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35 MPH FRONTAL BARRIER IMPACT  
OF A 1993 FORD TAURUS  
4-DOOR SEDAN

CALSPAN TEST NUMBER: Y49-03-1308

AUGUST 17, 1993

CALSPAN CORPORATION  
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FINAL REPORT

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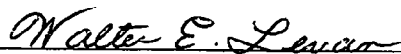
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16. Abstract  A 35 mph frontal load cell barrier impact test of a 1993 Ford Taurus 4-Door sedan was performed at the Calspan Advanced Technology Center crash facility in Buffalo, New York on August 17, 1993.  The measured vehicle impact velocity was 35.0 mph and the ambient temperature at the barrier face was 80°F. The 5th percentile female driver occupant and the 95th percentile male passenger occupant were both restrained with 3-point manual seat belt systems and air bag supplemental restraint systems. The driver and passenger dummy head injury criteria (HIC), chest resultant acceleration and femur load measurements were below the injury criteria requirements of FMVSS 208 "Occupant Crash Protection".			
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Section 1

PURPOSE AND TEST PROCEDURE

This 35 mph frontal vehicle barrier impact test is part of the Crashworthiness Testing and Analysis Program sponsored by the Research and Special Programs Administration under Contract No. DTRS57-90-C-00104. The purpose of this Technical Task Directive (TTD 7) is to obtain responses from vehicles and restrained Hybrid III type dummies during frontal barrier crashes. This test of a 1993 Ford Taurus 4-door Sedan was performed with a 5th percentile female dummy in the driver position and a 95th percentile male dummy in the passenger position. The dummy occupants were both restrained with the vehicle 3-point manual seat belt systems and the air bag supplemental restraint systems (SRS).

## Section 2

### SUMMARY OF THE BARRIER IMPACT TEST

A load barrier consisting of an array of thirty-six load cells was impacted by a 1993 Ford Taurus 4-door Sedan at a velocity of 35.0 mph. the test was performed at the Calspan Corporation advanced Technology Center Crash Test Facility on 17 august 1993.

Pre- and Post-test still photographs of the vehicle and dummies can be found in Appendix A. The frontal barrier impact event was documented with one real time movie camera and nine high speed movie cameras. Vehicle photographic target locations can be found in Figure 5 and movie camera locations can be found in Figure 7.

A Hybrid III 5th percentile anthropometric test device (ATD) was placed in the driver seating position and a Hybrid III 95th percentile ATD was placed in the passenger seating position. The dummies were positioned according to the dummy placement instructions from the FMVSS 208 "Occupant Crash Protection" Test Procedure and the supplementary dummy placement instructions for the small female and large male dummies which are included in Appendix C of this report. Both dummies were restrained with the vehicle 3-point belt restraint systems and the air bag supplemental restraint systems (SRS).

The 5th percentile female dummy in the driver position was instrumented with head, chest and pelvic triaxial accelerometer packages; a chest displacement potentiometer; upper neck force and moment transducer; thoracic and lumbar spine force and moment transducers; bilateral pelvic iliac crest force and moment transducers; femur axial force load cells and knee displacement transducers. The driver lap and shoulder belt tensile forces were also recorded.

The 95th percentile male dummy in the passenger position was instrumented with head, chest and pelvic triaxial accelerometer packages; a chest displacement potentiometer; upper and lower neck force and moment transducers; a lumbar spine force and moment transducer; femur axial force load cell; upper and lower tibia force and moment transducer packages and knee displacement transducers. The passenger lap and shoulder belt tensile forces were also recorded.

The 119 channels of vehicle and dummy transducer data were recorded on PC based data acquisition system. The data was reduced, filtered and processed as required by the appropriate test procedures using PC based software. Appendix B contains the load cell barrier, the vehicle and the dummy response data in plotted format.

The driver HIC was 234.1 and the only head contact was with the driver side airbag. The driver maximum chest acceleration over a three millisecond period was 53.6 g's. The driver left femur maximum axial compressive force was -638.8 pounds and the driver right femur maximum compressive force was -757.6 pounds.

The passenger HIC was 260.5 and the only head contact was with the passenger side airbag. The passenger maximum chest acceleration over a three millisecond period was 43.1 g's. The passenger left femur maximum axial compressive force was -1145.6 pounds and the passenger right femur maximum compressive force was -570.4 pounds.

Problems occurred with the following data channels:

- Driver right femur axial load -- intermittent output.
- Passenger lumbar force in the x-direction -- intermittent output.
- Passenger lumbar moment in the y-direction -- shift in the output from approximately 10 to 25 milliseconds.

Section 3  
VEHICLE AND OCCUPANT INFORMATION

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Vehicle Year/Make/Model/Body Style: 1993 Ford Taurus 4-Door Sedan

Test No.: - VIN.: 1FALP52UXPG135967

Body Color: Dark Plum Date of Manufacture: 9/92

Engine: 6 Cylinders; - C.I.D.; 3.0 Liters; - CC

Gas; - Diesel; - Turbocharged

- Longitudinal;  Transverse

Transmission: 3 Speed; - Manual;  Automatic; - Overdrive

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

A/C;  P/S;  P/B; - P/wdo;

Tilt Wheel - P/seats;  Cruise Control

\*Type of Occupant Restraint: 3-point manual seat belts

Driver and passenger supplemental air bags

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 35 psi, Rear 35 psi

Recommended Tire Size: P205/70R14

Recommended Cold Tire Pressure: Front 35 psi, Rear 35 psi

Tires on Vehicle: P205/70R14; Manufacturer: BSW All Season Firestone

Number of Occupants: 3 Front; 3 Rear; - 3rd Seat; 6 TOTAL

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

Type of Front Seat Back:  Fixed; - Adj. With - Lever - Rot. Knob

Vehicle Capacity Weight (VCW) = 1100 lbs. (A)

No. of Occupants x 150 lbs. = 900 lbs. (B)

Rated Cargo and Luggage

Weight (RCLW) A-B = 200 lbs.

GVWR 4692 lbs. GAWR: Front 2545 lbs. Rear 2178 lbs.

\*Driver and right-front passenger 3-point manual belt system were not used for this test.

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS) = UDW:

Right Front = 990 lbs.      Right Rear = 570 lbs.  
Left Front = 1030 lbs.      Left Rear = 530 lbs.  
TOTAL FRONT WEIGHT = 2020 lbs. (64.7% of Total Vehicle Weight)  
TOTAL REAR WEIGHT = 1100 lbs. (35.3% of Total Vehicle Weight)  
TOTAL DELIVERED WEIGHT = 3120 lbs.

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES:

Right Front = 1070 lbs.      Right Rear = 780 lbs.  
Left Front = 1070 lbs.      Left Rear = 740 lbs.  
TOTAL FRONT WEIGHT = 2140 lbs. (58.5% of Total Vehicle Weight)  
TOTAL REAR WEIGHT = 1520 lbs. (41.5% of Total Vehicle Weight)  
TOTAL TEST WEIGHT = 3660 lbs.  
Weight of Ballast Secured in Vehicle Trunk Area = 0 lbs.

TEST VEHICLE ATTITUDE (all dimensions in inches):

Delivered Attitude: RF 28.4 ; LF 28.3 ; RR 27.2 ; LR 26.9  
Test Attitude: RF 28.0 ; LF 28.2 ; RR 25.0 ; LR 24.9  
Vehicle's Wheel Base = 106.0 in.  
Location of Vehicle's C.G. = 44.0 inches rearward of front wheel center.

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

POST-IMPACT DATA:

Type of Test: Frontal Barrier Impact Angle: 0°  
 Date of Test: August 17, 1993 Time of Test: 14:00  
 Ambient Temperature: 80°F at impact area  
 Temperature in Occupant Compartment: 71°F  
 Windshield Molding Temperature: - °F  
 Required Impact Velocity Range: 34.5 to 35.5 mph  
 Impact Velocity: primary = 35.0 mph, secondary = - mph  
 Distance From Front Bumper to Barrier Face When  
 Entering Speed Trap: 52 inches  
 Exiting Speed Trap: 12 inches

VISIBLE DUMMY CONTACT POINTS:

	<u>Driver</u>	<u>Passenger</u>
Head	Face with left side of air bag. Rear of head with <u>left side of seat.</u>	Face with air bag. Rear of head with <u>head rest.</u>
Chest	<u>Air bag and steering wheel rim.</u>	<u>No contact</u>
Abdomen	<u>No Contact</u>	<u>No Contact</u>
Left Knee	<u>Lower dash</u>	<u>Glove box</u>
Right Knee	<u>Lower dash</u>	<u>Glove box</u>

Comments: Windshield cracked throughout. roof deformation behind both "B" pillars. Toe pan deformation.

	<u>Front</u>		<u>Rear</u>	
	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Door Opening	<u>Closed</u>	<u>Closed</u>	<u>Closed</u>	<u>Closed</u>

<u>Seat Movement</u>	<u>Front</u>		<u>Rear</u>	
	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Seat Back Failure	<u>None</u>	<u>None</u>	<u>N/A</u>	<u>N/A</u>
Seat Shift (in.)	<u>*</u>	<u>*</u>	<u>N/A</u>	<u>N/A</u>

\*Both front seats rotated to face slightly outboard.

Table 2  
DUMMY INJURY CRITERIA VALUES

	MAXIMUM ACCELERATION ("G")							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
DUMMY (1)	-25.3	-36.2	17.5	40.7	-54.1	-9.3	-6.9	53.6
DUMMY (2)	-48.0	8.7	19.8	48.9	42.3	-4.4	-13.7	43.1
DUMMY (3)	-	-	-	-	-	-	-	-
DUMMY (4)	-	-	-	-	-	-	-	-

	MAXIMUM FORCE FEMUR LOAD (LBS.)	
	RIGHT FEMUR	LEFT FEMUR
DUMMY (1)	-757.6	-638.8
DUMMY (2)	-570.4	-1145.6
DUMMY (3)	-	-
DUMMY (4)	-	-

	MAXIMUM FORCE SEAT BELT LOADS (LBS.)	
	TORSO BELT LOAD	LAP BELT LOAD
DUMMY (1)	513.6	2615.4
DUMMY (2)	2009.7	1911.3
DUMMY (3)	-	-
DUMMY (4)	-	-

	HEAD INJURY CRITERIA (HIC)			
	HIC	t <sub>1</sub> (SEC)	t <sub>2</sub> (SEC)	Average Acceleration t <sub>1</sub> TO t <sub>2</sub>
DUMMY (1)	234.1	46.32	82.20	33.6
DUMMY (2)	260.5	49.44	85.32	35.0
DUMMY (3)	-	-	-	-
DUMMY (4)	-	-	-	-

\*Defined as exceeding 0.003 sec. duration  
 \*\*As defined in FMVSS No. 208  
 \*\*\*Manual seat belts not used for this test

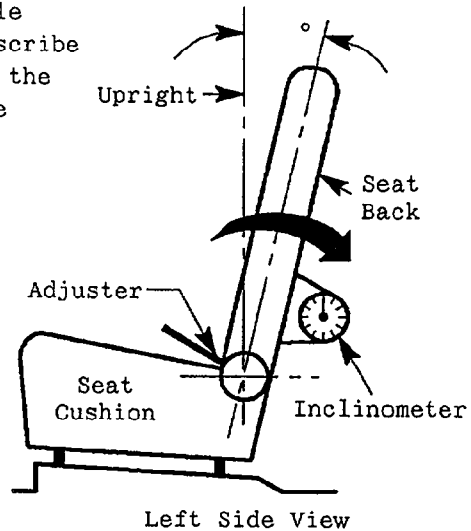
Figure 1

TEST VEHICLE SETUP INFORMATION

VEHICLE IDENTIFICATION:

Model Year: 1993 Vehicle Model: Ford Taurus Body Style: 4-door Sedan

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.



Seat back angle for driver's 20°

Measurement instructions: Measure along outside seat back frame  
13 inches above pivot point.

Seat back angle for passenger's seat: 20°

Measurement instructions: Same as driver side

2. Seat Fore and Aft Positioning

Positioning of the driver's seat: Positioned seat in full front  
(position #1) position for 5th percentile-female driver

Positioning of the passenger's seat (if applicable): Position seat in rear  
most (13th detent, full front is position #1) detent for 95th percentile  
passenger

3. Fuel Tank Capacity Data

A. "Usable Capacity" of the standard equipment fuel tank is 16.0 gallons

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

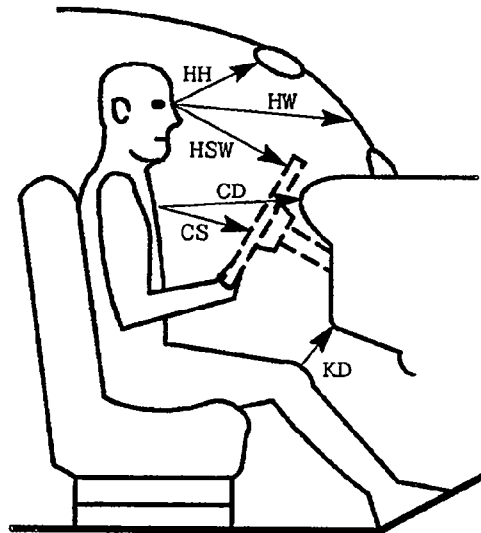
4. Steering Column Position: Mid position

5. Other: Fuel tank loaded with 14.8 gallons of stoddard for test.

Figure 2

OCCUPANT CLEARANCE DIMENSIONS

	DRIVER	PASSENGER
HH	10.0	15.2
HW	20.7	20.3
NSW	10.0	-
NIP	16.2	-
NH	9.8	-
CD	17.2**	22.0
CS	8.0	-
KDL	0.9	6.3
KDR	1.5	6.2
1	19.7	-
2	2.0	-
SA	20°	20°
PA	21°	22°*
ULA	102°	111°
LLA	217°	227°



\*Estimated from shoulder and H-point location. Standard pelvic bar could not be used due to specialized spine instrumentation.

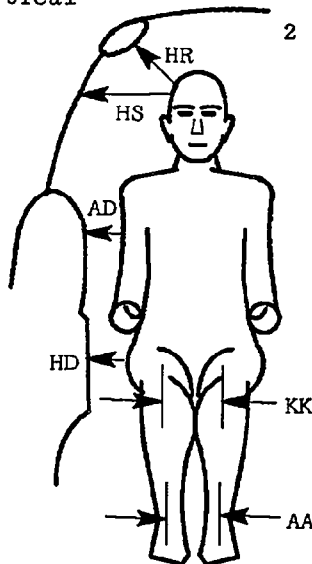
\*\*Taken from a point 5 inches below the chin to the upper portion of IP.

Angles taken relative to vertical

- SA = Seat Back Angle
- PA = Pelvic Angle
- ULA = Upper Leg Angle
- LLA = Lower Leg Angle

- HH = Head to Windshield Header
- HW = Head to Windshield
- NSW = Nose to Steering Wheel
- NIP = Nose to Instrument Panel
- NH = Nose to Steering Wheel Hub
- CD = Chest to Dash
- CS = Chest to Steering Wheel Hub
- KDL = Knee to Dash Left
- KDR = Knee to Dash Right
- 1 = Head Target to Steering Column Target
- 2 = Distance between Steering Column Targets

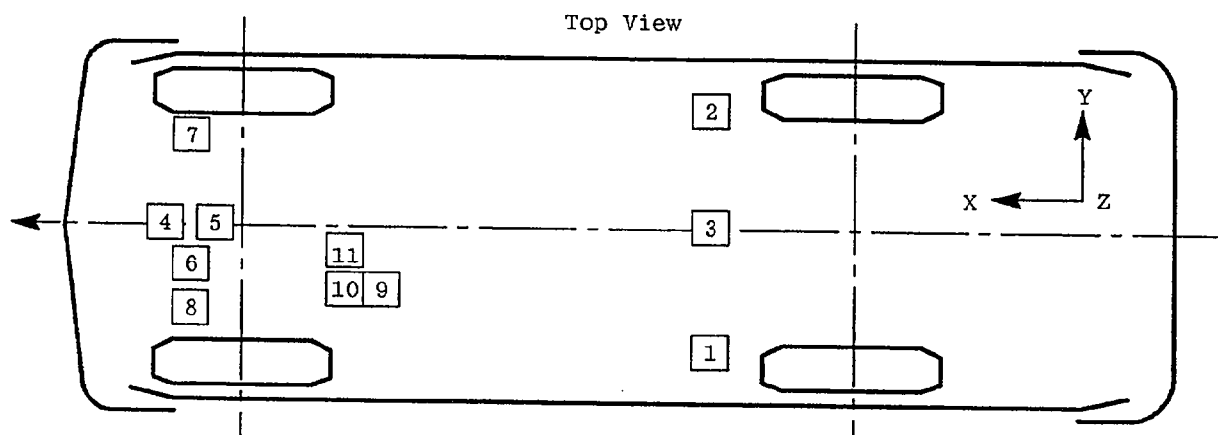
- HR = Head to Side Roof
- HS = Head to Side Window
- AD = Arm to Door
- HD = Hip to Door
- KK = Knee to Knee
- AA = Ankle to Ankle
- DT = Dummy Temperature °F



	DRIVER	PASSENGER
HR	8.2	5.7
HS	11.5	9.2
AD	6.0	3.4
HD	7.1*	5.6*
KK	8.5	10.0
AA	10.3	10.6
DT	71°	71°

\*Measured to door pocket.

Figure 3  
SUMMARY OF VEHICLE ACCELEROMETER DATA



Vehicle: 1993 Ford Taurus 4-Door Sedan

Loc, No.	Description	Axis	Maximum Value (g's)*	
			"-"	"+"
1	Rear seat crossmember left side	x	-27.4	1.7
2	Rear seat crossmember right side	x	-26.9	2.0
3	Rear seat crossmember centerline, X	x	-35.9	4.1
3	Rear seat crossmember centerline, Y	y	-6.2	3.5
3	Rear seat crossmember centerline, Z	z	-10.1	9.9
4	Top of engine block	x	-117.9	38.5
5	Bottom of engine block	x	-98.9	18.3
6	Front crossmember	x	-102.1	28.5
7	Right front brake caliper	x	-100.1	14.0
8	Left front brake caliper	x	-69.5	3.9
9	Brake pedal	x	-48.9	106.1
10	Brake pedal	z	-83.7	33.1
11	Toe pan	x	-108.8	24.1

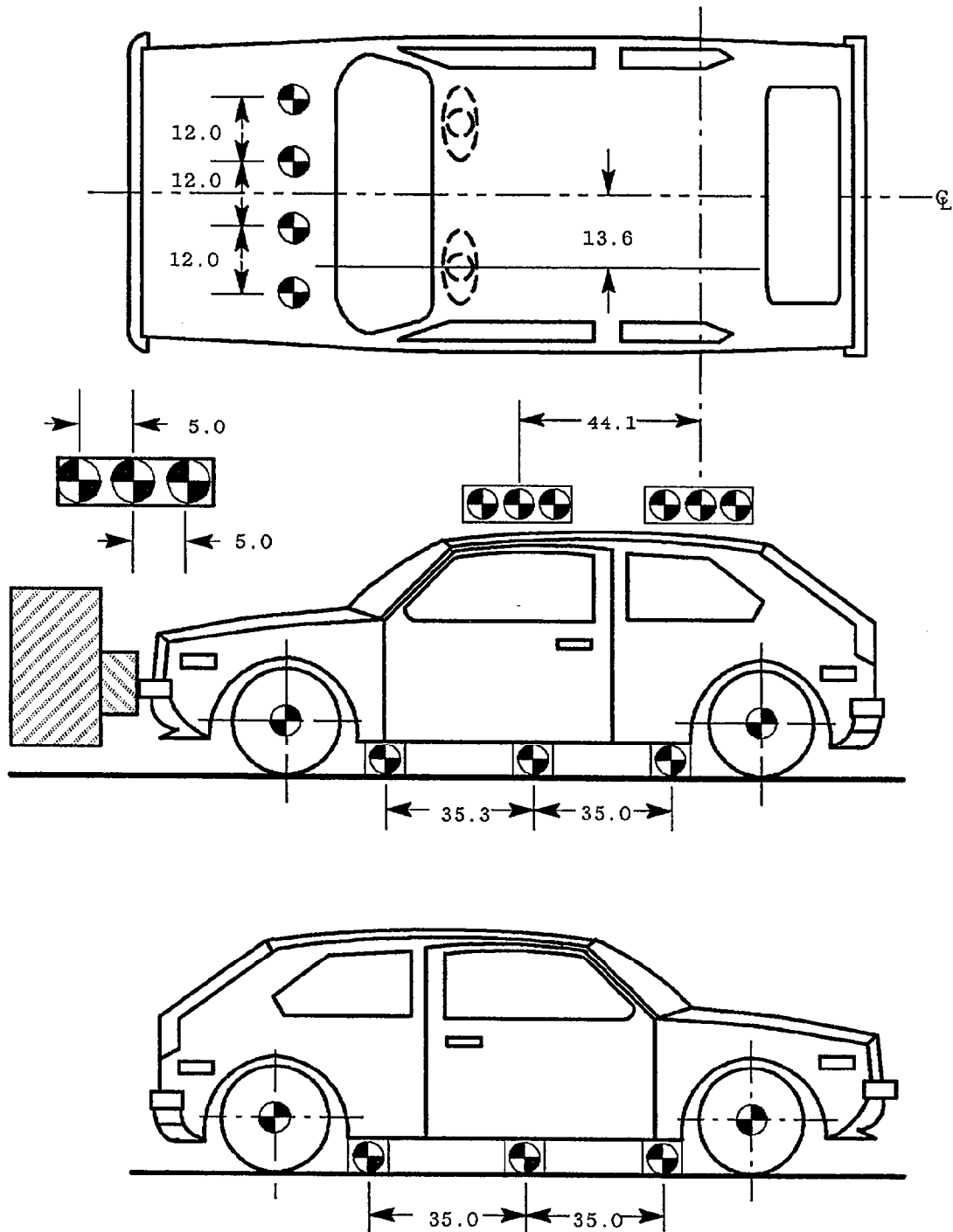
\*Values filtered using SAE class 60 filter.

Figure 4  
 PRE- AND POST-TEST POSITION OF TEST  
 ACCELEROMETER LOCATIONS

Test Description: 35 mph Frontal Vehicle-to-Barrier Impact  
 Test Vehicle: 1993 Ford Taurus  
 Reference Plane: Vehicle plane at rear bumper

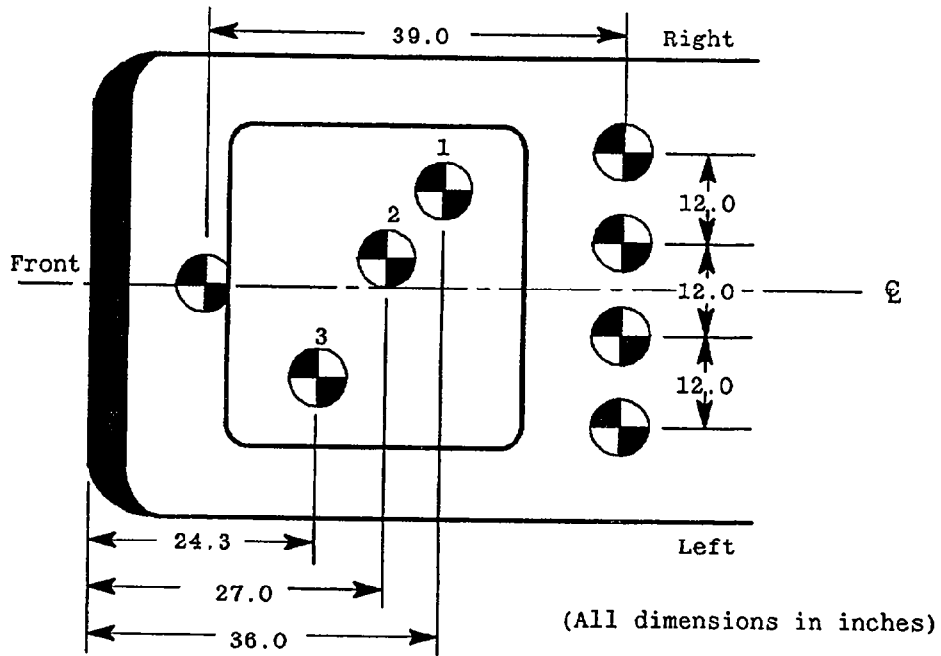
Accelerometer Description	LONGITUDINAL LOCATION (in.)		
	Pre-Test	Post-Test	Change
Rear seat crossmember left side	76.7	76.7	0.0
Rear seat crossmember right side	76.7	76.7	0.0
Rear seat crossmember centerline	74.7	74.7	0.0
Top of engine block	169.2	158.5	10.7
Bottom of engine block	150.3	146.8	3.5
Front suspension crossmember	145.5	141.3	4.2
Right front brake caliper	149.0	145.5	3.5
Left front brake caliper	149.0	144.8	4.2
Toe pan	135.4	133.5	1.9
Brake pedal	133.0	131.1	1.9

Figure 5  
 VEHICLE TARGET LOCATIONS  
 (All dimensions in inches)



(Dimensions in inches)

Figure 5  
 VEHICLE TARGET LOCATIONS (continued)  
 (TOP VIEW OF HOOD AND ENGINE COMPARTMENT)



Note: Drawing not to scale.

- Target 1: Intake manifold  
 Target 2: Alternator  
 Target 3: Valve Cover

Figure 6  
 VEHICLE MEASUREMENT POINTS  
 (All dimensions in inches)

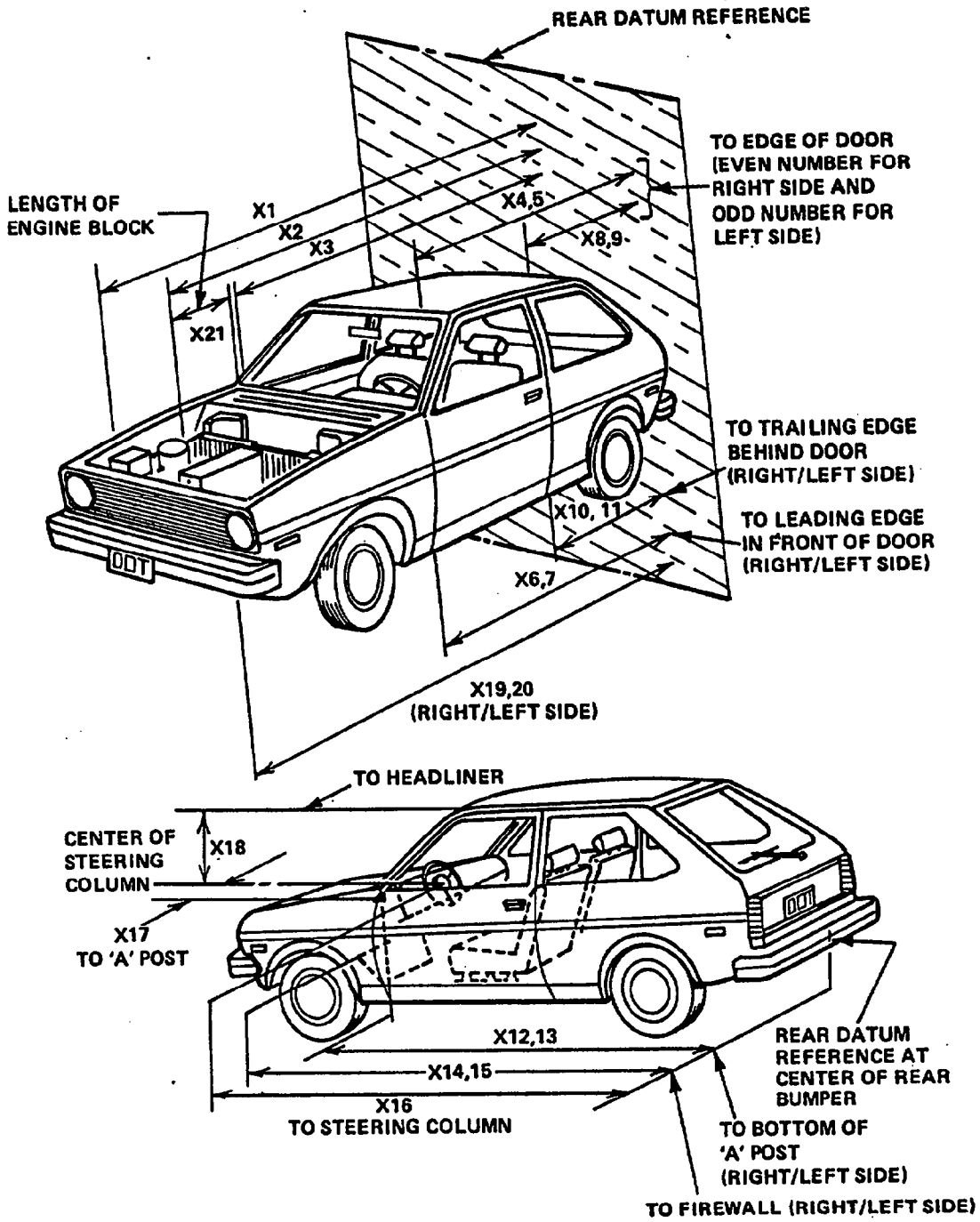


Figure 6  
VEHICLE MEASUREMENT POINTS (continued)

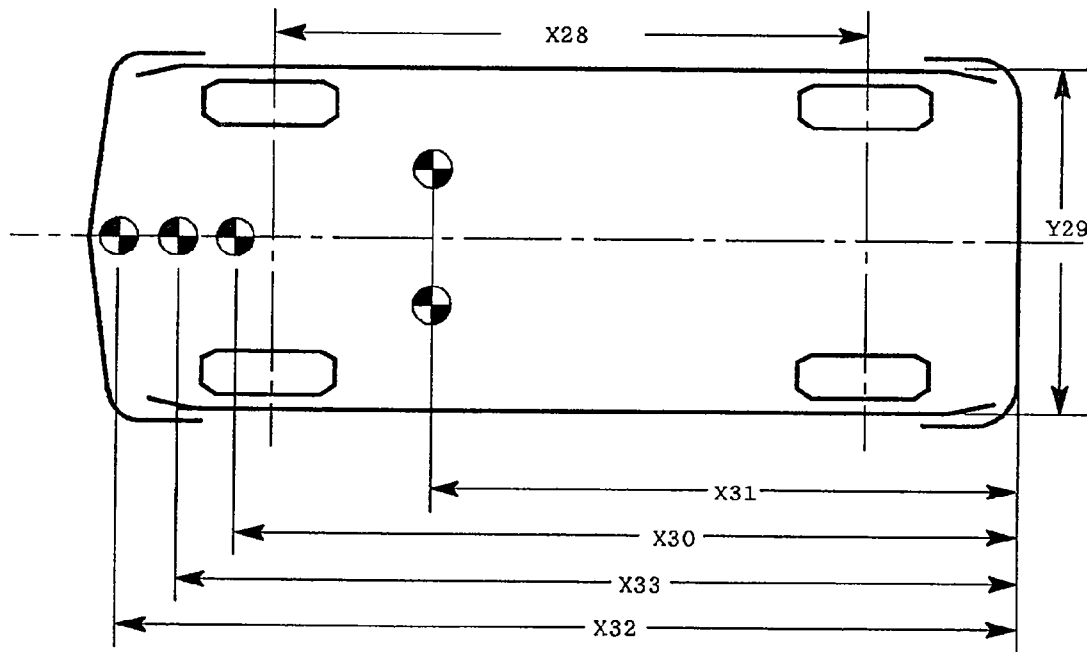
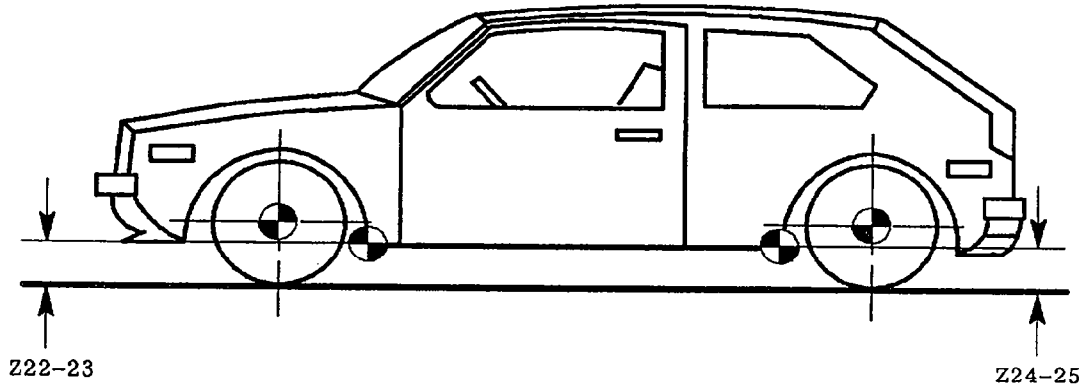


Table 3

VEHICLE MEASUREMENTS

No.	TYPE OF MEASUREMENT	All Dimensions in Inches	
		Pre-Test	Post-Test
X1	Total Length of Vehicle at Centerline	192.0	170.5
X2	Rear Surface of Vehicle to Engine at Centerline	169.2	158.5
X3	Rear Surface of Vehicle to Firewall	144.2	141.3
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	131.3	131.3
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	132.2	132.4
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	130.1	129.5
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	130.3	129.9
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	89.9	89.8
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	90.2	89.6
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	89.3	89.0
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	89.5	89.0
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	131.2	130.4
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	131.3	131.3
X14	Rear Surface of Vehicle to Firewall - Right Side	143.5	141.7
X15	Rear Surface of Vehicle to Firewall - Left Side	142.7	140.0
X16	Rear Surface of Vehicle to Steering Wheel Center	113.3	113.0
Y17	Steering Column to "A" Post	15.5	15.5

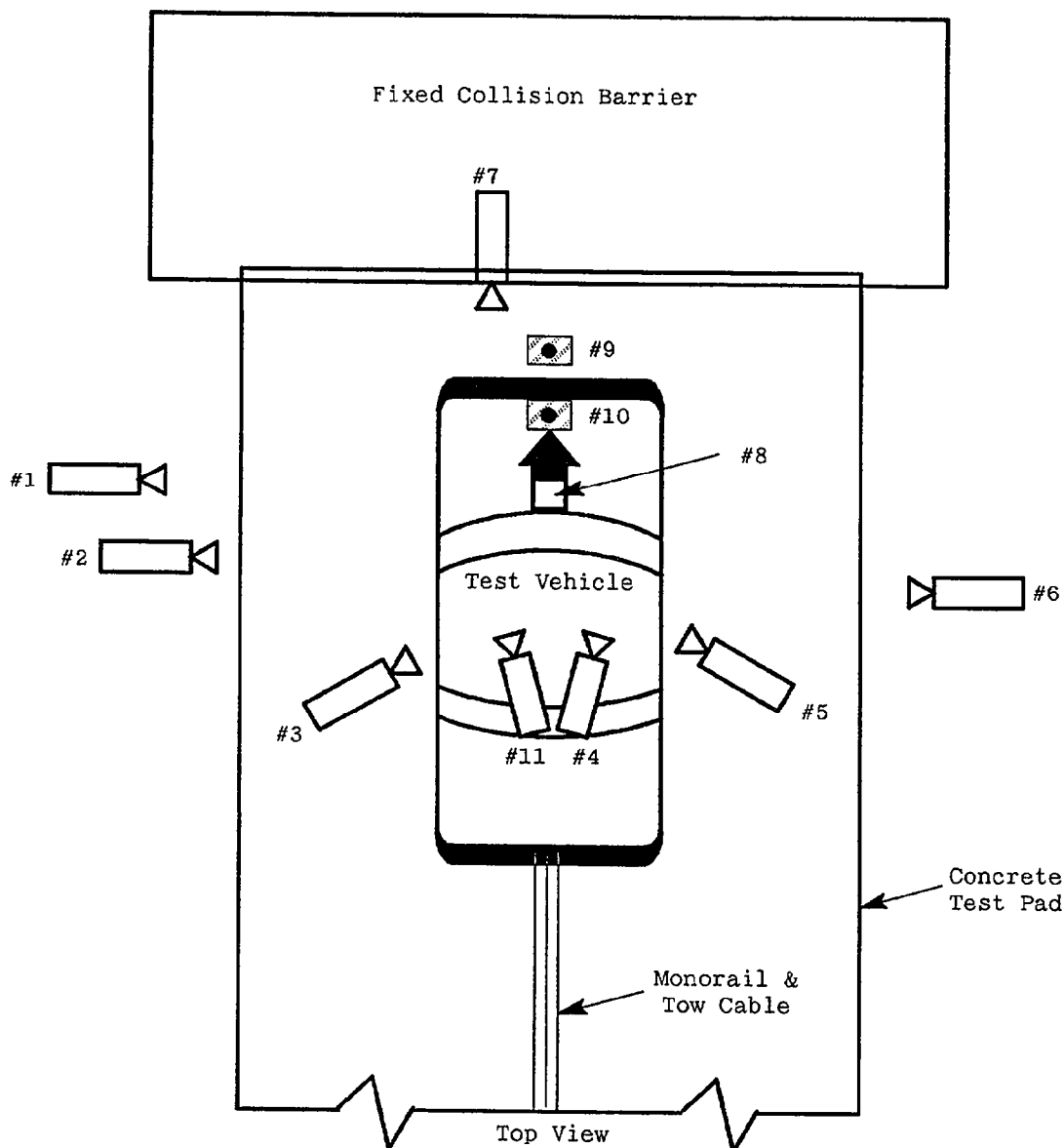
Table 3

## VEHICLE MEASUREMENTS (continued)

No.	TYPE OF MEASUREMENT	All Dimensions in Inches	
		Pre-Test	Post-Test
Z18	Rear of Windshield Header to Steering Wheel Column	64.0	64.0
X19	Rear Surface of Vehicle to Right Side of Front Bumper	186.6	166.5
X20	Rear Surface of Vehicle to Left Side of Front Bumper	186.5	169.0
X21	Width of Engine Block	16.0	16.0
Z22	Right Front Sill to Ground Plane	9.3	7.8
Z23	Left Front Sill to Ground Plane	9.2	8.8
Z24	Right Rear Sill to Ground Plane	8.7	7.0
Z25	Left Rear Sill to Ground Plane	8.8	8.1
X26	Firewall to Engine or Transaxle	-	-
Z27	Vertical Dim. from Door Sill to Centerline of Steering Column	23.7	22.0
X28	Wheelbase of Vehicle	106.0	102.3
Y29	Width of Vehicle at Maximum Width Point	68.9	69.0
X30	Rear Surface of Vehicle to Engine Target	150.3	146.8
X31	Rear Surface of Vehicle to Compartment Target	130.3	128.9
X32	Rear Surface of Vehicle to Bumper Target	189.8	167.5
X33	Rear Surface of Vehicle to Frame Crossmember	145.5	141.3

Figure 7  
CAMERA POSITIONS FOR FRONTAL IMPACT

NOTE: Camera Information Shown on Table 4.



- Top View
- Camera #1 - Real-time camera
  - Camera #2 - Left side overall view
  - Camera #3 - Driver and steering column view
  - Camera #4 - Onboard seat belt view (right)
  - Camera #5 - Passenger interior view
  - Camera #6 - Right side overall view
  - Camera #7 - Driver front view
  - Camera #8 - Windshield view
  - Camera #9 - Underbody view
  - Camera #10 - Overhead view
  - Camera #11 - Onboard seat belt view (left)

Table 4

HIGH-SPEED CAMERA LOCATIONS

Test No. Y49-3-1308 Vehicle: 1993 Ford Taurus 4-Door Sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (in)*			ANGLE** (deg)	LENS (mm)	SPEED (fps)
		X	Y	Z			
1	Real-Time Camera	-	-	-	-	-	24
2	Left Side Overall Camera	263	72	42	-2	13	N.T.
3	Driver and Steering Column View	119	106	69	-19	13	1015
4	Onboard Seat Belt View (Right)	-	-	-	-	8	N/A
5	Onboard Driver View	119	103	69	-17	13	1035
6	Right Side Overall View	259	80	42	-2	13	750
7	Driver Front View	22	0	78	-33	13	1010
8	Windshield View	0	-23	124	-44	13	1015
9	Underbody View	0	24	-83	90	13	735
10	Overhead View	0	11	166	-82	13	1065
11	Onboard Seat Belt View (Left)	-	-	-	-	8	520

\*X = film plane to monorail centerline

Y = film plane to impact location

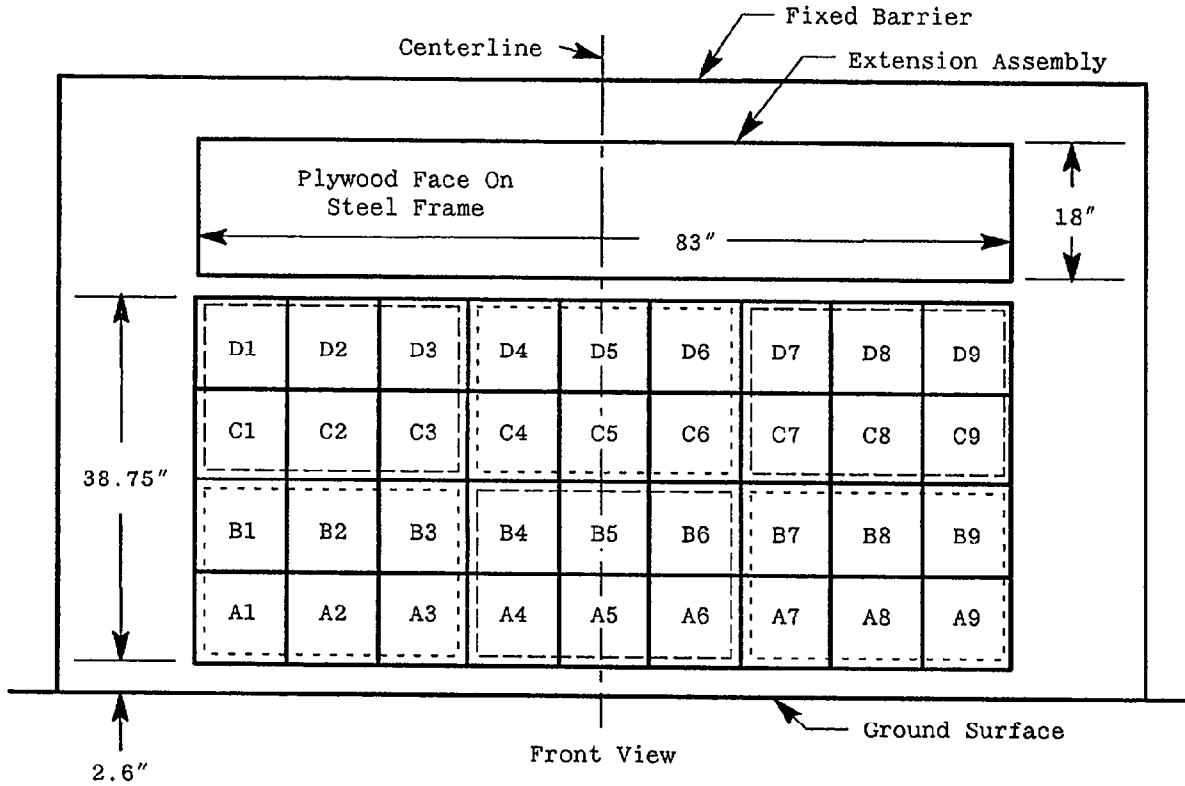
Z = film plane to ground

\*\* = referenced to horizontal plane

Figure 8

LOAD CELL LOCATIONS ON FIXED BARRIER

- 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 Groupings shown above (6 cells/group)

Table 5  
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST DATE: August 17, 1993

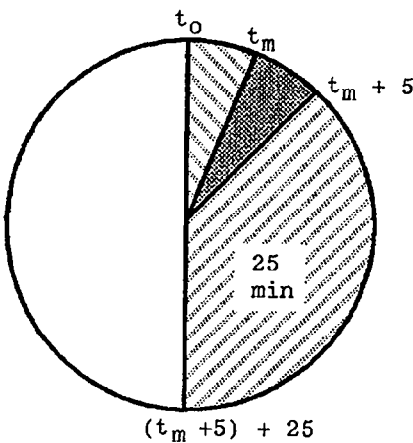
Vehicle Mfgr./Make/Model: 1993 Ford Taurus 4-Door Sedan

Test vehicle fuel tank filled to 92% to 94% of manufacturer's "usable" capacity and with electric fuel pump operating (if it will operate without engine operation). Part 572 test dummies located at each front designated seating position.

.....

TEST VEHICLE IMPACT TYPE:  X  Frontal (35 mph)  
 -  Oblique (30 mph) with  0 ° barrier face first contacting \_\_\_\_\_  
 (driver/passenger) side  
 -  Rear Moving Barrier (30 mph)  
 -  Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT:



1. From impact until vehicle motion ceases
2. For 5 minute period after vehicle motion ceases
3. For next 25 minutes

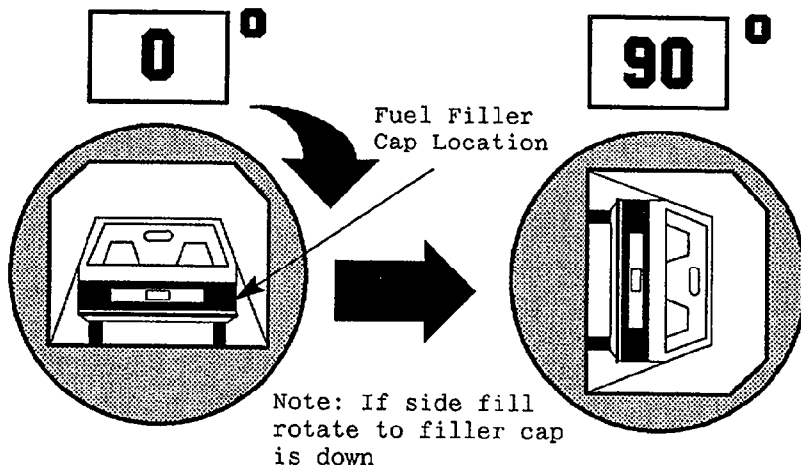
ACTUAL	MAX ALLOWED
0	1 oz.
0	5 oz.
0	1 oz./1 min.

SOLVENT SPILLAGE DETAILS:

None

Table 6  
STATIC ROLLOVER DATA SHEET

TEST PHASE:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

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

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

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0
---	---	---	---

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

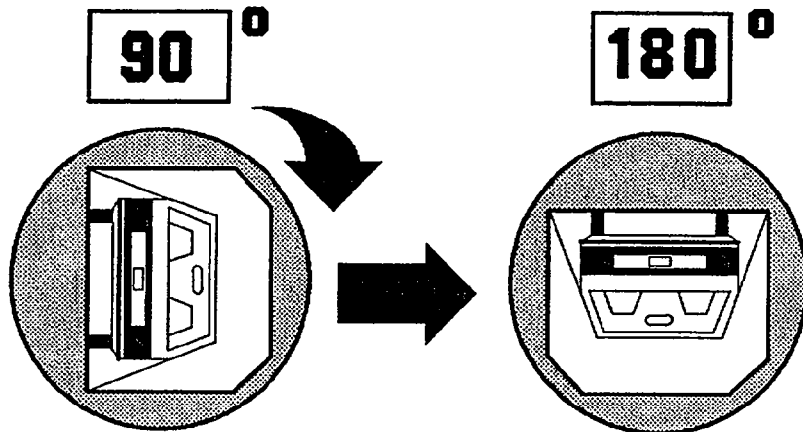
IV. SOLVENT SPILLAGE LOCATION(S):

None

Table 6  
STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time (Spec. Range = 1 to 3 minutes)	_____	minutes	_____	seconds
FMVSS 301 Position Hold Time +	_____	minutes	_____	seconds
TOTAL	_____	minutes	_____	seconds
Next whole minute interval	_____	minutes		

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

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0
---	---	---	---

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

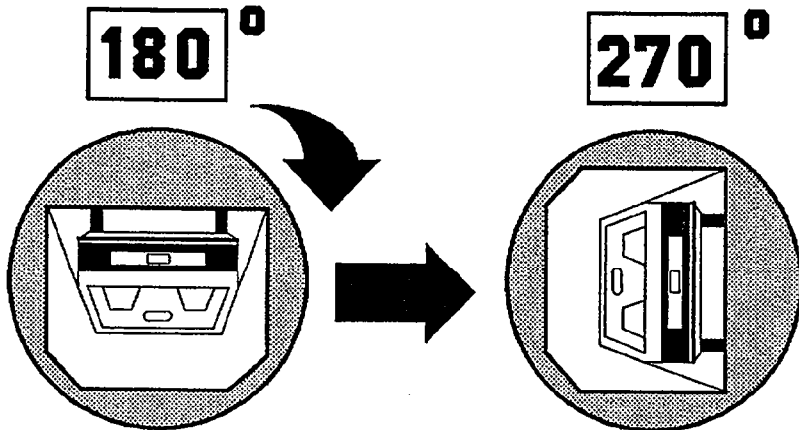
IV. SOLVENT SPILLAGE LOCATION(S):

NONE

Table 6  
 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time \_\_\_\_\_ 2 \_\_\_\_\_ minutes \_\_\_\_\_ 15 \_\_\_\_\_ seconds  
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + \_\_\_\_\_ 5 \_\_\_\_\_ minutes \_\_\_\_\_ 00 \_\_\_\_\_ seconds

TOTAL \_\_\_\_\_ 7 \_\_\_\_\_ minutes \_\_\_\_\_ 15 \_\_\_\_\_ seconds

Next whole minute interval \_\_\_\_\_ 8 \_\_\_\_\_ minutes

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

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0
---	---	---	---

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

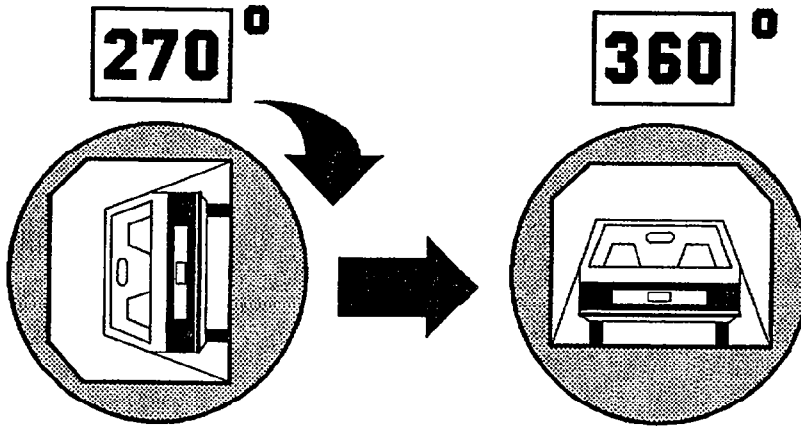
IV. SOLVENT SPILLAGE LOCATION(S):

NONE

Table 6  
 STATIC ROLLOVER DATA SHEET (cont.)

TEST PHASE:

Vehicle NHTSA ID No.:



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time \_\_\_\_\_ 2 \_\_\_\_\_ minutes \_\_\_\_\_ 05 \_\_\_\_\_ seconds  
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + \_\_\_\_\_ 5 \_\_\_\_\_ minutes \_\_\_\_\_ 00 \_\_\_\_\_ seconds

TOTAL \_\_\_\_\_ 7 \_\_\_\_\_ minutes \_\_\_\_\_ 05 \_\_\_\_\_ seconds

Next whole minute interval \_\_\_\_\_ 8 \_\_\_\_\_ minutes

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

5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0
---	---	---	---

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

IV. SOLVENT SPILLAGE LOCATION(S):

NONE

VEHICLE PHOTOGRAPHS

Appendix A  
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Figure A-1 PRE-TEST FRONT VIEW

A-3

8118-3

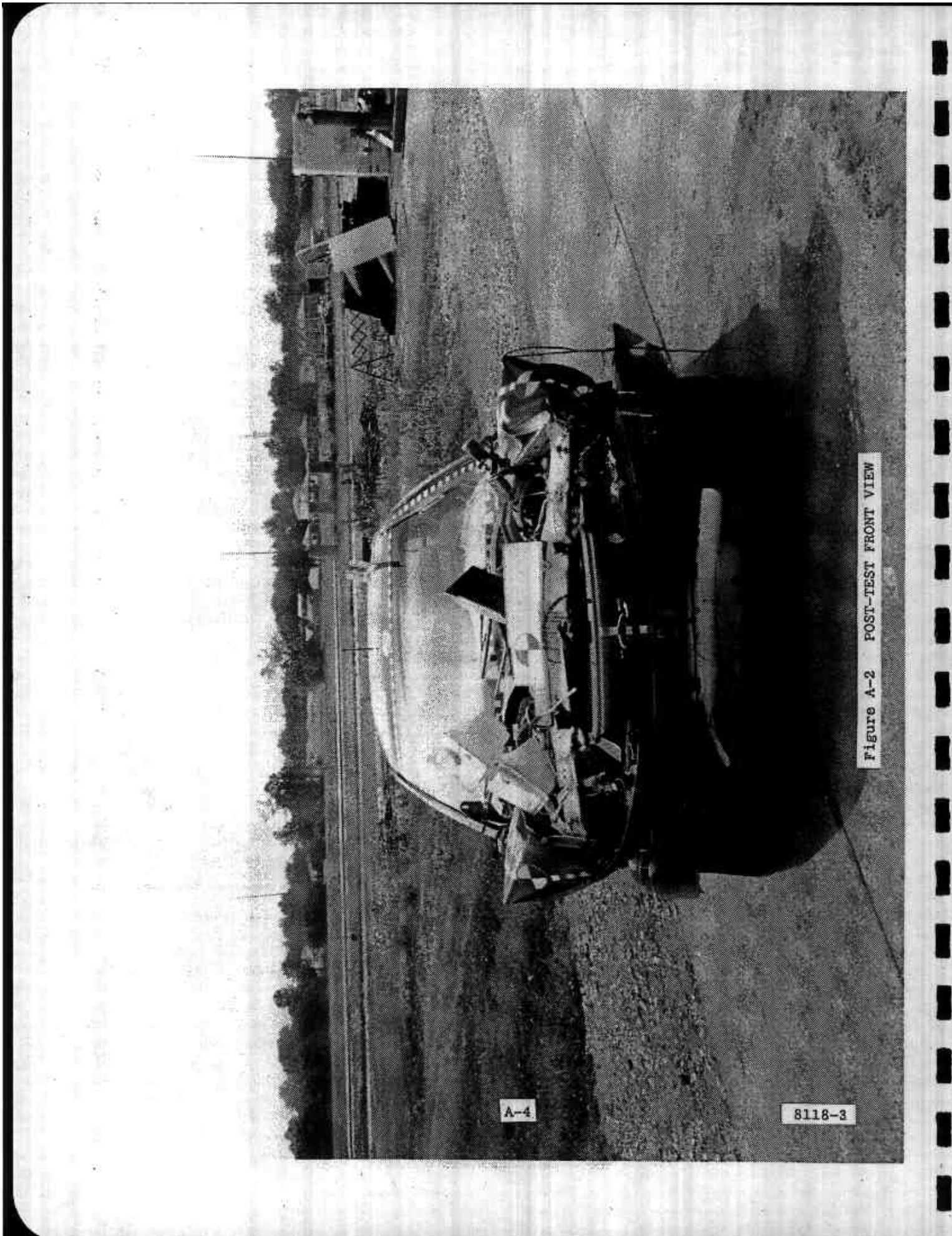


Figure A-2 POST-TEST FRONT VIEW

A-4

8118-3



Figure A-3 PRE-TEST FRONT RIGHT THREE QUARTER VIEW

A-5

8118-3



Figure A-4 POST-TEST FRONT RIGHT THREE QUARTER VIEW

A-6

8118-3

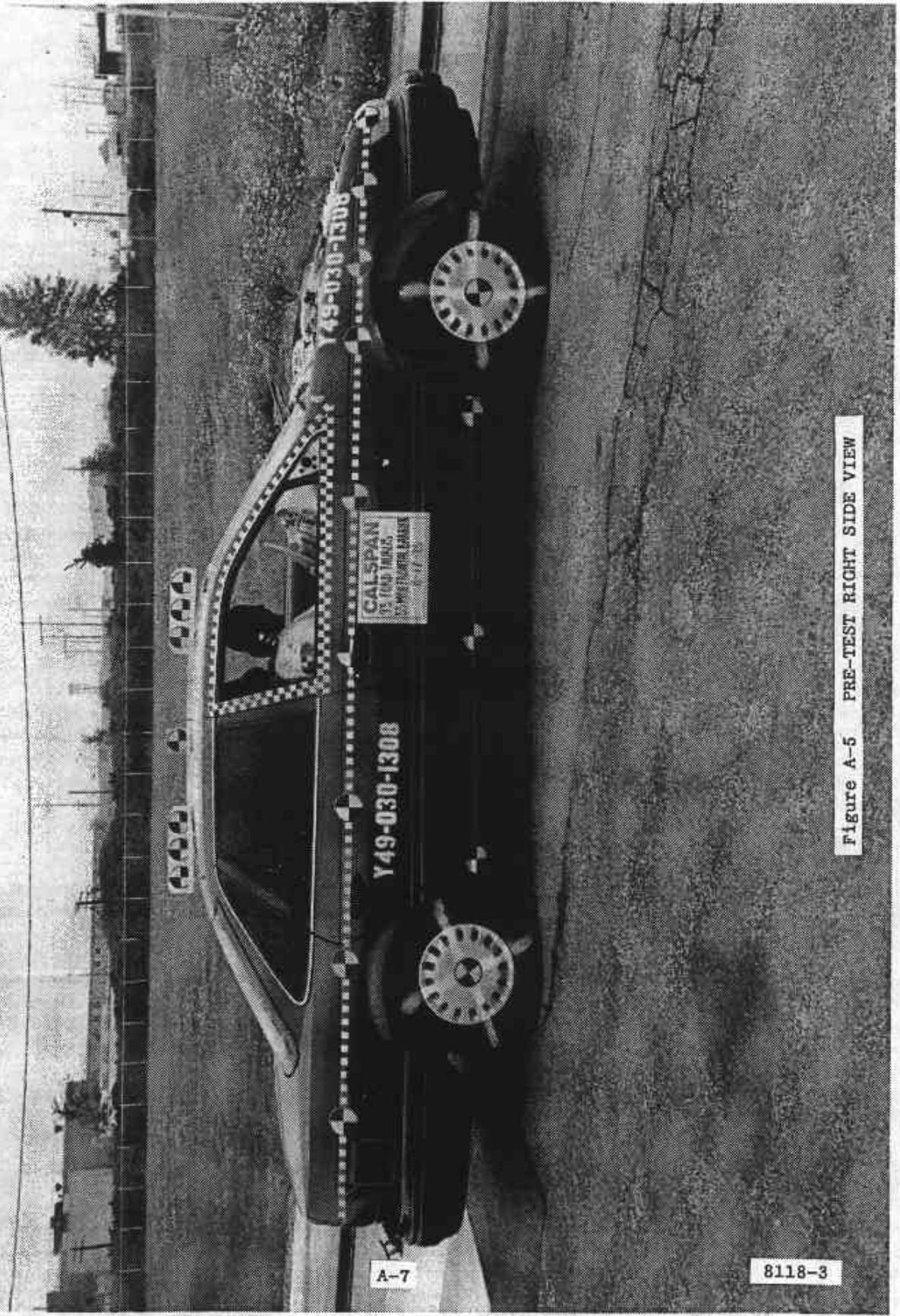


Figure A-5 PRE-TEST RIGHT SIDE VIEW

A-7

8118-3

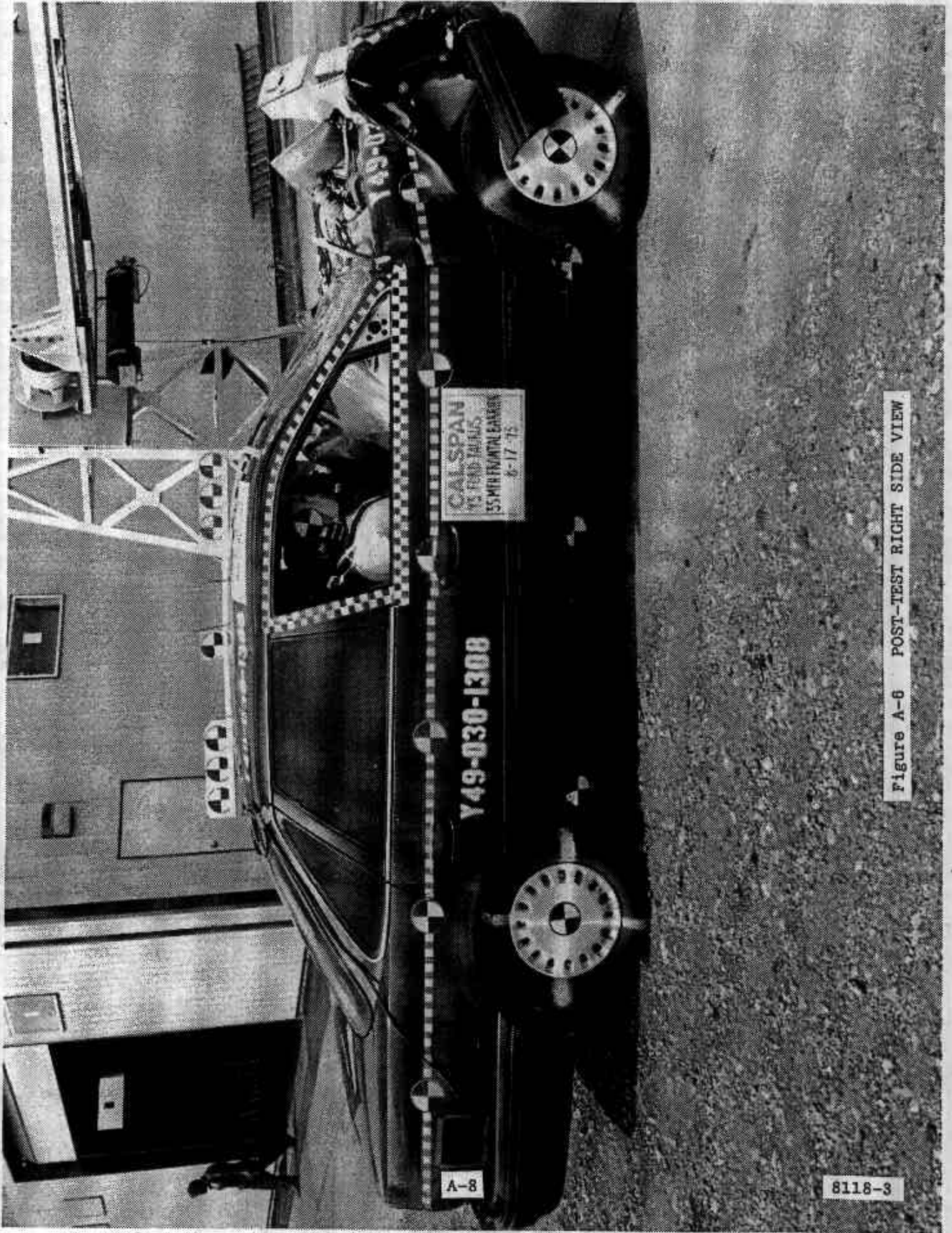


Figure A-6 POST-TEST RIGHT SIDE VIEW

A-8

8118-3



Figure A-7 PRE-TEST REAR RIGHT THREE QUARTER VIEW

A-9

8118-3



Figure A-8 POST-TEST REAR RIGHT THREE QUARTER VIEW

A-10

8118-3

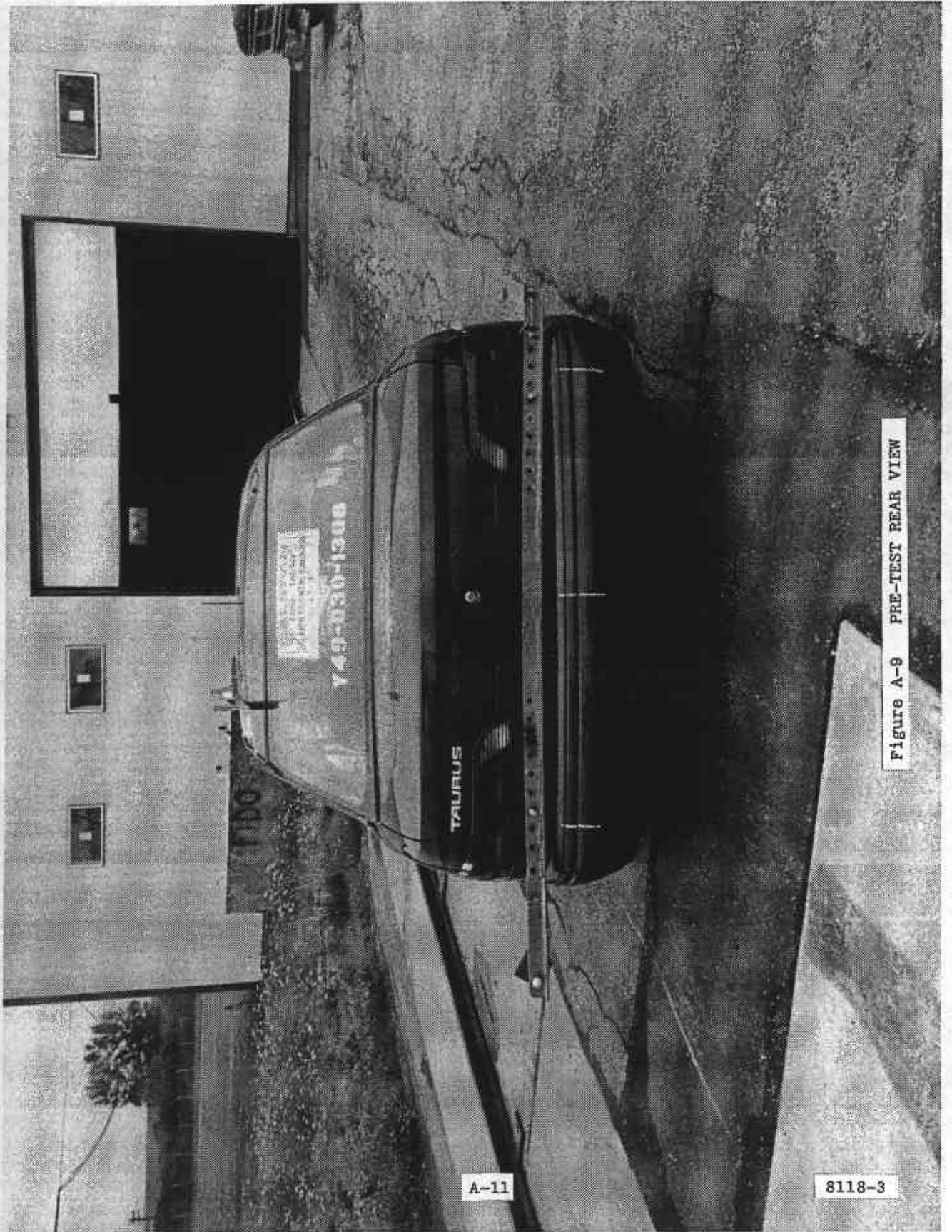


Figure A-9 PRE-TEST REAR VIEW

A-11

8118-3

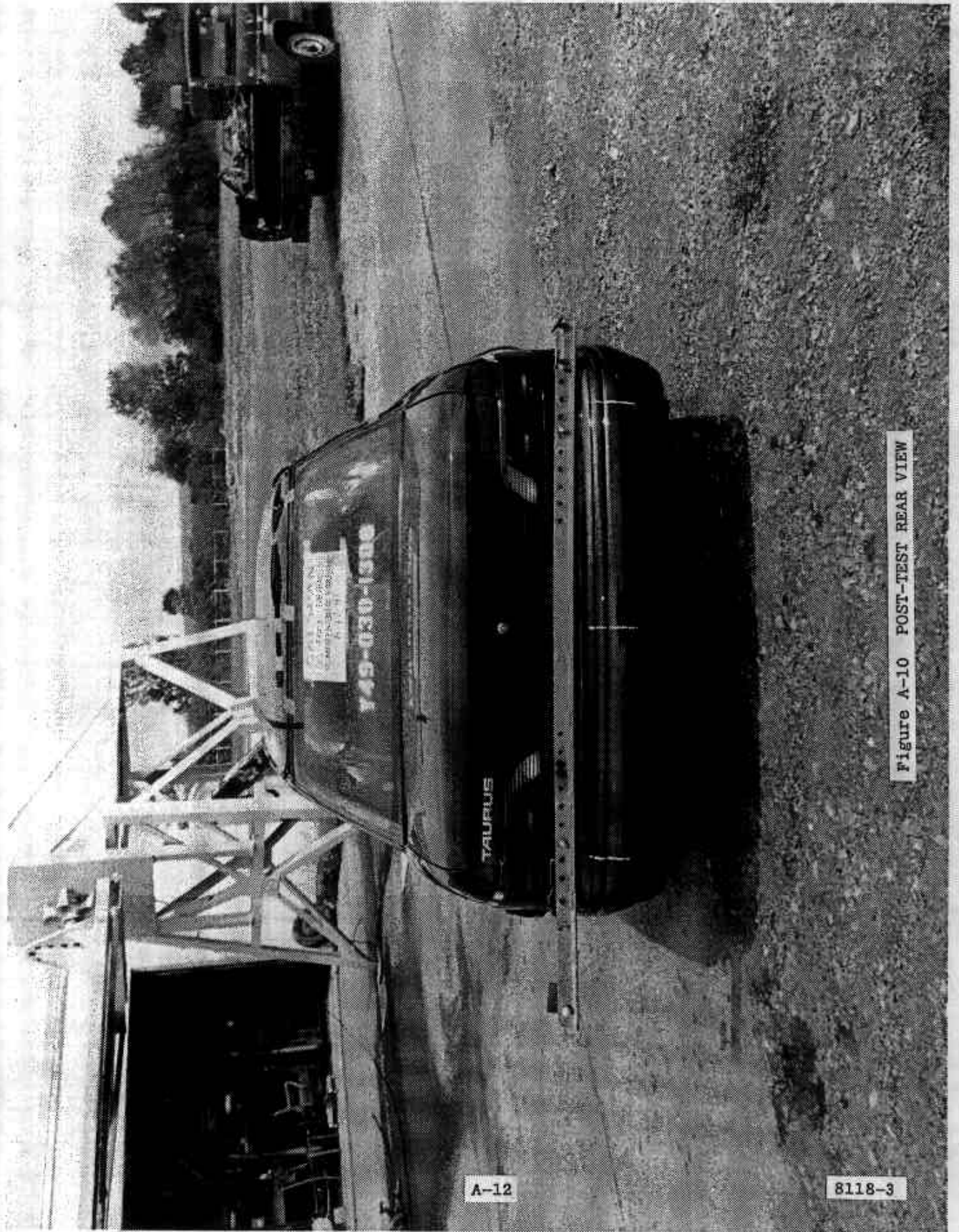


Figure A-10 POST-TEST REAR VIEW

A-12

8118-3

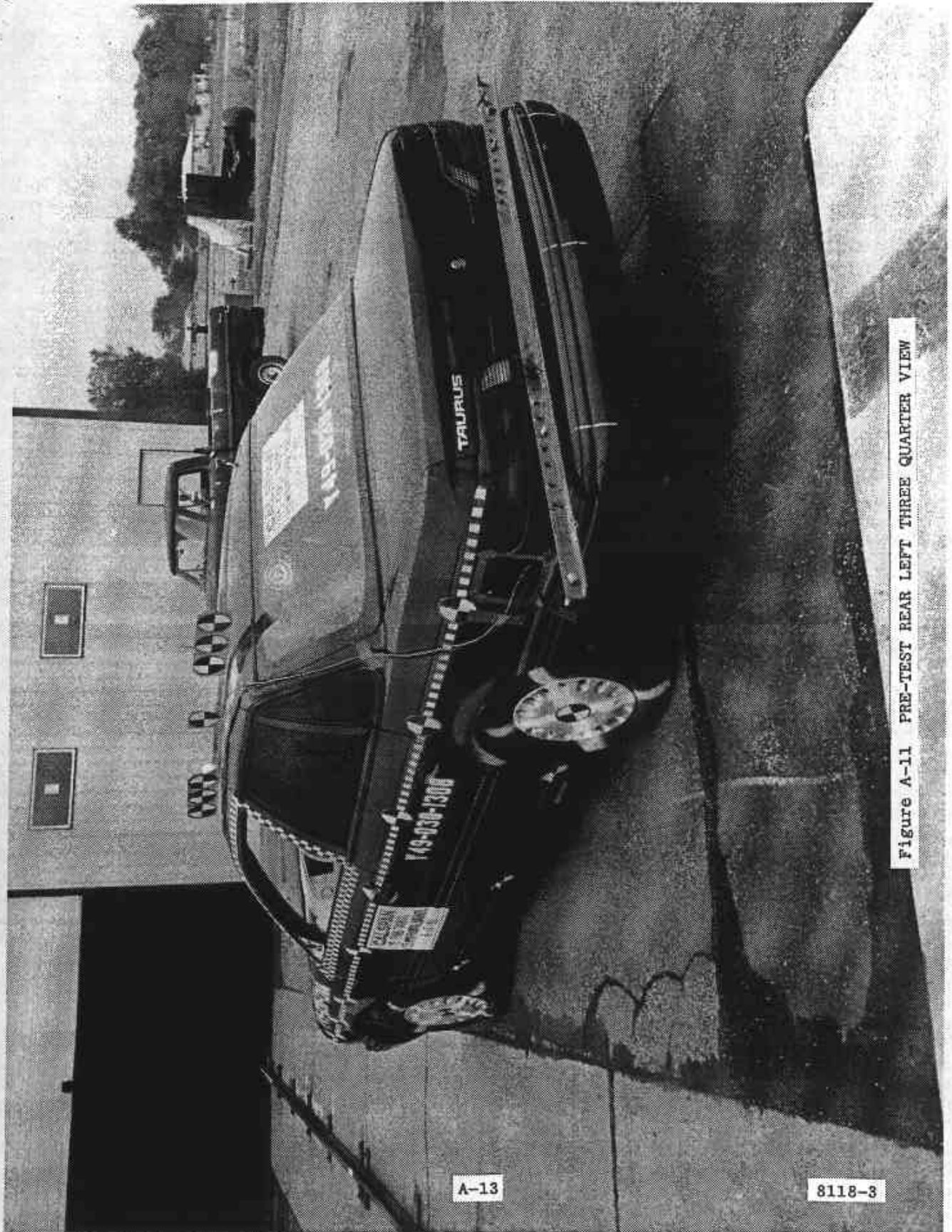


Figure A-11 PRE-TEST REAR LEFT THREE QUARTER VIEW

A-13

8118-3

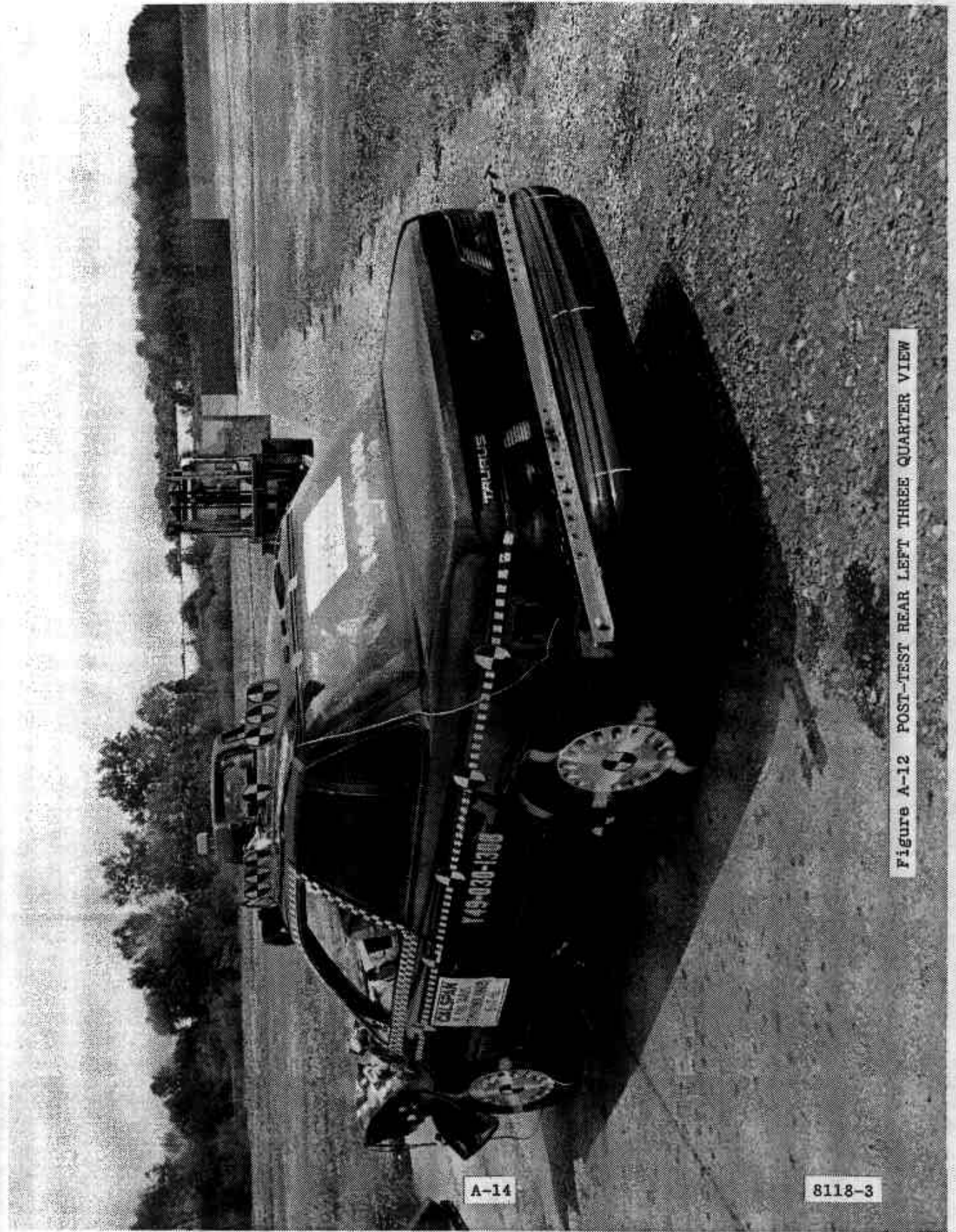


Figure A-12 POST-TEST REAR LEFT THREE QUARTER VIEW

A-14

8118-3

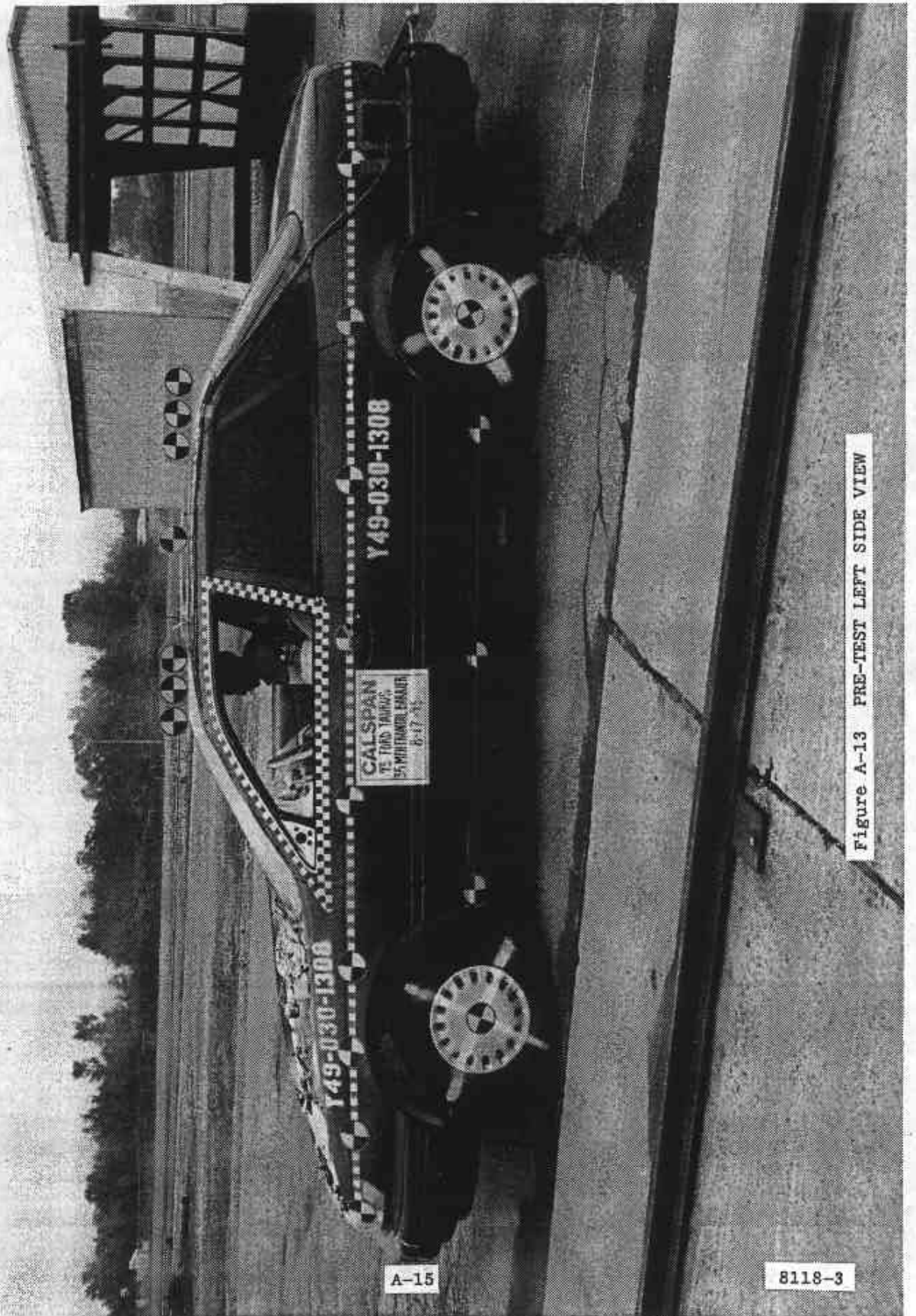


Figure A-13 PRE-TEST LEFT SIDE VIEW

A-15

8118-3



Figure A-14 POST-TEST LEFT SIDE VIEW

A-16

8118-3

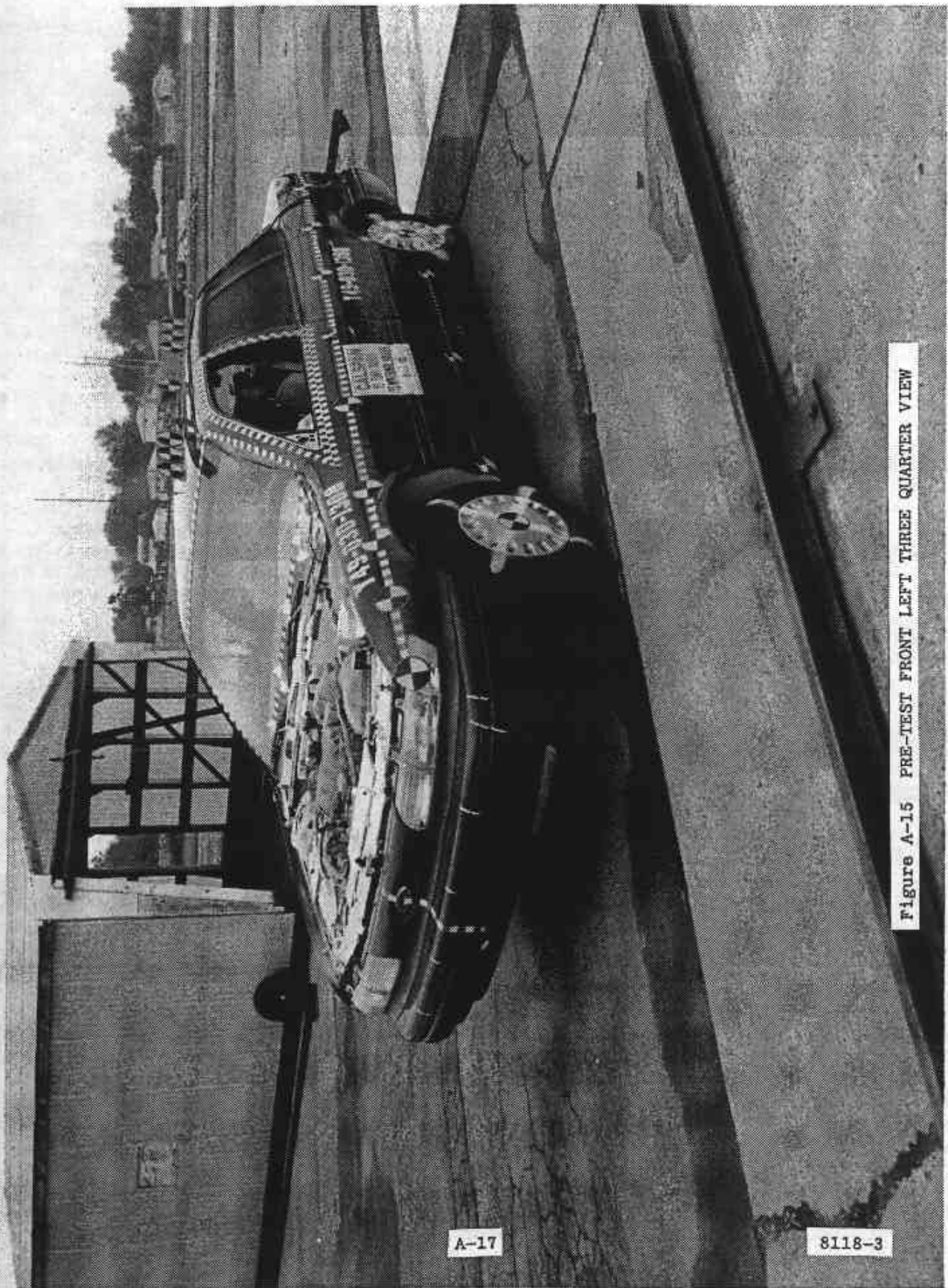


Figure A-15 PRE-TEST FRONT LEFT THREE QUARTER VIEW

A-17

8118-3



Figure A-16 POST-TEST FRONT LEFT THREE QUARTER VIEW

A-18

8118-3

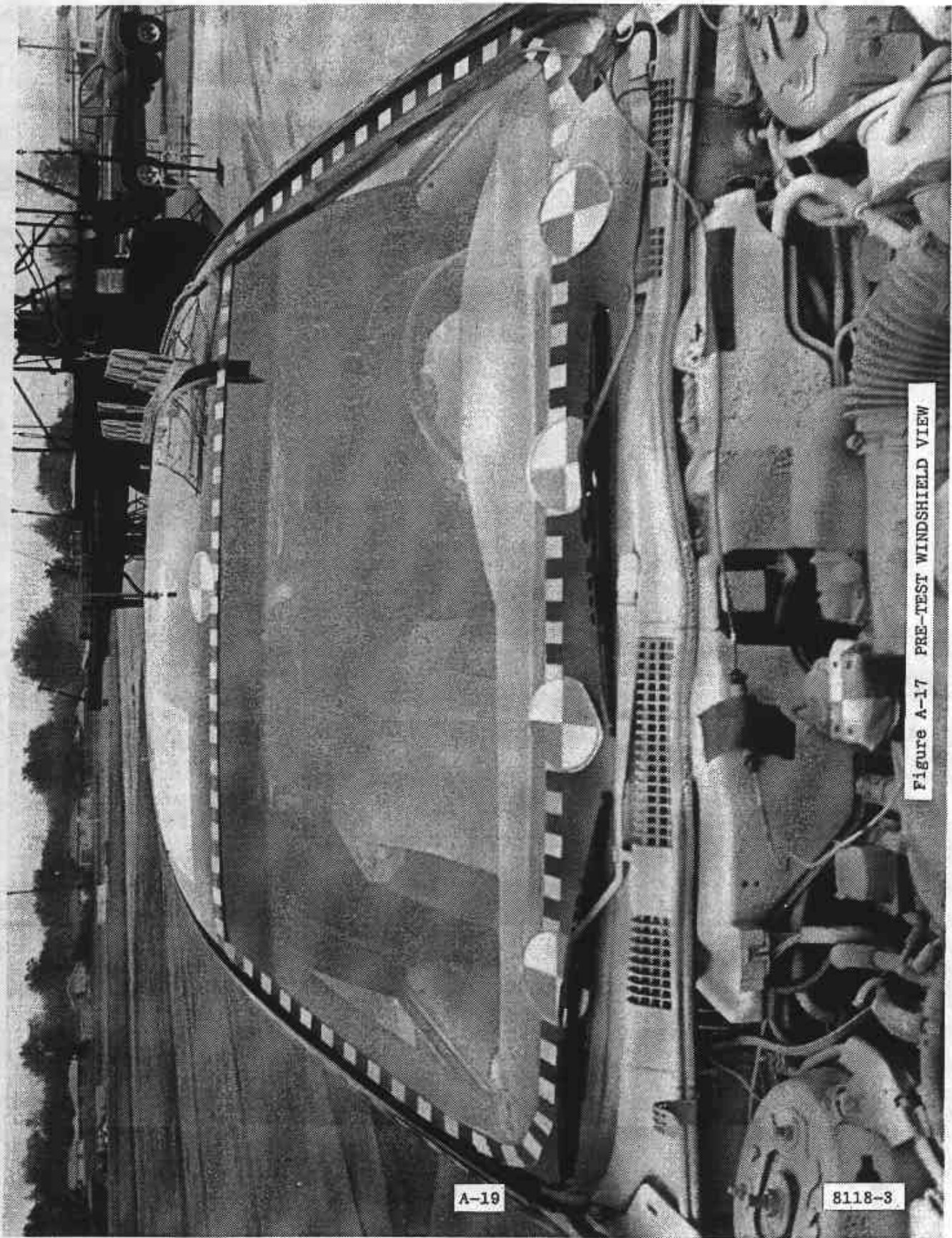


Figure A-17 PRE-TEST WINDSHIELD VIEW

A-19

8118-3

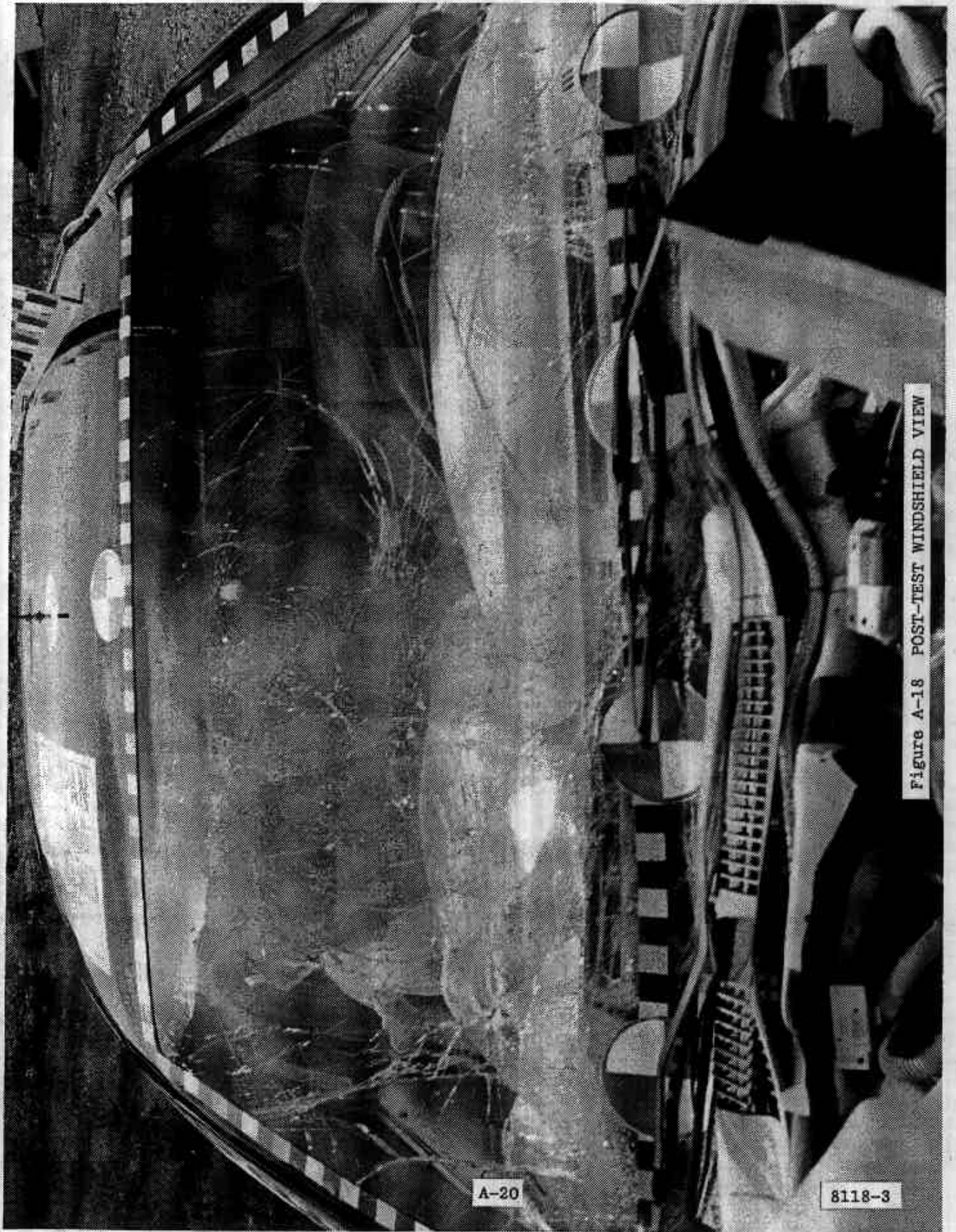


Figure A-18 POST-TEST WINDSHIELD VIEW

A-20

8118-3



Figure A-19 PRE-TEST OVERHEAD VIEW

A-21

8118-3



Figure A-20 POST-TEST OVERHEAD VIEW

A-22

8118-3

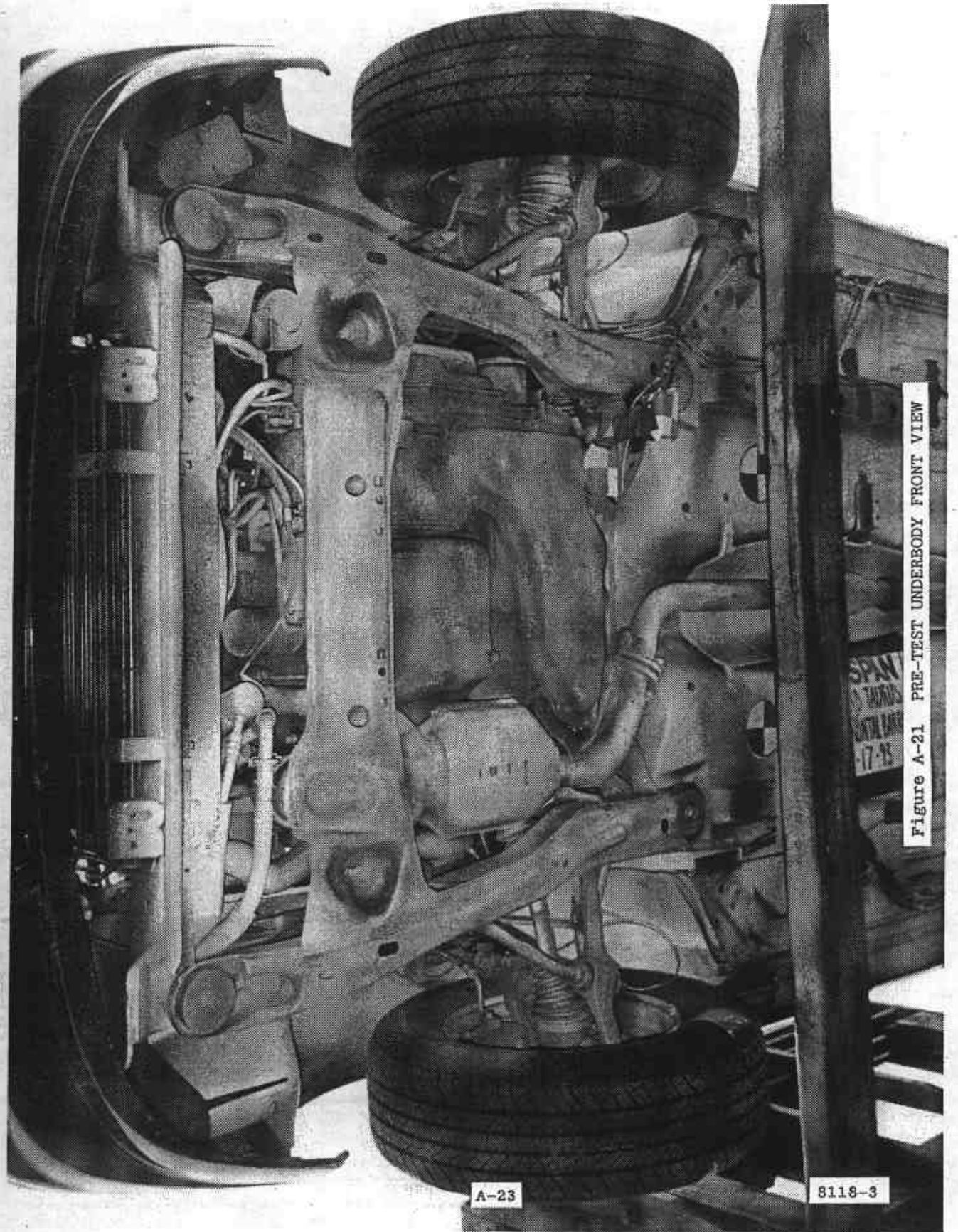


Figure A-21 PRE-TEST UNDERBODY FRONT VIEW

A-23

8118-3

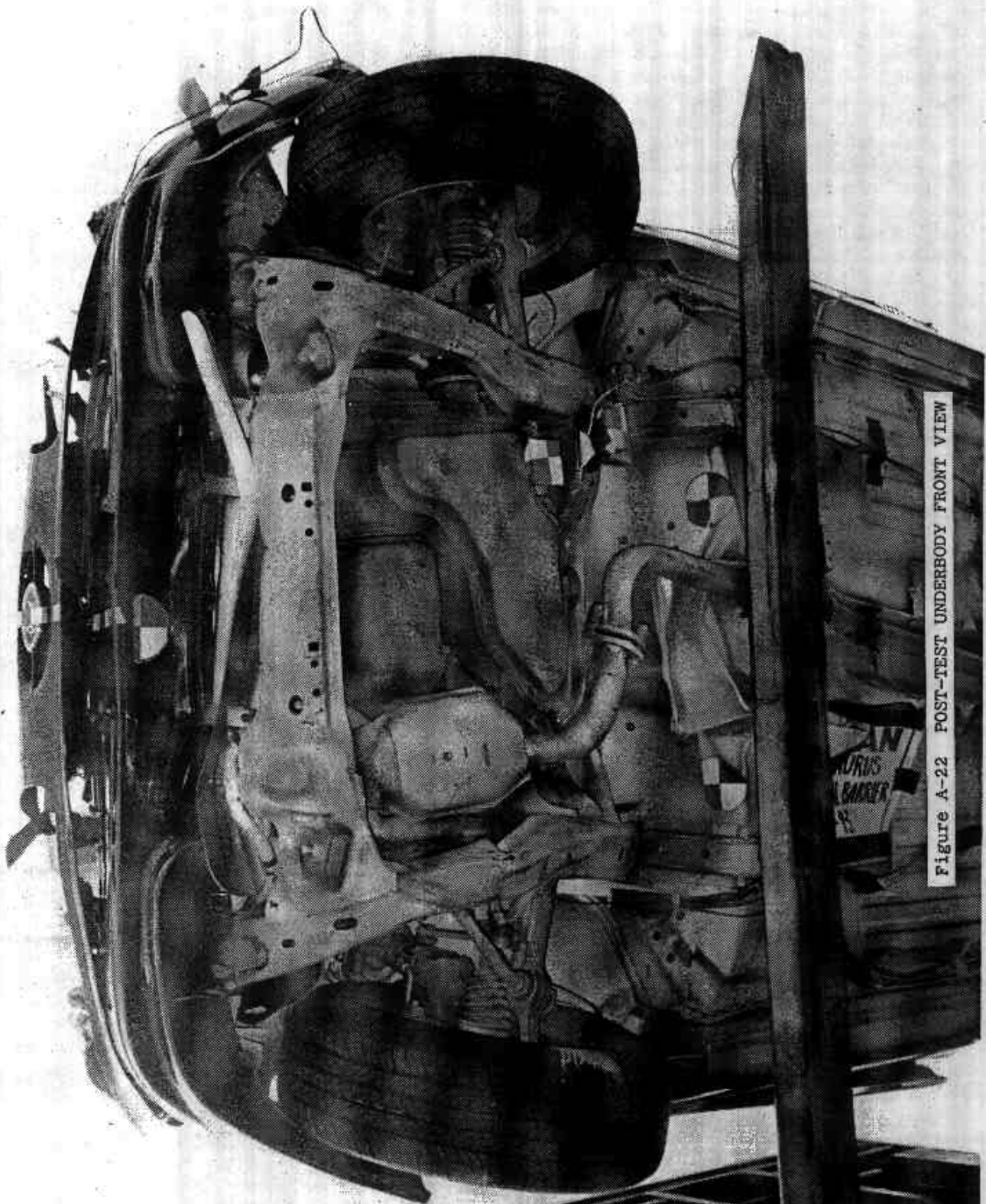


Figure A-22 POST-TEST UNDERBODY FRONT VIEW

A-24

8118-3

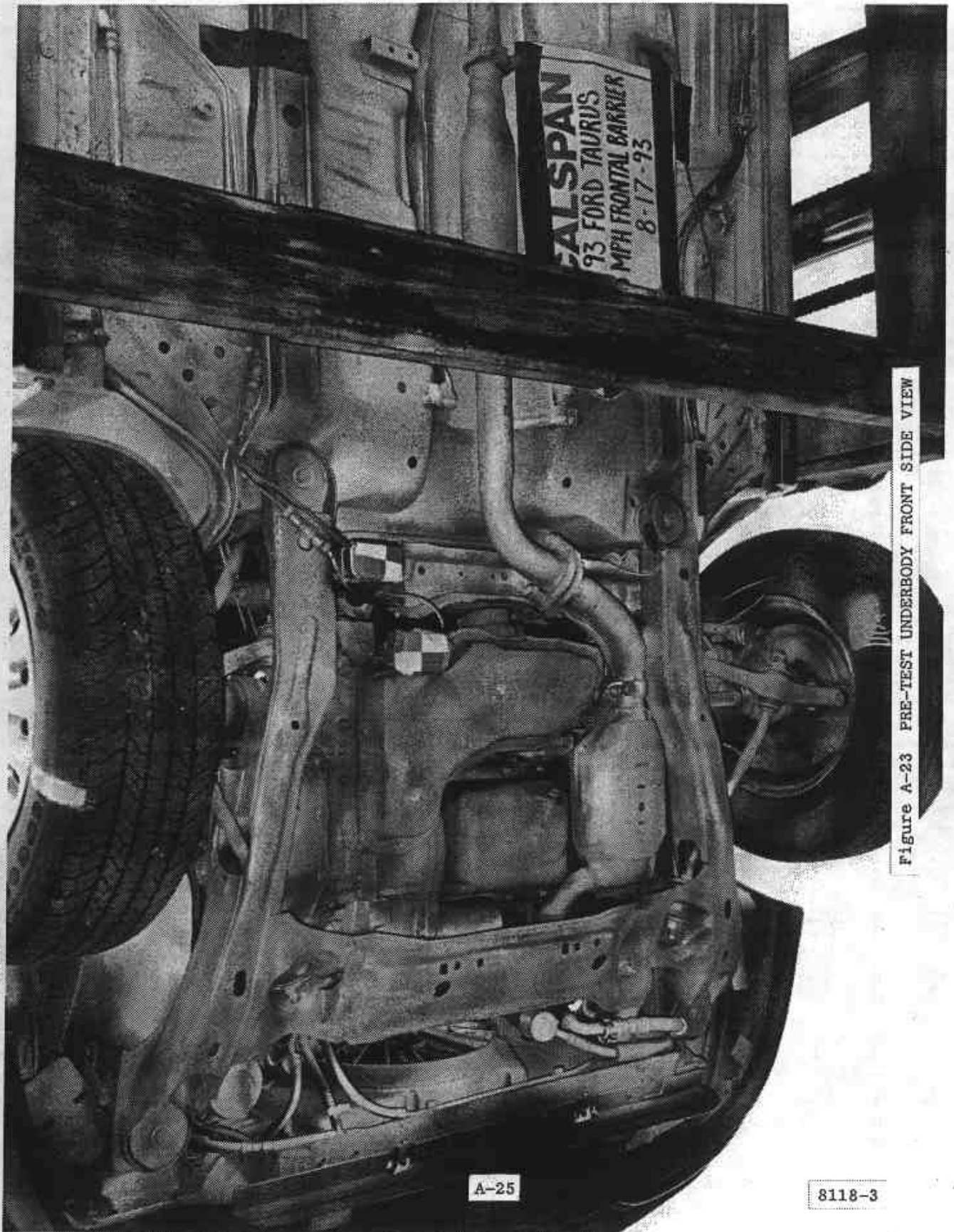


Figure A-23 PRE-TEST UNDERBODY FRONT SIDE VIEW

A-25

8118-3

Figure A-24 POST-TEST UNDERBODY FRONT SIDE VIEW (NOT AVAILABLE)

