, 2003  
\_\_\_\_\_  
Test Date

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TR-P23001-13-NC

**APPENDIX F**

**CHILD RESTRAINT SYSYTEM**

**REPORT NUMBER TR-P23001-13-NC**

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

**NISSAN MOTOR CORPORATION  
2003 NISSAN MURANO SL  
4 DOOR AWD SUV**

**NHTSA NUMBER: M35204**

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



**MARCH 4, 2003**

**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: \_\_\_\_\_ Date: March 12, 2003  
Mr. James E. Gorth, Project Engineer  
KARCO Engineering, LLC

Reviewed by: \_\_\_\_\_ Date: March 12, 2003  
Mr. Jerry L. Kratzke, Director of Operations  
KARCO Engineering, LLC

Approved by: \_\_\_\_\_ Date: March 12, 2003  
Mr. Frank D. Richardson, Program Manager  
KARCO Engineering, LLC

FINAL REPORT ACCEPTED BY:

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

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

\_\_\_\_\_  
COTR, NCAP Frontal Impact Program

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

## Technical Report Documentation Page

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		<b>8. Performing Organization Report No.</b> TR-P23001-13-NC			
<b>7. Authors</b> Mr. James E. Gorth, Project Engineer, Karco Mr. Frank Richardson, Project Manager, Karco		<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>  A CRS Test was performed in conjunction with a New Car Assessment Program (NCAP) Load Cell Barrier Test. This test was conducted at Karco Engineering, LLC on March 4, 2003					
<b>Measurement Description</b>		<b>Units</b>		<b>Left Rear</b>	<b>Right Rear</b>
Head Injury Criteria (HIC) 36		N/A		1488.1	1597.7
Head Injury Criteria (HIC) 15		N/A		686.1	875.0
3 M sec. Chest Clip		G's		46.4	55.0
Peak Chest Displacement		mm		-17.3	-18.3
<b>17. Key Words</b>  56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2003 Nissan Murano SL AWD SUV 4 Door NHTSA No. M35204			<b>18. Distribution Statement</b>  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>	<b>22. Price</b>
Unclassified		Unclassified		148	

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## SECTION F-1

### PURPOSE AND SUMMARY OF TEST M35204

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

The 56.07 km/h NCAP frontal impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

### SUMMARY

The three year old child dummies were instrumented with head, chest, and pelvic triaxial accelerometers. In addition, redundant head z acceleration, 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. 082) and the left rear (Position 4) child dummy (Serial No. 139) were calibrated prior to this test. Child dummy certification information is found in Section F-5.

#### CHILD DUMMY VALUES

	HIC36 Values	HIC15 Values	3 Msec Chest Clip	Peak Chest Disp.
Left Rear Child	1488.1	686.1	46.4	-17.3
Right Rear Child	1597.7	875.0	55.0	-18.3

**SECTION F-1**

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**TEST DUMMY INFORMATION**

Description	Position #3 CRS	Position # 4 CRS
Manufacturer	Evenflo	Evenflo
Model Name	Vanguard 5	Vanguard Comfort Touch
Serial No.	3691261 P1	3681261 P1
Type	Convertible	Convertible
Forward/Rearward	Forward	Forward

**VISIBLE DUMMY CONTACT POINTS**

Description	Position #3 CRS	Position # 4 CRS
Head Contact	Chest, Curtain	CRS, Shield
Chest Contact	Harness	Harness
Abdomen Contact	Harness	Harness
Left Knee Contact	Hand	None
Right Knee Contact	Hand	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	None	None

**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	4
Real Time	0
Total	4

**DATA SHEET NO. 2.....CRS PARAMETER DATA**

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**TEST VEHICLE WEIGHTS**

	Units	As Delivered			As Tested		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	542	378		588	435	
Right	kg	533	380		572	433	
Ratio	%	58.6	41.4		57.2	42.8	
Totals	kg	1075	758	1833	1160	868	2028

**TARGET TEST WEIGHT CALCULATION**

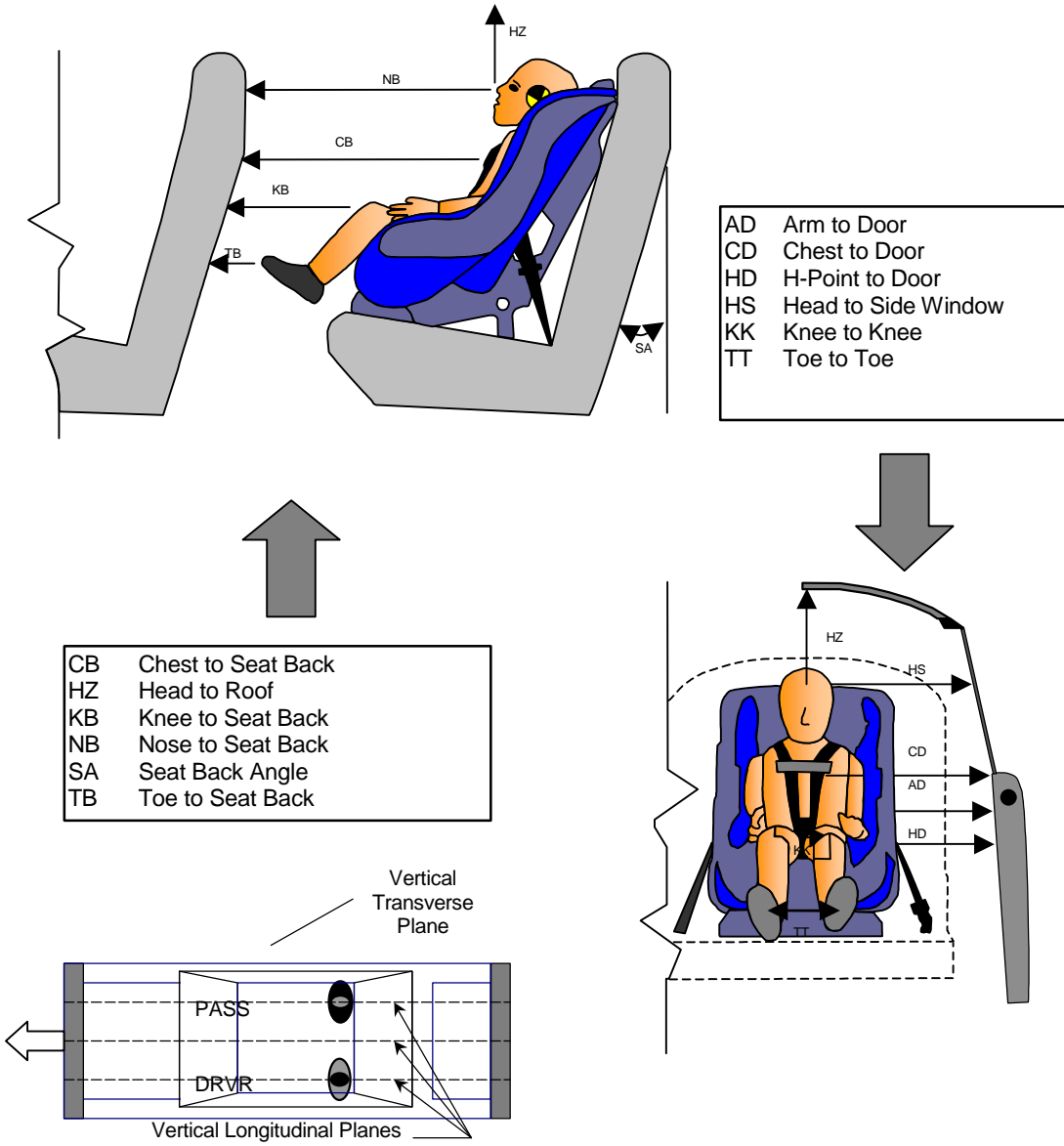
Measured Parameter	Units	Value
Total Delivered Weight ( <i>UVW</i> )	kg	1833
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight ( <i>RCLW</i> )	kg	50
Calculated Vehicle Target Weight ( <i>TVTW</i> )	kg	2035

**SECTION F-1**

# DATA SHEET NO. 3 .....CHILD DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03



DUMMY MEASUREMENTS FOR REAR SEAT OCCUPANTS

## SECTION F-1

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

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**CHILD DUMMY POSITION MEASUREMENTS**

Code	Measurement	P3 CRS (082)		P4 CRS (139)	
		Pre-Test	Post-test	Pre-Test	Post-test
SA	Seat Back Angle	74	83	74	83
HZ	Head to Roof (Z)	415	380	450	385
CD	Chest to Dash	385	350	395	342
KK	Knee to Knee (Y)	255	217	265	205
HS	Head to Side Window	310	275	315	242
HD	H-Point to Door (Y)	350	354	345	325
AD	Arm to Door (Y)	525	414	518	500
NB	Nose to Seat Back	515	450	510	521
CB	Chest to Seat Back	190	190	190	160
FF	Foot to Foot	230	274	185	230
KB-LEFT	Knee to Seat Back	310	330	338	385
KB-RIGHT	Knee to Seat Back	315	340	295	364
TB-LEFT	Toe to Seat Back	45	100	80	115
TB-RIGHT	Toe to Seat Back	100	137	80	124

**DATA SHEET NO. 8 - 3 YEAR OLD HYBRID III ATD INJURY CRITERIA AND SENSOR DATA**

Test Vehicle: 2003 Nissan Murano SL AWD SUV

NHTSA No.: M35204

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 3/4/03

**HEAD PRIMARY PEAK ACCELERATIONS**

Location	Axis	Units	Right Rear (3 Yr.)				Left Rear (3 Yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	28.0	209.5	-56.0	100.0	14.9	249.4	-83.2	115.0
Head CG	Y	G's	45.9	100.0	-4.3	118.5	11.3	120.4	-11.0	96.9
Head CG	Z	G's	80.1	99.9	-10.7	45.2	73.4	91.0	-3.7	46.7
Head CG Resultant	N/A	G's	107.8	100.0			86.4	115.0		

**PRIMARY HEAD INJURY CRITERAS (HIC)**

Location	Right Rear (3 Yr.)				Left Rear (3 Yr.)			
	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)	1597.7	77.9	113.9	72.2	1488.1	84.3	120.3	70.2
Head CG Primary (HIC15)	875.0	91.6	61.6	80.5	686.1	107.2	122.2	73.0

**CHEST PRIMARY PEAK ACCELERATIONS**

Location	Axis	Units	Right Rear (3 Yr.)				Left Rear (3 Yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	9.5	161.3	-57.7	73.8	6.3	273.3	-46.1	82.5
Chest CG	Y	G's	8.4	113.7	-7.3	85.7	2.6	140.1	-14.3	89.4
Chest CG	Z	G's	12.7	111.6	-14.4	54.3	14.2	95.1	-21.1	64.7
Chest CG Resultant	N/A	G's	58.4	73.7			47.8	82.7		

**PRIMARY CHEST CLIP (3MSEC)**

Location	Right Rear (3 Yr.)			Left Rear (3 Yr.)		
	CLIP	T <sup>1</sup>	T <sup>2</sup>	CLIP	T <sup>1</sup>	T <sup>2</sup>
Chest CG Primary	55.0	72.6	75.6	46.4	80.8	83.8

**CHEST PEAK DISPLACEMENTS**

Location	Axis	Units	Right Rear (3 Yr.)				Left Rear (3 Yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.1	28.2	-18.3	118.6	0.0	0.6	-17.3	118.6

**PELVIC PEAK ACCELERATIONS**

Location	Axis	Units	Right Rear (3 Yr.)				Left Rear (3 Yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	17.1	163.5	-71.1	70.7	21.1	132.8	-73.1	63.1
Pelvis	Y	G's	24.1	66.6	-18.0	76.7	21.1	101.5	-19.7	112.8
Pelvis	Z	G's	62.5	81.9	-21.9	92.8	5.8	263.8	-28.1	60.7
Pelvis Resultant	N/A	G's	73.3	67.2			77.9	63.0		

**DATA SHEET NO. 8...(continued)**

Test Vehicle: 2003 Nissan Murano SL AWD SUV

NHTSA No.: M35204

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 3/4/03

**UPPER NECK PEAK FORCES AND MOMENTS**

Location	Axis	Units	Right Rear (3 Yr.)				Left Rear (3 Yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	62.7	211.5	-1652.5	116.6	31.6	248.1	-695.2	88.2
Neck Force	Y	Newtons	105.3	108.1	-56.1	60.0	121.9	120.4	-295.2	101.6
Neck Force	Z	Newtons	2563.5	115.1	-307.7	45.6	1912.4	91.2	-266.4	271.7
Neck Force Resultant	N/A	Newtons	3031.1	115.5			2021.5	91.3		
Neck Moment	X	Nm	11.2	92.3	-7.3	119.6	2.5	169.8	-15.2	107.4
Neck Moment	Y	Nm	6.4	109.2	-22.5	84.1	15.0	112.4	-25.1	87.2
Neck Moment	Z	Nm	6.5	104.8	-2.4	225.1	6.6	109.7	-4.9	122.4
Neck Moment Resultant	N/A	Nm	22.7	84.1			25.9	87.2		

**LOWER NECK PEAK FORCES AND MOMENTS**

Location	Axis	Units	Right Rear (3 Yr.)				Left Rear (3 Yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	168.7	208.2	-1741.3	116.5	89.2	208.5	-665.8	116.0
Neck Force	Y	Newtons	357.2	108.3	-95.9	69.6	275.2	88.1	-275.4	105.1
Neck Force	Z	Newtons	2309.1	84.0	-361.5	44.9	1971.8	85.7	-284.0	63.7
Neck Force Resultant	N/A	Newtons	2317.7	84.0			2004.8	85.7		
Neck Moment	X	Nm	24.1	108.3	-8.5	76.2	2.7	234.4	-62.5	105.1
Neck Moment	Y	Nm	210.5	115.7	-11.7	208.1	117.5	115.0	-9.0	226.8
Neck Moment	Z	Nm	8.1	106.3	-8.6	118.4	2.8	273.5	-13.1	88.5
Neck Moment Resultant	N/A	Nm	211.1	115.7			123.9	112.4		

**CHILD SEAT TETHER BELT SENSOR PEAK VALUES**

Location	Axis	Units	Right Rear (3 Yr.)				Left Rear (3 Yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Tether Belt Force	N/A	Newtons	195.8	115.4	-38.8	69.4	839.6	102.1	-30.2	157.9

**CHILD SEAT ACCELEROMETER PEAK VALUES**

Location	Axis	Units	Right Rear (3 Yr.)				Left Rear (3 Yr.)			
			Max	Time	Min	Time	Max	Time	Min	Time
Child Seat	X	G's	18.1	92.8	-51.1	70.8	21.2	94.8	-64.0	56.5
Child Seat	Y	G's	7.9	81.5	-13.0	91.2	11.0	103.2	-10.5	91.9
Child Seat	Z	G's	24.0	86.3	-12.9	73.2	20.9	91.3	-23.3	116.5
Child Seat Resultant	N/A	G's	52.1	71.2			64.1	56.5		

**SECTION F-1**

**DATA SHEET NO. 5.....CRS PERFORMANCE DATA**

Test Vehicle: 2003 Nissan Murano SL AWD SUV  
 Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204  
 Test Date: 3/4/03

**CRS PERFORMANCE DATA**

Location	Serial # Position # 3		Serial # Position # 4	
	Damage	Remarks	Damage	Remarks
Upper Tether Strap	No	None	No	None
Upper Tether Buckle	No	None	No	None
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	Yes	Seatback bent forward	No	None
Vehicle Seat Fabric Tears	No	None	No	None
Child Dummy	No	None	No	None

**SECTION F-1**

**DATA SHEET NO. 6.....CRS CAMERA DATA**

Test Vehicle: 2003 Nissan Murano SL AWD SUV

NHTSA No.: M35204

Test Program: 2003 NHTSA 35mph NCAP

Test Date: 3/4/03

No.	Camera View	Location (mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Driver Side Child	2642	8230	2286	1	7869	35	No Time
2	Driver Side Child	2642	6096	1524	10	5676	25	510
3	Passenger Side Child	2438	-9144	2032	1	8761	25	No Time
4	Passenger Side Child	2743	-8331	1524	10	7894	25	DNR

X - Barrier Face    Y - Monorail Centerline    Z - Ground    DNR = Did Not Run

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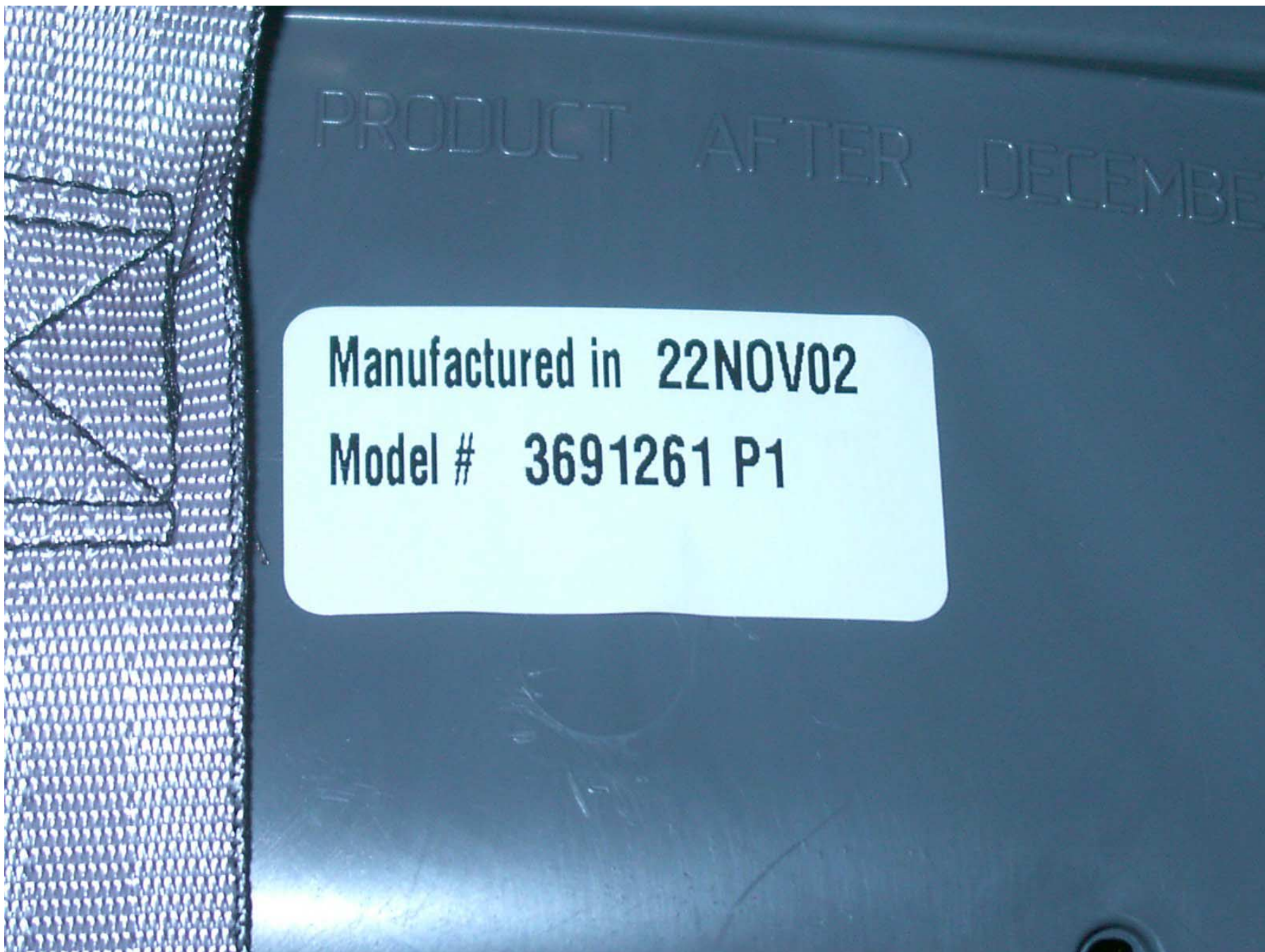


Figure F2-1: Close-up View Position 3 CRS Label



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 F2-15: Post-Test Position 3 Right Side View



Figure F2-16: Post-Test Position 3 Contact Point (Back of Right Front Seat)



Figure F2-17: Close-up View Position 4 CRS Label



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



Figure F2-19: Post-Test Front View of Position 4 CRS



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



Figure F2-21: Post-Test Rear View of Position 4 CRS



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



Figure F2-23: Post-Test Left Side View of Position 4 CRS



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



Figure F2-25: Post-Test Right Side View of Position 4 CRS



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



Figure F2-27: Post-Test Position 4 Front View



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



Figure F2-29: Post-Test Position 4 Left Side View



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



Figure F2-31: Post-Test Position 4 Right Side View



Figure F2-32: Post-Test Position 4 Contact Point (Back of Left Front Seat)

**SECTION F-3**

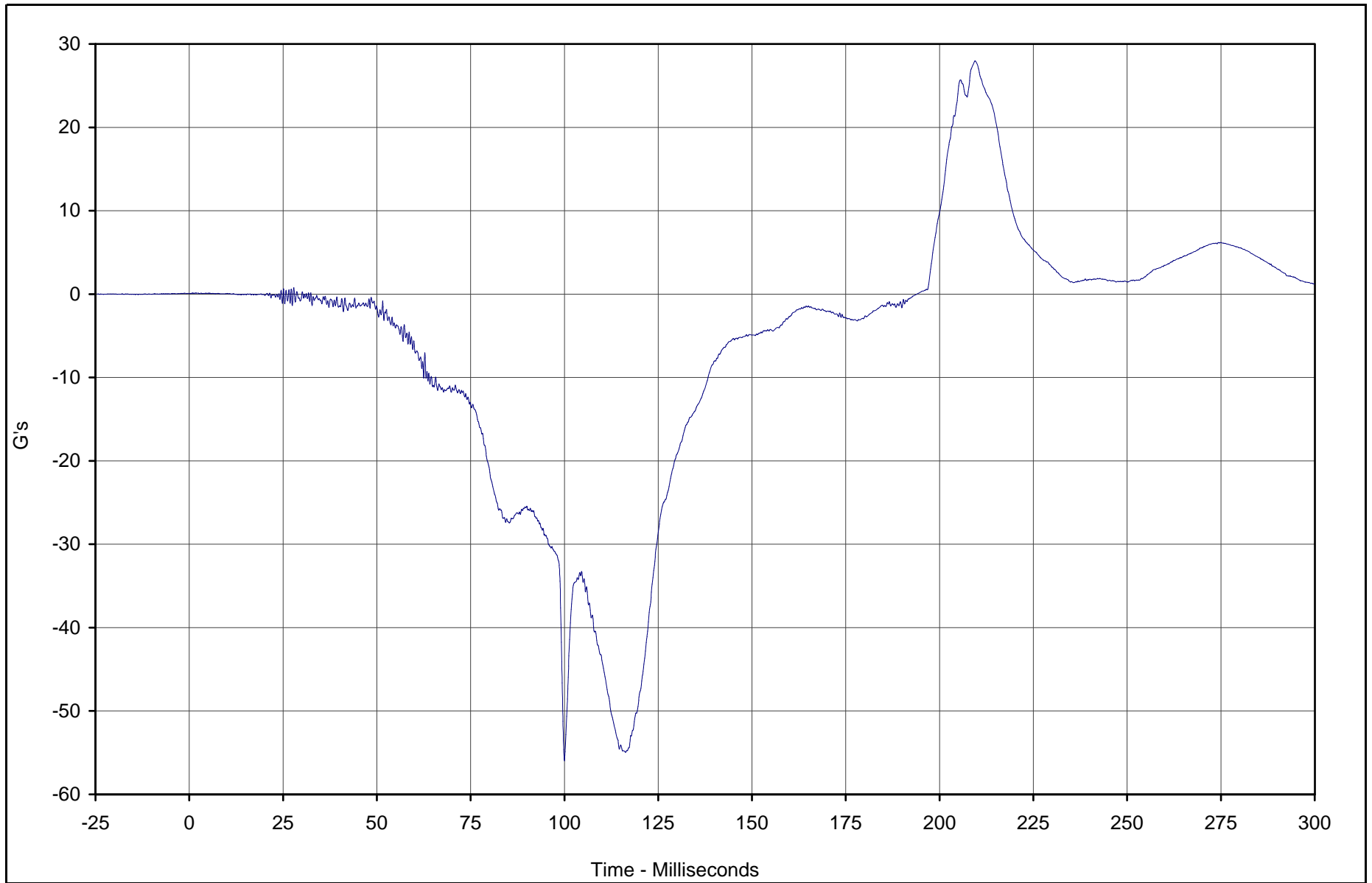
**CHILD DUMMY RESPONSE AND CRS DATA TRACES**

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Head X	134	FIL	G's	28.0	209.5	-56.0	100.0	1000



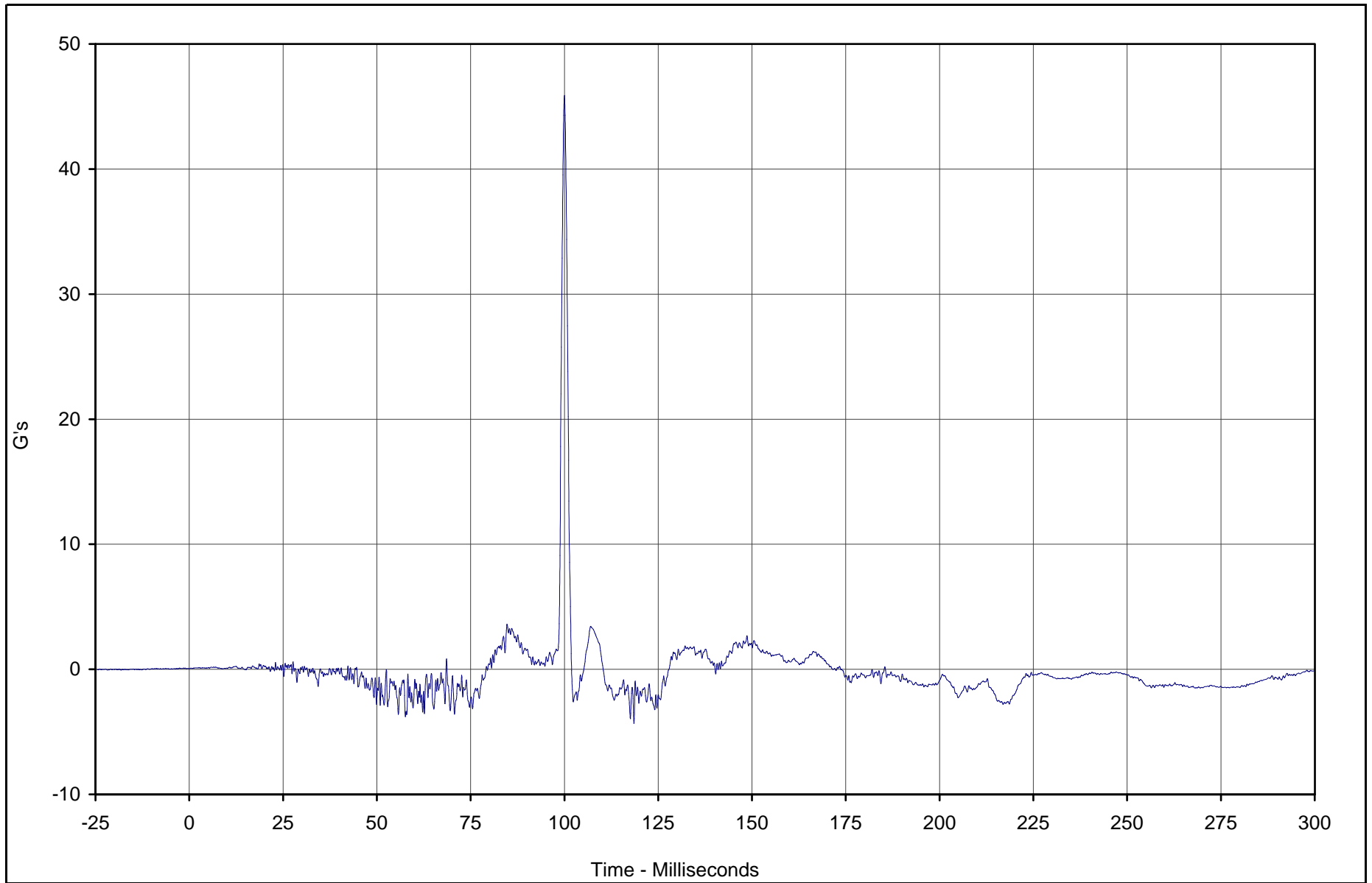
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-2



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Head Y	135	FIL	G's	45.9	100.0	-4.3	118.5	1000



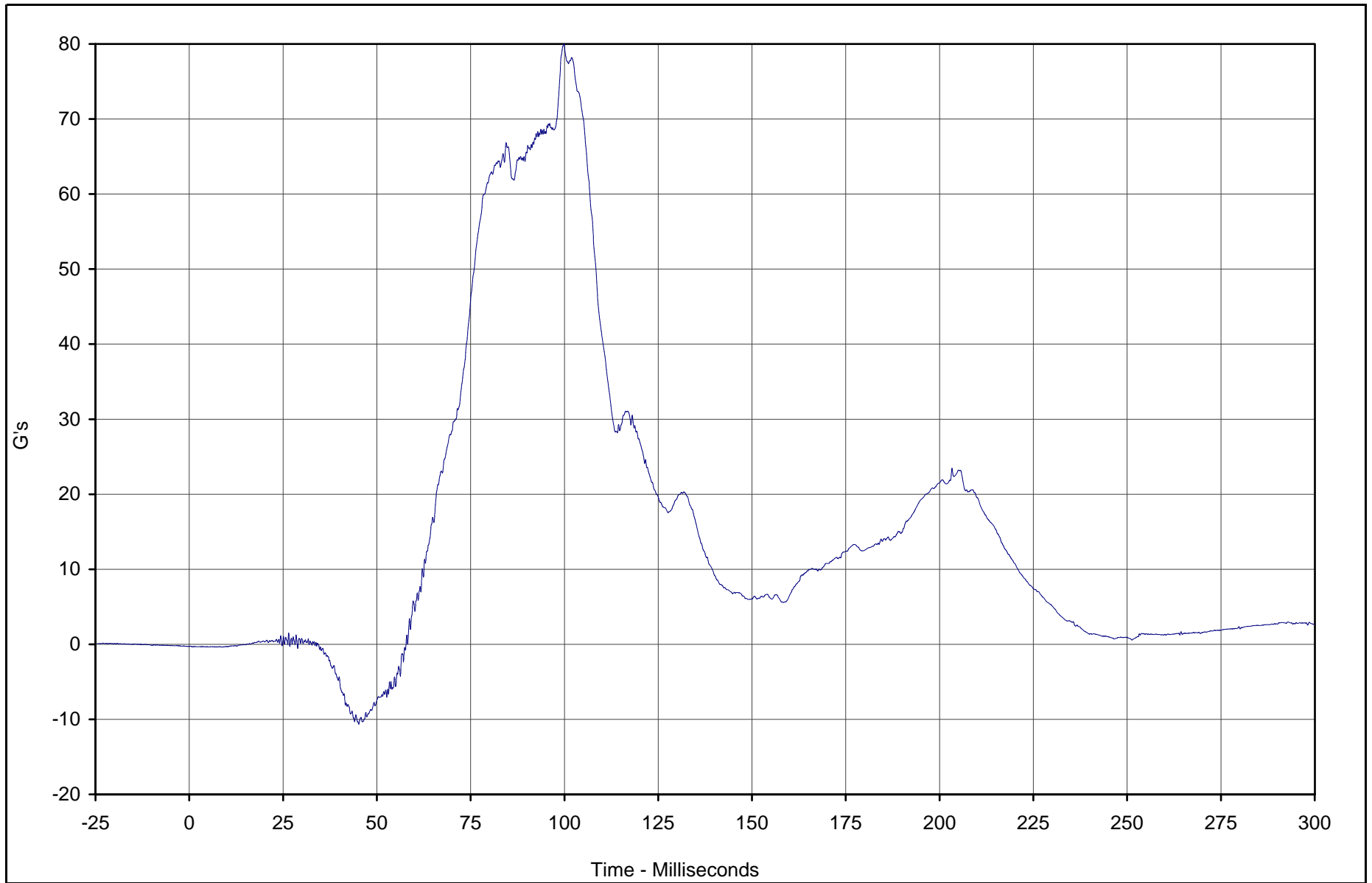
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

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Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Head Z	136	FIL	G's	80.1	99.9	-10.7	45.2	1000

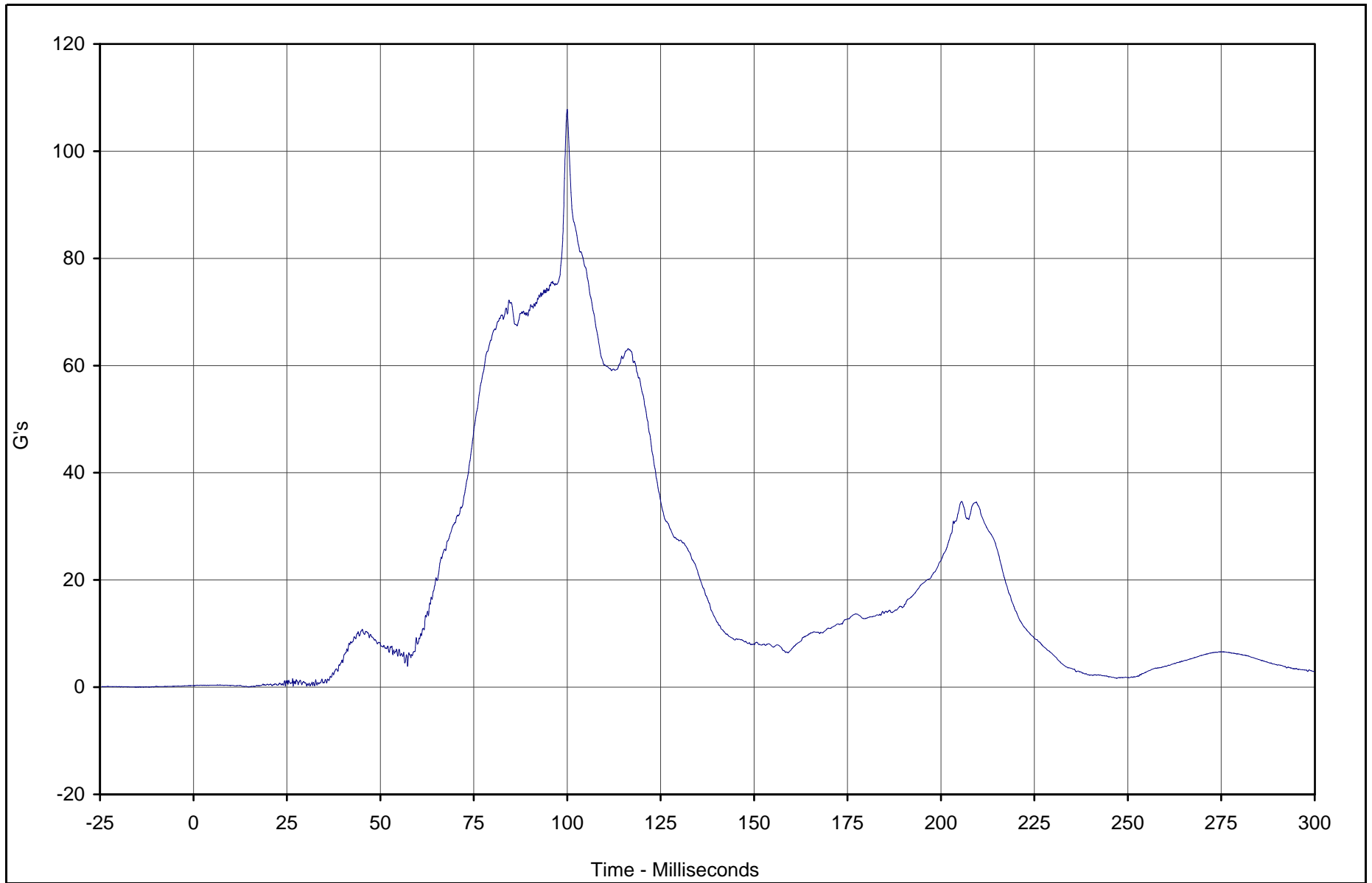


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Head Resultant	134	RES	G's	107.8	100.0	0.1	14.8	1000

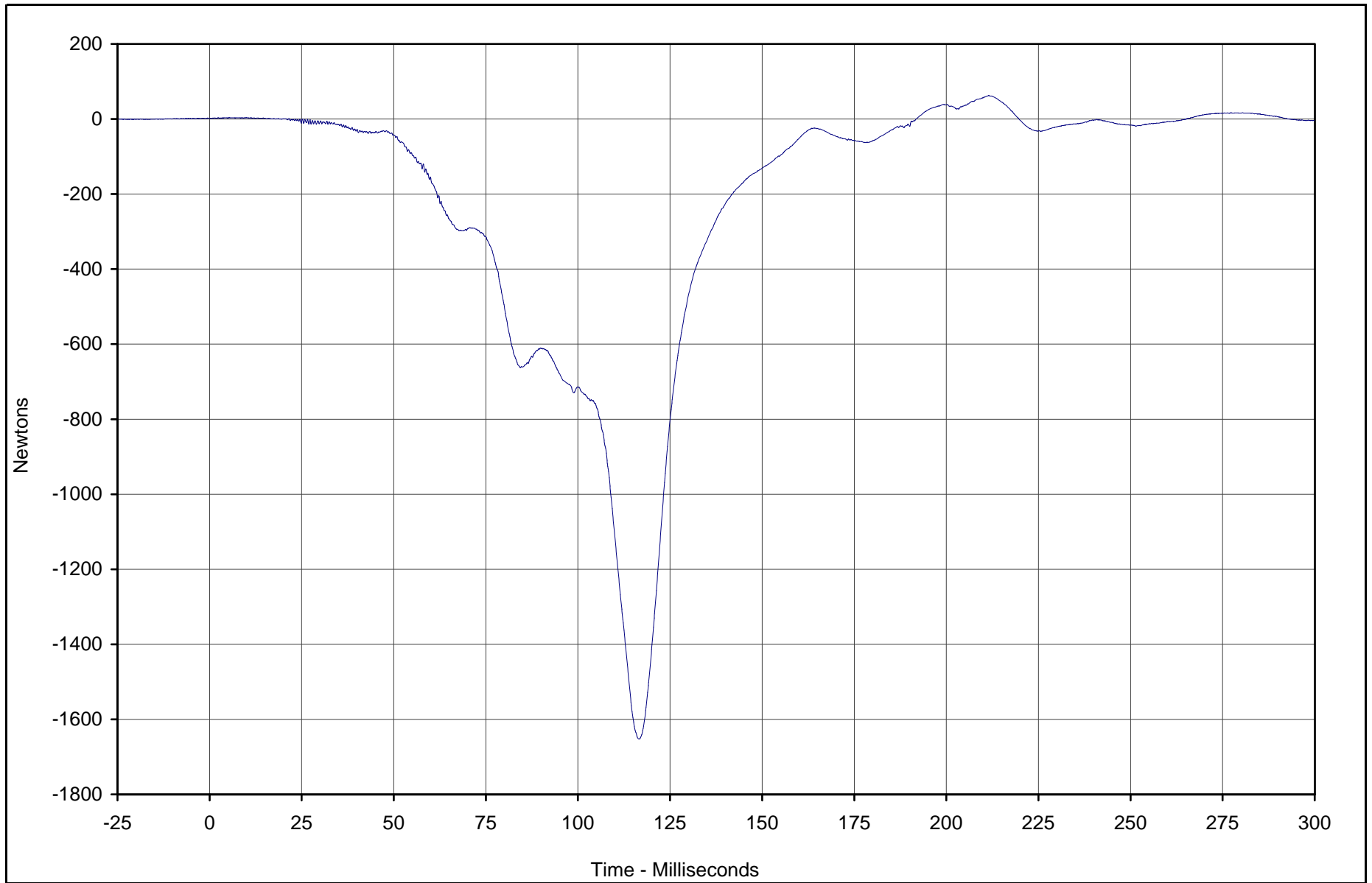


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Force X	137	FIL	Newtons	62.7	211.5	-1652.5	116.6	1000

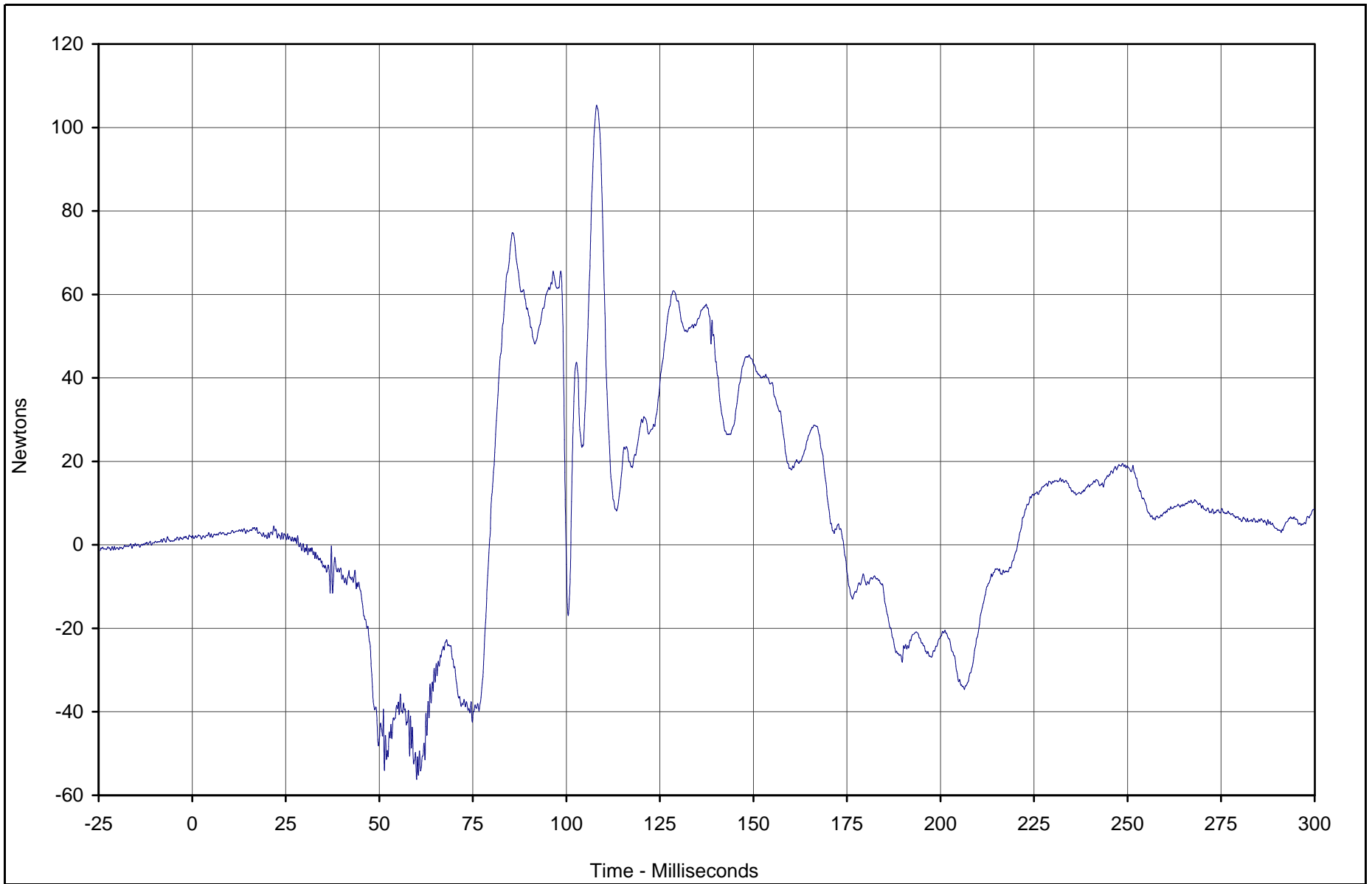


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Force Y	138	FIL	Newtons	105.3	108.1	-56.1	60.0	1000

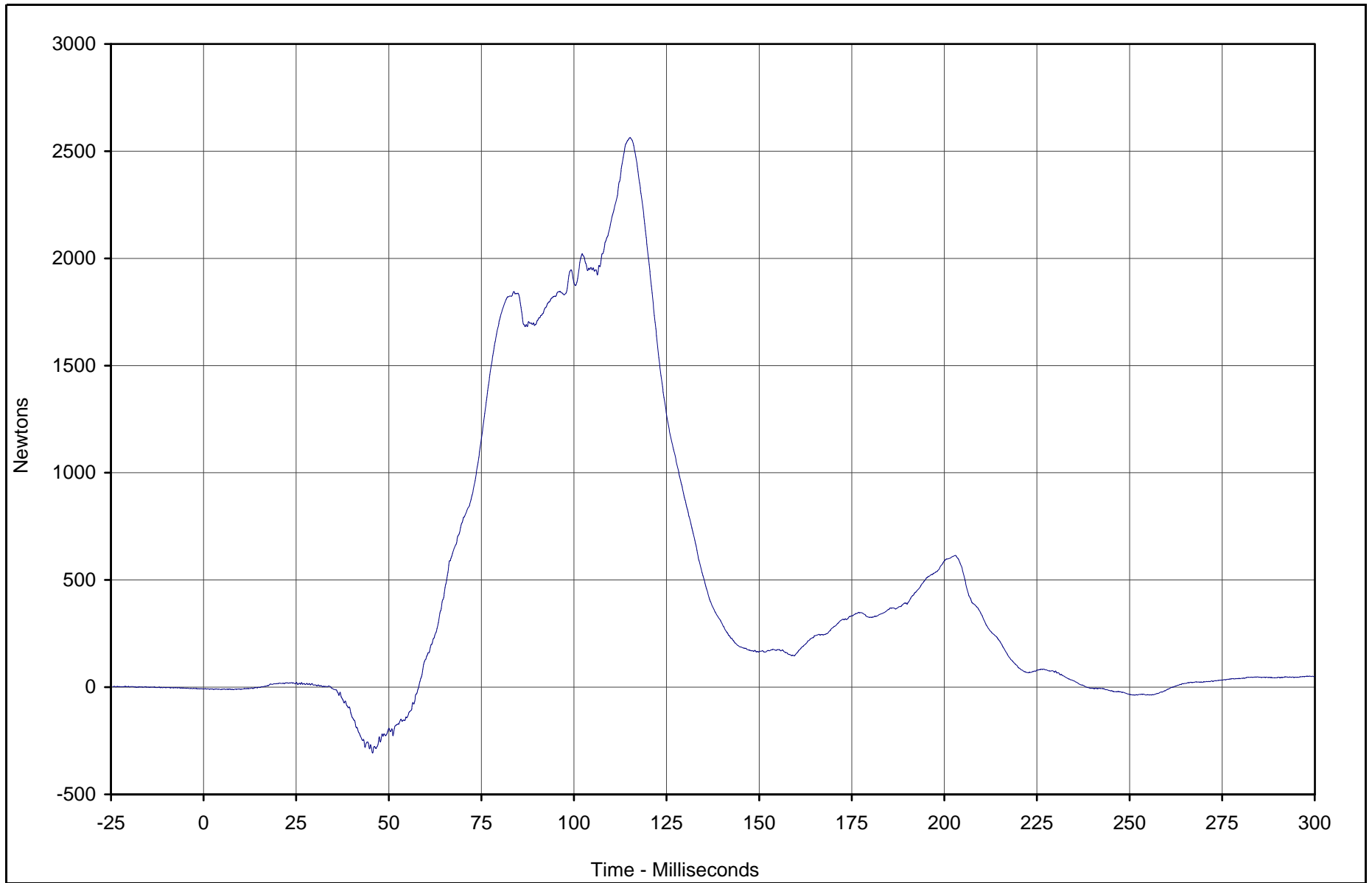


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Force Z	139	FIL	Newtons	2563.5	115.1	-307.7	45.6	1000

