V2767

REPORT NUMBER: CAL-98-20

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

TABC, INC.
1998 TOYOTA TACOMA 4X4 V6 XTRACAB
PICKUP

NHTSA NUMBER: MW5101

CALSPAN TEST NUMBER: 8413-19

CALSPAN CORPORATION
TRANSPORTATION SCIENCE CENTER
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January 28, 1998

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
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FINAL REPORT ACCEPTANCE BY OCS:

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Manager, New Car Assessment Program (NCAP)
NHTSA, Office of Crashworthiness Standards

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Date of Report Acceptance

_____

COTR, New Car Assessment Program (NCAP)
NHTSA, Office of Crashworthiness Standards

_____

Date of Report Acceptance

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15. *Supplementary Notes*		

16. *Abstract*

A frontal barrier test of a 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup was performed at Calspan Corporation crash test facility in Buffalo, New York, on January 28, 1998.

The impact velocity was 55.7 kph and the temperature at the barrier face was 20°C. The maximum post-test vehicle crush was 515.0 mm. The test vehicle was equipped with a 3-point restraint system and supplemental dual front next generation depowered airbags at each outboard seating position. The passenger side airbag was equipped with an airbag deactivation switch.

With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appear to comply with head, chest and femur requirements.

17. *Key Words* 56 kph Frontal Barrier Impact test New Car Assessment Program (NCAP)	18. *Distribution Statement* Copies of this report are available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, DC 20590

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Section 1

PURPOSE AND SUMMARY OF TEST MW5101

PURPOSE

This 55.7 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-96-D-02010. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 55.7 kph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test procedure.

SUMMARY

A barrier was impacted by a 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup at a velocity of 55.7 kph. The test was performed at the Calspan Corporation on January 28, 1998. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by 1 real-time camera and 16 high-speed cameras. Camera locations and other pertinent camera information can be found in this report.

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

Both ATDs were fully instrumented with head, chest, and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 061) was used in two prior tests (MW0111 and MW5109) where it did not exceed FMVSS 208 injury criteria. The right-front passenger (position 2) ATD (Serial No. 245) was used in one previous test (MW5109) to this test where it did not exceed FMVSS 208 injury criteria. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 97 channels of data were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Load Cell Barrier data was not requested for this test.

The driver's HIC was 731.38. The maximum chest deceleration over 3 milliseconds was 51.444 g's and maximum chest deflection was 48.2 mm. Femur loads were -6258.7 Newtons on the left and -3774.6 Newtons on the right.

The right front passenger's HIC was 682.62. Maximum chest deceleration over 3 milliseconds was 54.609 g's and maximum chest deflection was 47.2 mm. Femur loads were -5050.3 Newtons on the left and -2999.9 Newtons on the right.

Pos #2 Belt Elongation has a spike in the data at 70 ms.. The actual elongation is approximately 50 mm/M.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No. : MW5101 Test Mode : 56 kph Frontal Barrier

Test Date : January 28, 1998 Time: 13:40 Temperature : 20 °C

Vehicle Make/Model/Body Style : 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup

Vehicle Test Weight : 1913.5 kg

Vehicle/Barrier Impact Angle : 0 °

Impact Velocity : 55.7 kph

Maximum Static Crush : 515.0 mm

Vehicle Rebound : 304.0 mm

DUMMIES:	DRIVER	PASSENGER
Type :	572E	572E
Restraint System :	Airbag, Seatbelt, Knee Bolster	Airbag, seatbelt, Knee Bolster

Number of Data Channels : 97

Number of Cameras : 1 Real Time

16 High Speed

DOOR OPENING DATA : Closed/Operable - Left Front

Closed/Operable - Right Front

Front Seat(s) Data :	DRIVER	PASSENGER
Seat Track Failure :(mm of shift)	0	0
Seat Back Failure :	None	None

VISIBLE DUMMY CONTACT POINTS :	DRIVER	PASSENGER
Head :	Face to top center of airbag; Back of head to the left center of the headrest.	Face to top center of airbag; Back of head to bottom right side of headrest.
Abdomen :	None	None
Chest	Airbag	Airbag
Knees	Knee Bolster	Knee Bolster

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup

NHTSA No. : MW5101 ; VIN: 4TAWN72N9WZ078578 ; Color : Black

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

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

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

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

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

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

Date Received : 01/09/98 ; Odometer Reading 18 km

Selling Dealer : Northtown World Auto Centre

& Address: 3900 Sheridan Drive Amherst, New York 14226

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : TABC, Inc.

Date of Manufacture 12/97

GVWR : 2313 kg; GAWR: 1202 kg FRONT; 1270 kg REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 303 kpa FRONT

303 kpa REAR

Recommended Tire Size : P225/75R15

* Recommended Cold Tire Pressure : 241 kpa FRONT; 241 kpa REAR

Size of Tires on Test Vehicle: P265/75R15 ; Manufacturer: Firestone

Vehicle Capacity Data :

Type of Front Seats: - Bench; X Bucket; - Split Bench

Number of Occupants: 2 Front; 2 Rear; 4 Total

Vehicle Capacity Weight (VCW) = 680 kg

No. of Occupants x 68 kg = 272 kg

Rated Cargo/Luggage Weight (RCLW) = 408 kg

*Tire pressure used for test

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

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

Right Front =	482.0	kg	Right Rear =	314.0	kg
Left Front =	504.0	kg	Left Rear =	333.0	kg
TOTAL FRONT =	986.0	kg	TOTAL REAR =	647.0	kg

TOTAL DELIVERED WEIGHT = 1,633.0 kg

% of Total Front of Vehicle Weight = 60.4 % of Total Rear Weight = 39.6 %

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight (UDW) =	1,633.0	kg
Rated Cargo/Luggage Weight (RCLW) =	136.0	kg
Weight of 2 p.572 Dummies @ 76 each =	152	kg
TARGET TEST WEIGHT =	1,921.0	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 129 KG OF CARGO WEIGHT:

Right Front =	513.0	kg	Right Rear =	418.5	kg
Left Front =	541.5	kg	Left Rear =	440.5	kg
TOTAL FRONT =	1,054.5	kg	TOTAL REAR =	859.0	kg

TOTAL TEST WEIGHT = 1,913.5 kg

% of Total Front Weight = 55.1 % % of Total Rear Weight = 44.9 %

Weight of Ballast Secured in Vehicle Trunk Area = 39.5 kg

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED :	RF	926	LF	920	RR	926	LR 924
FULLY LOADED :	RF	914	LF	906	RR	894	LR 886
AS TESTED :	RF	920	LF	909	RR	896	LR 890

Vehicle's Wheel Base : 3120 mm

Location of Vehicle's C.G. : 1,400.6 mm rearward of front wheel center.

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual = 68.1 liters

Usable Capacity Figure Furnished by COTR = 68.1 liters

Test Volume Range (92 to 94% of Usable Capacity) = 62.6 to 64.0 liters

ACTUAL TEST VOLUME= 63.0 liters (with entire fuel system filled)

Test Fluid Type: Stoddard Solution ; Spec. Grav. = 0.764

Kinematic Viscosity = 0.96 centistokes; Color = Orange

Type of Fuel Pump: Electric- X ; Mechanical- -

Does Electric Pump operate with ignition switch "ON" & engine "OFF" Yes- X No- -

Details of Fuel System Filler - Left Side, ahead of rear axle; Tank - Left side, ahead of rear axle; Lines - Inside left frame rail.

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°

Test Date : January 28, 1998 Time: 13:40 Temperature: 10 °C

Vehicle NHTSA No. : MW5101

Required Impact Velocity Range : 55.7 to 57.1 kph

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

Trap No. 1 = 55.7 kph; Trap No. 2 = 55.7 kph

Distance from vehicle to barrier : (1) entering trap = 813 mm

(2) exiting trap = 305 mm

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

Vehicle Length:

Pre-Test	Right =	5050	; C/L =	5130	; Left =	5055
Post-Test	Right =	4540	; C/L =	4615	; Left =	4600
Crush	Right =	510.0	; C/L =	515.0	; Left =	455.0
AVERAGE	=	493.3	mm			

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

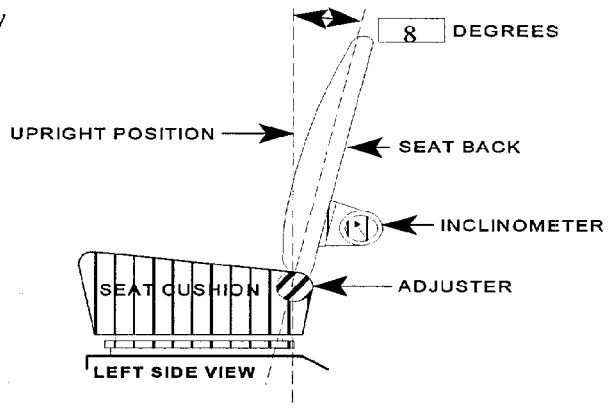
	Right =	310.0	; C/L =	280.0	; Left =	322.0
AVERAGE	=	304.0	mm			

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1998 Vehicle Model: Toyota Tacoma 4x4 Body Style : Pickup

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



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat : 8°

Measurement instructions : Recline seat the fifth notch rearward from the most upright position.

Seat back angle for passenger's seat : 8°

Measurement instructions : Same as driver's seat.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : There are fourteen detents numbered from 0 to 13. The seat was placed at detent number 7.

Positioning of the passenger's seat (if applicable) : Same as driver's seat.

3. Fuel Tank Capacity Data

3.1

A. "Usable Capacity" of the standard equipment fuel tank is 68.1 liters

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

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 68.1 liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 63.0 liters

3.3 Is vehicle equipped with electric fuel pump? Yes- X ; No- -

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

The fuel pump operates only when the engine is running.

4. STEERING COLUMN ADJUSTMENTS :

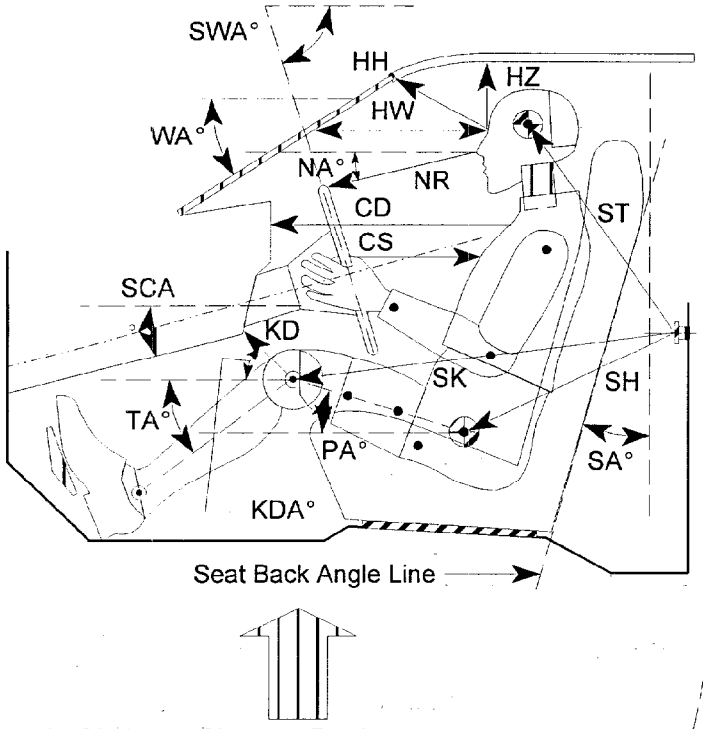
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine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

Operational Instructions: There are five total detents. The steering column was placed in the fourth detent from the top.

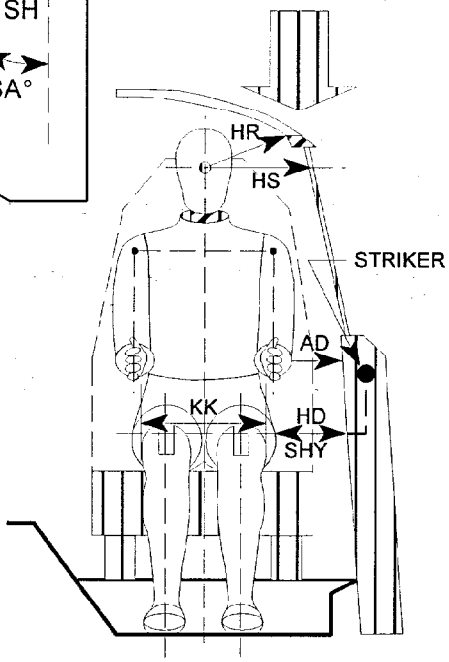
5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: There were five positions. The anchorage was placed at the second position from the top.

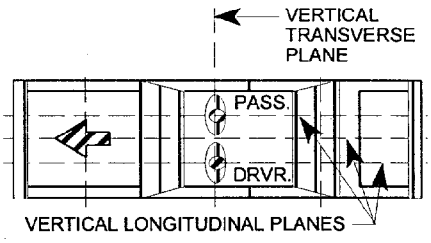
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



AD - Arm to Door
HD - H-Point to Door
HR - Head to Side Header
HS - Head to Side Window
KK - Knee to Knee
SHY- Striker to H-Point (Y Direction)



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



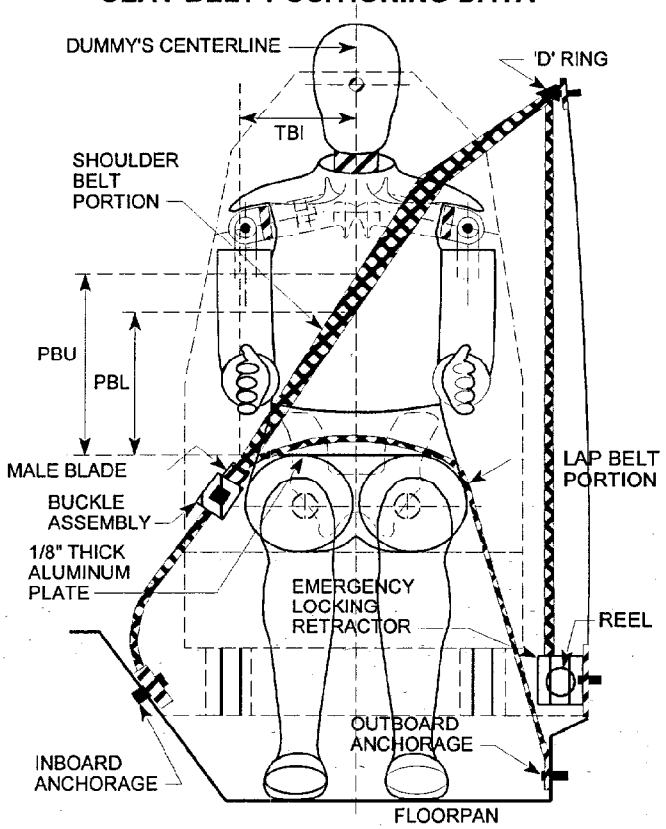
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE

	DRIVER (Serial #061)			PASS. (Serial # 245)		
WA°	38.1 deg.			N/A		
SWA°	25 deg.			N/A		
SCA°	65 deg.			N/A		
SA°	8 deg.			8 deg.		
HZ	197			202		
HH	382			381		
HW	570			570		
HR	219			228		
NR	393	Angle	-11 deg.	N/A		
CD	560			534		
CS	298			N/A		
RA	202			N/A		
KDL	210	Angle (KDA)	26 deg.	175		
KDR	210			180	Angle (KDA)	42 deg.
PA°	22.5 deg.			25 deg.		
TA°	-40 deg.			-36 deg.		
KK	285			275		
ST	550	Angle	24 deg.	550	Angle	23 deg.
SK	706	Angle	93 deg.	720	Angle	94 deg.
SH	366	Angle	118 deg.	368	Angle	120 deg.
SHY	200			205		
HS	288			304		
HD	150			162		
AD	87			116		

Dimensions in millimeters

DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

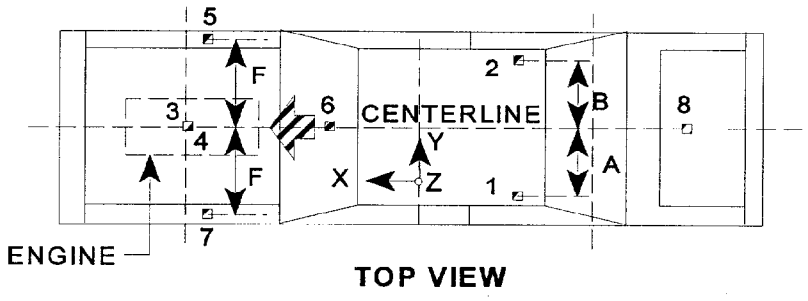
SEAT BELT POSITIONING DATA



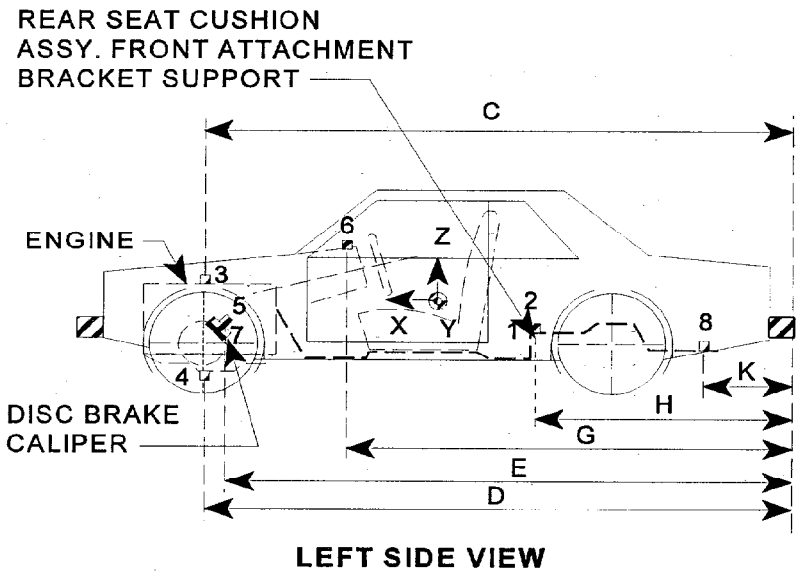
FRONT VIEW OF DUMMY

	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	340	315
PBL-- Top surface of alum. plate to belt lower edge	250	230
LAP BELT TENSION	10 Newtons	10 Newtons
SHOULDER BELT TENSION	Retractor	Retractor

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



TOP VIEW



LEFT SIDE VIEW

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

DATA SHEET NO. 7 VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

DIMENSION	LENGTH (mm)
	PRE-TEST VALUES
A Left Rear Seat Crossmember Y	592
B Right Rear Seat Crossmember Y	-592
C Top of Engine X	4354
D Bottom of Engine X	4492
E Disc Brake Calipers X	4414
F Disc Brake Calipers Y	±500
G Instrument Panel X	3584
H Rear Seat Crossmembers X	2529

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	3.0	193.8	-37.0	13.8
2	Rear Seat X-Member @ Right Side	2.4	175.7	-41.3	13.7
3	Top of Engine Block	61.6	44.9	-122.2	32.5
4	Bottom of Engine	73.6	209.0	-114.7	37.4
5	Disc Brake Caliper @ Right Side	27.3	24.2	-119.4	35.4
6	Instrument Panel	47.9	48.0	-78.7	40.6
7	Disc Brake Caliper @Left Side	34.6	59.4	-100.5	39.0
8	Rear Seat X-Member @ Left-Redundant	2.5	155.8	-43.8	13.3
9	Rear Seat X-Member @ Right-Redundant	2.6	89.9	-42.3	13.6

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

NHTSA Test No.: MW5101 Vehicle: 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec.	Neg.	msec.
Pos. 1 Head X	**g's**	42.5	178.9	-56.9	68.9
Pos. 1 Head Y	**g's**	12.9	197.1	-21.3	78.3
Pos. 1 Head Z	**g's**	42.4	68.2	-3.6	153.1
Pos. 1 Head Resultant	**g's**	71.1	68.2	0.1	-28.5
Pos. 2 Head X	**g's**	87.4	173.4	-47.1	74.5
Pos. 2 Head Y	**g's**	9.5	44.5	-10.4	53.9
Pos. 2 Head Z	**g's**	64.9	65.3	-9.5	146.7
Pos. 2 Head Resultant	**g's**	89.2	173.4	0.1	-16.8
Pos. 1 Chest X	**g's**	9.8	152.6	-51.9	65.2
Pos. 1 Chest Y	**g's**	6.6	69.1	-10.1	56.1
Pos. 1 Chest Z	**g's**	14.3	42.3	-8.1	104.5
Pos. 1 Chest Resultant	**g's**	52.8	65.1	0.0	-30.8
Pos. 1 Chest Displacement	**mm**	0.1	10.7	-48.2	68.9
Pos. 2 Chest X	**g's**	12.2	147.2	-57.5	55.4
Pos. 2 Chest Y	**g's**	9.4	62.4	-7.4	81.6
Pos. 2 Chest Z	**g's**	17.1	41.7	-11.0	124.0
Pos. 2 Chest Resultant	**g's**	58.3	55.3	0.0	-31.5
Pos. 2 Chest Displacement	**mm**	0.0	13.3	-47.2	70.9
Pos. 1 Left Femur	**N**	865.3	28.7	-6258.7	47.8
Pos. 1 Right Femur	**N**	1163.6	42.8	-3774.6	55.0
Pos. 2 Left Femur	**N**	208.5	34.1	-5050.3	46.7
Pos. 2 Right Femur	**N**	885.2	40.7	-2999.9	54.8
Pos. 1 Left Belt Load	**N**	4476.7	53.4	-25.1	206.2
Pos. 1 Torso Belt Load	**N**	9794.7	61.3	-219.7	189.0
Pos. 2 Right Belt Load	**N**	4321.3	66.2	-43.0	151.8
Pos. 2 Torso Belt Load	**N**	8932.7	61.0	-94.3	177.6

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

NHTSA Test No.: MW5101 Vehicle: 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup

	HEAD INJURY CRITERIA (HIC)			
	HIC**	t_1 (msec)	t_2 (msec)	Average Acceleration t_1 to t_2
Position #1 - Driver	731.38	50.300	86.300	52.86
Position #2 - Passenger	682.62	50.400	86.400	51.42

** HIC is as defined in FMVSS 208. The maximum time interval from t_1 to t_2 is 36 milliseconds.

	CLIP SUMMARY*			
	CLIP (g's)	t_1 (msec)	t_2 (msec)	CSI
Position #1 - Driver	51.444	59.0925	62.0925	559.252
Position #2 - Passenger	54.609	54.2538	57.2538	602.373

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

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
HYBRID III NECK AND PELVIC DATA SHEET

Vehicle Year/Make/Model/Body Style: 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup

NHTSA Test No.: MW5101 Test Date: January 28, 1998

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Upper Neck Fx	N	152.6	190.7	-912.6	59.5
Pos. 1 Upper Neck Fy	N	158.9	58.2	-429.7	79.5
Pos. 1 Upper Neck Fz	N	3124.5	70.3	-1268.5	199.3
Pos. 1 Neck Force Result	N	3200.6	70.3	5.4	24.9
Pos. 1 Upper Neck Mx	N-m	10.5	188.1	-21.0	200.2
Pos. 1 Upper Neck My	N-m	34.1	78.1	-32.9	53.6
Pos. 1 Upper Neck Mz	N-m	24.3	88.5	-9.1	139.7
Pos. 1 Neck Moment Result	N-m	38.6	78.2	0.1	-34.9
Pos. 2 Upper Neck Fx	N	308.8	69.5	-446.8	130.9
Pos. 2 Upper Neck Fy	N	223.9	188.3	-182.9	47.1
Pos. 2 Upper Neck Fz	N	2610.5	65.6	-774.7	200.8
Pos. 2 Neck Force Result	N	2626.7	65.6	6.3	-24.4
Pos. 2 Upper Neck Mx	N-m	14.0	227.6	-17.1	85.9
Pos. 2 Upper Neck My	N-m	54.8	69.8	-26.6	46.6
Pos. 2 Upper Neck Mz	N-m	19.0	85.9	-6.6	286.0
Pos. 2 Neck Moment Result	N-m	55.6	70.6	0.1	-28.8
Pos. 1 Pelvic (X)	g's	6.6	114.3	-70.0	52.4
Pos. 1 Pelvic (Y)	g's	10.1	59.7	-12.1	41.9
Pos. 1 Pelvic (Z)	g's	6.2	40.0	-16.5	54.5
Pos. 1 Pelvic (R)	g's	70.5	55.2	0.1	-13.7
Pos. 2 Pelvic (X)	g's	10.7	119.3	-59.5	46.2
Pos. 2 Pelvic (Y)	g's	7.5	38.2	-13.1	70.0
Pos. 2 Pelvic (Z)	g's	4.4	200.6	-17.0	61.2
Pos. 2 Pelvic (R)	g's	60.0	46.2	0.1	-27.6

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES (cont.)
HYBRID III LOWER LEG DATA SHEET

Vehicle Year/Make/Model/Body Style: 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup

NHTSA Test No.: MW5101 Test Date: January 28, 1998

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
P1 Lt Upper Tibia Mx	**N-m**	40.8	67.9	-30.7	49.4
P1 Lt Upper Tibia My	**N-m**	15.4	157.8	-132.8	42.9
P1 Lt Lower Tibia Fx	**N**	114.8	29.2	-912.0	43.5
P1 Lt Lower Tibia Fz	**N**	204.9	21.7	-4137.1	38.4
P1 Lt Lower Tibia My	**N-m**	35.6	62.3	-39.7	33.7
P1 Rt Upper Tibia Mx	**N-m**	13.9	49.1	-30.5	44.8
P1 Rt Upper Tibia My	**N-m**	215.8	40.1	-18.3	85.6
P1 Rt Lower Tibia Fx	**N**	102.0	142.4	-1985.1	40.4
P1 Rt Lower Tibia Fz	**N**	74.3	147.6	-1934.8	46.9
P1 Rt Lower Tibia My	**N-m**	178.5	47.8	-214.1	40.3
Pos. 2 Lt Upper Tibia Mx	**N-m**	57.3	41.9	-75.4	68.5
Pos. 2 Lt Upper Tibia My	**N-m**	126.4	62.0	-193.7	39.7
Pos. 2 Lt Lower Tibia Fx	**N**	612.0	66.2	-1401.9	39.1
Pos. 2 Lt Lower Tibia Fz	**N**	231.1	132.9	-3170.3	38.5
Pos. 2 Lt Lower Tibia My	**N-m**	92.1	66.2	-103.8	39.1
Pos. 2 Rt Upper Tibia Mx	**N-m**	69.4	55.0	-25.6	86.8
Pos. 2 Rt Upper Tibia My	**N-m**	100.2	50.8	-67.7	38.7
Pos. 2 Rt Lower Tibia Fx	**N**	599.5	56.4	-1256.2	72.8
Pos. 2 Rt Lower Tibia Fz	**N**	289.0	138.7	-3158.6	42.7
Pos. 2 Rt Lower Tibia My	**N-m**	99.8	66.1	-19.3	37.7

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

Vehicle Year/Make/Model/Body Style: 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup

NHTSA Test No.: MW5101 Test Date: January 28, 1998

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Left Ankle X	**g's**	62.7	76.5	-142.5	38.7
Pos. 1 Left Ankle Z	**g's**	22.5	29.6	-90.0	42.3
Pos. 1 Left Toe Z	**g's**	50.4	37.0	-132.1	30.2
Pos. 1 Right Ankle X	**g's**	60.8	47.4	-280.6	41.0
Pos. 1 Right Ankle Z	**g's**	10.1	66.3	-168.1	39.0
Pos. 1 Right Toe Z	**g's**	128.3	45.4	-416.9	38.8
Pos. 2 Left Ankle X	**g's**	56.3	45.9	-216.9	39.4
Pos. 2 Left Ankle Z	**g's**	23.2	28.8	-78.0	41.4
Pos. 2 Left Toe Z	**g's**	80.7	45.8	-276.0	38.0
Pos. 2 Right Ankle X	**g's**	49.2	72.8	-119.6	40.6
Pos. 2 Right Ankle Z	**g's**	29.3	63.2	-110.8	43.7
Pos. 2 Right Toe Z	**g's**	85.7	64.0	-140.7	43.8

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

NHTSA Test No.: MW5101 Vehicle: 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Head X(R)	g's	38.9	178.9	-62.4	68.1
Pos. 1 Head Y(R)	g's	13.6	197.7	-23.7	79.1
Pos. 1 Head Z(R)	g's	42.2	68.1	-6.4	153.9
Pos. 1 Head Resultant(RR)	g's	76.1	68.1	0.1	-33.3
Pos. 2 Head X(R)	g's	86.7	173.3	-53.3	74.3
Pos. 2 Head Y(R)	g's	17.4	45.1	-15.1	173.3
Pos. 2 Head Z(R)	g's	63.3	65.4	-16.6	38.3
Pos. 2 Head Resultant(RR)	g's	95.4	173.3	0.1	-15.5
Pos. 1 Chest X(R)	g's	9.3	152.6	-52.2	57.3
Pos. 1 Chest Y(R)	g's	7.2	71.9	-6.3	56.1
Pos. 1 Chest Z(R)	g's	14.3	41.9	-8.0	104.6
Pos. 1 Chest Resultant(RR)	g's	53.2	57.4	0.0	-30.0
Pos. 2 Chest X(R)	g's	11.8	146.8	-55.1	55.5
Pos. 2 Chest Y(R)	g's	8.8	62.4	-8.7	82.7
Pos. 2 Chest Z(R)	g's	16.7	41.7	-12.7	135.7
Pos. 2 Chest Resultant(RR)	g's	56.1	55.5	0.0	-36.8

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

NHTSA Test No.: MW5101 Vehicle: 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup

	HEAD INJURY CRITERIA (HIC) **REDUNDANT**			
	HIC**	t_1 (msec)	t_2 (msec)	Average Acceleration t_1 to t_2
Position #1 - Driver	858.38	49.900	85.900	56.36
Position #2 - Passenger	889.75	48.700	84.700	57.17

** HIC is as defined in FMVSS 208. The maximum time interval from t_1 to t_2 is 36 milliseconds.

	CLIP SUMMARY* **REDUNDANT**			
	CLIP (g's)	t_1 (msec)	t_2 (msec)	CSI
Position #1 - Driver	52.298	56.7124	60.5975	547.542
Position #2 - Passenger	54.262	54.6346	57.6346	588.601

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

DATA SHEET NO. 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:	Driver	Passenger
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	2415	2420
Shoulder belt length as measured on Part 572 Dummy.	900	900
Lap belt length as measured on Part 572 Dummy.	945	950
SHOULDER BELT SPOOL-OFF DATA:		
As determined by film analysis.	25	19
As determined mechanically.	20	18
As determined electronically.	45.5	25.1
BELT STRETCH DATA:		
Measured electronically between shoulder belt load cell and the "D" ring.	54.6 mm/M	50 mm/M*
Measured mechanically.	2 mm/M	1 mm/M

Dimensions in millimeters

* Estimated due to a noise spike in the data.

DATA SHEET NO.10 SUMMARY OF FMVSS 212 DATA

FMVSS NO. 212 - "WINDSHIELD MOUNTING" DATA

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

Windshield is bonded in place and covered with 20 mm molding.

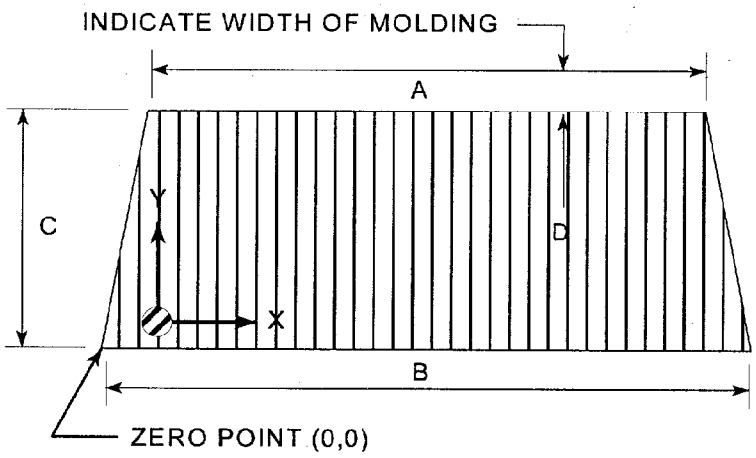
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants,

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		
	PRE-TEST (mm)	POST-TEST(mm)	% OF RETENTION
RIGHT SIDE	1872.5	1872.5	100
LEFT SIDE	1872.5	1872.5	100
TOTAL	3,745	3,745	100

AREA OF RETENTION FAILURE:



FRONT VIEW OF WINDSHIELD

DIMENSIONS (mm)	
A	1130
B	1375
C	620
D	20

FAILURE DETAILS: None

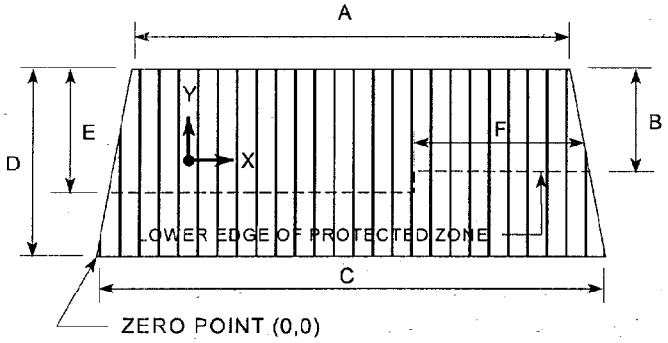
DATA SHEET NO. 11 FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

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

FMVSS 219 TEST DATA:

(Dimensions in mm)



FRONT VIEW OF WINDSHIELD

DIMENSIONS	
A	1130
B	350
C	1375
D	620
E	350
F	880

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm: None

(Show location of penetration on the above sketch)

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

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

NHTSA TEST No.: MW5101 TEST DATE: January 28, 1998

VEHICLE MAKE/MODEL: 1998 Toyota Tacoma 4x4 V6 XTRACAB

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

= =

TEST VEHICLE IMPACT TYPE:

X Frontal (56 kph)

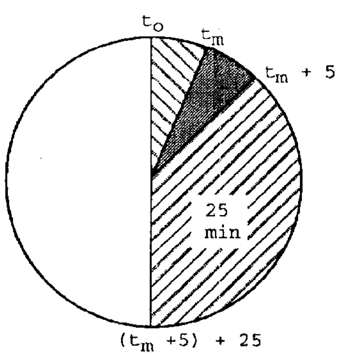
Oblique (48 kph) with ________ deg. barrier face first contacting ____________________

\- (driver/passenger) side

\- Rear Moving Barrier (48 kph)

\- Lateral Moving Barrier (32 kph)

FUEL SPILLAGE MEASUREMENT:



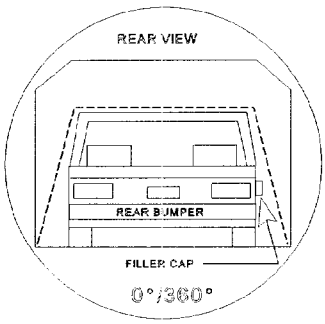
	ACTUAL	MAX ALLOWED
1. From impact until vehicle motion ceases	0	28 g
2. For 5 minute period after vehicle motion ceases	0	141 g
3. For next 25 minutes	0	28 g/min.

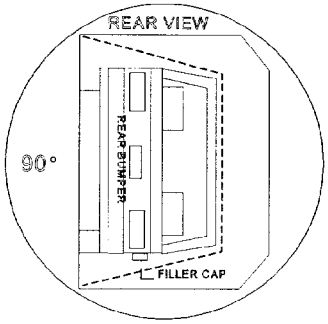
SOLVENT SPILLAGE DETAILS: None

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

TEST PHASE:
0-90 deg.

NHTSA Test No.:
MW5101





INDETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	09	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	9	seconds
Next whole minute interval	7	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	N/A

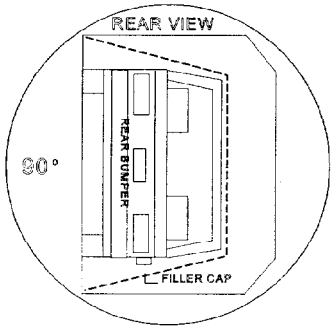
Note: Record spillage for whole minute intervals only as determined above.

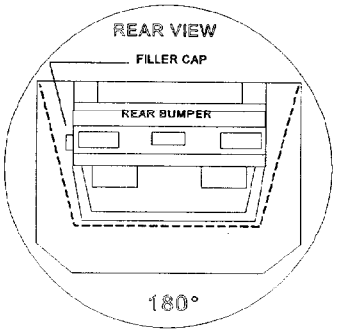
IV. SOLVENT SPILLAGE LOCATION(S): None

TEST SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
90-180 deg.

NHTSA Test No.:
MW5101





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	09	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	9	seconds
Next whole minute interval	7	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	N/A

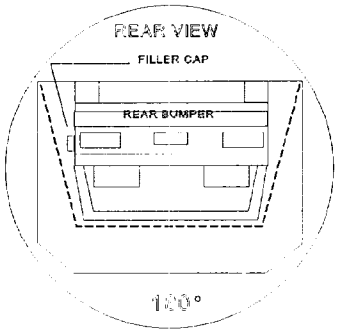
Note: Record spillage for whole minute intervals only as determined above.

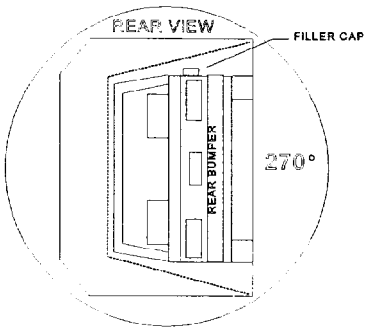
IV. SOLVENT SPILLAGE LOCATION(S): None

TEST SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
180-270 deg.

NHTSA Test No.:
MW5101





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	02	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	2	seconds
Next whole minute interval	7	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	N/A

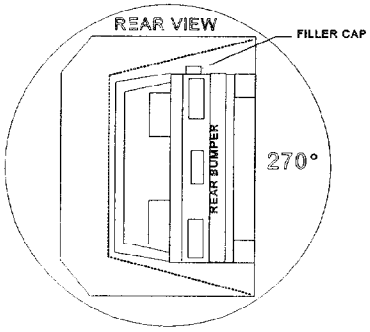
Note: Record spillage for whole minute intervals only as determined above.

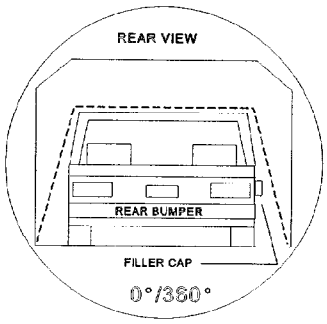
IV. SOLVENT SPILLAGE LOCATION(S): None

TEST SHEET NO. 13 FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:
270-360 deg.

NHTSA Test No.:
MW5101





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	11	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	11	seconds
Next whole minute interval	7	minutes	00	seconds

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

First 5 min. from onset of rotation	6th min.	7th min.	8th min. if reqd.

(2) Maximum Allowable Solvent Spillage

141 g	28 g	28 g	28 g

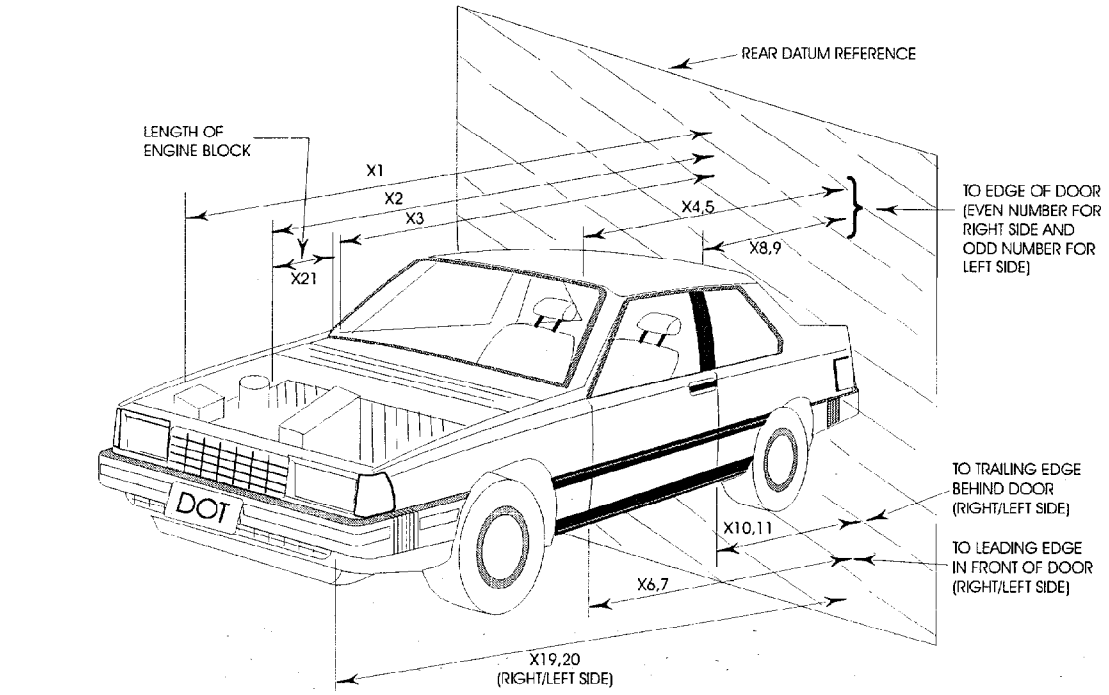
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

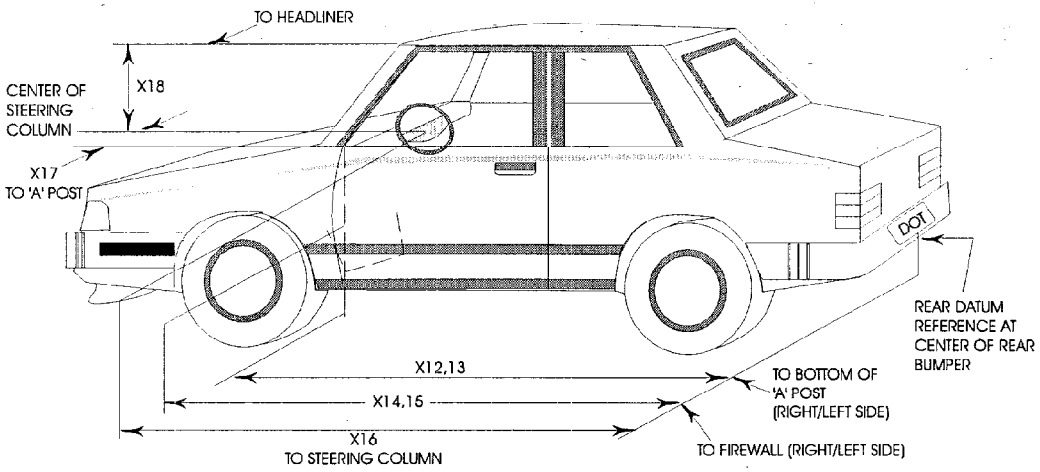
0	0	0	N/A

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

IV. SOLVENT SPILLAGE LOCATION(S): None

TEST VEHICLE MEASUREMENTS





DATA SHEET NO.14 VEHICLE MEASUREMENTS

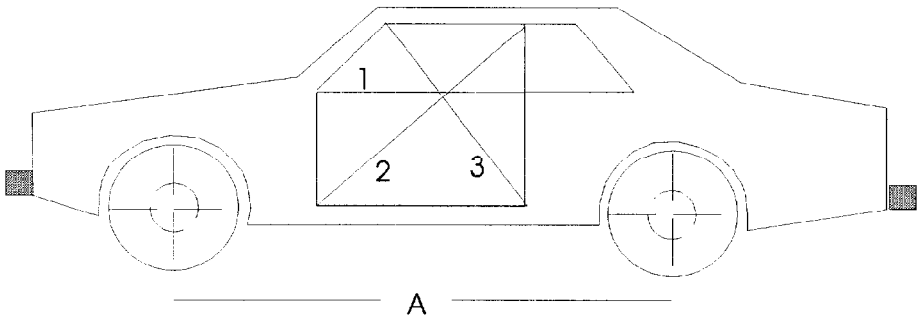
		All Dimensions in mm		
No.		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	5130	4615	515
X2	Rear Surface of Vehicle to Front of Engine	4470	4275	195
X3	Rear Surface of Vehicle to Firewall	4050	3485 *	565*
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3812	3797	15
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3807	3775	32
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3766	3739	27
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3760	3731	29
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2674	2660	14
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2670	2657	13
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2687	2652	35
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2679	2647	32
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3772	3744	28
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3760	3722	38
X14	Rear Surface of Vehicle to Firewall, Right Side	4050	3845 *	205
X15	Rear Surface of Vehicle to Firewall, Left Side	4050	3845 *	205
X16	Rear Surface of Vehicle to Steering Column	3370	3375	-5
X17	Center of Steering Column to "A" Post	370	365	5
X18	Center of Steering Column to Headliner	420	355	65
X19	Rear Surface of Vehicle to Right Side of Front Bumper	5050	4540	510
X20	Rear Surface of Vehicle to Left Side of Front Bumper	5055	4600	455
X21	Length of Engine Block	400	400	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3585	3560	25
CD	Rear Surface of Vehicle to Center of Dash Panel	3585	3585	0
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3600	3580	20

* Estimated

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

DOOR OPENING WIDTH



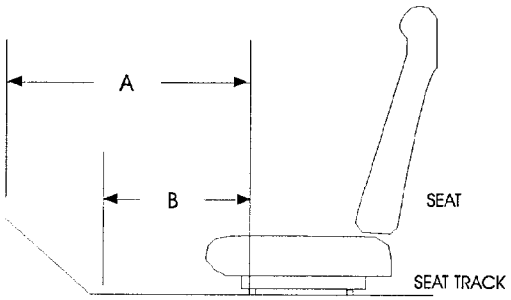
UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	1100	1495	1200	1100	1490	1190
AFTER TEST	1090	1480	1200	1085	1490	1195
DIFFERENCE	10	15	0	15	0	-5

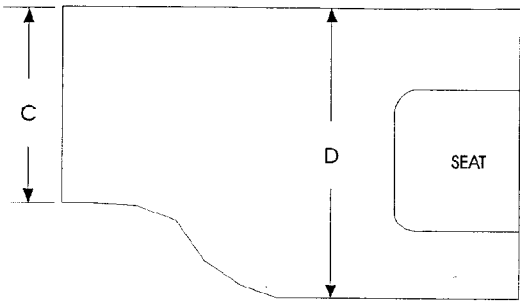
UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	3120	3115
AFTER TEST	3070	3065
DIFFERENCE	50	50

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

STATIC FOOTWELL DEFORMATION





DRIVER

Measurement	Pre-Test	Post-Test	Difference
A	620	600	20
B	565	560	5
C	380	380	0
D	425	410	15

PASSENGER

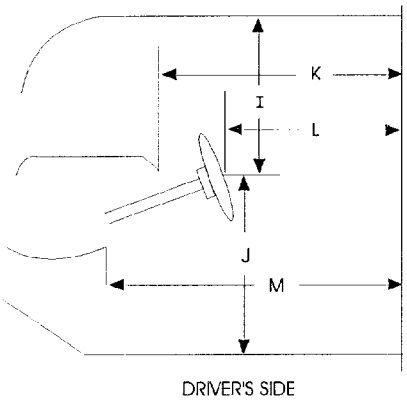
Measurement	Pre-Test	Post-Test	Difference
A	635	610	25
B	560	540	20
C	370	330	40
D	430	410	20

Units = mm

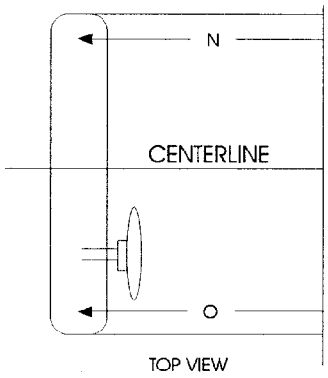
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

STATIC PASSENGER COMPARTMENT INTRUSION

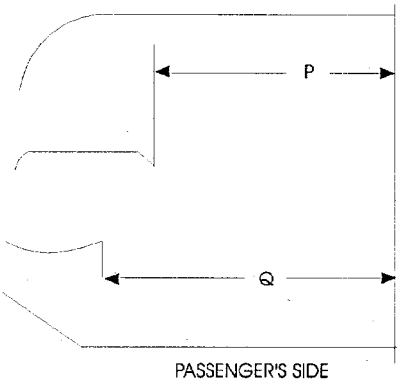


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



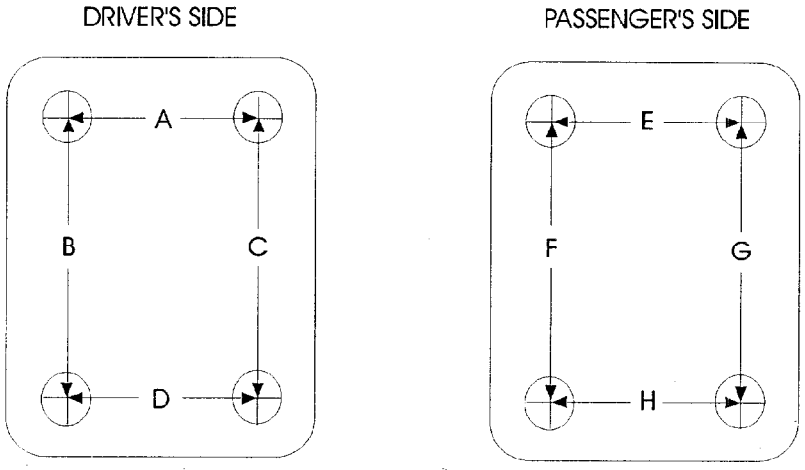
PASSENGER'S SIDE

Measurement	Pre-Test	Post-Test	Difference
I	410	350	60
J	610	670	-60
K	855	840	15
L	605	610	-5
M	840	835	5
N	820	795	25
O	835	815	20
P = K (PASS.)	805	780	25
Q = M (PASS.)	800	765	35

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

FLOORBOARD DEFORMATION



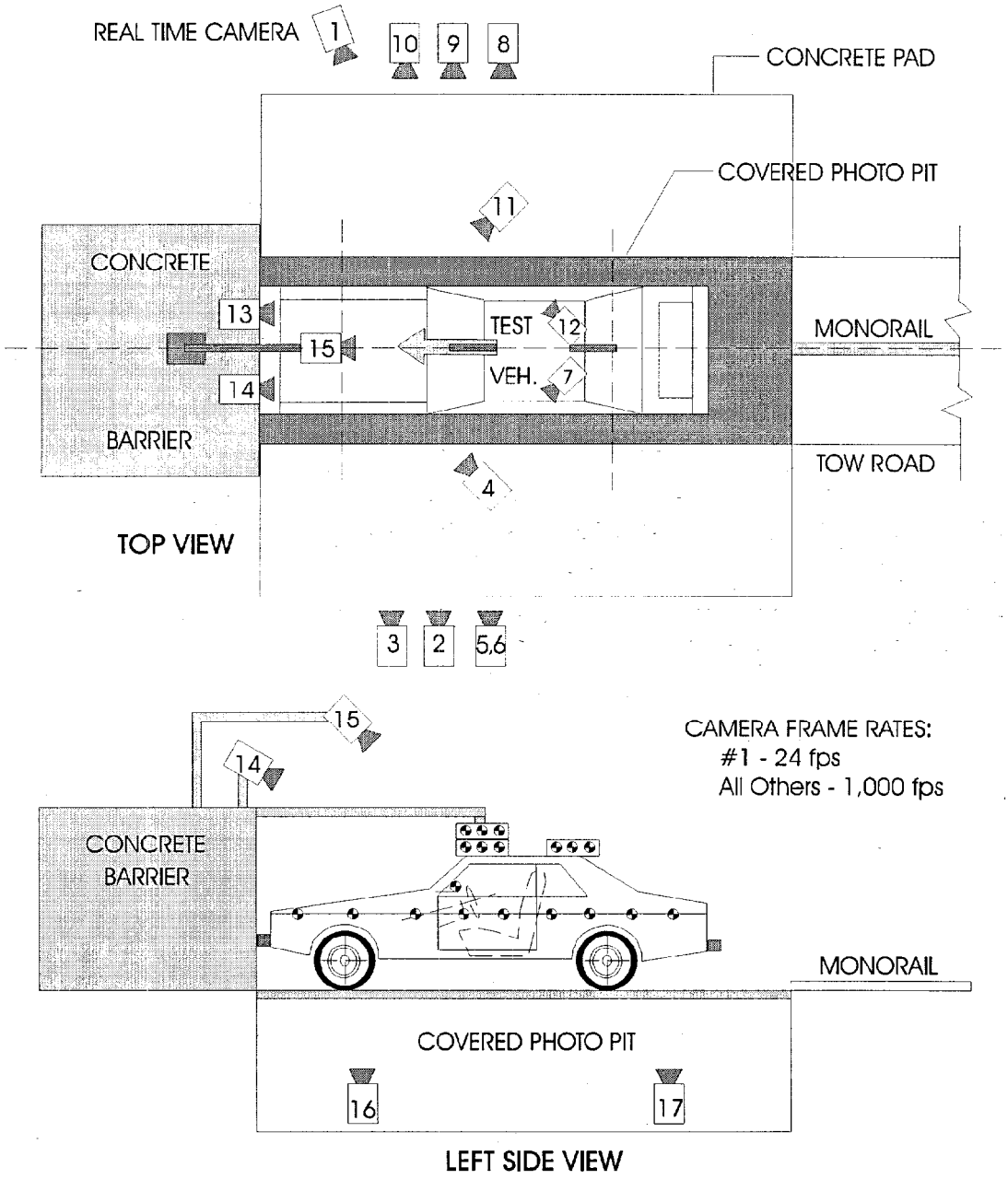
TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	90	90	0
B	305	305	0
C	305	305	0
D	90	90	0
E	80	80	0
F	300	300	0
G	300	300	0
H	80	80	0

Units = mm

CAMERA POSITIONS FOR FRONTAL IMPACTS

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



DATA SHEET NO.15 HIGH-SPEED CAMERA LOCATIONS

NHTSA Test No.: MW5101 Vehicle: 1998 Toyota Tacoma 4x4 V6 XTRACAB Pickup

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)* X	Y	Z	ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	7111	1733	1134	-3	6810	12.5	1020
3	Left Side View	7908	993	1148	-4	7607	25	1020
4	Driver and Interior View	5544	2883	1968	-12	-	25	1020
5	Steering Column (Bottom)	7908	1814	1174	-2	7607	25	1010
6	Steering Column (Top)	7908	1814	1777	-6	7607	25	1020
7	Left Belt	-	-	-	-	-	13	825
8	Overall Right Side	7147	2204	1102	-3	7408	13	1020
9	Right Side View	7873	1500	1216	-3	8174	25	1005
10	Right Passenger View	7843	1825	1600	-3	8144	35	1000
11	Passenger and Interior View	4938	3073	1983	-12	-	25	1020
12	Right Belt	-	-	-	-	-	13	780
13	Passenger Front View	610	-434	2055	-44	-	8	1020
14	Driver Front View	610	-434	2055	-47	-	8	1010
15	Windshield View	0	0	3374	-62	-	8	990
16	Pit View of Engine	0	817	-3048	90	-	13	990
17	Pit View of Fuel Tank	0	2703	-3048	90	-	13	1010

*X = film plane to monorail centerline

Y = film plane to impact location

Z = film plane to ground

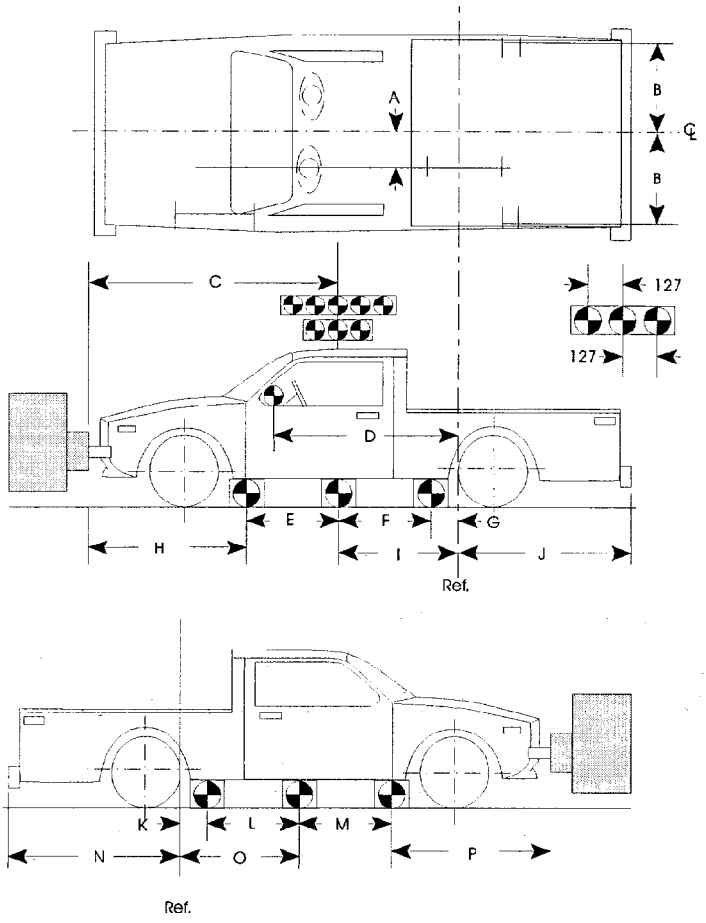
** = referenced to horizontal plane

N.T. indicates No Timing

DATA SHEET NO. 16 VEHICLE REFERENCE PHOTO TARGET LOCATIONS

(Dimensions in millimeters)

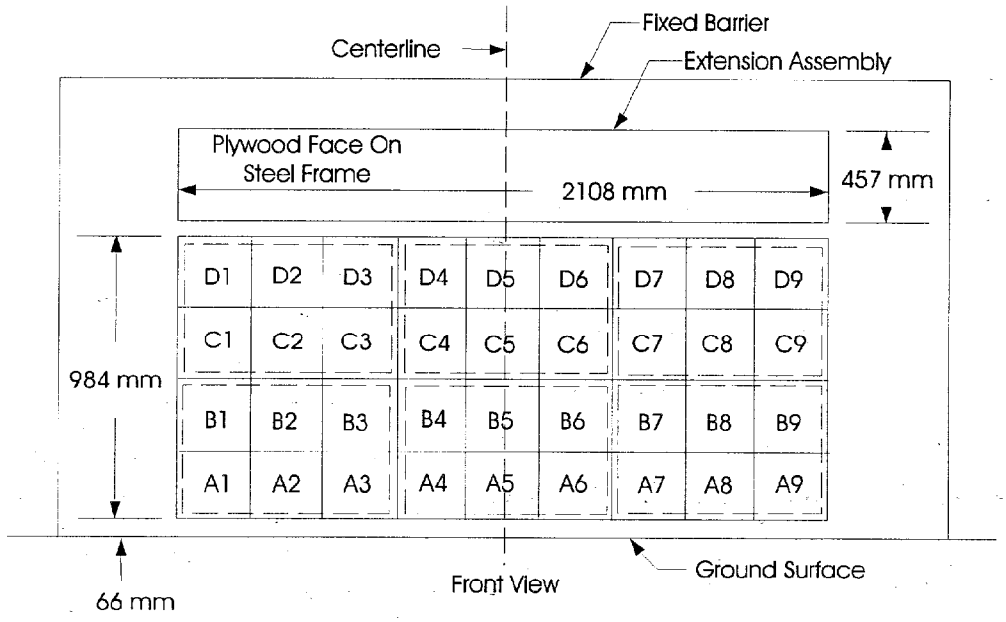
A	348
B	573
C	2201
D	1962
E	1034
F	1034
G	147
H	1328
I	1181
J	1587
K	147
L	1034
M	1034
N	1587
O	1181
P	1328



DATA SHEET NO. 17 LOAD CELL LOCATIONS ON FIXED BARRIER

Load Cell Barrier Data was not Requested for this Test

36 Load Cells
4 Rows
9 Columns
6 Groupings (6 cells/group)



6 GROUPS OF 6 LOAD CELLS EACH

Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

The following data is presented in Appendix B:

(1)Data from 36 individual load cells
(2)Total or Sum of 36 individual load cells
(3)Data from 6 Groupings shown above (6 cells/group)

DATA SHEET NO. 18 POST TEST AIR BAG DATA

NHTSA No. : MW5101; Test Date: January 28, 1998; Technician: P. MacDiarmid

Vehicle Model Year/Make/Model: 1998 Toyota Tacoma 4x4 V6 XTRACAB

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

B. Size of vent holes: (mm^2) 506.7 -Driver 1140 -Passenger

C. Total vent area: (mm^2) 1013.4 -Driver 2280 -Passenger

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

Driver: 550 -Height; 610 -Width; 305 -Depth

Passenger: 660 -Height; 810 -Width; 710 -Depth

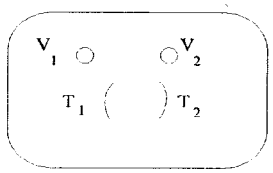
E. Is the air bag tethered?

Driver: X -Yes; - -No; If yes, record length of tether- 305

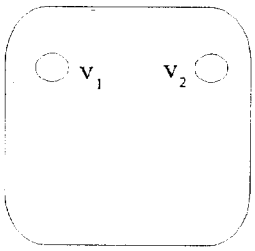
Passenger: - -Yes; X -No; If yes, record length of tether- -

Sketch the air bag showing the location of the vent holes, how the bag is tethered, and where the bag is tethered. Also describe how the tethers are attached to the bag and the steering wheel.
(Note: Not to scale; V_n = Vent hole$_n$, T_n = Tether$_n$).

Driver



Passenger



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

Driver: Air bag: 45165-04020-0A 000 5029 T034 29 10 97 WW7032510 S MADE IN MEXICO

Generator: 108703097A15 TDR HYJ 1L CKL

Passenger: Air bag: P118196-04E TAC312L11312 032 SA

Generator: AASHYK397PAJ TTP HYK 43 AQS

DATA SHEET NO.19 ACCIDENT INVESTIGATION DIVISION DATA

FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Toyota Tacoma 4x4 V6 XTRACAB Pickup

NHTSA Test No.: MW5101 VIN: 4TAWN72N9WZ078578

Model Year: 1998 Build Date: 12/97 Test Date: January 28, 1998

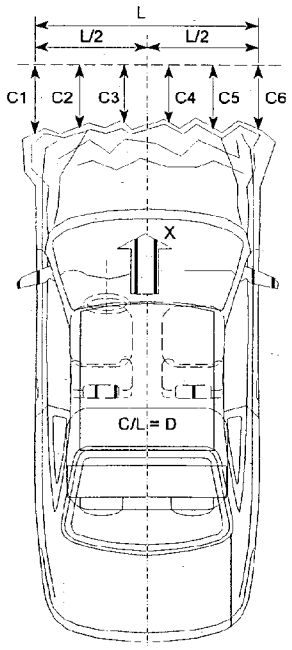
Vehicle Size Category: Compact Pickup Test Weight: 1913.5 kg

Vehicle Wheelbase: 3120 mm; Front Overhang: 1328 mm; Overall Width: 1720 mm

Collision Deformation Classification (CDC) Code: 12FDEW2

Crush Depth Dimensions:

	PRE	POST	DIFF	
C1 =	4970	4550	-420	mm
C2 =	5100	4610	-490	mm
C3 =	5025	4610	-415	mm
C4 =	5025	4625	-400	mm
C5 =	5100	4575	-525	mm
C6 =	4975	4480	-495	mm



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region:

L1 = 1630 mm

L2 = 815 mm

L3 = 326 mm

PHOTOGRAPHS

PHOTOGRAPH NOT AVAILABLE

Figure A-1 LOAD CELL LOCATIONS

Figure A-2 PRE-TEST FRONT VIEW

Figure A-3 POST-TEST FRONT VIEW

Figure A-4 PRE-TEST LEFT SIDE VIEW

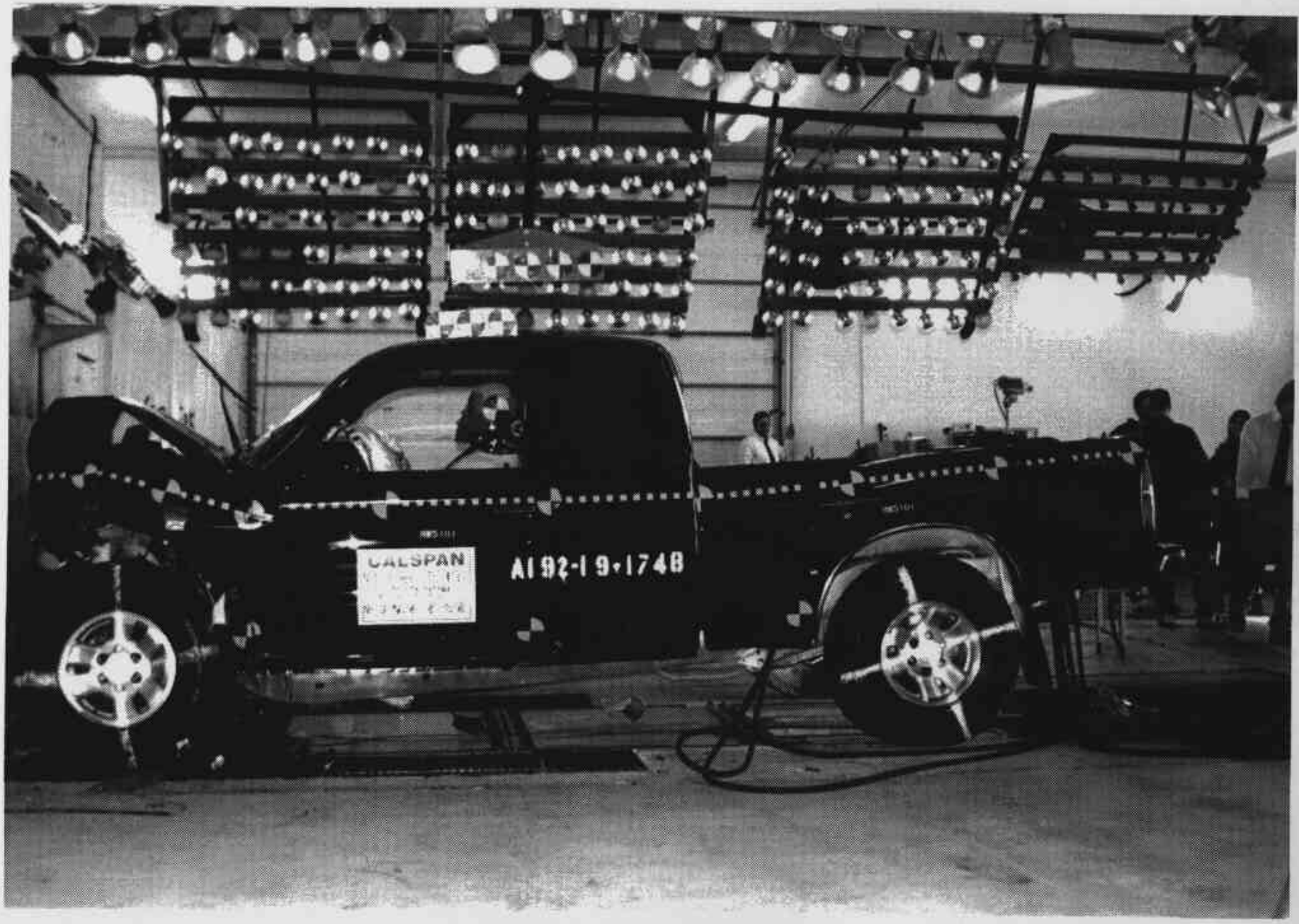


Figure A-5 POST-TEST LEFT SIDE VIEW

Figure A-6 PRE-TEST RIGHT SIDE VIEW

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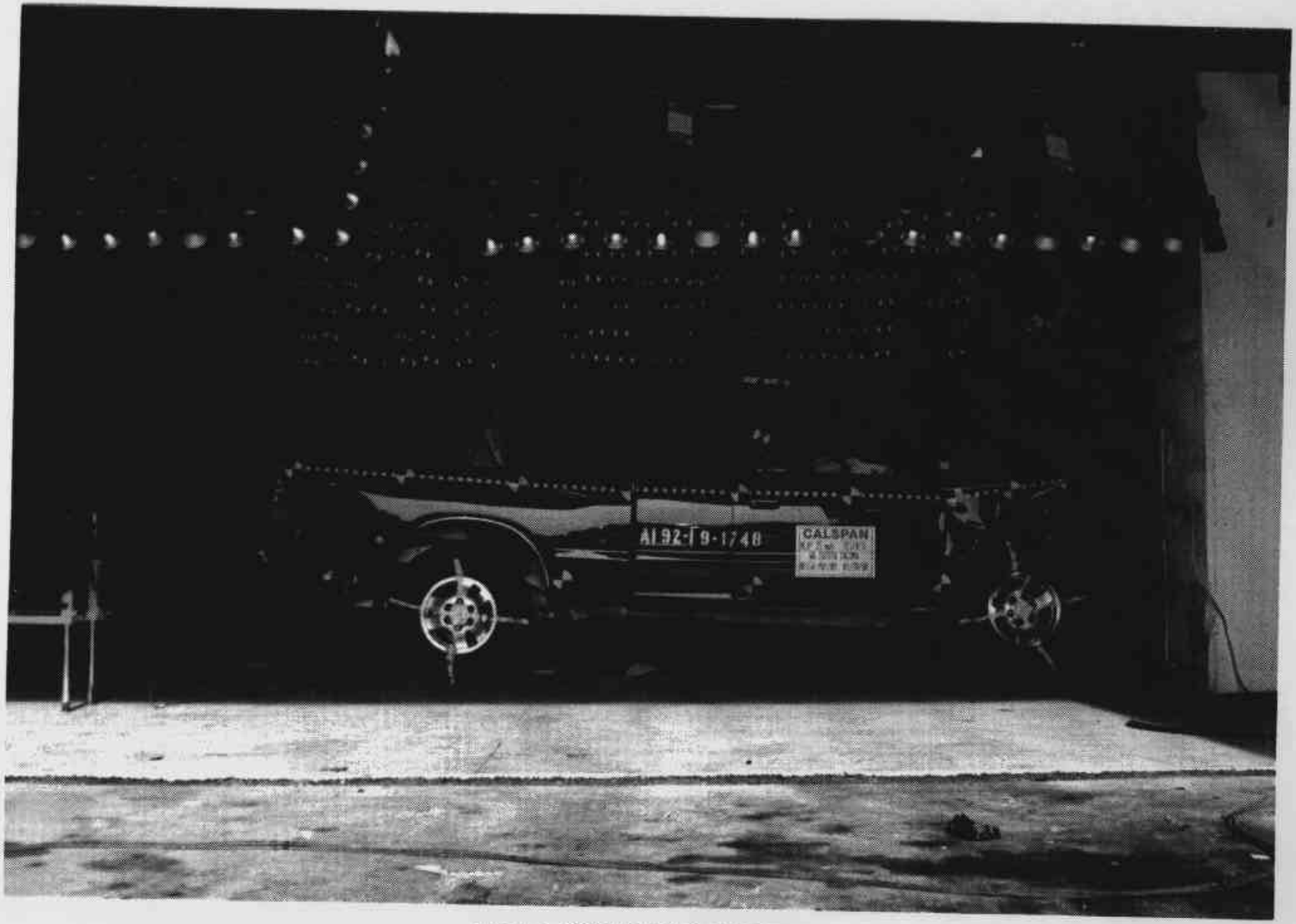

