V2747

REPORT NUMBER: CAL-98-16

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

FORD MOTOR COMPANY OF CANADA, LTD.
1998 FORD F-150 4X2 REGULAR CAB
PICK-UP

NHTSA NUMBER: MW0207

CALSPAN TEST NUMBER: 8413-15

CALSPAN SRL CORPORATION
TRANSPORTATION SCIENCE CENTER
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BUFFALO, NEW YORK 14225

December 16, 1997

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
Mail Code: NPS-10
400 Seventh Street, SW, Room No. 5313
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Approval Date: January 5, 1998

FINAL REPORT ACCEPTANCE BY OCS:

_____

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

_____

Date of Report Acceptance

_____

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

_____

Date of Report Acceptance

TECHNICAL REPORT STANDARD TITLE PAGE

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15. *Supplementary Notes*		

16. *Abstract*

A frontal barrier test of a 1998 Ford F-150 4X2 Regular Cab Pick-up was performed at Calspan SRL Corporation crash test facility in Buffalo, New York, on December 16, 1997.

The impact velocity was 56.2 kph and the temperature at the barrier face was 20°C. The maximum post-test vehicle crush was 725.0 mm. The test vehicle was equipped with a 3-point restraint system and supplemental airbags at each outboard seating position. This vehicle was equipped with dual front next generation depowered airbags. 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 MW0207

PURPOSE

This 56.2 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 56.2 kph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test procedure.

SUMMARY

A frontal barrier was impacted by a 1998 Ford F-150 4X2 Regular Cab Pick-up at a velocity of 56.2 kph. The test was performed at the Calspan SRL Corporation on December 16, 1997. 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 14 high-speed cameras. Camera locations and other pertinent camera information can be found in this report. The belt spool out cameras could not be mounted on this vehicle due to space limitations.

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. 064) was used in one prior test where it did not exceed FMVSS 208 injury criteria. The right-front passenger (position 2) ATD (Serial No. 245) was used in two previous tests where it did not exceed FMVSS 208 injury criteria. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 95 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.

Vehicle seatbelt spool-out potentiometers could not be properly mounted in this vehicle due to the location of the D-rings. As a result, seatbelt spool-out was only measured mechanically.

The driver's HIC was 496.92. The maximum chest deceleration over 3 milliseconds was 42.303 g's and maximum chest deflection was 42.3 mm. Femur loads were -5297.8 Newtons on the left and -6647.7 Newtons on the right.

The right front passenger's HIC was 614.87. Maximum chest deceleration over 3 milliseconds was 46.320 g's and maximum chest deflection was 41.6 mm. Femur loads were -5190.8 Newtons on the left and -4027.8 Newtons on the right.

The vehicle bottom of engine accelerometer (#4) data is not accurate after 160 ms. The vehicle left side disc brake caliper accelerometer (#5) data is not accurate after 25 ms. Position #1 left ankle x did not record, this data trace will not be included in the report. Position #2 chest x(r) data is not accurate after 50 ms.

The driver's side (left) door did not open after the test due to deformation of the B-pillar. The door was opened prior to the vehicle rollover using a pry bar. The vehicle windshield was cracked after the test as a result of the impact.

SECTION 2

GENERAL TEST AND VEHICLE PARAMETER DATA

DATA SHEET NO. 1 CRASH TEST SUMMARY

Vehicle NHTSA No. : MW0207 Test Mode : 56 kph Frontal Barrier

Test Date : December 16, 1997 Time: 13:15 Temperature : 8.3 °C

Vehicle Make/Model/Body Style : 1998 Ford F-150 4X2 Regular Cab Pick-up

Vehicle Test Weight : 2072 kg

Vehicle/Barrier Impact Angle : 0 °

Impact Velocity : 56.2 kph

Maximum Static Crush : 725.0 mm

Vehicle Rebound : 321.3 mm

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

Number of Data Channels : 95

Number of Cameras : 1 Real Time

14 High Speed

DOOR OPENING DATA : Closed/Inoperable - 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 airbag; Back of head to left outboard side of headrest.	Face to airbag; Back of head to right outboard side of headrest.
Abdomen :	Seatbelt	Seatbelt
Chest	Airbag, Seatbelt	Airbag, Seatbelt
Knees	Knee Bolster	Knee Bolster

DATA SHEET NO. 2 GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION :

Year/Make/Model/Body Style : 1998 Ford F-150 4X2 Regular Cab Pick-up

NHTSA No. : MW0207 ; VIN: 2FTZF1722WCA40293 ; Color : White

Engine Data: 6 cylinders; - CID; 4.2 Liters; - cc

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

Transmission Data : 5 speeds; X Manual; - Automatic; X Overdrive

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

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

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

Date Received : 12/08/97 ; Odometer Reading 42 km

Selling Dealer : West Herr Ford, Inc.

& Address: S 5025 Camp Road Hamburg, NY 14075

DATA FROM TIRE VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by : Ford Motor Company of Canada, Ltd.

Date of Manufacture 11/97

GVWR : 2517 kg; GAWR: 1133 kg FRONT; 1451 kg REAR

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load : 221 kpa FRONT

241 kpa REAR

Recommended Tire Size : P235/70R16

* Recommended Cold Tire Pressure : 221 kpa FRONT; 241 kpa REAR

Size of Tires on Test Vehicle: P235/70R16 ; Manufacturer: Firestone

Vehicle Capacity Data :

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

Number of Occupants: 3 Front; 0 Rear; 3 Total

Vehicle Capacity Weight (VCW) = 725 kg

No. of Occupants x 68 kg = 204 kg

Rated Cargo/Luggage Weight (RCLW) = 521 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 =	497.0	kg	Right Rear =	385.5	kg
Left Front =	516.5	kg	Left Rear =	393.0	kg
TOTAL FRONT =	1,013.5	kg	TOTAL REAR =	778.5	kg

TOTAL DELIVERED WEIGHT = 1,792.0 kg

% of Total Front of Vehicle Weight = 56.6 % of Total Rear Weight = 43.4 %

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT :

Total Delivered Weight (UDW) =	1,792.0	kg
Rated Cargo/Luggage Weight (RCLW) =	136.0	kg
Weight of 2 p.572 Dummies @ 76 each =	152	kg
TARGET TEST WEIGHT =	2,080.0	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 128 KG OF CARGO WEIGHT:

Right Front =	528.5	kg	Right Rear =	490.5	kg
Left Front =	550.5	kg	Left Rear =	502.5	kg
TOTAL FRONT =	1,079.0	kg	TOTAL REAR =	993.0	kg

TOTAL TEST WEIGHT = 2,072.0 kg

% of Total Front Weight = 52.1 % % of Total Rear Weight = 47.9 %

Weight of Ballast Secured in Vehicle Trunk Area = 28.3 kg

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimension in millimeters):

AS DELIVERED :	RF	863	LF	865	RR	926	LR	917
FULLY LOADED :	RF	851	LF	854	RR	886	LR	883
AS TESTED :	RF	852	LF	855	RR	890	LR	888

Vehicle's Wheel Base : 3250 mm

Location of Vehicle's C.G. : 1,556.7 mm rearward of front wheel center.

FUEL SYSTEM DATA :

Fuel System Capacity From Owner's Manual = 94.6 liters

Usable Capacity Figure Furnished by COTR = 94.6 liters

Test Volume Range (92 to 94% of Usable Capacity) = 87.0 to 89.0 liters

ACTUAL TEST VOLUME= 87.5 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-center, ahead of rear axle; Lines - Left frame rail.

DATA SHEET NO. 3 POST IMPACT DATA

TYPE OF TEST:

Type of Test : Frontal Barrier Impact Angle : 0°

Test Date : December 16, 1997 Time: 13:15 Temperature: 8.3 °C

Vehicle NHTSA No. : MW0207

Required Impact Velocity Range : 55.7 to 57.1 kph

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

Trap No. 1 = 56.2 kph; Trap No. 2 = 56.2 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	=	5155	; C/L	=	5235	; Left	= 5150
Post-Test	Right	=	4545	; C/L	=	4510	; Left	= 4505
Crush	Right	=	610.0	; C/L	=	725.0	; Left	= 645.0
AVERAGE		=	660.0	mm				

VEHICLE REBOUND: (From rigid barrier only.)

Distance from front of test vehicle to impact point :

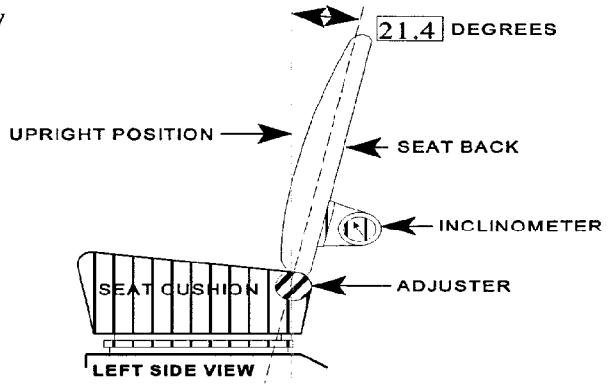
	Right	=	308	; C/L	=	318	; Left	= 338
AVERAGE		=	321.3	mm				

DATA SHEET NO. 4 TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1998 Vehicle Model: Ford F-150 4X2 Regular Cab Body Style : Pick-up

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 : 21.4°

Measurement instructions : Seatback angle is measured relative to rocker sill. Cut seatback material 330 mm above the back pivot. Place inclinometer on seat frame avoid taking measurement on reinforced plate.

Seat back angle for passenger's seat : 21.4°

Measurement instructions : Same as driver's seat.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : Place seat in mid-position or first notch rearward of mid-travel distance. Seat tracks were numbered from 0 to 18. Mid-position was detent number 9.

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	94.6	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 =	94.6	liters

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 87.5 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.

Fuel pump operates when vehicle ignition is turned on.

4. STEERING COLUMN ADJUSTMENTS :

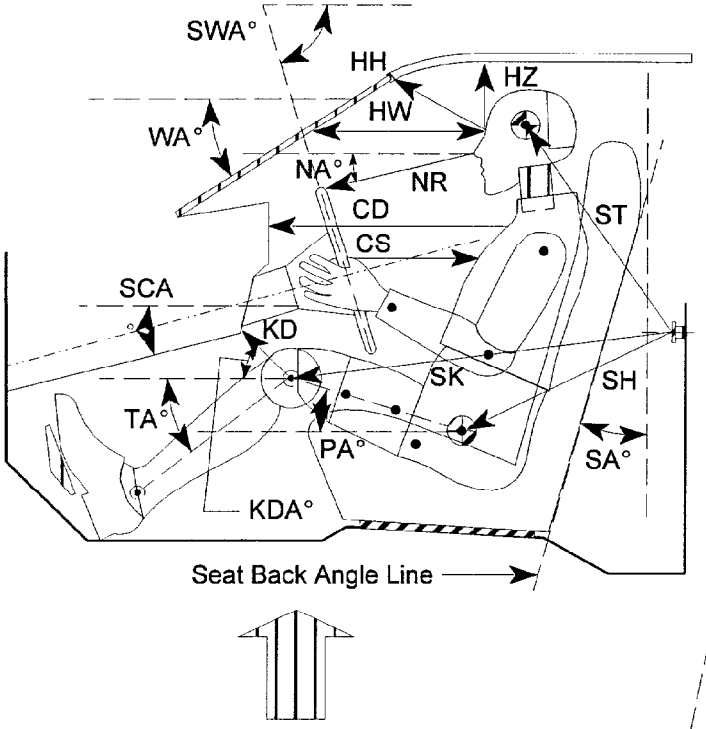
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine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

Operational Instructions: This vehicle was not equipped with a tilt steering column.

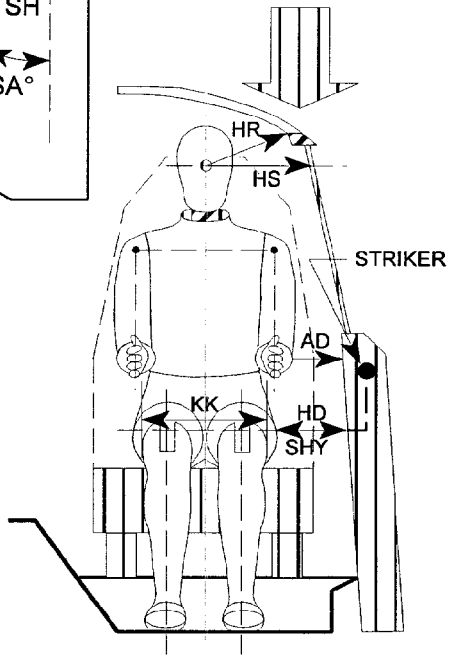
5. SEAT BELT UPPER ANCHORAGE

Nominal design riding position: There were five detents of seatbelt anchor adjustments. Mid-position is detent number 3.

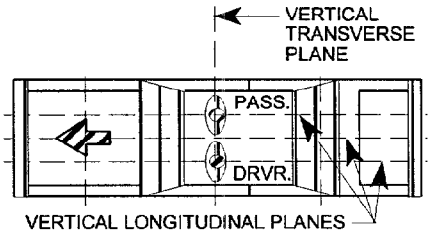
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



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



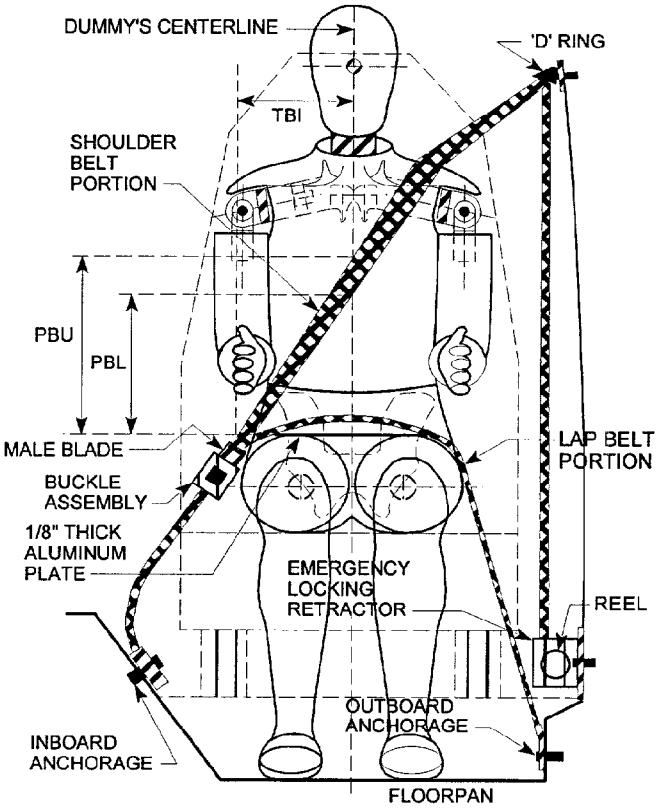
DATA SHEET NO. 5 FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE

	DRIVER (Serial #064)			PASS. (Serial # 245)		
WA°	35 deg.			N/A		
SWA°	70 deg.			N/A		
SCA°	20 deg.			N/A		
SA°	21.4 deg.			21.4 deg.		
HZ	244			238		
HH	409			386		
HW	650			639		
HR	255			255		
NR	405	Angle	-14 deg.	N/A		
CD	590			578		
CS	342			N/A		
RA	223			N/A		
KDL	146	Angle (KDA)	26 deg.	200		
KDR	160			195	Angle (KDA)	35 deg.
PA°	23 deg.			23 deg.		
TA°	-63 deg.			-53 deg.		
KK	279			272		
ST	660	Angle	22 deg.	675	Angle	25 deg.
SK	760	Angle	85 deg.	750	Angle	87 deg.
SH	370	Angle	100 deg.	367	Angle	96 deg.
SHY	270			260		
HS	351			351		
HD	190			188		
AD	136			150		

Dimensions in millimeters

DATA SHEET NO. 6 SEAT BELT POSITIONING DATA

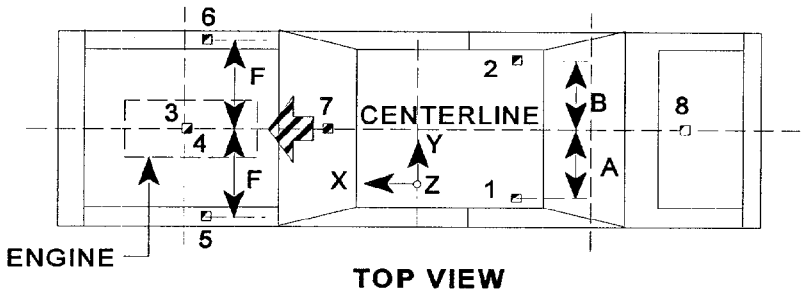
SEAT BELT POSITIONING DATA



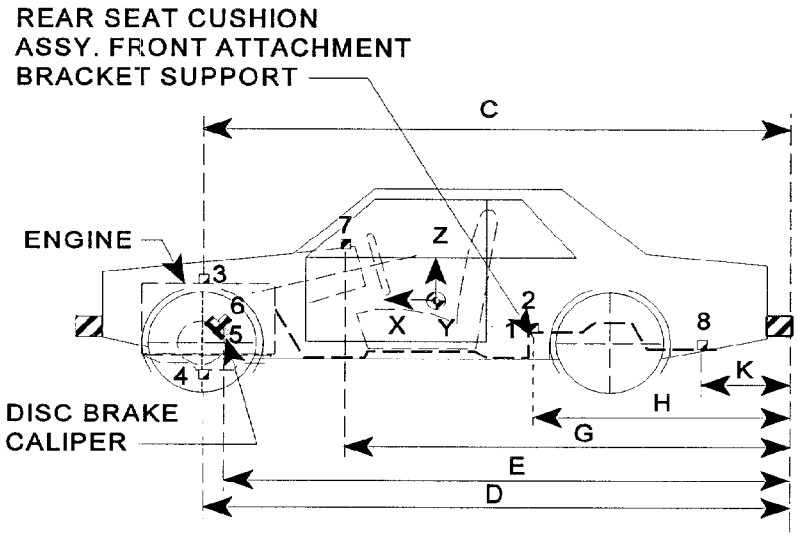
FRONT VIEW OF DUMMY

	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	320	330
PBL-- Top surface of alum. plate to belt lower edge	235	255
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	480
B Right Rear Seat Crossmember Y	-480
C Top of Engine X	4328
D Bottom of Engine X	3989
E Disc Brake Calipers X	4035
F Disc Brake Calipers Y	±407
G Instrument Panel X	3350
H Rear Seat Crossmembers X	2485

LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
		Pos.	msec.	Neg.	msec.
1	Rear Seat X-Member @ Left Side	4.4	188.0	-37.4	24.5
2	Rear Seat X-Member @ Right Side	4.6	171.8	-32.3	21.1
3	Top of Engine Block	15.6	64.9	-87.0	44.2
4	Bottom of Engine	*	*	*	*
5	Disc Brake Caliper @ Left Side	**	**	**	**
6	Disc Brake Caliper @ Right Side	39.3	13.4	-60.6	59.8
7	Instrument Panel	34.6	85.5	-56.4	76.0
8	Rear Seat X-Member @ Left-Redundant	7.7	12.9	-33.7	21.5
9	Rear Seat X-Member @ Right-Redundant	13.2	13.4	-31.0	21.1

* Data is not accurate after 160 ms.
** Data is not accurate after 25 ms.

DATA SHEET NO. 7 VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

DIMENSION	LENGTH (mm)
	PRE-TEST VALUES
A Left Rear Seat Crossmember Y	480
B Right Rear Seat Crossmember Y	-480
C Top of Engine X	4328
D Bottom of Engine X	3989
E Disc Brake Calipers X	4035
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LOCATION NUMBER	DESCRIPTION	MAXIMUM VALUE (g's)			
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1	Rear Seat X-Member @ Left Side	4.4	188.0	-37.4	24.5
2	Rear Seat X-Member @ Right Side	4.6	171.8	-32.3	21.1
3	Top of Engine Block	15.6	64.9	-87.0	44.2
4	Bottom of Engine	*	*	*	*
5	Disc Brake Caliper @ Left Side	*	*	*	*
6	Disc Brake Caliper @ Right Side	39.3	13.4	-60.6	59.8
7	Instrument Panel	34.6	85.5	-56.4	76.0
8	Rear Seat X-Member @ Left-Redundant	7.7	12.9	-33.7	21.5
9	Rear Seat X-Member @ Right-Redundant	13.2	13.4	-31.0	21.1

* Data is not accurate after 160 ms.
** Data is not accurate after 25 ms.

DATA SHEET NO. 8 DUMMY INJURY CRITERIA VALUES

NHTSA Test No.: MW0207 Vehicle: 1998 Ford F-150 4X2 Regular Cab Pick-up

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec.	Neg.	msec.
Pos. 1 Head X	**g's**	10.2	242.9	-42.2	87.7
Pos. 1 Head Y	**g's**	5.1	173.2	-13.0	92.9
Pos. 1 Head Z	**g's**	35.7	73.1	-10.3	144.4
Pos. 1 Head Resultant	**g's**	50.2	85.9	0.0	4.6
Pos. 2 Head X	**g's**	13.3	224.2	-55.7	88.8
Pos. 2 Head Y	**g's**	9.8	224.5	-8.6	171.4
Pos. 2 Head Z	**g's**	44.4	71.7	-11.0	135.7
Pos. 2 Head Resultant	**g's**	59.6	87.9	0.1	-29.5
Pos. 1 Chest X	**g's**	6.1	186.5	-39.8	70.5
Pos. 1 Chest Y	**g's**	2.1	86.2	-9.7	55.3
Pos. 1 Chest Z	**g's**	16.6	71.5	-13.8	143.8
Pos. 1 Chest Resultant	**g's**	43.5	70.7	0.0	-33.8
Pos. 1 Chest Displacement	**mm**	0.0	12.0	-42.3	81.4
Pos. 2 Chest X	**g's**	7.4	189.0	-46.0	73.4
Pos. 2 Chest Y	**g's**	10.5	90.5	-8.0	136.7
Pos. 2 Chest Z	**g's**	16.8	73.9	-16.7	137.4
Pos. 2 Chest Resultant	**g's**	49.4	73.6	0.0	-28.5
Pos. 2 Chest Displacement	**mm**	0.0	-15.2	-41.6	82.2
Pos. 1 Left Femur	**N**	300.4	33.0	-5297.8	46.9
Pos. 1 Right Femur	**N**	562.2	43.3	-6647.7	55.4
Pos. 2 Left Femur	**N**	418.0	47.3	-5190.8	57.9
Pos. 2 Right Femur	**N**	268.6	33.1	-4027.8	50.0
Pos. 1 Left Belt Load	**N**	4544.1	63.5	-227.4	187.9
Pos. 1 Torso Belt Load	**N**	7645.4	74.9	-283.5	187.8
Pos. 2 Right Belt Load	**N**	5910.4	61.6	-234.7	178.1
Pos. 2 Torso Belt Load	**N**	9205.9	74.4	-281.9	187.9

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

NHTSA Test No.: MW0207 Vehicle: 1998 Ford F-150 4X2 Regular Cab Pick-up

	HEAD INJURY CRITERIA (HIC)			
	HIC**	t_1 (msec)	t_2 (msec)	Average Acceleration t_1 to t_2
Position #1 - Driver	496.92	66.500	102.500	45.29
Position #2 - Passenger	614.87	64.300	100.300	49.32

** 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	42.303	69.6479	72.6479	378.574
Position #2 - Passenger	46.320	71.9111	74.9111	459.182

* 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 Ford F-150 4X2 Regular Cab Pick-up

NHTSA Test No.: MW0207 Test Date: December 16, 1997

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Upper Neck Fx	N	438.3	33.0	-345.3	77.3
Pos. 1 Upper Neck Fy	N	212.6	170.1	-448.8	33.0
Pos. 1 Upper Neck Fz	N	2770.5	75.6	-1113.0	33.0
Pos. 1 Neck Force Result	N	2793.5	75.6	3.4	8.6
Pos. 1 Upper Neck Mx	N-m	26.4	184.3	-24.3	95.3
Pos. 1 Upper Neck My	N-m	39.6	102.5	-34.0	275.4
Pos. 1 Upper Neck Mz	N-m	10.9	111.7	-9.5	33.1
Pos. 1 Neck Moment Result	N-m	45.6	102.6	0.0	-34.0
Pos. 2 Upper Neck Fx	N	425.9	33.1	-480.3	61.6
Pos. 2 Upper Neck Fy	N	295.8	87.6	-474.8	170.6
Pos. 2 Upper Neck Fz	N	2156.3	78.5	-1047.6	33.1
Pos. 2 Neck Force Result	N	2192.8	78.5	6.3	12.6
Pos. 2 Upper Neck Mx	N-m	18.1	96.4	-18.1	162.1
Pos. 2 Upper Neck My	N-m	30.5	169.8	-26.3	248.6
Pos. 2 Upper Neck Mz	N-m	24.0	94.0	-10.3	170.7
Pos. 2 Neck Moment Result	N-m	33.7	169.8	0.0	-34.2
Pos. 1 Pelvic (X)	g's	6.4	125.9	-57.5	52.4
Pos. 1 Pelvic (Y)	g's	11.1	44.5	-11.6	51.0
Pos. 1 Pelvic (Z)	g's	3.1	279.4	-14.0	130.6
Pos. 1 Pelvic (R)	g's	59.0	52.3	0.1	-26.3
Pos. 2 Pelvic (X)	g's	7.3	124.1	-66.9	58.3
Pos. 2 Pelvic (Y)	g's	11.4	62.4	-8.3	121.4
Pos. 2 Pelvic (Z)	g's	5.6	109.9	-15.4	137.7
Pos. 2 Pelvic (R)	g's	67.9	58.3	0.0	-20.3

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

Vehicle Year/Make/Model/Body Style: 1998 Ford F-150 4X2 Regular Cab Pick-up

NHTSA Test No.: MW0207 Test Date: December 16, 1997

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
P1 Lt Upper Tibia Mx	N-m	37.4	49.6	-41.6	133.7
P1 Lt Upper Tibia My	N-m	24.1	143.3	-161.7	50.0
P1 Lt Lower Tibia Fx	N	74.2	141.1	-740.3	49.8
P1 Lt Lower Tibia Fz	N	228.4	91.0	-2123.9	53.3
P1 Lt Lower Tibia My	N-m	16.1	134.8	-183.2	50.0
P1 Rt Upper Tibia Mx	N-m	53.8	53.5	-21.9	68.1
P1 Rt Upper Tibia My	N-m	31.8	61.0	-133.1	52.0
P1 Rt Lower Tibia Fx	N	246.0	52.5	-746.9	63.7
P1 Rt Lower Tibia Fz	N	122.0	54.7	-671.3	66.3
P1 Rt Lower Tibia My	N-m	86.6	66.6	-38.5	47.6
Pos. 2 Lt Upper Tibia Mx	N-m	37.4	57.7	-9.4	64.7
Pos. 2 Lt Upper Tibia My	N-m	46.4	55.8	-130.3	61.8
Pos. 2 Lt Lower Tibia Fx	N	554.4	54.9	-1020.6	61.2
Pos. 2 Lt Lower Tibia Fz	N	269.8	114.1	-1858.4	68.0
Pos. 2 Lt Lower Tibia My	N-m	78.9	71.1	-95.6	59.6
Pos. 2 Rt Upper Tibia Mx	N-m	34.6	101.3	-36.4	47.9
Pos. 2 Rt Upper Tibia My	N-m	166.5	48.3	-25.1	45.3
Pos. 2 Rt Lower Tibia Fx	N	1688.8	48.1	-1660.0	73.1
Pos. 2 Rt Lower Tibia Fz	N	870.4	53.0	-1147.9	66.6
Pos. 2 Rt Lower Tibia My	N-m	117.7	48.0	-11.6	21.1

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

Vehicle Year/Make/Model/Body Style: 1998 Ford F-150 4X2 Regular Cab Pick-up

NHTSA Test No.: MW0207 Test Date: December 16, 1997

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Left Ankle X	**g's**	*	*	*	*
Pos. 1 Left Ankle Z	**g's**	52.2	47.3	-53.2	47.7
Pos. 1 Left Toe Z	**g's**	110.7	45.3	-99.8	48.7
Pos. 1 Right Ankle X	**g's**	36.6	67.9	-94.2	50.7
Pos. 1 Right Ankle Z	**g's**	4.4	94.3	-64.3	59.8
Pos. 1 Right Toe Z	**g's**	28.2	63.2	-98.7	59.0
Pos. 2 Left Ankle X	**g's**	25.9	67.2	-112.6	60.5
Pos. 2 Left Ankle Z	**g's**	23.0	71.2	-71.8	59.8
Pos. 2 Left Toe Z	**g's**	63.6	48.7	-118.7	58.8
Pos. 2 Right Ankle X	**g's**	10.3	116.8	-118.3	48.1
Pos. 2 Right Ankle Z	**g's**	23.4	49.8	-61.8	48.2
Pos. 2 Right Toe Z	**g's**	59.0	65.4	-172.8	48.1

* Data did not record.

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

NHTSA Test No.: MW0207 Vehicle: 1998 Ford F-150 4X2 Regular Cab Pick-up

DESCRIPTION	UNIT	MAXIMUM VALUE			
		Pos.	msec	Neg.	msec
Pos. 1 Head X(R)	g's	8.7	243.6	-45.3	87.6
Pos. 1 Head Y(R)	g's	5.6	173.1	-13.8	92.8
Pos. 1 Head Z(R)	g's	37.8	69.1	-9.6	145.2
Pos. 1 Head Resultant(RR)	g's	53.6	76.8	0.1	3.1
Pos. 2 Head X(R)	g's	11.7	227.5	-59.8	88.7
Pos. 2 Head Y(R)	g's	9.8	76.5	-7.6	158.6
Pos. 2 Head Z(R)	g's	46.6	71.8	-9.4	136.1
Pos. 2 Head Resultant(RR)	g's	64.1	85.1	0.0	-29.3
Pos. 1 Chest X(R)	g's	4.9	180.5	-39.3	70.6
Pos. 1 Chest Y(R)	g's	2.3	86.3	-10.4	54.0
Pos. 1 Chest Z(R)	g's	16.3	71.3	-13.3	143.4
Pos. 1 Chest Resultant(RR)	g's	42.9	70.7	0.0	-36.0
Pos. 2 Chest X(R)	g's	*	*	*	*
Pos. 2 Chest Y(R)	g's	9.7	74.9	-8.6	137.7
Pos. 2 Chest Z(R)	g's	15.4	73.8	-15.6	137.3
Pos. 2 Chest Resultant(RR)	g's	*	*	*	*

* Data is not accurate after 50 ms.

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

NHTSA Test No.: MW0207 Vehicle: 1998 Ford F-150 4X2 Regular Cab Pick-up

	HEAD INJURY CRITERIA (HIC) **REDUNDANT**			
	HIC**	t_1 (msec)	t_2 (msec)	Average Acceleration t_1 to t_2
Position #1 - Driver	566.31	66.200	102.200	47.72
Position #2 - Passenger	734.29	63.400	99.400	52.95

** 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	41.742	69.3441	72.3441	375.545
Position #2 - Passenger	***	***	***	***

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

*** Position #2 clip could not be calculated due to the position #2 chest x(R) being inaccurate after 50 ms.

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.	2155	2155
Shoulder belt length as measured on Part 572 Dummy.	935	935
Lap belt length as measured on Part 572 Dummy.	935	935
SHOULDER BELT SPOOL-OFF DATA:		
As determined by film analysis.	*	*
As determined mechanically.	40	48
As determined electronically.	**	**
BELT STRETCH DATA:		
Measured electronically between shoulder belt load cell and the "D" ring.	35.5 mm/M	46.6 mm/M
Measured mechanically.	0 mm/M	1 mm/M

Dimensions in millimeters

* On-board cameras could not be installed due to space limitations inside the cab.
** Seatbelt spool out potentiometers could not be installed due to the location of the D-ring.

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 28 mm molding.

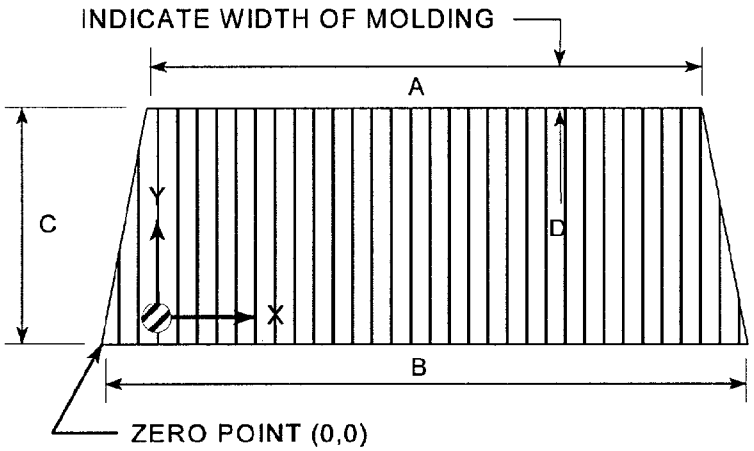
FMVSS 212 REQUIREMENTS:

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	2262.5	2262.5	100
LEFT SIDE	2262.5	2262.5	100
TOTAL	4,525	4,525	100

AREA OF RETENTION FAILURE:



FRONT VIEW OF WINDSHIELD

DIMENSIONS (mm)	
A	1360
B	1725
C	720
D	28

FAILURE DETAILS: None

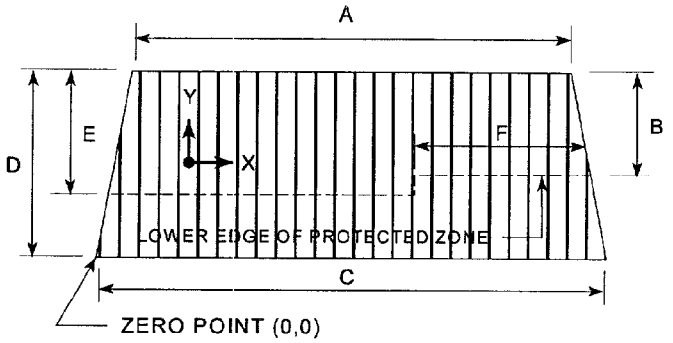
DATA SHEET NO. 11 FMVSS NO. 219 (PARTIAL) - "WINDSHIELD ZONE INTRUSION" DATA

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	1360
B	420
C	1725
D	720
E	520
F	755

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.: MW0207 TEST DATE: December 16, 1997

VEHICLE MAKE/MODEL: 1998 Ford F-150 4X2 Regular Cab

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:

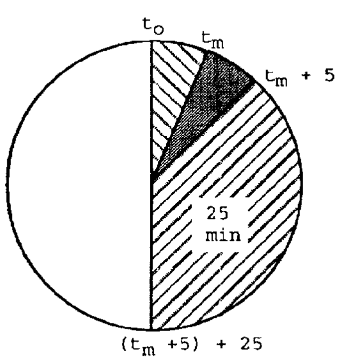
X Frontal (56 kph)

\- 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:



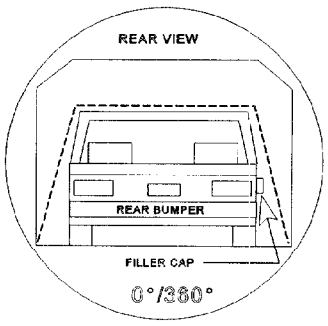
	ACTUAL	MAX ALLOWED
1. From impact until vehicle motion ceases	0	28 g
2. For 5 minute period after vehicle motion ceases	0	141 g
3. For next 25 minutes	0	28 g/min.

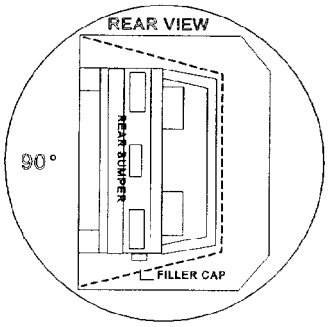
SOLVENT SPILLAGE DETAILS: None

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

TEST PHASE:
0-90 deg.

NHTSA Test No.:
MW0207





INDETERMINATION 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

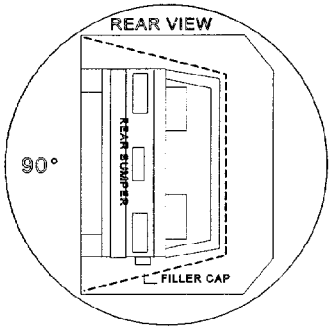
Note: Record spillage for whole minute intervals only as determined above.

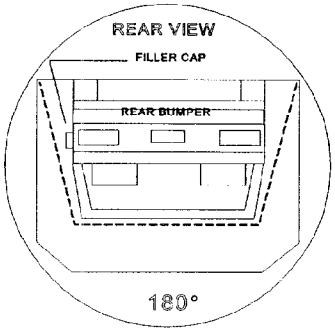
IV. SOLVENT SPILLAGE LOCATION(S): None

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

TEST PHASE:
90-180 deg.

NHTSA Test No.:
MW0207





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	08	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	8	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

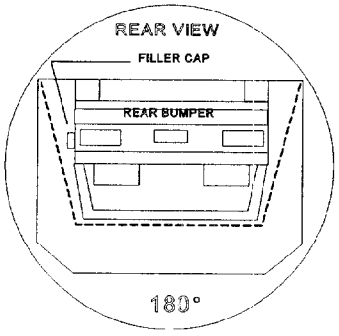
Note: Record spillage for whole minute intervals only as determined above.

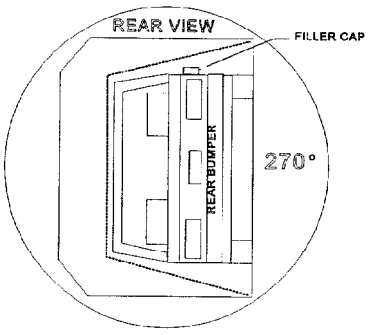
IV. SOLVENT SPILLAGE LOCATION(S): None

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

TEST PHASE:
180-270 deg.

NHTSA Test No.:
MW0207





I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90 deg. Rotation Time (Spec. Range = 1 to 3 minutes)	1	minutes	04	seconds
FMVSS 301 Position Hold Time +	5	minutes	00	seconds
TOTAL	6	minutes	4	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

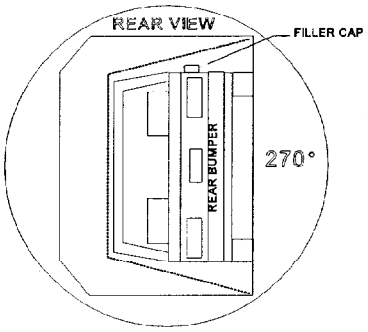
Note: Record spillage for whole minute intervals only as determined above.

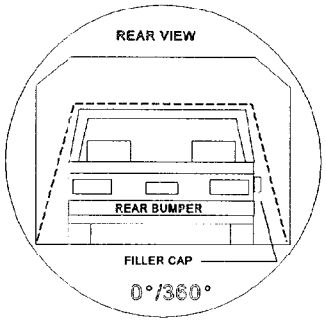
IV. SOLVENT SPILLAGE LOCATION(S): None

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

TEST PHASE:
270-360 deg.

NHTSA Test No.:
MW0207





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

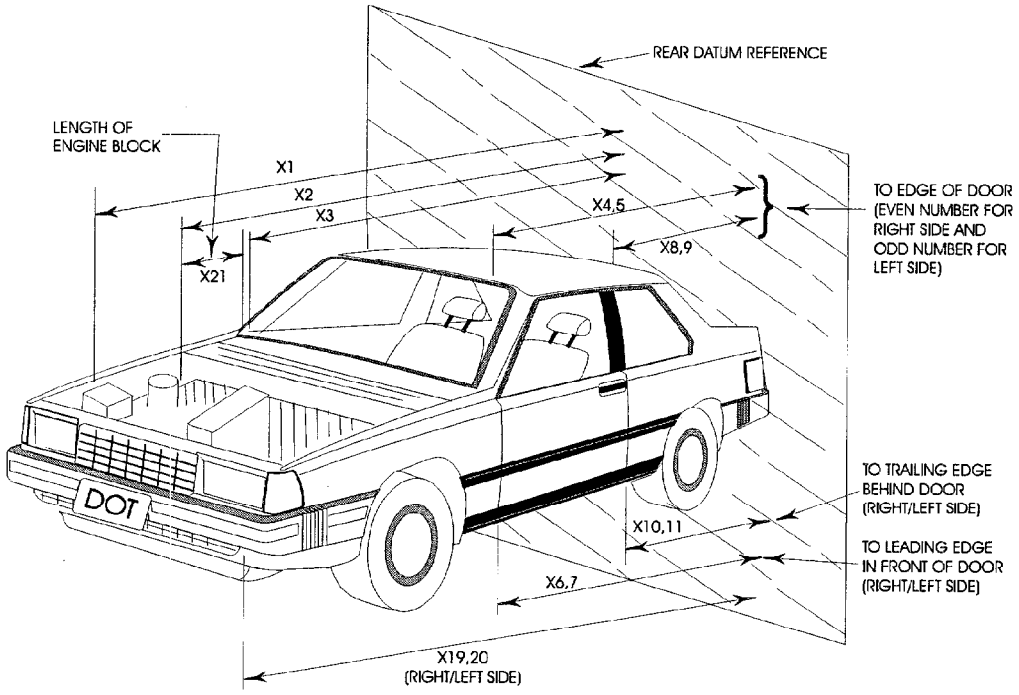
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

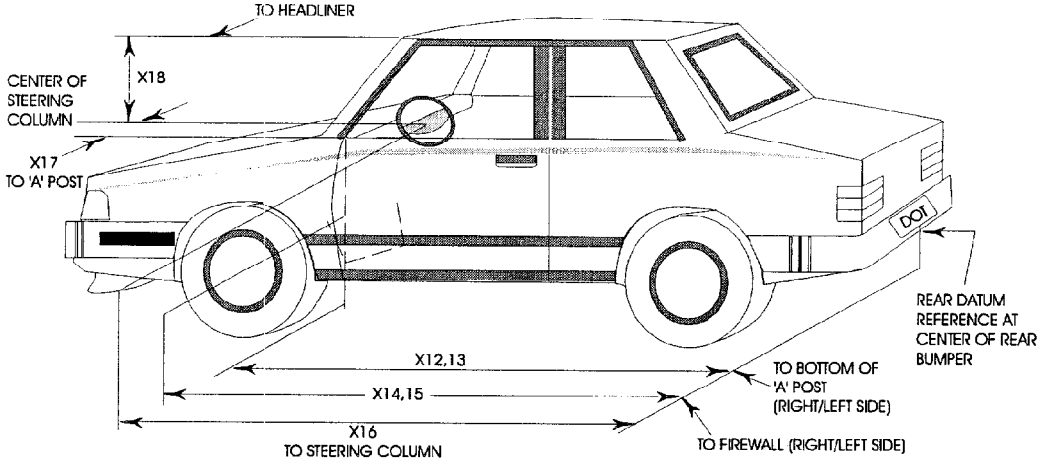
0	0	0	N/A

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

IV. SOLVENT SPILLAGE LOCATION(S): None

TEST VEHICLE MEASUREMENTS





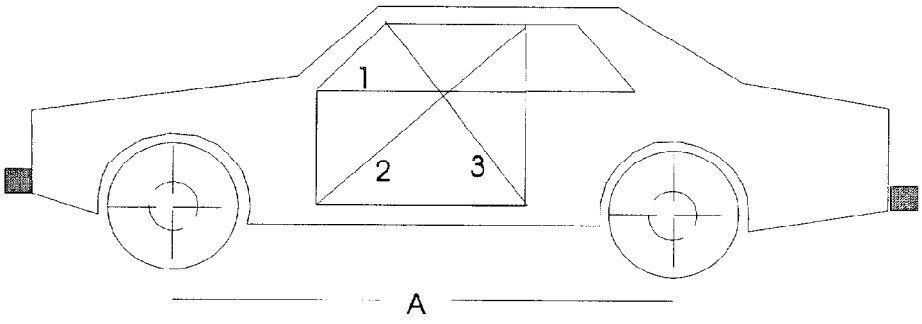
DATA SHEET NO.14 VEHICLE MEASUREMENTS

		All Dimensions in mm		
No.		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	5235	4510	725
X2	Rear Surface of Vehicle to Front of Engine	4300	4100	200
X3	Rear Surface of Vehicle to Firewall	4060	3955	105
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3680	3669	11
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3685	3631	54
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3585	3557	28
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3596	3520	76
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2393	2383	10
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2402	2342	60
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2465	2438	27
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2468	2393	75
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3592	3562	30
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3600	3519	81
X14	Rear Surface of Vehicle to Firewall, Right Side	4060	3955	105
X15	Rear Surface of Vehicle to Firewall, Left Side	4060	3955	105
X16	Rear Surface of Vehicle to Steering Column	3185	3175	10
X17	Center of Steering Column to "A" Post	430	435	-5
X18	Center of Steering Column to Headliner	500	465	35
X19	Rear Surface of Vehicle to Right Side of Front Bumper	5155	4545	610
X20	Rear Surface of Vehicle to Left Side of Front Bumper	5150	4505	645
X21	Length of Engine Block	550	550	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3470	3450	20
CD	Rear Surface of Vehicle to Center of Dash Panel	3405	3385	20
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3295	3255	40

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

DOOR OPENING WIDTH



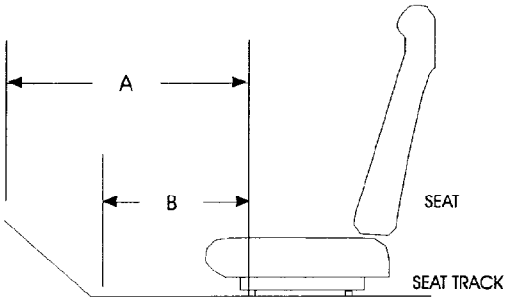
UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	1215	1750	1330	1215	1760	1320
AFTER TEST	1200	1750	1345	1200	1760	1330
DIFFERENCE	15	0	-15	15	0	-10

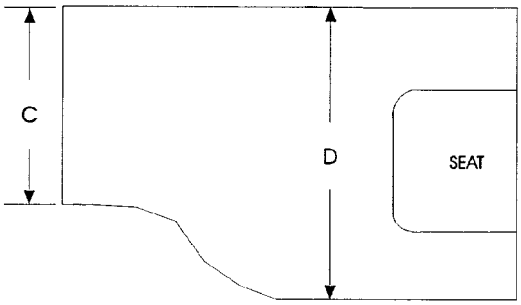
UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	3250	3250
AFTER TEST	2900	2925
DIFFERENCE	350	325

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

STATIC FOOTWELL DEFORMATION





DRIVER

Measurement	Pre-Test	Post-Test	Difference
A	690	670	20
B	580	570	10
C	440	445	-5
D	500	515	-15

PASSENGER

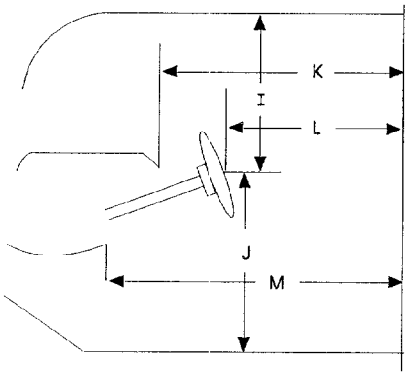
Measurement	Pre-Test	Post-Test	Difference
A	700	670	30
B	530	520	10
C	450	450	0
D	500	500	0

Units = mm

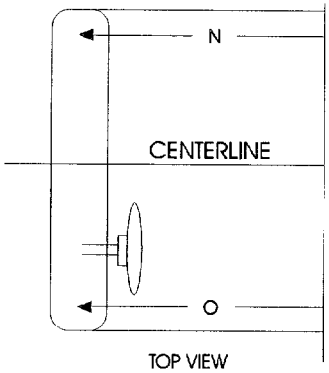
DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

VEHICLE INTRUSION MEASUREMENTS

STATIC PASSENGER COMPARTMENT INTRUSION

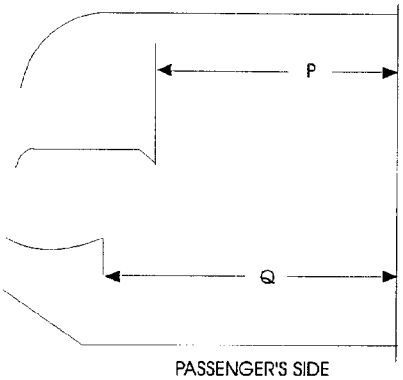


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



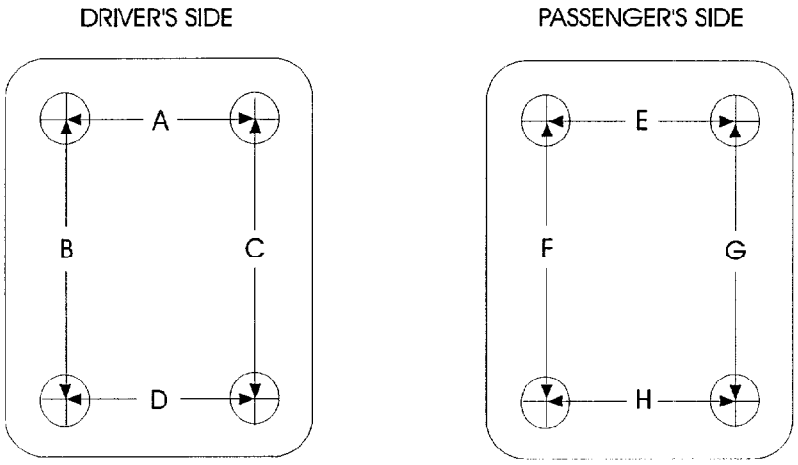
PASSENGER'S SIDE

Measurement	Pre-Test	Post-Test	Difference
I	475	460	15
J	690	705	-15
K	825	780	45
L	600	590	10
M	800	830	-30
N	885	865	20
O	710	870	-160
P = K (PASS.)	840	830	10
Q = M (PASS.)	810	800	10

Units = mm

DATA SHEET NO.14 VEHICLE MEASUREMENTS (cont.)

FLOORBOARD DEFORMATION



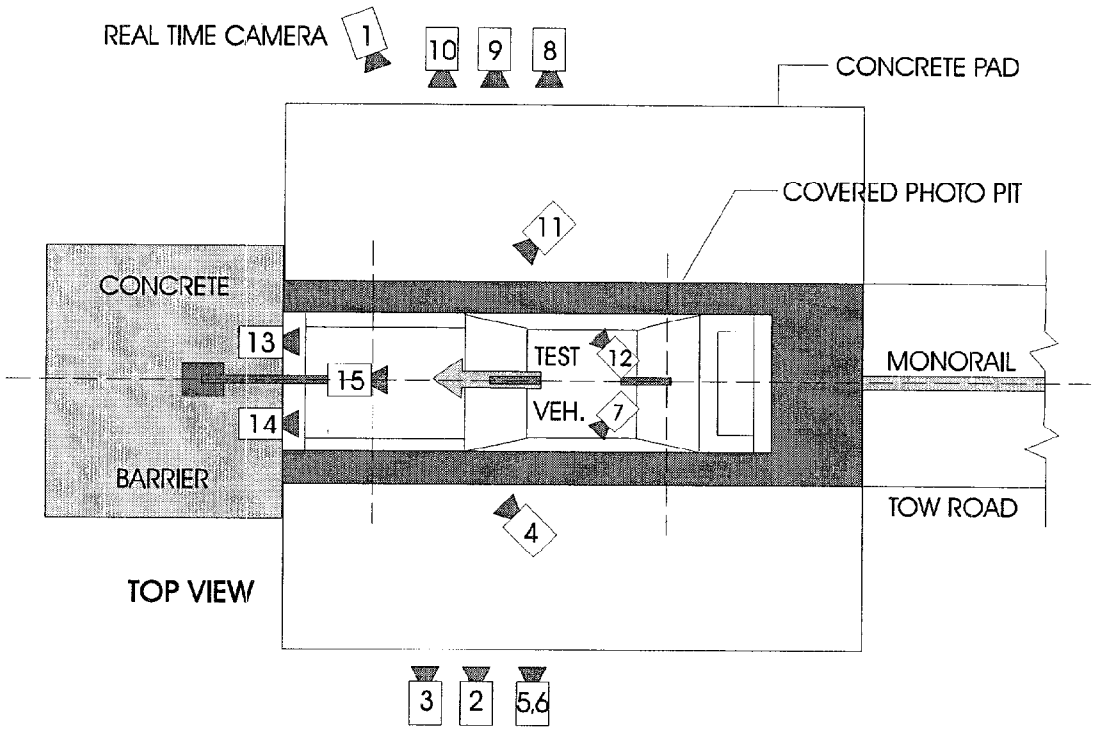
TOP VIEW THROUGH FLOOR PAN

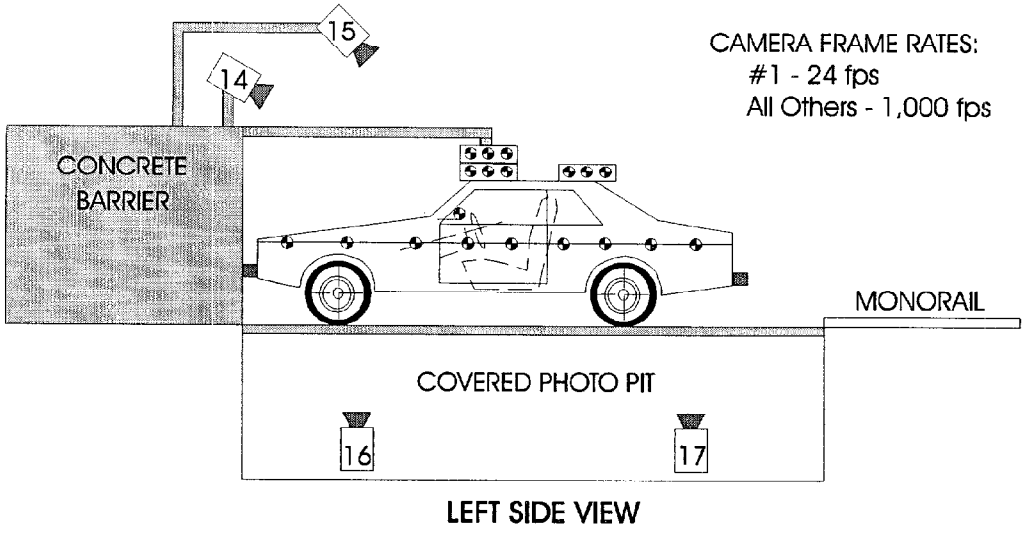
Measurement	Pre-Test	Post-Test	Difference
A	150	153	-3
B	295	291	4
C	300	300	0
D	85	83	2
E	147	146	1
F	354	350	4
G	359	357	2
H	93	92	1

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.: MW0207 Vehicle: 1998 Ford F-150 4X2 Regular Cab Pick-up

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	7020	1500	1110	-3	6514	12.5	1020
3	Left Side View	8505	785	1275	-4	7999	25	1020
4	Driver and Interior View	5105	2785	1995	-10	-	25	N.T.
5	Steering Column (Bottom)	7985	1875	1165	-4	7479	25	1020
6	Steering Column (Top)	7985	1875	1765	-6	7479	25	1020
7	Left Belt	-	-	-	-	-	-	-
8	Overall Right Side	7200	2135	1295	-3	7706	13	1050
9	Right Side View	8640	1590	1330	-4	9146	25	1020
10	Right Passenger View	8170	2225	1550	-4	8676	35	1000
11	Passenger and Interior View	5140	3285	2010	-10	-	25	1000
12	Right Belt	-	-	-	-	-	-	-
13	Passenger Front View	545	-450	2000	-44	-	13	1020
14	Driver Front View	545	-450	2000	-41	-	13	1000
15	Windshield View	0	0	3374	-56	-	13	1000
16	Pit View of Engine	0	930	-3048	90	-	8	1000
17	Pit View of Fuel Tank	0	2475	-3048	90	-	8	1000

*X = film plane to monorail centerline

Y = film plane to impact location

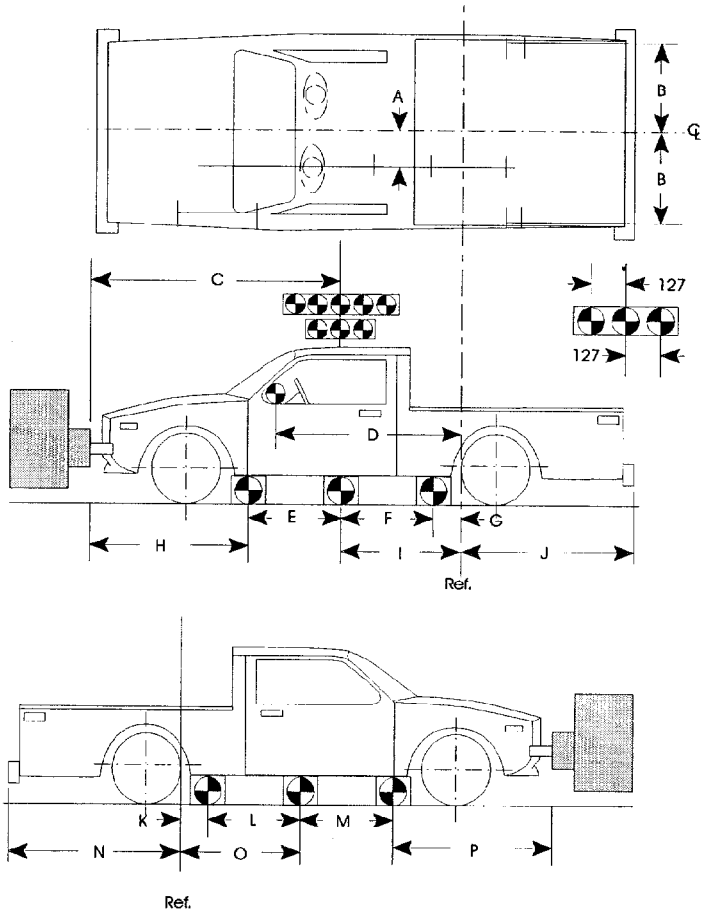
Z = film plane to ground

** = referenced to horizontal plane

N.T. indicates No Timing

(Dimensions in millimeters)

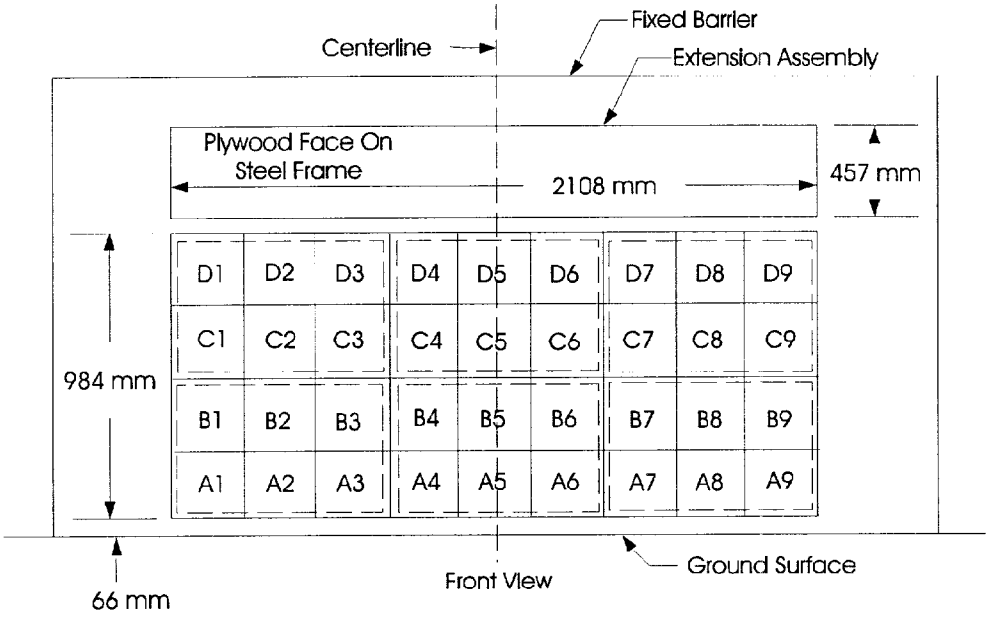
A	430
B	560
C	2075
D	1825
E	980
F	980
G	215
H	1485
I	1195
J	1575
K	215
L	980
M	980
N	1575
O	1195
P	1485



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. : MW0207; Test Date: December 16, 1997; Technician: P. MacDiarmid

Vehicle Model Year/Make/Model: 1998 Ford F-150 4X2 Regular Cab

A. No. of vent holes: 2 -Driver 0 -Passenger

B. Size of vent holes: (mm^2) 707 -Driver 0 -Passenger

C. Total vent area: (mm^2) 1414 -Driver 0 -Passenger

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

Driver: 500 -Height; 550 -Width; 350 -Depth

Passenger: 650 -Height; 600 -Width; 650 -Depth

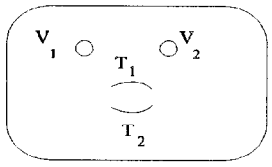
E. Is the air bag tethered?

Driver: X -Yes; - -No; If yes, record length of tether- 250

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: 72P702 30302083A

Generator: 72972105 1ZV0310K31224DP T1JD301K20219 3031905A

Passenger: Air bag: -

Generator: F75X15060B64AA F85B15044A74BAAYCQDP M73252443

DATA SHEET NO.19 ACCIDENT INVESTIGATION DIVISION DATA

FOR 56.3 KPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Ford F-150 4X2 Regular Cab Pick-up

NHTSA Test No.: MW0207 VIN: 2FTZF1722WCA40293

Model Year: 1998 Build Date: 11/97 Test Date: December 16, 1997

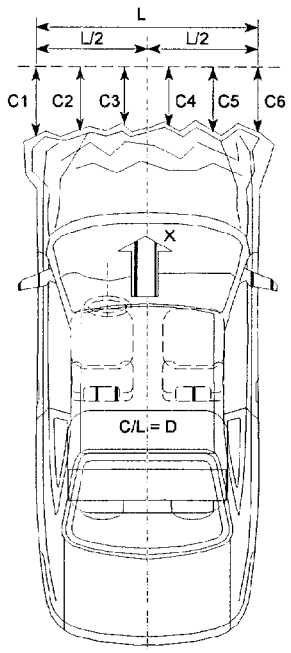
Vehicle Size Category: Full-size Pick-up Test Weight: 2072 kg

Vehicle Wheelbase: 3250 mm; Front Overhang: 1485 mm; Overall Width: 1991 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions:

	PRE	POST	DIFF	
C1 =	4955	4355	-600	mm
C2 =	5175	4530	-645	mm
C3 =	5235	4530	-705	mm
C4 =	5235	4510	-725	mm
C5 =	5175	4550	-625	mm
C6 =	4950	4425	-525	mm



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

Length of Damaged Region:

L1 = 1935 mm

L2 = 967.5 mm

L3 = 387 mm

Appendix A

PHOTOGRAPHS

PHOTOGRAPHS

PHOTOGRAPHS (continued)