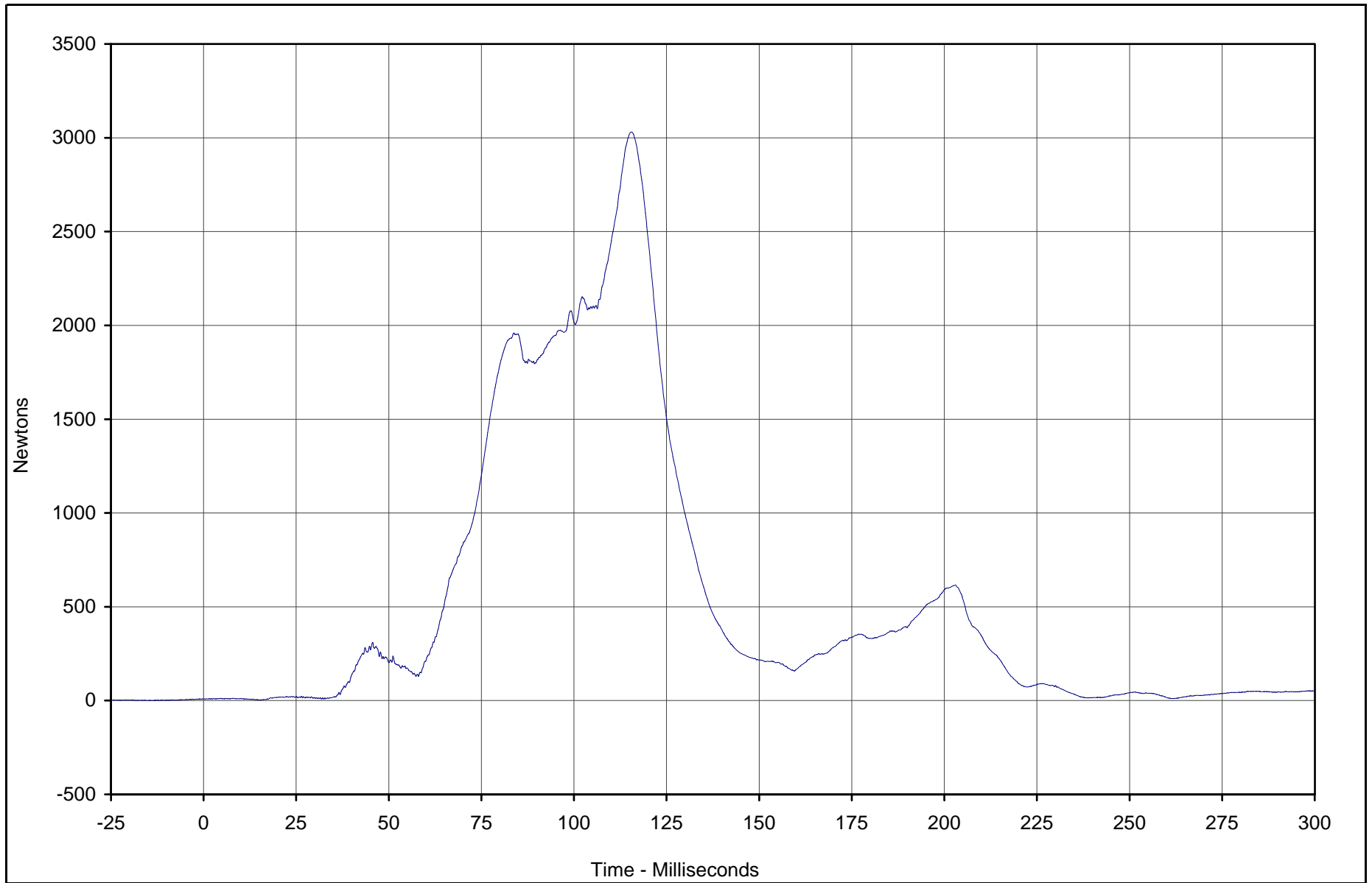


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Force Res.	137	RES	Newtons	3031.1	115.5	3.8	15.4	1000

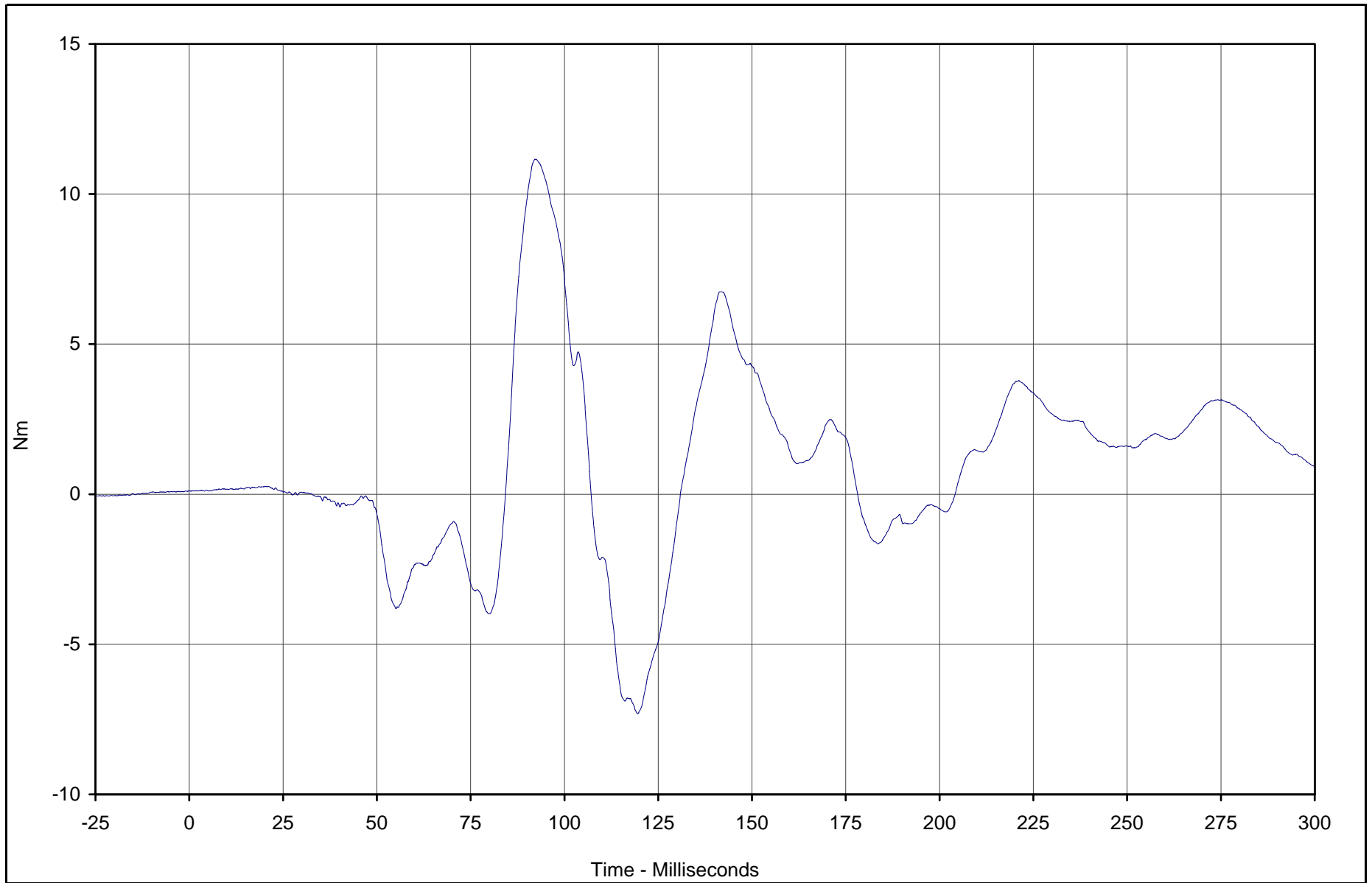


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Moment X	140	FIL	Nm	11.2	92.3	-7.3	119.6	600



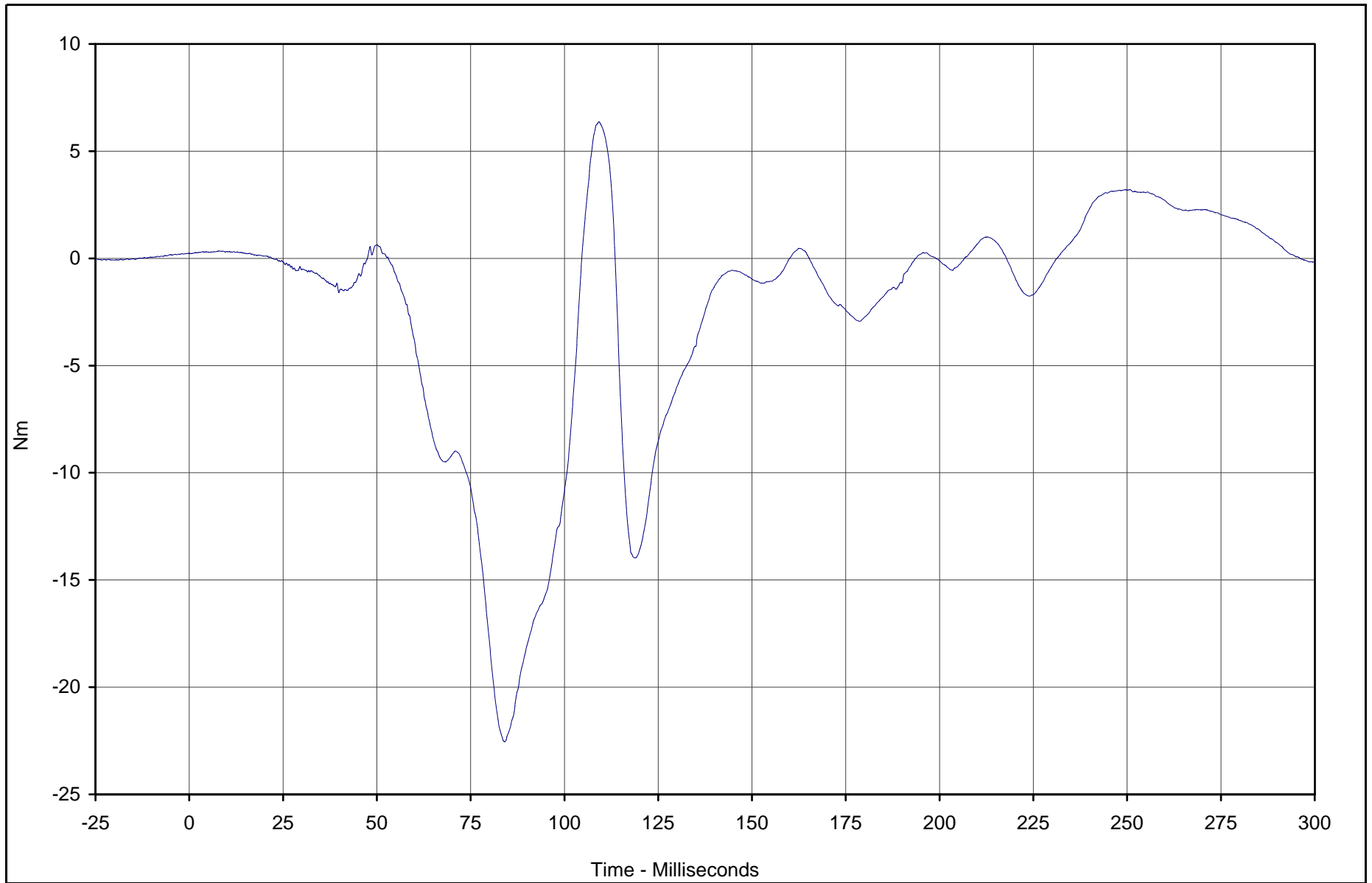
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Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-10



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Moment Y	141	FIL	Nm	6.4	109.2	-22.5	84.1	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

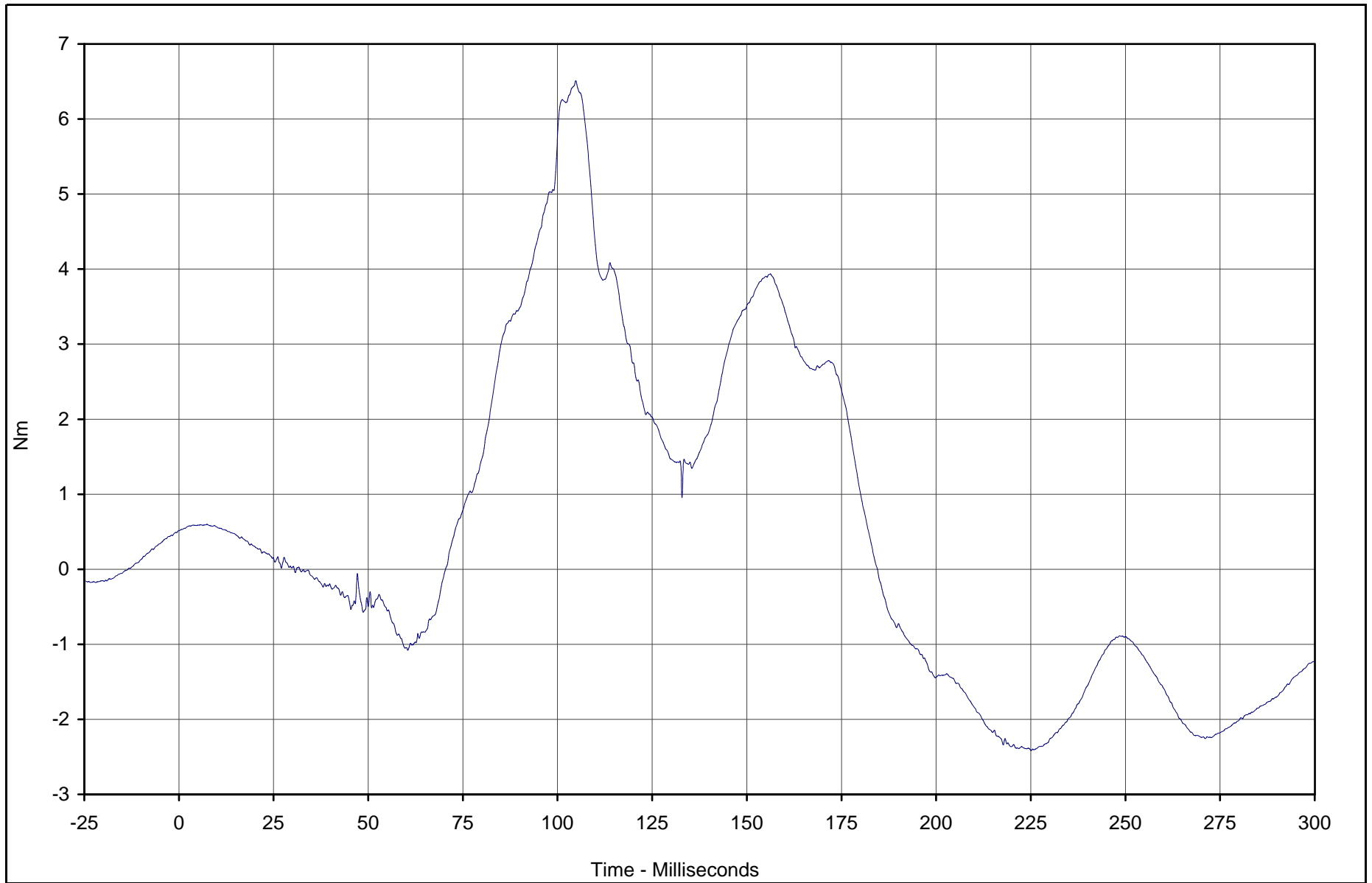
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

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F3-11



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Moment Z	142	FIL	Nm	6.5	104.8	-2.4	225.1	600



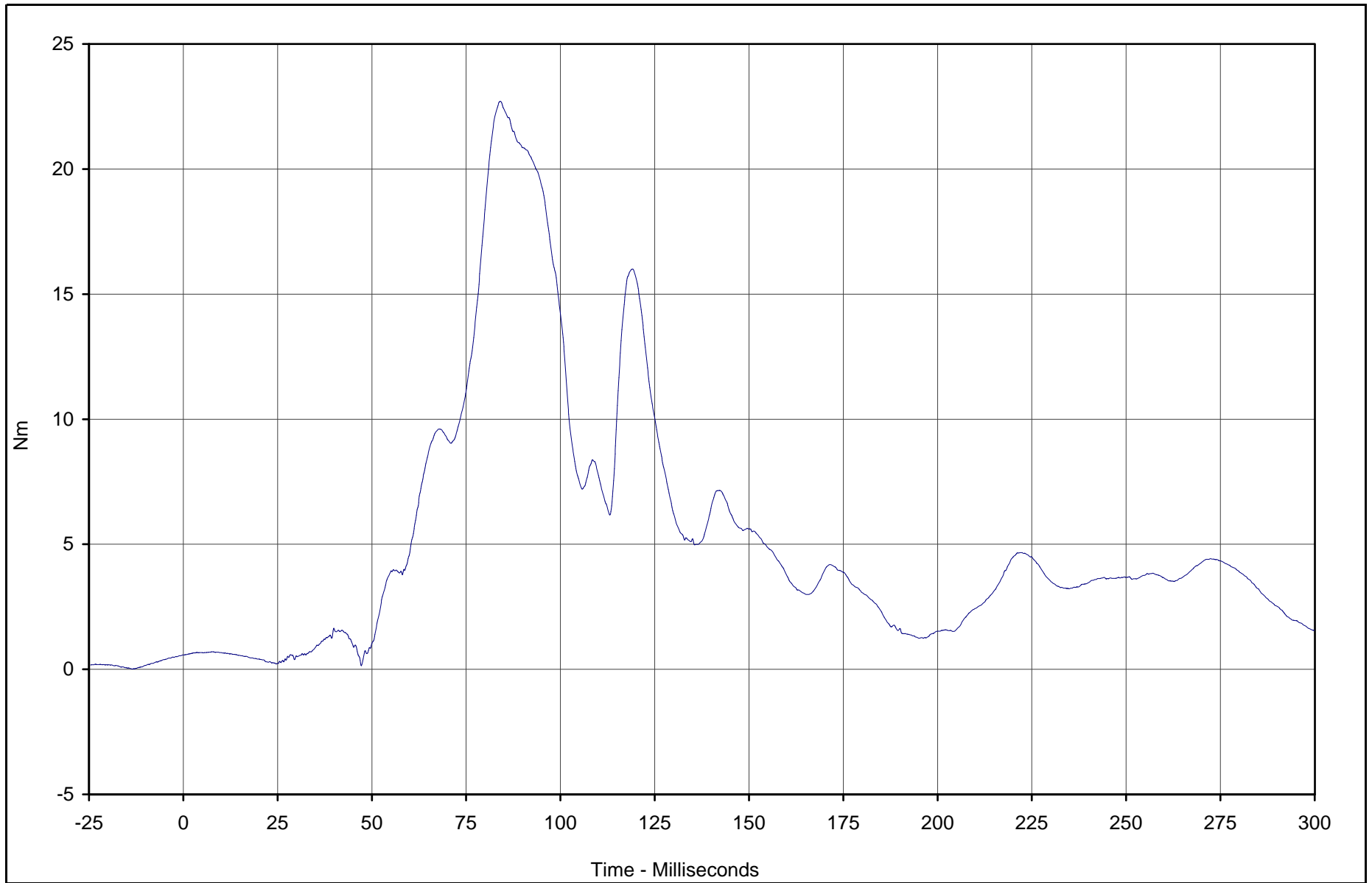
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Upper Neck Mom Res.	140	RES	Nm	22.7	84.1	0.1	47.2	600

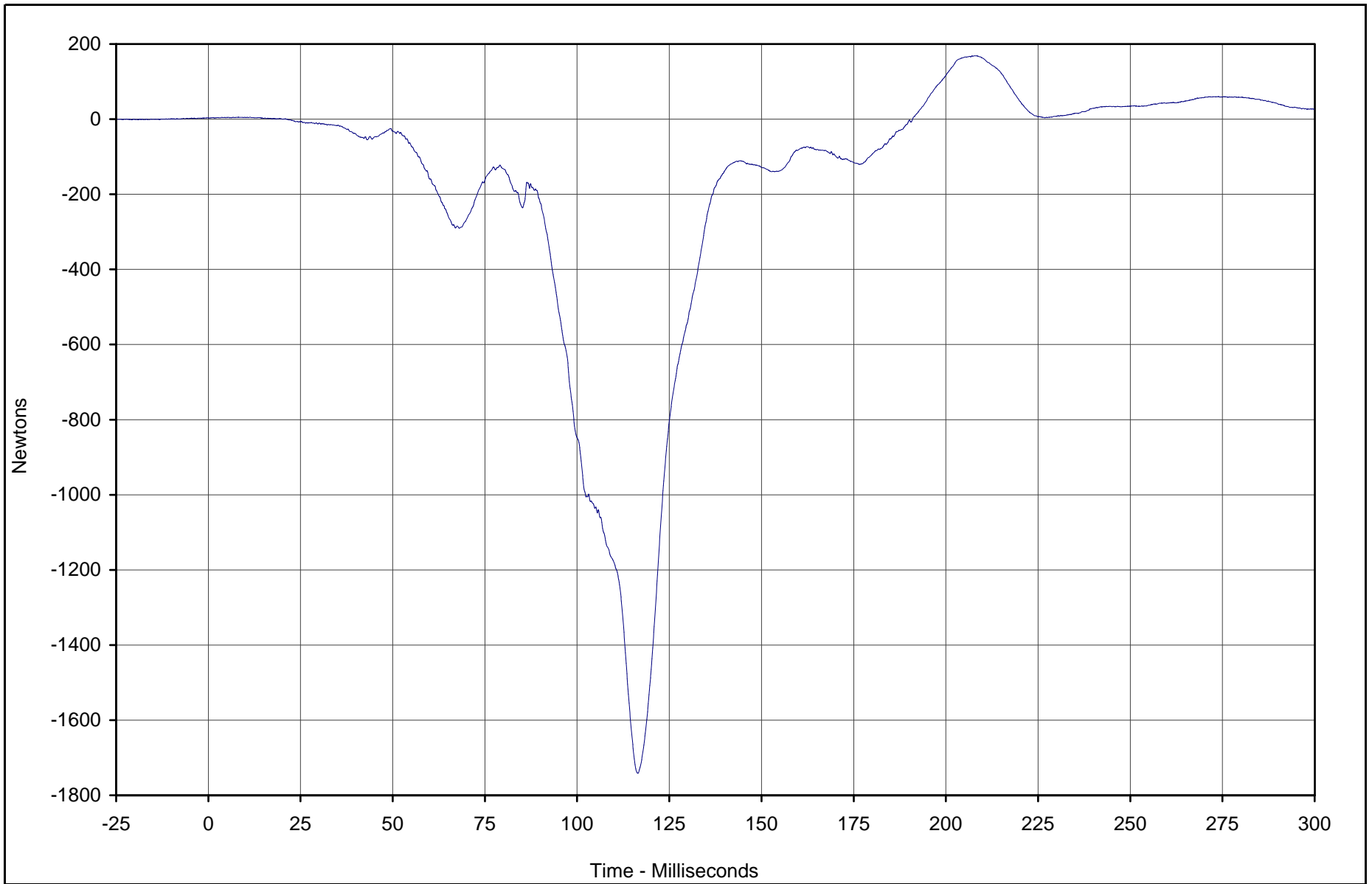


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Force X	143	FIL	Newtons	168.7	208.2	-1741.3	116.5	1000

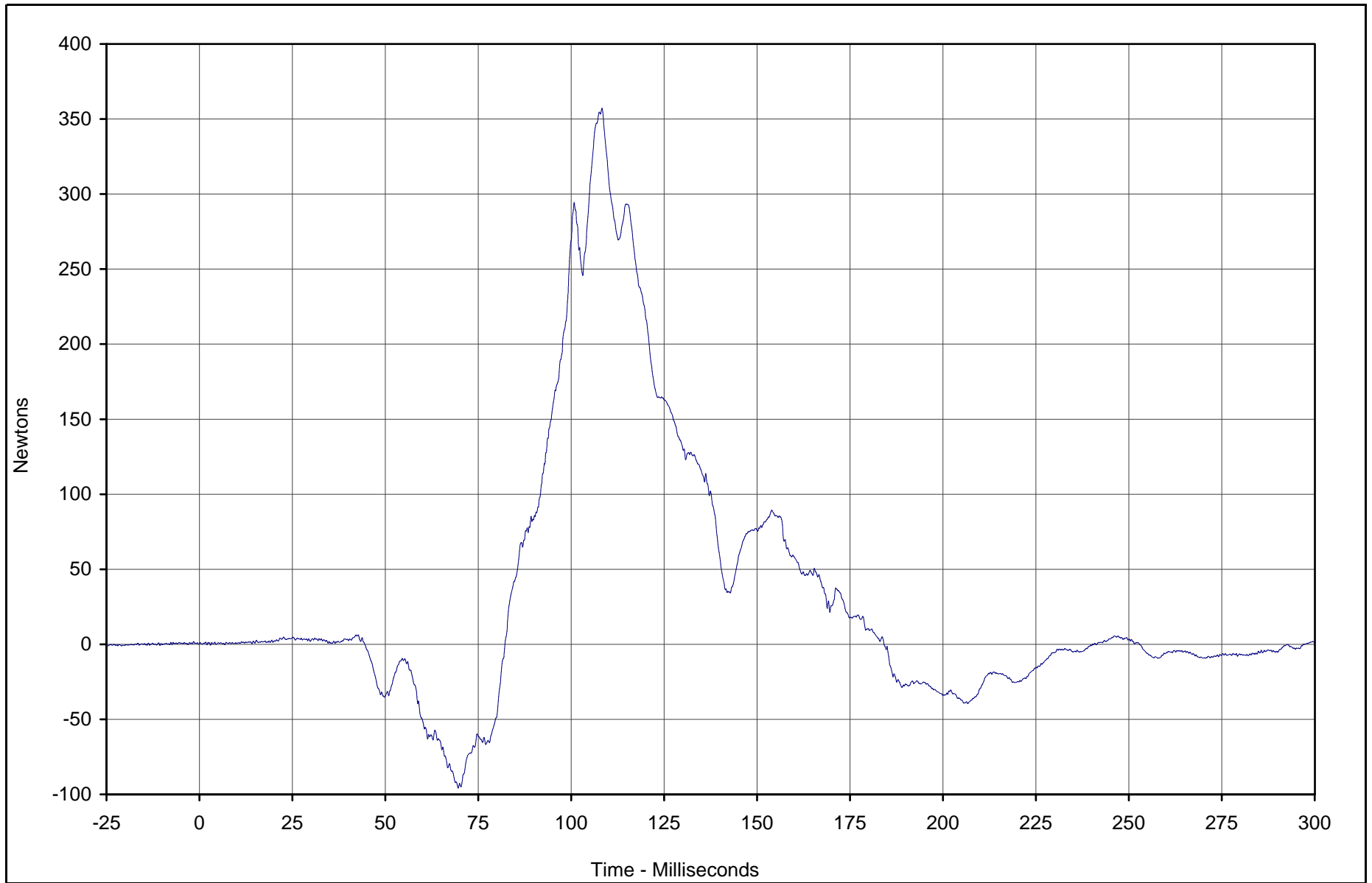


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Force Y	144	FIL	Newtons	357.2	108.3	-95.9	69.6	1000



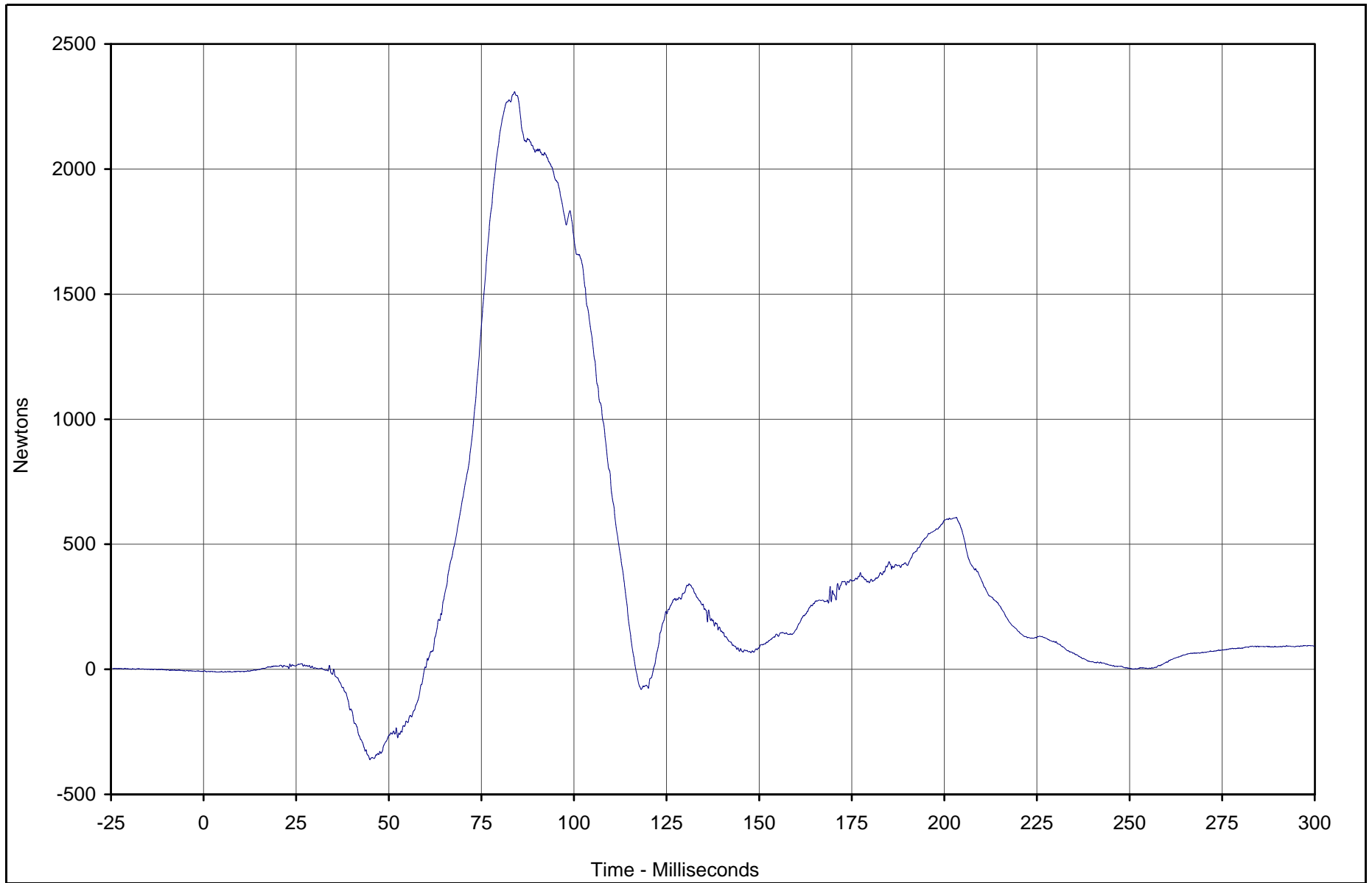
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-15



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Force Z	145	FIL	Newtons	2309.1	84.0	-361.5	44.9	1000



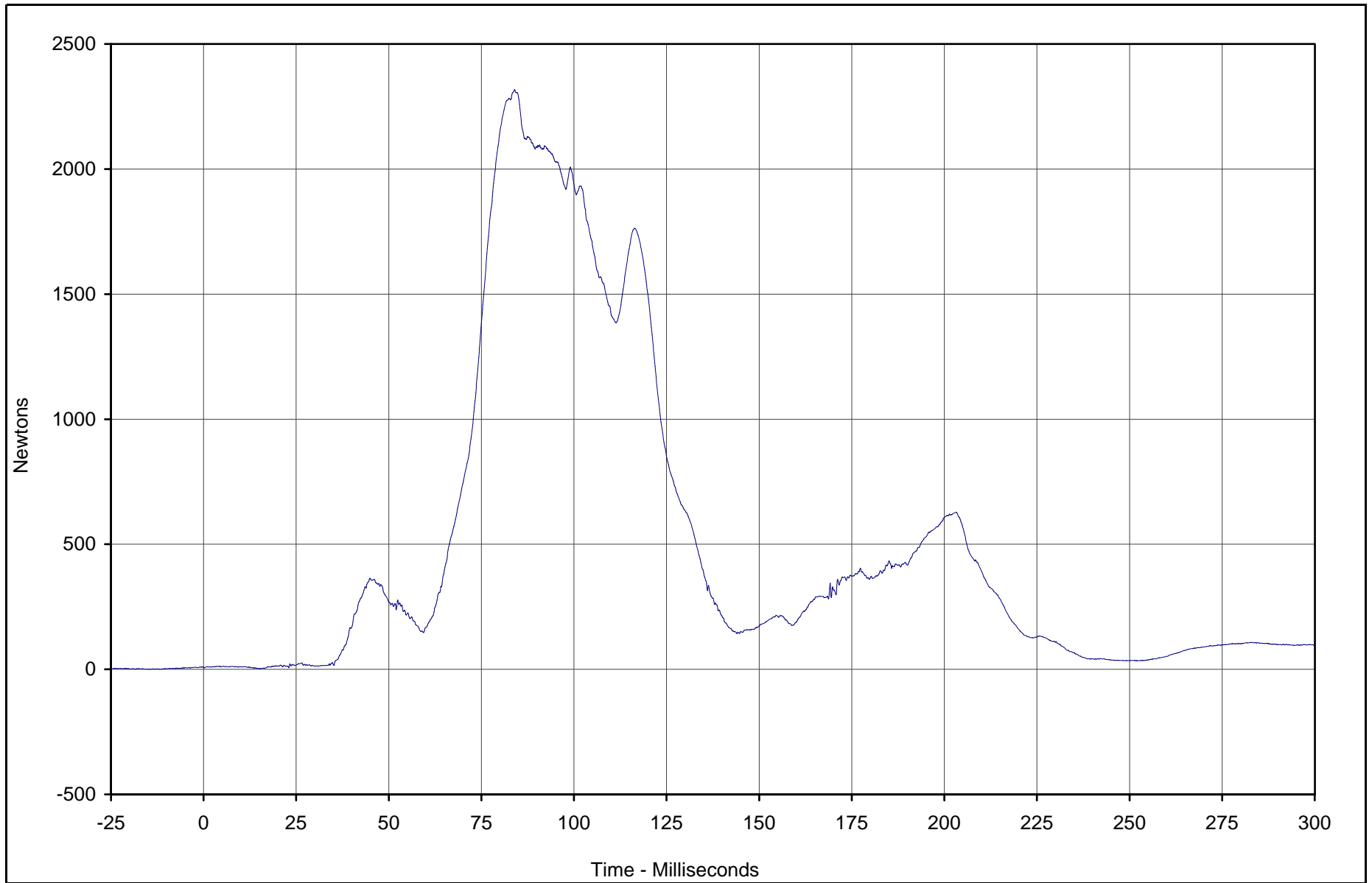
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Force Res.	143	RES	Newtons	2317.7	84.0	2.2	15.0	1000

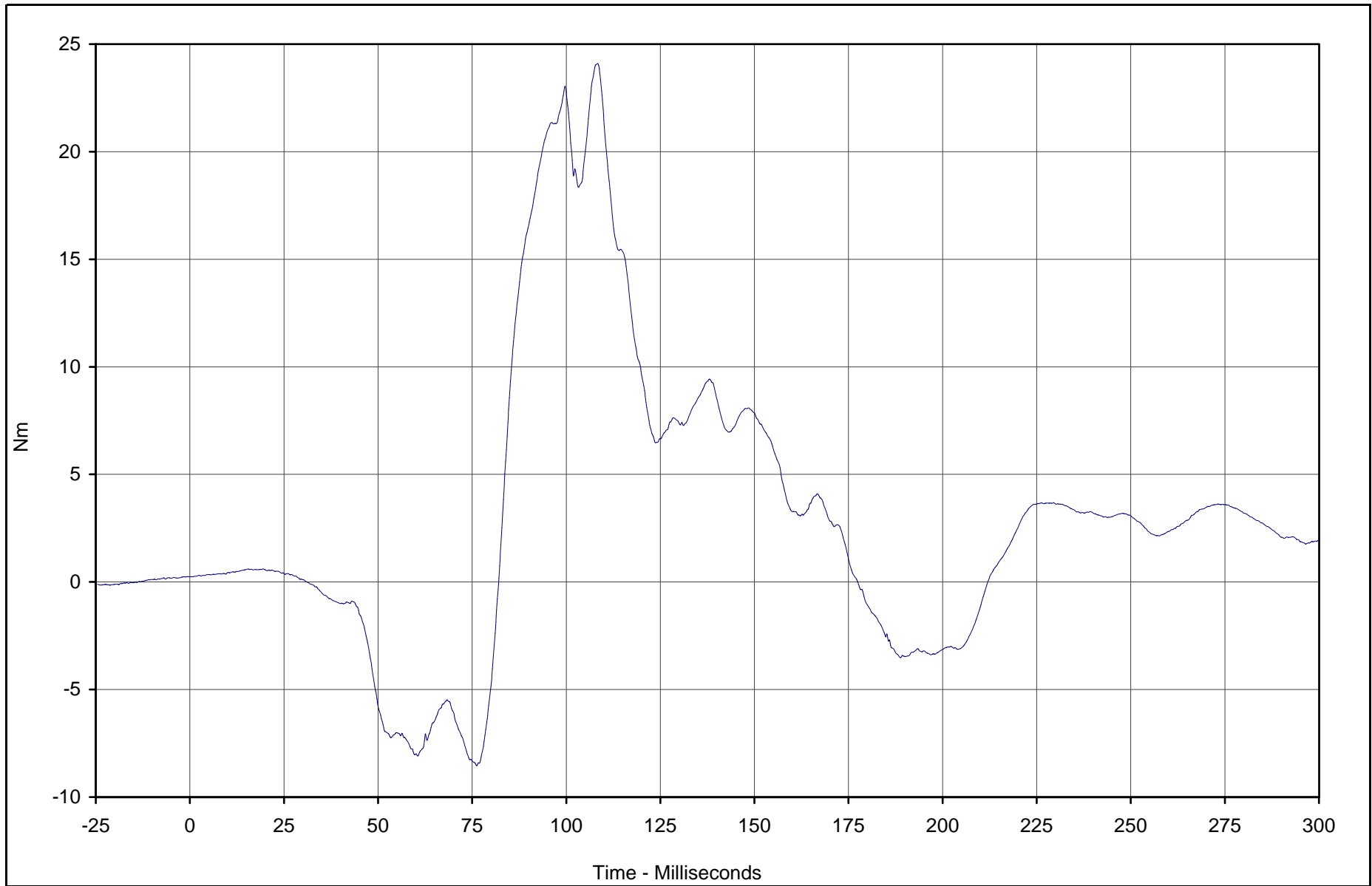


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Moment X	146	FIL	Nm	24.1	108.3	-8.5	76.2	600

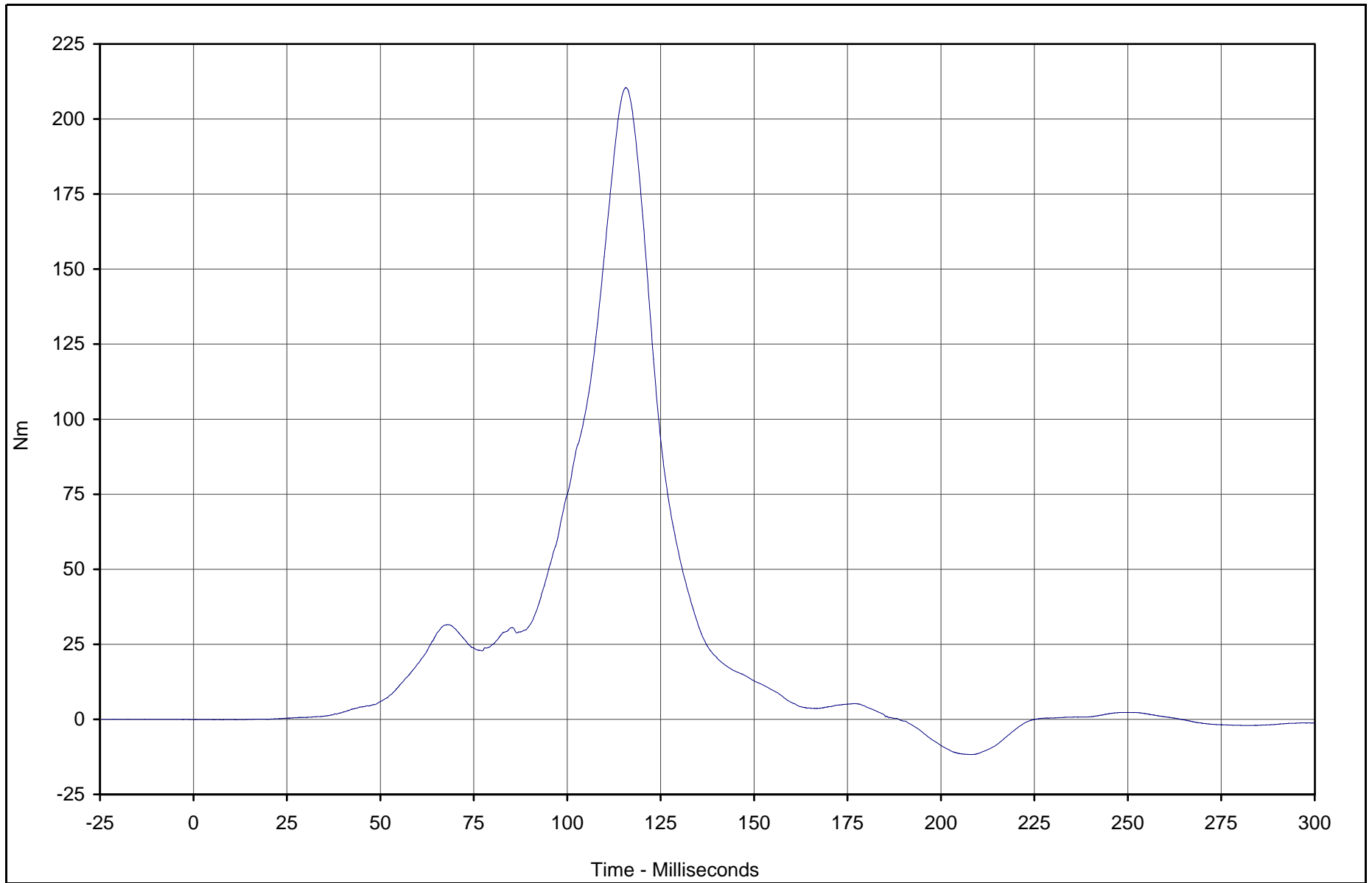


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Moment Y	147	FIL	Nm	210.5	115.7	-11.7	208.1	600



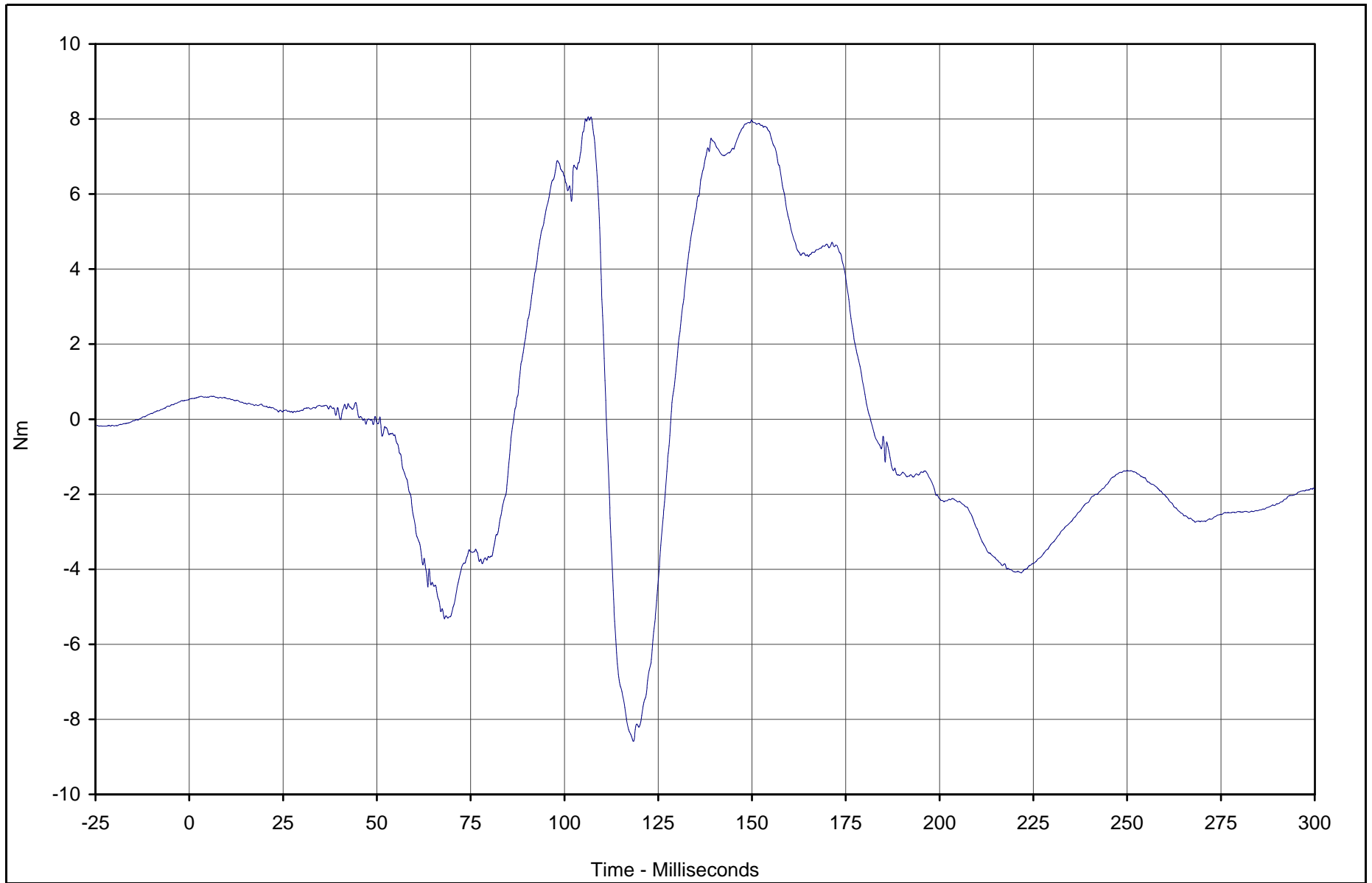
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-19



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Moment Z	148	FIL	Nm	8.1	106.3	-8.6	118.4	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

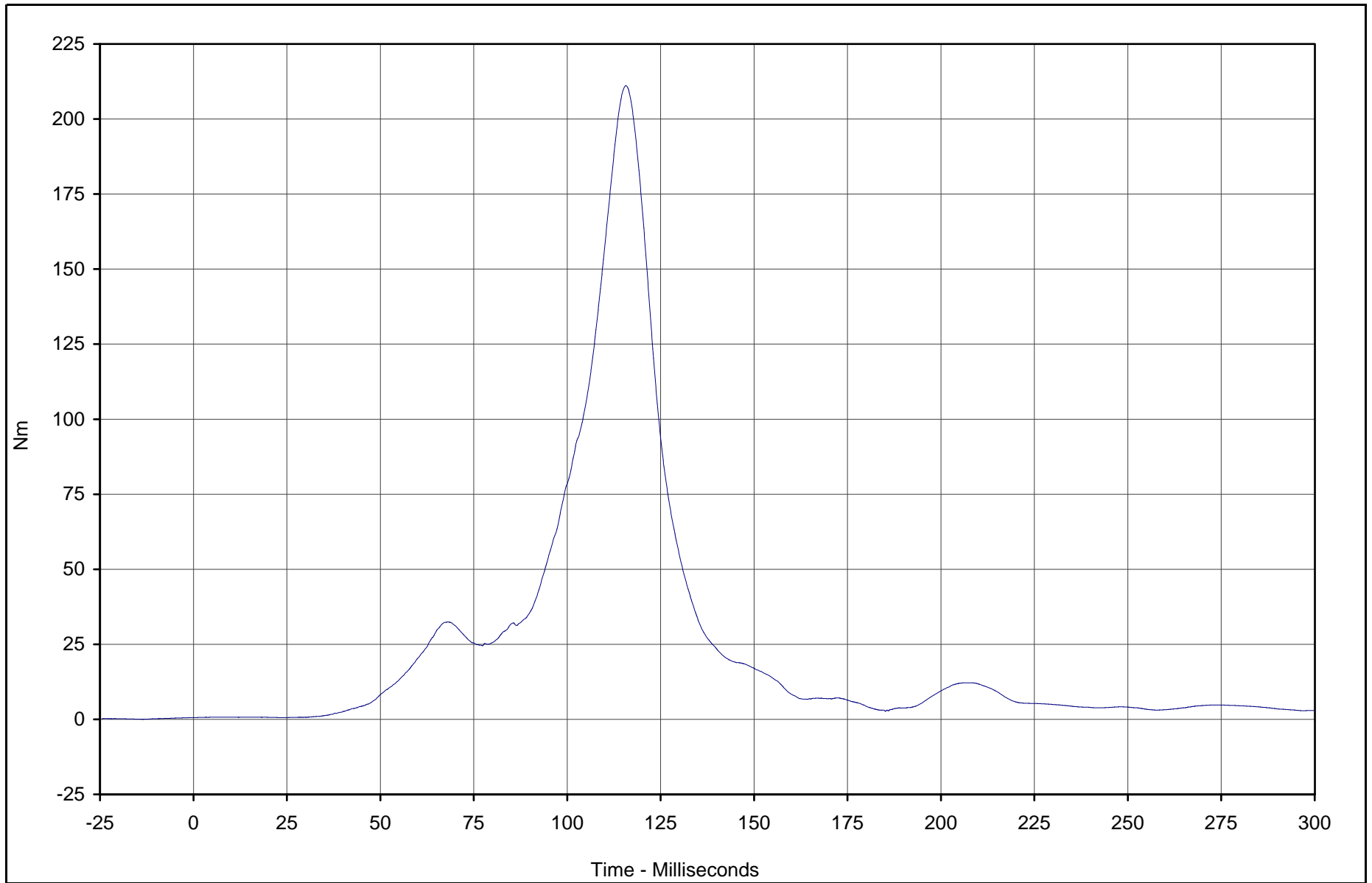
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-20



