

REPORT NUMBER KAR22003-02

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**TOYOTA MOTOR CORPORATION
2002 TOYOTA RAV 4
4WD SUV**

NHTSA NUMBER: M25108

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FINAL REPORT

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16. Abstract A 55/28 km/h 90 deg. Moving Deformable Barrier Side Impact NCAP Test was conducted on the subject 2002 Toyota RAV 4 4WD SUV in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at KARCO Engineering laboratories in Adelanto, California, on November 20, 2001. The impact velocity of the Moving Deformable Barrier was 61.73 km/h, and the outside ambient temperature at the struck (driver's) side of the vehicle was 18.8 deg. C. The target vehicle's maximum post test static crush was 301 mm located at level 3. The test vehicle's occupant performance is as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 35%;">Measurement Description</th> <th style="width: 30%;">Driver SID</th> <th style="width: 35%;">Passenger SID</th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) G's</td> <td style="text-align: center;">43.7</td> <td style="text-align: center;">42.3</td> </tr> <tr> <td>Left Lower Rib (LLR) G's</td> <td style="text-align: center;">41.9</td> <td style="text-align: center;">47.8</td> </tr> <tr> <td>Lower Spine (T₁₂) G's</td> <td style="text-align: center;">58.1</td> <td style="text-align: center;">64.8</td> </tr> <tr> <td>Thoracic Trauma Index (TTI) G's</td> <td style="text-align: center;">51</td> <td style="text-align: center;">56</td> </tr> <tr> <td>Pelvis (PEV) G's</td> <td style="text-align: center;">75</td> <td style="text-align: center;">78</td> </tr> </tbody> </table>				Measurement Description	Driver SID	Passenger SID	Left Upper Rib (LUR) G's	43.7	42.3	Left Lower Rib (LLR) G's	41.9	47.8	Lower Spine (T ₁₂) G's	58.1	64.8	Thoracic Trauma Index (TTI) G's	51	56	Pelvis (PEV) G's	75	78
Measurement Description	Driver SID	Passenger SID																			
Left Upper Rib (LUR) G's	43.7	42.3																			
Left Lower Rib (LLR) G's	41.9	47.8																			
Lower Spine (T ₁₂) G's	58.1	64.8																			
Thoracic Trauma Index (TTI) G's	51	56																			
Pelvis (PEV) G's	75	78																			
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SECTION 1

PURPOSE and TEST PROCEDURE

1.1 PURPOSE

This Side Impact NCAP test is conducted as part of the FY' 2002 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-99-D-02041. The purpose of this test is to generate comparative side impact data on a 2002 Toyota RAV 4 4WD SUV manufactured by Toyotal Motor Corporation.

1.2 TEST PROCEDURE

The side impact test was conducted in accordance with the current National Highway Traffic Safety Administration (NHTSA), Office of Crashworthiness Standards (OCS), laboratory test procedure NCAP Side Impact Testing, dated July 1997 and the corresponding KARCO Engineering Test Procedure KTP-214D, dated November 18, 1998. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

2.1 SUMMARY OF SIDE IMPACT NCAP TEST

A model year 2002 Toyota RAV 4 4WD SUV was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.73 km/h. The specified impact velocity range is from 61.1 to 62.7 km/h. The test (target) vehicle was stationary and positioned 63° to the line of forward motion. The weight of the vehicle as tested was 1625 kg and the test weight of the MDB was 1361 kg. The test was conducted at KARCO Engineering in Adelanto, California, on November 20, 2001.

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver)		Left Rear (Passenger)	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	Not Deployed	None	Not Applicable
Side Torso Airbag	None	Not Applicable	None	Not Applicable
Head Curtain Airbag	None	Not Applicable	None	Not Applicable

One (1) real-time motion picture camera and ten (11) high-speed motion picture cameras were used to document the impact event. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and SID can be found in Appendix A. Two 50th percentile adult male Side Impact Dummy's (SID's) were placed in the driver's and left rear passenger designated seating positions according to the test procedure. Each SID is instrumented with contact switches on the pelvis and thorax, and eleven accelerometers in the following locations:

- Left Upper Rib (LUR) uni-axial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uni-axial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uni-axial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uni-axial accelerometer (Y-axis primary and redundant)
- Head Center of Gravity (CG) tri-axial accelerometers (X, Y, and Z axes)

The test vehicle was instrumented with twenty-five (25) structural accelerometers and the MDB was instrumented with five (5) accelerometers and a one (1) contact switch on the right bumper to compare left side to right side bumper impact timing. All data channels were recorded with a fully self contained on-board Test Data Acquisition System (TDAS). The data was digitally sampled at 10,000 samples per second and processed per Appendix V of the Test Procedure.

2.2 GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 301 mm at level 3, 1800mm rearward of the left vertical impact point. The driver SID, Serial No. 275 and the passenger SID, Serial No. 274 were calibrated two tests prior to this test. The SID injury criteria is summarized as follows:

Measurement	Units	Driver	Passenger
Thoracic Trauma Index (TTI)	G's	51	56
Peak Pelvic G's (PEV)	G's	75	78

Tests summaries and post-test observations are presented in Section 3. The vehicle, camera, and occupant measurements are presented in Section 4. Appendix A contains the still photograph prints. Appendix B contains the driver and passenger SID's, vehicle, and MDB response data traces. Appendix C contains the SID's Configuration and performance verification data. Appendix D contains the test equipment information.

SECTION 3
SIDE IMPACT DUMMY (SID) AND VEHICLE TEST DATA

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No. M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

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 ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(t_f - 32)/1.8$
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

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No. M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

TEST VEHICLE INFORMATION

Make	Toyota
Model	RAV 4 4WD
Body Style	SUV
NHTSA No.	M25108
VIN	JTEHH20V026023390
Color	Black/Silver
Delivery Date	11/6/2001
Odometer Reading (mile)	165
Dealer	Glendale Toyota
Transmission	4 Speed Automatic
Final Drive	4WD
Type/No. of Cylinders	4
Engine Displacement (L)	2
Engine Placement	Transverse

TEST VEHICLE OPTIONS

Driver Front Airbag	Yes
Driver Side Torso Airbag	No
Driver Side Head Airbag	No
Rear Pass. Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Head Airbag	No
Power Brakes	Yes
Power Steering	Yes
Disc Brakes, Front	Yes
Disc Brakes, Rear	No
Anti-lock Brakes	Yes
Tilt Steering Wheel	Yes
Power Windows	Yes
Power Seats	No

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Corporation	GVWR (kg)	1809
Date of Manufacture	September-01	GAWR Front (kg)	920
		GAWR Rear (kg)	1010

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	200	200
Cold Pressure (kPa)	200	200
Recommend Tire Size	P235/60R16	P235/60R16
Tire Size on Vehicle	P235/60R16	P235/60R16
Tire Manufacturer	Bridgestone	Bridgestone

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	None	
Number of Occupants	2	3	0	5
Capacity Wt. (VCW) (kg)				362
Cargo Weight (RCLW) (kg)				22

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No. M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	405	315		445	384	
Right	kg	415	312		431	365	
Ratio	%	56.7	43.3		53.9	46.1	
Totals	kg	820	627	1447	876	749	1625

TARGET TEST WEIGHT CALCULATION*

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1447
Weight of 2 P572F Side Impact Dummies	kg	161
Rated Cargo/Luggage Weight (RCLW)	kg	22
Calculated Vehicle Target Weight (TVTW)	kg	1630

*Actual As Tested Weight (ATW) will be TVTW -5/-10 kg

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	774	778	789	779	1077
As Tested	mm	760	771	755	755	1146
Fully Loaded	mm	758	774	760	760	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel base	mm	2486
Total Vehicle Length at Left Side	mm	2935
Total Vehicle Length at Centerline	mm	4052
Total Vehicle Length at Right Side	mm	2975
Weight of Ballast In Cargo Area	kg	0
Amount of Stoddard Solvent in Fuel Tank	Liters	52.0

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel base	mm	2486
Target Impact Point Aft of Front Axle	mm	303
Actual Impact Point Aft of Front Axle	mm	315

DATA SHEET NO. 1...(continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No. M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

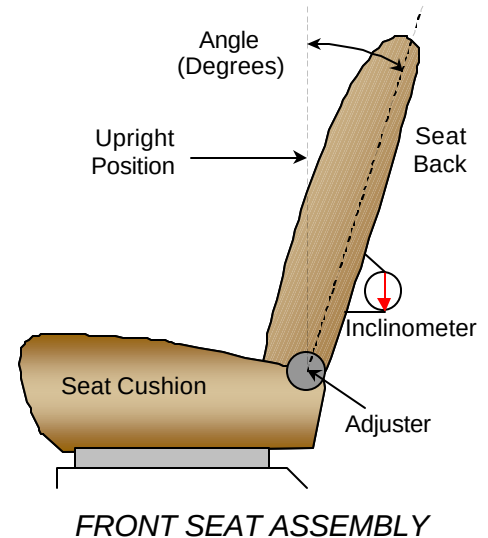
Test Date: 11/20/01

NOMINAL DESIGN RIDING POSITION

The driver's seat back is positioned to the manufacturer's designated angle. The procedure for positioning the seat is as follows: A slit is cut into fabric of the seat at the outboard edge, approximately 10-13 inches above the pivot point to expose the frame of the seat. An inclinometer is firmly placed against the flat portion of the frame surface and the seat back is adjusted to the manufacturers designated angle.

Driver seat back angle: 8° with a seated dummy

Rear seat back angle: 5° fixed



SEAT FORE/AFT POSITIONS

The driver's seat is adjustable. The fore/aft position is set to the middle.

Driver seat fore/aft total travel: 17 seat detents

Rear seat fore/aft total travel: 3 seat detents

Driver seat fore/aft position: Placed in the 9th detent

Rear seat fore/aft position: Placed in the 2nd detent

SEAT BELT UPPER ANCHORAGE

Driver seat has 5 seat belt anchorage positions, placed in the 3rd position from the top. Rear passenger seat belt anchorage is fixed and has no adjustment

DATA SHEET NO. 1...(continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No. M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

FUEL TANK CAPACITY DATA

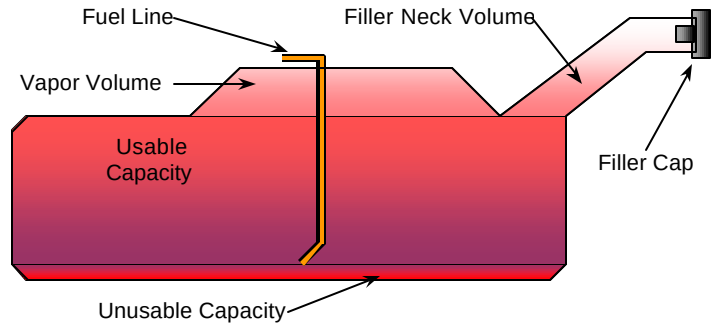
The "Usable Capacity" of the standard equipment fuel tank is: 56.0 liters

The "Usable Capacity" of any optional equipment fuel tank is: N/A liters

92-94% of "Usable Capacity" for certification to FMVSS 301 requirement: 51.5 to 52.6 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 52.0 liters

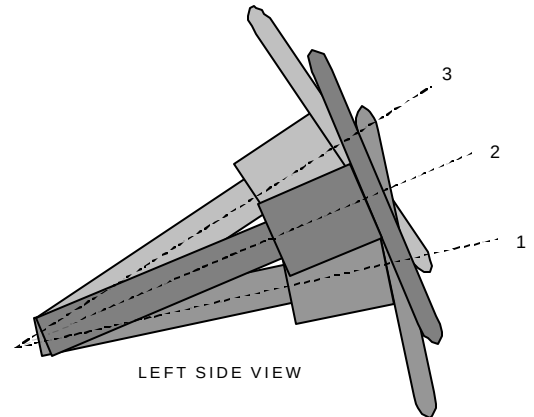
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate for approximately three (3) seconds with the ignition in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender.



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 it is moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed onto the plate and the angle is measured. The tested vehicle has its steering column set at position 2 as indicated in the drawing at right and the angle below.



STEERING COLUMN ASSEMBLY

Lowermost, position 1: 23°

Geometric center, position 2: 21°

Uppermost, position 3: 19°

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No. M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	405	315		445	384	
Right	kg	415	312		431	365	
Weight Ratio	%	56.7	43.3		53.9	46.1	
Totals	kg	820	627	1447	876	749	1625

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	157	322
Level 2	Occupant H-Point	mm	27	658
Level 3	Mid Door	mm	301	686
Level 4	Window Sill	mm	180	988
Level 5	Window Top	mm	14	1566
N/A	Maximum Penetration	mm	301	

INSTRUMENTATION

Driver SID Accelerometers	11
Passenger SID Accelerometers	11
Vehicle Structure Accelerometers	25
MDB Accelerometers	5
Total	52

16mm MOVIE COVERAGE

High Speed, Vehicle On-Board	3
High Speed, Off-Board	6
High Speed, MDB On-Board	2
Real Time, Panning	1
Total	12

DATA SHEET NO. 3
MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No. M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

MDB SPECIFICATIONS (mm)

Measurement Description	Length
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Face	4115
Wheel base of Framework Carriage	2590
C.G. Location aft of Front Axle	1127

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	384	308	
Right	kg	385	284	
Ratio	%	56.5	43.5	
Totals	kg	769	592	1361

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.73
Trap No. 2 Velocity (Redn.)	km/h	61.1 to 62.7	61.78
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.5

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE (mm)

Vertical Location			From Centerline		Max Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	230
B	Top of Bumper	533	800	Right	127
C	Mid Level	686	800	Right	154
D	Top of Stack	813	800	Left	209

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2
High Speed Cameras	2

DATA SHEET NO. 4
POST TEST OBSERVATIONS

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No.: M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

Description	Front Seat SID	Rear Seat SID
Dummy Type / Serial No.	P572F, SID / No. 275	P572F, SID / No. 274
Head Contact	Seat Belt/HeadrestPanel	C-Pillar
Upper Torso Contact	Panel	Panel
Lower Torso Contact	Panel	Seat/Panel
Left Knee Contact	Panel	Panel
Right Knee Contact	Knee	Knee

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Remained closed inoperable	Remained closed inoperable
Right Side Door Opening	Remained closed operable	Remained closed operable
Seat Movement	0	0
Seat Back Failure	0	0

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Pillars pushed inward with no apparent failure
Sill Separation	No Apparent Visible Failure
Windshield Damage	Glazing Cracks on Struck Side Only
Window Damage	Both Left Side Windows Broke.
Other Notable Effects	No significant items to note.

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 01		Left Rear (Passenger) Occupant Location 04	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	Not Deployed	None	Not Applicable
Side Torso Airbag	None	Not Applicable	None	Not Applicable
Head Curtain Airbag	None	Not Applicable	None	Not Applicable
Seat Belt Pretensioner	Yes	Unknown	Yes	Unknown
Seat Belt Load Limiter	Yes	Unknown	Yes	Unknown

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	12(right)
Vertical Offset	mm	+/- 20	11(below)

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 5
SID INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2002 Toyota Rav4 4WD SUV

NHTSA No.: M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

THORAX AND PELVIS PEAK ACCELERATIONS, PRIMARY (FIR 100 Filtered)

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Upper Rib (LUR)	Y	G's	43.7	31.3	-6.0	103.1	42.3	61.3	-12.5	167.5
Lower Rib (LLR)	Y	G's	41.9	45.0	-6.5	146.9	47.8	49.4	-13.2	167.5
Lower Spine (T ₁₂)	Y	G's	58.1	37.5	-8.3	56.9	64.8	50.0	-6.1	71.3
Pelvis (PEV)	Y	G's	75.2	40.6	-4.8	107.5	77.7	44.4	-6.4	65.0

THORACIC TRAUMA INDEX (TTI) AND PELVIC ACCELERATION, PRIMARY (FIR 100 Filtered)

Location	Driver				Passenger			
	LLR	T ₁₂	TTI(g)	PEV(g)	LLR	T ₁₂	TTI(g)	PEV(g)
Primary Rib, Spine, and Pelvis	43.710	58.074	51	75	47.767	64.829	56	78

THORAX AND PELVIS PEAK ACCELERATIONS, REDUNDANT (FIR 100 Filtered)

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Upper Rib (LUR)	Y	G's	43.7	31.3	-6.9	103.1	41.7	61.3	-10.6	167.5
Lower Rib (LLR)	Y	G's	41.1	45.0	-5.9	146.9	48.2	49.4	-13.3	167.5
Lower Spine (T ₁₂)	Y	G's	57.7	37.5	-7.9	56.9	64.8	50.0	-5.3	108.8
Pelvis (PEV)	Y	G's	74.7	40.6	-4.5	109.4	77.6	44.4	-6.5	65.0

THORACIC TRAUMA INDEX (TTI) AND PELVIC ACCELERATION, REDUNDANT (FIR 100 Filtered)

Location	Driver				Passenger			
	LLR	T ₁₂	TTI(g)	PEV(g)	LLR	T ₁₂	TTI(g)	PEV(g)
Redundant Rib, Spine, and Pelvis	43.735	57.743	51	75	48.200	64.846	57	78

HEAD CG PEAK ACCELERATIONS (SAE CLASS 1000 Filtered)

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	4.9	45.2	-17.5	81.8	144.3	175.6	-23.2	76.6
Head CG	Y	G's	21.1	57.7	-5.6	35.0	44.2	61.5	-68.0	175.9
Head CG	Z	G's	37.7	64.7	-3.2	26.3	64.3	85.7	-15.4	64.8
Head CG Resultant	N/A	G's	40.5	64.7			162.0	175.7		

HEAD INJURY CRITERIA (SAE CLASS 1000 Filtered)

Location	Driver				Passenger			
	HIC	T ¹	T ²	Avg G	HIC	T ¹	T ²	Avg G
Head CG	127.9	54.1	90.0	26.3	437.3	174.5	176.8	127.1

Positive Acceleration Polarities: Longitudinal (X) = Forward
 (Conforms to SAE J211) Lateral (Y) = Right
 Vertical (Z) = Down

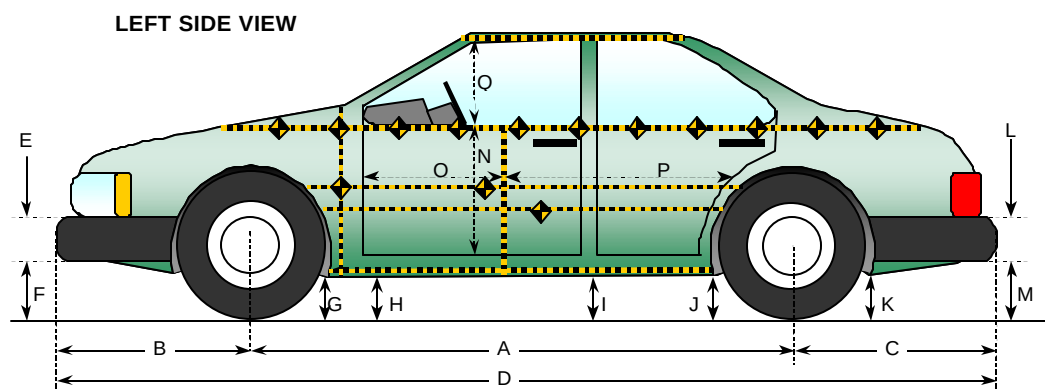
DATA SHEET NO. 6
VEHICLE PRE-TEST AND POST TEST MEASUREMENTS

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No. M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01



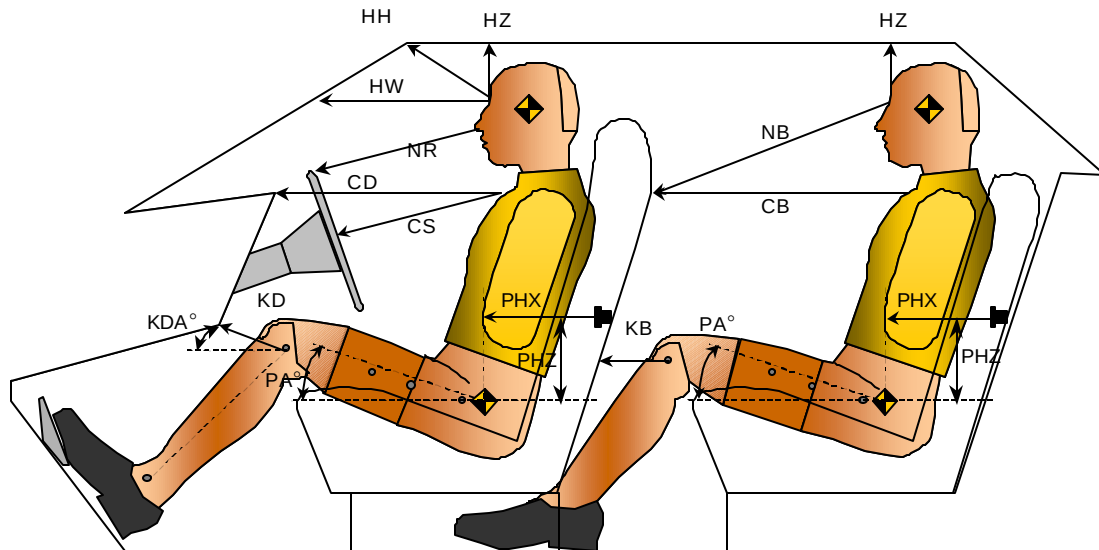
All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2486	2416	70
B	Front Axle To FSOV	754	853	-99
C	Rear Axle to RSOV	810	758	52
D	Total Length at Centerline	4052	4027	25
E	Front Bumper Thickness	385	385	0
F	Front Bumper Bottom to Ground	312	311	1
G	Sill Height at Front Wheel Well	231	266	-35
H	Sill Height at Front Door Leading Edge	238	280	-42
I	Sill Height at "B" Pillar	261	297	-36
J1	Sill Height at Rear Wheel Well	218	254	-36
J2	Pinch Weld Height at Rear Wheel Well	249	290	-41
K	Sill Height aft of Rear Wheel Well	320	361	-41
L	Rear Bumper Thickness	345	345	0
M	Rear Bumper Bottom to Ground	388	435	-47
N	Sill Height to Window Bottom Sill	706	662	44
O	Front Door Leading Edge to Impact CL	662	653	9
P	Rear Door Trailing Edge to Impact CL	1266	977	289
Q	Front Window Opening	425	418	7
R	Right Side Length	2975	2982	-7
S	Left Side Length	2935	2876	59
T	Vehicle Width at "B" Post	1512	1458	54

DATA SHEET NO. 7
SID LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2002 Toyota RAV 4 4WD SUV
 Test Program: 55/28 km/h 90° Side Impact NCAP

NHTSA No. M25108
 Test Date: 11/20/01



Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	410	21		
HW		Head to Windshield	660			
HZ	HZ	Head to Roof	205	90	160	90
NR	NB	Nose to Rim/Nose to Seatback	482	14	595	31
CD	CB	Chest to Dash or Seatback	540	3	480	9
CS		Chest to Steering Wheel	355	13		
KDL	KBL	Left Knee to Dash or Seatback	165	30	130	8
KDR	KBR	Right Knee to Dash or Seatback	145		115	
PA	PA	Pelvic Angle		23		24
PHX	PHX	H-Point to Striker (X-Axis)	172		283	
PHZ	PHZ	H-Point to Striker (Z-Axis)	137		240	
PHY	PHY	Striker to H Point (Y-Axis)	232		285	

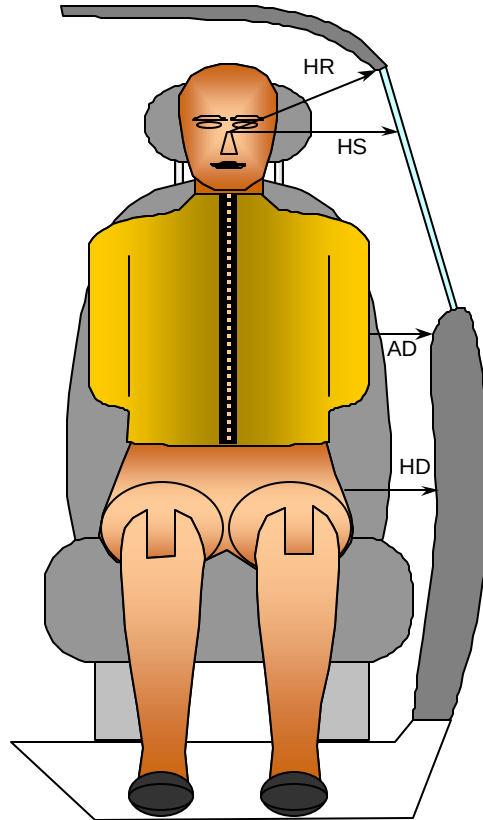
DATA SHEET NO. 8
SID LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No. M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01



FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	260	275
HS	Head to Side Window	mm	310	225
AD	Arm to Door	mm	82	115
HD	H-Point to Door	mm	209	190

DATA SHEET NO. 9

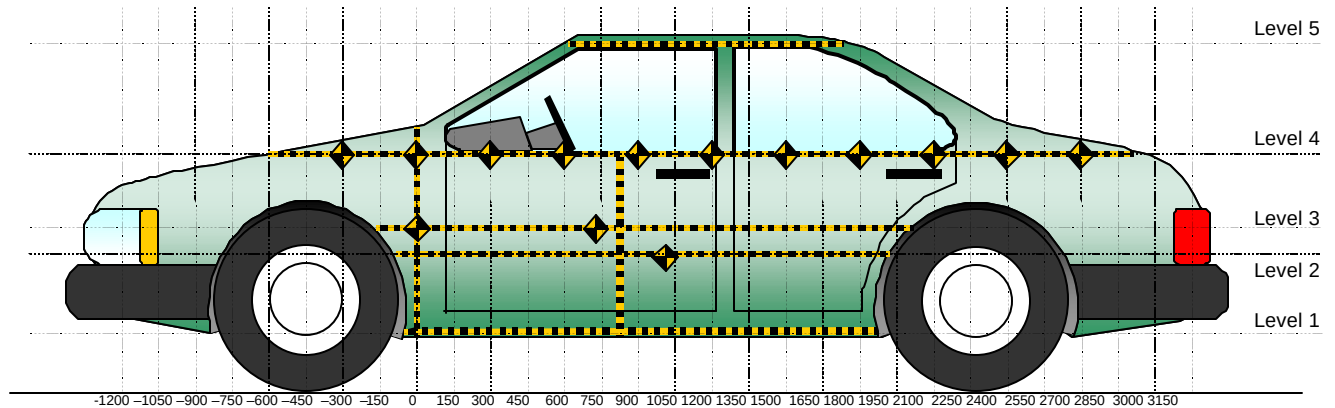
VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No.: M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01



All Measurements Shown in mm

LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.

Measurements taken 900mm right of impact reference.

All measurements below in mm.

Level	Measurement Description	Height Above Ground
5	Window Top	1566
4	Window Sill	988
3	Mid Door	686
2	Occupant H-Point	658
1	Sill Top	322

DATA SHEET NO. 10 - VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No.: M25108

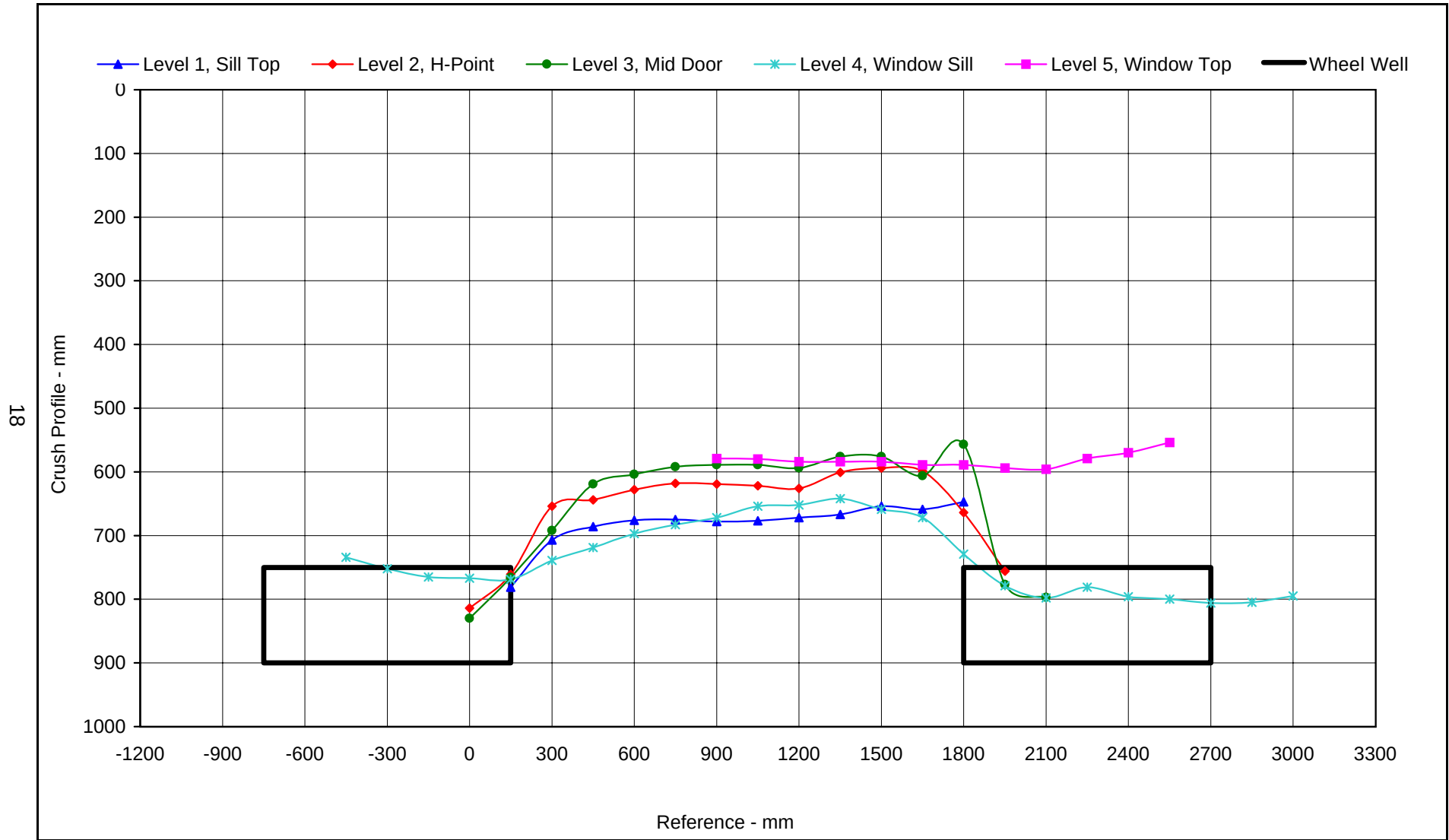
Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 2001-11-20

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450				729					734					-5	
-300				757					752					5	
-150				771					765					6	
0		893	890	779			814	830	767			79	60	12	
150	819	863	861	781		781	761	766	769		38	102	95	12	
300	797	859	859	788		707	654	692	739		90	205	167	49	
450	791	858	859	798		686	644	619	719		105	214	240	79	
600	786	852	854	803		676	628	604	697		110	224	250	106	
750	785	864	849	811		675	618	592	683		110	246	257	128	
900	785	868	849	814	584	678	619	589	672	579	107	249	260	142	5
1050	785	868	853	804	594	677	622	589	654	580	108	246	264	150	14
1200	785	868	853	819	596	672	626	594	652	584	113	242	259	167	12
1350	783	868	854	822	597	667	601	576	642	584	116	267	278	180	13
1500	785	867	854	824	594	654	594	576	659	584	131	273	278	165	10
1650	786	867	861	824	594	659	599	606	672	589	127	268	255	152	5
1800	804	862	858	828	594	647	664	557	729	589	157	198	301	99	5
1950		888	881	823	591		756	777	779	594		132	104	44	-3
2100			889	823	584			797	798	596			92	25	-12
2250				823	576				781	579				42	-3
2400				814	566				796	570				18	-4
2550				809	546				800	554				9	-8
2700				804					806					-2	
2850				793					805					-12	
3000				780					795					-15	

Pre-Test and Post-Test dimensions are actual distance from centerline of test vehicle.

DATA SHEET NO. 10...(continued)



Maximum Crush, Level 1: 157 mm at 1800 mm
 Maximum Crush, Level 2: 273 mm at 1500 mm
 Maximum Crush, Level 3: 301 mm at 1800 mm
 Maximum Crush, Level 4: 180 mm at 1350 mm
 Maximum Crush, Level 5: 14 mm at 1050 mm

Test Program: 55/28 km/h 90° Side Impact NCAP No.: M25108
 Test Vehicle: 2002 Toyota RAV 4 4WD SUV
 Test Date: 11-20-01



DATA SHEET NO. 11

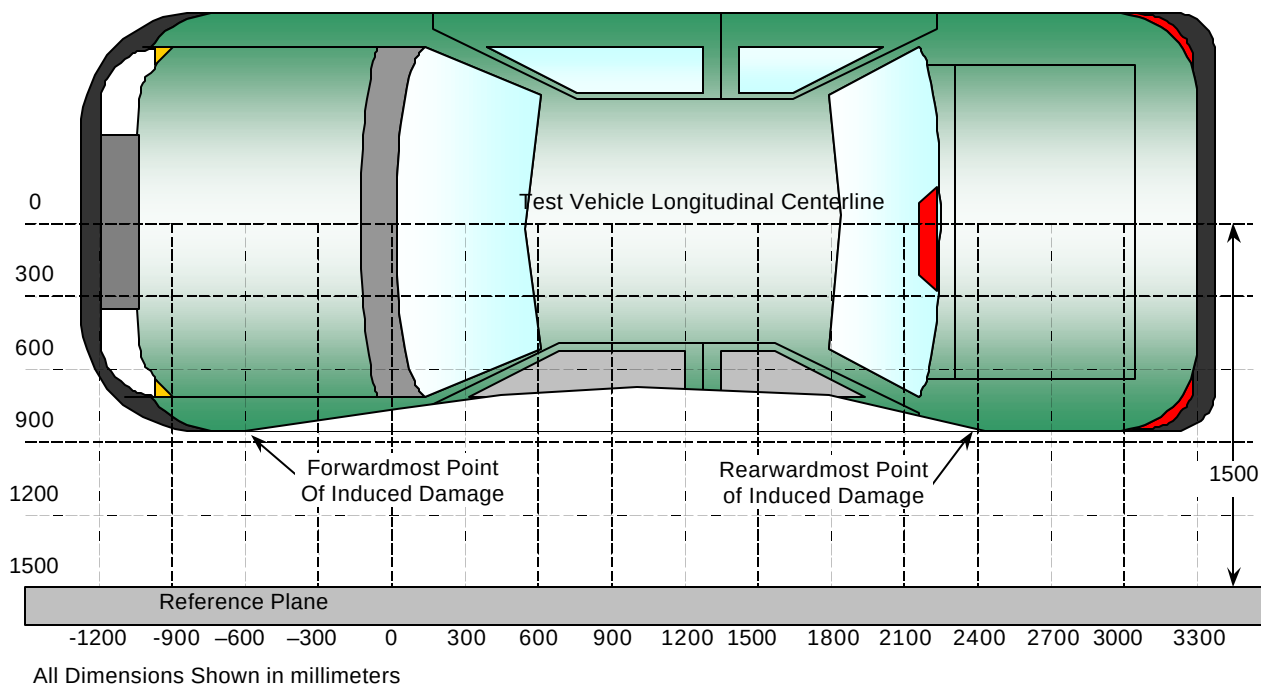
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No.: M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01



TOP VIEW

Damage Profile Distances

DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1	-450	4	729	734	-5
2	300	2	859	654	205
3	900	3	849	589	260
4	1650	2	867	599	268
5	2250	4	823	781	42
6	3000	4	780	795	-15

Pre-Test and Post-Test measurements are distance from vehicle centerline.

DATA SHEET NO. 12

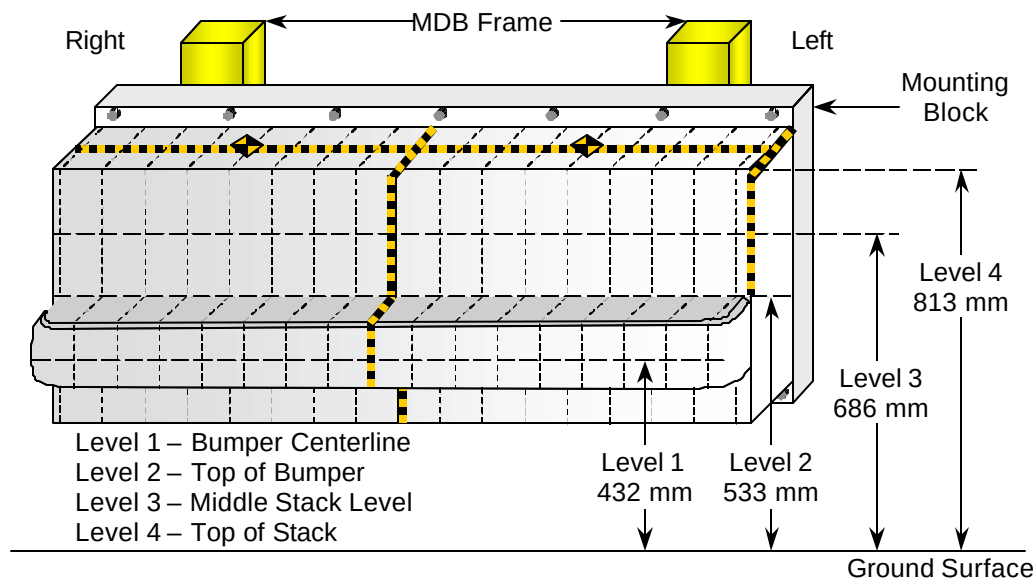
DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No.: M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01



DEFORMABLE BARRIER STATIC CRUSH

Stack	Distance Right of Center								C _L	Distance Left of Center							
Level	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	189	173	167	167	168	169	173	174	179	177	179	182	183	185	196	215	230
2	117	113	103	96	92	89	93	96	94	95	97	100	101	107	114	122	127
3	87	51	31	32	34	51	52	41	34	33	35	44	48	59	71	131	154
4	209	158	92	71	57	45	37	27	25	28	35	27	28	41	58	79	103

All Dimensions in mm

DATA SHEET NO. 13

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

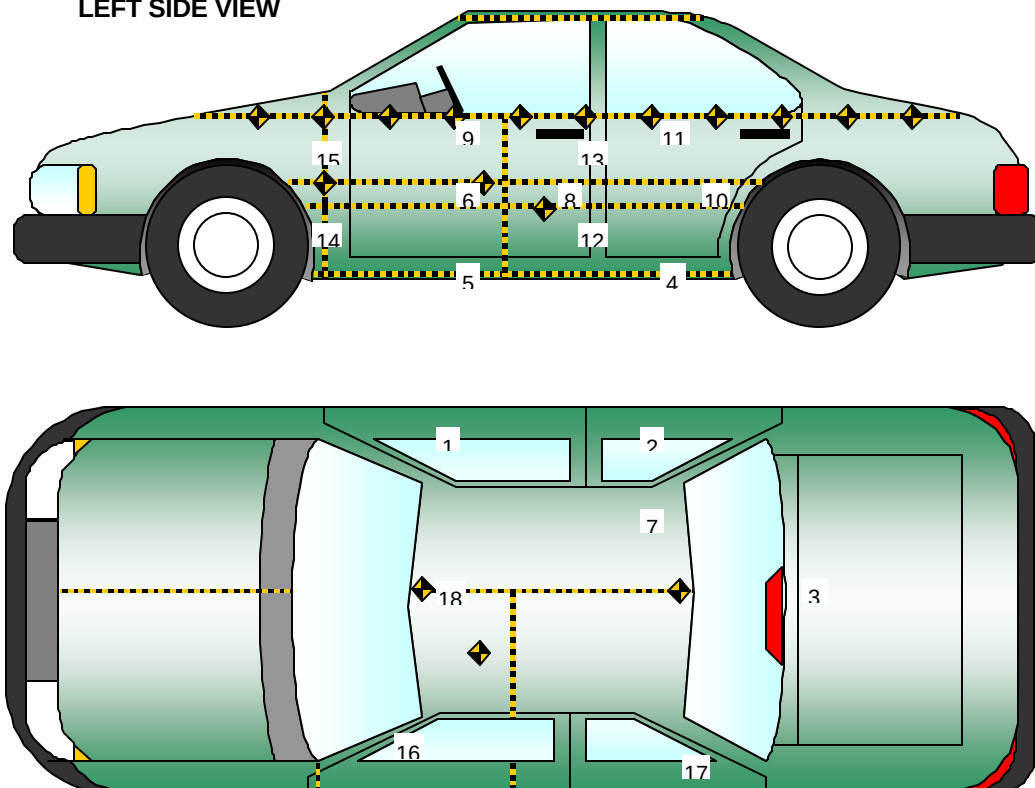
Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No.: M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

LEFT SIDE VIEW



No.	Location
1	Right Sill at Front Seat
2	Right Sill at Rear Seat
3	Rear Floorpan Above Axle
4	Left Sill at Rear Door
5	Left Sill at Front Door
6	Left Front Door Centerline
7	Right Rear Occupant Compartment
8	Left Front Door Mid-Rear
9	Left Front Door Upper Centerline

No.	Location
10	Left Rear Door Mid-Rear
11	Left Rear Door Upper Centerline
12	Left Lower B-Post
13	Left Middle B-Post
14	Left Lower A-Post
15	Left Middle A-Post
16	Front Seat Track
17	Rear Seat Track or Structure
18	Vehicle CG

DATA SHEET NO. 13
VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2002 Toyota Rav4 4WD SUV

NHTSA No.: M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)			Peak Values (G's)				
		X	Y	Z	Axis	Max	Time	Min	Time
1	Right Sill at Front Seat	2390	615	320	X	3.7	25.1	-6.5	14.4
					Y	22.6	5.7	-2.1	77.2
					Z	3.4	73.8	-9.4	11.4
					RES	23.0	5.8		
2	Right Sill at Rear Seat	1600	680	400	X	5.0	27.8	-5.4	14.2
					Y	30.3	6.0	-2.7	168.0
					Z	7.9	6.0	-6.8	13.7
					RES	31.5	6.0		
3	Rear Floorpan Above Axle	790	80	510	X	4.1	67.3	-9.1	7.1
					Y	37.3	6.6	-2.7	100.4
					Z	8.8	5.3	-7.7	11.0
					RES	39.1	6.6		
4	Left Sill at Rear Door	1490	-710	220	Y	62.9	8.0	-7.2	49.0
5	Left Sill at Front Door	2190	-710	220	Y	47.1	8.2	-8.0	11.3
6	Front Door Centerline	2160	-720	830	Y	0.0	0.0	0.0	0.0 *
7	Rear Occupant Compartment	1700	460	390	Y	28.4	6.0	-2.4	135.8
8	Front Door Mid-Rear	1960	-720	800	Y	93.4	5.2	-113.3	30.4
9	Front Door Upper Centerline	2330	-720	890	Y	89.0	8.6	-55.1	27.3
10	Rear Door Mid-Rear	1050	-730	860	Y	70.1	6.6	-27.5	21.3
11	Rear Door Upper Centerline	1370	-730	980	Y	133.4	12.0	-38.8	34.7
12	B-Post Lower	1780	-700	620	Y	154.1	4.0	-21.4	33.7
13	B-Post Middle	1780	-700	820	Y	108.4	4.4	-30.9	32.6
14	A-Post Lower	2780	-785	540	Y	105.5	1.9	-13.0	22.0 *
15	A-Post Middle	2780	-785	740	Y	44.0	2.3	-5.3	56.6
16	Front Seat Track	2300	-580	480	Y	62.9	41.4	-32.0	30.0
17	Rear Seat Structure				Y				**
18	Vehicle CG	2610	230	320	X	4.5	24.5	-9.8	8.1
					Y	20.9	10.7	-3.0	79.4
					Z	23.4	23.5	-24.0	26.7
					RES	28.7	35.9		

* Channels Failed, check plot for failure times

** Not installed

DATA SHEET NO. 14
MDB ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2002 Toyota Rav4 4WD SUV

Test Program: 55/28 km/h 90° Side Impact NCAP

NHTSA No.: M25108

Test Date: 11/20/01

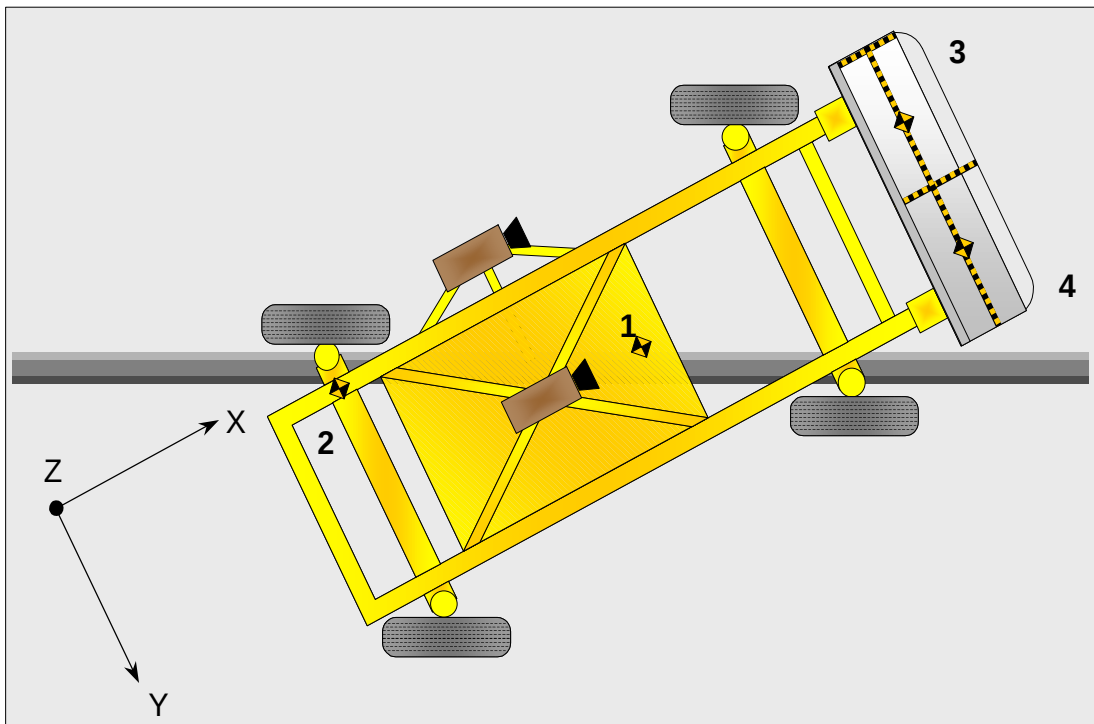
MDB ACCELEROMETER PEAK DATA AND LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)			Peak Values (G's)				
		X	Y	Z	Axis	Max	Time	Min	Time
1	MDB CG	-1195	0	430	X	2.0	128.4	-18.7	36.3
					Y	1.4	84.0	-7.0	37.2
					Z	8.3	20.4	-8.8	27.7
					RES	20.4	37.2		
2	MDB Rear	-2642	-593	608	X	2.0	160.1	-20.8	37.4
					Y	1.9	158.4	-4.9	26.8

Reference Points X - MDB Front Axle Y - MDB Centerline Z - Ground Plane

MDB BUMPER CONTACT SWITCH DATA

Loc. No.	Contact Switch Location	Units	Peak and 50% Crossing Point			
			Max	Time	50%	Time
3	MDB Left Bumper (T=0)	% F.S	100.0	0.0	50.0	0.0
4	MDB Right Bumper	% F.S.	100.9	14.1	50.5	2.9



DATA SHEET NO. 15

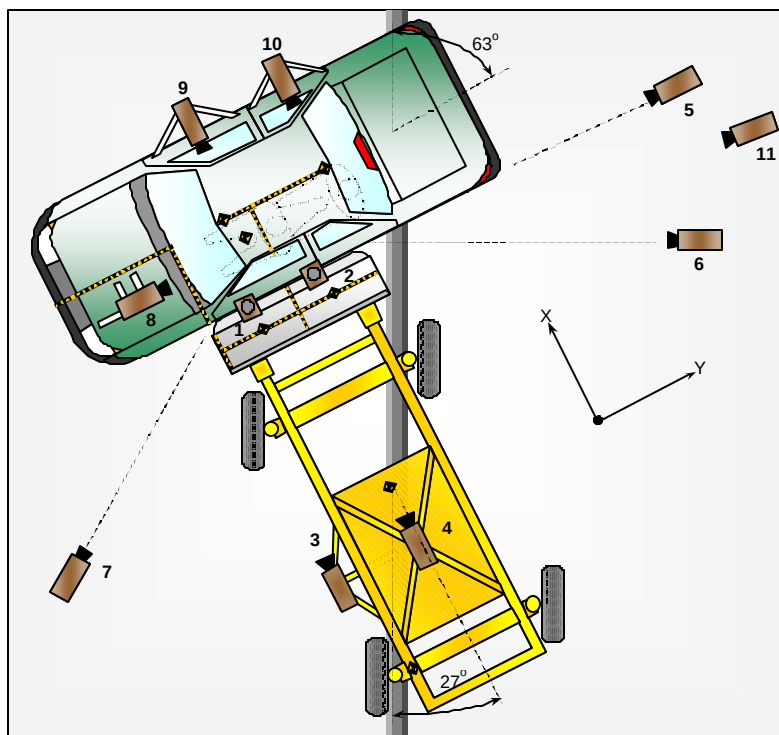
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No.: M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01



No.	Camera View	Location (mm)			Angle (deg.)	Lens (mm)	Film Speed (fr./sec.)
		X	Y	Z			
1	Overhead Overall	1650	-760	5486	-90	10	960
2	Overhead Close-up	-760	0	5790	-90	24	1010
3	MDB Onboard, Impact Point Close-Up	-2130	0	1140	-7	13	710
4	MDB Onboard, Centerline of Impact	-3050	-1650	1830	-11	13	790
5	Right Side, Ground Level, Overall	0	-20940	740	-1	50	*
6	Right Side, Ground Level, Close-up	-8840	-15510	740	0	80	980
7	Left Side, Ground Level, Close-up	-2630	4680	1450	-7	13	1070
8	Vehicle Onboard Front SID, Front	570	380	1470	-10	19	1020
9	Vehicle Onboard Front SID, Side	1890	-910	1150	-5	10	1010
10	Vehicle Onboard Rear SID, Side	1800	-1680	1200	-5	10	930
11	Front View In-Line with Track	83000	-42000	1370	0	76	510
12	Real Time Coverage	N/A	N/A	N/A	N/A	N/A	N/A

*Timing Generator did not run.

DATA SHEET NO. 16

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

NHTSA No.: M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/20/01

Test Time: 11:44 AM

Temperature at Time of Impact: 18.8 °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 Details: No leakage occurred

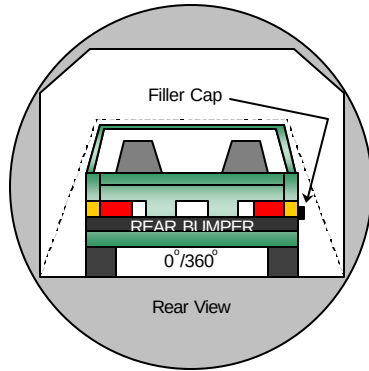
DATA SHEET NO. 17
FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

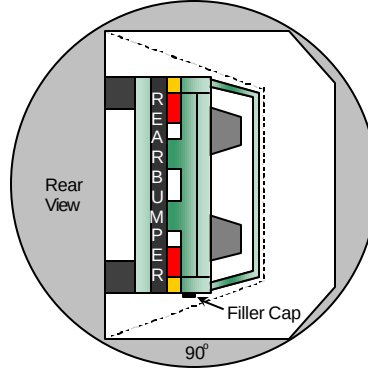
NHTSA No.: M25108

Test Program: 55/28 km/h 90° Side Impact NCAP

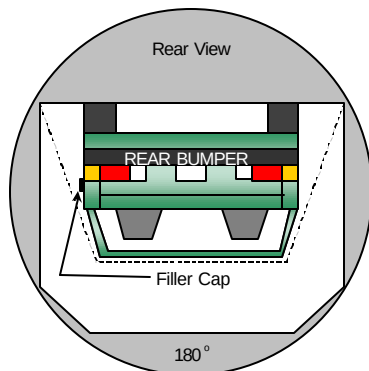
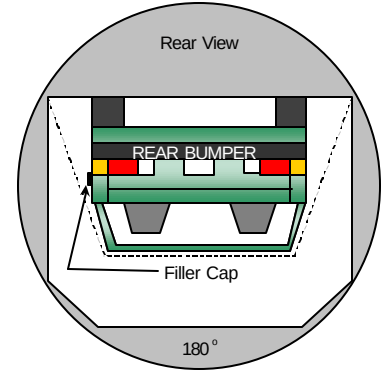
Test Date: 11/20/01



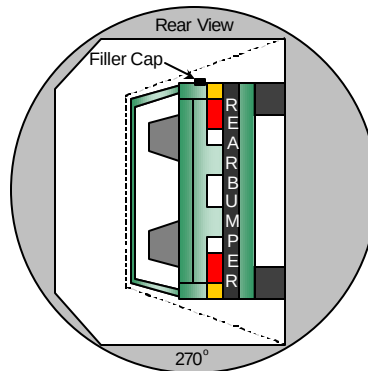
0° TO 90°



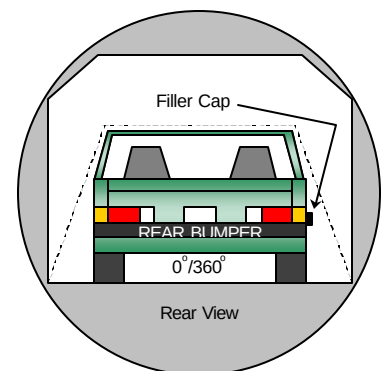
90° TO 180°



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. Details of Stoddard Solvent spillage locations.

No solvent leakage occurred during static rollover testing.

Rollover Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° TO 90°	76	300	0.0
90° TO 180°	82	300	0.0
180° TO 270°	80	300	0.0
270° TO 360°	82	300	0.0

APPENDIX A
PHOTOGRAPHS

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Figure A-1: Left Front, as Received



Figure A-2: Right Rear, as Received

MFD. BY: TOYOTA MOTOR CORPORATION

DATE 09

GVWR: 1809KG (3988LB)

GAWR: FRT. 920KG (2028LB) WITH 215/70R16 TIRES.

16X6 1/2J RIMS. AT 200KPA (29PSI) COLD.

RR. 1010KG (2227LB) WITH 215/70R16 TIRES.

16X6 1/2J RIMS. AT 200KPA (29PSI) COLD.

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR
VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT
ON THE DATE OF MANUFACTURE SHOWN ABOVE.

JTEHH20V026023390

MPV

ACA21L-AWPNKA

C/TR 202/FG40

A/TM -02A/

U140F

MADE IN JAPAN

NO. 210



*

Figure A-3: Vehicle Certification Label



Figure A-4: Vehicle Tire Label



Figure A-5: Front View, Pre-Test



Figure A-6: Front View, Post-Test



Figure A-7: Rear View, Pre-Test



Figure A-8: Rear View, Post-Test



Figure A-9: Left (Impacted) Side View, Pre-Test



Figure A-10: Left (Impacted) Side View, Post-Test



Figure A-11: Overhead Close-up View at Impact Position, Pre-Test



Figure A-12: Overhead Overall View, Pre-Test



Figure A-13: Overhead Overall View, Post-Test



Figure A-14: MDB Left Side View at Impact Position, Pre-Test



Figure A-15: MDB Right Side View at Impact Position, Pre-Test



Figure A-16: Impact Point Target Close-up, Pre-Test



Figure A-17: Impact Point Target Close-up, Post-Test



Figure A-18: Left Front Door Closed, Pre-Test



Figure A-19: Left Front Door Closed, Post-Test

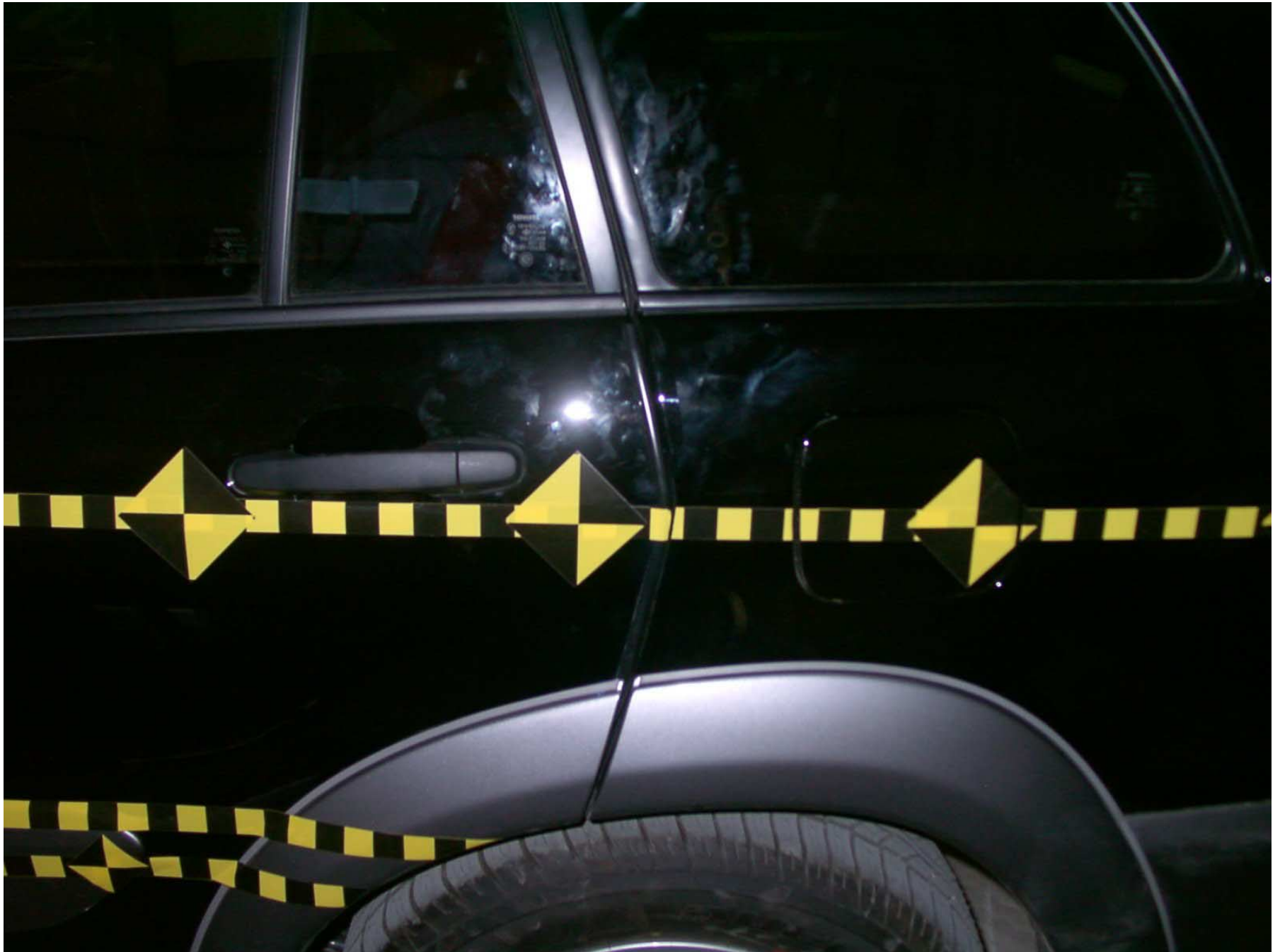


Figure A-20: Left Rear Door Closed, Pre-Test



Figure A-21: Left Rear Door Closed, Post-Test



Figure A-22: Driver Dummy Left Side with Door Open, Pre-Test



Figure A-23: Driver Dummy Left Side, Pre-test



Figure A-24: Driver Dummy Left Side, Post-Test



Figure A-25: Driver Dummy Clearance, Pre-Test



Figure A-26: Driver Dummy Clearance, Post-Test



Figure A-27: Driver Dummy Inside View, Pre-Test



Figure A-28: Driver Dummy Inside View, Post-Test



Figure A-29: Driver Door Inside View, Pre-Test



Figure A-30: Driver Dummy Contact Points Inside View, Post-Test



Figure A-31: Passenger Dummy Left Side with Door Open, Pre-Test



Figure A-32: Passenger Dummy Left Side, Pre-Test



Figure A-33: Passenger Dummy Left Side, Post-Test



Figure A-34: Passenger Dummy Clearance, Pre-Test



Figure A-35: Passenger Dummy Clearance, Post-Test

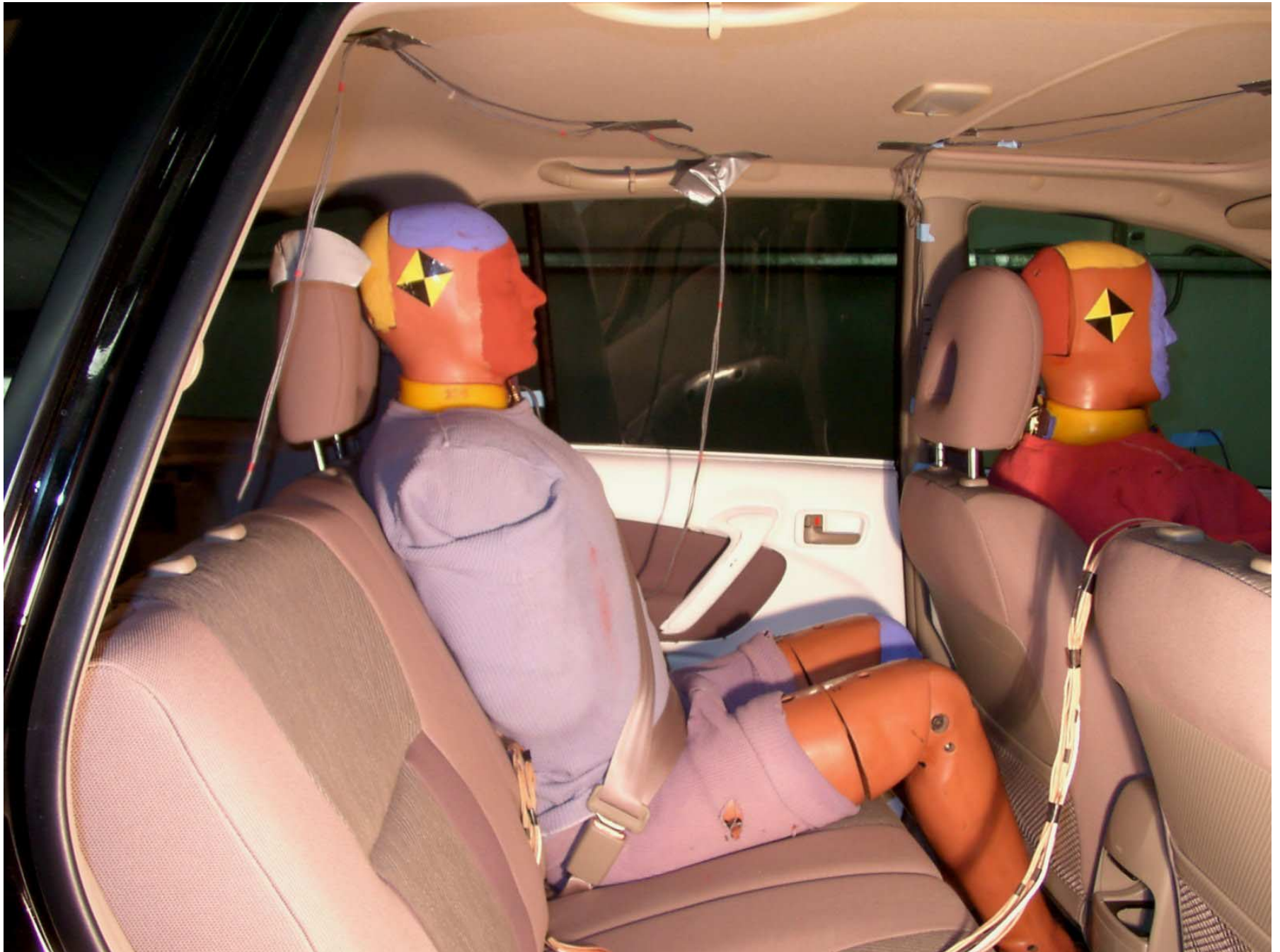


Figure A-36: Passenger Dummy Inside View, Pre-Test



Figure A-37: Passenger Dummy Inside View, Post-Test



Figure A-38: Passenger Door Inside View, Pre-Test



Figure A-39: Passenger Dummy Contact Points Inside View, Post-Test



Figure A-40: Front View of Deformable Barrier, Pre-Test

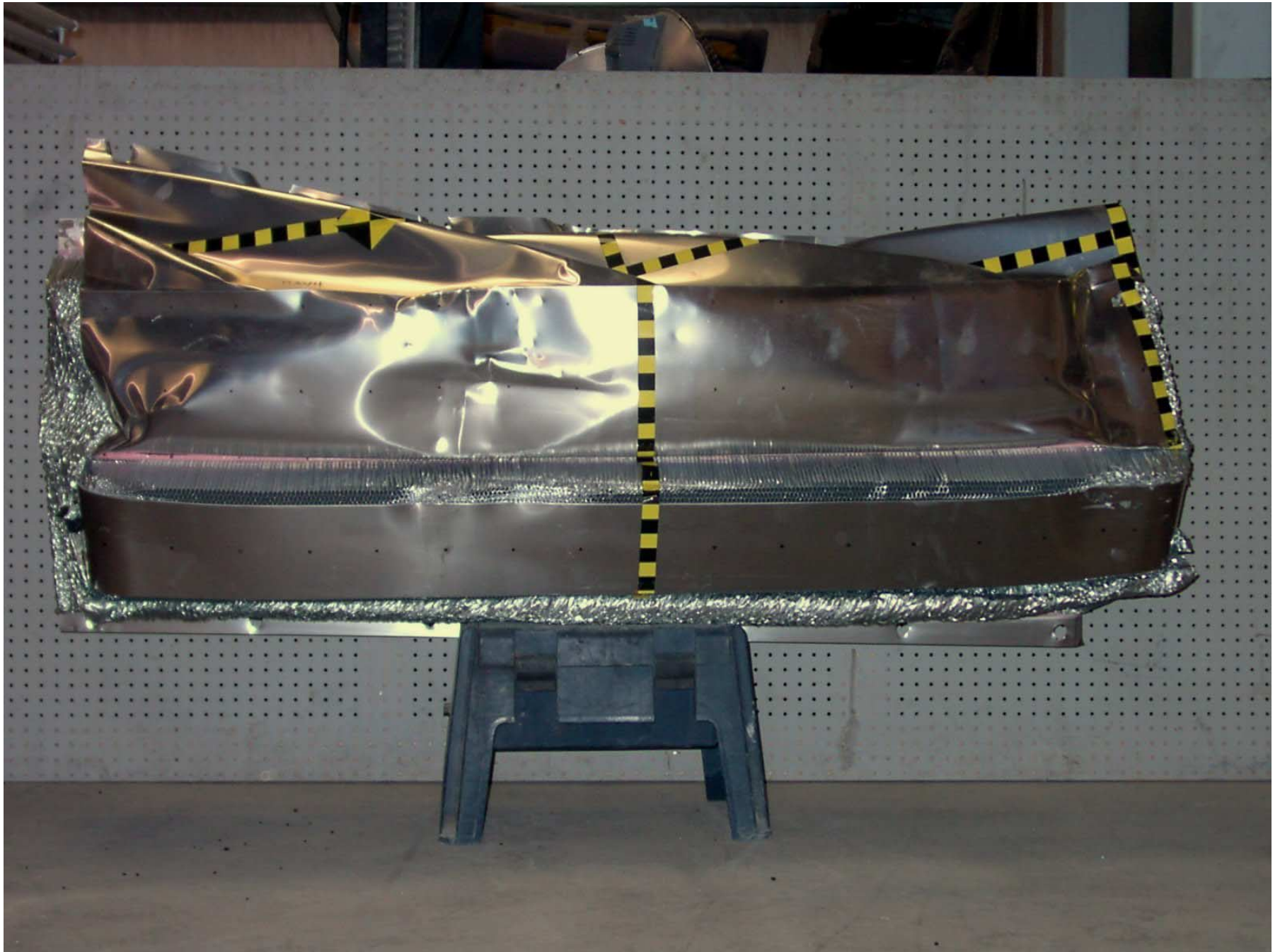


Figure A-41: Front View of Deformable Barrier, Post-Test

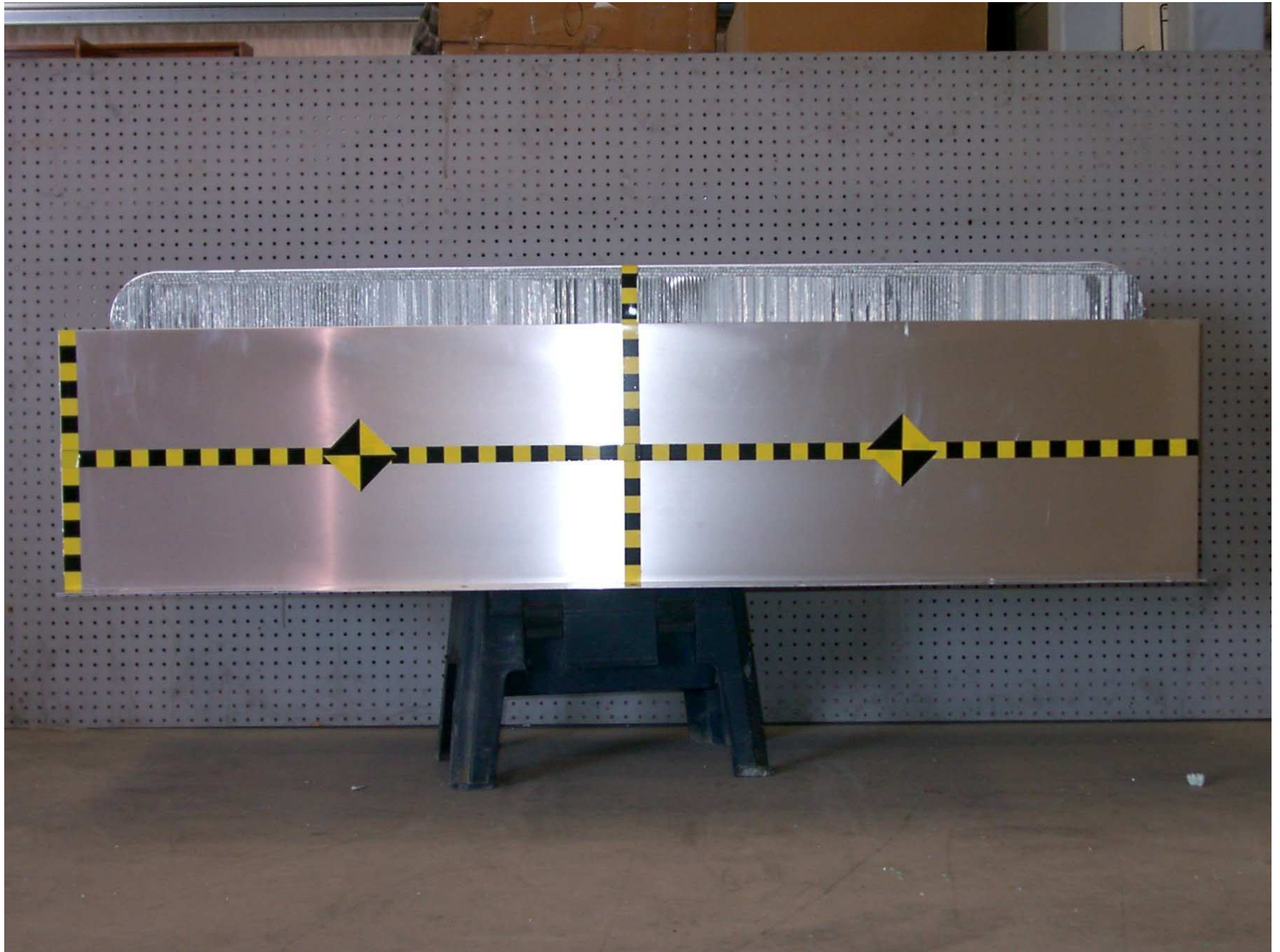


Figure A-42: Top View of Deformable Barrier, Pre-Test

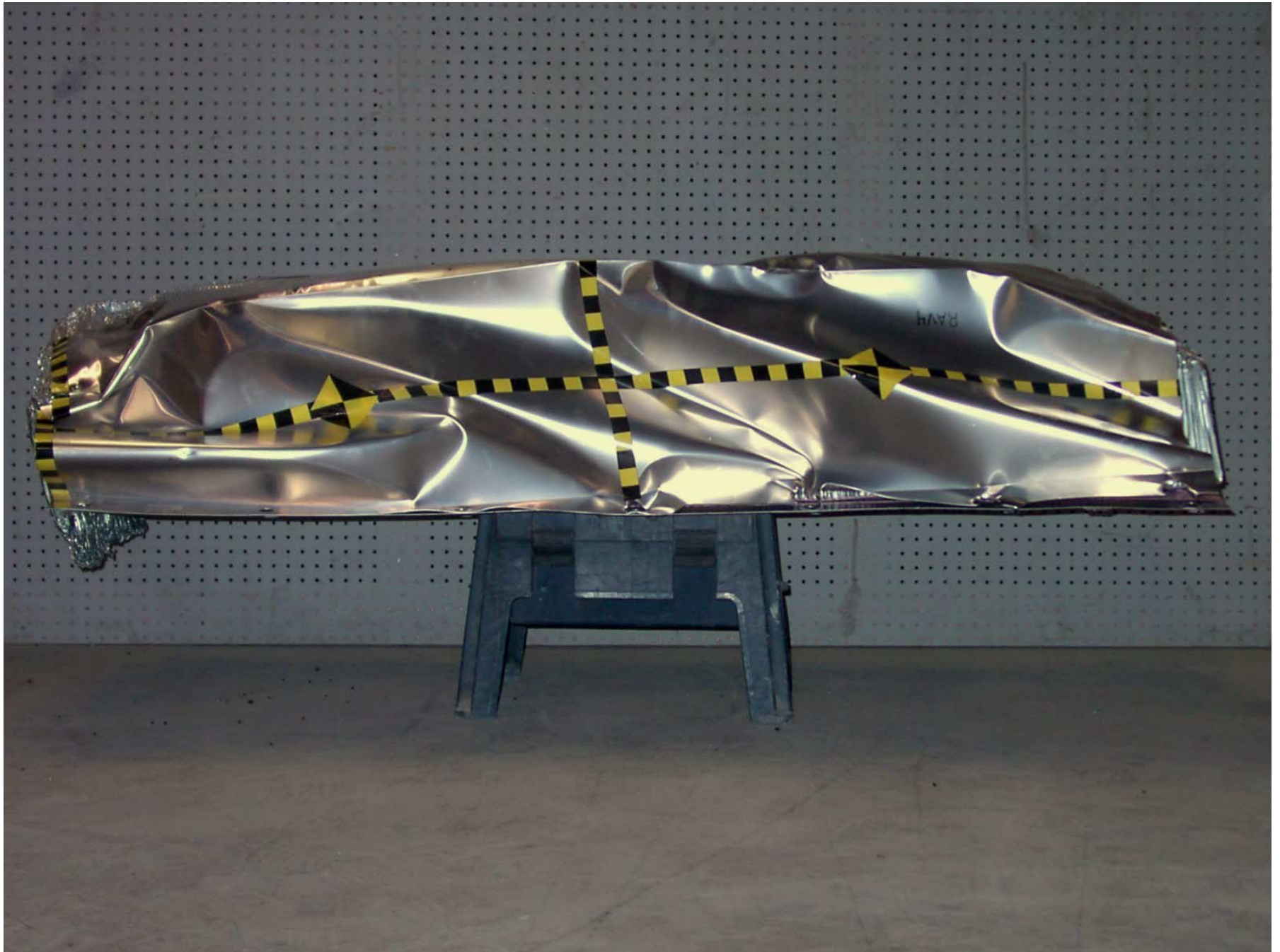


Figure A-43: Top View of Deformable Barrier, Post-Test



Figure A-44: Right Side View of Deformable Barrier, Pre-Test



Figure A-45: Right Side View of Deformable Barrier, Post-Test



Figure A-46: Left Side View of Deformable Barrier, Pre-Test

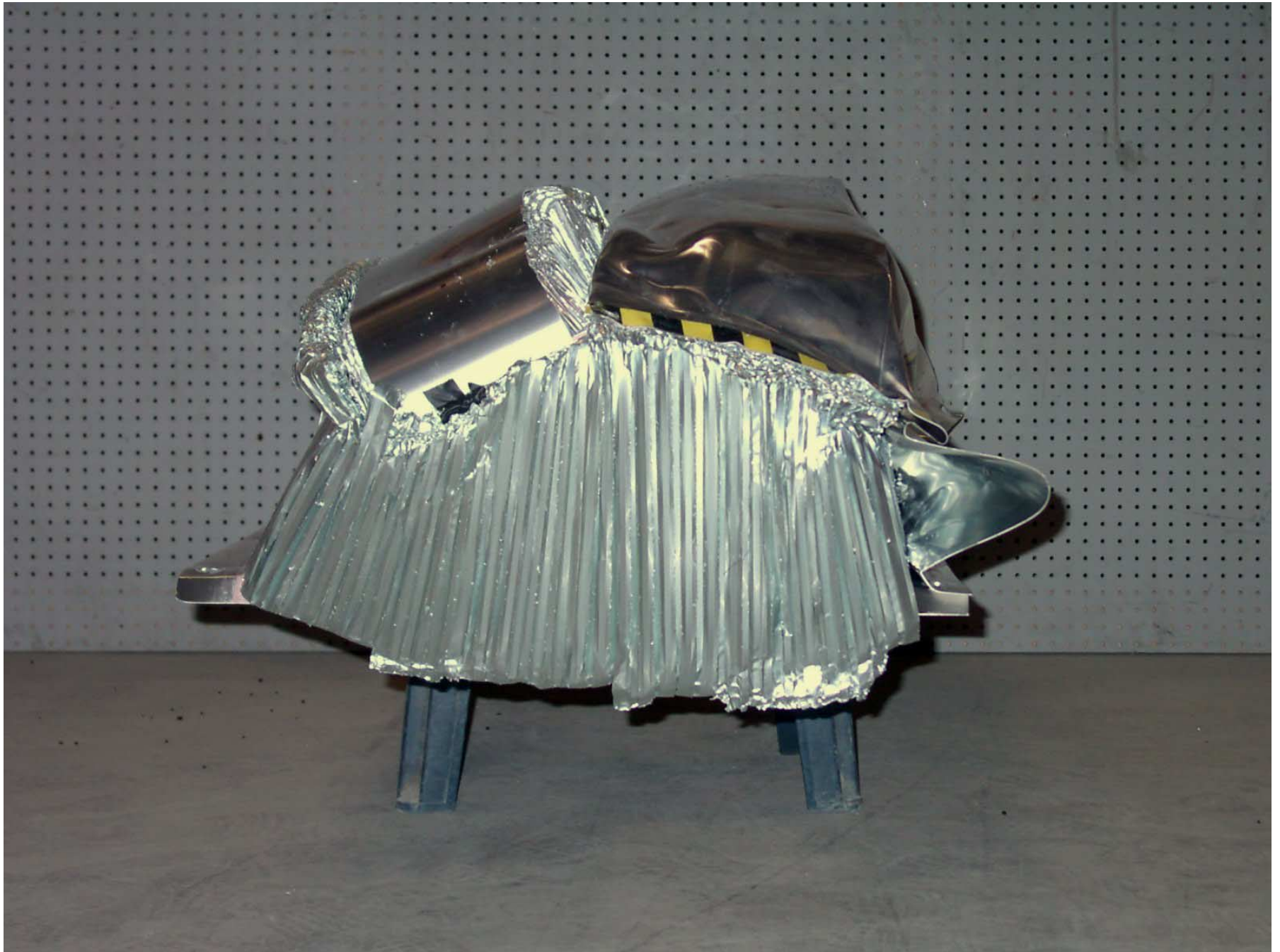


Figure A-47: Left Side View of Deformable Barrier, Post-Test



Figure A-48: Vehicle on Rollover Device, Top View



Figure A-49: Vehicle During Impact

APPENDIX B
SID, VEHICLE, AND MDB RESPONSE DATA

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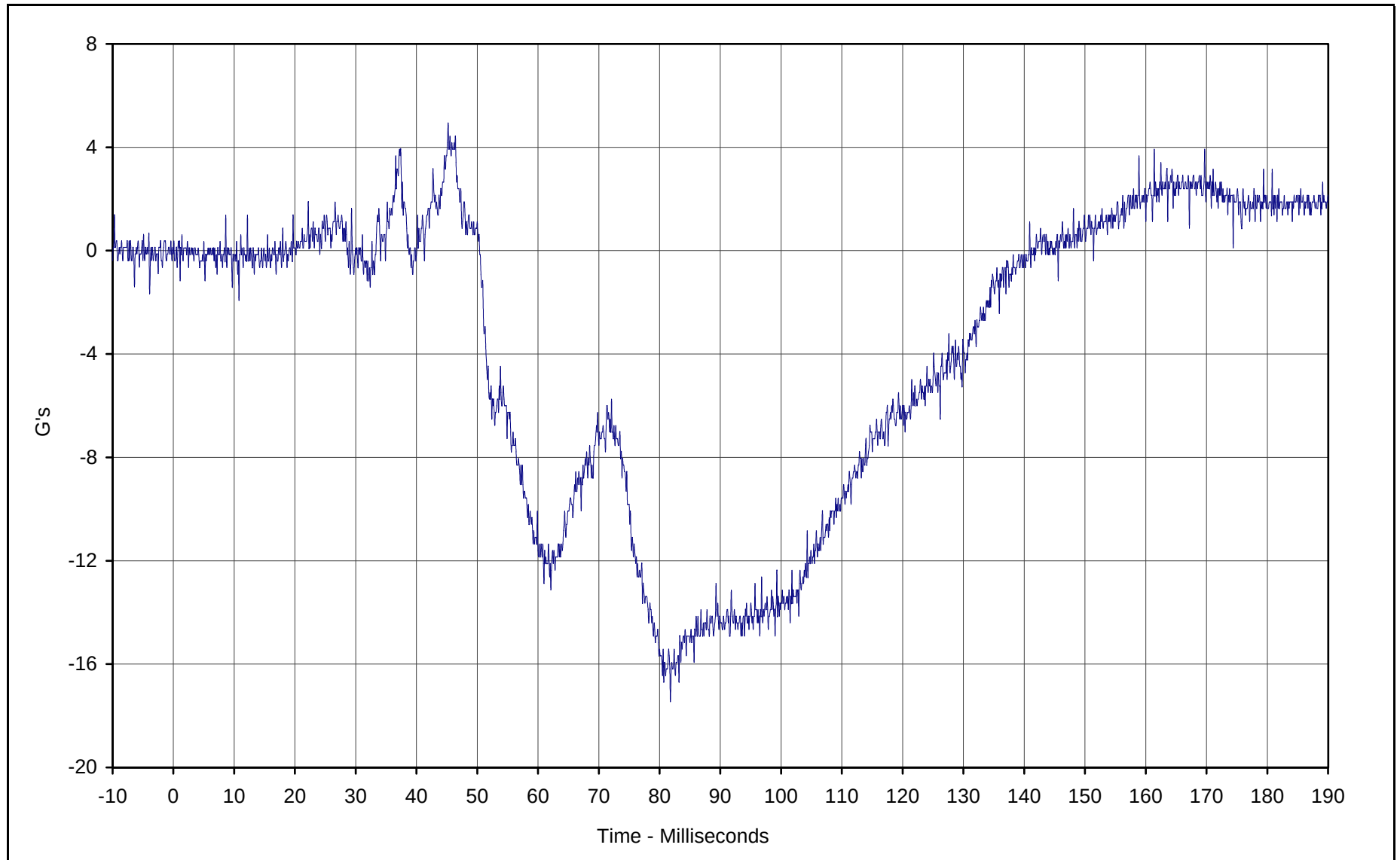
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LIST OF DATA PLOTS, FIR FILTER DATA

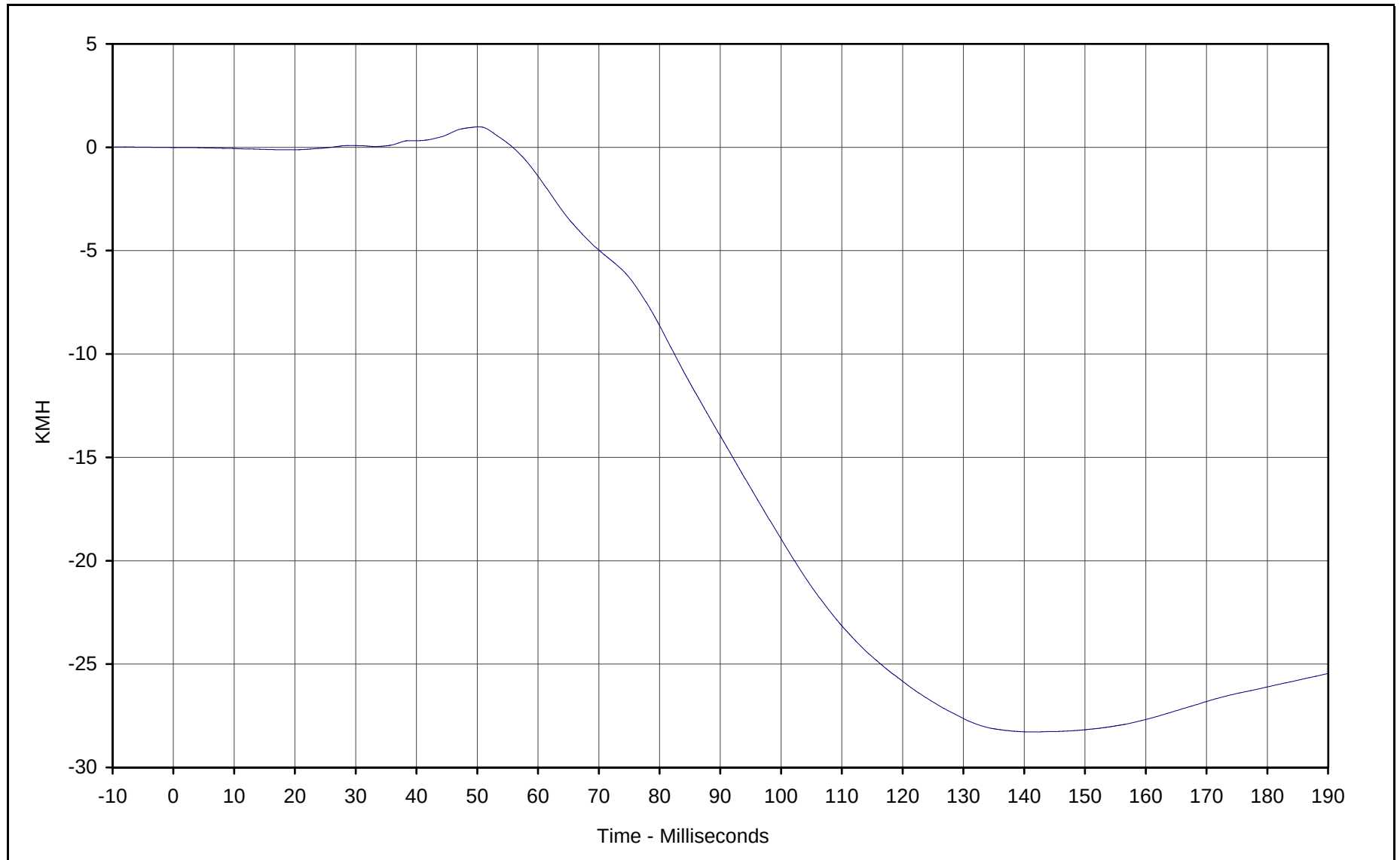
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Curve Description: Driver Head CG X
Maximum Value: 4.9 at 45.2 Milliseconds
Minimum Value: -17.5 at 81.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-001

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

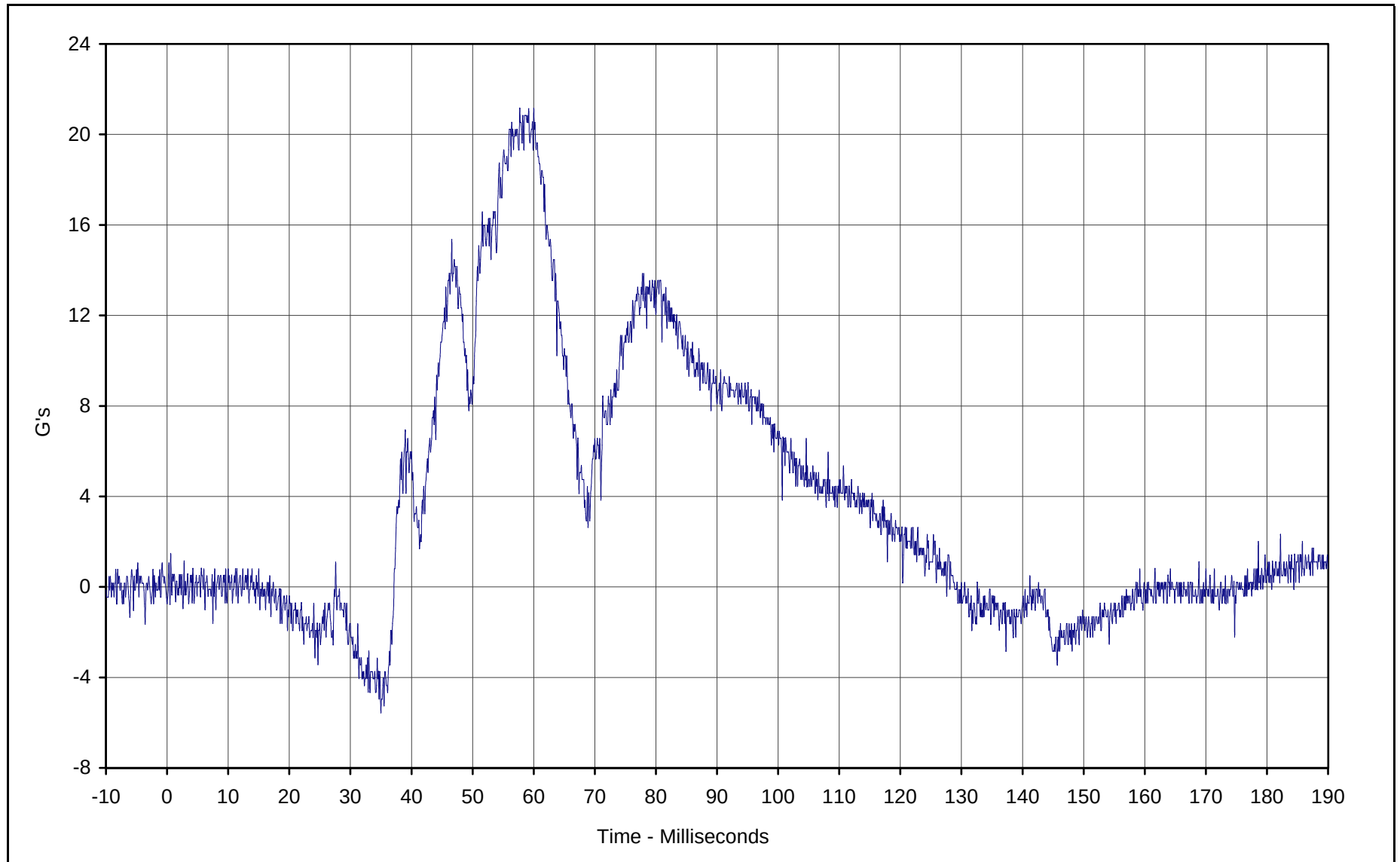




Curve Description: Driver Head CG X Velocity
Maximum Value: 1.0 at 50.3 Milliseconds
Minimum Value: -28.3 at 141.5 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-001