Figure A-7 POST-TEST RIGHT SIDE VIEW

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

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

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

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

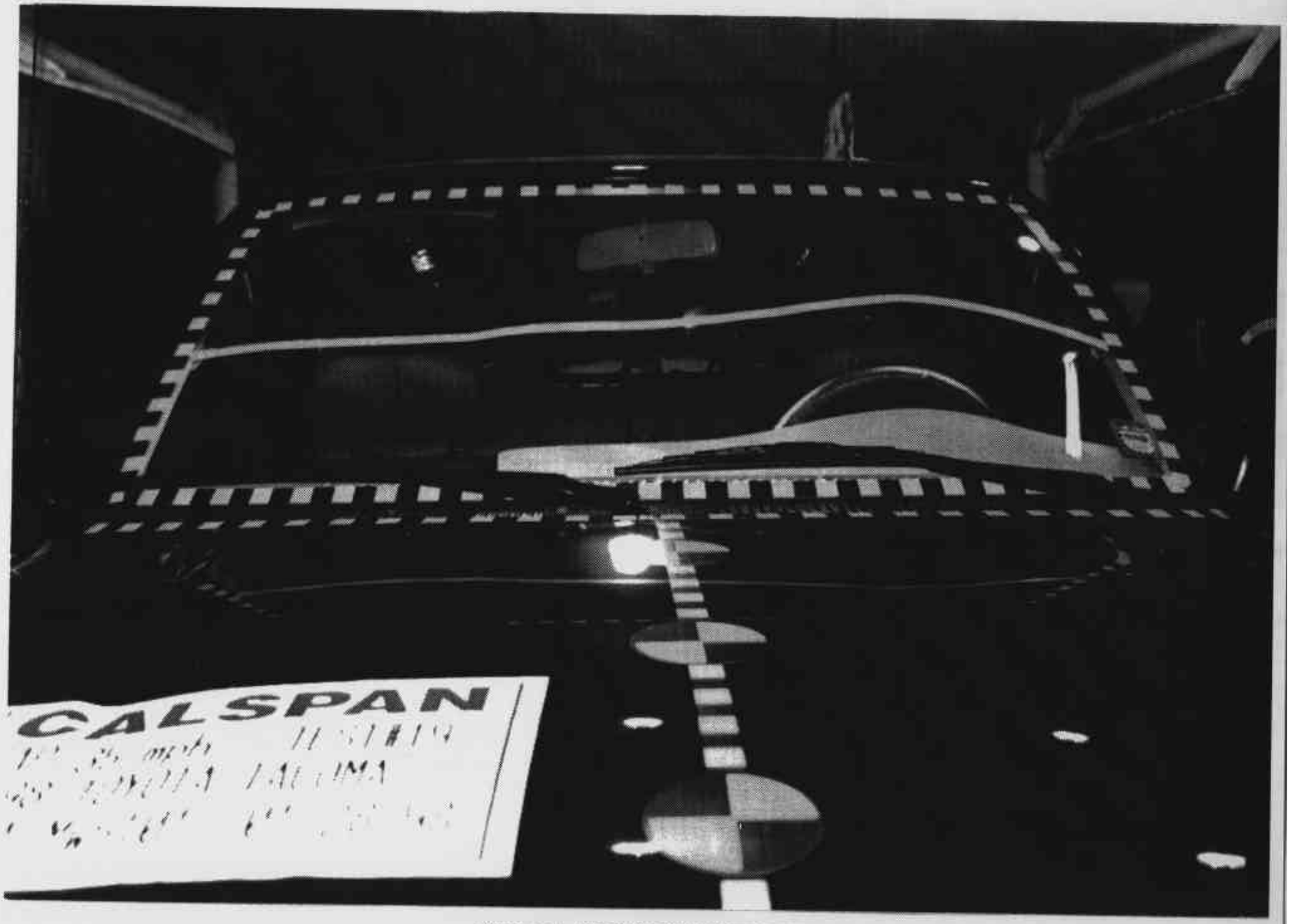

Figure A-12 PRE-TEST WINDSHIELD VIEW

Figure A-13 POST-TEST WINDSHIELD VIEW

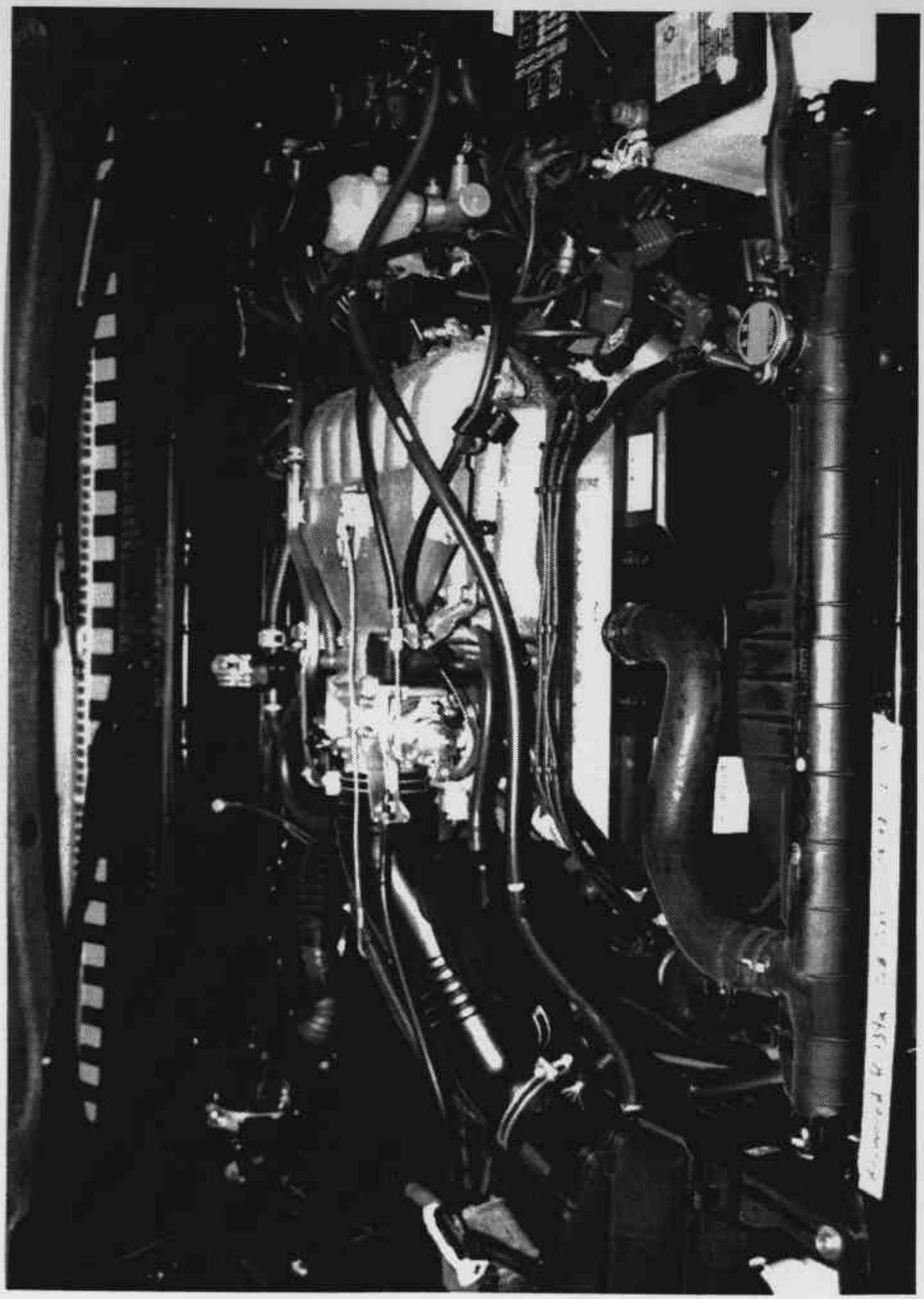

Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

Figure A-15 FUEL CAP VIEW

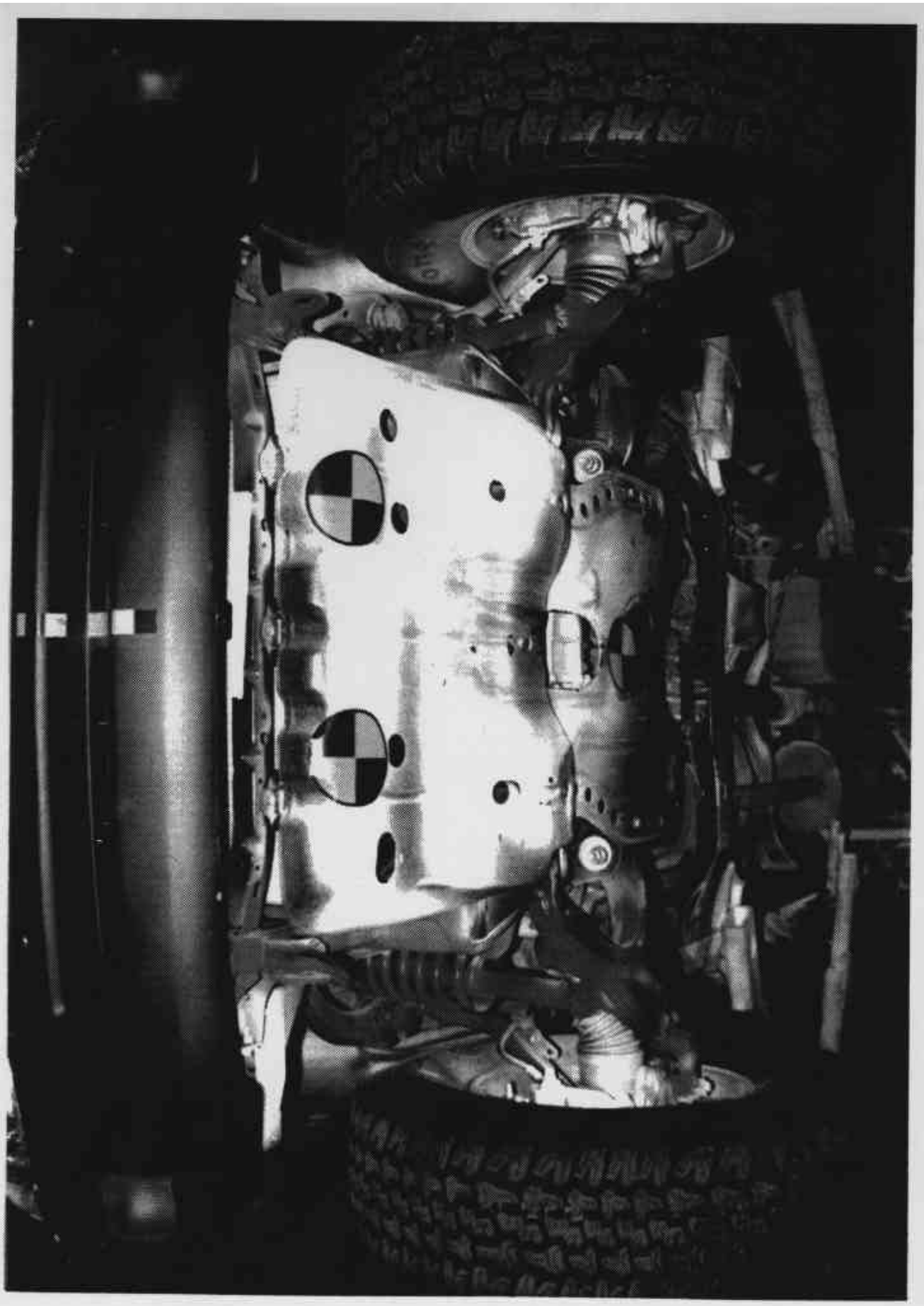

Figure A-16 PRE-TEST FRONT UNDERBODY VIEW

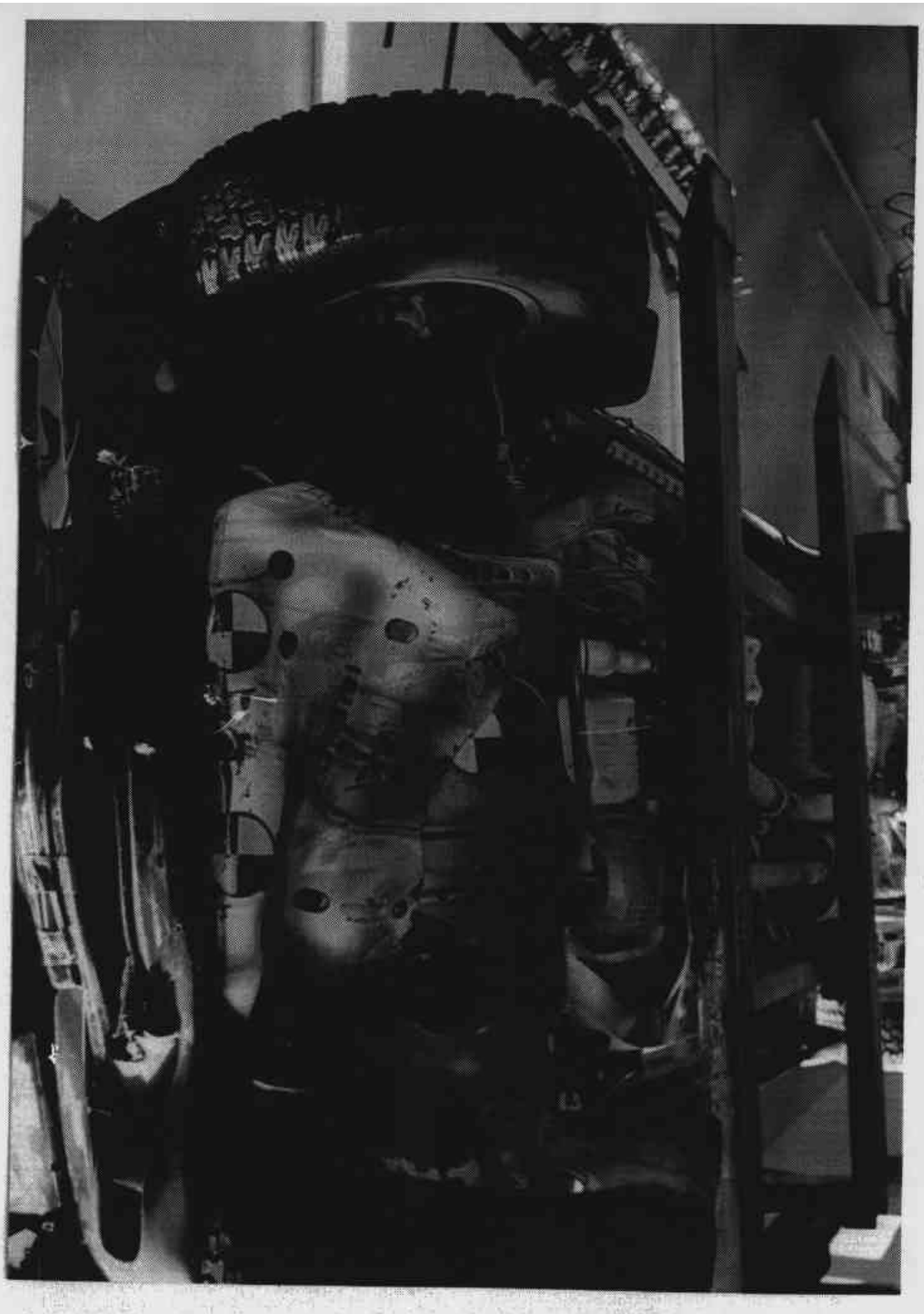

Figure A-17 POST-TEST FRONT UNDERBODY VIEW

Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW

Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW

Figure A-20 PRE-TEST REAR UNDERBODY VIEW

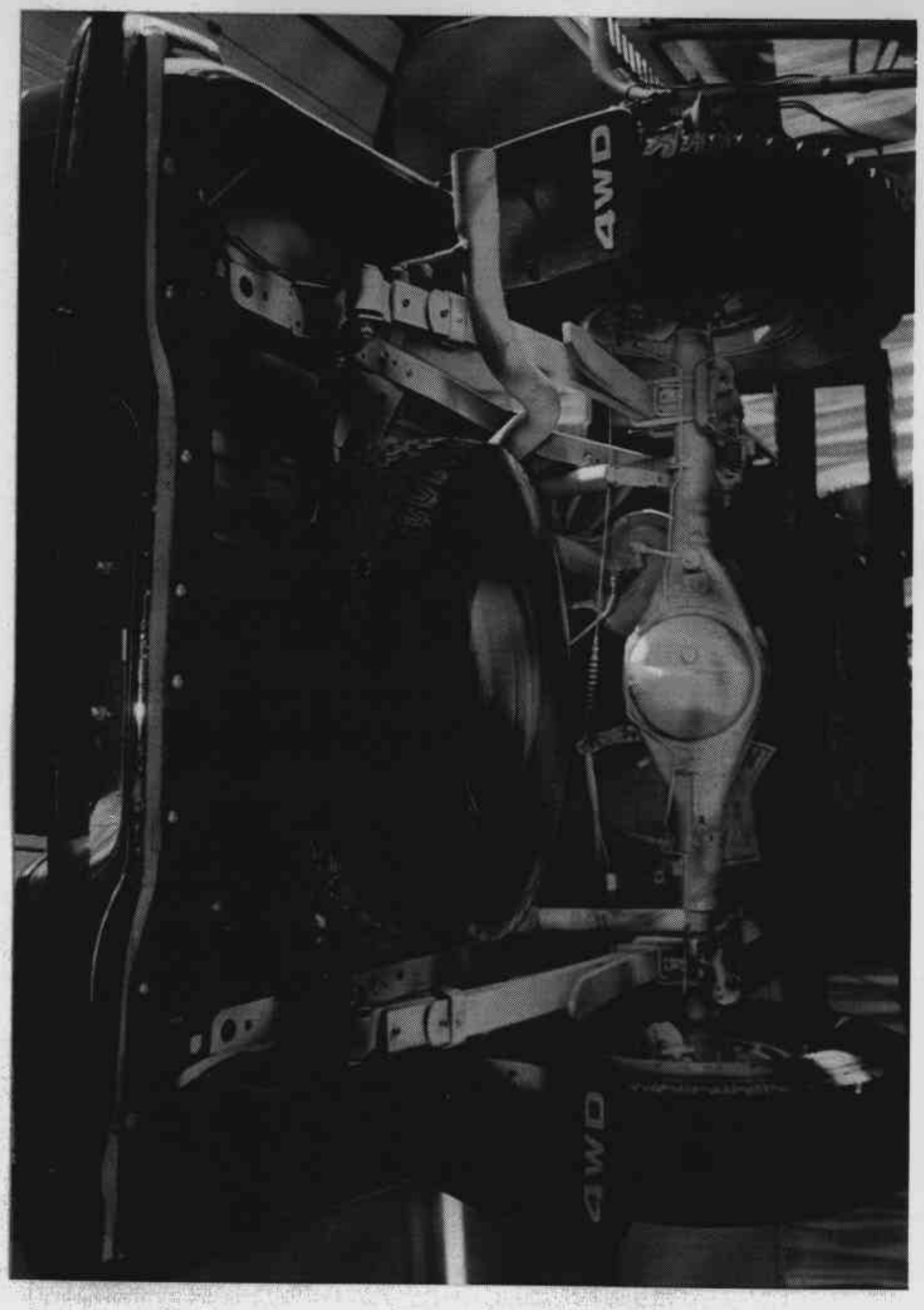

Figure A-21 POST-TEST REAR UNDERBODY VIEW

Figure A-22 PRE-TEST DRIVER POSITION VIEW

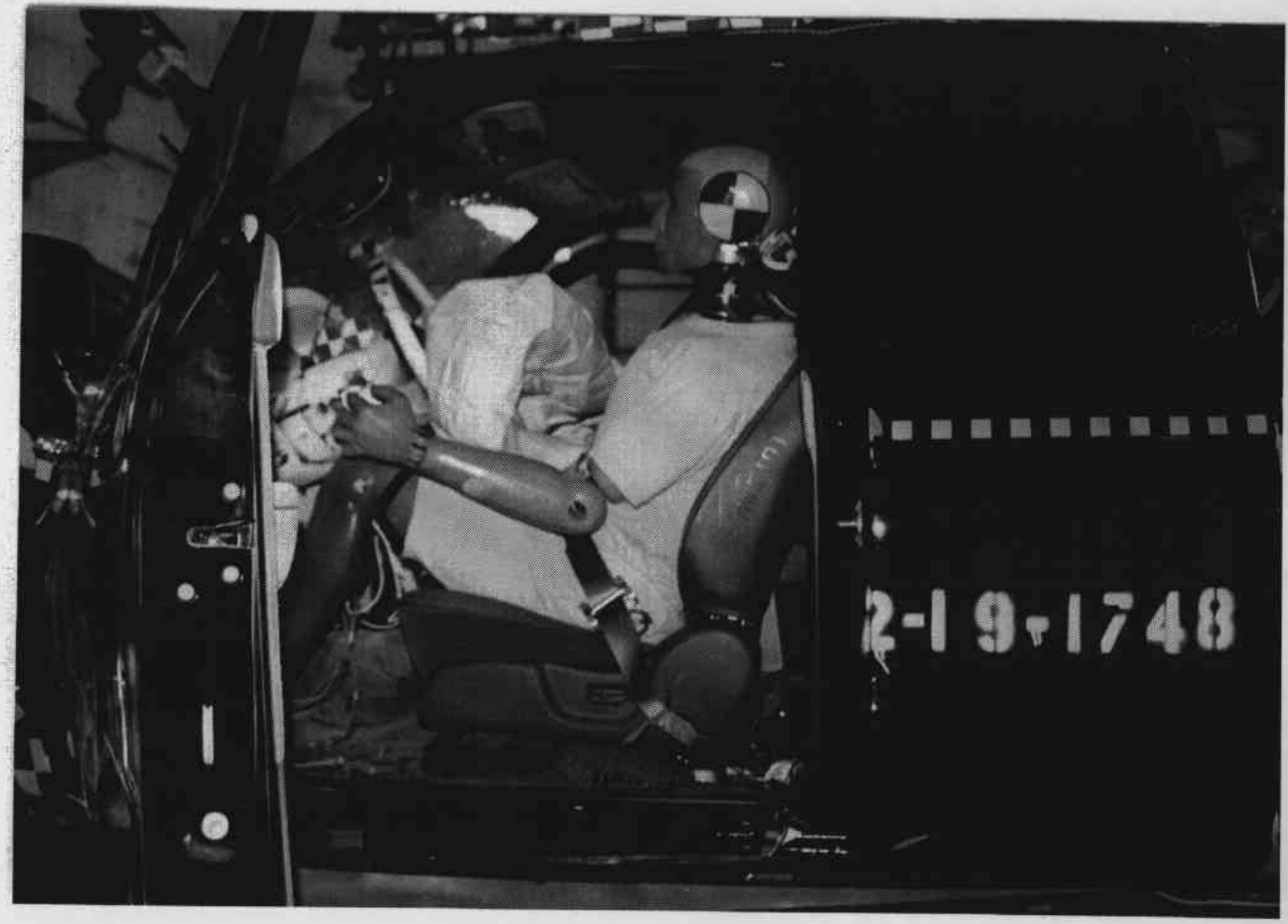

Figure A-23 POST-TEST DRIVER POSITION VIEW

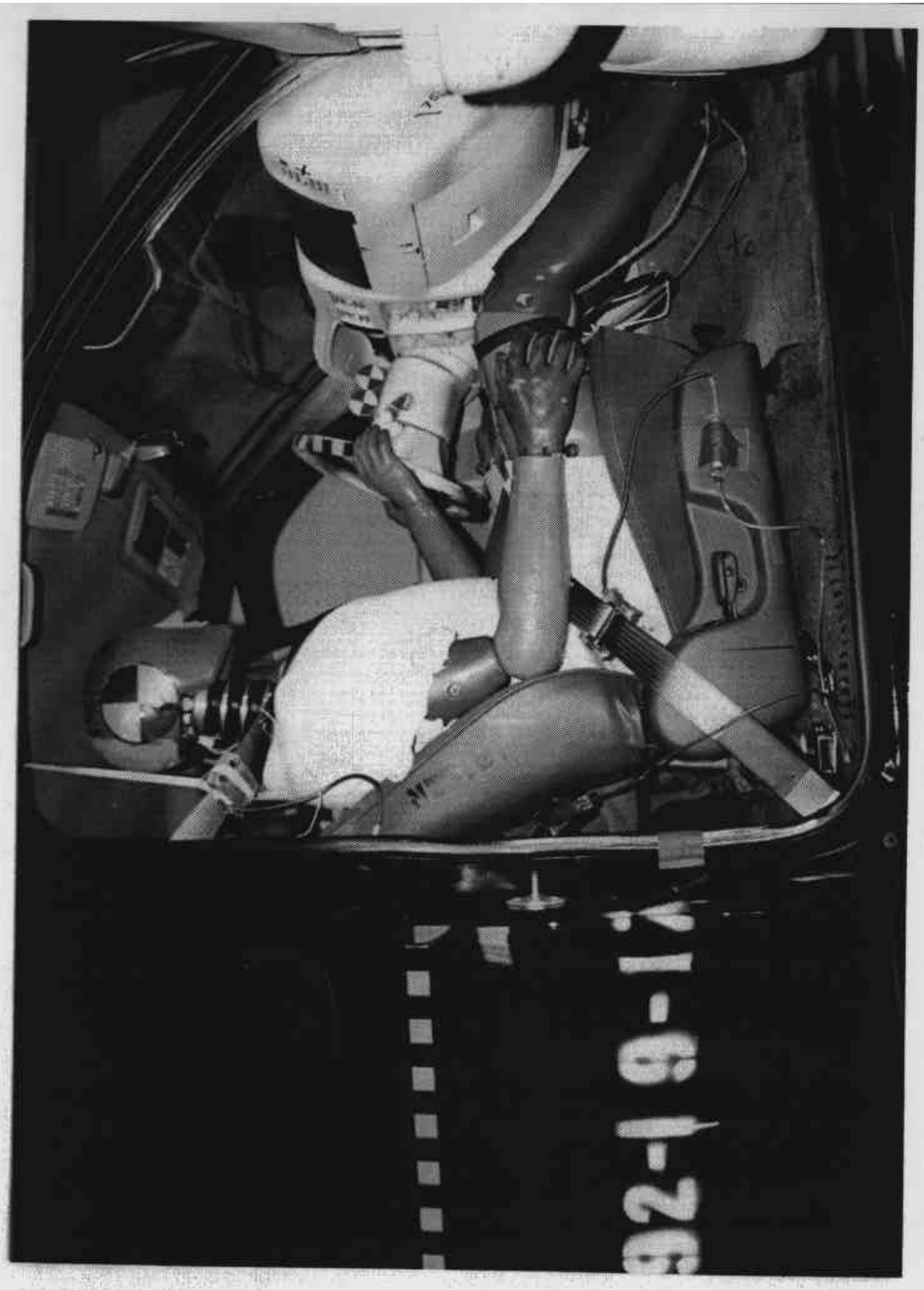

Figure A-24 PRE-TEST PASSENGER POSITION VIEW

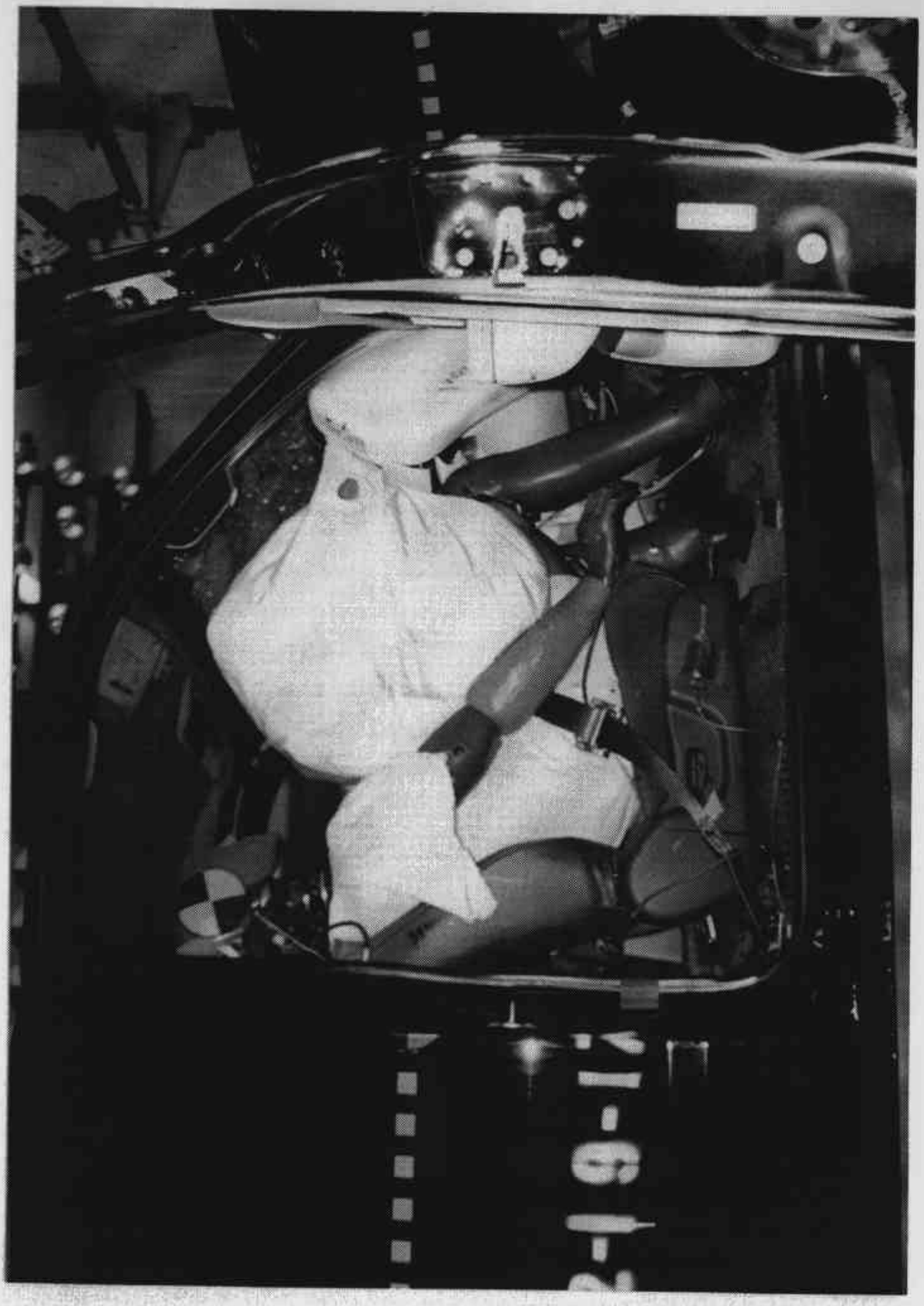

Figure A-25 POST-TEST PASSENGER POSITION VIEW

Figure A-26 PRE-TEST DRIVER AND INTERIOR VIEW

Figure A-27 POST-TEST DRIVER AND INTERIOR VIEW

Figure A-28 PRE-TEST PASSENGER AND INTERIOR VIEW

Figure A-29 POST-TEST PASSENGER AND INTERIOR VIEW

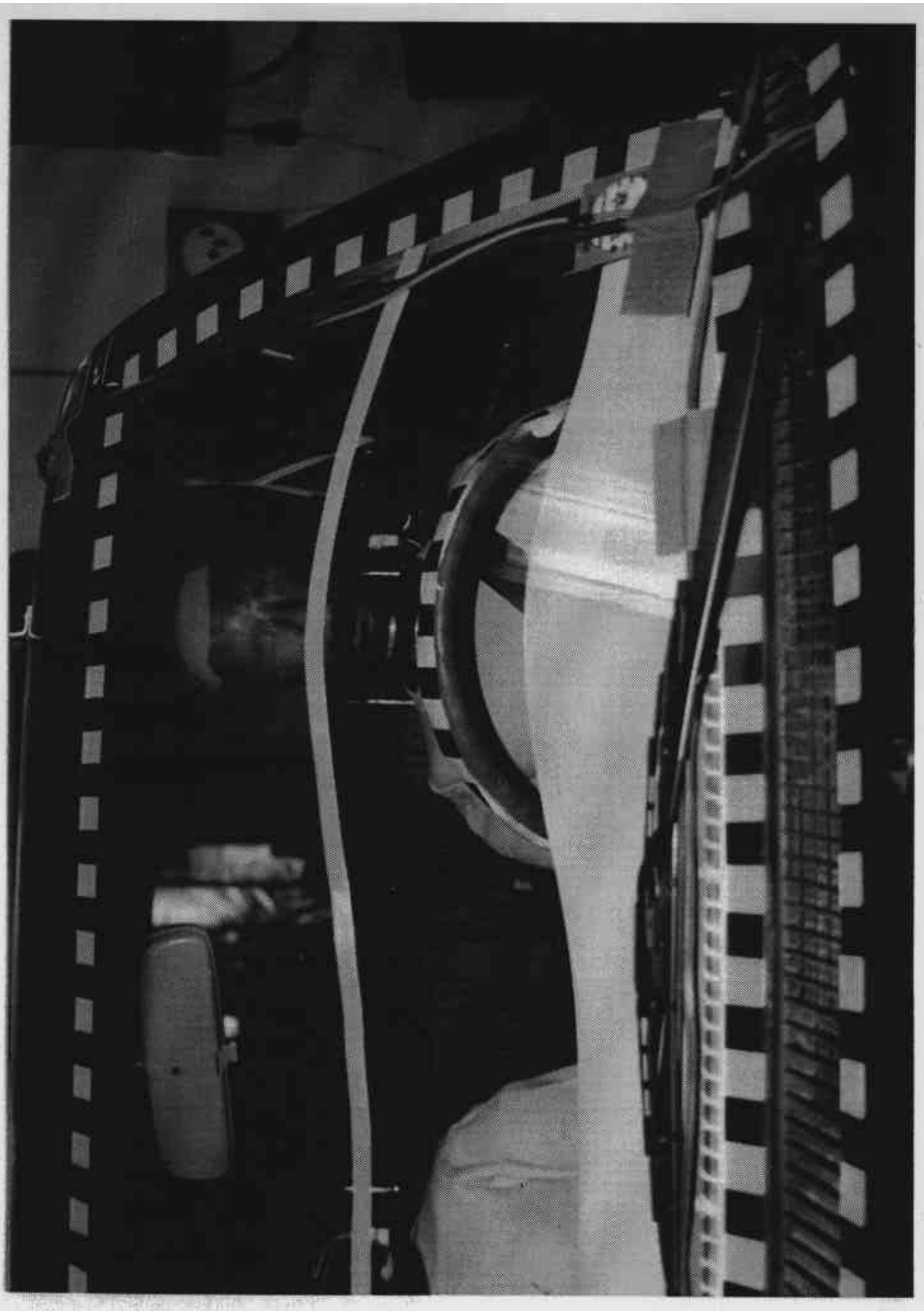

Figure A-30 PRE-TEST DRIVER HEAD LOCATION

Figure A-31 POST-TEST DRIVER HEAD LOCATION

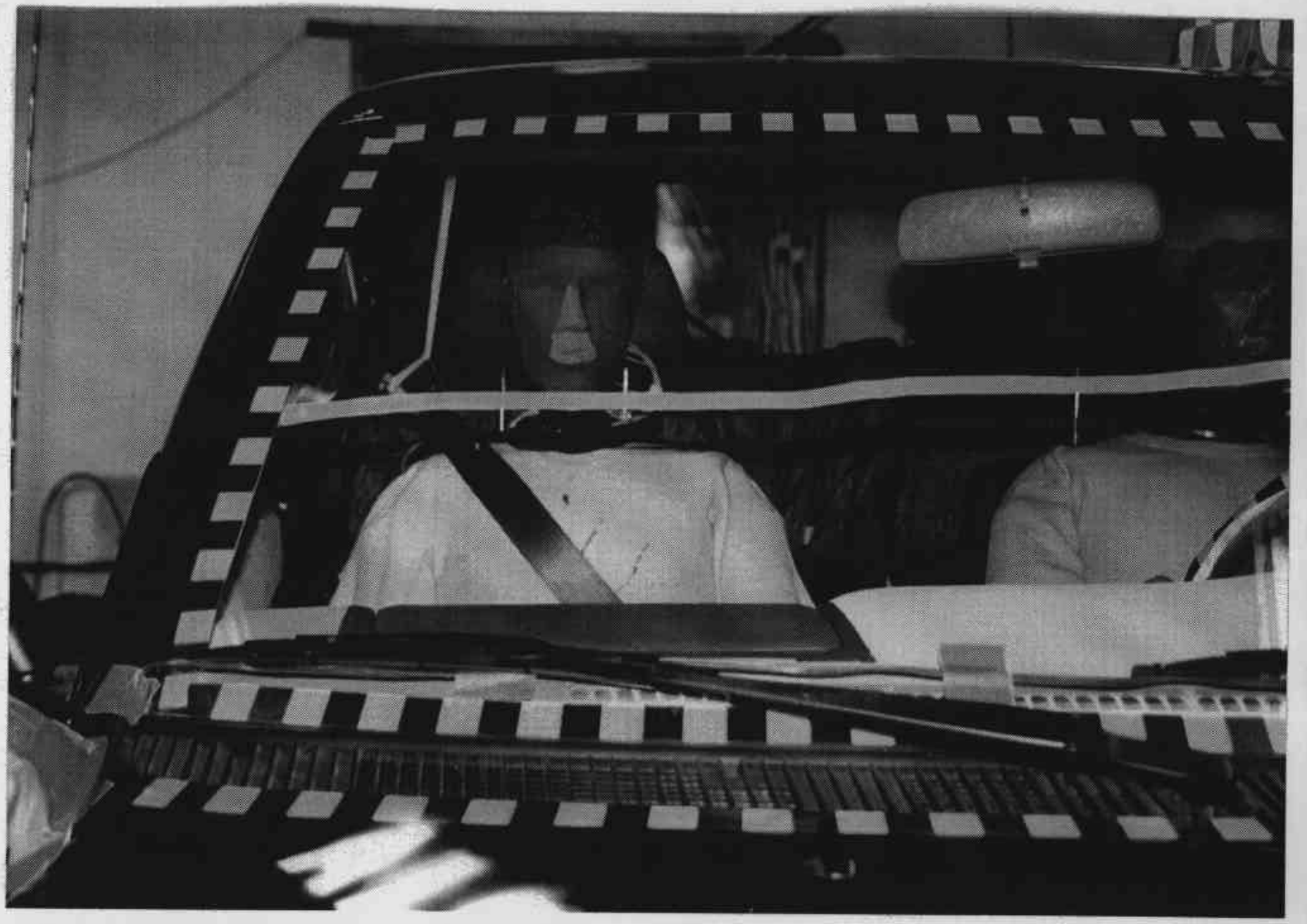

Figure A-32 PRE-TEST PASSENGER HEAD LOCATION

Figure A-33 POST-TEST PASSENGER HEAD LOCATION

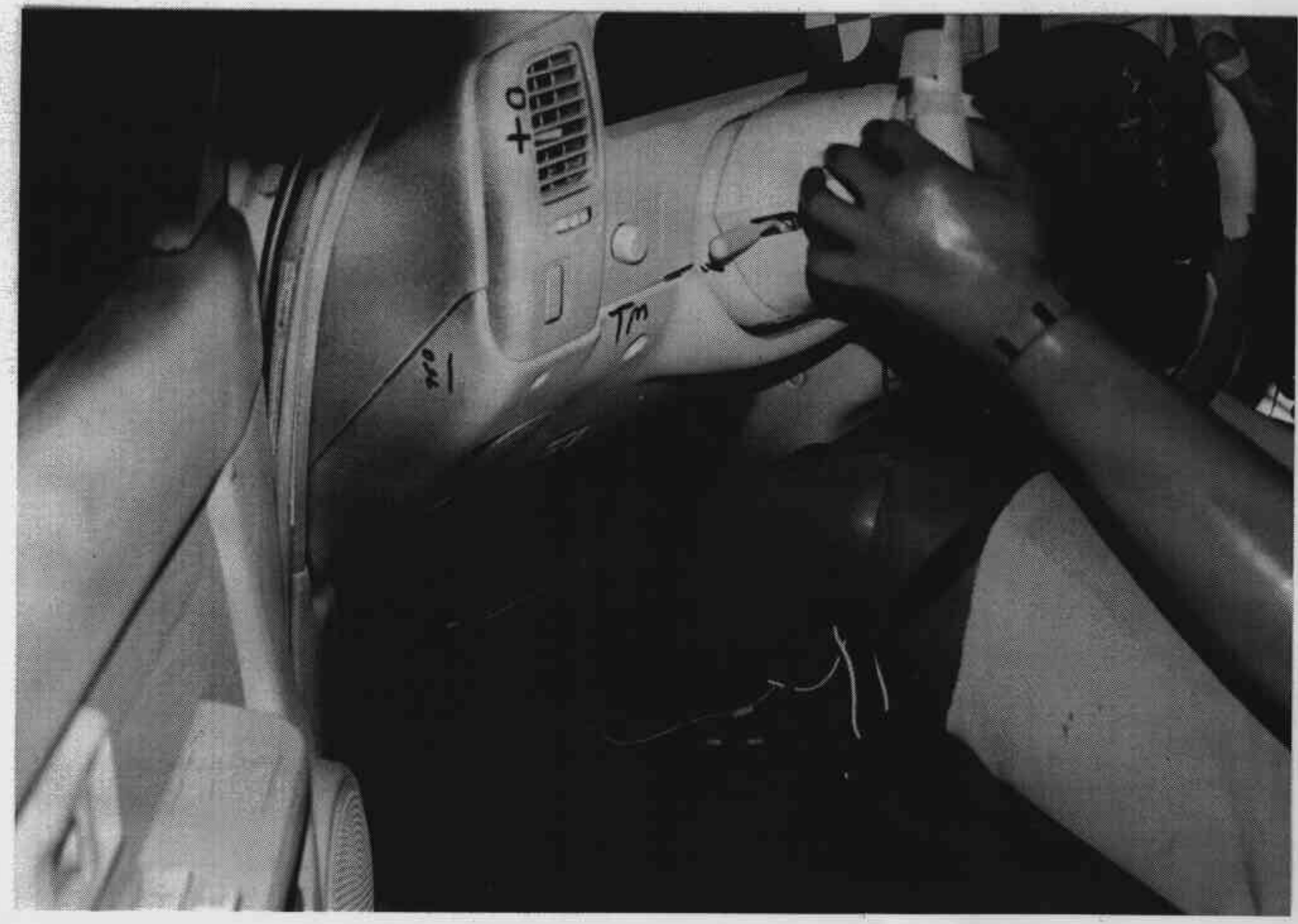

Figure A-34 PRE-TEST DRIVER FLOOR PAN VIEW

Figure A-35 POST-TEST DRIVER FLOOR PAN VIEW

Figure A-36 PRE-TEST PASSENGER FLOOR PAN VIEW

Figure A-37 POST-TEST PASSENGER FLOOR PAN VIEW

Figure A-38 ROLLOVER VIEW

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Figure A-39 IMPACT VIEW

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PHOTOGRAPHS (continued)

Appendix B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers

Transducer	DOT/NHTSA Sign Convention (positive unless noted)
Upper Neck Load Cell	Fx Head forward Fy Head left Fz Neck in tension Mx Right ear to right shoulder My Chin to chest (flexion) Mz Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative
Pelvic Load Cell (Lower Lumbar)	Fx Chest forward Fy Chest left Fz Spine in tension
Femur Load Cell	Compression is negative
Upper Tibia Load Cell (right and left leg)	Mx Support tibia, load right side center My Support tibia, load front (shin) center
Lower Tibia Load Cell (right and left leg)	Fy Foot right w/r to left Fz Tibia in tension Mx Support tibia, press right side center

NHTSA TEST NO. MW5101

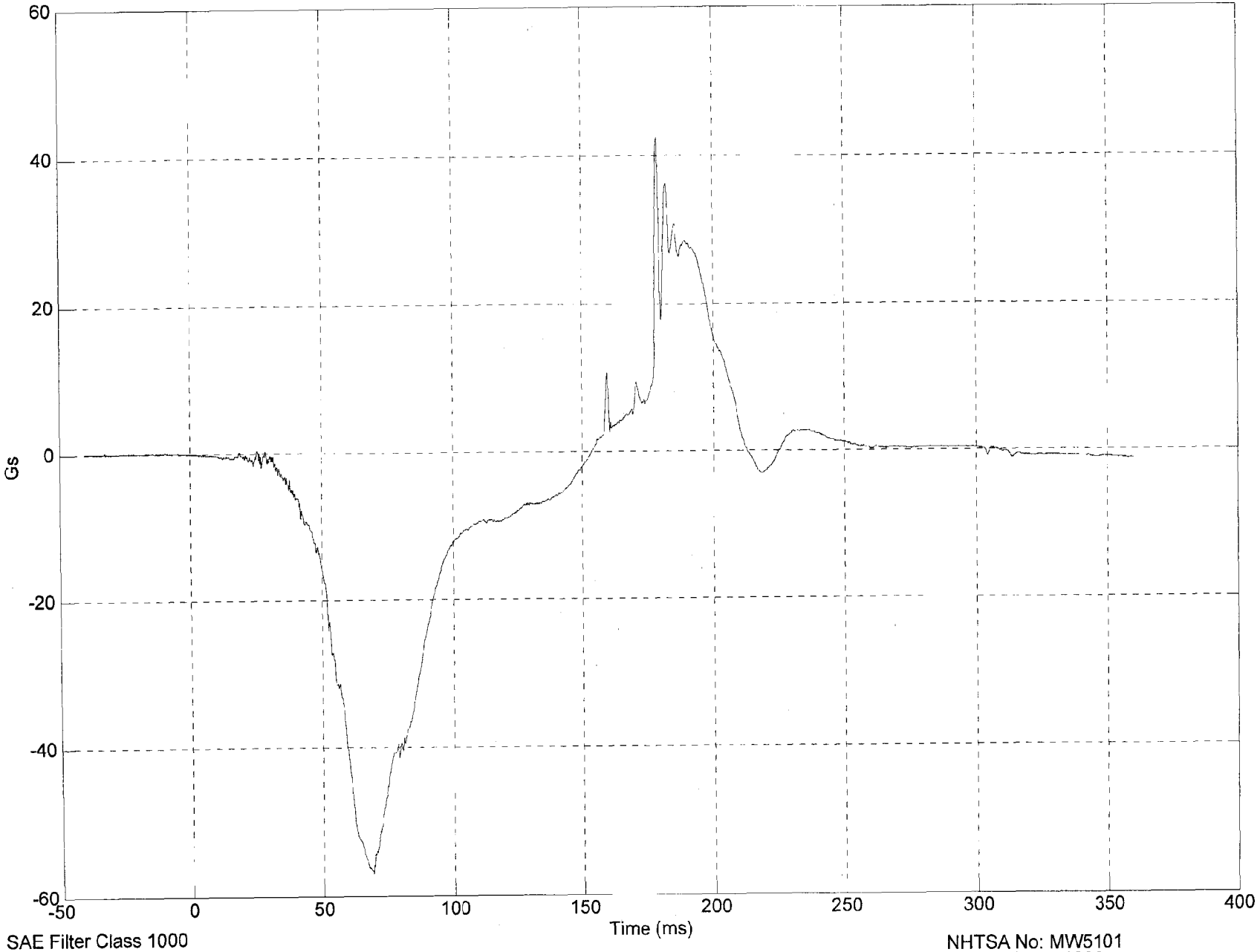
DUMMY DATA

CLASS	FILTER CHANNEL
Head Accelerations	1000
Chest Accelerations	180
Chest Displacements	60
Femur Forces	600
Belt Loads	60
Belt Displacements	180
Neck Forces	1000
Neck Moments	600

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Head X

Max = 42.5 Gs @ 179.00 msec
Min = -56.9 Gs @ 69.00 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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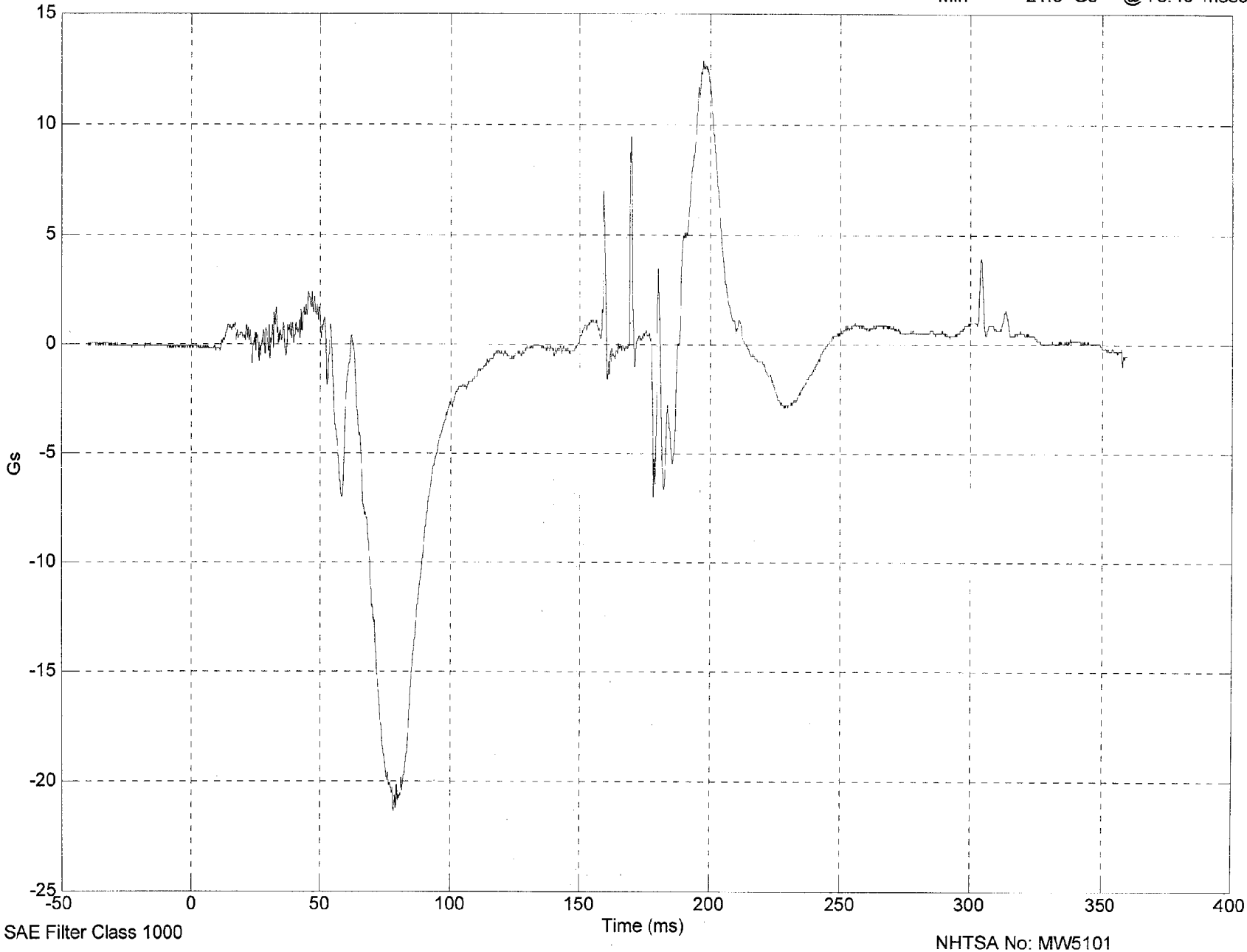
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Head Y

Max = 12.9 Gs @ 197.20 msec
Min = -21.3 Gs @ 78.40 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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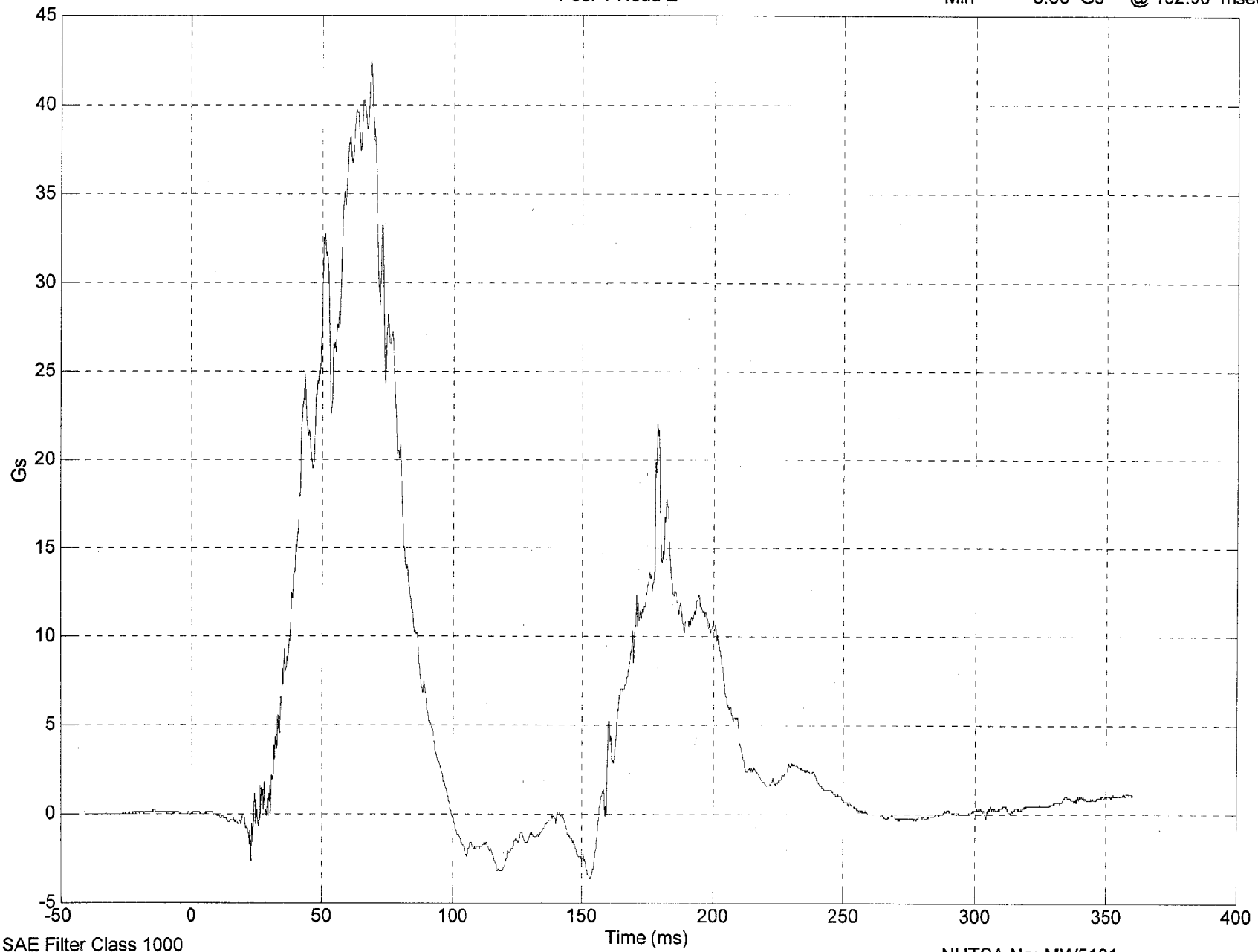
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Head Z

Max = 42.4 Gs @ 68.20 msec
Min = -3.63 Gs @ 152.90 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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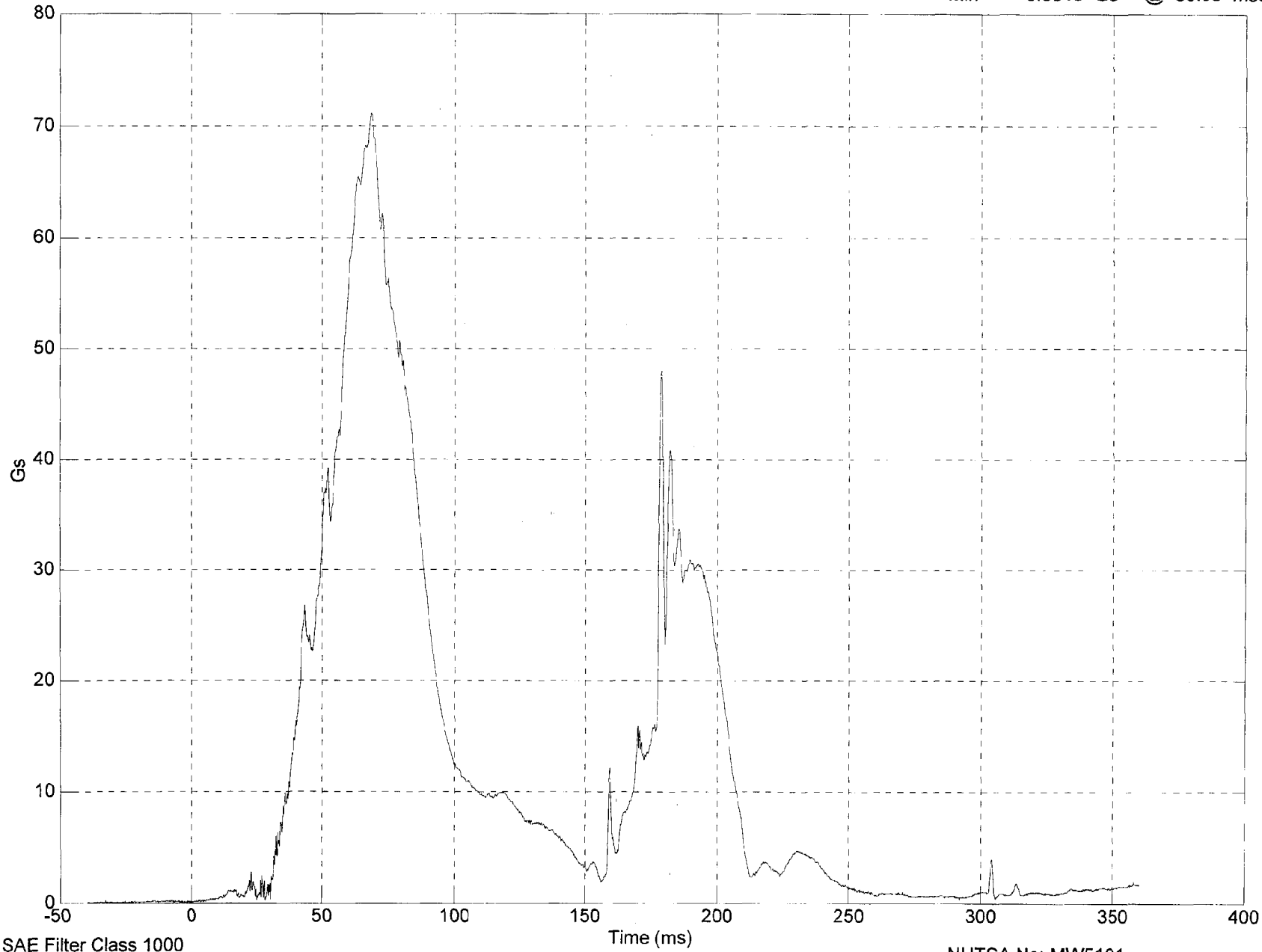
NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 71.1 Gs @ 68.20 msec
Min = 0.0515 Gs @ -39.90 msec

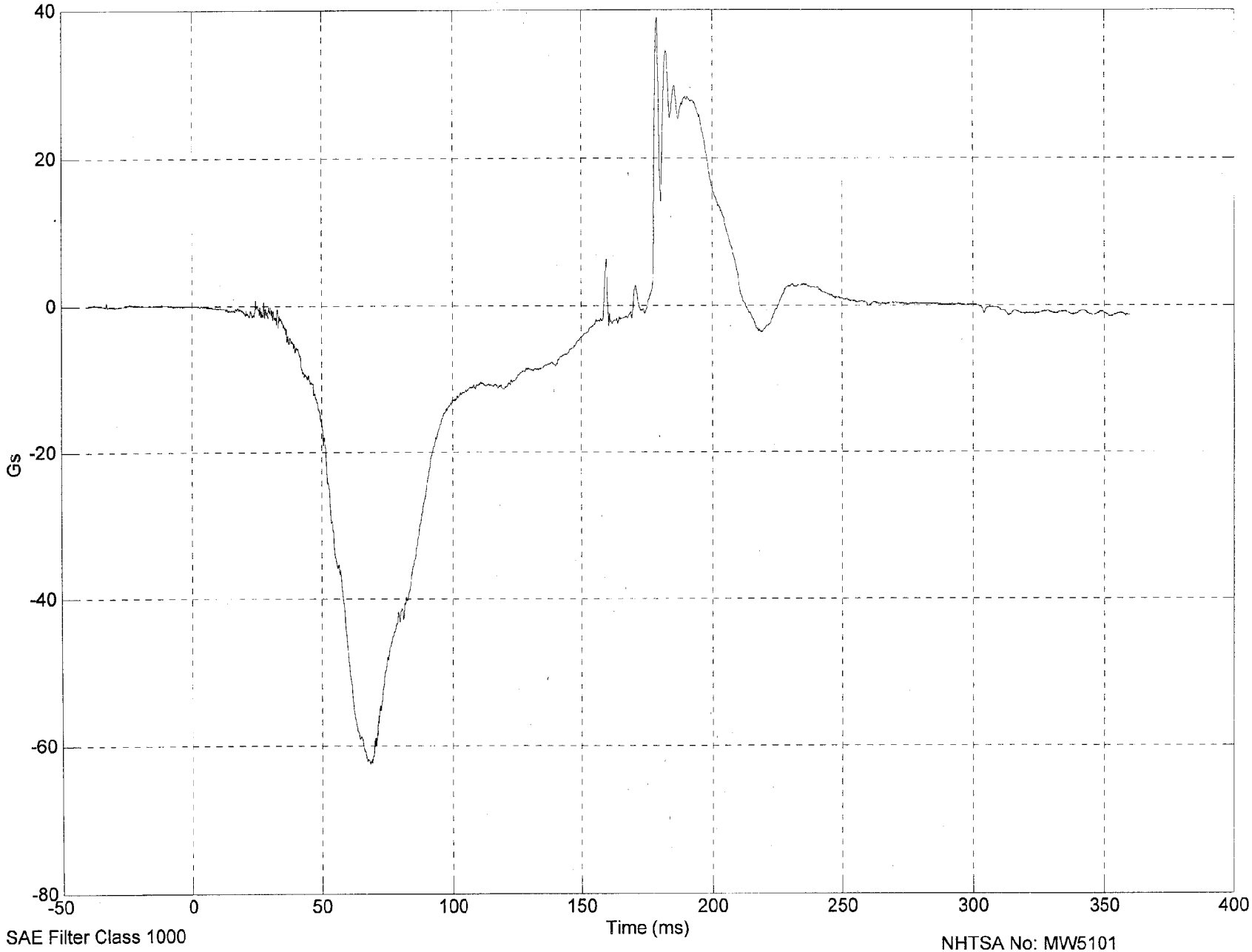


SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 38.9 Gs @ 179.00 msec
Min = -62.4 Gs @ 68.20 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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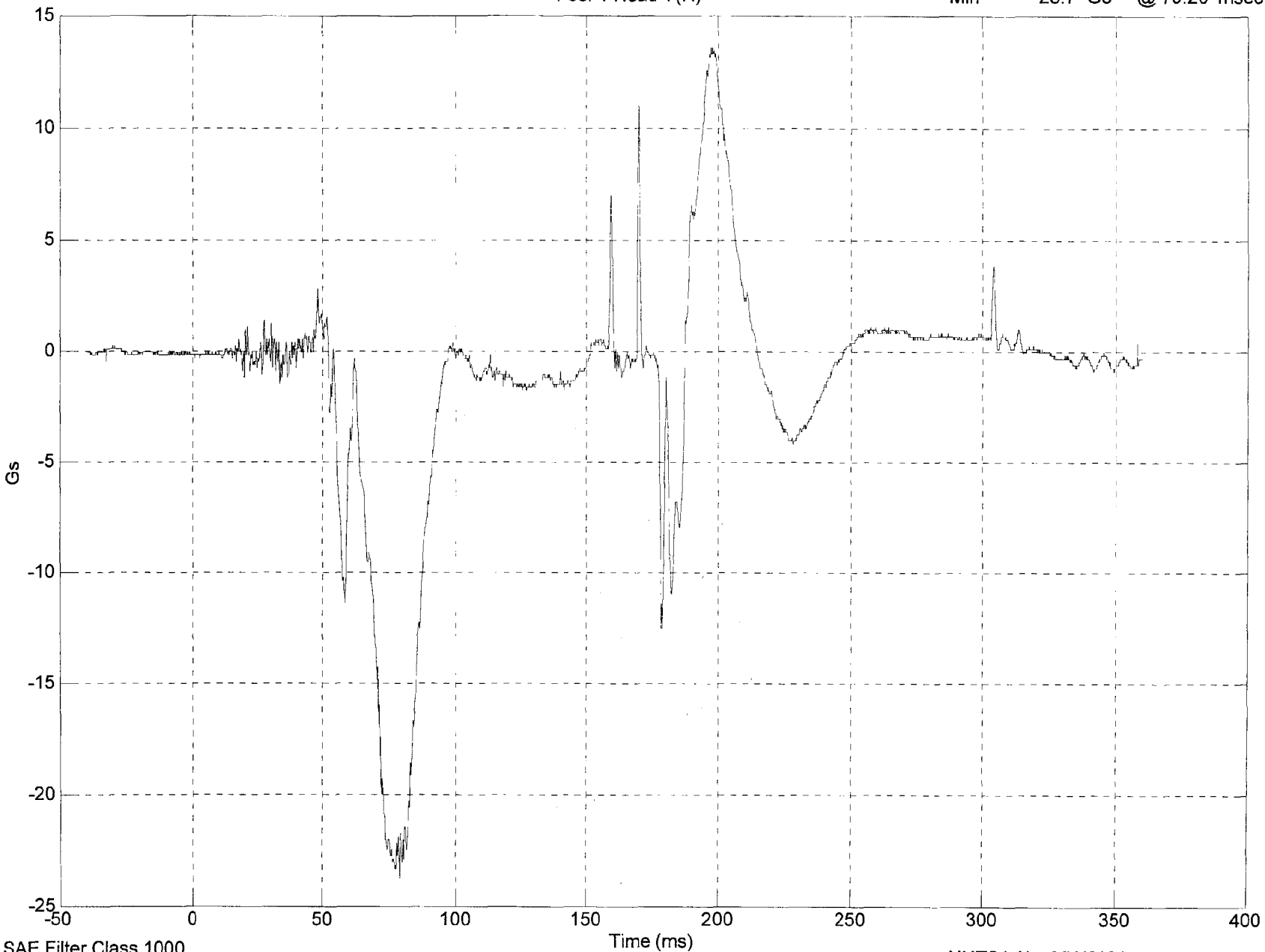
NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 13.6 Gs @ 197.20 msec
Min = -23.7 Gs @ 79.20 msec

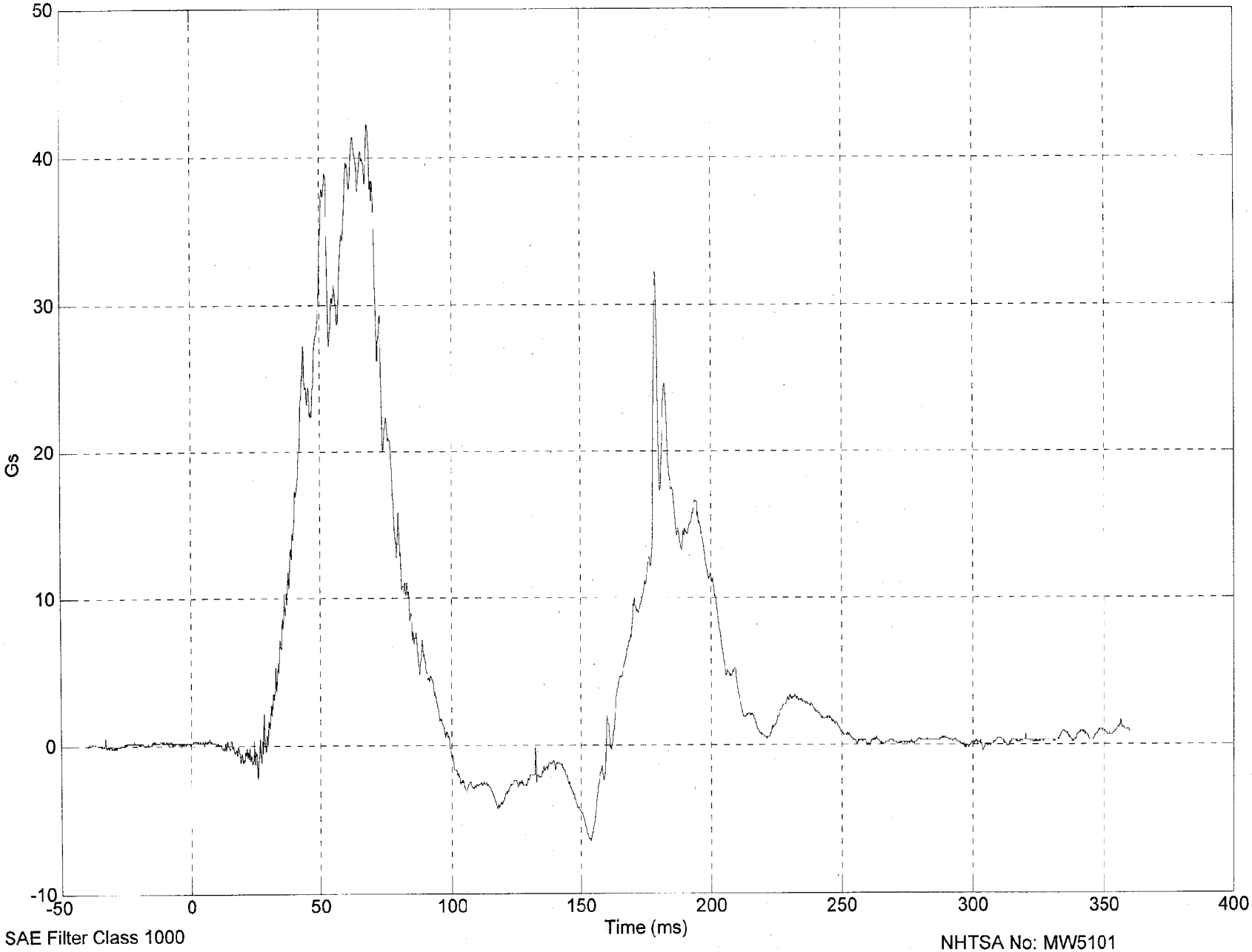


SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 42.2 Gs @ 68.10 msec
Min = -6.41 Gs @ 153.70 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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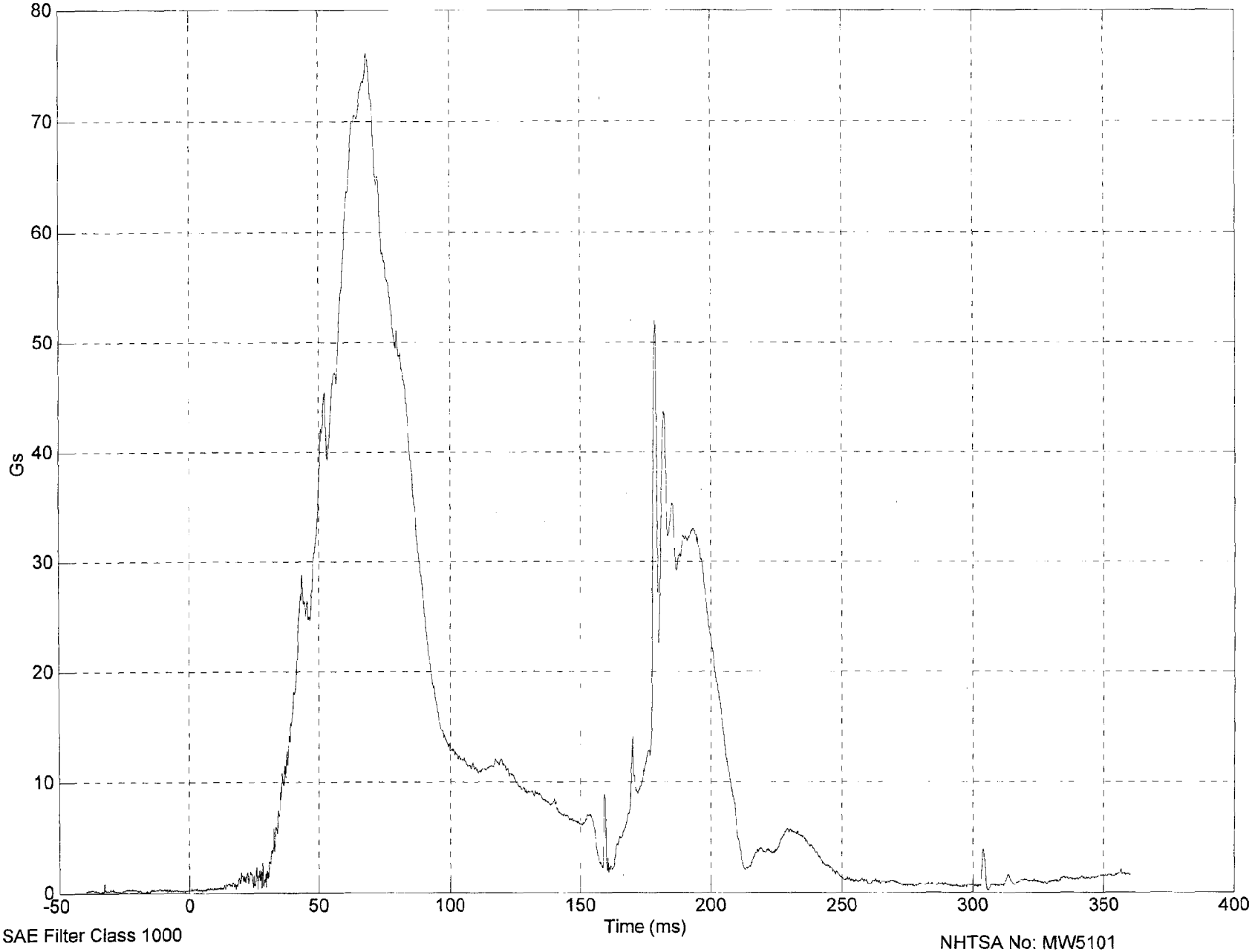
NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 76.1 Gs @ 68.20 msec
Min = 0.0686 Gs @ -39.70 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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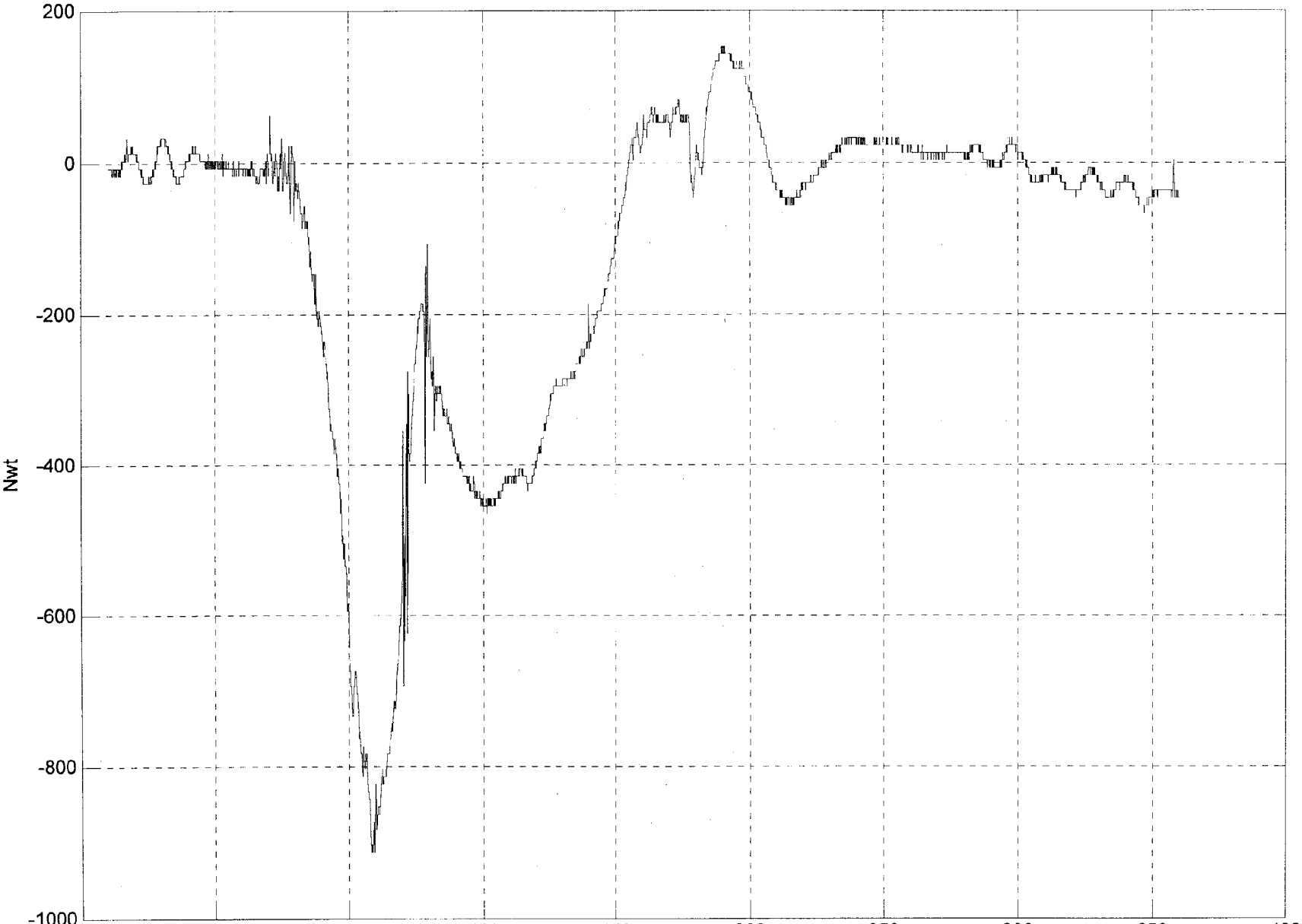
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Upper Neck Fx

Max = 153 Nwt @ 189.60 msec
Min = -913 Nwt @ 58.30 msec



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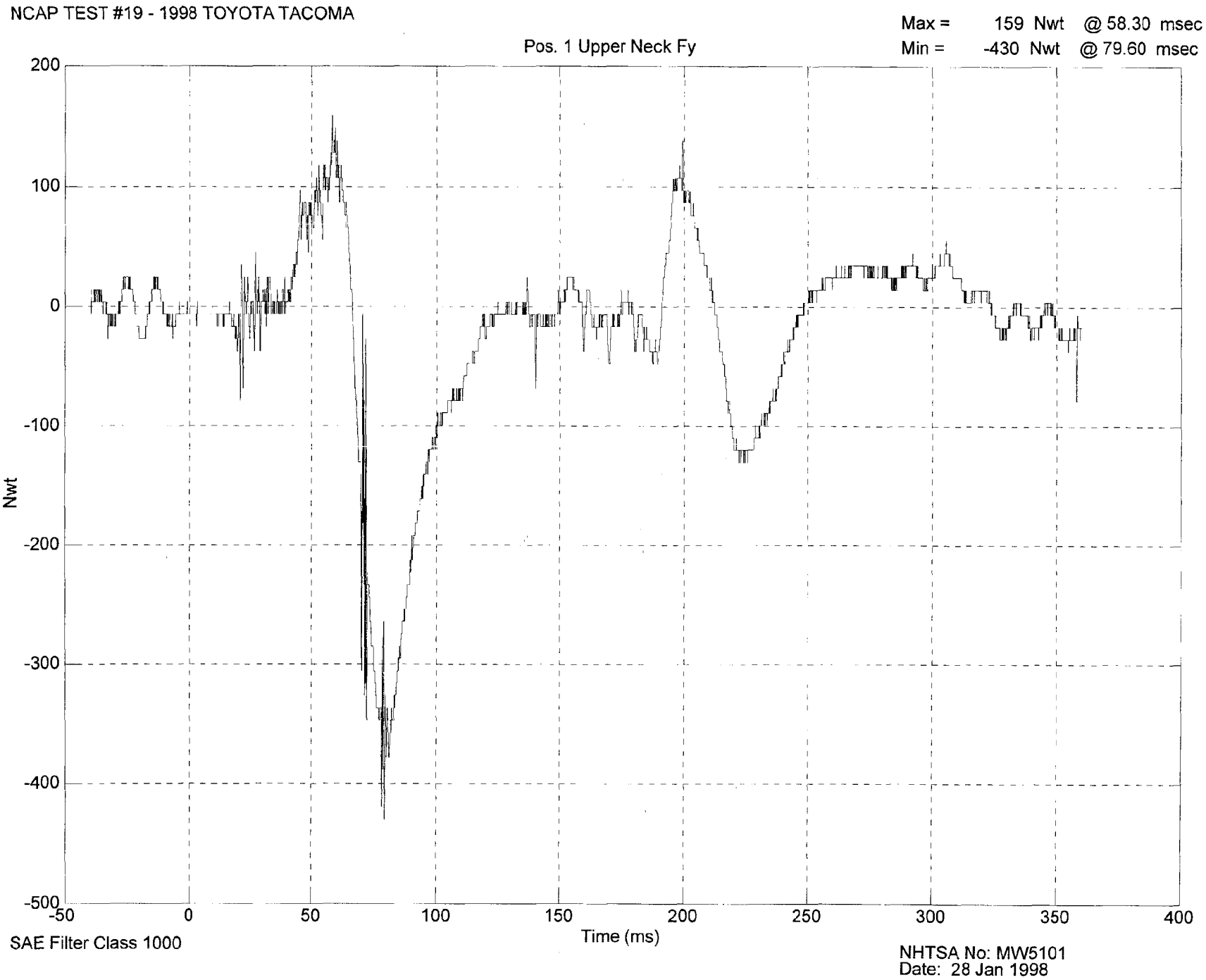
SAE Filter Class 1000

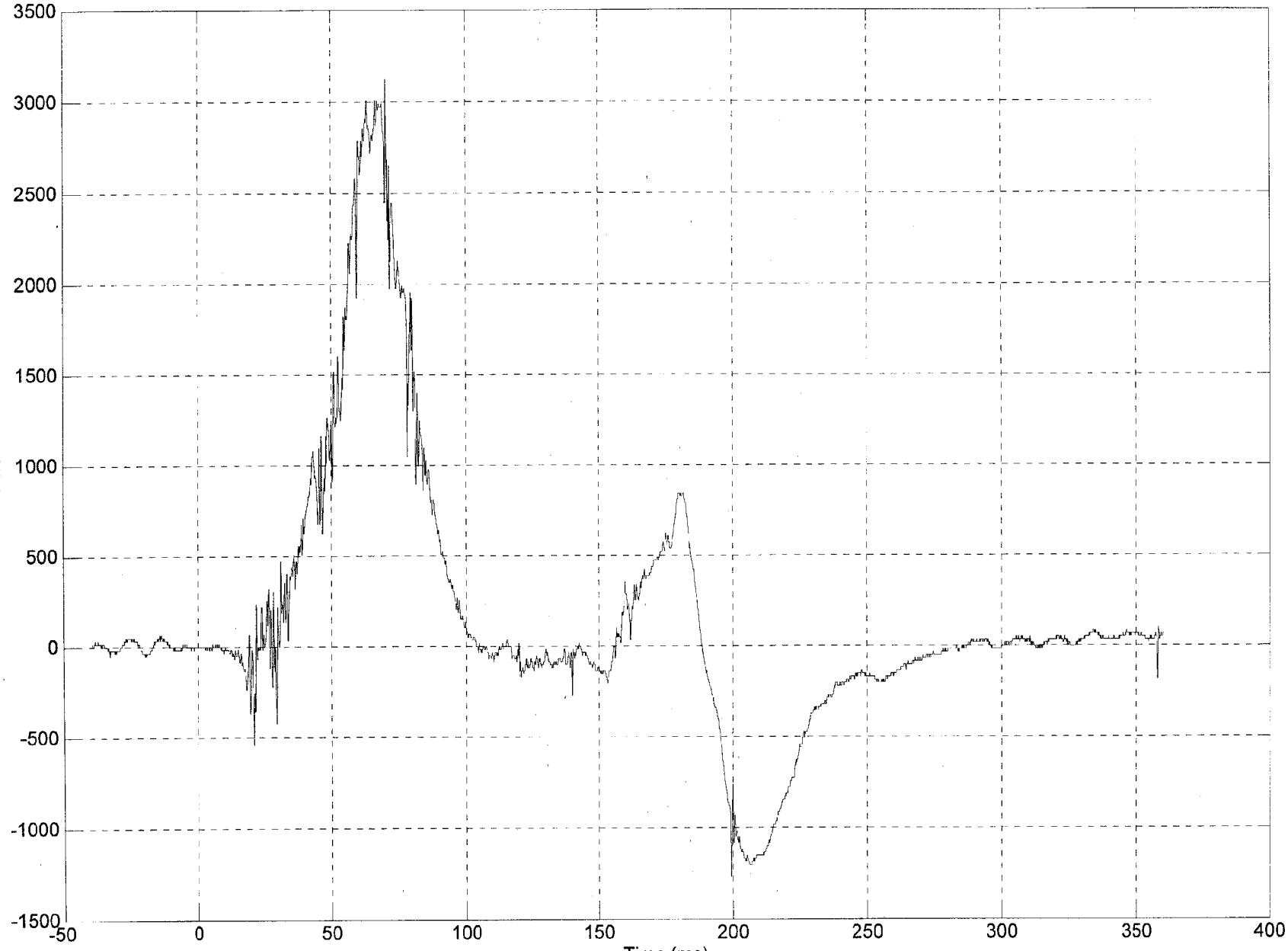
NHTSA No: MW5101
Date: 28 Jan 1998


NCAP TEST #19 - 1998 TOYOTA TACOMA
Pos. 1 Upper Neck Fy
Max = 159 Nwt @ 58.30 msec
Min = -430 Nwt @ 79.60 msec
200
100
0
-100
-200
-300
-400
-500
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Upper Neck Fz

