

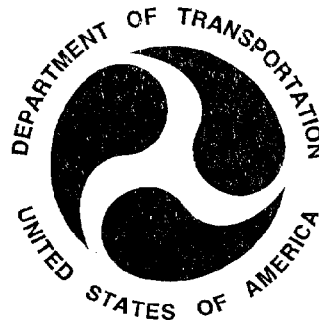
3248

NEW CAR ASSESSMENT PROGRAM (NCAP)

FRONTAL BARRIER IMPACT TEST

Ford Motor Company
2000 Ford Taurus 4 Door

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: December 21, 1999

Report Date: January 11, 2000

FINAL REPORT

Prepared For:

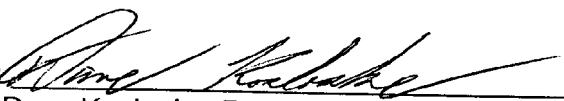
U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY PERFORMANCE STANDARDS
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE NPS-10
400 SEVENTH STREET, SW, ROOM 5313
WASHINGTON, D.C. 20590

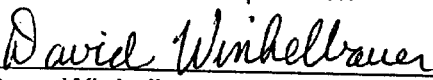
TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. MGA-00-N02	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle NHTSA New Car Assessment Program (NCAP) Testing of a 2000 Ford Taurus 4 Door		5. Report Date January 11, 2000	
		6. Performing Organization Code MGA	
7. Author(s) Dave Kosloske		8. Performing Organization Report No. MGA-DOT-NCAP-002	
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		10. Work Unit No.	
		11. Contract or Grant No. Optional NCAP	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (Mail Code: NPS-10) 400 Seventh St., S.W., Room 5313 Washington, D.C. 20590		13. Type of Report and Period Covered Final Report December 21, 1999 - January 17, 2000	
		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract A 56 kph (35 mph) frontal barrier impact using a rigid barrier was conducted on a 2000 Ford Taurus 4 Door in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure No. TP-NCAP090196 for the determination of vehicle crashworthiness on December 21, 1999. The barrier impact velocity was 56.6 kph (35.2 mph), and the ambient temperature at the time of impact was 22 °C. The post-test maximum static crush was 507 mm. The test vehicle appeared to comply with the requirements of the following Federal Motor Vehicle Safety Standards: 1. FMVSS 212, "Windshield Mounting" 2. FMVSS 219 (partial), "Windshield Zone Intrusion" 3. FMVSS 301, "Fuel System Integrity" With regard to "Occupant Crash Protection" injury criteria, the driver's HIC was 345 and the 3 msec. Clip (Chest g's) was 40.8 g's. The left and right femur loads for the driver were 1246 and 6026 Newtons, respectively. The passenger's HIC was 370 and the 3 msec Clip was 37.5 g's. The left and right femur maximum loads were 5499 and 2219 Newtons respectively.			
17. Key Words 35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP) FMVSS 212 Indicant Testing FMVSS 219 (partial) Indicant Testing FMVSS 301 Indicant Testing		18. Distribution Statement Copies of this report are available from: Technical Ref. Division, NHTSA, NASSIF Building, Room 5108 400 Seventh Street, S.W. Washington, D.C. 20590	
19. Security Classification (of this report) Unclassified	20. Security Classification (of this page) Unclassified	21. No. of Pages 291	22. Price

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration. This document is disseminated under the sponsorship of the U.S. Dept. of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

PREPARED BY: 
 Dave Kosloske, Project Engineer
 MGA Research Corporation

APPROVED BY: 
 Dave Winkelbauer, Facility Director
 MGA Research Corporation

APPROVAL DATE: 1/19/00

TEST TECHNICIANS:	Al Chalmers Wayne Dahlke Chris Novak Todd Stevenson John Wistert Eric Nelson
CALIBRATION/INSTRUMENTATION:	Tim Michnay Todd Stevenson
PHOTOGRAPHIC:	Chris Kulis Erika Miller
SECRETARY:	Donna Janovicz

FINAL REPORT ACCEPTED BY:

 Manager, New Car Assess. Program (NCAP)

 Date of Report Acceptance

Verbally Accepted by COTR
 Contracting Officer's Tech. Rep. (COTR)

March 28, 2000
 Date of Report Acceptance

TABLE OF CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
1	Purpose and Summary of NCAP Test	1-1
2	Occupant and Vehicle Information/Data Sheets	2-1
APPENDIX A	Photographs	
APPENDIX B	Vehicle and Dummy Response Data	
APPENDIX C	Dummy Configuration & Performance Verification Data	
APPENDIX D	Test Equipment and Instrumentation Calibration	
APPENDIX E	Vehicle Owner's Occupant Restraint System Instructions	