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

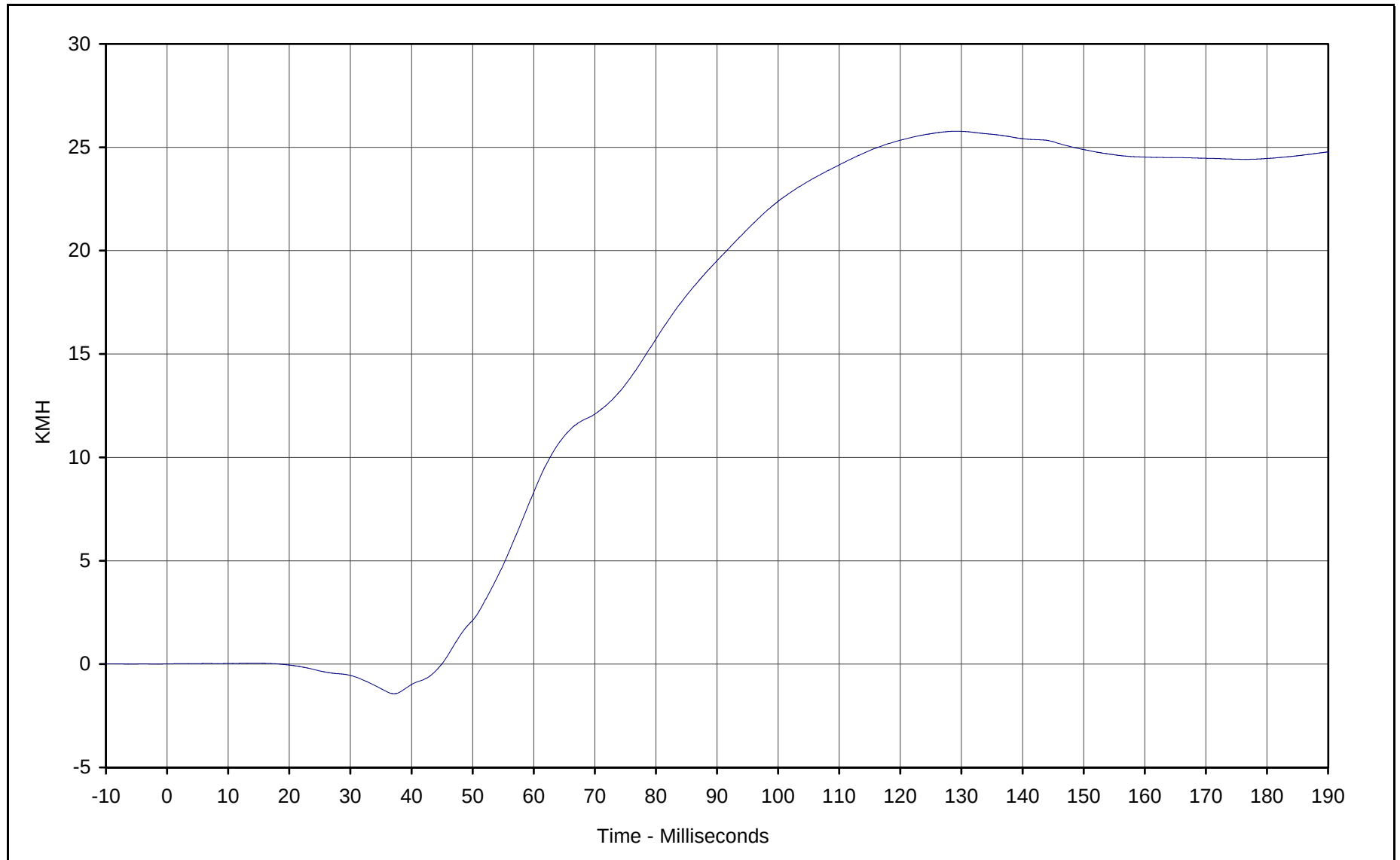




Curve Description: Driver Head CG Y
Maximum Value: 21.1 at 57.7 Milliseconds
Minimum Value: -5.6 at 35.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-002

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

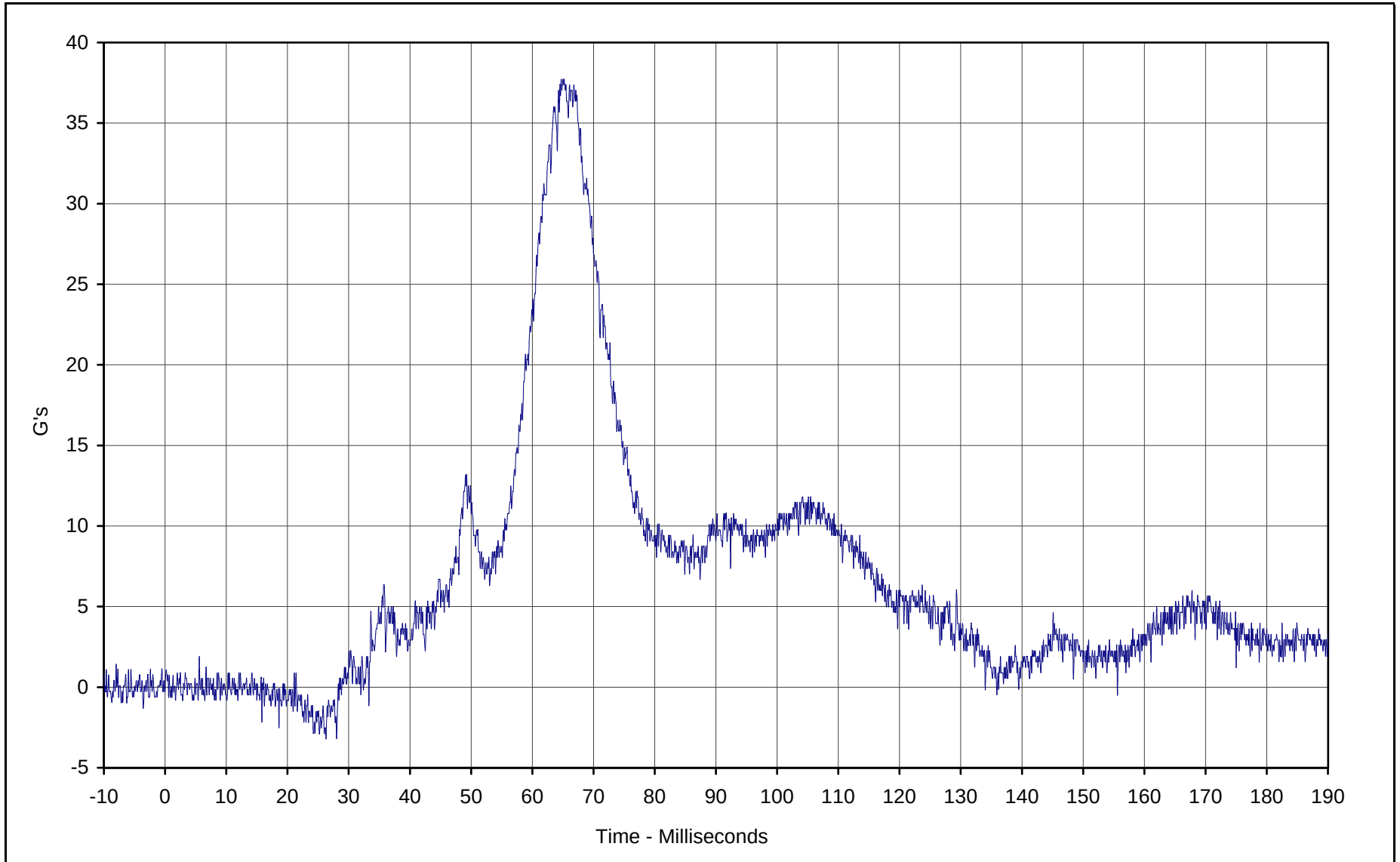




Curve Description: Driver Head CG Y Velocity
Maximum Value: 25.8 at 129.0 Milliseconds
Minimum Value: -1.4 at 37.1 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-002

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

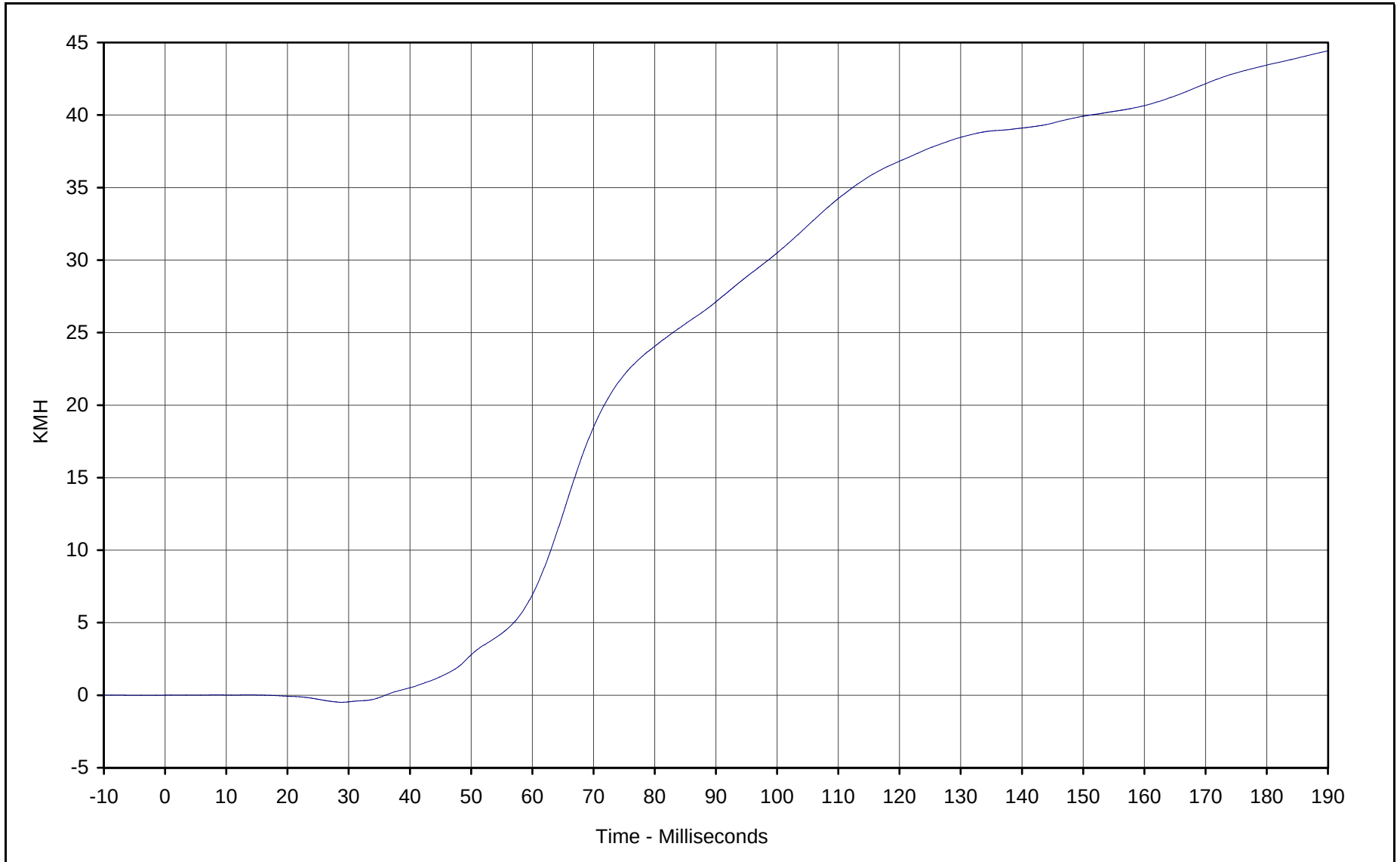




Curve Description: Driver Head CG Z
Maximum Value: 37.7 at 64.7 Milliseconds
Minimum Value: -3.2 at 26.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-003

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

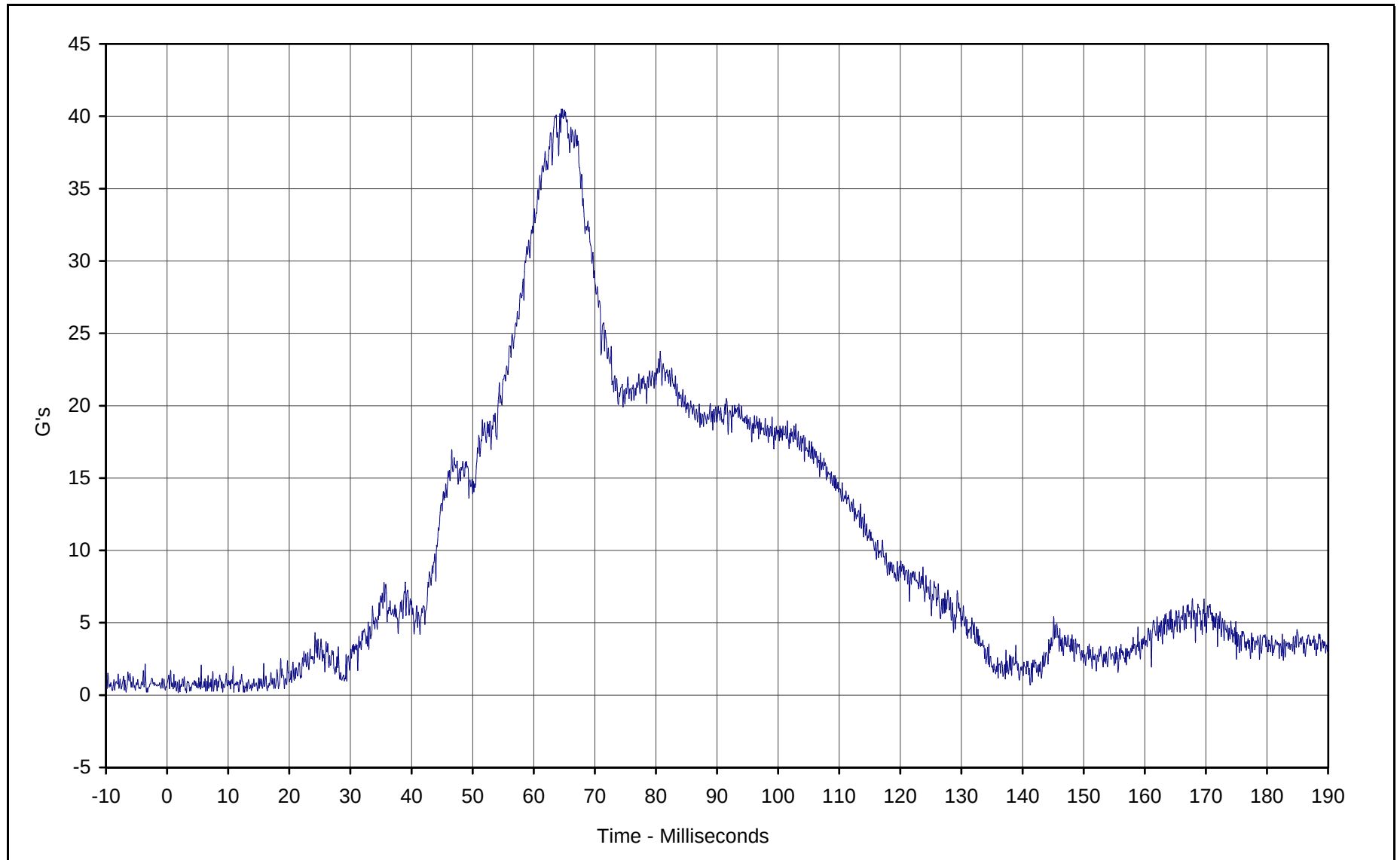




Curve Description: Driver Head CG Z Velocity
Maximum Value: 44.4 at 189.9 Milliseconds
Minimum Value: -0.5 at 28.8 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-003

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

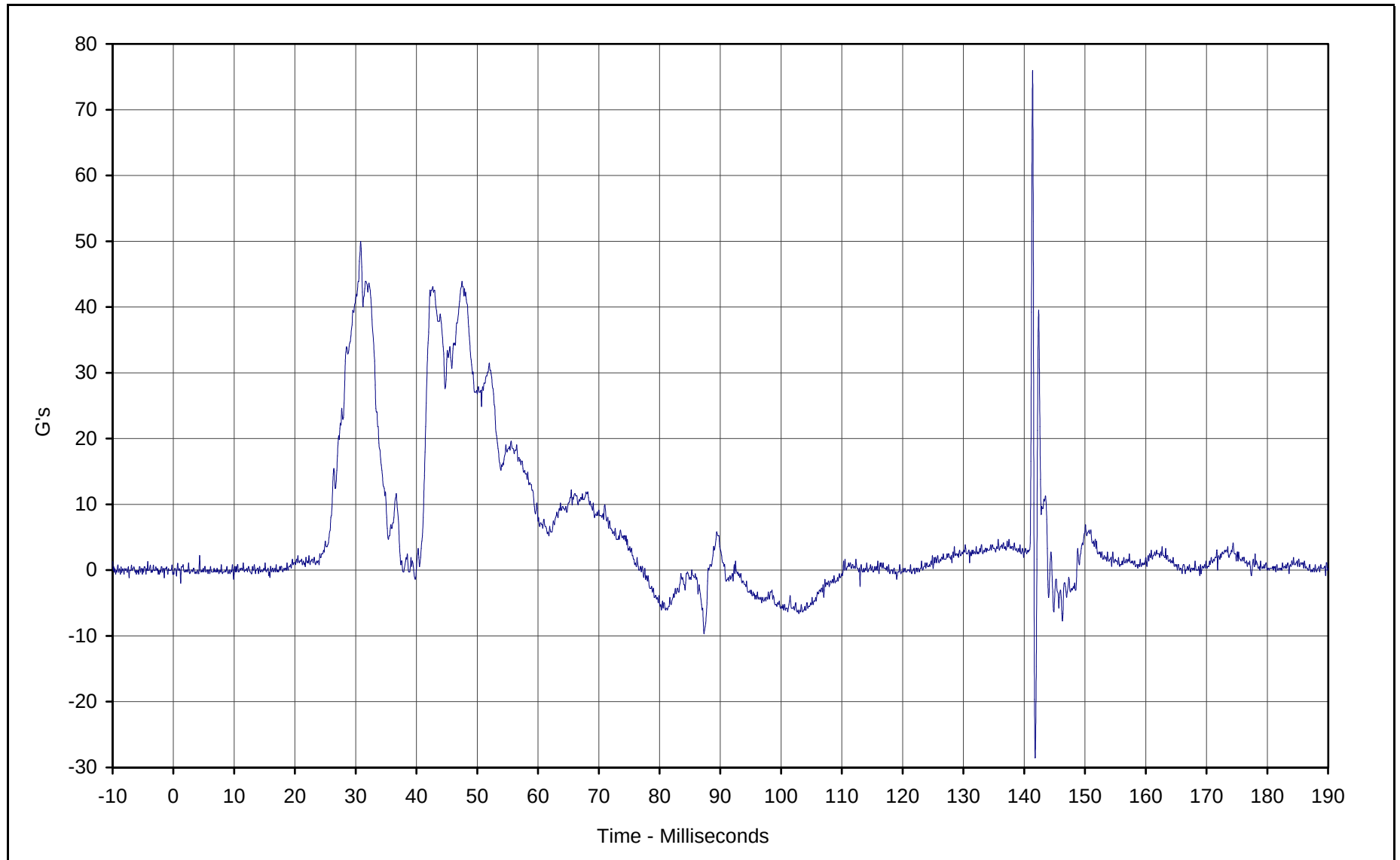




Curve Description: Driver Head CG Resultant
Maximum Value: 40.5 at 64.7 Milliseconds
Minimum Value: 0.2 at 1.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: RES-001

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

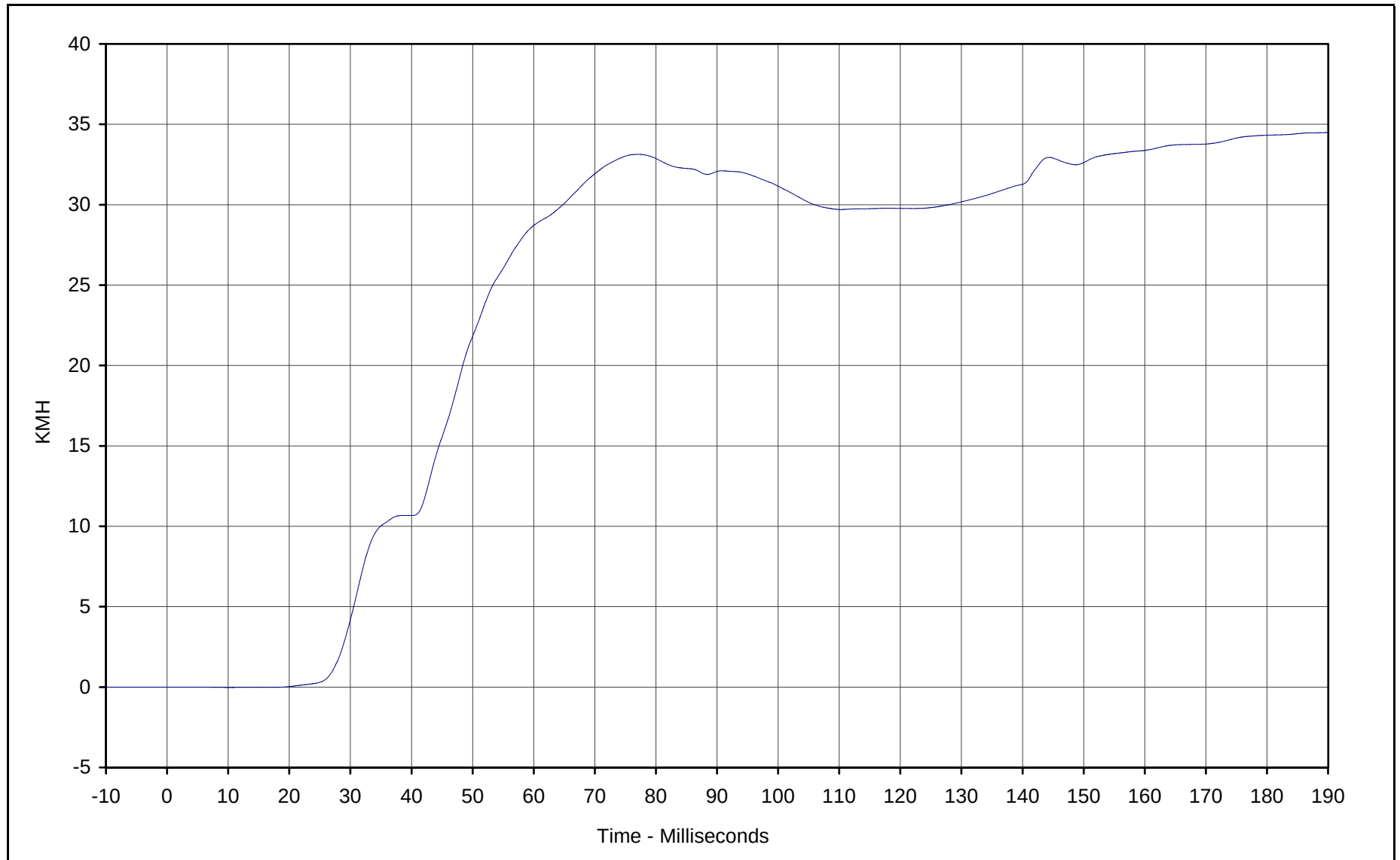




Curve Description: Driver Upper Rib Primary Y
Maximum Value: 75.7 at 141.4 Milliseconds
Minimum Value: -28.4 at 141.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-004

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Driver Upper Rib Primary Y Velocity

Maximum Value: 34.5 at 189.9 Milliseconds

Minimum Value: 0.0 at 10.2 Milliseconds

SAE Filter Class: 180

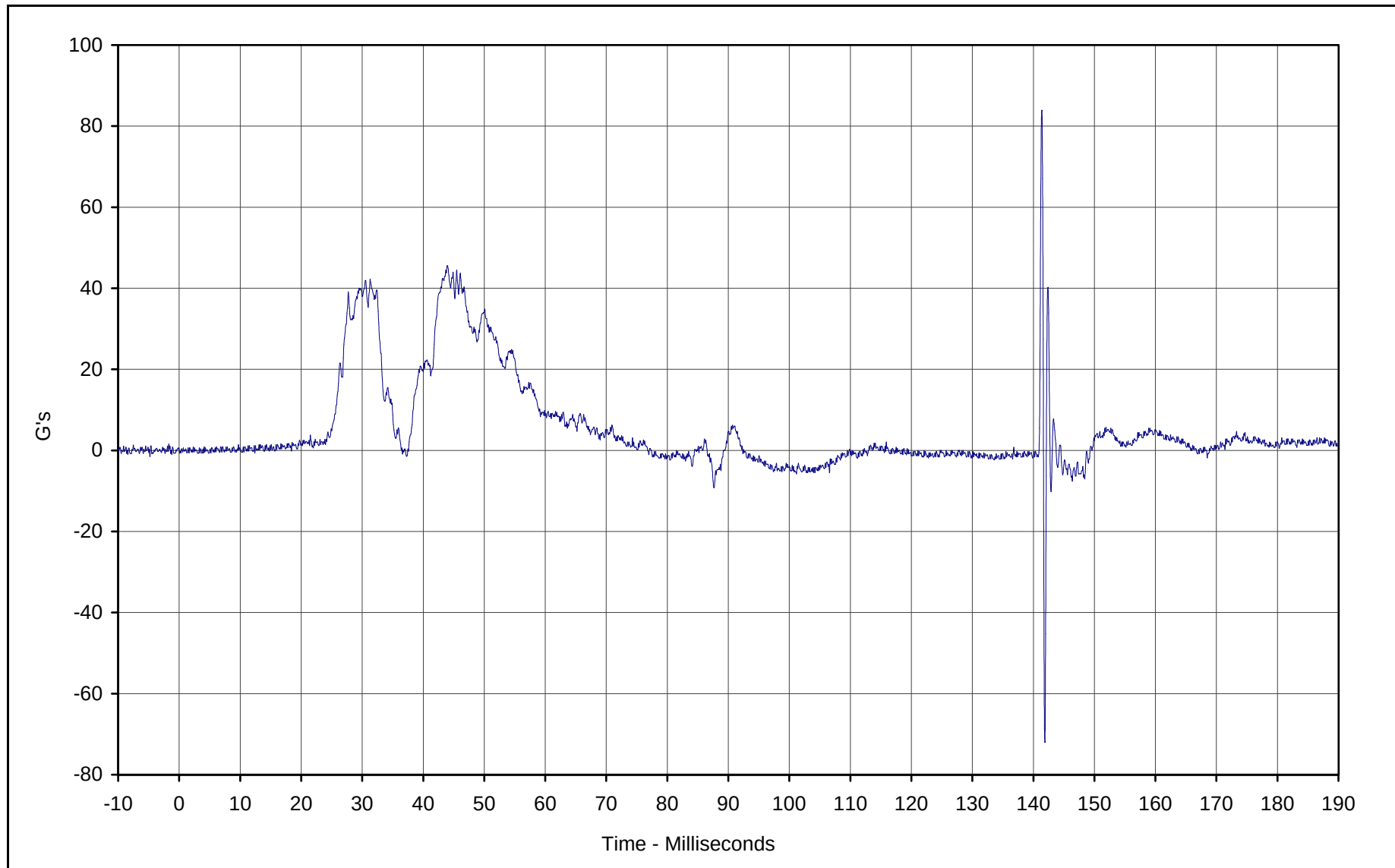
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Curve Number: IN1-004

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

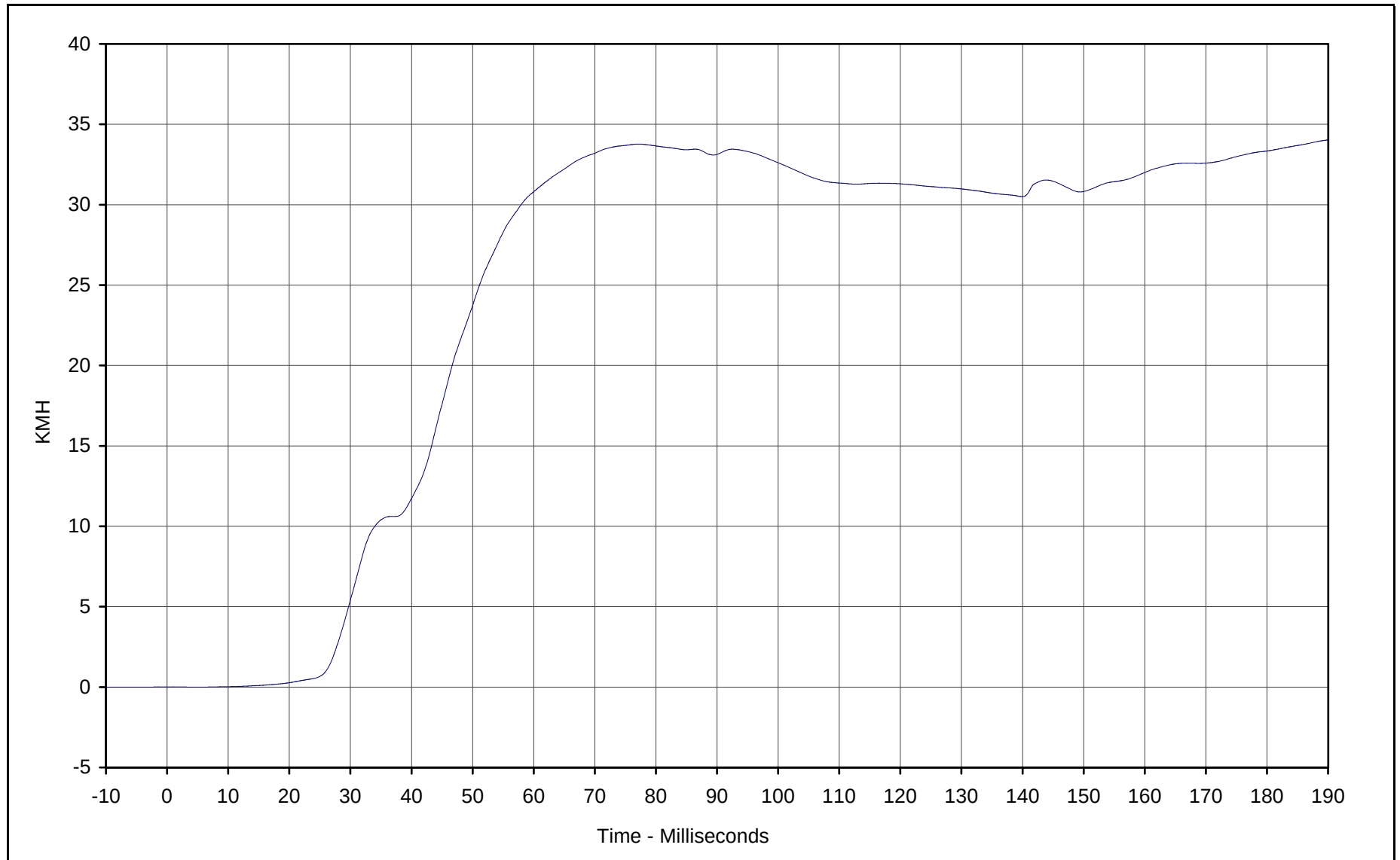




Curve Description: Driver Lower Rib Primary Y
Maximum Value: 83.8 at 141.4 Milliseconds
Minimum Value: -71.9 at 141.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-005

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Driver Lower Rib Primary Y Velocity

Maximum Value: 34.0 at 189.9 Milliseconds

Minimum Value: 0.0 at 5.3 Milliseconds

SAE Filter Class: 180

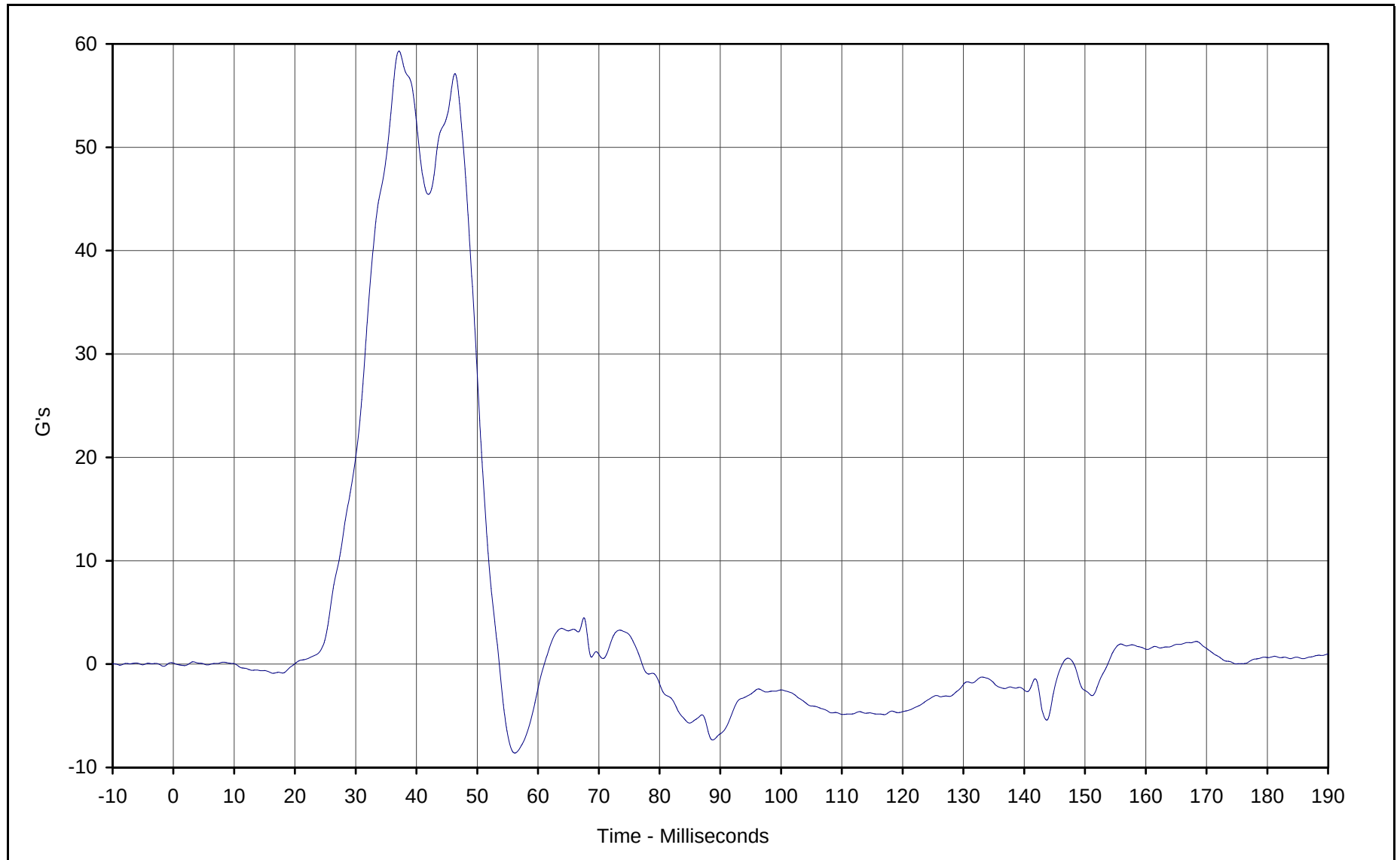
Date of Test: 11/20/01

Curve Number: IN1-005

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

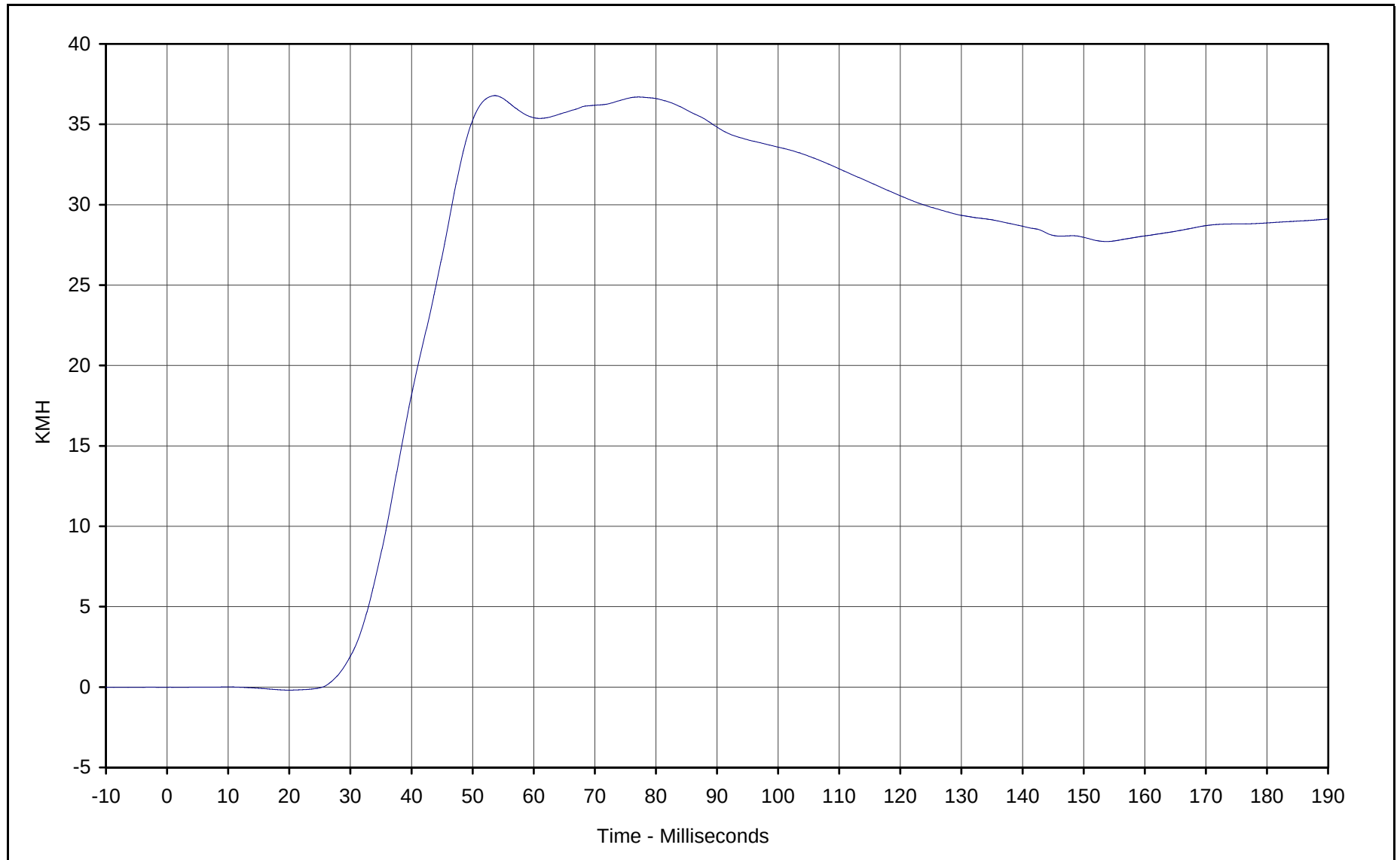




Curve Description: Driver Lower Spine Primary Y
Maximum Value: 59.3 at 37.1 Milliseconds
Minimum Value: -8.6 at 56.2 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: FIL-006

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Driver Lower Spine Primary Y Velocity

Maximum Value: 36.8 at 53.6 Milliseconds

Minimum Value: -0.2 at 19.9 Milliseconds

SAE Filter Class: 180

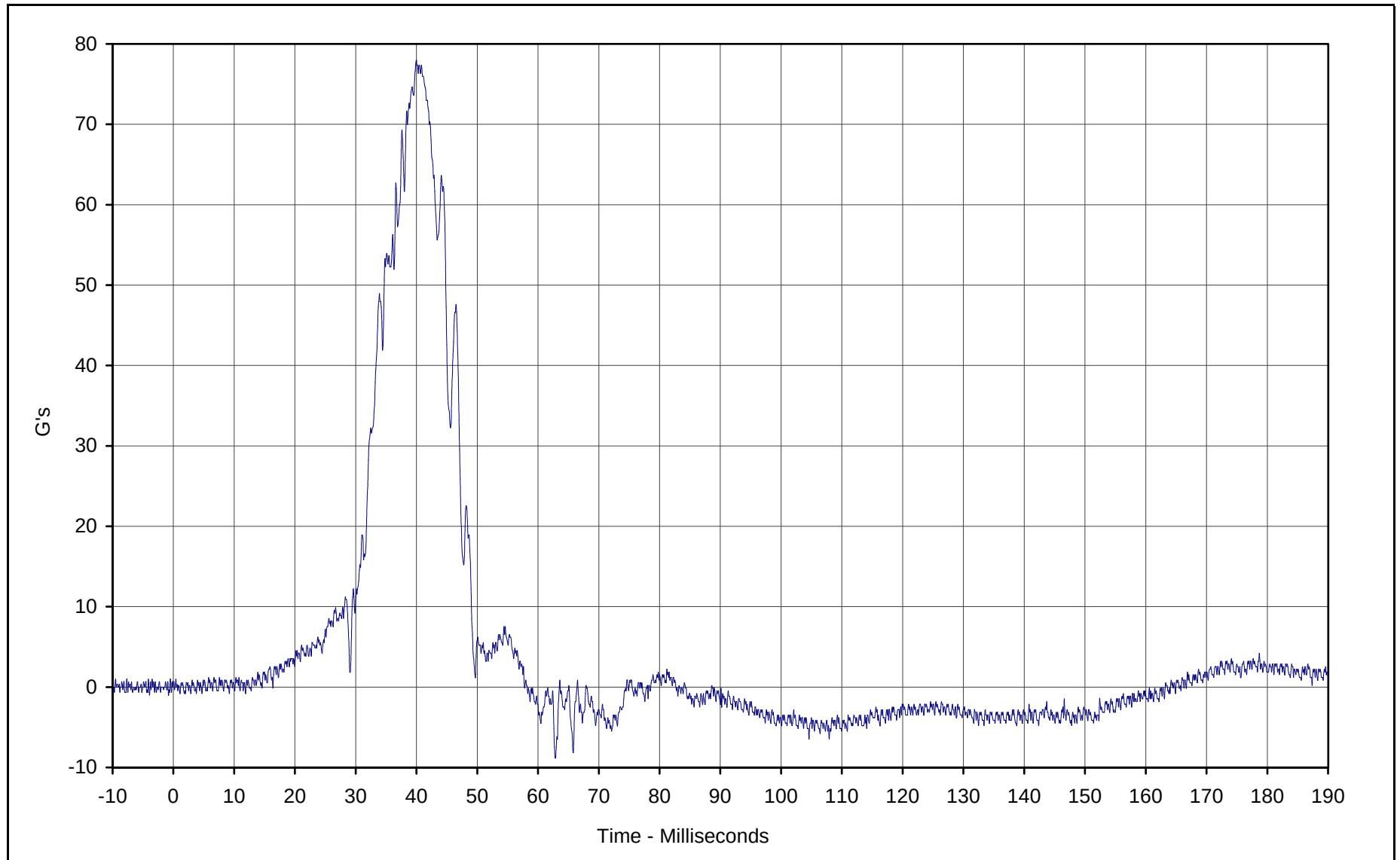
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Curve Number: IN1-006

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

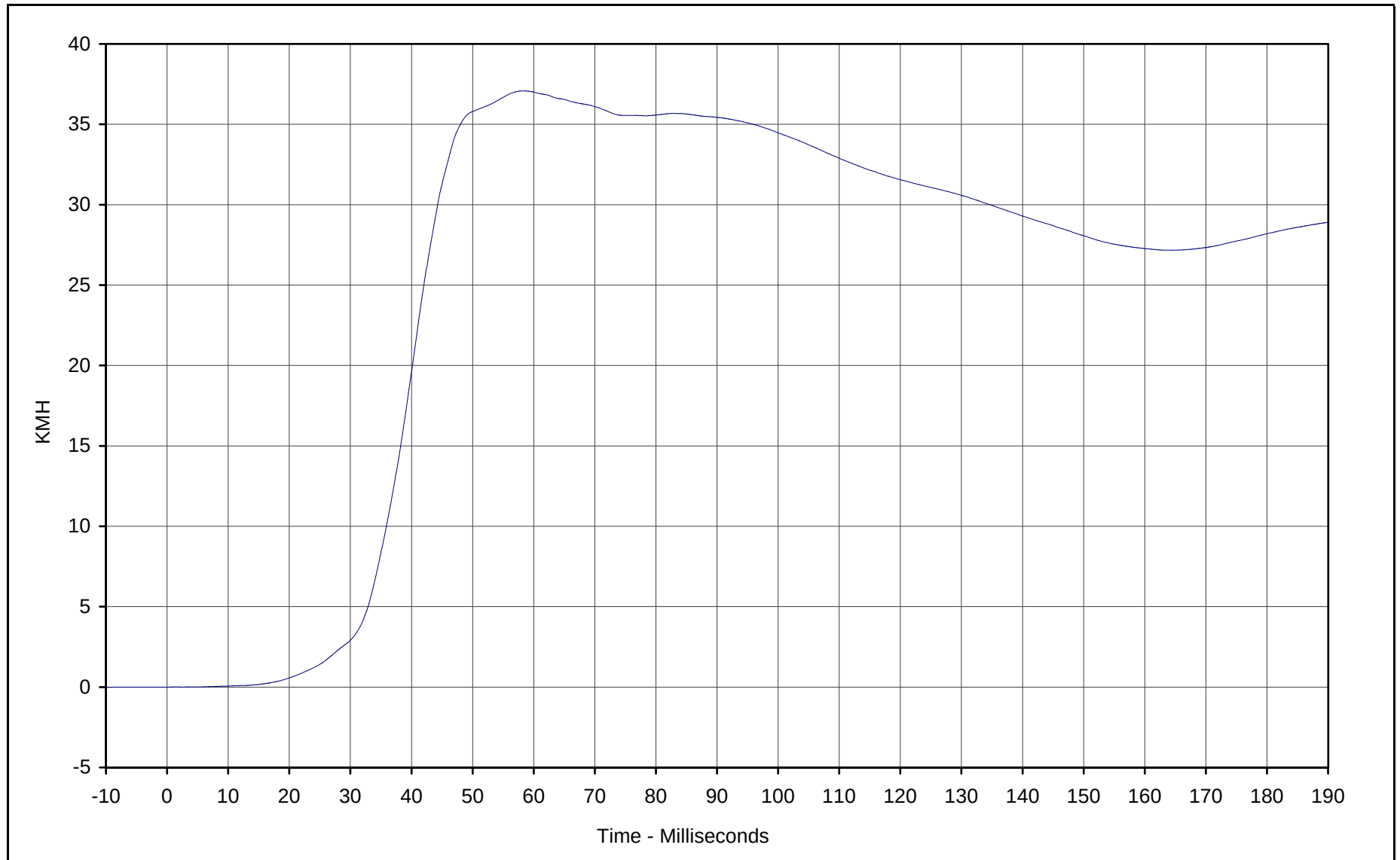




Curve Description: Driver Pelvis Primary Y
Maximum Value: 78.0 at 40.0 Milliseconds
Minimum Value: -8.8 at 62.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-007

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

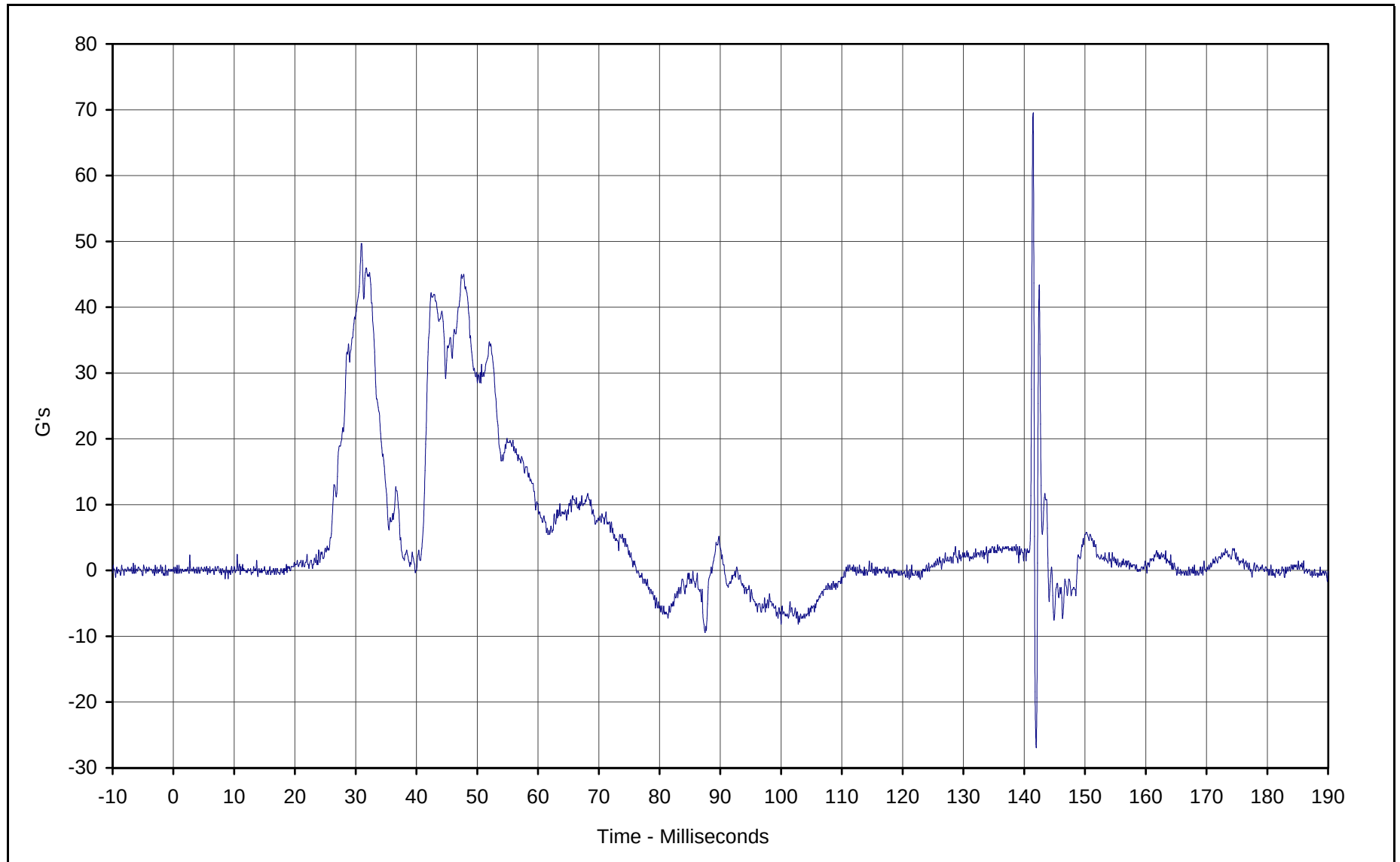




Curve Description: Driver Pelvis Primary Y Velocity
Maximum Value: 37.1 at 58.3 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-007

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

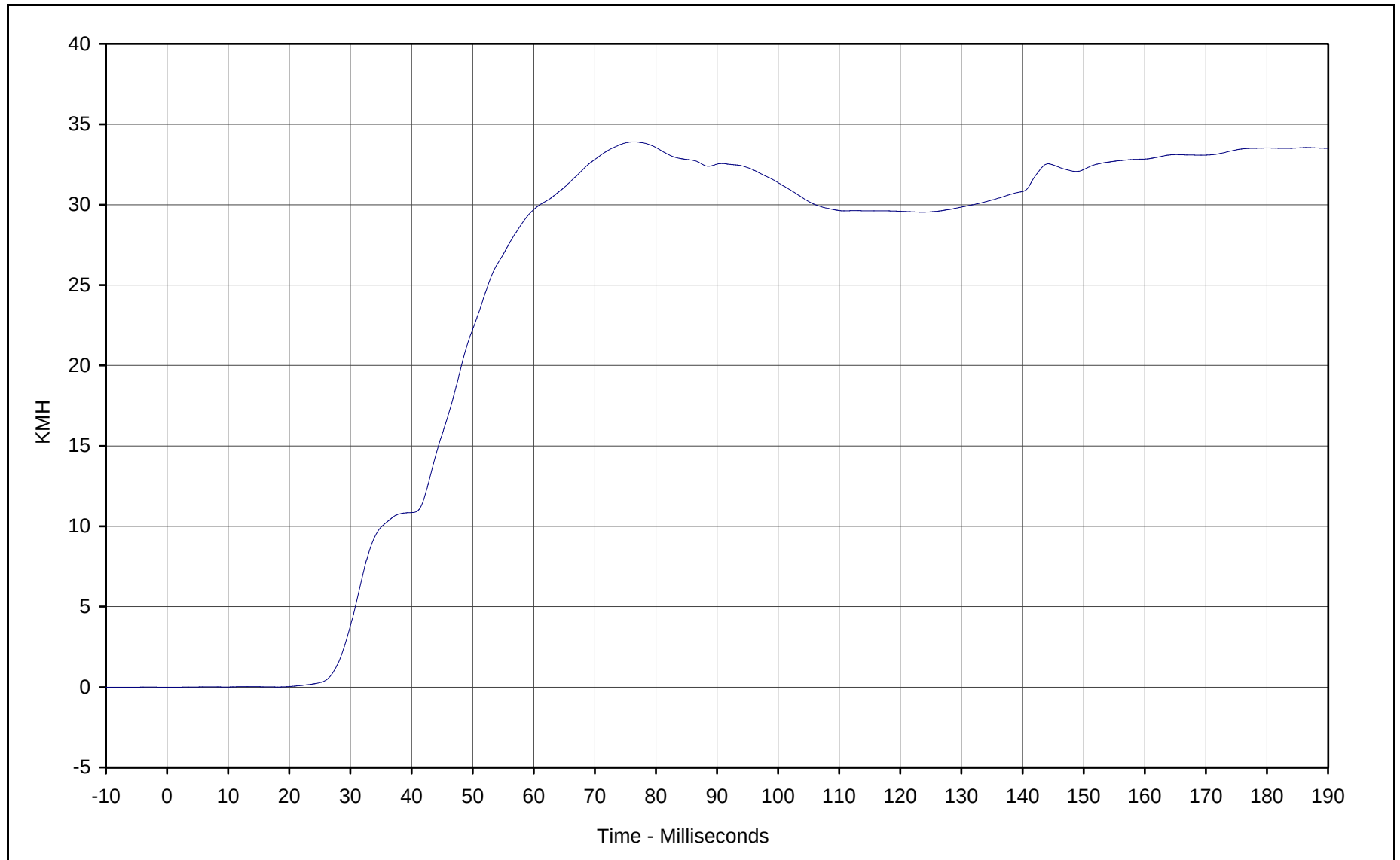




Curve Description: Driver Upper Rib Redundant Y
Maximum Value: 69.4 at 141.5 Milliseconds
Minimum Value: -26.8 at 142.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-008

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Driver Upper Rib Redundant Y Velocity

Maximum Value: 33.9 at 76.3 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

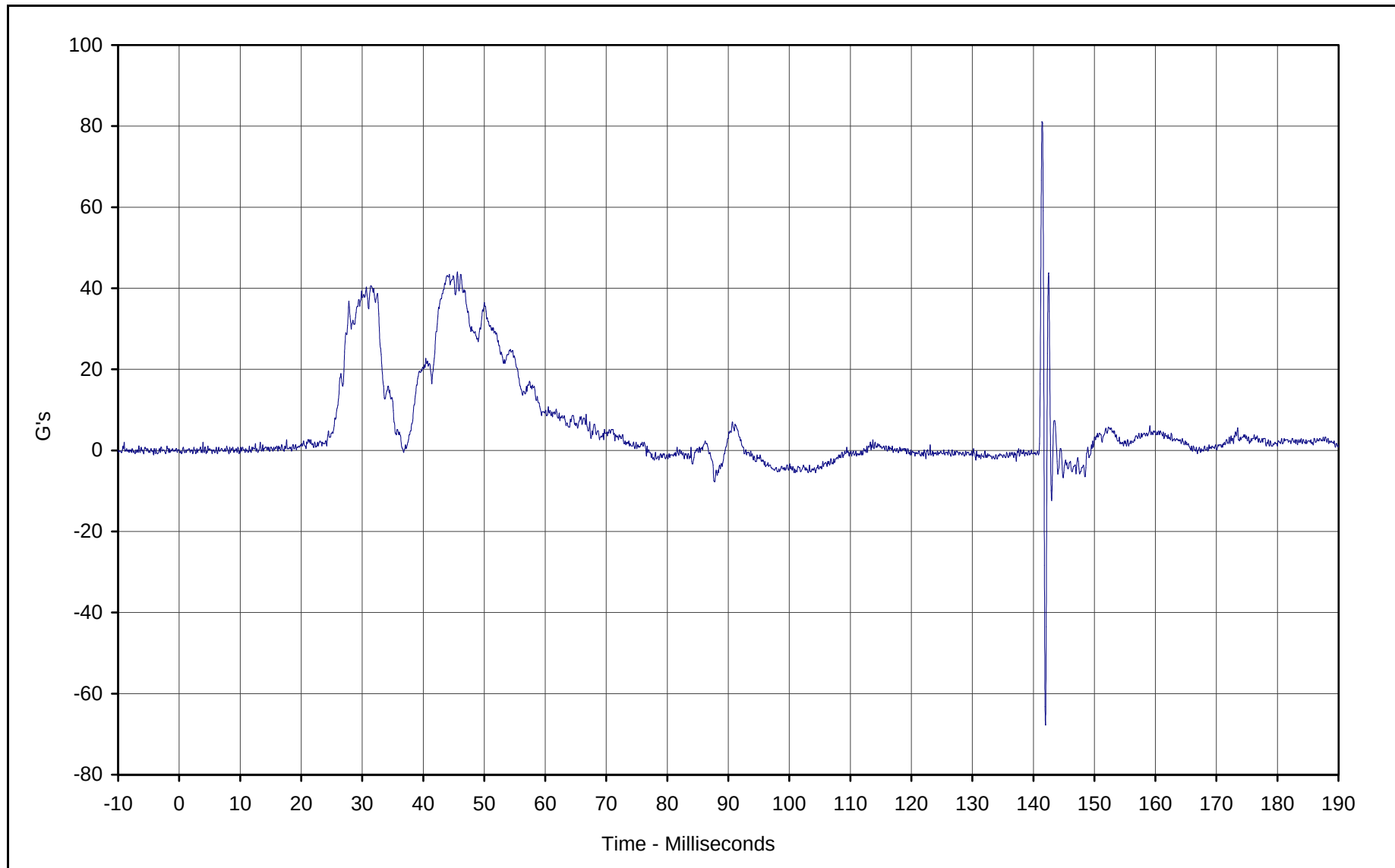
Date of Test: 11/20/01

Curve Number: IN1-008

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

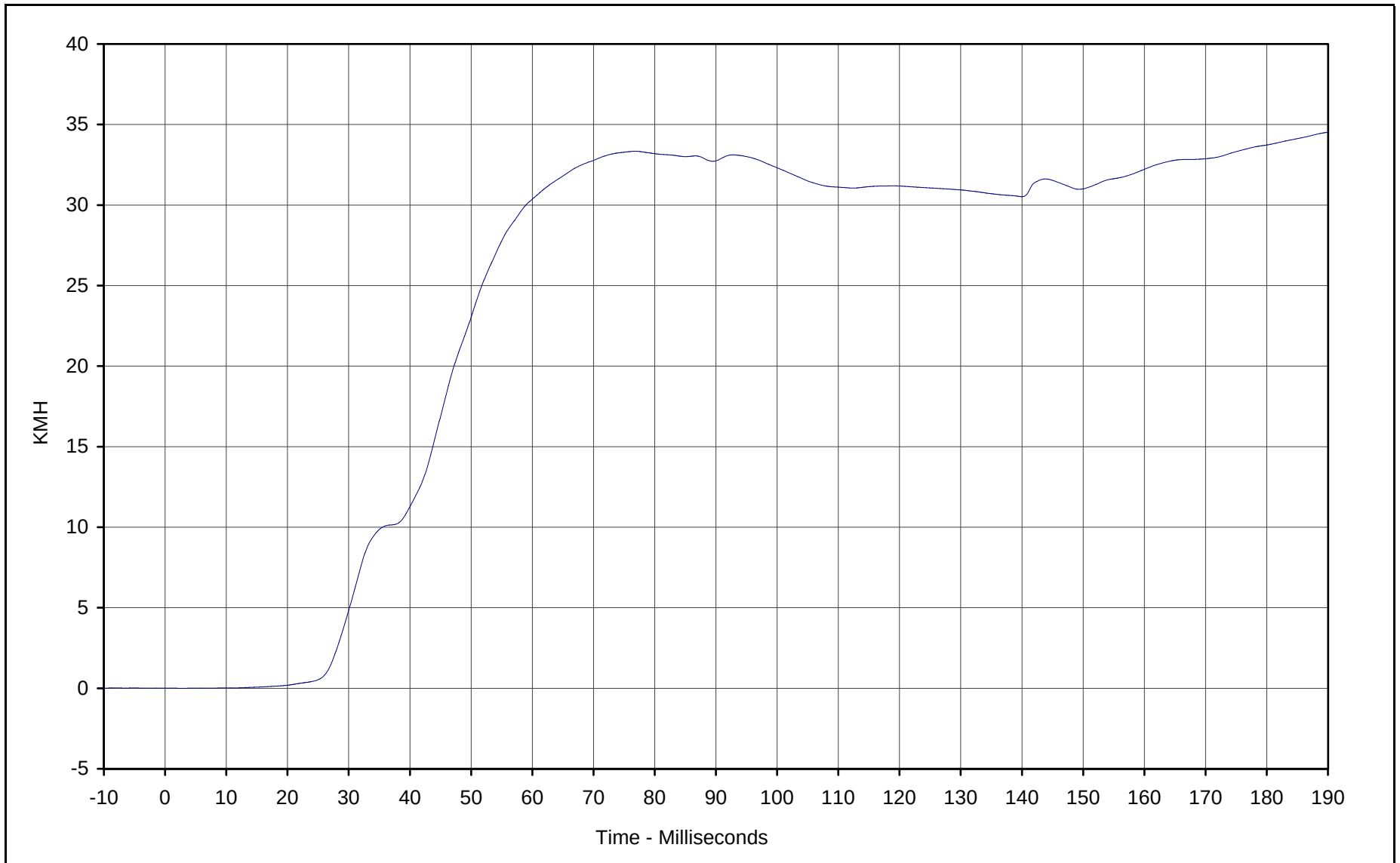




Curve Description: Driver Lower Rib Redundant Y
Maximum Value: 81.0 at 141.4 Milliseconds
Minimum Value: -67.6 at 142.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-009

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Driver Lower Rib Redundant Y Velocity

Maximum Value: 34.5 at 189.9 Milliseconds

Minimum Value: 0.0 at 2.9 Milliseconds

SAE Filter Class: 180

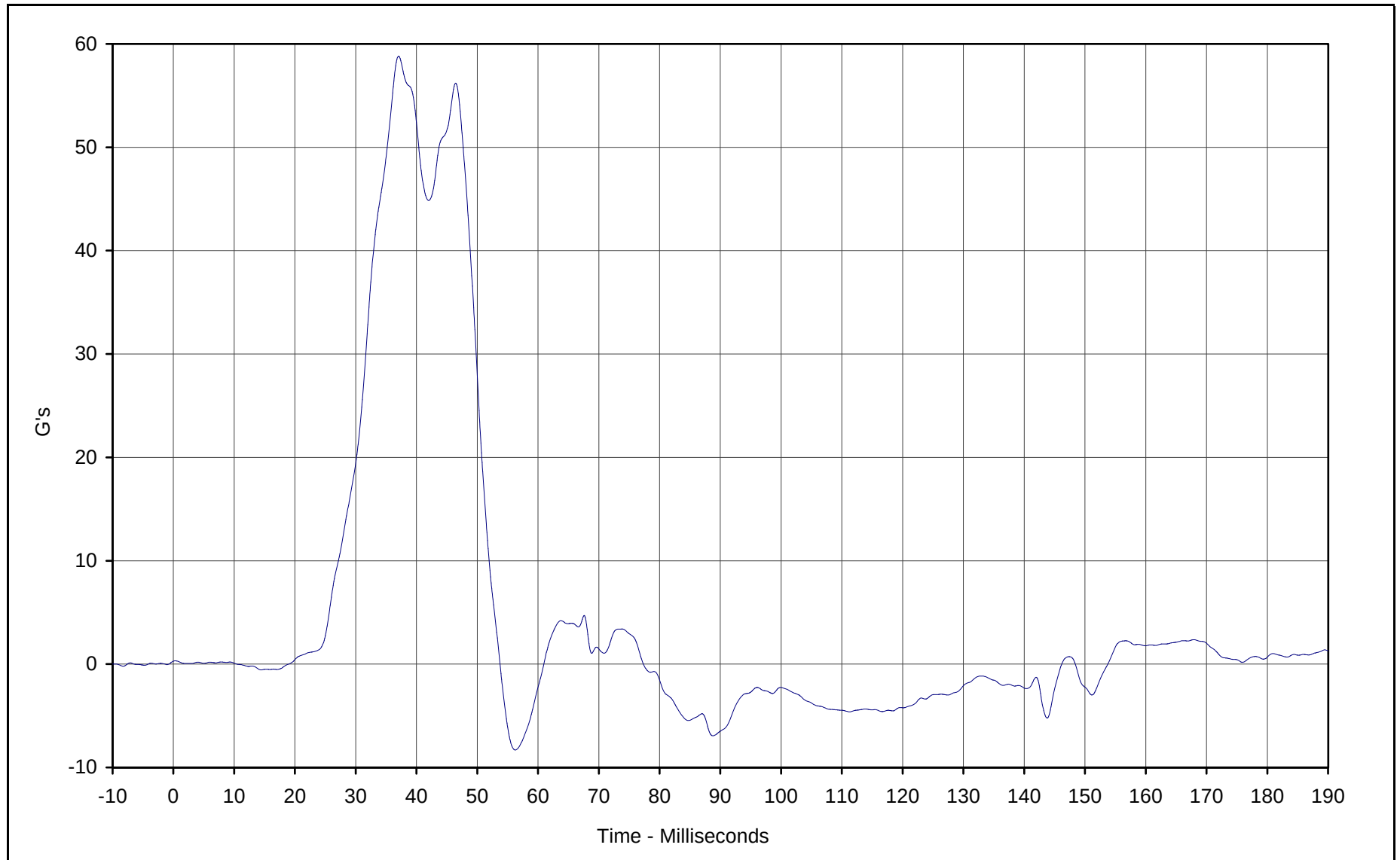
Date of Test: 11/20/01

Curve Number: IN1-009

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

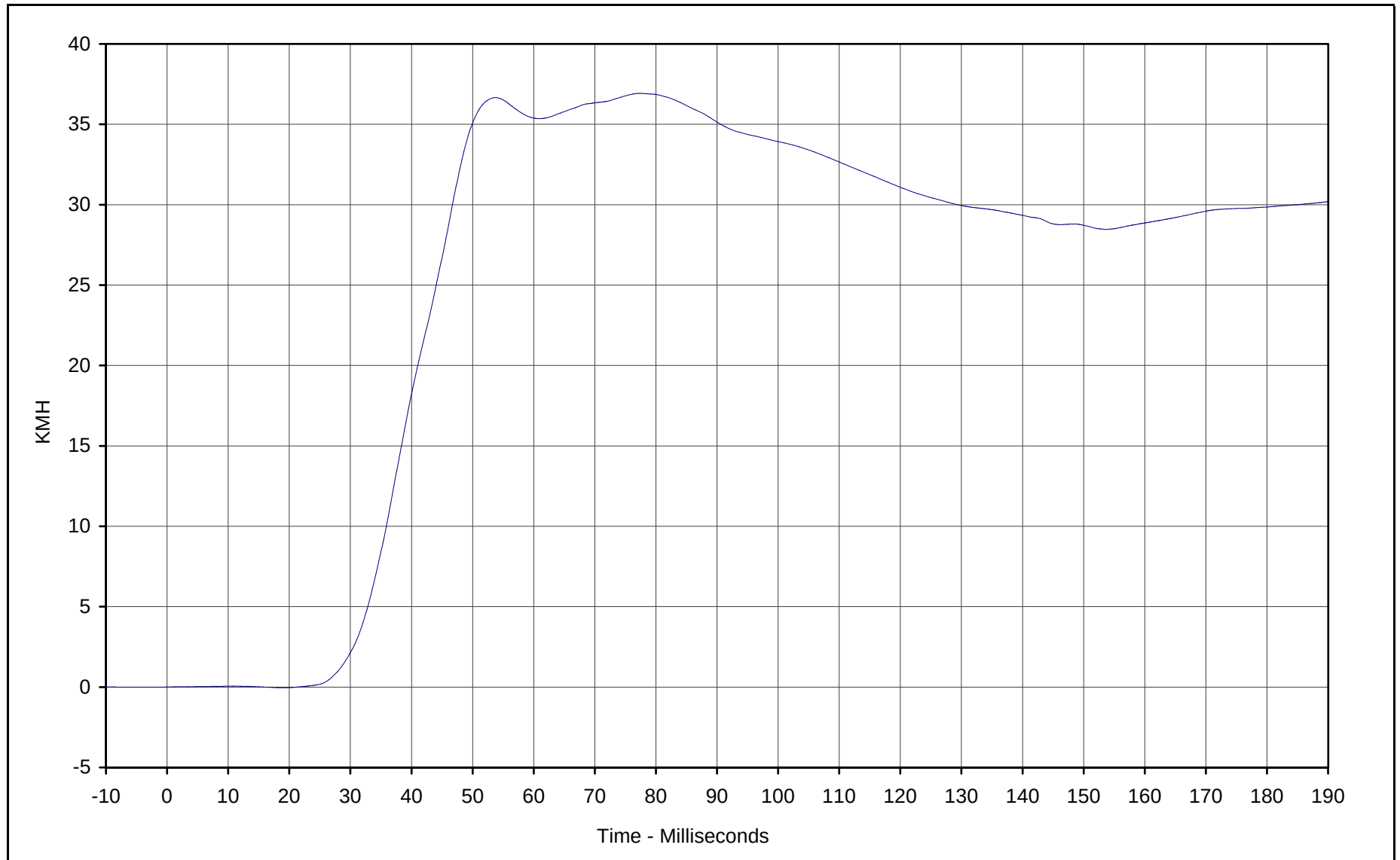




Curve Description: Driver Lower Spine Redundant Y
Maximum Value: 58.8 at 37.1 Milliseconds
Minimum Value: -8.3 at 56.3 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: FIL-010

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Driver Lower Spine Redundant Y Velocity

Maximum Value: 36.9 at 77.4 Milliseconds

Minimum Value: 0.0 at 19.0 Milliseconds

SAE Filter Class: 180

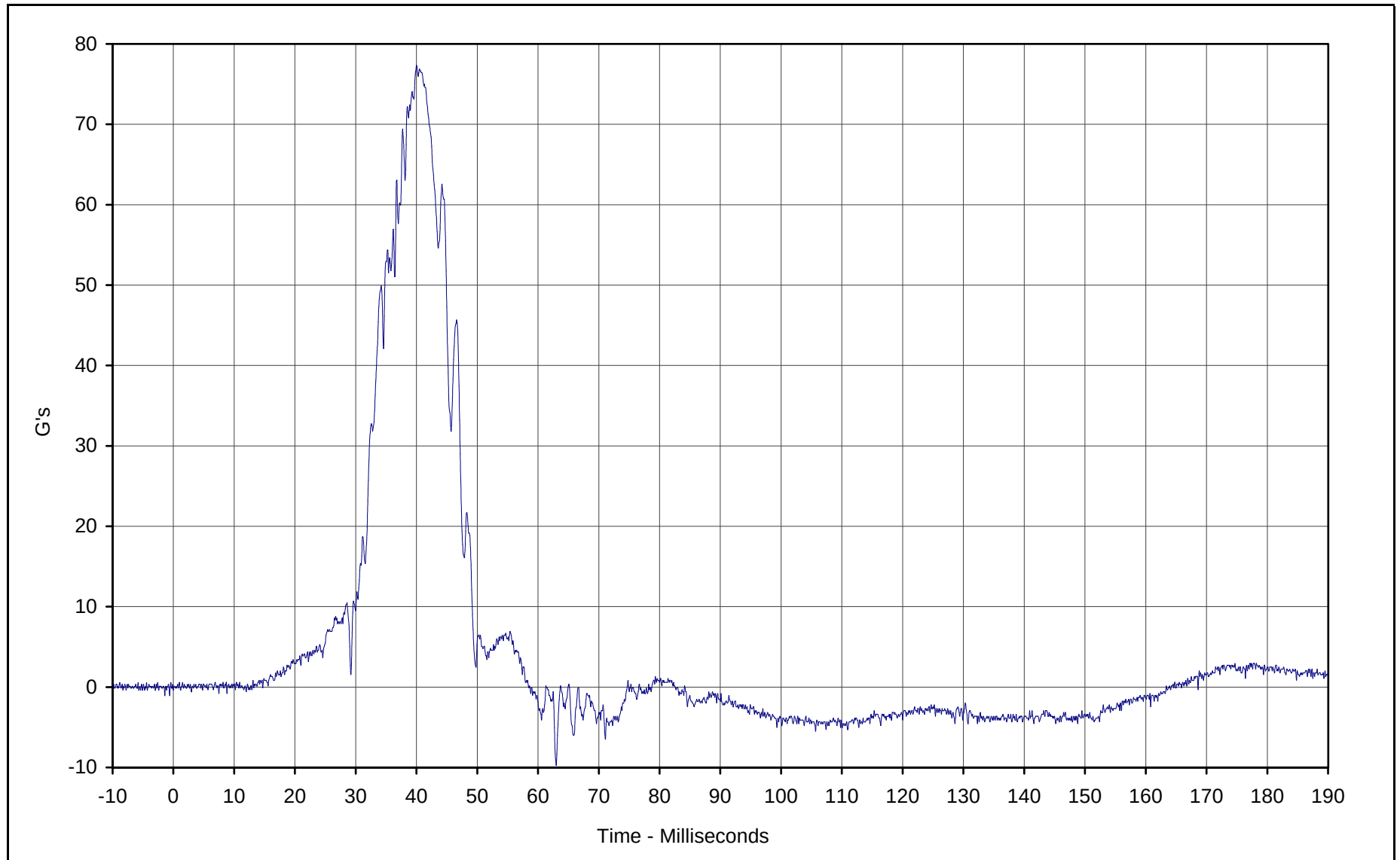
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Curve Number: IN1-0010

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

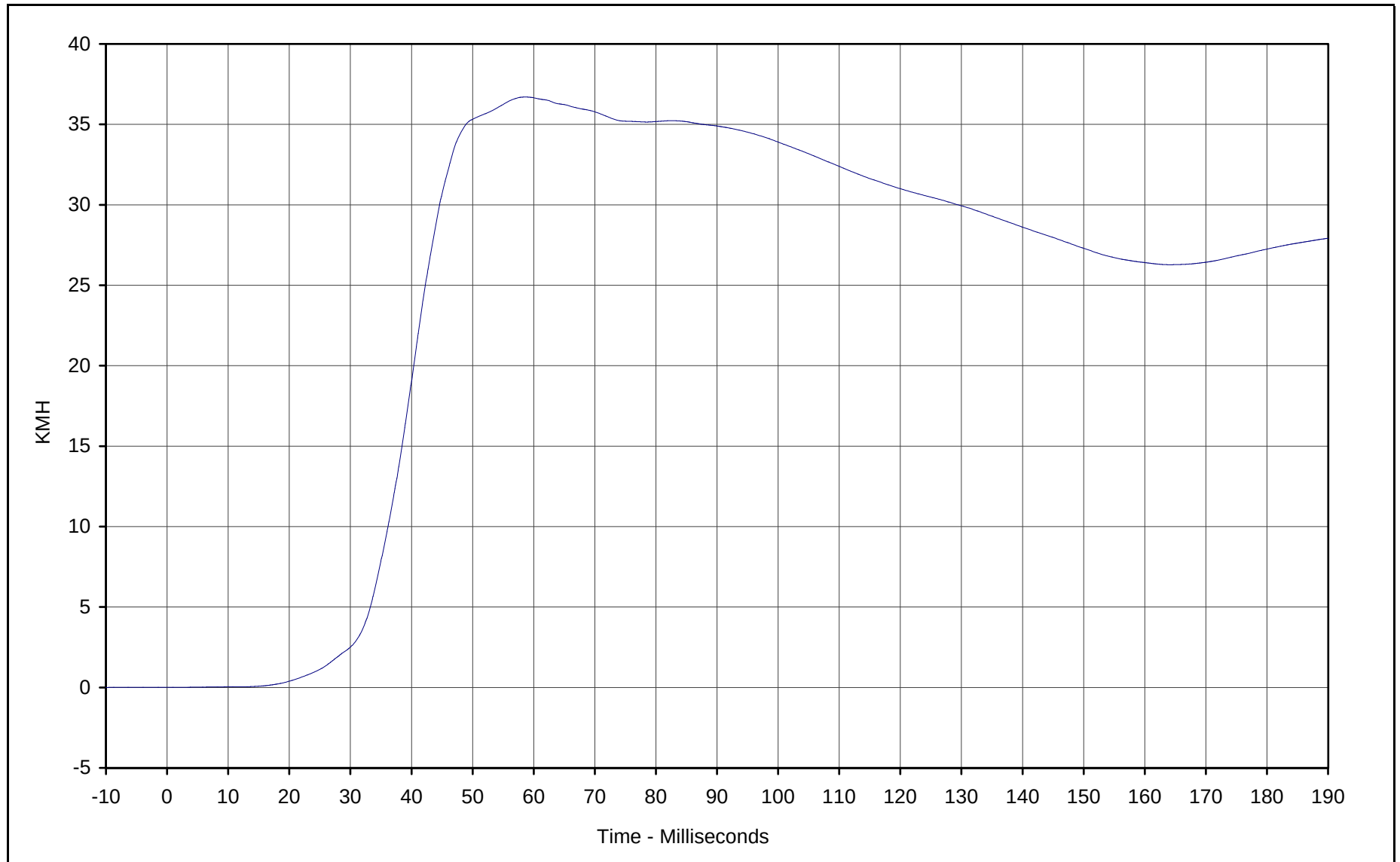




Curve Description: Driver Pelvis Redundant Y
Maximum Value: 77.4 at 40.0 Milliseconds
Minimum Value: -9.7 at 63.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-011

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

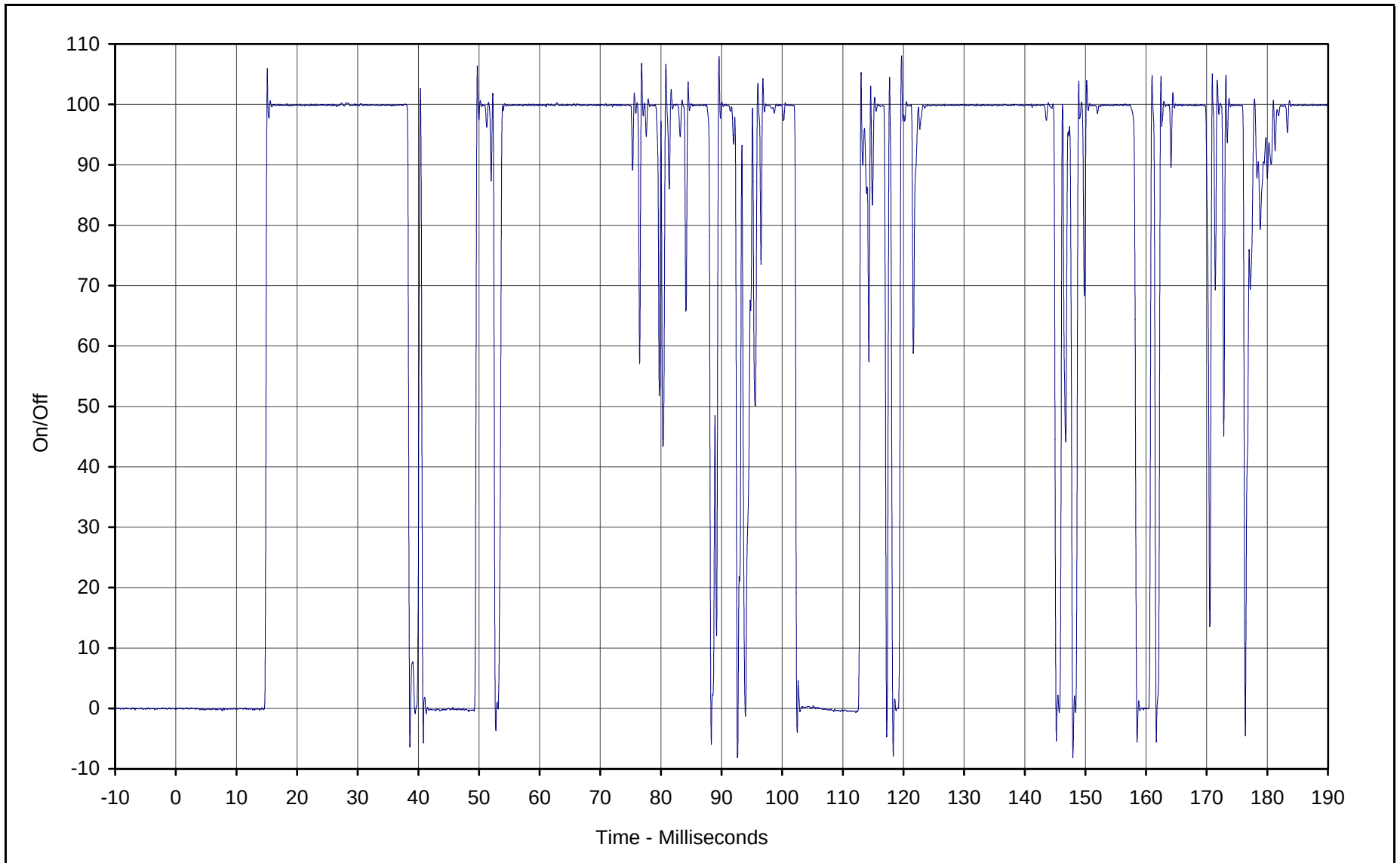




Curve Description: Driver Pelvis Redundant Y Velocity
Maximum Value: 36.7 at 58.6 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-011

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

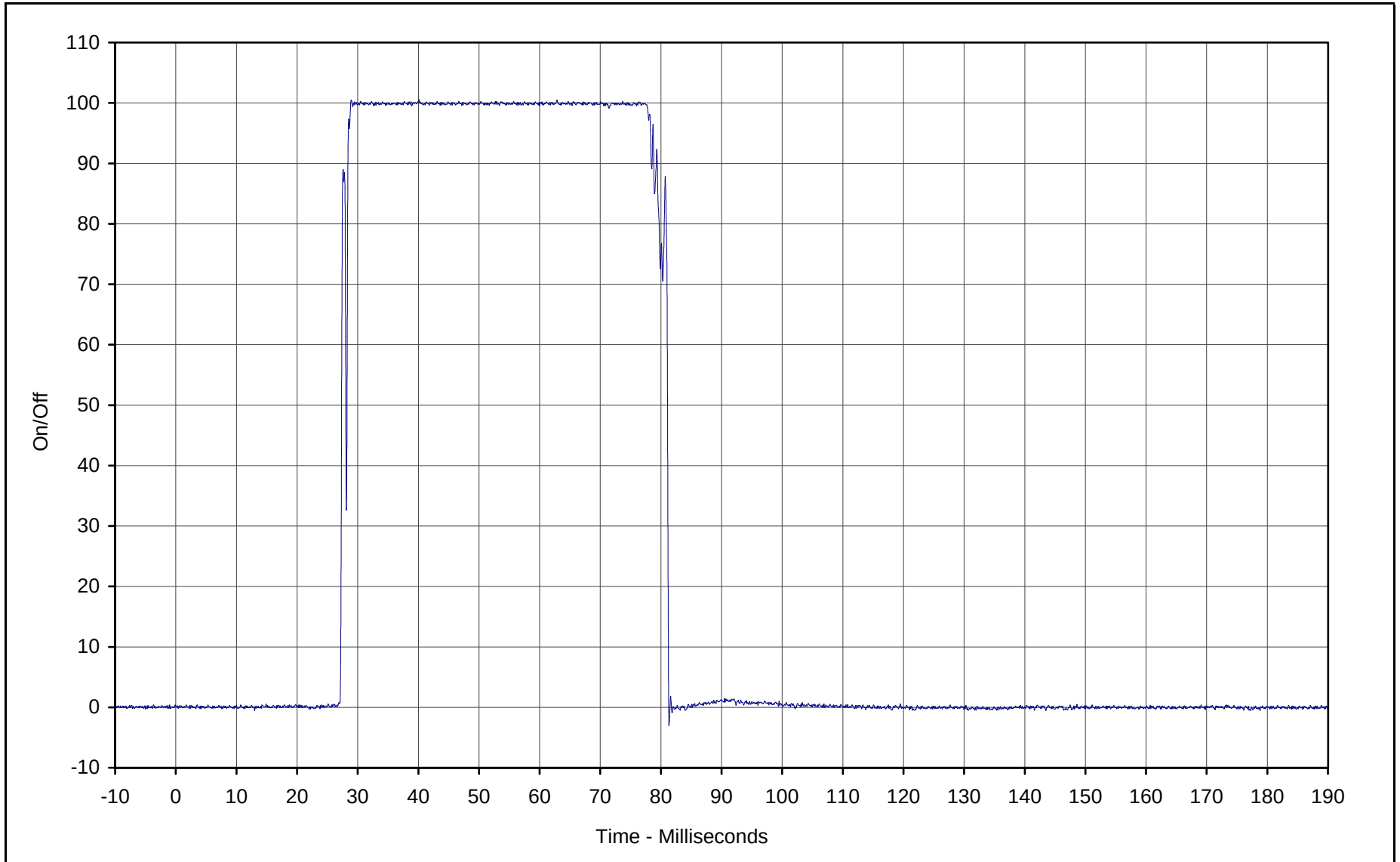




Curve Description: Driver Thorax Contact
Maximum Value: 108.0 at 119.7 Milliseconds
Crossing Point: 50% at 14.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-012

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

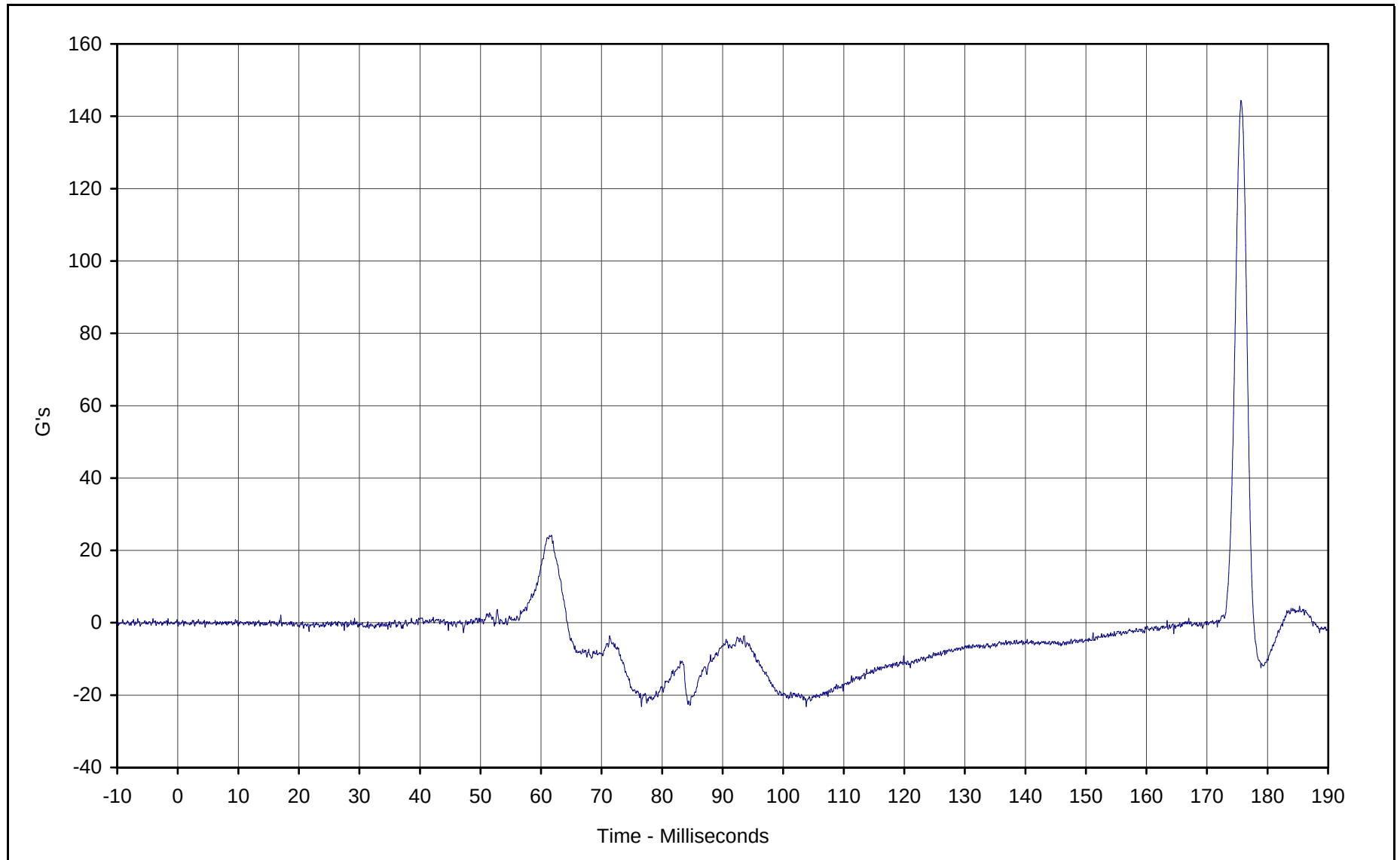




Curve Description: Driver Pelvis Contact
Maximum Value: 100.6 at 40.1 Milliseconds
Crossing Point: 50% at 27.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-013