Max = 3.12e+003 Nwt @ 70.40 msec
Min = -1.27e+003 Nwt @ 199.40 msec



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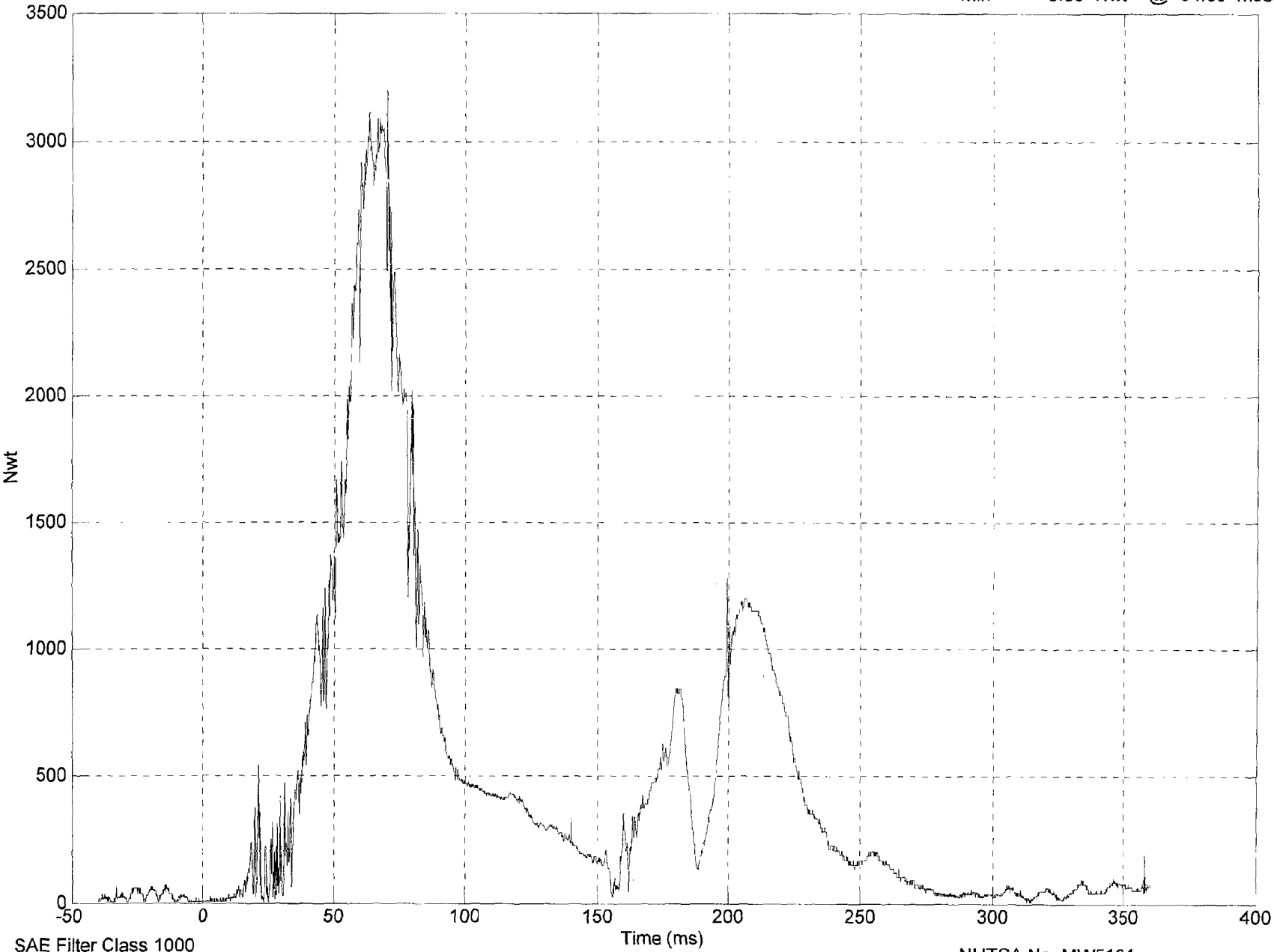
SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 3.2e+003 Nwt @ 70.40 msec
Min = 5.36 Nwt @ -34.80 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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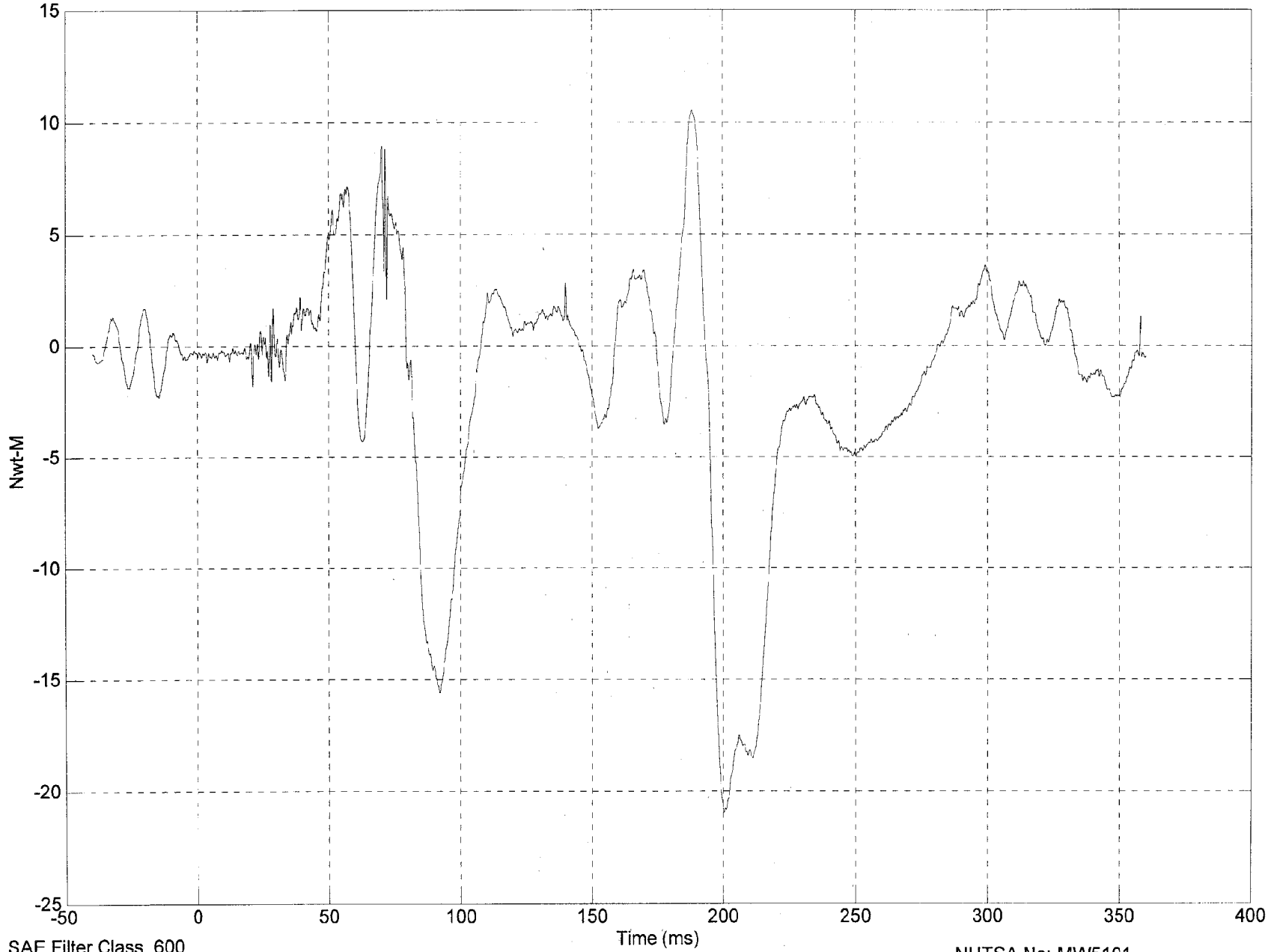
NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 10.5 Nwt-M @ 188.20 msec
Min = -21 Nwt-M @ 200.30 msec

Pos. 1 Upper Neck Mx



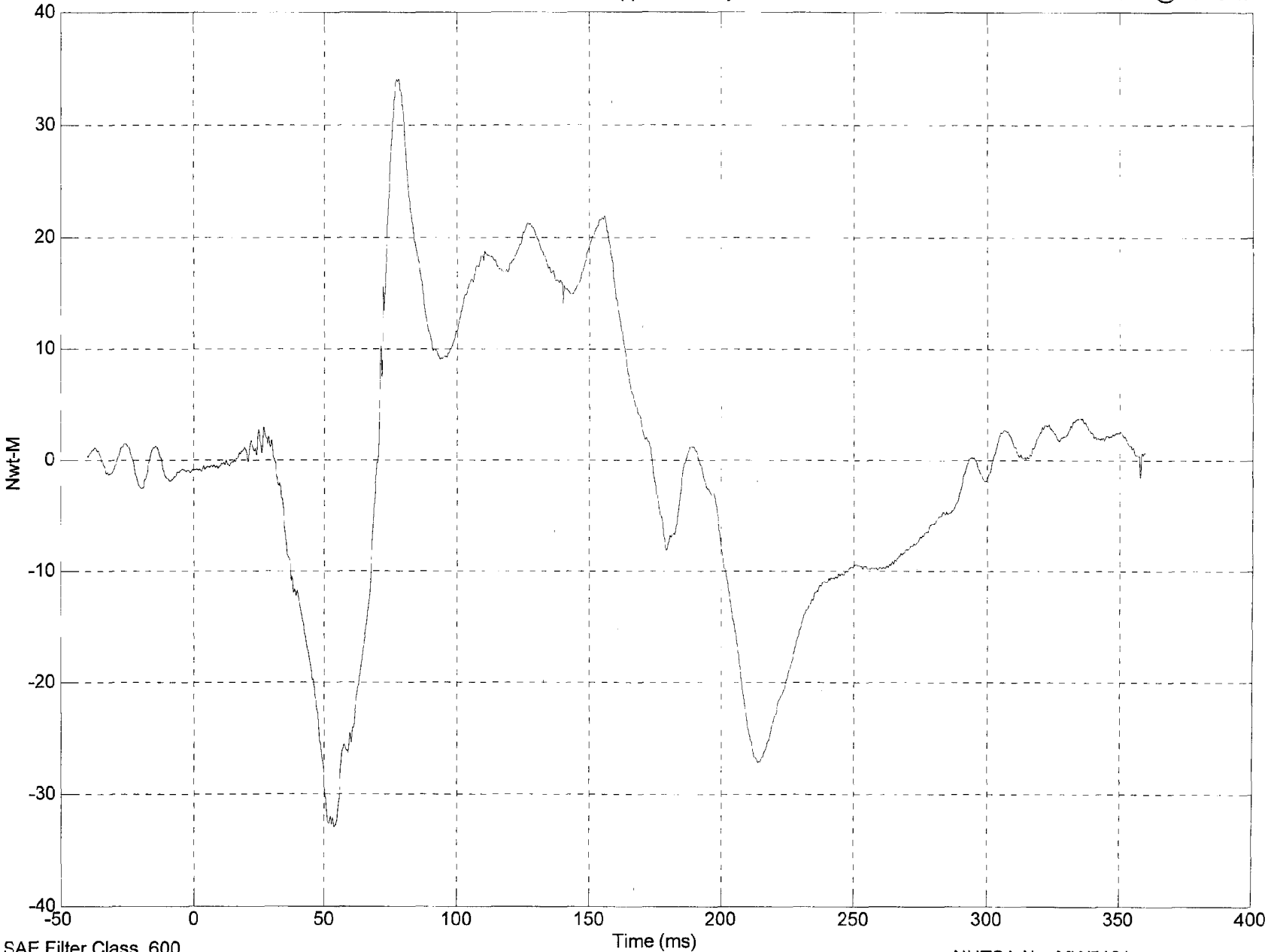
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 34.1 Nwt-M @ 78.20 msec
Min = -32.9 Nwt-M @ 53.70 msec



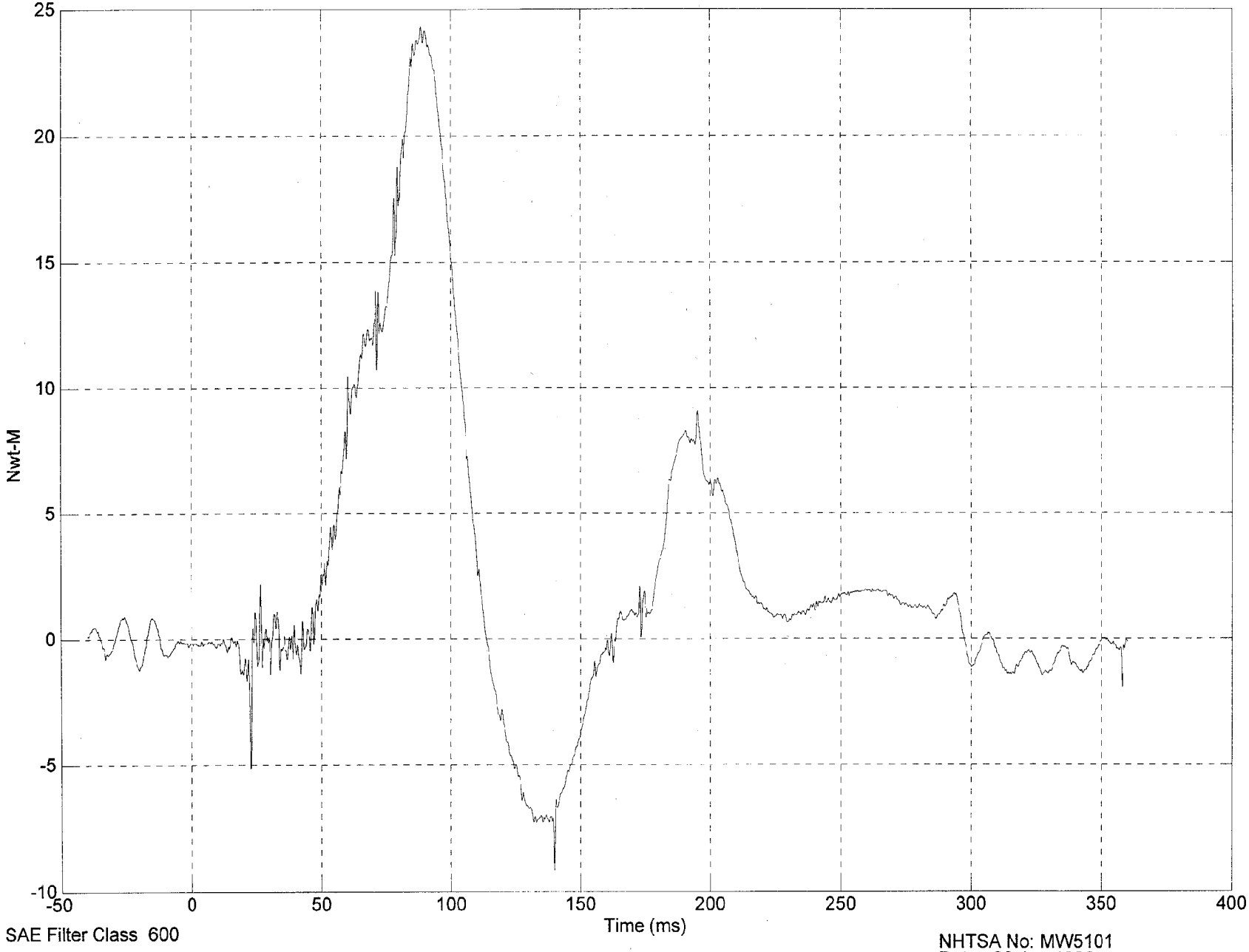
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Upper Neck Mz

Max = 24.3 Nwt-M @ 88.60 msec
Min = -9.14 Nwt-M @ 139.80 msec



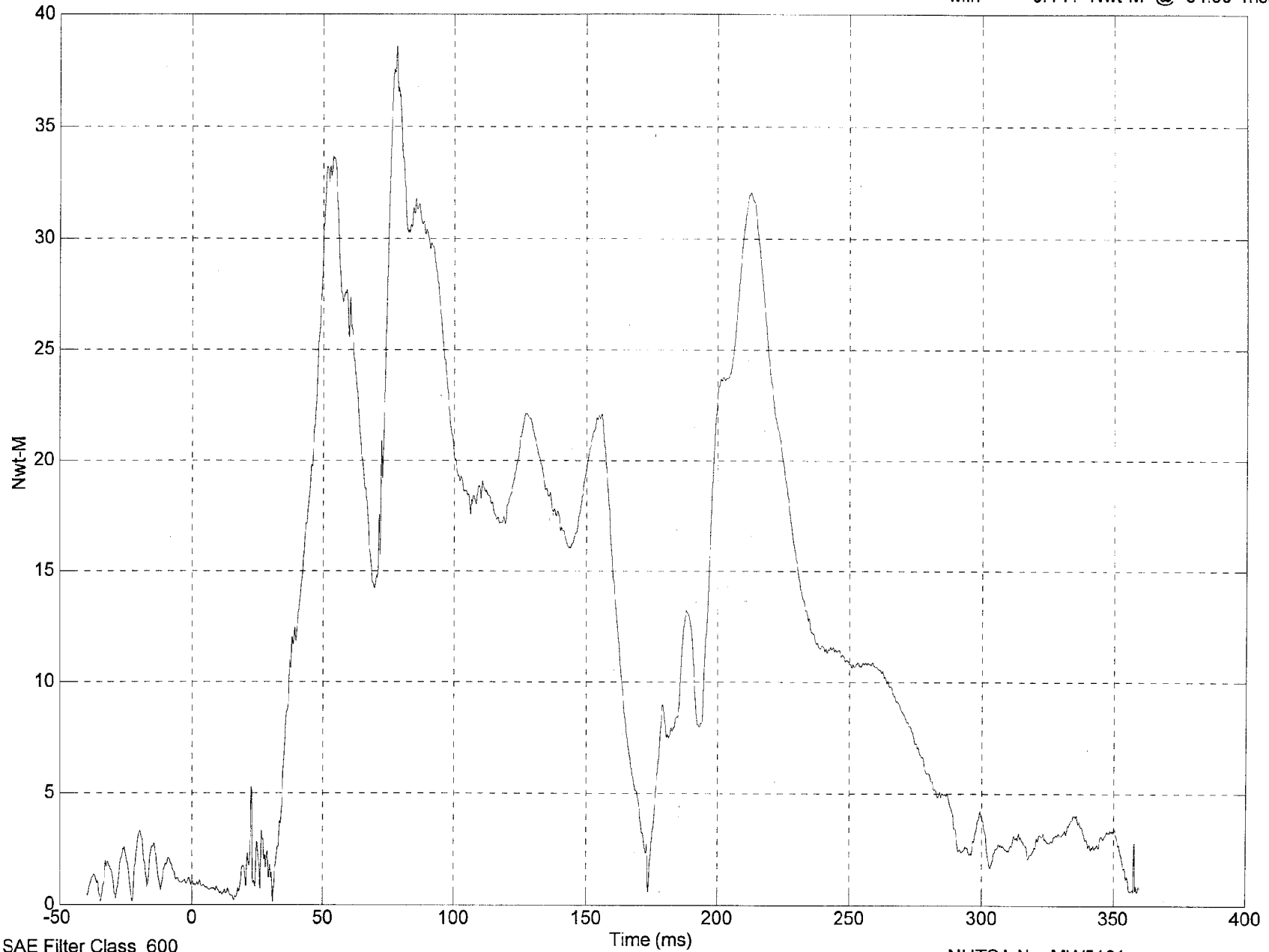
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

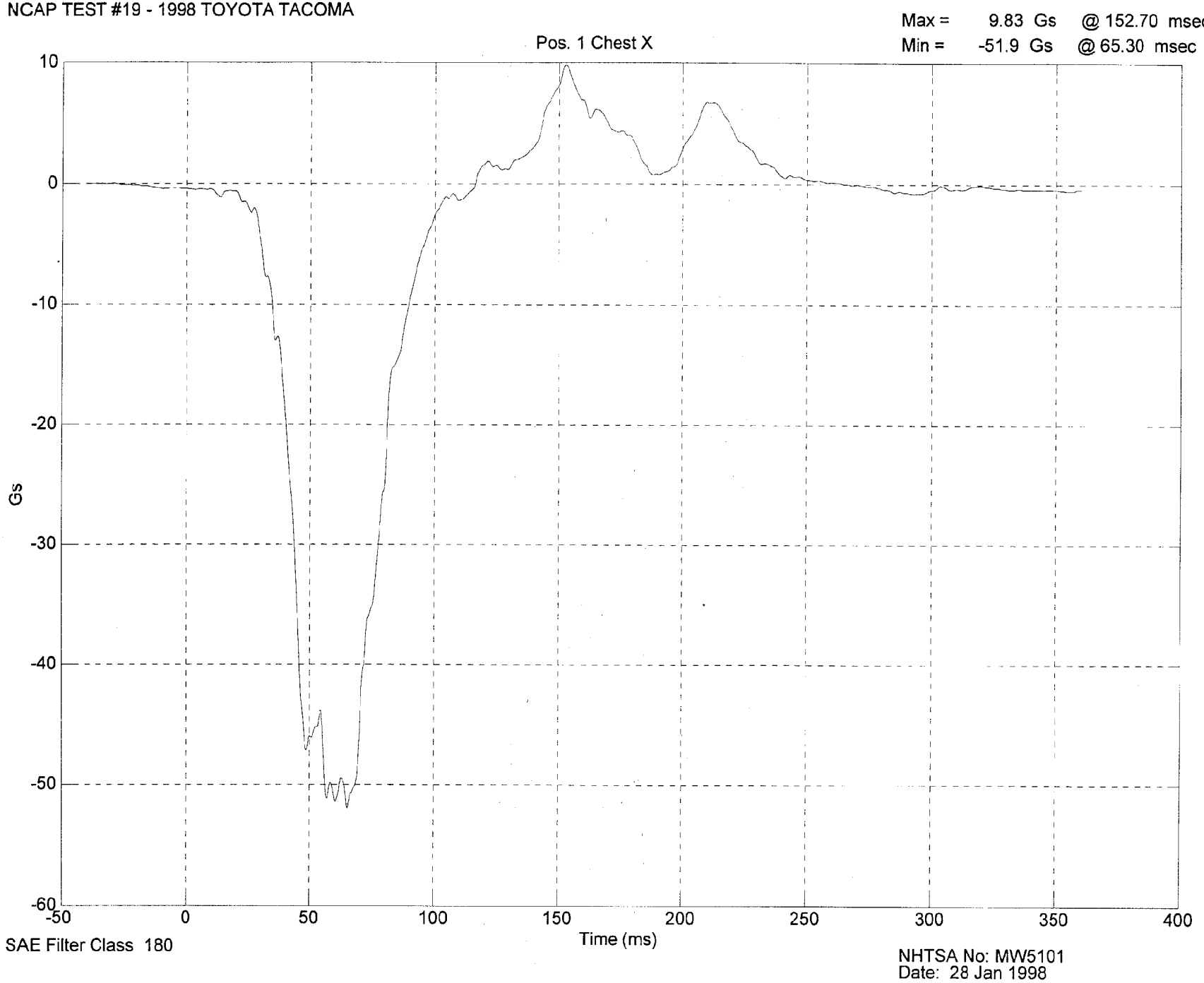
Max = 38.6 Nwt-M @ 78.30 msec
Min = 0.141 Nwt-M @ -34.80 msec



SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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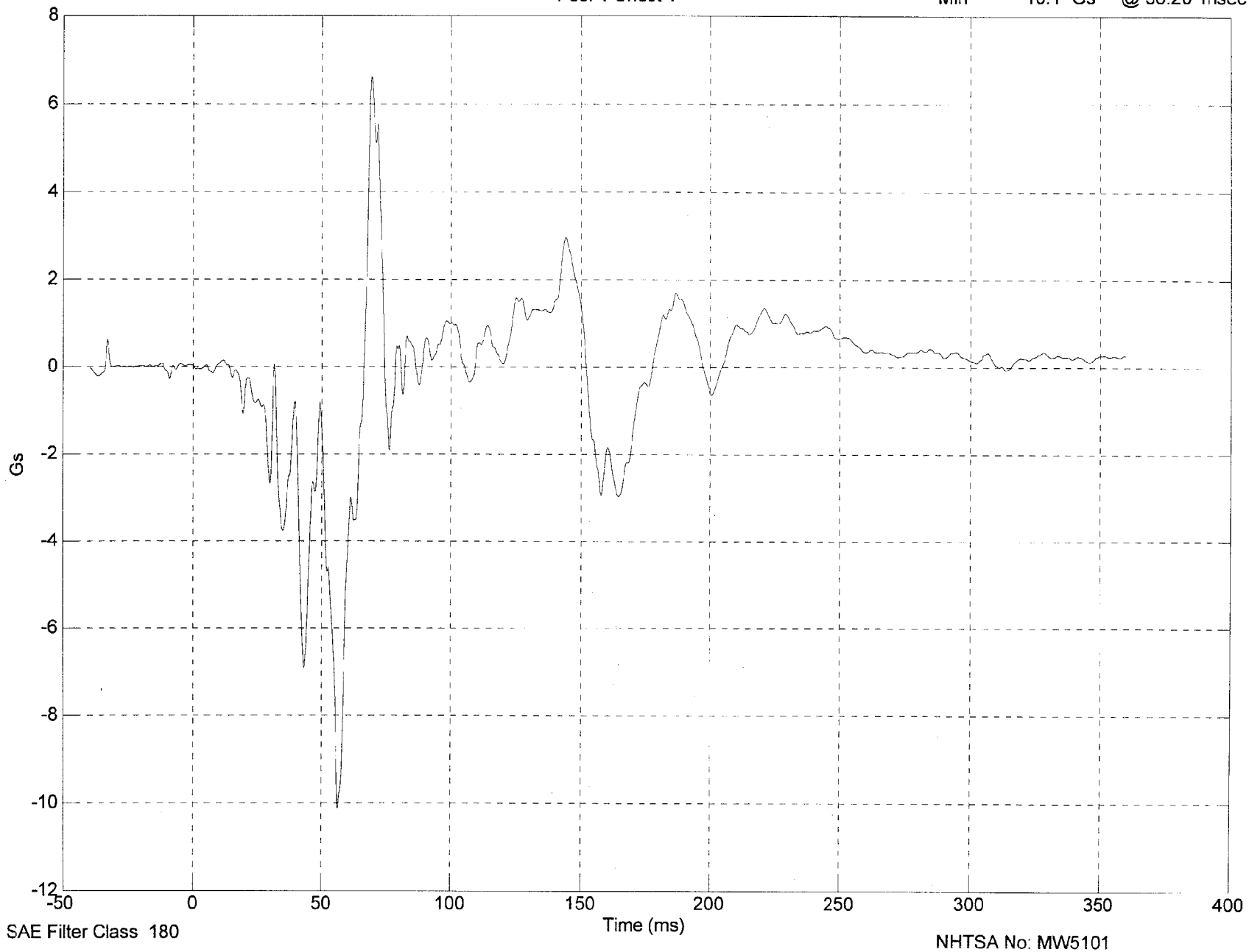
NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 6.61 Gs @ 69.20 msec
Min = -10.1 Gs @ 56.20 msec



SAE Filter Class 180

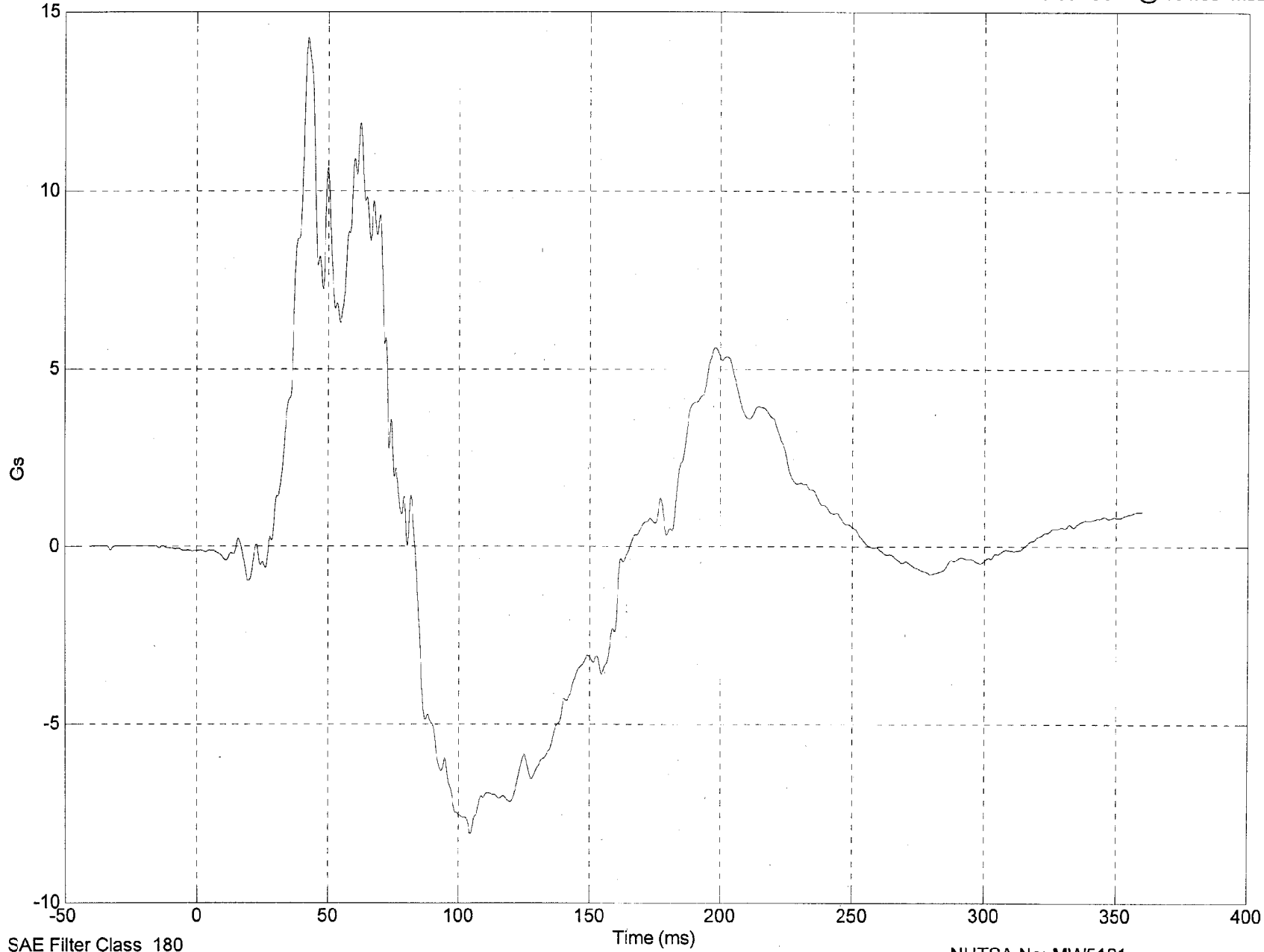
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Chest Z

Max = 14.3 Gs @ 42.40 msec
Min = -8.06 Gs @ 104.60 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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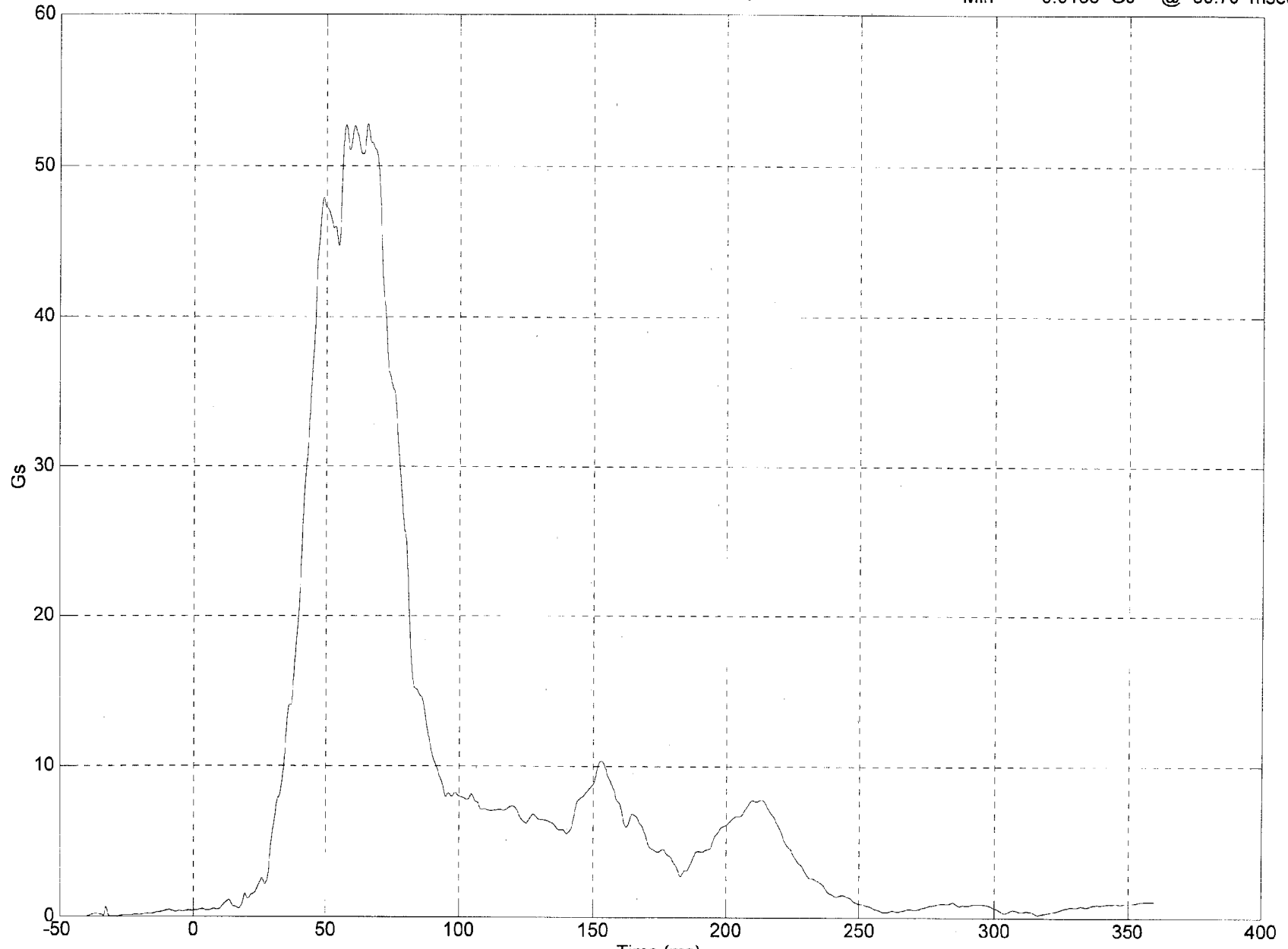
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Chest Resultant

Max = 52.8 Gs @ 65.20 msec
Min = 0.0136 Gs @ -30.70 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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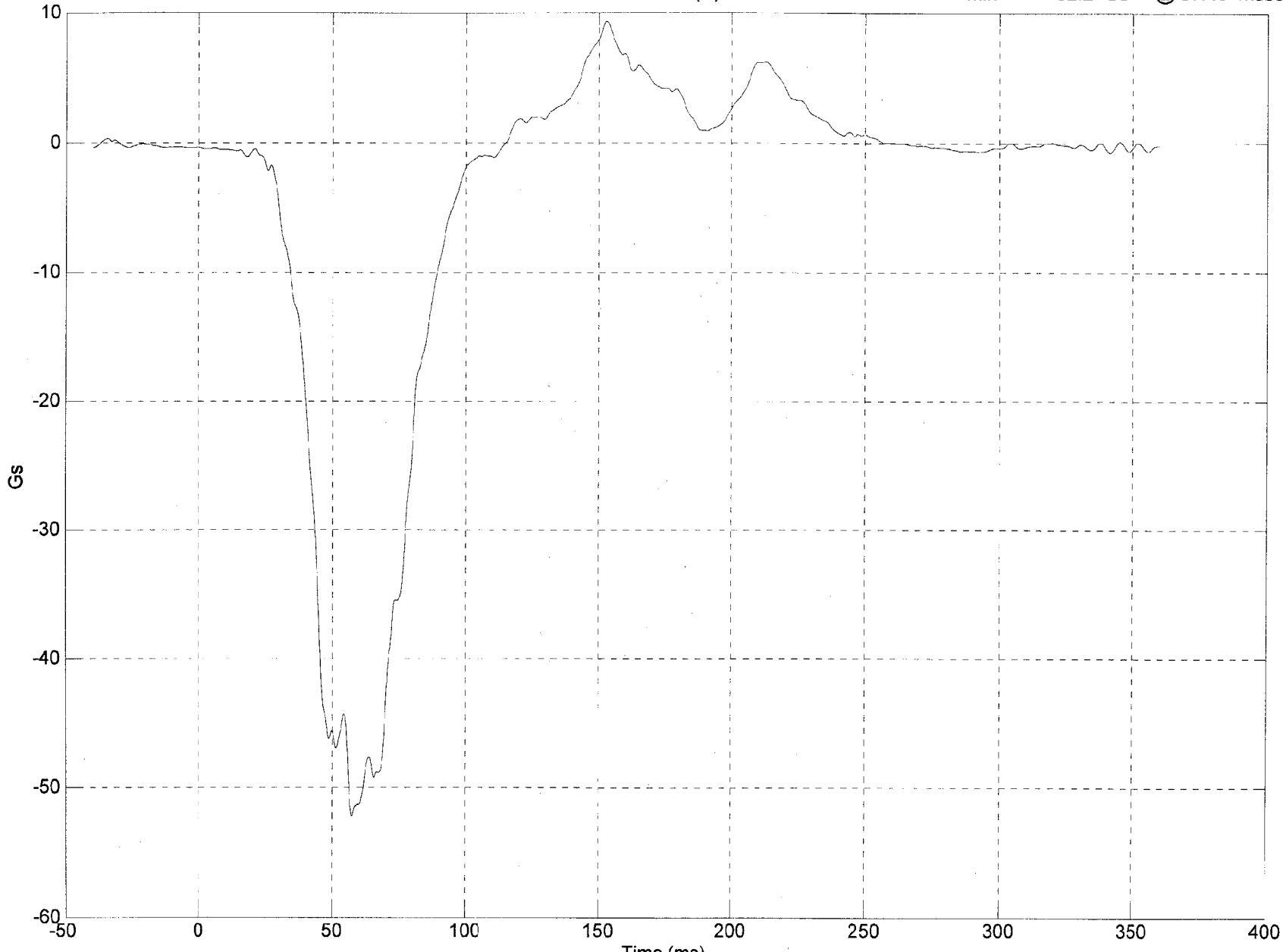
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Chest X(R)

Max = 9.34 Gs @ 152.70 msec
Min = -52.2 Gs @ 57.40 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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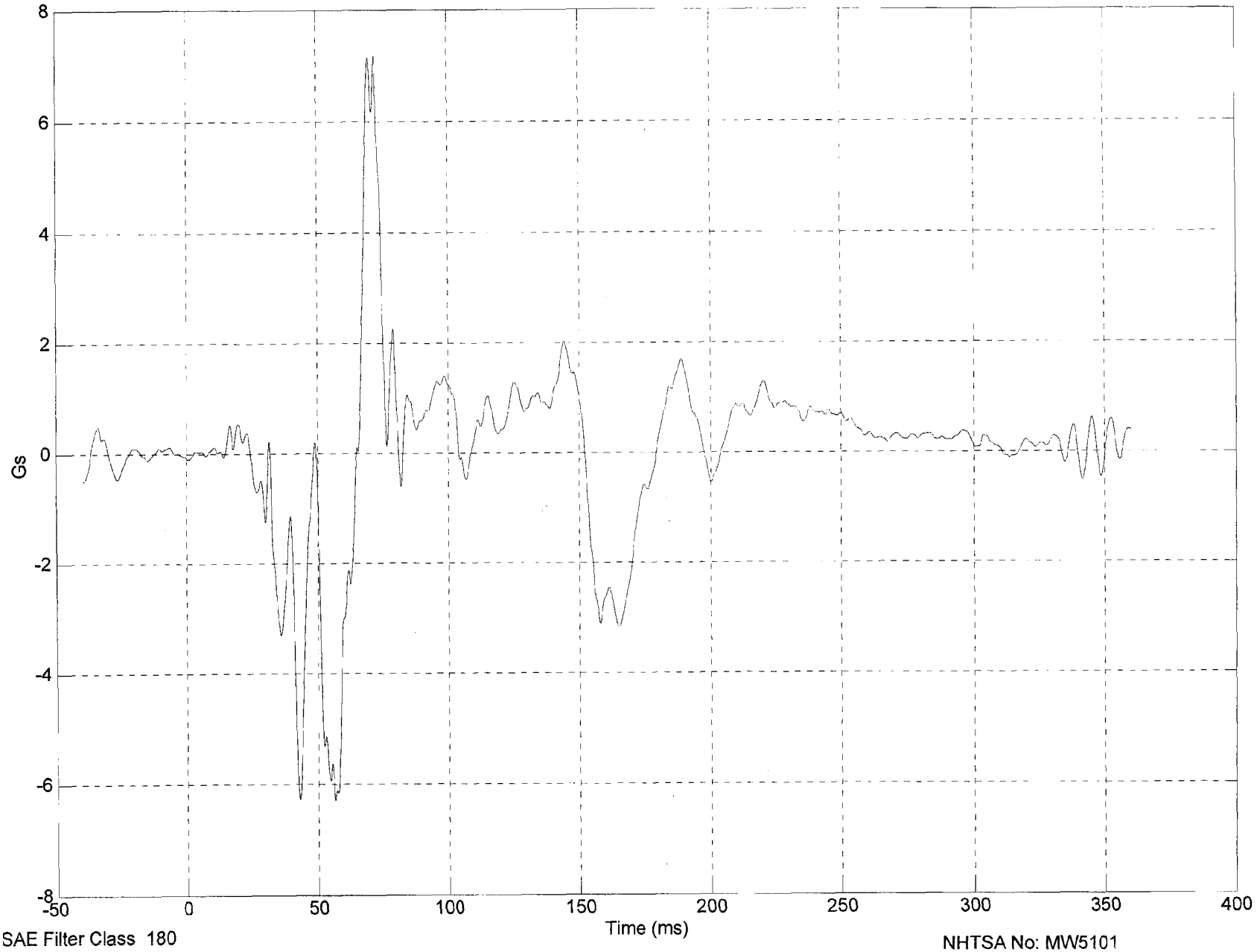
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Chest Y(R)

Max = 7.17 Gs @ 72.00 msec
Min = -6.29 Gs @ 56.20 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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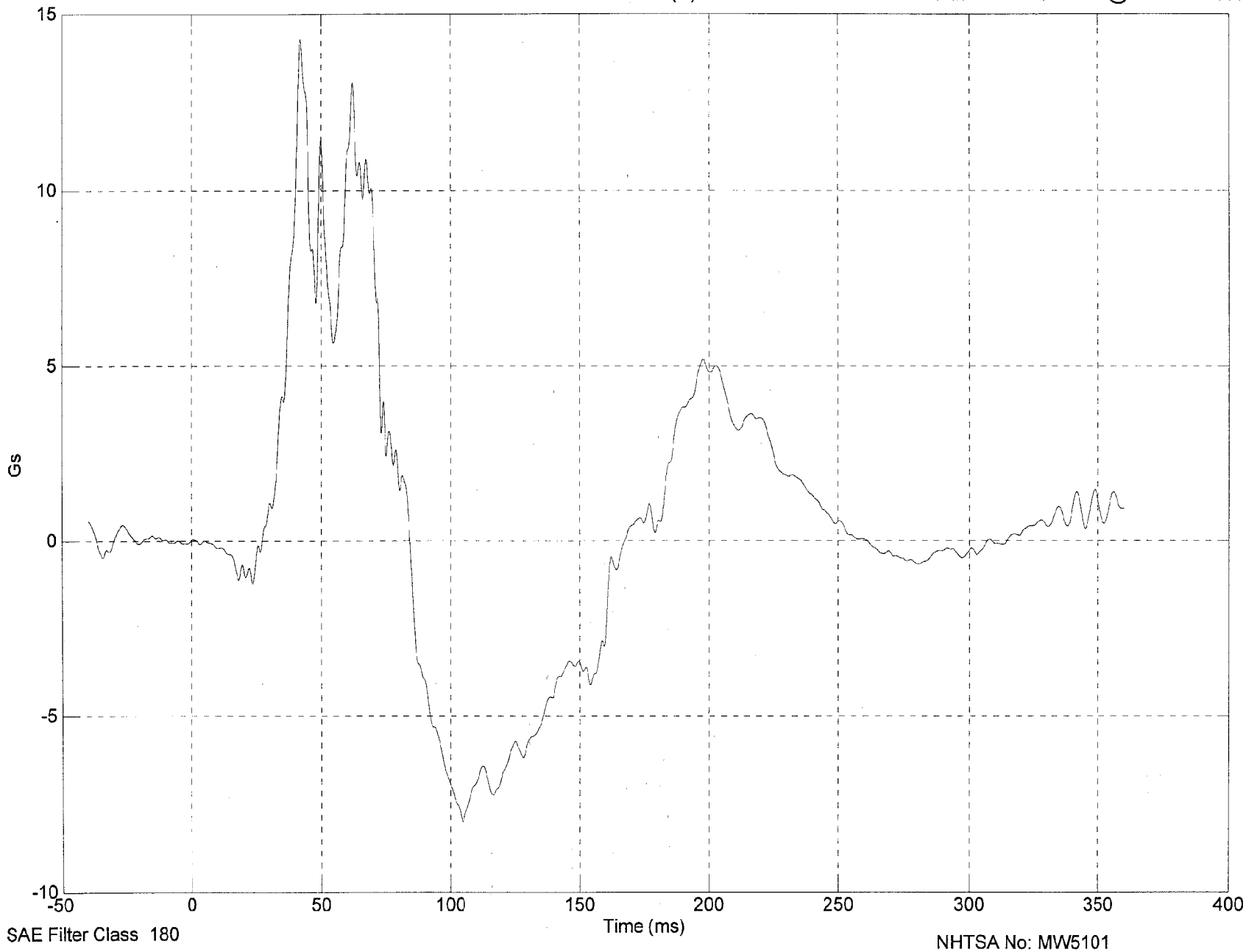
8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Chest Z(R)

Max = 14.3 Gs @ 42.00 msec
Min = -8 Gs @ 104.70 msec



SAE Filter Class 180

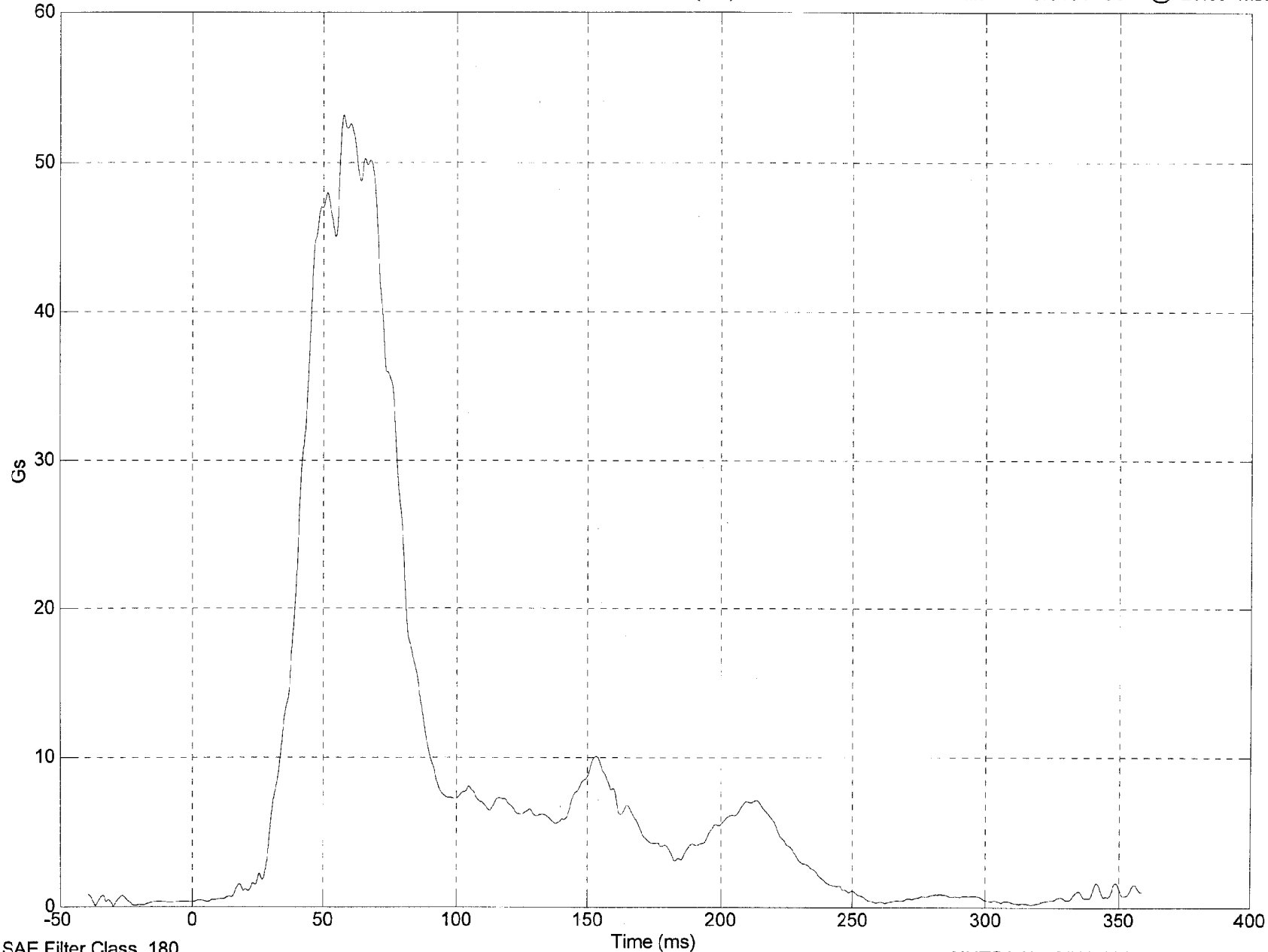
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Chest Res(RR)

Max = 53.2 Gs @ 57.50 msec
Min = 0.0161 Gs @ -29.90 msec



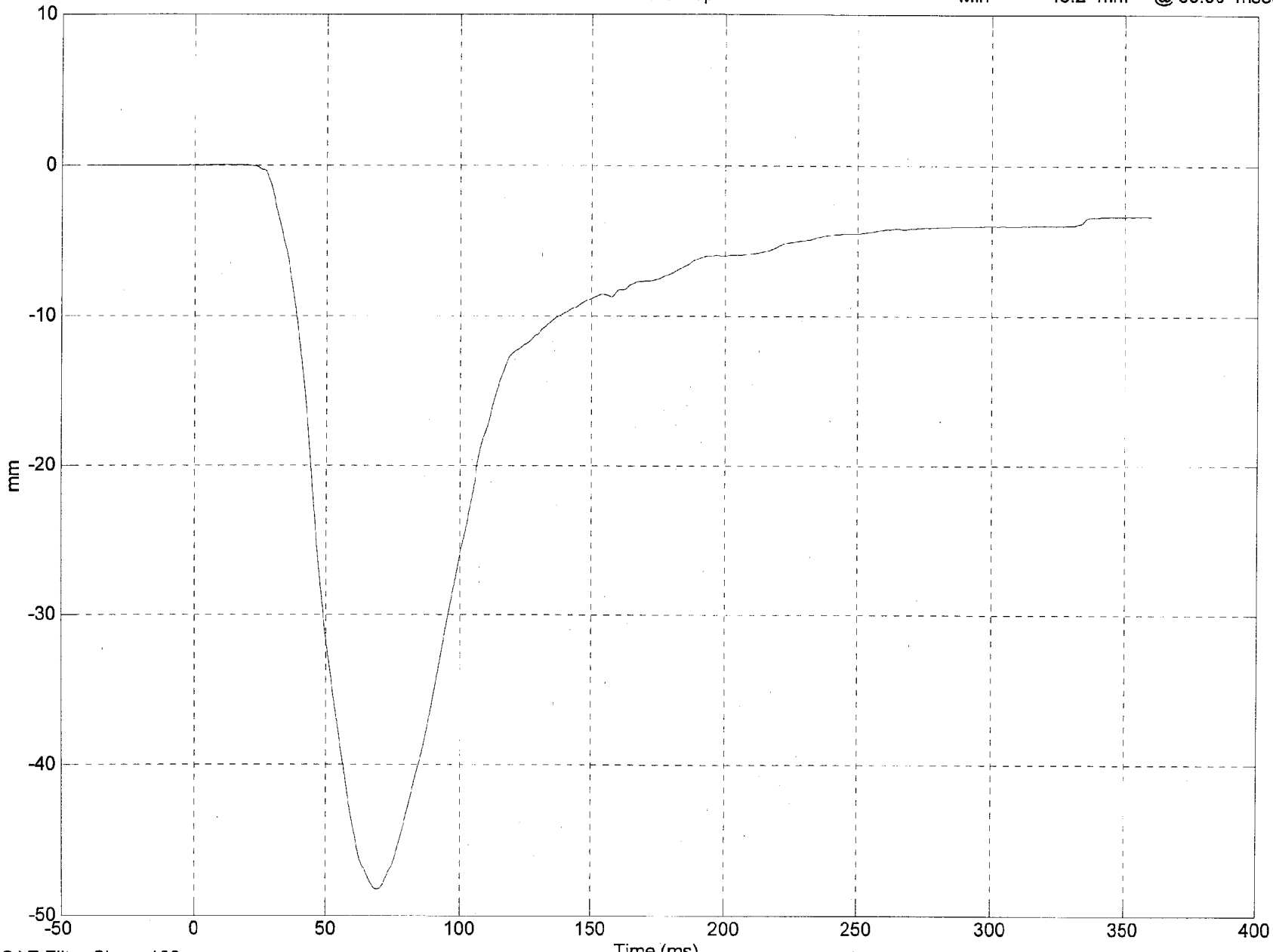
SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 0.0535 mm @ 10.80 msec
Min = -48.2 mm @ 68.90 msec



SAE Filter Class 180

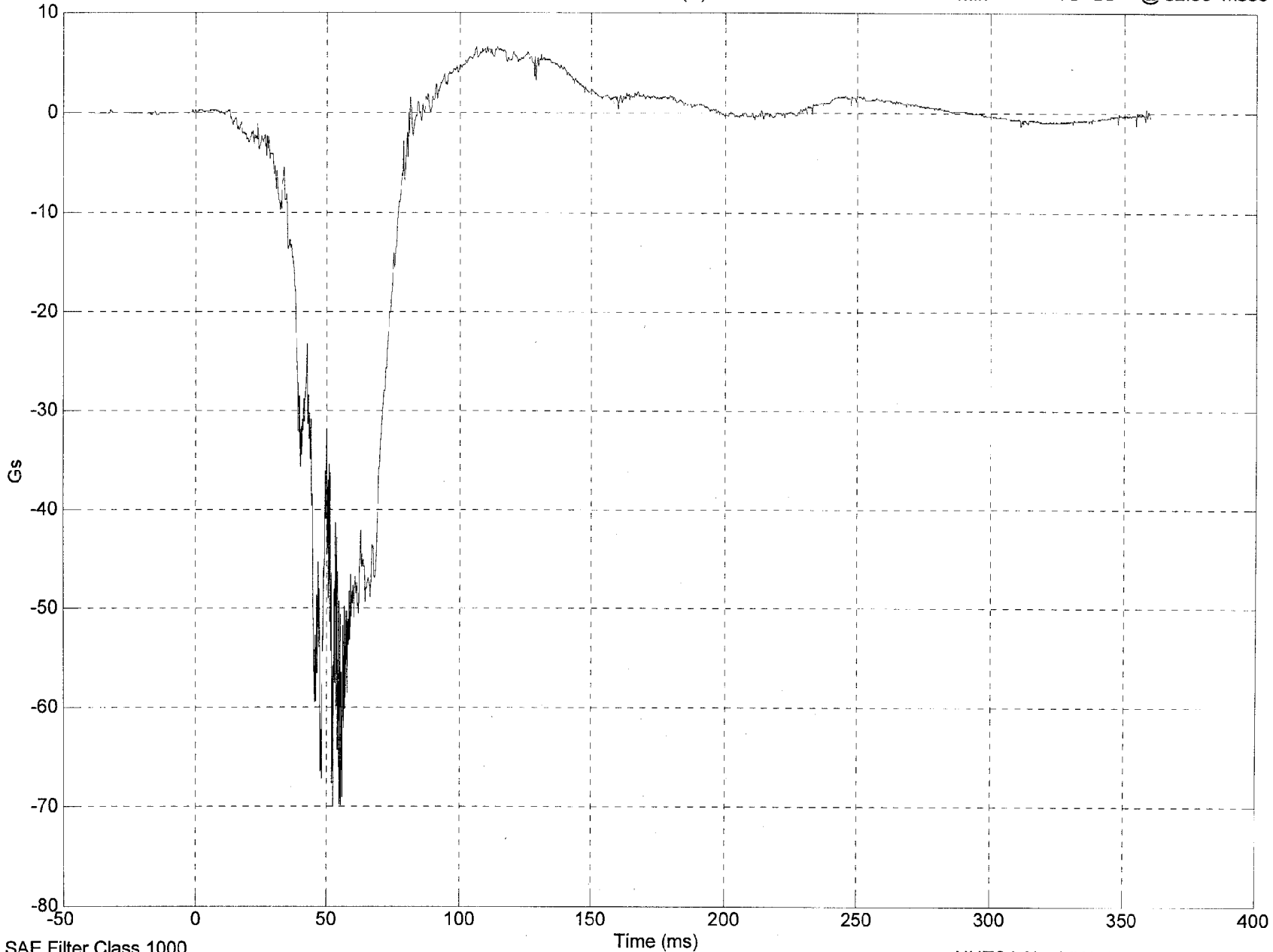
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Pelvic (X)

Max = 6.59 Gs @ 106.10 msec
Min = -70 Gs @ 52.50 msec



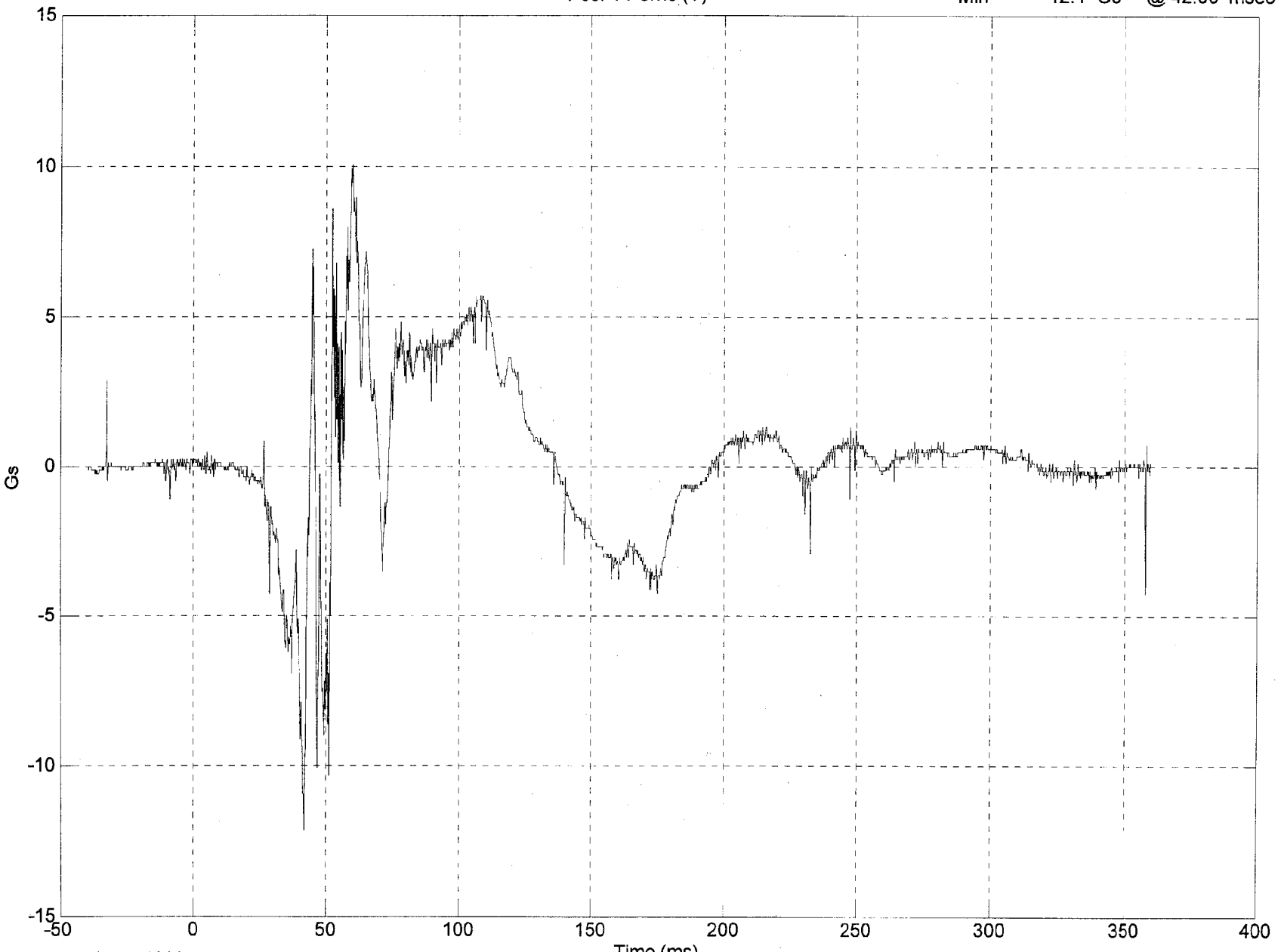
SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

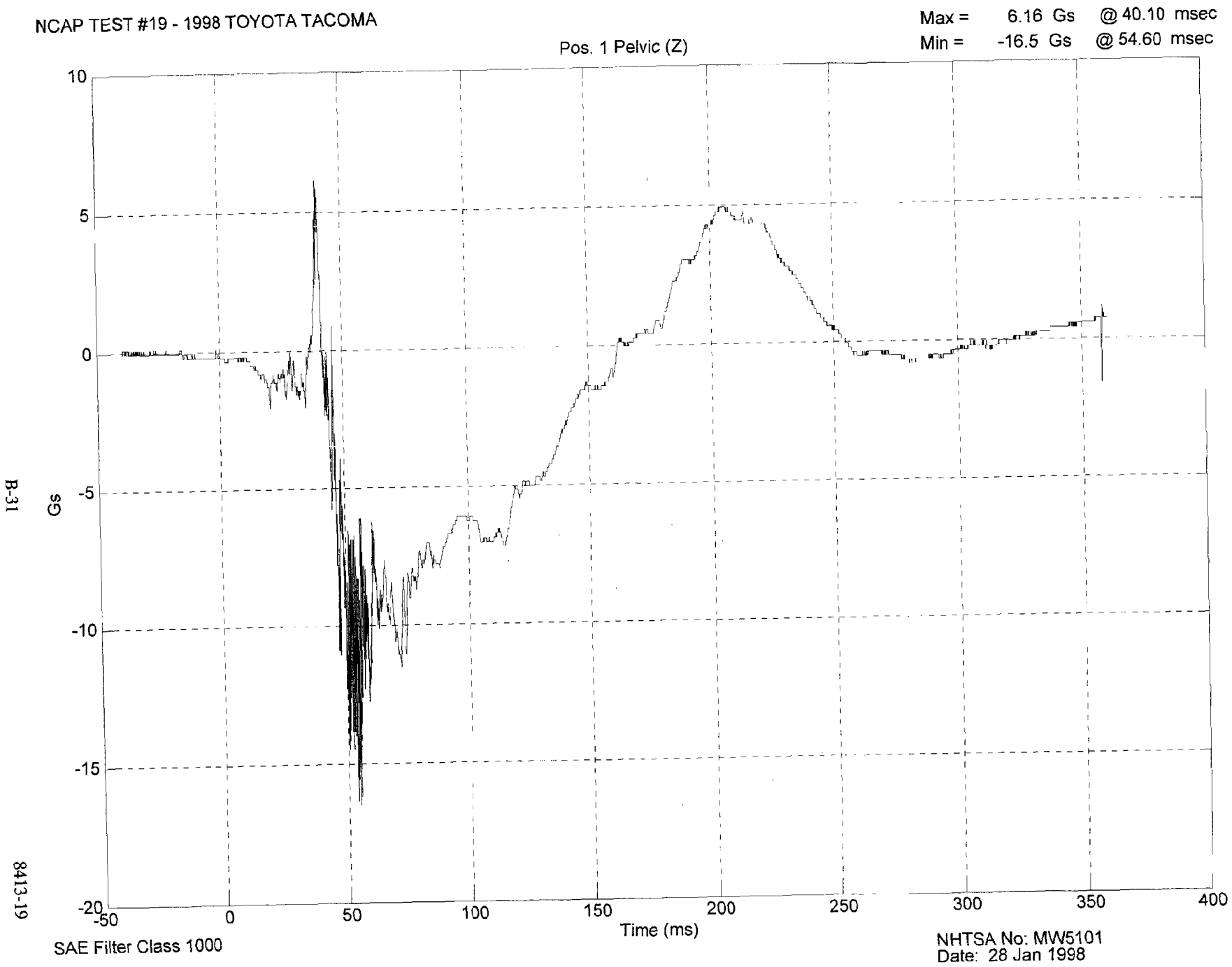
Max = 10.1 Gs @ 59.80 msec
Min = -12.1 Gs @ 42.00 msec

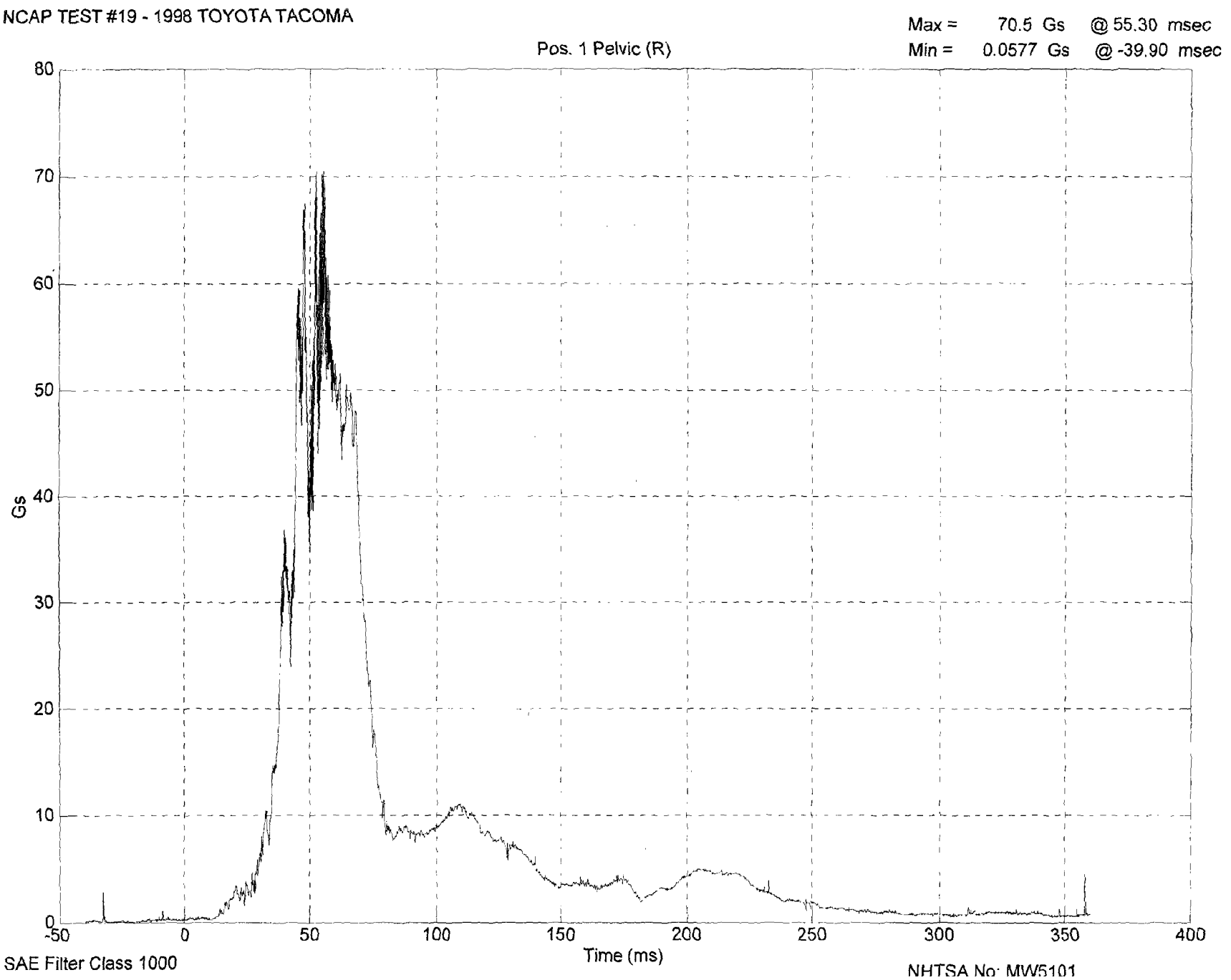


SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

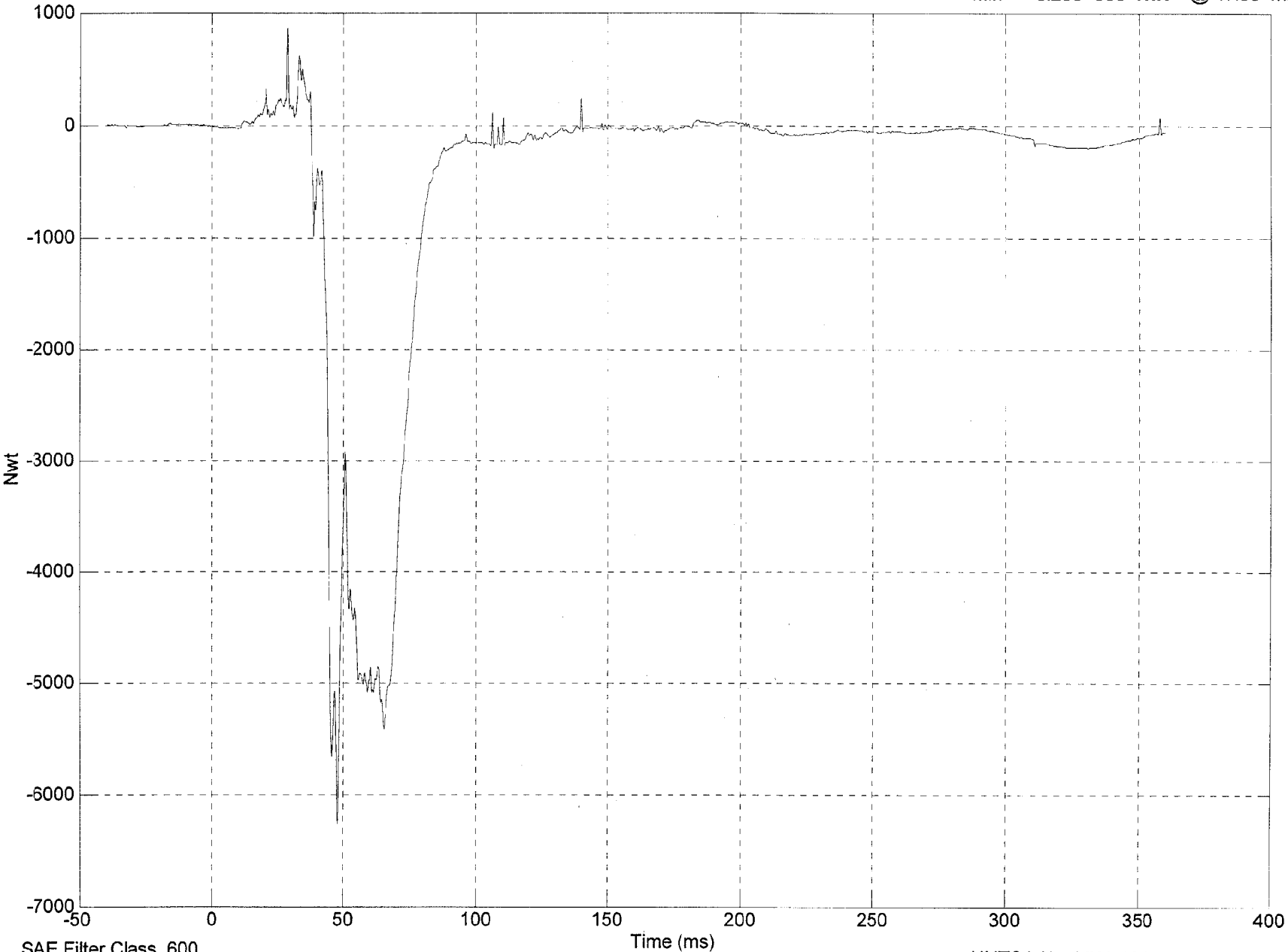

NCAP TEST #19 - 1998 TOYOTA TACOMA
Pos. 1 Pelvic (Z)
Max = 6.16 Gs @ 40.10 msec
Min = -16.5 Gs @ 54.60 msec
10
5
0
-5
-10
-15
-20
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW5101
Date: 28 Jan 1998


NCAP TEST #19 - 1998 TOYOTA TACOMA
Pos. 1 Pelvic (R)
Max = 70.5 Gs @ 55.30 msec
Min = 0.0577 Gs @ -39.90 msec
Gs
Time (ms)
SAE Filter Class 1000
NHTSA No: MW5101

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Left Femur

Max = 865 Nwt @ 28.80 msec
Min = -6.26e+003 Nwt @ 47.90 msec



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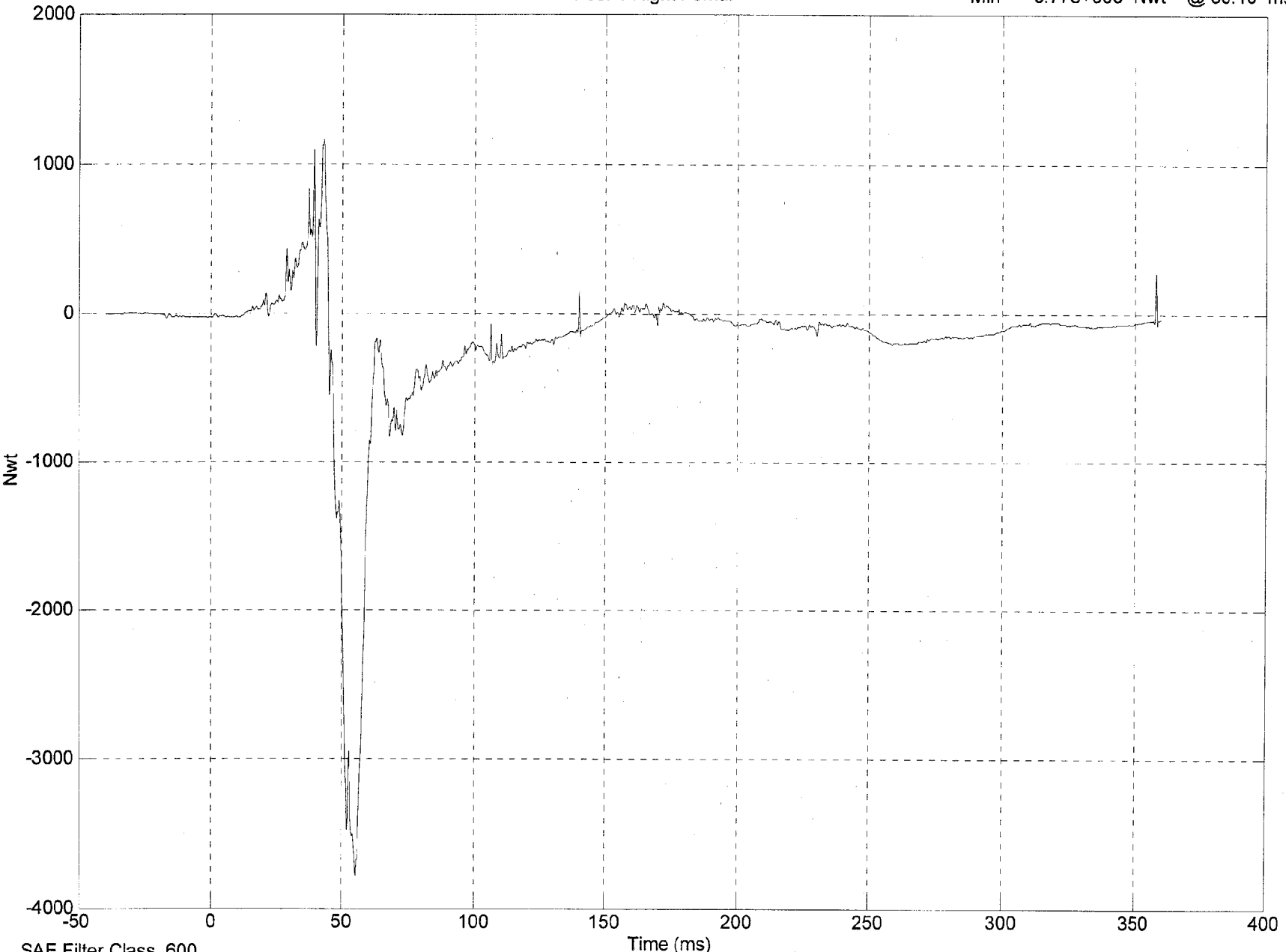
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Right Femur

Max = 1.16e+003 Nwt @ 42.90 msec
Min = -3.77e+003 Nwt @ 55.10 msec



SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

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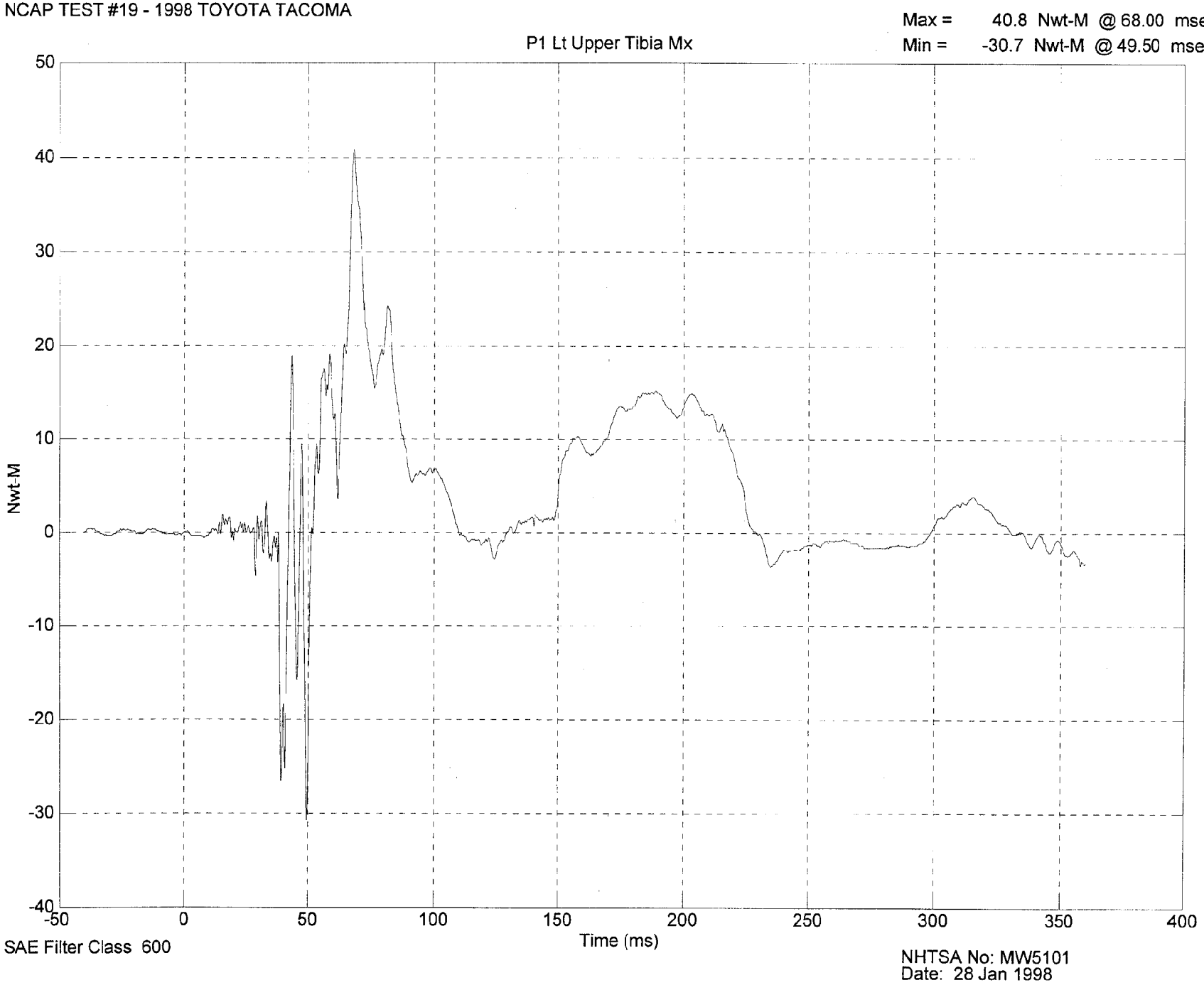
NCAP TEST #19 - 1998 TOYOTA TACOMA