SIDE VIEW IS NOT AVAILABLE

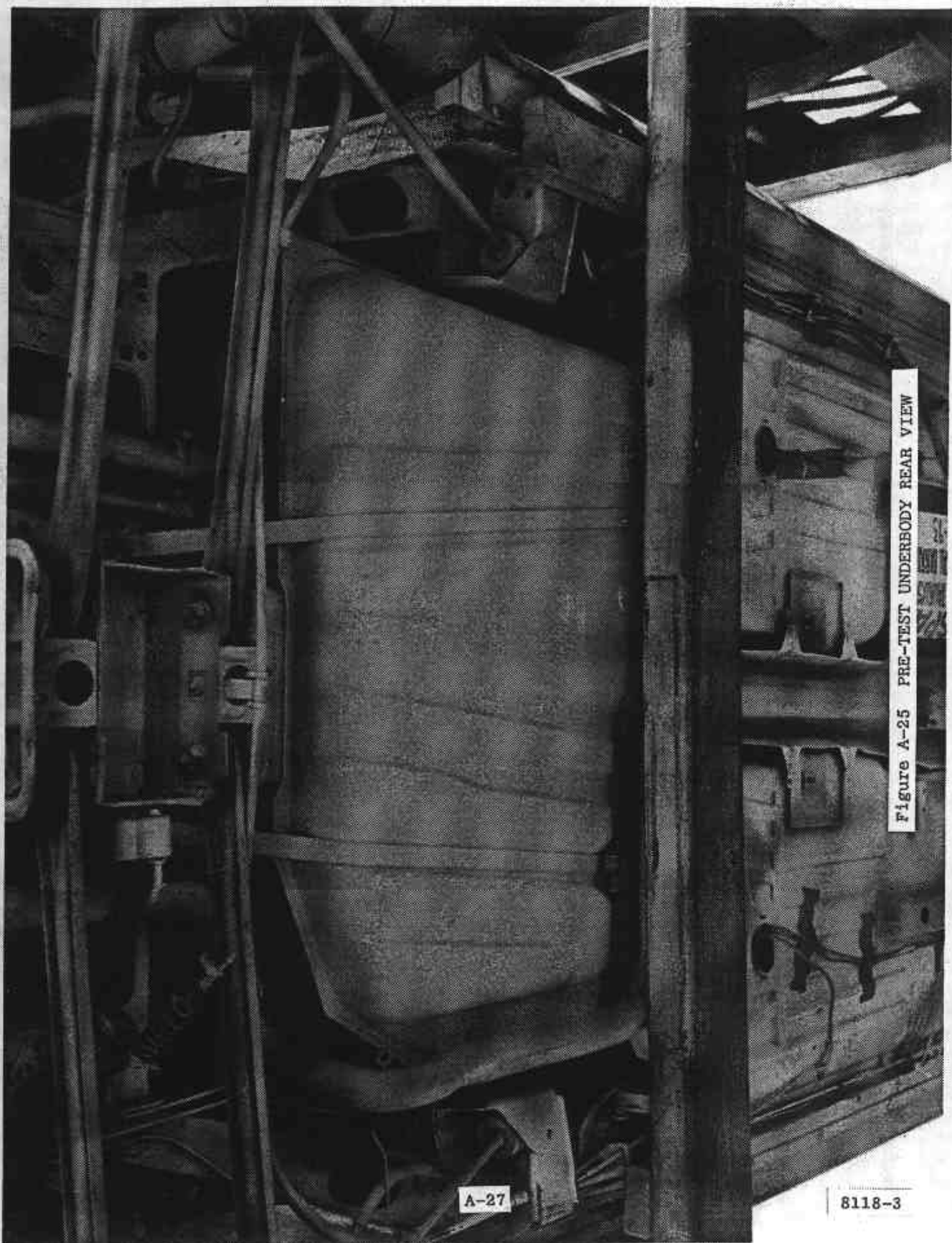


Figure A-25 PRE-TEST UNDERBODY REAR VIEW

A-27

8118-3

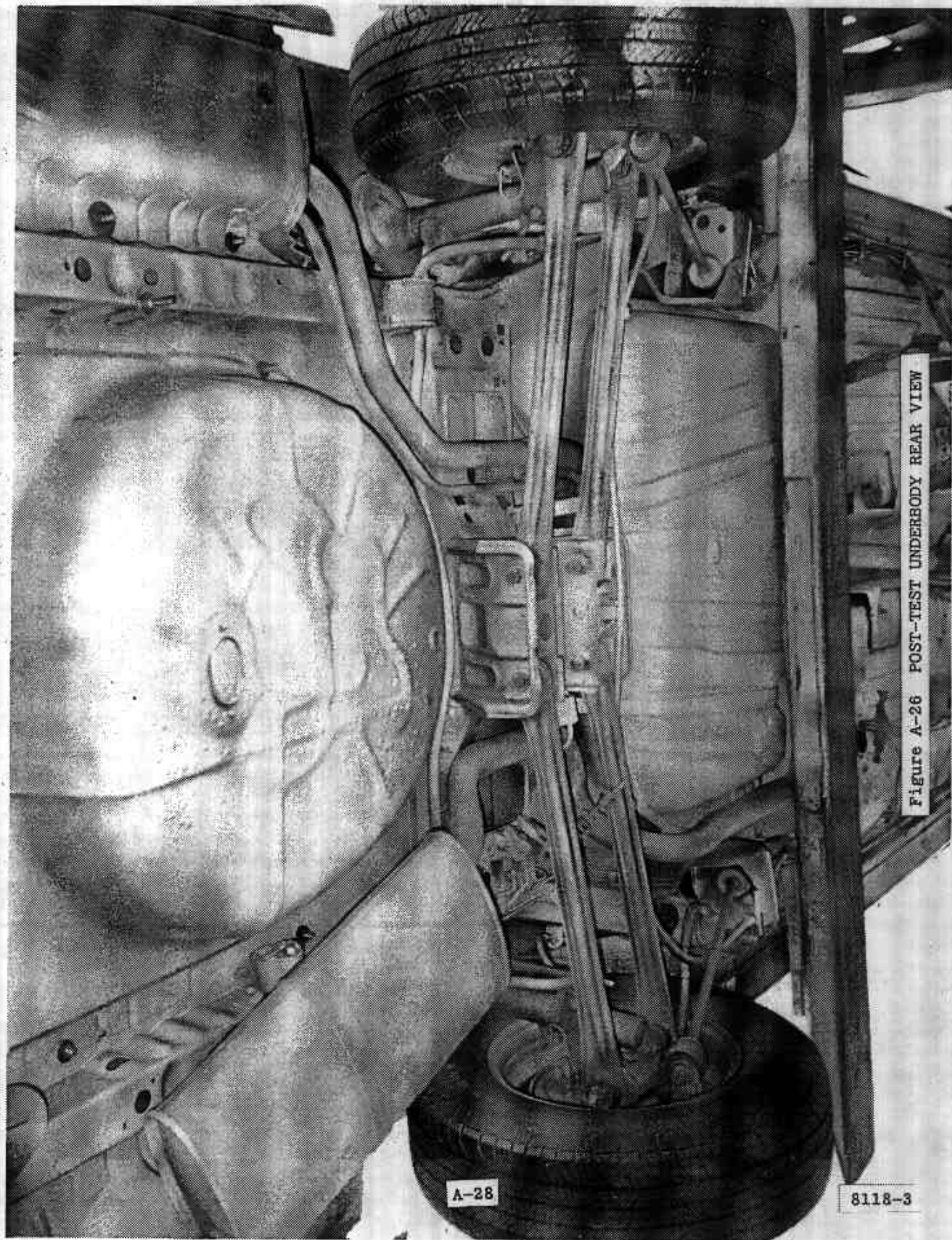


Figure A-26 POST-TEST UNDERBODY REAR VIEW

A-28

8118-3

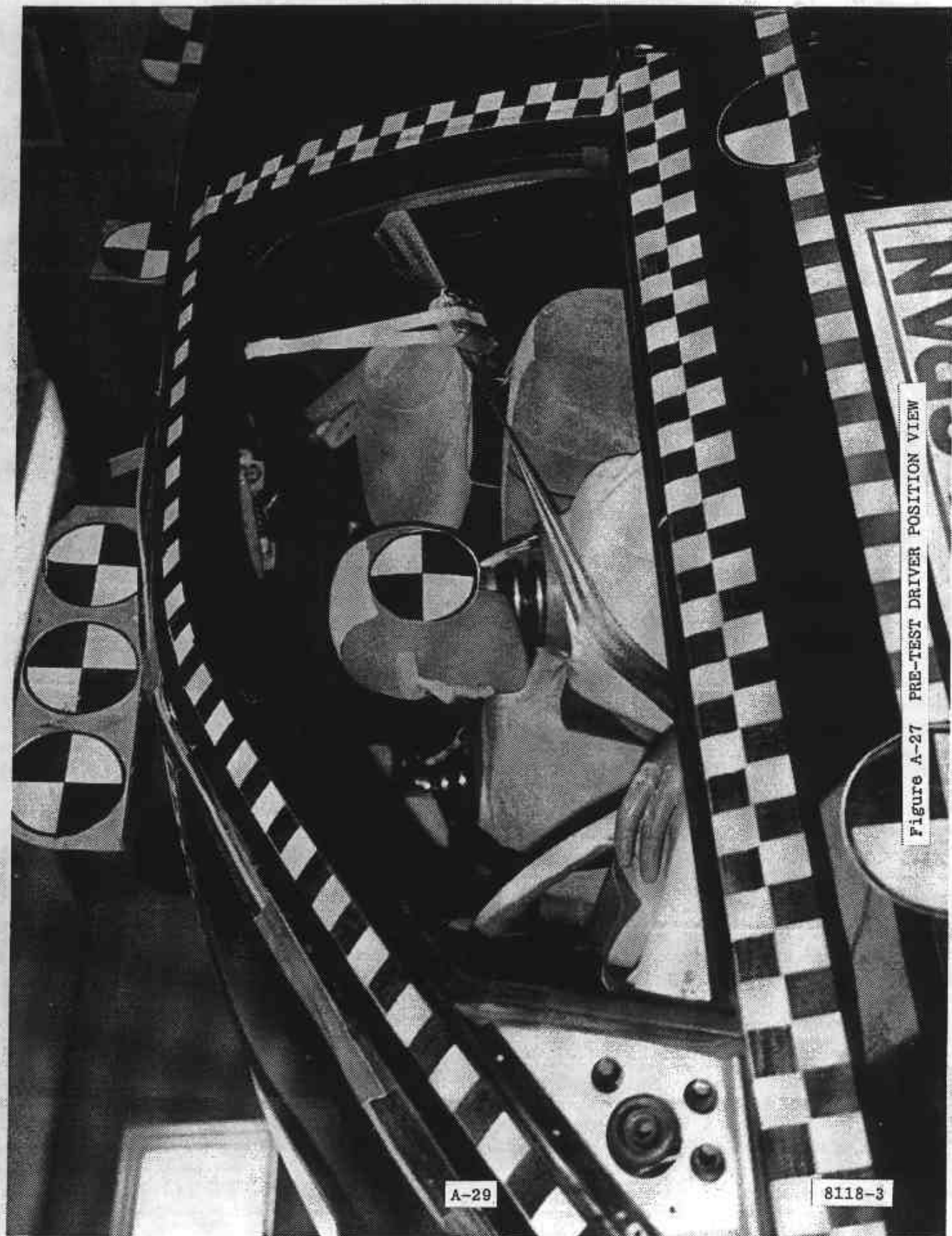


Figure A-27 PRE-TEST DRIVER POSITION VIEW

A-29

8118-3



Figure A-28 POST-TEST DRIVER POSITION VIEW

A-30

8118-3

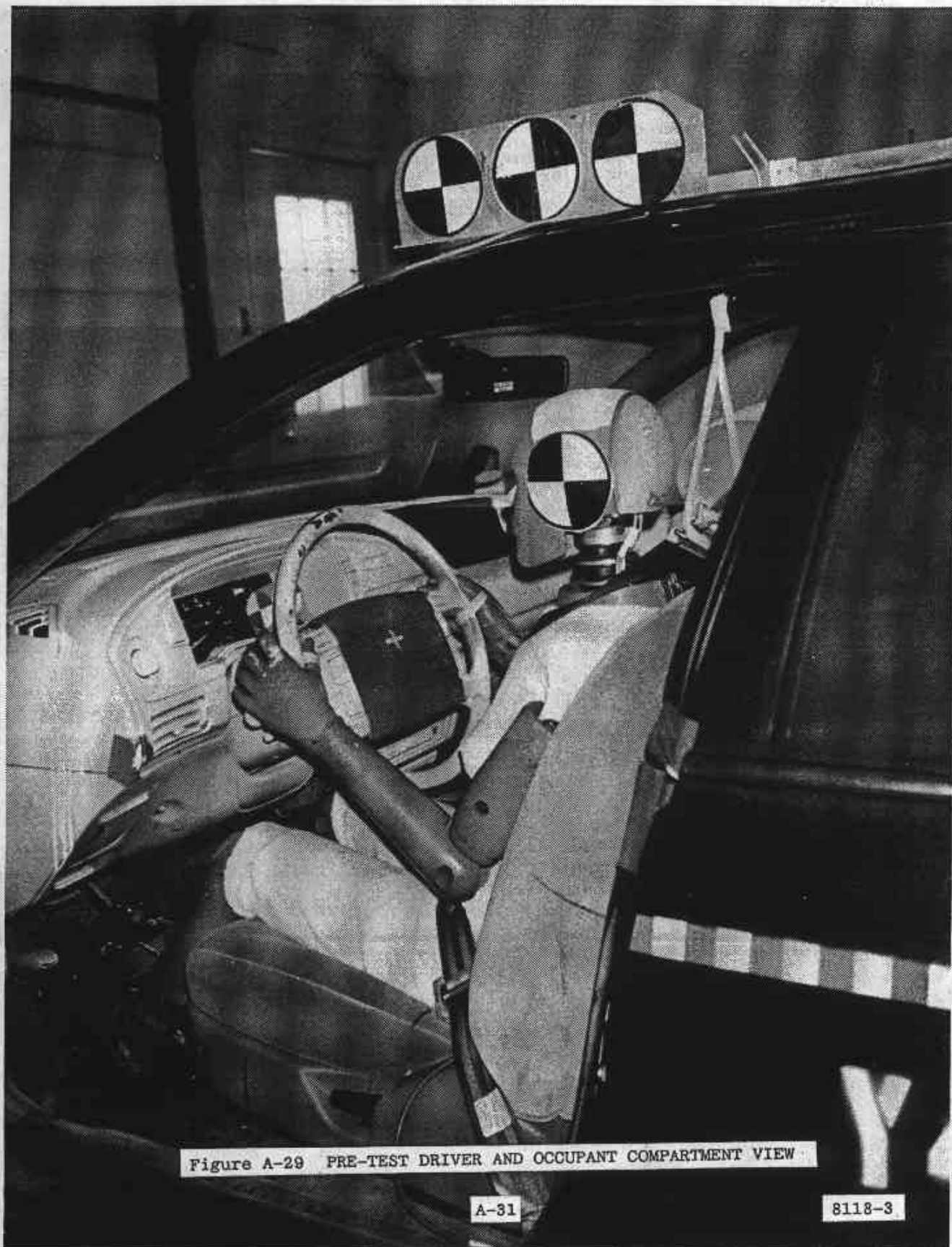


Figure A-29 PRE-TEST DRIVER AND OCCUPANT COMPARTMENT VIEW

A-31

8118-3



Figure A-30 POST-TEST DRIVER AND OCCUPANT COMPARTMENT VIEW

A-32

8118-3



Figure A-31 PRE-TEST PASSENGER POSITION VIEW

A-33

8118-3



Figure A-32 POST TEST PASSENGER POSITION VIEW

A-34

8118-3



Figure A-33 PRE-TEST PASSENGER AND OCCUPANT COMPARTMENT VIEW

A-35

8118-3

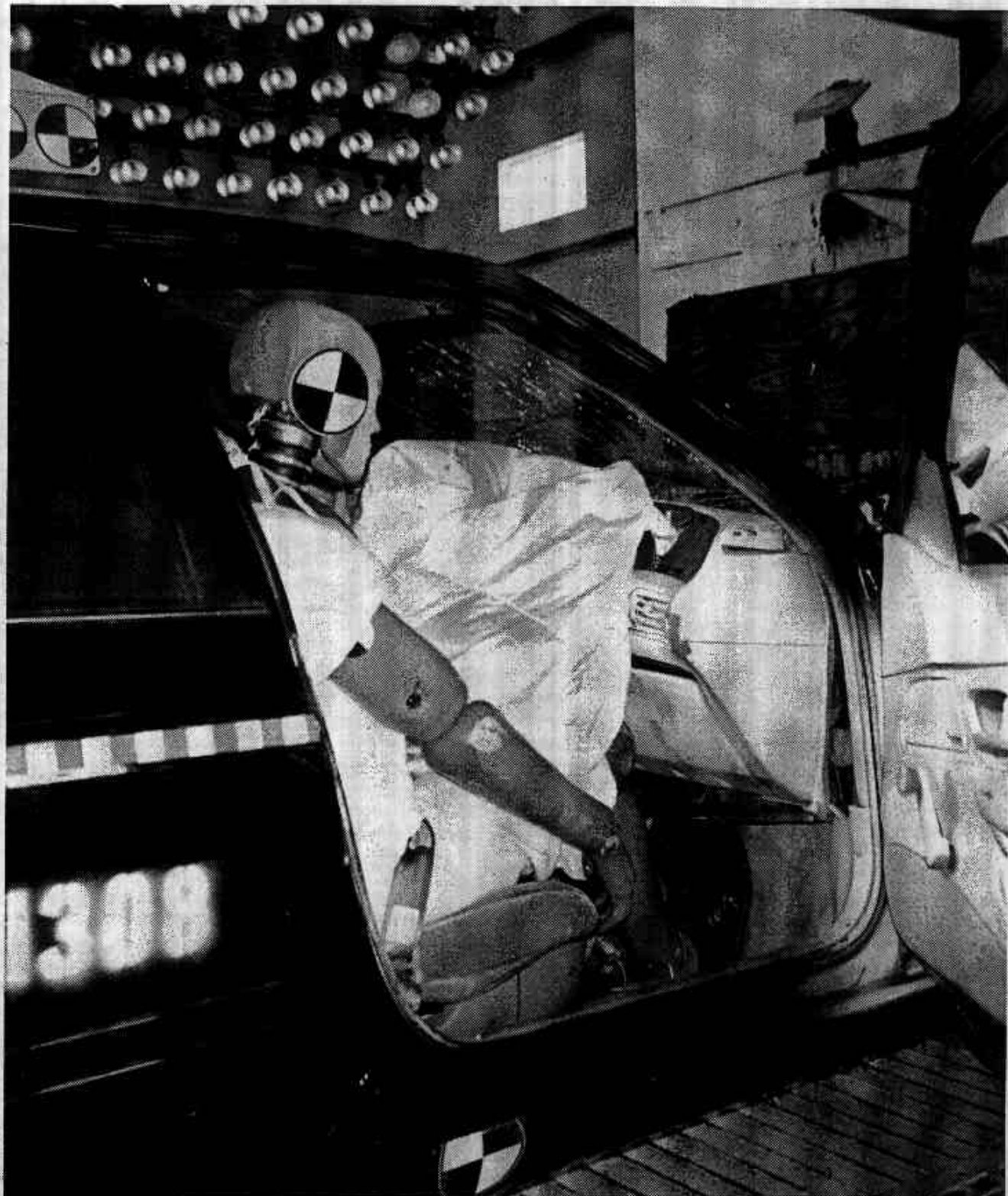


Figure A-34 POST-TEST PASSENGER AND OCCUPANT COMPARTMENT VIEW

A-36

8118-3

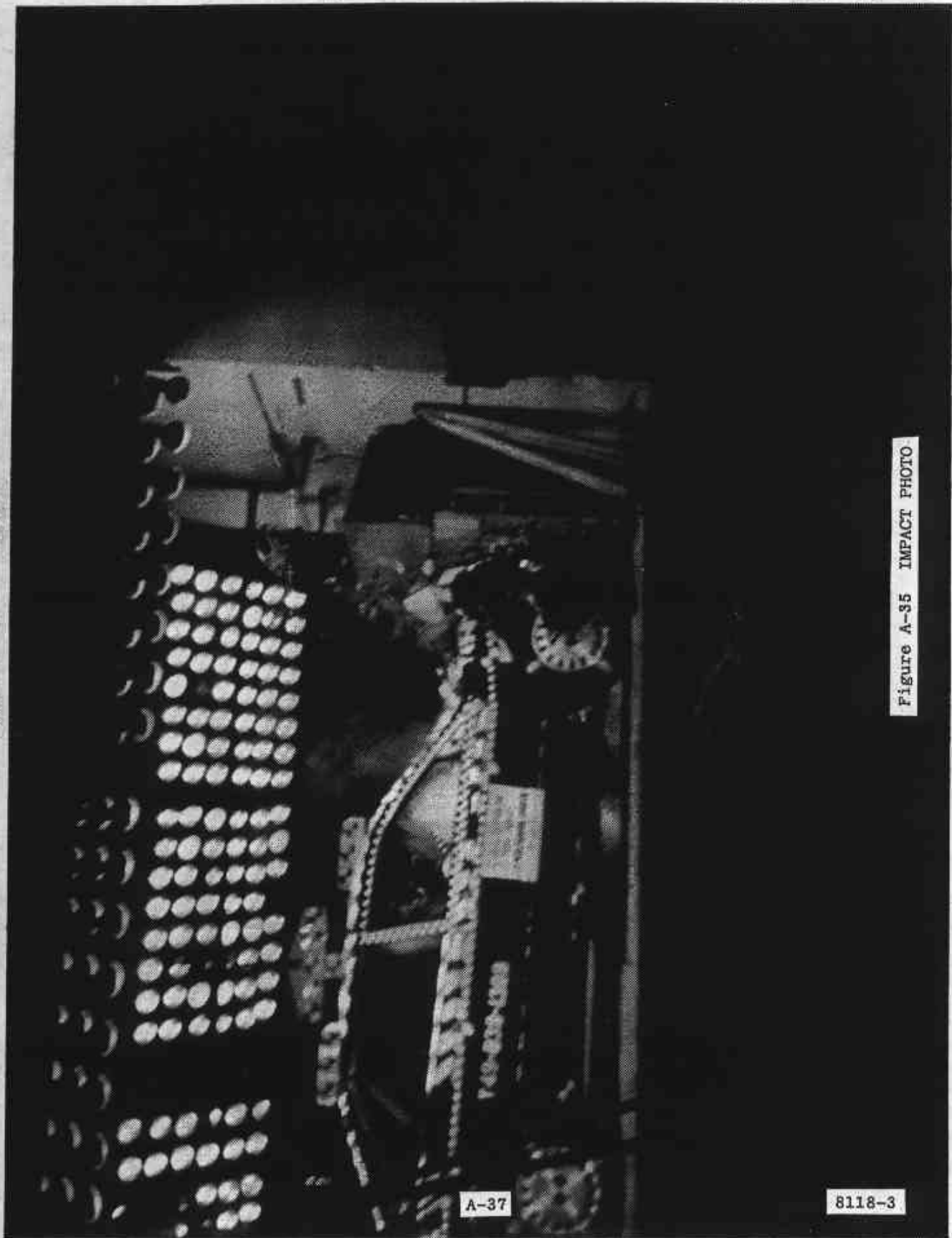


Figure A-35 IMPACT PHOTO

A-37

8118-3

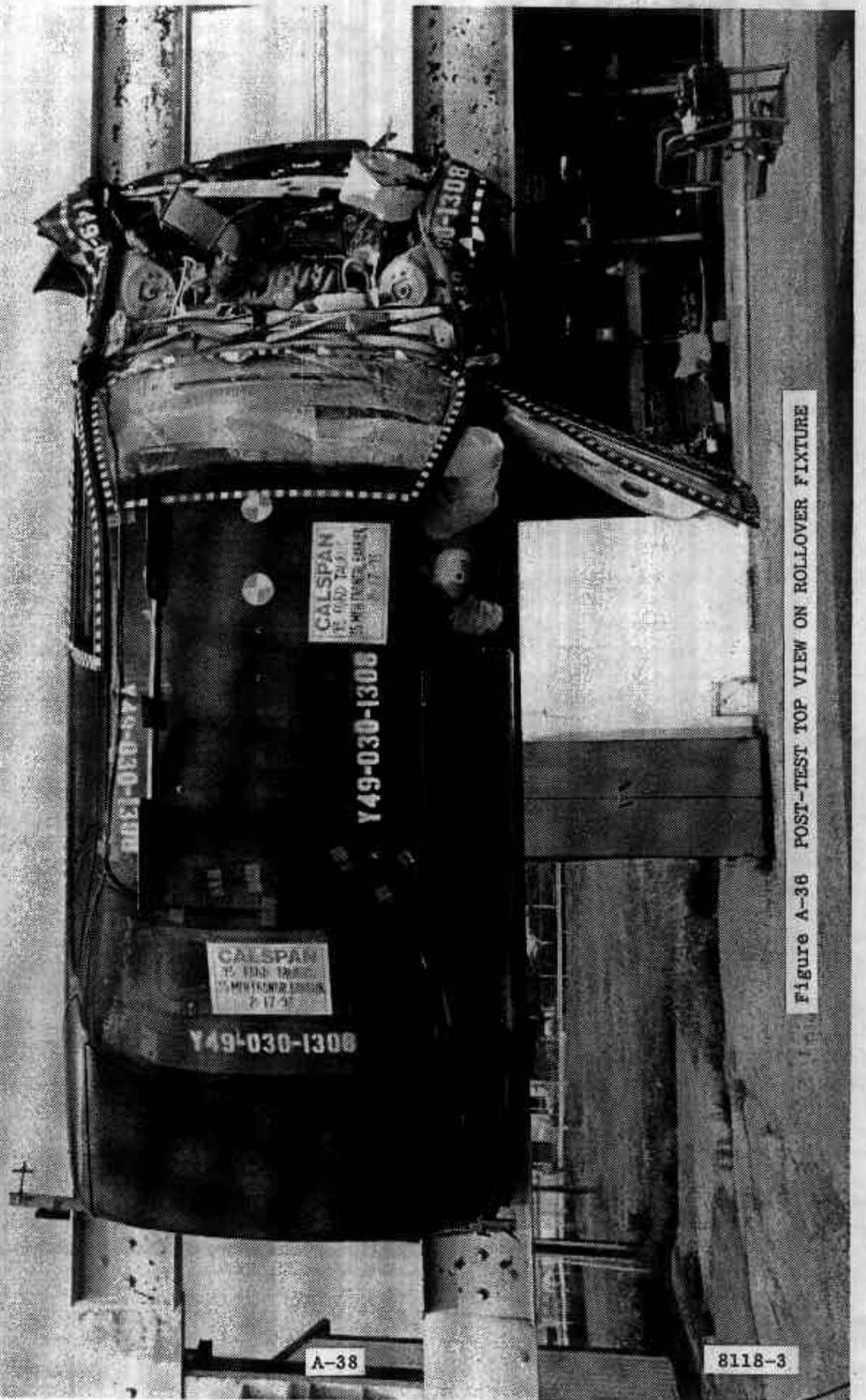


Figure A-36 POST-TEST TOP VIEW ON ROLLOVER FIXTURE

A-38

8118-3

Appendix B

BARRIER LOAD CELL, VEHICLE AND DUMMY RESPONSE DATA

TEST NO. Y49-3-1308

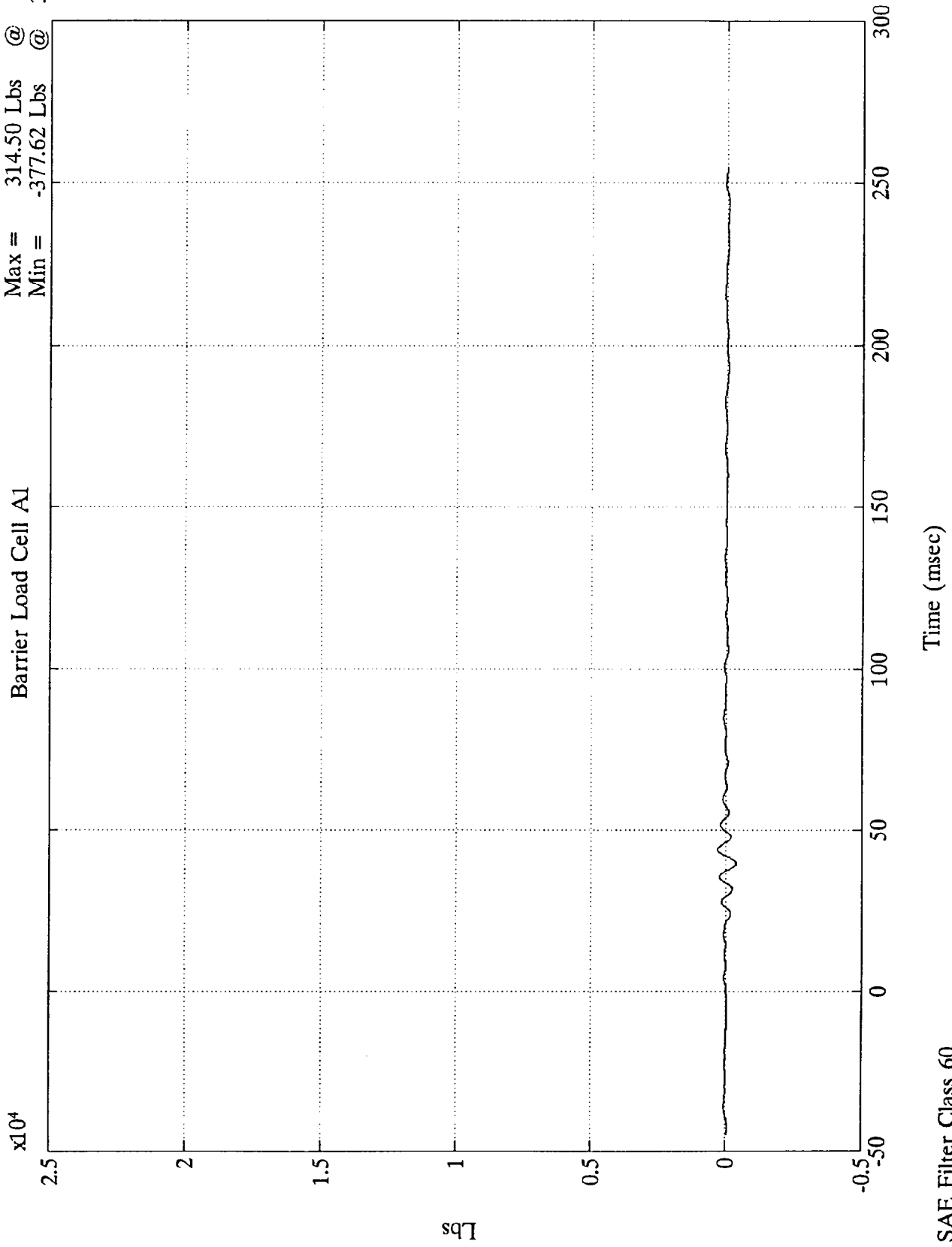
LOAD CELL BARRIER DATA

SAE FILTER CHANNEL CLASS

60

TSC Frontal Barrier Test #3 - Ford Taurus

Barrier Load Cell A1  
Max = 314.50 Lbs @ 43.91 msec  
Min = -377.62 Lbs @ 39.59 msec



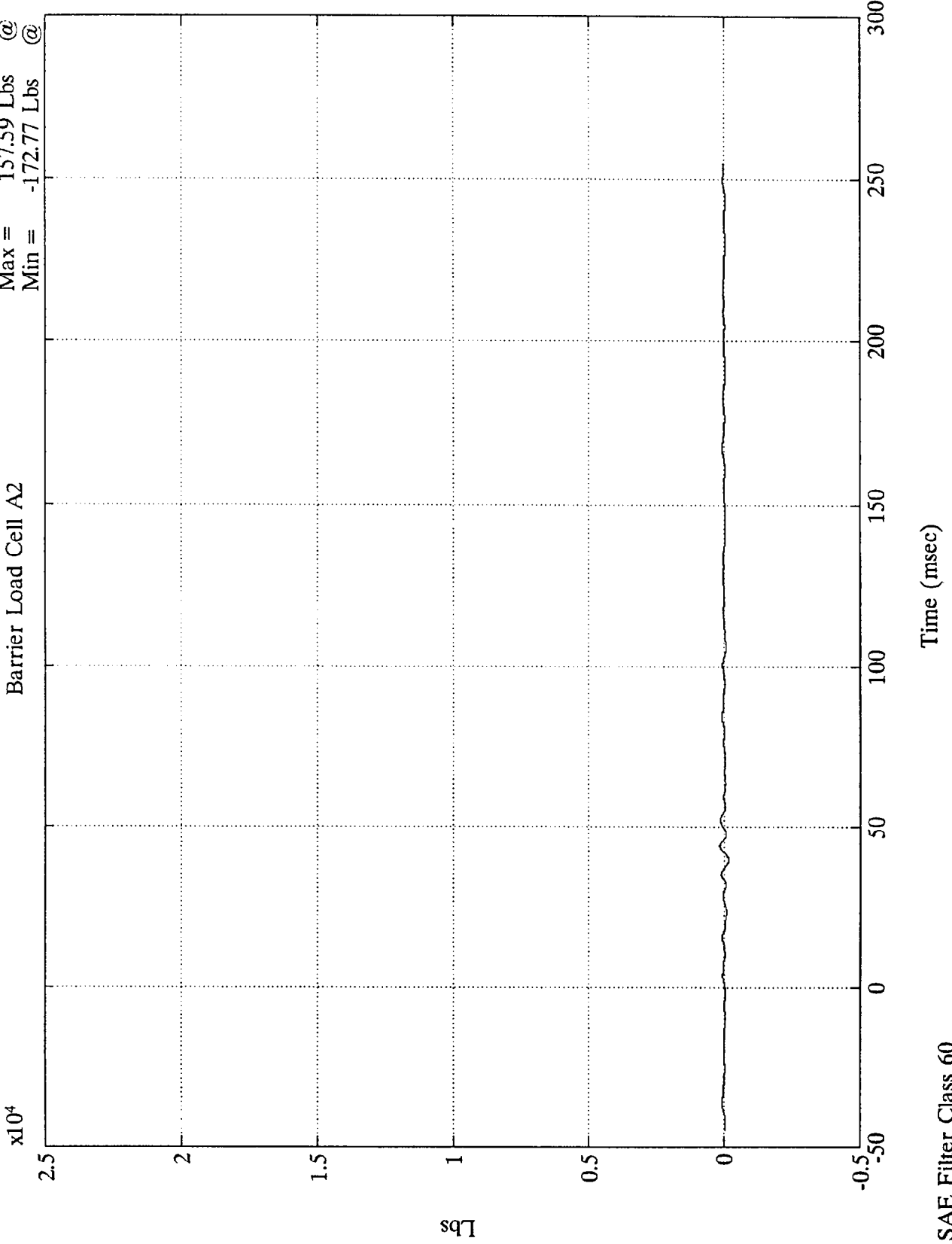
B-3

8118-3

SAE Filter Class 60

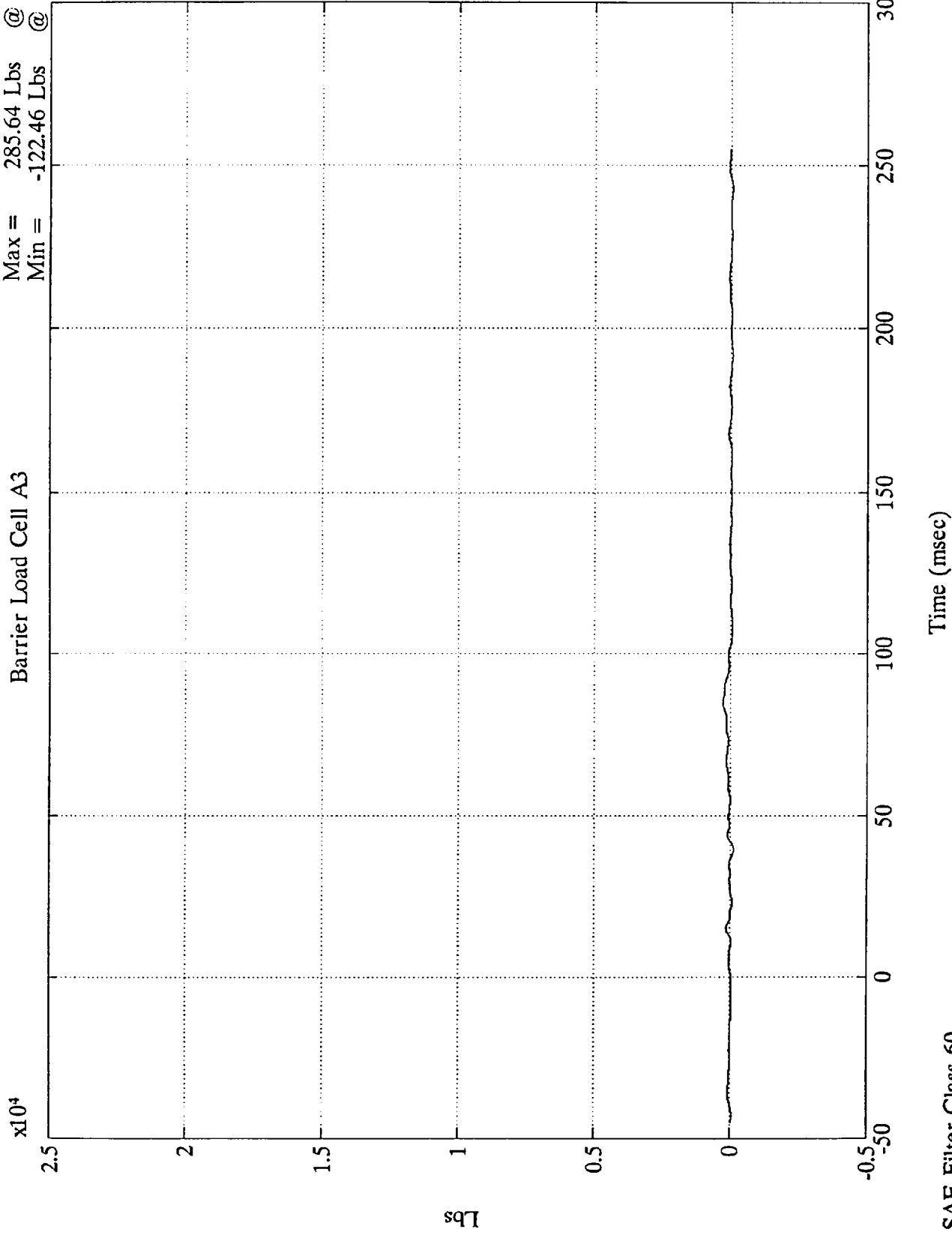
TSC Frontal Barrier Test #3 - Ford Taurus

Barrier Load Cell A2  
Max = 157.59 Lbs @ 43.79 msec  
Min = -172.77 Lbs @ 39.59 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Barrier Load Cell A3  
Max = 285.64 Lbs @ 84.95 msec  
Min = -122.46 Lbs @ 39.36 msec



5-B  
lbs

8118-3

SAE Filter Class 60

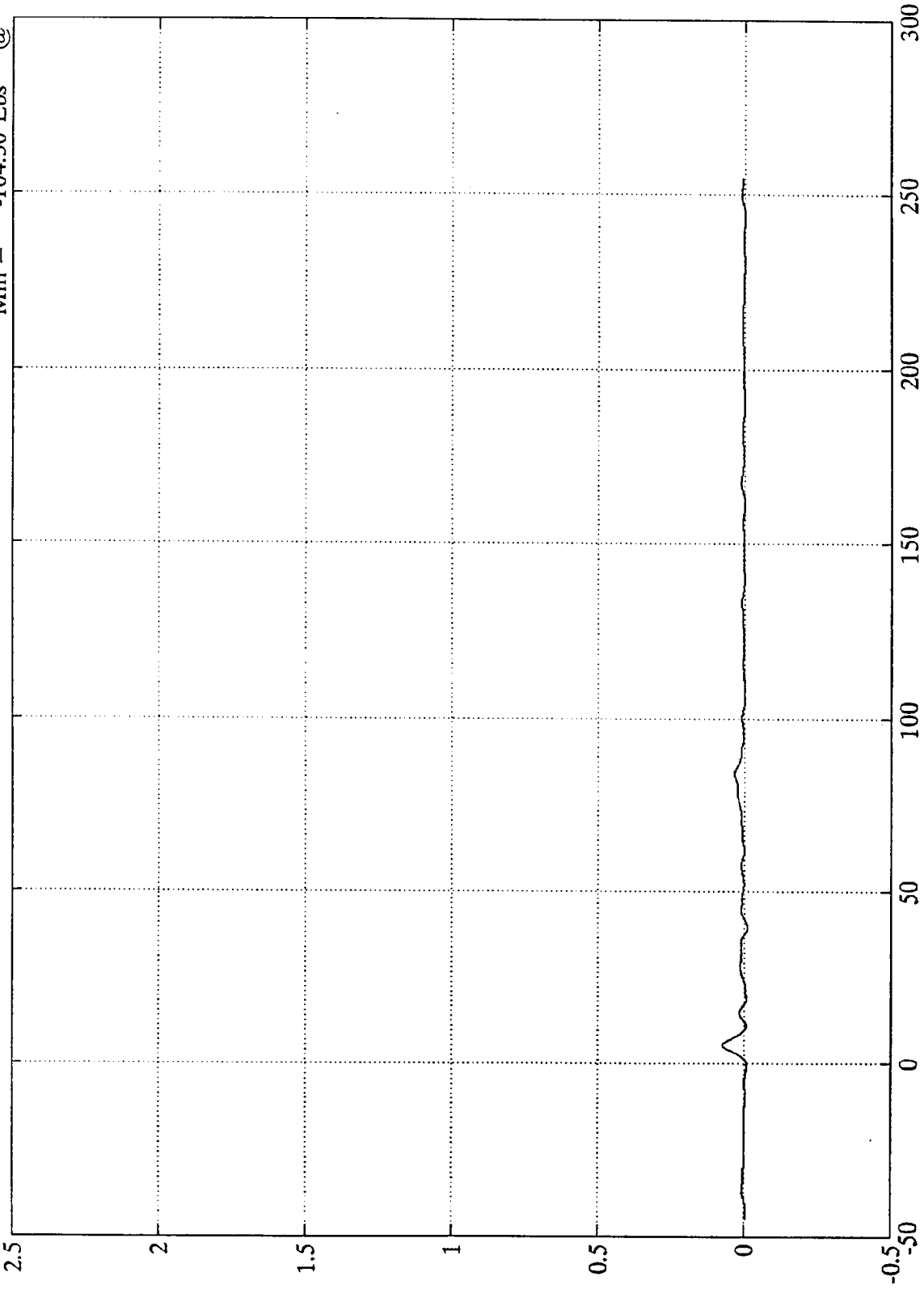
Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 748.70 Lbs @ 5.27 msec  
Min = -104.30 Lbs @ 39.36 msec

Barrier Load Cell A4

$\times 10^4$



B-6

8118-3

SAE Filter Class 60

Time (msec)

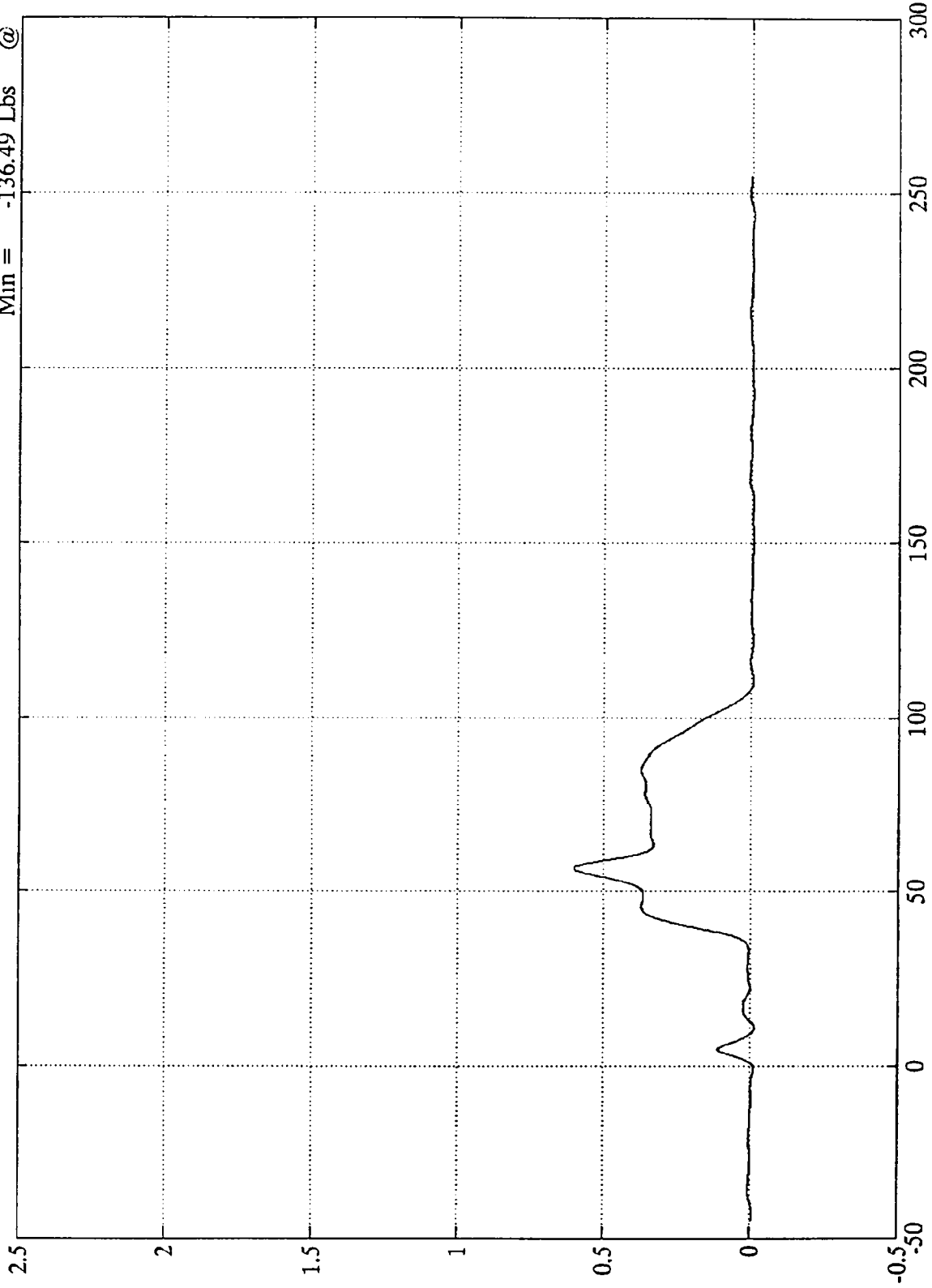


TSC Frontal Barrier Test #3 - Ford Taurus

Max = 6024.28 Lbs @ 56.40 msec  
Min = -136.49 Lbs @ 10.91 msec

Barrier Load Cell A5

x10<sup>4</sup>



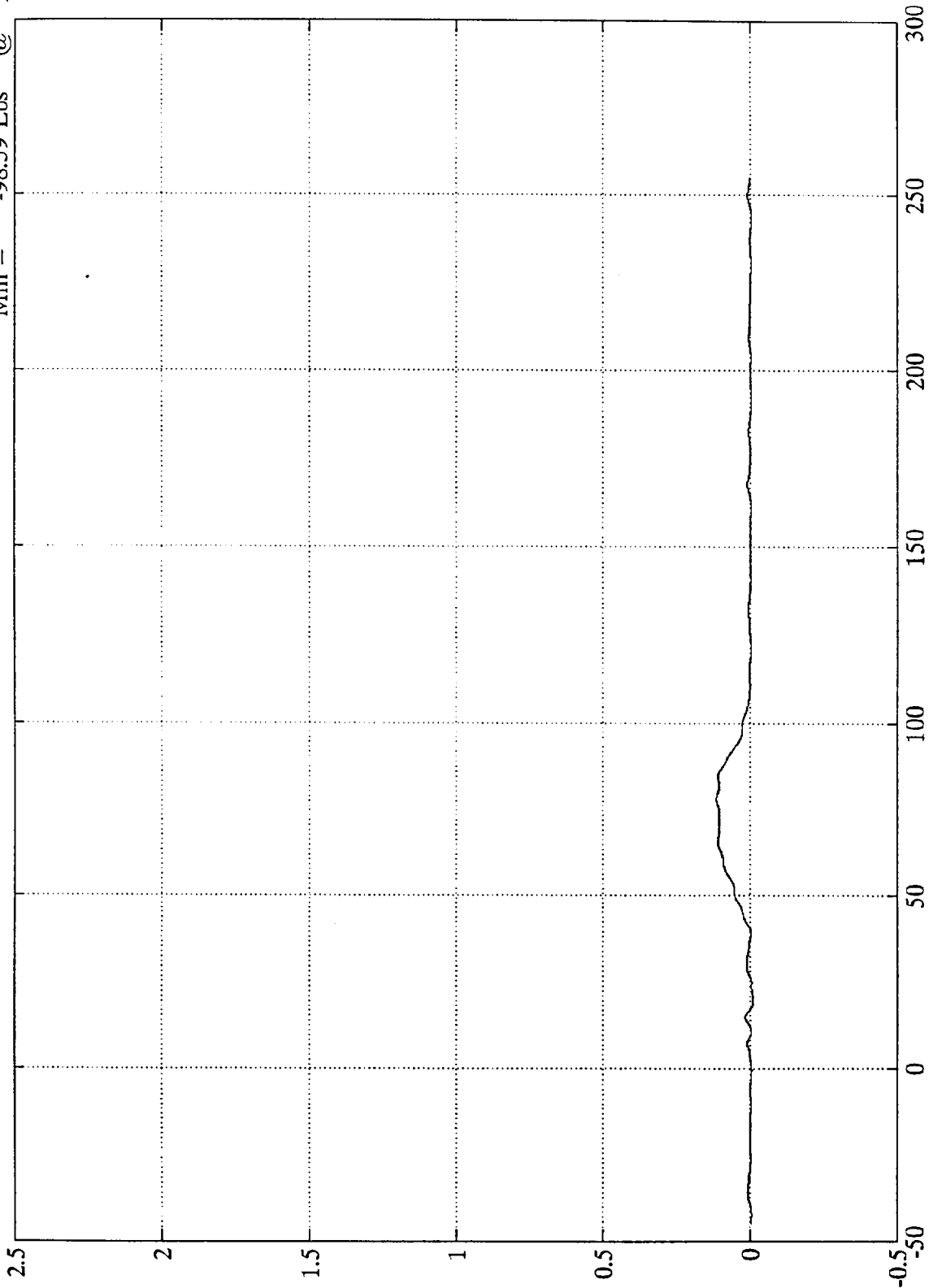
Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus  
x10<sup>4</sup>

Max = 1134.43 Lbs @ 78.12 msec  
Min = -98.59 Lbs @ 19.55 msec

Barrier Load Cell A6



B-8

8118-3

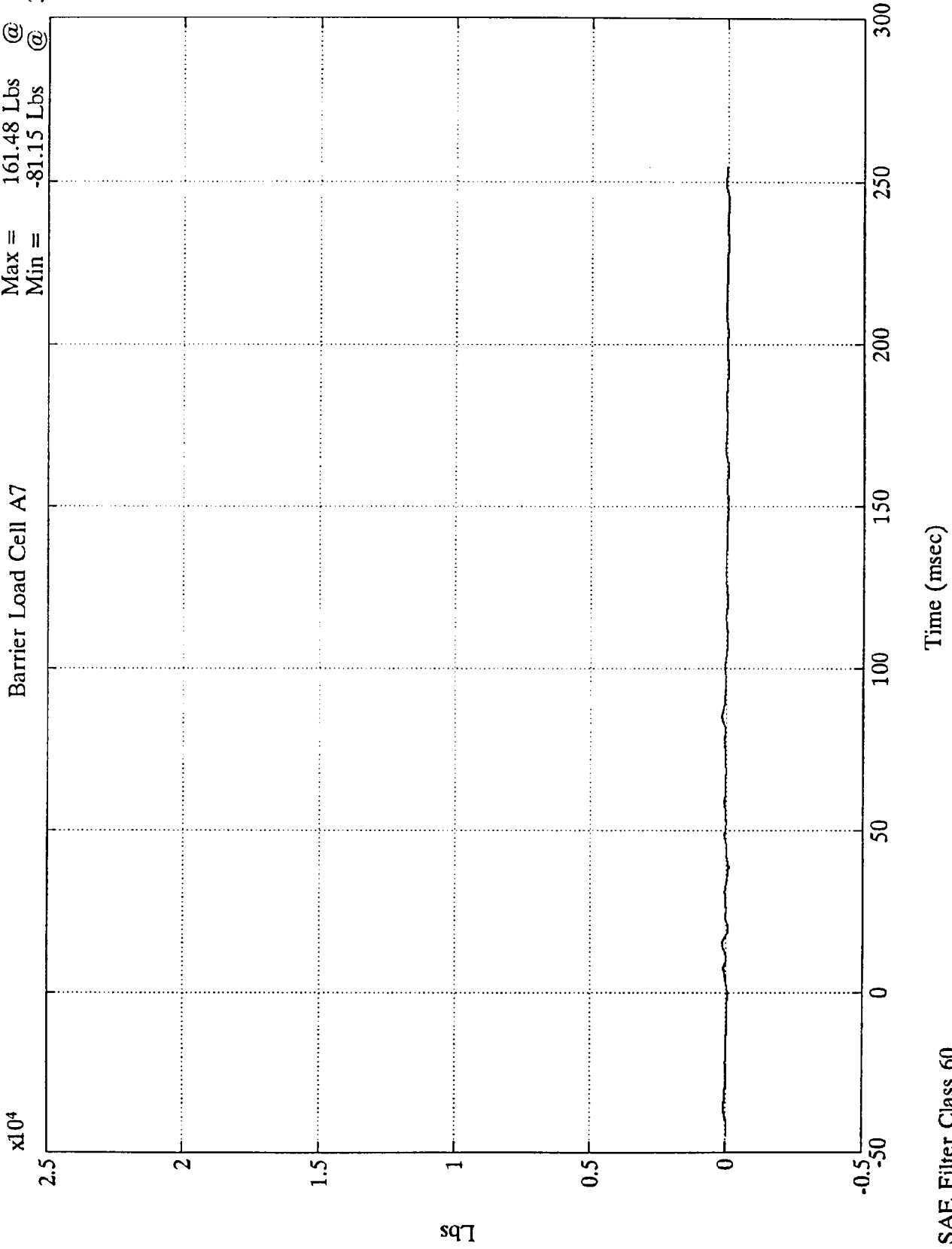
Time (msec)

SAE Filter Class 60



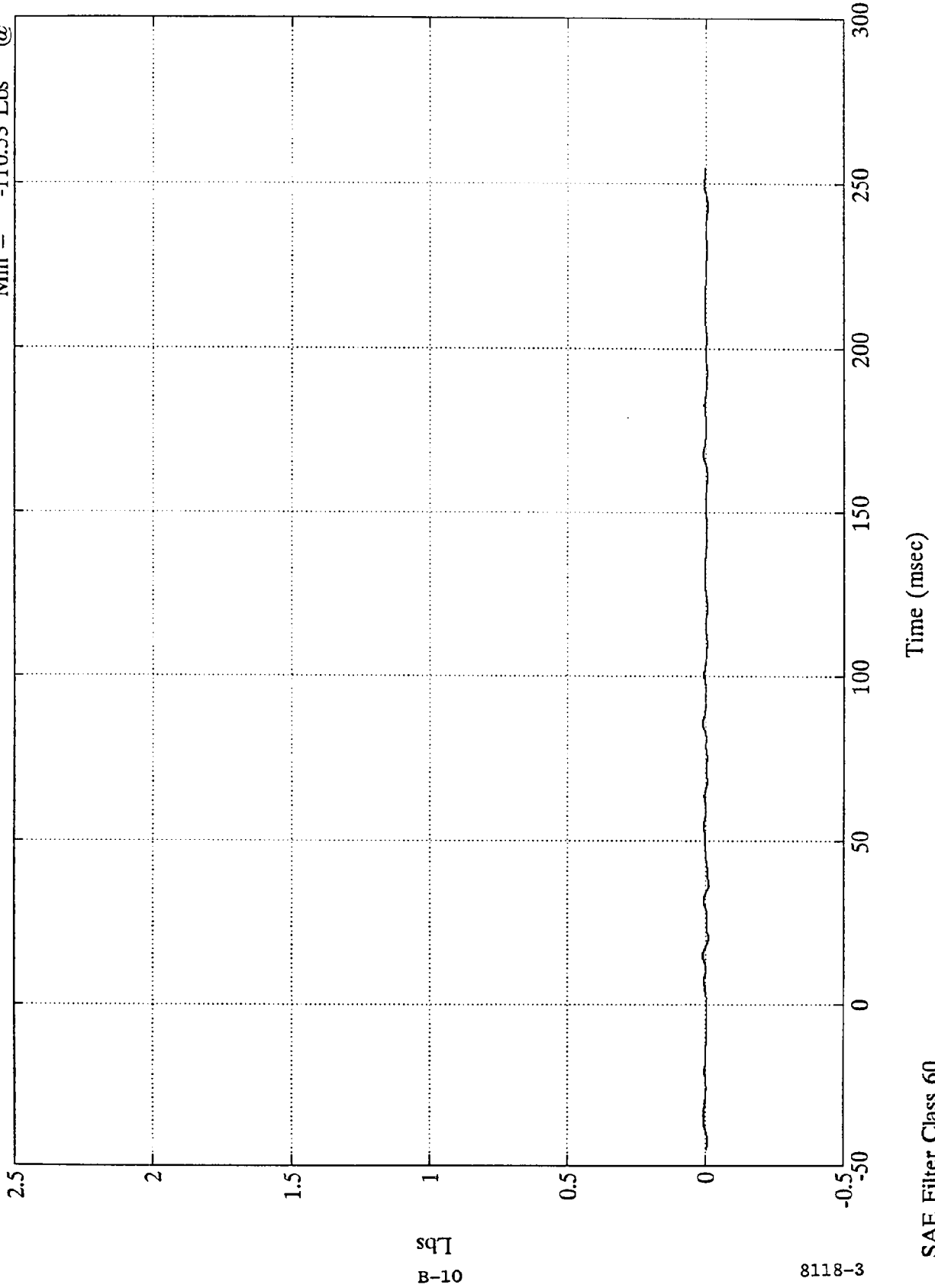
TSC Frontal Barrier Test #3 - Ford Taurus

Barrier Load Cell A7  
Max = 161.48 Lbs @ 85.20 msec  
Min = -81.15 Lbs @ 38.75 msec



TSC Frontal Barrier Test #3 - Ford Taurus  
x10<sup>4</sup>

Barrier Load Cell A8  
Max = 112.27 Lbs @ 85.56 msec  
Min = -110.53 Lbs @ 36.72 msec



B-10

8118-3

SAE Filter Class 60

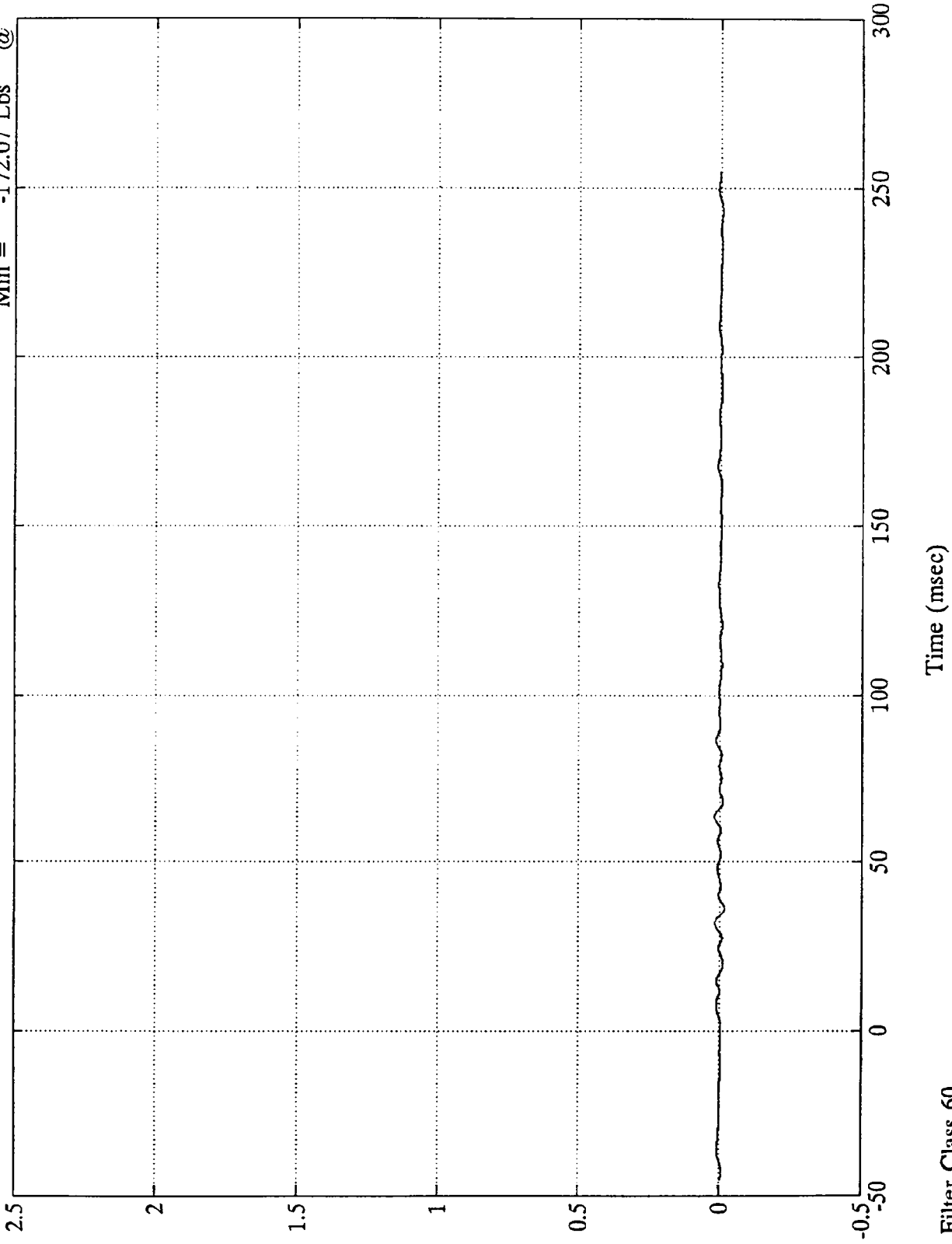


TSC Frontal Barrier Test #3 - Ford Taurus

Max = 192.52 Lbs @ 63.35 msec  
Min = -172.07 Lbs @ 36.00 msec

Barrier Load Cell A9

x10<sup>4</sup>



B-11  
Lbs

8118-3

SAE Filter Class 60

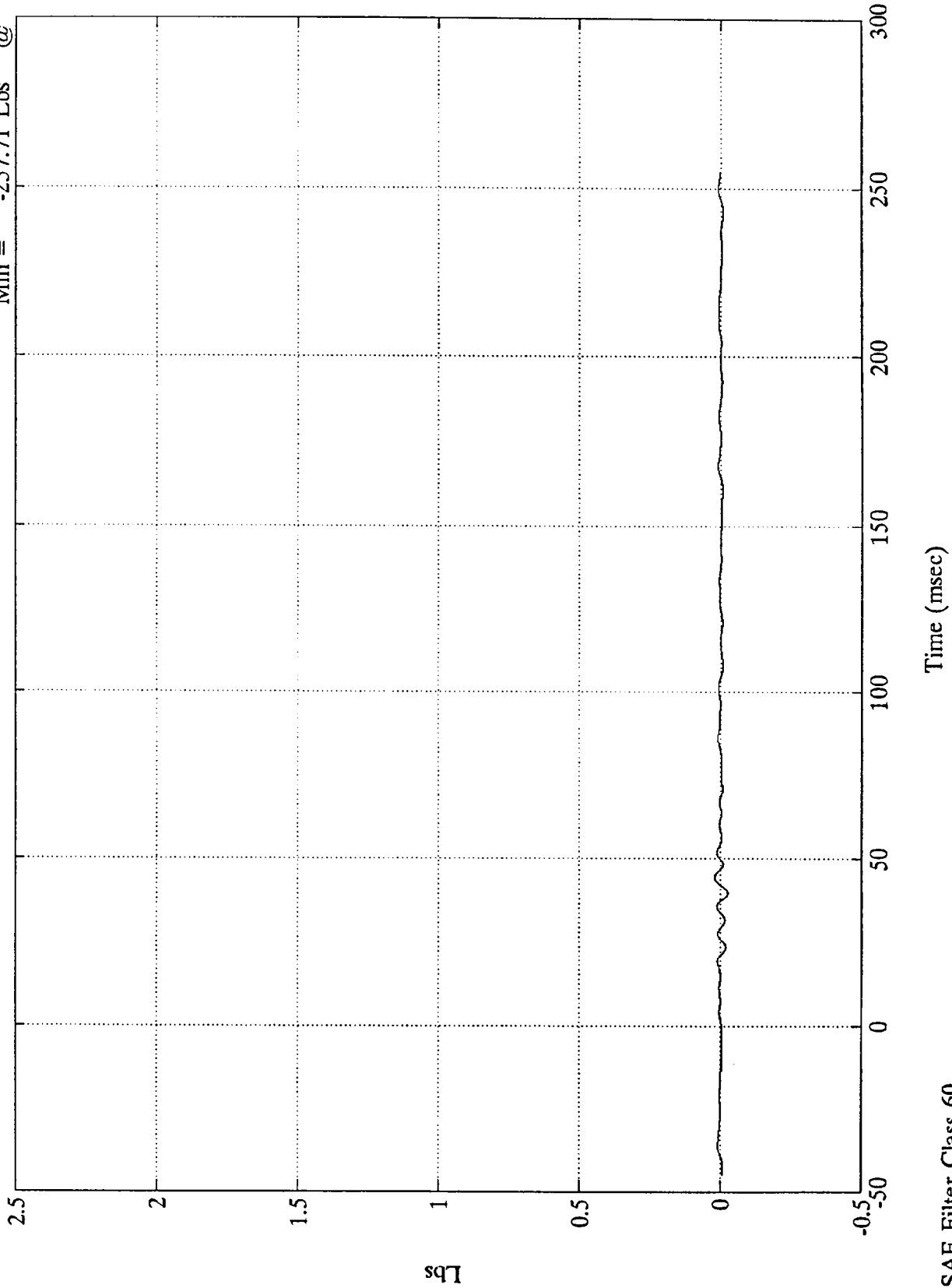
Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 213.83 Lbs @ 44.15 msec  
Min = -257.71 Lbs @ 39.59 msec

Barrier Load Cell B1

x10<sup>4</sup>



B-12

8118-3

SAE Filter Class 60

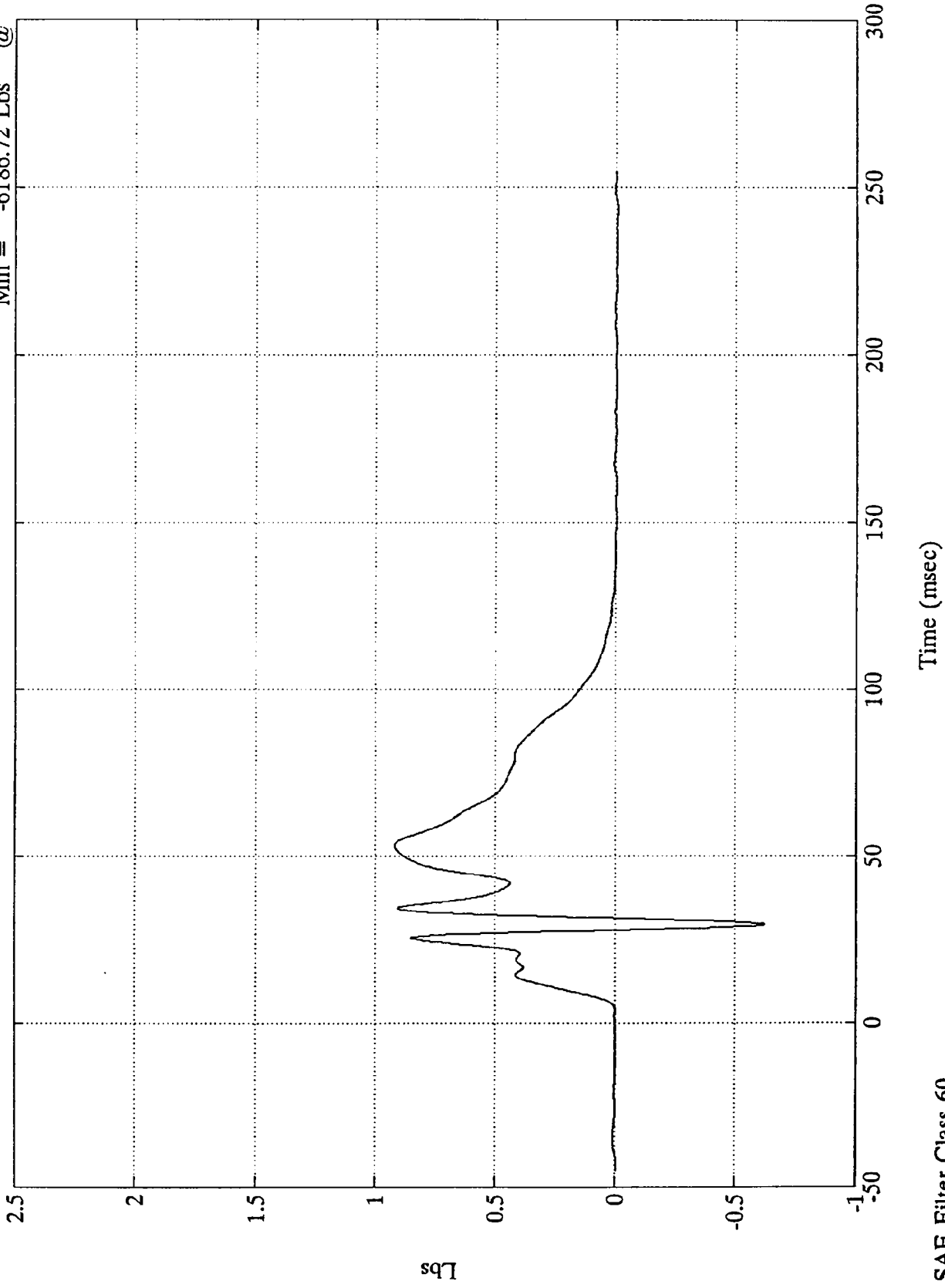


TSC Frontal Barrier Test #3 - Ford Taurus

Max = 9190.86 Lbs @ 53.27 msec  
Min = -6186.72 Lbs @ 29.39 msec

Barrier Load Cell B2

x10<sup>4</sup>



lbs  
B-13

8118-3

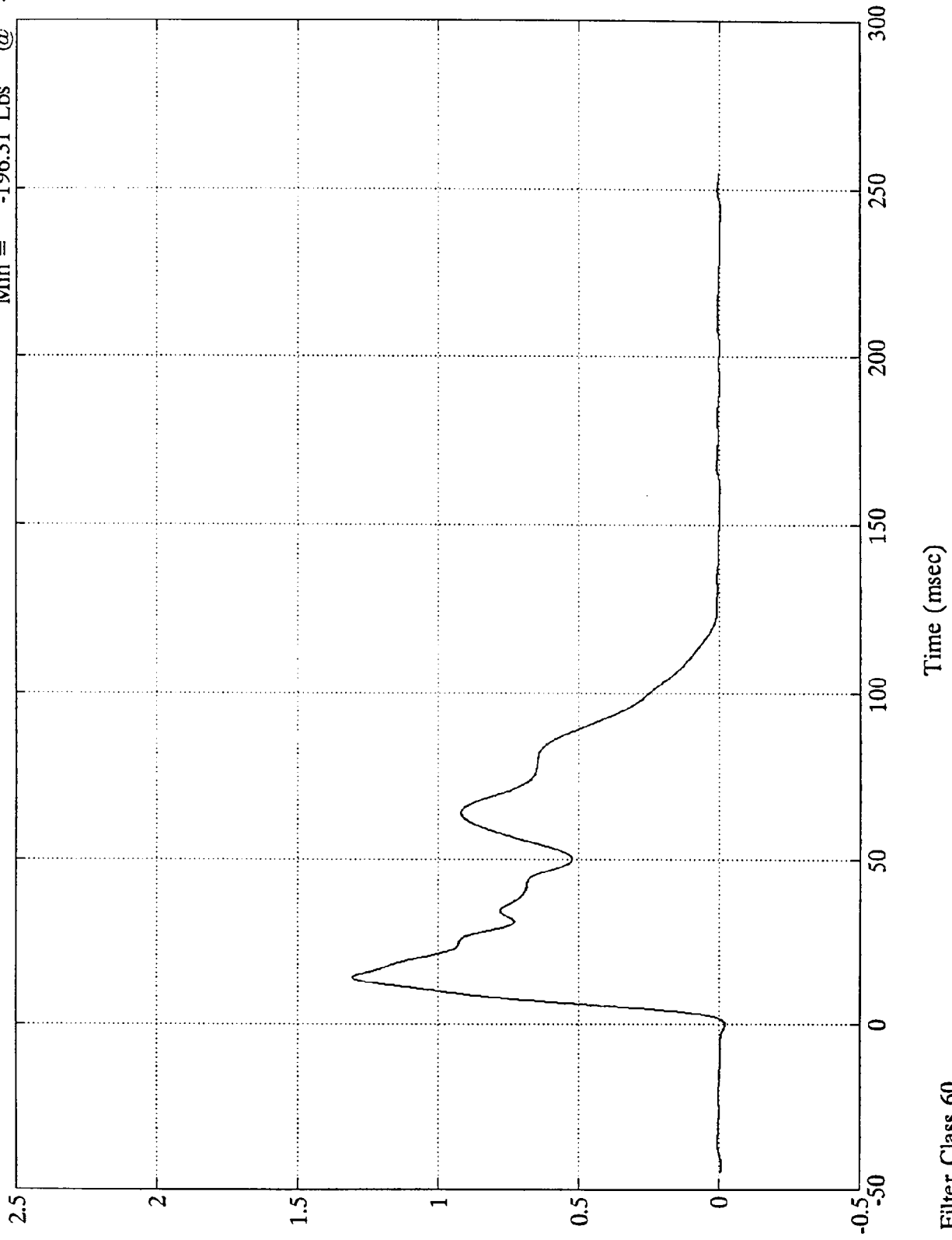
SAE Filter Class 60

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus  
x10<sup>4</sup>

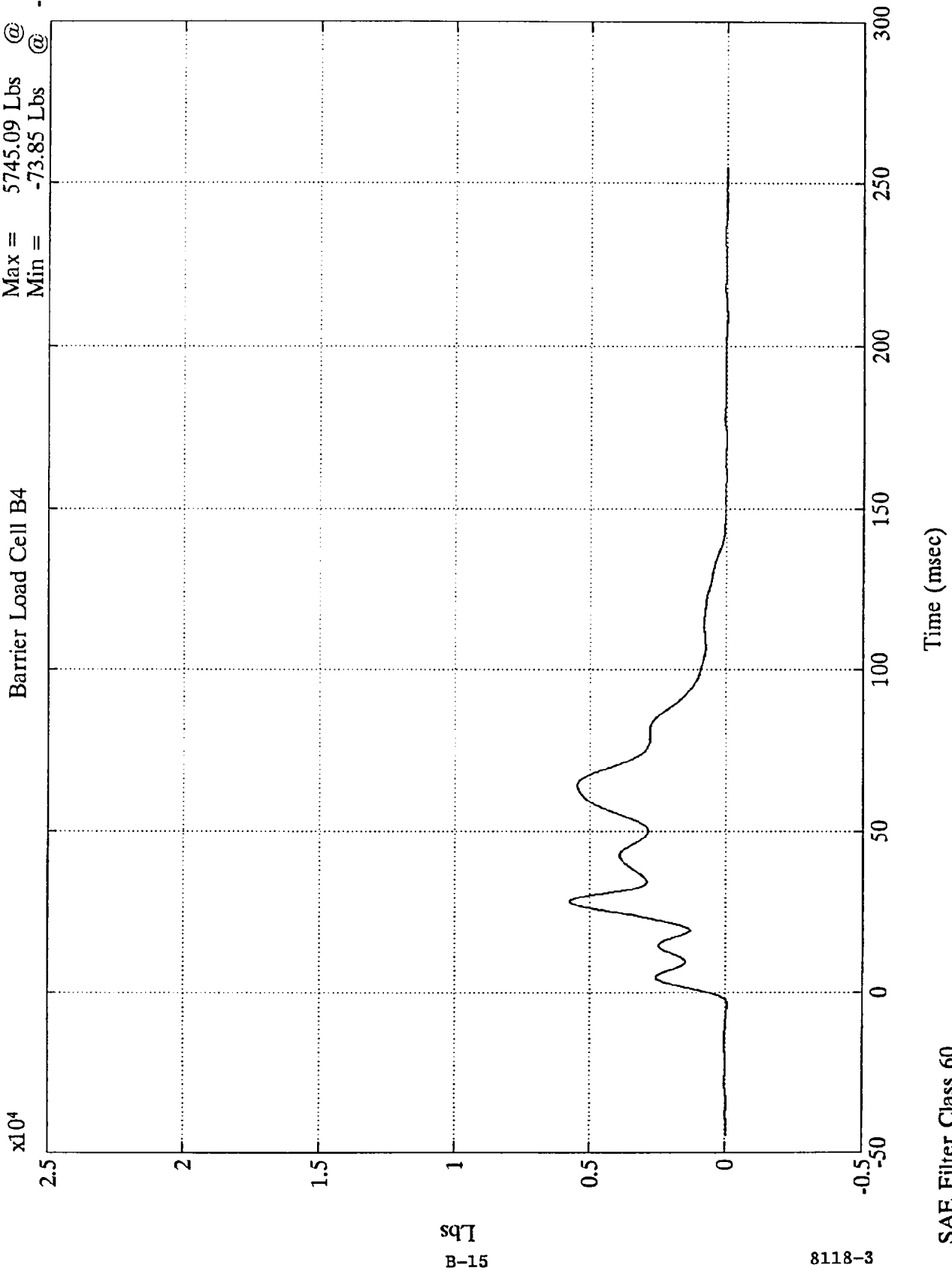
Barrier Load Cell B3

Max = 13047.53 Lbs @ 13.79 msec  
Min = -196.31 Lbs @ -0.12 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Barrier Load Cell B4  
Max = 5745.09 Lbs @ 28.31 msec  
Min = -73.85 Lbs @ -3.72 msec



B-15  
lbs

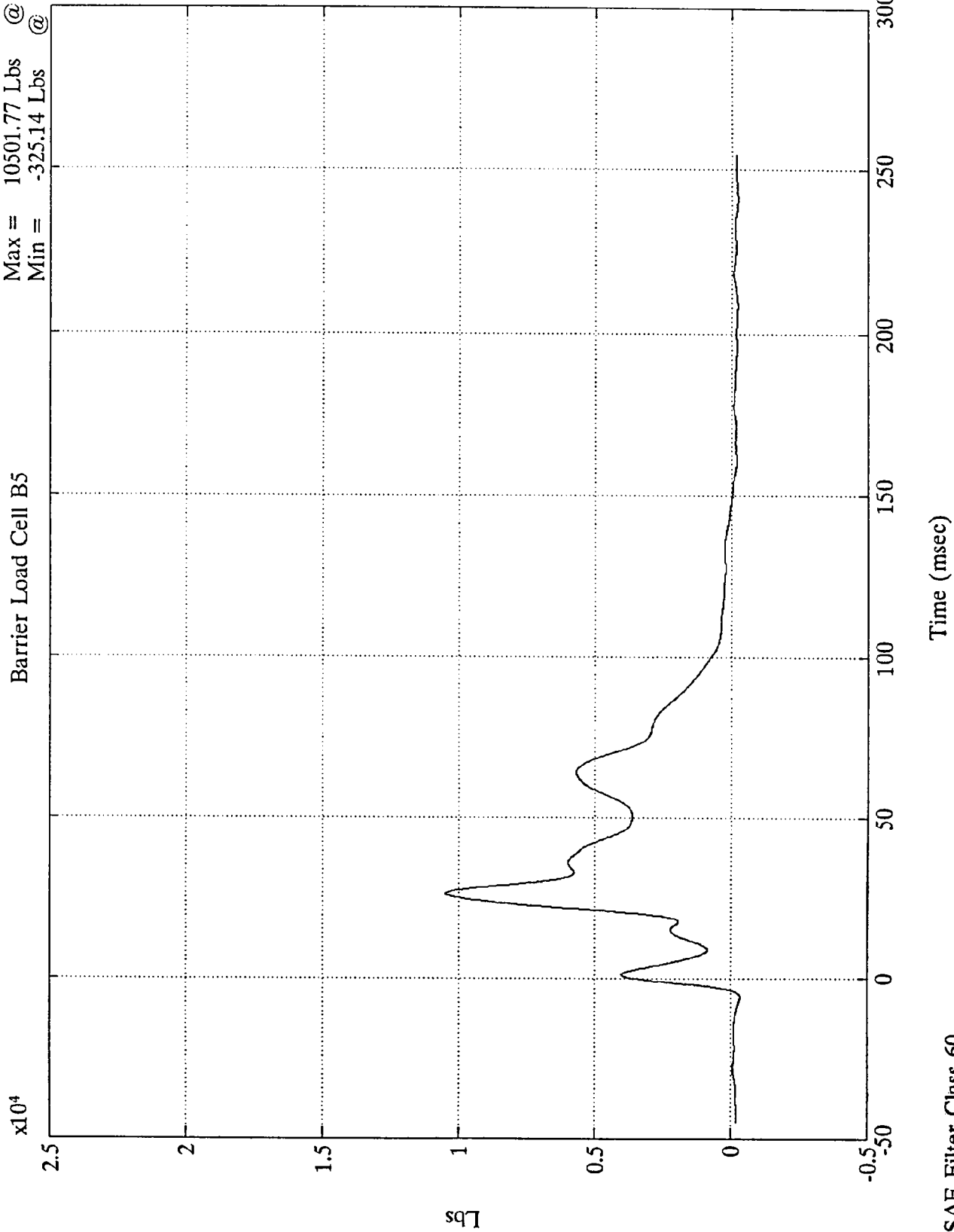
8118-3

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 10501.77 Lbs @ 26.15 msec  
Min = -325.14 Lbs @ -5.76 msec

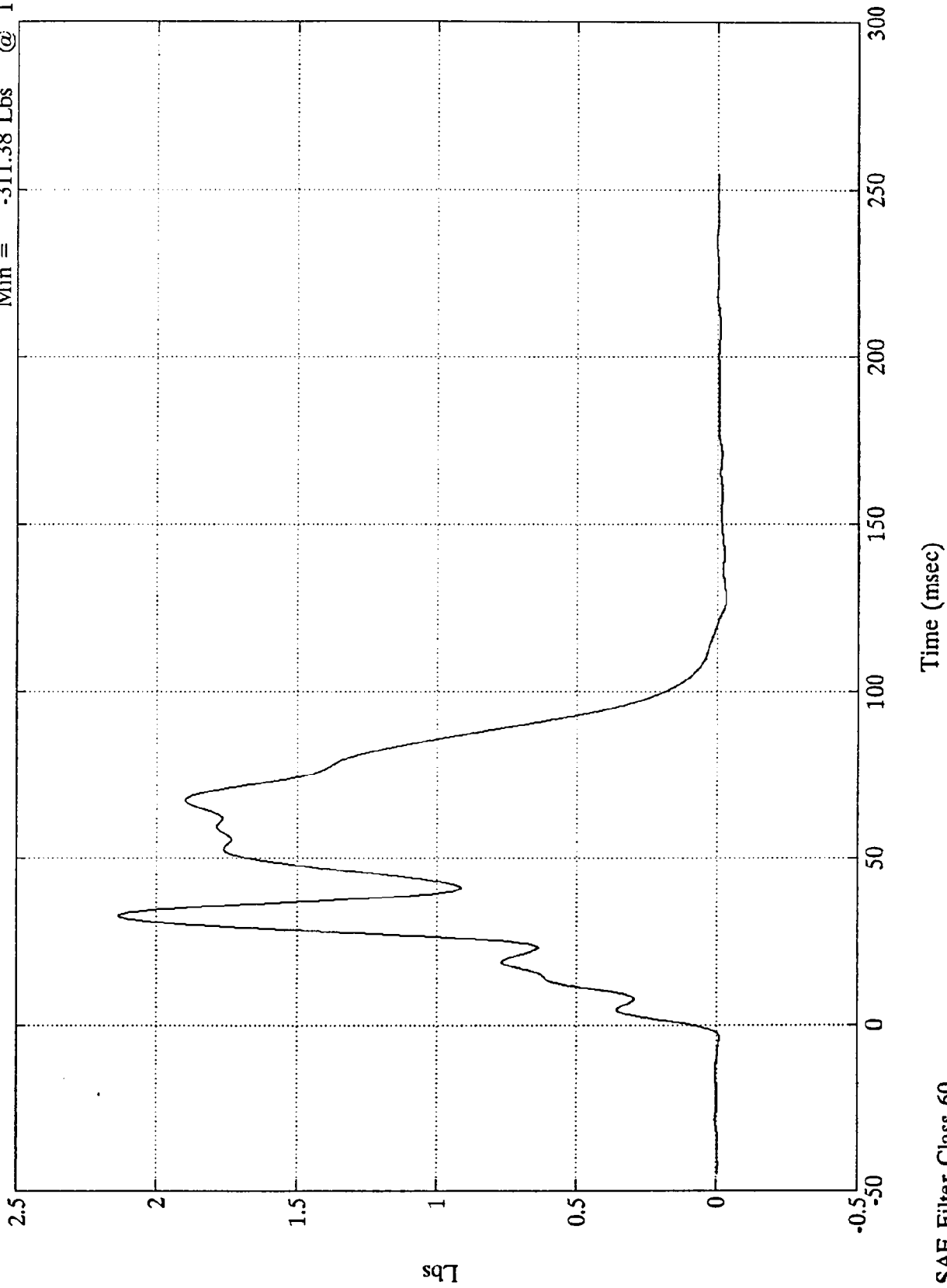
Barrier Load Cell B5



TSC Frontal Barrier Test #3 - Ford Taurus  
x10<sup>4</sup>

Barrier Load Cell B6

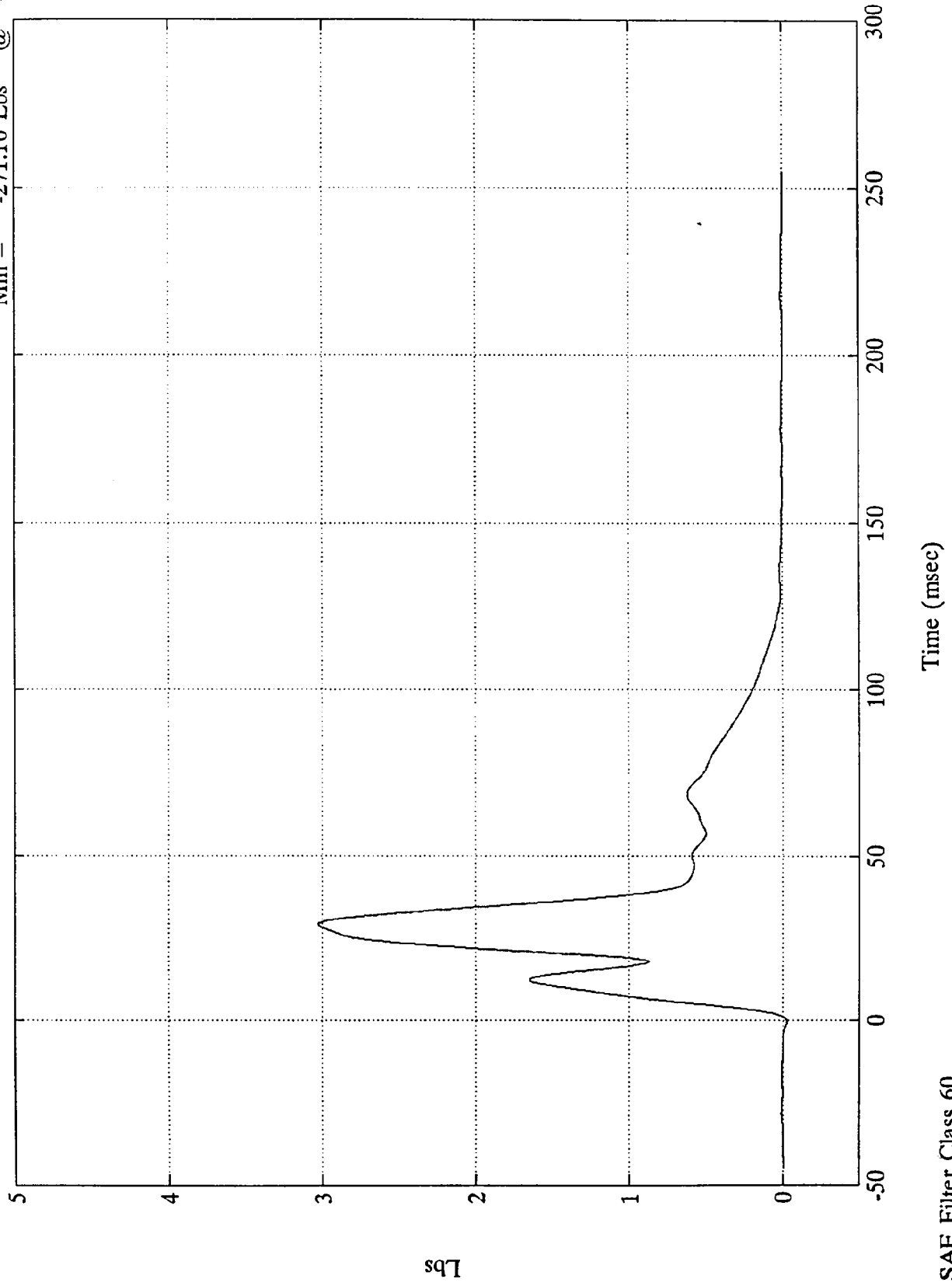
Max = 21358.24 Lbs @ 32.52 msec  
Min = -311.38 Lbs @ 127.44 msec