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

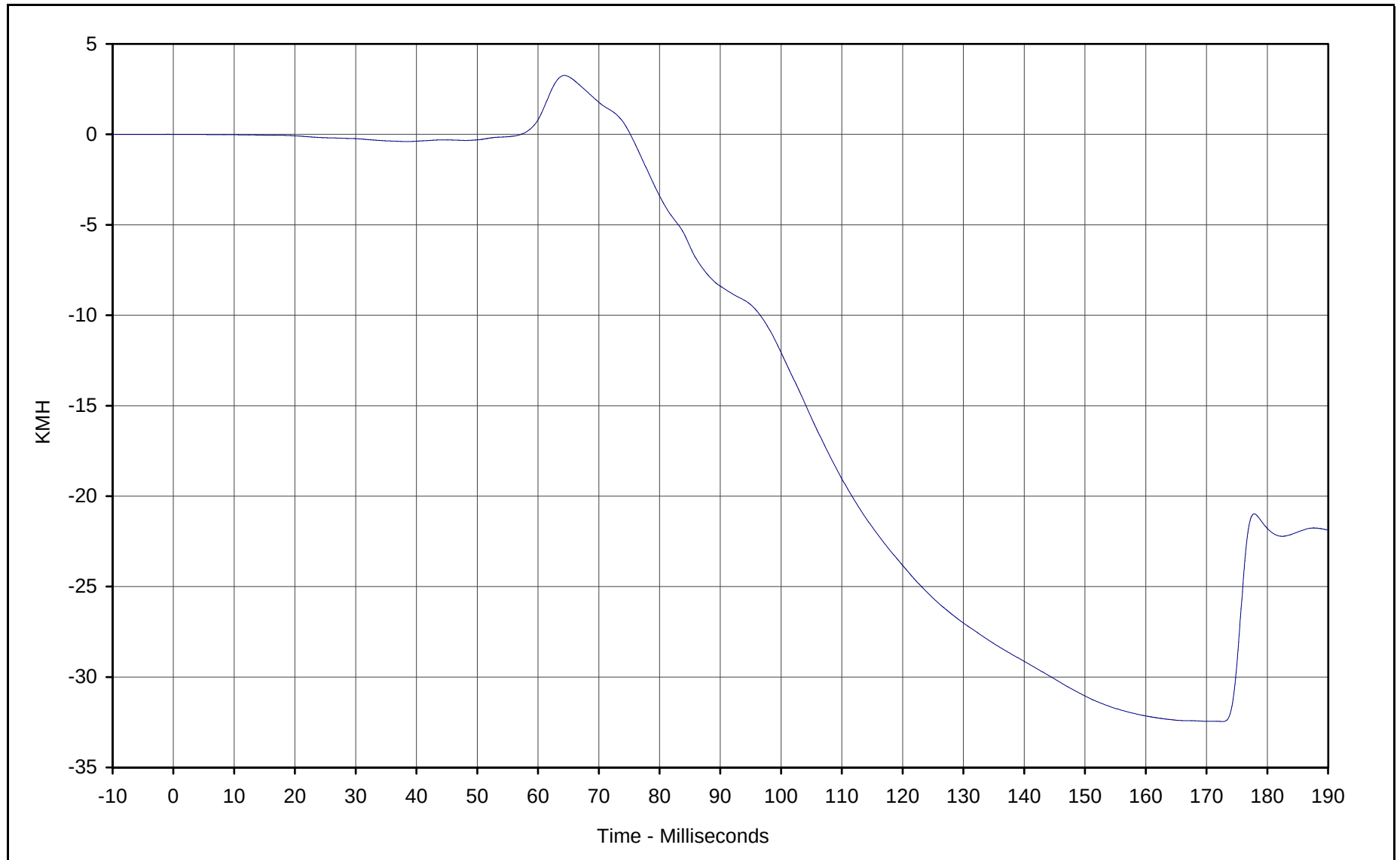




Curve Description: Pass. Head CG X
Maximum Value: 144.3 at 175.6 Milliseconds
Minimum Value: -23.2 at 76.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-014

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

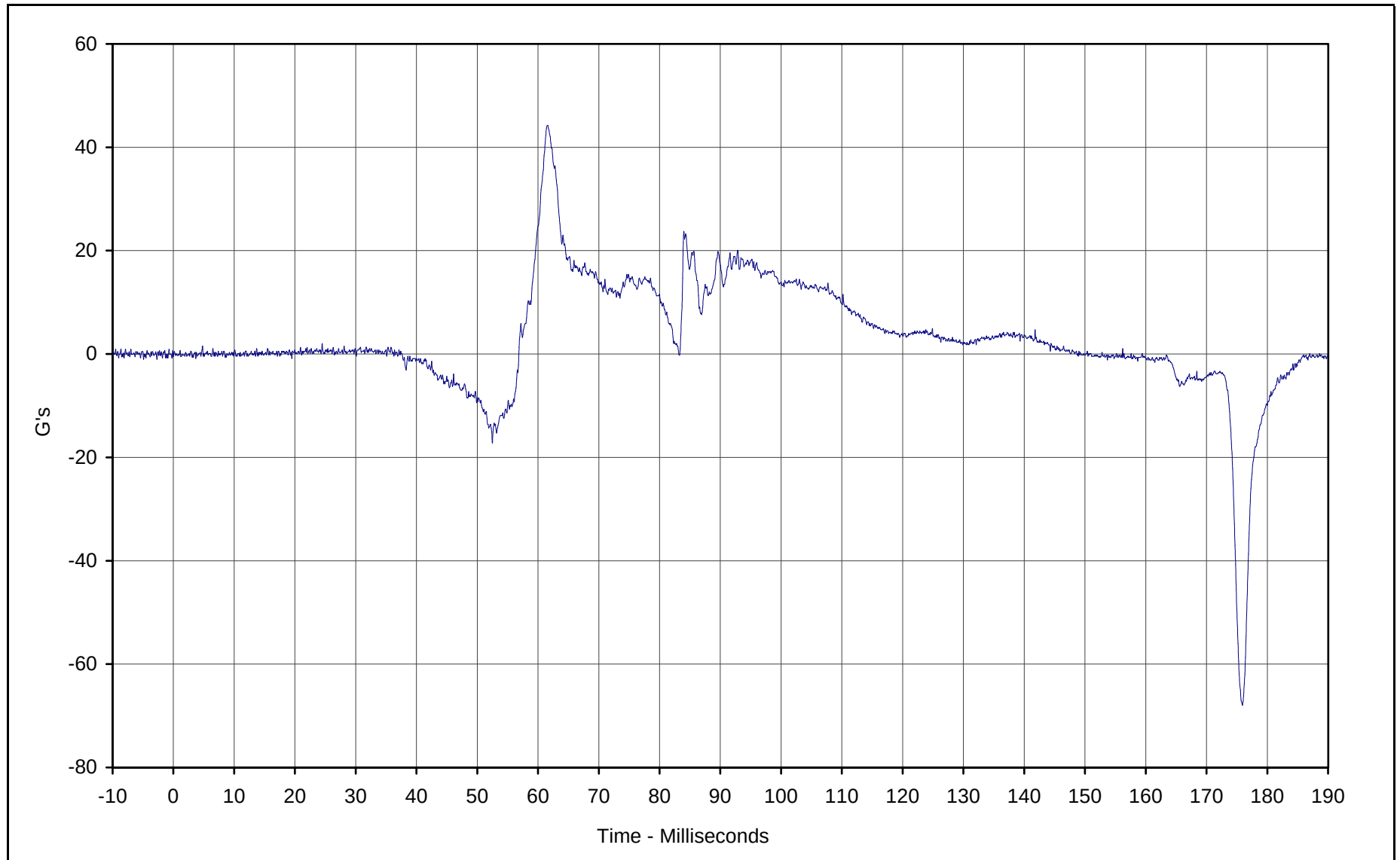




Curve Description: Pass. Head CG X Velocity
Maximum Value: 3.3 at 64.4 Milliseconds
Minimum Value: -32.5 at 172.6 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-014

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

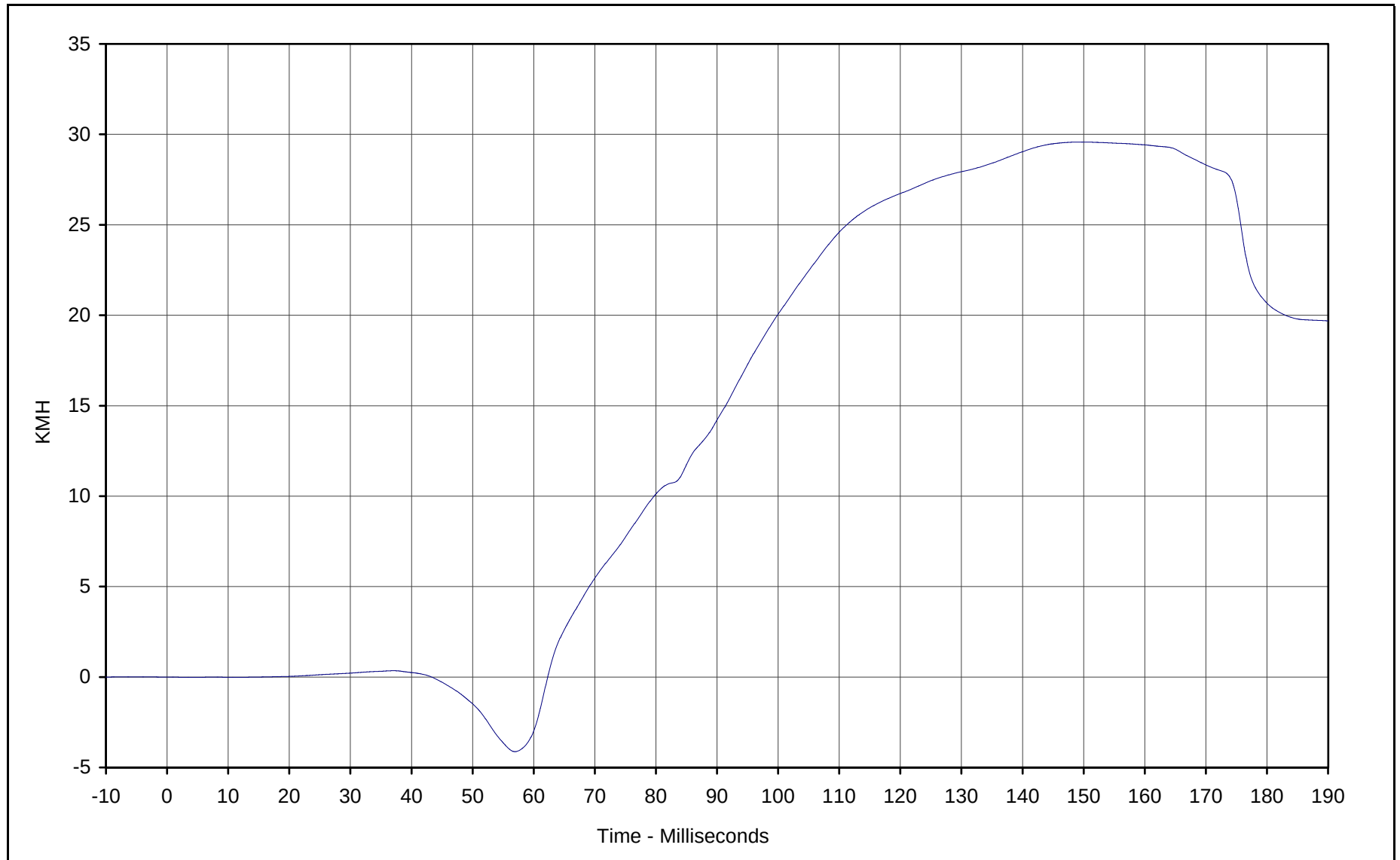




Curve Description: Pass. Head CG Y
Maximum Value: 44.2 at 61.5 Milliseconds
Minimum Value: -68.0 at 175.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-015

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

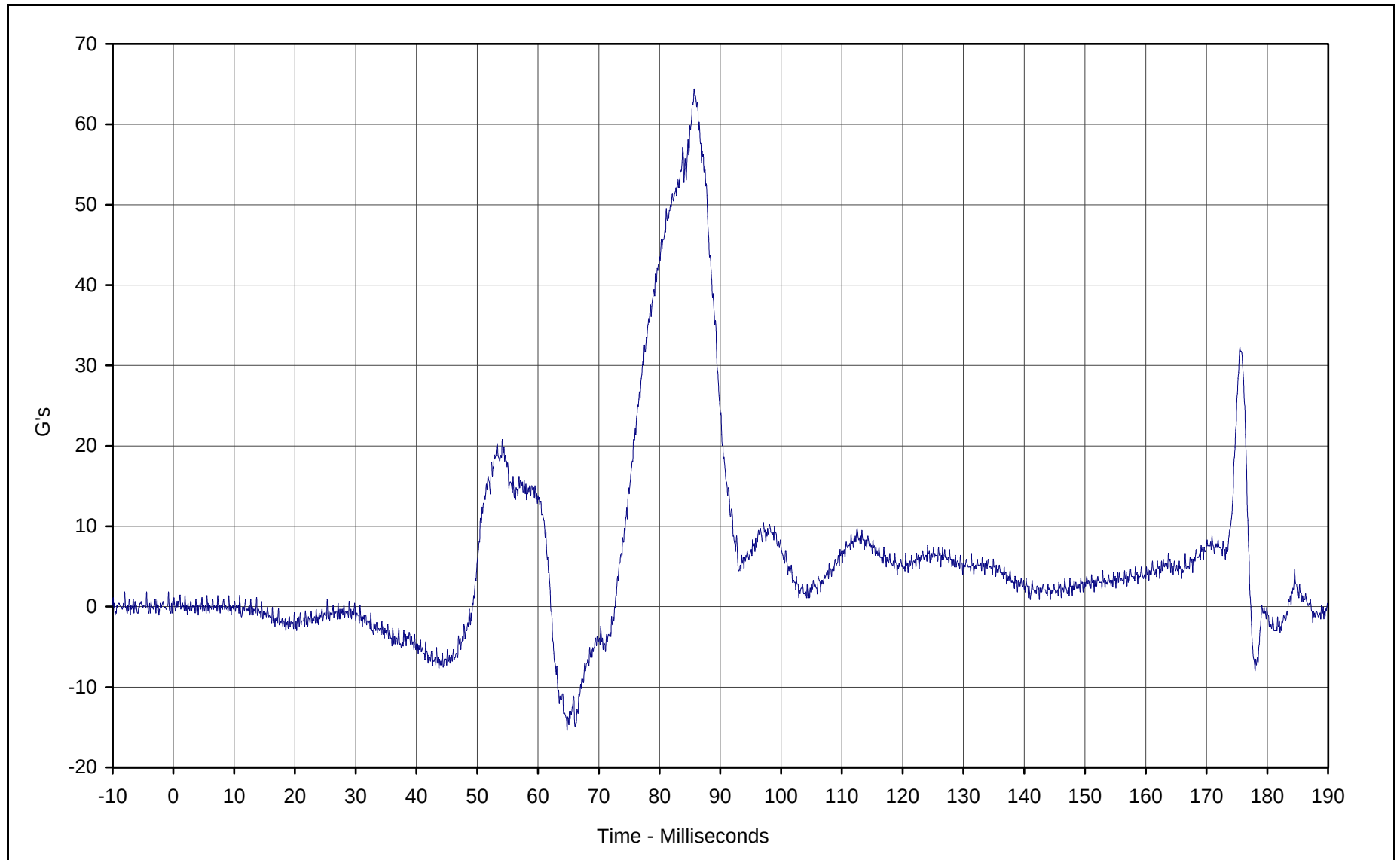




Curve Description: Pass. Head CG Y Velocity
Maximum Value: 29.6 at 149.3 Milliseconds
Minimum Value: -4.1 at 56.9 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-015

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

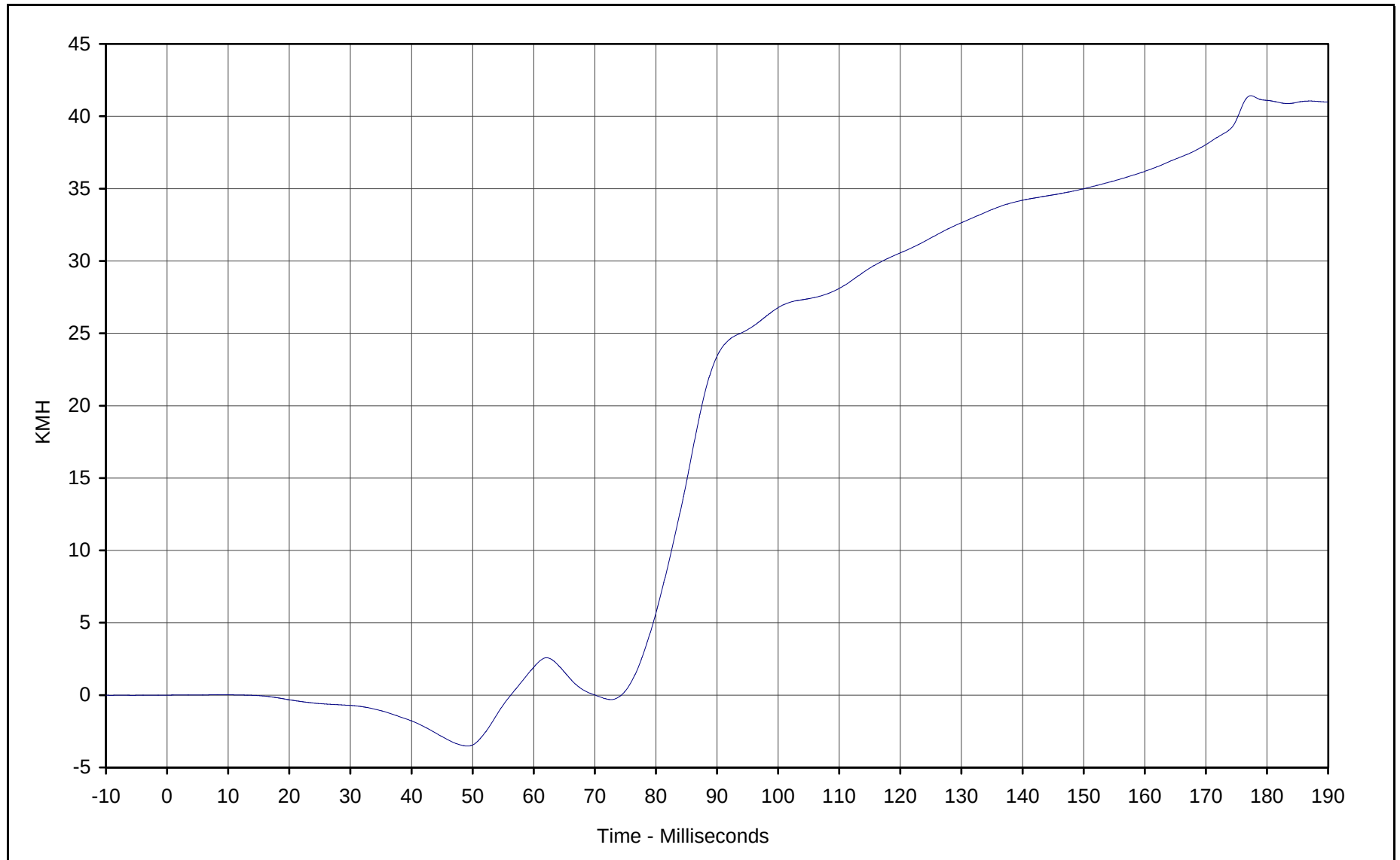




Curve Description: Pass. Head CG Z
Maximum Value: 64.3 at 85.7 Milliseconds
Minimum Value: -15.4 at 64.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-016

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

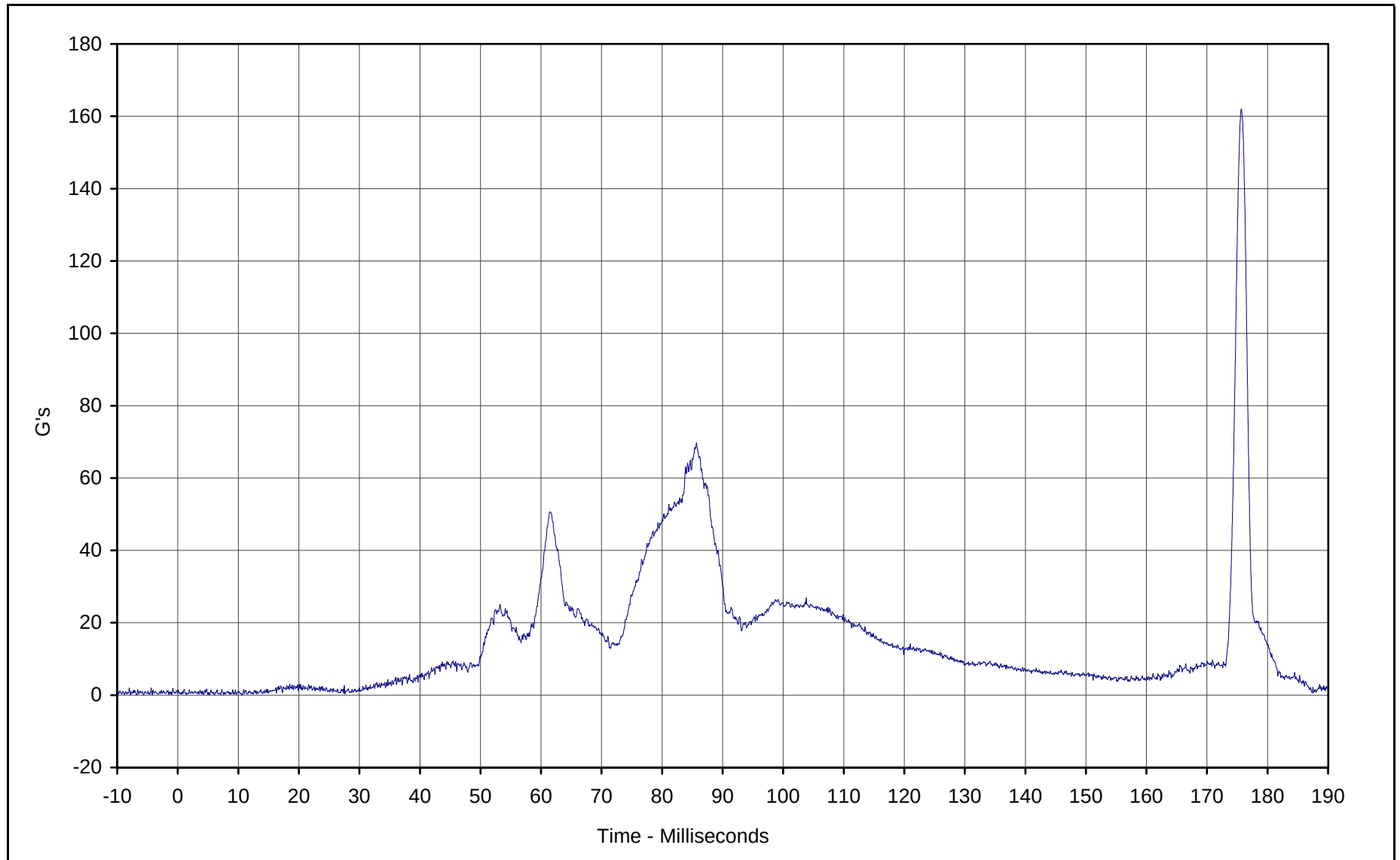




Curve Description: Pass. Head CG Z Velocity
Maximum Value: 41.4 at 177.4 Milliseconds
Minimum Value: -3.5 at 49.2 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-016

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

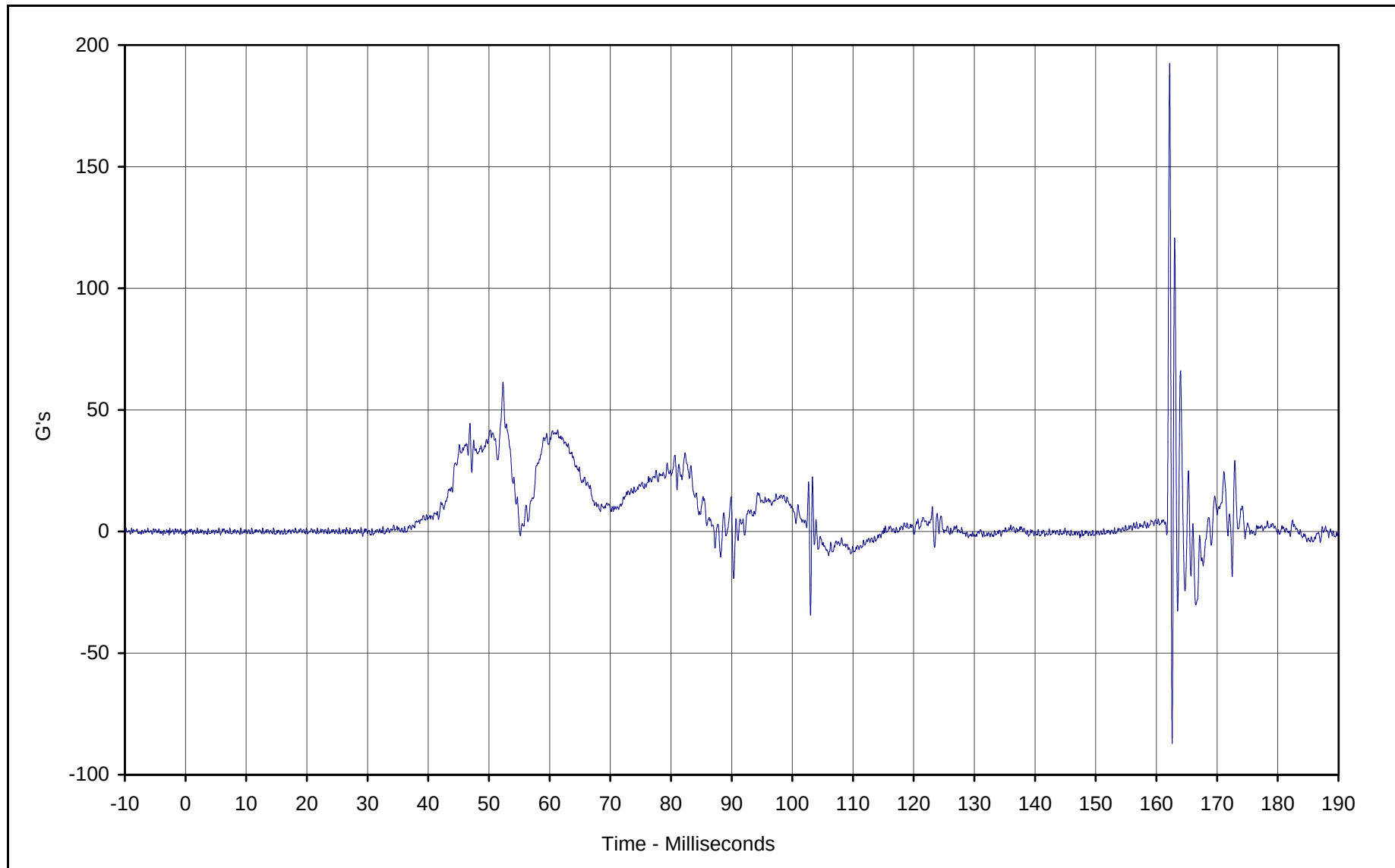




Curve Description: Pass. Head CG Resultant
Maximum Value: 162.0 at 175.7 Milliseconds
Minimum Value: 0.1 at 6.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: RES-014

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

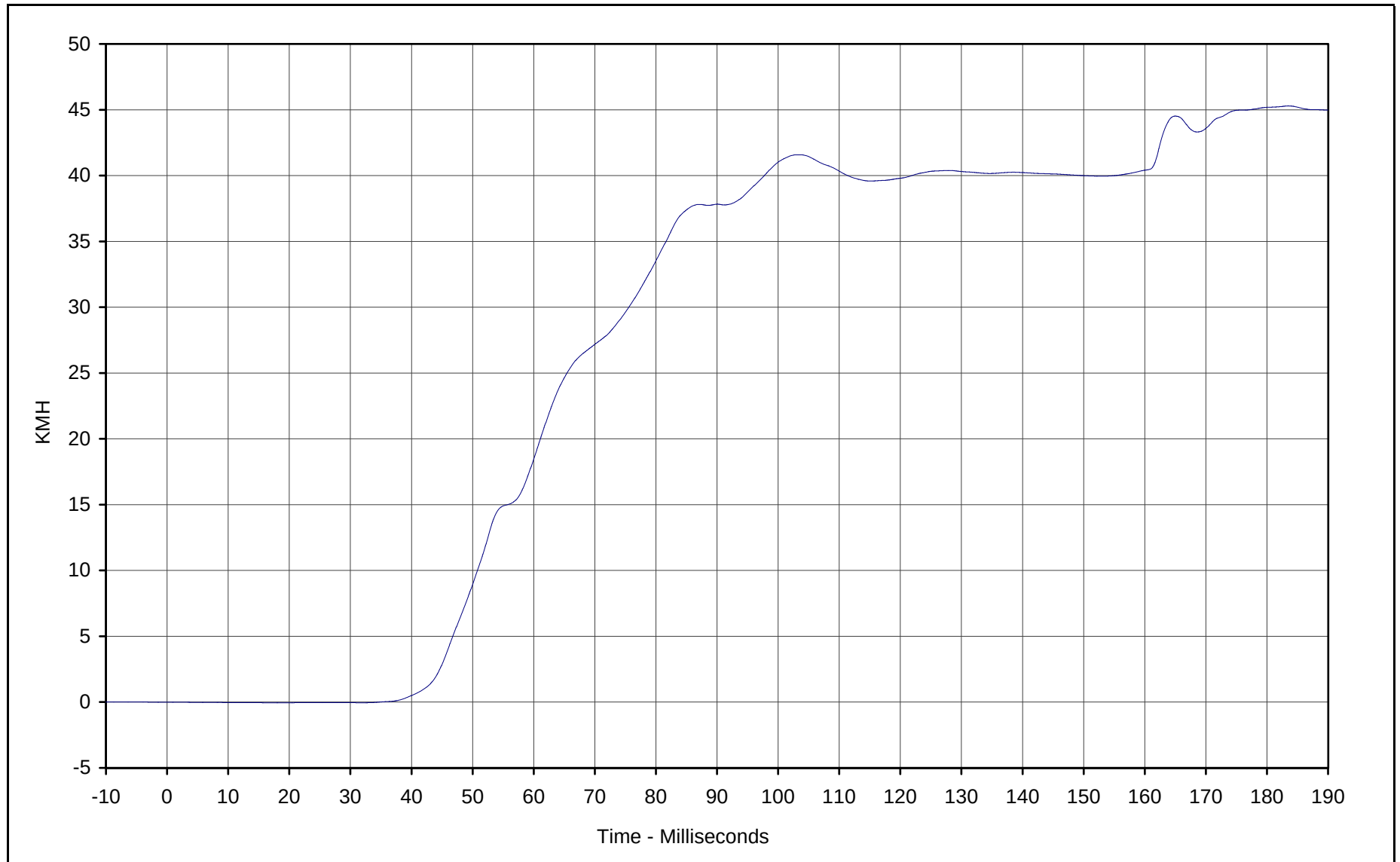




Curve Description: Pass. Upper Rib Primary Y
Maximum Value: 192.1 at 162.2 Milliseconds
Minimum Value: -87.2 at 162.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-017

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Pass. Upper Rib Primary Y Velocity

Maximum Value: 45.3 at 183.5 Milliseconds

Minimum Value: -0.1 at 17.2 Milliseconds

SAE Filter Class: 180

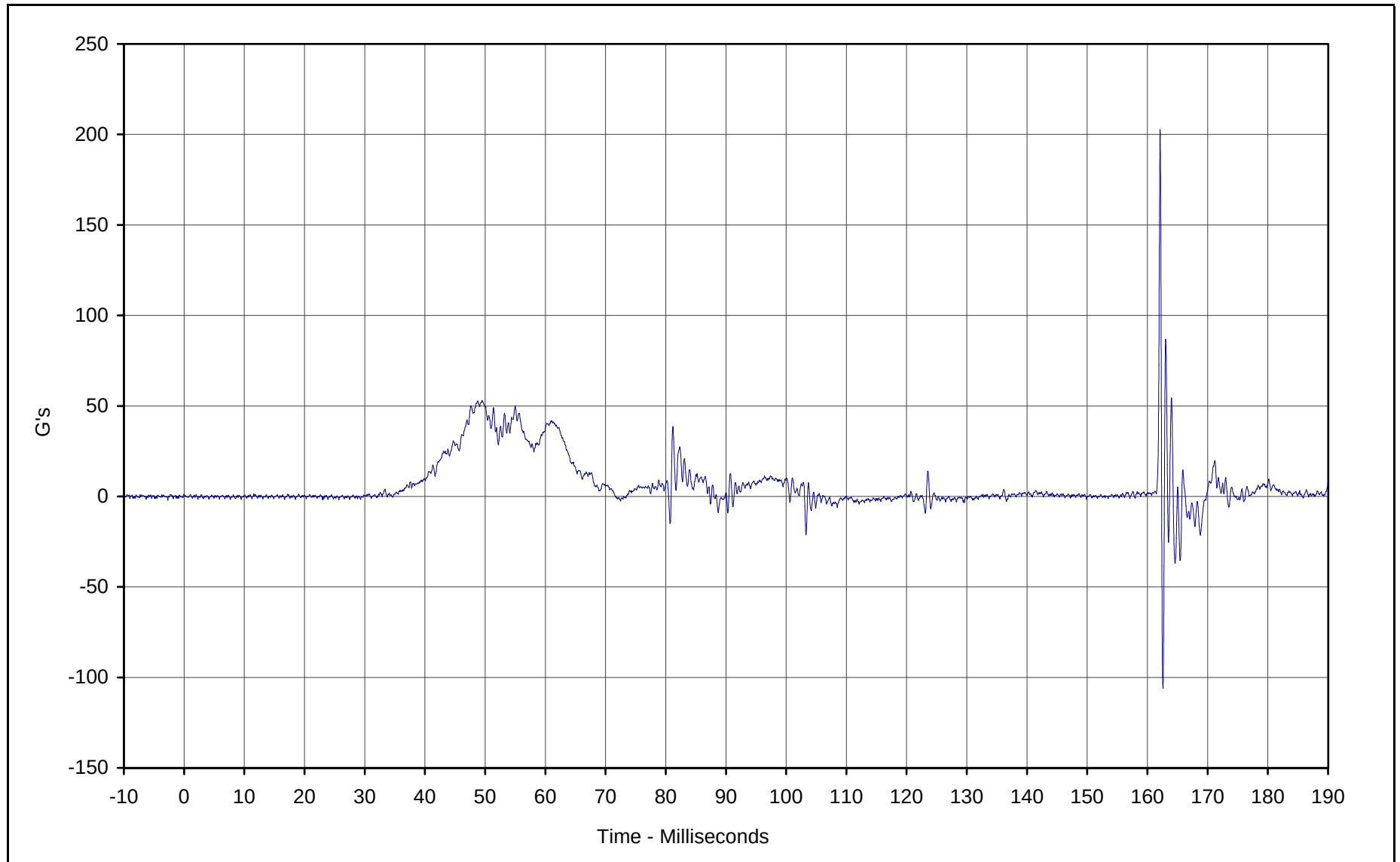
Date of Test: 11/20/01

Curve Number: IN1-017

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

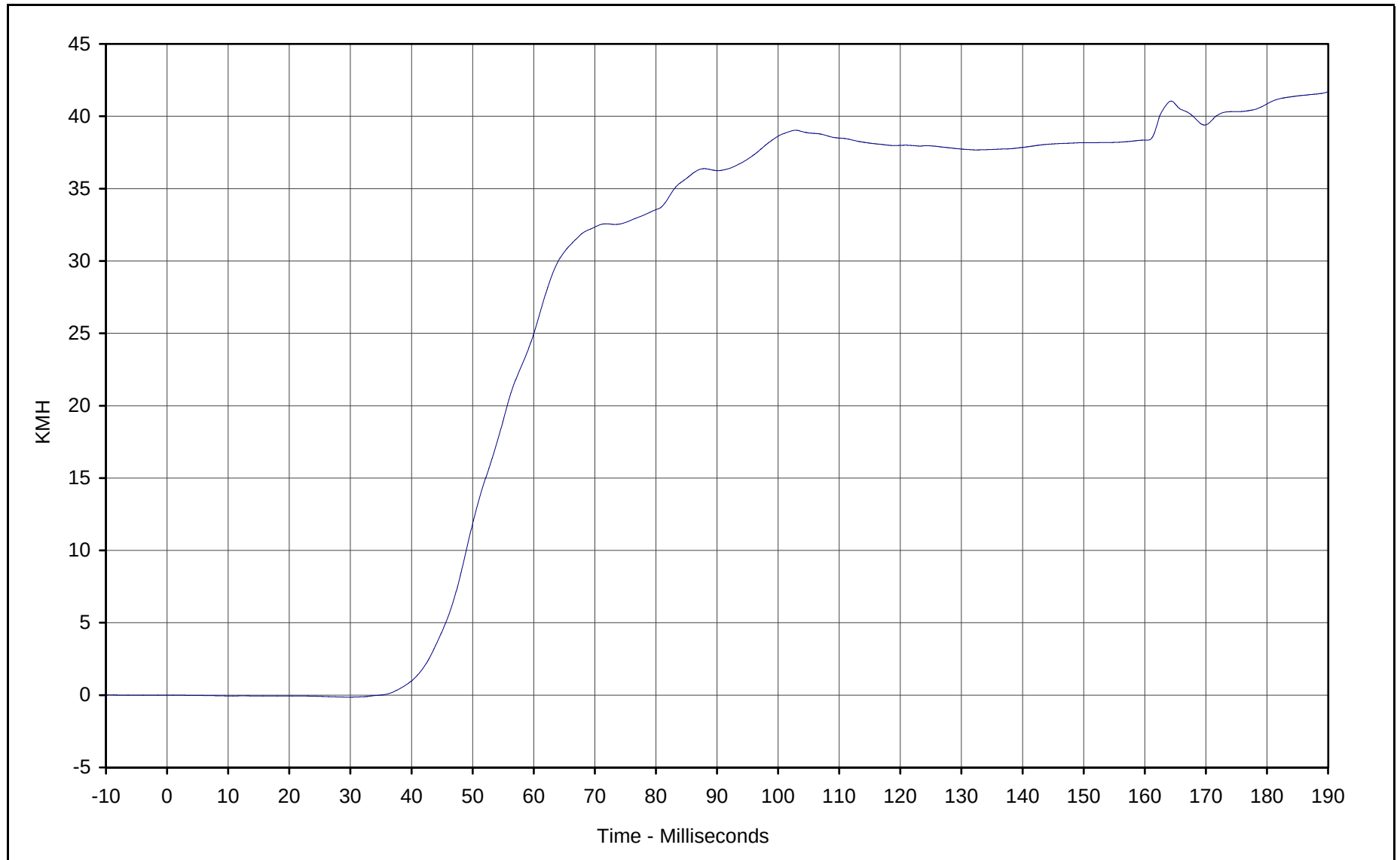




Curve Description: Pass. Lower Rib Primary Y
Maximum Value: 202.6 at 162.1 Milliseconds
Minimum Value: -105.9 at 162.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-018

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Pass. Lower Rib Primary Y Velocity

Maximum Value: 41.7 at 189.9 Milliseconds

Minimum Value: -0.1 at 29.7 Milliseconds

SAE Filter Class: 180

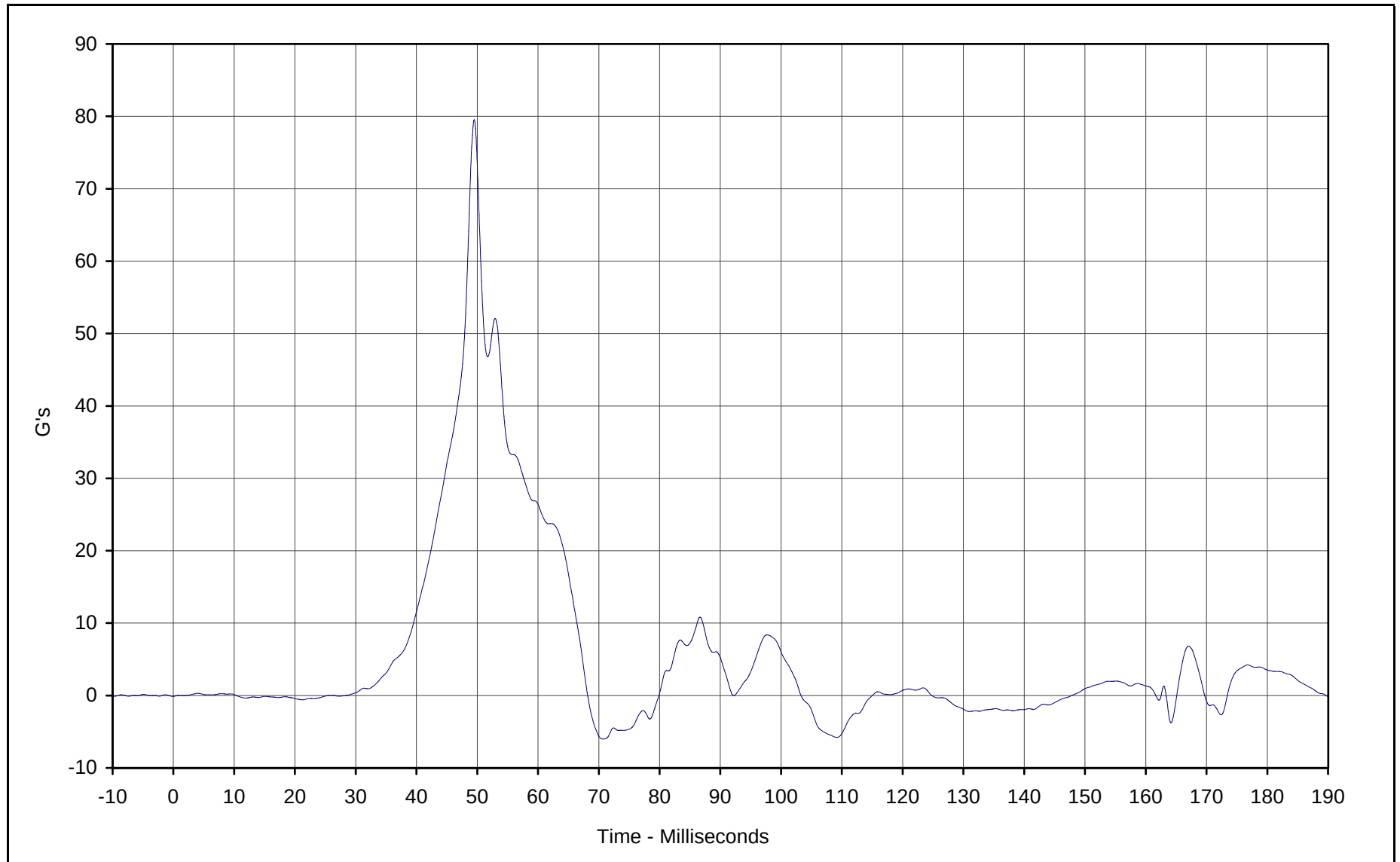
Date of Test: 11/20/01

Curve Number: IN1-018

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

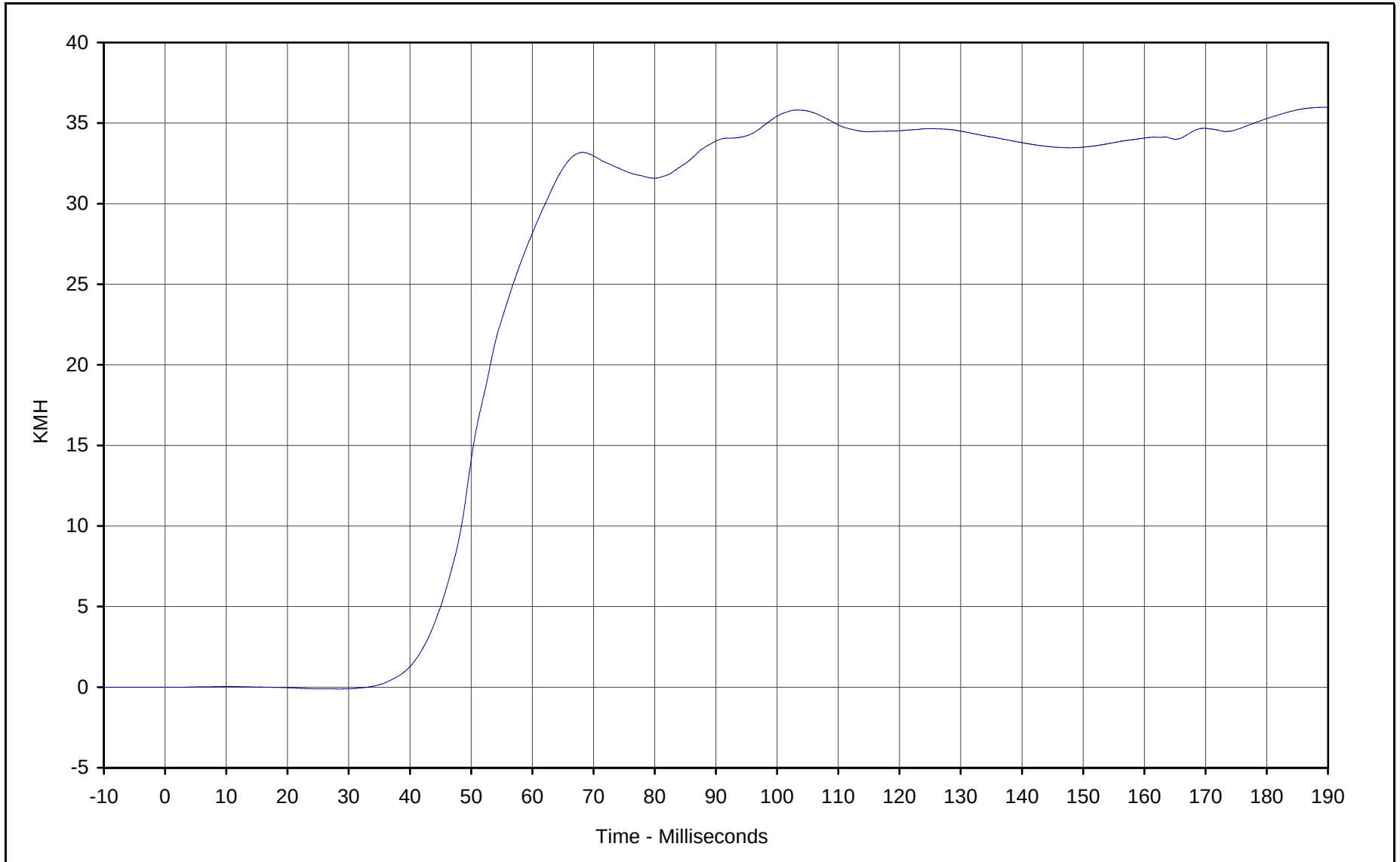




Curve Description: Pass. Lower Spine Primary Y
Maximum Value: 79.5 at 49.5 Milliseconds
Minimum Value: -6.0 at 70.7 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: FIL-019

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Pass. Lower Spine Primary Y Velocity

Maximum Value: 36.0 at 189.7 Milliseconds

Minimum Value: -0.1 at 28.5 Milliseconds

SAE Filter Class: 180

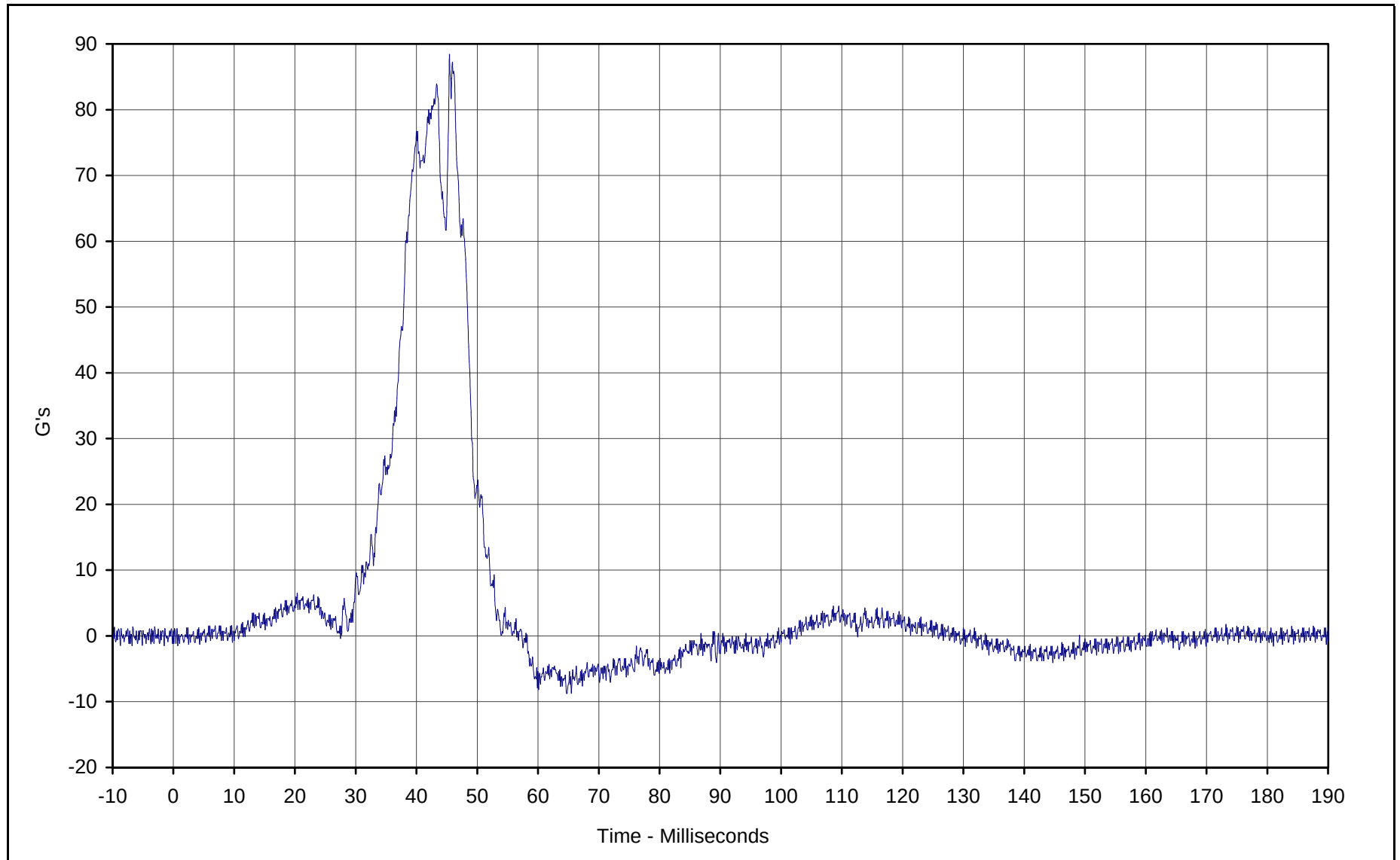
Date of Test: 11/20/01

Curve Number: IN1-019

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

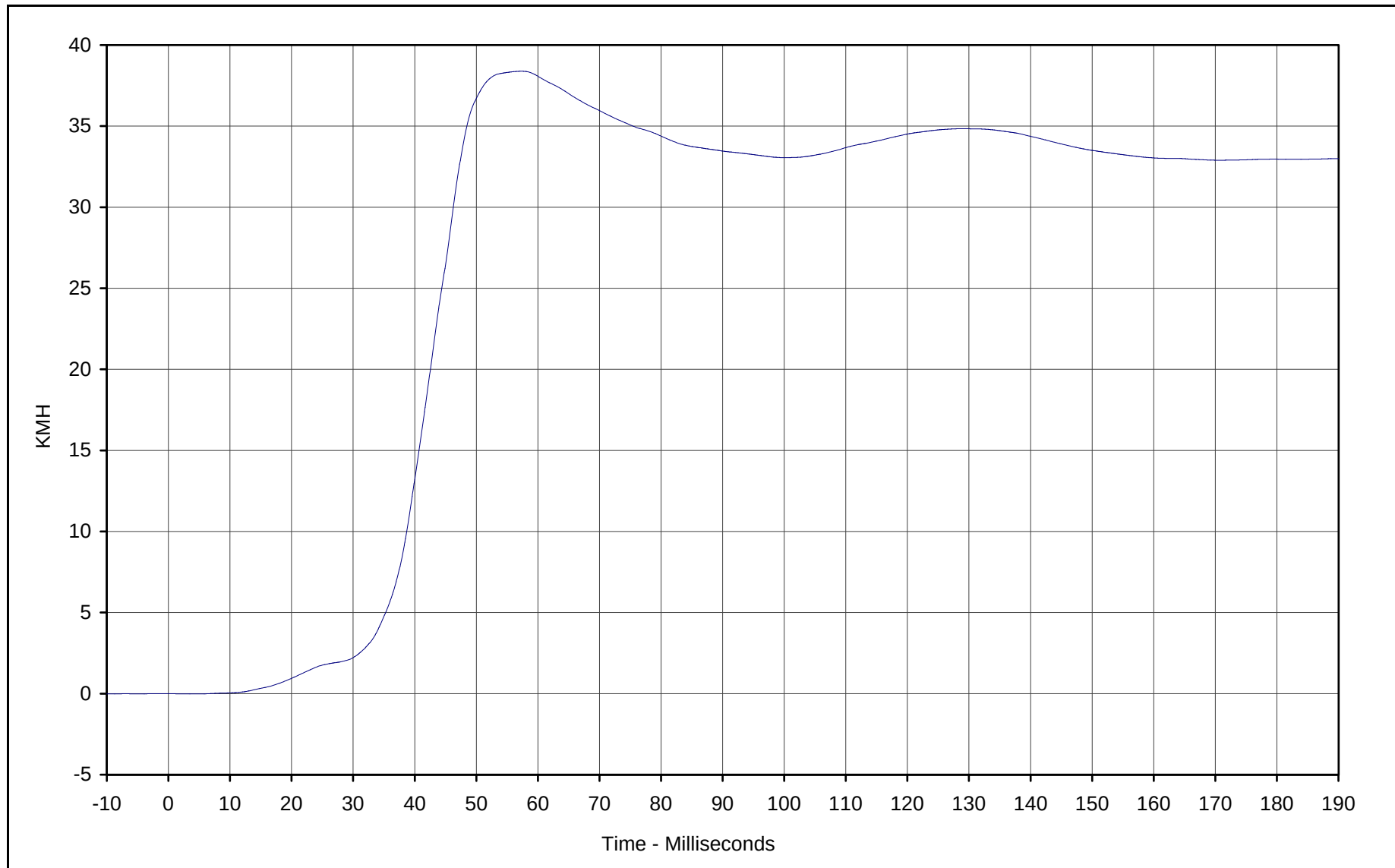




Curve Description: Pass. Pelvis Primary Y
Maximum Value: 88.3 at 45.4 Milliseconds
Minimum Value: -8.7 at 64.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-020

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Pass. Pelvis Primary Y Velocity

Maximum Value: 38.4 at 57.3 Milliseconds

Minimum Value: 0.0 at 4.4 Milliseconds

SAE Filter Class: 180

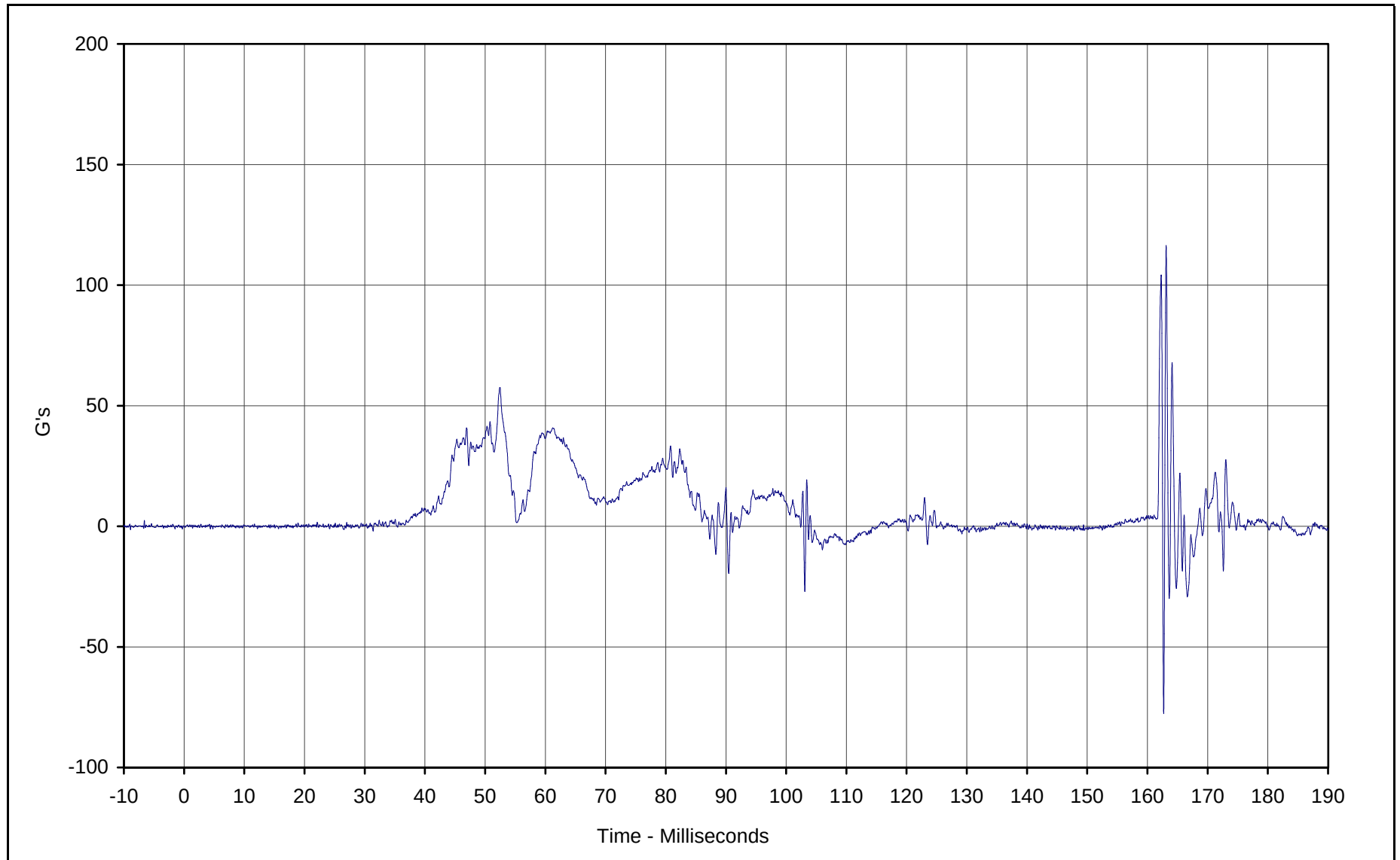
Date of Test: 11/20/01

Curve Number: IN1-020

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

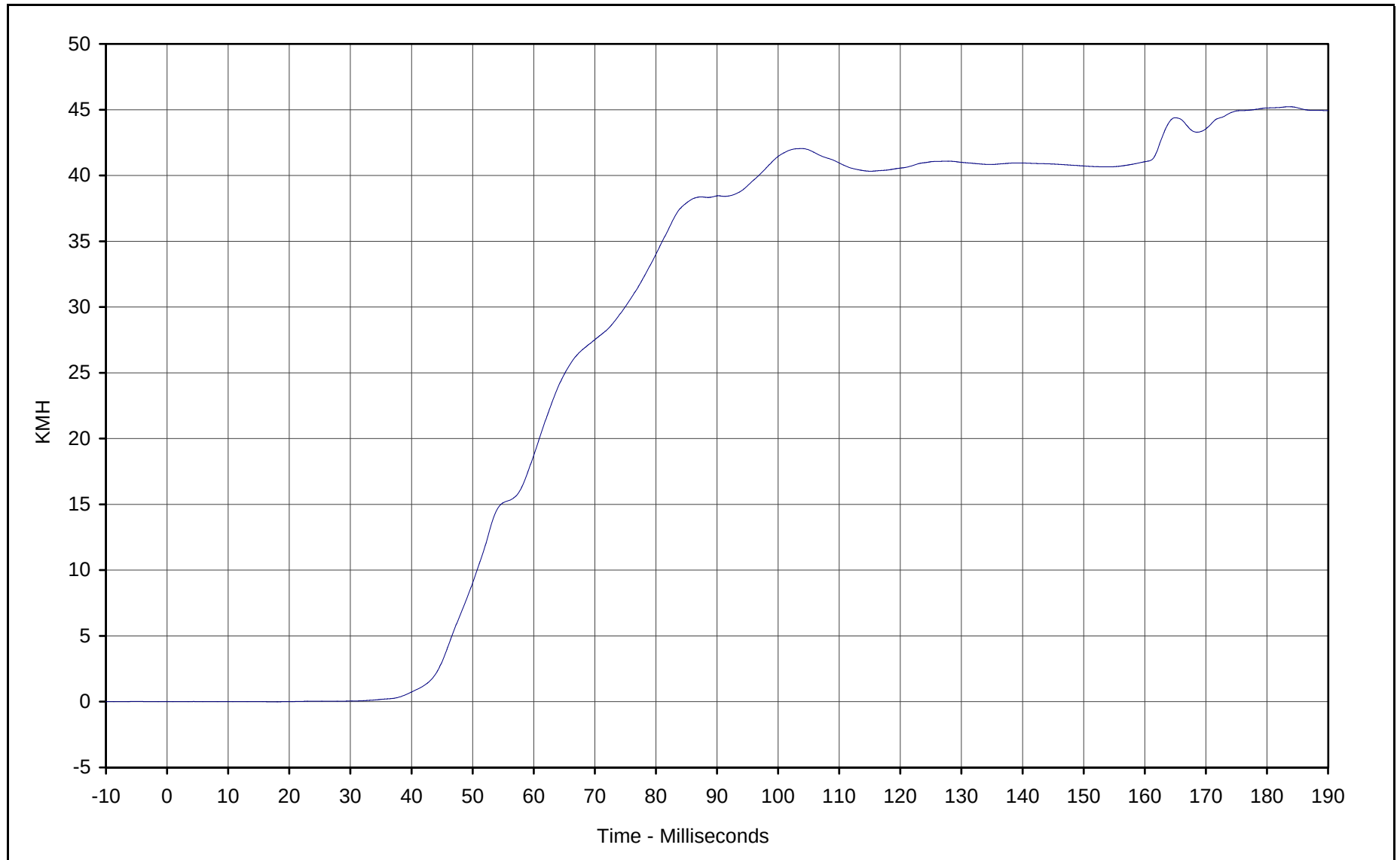




Curve Description: Pass. Upper Rib Redundant Y
Maximum Value: 116.3 at 163.1 Milliseconds
Minimum Value: -77.7 at 162.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-021

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Pass. Upper Rib Redundant Y Velocity

Maximum Value: 45.2 at 183.6 Milliseconds

Minimum Value: 0.0 at 17.2 Milliseconds

SAE Filter Class: 180

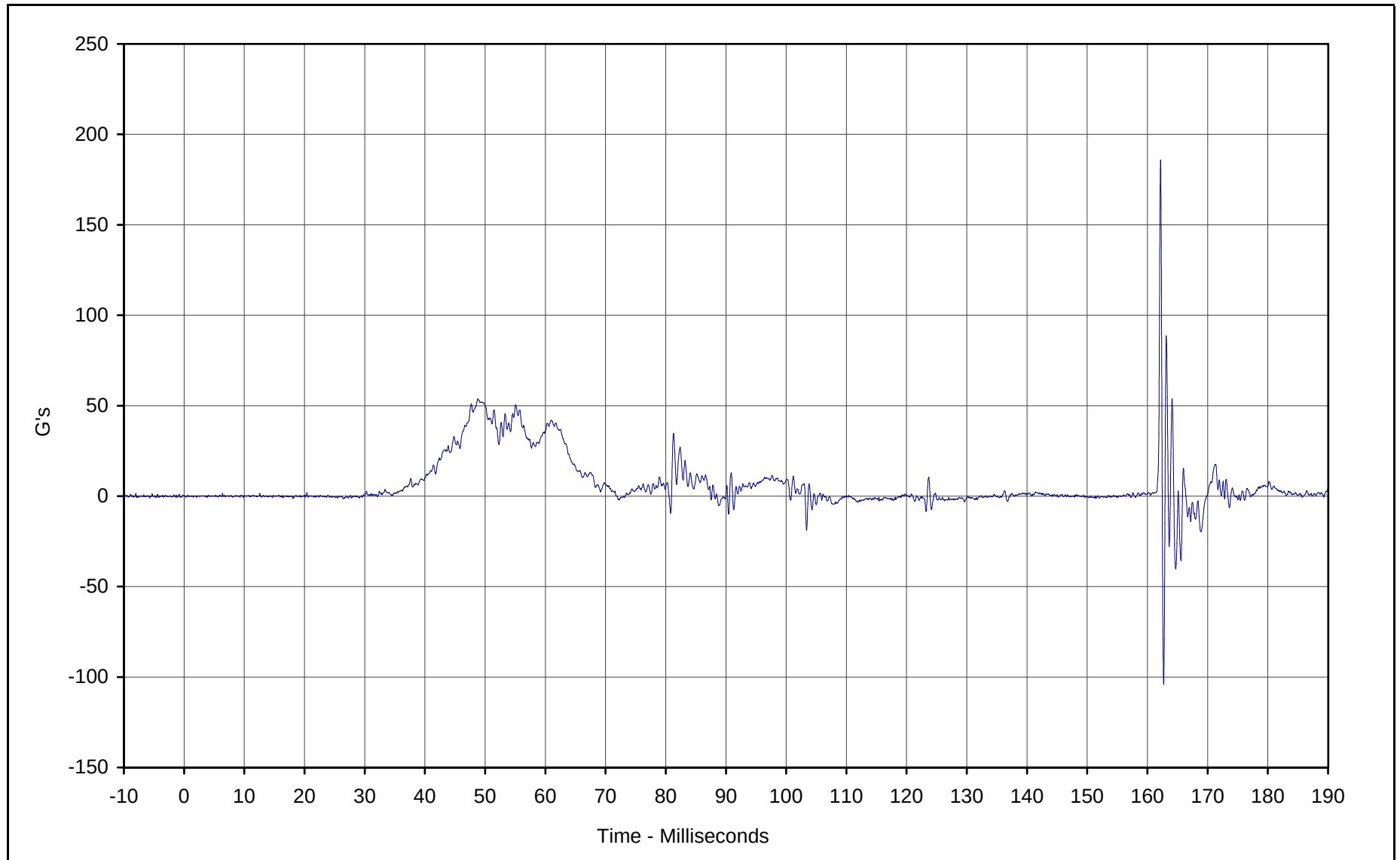
Date of Test: 11/20/01

Curve Number: IN1-021

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

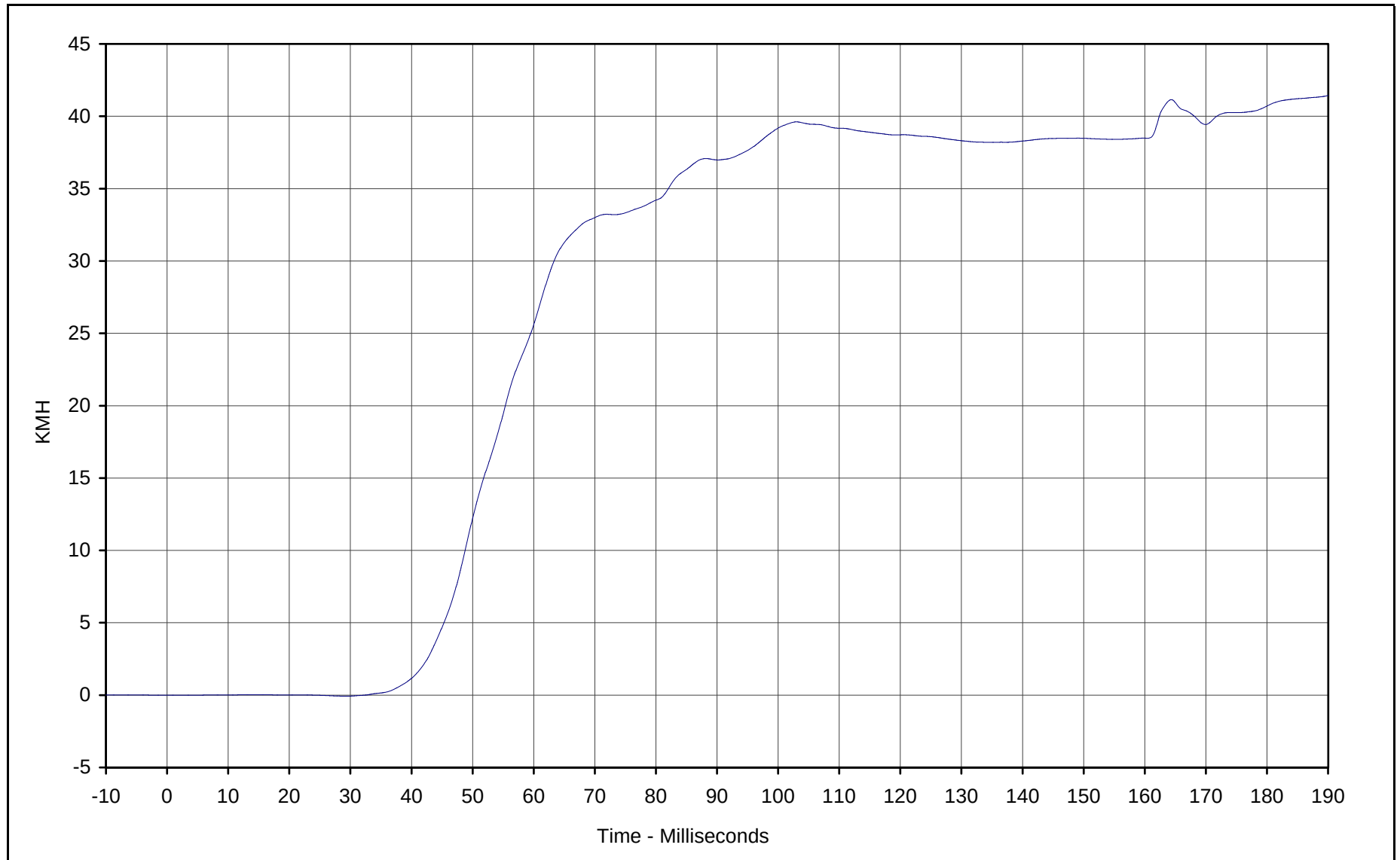




Curve Description: Pass. Lower Rib Redundant Y
Maximum Value: 185.4 at 162.2 Milliseconds
Minimum Value: -104.0 at 162.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-022

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Pass. Lower Rib Redundant Y Velocity

Maximum Value: 41.4 at 189.9 Milliseconds

Minimum Value: -0.1 at 29.4 Milliseconds

SAE Filter Class: 180

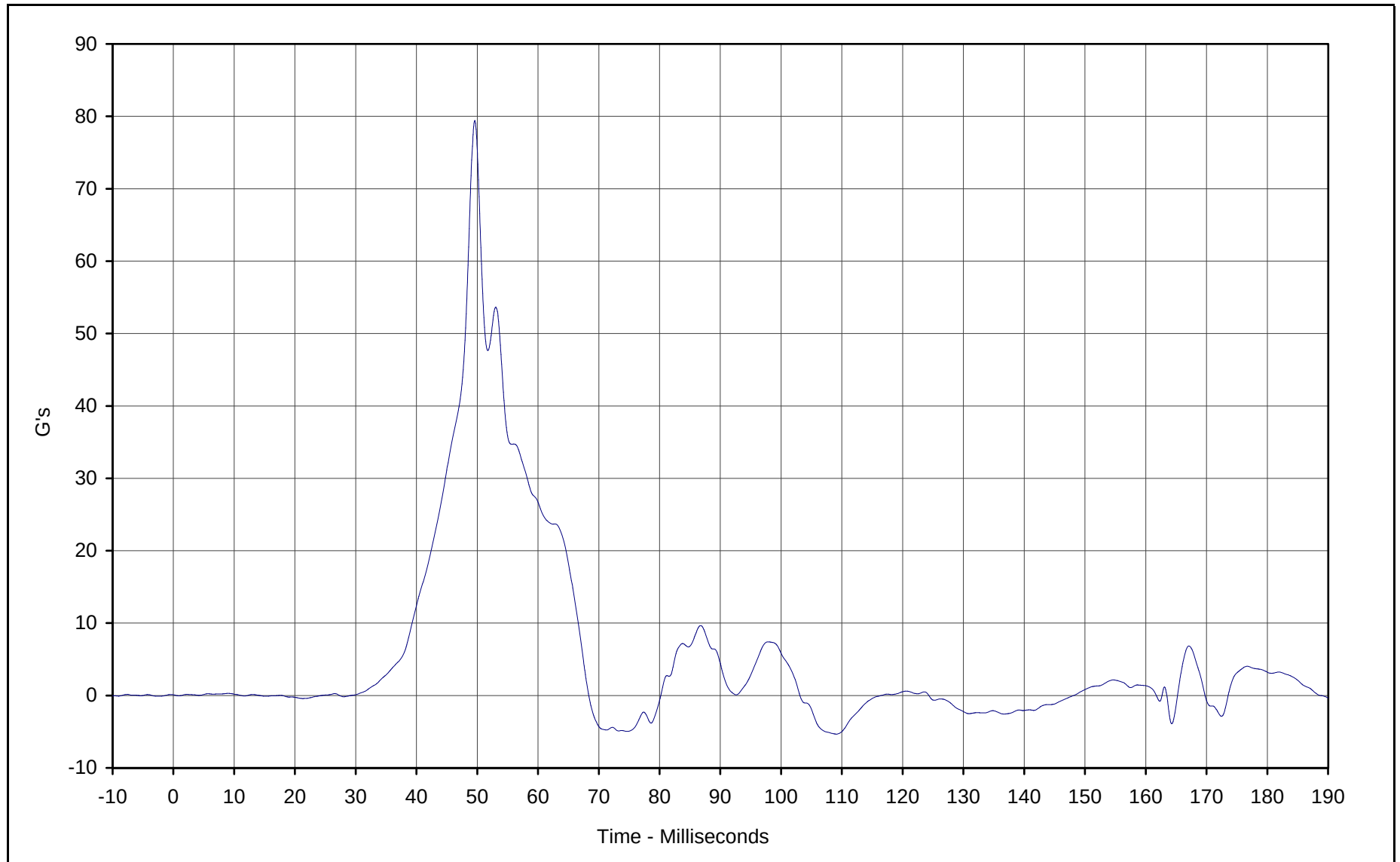
Date of Test: 11/20/01

Curve Number: IN1-022

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

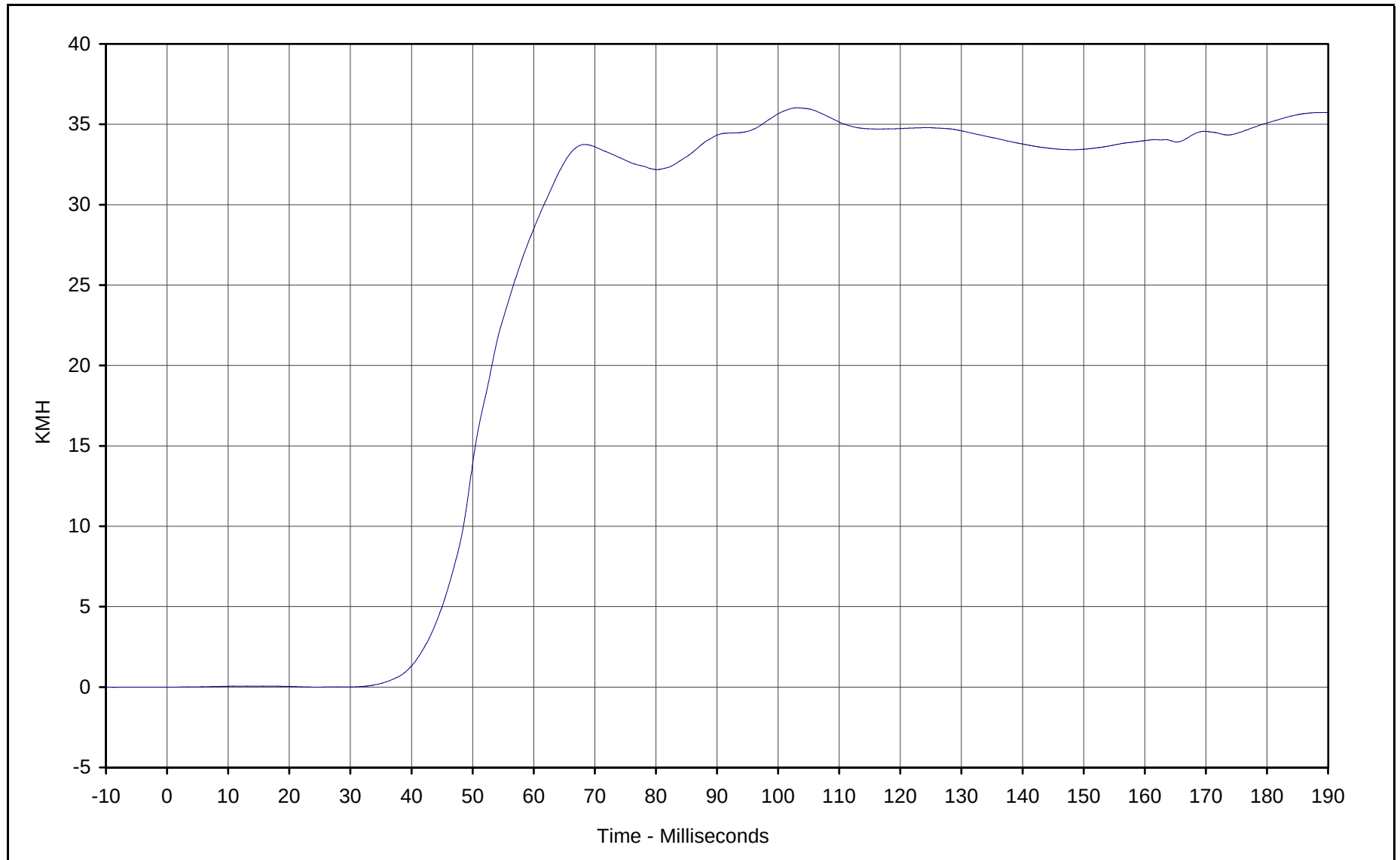




Curve Description: Pass. Lower Spine Redundant Y
Maximum Value: 79.4 at 49.6 Milliseconds
Minimum Value: -5.3 at 109.1 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: FIL-023

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Pass. Lower Spine Redundant Y Velocity

Maximum Value: 36.0 at 103.1 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

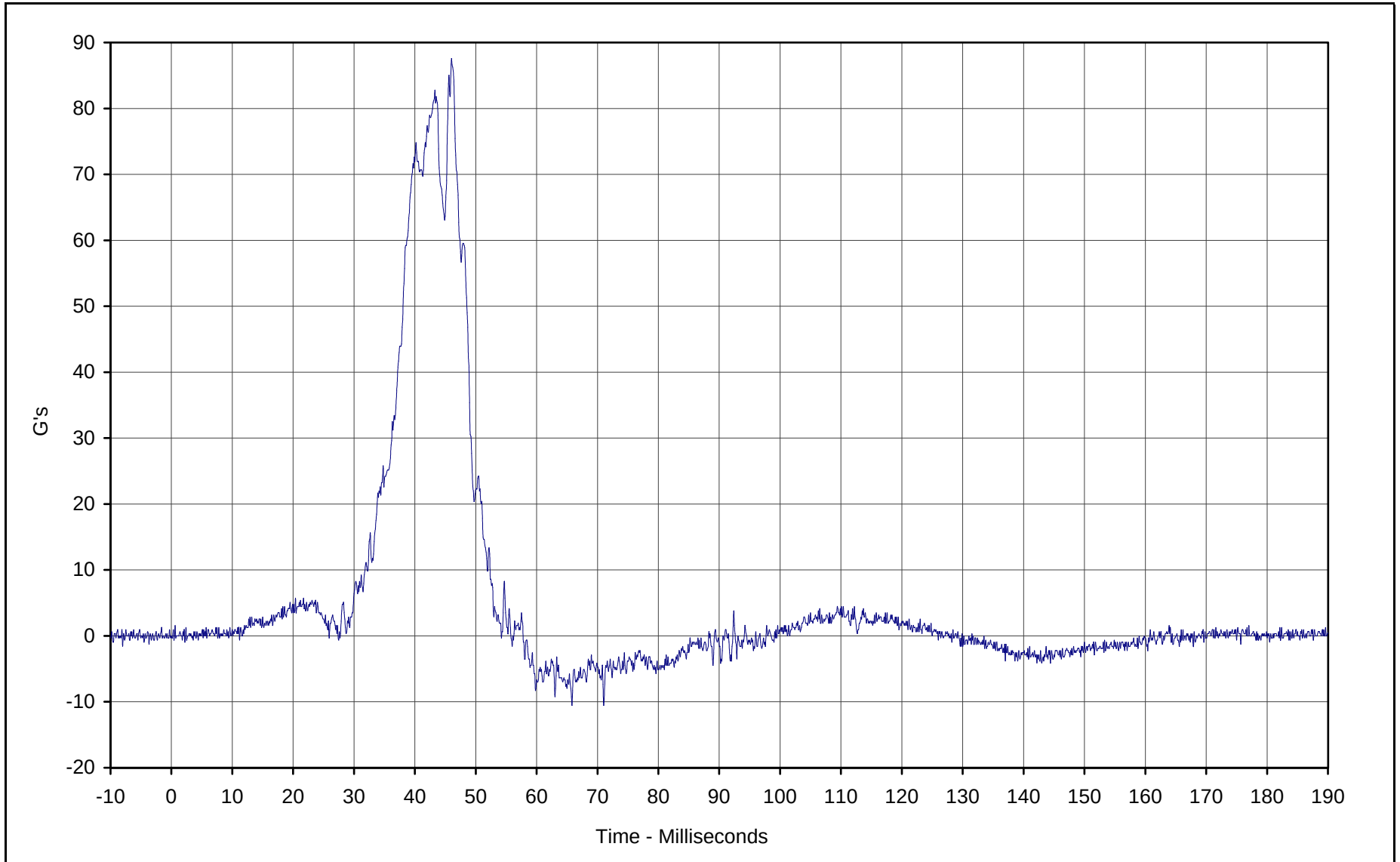
Date of Test: 11/20/01

Curve Number: IN1-023

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

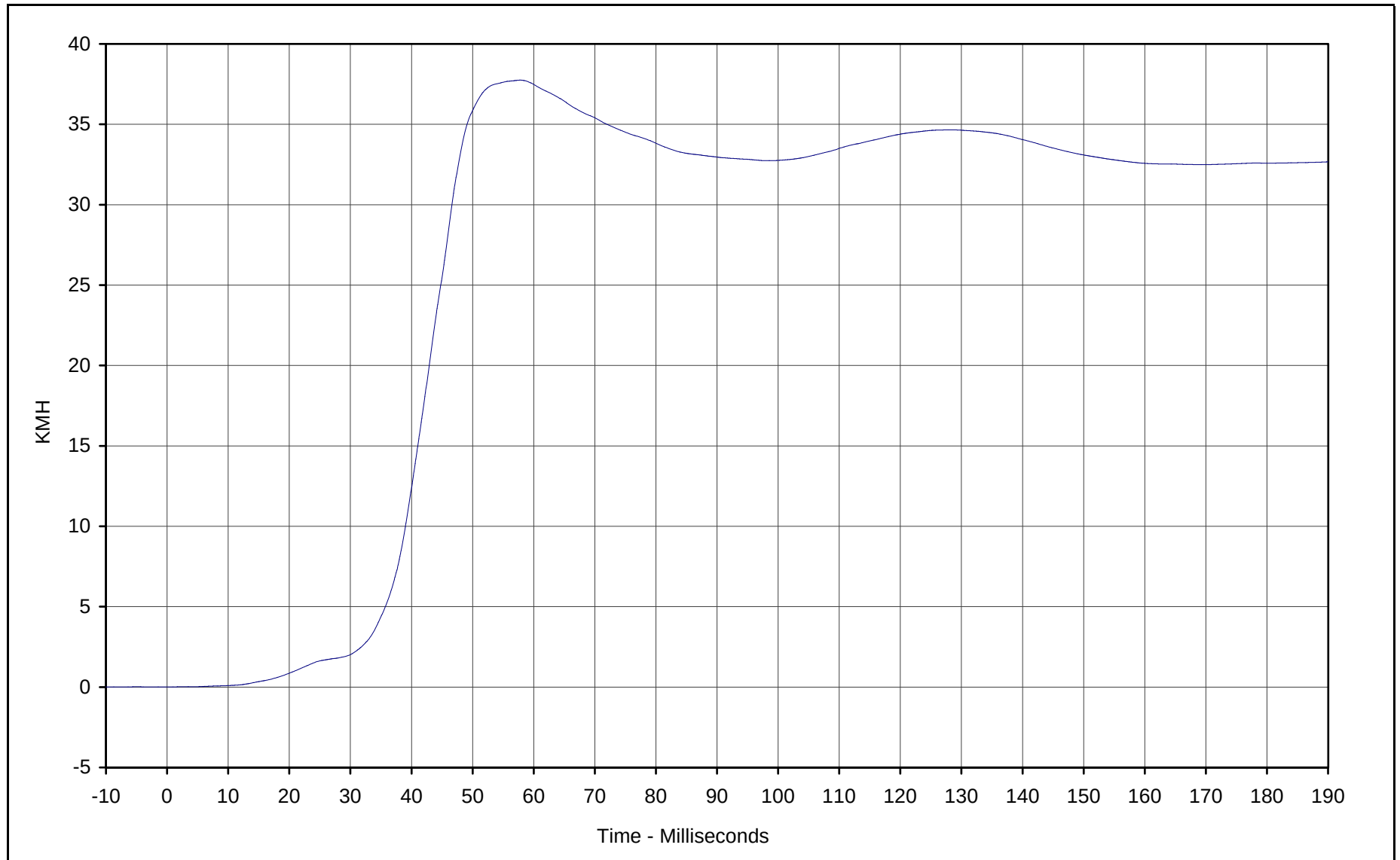




Curve Description: Pass. Pelvis Redundant Y
Maximum Value: 87.6 at 46.0 Milliseconds
Minimum Value: -10.5 at 65.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-024

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Pass. Pelvis Redundant Y Velocity

Maximum Value: 37.7 at 57.8 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

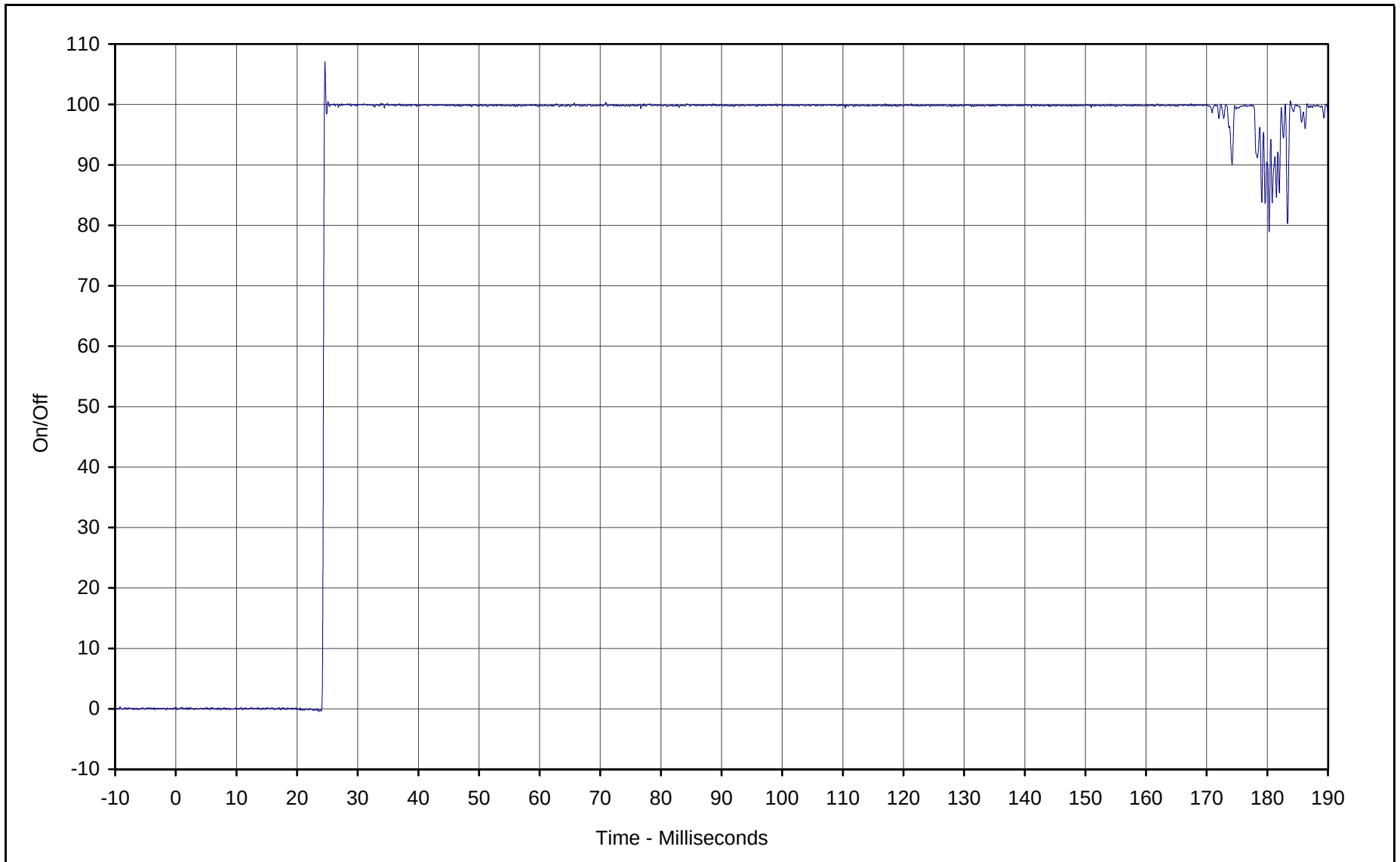
Date of Test: 11/20/01

Curve Number: IN1-024

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

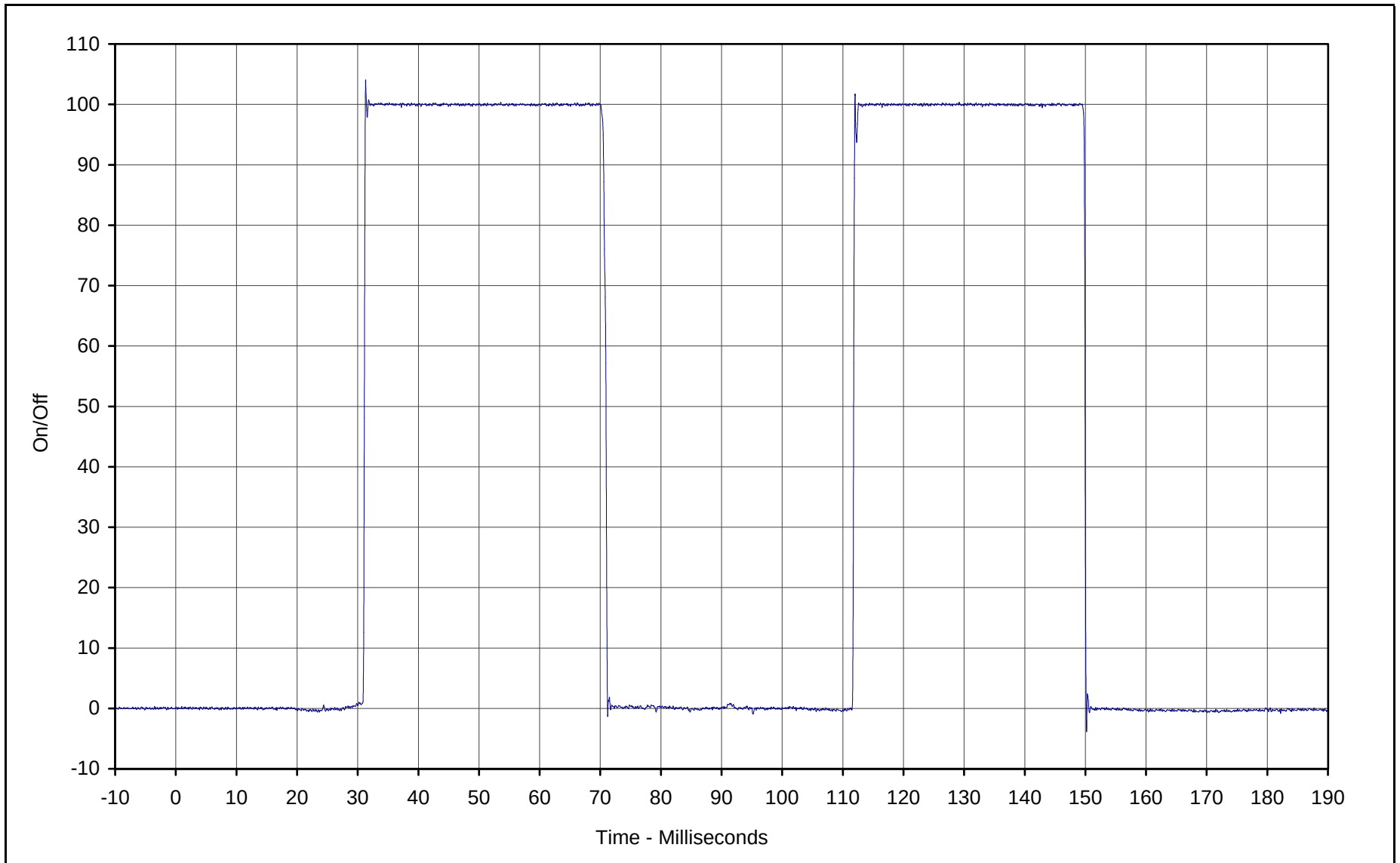




Curve Description: Pass. Thorax Contact
Maximum Value: 106.9 at 24.6 Milliseconds
Crossing Point: 50% at 24.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-025