PHOTOGRAPH NOT AVAILABLE

Figure A-1 LOAD CELL LOCATIONS

8413-15

Figure A-2 PRE-TEST FRONT VIEW

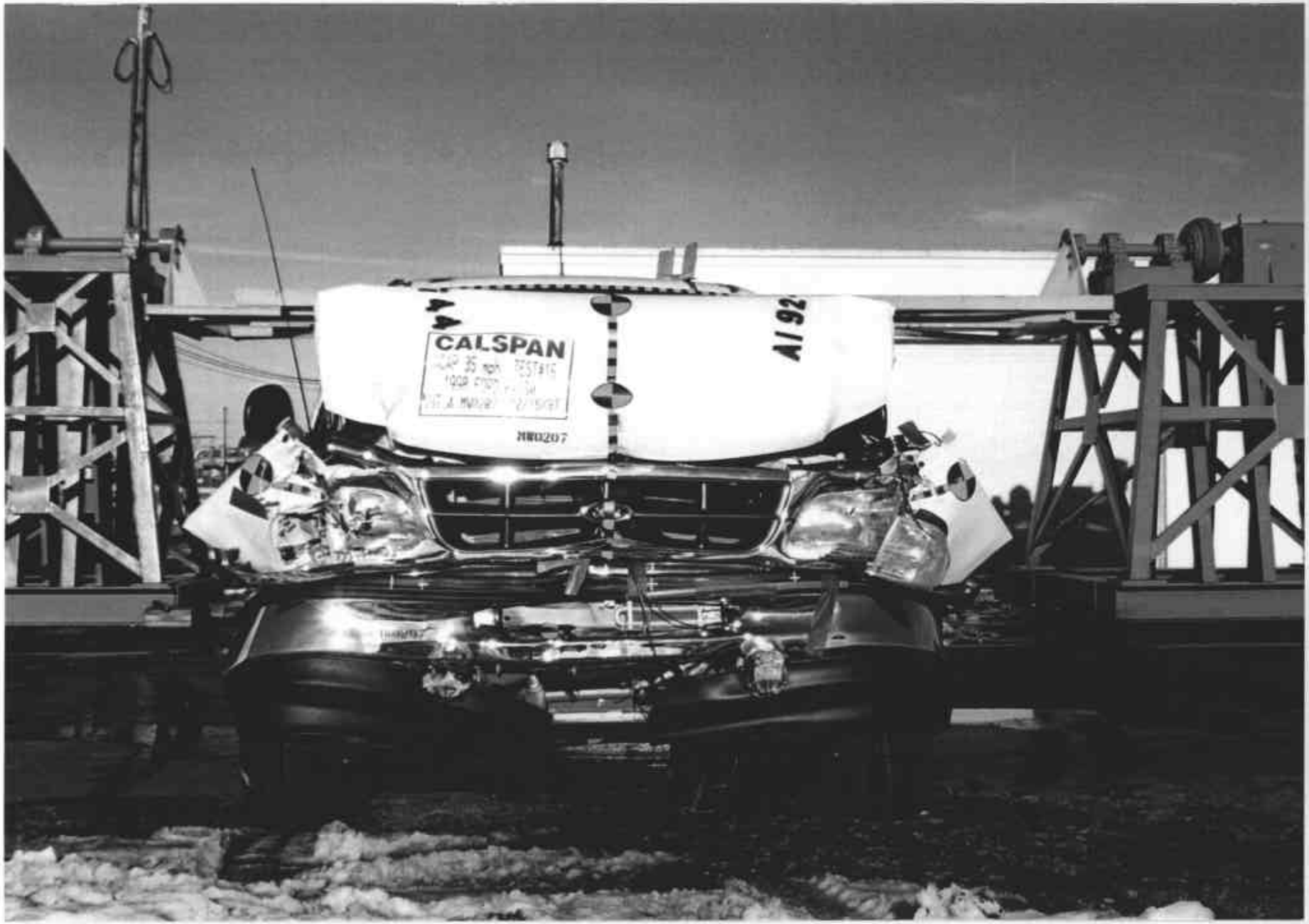


Figure A-3 POST-TEST FRONT VIEW

Figure A-4 PRE-TEST LEFT SIDE VIEW

Figure A-5 POST-TEST LEFT SIDE VIEW

Figure A-6 PRE-TEST RIGHT SIDE VIEW

Figure A-7 POST-TEST RIGHT SIDE VIEW

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

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

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

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

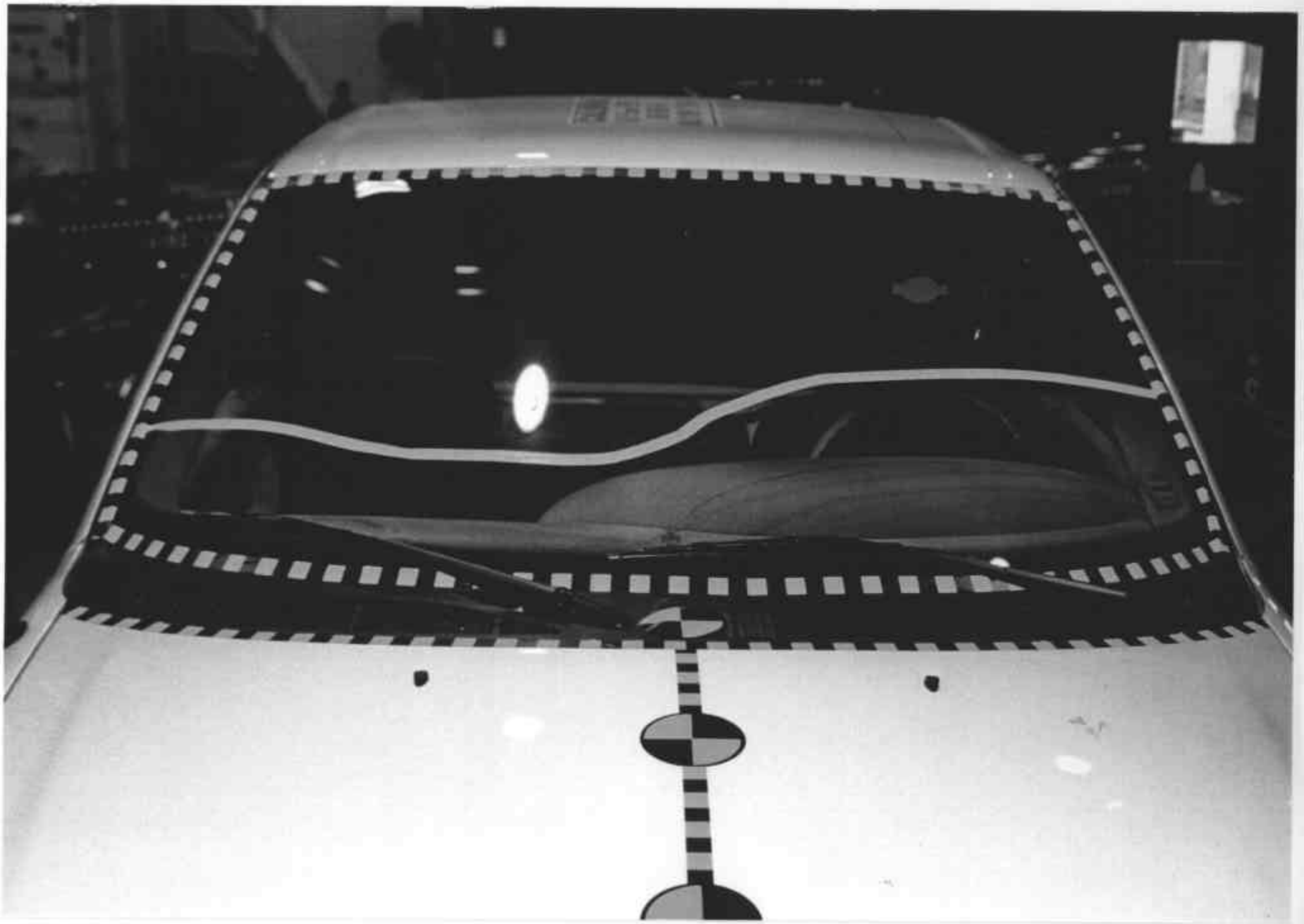


Figure A-12 PRE-TEST WINDSHIELD VIEW

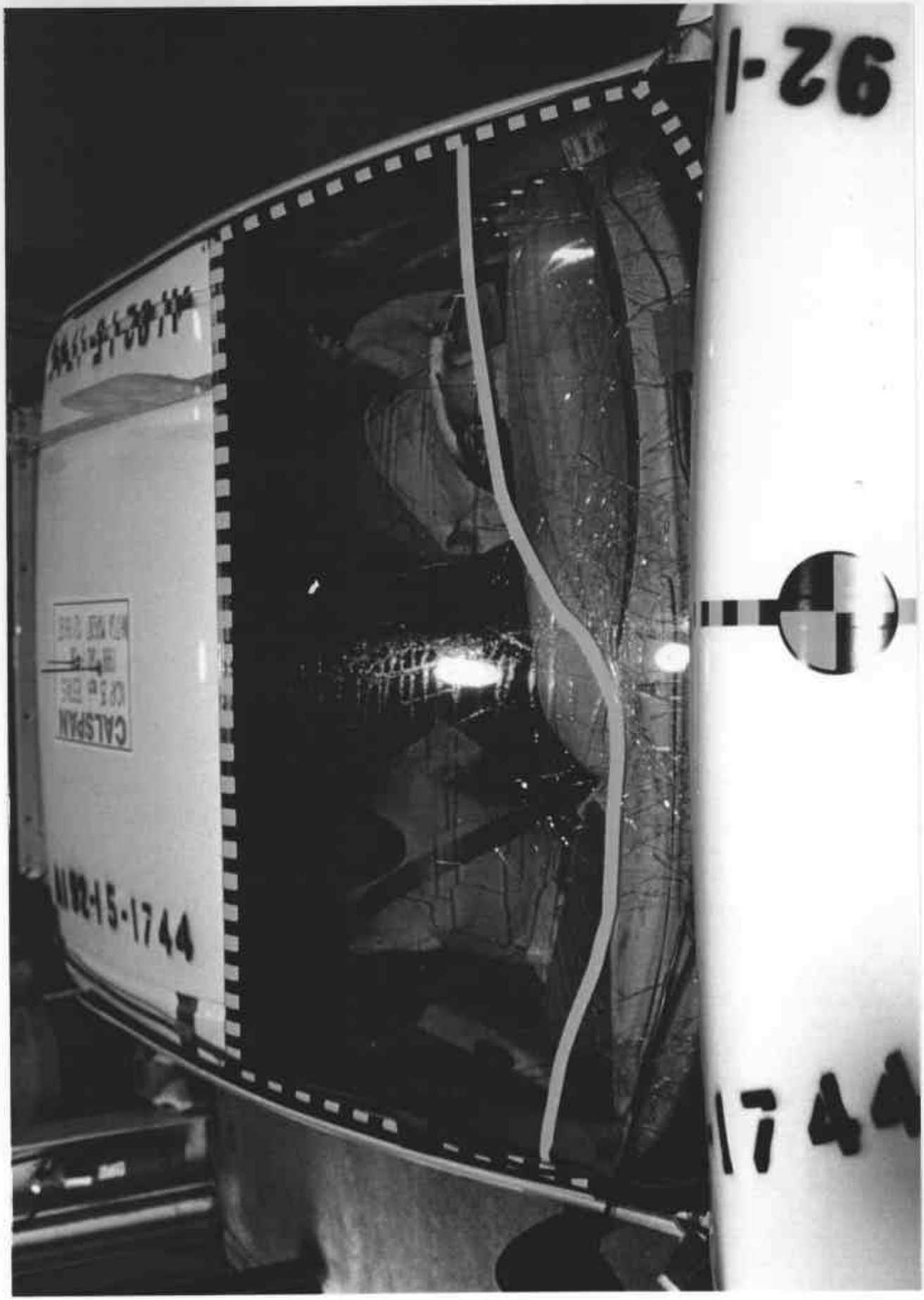


Figure A-13 POST-TEST WINDSHIELD VIEW

Figure A-14 PRE-TEST ENGINE COMPARTMENT VIEW

Figure A-15 FUEL CAP VIEW

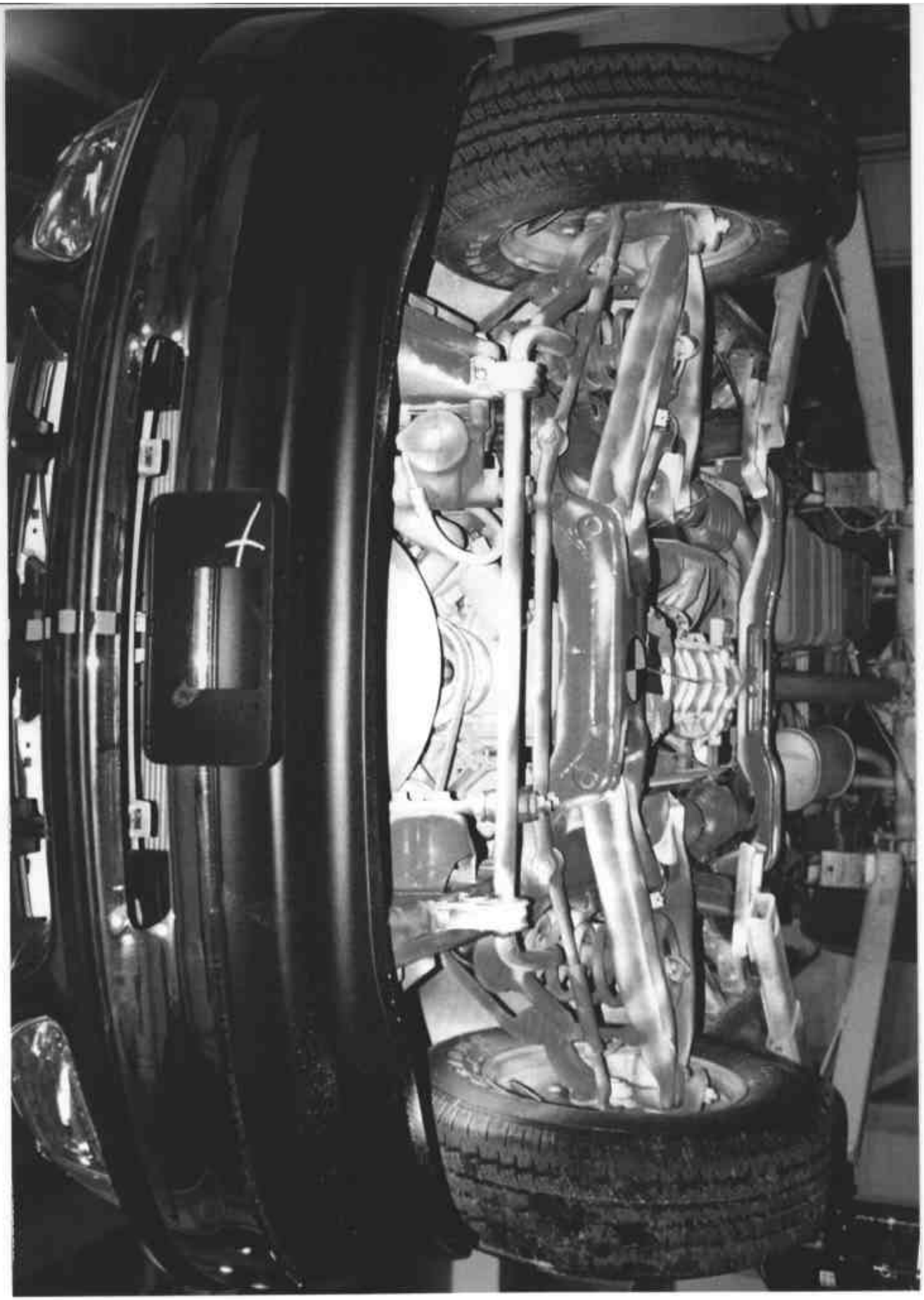


Figure A-16 PRE-TEST FRONT UNDERBODY VIEW

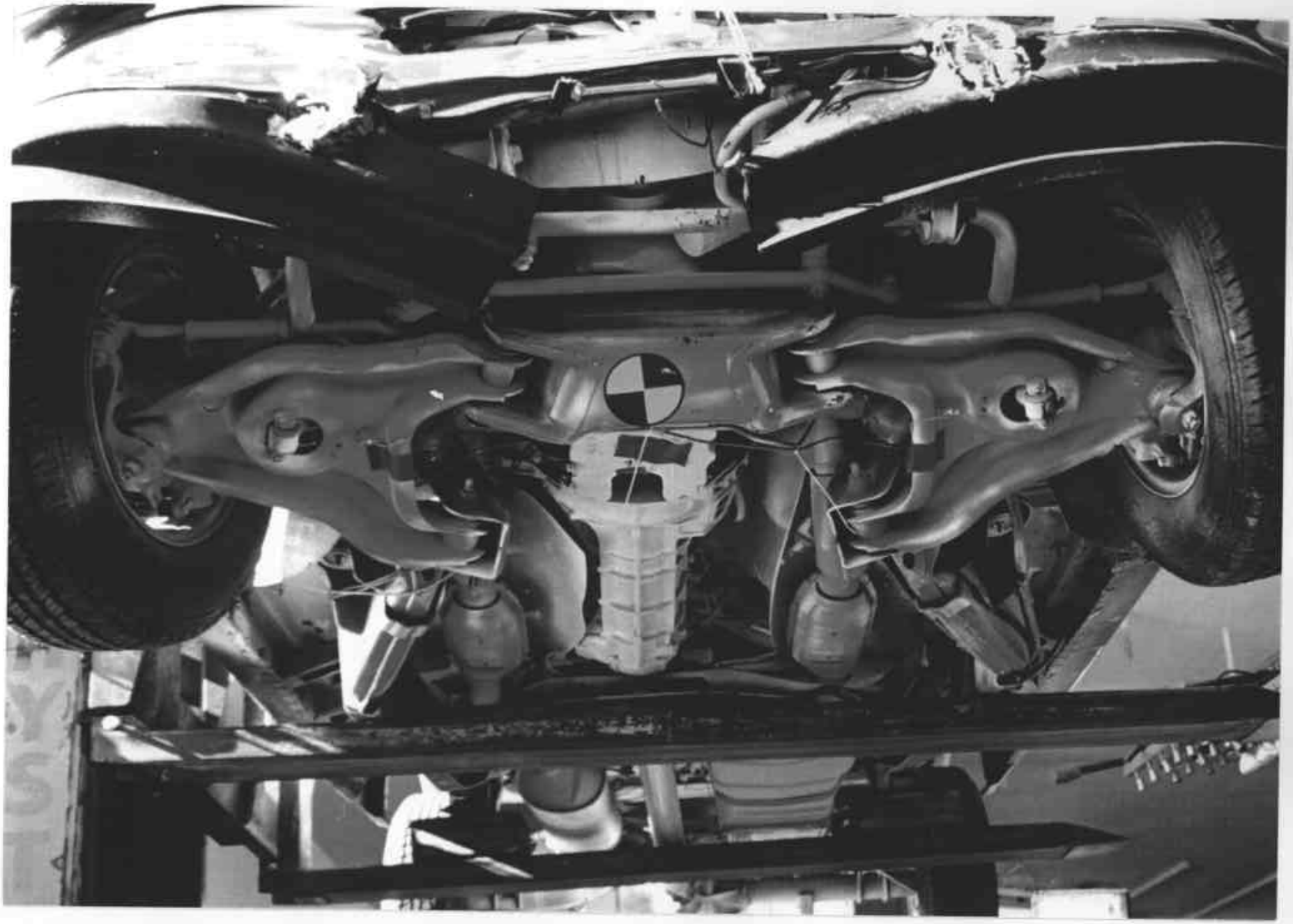


Figure A-17 POST-TEST FRONT UNDERBODY VIEW

Figure A-18 PRE-TEST FRONT SIDE UNDERBODY VIEW

Figure A-19 POST-TEST FRONT SIDE UNDERBODY VIEW

Figure A-20 PRE-TEST REAR UNDERBODY VIEW

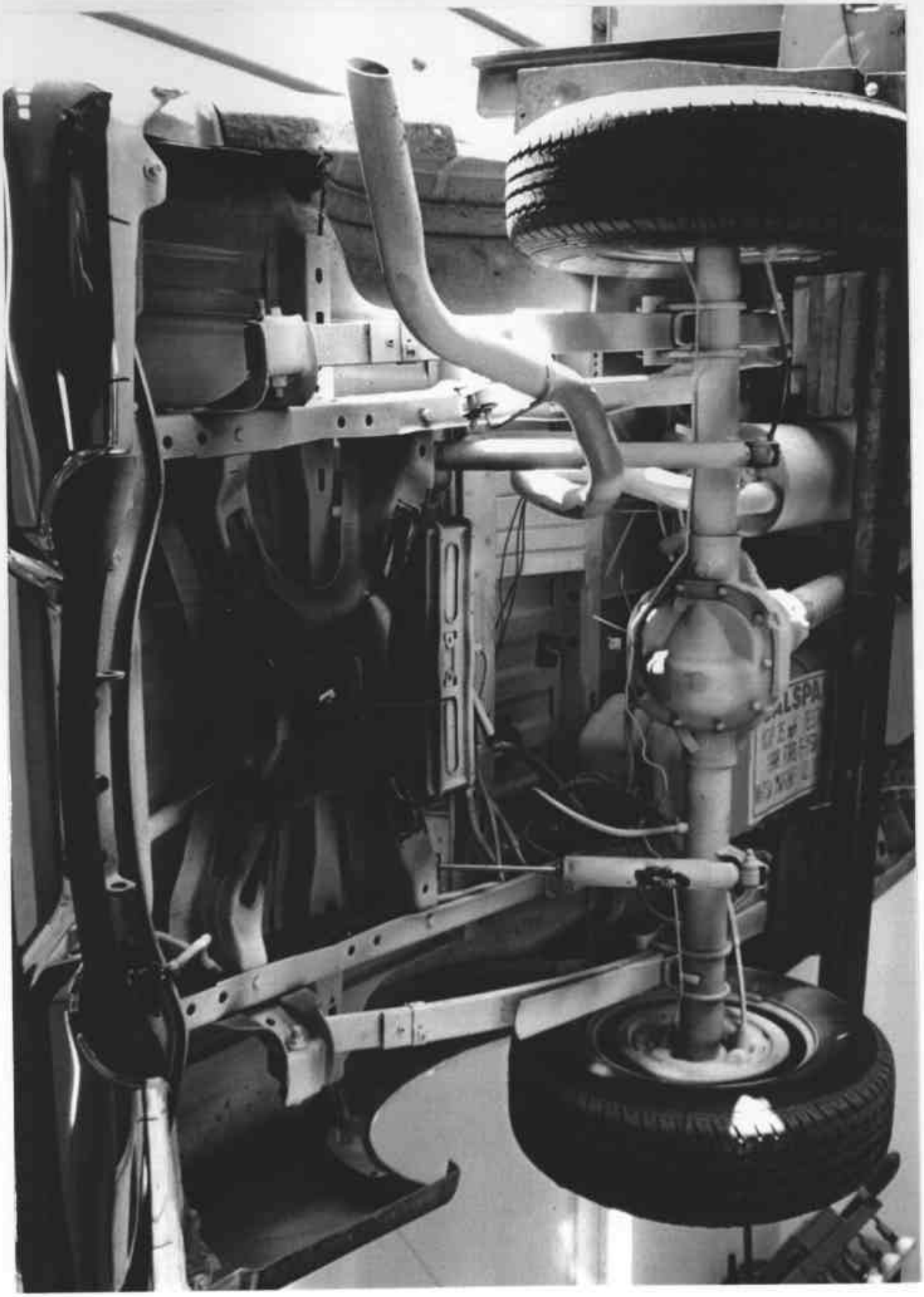


Figure A-21 POST-TEST REAR UNDERBODY VIEW

Figure A-22 PRE-TEST DRIVER POSITION VIEW

Figure A-23 POST-TEST DRIVER POSITION VIEW

Figure A-24 PRE-TEST PASSENGER POSITION VIEW

Figure A-25 POST-TEST PASSENGER POSITION VIEW

Figure A-26 PRE-TEST DRIVER AND INTERIOR VIEW

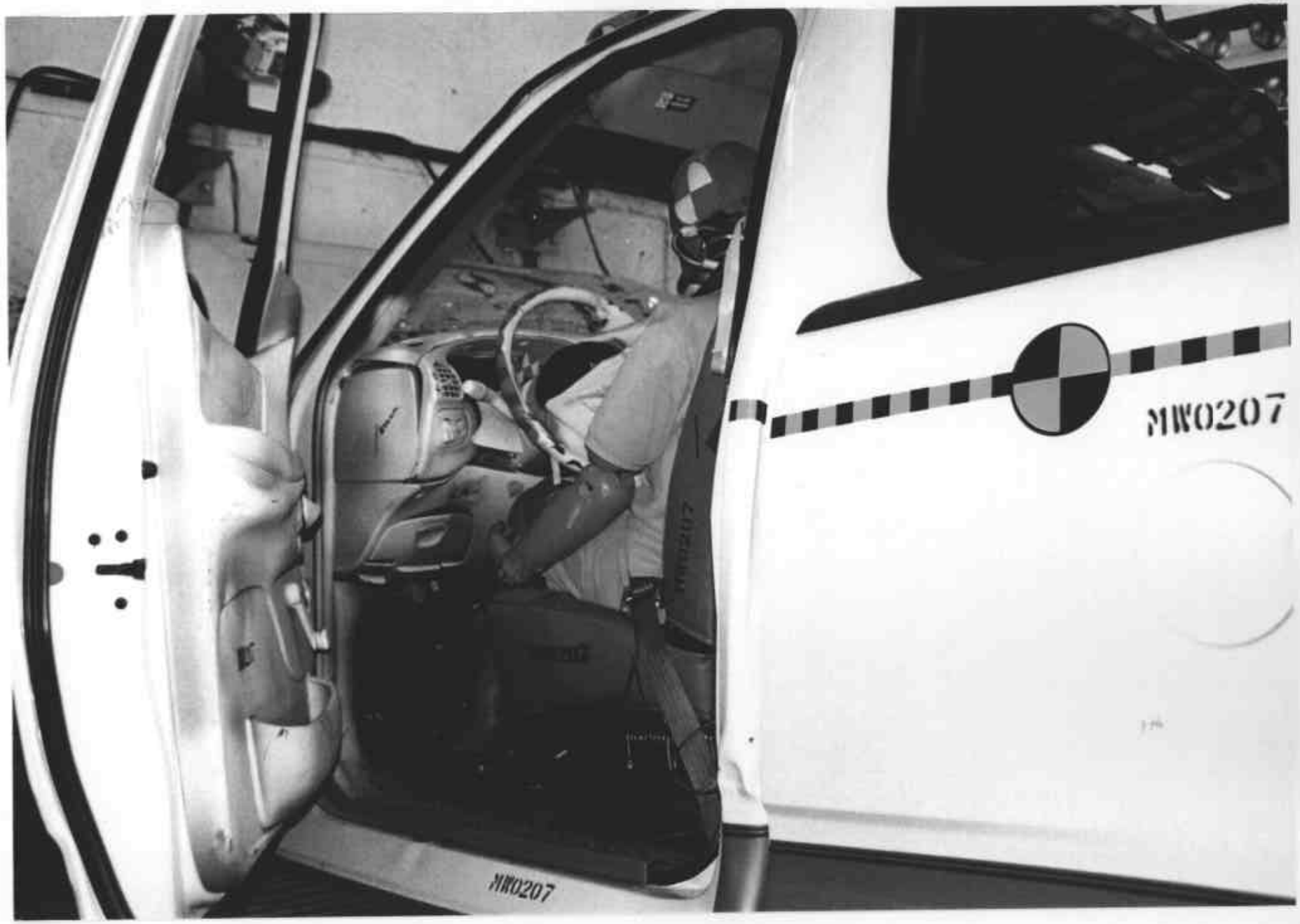


Figure A-27 POST-TEST DRIVER AND INTERIOR VIEW

Figure A-28 PRE-TEST PASSENGER AND INTERIOR VIEW

Figure A-29 POST-TEST PASSENGER AND INTERIOR VIEW

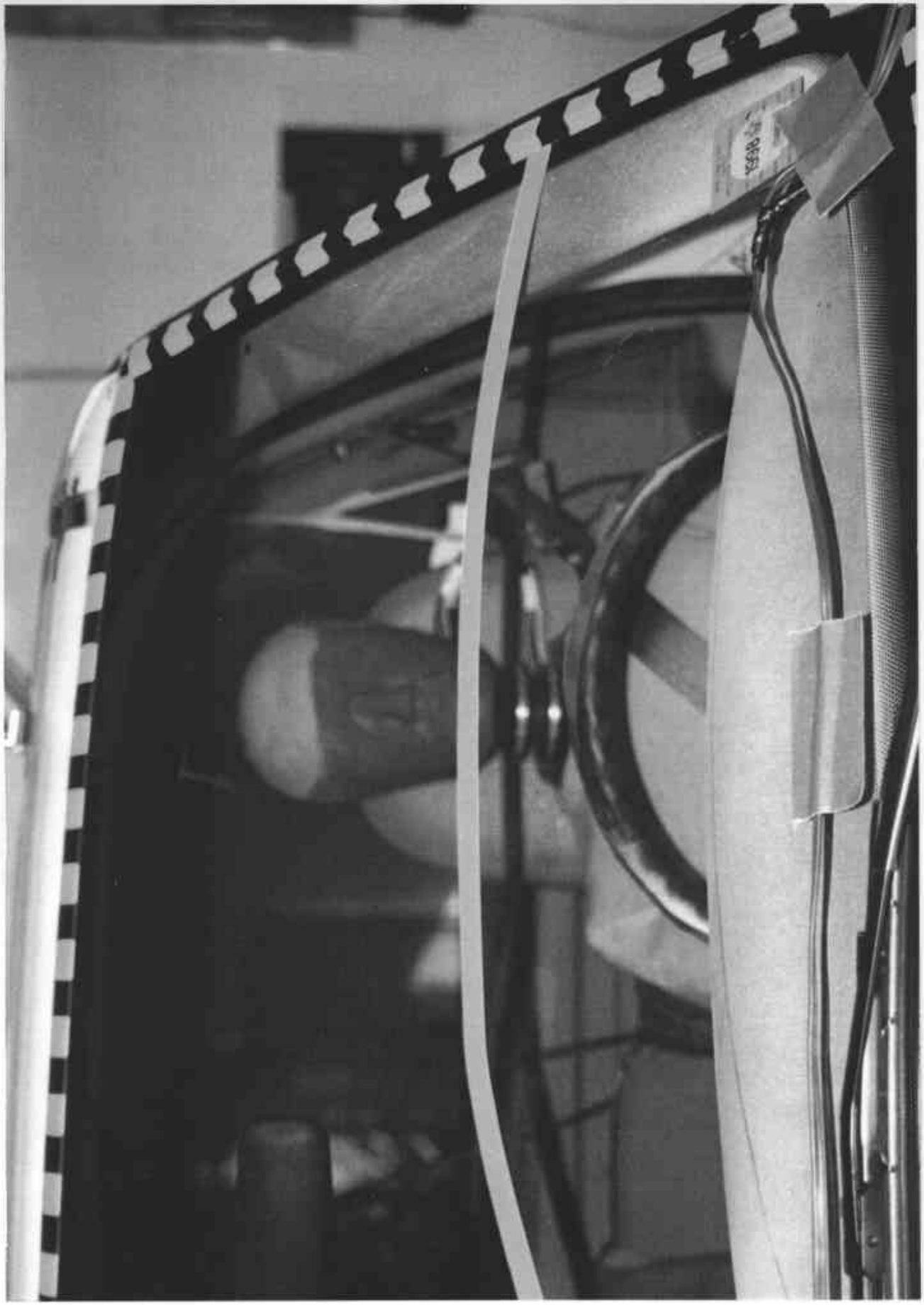


Figure A-30 PRE-TEST DRIVER HEAD LOCATION

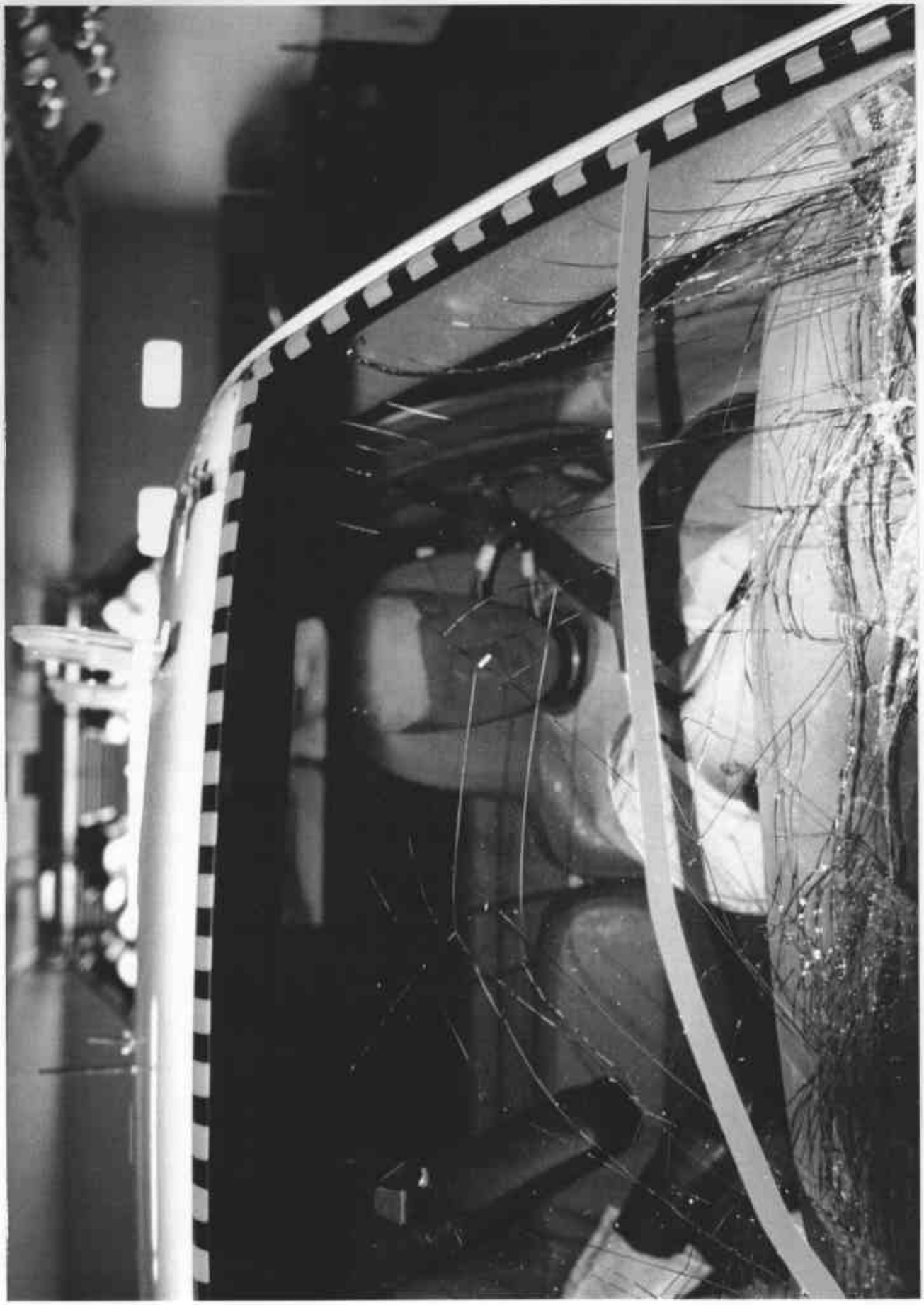


Figure A-31 POST-TEST DRIVER HEAD LOCATION

Figure A-32 PRE-TEST PASSENGER HEAD LOCATION

Figure A-33 POST-TEST PASSENGER HEAD LOCATION

Figure A-34 PRE-TEST DRIVER FLOOR PAN VIEW

Figure A-35 POST-TEST DRIVER FLOOR PAN VIEW

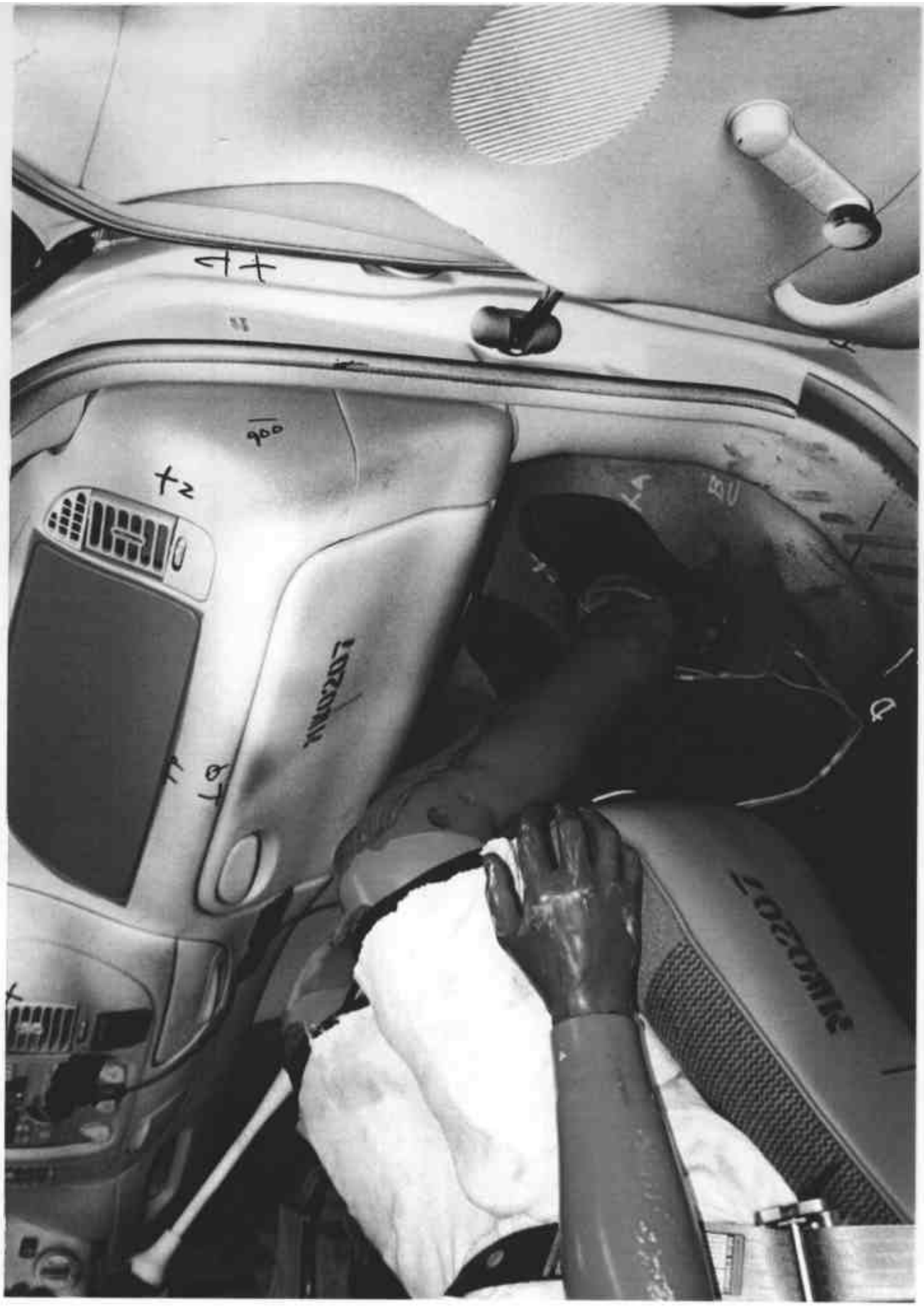


Figure A-36 PRE-TEST PASSENGER FLOOR PAN VIEW

Figure A-37 POST-TEST PASSENGER FLOOR PAN VIEW

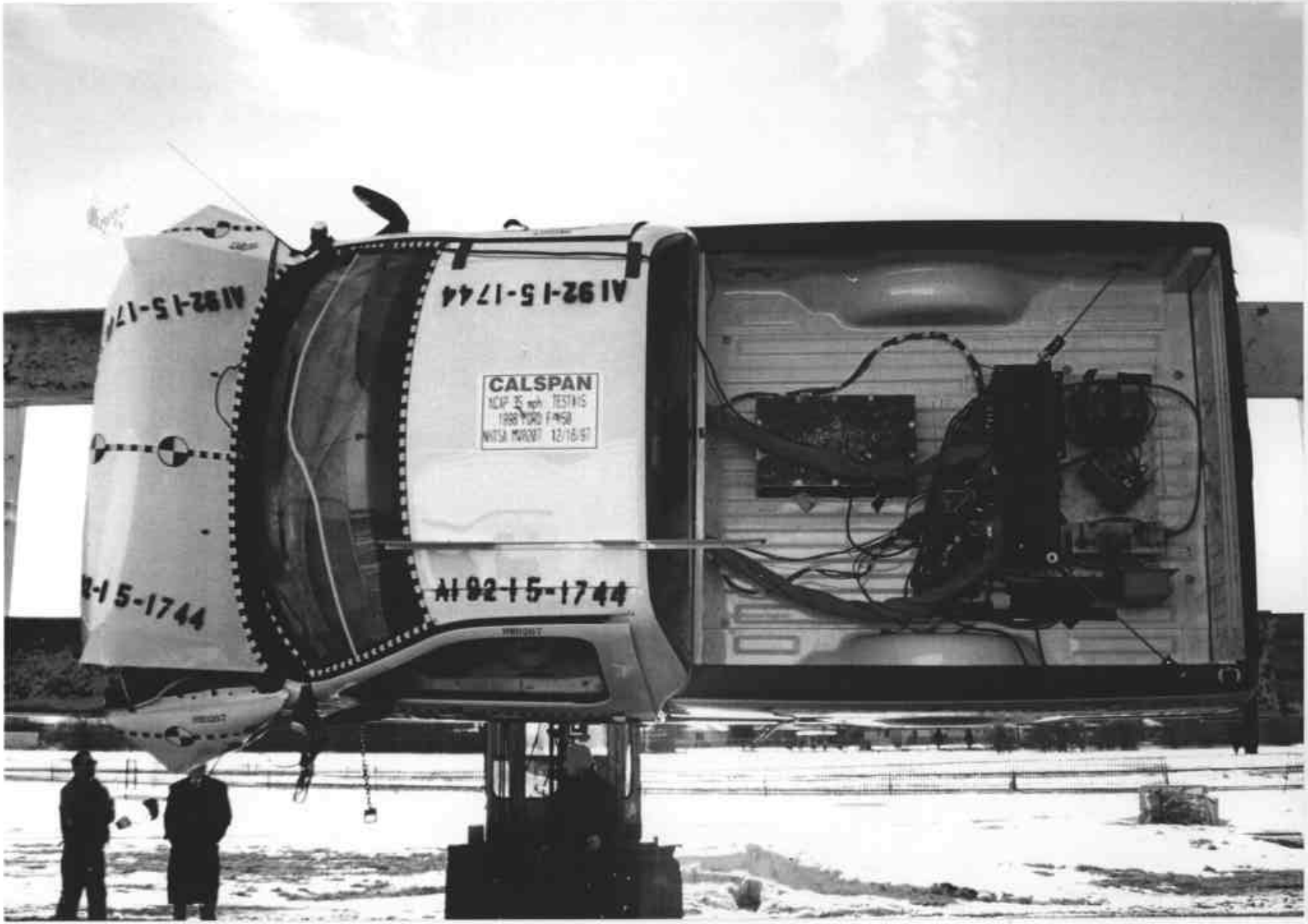


Figure A-38 ROLLOVER VIEW

Figure A-39 IMPACT VIEW

Appendix B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers

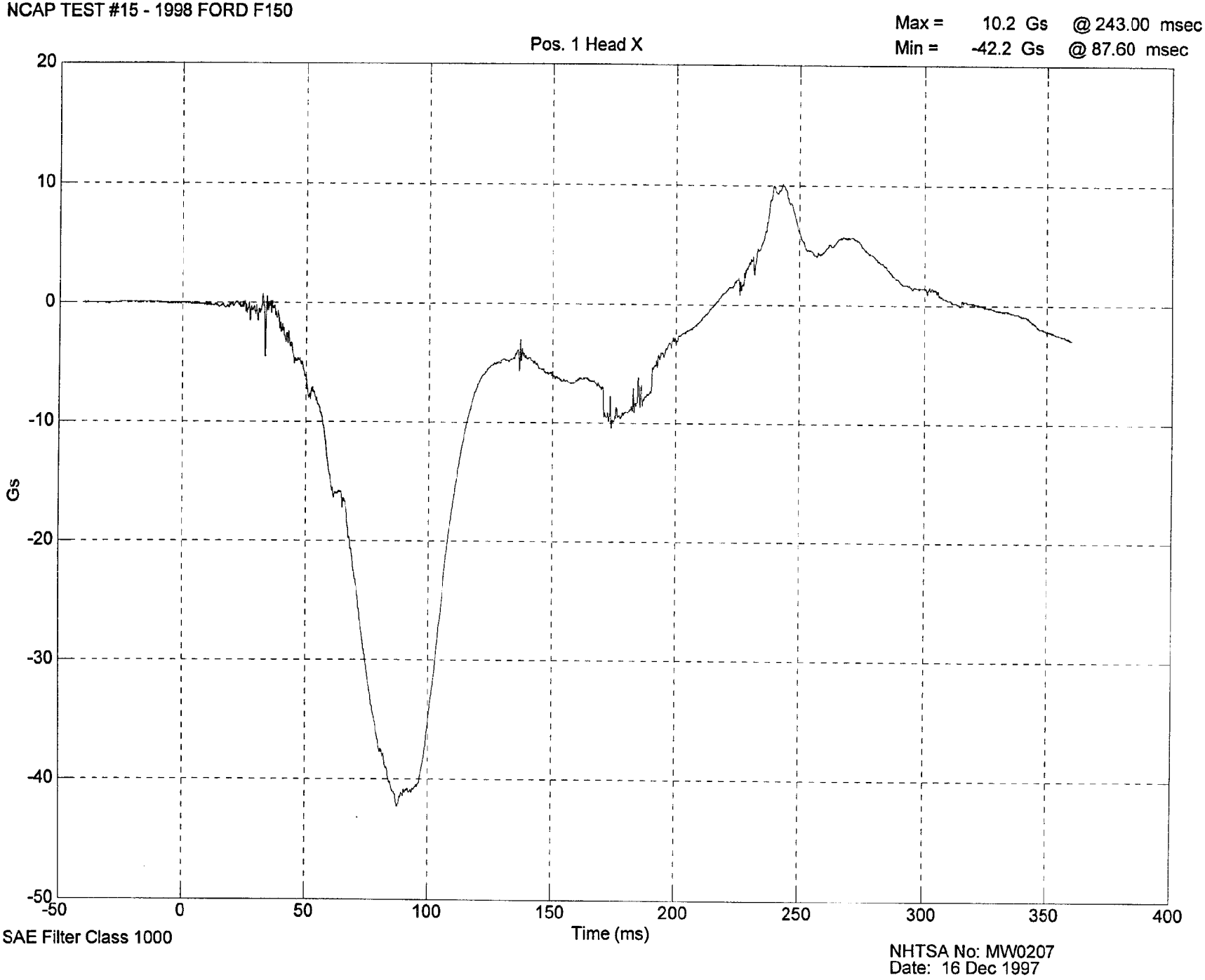
Transducer	DOT/NHTSA Sign Convention (positive unless noted)
Upper Neck Load Cell	Fx Head forward Fy Head left Fz Neck in tension Mx Right ear to right shoulder My Chin to chest (flexion) Mz Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative
Pelvic Load Cell (Lower 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. MW0207

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

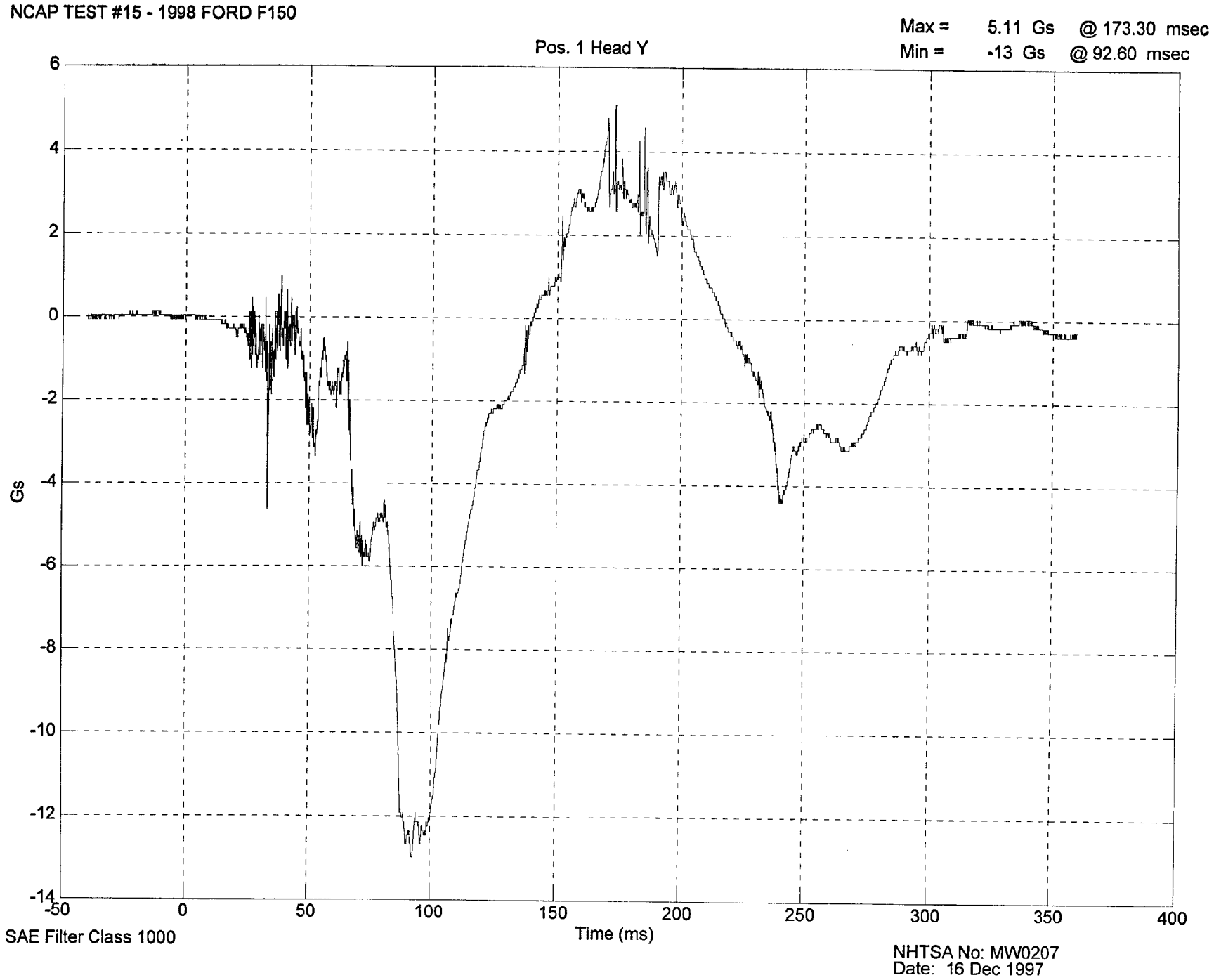
NCAP TEST #15 - 1998 FORD F150



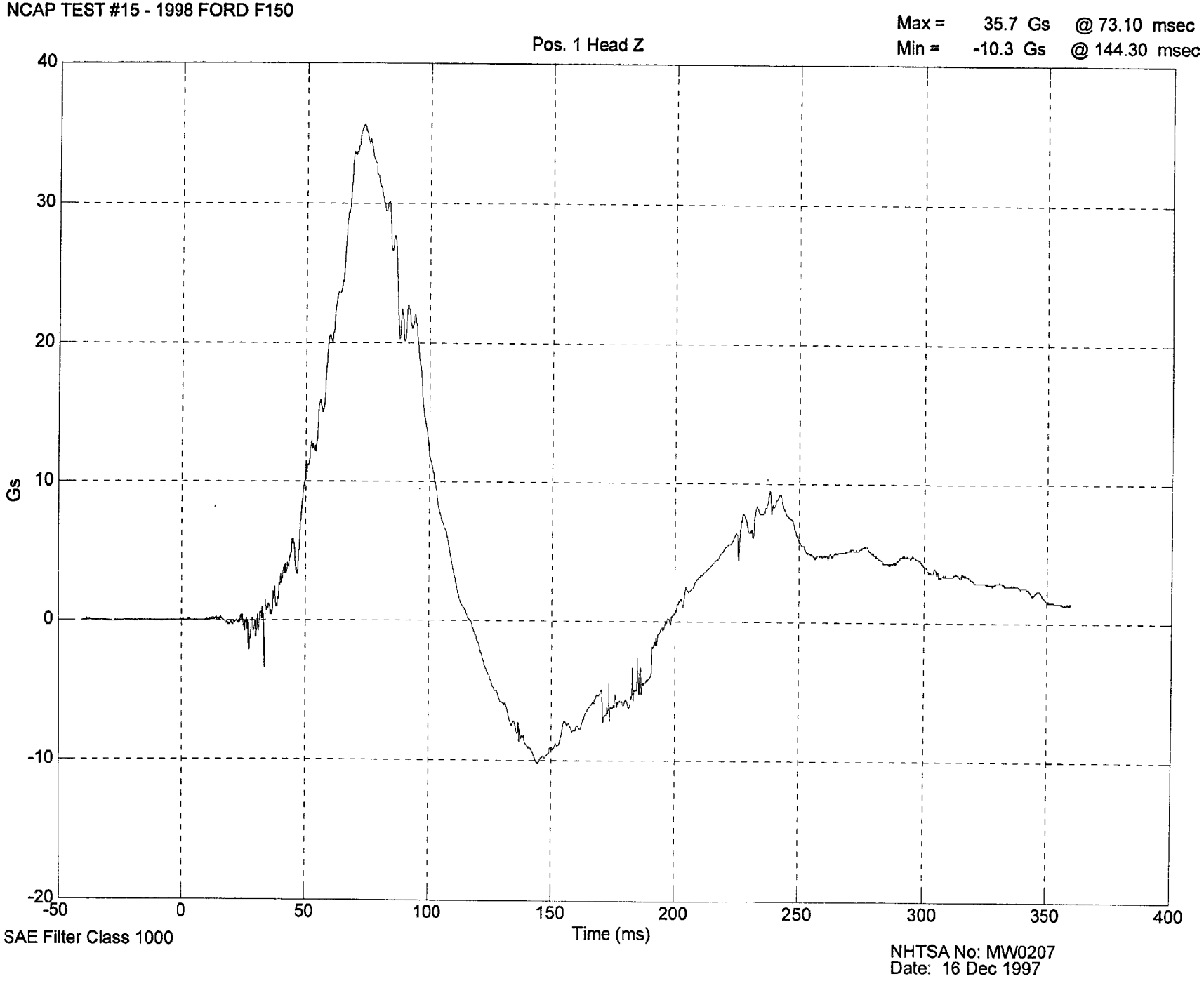
SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

8413-15


NCAP TEST #15 - 1998 FORD F150
Pos. 1 Head Y
Max = 5.11 Gs @ 173.30 msec
Min = -13 Gs @ 92.60 msec
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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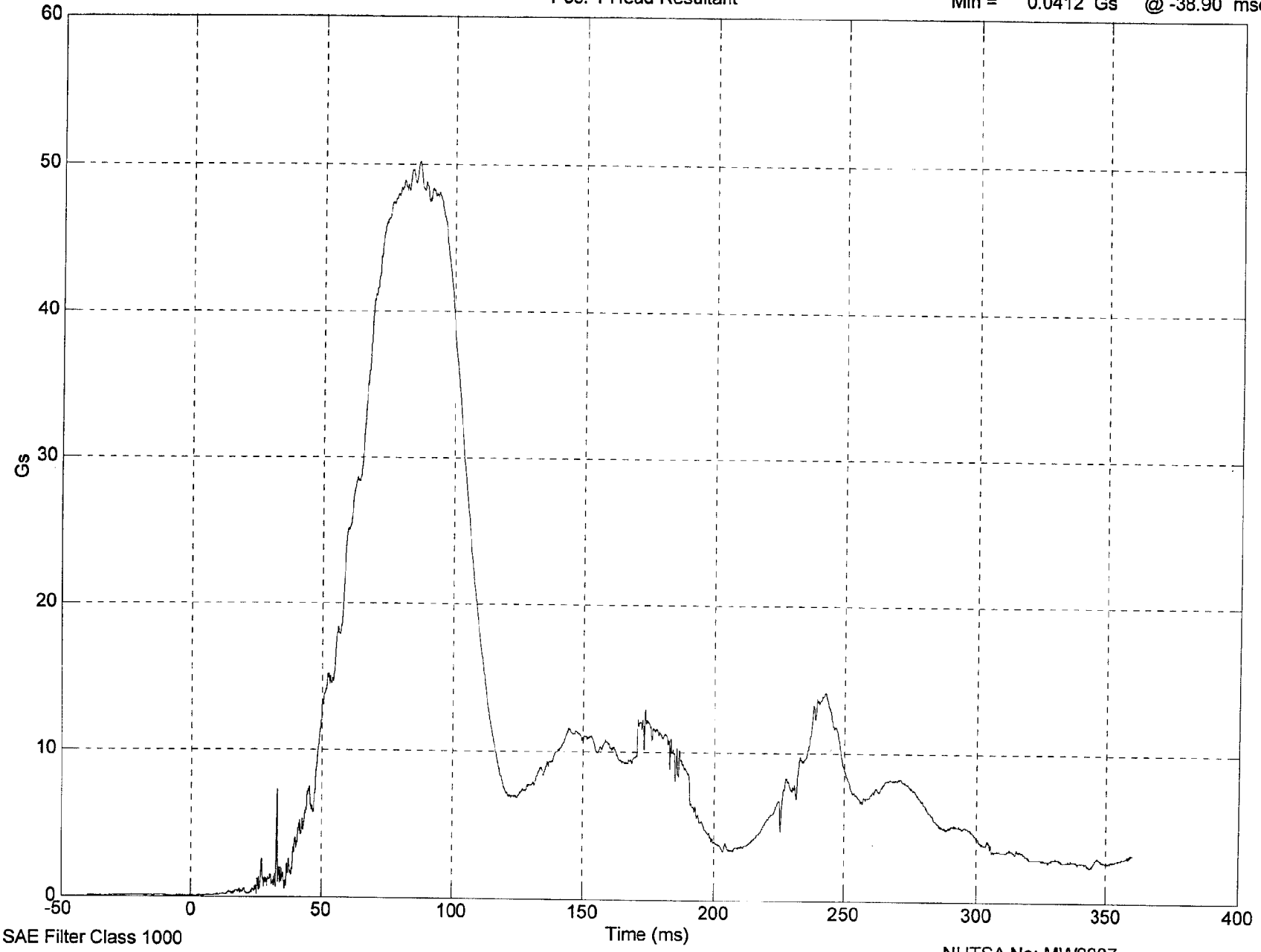
NCAP TEST #15 - 1998 FORD F150

Max = 50.2 Gs @ 86.00 msec
Min = 0.0412 Gs @ -38.90 msec

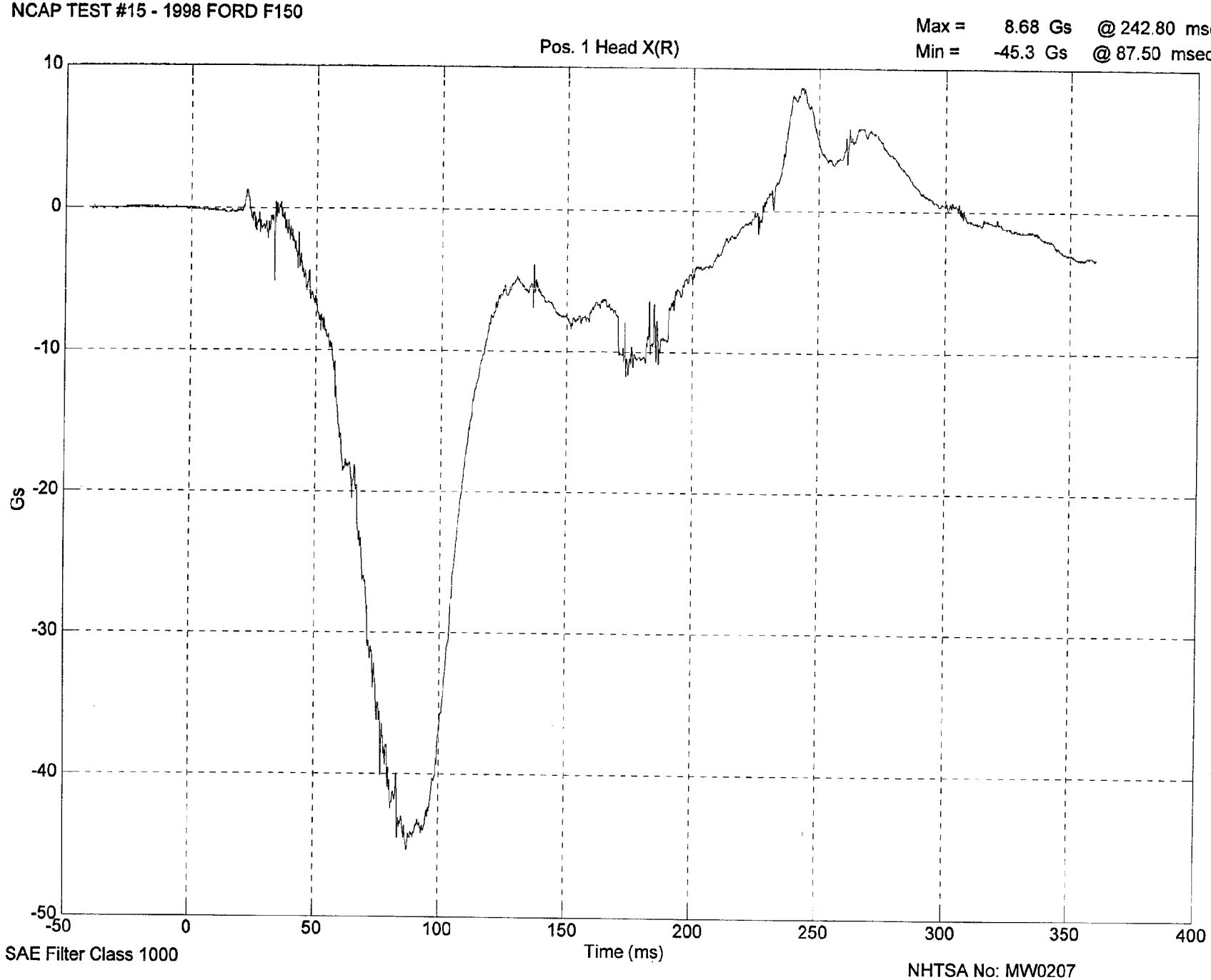


SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

8413-15

NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 1000

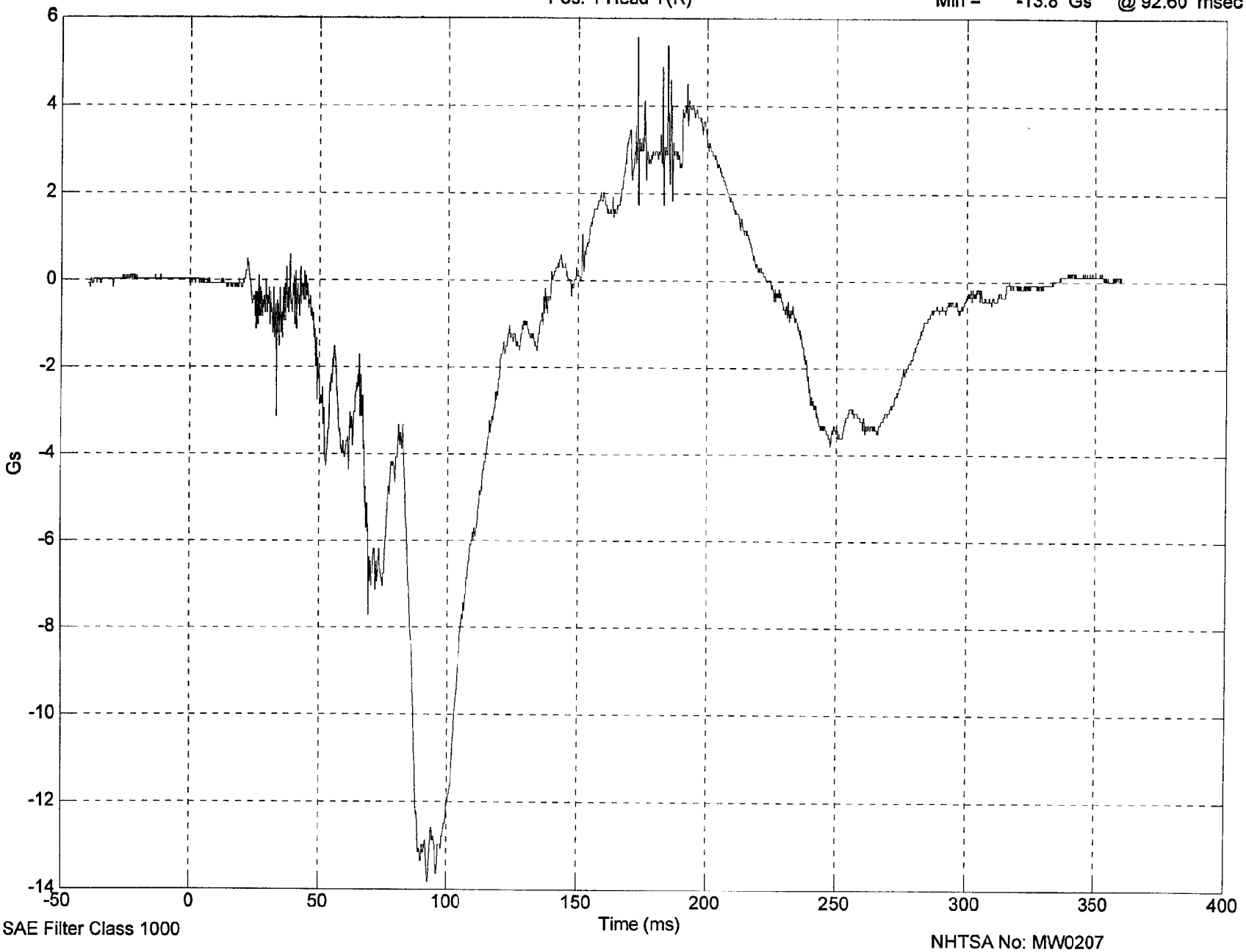
NHTSA No: MW0207
Date: 16 Dec 1997

8413-15

NCAP TEST #15 - 1998 FORD F150

Pos. 1 Head Y(R)

Max = 5.56 Gs @ 173.20 msec
Min = -13.8 Gs @ 92.60 msec



SAE Filter Class 1000

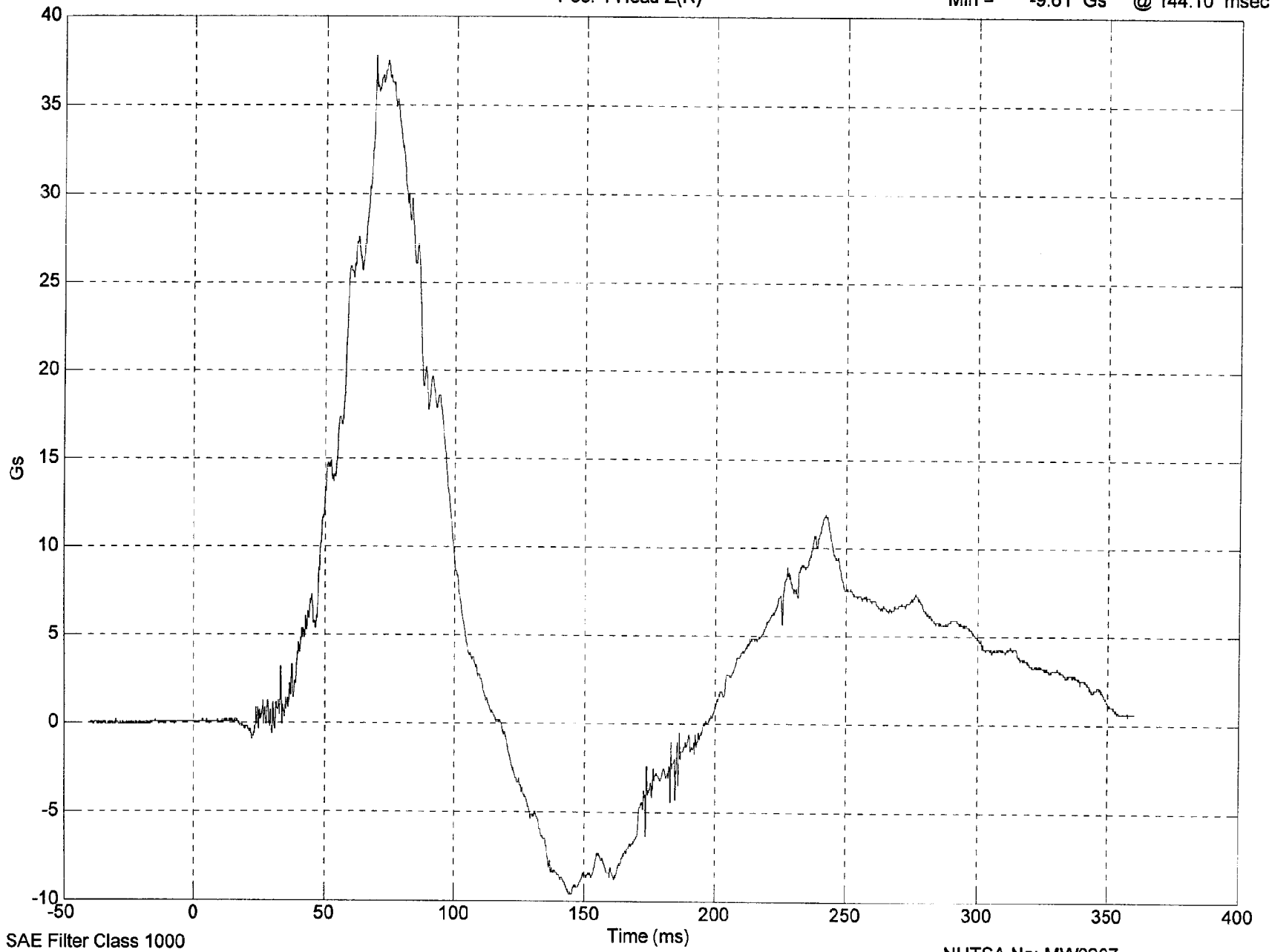
NHTSA No: MW0207
Date: 16 Dec 1997

8413-15

NCAP TEST #15 - 1998 FORD F150

Pos. 1 Head Z(R)

Max = 37.8 Gs @ 69.20 msec
Min = -9.61 Gs @ 144.10 msec



SAE Filter Class 1000

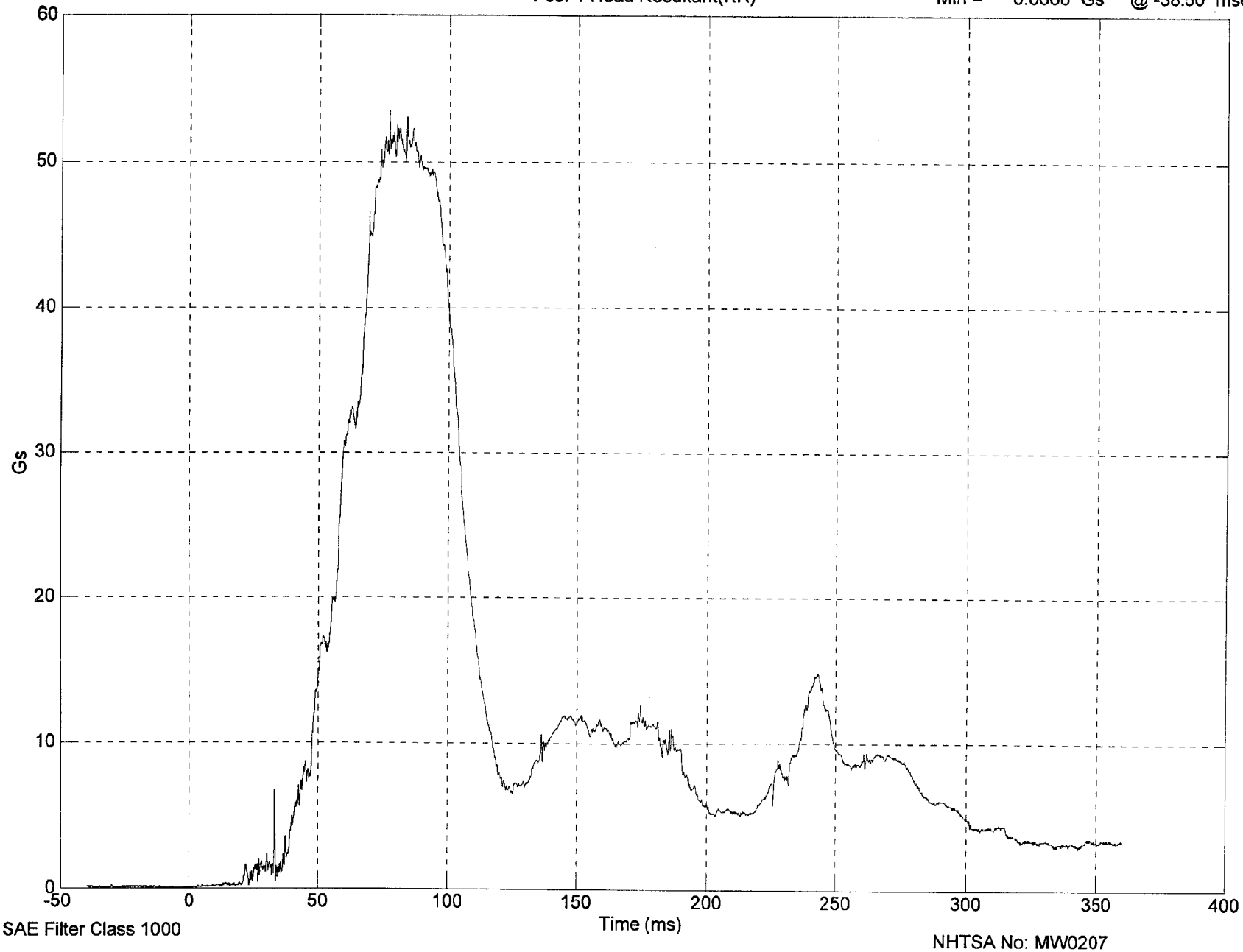
NHTSA No: MW0207
Date: 16 Dec 1997

8413-15

NCAP TEST #15 - 1998 FORD F150

Pos. 1 Head Resultant(RR)

Max = 53.6 Gs @ 76.90 msec
Min = 0.0668 Gs @ -38.50 msec



SAE Filter Class 1000

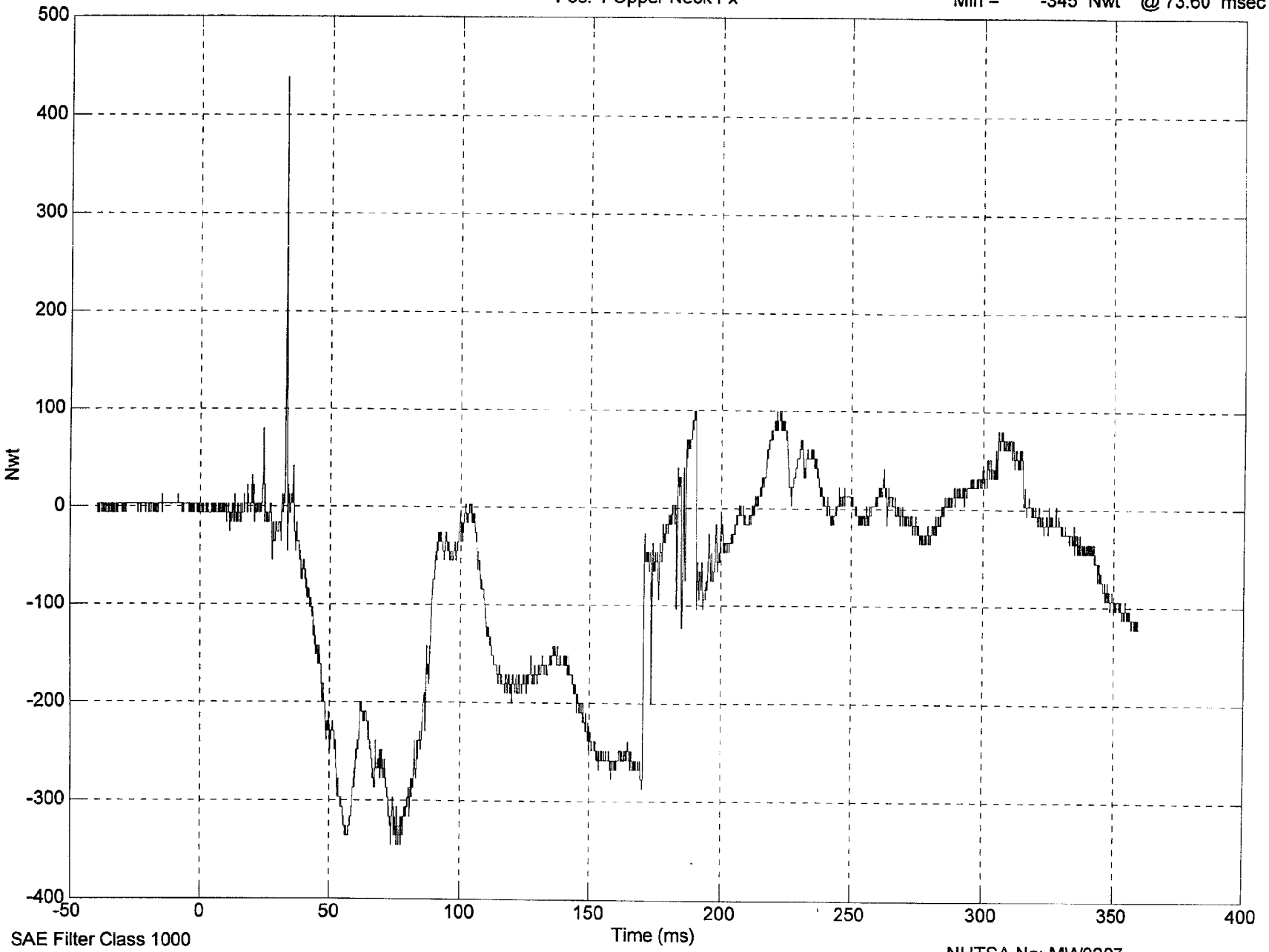
NHTSA No: MW0207
Date: 16 Dec 1997

8413-15

NCAP TEST #15 - 1998 FORD F150

Pos. 1 Upper Neck Fx

Max = 438 Nwt @ 33.10 msec
Min = -345 Nwt @ 73.60 msec

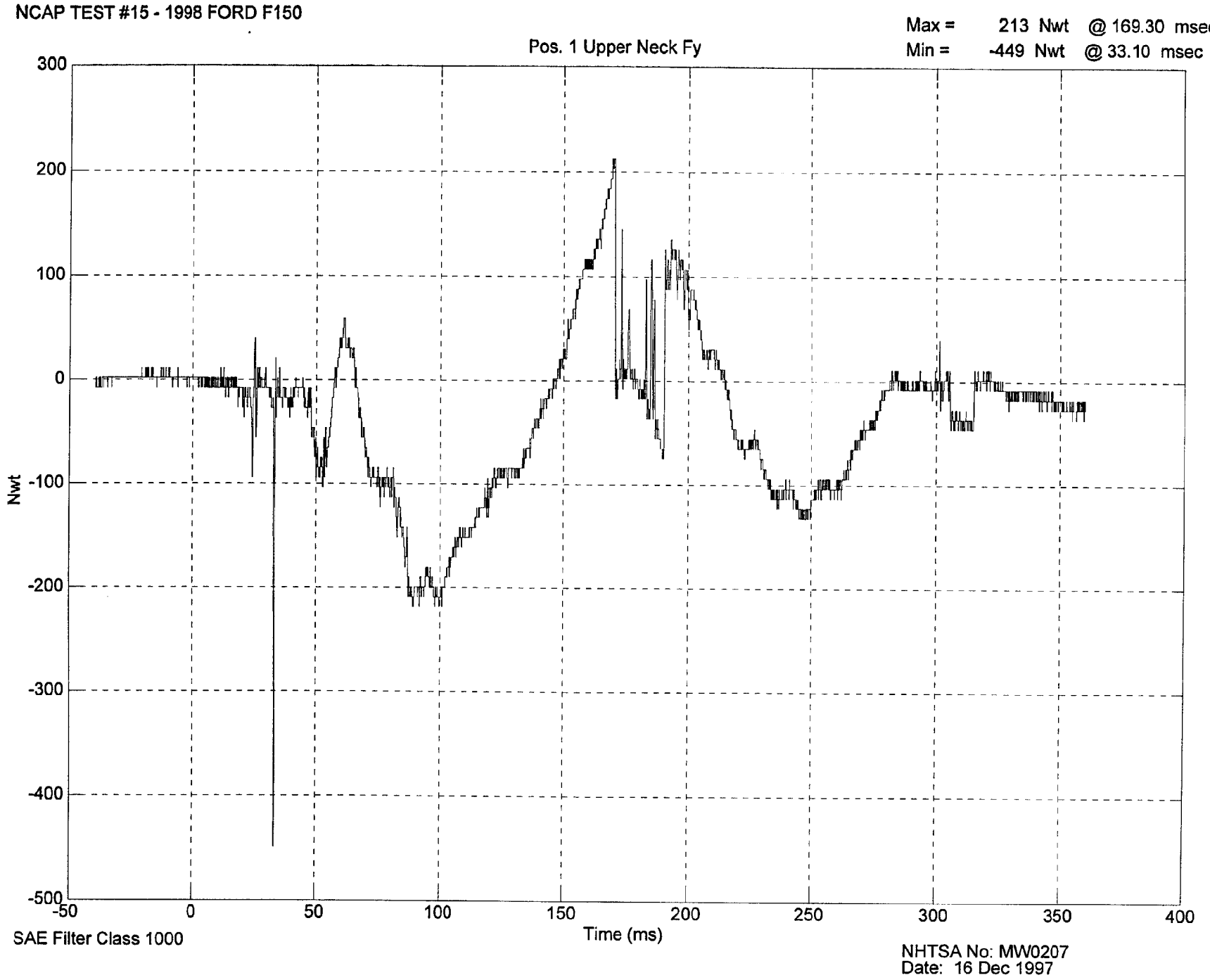


SAE Filter Class 1000

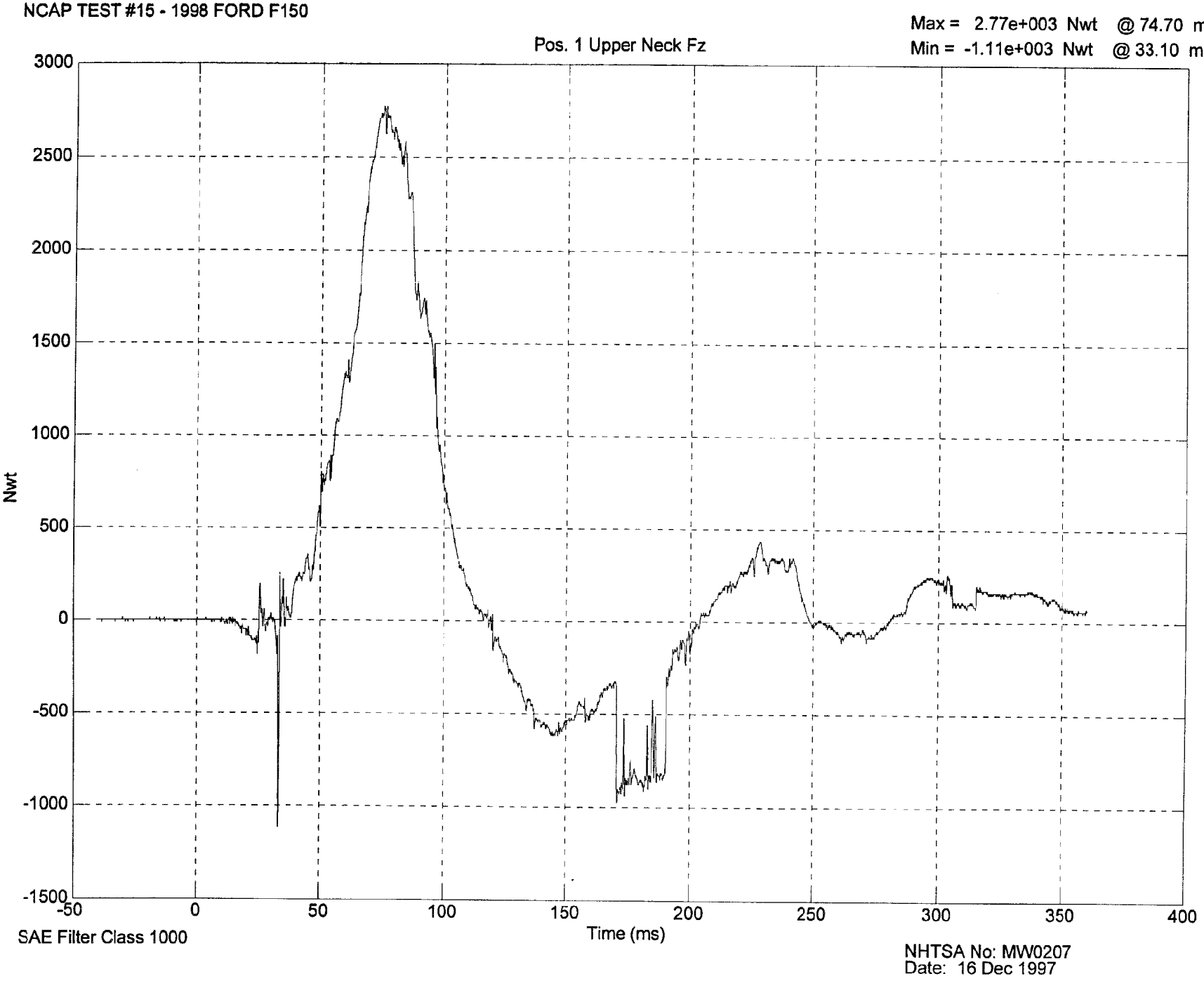
NHTSA No: MW0207
Date: 16 Dec 1997

B-12

8413-15


NCAP TEST #15 - 1998 FORD F150
Pos. 1 Upper Neck Fy
Max = 213 Nwt @ 169.30 msec
Min = -449 Nwt @ 33.10 msec
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: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



B-14

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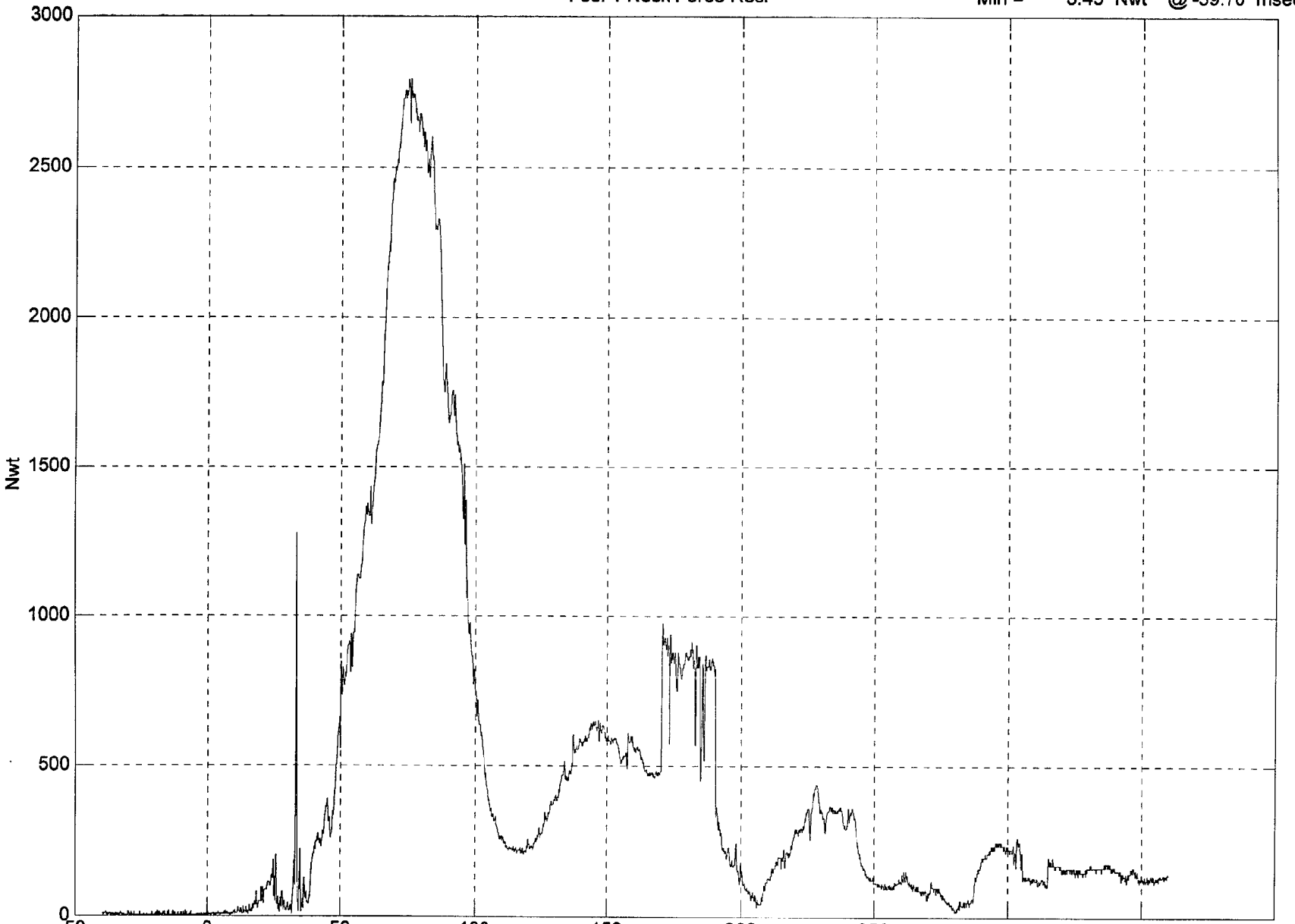
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Neck Force Res.