TSC Frontal Barrier Test #3 - Ford Taurus  
x10<sup>4</sup>

Max = 30274.66 Lbs @ 29.15 msec  
Min = -271.10 Lbs @ -0.48 msec

Barrier Load Cell B7

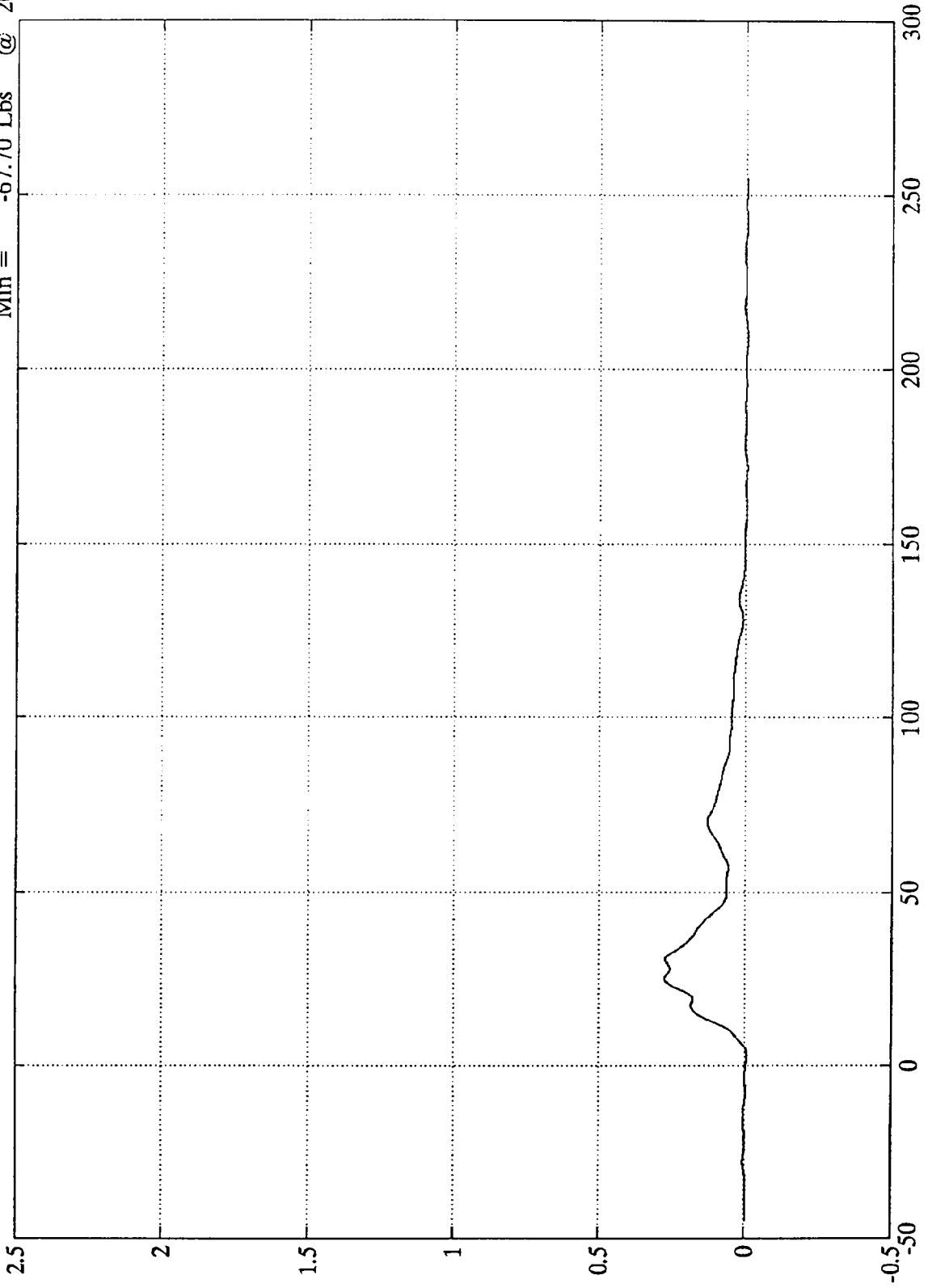


TSC Frontal Barrier Test #3 - Ford Taurus

Max = 2752.75 Lbs @ 25.20 msec  
Min = -67.70 Lbs @ 209.04 msec

Barrier Load Cell B8

x10<sup>4</sup>



lbs  
B-19

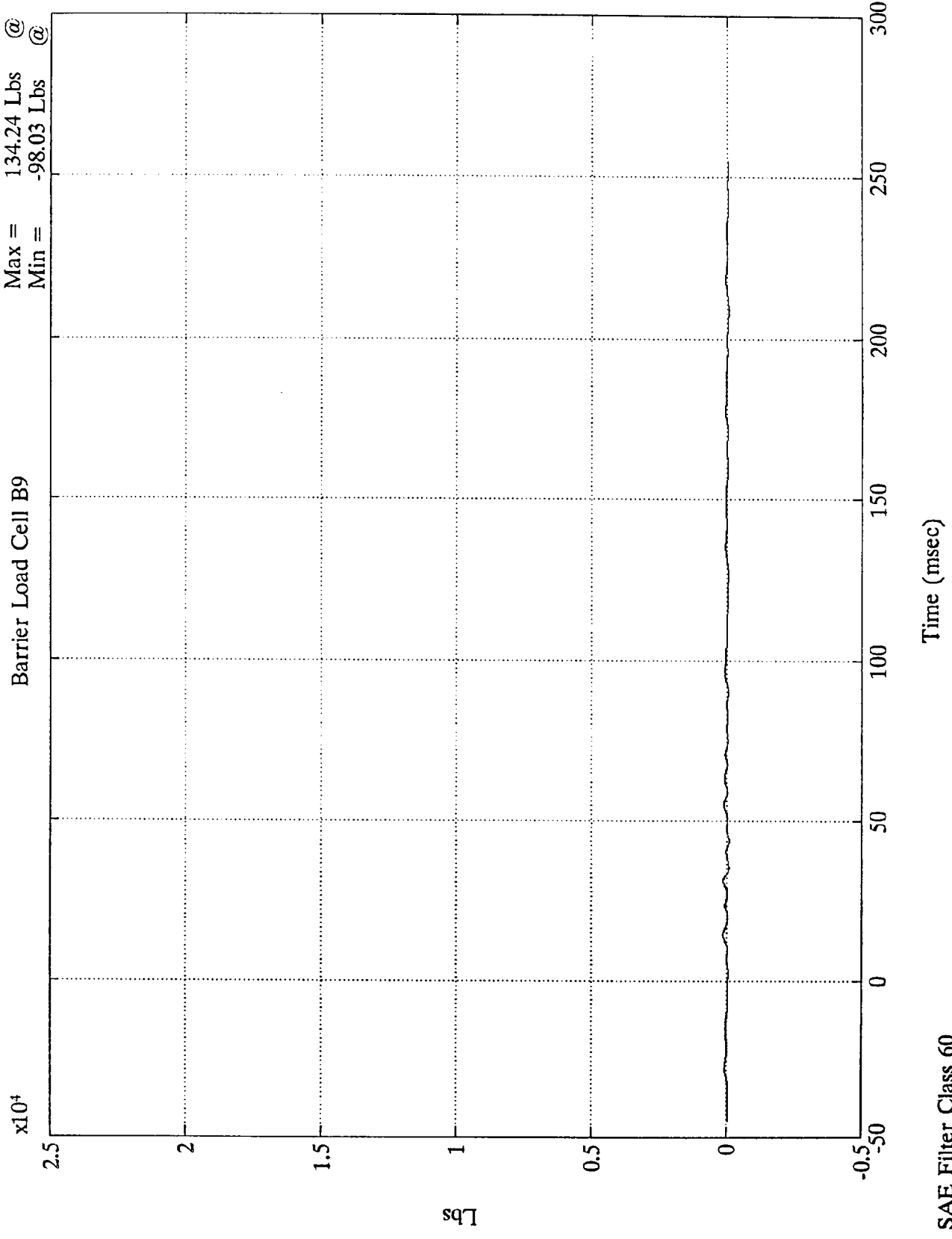
8118-3

Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Barrier Load Cell B9  
Max = 134.24 Lbs @ 14.63 msec  
Min = -98.03 Lbs @ 43.56 msec



B-20

8118-3

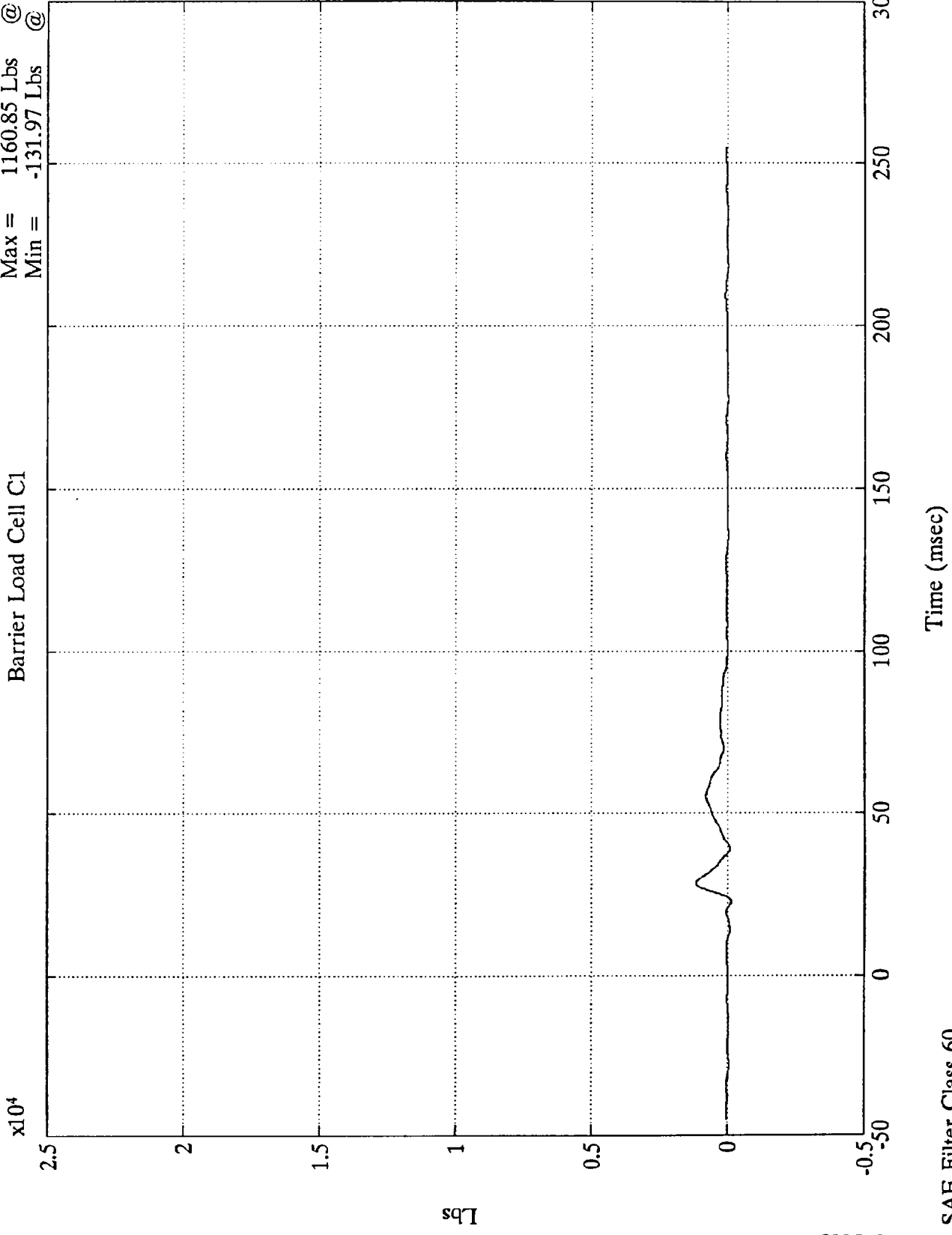
SAE Filter Class 60

Time (msec)



TSC Frontal Barrier Test #3 - Ford Taurus

Barrier Load Cell C1  
Max = 1160.85 Lbs @ 28.07 msec  
Min = -131.97 Lbs @ 22.56 msec



12-B  
Lbs

8118-3

SAE Filter Class 60

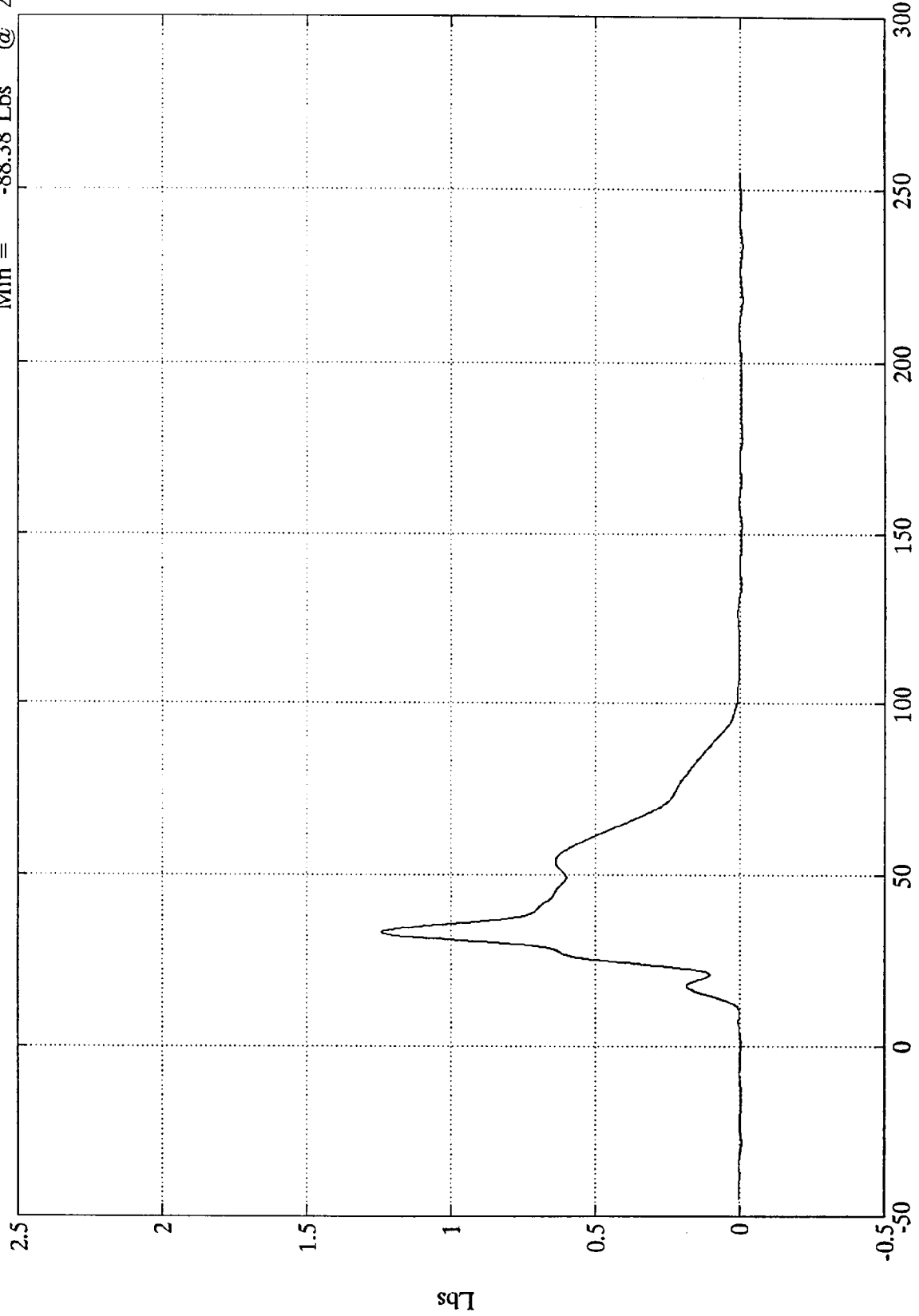
Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 12422.61 Lbs @ 33.11 msec  
Min = -88.38 Lbs @ 218.16 msec

Barrier Load Cell C2

x10<sup>4</sup>

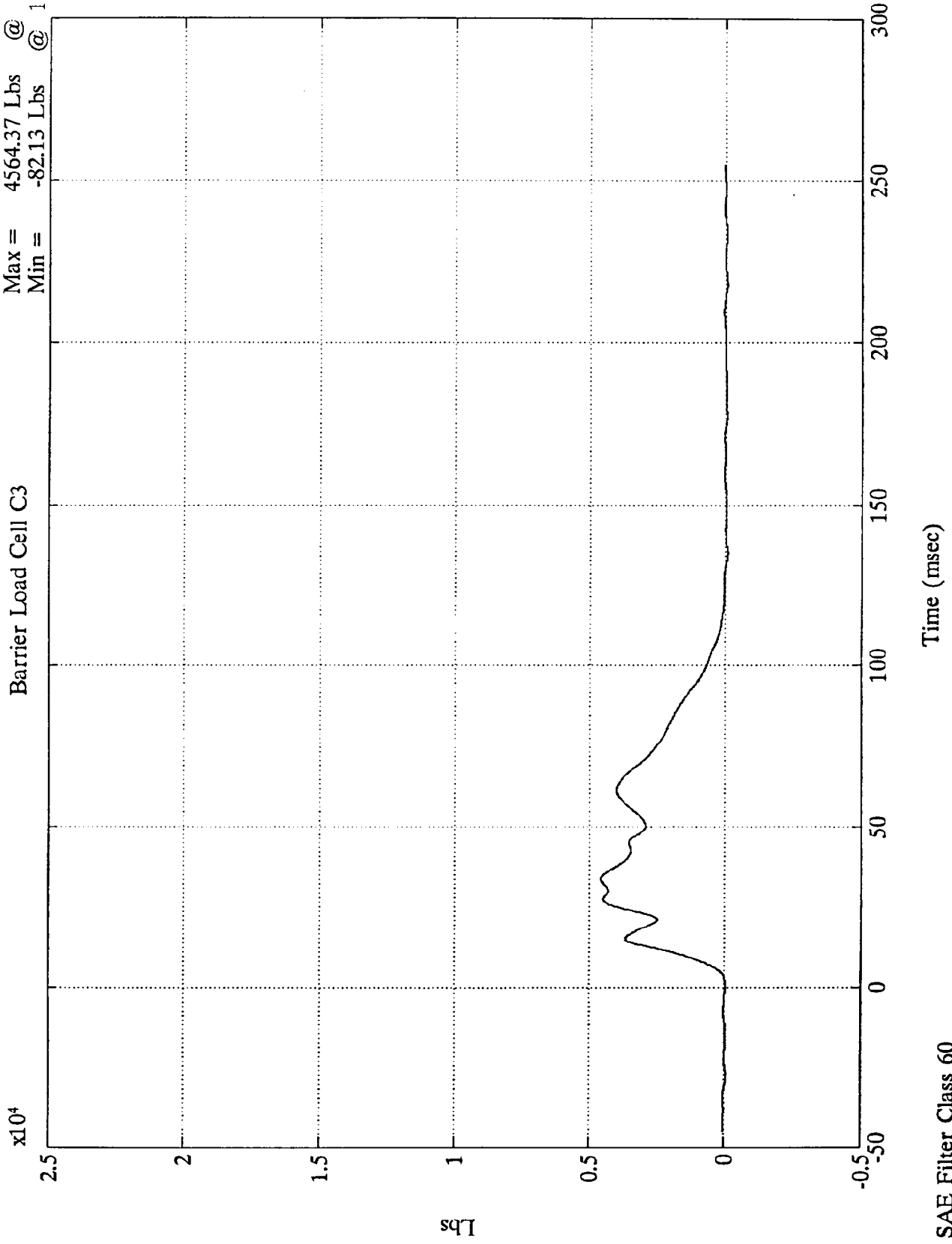


Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

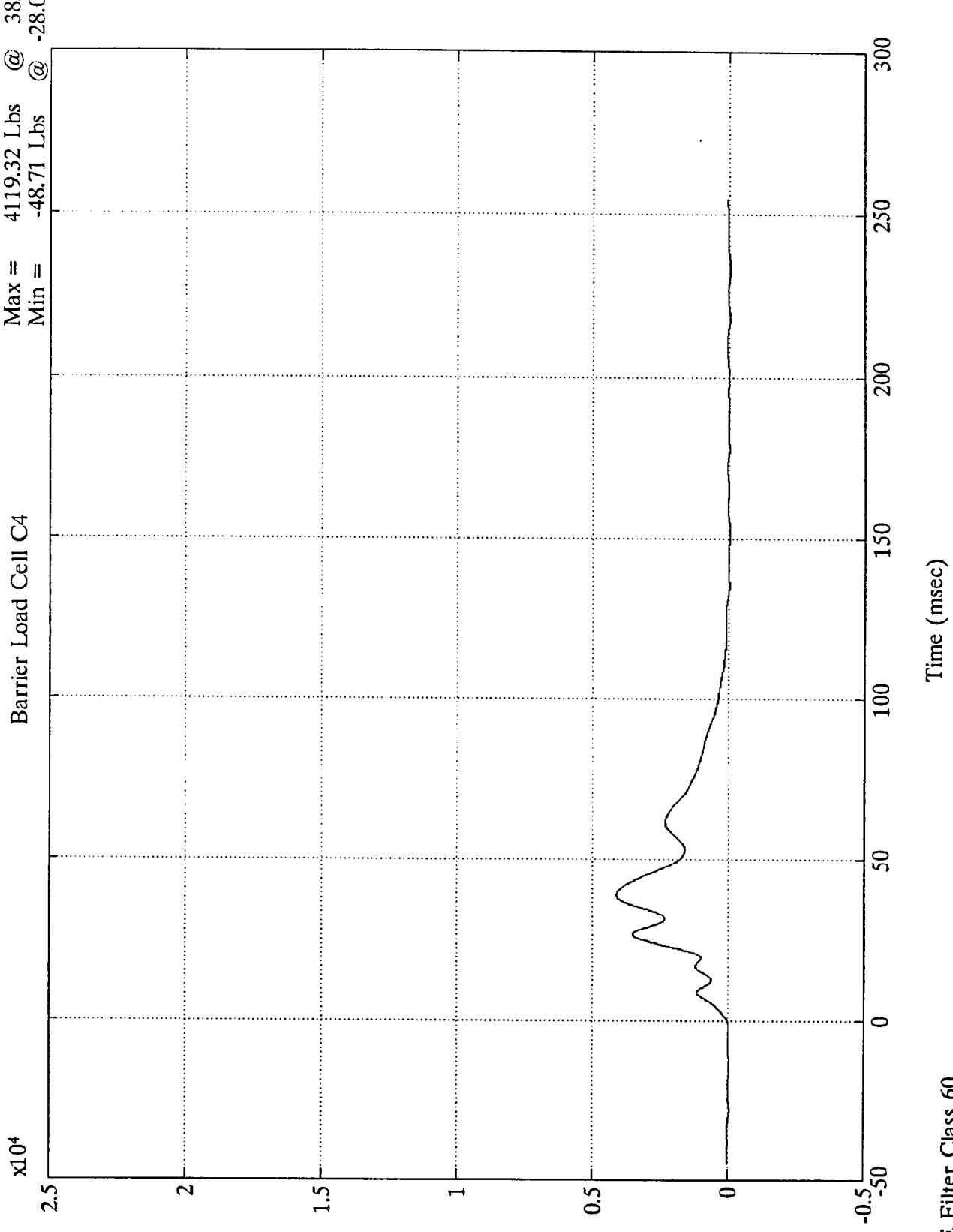
Barrier Load Cell C3  
Max = 4564.37 Lbs @ 33.72 msec  
Min = -82.13 Lbs @ 135.24 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 4119.32 Lbs @ 38.75 msec  
Min = -48.71 Lbs @ -28.08 msec

Barrier Load Cell C4



Lbs  
B-24

8118-3

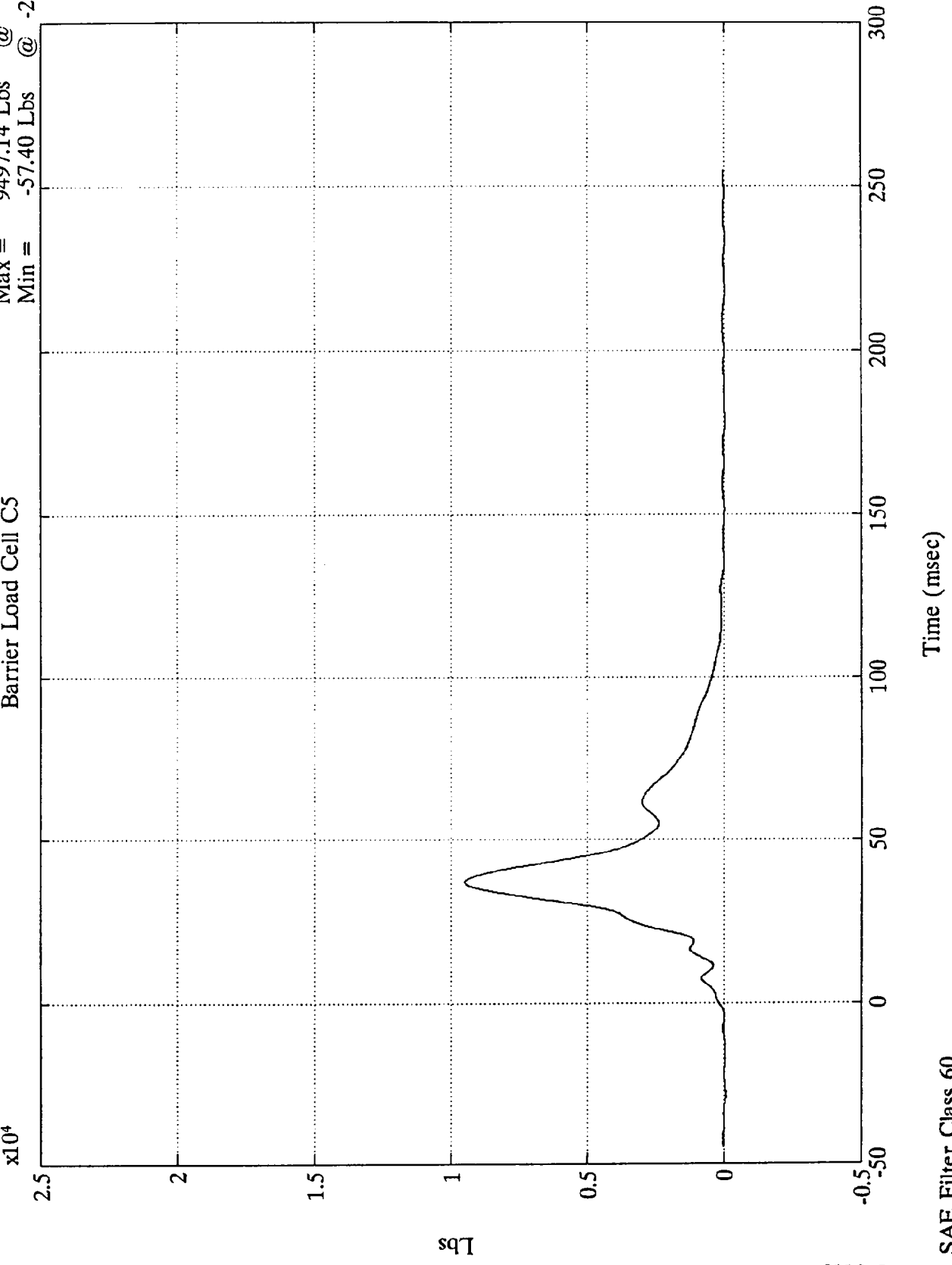
SAE Filter Class 60

Time (msec)



TSC Frontal Barrier Test #3 - Ford Taurus

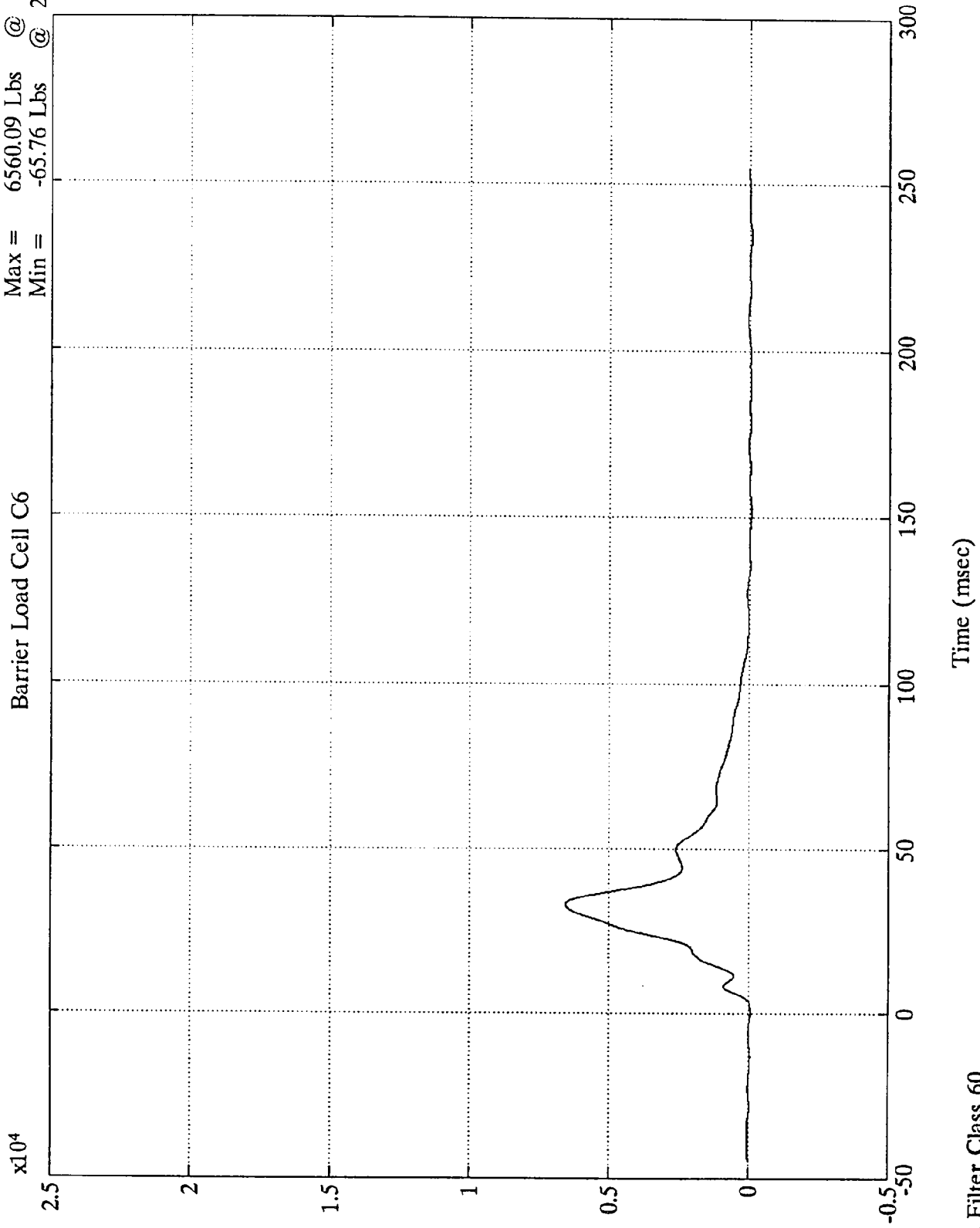
Barrier Load Cell C5  
Max = 9497.14 Lbs @ 36.84 msec  
Min = -57.40 Lbs @ -28.56 msec



TSC Frontal Barrier Test #3 - Ford Taurus

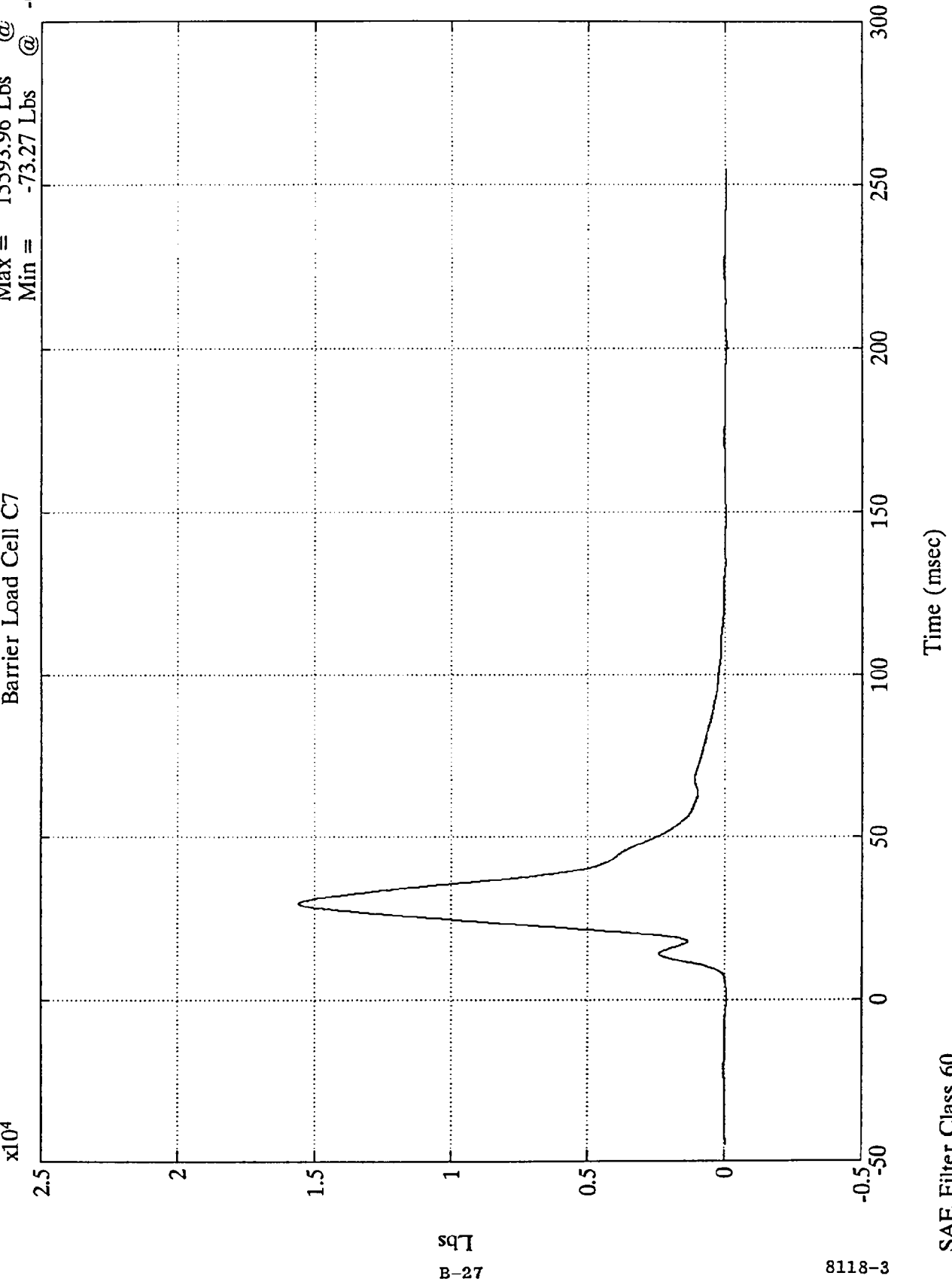
Max = 6560.09 Lbs @ 33.00 msec  
Min = -65.76 Lbs @ 234.48 msec

Barrier Load Cell C6



TSC Frontal Barrier Test #3 - Ford Taurus

Barrier Load Cell C7  
Max = 15593.96 Lbs @ 29.63 msec  
Min = -73.27 Lbs @ -0.00 msec



8-B-27

8118-3

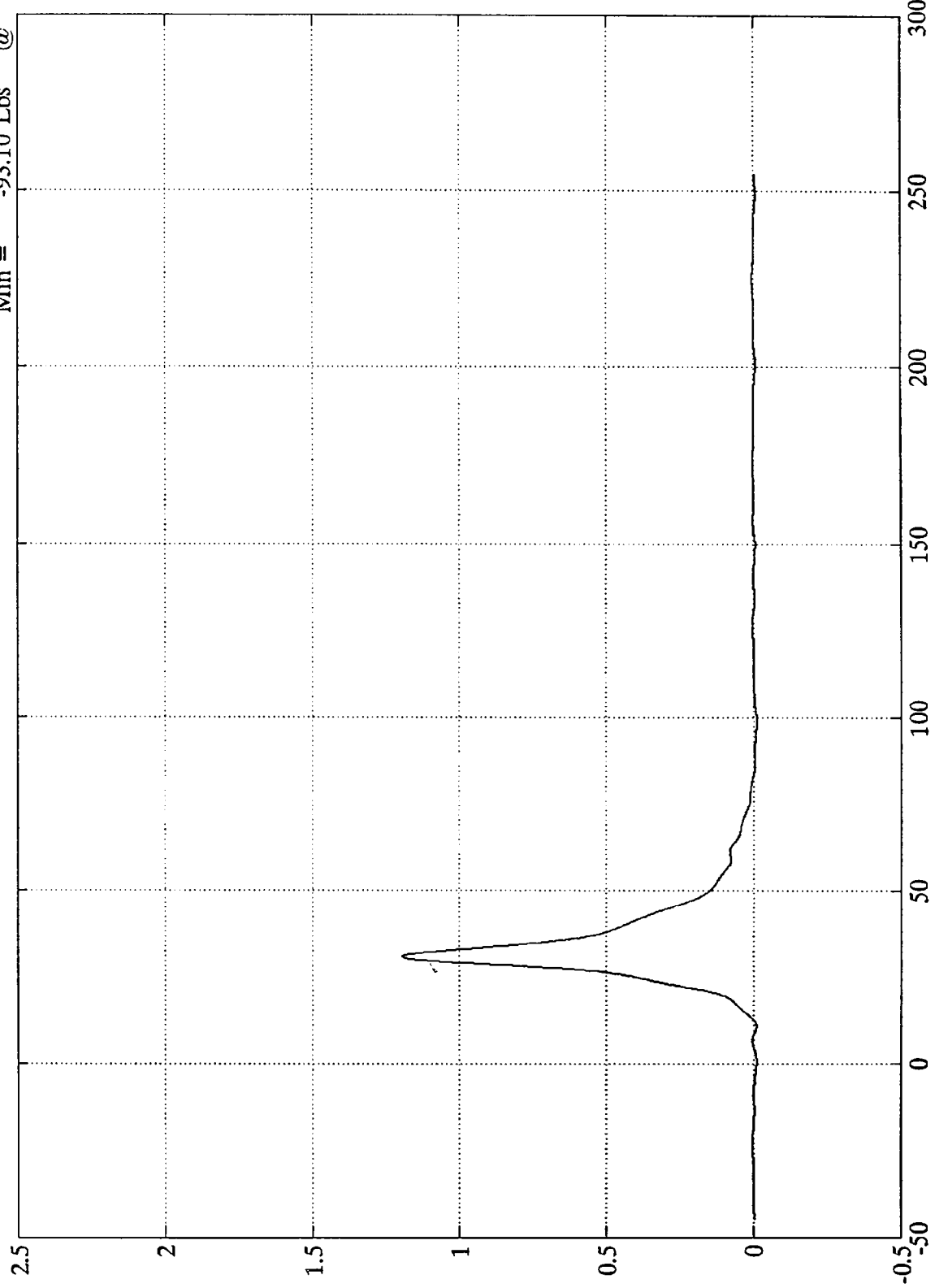
SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 11964.88 Lbs @ 30.60 msec  
Min = -93.10 Lbs @ 98.76 msec

Barrier Load Cell C8

x10<sup>4</sup>



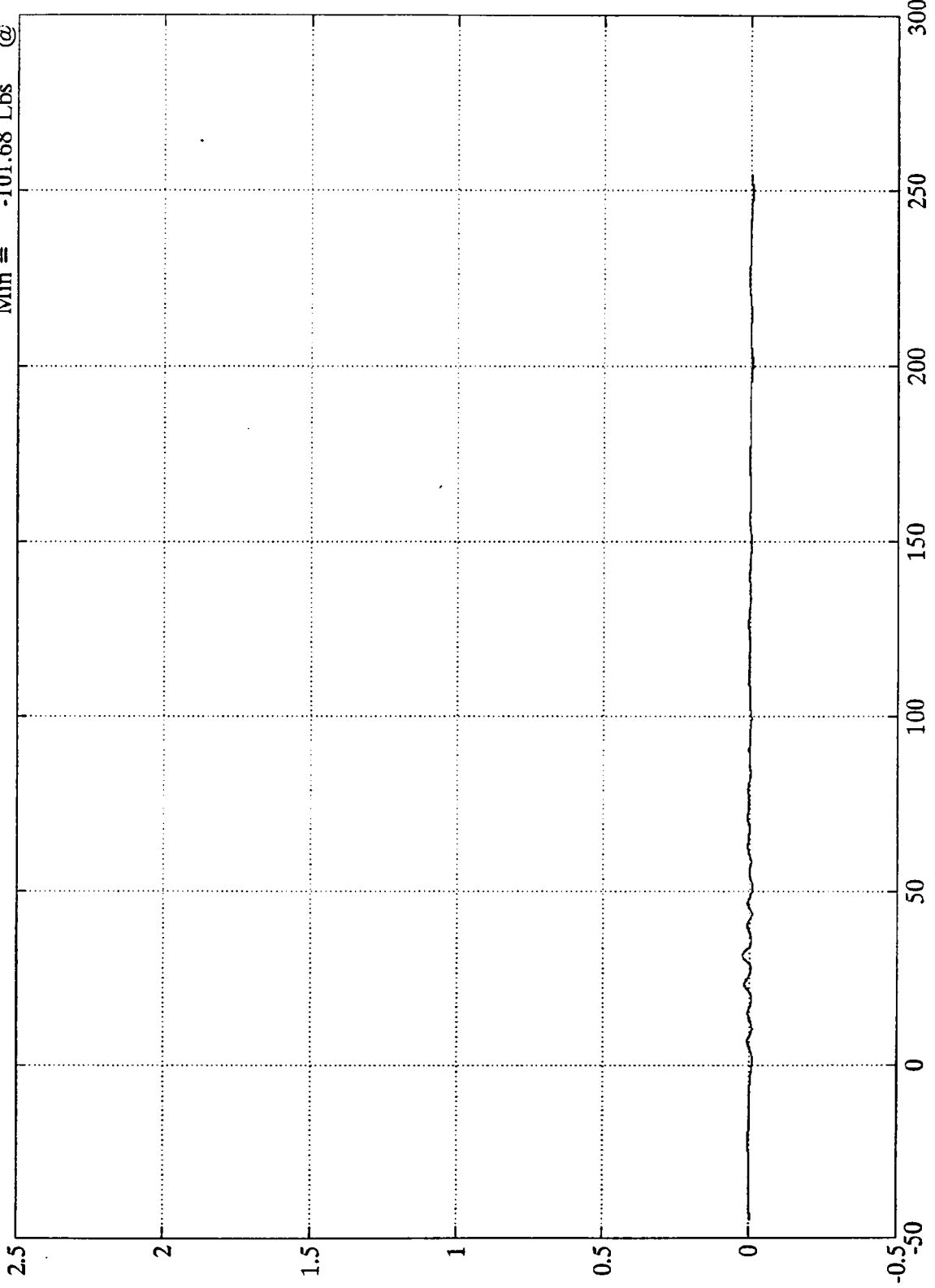
Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus  
x10<sup>4</sup>

Max = 227.51 Lbs @ 31.44 msec  
Min = -101.68 Lbs @ 51.12 msec

Barrier Load Cell C9



B-29

8118-3

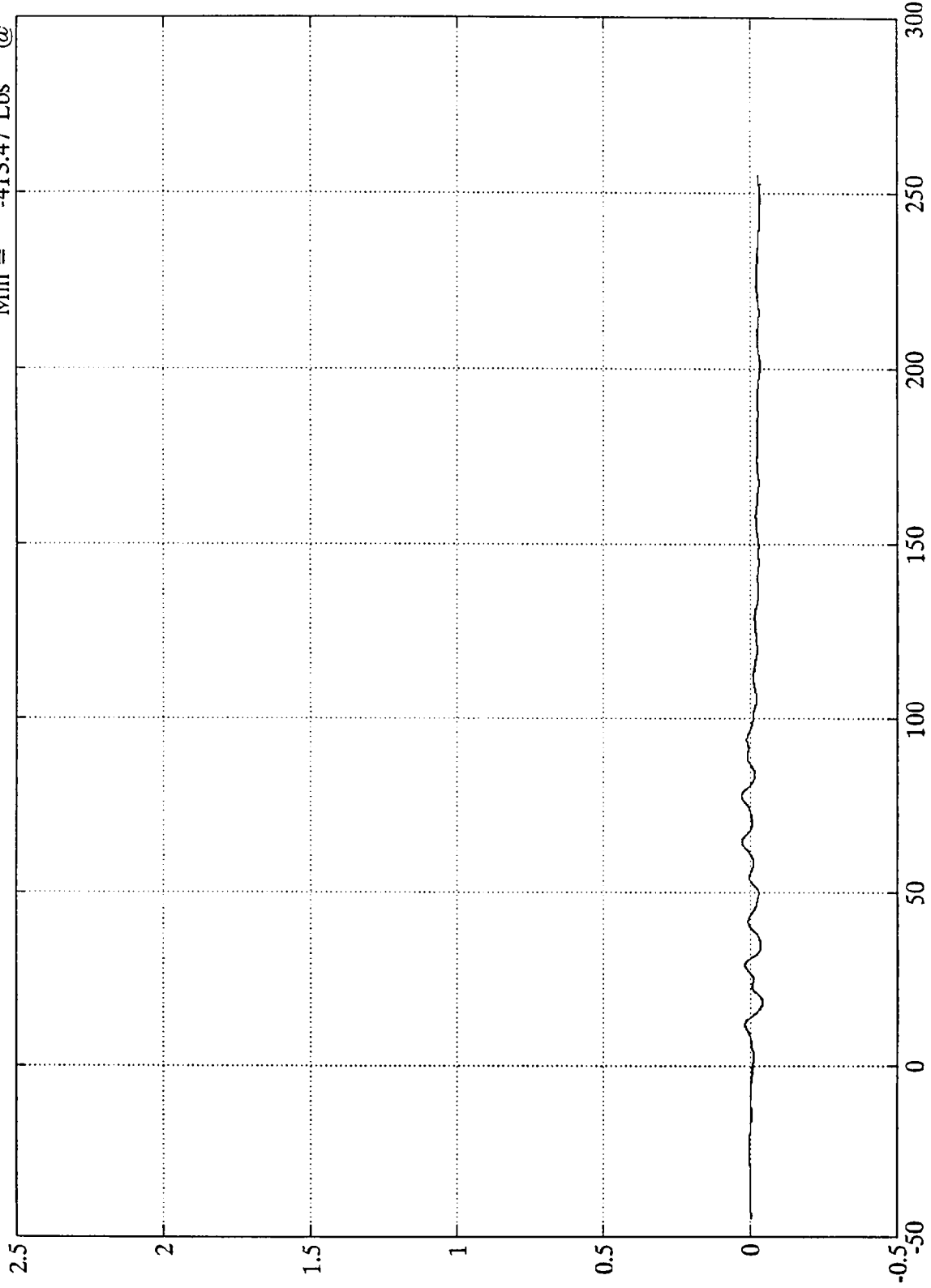
SAE Filter Class 60

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus  
x10<sup>4</sup>

Max = 301.16 Lbs @ 77.88 msec  
Min = -413.47 Lbs @ 18.47 msec

Barrier Load Cell DI



B-30

8118-3

Time (msec)

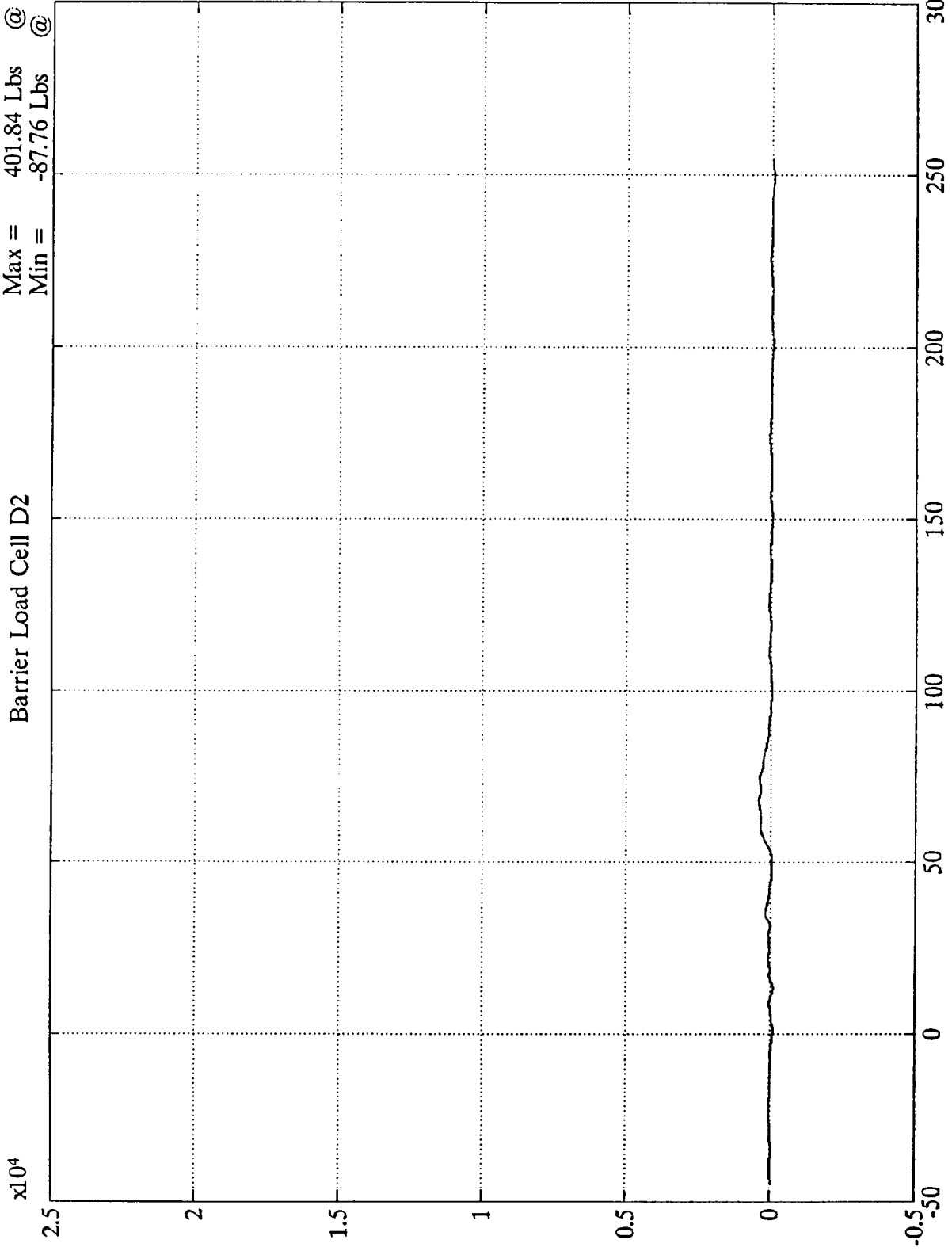
SAE Filter Class 60



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 401.84 Lbs @ 68.04 msec  
Min = -87.76 Lbs @ 0.95 msec

Barrier Load Cell D2



B-31  
Lbs

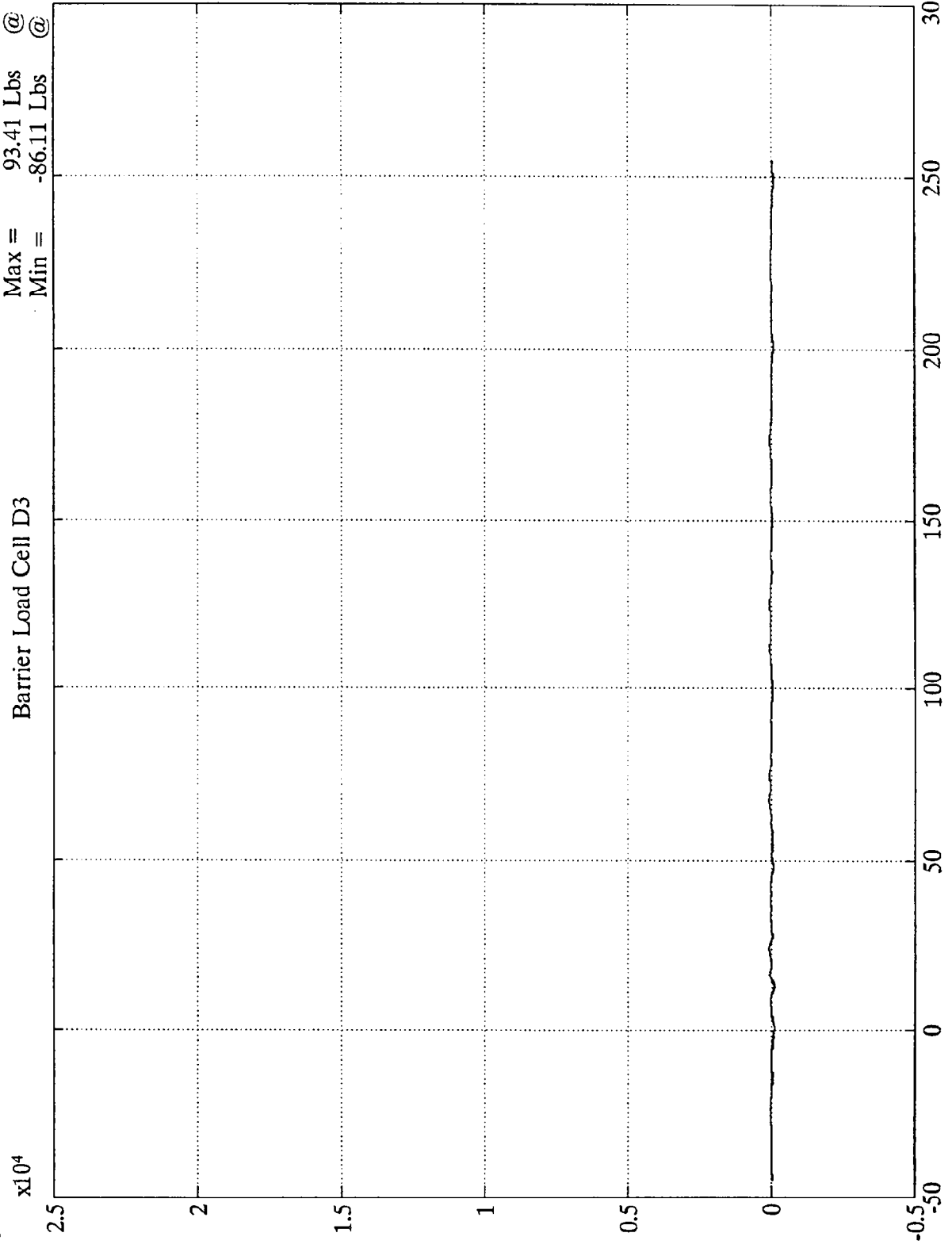
8118-3

SAE Filter Class 60

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Barrier Load Cell D3  
Max = 93.41 Lbs @ 23.76 msec  
Min = -86.11 Lbs @ 12.83 msec

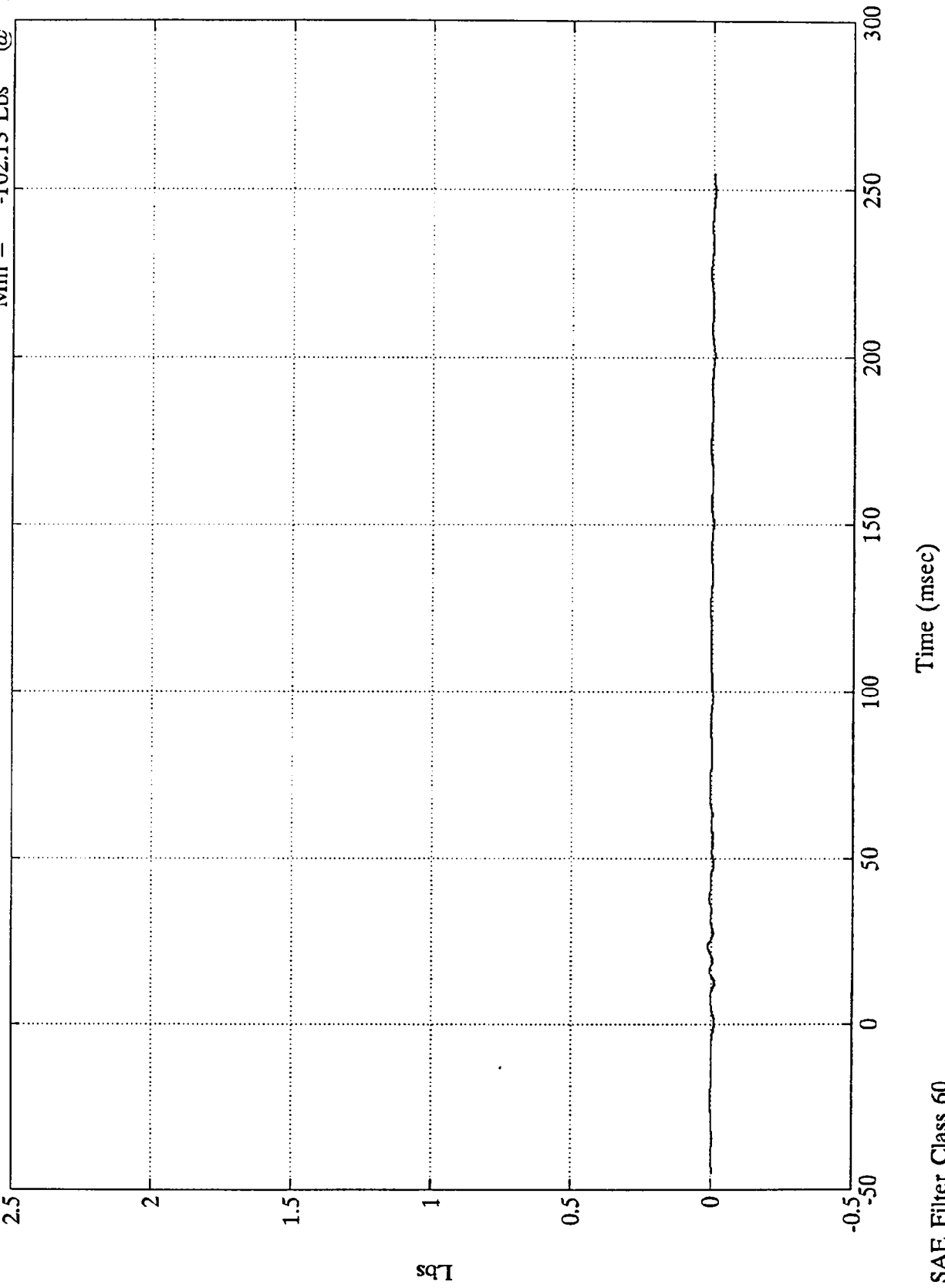


TSC Frontal Barrier Test #3 - Ford Taurus

Max = 142.44 Lbs @ 23.76 msec  
Min = -102.13 Lbs @ 12.47 msec

Barrier Load Cell D4

x10<sup>4</sup>



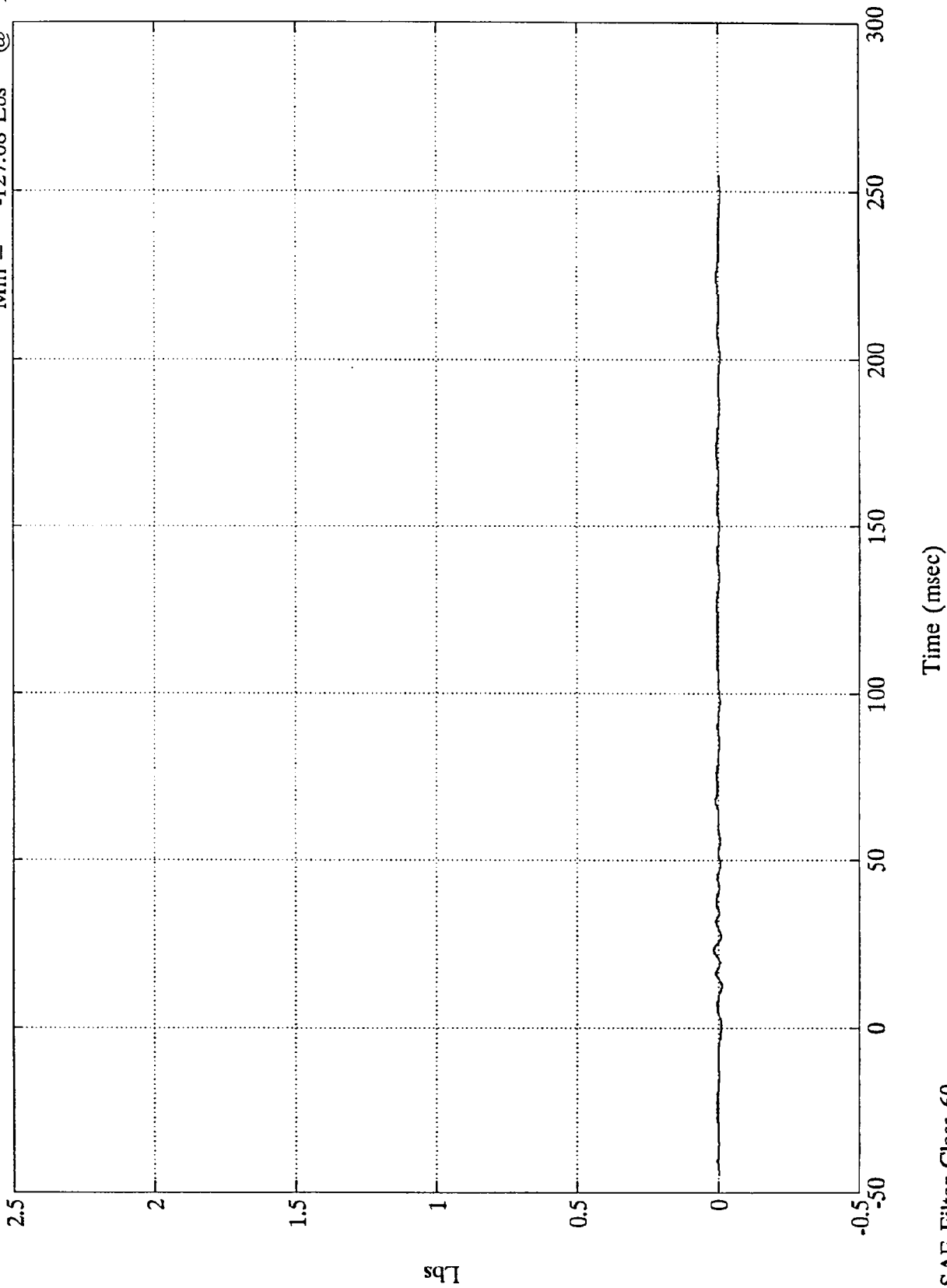
B-33

8118-3

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus  
x10<sup>4</sup>

Barrier Load Cell D5  
Max = 160.63 Lbs @ 23.63 msec  
Min = -127.08 Lbs @ 12.59 msec



81-8

8118-3

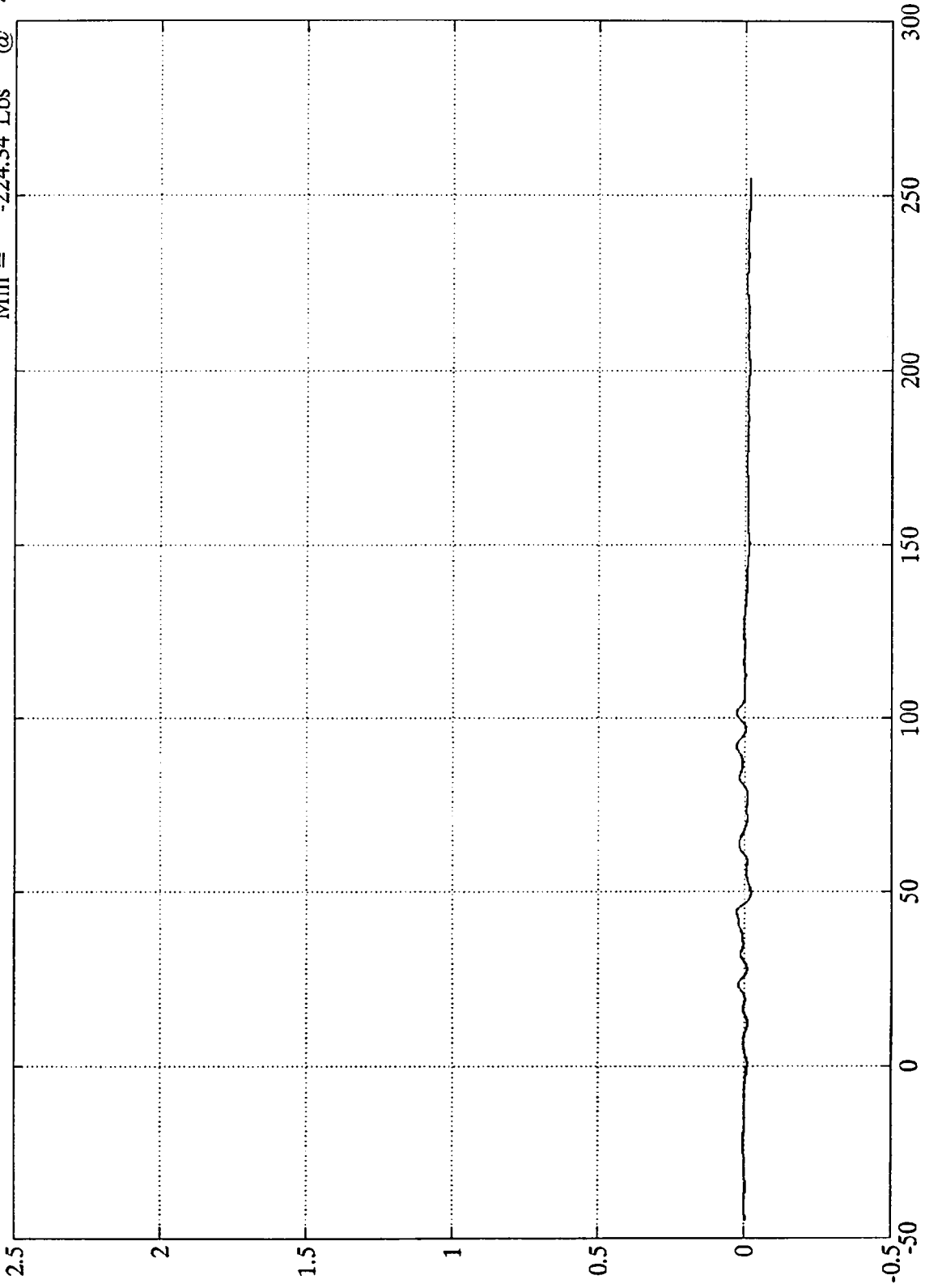
SAE Filter Class 60



TSC Frontal Barrier Test #3 - Ford Taurus  
x10<sup>4</sup>

Max = 285.89 Lbs @ 91.92 msec  
Min = -224.34 Lbs @ 49.68 msec

Barrier Load Cell D6



B-35

8118-3

SAE Filter Class 60

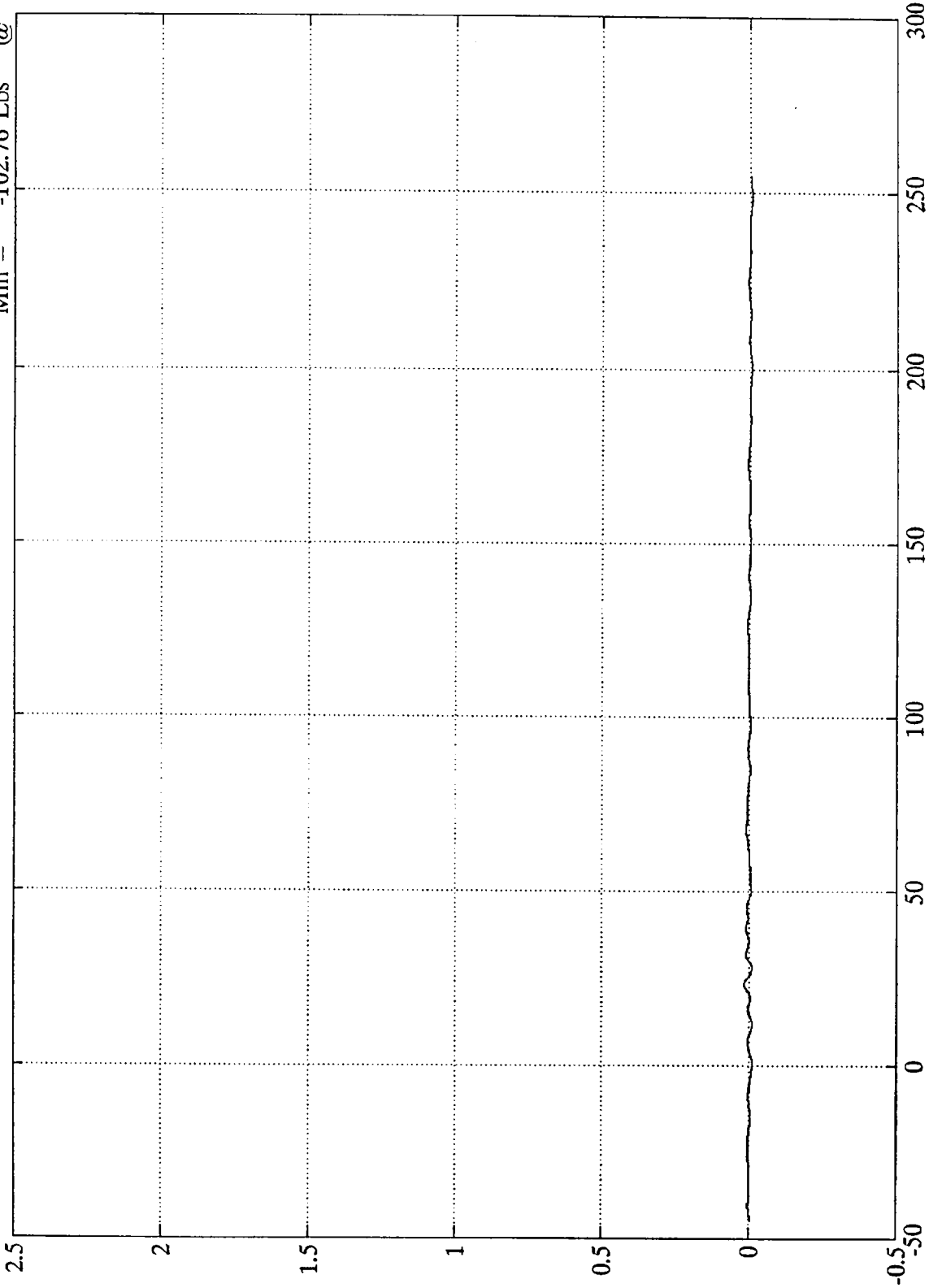
Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 163.79 Lbs @ 23.04 msec  
Min = -102.76 Lbs @ 11.63 msec

Barrier Load Cell D7

x10<sup>4</sup>



B-36

8118-3

SAE Filter Class 60

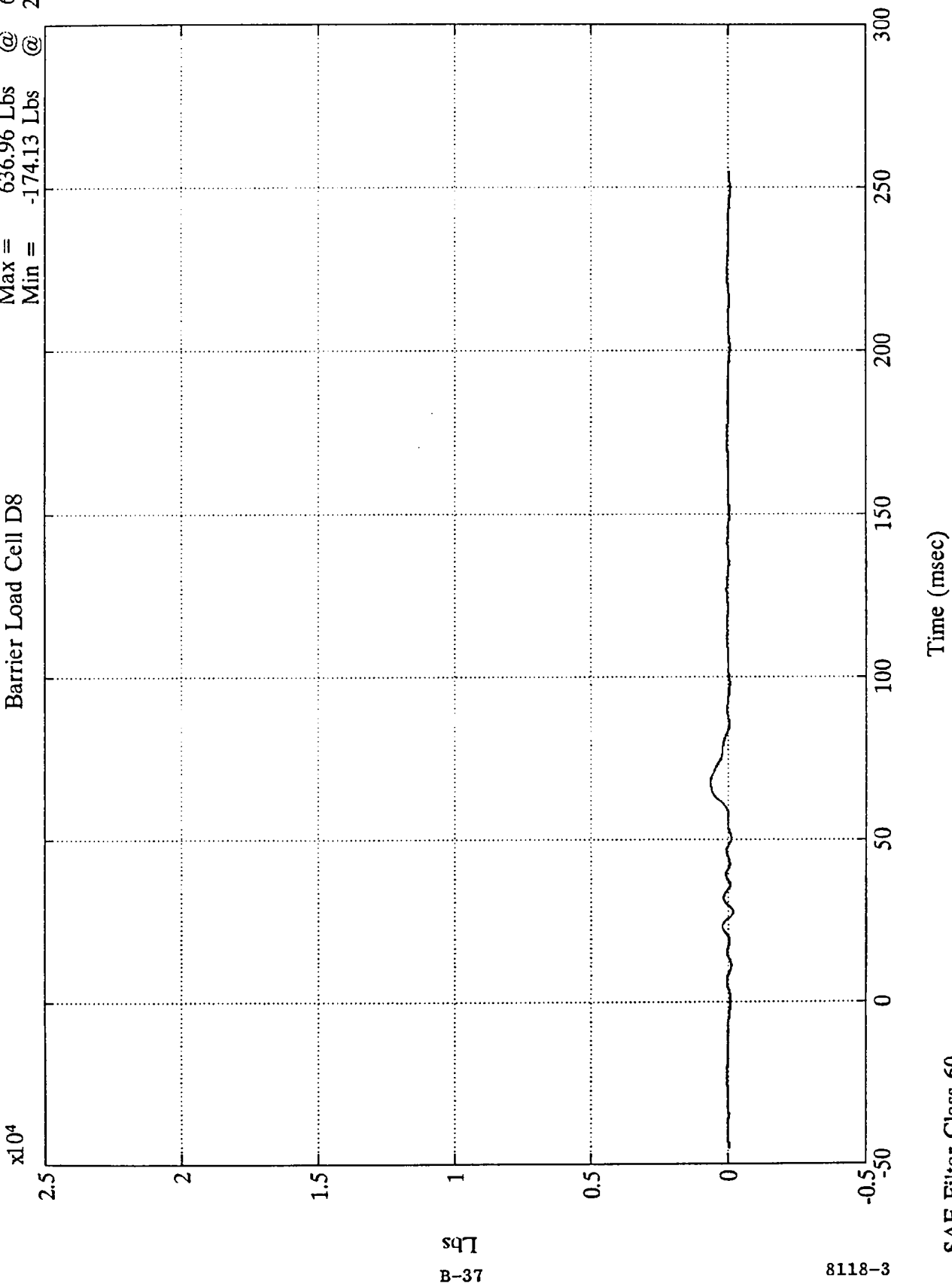
Time (msec)



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 636.96 Lbs @ 67.32 msec  
Min = -174.13 Lbs @ 27.84 msec

Barrier Load Cell D8



15-8  
lbs

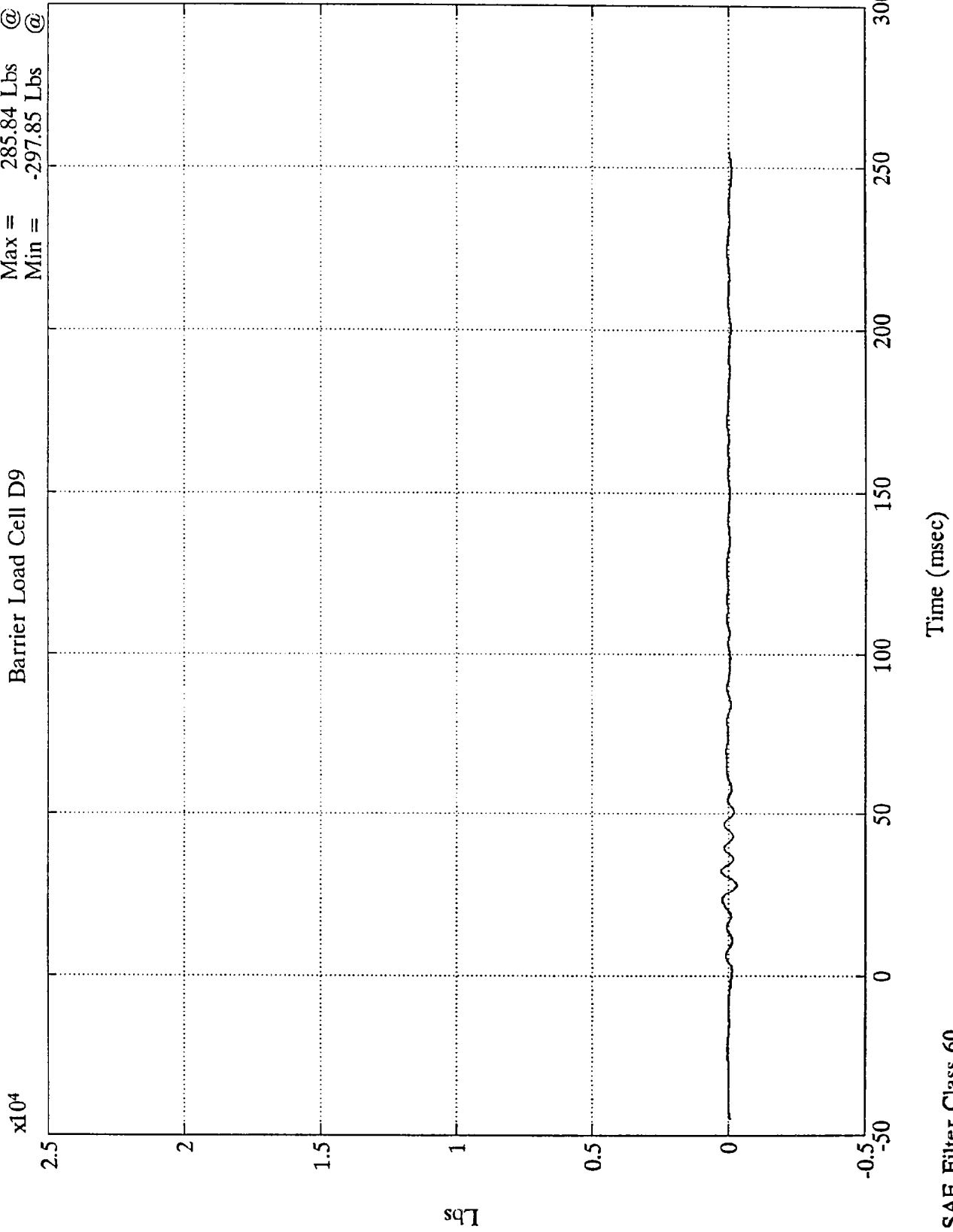
8118-3

SAE Filter Class 60

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

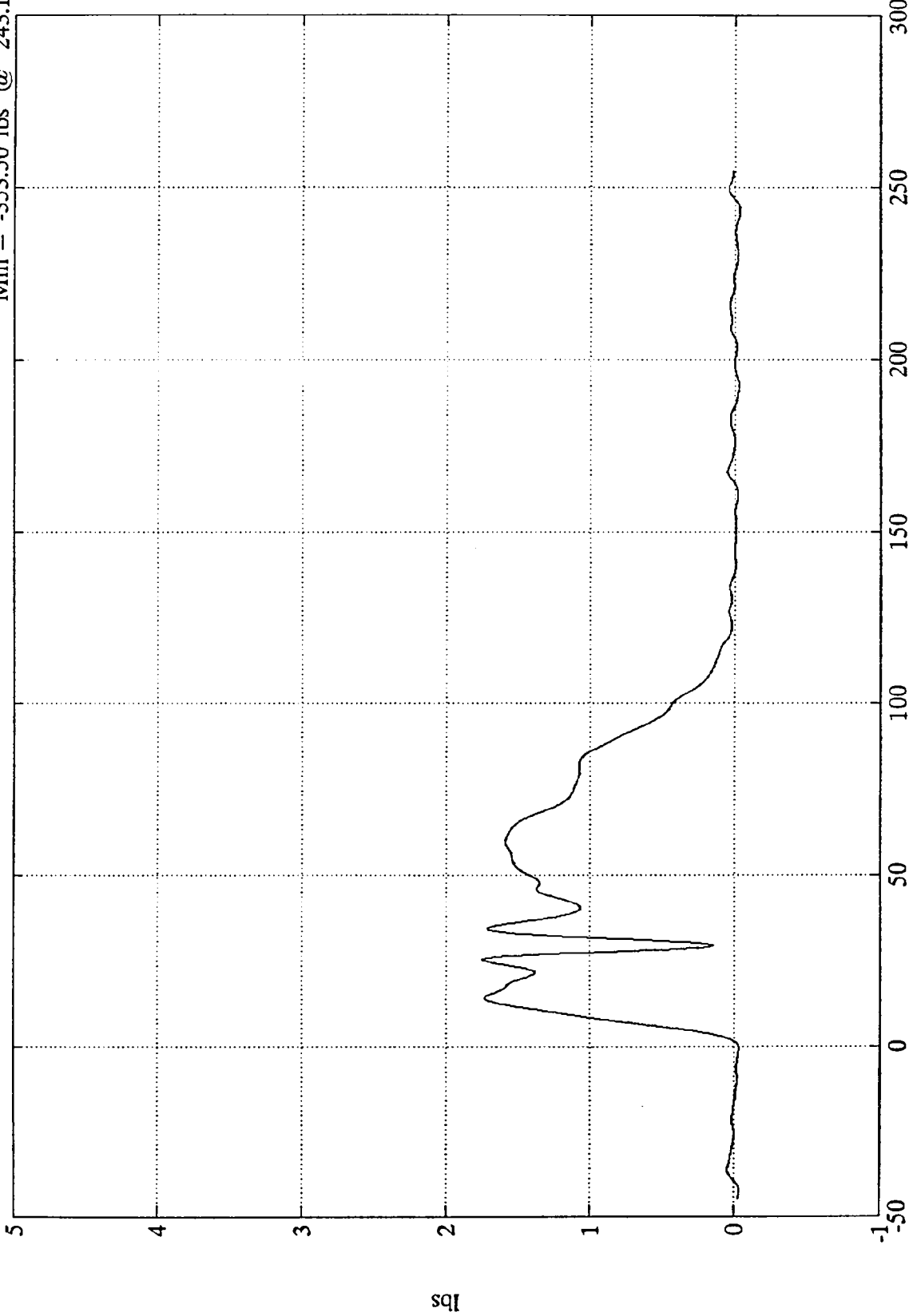
Barrier Load Cell D9  
Max = 285.84 Lbs @ 32.04 msec  
Min = -297.85 Lbs @ 27.84 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Group 1 Load Cell Sum

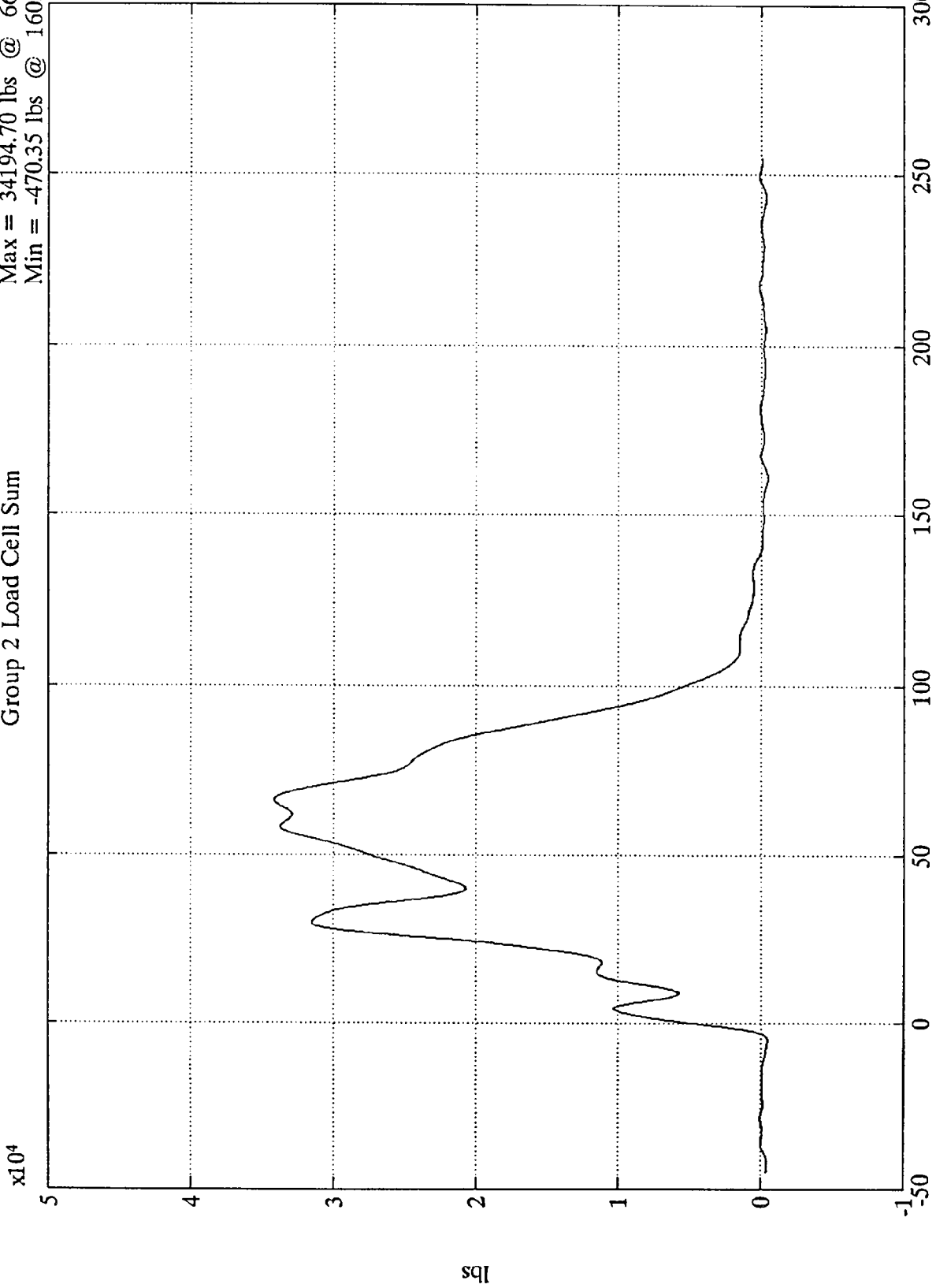
Max = 17535.40 lbs @ 25.44 msec  
Min = -3533.50 lbs @ 243.12 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Group 2 Load Cell Sum

Max = 34194.70 lbs @ 66.00 msec  
Min = -470.35 lbs @ 160.56 msec



Time (msec)

Load Cells (A4,A5,A6,B4,B5,B6)

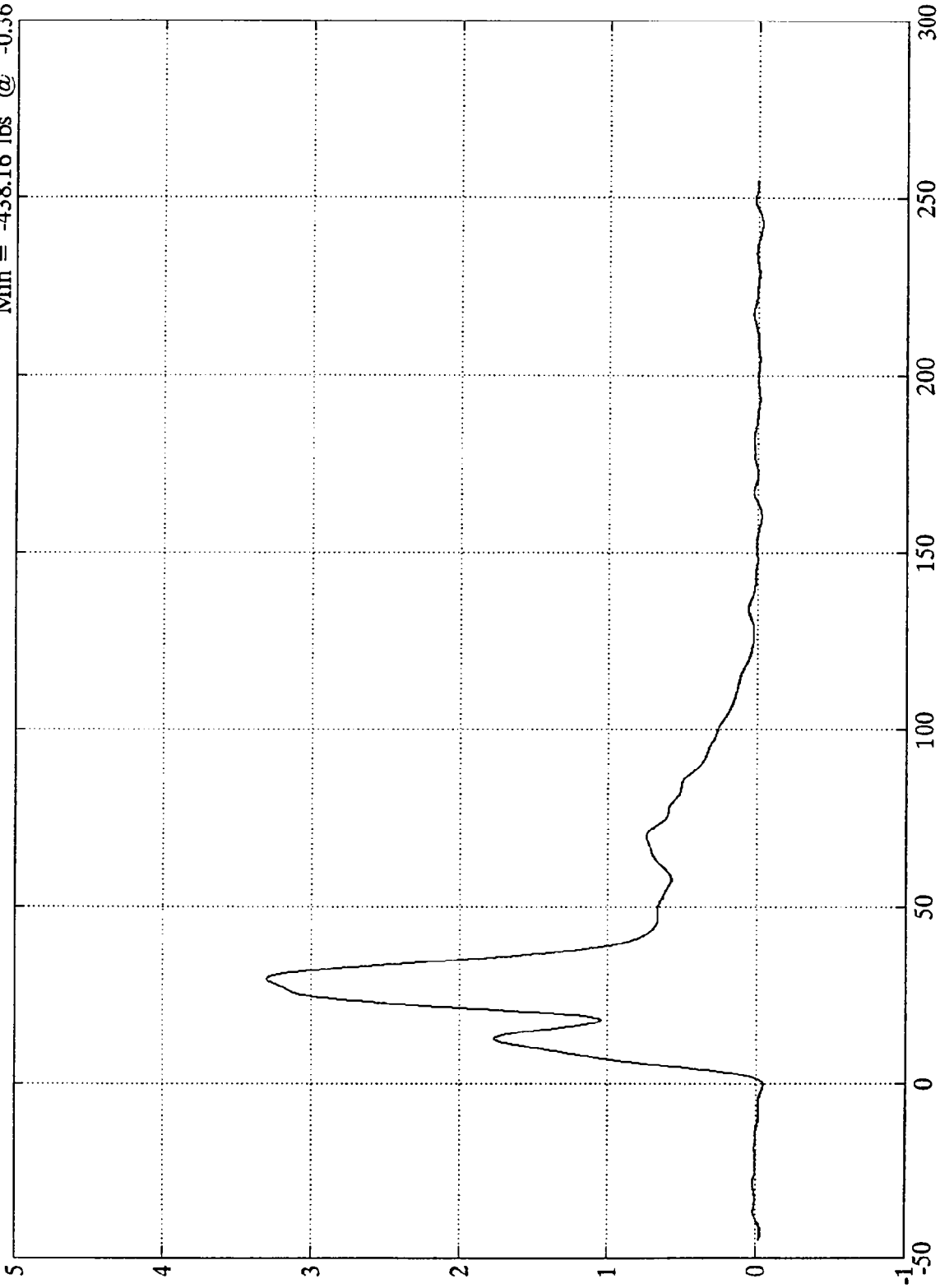
SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Group 3 Load Cell Sum

Max = 33026.40 lbs @ 29.52 msec  
Min = -438.16 lbs @ -0.36 msec

x10<sup>4</sup>



Time (msec)

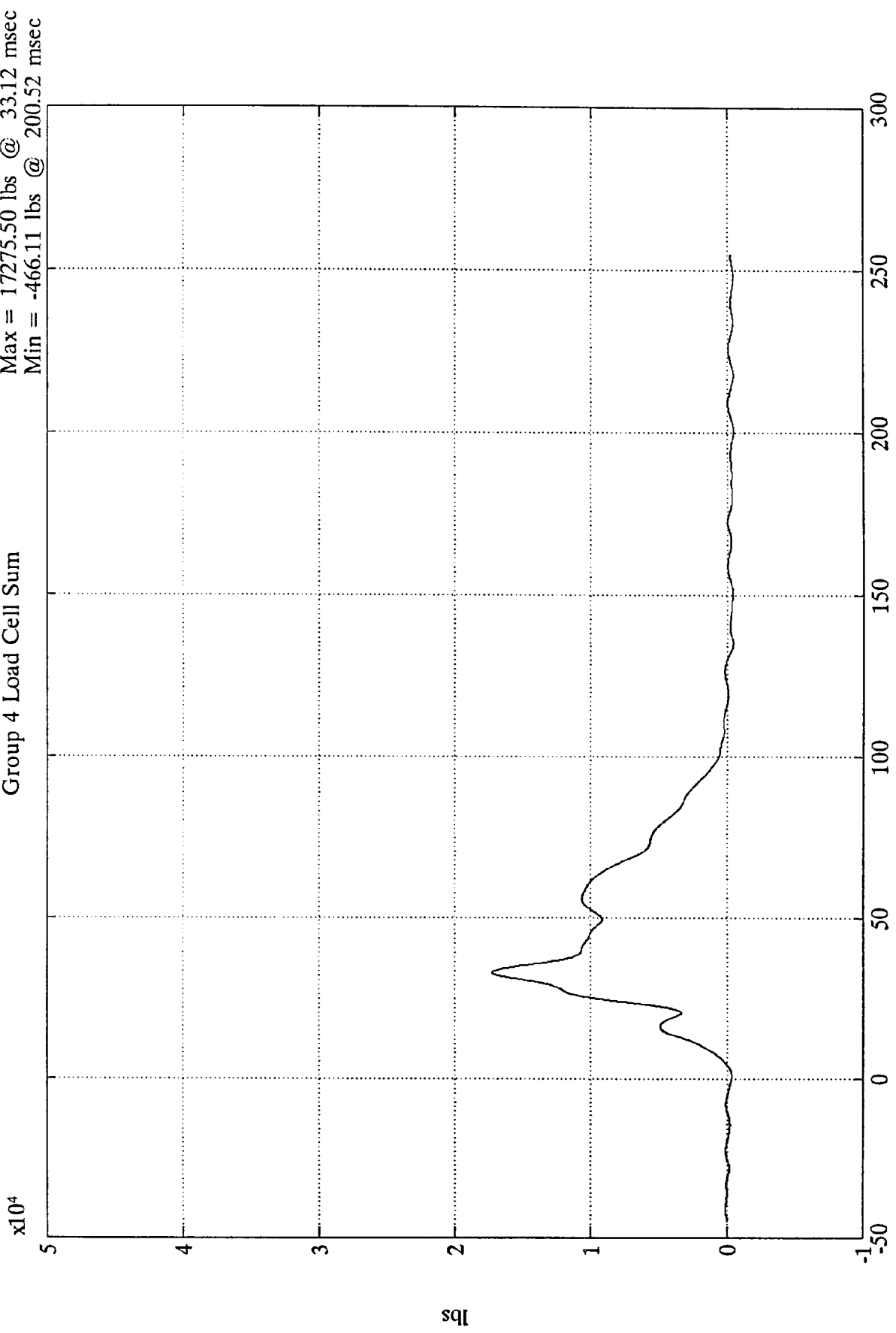
Load Cells (A7,A8,A9,B7,B8,B9)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Group 4 Load Cell Sum

Max = 17275.50 lbs @ 33.12 msec  
Min = -466.11 lbs @ 200.52 msec



Time (msec)