DATA SHEET LISTING

<u>DATA SHEET NO.</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
1	Crash Test Summary	2-1
2	General Test and Vehicle Parameter Data	2-2
3	Post Impact Data	2-5
4	Test Vehicle Information	2-6
5	Summary of FMVSS 212 Data	2-7
6	Windshield Zone Intrusion FMVSS 219 Data	2-8
7	FMVSS 301 Fuel System Integrity Data	2-9
8	FMVSS 301 Rollover Data	2-10
9	Dummy Injury Criteria Values	2-14
10	Dummy Positioning in Vehicle	2-17
11	Seat Belt Positioning Data	2-20
12	Seat Belt Performance Data	2-21
13	Camera Data	2-22
14	Vehicle Target Locations	2-24
15	Vehicle Accelerometer Location and Data Summary	2-25
16	Post Test Air Bag Data	2-26
17	Test Vehicle Measurements	2-27
18	Accident Investigation Division Data	2-34

SECTION 1

PURPOSE AND SUMMARY OF NCAP TEST

This 35 mph frontal barrier impact test was conducted as an optional NCAP test. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48 kph (30 mph) FMVSS 208/212/219/301-75 requirements.

The 56 kph (35 mph) frontal barrier impact test was conducted in accordance with the National Highway Traffic Safety Administration (NHTSA) Indicant Test Procedure for New Car Assessment Program (NCAP) dated January 1, 1990. Data for FMVSS No. 212, "Windshield Mounting", FMVSS No. 219 (Partial), "Windshield Zone Intrusion", FMVSS No. 301-75, "Fuel System Integrity," as well as occupant performance data are provided herein.

A flat concrete barrier covered with 3/4" plywood was impacted by a 2000 Ford Taurus 4 Door at a velocity of 56.6 kph (35.2 mph). The test was performed at the MGA Proving Grounds and Crash Test Center on December 21, 1999. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

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

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

Both ATDs were instrumented with head and chest primary and redundant triaxial accelerometers, pelvis triaxial accelerometers, a chest displacement transducer, a six axis neck load cell, right/left femur load cells, right/left lower leg sensors, and right/left foot accelerometers. Seat belt load cells were also on the driver and passenger shoulder and lap

belts to measure dummy torso and pelvic section loading. Calibrated ATDs, driver (Serial No. 066), and the right front passenger (Serial No. 065), were used for this test. Certification details, along with instrumentation calibration data, are found in Appendices C and D.

The 113 channels of data were recorded on 10 computers. Appendix B contains the vehicle and dummy response data traces.

The driver's head struck the inflated airbag. The driver HIC was 345 and the maximum chest (CLIP) deceleration over 3 milliseconds was 40.8 g's. The maximum chest compression was 26 mm. The left and right femur loads were 1246 and 6026 Newtons respectively.

The right front passenger's head struck the inflated airbag. The passenger HIC was 370 and maximum chest (CLIP) deceleration over 3 milliseconds was 37.5 g's. The maximum chest compression was 26 mm. The left and right femur loads were 5499 and 2219 Newtons respectively.

SECTION 2
OCCUPANT AND VEHICLE
INFORMATION/DATA SHEETS

DATA SHEET NO. 1
CRASH TEST SUMMARY

Vehicle Yr/Make/Model/Body Style: 2000/Ford/Taurus/4 Door
VIN.: 1FAFP55U4Y127327

Vehicle Test Weight: 1776.7 kgs.

Impact Velocity: 56.6 kph

Maximum Static Crush: 507 mm

Vehicle Rebound: 546 mm

DUMMIES:	DRIVER	PASSENGER
Serial Number:	<u>066</u>	<u>065</u>
Restraint System:	<u>Type II belt and frontal</u> <u>airbag</u>	<u>Type II belt and frontal</u> <u>airbag</u>
No. Data Channels:	<u>42</u>	<u>42</u>

Number of Cameras: 1 Real Time
16 High Speed

Door Opening Data: LF yes RF yes LR yes RR yes
(without use of tools)

FRONT SEAT(S) DATA	DRIVER	FRONT PASSENGER
Seat Shift:	<u>none</u>	<u>none</u>
Seat Back Movement:	<u>none</u>	<u>none</u>

VISIBLE DUMMY

CONTACT POINTS:	DRIVER	FRONT PASSENGER
Head	<u>airbag</u>	<u>airbag</u>
Chest	<u>airbag</u>	<u>airbag</u>
Left Knee	<u>dash panel</u>	<u>glovebox</u>
Right Knee	<u>dash panel and steering column</u>	<u>glovebox</u>

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

Vehicle Yr/Make/Model/Body Style: 2000/Ford/Taurus/4 Door

VIN.: 1FAFP55U4Y127327

Body color: red Date of Manufacture: 11/99

Engine: 6 Cylinders; C.I.D.; 3.0 Liters;
X Gas; Diesel; Turbocharged
 Longitudinal; X Transverse

Transmission: 4 Speed; Manual; X Automatic; X Overdrive

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

Odometer Reading: 47 miles

Major Option:

 X A/C; X P/S; X P/B; X P/wdo;
 X P/locks; X Tilt Wheel; X Cruise Control; ABS
Other: _____

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 207 kPa (30 psi) Rear 207 kPa (30 psi)

Recommended Tire Size: P215/60TR16

Recommended Cold Tire Pressure: Front 207 kPa (30 psi) Rear 207 kPa (30 psi)

Tires on Vehicle: P215/60R16 Manufacturer: Firestone

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

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

Type of Front Seat Back: ☐ Fixed; ☒ Adj. With; ☒ Power; ☐ Lever

Vehicle Capacity Weight (VCW) = 498.9 kg. (A)

$$\text{No. of Occupants} \times 68.0 \text{ kg.} = \underline{408.0} \text{ kg. (B)}$$

Rated Cargo Weight (RCW) A-B = 90.9 kg.