Max = 2.79e+003 Nwt @ 75.70 msec
Min = 3.45 Nwt @ -39.70 msec



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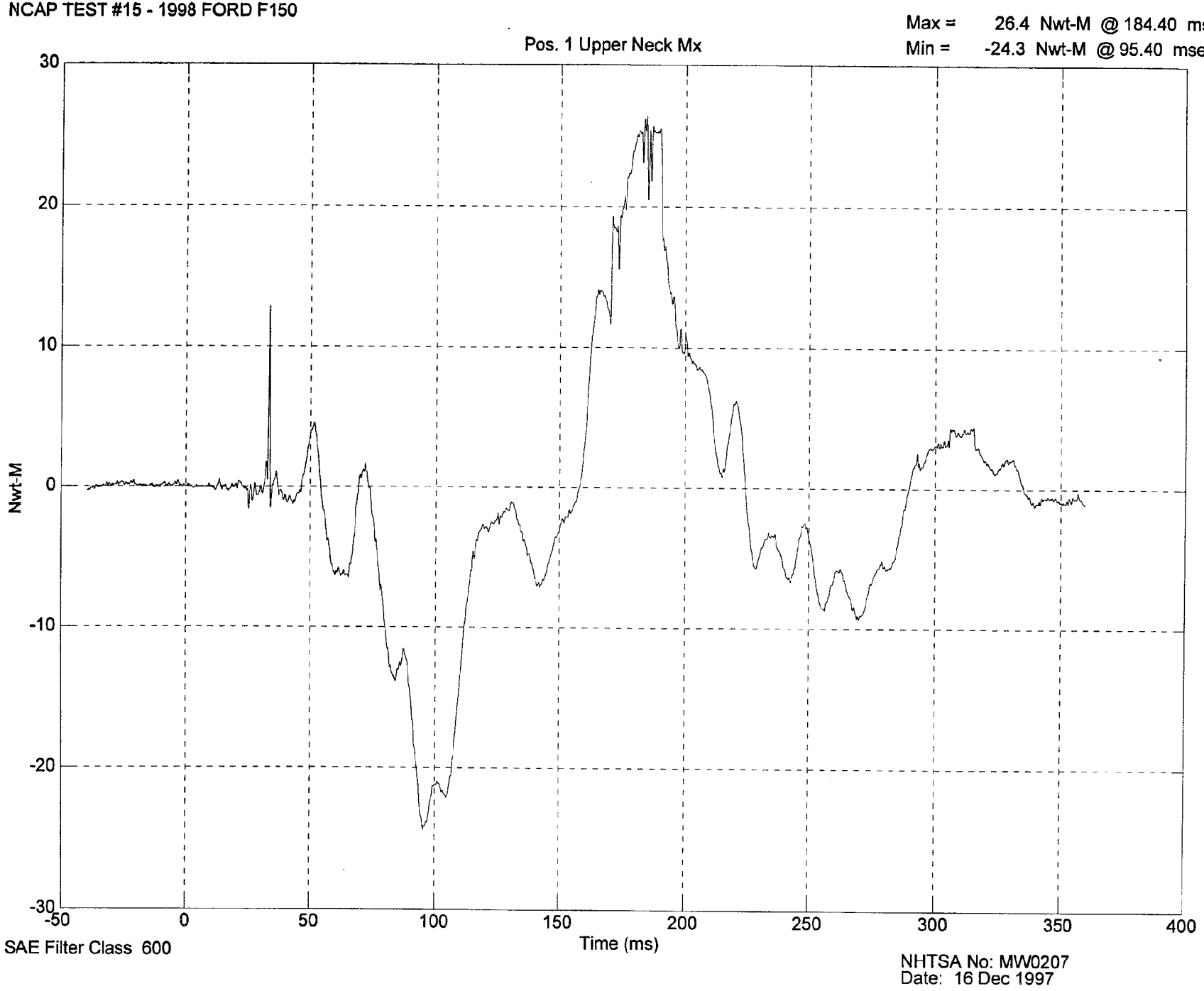
8413-15

SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

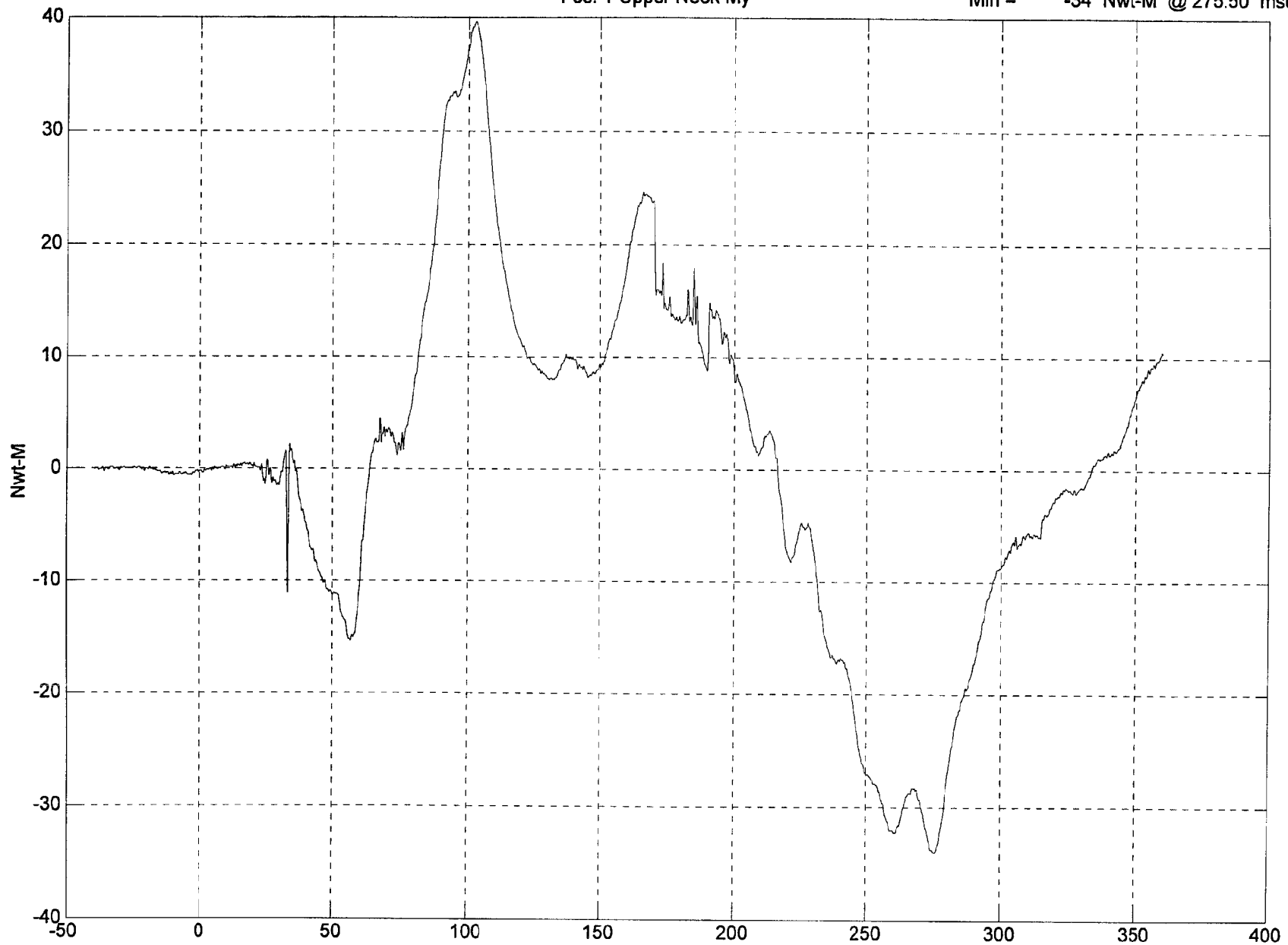
NCAP TEST #15 - 1998 FORD F150



NCAP TEST #15 - 1998 FORD F150

Pos. 1 Upper Neck My

Max = 39.6 Nwt-M @ 102.60 msec
Min = -34 Nwt-M @ 275.50 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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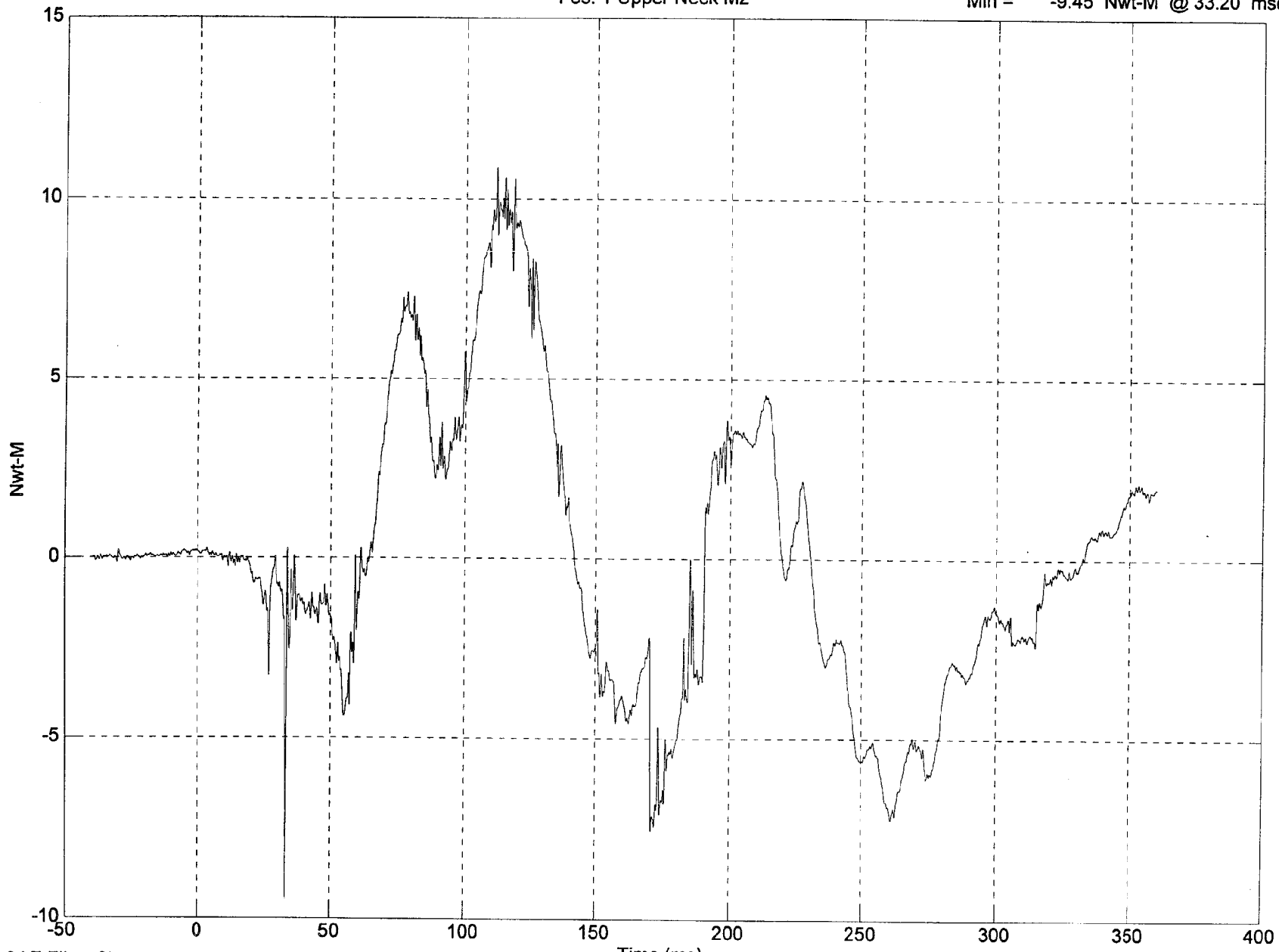
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Upper Neck Mz

Max = 10.9 Nwt-M @ 111.80 msec
Min = -9.45 Nwt-M @ 33.20 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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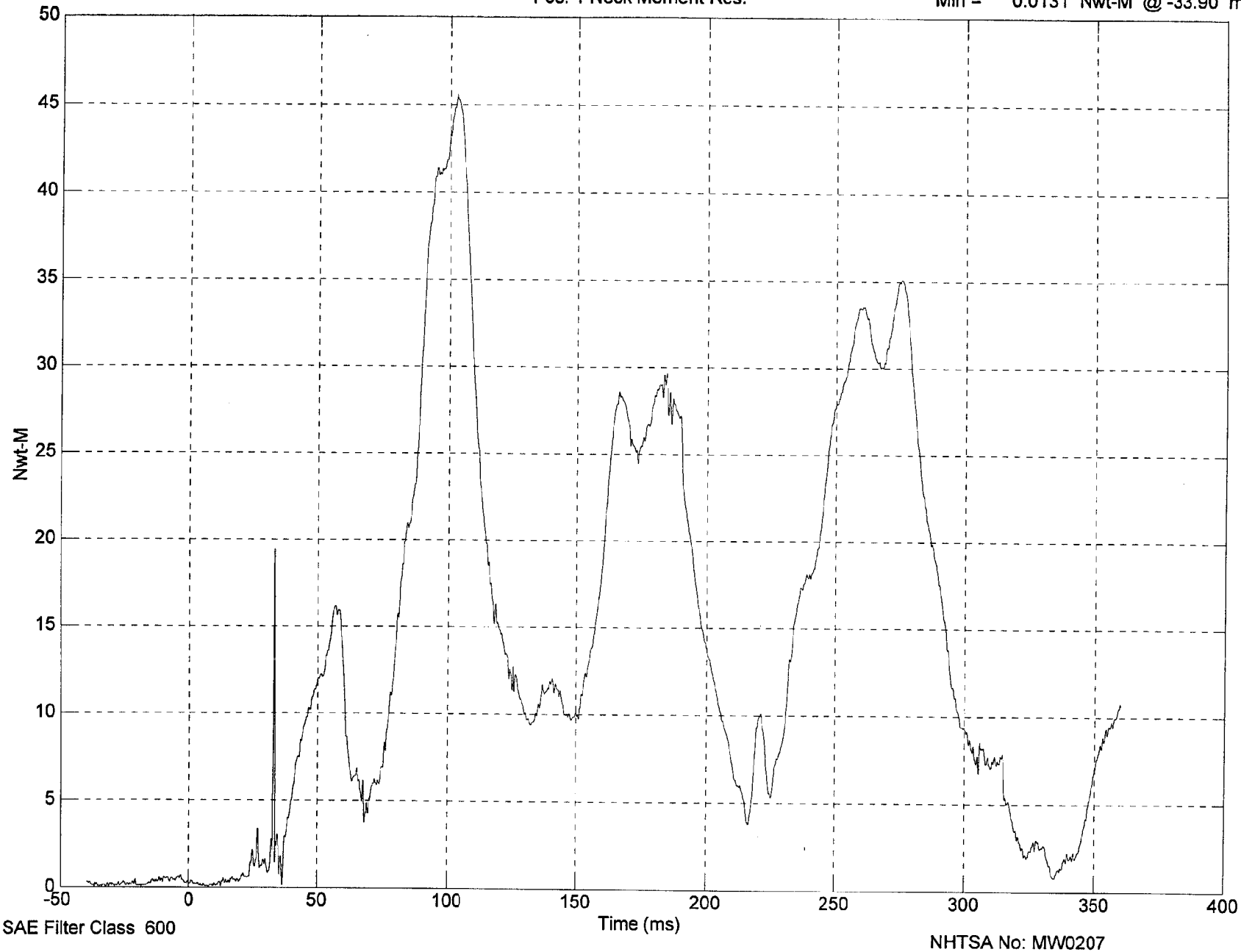
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Neck Moment Res.

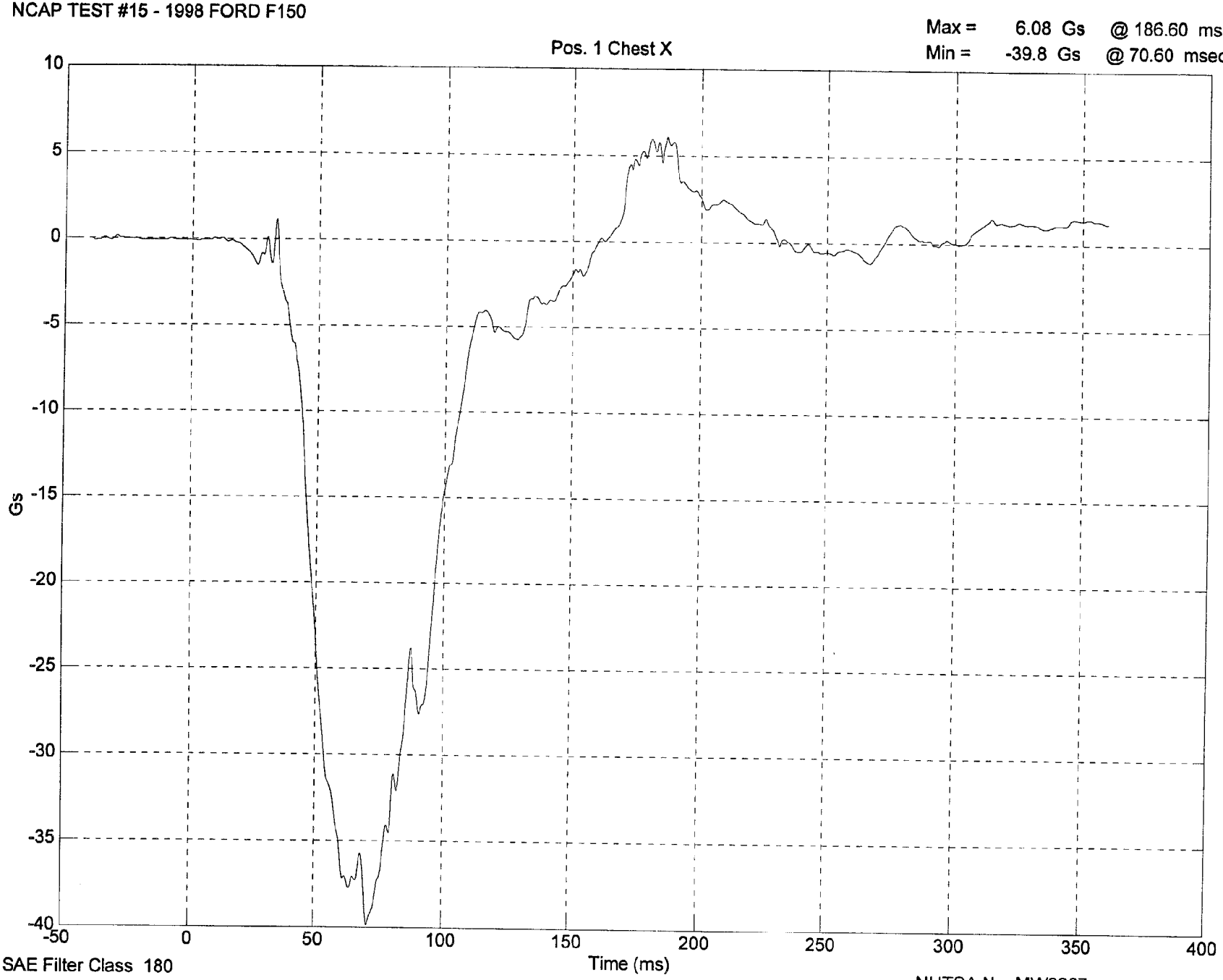
Max = 45.6 Nwt-M @ 102.70 msec
Min = 0.0131 Nwt-M @ -33.90 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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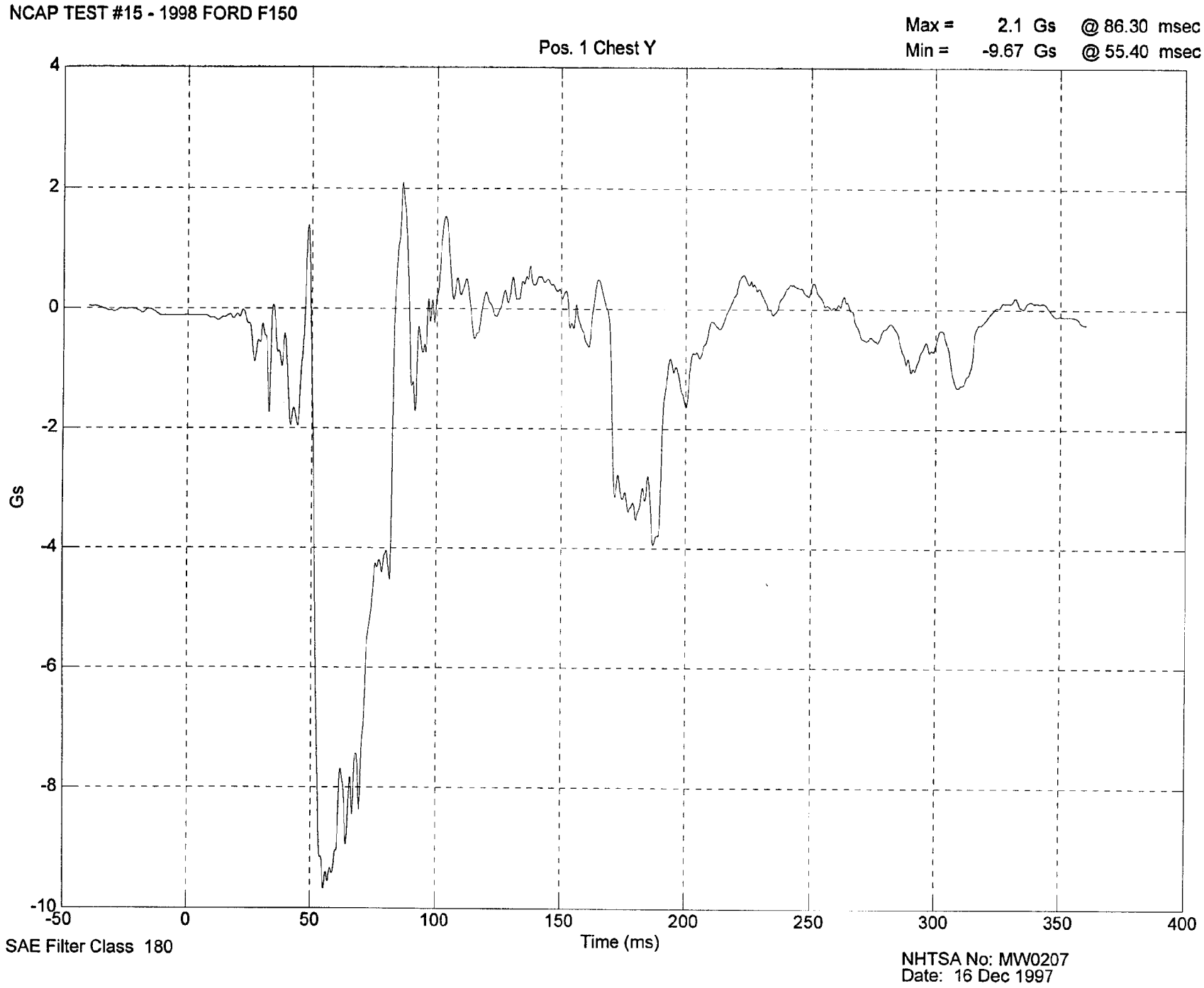
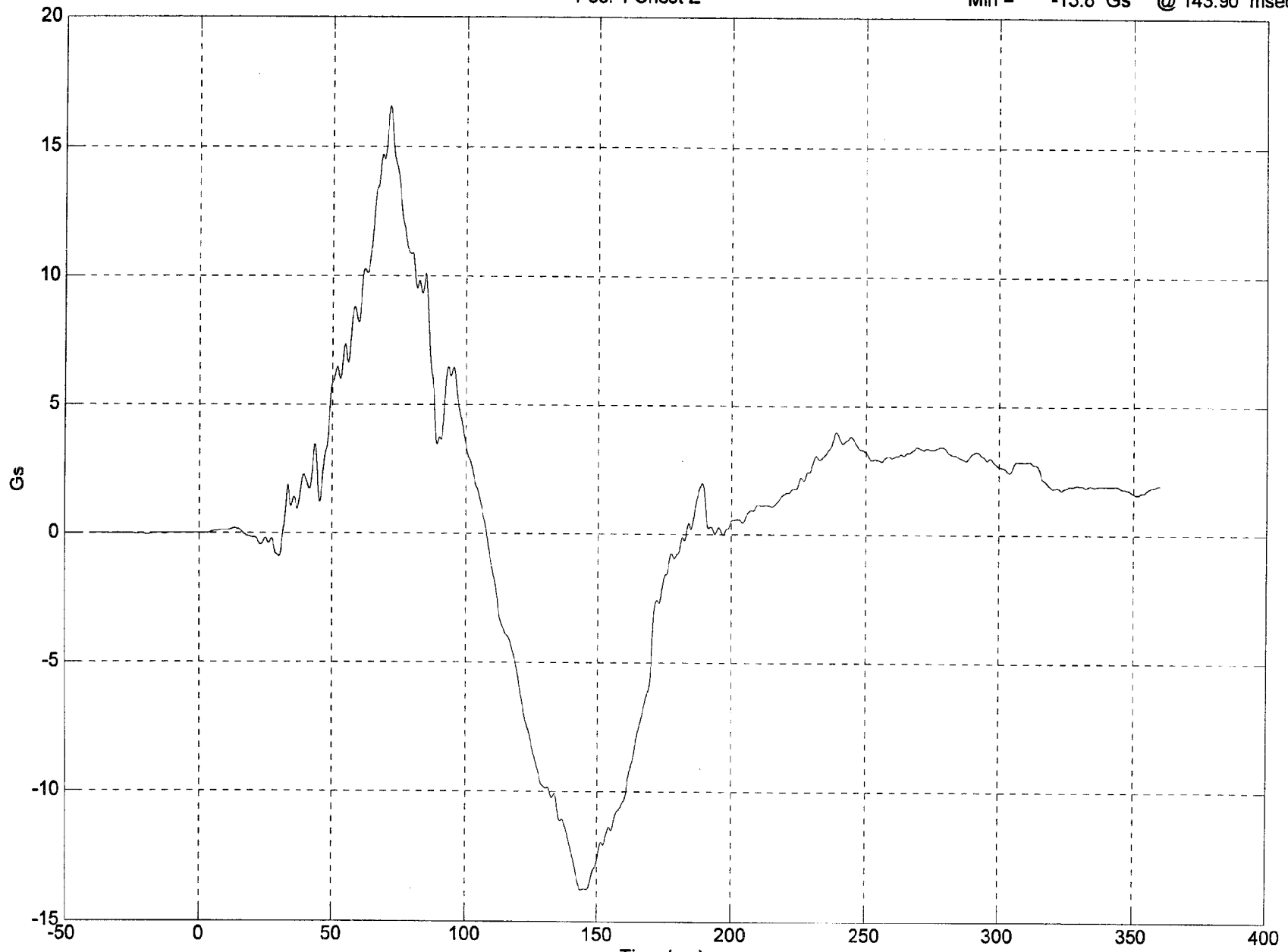

NCAP TEST #15 - 1998 FORD F150
Pos. 1 Chest Y
Max = 2.1 Gs @ 86.30 msec
Min = -9.67 Gs @ 55.40 msec
Gs
4
2
0
-2
-4
-6
-8
-10
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 180
NHTSA No: MVV0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 1 Chest Z

Max = 16.6 Gs @ 71.60 msec
Min = -13.8 Gs @ 143.90 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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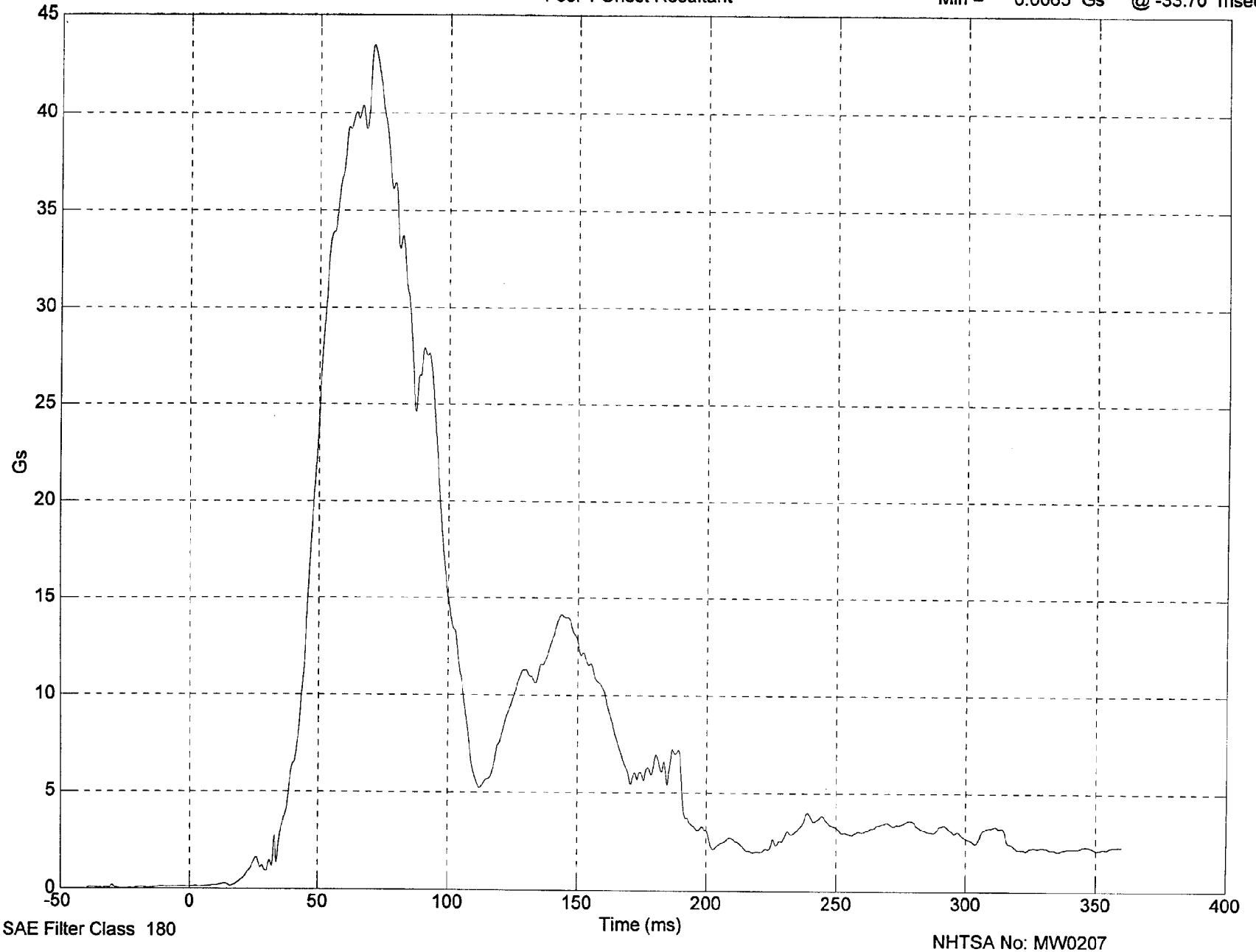
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Chest Resultant

Max = 43.5 Gs @ 70.80 msec
Min = 0.0065 Gs @ -33.70 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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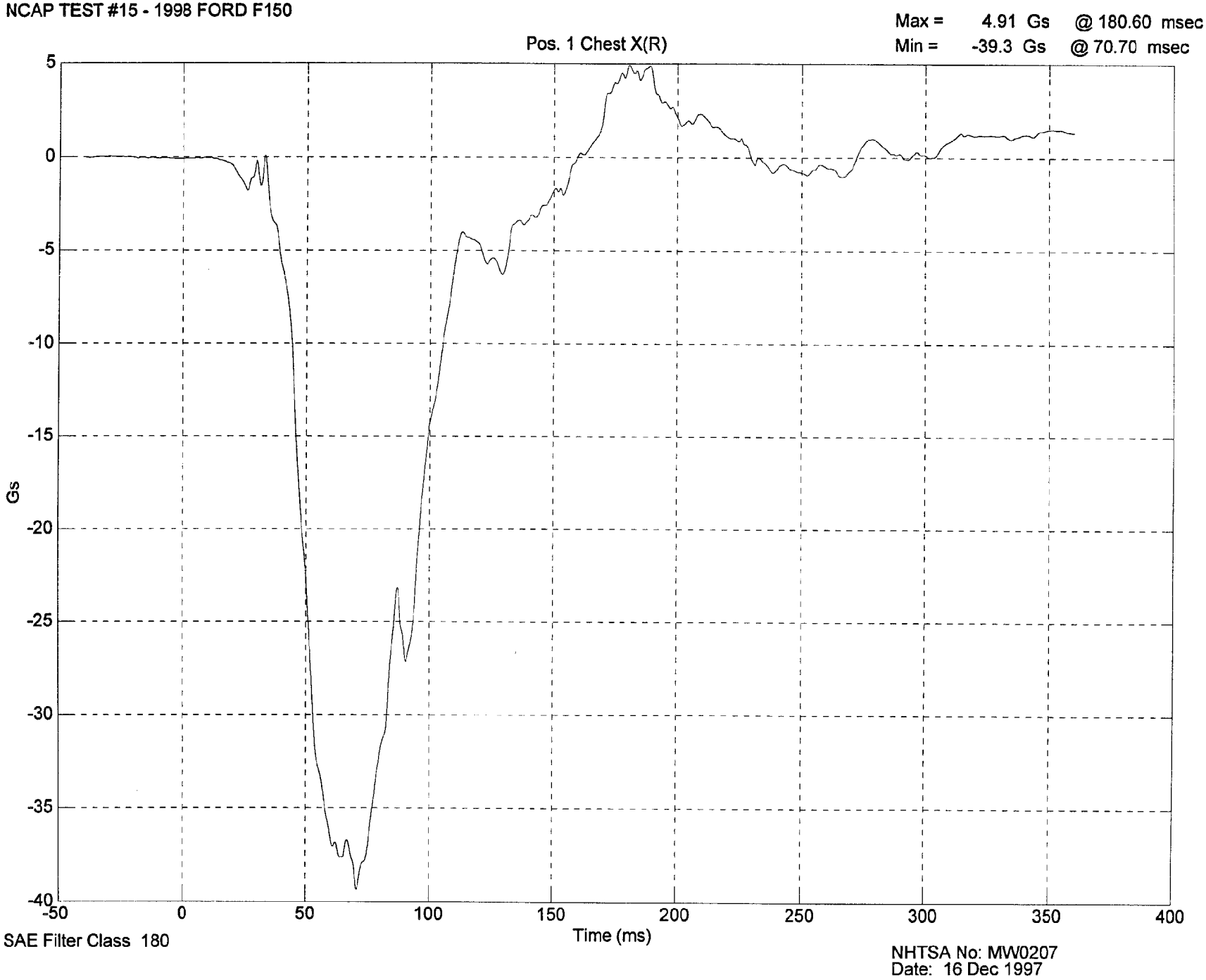
NCAP TEST #15 - 1998 FORD F150



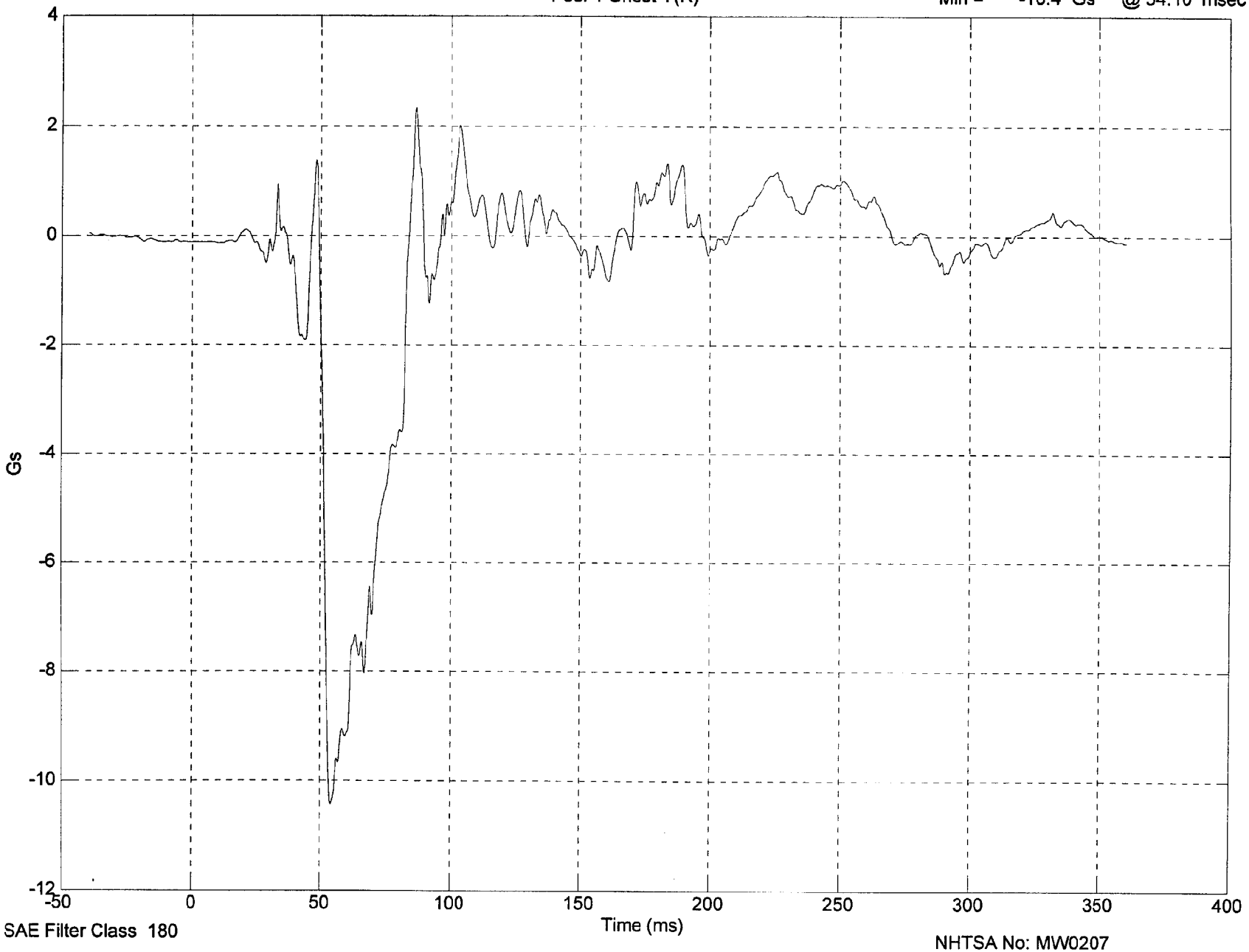
SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 1 Chest Y(R)

Max = 2.34 Gs @ 86.40 msec
Min = -10.4 Gs @ 54.10 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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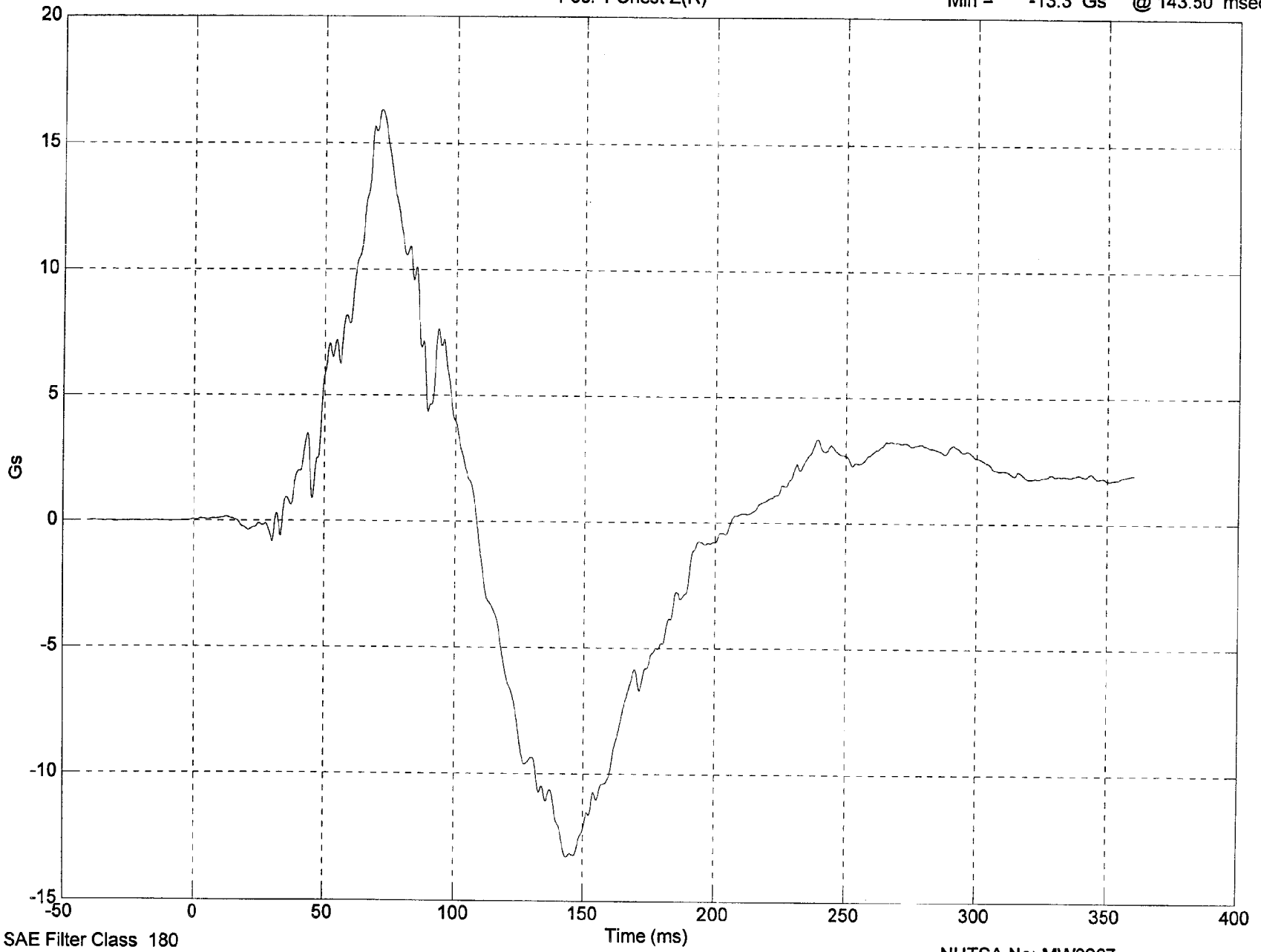
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Chest Z(R)

Max = 16.3 Gs @ 71.40 msec
Min = -13.3 Gs @ 143.50 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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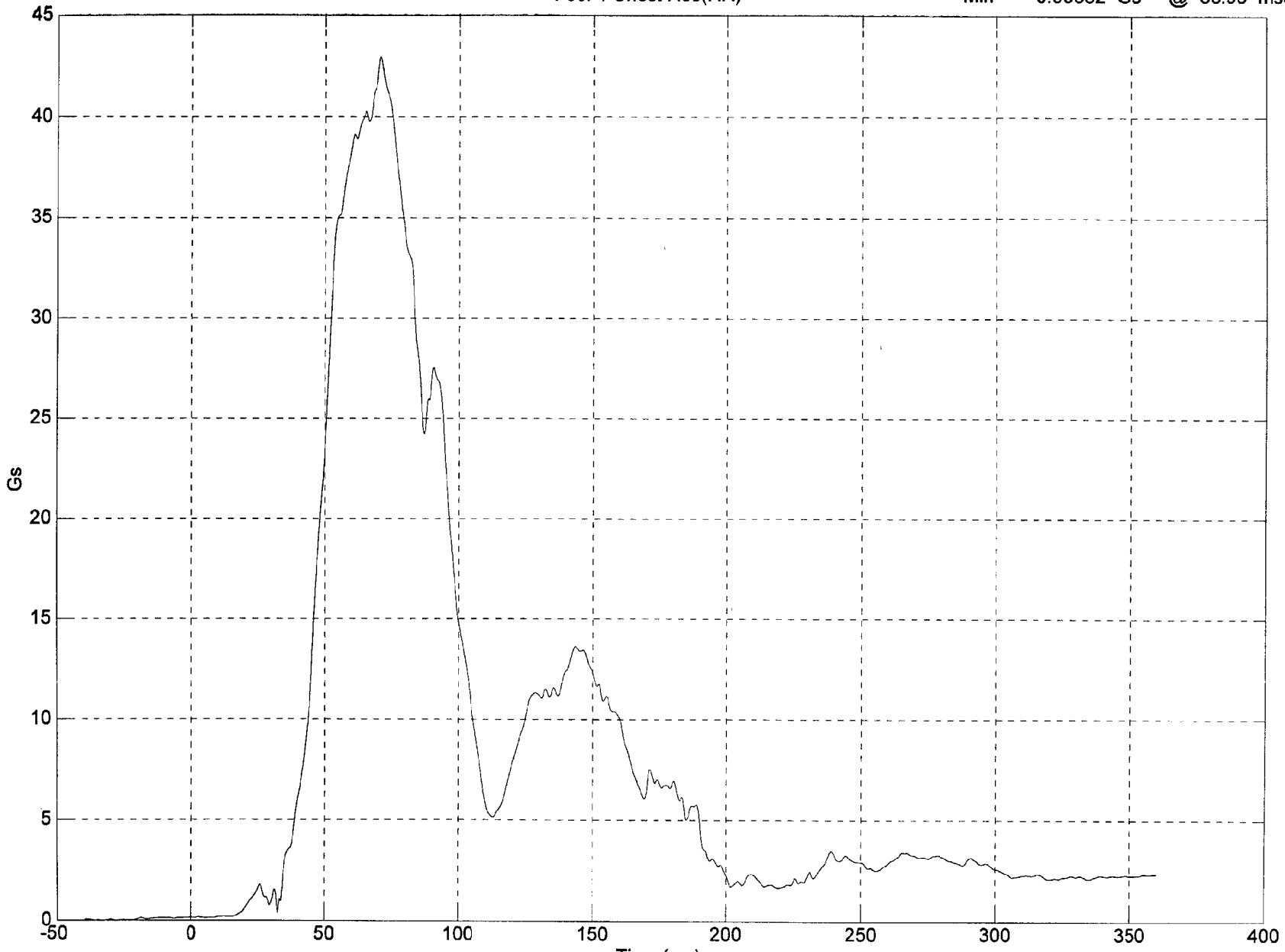
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Chest Res(RR)

Max = 42.9 Gs @ 70.80 msec
Min = 0.00582 Gs @ -35.90 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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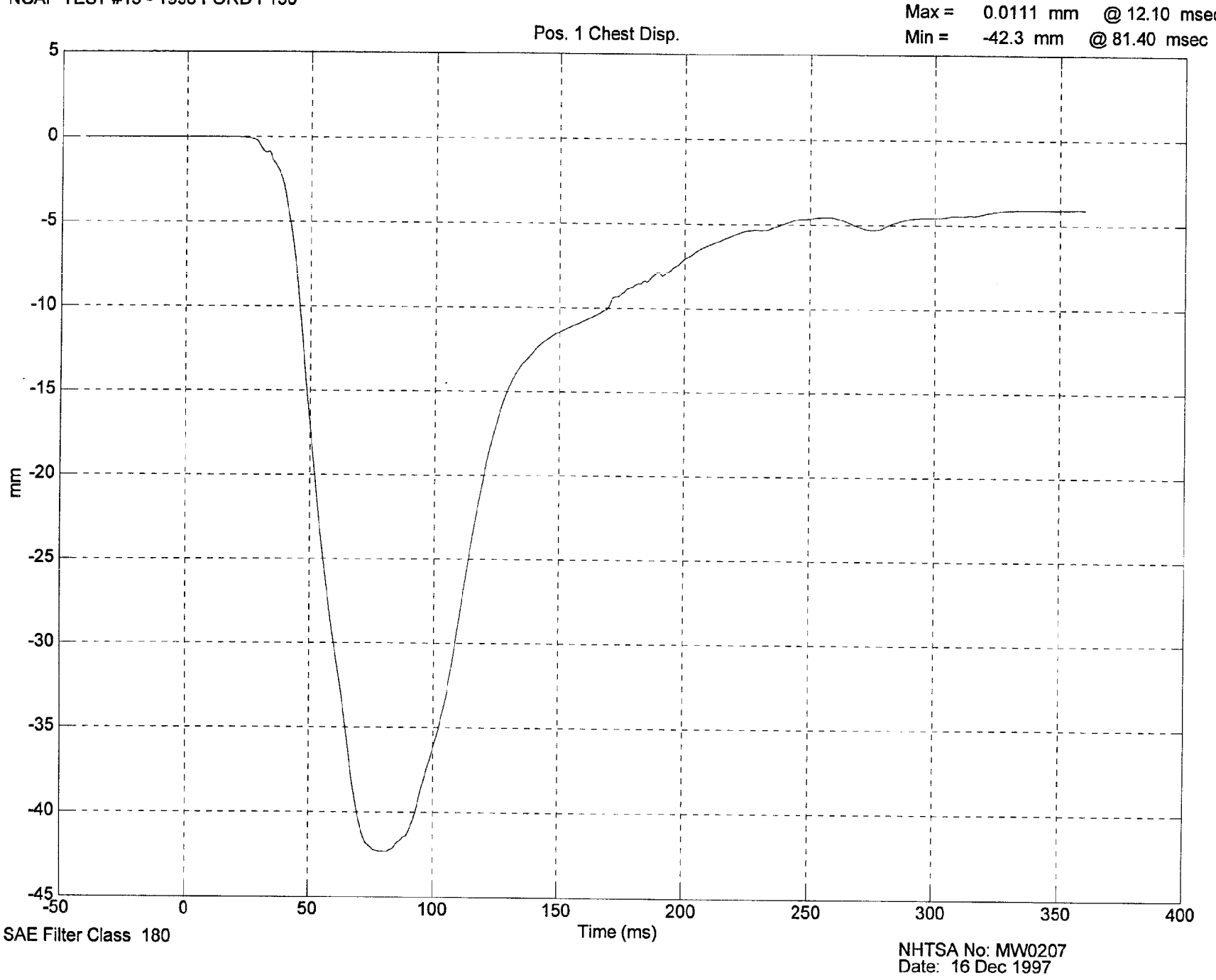
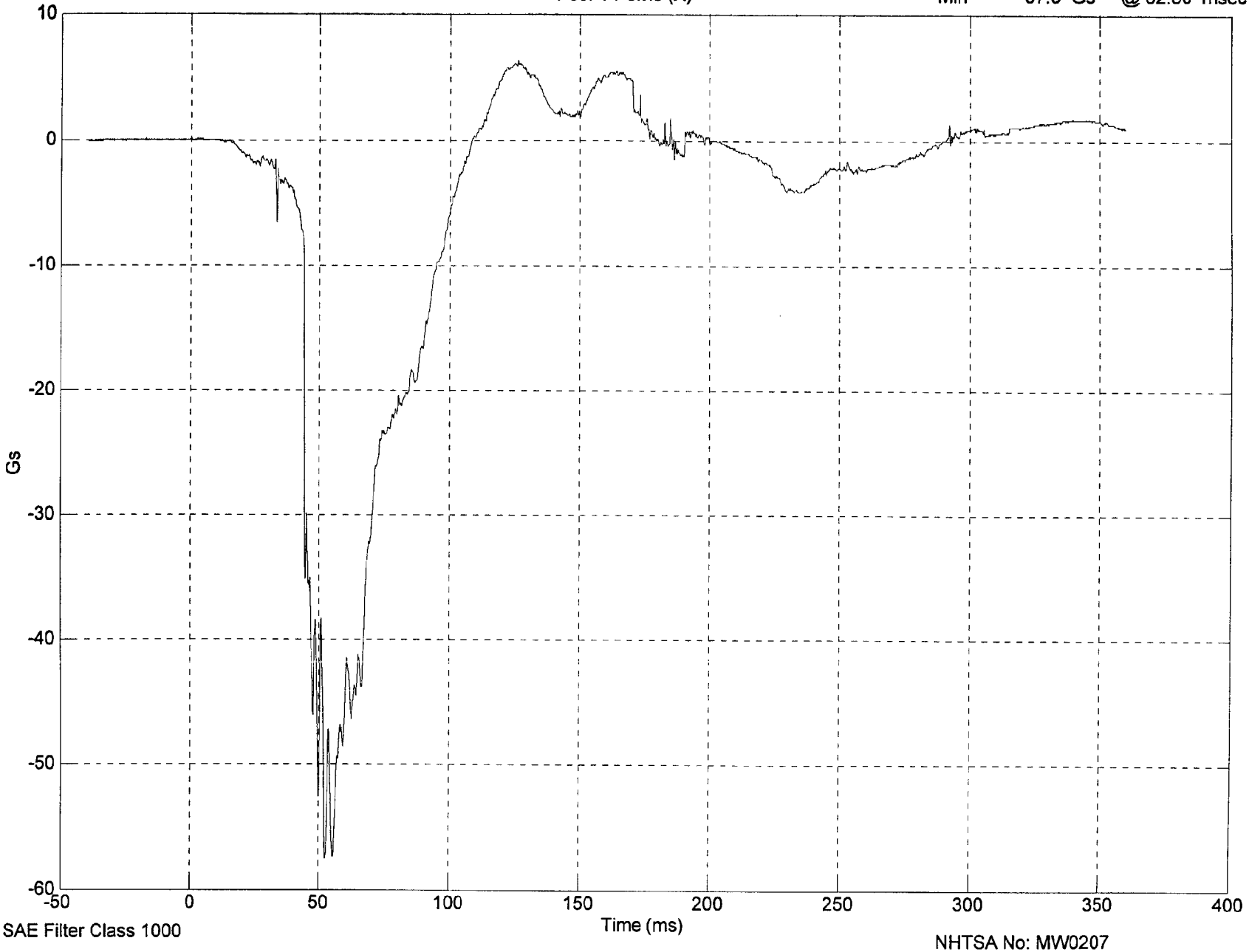
NCAP TEST #15 - 1998 FORD F150



NCAP TEST #15 - 1998 FORD F150

Pos. 1 Pelvic (X)

Max = 6.35 Gs @ 126.00 msec
Min = -57.5 Gs @ 52.50 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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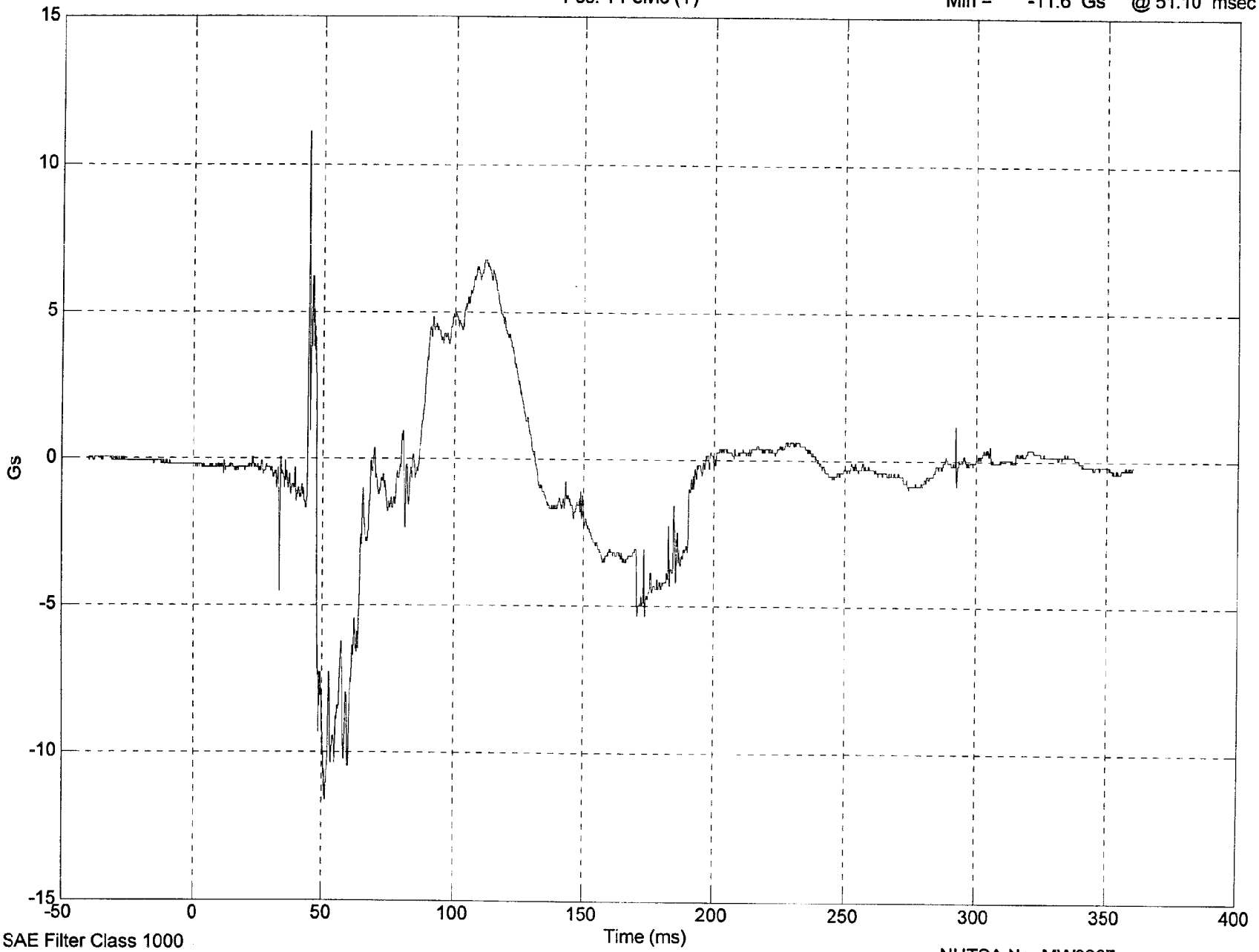
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Pelvic (Y)

Max = 11.1 Gs @ 44.60 msec
Min = -11.6 Gs @ 51.10 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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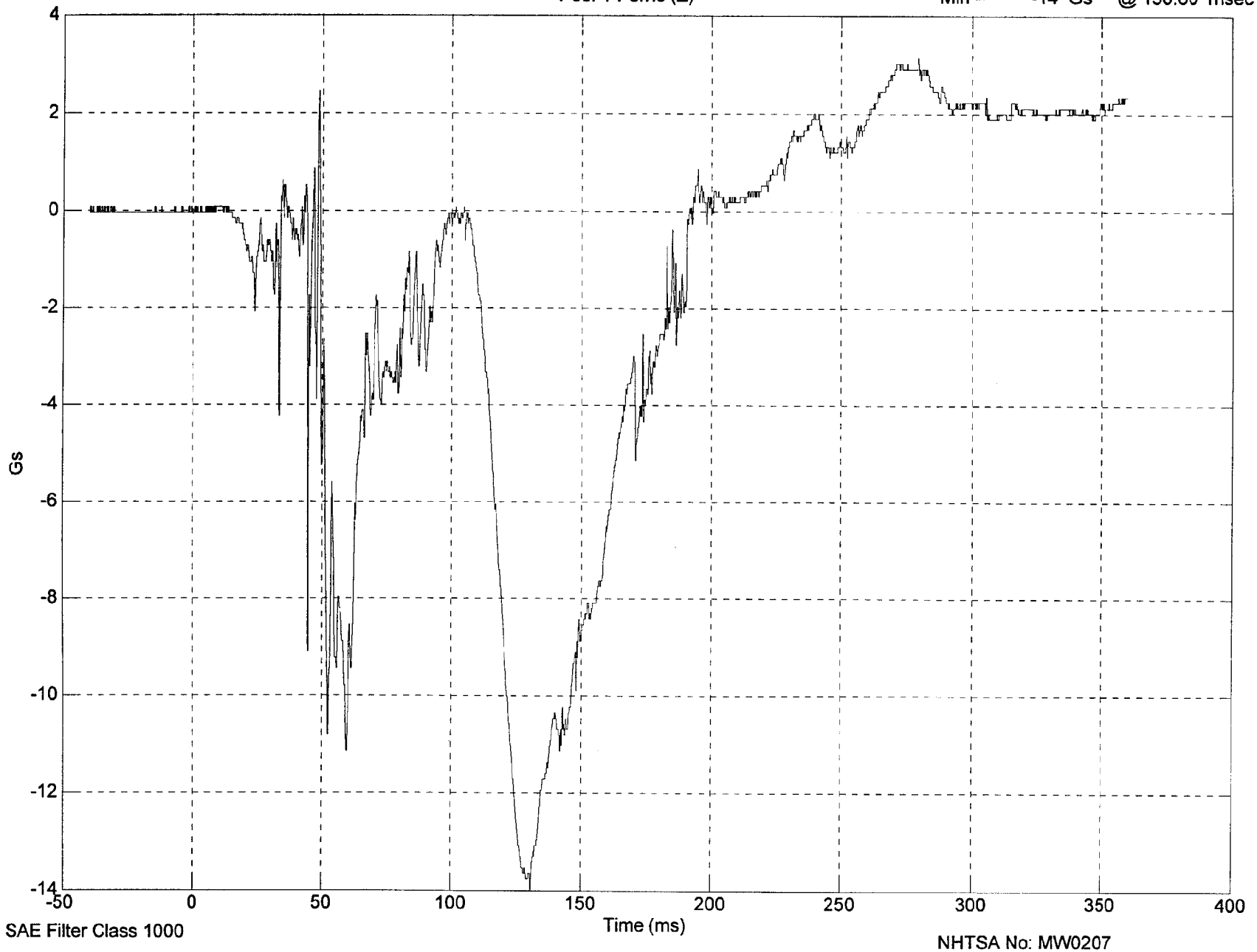
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Pelvic (Z)

Max = 3.14 Gs @ 279.30 msec
Min = -14 Gs @ 130.60 msec



SAE Filter Class 1000

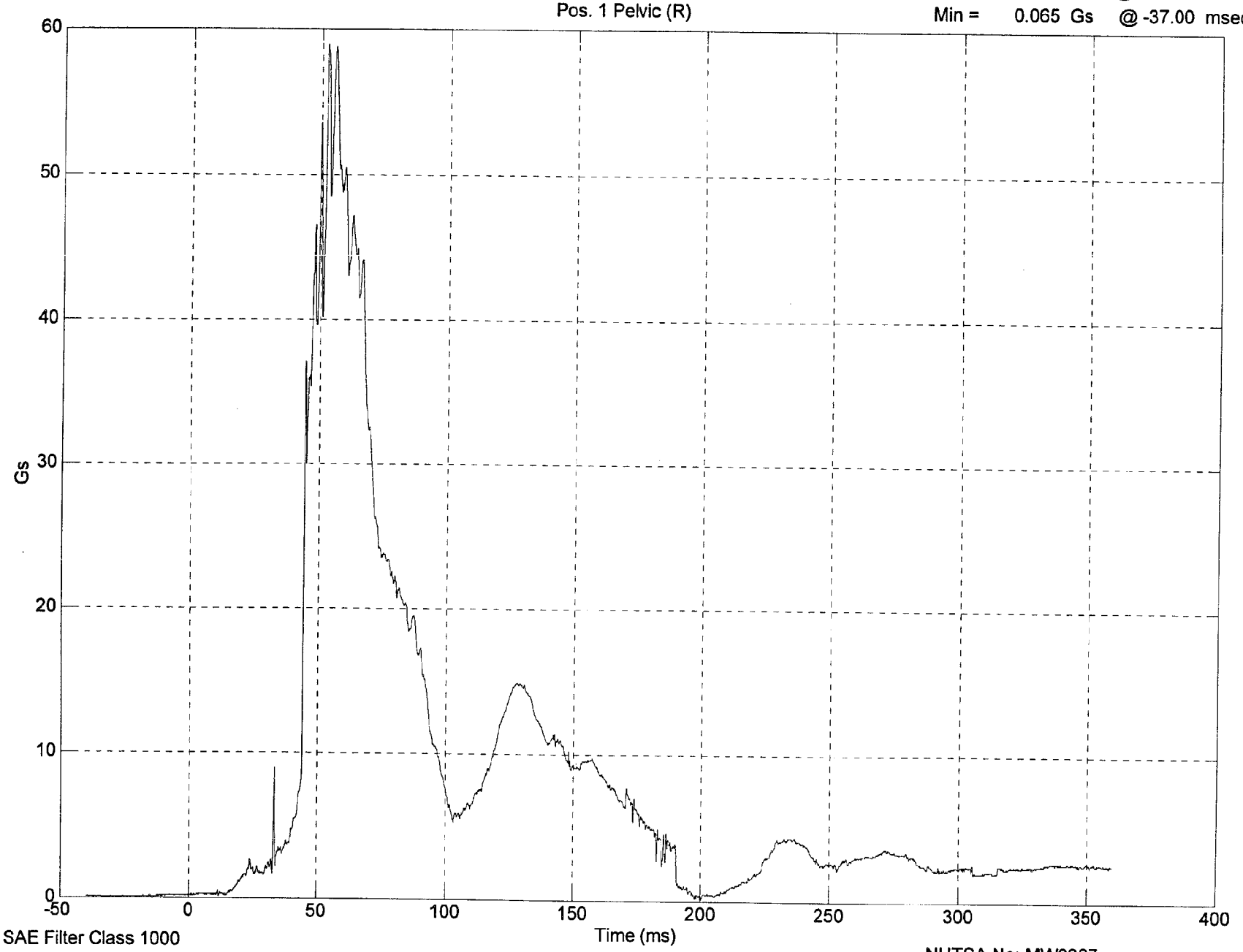
NHTSA No: MW0207
Date: 16 Dec 1997

8413-15

NCAP TEST #15 - 1998 FORD F150

Pos. 1 Pelvic (R)

Max = 59 Gs @ 52.40 msec
Min = 0.065 Gs @ -37.00 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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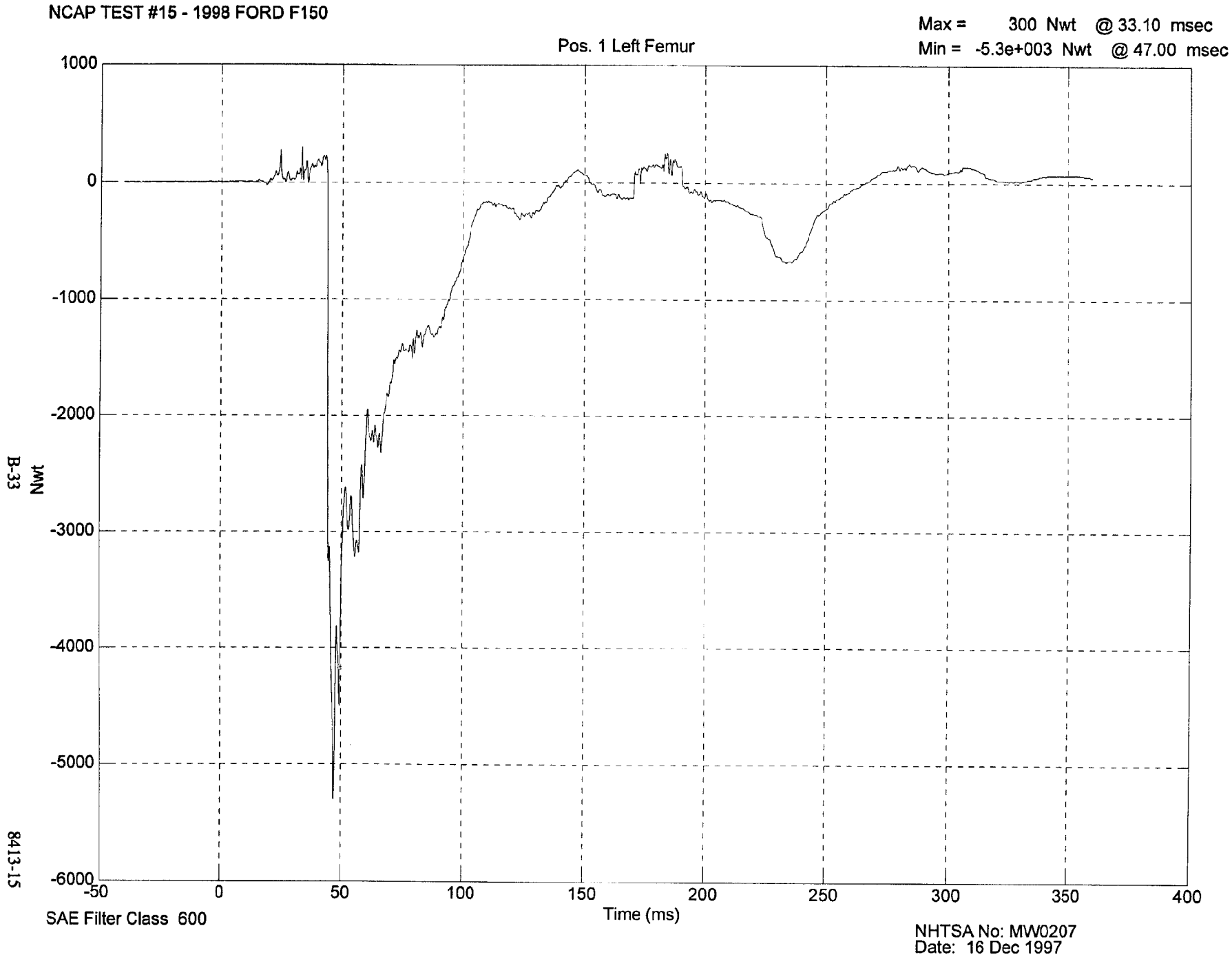
NCAP TEST #15 - 1998 FORD F150
Max = 300 Nwt @ 33.10 msec
Min = -5.3e+003 Nwt @ 47.00 msec
Pos. 1 Left Femur
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 600
NHTSA No: MW0207
Date: 16 Dec 1997
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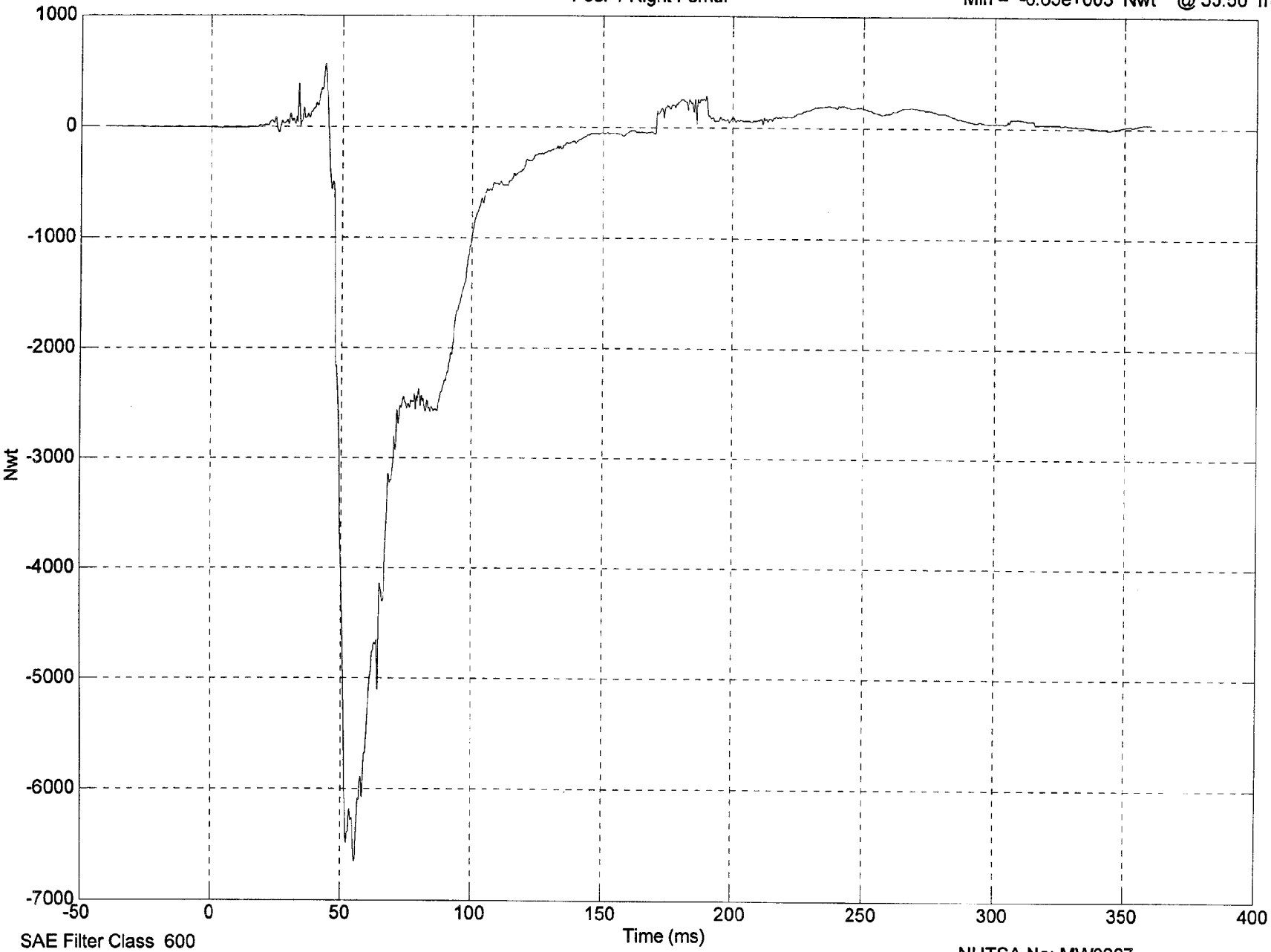
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Right Femur

Max = 562 Nwt @ 43.40 msec
Min = -6.65e+003 Nwt @ 55.50 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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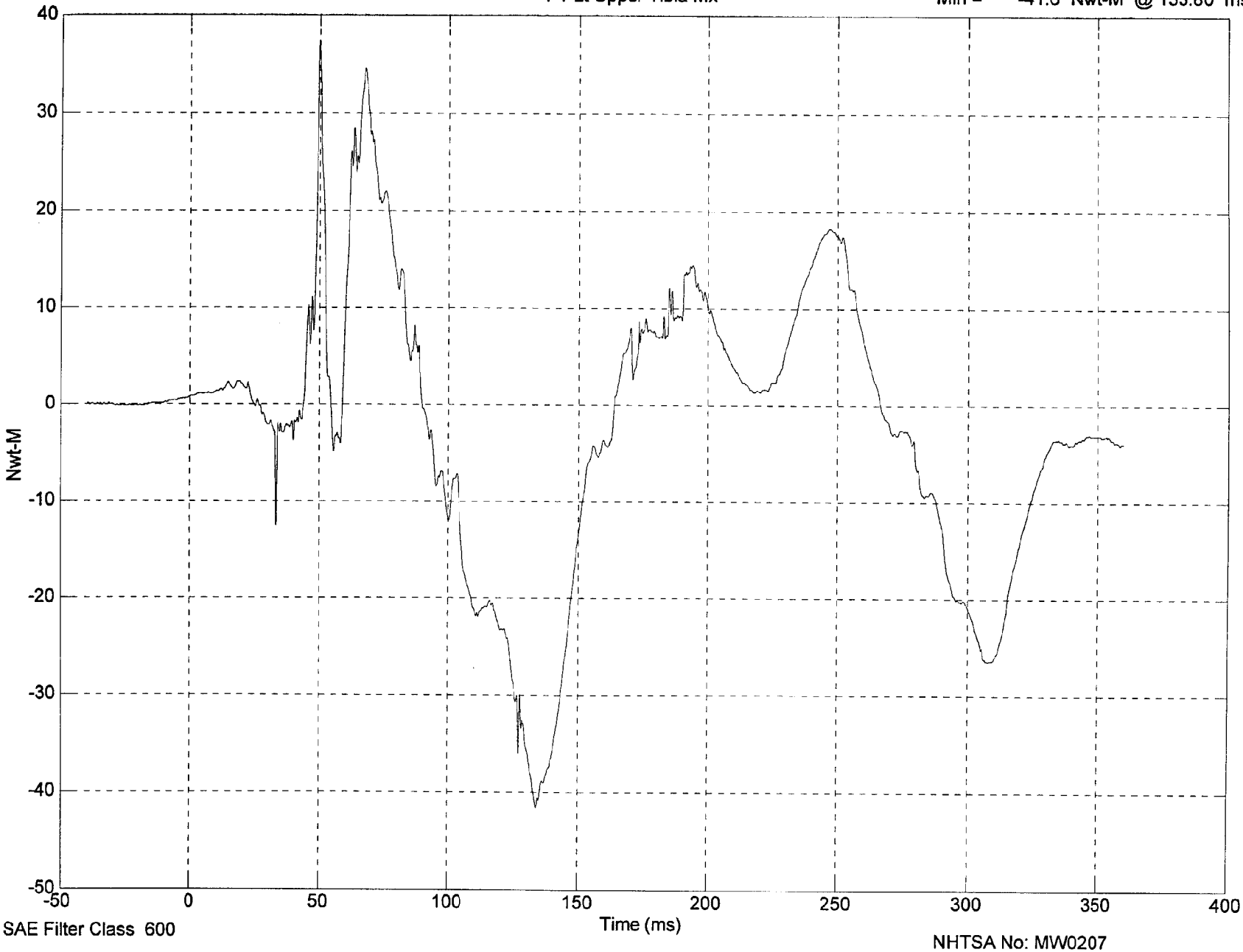
NCAP TEST #15 - 1998 FORD F150