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

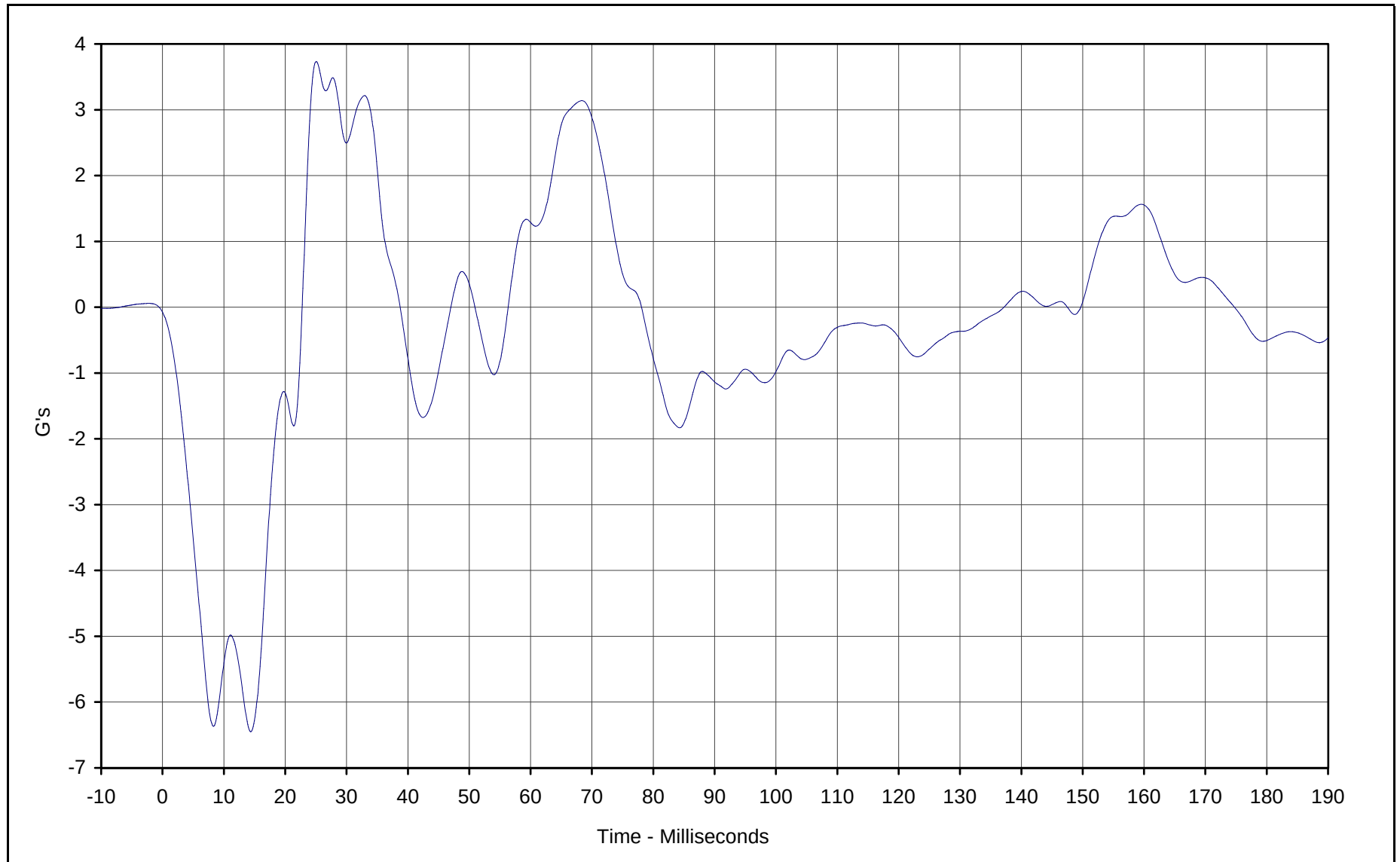




Curve Description: Pass. Pelvis Contact
Maximum Value: 103.8 at 31.3 Milliseconds
Crossing Point: 50% at 31.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-026

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

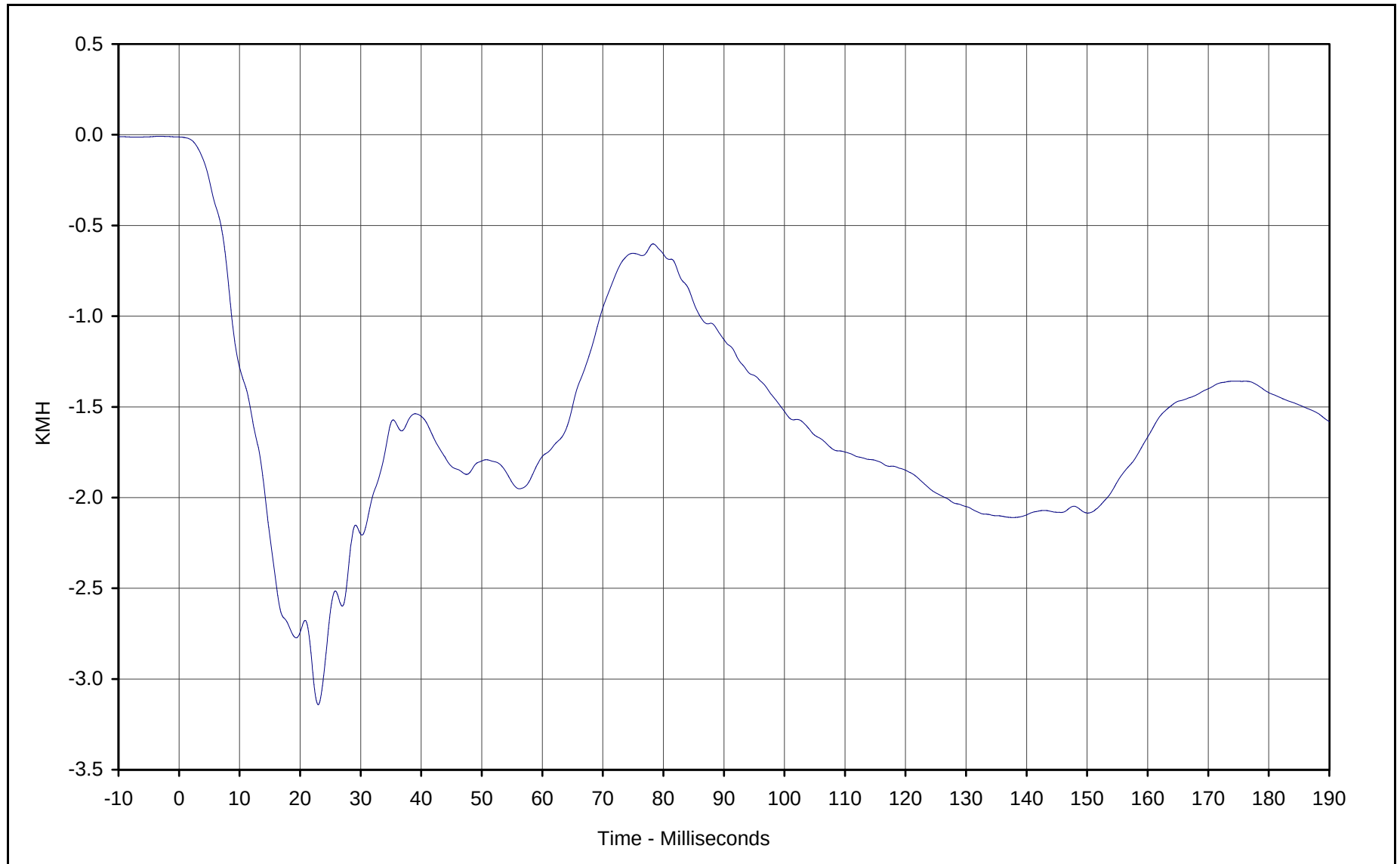




Curve Description: Right Sill at Front Seat X
Maximum Value: 3.7 at 25.1 Milliseconds
Minimum Value: -6.5 at 14.4 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-027

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

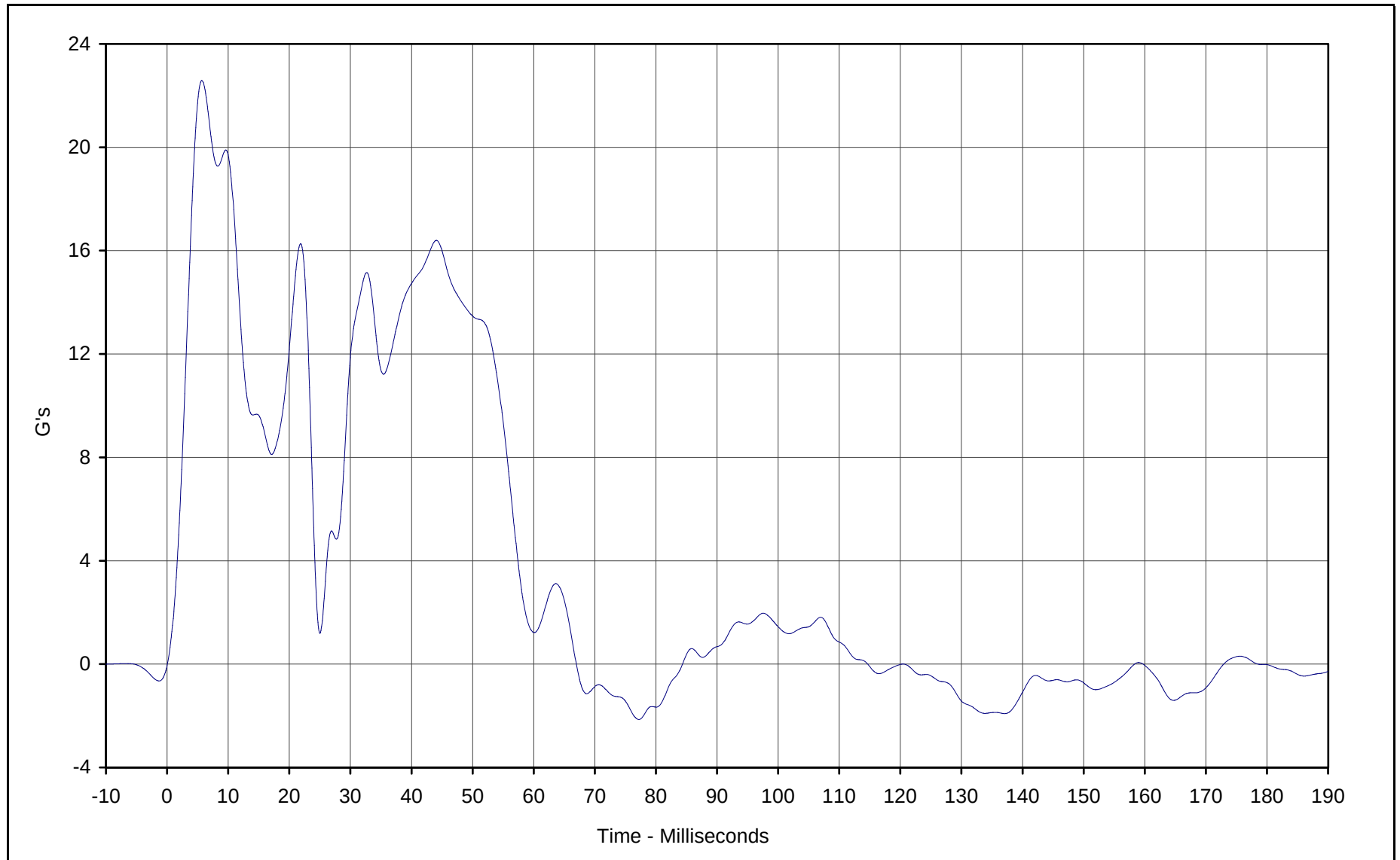




Curve Description: Right Sill at Front Seat X Velocity
Maximum Value: 0.0 at 0.0 Milliseconds
Minimum Value: -3.1 at 23.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-027

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

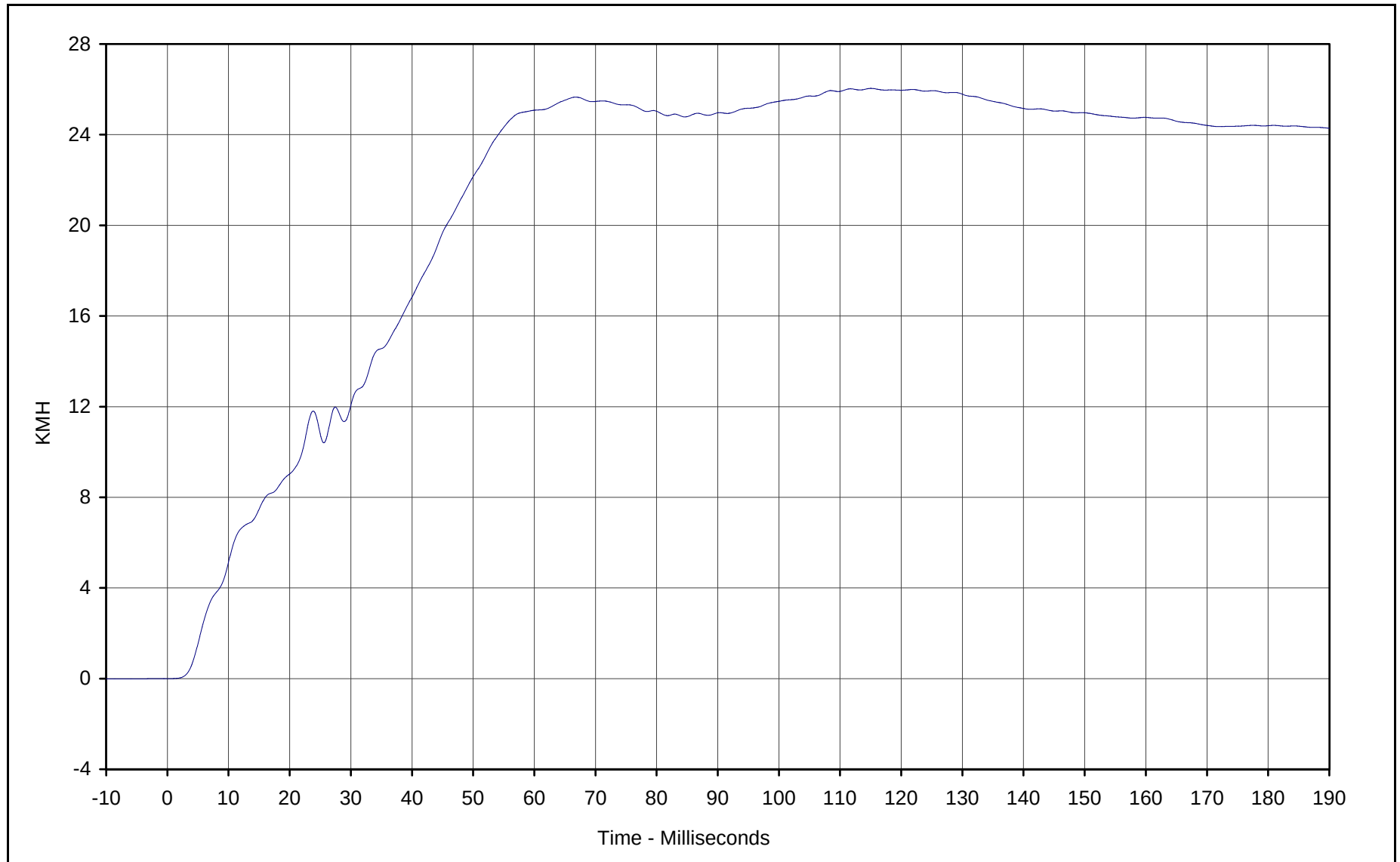




Curve Description: Right Sill at Front Seat Y
Maximum Value: 22.6 at 5.7 Milliseconds
Minimum Value: -2.1 at 77.2 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-028

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

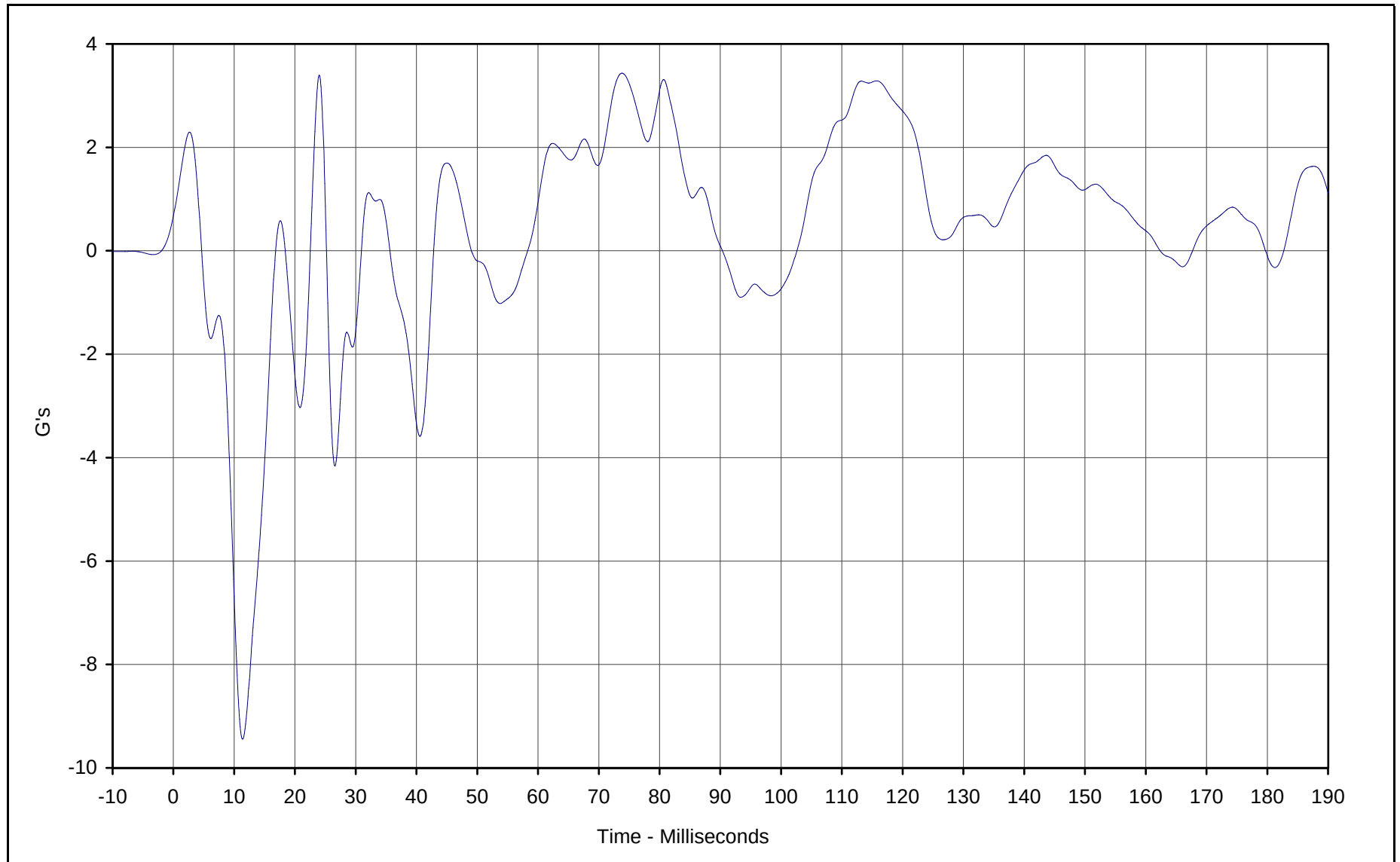




Curve Description: Right Sill at Front Seat Y Velocity
Maximum Value: 26.0 at 115.1 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-028

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

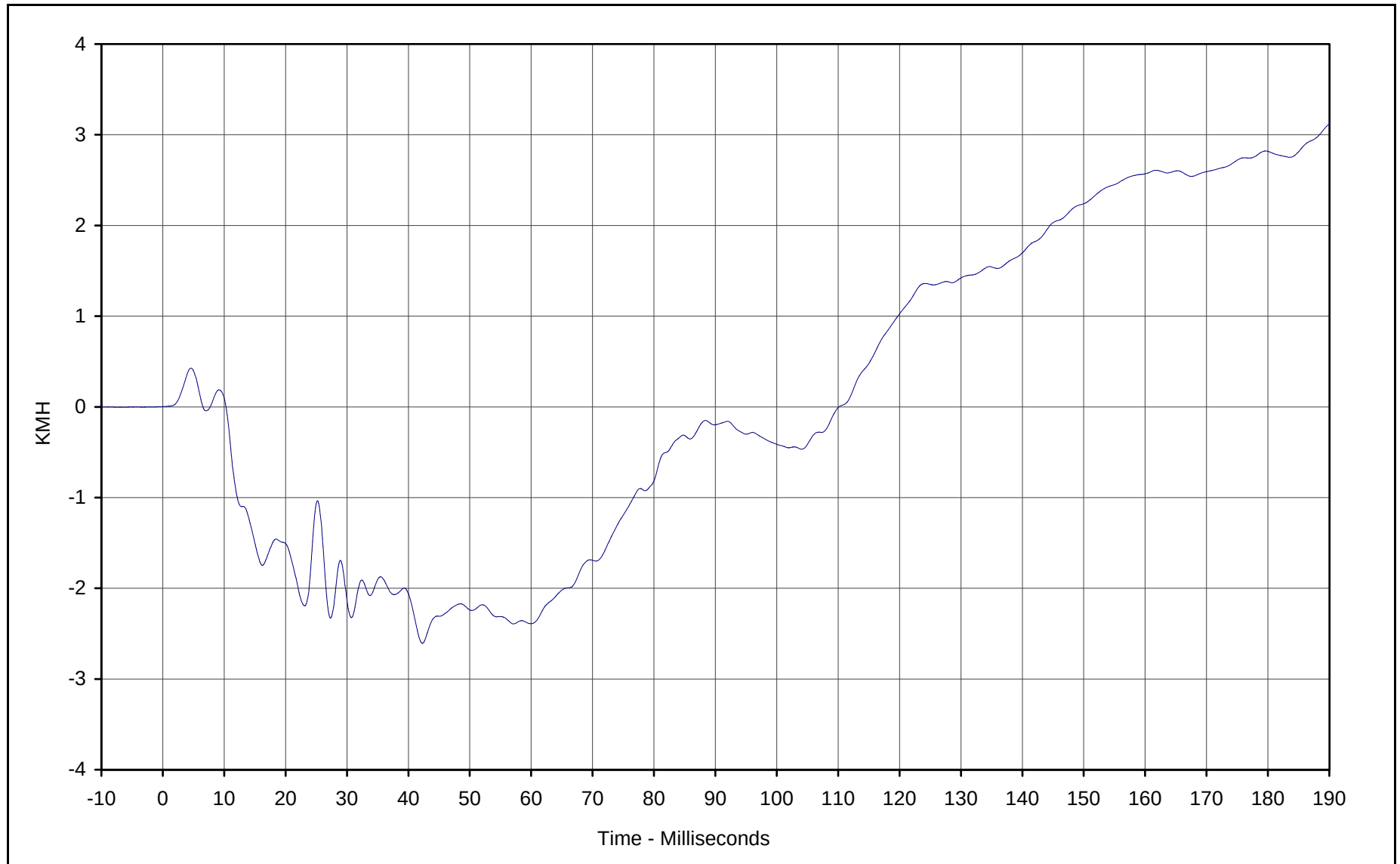




Curve Description: Right Sill at Front Seat Z
Maximum Value: 3.4 at 73.8 Milliseconds
Minimum Value: -9.4 at 11.4 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-029

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

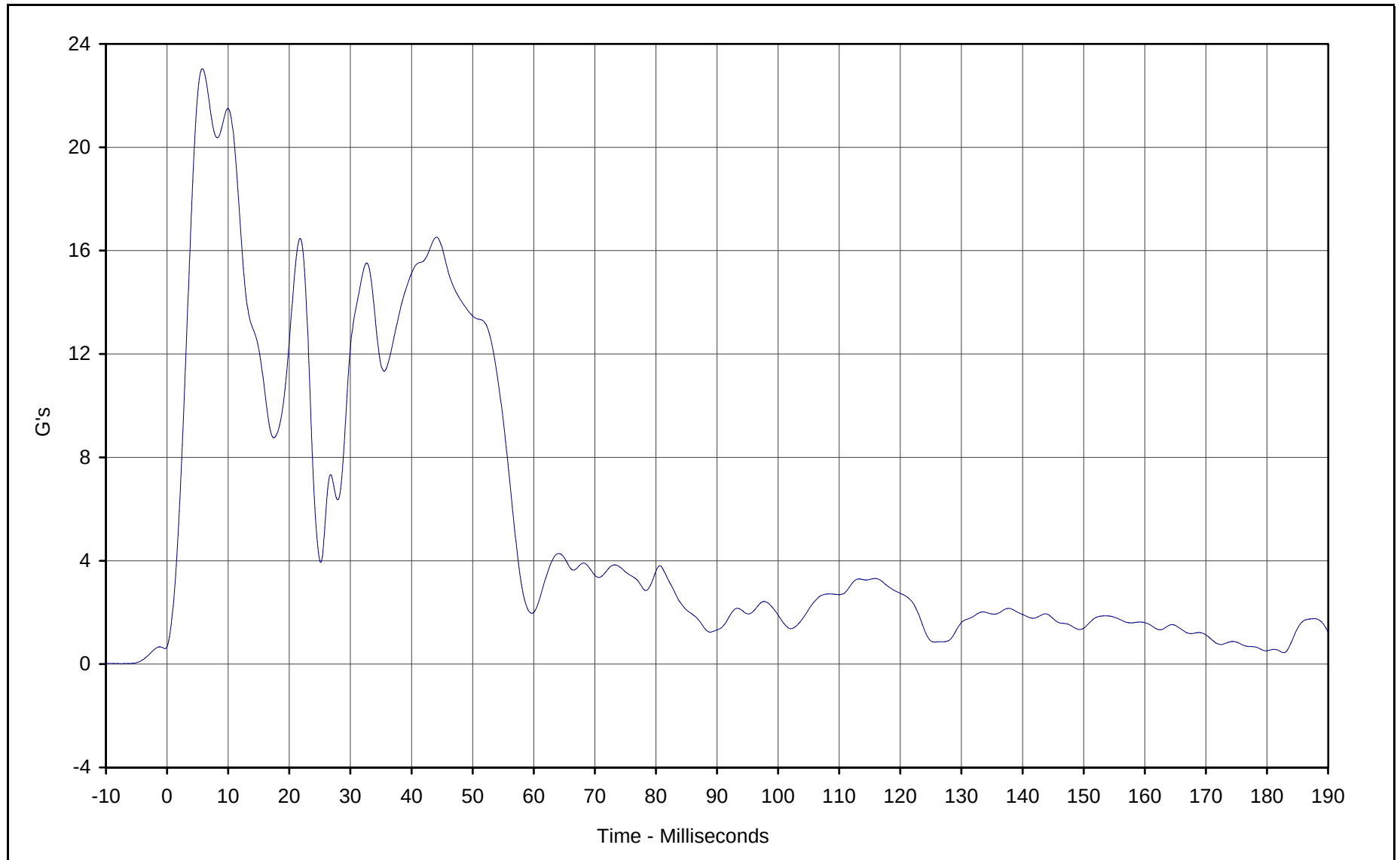




Curve Description: Right Sill at Front Seat Z Velocity
Maximum Value: 3.1 at 189.9 Milliseconds
Minimum Value: -2.6 at 42.3 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-029

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

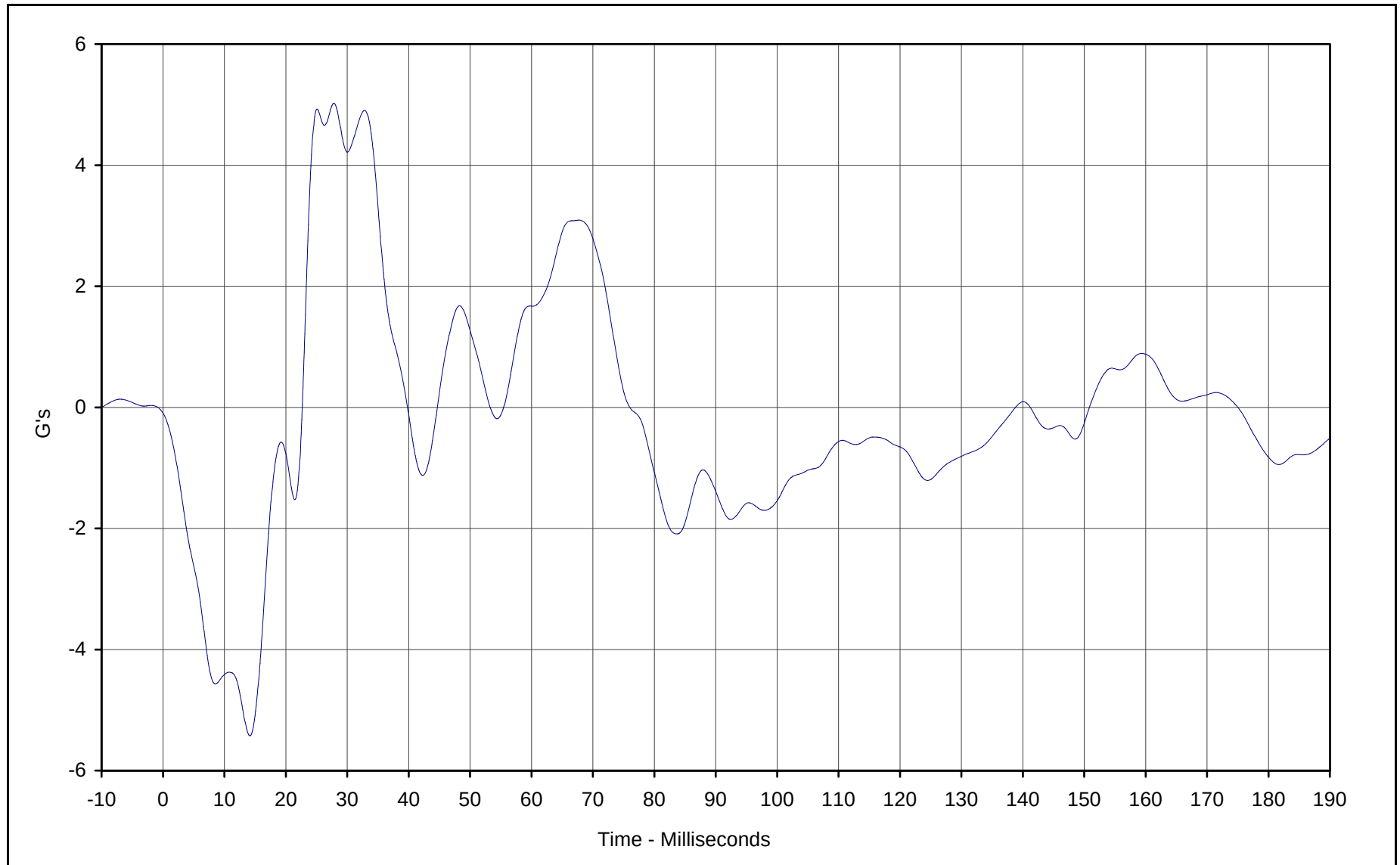




Curve Description: Right Sill at Front Seat Resultant
Maximum Value: 23.0 at 5.8 Milliseconds
Minimum Value: 0.4 at 182.8 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: RES-027

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

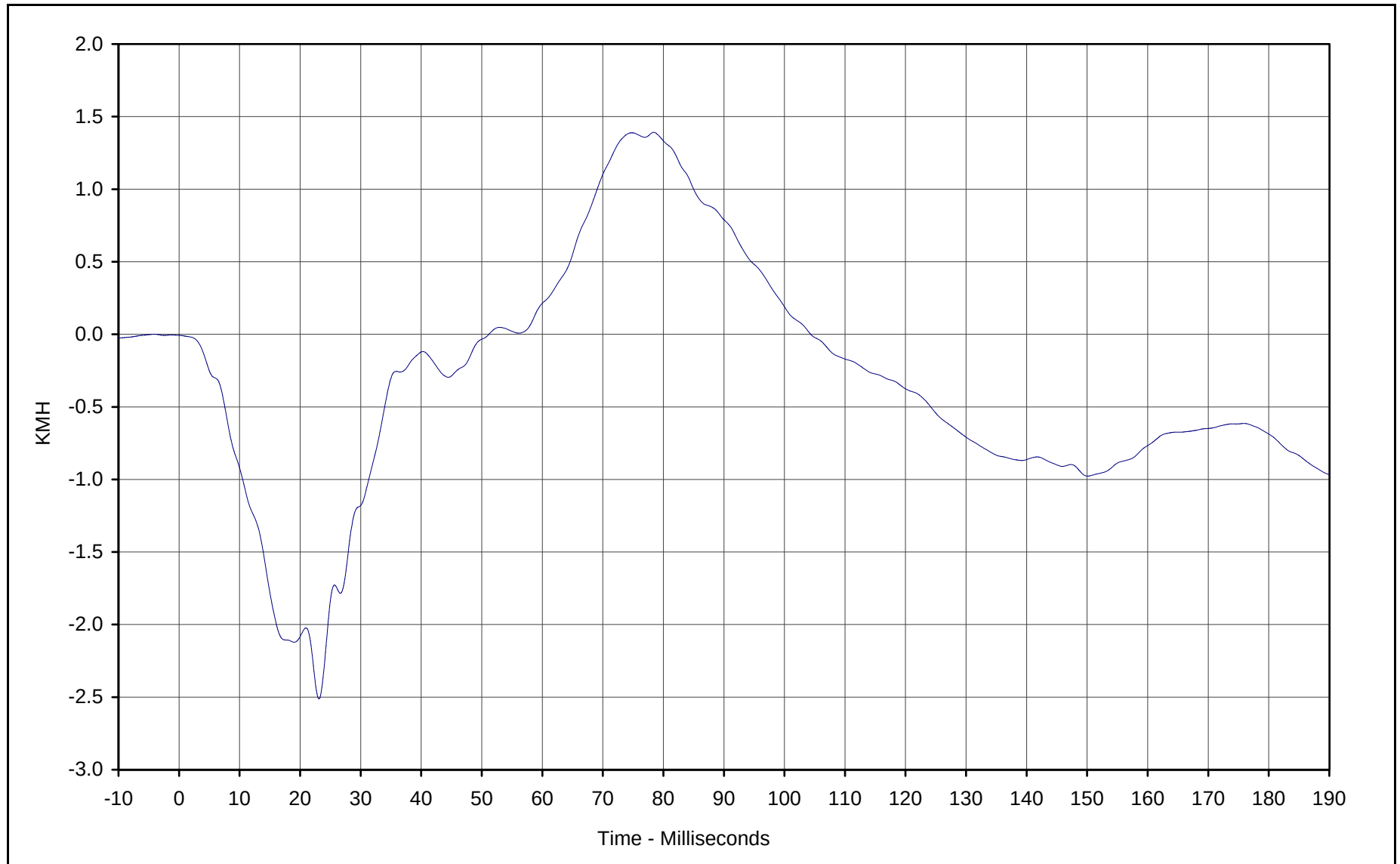




Curve Description: Right Sill at Rear Seat X
Maximum Value: 5.0 at 27.8 Milliseconds
Minimum Value: -5.4 at 14.2 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-030

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV



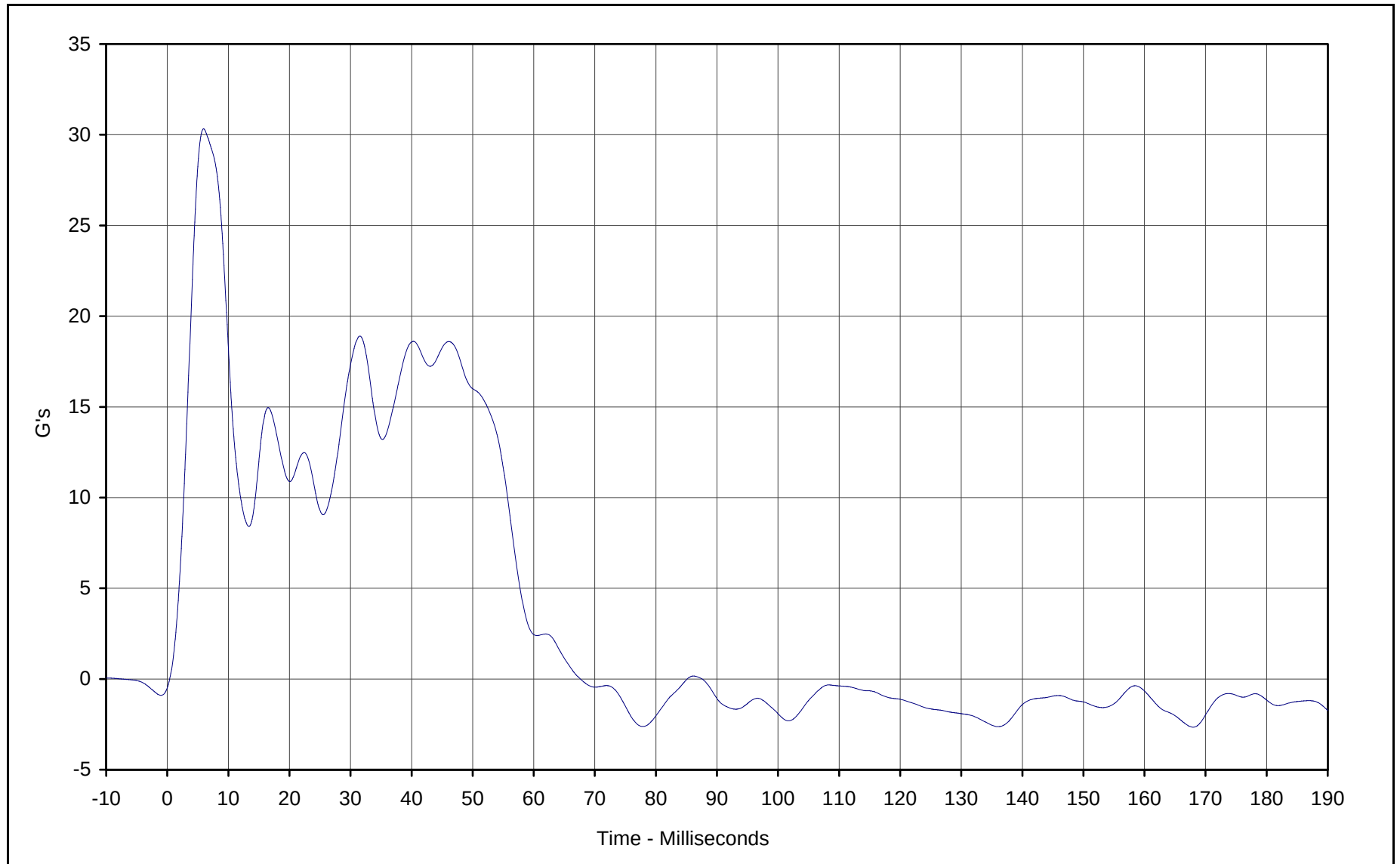


Curve Description: Right Sill at Rear Seat X Velocity
Maximum Value: 1.4 at 78.4 Milliseconds
Minimum Value: -2.5 at 23.1 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-030

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV



B-60

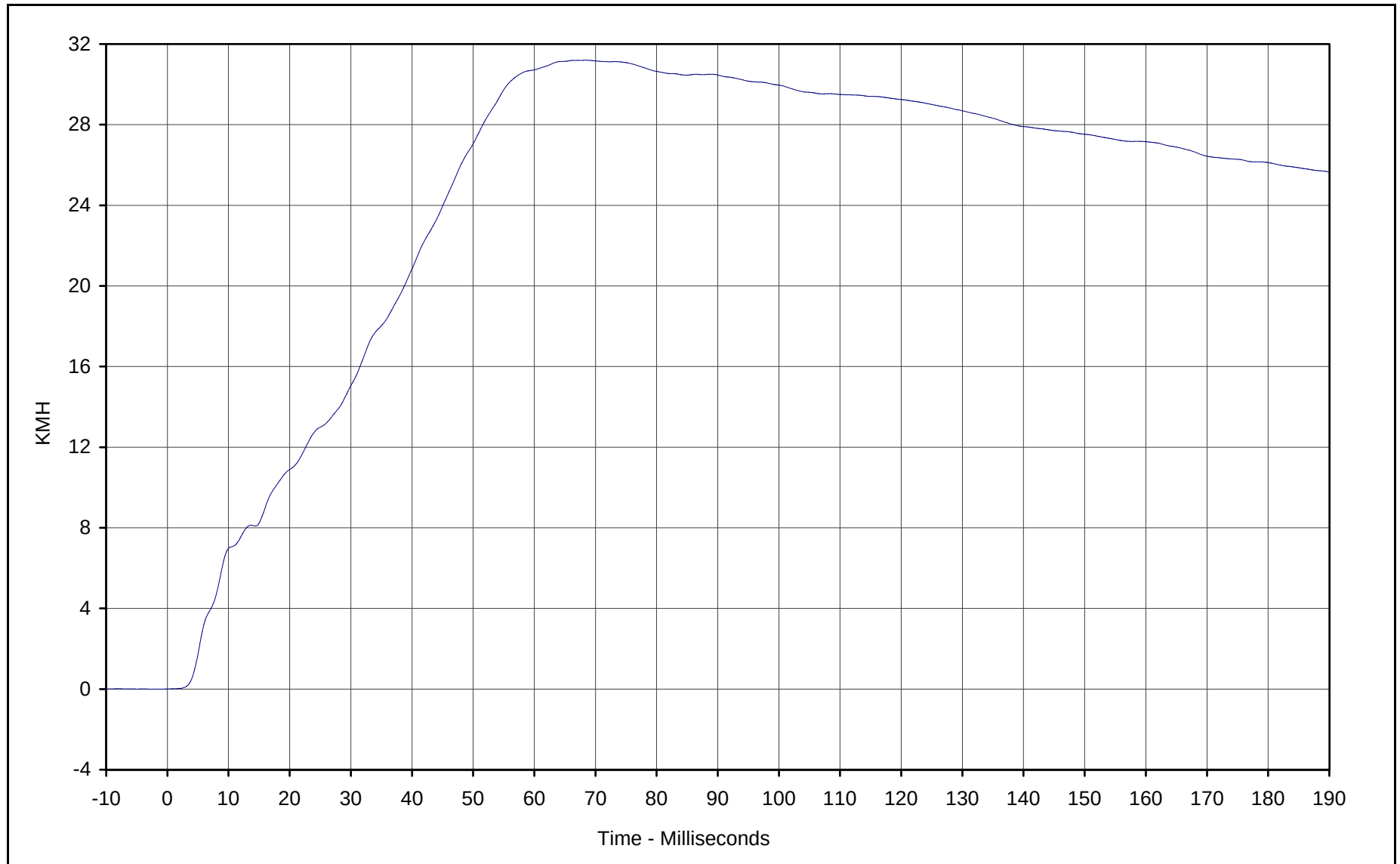


Curve Description: Right Sill at Rear Seat Y
Maximum Value: 30.3 at 6.0 Milliseconds
Minimum Value: -2.7 at 168.0 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-031

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV



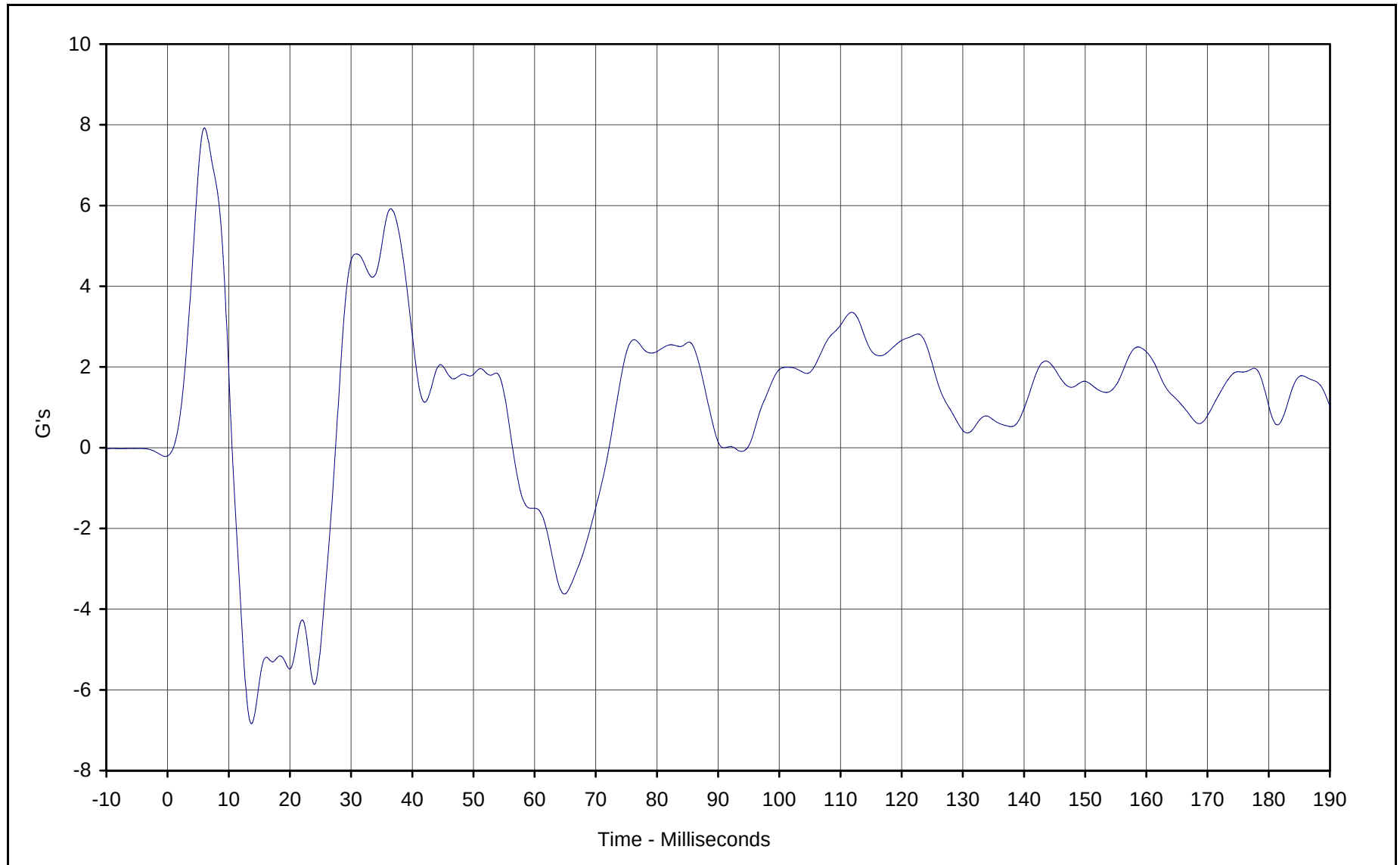
KAR22003-02



Curve Description: Right Sill at Rear Seat Y Velocity
Maximum Value: 31.2 at 68.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-031

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

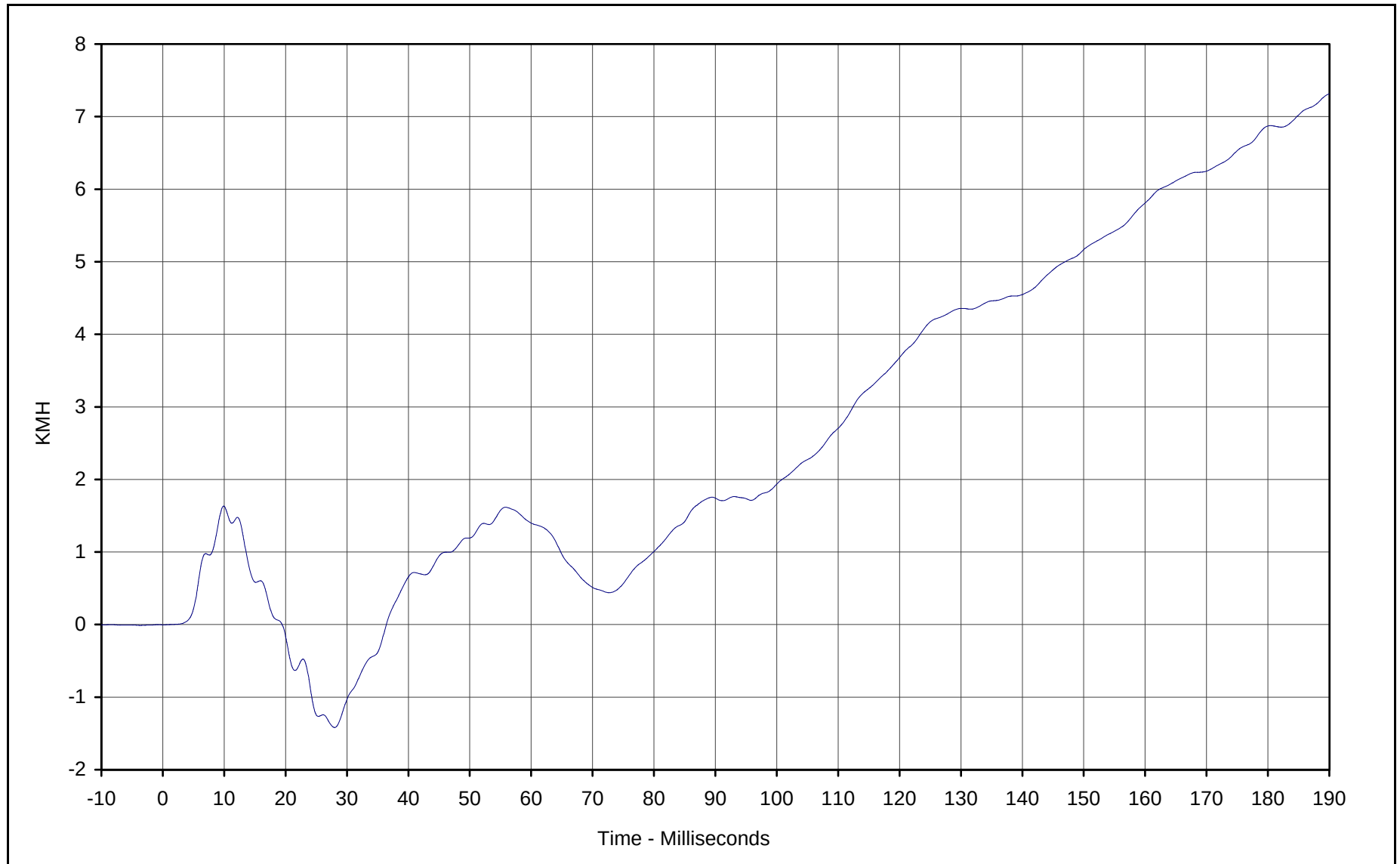




Curve Description: Right Sill at Rear Seat Z
Maximum Value: 7.9 at 6.0 Milliseconds
Minimum Value: -6.8 at 13.7 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-032

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

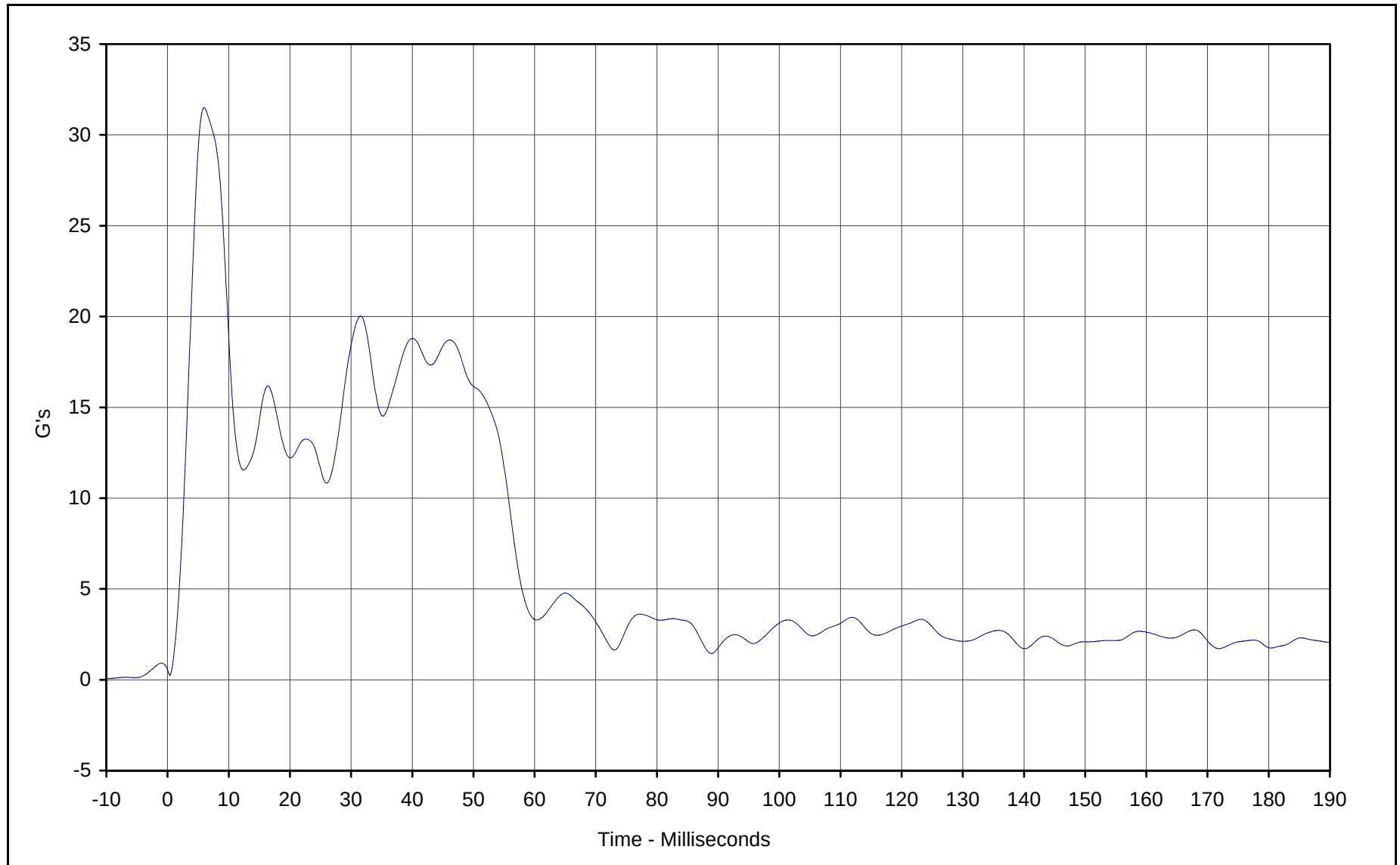




Curve Description: Right Sill at Rear Seat Z Velocity
Maximum Value: 7.3 at 189.9 Milliseconds
Minimum Value: -1.4 at 28.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-032

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

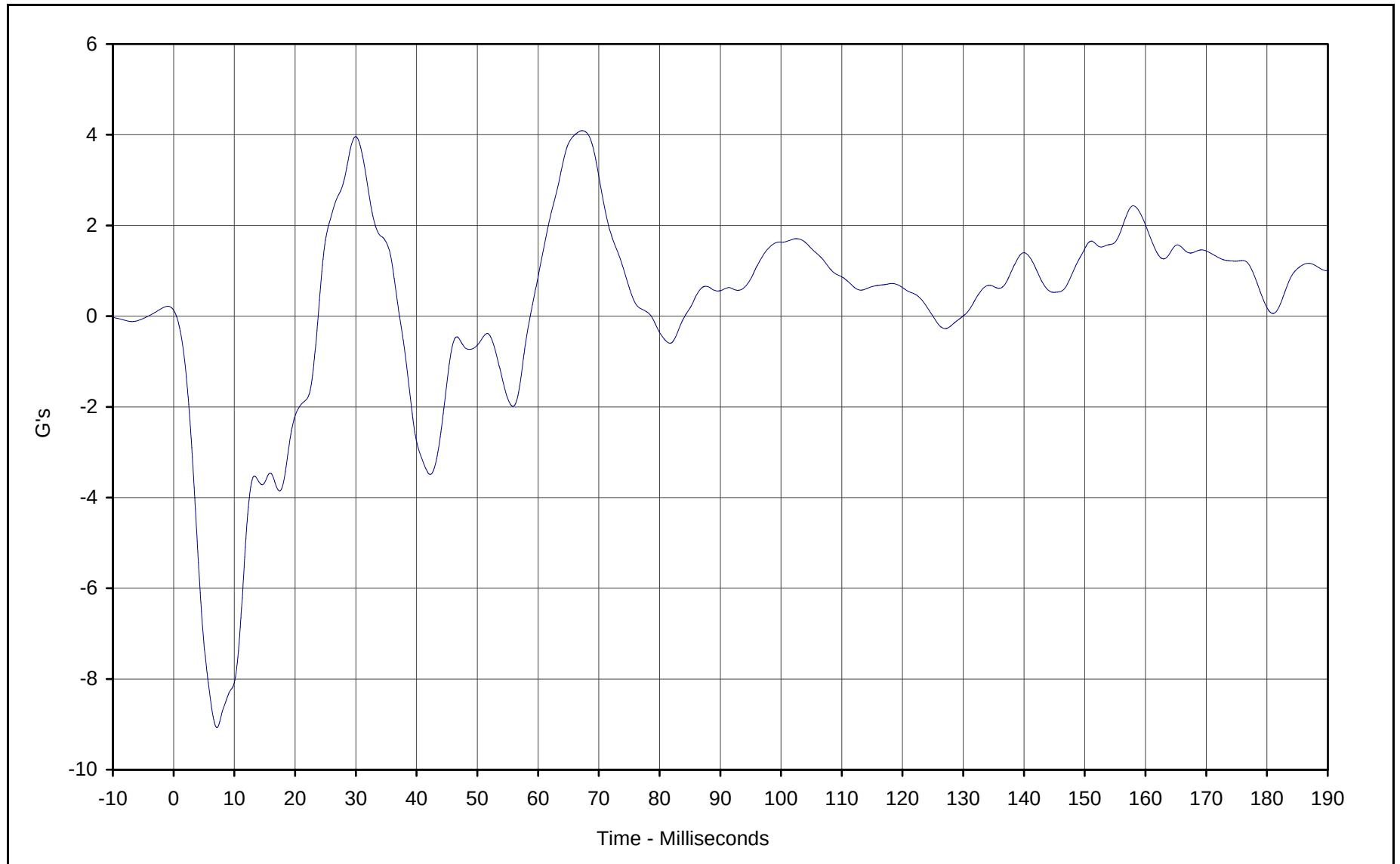




Curve Description: Right Sill at Rear Seat Resultant
Maximum Value: 31.5 at 6.0 Milliseconds
Minimum Value: 0.2 at 0.4 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: RES-030

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

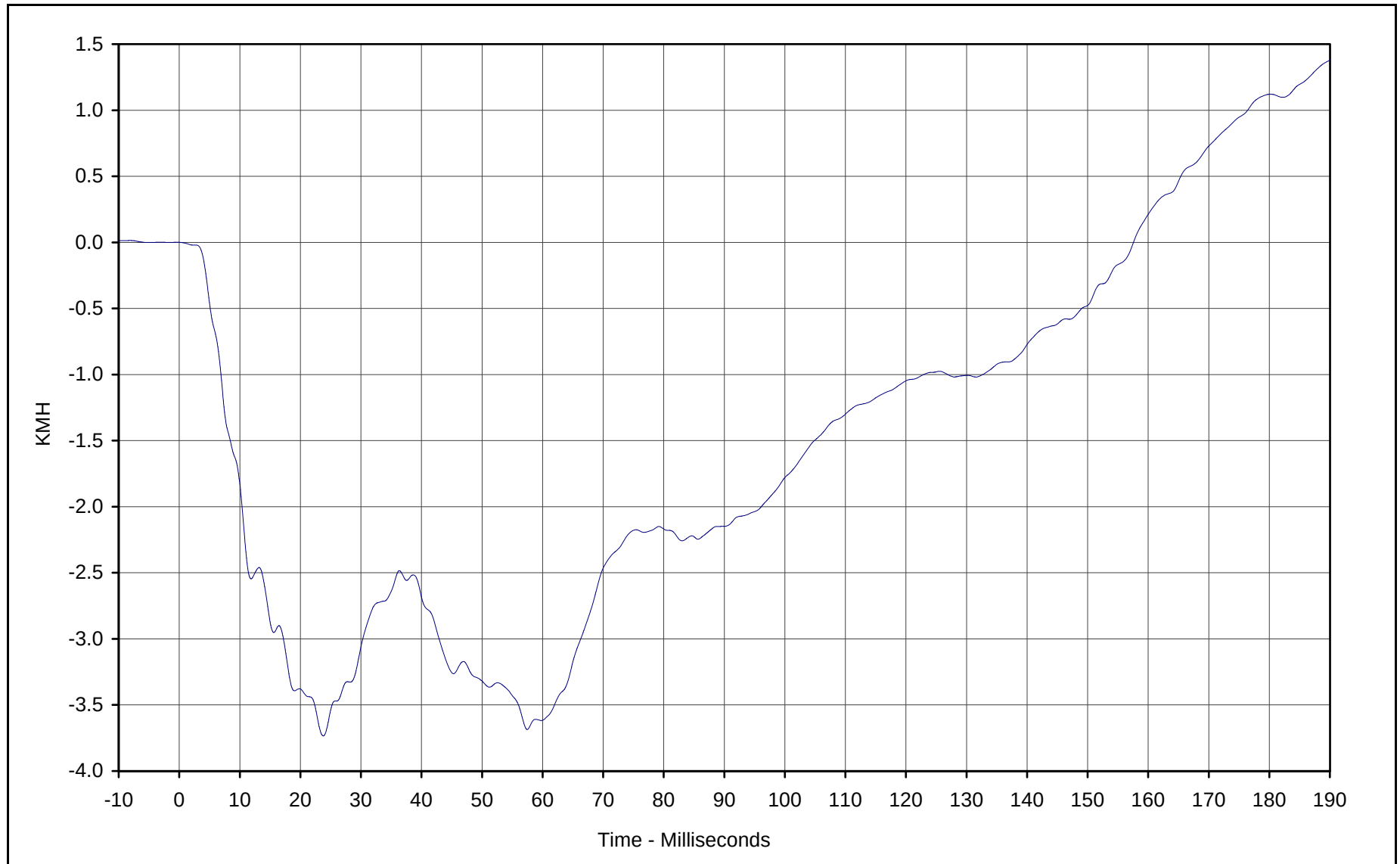




Curve Description: Rear Floor Above Axle X
Maximum Value: 4.1 at 67.3 Milliseconds
Minimum Value: -9.1 at 7.1 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-033

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

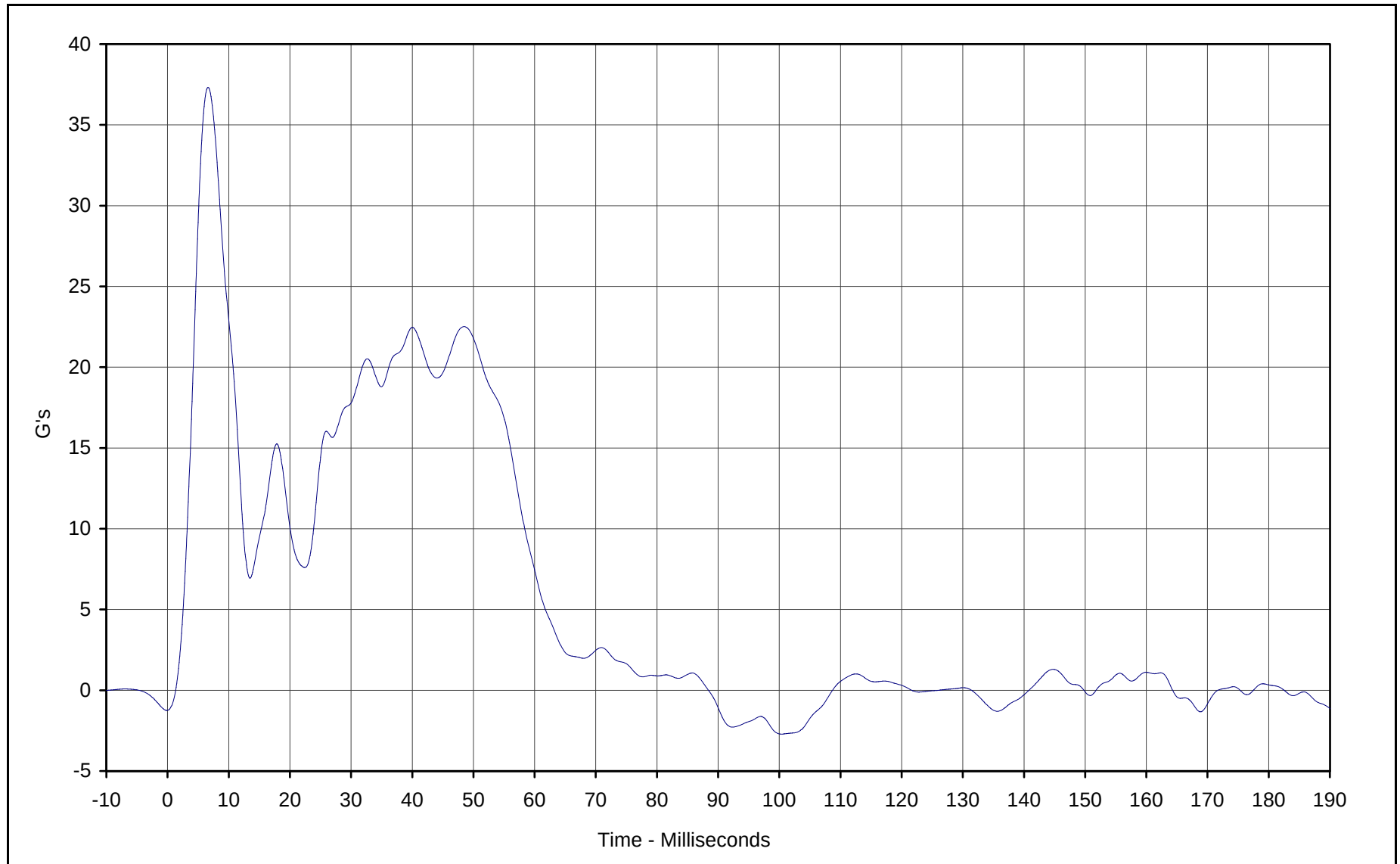




Curve Description: Rear Floor Above Axle X Velocity
Maximum Value: 1.4 at 189.9 Milliseconds
Minimum Value: -3.7 at 23.8 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-033

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

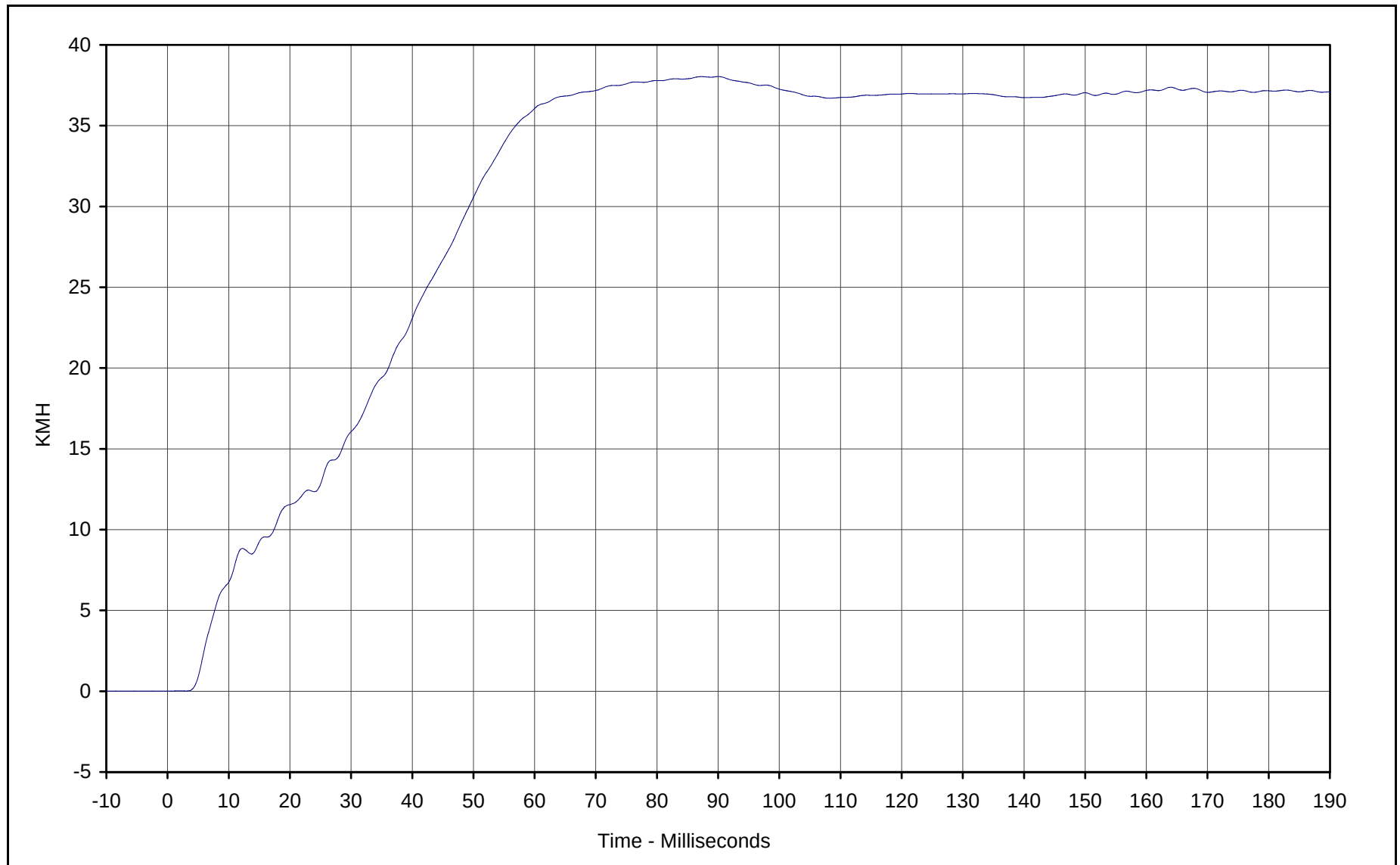




Curve Description: Rear Floor Above Axle Y
Maximum Value: 37.3 at 6.6 Milliseconds
Minimum Value: -2.7 at 100.4 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-034

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

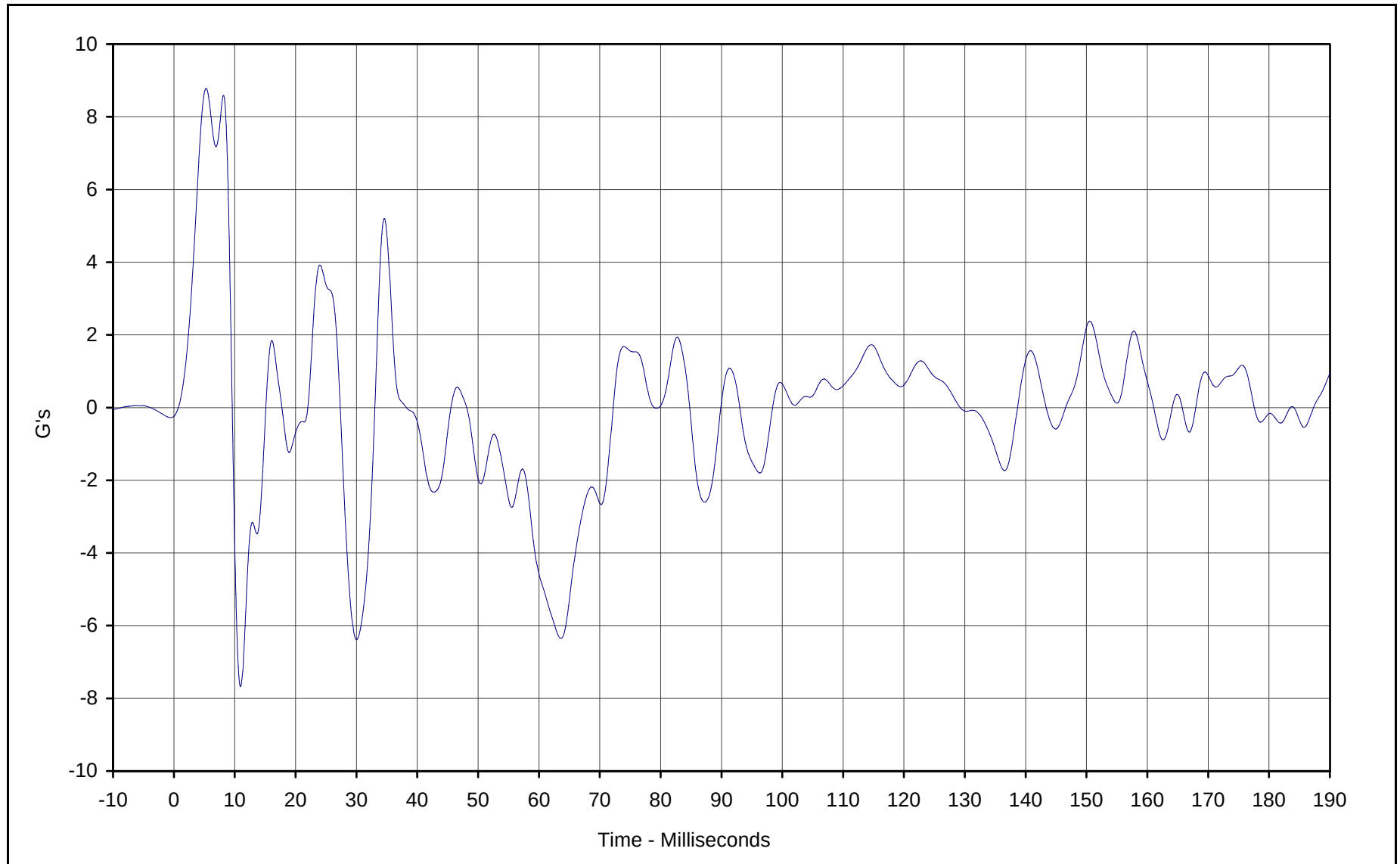




Curve Description: Rear Floor Above Axle Y Velocity
Maximum Value: 38.0 at 90.0 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-034

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

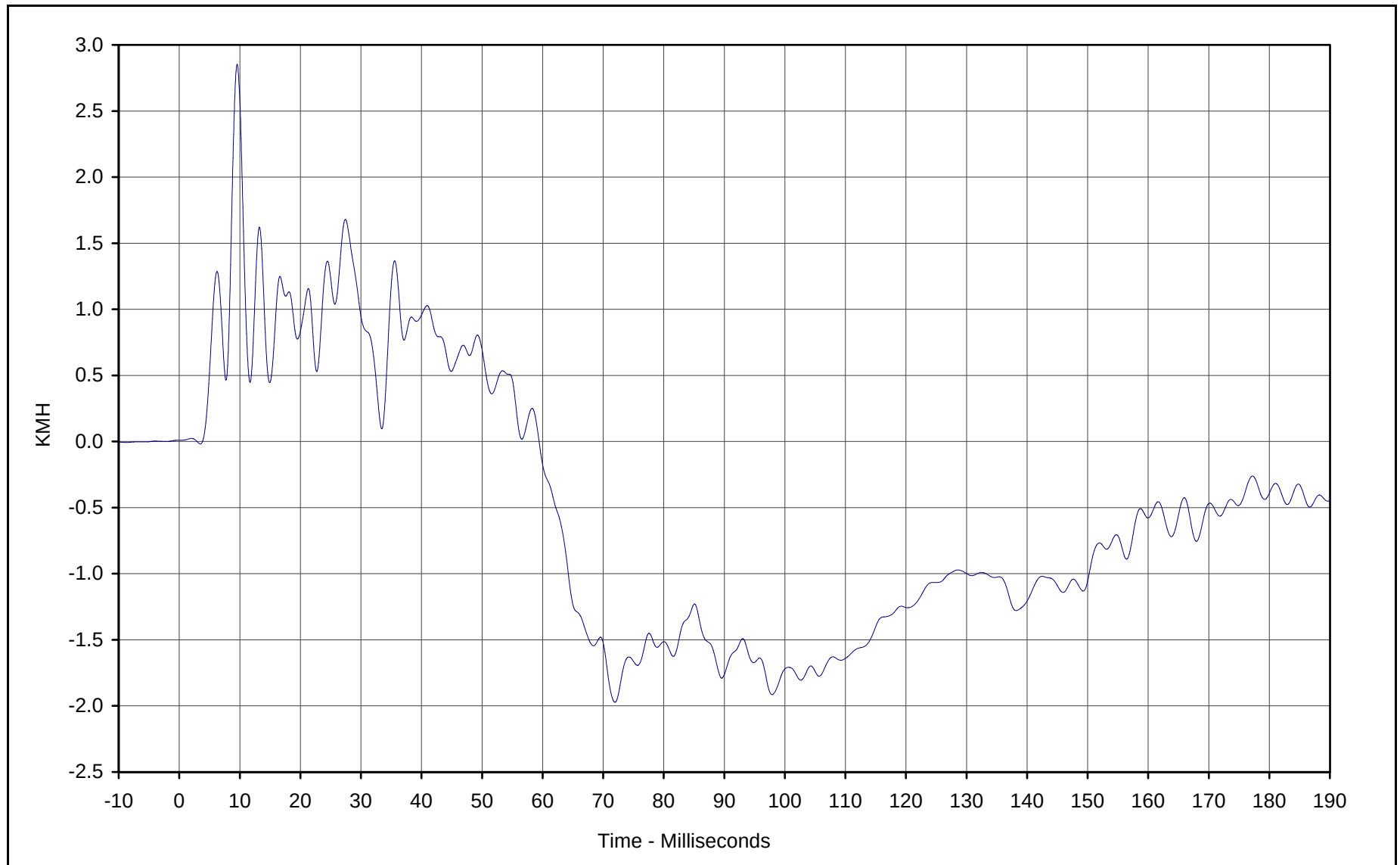




Curve Description: Rear Floor Above Axle Z
Maximum Value: 8.8 at 5.3 Milliseconds
Minimum Value: -7.7 at 11.0 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-035

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

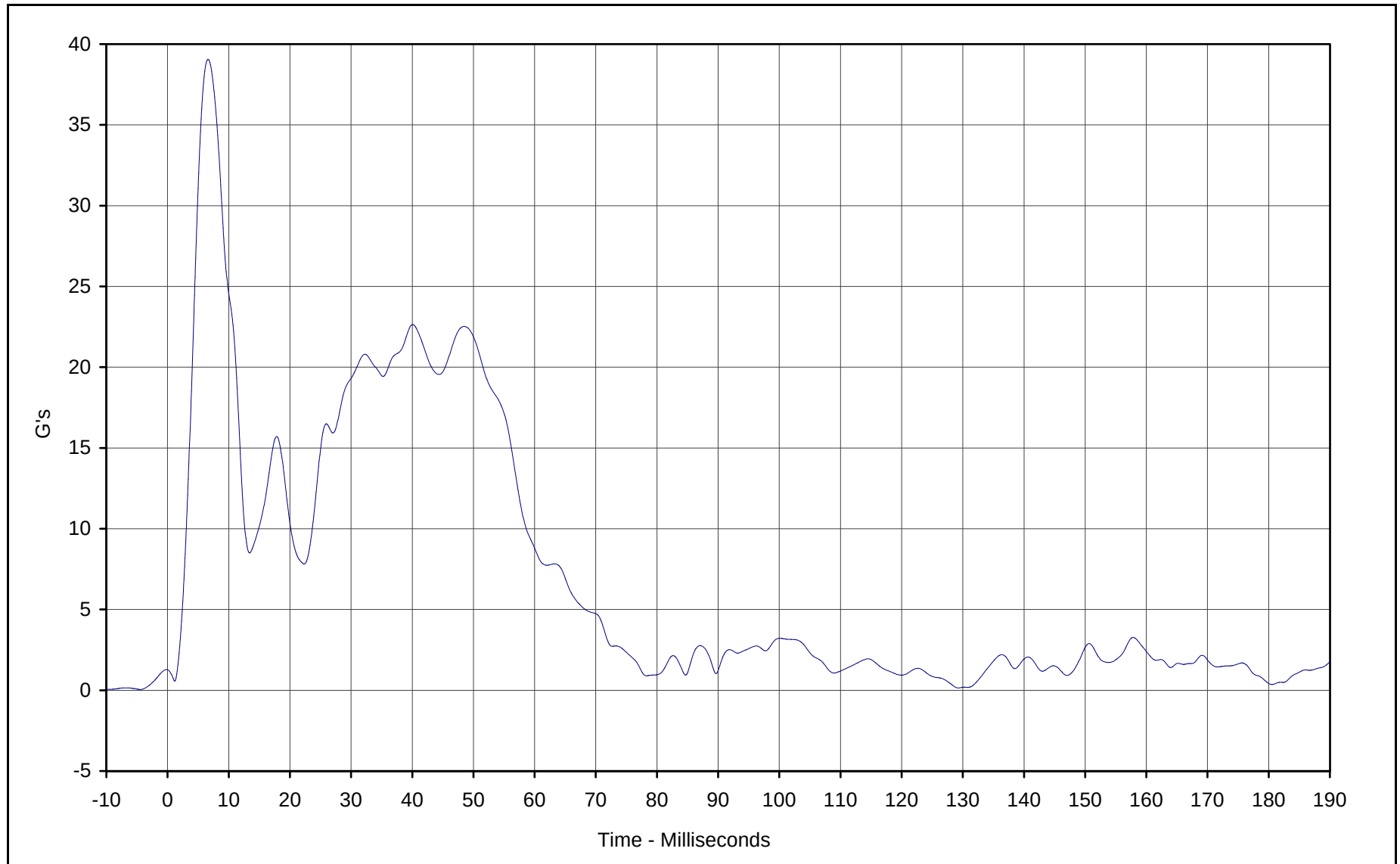




Curve Description: Rear Floor Above Axle Z Velocity
Maximum Value: 2.9 at 9.6 Milliseconds
Minimum Value: -2.0 at 72.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-035

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

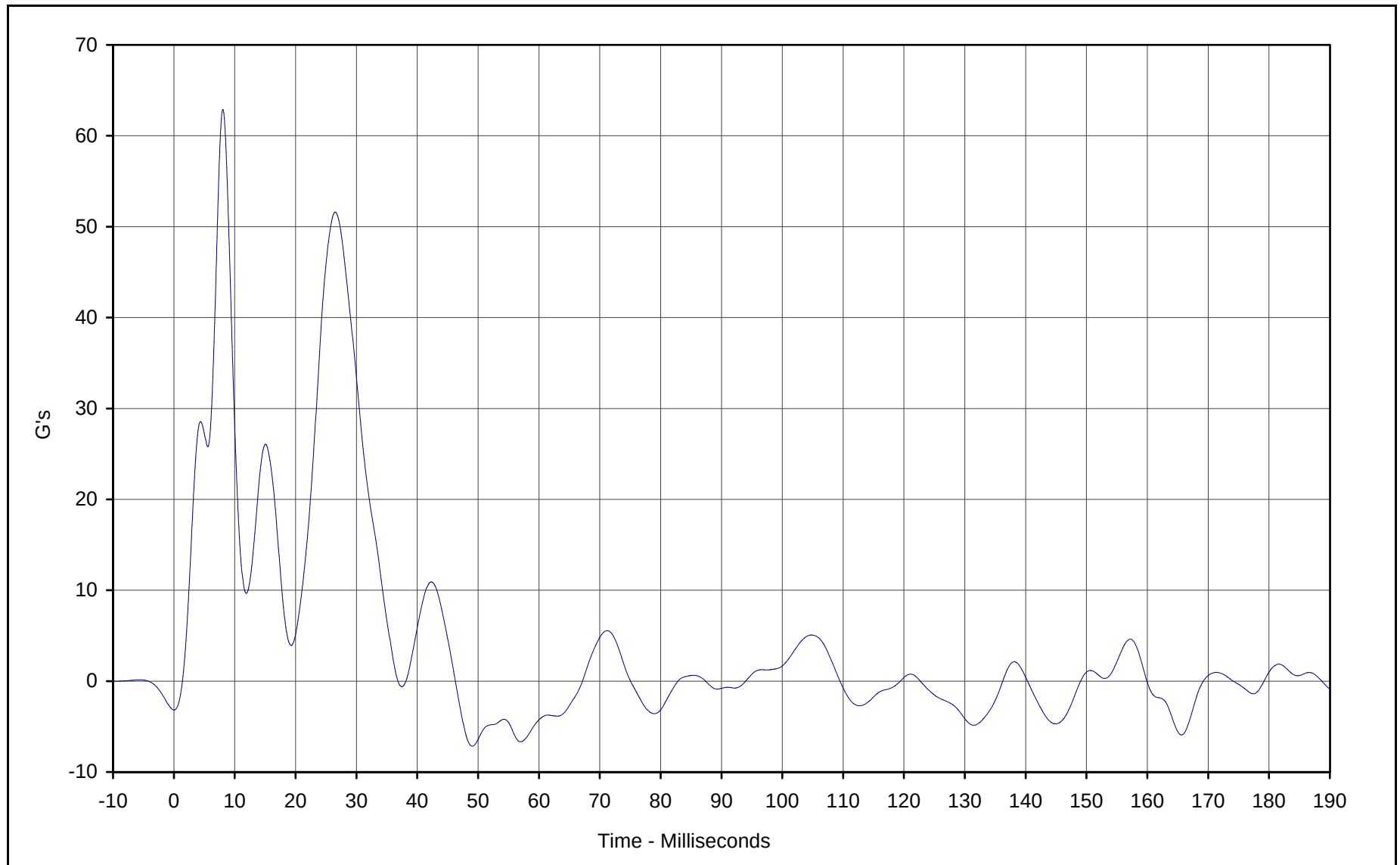




Curve Description: Rear Floor Above Axle Resultant
Maximum Value: 39.1 at 6.6 Milliseconds
Minimum Value: 0.1 at 129.3 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: RES-033

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

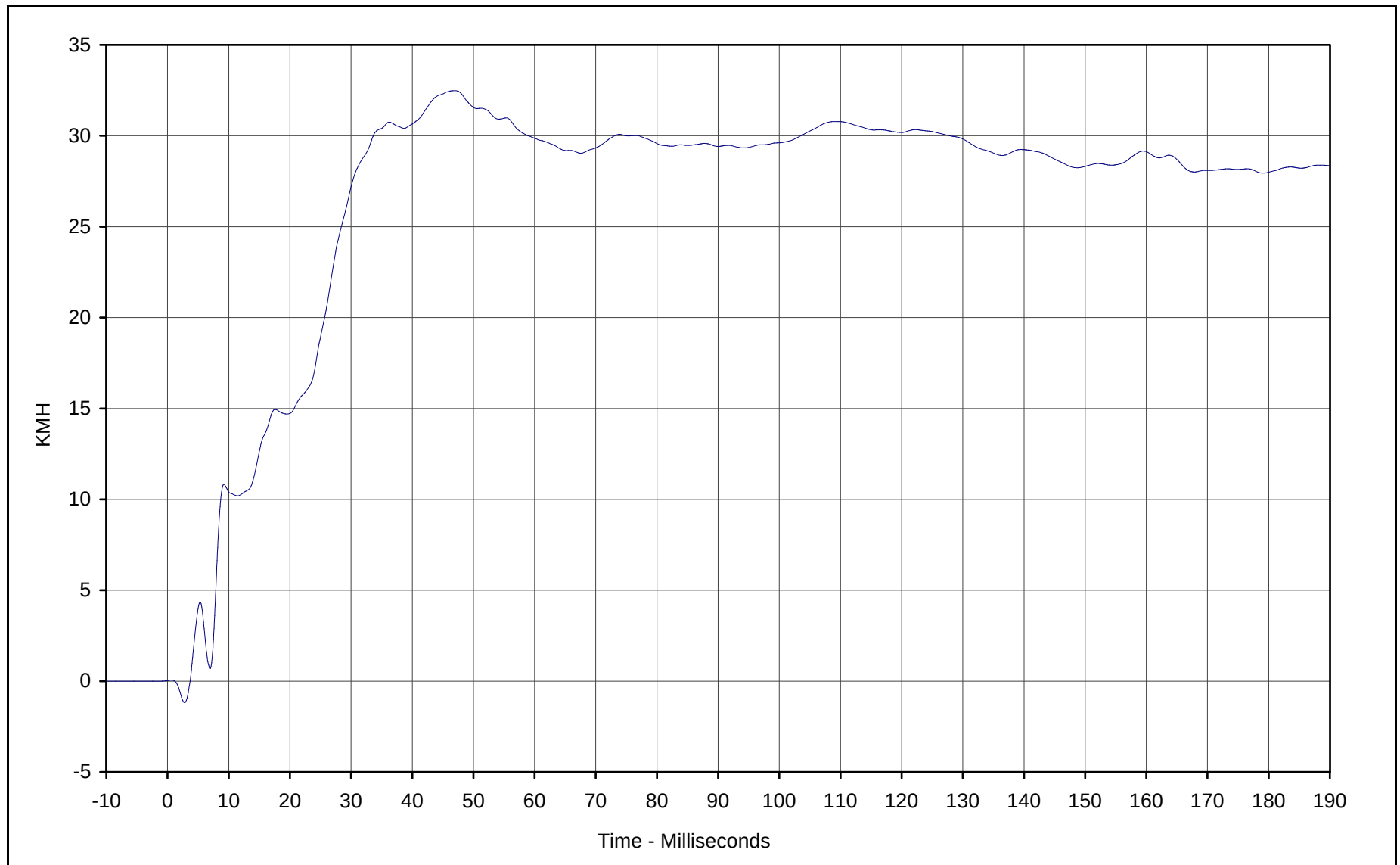




Curve Description: Left Sill at Rear Door Y
Maximum Value: 62.9 at 8.0 Milliseconds
Minimum Value: -7.2 at 49.0 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-036