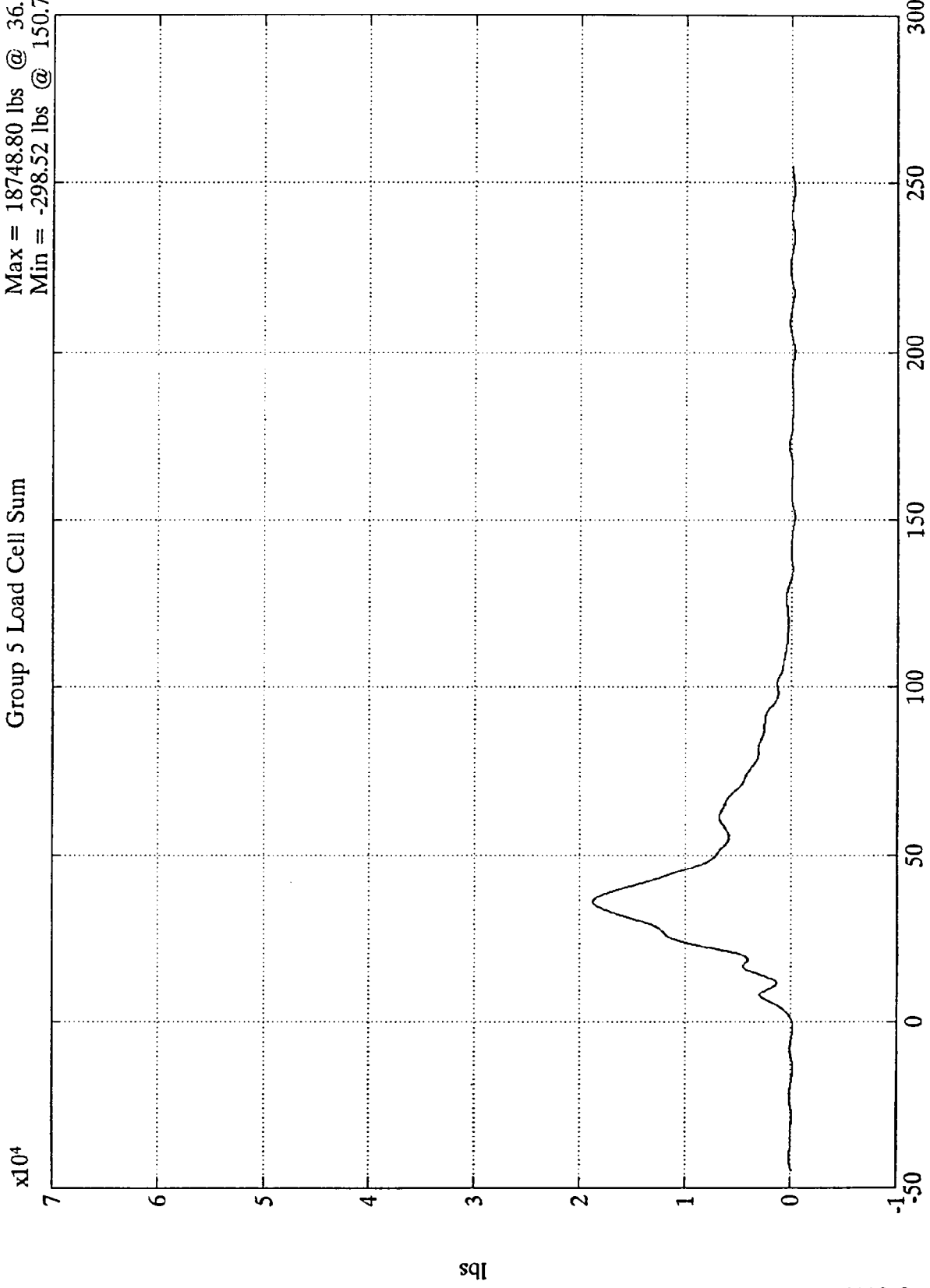
Load Cells (C1,C2,C3,D1,D2,D3)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Group 5 Load Cell Sum

Max = 18748.80 lbs @ 36.00 msec  
Min = -298.52 lbs @ 150.72 msec



Load Cells (C4,C5,C6,D4,D5,D6)

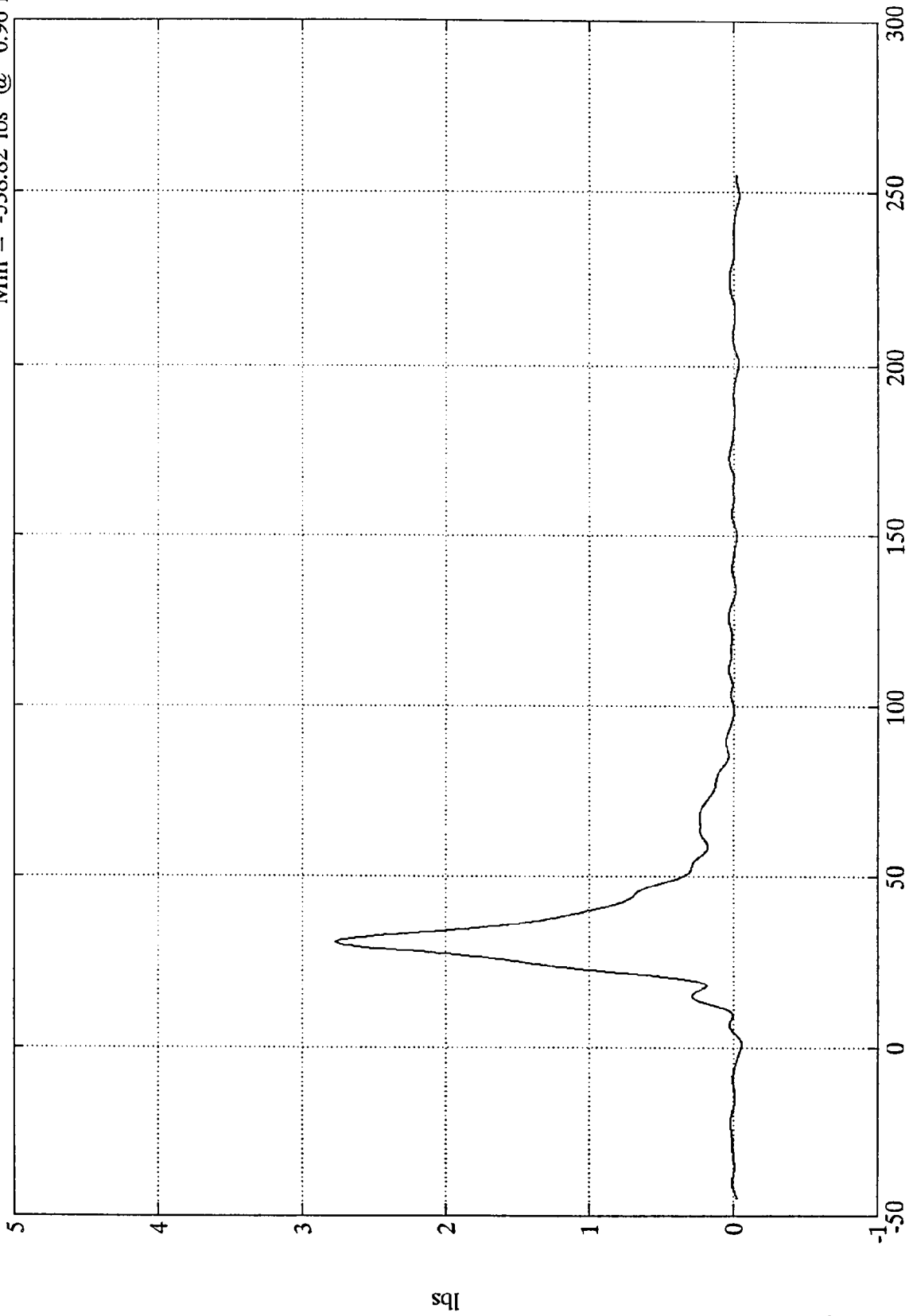
Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus  
x10<sup>4</sup>

Group 6 Load Cell Sum

Max = 27707.40 lbs @ 30.60 msec  
Min = -538.82 lbs @ 0.96 msec



Time (msec)

Load Cells (C7,C8,C9,D7,D8,D9)

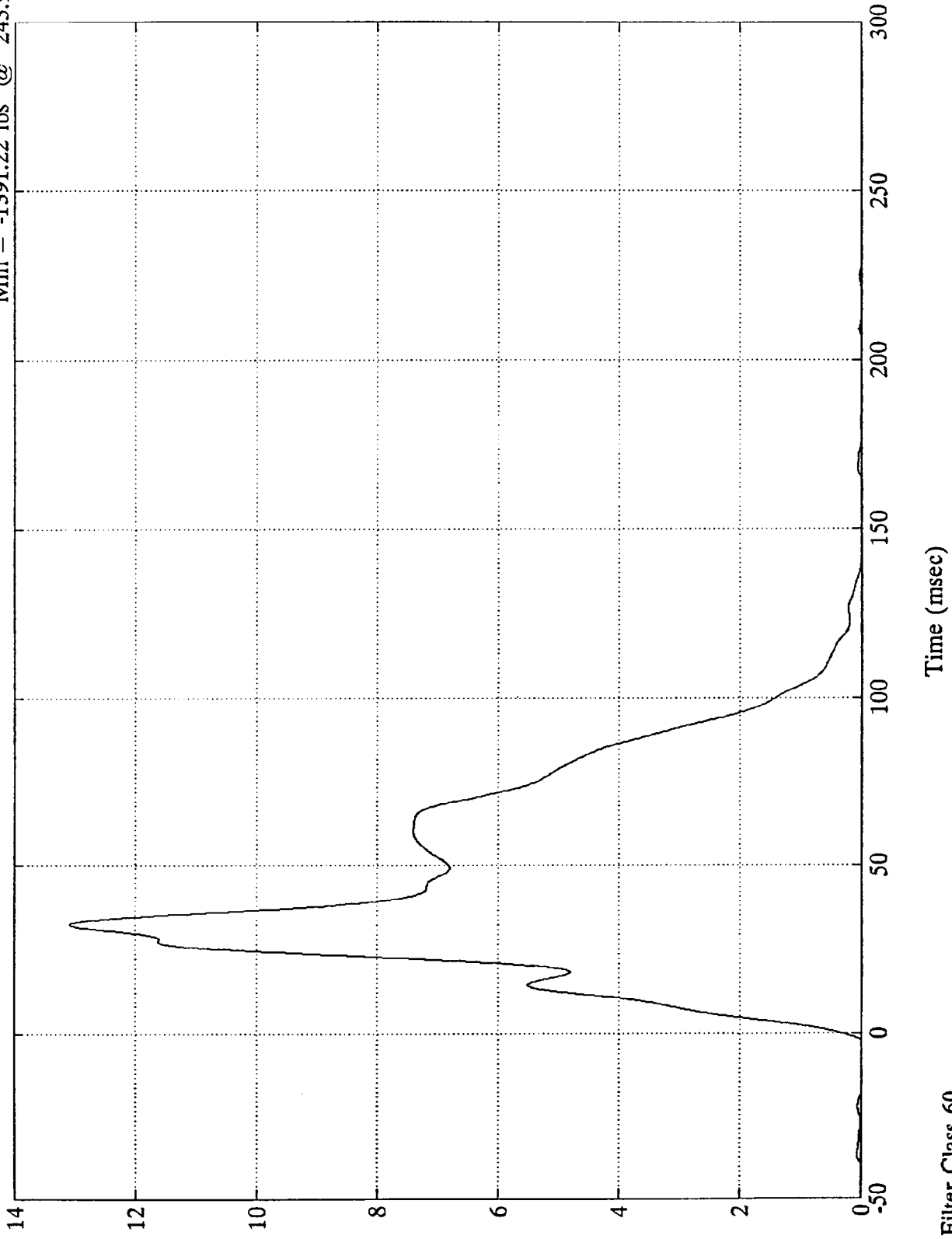
SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 130856.00 lbs @ 32.28 msec  
Min = -1391.22 lbs @ 243.96 msec

Total Load Cell Sum

$\times 10^4$



sql

B-45

SAE Filter Class 60

TEST NO. Y49-3-1308

VEHICLE

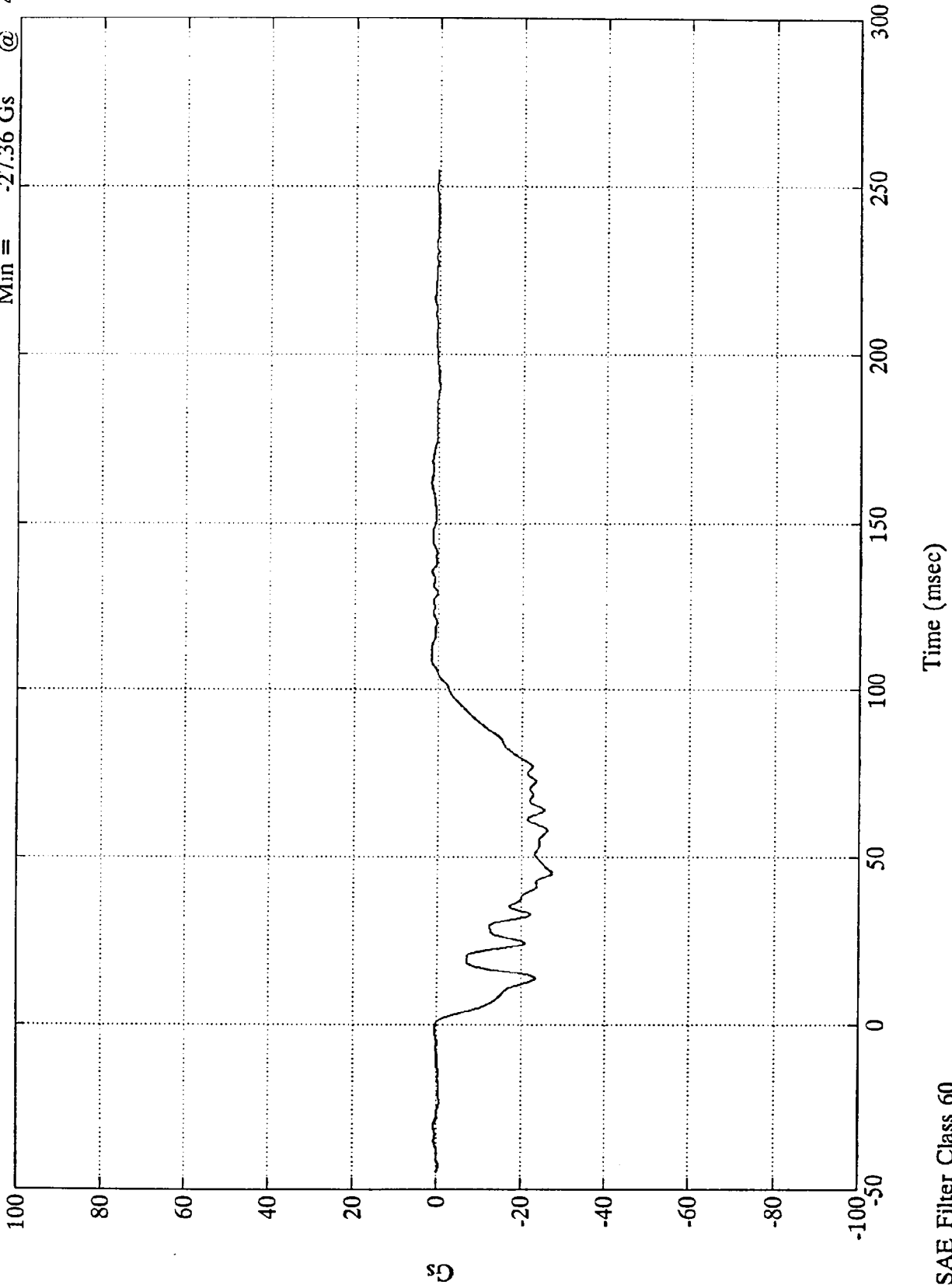
SAE FILTER CHANNEL CLASS

60

TSC Frontal Barrier Test #3 - Ford Taurus

L. Rear Seat X-Member (X)

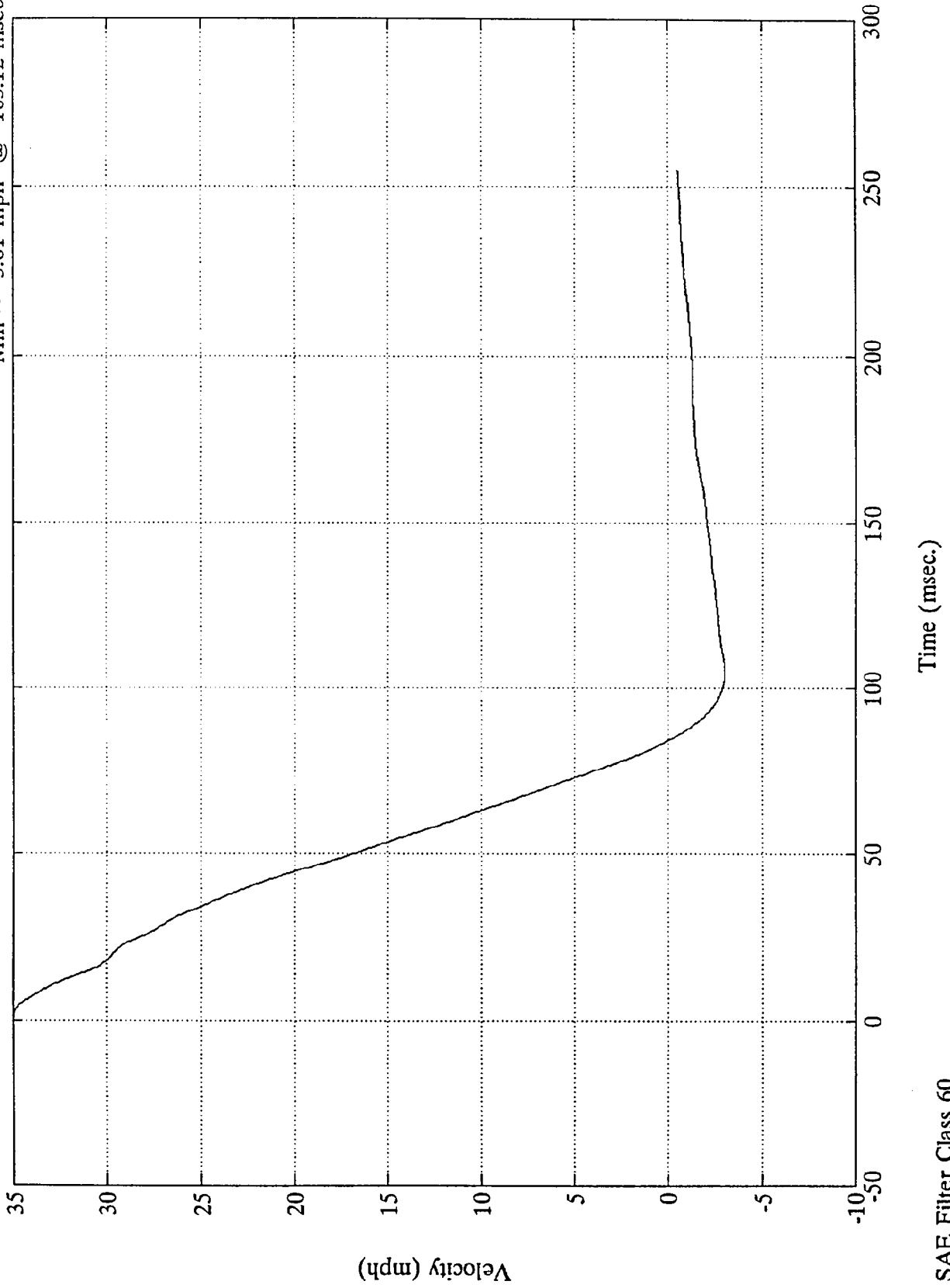
Max = 1.73 Gs @ 162.11 msec  
Min = -27.36 Gs @ 45.36 msec



TSC Frontal Barrier Test #3 - Ford Taurus

L. Rear Seat X-member X

Max = 35.00 mph @ 1.20 msec  
Min = -3.01 mph @ 105.12 msec

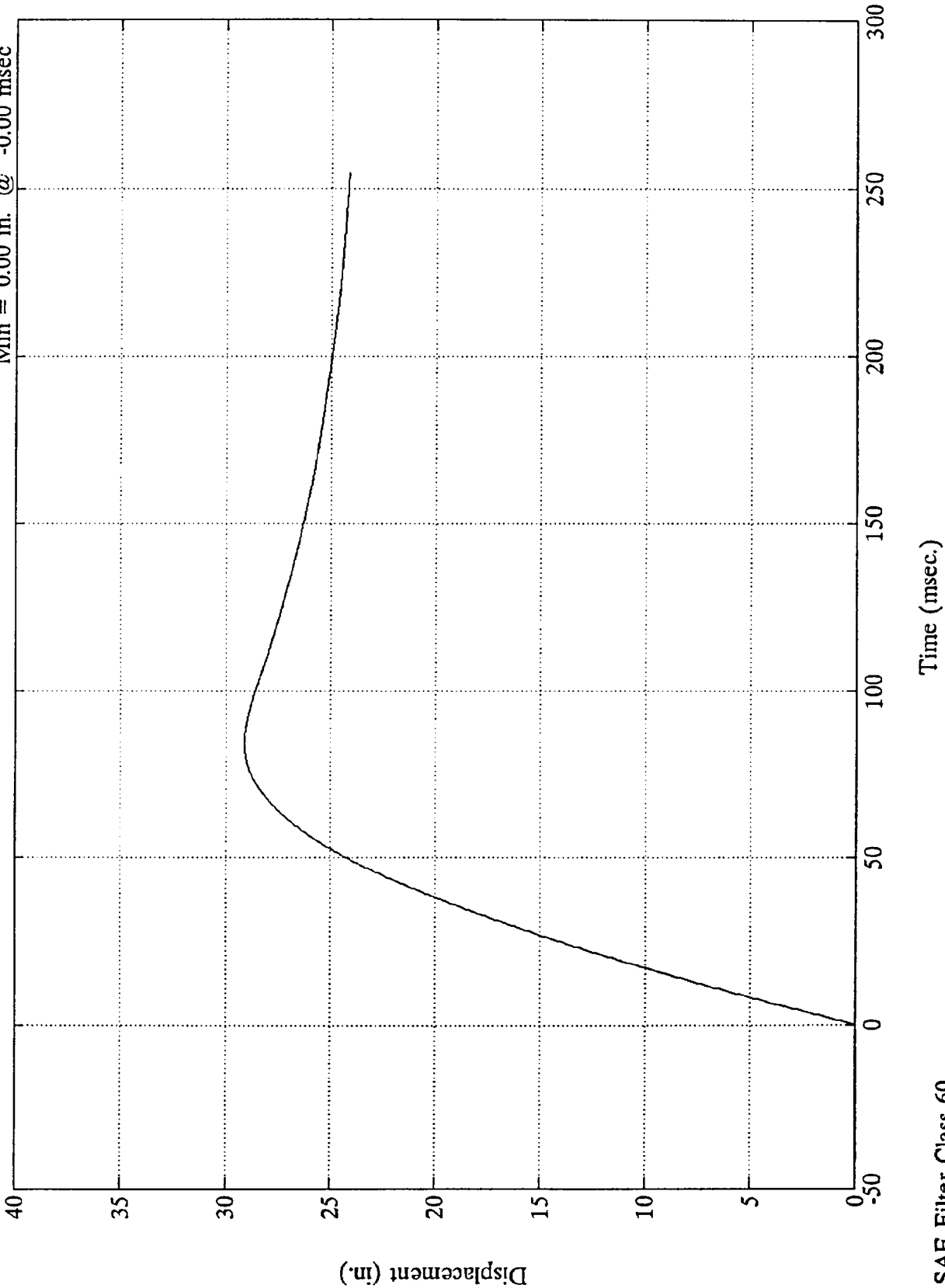


SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

L. Rear Seat X-member X

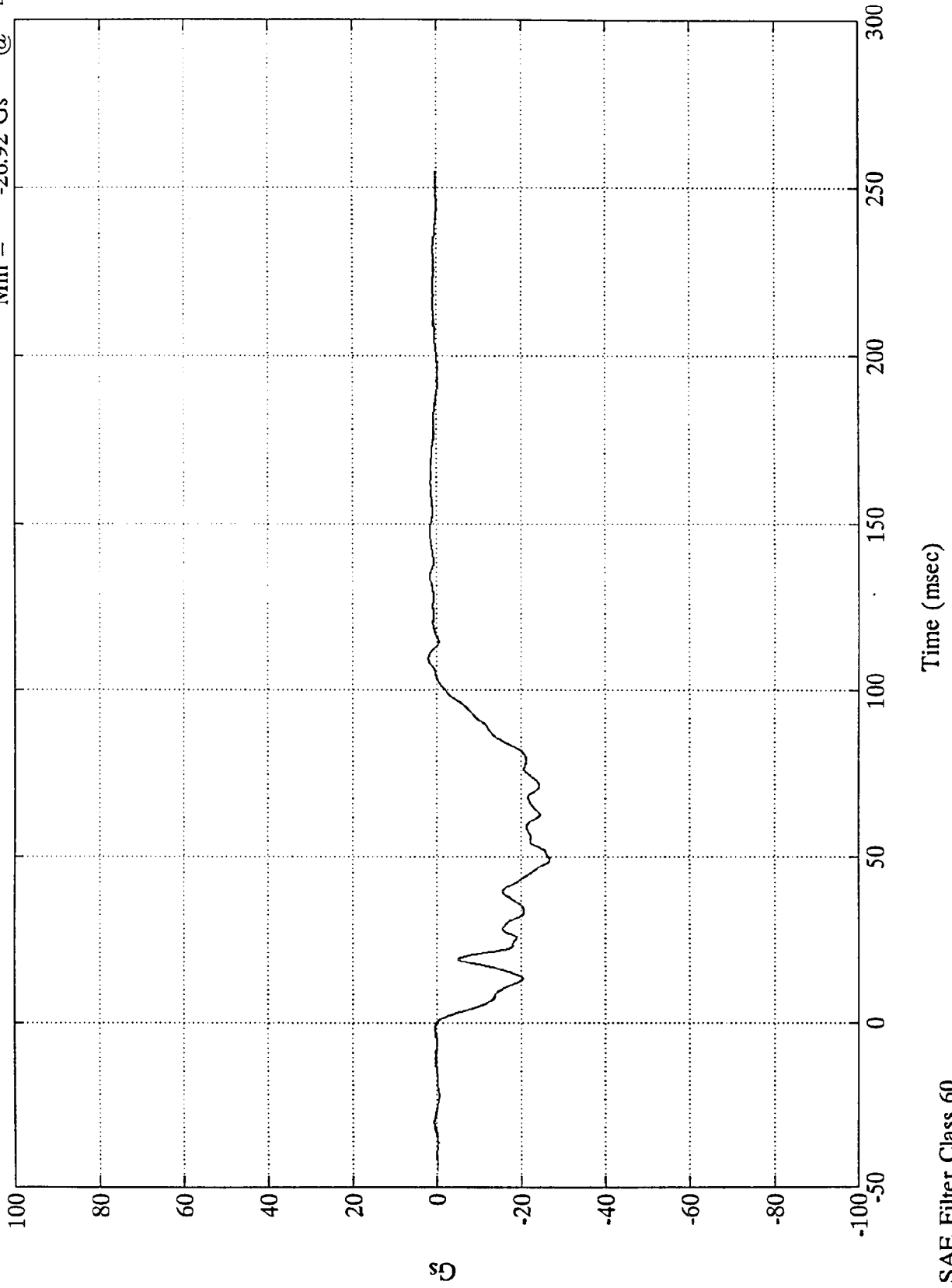
Max = 29.10 in. @ 84.48 msec  
Min = 0.00 in. @ -0.00 msec



TSC Frontal Barrier Test #3 - Ford Taurus

R. Rear Seat X-Member (X)

Max = 1.98 Gs @ 109.44 msec  
Min = -26.92 Gs @ 49.07 msec



B-50

8118-3

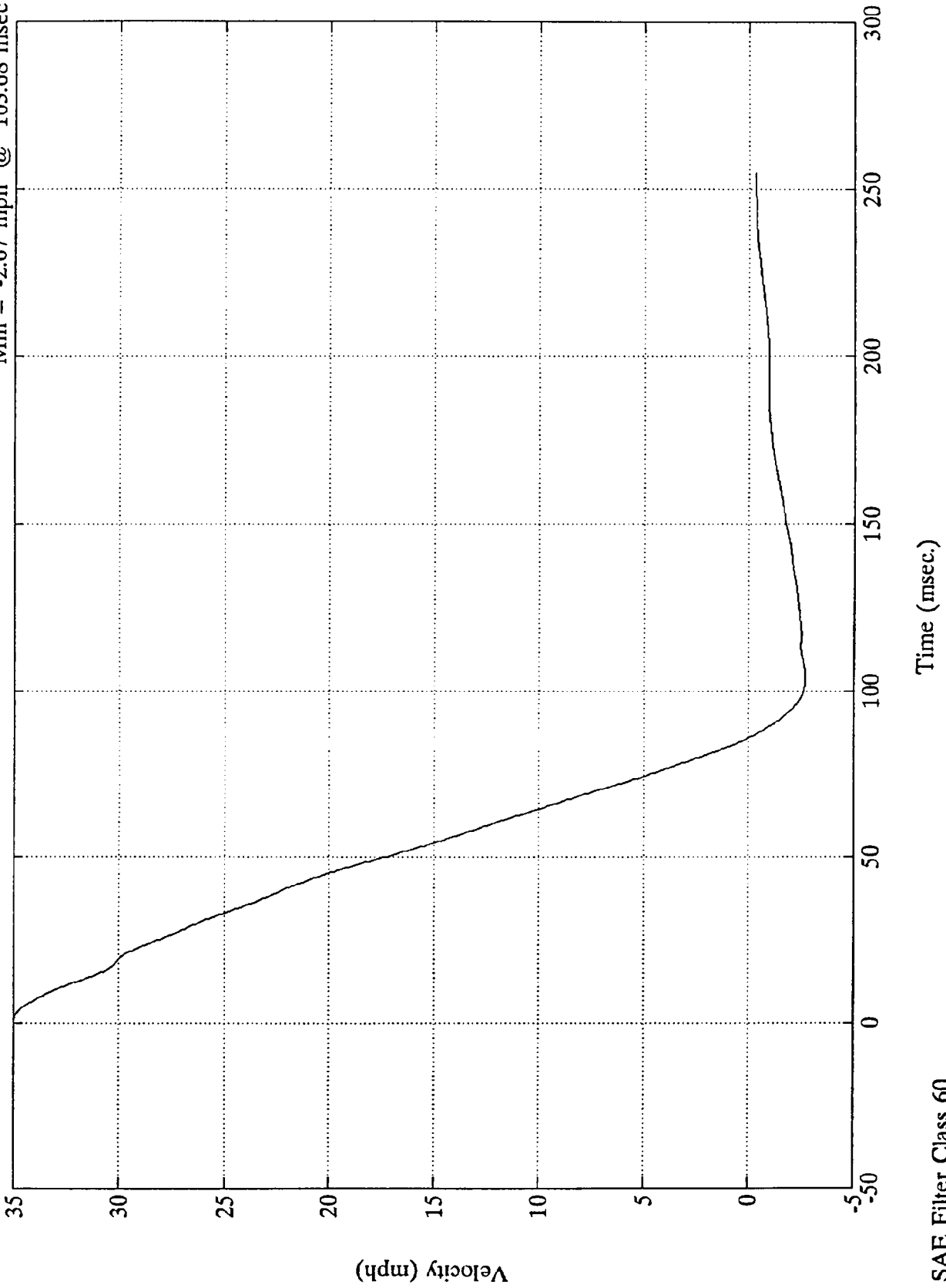
SAE Filter Class 60

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

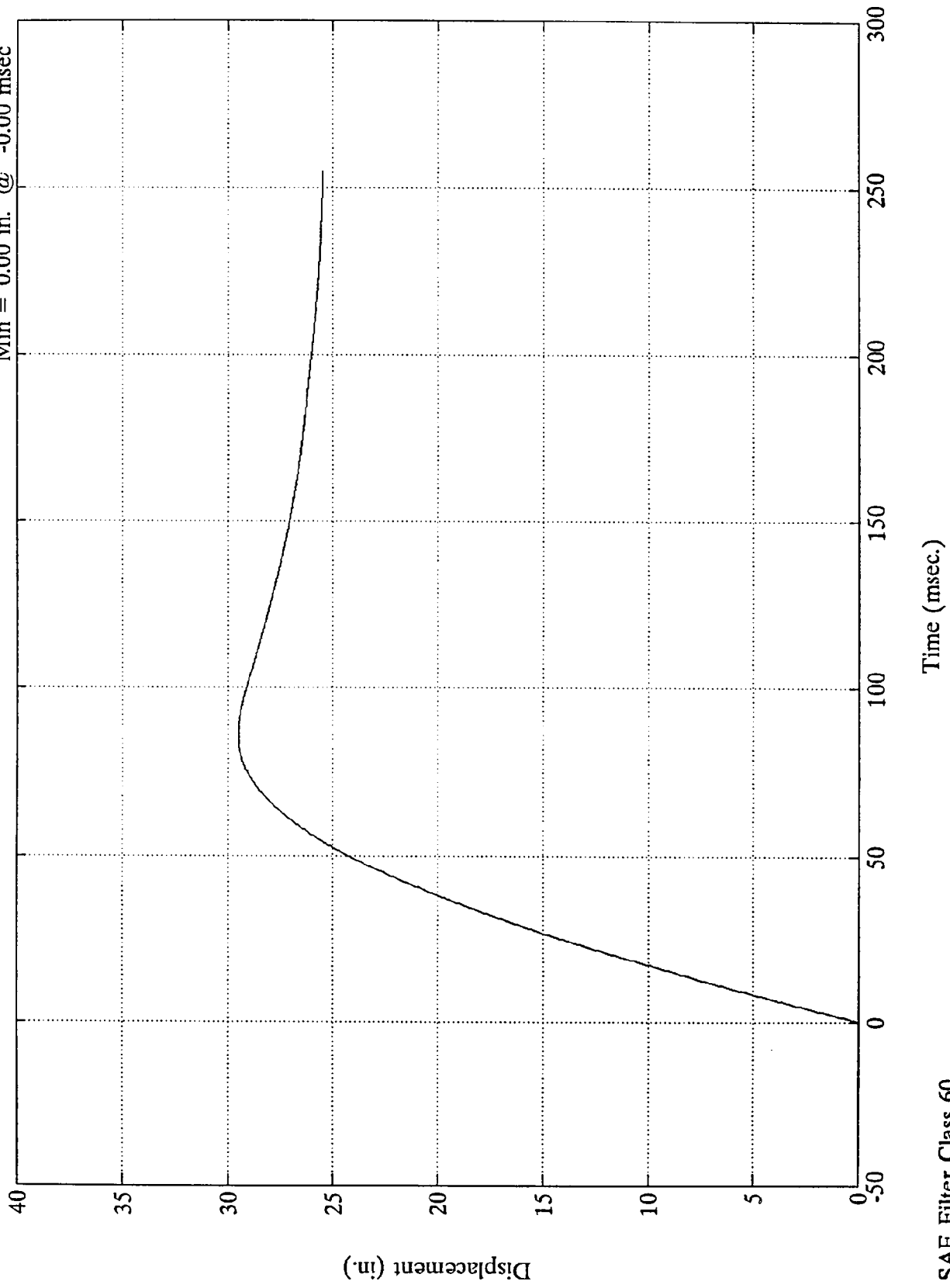
R. Rear Seat X-member X

Max = 35.00 mph @ 0.72 msec  
Min = -2.67 mph @ 103.68 msec



TSC Frontal Barrier Test #3 - Ford Taurus

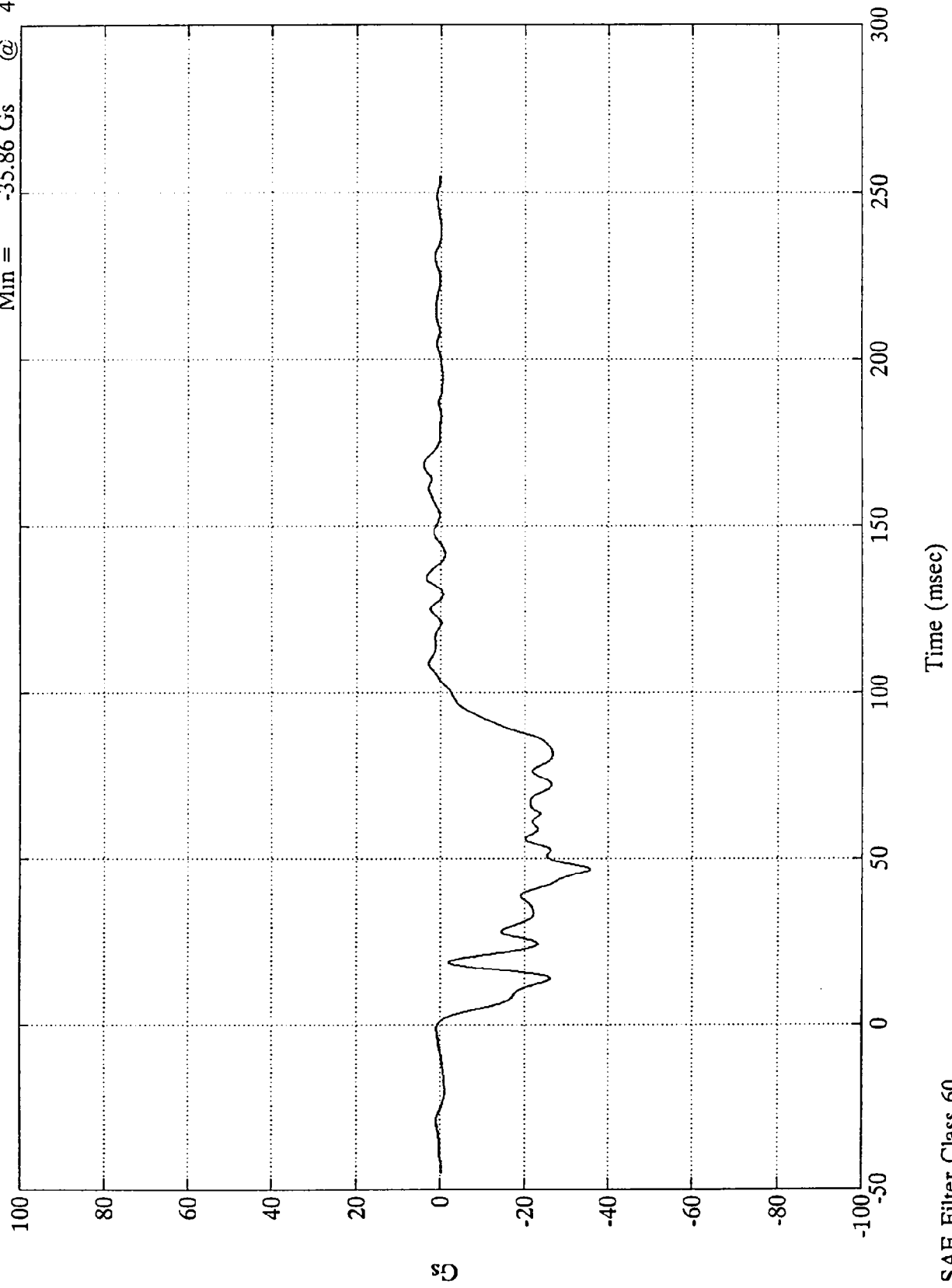
R. Rear Seat X-member X  
Max = 29.51 in. @ 86.88 msec  
Min = 0.00 in. @ -0.00 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Rear Seat X-Member (X)

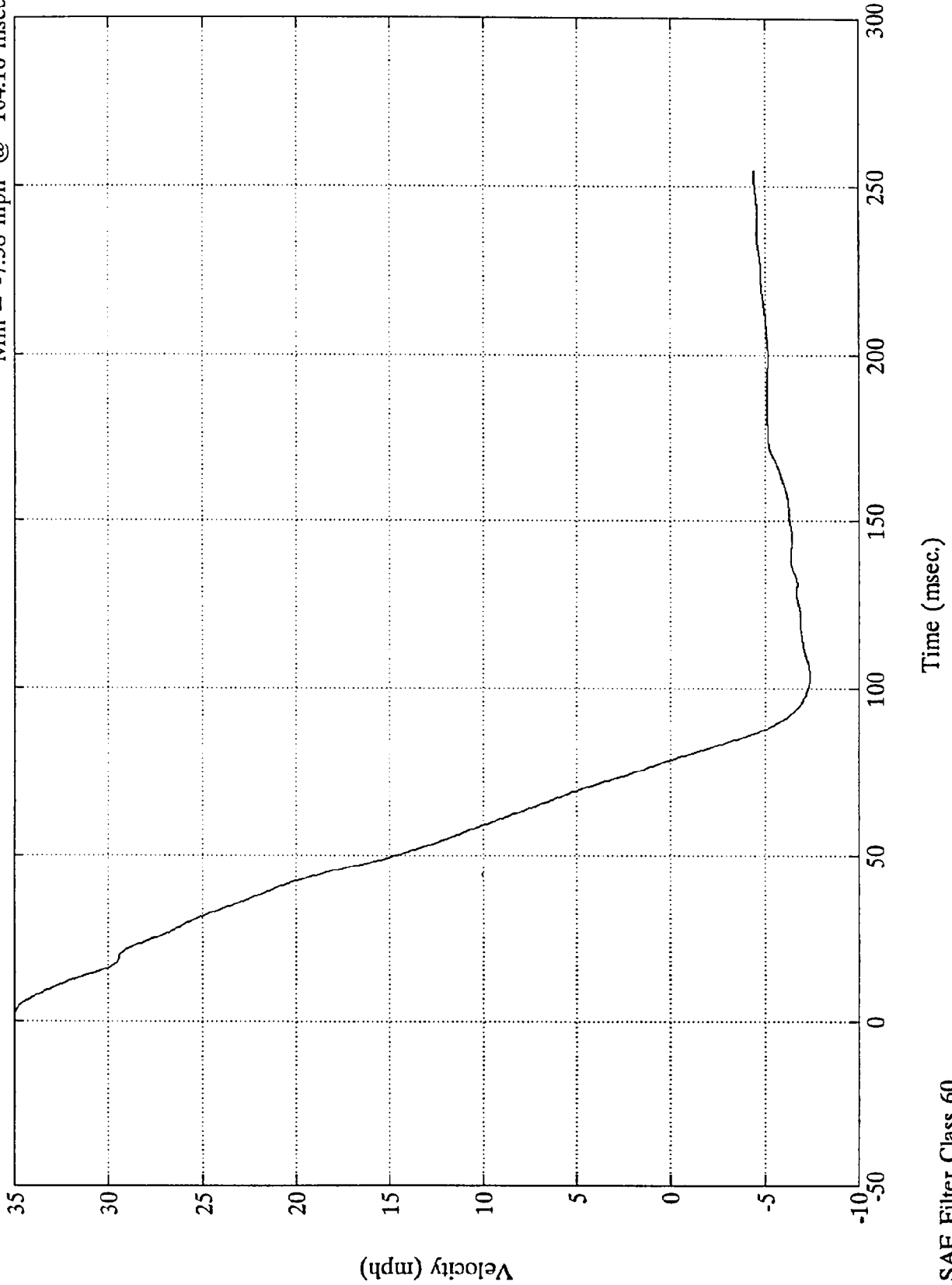
Max = 4.12 Gs @ 168.60 msec  
Min = -35.86 Gs @ 46.79 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 35.01 mph @ 1.20 msec  
Min = -7.38 mph @ 104.16 msec

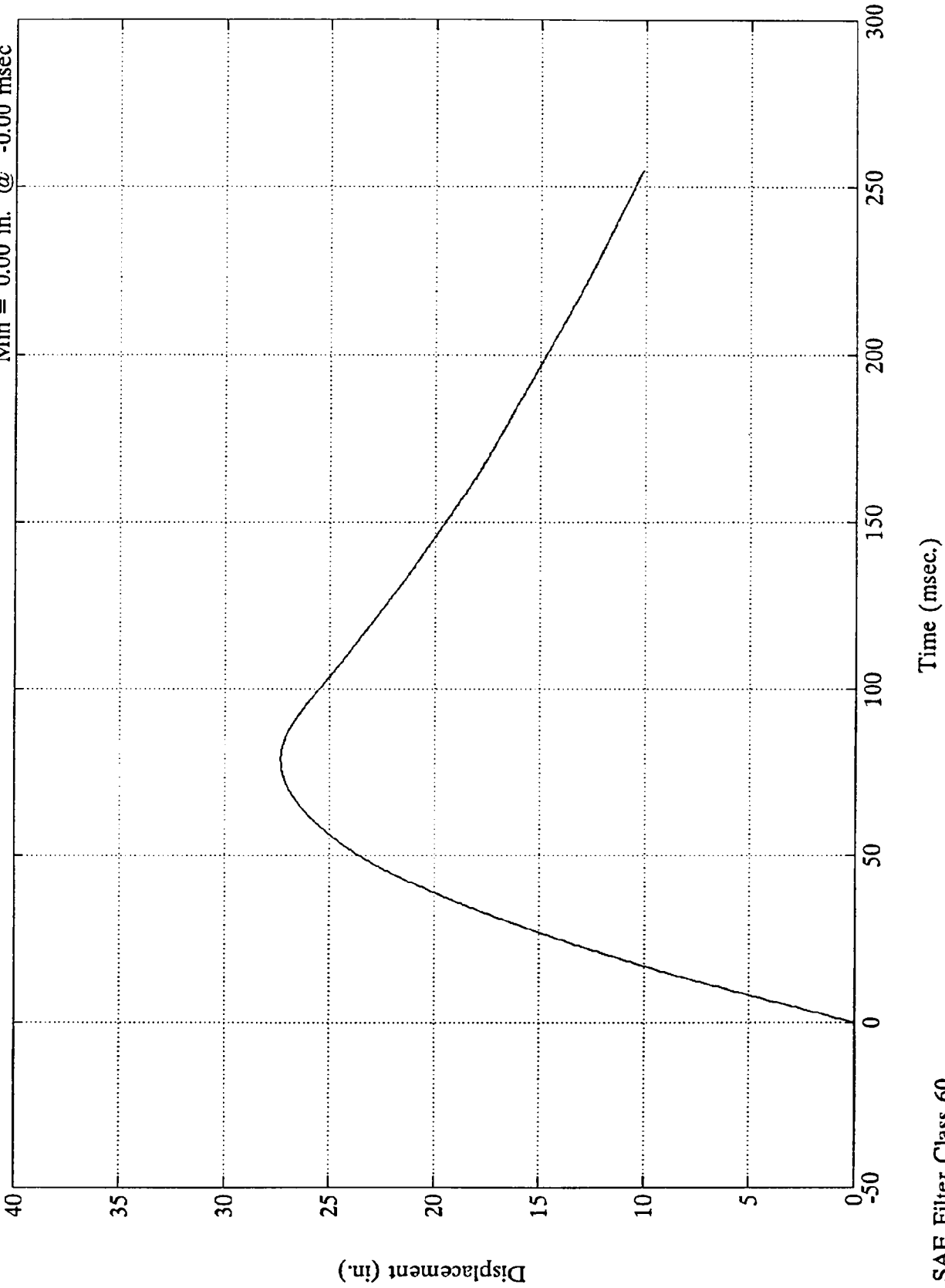
Rear Seat X-member X



TSC Frontal Barrier Test #3 - Ford Taurus

Rear Seat X-member X

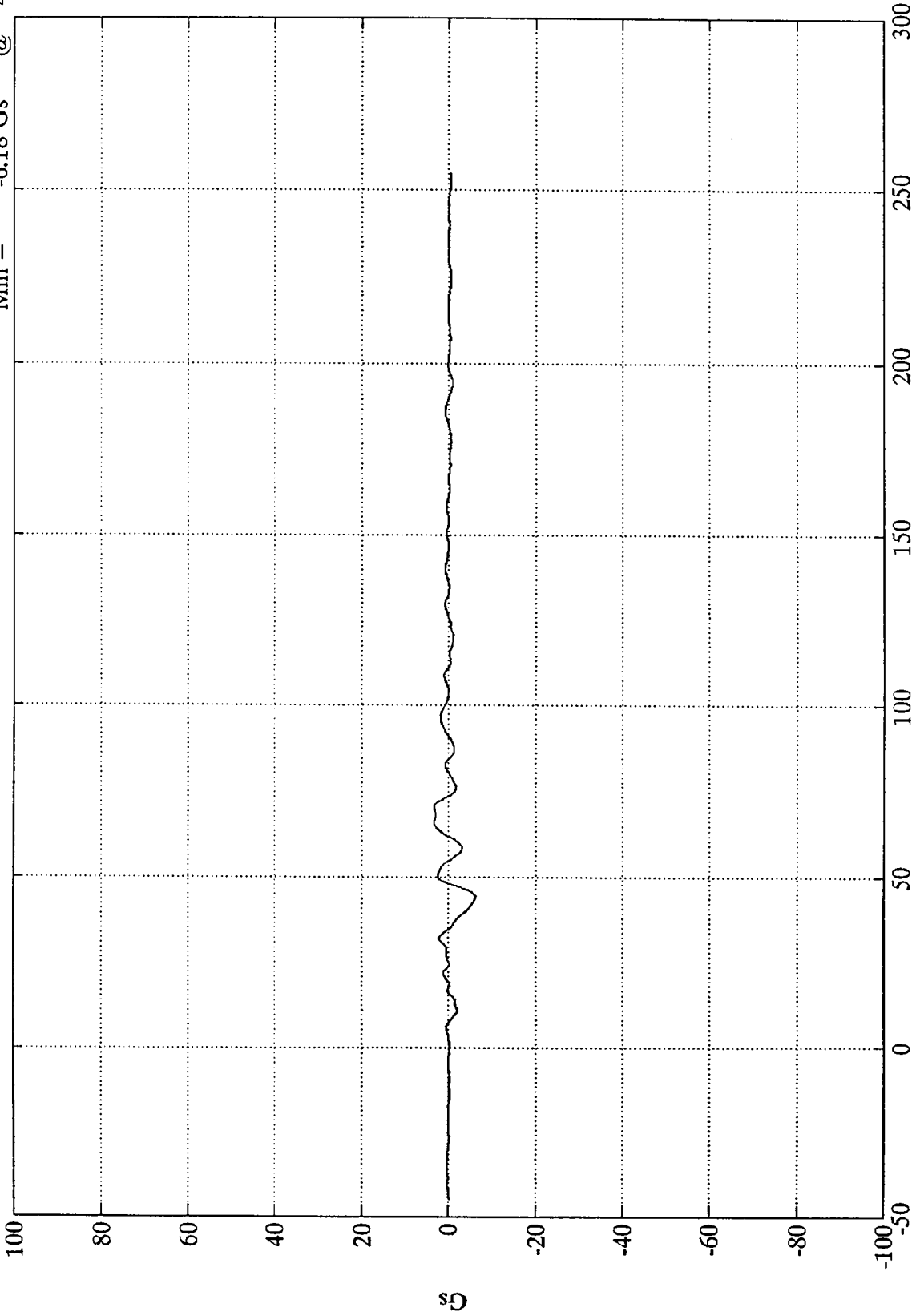
Max = 27.33 in. @ 79.44 msec  
Min = 0.00 in. @ -0.00 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Rear Seat X-Member (Y)

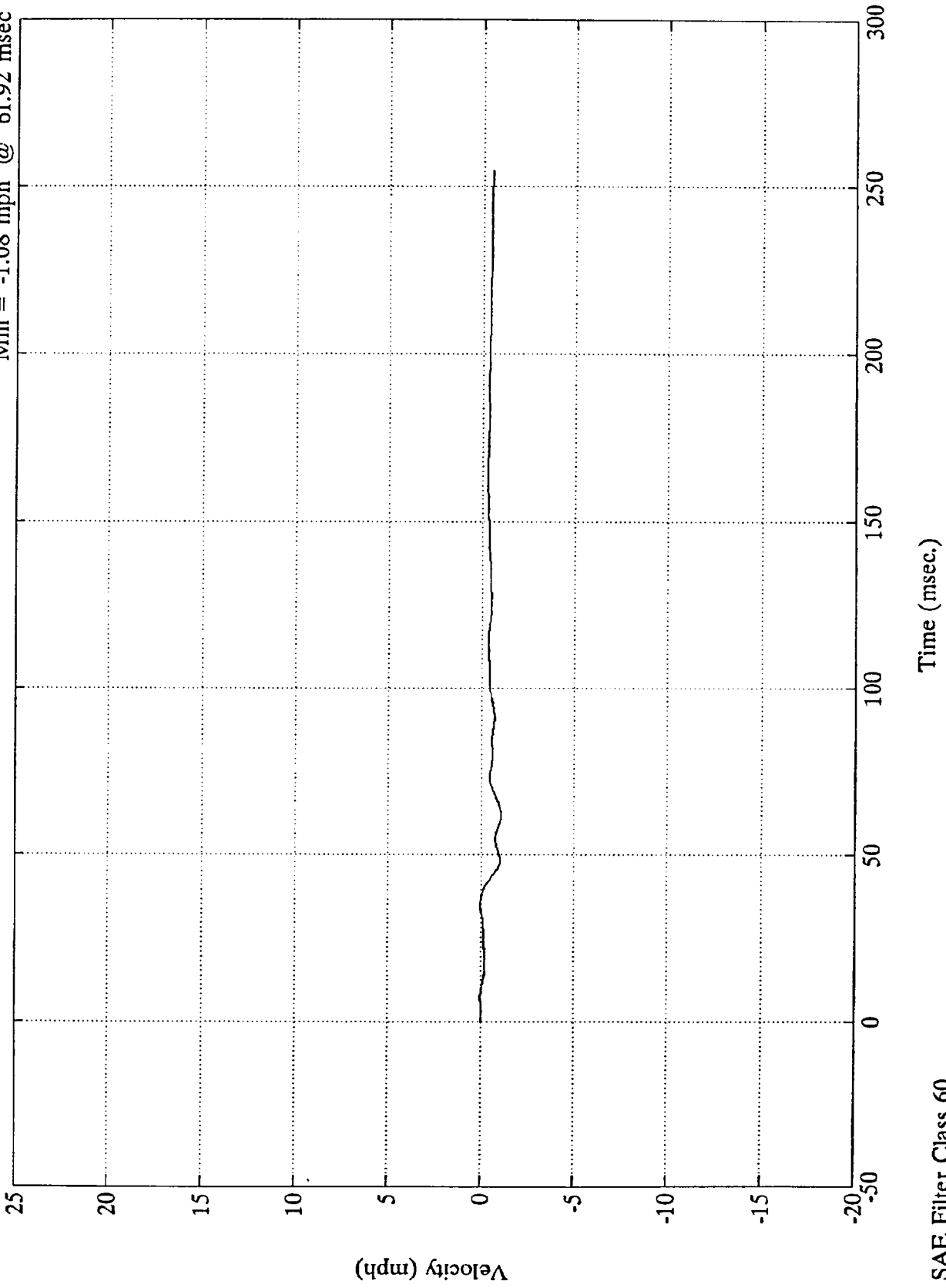
Max = 3.45 Gs @ 65.87 msec  
Min = -6.18 Gs @ 43.91 msec



TSC Frontal Barrier Test #3 - Ford Taurus

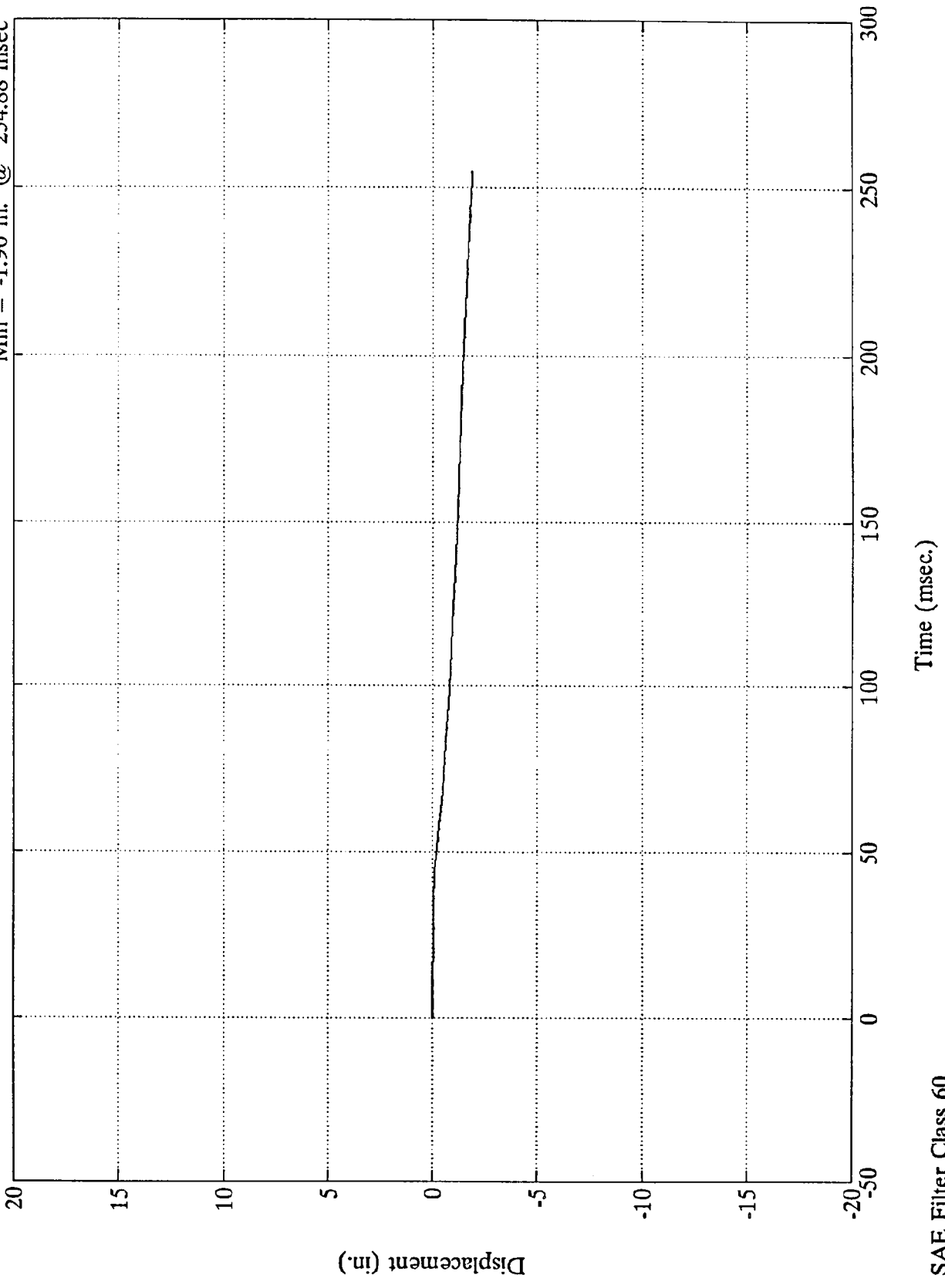
Max = 0.04 mph @ 34.56 msec  
Min = -1.08 mph @ 61.92 msec

Rear Seat X-member Y



TSC Frontal Barrier Test #3 - Ford Taurus

Rear Seat X-member Y  
Max = 0.00 in. @ 8.88 msec  
Min = -1.90 in. @ 254.88 msec



8-58

8118-3

SAE Filter Class 60

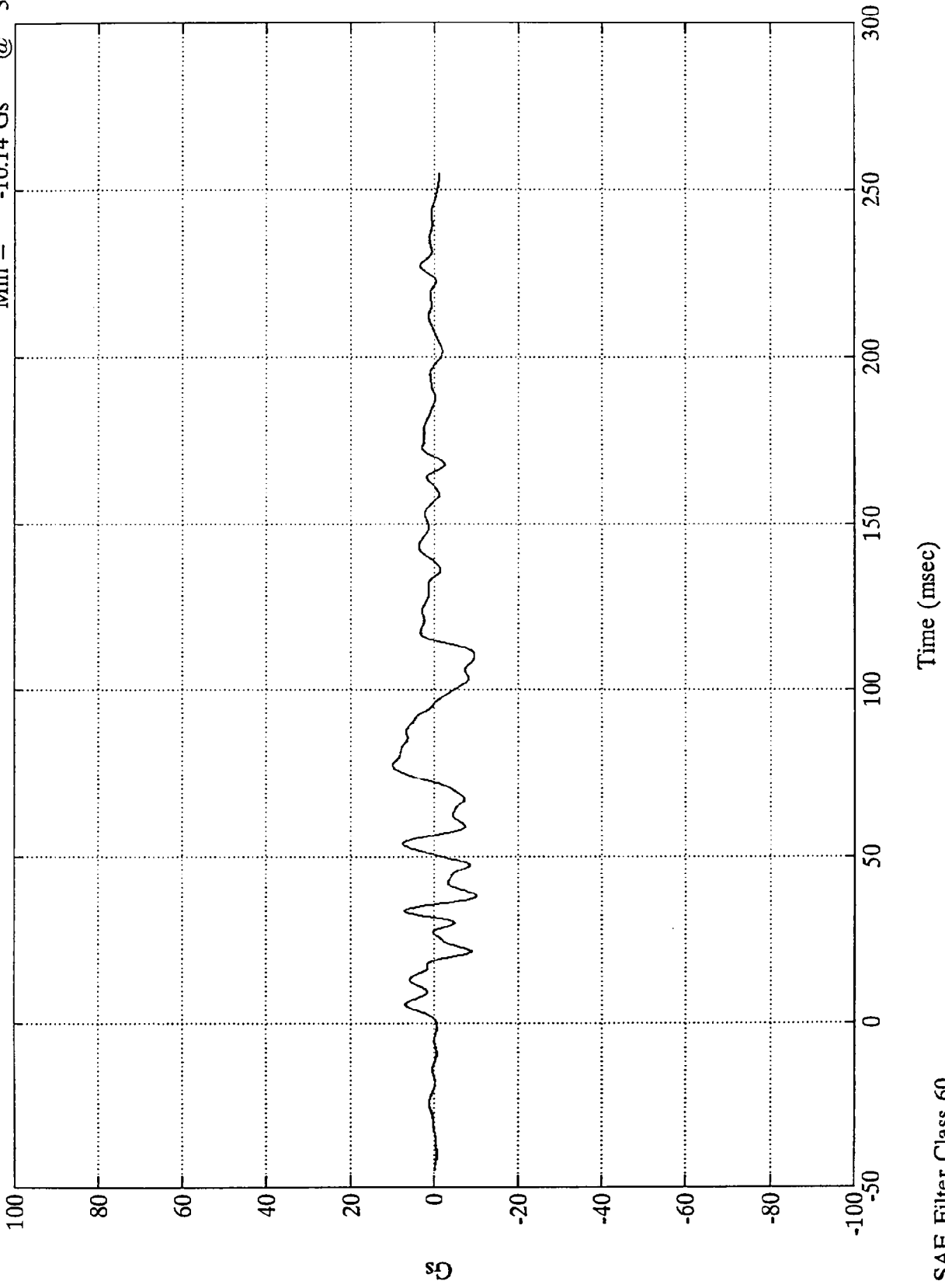
Time (msec.)

Displacement (in.)

TSC Frontal Barrier Test #3 - Ford Taurus

Rear Seat X-Member (Z)

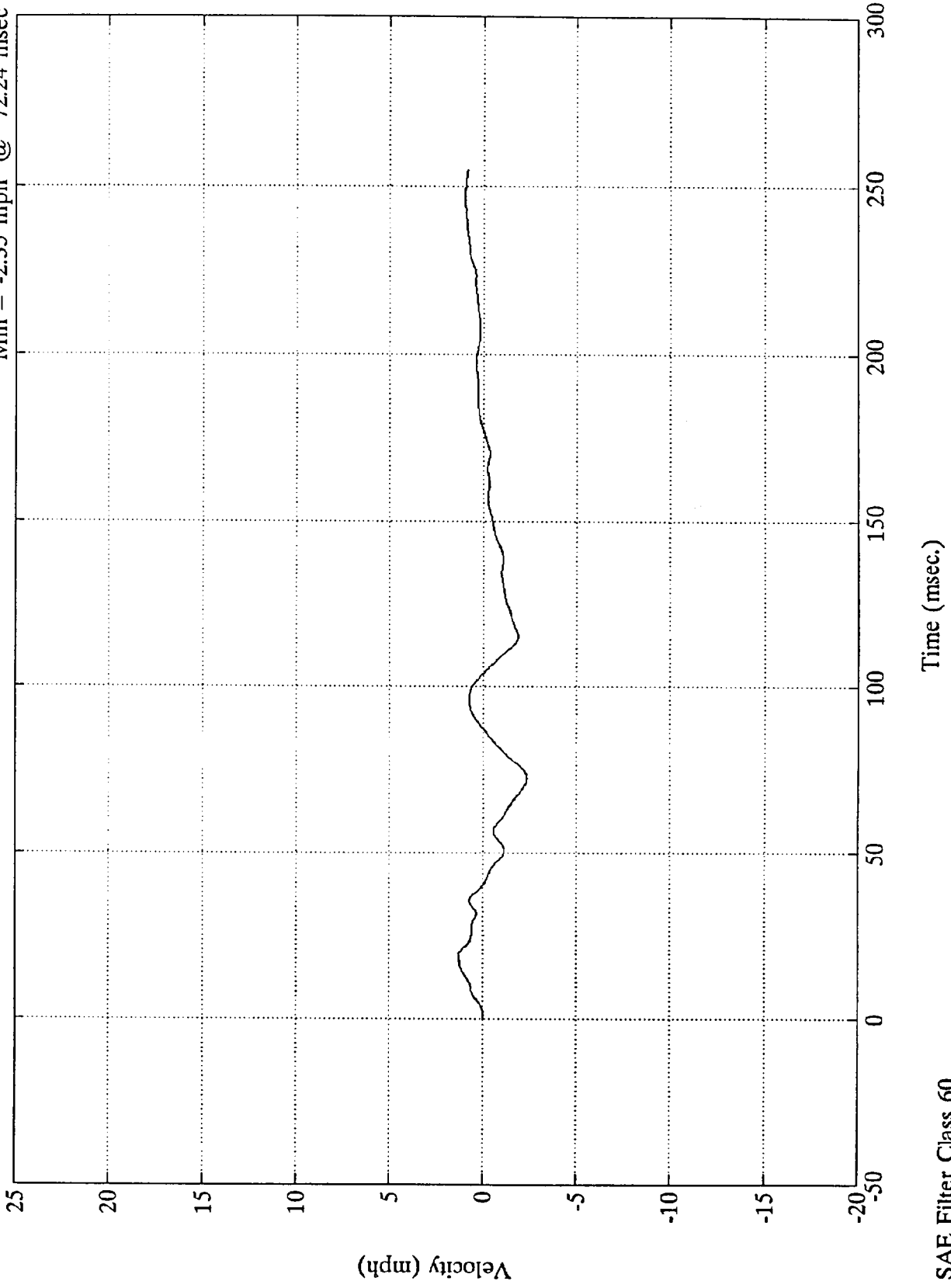
Max = 9.88 Gs @ 77.51 msec  
Min = -10.14 Gs @ 38.04 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 1.32 mph @ 18.72 msec  
Min = -2.35 mph @ 72.24 msec

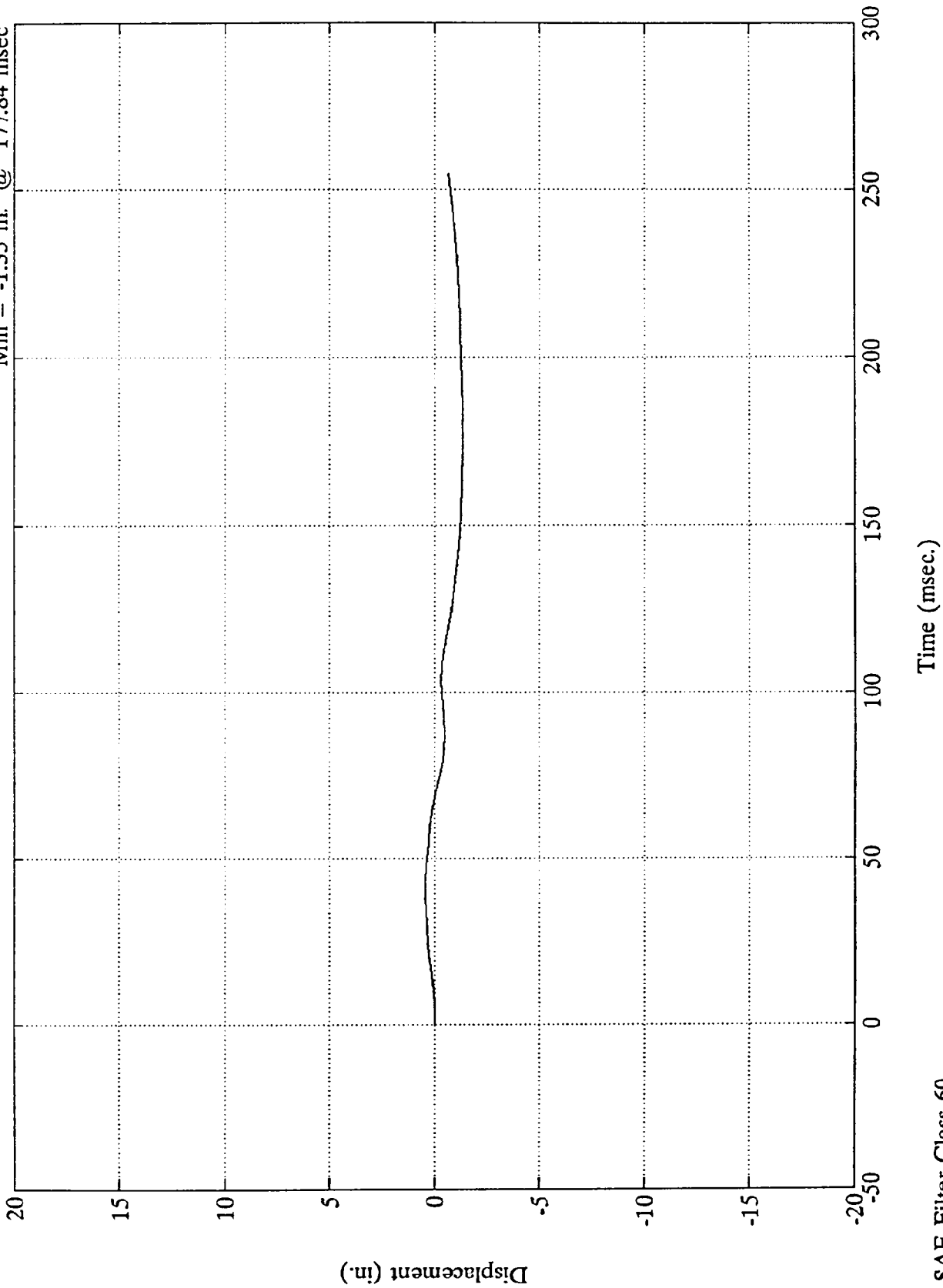
Rear Seat X-member Z



TSC Frontal Barrier Test #3 - Ford Taurus

Rear Seat X-member Z

Max = 0.45 in. @ 40.08 msec  
Min = -1.35 in. @ 177.84 msec



19-B

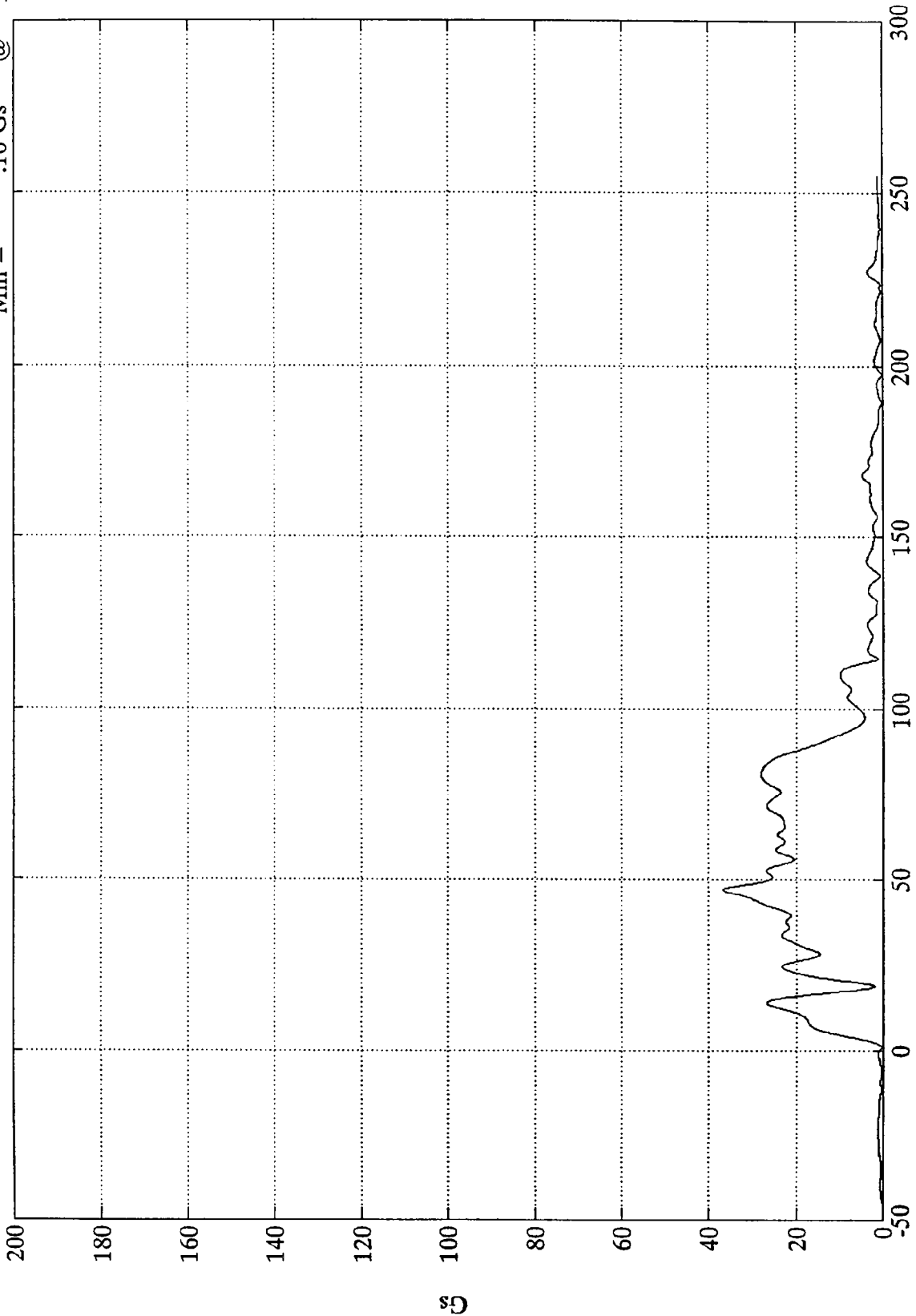
8118-3

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

R. Seat X-Member Result.

Max = 36.84 Gs @ 46.92 msec  
Min = .16 Gs @ 1.07 msec



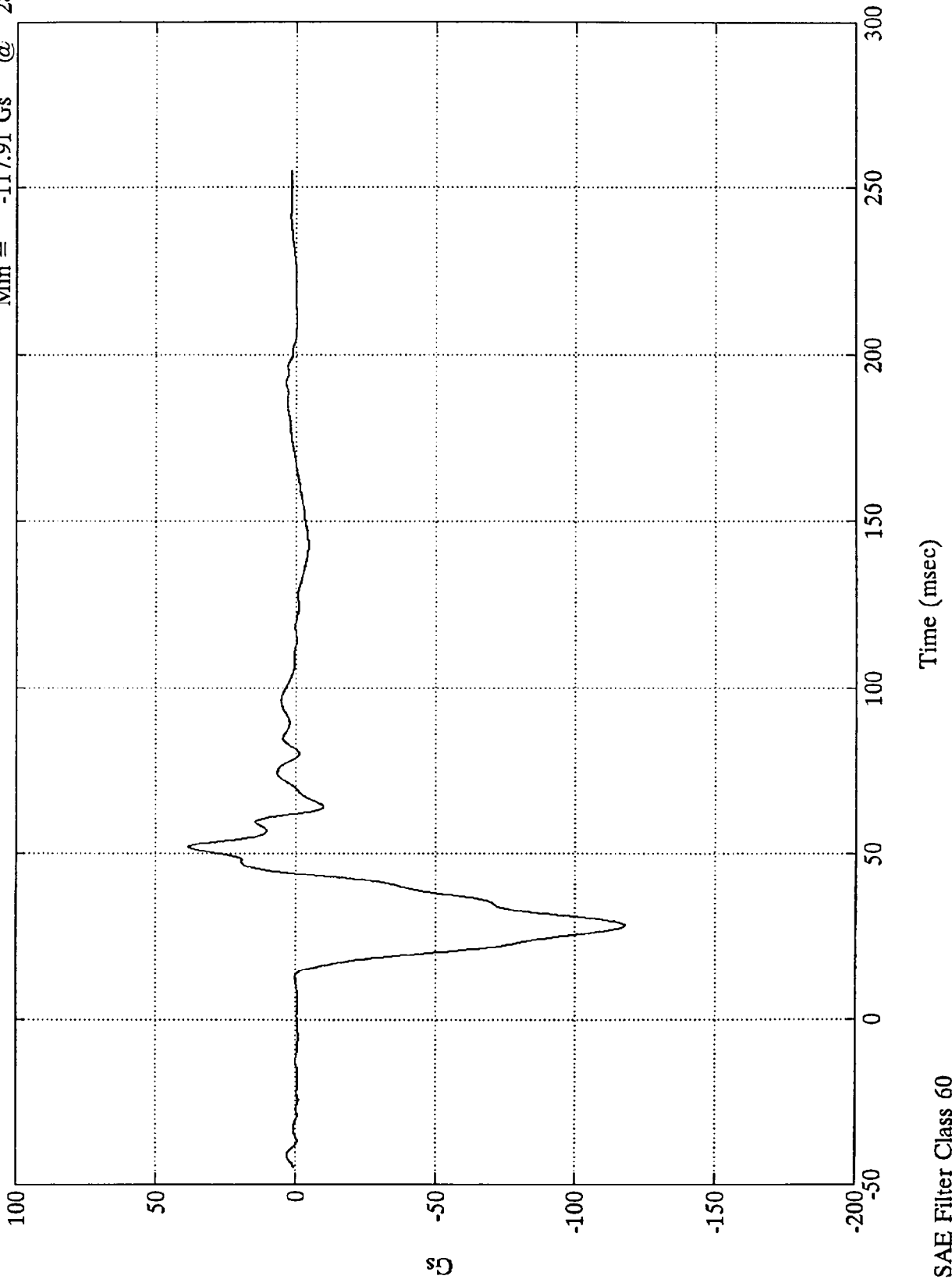
Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 38.48 Gs @ 51.95 msec  
Min = -117.91 Gs @ 28.31 msec

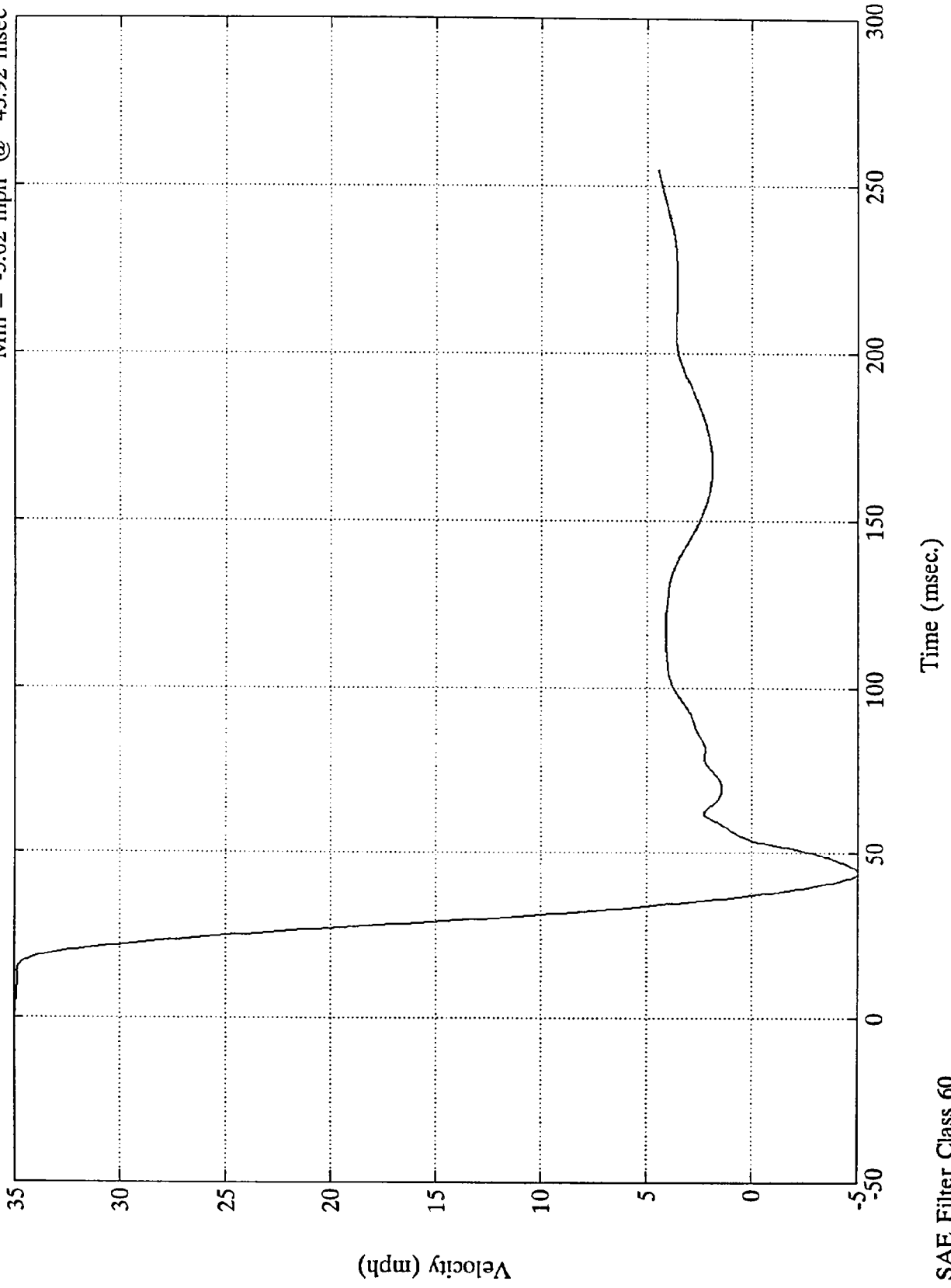
Engine Top (X)



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 35.00 mph @ 0.48 msec  
Min = -5.02 mph @ 43.92 msec

Engine Top X



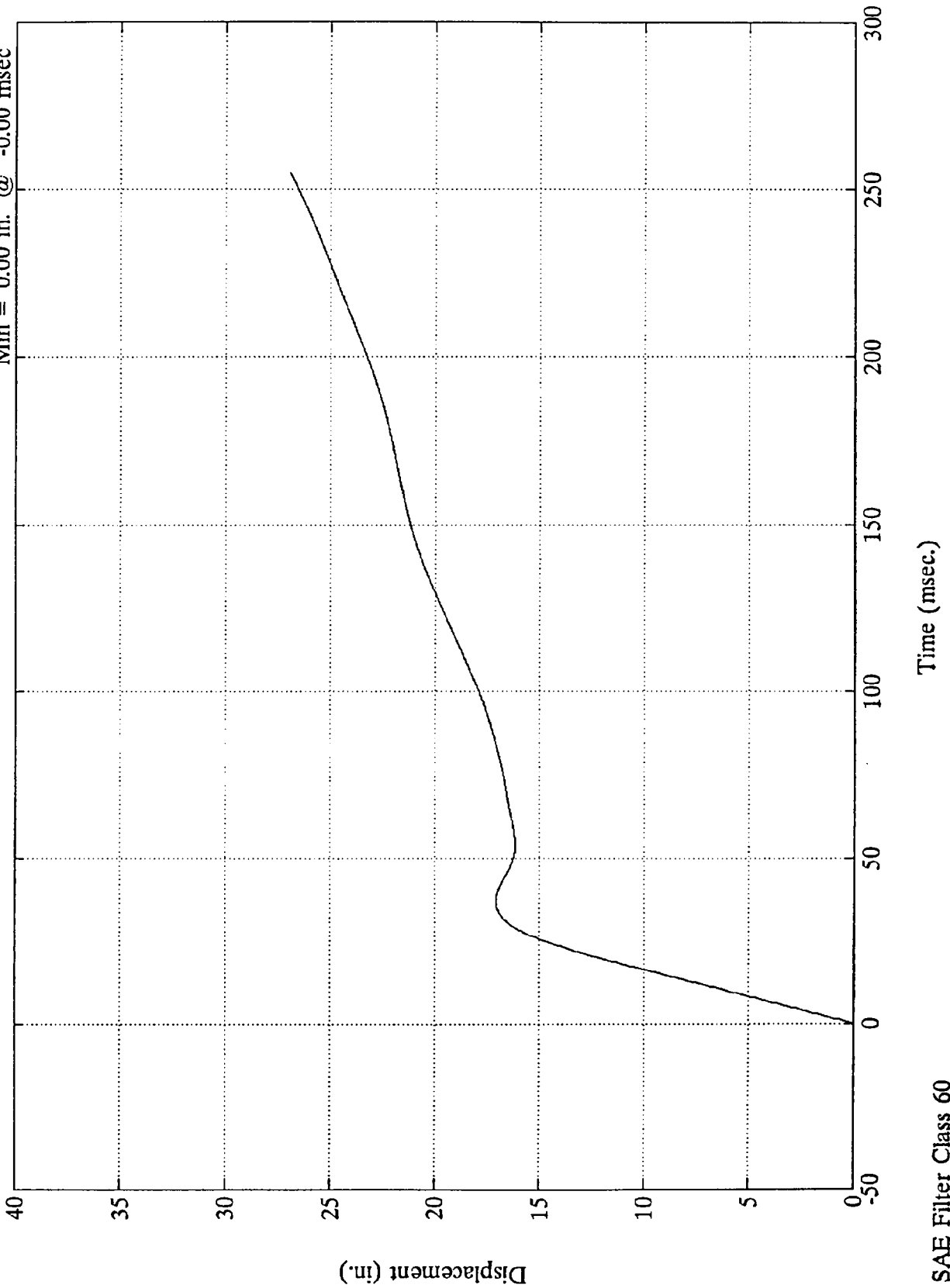
Time (msec.)