P1 Lt Upper Tibia Mx

Max = 37.4 Nwt-M @ 49.70 msec
Min = -41.6 Nwt-M @ 133.80 msec

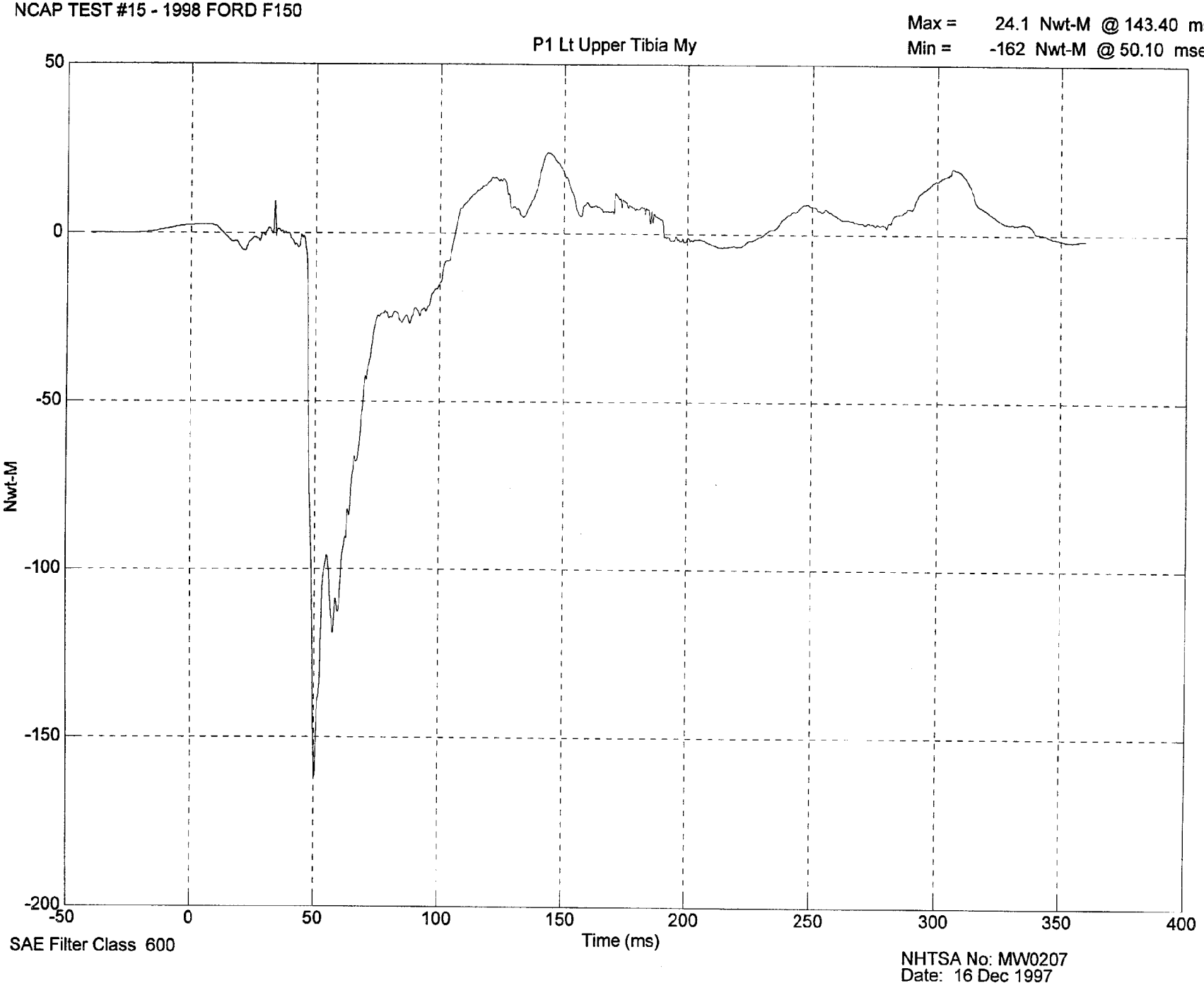


SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

8413-15

NCAP TEST #15 - 1998 FORD F150



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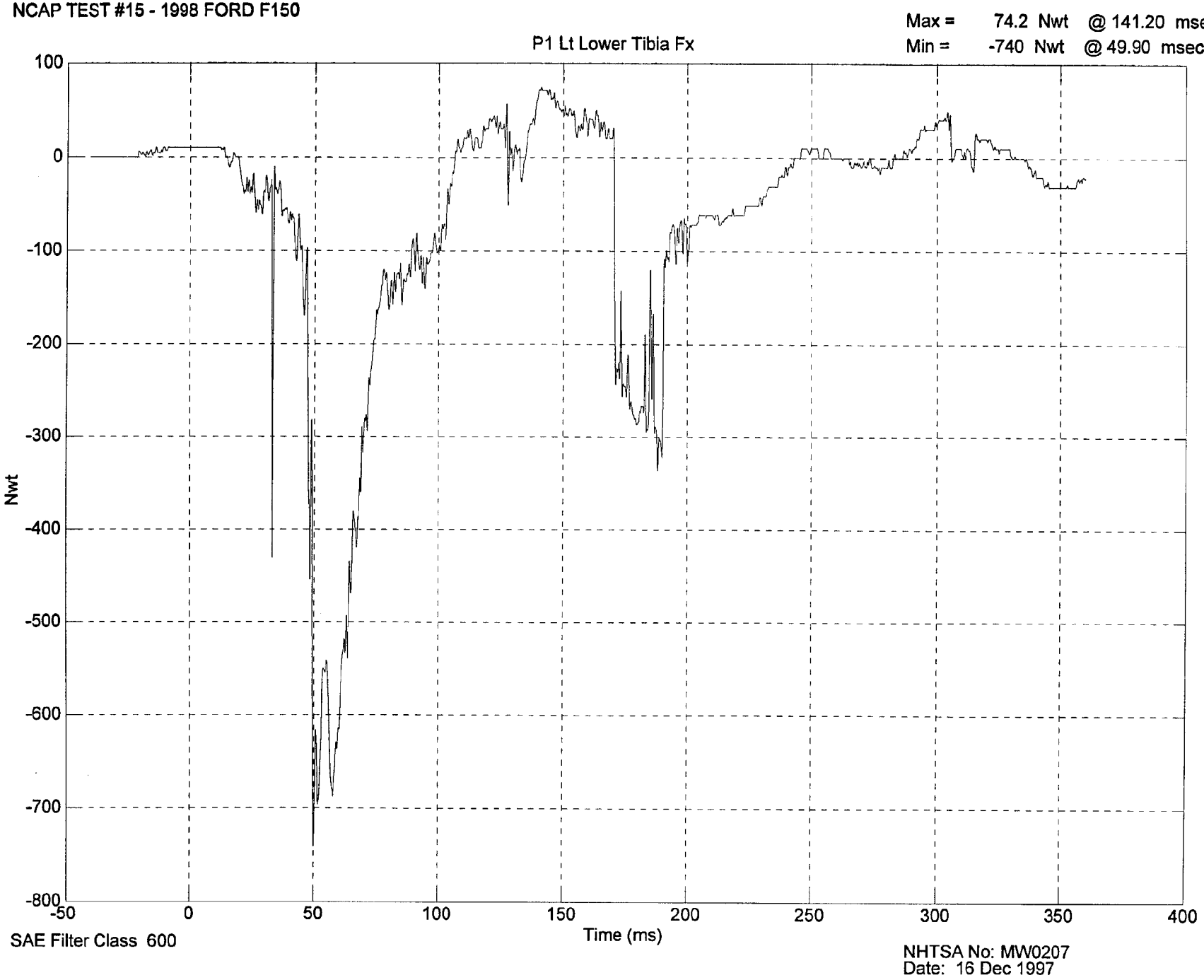
NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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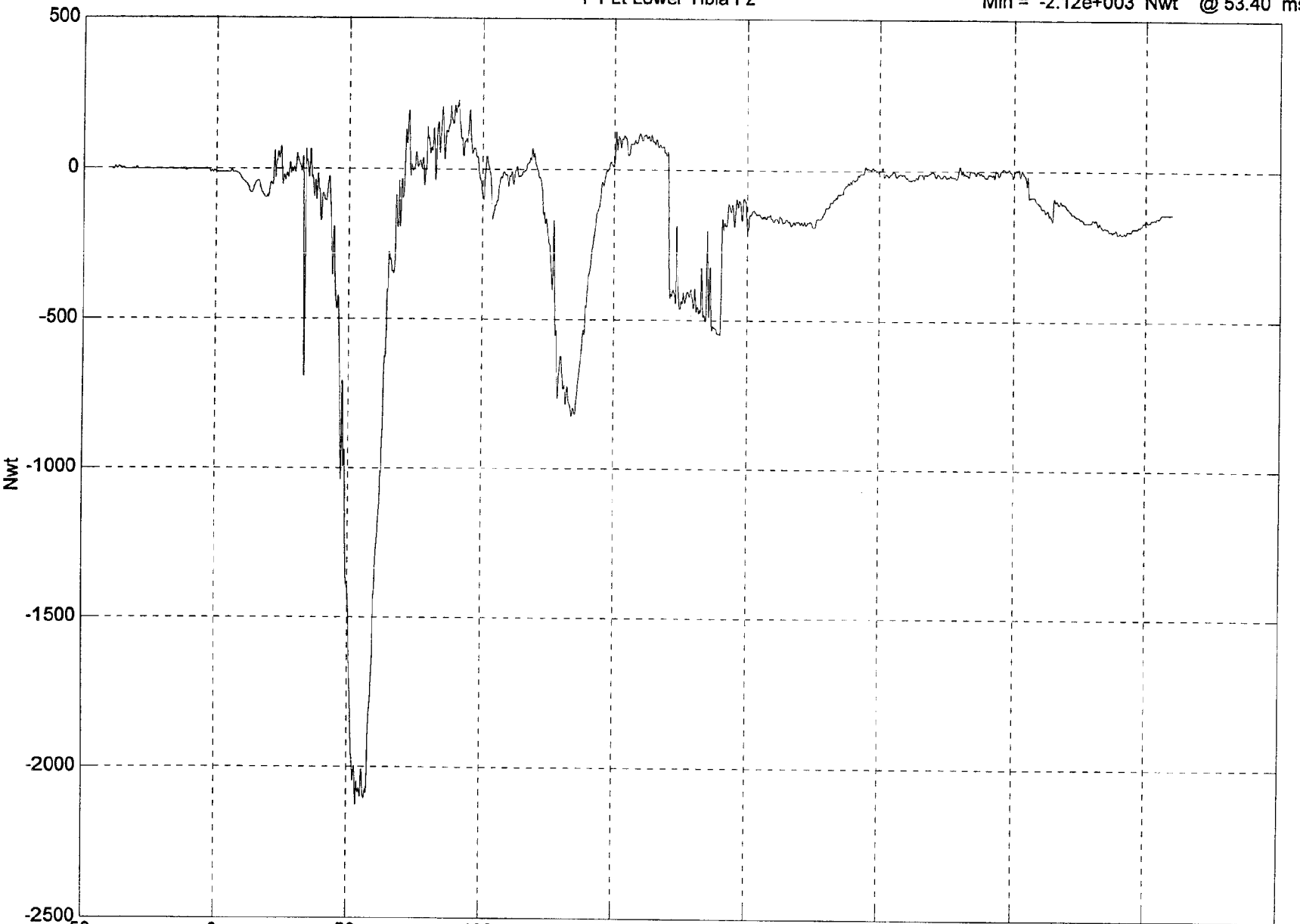
NCAP TEST #15 - 1998 FORD F150

P1 Lt Lower Tibia Fz

Max = 228 Nwt @ 91.10 msec
Min = -2.12e+003 Nwt @ 53.40 msec



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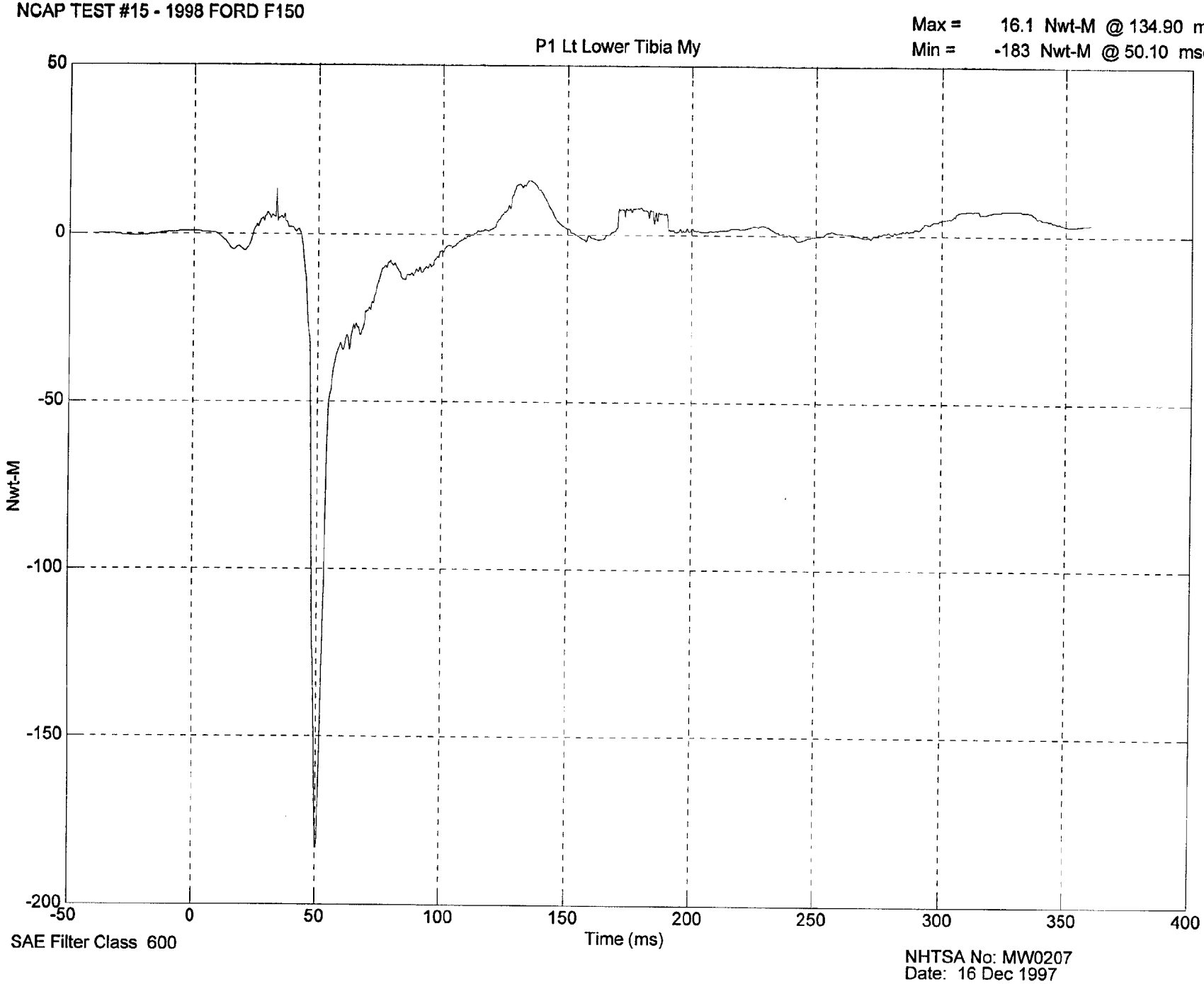
SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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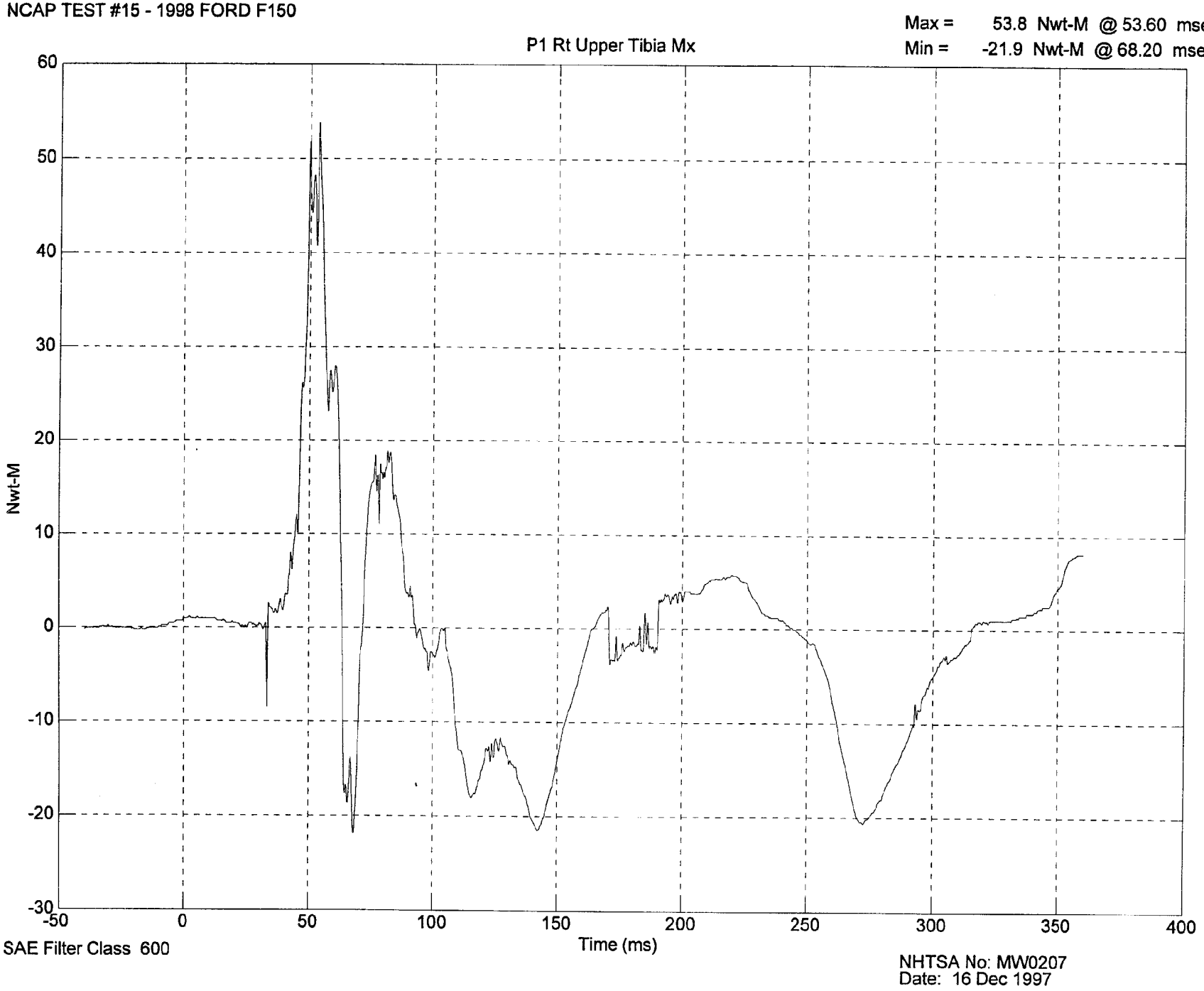
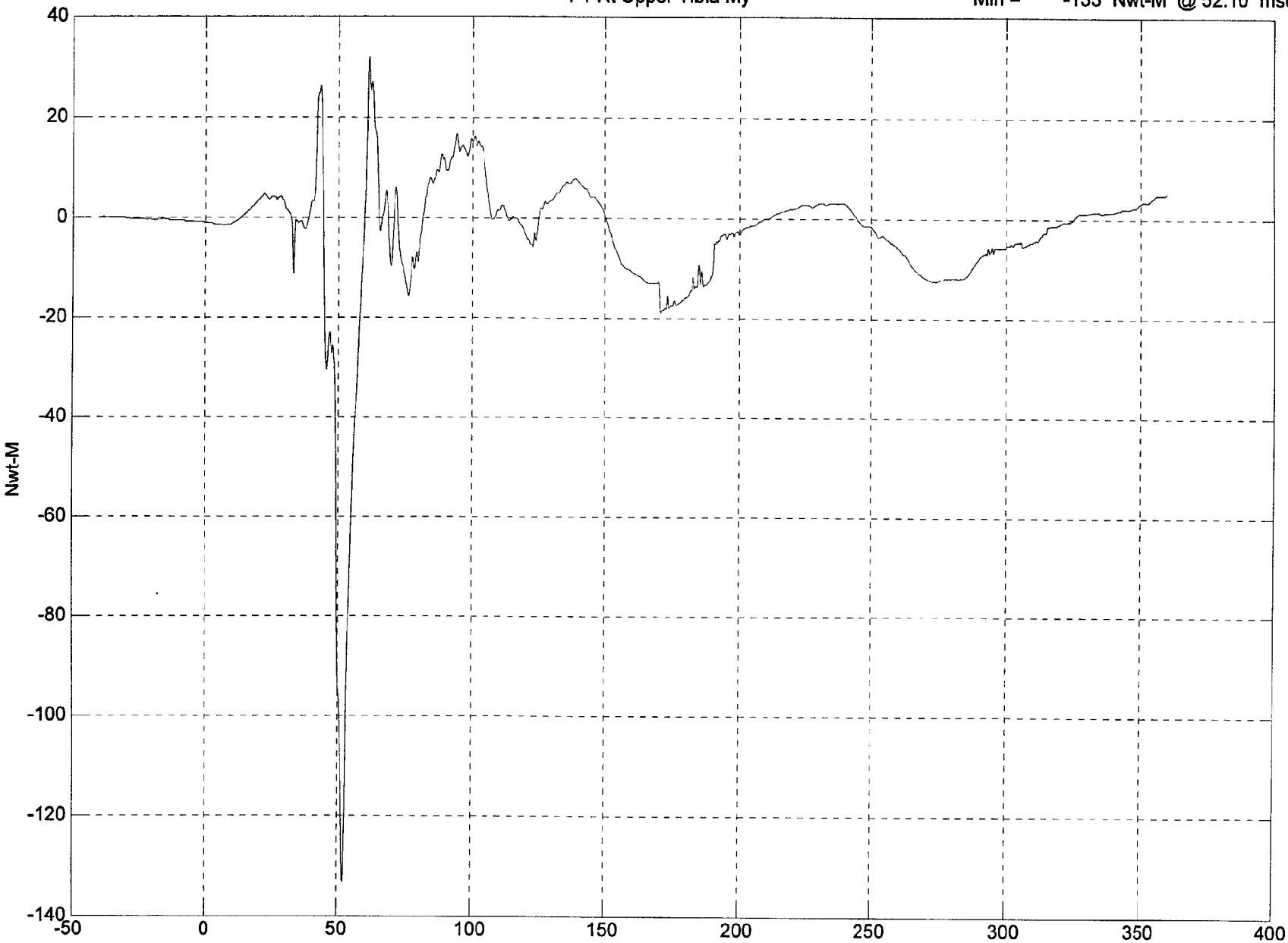
NCAP TEST #15 - 1998 FORD F150



NCAP TEST #15 - 1998 FORD F150

P1 Rt Upper Tibia My

Max = 31.8 Nwt-M @ 61.10 msec
Min = -133 Nwt-M @ 52.10 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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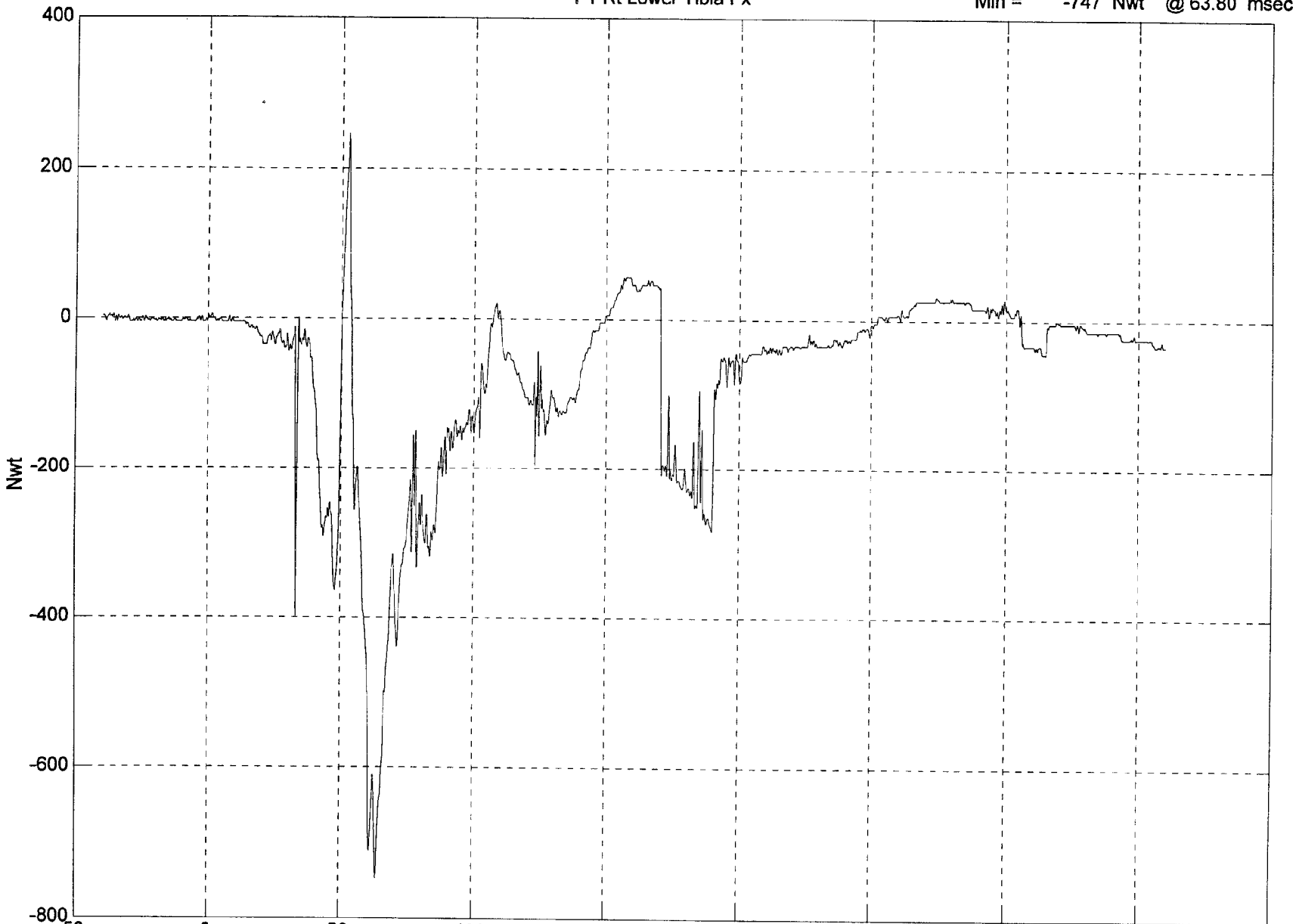
NCAP TEST #15 - 1998 FORD F150

P1 Rt Lower Tibia Fx

Max = 246 Nwt @ 52.60 msec
Min = -747 Nwt @ 63.80 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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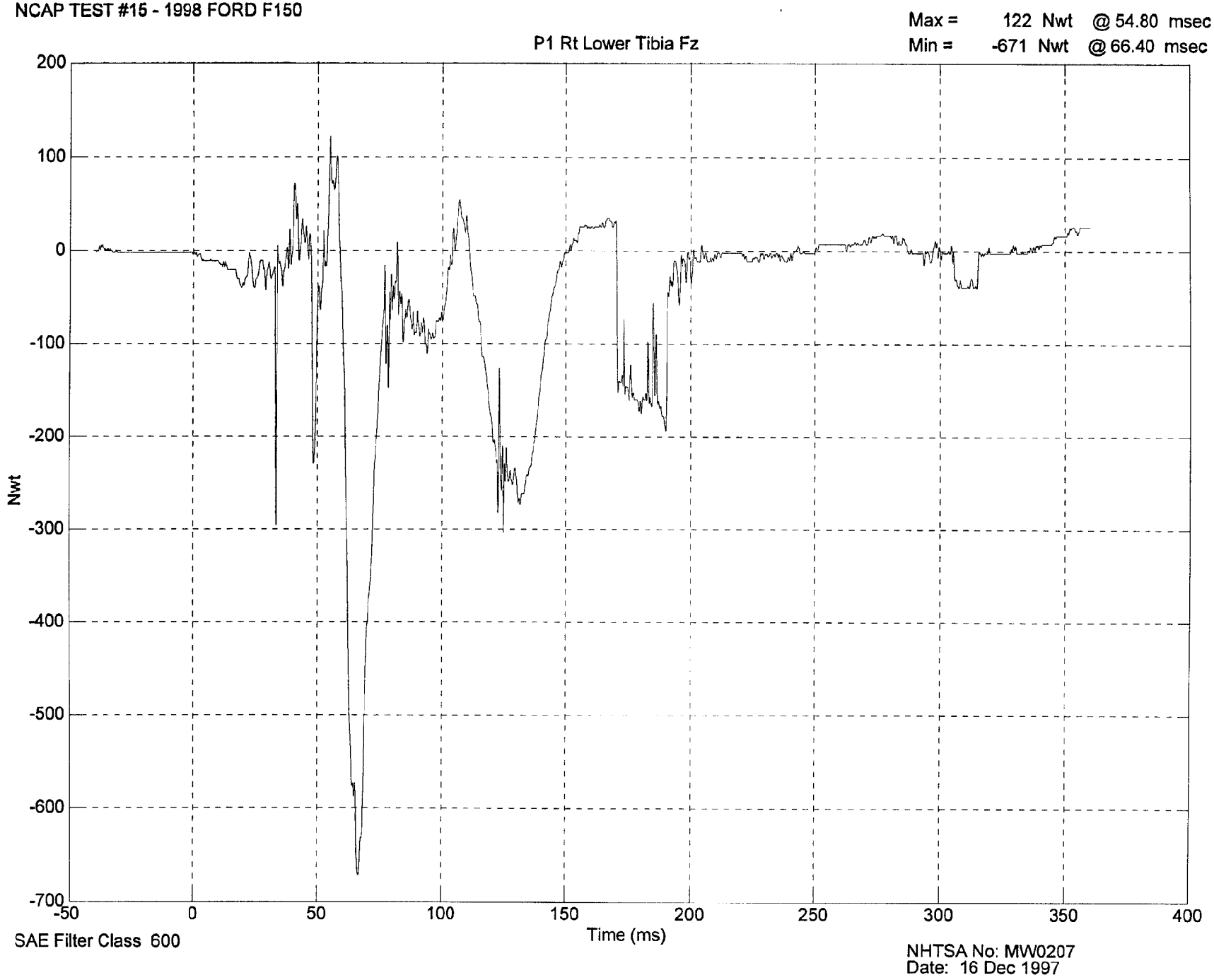
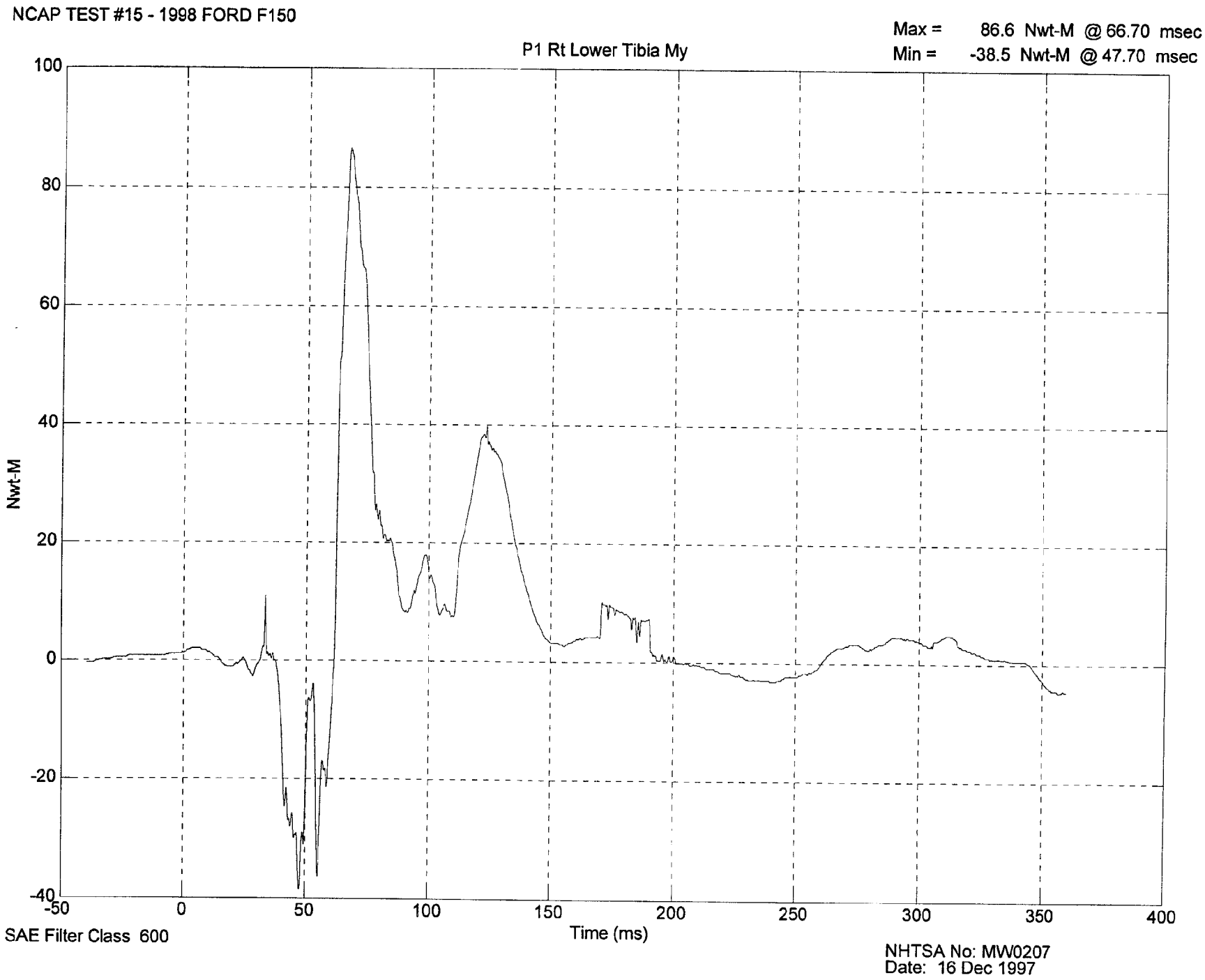
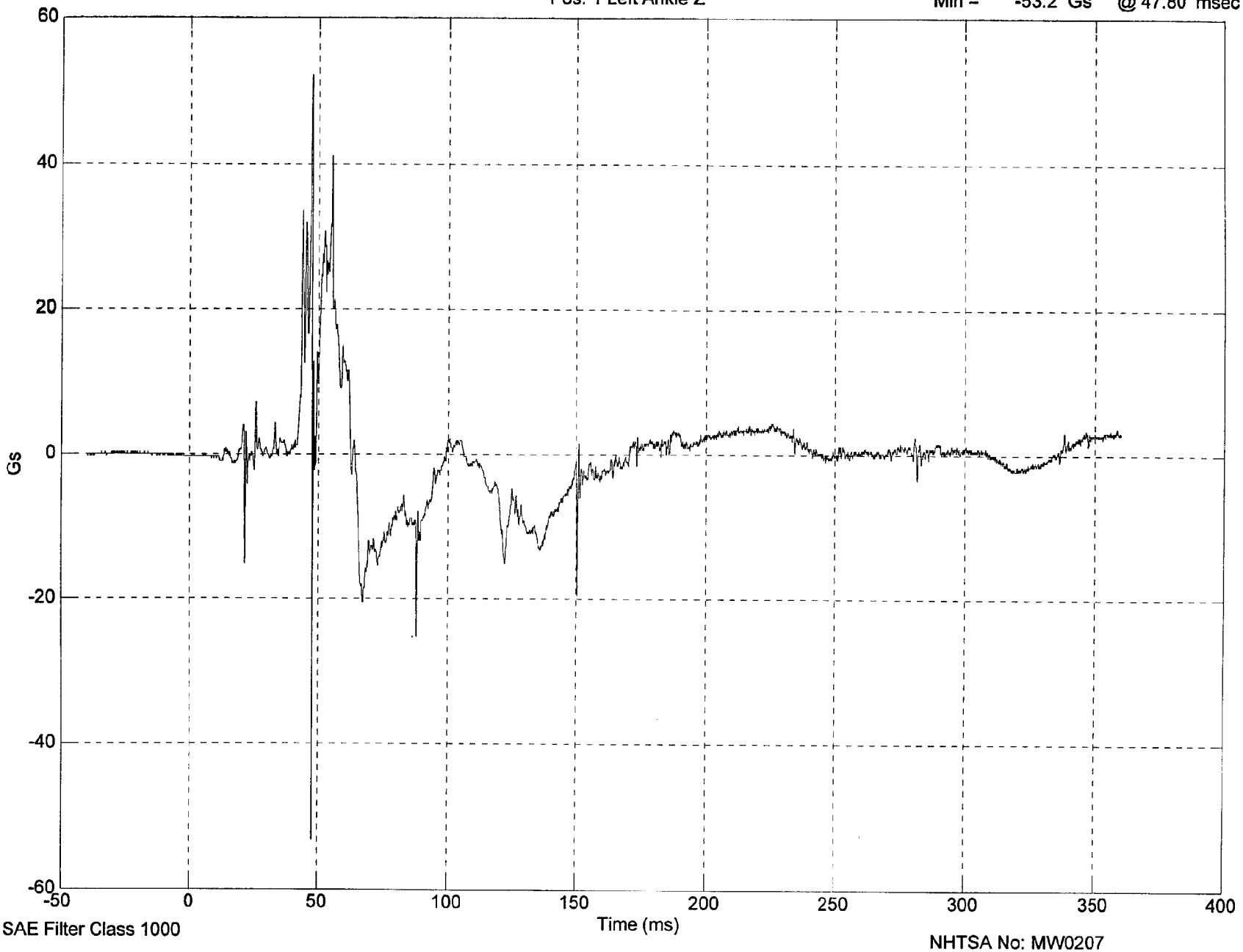

NCAP TEST #15 - 1998 FORD F150
P1 Rt Lower Tibia Fz
Max = 122 Nwt @ 54.80 msec
Min = -671 Nwt @ 66.40 msec
200
100
0
-100
-200
-300
-400
-500
-600
-700
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 600
NHTSA No: MW0207
Date: 16 Dec 1997


NCAP TEST #15 - 1998 FORD F150
P1 Rt Lower Tibia My
Max = 86.6 Nwt-M @ 66.70 msec
Min = -38.5 Nwt-M @ 47.70 msec
Nwt-M
100
80
60
40
20
0
-20
-40
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 600
NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 1 Left Ankle Z

Max = 52.2 Gs @ 47.40 msec
Min = -53.2 Gs @ 47.80 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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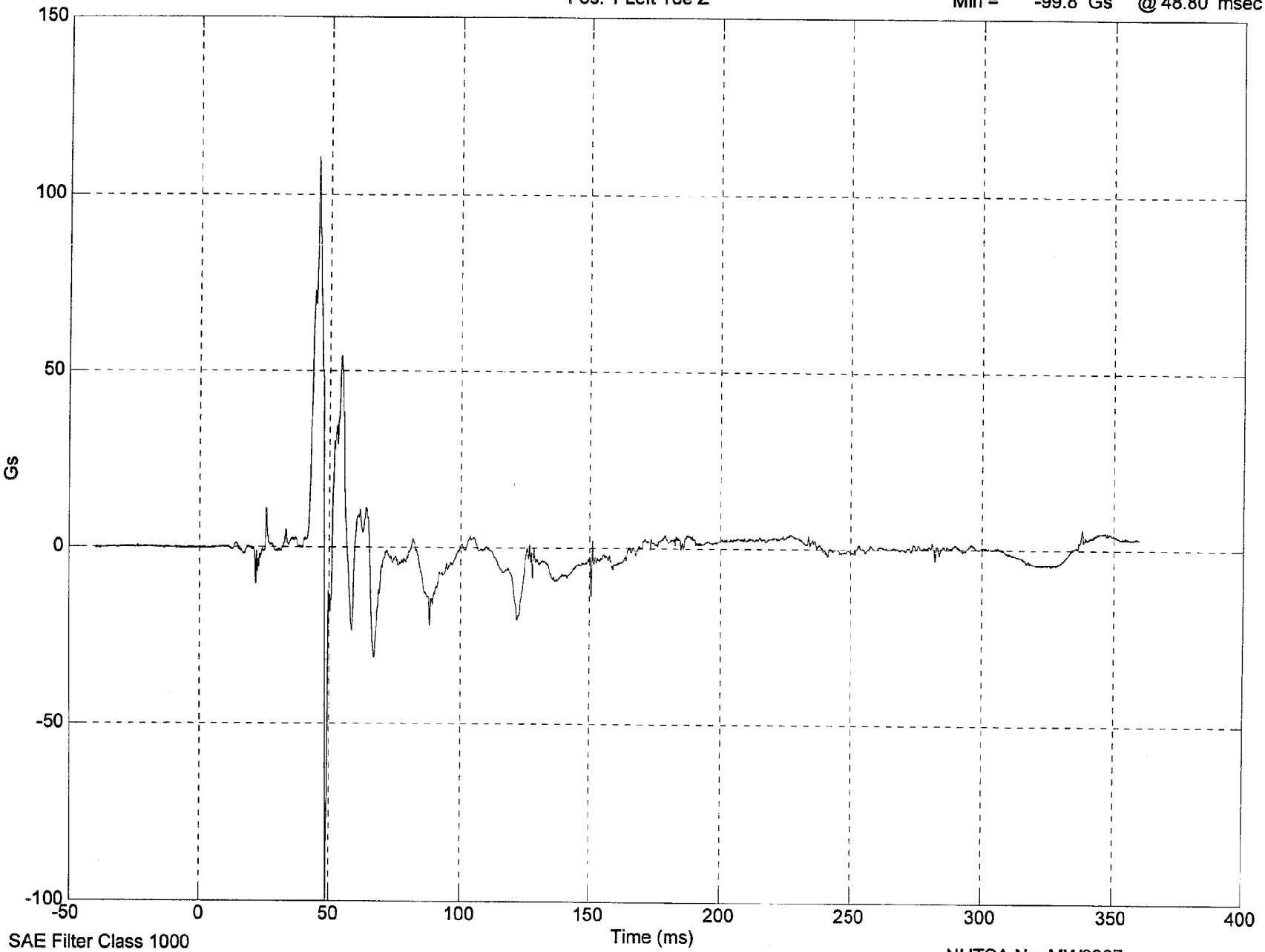
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Left Toe Z

Max = 111 Gs @ 45.40 msec
Min = -99.8 Gs @ 48.80 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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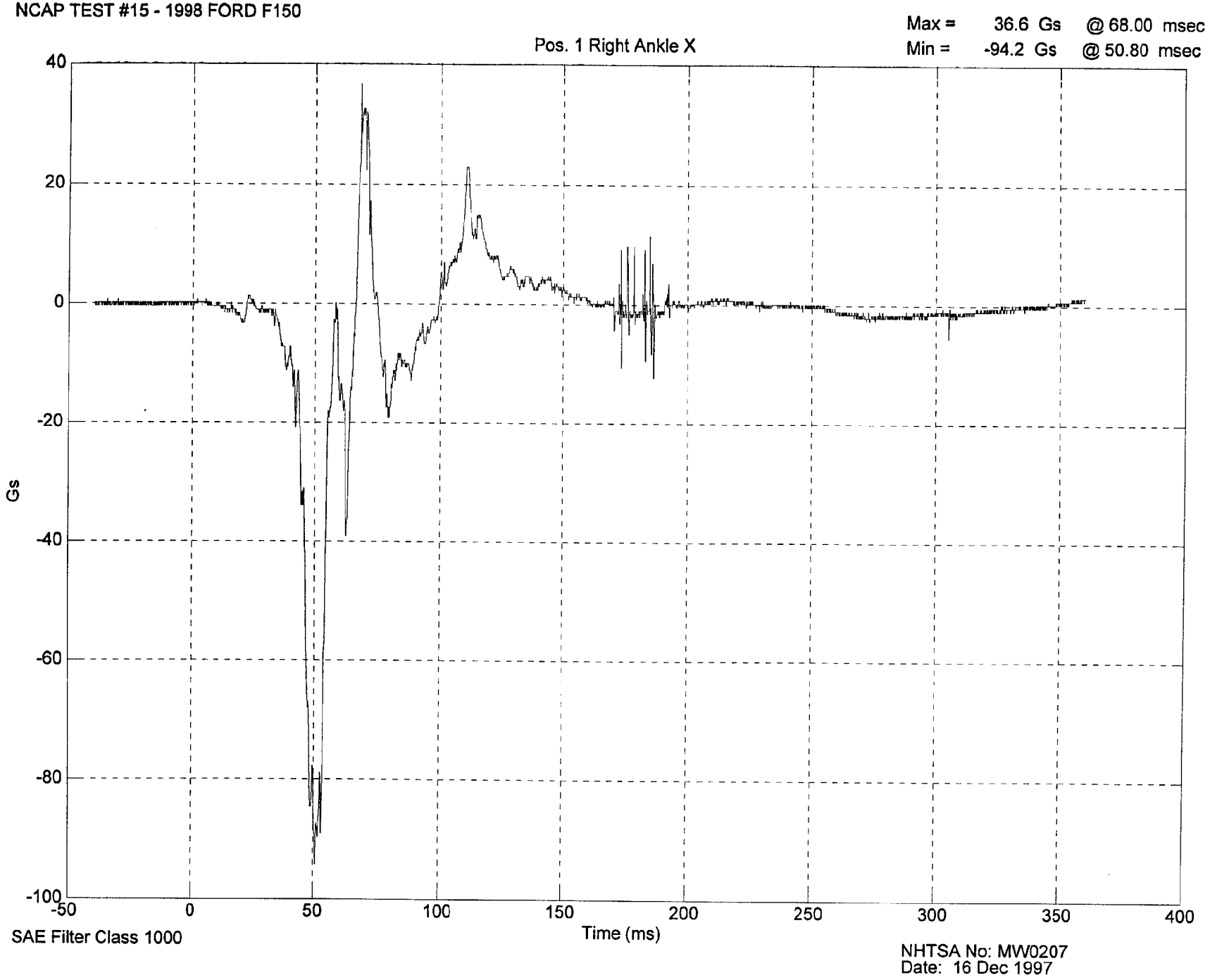
NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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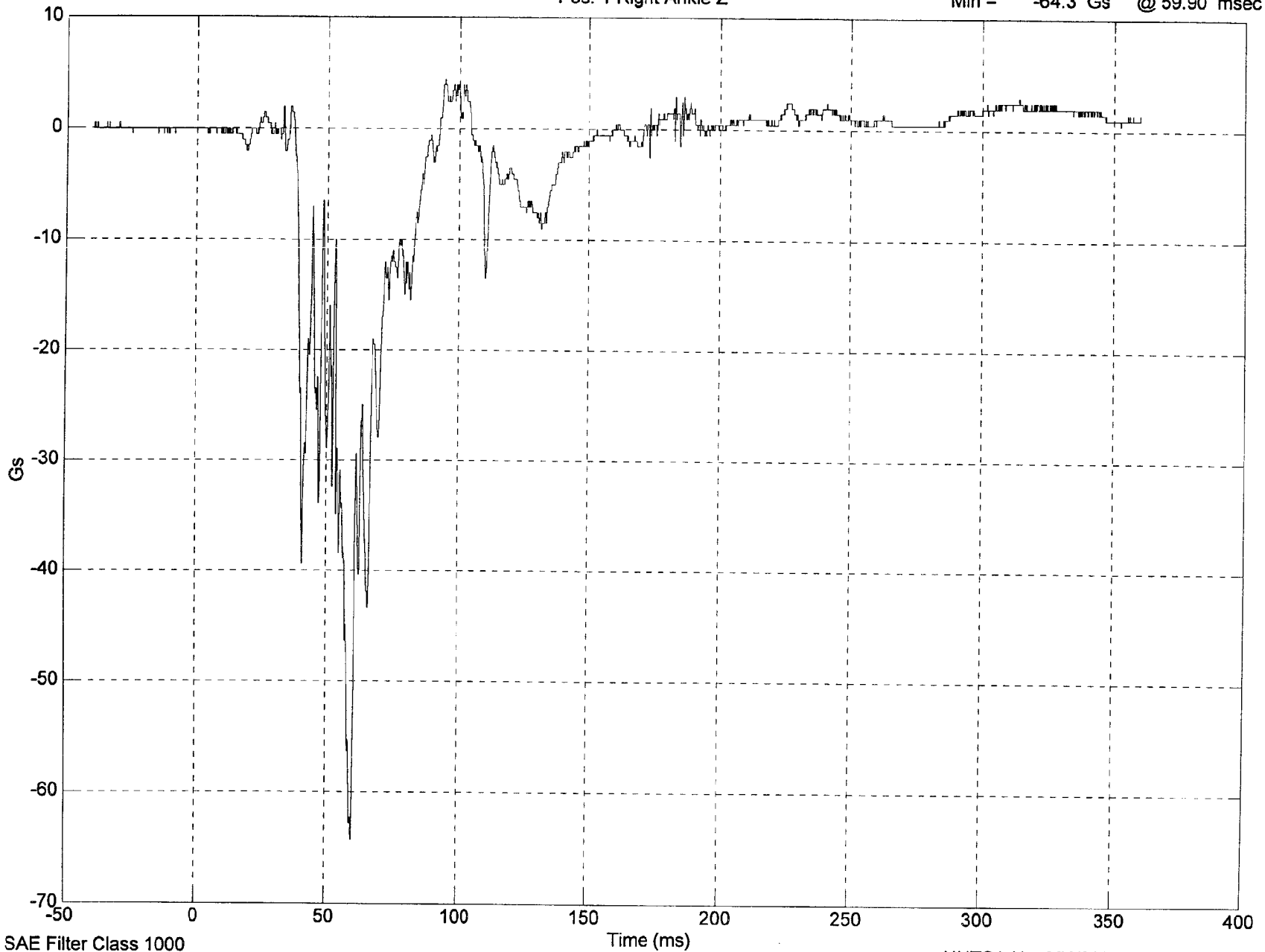
NCAP TEST #15 - 1998 FORD F150

Pos. 1 Right Ankle Z

Max = 4.44 Gs @ 94.30 msec
Min = -64.3 Gs @ 59.90 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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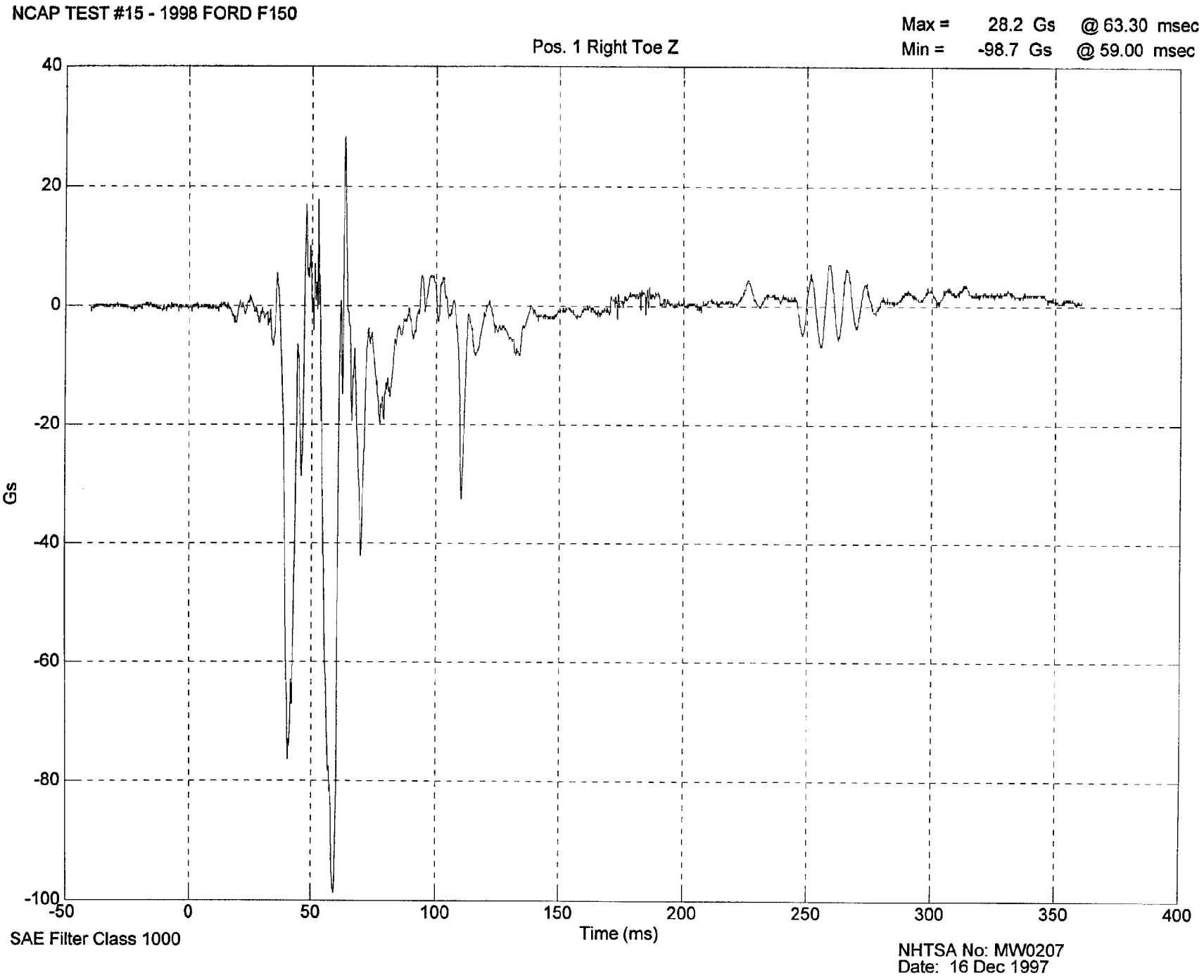
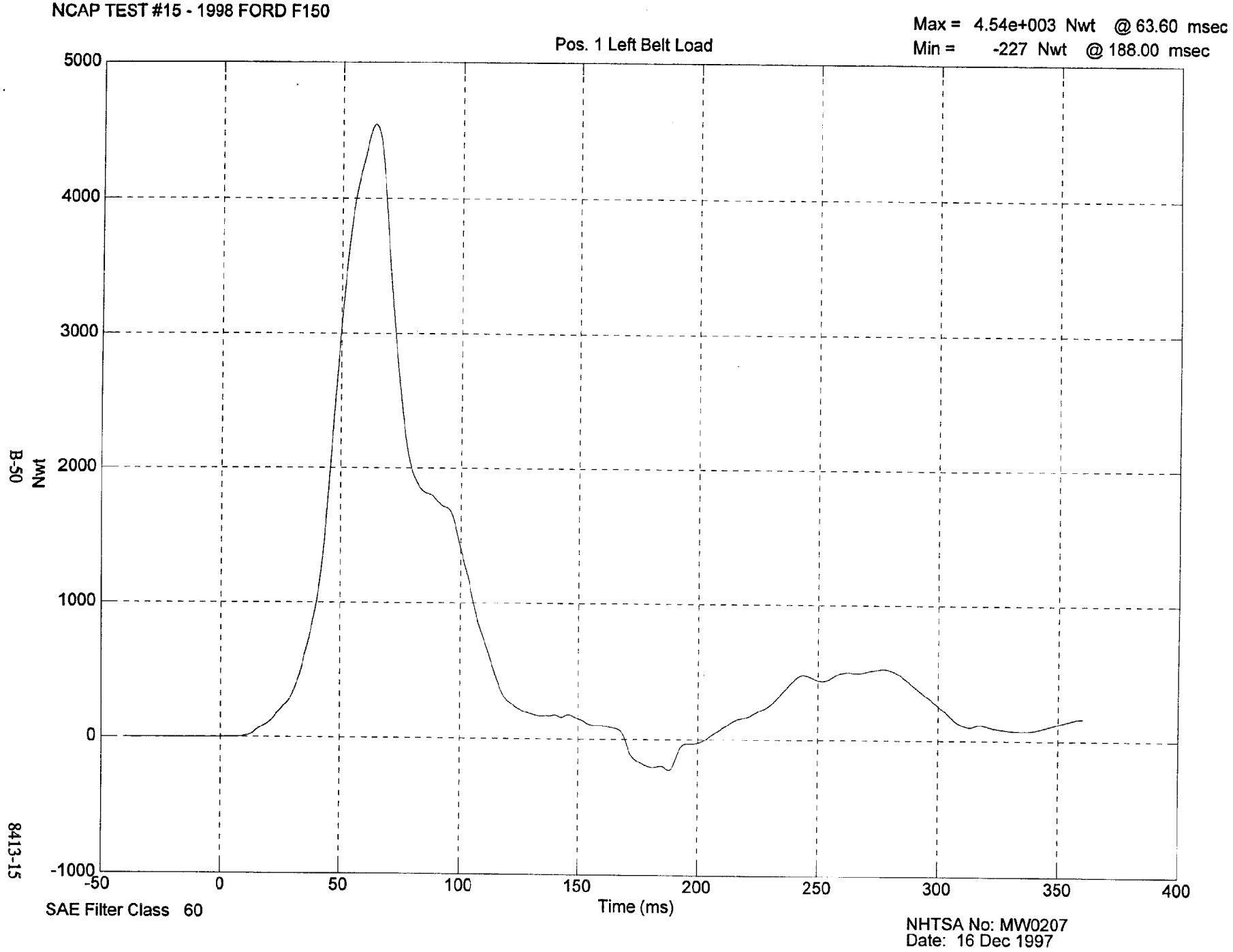
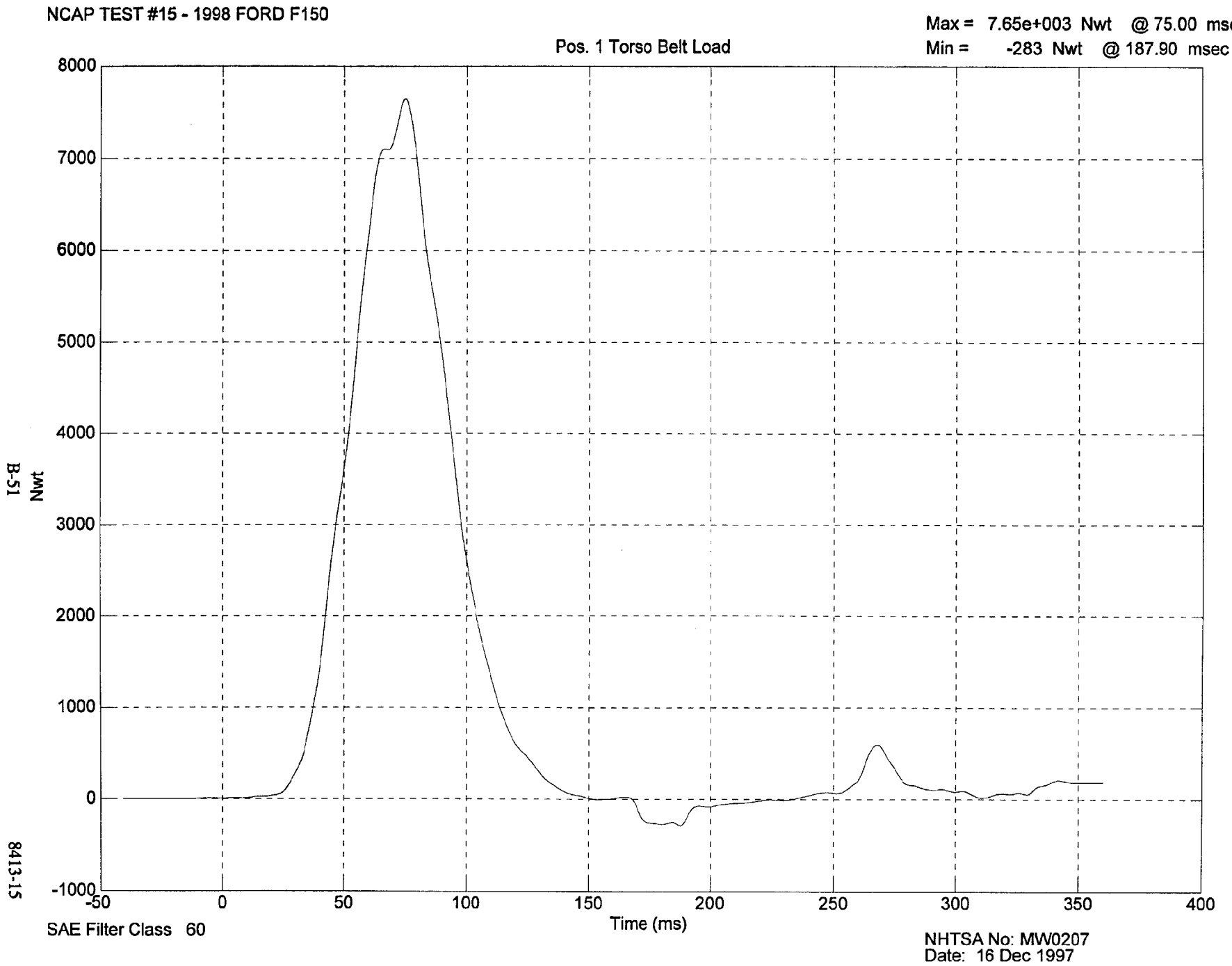

NCAP TEST #15 - 1998 FORD F150
Pos. 1 Right Toe Z
Max = 28.2 Gs @ 63.30 msec
Min = -98.7 Gs @ 59.00 msec
40
20
0
-20
-40
-60
-80
-100
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150




NCAP TEST #15 - 1998 FORD F150
Pos. 1 Torso Belt Load
Max = 7.65e+003 Nwt @ 75.00 msec
Min = -283 Nwt @ 187.90 msec
8000
7000
6000
5000
4000
3000
2000
1000
0
-1000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (ms)
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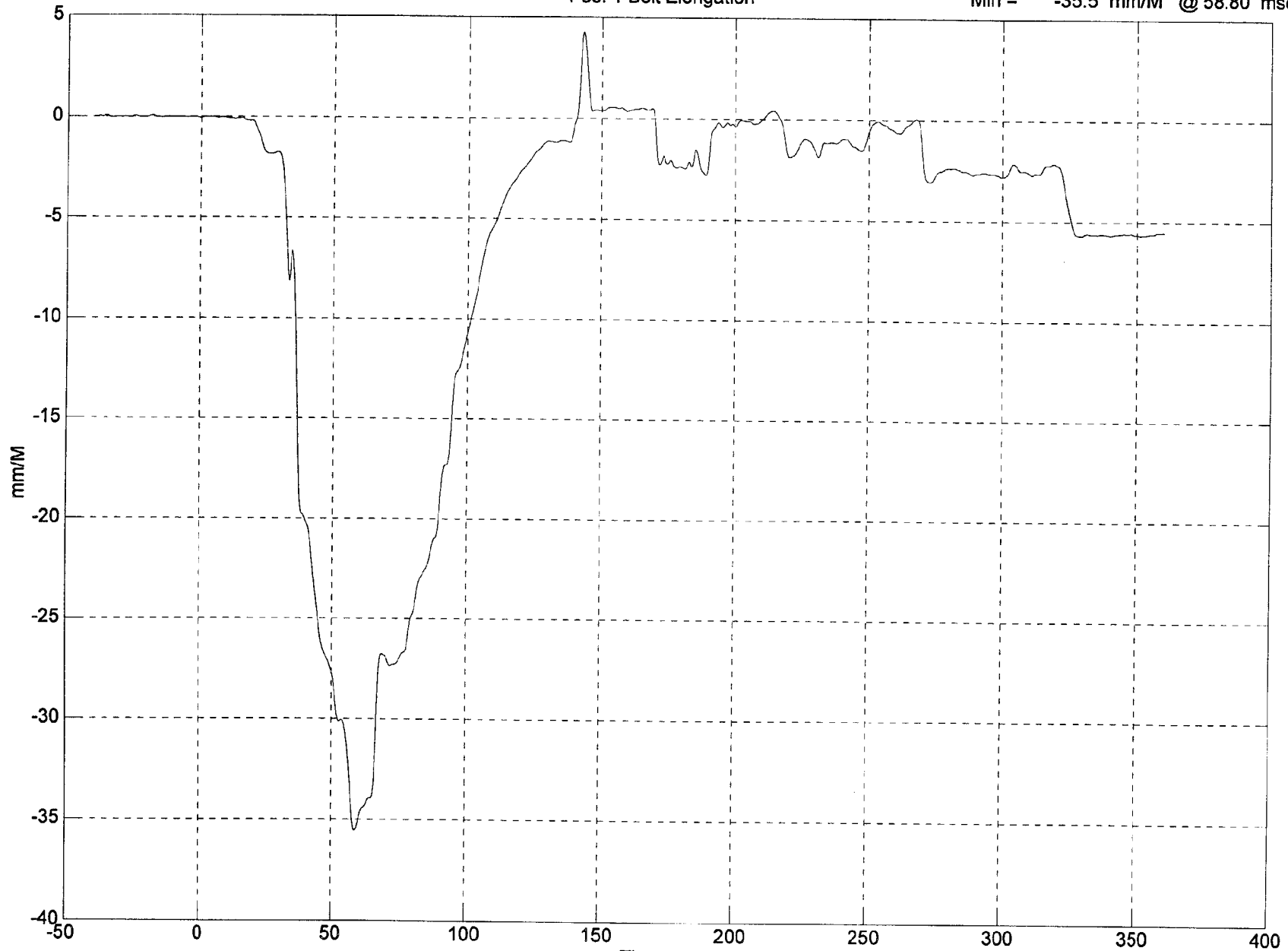
SAE Filter Class 60
NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 1 Belt Elongation

Max = 4.25 mm/M @ 143.30 msec
Min = -35.5 mm/M @ 58.80 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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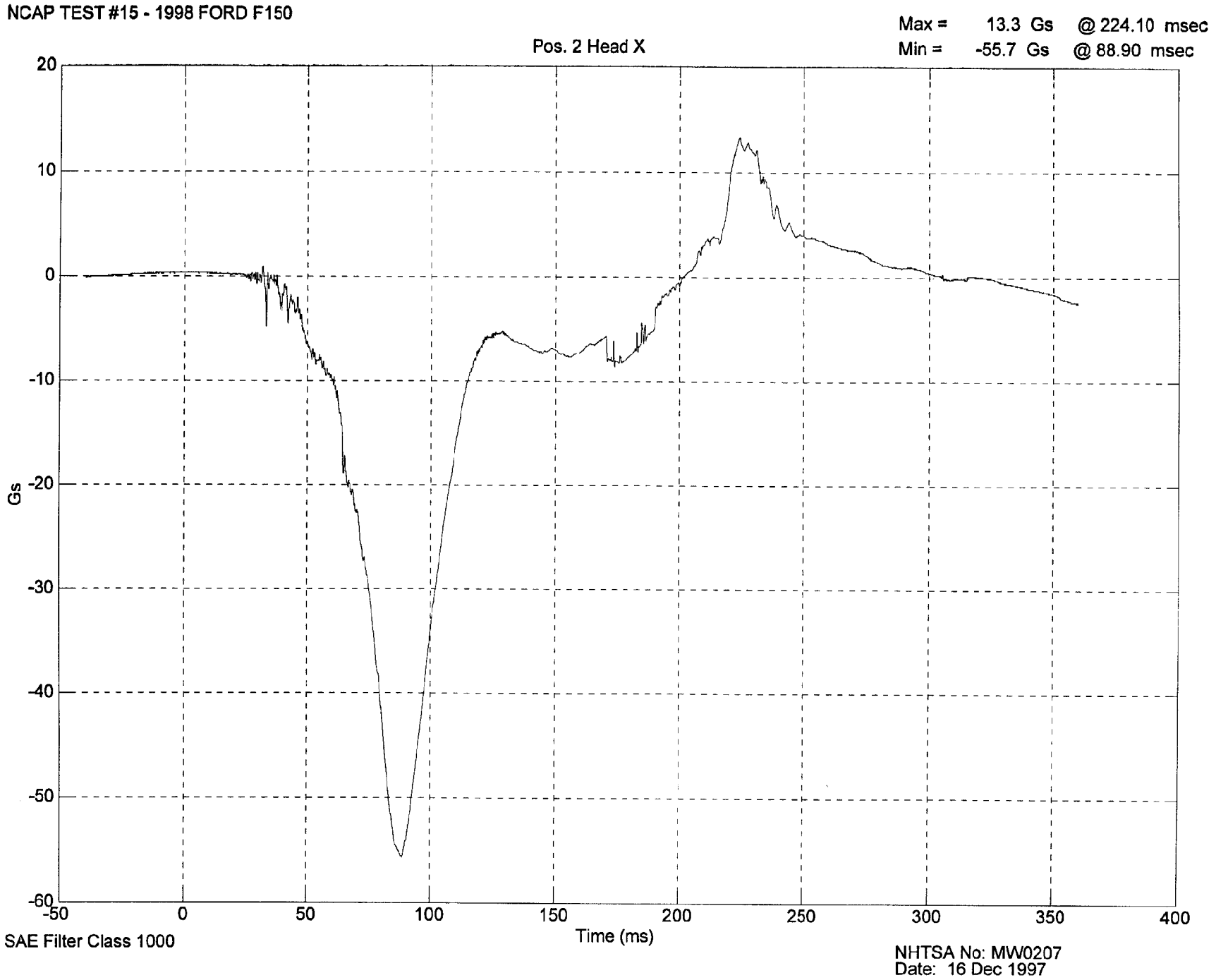
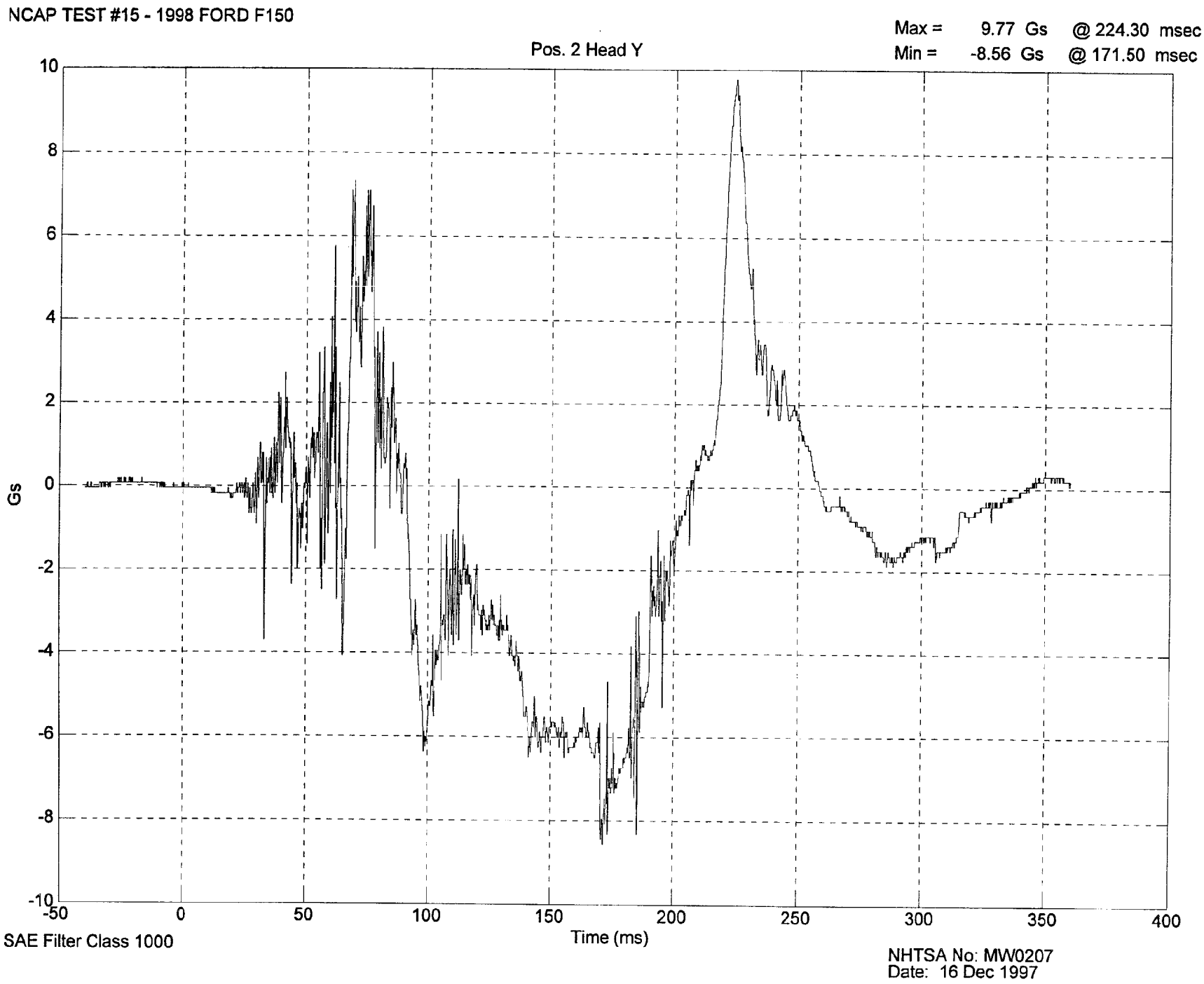
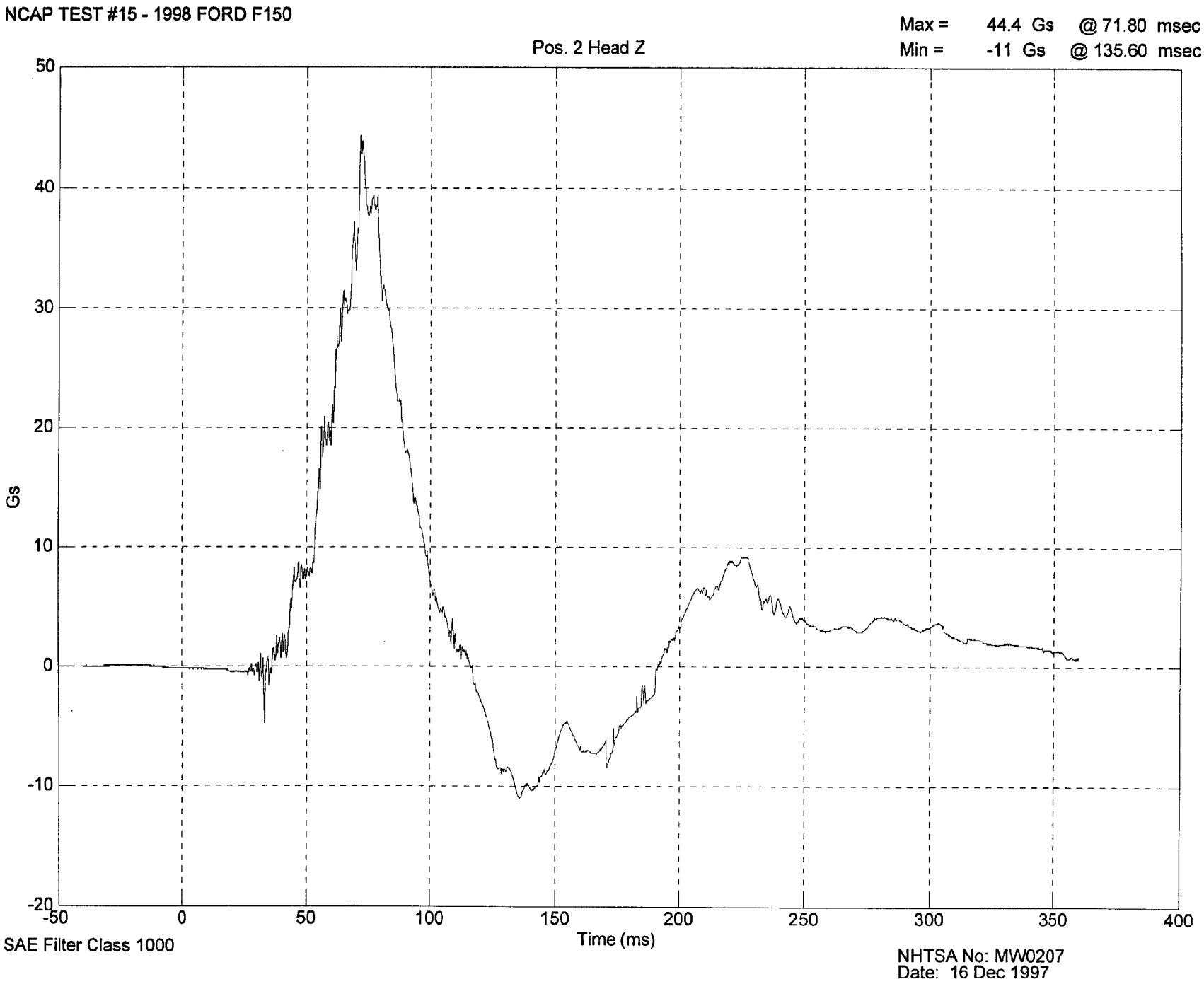