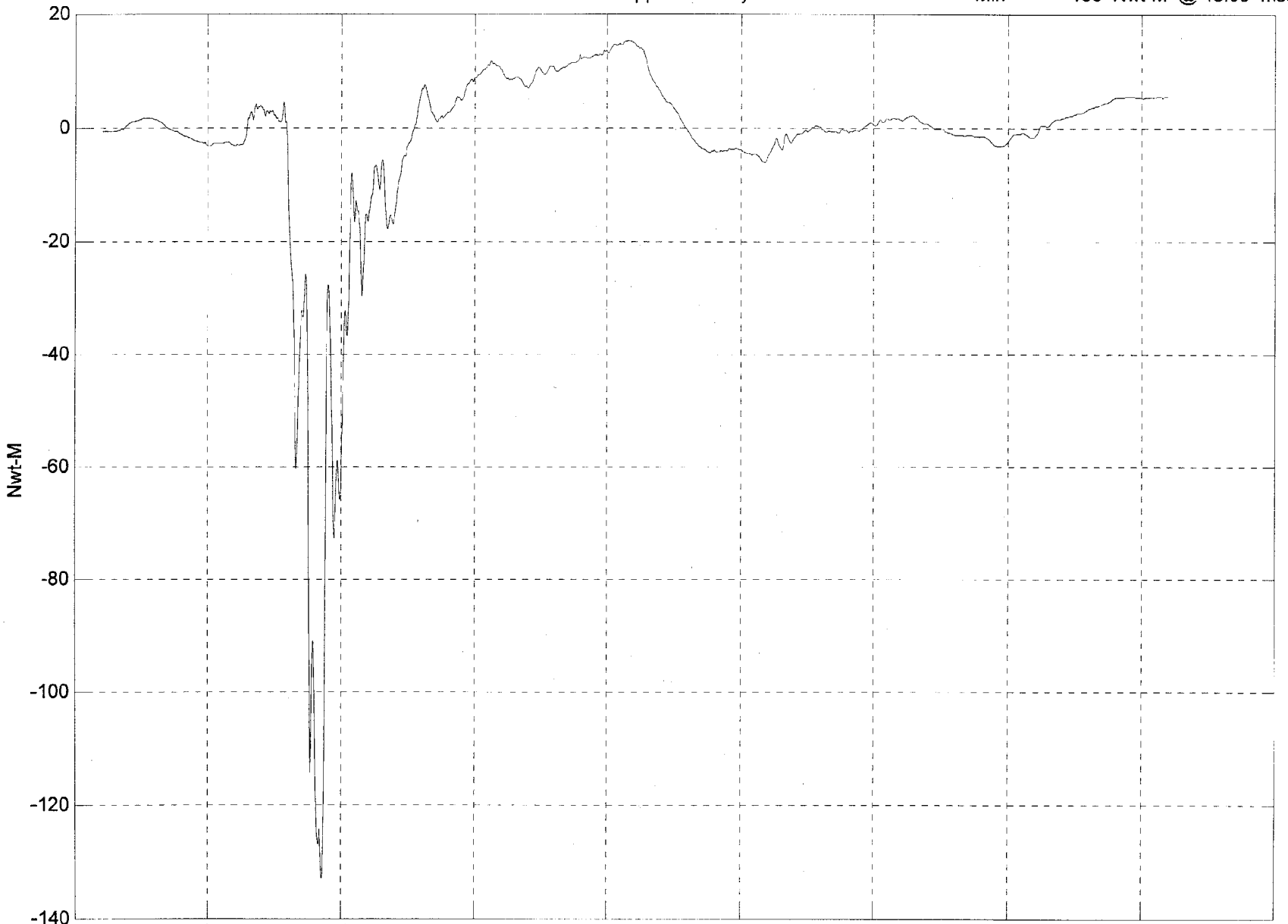
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

P1 Lt Upper Tibia My

Max = 15.4 Nwt-M @ 157.90 msec
Min = -133 Nwt-M @ 43.00 msec



SAE Filter Class 600

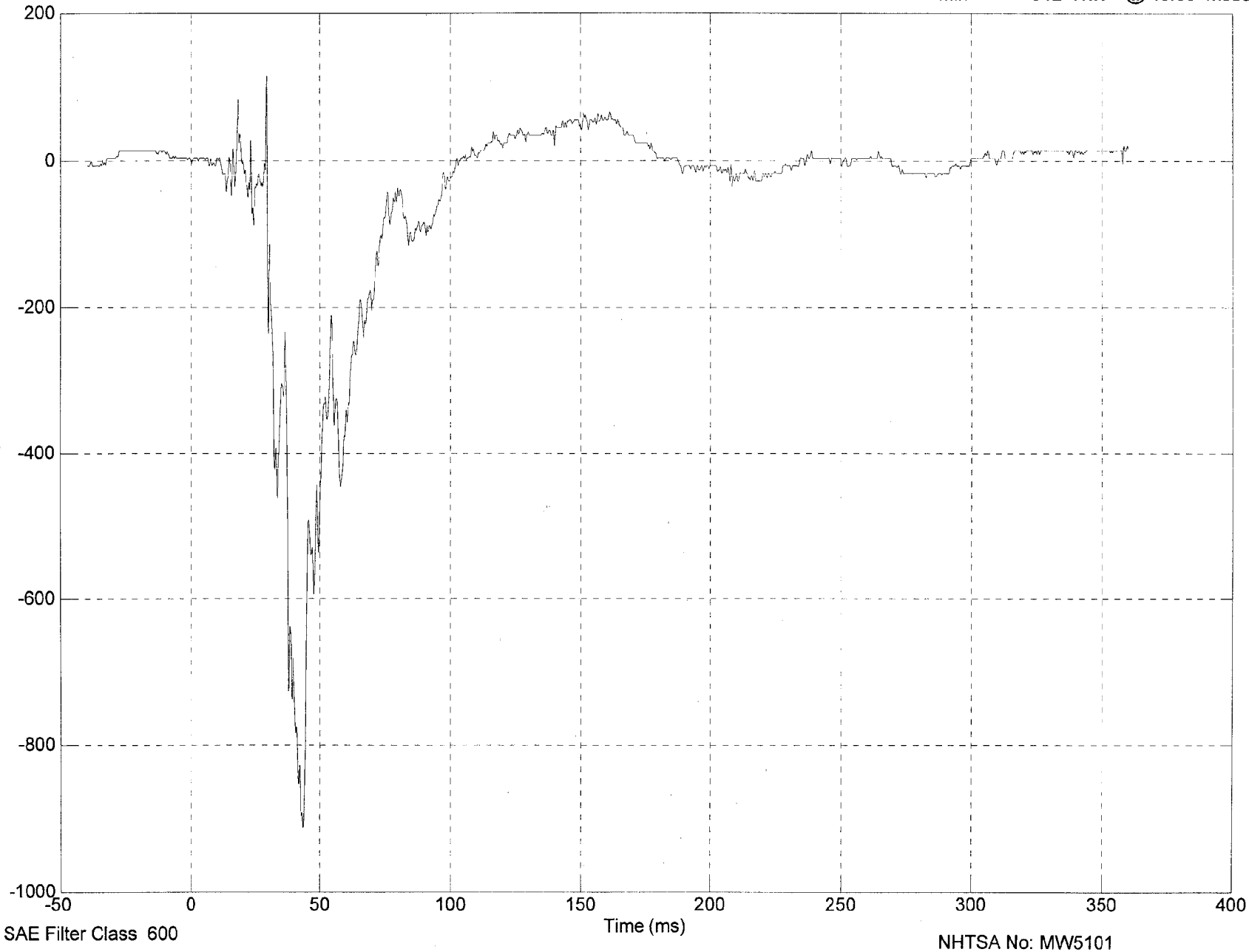
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

P1 Lt Lower Tibia Fx

Max = 115 Nwt @ 29.30 msec
Min = -912 Nwt @ 43.60 msec



SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

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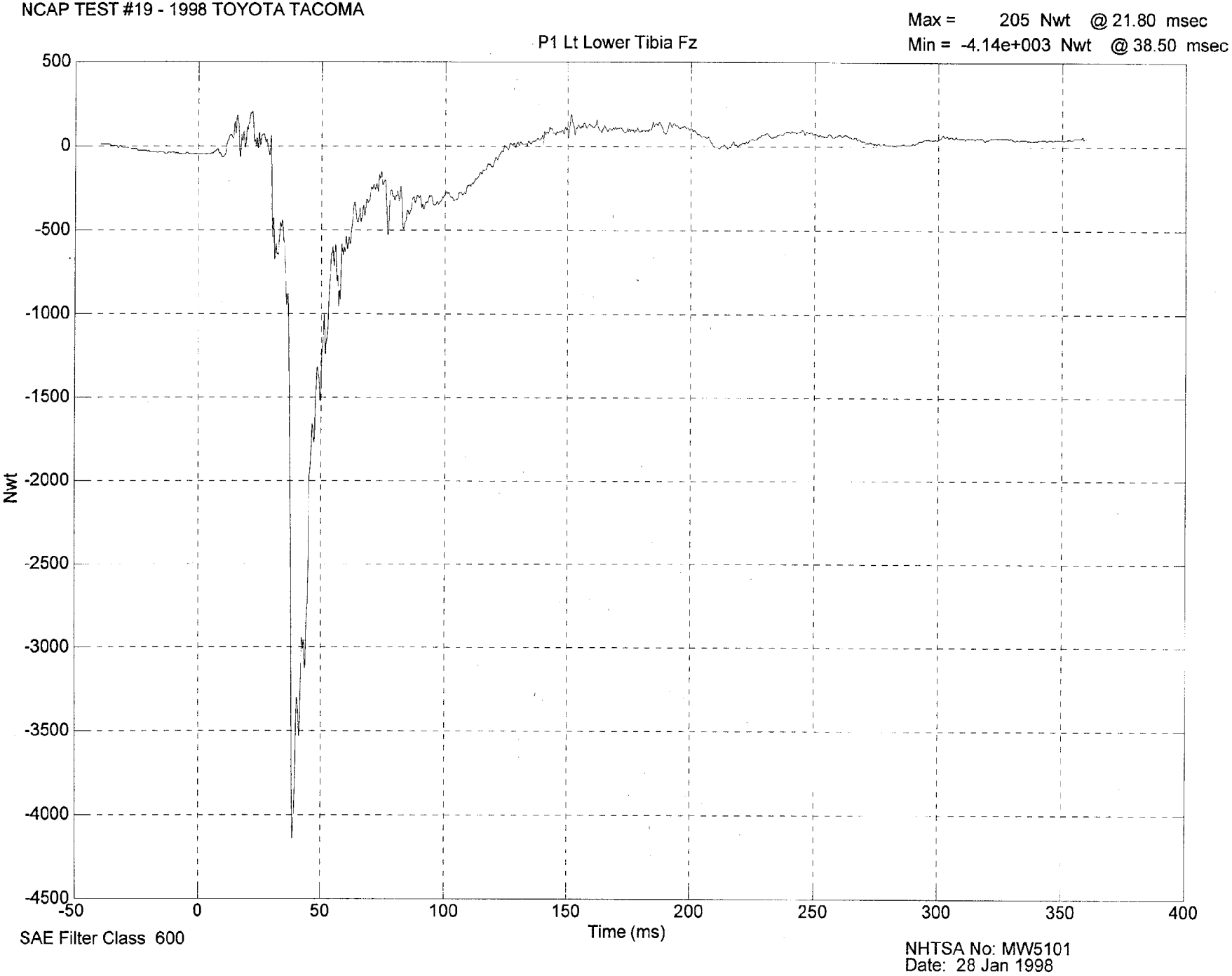
NCAP TEST #19 - 1998 TOYOTA TACOMA



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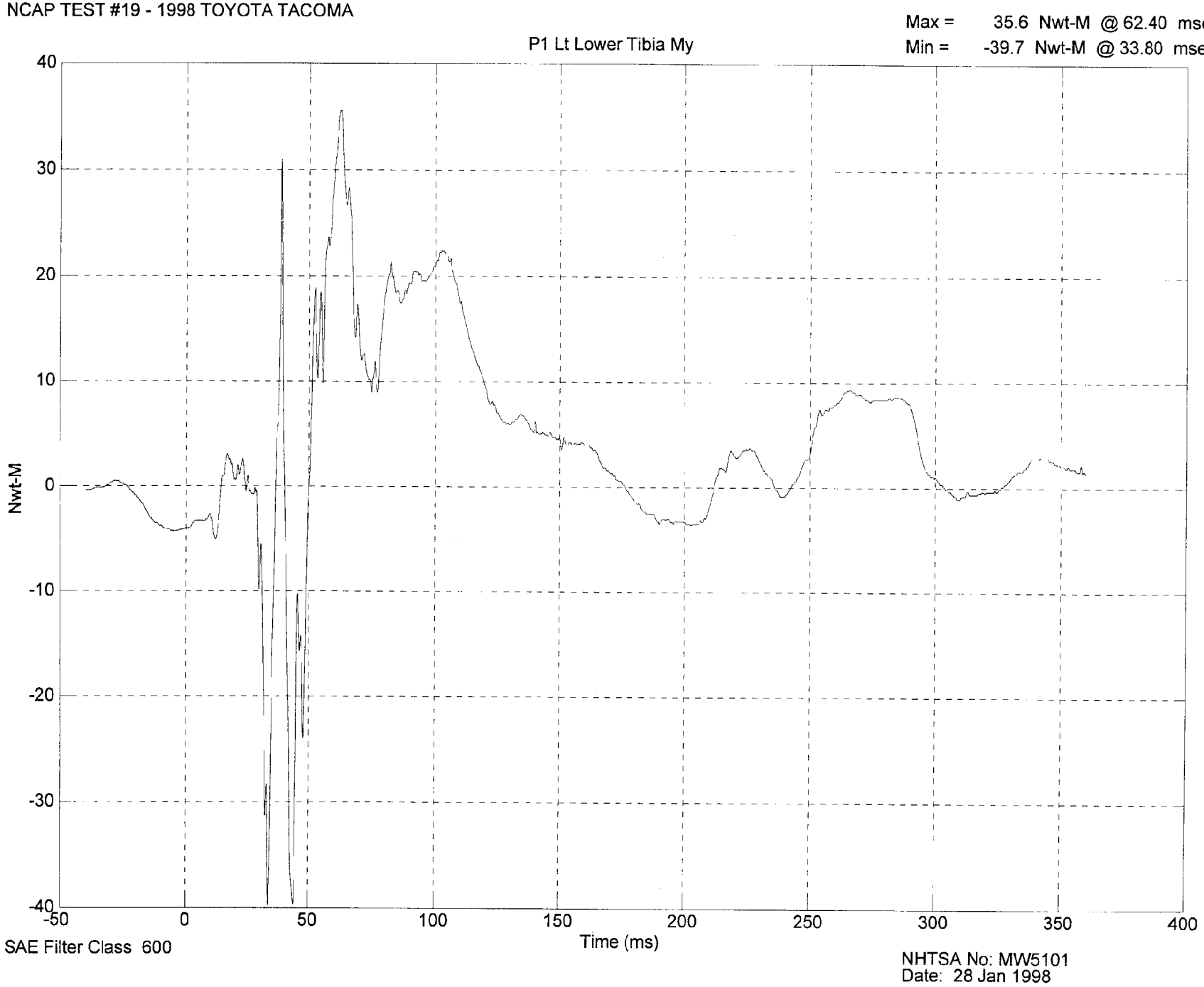
NCAP TEST #19 - 1998 TOYOTA TACOMA

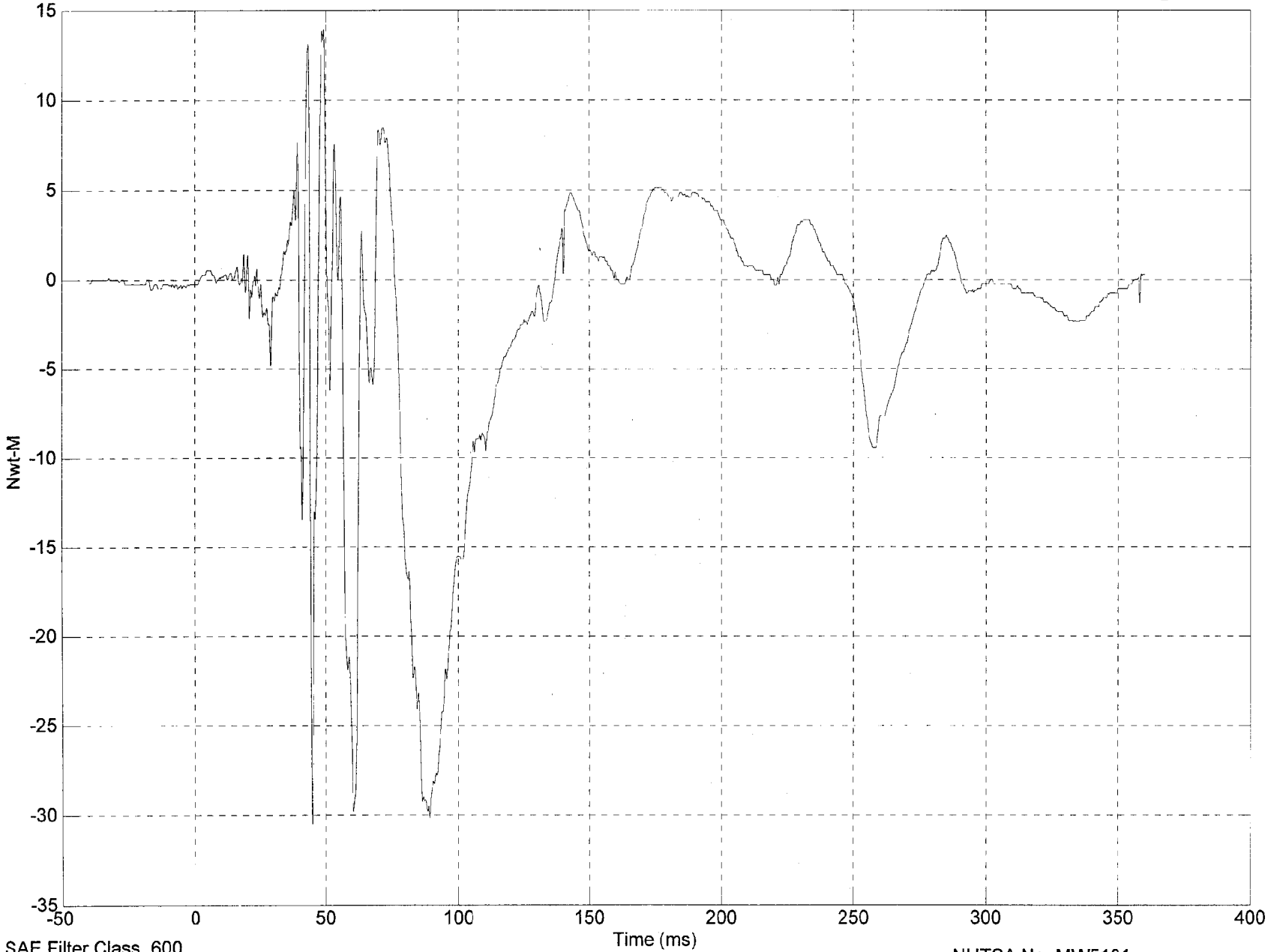


8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

P1 Rt Upper Tibia Mx

Max = 13.9 Nwt-M @ 49.20 msec
Min = -30.5 Nwt-M @ 44.90 msec



SAE Filter Class 600

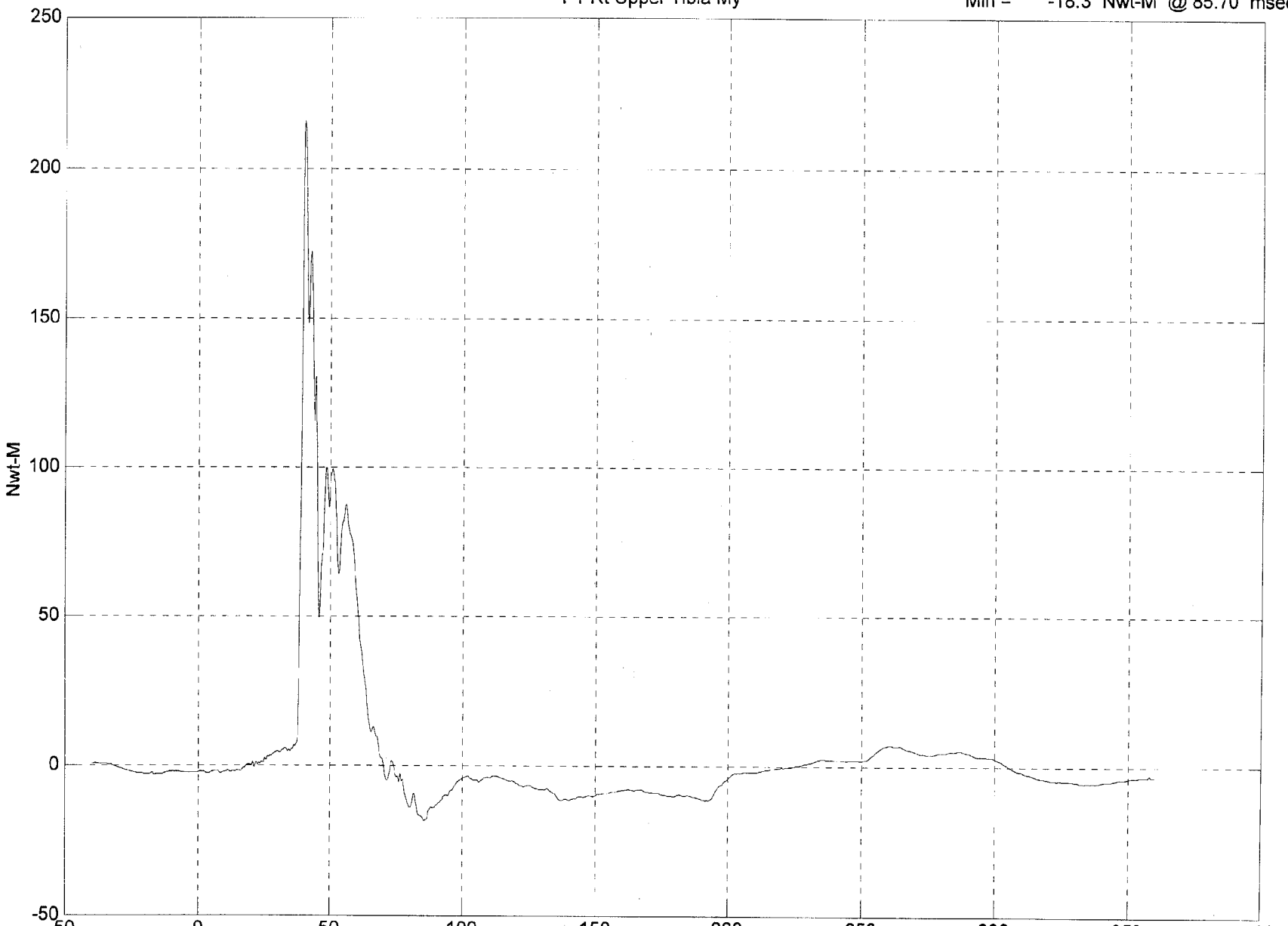
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

P1 Rt Upper Tibia My

Max = 216 Nwt-M @ 40.20 msec
Min = -18.3 Nwt-M @ 85.70 msec



SAE Filter Class 600

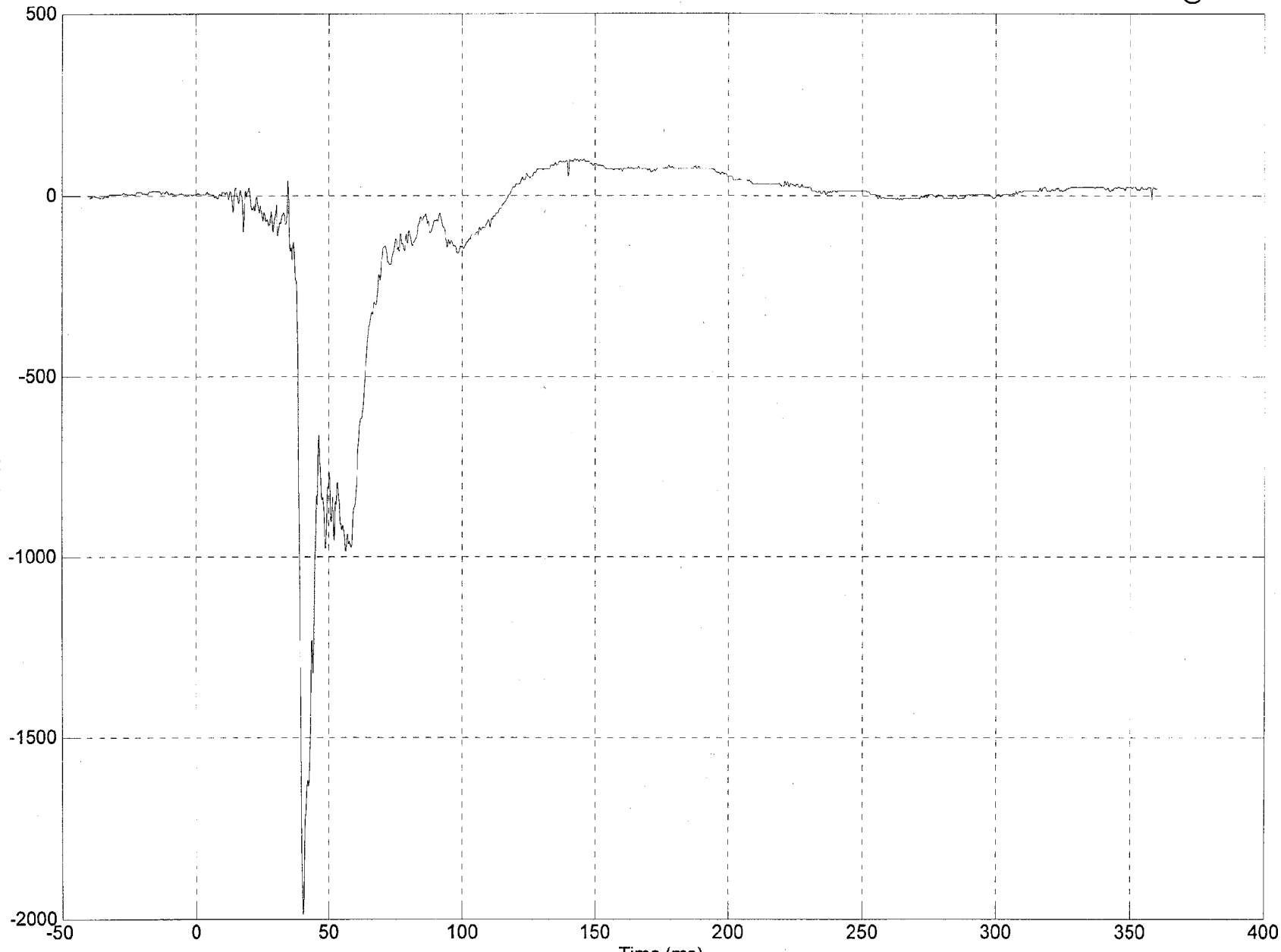
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

P1 Rt Lower Tibia Fx

Max = 102 Nwt @ 142.50 msec
Min = -1.99e+003 Nwt @ 40.50 msec



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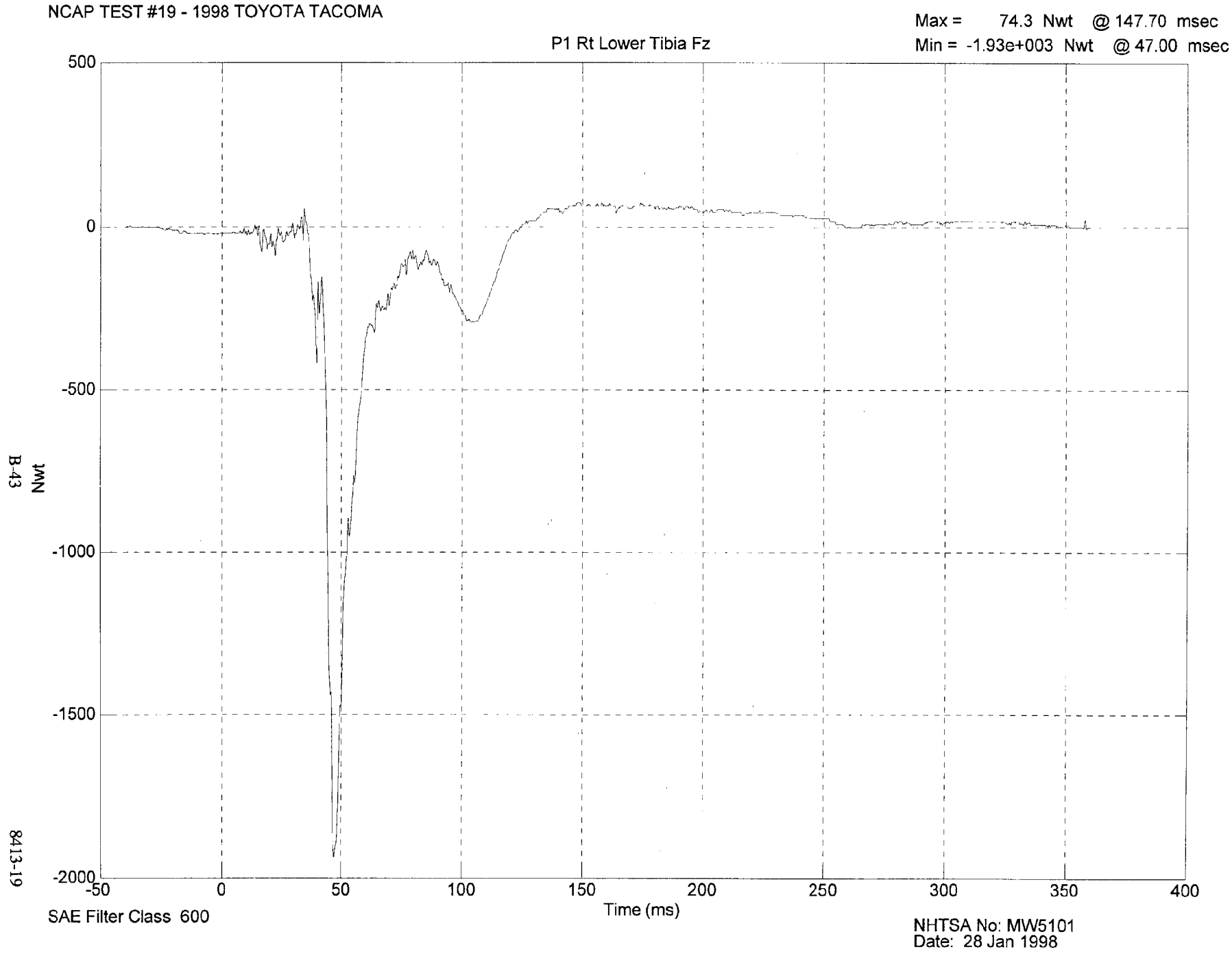
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998


NCAP TEST #19 - 1998 TOYOTA TACOMA
P1 Rt Lower Tibia Fz
Max = 74.3 Nwt @ 147.70 msec
Min = -1.93e+003 Nwt @ 47.00 msec
500
0
-500
-1000
-1500
-2000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (ms)
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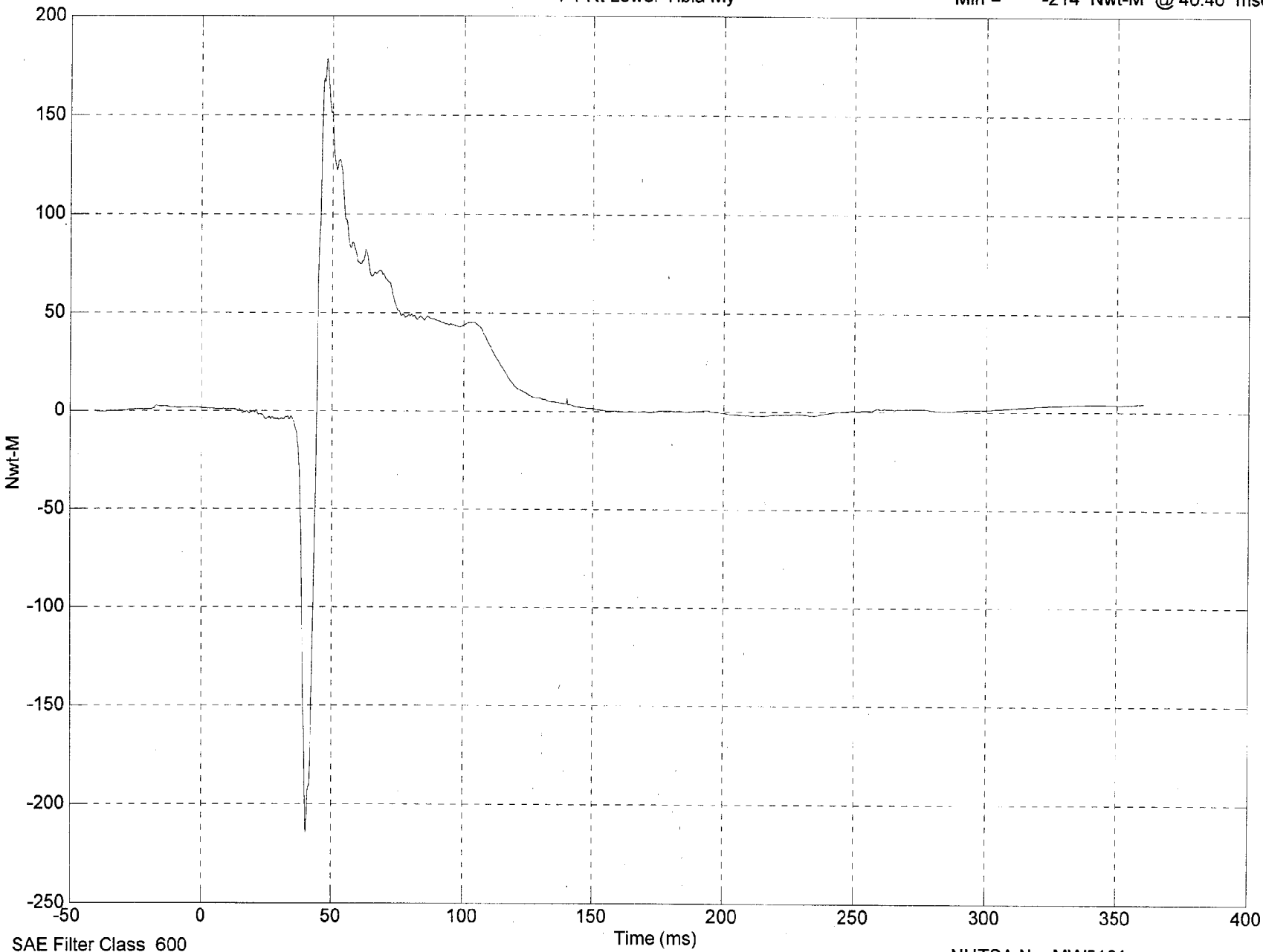
SAE Filter Class 600
NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

P1 Rt Lower Tibia My

Max = 178 Nwt-M @ 47.90 msec
Min = -214 Nwt-M @ 40.40 msec



SAE Filter Class 600

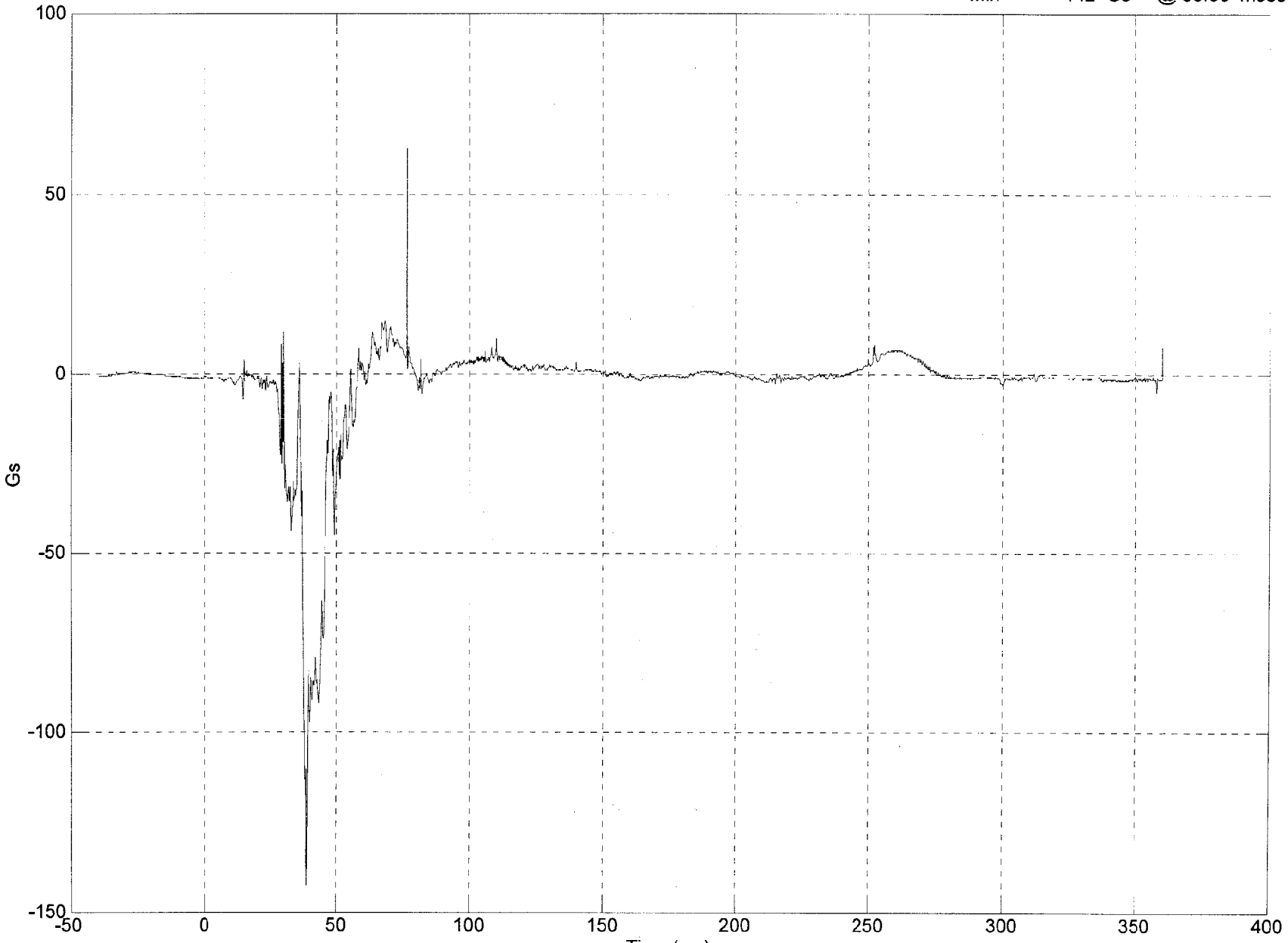
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Left Ankle X

Max = 62.7 Gs @ 76.60 msec
Min = -142 Gs @ 38.80 msec



SAE Filter Class 1000

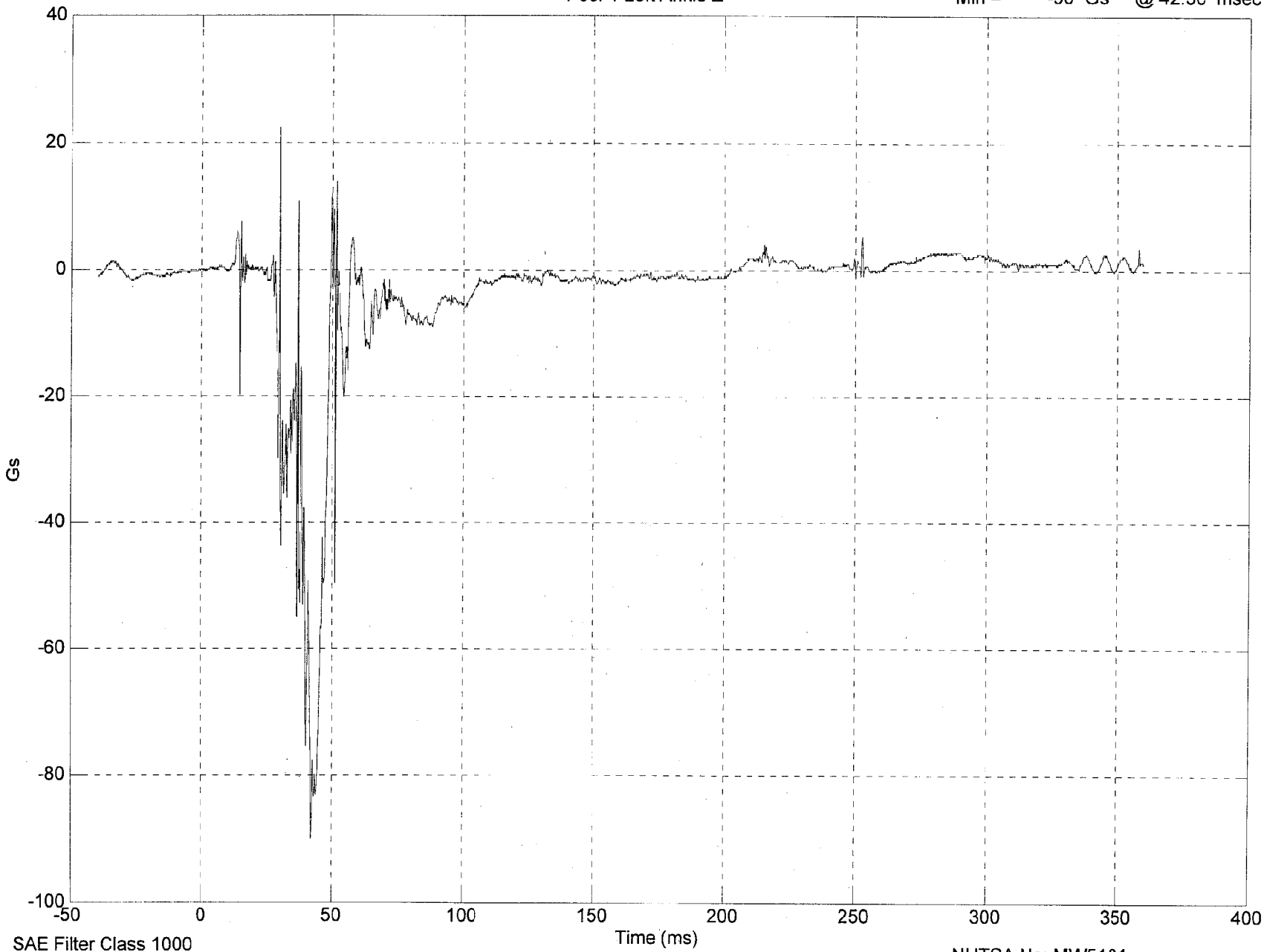
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Left Ankle Z

Max = 22.5 Gs @ 29.70 msec
Min = -90 Gs @ 42.30 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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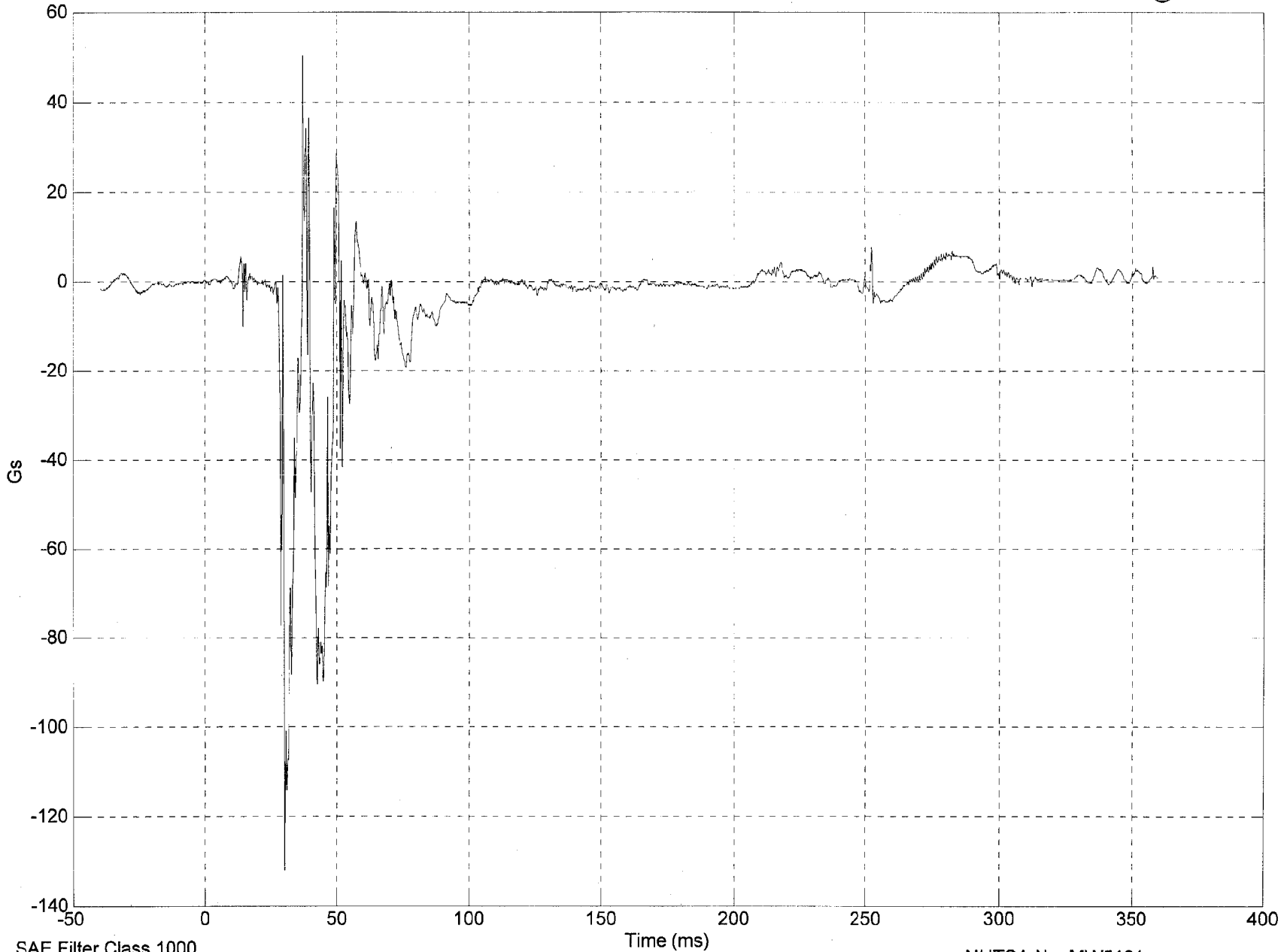
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Left Toe Z

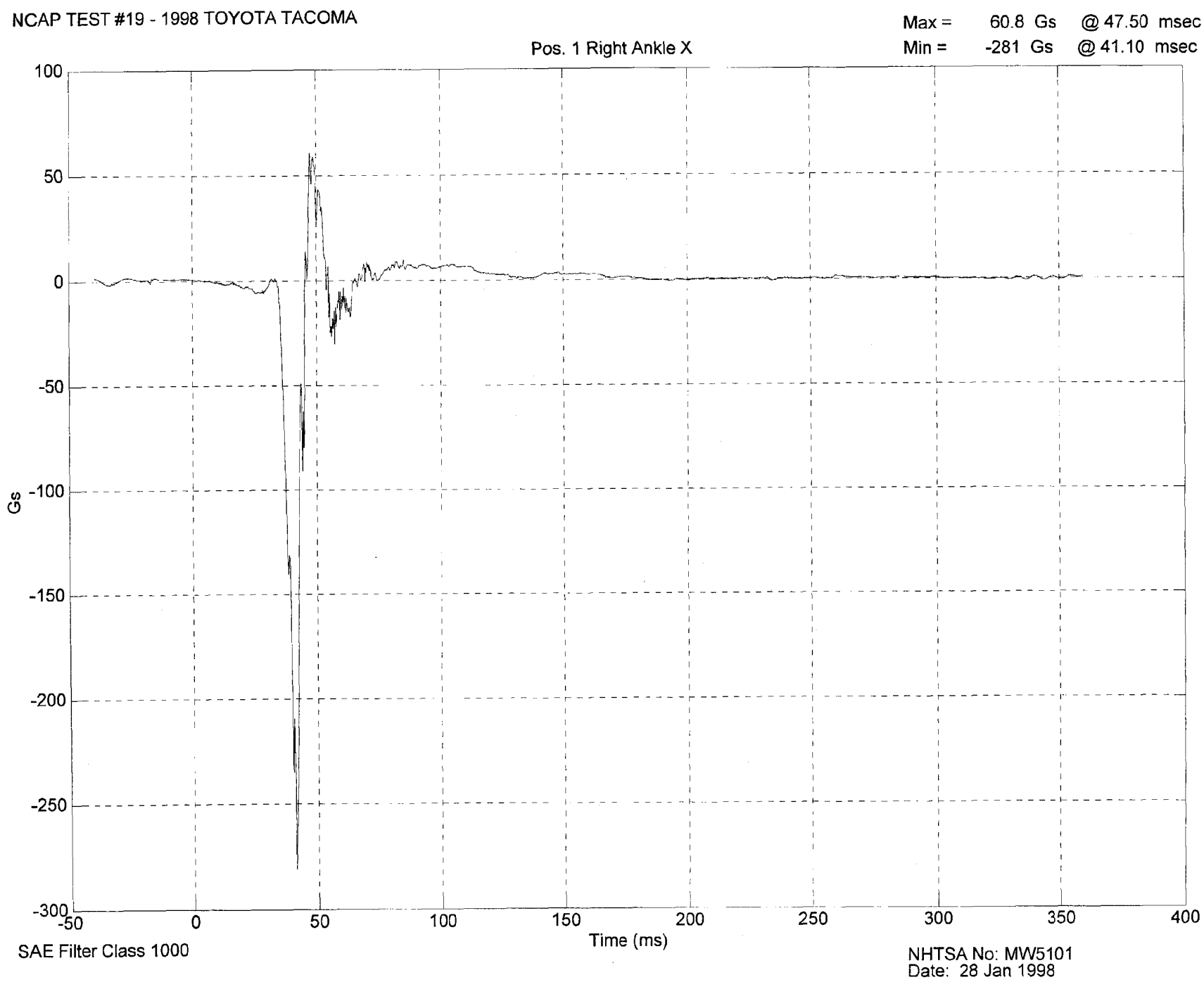
Max = 50.4 Gs @ 37.00 msec
Min = -132 Gs @ 30.30 msec



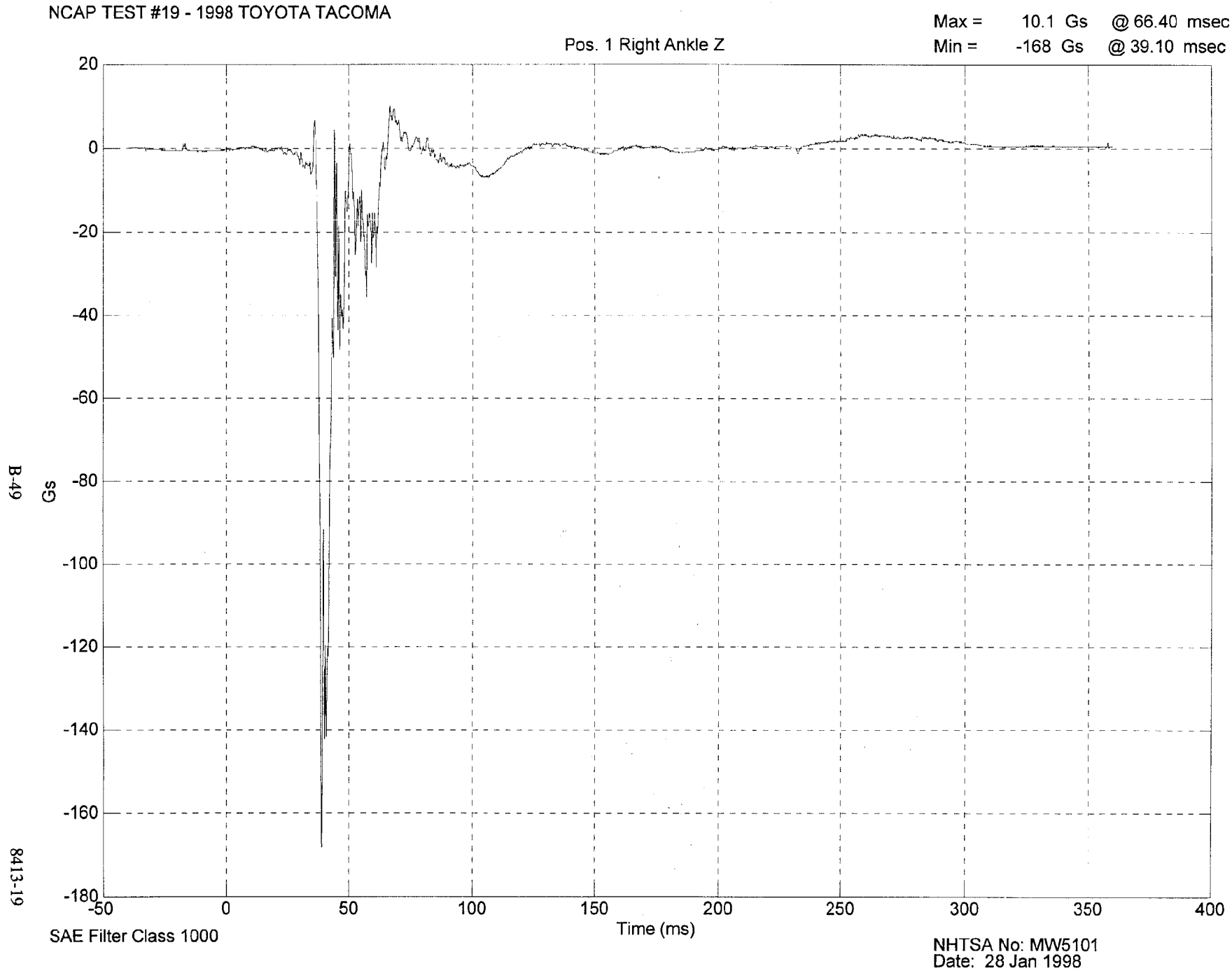
SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

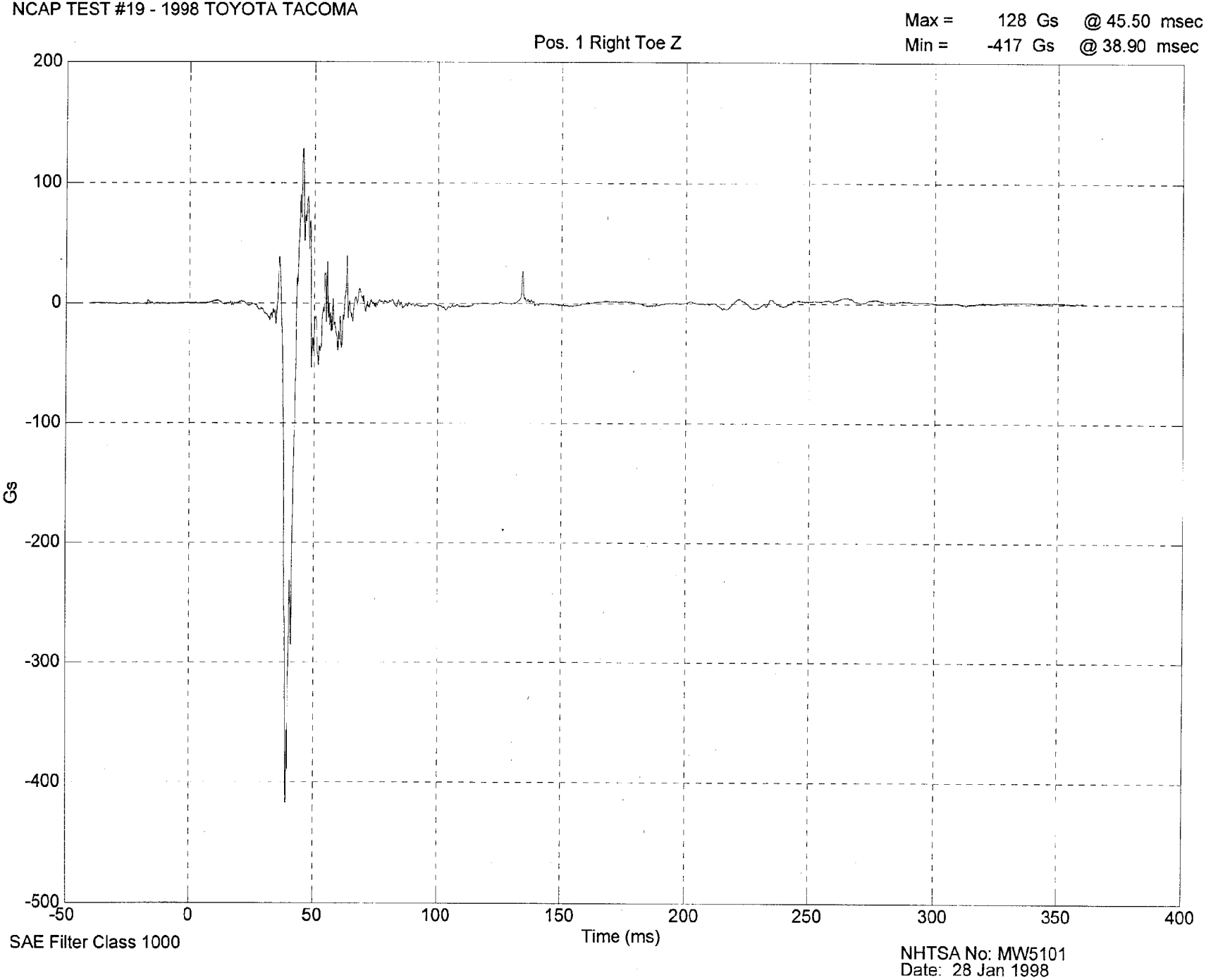
8413-19


NCAP TEST #19 - 1998 TOYOTA TACOMA
Pos. 1 Right Ankle X
Max = 60.8 Gs @ 47.50 msec
Min = -281 Gs @ 41.10 msec
100
50
0
-50
-100
-150
-200
-250
-300
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19


NCAP TEST #19 - 1998 TOYOTA TACOMA
Pos. 1 Right Ankle Z
Max = 10.1 Gs @ 66.40 msec
Min = -168 Gs @ 39.10 msec
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA



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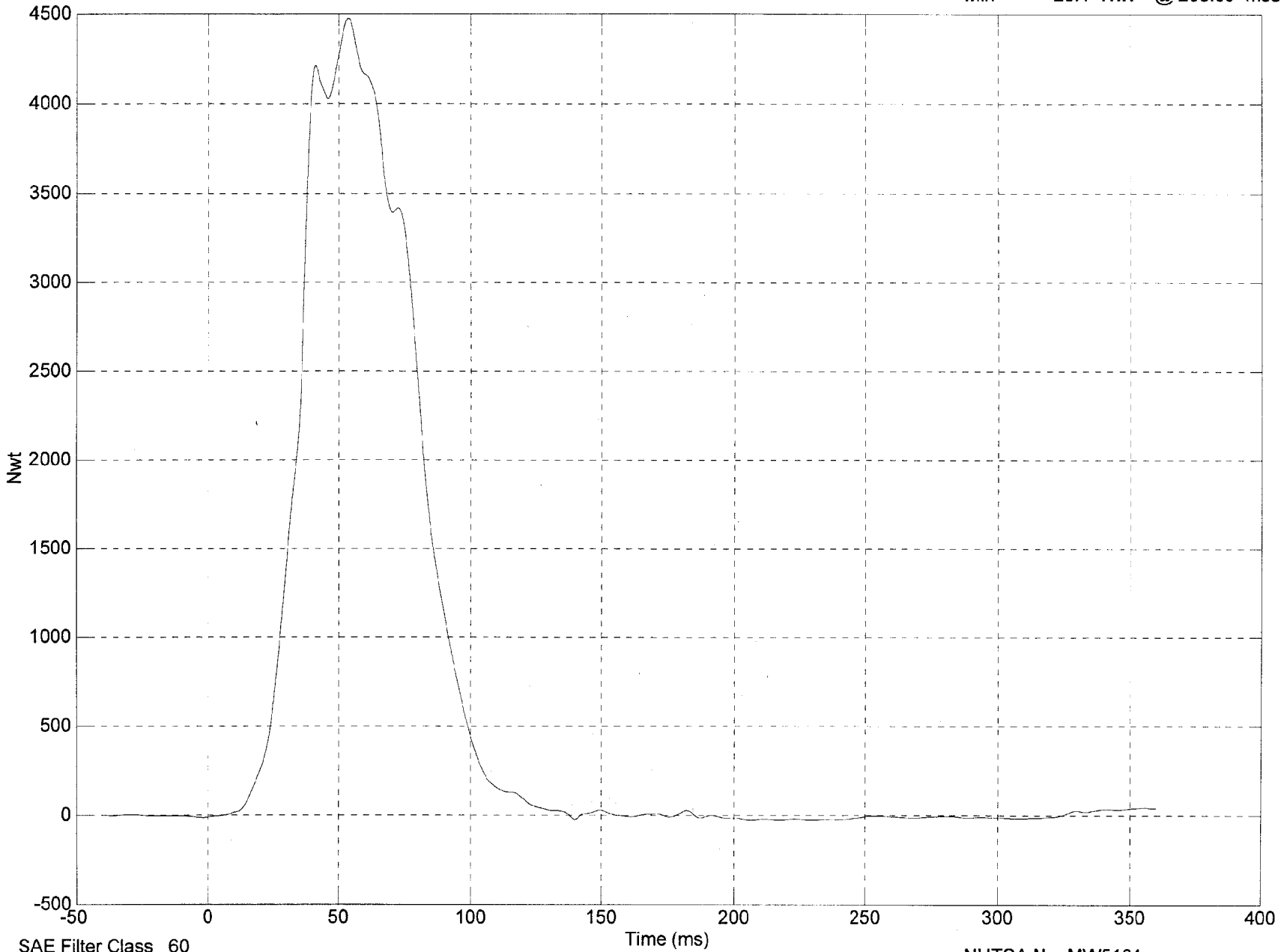
SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 4.48e+003 Nwt @ 53.50 msec
Min = -25.1 Nwt @ 206.30 msec



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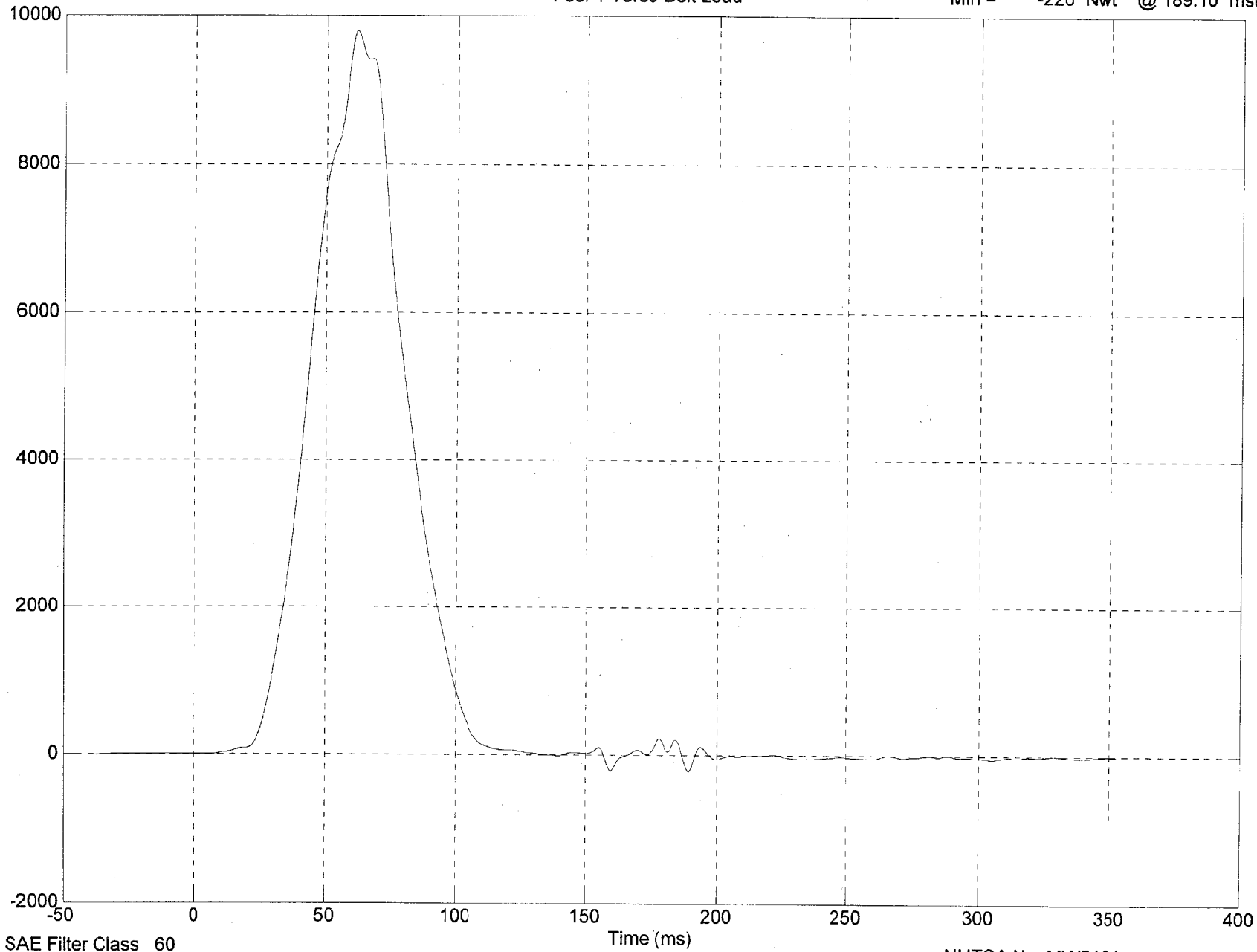
SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Torso Belt Load

Max = 9.79e+003 Nwt @ 61.40 msec
Min = -220 Nwt @ 189.10 msec



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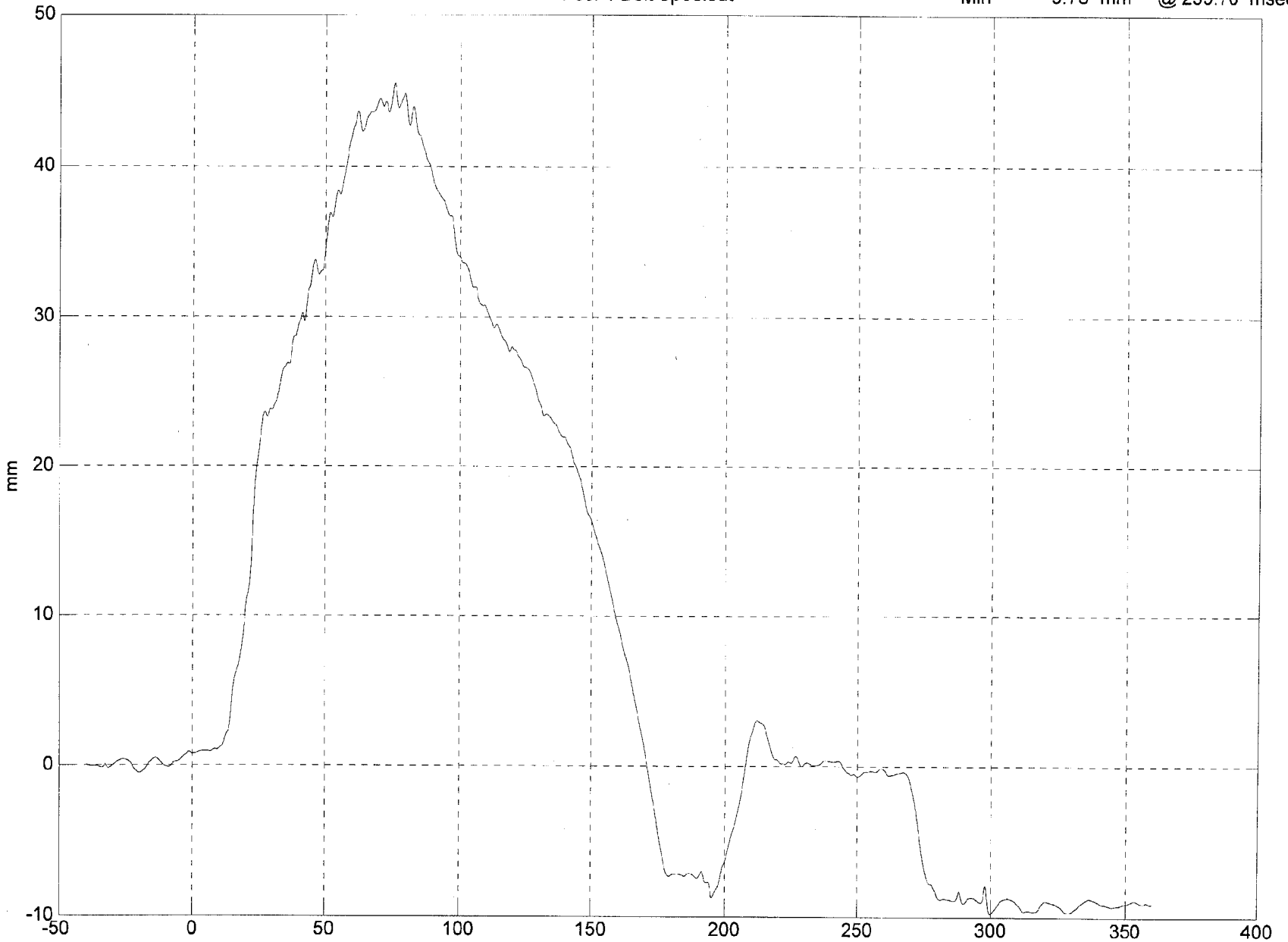
SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Belt Spoolout

Max = 45.5 mm @ 75.60 msec
Min = -9.76 mm @ 299.70 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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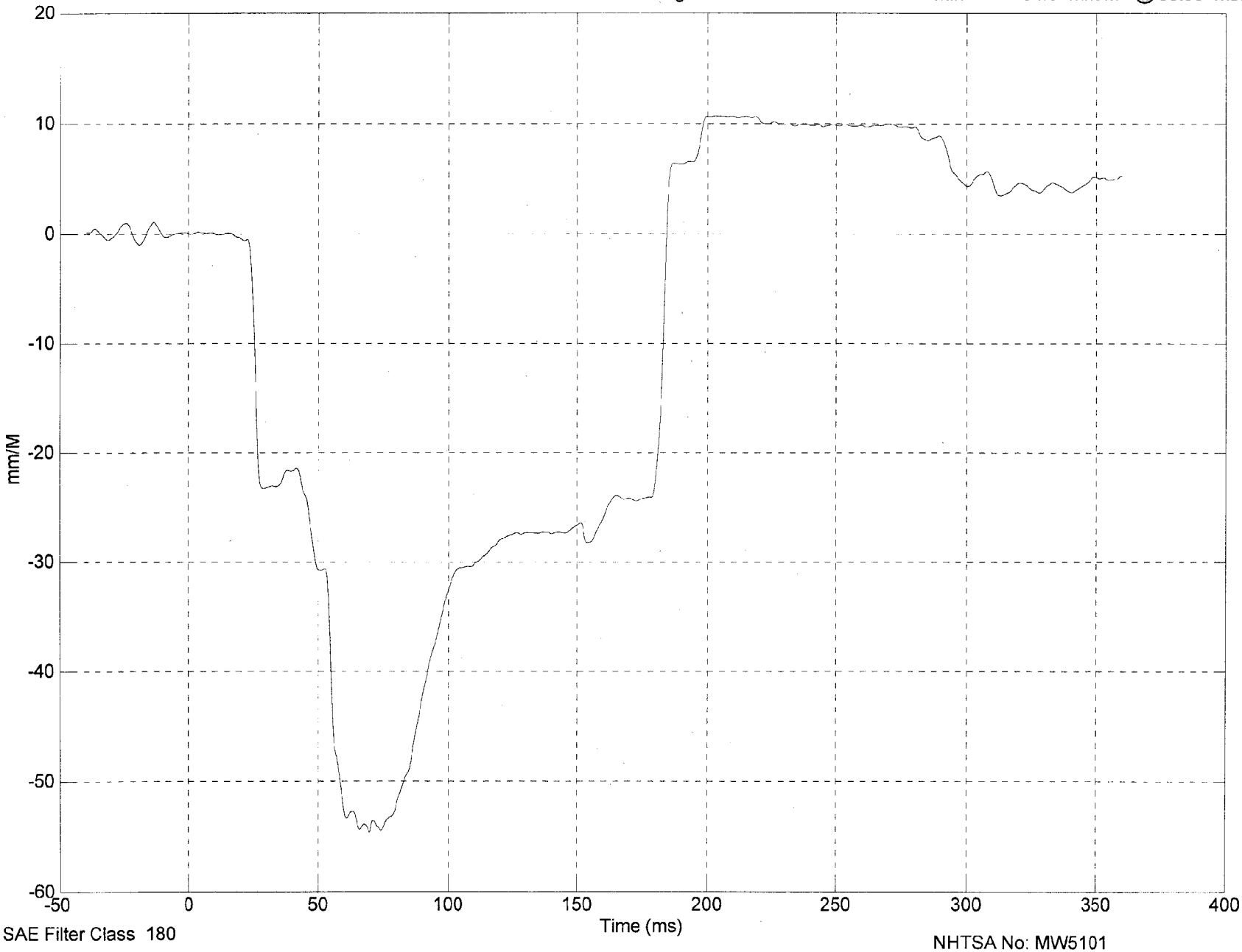
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 1 Belt Elongation

Max = 10.7 mm/M @ 203.20 msec
Min = -54.6 mm/M @ 69.90 msec



SAE Filter Class 180

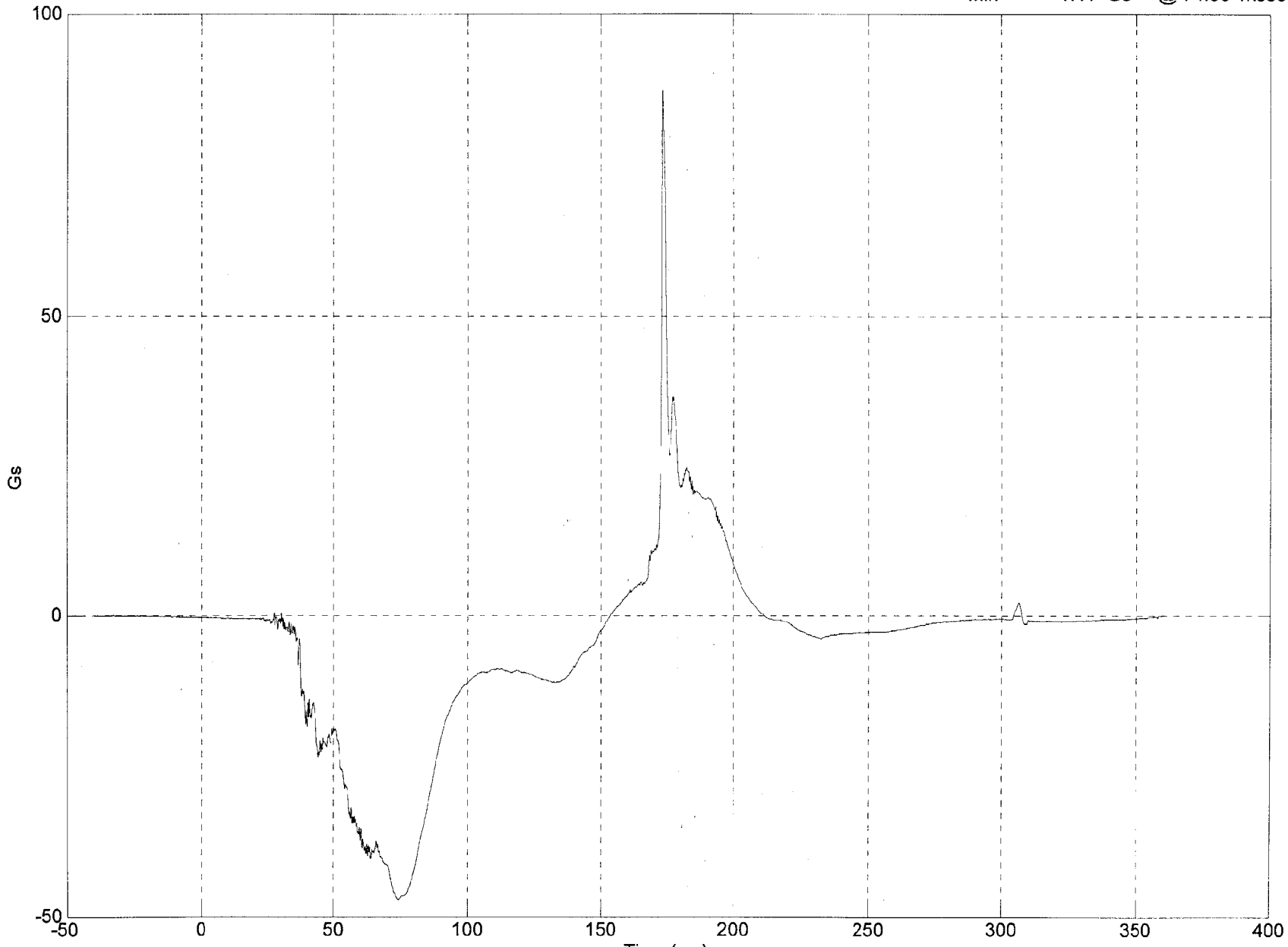
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Head X