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Lower Neck Mom Res.	146	RES	Nm	211.1	115.7	0.6	25.1	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

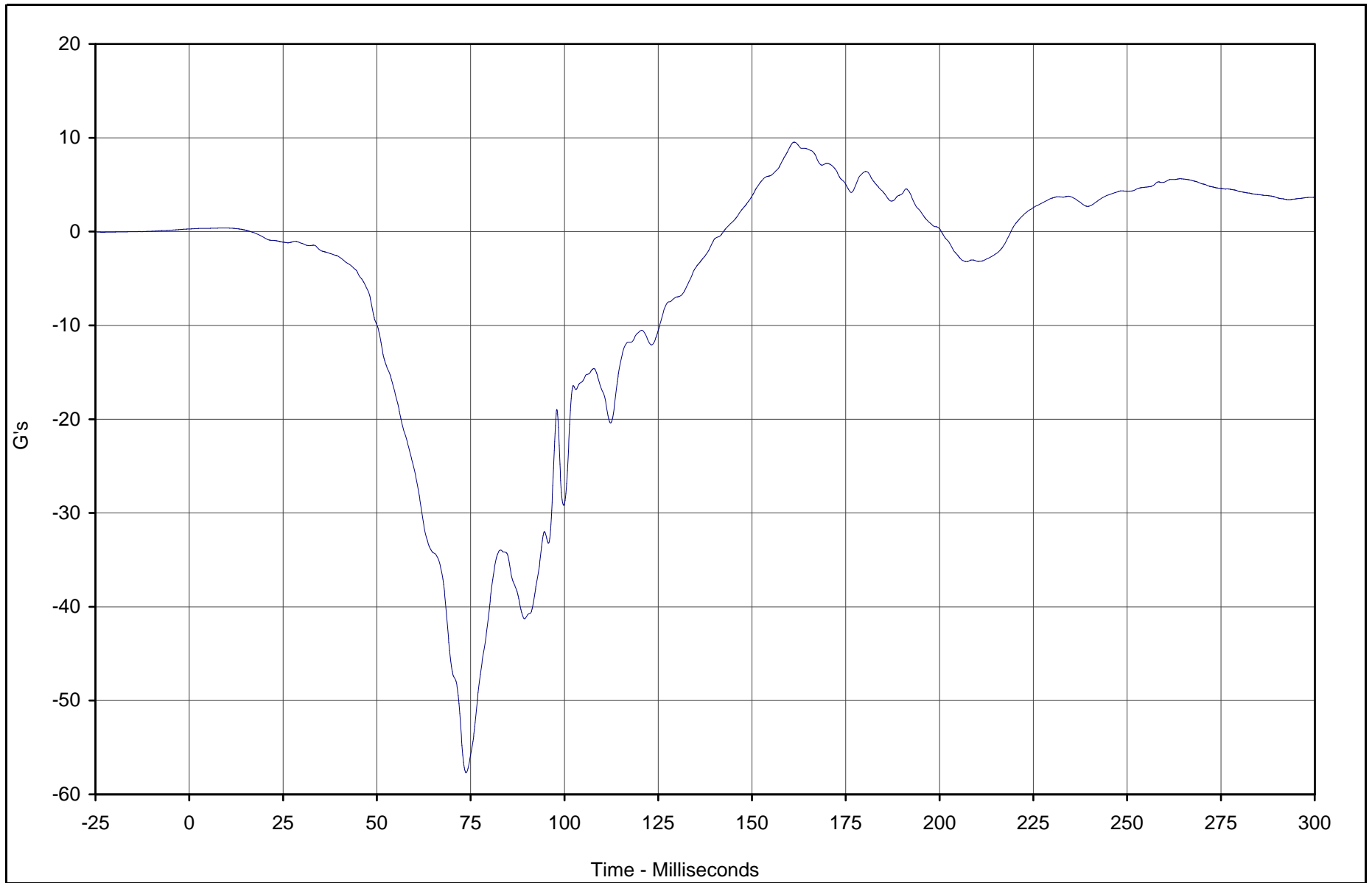
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-21



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Chest X	149	FIL	G's	9.5	161.3	-57.7	73.8	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

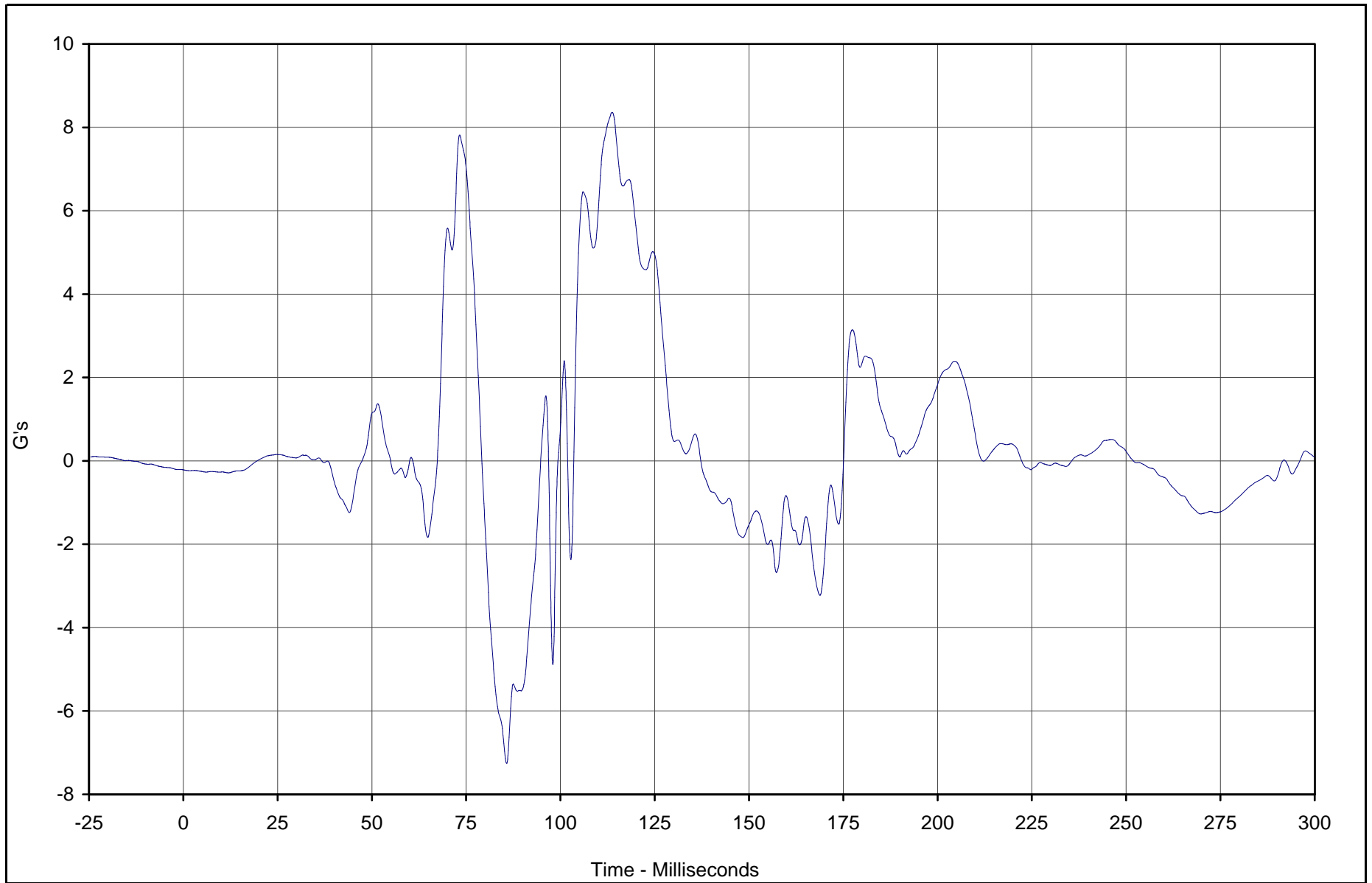
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-22



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Chest Y	150	FIL	G's	8.4	113.7	-7.3	85.7	180



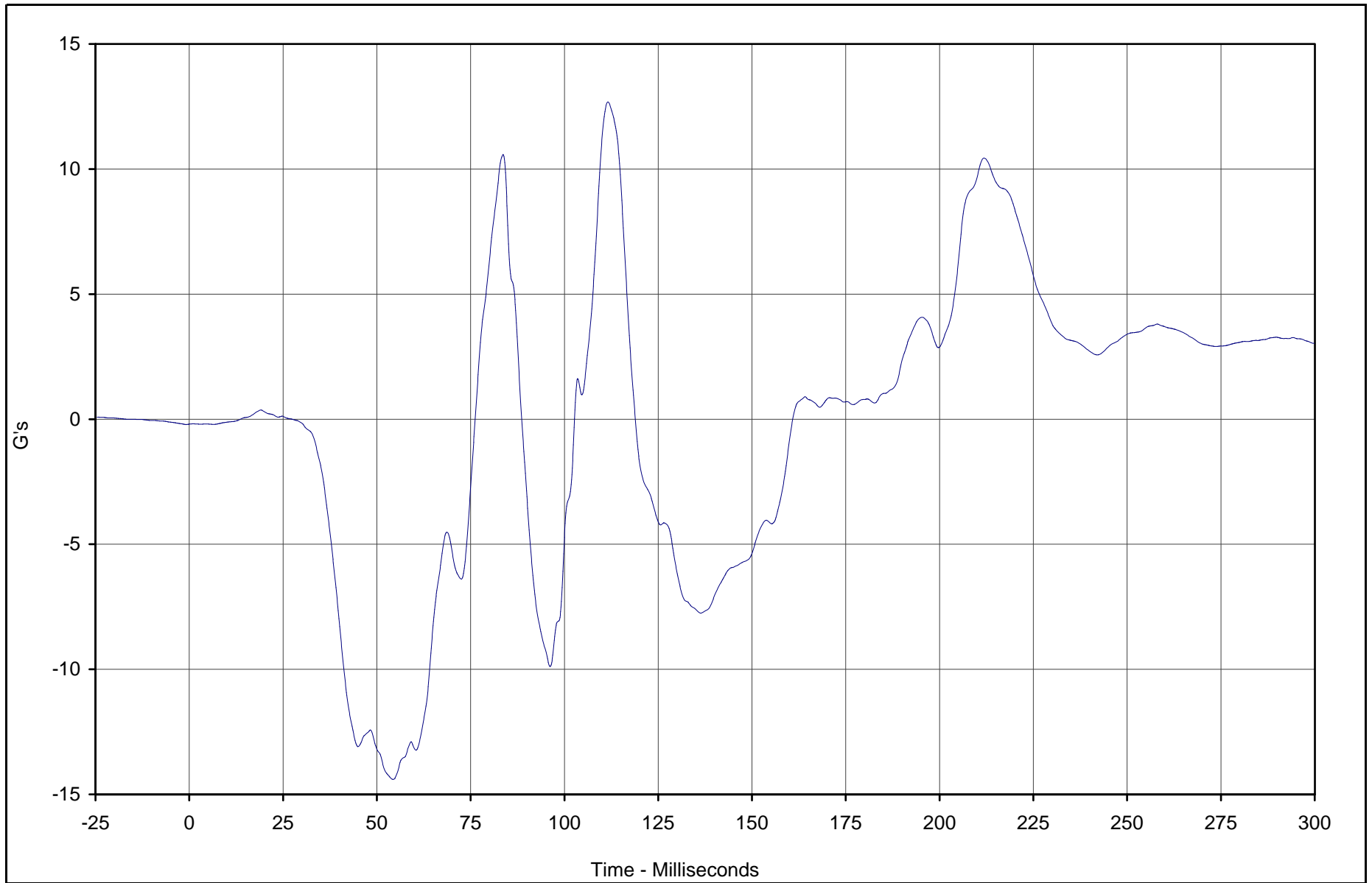
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-23



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Chest Z	151	FIL	G's	12.7	111.6	-14.4	54.3	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

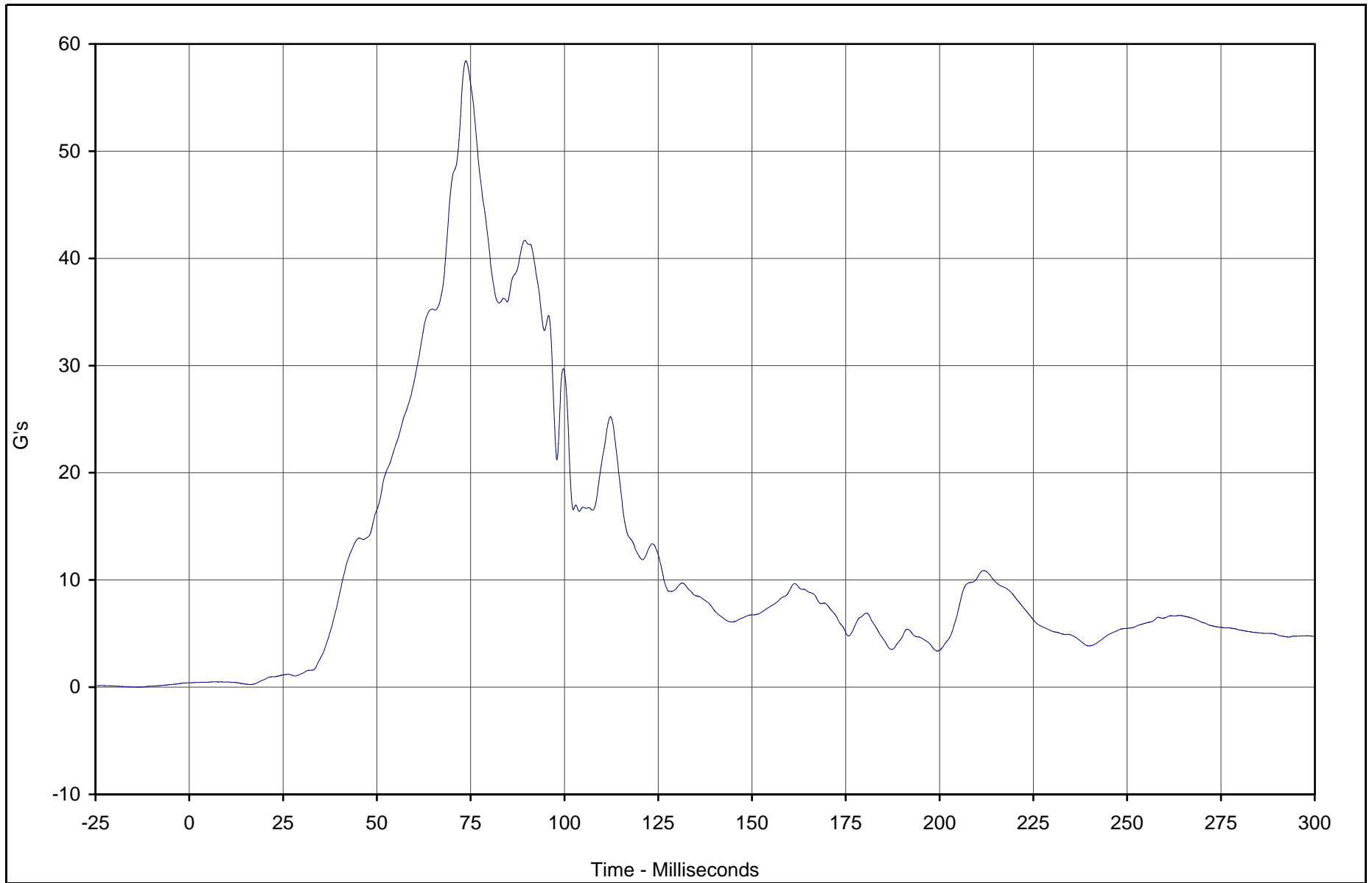
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-24



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Chest Resultant	149	RES	G's	58.4	73.7	0.2	16.2	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

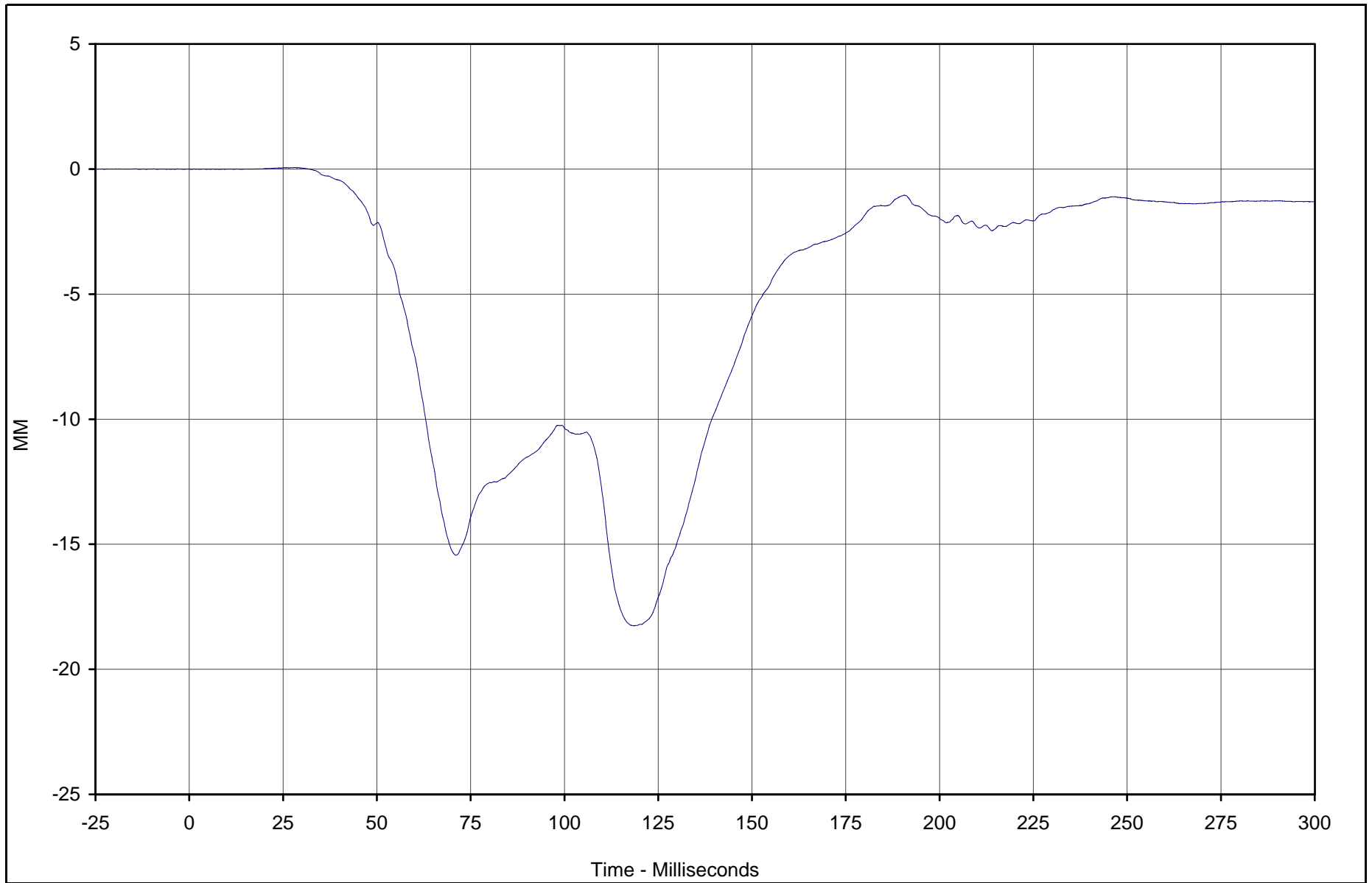
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-25



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Chest Deflection	152	FIL	MM	0.1	28.2	-18.3	118.6	600

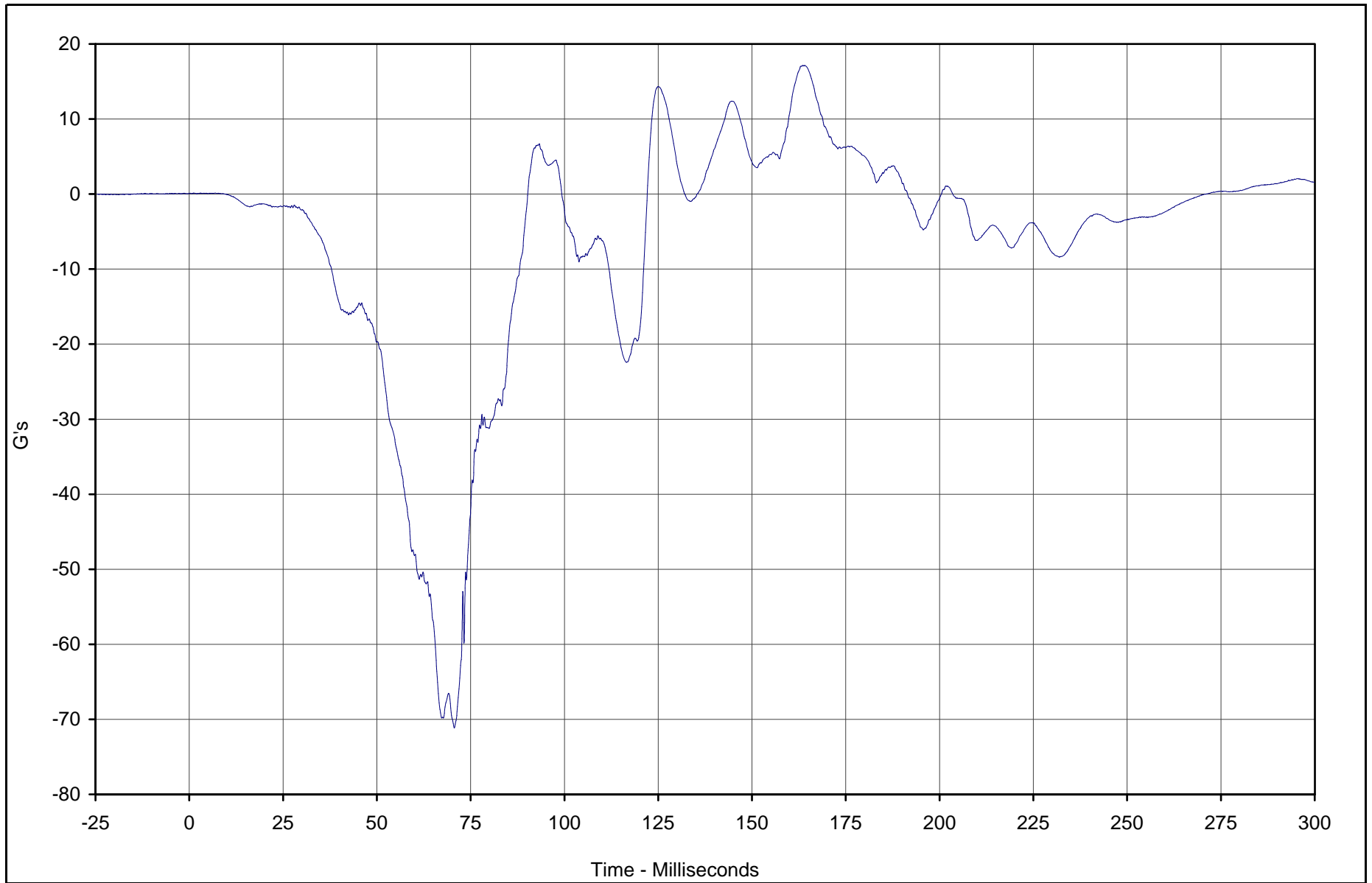


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Pelvis X	153	FIL	G's	17.1	163.5	-71.1	70.7	1000

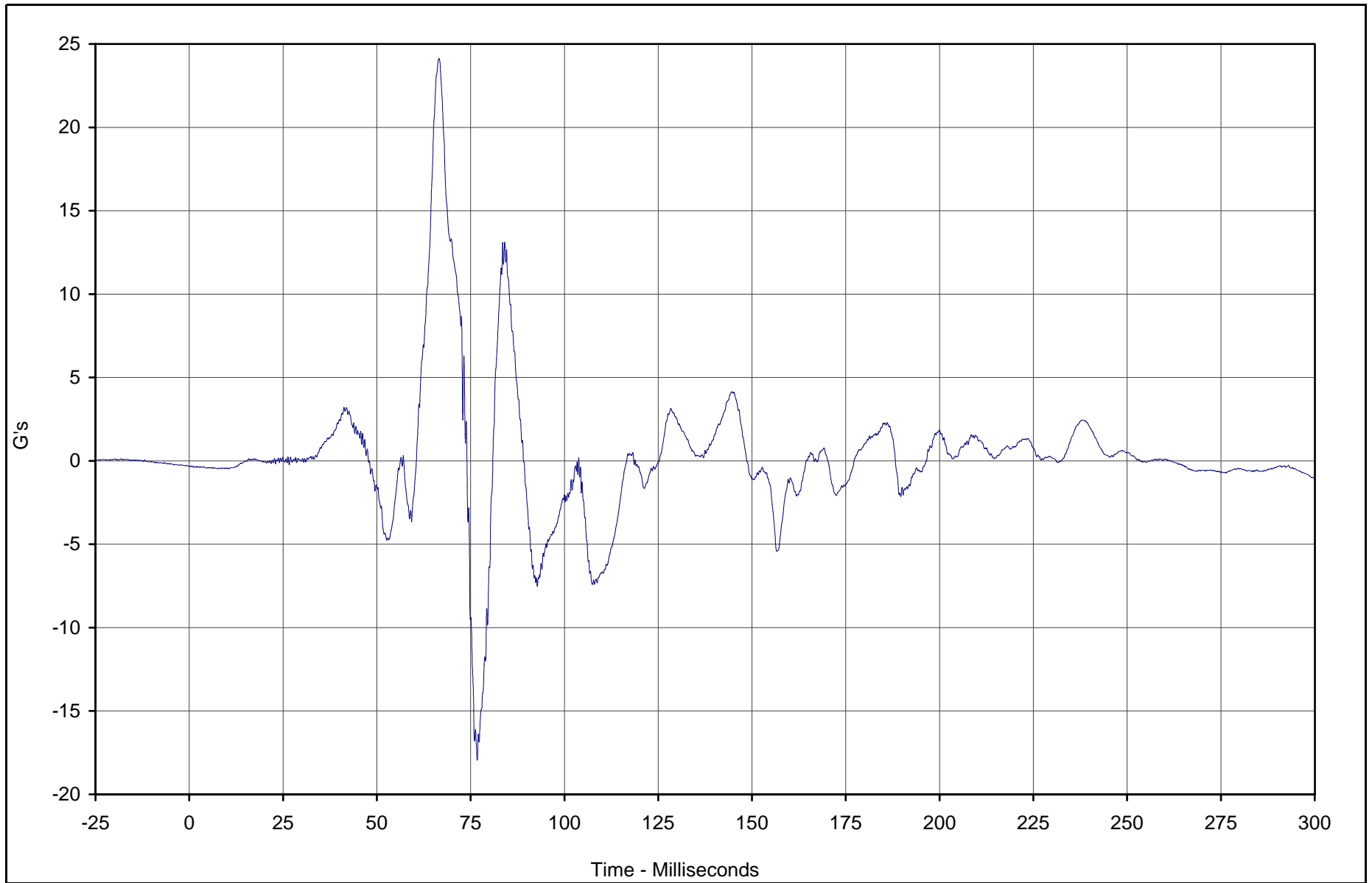


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Pelvis Y	154	FIL	G's	24.1	66.6	-18.0	76.7	1000

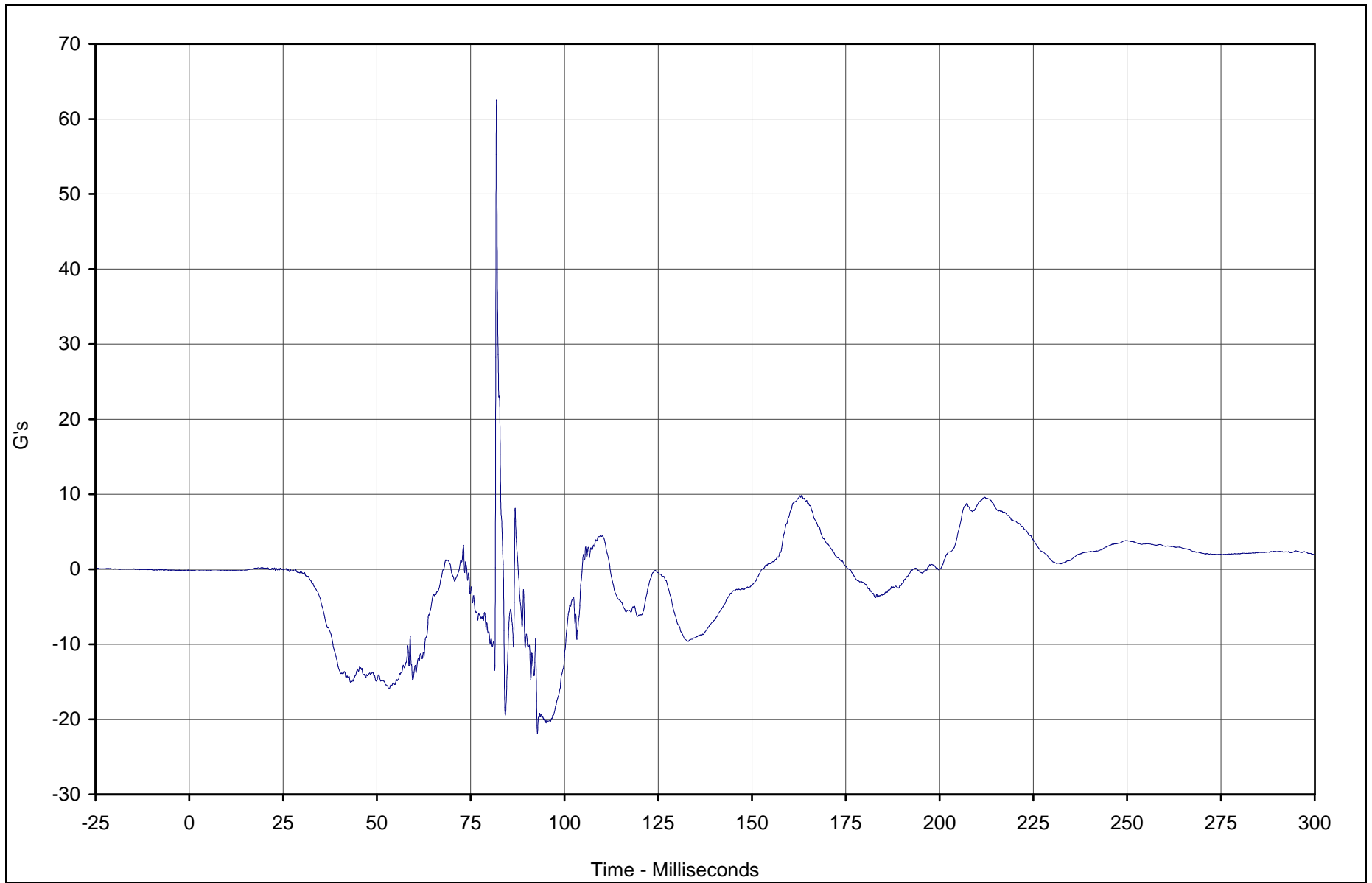


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Pelvis Z	155	FIL	G's	62.5	81.9	-21.9	92.8	1000

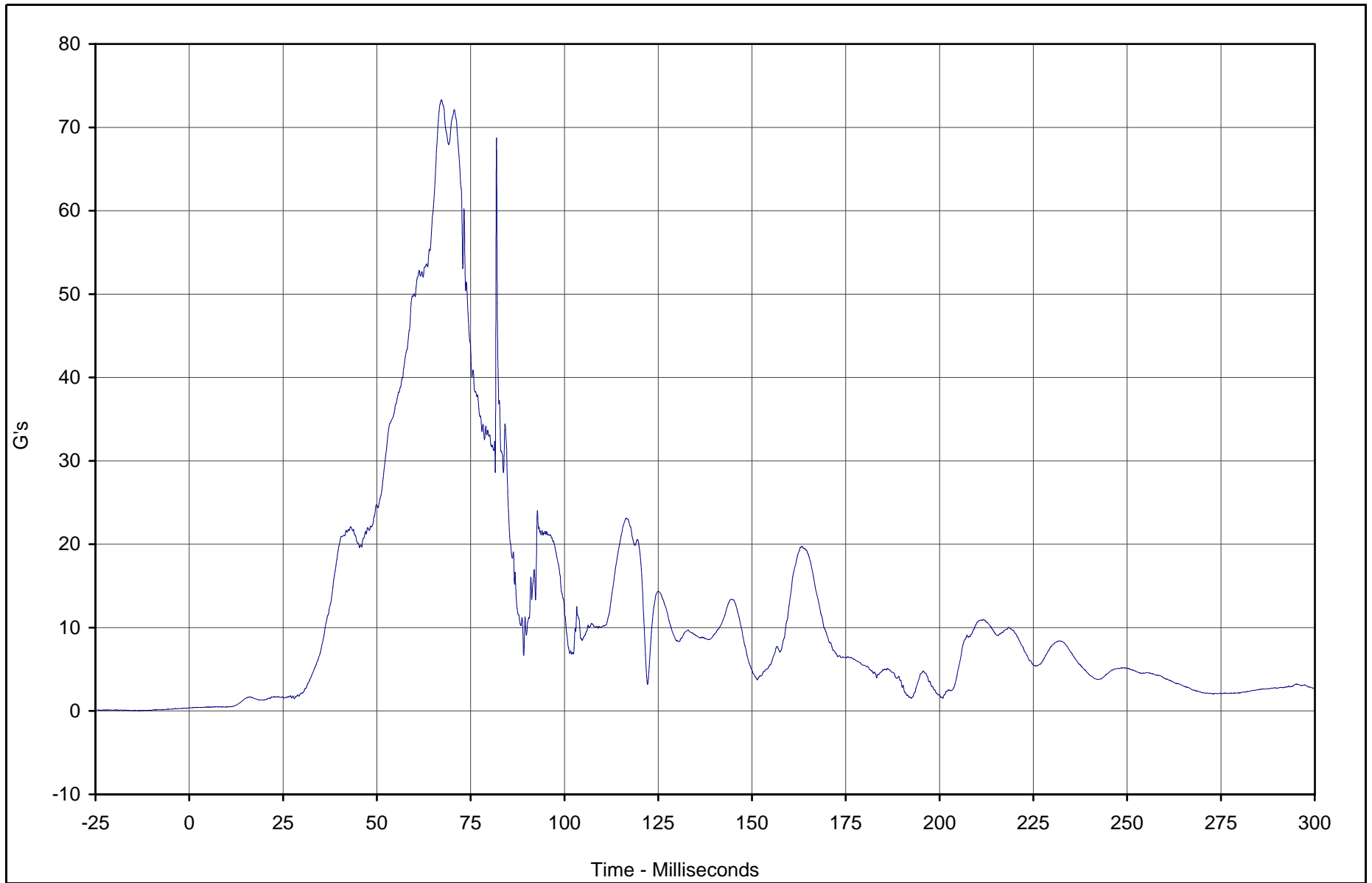


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Pelvis Resultant	153	RES	G's	73.3	67.2	0.4	0.5	1000



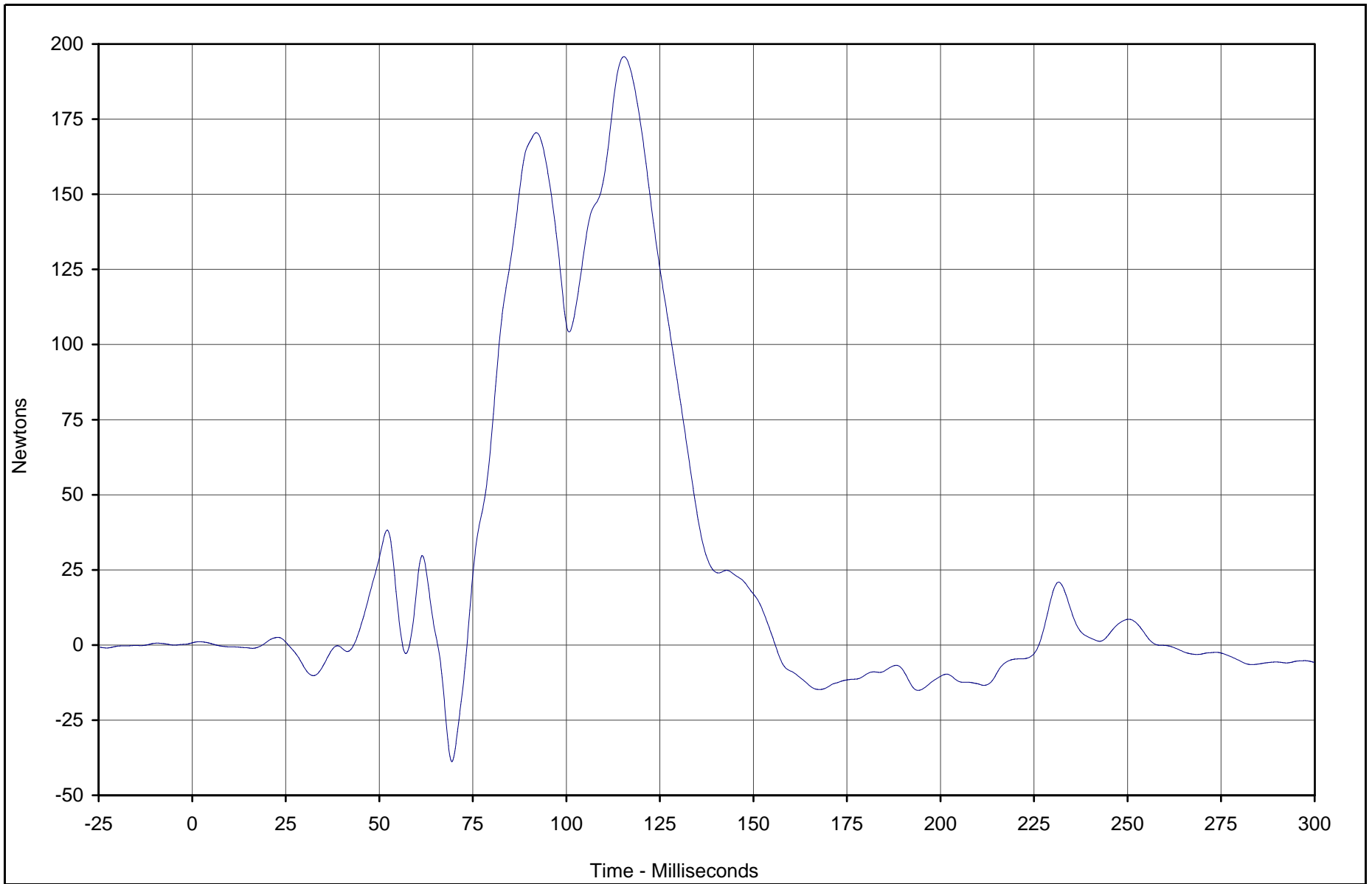
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-30



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Seat Tether Load	156	FIL	Newtons	195.8	115.4	-38.8	69.4	60



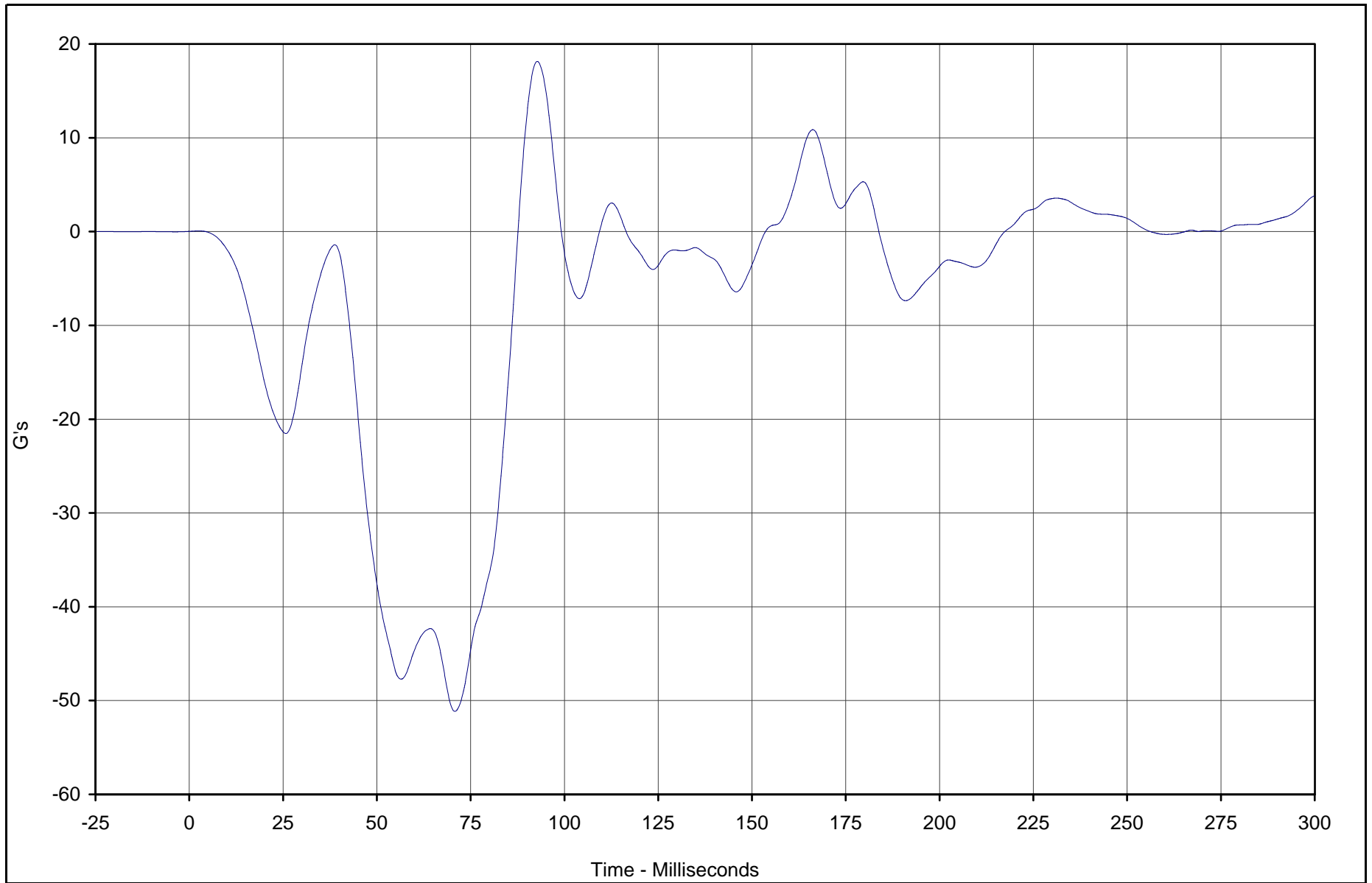
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Car Seat X	157	FIL	G's	18.1	92.8	-51.1	70.8	60

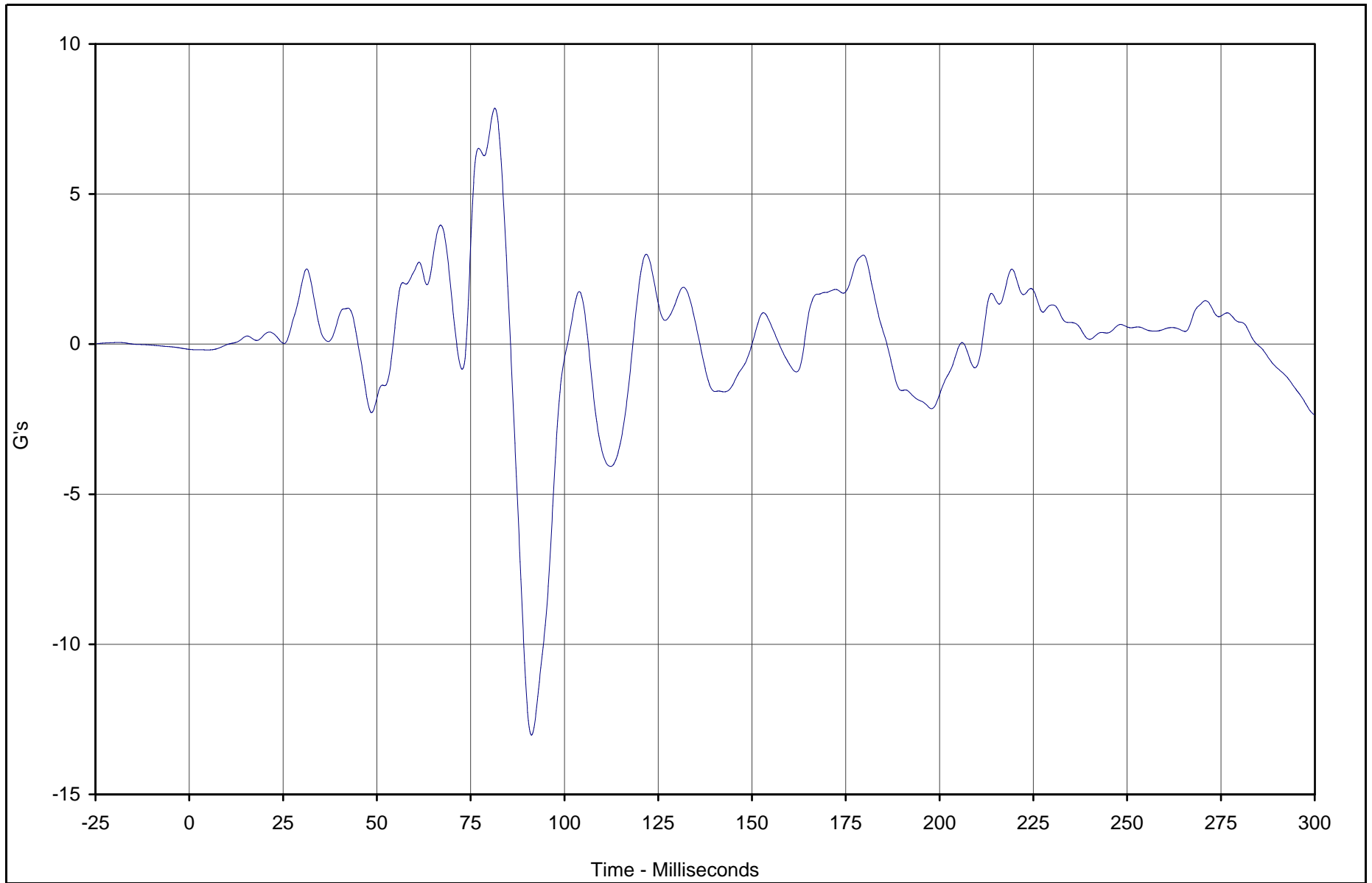


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Car Seat Y	158	FIL	G's	7.9	81.5	-13.0	91.2	60