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

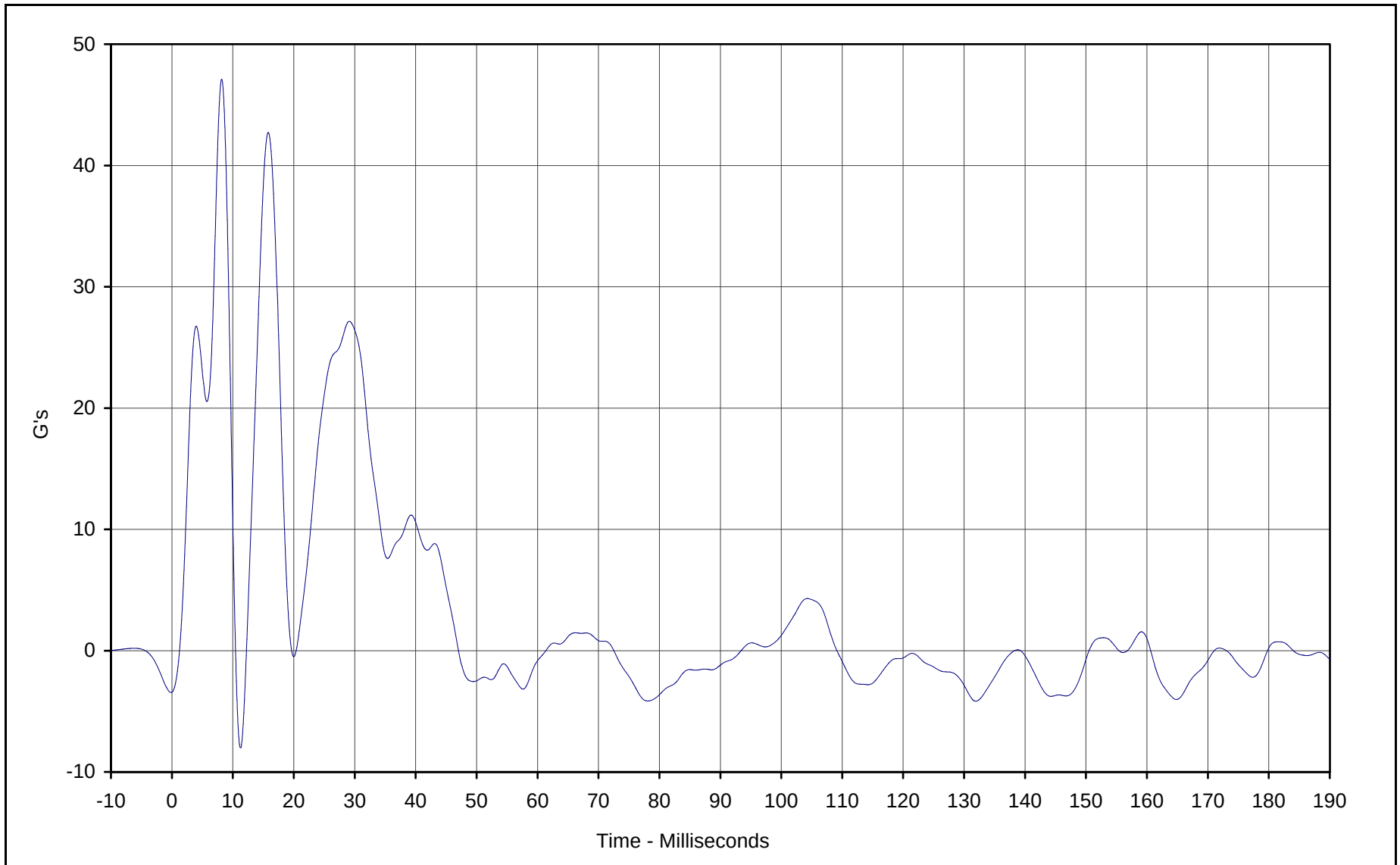




Curve Description: Left Sill at Rear Door Y Velocity
Maximum Value: 32.5 at 46.9 Milliseconds
Minimum Value: -1.2 at 2.8 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-036

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

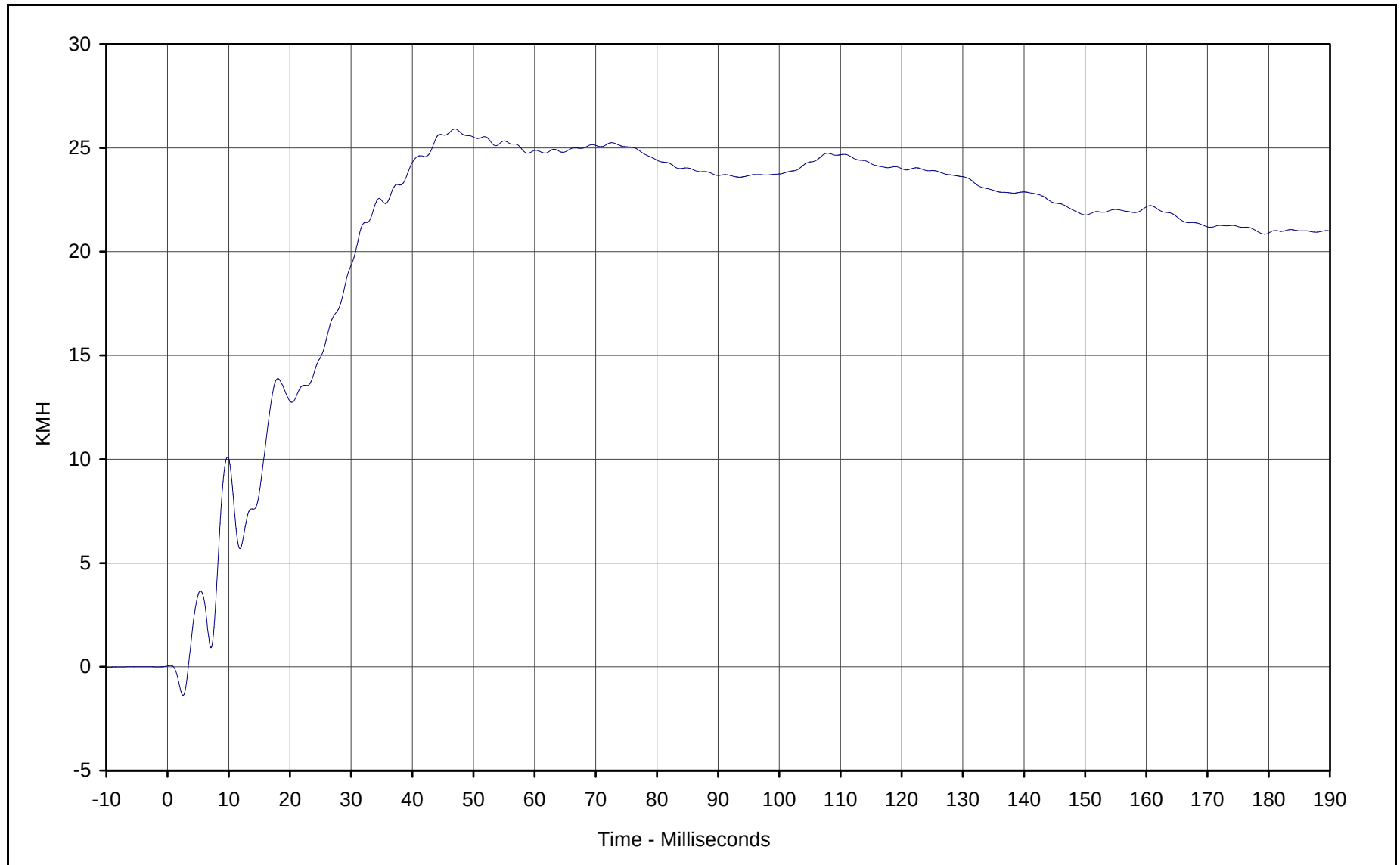




Curve Description: Left Sill at Front Door Y
Maximum Value: 47.1 at 8.2 Milliseconds
Minimum Value: -8.0 at 11.3 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-037

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

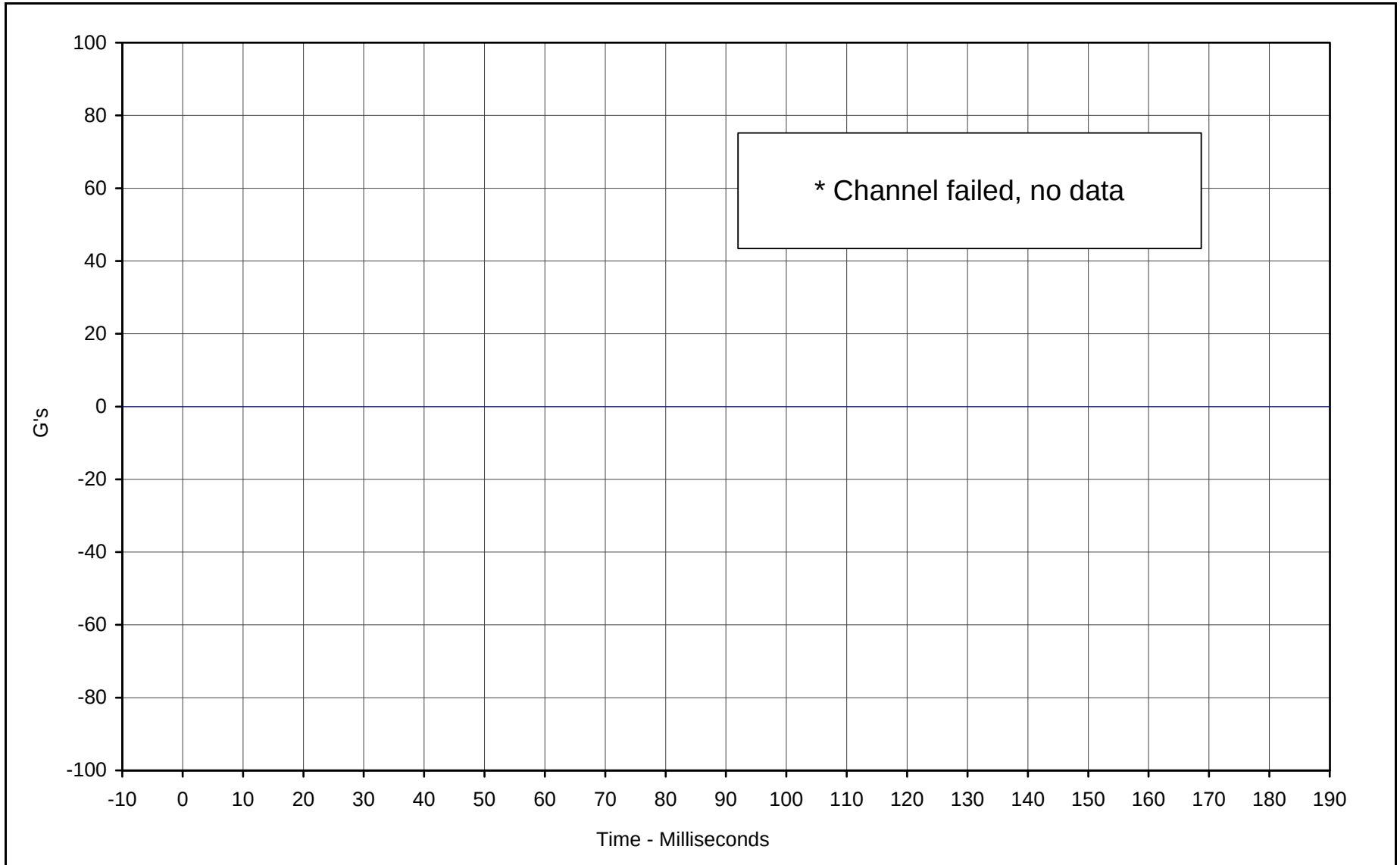




Curve Description: Left Sill at Front Door Y Velocity
Maximum Value: 25.9 at 47.0 Milliseconds
Minimum Value: -1.4 at 2.5 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-037

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Left Front Door Centerline Y *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 11/20/01

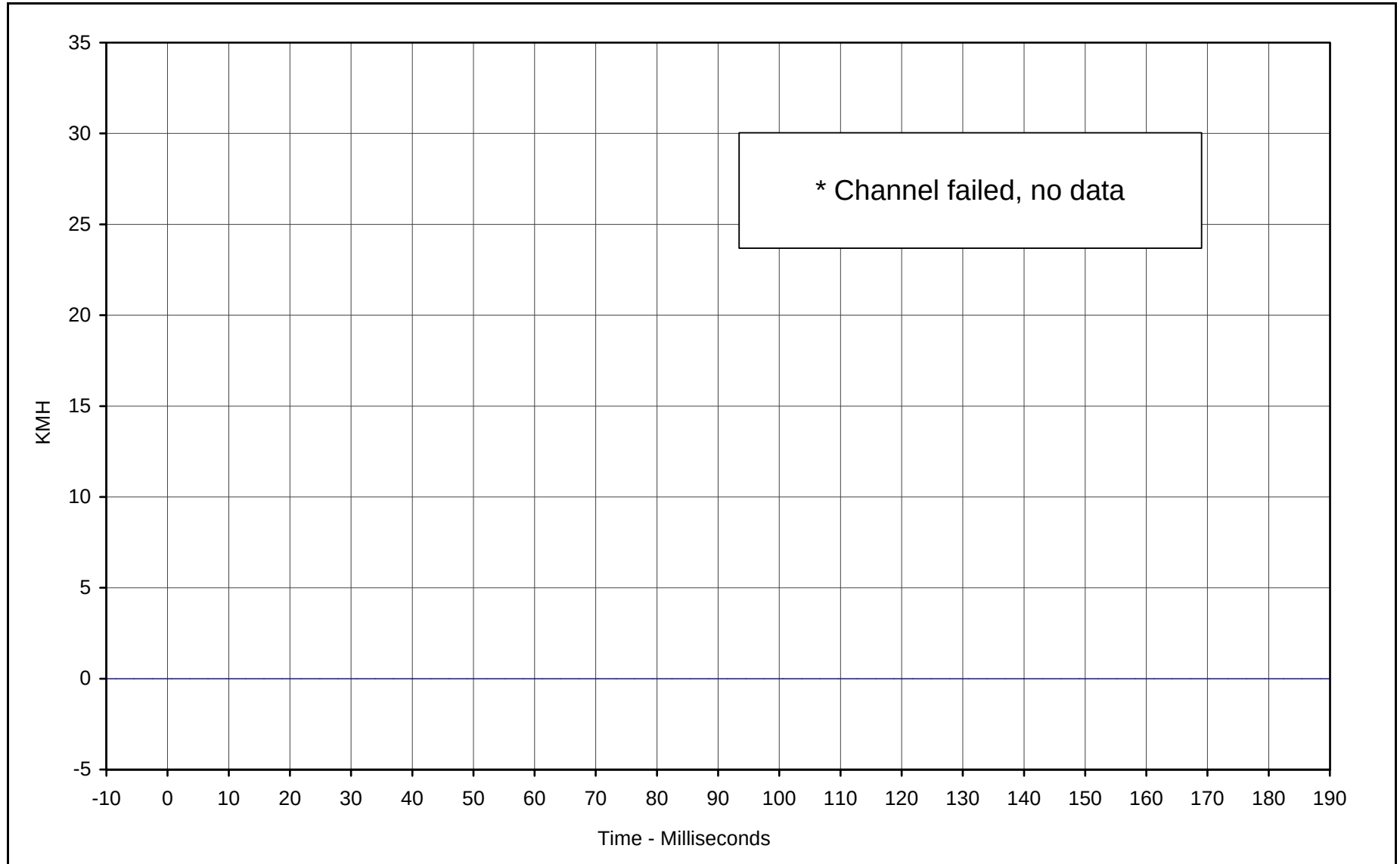
Curve Number: FIL-038

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

* Channel failed, no data





Curve Description: Left Front Door CL Y Velocity *

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 11/20/01

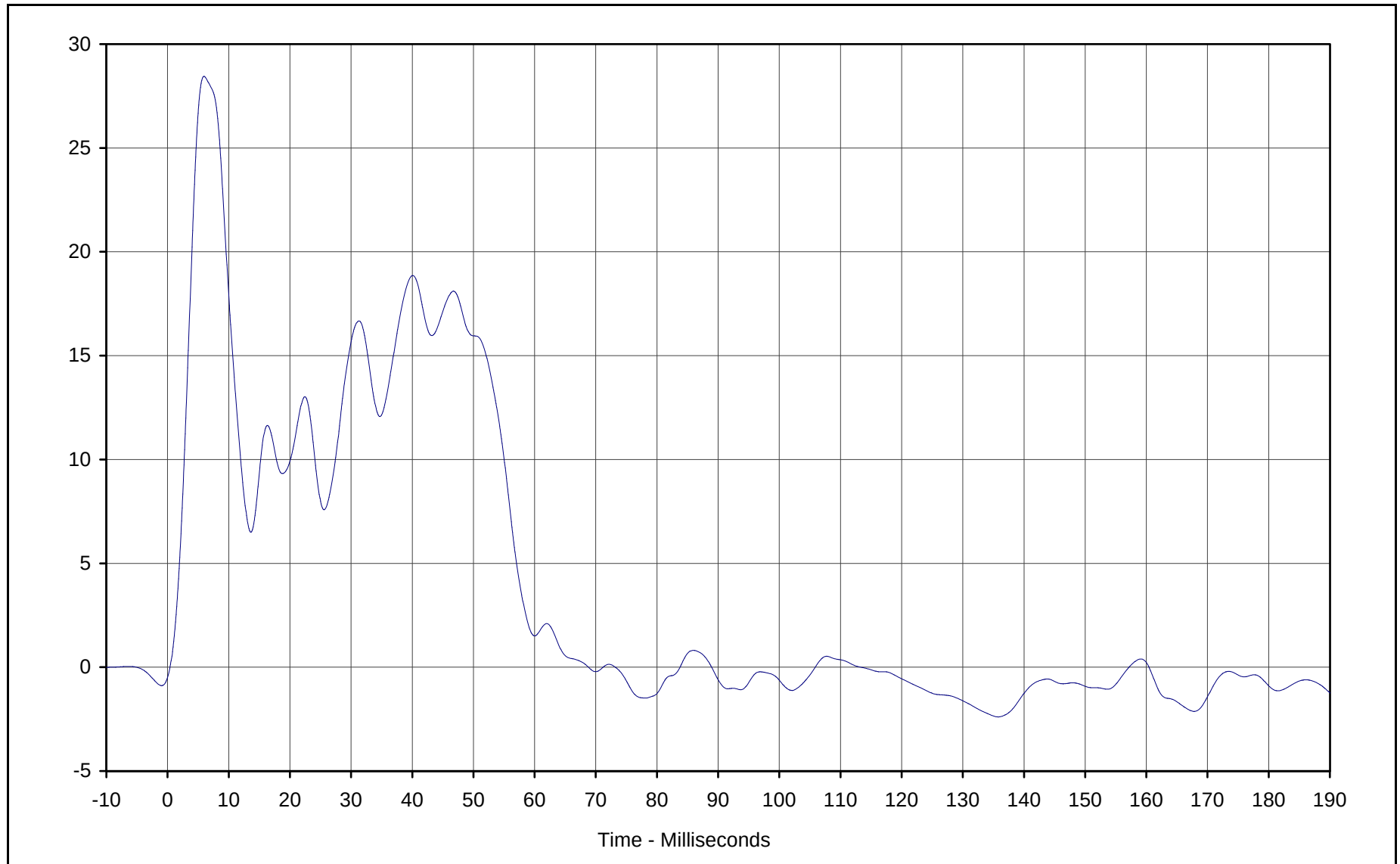
Curve Number: IN1-038

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

* Channel failed, no data

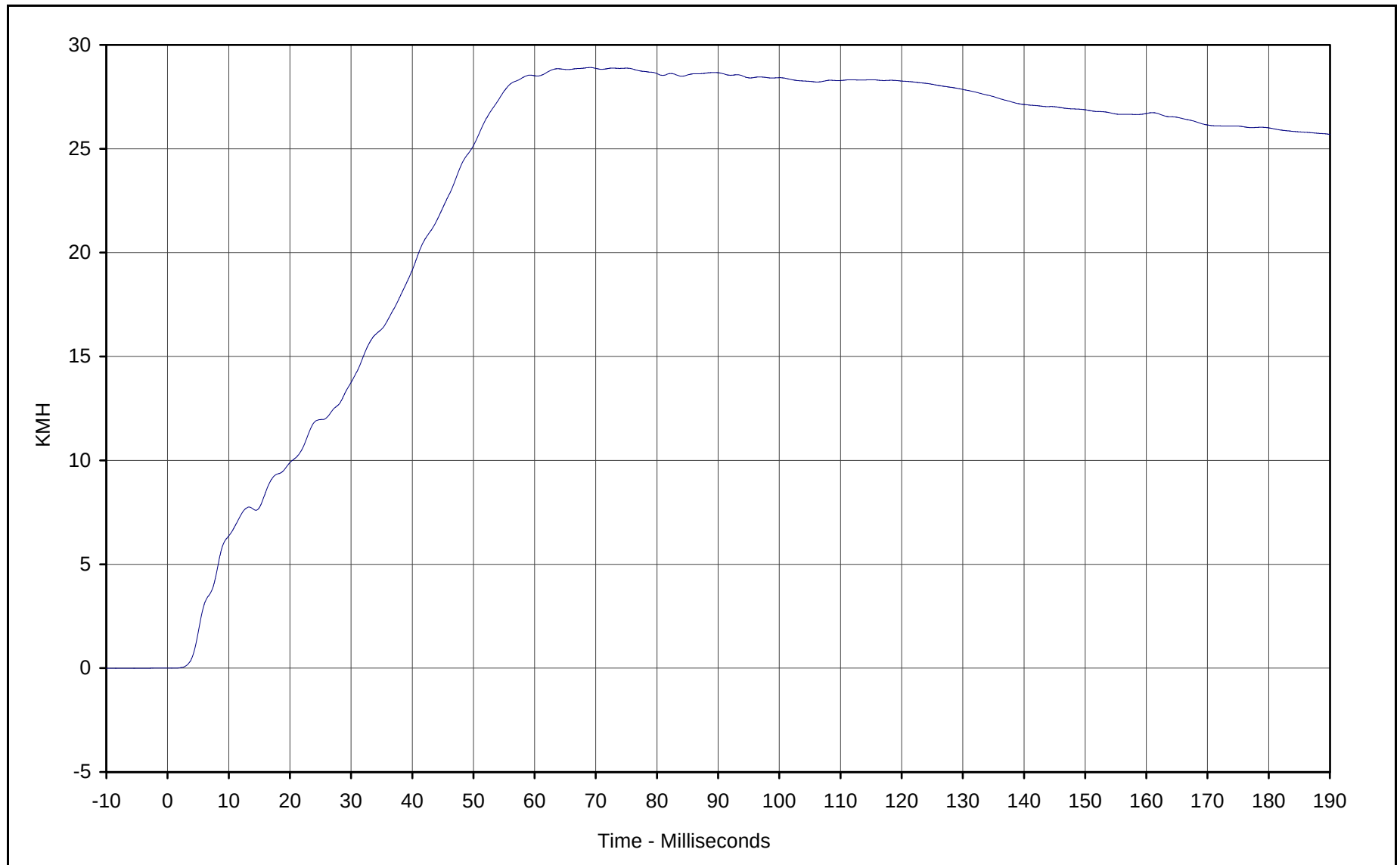




Curve Description: Right Rear Occ. Compartment Y
Maximum Value: 28.4 at 6.0 Milliseconds
Minimum Value: -2.4 at 135.8 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-039

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

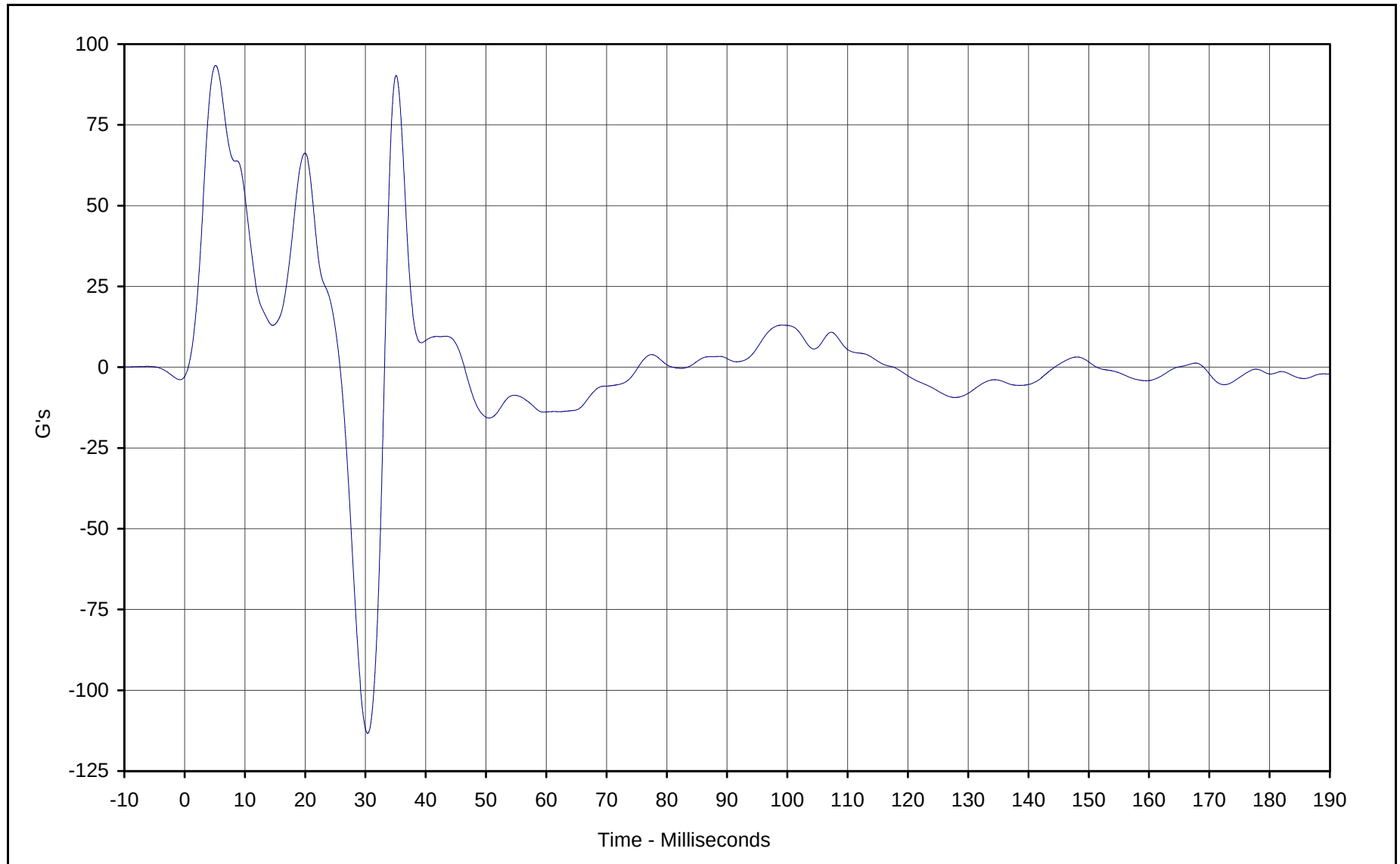




Curve Description: Right Rear Occ. Comp. Y Velocity
Maximum Value: 28.9 at 69.1 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-039

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

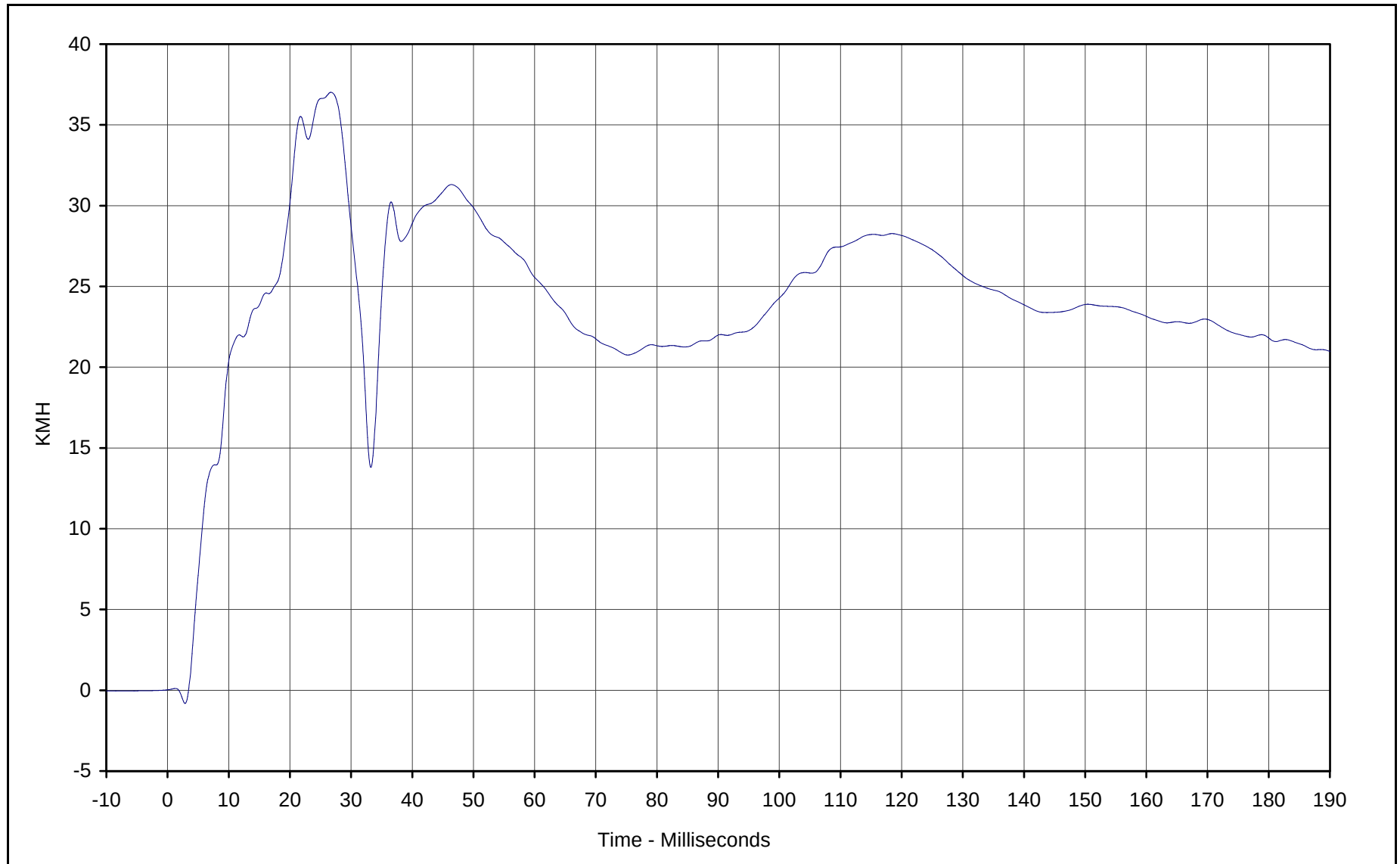




Curve Description: Left Front Door Mid Rear Y
Maximum Value: 93.4 at 5.2 Milliseconds
Minimum Value: -113.3 at 30.4 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-040

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV





Curve Description: Left Front Door Mid Rear Y Velocity

Maximum Value: 37.0 at 26.7 Milliseconds

Minimum Value: -0.8 at 2.9 Milliseconds

SAE Filter Class: 180

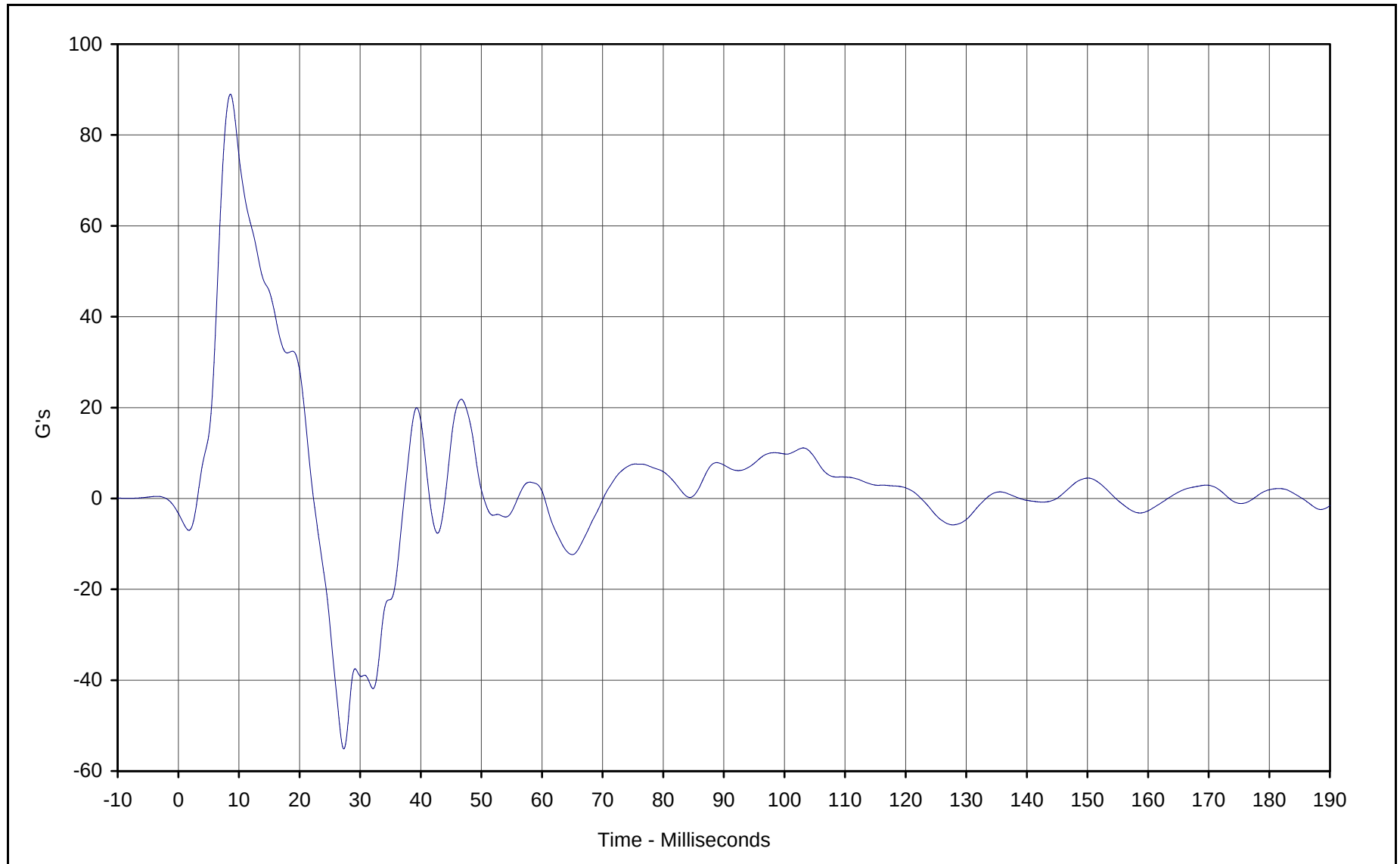
Date of Test: 11/20/01

Curve Number: IN1-040

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

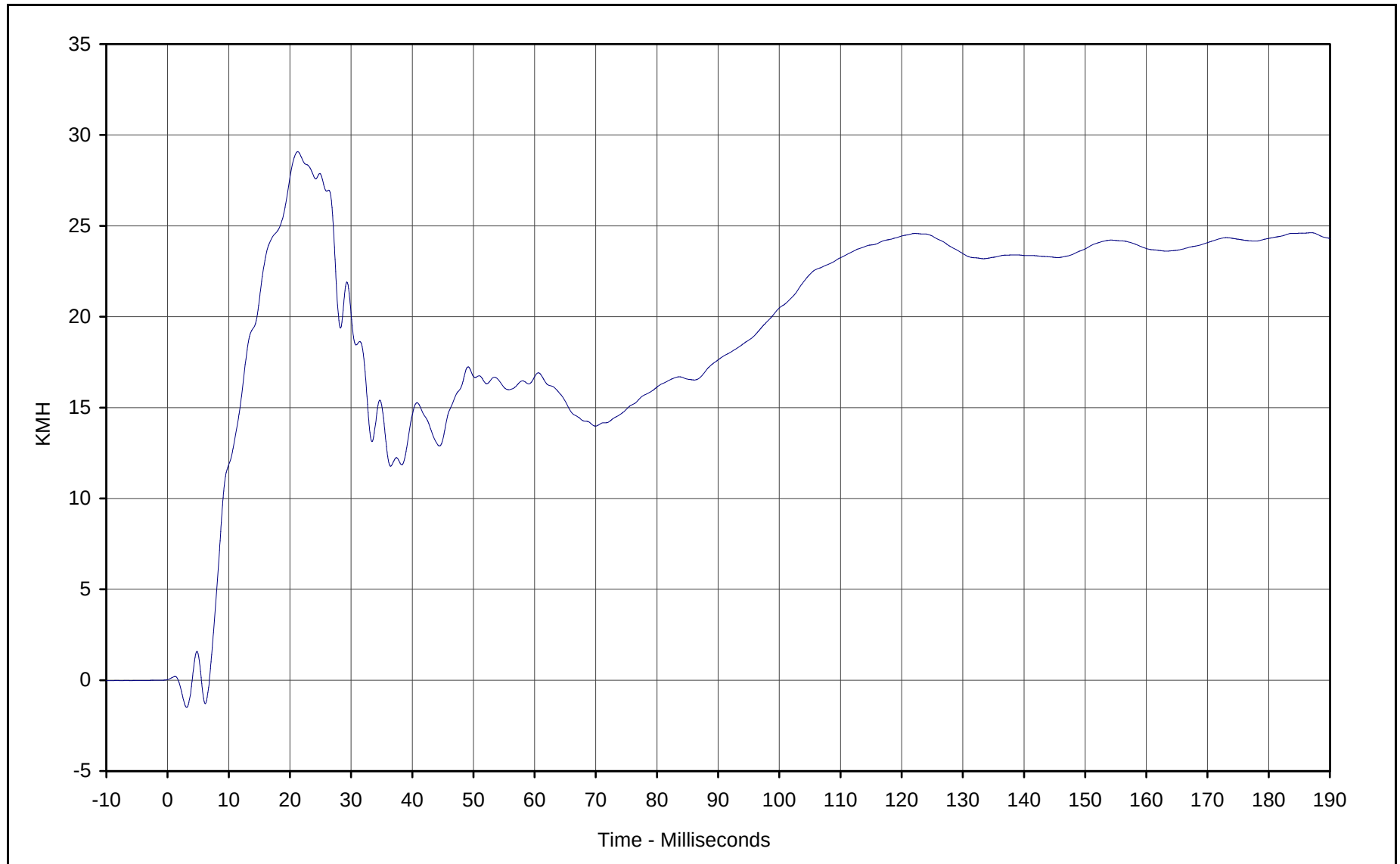




Curve Description: Left Front Door Upper CL Y
Maximum Value: 89.0 at 8.6 Milliseconds
Minimum Value: -55.1 at 27.3 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-041

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV





Curve Description: Left Front Door Upper CL Y Velocity

Maximum Value: 29.1 at 21.3 Milliseconds

Minimum Value: -1.5 at 3.1 Milliseconds

SAE Filter Class: 180

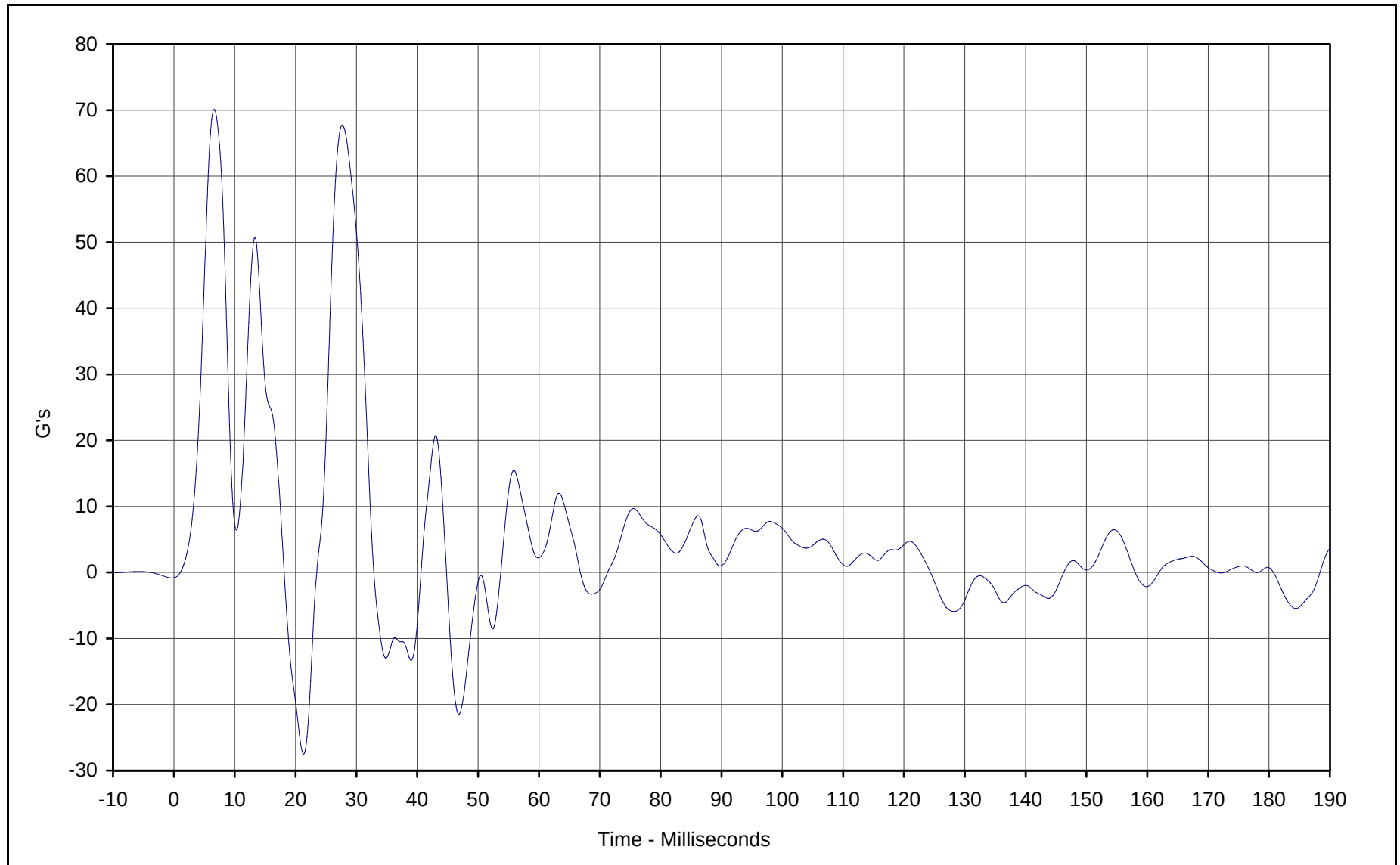
Date of Test: 11/20/01

Curve Number: IN1-041

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

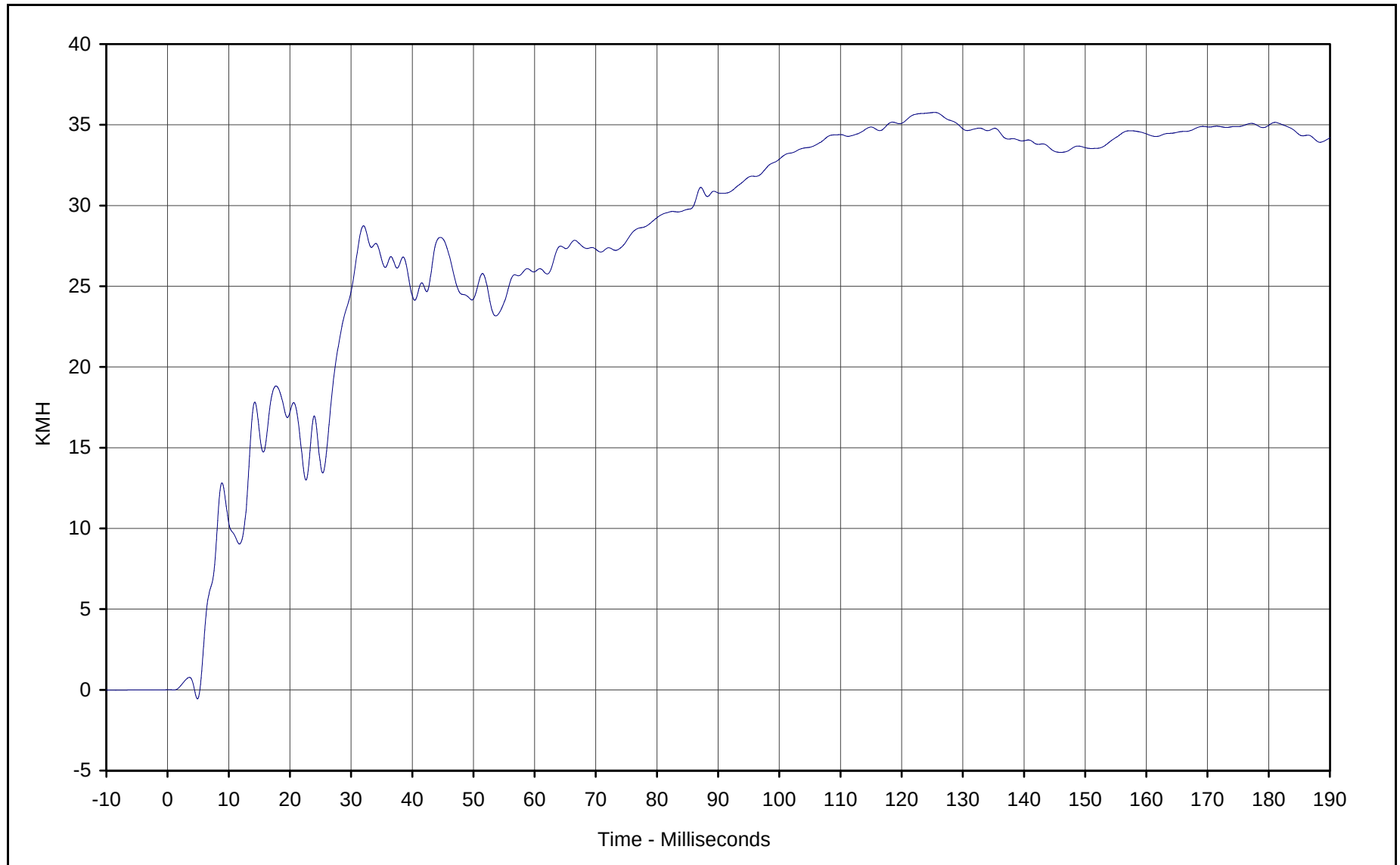




Curve Description: Left Rear Door Mid Rear Y
Maximum Value: 70.1 at 6.6 Milliseconds
Minimum Value: -27.5 at 21.3 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-042

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV

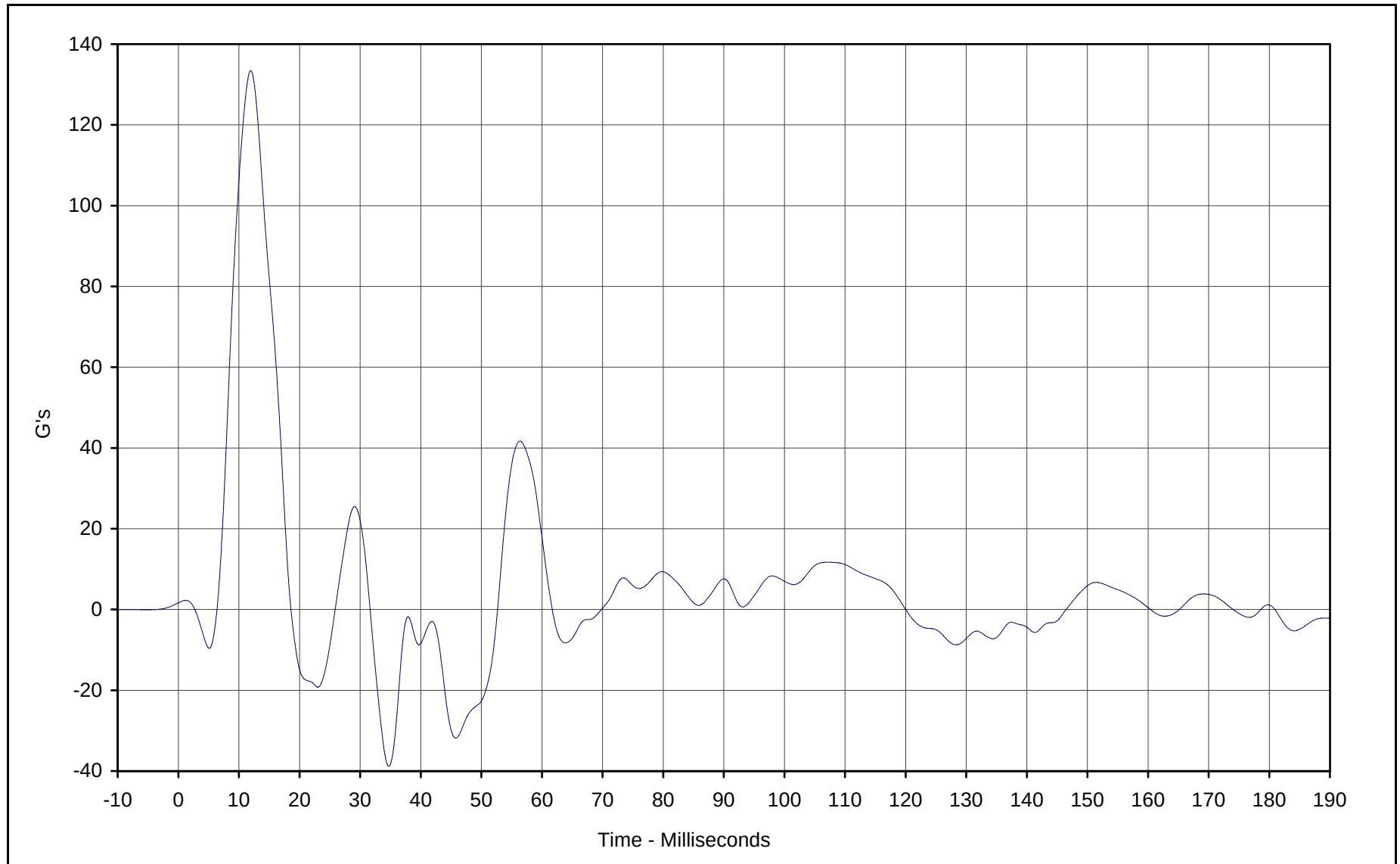




Curve Description: Left Rear Door Mid Rear Y Velocity
Maximum Value: 35.8 at 125.4 Milliseconds
Minimum Value: -0.6 at 4.9 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-042

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV

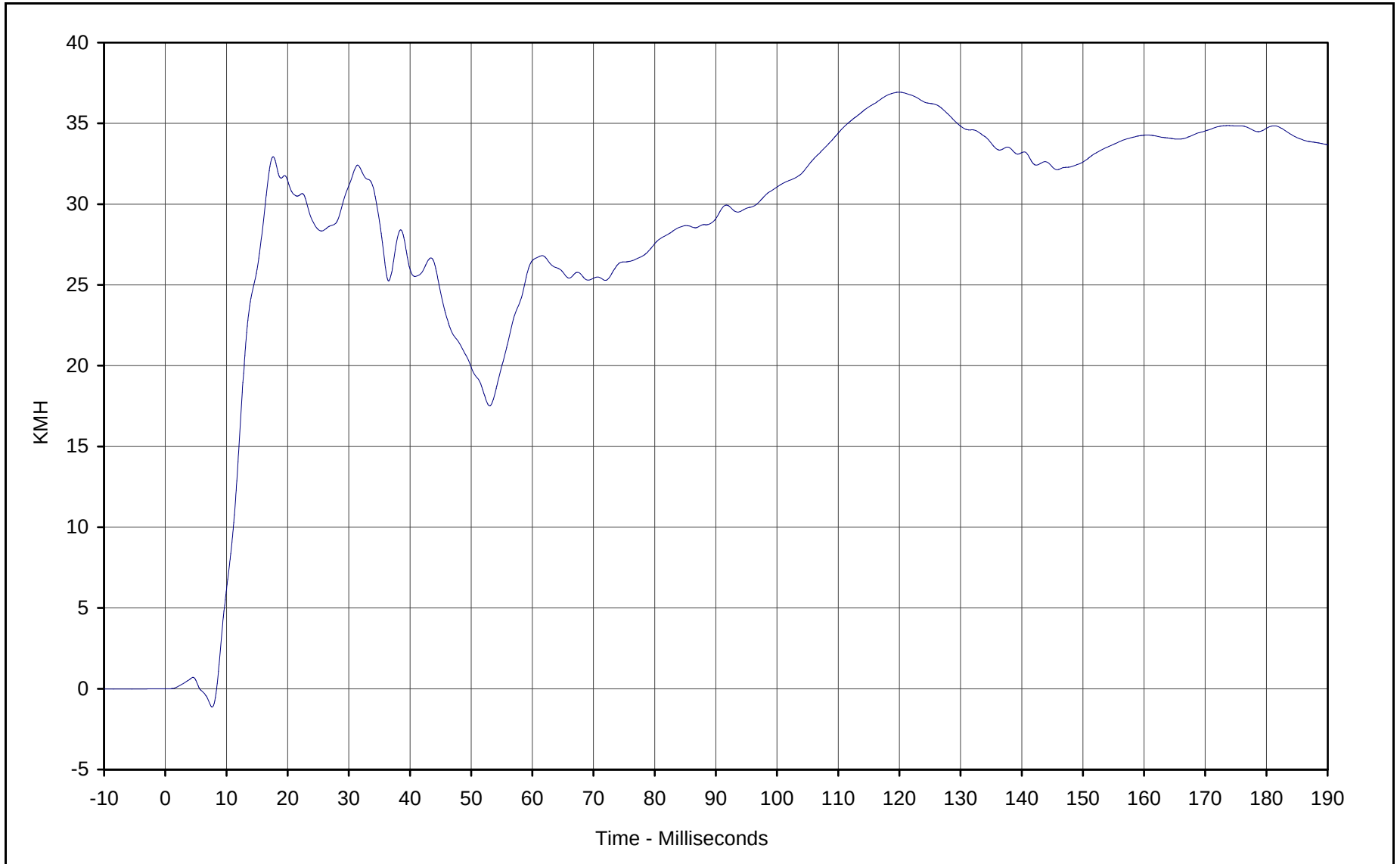




Curve Description: Left Rear Door Upper CL Y
Maximum Value: 133.4 at 12.0 Milliseconds
Minimum Value: -38.8 at 34.7 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-043

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV

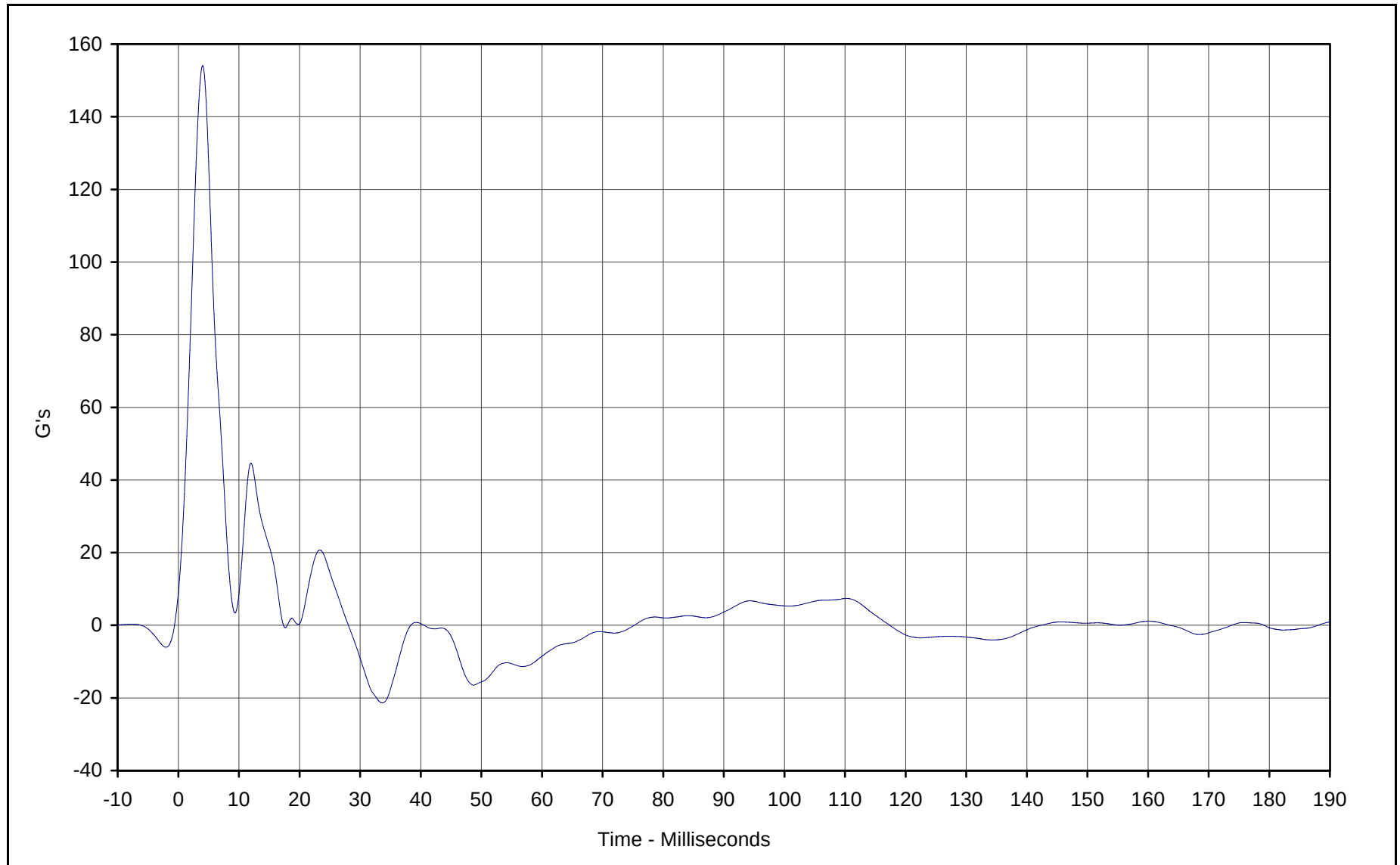




Curve Description: Left Rear Door Upper CL Y Velocity
Maximum Value: 36.9 at 120.0 Milliseconds
Minimum Value: -1.1 at 7.7 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-043

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV





Curve Description: Left B-Post Lower Y

Maximum Value: 154.1 at 4.0 Milliseconds

Minimum Value: -21.4 at 33.7 Milliseconds

SAE Filter Class: 60

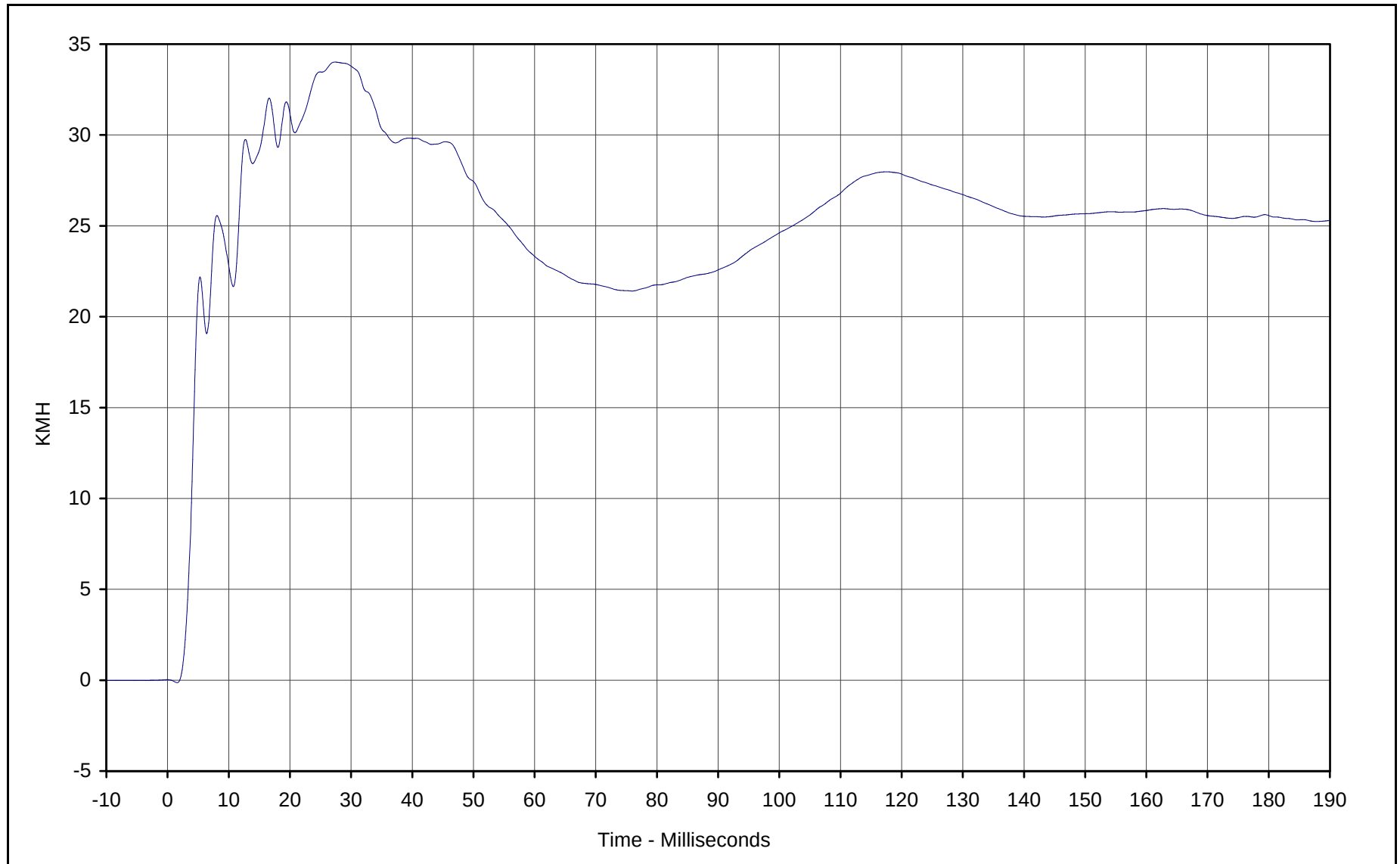
Date of Test: 11/20/01

Curve Number: FIL-044

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota RAV 4 4WD SUV



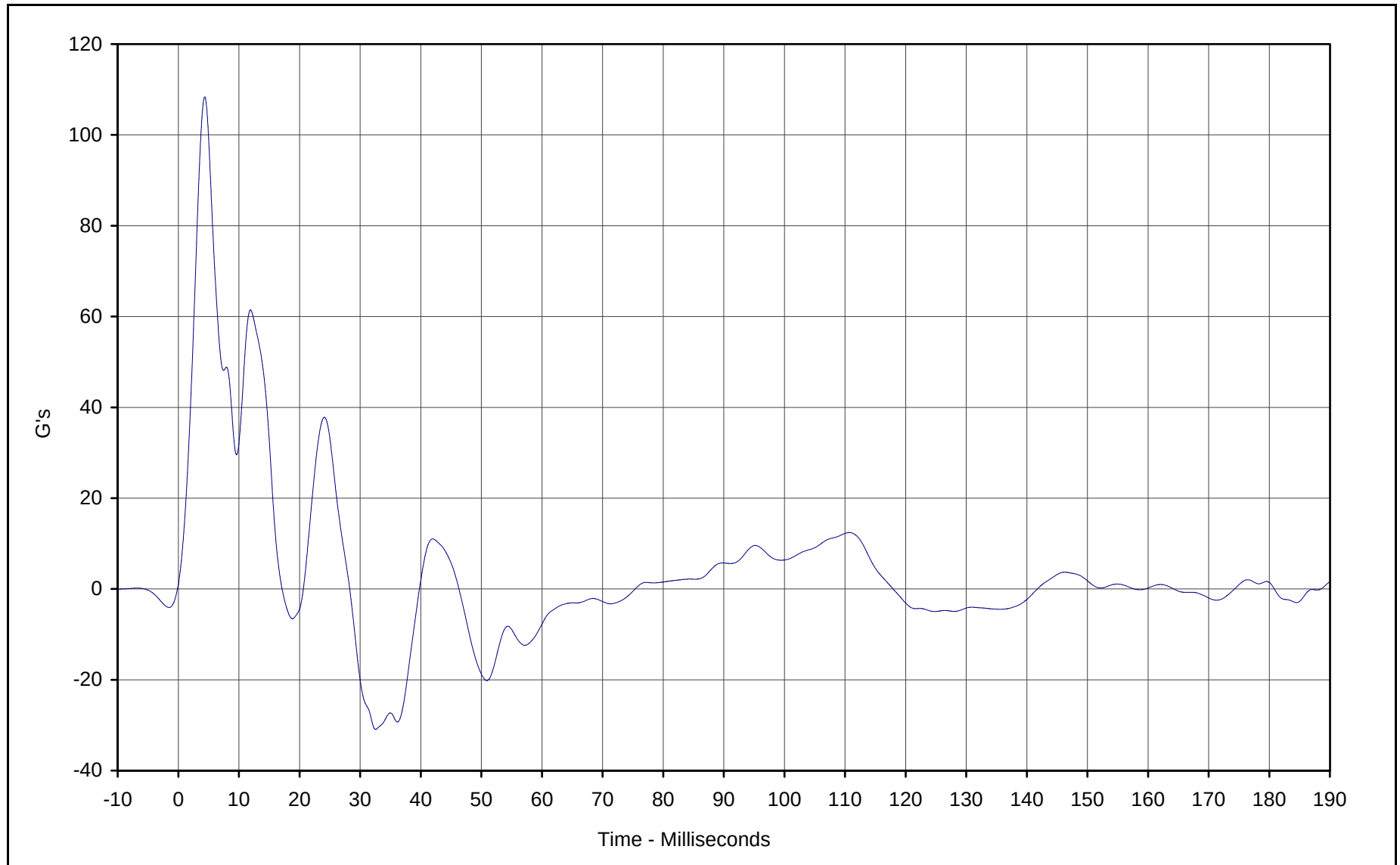


Curve Description: Left B-Post Lower Y Velocity
Maximum Value: 34.0 at 27.4 Milliseconds
Minimum Value: -0.1 at 1.6 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-044

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV



B-90

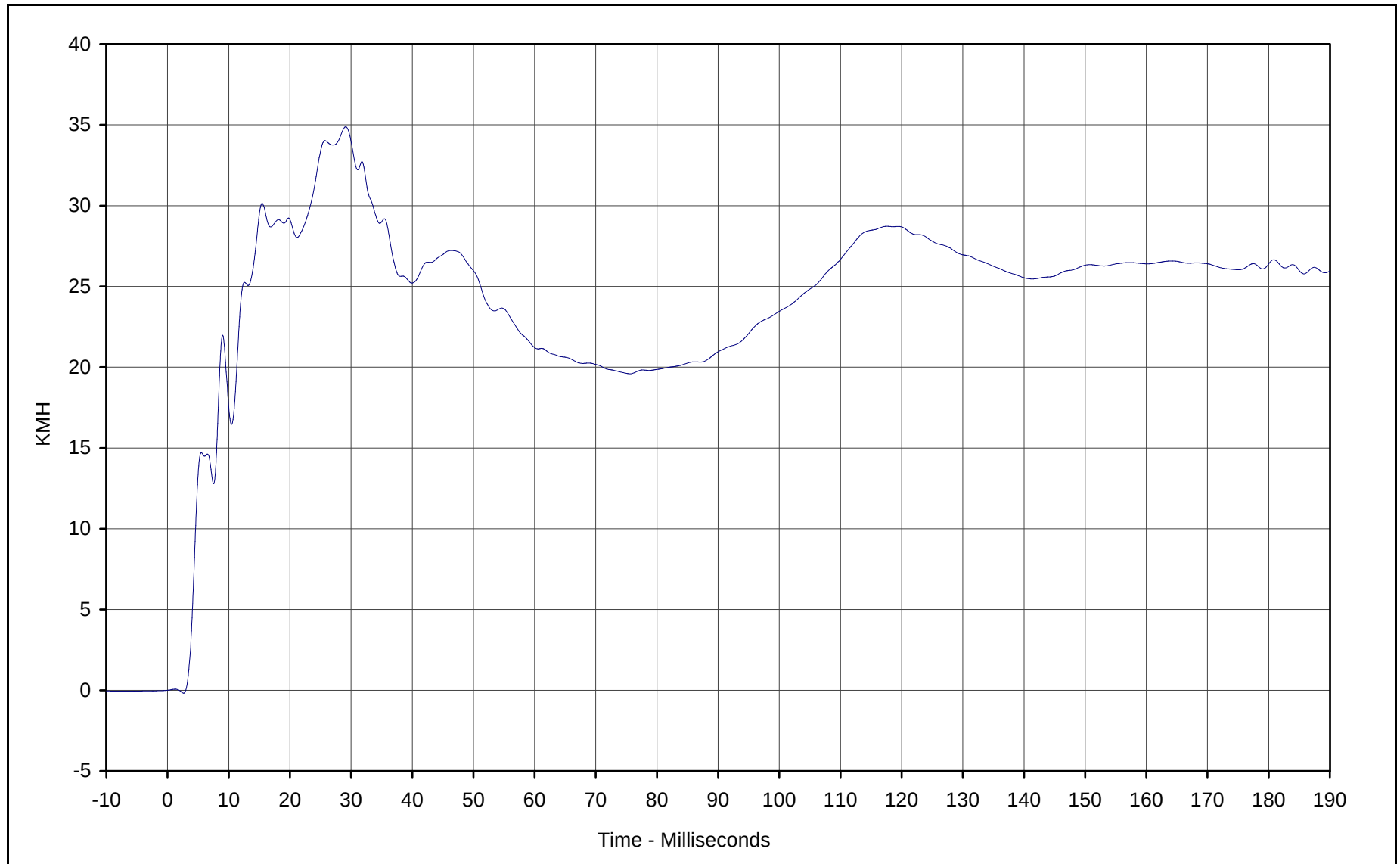


Curve Description: Left B-Post Middle Y
Maximum Value: 108.4 at 4.4 Milliseconds
Minimum Value: -30.9 at 32.6 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-045

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV



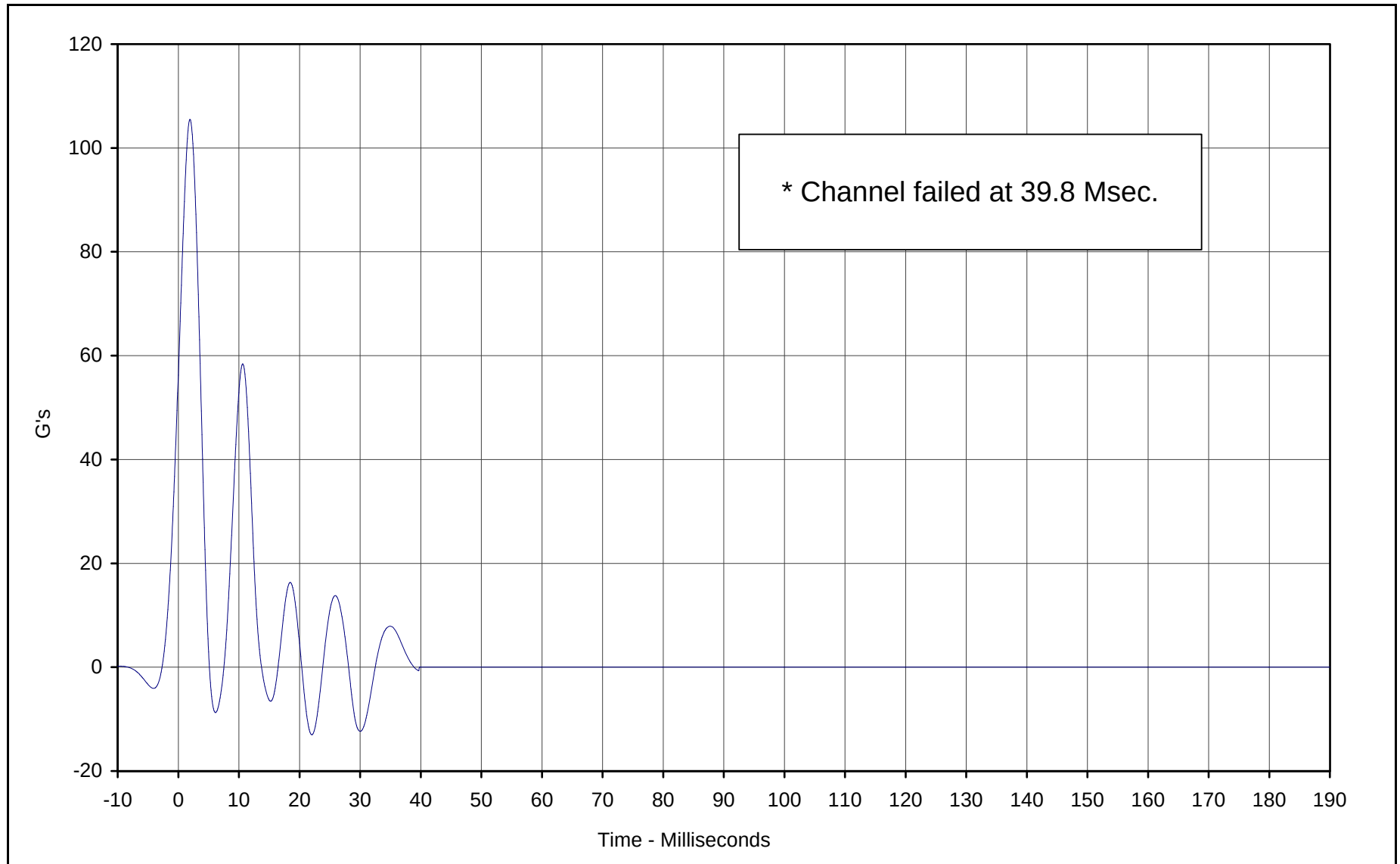
KAR22003-02



Curve Description: Left B-Post Middle Y Velocity
Maximum Value: 34.9 at 29.1 Milliseconds
Minimum Value: -0.2 at 2.6 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-045

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV





Curve Description: Left A-Post Lower Y *

Maximum Value: 105.5 at 1.9 Milliseconds

Minimum Value: -13.0 at 22.0 Milliseconds

SAE Filter Class: 60

Date of Test: 11/20/01

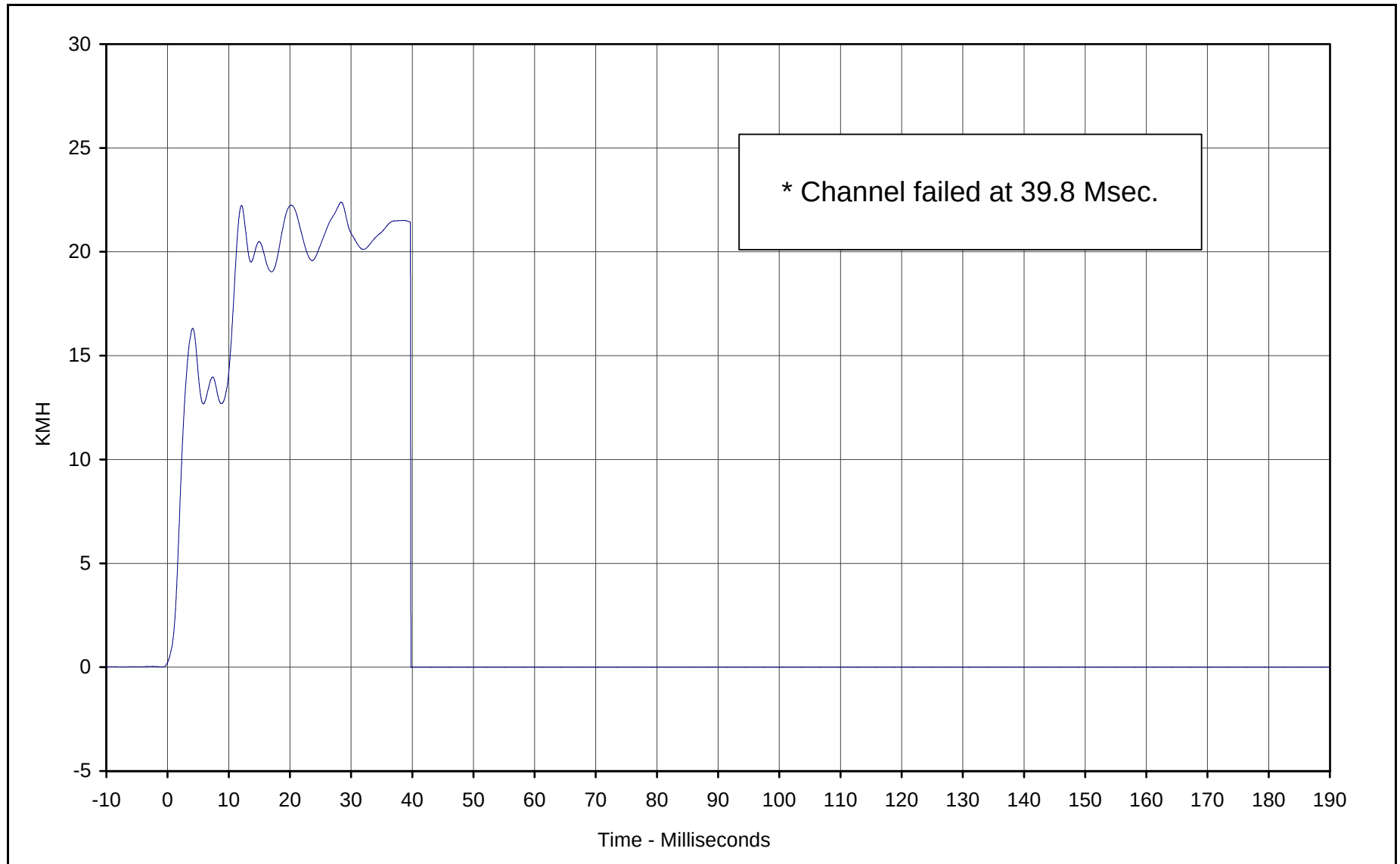
Curve Number: FIL-046

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

* Channel failed at 39.8 Msec.





Curve Description: Left A-Post Lower Y Velocity *

Maximum Value: 22.4 at 28.4 Milliseconds

Minimum Value: 0.0 at 39.8 Milliseconds

SAE Filter Class: 180

Date of Test: 11/20/01

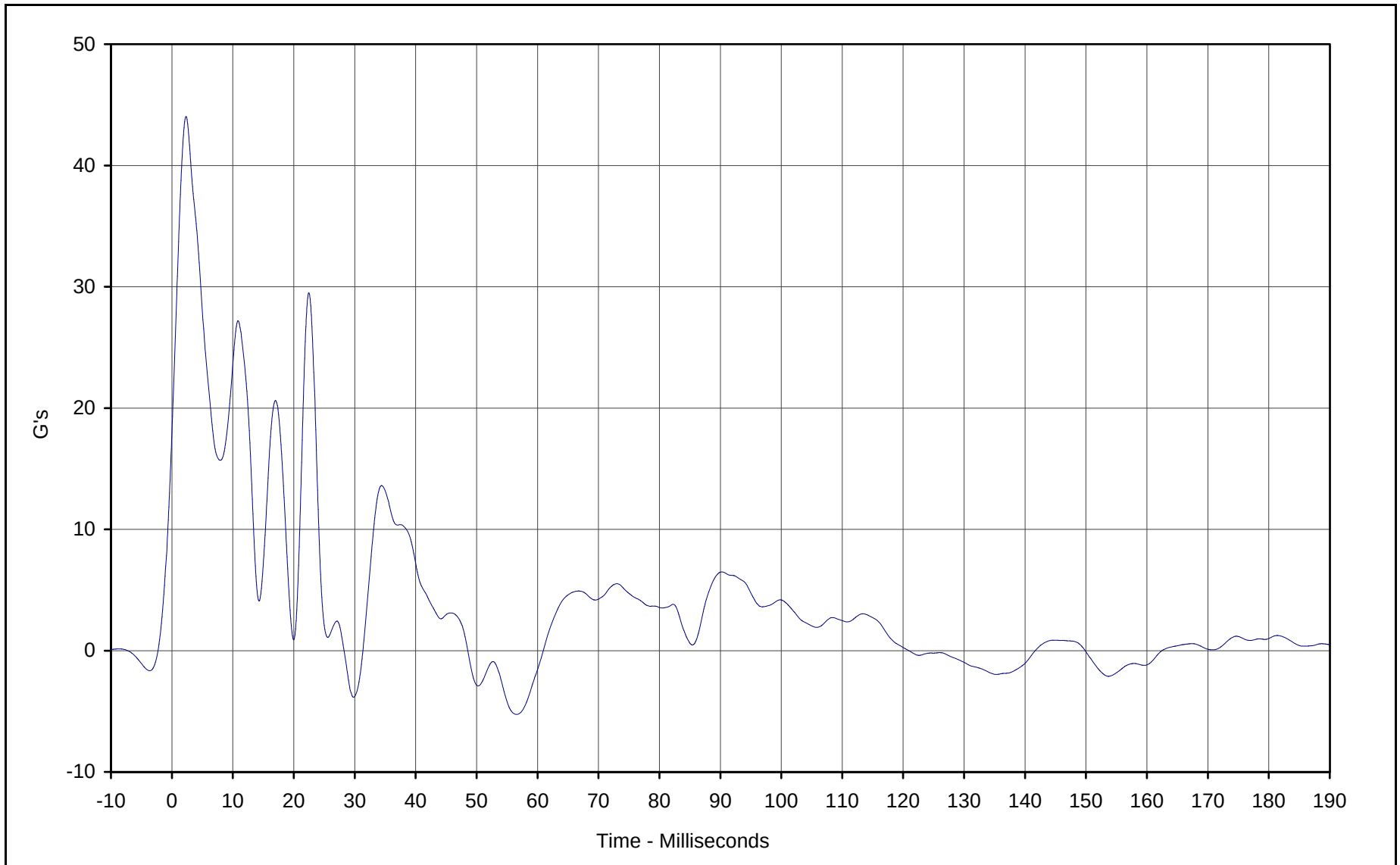
Curve Number: IN1-046

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota RAV 4 4WD SUV

* Channel failed at 39.8 Msec.