Max = 87.4 Gs @ 173.50 msec
Min = -47.1 Gs @ 74.30 msec



SAE Filter Class 1000

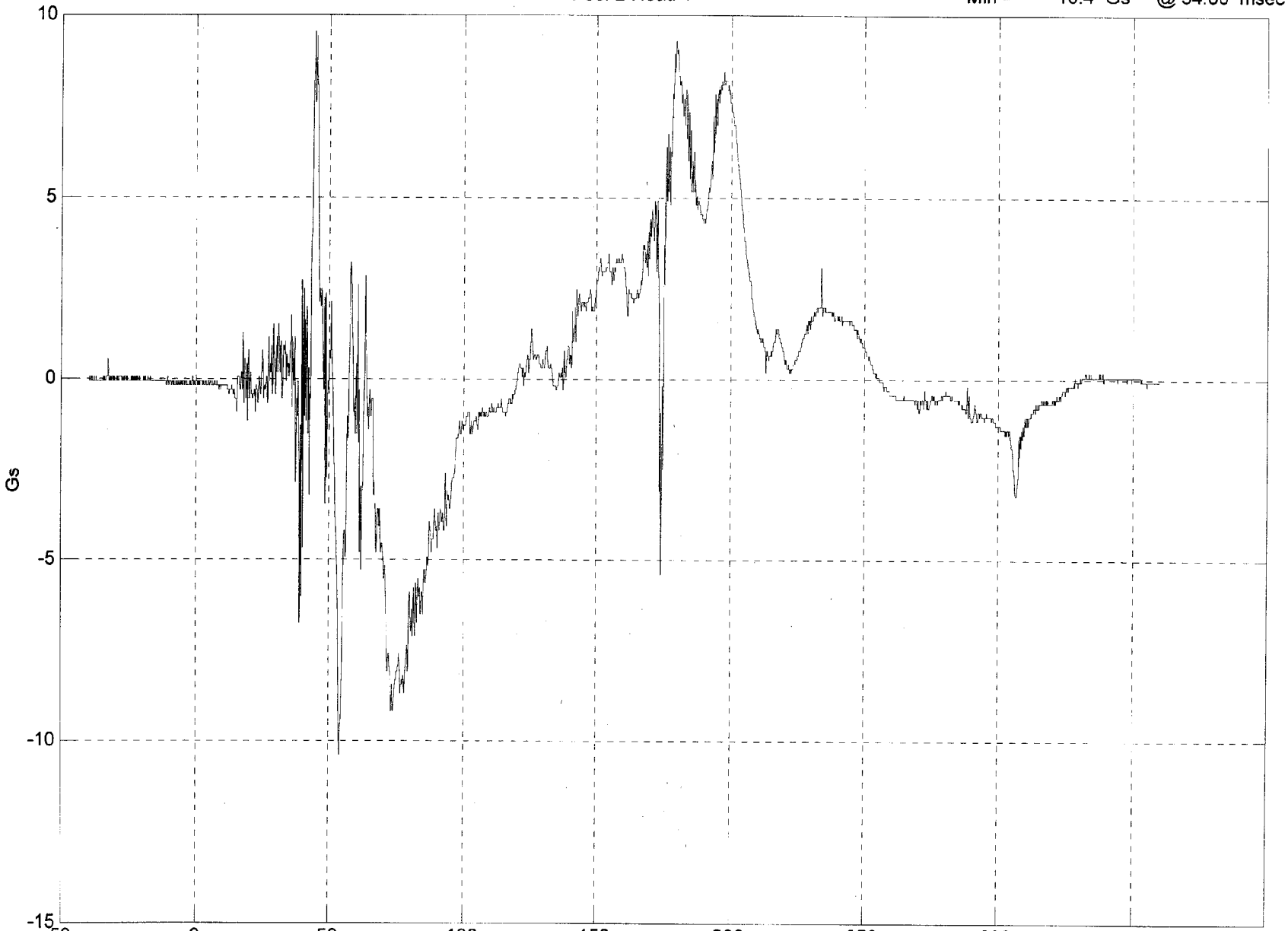
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Head Y

Max = 9.55 Gs @ 44.60 msec
Min = -10.4 Gs @ 54.00 msec



SAE Filter Class 1000

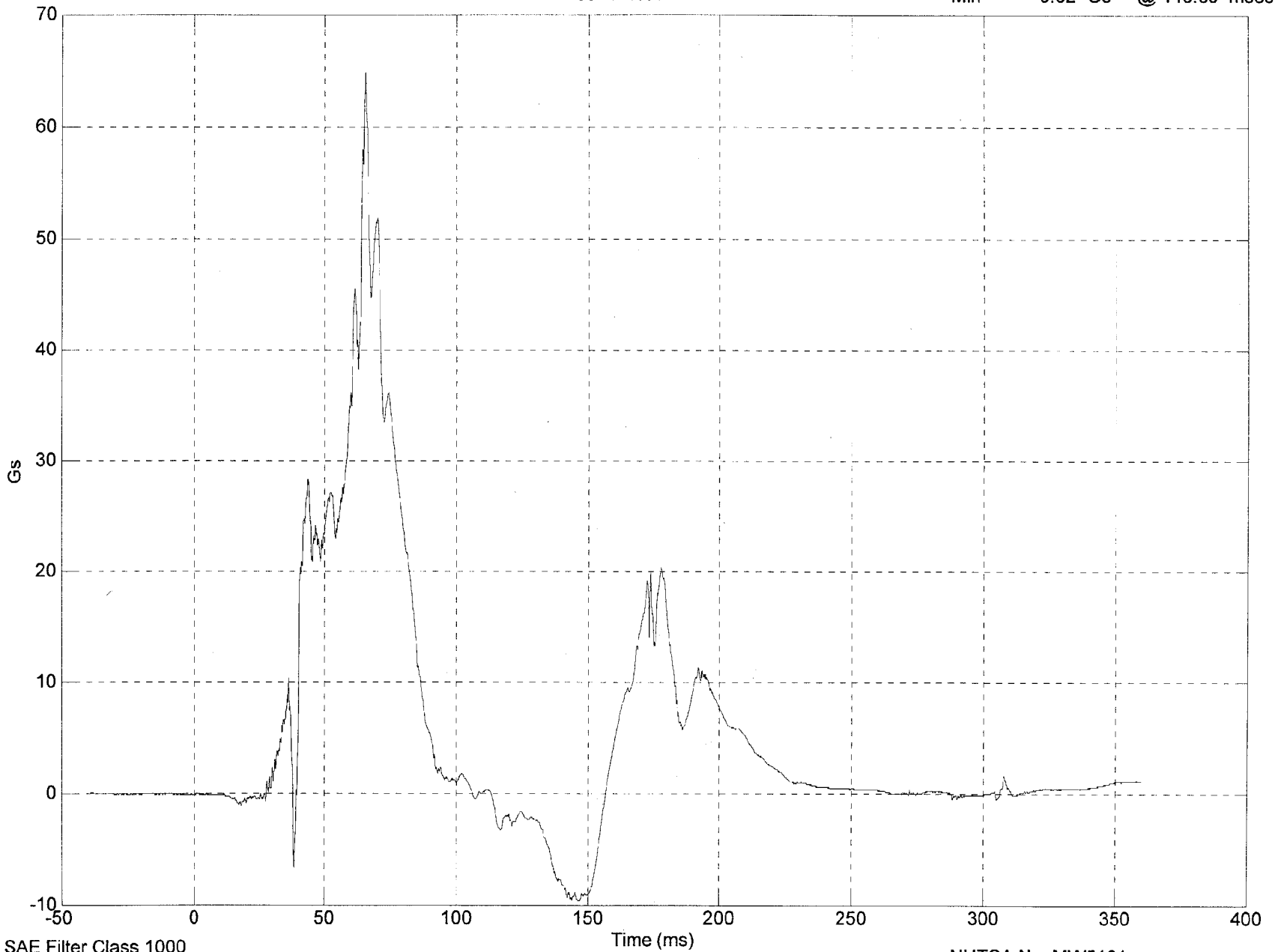
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Head Z

Max = 64.9 Gs @ 65.40 msec
Min = -9.52 Gs @ 143.80 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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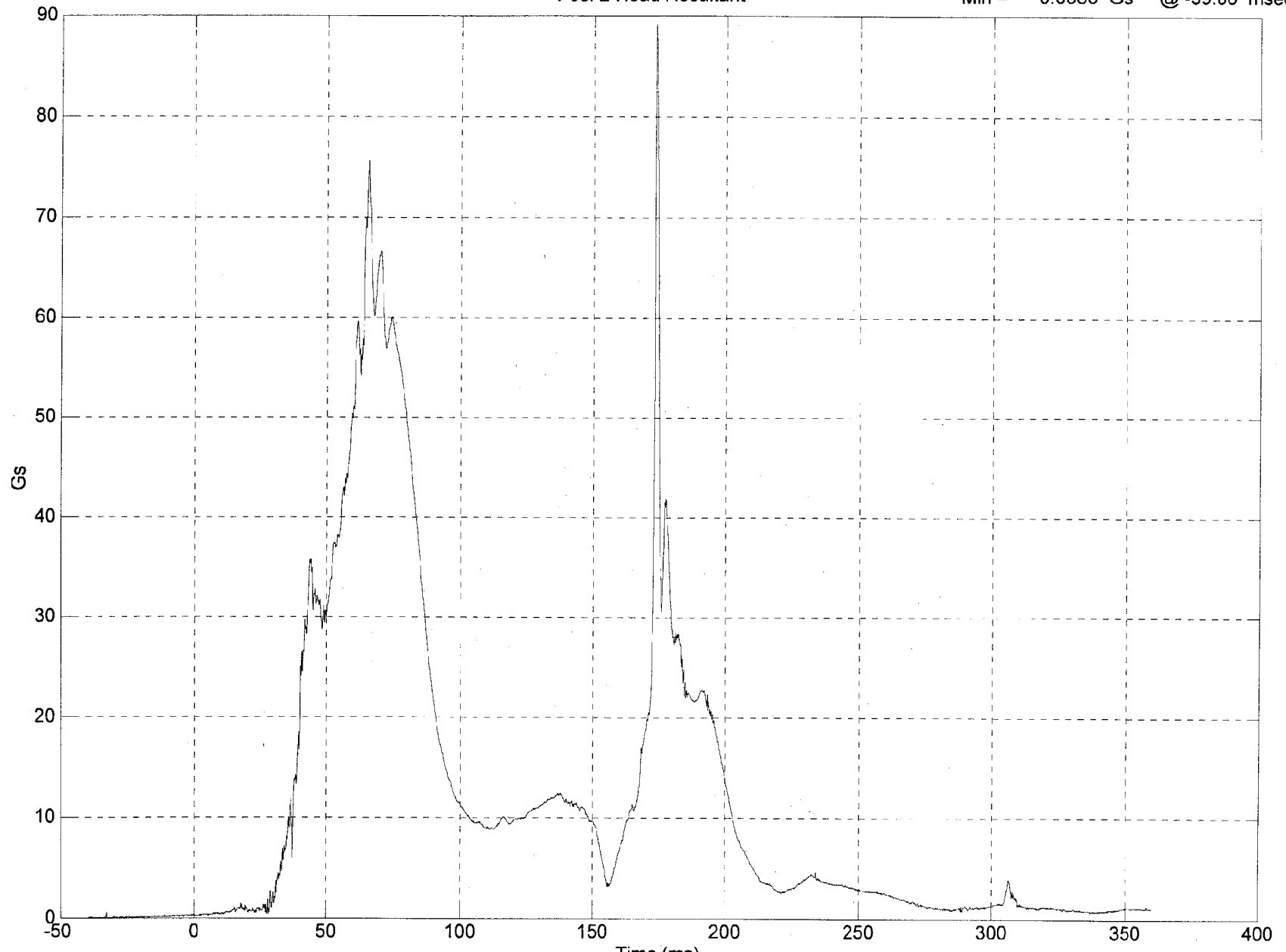
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Head Resultant

Max = 89.2 Gs @ 173.50 msec
Min = 0.0585 Gs @ -39.80 msec



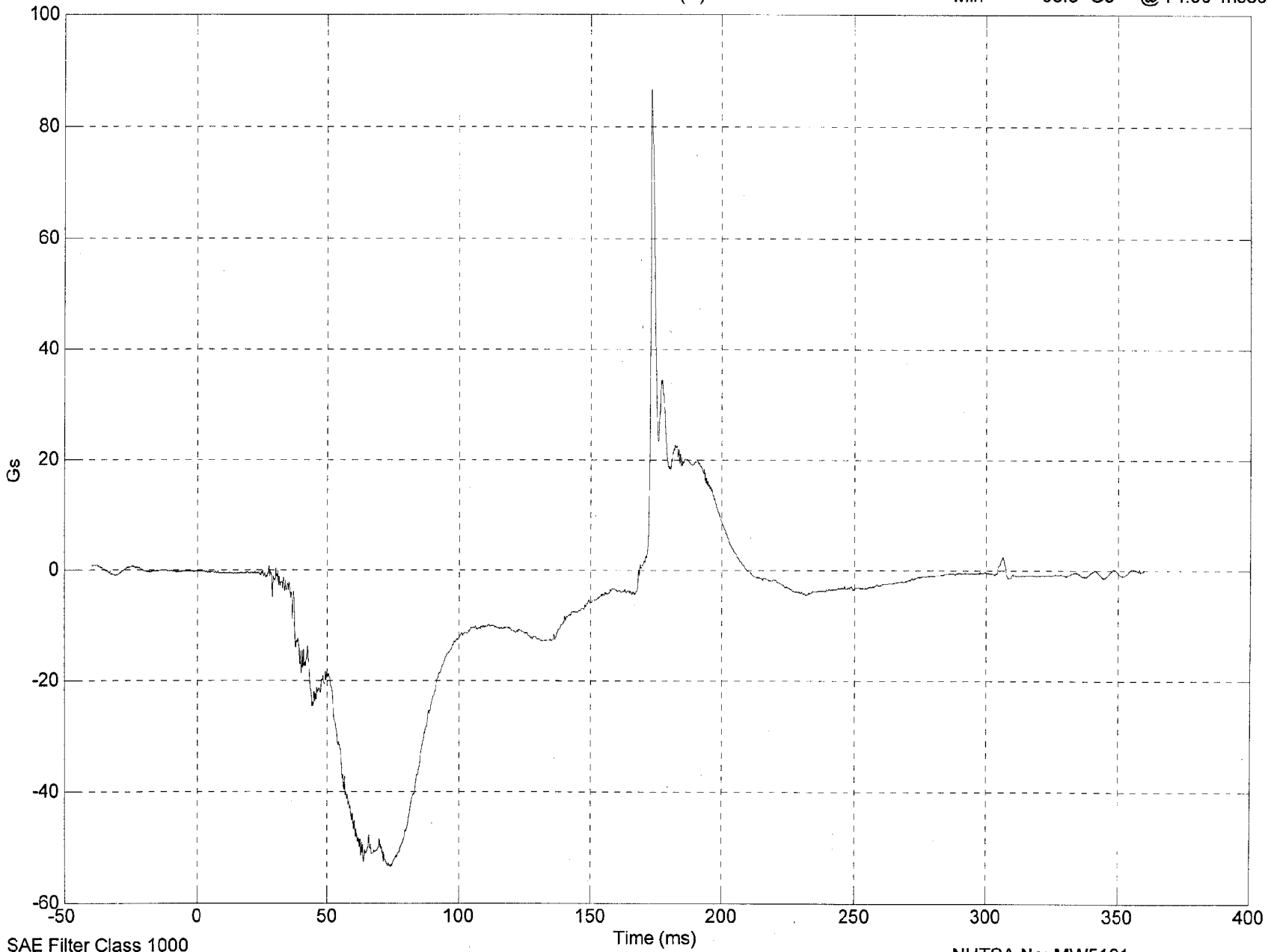
SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 86.7 Gs @ 173.40 msec
Min = -53.3 Gs @ 74.30 msec



SAE Filter Class 1000

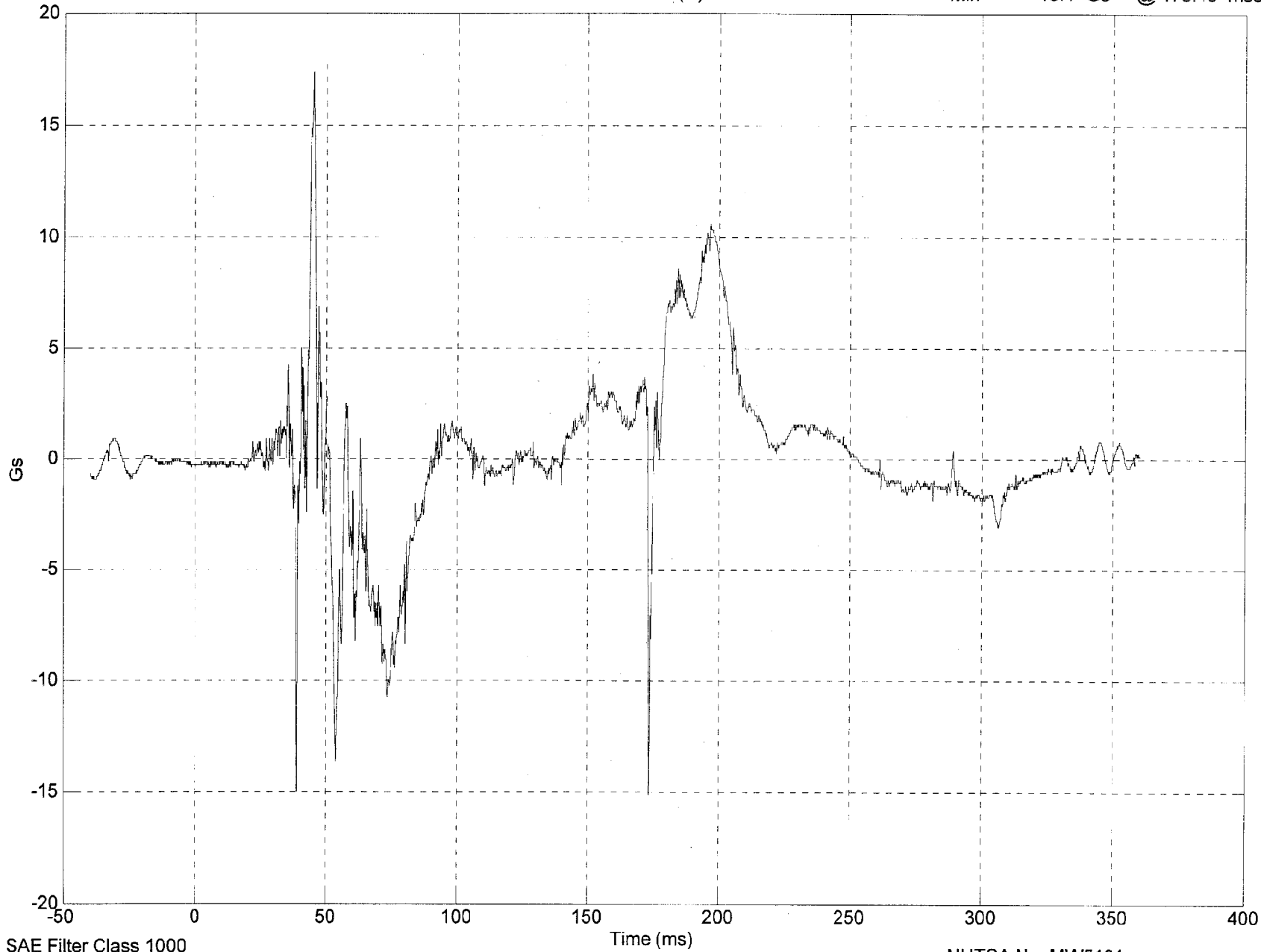
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Head Y(R)

Max = 17.4 Gs @ 45.20 msec
Min = -15.1 Gs @ 173.40 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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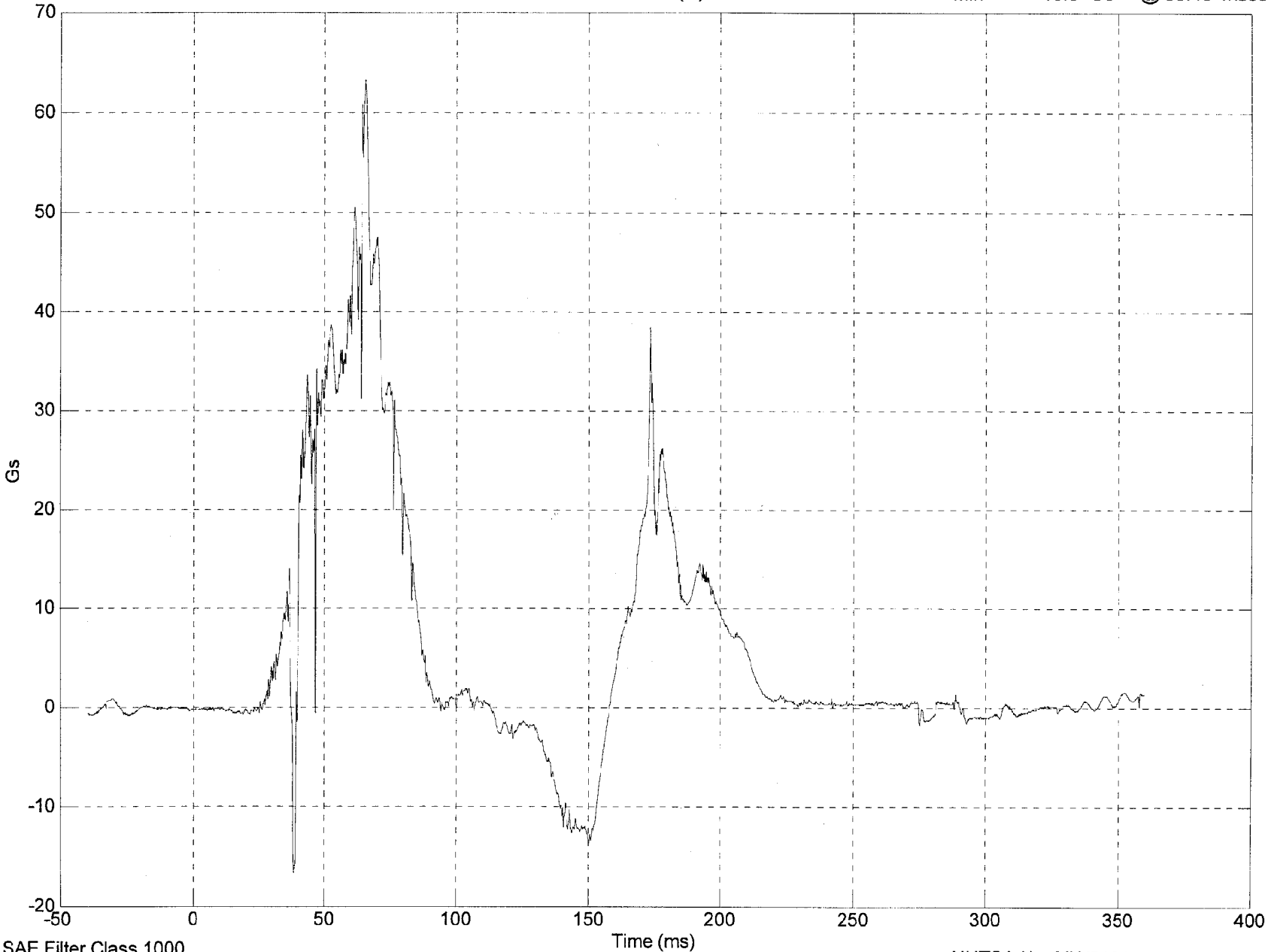
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Head Z(R)

Max = 63.3 Gs @ 65.40 msec
Min = -16.6 Gs @ 38.40 msec



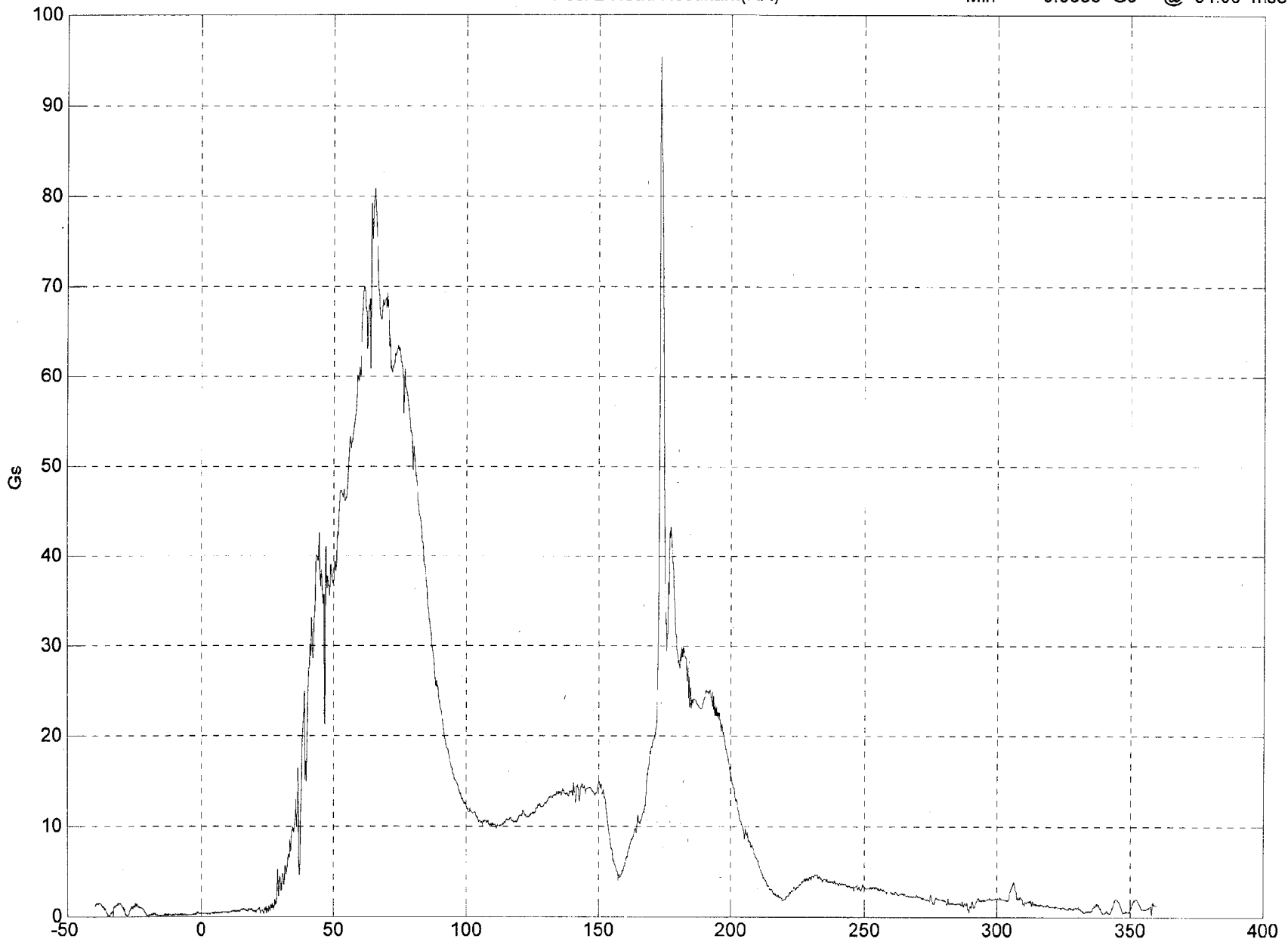
SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 95.4 Gs @ 173.40 msec
Min = 0.0563 Gs @ -34.90 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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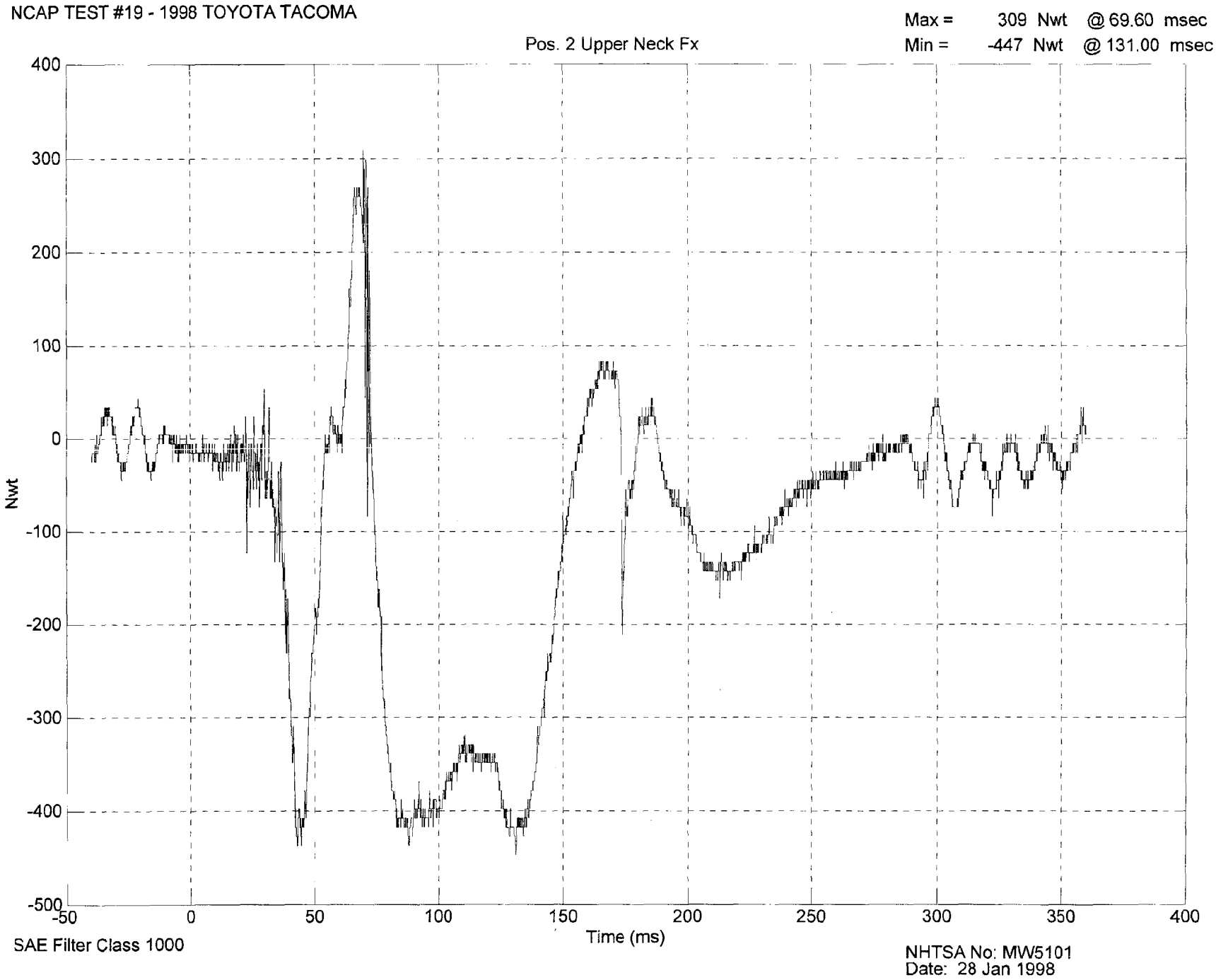
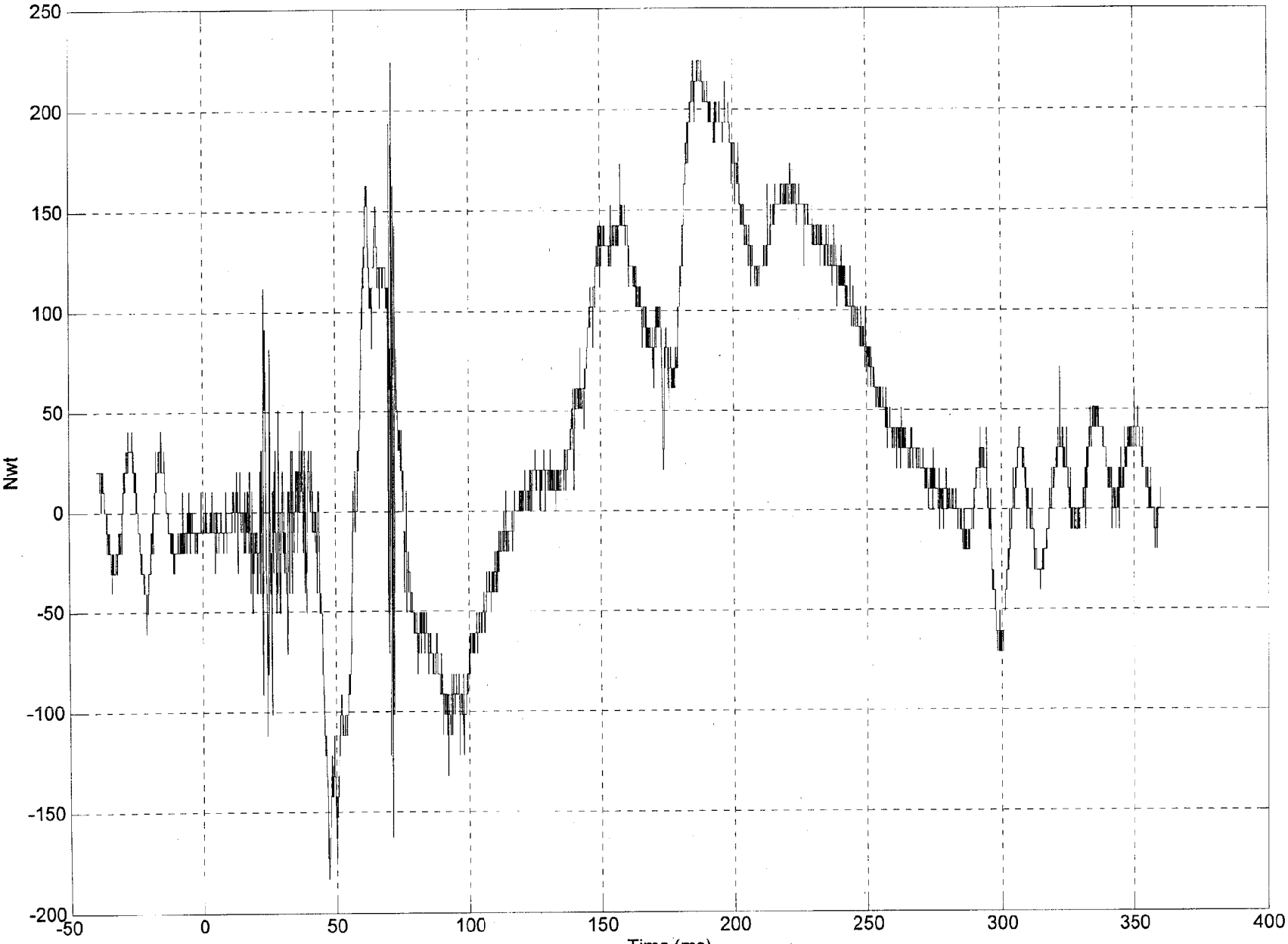

NCAP TEST #19 - 1998 TOYOTA TACOMA
Pos. 2 Upper Neck Fx
Max = 309 Nwt @ 69.60 msec
Min = -447 Nwt @ 131.00 msec
400
300
200
100
0
-100
-200
-300
-400
-500
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Upper Neck Fy

Max = 224 Nwt @ 71.20 msec
Min = -183 Nwt @ 47.10 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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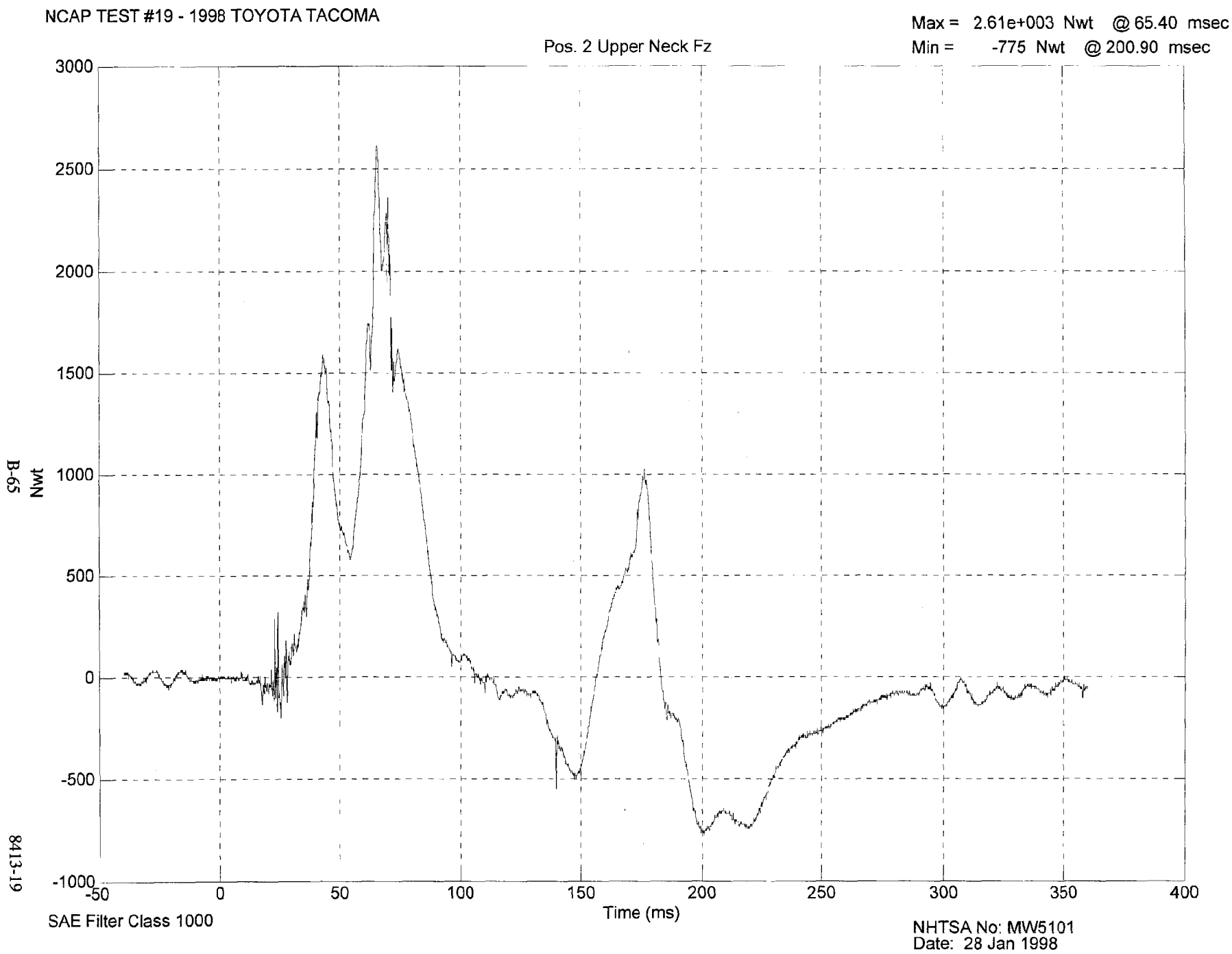
NCAP TEST #19 - 1998 TOYOTA TACOMA
Pos. 2 Upper Neck Fz
Max = 2.61e+003 Nwt @ 65.40 msec
Min = -775 Nwt @ 200.90 msec
3000
2500
2000
1500
1000
500
0
-500
-1000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (ms)
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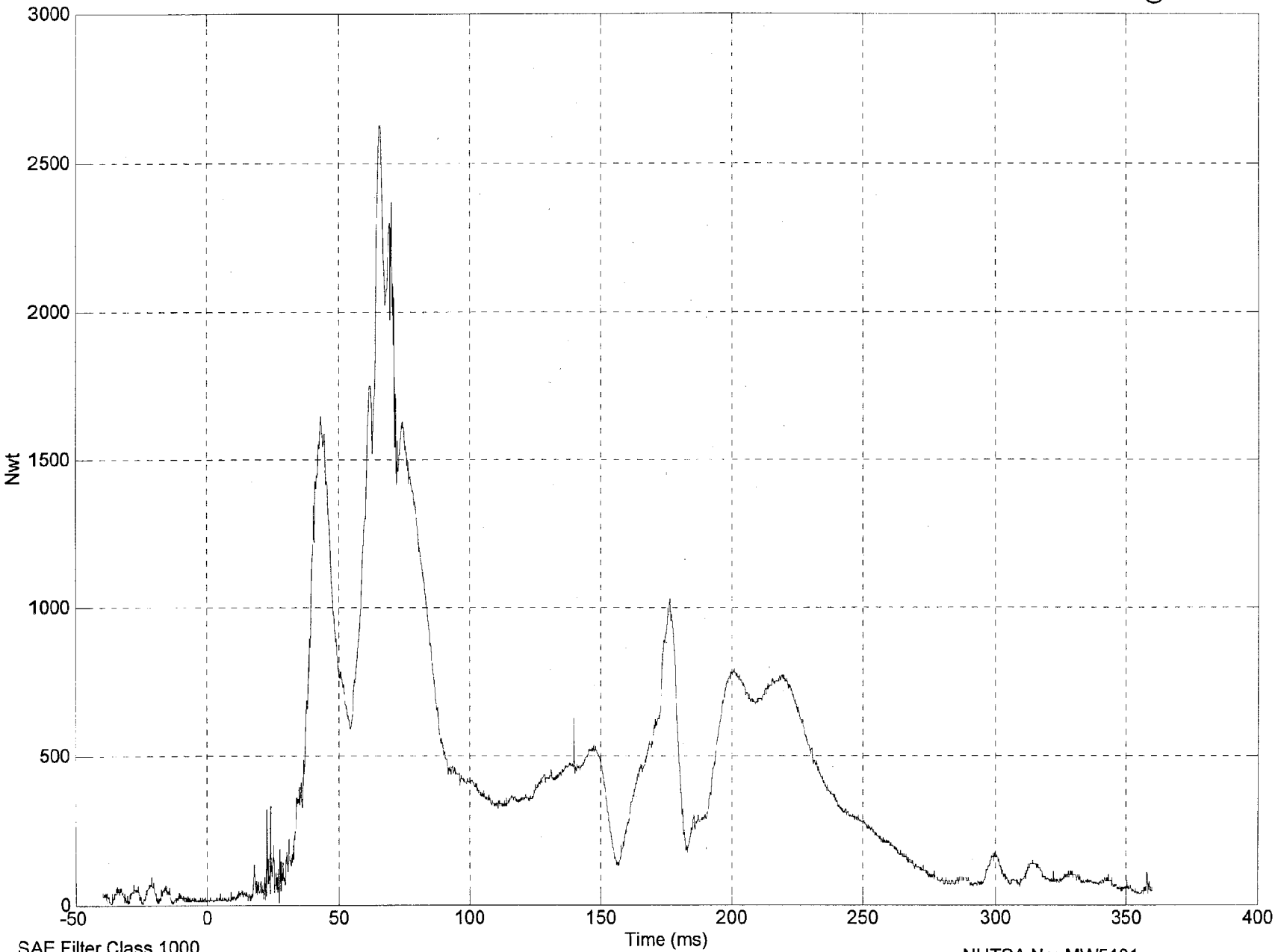
SAE Filter Class 1000
NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Neck Force Res.

Max = 2.63e+003 Nwt @ 65.70 msec
Min = 6.3 Nwt @ -38.10 msec



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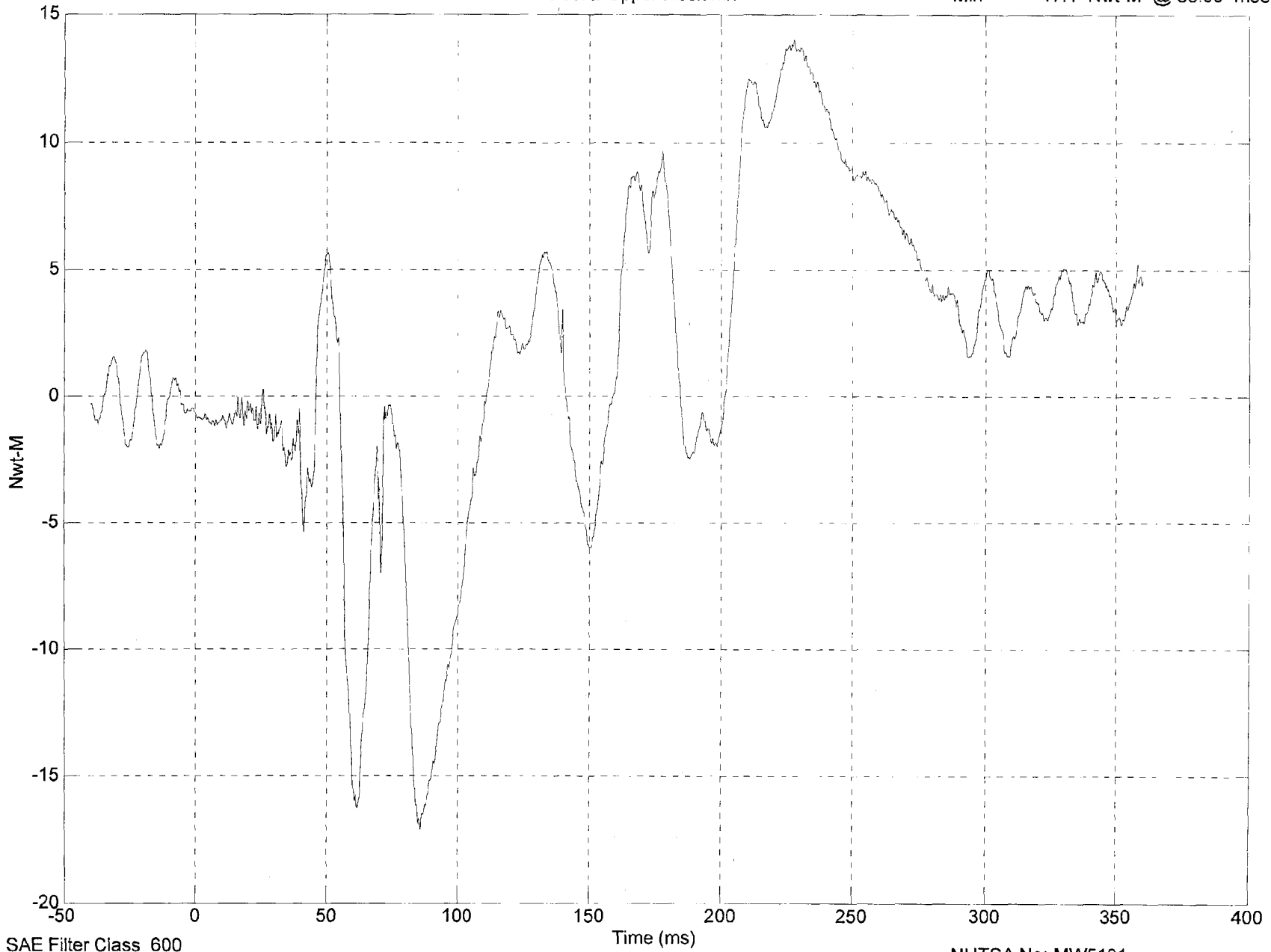
SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Upper Neck Mx

Max = 14 Nwt-M @ 227.70 msec
Min = -17.1 Nwt-M @ 86.00 msec



SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

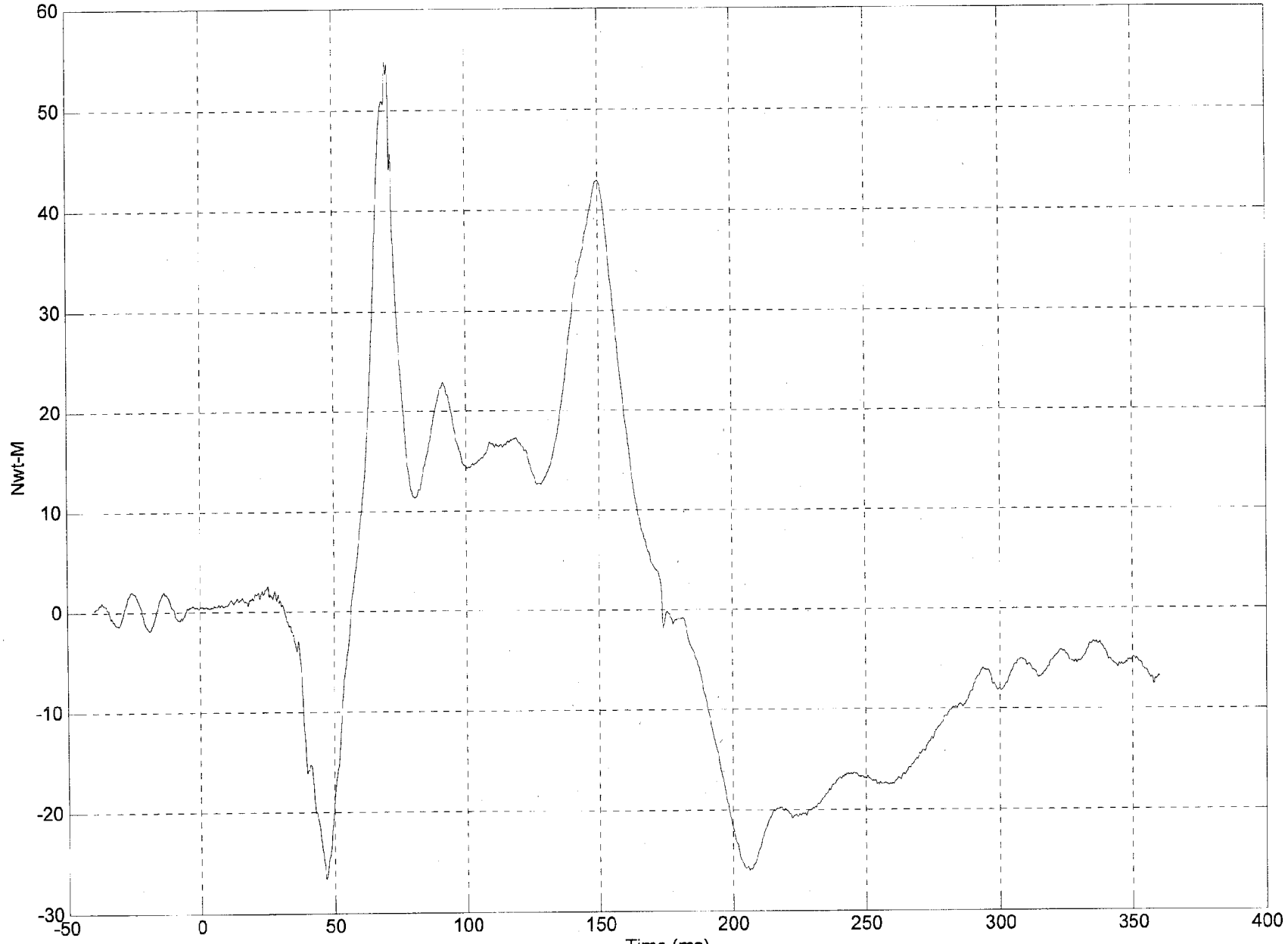
8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Upper Neck My

Max = 54.8 Nwt-M @ 69.90 msec

Min = -26.6 Nwt-M @ 46.70 msec



SAE Filter Class 600

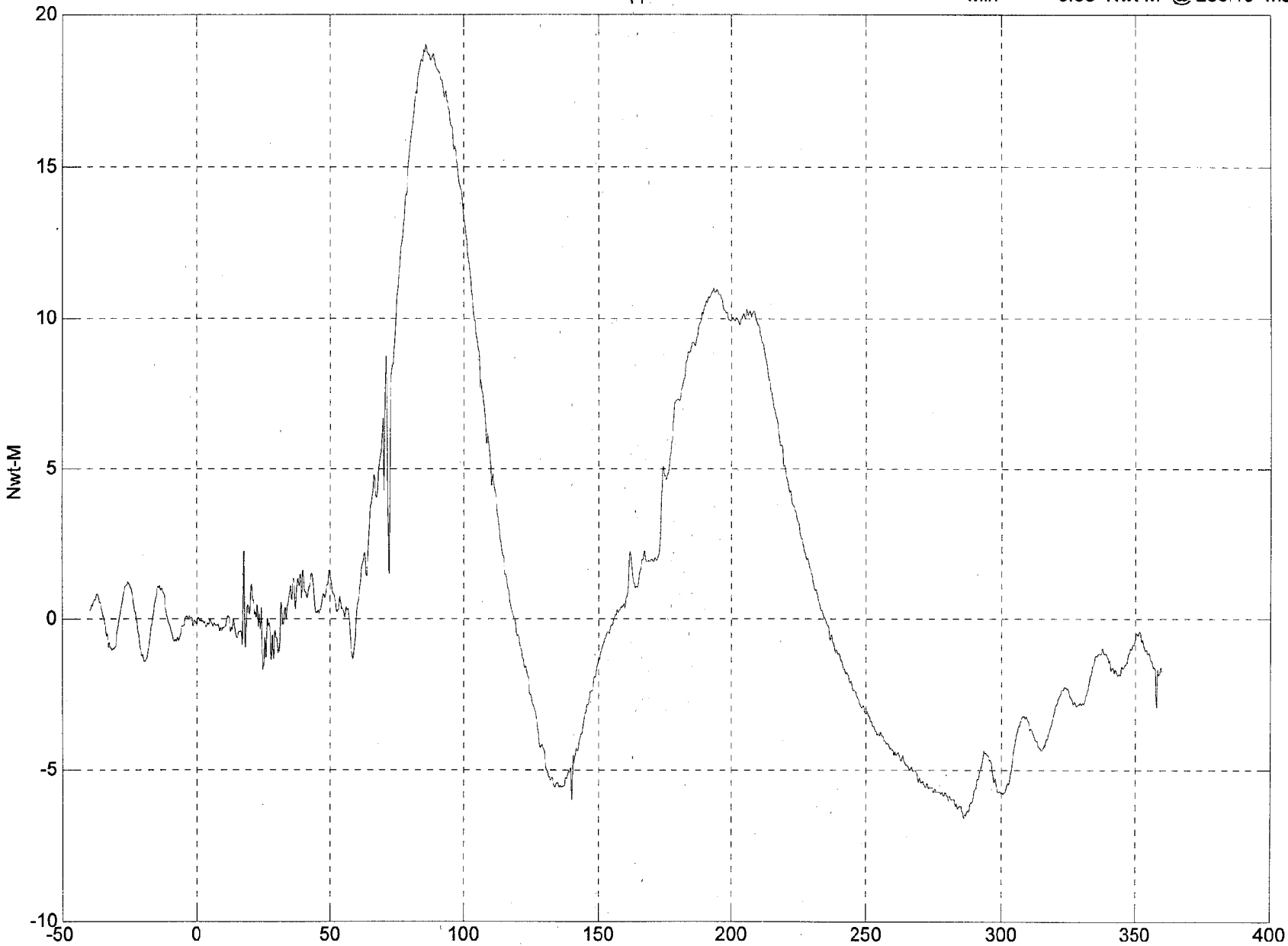
NHTSA No: MW5101

Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Upper Neck Mz

Max = 19 Nwt-M @ 86.00 msec
Min = -6.58 Nwt-M @ 286.10 msec



SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

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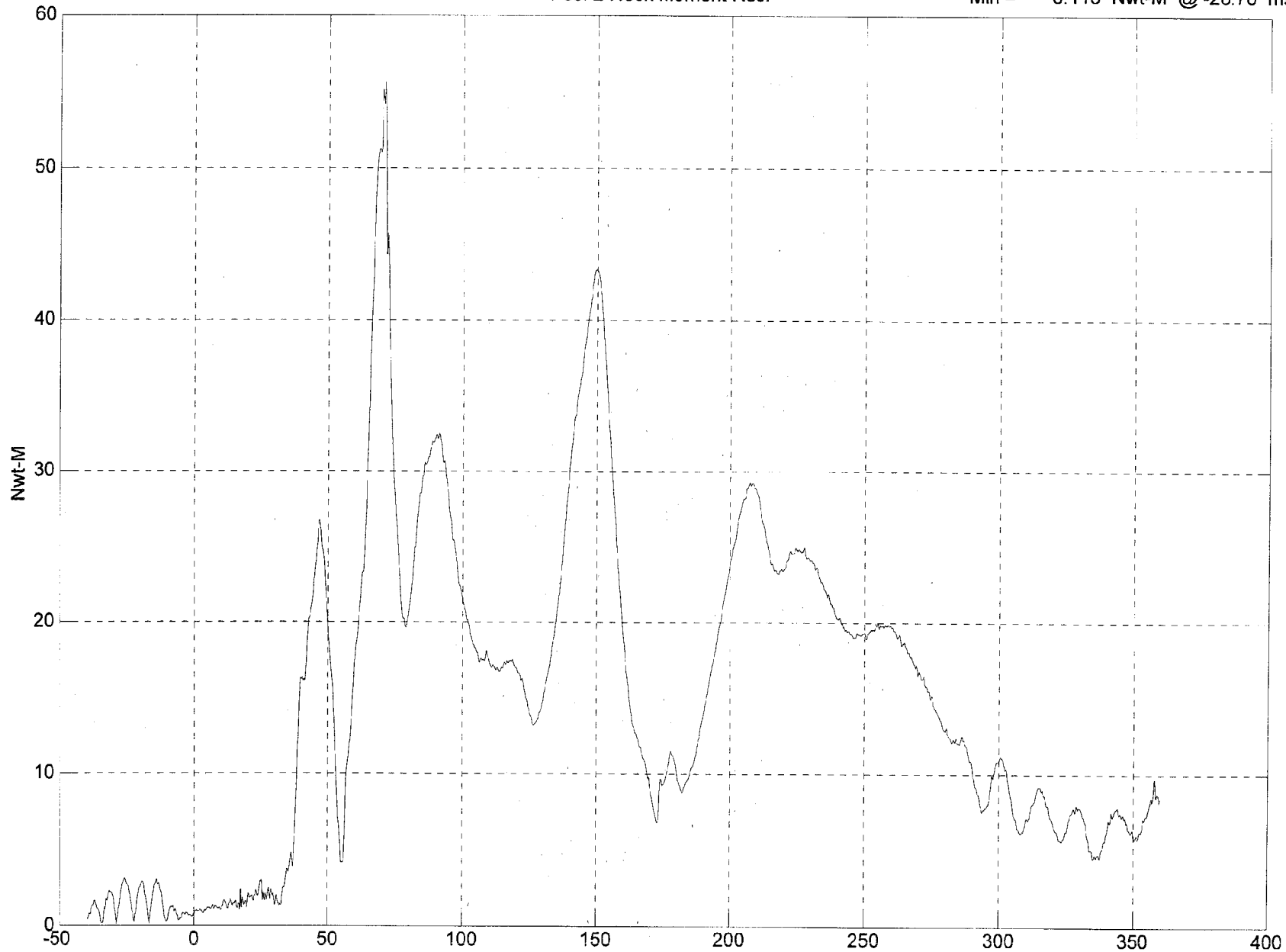
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Neck Moment Res.

Max = 55.6 Nwt-M @ 70.70 msec
Min = 0.113 Nwt-M @ -28.70 msec



SAE Filter Class 600

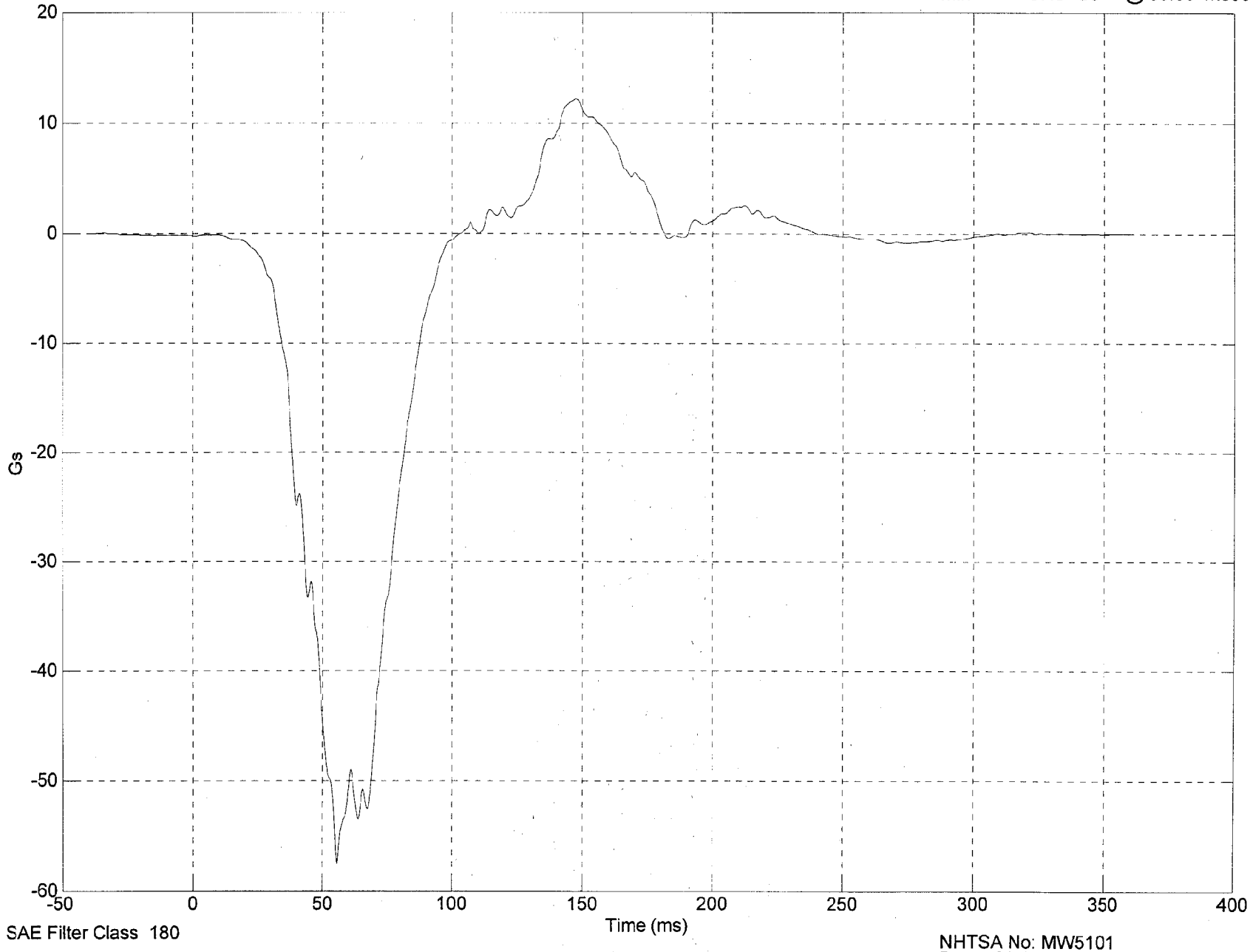
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Chest X

Max = 12.2 Gs @ 147.30 msec
Min = -57.5 Gs @ 55.50 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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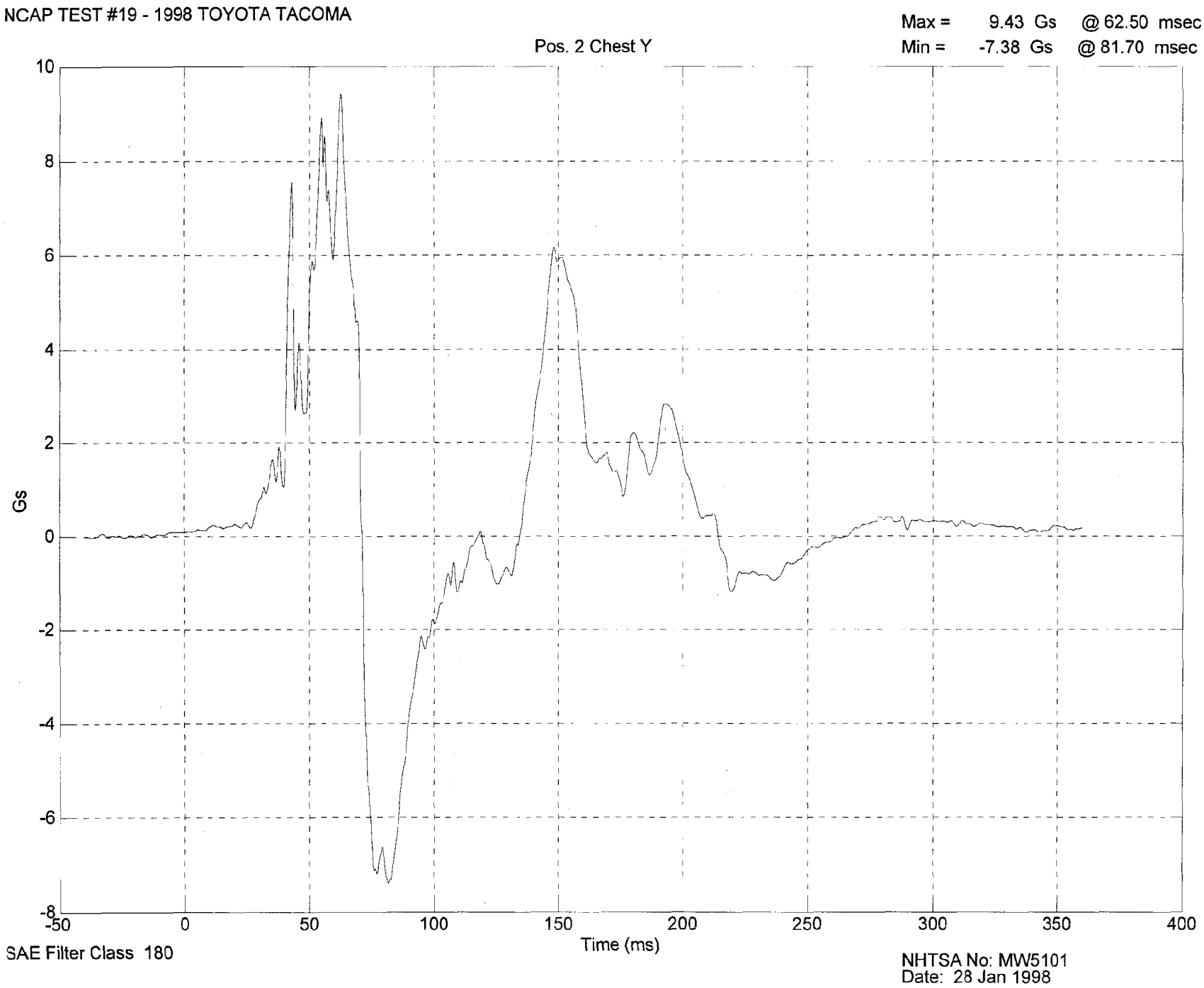
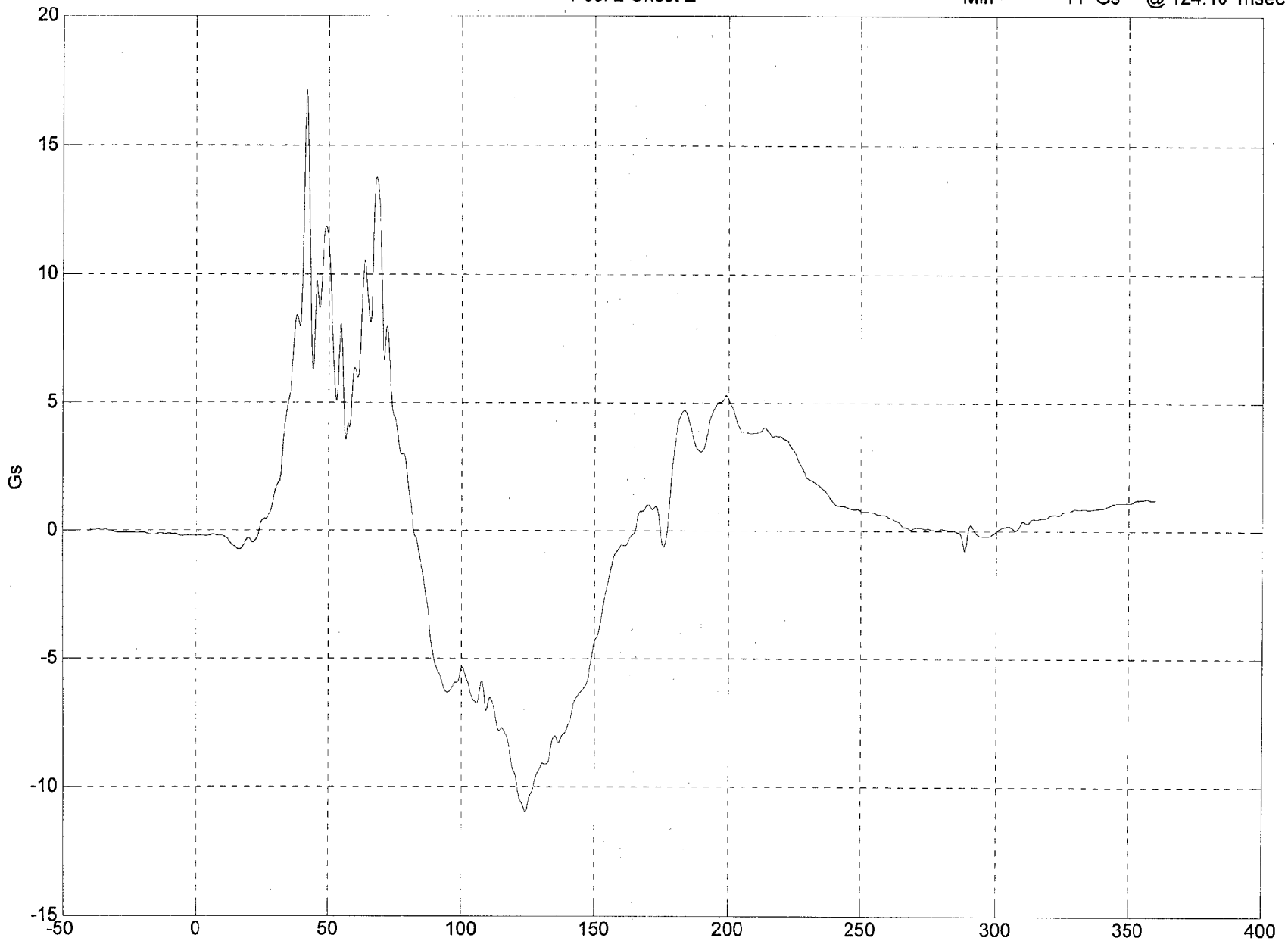

NCAP TEST #19 - 1998 TOYOTA TACOMA
Pos. 2 Chest Y
Max = 9.43 Gs @ 62.50 msec
Min = -7.38 Gs @ 81.70 msec
Gs
Time (ms)
SAE Filter Class 180
NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Chest Z

Max = 17.1 Gs @ 41.80 msec
Min = -11 Gs @ 124.10 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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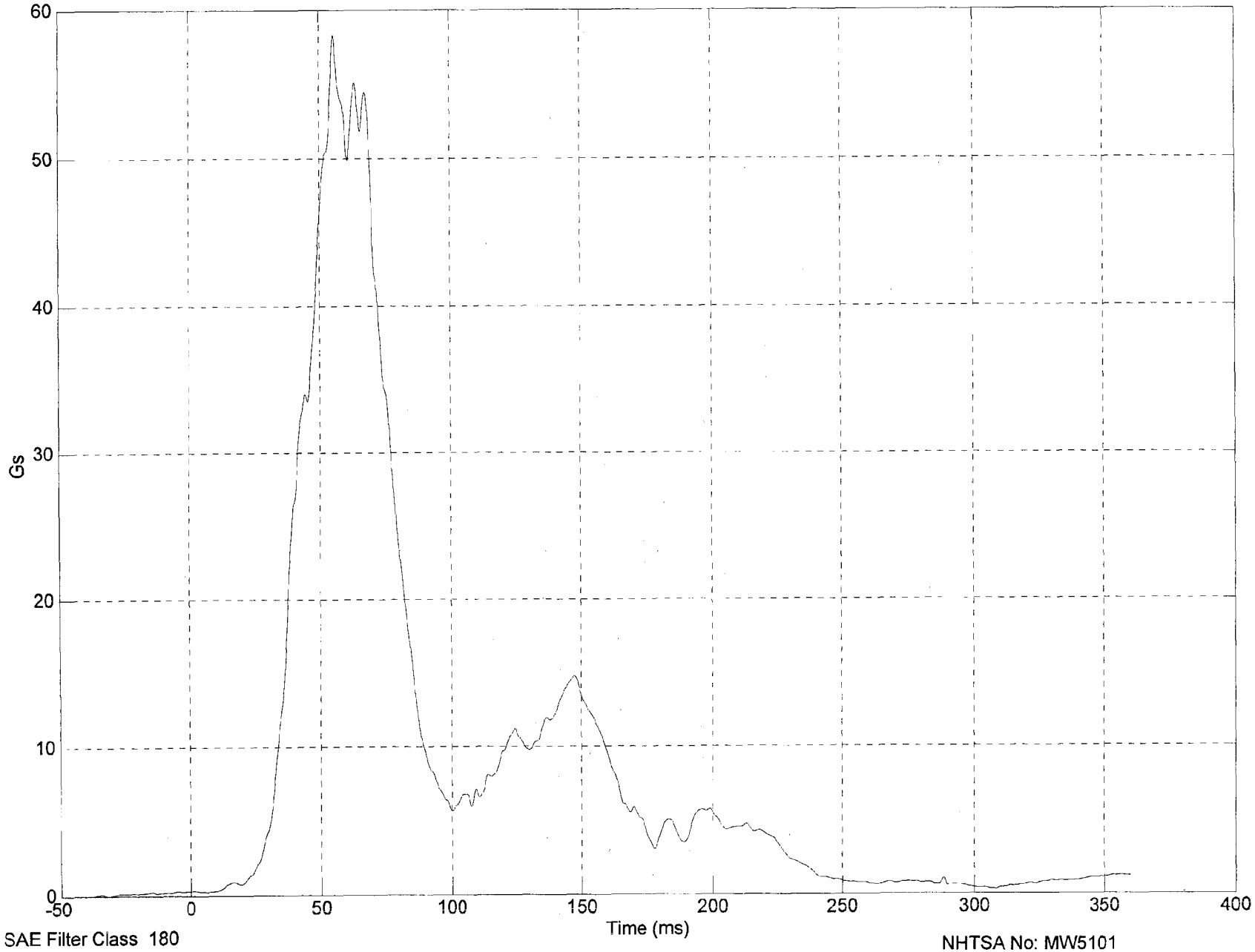
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Chest Resultant

Max = 58.3 Gs @ 55.40 msec
Min = 0.013 Gs @ -31.40 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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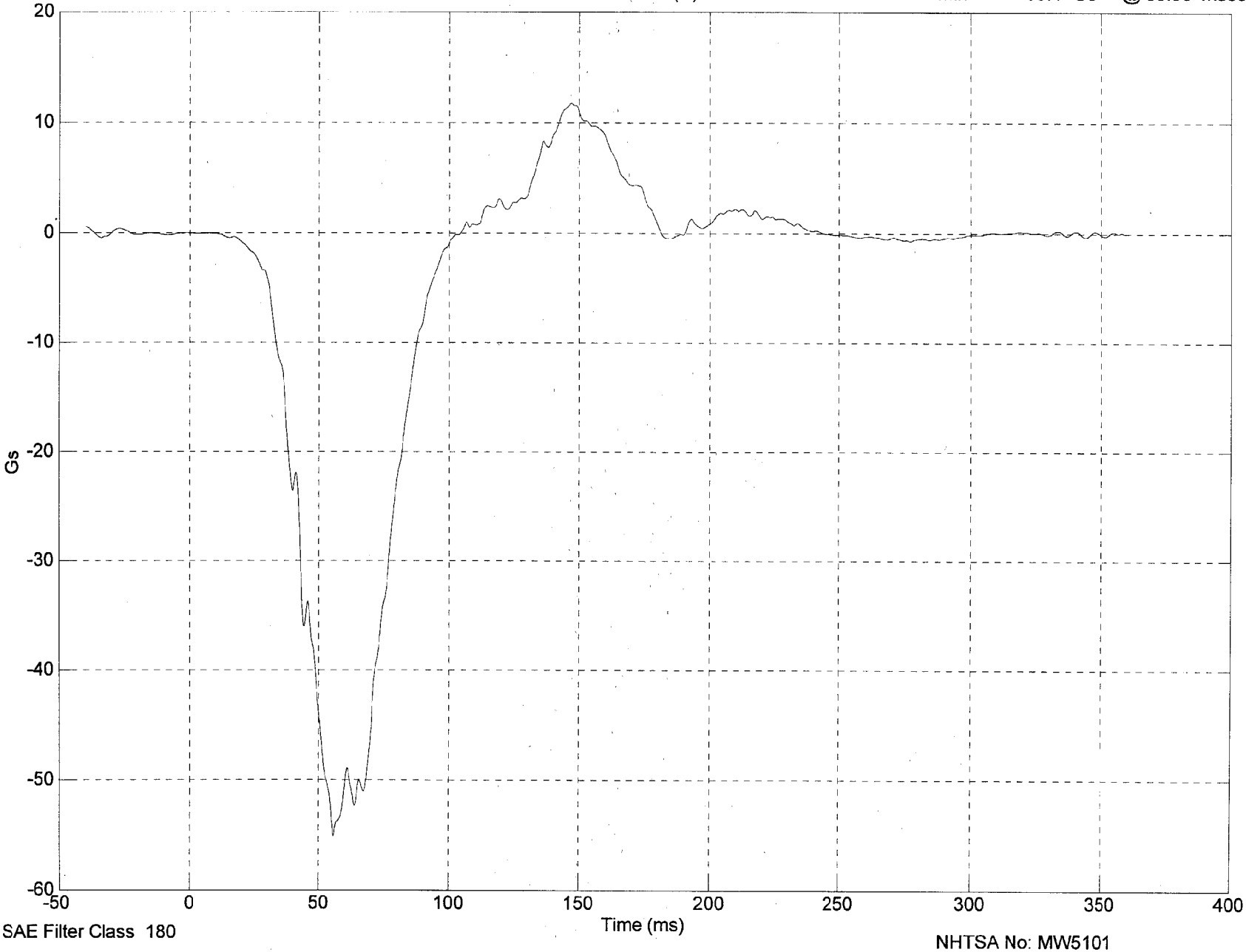
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Chest X(R)