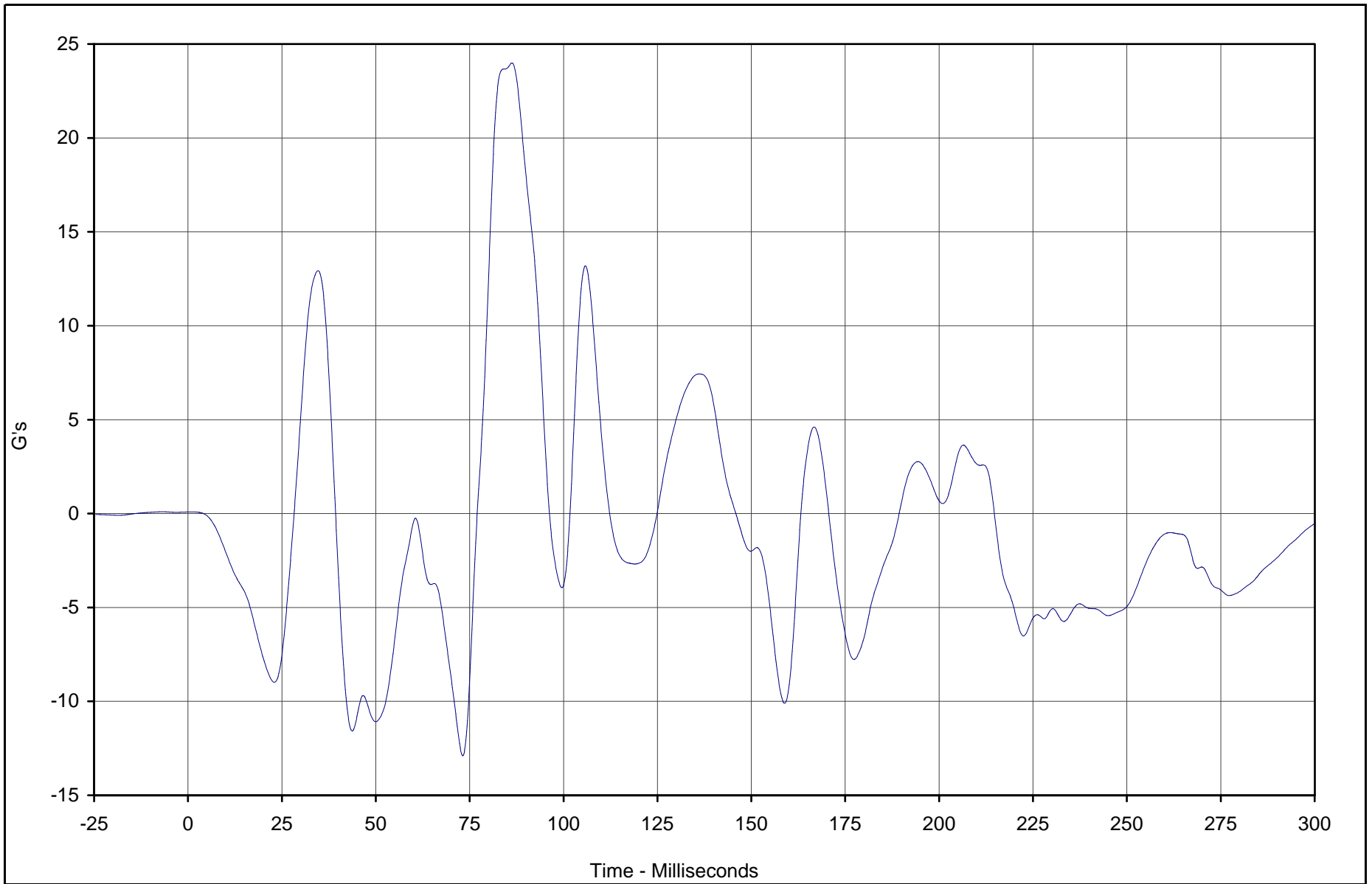
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-33



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Car Seat Z	159	FIL	G's	24.0	86.3	-12.9	73.2	60



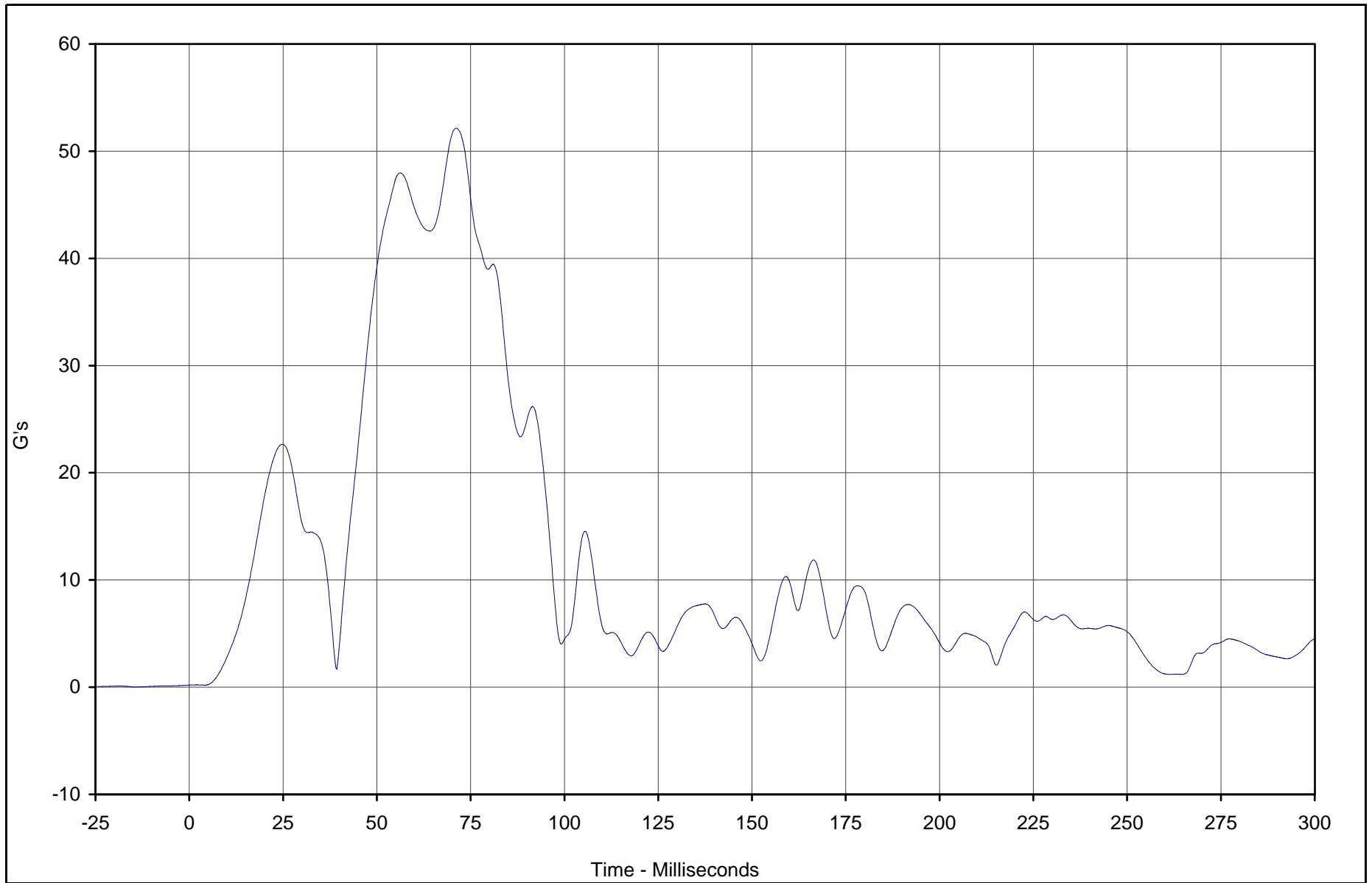
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Right Rear (3 Yr.) Car Seat Resultant	157	RES	G's	52.1	71.2	0.2	4.1	60



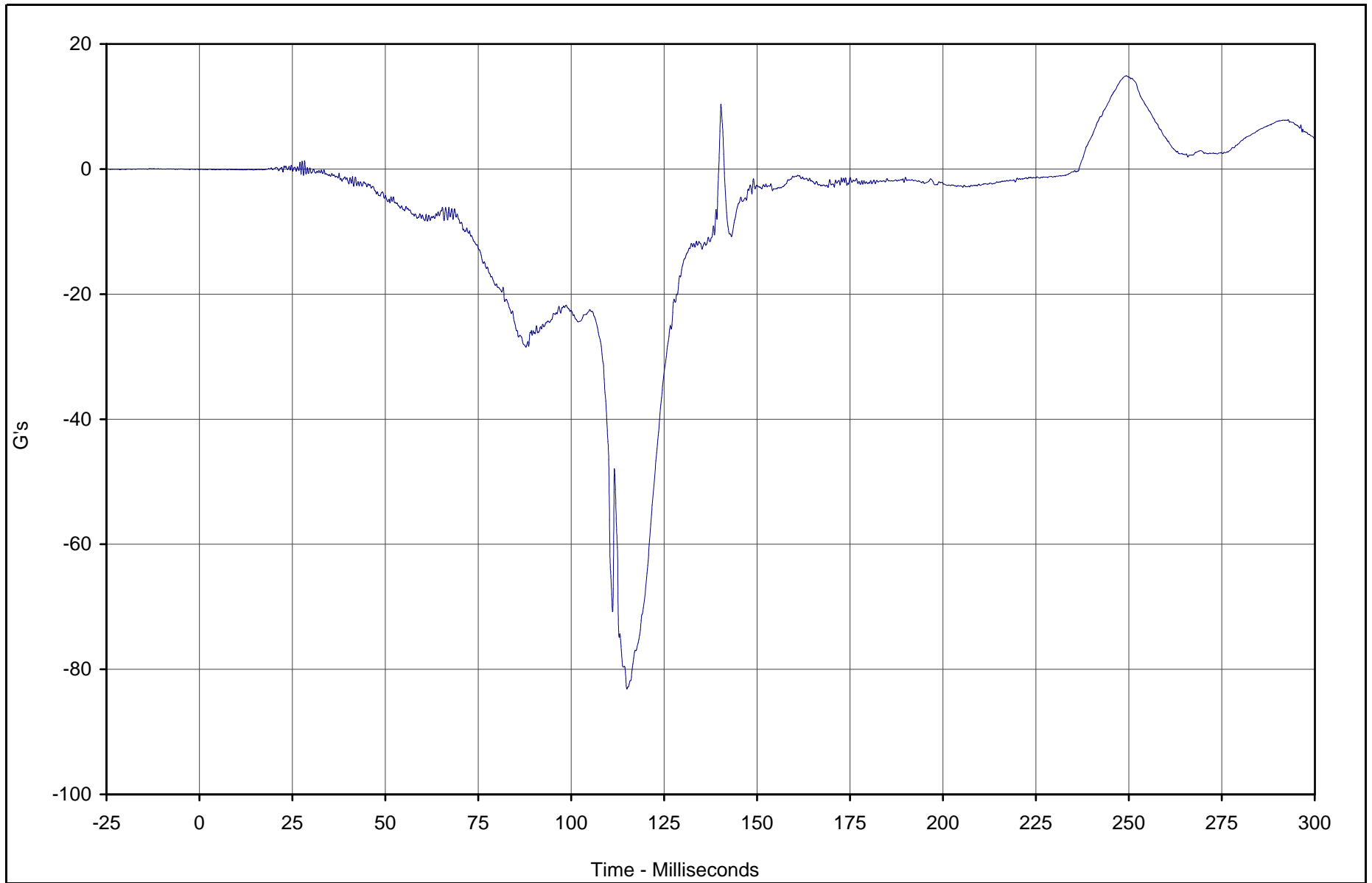
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-35



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Head X	160	FIL	G's	14.9	249.4	-83.2	115.0	1000



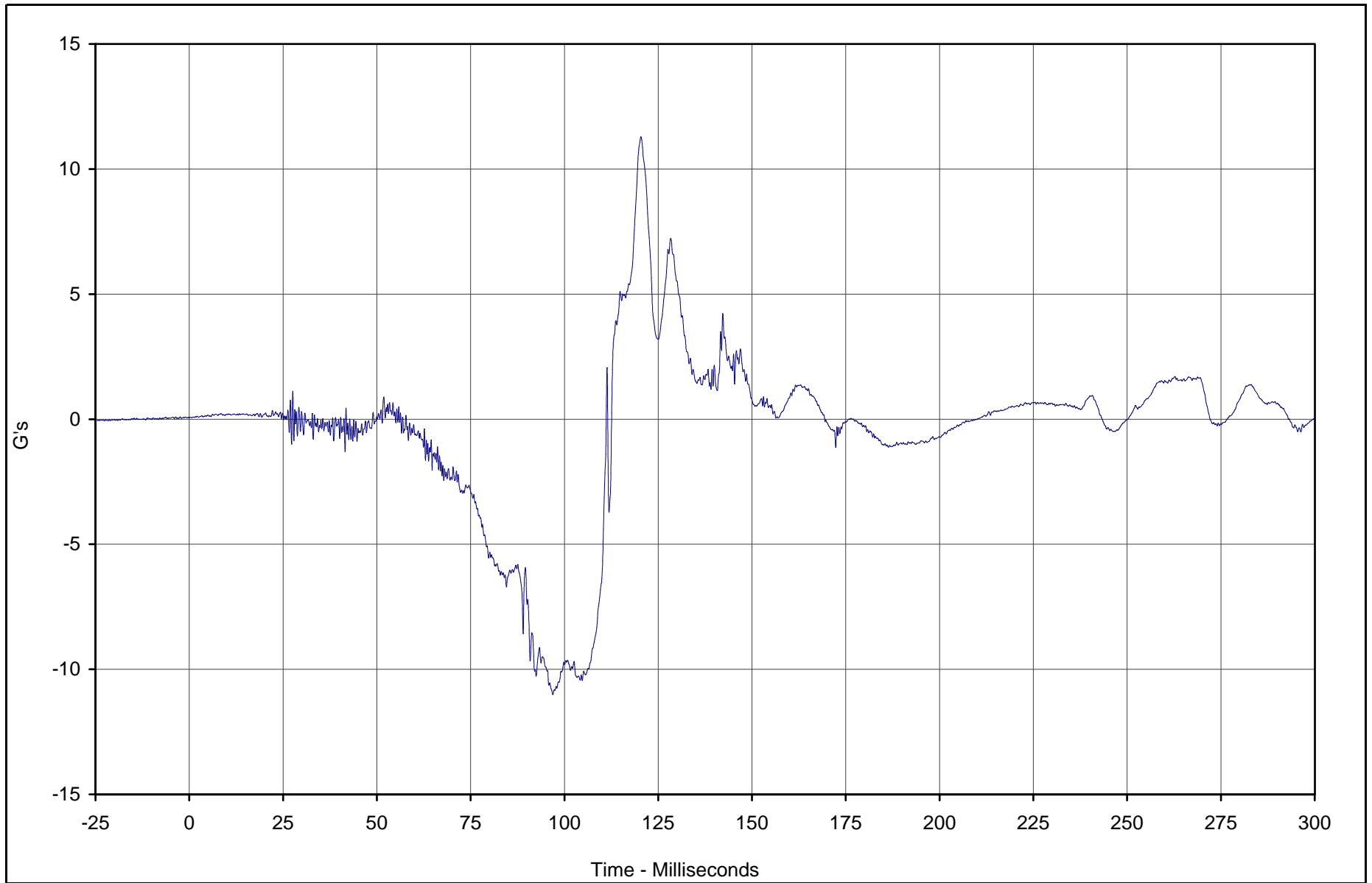
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Head Y	161	FIL	G's	11.3	120.4	-11.0	96.9	1000

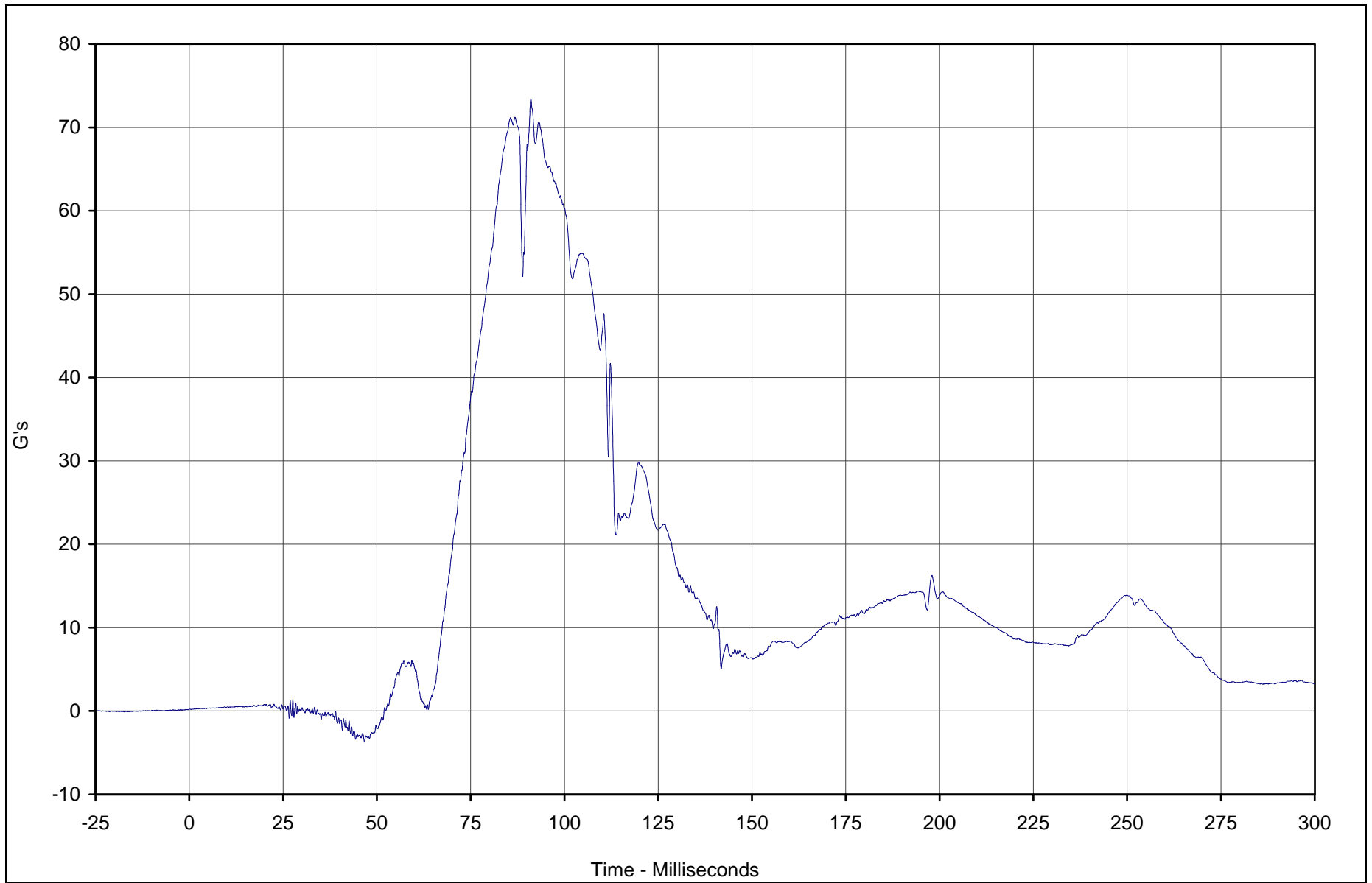


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Head Z	162	FIL	G's	73.4	91.0	-3.7	46.7	1000



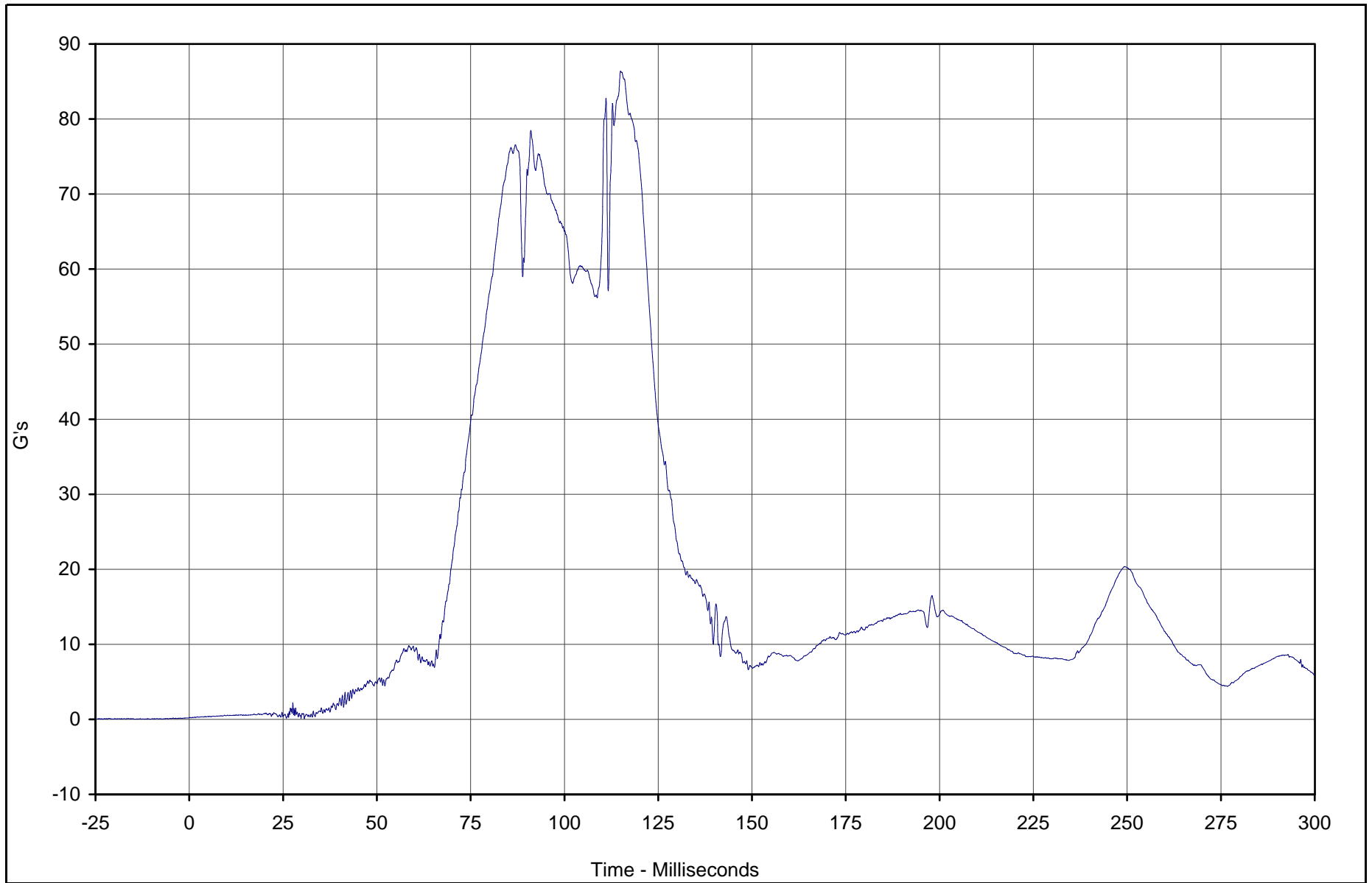
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-38



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Head Resultant	160	RES	G's	86.4	115.0	0.1	30.7	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

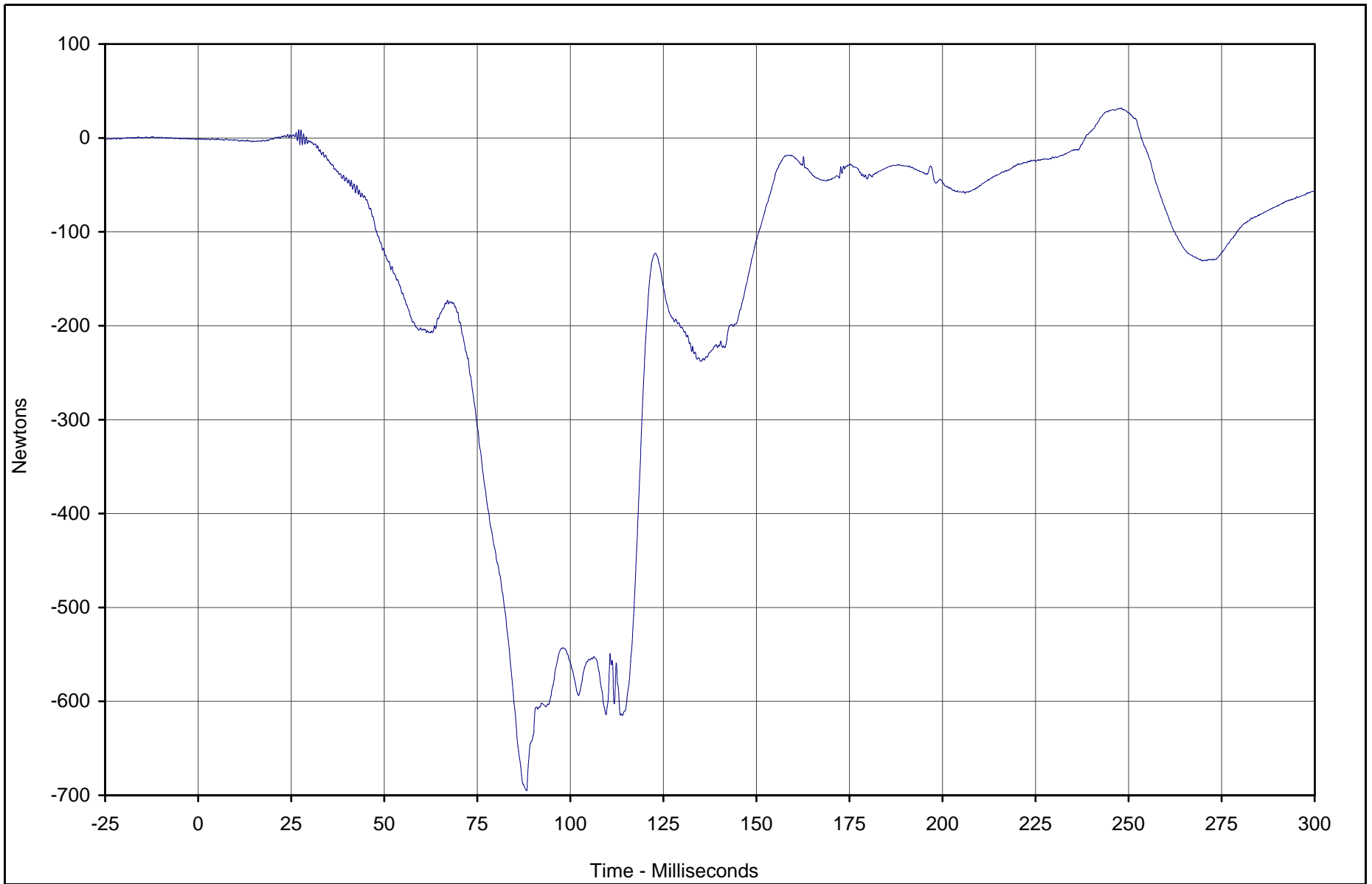
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-39



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Force X	163	FIL	Newtons	31.6	248.1	-695.2	88.2	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

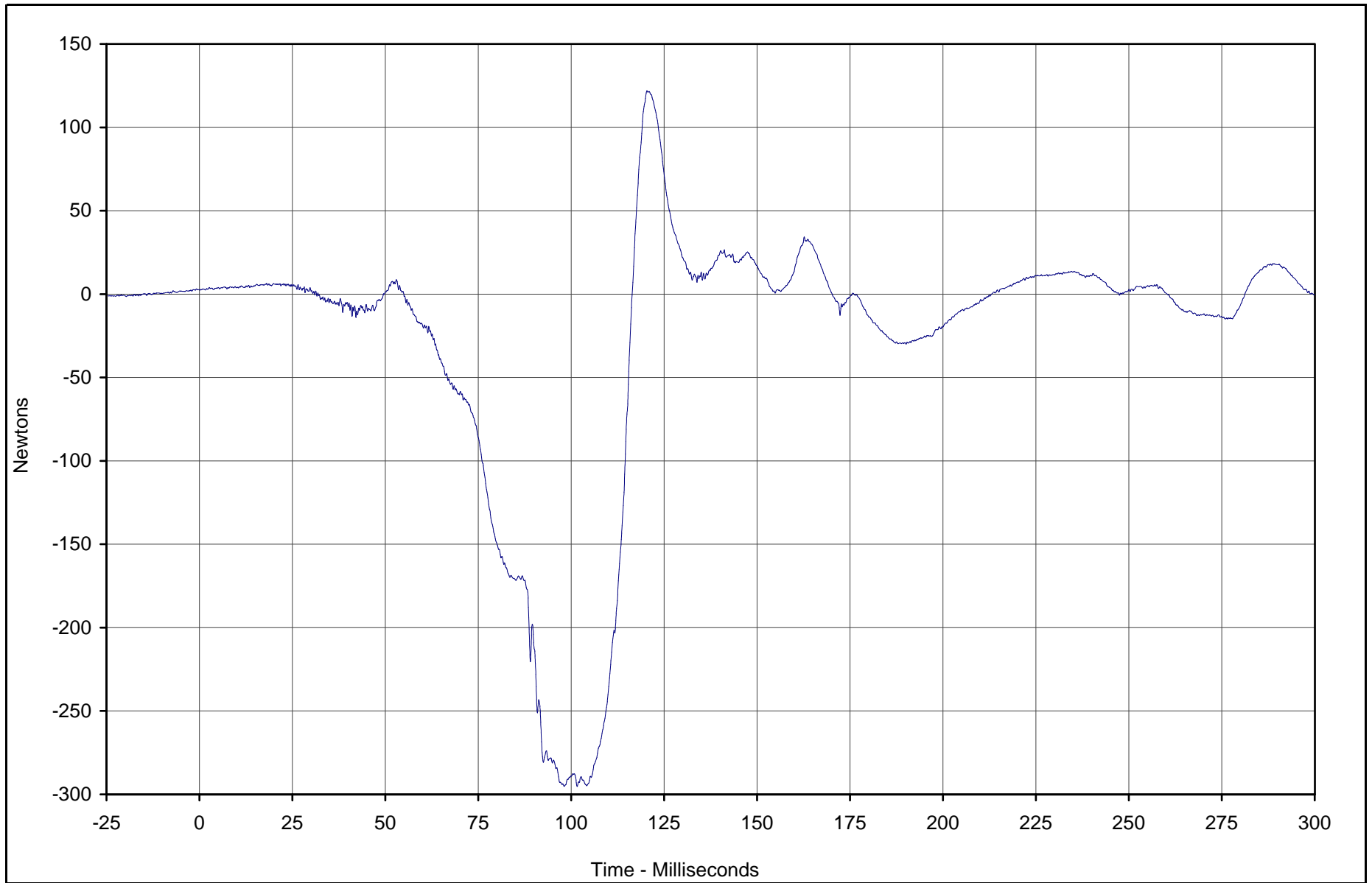
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-40



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Force Y	164	FIL	Newtons	121.9	120.4	-295.2	101.6	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

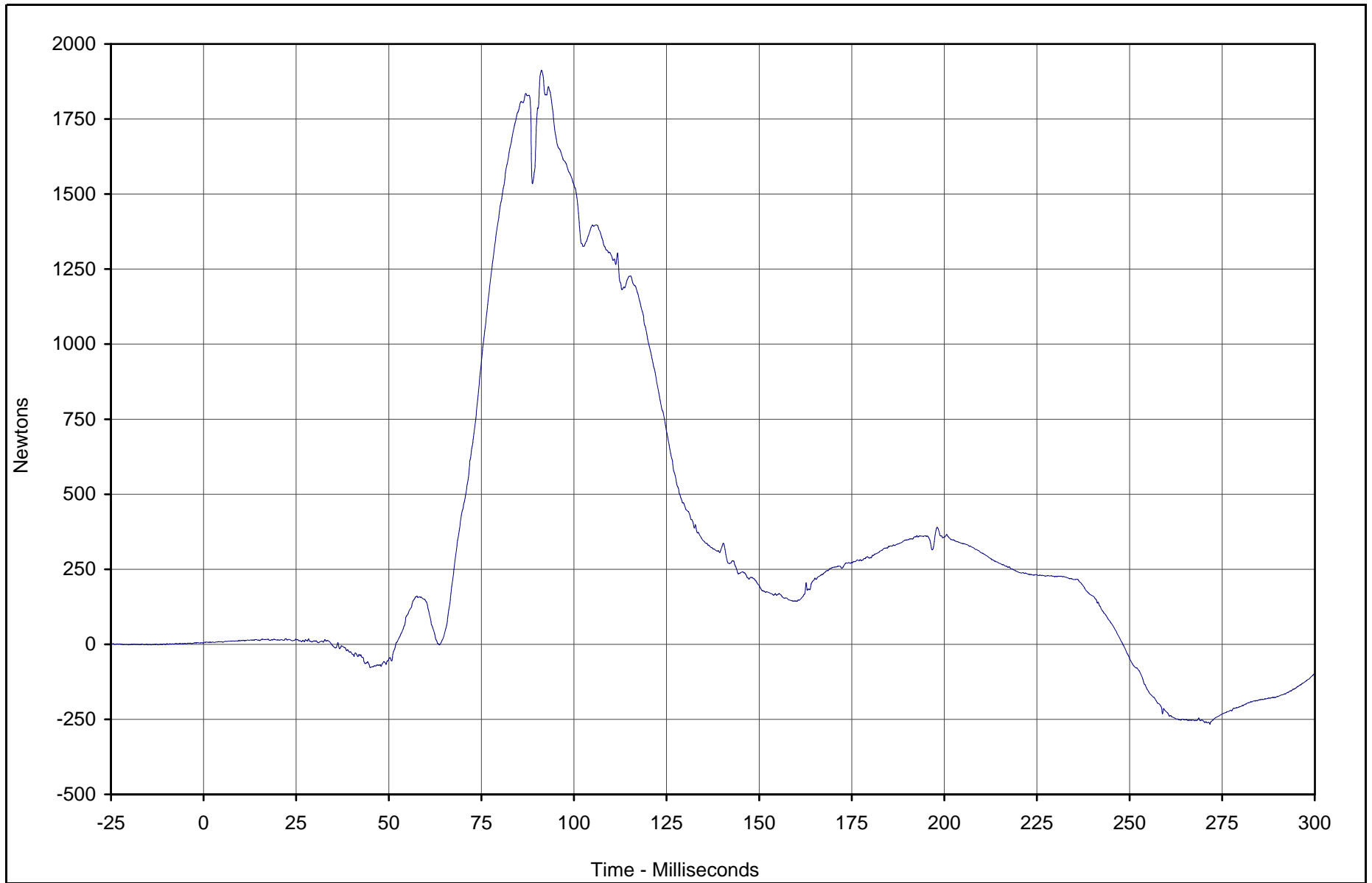
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-41



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Force Z	165	FIL	Newtons	1912.4	91.2	-266.4	271.7	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

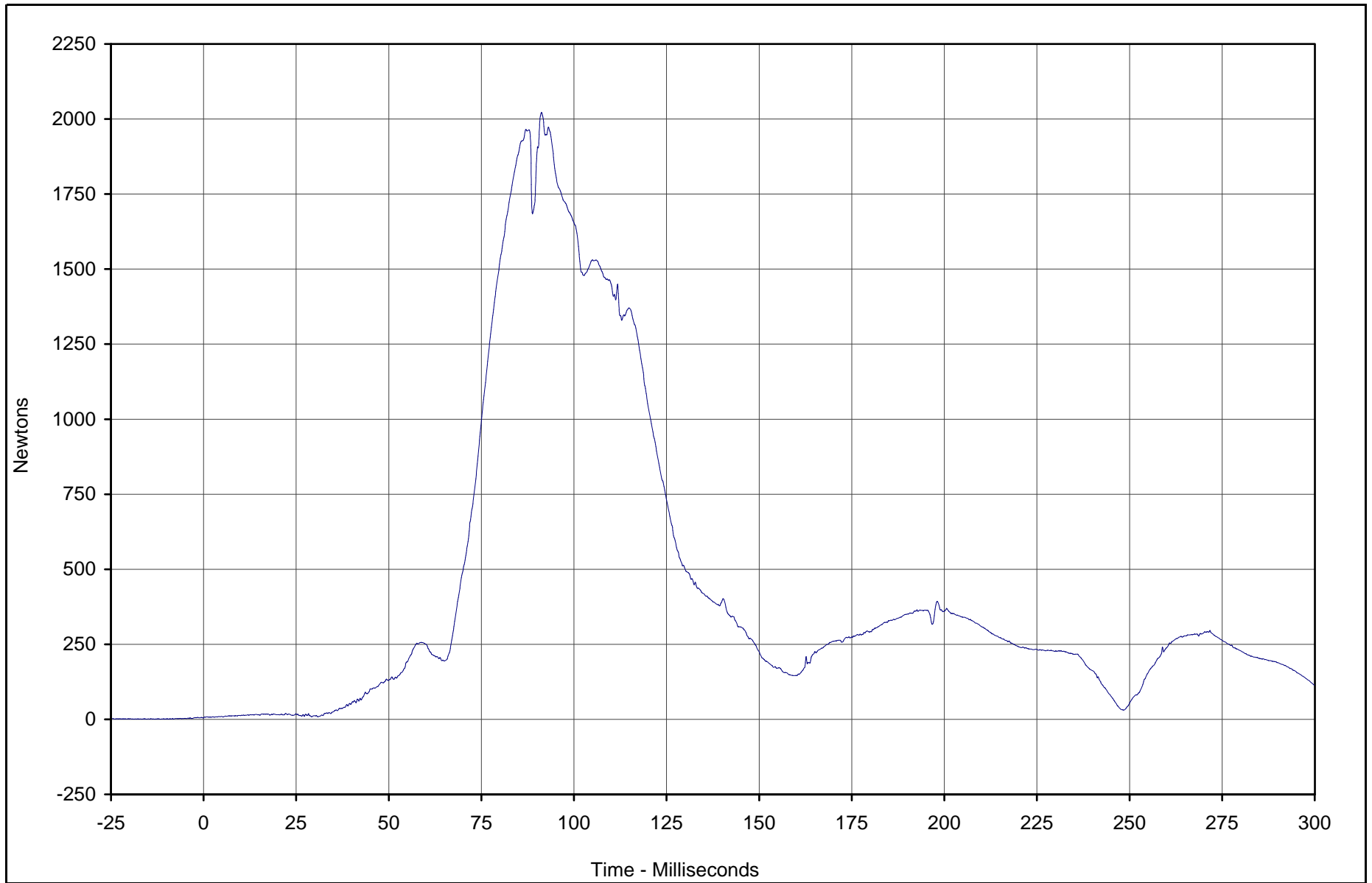
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-42



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Force Res.	163	RES	Newtons	2021.5	91.3	5.3	0.0	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

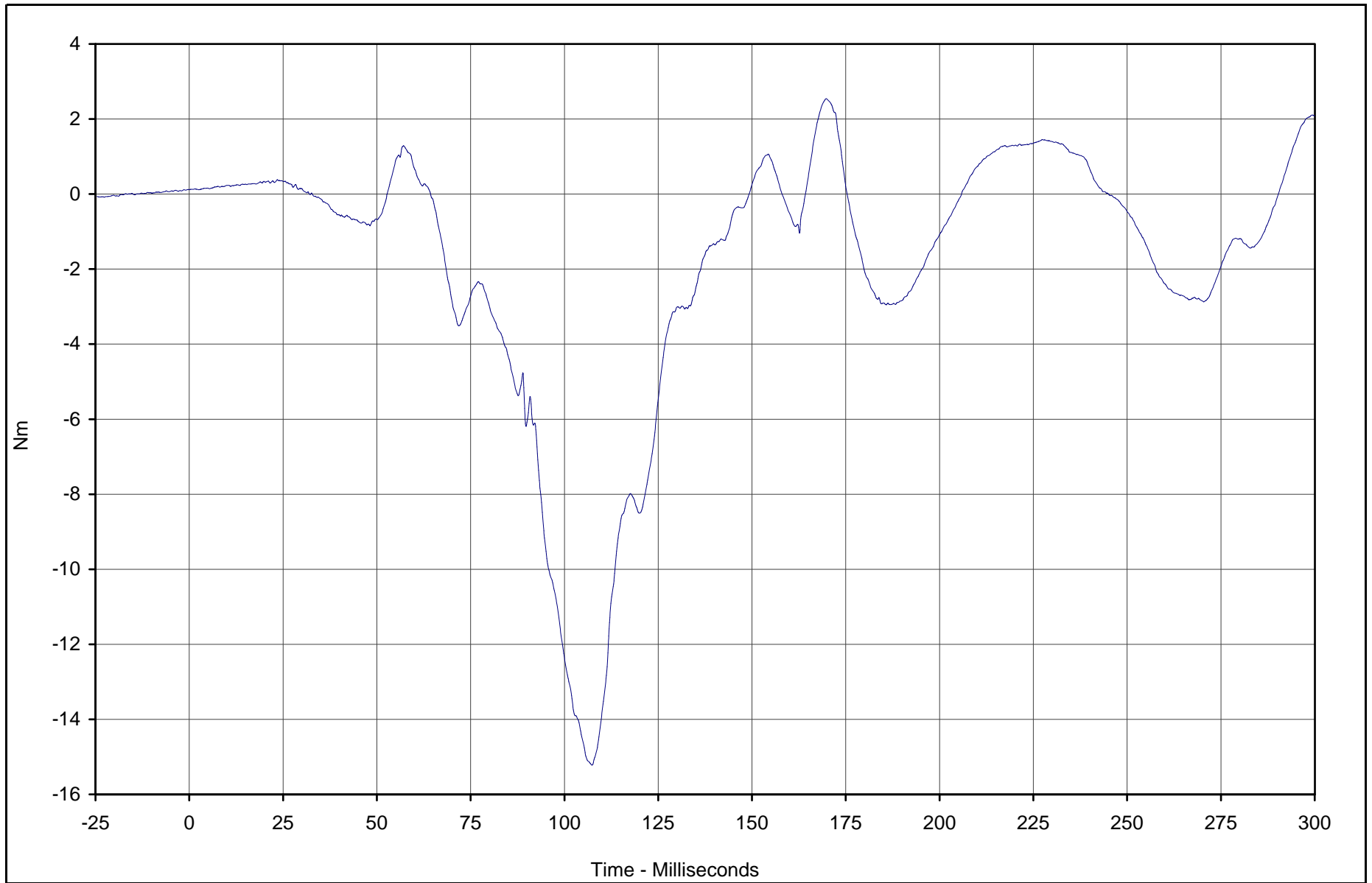
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-43



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Moment X	166	FIL	Nm	2.5	169.8	-15.2	107.4	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

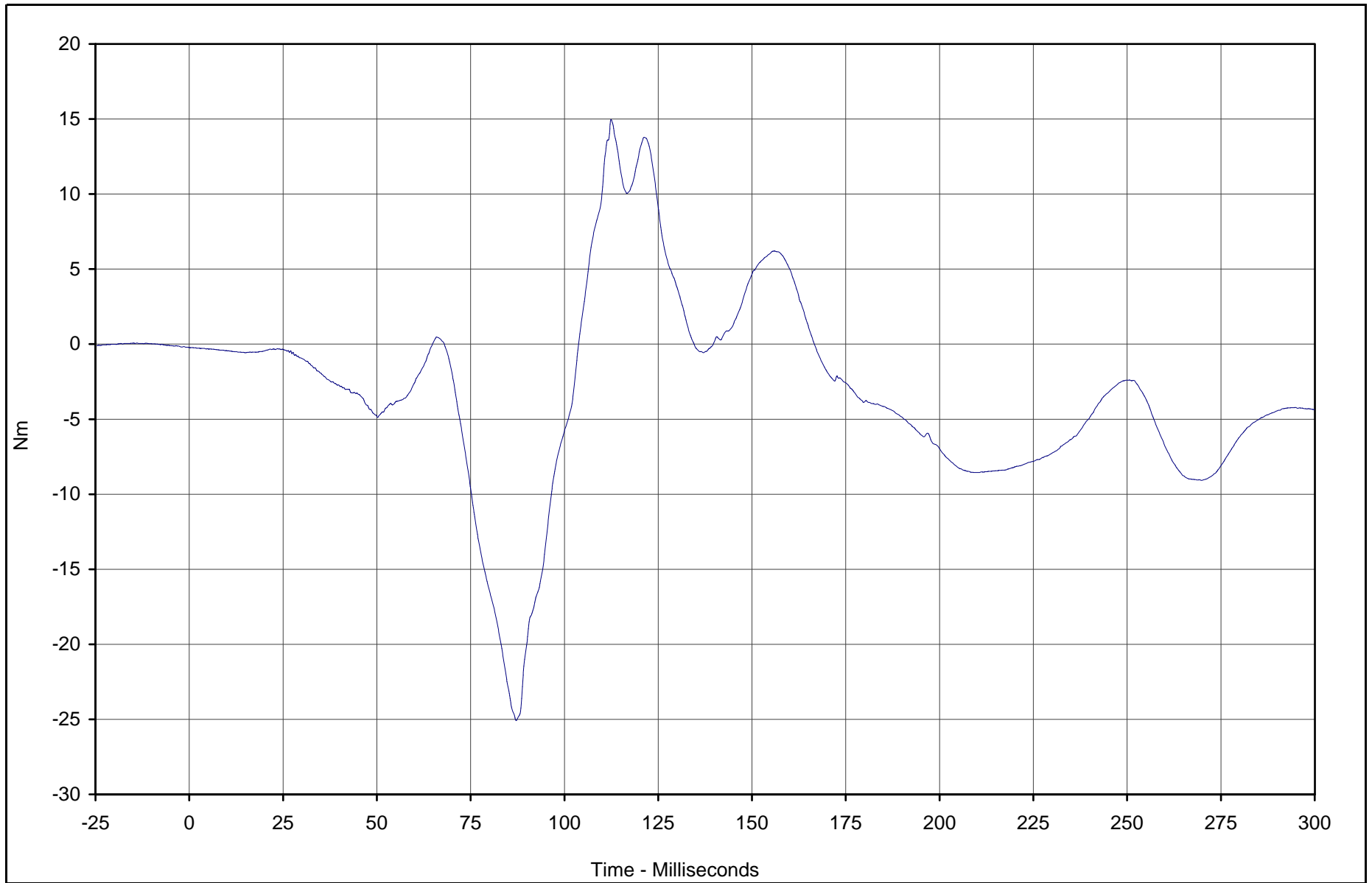
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-44



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Moment Y	167	FIL	Nm	15.0	112.4	-25.1	87.2	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

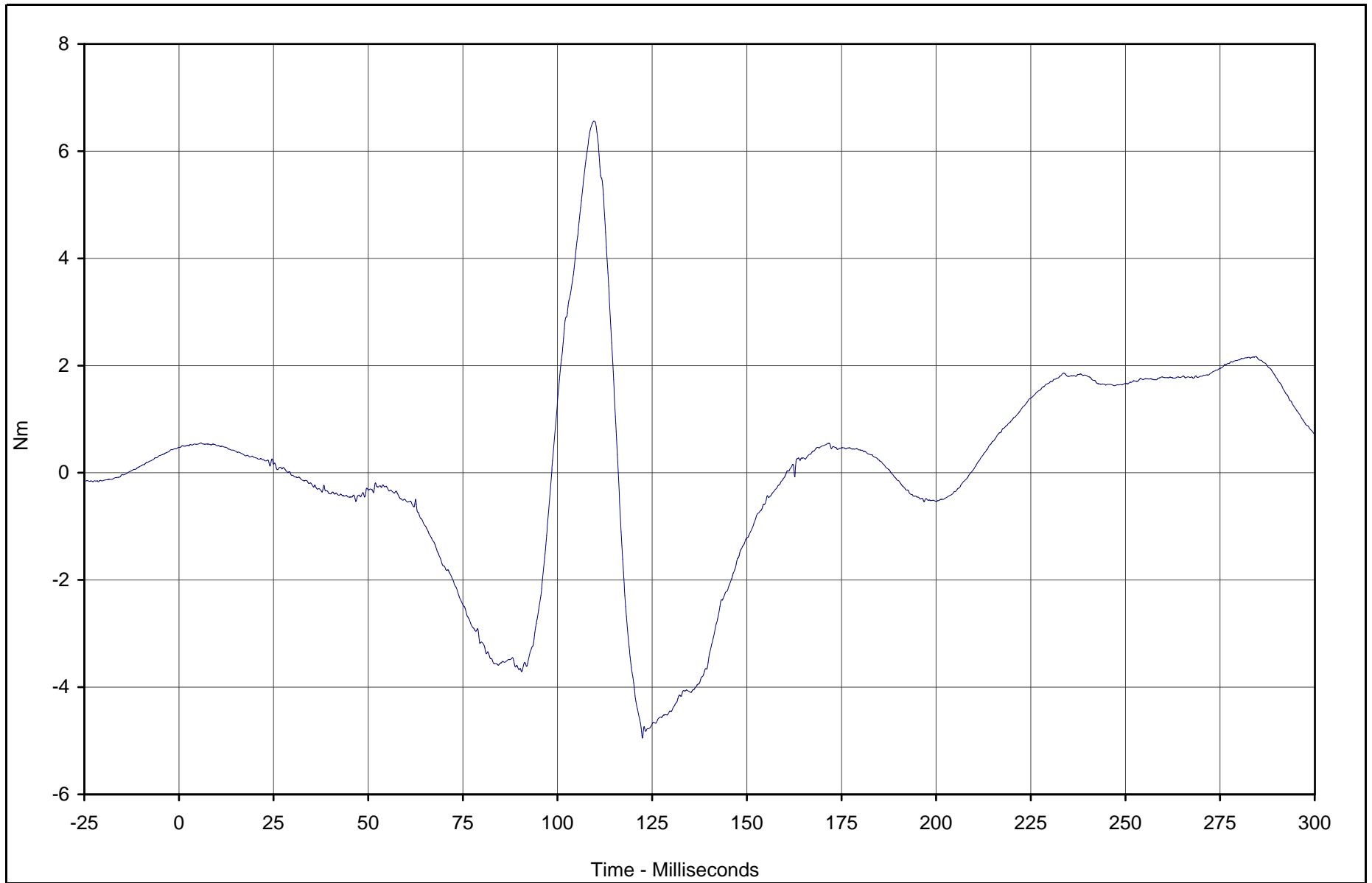
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-45