NCAP TEST #15 - 1998 FORD F150
Pos. 2 Head X
Max = 13.3 Gs @ 224.10 msec
Min = -55.7 Gs @ 88.90 msec
20
10
0
-10
-20
-30
-40
-50
-60
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW0207
Date: 16 Dec 1997

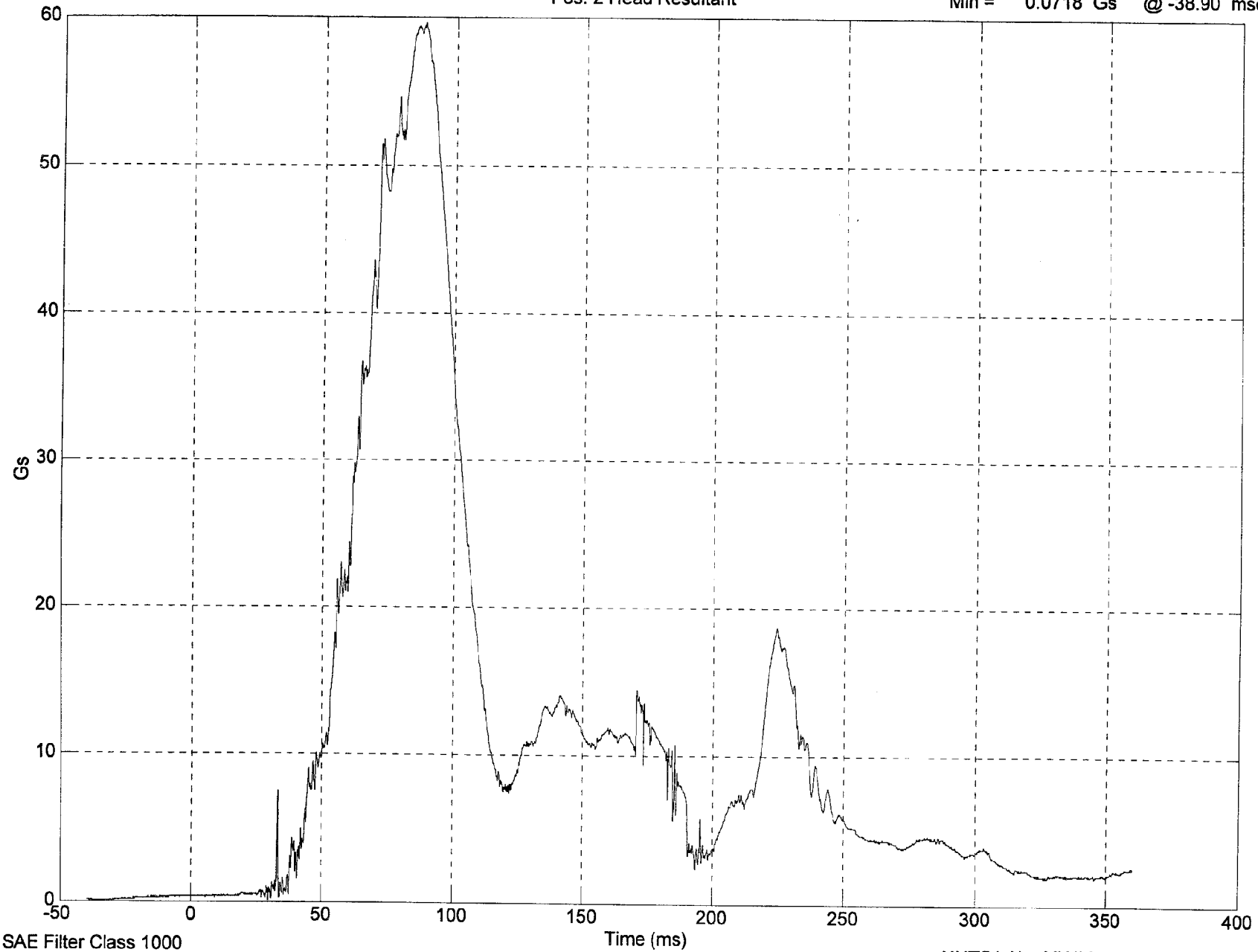

NCAP TEST #15 - 1998 FORD F150
Pos. 2 Head Y
Max = 9.77 Gs @ 224.30 msec
Min = -8.56 Gs @ 171.50 msec
Gs
Time (ms)
SAE Filter Class 1000
NHTSA No: MW0207
Date: 16 Dec 1997


NCAP TEST #15 - 1998 FORD F150
Pos. 2 Head Z
Max = 44.4 Gs @ 71.80 msec
Min = -11 Gs @ 135.60 msec
Gs
Time (ms)
50
40
30
20
10
0
-10
-20
-50
0
50
100
150
200
250
300
350
400
SAE Filter Class 1000
NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 2 Head Resultant

Max = 59.6 Gs @ 88.00 msec
Min = 0.0718 Gs @ -38.90 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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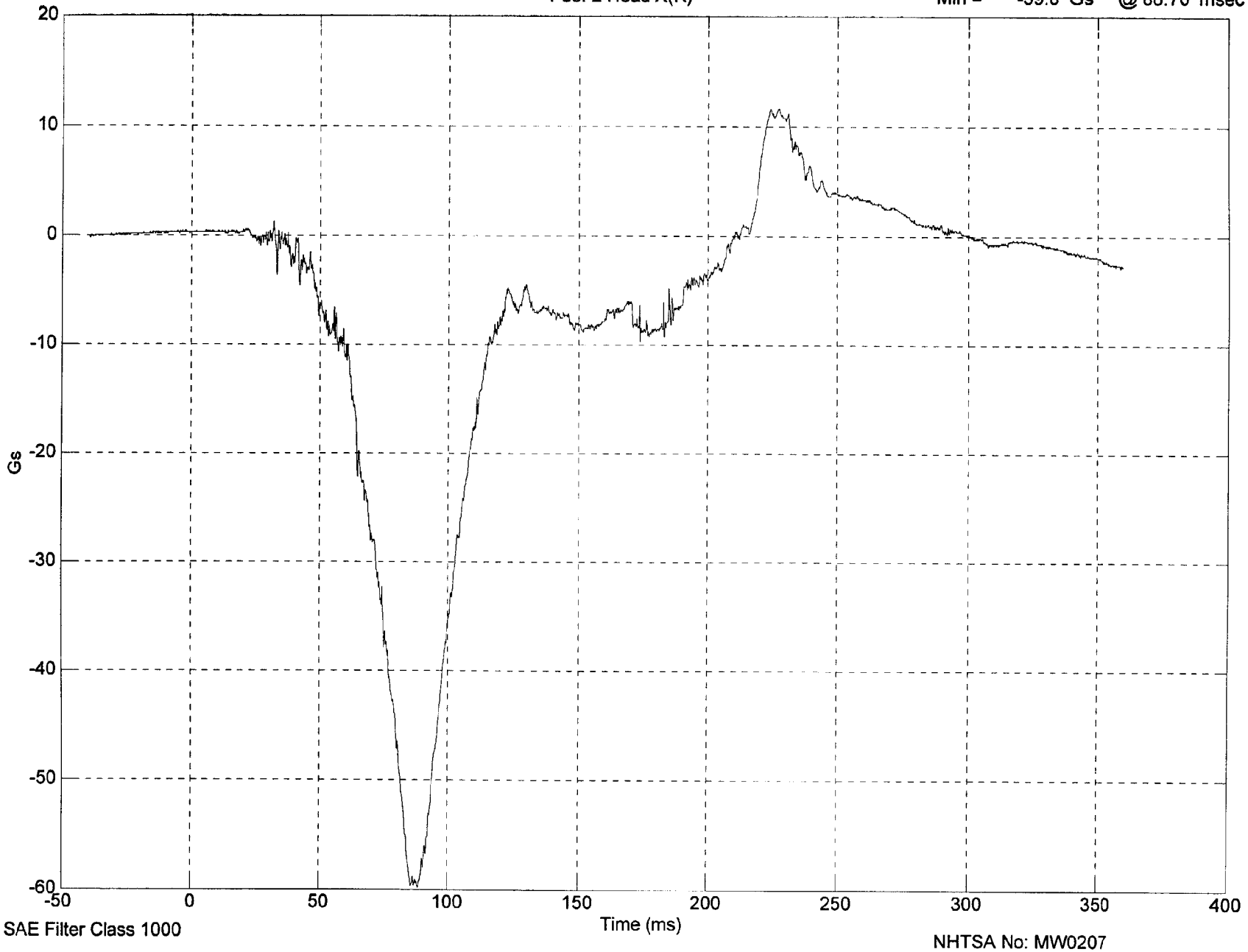
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Head X(R)

Max = 11.7 Gs @ 224.30 msec
Min = -59.8 Gs @ 88.70 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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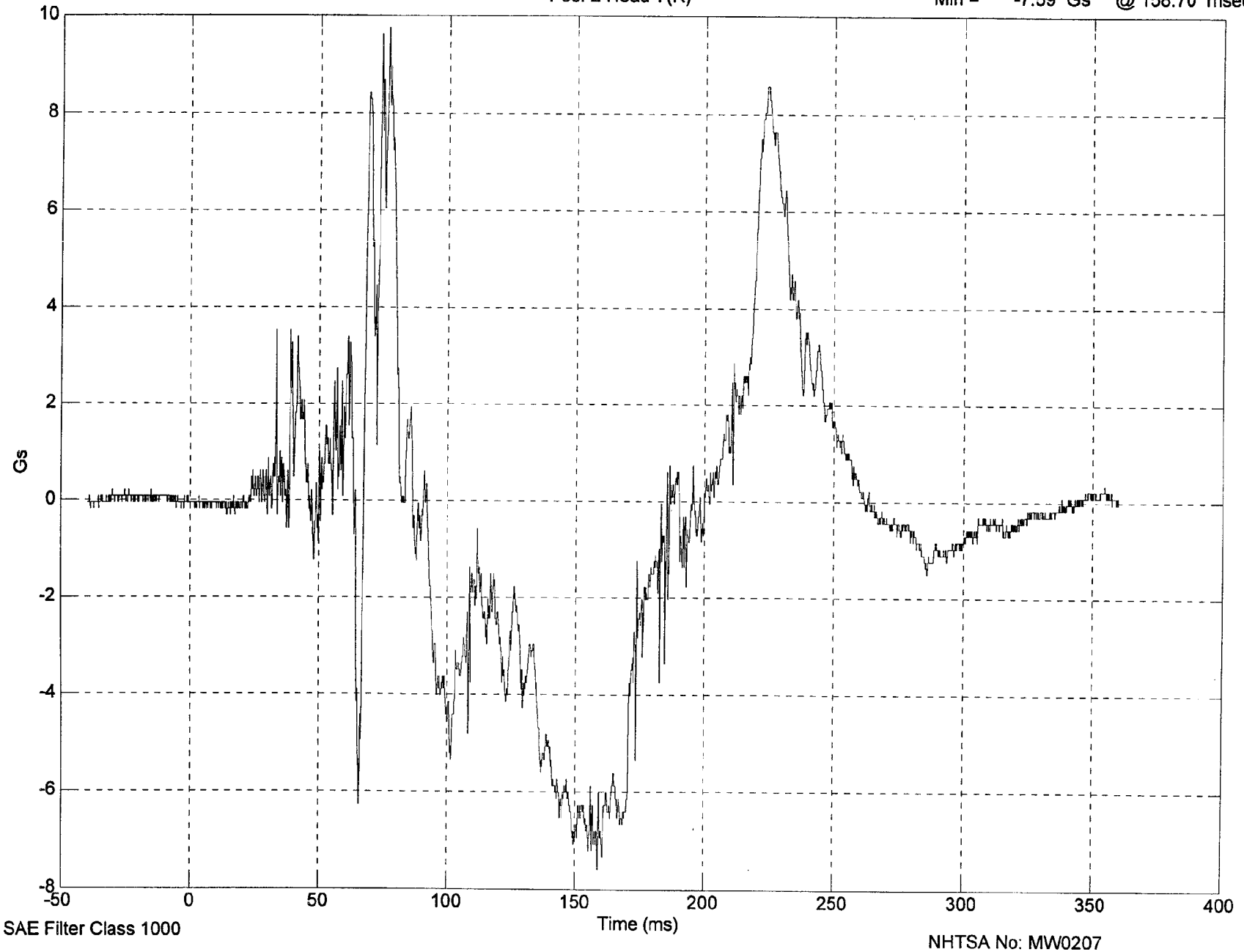
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Head Y(R)

Max = 9.75 Gs @ 76.60 msec
Min = -7.59 Gs @ 158.70 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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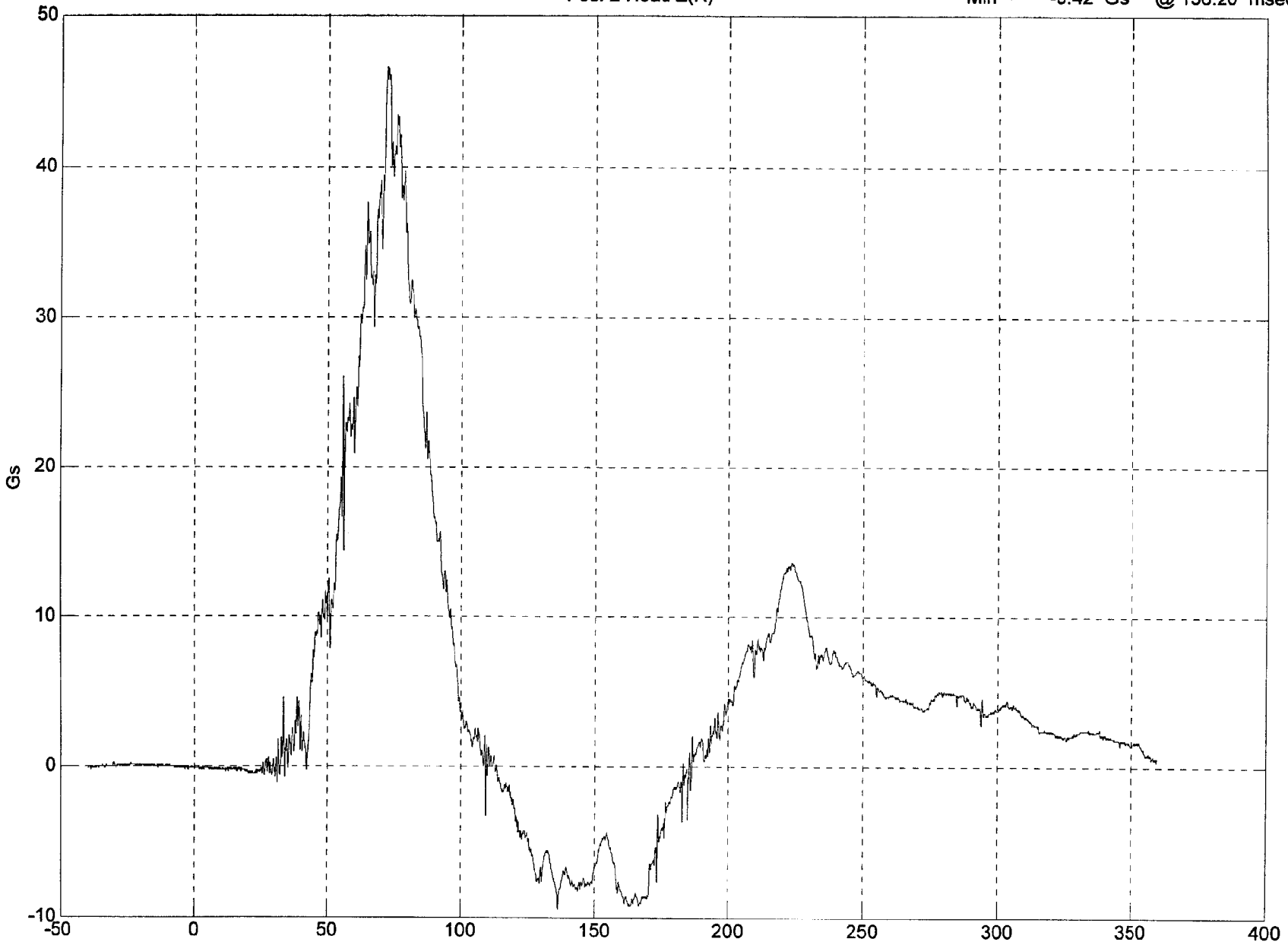
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Head Z(R)

Max = 46.6 Gs @ 71.90 msec
Min = -9.42 Gs @ 136.20 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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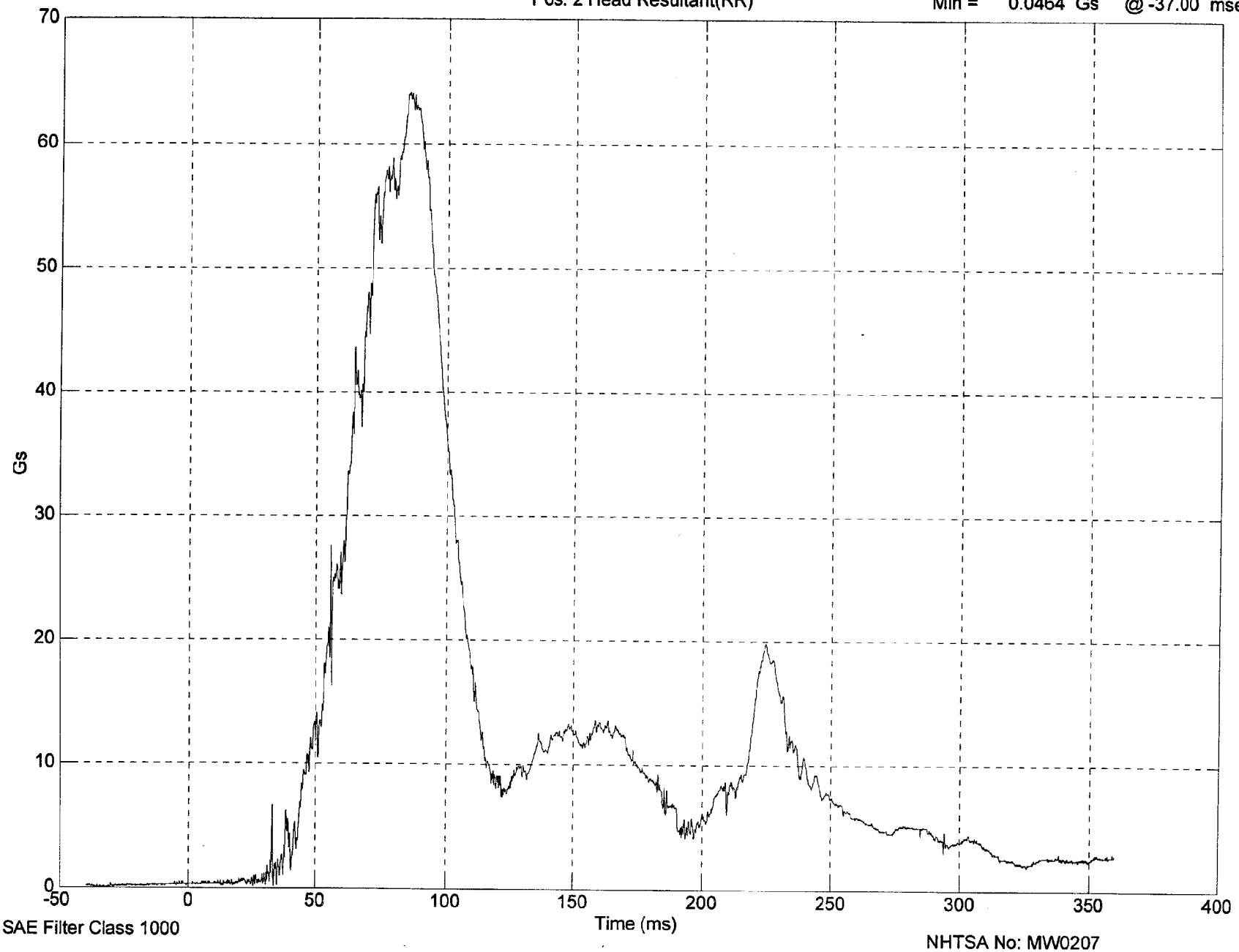
NCAP TEST #15 - 1998 FORD F150

Max = 64.1 Gs @ 85.20 msec
Min = 0.0464 Gs @ -37.00 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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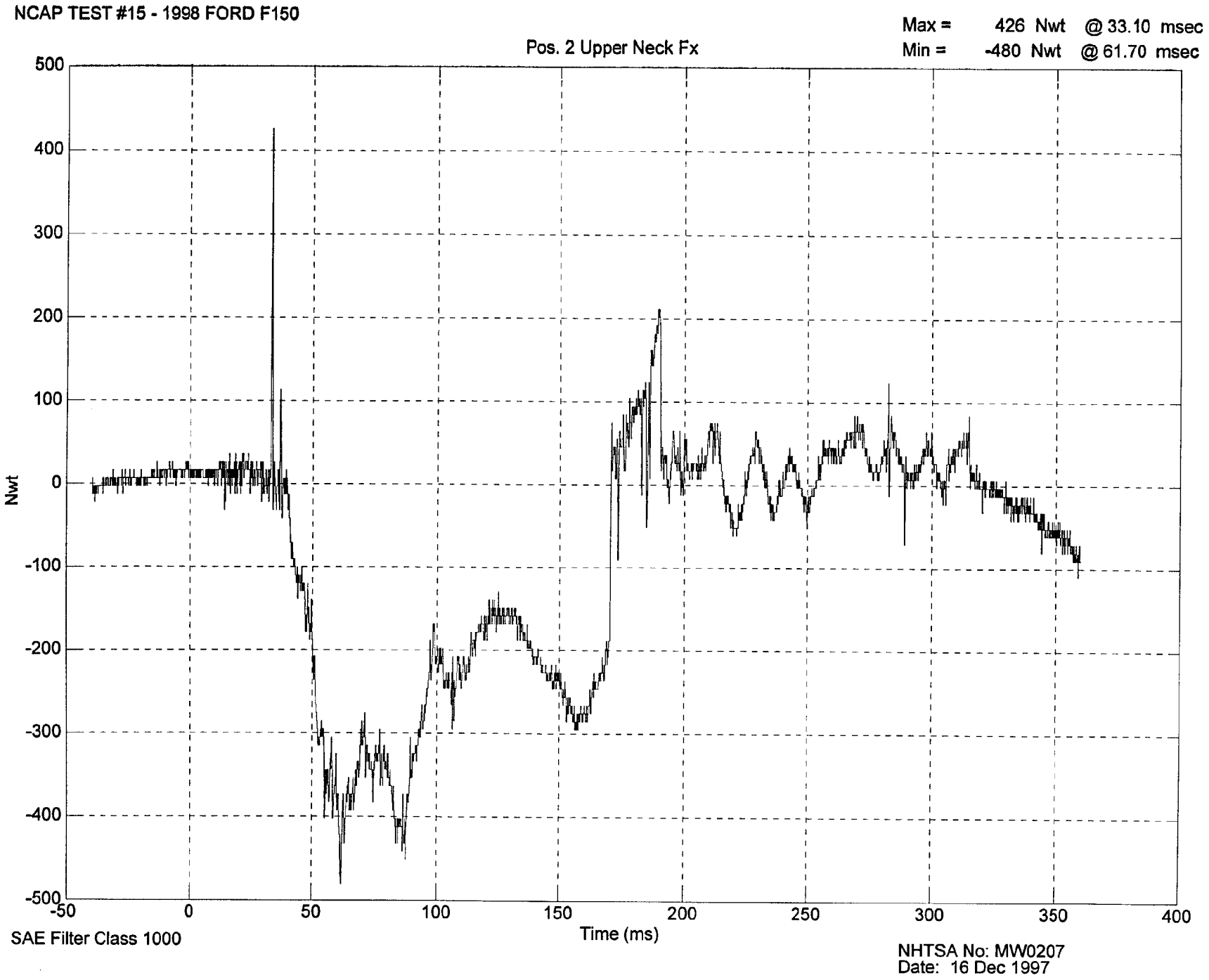
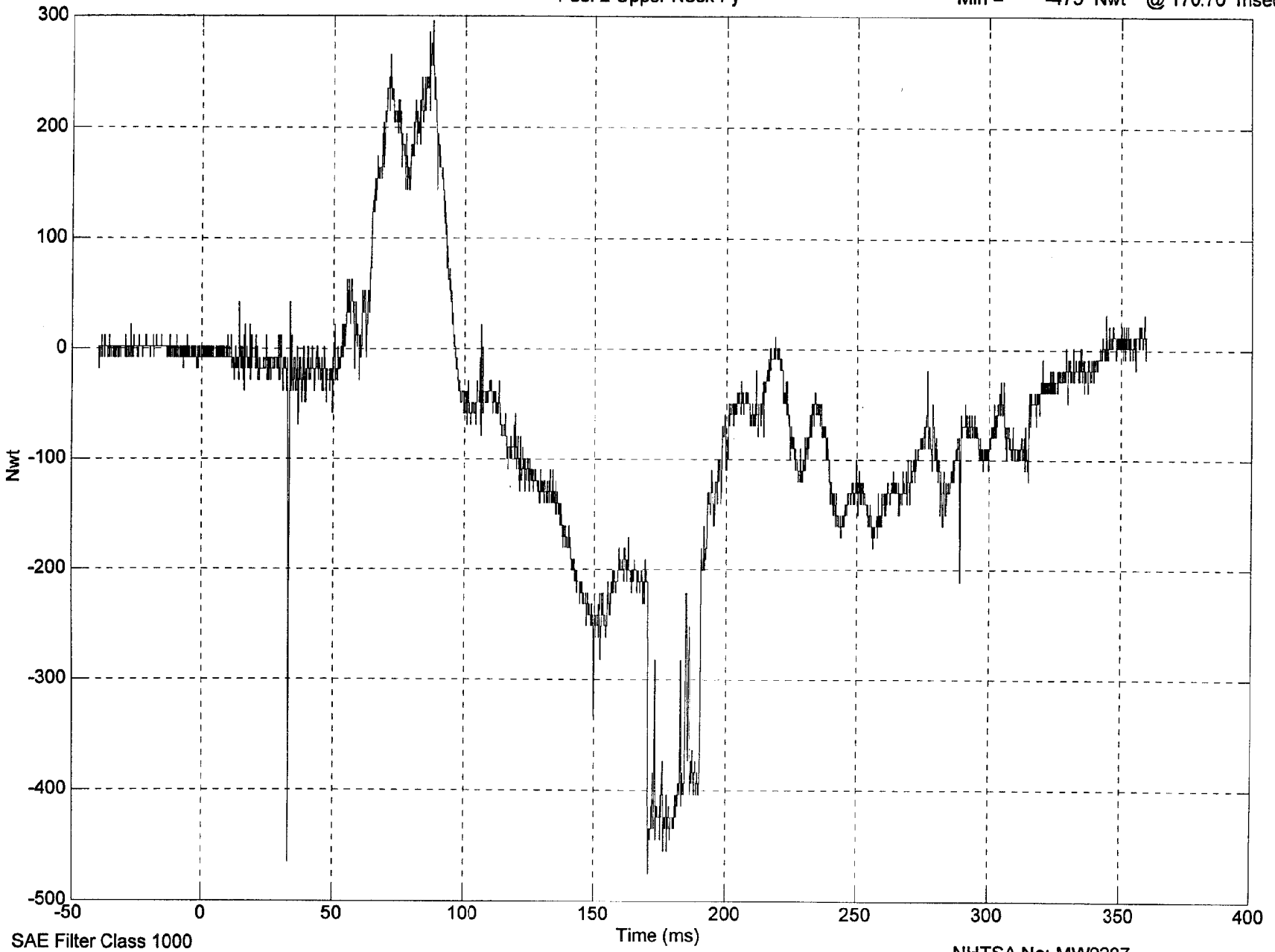

NCAP TEST #15 - 1998 FORD F150
Pos. 2 Upper Neck Fx
Max = 426 Nwt @ 33.10 msec
Min = -480 Nwt @ 61.70 msec
Nwt
Time (ms)
SAE Filter Class 1000
NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 2 Upper Neck Fy

Max = 296 Nwt @ 87.70 msec
Min = -475 Nwt @ 170.70 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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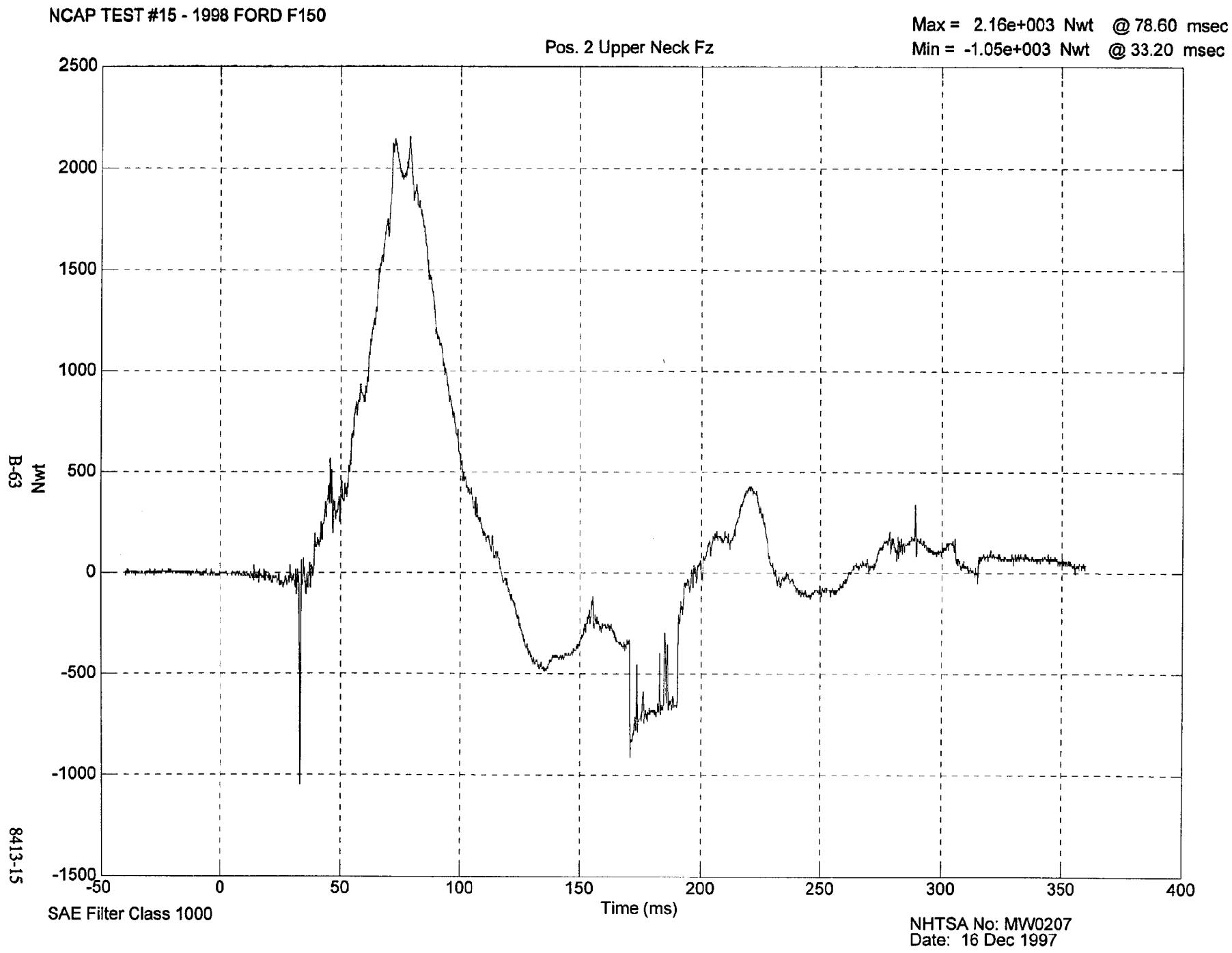
NCAP TEST #15 - 1998 FORD F150
Pos. 2 Upper Neck Fz
Max = 2.16e+003 Nwt @ 78.60 msec
Min = -1.05e+003 Nwt @ 33.20 msec
2500
2000
1500
1000
500
0
-500
-1000
-1500
Nwt
B-63
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW0207
Date: 16 Dec 1997
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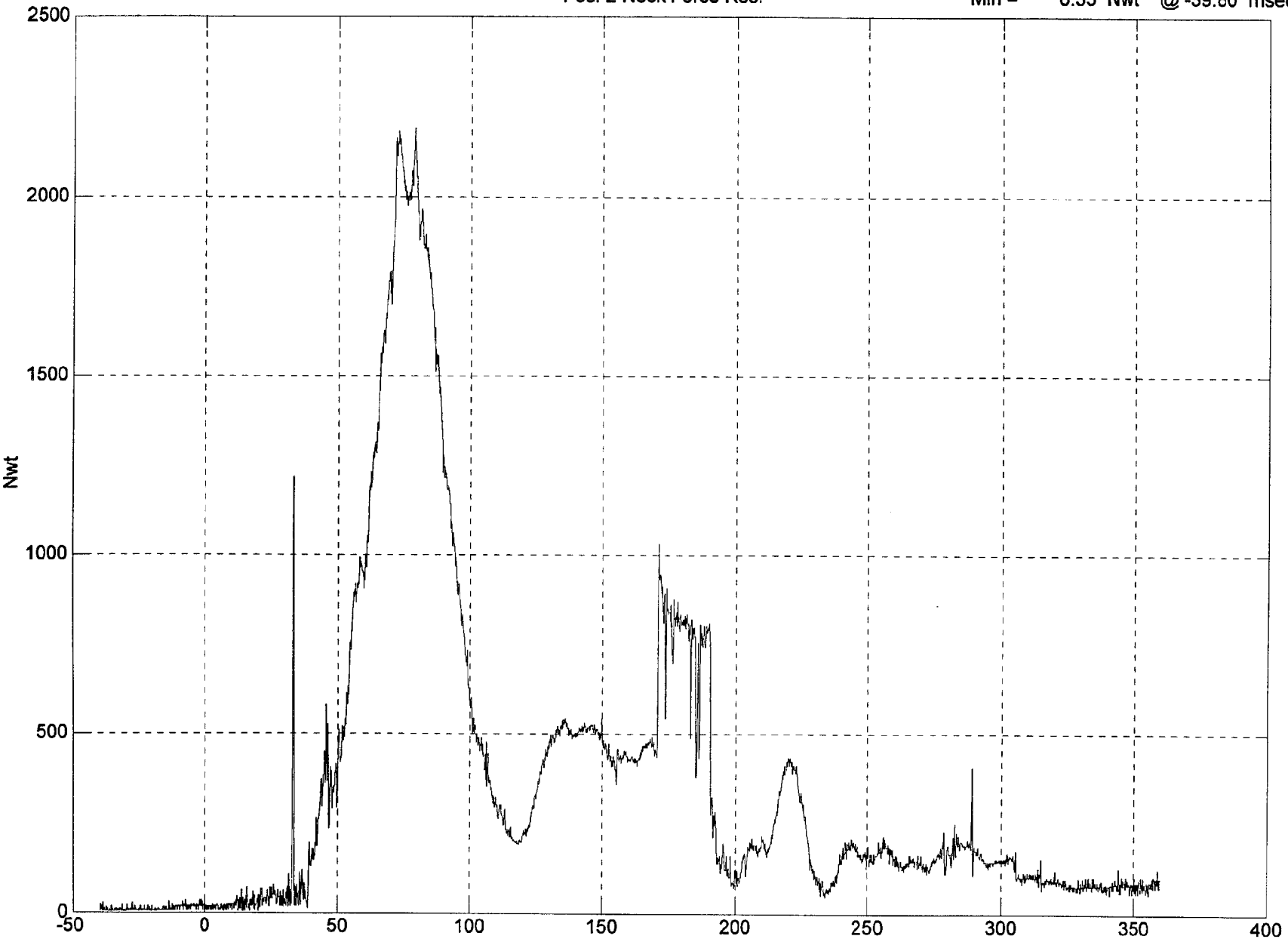
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Neck Force Res.

Max = 2.19e+003 Nwt @ 78.60 msec
Min = 6.35 Nwt @ -39.80 msec



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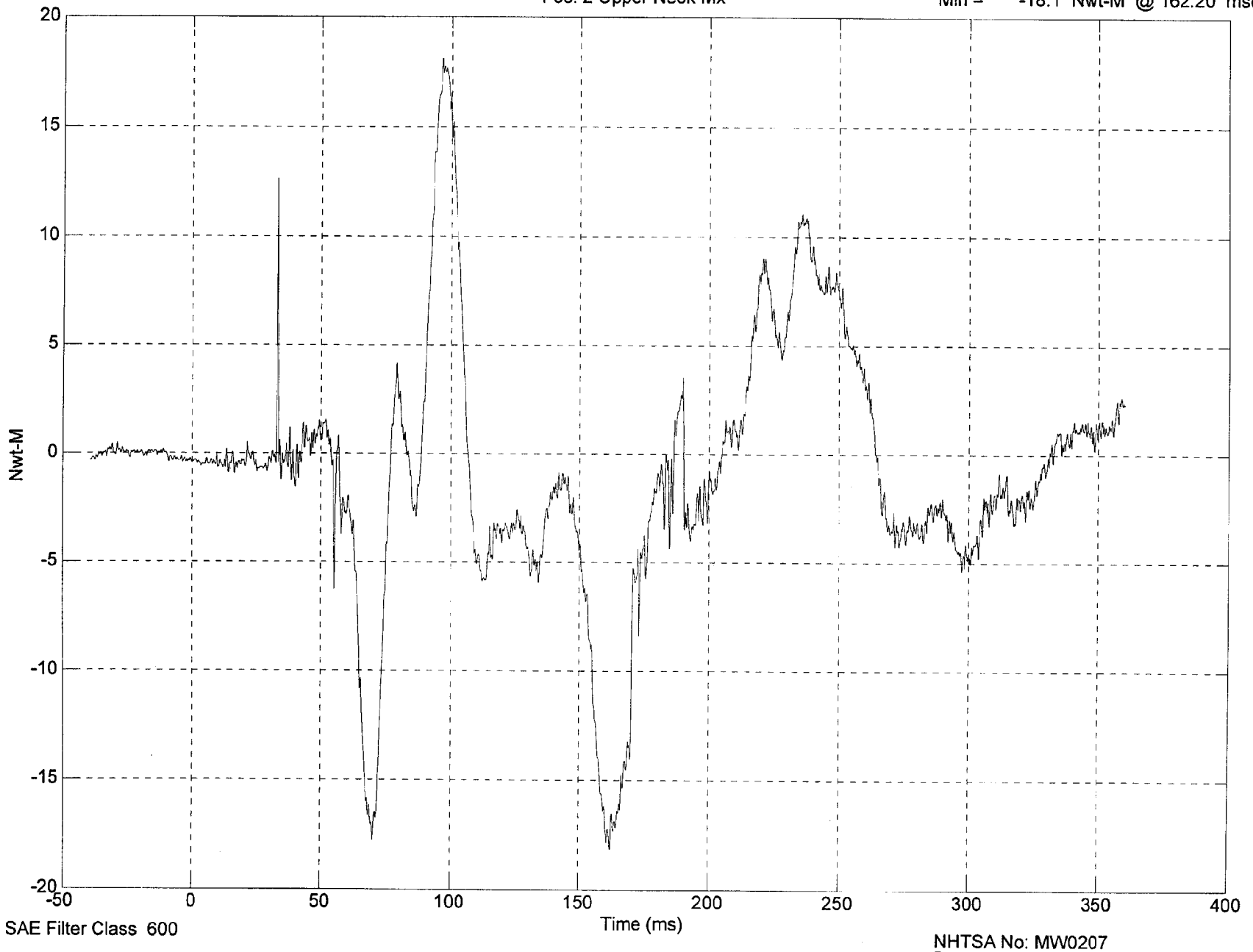
SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 2 Upper Neck Mx

Max = 18.1 Nwt-M @ 96.50 msec
Min = -18.1 Nwt-M @ 162.20 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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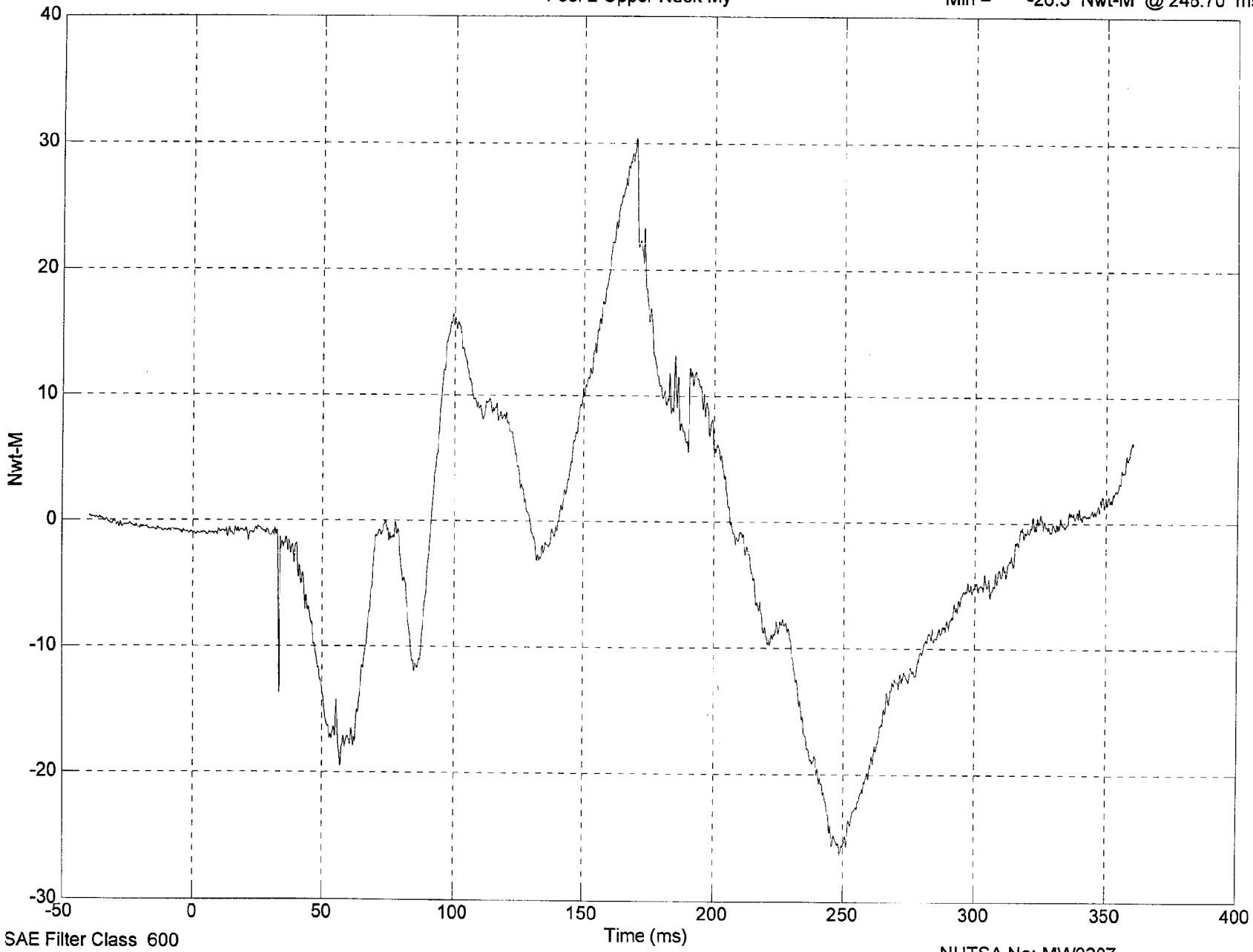
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Upper Neck My

Max = 30.4 Nwt-M @ 169.90 msec
Min = -26.3 Nwt-M @ 248.70 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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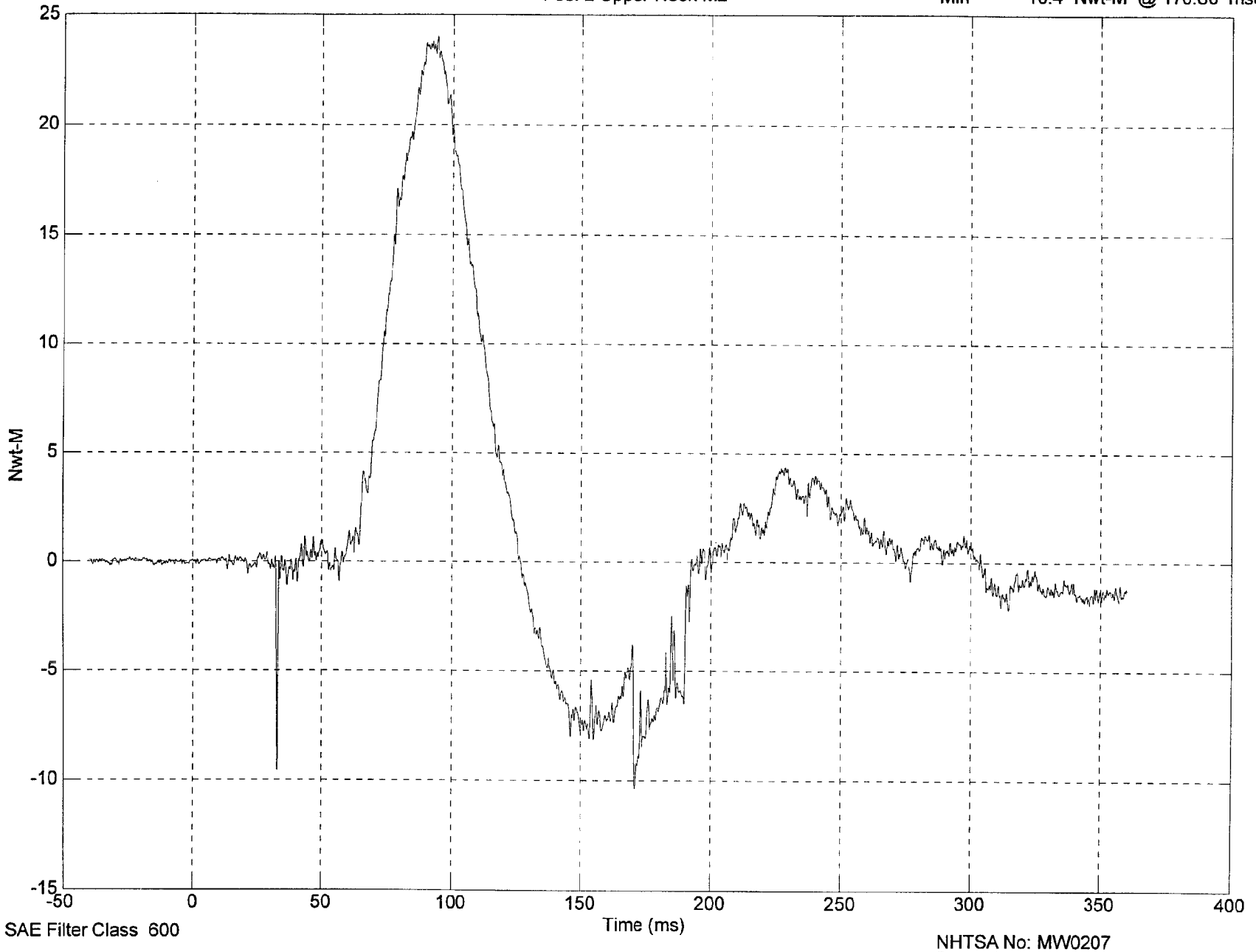
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Upper Neck Mz

Max = 24 Nwt-M @ 94.10 msec
Min = -10.4 Nwt-M @ 170.80 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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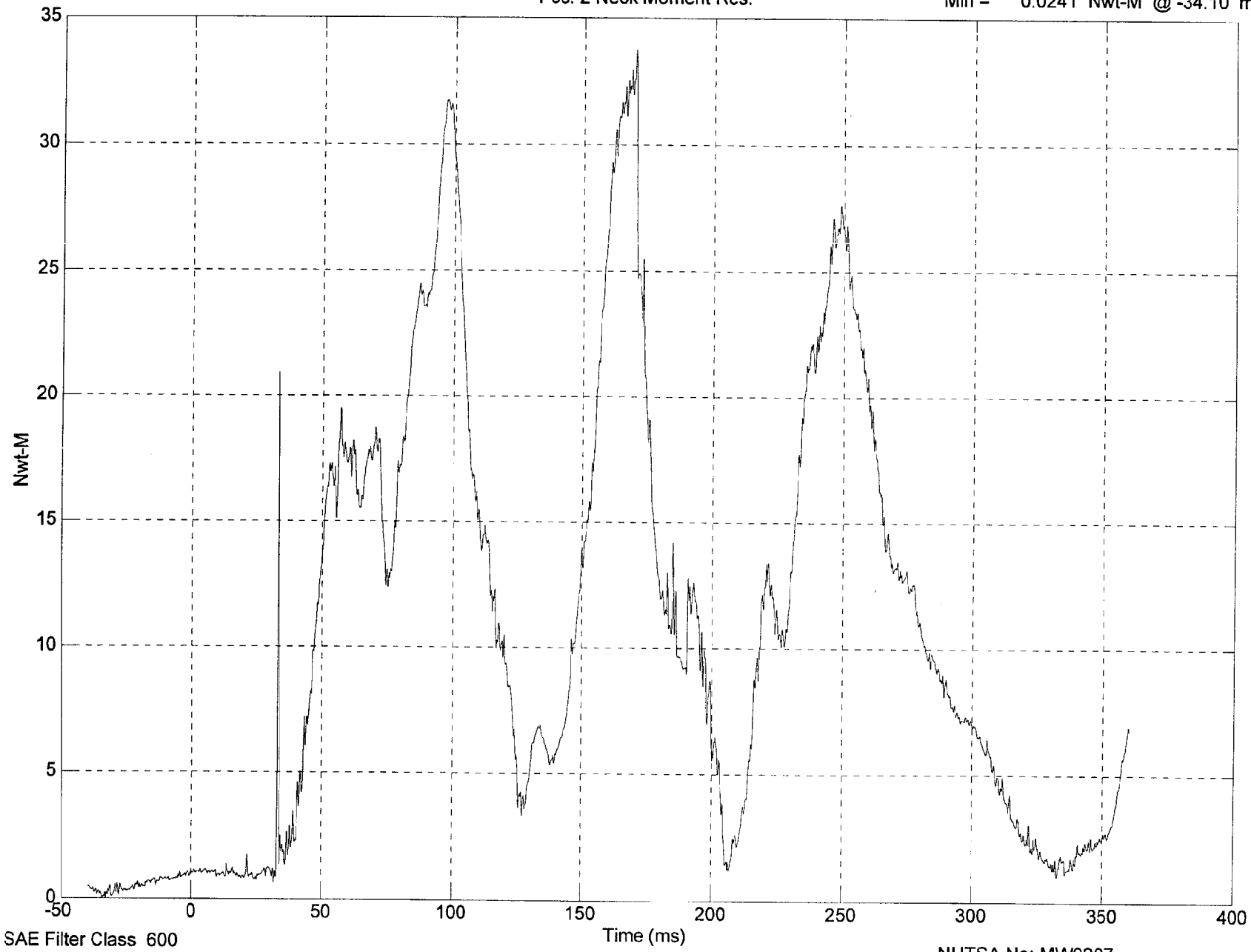
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Neck Moment Res.

Max = 33.7 Nwt-M @ 169.90 msec
Min = 0.0241 Nwt-M @ -34.10 msec



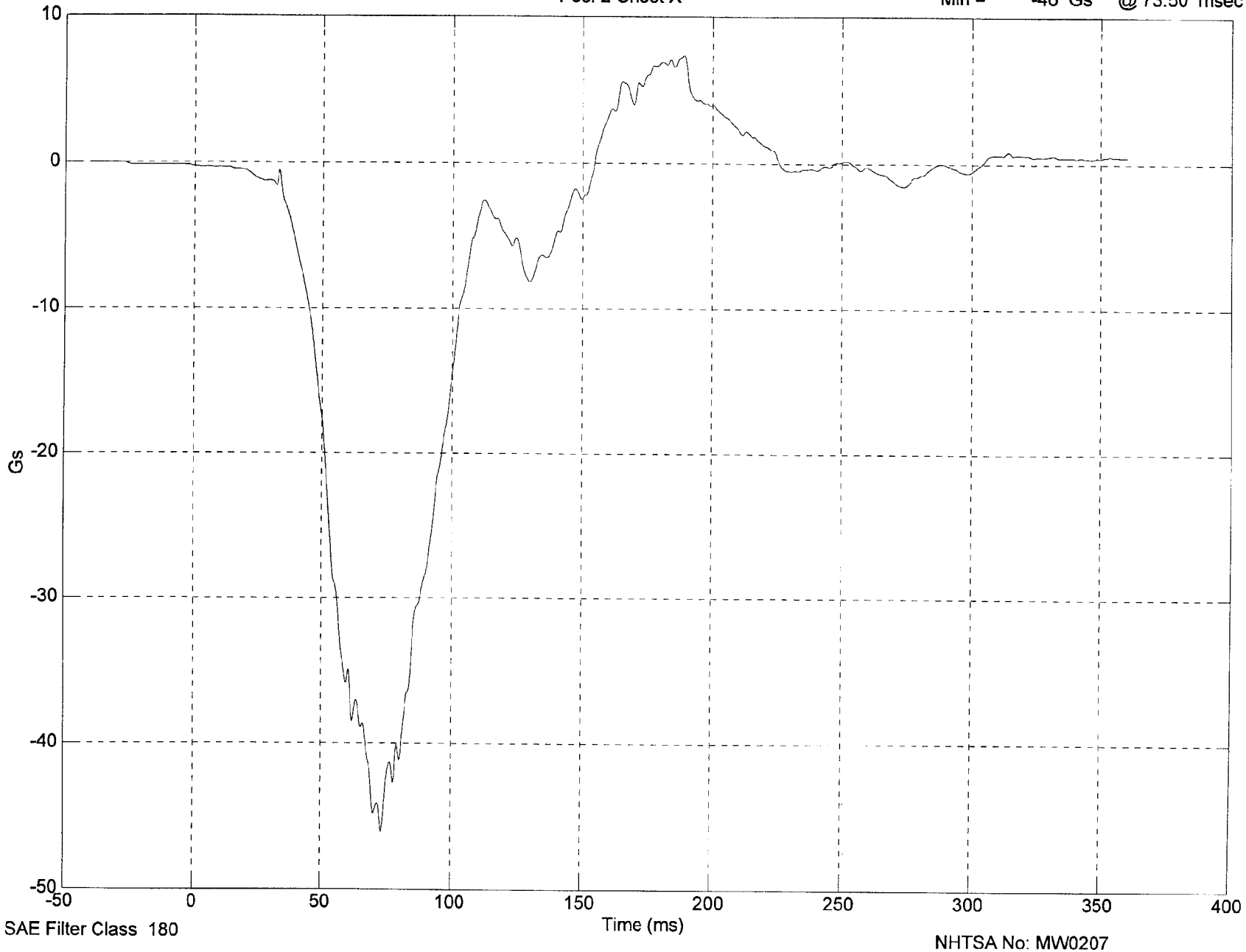
SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 2 Chest X

Max = 7.37 Gs @ 189.10 msec
Min = -46 Gs @ 73.50 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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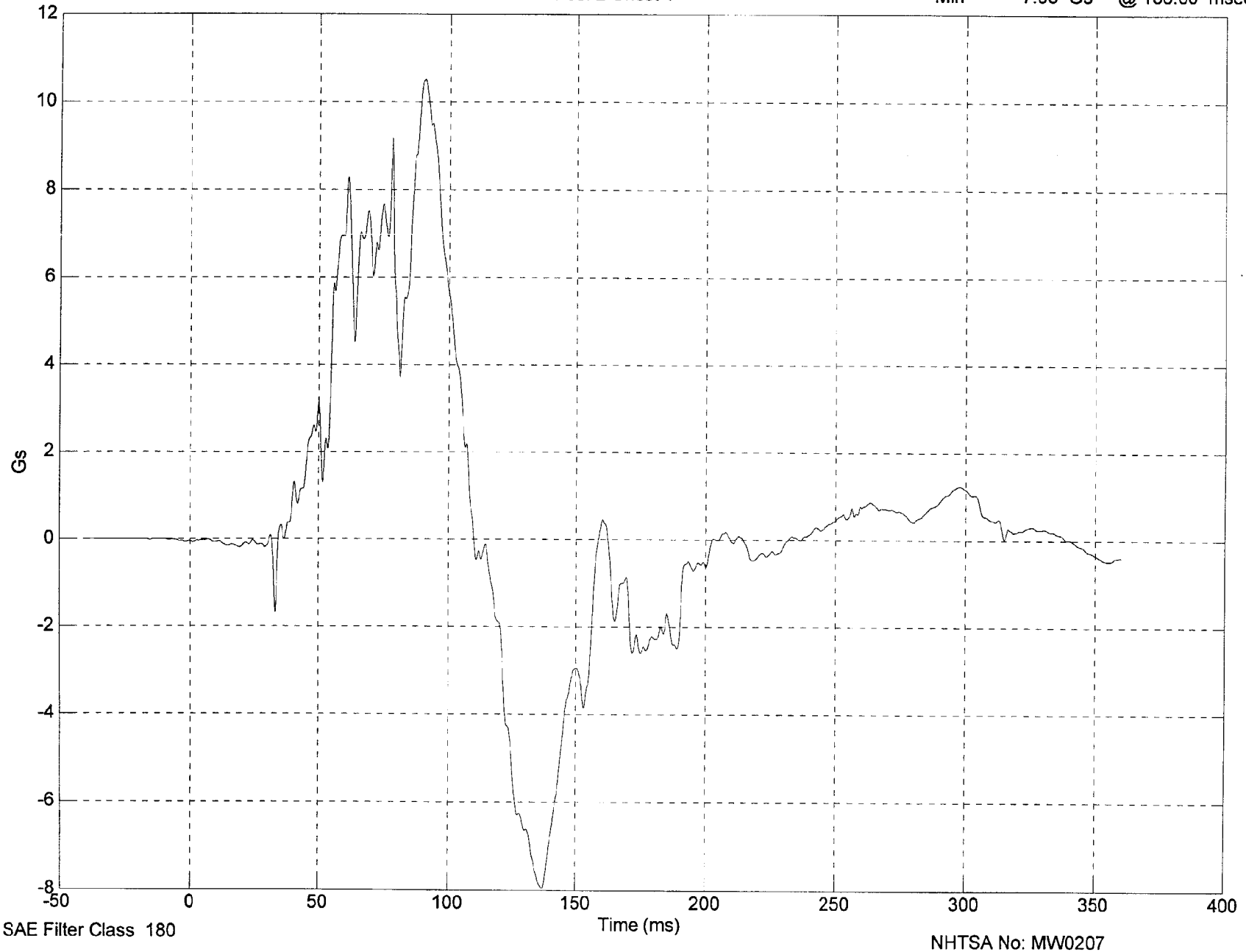
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Chest Y

Max = 10.5 Gs @ 90.50 msec
Min = -7.95 Gs @ 136.80 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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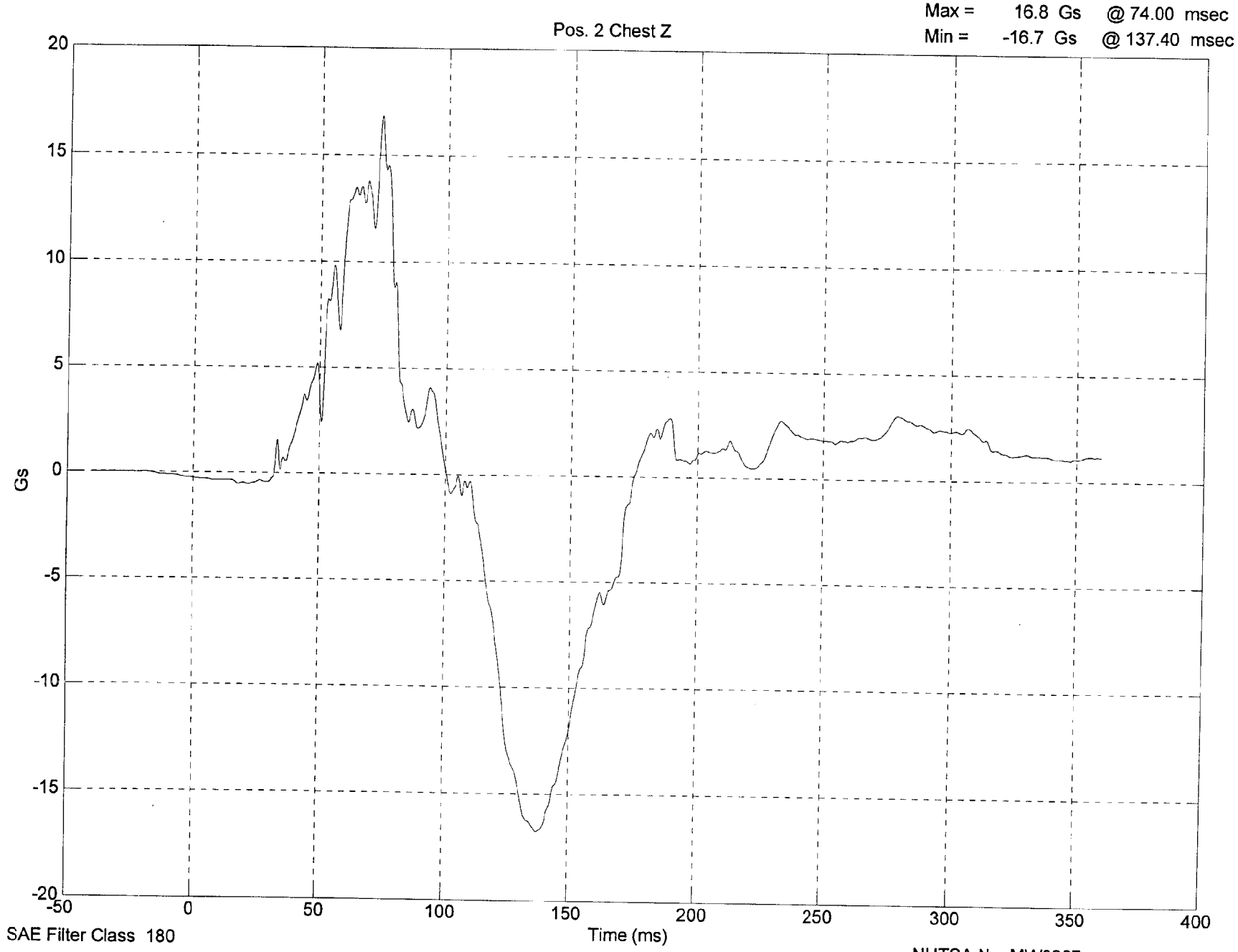
NCAP TEST #15 - 1998 FORD F150



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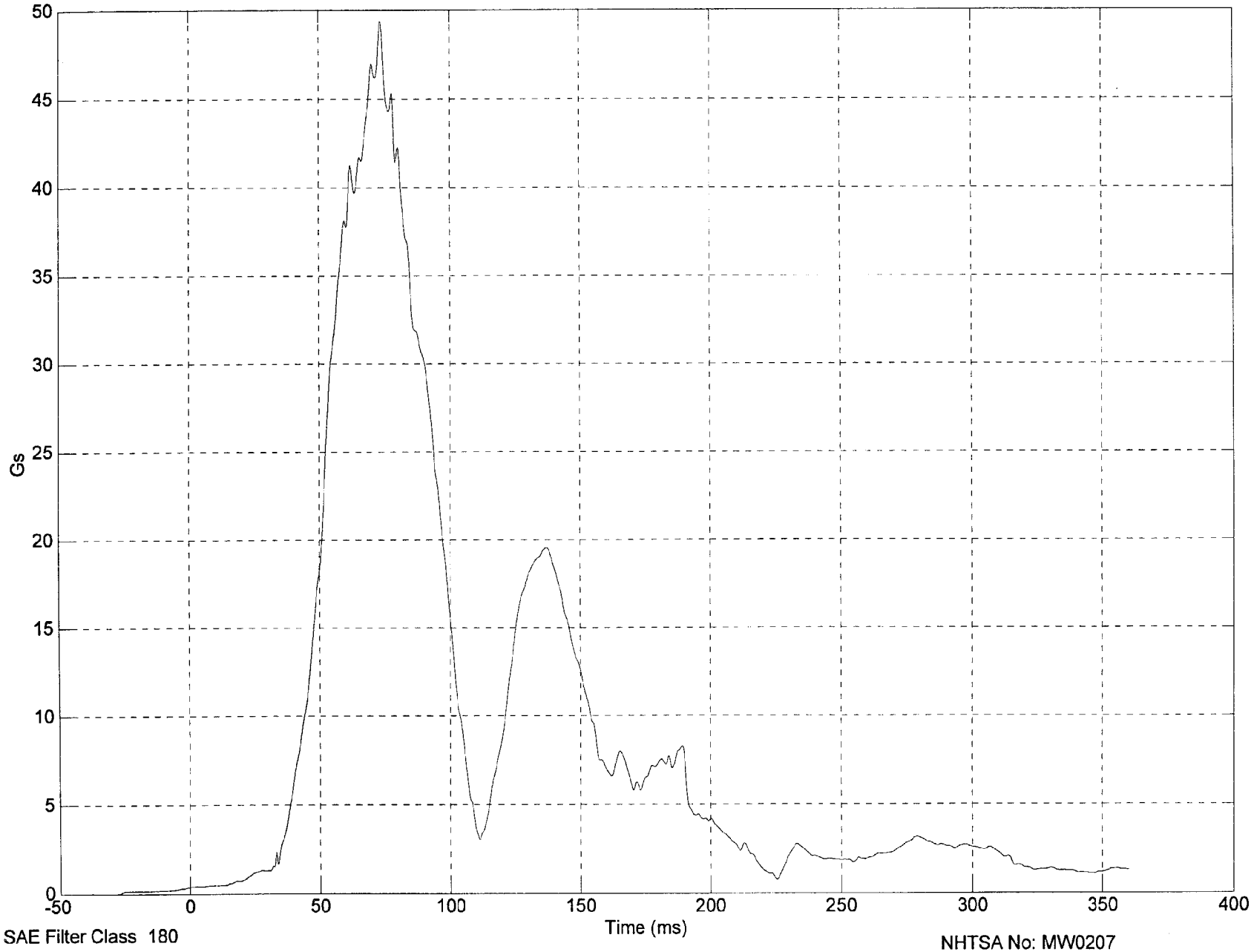
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Chest Resultant

Max = 49.4 Gs @ 73.70 msec
Min = 0.000935 Gs @ -28.40 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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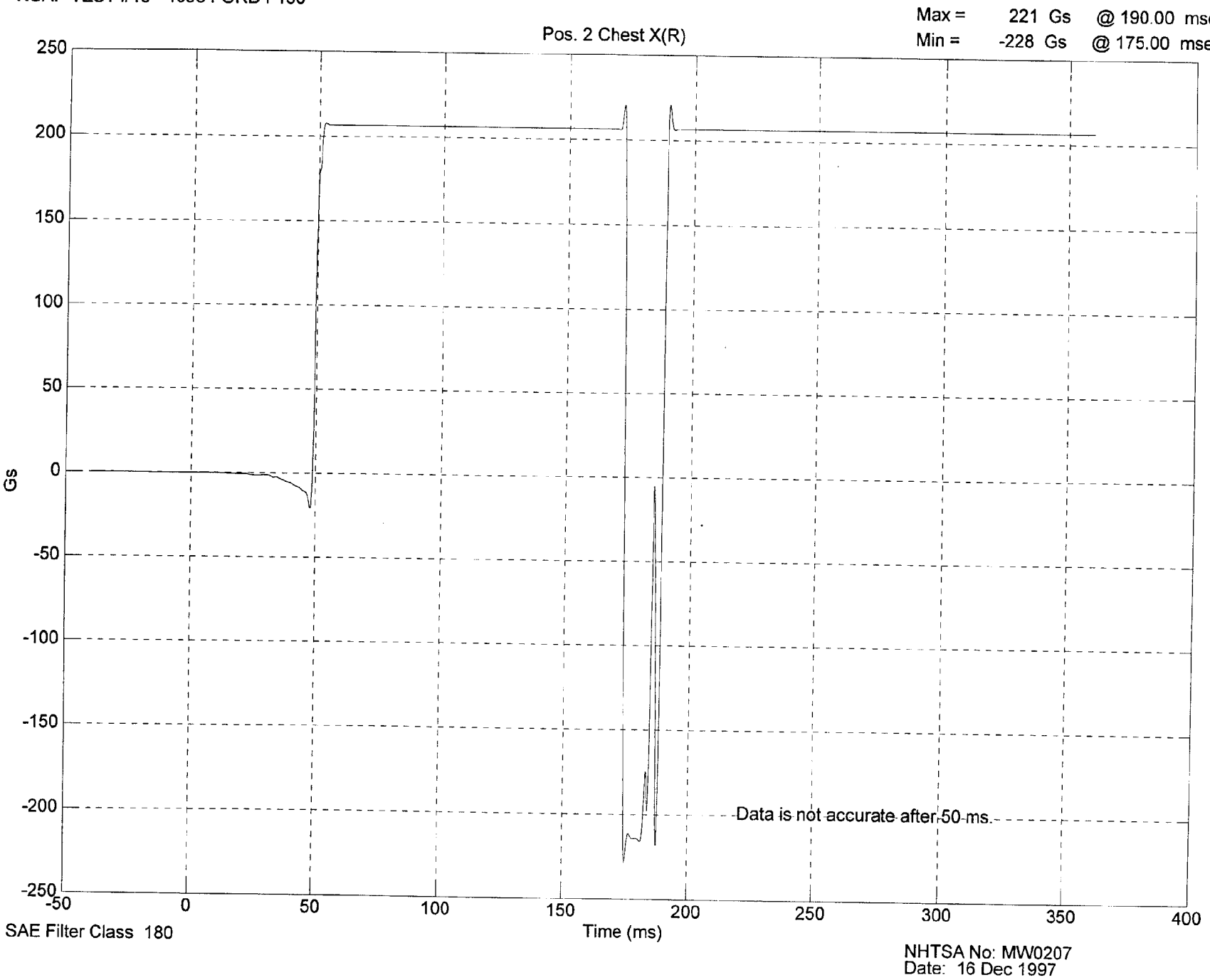
NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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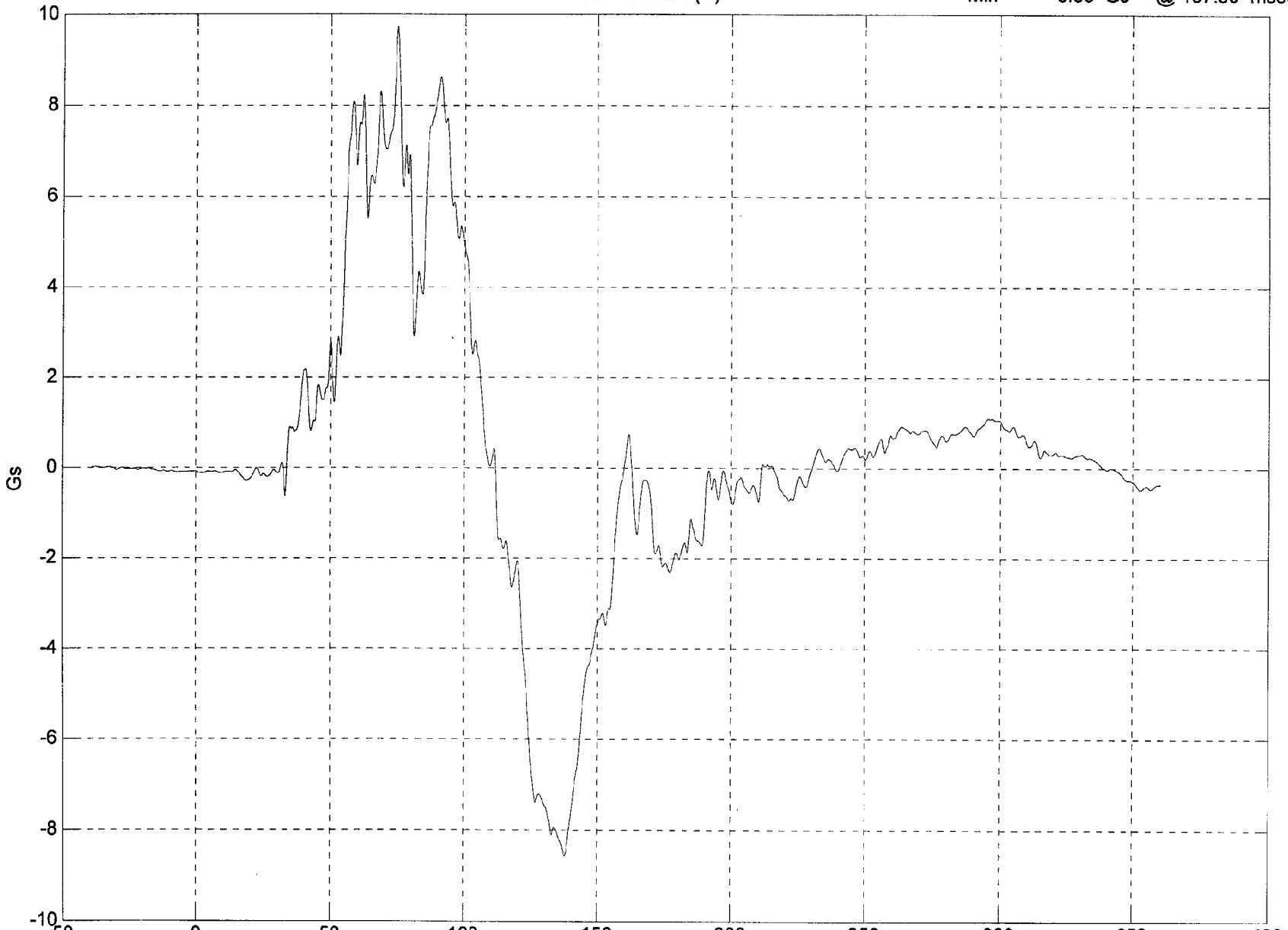
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Chest Y(R)