Max = 11.8 Gs @ 146.90 msec
Min = -55.1 Gs @ 55.60 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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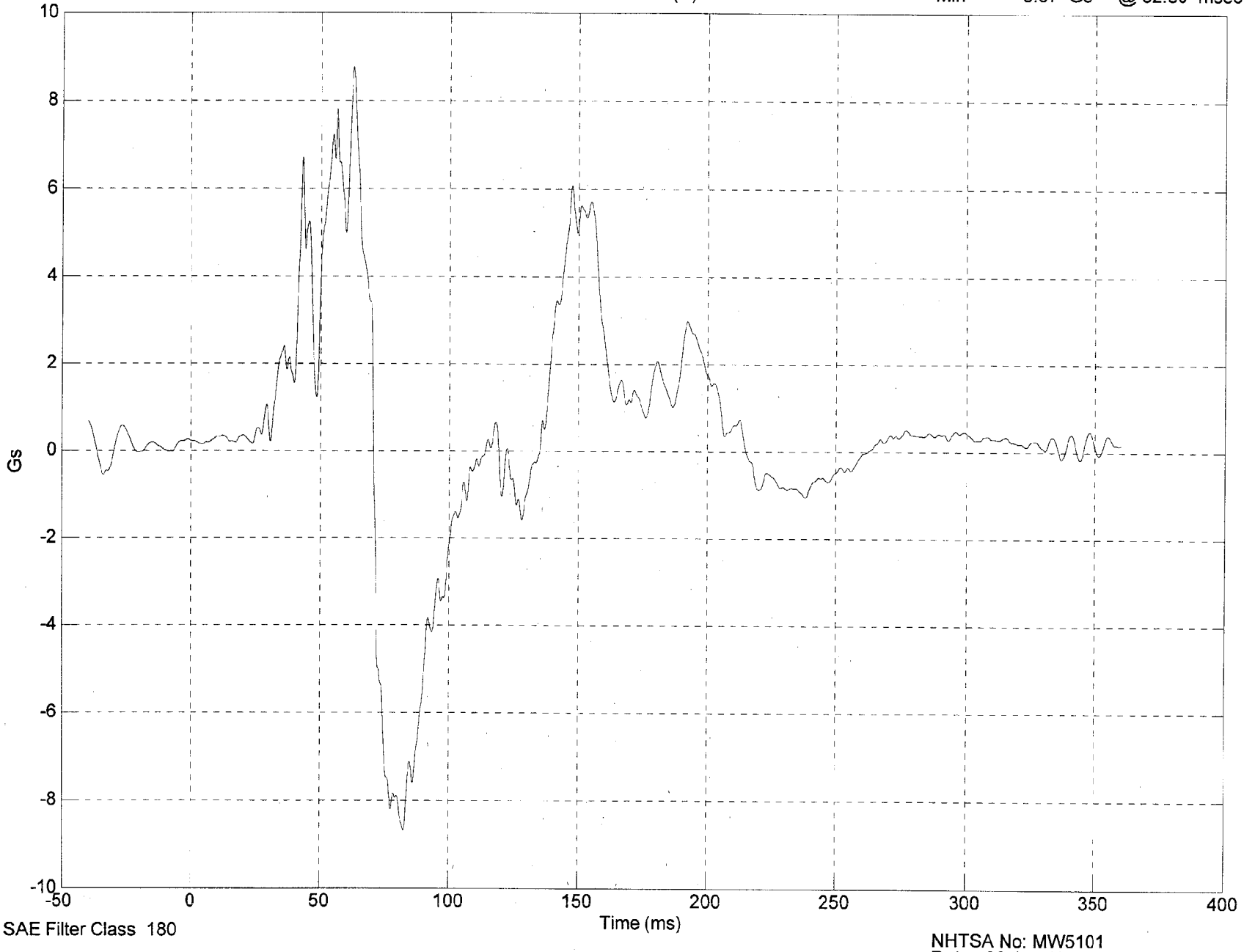
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Chest Y(R)

Max = 8.77 Gs @ 62.50 msec
Min = -8.67 Gs @ 82.80 msec



SAE Filter Class 180

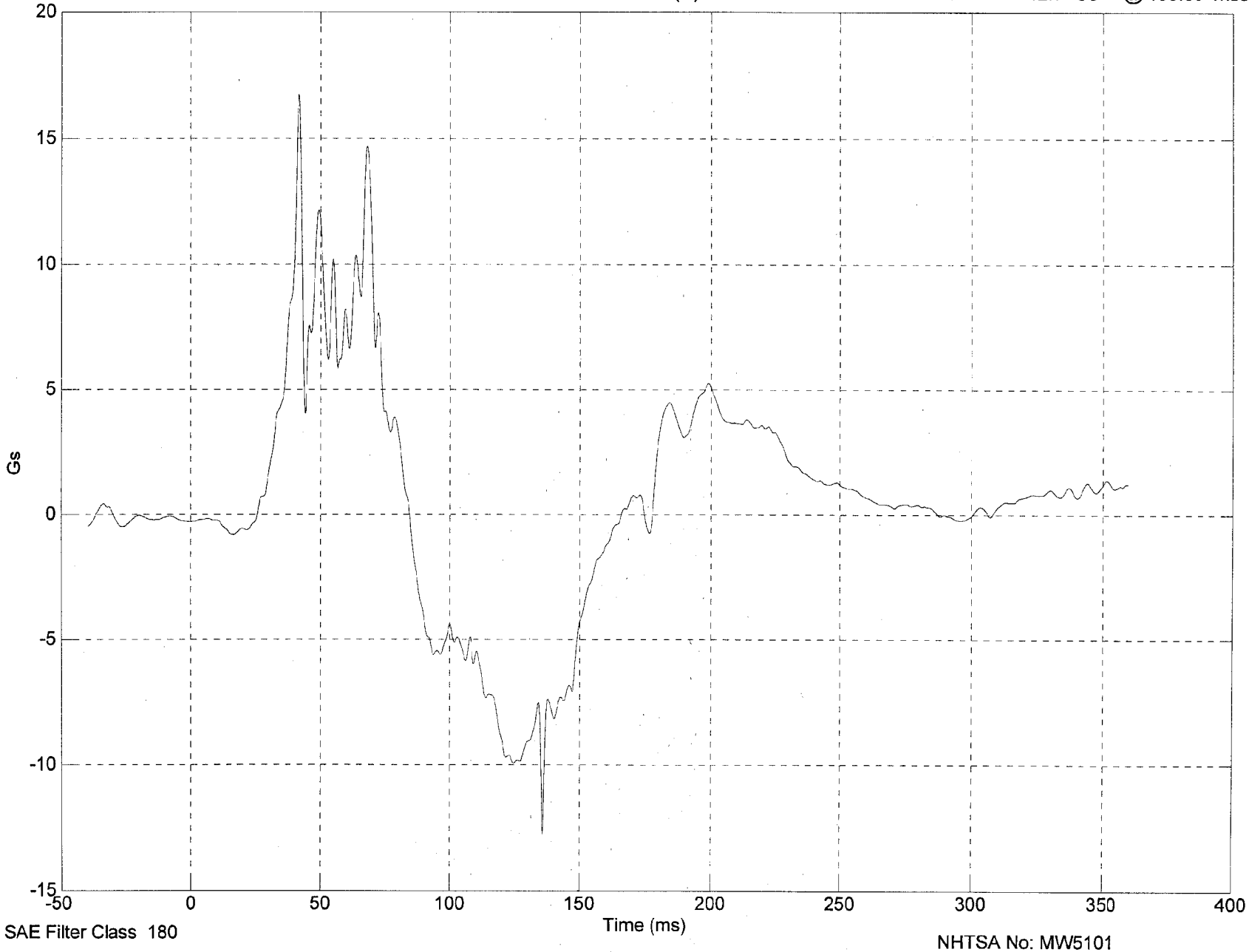
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Chest Z(R)

Max = 16.7 Gs @ 41.80 msec
Min = -12.7 Gs @ 135.80 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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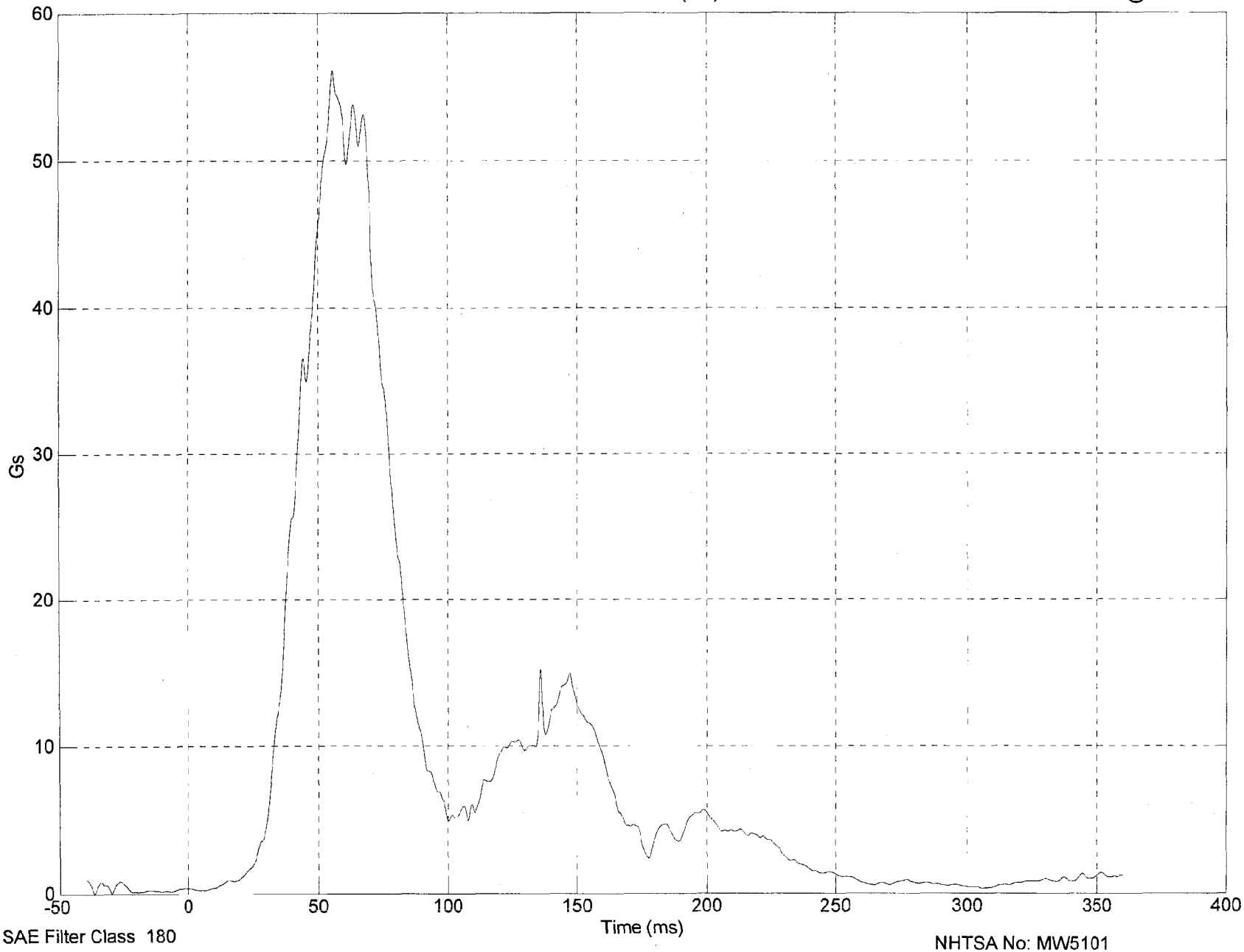
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Chest Res(RR)

Max = 56.1 Gs @ 55.60 msec
Min = 0.0258 Gs @ -36.70 msec



SAE Filter Class 180

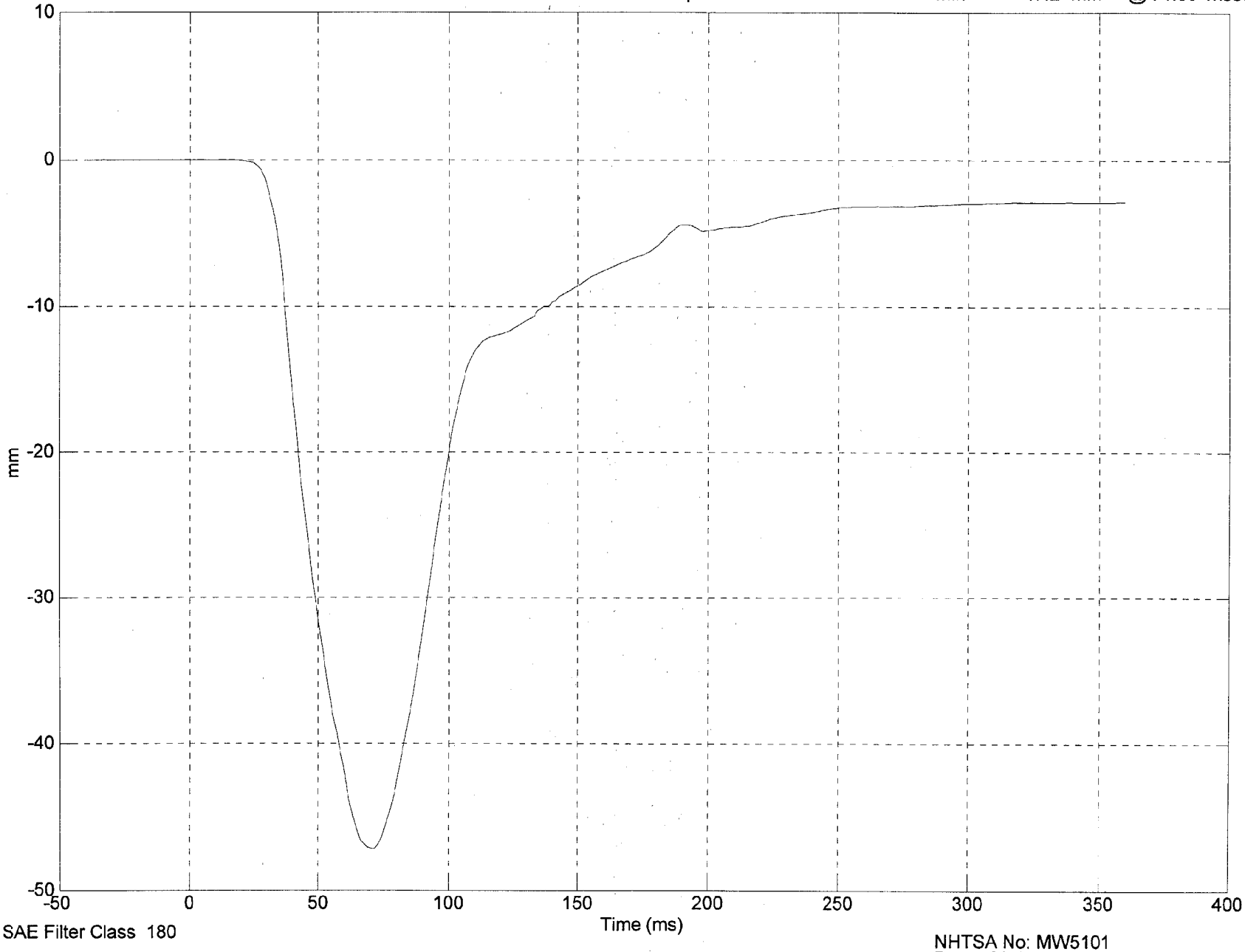
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Chest Disp.

Max = 0.0193 mm @ 13.40 msec
Min = -47.2 mm @ 71.00 msec



SAE Filter Class 180

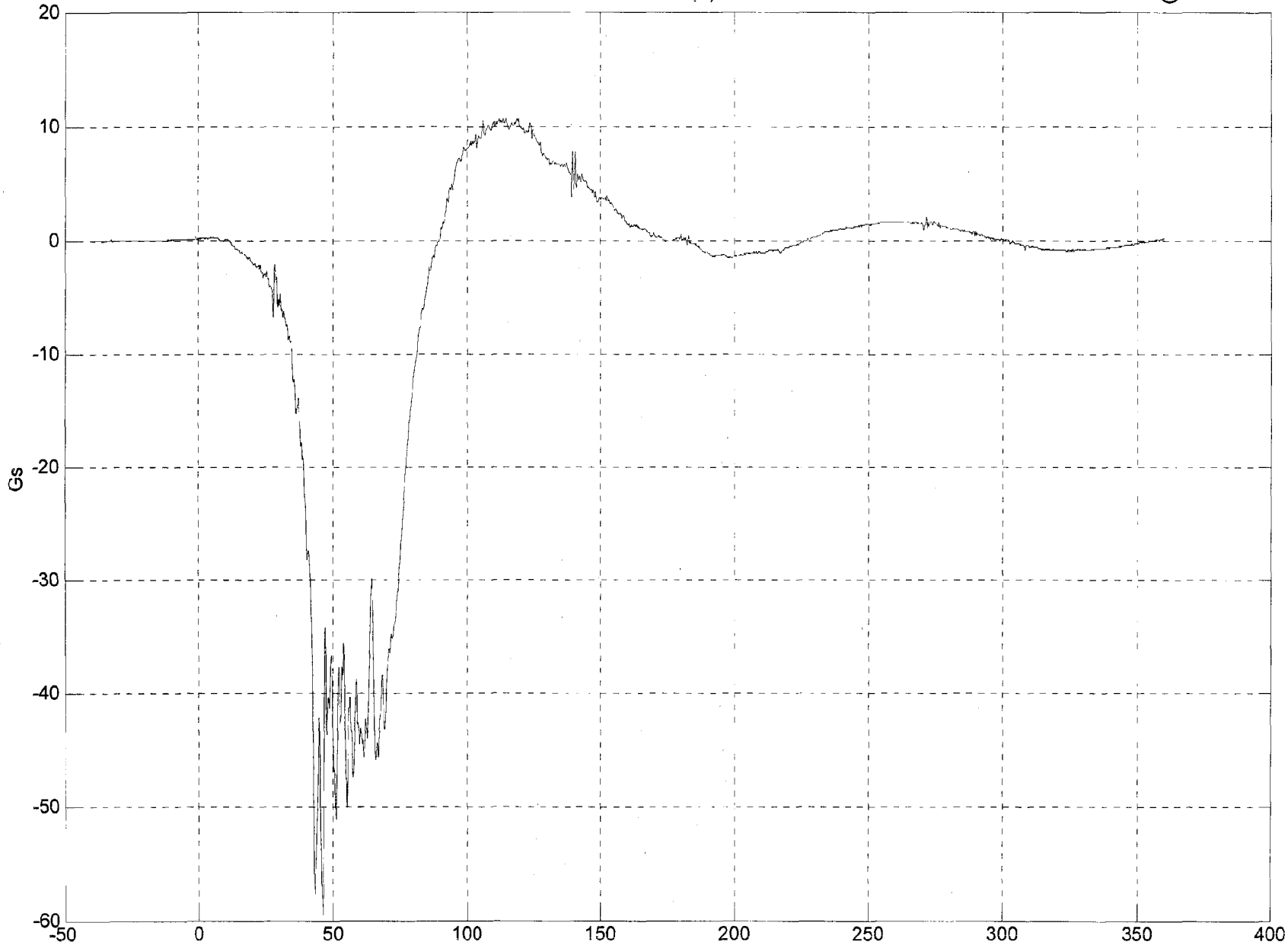
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Pelvic (X)

Max = 10.7 Gs @ 112.00 msec
Min = -59.5 Gs @ 46.30 msec



SAE Filter Class 1000

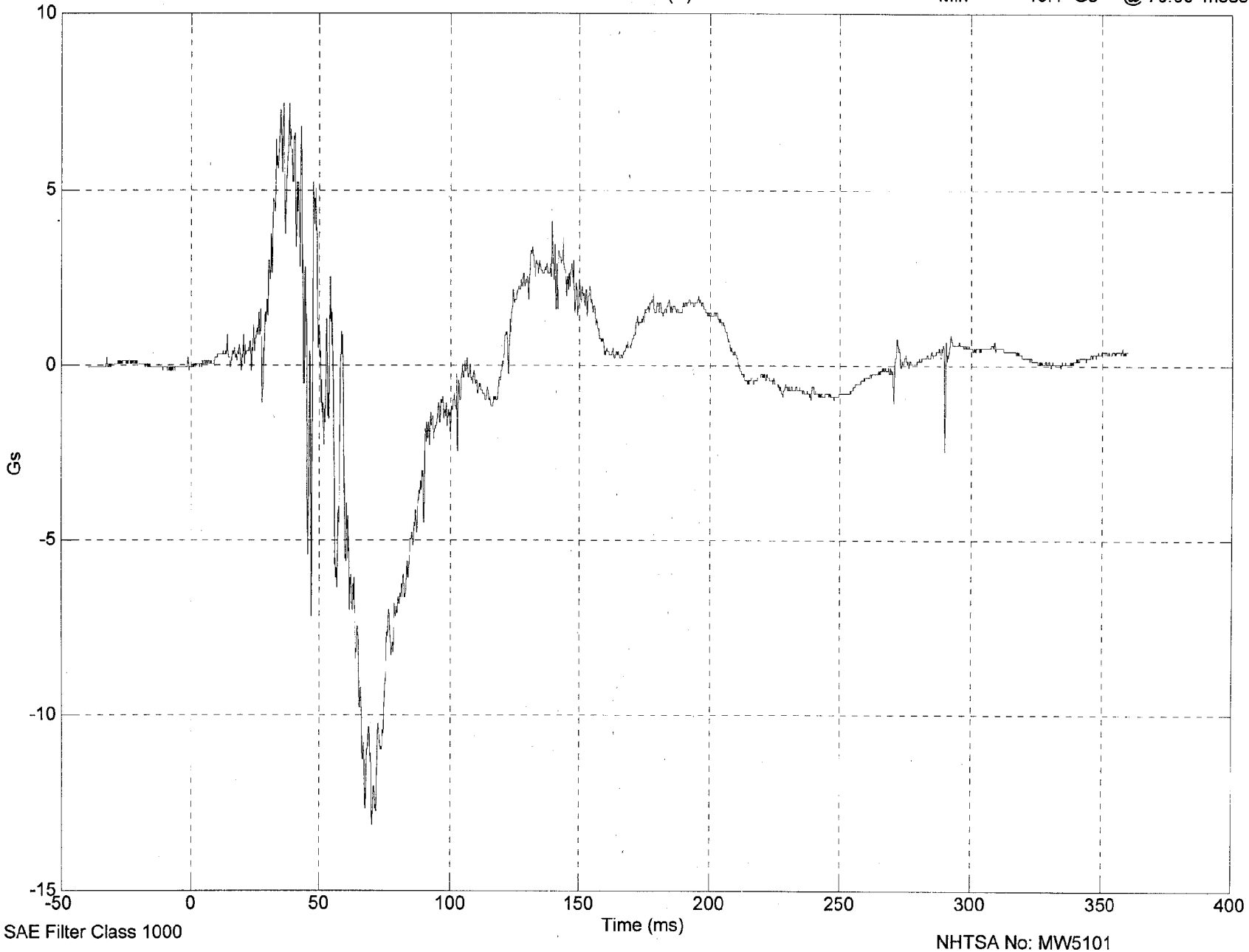
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Pelvic (Y)

Max = 7.46 Gs @ 36.00 msec
Min = -13.1 Gs @ 70.00 msec



SAE Filter Class 1000

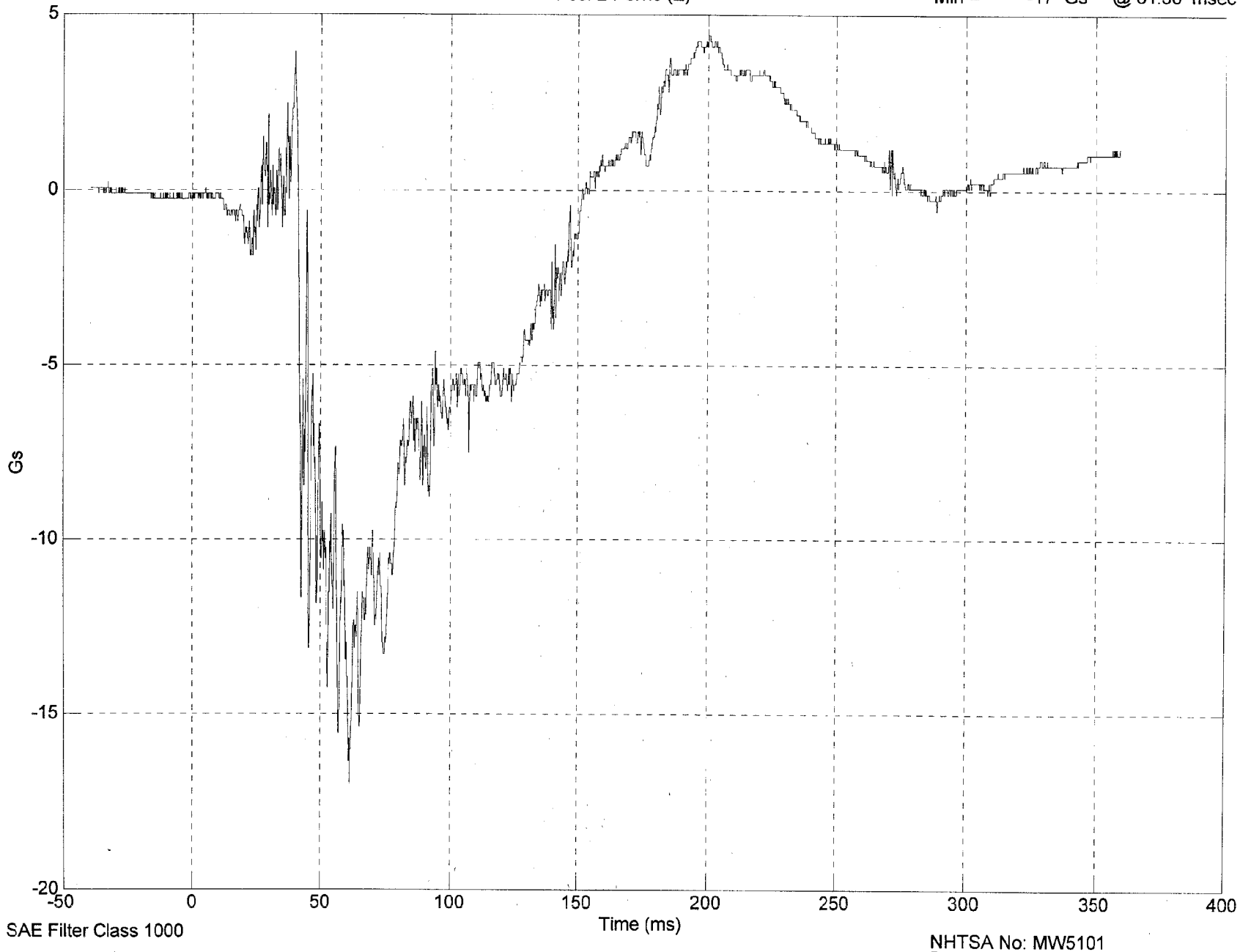
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Pelvic (Z)

Max = 4.41 Gs @ 200.10 msec
Min = -17 Gs @ 61.30 msec



SAE Filter Class 1000

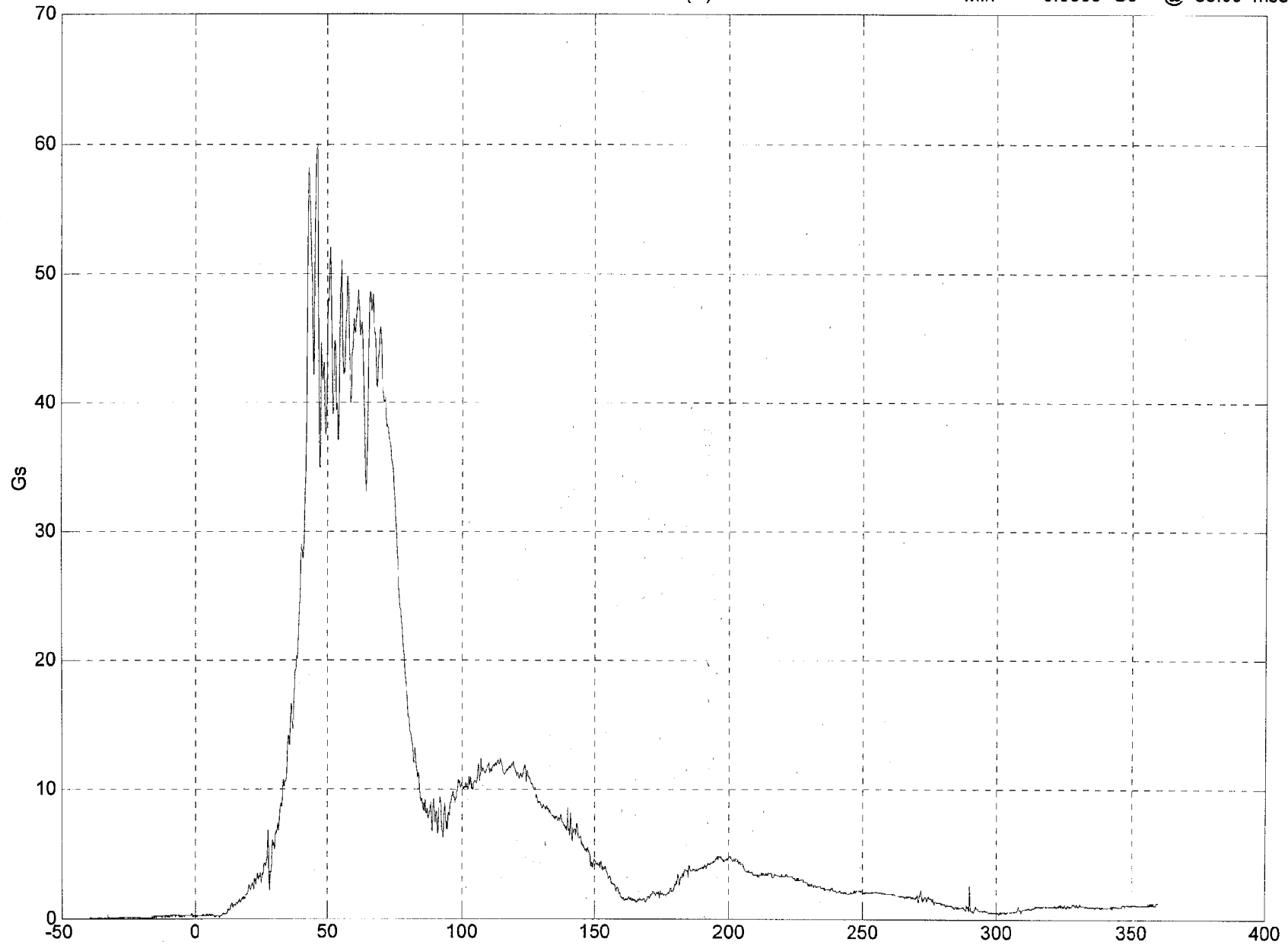
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Pelvic (R)

Max = 60 Gs @ 46.30 msec
Min = 0.0809 Gs @ -33.00 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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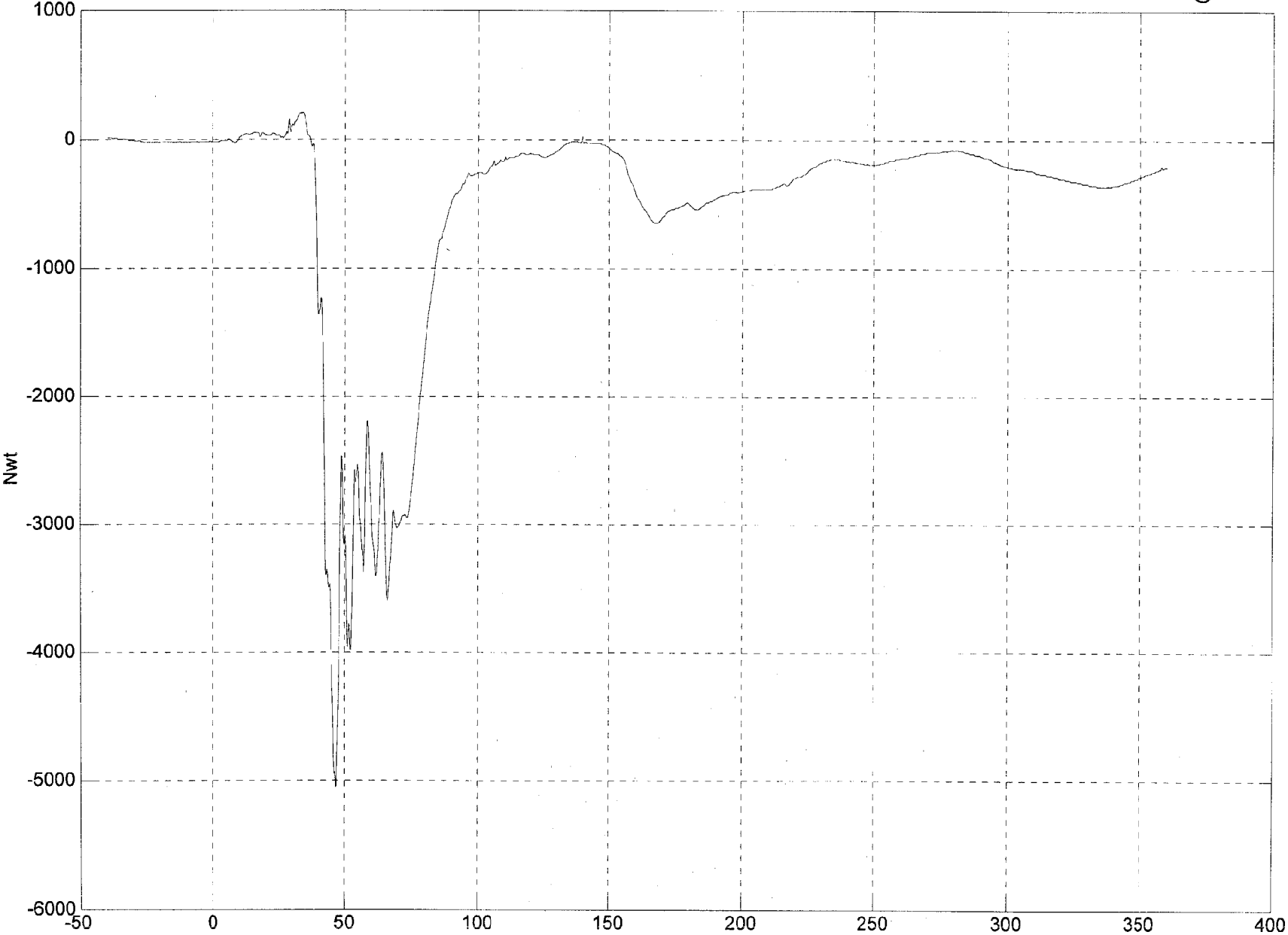
NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Left Femur

Max = 208 Nwt @ 34.20 msec
Min = -5.05e+003 Nwt @ 46.80 msec



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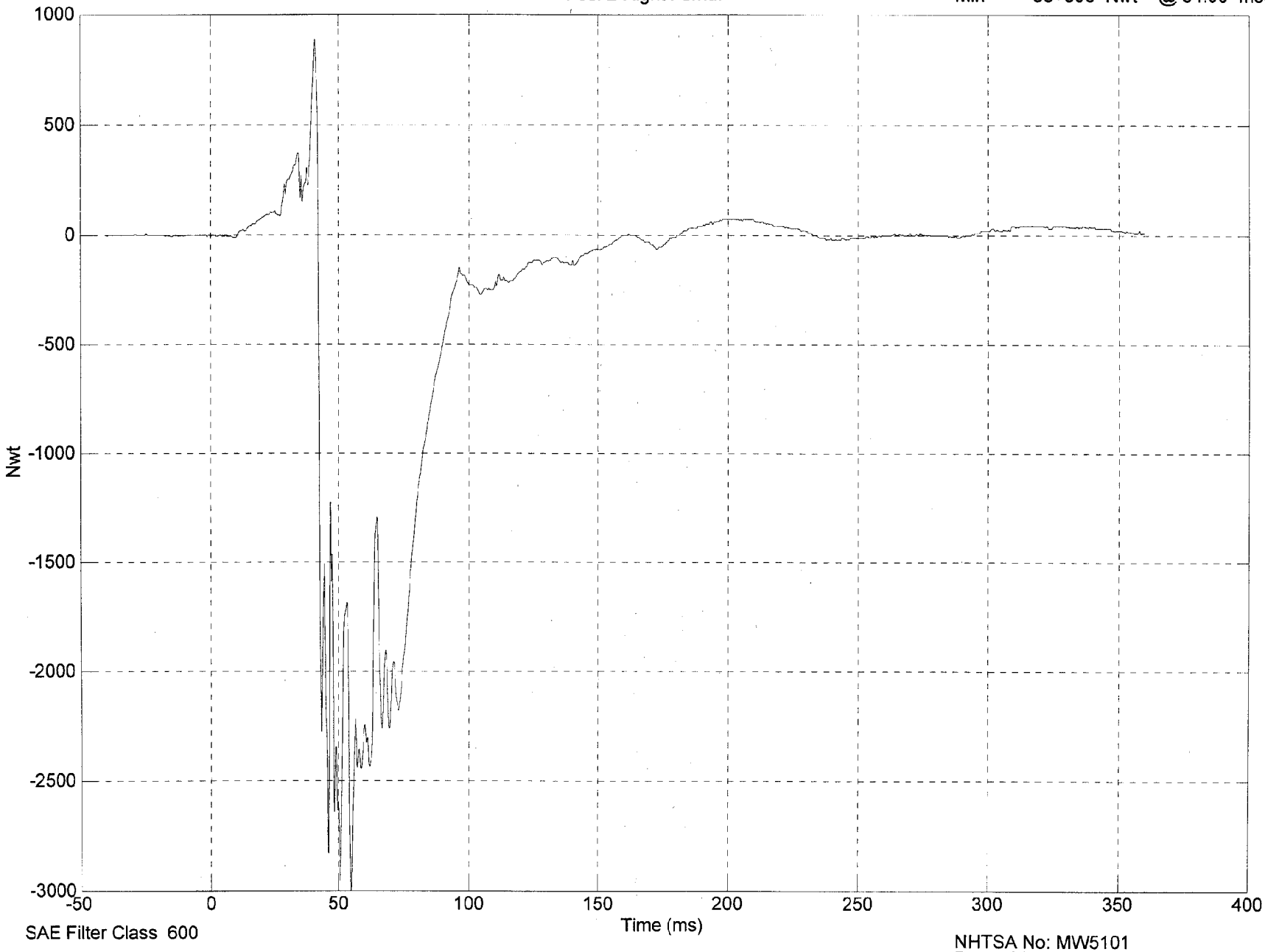
8413-19

SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 885 Nwt @ 40.80 msec
Min = -3e+003 Nwt @ 54.90 msec



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8413-19

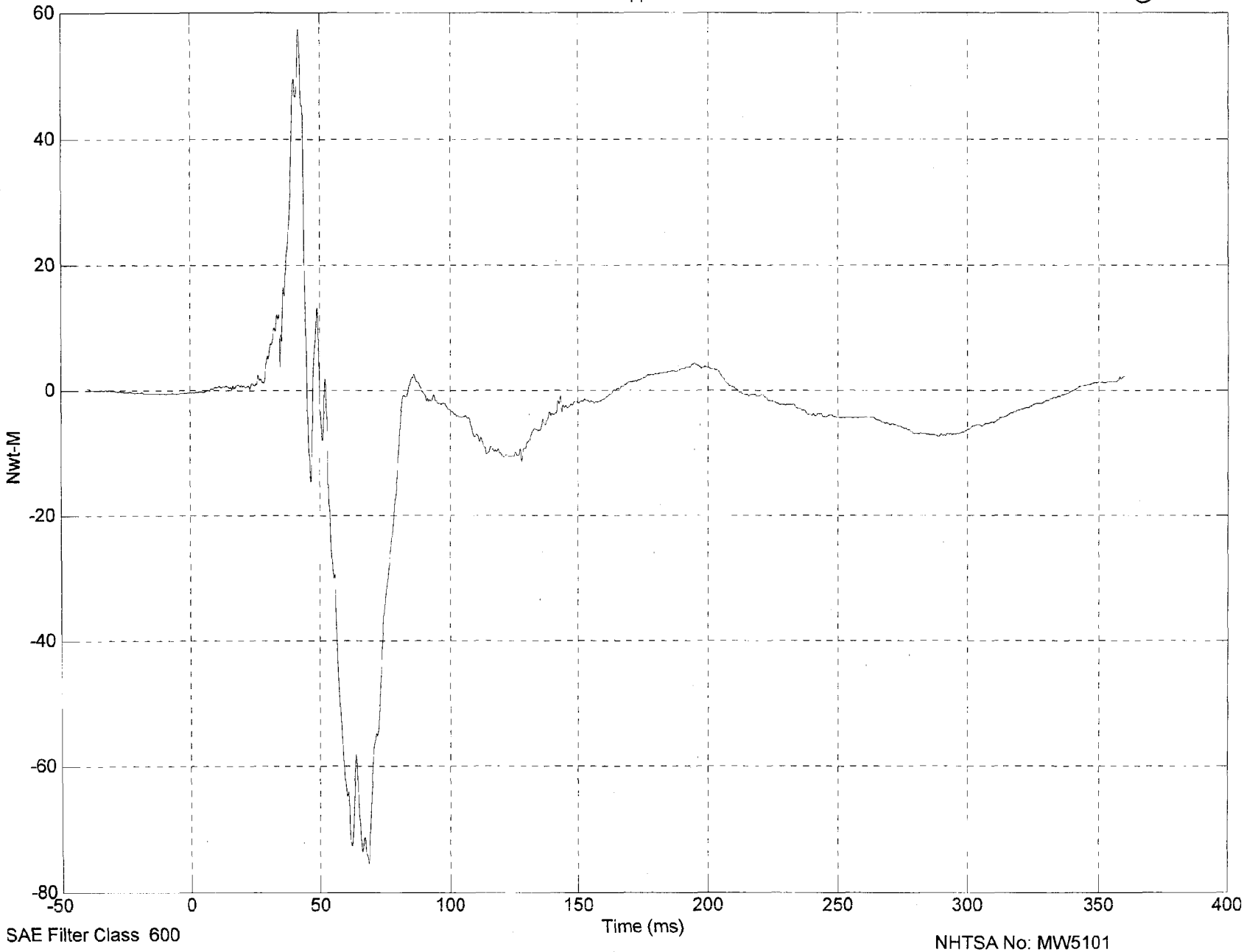
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Lt Upper Tibia Mx

Max = 57.3 Nwt-M @ 42.00 msec
Min = -75.4 Nwt-M @ 68.60 msec



SAE Filter Class 600

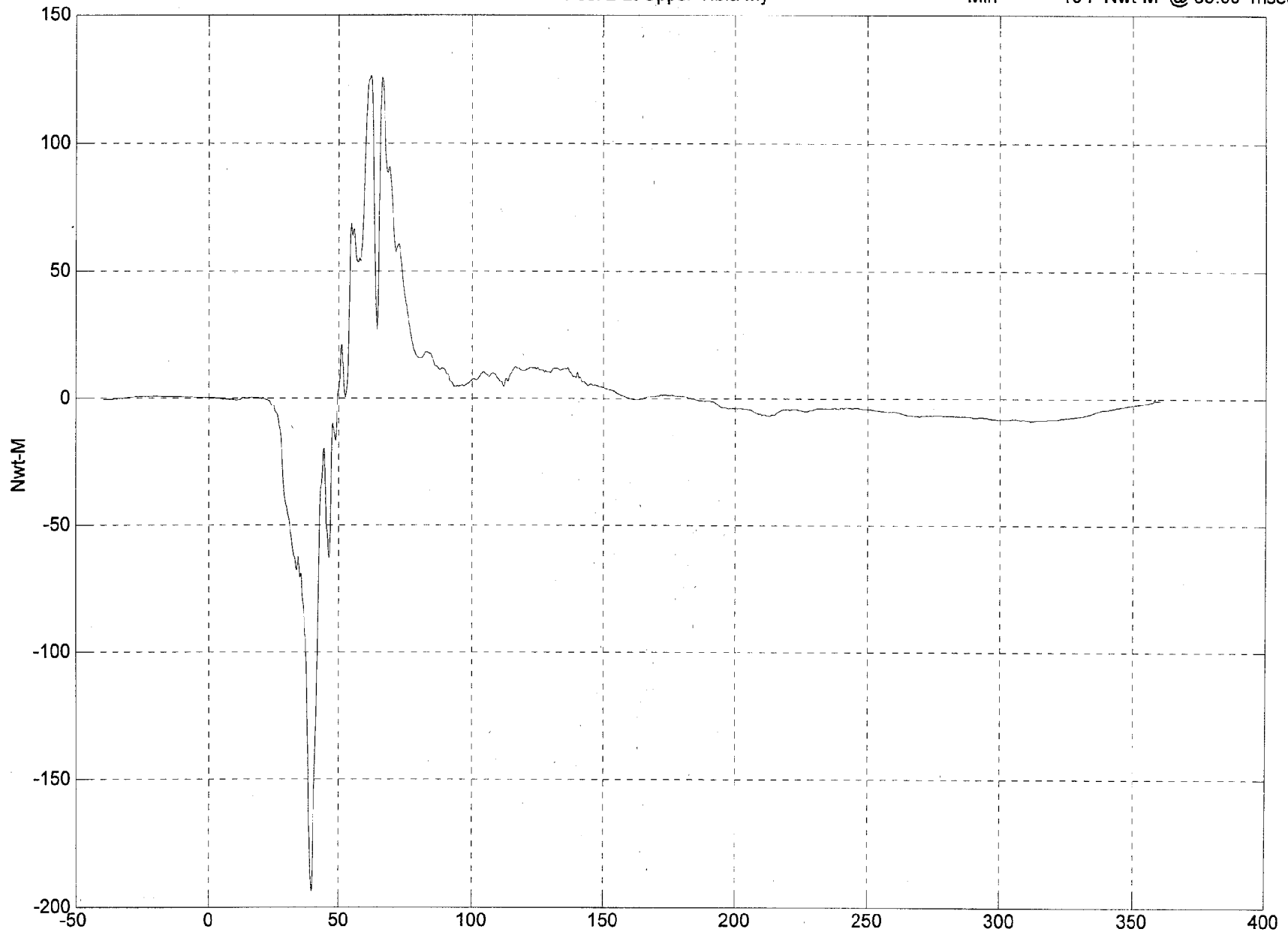
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Lt Upper Tibia My

Max = 126 Nwt-M @ 62.10 msec
Min = -194 Nwt-M @ 39.80 msec



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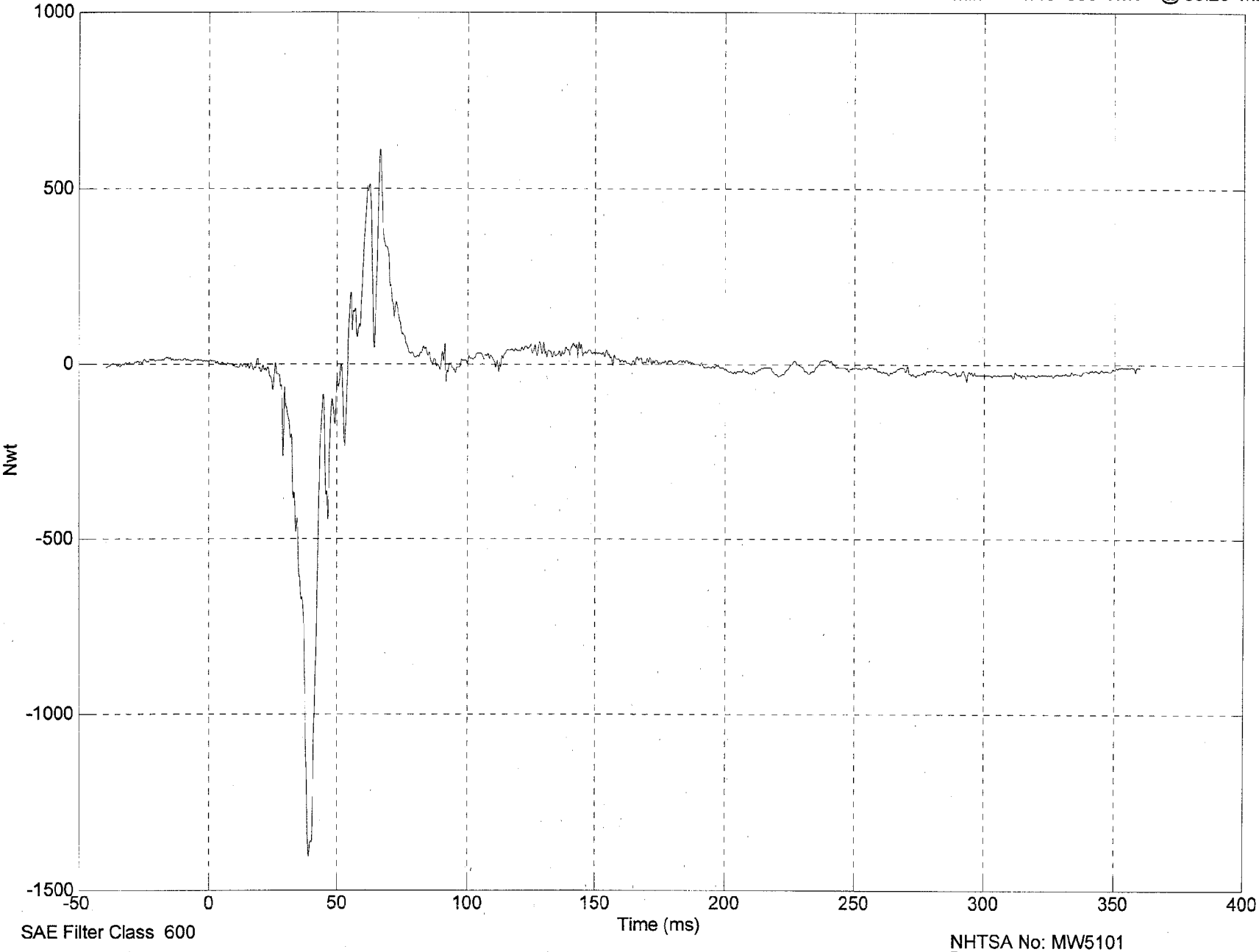
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Lt Lower Tibia Fx

Max = 612 Nwt @ 66.30 msec
Min = -1.4e+003 Nwt @ 39.20 msec



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8413-19

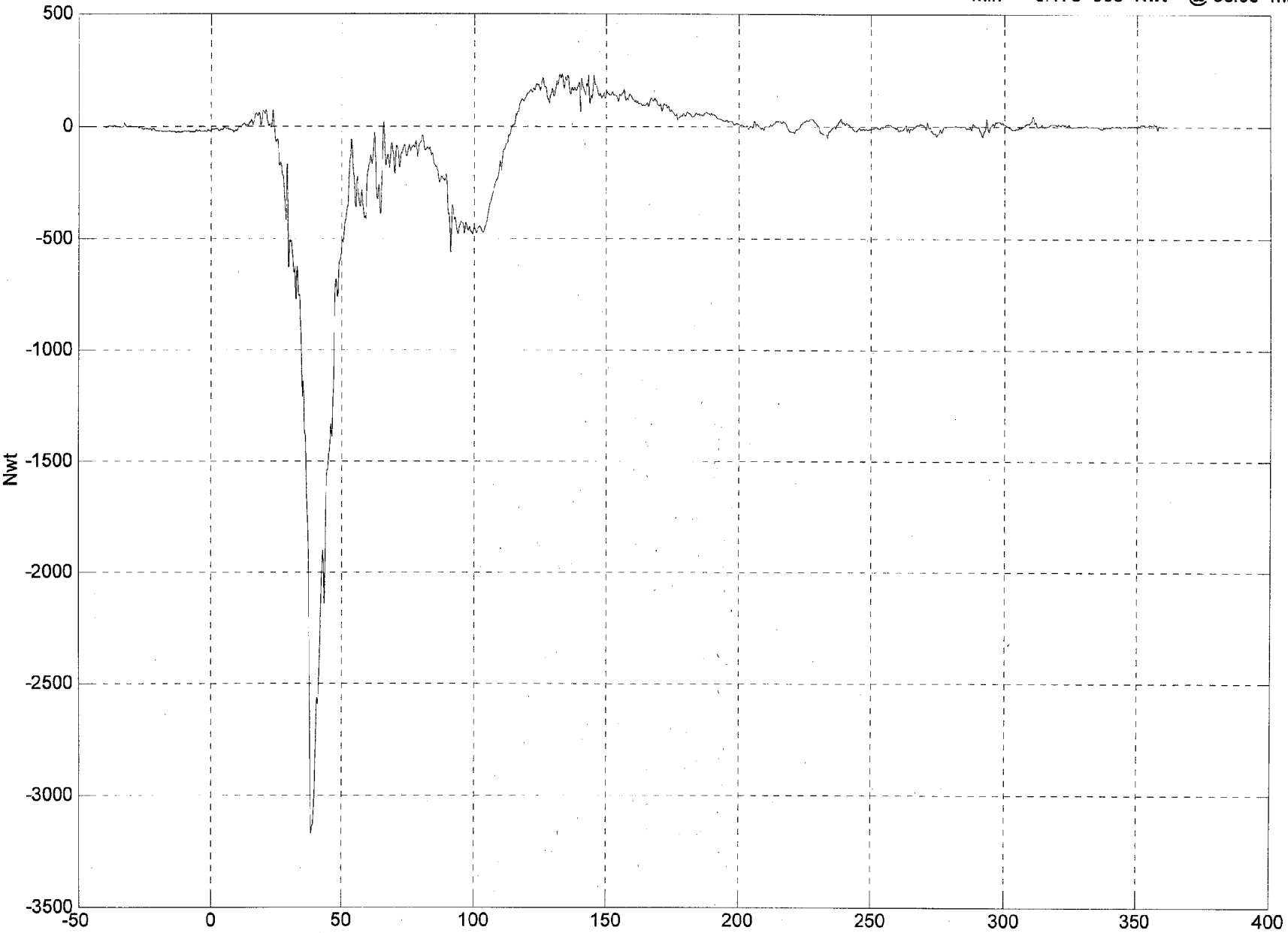
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Lt Lower Tibia Fz

Max = 231 Nwt @ 133.00 msec
Min = -3.17e+003 Nwt @ 38.60 msec



B-89

8413-19

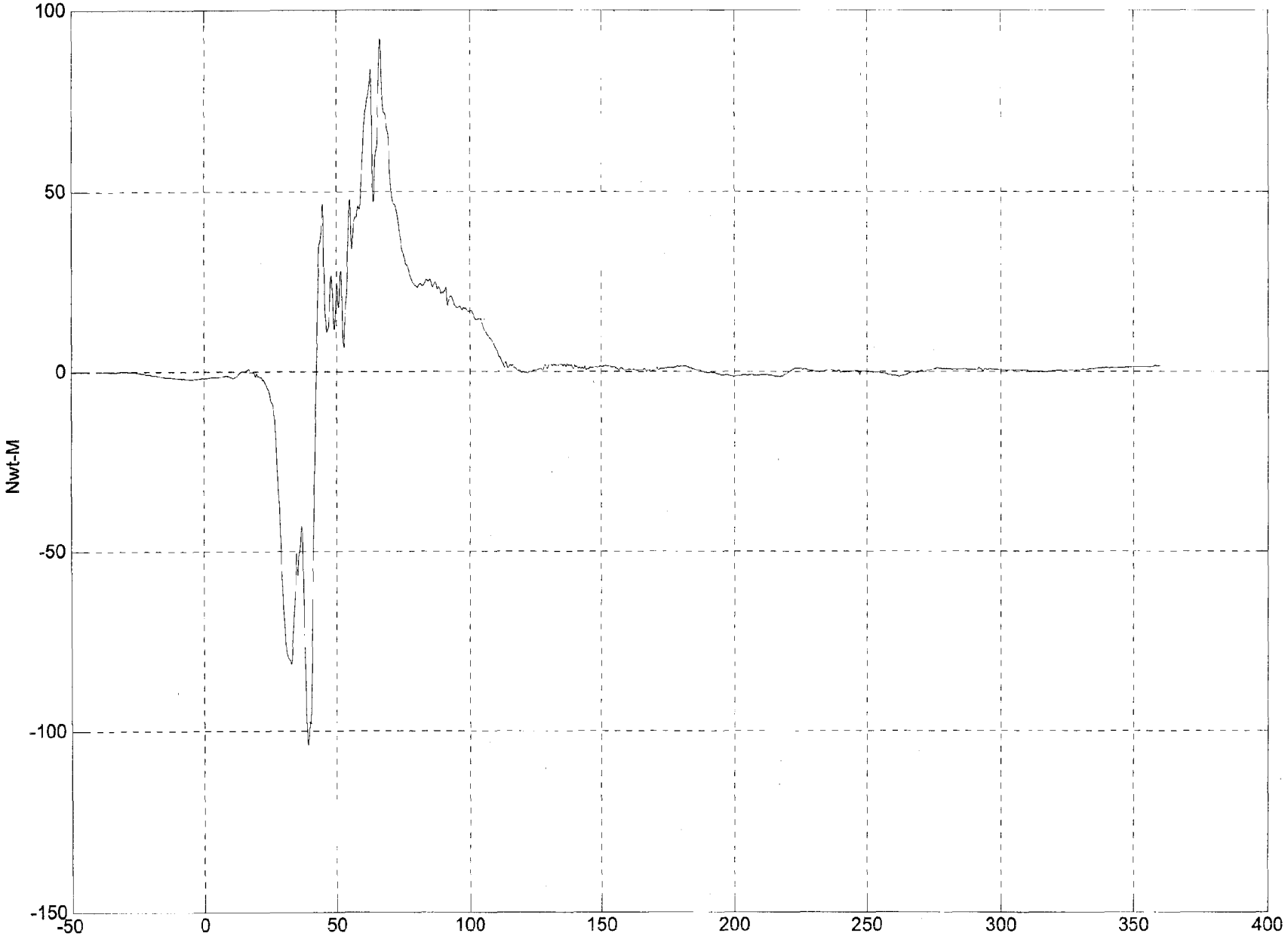
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Lt Lower Tibia My

Max = 92.1 Nwt-M @ 66.30 msec
Min = -104 Nwt-M @ 39.20 msec



B-90

8413-19

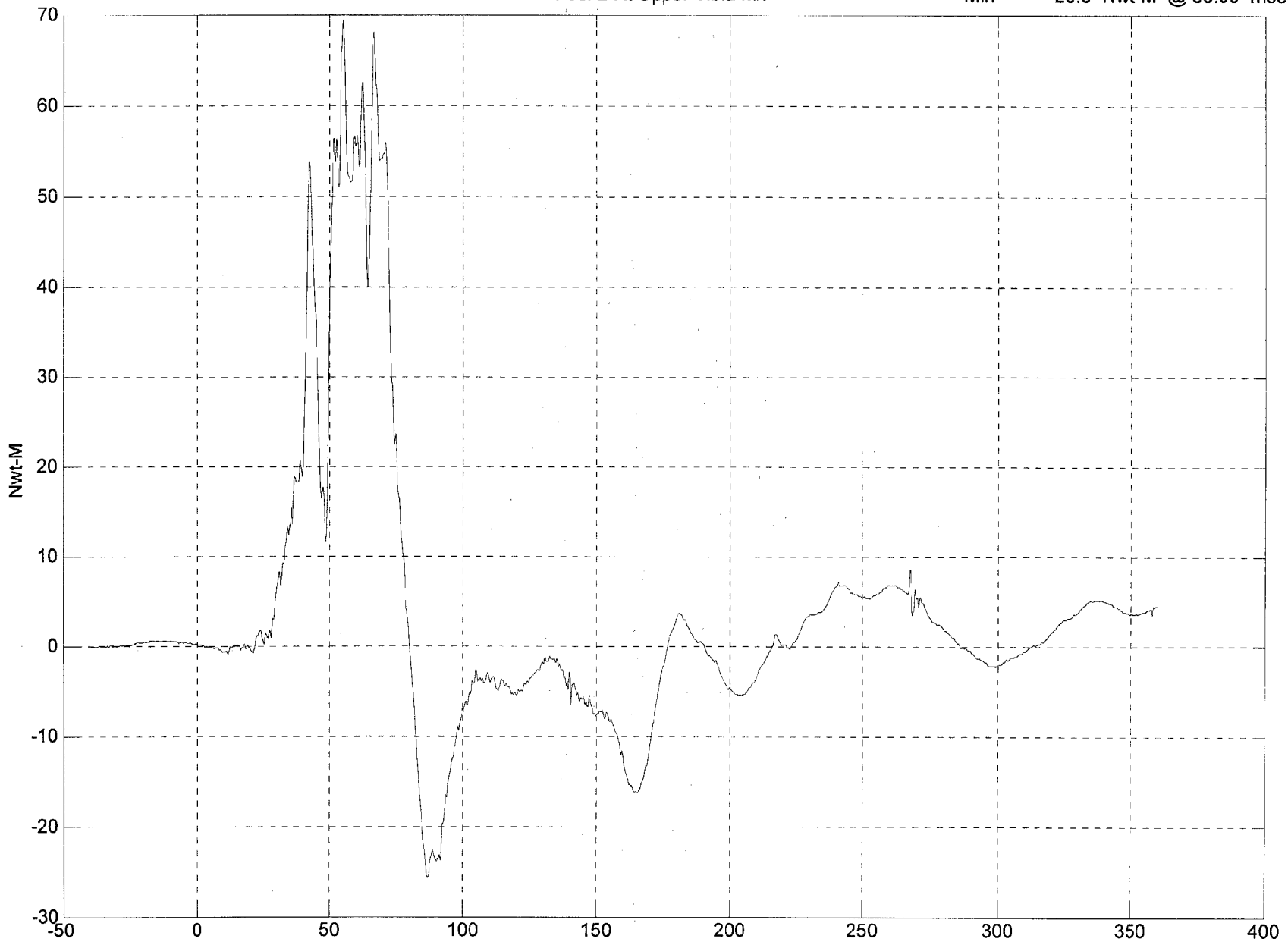
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Rt Upper Tibia Mx

Max = 69.4 Nwt-M @ 55.10 msec
Min = -25.6 Nwt-M @ 86.90 msec



SAE Filter Class 600

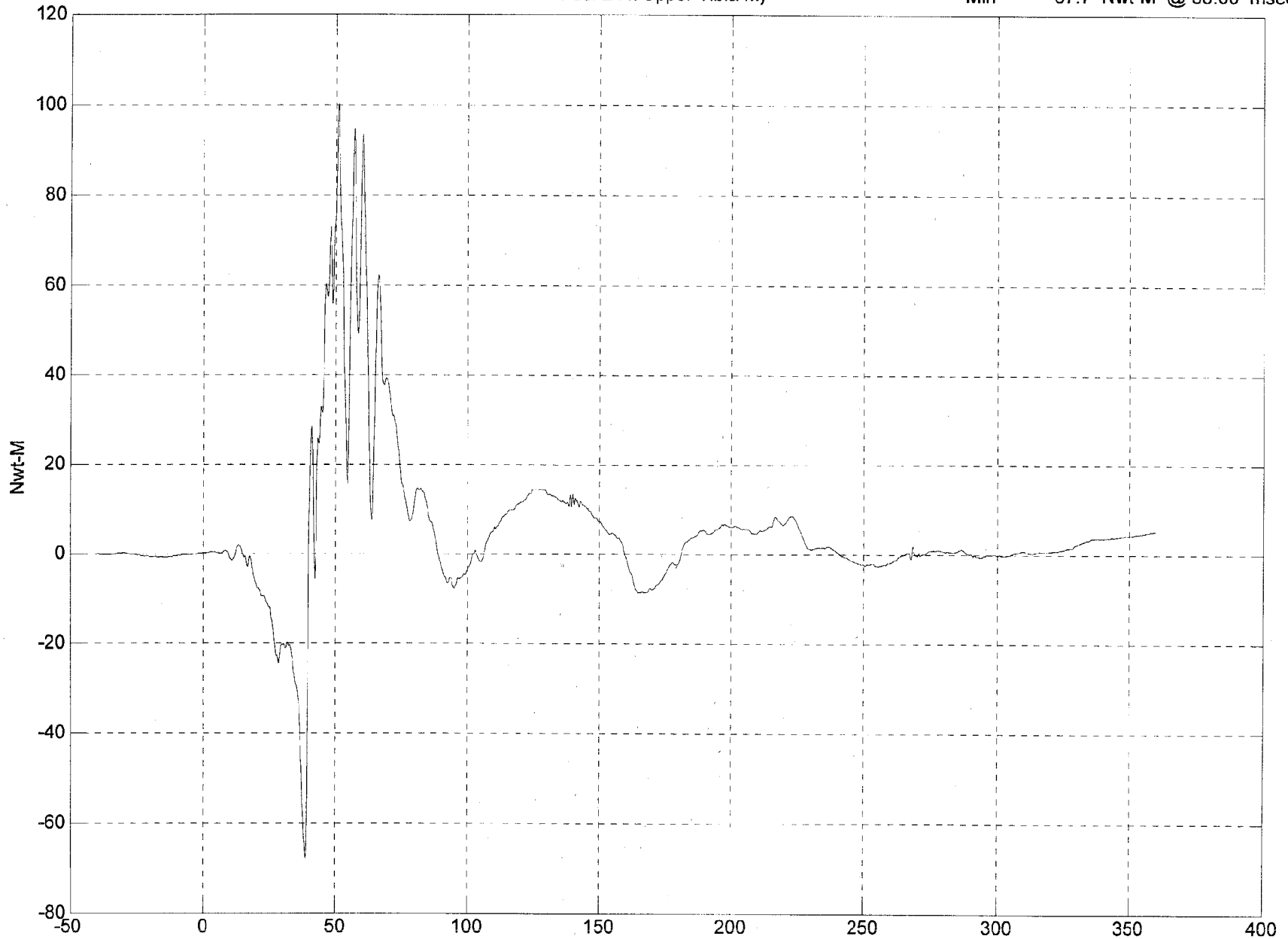
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Rt Upper Tibia My

Max = 100 Nwt-M @ 50.90 msec
Min = -67.7 Nwt-M @ 38.80 msec



SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

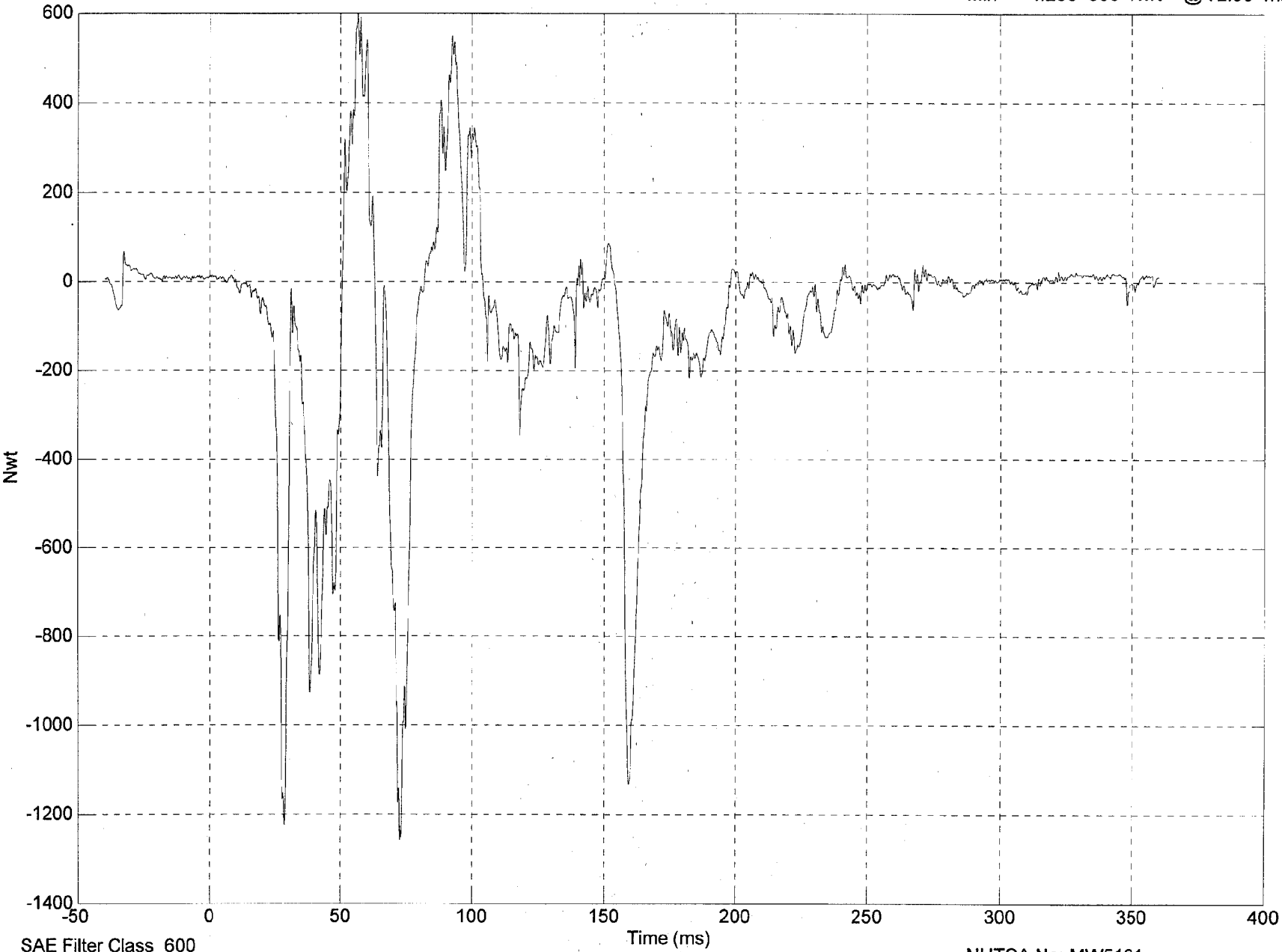
B-92

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Rt Lower Tibia Fx

Max = 600 Nwt @ 56.50 msec
Min = -1.26e+003 Nwt @ 72.90 msec



B-93

8413-19

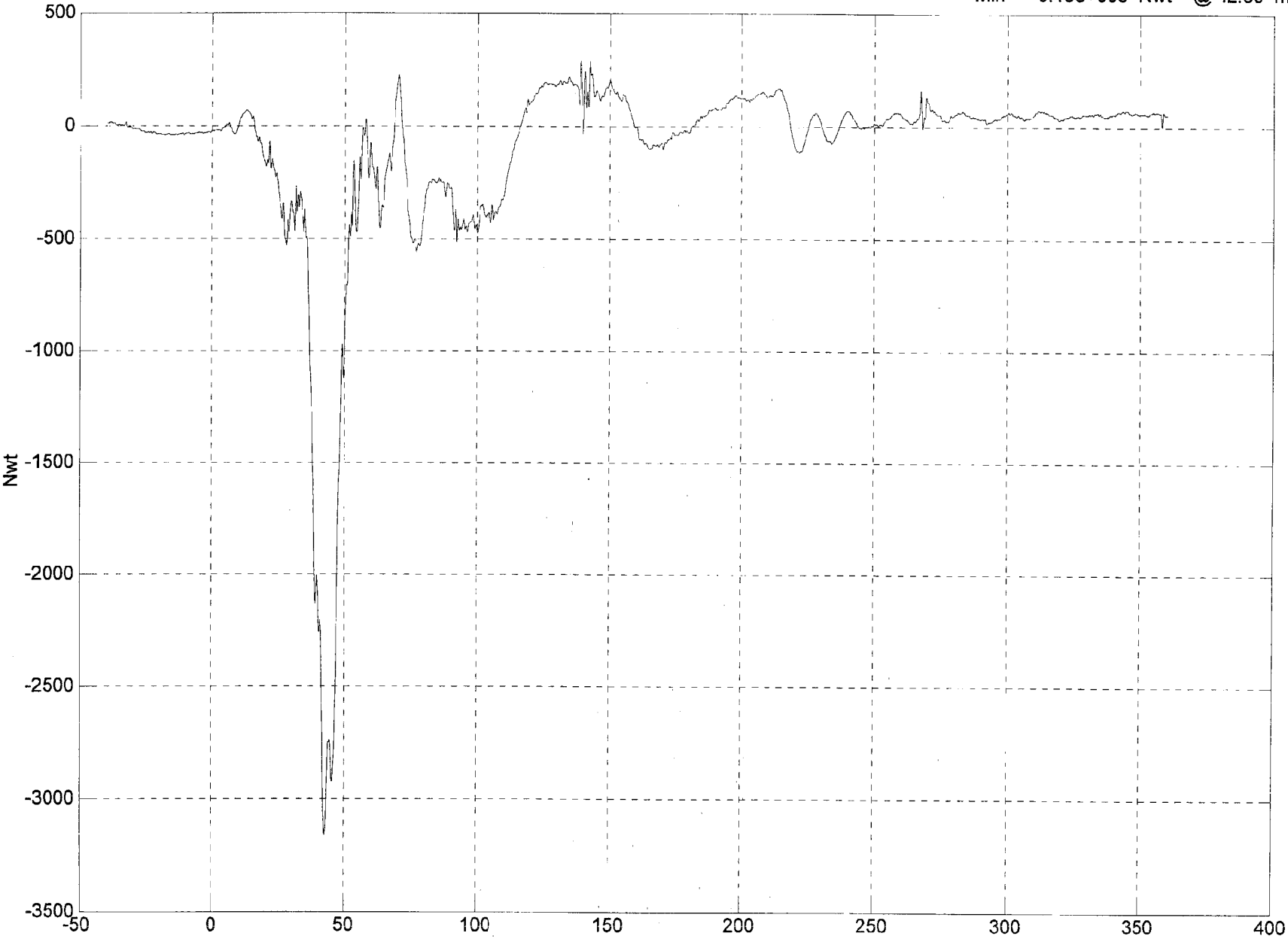
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Rt Lower Tibia Fz

Max = 289 Nwt @ 138.80 msec
Min = -3.16e+003 Nwt @ 42.80 msec



B-94

8413-19

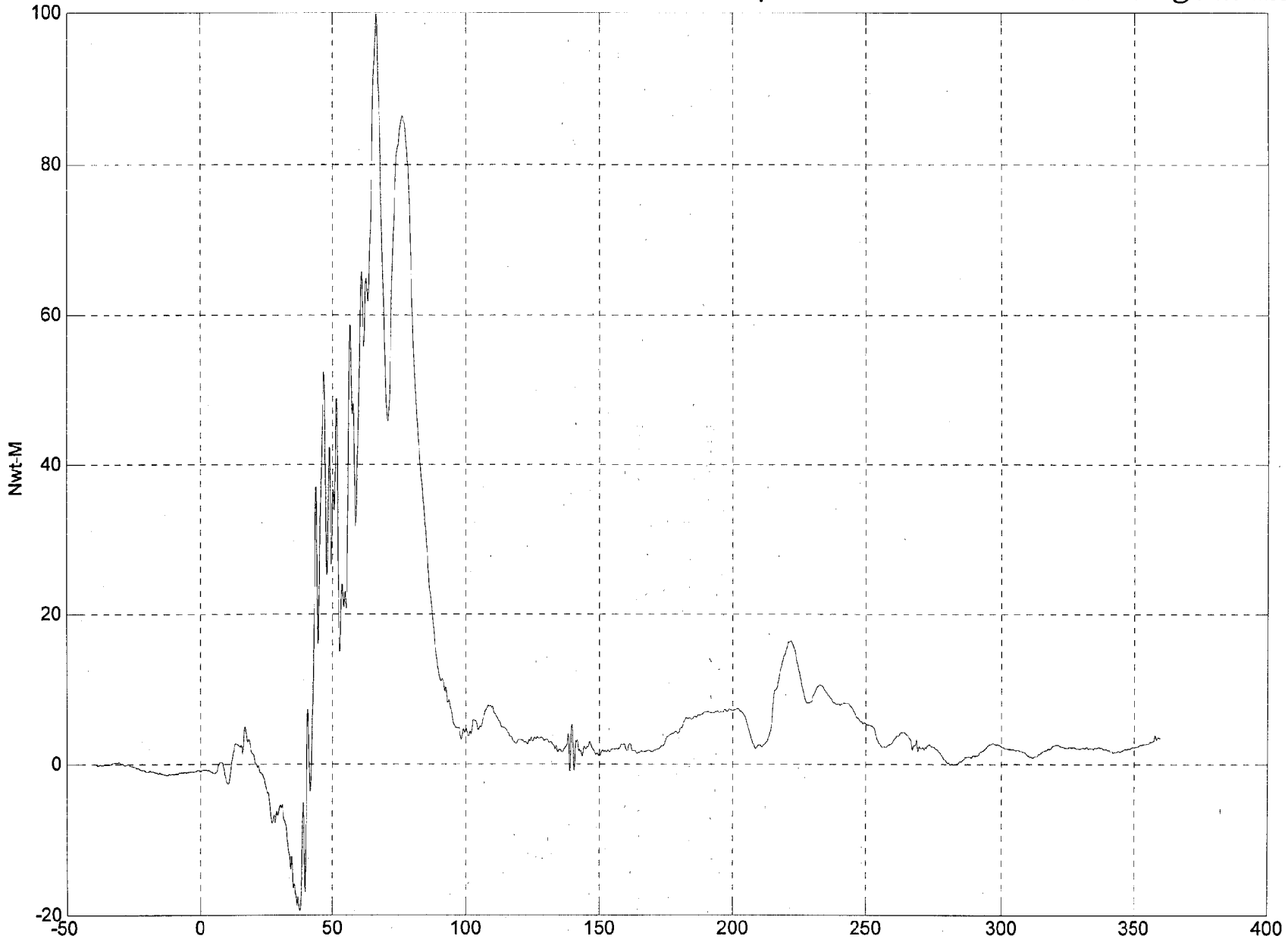
SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Rt Lower Tibia My