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Moment Z	168	FIL	Nm	6.6	109.7	-4.9	122.4	600

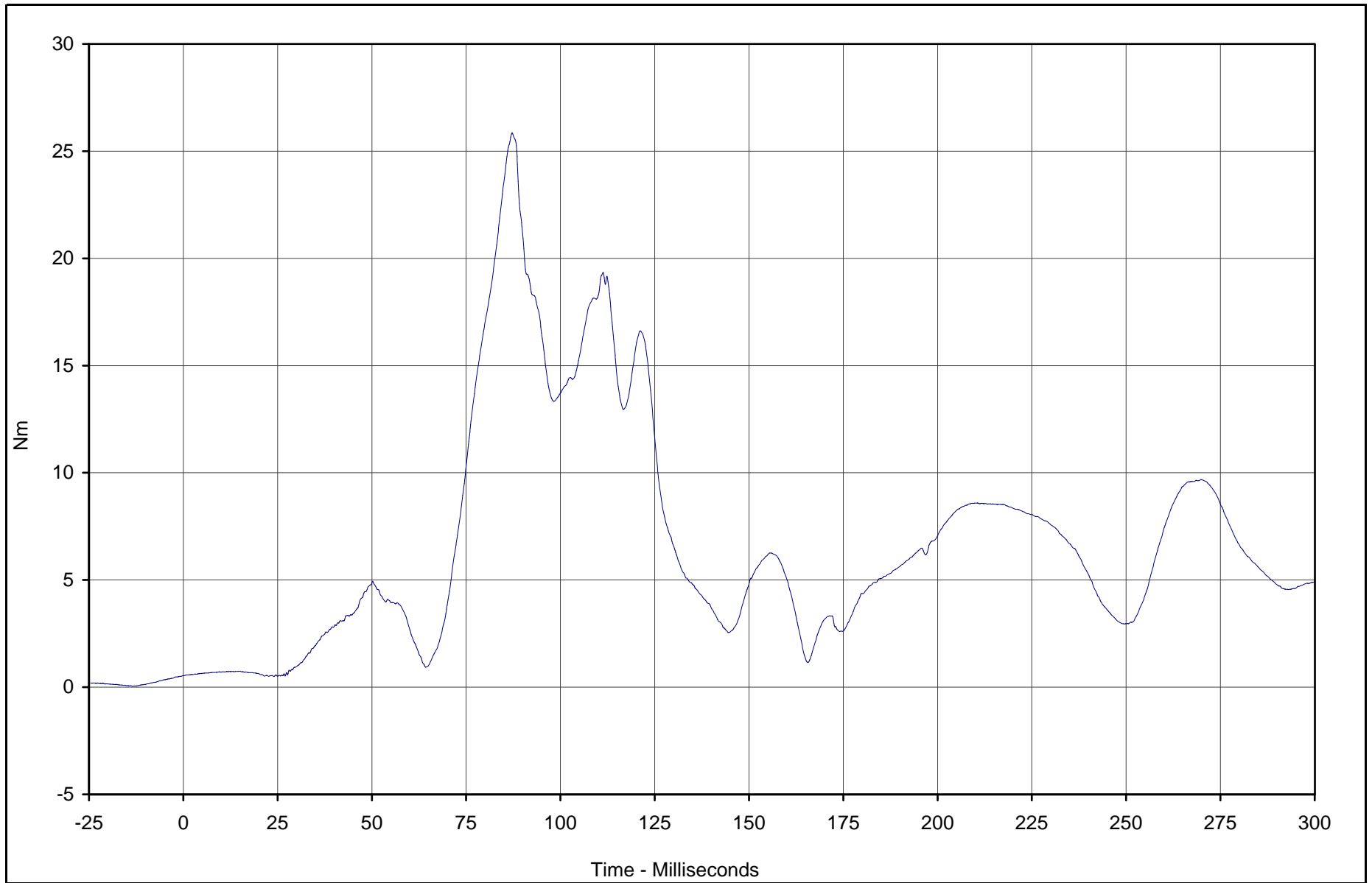


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Upper Neck Mom Res.	166	RES	Nm	25.9	87.2	0.5	24.1	600



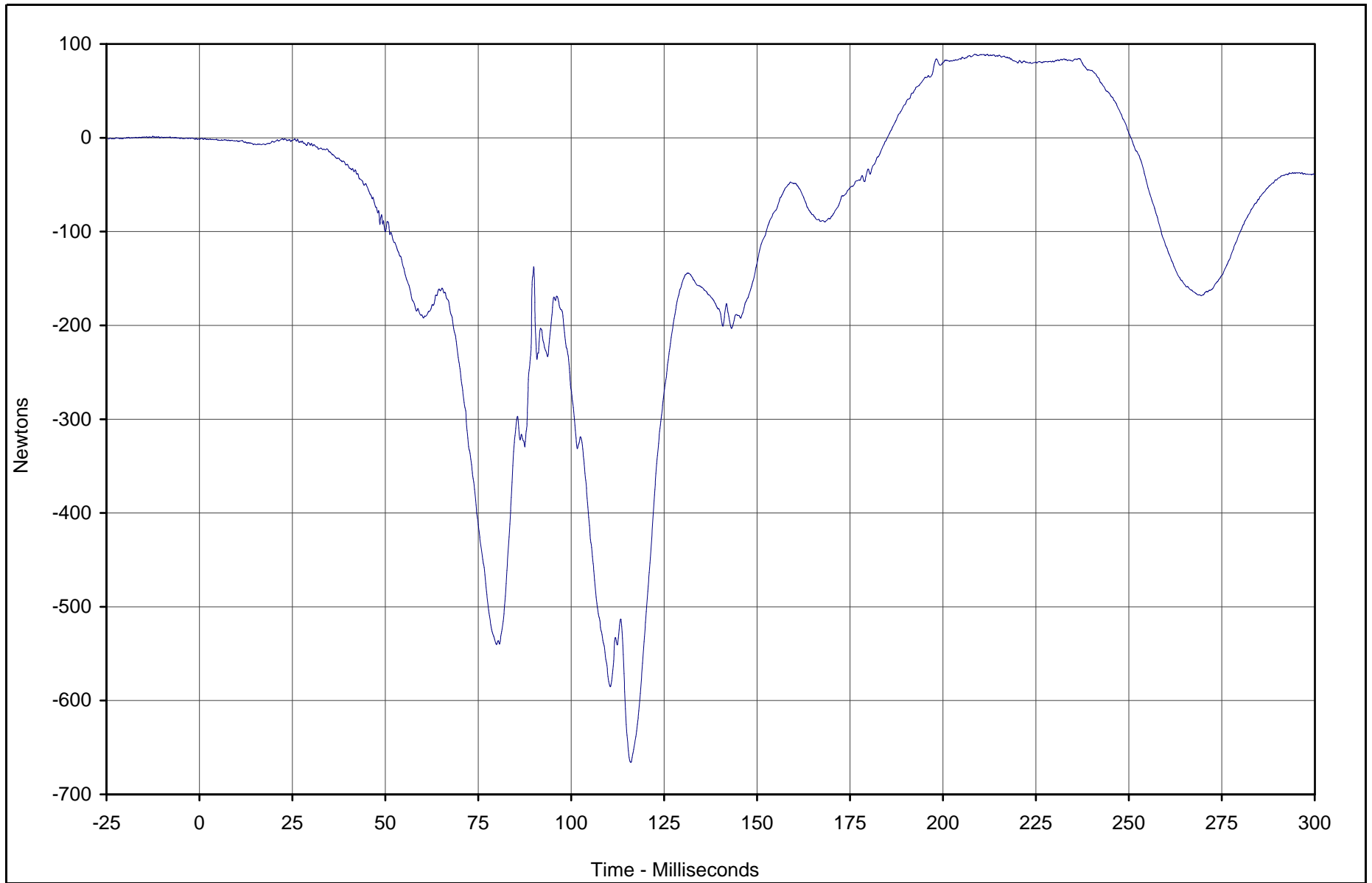
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-47



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Force X	169	FIL	Newtons	89.2	208.5	-665.8	116.0	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

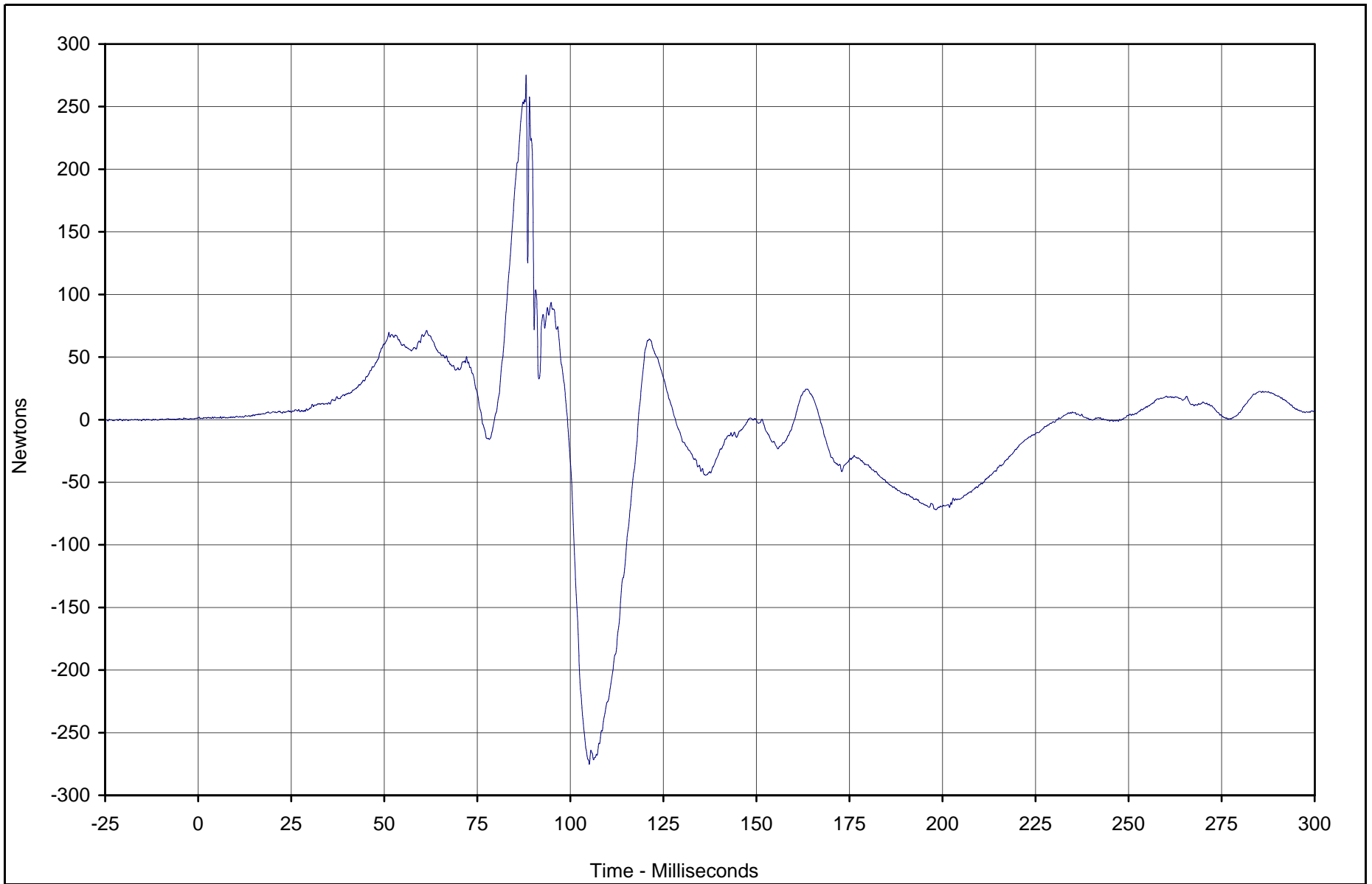
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-48



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Force Y	170	FIL	Newtons	275.2	88.1	-275.4	105.1	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

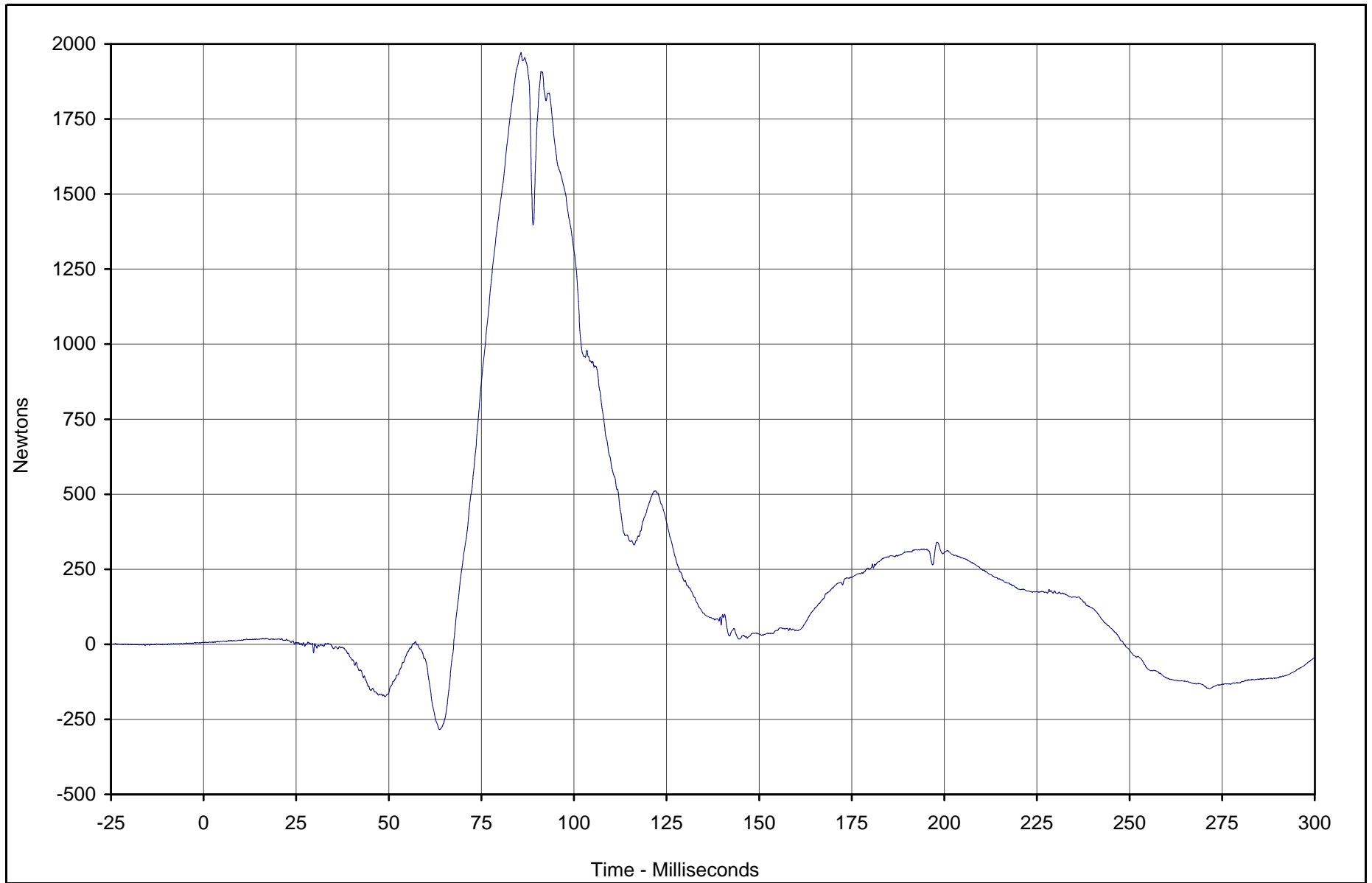
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-49



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Force Z	171	FIL	Newtons	1971.8	85.7	-284.0	63.7	1000



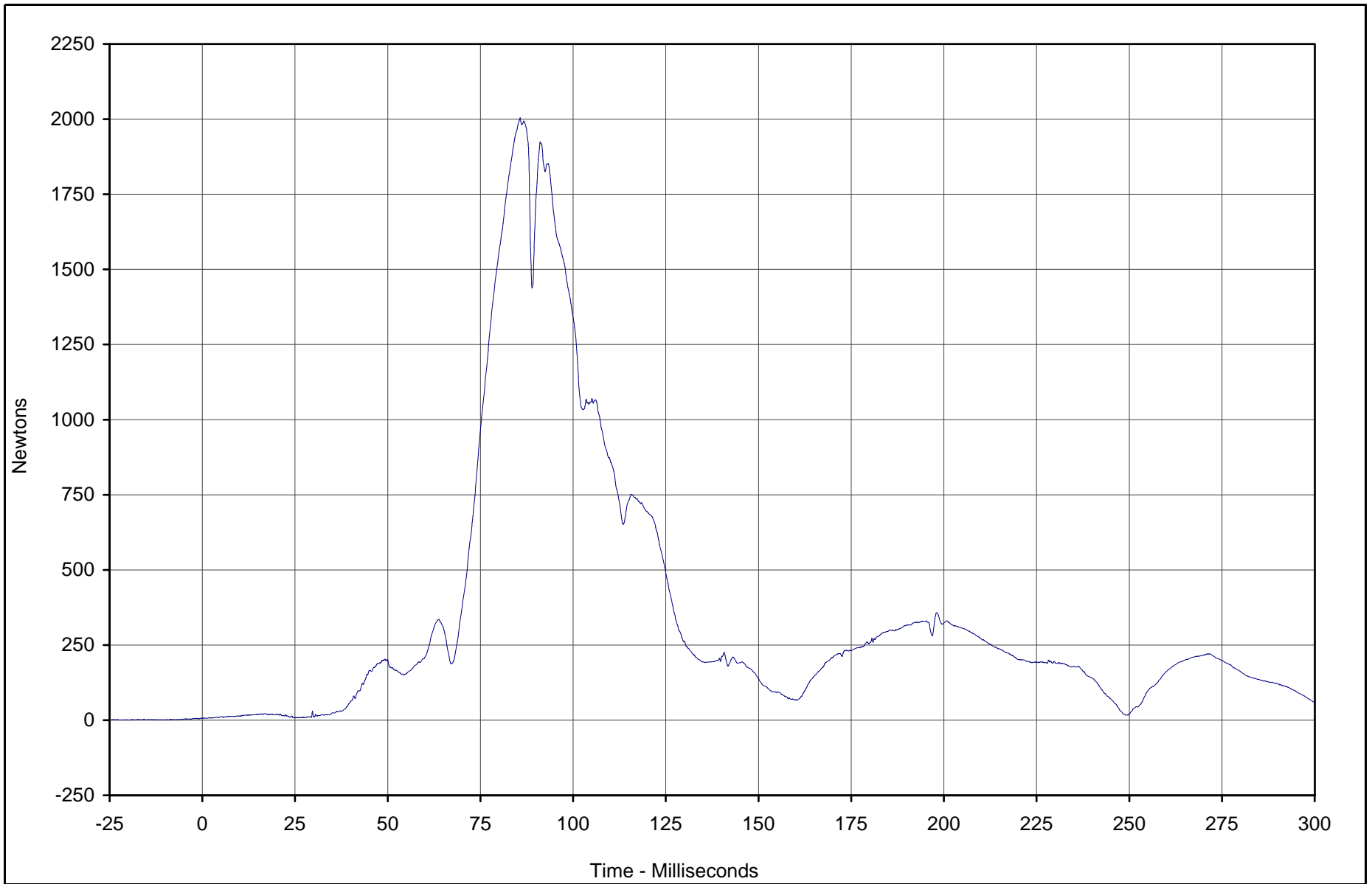
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-50



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Force Res.	169	RES	Newtons	2004.8	85.7	6.2	1.1	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

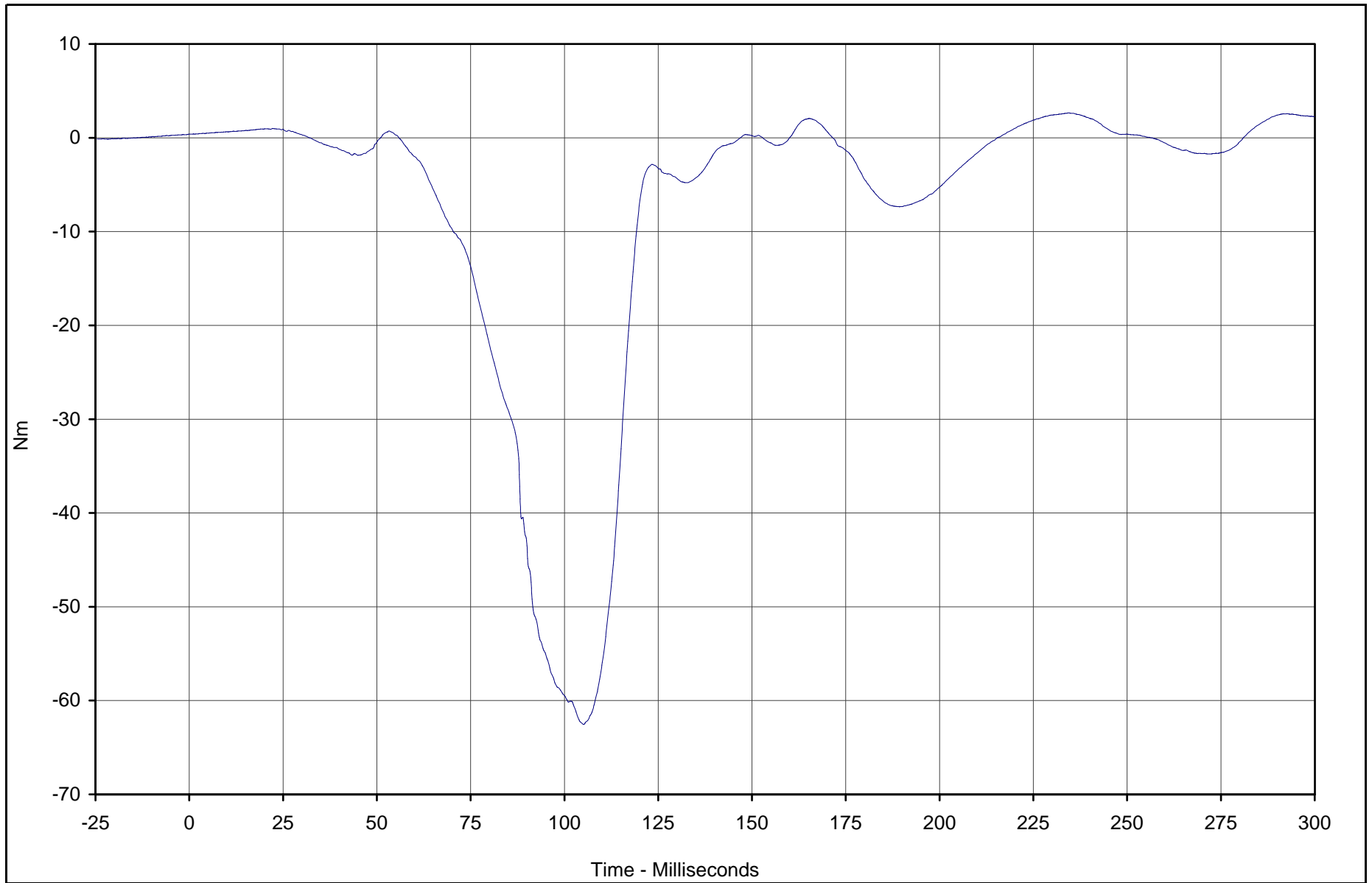
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-51



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Moment X	172	FIL	Nm	2.7	234.4	-62.5	105.1	600

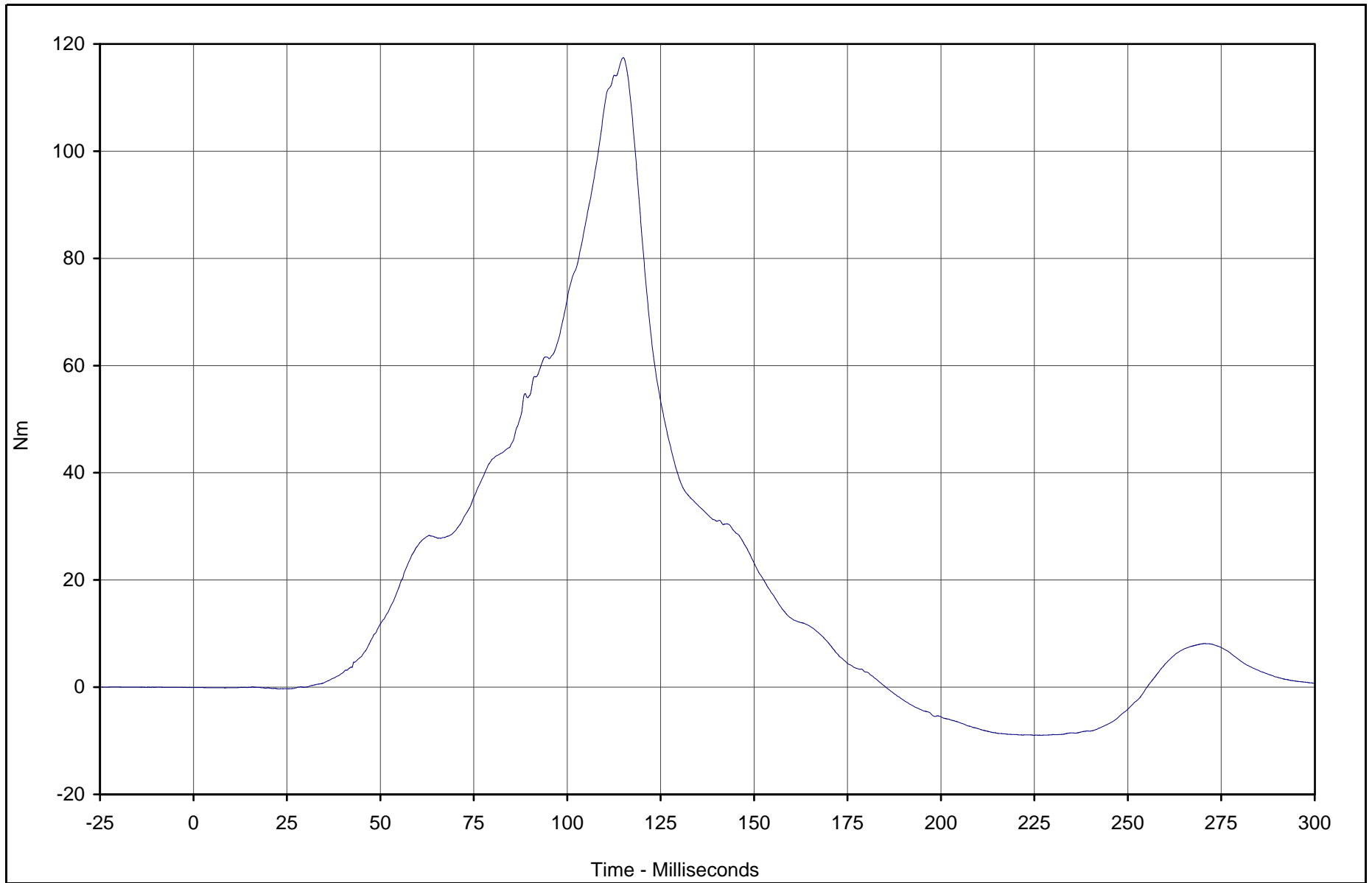


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Moment Y	173	FIL	Nm	117.5	115.0	-9.0	226.8	600

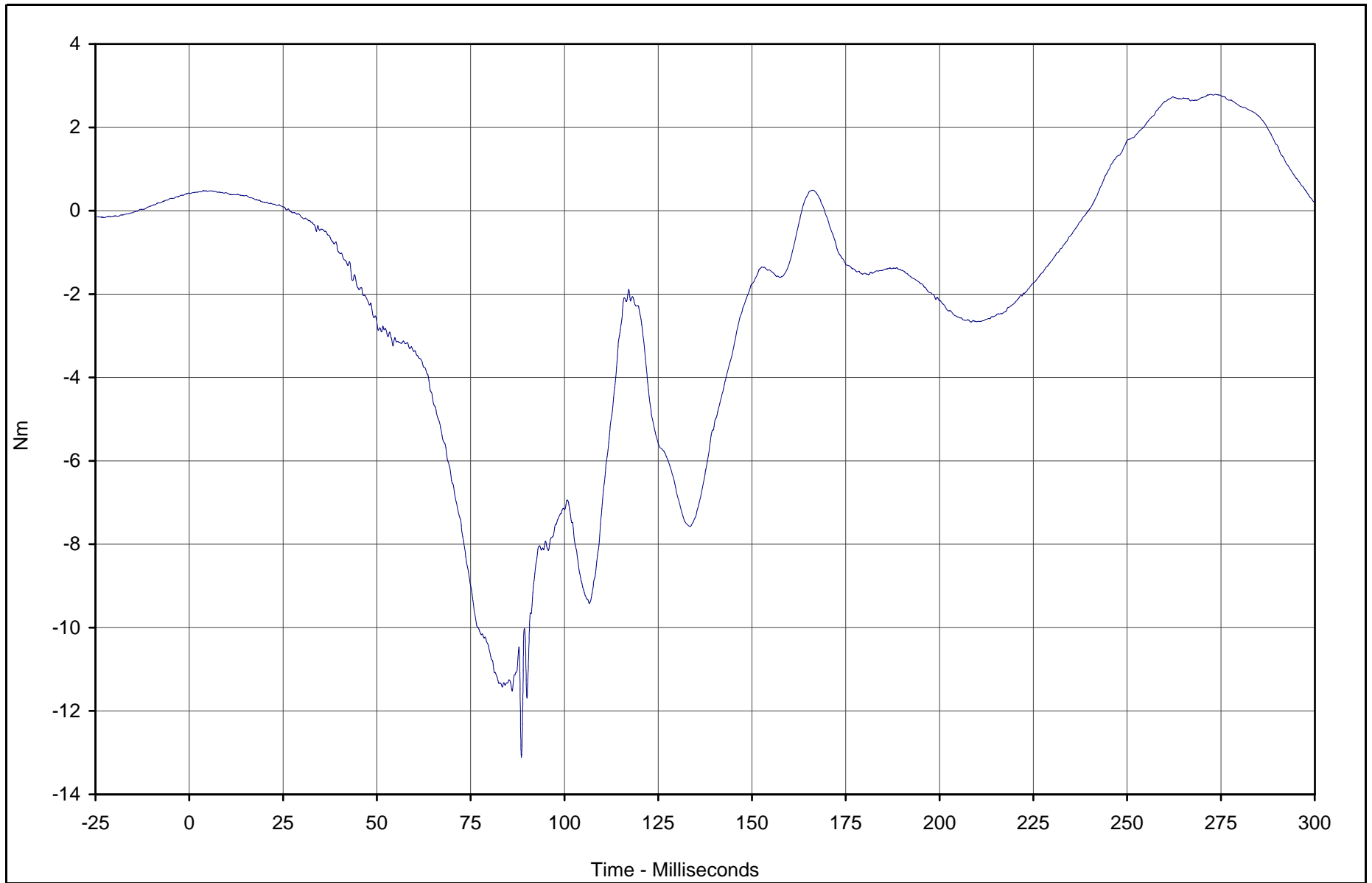


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Moment Z	174	FIL	Nm	2.8	273.5	-13.1	88.5	600



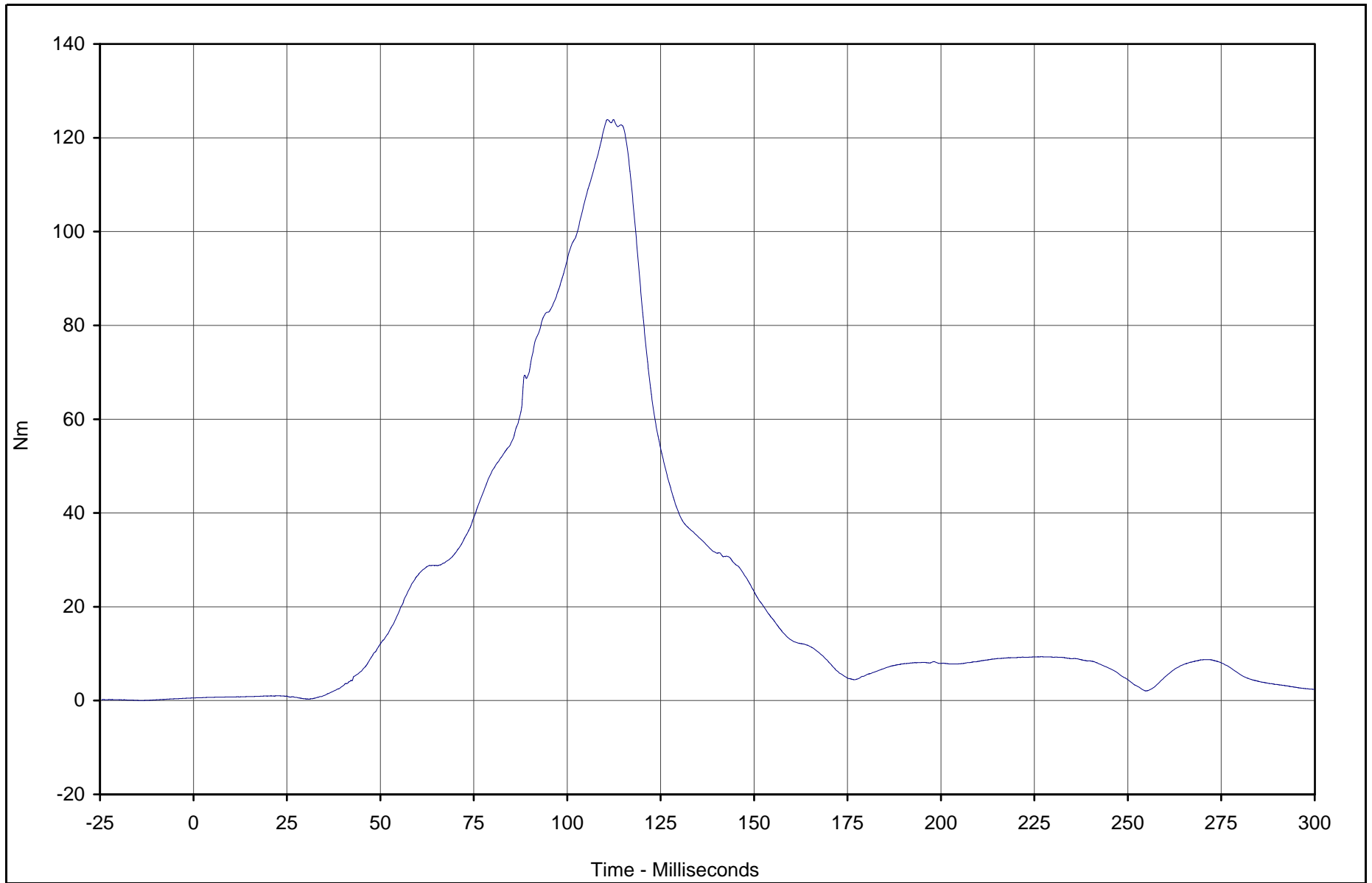
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-54



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Lower Neck Mom Res.	172	RES	Nm	123.9	112.4	0.3	30.9	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

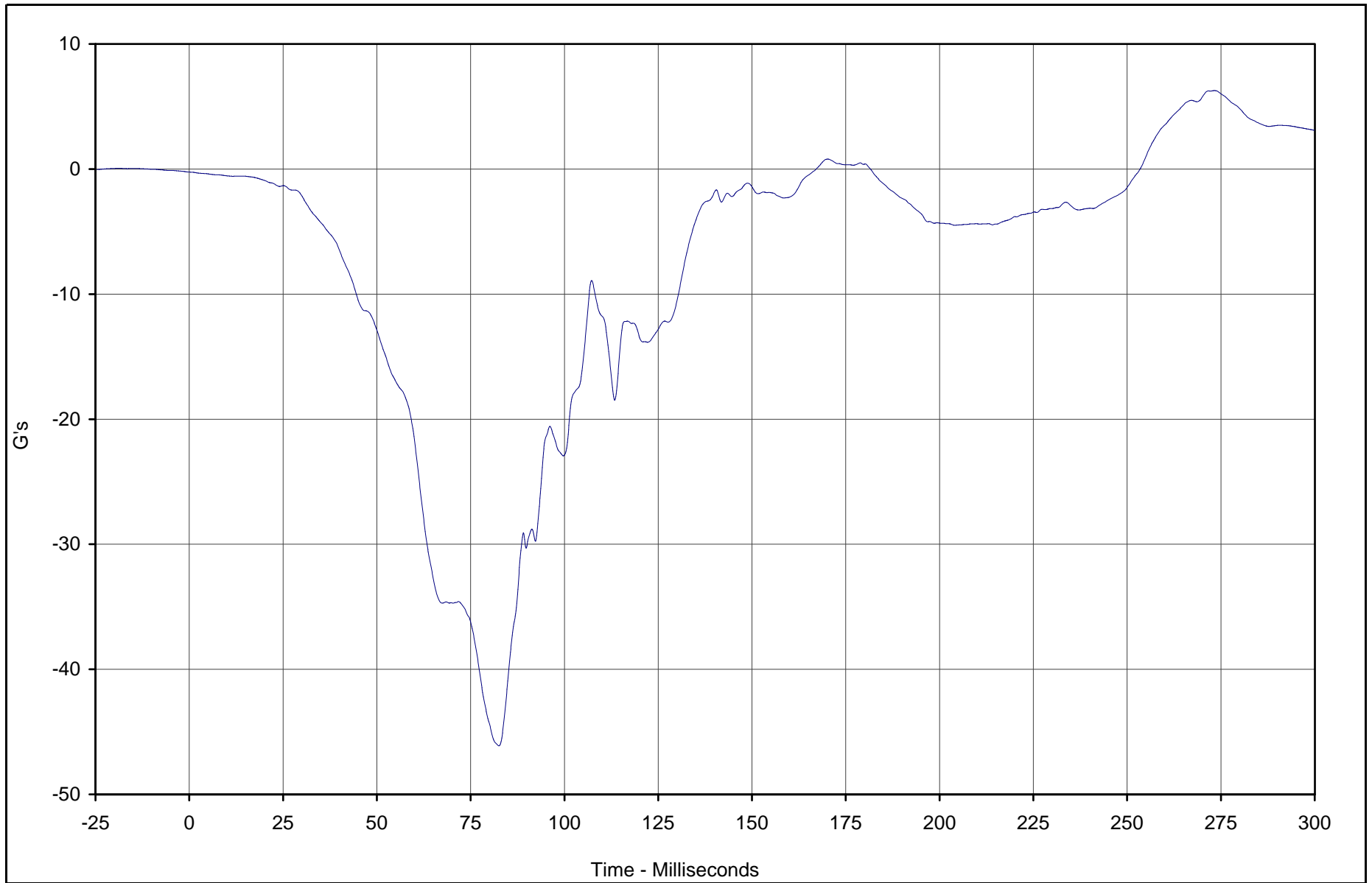
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-55



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Chest X	175	FIL	G's	6.3	273.3	-46.1	82.5	180

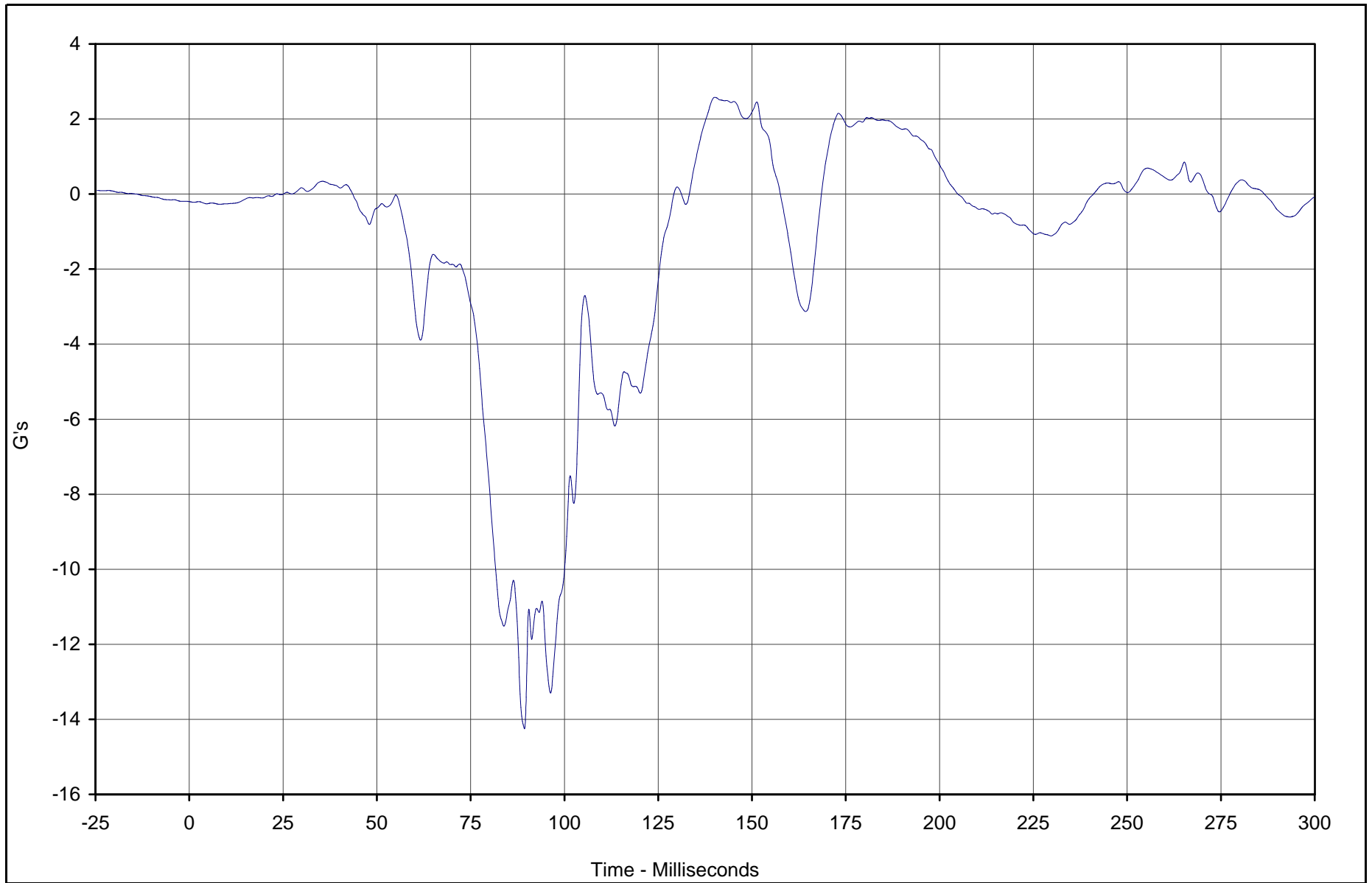


Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Chest Y	176	FIL	G's	2.6	140.1	-14.3	89.4	180



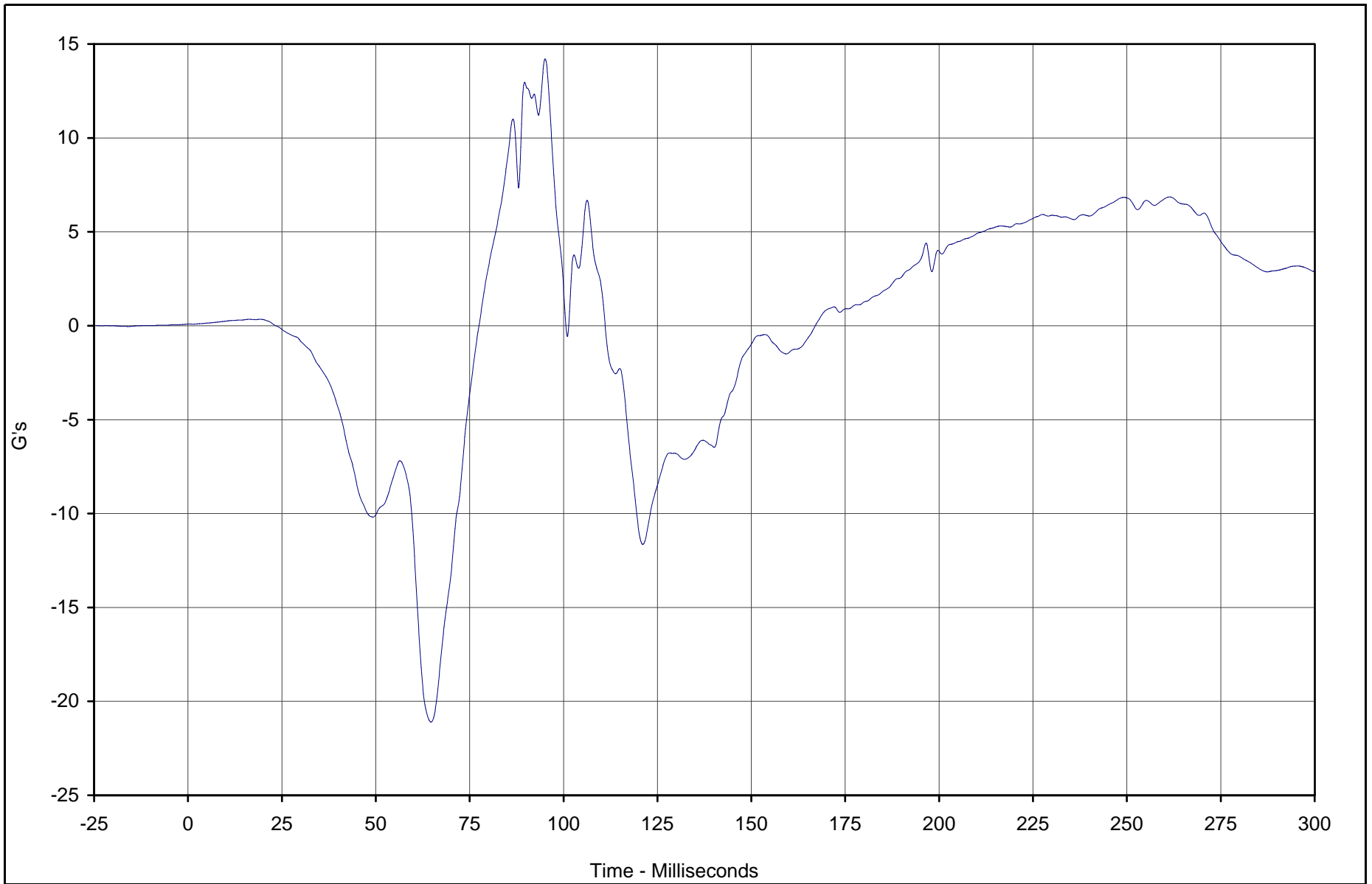
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-57



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Chest Z	177	FIL	G's	14.2	95.1	-21.1	64.7	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