Velocity (mph)

TSC Frontal Barrier Test #3 - Ford Taurus

Engine Top X

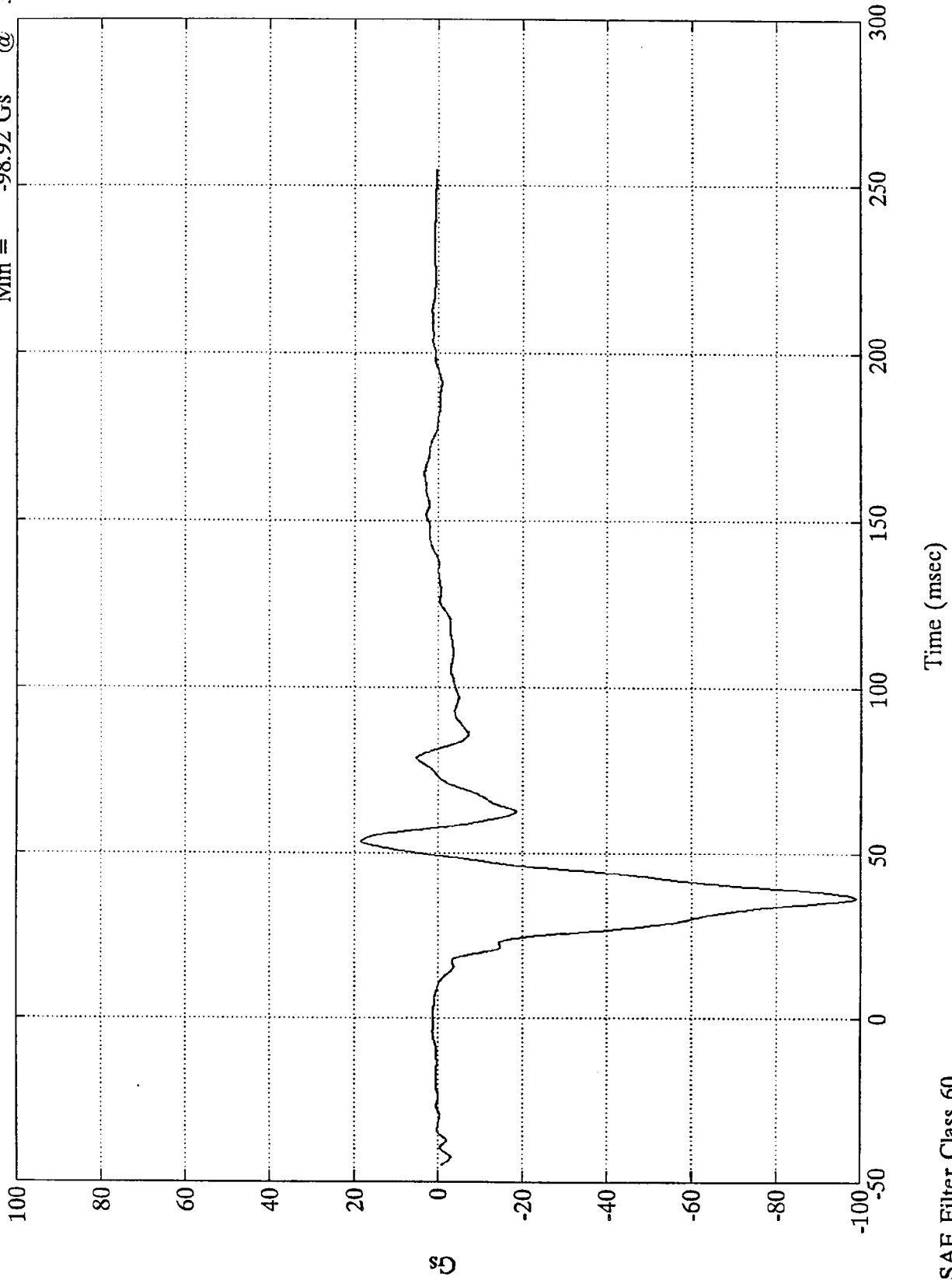
Max = 26.92 in. @ 254.88 msec  
Min = 0.00 in. @ -0.00 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Engine Bottom (X)

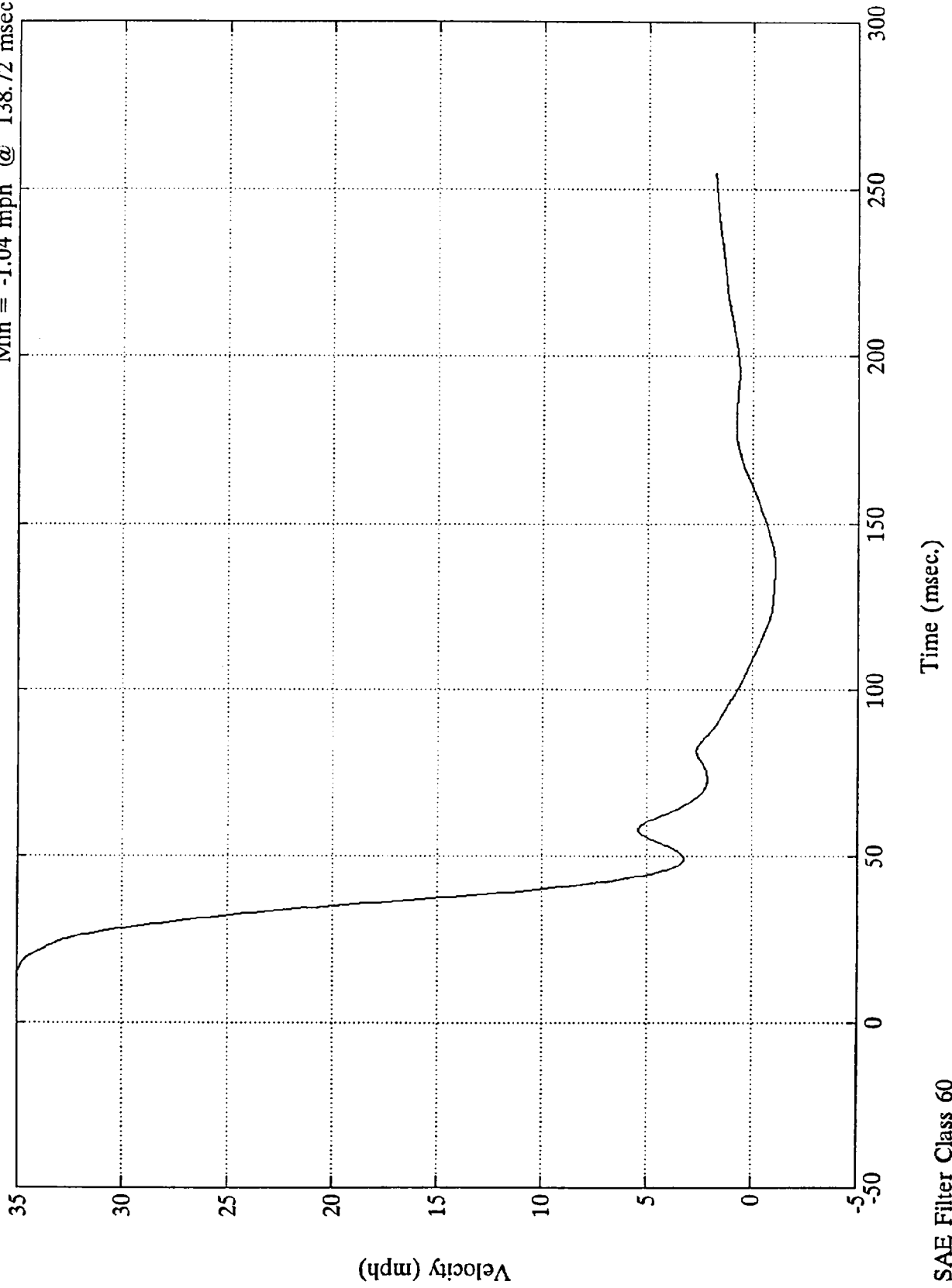
Max = 18.33 Gs @ 53.52 msec  
Min = -98.92 Gs @ 36.60 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Engine Bottom X

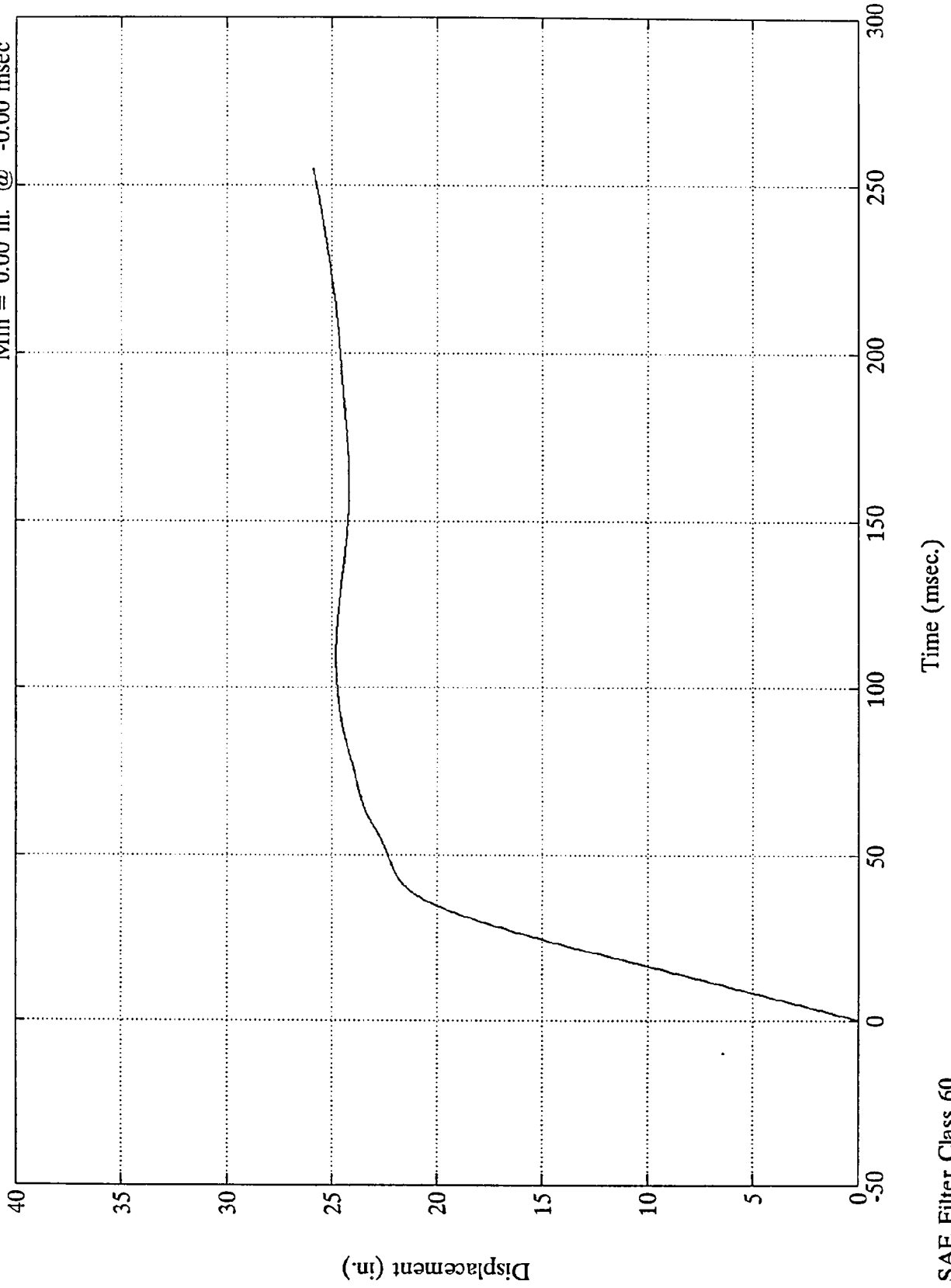
Max = 35.19 mph @ 10.32 msec  
Min = -1.04 mph @ 138.72 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Engine Bottom X

Max = 25.91 in. @ 254.88 msec  
Min = 0.00 in. @ -0.00 msec



B-68

8118-3

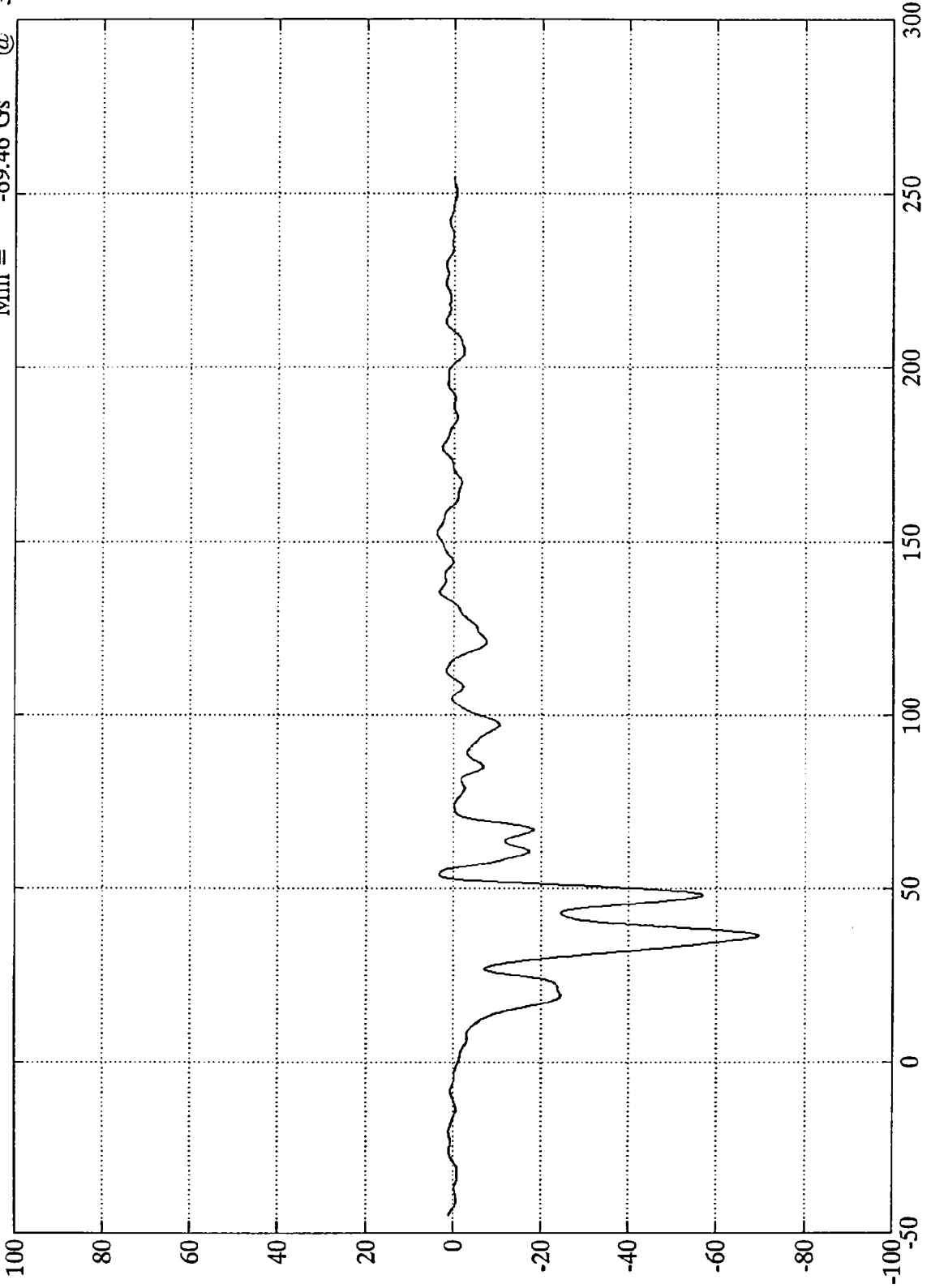
SAE Filter Class 60



TSC Frontal Barrier Test #3 - Ford Taurus

Left Caliper (X)

Max = 3.86 Gs @ 152.63 msec  
Min = -69.46 Gs @ 36.47 msec

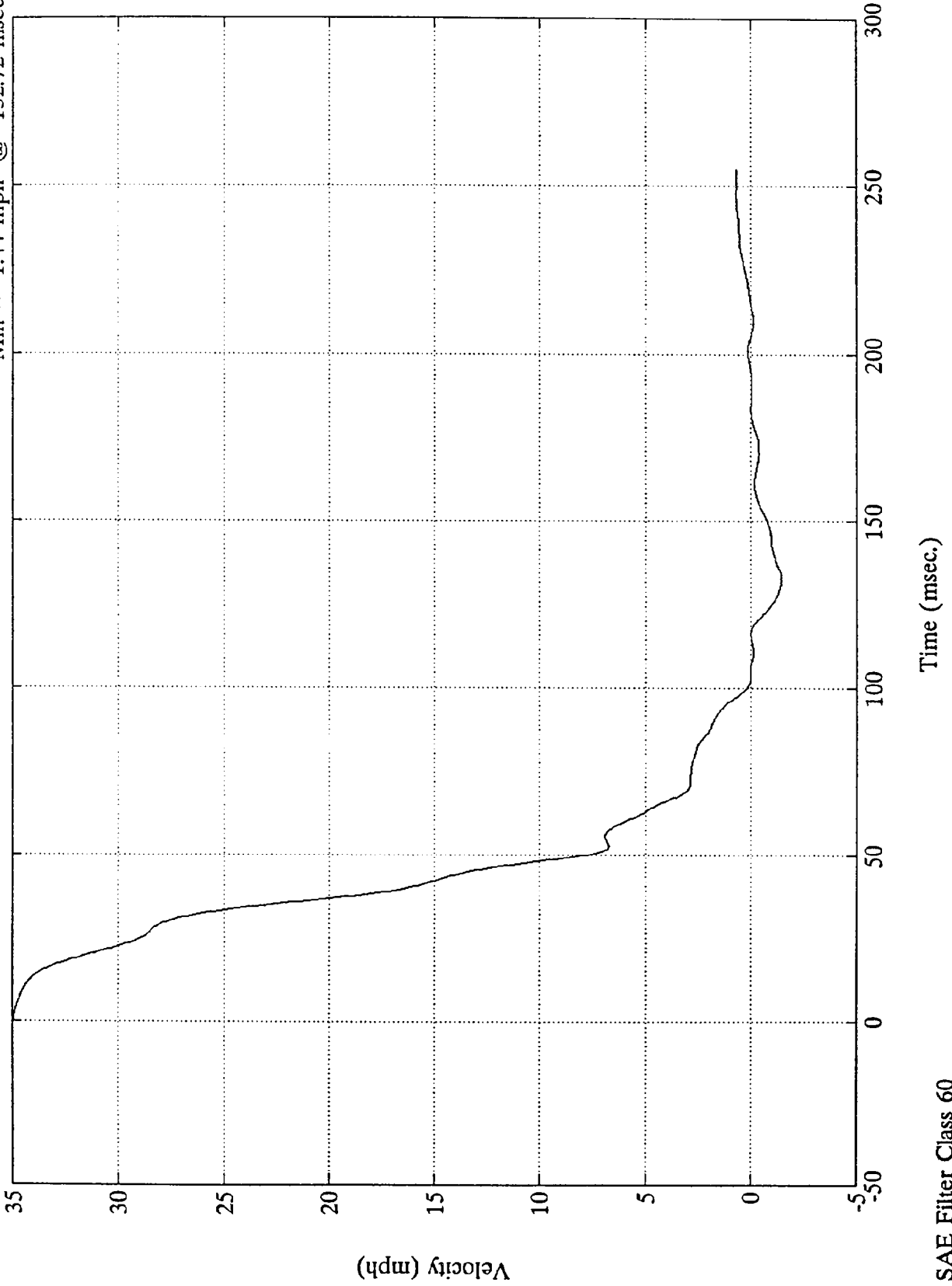


Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

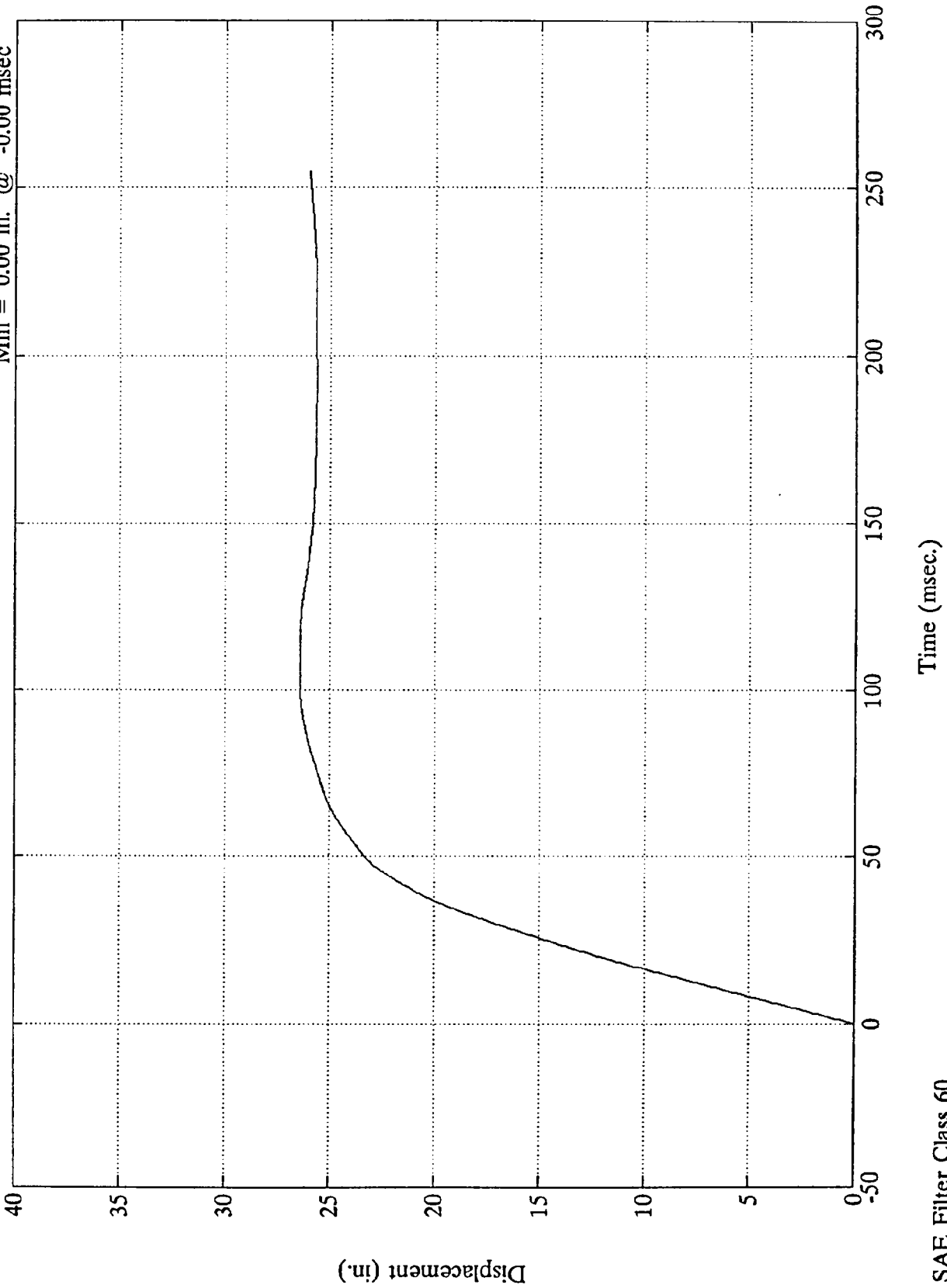
Left Caliper X  
Max = 35.00 mph @ -0.00 msec  
Min = -1.44 mph @ 132.72 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Left Caliper X

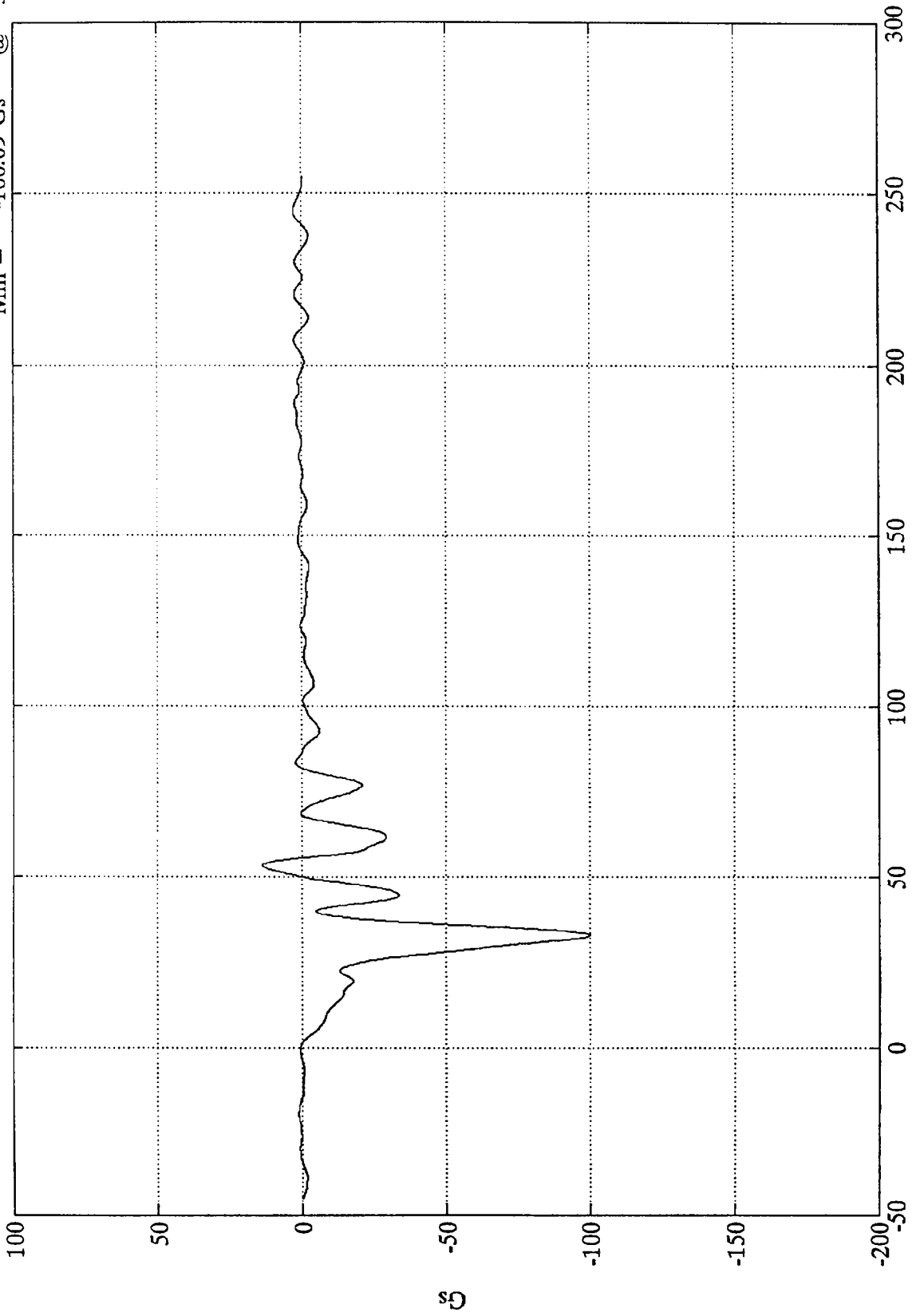
Max = 26.41 in. @ 110.64 msec  
Min = 0.00 in. @ -0.00 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 13.97 Gs @ 53.40 msec  
Min = -100.09 Gs @ 32.88 msec

Right Caliper (X)



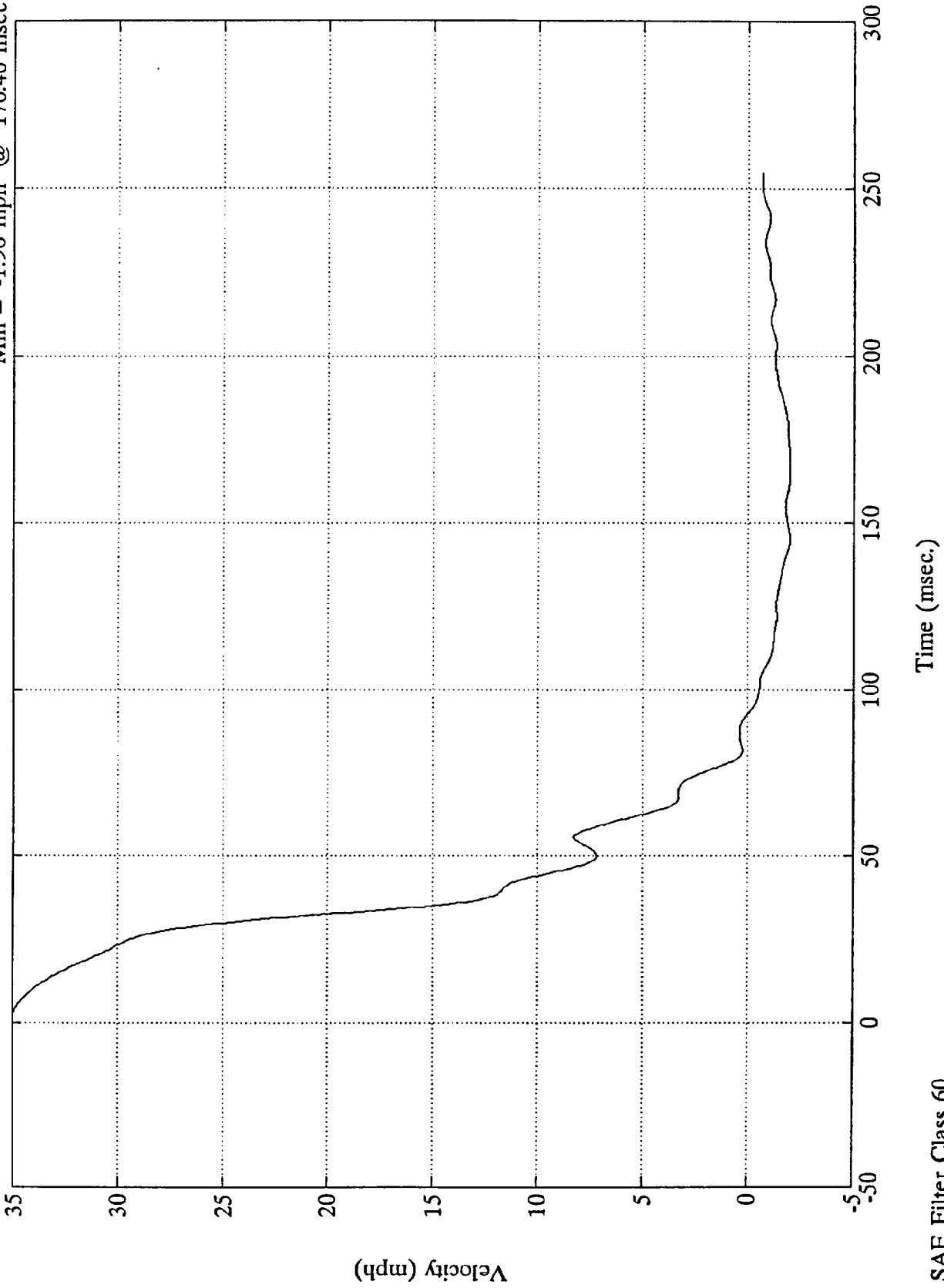
Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Right Caliper X

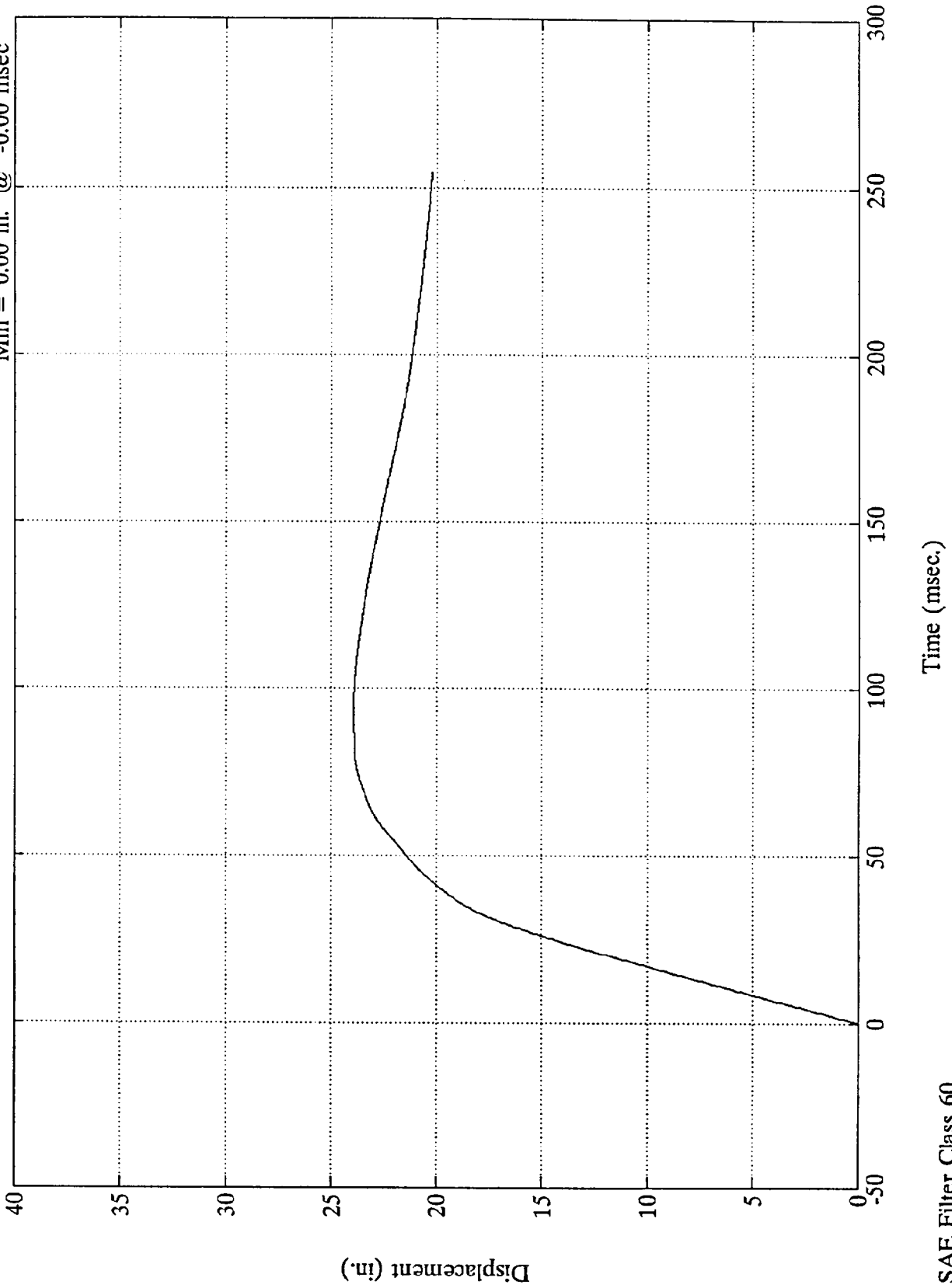
Max = 35.01 mph @ 1.68 msec  
Min = -1.96 mph @ 170.40 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Right Caliper X

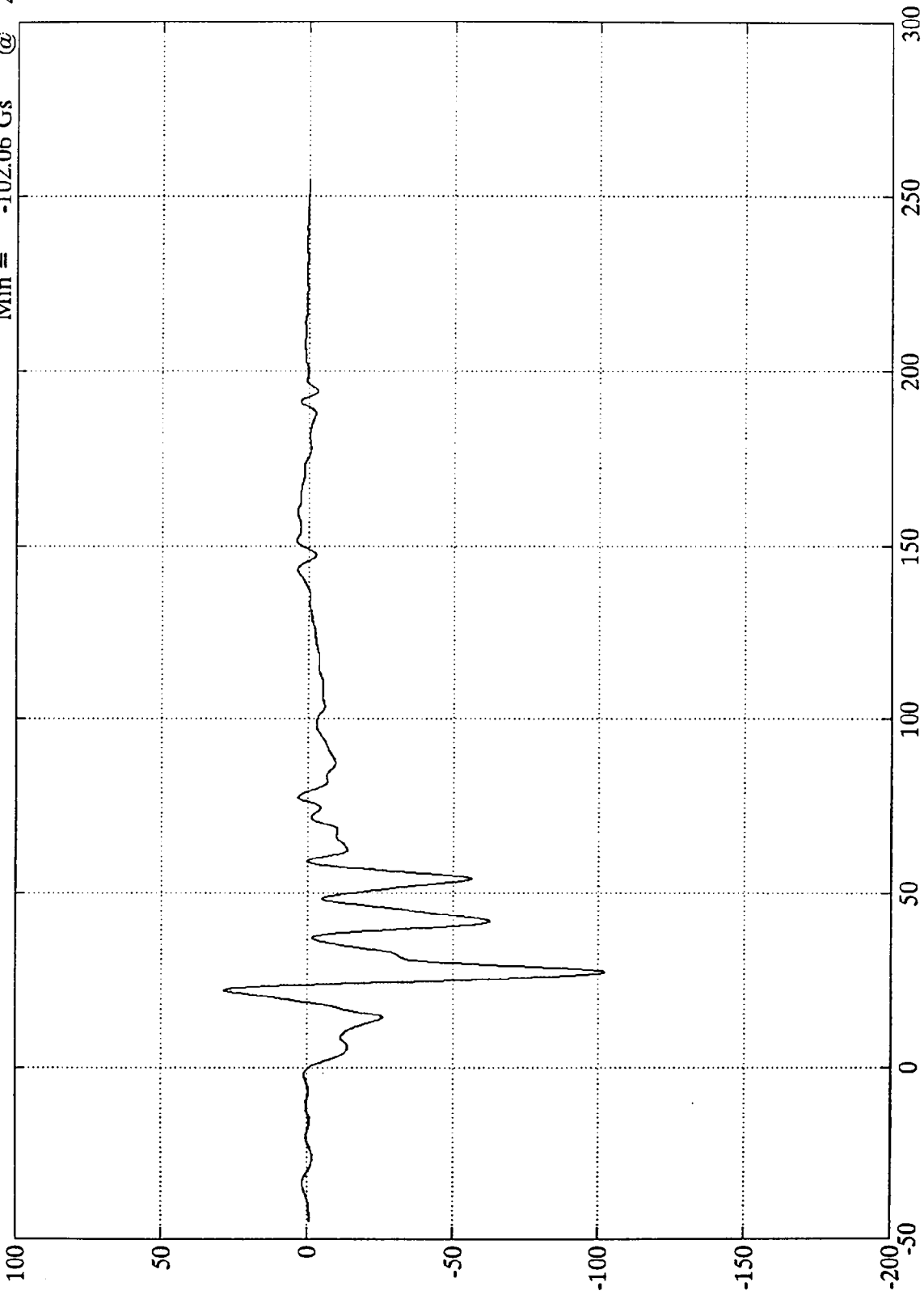
Max = 23.96 in. @ 93.60 msec  
Min = 0.00 in. @ -0.00 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 28.46 Gs @ 21.84 msec  
Min = -102.06 Gs @ 27.00 msec

Front X-Member (X)



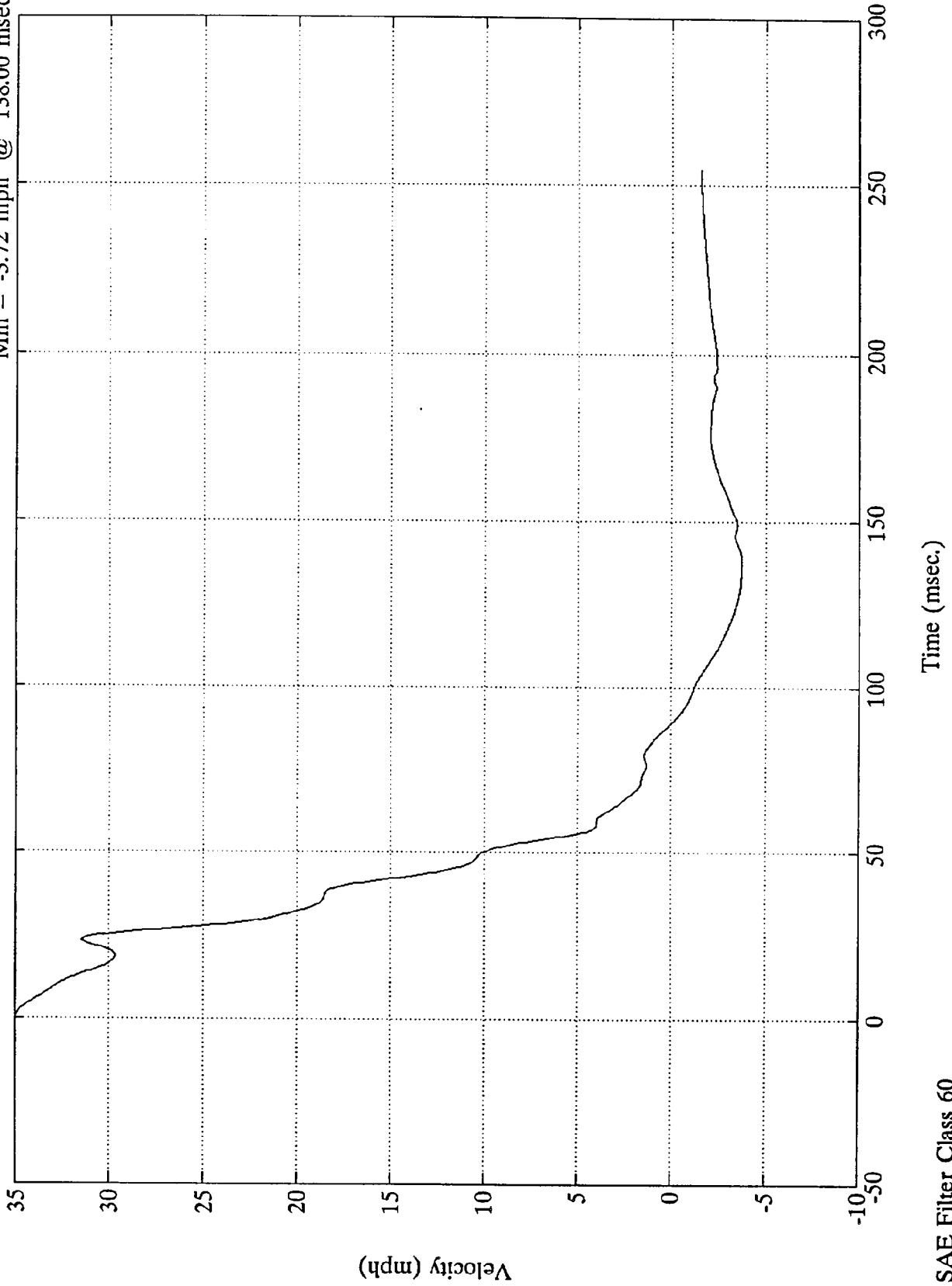
Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 35.00 mph @ 0.24 msec  
Min = -3.72 mph @ 138.00 msec

Front X-member X

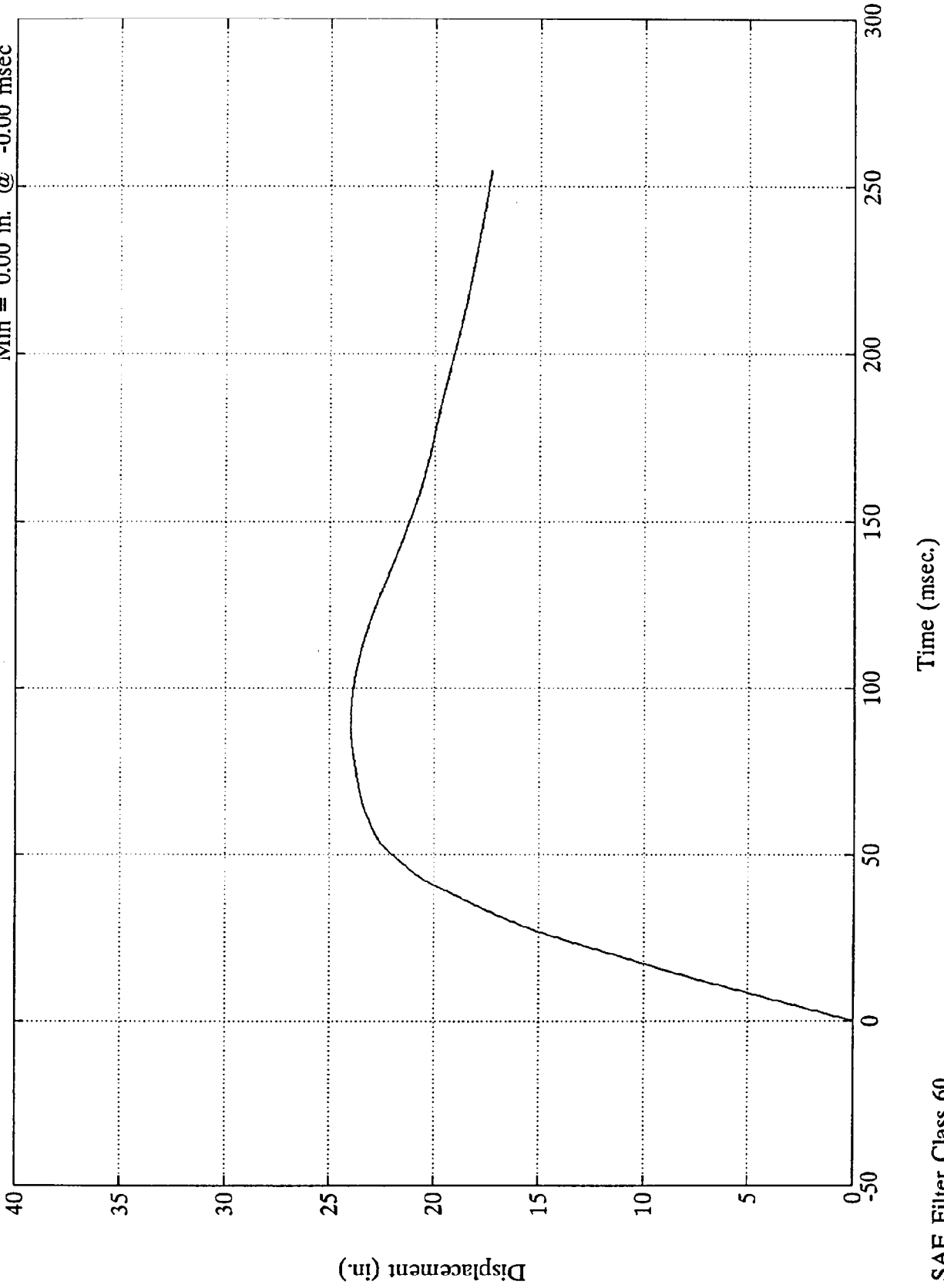


SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 24.00 in. @ 90.96 msec  
Min = 0.00 in. @ -0.00 msec

Front X-member X



B-77

8118-3

SAE Filter Class 60

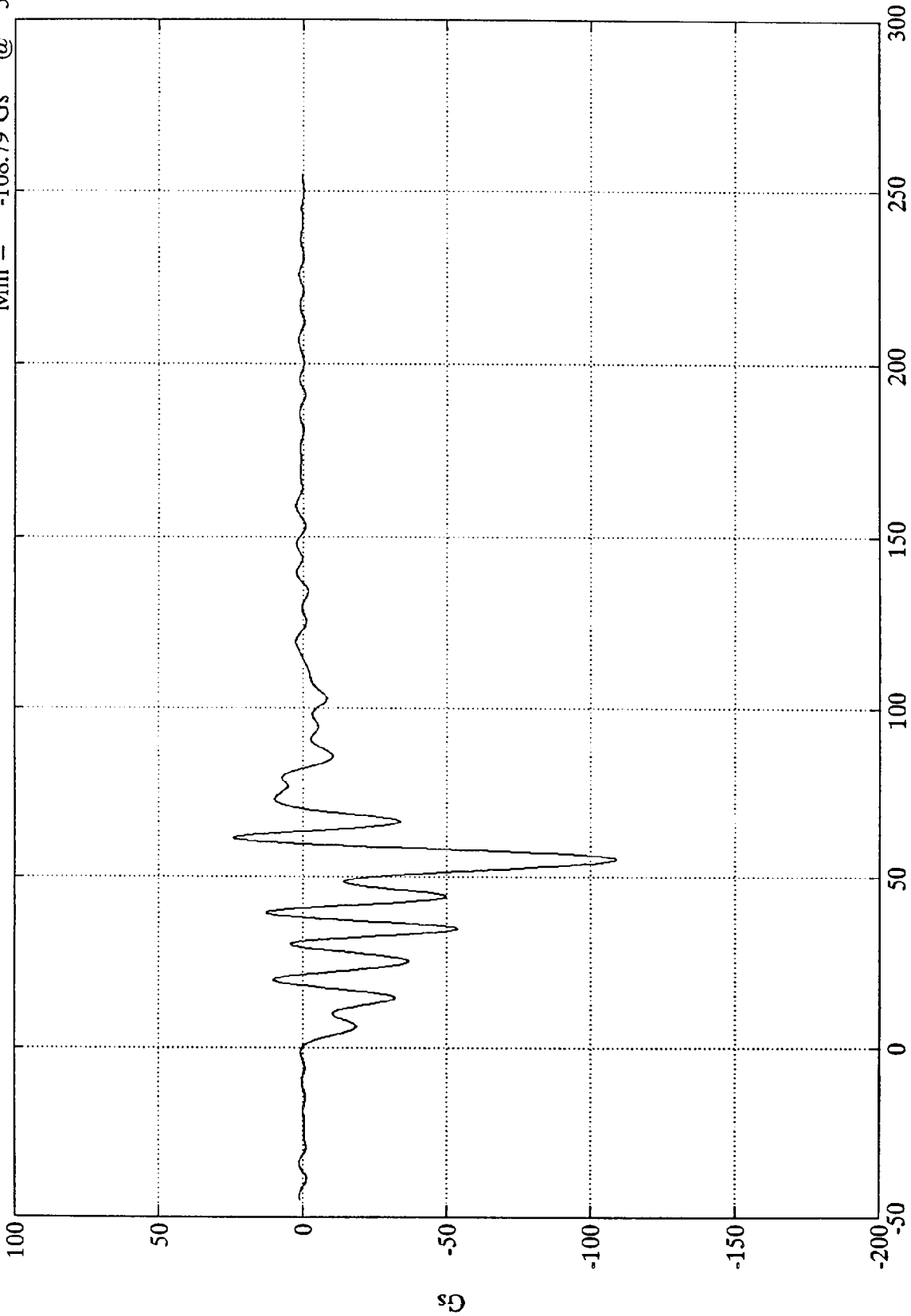
Time (msec.)

Displacement (in.)

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 24.12 Gs @ 61.44 msec  
Min = -108.79 Gs @ 55.20 msec

Toe Pan (X)



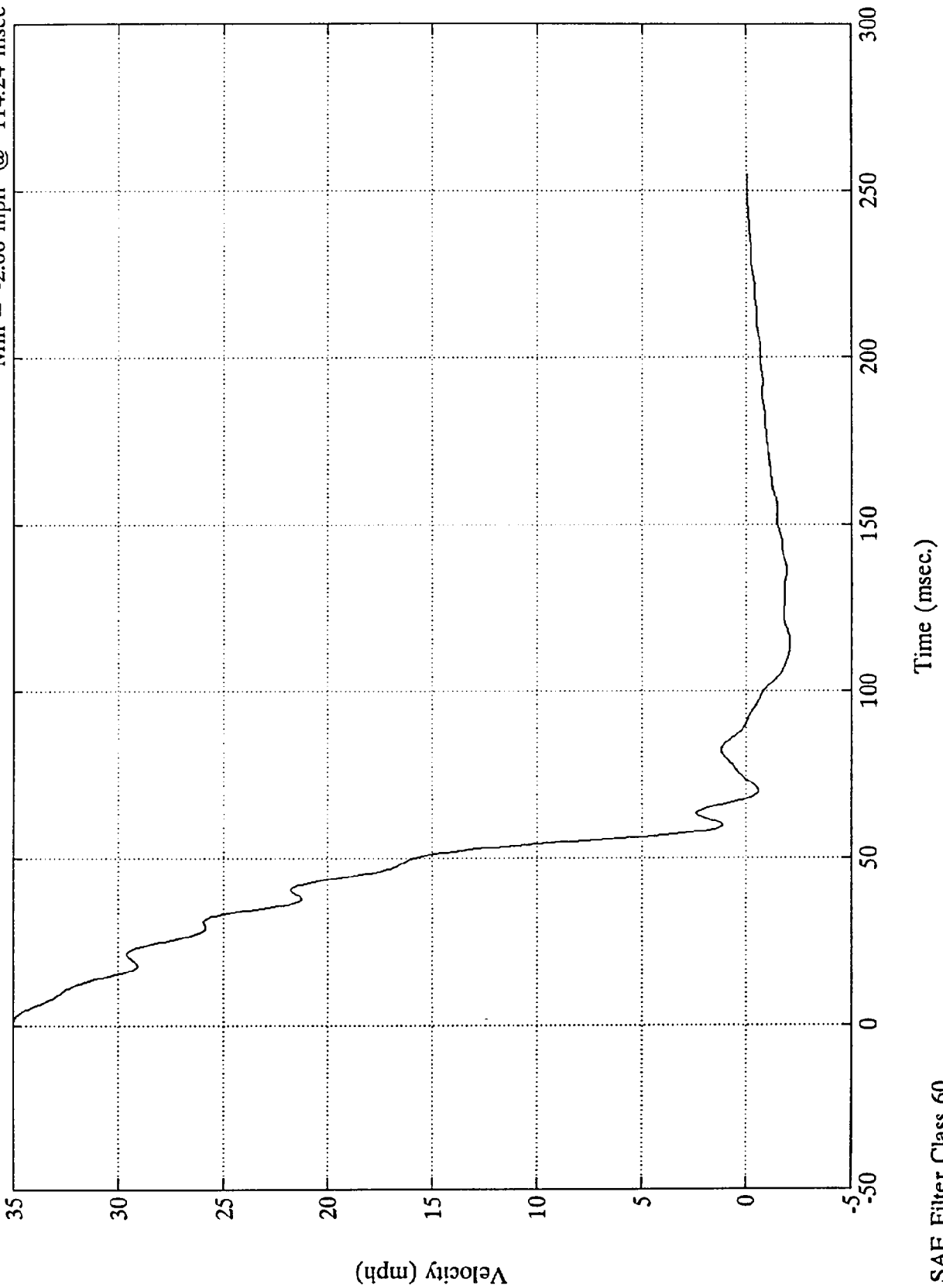
Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Toe Pan X

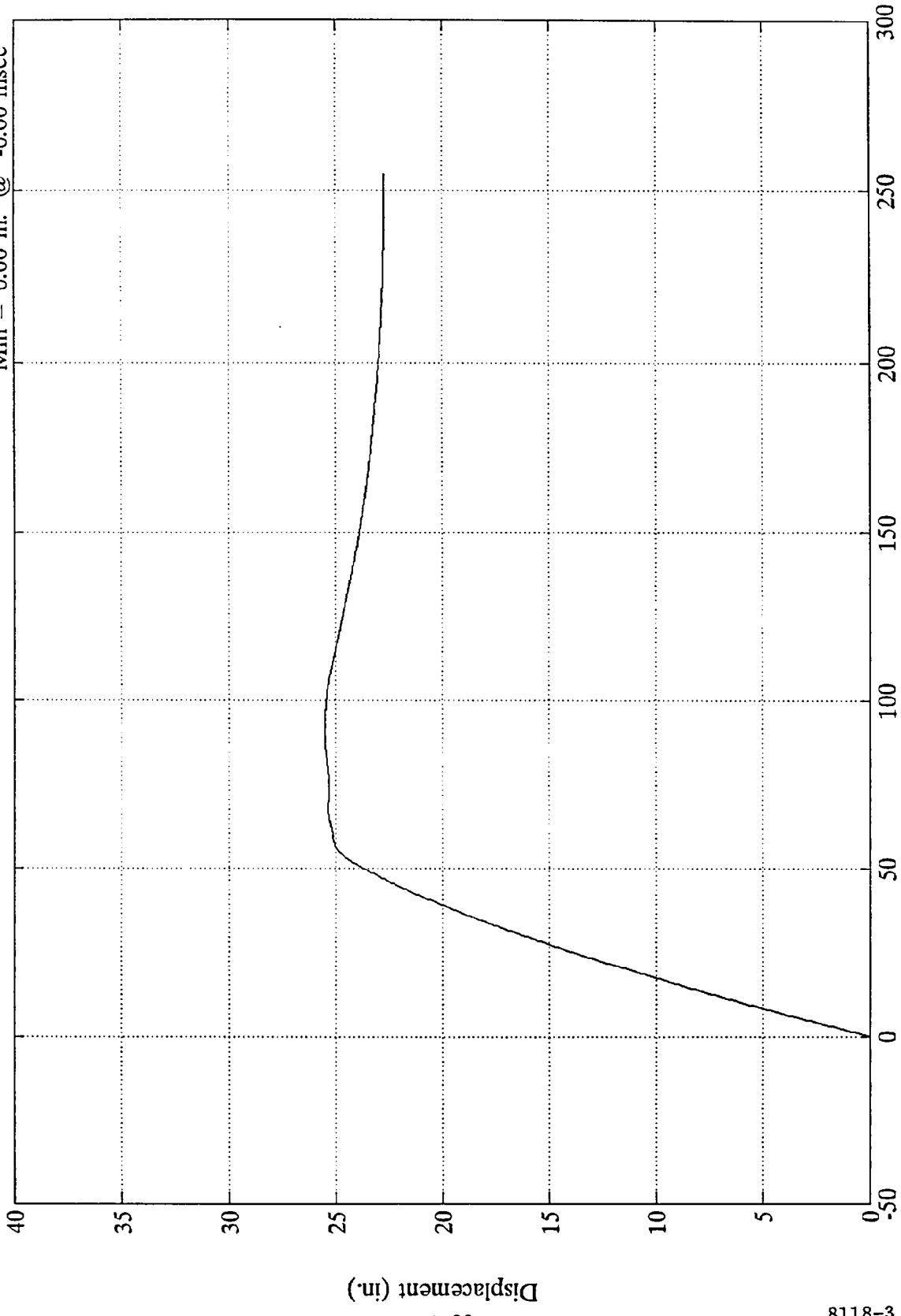
Max = 35.00 mph @ 0.72 msec  
Min = -2.06 mph @ 114.24 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 25.52 in. @ 91.92 msec  
Min = 0.00 in. @ -0.00 msec

Toe Pan X



8-80

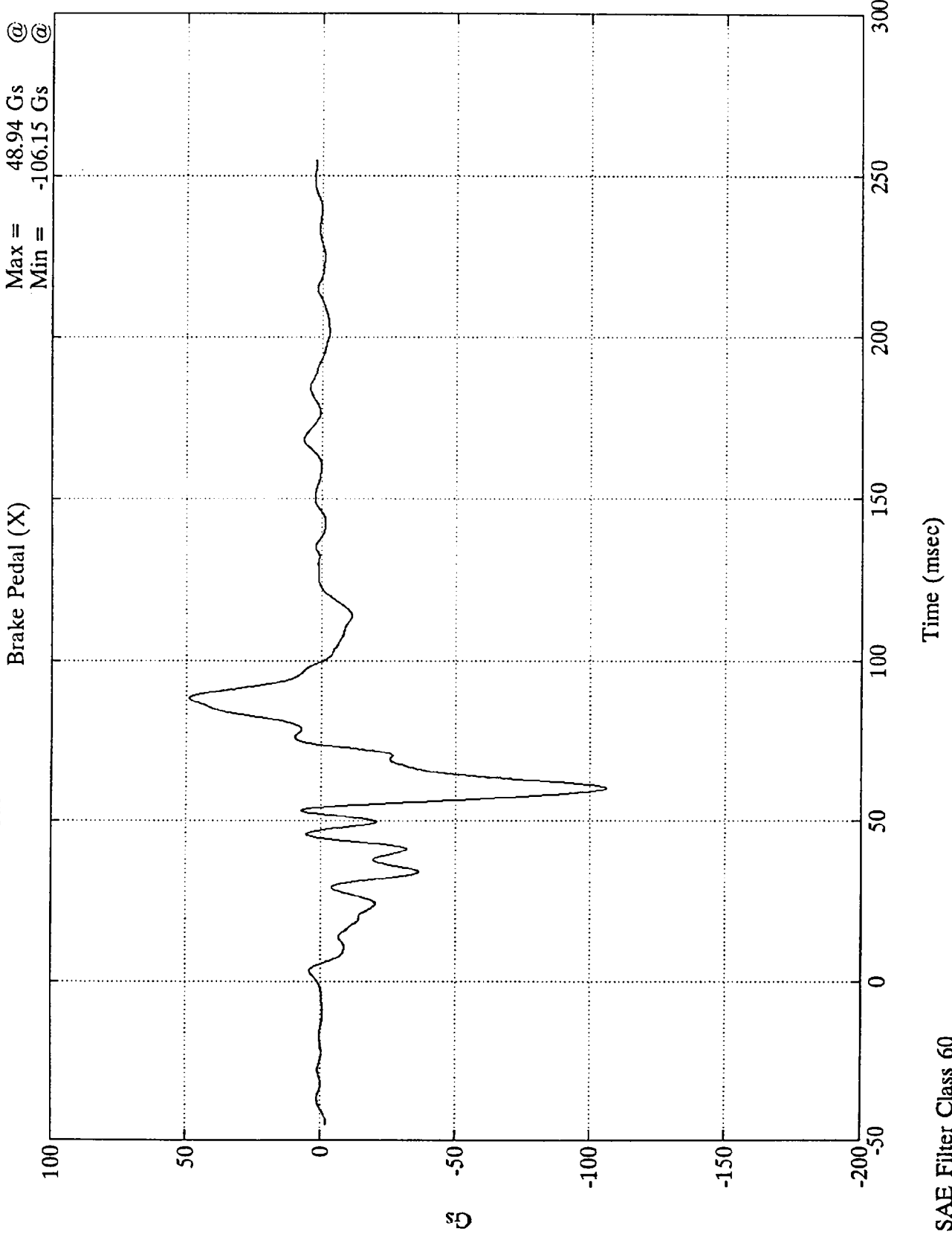
8118-3

Time (msec.)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

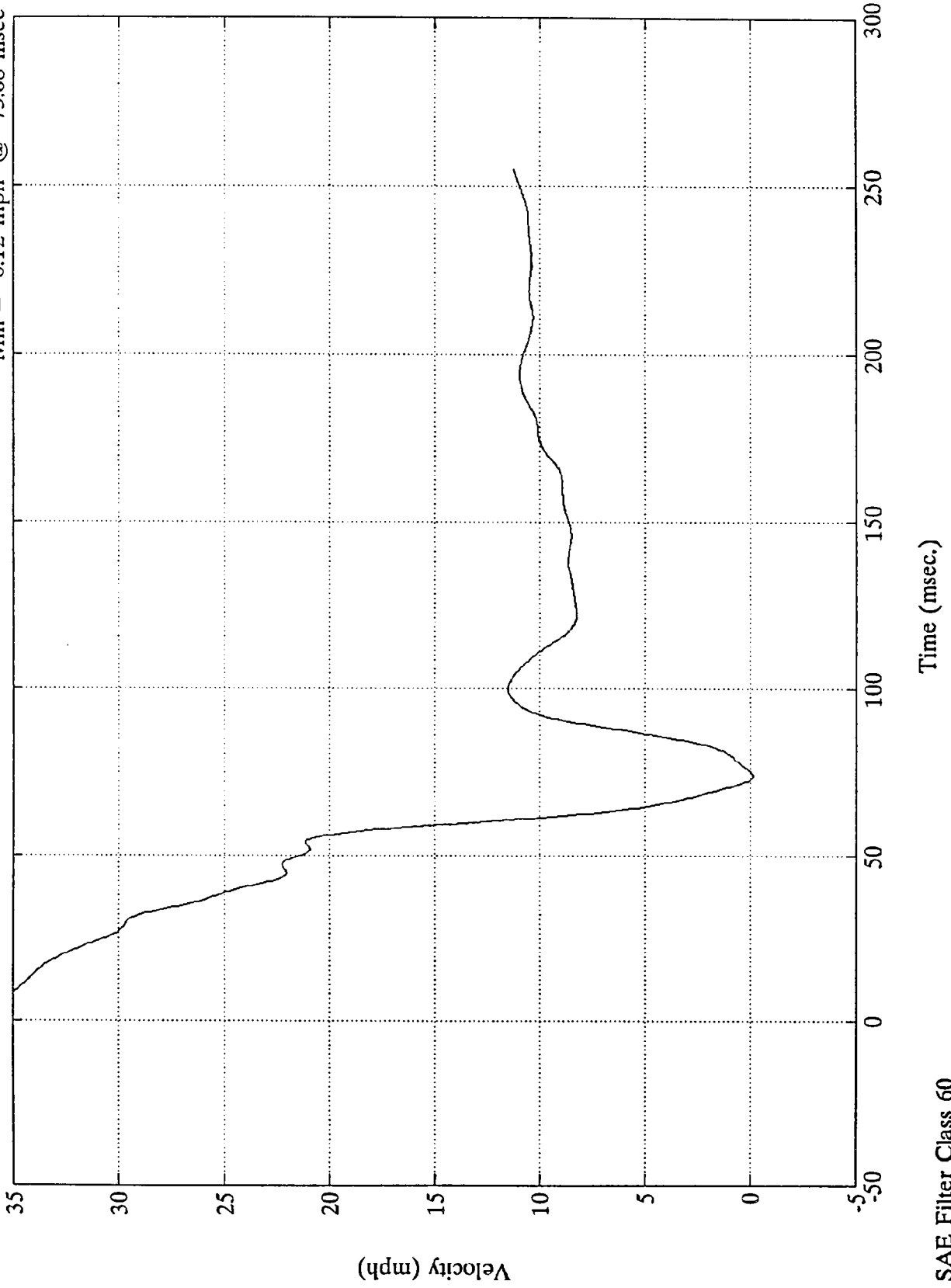
Max = 48.94 Gs @ 88.08 msec  
Min = -106.15 Gs @ 60.00 msec



TSC Frontal Barrier Test #3 - Ford Taurus

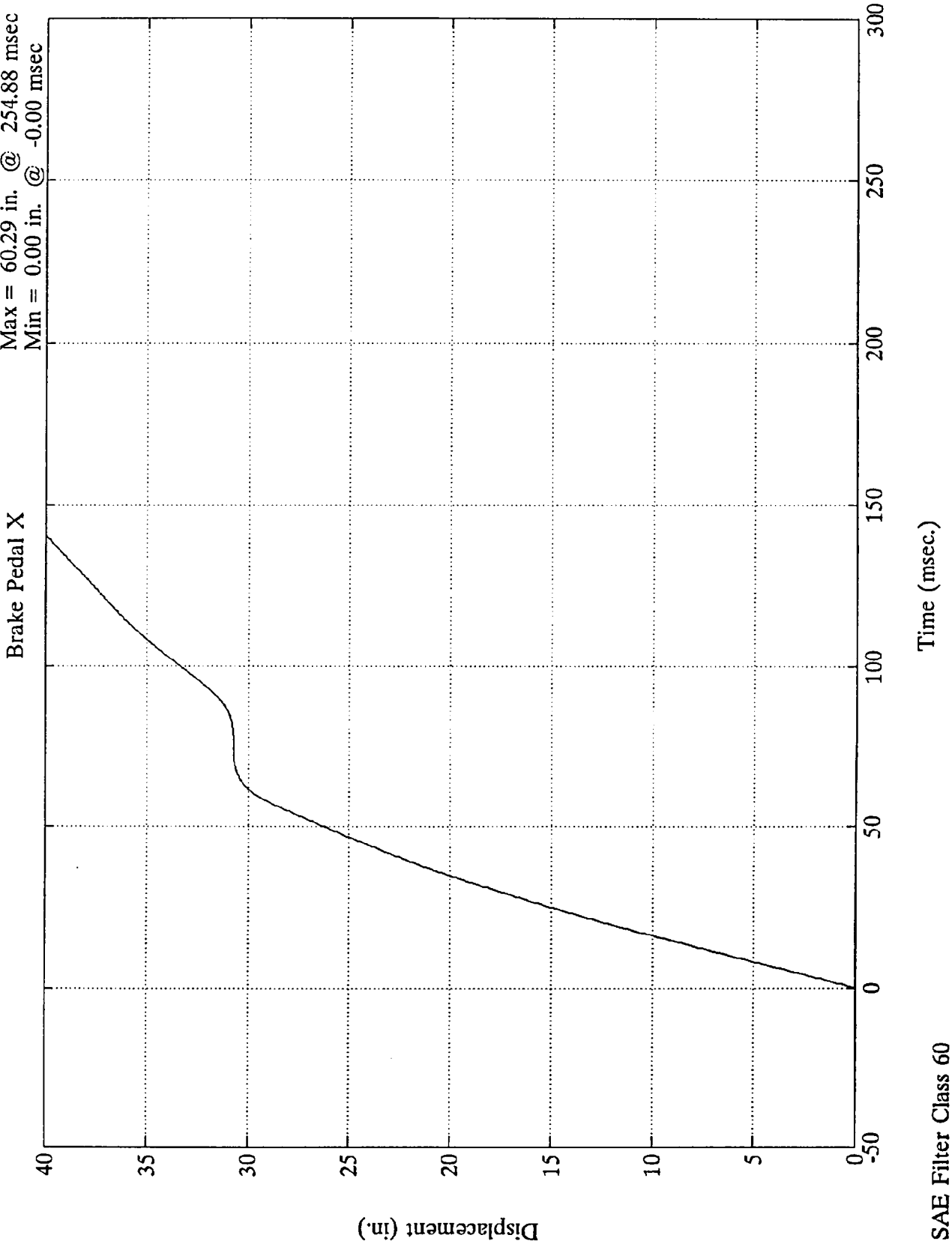
Max = 35.33 mph @ 5.28 msec  
Min = -0.12 mph @ 73.68 msec

Brake Pedal X



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 60.29 in. @ 254.88 msec  
Min = 0.00 in. @ -0.00 msec



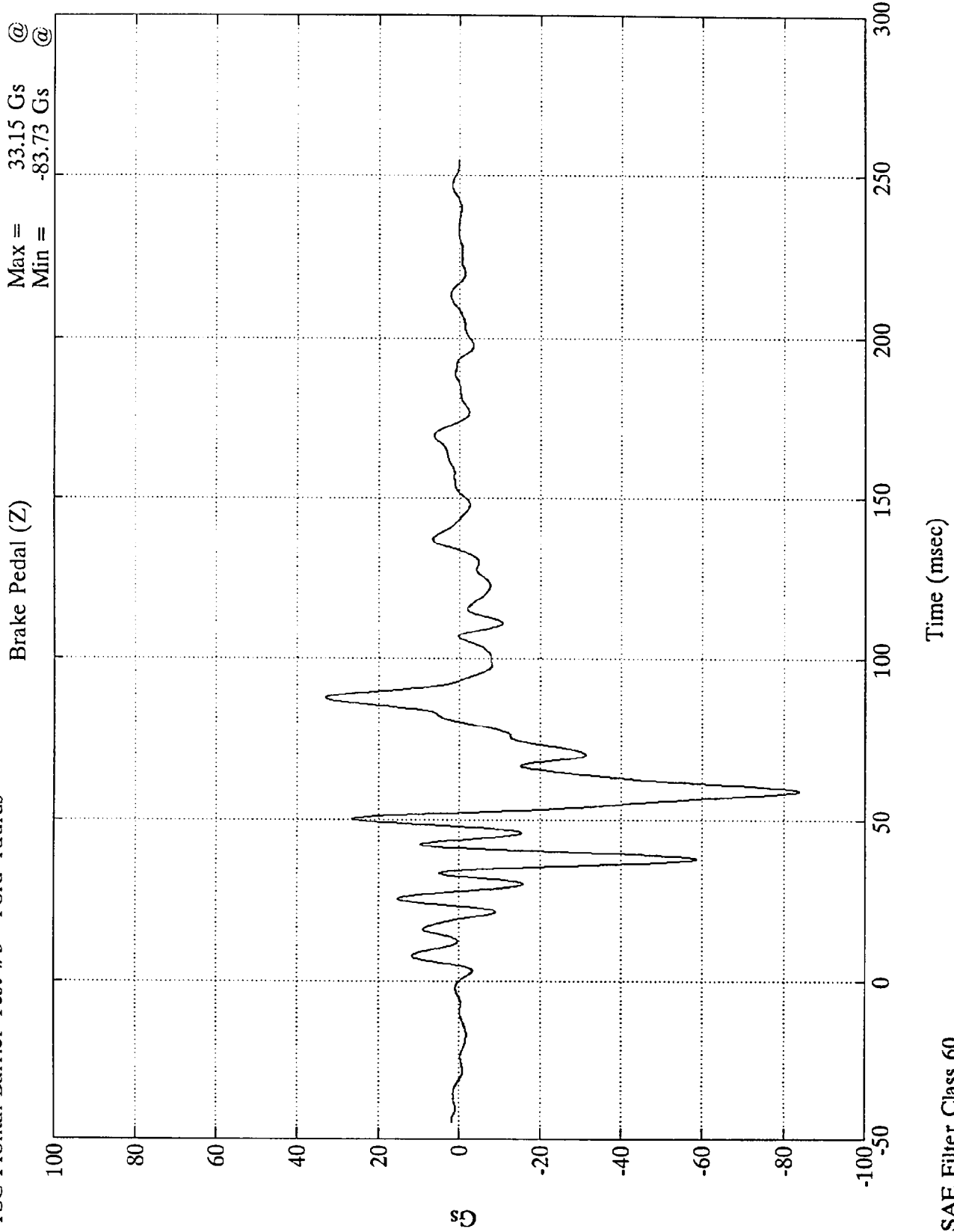
88-B

8118-3

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 33.15 Gs @ 87.83 msec  
Min = -83.73 Gs @ 59.27 msec



59  
B-84

8118-3

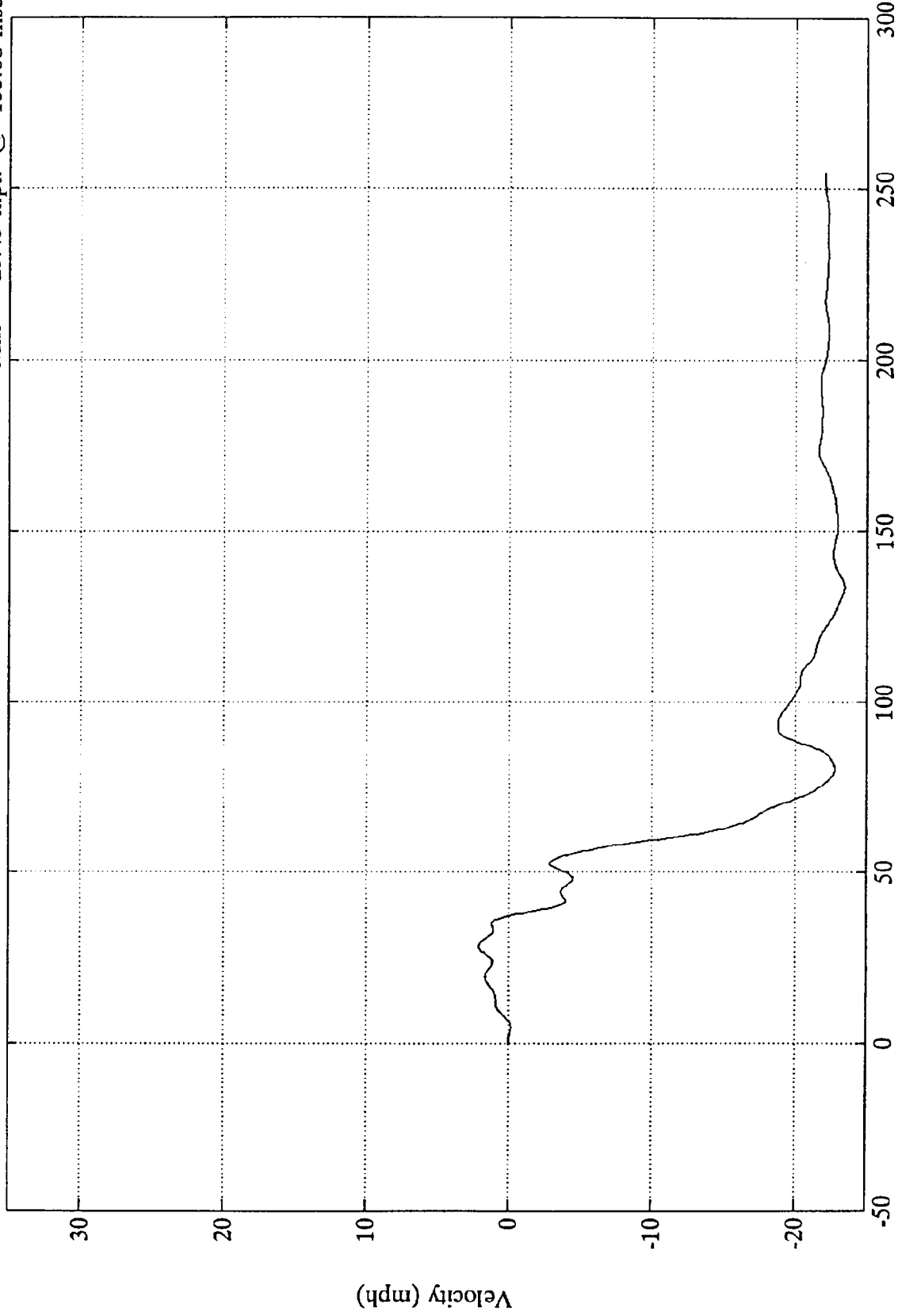
SAE Filter Class 60



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 2.06 mph @ 28.08 msec  
Min = -23.43 mph @ 133.68 msec

Brake Pedal Z



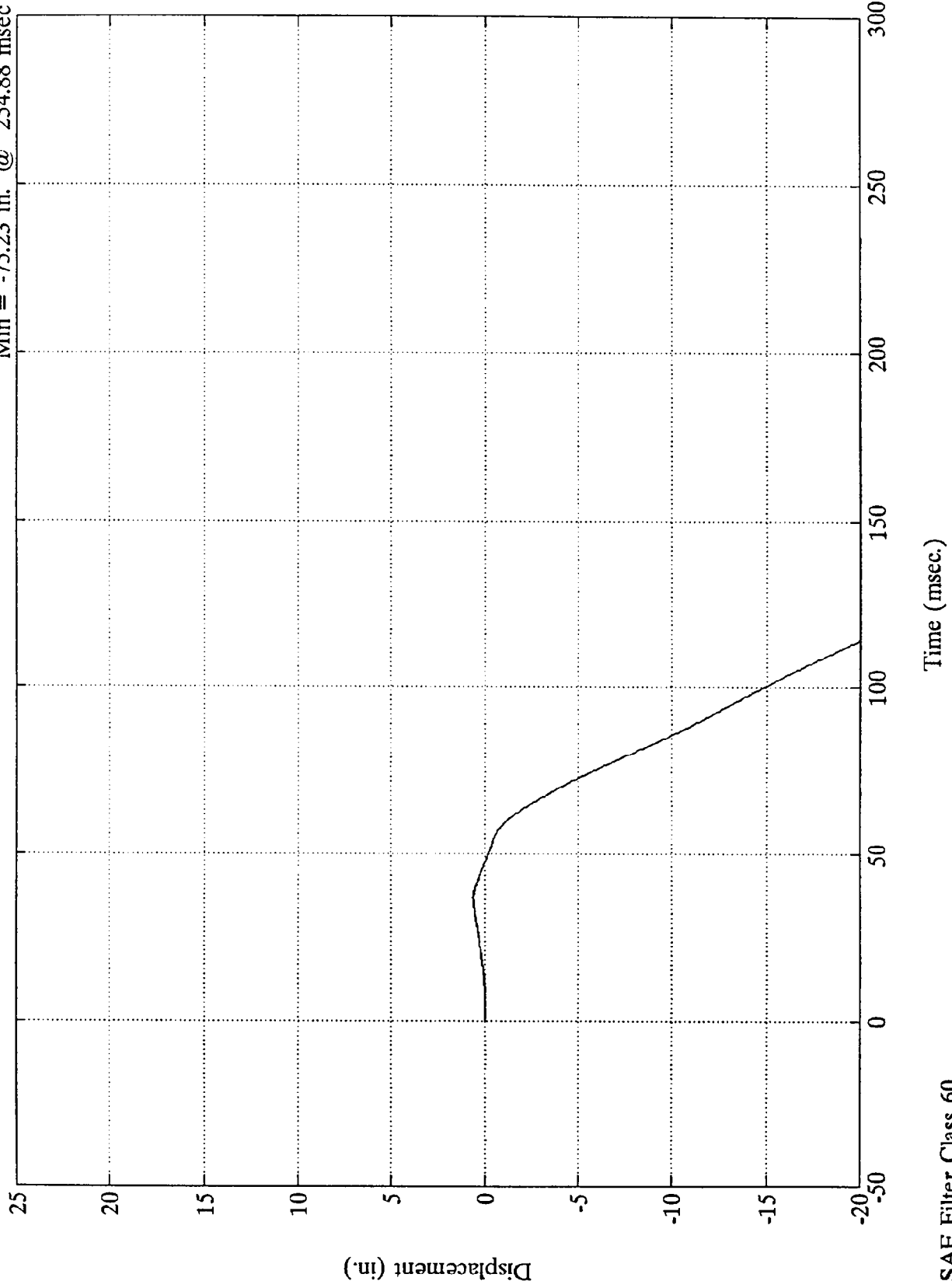
Time (msec.)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 0.62 in. @ 36.96 msec  
Min = -75.23 in. @ 254.88 msec

Brake Pedal Z



TEST NO. Y49-3-1308

DUMMY DATA

CHANNEL	SAE FILTER CHANNEL CLASS
Head Accelerations	1000
Chest Accelerations	180
Femur Forces	600
Torso Belt	60
Chest Displacement	180
Neck Forces	1000
Neck Moments	600
Tibia Forces, Moments	600

SUMMARY OF INJURY CRITERIA

FACILITY: TRACK TEST DATE: 17 Aug 1993  
RUN #: 1308 TEST TIME: 12:43:40  
SERIES #: 1

TITLE: TSC Frontal Barrier Test #3 - Ford Taurus

36 ms Fixed Duration HIC SUMMARY: Pos. 1 Head Resultant

hic: 234.08  
t1 = 46.320 msec  
t2 = 82.200 msec  
Average G's Over Hic Duration = 33.56

36 ms Fixed Duration HIC SUMMARY: Pos. 2 Head Resultant

hic: 260.54  
t1 = 49.440 msec  
t2 = 85.320 msec  
Average G's Over Hic Duration = 35.03

CLIP SUMMARY: Pos. 1 Chest Resultant

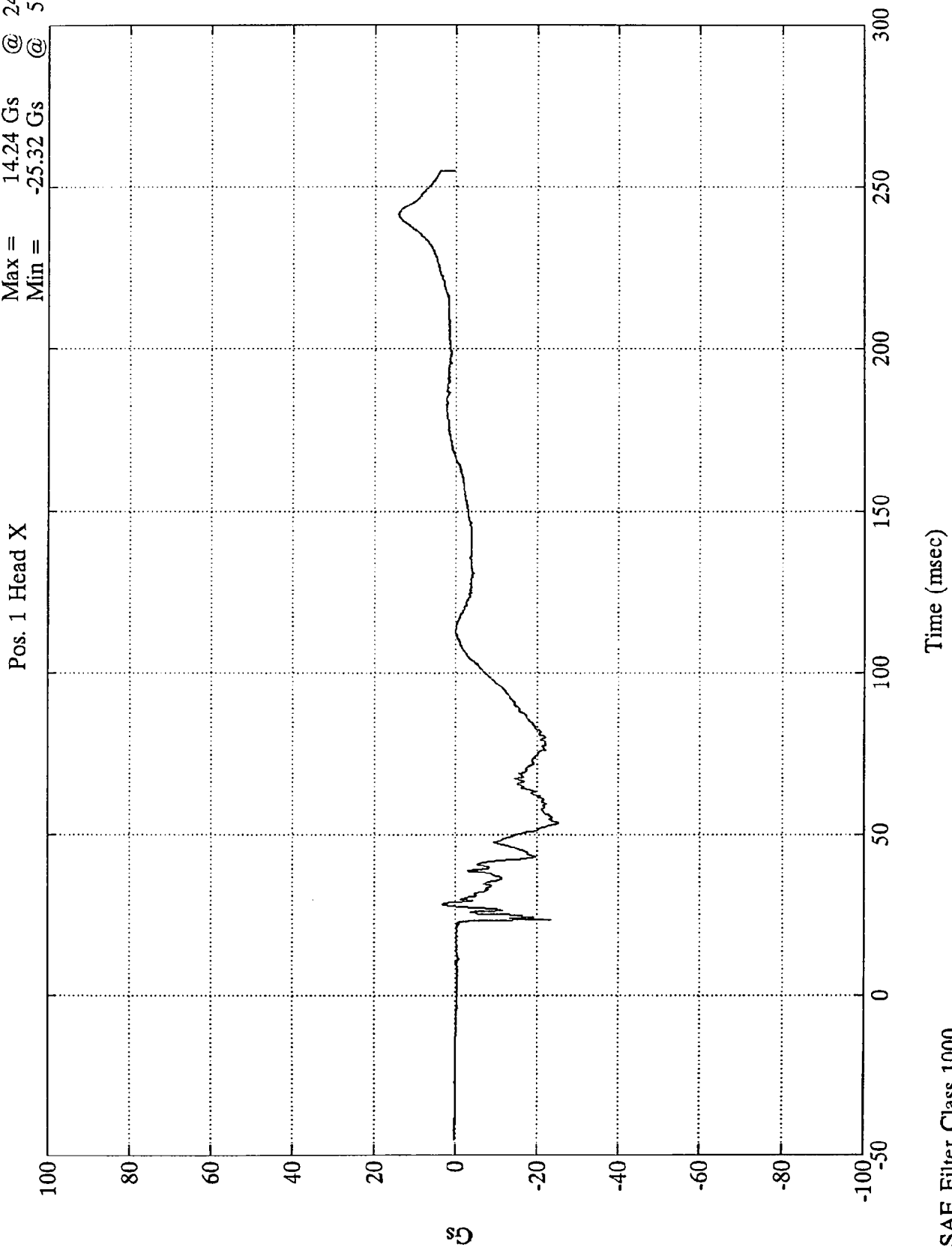
Peak Resultant (3 ms CLIPPED DURATION) = 53.622 G's  
Tstart = 56.6400 ms  
Tend = 59.7600 ms  
CSI = 506.230

CLIP SUMMARY: Pos. 2 Chest Resultant

Peak Resultant (3 ms CLIPPED DURATION) = 43.055 G's  
Tstart = 69.4800 ms  
Tend = 72.6000 ms  
CSI = 386.600

TSC Frontal Barrier Test #3 - Ford Taurus

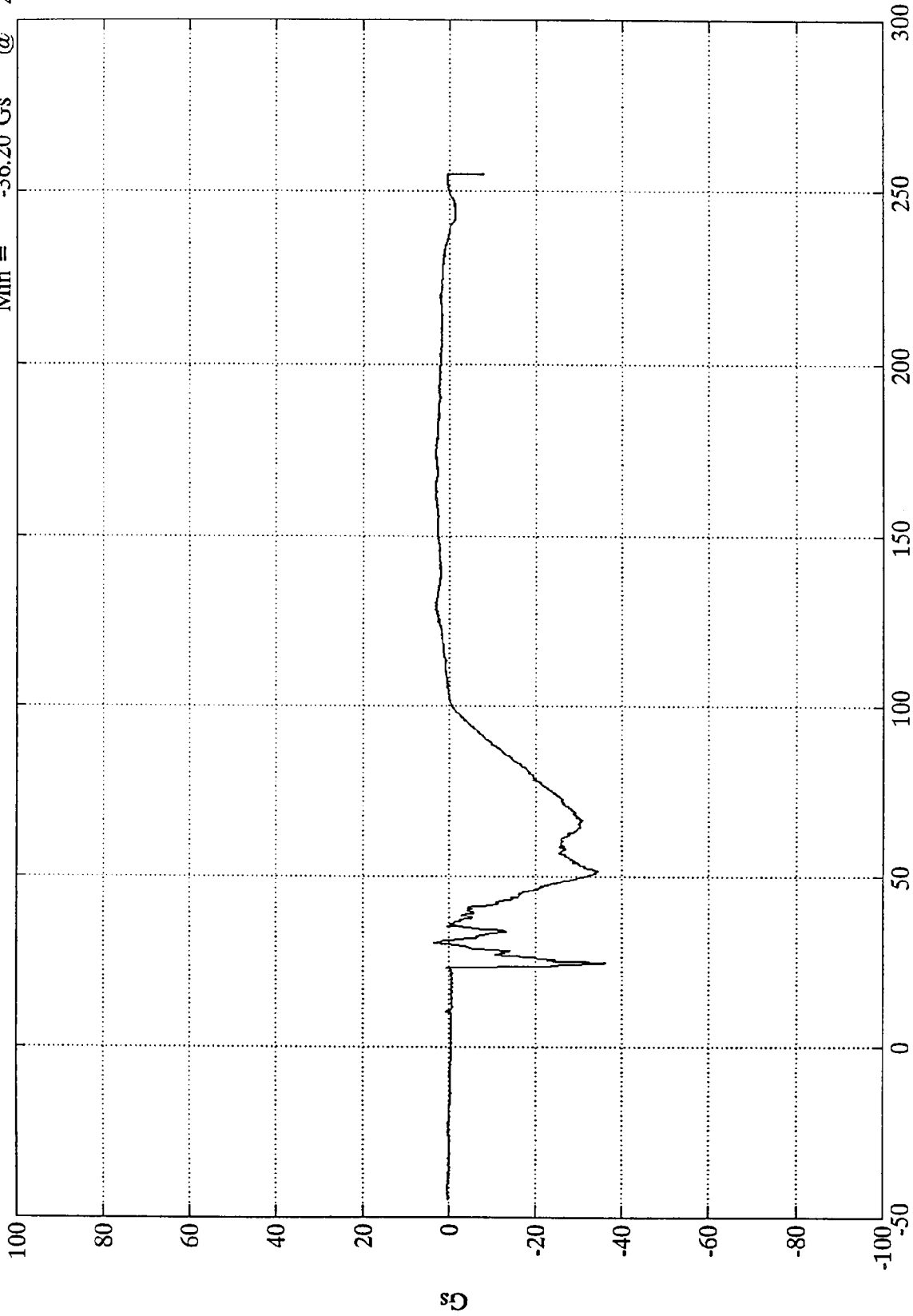
Max = 14.24 Gs @ 241.44 msec  
Min = -25.32 Gs @ 53.63 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 3.65 Gs @ 30.47 msec  
Min = -36.20 Gs @ 24.71 msec

Pos. 1 Head Y



B-90

8118-3

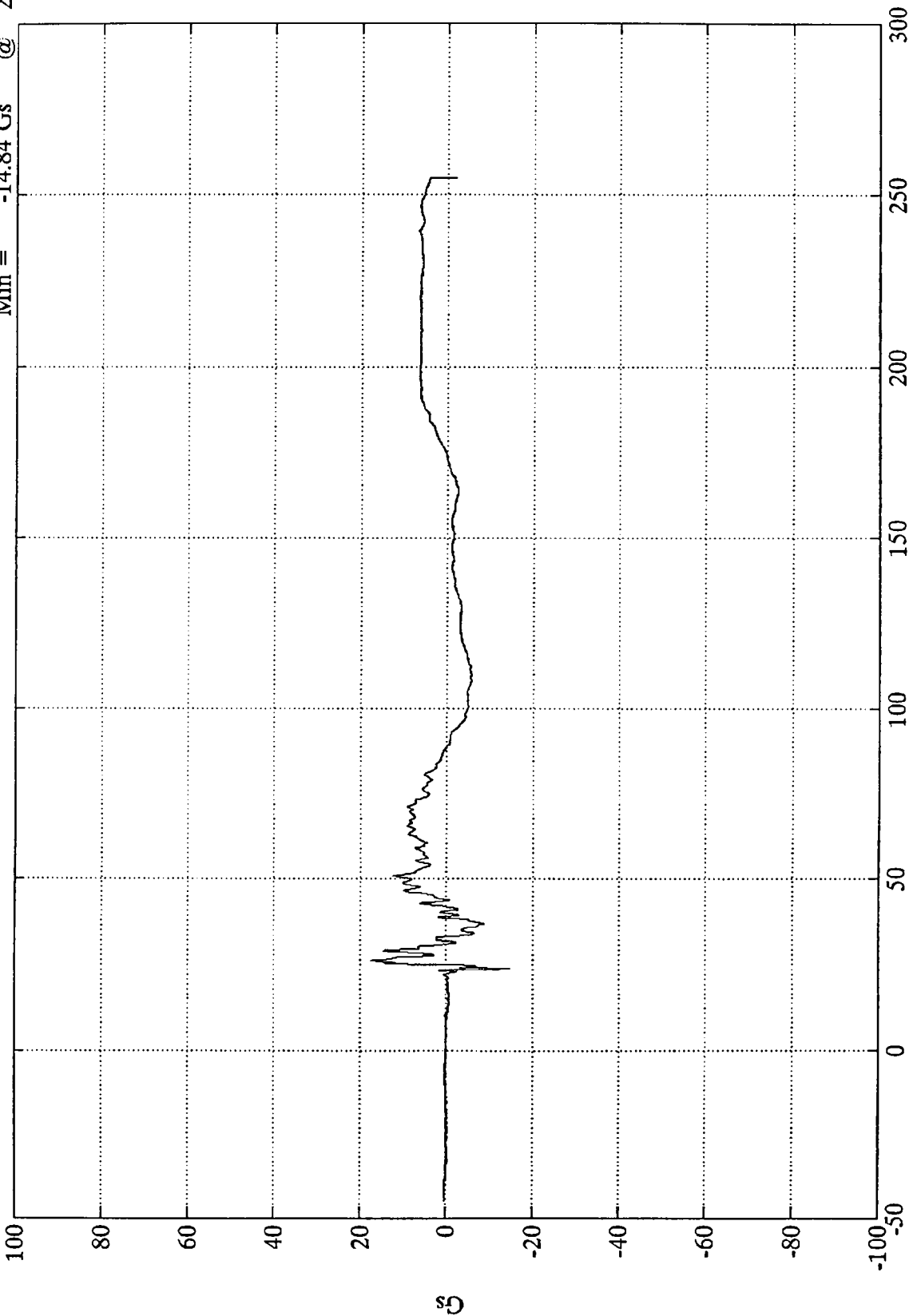
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 17.46 Gs @ 26.27 msec  
Min = -14.84 Gs @ 23.87 msec

Pos. 1 Head Z



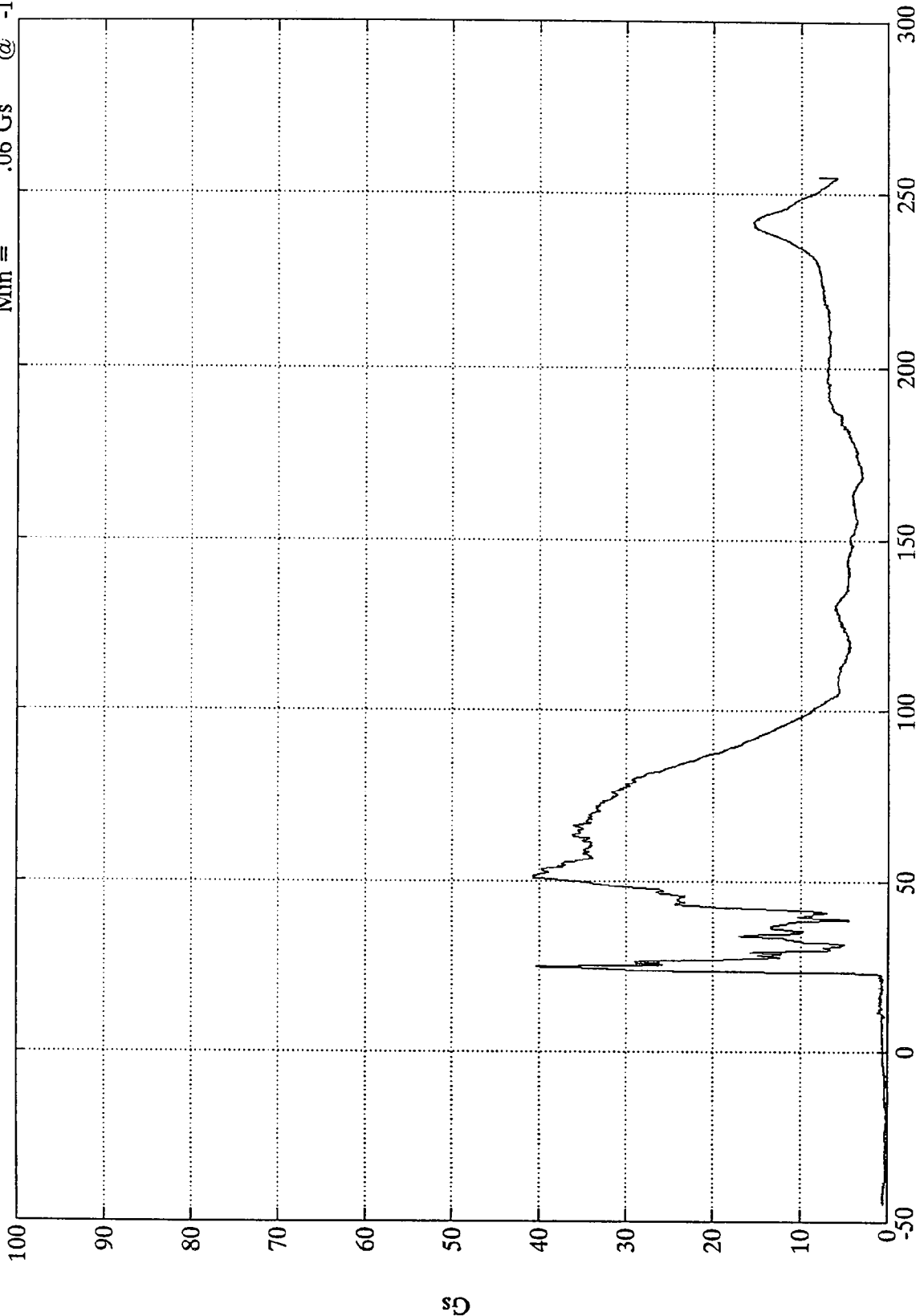
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 40.67 Gs @ 51.60 msec  
Min = .06 Gs @ -18.12 msec

Pos. 1 Head Resultant



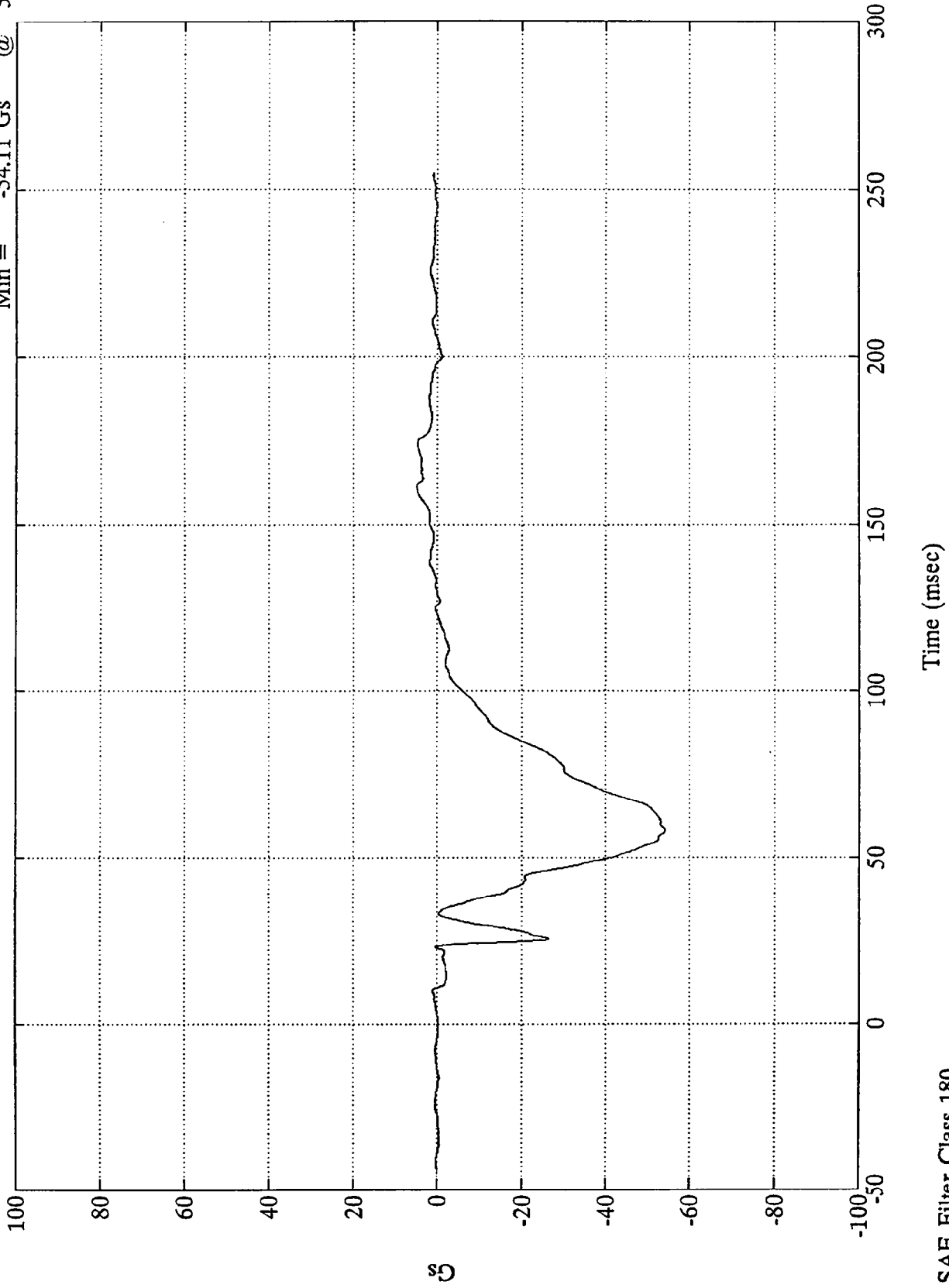
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 4.92 Gs @ 161.76 msec  
Min = -54.11 Gs @ 58.31 msec

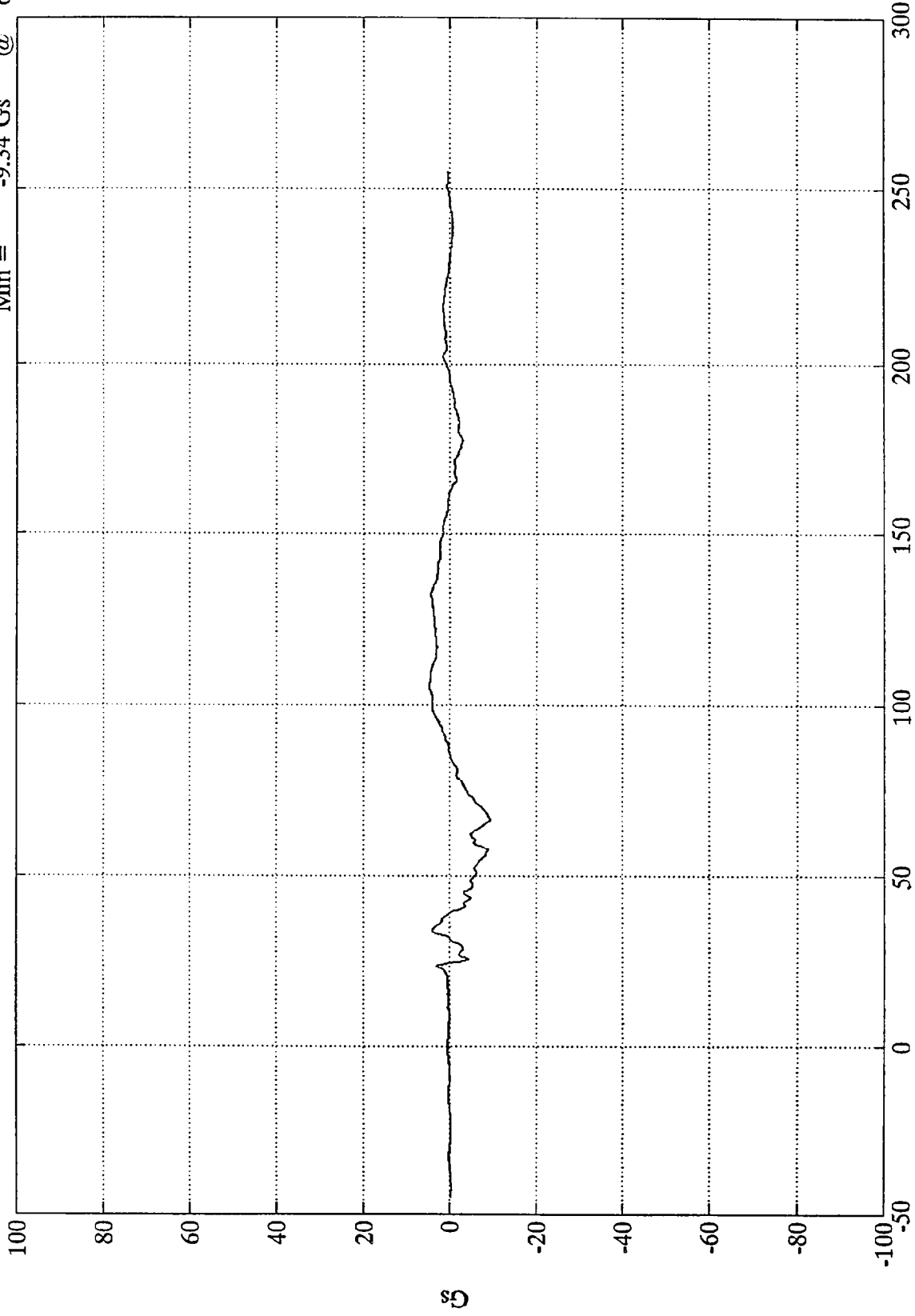
Pos. 1 Chest X



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 4.75 Gs @ 105.48 msec  
Min = -9.34 Gs @ 66.48 msec

Pos. 1 Chest Y



Time (msec)

SAE Filter Class 180

95

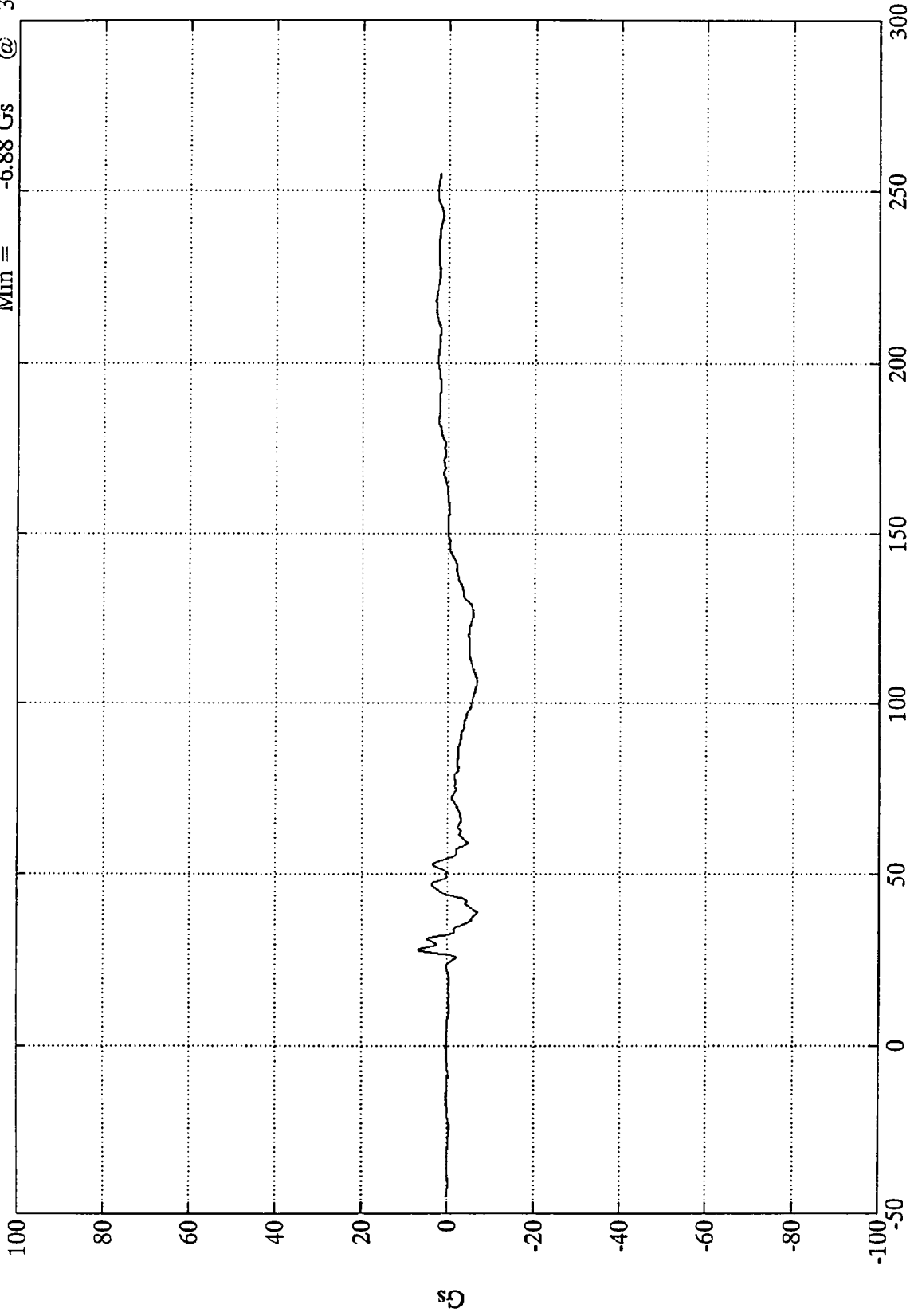
B-94

8118-3

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 6.78 Gs @ 27.72 msec  
Min = -6.88 Gs @ 38.40 msec