Max = 9.73 Gs @ 75.00 msec
Min = -8.56 Gs @ 137.80 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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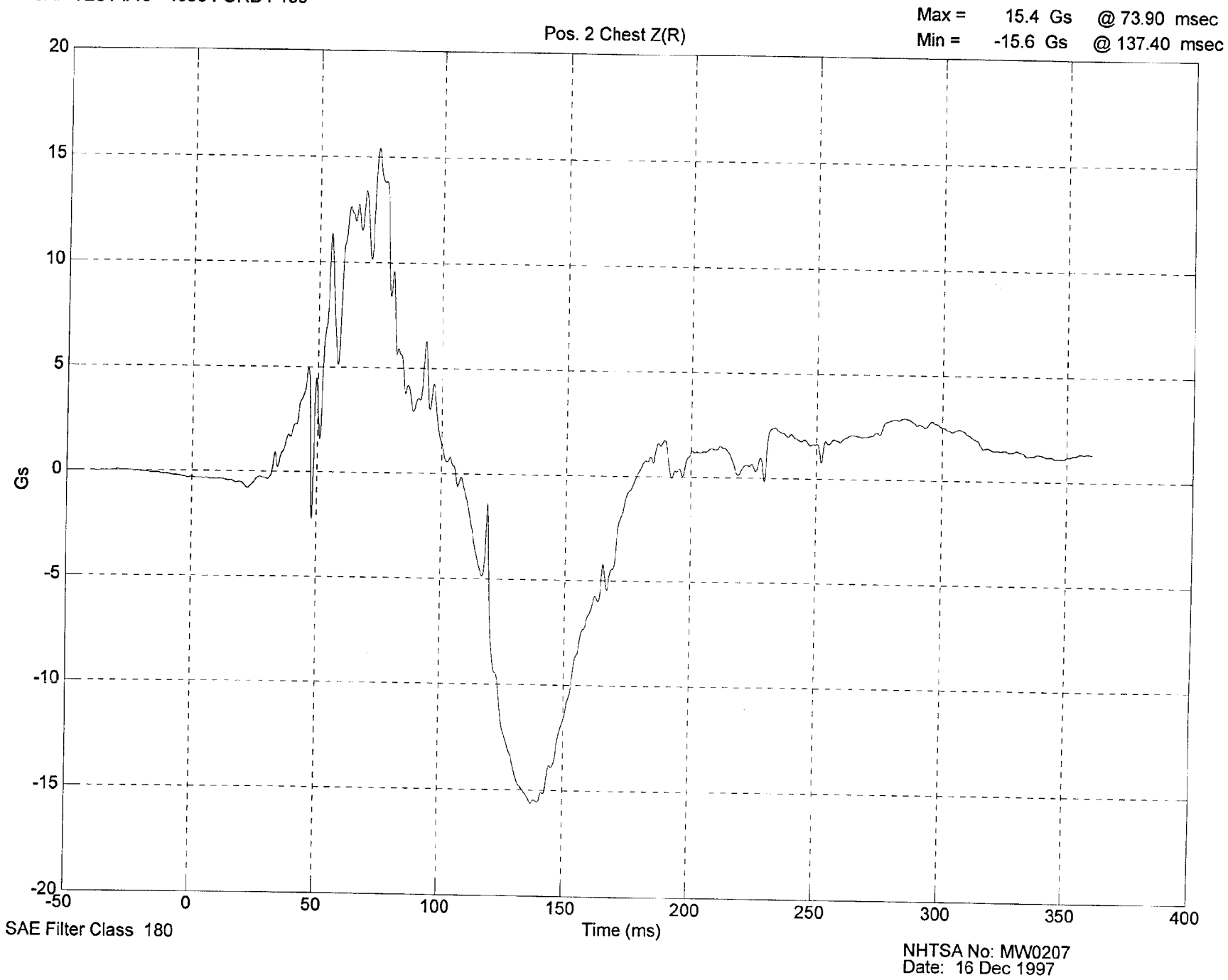
NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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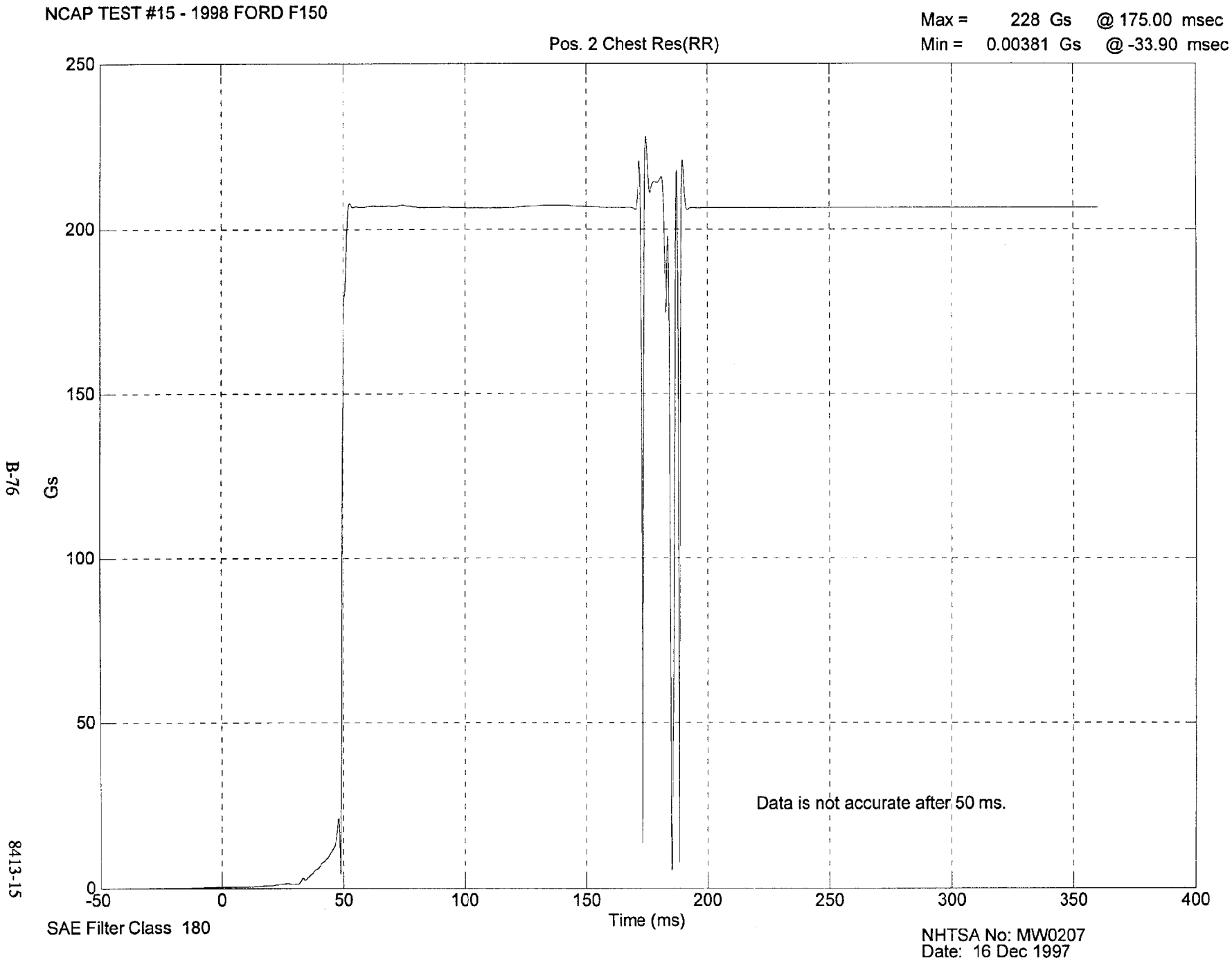
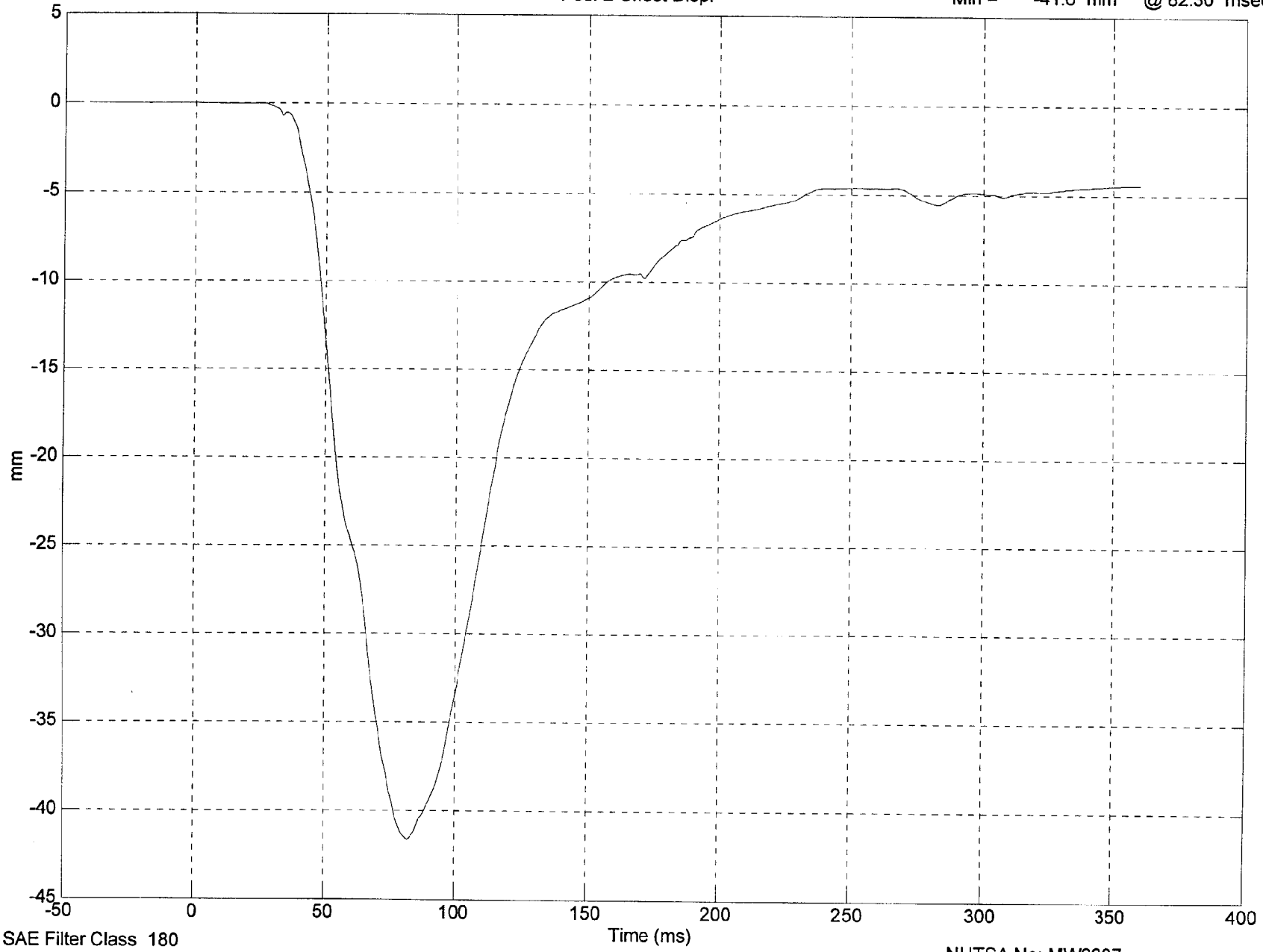

NCAP TEST #15 - 1998 FORD F150
Pos. 2 Chest Res(RR)
Max = 228 Gs @ 175.00 msec
Min = 0.00381 Gs @ -33.90 msec
250
200
150
100
50
0
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
Data is not accurate after 50 ms.
SAE Filter Class 180
NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Max = 0.00247 mm @ -15.10 msec
Min = -41.6 mm @ 82.30 msec



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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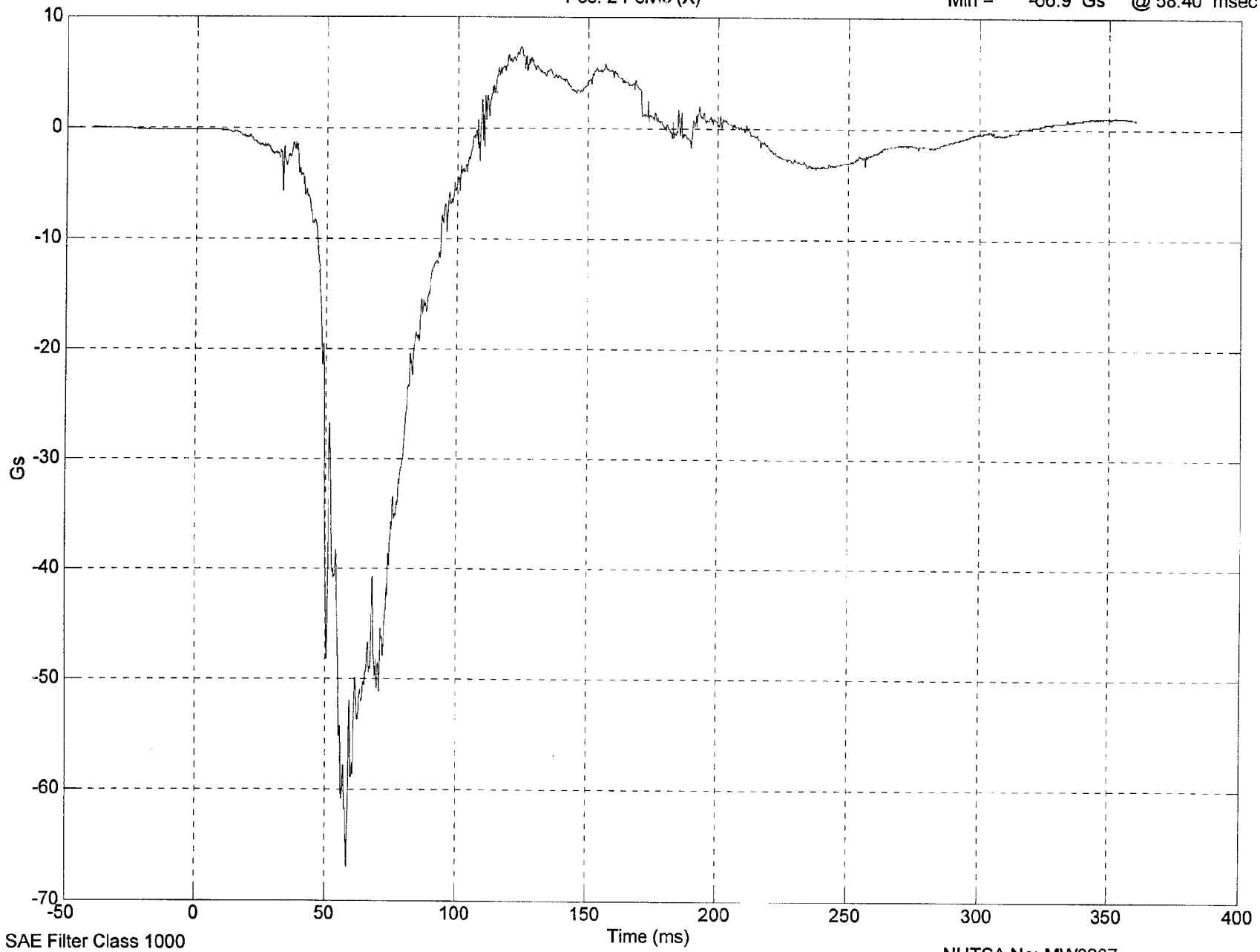
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Pelvic (X)

Max = 7.34 Gs @ 123.90 msec
Min = -66.9 Gs @ 58.40 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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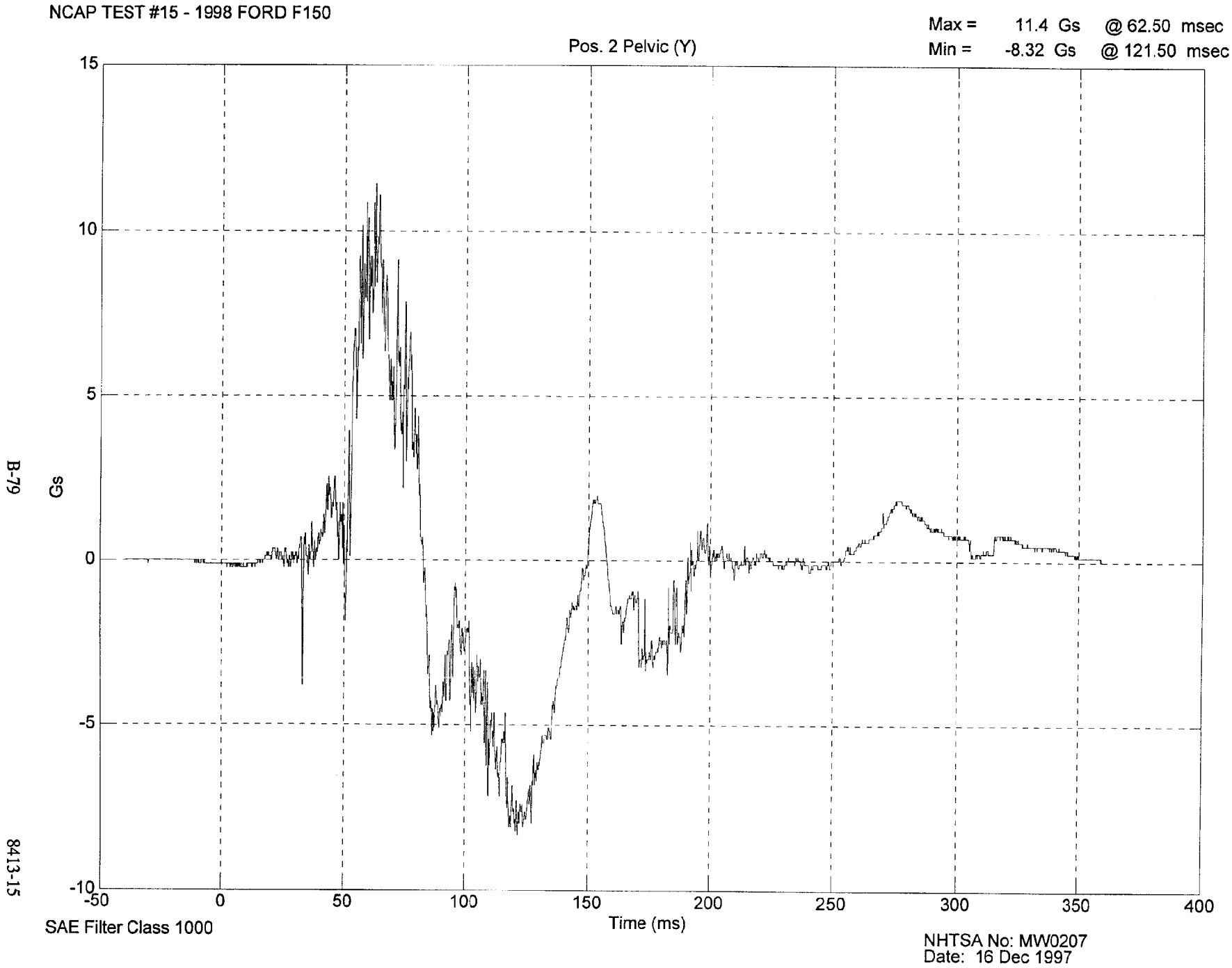
NCAP TEST #15 - 1998 FORD F150
Pos. 2 Pelvic (Y)
Max = 11.4 Gs @ 62.50 msec
Min = -8.32 Gs @ 121.50 msec
15
10
5
0
-5
-10
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW0207
Date: 16 Dec 1997

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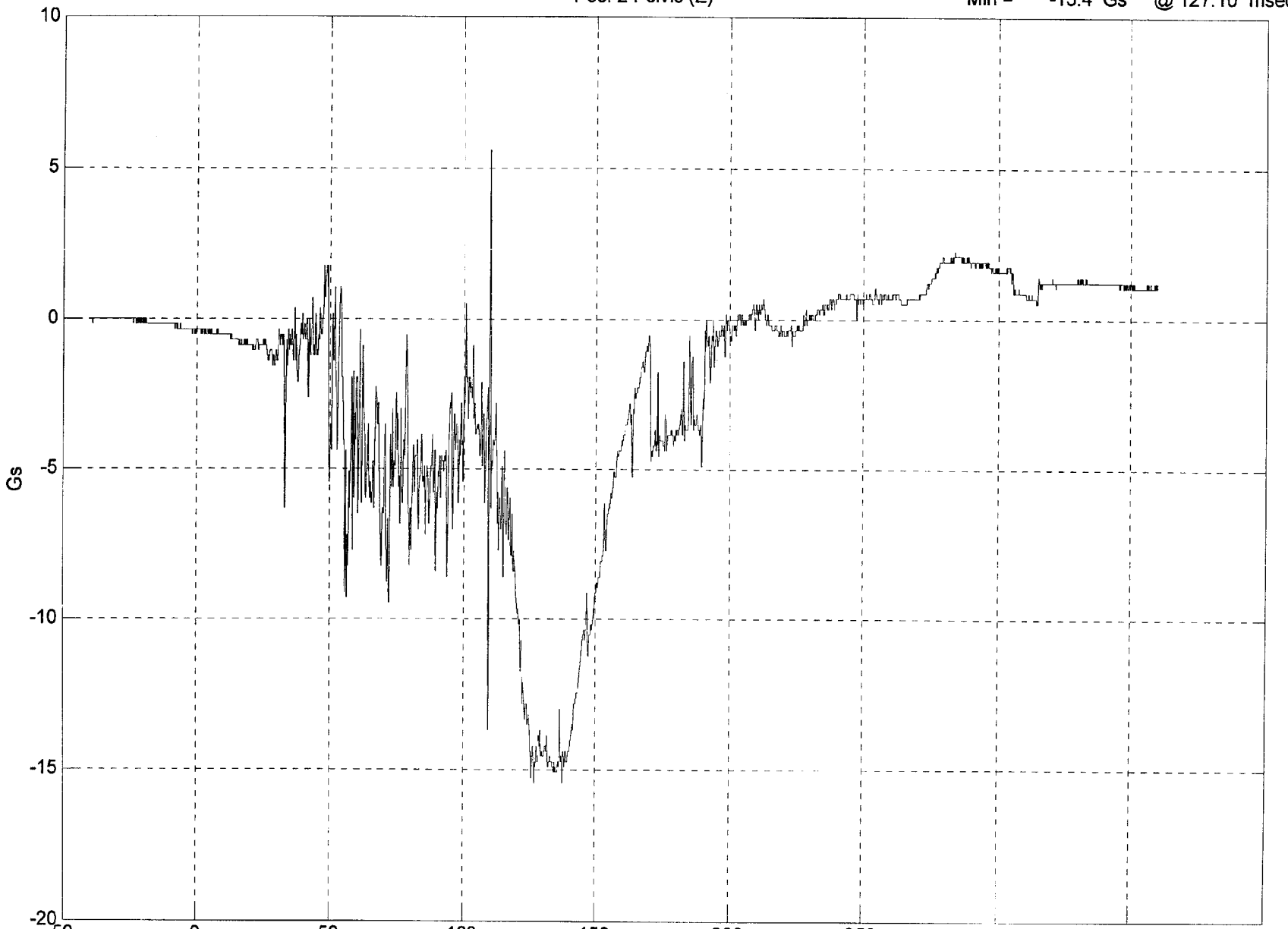
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Pelvic (Z)

Max = 5.62 Gs @ 110.00 msec
Min = -15.4 Gs @ 127.10 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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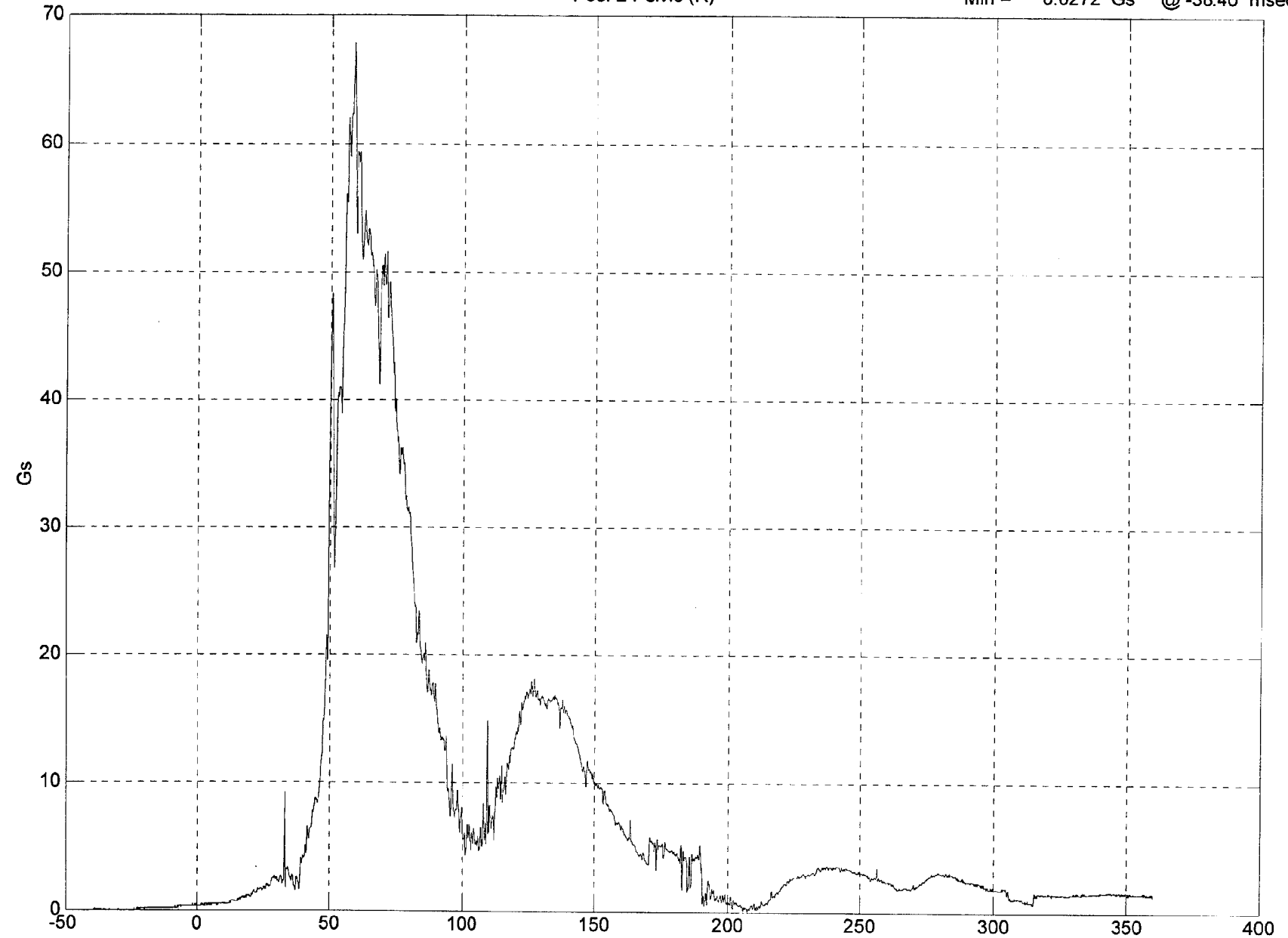
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Pelvic (R)

Max = 67.9 Gs @ 58.40 msec
Min = 0.0272 Gs @ -38.40 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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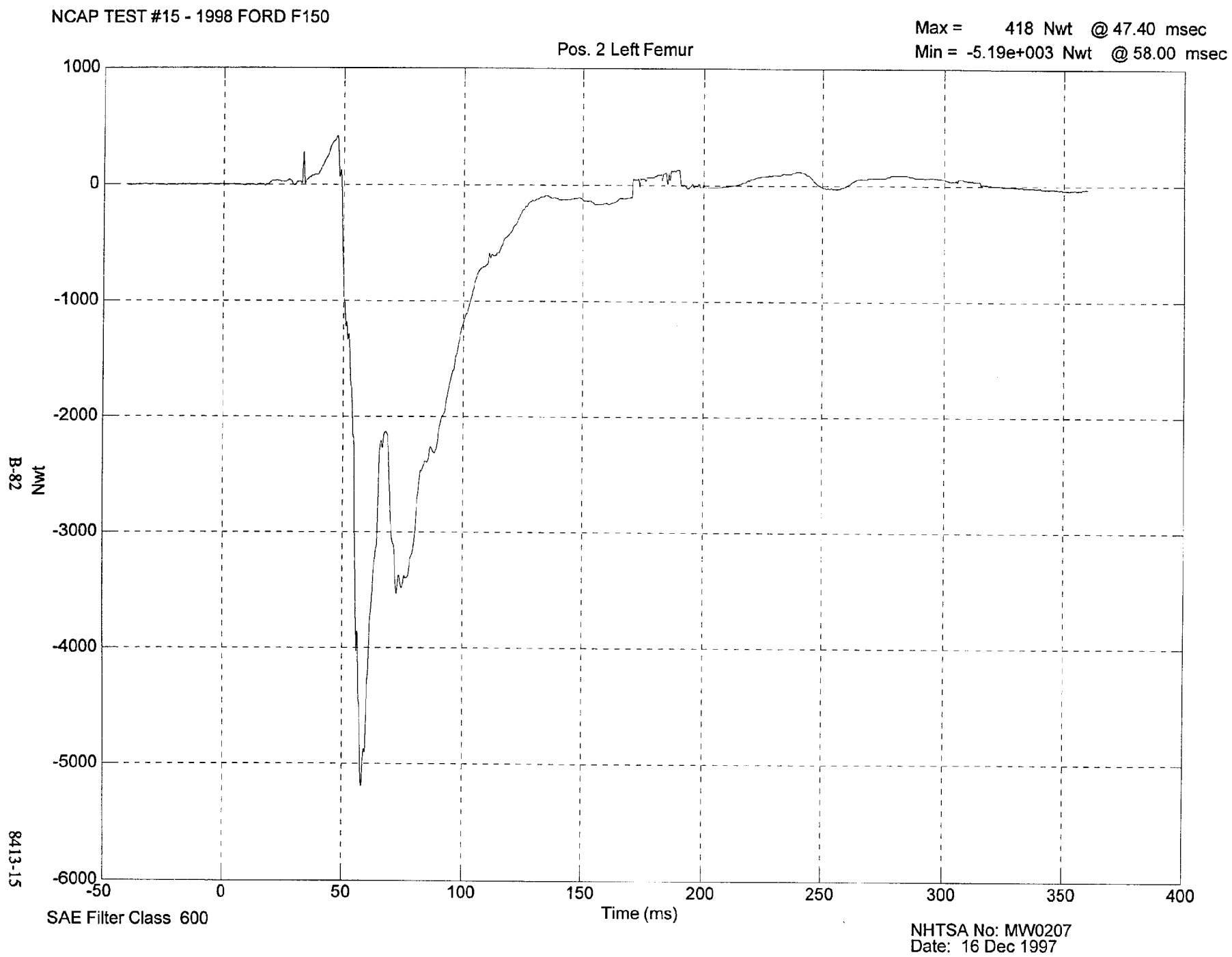
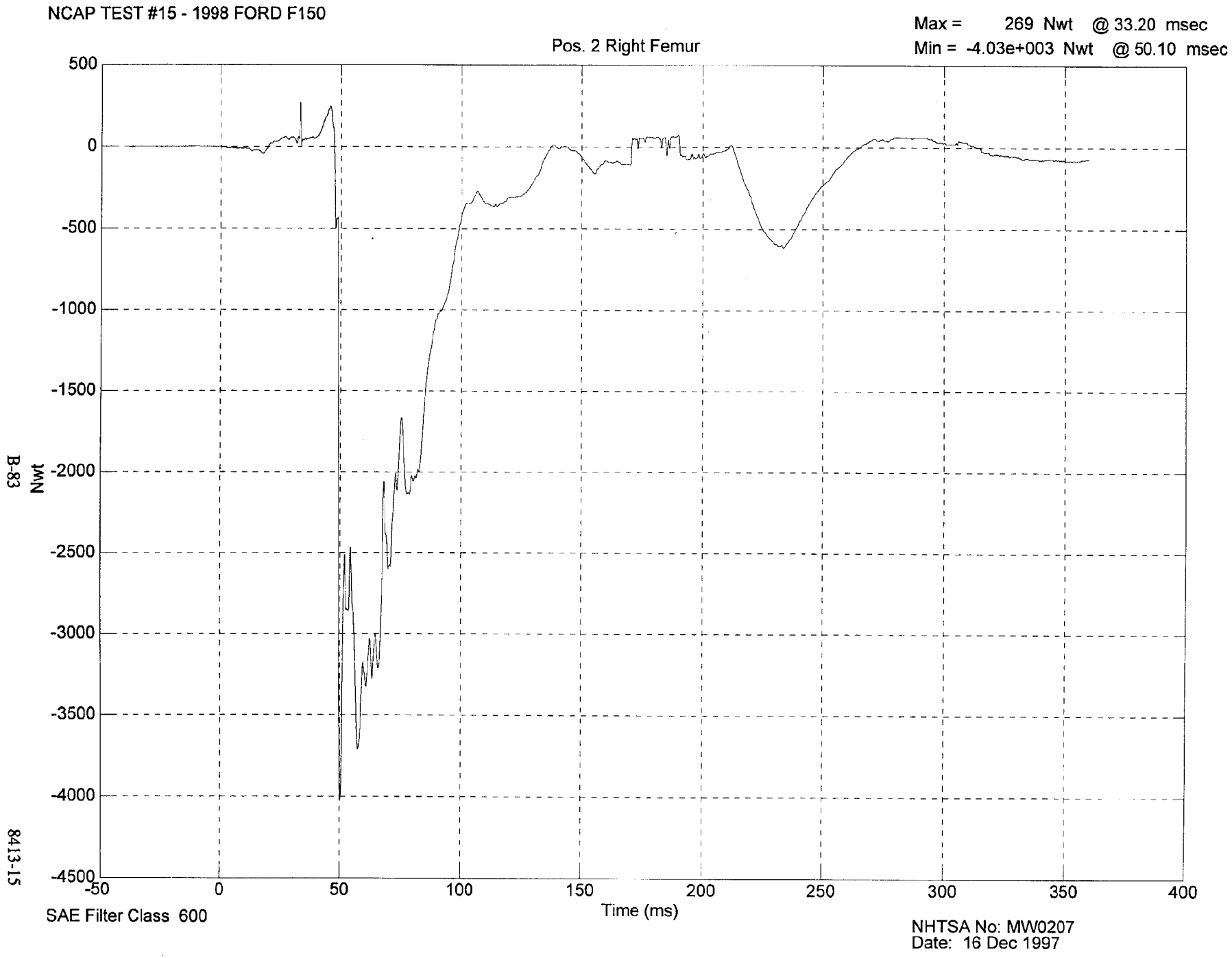

NCAP TEST #15 - 1998 FORD F150
Pos. 2 Left Femur
Max = 418 Nwt @ 47.40 msec
Min = -5.19e+003 Nwt @ 58.00 msec
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
Nwt
B-82
8413-15
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 600
NHTSA No: MW0207
Date: 16 Dec 1997


NCAP TEST #15 - 1998 FORD F150
Pos. 2 Right Femur
Max = 269 Nwt @ 33.20 msec
Min = -4.03e+003 Nwt @ 50.10 msec
500
0
-500
-1000
-1500
-2000
-2500
-3000
-3500
-4000
-4500
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (ms)
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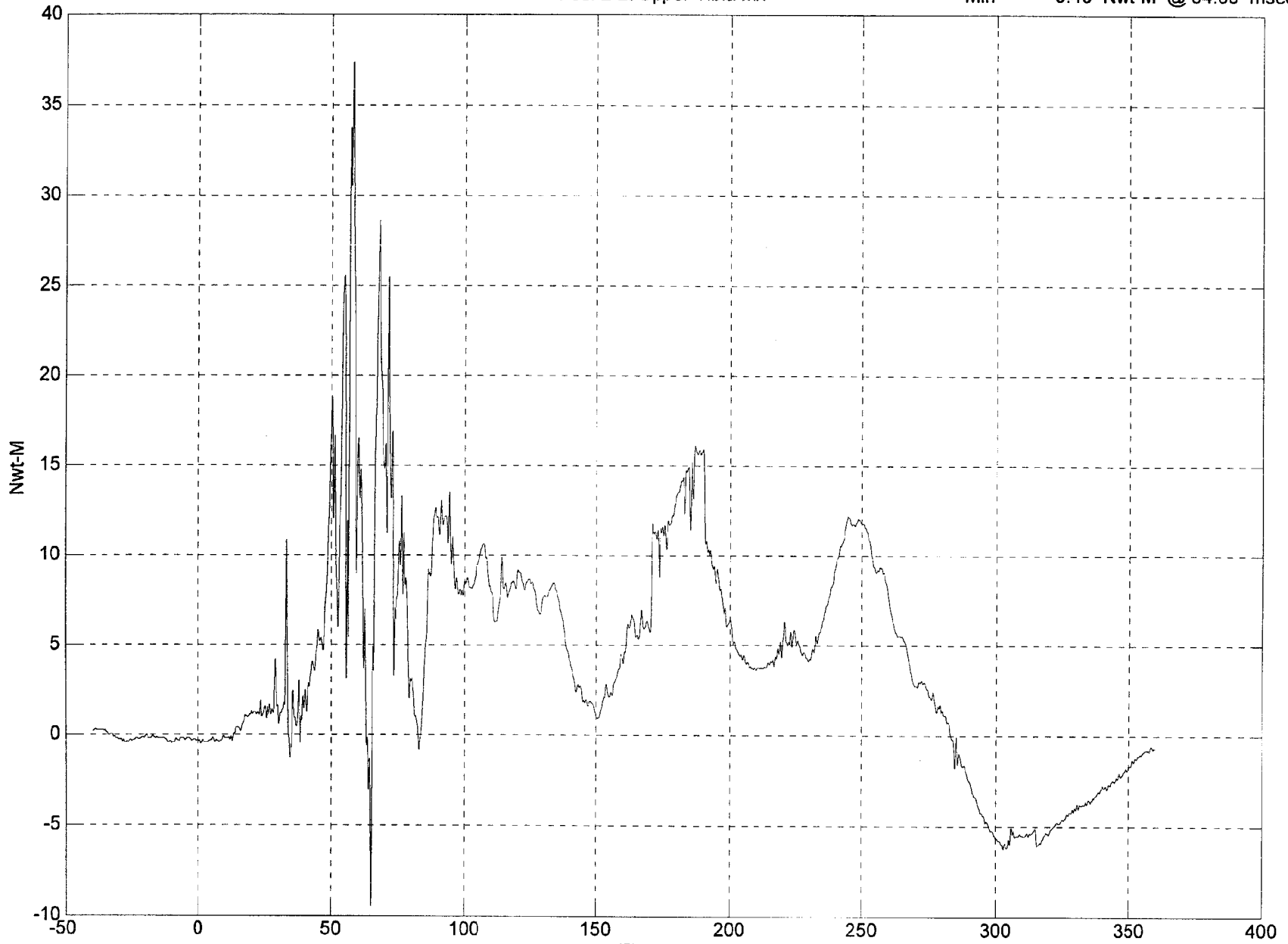
SAE Filter Class 600
NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 2 Lt Upper Tibia Mx

Max = 37.4 Nwt-M @ 57.80 msec
Min = -9.45 Nwt-M @ 64.80 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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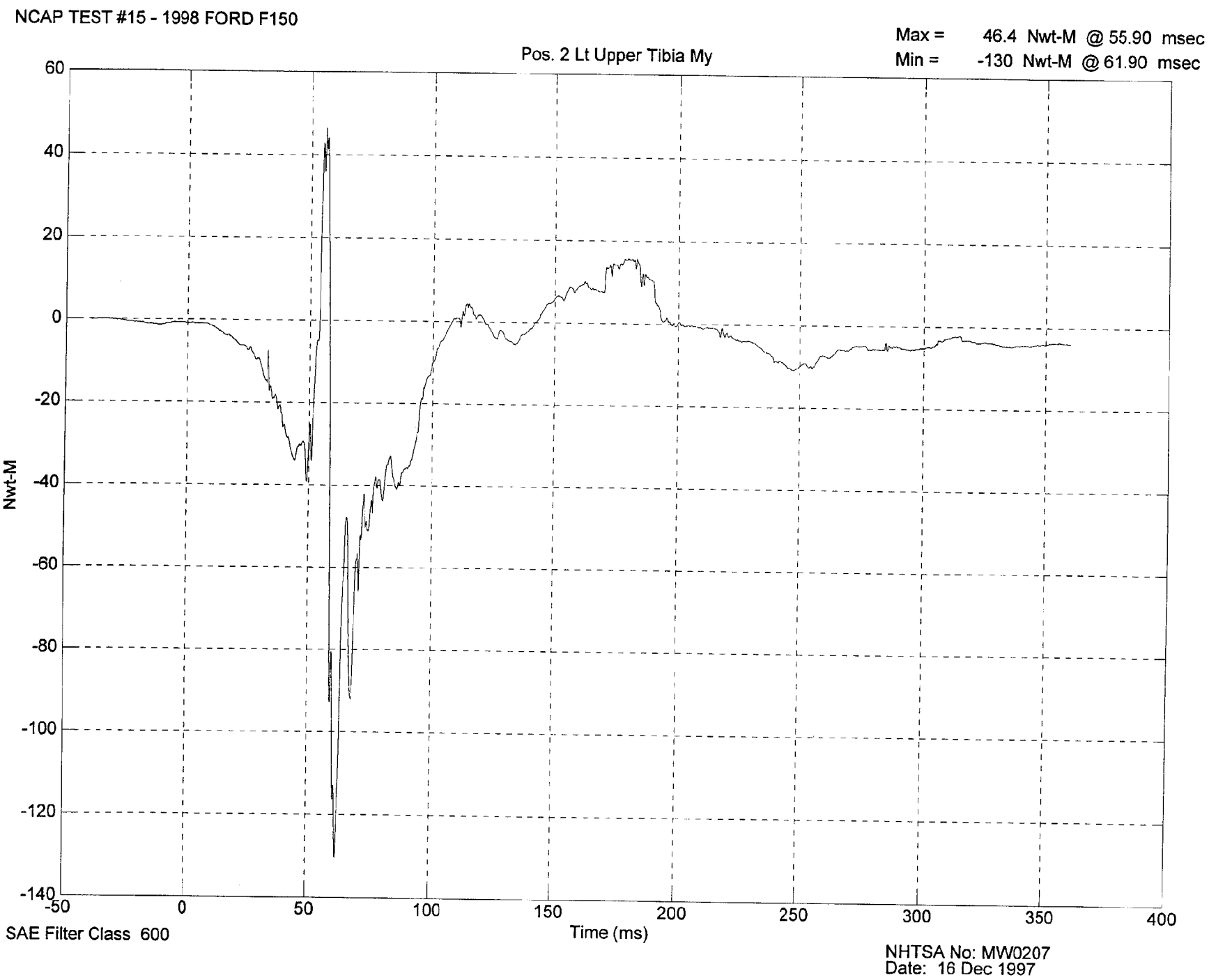
NCAP TEST #15 - 1998 FORD F150
Pos. 2 Lt Upper Tibia My
Max = 46.4 Nwt-M @ 55.90 msec
Min = -130 Nwt-M @ 61.90 msec
Nwt-M
60
40
20
0
-20
-40
-60
-80
-100
-120
-140
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 600
NHTSA No: MW0207
Date: 16 Dec 1997

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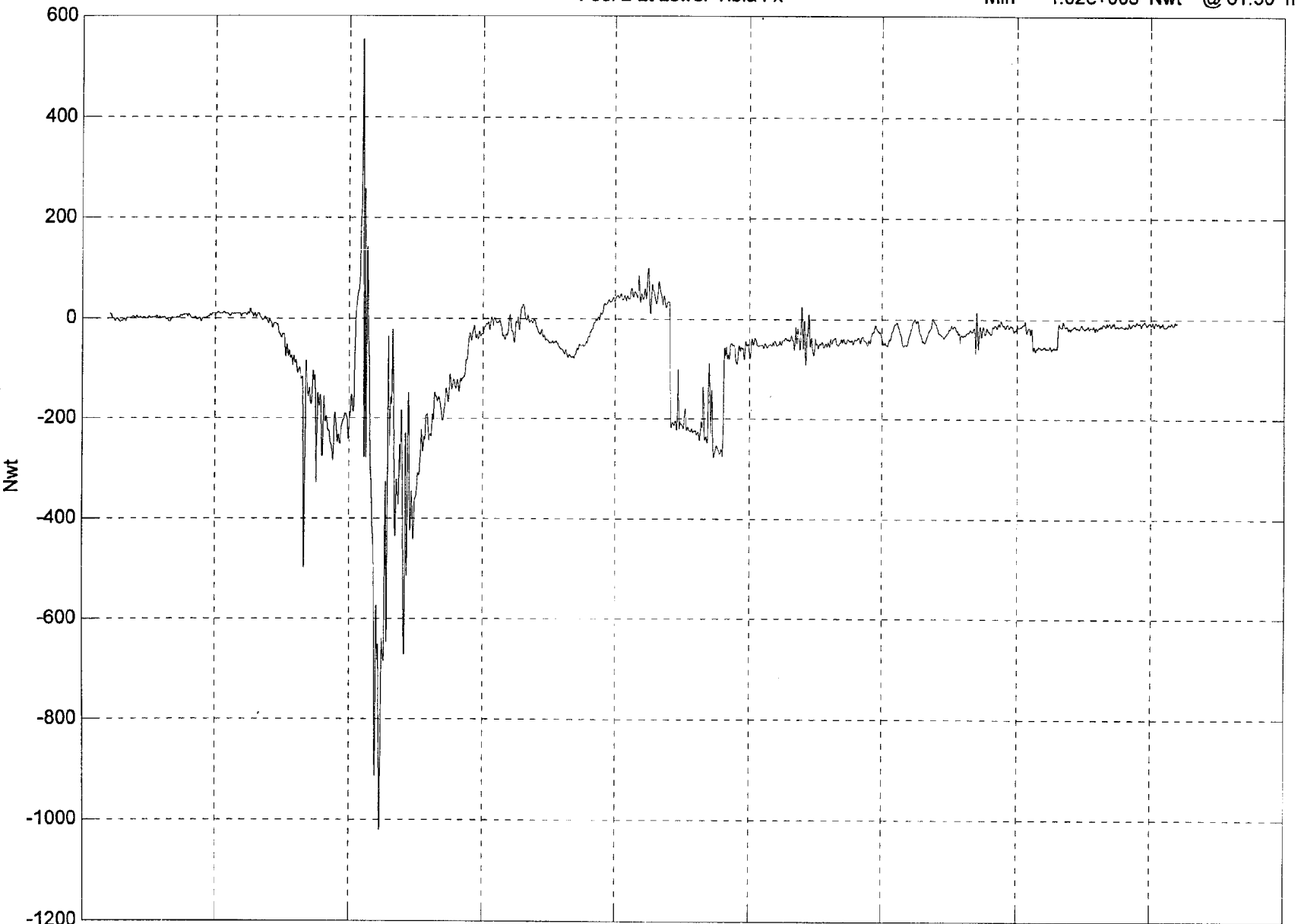
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Lt Lower Tibia Fx

Max = 554 Nwt @ 55.00 msec
Min = -1.02e+003 Nwt @ 61.30 msec



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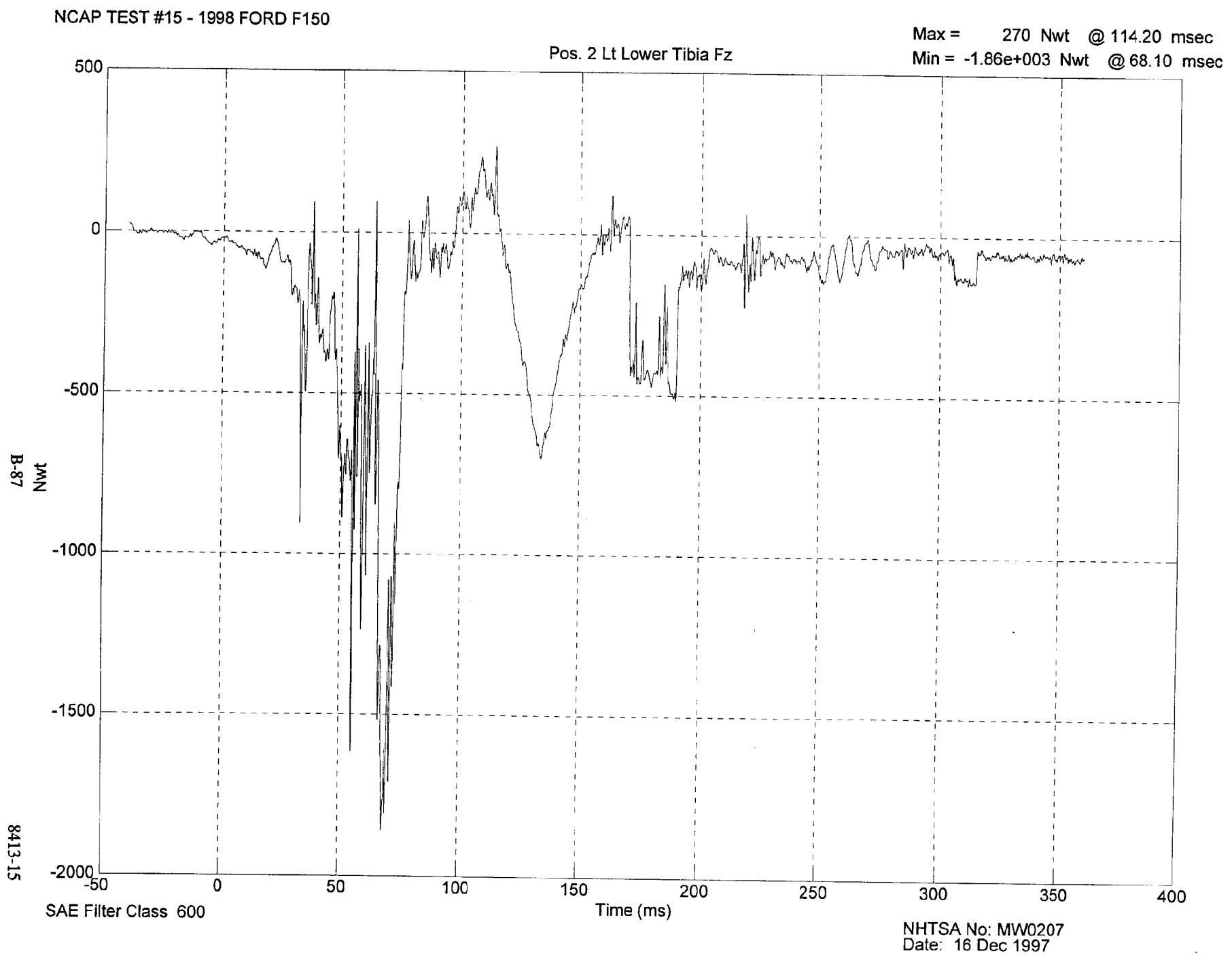
SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997


NCAP TEST #15 - 1998 FORD F150
Pos. 2 Lt Lower Tibia Fz
Max = 270 Nwt @ 114.20 msec
Min = -1.86e+003 Nwt @ 68.10 msec
500
0
-500
-1000
-1500
-2000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 600
NHTSA No: MW0207
Date: 16 Dec 1997
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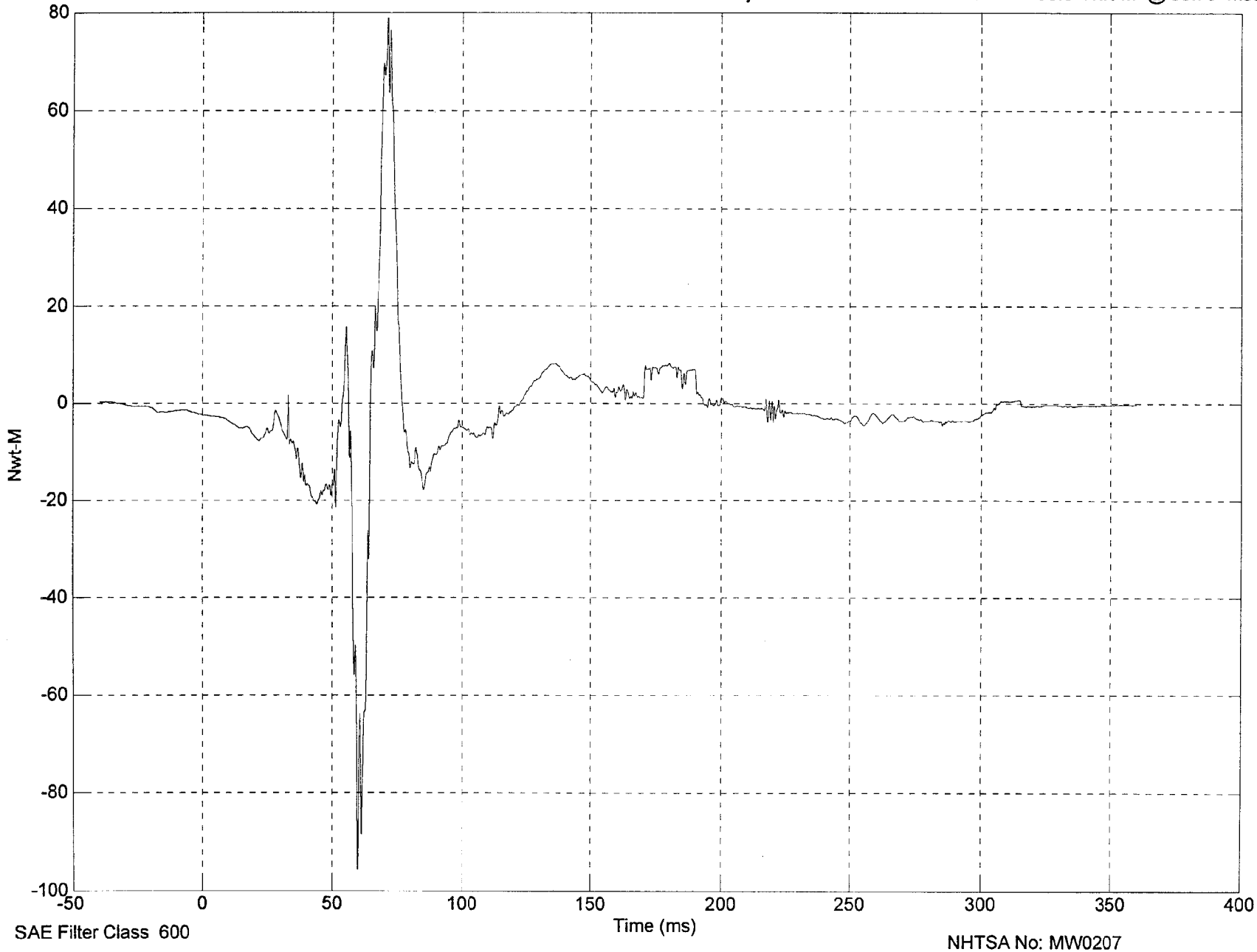
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Lt Lower Tibia My

Max = 78.9 Nwt-M @ 71.20 msec
Min = -95.6 Nwt-M @ 59.70 msec



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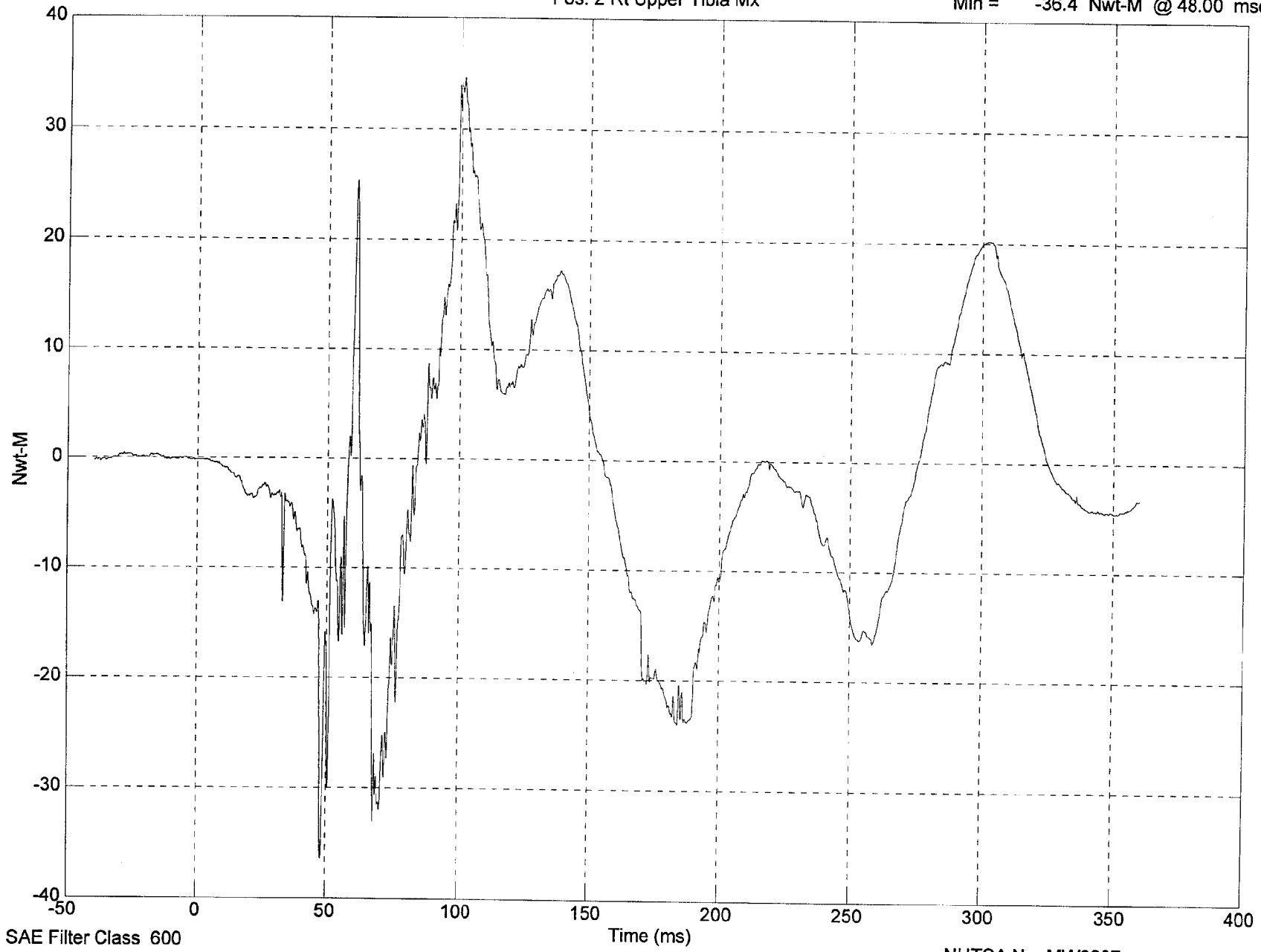
SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 2 Rt Upper Tibia Mx

Max = 34.6 Nwt-M @ 101.40 msec
Min = -36.4 Nwt-M @ 48.00 msec



SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

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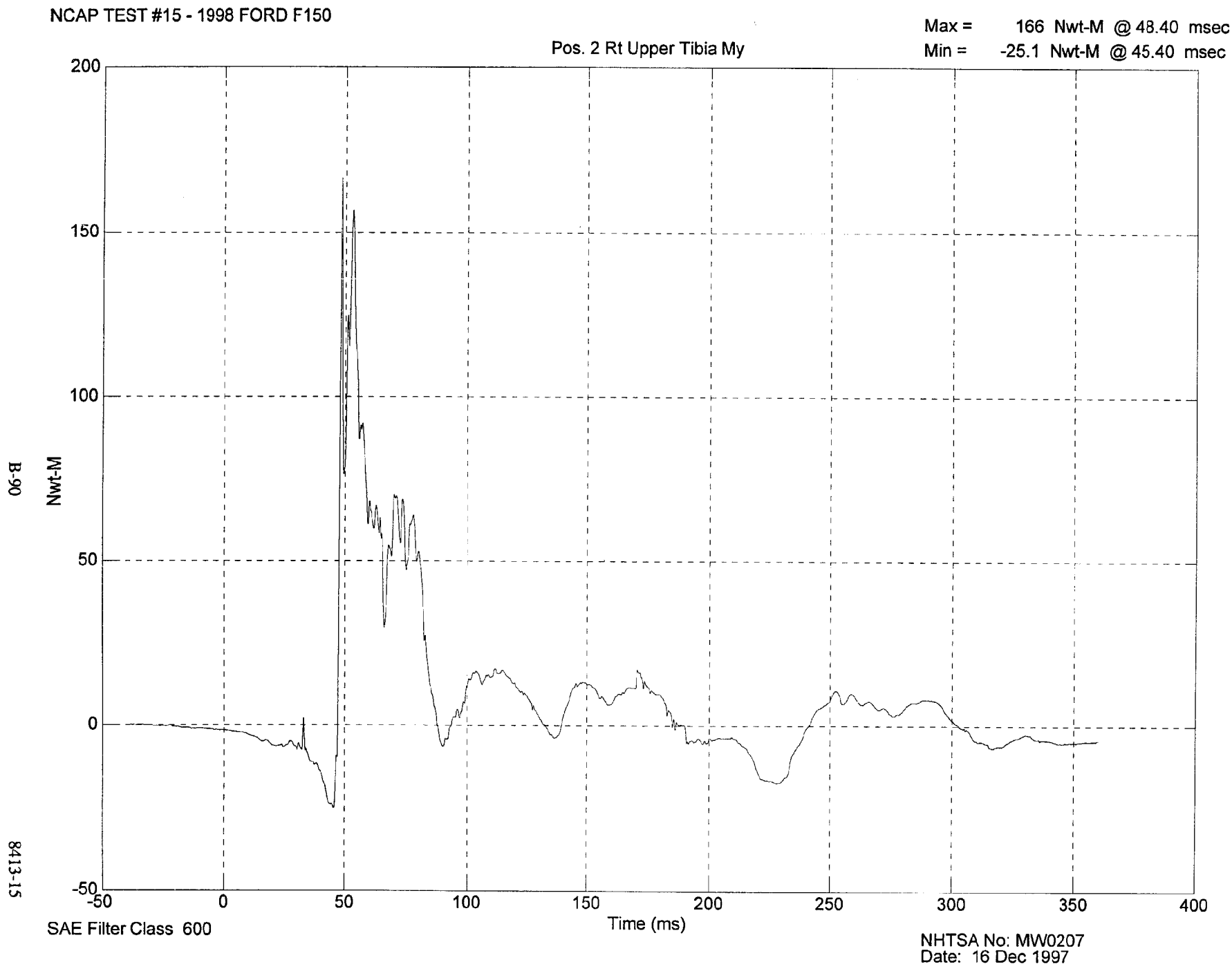
NCAP TEST #15 - 1998 FORD F150
Pos. 2 Rt Upper Tibia My
Max = 166 Nwt-M @ 48.40 msec
Min = -25.1 Nwt-M @ 45.40 msec
Nwt-M
200
150
100
50
0
-50
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 600
NHTSA No: MW0207
Date: 16 Dec 1997
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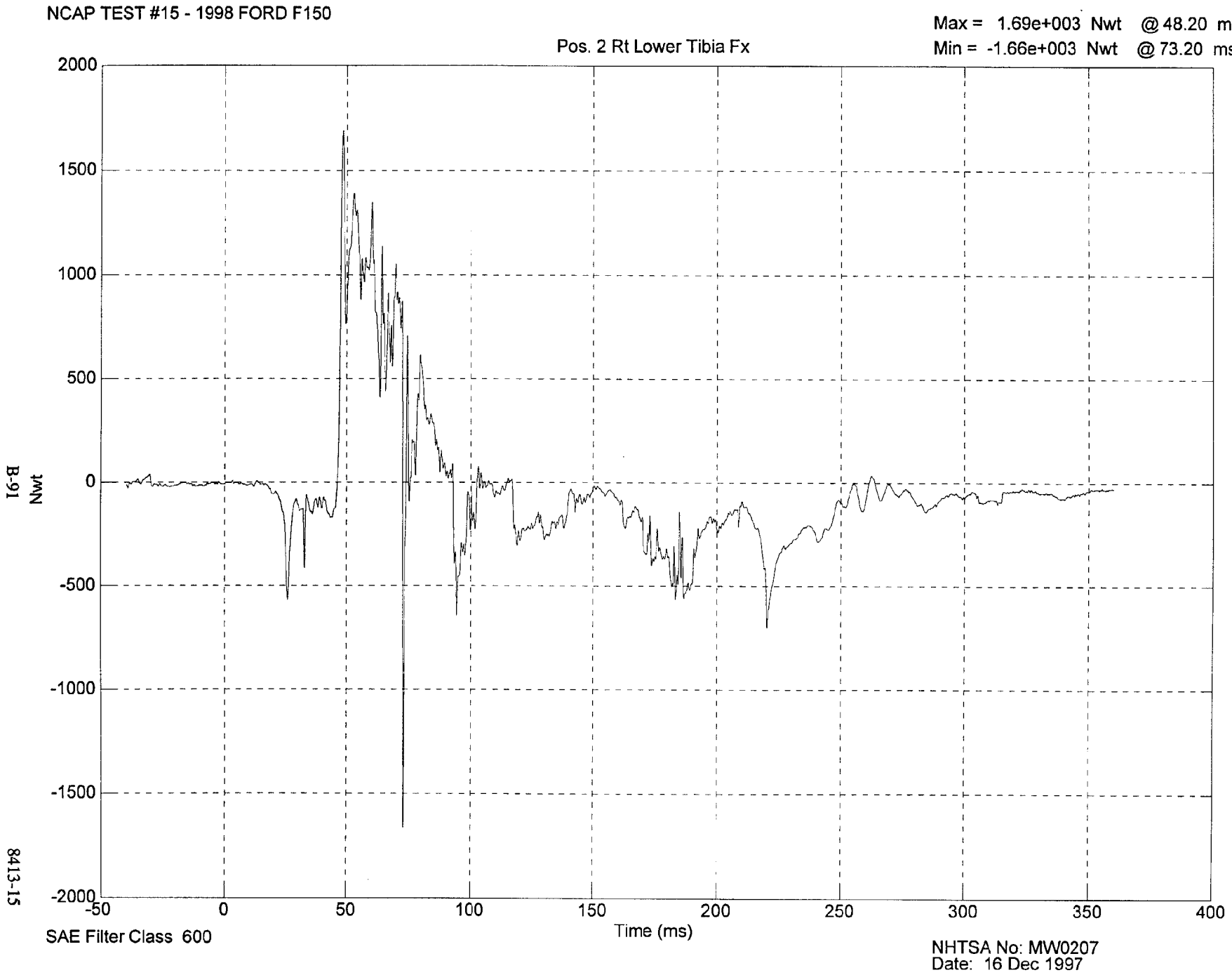
NCAP TEST #15 - 1998 FORD F150
Pos. 2 Rt Lower Tibia Fx
Max = 1.69e+003 Nwt @ 48.20 msec
Min = -1.66e+003 Nwt @ 73.20 msec
2000
1500
1000
500
0
-500
-1000
-1500
-2000
Nwt
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 600
NHTSA No: MW0207
Date: 16 Dec 1997
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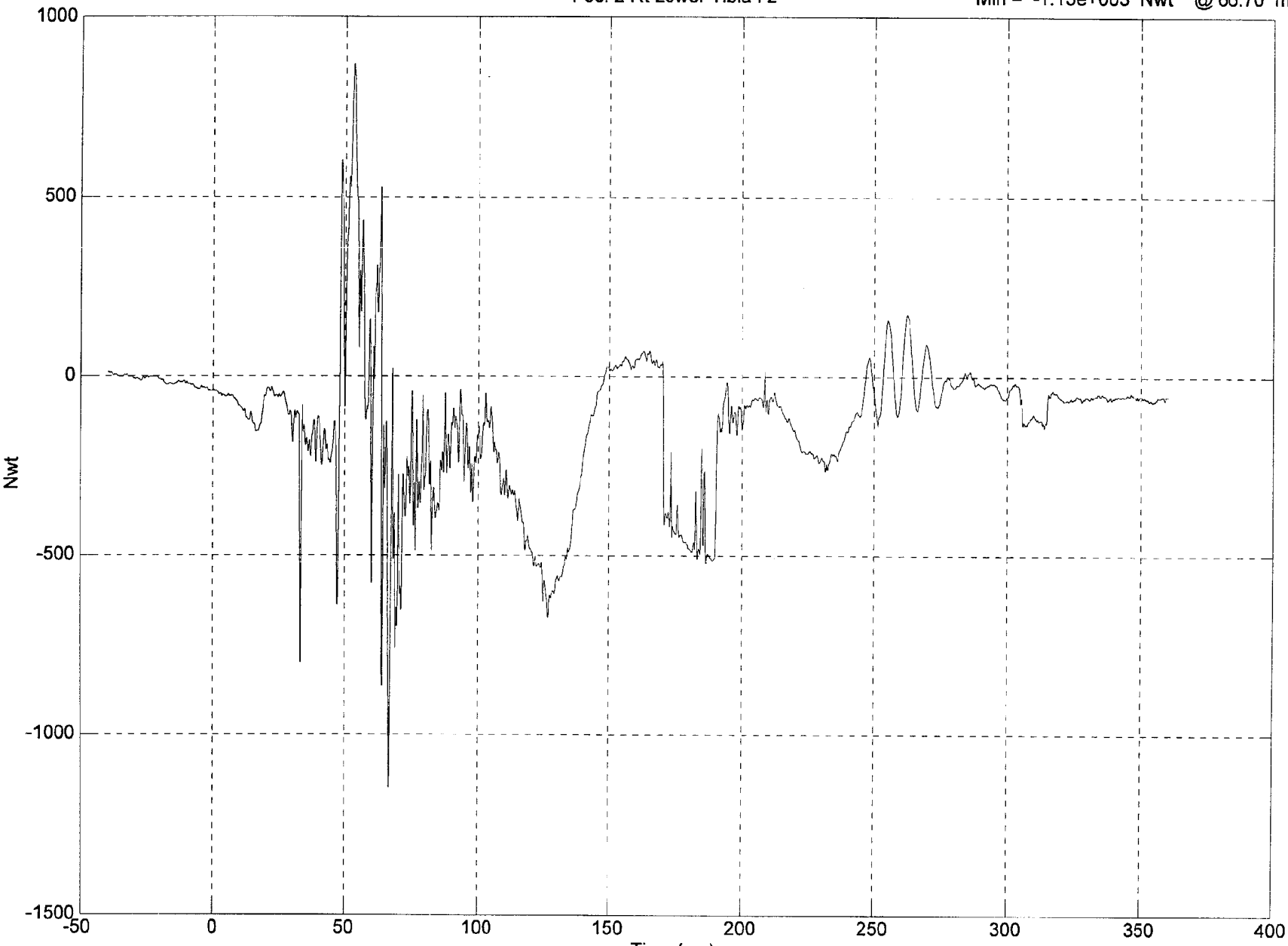
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Rt Lower Tibia Fz

Max = 870 Nwt @ 53.10 msec
Min = -1.15e+003 Nwt @ 66.70 msec



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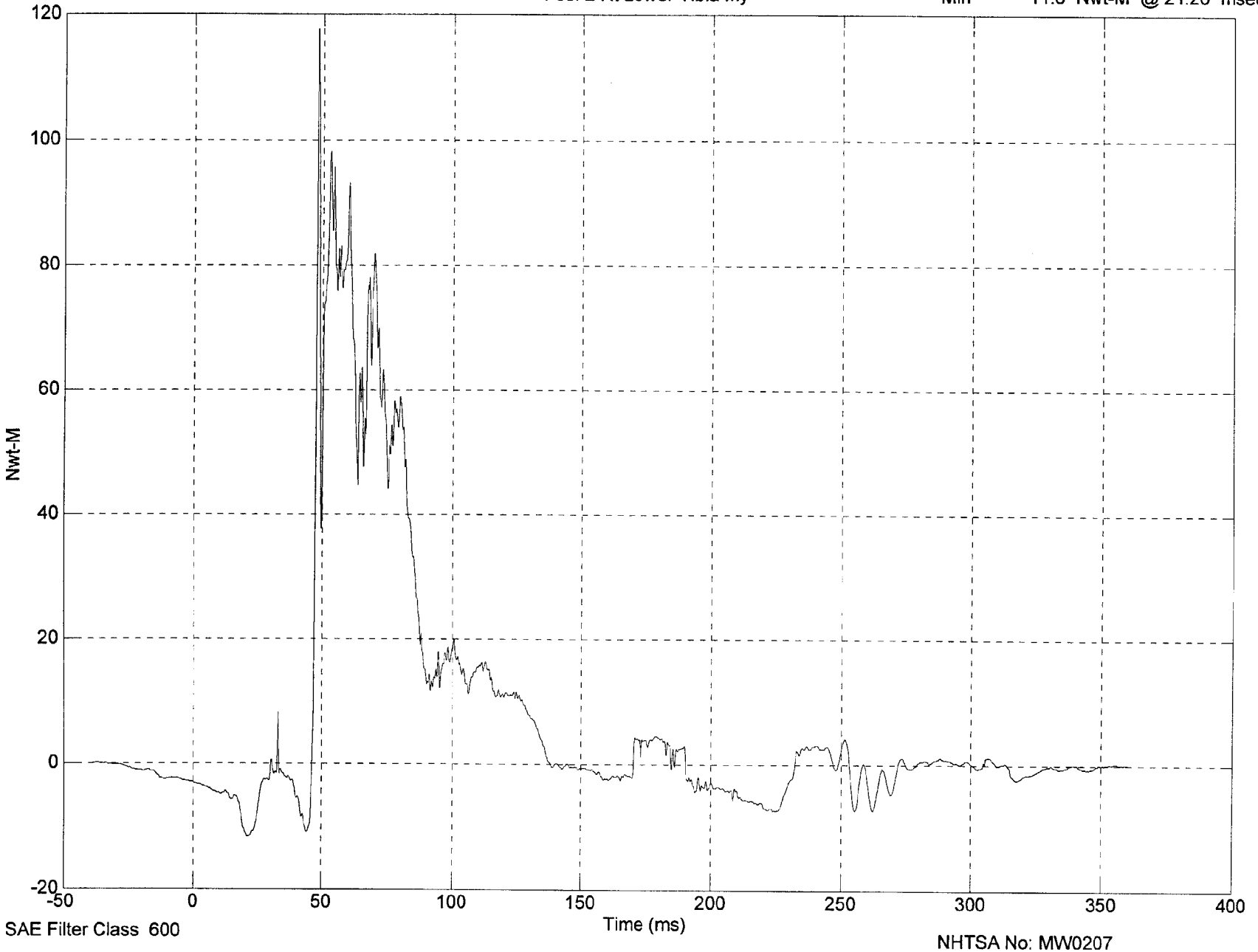
SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 2 Rt Lower Tibia My

Max = 118 Nwt-M @ 48.10 msec
Min = -11.6 Nwt-M @ 21.20 msec



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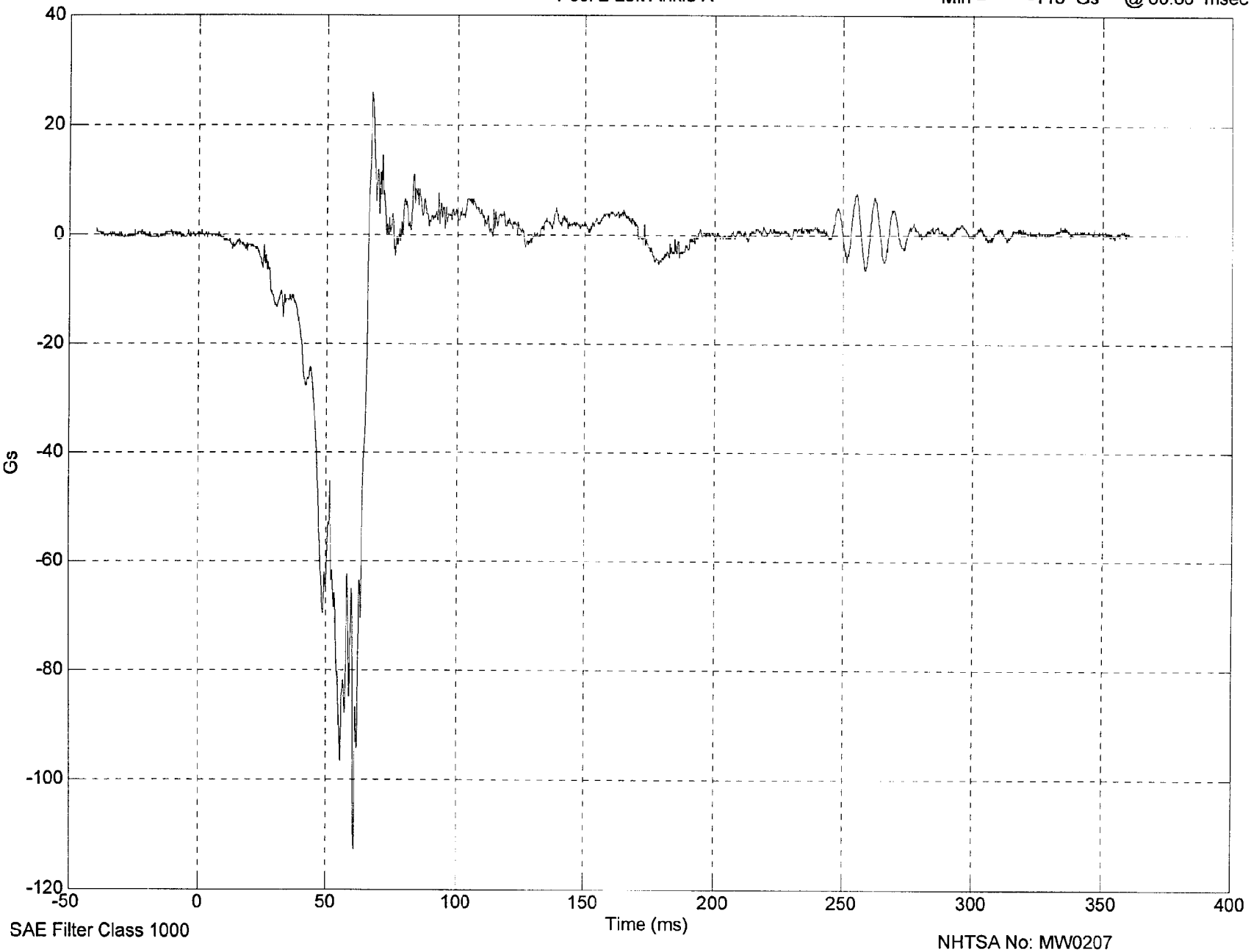
SAE Filter Class 600