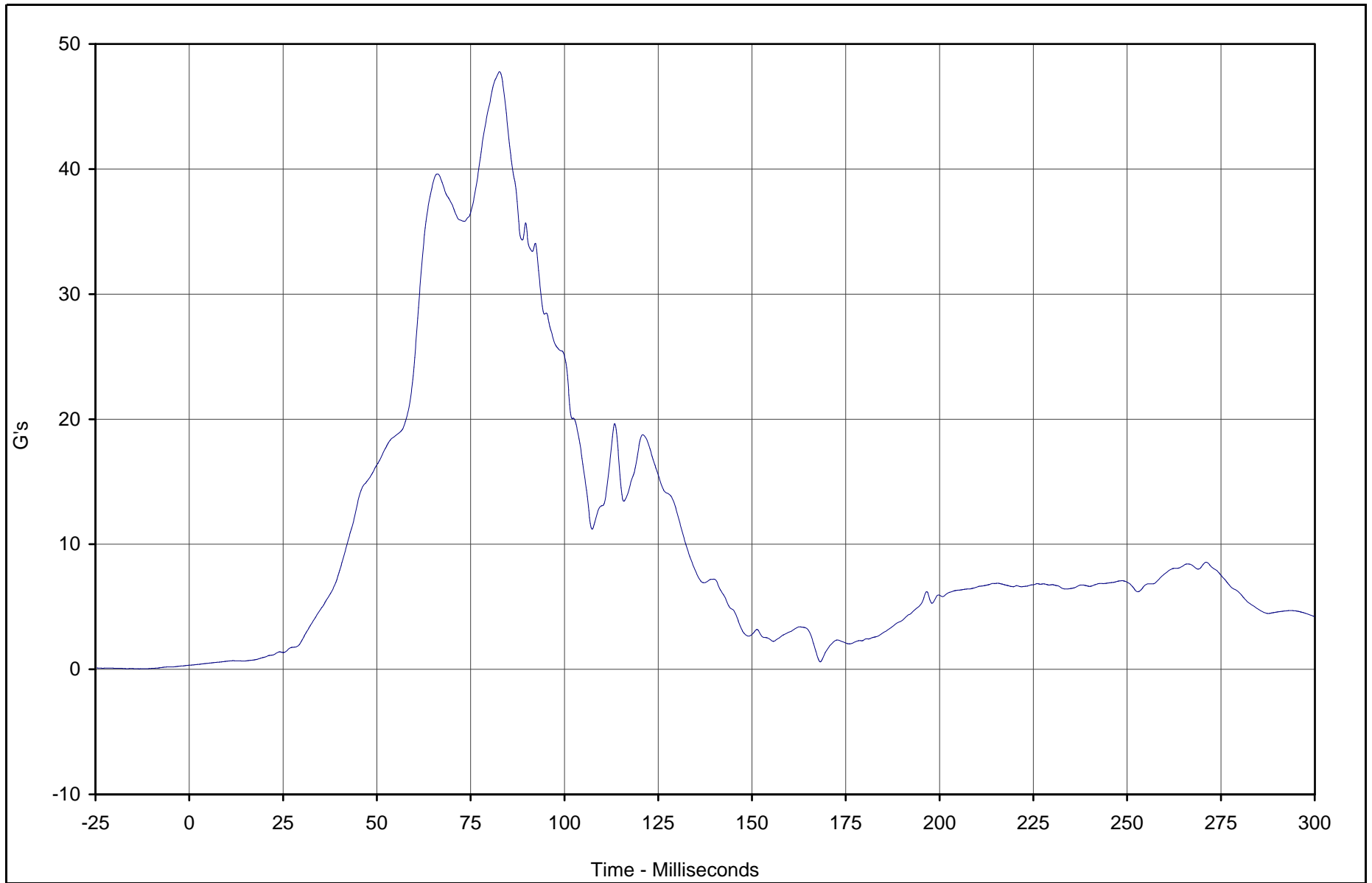
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-58



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Chest Resultant	177	RES	G's	47.8	82.7	0.3	0.0	180



Test Vehicle: 2003 Nissan Murano SL AWD SUV

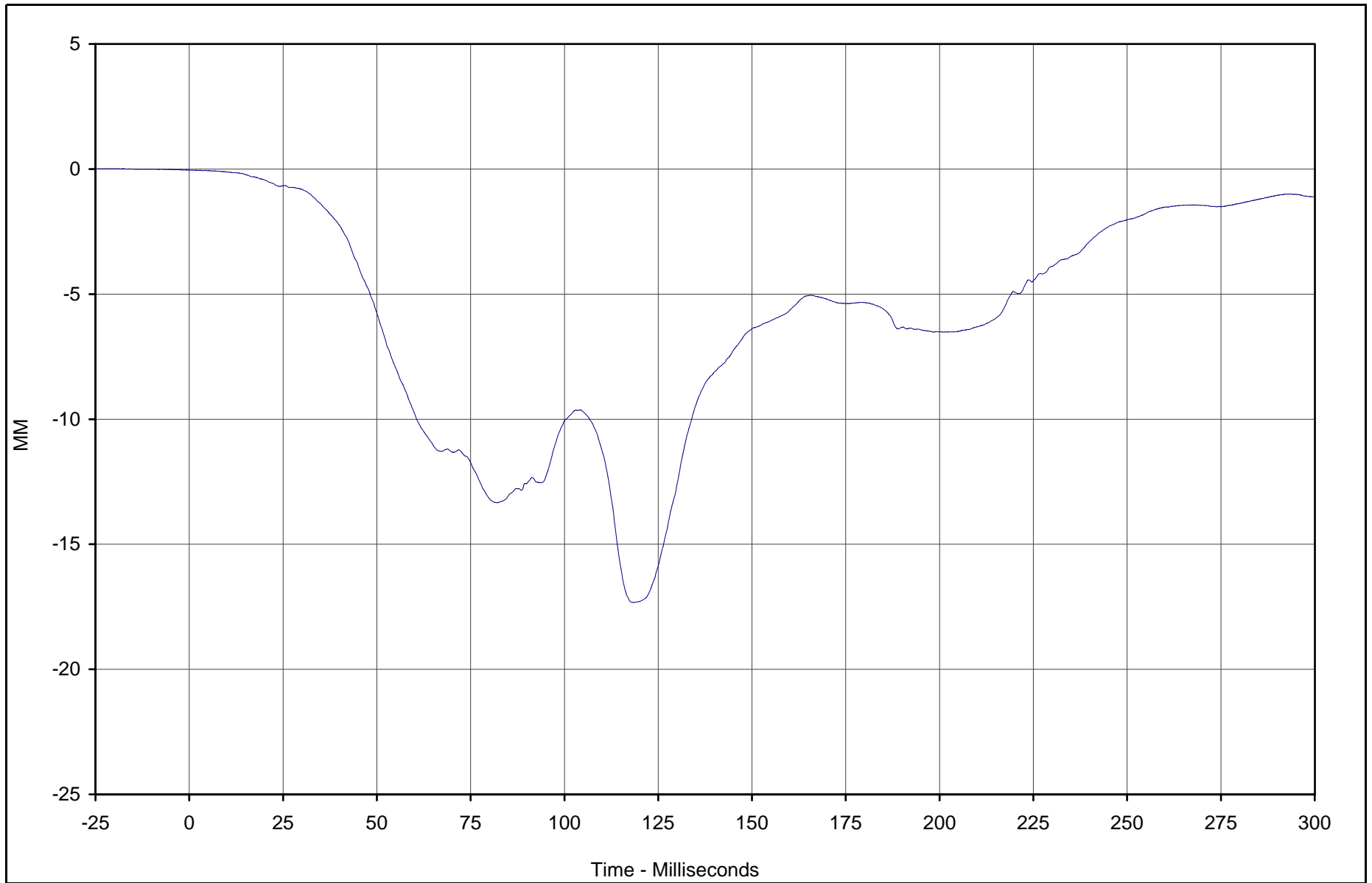
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-59



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Chest Deflection	178	FIL	MM	0.0	0.6	-17.3	118.6	600



Test Vehicle: 2003 Nissan Murano SL AWD SUV

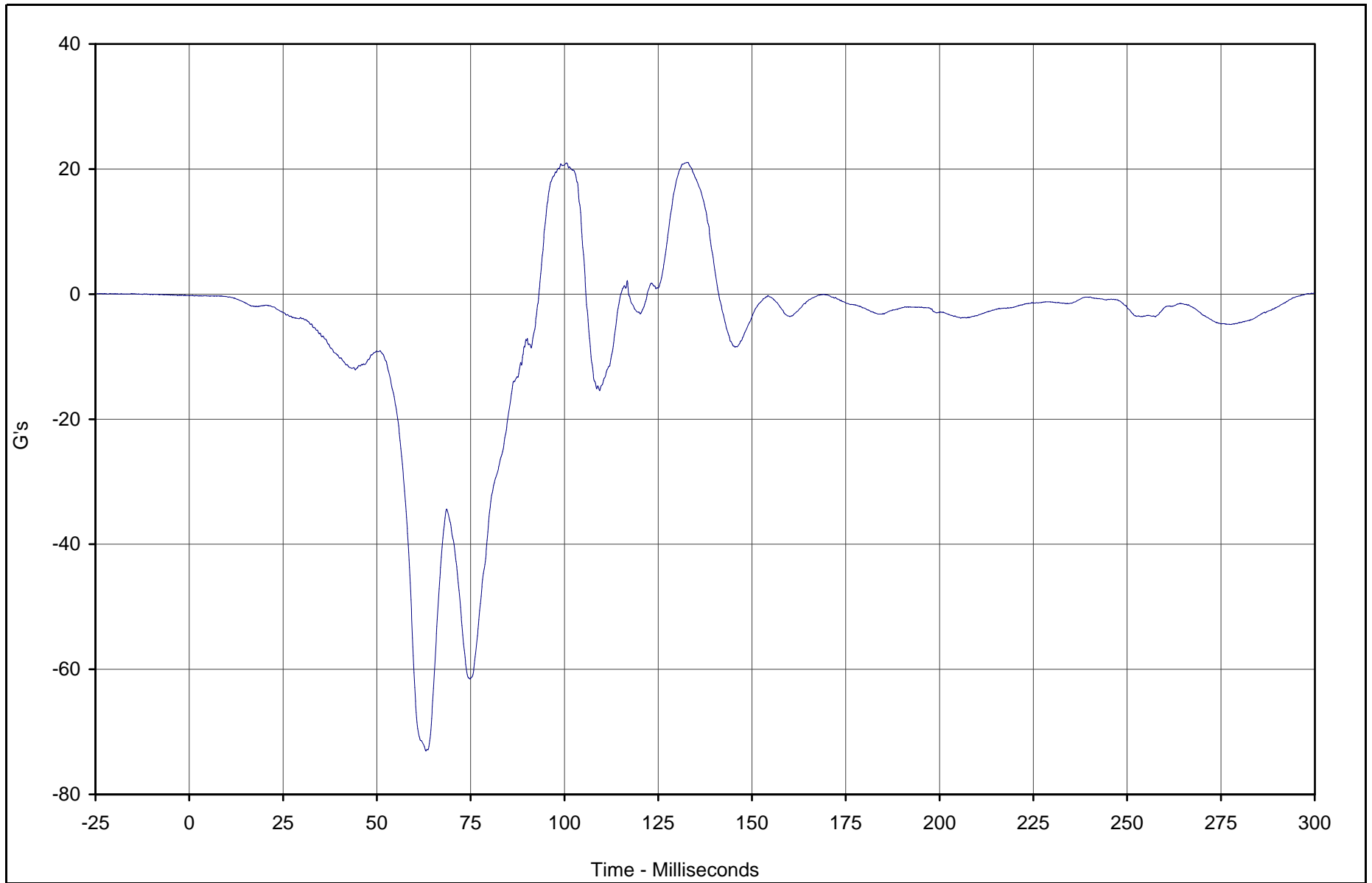
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-60



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Pelvis X	179	FIL	G's	21.1	132.8	-73.1	63.1	1000



Test Vehicle: 2003 Nissan Murano SL AWD SUV

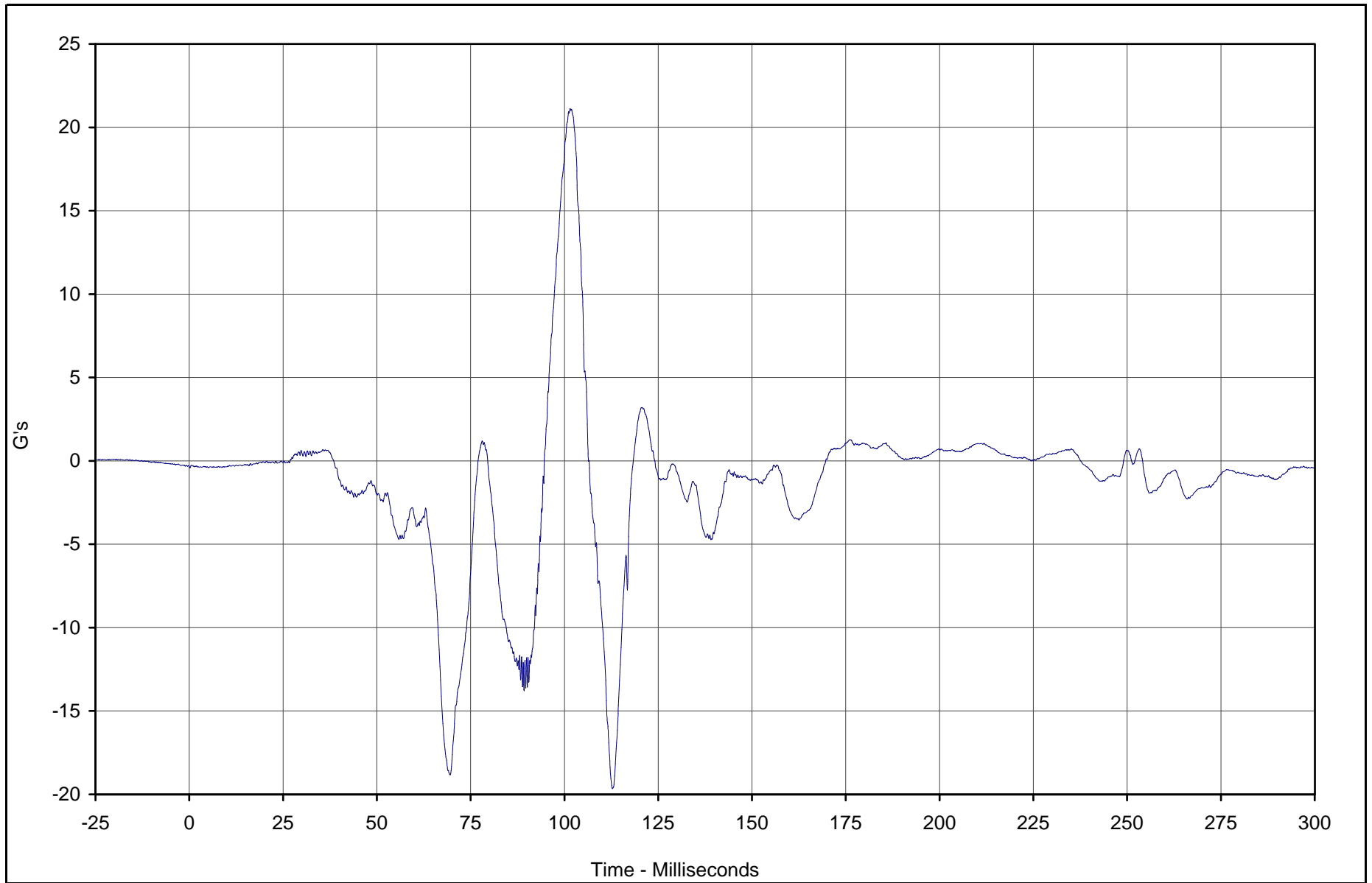
Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC

F3-61



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Pelvis Y	180	FIL	G's	21.1	101.5	-19.7	112.8	1000



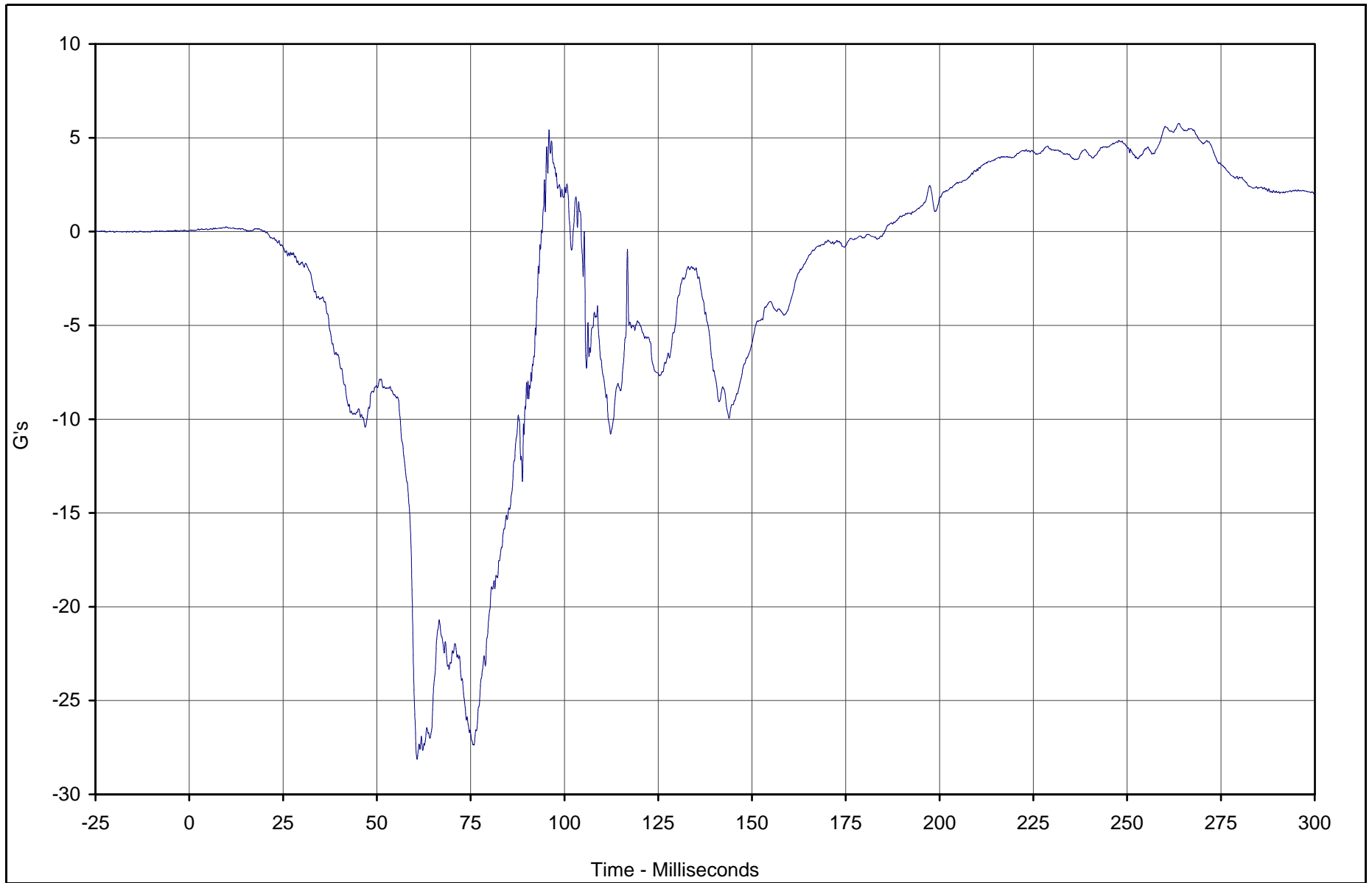
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-62



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Pelvis Z	181	FIL	G's	5.8	263.8	-28.1	60.7	1000



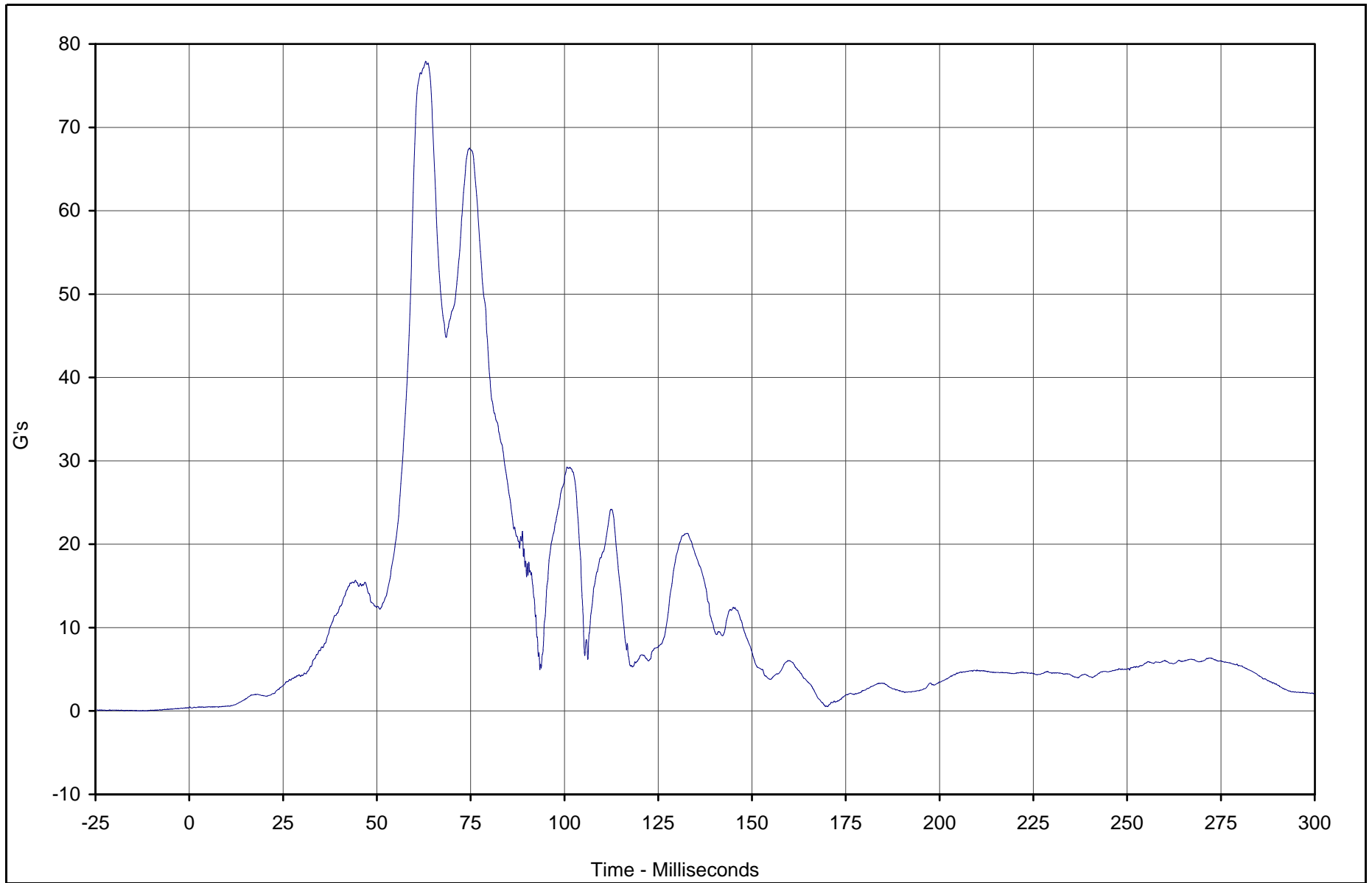
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Pelvis Resultant	179	RES	G's	77.9	63.0	0.4	0.7	1000



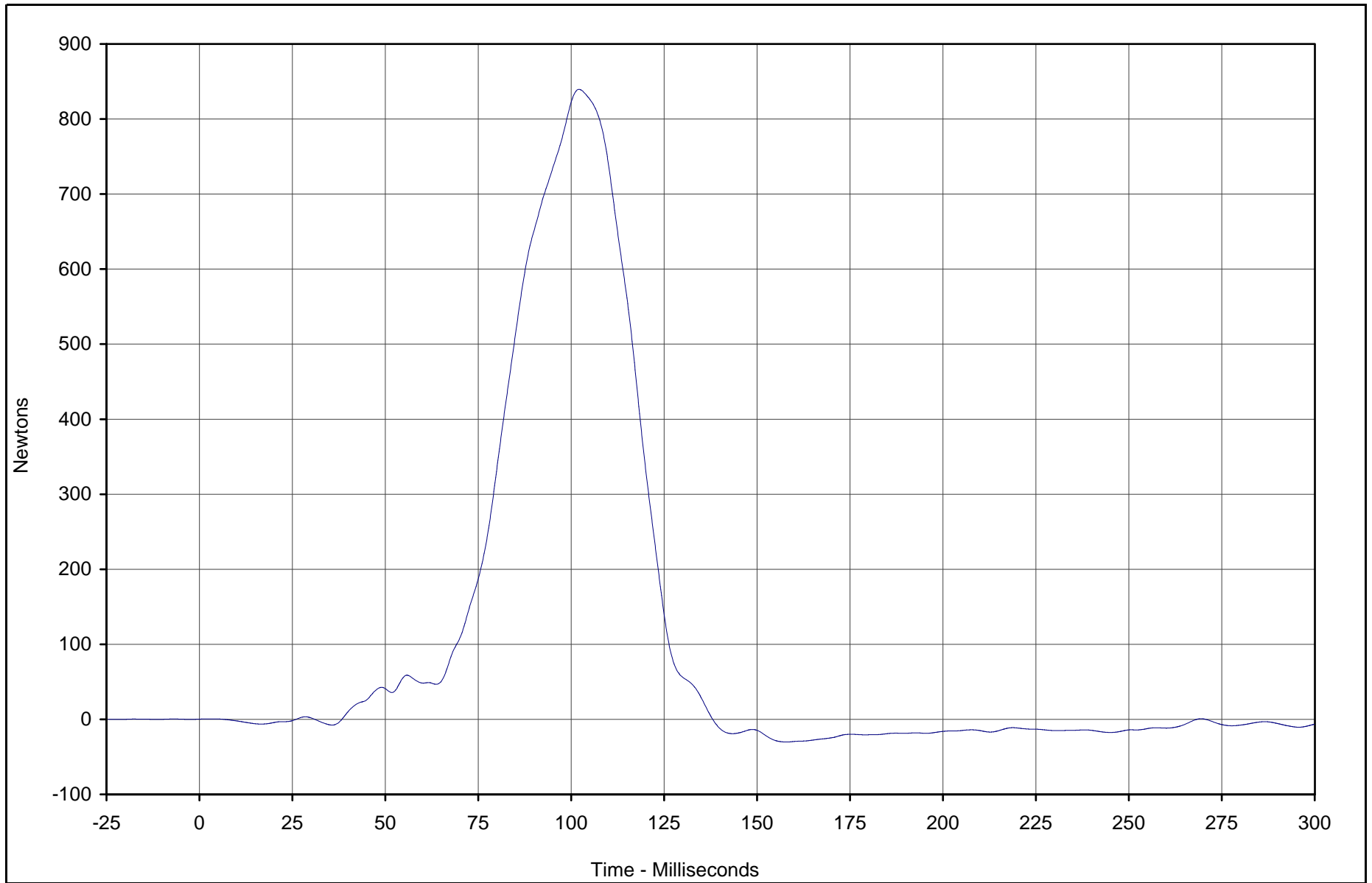
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-64



TR-P23001-13-NC

Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Seat Tether Load	182	FIL	Newtons	839.6	102.1	-30.2	157.9	60



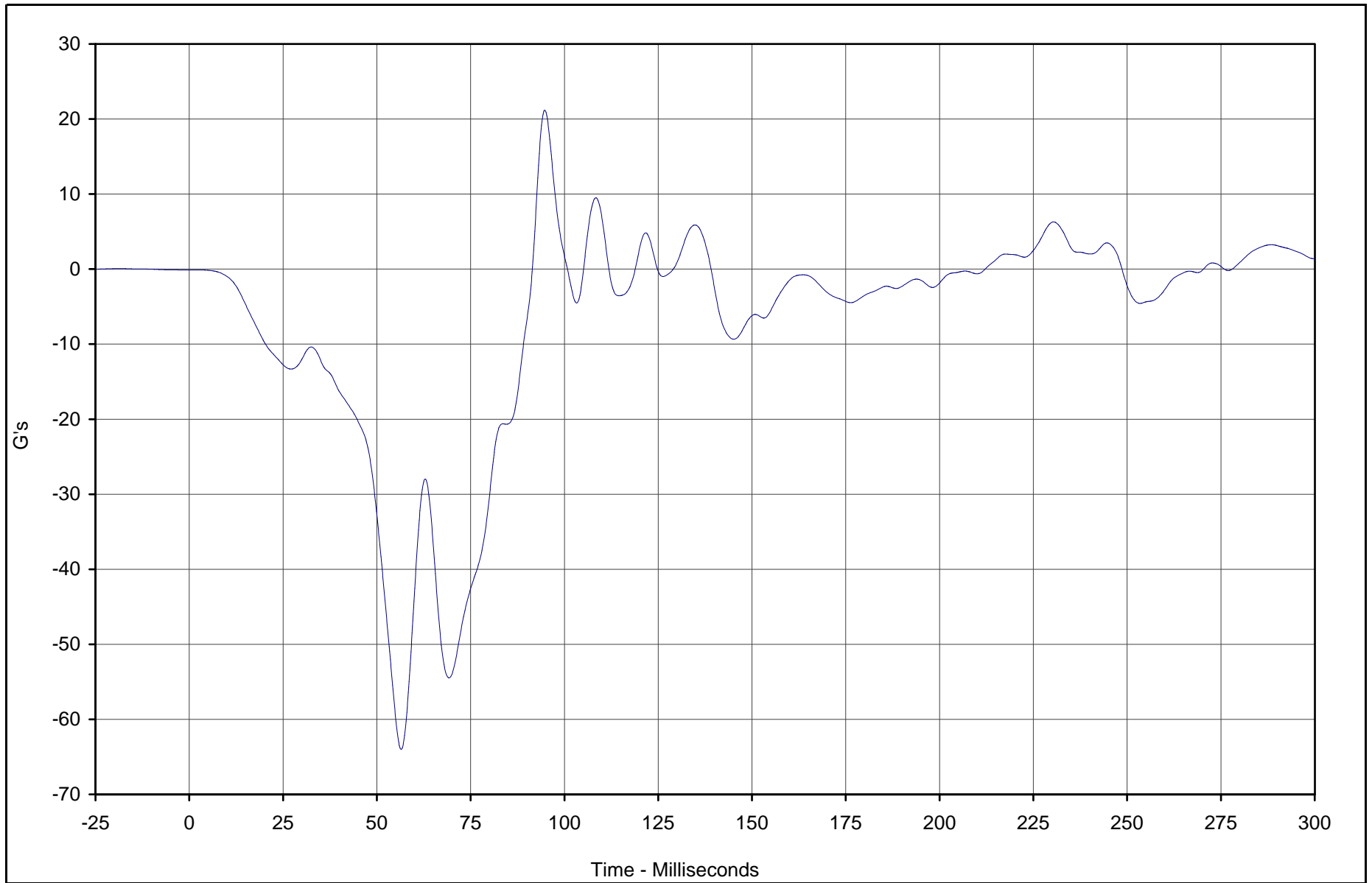
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-65



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Car Seat X	183	FIL	G's	21.2	94.8	-64.0	56.5	60



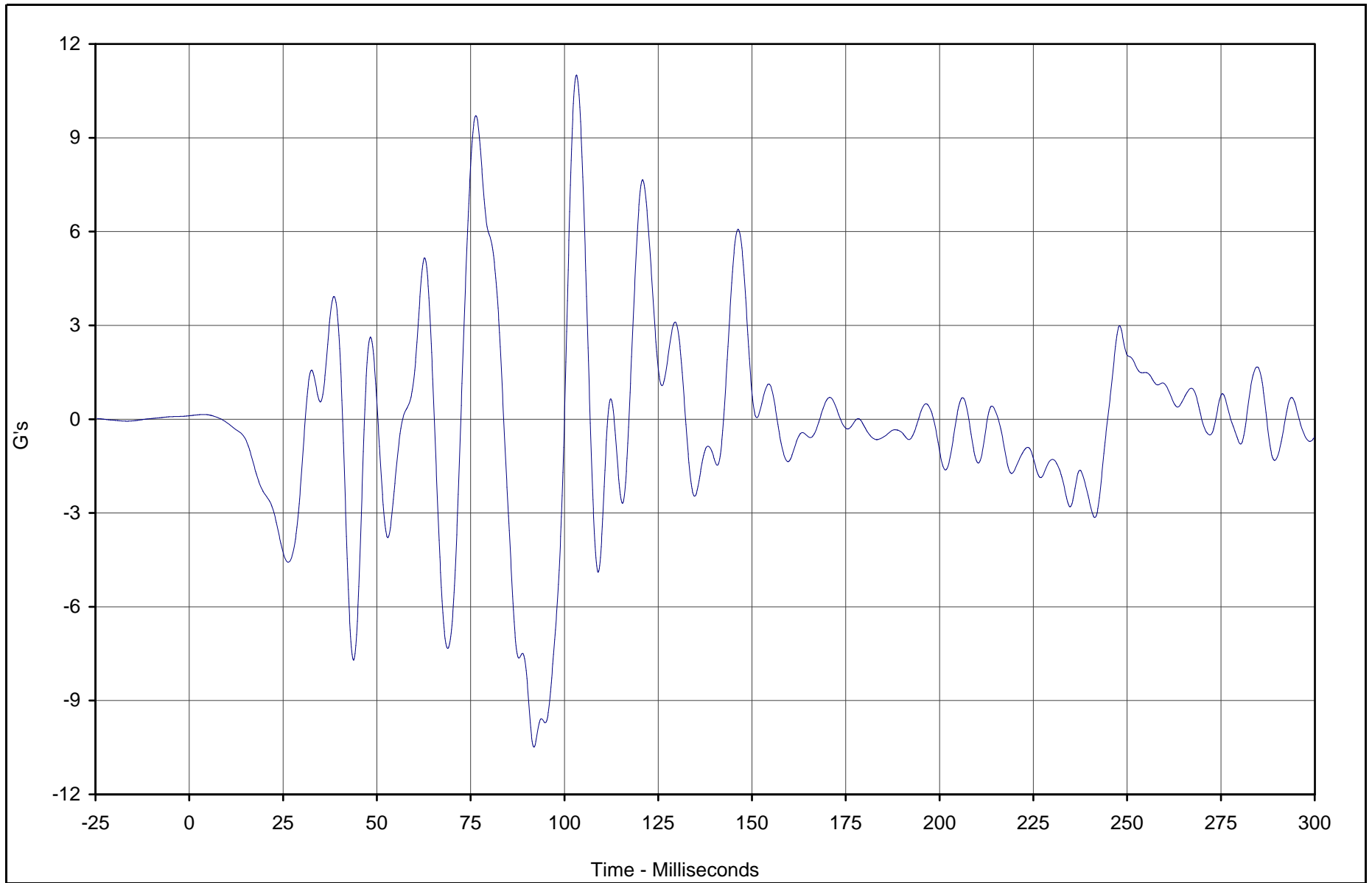
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Car Seat Y	184	FIL	G's	11.0	103.2	-10.5	91.9	60



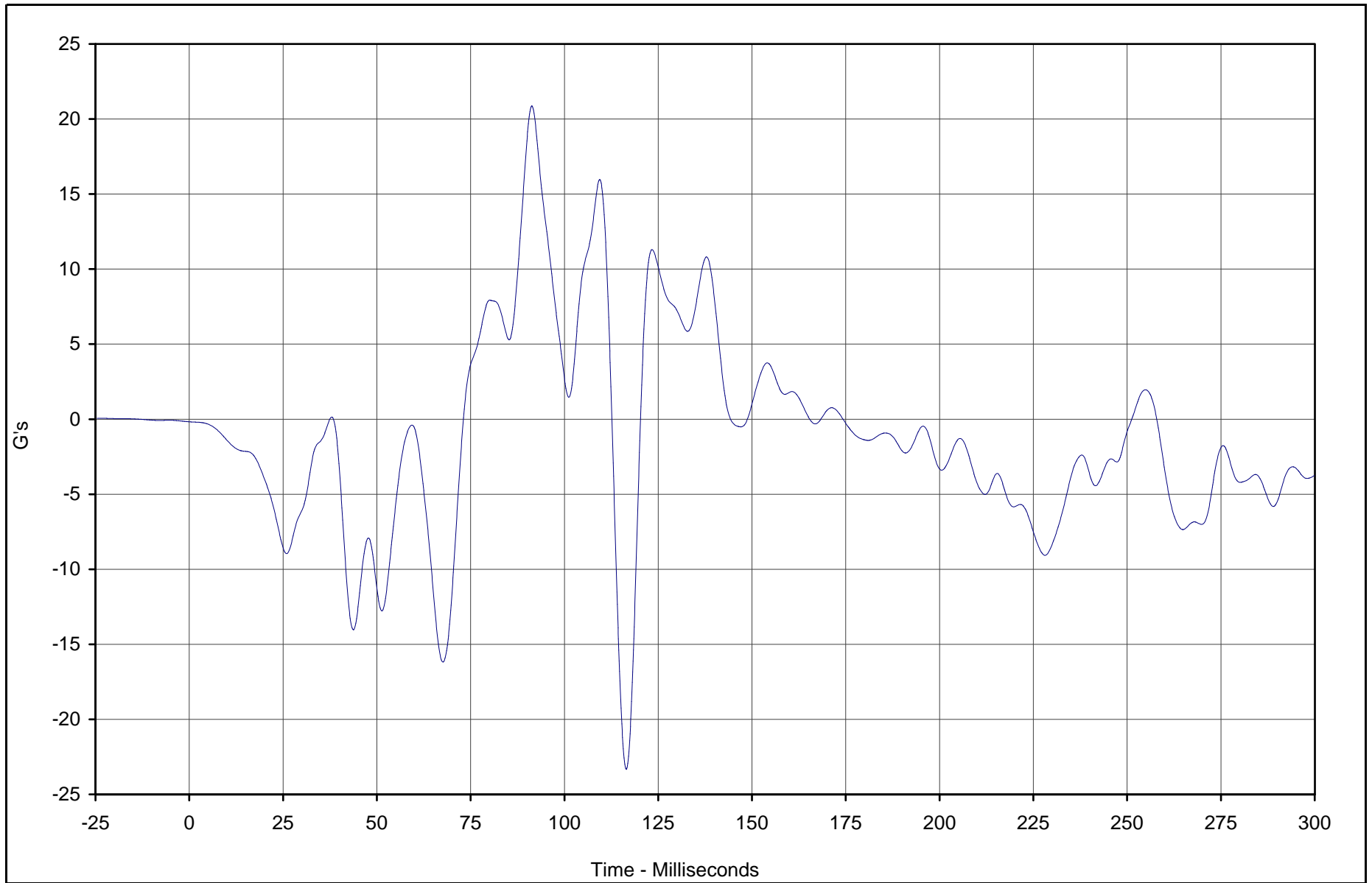
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

F3-67



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Car Seat Z	185	FIL	G's	20.9	91.3	-23.3	116.5	60



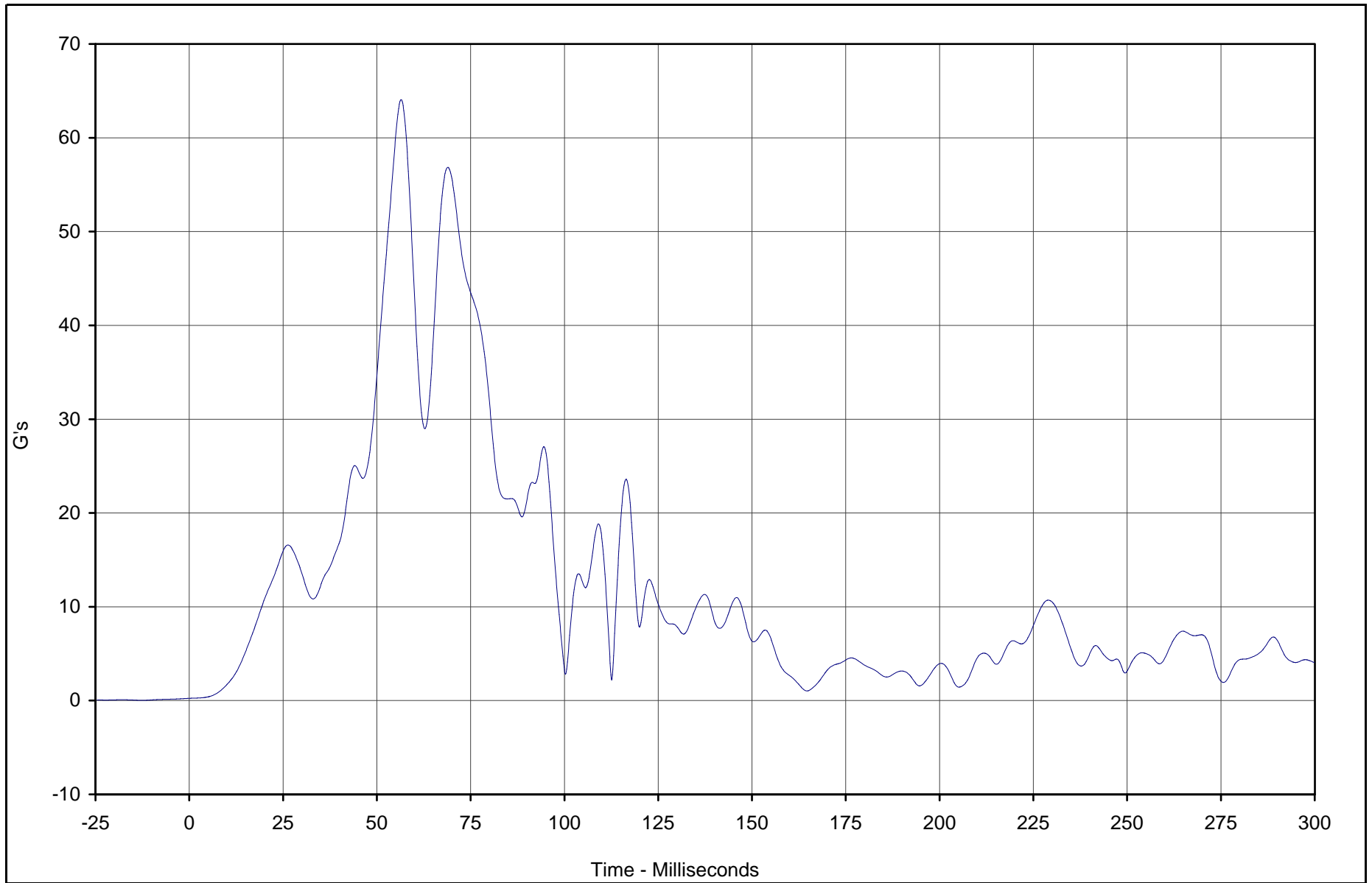
Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

TR-P23001-13-NC



Curve Description	CURNO	Type	Units	Max	Time	Min	Time	SAE Class
Left Rear (3 Yr.) Car Seat Resultant	183	RES	G's	64.1	56.5	0.2	0.0	60



Test Vehicle: 2003 Nissan Murano SL AWD SUV

Test Date: 3/4/03

Test Program: 2003 NHTSA 35mph NCAP

NHTSA No.: M35204

**SECTION F-4**

**CHILD DUMMY INSTRUMENTATION INFORMATION**

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Right Rear Child A.T.D. Serial Number 082  
3/4/03  
2003 Nissan Murano SL AWD SUV**

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

E4-1

TR-P23001-13-NC

**2003 NHTSA 35mph NCAP  
Instrumentation Data Channel Assignments  
Left Rear Child A.T.D. Serial Number 139  
3/4/03  
2003 Nissan Murano SL AWD SUV**

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.: HD03B

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	267.0	Pass
Peak Lateral Acceleration	G's	≤15.0	7.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<10	3.9	Pass
Overall Test Results				Pass

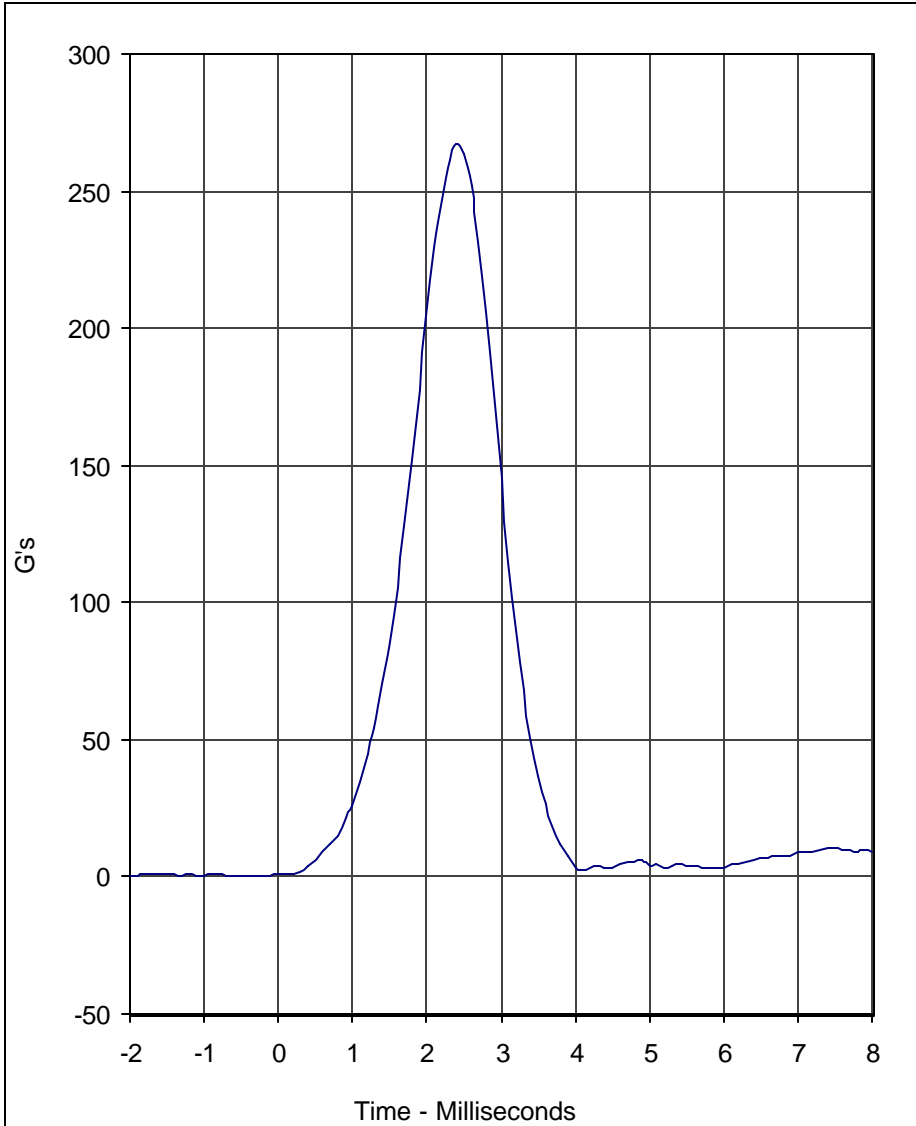
F5-1

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Laboratory Technician

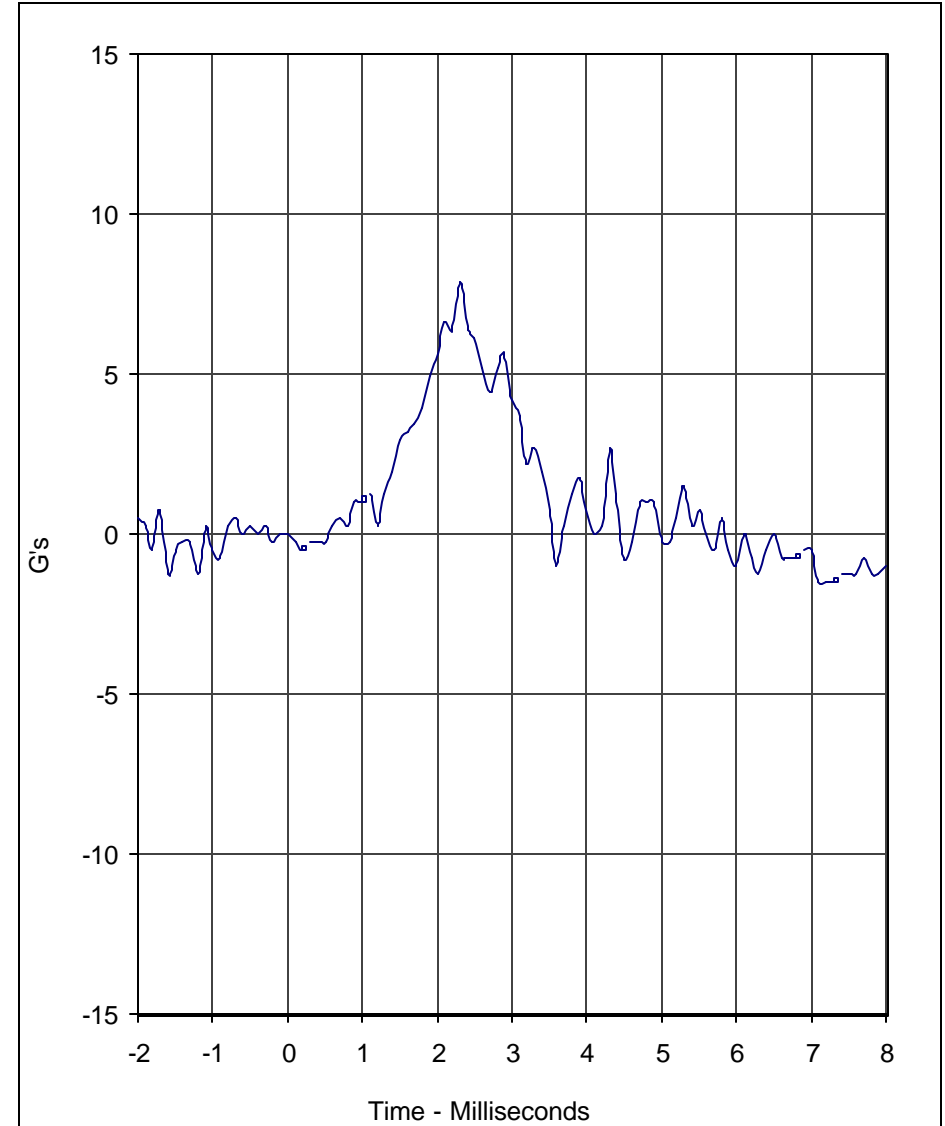
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March 2, 2003