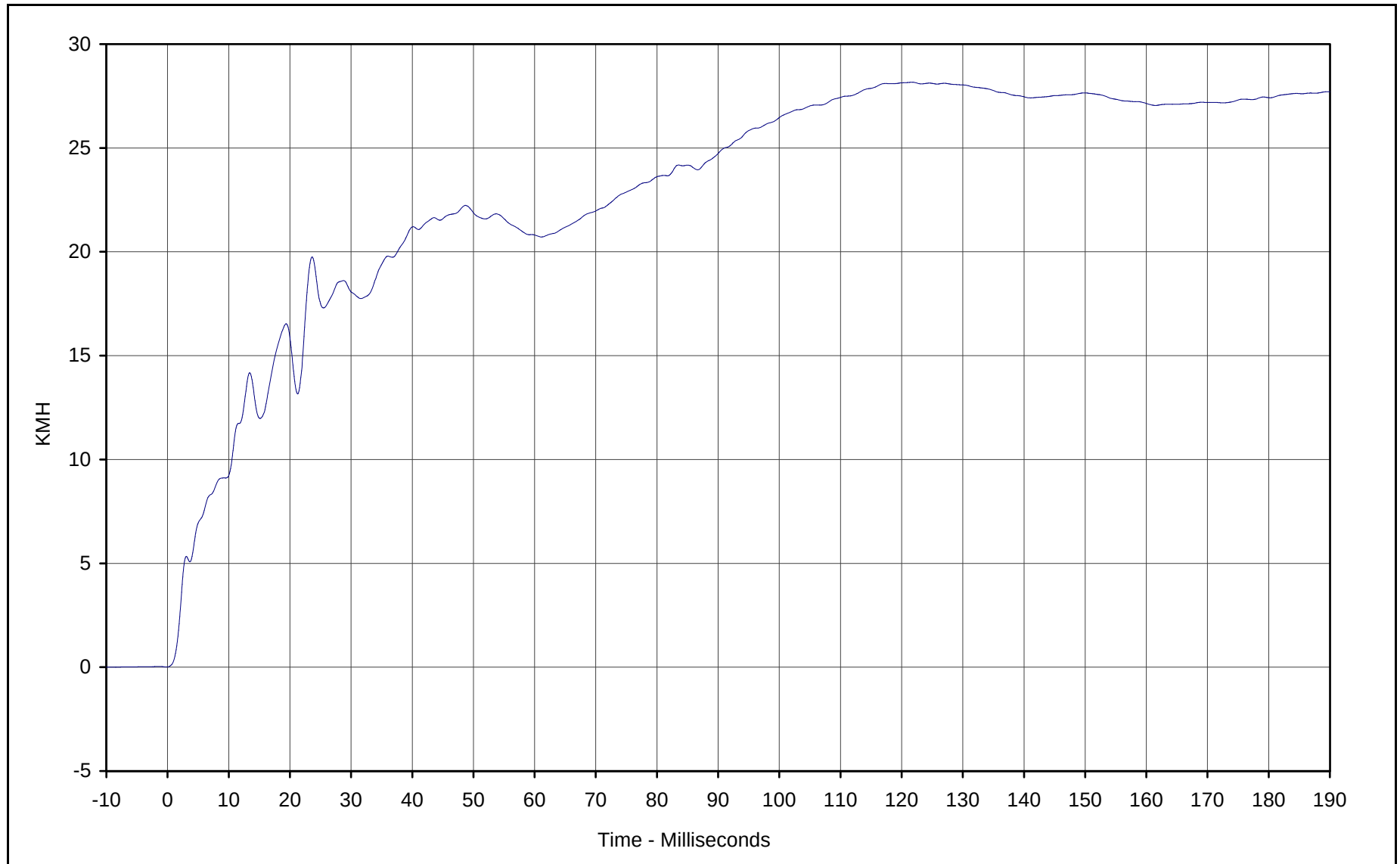




Curve Description: Left A-Post Middle Y
Maximum Value: 44.0 at 2.3 Milliseconds
Minimum Value: -5.3 at 56.6 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-047

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV

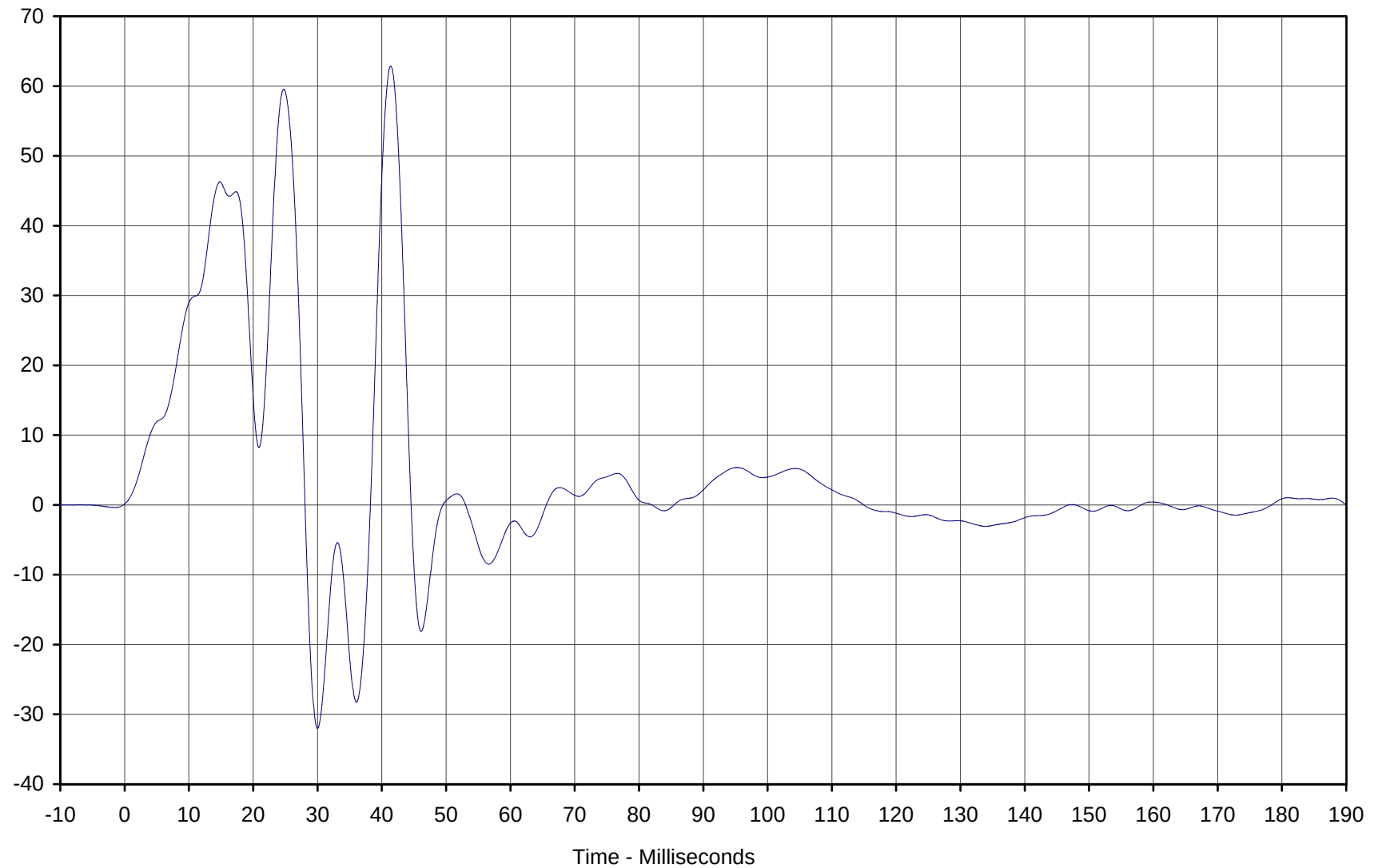




Curve Description: Left A-Post Middle Y Velocity
Maximum Value: 28.2 at 121.7 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-047

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota RAV 4 4WD SUV

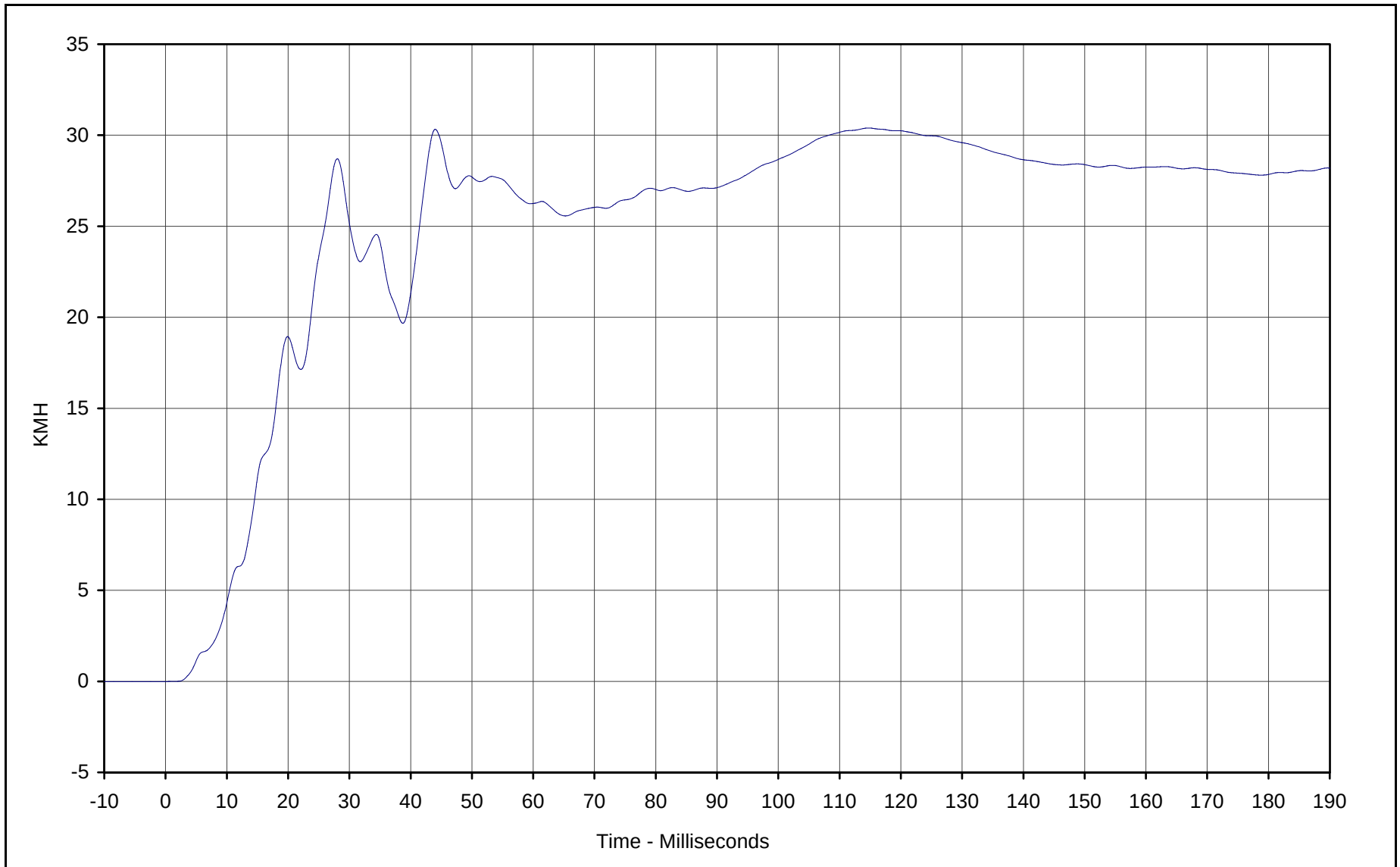




Curve Description: Left Front Seat Track Y
Maximum Value: 62.9 at 41.4 Milliseconds
Minimum Value: -32.0 at 30.0 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-048

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

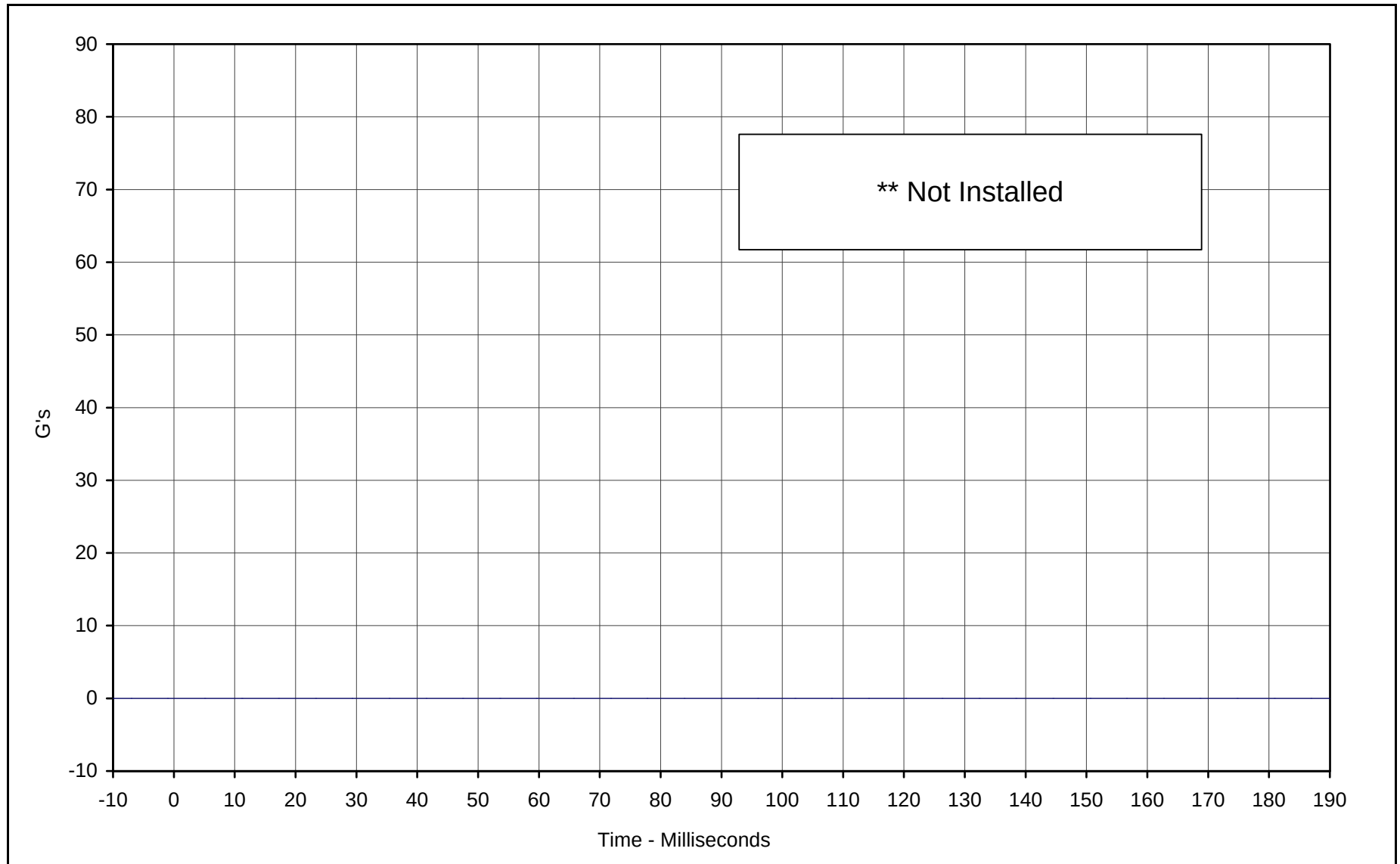




Curve Description: Left Front Seat Track Y Velocity
Maximum Value: 30.4 at 114.8 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-048

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Left Rear Seat Structure Y **

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 11/20/01

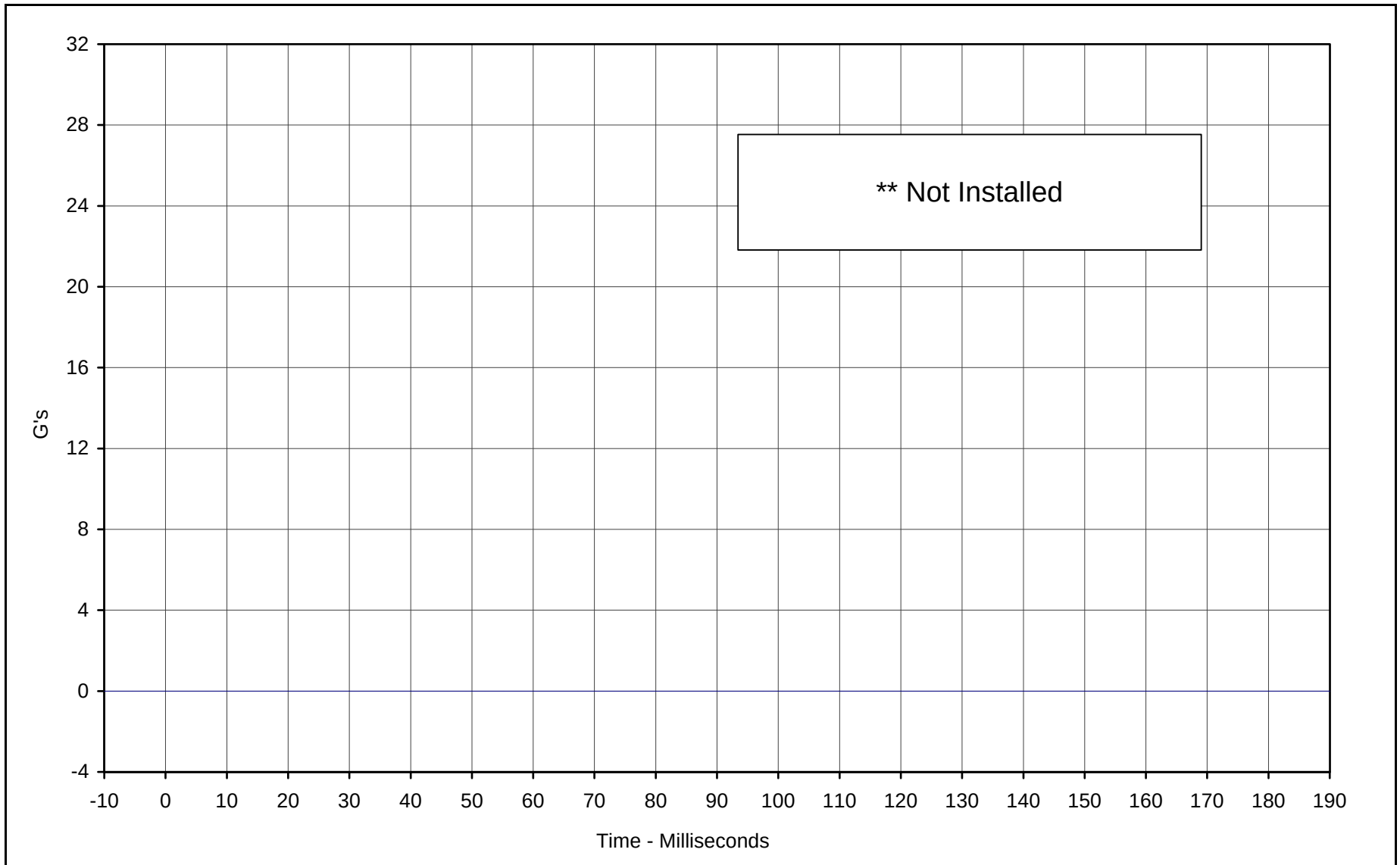
Curve Number: FIL-049

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

** Not Installed





Curve Description: Left Rear Seat Structure Y Velocity **

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 11/20/01

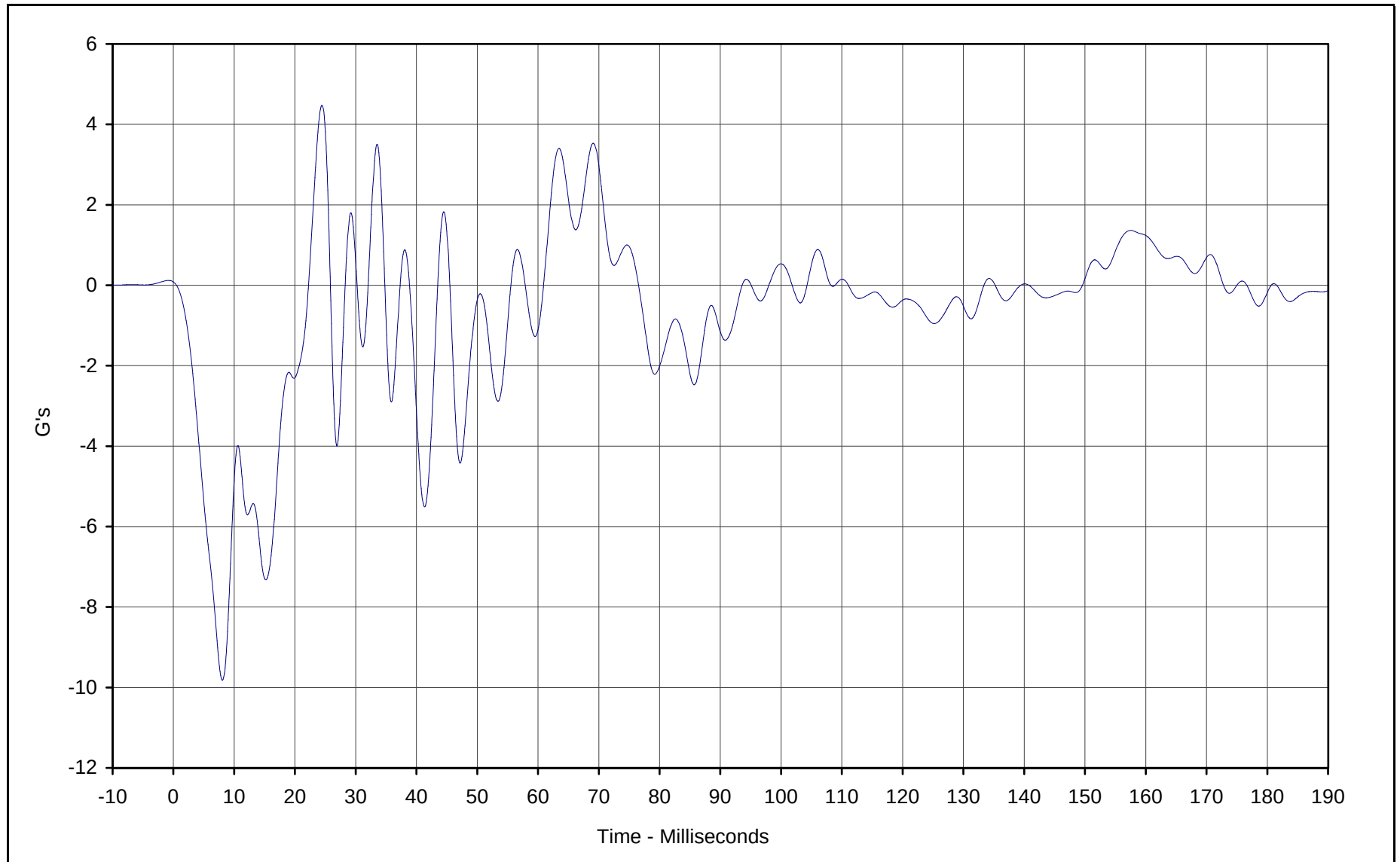
Curve Number: IN1-049

Test Program: 55/28 km/h Side Impact NCAP No.: M25108

Test Vehicle: 2002 Toyota Rav4 4WD SUV

** Not Installed

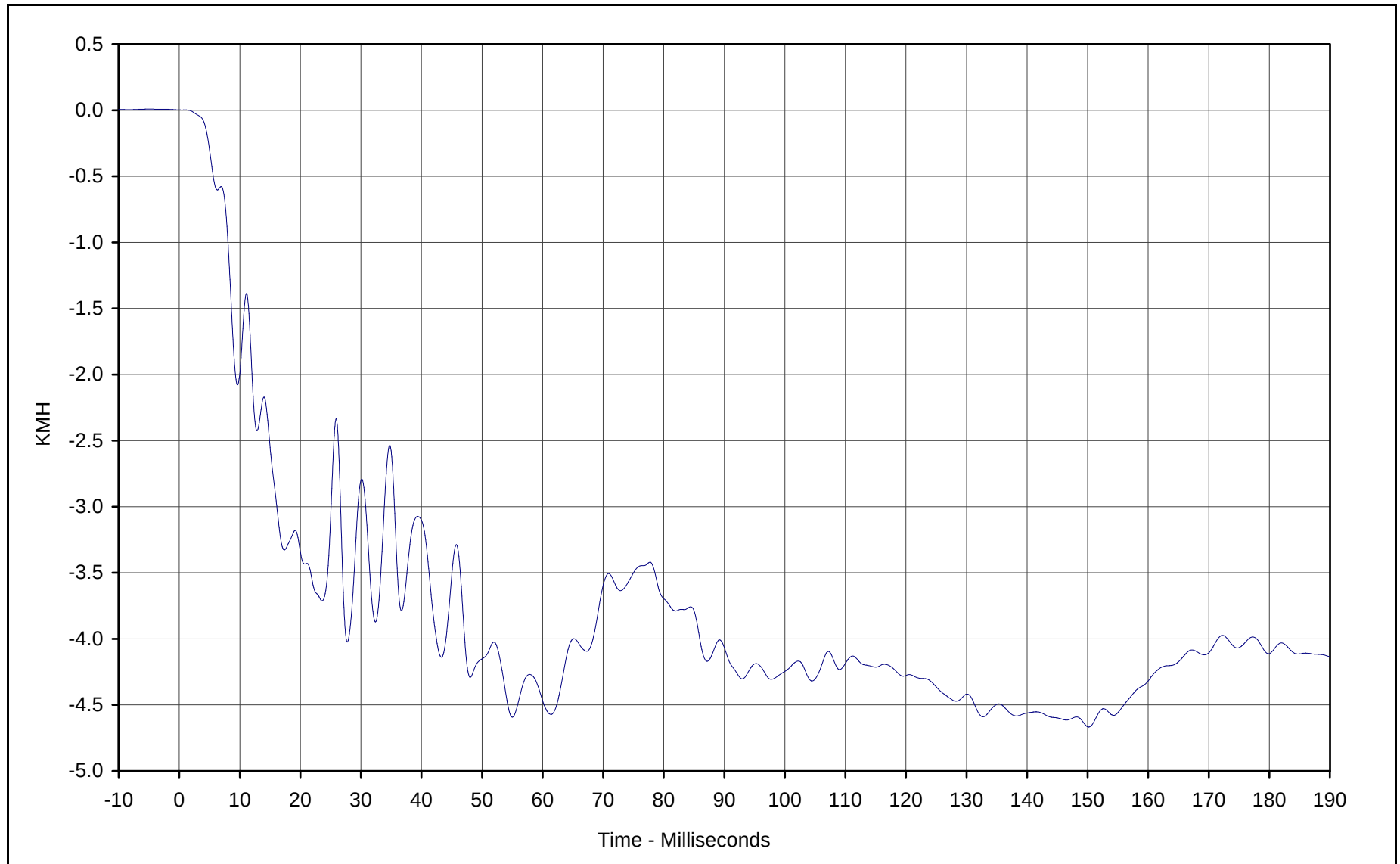




Curve Description: Vehicle CG X
Maximum Value: 4.5 at 24.5 Milliseconds
Minimum Value: -9.8 at 8.1 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-050

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

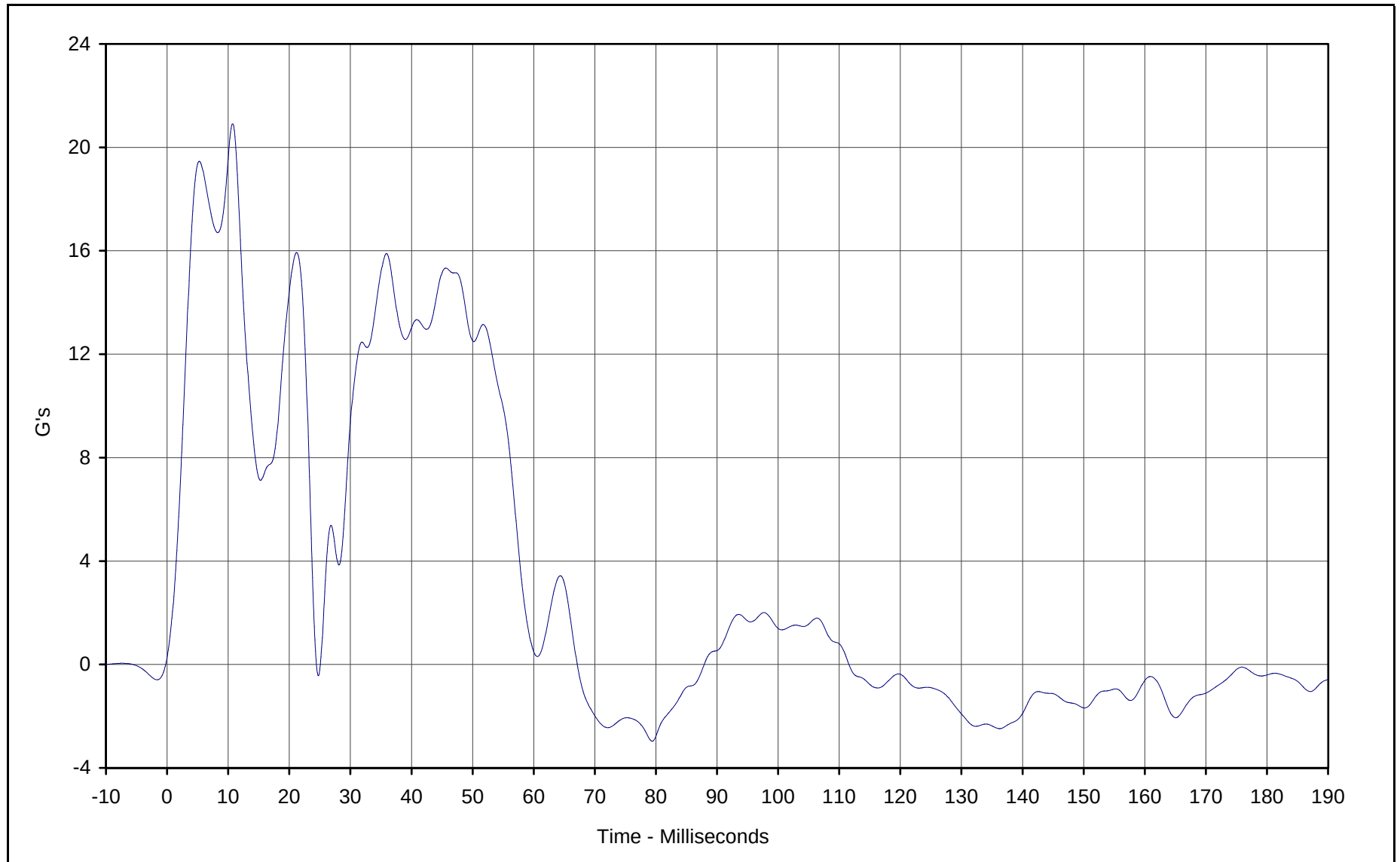




Curve Description: Vehicle CG X Velocity
Maximum Value: 0.0 at 0.0 Milliseconds
Minimum Value: -4.7 at 150.2 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-050

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

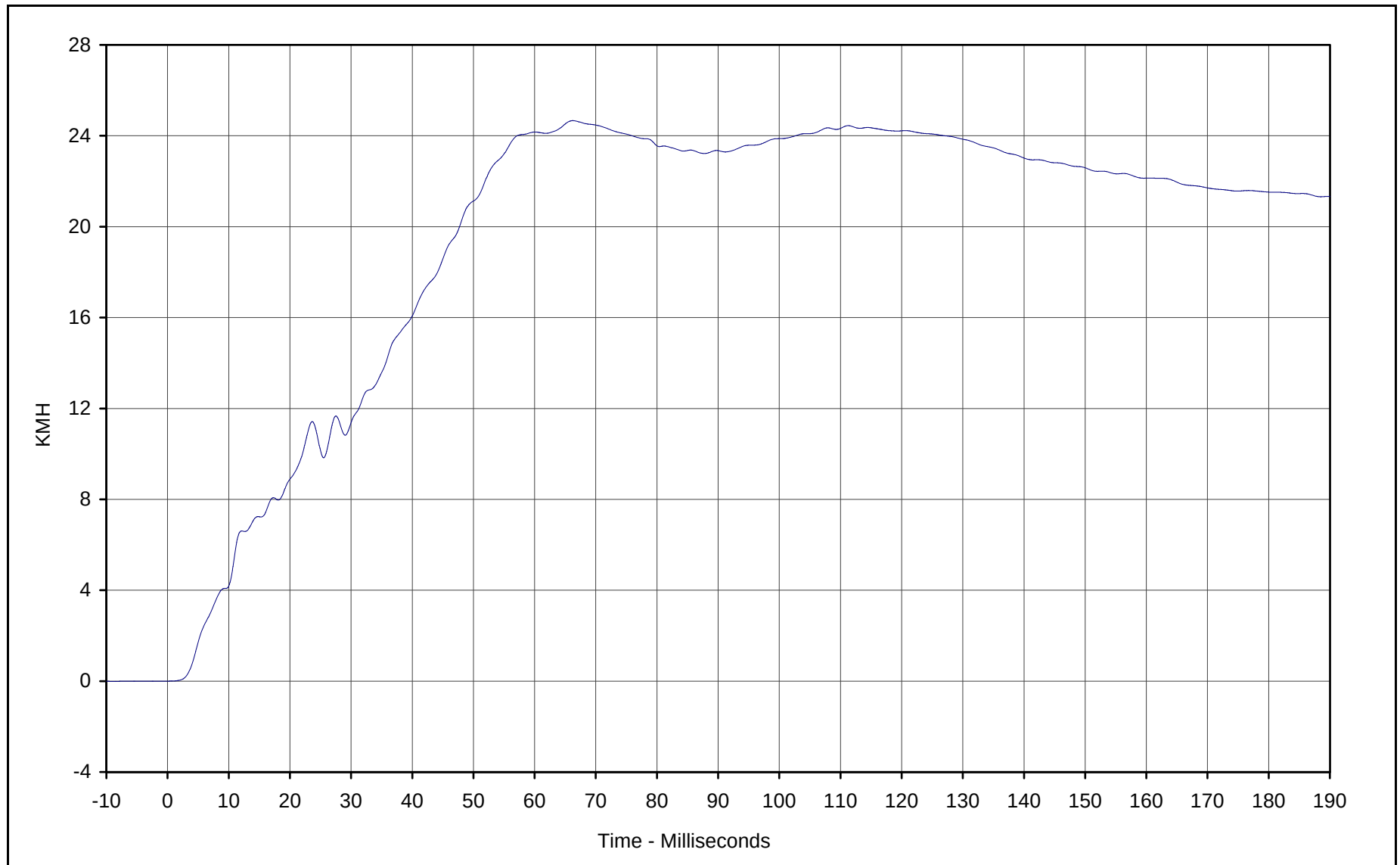




Curve Description: Vehicle CG Y
Maximum Value: 20.9 at 10.7 Milliseconds
Minimum Value: -3.0 at 79.4 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-051

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

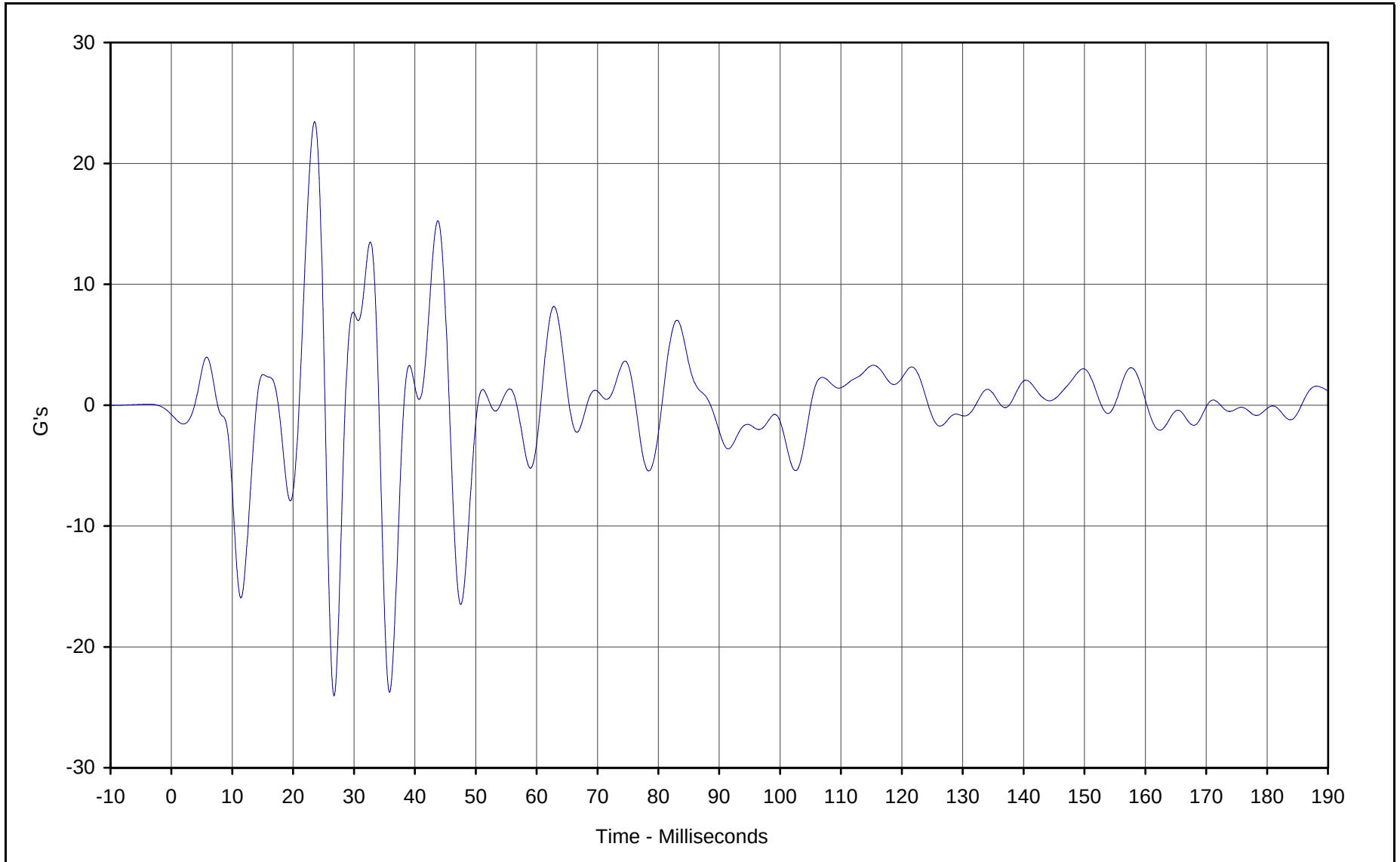




Curve Description: Vehicle CG Y Velocity
Maximum Value: 24.7 at 66.3 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-051

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

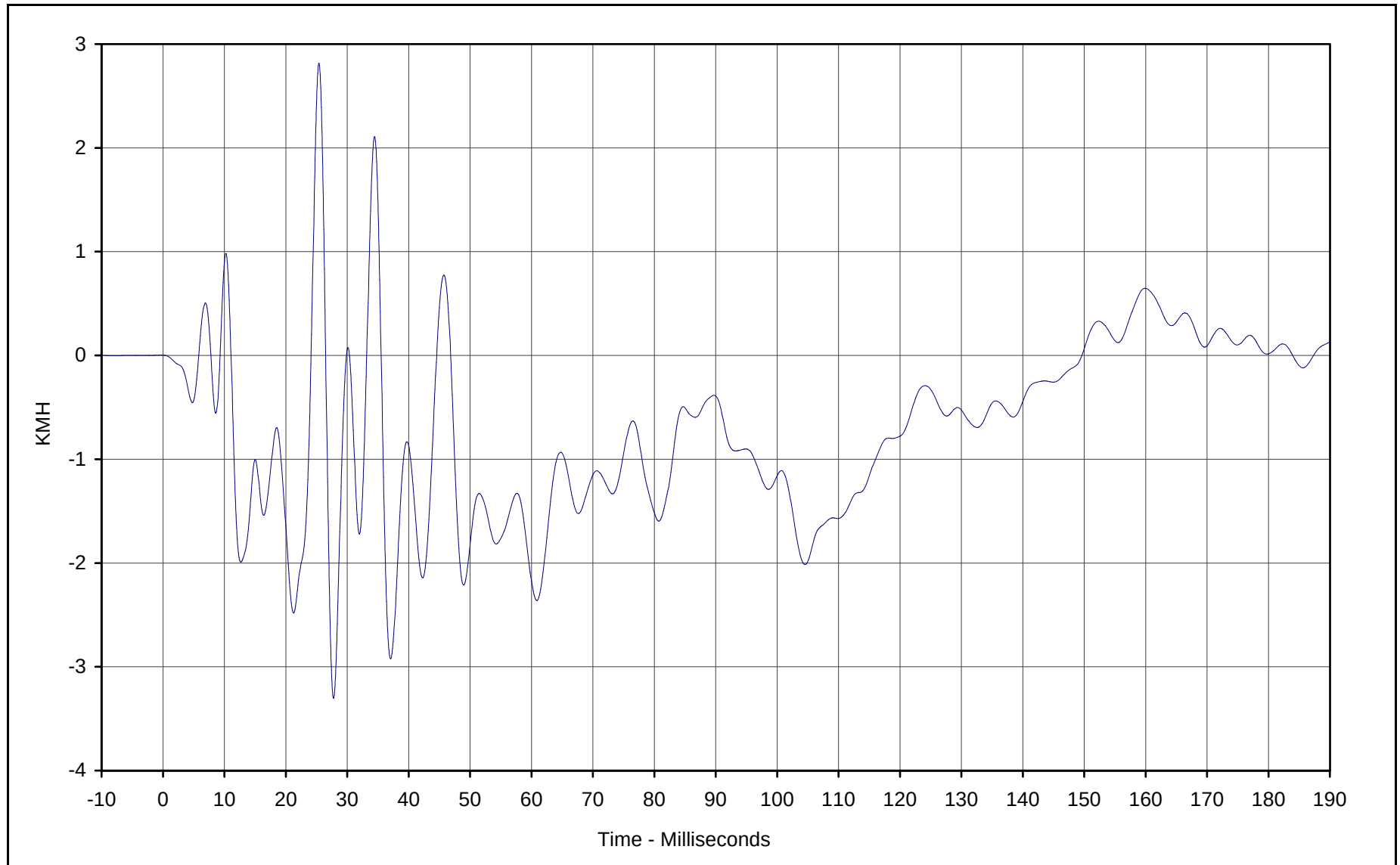




Curve Description: Vehicle CG Z
Maximum Value: 23.4 at 23.5 Milliseconds
Minimum Value: -24.0 at 26.7 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-052

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

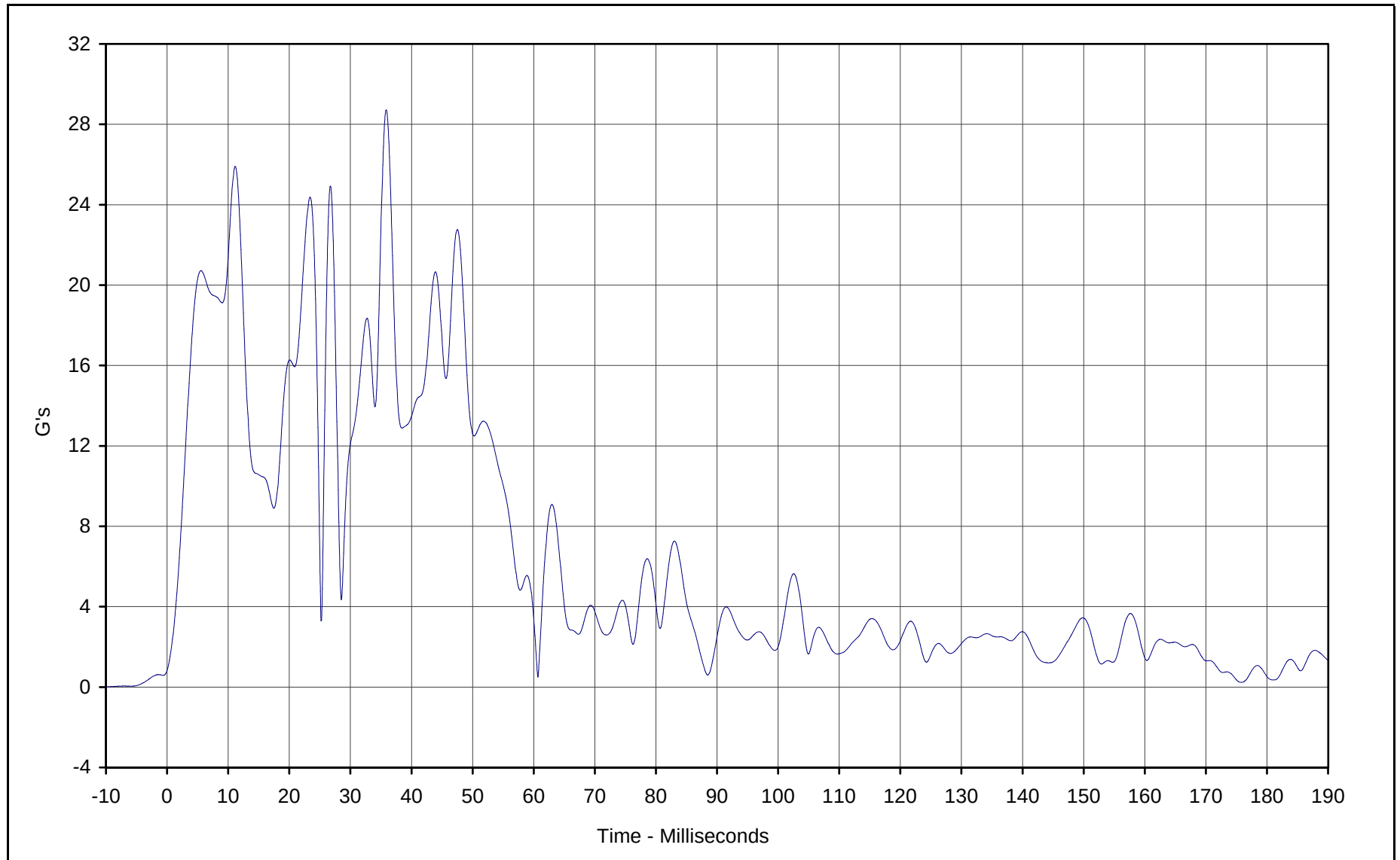




Curve Description: Vehicle CG Z Velocity
Maximum Value: 2.8 at 25.4 Milliseconds
Minimum Value: -3.3 at 27.8 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-052

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

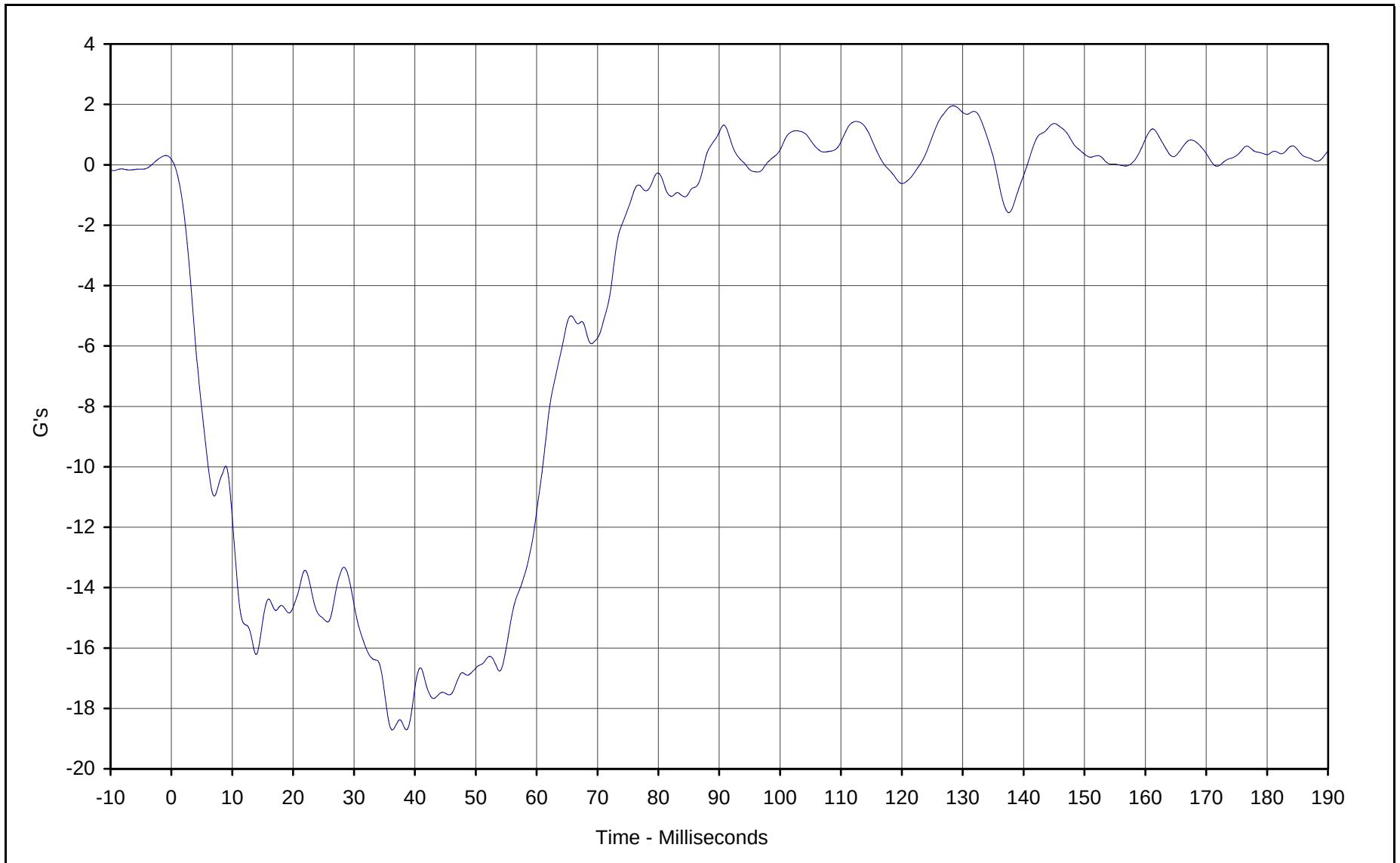




Curve Description: Vehicle CG Resultant
Maximum Value: 28.7 at 35.9 Milliseconds
Minimum Value: 0.2 at 175.8 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: RES-050

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

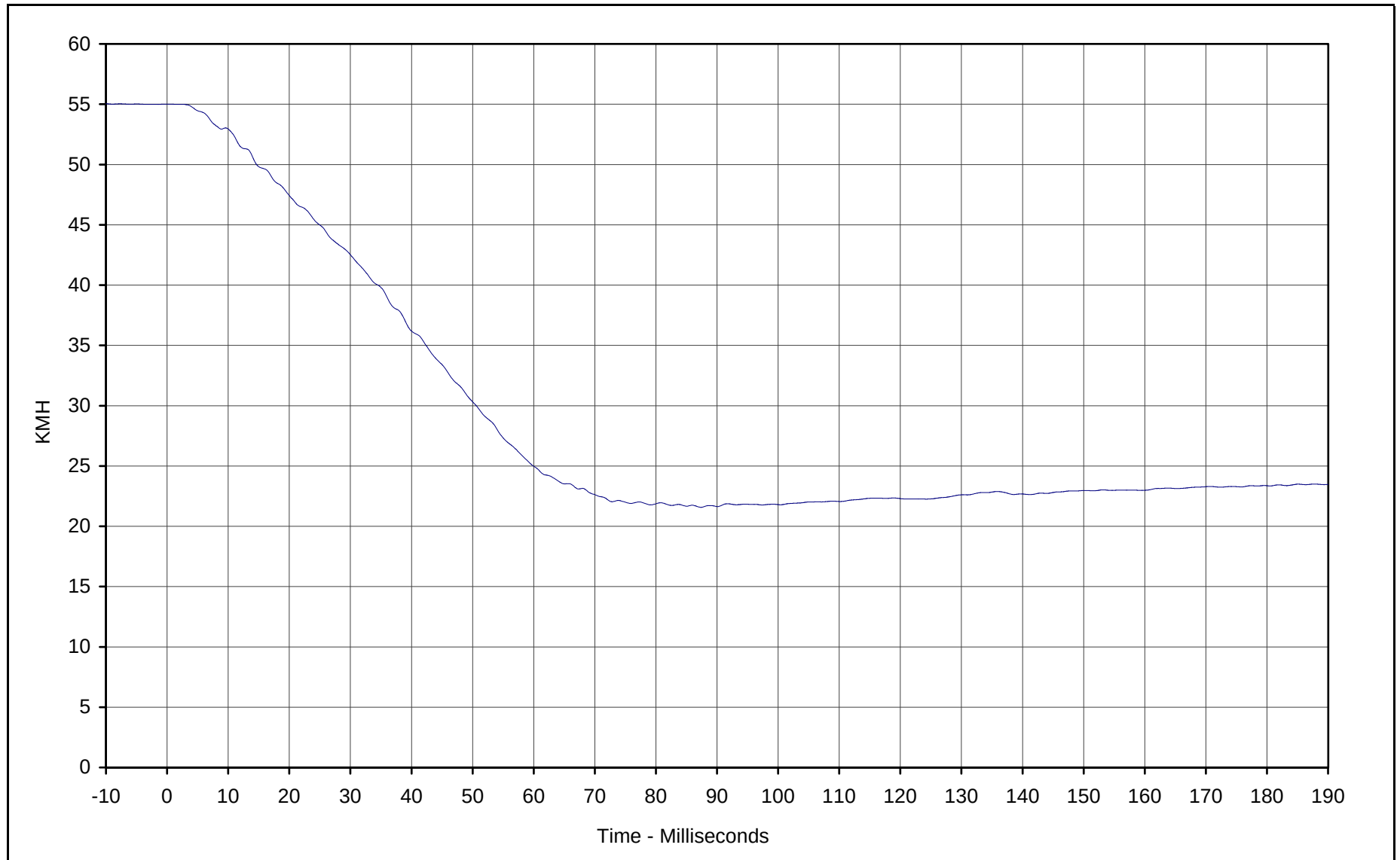




Curve Description: MDB CG X
Maximum Value: 2.0 at 128.4 Milliseconds
Minimum Value: -18.7 at 36.3 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-053

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

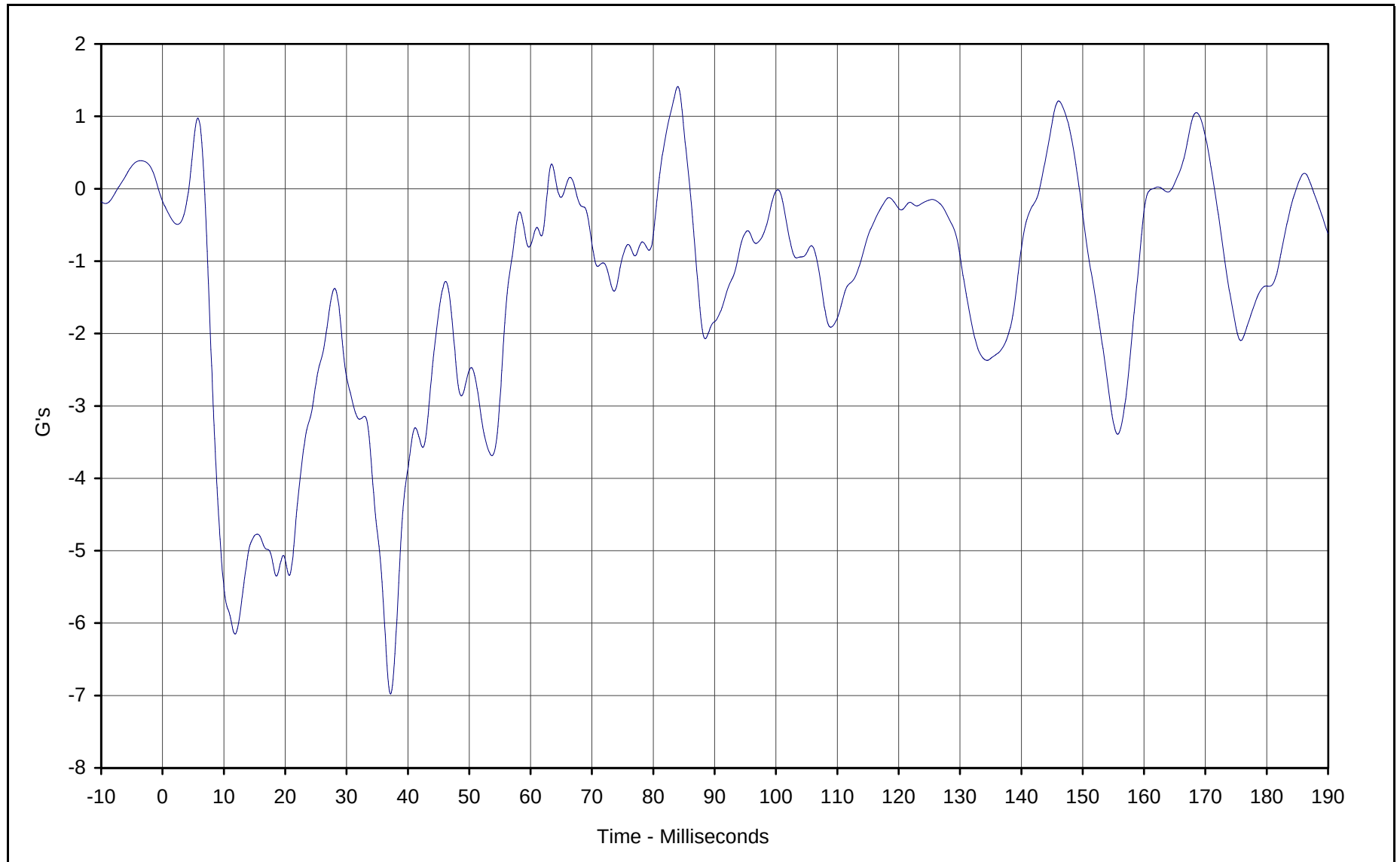




Curve Description: MDB CG X Velocity
Maximum Value: 55.0 at 0.3 Milliseconds
Minimum Value: 21.6 at 87.4 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-053

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

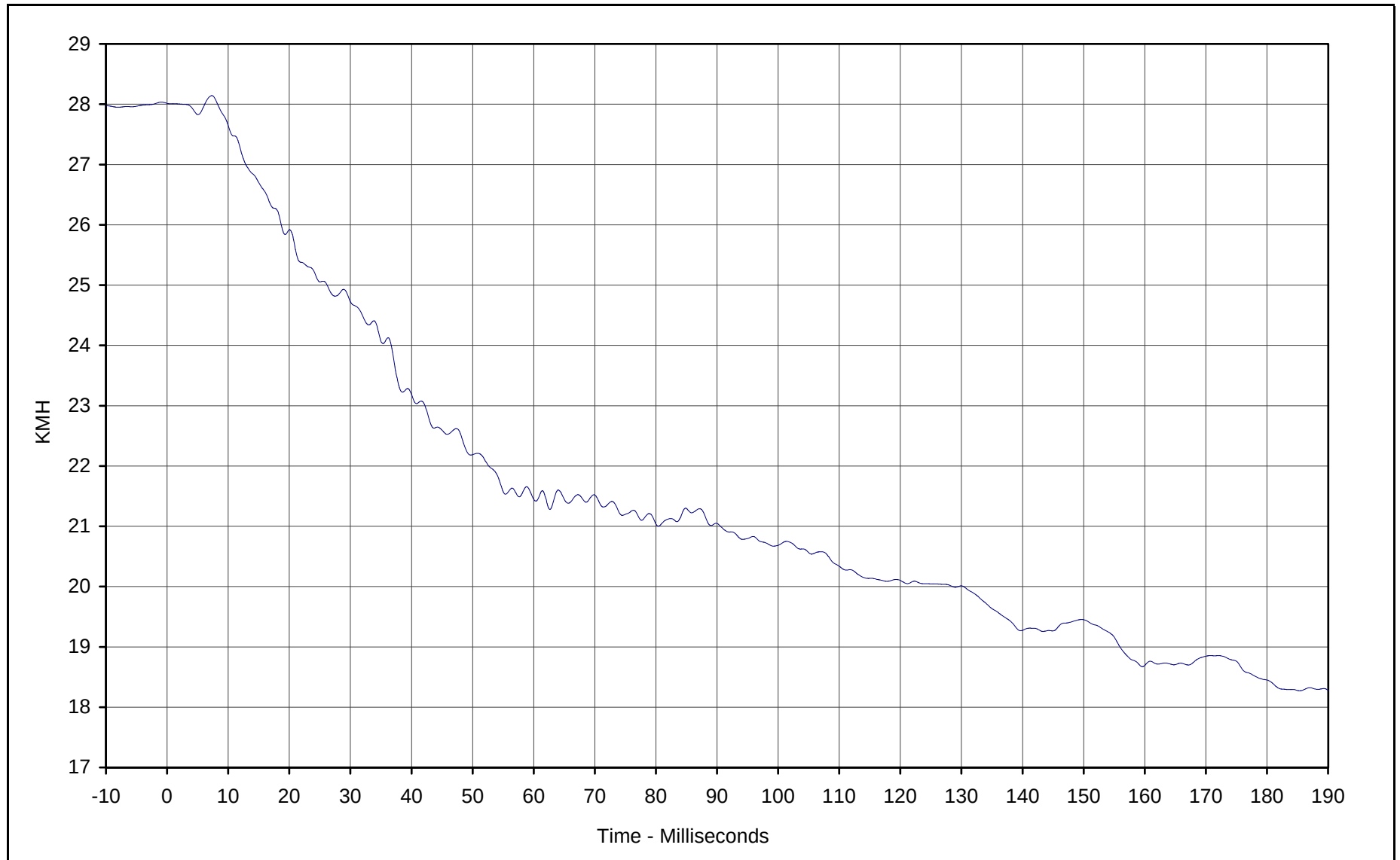




Curve Description: MDB CG Y
Maximum Value: 1.4 at 84.0 Milliseconds
Minimum Value: -7.0 at 37.2 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-054

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

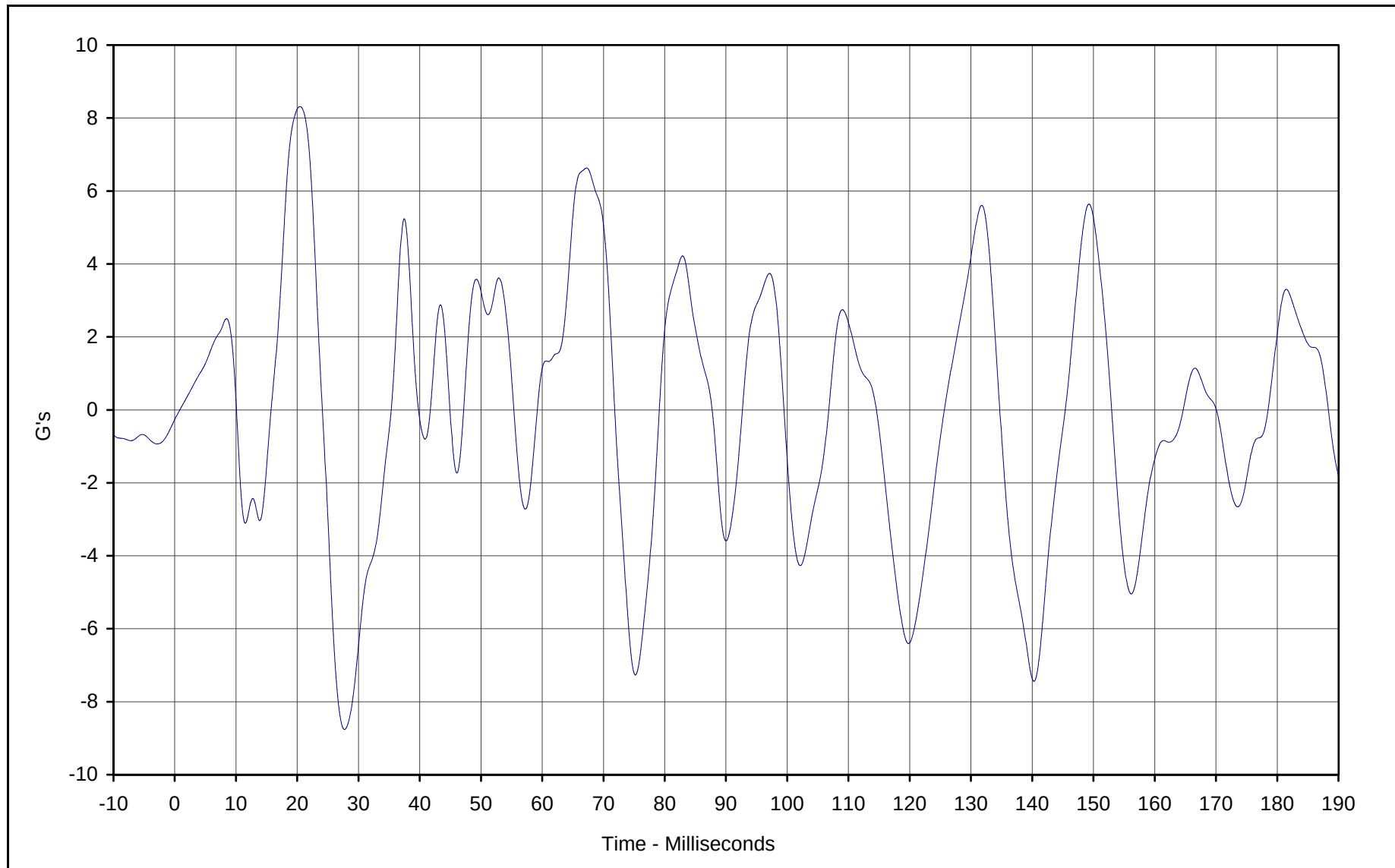




Curve Description: MDB CG Y Velocity
Maximum Value: 28.1 at 7.3 Milliseconds
Minimum Value: 18.3 at 185.3 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-054

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

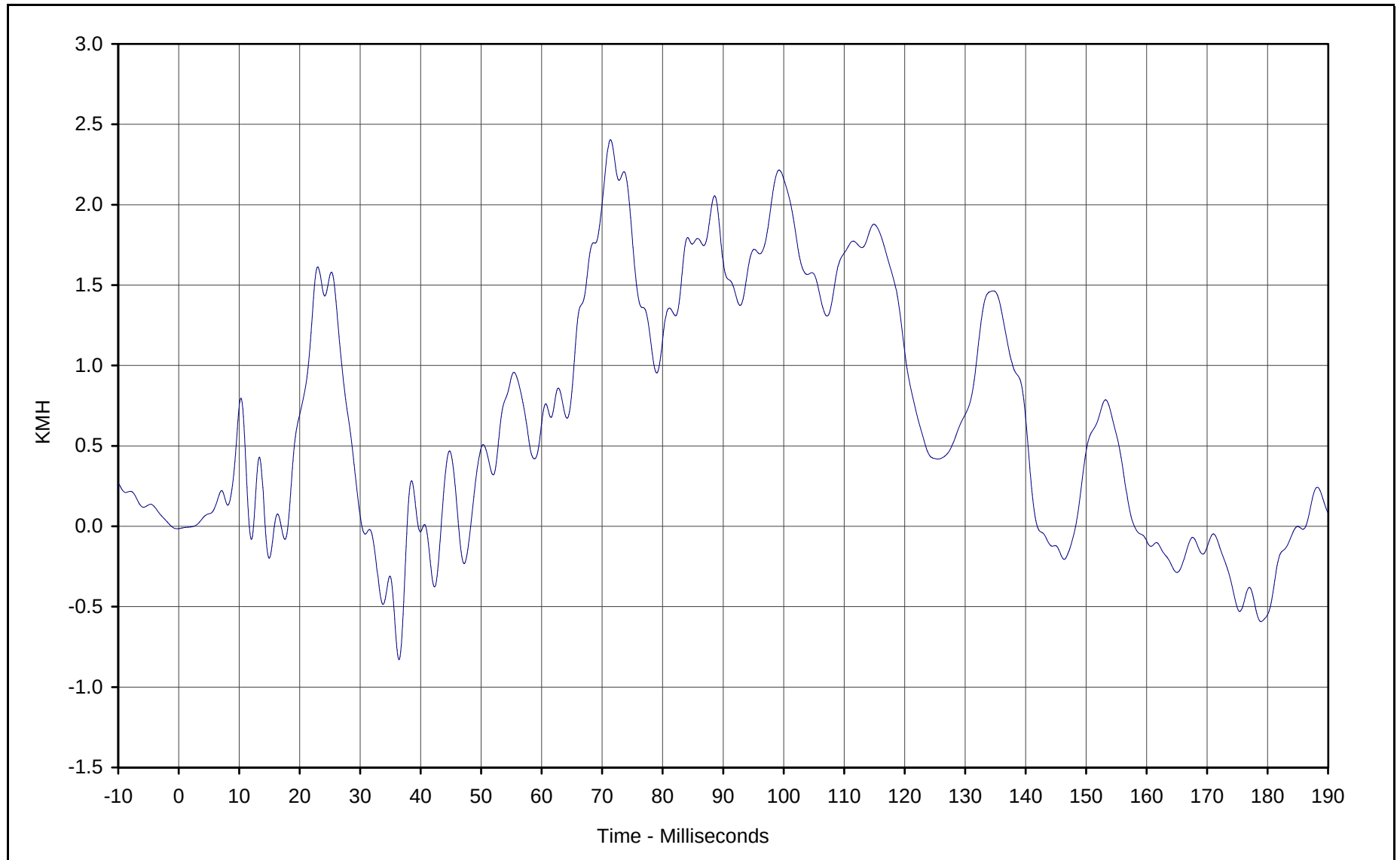




Curve Description: MDB CG Z
Maximum Value: 8.3 at 20.4 Milliseconds
Minimum Value: -8.8 at 27.7 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-055

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

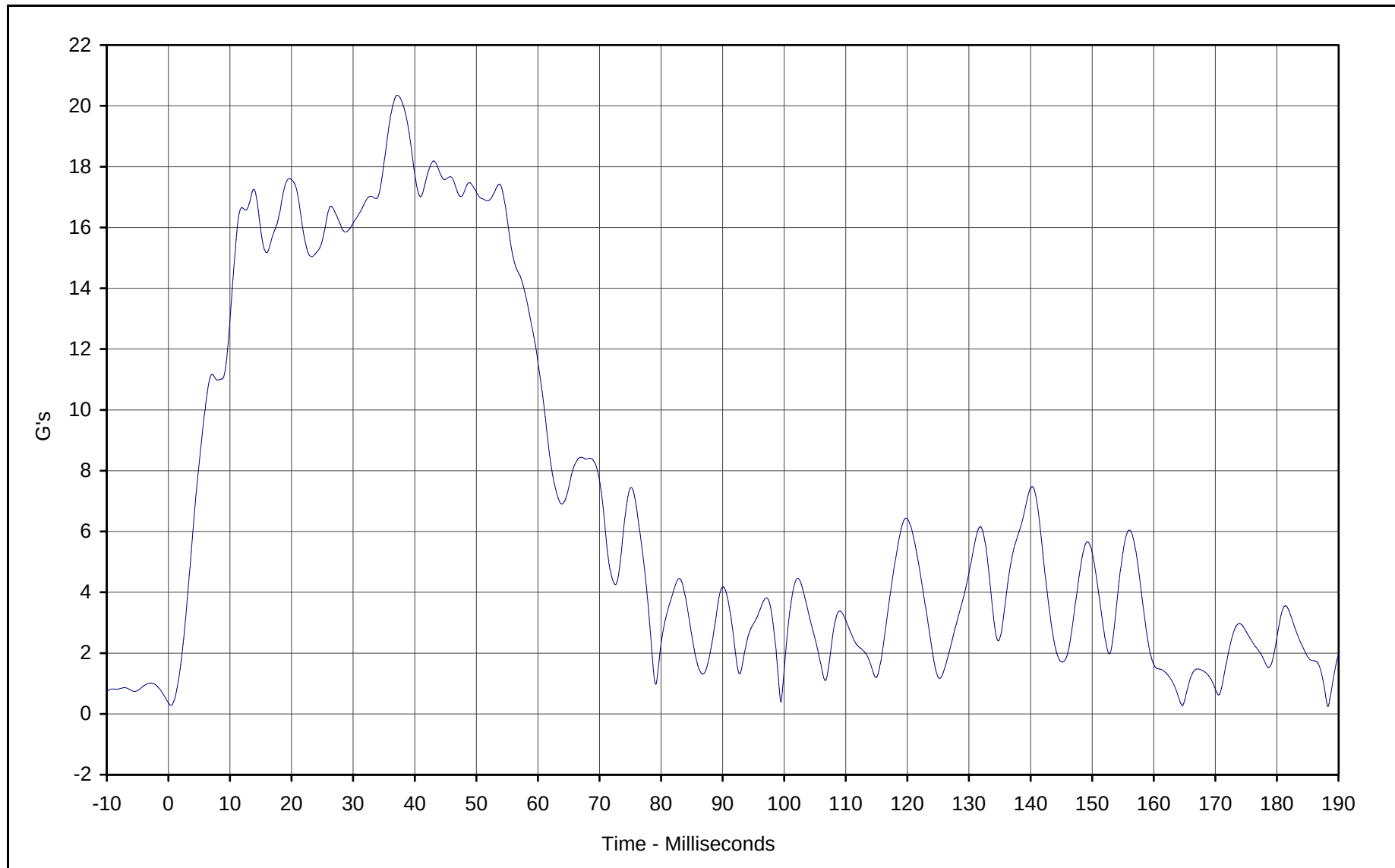




Curve Description: MDB CG Z Velocity
Maximum Value: 2.4 at 71.4 Milliseconds
Minimum Value: -0.8 at 36.4 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-055

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

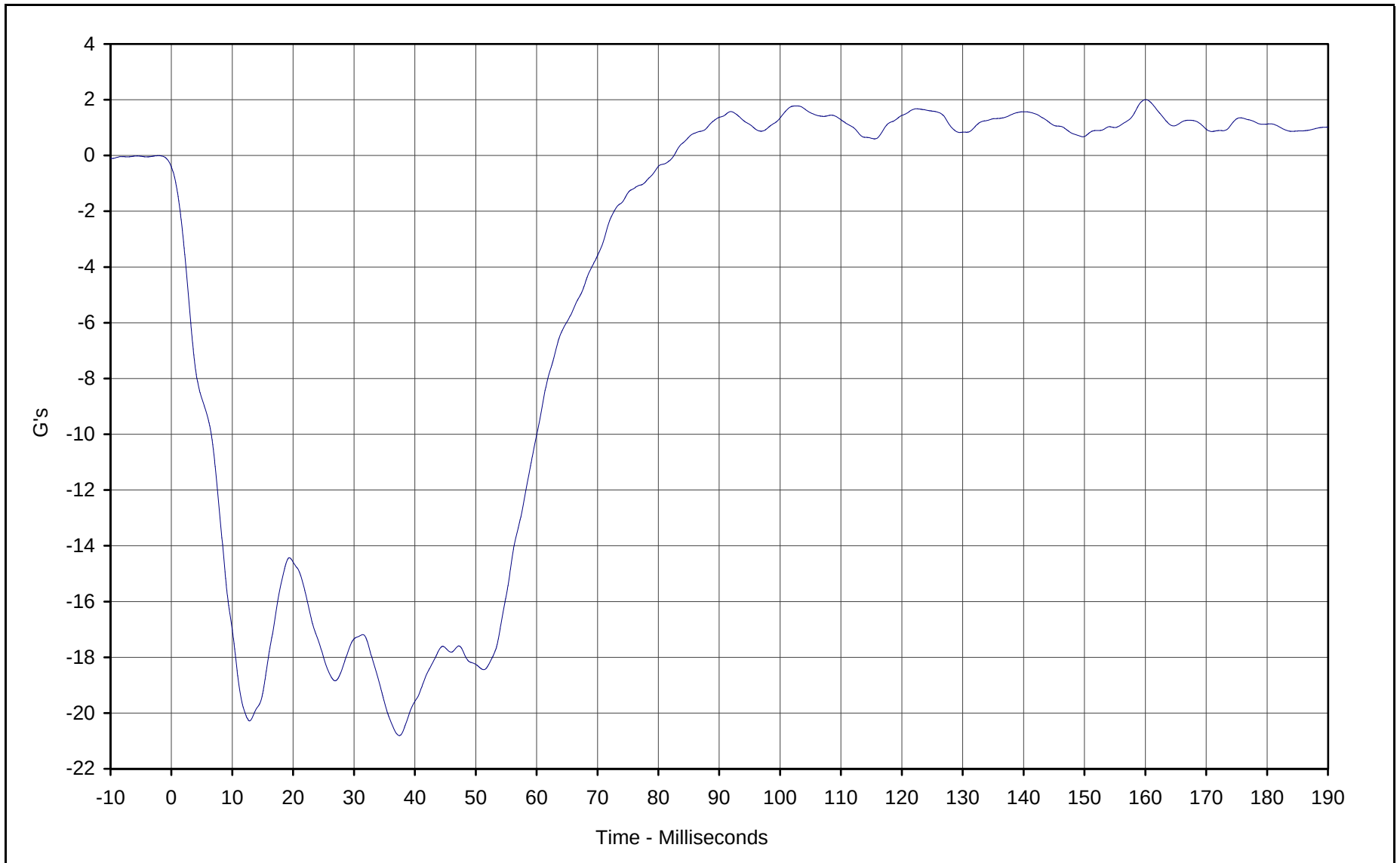




Curve Description: CG Resultant
Maximum Value: 20.4 at 37.2 Milliseconds
Minimum Value: 0.2 at 188.3 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: RES-053

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

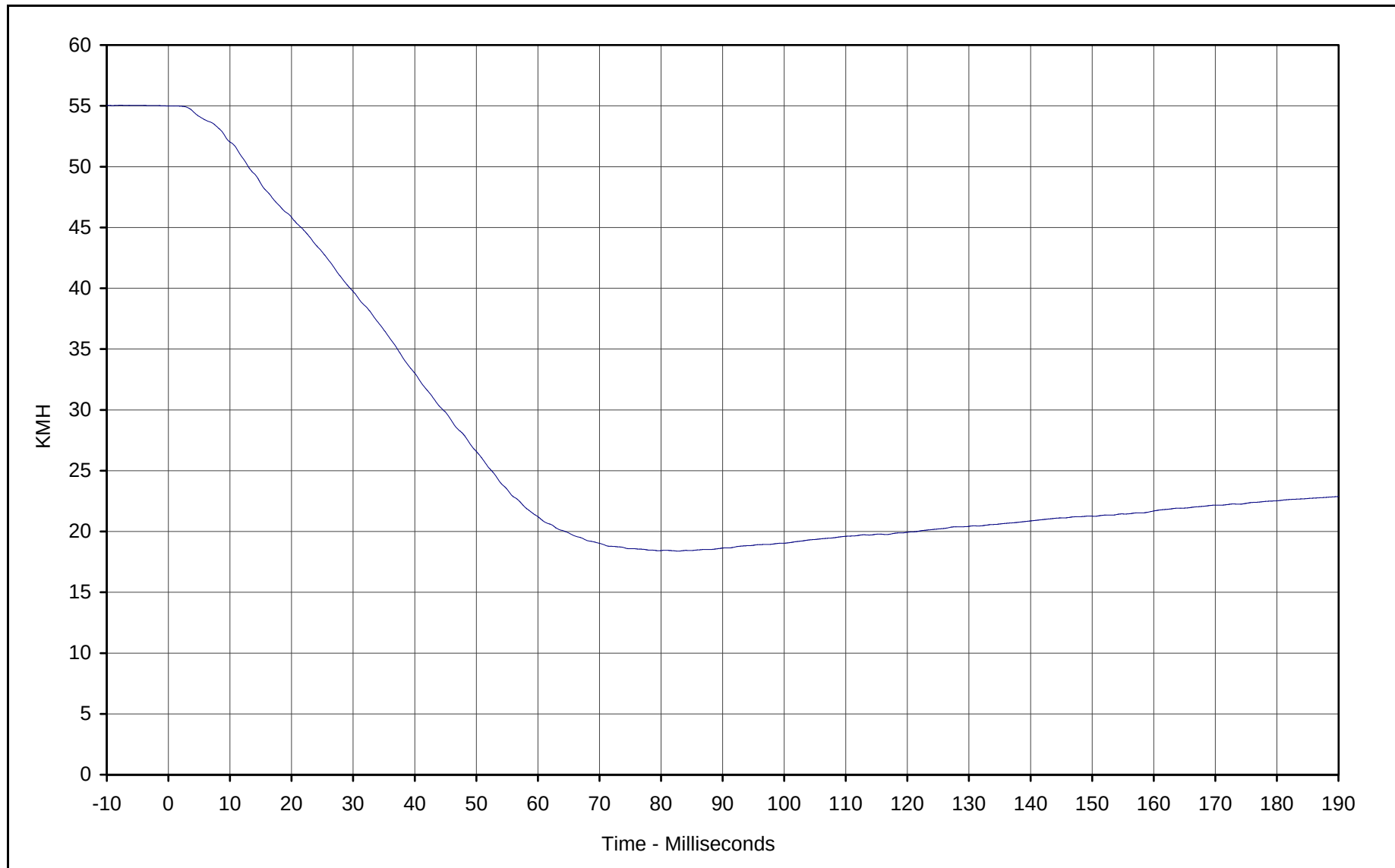




Curve Description: MDB Rear X
Maximum Value: 2.0 at 160.1 Milliseconds
Minimum Value: -20.8 at 37.4 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-056

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

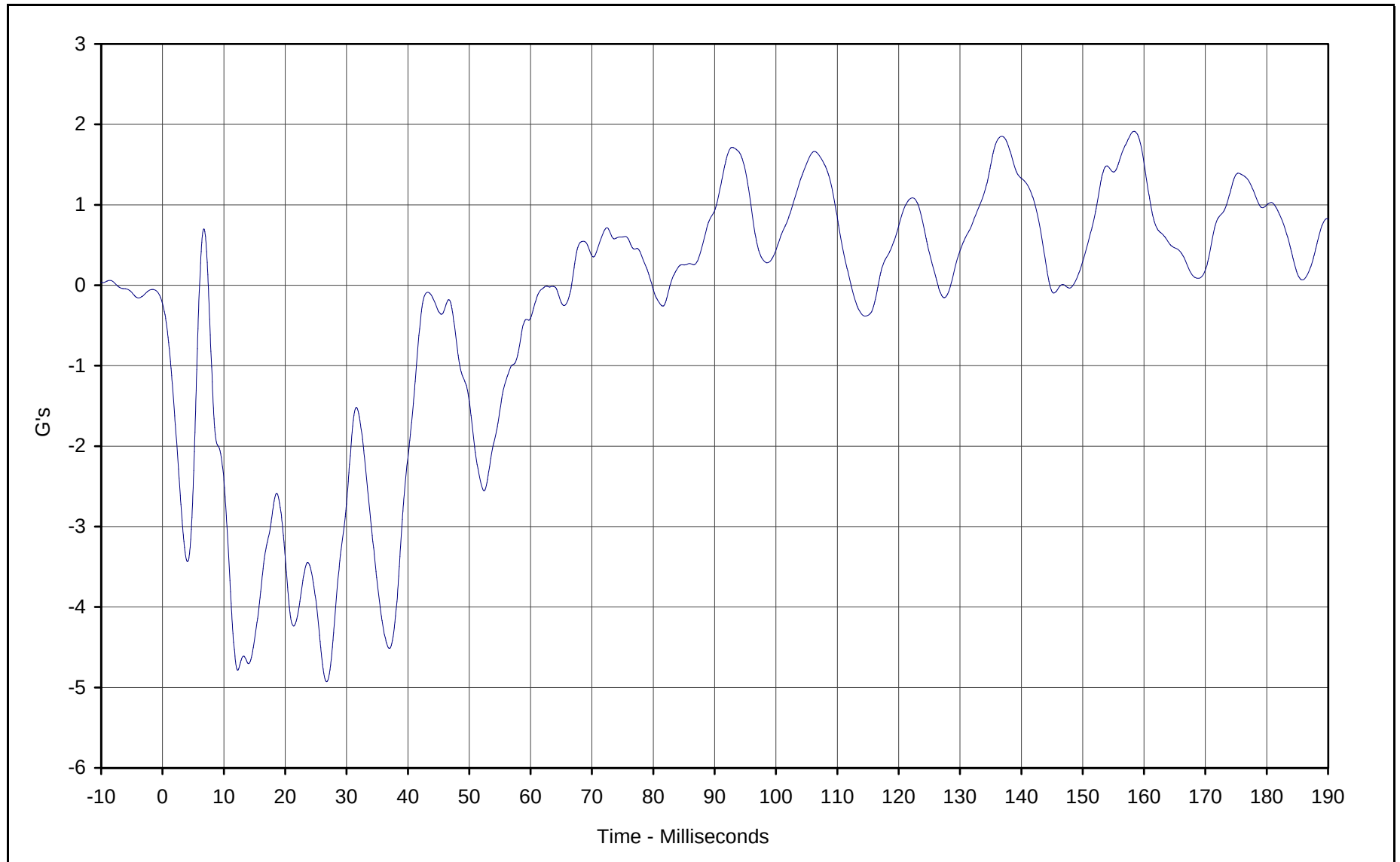




Curve Description: MDB Rear X Velocity
Maximum Value: 55.0 at 0.0 Milliseconds
Minimum Value: 18.4 at 82.8 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-056

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

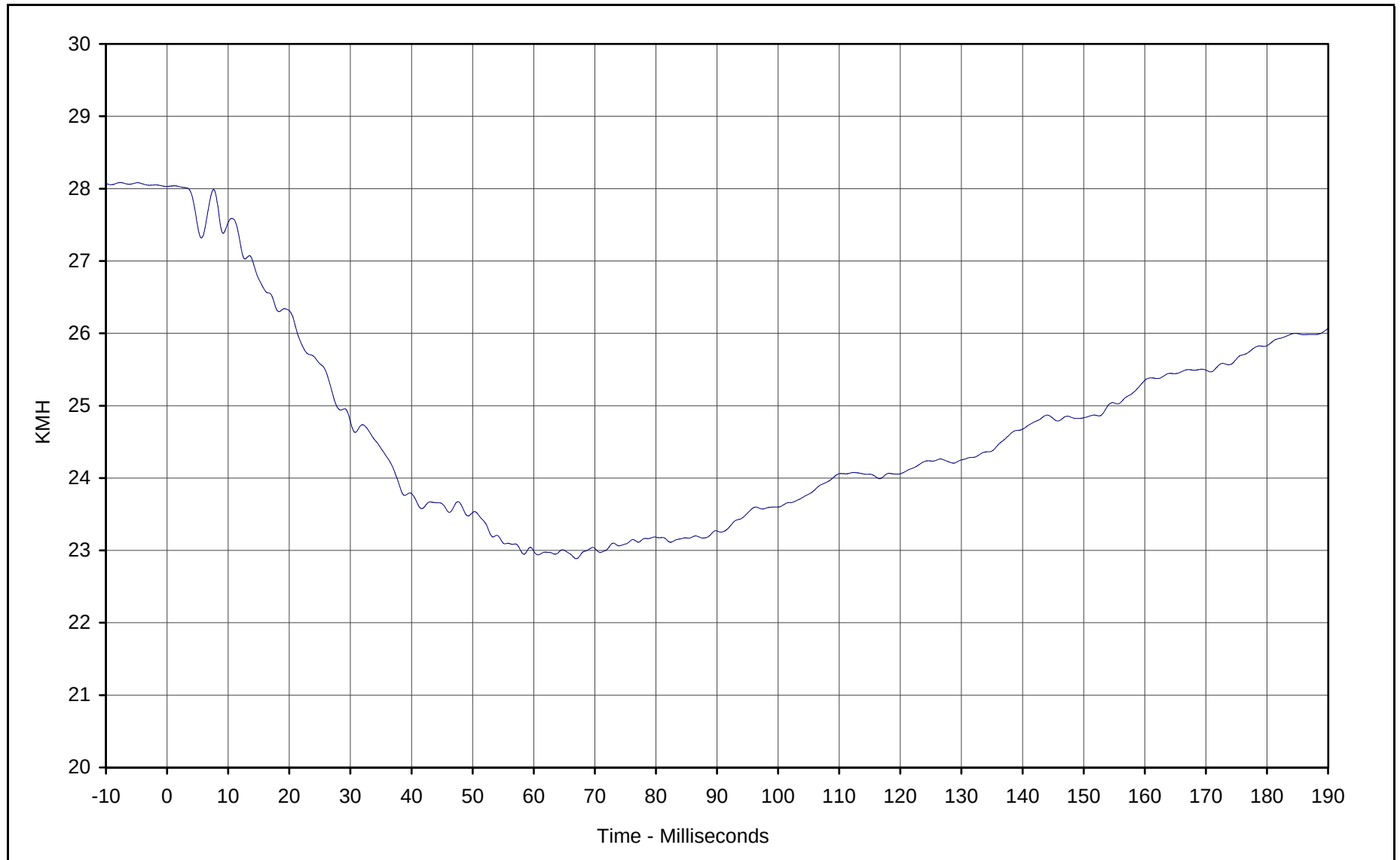




Curve Description: MDB Rear Y
Maximum Value: 1.9 at 158.4 Milliseconds
Minimum Value: -4.9 at 26.8 Milliseconds
SAE Filter Class: 60
Date of Test: 11/20/01
Curve Number: FIL-057

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

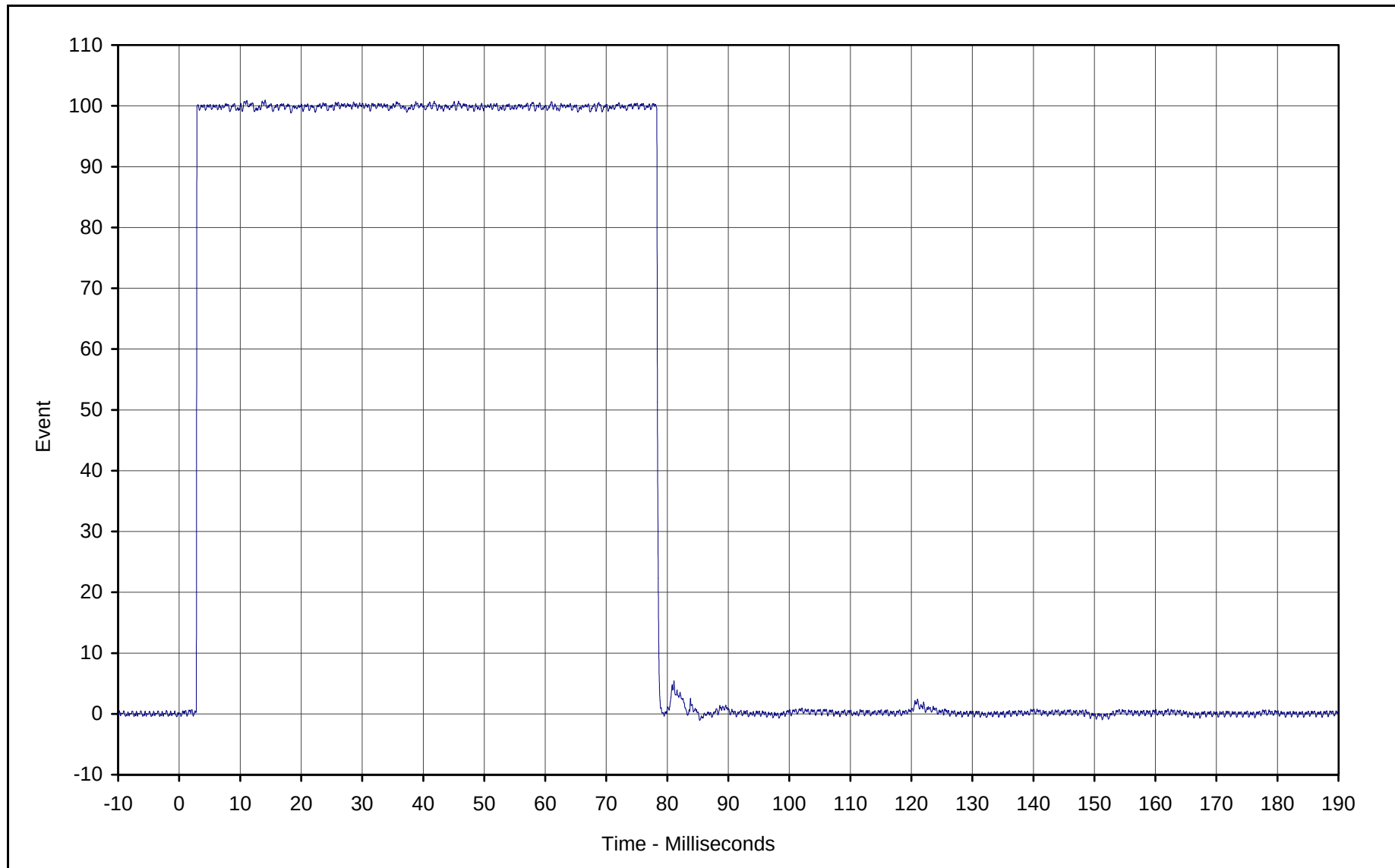




Curve Description: MDB Rear Y Velocity
Maximum Value: 28.0 at 1.1 Milliseconds
Minimum Value: 22.9 at 67.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/20/01
Curve Number: IN1-057

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

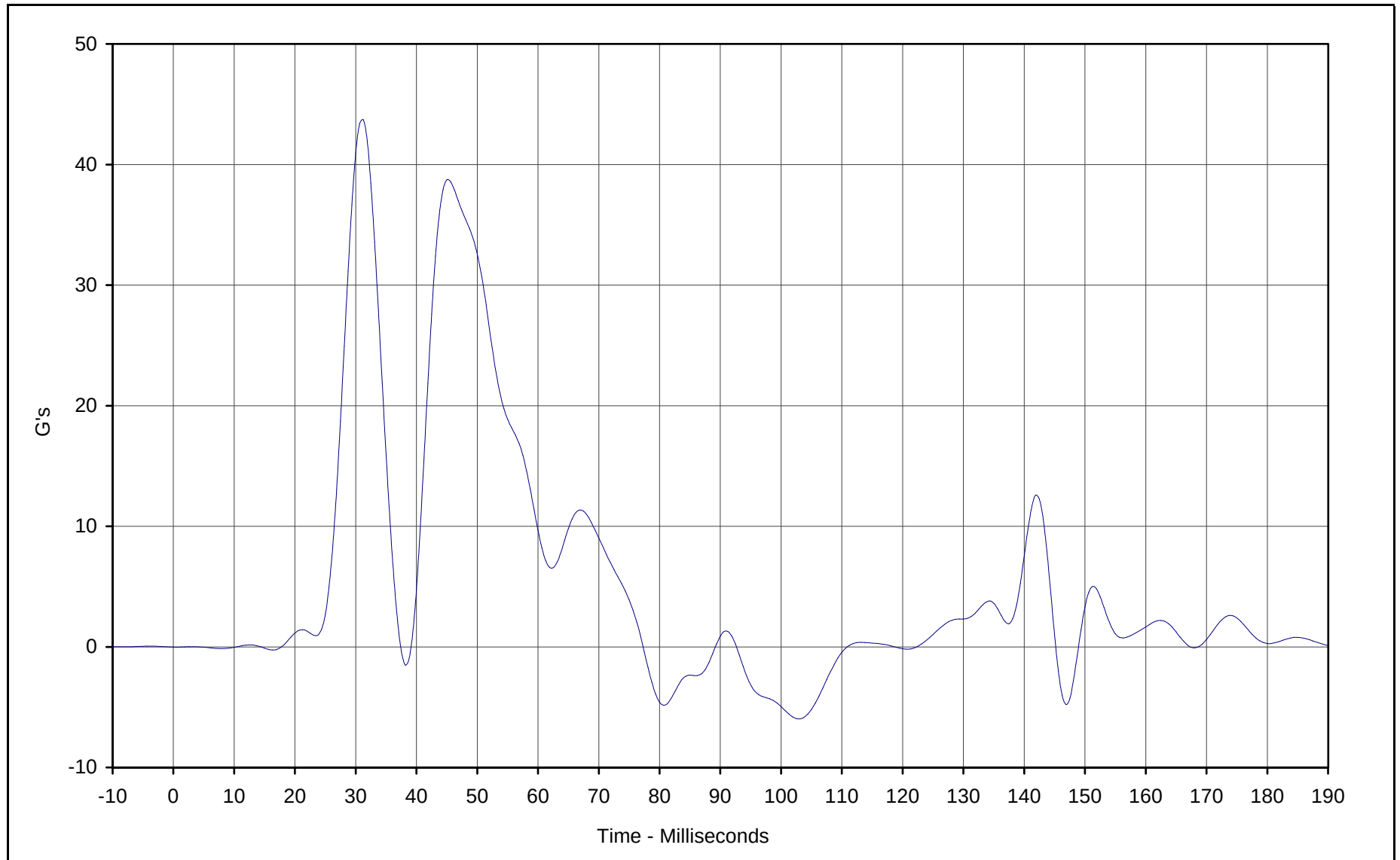




Curve Description: MDB Right Bumper Contact
Maximum Value: 100.9 at 14.1 Milliseconds
Crossing Point: 50% at 2.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/20/01
Curve Number: FIL-058

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

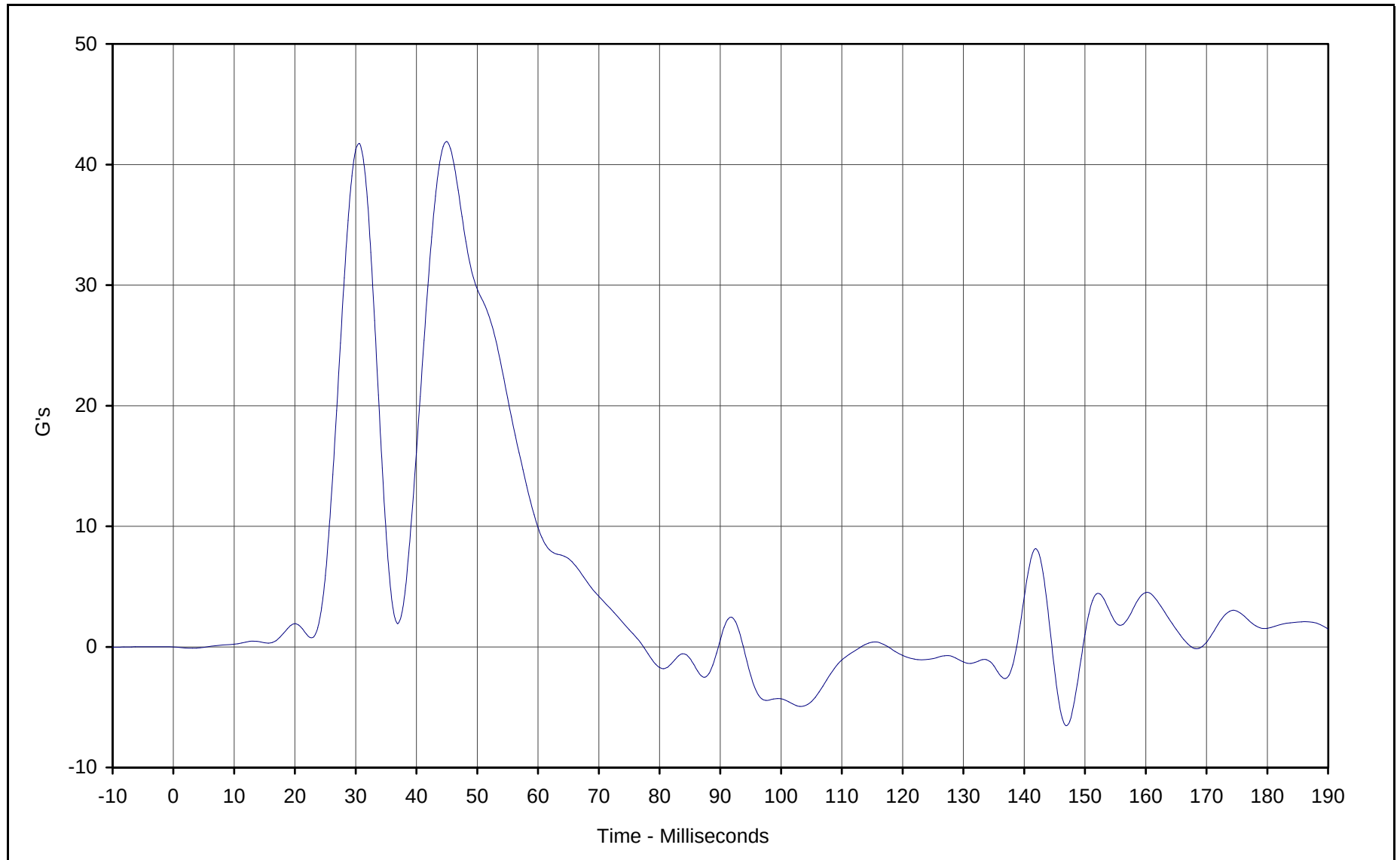




Curve Description: Driver Upper Rib Primary Y
Maximum Value: 43.7 at 31.3 Milliseconds
Minimum Value: -6.0 at 103.1 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-004