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 2 Left Ankle X

Max = 25.9 Gs @ 67.30 msec
Min = -113 Gs @ 60.60 msec



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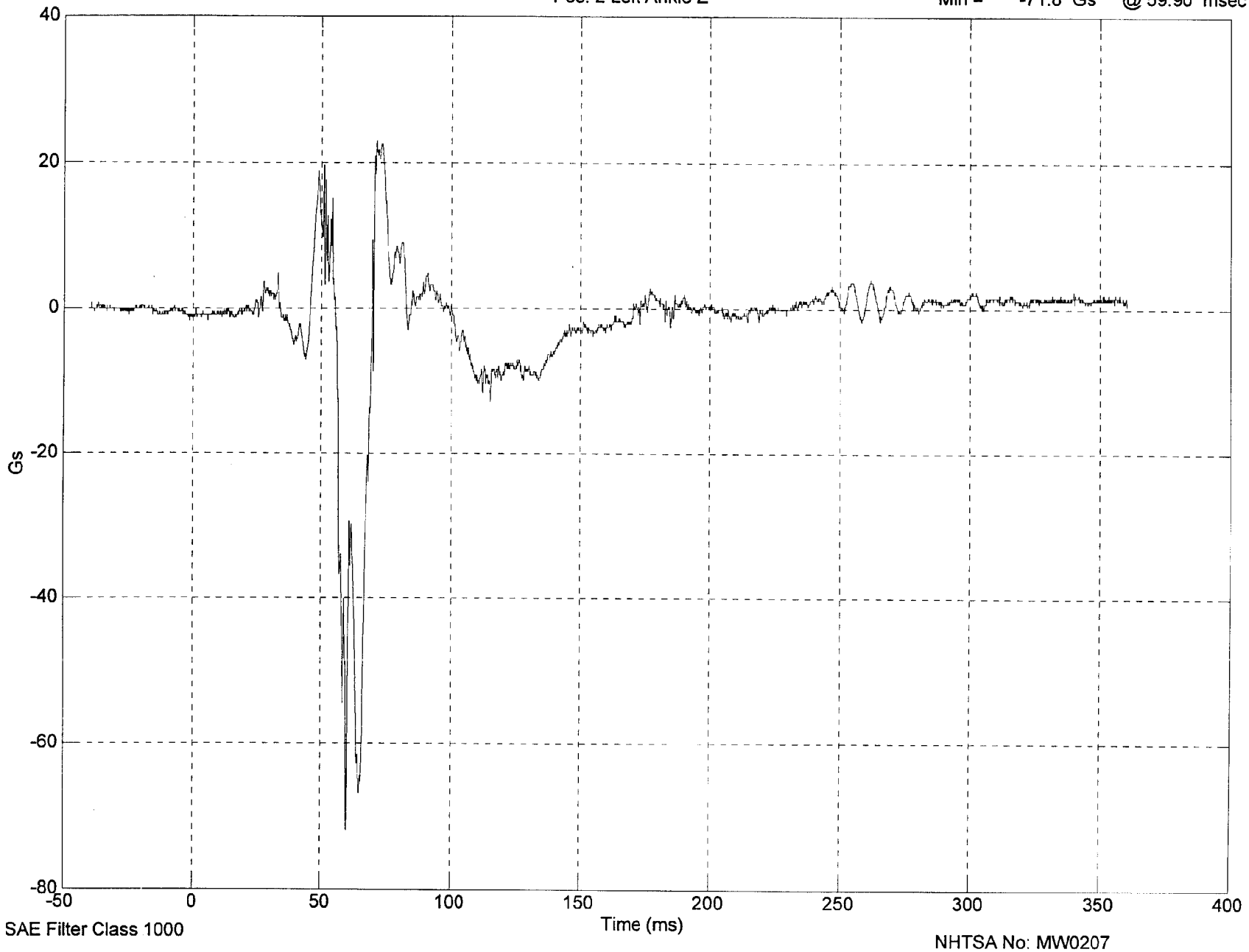
SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 2 Left Ankle Z

Max = 23 Gs @ 71.30 msec
Min = -71.8 Gs @ 59.90 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997

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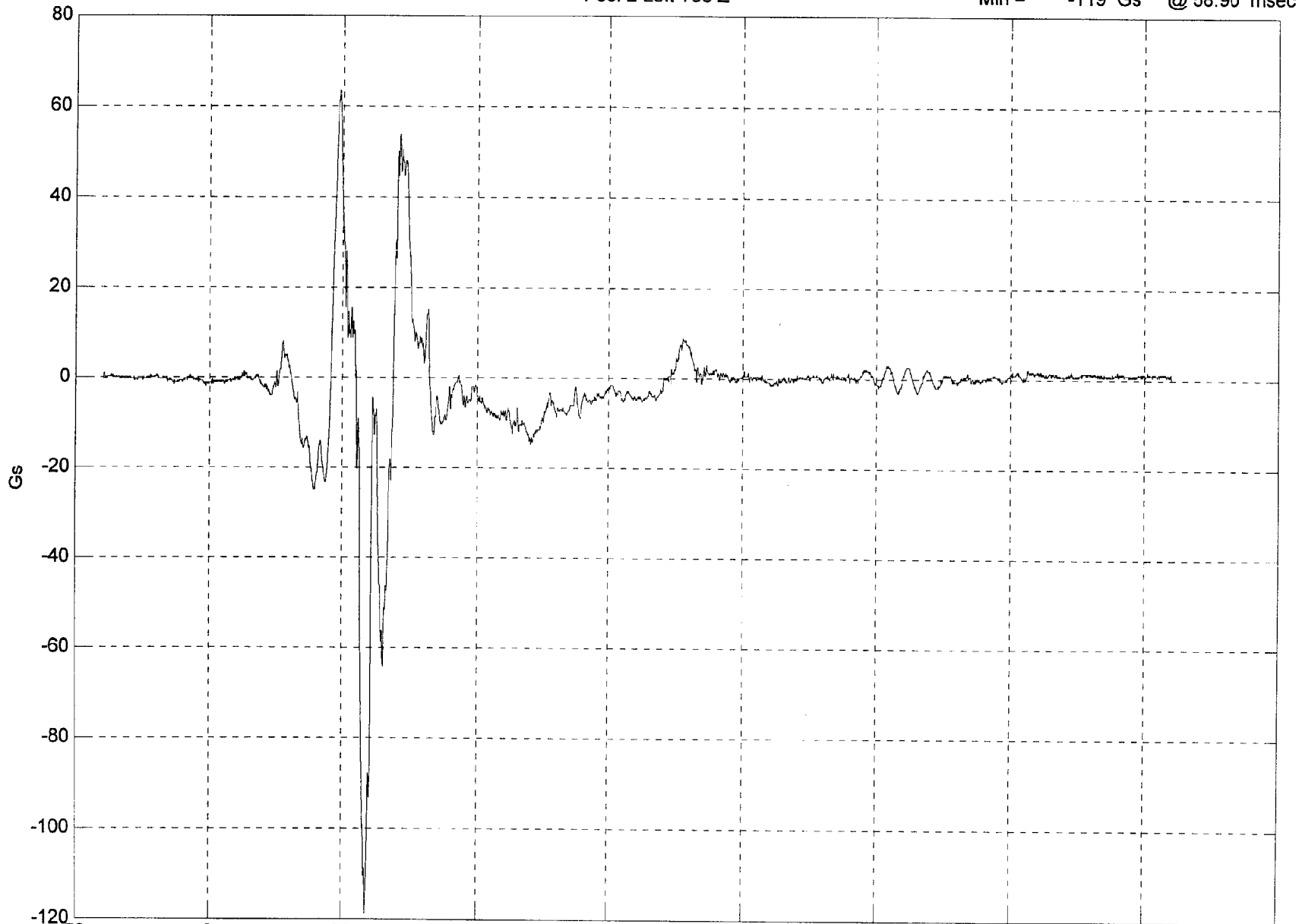
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Left Toe Z

Max = 63.6 Gs @ 48.80 msec
Min = -119 Gs @ 58.90 msec



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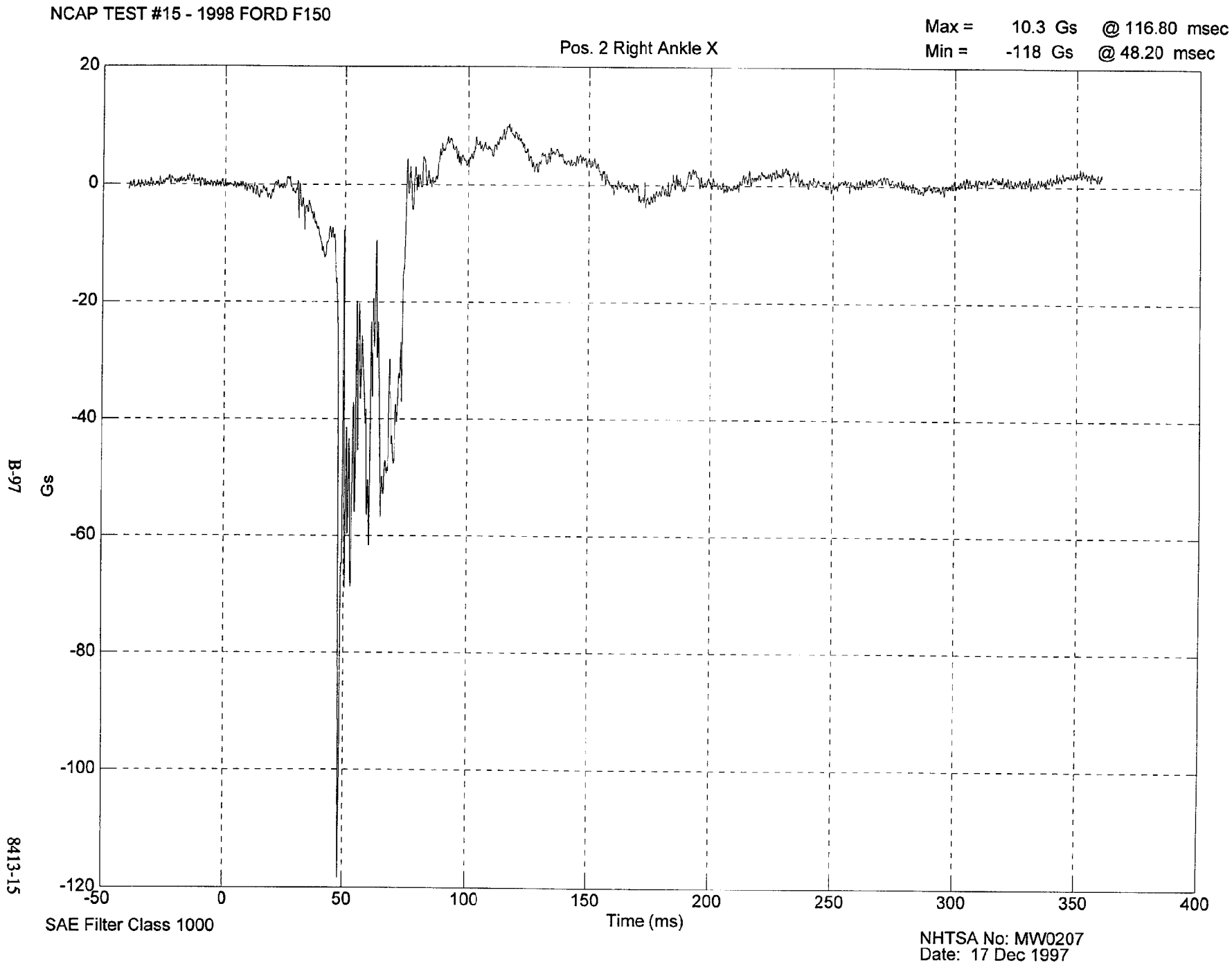
SAE Filter Class 1000

NHTSA No: MW0207
Date: 16 Dec 1997


NCAP TEST #15 - 1998 FORD F150
Pos. 2 Right Ankle X
Max = 10.3 Gs @ 116.80 msec
Min = -118 Gs @ 48.20 msec
20
0
-20
-40
-60
-80
-100
-120
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW0207
Date: 17 Dec 1997
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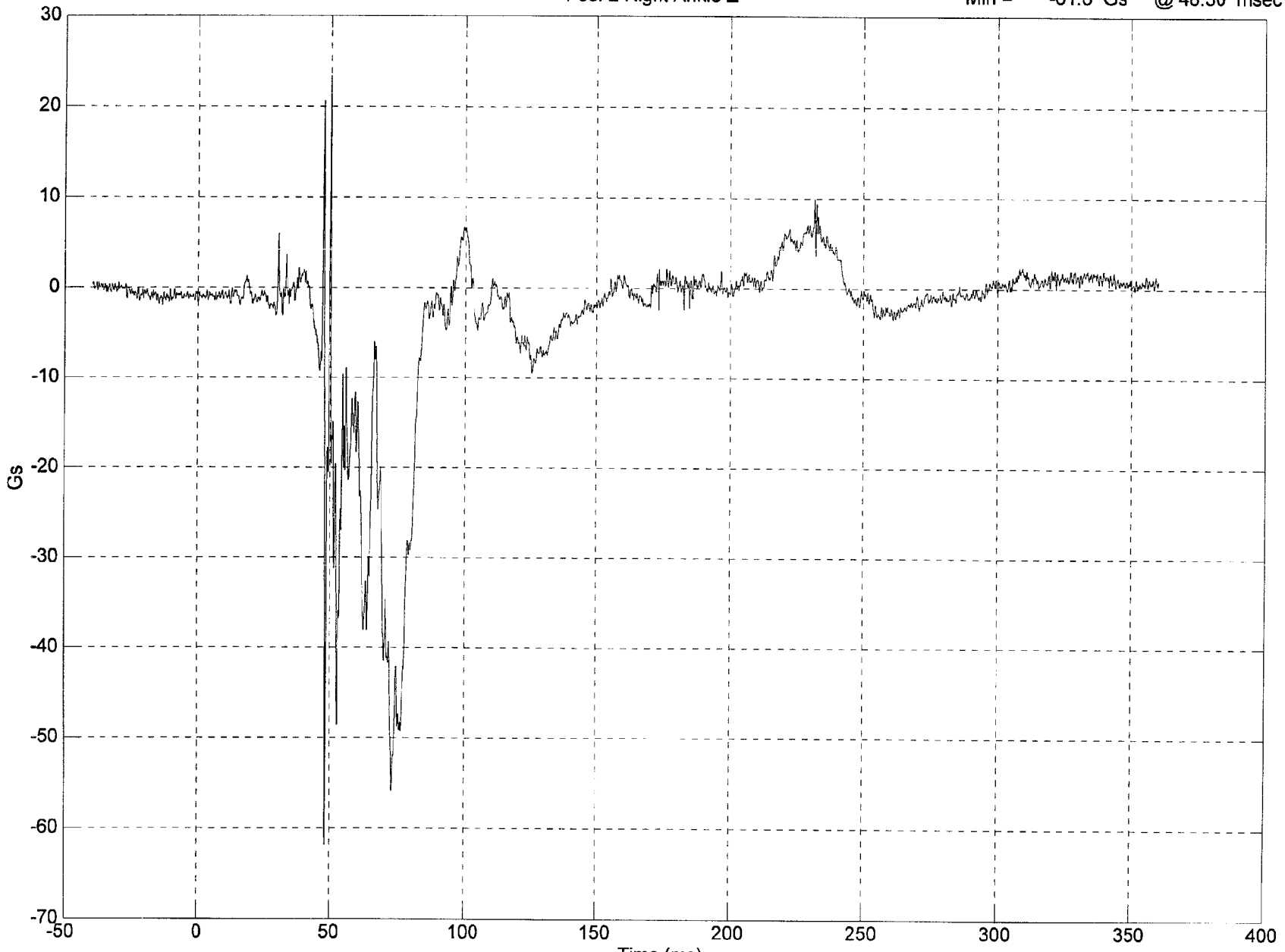
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Right Ankle Z

Max = 23.4 Gs @ 49.90 msec
Min = -61.8 Gs @ 48.30 msec



SAE Filter Class 1000

NHTSA No: MW0207
Date: 17 Dec 1997

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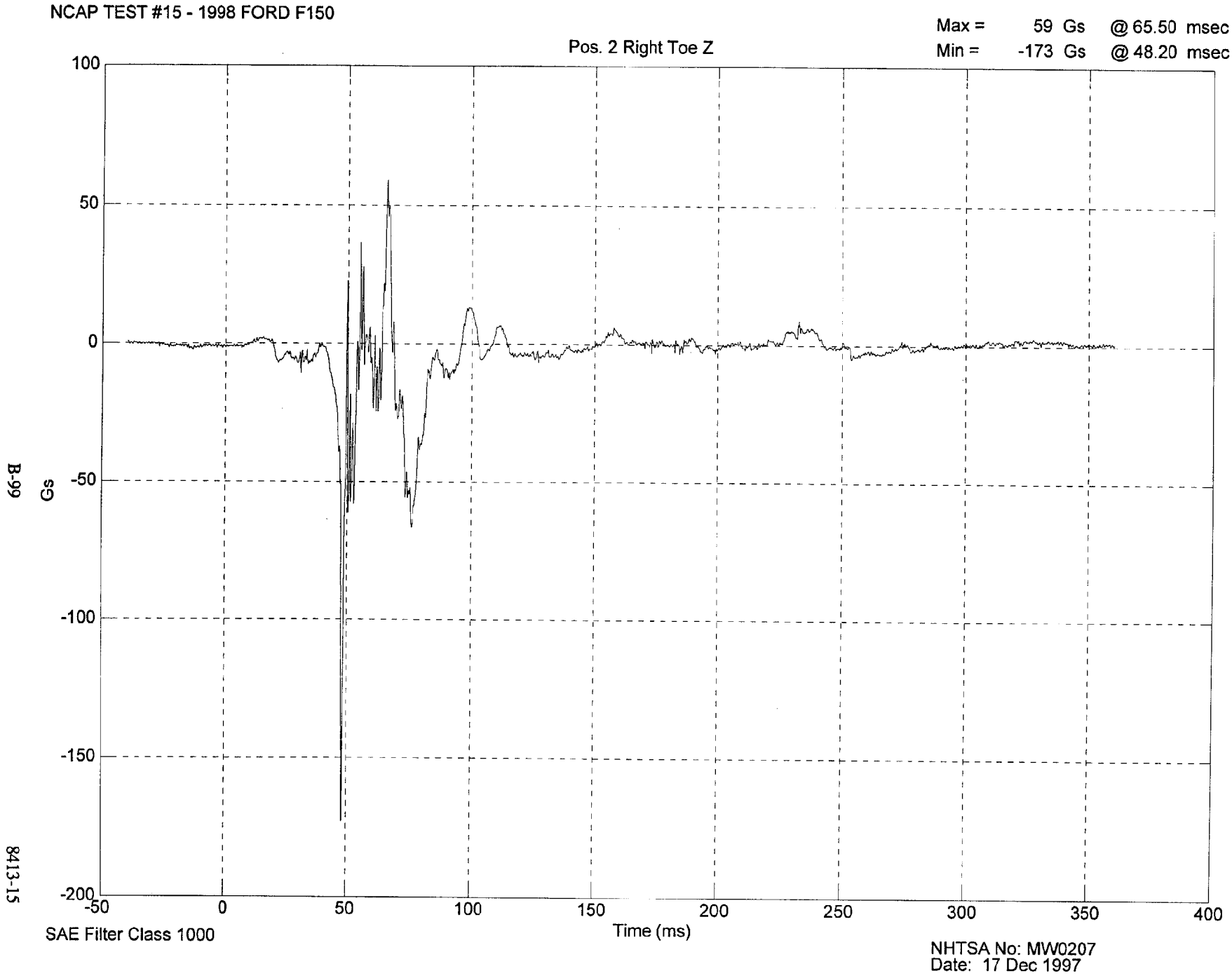
NCAP TEST #15 - 1998 FORD F150
Pos. 2 Right Toe Z
Max = 59 Gs @ 65.50 msec
Min = -173 Gs @ 48.20 msec
100
50
0
-50
-100
-150
-200
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW0207
Date: 17 Dec 1997
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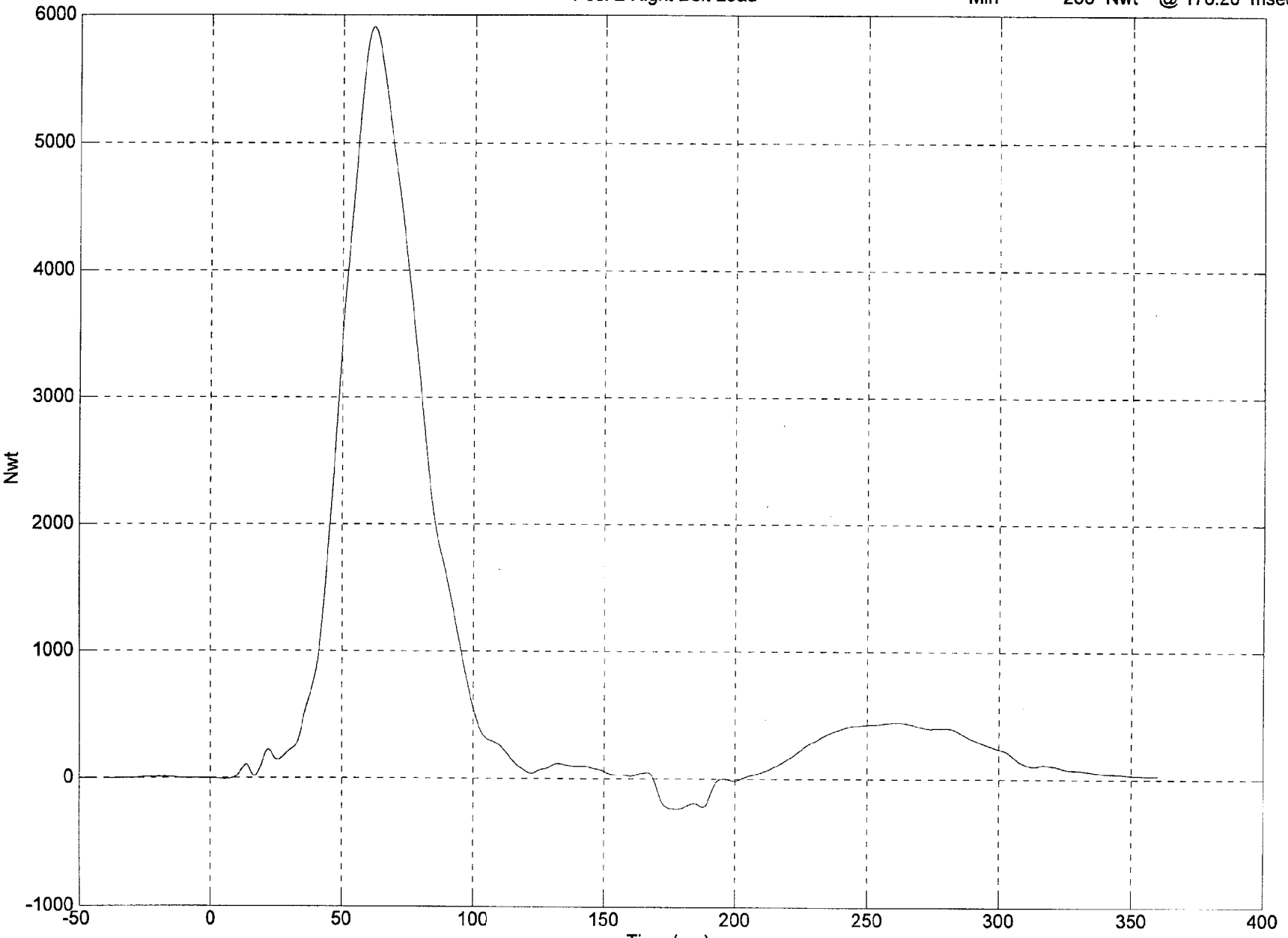
NCAP TEST #15 - 1998 FORD F150

Pos. 2 Right Belt Load

Max = 5.91e+003 Nwt @ 61.70 msec
Min = -235 Nwt @ 178.20 msec



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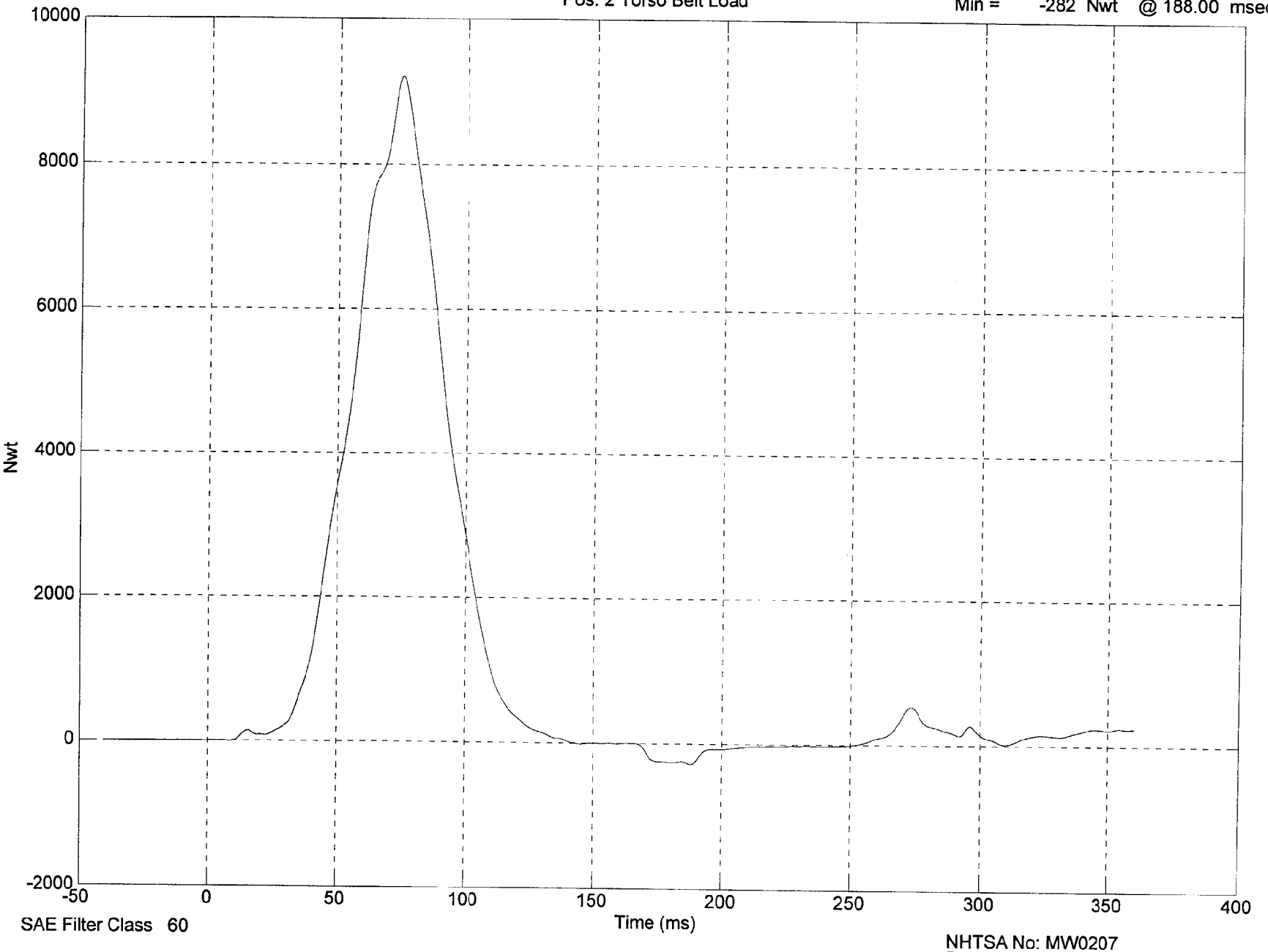
SAE Filter Class 60

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150

Pos. 2 Torso Belt Load

Max = 9.21e+003 Nwt @ 74.50 msec
Min = -282 Nwt @ 188.00 msec

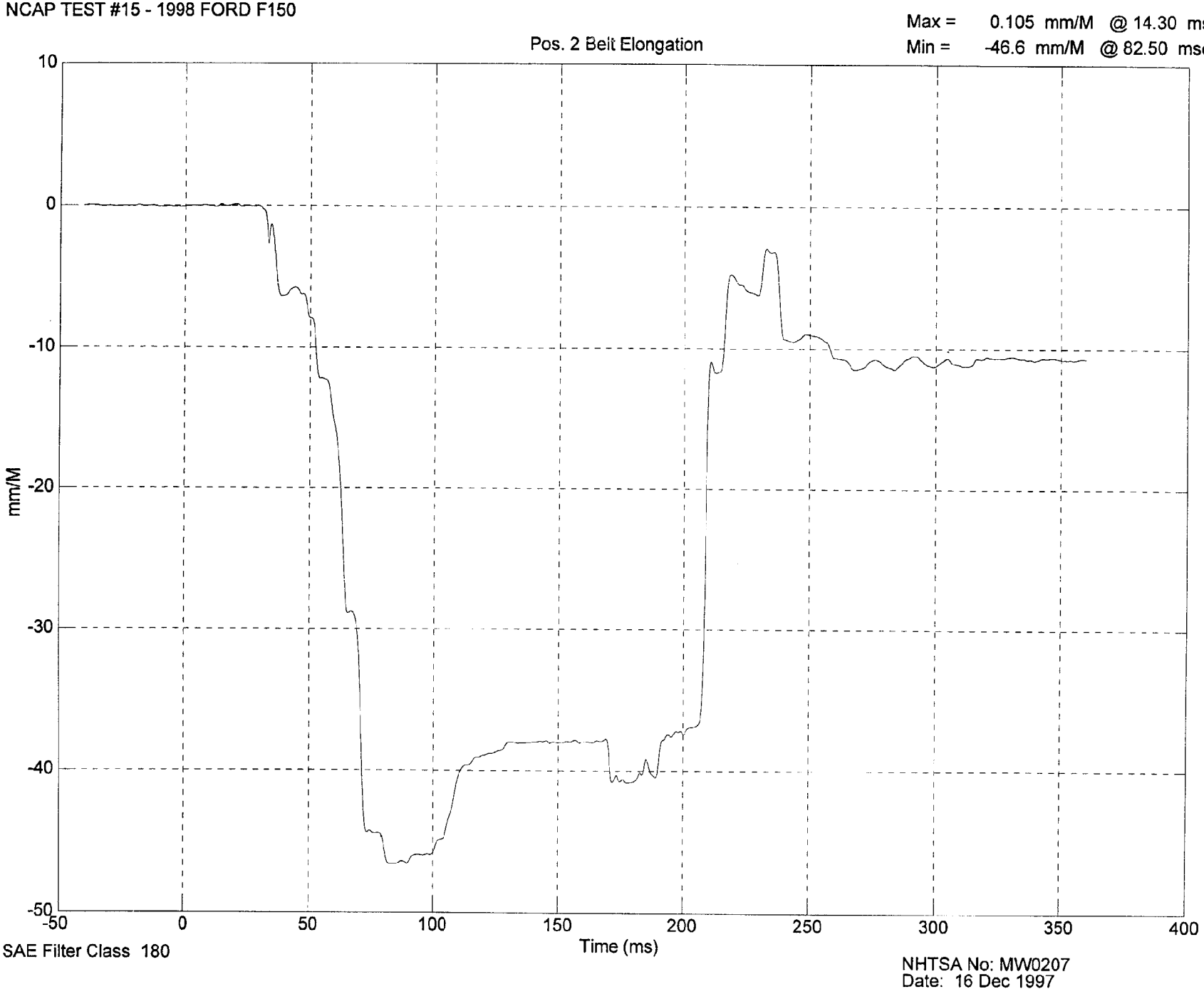


8413-15

SAE Filter Class 60

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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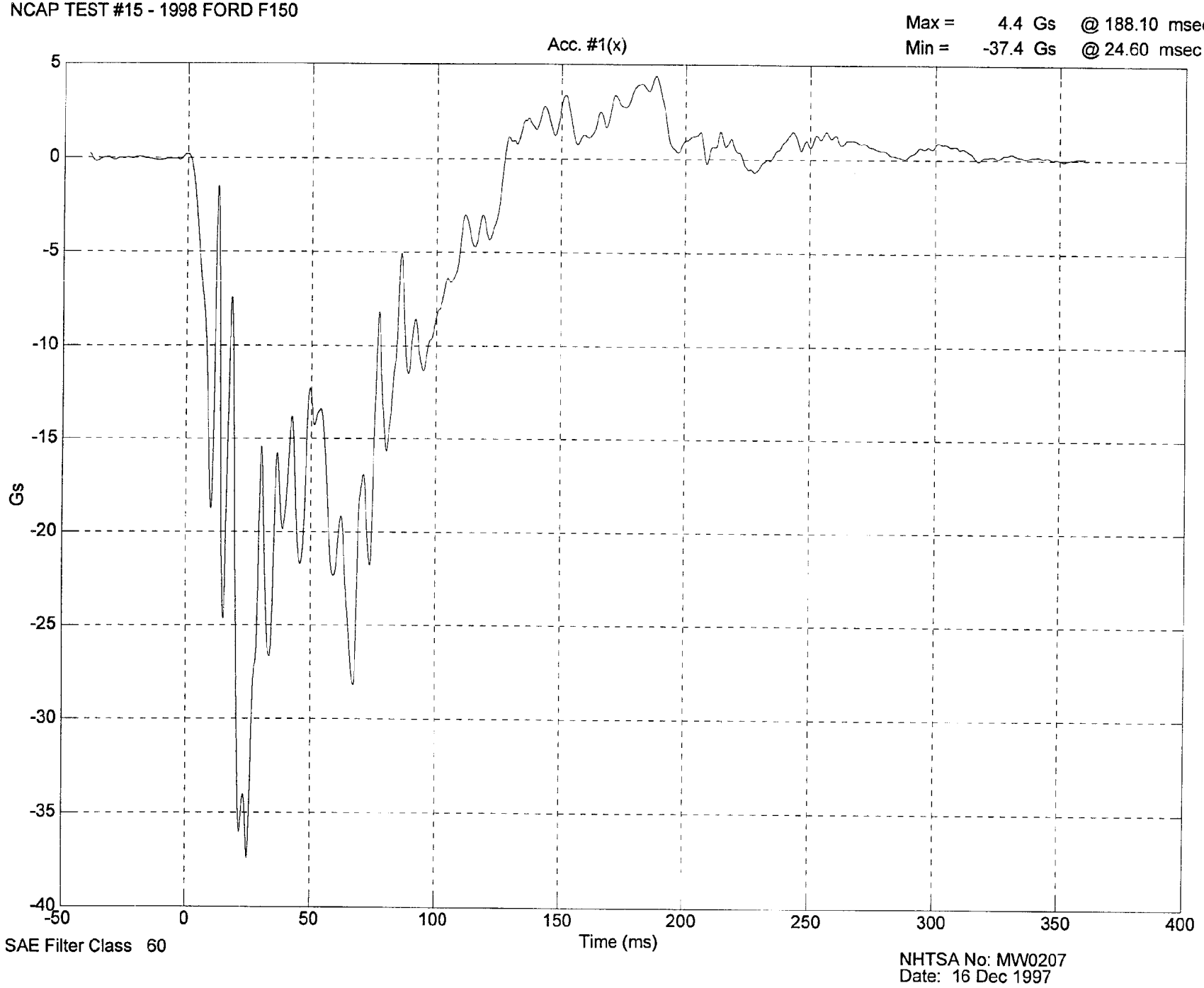
NHTSA TEST NO. MW0207

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

NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 60

NHTSA No: MW0207
Date: 16 Dec 1997

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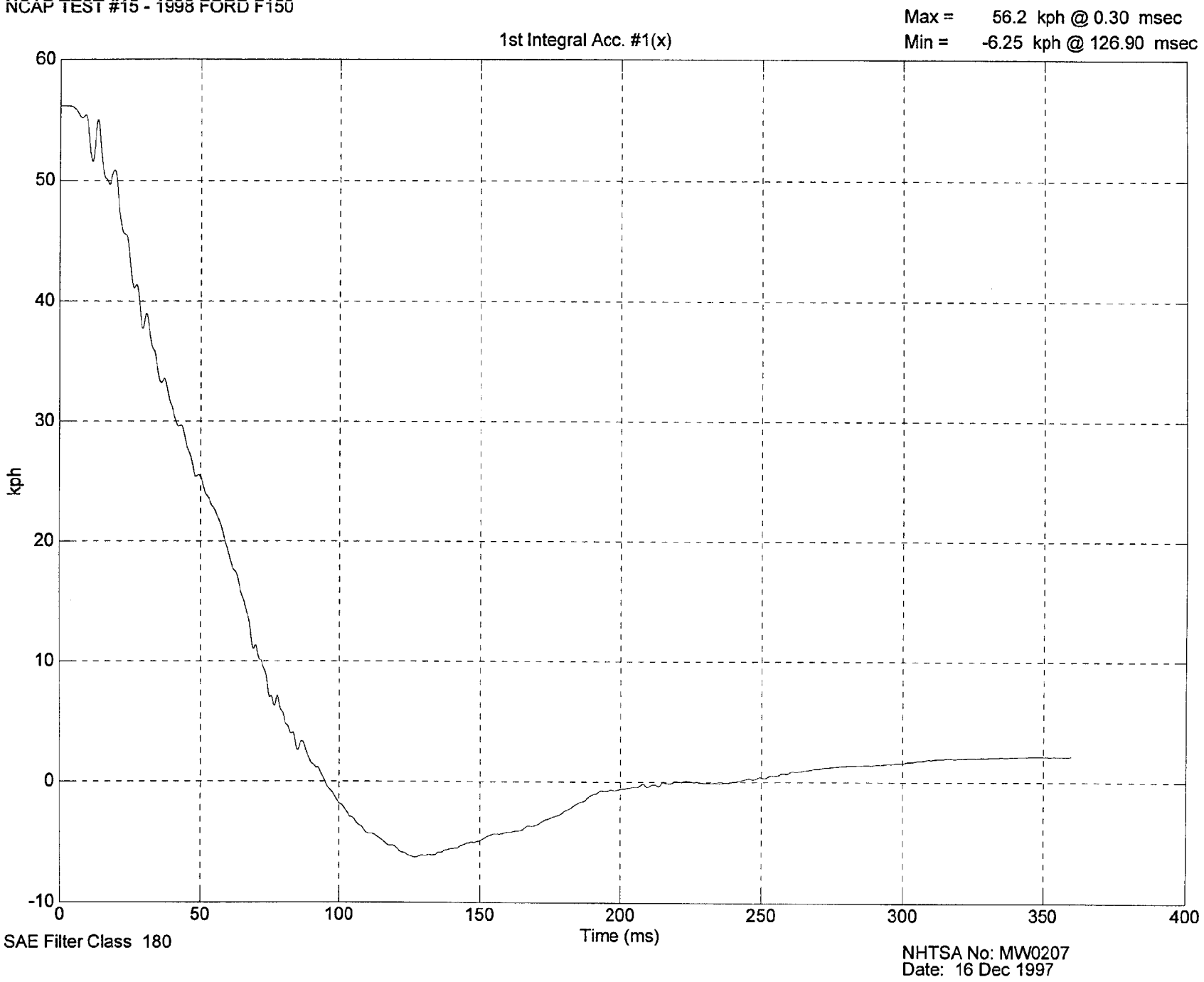
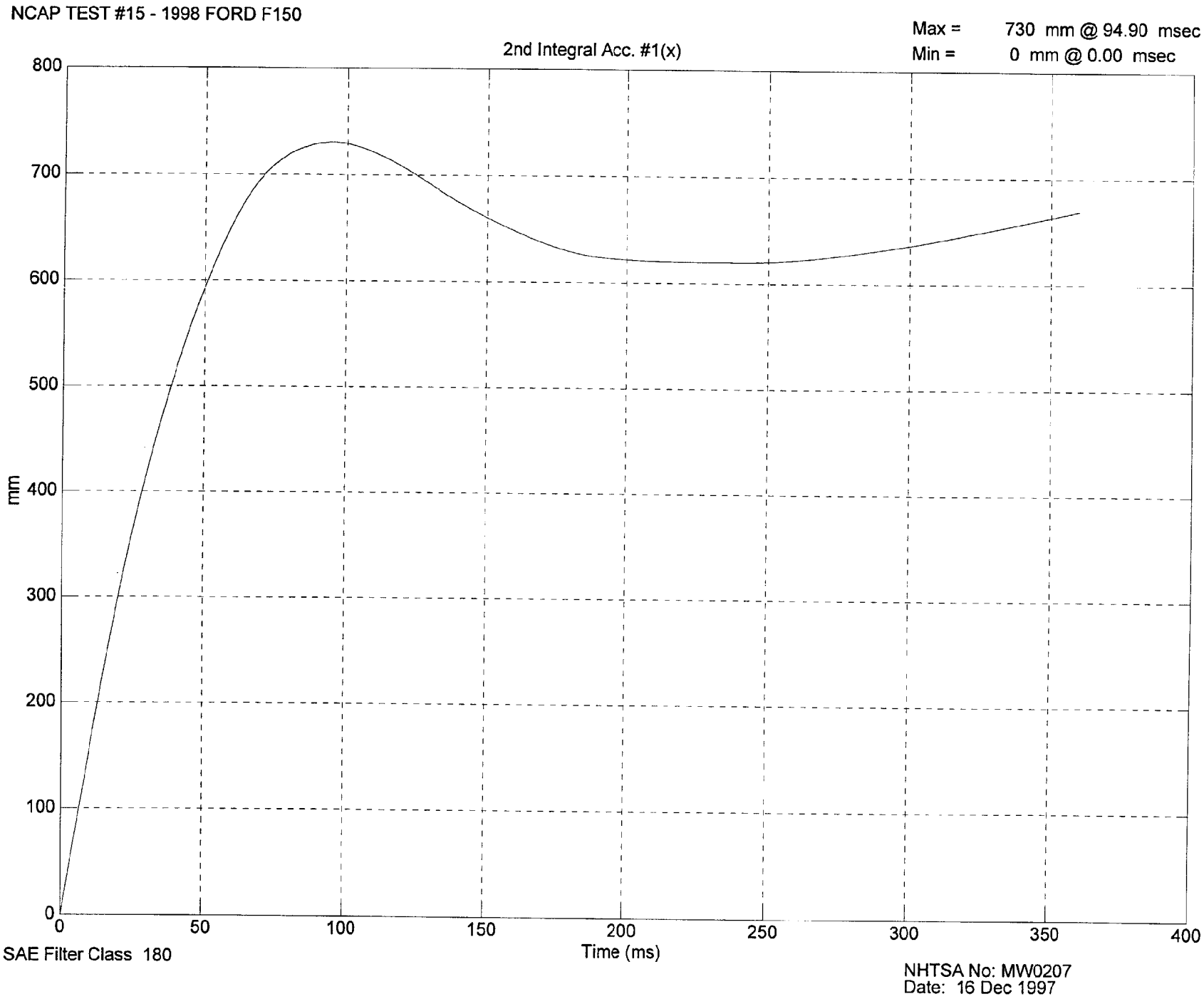
NCAP TEST #15 - 1998 FORD F150

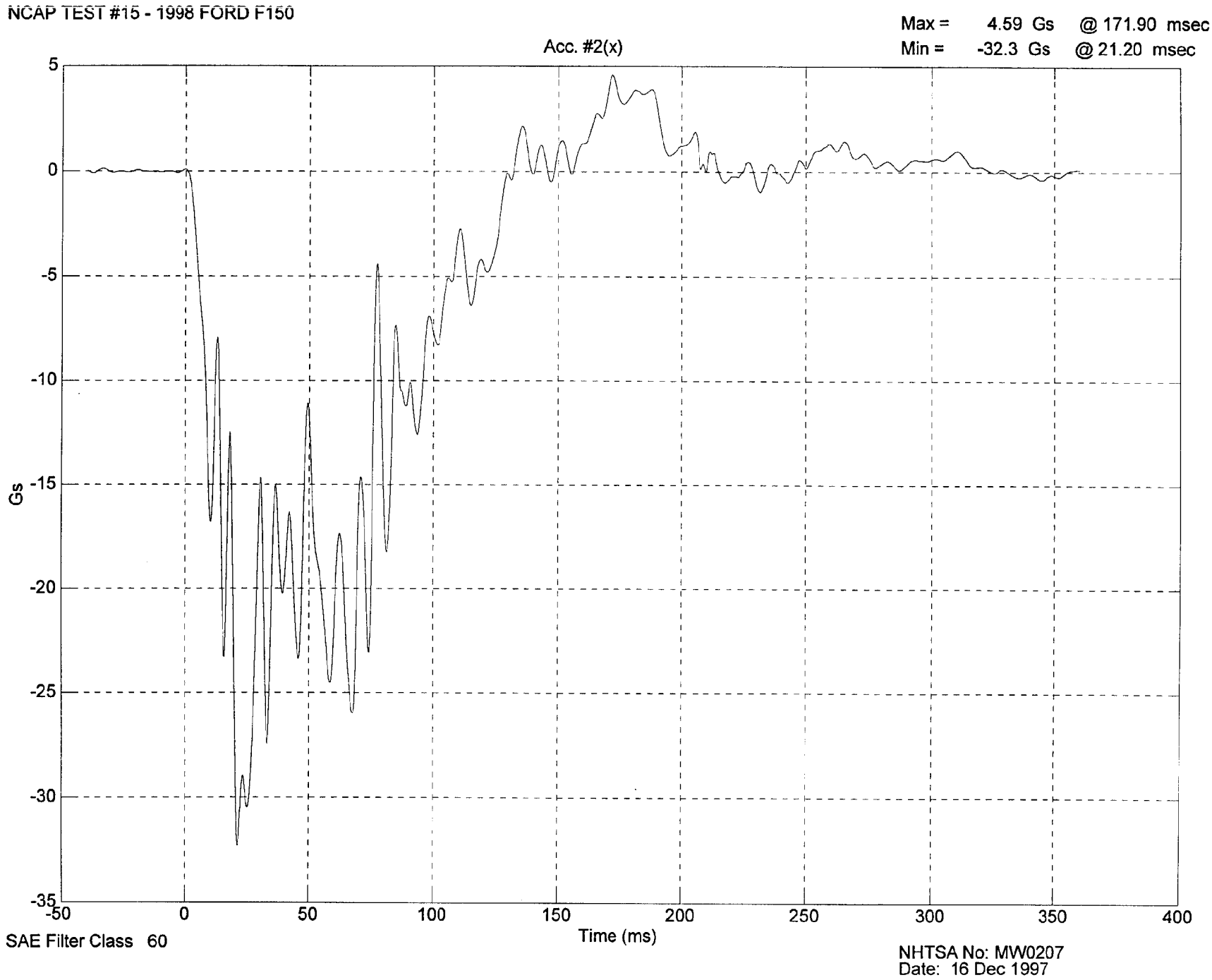


SAE Filter Class 180

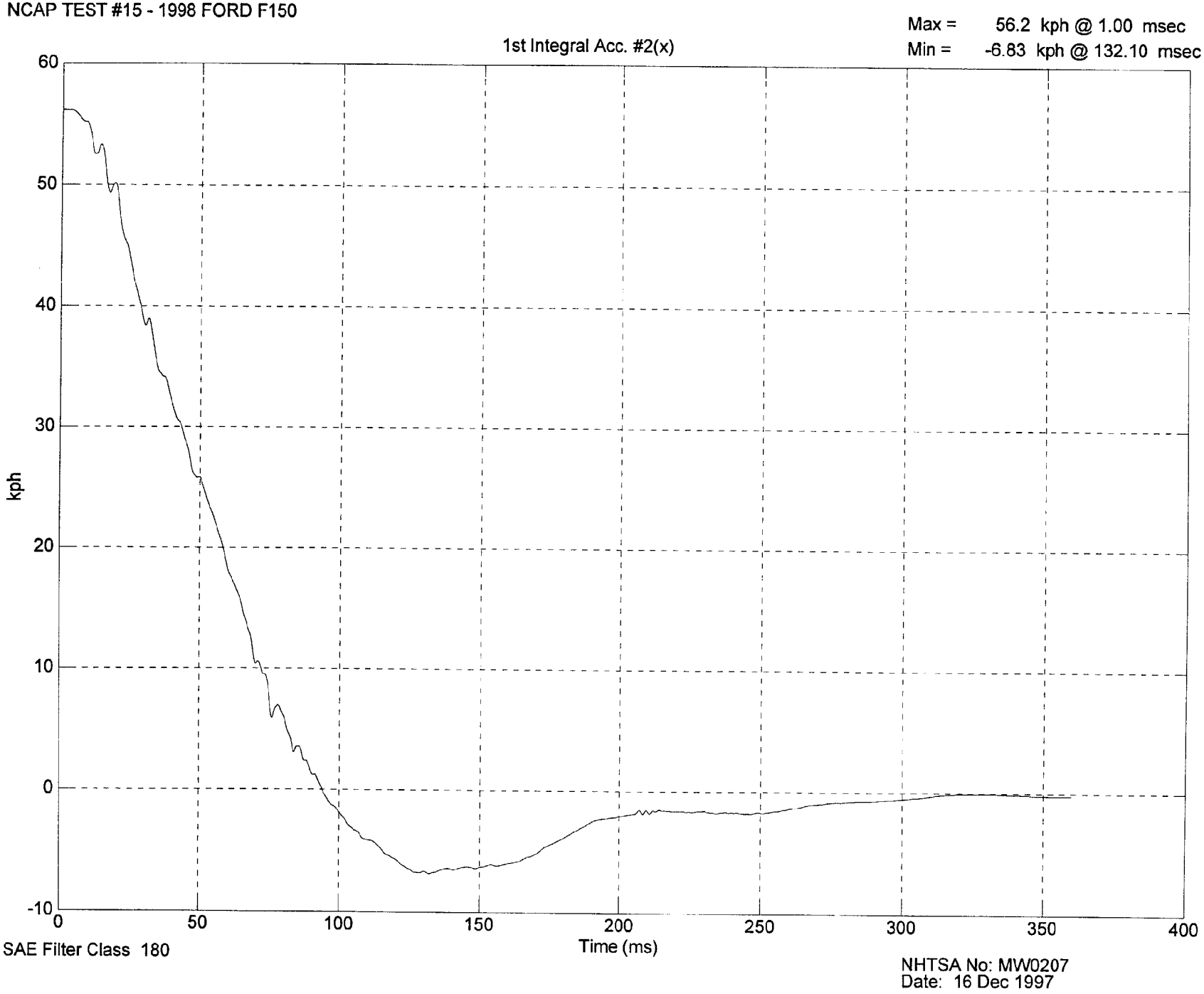
NHTSA No: MW0207
Date: 16 Dec 1997

8413-15


NCAP TEST #15 - 1998 FORD F150
2nd Integral Acc. #1(x)
Max = 730 mm @ 94.90 msec
Min = 0 mm @ 0.00 msec
800
700
600
500
400
300
200
100
0
mm
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 180
NHTSA No: MW0207
Date: 16 Dec 1997


NCAP TEST #15 - 1998 FORD F150
Max = 4.59 Gs @ 171.90 msec
Min = -32.3 Gs @ 21.20 msec
Acc. #2(x)
5
0
-5
-10
-15
-20
-25
-30
-35
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 60
NHTSA No: MW0207
Date: 16 Dec 1997

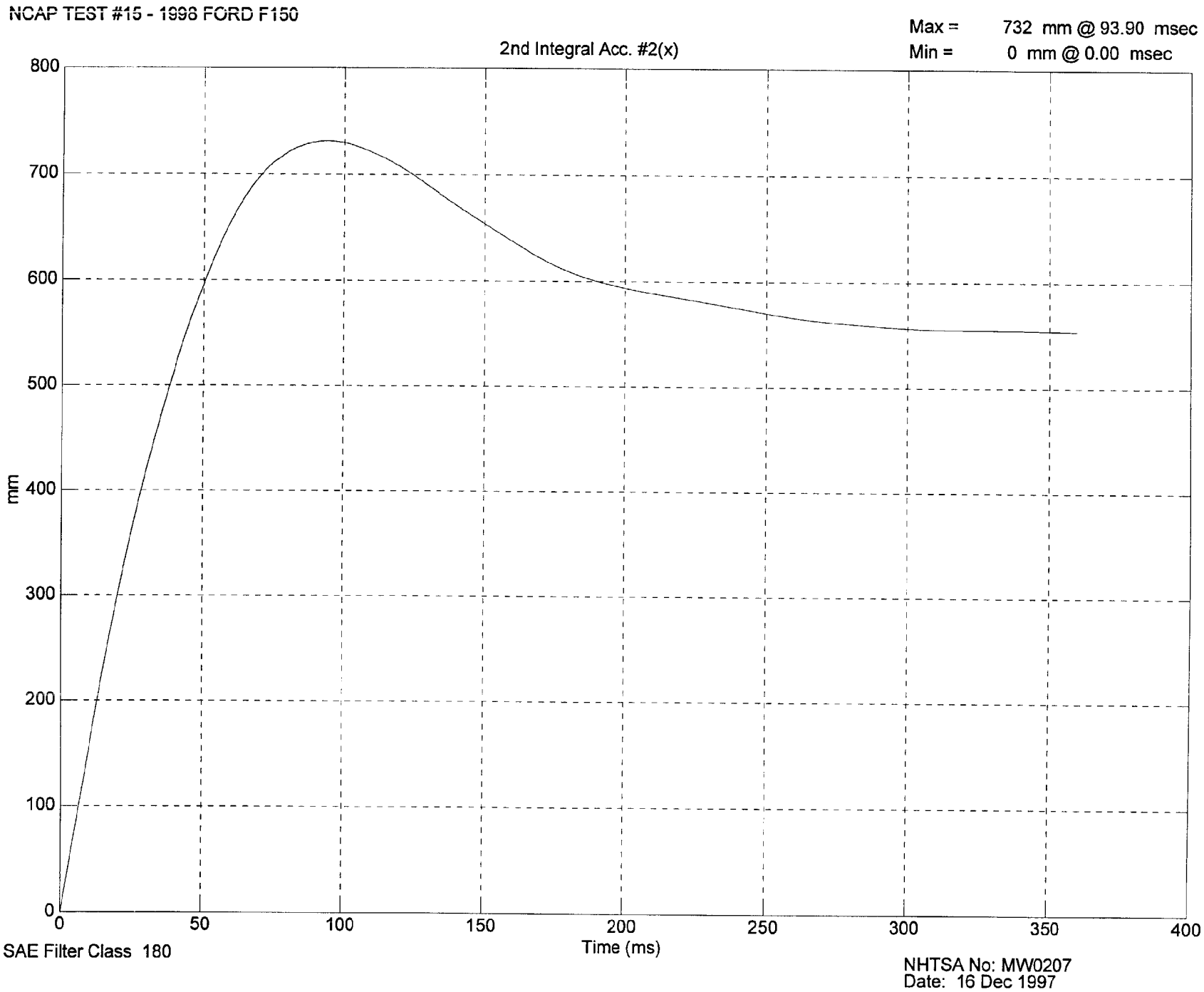
NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

8413-15


NCAP TEST #15 - 1998 FORD F150
2nd Integral Acc. #2(x)
Max = 732 mm @ 93.90 msec
Min = 0 mm @ 0.00 msec
800
700
600
500
400
300
200
100
0
mm
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 180
NHTSA No: MW0207
Date: 16 Dec 1997

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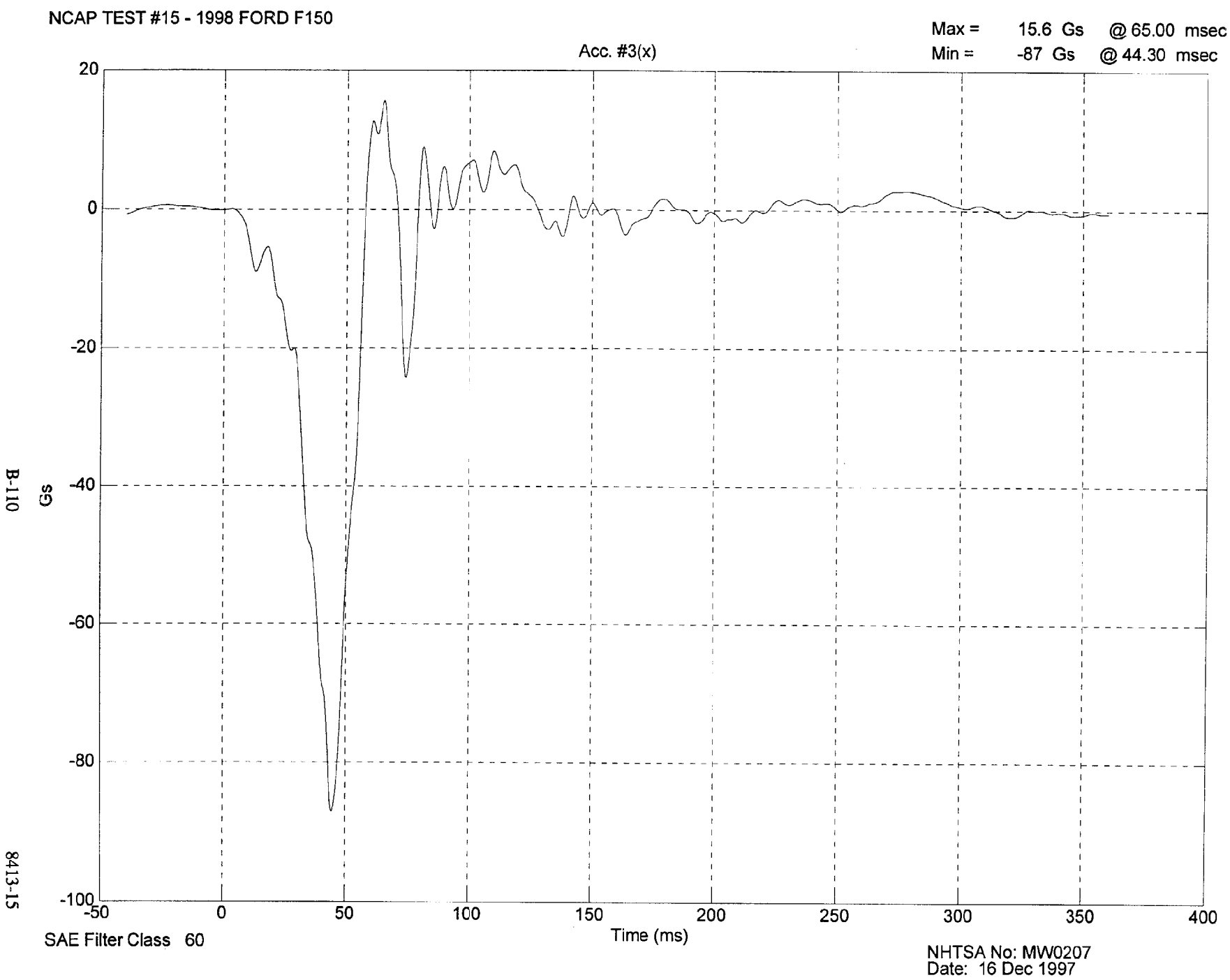
NCAP TEST #15 - 1998 FORD F150
Acc. #3(x)
Max = 15.6 Gs @ 65.00 msec
Min = -87 Gs @ 44.30 msec
20
0
-20
-40
-60
-80
-100
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 60
NHTSA No: MW0207
Date: 16 Dec 1997
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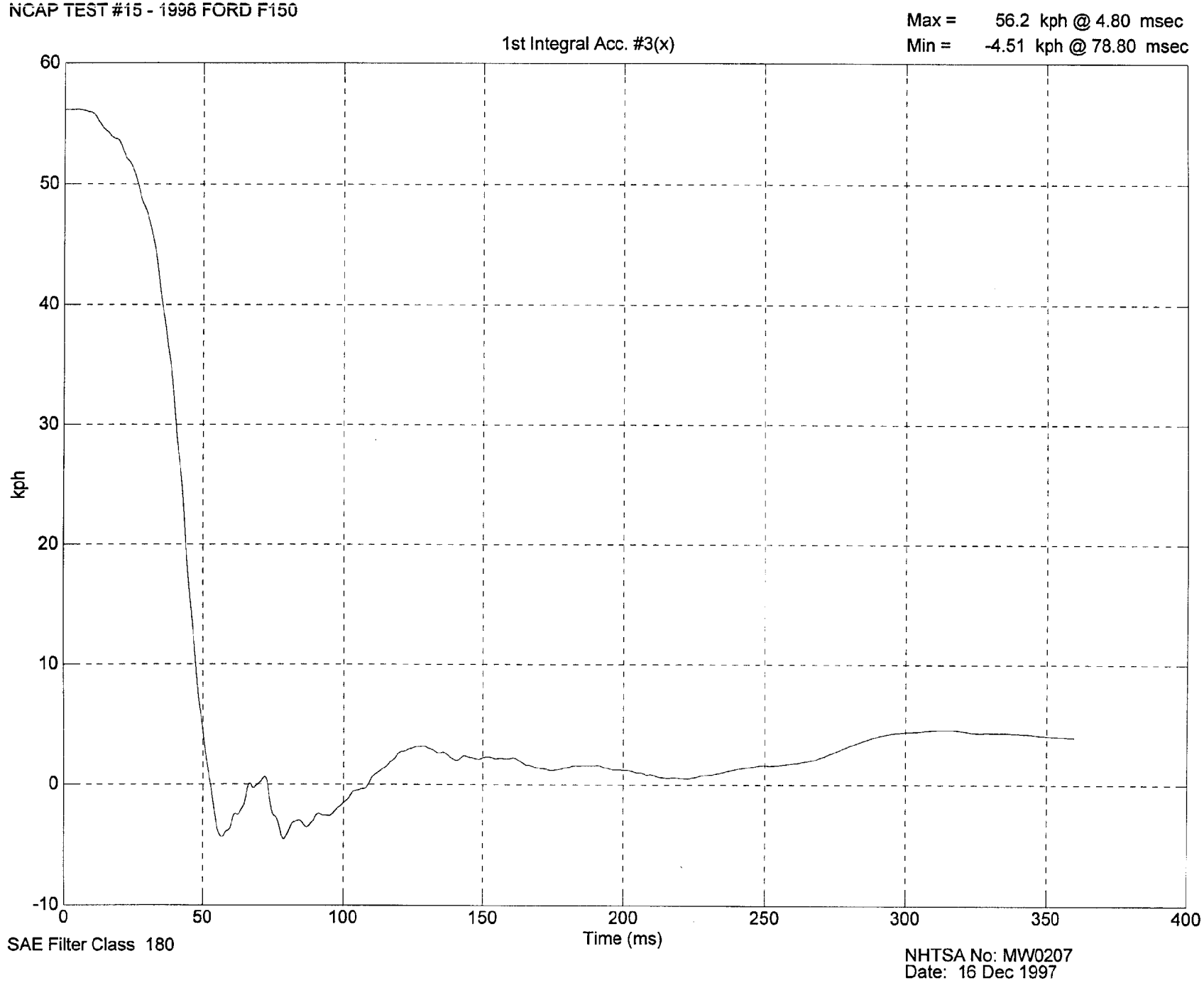
8413-15

NCAP TEST #15 - 1998 FORD F150



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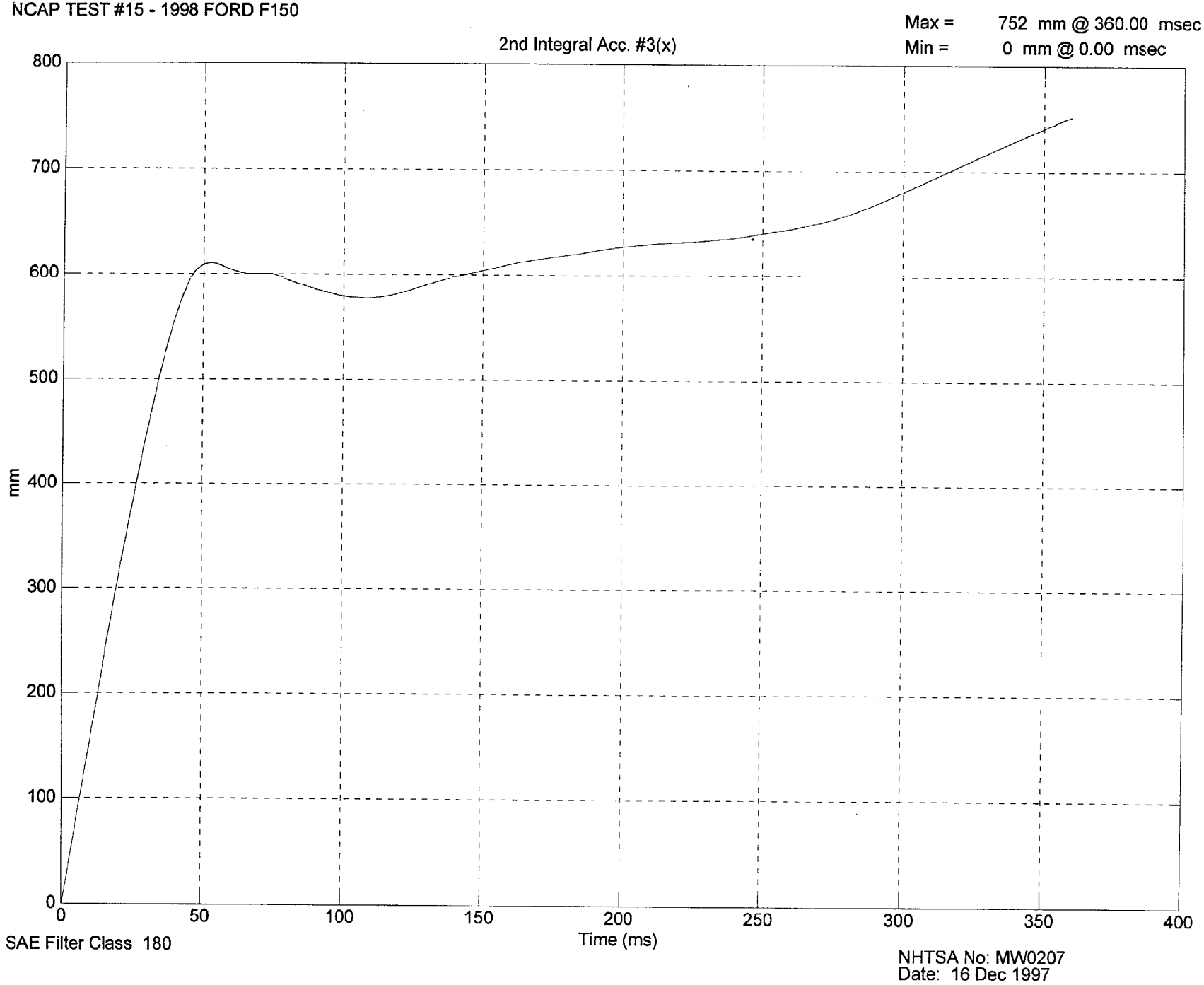
SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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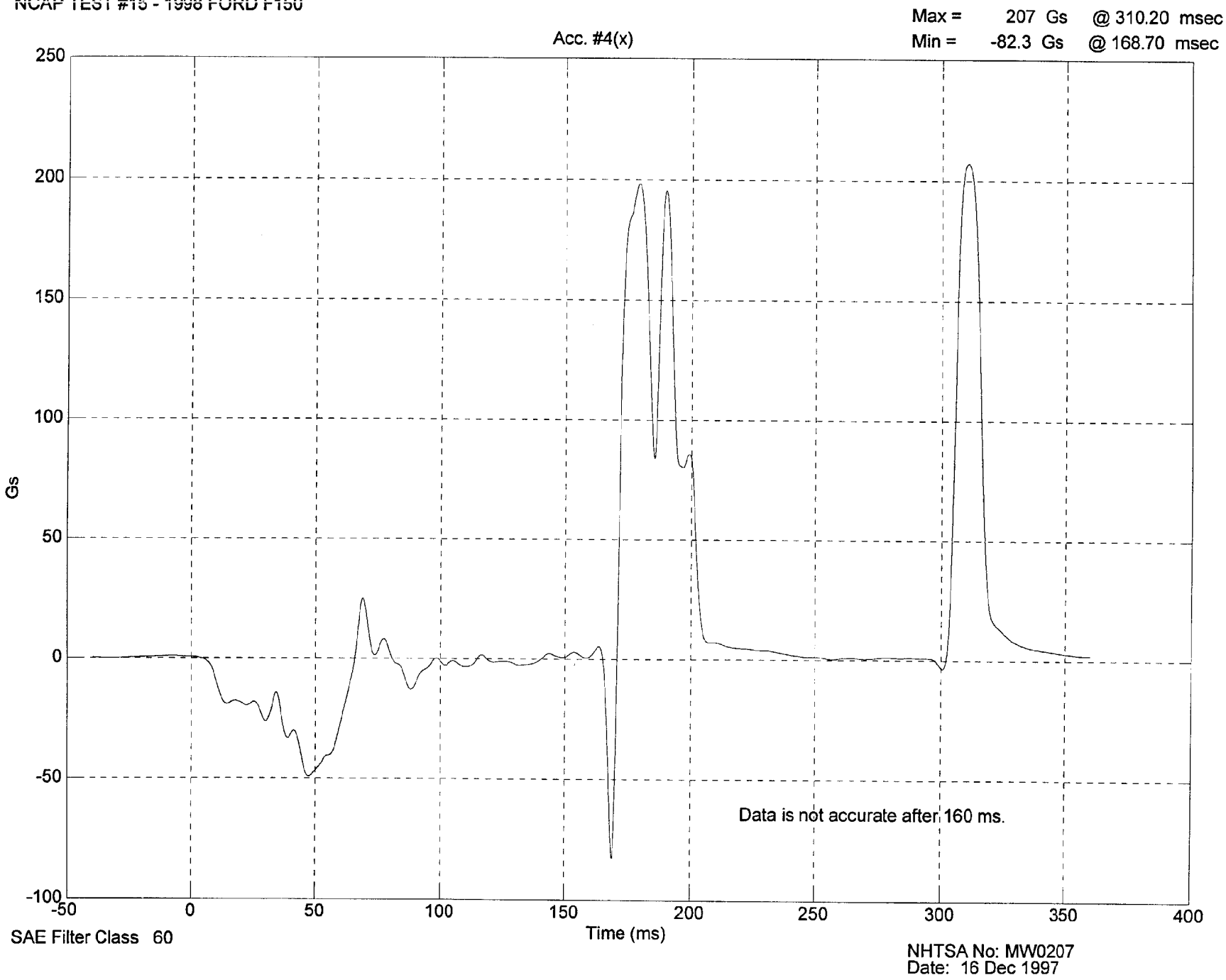
NCAP TEST #15 - 1998 FORD F150



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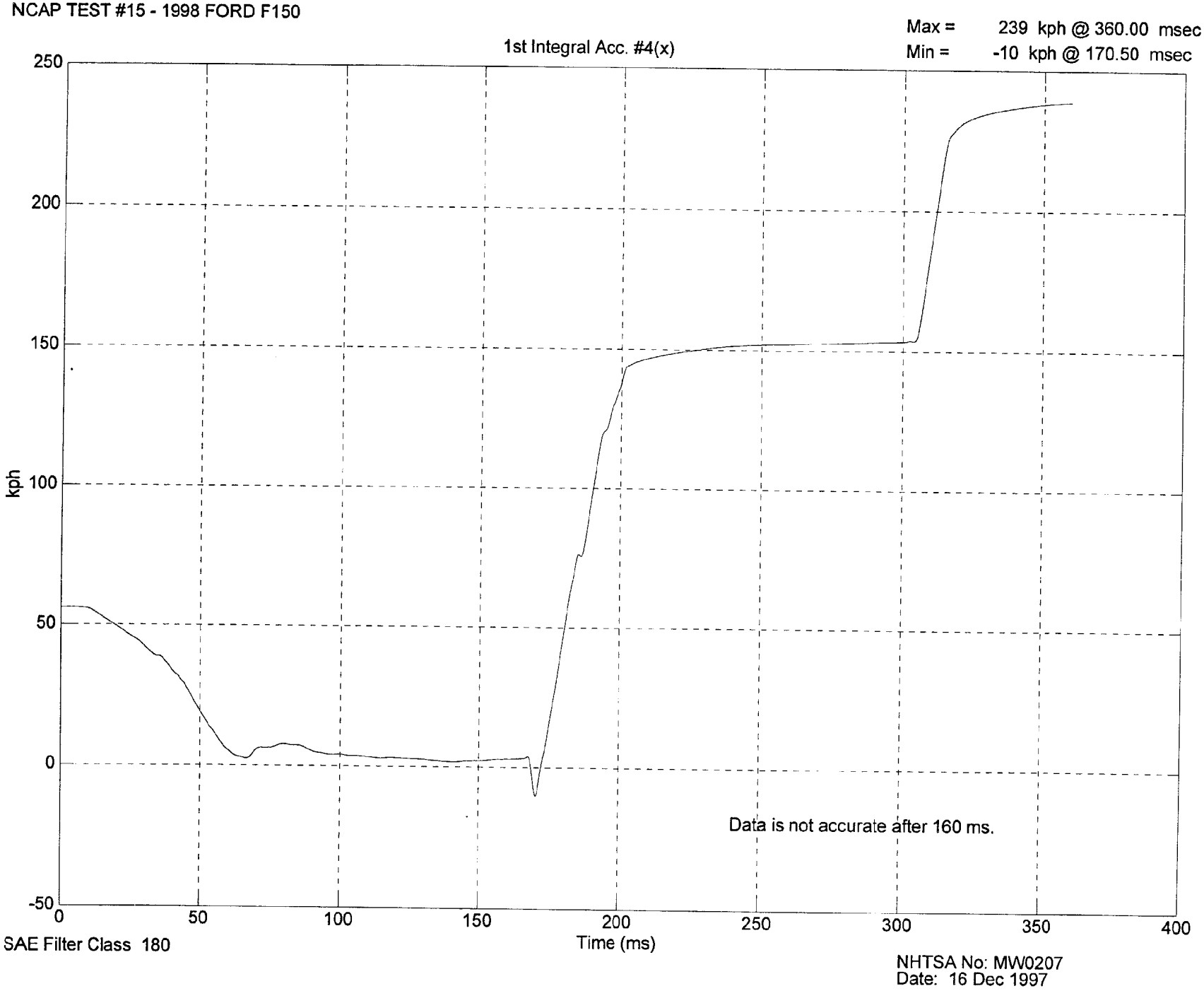
SAE Filter Class 60