Test Date



Curve Description				CURNO	Type
Head Resultant				001	RES

Units	Max	Time	Min	Time	SAE Class
G's	267.0	2.4	0.0	-0.1	1000



Curve Description				CURNO	Type
Head Y				002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	7.9	2.3	-1.2	-1.6	1000

Test Program: Hybrid III 3 Year Old Head Drop Test  
 Test Date: 3/2/03

A.T.D. Serial No.: 082  
 Test I.D.: HD03B





# Calibration Data Sheet

## Hybrid III 3 Year Old

### Thorax Impact Test

ATD Serial No.: 082

Test I.D.: CH03A

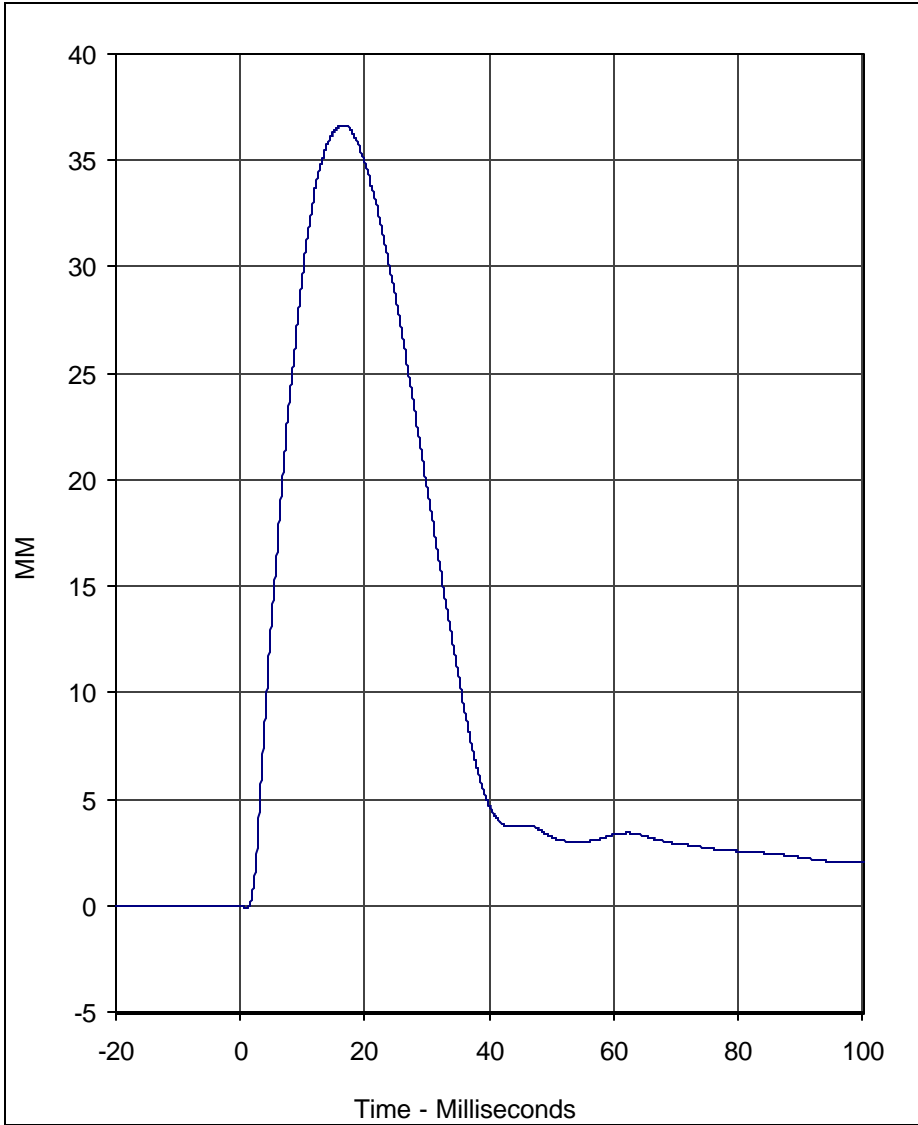
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.9 to 6.1	5.93	Pass
Peak Chest Compression	MM	32 to 38	36.7	Pass
Peak Probe Force Between 32 and 38 MM	Newtons	680 to 810	783.2	Pass
Peak Probe Force Between 12.5 and 32 MM	Newtons	≤860	758.7	Pass
Internal Hysteresis	%	65 to 85	71.0	Pass
			Overall Test Results	Pass

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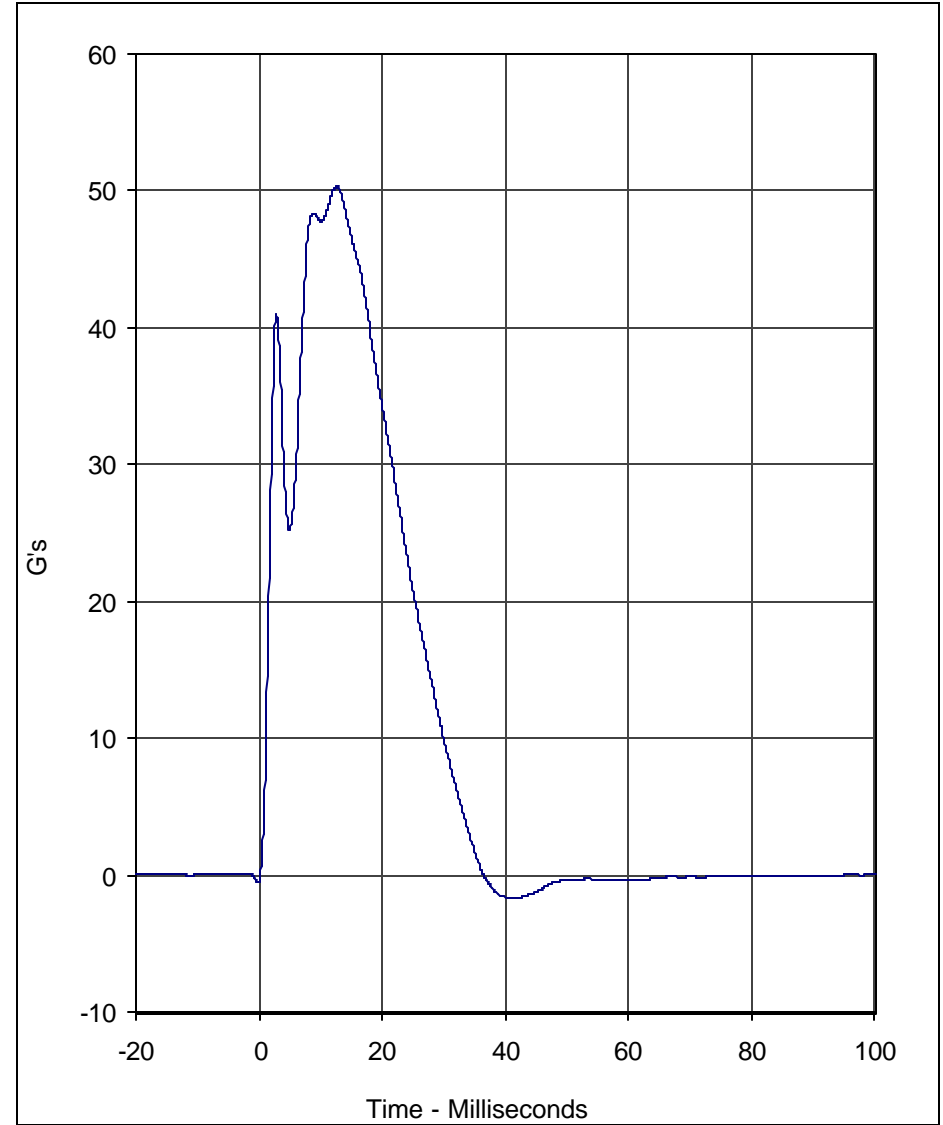
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Laboratory Technician

March 1, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Chest Compression	001	FIL

Units	Max	Time	Min	Time	SAE Class
MM	36.7	16.7	-0.1	1.0	180



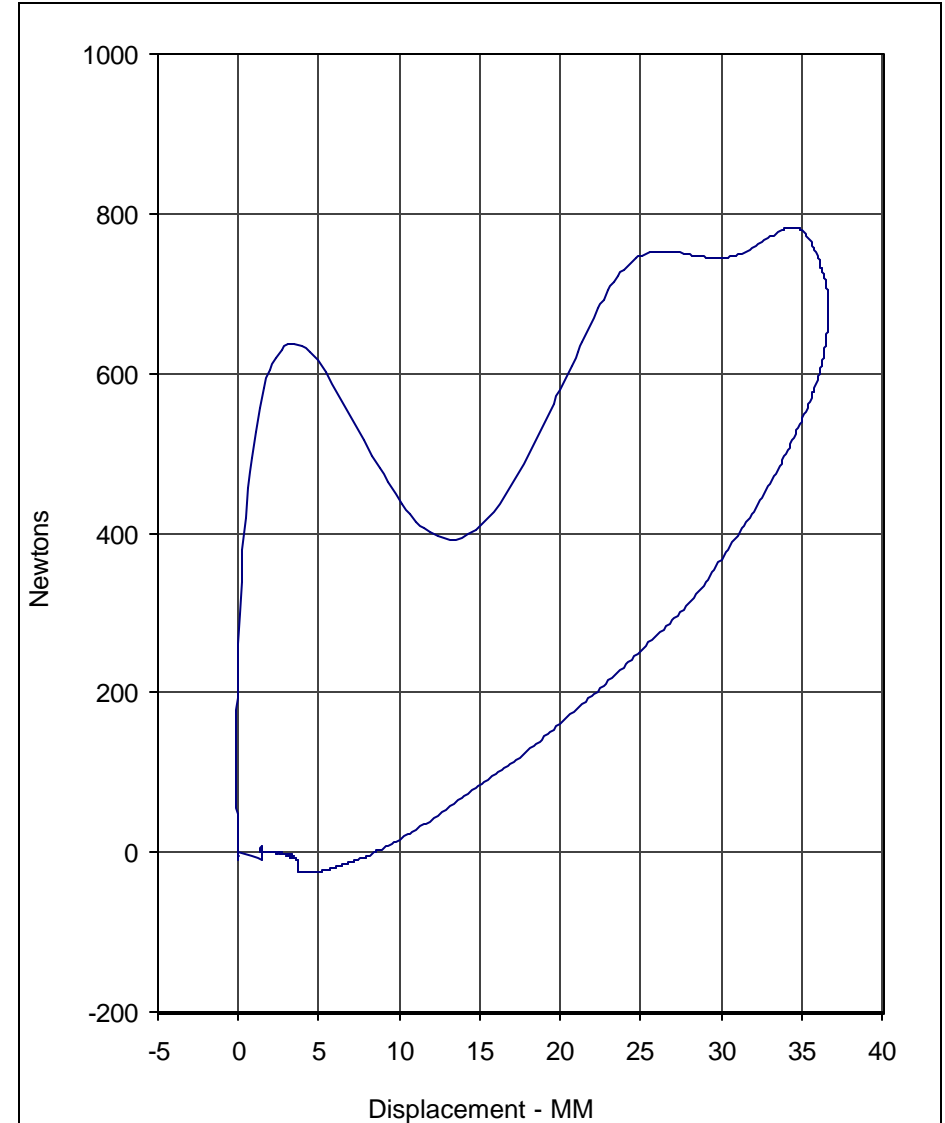
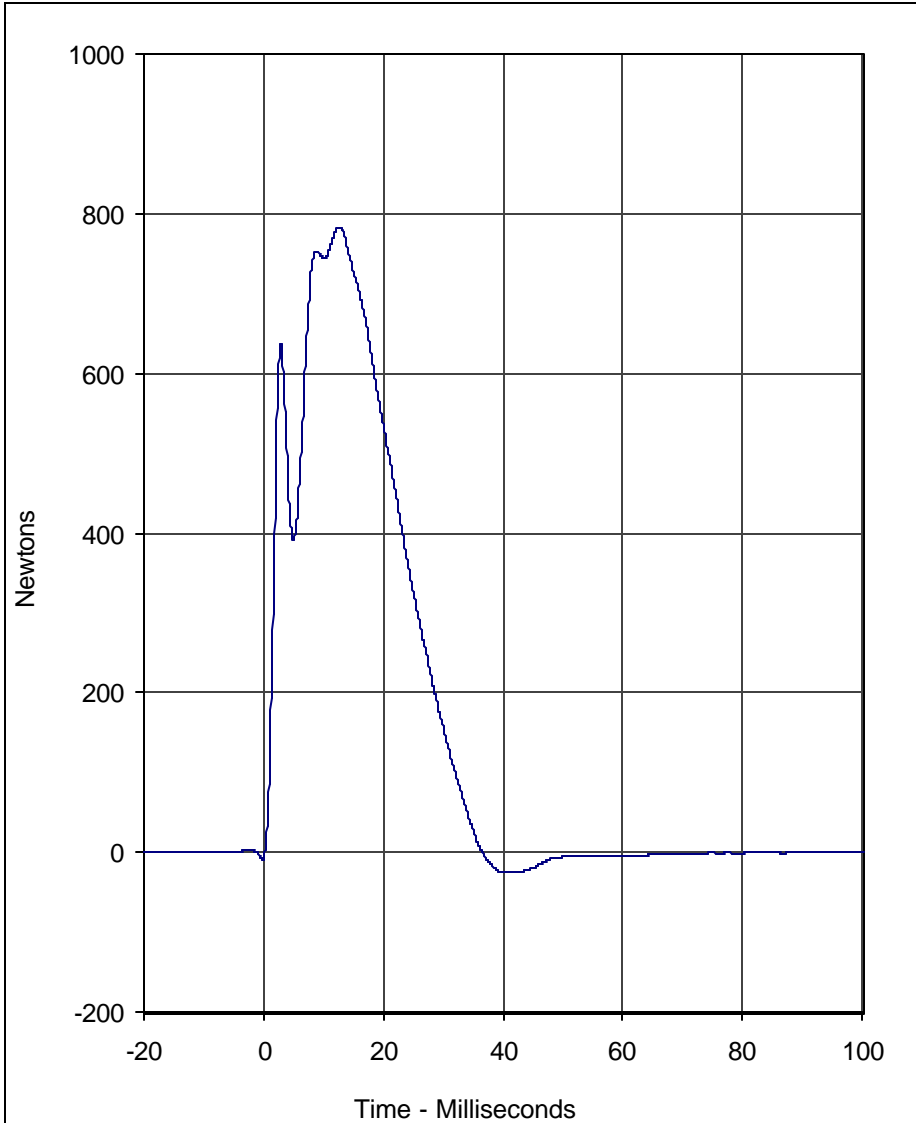
Curve Description	CURNO	Type
Probe Acceleration	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	50.3	12.7	-1.6	42.0	180

Test Program: Hybrid III 3 Year Old Thorax Impact  
 Test Date: 3/1/03

A.T.D. Serial No.: 082  
 Test I.D.: CH03A





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	783.2	12.7	-25.6	42.0	180

Units	Hysteresis	SAE Class
%	70.3	180

Test Program: Hybrid III 3 Year Old Thorax Impact  
 Test Date: 3/1/03

A.T.D. Serial No.: 082  
 Test I.D.: CH03A





# Calibration Data Sheet

## Hybrid III 3 Year Old Neck Flexion Test

ATD Serial No.: 082

Test I.D.: NF03B

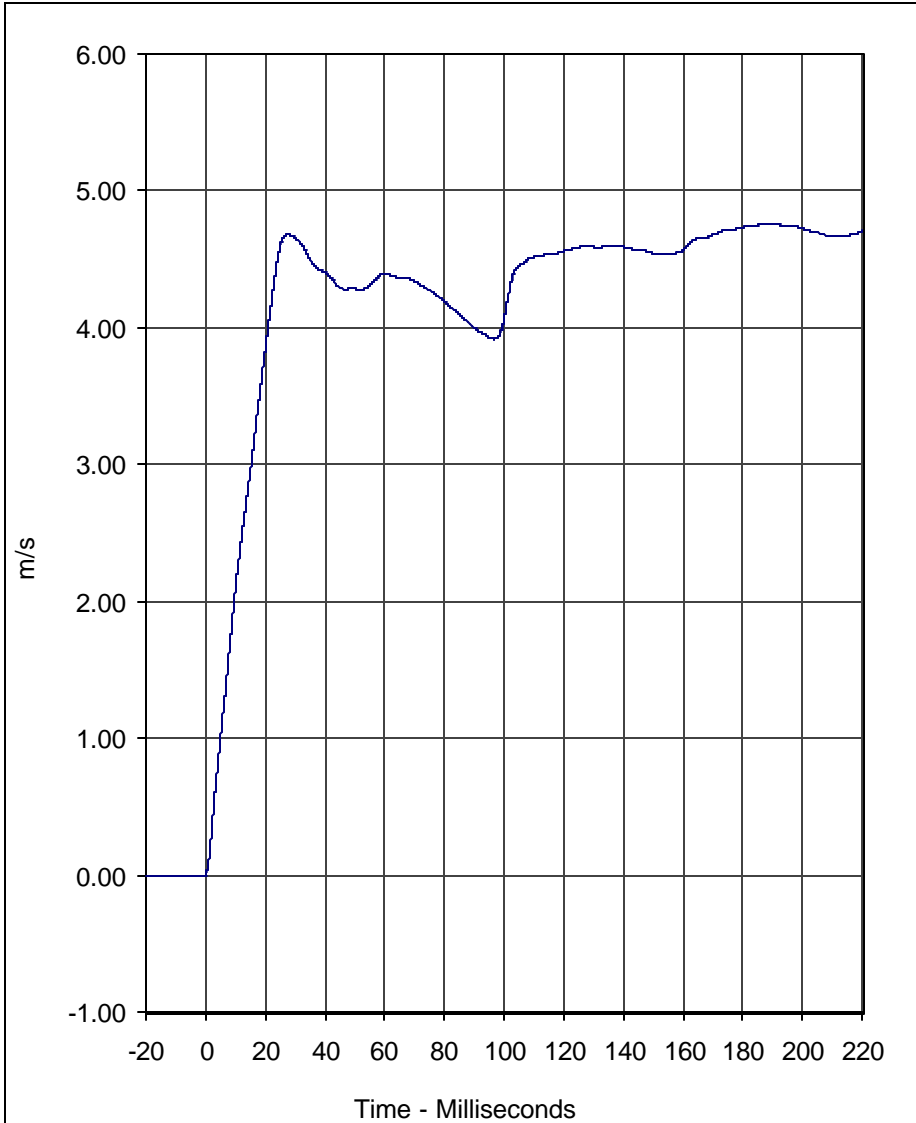
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.40 to 5.60	5.43	Pass
Pendulum Deceleration	10 Msec.	m/s	2.0 to 2.7	2.1	Pass
	20 Msec.	m/s	3.0 to 4.0	3.8	Pass
	30 Msec.	m/s	4.0 to 5.1	4.7	Pass
"D" Plane Rotation	Maximum	Degrees	70.0 to 82.0	79.2	Pass
Peak Moment in Rotation	Maximum	Nm	42.0 to 53.0	45.2	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	70.7	Pass
Overall Test Results					Pass

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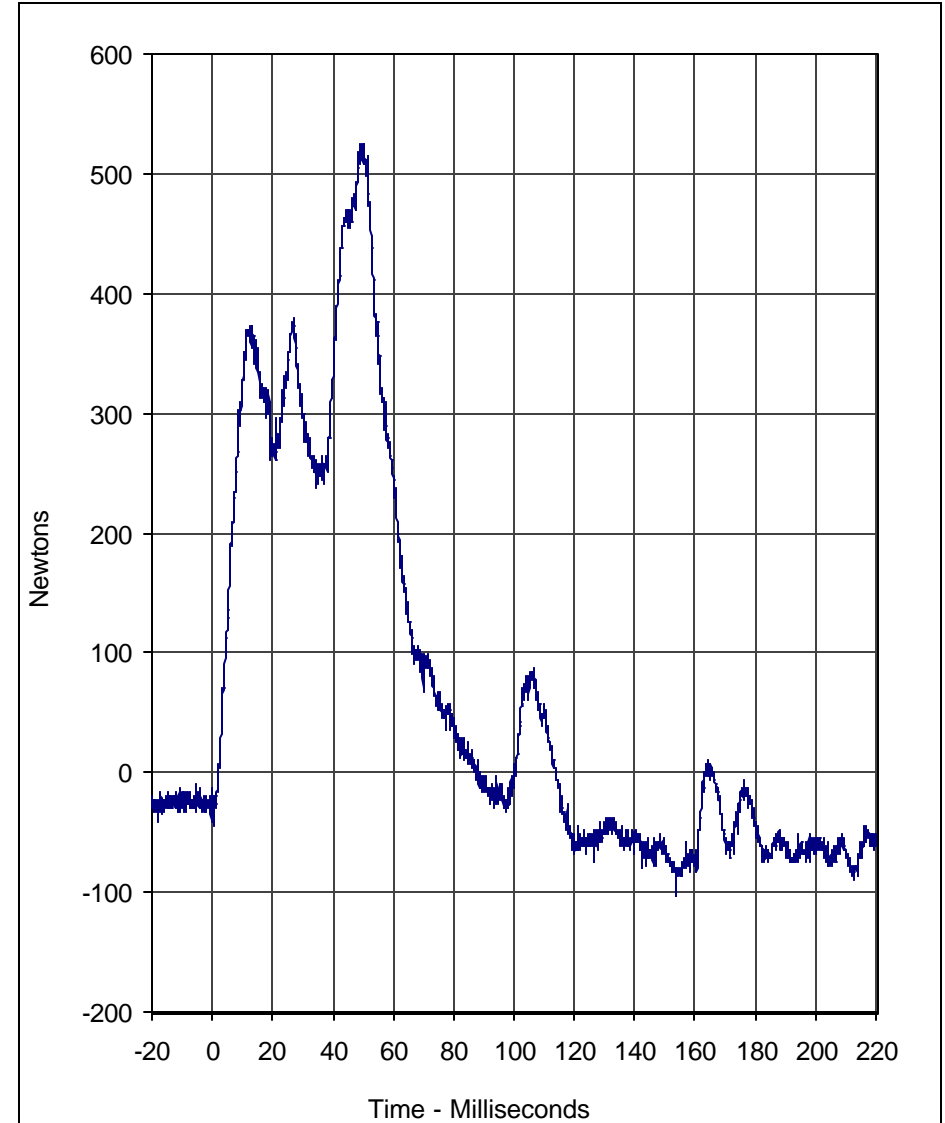
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Laboratory Technician

March 3, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	4.8	190.1	0.0	-0.6	180



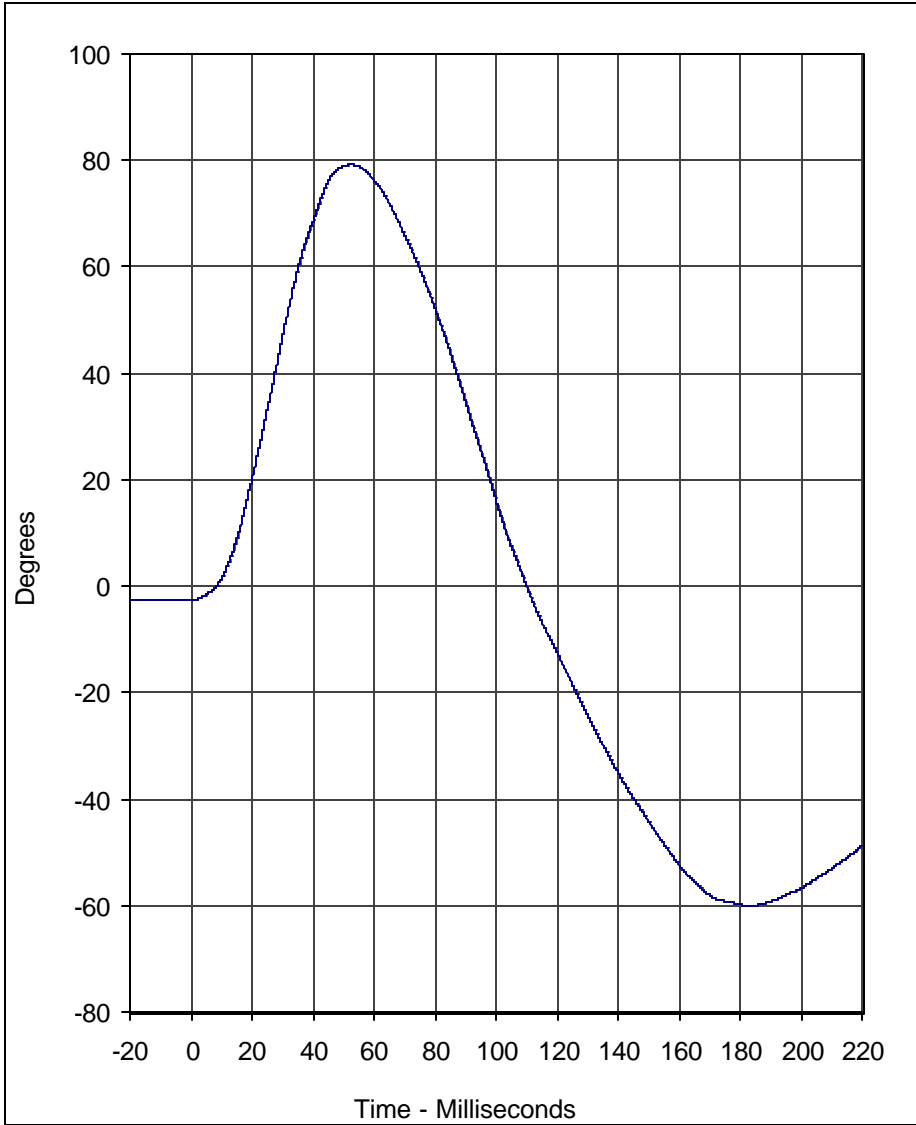
Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	524.7	49.0	-103.0	153.5	1000

Test Program: 3 Year Old Hybrid III Neck Flexion Test  
 Test Date: 3/3/03

A.T.D. Serial No.: 082  
 Test I.D.: NF03B

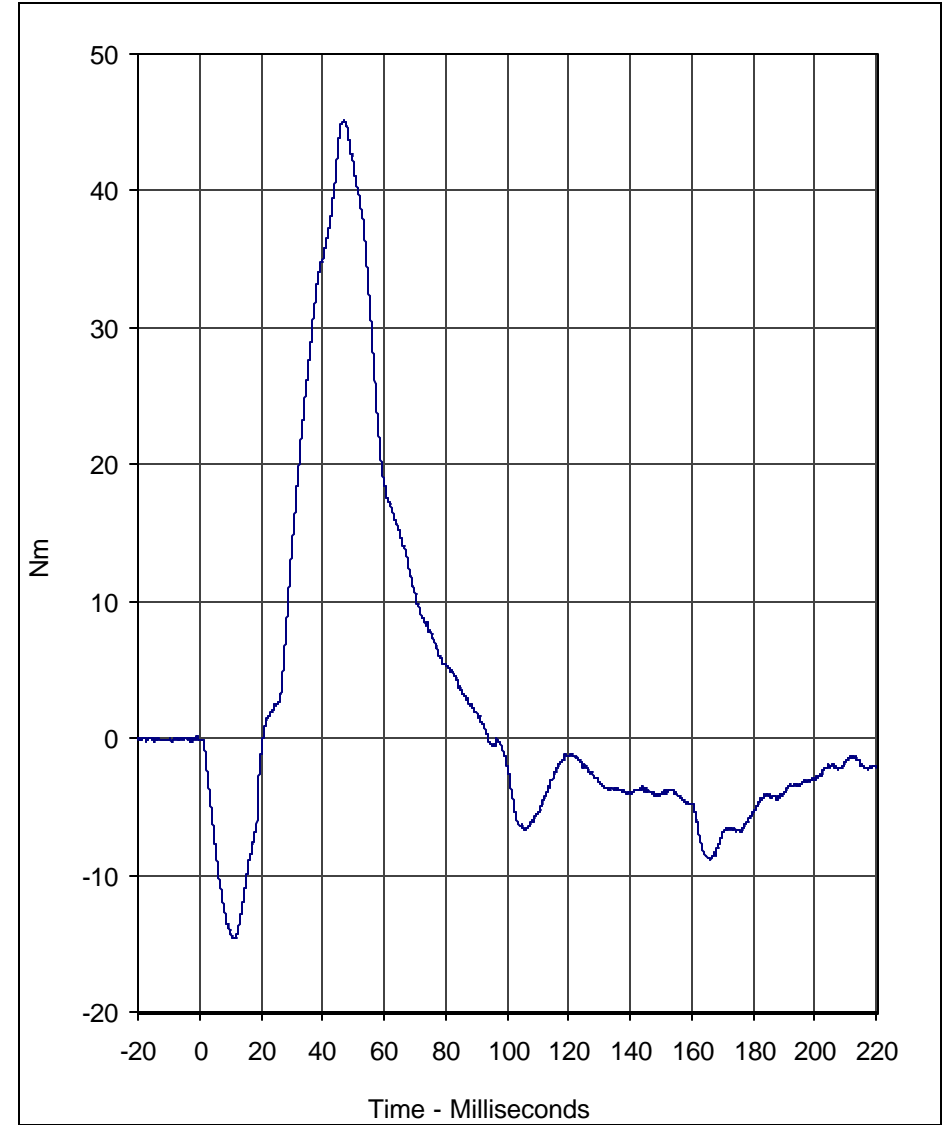




Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	79.2	52.5	-60.1	183.5	60

Test Program: 3 Year Old Hybrid III Neck Flexion Test  
 Test Date: 3/3/03



Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	45.2	47.0	-14.6	11.4	600

A.T.D. Serial No.: 082  
 Test I.D.: NF03B





# Calibration Data Sheet

## Hybrid III 3 Year Old

### Neck Flexion Test

ATD Serial No.: 082

Test I.D.: NE03E

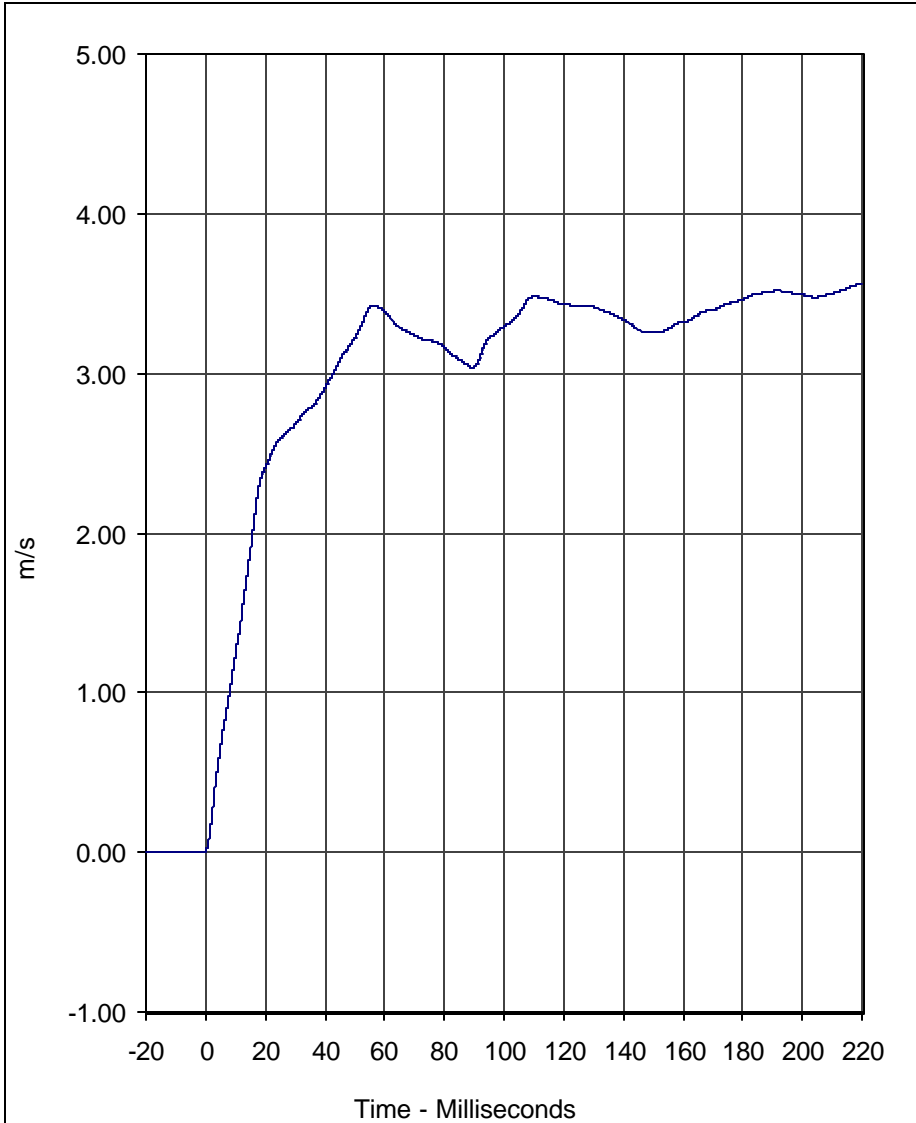
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.55 to 3.75	3.60	Pass
Pendulum Deceleration	10 Msec.	m/s	1.0 to 1.4	1.2	Pass
	20 Msec.	m/s	1.9 to 2.5	2.4	Pass
	30 Msec.	m/s	2.8 to 3.5	2.8	Pass
"D" Plane Rotation	Maximum	Degrees	83.0 to 93.0	86.8	Pass
Peak Moment in Rotation	Maximum	Nm	-43.7 to -53.3	-52.2	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	68.5	Pass
Overall Test Results					Pass

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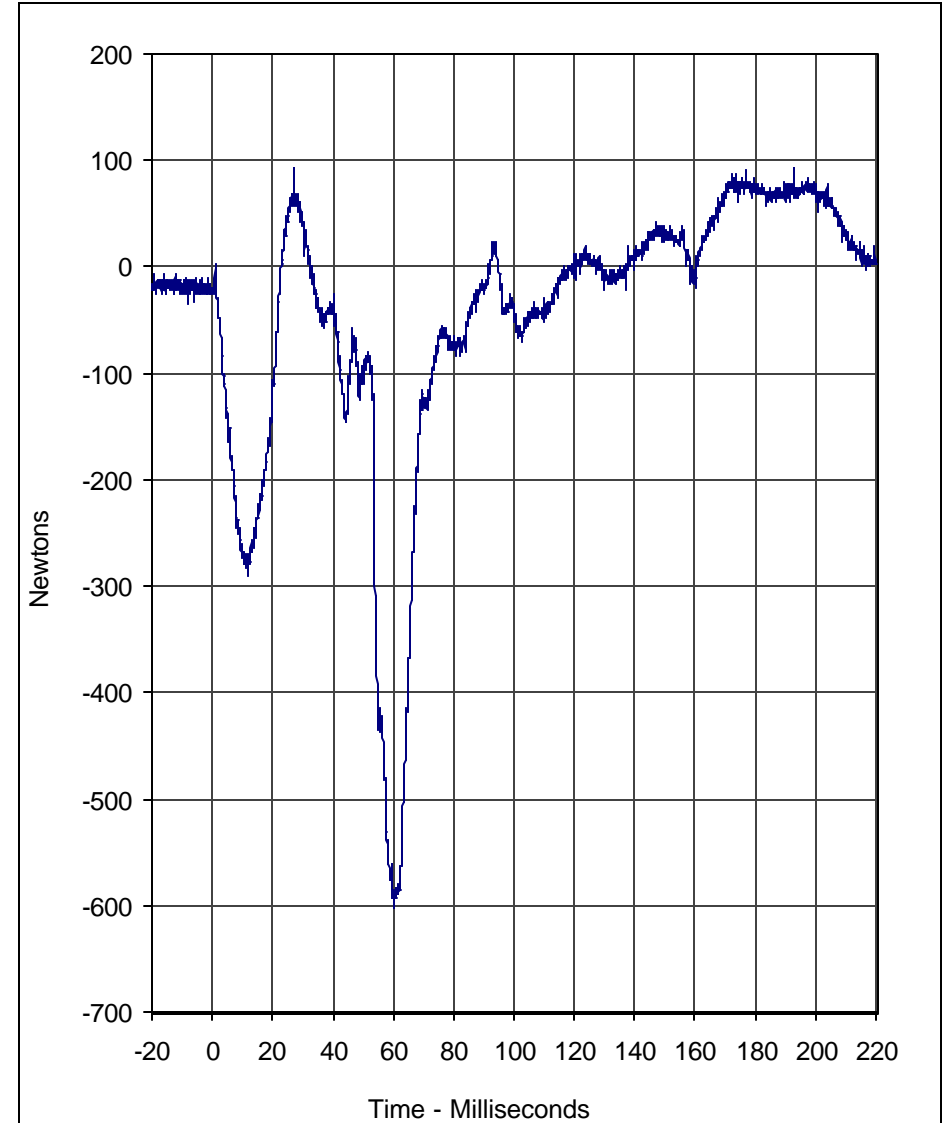
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Laboratory Technician

March 3, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	3.6	220.0	0.0	-0.8	180



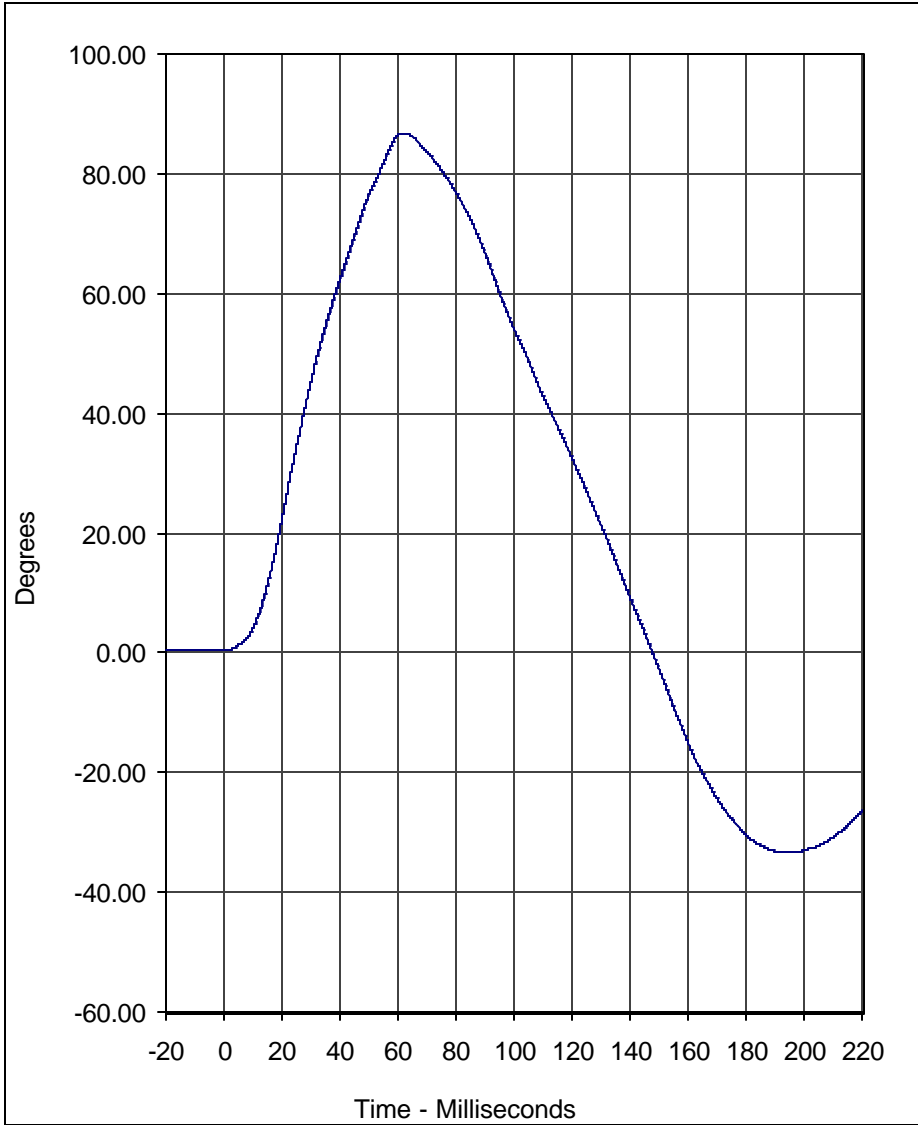
Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	93.3	27.3	-601.9	60.2	1000

Test Program: 3 Year Old Hybrid III Neck Extension Test  
 Test Date: 3/3/03

A.T.D. Serial No.: 082  
 Test I.D.: NE03E

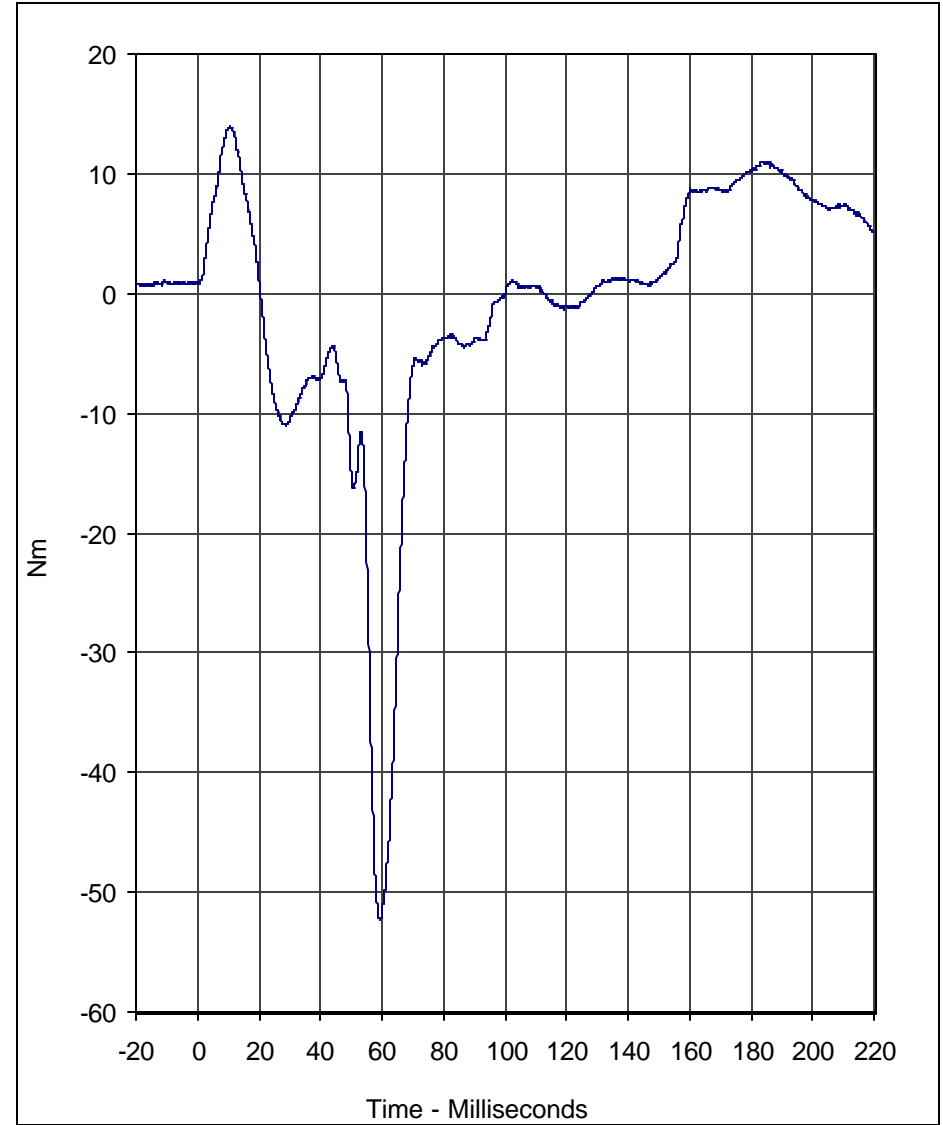




Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	86.8	61.9	-33.4	194.0	60

Test Program: 3 Year Old Hybrid III Neck Extension Test  
 Test Date: 3/3/03



Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	14.0	10.6	-52.2	59.5	600

A.T.D. Serial No.: 082  
 Test I.D.: NE03E





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

ATD Serial No.: 082

Test I.D.: TF03A

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	5.7	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	130.0 to 180.0	155.6	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	0.8	Pass
Final reference plane angle	Degrees	+/-10	4.7	Pass
Overall Test Results				Pass

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Laboratory Technician

March 3, 2003

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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	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

March 3, 2003  
\_\_\_\_\_  
Test Date



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

ATD Serial No.: 139

Test I.D.: HD03A

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	275.1	Pass
Peak Lateral Acceleration	G's	≤15.0	12.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<10	3.8	Pass
Overall Test Results				Pass

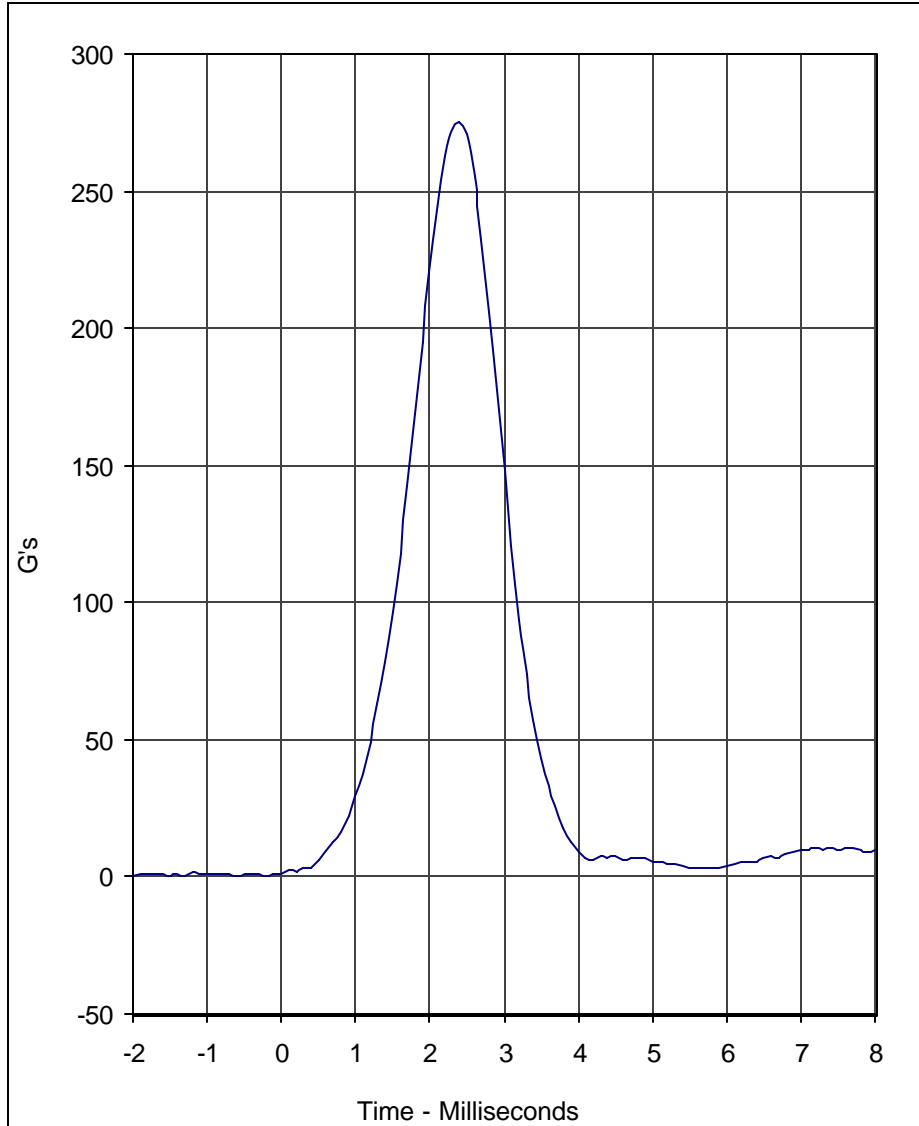
F5-14

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Laboratory Technician

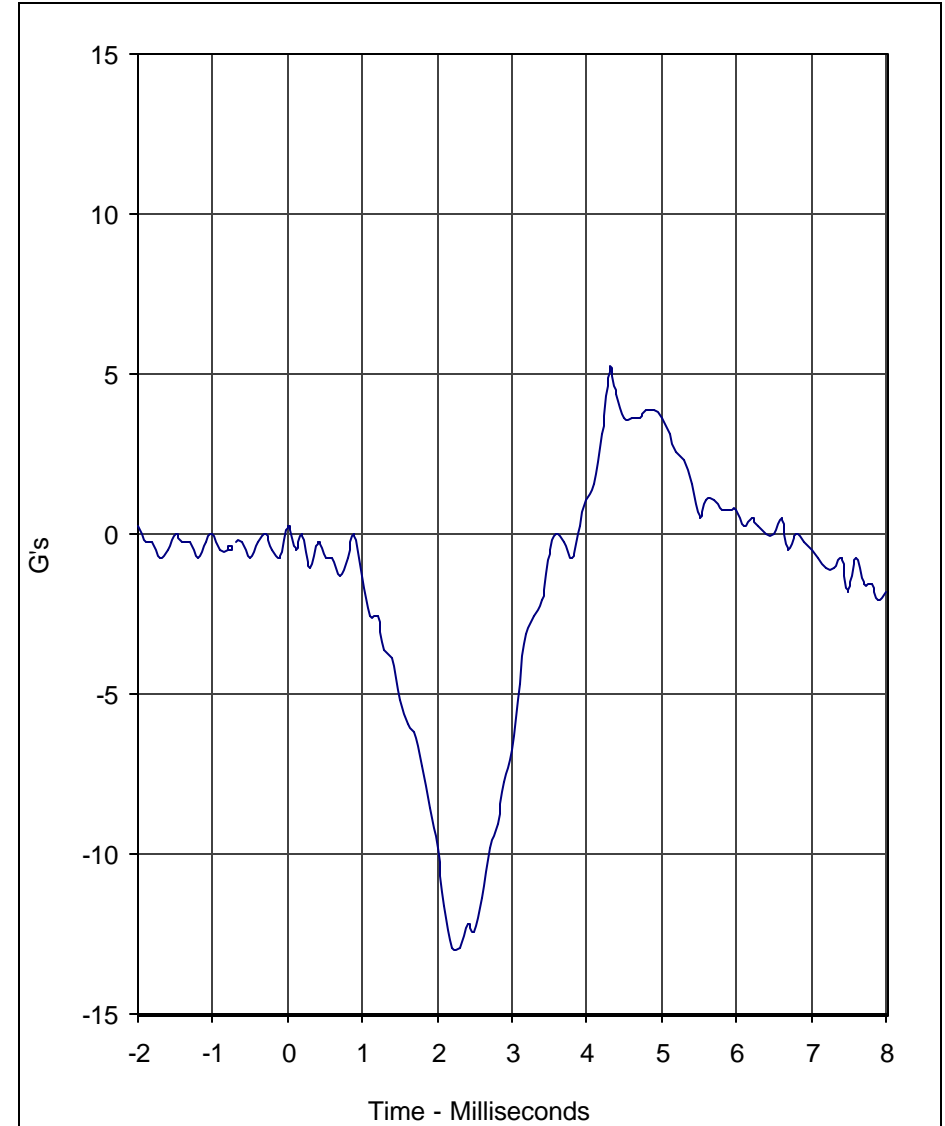
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March 2, 2003