Max = 99.8 Nwt-M @ 66.20 msec
Min = -19.3 Nwt-M @ 37.80 msec



SAE Filter Class 600

NHTSA No: MW5101
Date: 28 Jan 1998

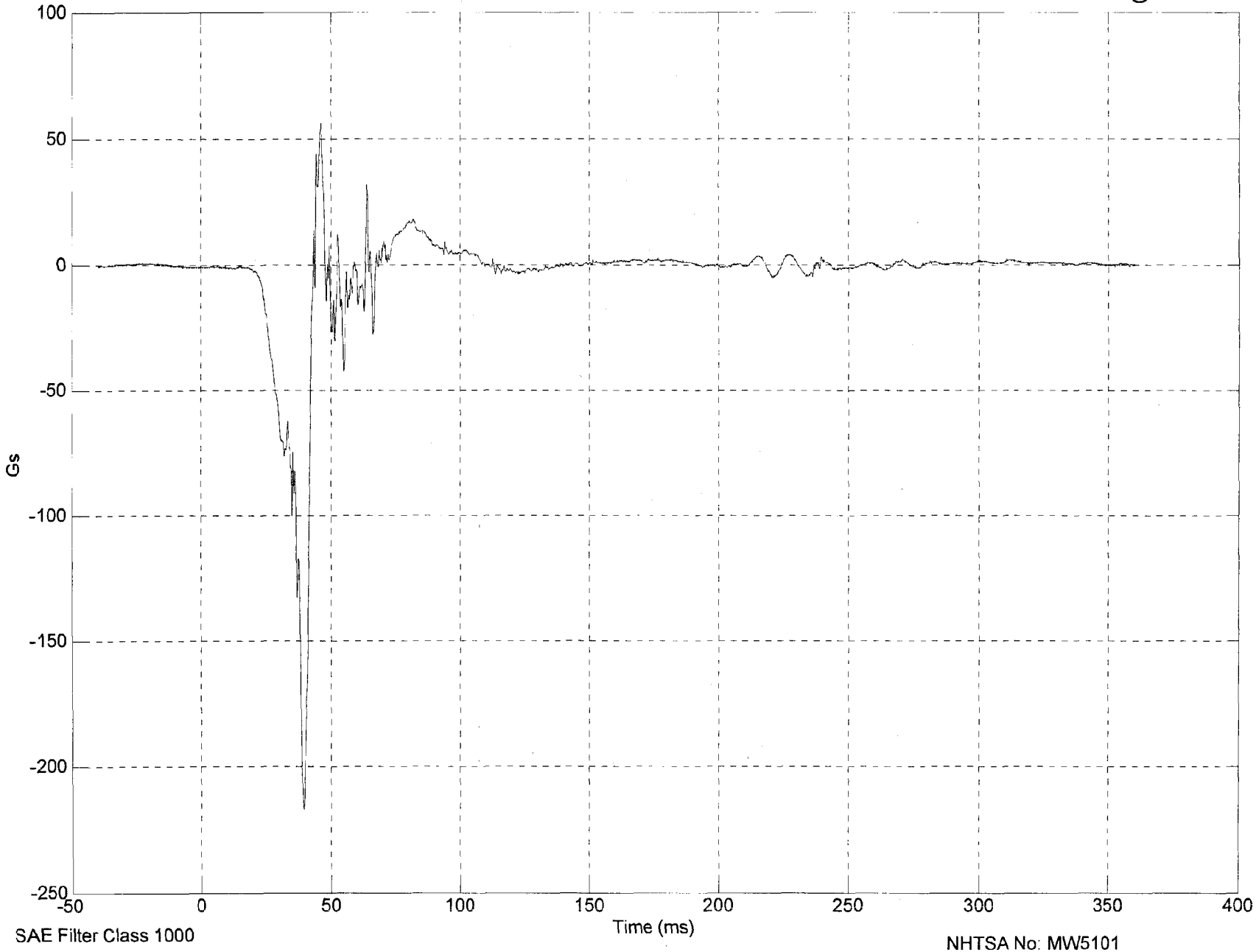
B-95

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Left Ankle X

Max = 56.3 Gs @ 46.00 msec
Min = -217 Gs @ 39.50 msec



B-96

8413-19

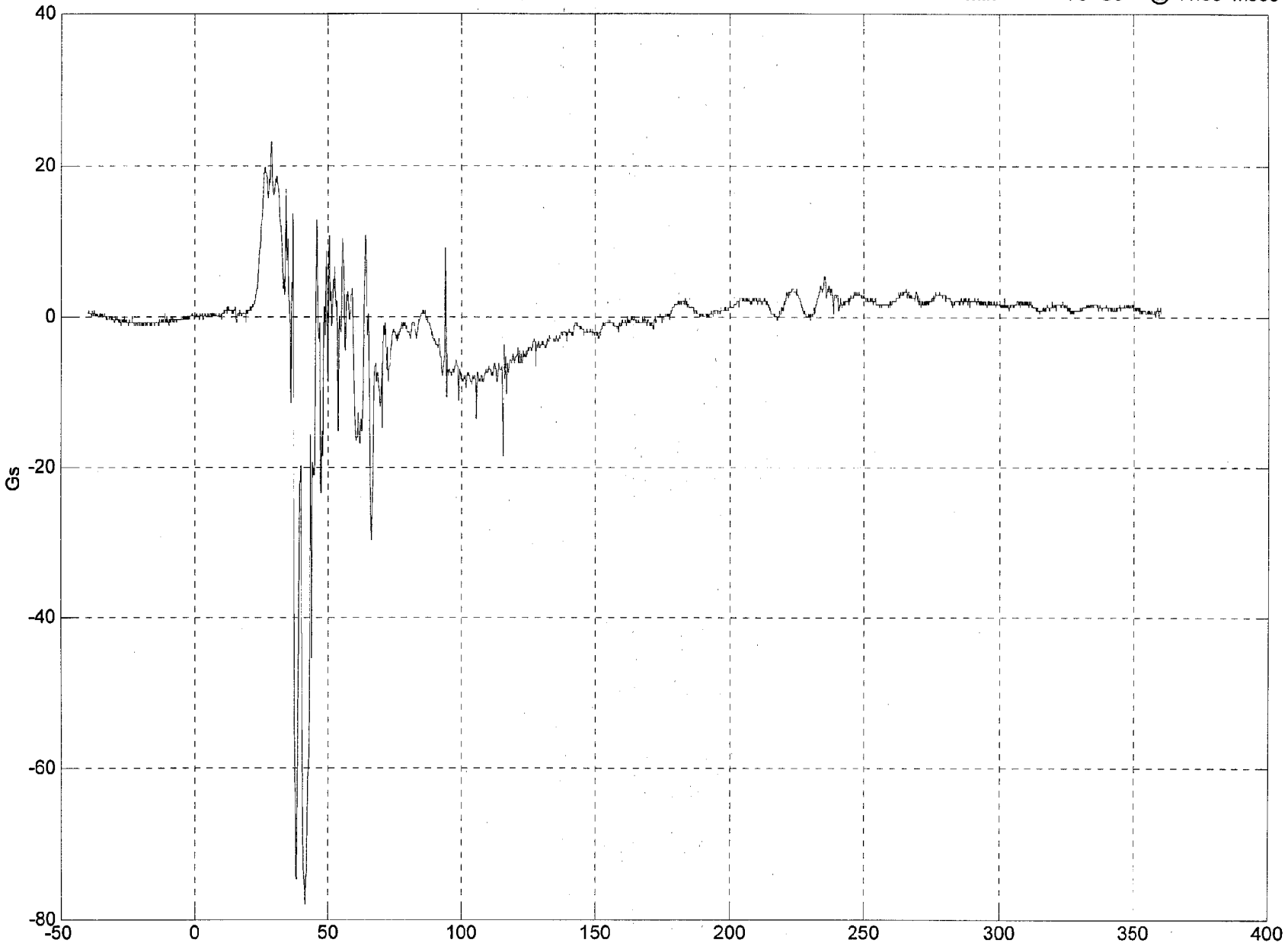
SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Left Ankle Z

Max = 23.2 Gs @ 28.90 msec
Min = -78 Gs @ 41.50 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

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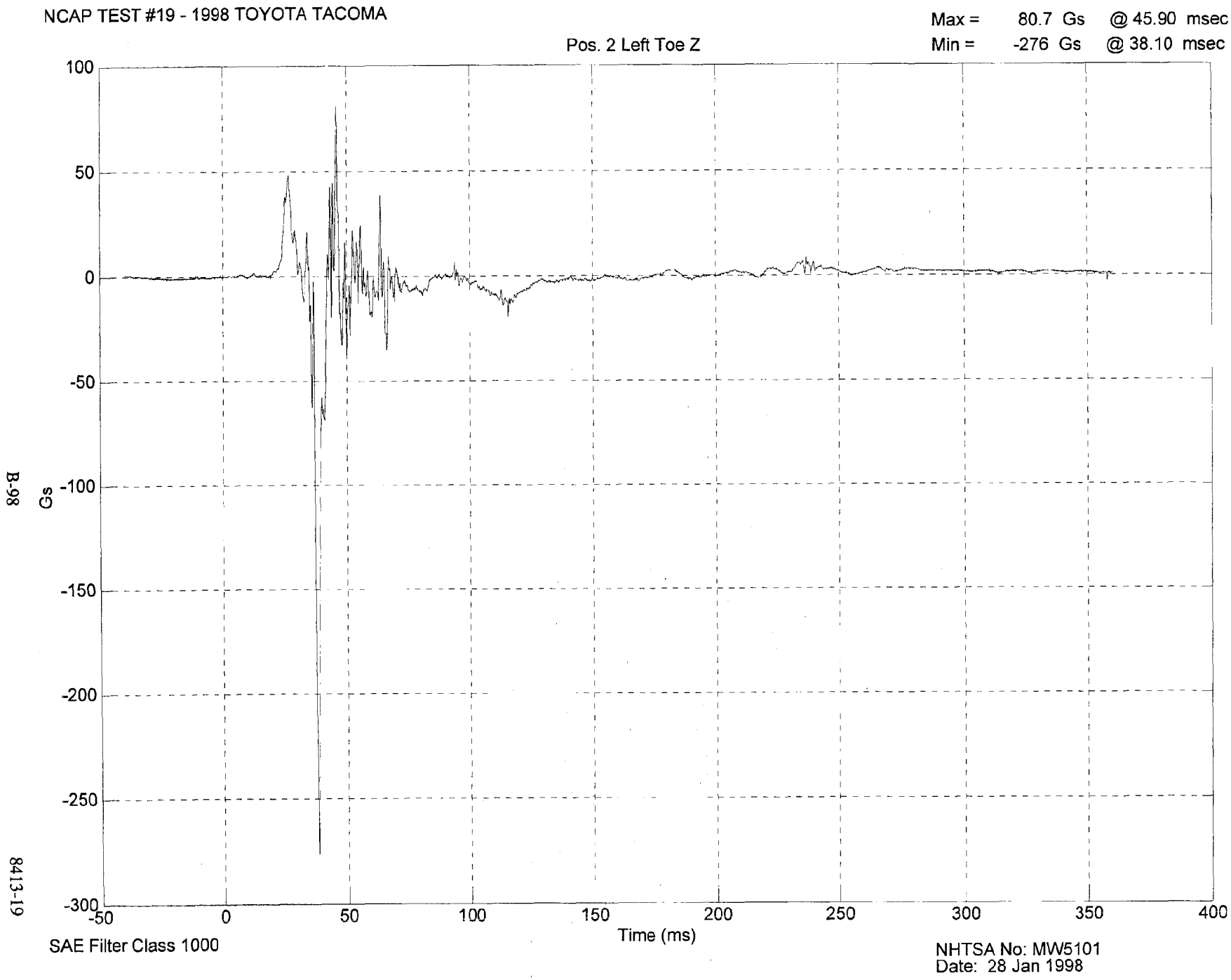
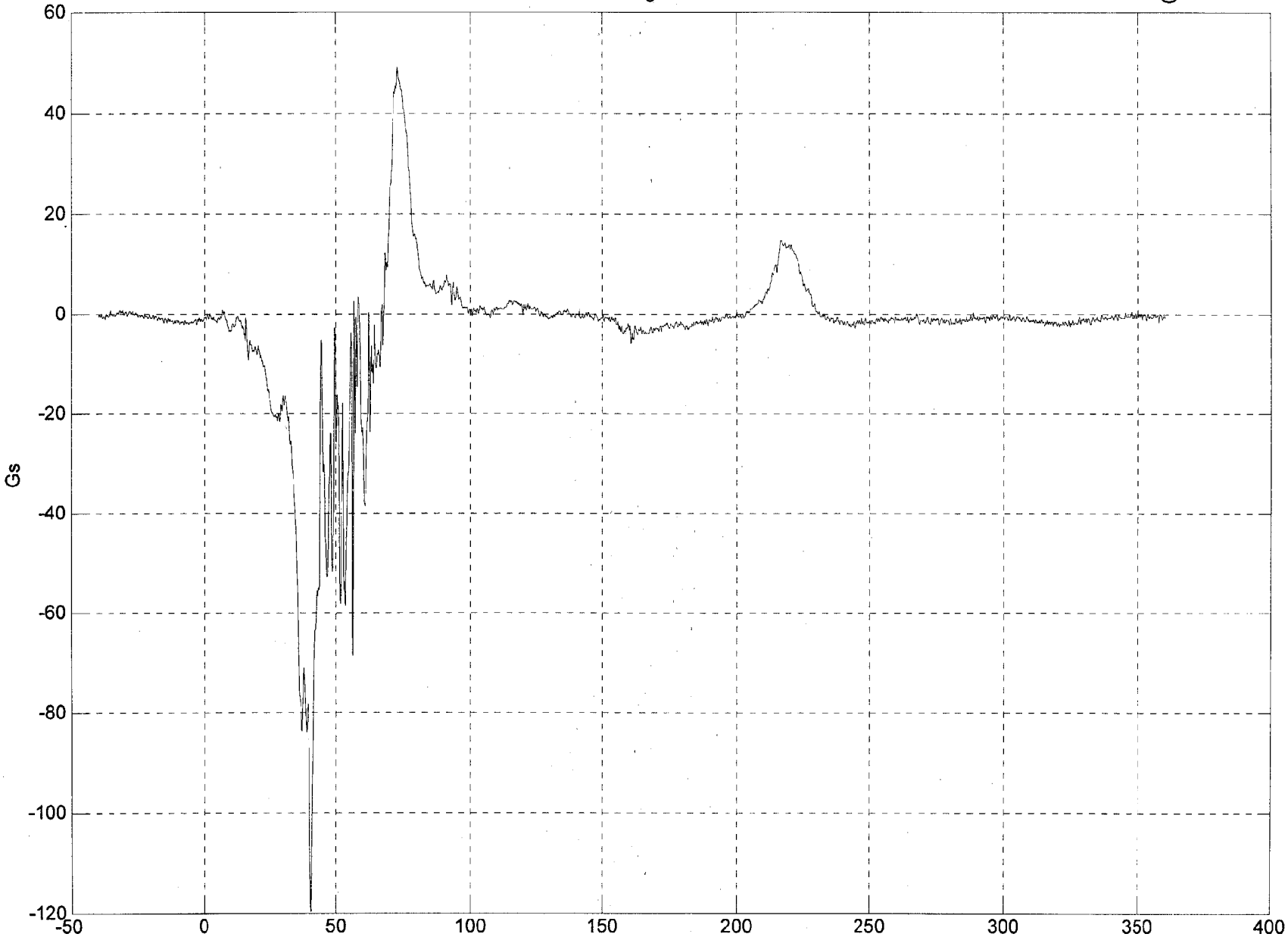
8413-19


NCAP TEST #19 - 1998 TOYOTA TACOMA
Pos. 2 Left Toe Z
Max = 80.7 Gs @ 45.90 msec
Min = -276 Gs @ 38.10 msec
100
50
0
-50
-100
-150
-200
-250
-300
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW5101
Date: 28 Jan 1998
B-98
8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Right Ankle X

Max = 49.2 Gs @ 72.80 msec
Min = -120 Gs @ 40.70 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

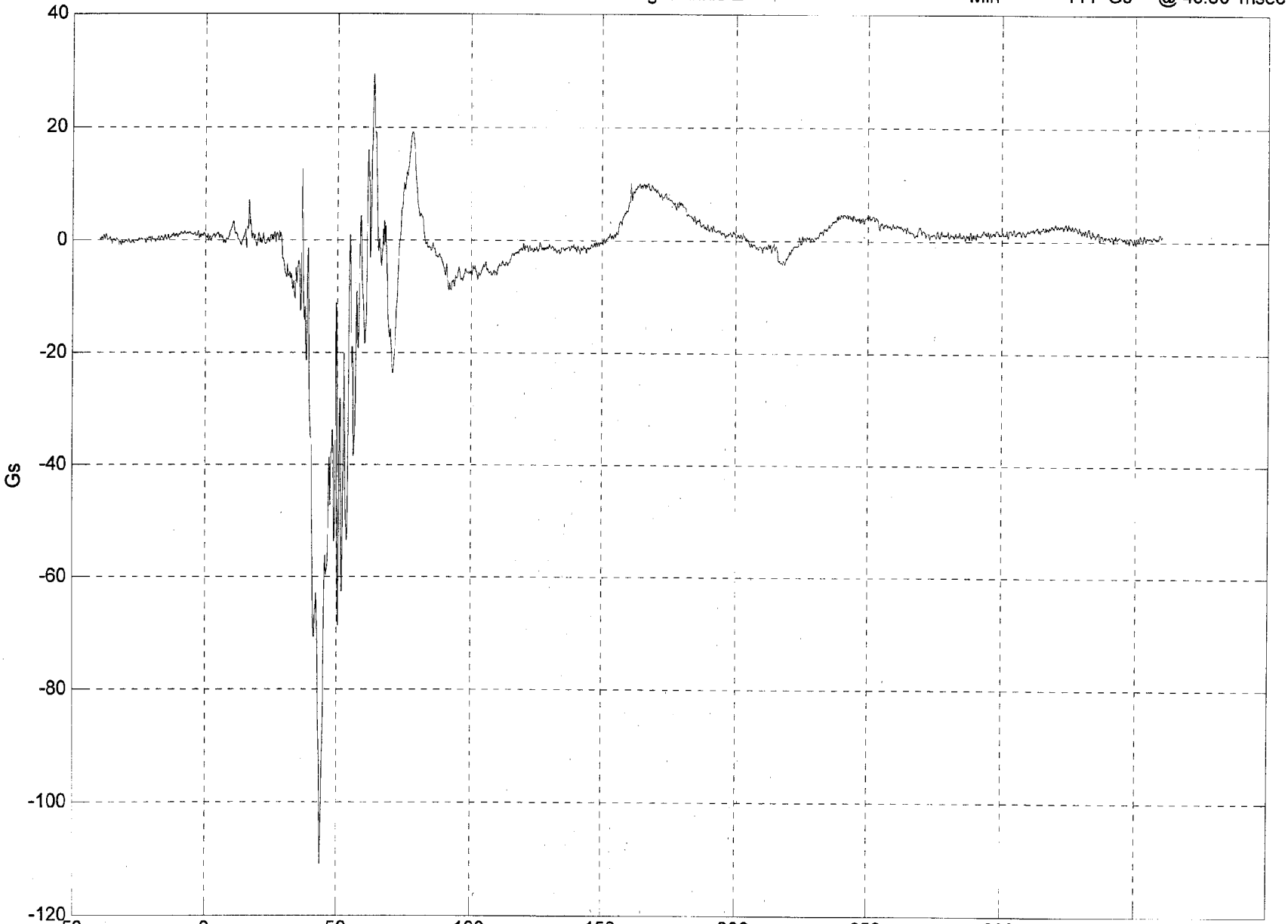
B-99

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Right Ankle Z

Max = 29.3 Gs @ 63.30 msec
Min = -111 Gs @ 43.80 msec



B-100

8413-19

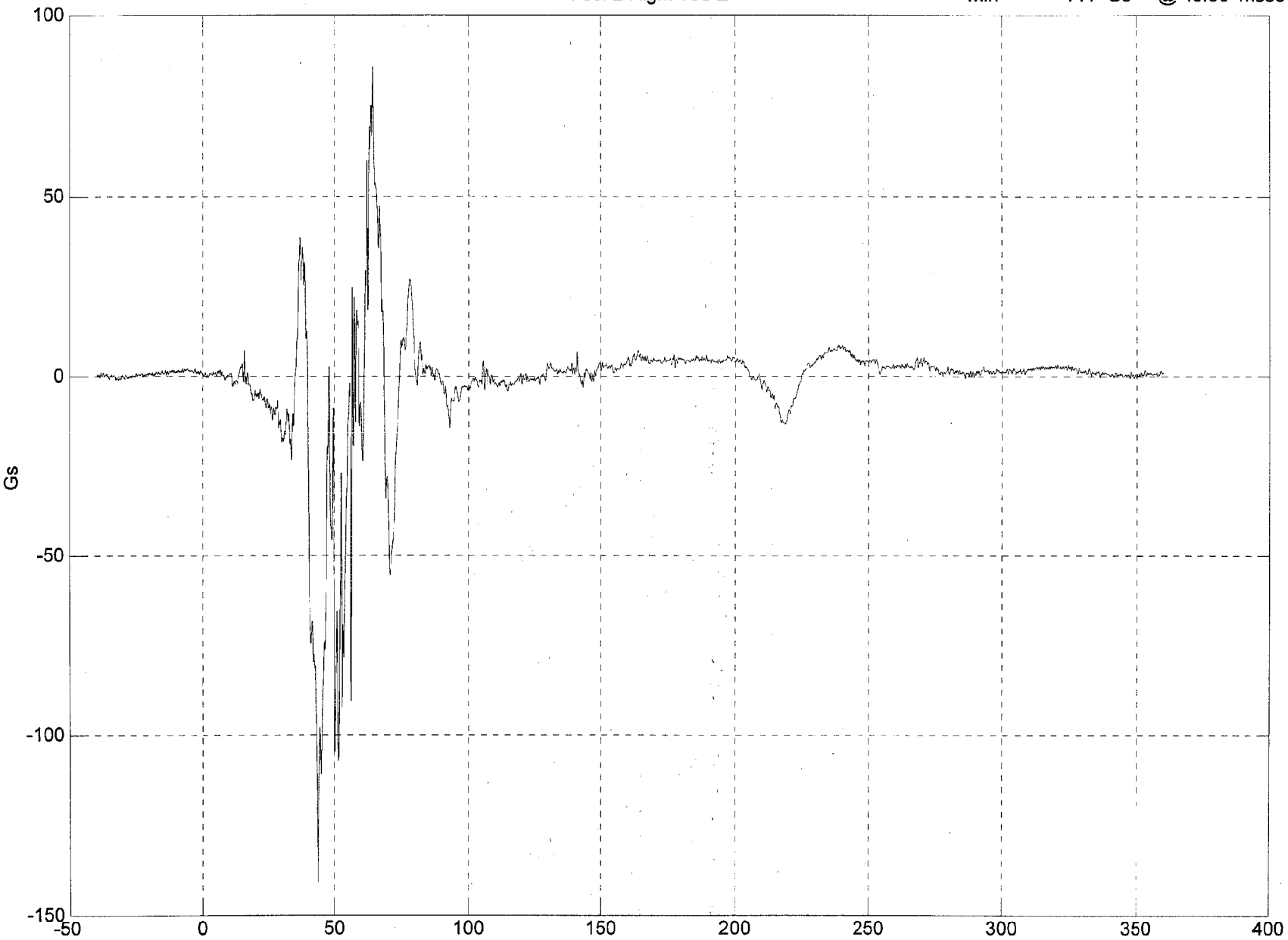
SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Right Toe Z

Max = 85.7 Gs @ 64.10 msec
Min = -141 Gs @ 43.90 msec



B-101

8413-19

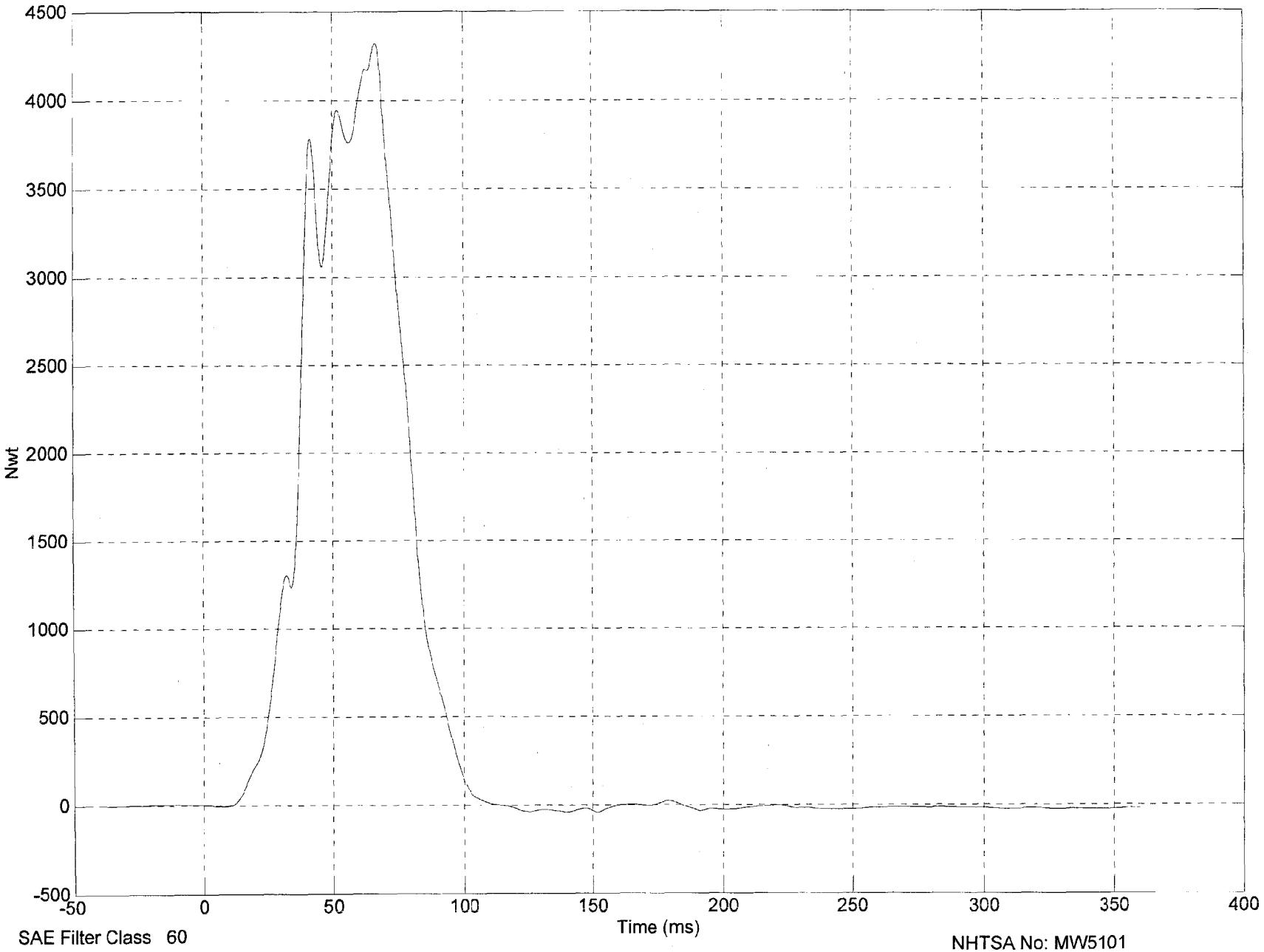
SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Right Belt Load

Max = 4.32e+003 Nwt @ 66.30 msec
Min = -43 Nwt @ 151.90 msec



B-102

8413-19

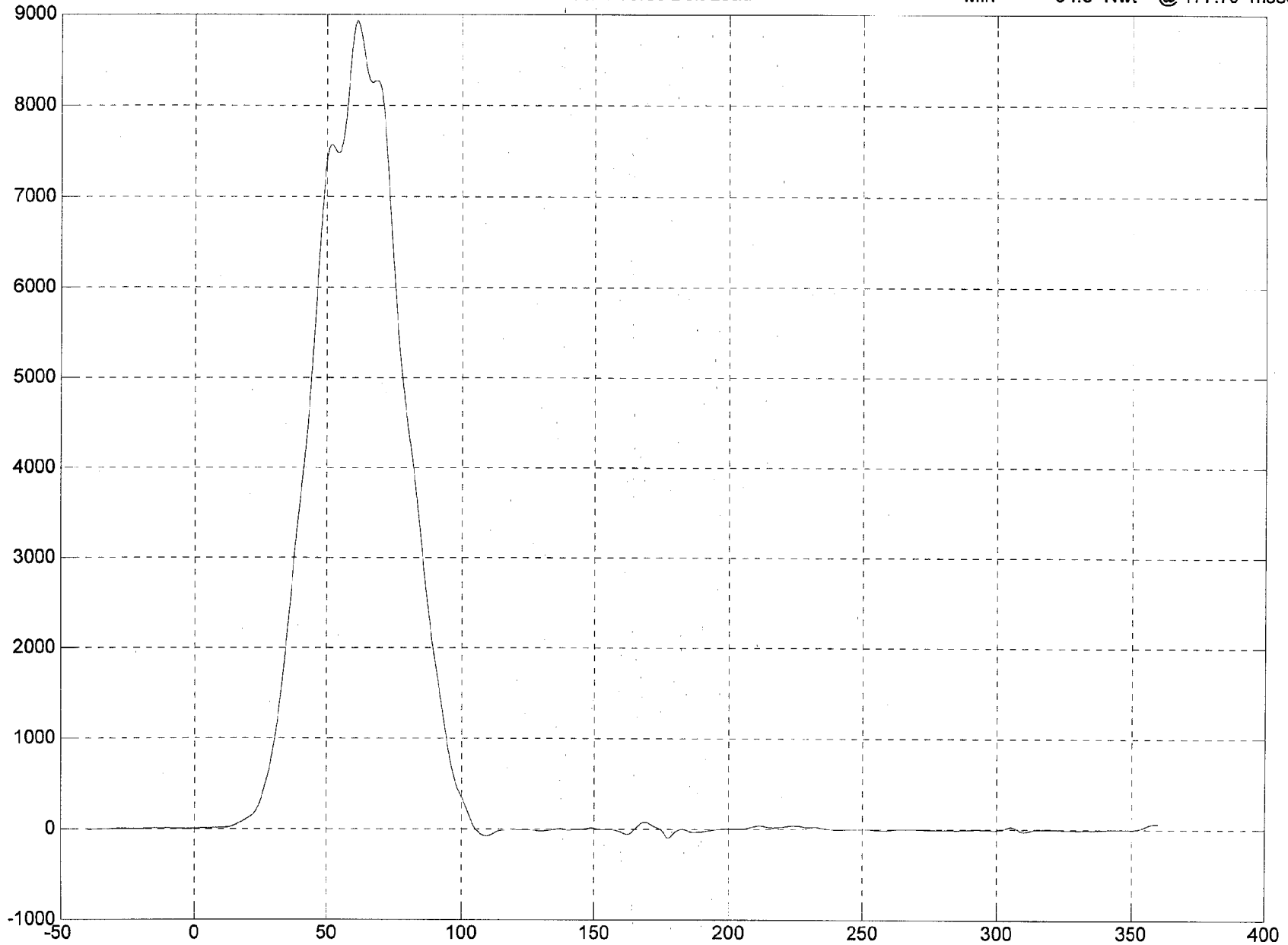
SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Torso Belt Load

Max = 8.93e+003 Nwt @ 61.10 msec
Min = -94.3 Nwt @ 177.70 msec



B-103

8413-19

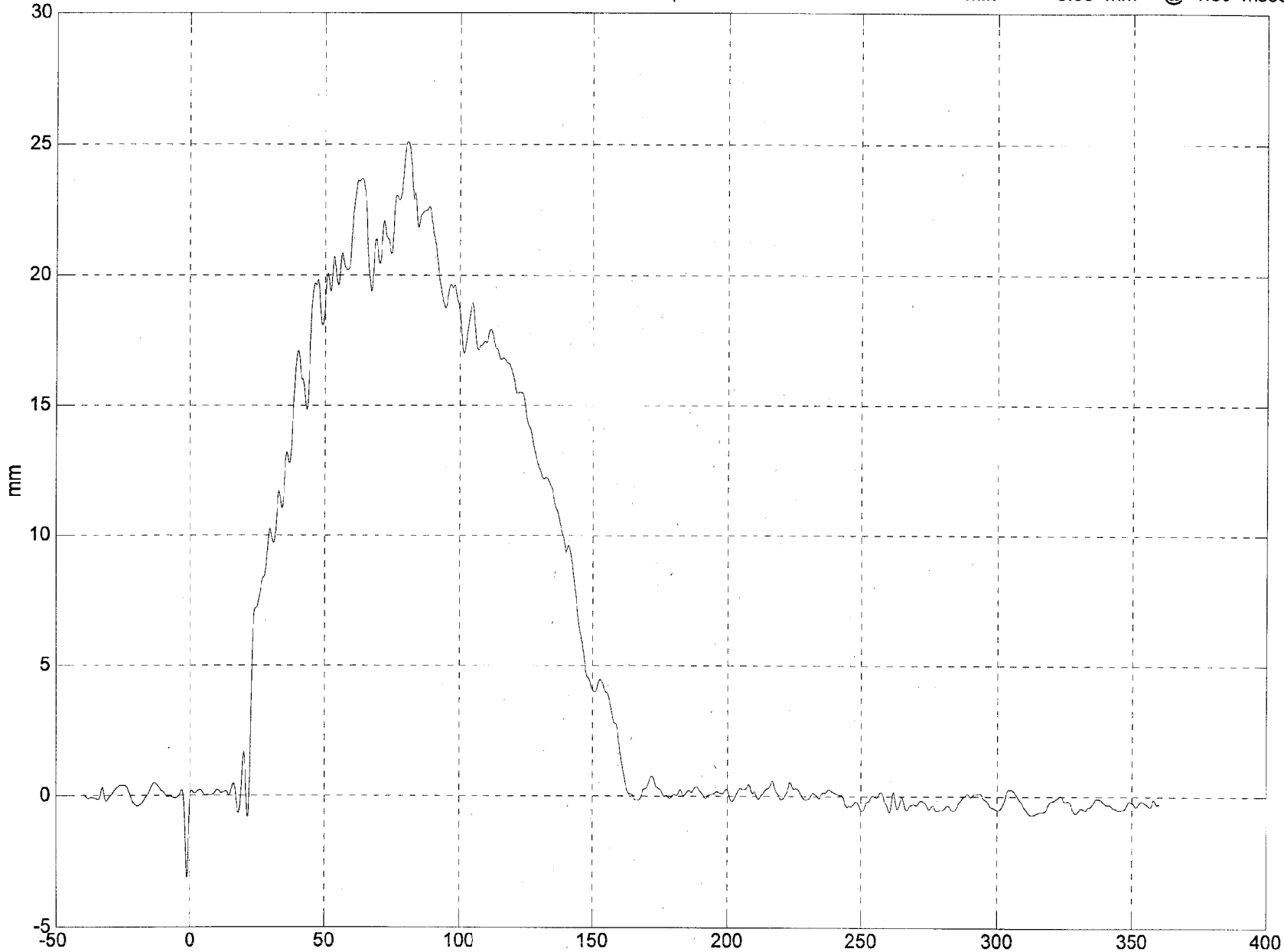
SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Belt Spoolout

Max = 25.1 mm @ 80.70 msec
Min = -3.09 mm @ -1.30 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

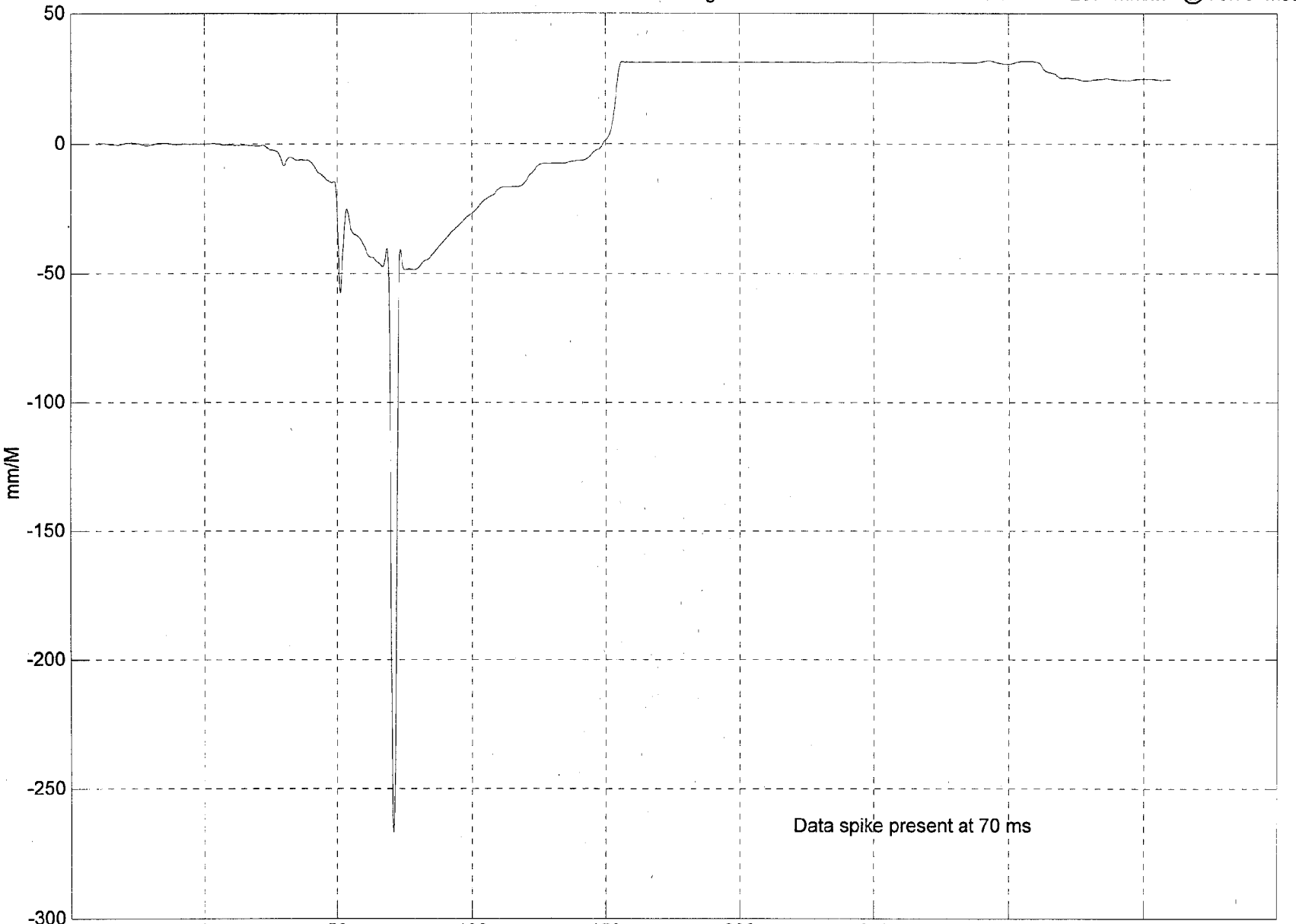
B-104

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Pos. 2 Belt Elongation

Max = 31.8 mm/M @ 292.80 msec
Min = -267 mm/M @ 70.70 msec



B-105

8413-19

SAE Filter Class 180

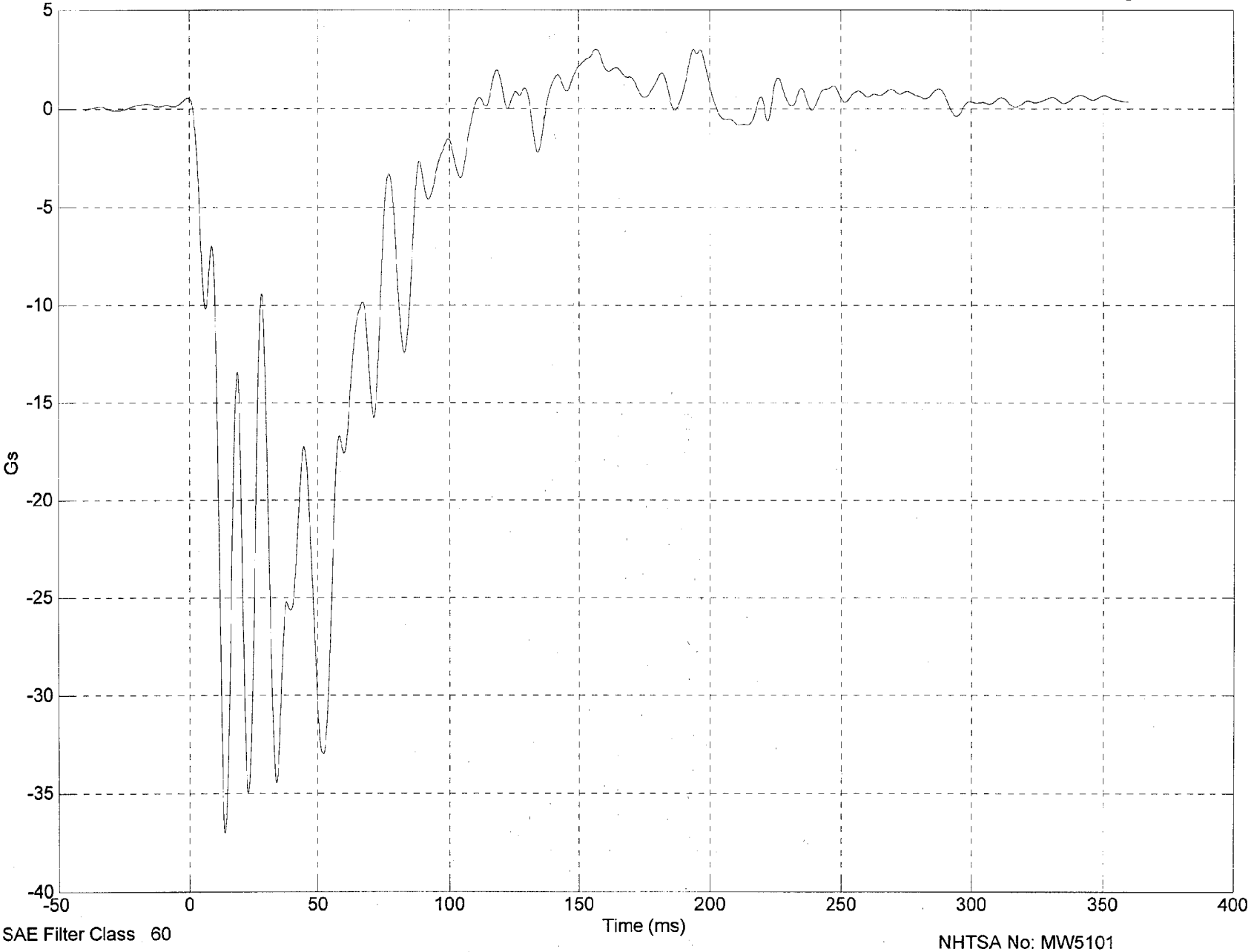
NHTSA No: MW5101
Date: 28 Jan 1998

NHTSA TEST NO. MW5101

VEHICLE DATA	FILTER CHANNEL CLASS
Acceleration	60
Velocity	180
Displacement	180
Time Zero	1000

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 3.01 Gs @ 193.90 msec
Min = -37 Gs @ 13.90 msec



SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

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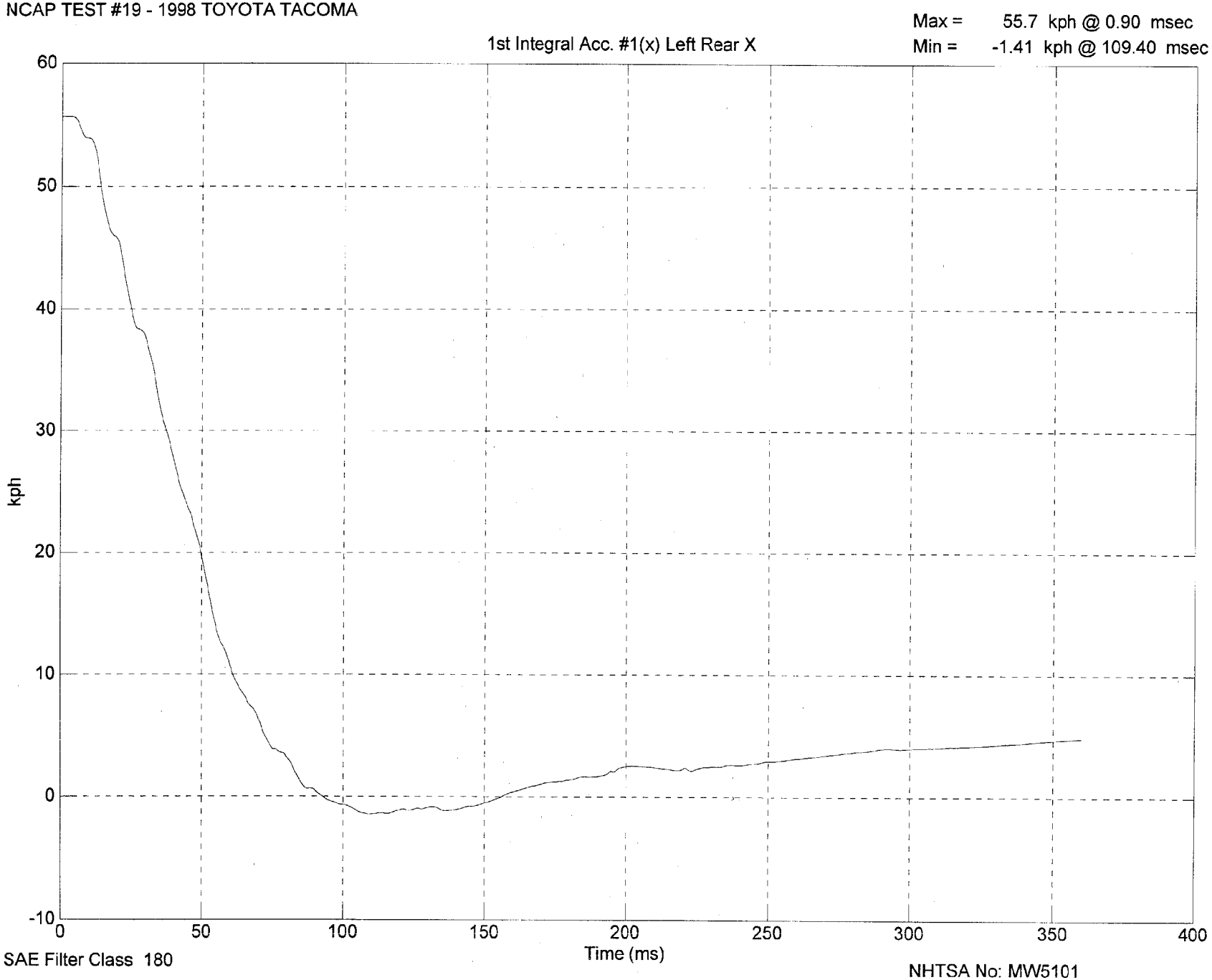
8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

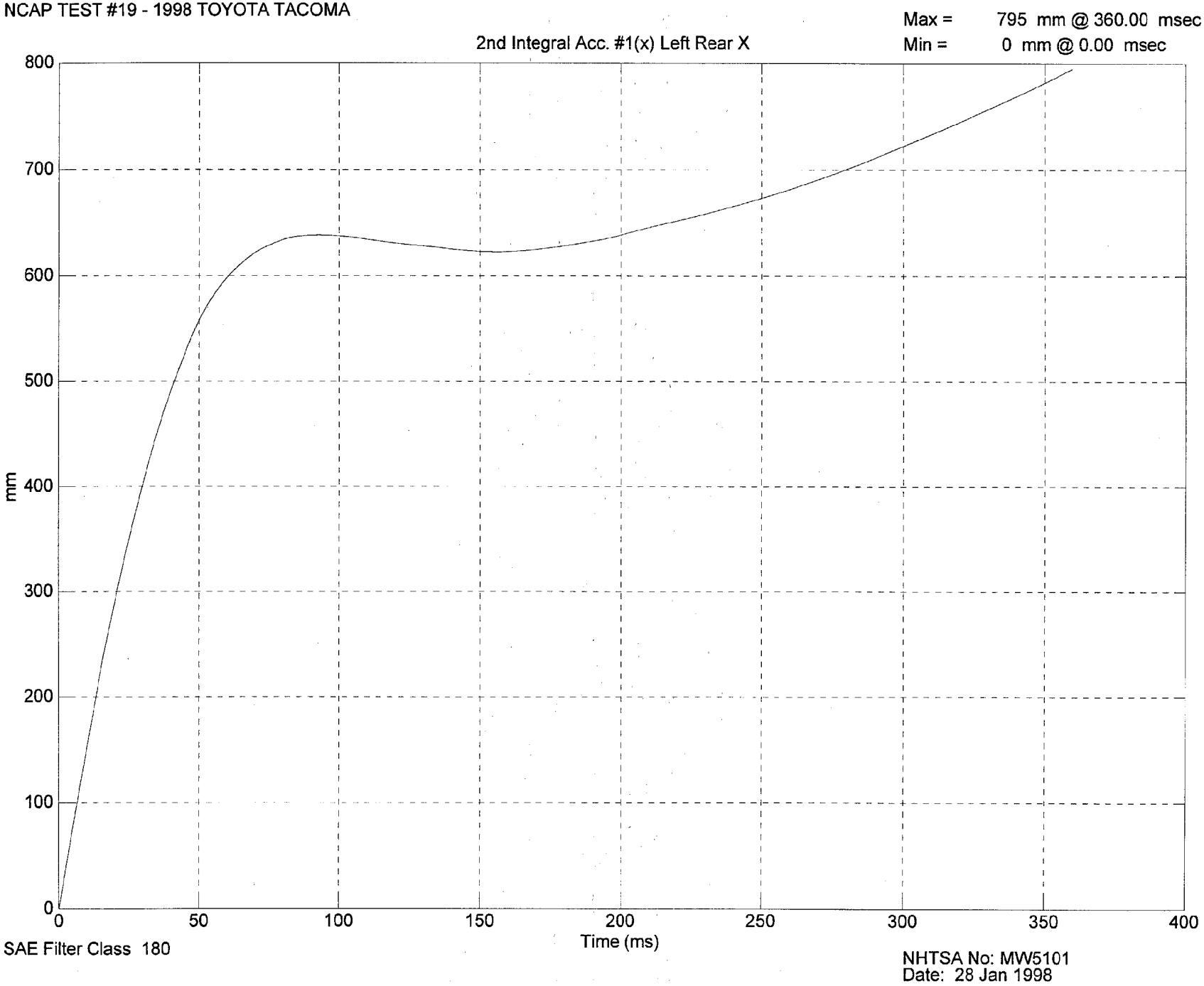


SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA



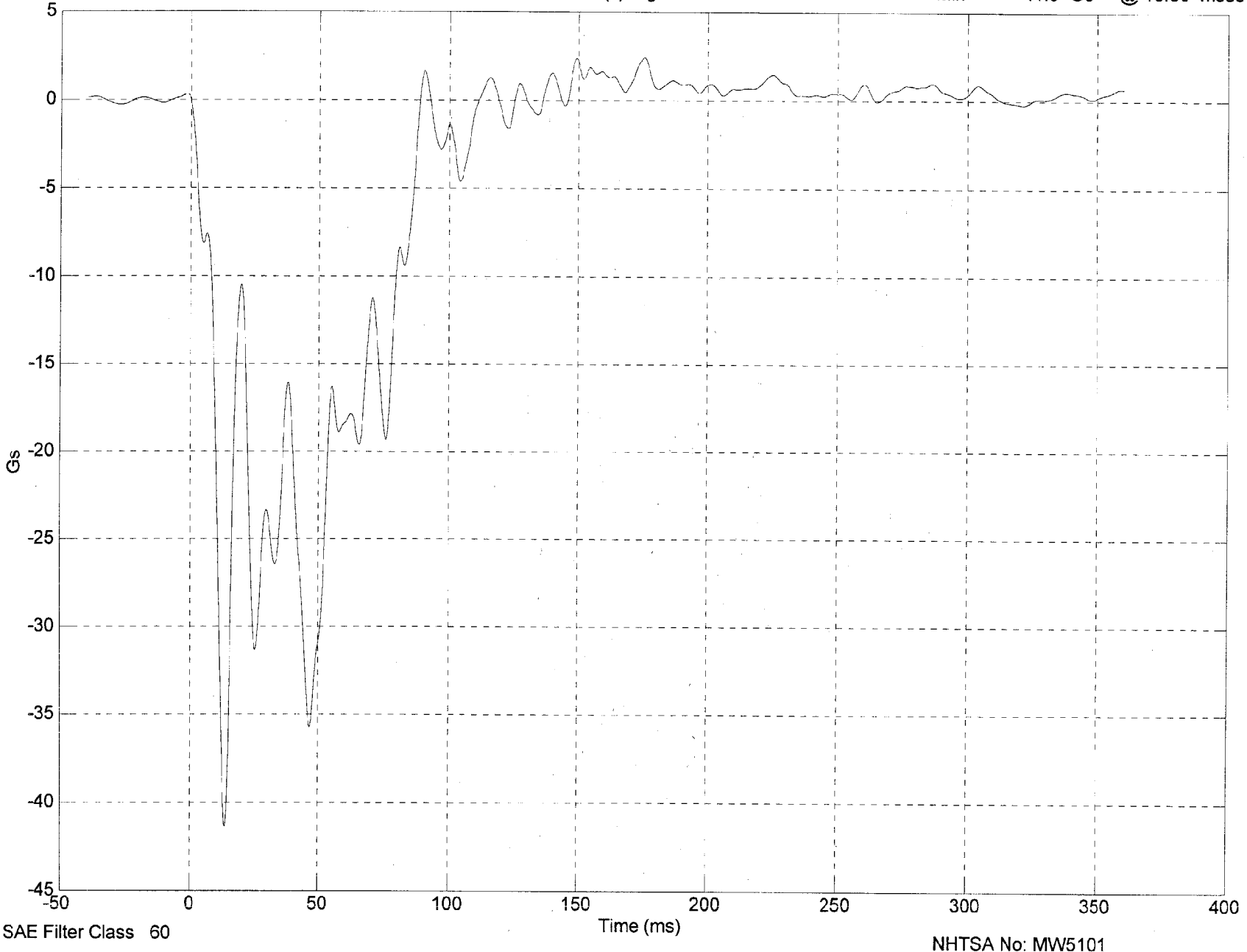
SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 2.43 Gs @ 175.80 msec
Min = -41.3 Gs @ 13.80 msec



SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

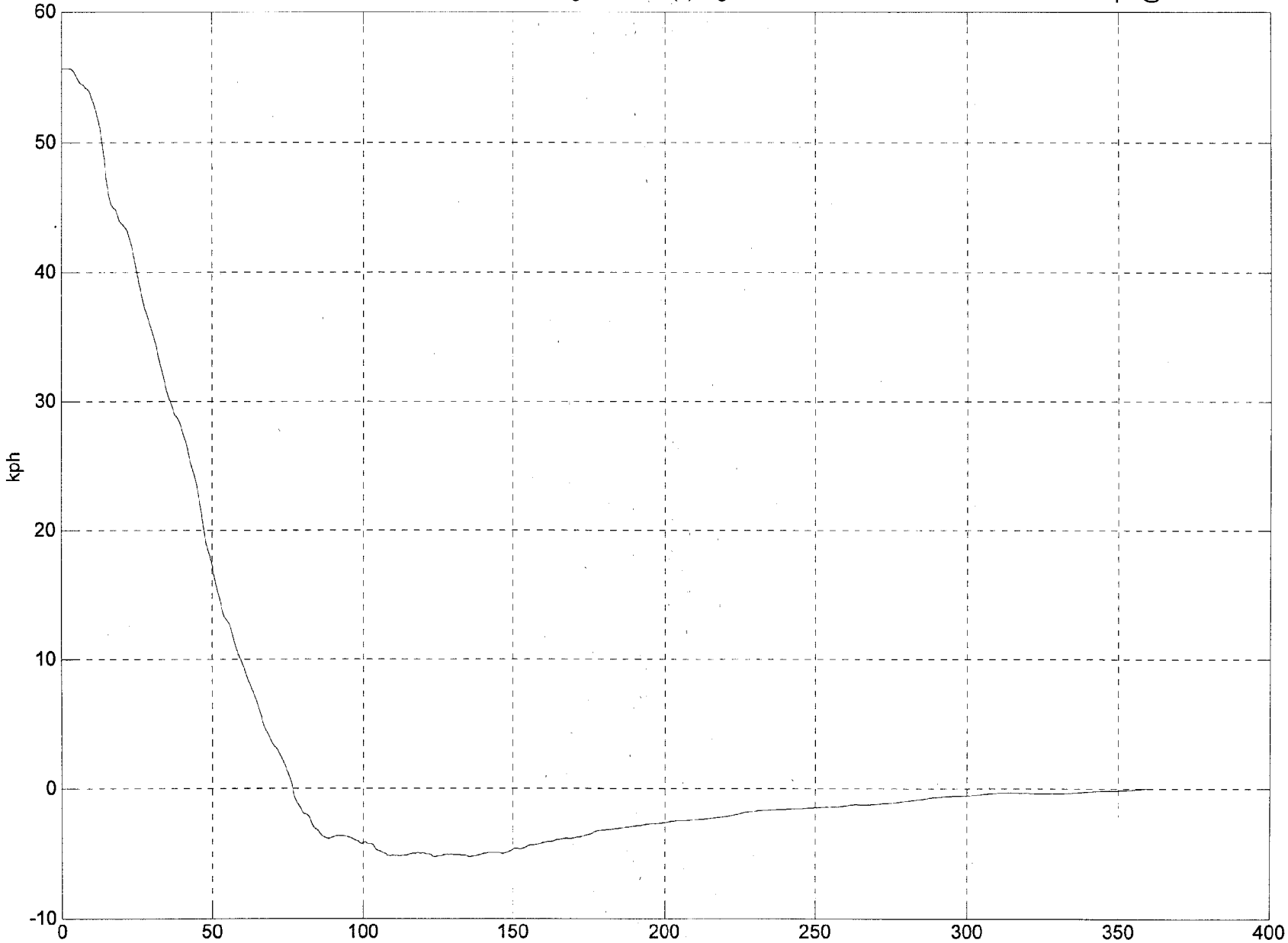
B-110

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

1st Integral Acc. #2(x) Right Rear X

Max = 55.7 kph @ 1.00 msec
Min = -5.23 kph @ 135.70 msec



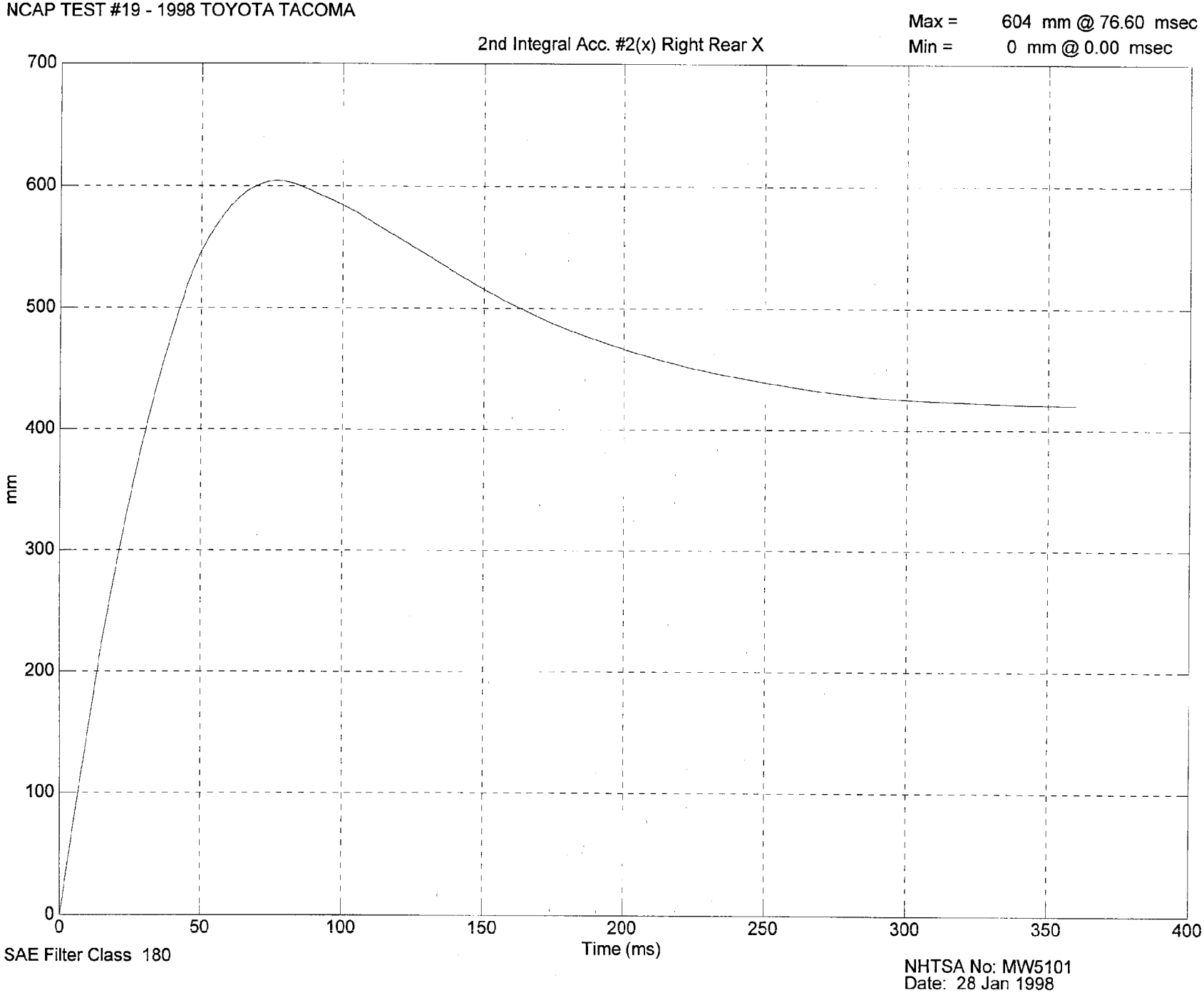
SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

B-111

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA



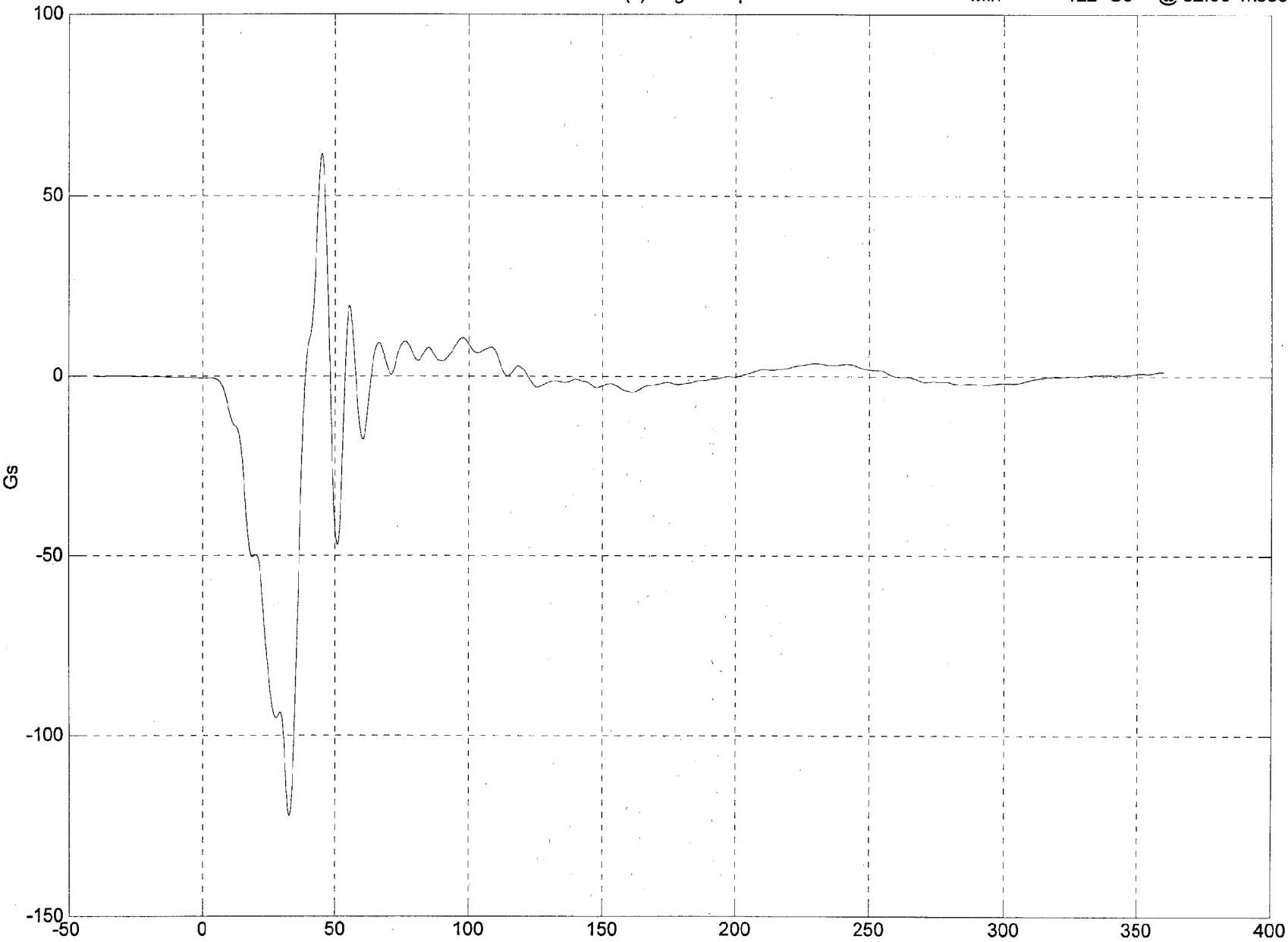
SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Acc. #3(x) Engine Top X

Max = 61.6 Gs @ 45.00 msec
Min = -122 Gs @ 32.60 msec



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8413-19

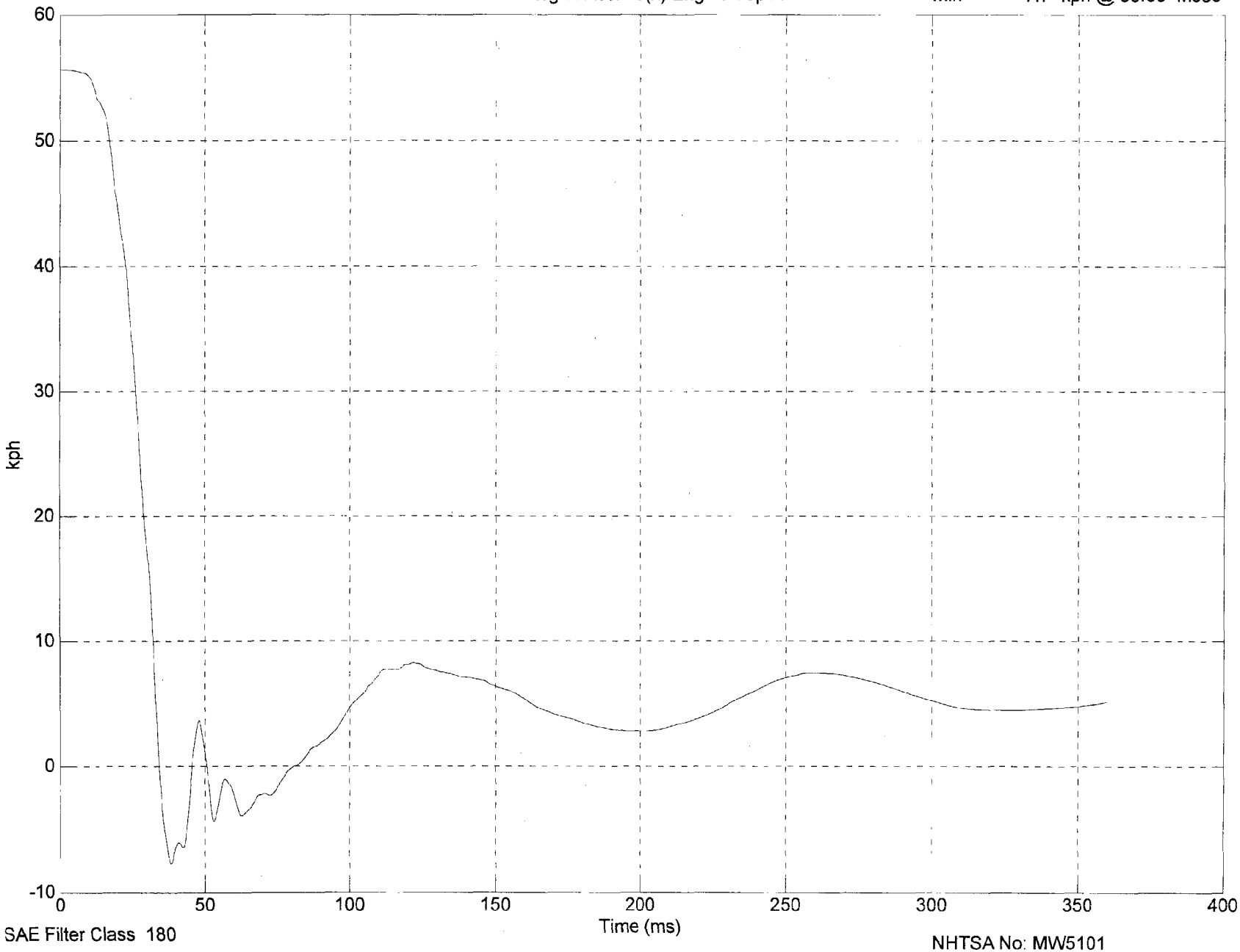
SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

1st Integral Acc. #3(x) Engine Top X

Max = 55.7 kph @ 0.00 msec
Min = -7.7 kph @ 38.30 msec

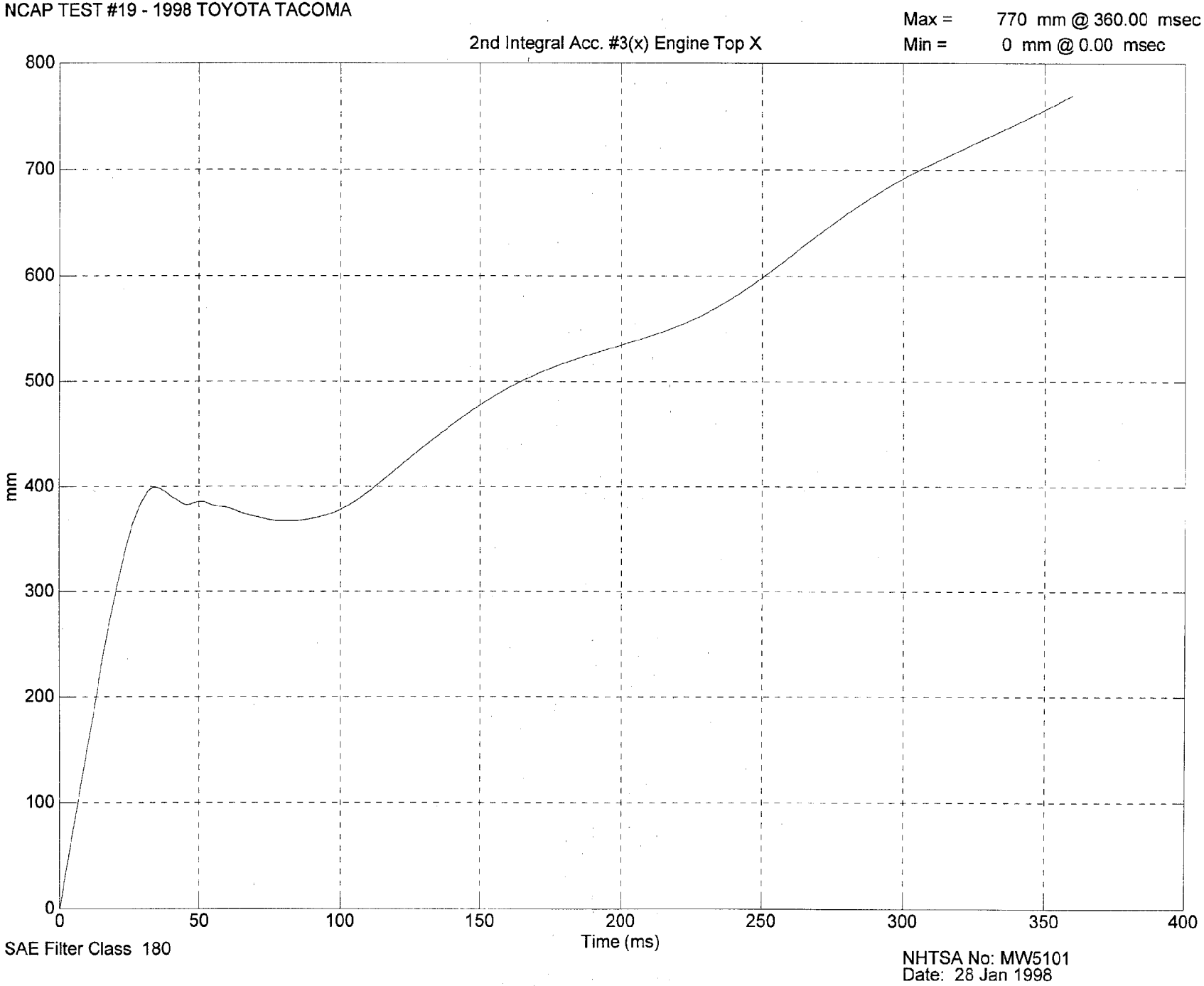


SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

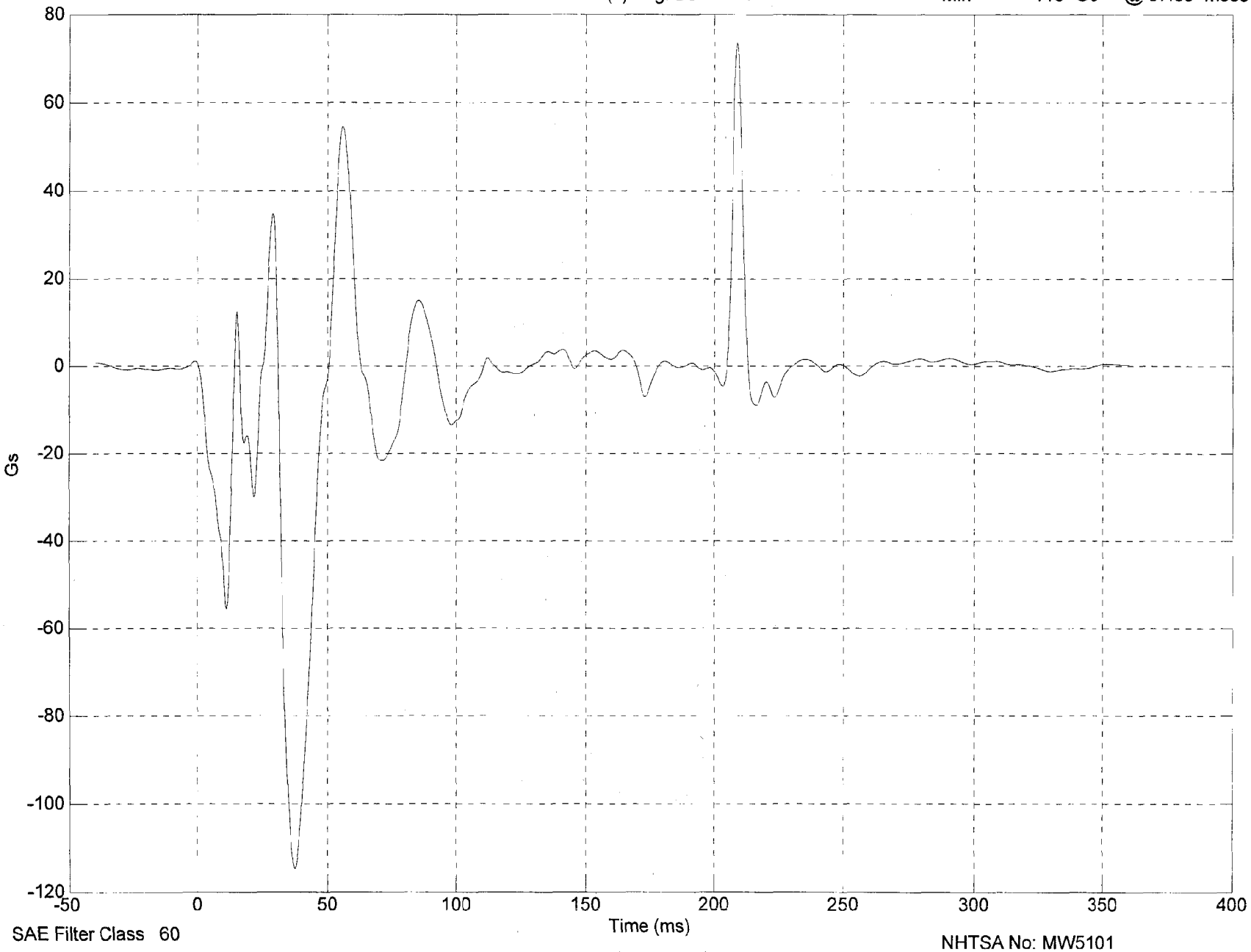


SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 73.6 Gs @ 209.10 msec
Min = -115 Gs @ 37.50 msec



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8413-19

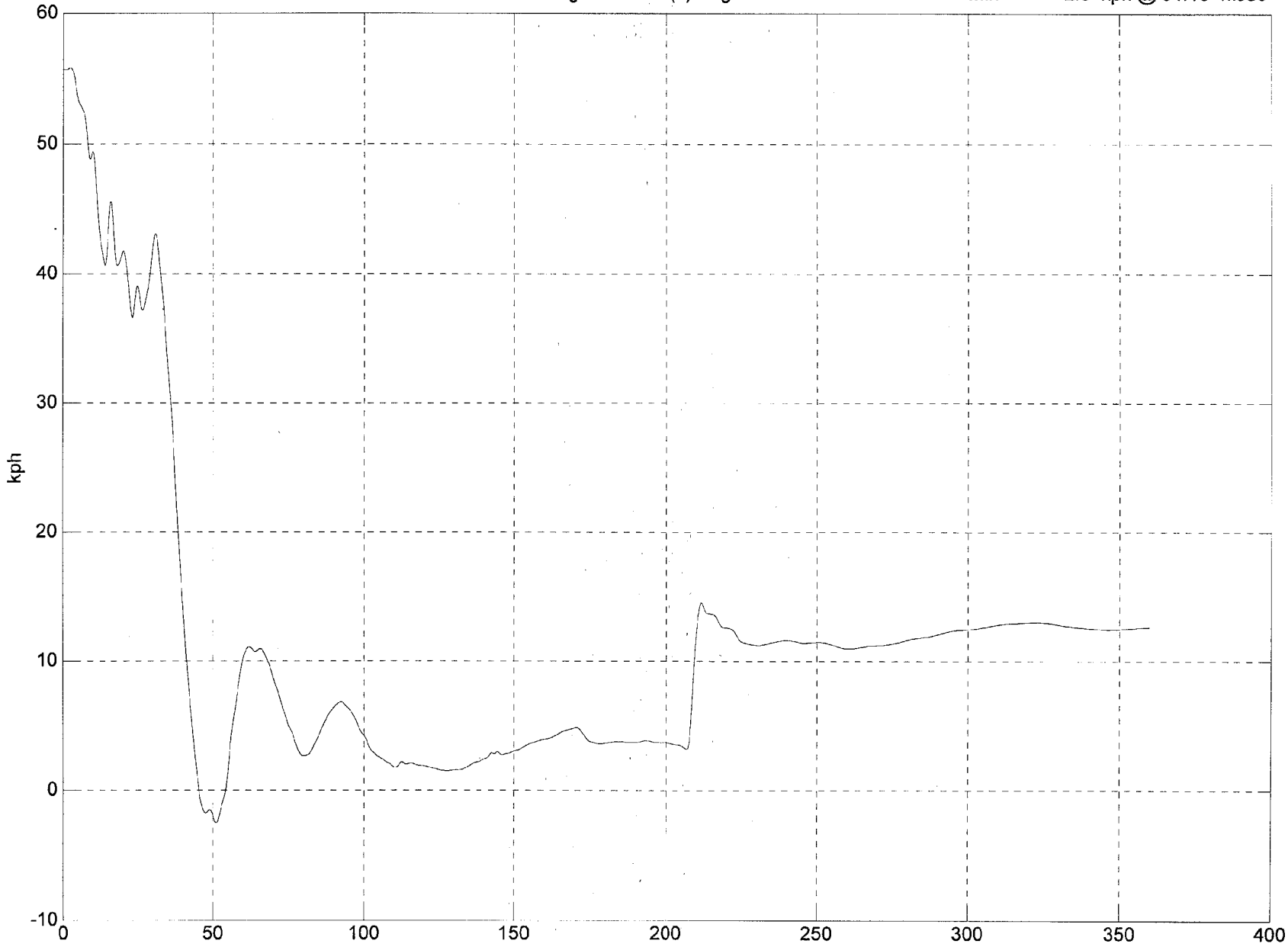
SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