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

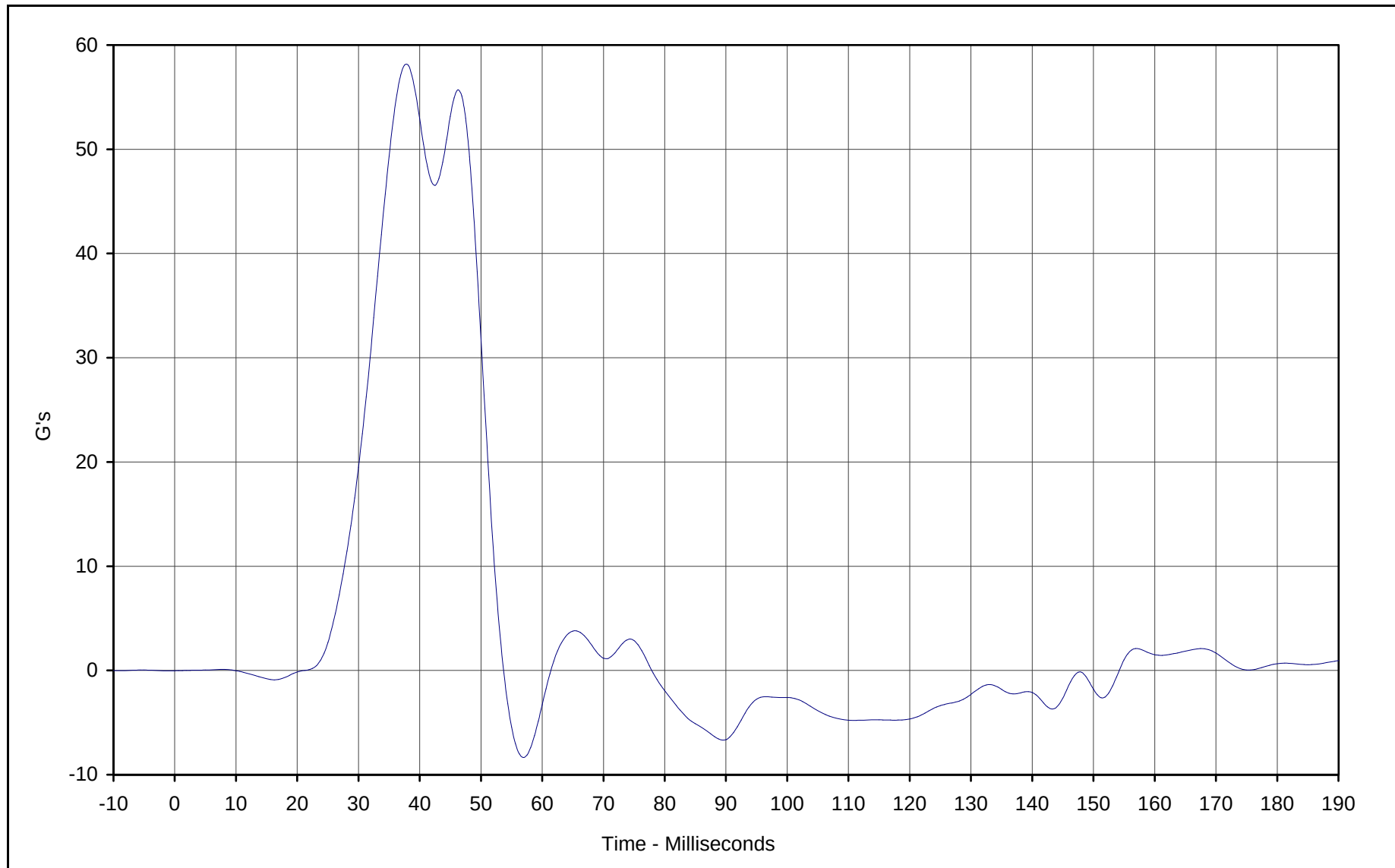




Curve Description: Driver Lower Rib Primary Y
Maximum Value: 41.9 at 45.0 Milliseconds
Minimum Value: -6.5 at 146.9 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-005

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

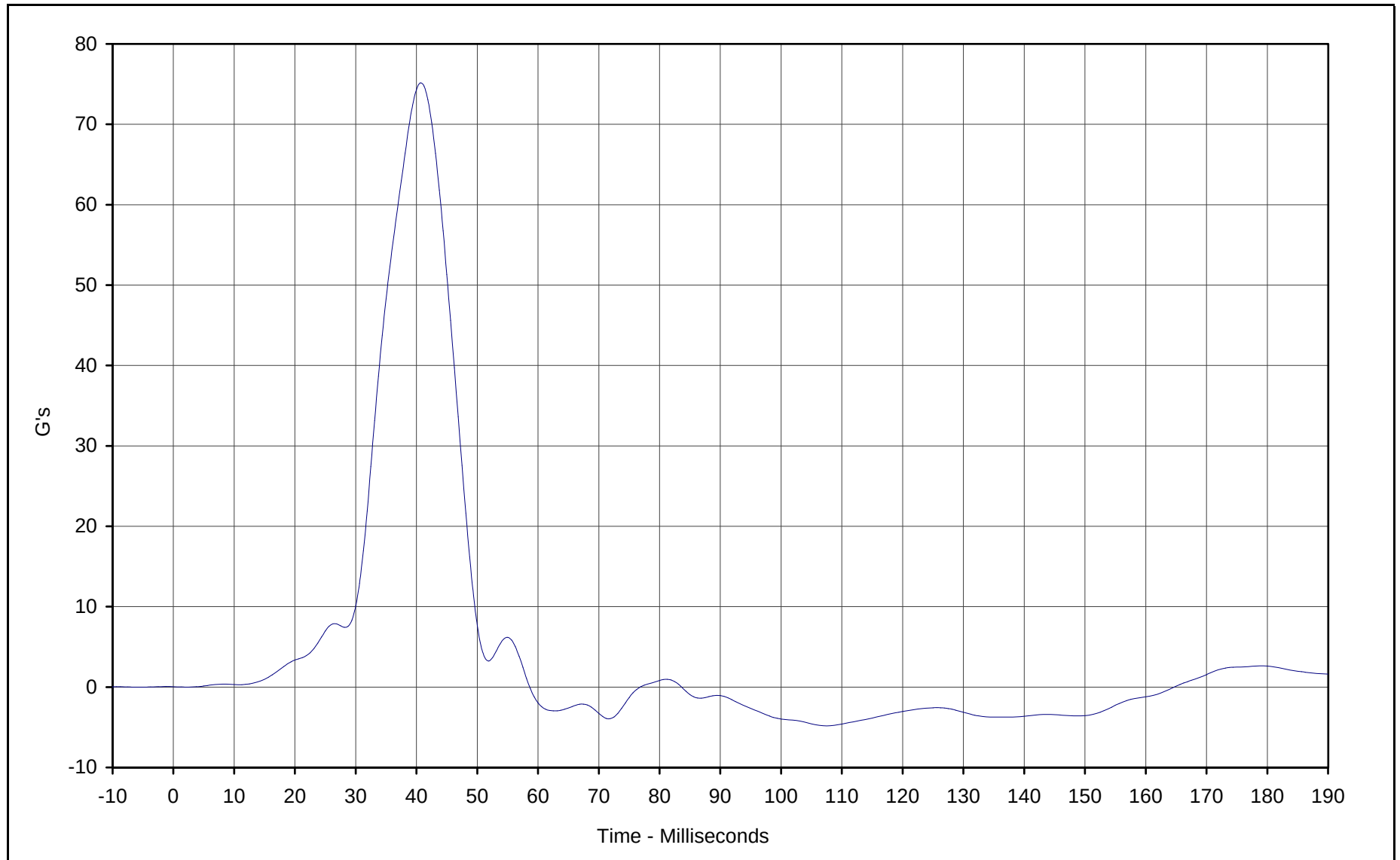




Curve Description: Driver Lower Spine Primary Y
Maximum Value: 58.1 at 37.5 Milliseconds
Minimum Value: -8.3 at 56.9 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-006

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

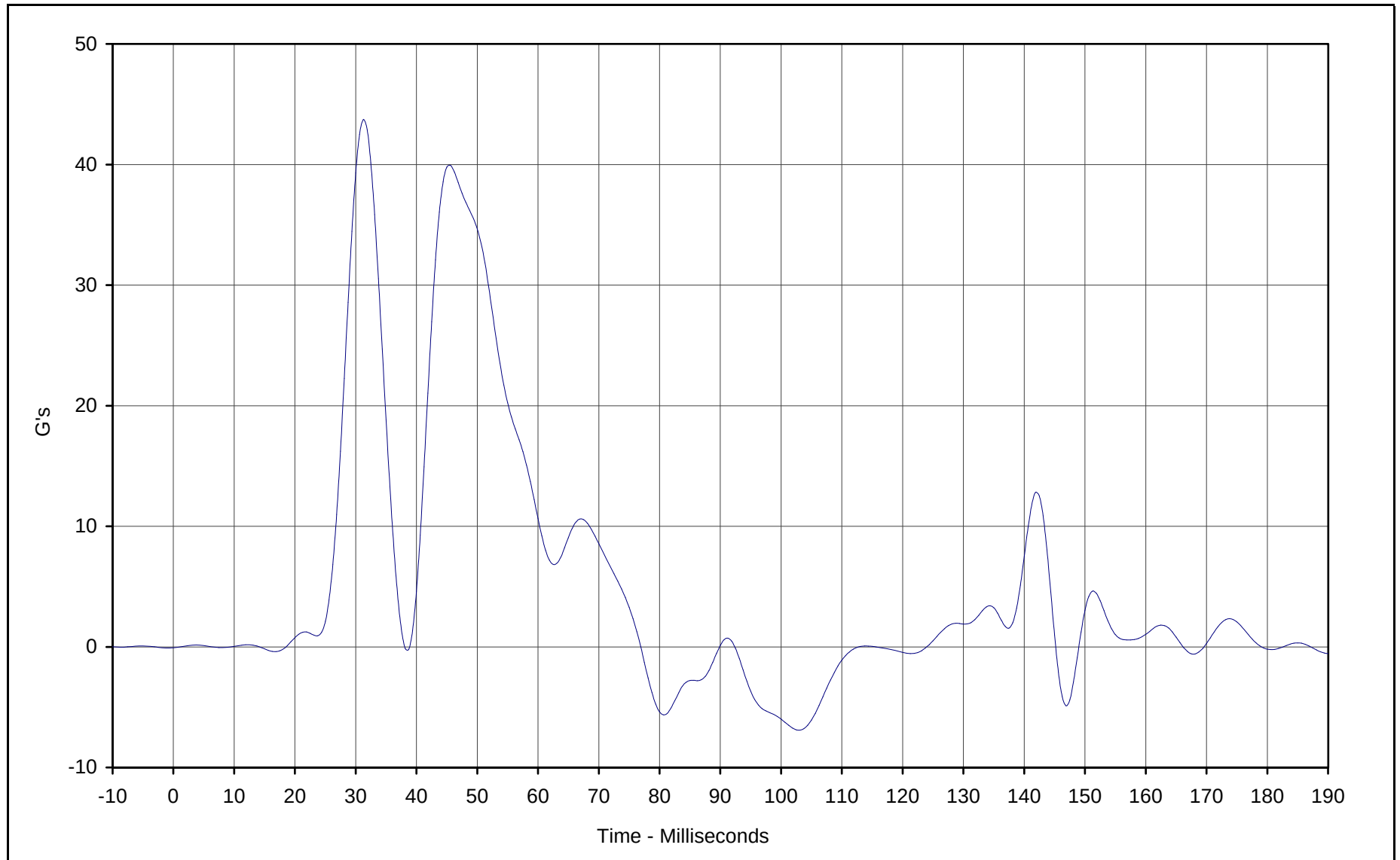




Curve Description: Driver Pelvis Primary Y
Maximum Value: 75.2 at 40.6 Milliseconds
Minimum Value: -4.8 at 107.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-007

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

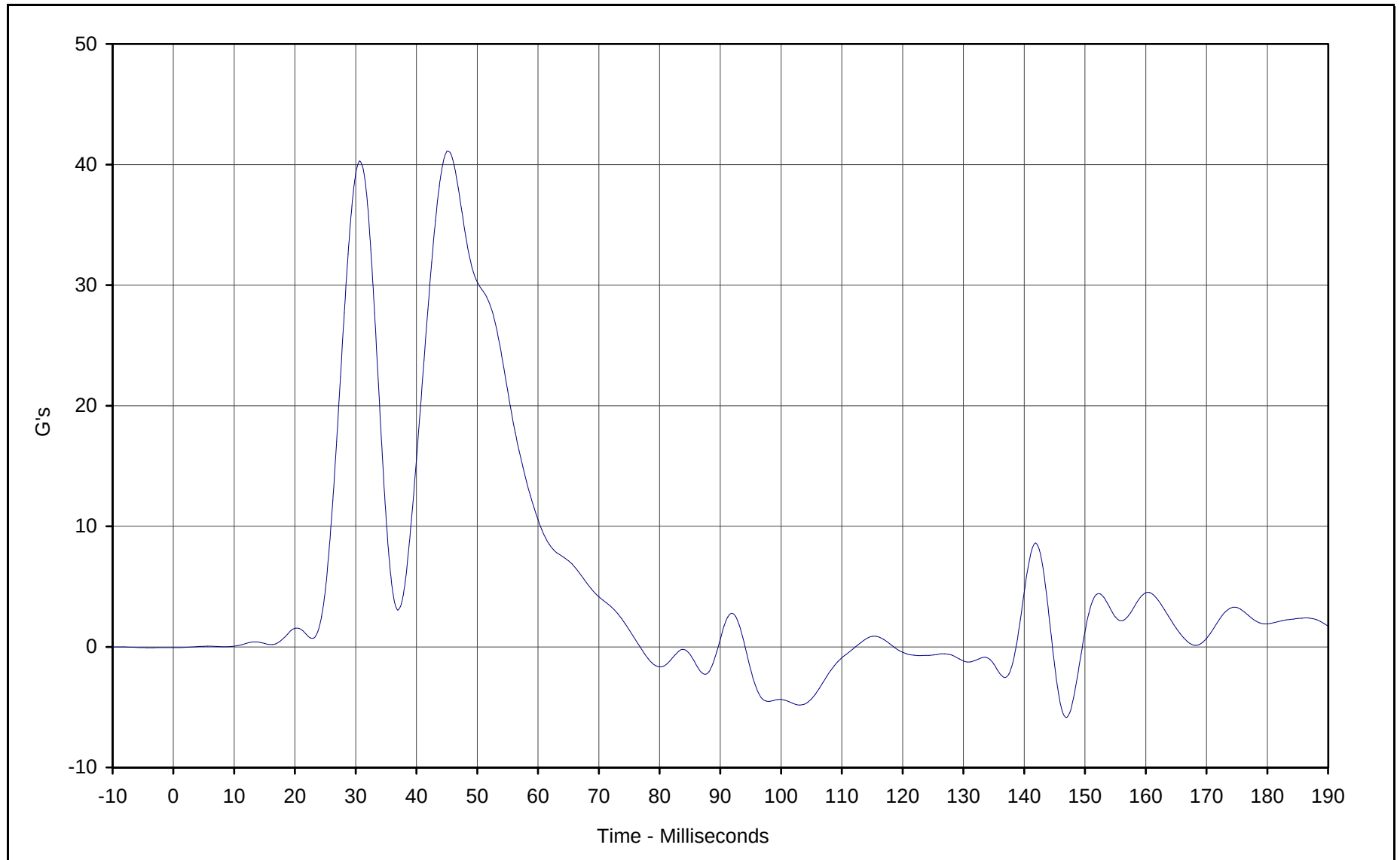




Curve Description: Driver Upper Rib Redundant Y
Maximum Value: 43.7 at 31.3 Milliseconds
Minimum Value: -6.9 at 103.1 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-008

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

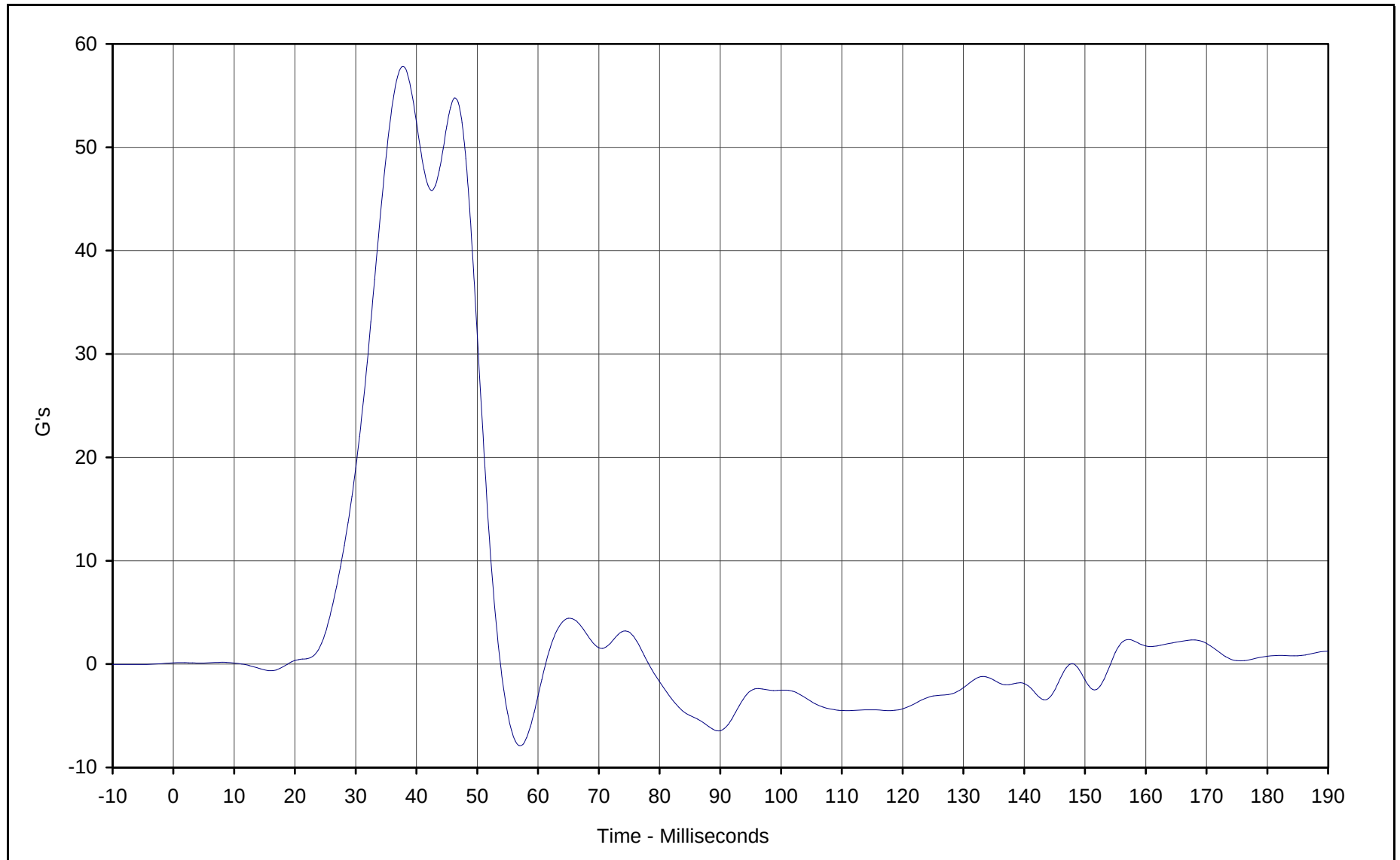




Curve Description: Driver Lower Rib Redundant Y
Maximum Value: 41.1 at 45.0 Milliseconds
Minimum Value: -5.9 at 146.9 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-009

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

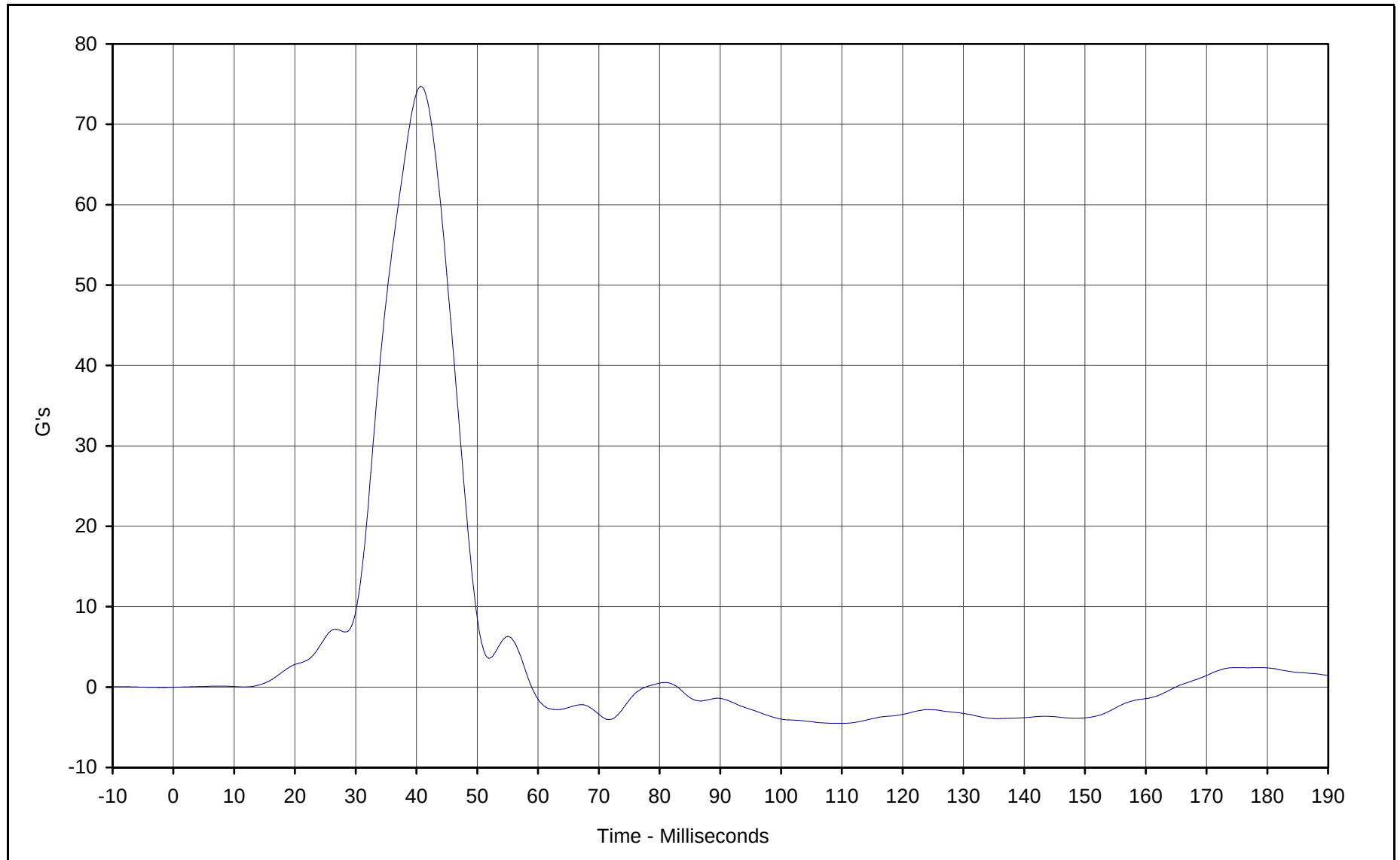




Curve Description: Driver Lower Spine Redundant Y
Maximum Value: 57.7 at 37.5 Milliseconds
Minimum Value: -7.9 at 56.9 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-010

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

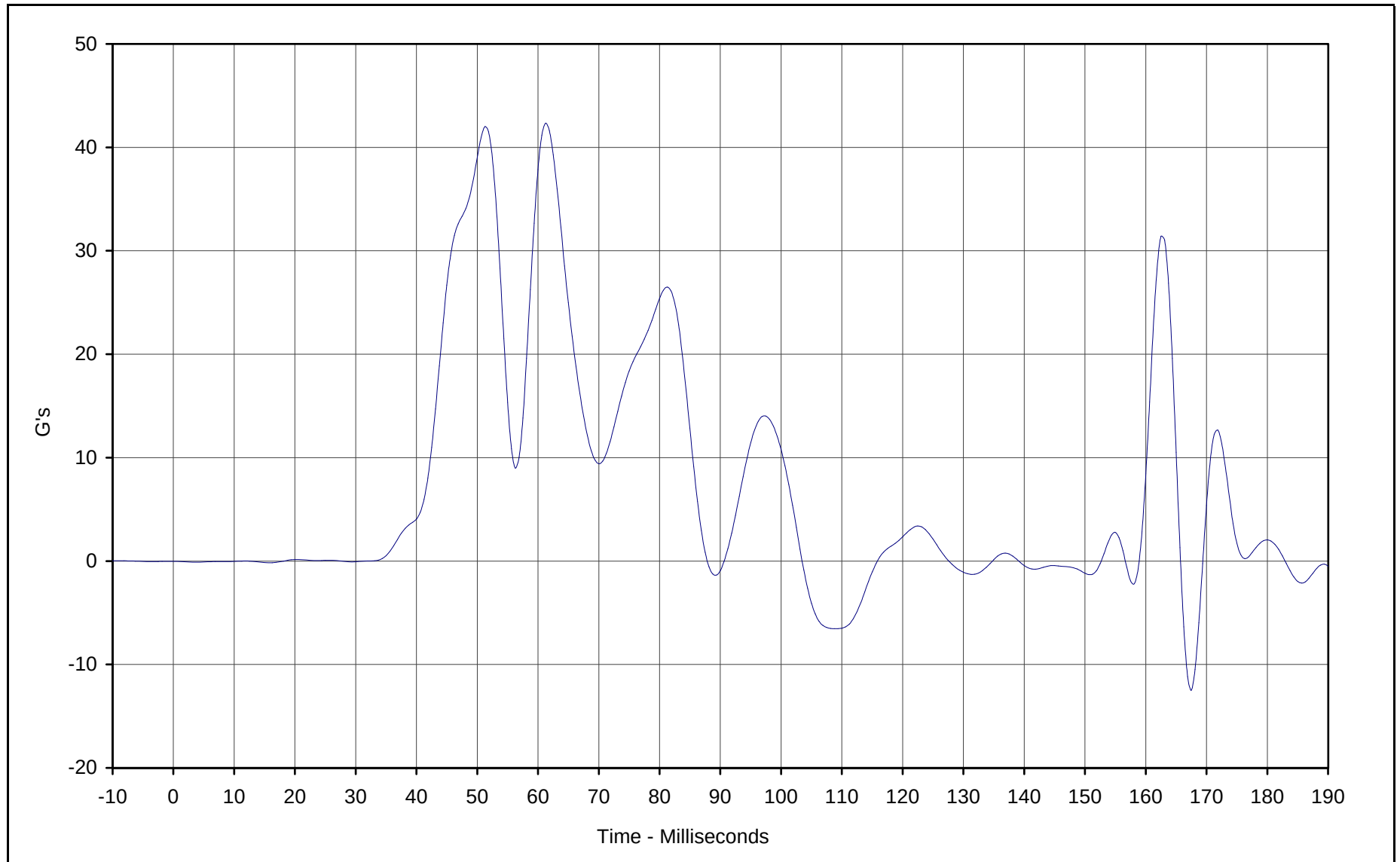




Curve Description: Driver Pelvis Redundant Y
Maximum Value: 74.7 at 40.6 Milliseconds
Minimum Value: -4.5 at 109.4 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-011

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

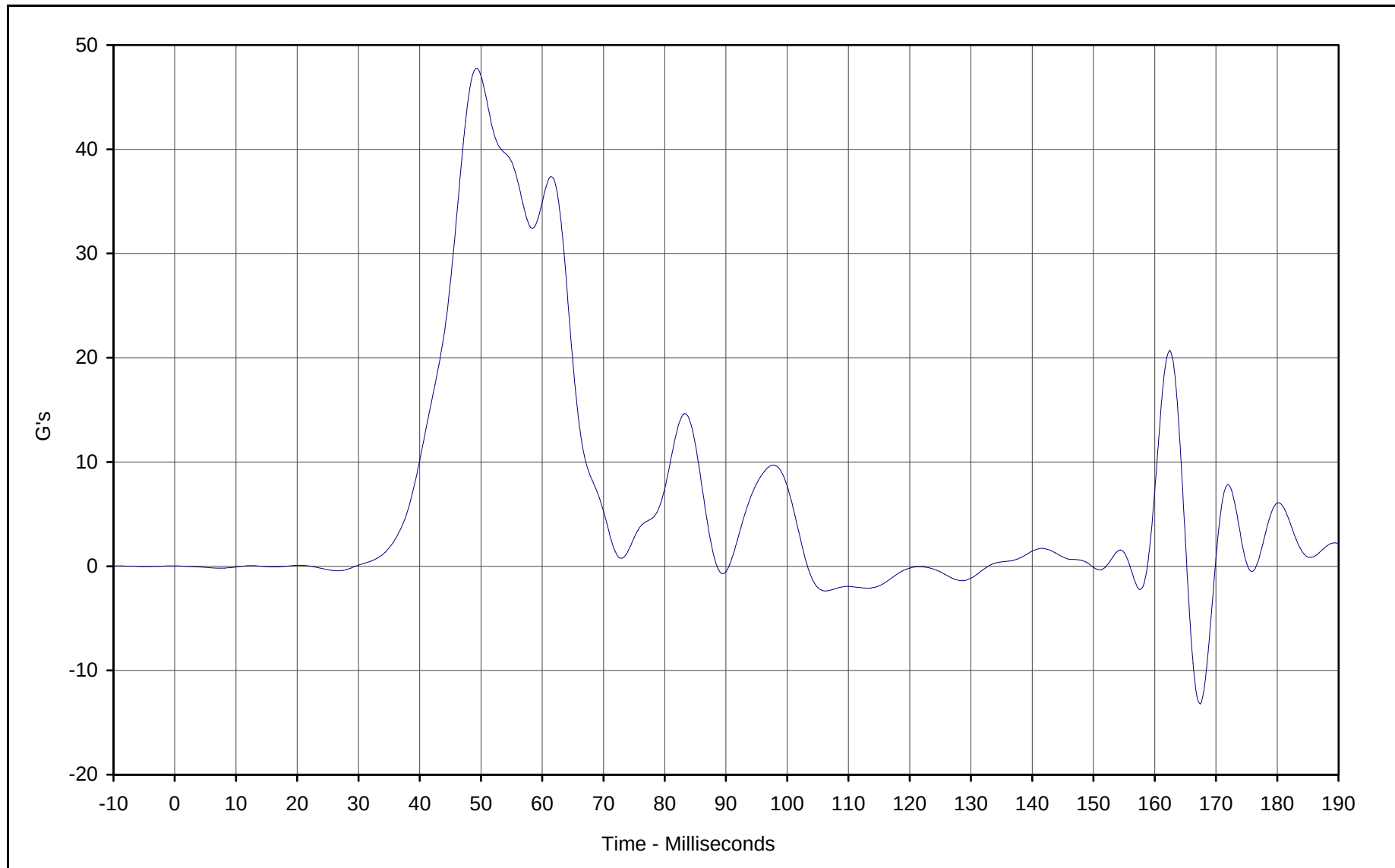




Curve Description: Pass. Upper Rib Primary Y
Maximum Value: 42.3 at 61.3 Milliseconds
Minimum Value: -12.5 at 167.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-017

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

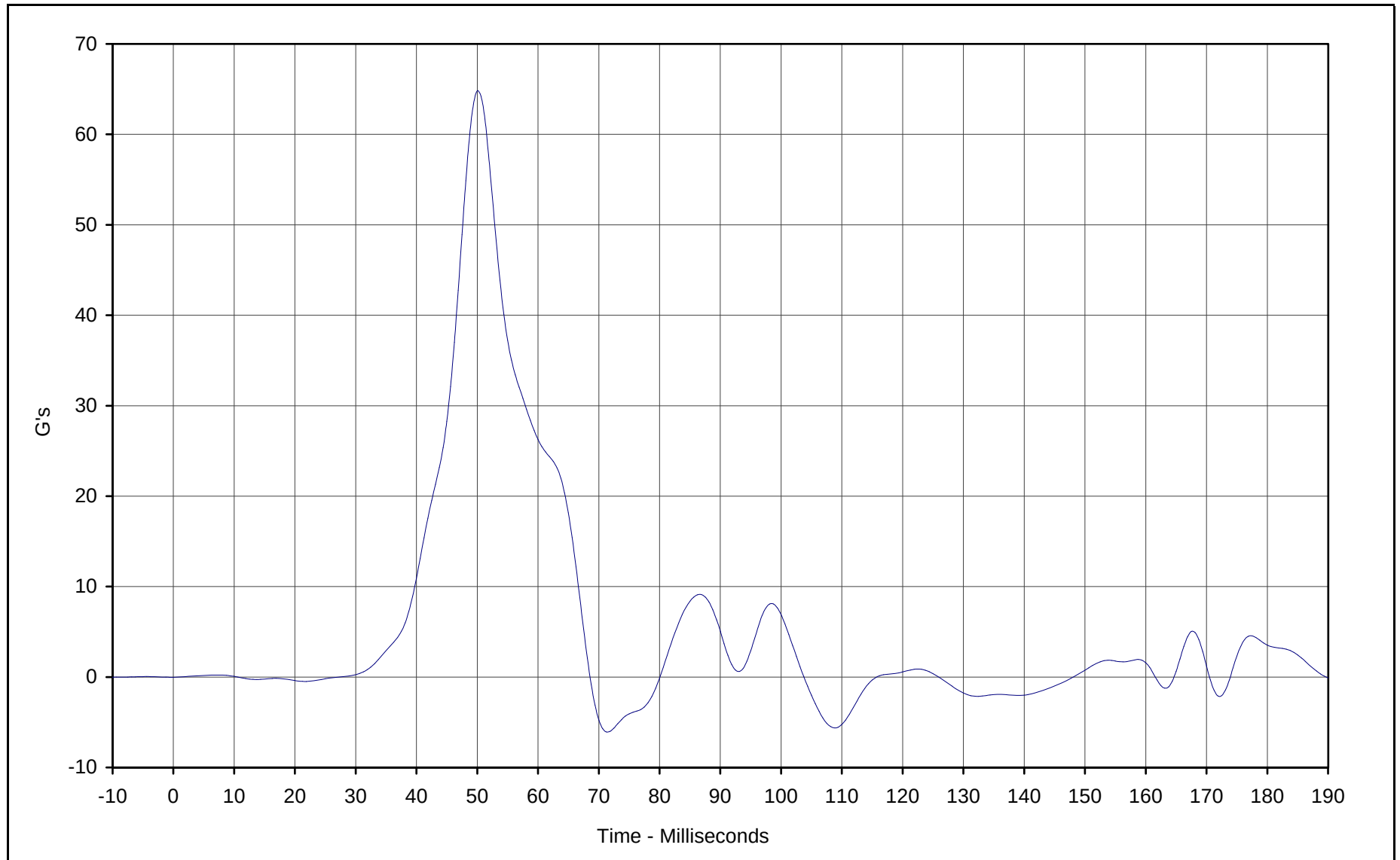




Curve Description: Pass. Lower Rib Primary Y
Maximum Value: 47.8 at 49.4 Milliseconds
Minimum Value: -13.2 at 167.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-018

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

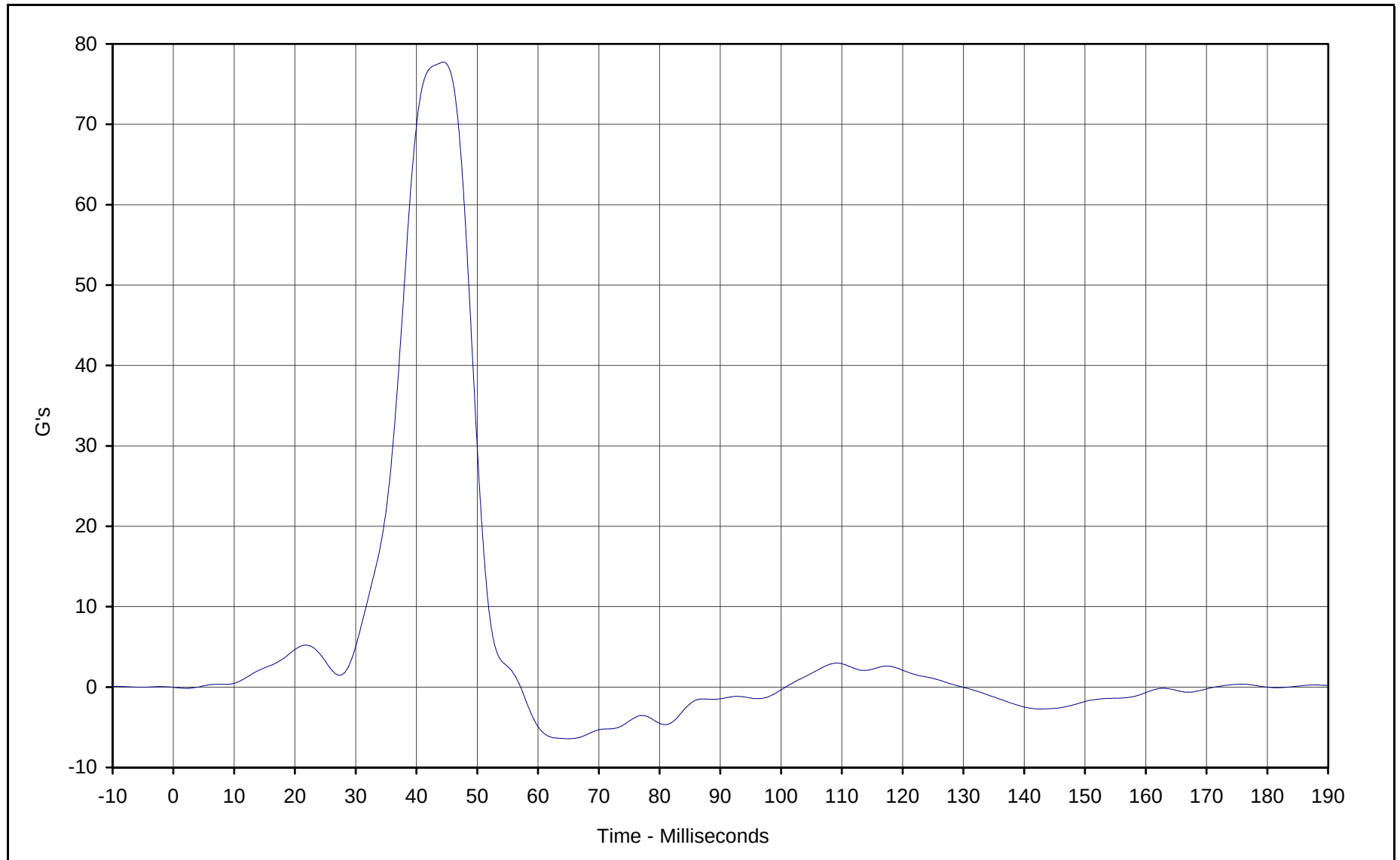




Curve Description: Pass. Lower Spine Primary Y
Maximum Value: 64.8 at 50.0 Milliseconds
Minimum Value: -6.1 at 71.3 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-019

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

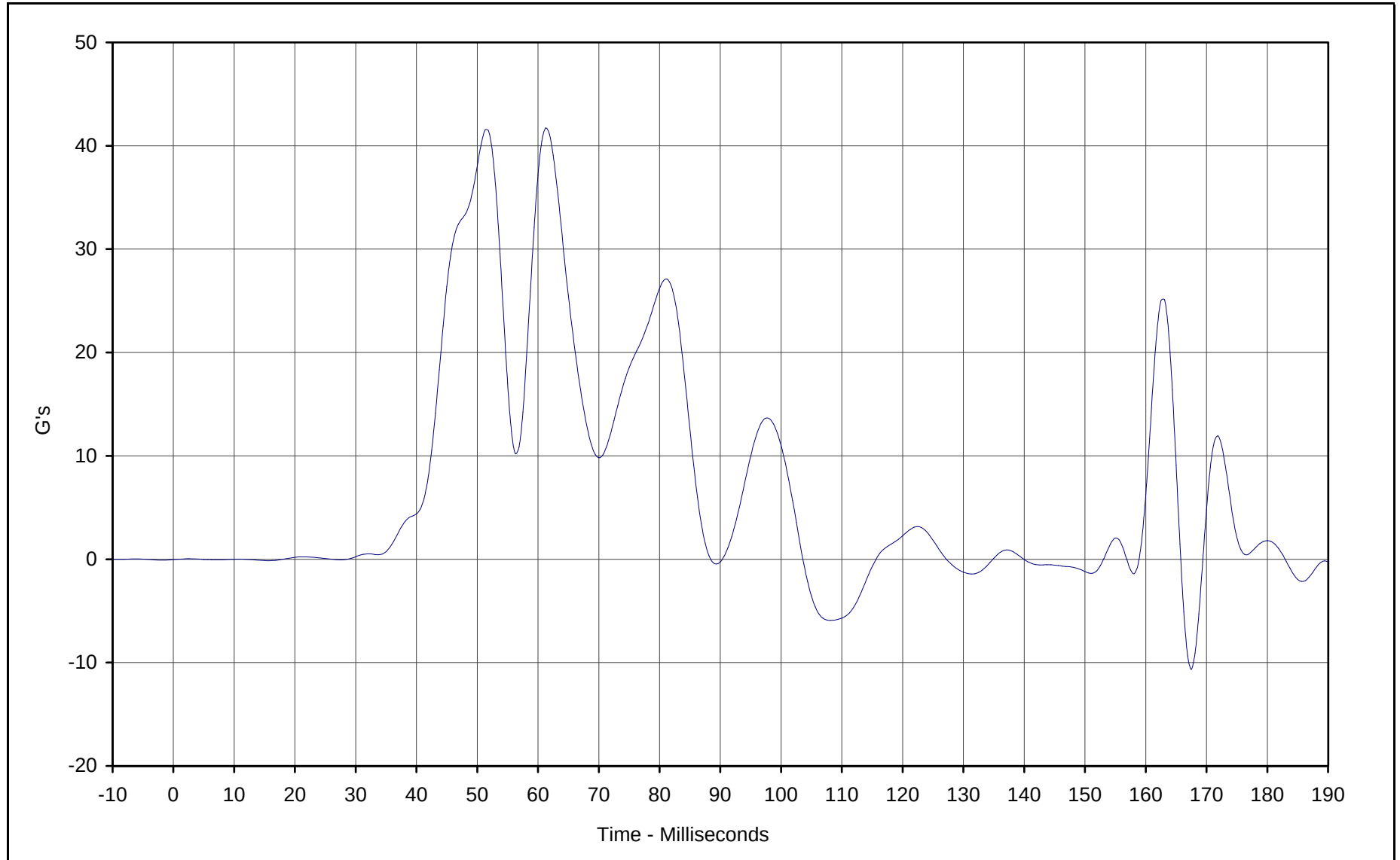




Curve Description: Pass. Pelvis Primary Y
Maximum Value: 77.7 at 44.4 Milliseconds
Minimum Value: -6.4 at 65.0 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-020

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

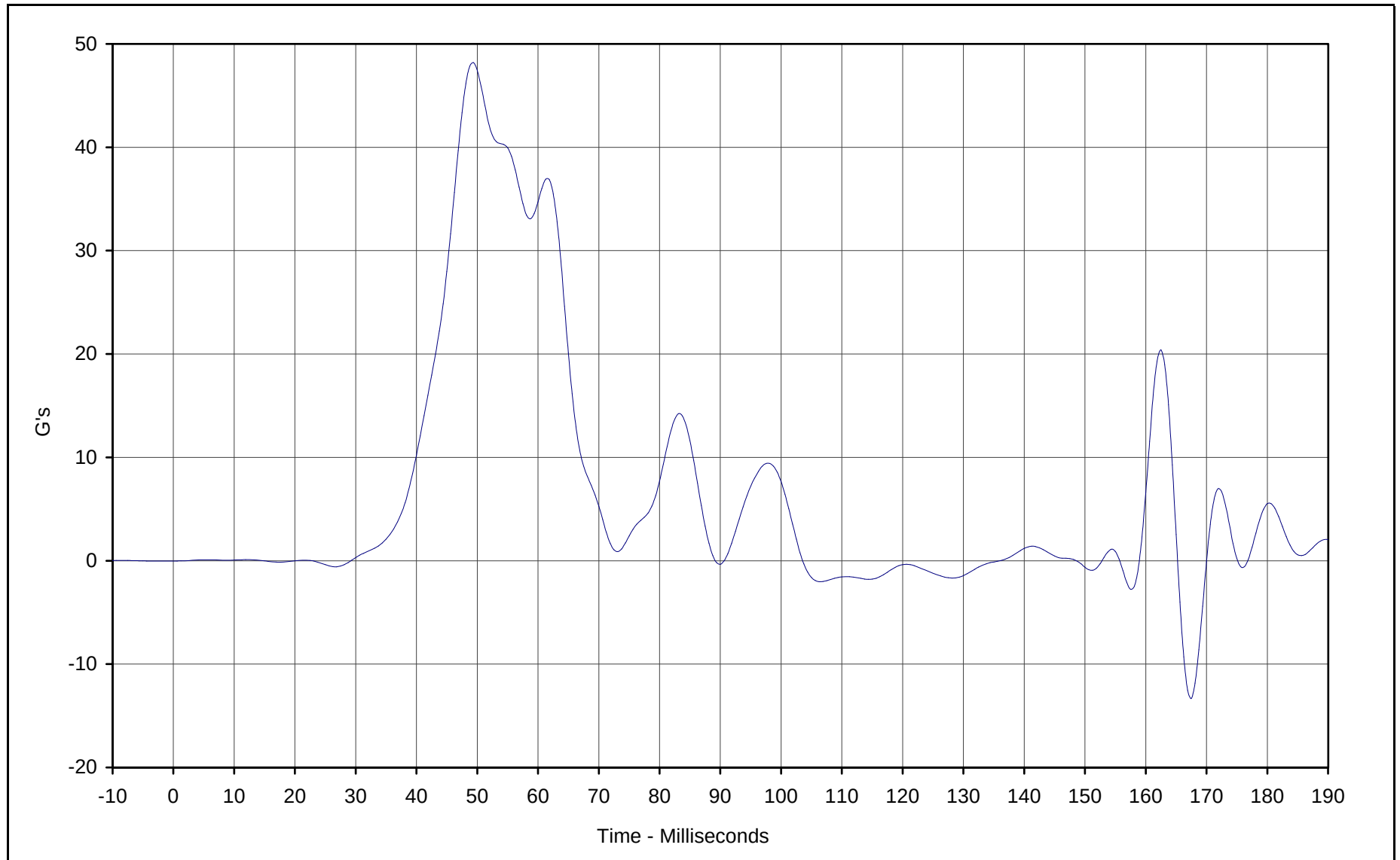




Curve Description: Pass. Upper Rib Redundant Y
Maximum Value: 41.7 at 61.3 Milliseconds
Minimum Value: -10.6 at 167.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-021

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

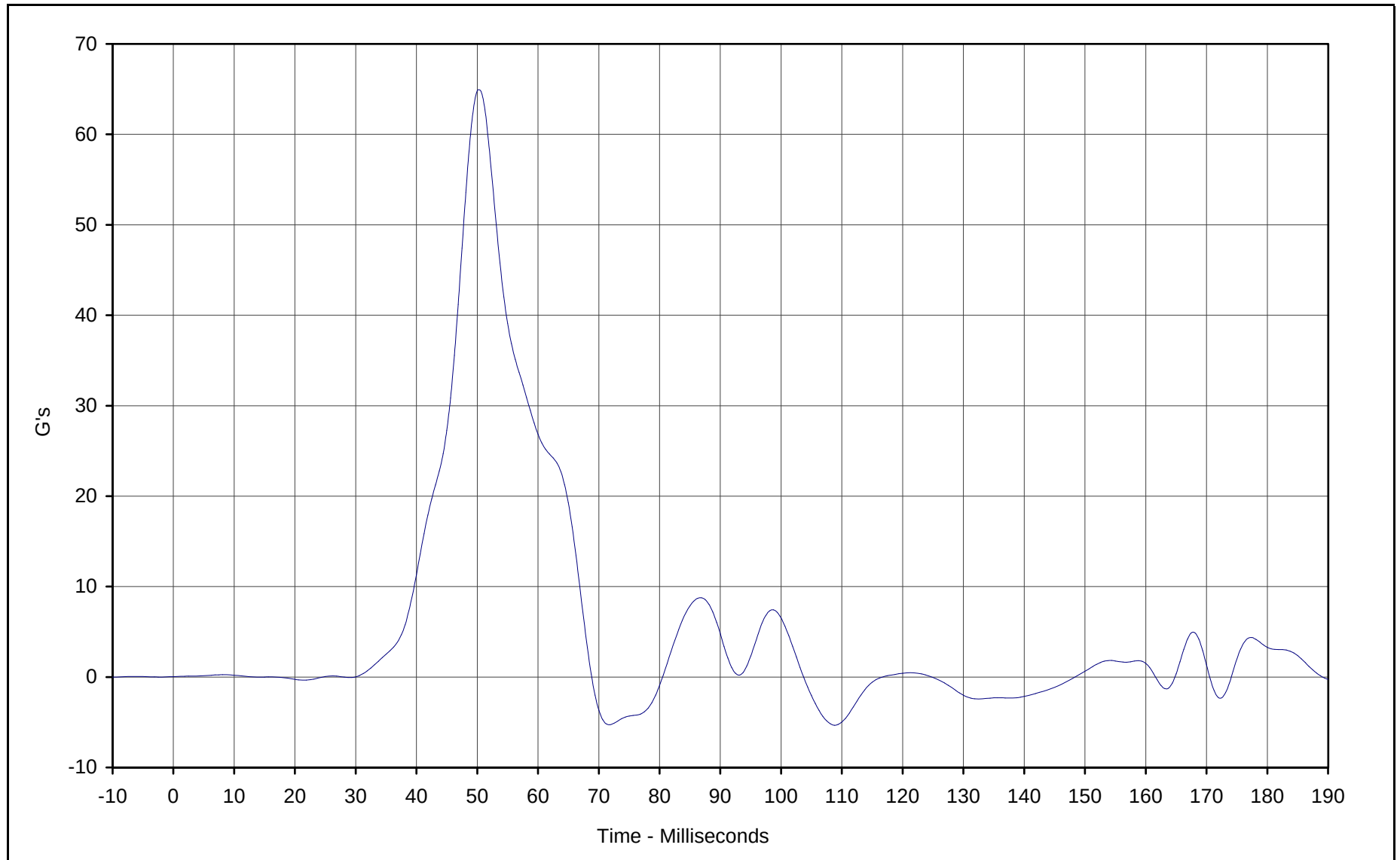




Curve Description: Pass. Lower Rib Redundant Y
Maximum Value: 48.2 at 49.4 Milliseconds
Minimum Value: -13.3 at 167.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-022

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV

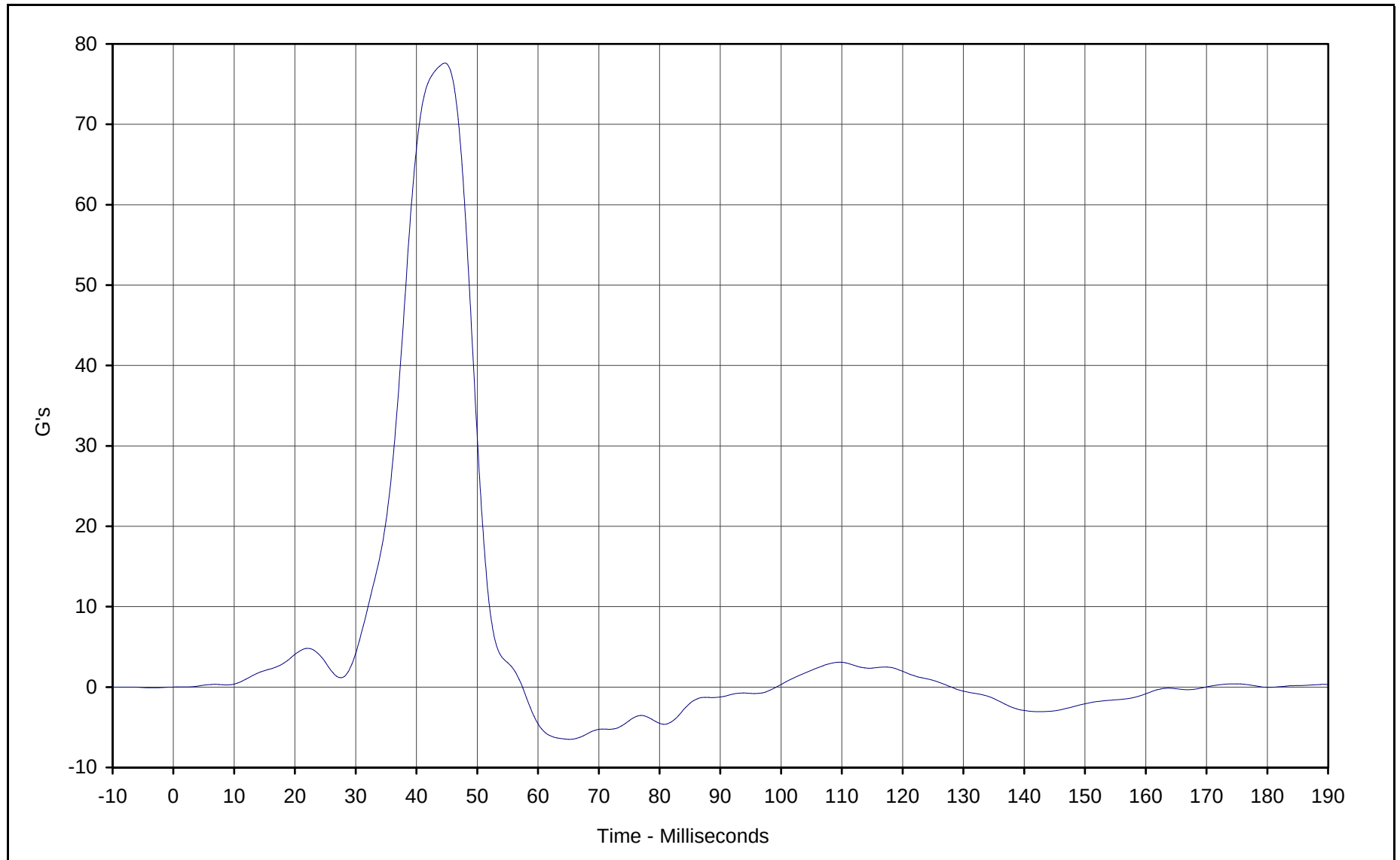




Curve Description: Pass. Lower Spine Redundant Y
Maximum Value: 64.8 at 50.0 Milliseconds
Minimum Value: -5.3 at 108.8 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-023

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV





Curve Description: Pass. Pelvis Redundant Y
Maximum Value: 77.6 at 44.4 Milliseconds
Minimum Value: -6.5 at 65.0 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/20/01
Curve Number: FIR-024

Test Program: 55/28 km/h Side Impact NCAP No.: M25108
Test Vehicle: 2002 Toyota Rav4 4WD SUV



APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
PRE-TEST SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA



Performance Verification Data Side Impact Dummy (SID) External Dimensions

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	905	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	515	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	515	Pass
KV- Knee Pivot From Floor	mm	490 to 505	495	Pass
HW- Hip Width	mm	356 to 391	375	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date



Performance Verification Data Side Impact Dummy (SID) Thorax Lateral Impact

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: TI11E

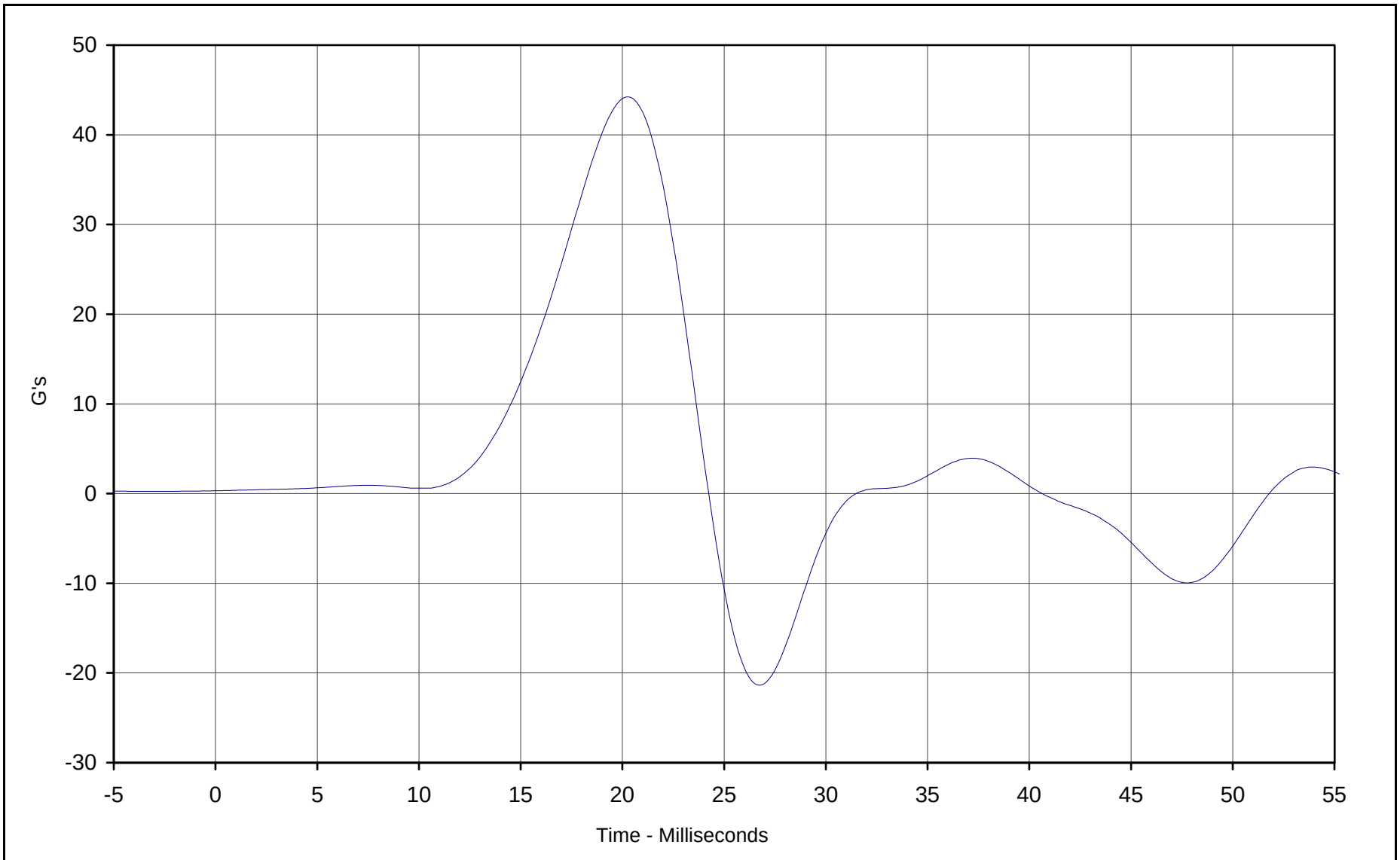
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Left Upper Rib Acceleration	G's	37.0 to 46.0	44.2	Pass
Left Lower Rib Acceleration	G's	37.0 to 46.0	45.7	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	19.7	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-3



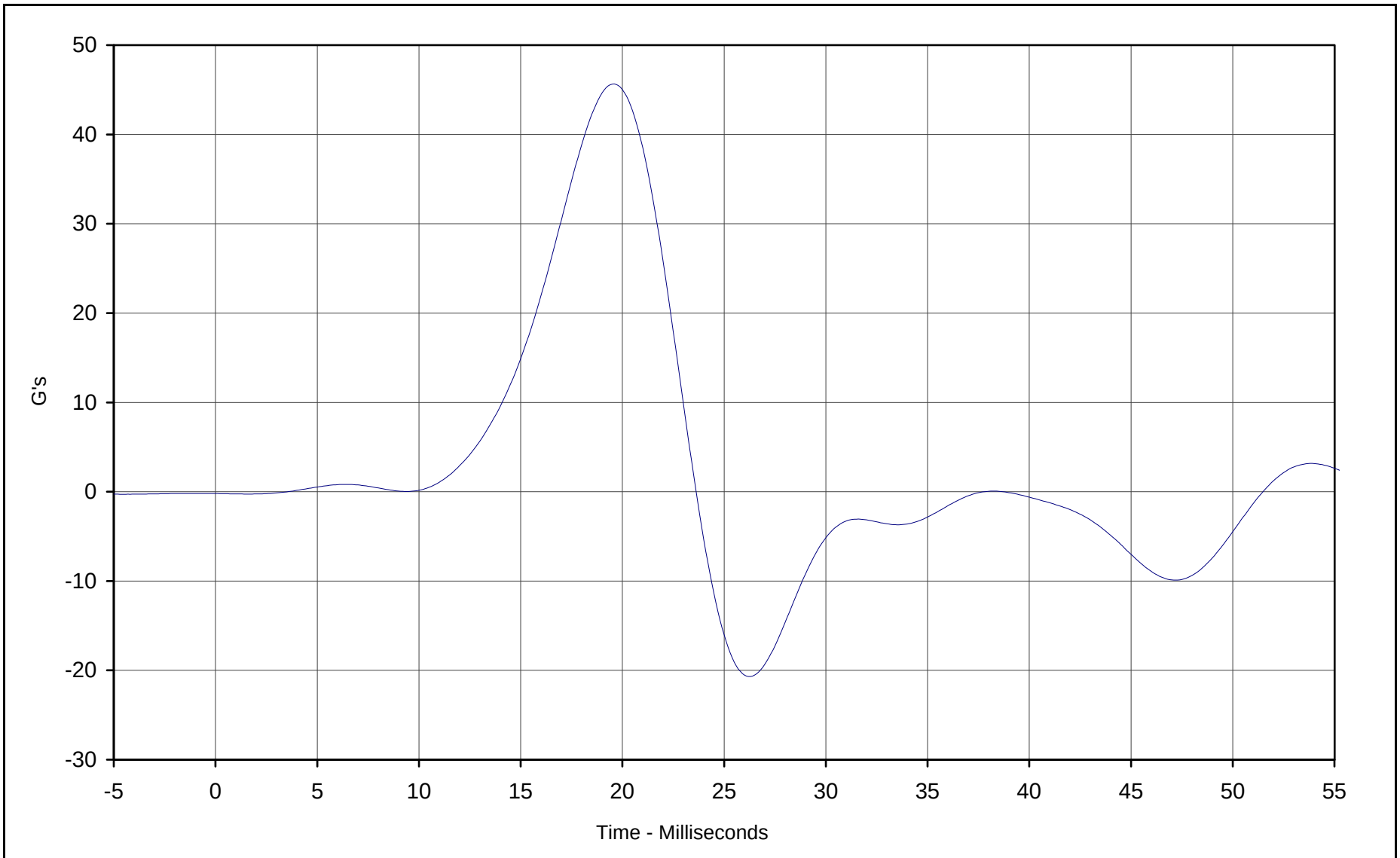
Curve Description: Left Upper Rib Y Acceleration
Maximum Value: 44.2 at 20.3 Milliseconds
Minimum Value: -21.4 at 26.7 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 274 Test I.D.: TI11E



KAR22003-02

C-4



Curve Description: Left Lower Rib Y Acceleration

Maximum Value: 45.7 at 19.6 Milliseconds

Minimum Value: -20.7 at 26.2 Milliseconds

SAE Filter Class: FIR 100

Date of Test: 11/19/01

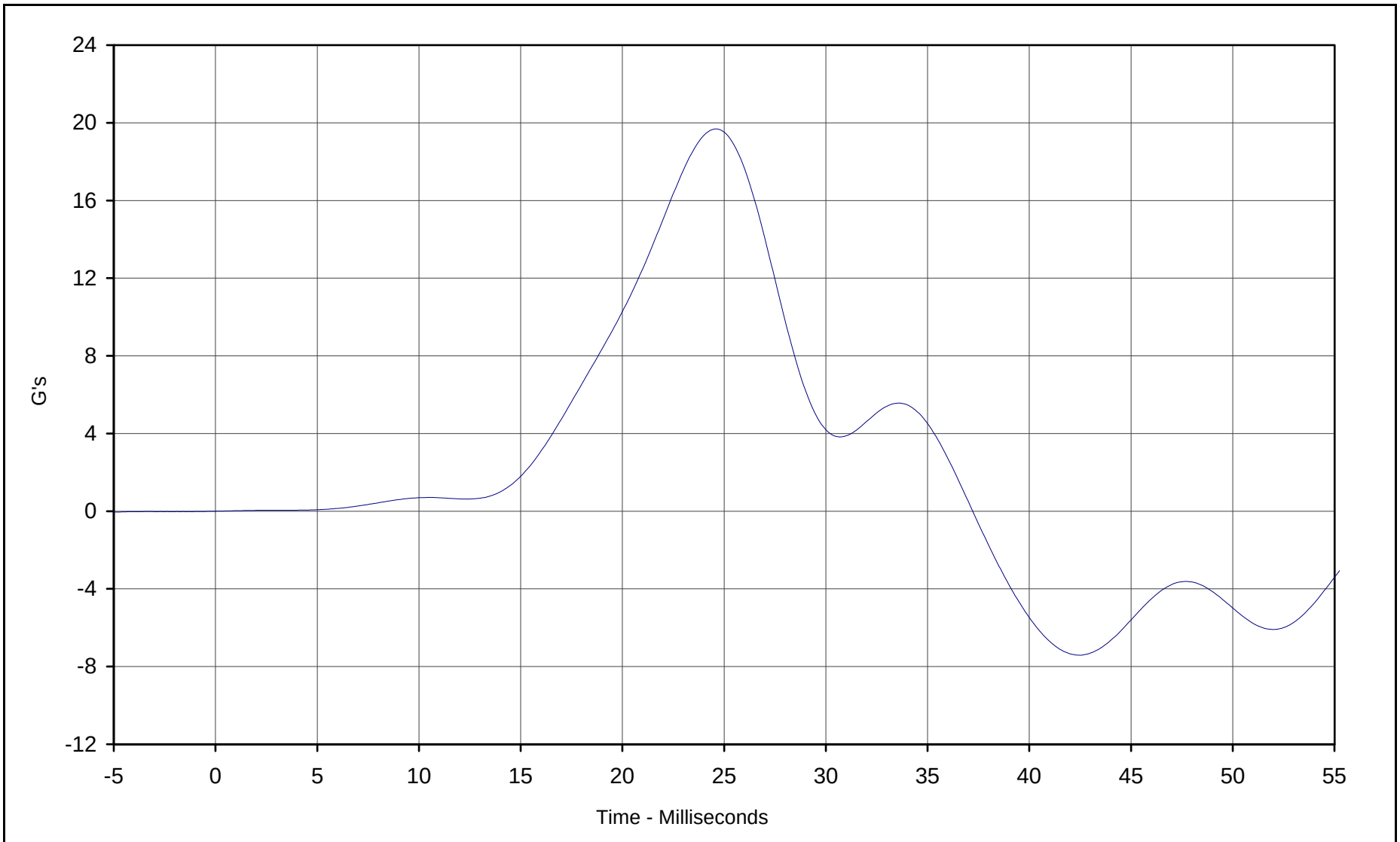
Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 274 Test I.D.: TI11E



KAR22003-02

C-5



Curve Description: Lower Spine Y Acceleration
Maximum Value: 19.7 at 24.6 Milliseconds
Minimum Value: -7.4 at 42.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 274 Test I.D.: TI11E



KAR22003-02



Performance Verification Data Side Impact Dummy (SID) Left Side Pelvis Lateral Impact

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: TI11E

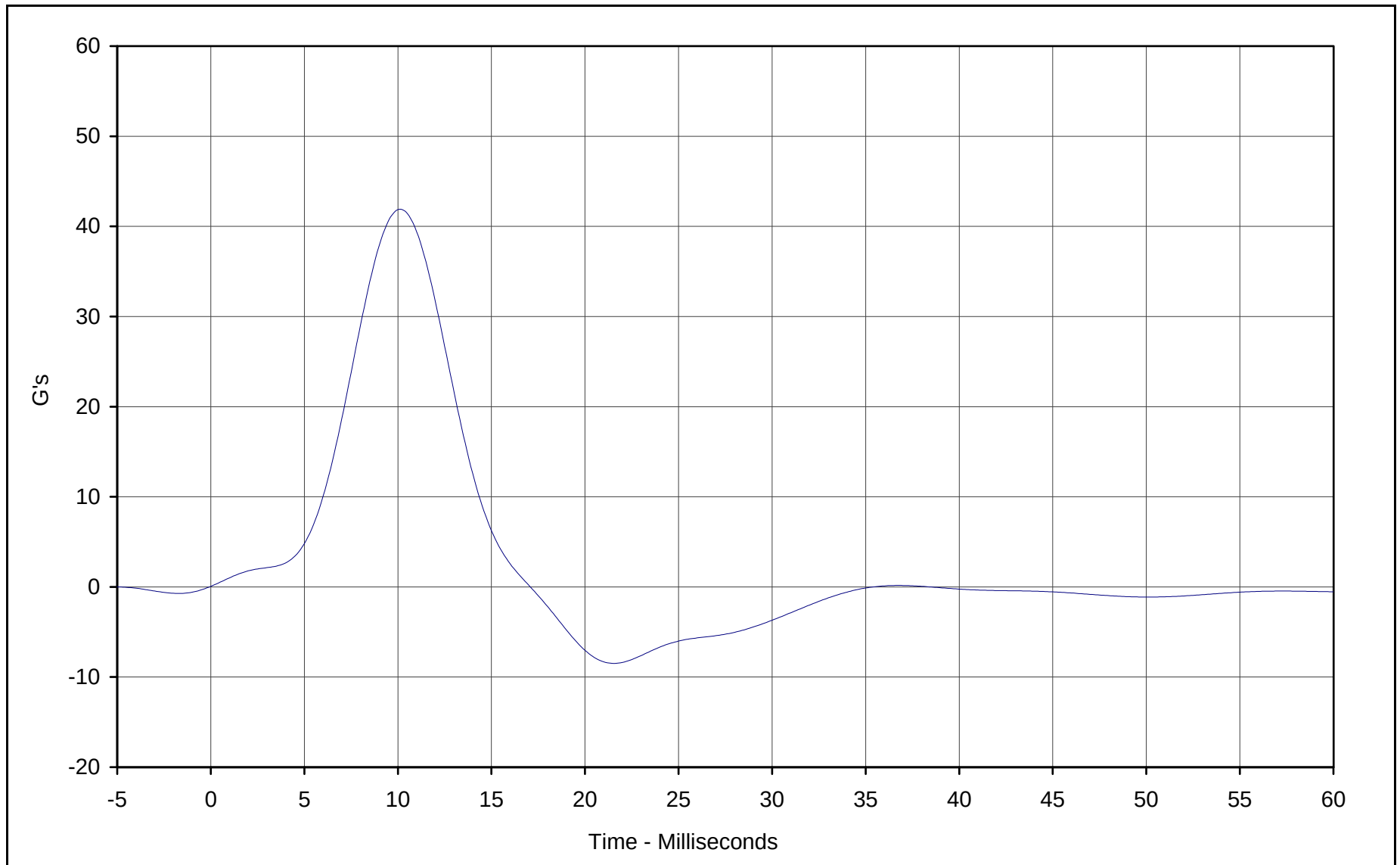
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Pelvis Acceleration	G's	40.0 to 60.0	41.9	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0 Msec.	6.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-7



Curve Description: Pelvis Y Axis Acceleration
Maximum Value: 41.9 at 10.1 Milliseconds
Minimum Value: -8.5 at 21.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01

Test Program: SID Left Side Pelvis Lateral Impact
Test Information: SID S/N: 274 Test I.D.: TI11E



KAR22003-02



Performance Verification Data Side Impact Dummy (SID) Abdominal Compression Test

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: AC11E

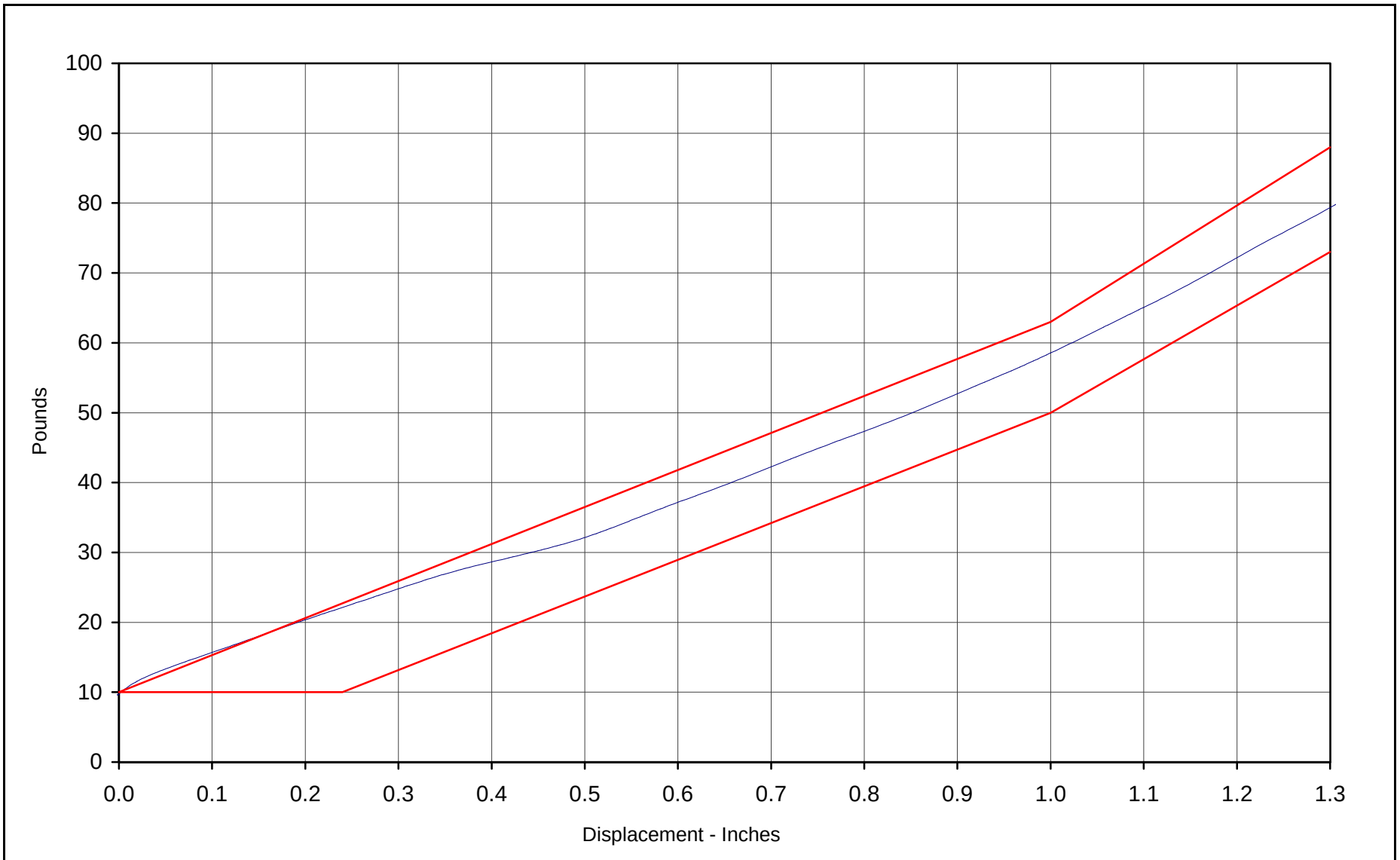
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Force at 0.5 Inches of Displacement	Pounds	23.0 to 36.0	32.1	Pass
Force at 0.75 Inches of Displacement	Pounds	36.0 to 50.0	44.7	Pass
Force at 1.0 Inches of Displacement	Pounds	50.0 to 63.0	58.3	Pass
Force at 1.3 Inches of Displacement	Pounds	73.0 to 88.0	79.3	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-9



Curve Description: Abdomen Force vs. Displacement

Force at 0.5 In.: 32.1 Pounds

Force at 0.75 In.: 44.7 Pounds

Force at 1.0 In.: 58.3 Pounds

Force at 1.3 In.: 79.3 Pounds

Date of Test: 11/19/01

Test Program: SID Abdominal Compression

Test Information: SID S/N: 274 Test I.D.: AC11E



KAR22003-02



Performance Verification Data Side Impact Dummy (SID) Head Drop Calibration

ATD Serial No.: 274

Part Serial No.: N/A

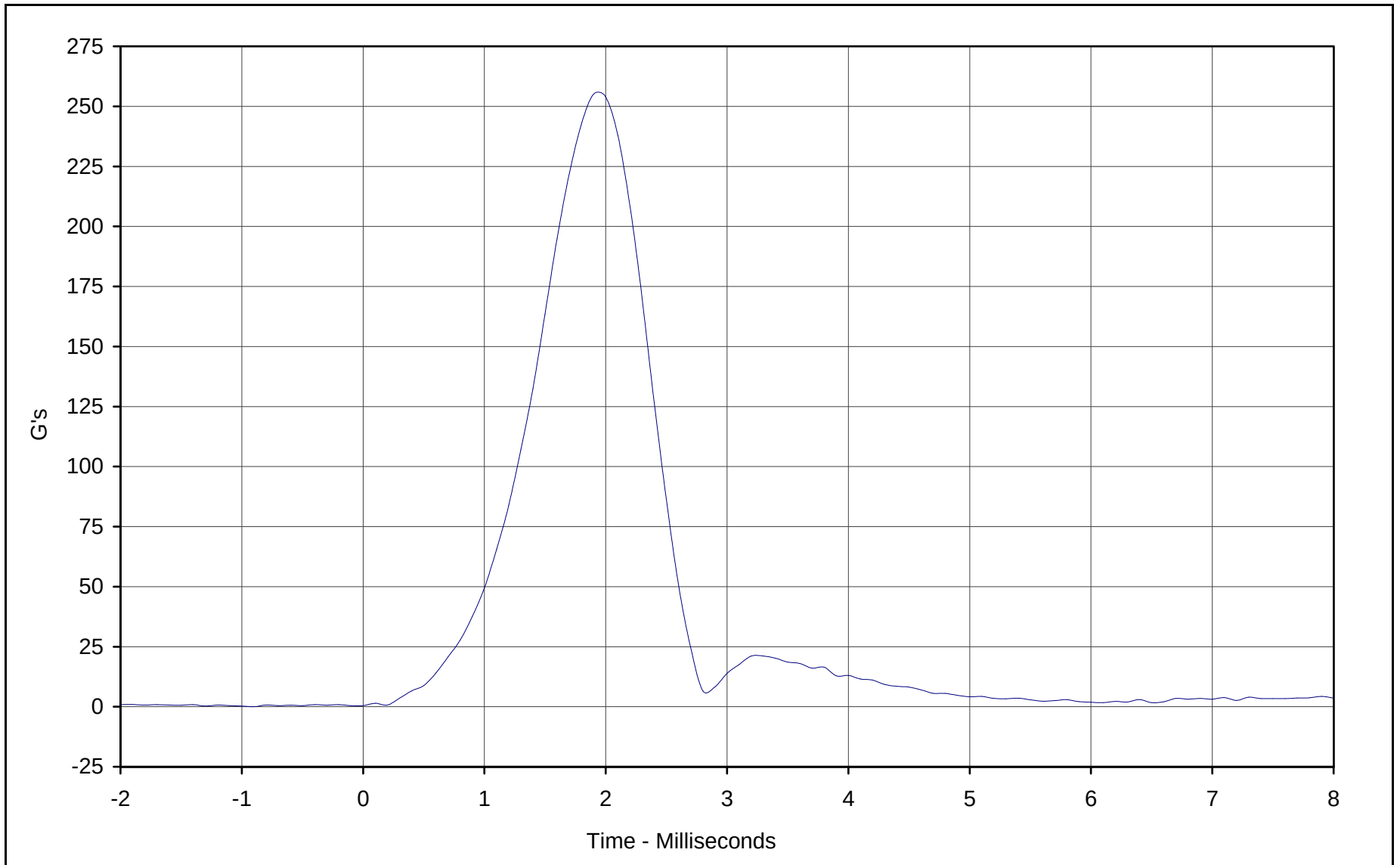
Test I.D.: HD11E

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	210.0 to 260.0	255.1	Pass
Peak Lateral Acceleration	G's	≤10.0	8.4	Pass
Time Above 100 G's	Msec.	0.9 to 1.5	1.2	Pass
Is Resultant Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001
Test Date

C-11

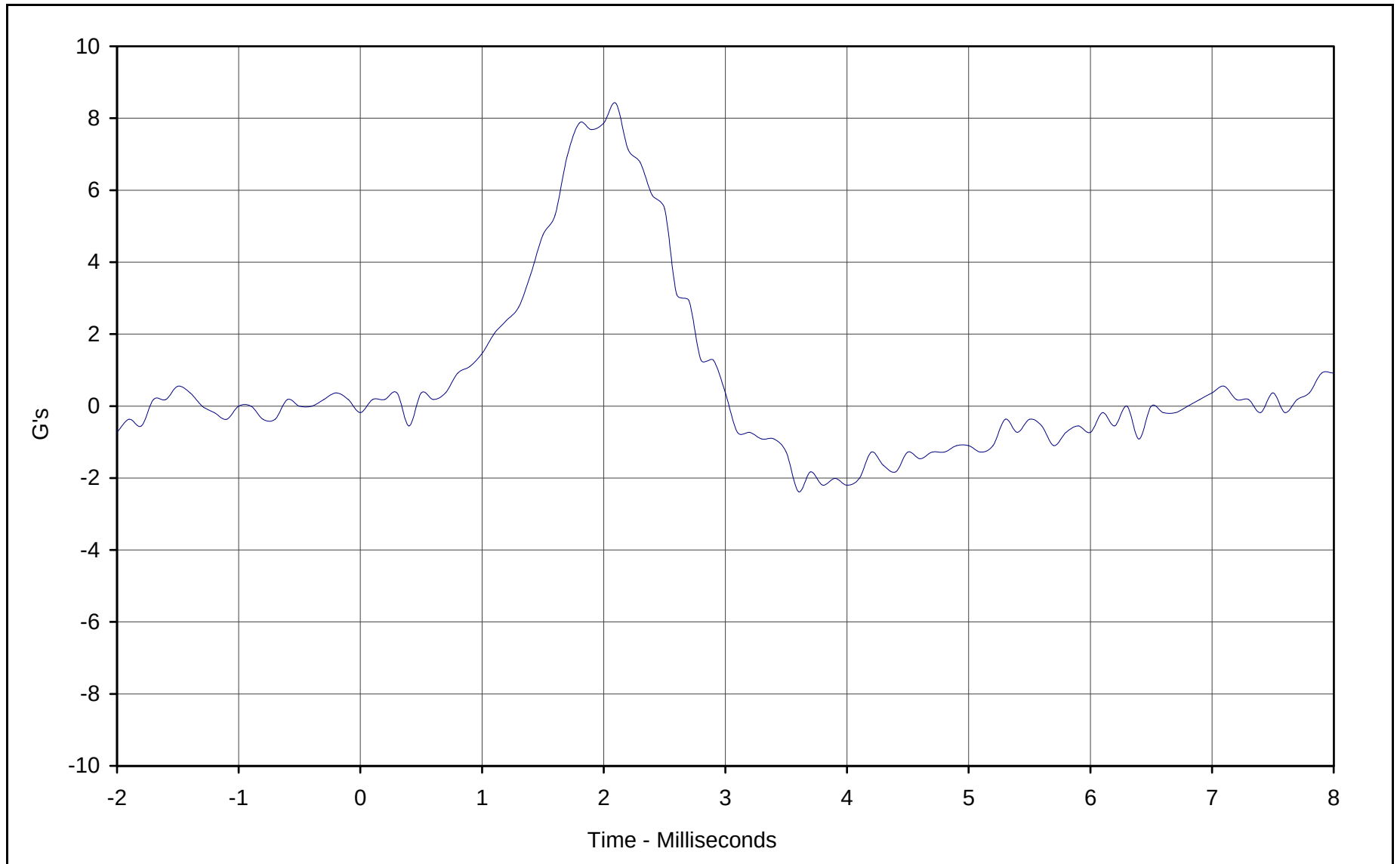


Curve Description: Head Resultant Acceleration
Maximum Value: 255.1 at 1.9 Milliseconds
Minimum Value: 0.4 at 0.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 274 Test I.D.: HD11E



KAR22003-02



Curve Description: Head Y Axis Acceleration
Maximum Value: 8.4 at 2.1 Milliseconds
Minimum Value: -2.4 at 3.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 274 Test I.D.: HD11E





Performance Verification Data Side Impact Dummy (SID) External Dimensions

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	895	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	510	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	520	Pass
KV- Knee Pivot From Floor	mm	490 to 505	500	Pass
HW- Hip Width	mm	356 to 391	380	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001
Test Date



Performance Verification Data Side Impact Dummy (SID) Thorax Lateral Impact

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: TI11F

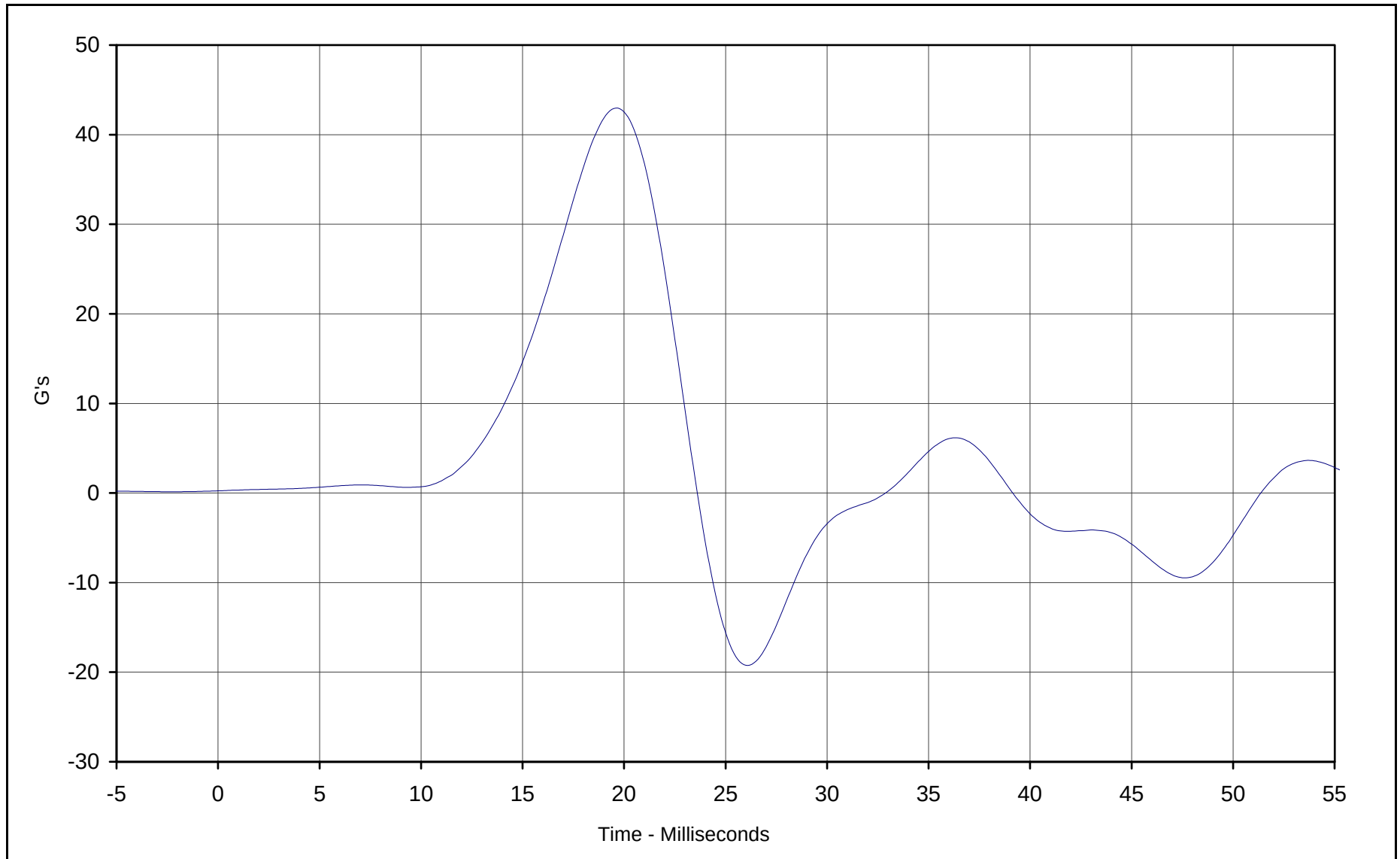
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Left Upper Rib Acceleration	G's	37.0 to 46.0	43.0	Pass
Left Lower Rib Acceleration	G's	37.0 to 46.0	44.0	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	20.5	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-15