Pos. 1 Chest Z



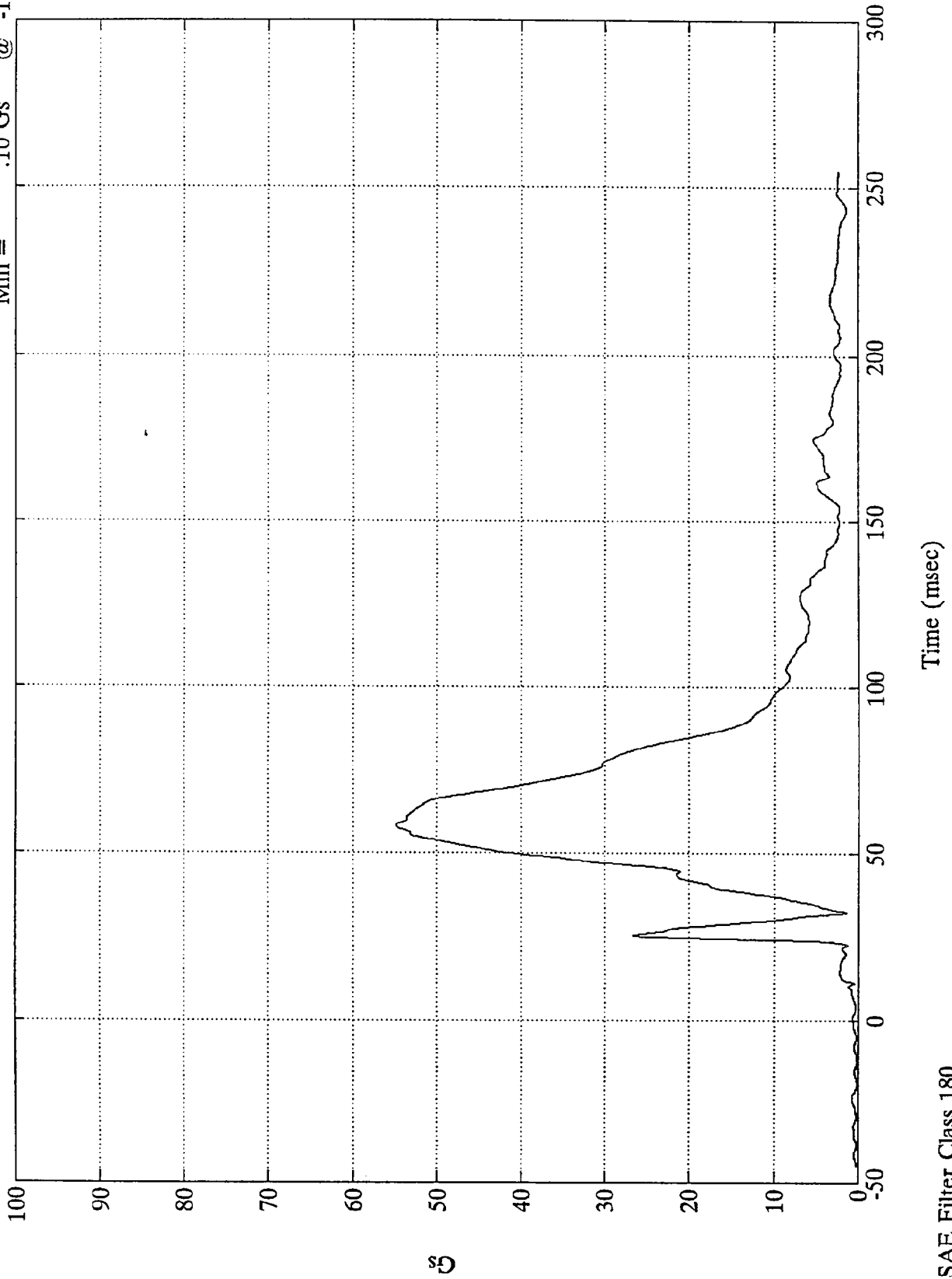
Time (msec)

SAE Filter Class 180

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 54.86 Gs @ 58.08 msec  
Min = .10 Gs @ -19.80 msec

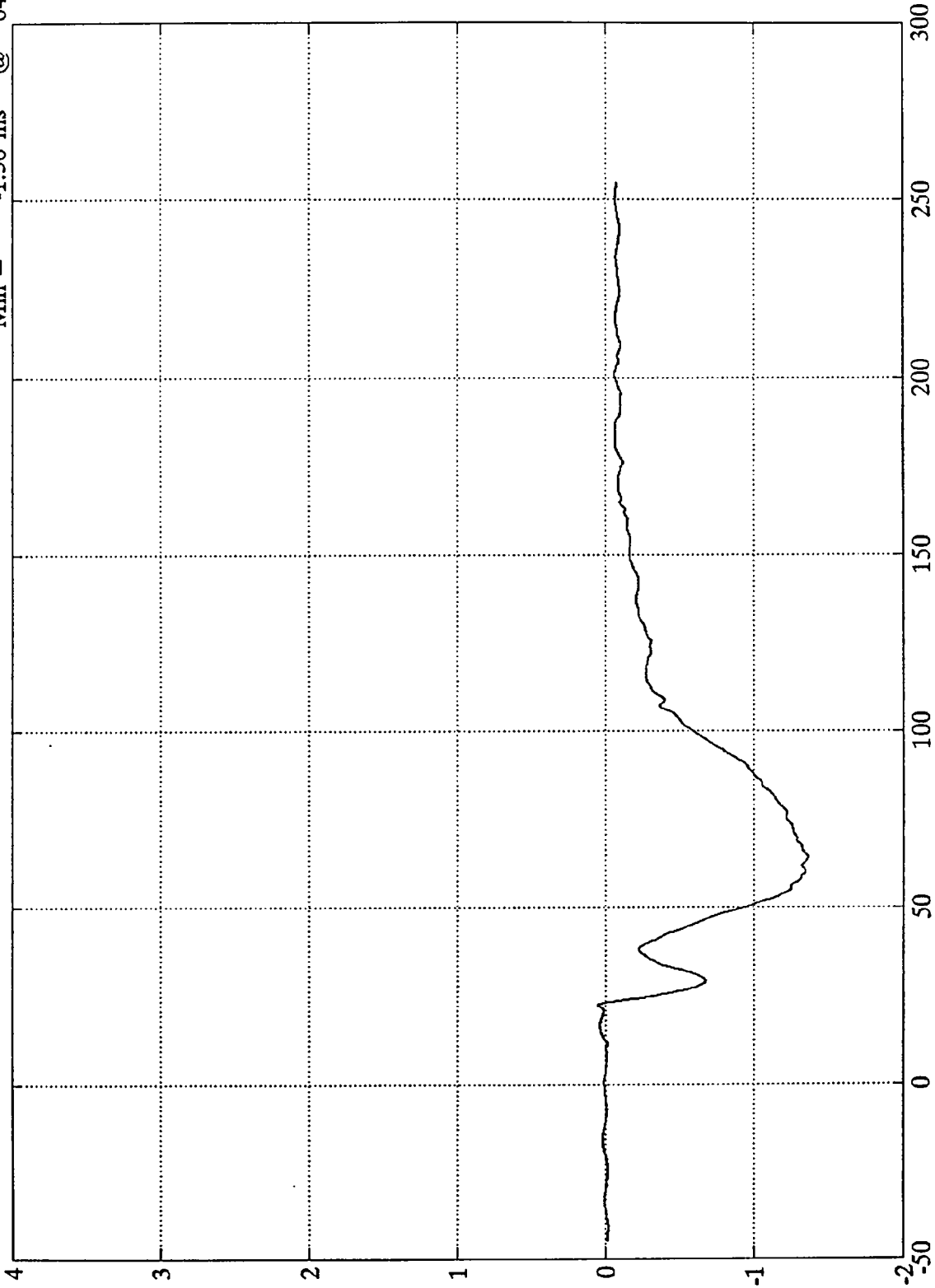
Pos. 1 Chest Resultant



TSC Frontal Barrier Test #3 - Ford Taurus

Max = .06 ins @ 22.43 msec  
Min = -1.36 ins @ 64.19 msec

Pos. 1 Chest Deflection



SUI  
B-97

8118-3

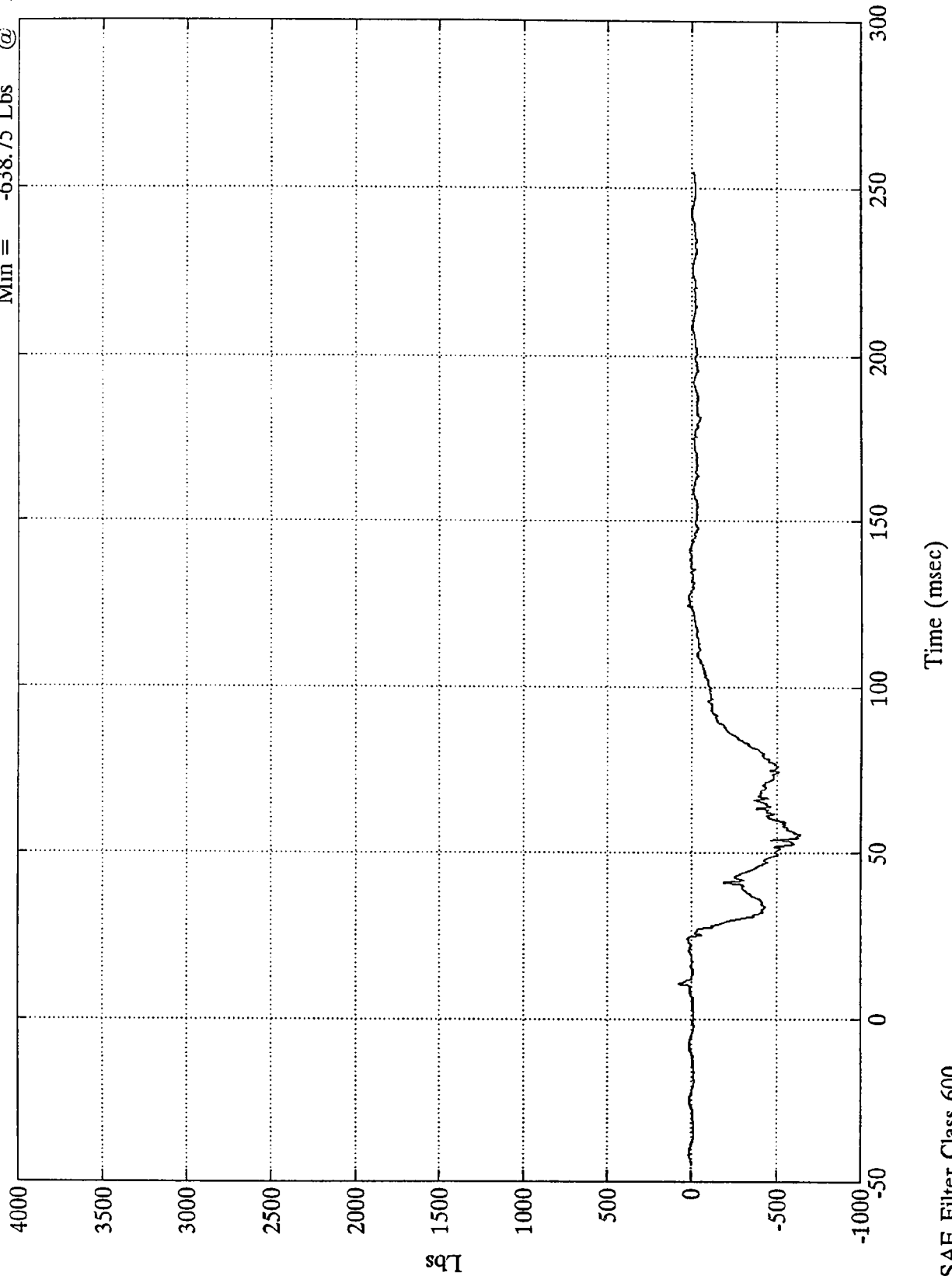
SAE Filter Class 180

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 75.09 Lbs @ 10.43 msec  
Min = -638.75 Lbs @ 55.56 msec

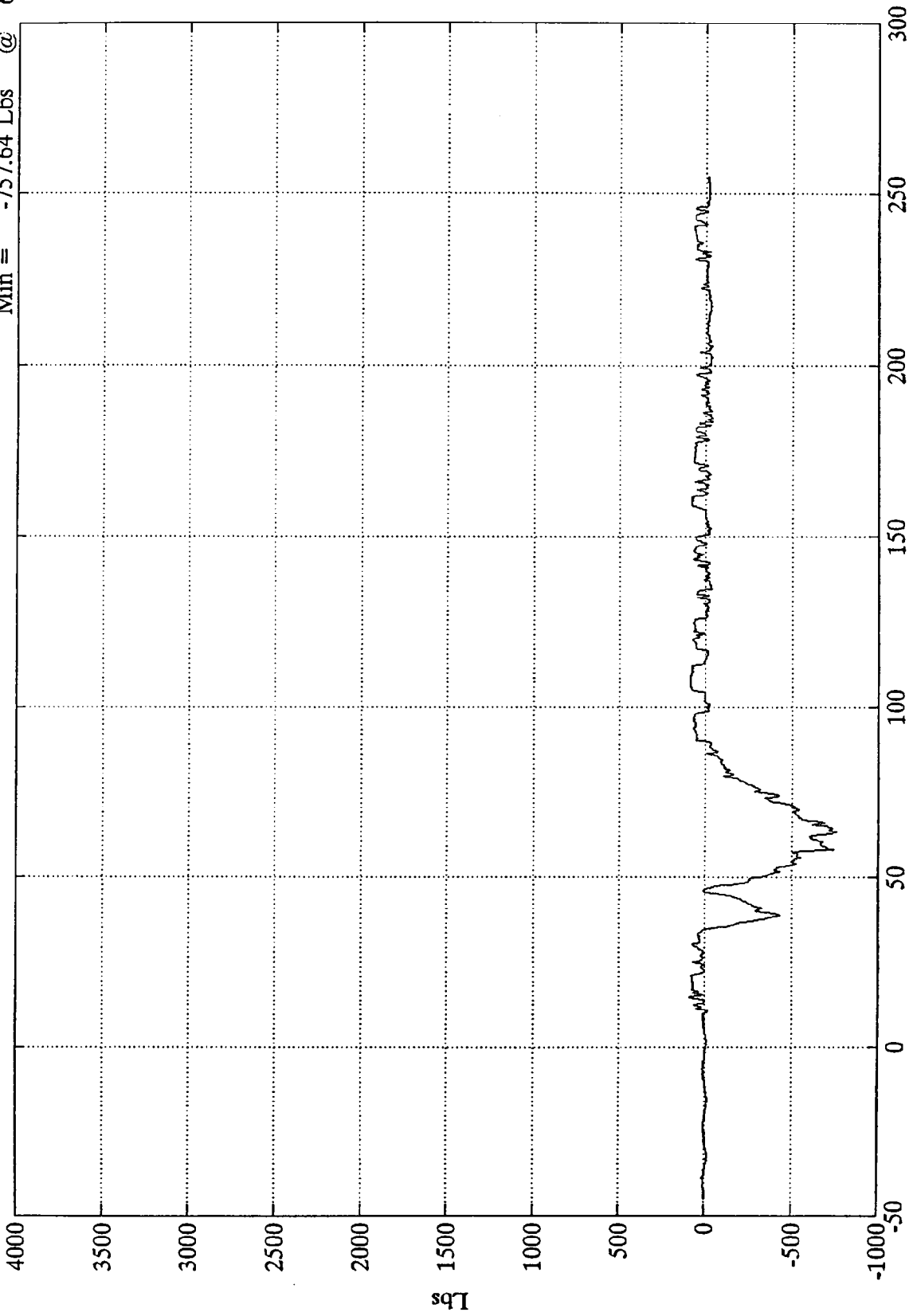
Pos. 1 Left Femur



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Right Femur

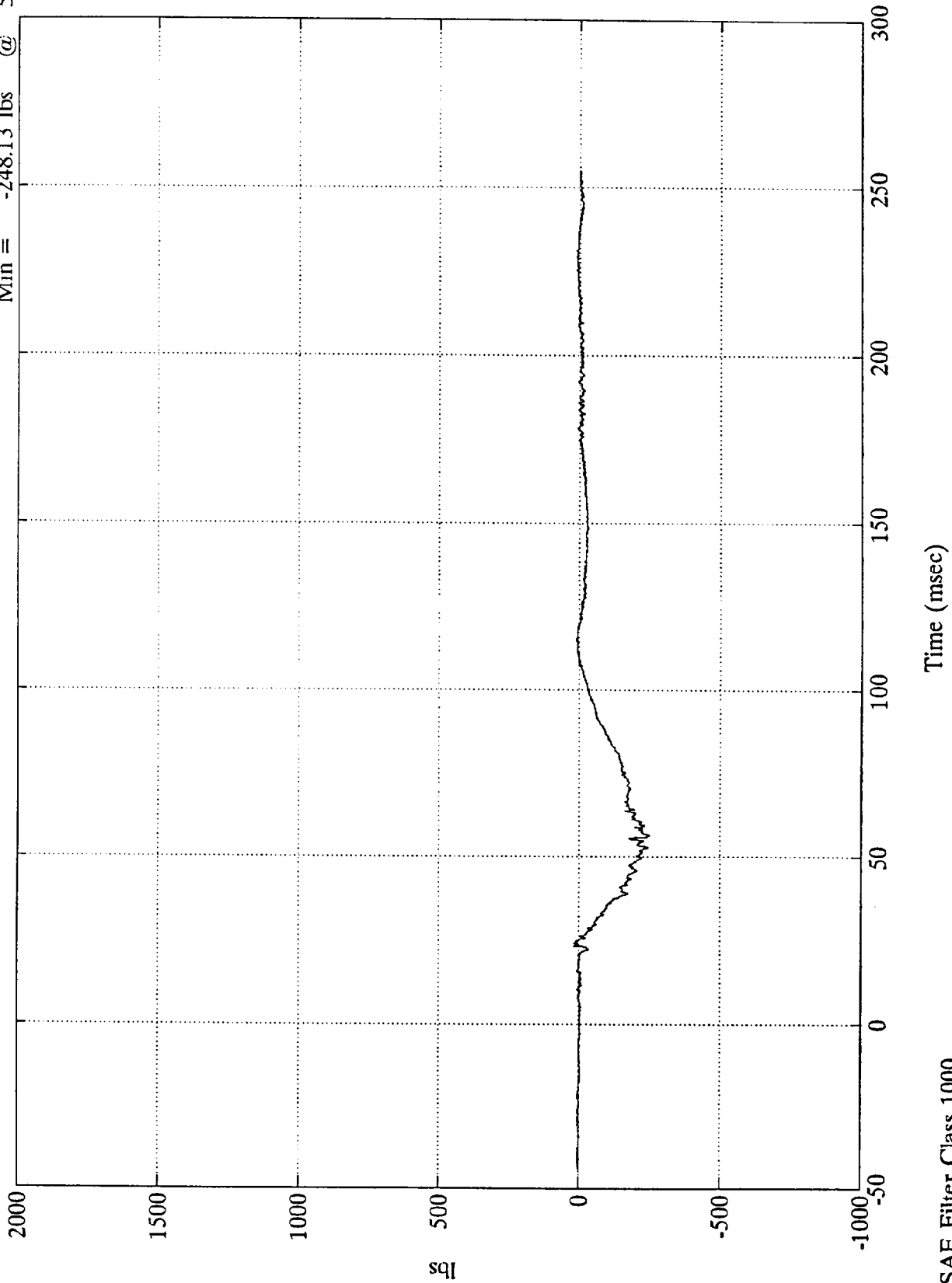
Max = 87.56 Lbs @ 106.68 msec  
Min = -757.64 Lbs @ 63.23 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Upper Neck Fx

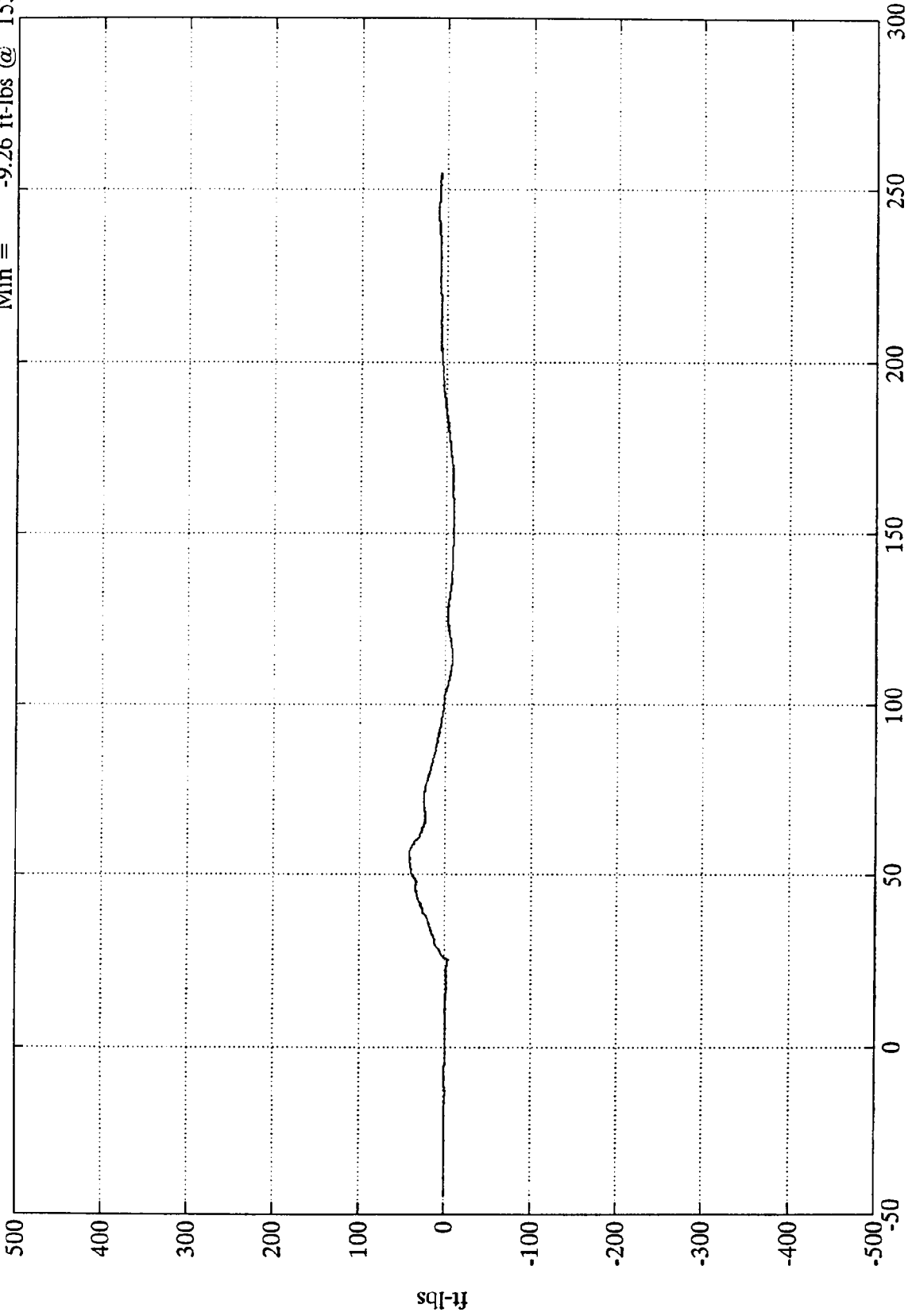
Max = 15.68 lbs @ 24.35 msec  
Min = -248.13 lbs @ 56.52 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Upper Neck My

Max = 42.01 ft-lbs @ 56.52 msec  
Min = -9.26 ft-lbs @ 153.24 msec



B-101

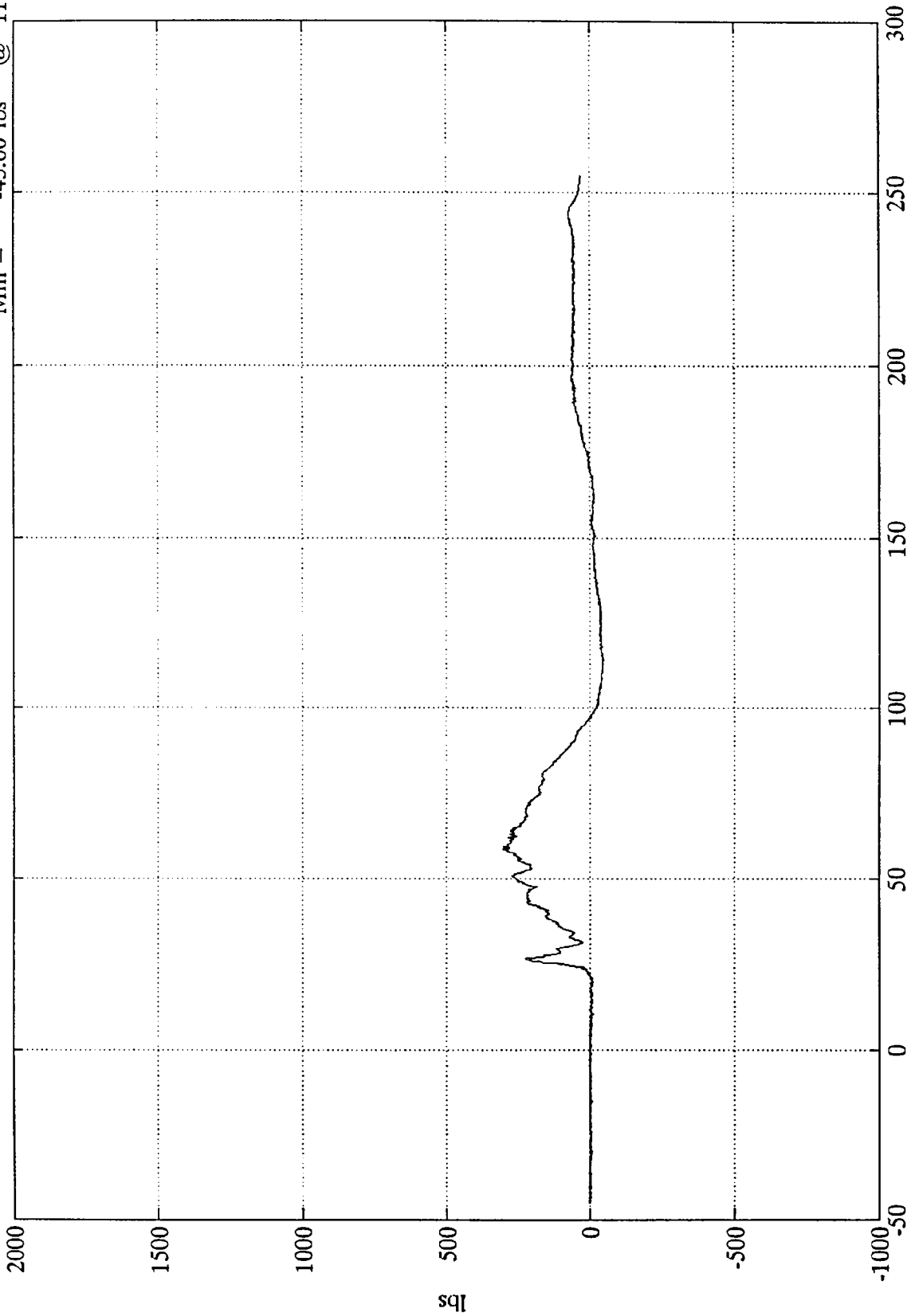
8118-3

SAE Filter Class 600

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Upper Neck Fz

Max = 303.56 lbs @ 58.68 msec  
Min = -45.60 lbs @ 114.84 msec



SAE Filter Class 1000

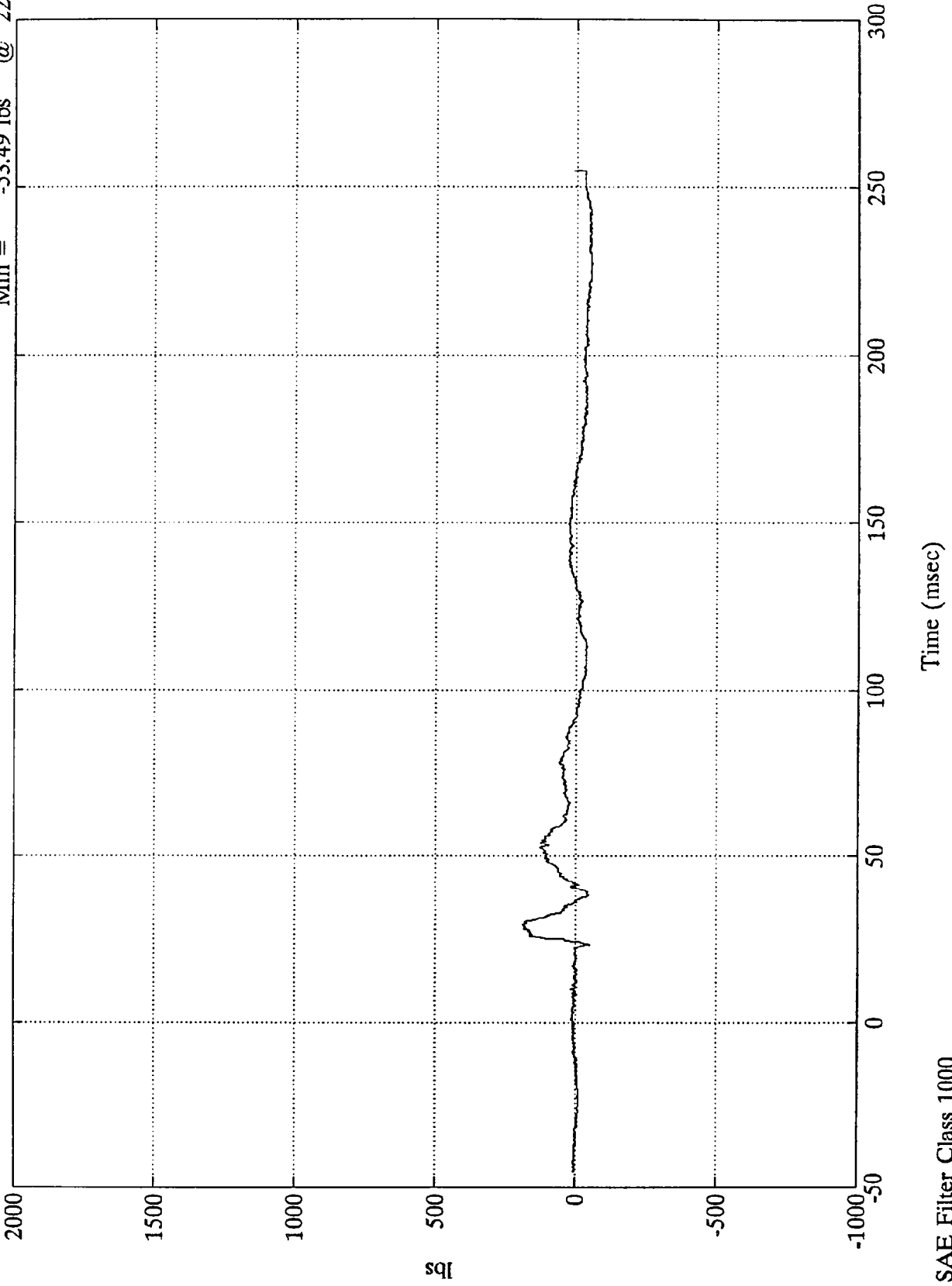
Time (msec)



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 188.93 lbs @ 29.27 msec  
Min = -53.49 lbs @ 227.40 msec

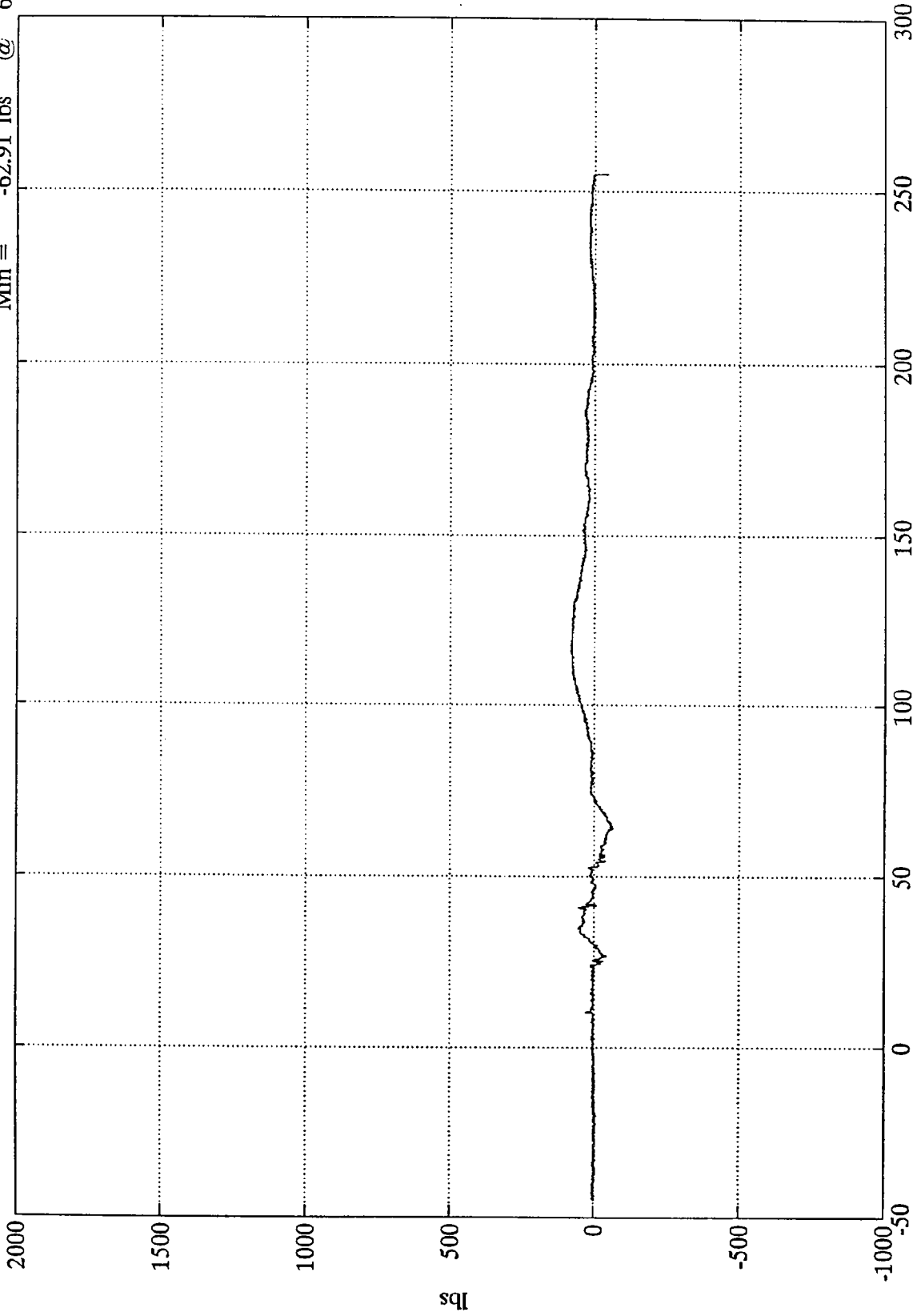
Pos. 1 Thorax Fx



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Thorax Fy

Max = 83.35 lbs @ 116.16 msec  
Min = -62.91 lbs @ 63.95 msec



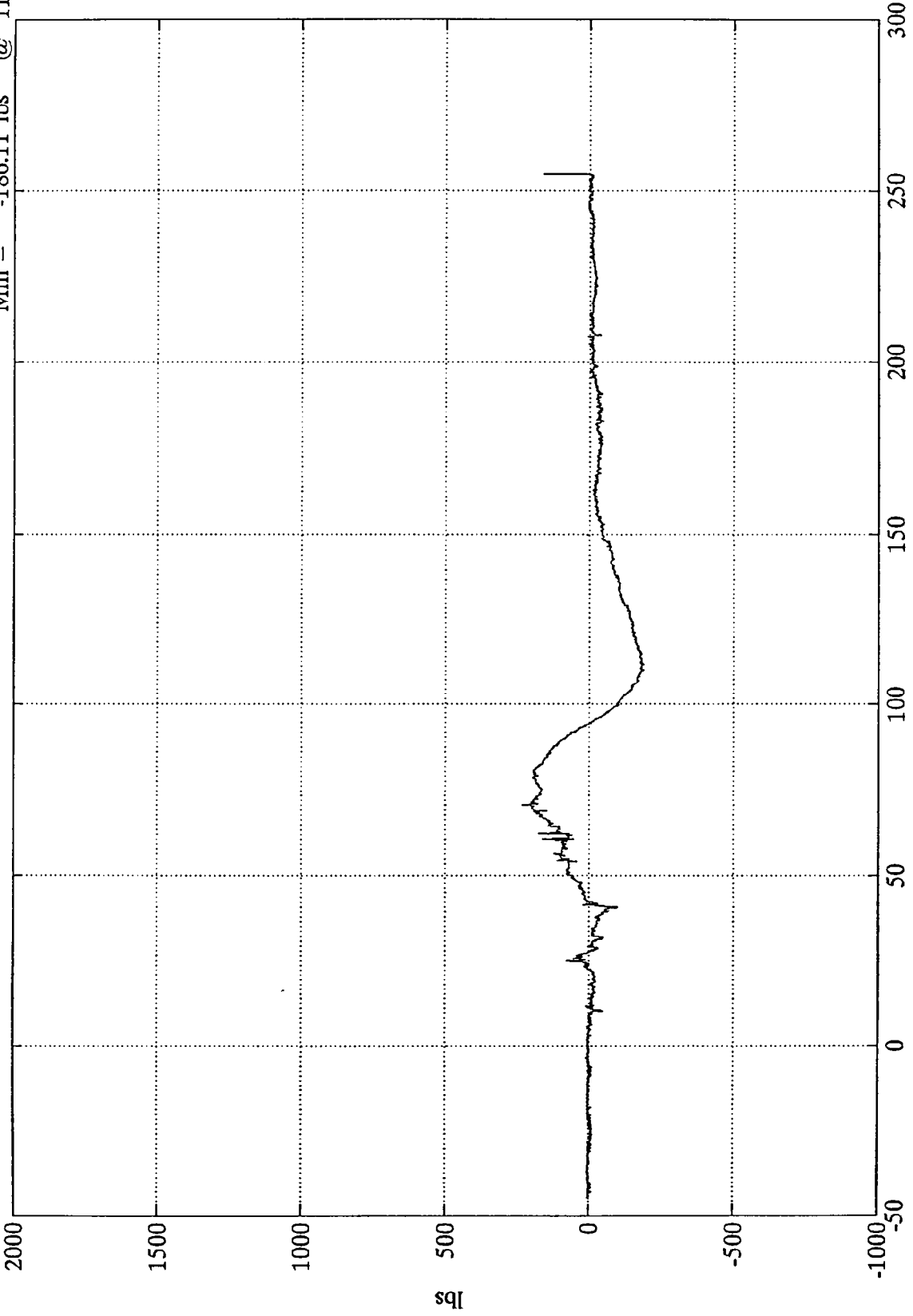
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 232.72 lbs @ 70.44 msec  
Min = -186.11 lbs @ 112.19 msec

Pos. 1 Thorax Fz



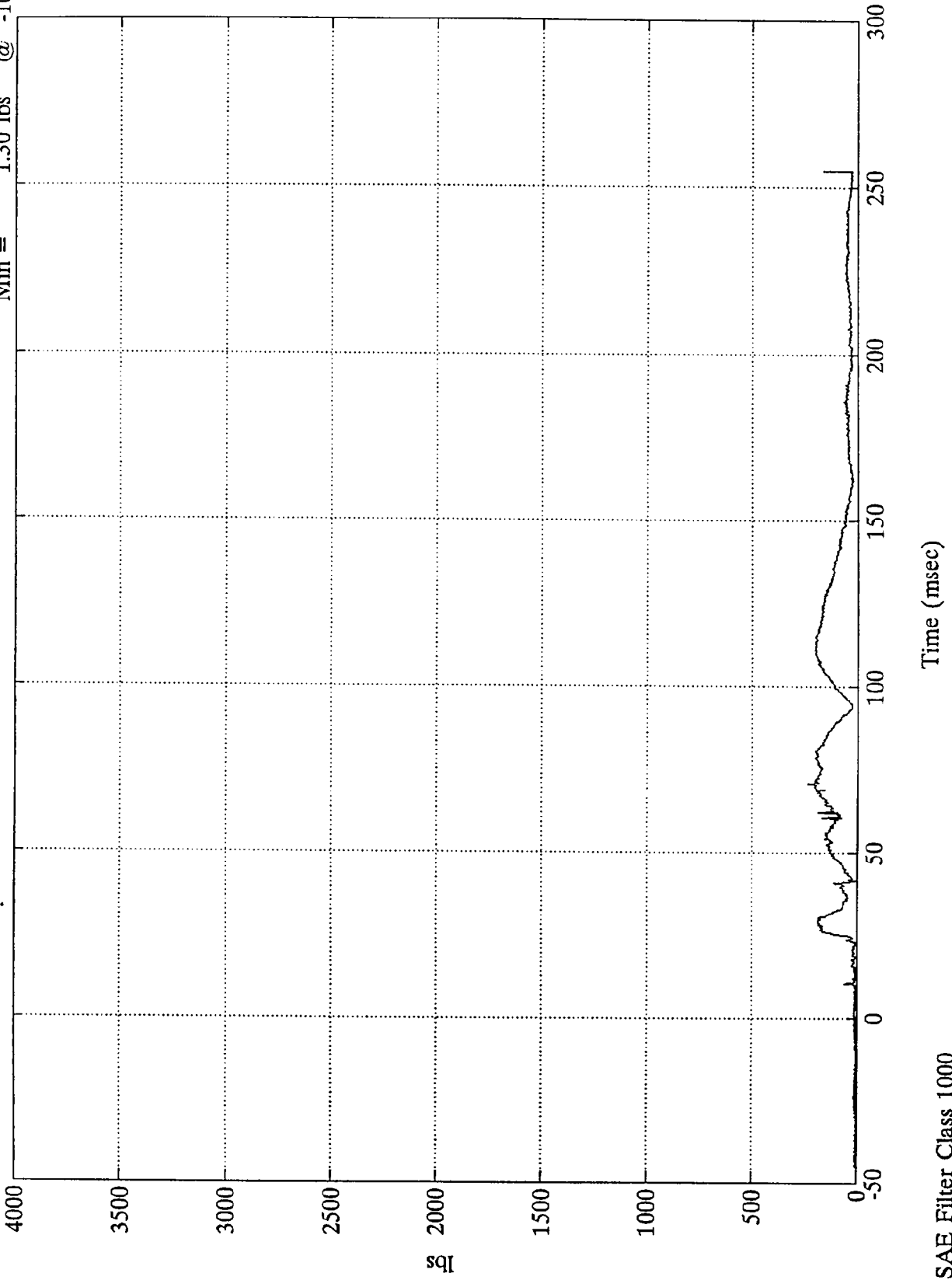
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 236.46 lbs @ 70.44 msec  
Min = 1.30 lbs @ -10.44 msec

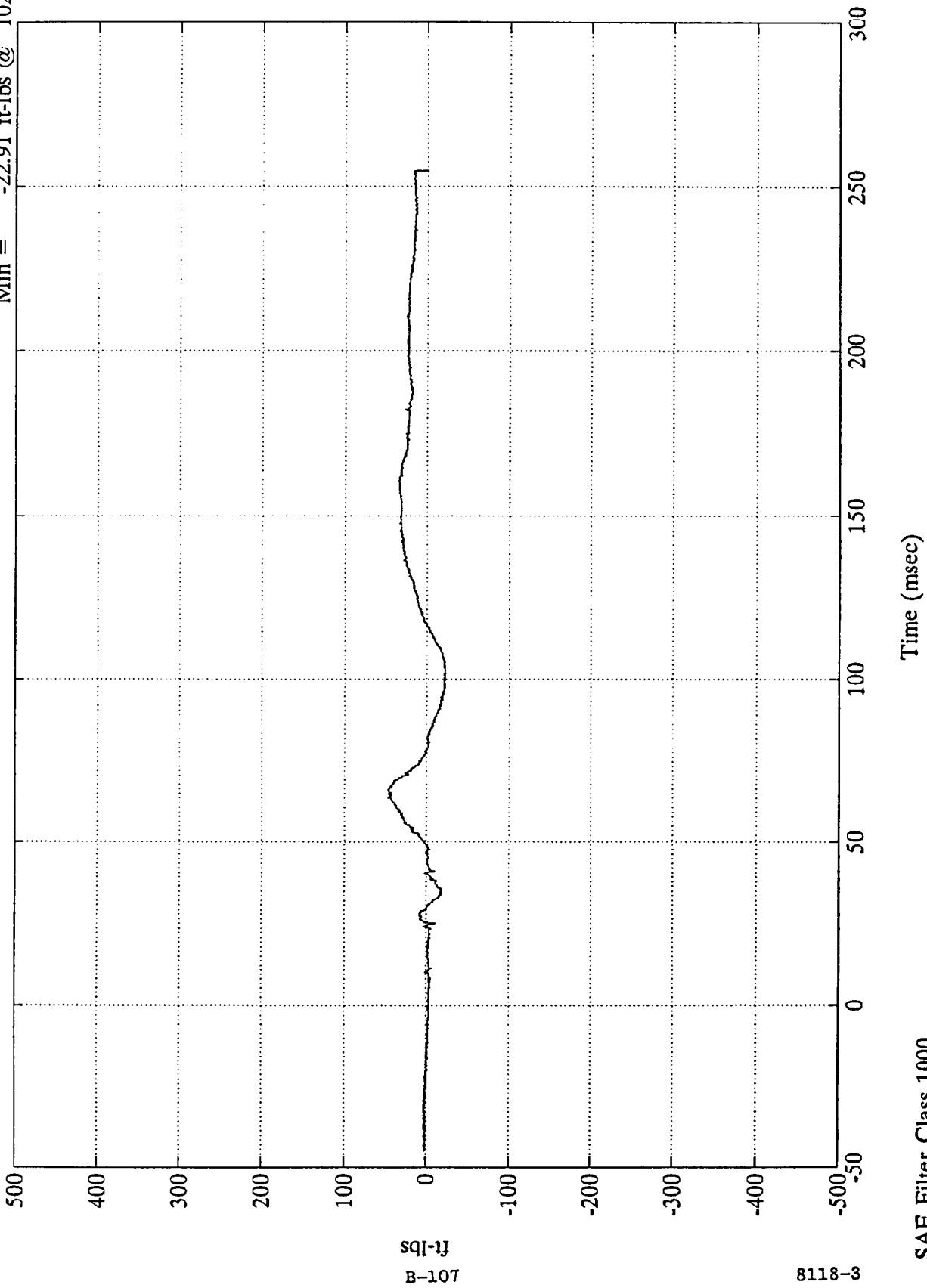
P1 Thorax Force Result.



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 46.71 ft-lbs @ 63.48 msec  
Min = -22.91 ft-lbs @ 102.72 msec

Pos. 1 Thorax Mx



SQ[-1]  
B-107

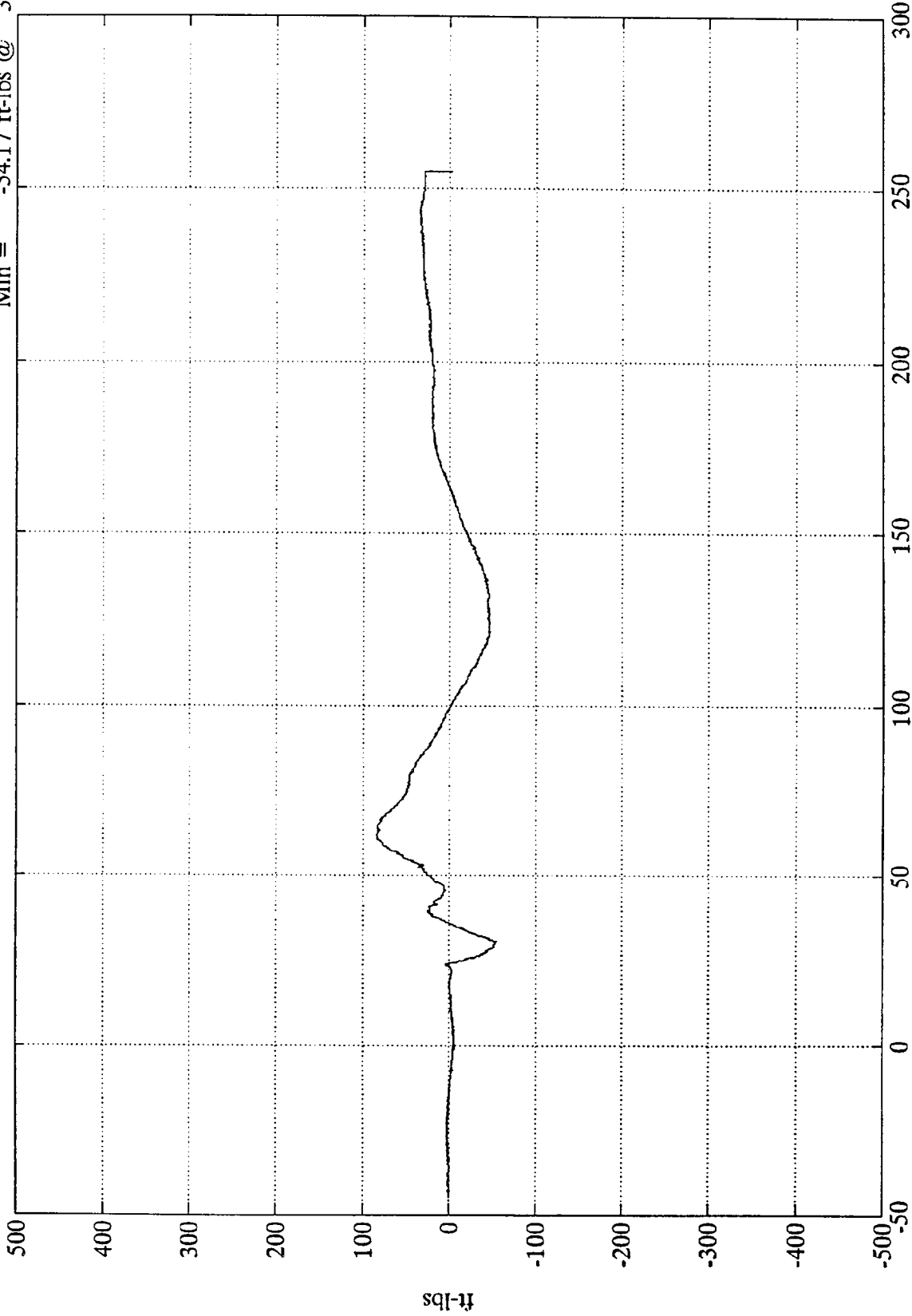
8118-3

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Thorax My

Max = 84.11 ft-lbs @ 61.79 msec  
Min = -54.17 ft-lbs @ 30.36 msec



sq1-11  
B-108

8118-3

SAE Filter Class 1000

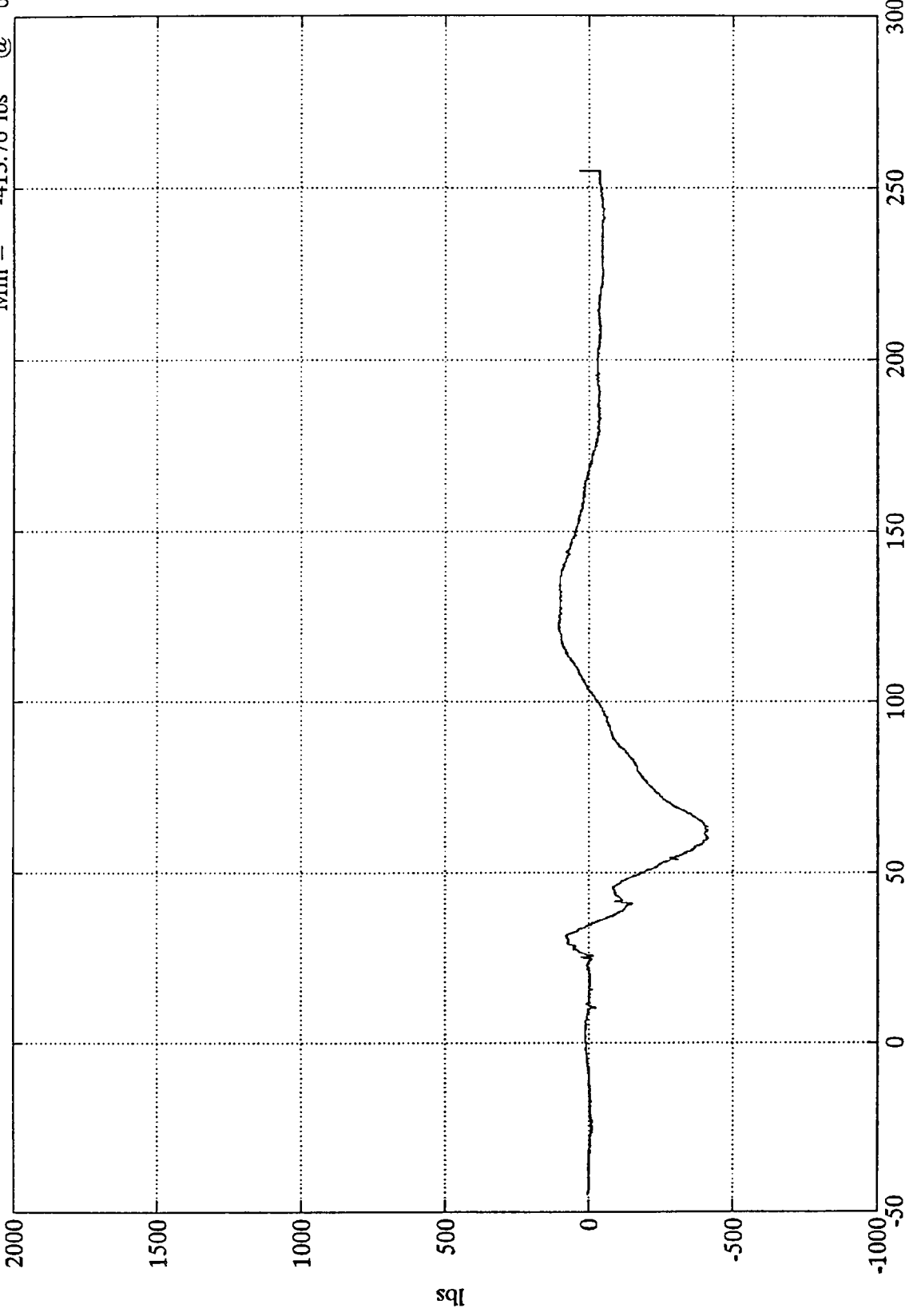
Time (msec)



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 106.77 lbs @ 123.12 msec  
Min = -413.76 lbs @ 63.48 msec

Pos. 1 Lumbar Fx



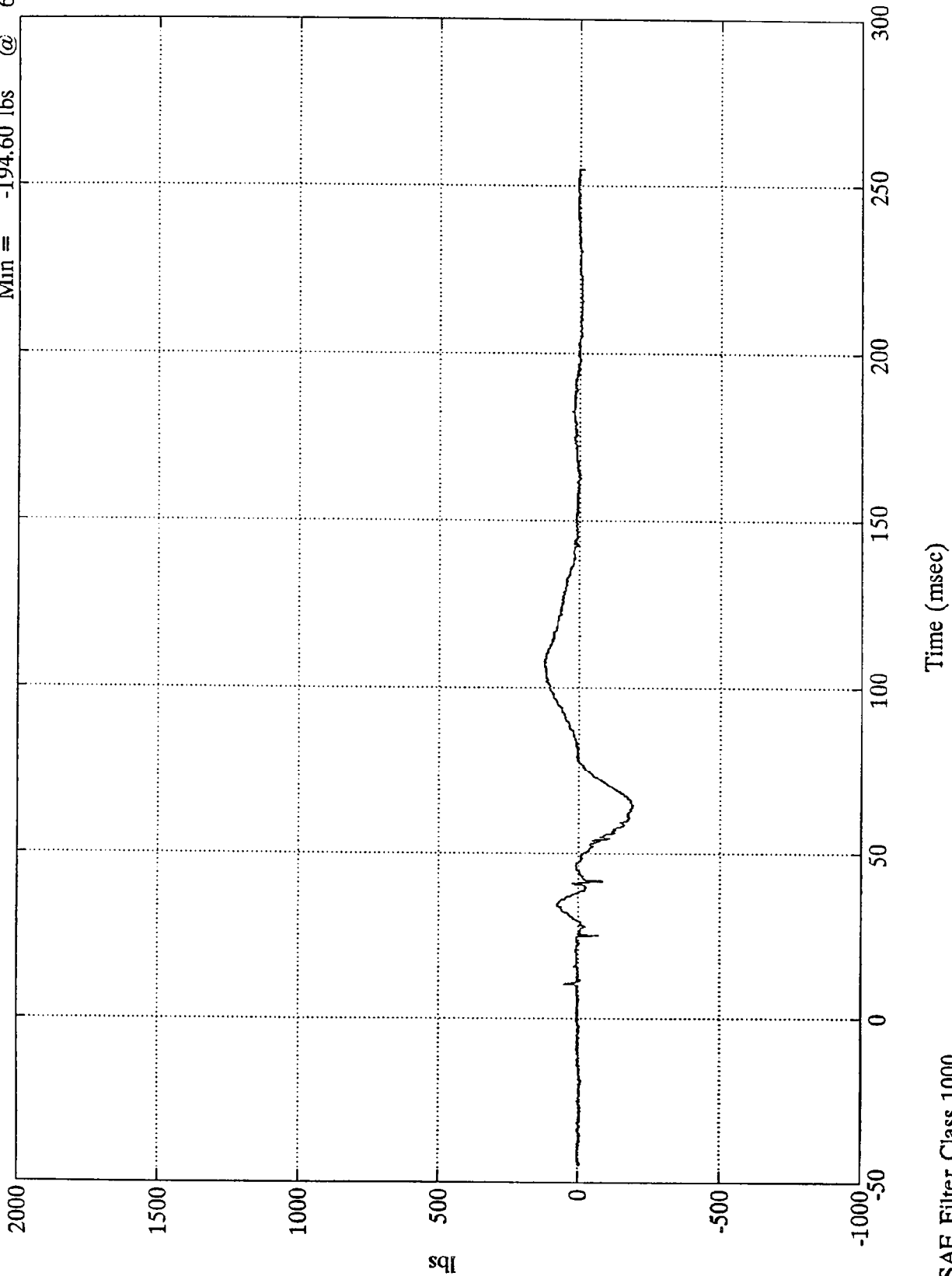
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

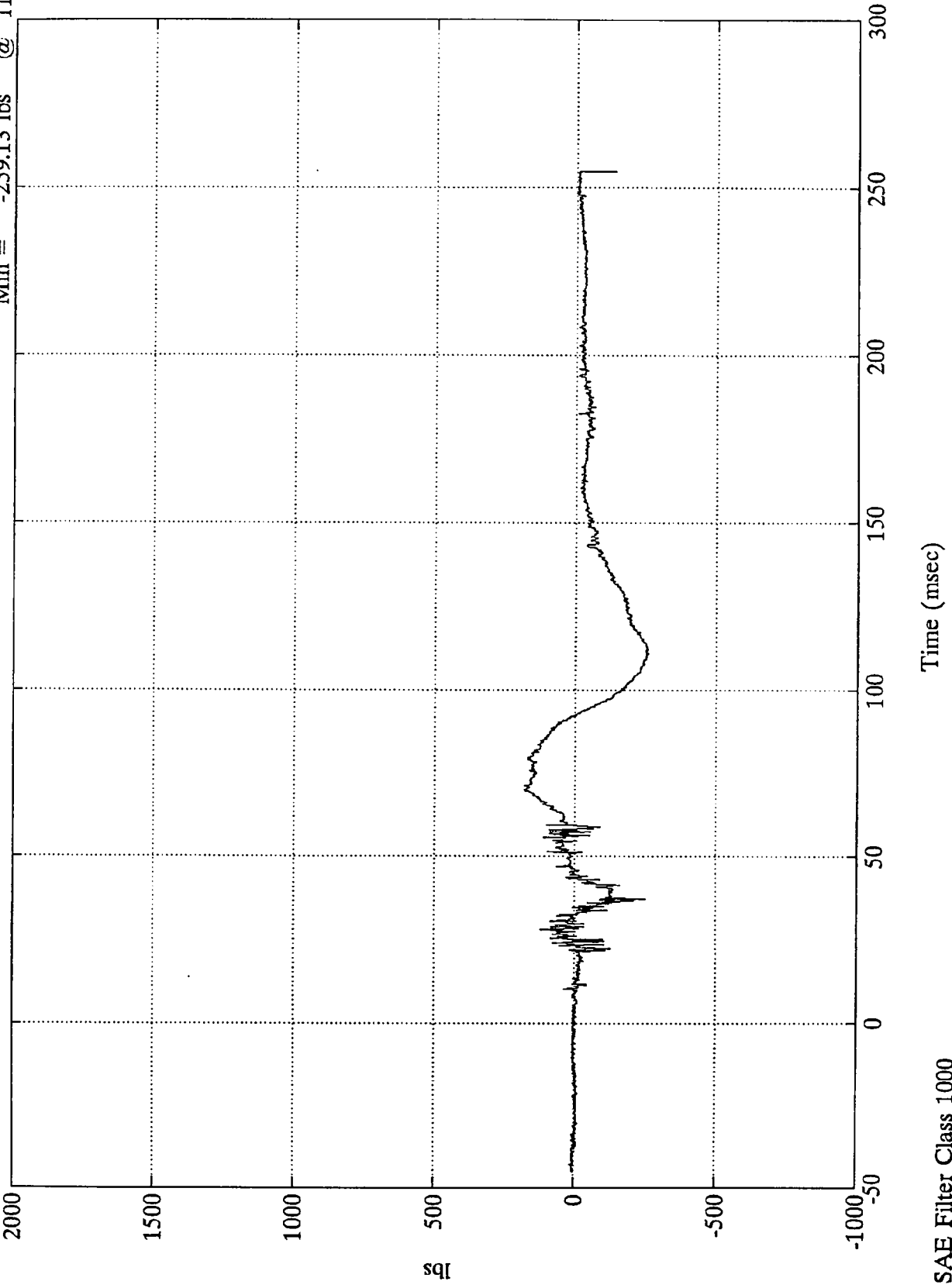
Max = 124.67 lbs @ 108.72 msec  
Min = -194.60 lbs @ 64.56 msec

Pos. 1 Lumbar Fy



TSC Frontal Barrier Test #3 - Ford Taurus

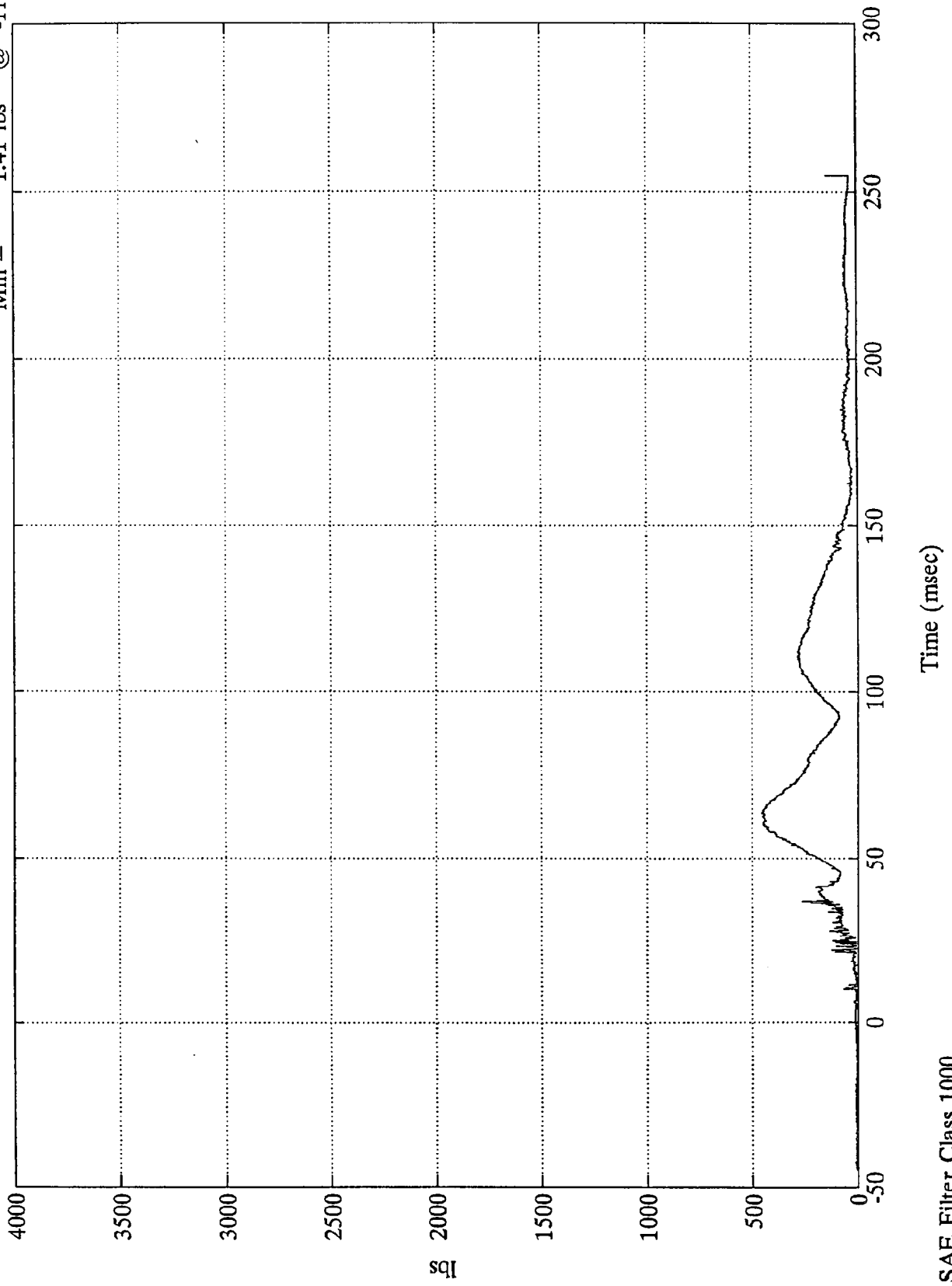
Pos. 1 Lumbar Fz  
Max = 176.70 lbs @ 71.76 msec  
Min = -259.13 lbs @ 112.08 msec



TSC Frontal Barrier Test #3 - Ford Taurus

P1 Lumbar Force Result.

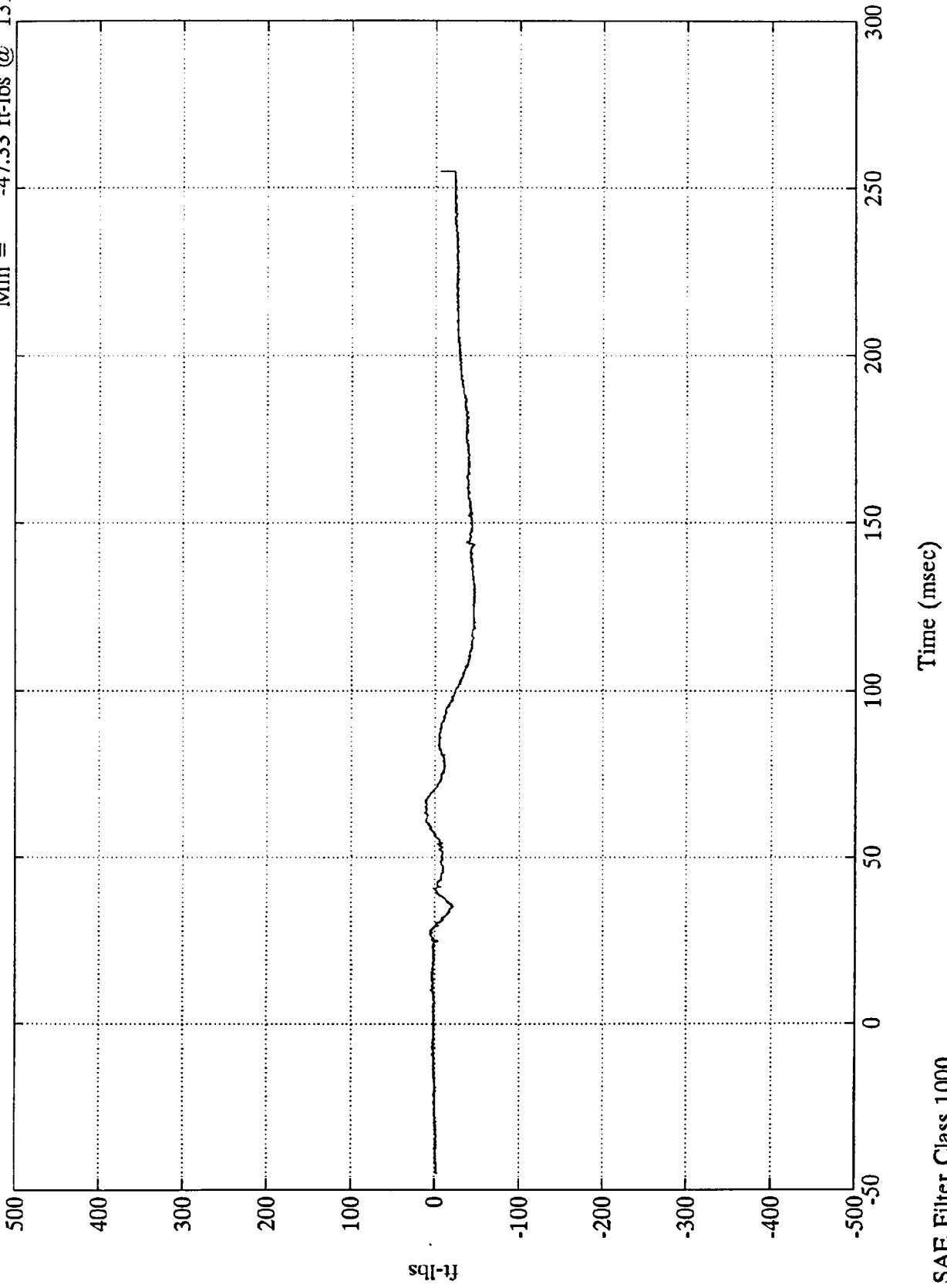
Max = 456.19 lbs @ 63.48 msec  
Min = 1.41 lbs @ -11.88 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 12.79 ft-lbs @ 63.35 msec  
Min = -47.33 ft-lbs @ 131.52 msec

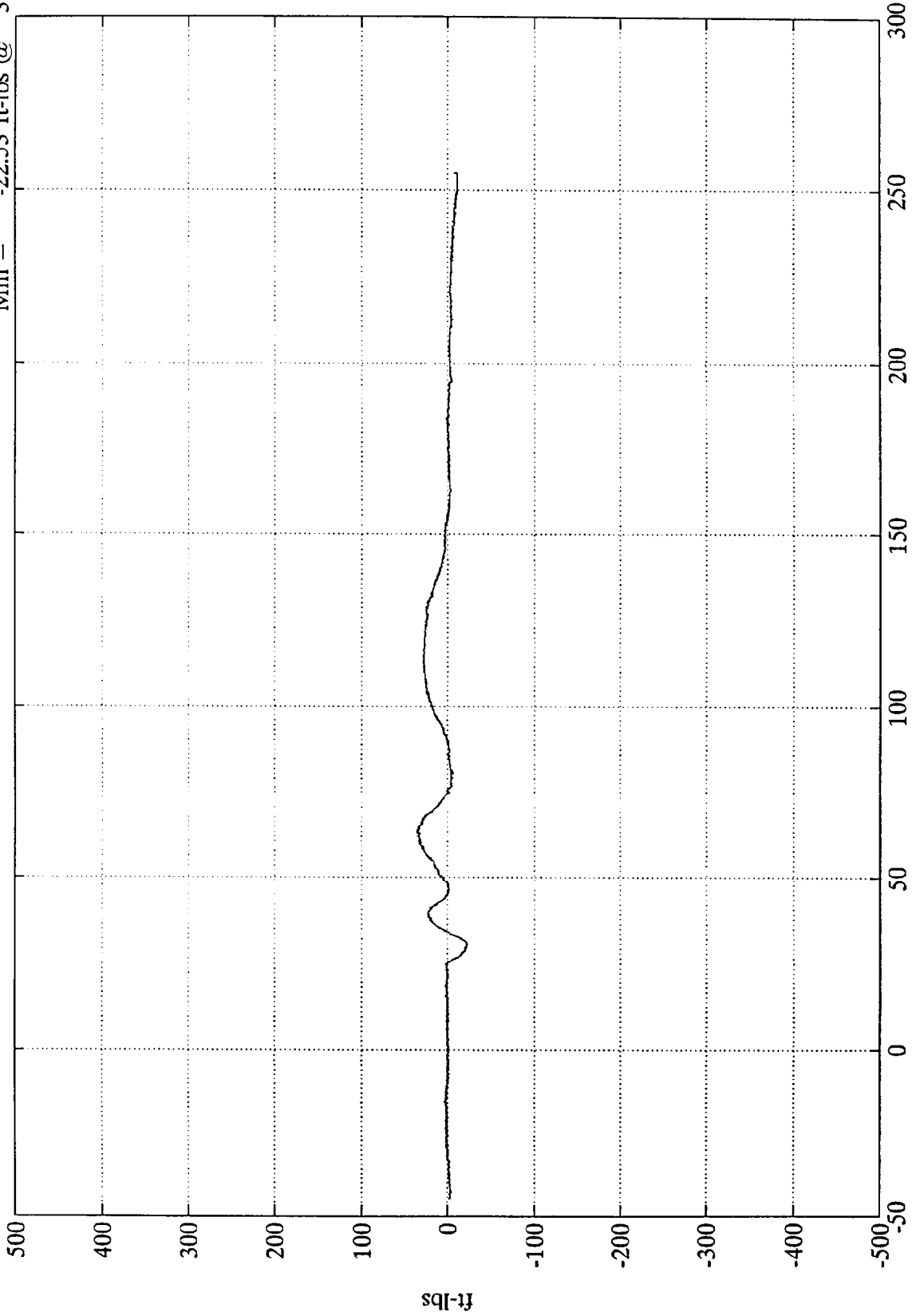
Pos. 1 Lumbar Mx



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Lumbar My

Max = 36.16 ft-lbs @ 63.23 msec  
Min = -22.53 ft-lbs @ 30.71 msec



sq-lj

B-114

8118-3

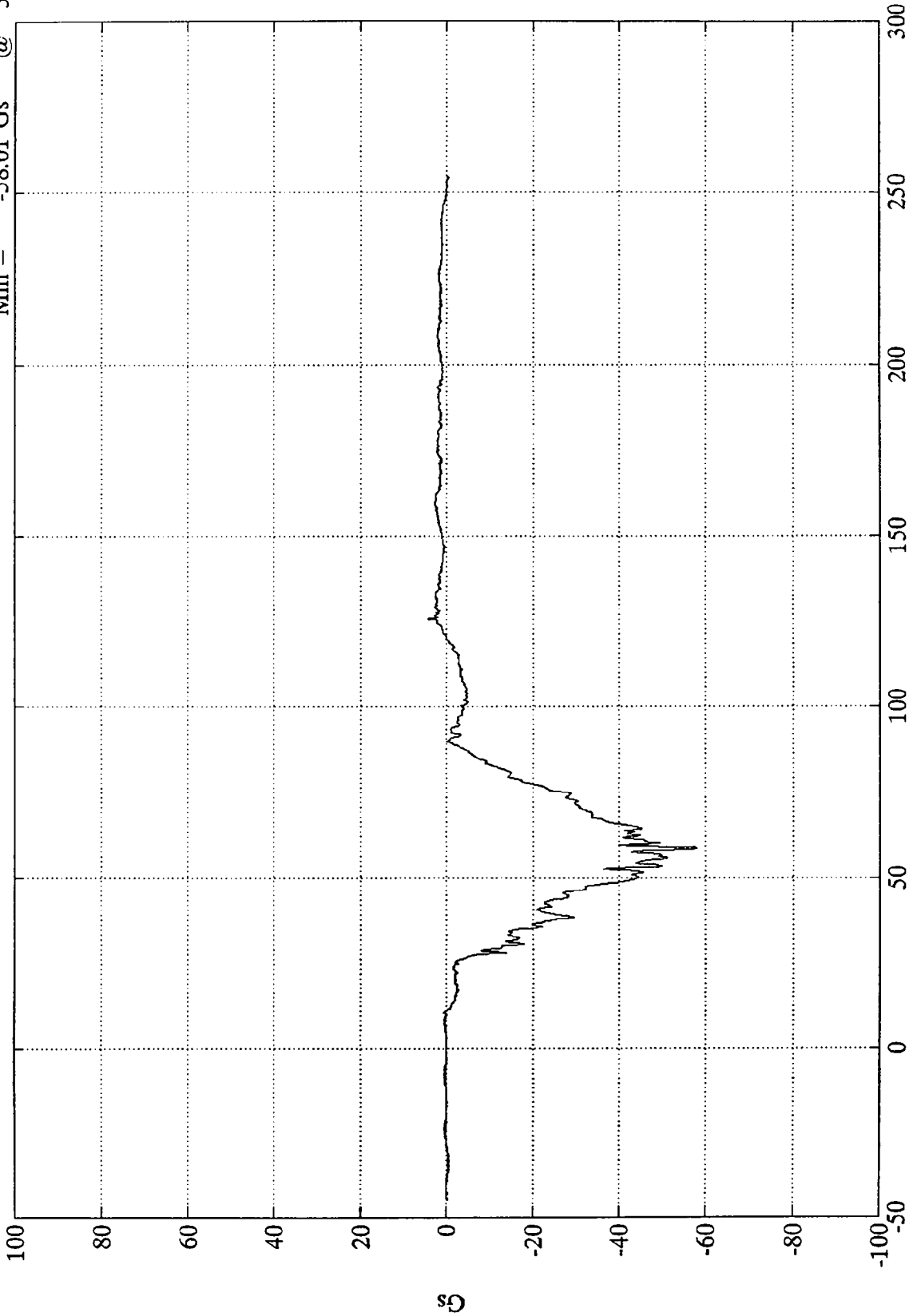
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 4.35 Gs @ 125.88 msec  
Min = -58.01 Gs @ 58.56 msec

Pos. 1 Pelvic X

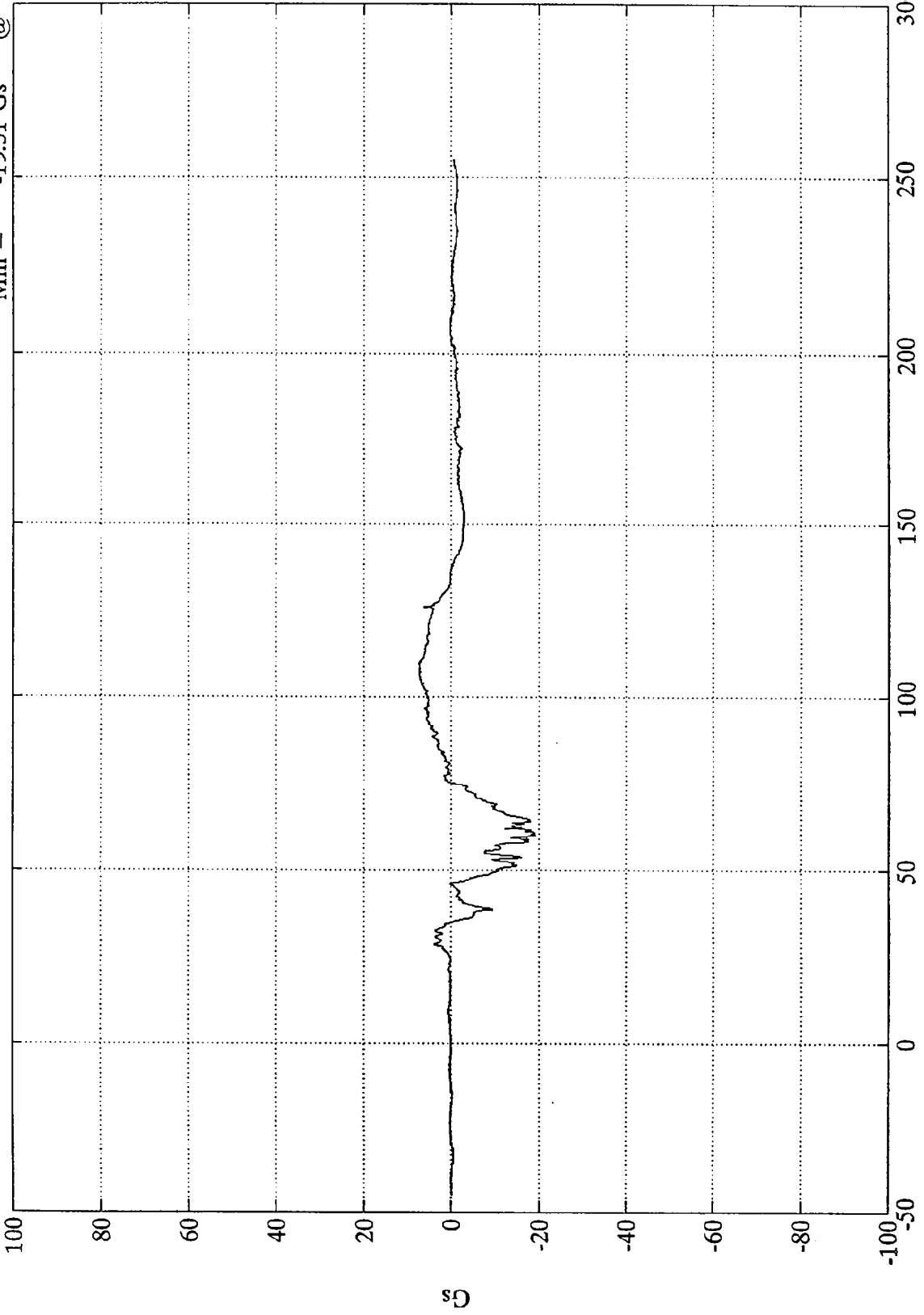


Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 7.38 Gs @ 109.80 msec  
Min = -19.31 Gs @ 60.12 msec

Pos. 1 Pelvic Y



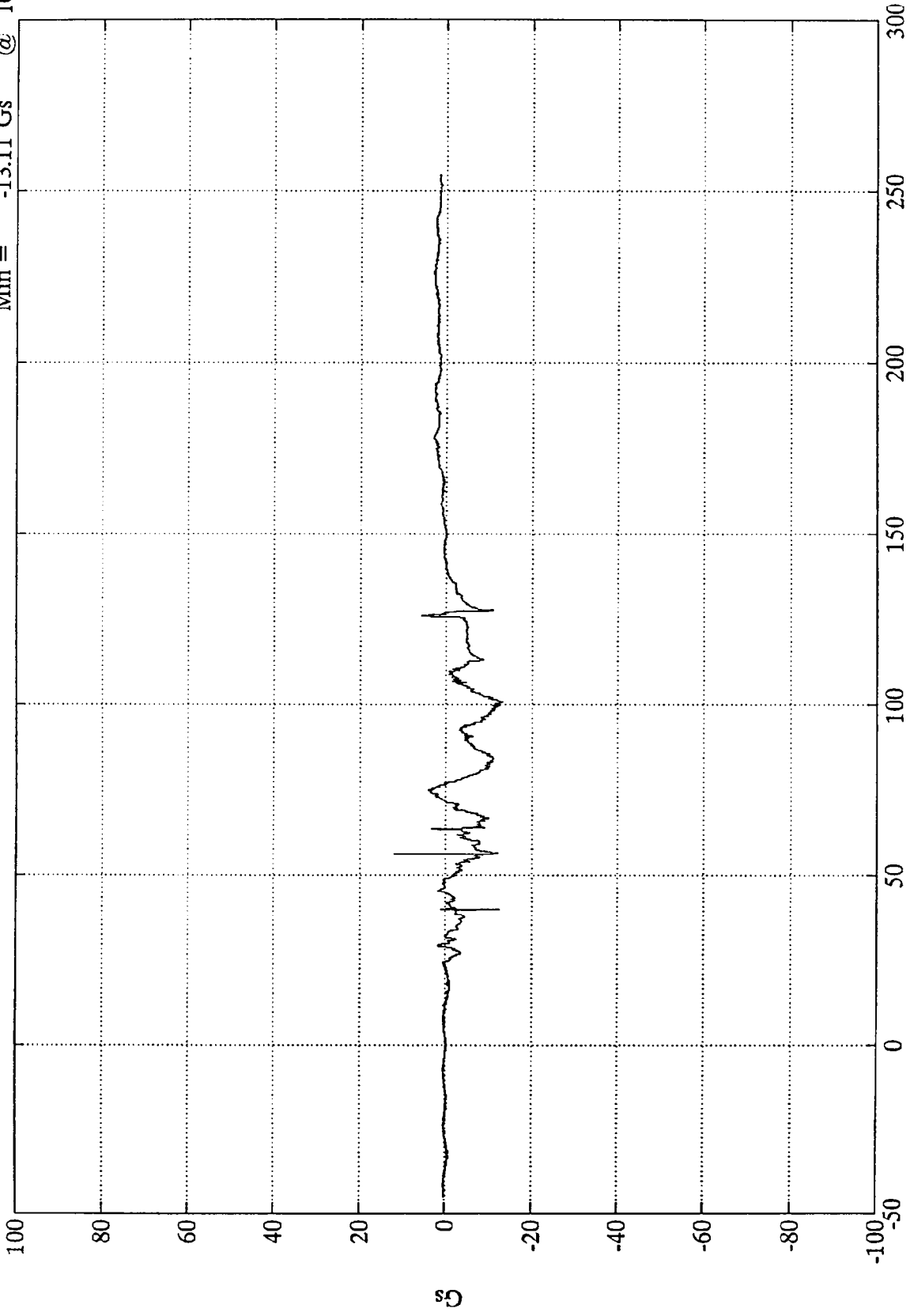
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 12.09 Gs @ 56.28 msec  
Min = -13.11 Gs @ 100.68 msec

Pos. 1 Pelvic Z



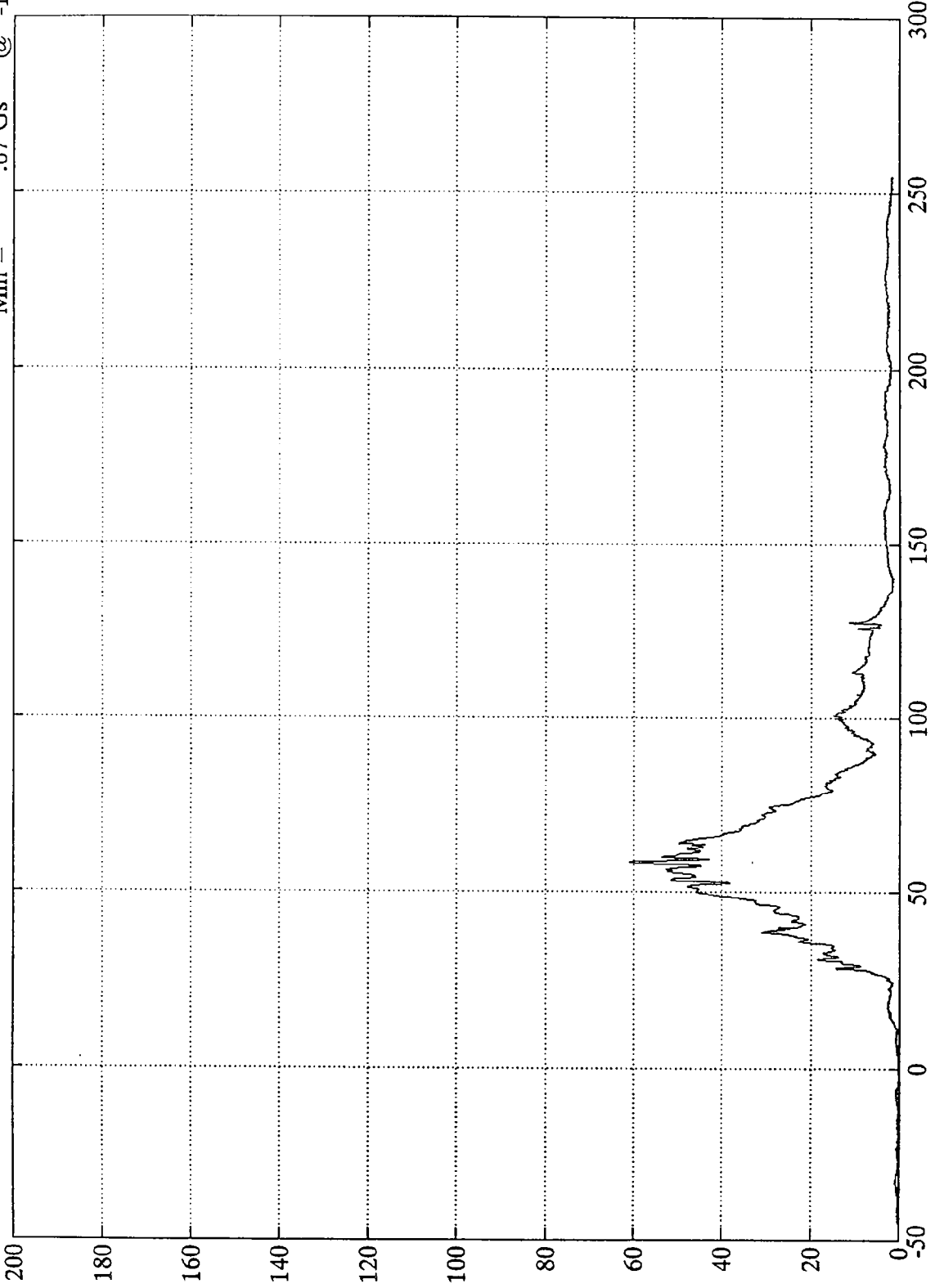
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 60.86 Gs @ 58.43 msec  
Min = .07 Gs @ -12.24 msec

Pos. 1 Pelvic Resultant



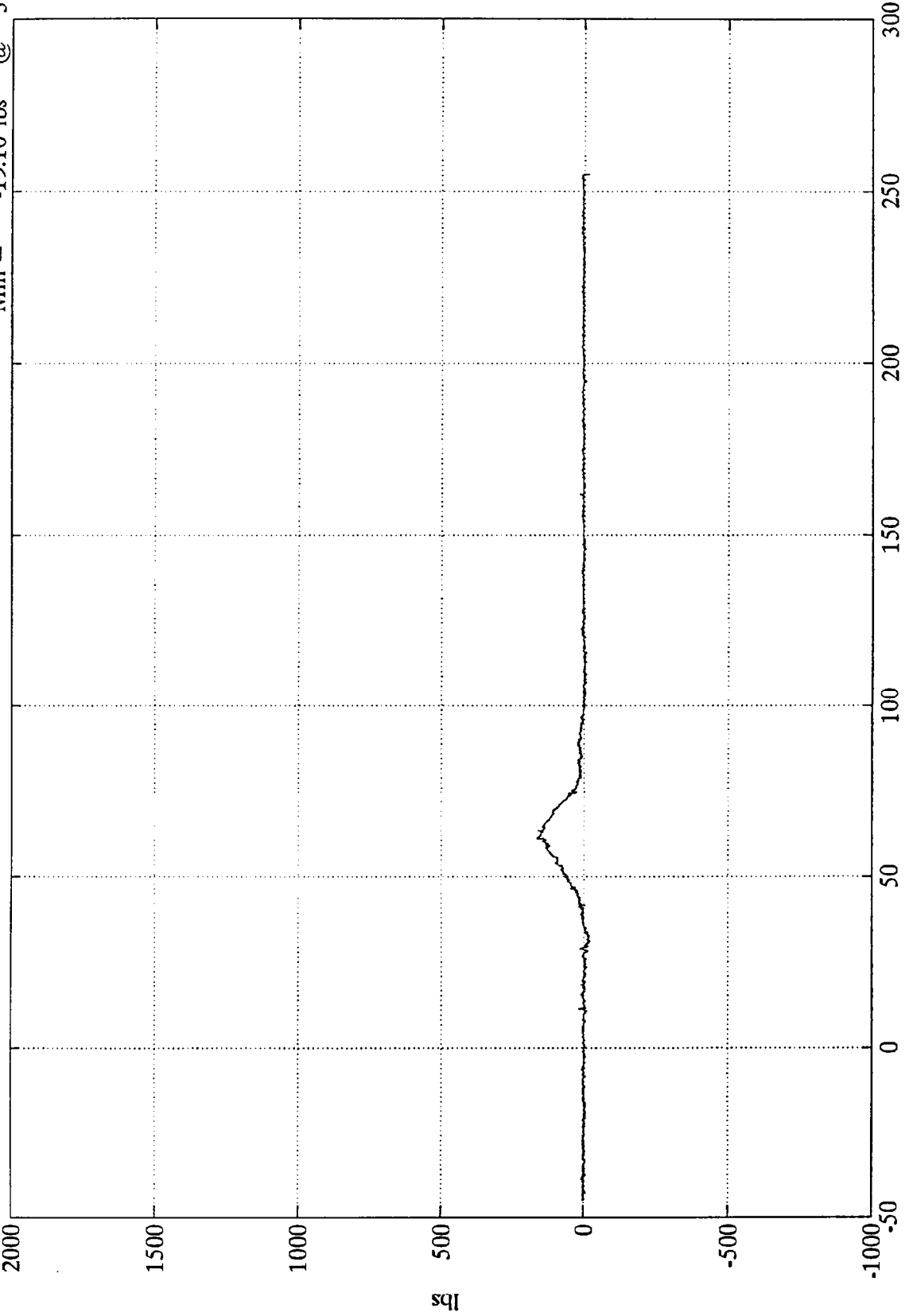
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Left Iliac Fx

Max = 166.19 lbs @ 61.31 msec  
Min = -19.10 lbs @ 31.19 msec



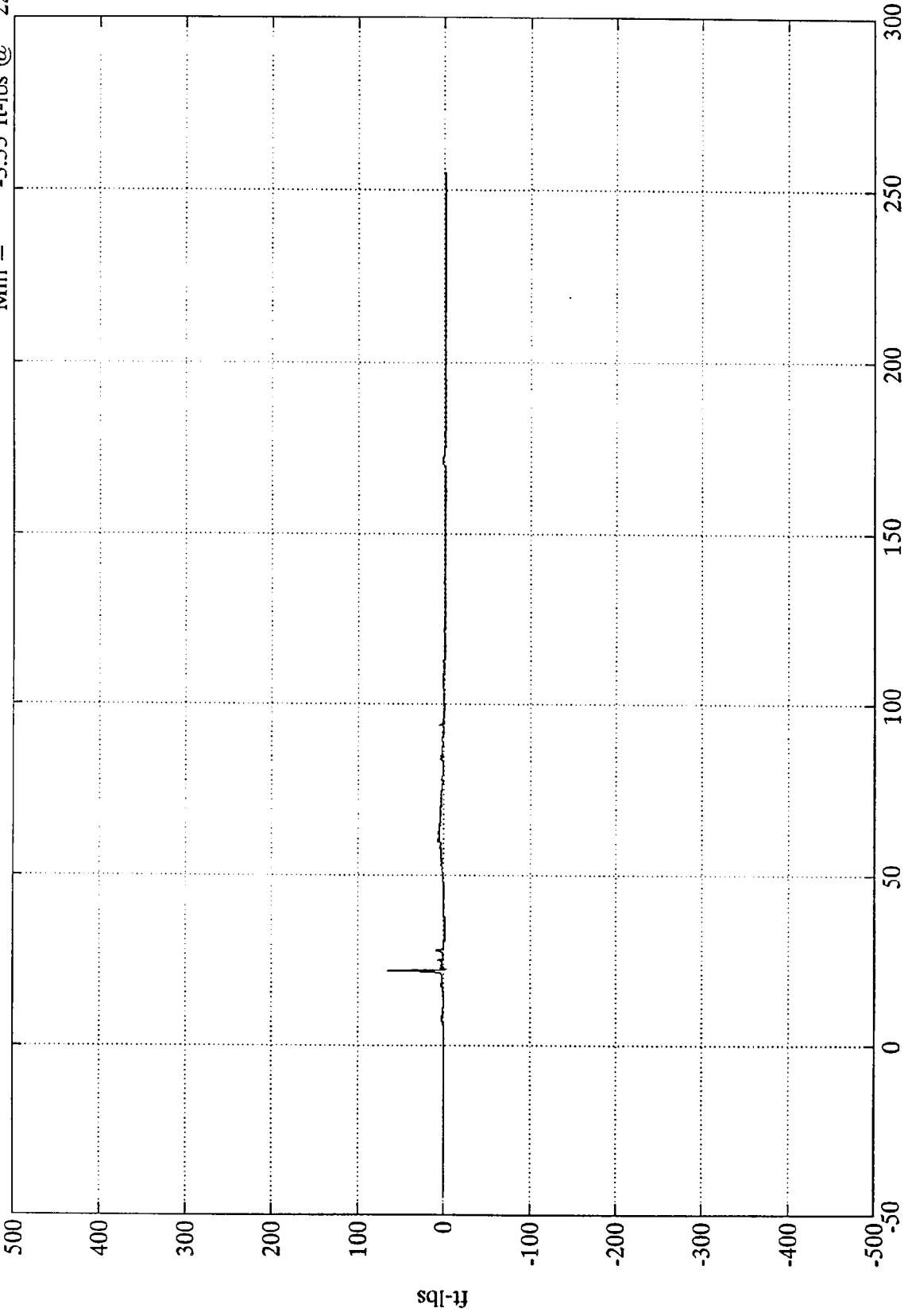
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Left Iliac My

Max = 64.57 ft-lbs @ 21.71 msec  
Min = -3.55 ft-lbs @ 22.19 msec



sq[-1] B-120

8118-3

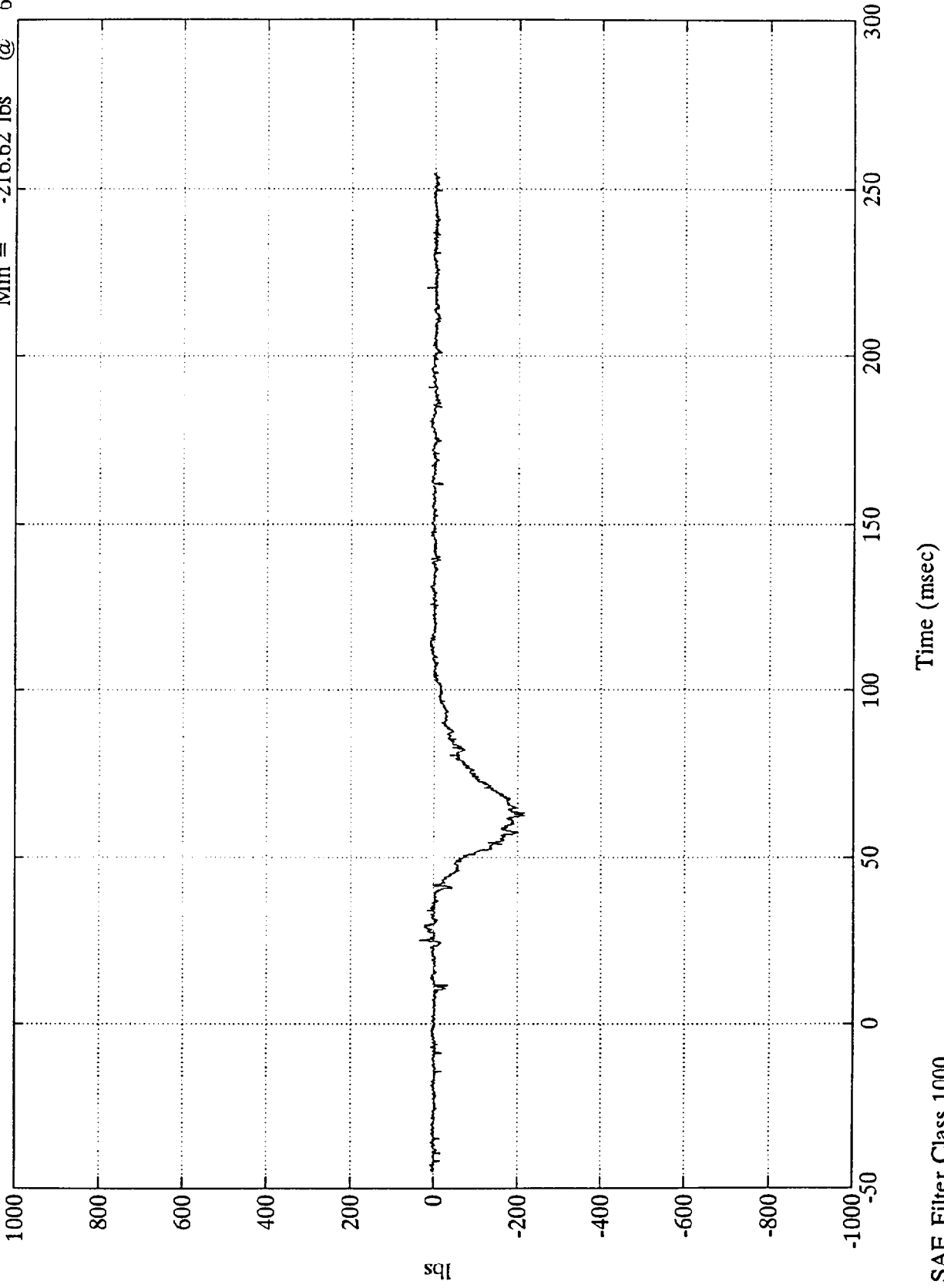
SAE Filter Class 1000

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Right Iliac Fx

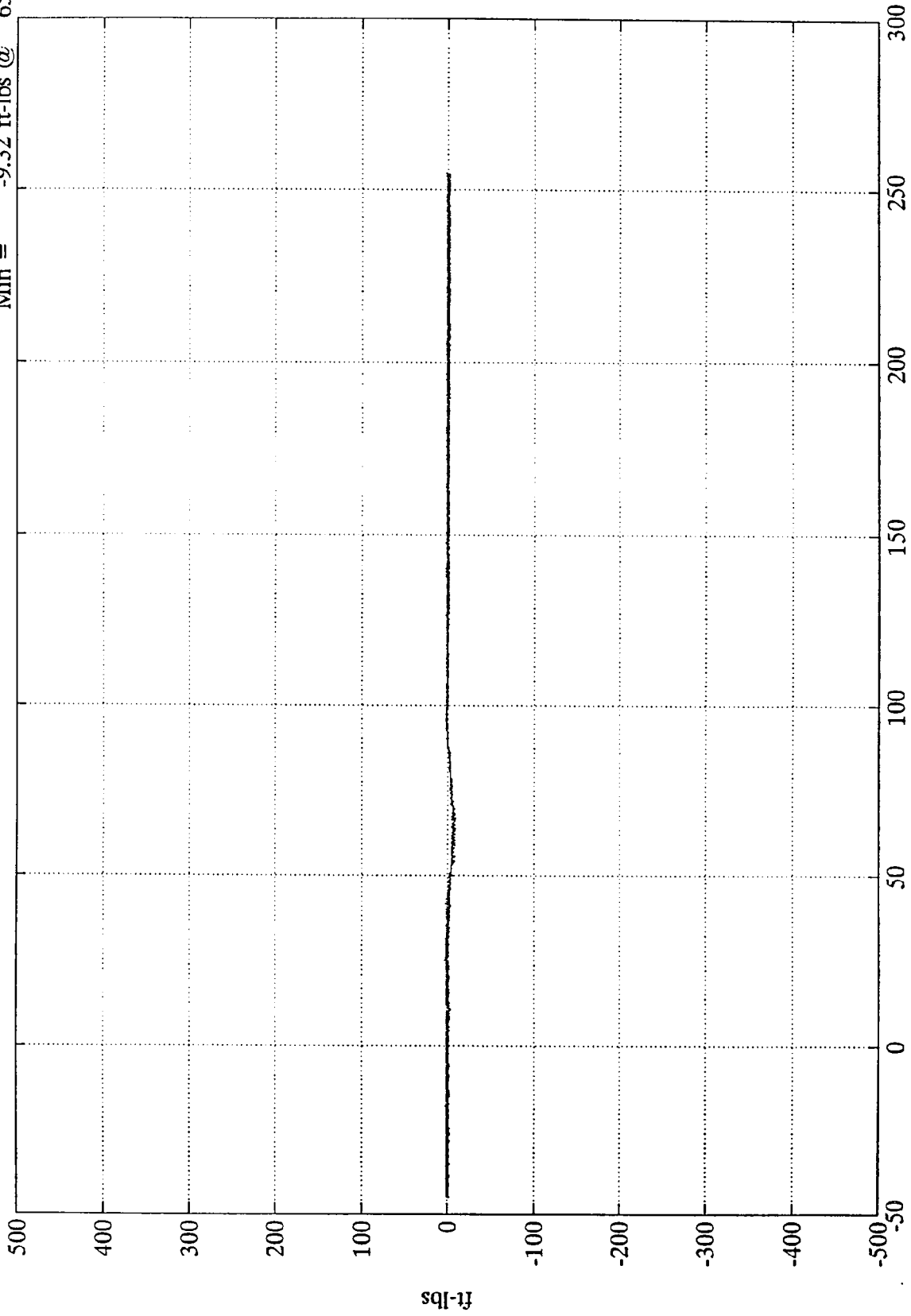
Max = 32.87 lbs @ 25.07 msec  
Min = -216.62 lbs @ 63.35 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Right Iliac My

Max = 3.45 ft-lbs @ 25.20 msec  
Min = -9.32 ft-lbs @ 65.87 msec



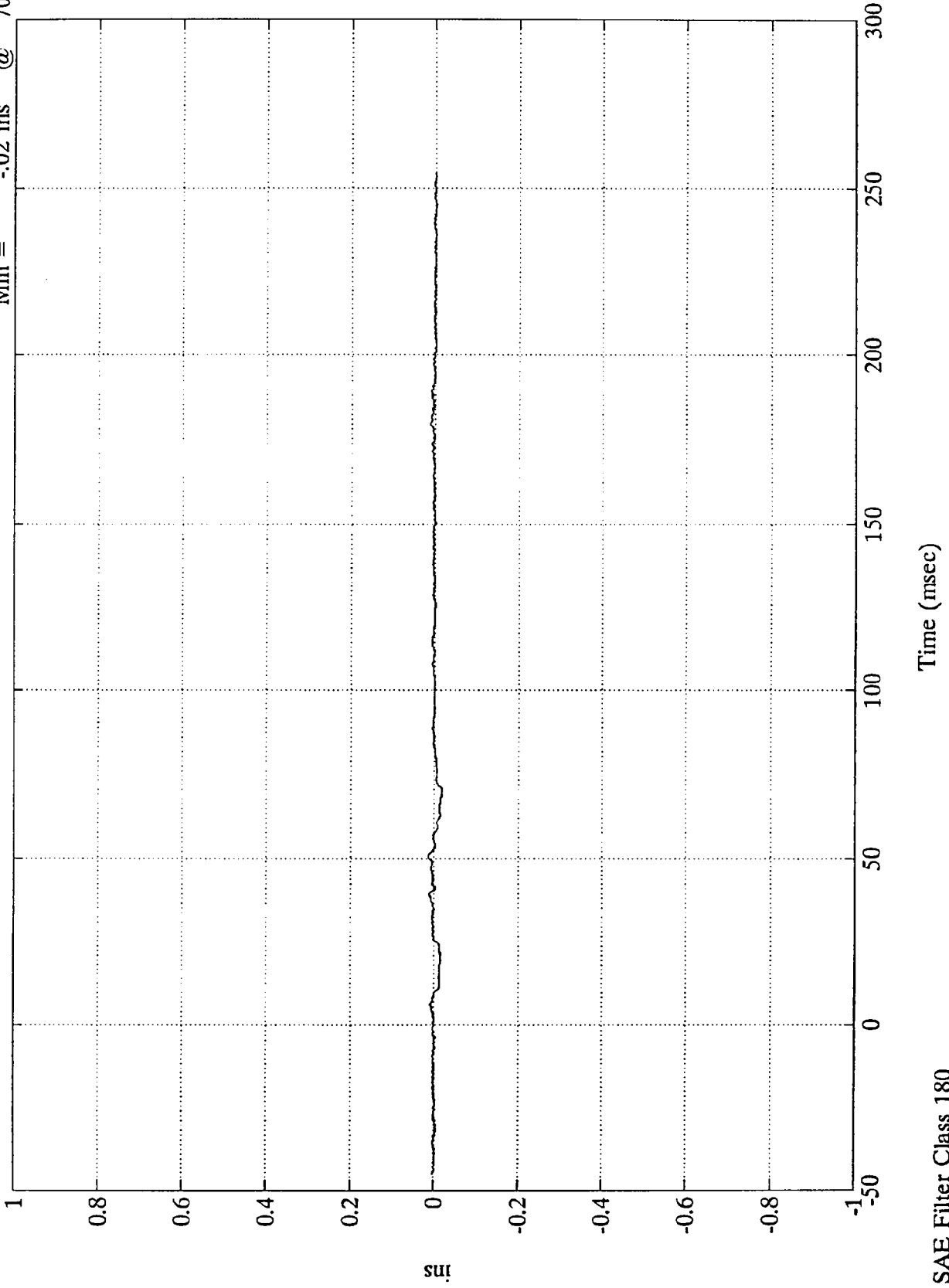
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Right Knee Displ.