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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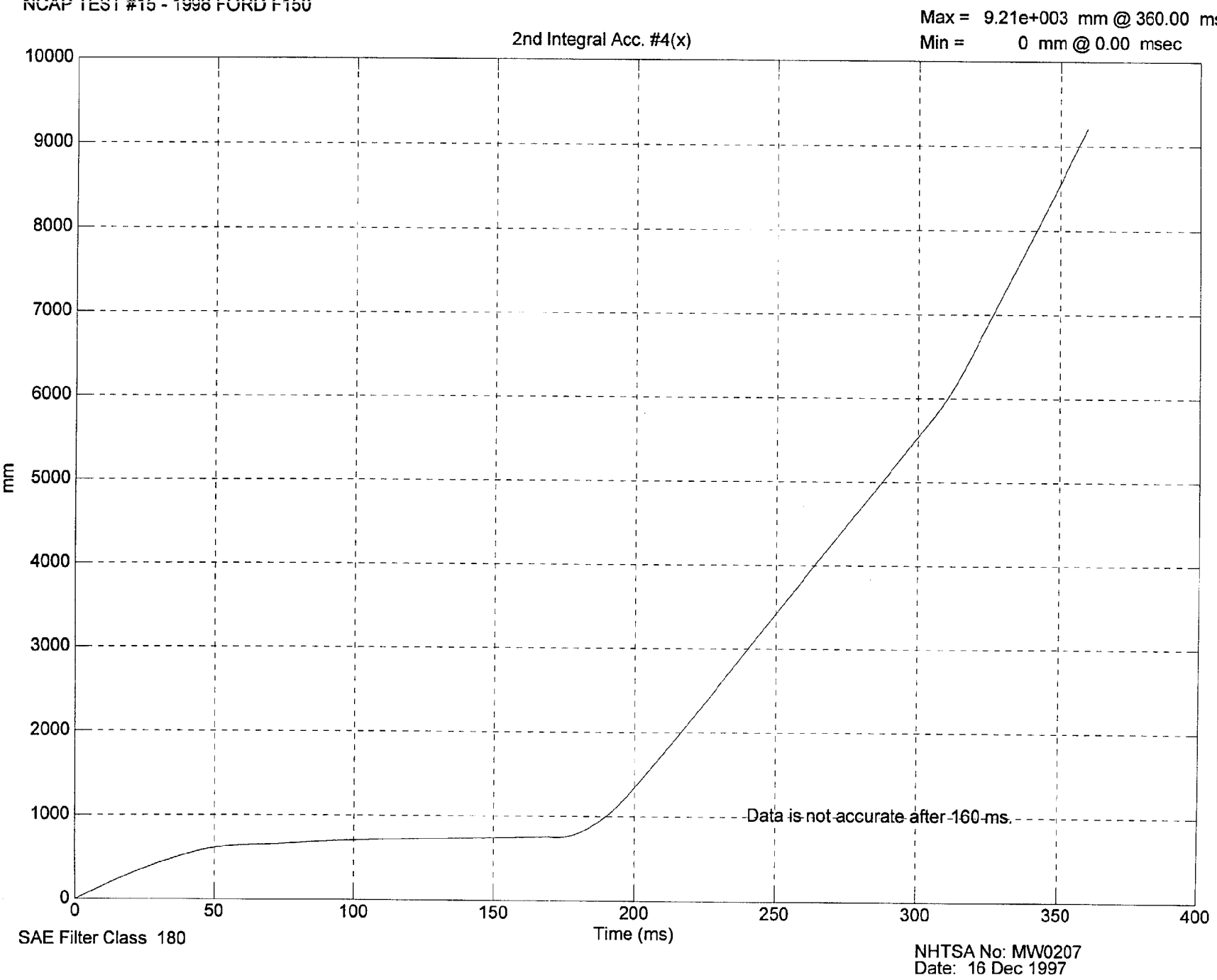
NCAP TEST #15 - 1998 FORD F150



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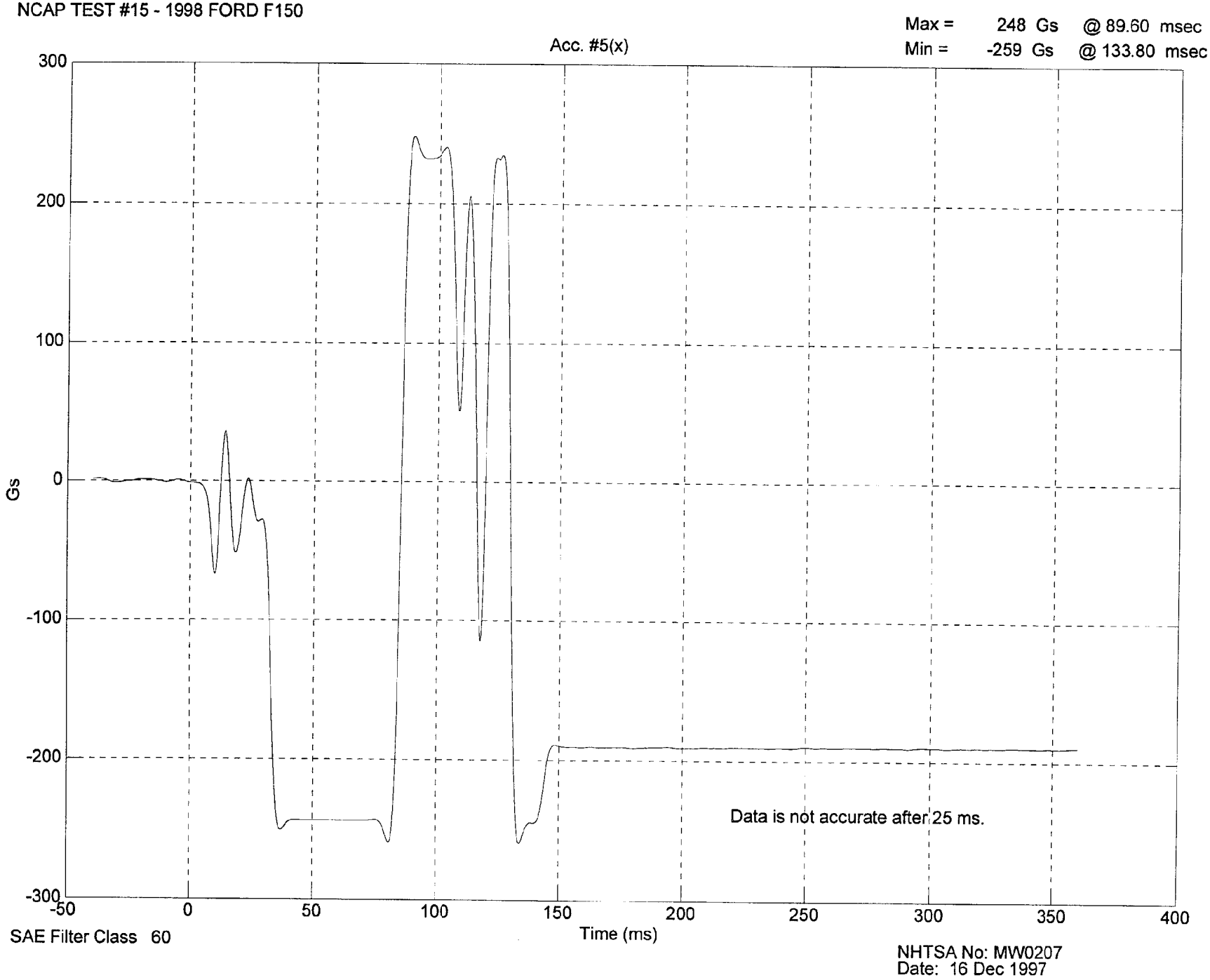
SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



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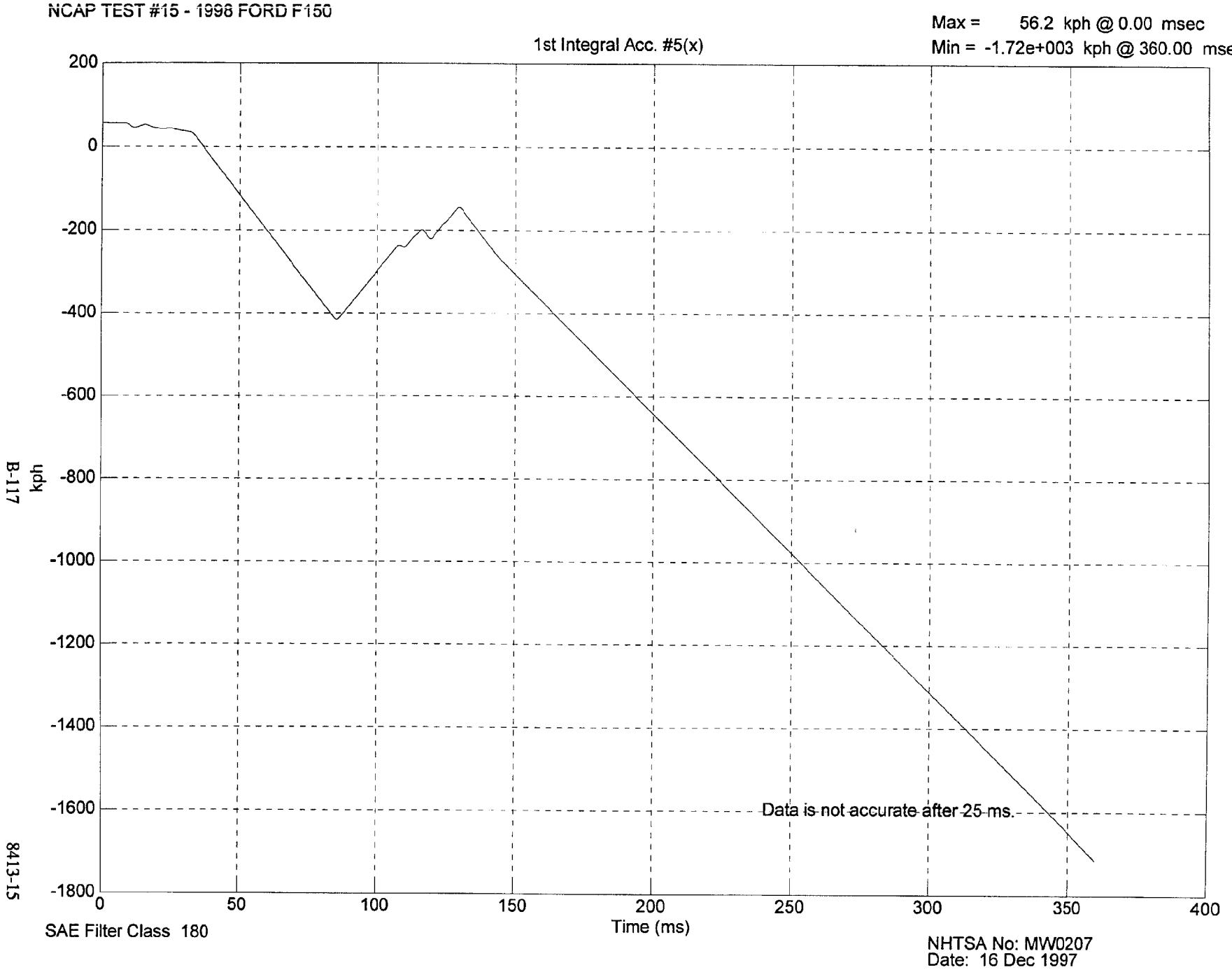
SAE Filter Class 60

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



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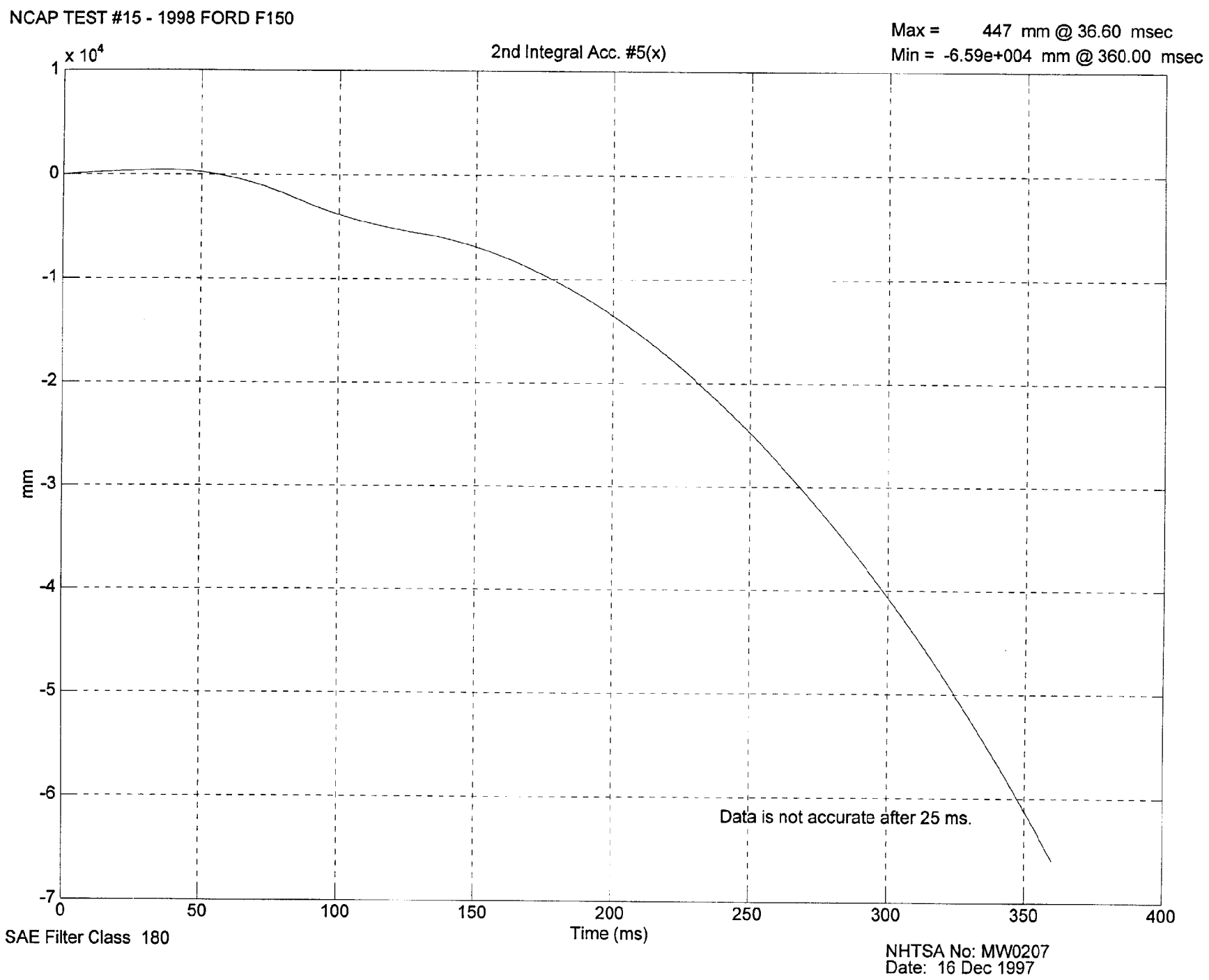
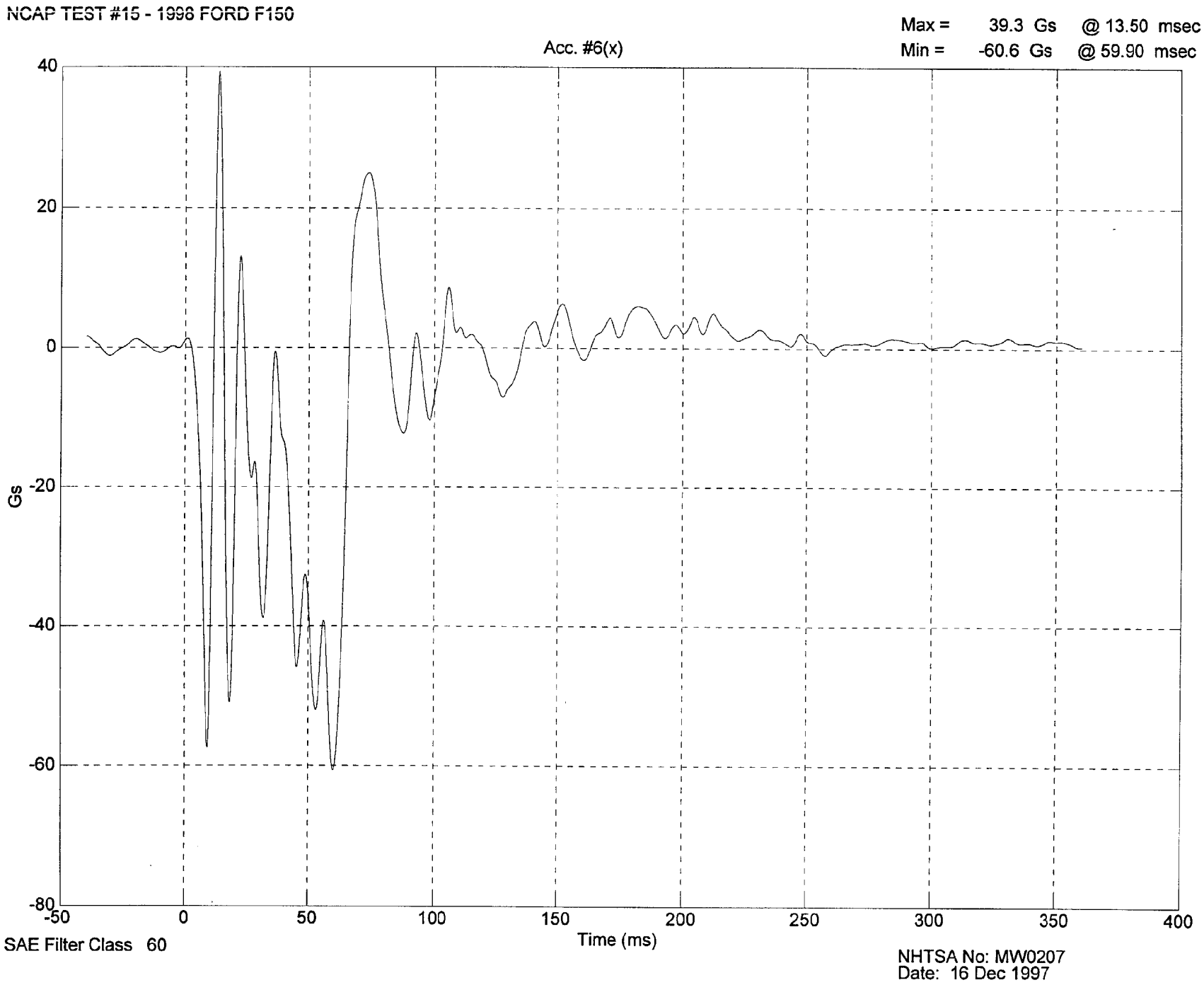
SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997


NCAP TEST #15 - 1998 FORD F150
2nd Integral Acc. #5(x)
Max = 447 mm @ 36.60 msec
Min = -6.59e+004 mm @ 360.00 msec
x 10^4
1
0
-1
-2
-3
-4
-5
-6
-7
mm
0
50
100
150
200
250
300
350
400
Time (ms)
Data is not accurate after 25 ms.
SAE Filter Class 180
NHTSA No: MW0207
Date: 16 Dec 1997


NCAP TEST #15 - 1998 FORD F150
Max = 39.3 Gs @ 13.50 msec
Min = -60.6 Gs @ 59.90 msec
Acc. #6(x)
40
20
0
-20
-40
-60
-80
Gs
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 60
NHTSA No: MW0207
Date: 16 Dec 1997

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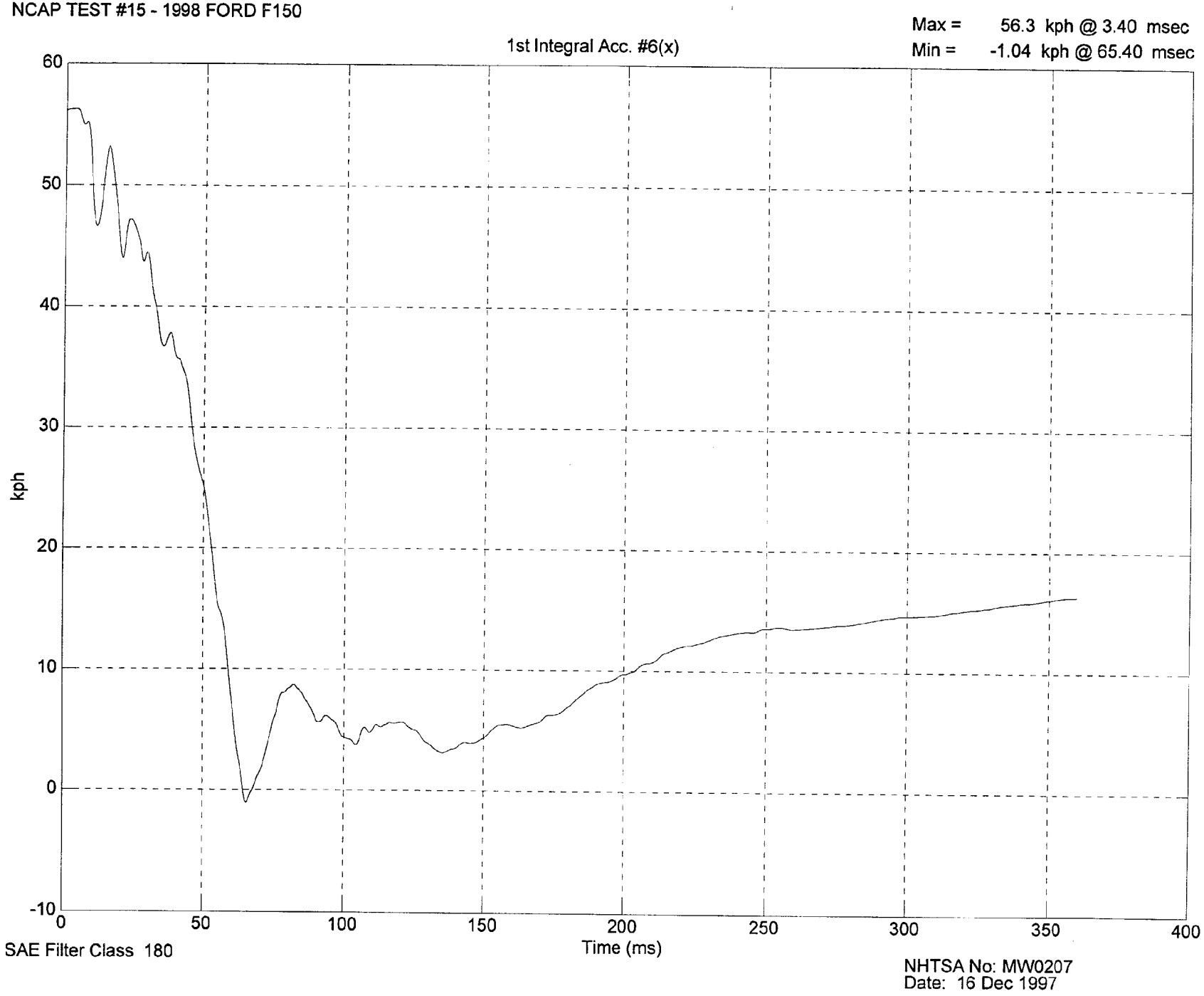
NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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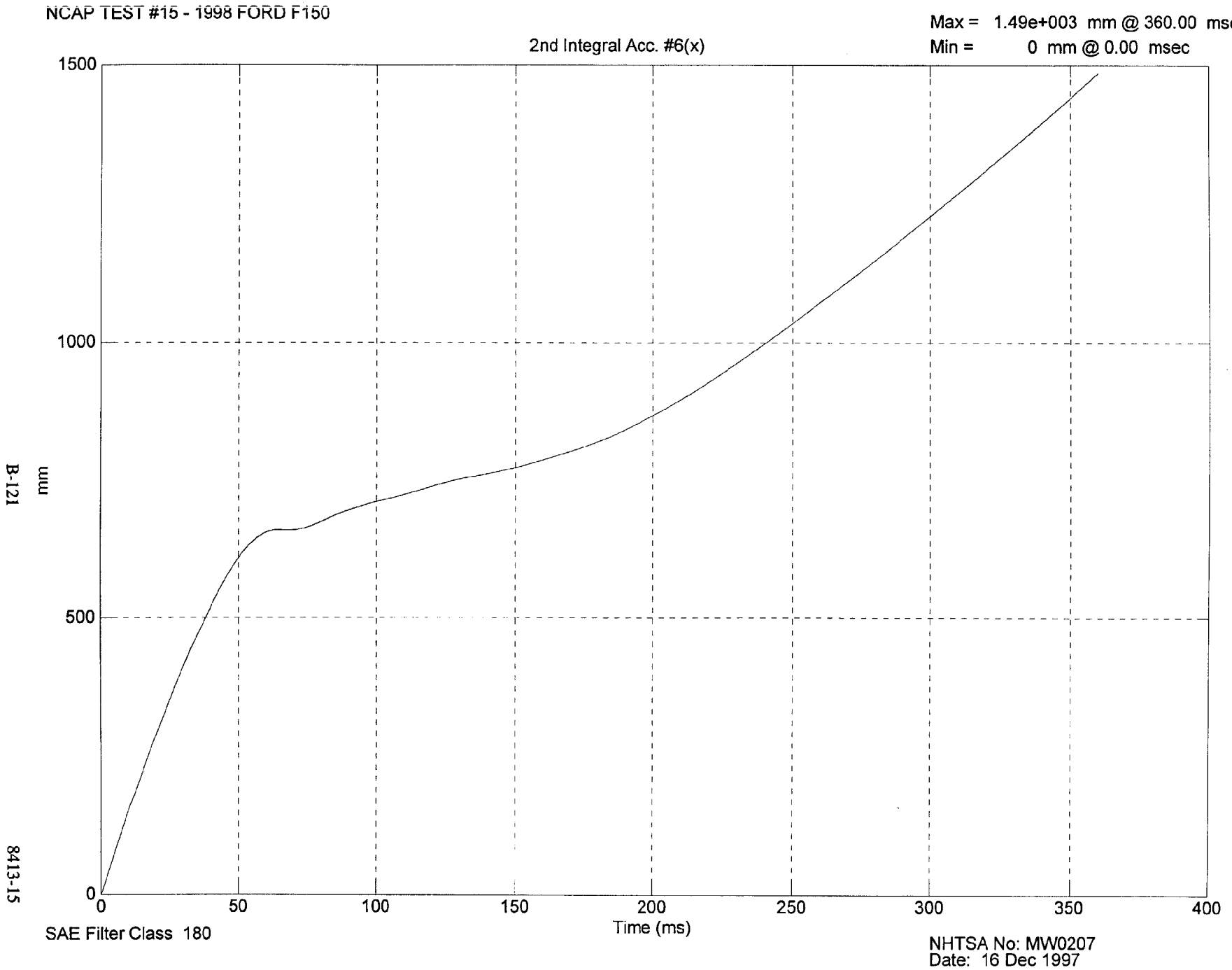
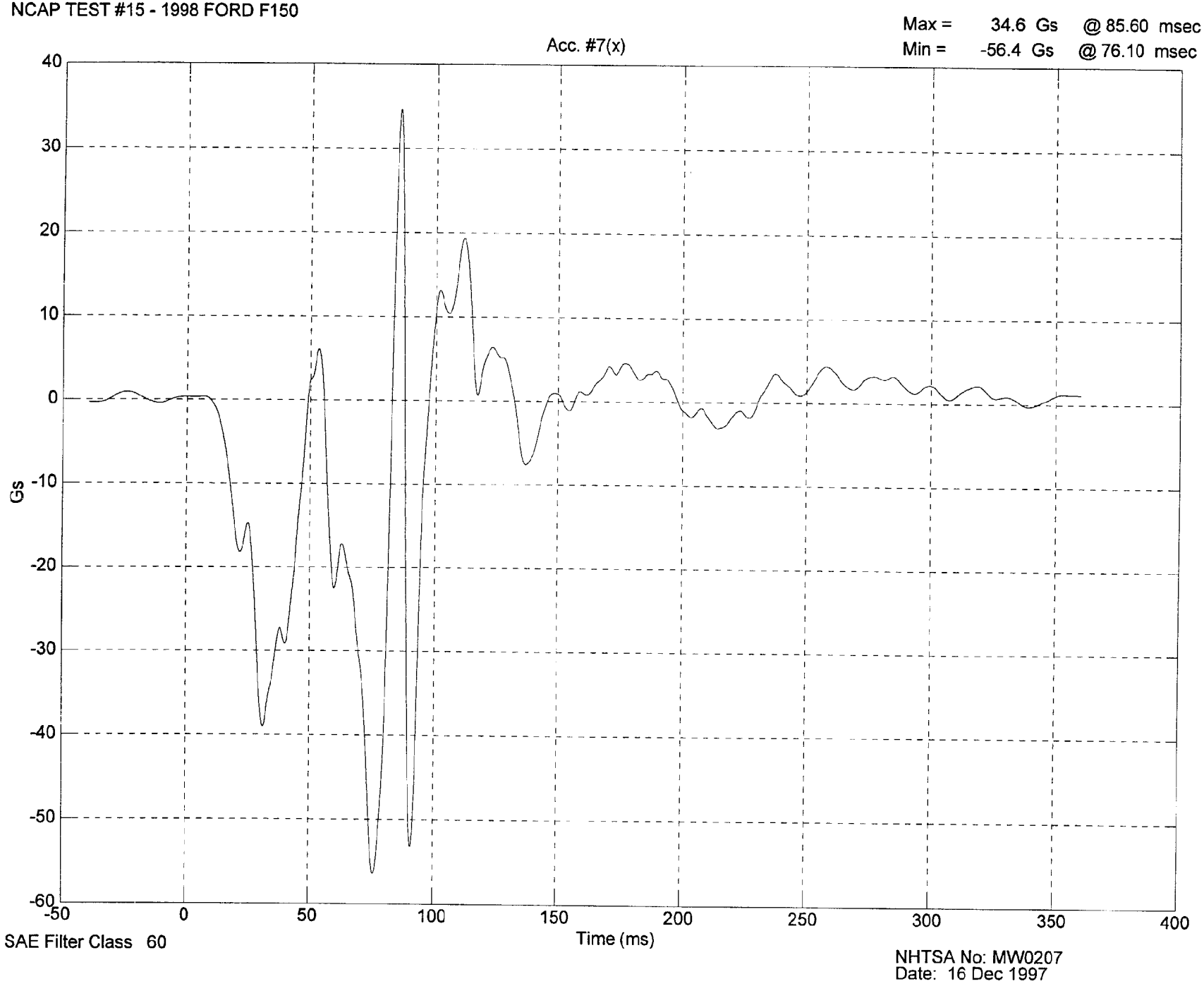

NCAP TEST #15 - 1998 FORD F150
2nd Integral Acc. #6(x)
Max = 1.49e+003 mm @ 360.00 msec
Min = 0 mm @ 0.00 msec
1500
1000
500
0
mm
0
50
100
150
200
250
300
350
400
Time (ms)
B-121
8413-15
SAE Filter Class 180
NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 60

NHTSA No: MW0207
Date: 16 Dec 1997

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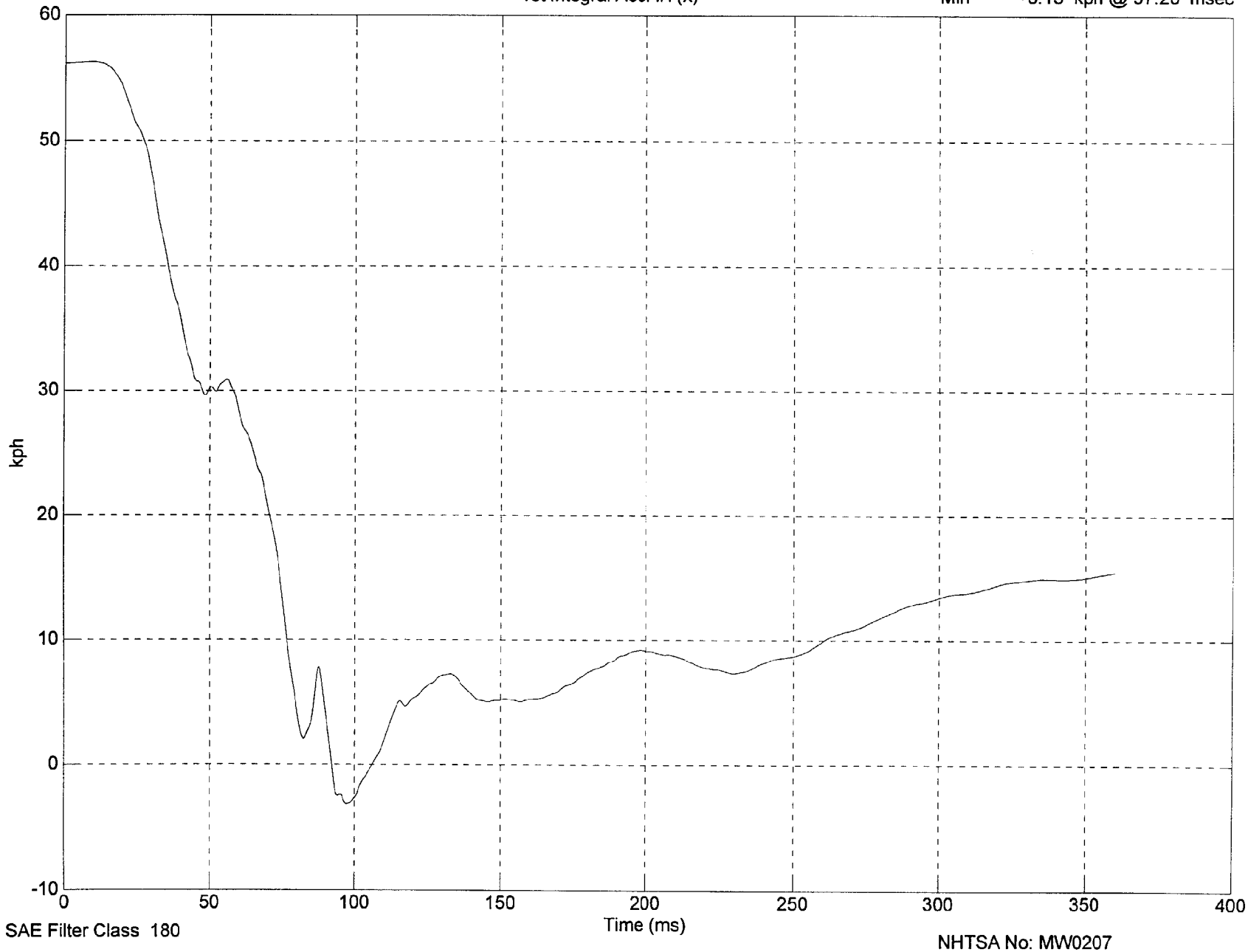
NCAP TEST #15 - 1998 FORD F150

1st Integral Acc. #7(x)

Max = 56.3 kph @ 9.40 msec
Min = -3.13 kph @ 97.20 msec



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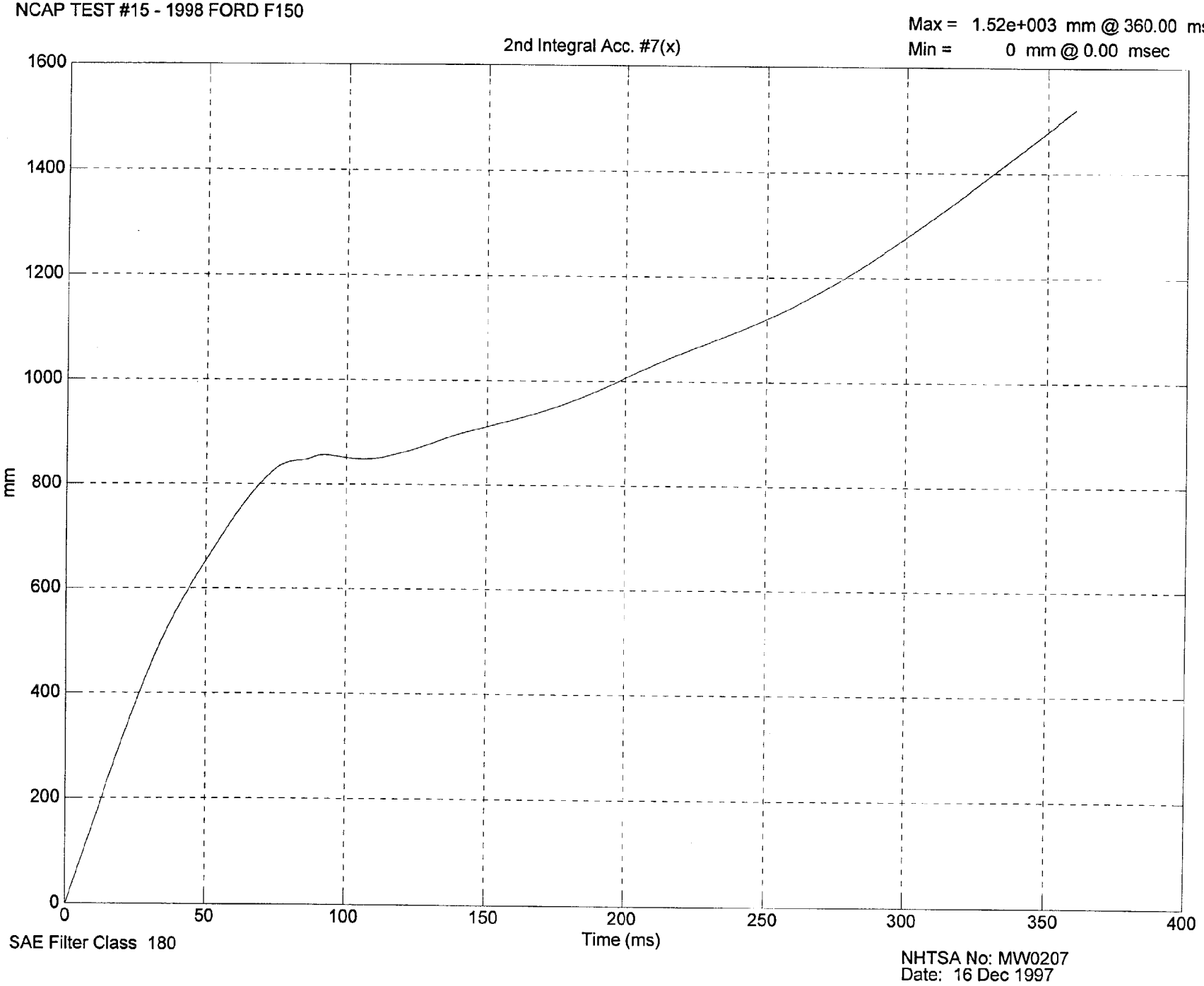
SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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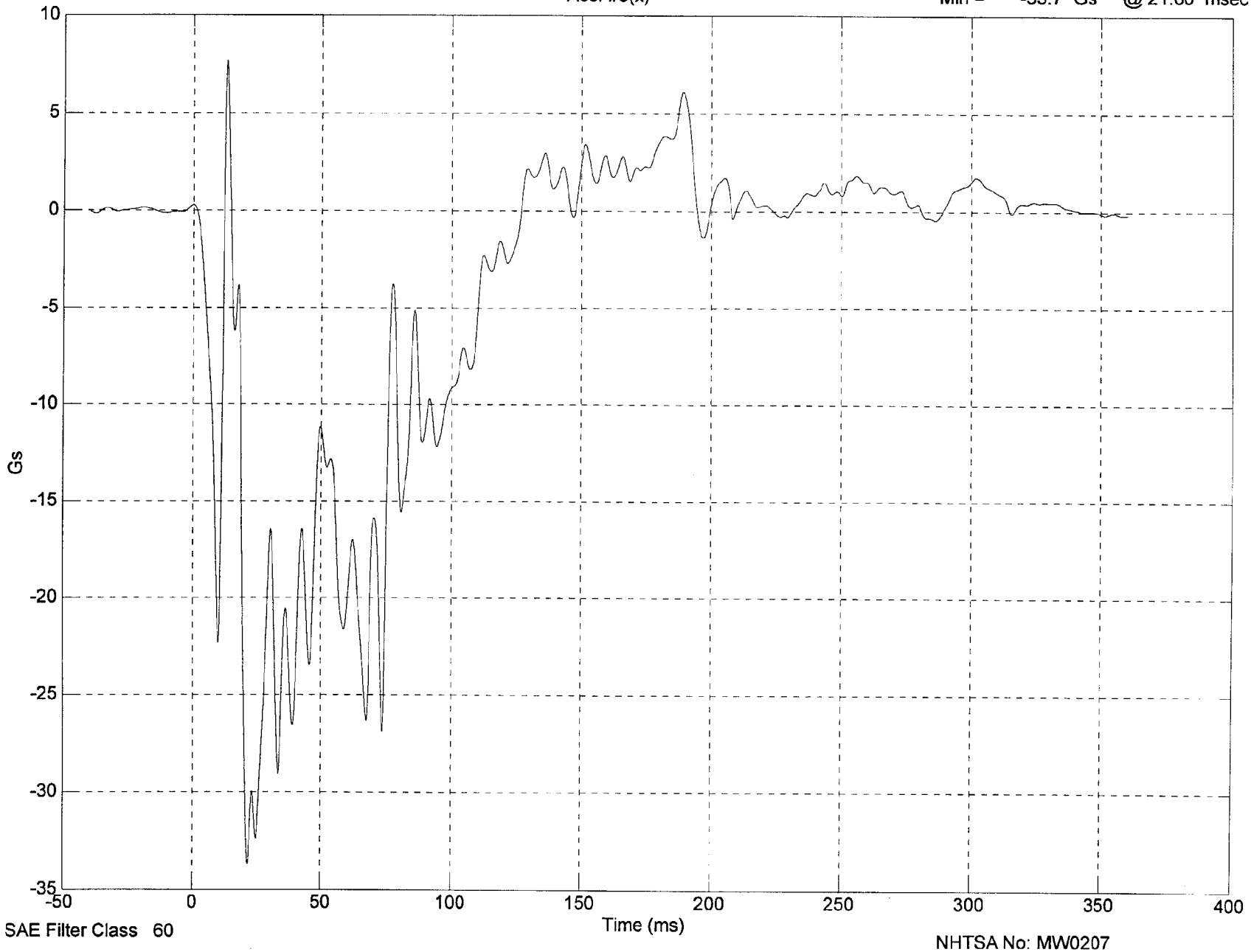
NCAP TEST #15 - 1998 FORD F150

Max = 7.67 Gs @ 13.00 msec
Min = -33.7 Gs @ 21.60 msec



SAE Filter Class 60

NHTSA No: MW0207
Date: 16 Dec 1997

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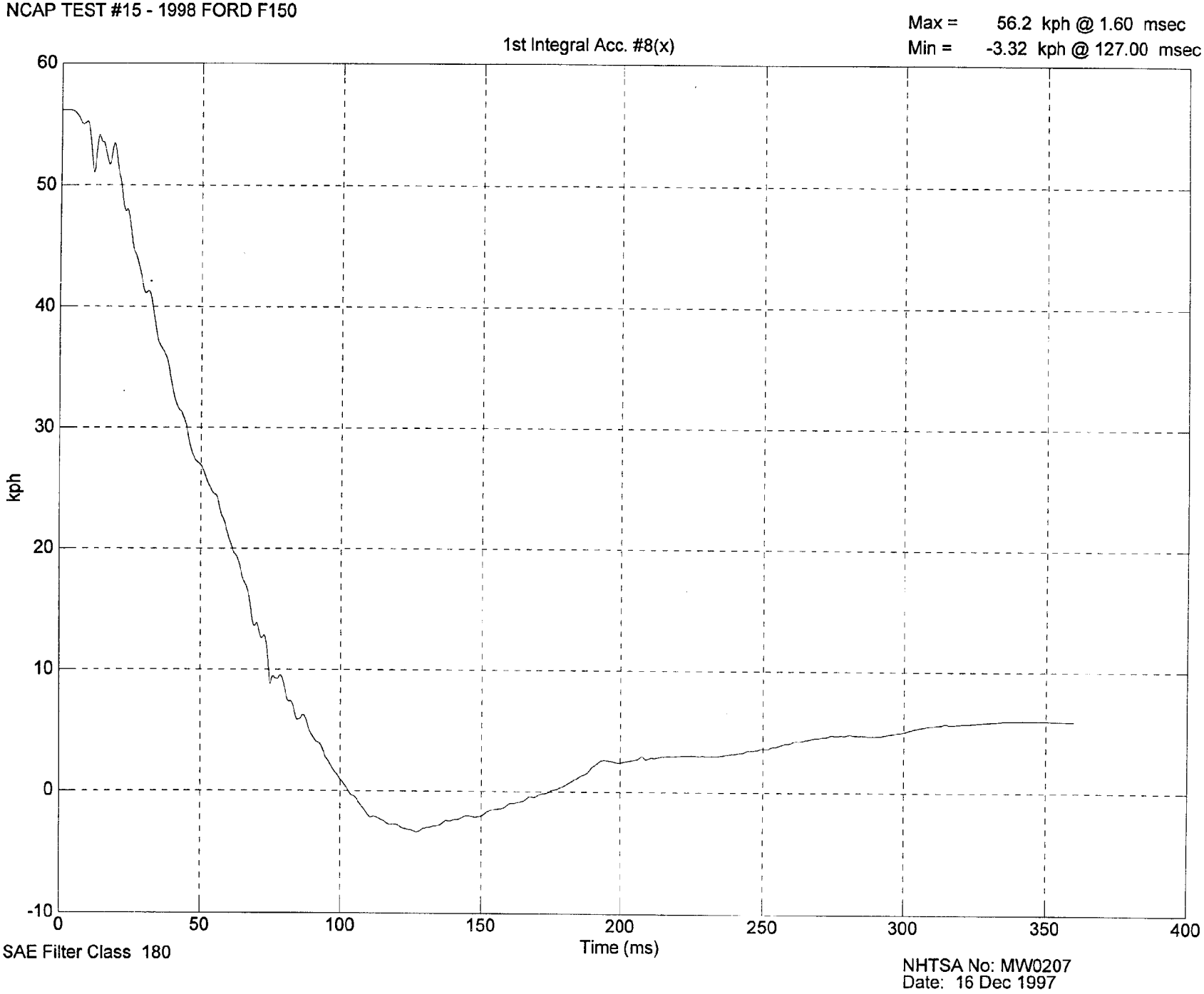
NCAP TEST #15 - 1998 FORD F150



SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

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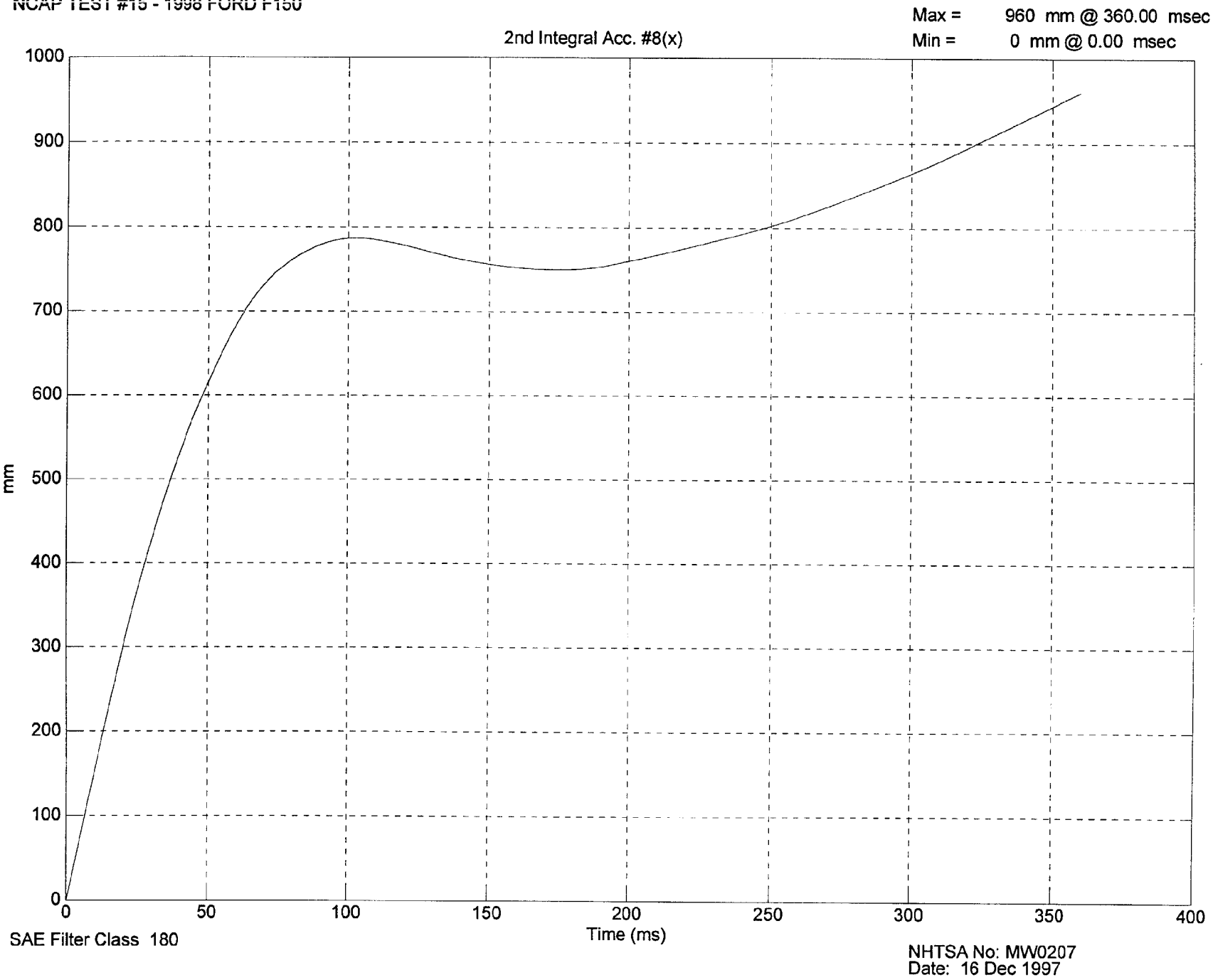
NCAP TEST #15 - 1998 FORD F150

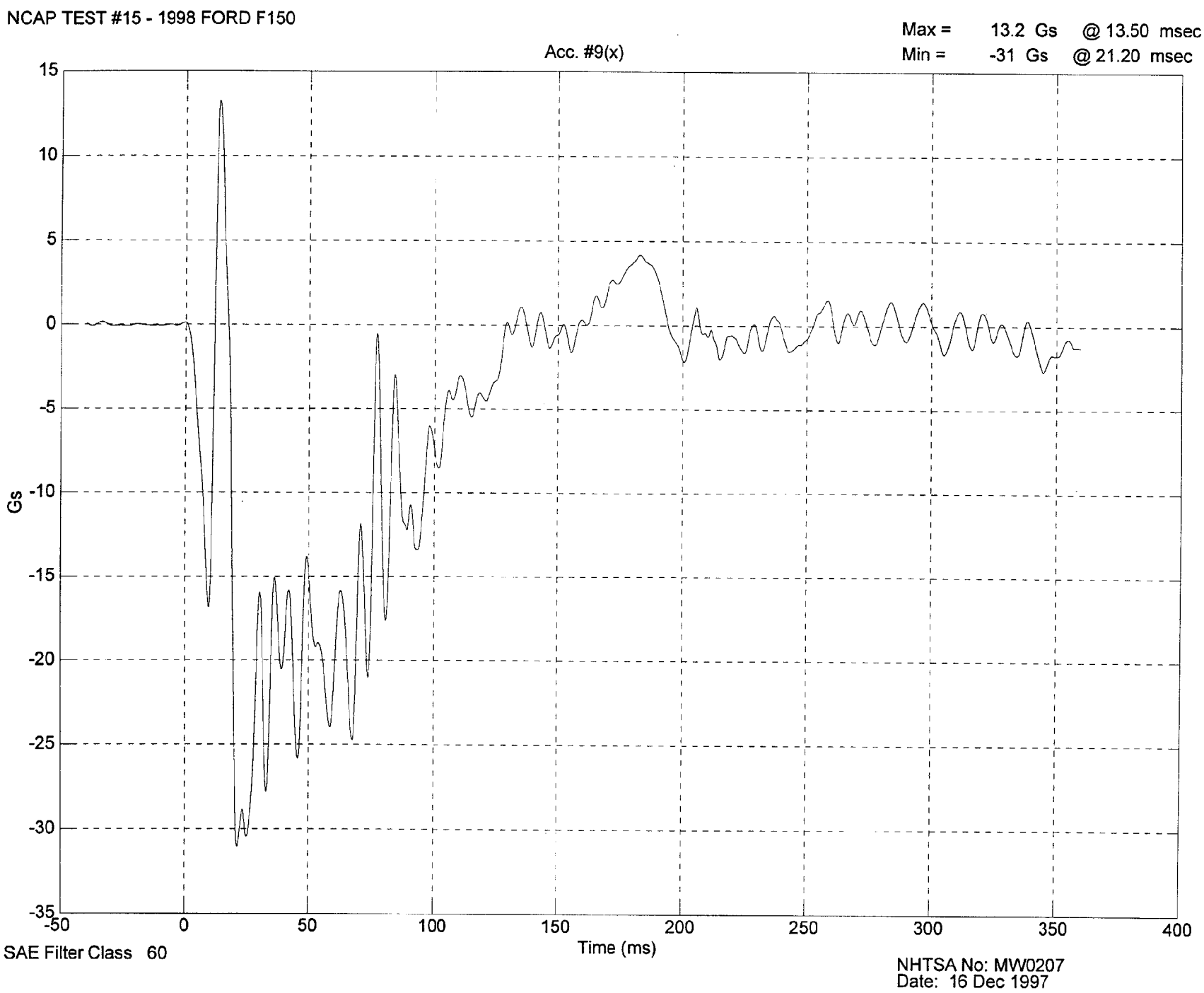


SAE Filter Class 180

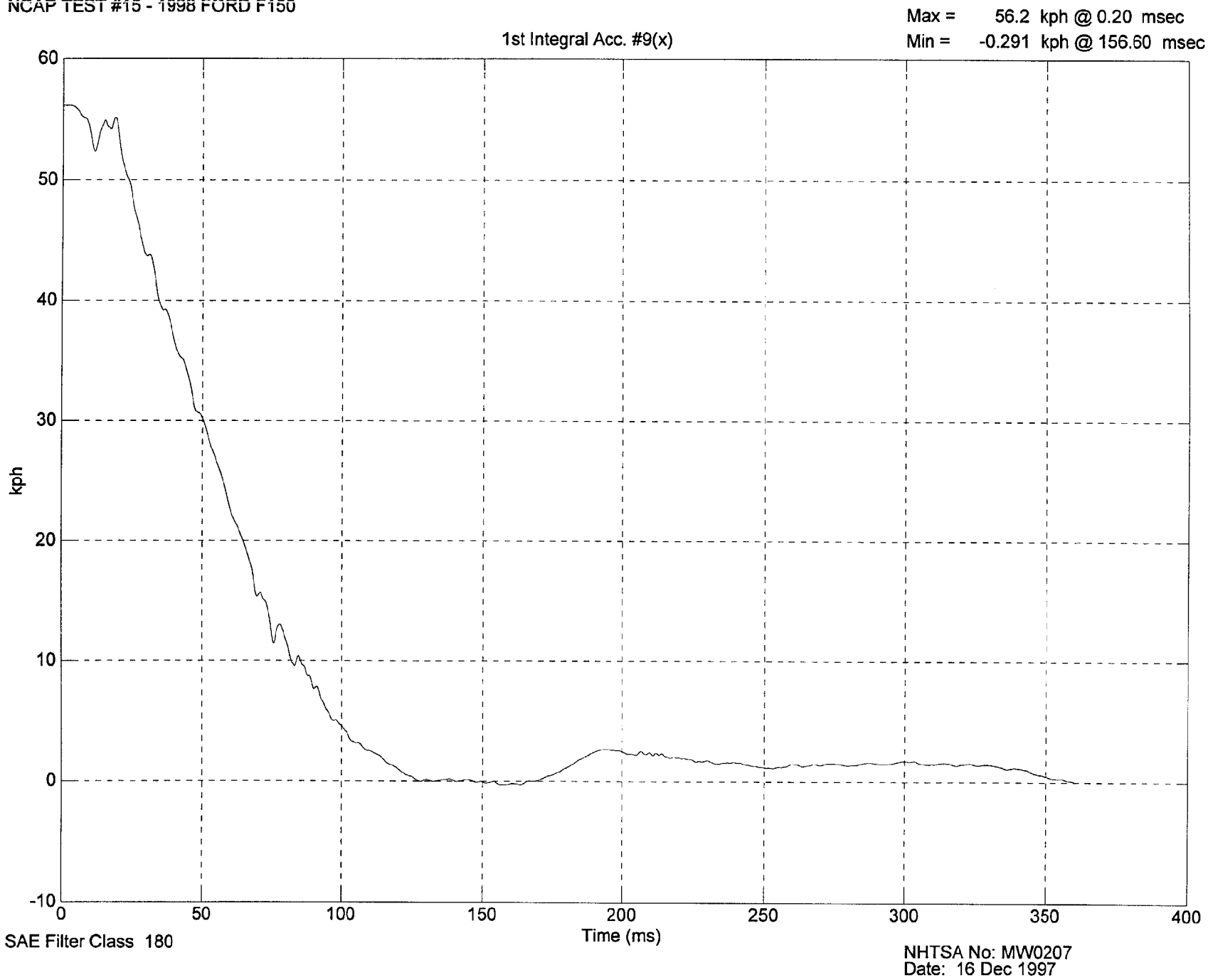
NHTSA No: MW0207
Date: 16 Dec 1997

B-127

8413-15


NCAP TEST #15 - 1998 FORD F150
Acc. #9(x)
Max = 13.2 Gs @ 13.50 msec
Min = -31 Gs @ 21.20 msec
Gs
Time (ms)
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-50
0
50
100
150
200
250
300
350
400
SAE Filter Class 60
NHTSA No: MW0207
Date: 16 Dec 1997

NCAP TEST #15 - 1998 FORD F150



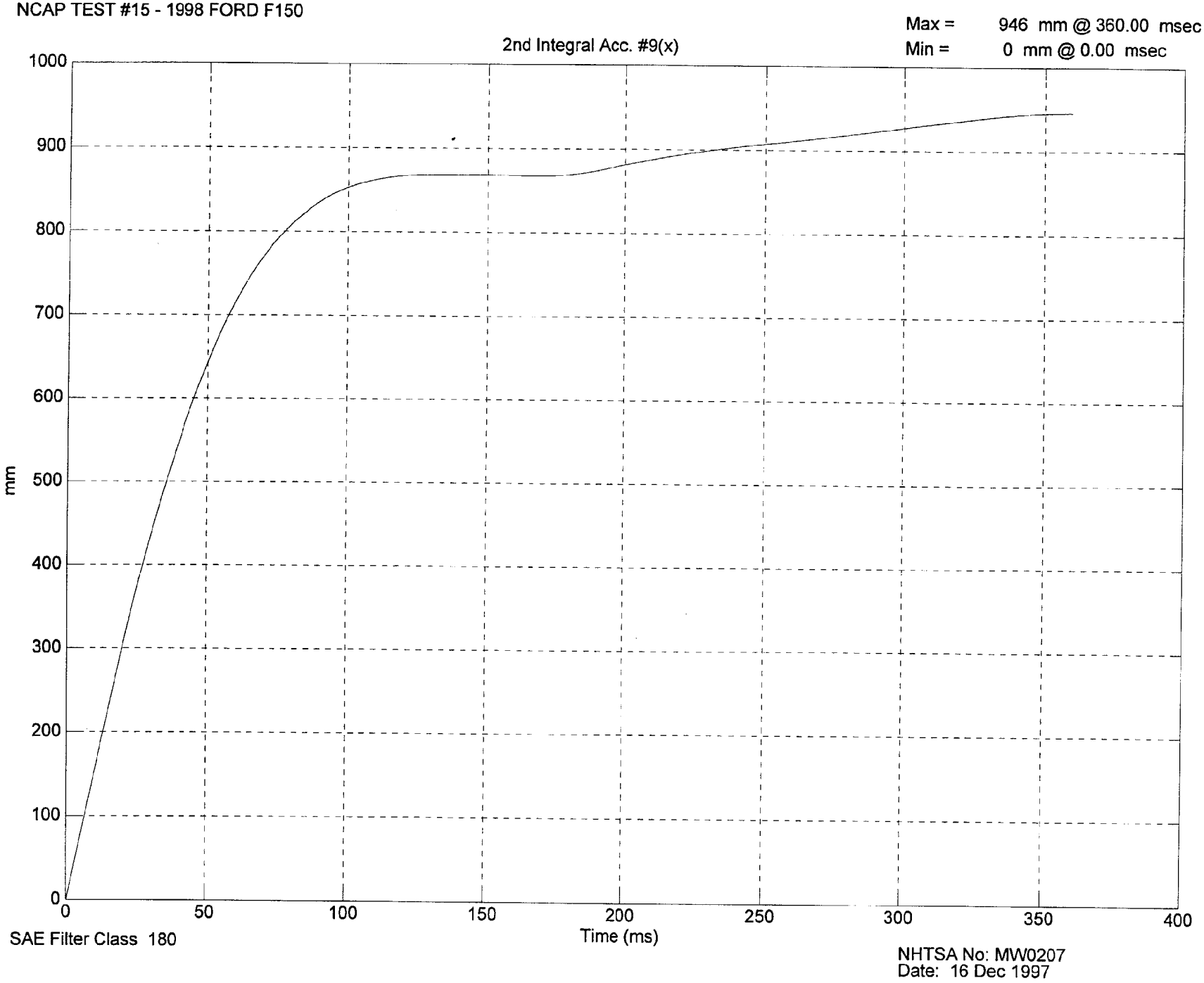
SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997

B-129

8413-15

NCAP TEST #15 - 1998 FORD F150

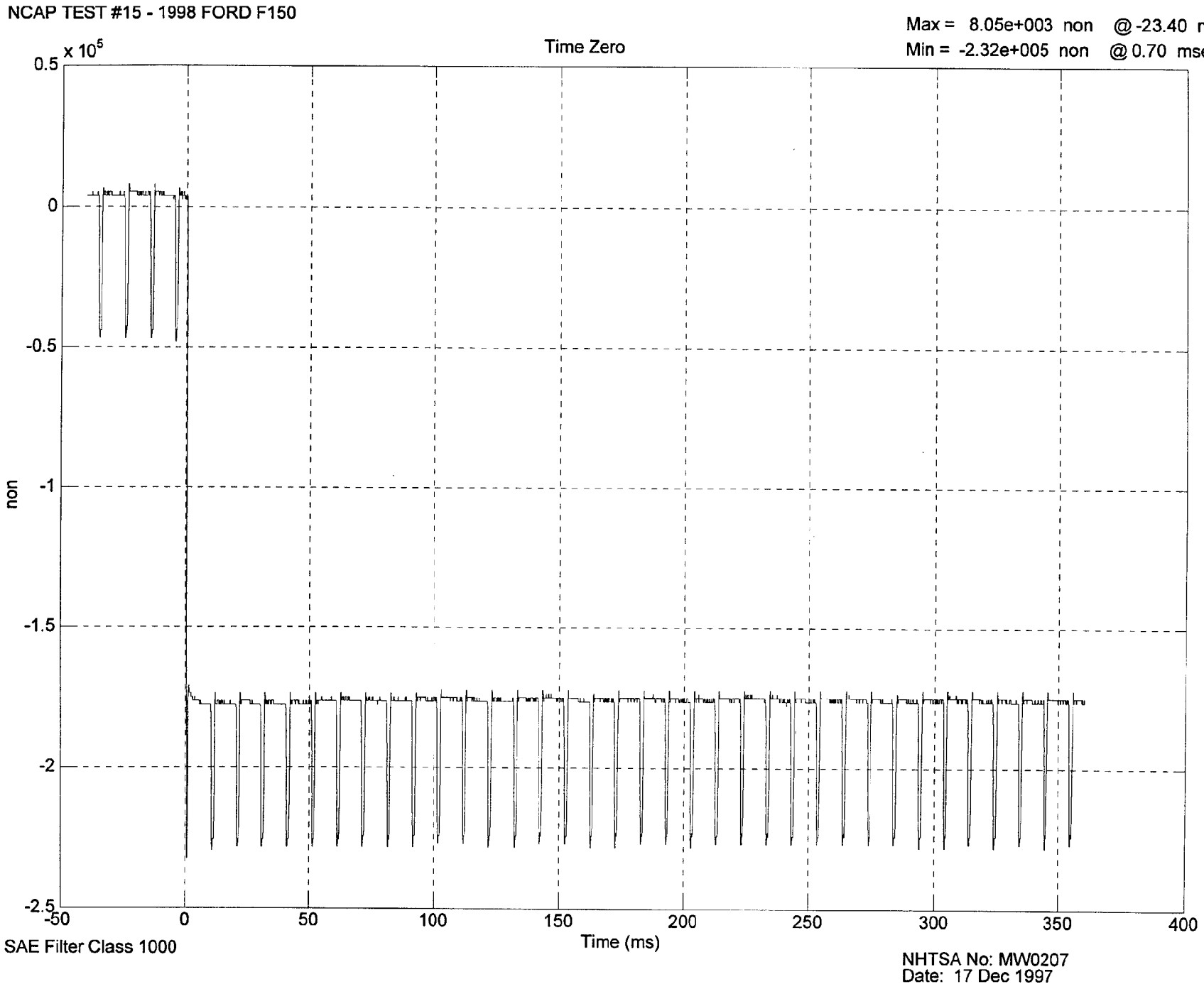


B-130

8413-15

SAE Filter Class 180

NHTSA No: MW0207
Date: 16 Dec 1997


NCAP TEST #15 - 1998 FORD F150
Max = 8.05e+003 non @ -23.40 msec
Min = -2.32e+005 non @ 0.70 msec
Time Zero
x 10^5
0.5
0
-0.5
-1
-1.5
-2
-2.5
non
-50
0
50
100
150
200
250
300
350
400
Time (ms)
SAE Filter Class 1000
NHTSA No: MW0207
Date: 17 Dec 1997

8413-15

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 SRL Corporation. A summary of the test results, and Part 572 specifications are included in this Appendix.

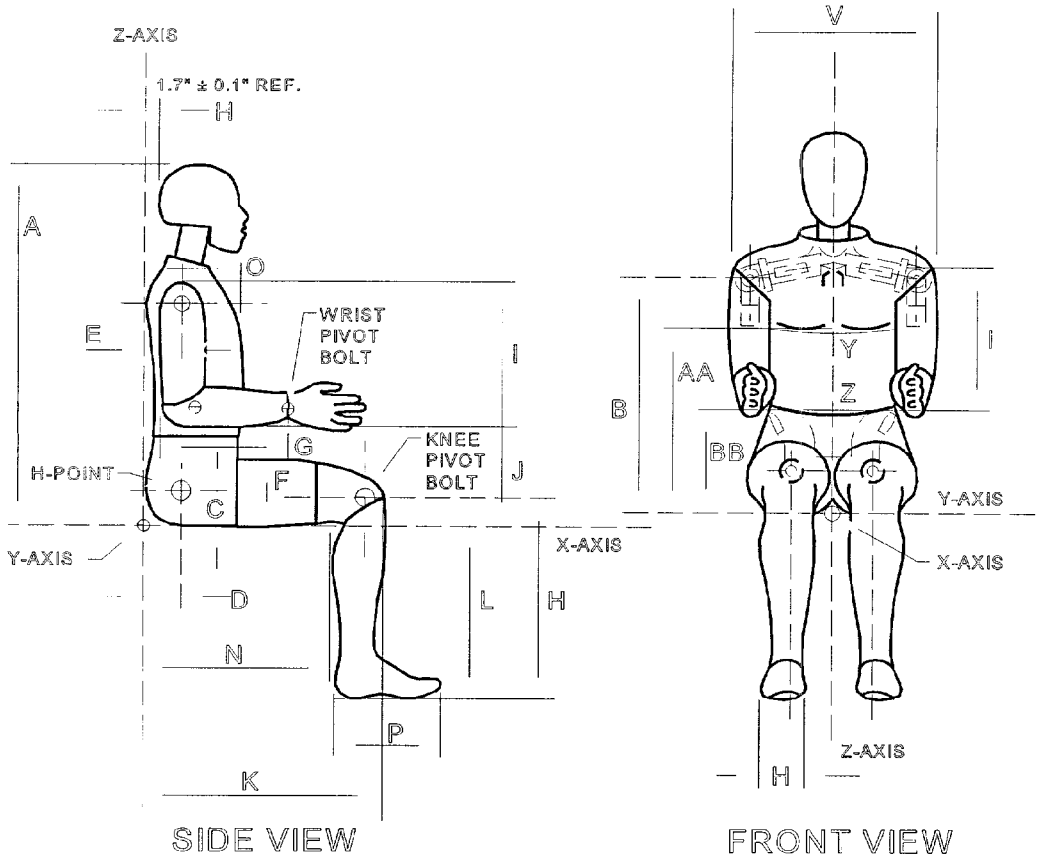
Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	064	12/08/97
#2/Right Front Passenger	245	12/08/97

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	064
Calspan Sequential Test Number	5
Date	12/04/97
Workfile	064597.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	32
Peak Resultant Acceleration	225-275 G's	244.1
Peak Lateral Acceleration	15 G's Max	10.8
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064
Calspan Sequential Test Number	5
Date	12/04/97
Workfile	064597.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	32
Impact Velocity		22.60 - 23.40 Ft/s	23.12
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.78
	20 ms	17.60 - 22.60 G's	20.20
	30 ms	12.50 - 18.50 G's	16.67
Max Pendulum G's Above 30 ms		29 G's Max	16.67
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	40.13
D Plane Rotation	Max	64 - 78 Deg	66.68
	Time	57 - 64 ms	56.38
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	79.00
	Time	47 - 58 ms	52.50
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	115.63
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064
Calspan Sequential Test Number	5
Date	12/04/97
Workfile	064597.nex

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	32
Impact Velocity		19.50 - 20.30 Ft/s	19.71
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	17.60
	20 ms	14.00 - 19.00 G's	16.66
	30 ms	11.00 - 16.00 G's	14.45
Max Pendulum G's Above 30 ms		22 G's Max	14.45
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	43.38
D Plane Rotation	Max	81 - 106 Deg	86.29
	Time	72 - 82 ms	75.25
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-47.91
	Time	65 - 79 ms	70.50
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	149.88
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	133.75

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	064
Calspan Sequential Test Number	5
Date	12/05/97
Workfile	064597.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	30
Pendulum Velocity	21.6 - 22.4 Ft/s	21.77
Maximum Deflection	2.50 - 2.86 in	2.61
Maximum Resistive Force	1160 - 1325 Lbs	1294.03
Internal Hysteresis	69 - 85 %	72.4

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	064
Calspan Sequential Test Number	5
Date	12/08/97
Workfile	064597

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	50
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1142.0
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	50
Probe Velocity	6.8 - 7.0 Ft/s	6.95
Peak Knee Impact Force	1060 - 1300 Lbs	1238.0

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Calspan Sequential Test Number 5
Date 12/05/97

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			30
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	38.8
Waist Circumference	Z	32.9 - 34.1 in	33.0
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	34.8
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	18.4
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Foot Length	P	9.9 - 10.5 in	10.1
Foot Breadth	W	3.6 - 4.2 in	3.8
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.6
Shoulder Breadth	V	16.6 - 17.2 in	16.9
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
Elbow Rest Height	J	7.5 - 8.3 in	8.0
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
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	6
Date	12/04/97
Workfile	245697.hdp

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	66-78 Deg F	70
Relative Humidity	10% - 70%	32
Peak Resultant Acceleration	225-275 G's	240.8
Peak Lateral Acceleration	15 G's Max	13.2
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	245
Calspan Sequential Test Number	6
Date	12/05/97
Workfile	245697.nfl

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	30
Impact Velocity		22.60 - 23.40 Ft/s	23.18
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.17
	20 ms	17.60 - 22.60 G's	20.50
	30 ms	12.50 - 18.50 G's	14.08
Max Pendulum G's Above 30 ms		29 G's Max	14.08
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	41.88
D Plane Rotation	Max	64 - 78 Deg	73.14
	Time	57 - 64 ms	60.13
Moment About Occipital Condyle	Max	65 - 80 Ft-Lbs	68.43
	Time	47 - 58 ms	55.75
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	120.00
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	245
Calspan Sequential Test Number	6
Date	12/05/97
Workfile	245697.nex

6 Axis Neck Transducer

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		69-72 Deg F	70
Relative Humidity		10% - 70%	50
Impact Velocity		19.50 - 20.30 Ft/s	19.76
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.25
	20 ms	14.00 - 19.00 G's	16.94
	30 ms	11.00 - 16.00 G's	14.89
Max Pendulum G's Above 30 ms		22 G's Max	14.89
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	41.75
D Plane Rotation	Max	81 - 106 Deg	90.70
	Time	72 - 82 ms	74.13
Moment About Occipital Condyle	Max	-59.0 - -39.0 Ft-Lbs	-51.90
	Time	65 - 79 ms	70.13
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	148.38
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	134.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	245
Calspan Sequential Test Number	6
Date	12/05/97
Workfile	245697.th3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	69-72 Deg F	70
Relative Humidity	10% - 70%	30
Pendulum Velocity	21.6 - 22.4 Ft/s	21.73
Maximum Deflection	2.50 - 2.86 in	2.66
Maximum Resistive Force	1160 - 1325 Lbs	1244.68
Internal Hysteresis	69 - 85 %	74.4

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	245
Calspan Sequential Test Number	6
Date	12/08/97
Workfile	245697

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	50
Probe Velocity	6.8 - 7.0 Ft/s	7.00
Peak Knee Impact Force	1060 - 1300 Lbs	1190.0
RIGHT KNEE		
Temperature	66 - 78 Deg F	70
Relative Humidity	10% - 70%	50
Probe Velocity	6.8 - 7.0 Ft/s	6.90
Peak Knee Impact Force	1060 - 1300 Lbs	1252.0

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 245
Calspan Sequential Test Number 6
Date 12/05/97

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			30
Location for Chest Circumference	AA	16.9 -17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.2
Waist Circumference	Z	32.9 - 34.1 in	33.7
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	34.8
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	18.4
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	3.6
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 064)		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	AF5B3	ENDEVCO	8/97	2/98
	Y	AF5F7	ENDEVCO	8/97	2/98
	Z	AF5E1	ENDEVCO	8/97	2/98
Chest	X	A08A	ENDEVCO	8/97	2/98
	Y	ADL42	ENDEVCO	8/97	2/98
	Z	A28F	ENDEVCO	8/97	2/98
Right Femur Load Cell		952	GSE	9/97	3/98
Left Femur Load Cell		951	GSE	9/97	3/98
Neck Load Cell	X	076	DENTON	10/97	4/98
	Y	076	DENTON	10/97	4/98
	Z	076	DENTON	10/97	4/98
Neck Moment	X	076	DENTON	10/97	4/98
	Y	076	DENTON	10/97	4/98
	Z	076	DENTON	10/97	4/98
Chest Deflection Gauge		064	HUMANOID	10/97	4/98
Hybrid III Use Only					
Lap Belt Load Cells		706	LEBOW	6/97	12/97
Shoulder Belt Load Cells		707	LEBOW	6/97	12/97
Spool-Out Potentiometer		-	MAGNETEK	-	-
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)	A13942	ENDEVCO	11/97	5/98
	Y (R)	J18649	ENDEVCO	8/97	2/98
	Z (R)	J18400	ENDEVCO	8/97	2/98
Chest	X (R)	B11407	ENDEVCO	6/97	12/97
	Y (R)	B11073	ENDEVCO	6/97	12/97
	Z (R)	B11408	ENDEVCO	6/97	12/97
Pelvic	X	C14953	ENDEVCO	8/97	2/98
	Y	C14966	ENDEVCO	8/97	2/98
	Z	C14968	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	A13929	ENDEVCO	9/97	3/98
Left Foot Rear	Z	A14150	ENDEVCO	9/97	3/98
Right Foot Front	Z	A14124	ENDEVCO	9/97	3/98
Right Foot Rear	X	A14181	ENDEVCO	9/97	3/98
Right Foot Rear	Z	A14126	ENDEVCO	9/97	3/98

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY

(6 Month Calibration Minimum)

PASSENGER DUMMY (S/N 245)		Serial #	Manufacturer	Calibration Last	Calibration Next
Head	X	ADL98	ENDEVCO	8/97	2/98
	Y	AE8K0	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	9/97	3/98
Left Femur Load Cell		231	GSE	9/97	3/98
Neck Load Cell	X	440	DENTON	8/97	2/98
	Y	440	DENTON	8/97	2/98
	Z	440	DENTON	8/97	2/98
Neck Moment	X	440	DENTON	8/97	2/98
	Y	440	DENTON	8/97	2/98
	Z	440	DENTON	8/97	2/98
Chest Deflection Gauge		245	HUMANOID	10/97	4/98
Hybrid III Use Only					
Lap Belt Load Cells		635	LEBOW	6/97	12/97
Shoulder Belt Load Cells		711	LEBOW	6/97	12/97
Spool-Out Potentiometer		-	MAGNETEK	-	-
Belt Stretch Transducer		E4	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	8/97	2/98
	Y	AL6R7	ENDEVCO	8/97	2/98
	Z	A12C	ENDEVCO	8/97	2/98
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	AKD92	ENDEVCO	8/97	2/98
Right Foot Rear	Z	AEWK1	ENDEVCO	8/97	2/98

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS

(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	Y112	ICS	9/97	3/98
Right Rear Seat Crossmember	D88	ICS	9/97	3/98
Top of Engine	X26	ICS	9/97	3/98
Bottom of Engine	D19	ICS	9/97	3/98
Left Disc Brake Caliper	Y151	CEC	10/97	4/98
Right Disc Brake Caliper	D33	CEC	9/97	3/98
Instrument Panel	E02	CEC	9/97	3/98
Left Seat Rear Crossmember (R)	D82	ICS	9/97	3/98
Right Seat Rear Crossmember (R)	Y17	ICS	9/97	3/98