Curve Description: Left Upper Rib Y Acceleration

Maximum Value: 43.0 at 19.6 Milliseconds

Minimum Value: -19.3 at 26.1 Milliseconds

SAE Filter Class: FIR 100

Date of Test: 11/19/01

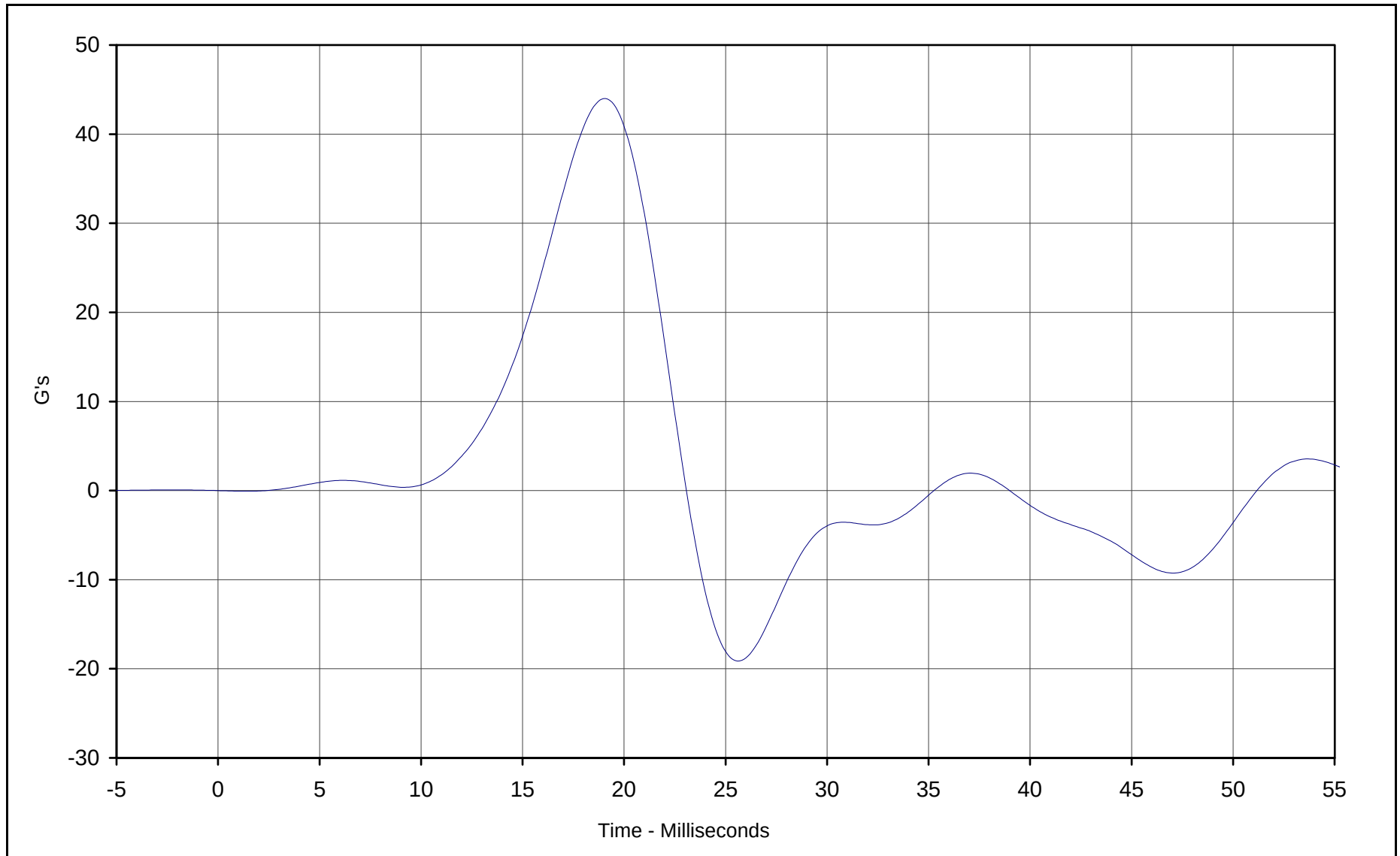
Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 275 Test I.D.: TI11F



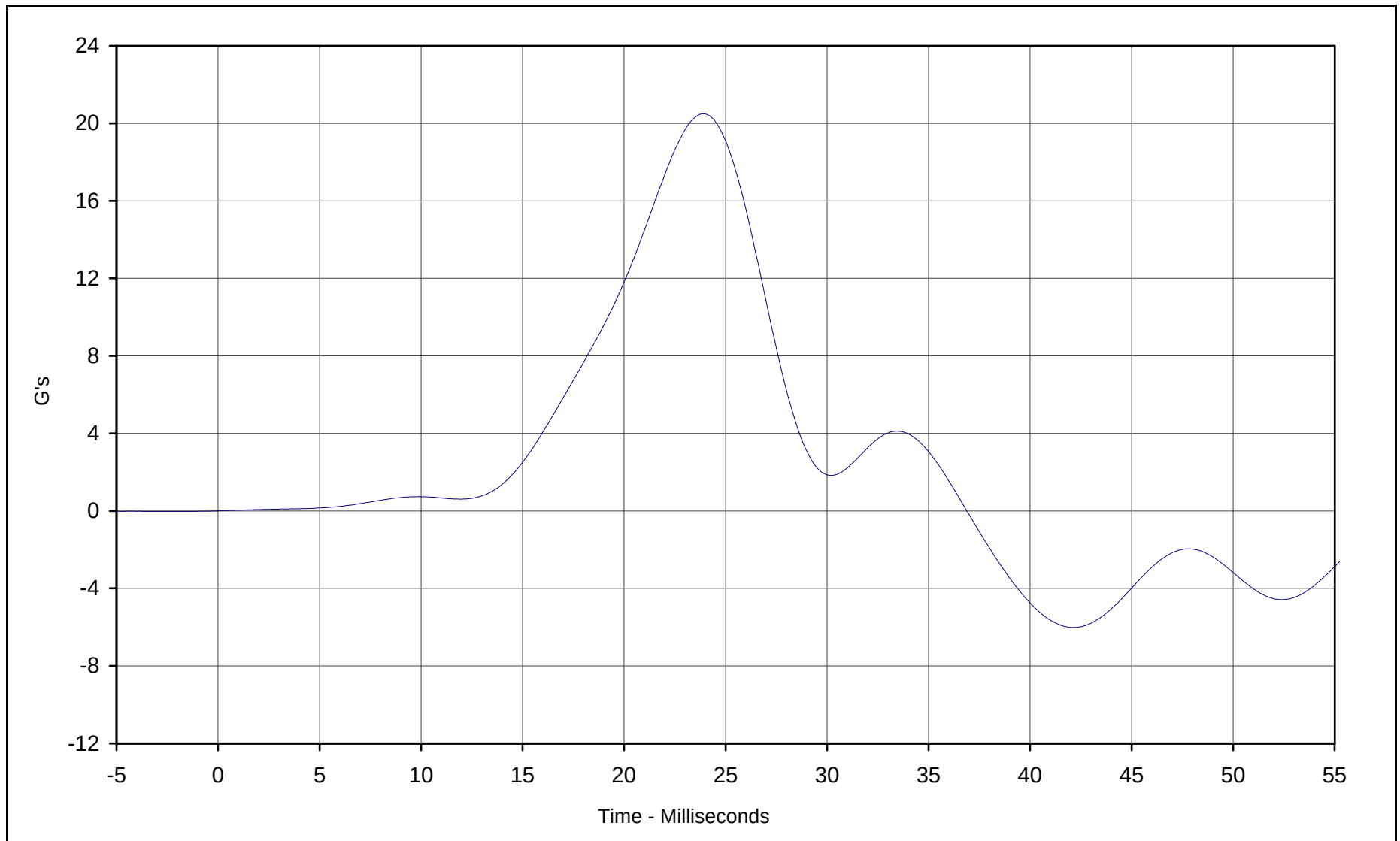
KAR22003-02

C-16

Curve Description: Left Lower Rib Y AccelerationMaximum Value: 44.0 at 19.1 MillisecondsMinimum Value: -19.1 at 25.6 MillisecondsSAE Filter Class: FIR 100Date of Test: 11/19/01Test Program: SID Thorax Lateral Impact TestTest Information: SID S/N: 275 Test I.D.: TI11F

KARR22003-02

C-17



Curve Description: Lower Spine Y Acceleration
Maximum Value: 20.5 at 23.9 Milliseconds
Minimum Value: -6.0 at 42.1 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 275 Test I.D.: TI11F



KAR22003-02



Performance Verification Data Side Impact Dummy (SID) Left Side Pelvis Lateral Impact

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: PI11F

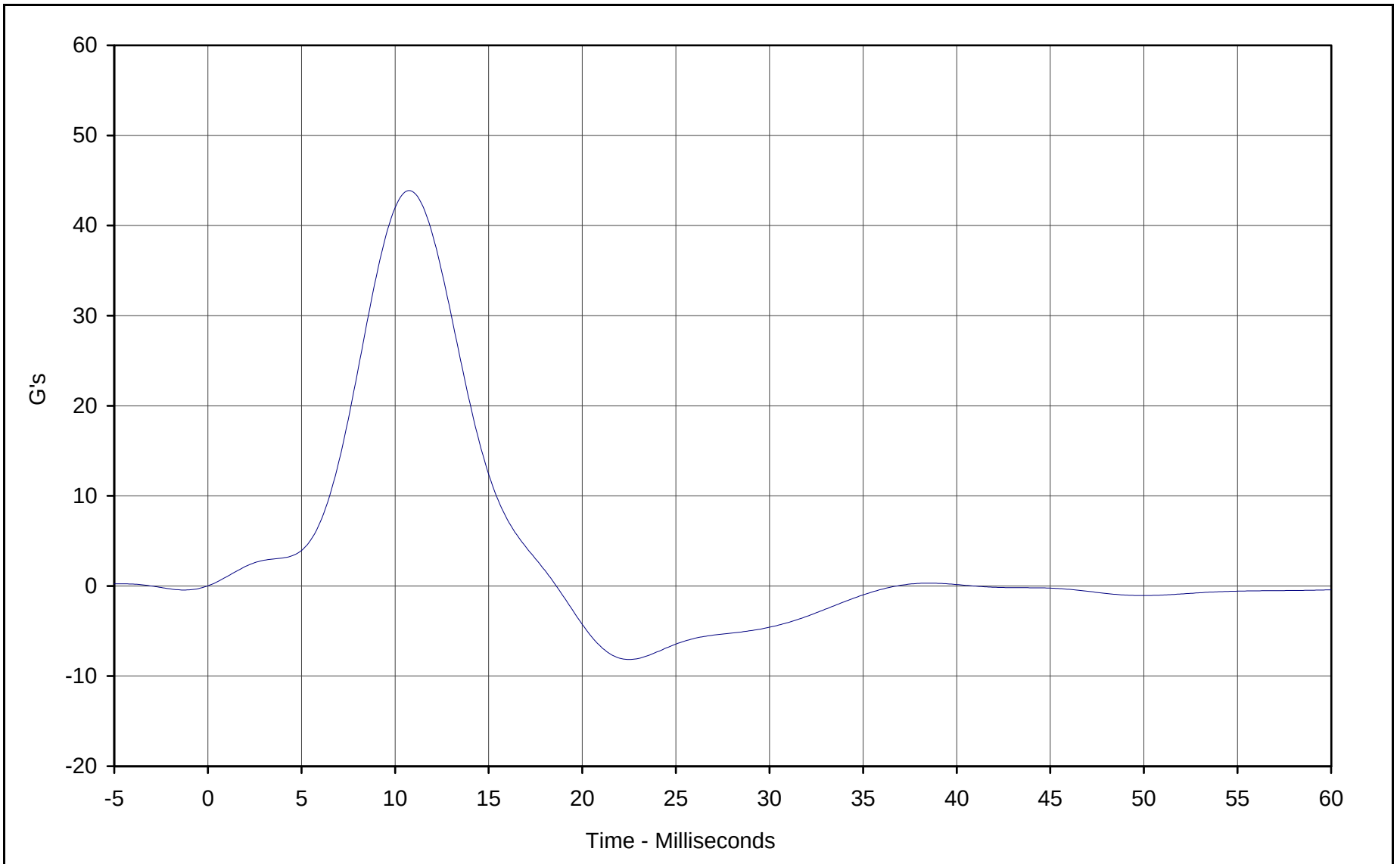
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Pelvis Acceleration	G's	40.0 to 60.0	43.9	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0 Msec.	6.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-19



Curve Description: Pelvis Y Axis Acceleration
Maximum Value: 43.9 at 10.8 Milliseconds
Minimum Value: -8.2 at 22.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01

Test Program: SID Left Side Pelvis Lateral Impact
Test Information: SID S/N: 275 Test I.D.: PI11F



KAR22003-02



Performance Verification Data Side Impact Dummy (SID) Abdominal Compression Test

ATD Serial No.: 275

Part Serial No.: N/A

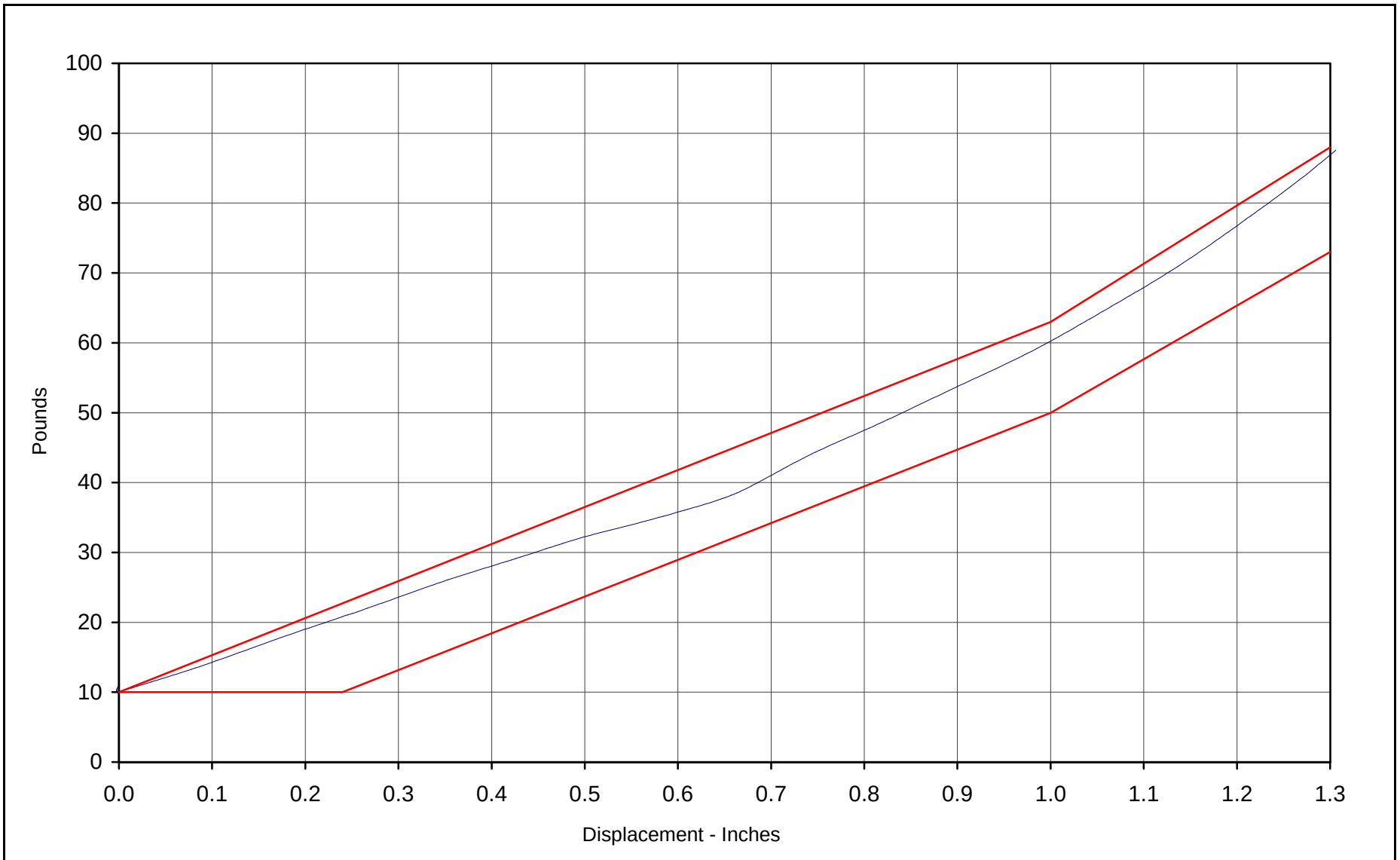
Test I.D.: AC11F

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Force at 0.5 Inches of Displacement	Pounds	23.0 to 36.0	32.2	Pass
Force at 0.75 Inches of Displacement	Pounds	36.0 to 50.0	44.4	Pass
Force at 1.0 Inches of Displacement	Pounds	50.0 to 63.0	60.2	Pass
Force at 1.3 Inches of Displacement	Pounds	73.0 to 88.0	86.8	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date



Curve Description: Abdomen Force vs. Displacement

Force at 0.5 In.: 32.2 Pounds

Force at 0.75 In.: 44.4 Pounds

Force at 1.0 In.: 60.2 Pounds

Force at 1.3 In.: 86.8 Pounds

Date of Test: 11/19/01

Test Program: SID Abdominal Compression

Test Information: SID S/N: 275 Test I.D.: AC11F





Performance Verification Data Side Impact Dummy (SID) Head Drop Calibration

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: HD11F

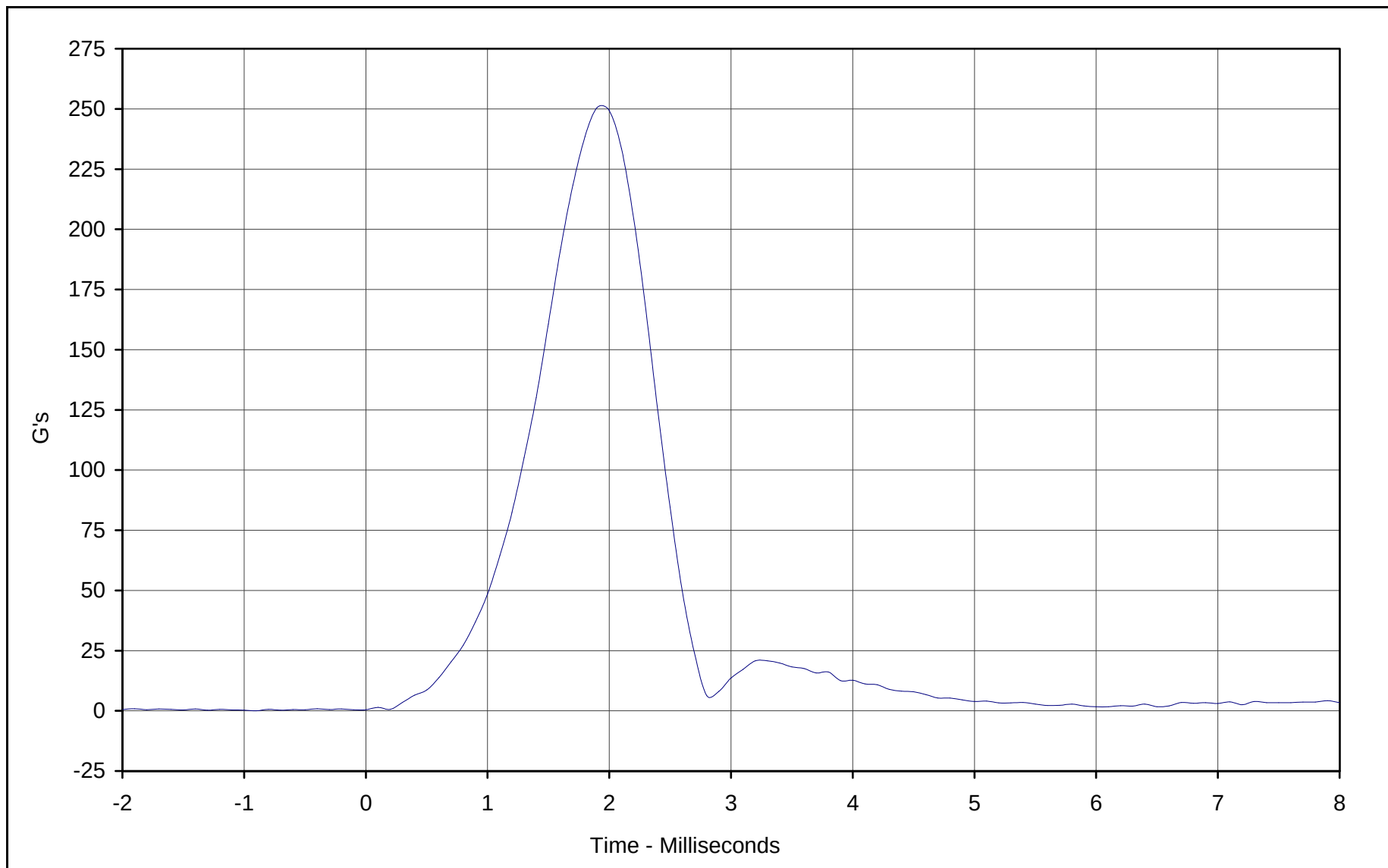
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	210.0 to 260.0	250.5	Pass
Peak Lateral Acceleration	G's	≤10.0	3.1	Pass
Time Above 100 G's	Msec.	0.9 to 1.5	1.2	Pass
Is Resultant Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-23



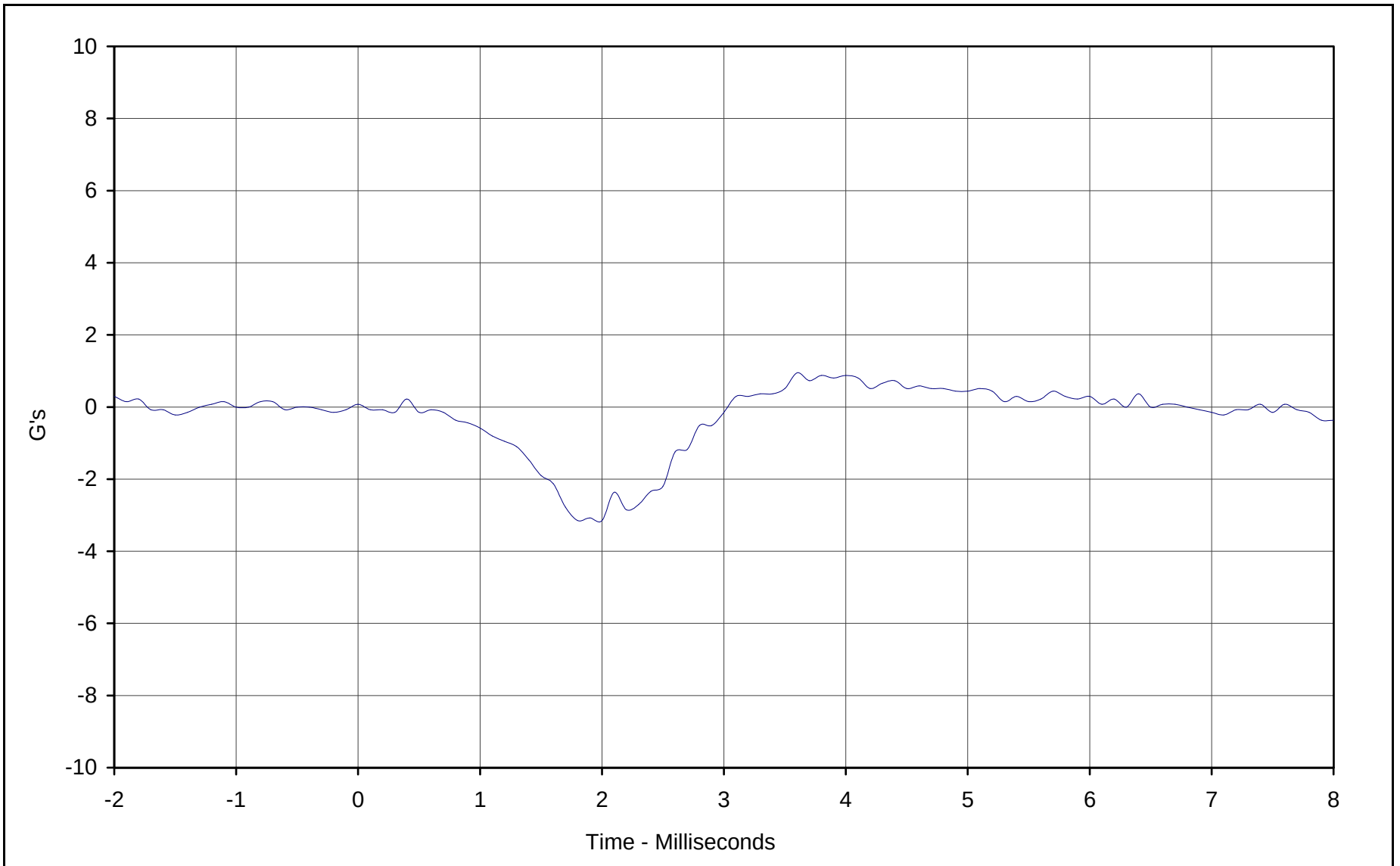
Curve Description: Head Resultant Acceleration
Maximum Value: 250.5 at 1.9 Milliseconds
Minimum Value: 0.4 at 0.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 275 Test I.D.: HD11F



KAR22003-02

C-24



Curve Description: Head Y Axis Acceleration

Maximum Value:	1.0	at	3.6	Milliseconds
Minimum Value:	-3.1	at	1.8	Milliseconds
SAE Filter Class:	1000			
Date of Test:	11/19/01			

Test Program: SID Head Drop Calibration

Test Information: SID S/N: 275 Test I.D.: HD11F



KAR22003-02

APPENDIX C
POST-TEST SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA



Performance Verification Data Side Impact Dummy (SID) External Dimensions

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	895	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	505	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	515	Pass
KV- Knee Pivot From Floor	mm	490 to 505	495	Pass
HW- Hip Width	mm	356 to 391	380	Pass
Overall Test Results				Pass

Laboratory Technician

November 21, 2001
Test Date



Performance Verification Data Side Impact Dummy (SID) Thorax Lateral Impact

ATD Serial No.: 274

Part Serial No.: N/A

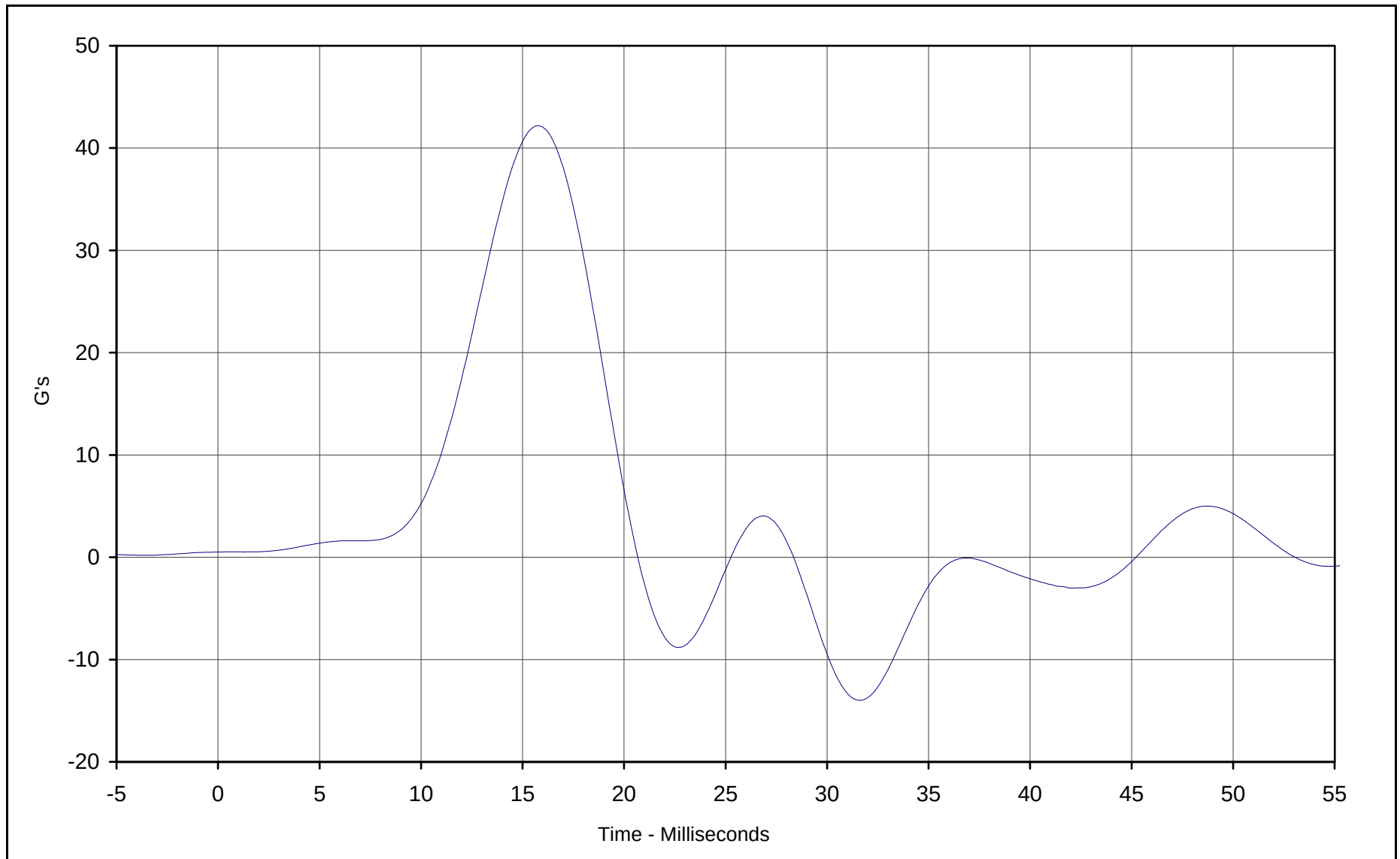
Test I.D.: TI11G

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Left Upper Rib Acceleration	G's	37.0 to 46.0	42.2	Pass
Left Lower Rib Acceleration	G's	37.0 to 46.0	41.6	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	19.1	Pass
Overall Test Results				Pass

Laboratory Technician

November 21, 2001

Test Date

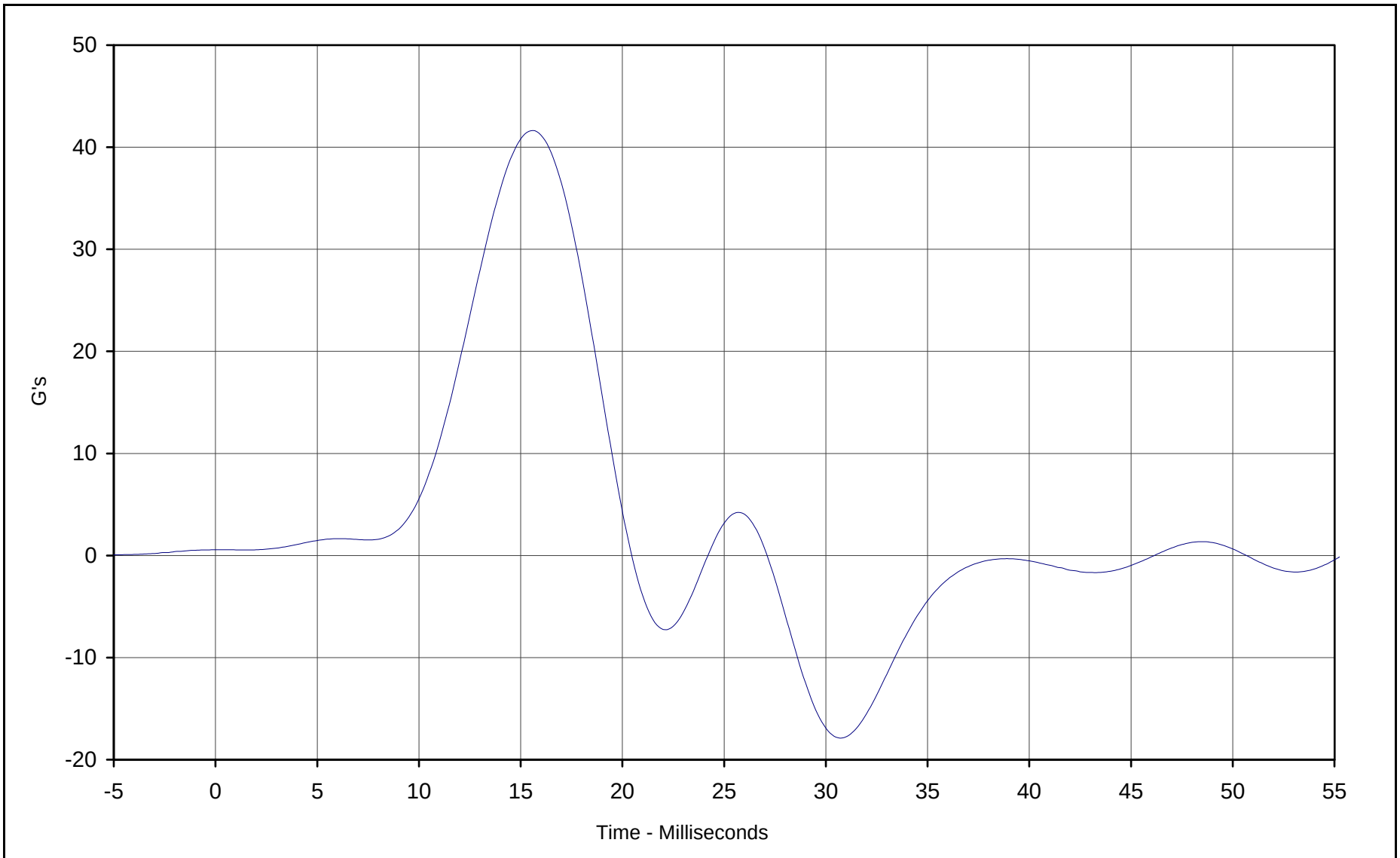


Curve Description: Left Upper Rib Y Acceleration
Maximum Value: 42.2 at 15.8 Milliseconds
Minimum Value: -14.0 at 31.6 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/21/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 274 Test I.D.: TI11G



C-28



Curve Description: Left Lower Rib Y Acceleration

Maximum Value: 41.6 at 15.6 Milliseconds

Minimum Value: -17.9 at 30.7 Milliseconds

SAE Filter Class: FIR 100

Date of Test: 11/21/01

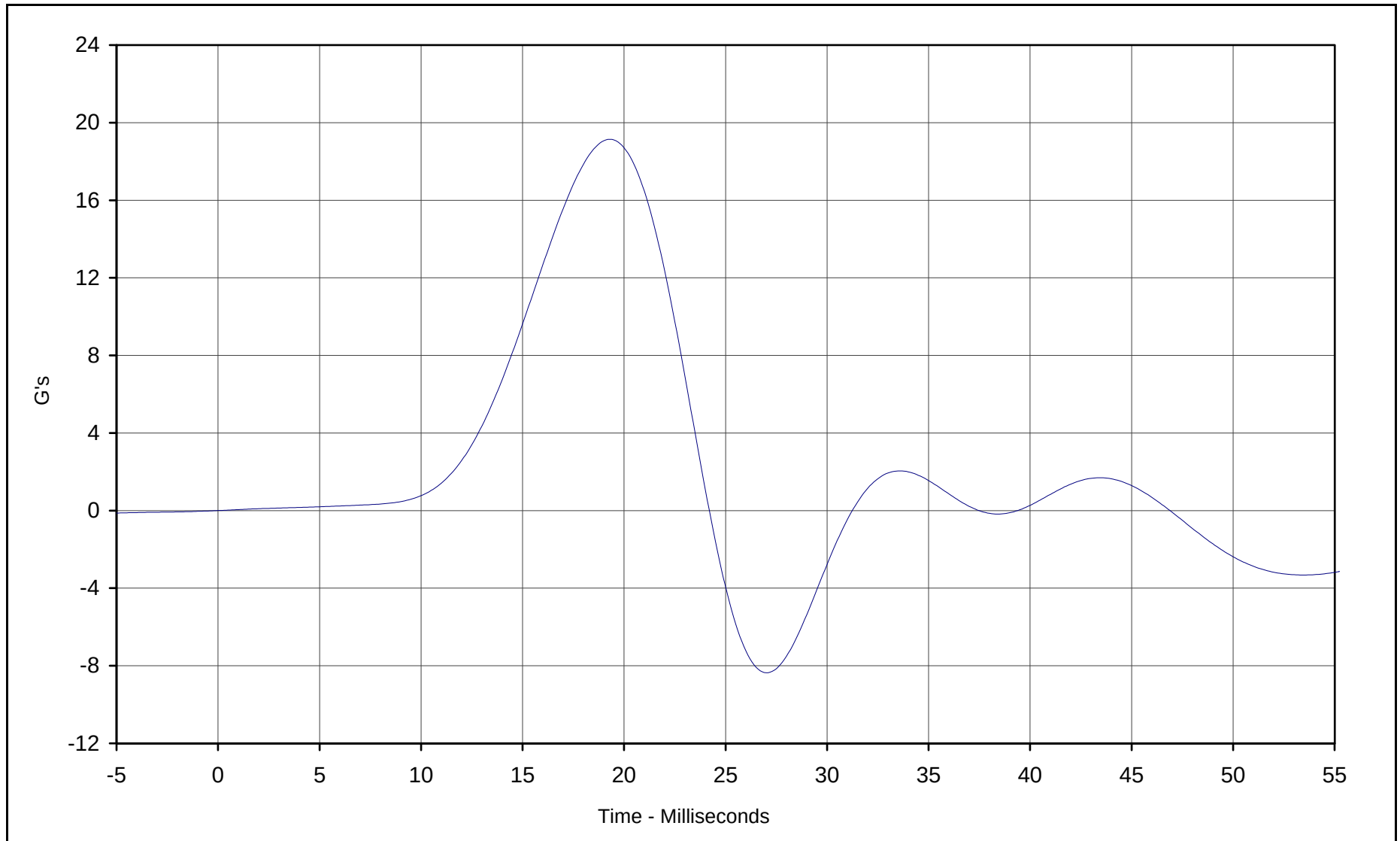
Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 274 Test I.D.: TI11G



KAR22003-02

C-29



Curve Description: Lower Spine Y Acceleration
Maximum Value: 19.1 at 19.3 Milliseconds
Minimum Value: -8.4 at 27.0 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/21/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 274 Test I.D.: TI11G



KAR22003-02



Performance Verification Data Side Impact Dummy (SID) Left Side Pelvis Lateral Impact

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: PI11G

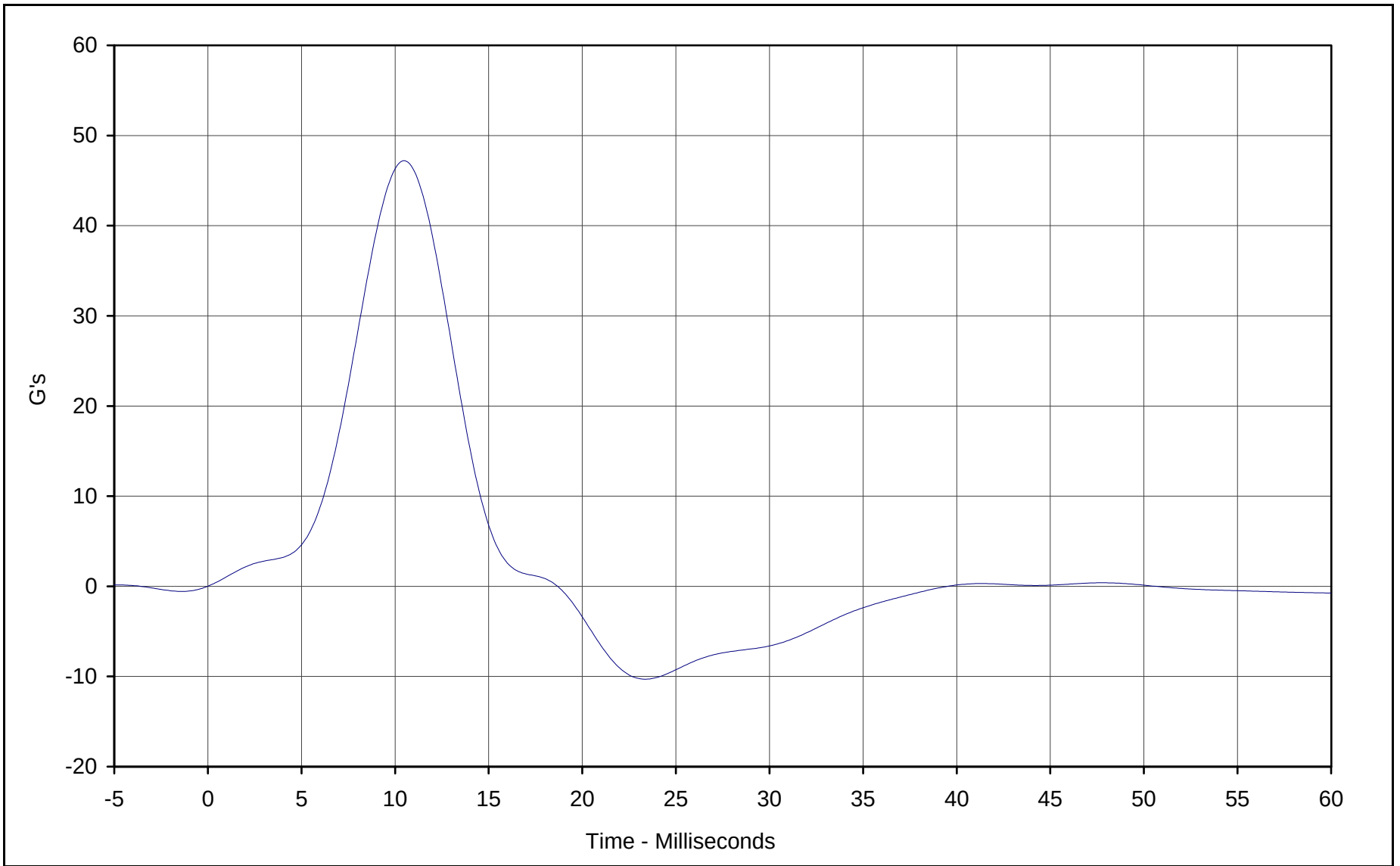
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Pelvis Acceleration	G's	40.0 to 60.0	47.2	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0 Msec.	6.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 21, 2001

Test Date

C-31



Curve Description: Pelvis Y Axis Acceleration
Maximum Value: 47.2 at 10.5 Milliseconds
Minimum Value: -10.3 at 23.3 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/21/01

Test Program: SID Left Side Pelvis Lateral Impact
Test Information: SID S/N: 274 Test I.D.: PI11G



KAR22003-02



Performance Verification Data Side Impact Dummy (SID) Abdominal Compression Test

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: AB11G

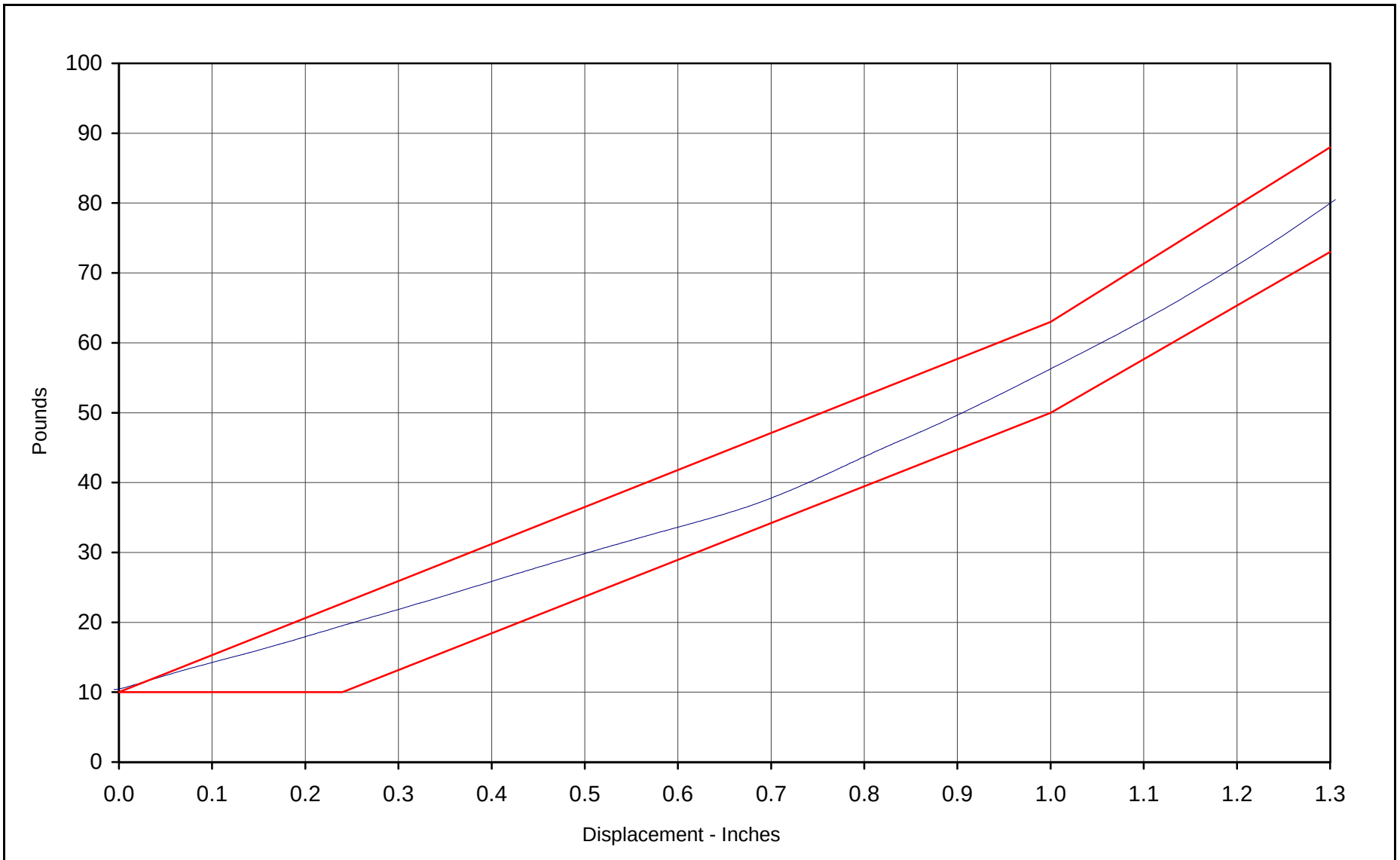
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Force at 0.5 Inches of Displacement	Pounds	23.0 to 36.0	29.8	Pass
Force at 0.75 Inches of Displacement	Pounds	36.0 to 50.0	40.5	Pass
Force at 1.0 Inches of Displacement	Pounds	50.0 to 63.0	56.1	Pass
Force at 1.3 Inches of Displacement	Pounds	73.0 to 88.0	79.4	Pass
Overall Test Results				Pass

Laboratory Technician

November 21, 2001

Test Date

C-33

Curve Description: Abdomen Force vs. DisplacementForce at 0.5 In.: 29.8 PoundsForce at 0.75 In.: 40.5 PoundsForce at 1.0 In.: 56.1 PoundsForce at 1.3 In.: 79.4 PoundsDate of Test: 11/21/01Test Program: SID Abdominal CompressionTest Information: SID S/N: 274 Test I.D.: AB11G

KAR22003-02



Performance Verification Data Side Impact Dummy (SID) Head Drop Calibration

ATD Serial No.: 274

Part Serial No.: N/A

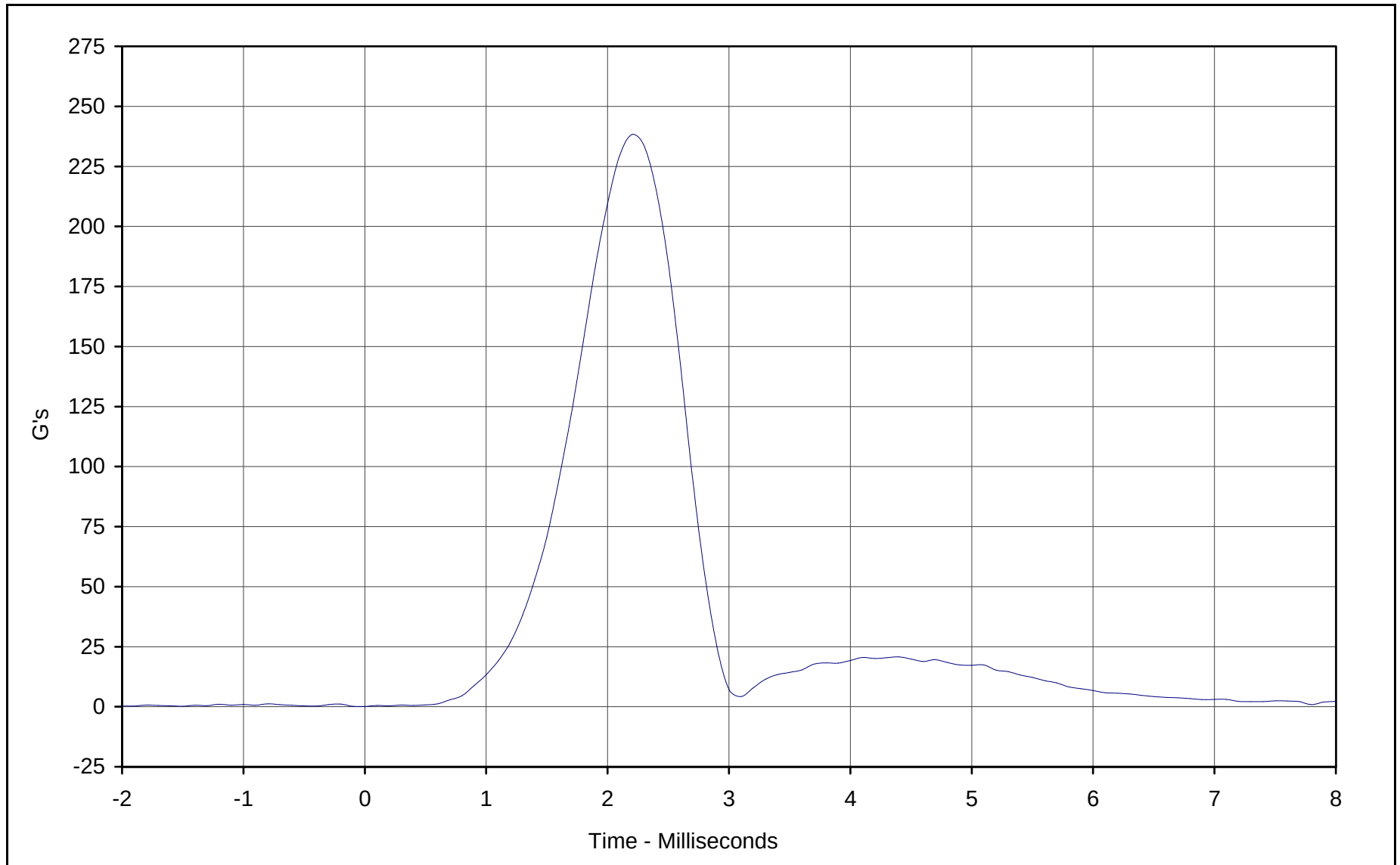
Test I.D.: HD11G

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	210.0 to 260.0	238.3	Pass
Peak Lateral Acceleration	G's	≤10.0	5.3	Pass
Time Above 100 G's	Msec.	0.9 to 1.5	1.0	Pass
Is Resultant Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 21, 2001

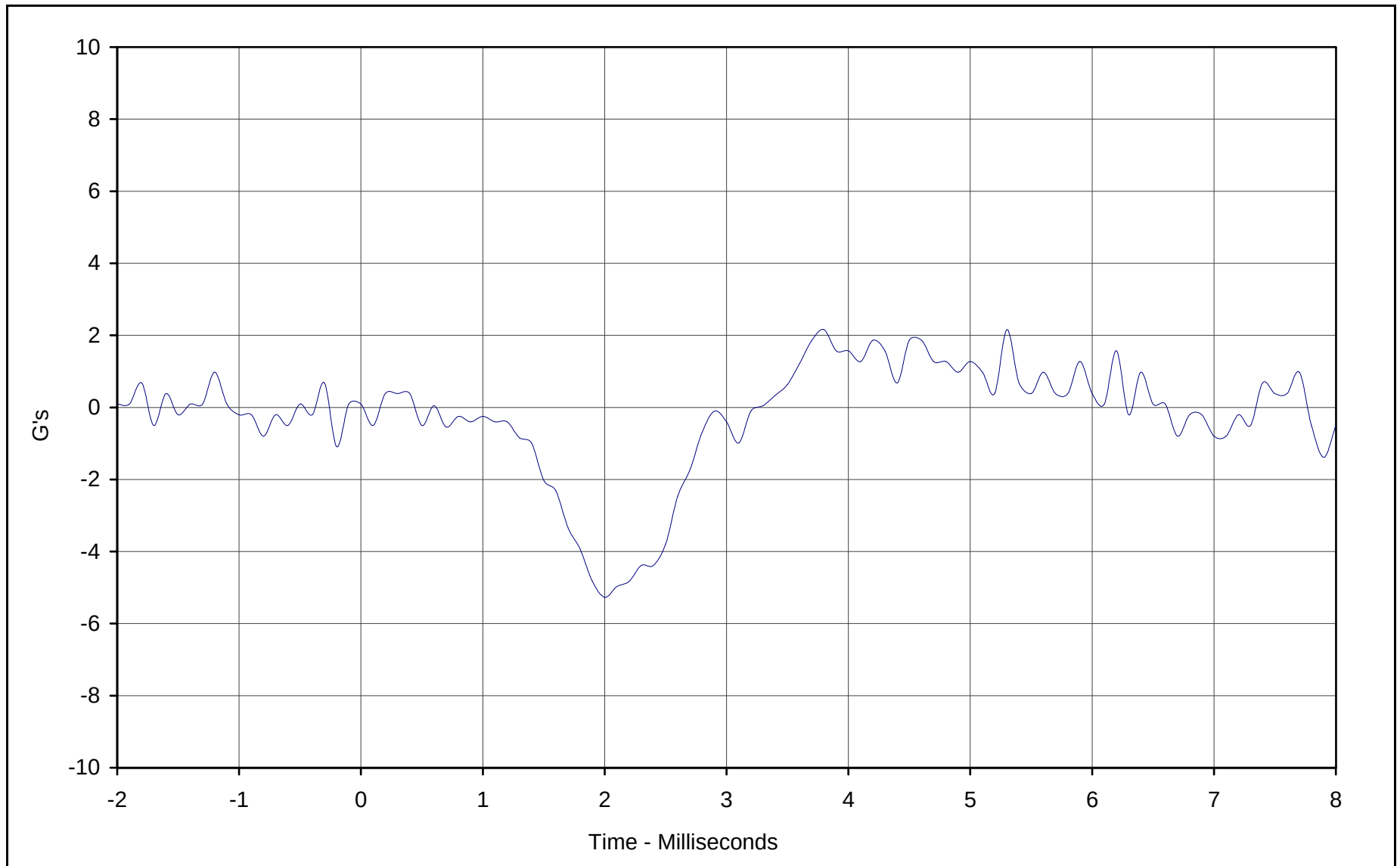
Test Date



Curve Description: Head Resultant Acceleration
Maximum Value: 238.3 at 2.2 Milliseconds
Minimum Value: 0.1 at 0.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/21/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 274 Test I.D.: HD11G





Curve Description: Head Y Axis Acceleration
Maximum Value: 2.2 at 3.8 Milliseconds
Minimum Value: -5.3 at 2 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/21/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 274 Test I.D.: HD11G





Performance Verification Data Side Impact Dummy (SID) External Dimensions

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	900	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	510	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	520	Pass
KV- Knee Pivot From Floor	mm	490 to 505	500	Pass
HW- Hip Width	mm	356 to 391	385	Pass
Overall Test Results				Pass

Laboratory Technician

November 21, 2001
Test Date



Performance Verification Data Side Impact Dummy (SID) Thorax Lateral Impact

ATD Serial No.: 275

Part Serial No.: N/A

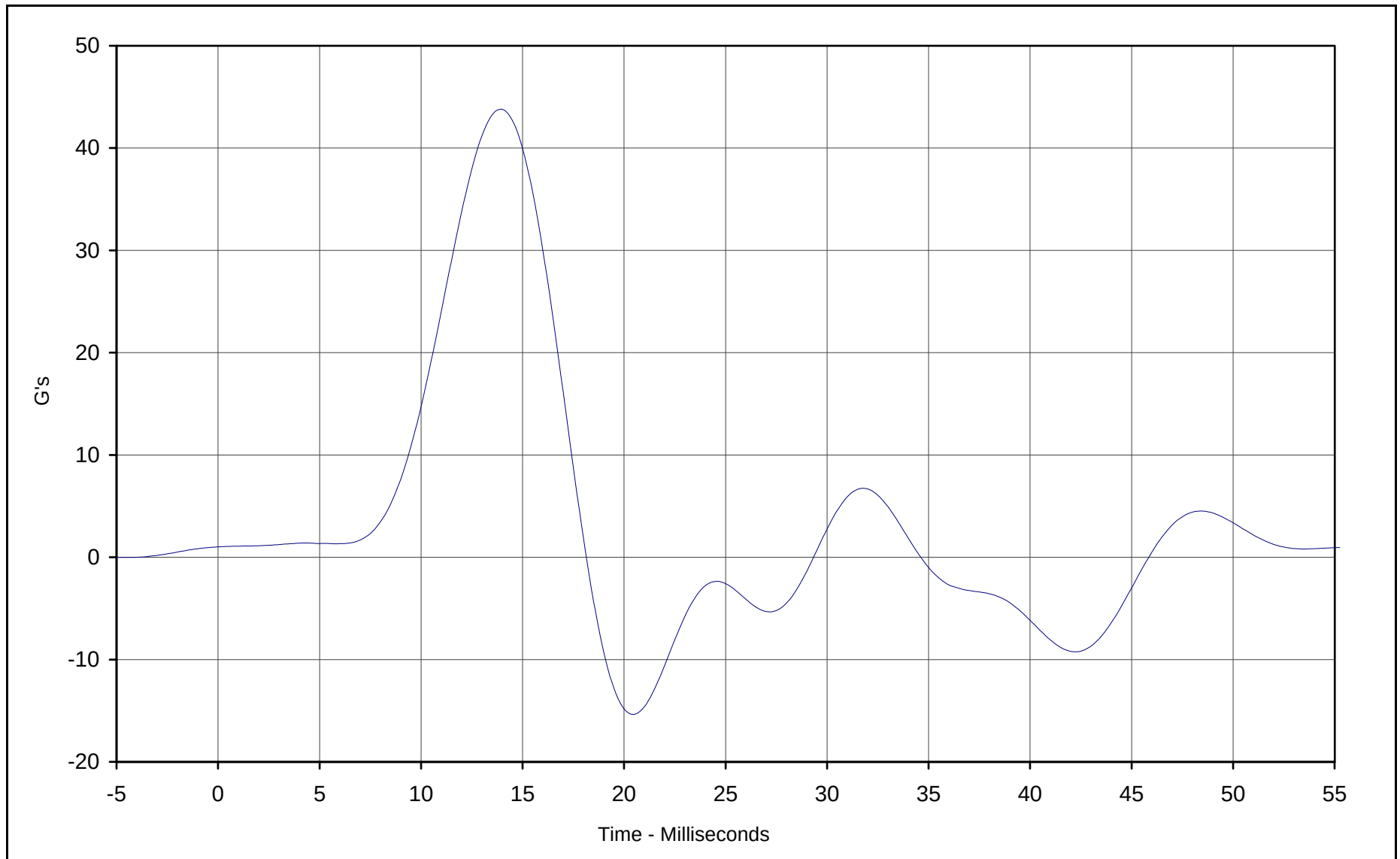
Test I.D.: TI11H

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Left Upper Rib Acceleration	G's	37.0 to 46.0	43.8	Pass
Left Lower Rib Acceleration	G's	37.0 to 46.0	42.9	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	20.0	Pass
Overall Test Results				Pass

Laboratory Technician

November 21, 2001

Test Date



Curve Description: Left Upper Rib Y Acceleration

Maximum Value: 43.8 at 13.9 Milliseconds

Minimum Value: -15.4 at 20.4 Milliseconds

SAE Filter Class: FIR 100

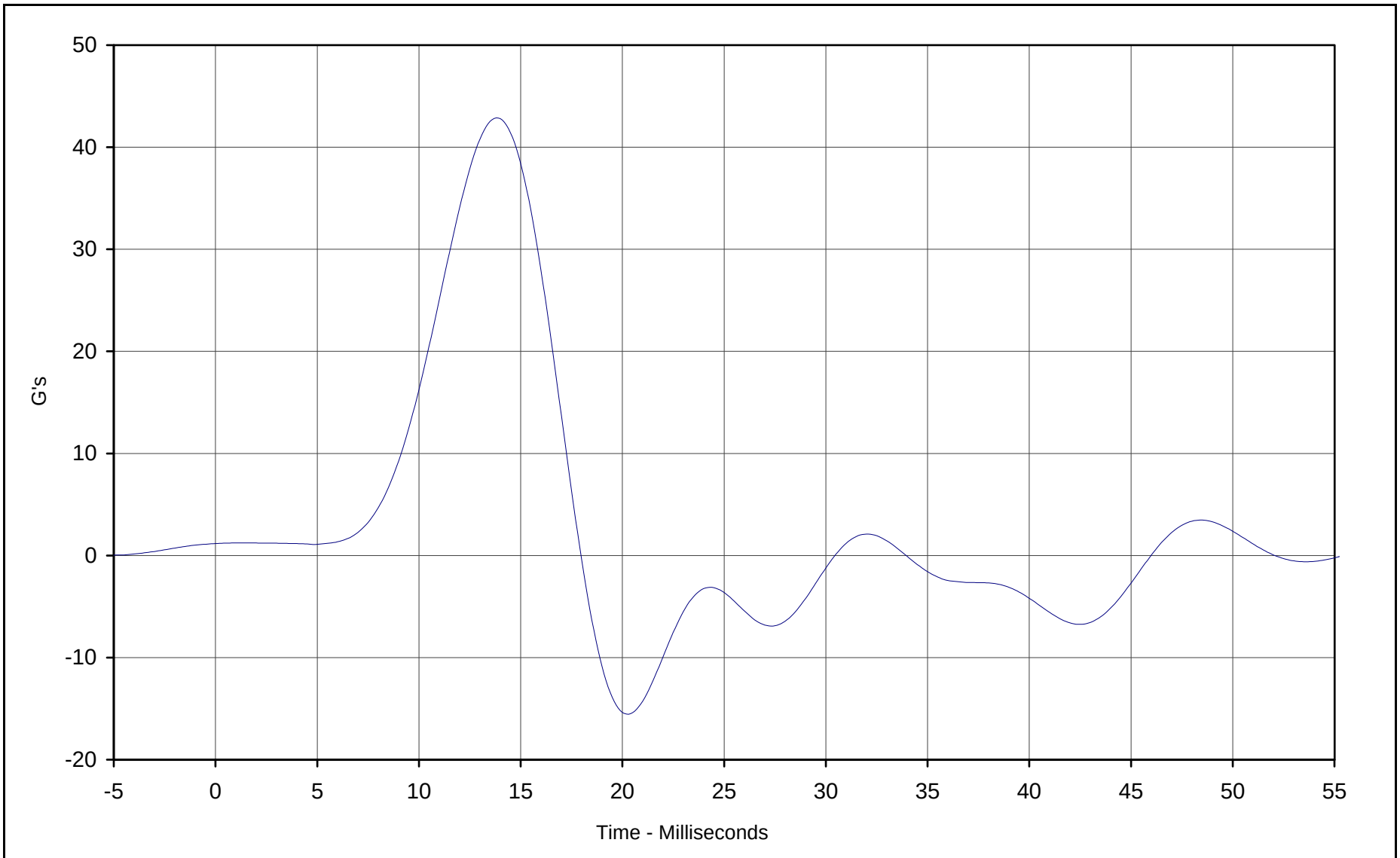
Date of Test: 11/21/01

Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 275 Test I.D.: TI11H



C-40



Curve Description: Left Lower Rib Y Acceleration

Maximum Value: 42.9 at 13.8 Milliseconds

Minimum Value: -15.5 at 20.3 Milliseconds

SAE Filter Class: FIR 100

Date of Test: 11/21/01

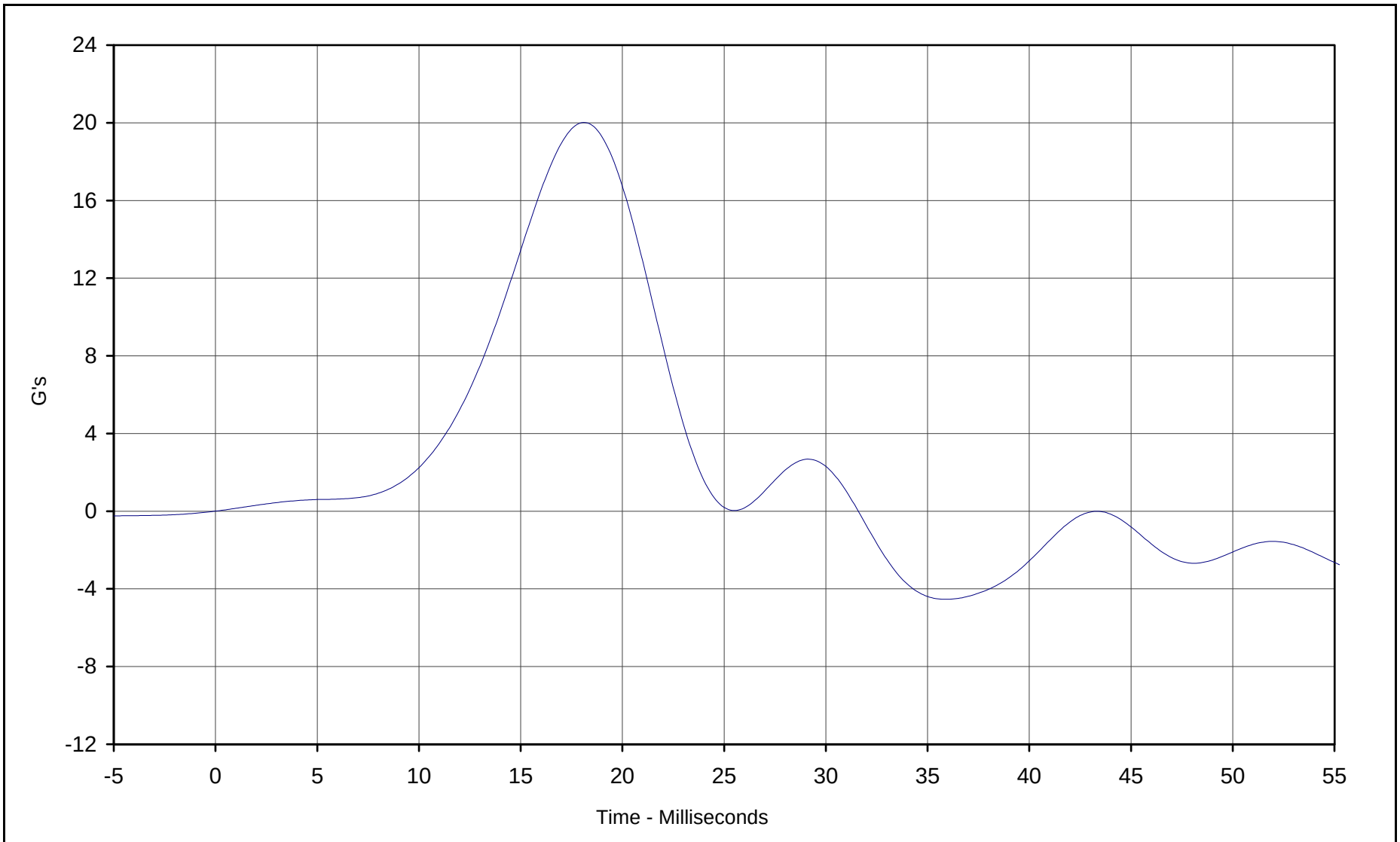
Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 275 Test I.D.: TI11H



KAR22003-02

C-41



Curve Description: Lower Spine Y Acceleration
Maximum Value: 20.0 at 18.1 Milliseconds
Minimum Value: -4.5 at 35.9 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/21/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 275 Test I.D.: TI11H



KAR22003-02



Performance Verification Data Side Impact Dummy (SID) Left Side Pelvis Lateral Impact

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: PI11H

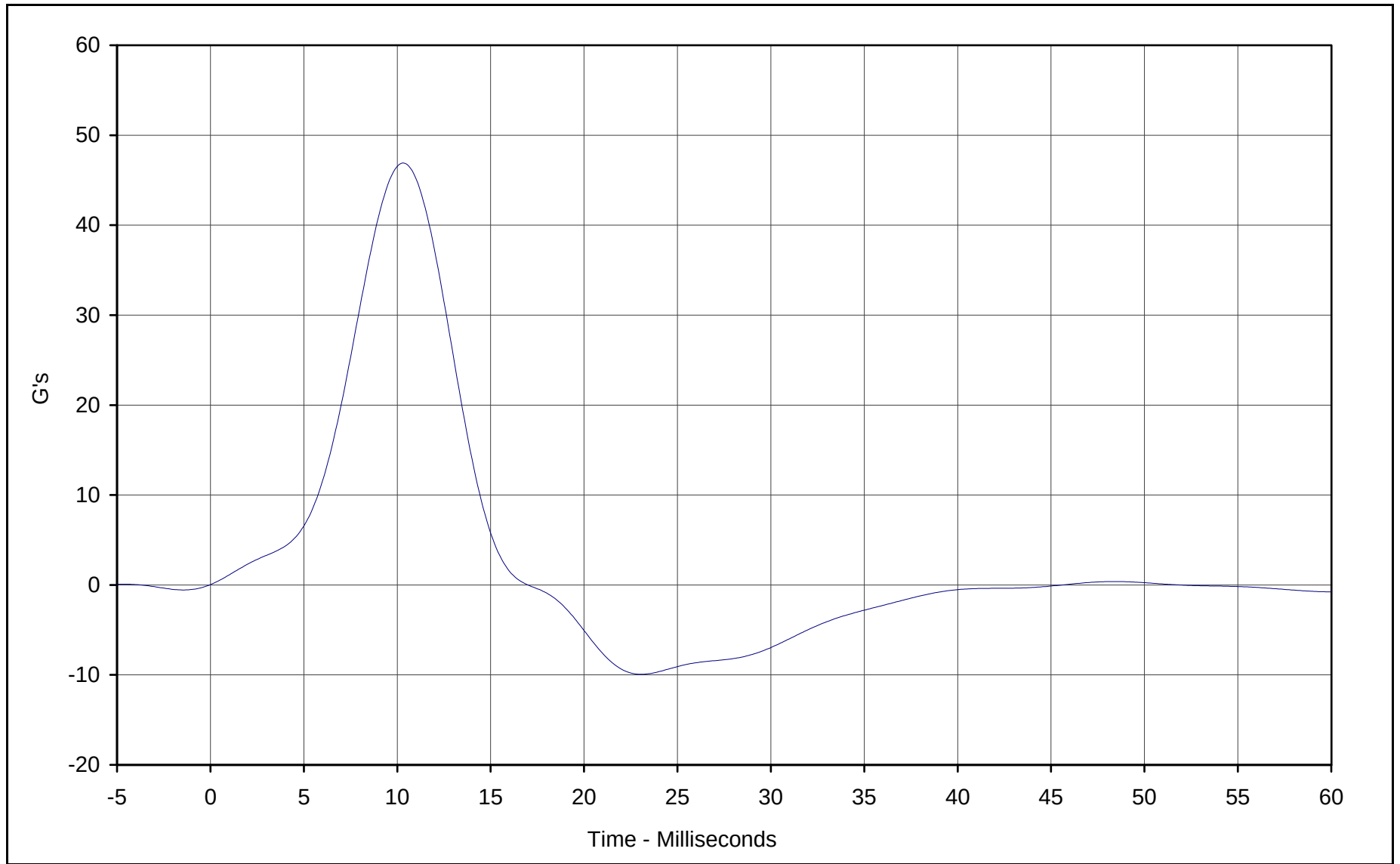
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Pelvis Acceleration	G's	40.0 to 60.0	46.9	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0 Msec.	6.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 21, 2001

Test Date

C-43



Curve Description: Pelvis Y Axis Acceleration
Maximum Value: 46.9 at 10.3 Milliseconds
Minimum Value: -9.9 at 23.1 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/21/01

Test Program: SID Left Side Pelvis Lateral Impact
Test Information: SID S/N: 275 Test I.D.: PI11H



KAR22003-02



Performance Verification Data Side Impact Dummy (SID) Abdominal Compression Test

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: AB11H

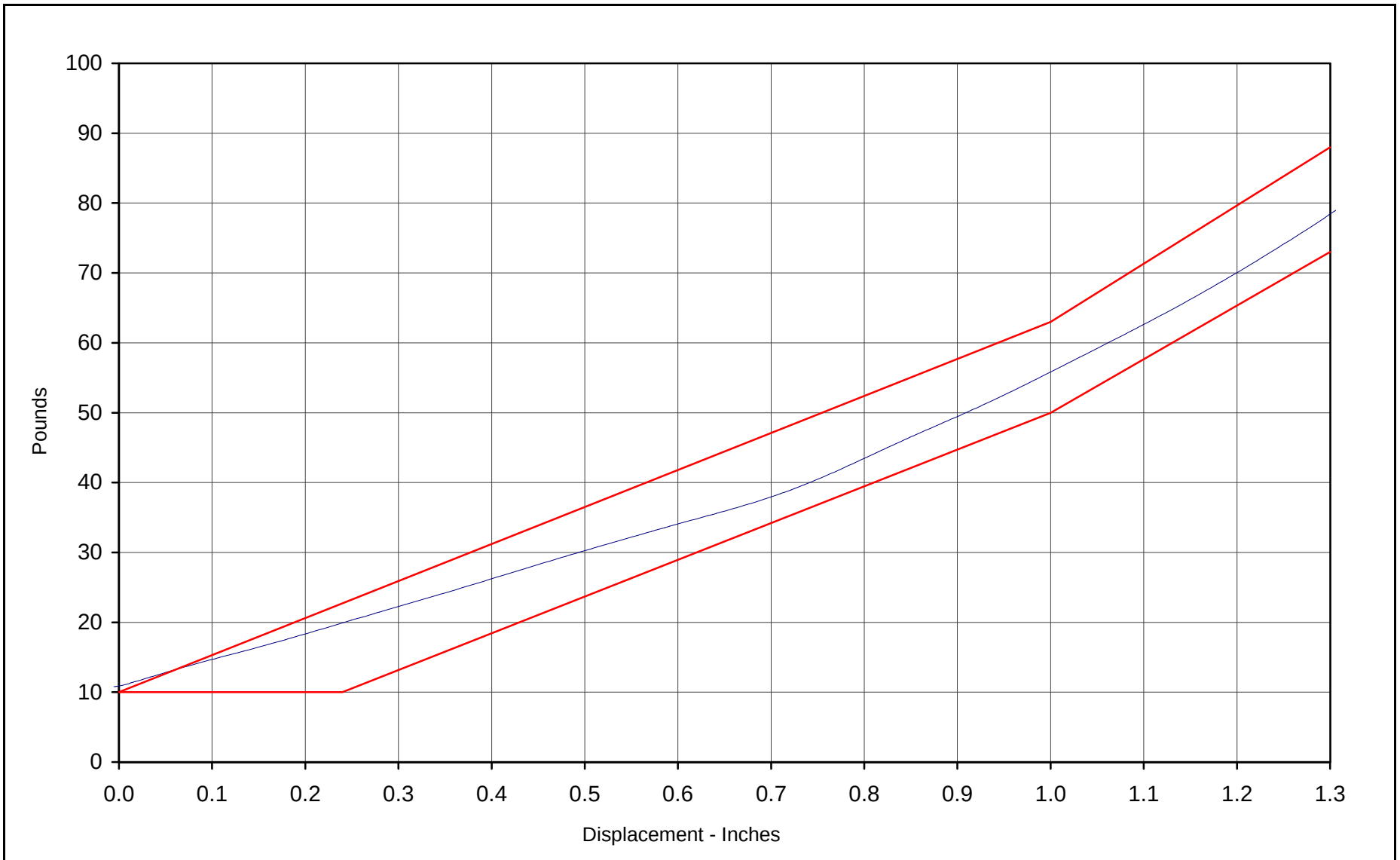
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Force at 0.5 Inches of Displacement	Pounds	23.0 to 36.0	30.1	Pass
Force at 0.75 Inches of Displacement	Pounds	36.0 to 50.0	40.5	Pass
Force at 1.0 Inches of Displacement	Pounds	50.0 to 63.0	55.6	Pass
Force at 1.3 Inches of Displacement	Pounds	73.0 to 88.0	78.3	Pass
Overall Test Results				Pass

Laboratory Technician

November 21, 2001

Test Date

C-45



Curve Description: Abdomen Force vs. Displacement

Force at 0.5 In.: 30.1 Pounds

Force at 0.75 In.: 40.5 Pounds

Force at 1.0 In.: 55.6 Pounds

Force at 1.3 In.: 78.3 Pounds

Date of Test: 11/21/01

Test Program: SID Abdominal Compression

Test Information: SID S/N: 275 Test I.D.: AB11H



KARR22003-02



Performance Verification Data Side Impact Dummy (SID) Head Drop Calibration

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: HD11H

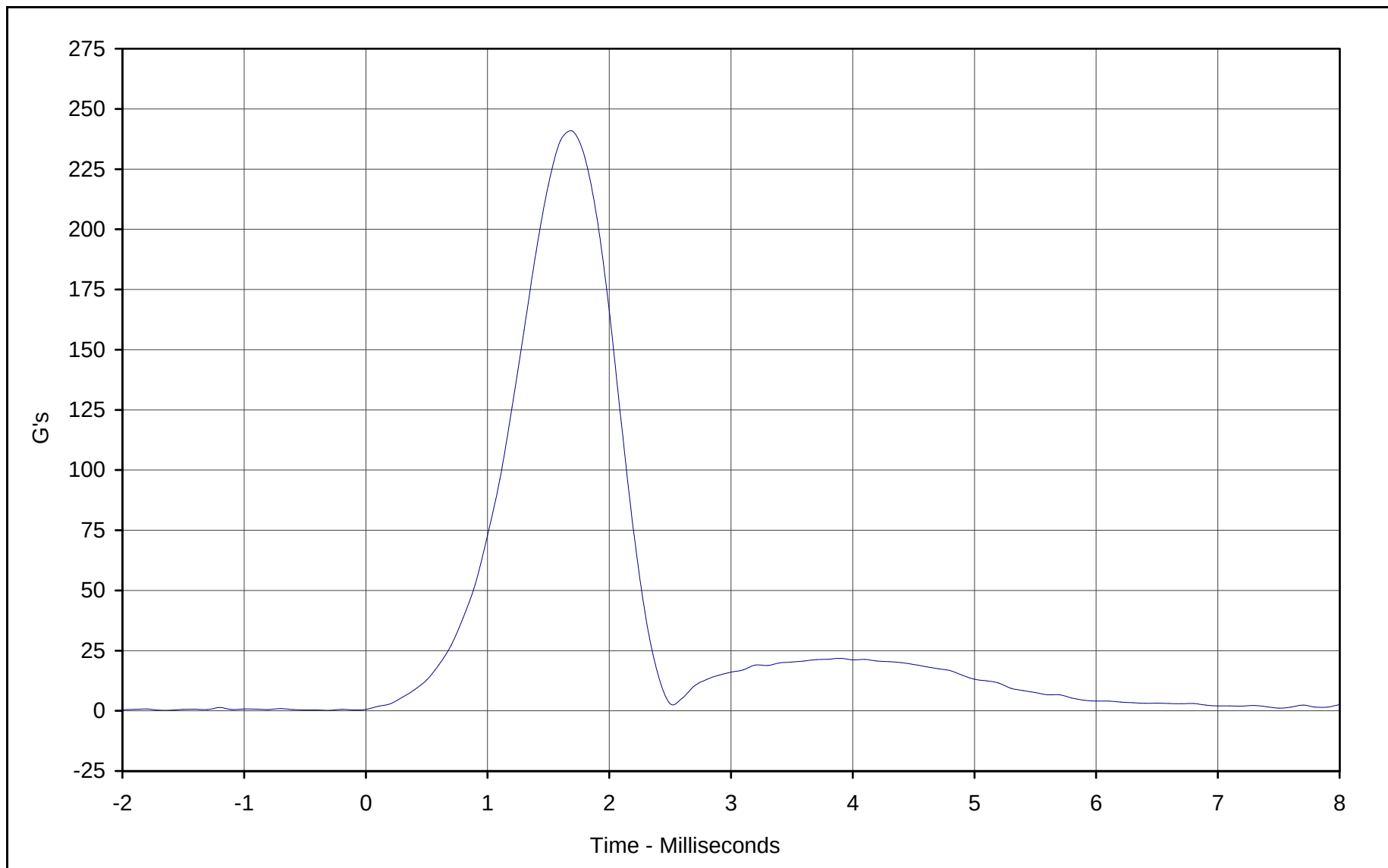
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	210.0 to 260.0	240.6	Pass
Peak Lateral Acceleration	G's	≤10.0	3.8	Pass
Time Above 100 G's	Msec.	0.9 to 1.5	1.0	Pass
Is Resultant Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 21, 2001

Test Date

C-47



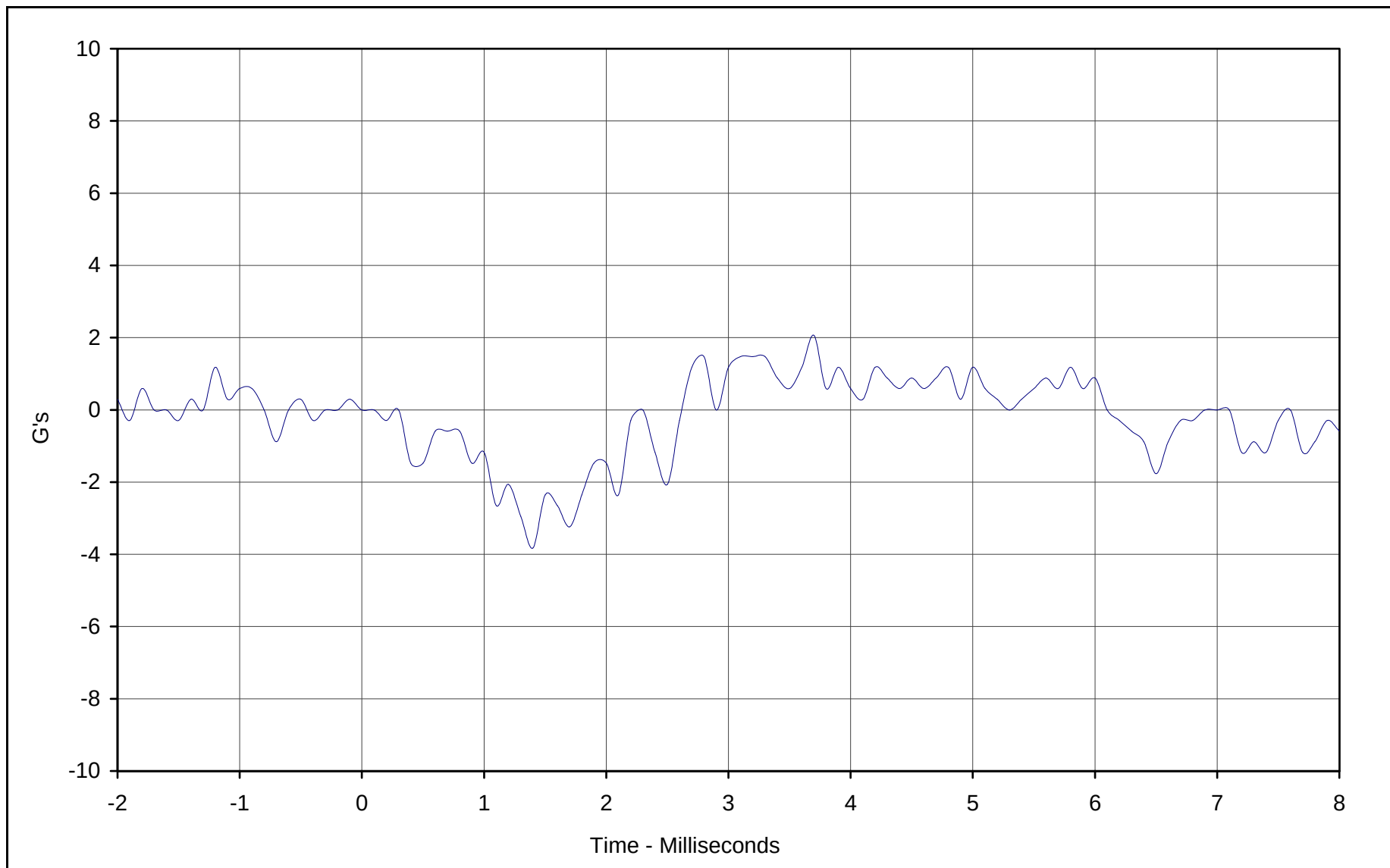
Curve Description: Head Resultant Acceleration
Maximum Value: 240.6 at 1.7 Milliseconds
Minimum Value: 0.6 at 0.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/21/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 275 Test I.D.: HD11H



KAR22003-02

C-48



Curve Description: Head Y Axis Acceleration
Maximum Value: 2.1 at 3.7 Milliseconds
Minimum Value: -3.8 at 1.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/21/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 275 Test I.D.: HD11H



KAR22003-02

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

55/28 km/h Side Impact NCAP
Instrumentation Data Channel Assignments
Driver S.I.D. Serial Number 274
11/20/01
2002 Toyota Rav4 4WD SUV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	Head CG	X	KEAC086	Accel.,1/2 bridge	Endevco	7264-2000X	G
2	Head CG	Y	KEAC087	Accel.,1/2 bridge	Endevco	7264-2000Y	G
3	Head CG	Z	KEAC088	Accel.,1/2 bridge	Endevco	7264-2000Z	G
4	Upper Rib Primary	Y	KEAC070	Accel.,1/2 bridge	Endevco	7264-2000X	G
5	Lower Rib, Primary	Y	KEAC071	Accel.,1/2 bridge	Endevco	7264-2000Y	G
6	Lower Spine, Primary	Y	KEAC072	Accel.,1/2 bridge	Endevco	7264-2000Z	G
7	Pelvis, Primary	Y	KEAC090	Accel.,Full bridge	Endevco	7264-2000X	G
8	Upper Rib Redundant	Y	KEAC076	Accel.,1/2 bridge	Endevco	7264-2000X	G
9	Lower Rib, Redundant	Y	KEAC077	Accel.,1/2 bridge	Endevco	7264-2000Y	G
10	Lower Spine, Redundant	Y	KEAC078	Accel.,1/2 bridge	Endevco	7264-2000Z	G
11	Pelvis, Redundant	Y	KEAC089	Accel.,1/2 bridge	Endevco	7264-2000X	G
12	Thorax Contact	N/A	T0	Contact Switch	Tapeswitch	8 oz. Yellow	%
13	Pelvis Contact	N/A	T0	Contact Switch	Tapeswitch	8 oz. Yellow	%

55/28 km/h Side Impact NCAP
Instrumentation Data Channel Assignments
Passenger S.I.D. Serial Number 275
11/20/01
2002 Toyota Rav4 4WD SUV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
14	Head CG	X	KEAC069	Accel.,1/2 bridge	Endevco	7264-2000X	G
15	Head CG	Y	KEAC080	Accel.,1/2 bridge	Endevco	7264-2000Y	G
16	Head CG	Z	KEAC082	Accel.,1/2 bridge	Endevco	7264-2000Z	G
17	Upper Rib Primary	Y	KEAC066	Accel.,1/2 bridge	Endevco	7264-2000X	G
18	Lower Rib, Primary	Y	KEAC067	Accel.,1/2 bridge	Endevco	7264-2000Y	G
19	Lower Spine, Primary	Y	KEAC068	Accel.,1/2 bridge	Endevco	7264-2000Z	G
20	Pelvis, Primary	Y	KEAC079	Accel.,1/2 bridge	Endevco	7264-2000X	G
21	Upper Rib Redundant	Y	KEAC073	Accel.,1/2 bridge	Endevco	7264-2000X	G
22	Lower Rib, Redundant	Y	KEAC074	Accel.,1/2 bridge	Endevco	7264-2000Y	G
23	Lower Spine, Redundant	Y	KEAC075	Accel.,1/2 bridge	Endevco	7264-2000Z	G
24	Pelvis, Redundant	Y	KEAC081	Accel.,1/2 bridge	Endevco	7264-2000X	G
25	Thorax Contact	Y	T0	Contact Switch	Tapeswitch	8 oz. Yellow	%
26	Pelvis Contact	Y	T0	Contact Switch	Tapeswitch	8 oz. Yellow	%

**55/28 km/h Side Impact NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers**

11/20/01

2002 Toyota Rav4 4WD SUV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
27	Right at Sill Front Seat	X	KETX2A	Accel., Triax	I.C. Sensor	3031-200	G
28	Right at Sill Front Seat	Y	KETX2B	Accel., Triax	I.C. Sensor	3031-200	G
29	Right at Sill Front Seat	Z	KETX2C	Accel., Triax	I.C. Sensor	3031-200	G
30	Right at Sill Rear Seat	X	KETX3A	Accel., Triax	I.C. Sensor	3031-500	G
31	Right at Sill Rear Seat	Y	KETX3B	Accel., Triax	I.C. Sensor	3031-500	G
32	Right at Sill Rear Seat	Z	KETX3C	Accel., Triax	I.C. Sensor	3031-500	G
33	Rear Floorpan Above Axle	X	KETX4A	Accel., Triax	I.C. Sensor	3031-500	G
34	Rear Floorpan Above Axle	Y	KETX4B	Accel., Triax	I.C. Sensor	3031-500	G
35	Rear Floorpan Above Axle	Z	KETX4C	Accel., Triax	I.C. Sensor	3031-500	G
36	Left Sill at Rear Door	Y	KEVA012	Accel., Vehicle block	I.C. Sensor	3031-500	G
37	Left Sill at Front Door	Y	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
38	Left Front Door Centerline	Y	ICST004X	Accel., Triax	I.C. Sensor	3031-500	G
39	Rear Occupant Compartment	Y	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
40	Left Front Door Mid-Rear	Y	ICST004Y	Accel., Triax	I.C. Sensor	3031-500	G
41	Left Front Door Upper Centerline	Y	ICST004Z	Accel., Triax	I.C. Sensor	3031-500	G
42	Rear Door Mid-Rear	Y	ICST005X	Accel., Triax	I.C. Sensor	3031-500	G
43	Rear Door Upper Centerline	Y	ICST005Y	Accel., Triax	I.C. Sensor	3031-500	G
44	B-Post Lower	Y	KEBX2A	Accel., Biax	I.C. Sensor	3031-500	G
45	B-Post Middle	Y	KEBX2B	Accel., Biax	I.C. Sensor	3031-500	G
46	A-Post Lower	Y	KEBX1A	Accel., Biax	I.C. Sensor	3031-200	G
47	A-Post Middle	Y	KEBX1B	Accel., Biax	I.C. Sensor	3031-500	G
48	Front Seat Track	Y	KEIC008Y	Single	I.C. Sensor	3031-500	G
49	Rear Seat Structure	Y	N/A	N/A	N/A	N/A	N/A
50	Vehicle CG	X	KETX2A	Accel., Triax	I.C. Sensor	3031-200	G
51	Vehicle CG	Y	KETX2B	Accel., Triax	I.C. Sensor	3031-200	G
52	Vehicle CG	Z	KETX2C	Accel., Triax	I.C. Sensor	3031-200	G

55/28 km/h Side Impact NCAP
Instrumentation Data Channel Assignments
Moving Deformable Barrier
11/20/01
2002 Toyota Rav4 4WD SUV

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
53	MDB CG	X	ICST001X	Accel., Triax	I.C. Sensor	3031-100	G
54	MDB CG	Y	ICST001Y	Accel., Triax	I.C. Sensor	3031-100	G
55	MDB CG	Z	ICST001Z	Accel., Triax	I.C. Sensor	3031-100	G
56	MDB Rear Centerline	X	ICST002X	Accel., Biax	I.C. Sensor	3031-100	G
57	MDB Rear Centerline	Y	ICST002Y	Accel., Biax	I.C. Sensor	3031-100	G
58	Right Bumper Contact	N/A	T0	Contact Switch	Tapeswitch	40 oz. Grey	%