Max = .01 ins @ 50.64 msec  
Min = -.02 ins @ 70.31 msec



sui  
B-123

8118-3

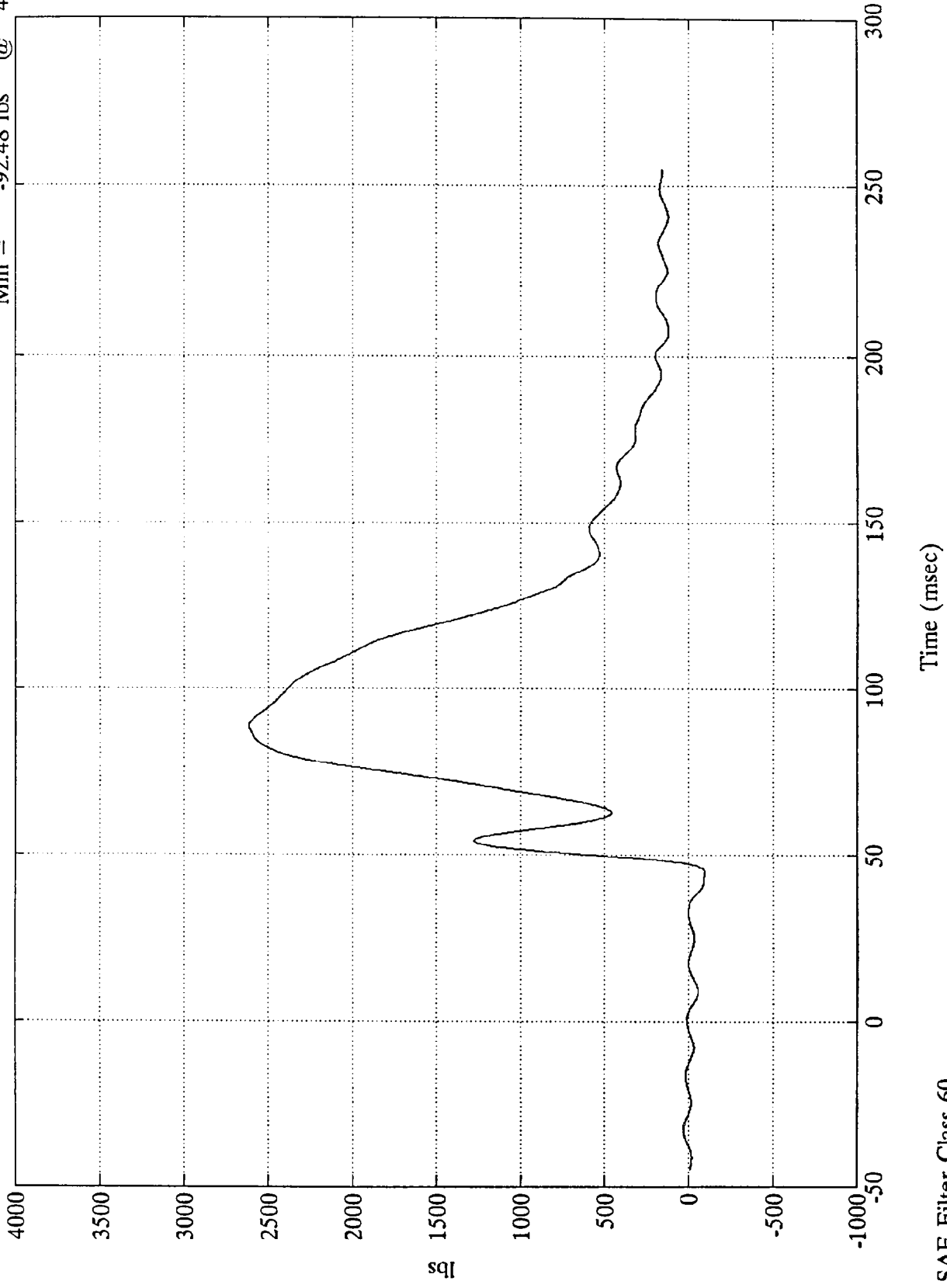
SAE Filter Class 180

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Lap Belt

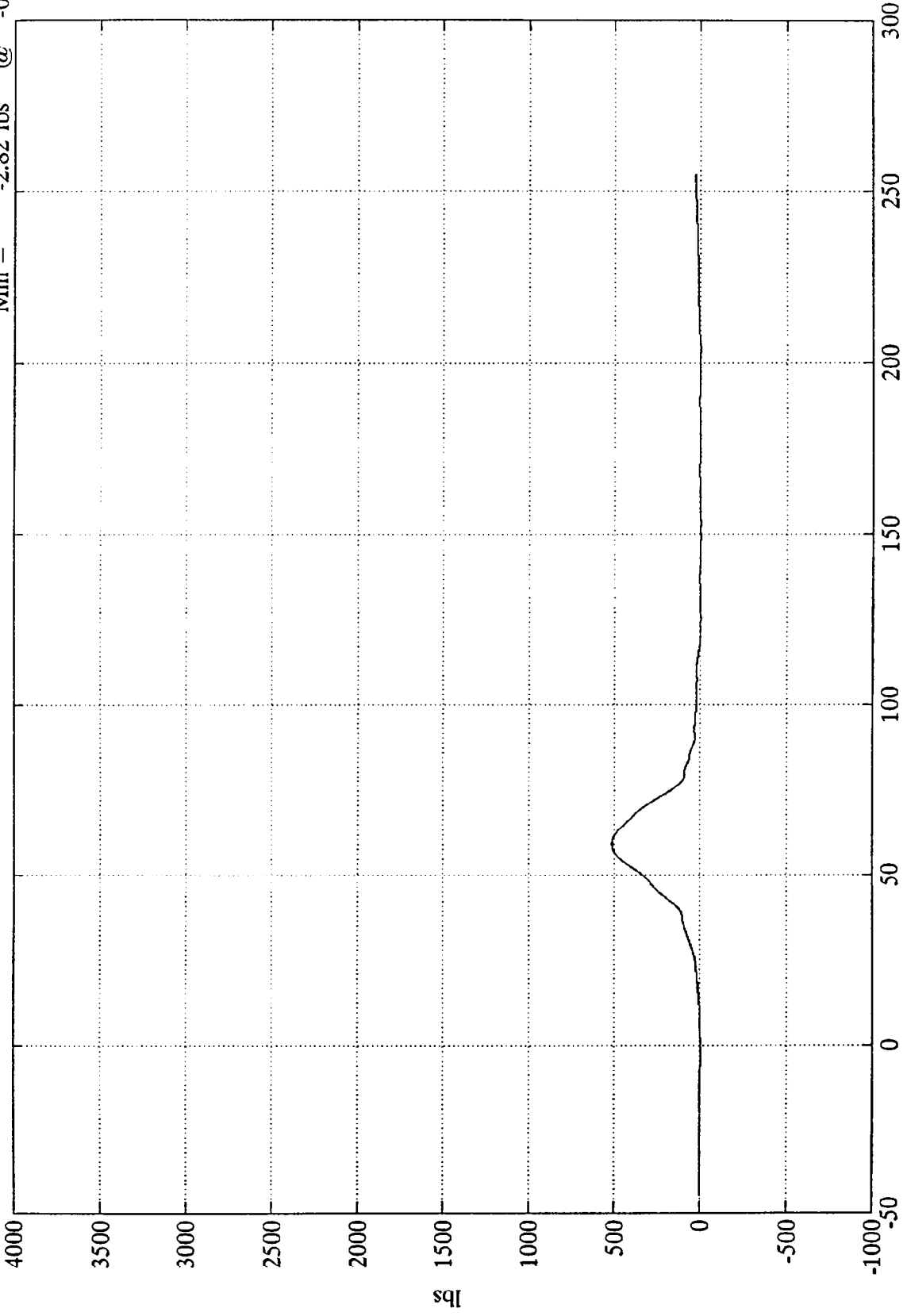
Max = 2615.36 lbs @ 88.55 msec  
Min = -92.48 lbs @ 44.63 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 1 Torso Belt

Max = 513.58 lbs @ 59.15 msec  
Min = -2.82 lbs @ -0.12 msec



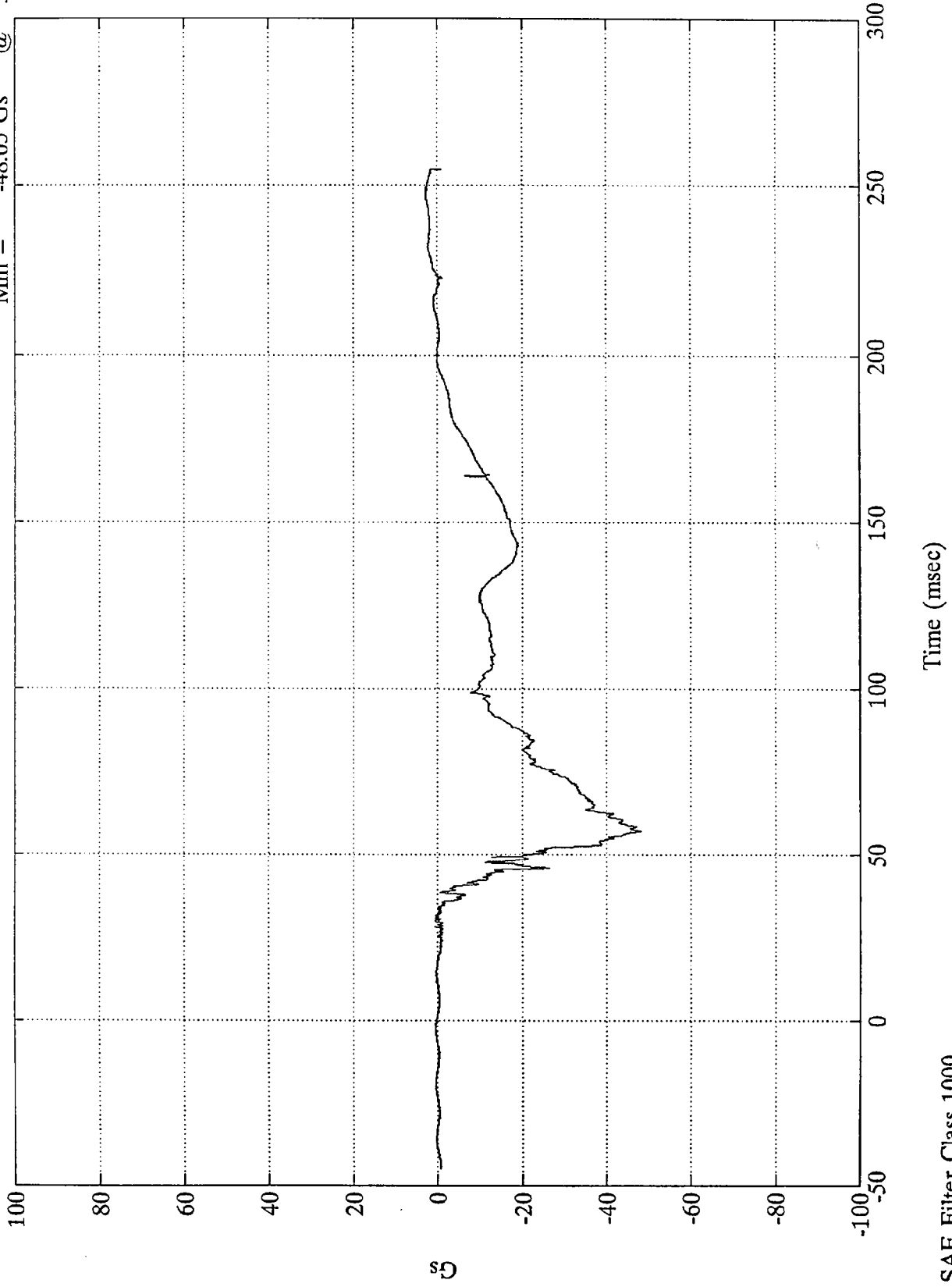
Time (msec)

SAE Filter Class 60

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Head X

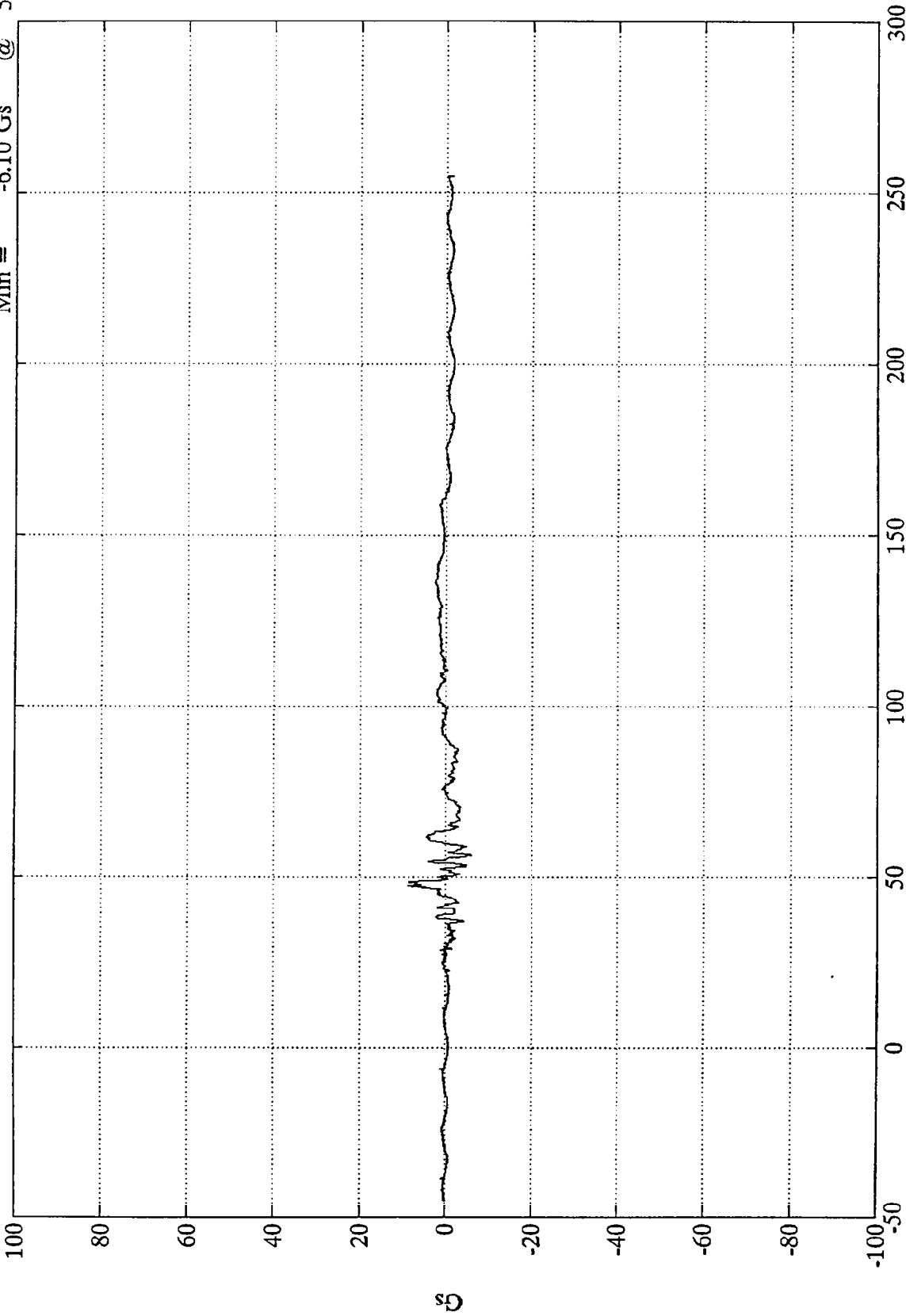
Max = 2.75 Gs @ 248.04 msec  
Min = -48.05 Gs @ 57.11 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 8.74 Gs @ 47.40 msec  
Min = -6.10 Gs @ 56.40 msec

Pos. 2 Head Y

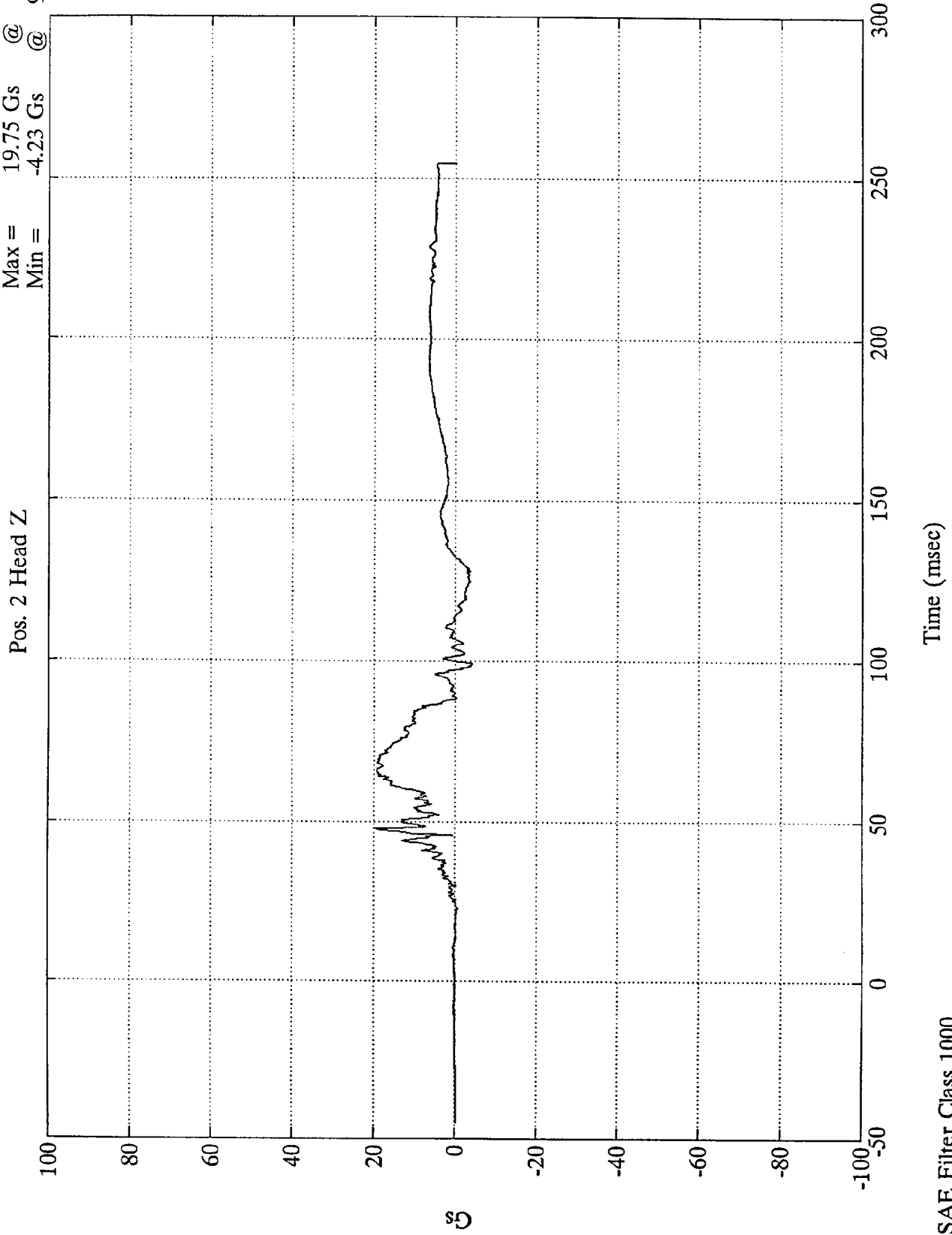


Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

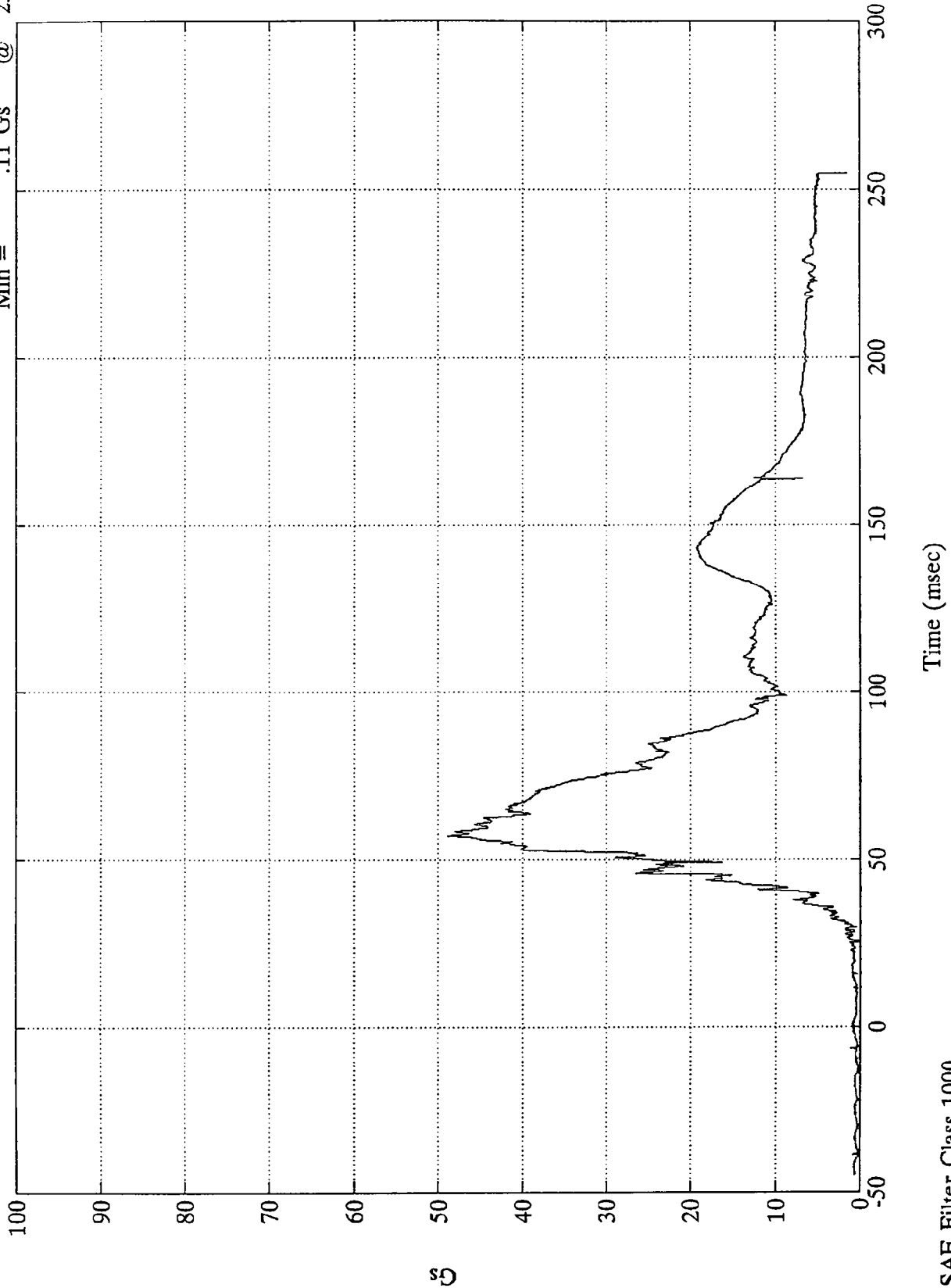
Max = 19.75 Gs @ 47.63 msec  
Min = -4.23 Gs @ 99.12 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 48.92 Gs @ 57.11 msec  
Min = .11 Gs @ 25.44 msec

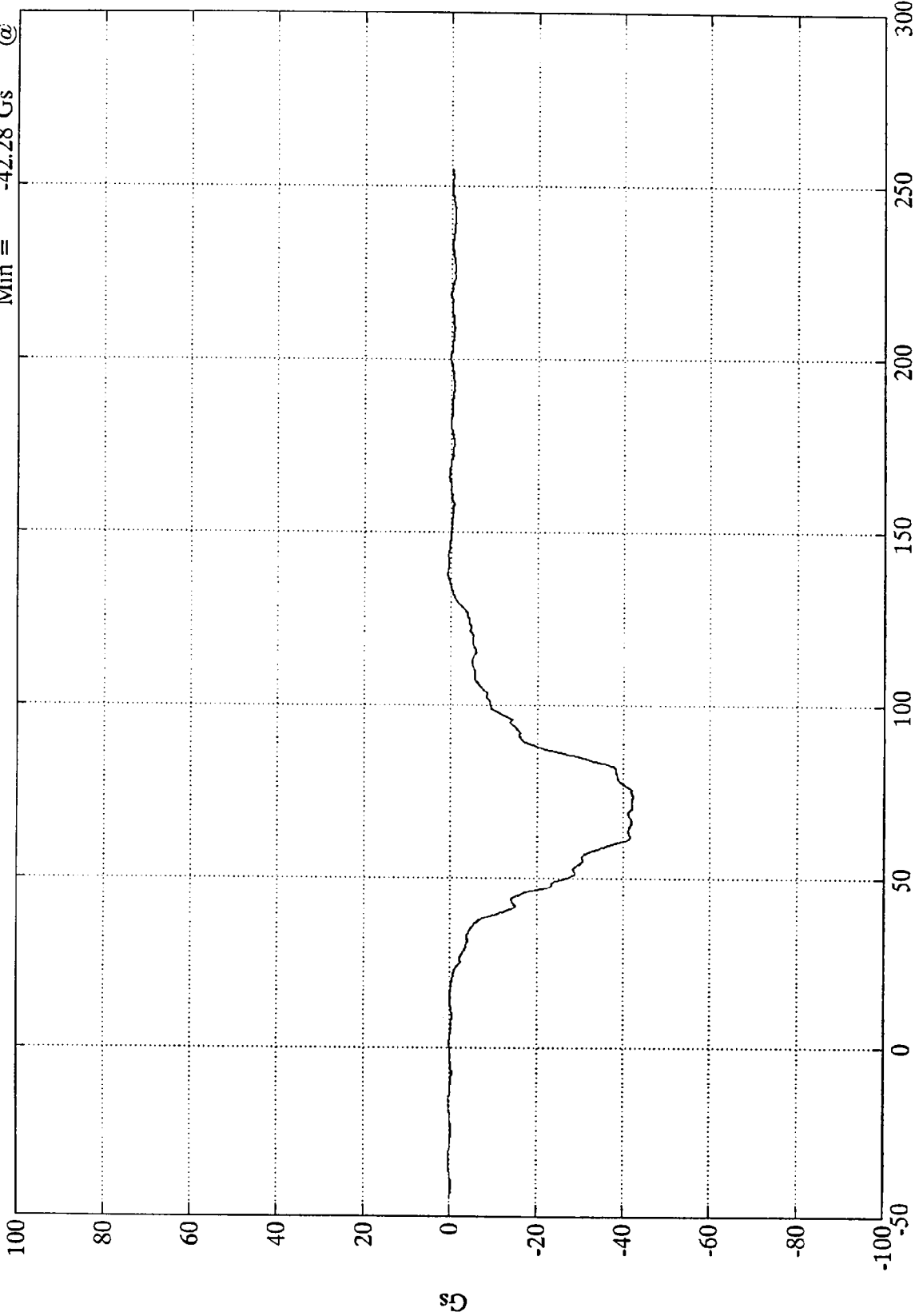
Pos. 2 Head Resultant



TSC Frontal Barrier Test #3 - Ford Taurus

Max = .82 Gs @ 138.12 msec  
Min = -42.28 Gs @ 73.44 msec

Pos. 2 Chest X

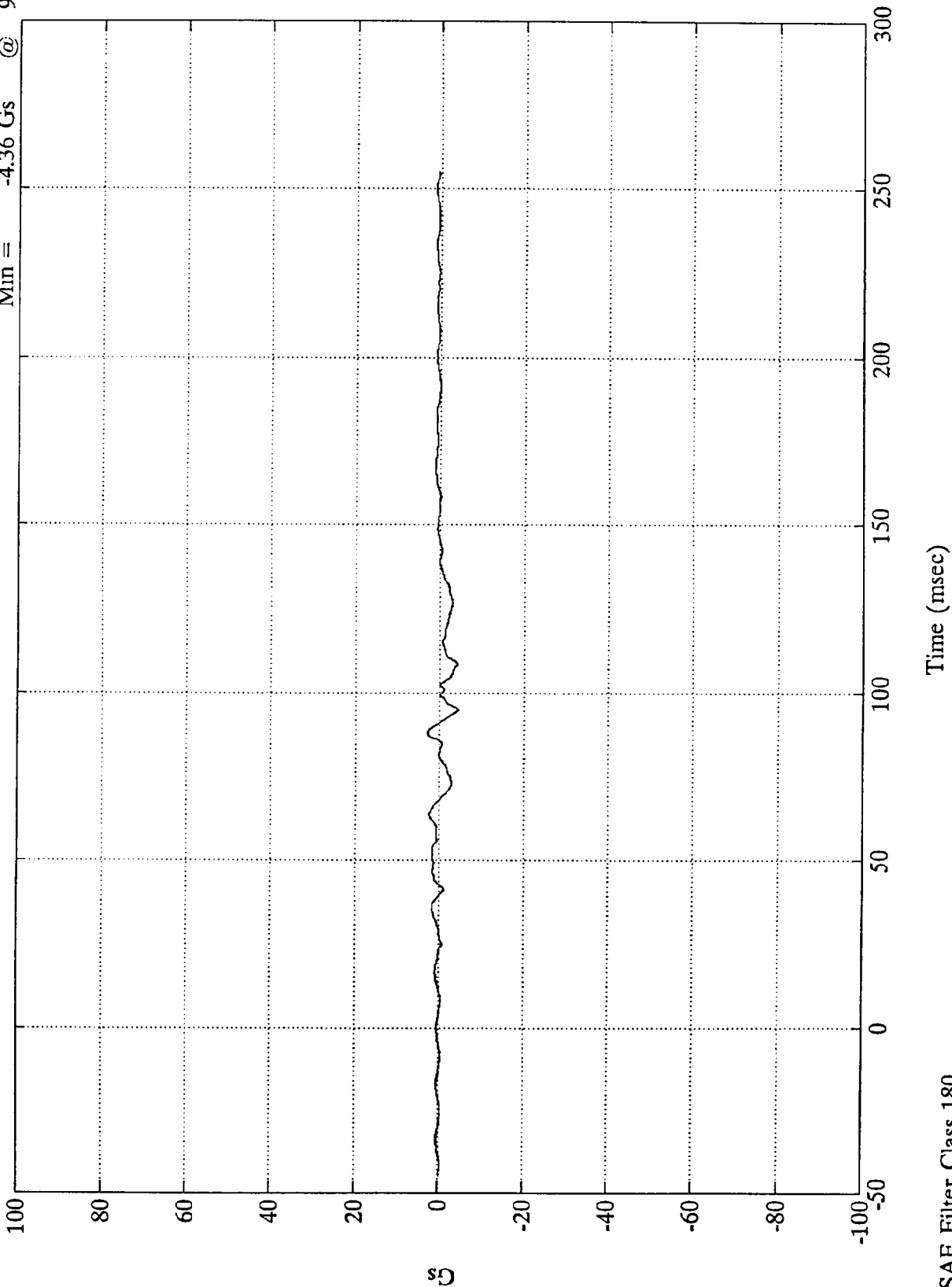


Time (msec)

SAE Filter Class 180

TSC Frontal Barrier Test #3 - Ford Taurus

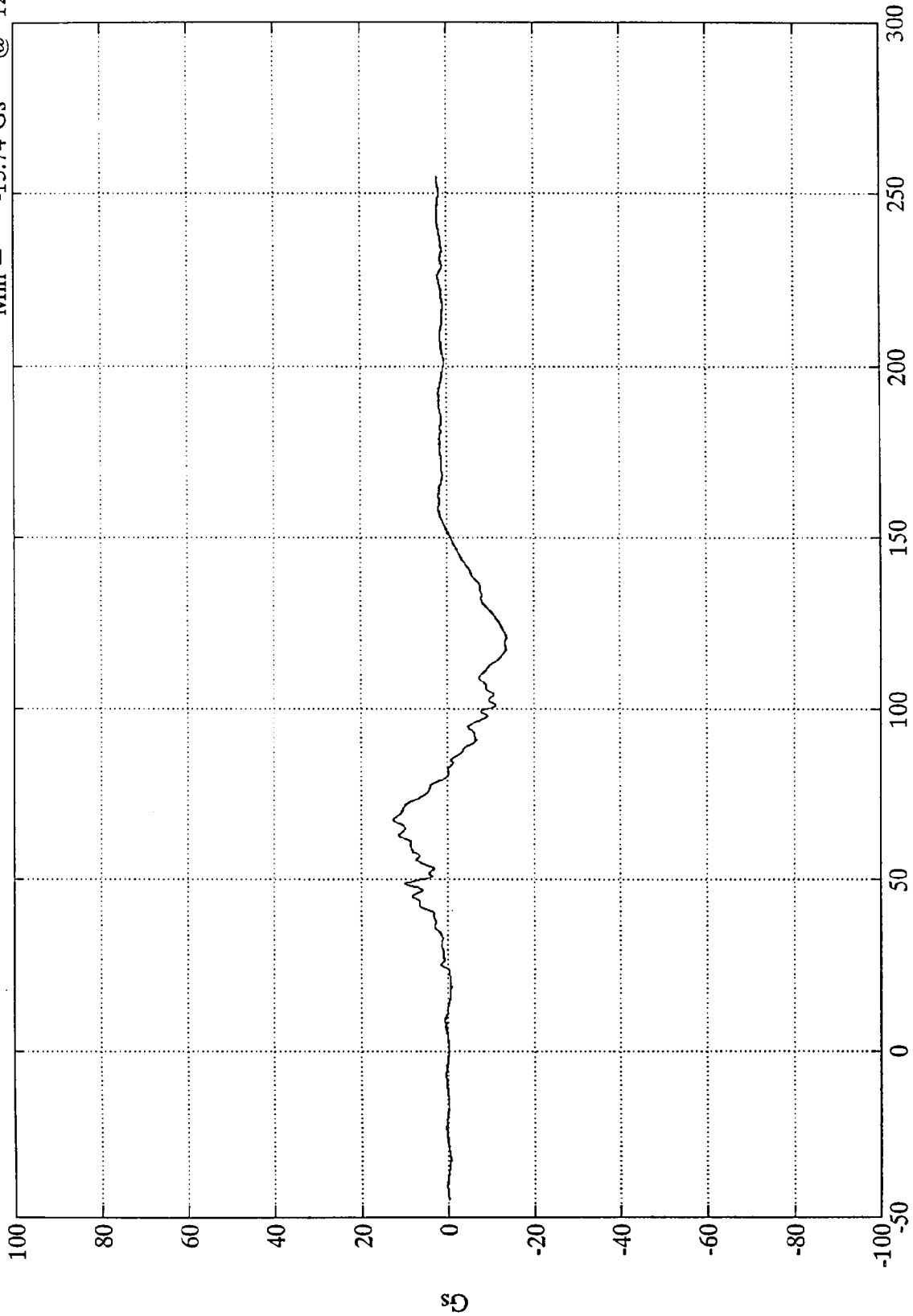
Pos. 2 Chest Y  
Max = 2.75 Gs @ 88.20 msec  
Min = -4.36 Gs @ 94.80 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 12.50 Gs @ 67.56 msec  
Min = -13.74 Gs @ 120.72 msec

Pos. 2 Chest Z



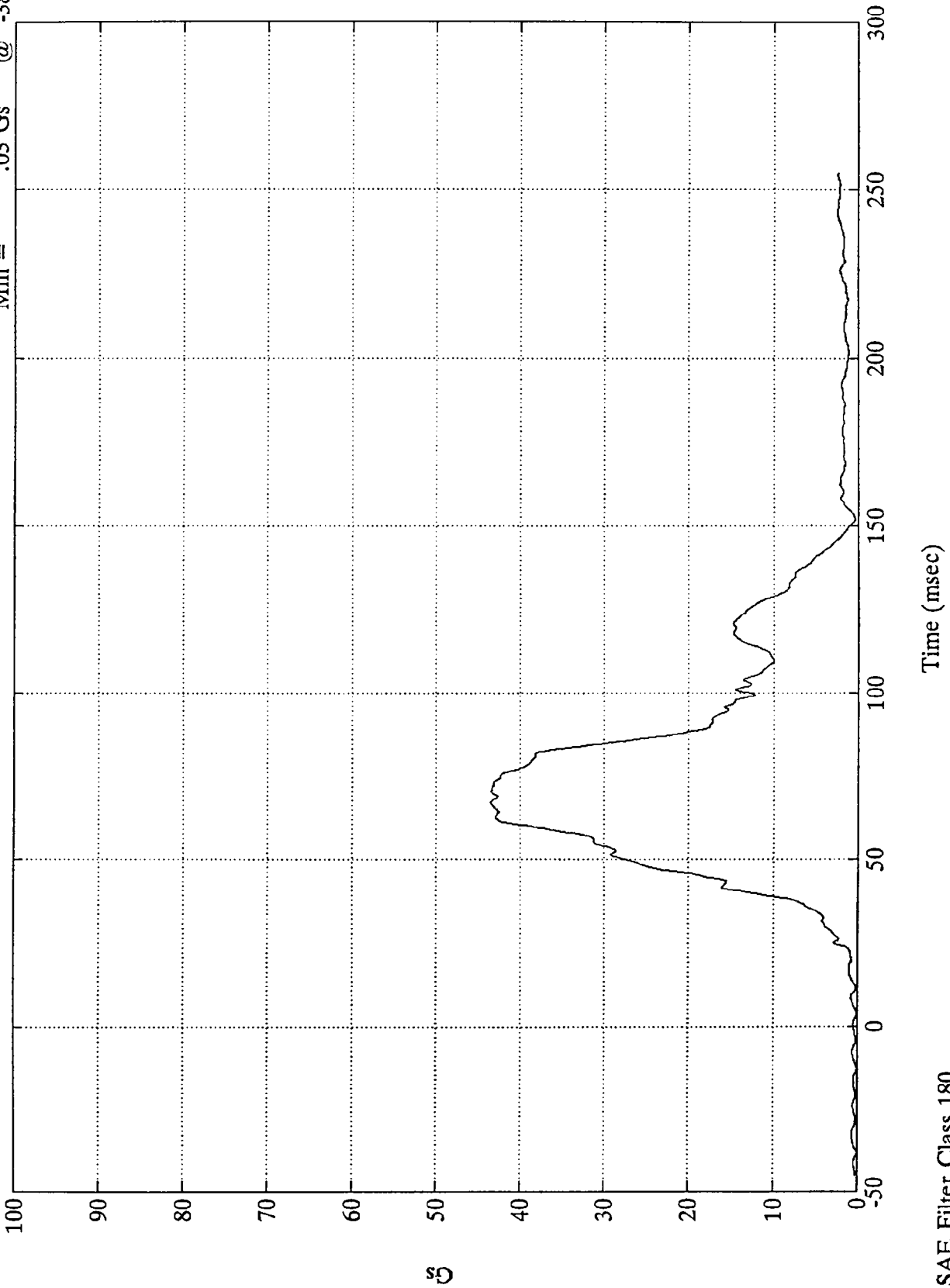
Time (msec)

SAE Filter Class 180

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 43.47 Gs @ 66.95 msec  
Min = .03 Gs @ -38.28 msec

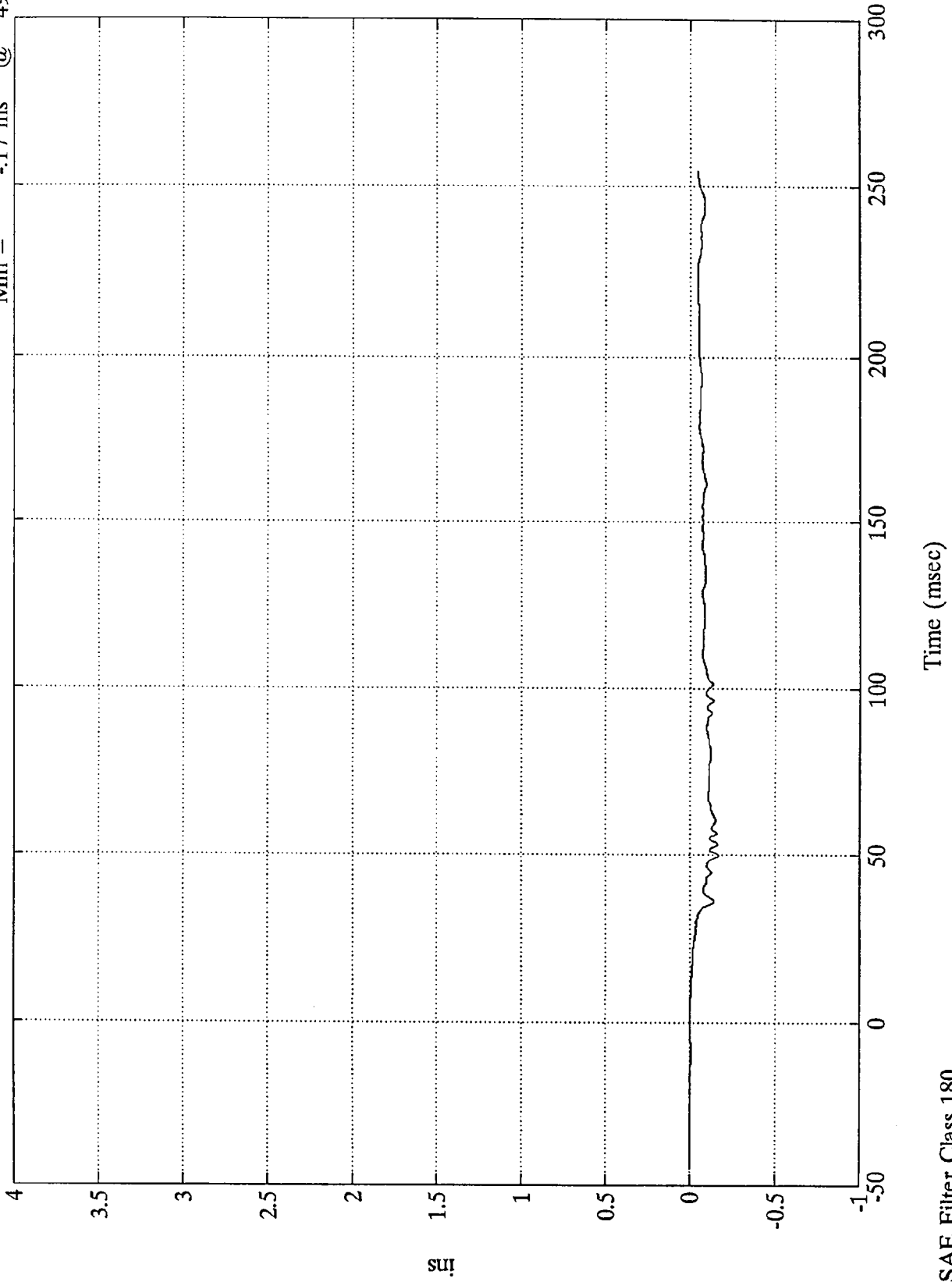
Pos. 2 Chest Resultant



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Chest Deflection

Max = .00 ins @ -33.12 msec  
Min = -.17 ins @ 49.79 msec



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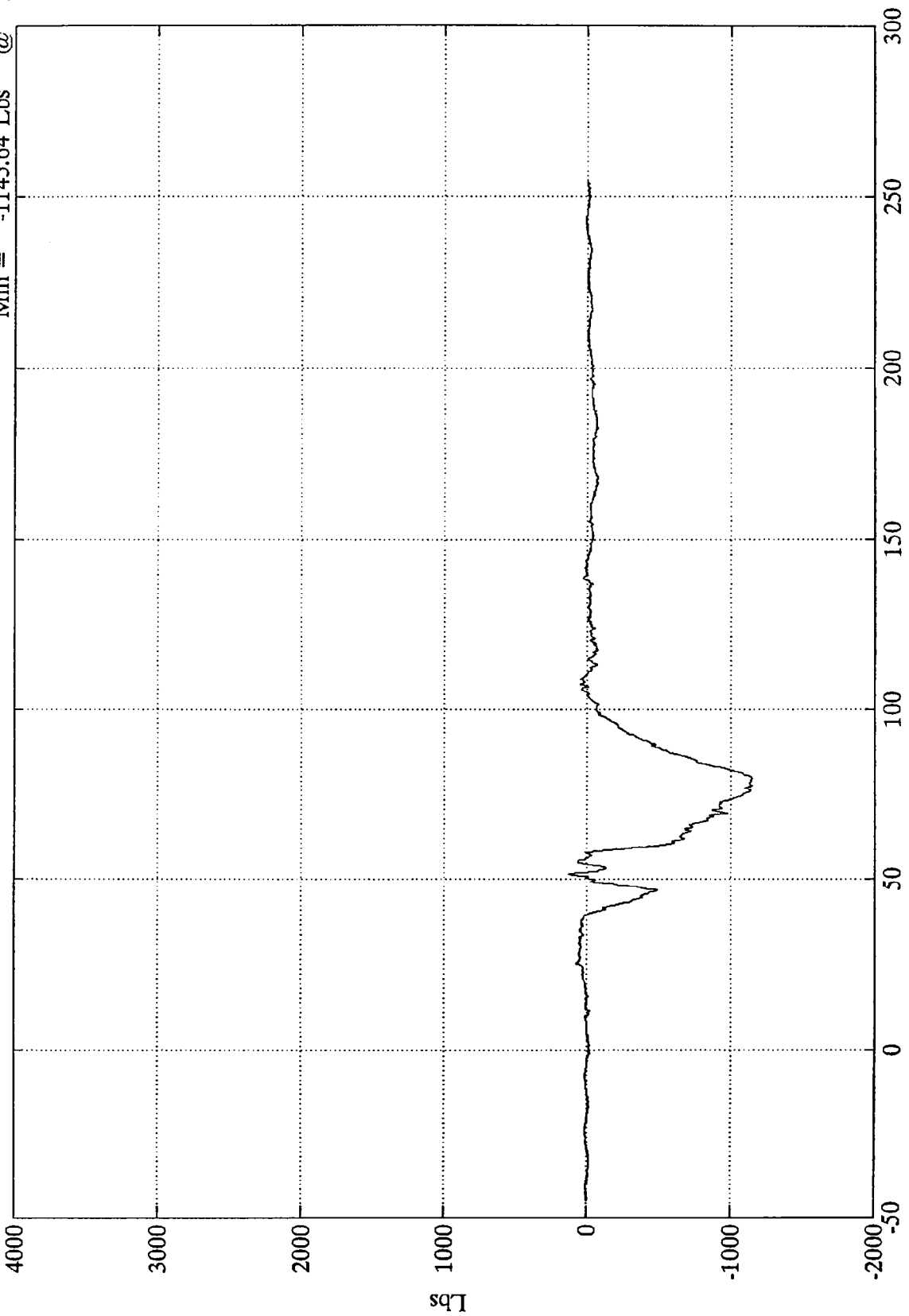
SAE Filter Class 180



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 125.49 Lbs @ 51.47 msec  
Min = -1145.64 Lbs @ 77.51 msec

Pos. 2 Left Femur



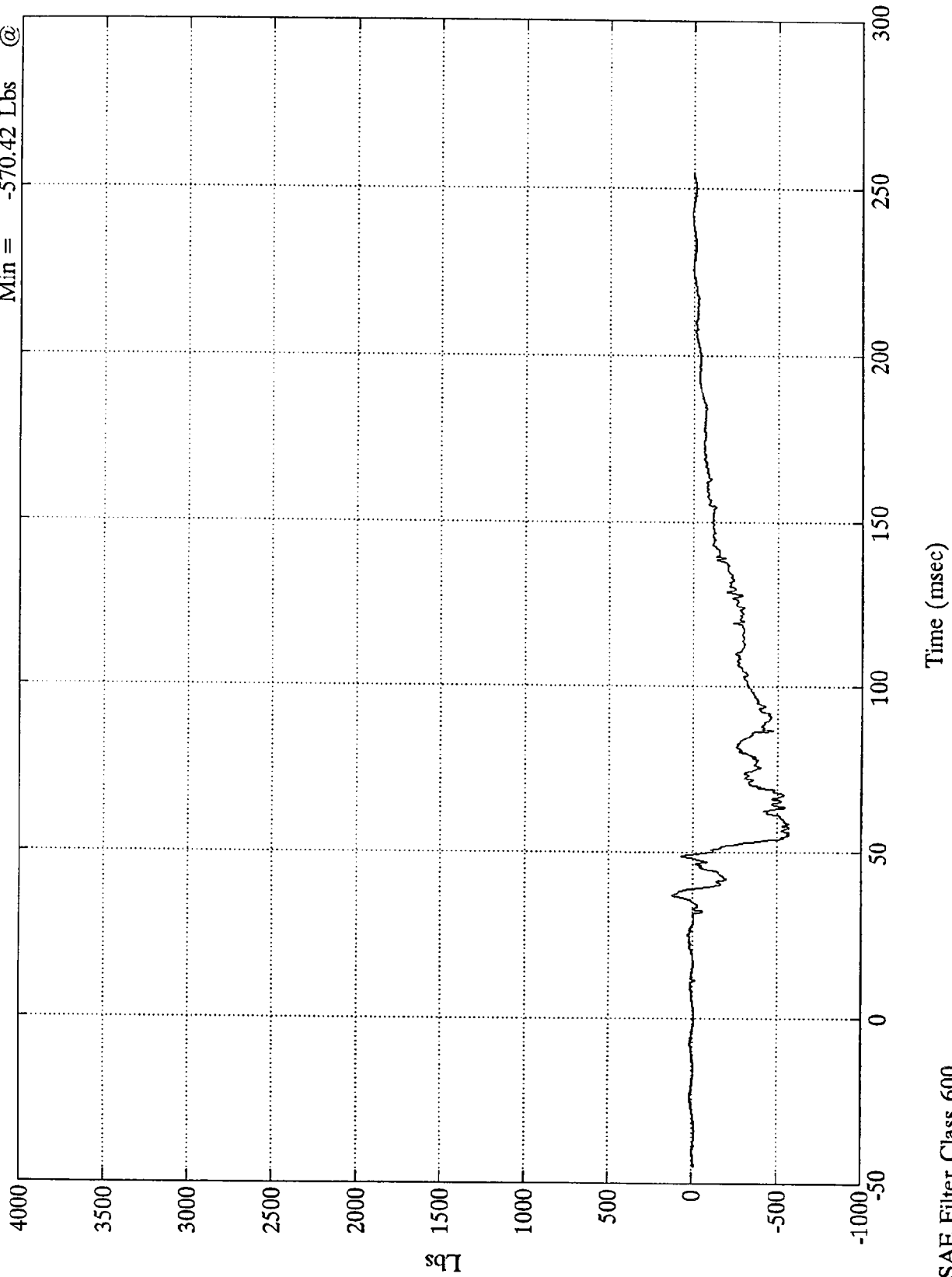
Time (msec)

SAE Filter Class 600

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Right Femur

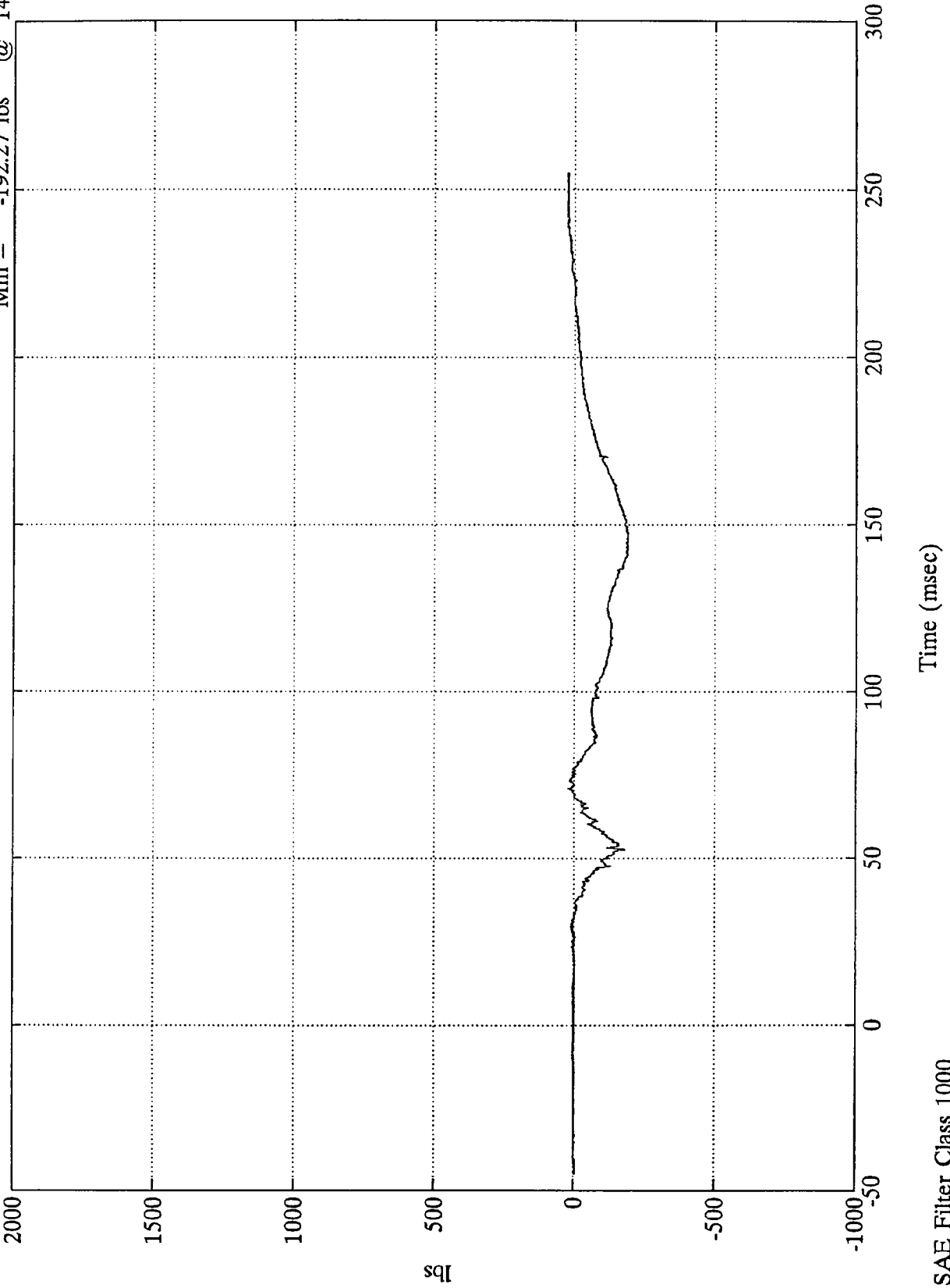
Max = 119.12 Lbs @ 37.08 msec  
Min = -570.42 Lbs @ 57.60 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Upper Neck Fx

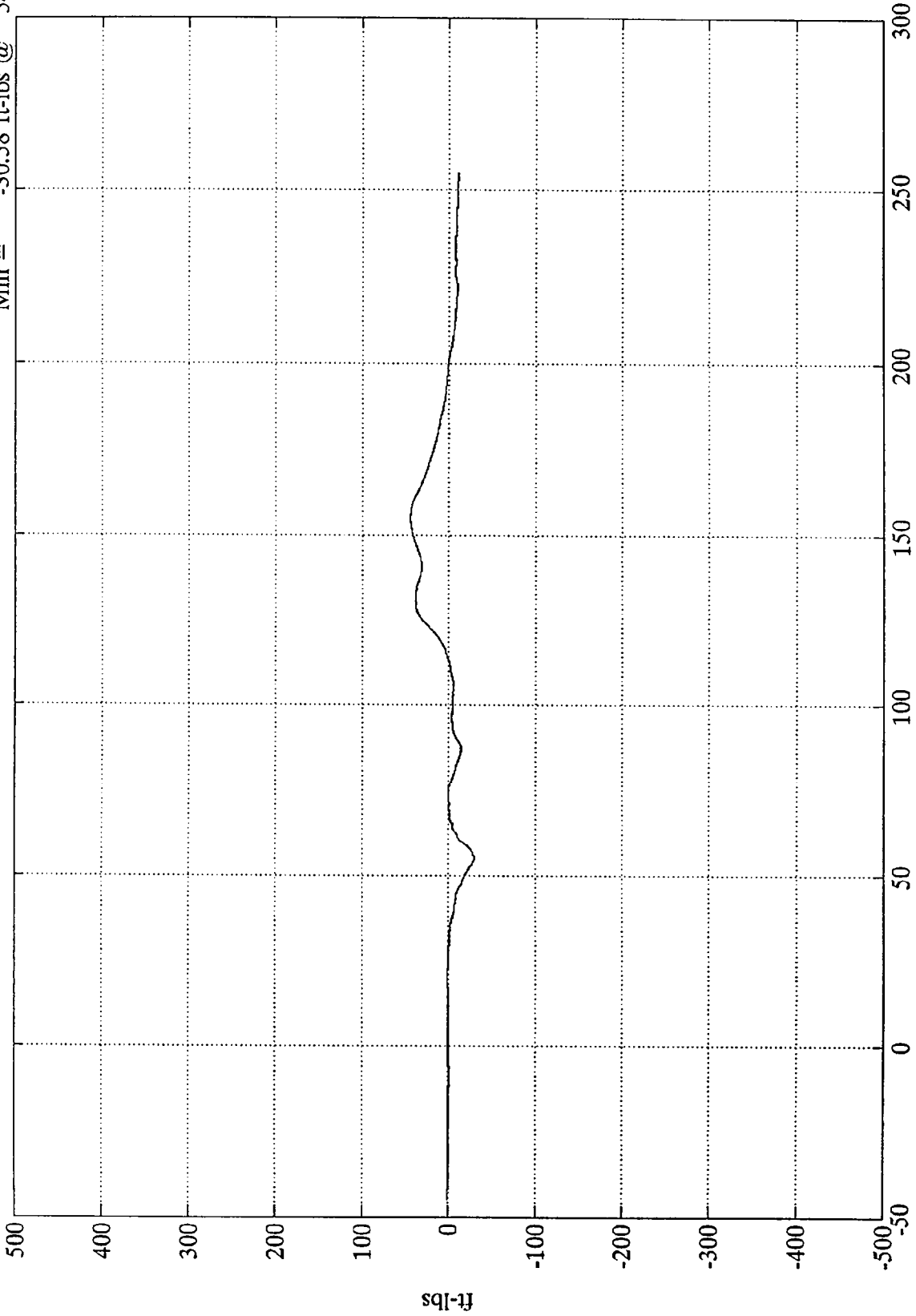
Max = 26.53 lbs @ 254.88 msec  
Min = -192.27 lbs @ 145.31 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Upper Neck My

Max = 44.70 ft-lbs @ 155.04 msec  
Min = -30.58 ft-lbs @ 54.84 msec



sq|-1|  
ft-lbs  
B-118-3

8118-3

SAE Filter Class 600

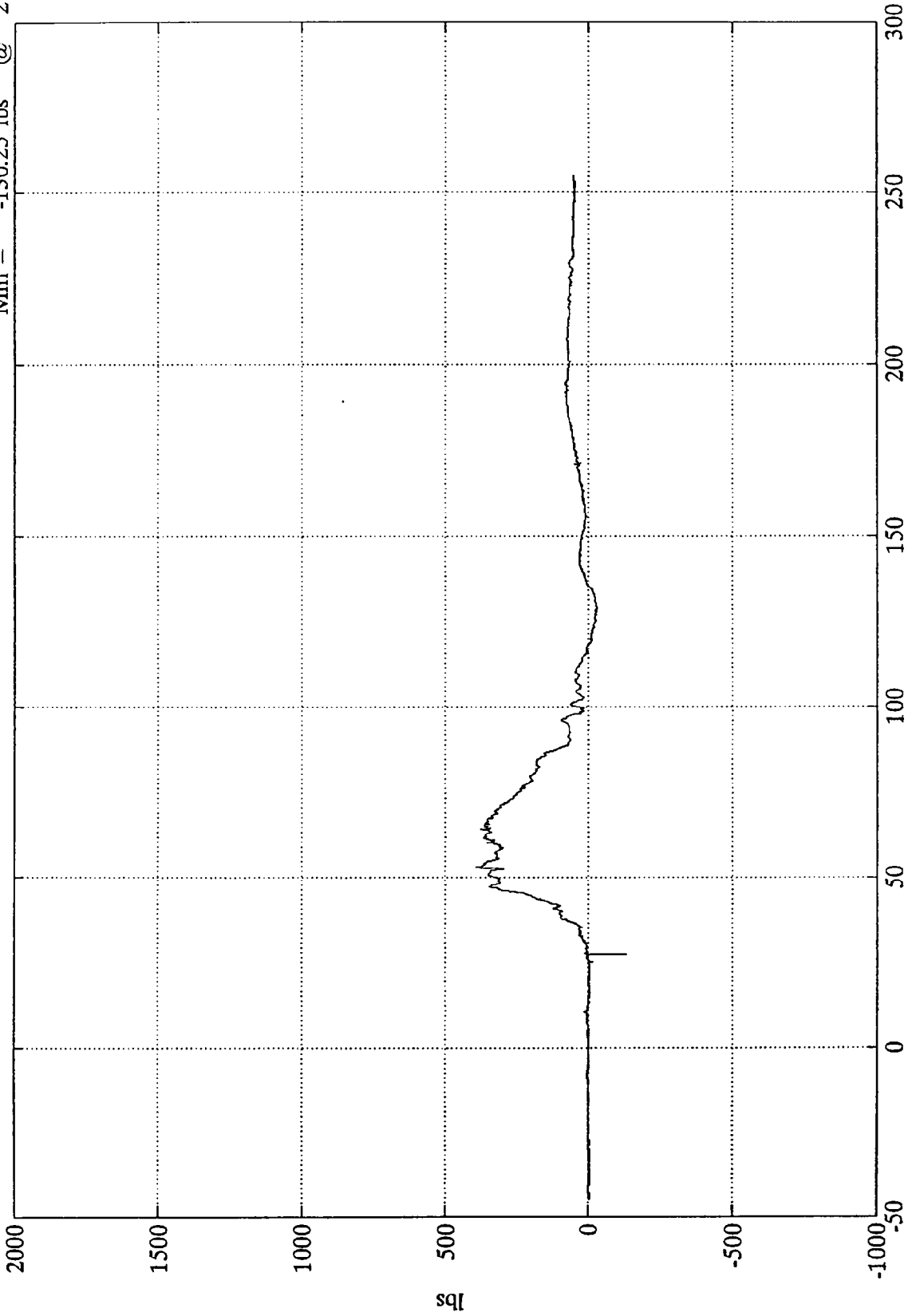
Time (msec)



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Upper Neck Fz

Max = 394.44 lbs @ 53.15 msec  
Min = -130.25 lbs @ 27.36 msec



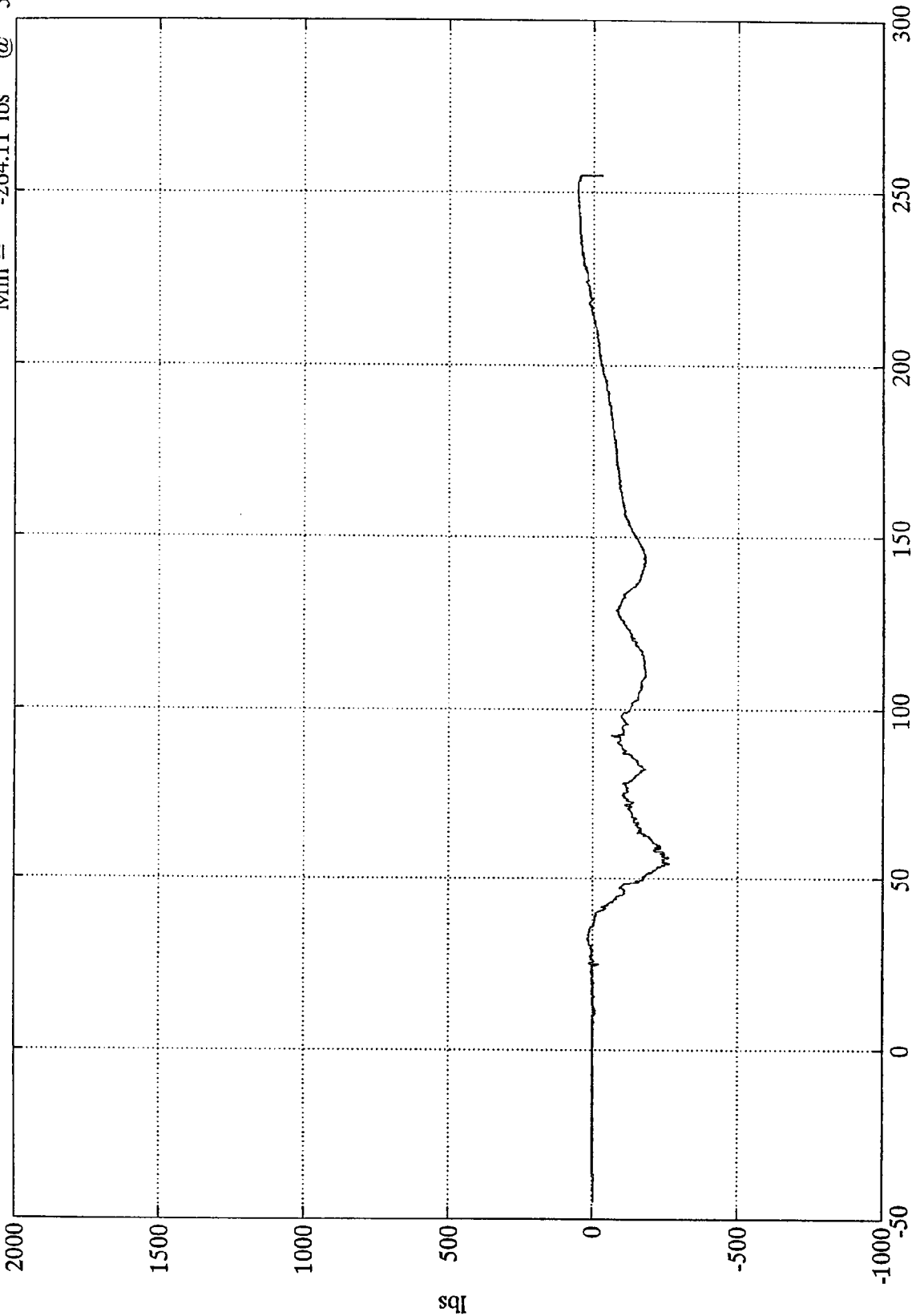
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 56.98 lbs @ 250.56 msec  
Min = -264.11 lbs @ 54.36 msec

Pos. 2 Lower Neck Fx



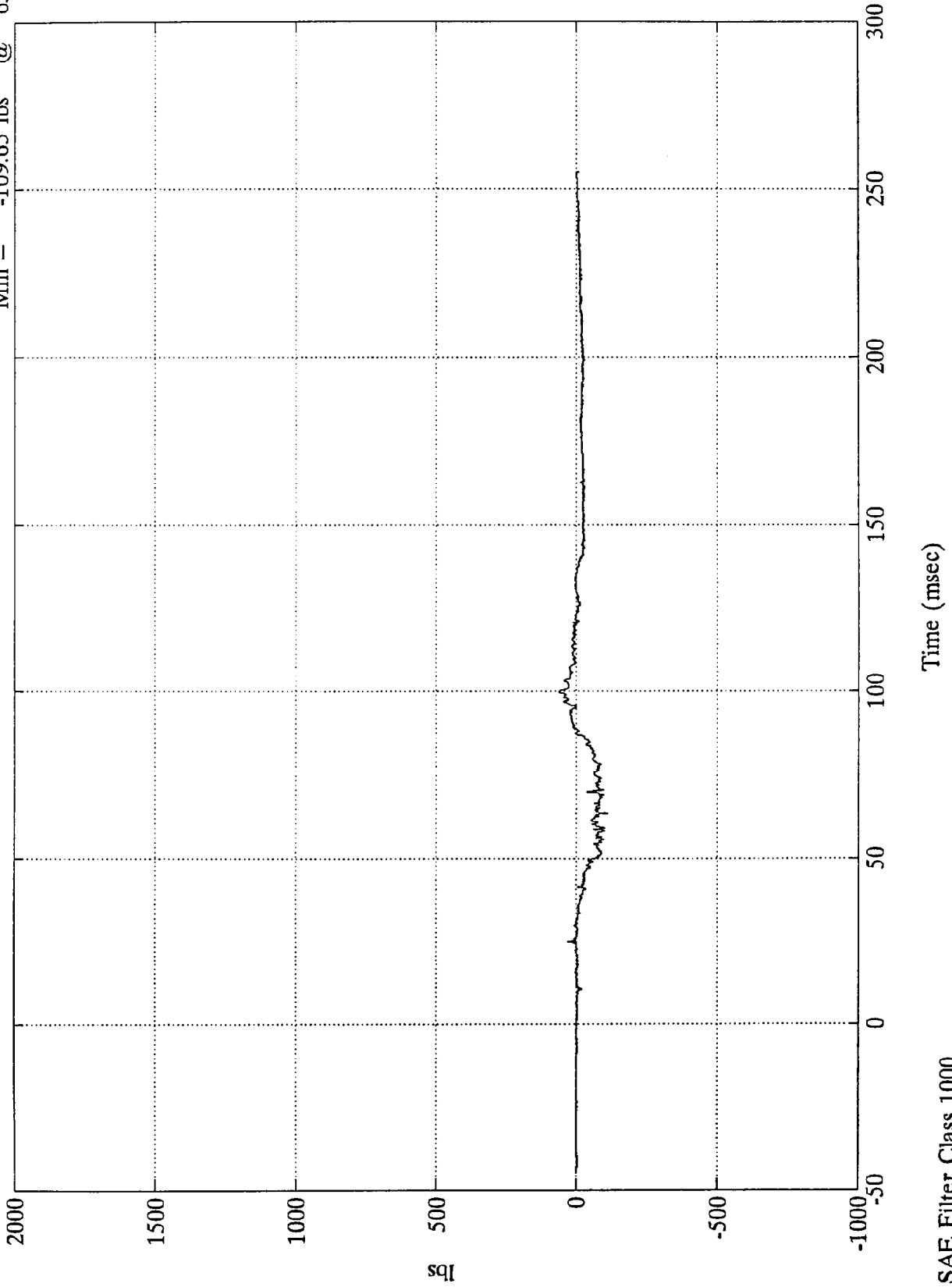
Time (msec)

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Lower Neck Fy

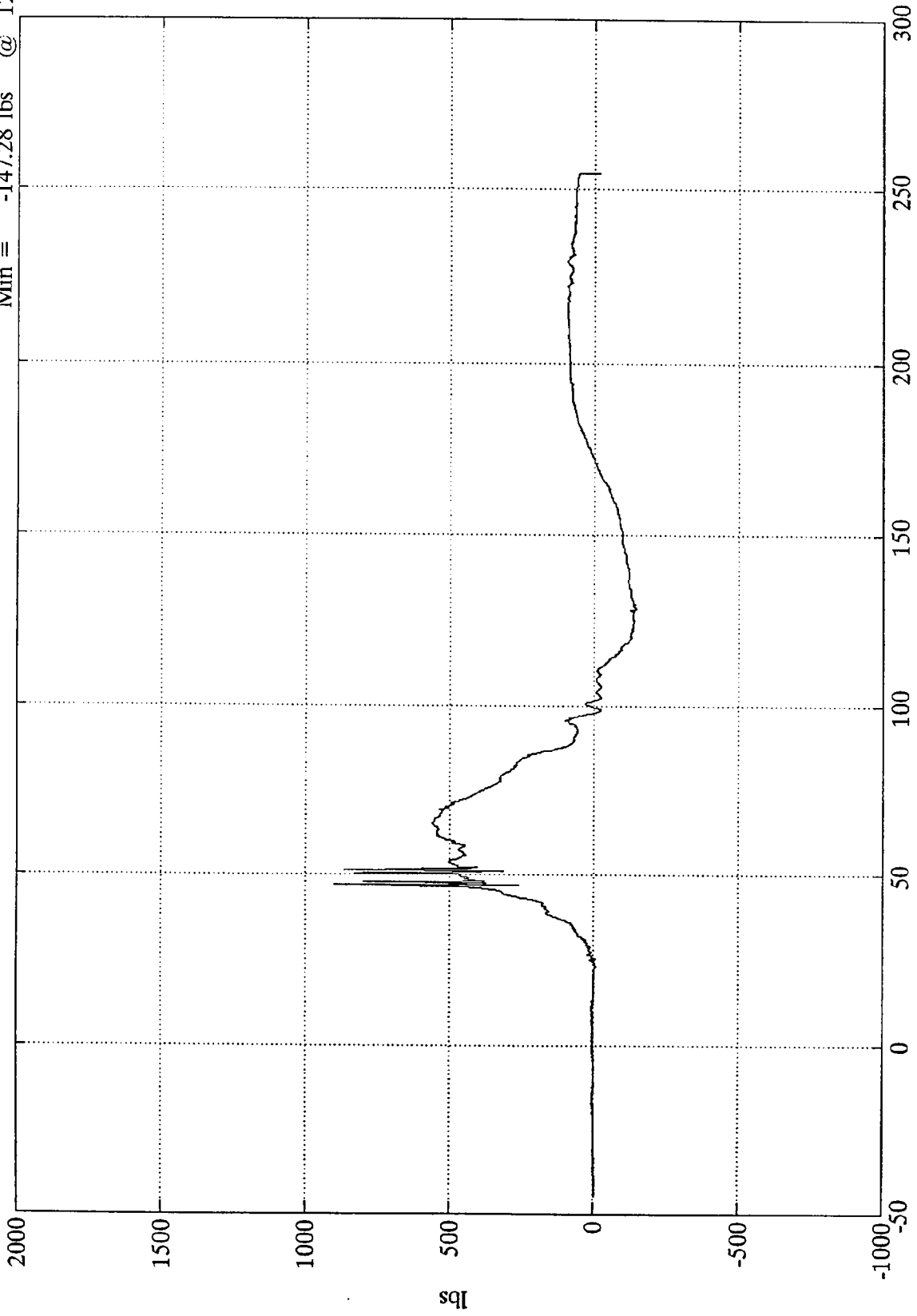
Max = 61.41 lbs @ 99.72 msec  
Min = -109.65 lbs @ 63.48 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 899.05 lbs @ 46.79 msec  
Min = -147.28 lbs @ 128.27 msec

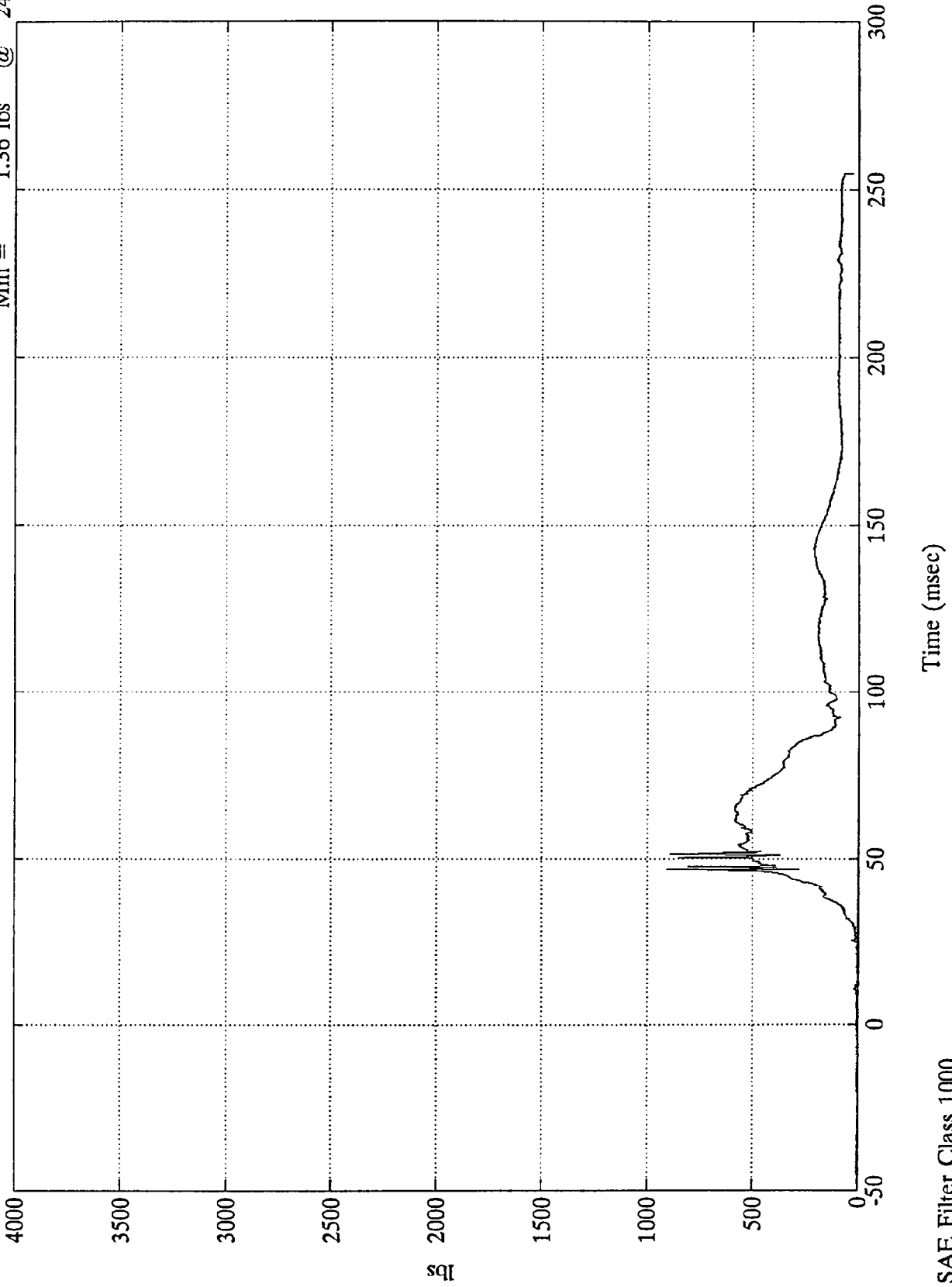
Pos. 2 Lower Neck Fz



TSC Frontal Barrier Test #3 - Ford Taurus

P2 L Neck Force Result.