Test Date



Curve Description	CURNO	Type
Head Resultant	001	RES

Units	Max	Time	Min	Time	SAE Class
G's	275.1	2.4	0.4	-0.6	1000



Curve Description	CURNO	Type
Head Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	5.2	4.3	-12.9	2.2	1000

Test Program: Hybrid III 3 Year Old Head Drop Test  
 Test Date: 3/2/03

A.T.D. Serial No.: 139  
 Test I.D.: HD03A





# Calibration Data Sheet

## Hybrid III 3 Year Old

### Thorax Impact Test

ATD Serial No.: 082

Test I.D.: CH04A

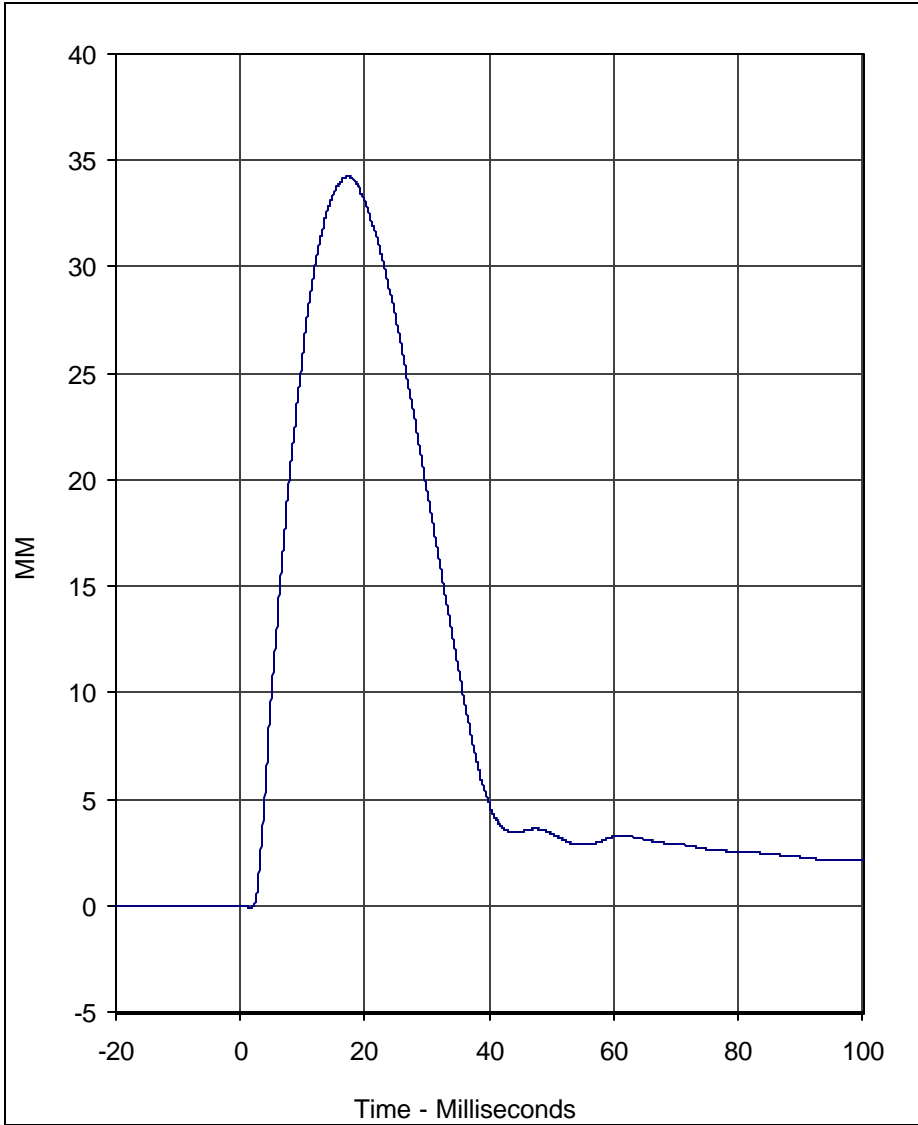
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.9 to 6.1	6.00	Pass
Peak Chest Compression	MM	32 to 38	34.2	Pass
Peak Probe Force Between 32 and 38 MM	Newtons	680 to 810	759.7	Pass
Peak Probe Force Between 12.5 and 32 MM	Newtons	≤860	759.6	Pass
Internal Hysteresis	%	65 to 85	70.0	Pass
Overall Test Results				Pass

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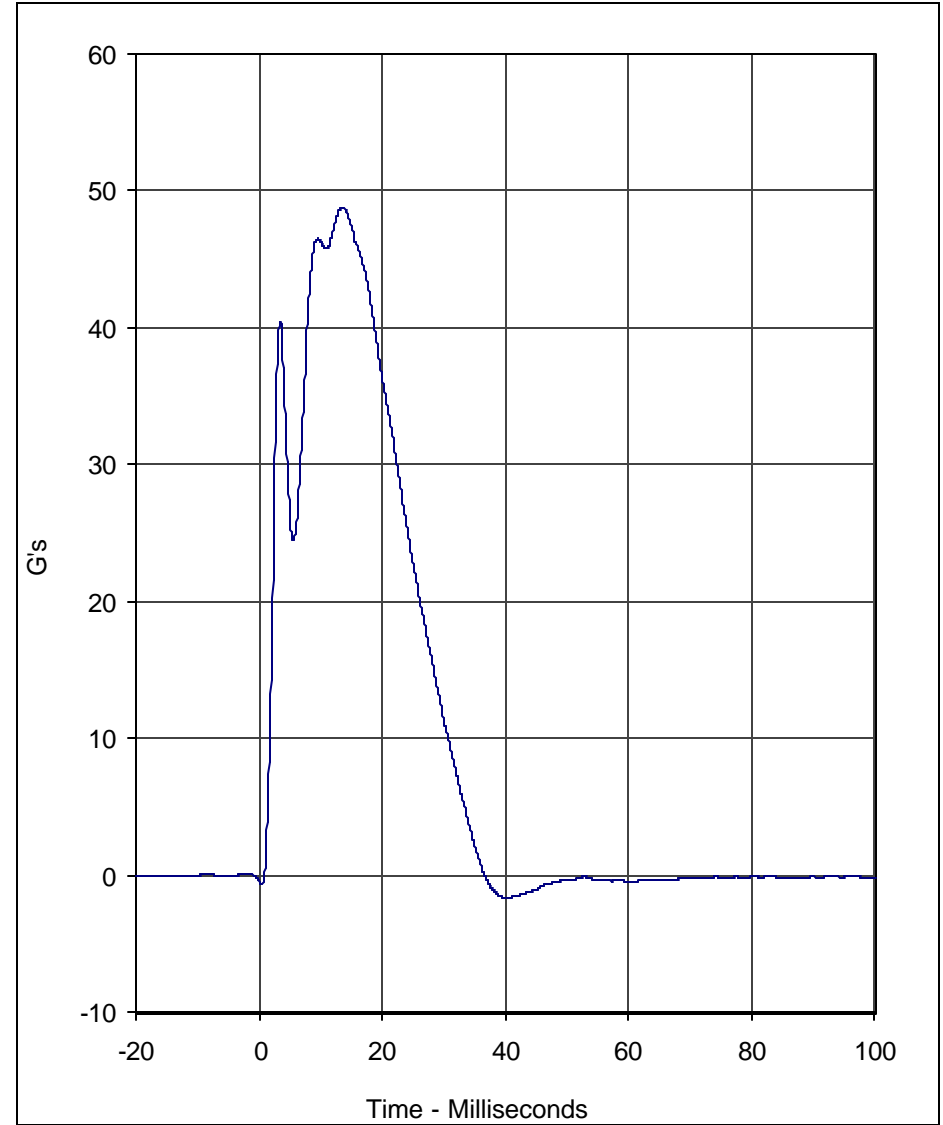
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Laboratory Technician

March 1, 2003  
\_\_\_\_\_  
Test Date



Curve Description				CURNO	Type
Chest Compression				001	FIL

Units	Max	Time	Min	Time	SAE Class
MM	34.2	17.4	-0.1	1.7	180



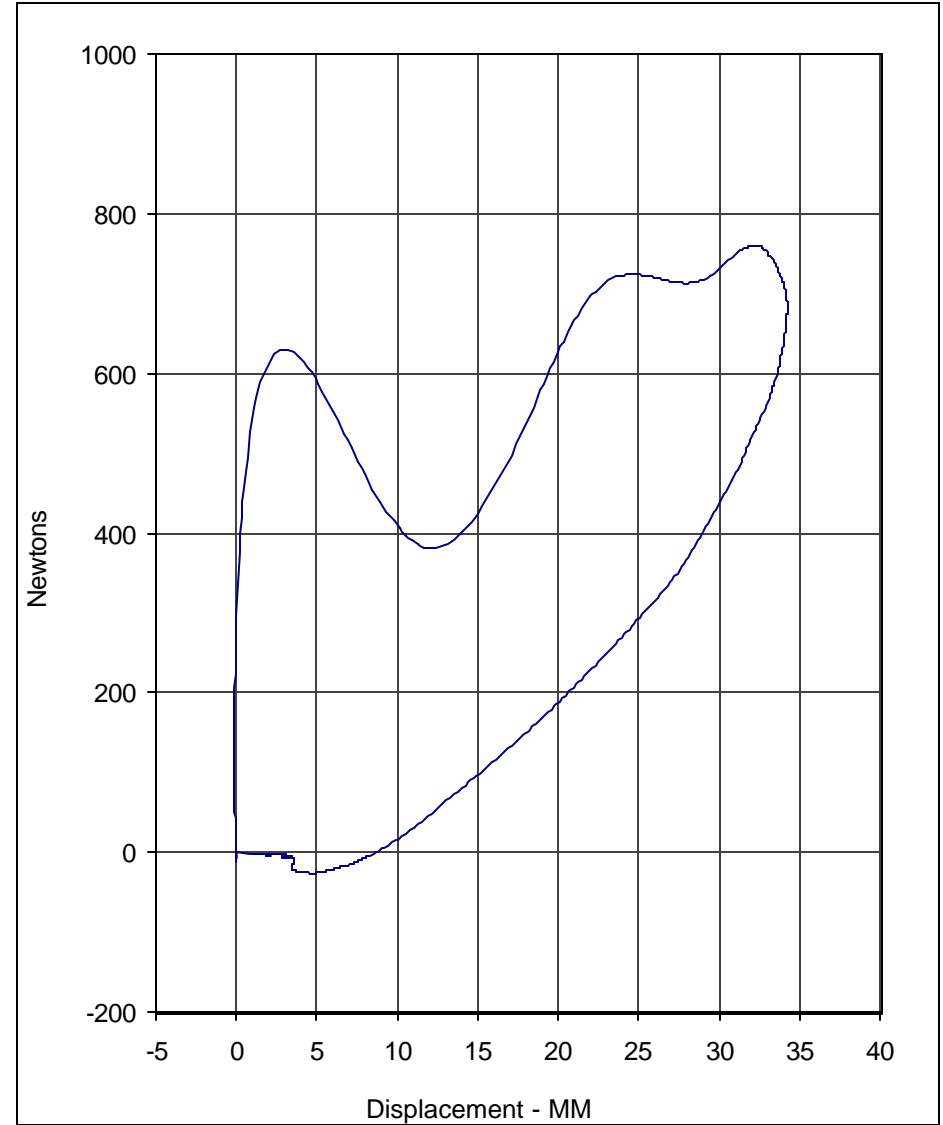
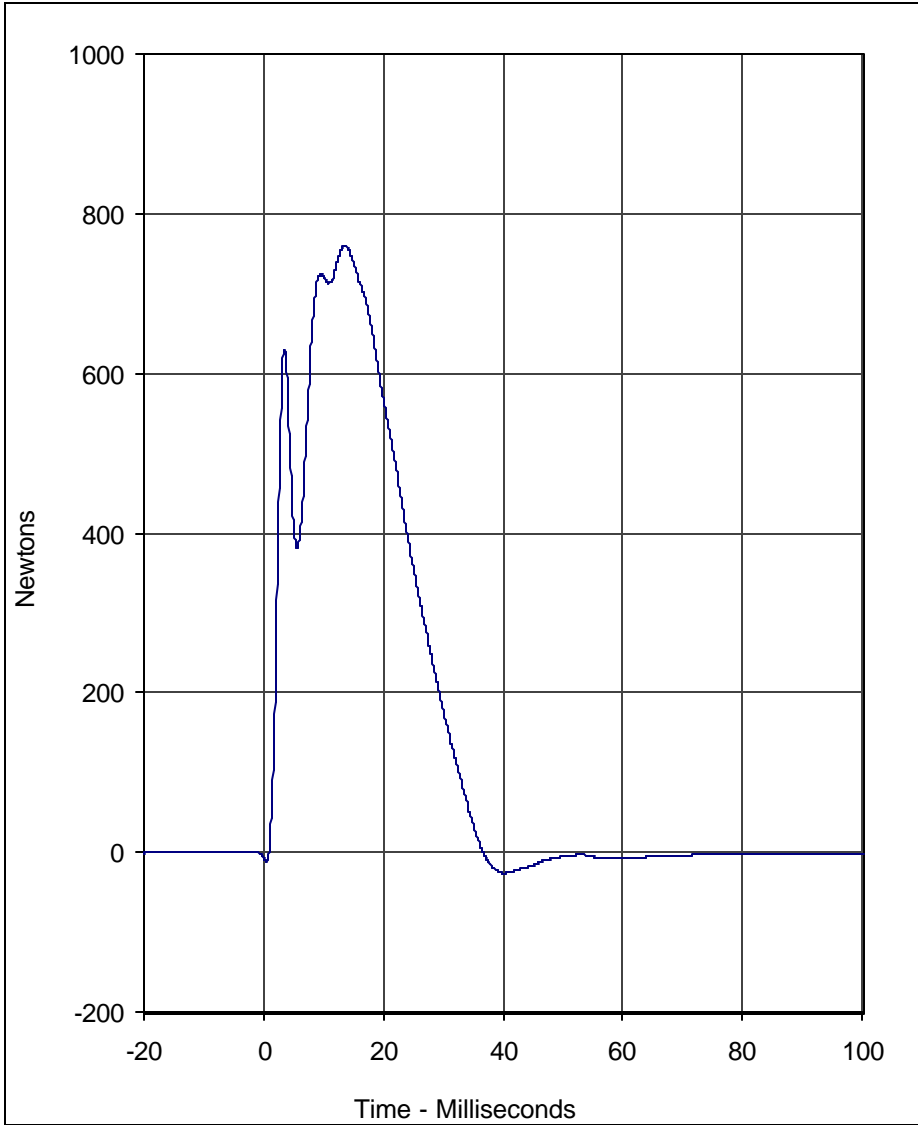
Curve Description				CURNO	Type
Probe Acceleration				002	FIL

Units	Max	Time	Min	Time	SAE Class
G's	48.8	13.6	-1.7	40.1	180

Test Program: Hybrid III 3 Year Old Thorax Impact  
 Test Date: 3/1/03

A.T.D. Serial No.: 082  
 Test I.D.: CH04A





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	759.7	13.6	-26.2	40.1	180

Units	Hysteresis	SAE Class
%	69.3	180

Test Program: Hybrid III 3 Year Old Thorax Impact  
 Test Date: 3/1/03

A.T.D. Serial No.: 082  
 Test I.D.: CH04A





# Calibration Data Sheet

## Hybrid III 3 Year Old Neck Flexion Test

ATD Serial No.: 139

Test I.D.: NF03C

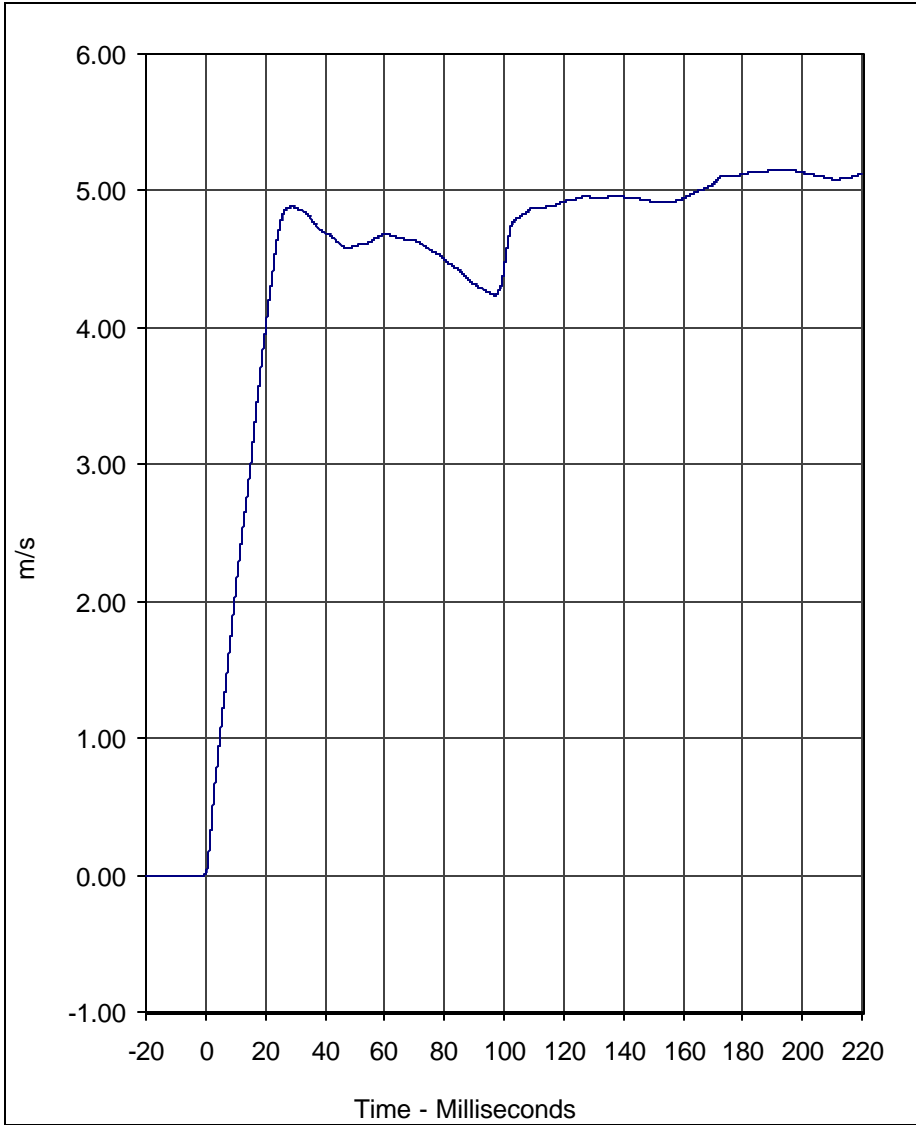
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.40 to 5.60	5.43	Pass
Pendulum Deceleration	10 Msec.	m/s	2.0 to 2.7	2.1	Pass
	20 Msec.	m/s	3.0 to 4.0	4.0	Pass
	30 Msec.	m/s	4.0 to 5.1	4.9	Pass
"D" Plane Rotation	Maximum	Degrees	70.0 to 82.0	78.4	Pass
Peak Moment in Rotation	Maximum	Nm	42.0 to 53.0	42.3	Pass
Positive Moment Decay, Time to 10Nm		Msec.	60.0 to 80.0	71.4	Pass
Overall Test Results					Pass

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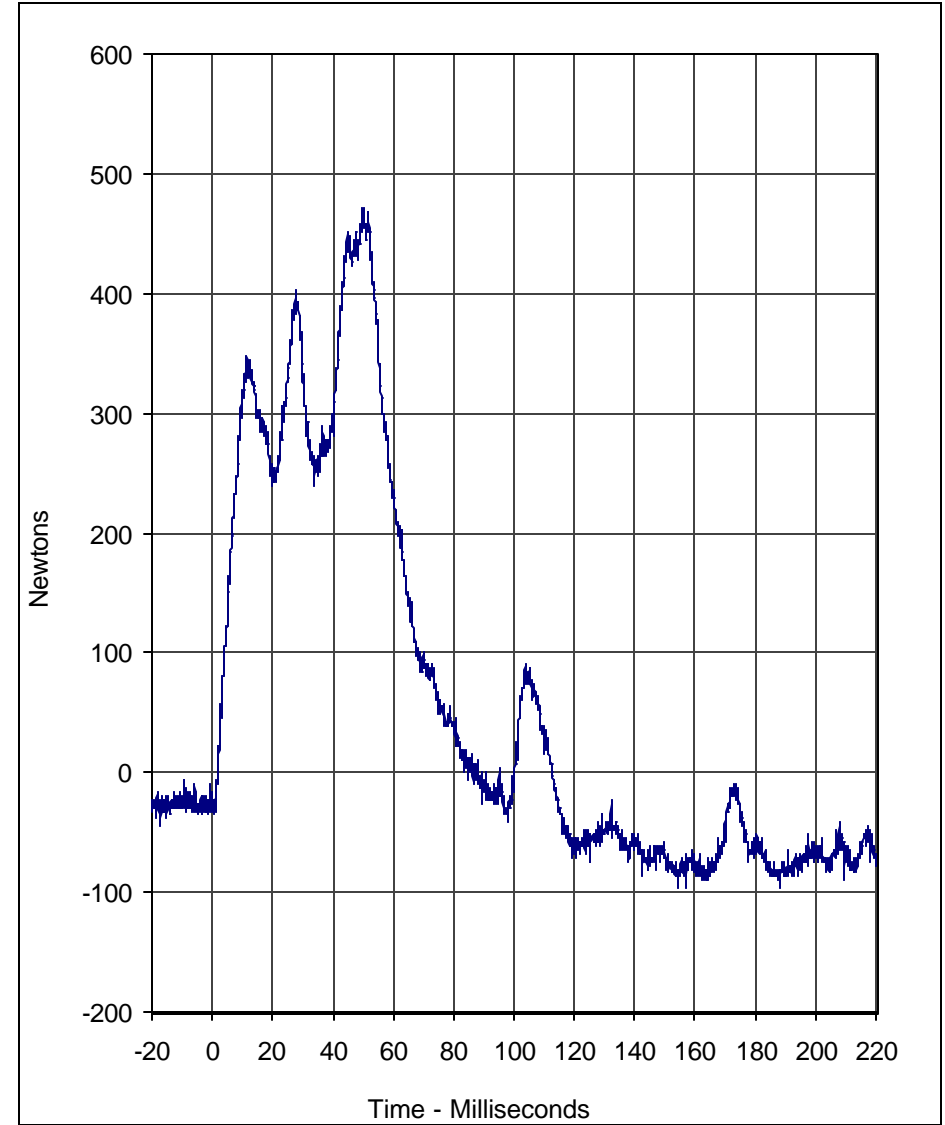
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Laboratory Technician

March 3, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	5.2	191.3	0.0	-0.7	180



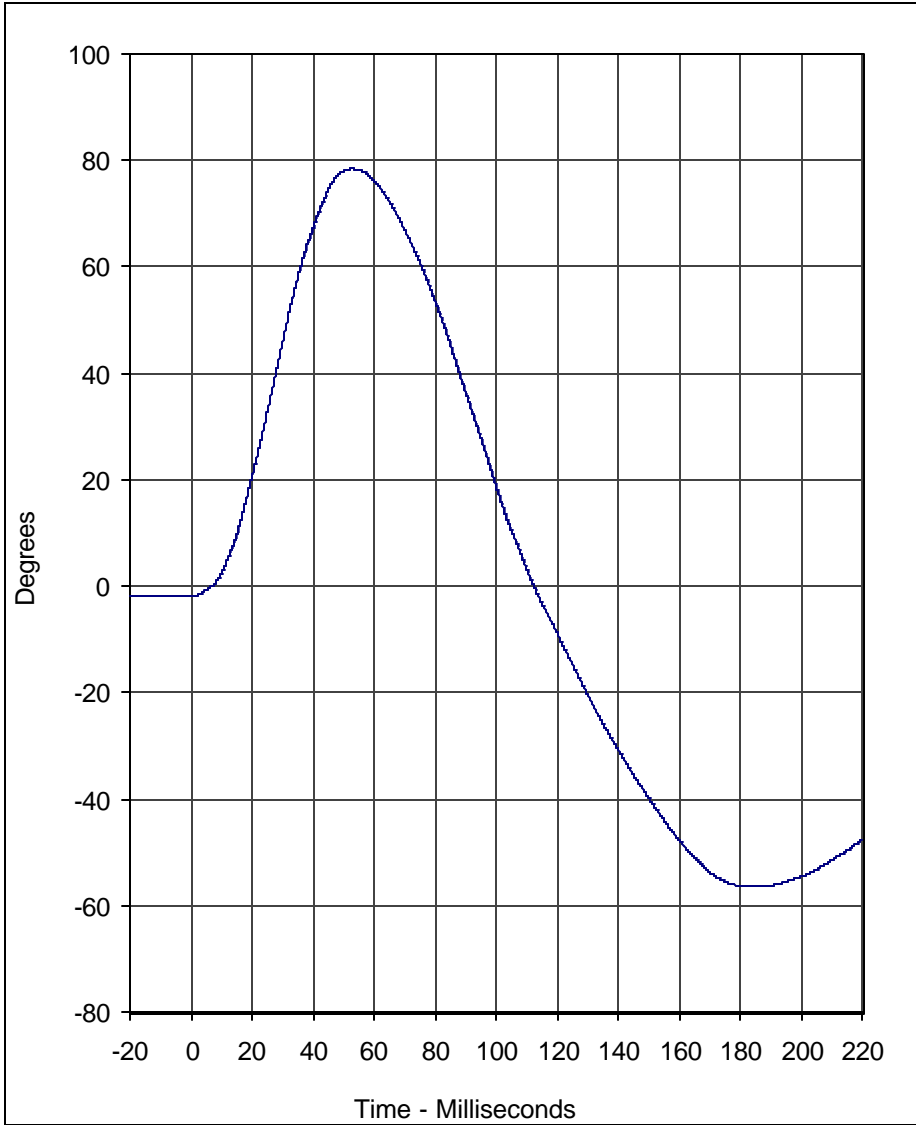
Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	470.7	49.5	-96.7	154.3	1000

Test Program: 3 Year Old Hybrid III Neck Flexion Test  
 Test Date: 3/3/03

A.T.D. Serial No.: 139  
 Test I.D.: NF03C

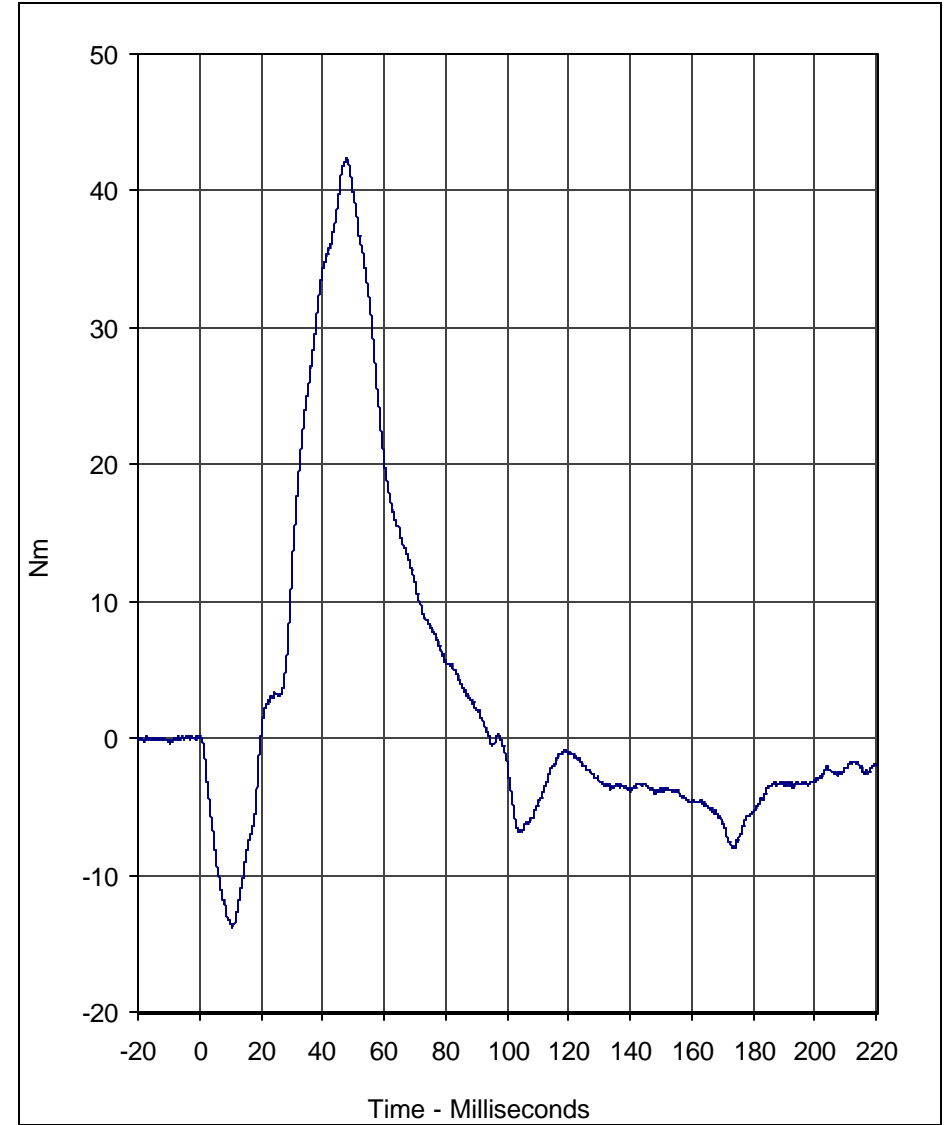




Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	78.4	52.9	-56.4	184.2	60

Test Program: 3 Year Old Hybrid III Neck Flexion Test  
 Test Date: 3/3/03



Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	42.3	47.8	-13.8	10.6	600

A.T.D. Serial No.: 139  
 Test I.D.: NF03C





# Calibration Data Sheet

## Hybrid III 3 Year Old Neck Flexion Test

ATD Serial No.: 139

Test I.D.: NE03B

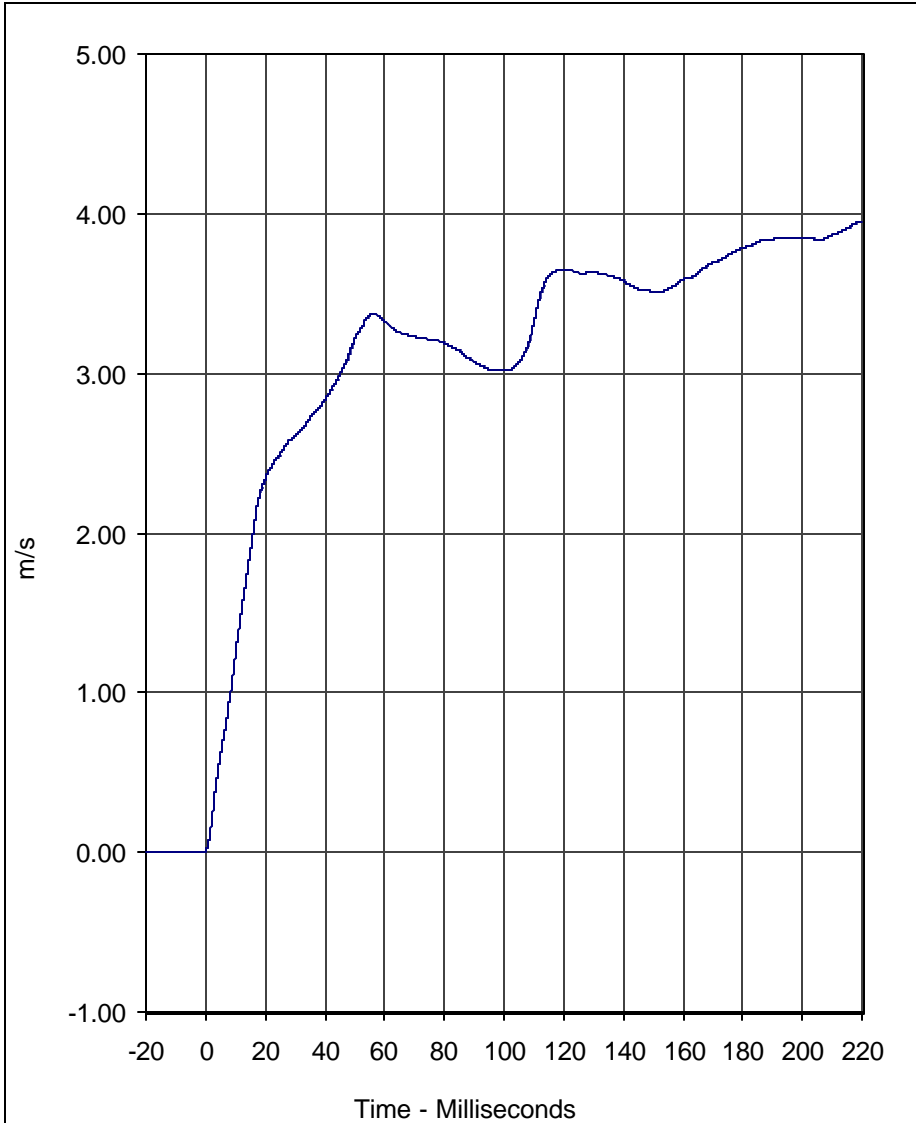
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.55 to 3.75	3.60	Pass
Pendulum Deceleration	10 Msec.	m/s	1.0 to 1.4	1.2	Pass
	20 Msec.	m/s	1.9 to 2.5	2.3	Pass
	30 Msec.	m/s	2.8 to 3.5	2.8	Pass
"D" Plane Rotation	Maximum	Degrees	83.0 to 93.0	85.6	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	67.8	Pass
Overall Test Results					Pass

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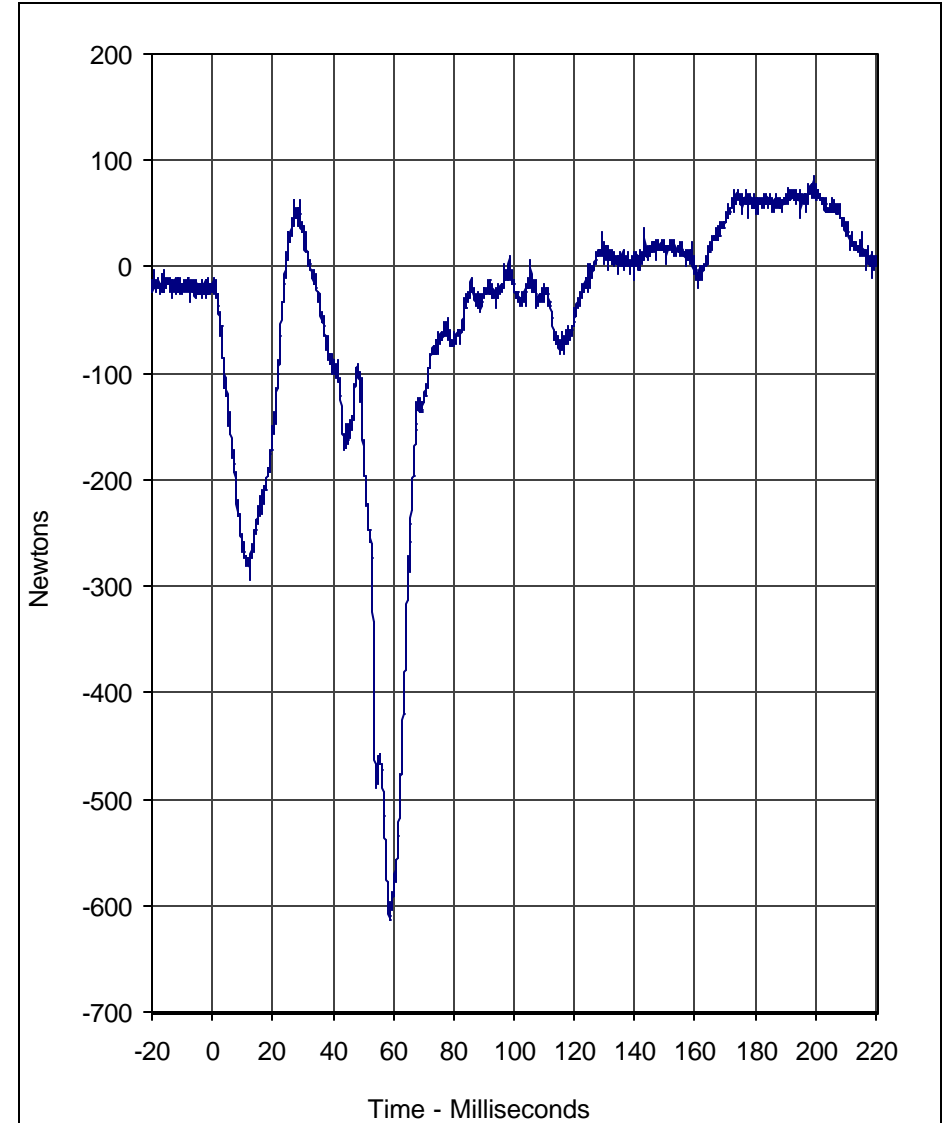
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Laboratory Technician

March 3, 2003  
\_\_\_\_\_  
Test Date



Curve Description	CURNO	Type
Pendulum Velocity	001	FIL

Units	Max	Time	Min	Time	SAE Class
m/s	4.0	220.0	0.0	-0.9	180



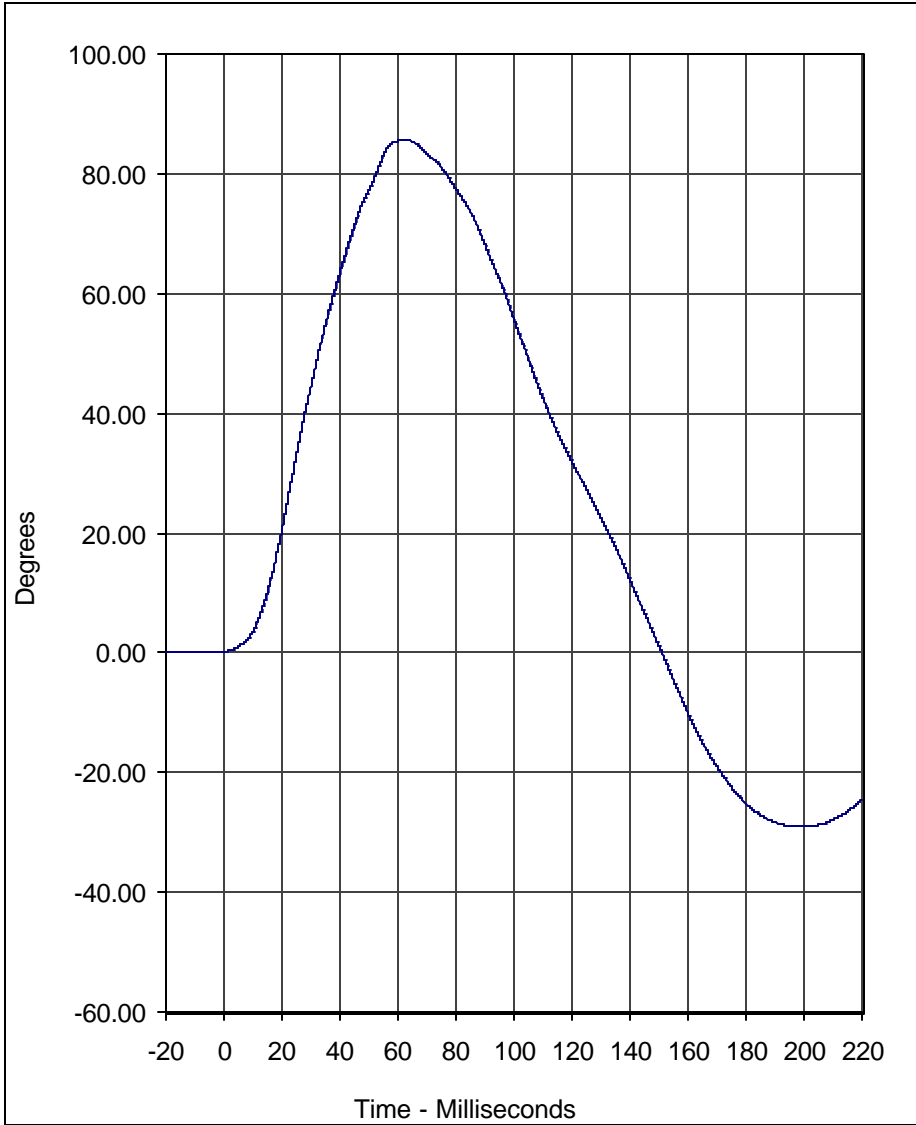
Curve Description	CURNO	Type
Neck Force X	002	FIL

Units	Max	Time	Min	Time	SAE Class
Newtons	84.8	199.2	-613.3	58.6	1000

Test Program: 3 Year Old Hybrid III Neck Extension Test  
 Test Date: 3/3/03

A.T.D. Serial No.: 139  
 Test I.D.: NE03B

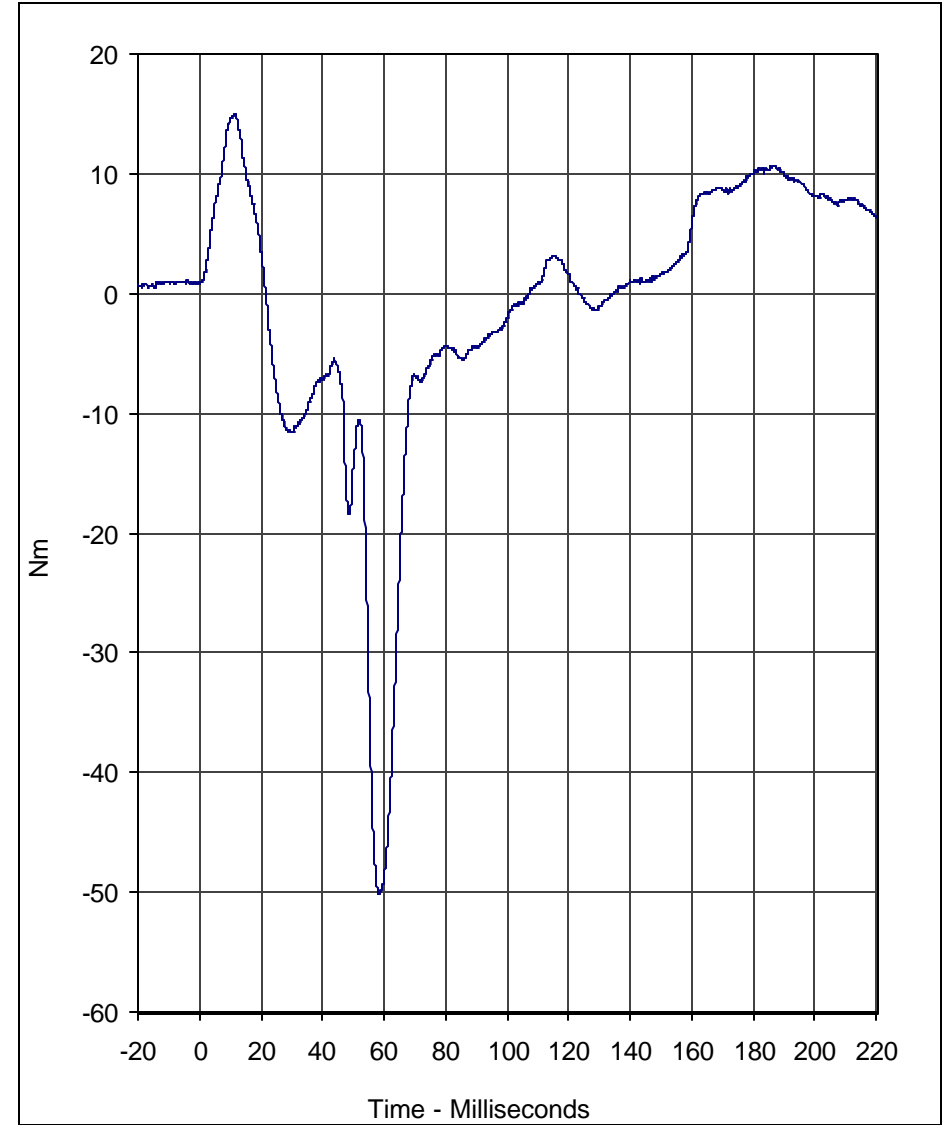




Curve Description	CURNO	Type
"D" Plane Rotation	003	FIL

Units	Max	Time	Min	Time	SAE Class
Degrees	85.6	62.6	-29.0	196.8	60

Test Program: 3 Year Old Hybrid III Neck Extension Test  
 Test Date: 3/3/03



Curve Description	CURNO	Type
Neck Moment Y	002	FIL

Units	Max	Time	Min	Time	SAE Class
Nm	15.0	11.4	-50.2	58.6	600

A.T.D. Serial No.: 139  
 Test I.D.: NE03B





# Calibration Data Sheet

## Hybrid III 3 Year Old

### Torso Flexion Test

ATD Serial No.: 139

Test I.D.: TF03B

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	3.2	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	130.0 to 180.0	178.4	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	0.6	Pass
Final reference plane angle	Degrees	+/-10	6.9	Pass
Overall Test Results				Pass

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Laboratory Technician

March 3, 2003

\_\_\_\_\_  
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	310	Pass
C - "H" point height	mm	34 to 45	40	Pass
D - "H" point from backline	mm	57 to 67	65	Pass
E - Shoulder pivot from back	mm	61 to 71	65	Pass
F - Thigh clearance	mm	81 to 91	90	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	195	Pass
J - Elbow rest height	mm	134 to 149	145	Pass
K - Buttock to knee length	mm	285 to 300	290	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	225	Pass
O - Chest depth with jacket	mm	139 to 154	150	Pass
P - Foot length	mm	138 to 148	145	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	175	Pass
U - Hip breadth	mm	201 to 216	210	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	550	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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Laboratory Technician

March 3, 2003  
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Test Date