1st Integral Acc. #4(x) Eng. Bottom X

Max = 55.8 kph @ 2.30 msec
Min = -2.5 kph @ 51.10 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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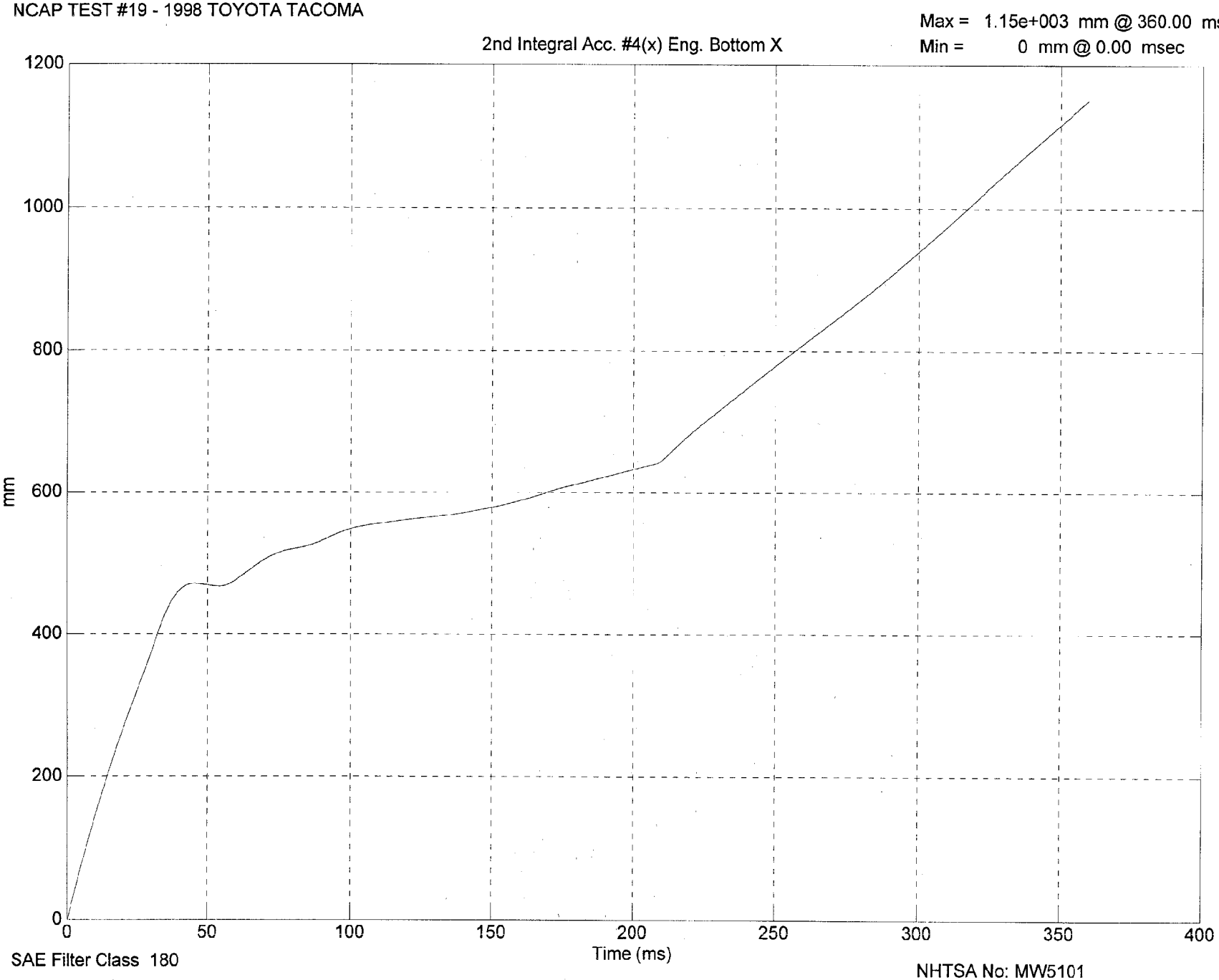
8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA



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8413-19

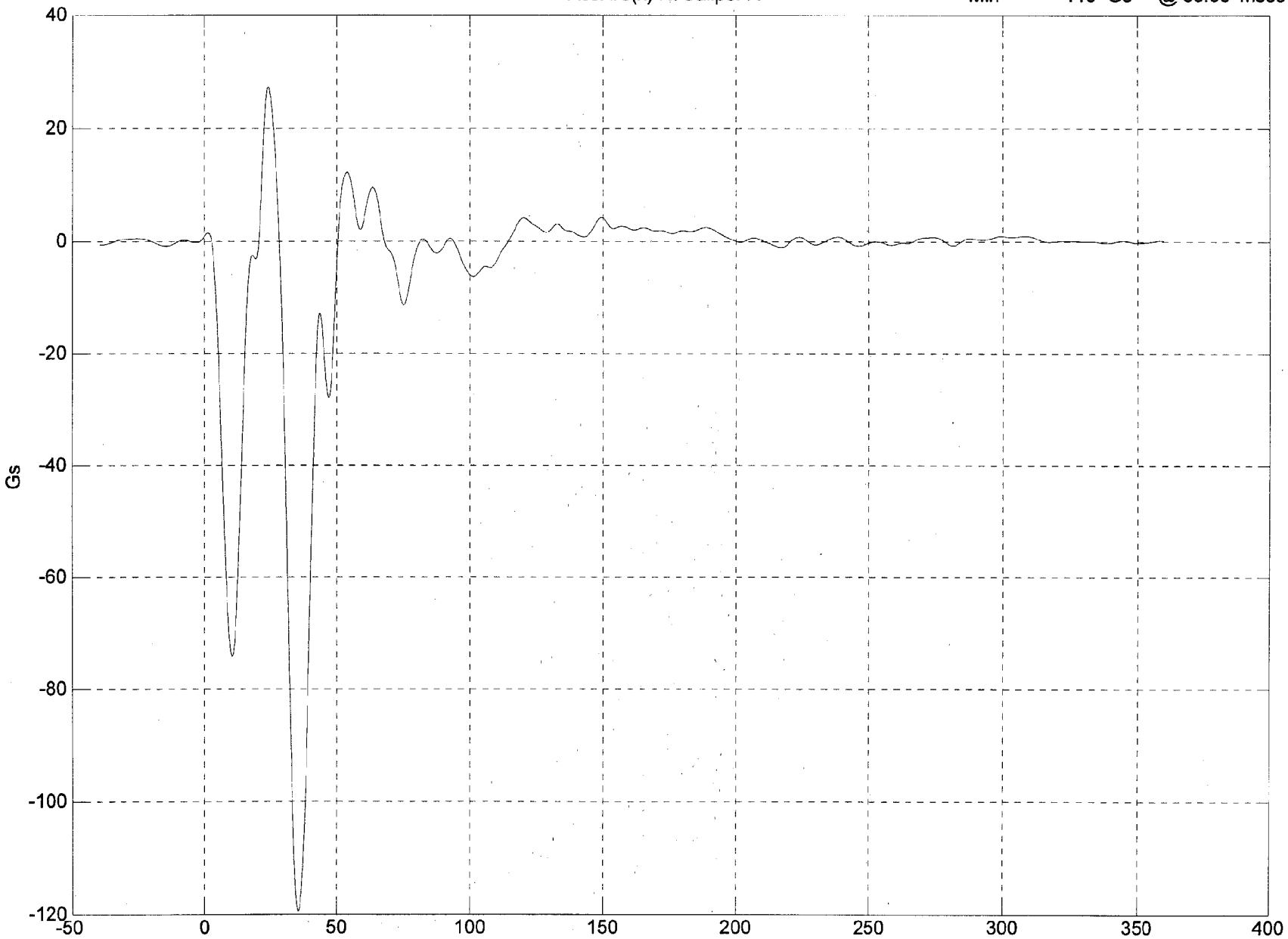
SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Acc. #5(x) Rt Caliper X

Max = 27.3 Gs @ 24.30 msec
Min = -119 Gs @ 35.50 msec



SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

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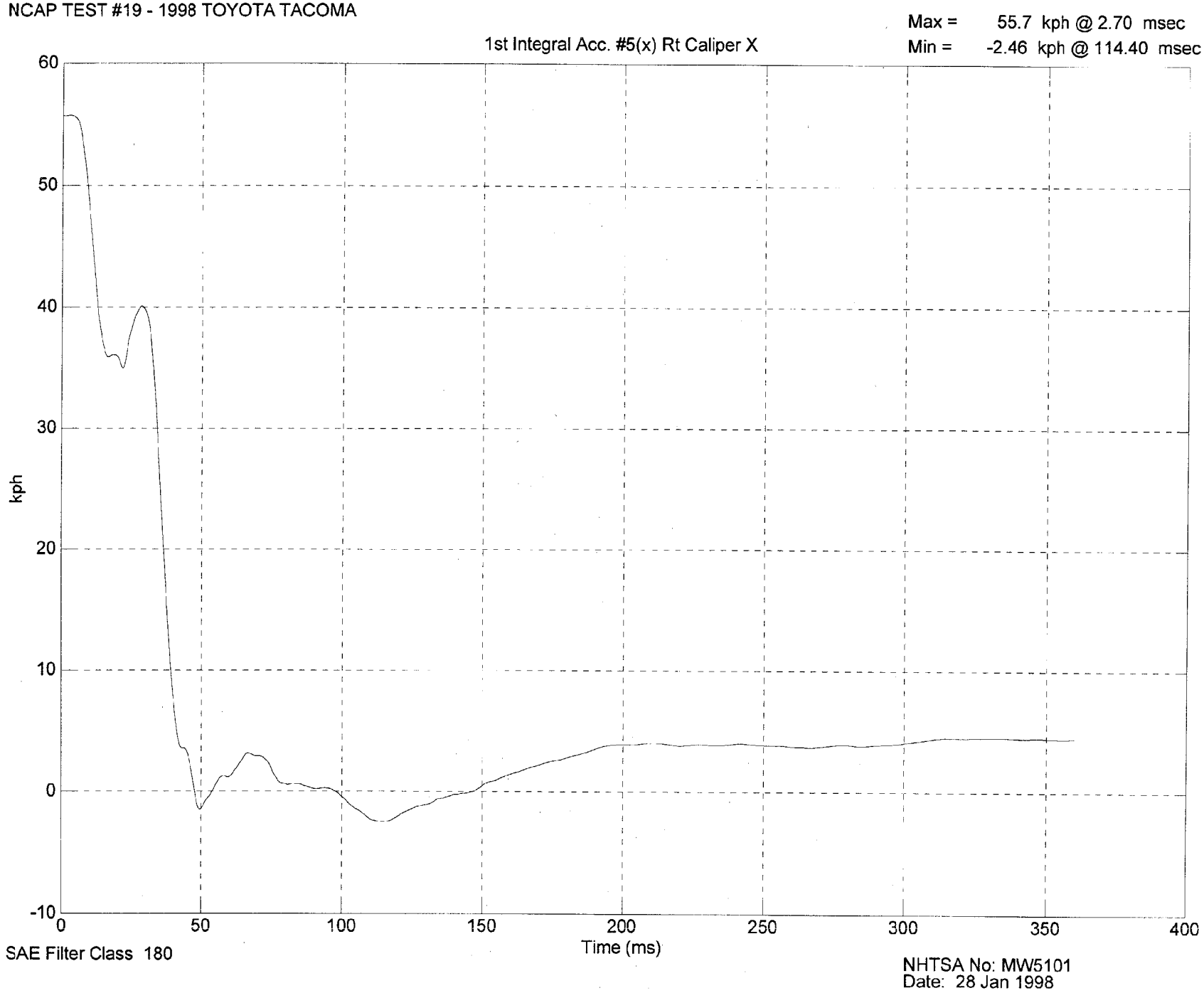
8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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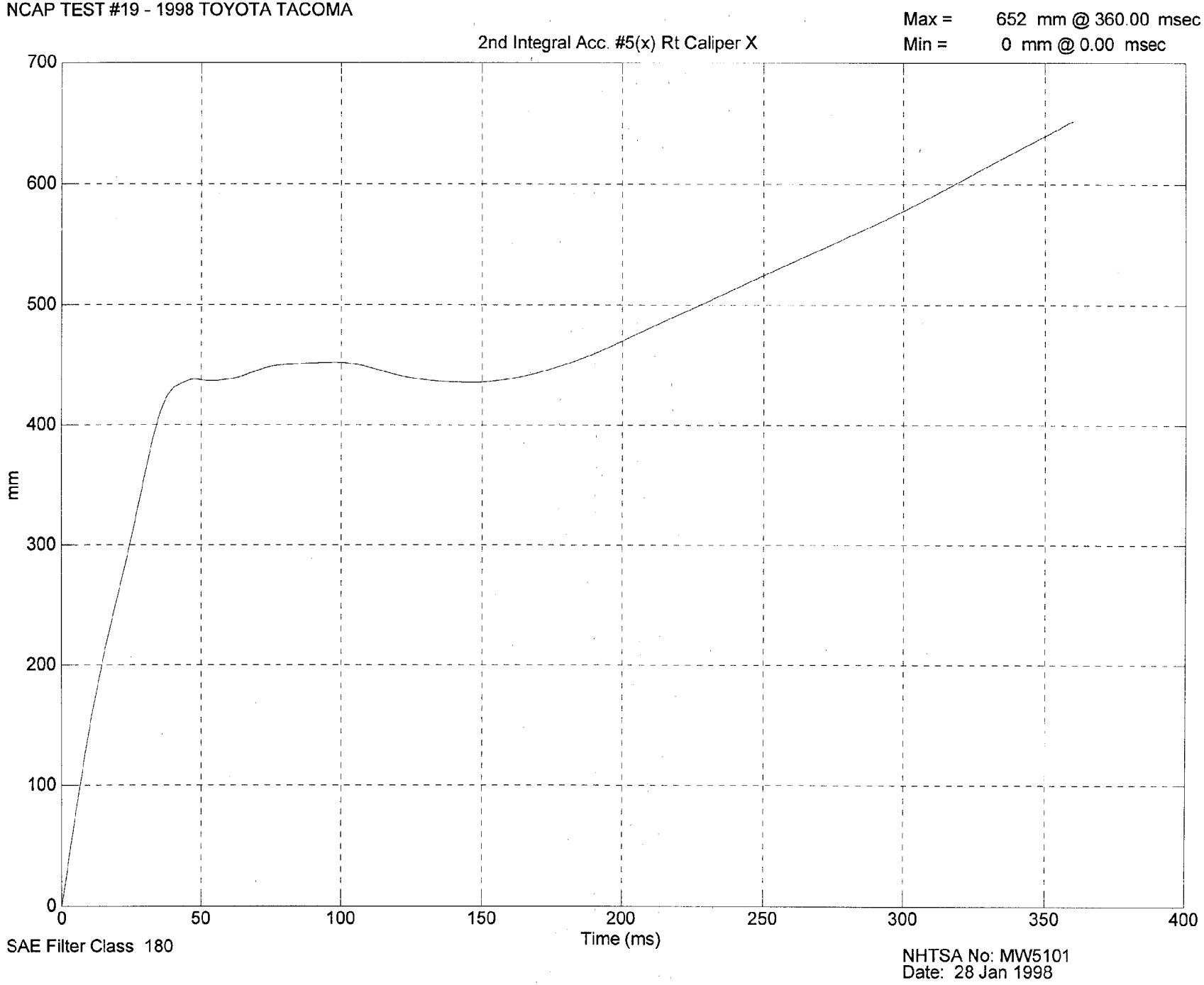
8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA



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8413-19

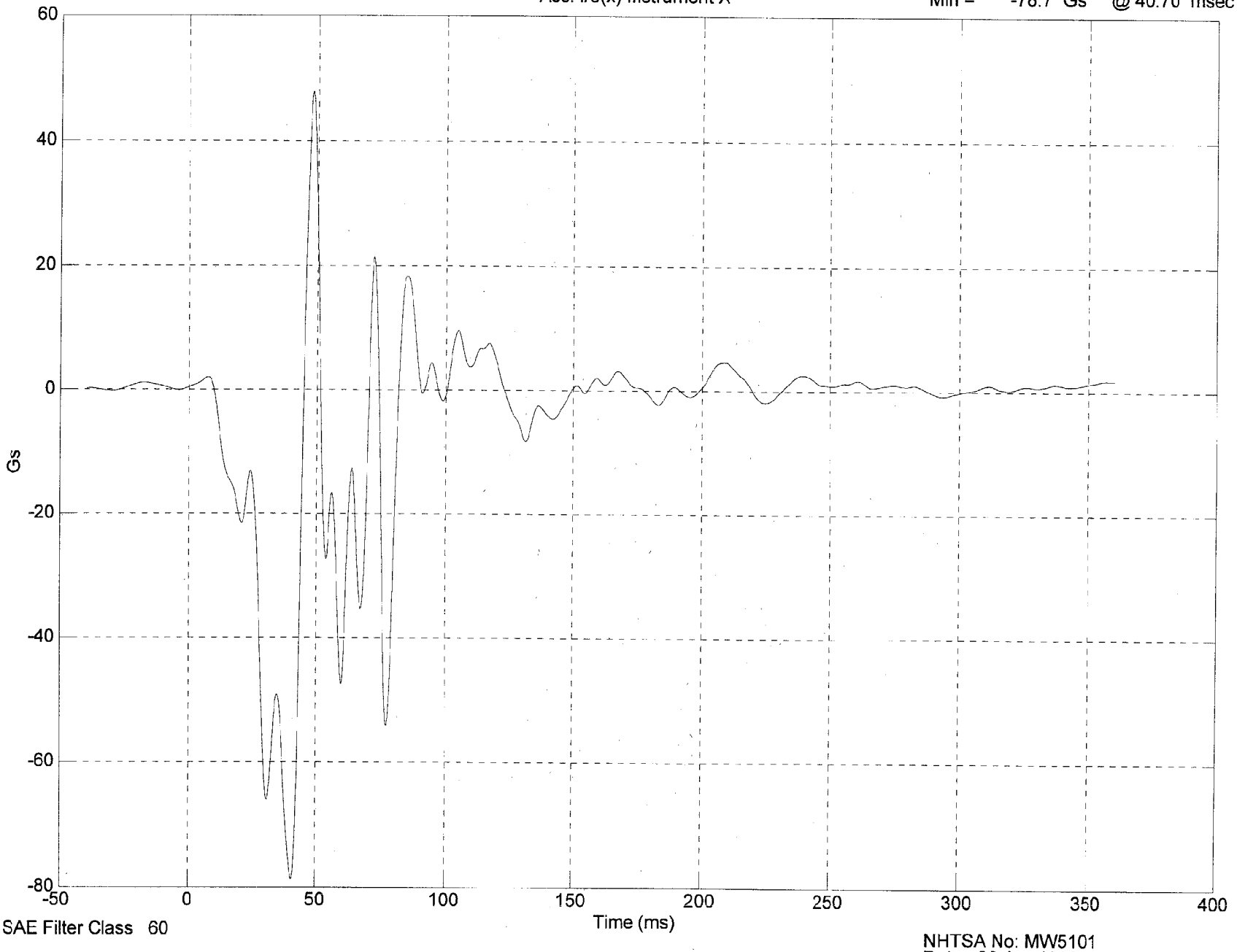
SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Acc. #6(x) Instrument X

Max = 47.9 Gs @ 48.10 msec
Min = -78.7 Gs @ 40.70 msec



SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

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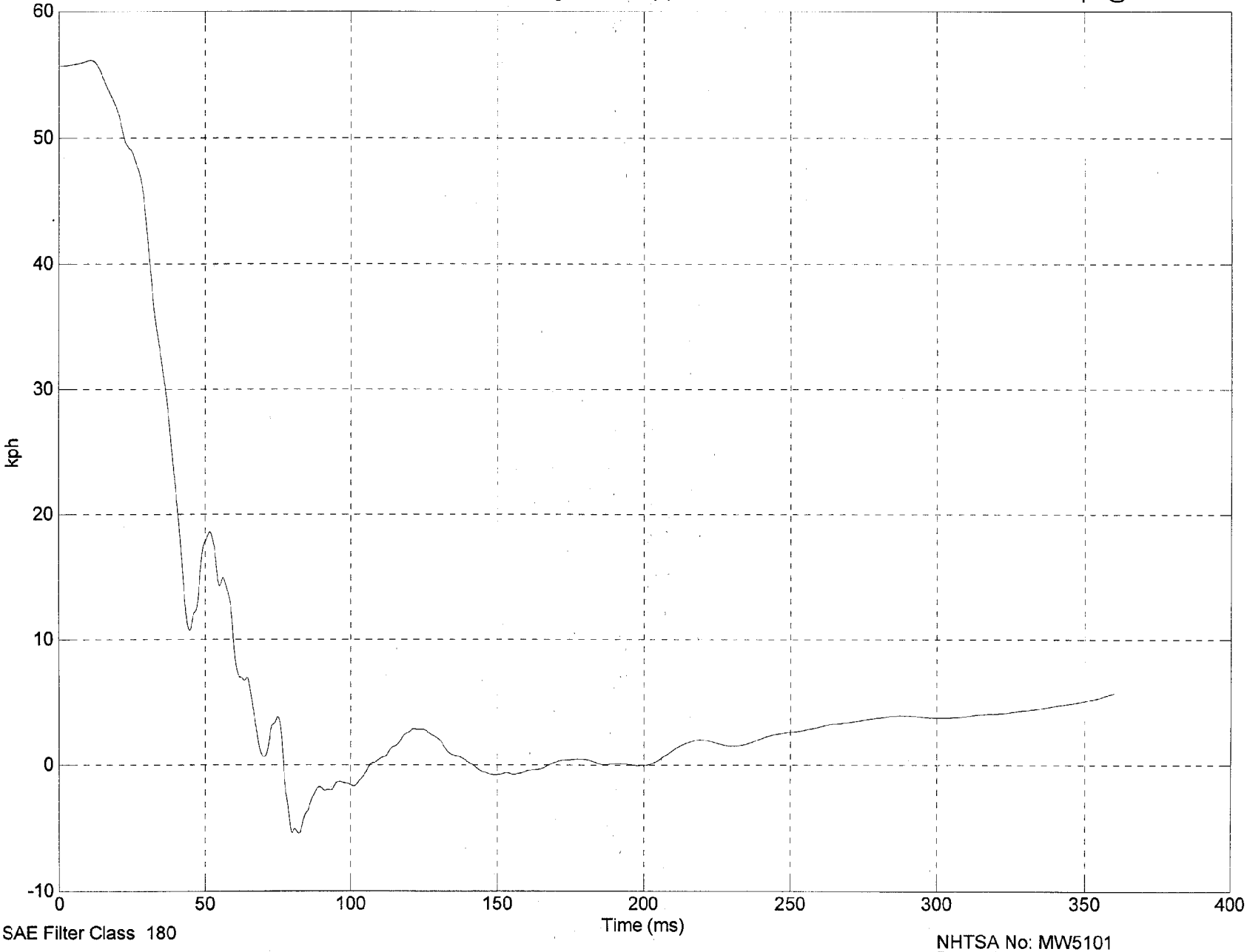
8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

1st Integral Acc. #6(x) Instrument X

Max = 56.1 kph @ 10.60 msec
Min = -5.39 kph @ 82.60 msec



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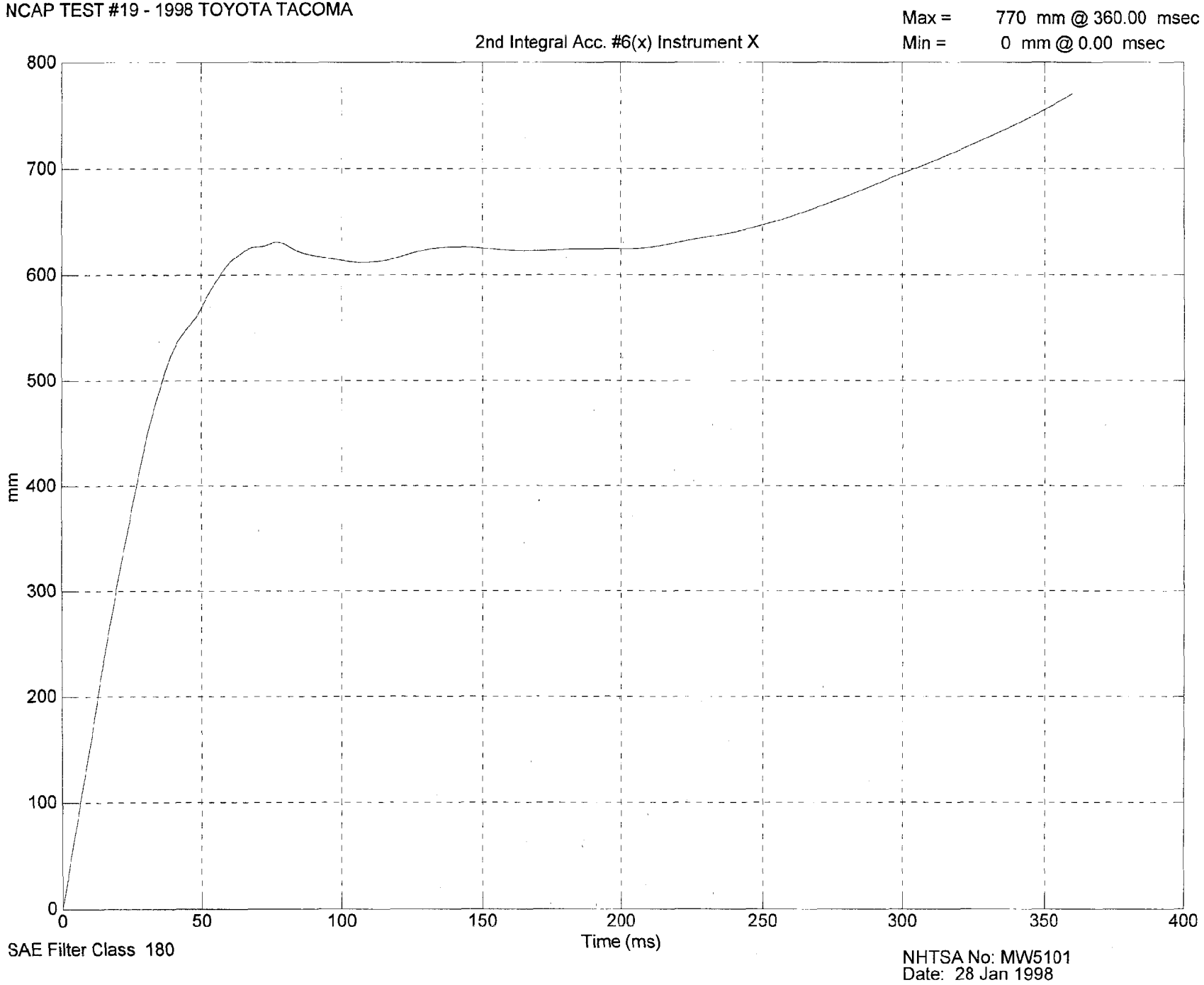
8413-19

SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

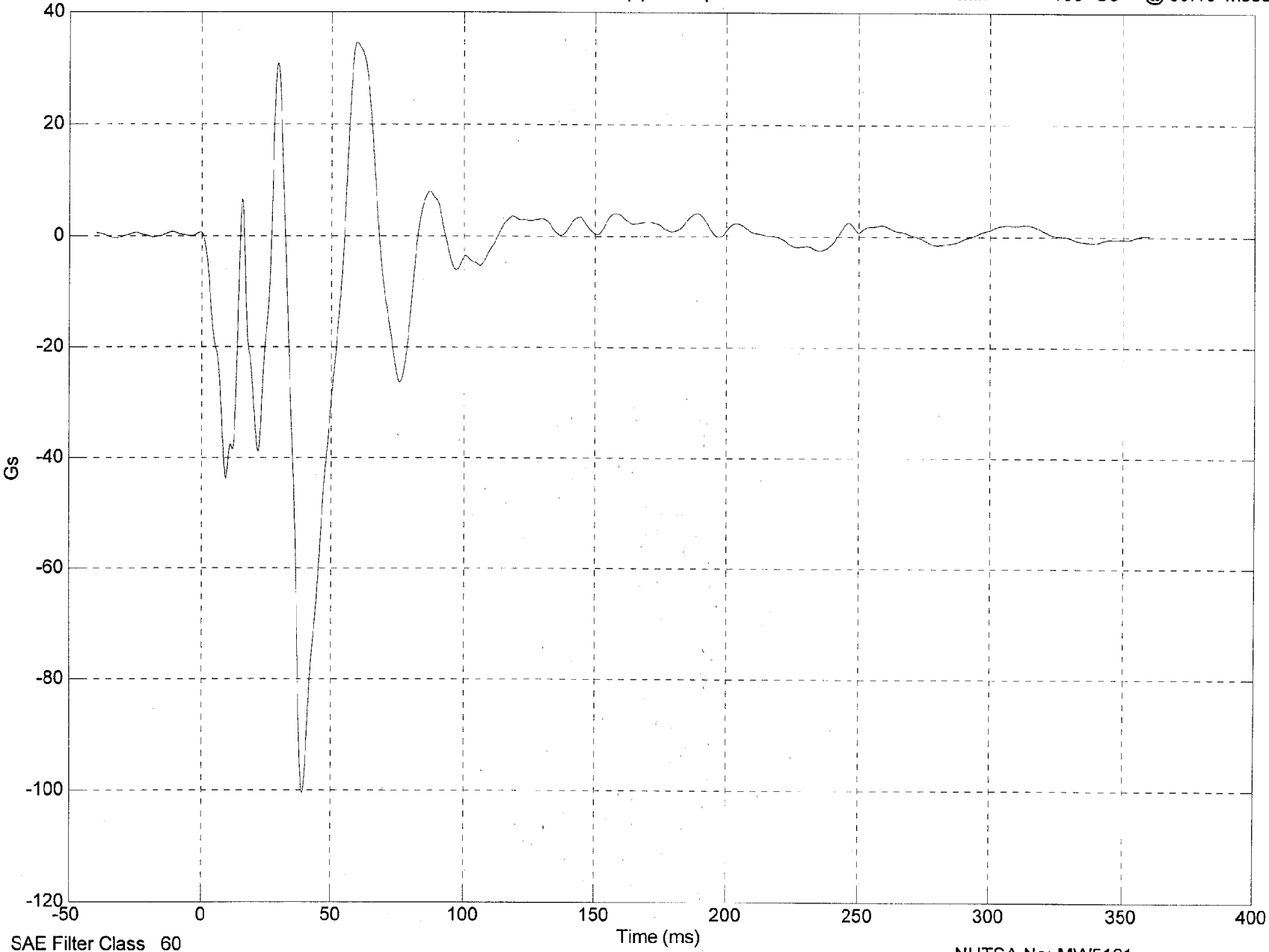


SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 34.6 Gs @ 59.50 msec
Min = -100 Gs @ 39.10 msec



SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

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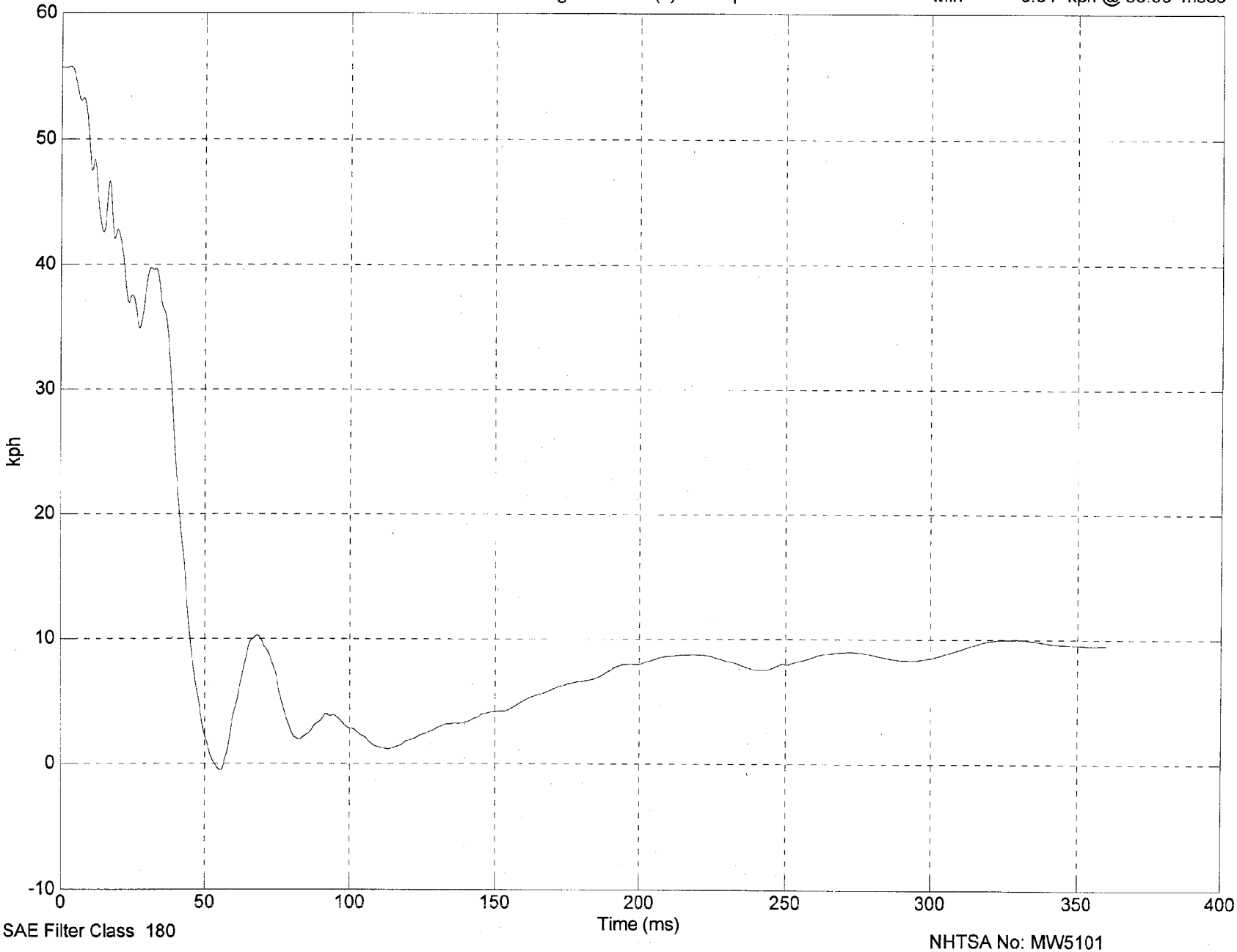
8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

1st Integral Acc. #7(x) Lt Caliper X

Max = 55.7 kph @ 3.10 msec
Min = -0.51 kph @ 55.50 msec



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

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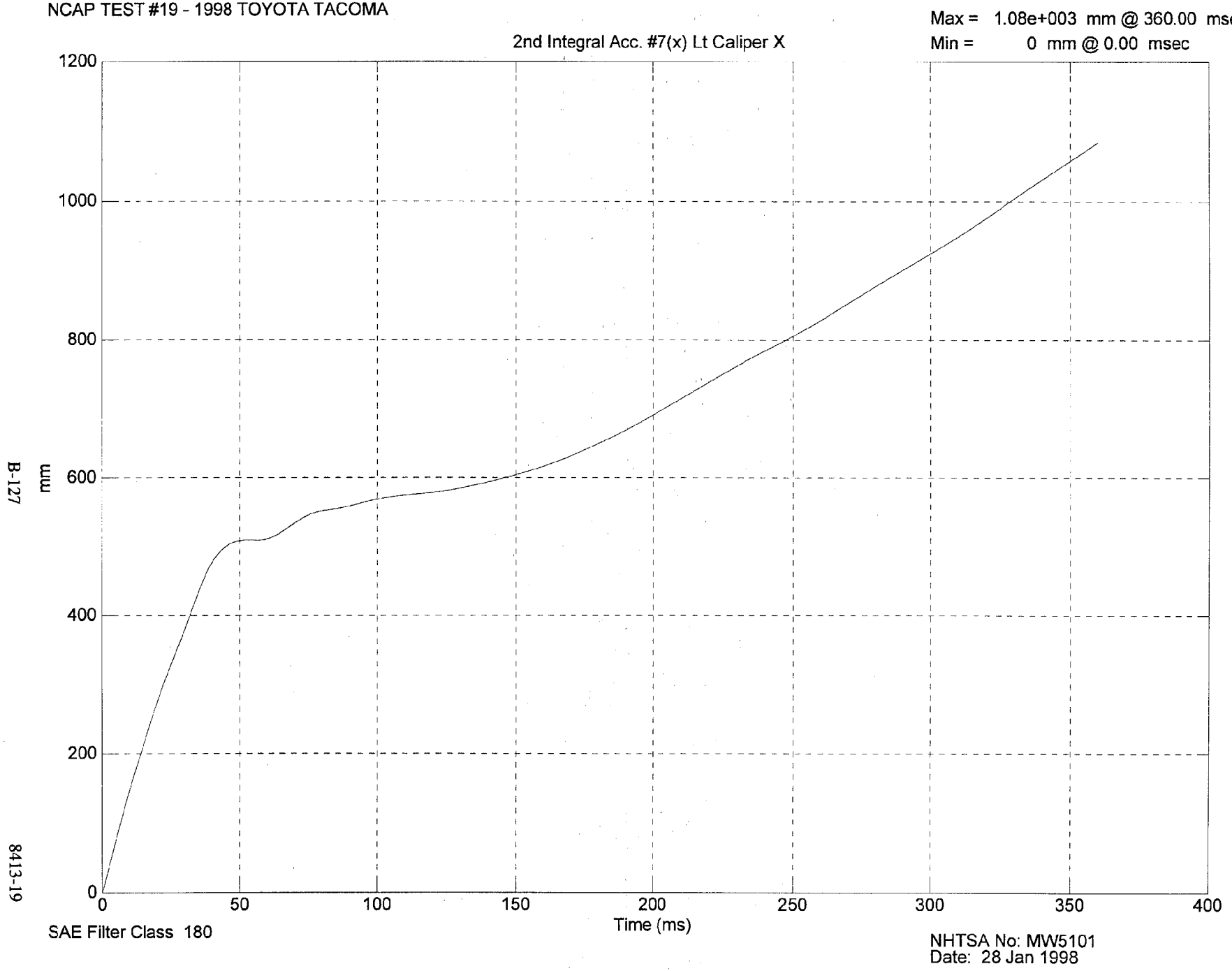
8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA



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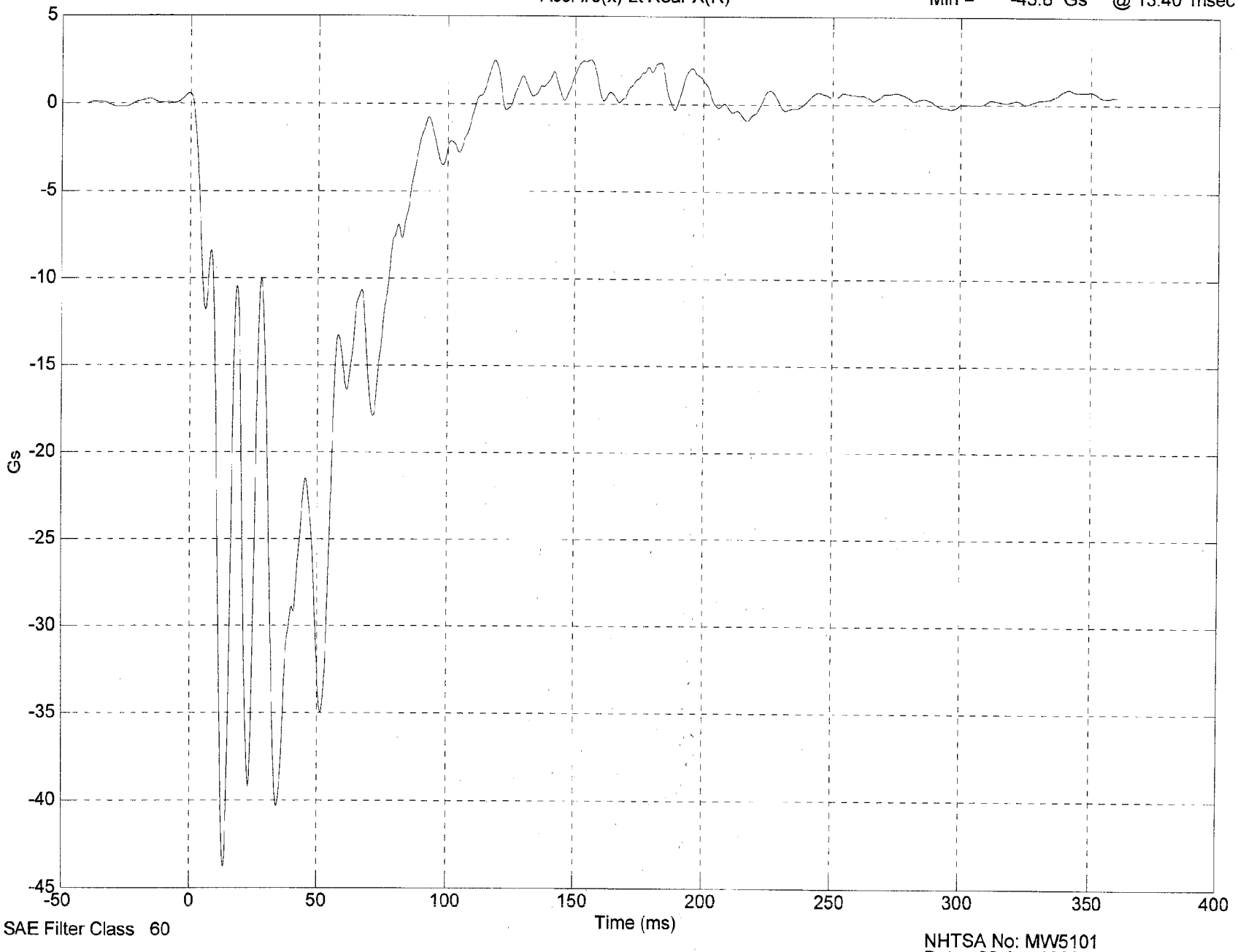
8413-19

SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 2.51 Gs @ 155.90 msec
Min = -43.8 Gs @ 13.40 msec



SAE Filter Class 60

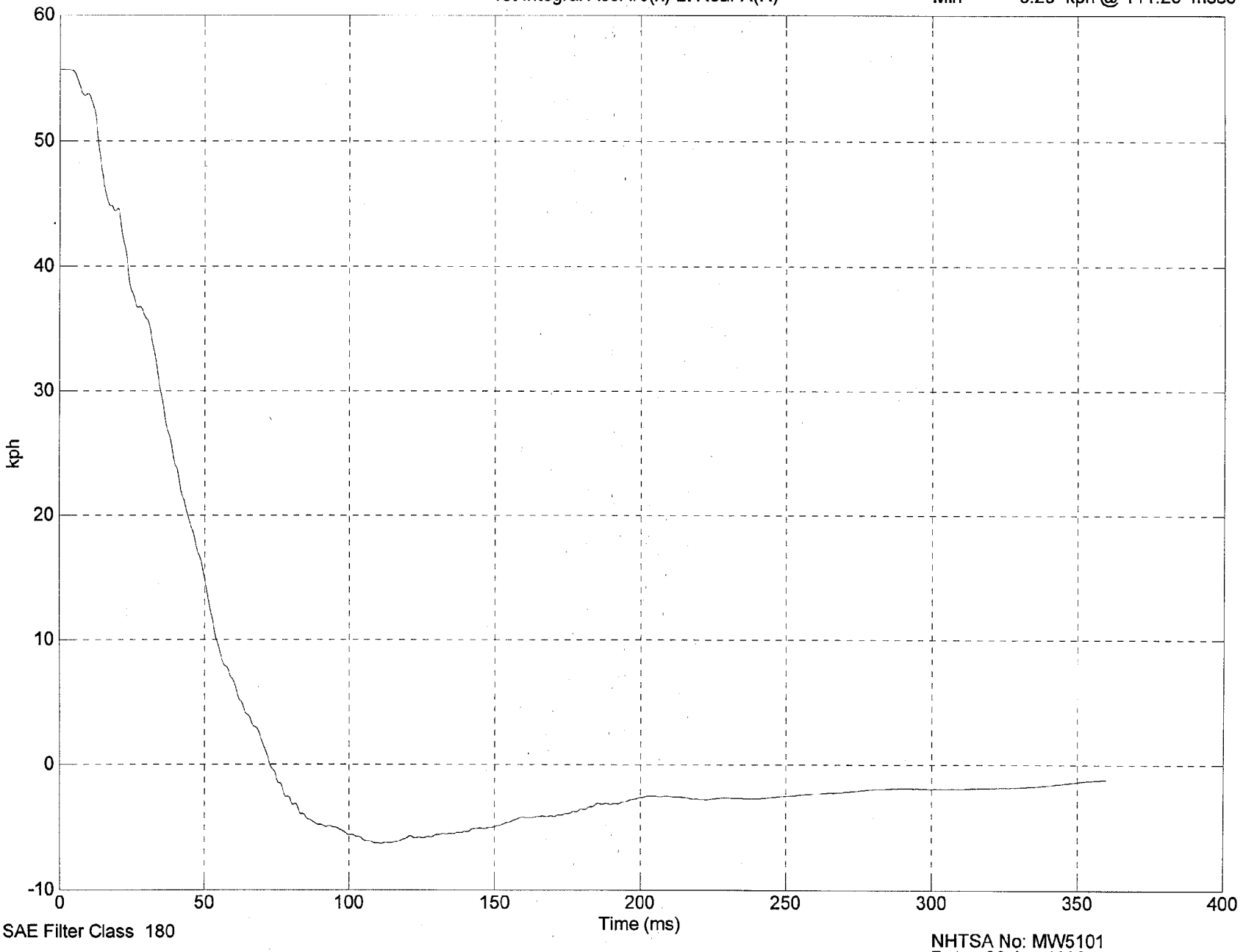
NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

1st Integral Acc. #8(x) Lt Rear X(R)

Max = 55.7 kph @ 0.70 msec
Min = -6.29 kph @ 111.20 msec



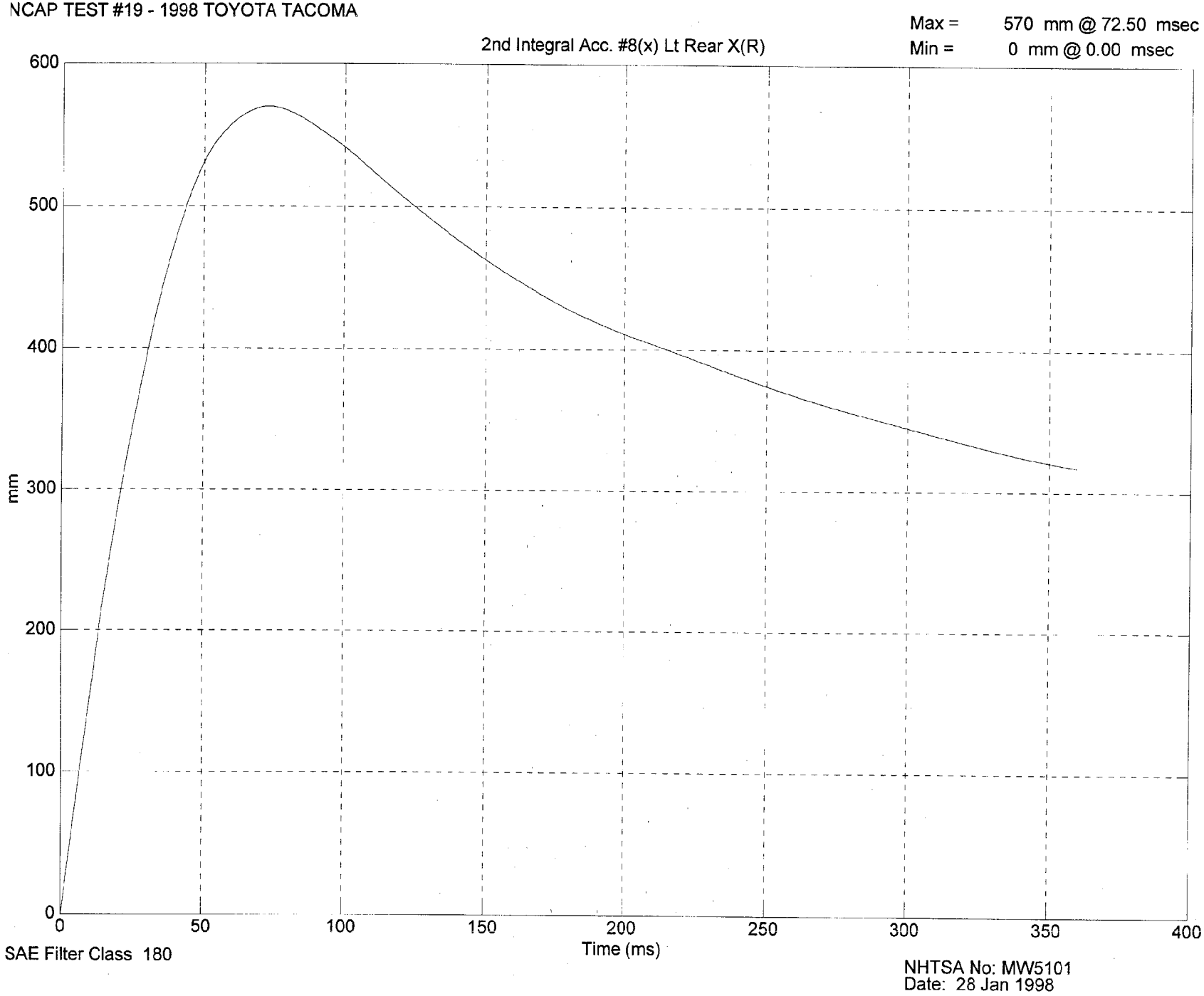
SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

B-129

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

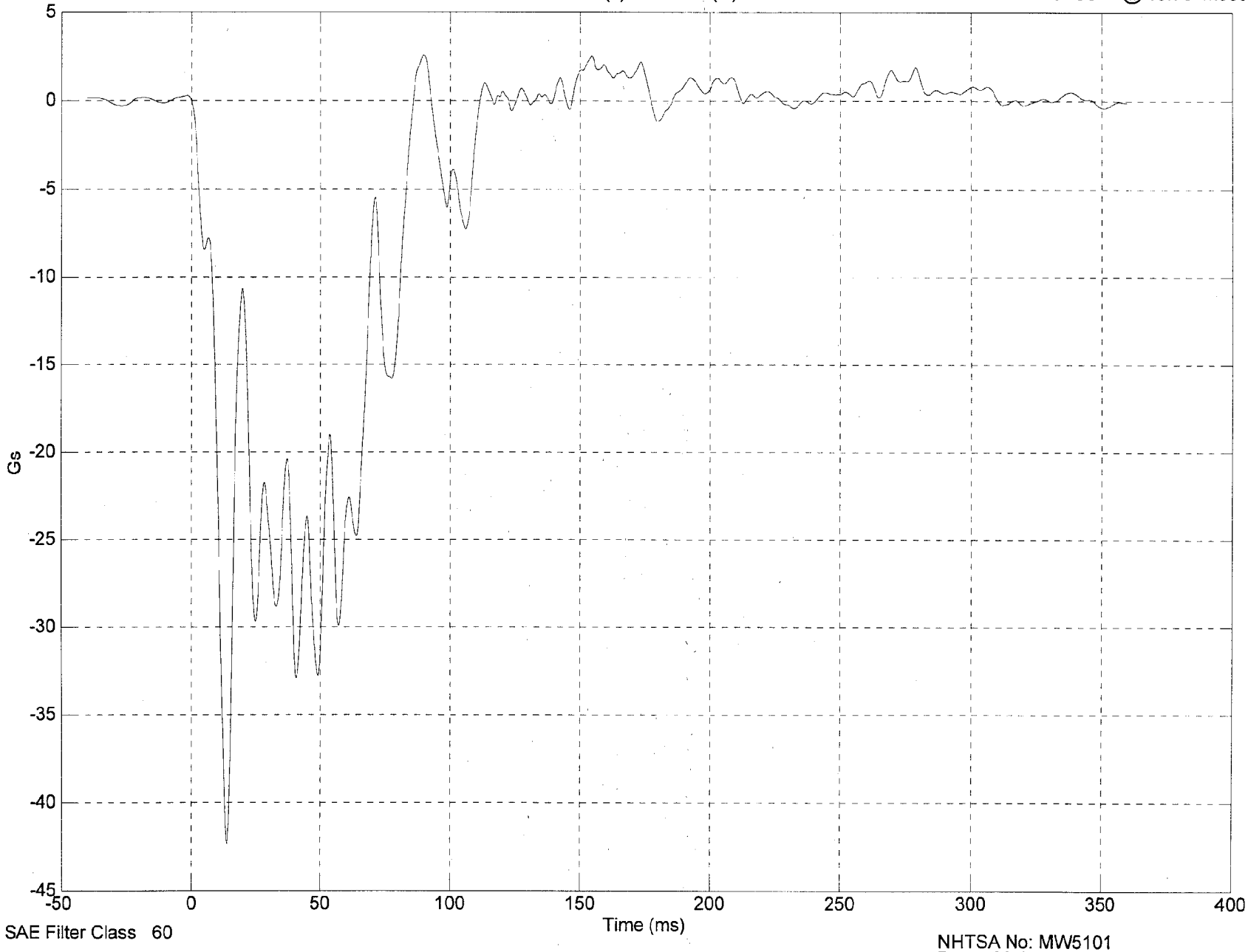


SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 2.56 Gs @ 90.00 msec
Min = -42.3 Gs @ 13.70 msec

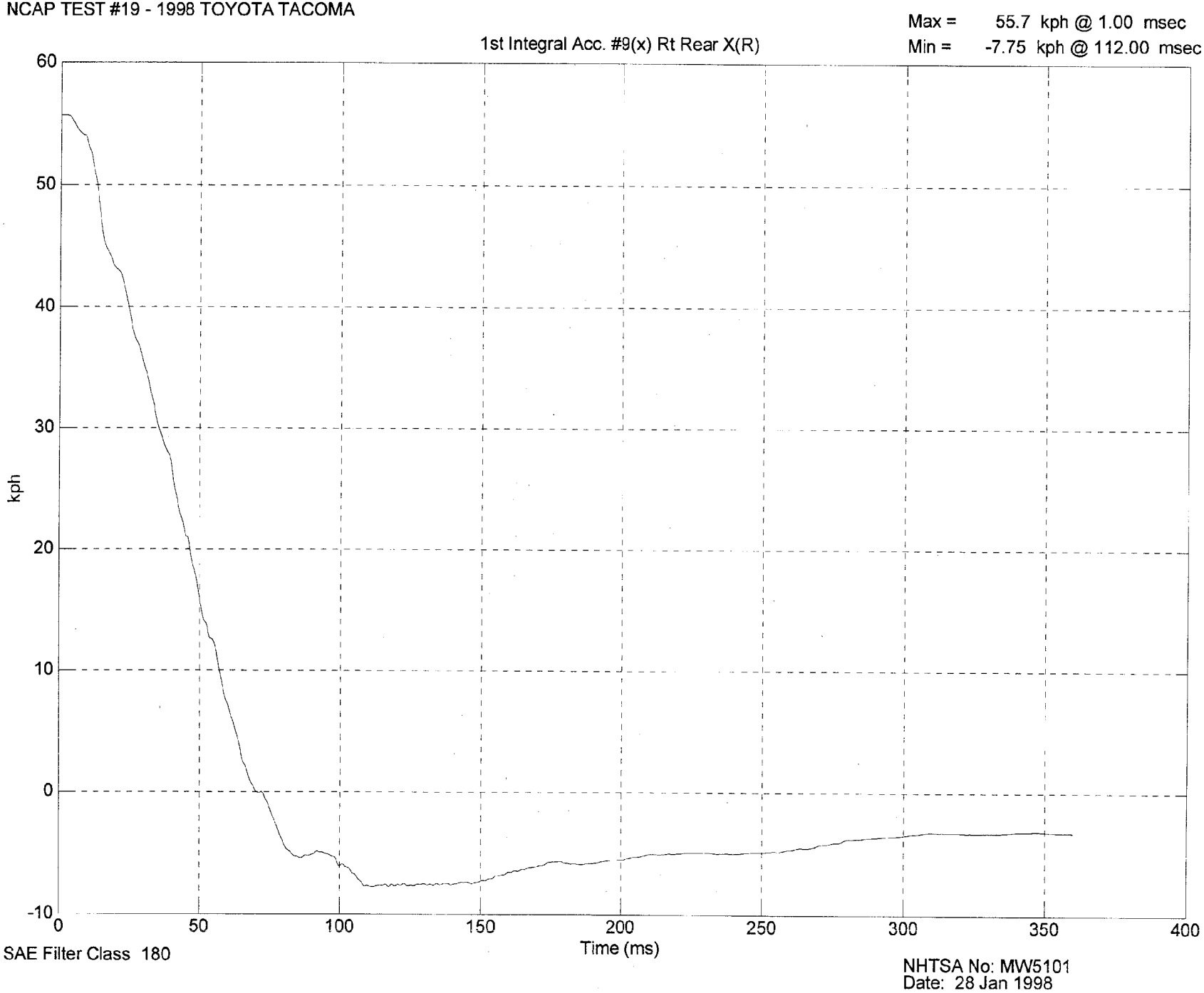


SAE Filter Class 60

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

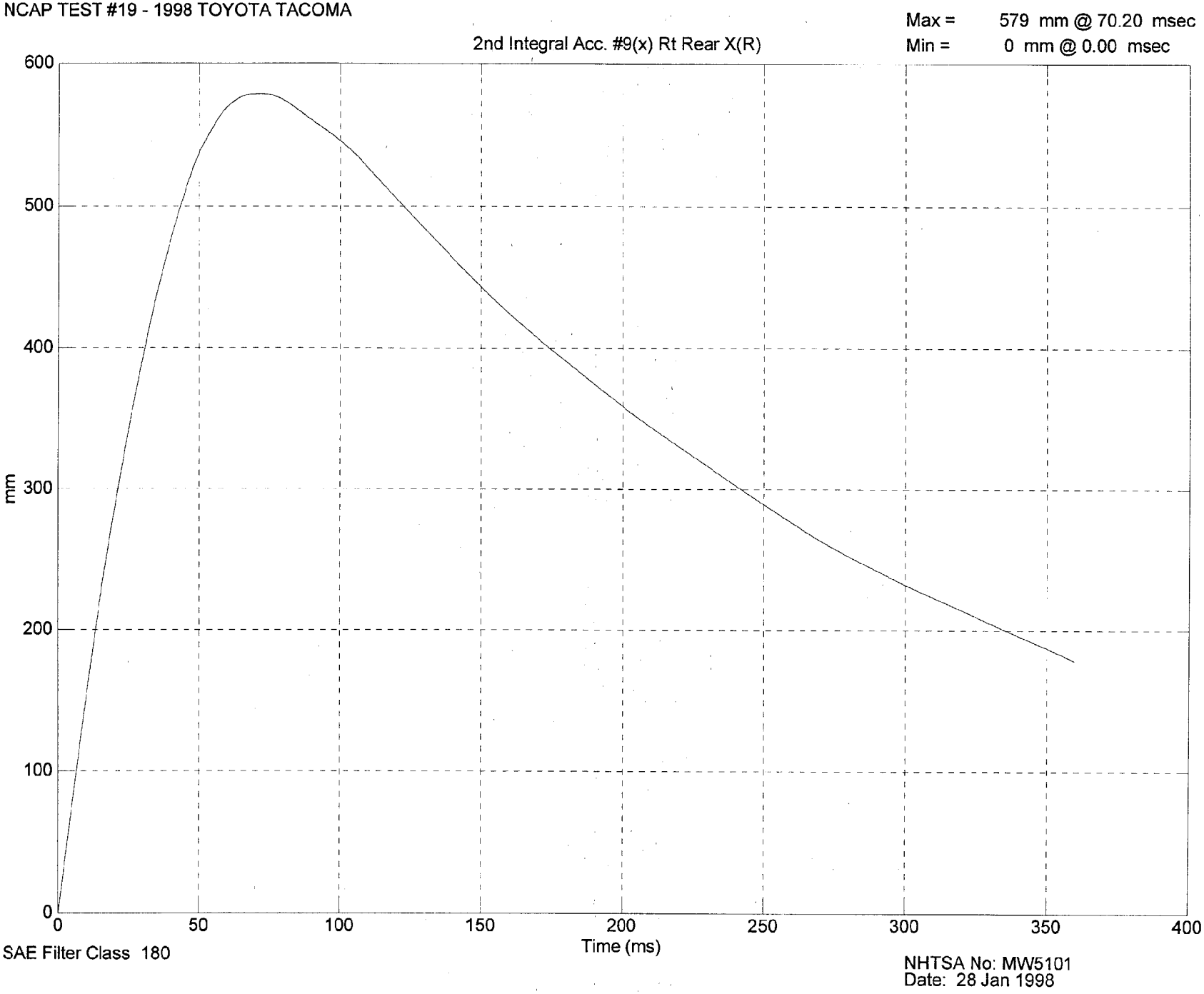
NCAP TEST #19 - 1998 TOYOTA TACOMA



SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

NCAP TEST #19 - 1998 TOYOTA TACOMA



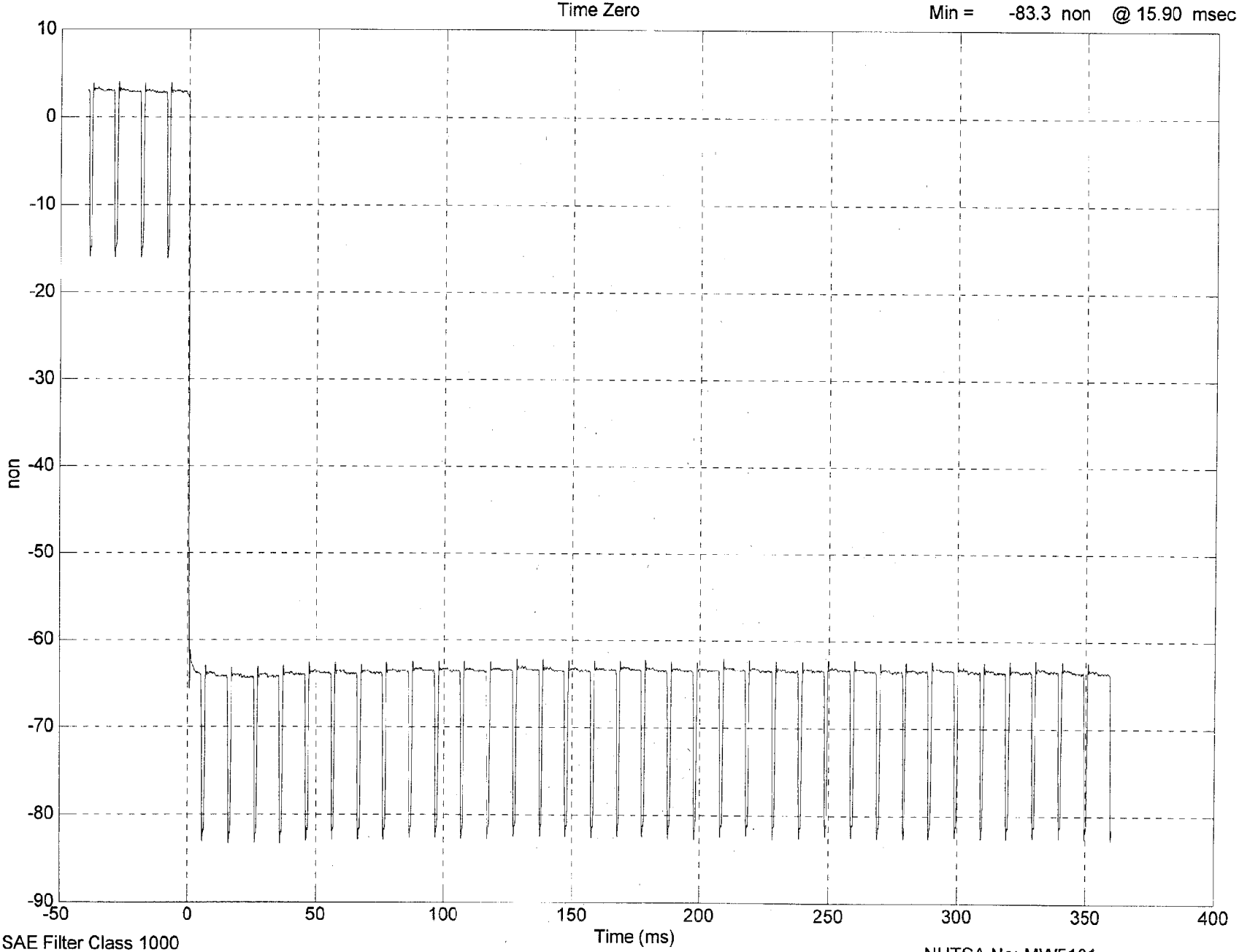
SAE Filter Class 180

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

NCAP TEST #19 - 1998 TOYOTA TACOMA

Max = 4.1 non @ -27.50 msec
Min = -83.3 non @ 15.90 msec



SAE Filter Class 1000

NHTSA No: MW5101
Date: 28 Jan 1998

8413-19

Appendix C

PART 572B/E DUMMY CONFIGURATION

AND PERFORMANCE VERIFICATION DATA SHEETS

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

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

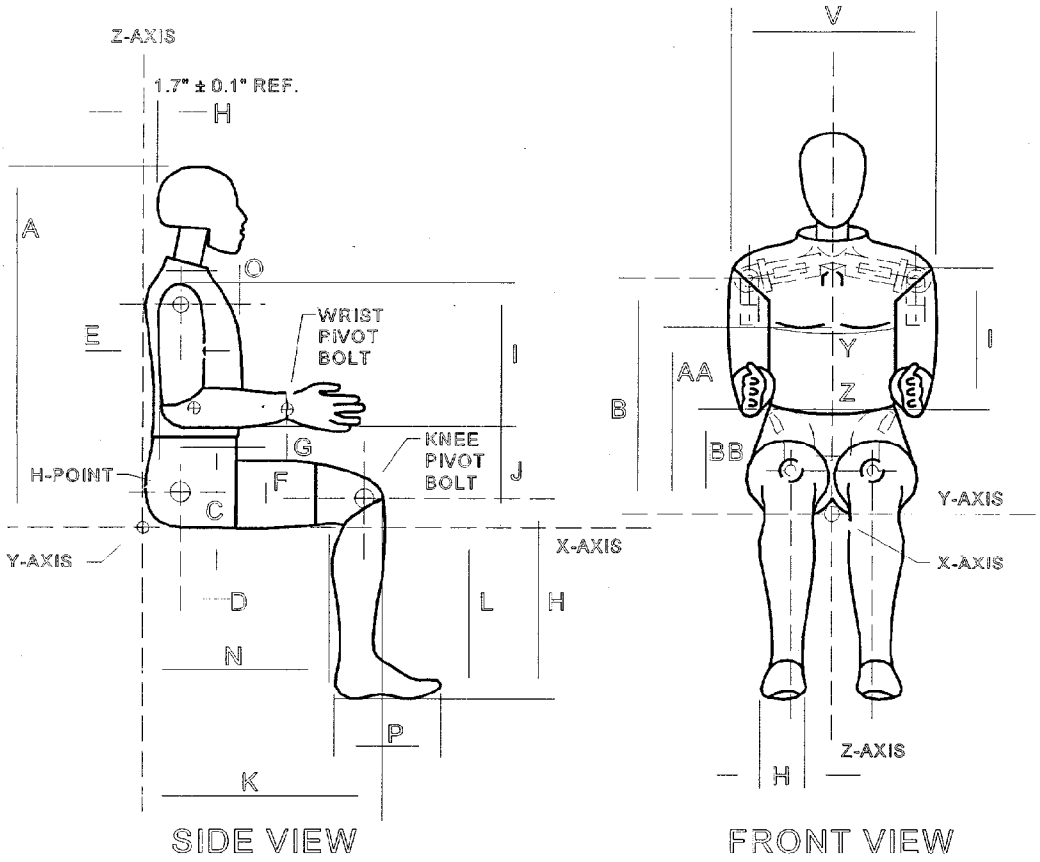
Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	061	01/21/98
#2/Right Front Passenger	245	01/21/98

Electronic Test Equipment

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

EXTERNAL DIMENSIONS SPECIFICATIONS



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

PART 572E
HEAD DROP TEST

Dummy Serial Number	061
Calspan Sequential Test Number	1
Date	01/16/98
Workfile	061198.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	34
Peak Resultant Acceleration	225-275 G's	259.7
Peak Lateral Acceleration	15 G's Max	11.4
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061
Calspan Sequential Test Number	1
Date	01/19/98
Workfile	061198.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	40
Impact Velocity		22.60 - 23.40 Ft/s	23.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.40
	20 ms	17.60 - 22.60 G's	19.94
	30 ms	12.50 - 18.50 G's	16.46
Max Pendulum G's Above 30 ms		29 G's Max	16.46
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	42.00
D Plane Rotation	Max	64 - 78 Deg	66.51
	Time	57 - 64 ms	57.75
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	65.10
	Time	47 - 58 ms	54.13
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	119.25
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.63

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061
Calspan Sequential Test Number	1
Date	01/19/98
Workfile	061198.nex

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	40
Impact Velocity		19.50 - 20.30 Ft/s	19.90
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	17.51
	20 ms	14.00 - 19.00 G's	16.23
	30 ms	11.00 - 16.00 G's	14.02
Max Pendulum G's Above 30 ms		22 G's Max	14.02
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	45.38
D Plane Rotation	Max	81 - 106 Deg	88.93
	Time	72 - 82 ms	78.00
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-40.58
	Time	65 - 79 ms	71.88
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	159.38
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	137.88

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	061
Calspan Sequential Test Number	1
Date	01/19/98
Workfile	061198.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	40
Pendulum Velocity	21.6 - 22.4 Ft/s	21.61
Maximum Deflection	2.50 - 2.86 in	2.50
Maximum Resistive Force	1160 - 1325 Lbs	1309.04
Internal Hysteresis	69 - 85 %	71.8

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	061
Calspan Sequential Test Number	1
Date	01/21/98
Workfile	061198

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	40
Probe Velocity	6.8 - 7.0 Ft/s	6.90
Peak Knee Impact Force	1060 - 1300 Lbs	1286.0
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	40
Probe Velocity	6.8 - 7.0 Ft/s	6.91
Peak Knee Impact Force	1060 - 1300 Lbs	1140.0

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Calspan Sequential Test Number 1
Date 01/19/98

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			40
Location for Chest Circumference	AA	16.9 -17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.4
Waist Circumference	Z	32.9 - 34.1 in	33.5
Chest Depth	O	8.4 - 9.0 in	8.5
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.6
Thigh Clearance	F	5.5 - 6.1 in	6.1
Buttock Knee Length	K	22.8 - 23.8 in	23.2
Buttock Popliteal Length	N	17.8 - 18.8 in	18.3
Popliteal Height	L	16.9 - 17.9 in	17.7
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
Elbow Rest Height	J	7.5 - 8.3 in	7.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.4
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number	245
Calspan Sequential Test Number	1
Date	01/16/98
Workfile	245198.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	33
Peak Resultant Acceleration	225-275 G's	260.9
Peak Lateral Acceleration	15 G's Max	11.4
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	245
Calspan Sequential Test Number	1
Date	01/19/98
Workfile	245198.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	40
Impact Velocity		22.60 - 23.40 Ft/s	23.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.66
	20 ms	17.60 - 22.60 G's	20.53
	30 ms	12.50 - 18.50 G's	17.56
Max Pendulum G's Above 30 ms		29 G's Max	17.56
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	39.13
D Plane Rotation	Max	64 - 78 Deg	66.12
	Time	57 - 64 ms	58.88
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	66.03
	Time	47 - 58 ms	51.75
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	117.88
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.75

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	245
Calspan Sequential Test Number	1
Date	01/16/98
Workfile	245198.nex

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	34
Impact Velocity		19.50 - 20.30 Ft/s	19.90
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.68
	20 ms	14.00 - 19.00 G's	17.03
	30 ms	11.00 - 16.00 G's	14.47
Max Pendulum G's Above 30 ms		22 G's Max	14.47
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	42.13
D Plane Rotation	Max	81 - 106 Deg	90.10
	Time	72 - 82 ms	76.63
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-44.32
	Time	65 - 79 ms	71.63
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	156.75
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	137.75

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	245
Calspan Sequential Test Number	1
Date	01/20/98
Workfile	245198.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	40
Pendulum Velocity	21.6 - 22.4 Ft/s	21.63
Maximum Deflection	2.50 - 2.86 in	2.55
Maximum Resistive Force	1160 - 1325 Lbs	1279.49
Internal Hysteresis	69 - 85 %	73.8

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	245
Calspan Sequential Test Number	1
Date	01/21/98
Workfile	245198

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	40
Probe Velocity	6.8 - 7.0 Ft/s	6.91
Peak Knee Impact Force	1060 - 1300 Lbs	1184.0
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	40
Probe Velocity	6.8 - 7.0 Ft/s	6.93
Peak Knee Impact Force	1060 - 1300 Lbs	1188.0

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 245
Calspan Sequential Test Number 1
Date 01/19/98

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			40
Location for Chest Circumference	AA	16.9 -17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.0
Waist Circumference	Z	32.9 - 34.1 in	33.6
Chest Depth	O	8.4 - 9.0 in	8.4
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Total Sitting Height	A	34.6 - 35.0 in	34.9
Thigh Clearance	F	5.5 - 6.1 in	6.0
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.2
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.2
Foot Length	P	9.9 - 10.5 in	10.2
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.2
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6

Remarks:

Laboratory Technician: B. Swiecicki

Appendix D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	C14883	ENDEVCO	8/97	2/98
	Y	C14972	ENDEVCO	8/97	2/98
	Z	C15018	ENDEVCO	8/97	2/98
Chest	X	AL6C4	ENDEVCO	8/97	2/98
	Y	AE8W7	ENDEVCO	8/97	2/98
	Z	A57G	ENDEVCO	8/97	2/98
Right Femur Load Cell		952	GSE	1/98	7/98
Left Femur Load Cell		951	GSE	1/98	7/98
Neck Load Cell	X	446	DENTON	10/97	4/98
	Y	446	DENTON	10/97	4/98
	Z	446	DENTON	10/97	4/98
Neck Moment	X	446	DENTON	10/97	4/98
	Y	446	DENTON	10/97	4/98
	Z	446	DENTON	10/97	4/98
Chest Deflection Gauge		061	HUMANOID	11/97	5/98
Hybrid III Use Only					
Lap Belt Load Cells		706	LEBOW	1/98	7/98
Shoulder Belt Load Cells		707	LEBOW	1/98	7/98
Spool-Out Potentiometer		M5	MAGNETEK	9/97	3/98
Belt Stretch Transducer		E1	CALSPAN	9/97	3/98

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X (R)	A13937	ENDEVCO	10/97	4/98
	Y (R)	A13517	ENDEVCO	10/97	4/98
	Z (R)	A13941	ENDEVCO	10/97	4/98
Chest	X (R)	A13811	ENDEVCO	10/97	4/98
	Y (R)	A13828	ENDEVCO	10/97	4/98
	Z (R)	A13883	ENDEVCO	10/97	4/98
Pelvic	X	AC2P5	ENDEVCO	8/97	2/98
	Y	ADL50	ENDEVCO	8/97	2/98
	Z	A59J	ENDEVCO	8/97	2/98
Left Upper Tibia	Mx	038	DENTON	10/97	4/98
Left Upper Tibia	My	038	DENTON	10/97	4/98
Left Lower Tibia	Fy	032	DENTON	10/97	4/98
Left Lower Tibia	Fz	032	DENTON	10/97	4/98
Left Lower Tibia	Mx	032	DENTON	10/97	4/98
Right Upper Tibia	Mx	045	DENTON	10/97	4/98
Right Upper Tibia	My	045	DENTON	10/97	4/98
Right Lower Tibia	Fy	041	DENTON	10/97	4/98
Right Lower Tibia	Fz	041	DENTON	10/97	4/98
Right Lower Tibia	Mx	041	DENTON	10/97	4/98

INSTRUMENT CALIBRATION FOR DRIVER DUMMY

(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #	Manufacture	Calibration	
				Last	Next
Left Foot Front	Z	A14058	ENDEVCO	9/97	3/98
Left Foot Rear	X	APA58	ENDEVCO	9/97	3/98
Left Foot Rear	Z	A14150	ENDEVCO	10/97	4/98
Right Foot Front	Z	A14124	ENDEVCO	9/97	3/98
Right Foot Rear	X	A14126	ENDEVCO	9/97	3/98
Right Foot Rear	Z	A14181	ENDEVCO	9/97	3/98

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 245)		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	ADL98	ENDEVCO	8/97	2/98
	Y	AEK80	ENDEVCO	8/97	2/98
	Z	ADMB6	ENDEVCO	8/97	2/98
Chest	X	A26A	ENDEVCO	8/97	2/98
	Y	A27A	ENDEVCO	8/97	2/98
	Z	A51A	ENDEVCO	8/97	2/98
Right Femur Load Cell		232	GSE	1/98	7/98
Left Femur Load Cell		231	GSE	1/98	7/98
Neck Load Cell	X	440	DENTON	1/98	7/98
	Y	440	DENTON	1/98	7/98
	Z	440	DENTON	1/98	7/98
Neck Moment	X	440	DENTON	1/98	7/98
	Y	440	DENTON	1/98	7/98
	Z	440	DENTON	1/98	7/98
Chest Deflection Gauge		245	HUMANOID	10/97	4/98
Hybrid III Use Only					
Lap Belt Load Cells		635	LEBOW	1/98	7/98
Shoulder Belt Load Cells		711	LEBOW	1/98	7/98
Spool-Out Potentiometer		M10	MAGNETEK	9/97	3/98
Belt Stretch Transducer		E3	CALSPAN	9/97	3/98

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X (R)	A13829	ENDEVCO	11/97	5/98
	Y (R)	AC8F6	ENDEVCO	8/97	2/98
	Z (R)	ACCW0	ENDEVCO	8/97	2/98
Chest	X (R)	AHRC9	ENDEVCO	8/97	2/98
	Y (R)	AC7W8	ENDEVCO	8/97	2/98
	Z (R)	ACC06	ENDEVCO	8/97	2/98
Pelvic	X	AL6N5	ENDEVCO	1/98	7/98
	Y	AL6R7	ENDEVCO	1/98	7/98
	Z	A12C	ENDEVCO	1/98	7/98
Left Upper Tibia	Mx	015	DENTON	10/97	4/98
Left Upper Tibia	My	015	DENTON	10/97	4/98
Left Lower Tibia	Fy	011	DENTON	10/97	4/98
Left Lower Tibia	Fz	011	DENTON	10/97	4/98
Left Lower Tibia	Mx	011	DENTON	10/97	4/98
Right Upper Tibia	Mx	016	DENTON	10/97	4/98
Right Upper Tibia	My	016	DENTON	10/97	4/98
Right Lower Tibia	Fy	012	DENTON	10/97	4/98
Right Lower Tibia	Fz	012	DENTON	10/97	4/98
Right Lower Tibia	Mx	012	DENTON	10/97	4/98

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY		Serial #	Manufacture	Calibration	
				Last	Next
Left Foot Front	Z	A13011	ENDEVCO	9/97	3/98
Left Foot Rear	X	A13506	ENDEVCO	9/97	3/98
Left Foot Rear	Z	A12268	ENDEVCO	9/97	3/98
Right Foot Front	Z	J18418	ENDEVCO	8/97	2/98
Right Foot Rear	X	AEWK1	ENDEVCO	8/97	2/98
Right Foot Rear	Z	AKD92	ENDEVCO	8/97	2/98

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS

(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	X93	ICS	9/97	3/98
Right Rear Seat Crossmember	Y17	ICS	9/97	3/98
Top of Engine	Y151	ICS	9/97	3/98
Bottom of Engine	BB51	ICS	8/97	2/98
Left Disc Brake Caliper	X24	CEC	10/97	4/98
Right Disc Brake Caliper	BA65	CEC	10/97	4/98
Instrument Panel	A14151	CEC	9/97	3/98
Left Seat Rear Crossmember (R)	D86	ICS	9/97	3/98
Right Seat Rear Crossmember (R)	D22	ICS	10/97	4/98