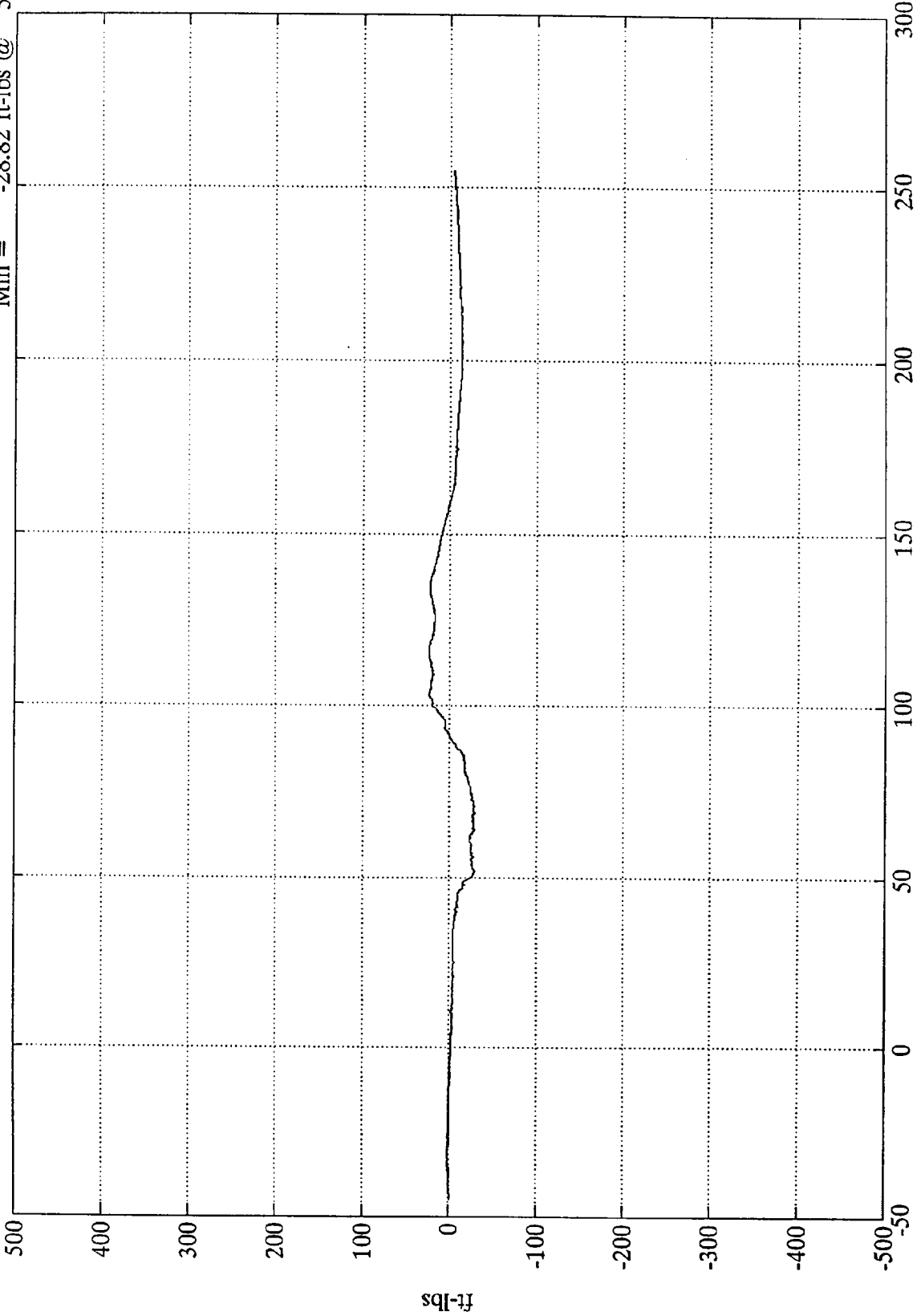
Max = 905.24 lbs @ 46.79 msec  
Min = 1.36 lbs @ 24.47 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 24.19 ft-lbs @ 115.91 msec  
Min = -28.82 ft-lbs @ 51.84 msec

Pos. 2 Lower Neck Mx



sq|-1j  
B-144

8118-3

SAE Filter Class 600

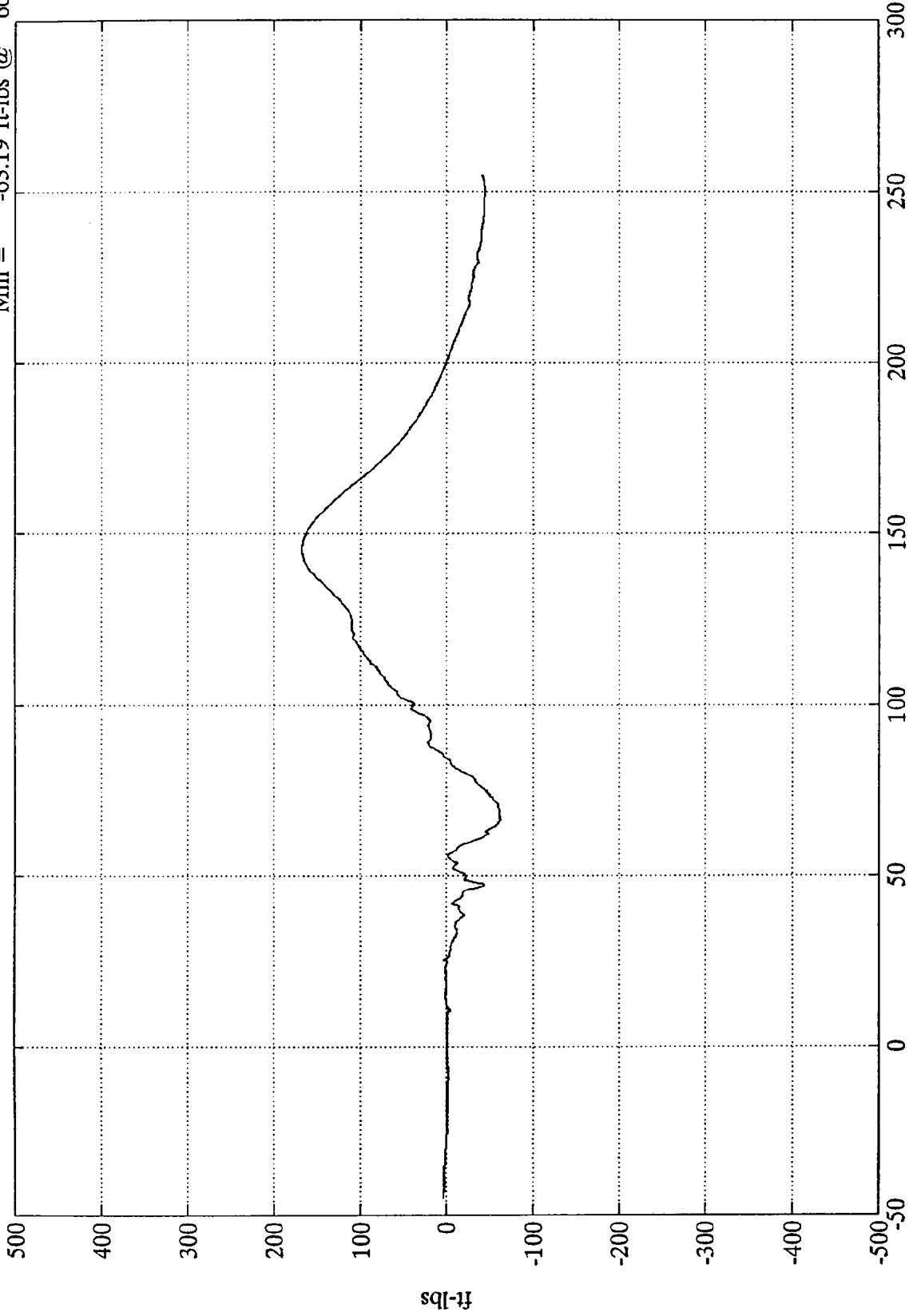
Time (msec)



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Lower Neck My

Max = 167.83 ft-lbs @ 144.96 msec  
Min = -63.19 ft-lbs @ 66.11 msec



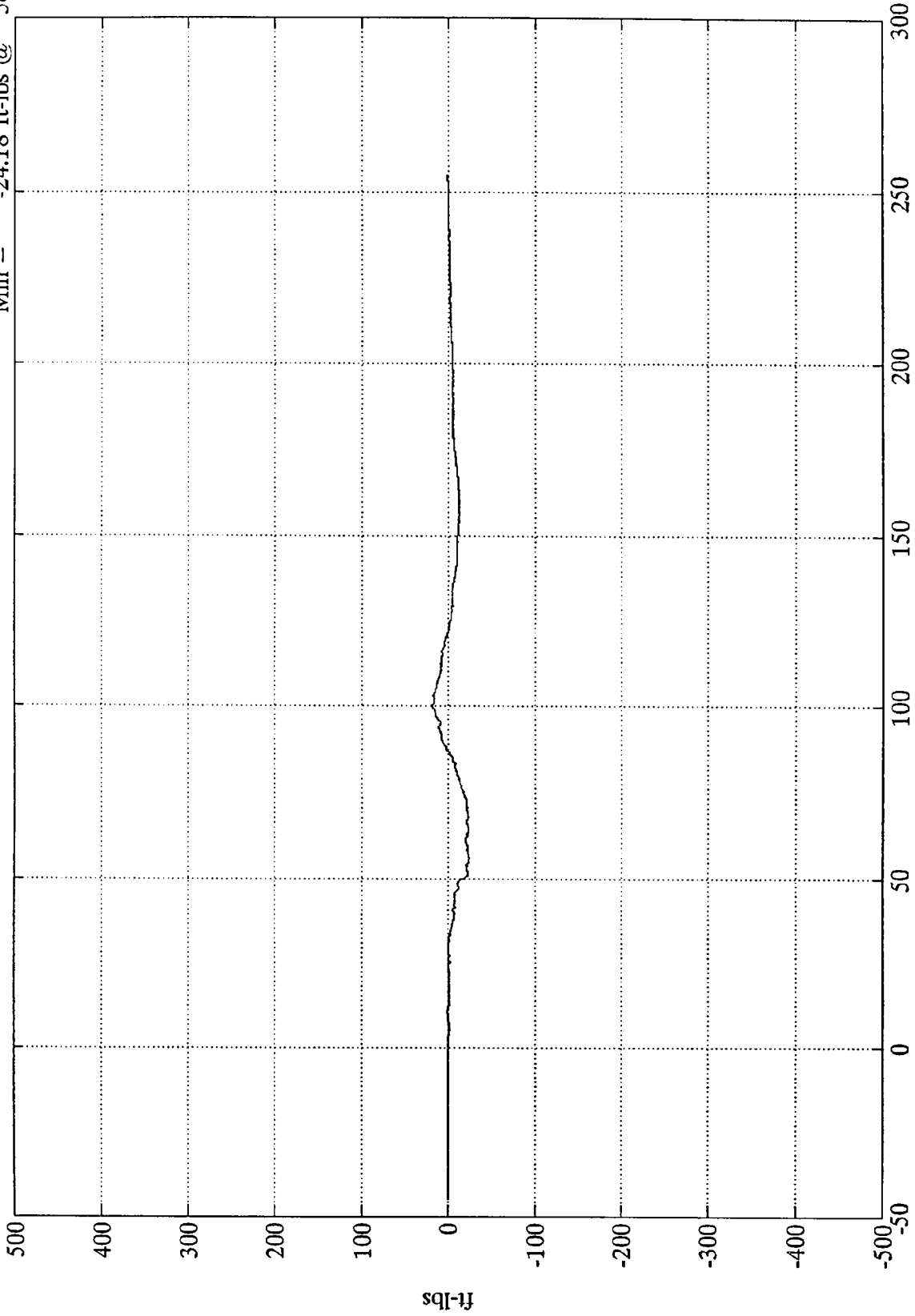
Time (msec)

SAE Filter Class 600

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Lower Neck Mz

Max = 19.82 ft-lbs @ 99.84 msec  
Min = -24.18 ft-lbs @ 56.15 msec



sqi-tj  
B-146

8118-3

SAE Filter Class 600

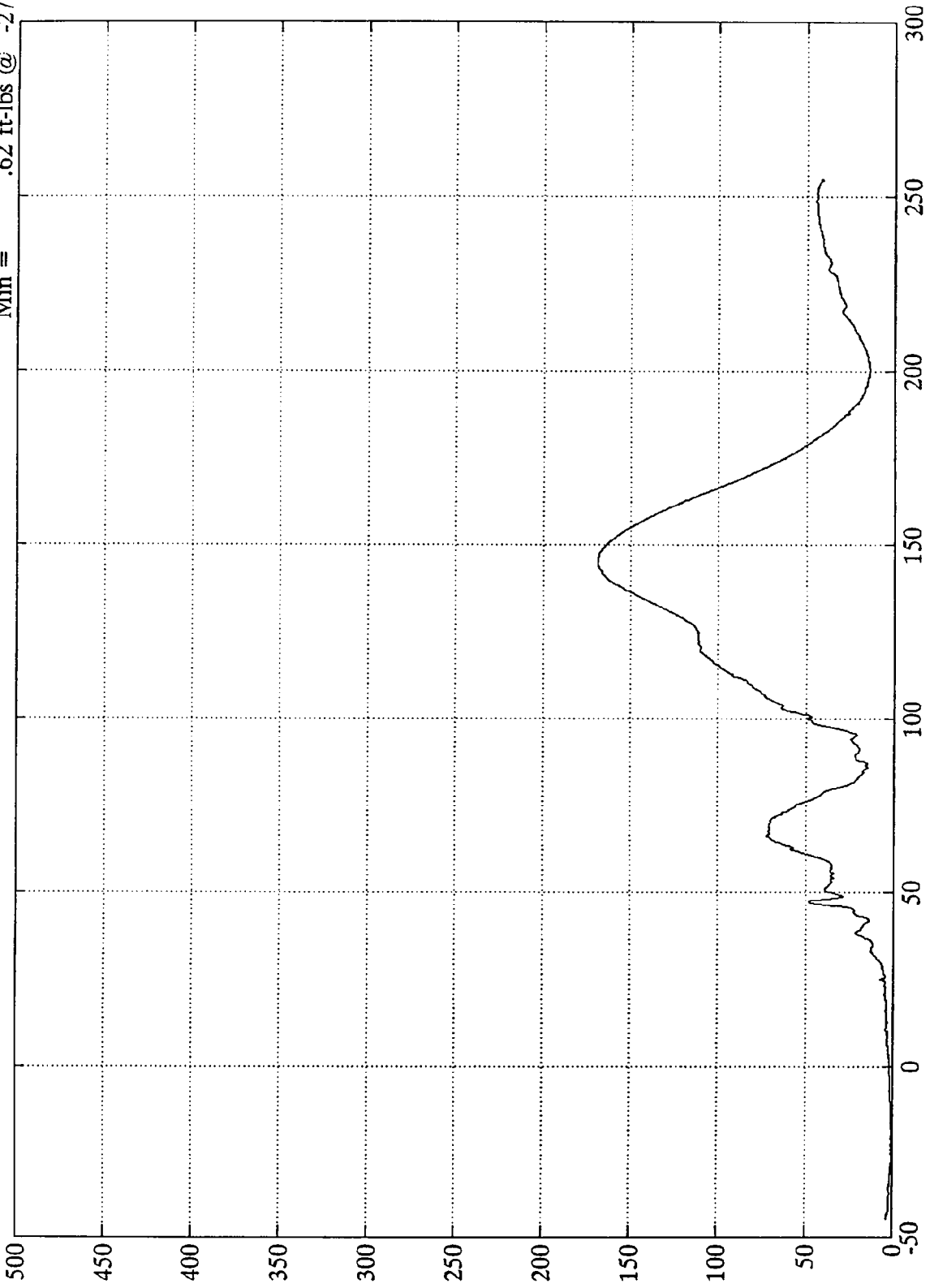
Time (msec)



TSC Frontal Barrier Test #3 - Ford Taurus

P2 L. Neck Moment Result.

Max = 168.68 ft-lbs @ 144.96 msec  
Min = .62 ft-lbs @ -27.48 msec



sq[-1]

B-147

8118-3

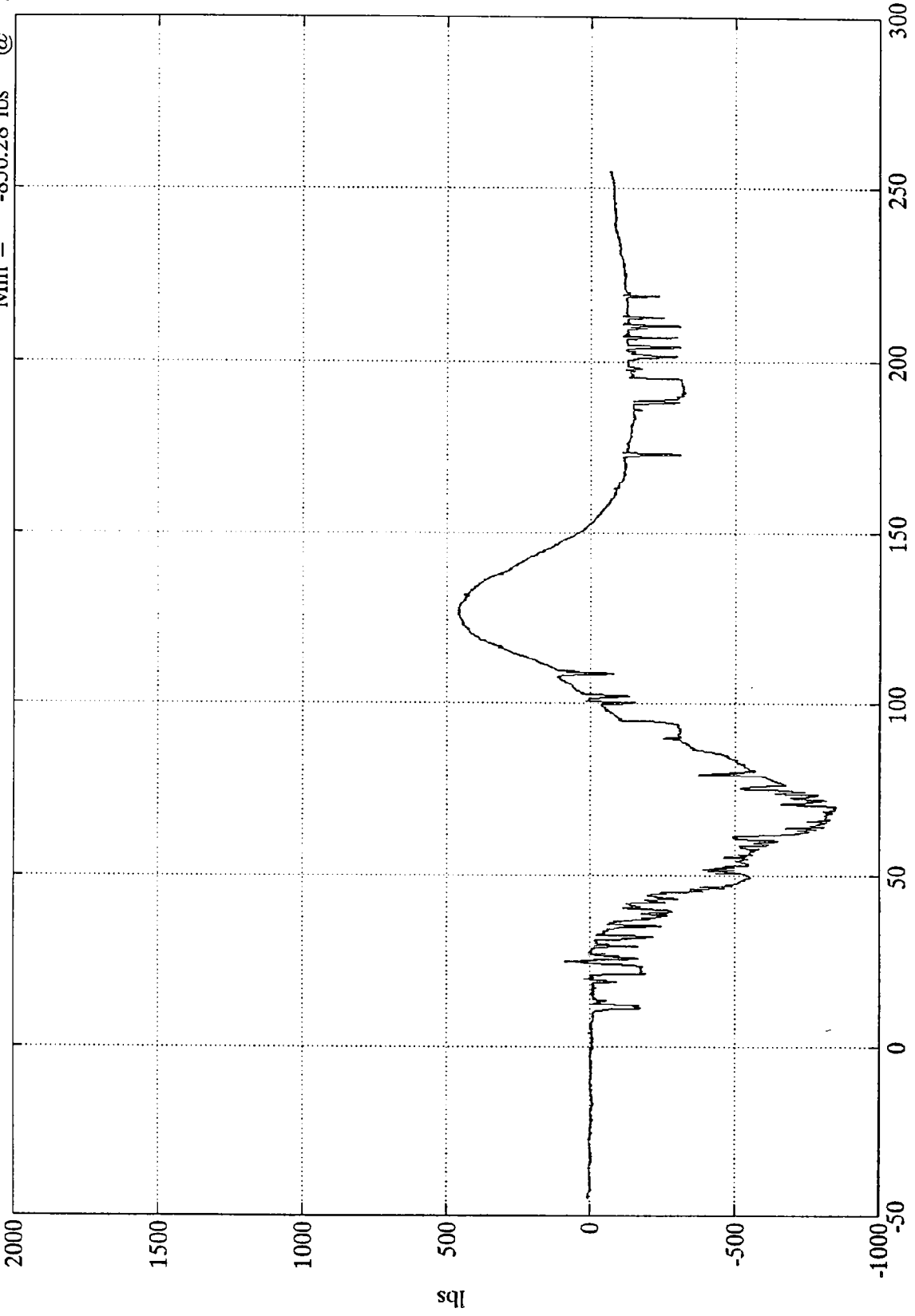
Time (msec)

SAE Filter Class 600

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Lumbar Fx

Max = 464.52 lbs @ 127.08 msec  
Min = -850.28 lbs @ 70.08 msec



sq lbs  
B-148

8118-3

SAE Filter Class 1000

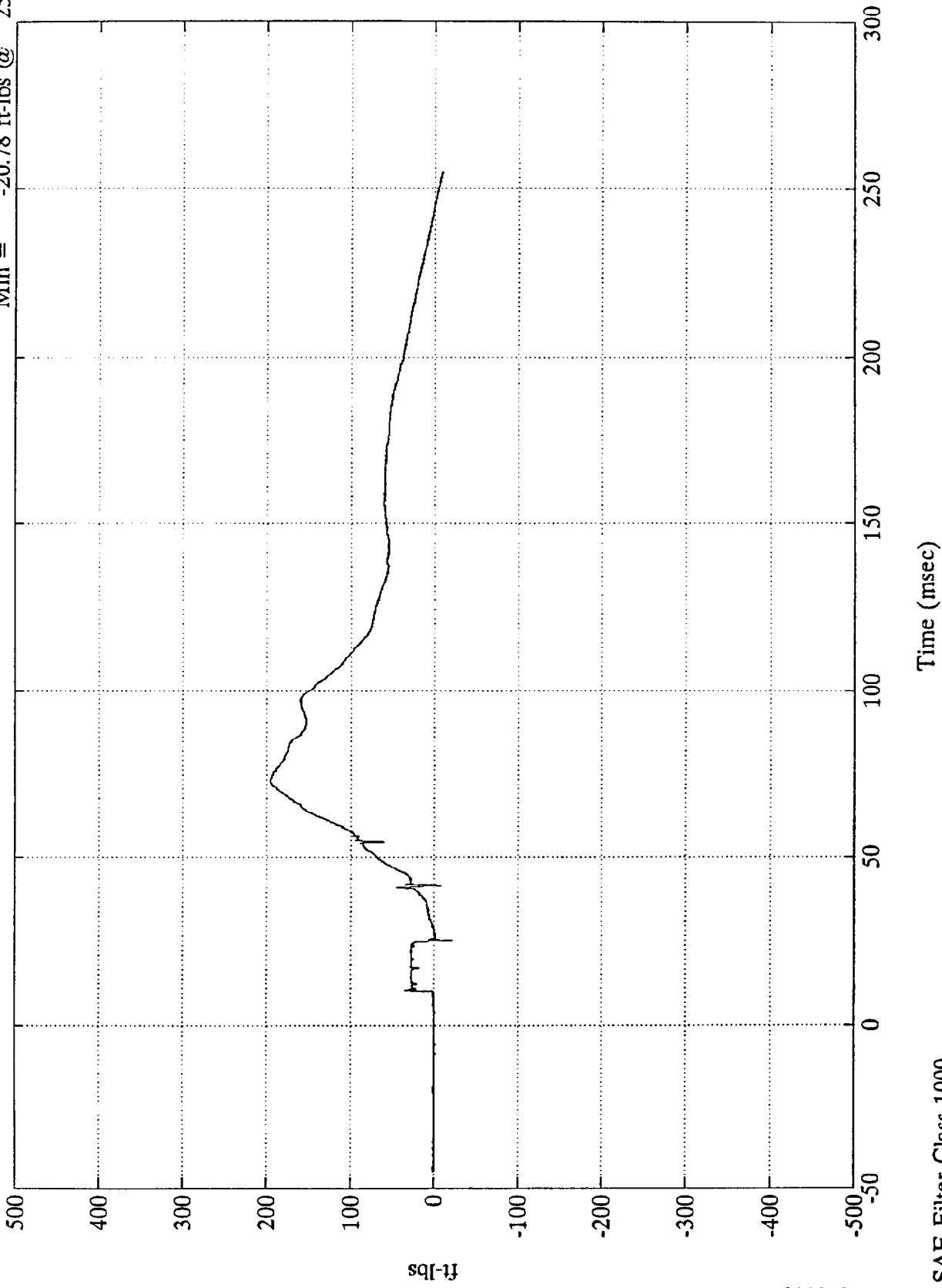
Time (msec)



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 196.41 ft-lbs @ 73.31 msec  
Min = -20.78 ft-lbs @ 25.07 msec

Pos. 2 Lumbar My



B-149

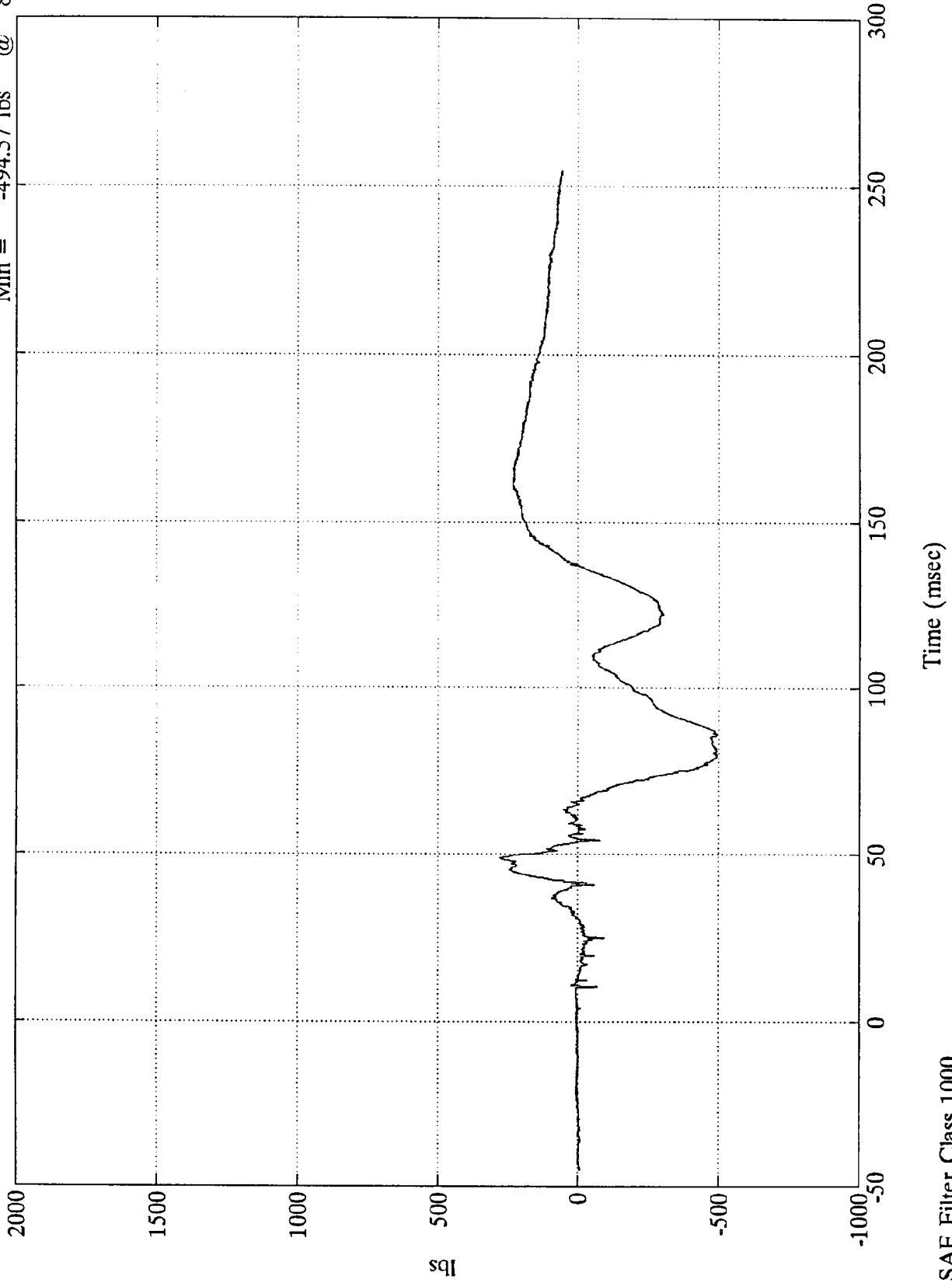
8118-3

SAE Filter Class 1000

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 278.36 lbs @ 48.84 msec  
Min = -494.57 lbs @ 86.16 msec

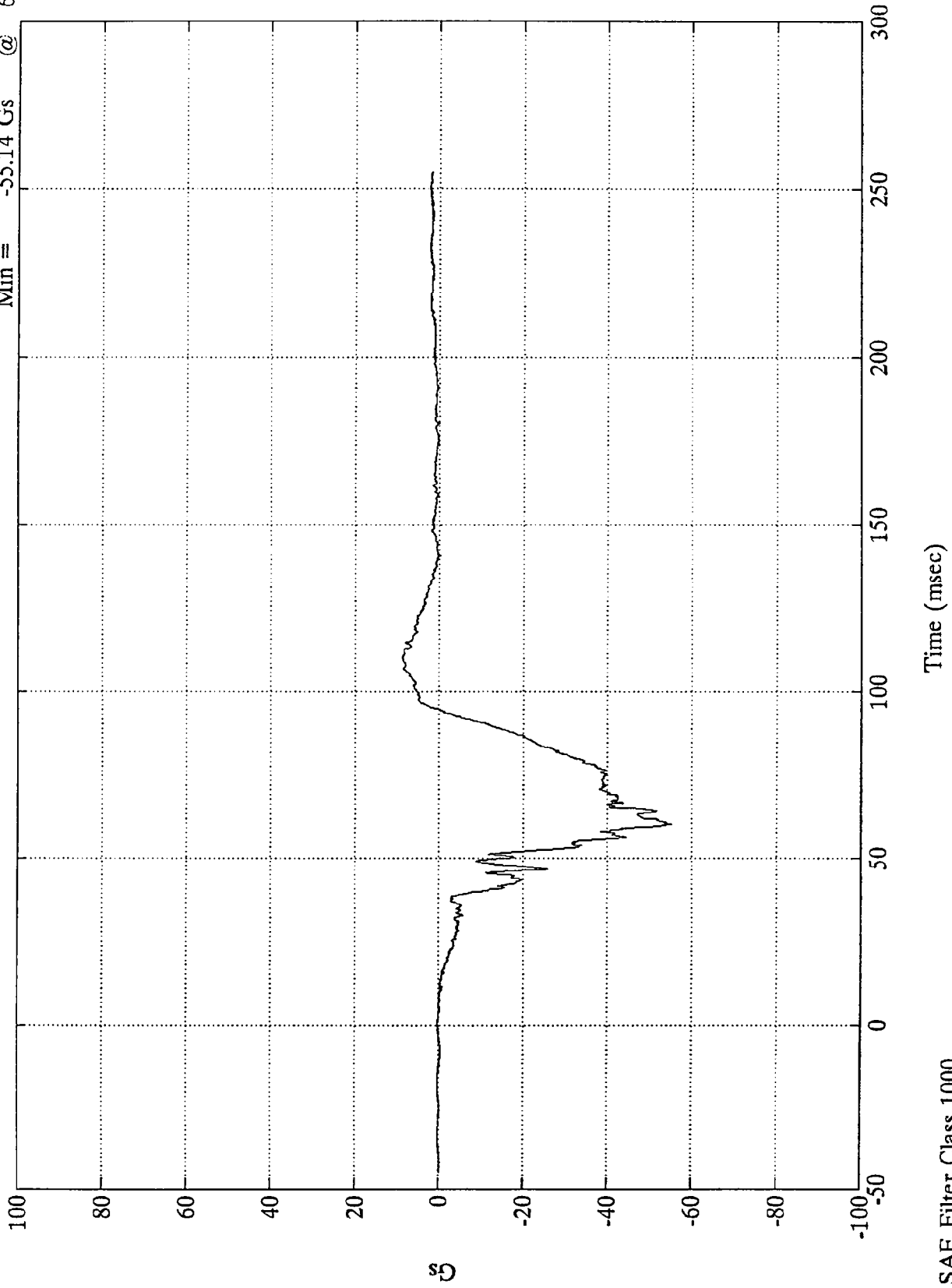
Pos. 2 Lumbar Fz



TSC Frontal Barrier Test #3 - Ford Taurus

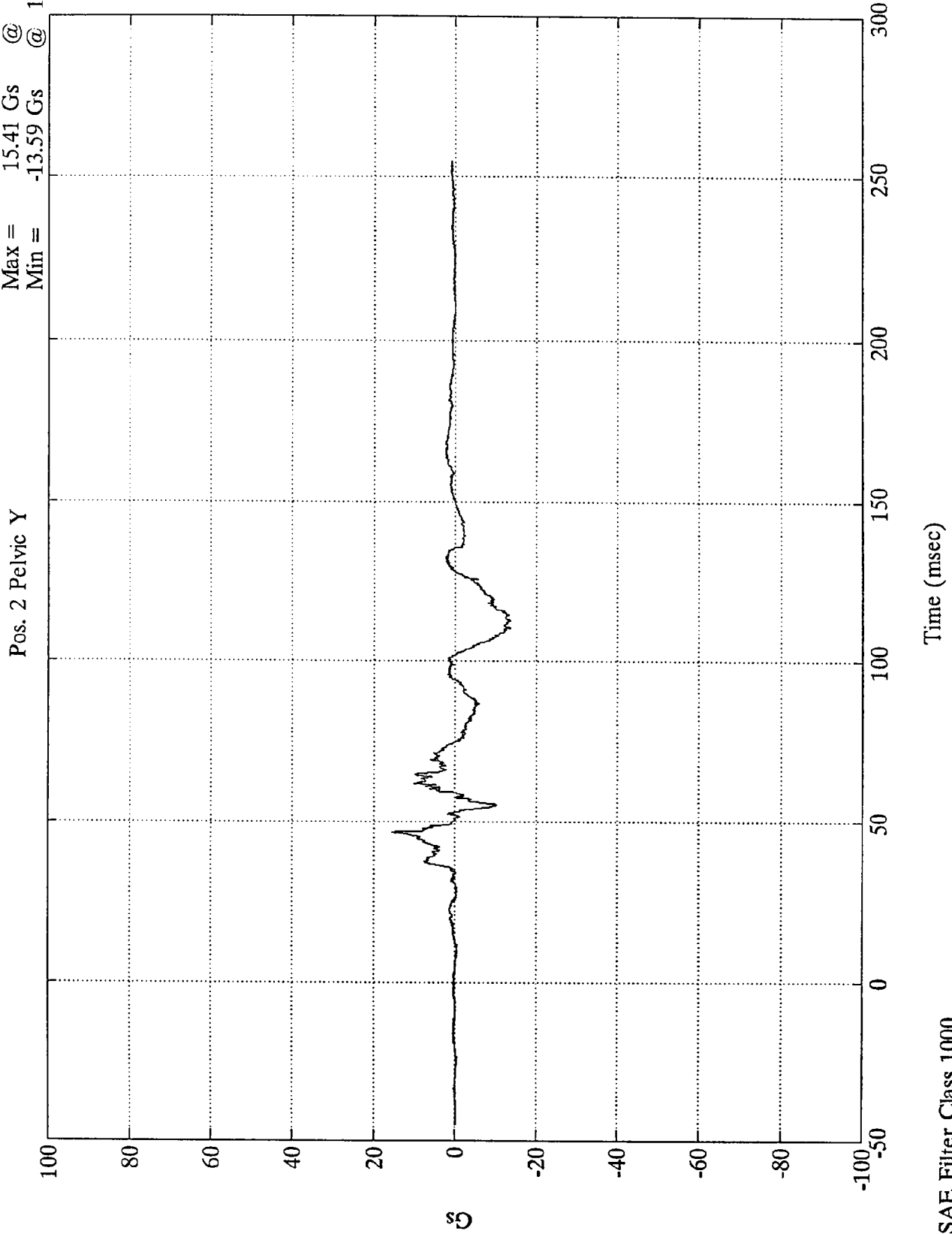
Max = 8.83 Gs @ 110.27 msec  
Min = -55.14 Gs @ 50.24 msec

Pos. 2 Pelvic X



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 15.41 Gs @ 46.56 msec  
Min = -13.59 Gs @ 112.68 msec

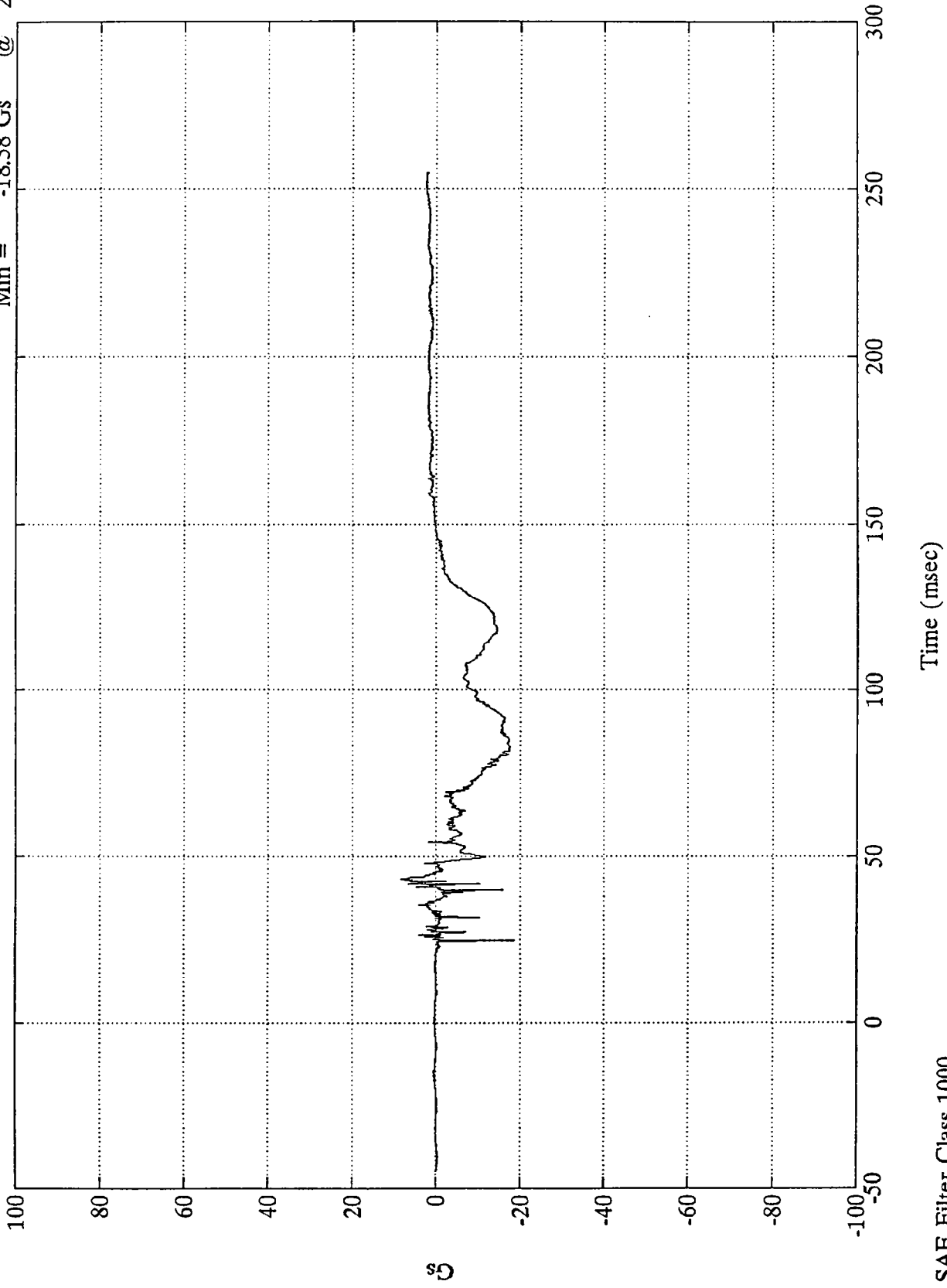


Pos. 2 Pelvic Y

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 8.25 Gs @ 43.20 msec  
Min = -18.58 Gs @ 24.71 msec

Pos. 2 Pelvic Z



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B-153

8118-3

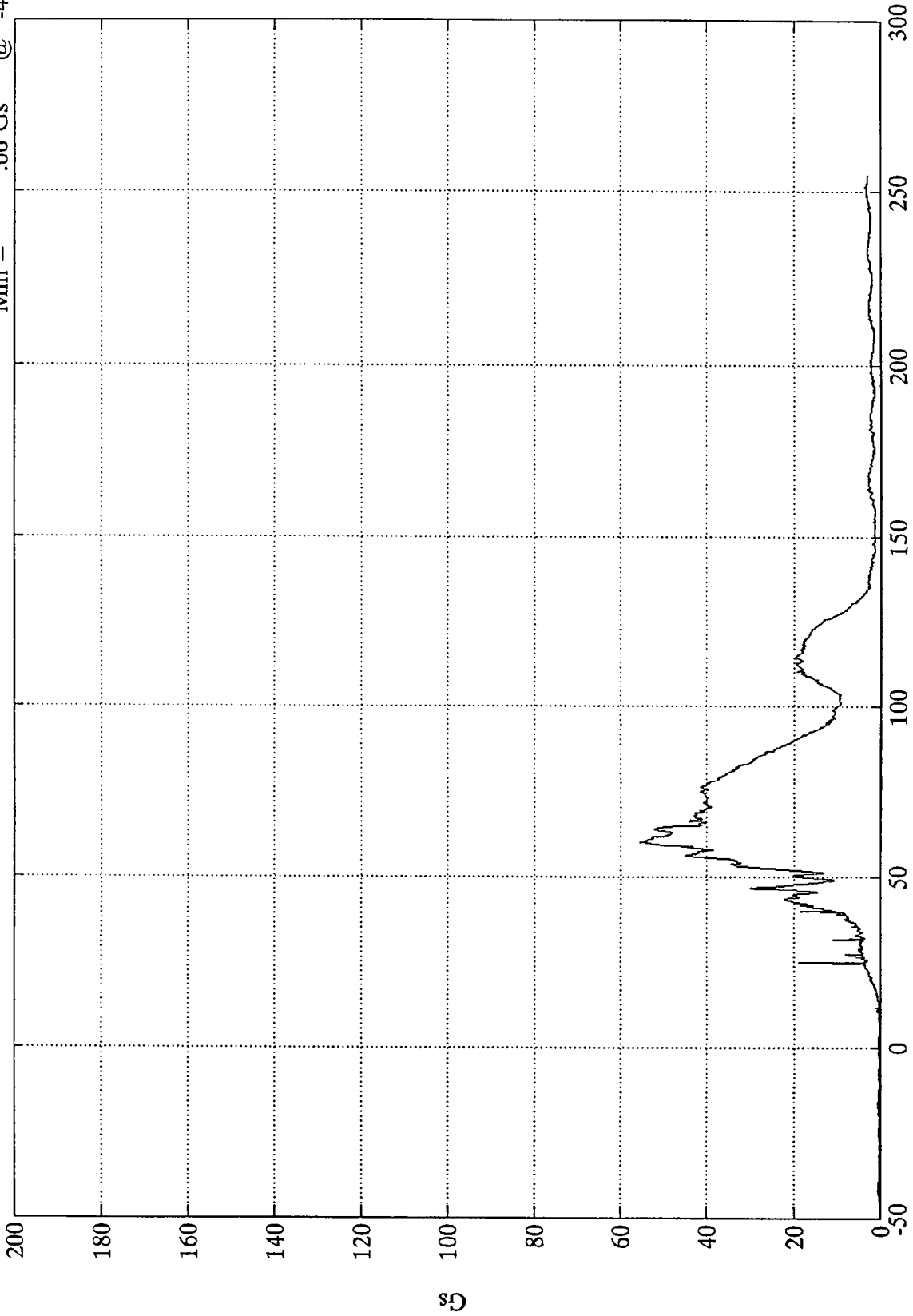
SAE Filter Class 1000

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Pelvic Resultant

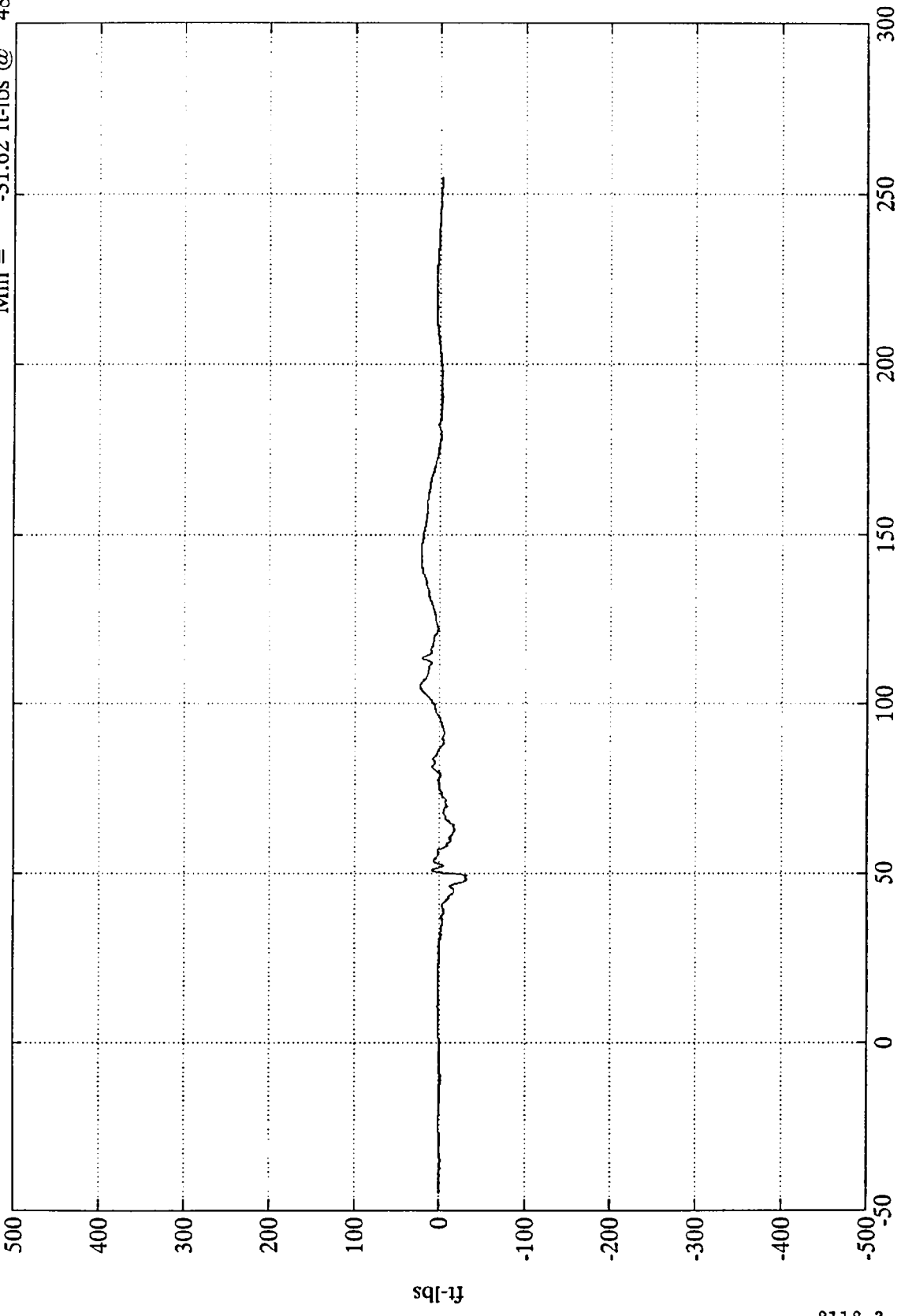
Max = 55.60 Gs @ 60.24 msec  
Min = .06 Gs @ -44.15 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 L. Upper Tibia Mx

Max = 22.88 ft-lbs @ 105.00 msec  
Min = -31.62 ft-lbs @ 48.24 msec



B-155

8118-3

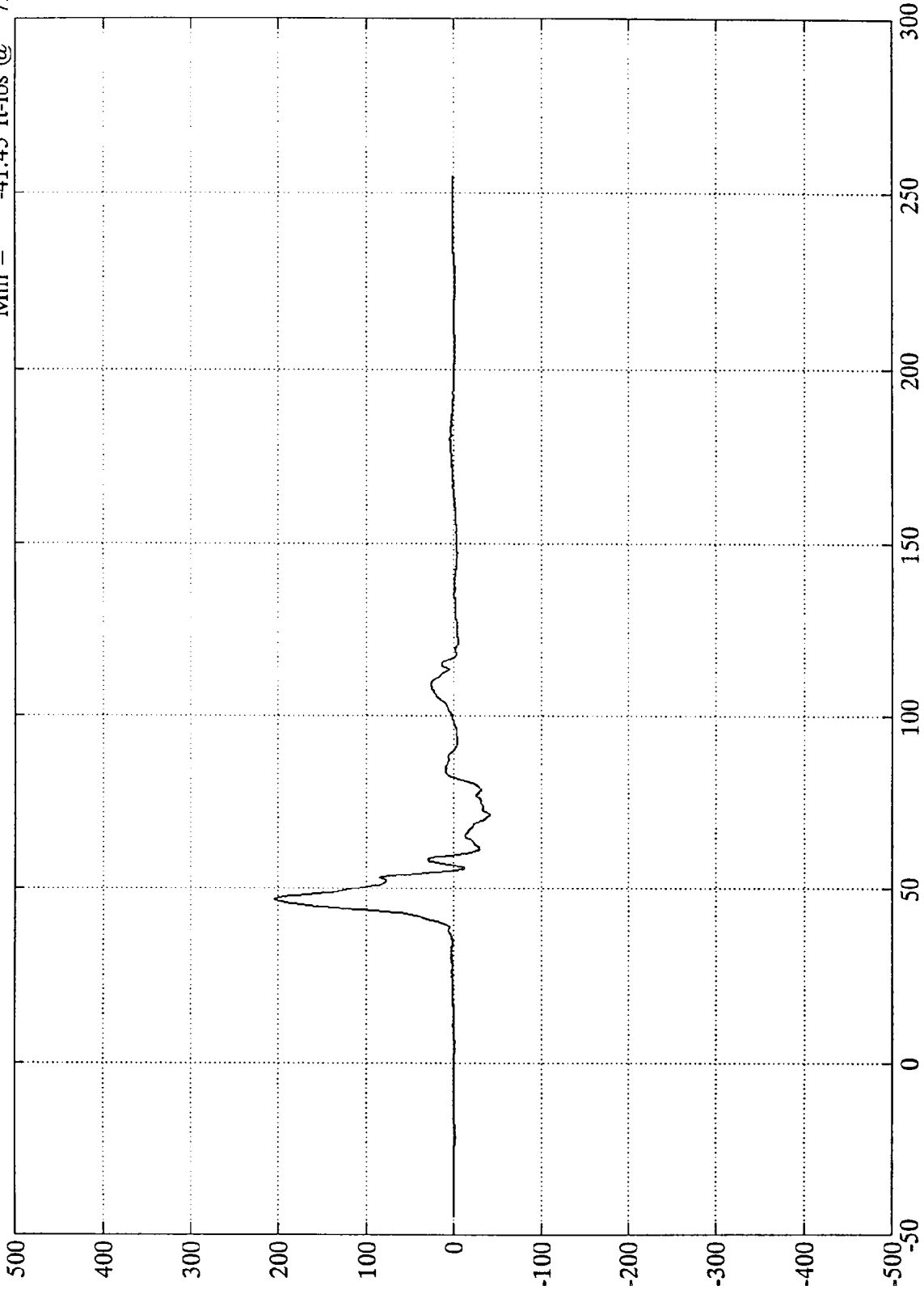
SAE Filter Class 600

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 L. Upper Tibia My

Max = 204.41 ft-lbs @ 46.68 msec  
Min = -41.45 ft-lbs @ 71.27 msec



B-156

8118-3

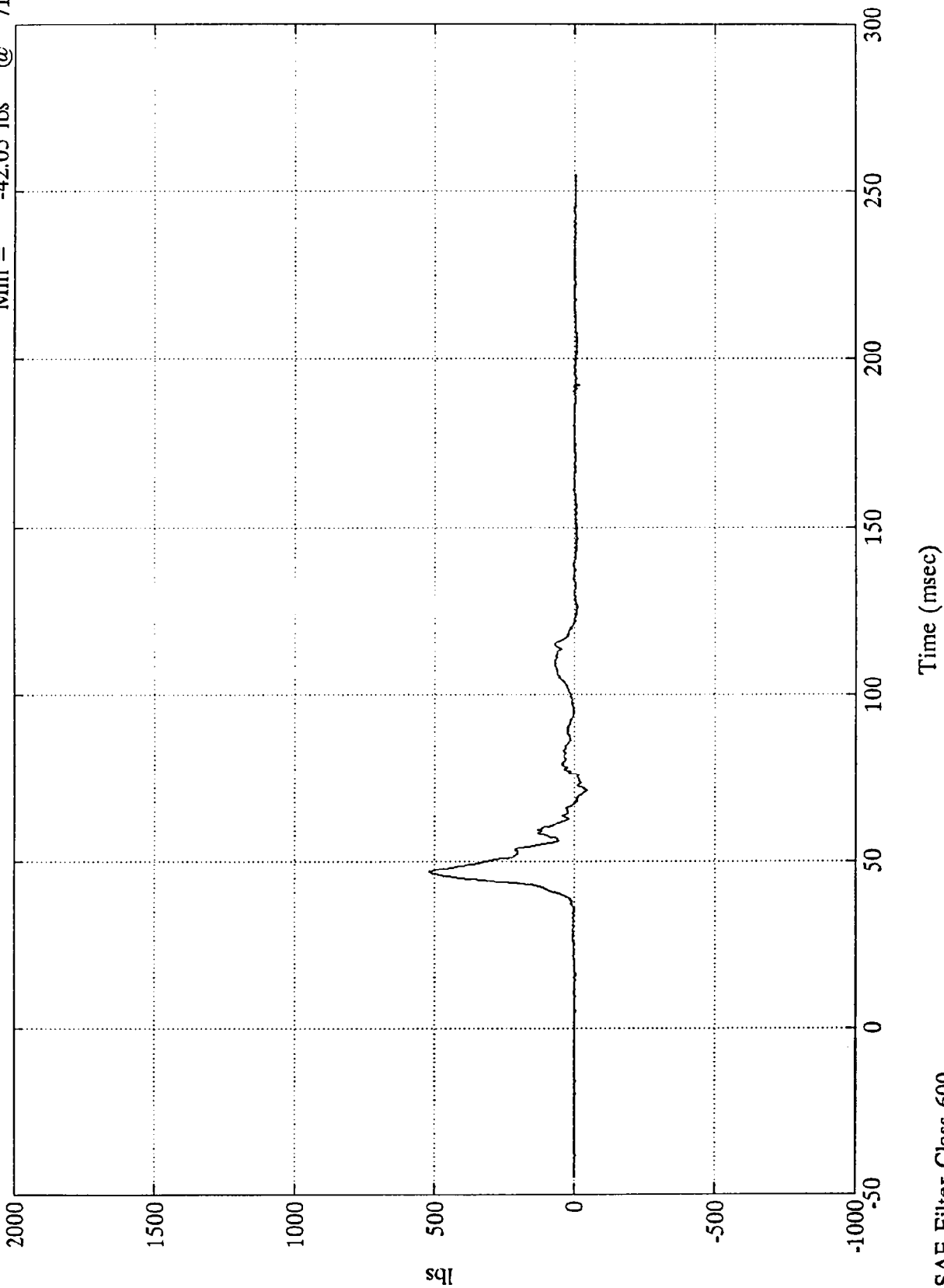
SAE Filter Class 600

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

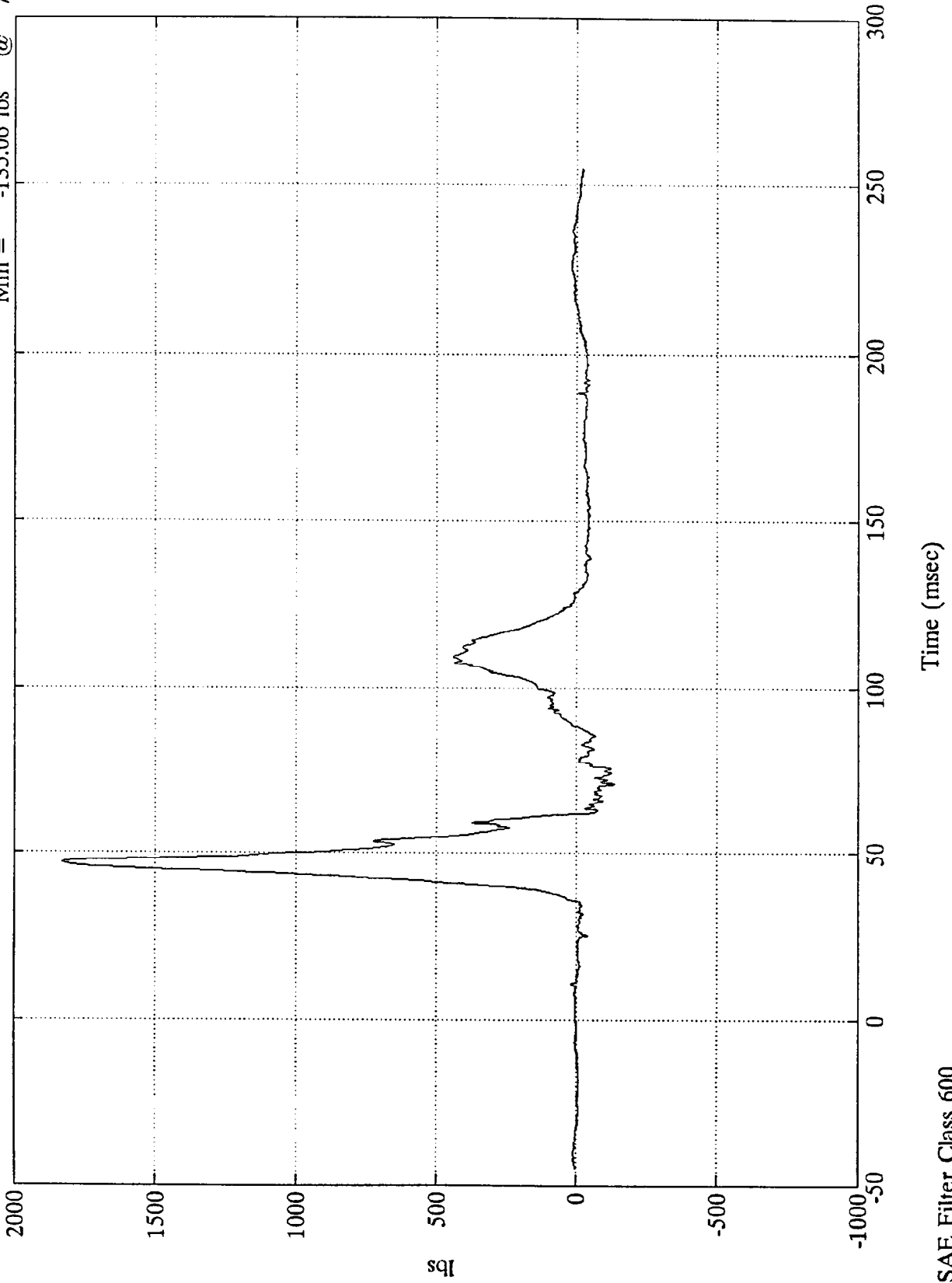
Pos. 2 L. Lower Tibia Fy

Max = 519.38 lbs @ 46.68 msec  
Min = -42.05 lbs @ 71.04 msec



TSC Frontal Barrier Test #3 - Ford Taurus

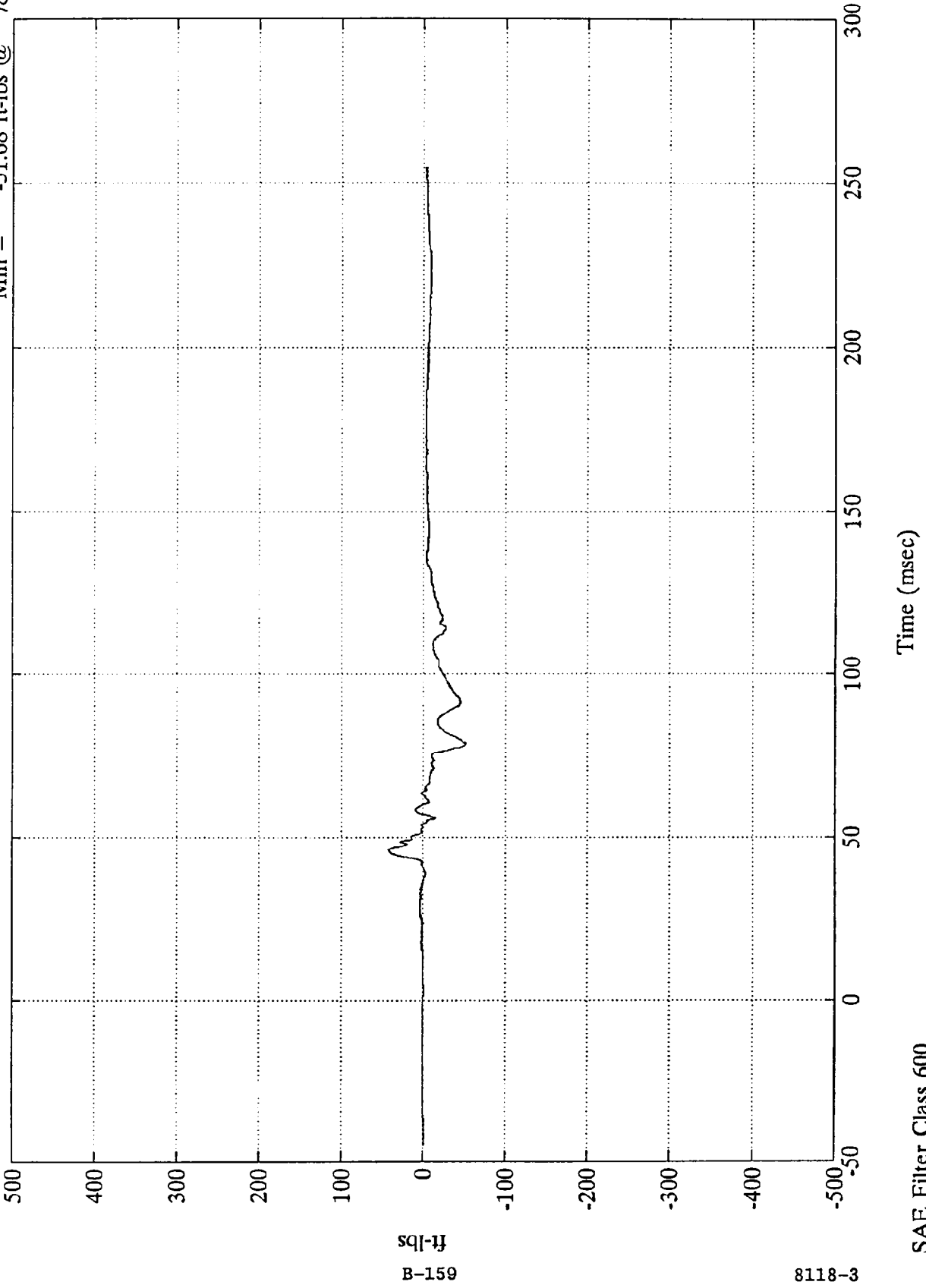
Pos. 2 L. Lower Tibia Fz  
Max = 1831.03 lbs @ 46.79 msec  
Min = -135.06 lbs @ 70.91 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 L. Lower Tibia Mx

Max = 42.09 ft-lbs @ 45.96 msec  
Min = -51.68 ft-lbs @ 78.72 msec



B-159  
ft-lbs

8118-3

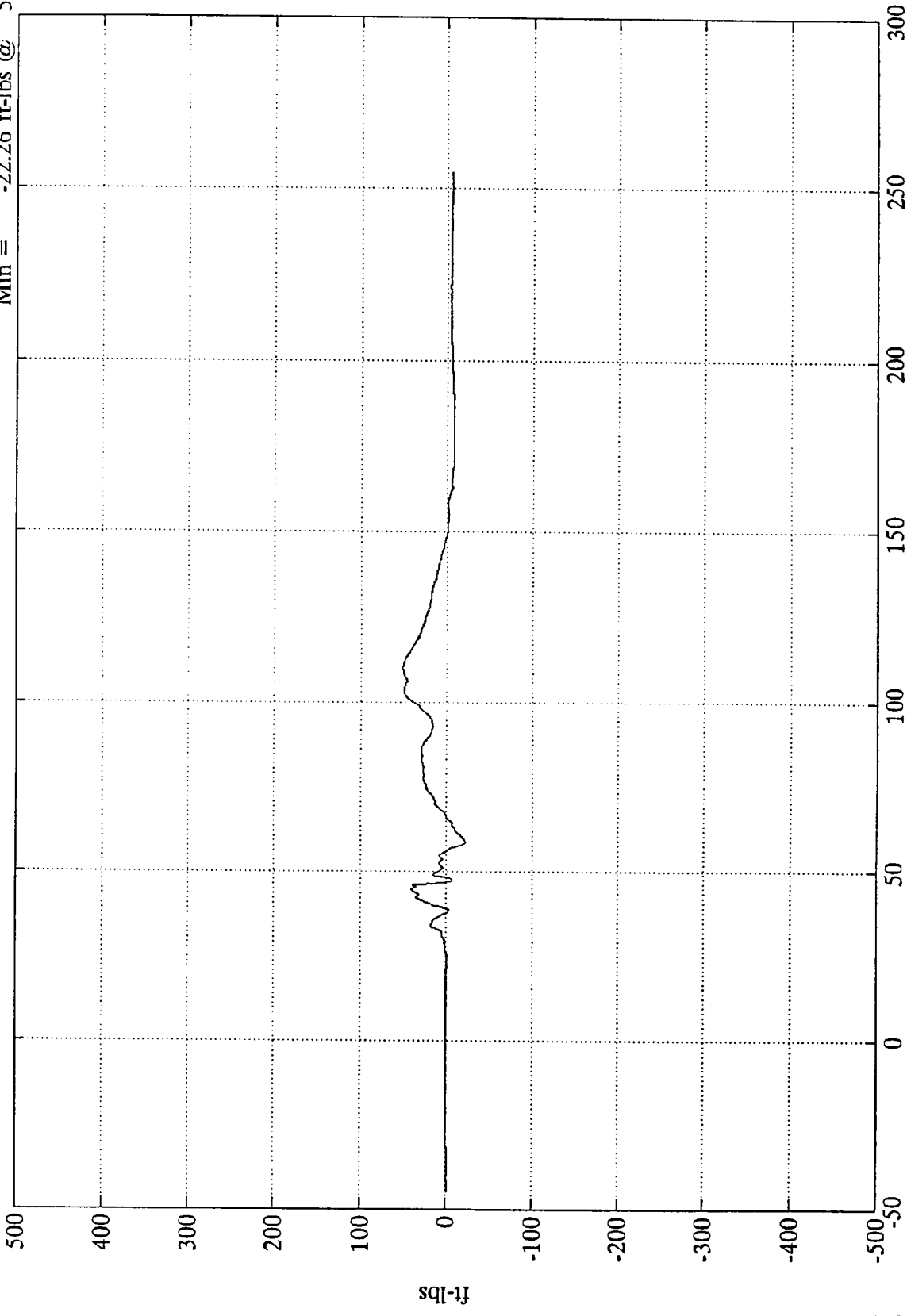
SAE Filter Class 600

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 R. Upper Tibia Mx

Max = 51.21 ft-lbs @ 110.16 msec  
Min = -22.26 ft-lbs @ 58.68 msec



ft-lbs  
B-160

Time (msec)

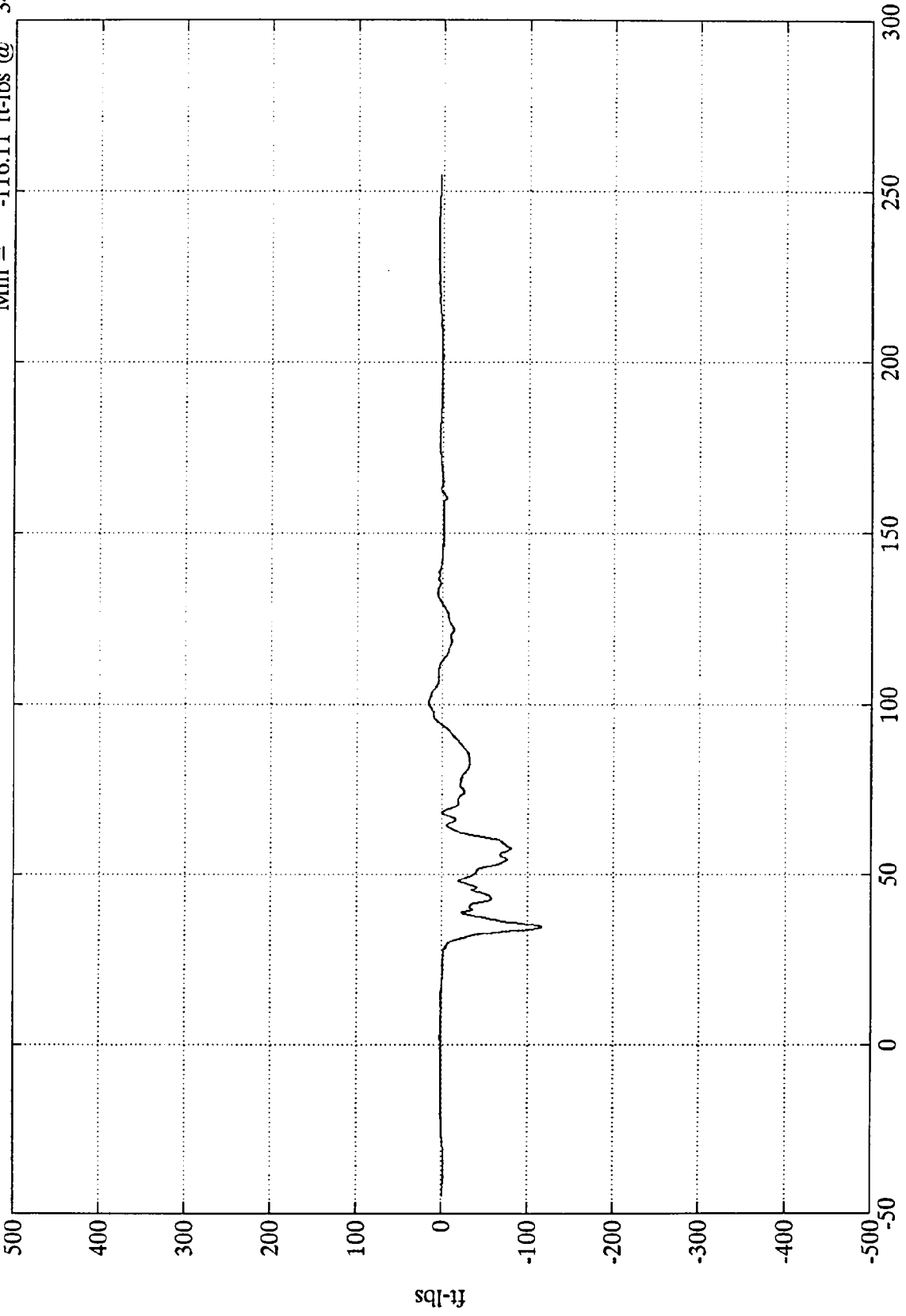
SAE Filter Class 600

8118-3

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 R. Upper Tibia My

Max = 15.64 ft-lbs @ 100.68 msec  
Min = -116.11 ft-lbs @ 34.55 msec



sq|tj  
B-161

8118-3

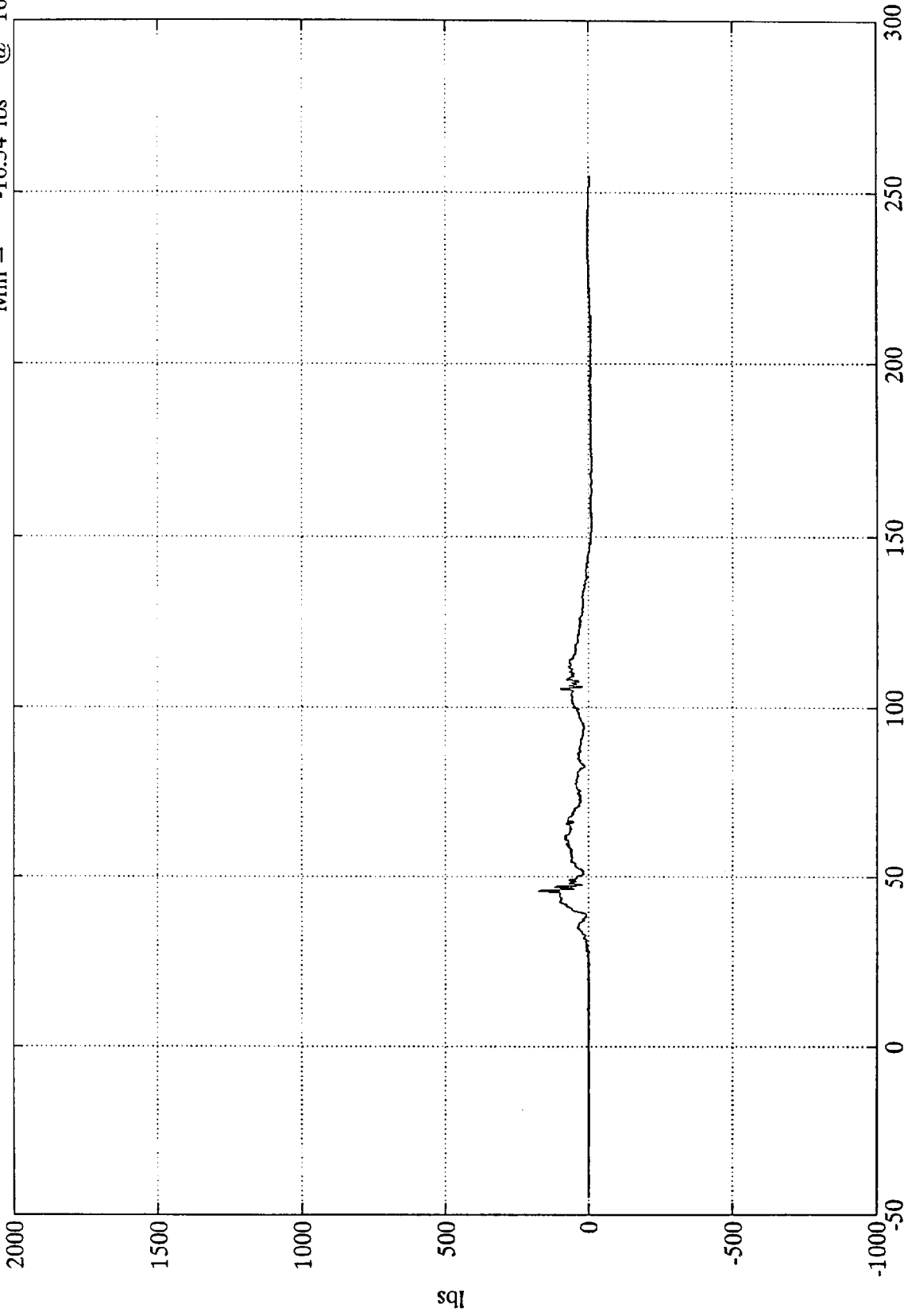
SAE Filter Class 600

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 R. Lower Tibia Fy

Max = 175.07 lbs @ 45.60 msec  
Min = -10.54 lbs @ 163.32 msec



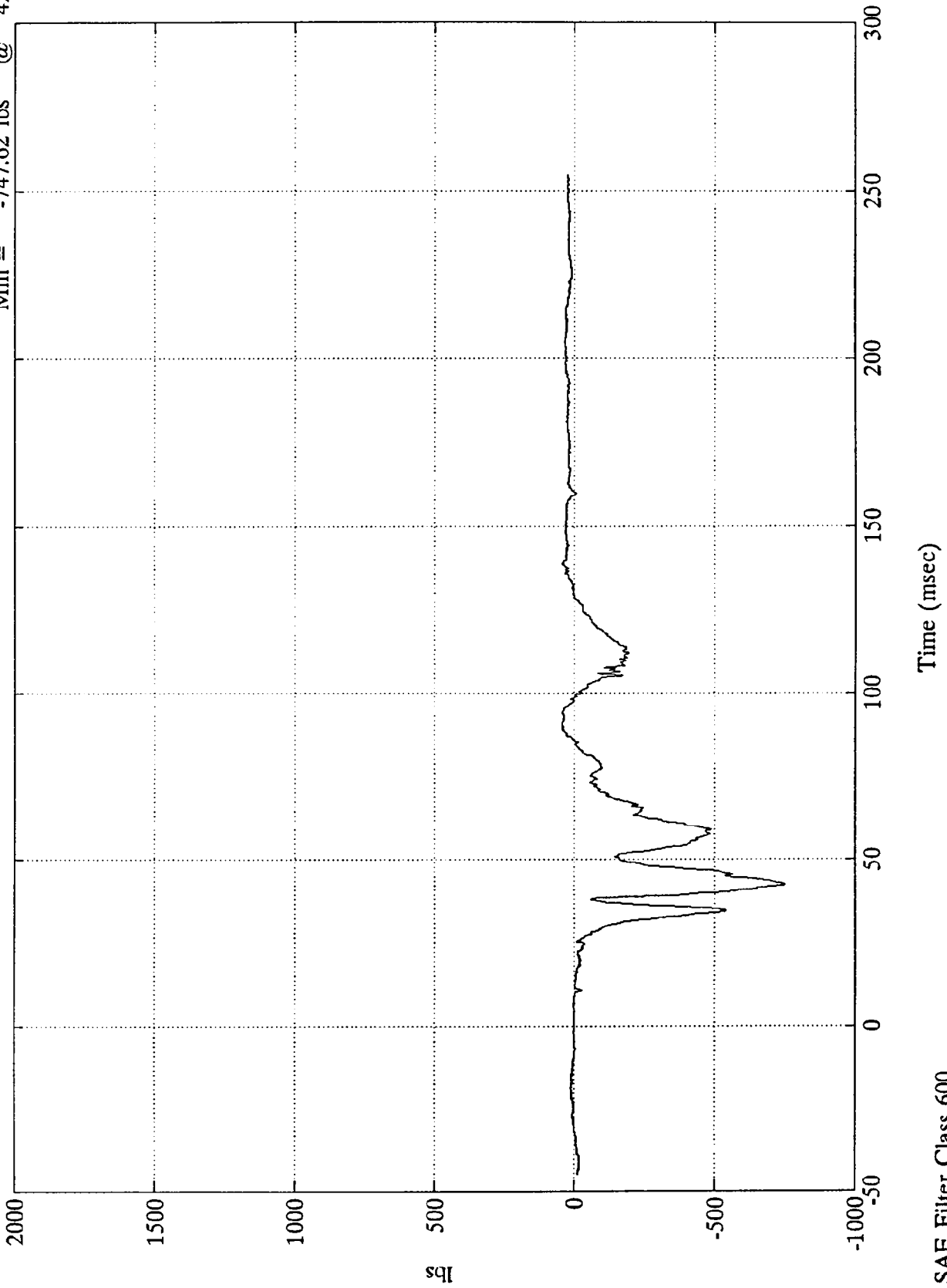
Time (msec)

SAE Filter Class 600

TSC Frontal Barrier Test #3 - Ford Taurus

Max = 45.59 lbs @ 138.60 msec  
Min = -747.62 lbs @ 42.36 msec

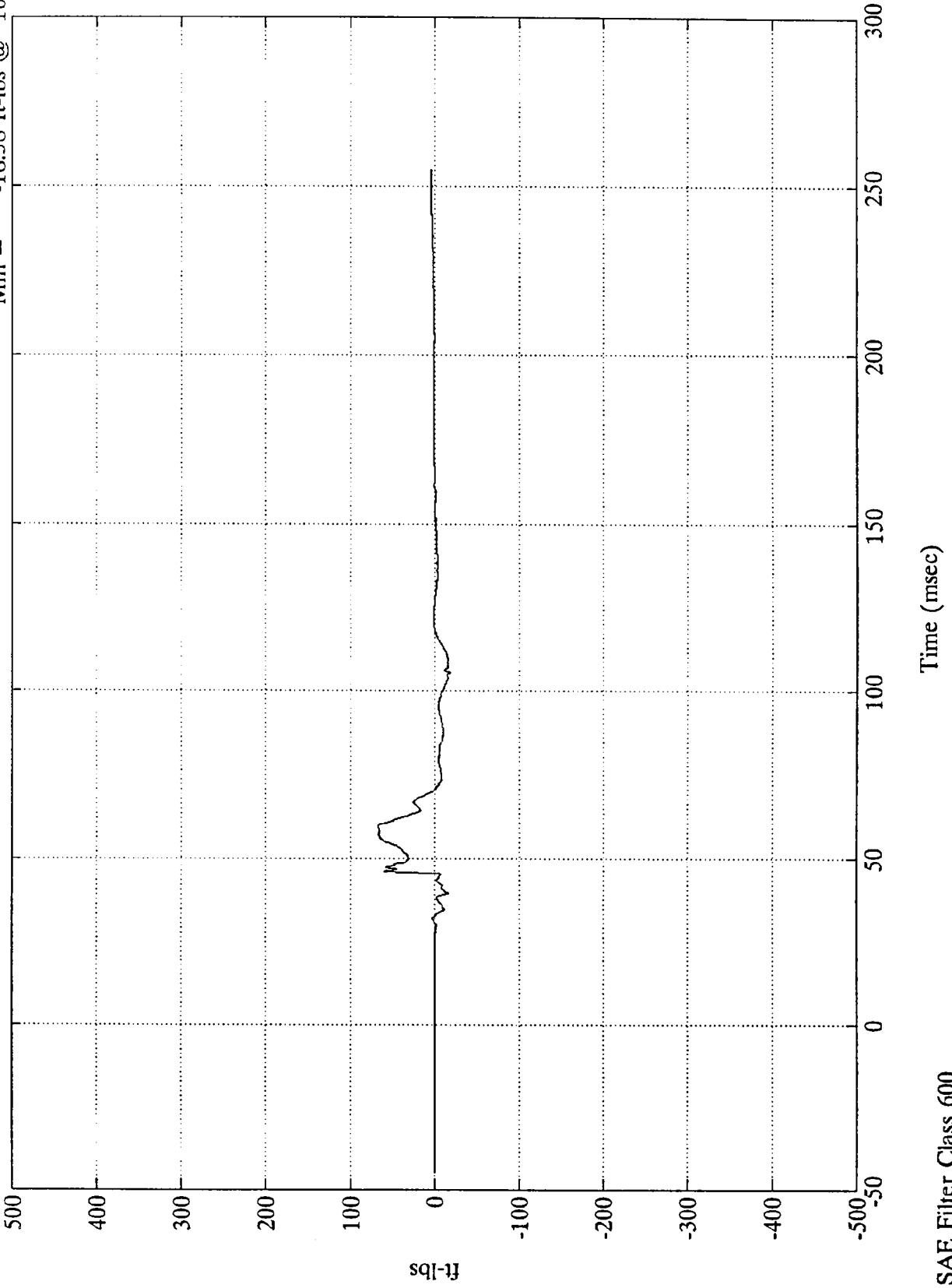
Pos. 2 R. Lower Tibia Fz



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 R. Lower Tibia Mx

Max = 67.73 ft-lbs @ 59.40 msec  
Min = -18.58 ft-lbs @ 105.24 msec



sq|l-tj  
B-164

8118-3

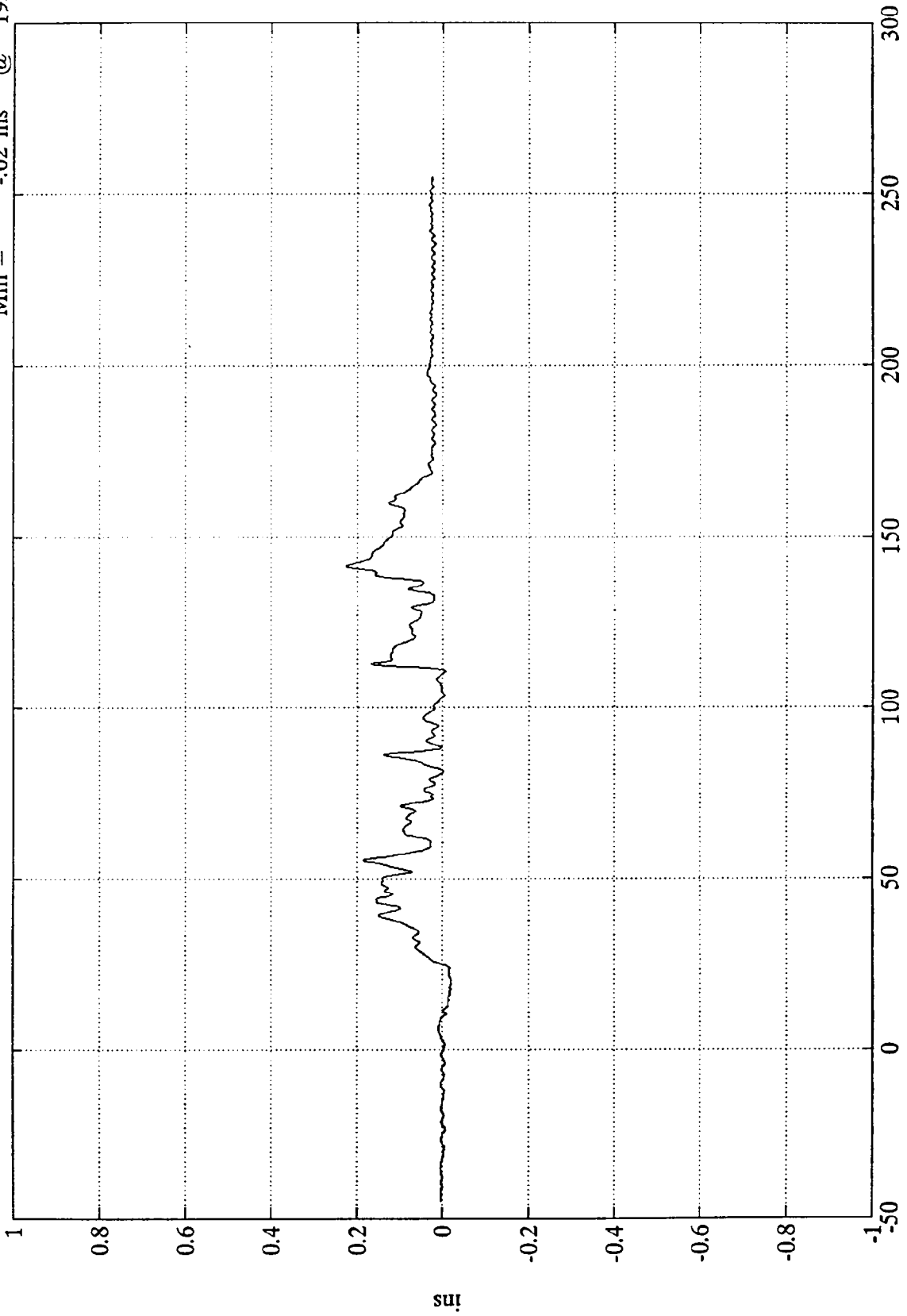
SAE Filter Class 600

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Left Knee Displ.

Max = .23 ins @ 141.59 msec  
Min = -.02 ins @ 19.55 msec



su!  
B-165

8118-3

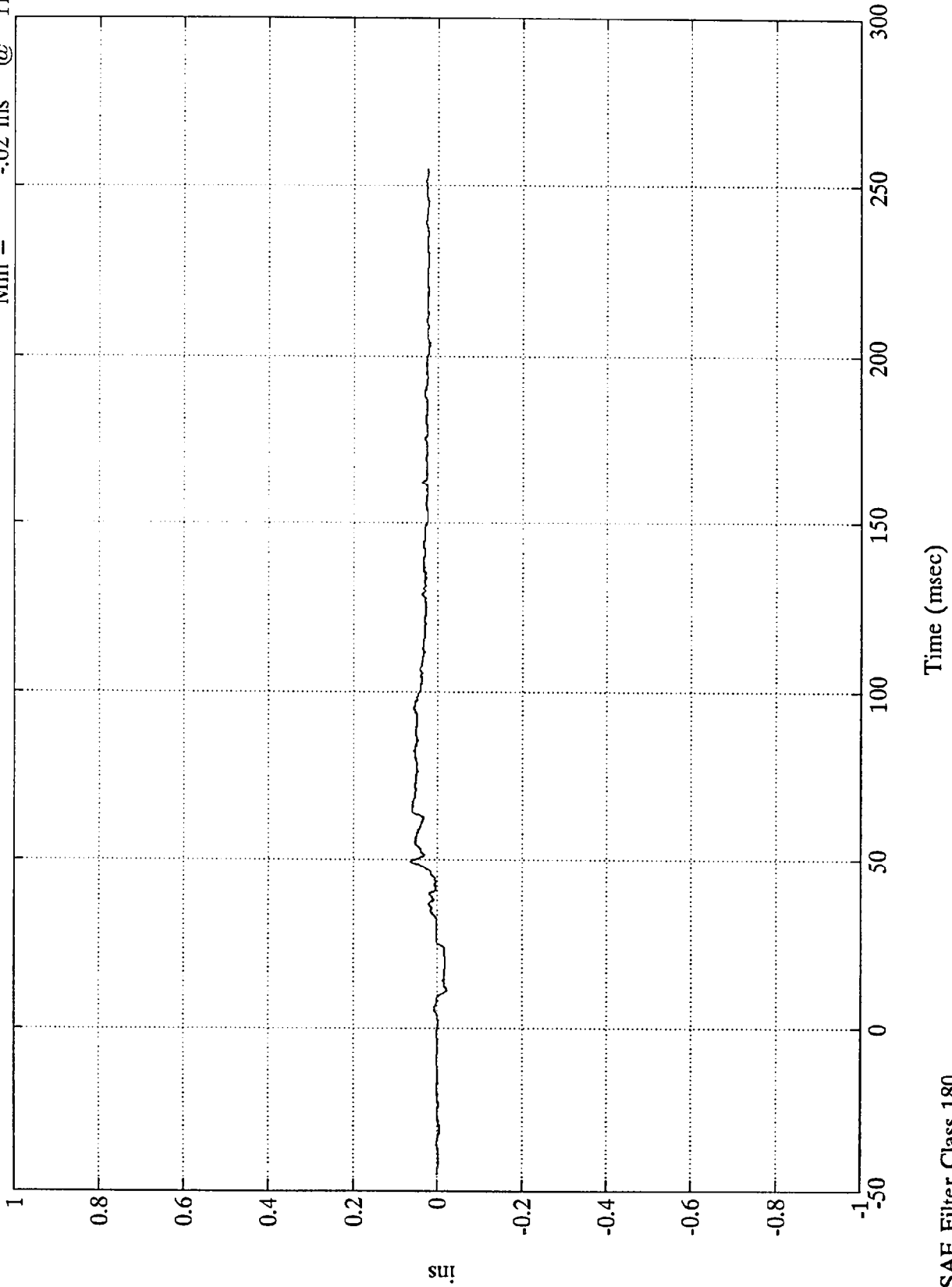
SAE Filter Class 180

Time (msec)

TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Right Knee Displ.

Max = .06 ins @ 49.43 msec  
Min = -.02 ins @ 11.39 msec



ins  
B-166

8118-3

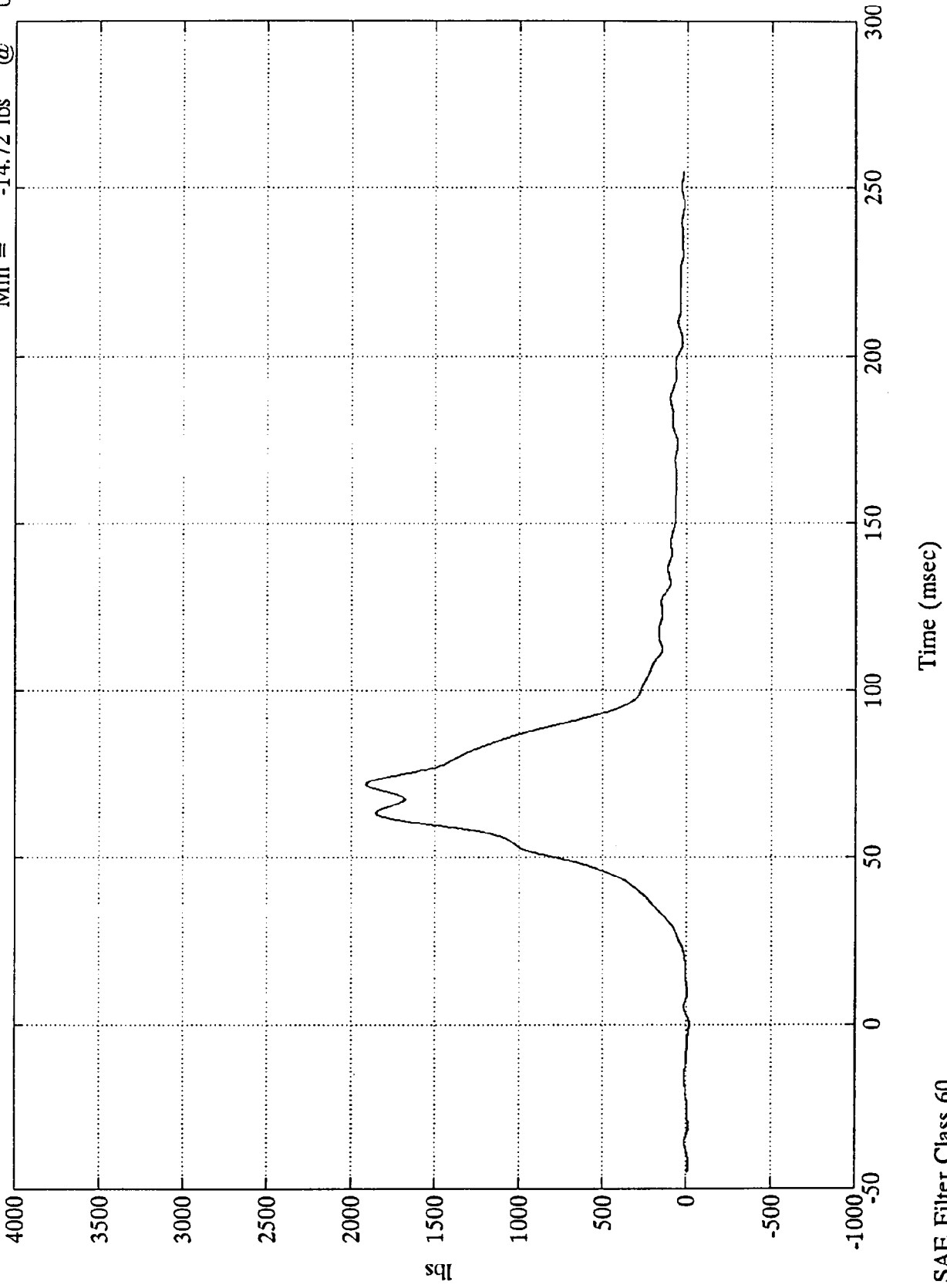
SAE Filter Class 180



TSC Frontal Barrier Test #3 - Ford Taurus

Pos. 2 Lap Belt

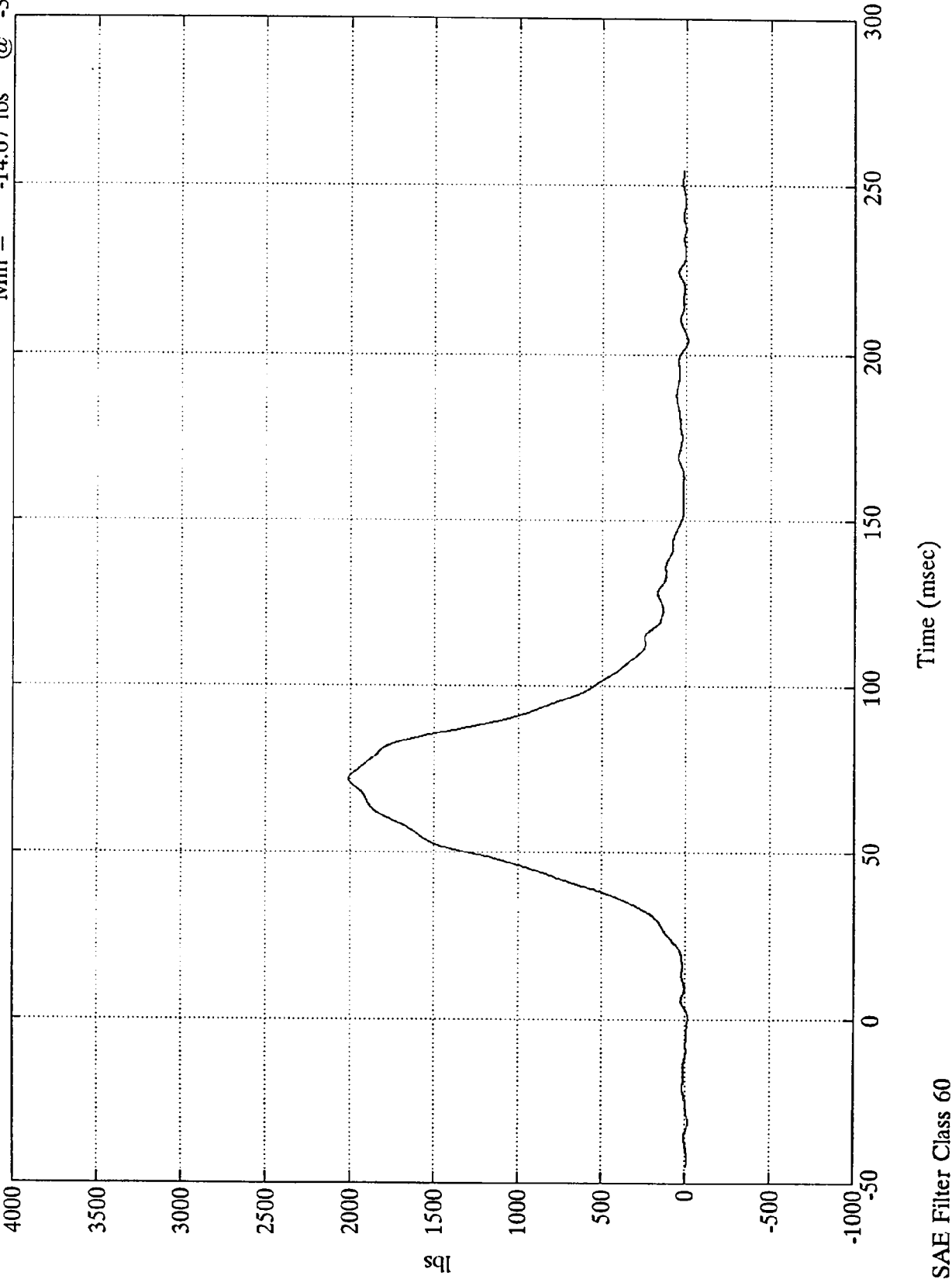
Max = 1911.27 lbs @ 71.76 msec  
Min = -14.72 lbs @ 0.11 msec



TSC Frontal Barrier Test #3 - Ford Taurus

Max = 2009.73 lbs @ 71.87 msec  
Min = -14.67 lbs @ -30.96 msec

Pos. 2 Torso Belt



Appendix C

HYBRID III 5TH FEMALE AND 95TH MALE

SEATING PROCEDURE

3D H-Point Machine Setup and Adjustments from Standard SAE-J826 Procedure

The H-point and seat location shall be determined using the equipment and procedures specified in SAE-J826 (April 1980) except for the following changes:

1. The distance between the H-point and centerline of the knee joint T-bar shall be:

380 mm (small female)

452 mm (large male)

2. The distance between the centerline of the knee joint T-bar and the centerline of the ankle pivot shall be adjusted to:

342 mm (small female)

460 mm (large male)

3. The standard 3D H-Point Machine feet shall be utilized for the large male setup. The feet shall be locked at 87° relative to the tibia. For the small female, the template shown in Figure 1 shall be fabricated from 6.4 mm (1/4") thick aluminum plate. The same template shall be used to fabricate both the left and right feet. The fabricated feet shall then be installed in place of the standard H-Point Machine feet and locked at the 87° position relative to the tibia.

4. The initial leg spacing shall be adjusted to:

142 mm (small female)

168 mm (large male)

from the centerline of the torso to the centerline of each leg.

5. The total weight of the 3D H-Point Machine shall be adjusted to:

104 ± 2 lbs (small female\*)

226 ± 2 lbs (large male)

\* with small female feet described in Section 3 above.

For the small female, all weight shall be symmetrically distributed within the seat pan. For the large male, all standard H-Point Machine weights shall be utilized plus additional weights totaling 226 lbs distributed symmetrically throughout the seat pan.

#### Initial Vehicle Setup

The vehicle shall be initially configured as follows:

1. Seat back positioned at manufacturer's specification or at 25° if not specified.
2. Seat full rearward initially.
3. Seat pan full down.
4. Tilt wheel at mid position.
5. Telescoping wheel at mid position.

#### H-Point / Seat Location Procedure

Follow SAE-J826 except as specified above. Align the right leg centerline with the centerline of the accelerator pedal and adjust the left leg laterally to clear the wheel housing or brake pedal to permit the right foot to contact the accelerator pedal. Once the H-Point Machine is installed at the full rearward position, move the seat forward until a point between the ball and toe of the foot is tangent to, but not depressing, the accelerator pedal. The heels should maintain contact with the floor after the seat has been moved. Rotate the lower leg through its arc to check for accelerator depression and verify proper seat placement.

Record seat detent from full forward and distance of seat from full forward position. Also, record the horizontal and vertical location of the H-point.

#### Dummy Installation

The H-point of the driver and passenger dummies shall coincide within 13 mm (1/2") in the vertical dimension and 13 mm in the horizontal dimension of a point 6 mm below the position of the H-point as determined in the section above entitled "H-point/Seat Location Procedure."

For the pelvis, as determined using the pelvic angle gage (GM drawing 78051-532) which is inserted into the H-point gaging hole of the dummy, the angle measured from the horizontal on the 76 mm (3") flat surface of the gage shall be  $22.5^\circ \pm 2.5^\circ$ .

The transverse instrumentation platform of the seat shall be horizontal within  $0.5^\circ$ . Use the head adjustment specified in FMVSS 208 S11.1 if necessary.

The hands shall be set as specified in FMVSS 208 S11.3. The upper torso shall be set as in FMVSS 208 S11.4.1 and S11.4.2.

The centerline of the left knee of the driver test dummy to the centerline of the torso shall be:

81 mm (small female)  
168 mm (large male)

For placement of the right foot and leg of the driver, refer to FMVSS 208 S11.6.

For a passenger test dummy, the distance between the centerline of the knees shall be

150 mm (small female)  
336 mm (large male)

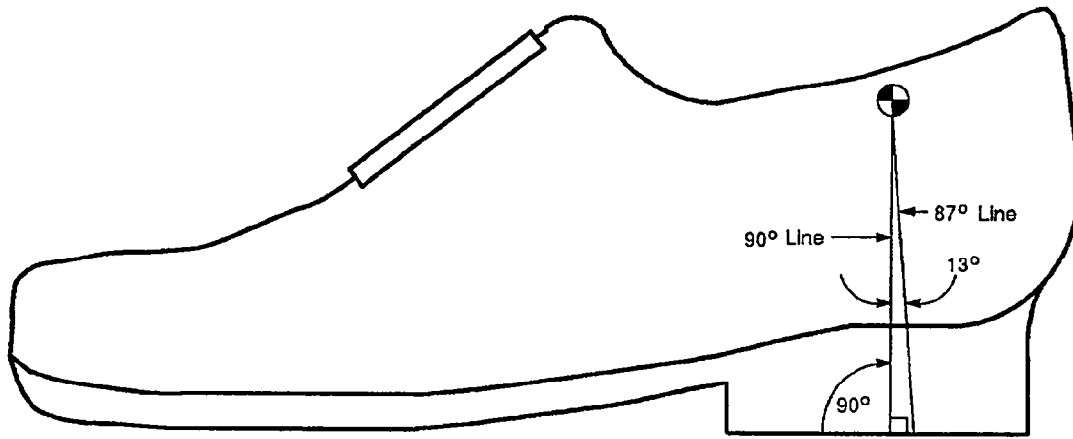


Figure C-1 TEMPLATE FOR SMALL FEMALE FOOT WITH SHOE