GVWR 2120.5 kg. GAWR: Front 1163.0 kg.; Rear 968.9 kg.

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

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

Right Front =	<u>494.9</u>	kg	Right Rear =	<u>272.6</u>	kg
Left Front =	<u>488.5</u>	kg	Left Rear =	<u>283.0</u>	kg
TOTAL FRONT =	<u>983.4</u>	kg	TOTAL REAR =	<u>555.6</u>	kg
% of Total Weight =	<u>63.9</u>	%	% of Total Weight =	<u>36.1</u>	%
TOTAL UNLOADED DELIVERED WEIGHT (UDW) =				<u>1539.0</u>	kg

CALCULATION FOR TARGET TEST WEIGHT:

UDW = Unloaded Delivered Weight 1539.0 kg
 VCW = Vehicle Capacity Weight 498.9 kg
 DSC = Designated Seating Capacity 6
 RCW = VCW - 68 (DSC) = 90.9 kg*
 Target Test Weight = UDW + RCW + (2 dummies x 78.0 kg/dummy)
 Target Test Weight = 1785.9 kg

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND CARGO:

Right Front =	<u>540.7</u>	kg	Right Rear =	<u>351.5</u>	kg
Left Front =	<u>525.7</u>	kg	Left Rear =	<u>358.8</u>	kg
TOTAL FRONT =	<u>1066.4</u>	kg	TOTAL REAR =	<u>710.3</u>	kg
% of Total Weight =	<u>60.0</u>	%	% of Total Weight =	<u>40.0</u>	%
TOTAL WEIGHT =				<u>1776.7</u>	kg
Weight of ballast secured in vehicle trunk area = <u>36.7</u> kg					
Vehicle components removed to meet target weight: <u>spare tire, jack, rear seat, rear carpet, speakers, trunk interior, and right taillight</u>					

VEHICLE ATTITUDE (all dimensions in mm):

Delivered Attitude:	RF <u>713</u>	LF <u>713</u>	RR <u>692</u>	LR <u>691</u>
Test Attitude:	RF <u>705</u>	LF <u>706</u>	RR <u>664</u>	LR <u>661</u>
Post Test	RF <u>735</u>	LF <u>755</u>	RR <u>648</u>	LR <u>656</u>

Wheel Base: 2755 mm; C.G. = 1101 mm rearward of front wheel C/L

Remarks: none

* light trucks and MPVs RCW is 136 kgs or manufacturer's value, whichever is less

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

FUEL SYSTEM DATA:Fuel System Capacity From Owner's Manual = 60.6 litersUsable Capacity Figure Furnished by COTR = 60.6 litersTest Volume Range (92 to 94% of Usable Capacity) = 55.7 to 56.9 litersACTUAL TEST VOLUME = 56.1 litersTest Fluid Type: Stoddard Solvent; Spec. Grav. = 0.77Kinematic Viscosity = 1.788 centistrokes; Color = PurpleType of Fuel Pump; Electric X; Mechanical

Does Electric Pump operate with ignition switch "ON" & engine "Off"?

Yes X No

DATA SHEET NO. 3
POST-IMPACT DATA

Vehicle Yr/Make/Model/Body Style: 2000/Ford/Taurus/4 Door
VIN.: 1FAFP55U4Y127327

Type of Test: 35 mph Frontal Impact Impact Angle: 0°
Date of Test: December 21, 1999 Time of Test: 4:19 p.m.

Ambient Temperature: 22 °C (72°F) (Spec. Range = 18.8 to 25.6°C)

Temperature in Occupant Compartment: 22 °C (72°F)

Windshield Molding Temperature: 22 °C (72°F)

Required Impact Velocity Range: 55.5 to 57.1 kph

Impact Velocity: primary = 56.6 kph; secondary = 56.9 kph

Distance From Front Bumper to Barrier Face When

Entering Speed Trap: 1300 mm

Exiting Speed Trap: 300 mm

VEHICLE REBOUND AND CRUSH (mm):

Vehicle Length:	Pre-test	= Right	<u>4751</u>	C/L	<u>4970</u>	Left	<u>4750</u>
	Post-test	= Right	<u>4471</u>	C/L	<u>4473</u>	Left	<u>4388</u>
	Crush	= Right	<u>280</u>	C/L	<u>497</u>	Left	<u>362</u>

Distance from front of test vehicle to point of impact (rebound):

Right 517 mm C/L 536 mm Left 585 mm

Average = 546 mm

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

	<u>Front</u>		<u>Rear</u>	
<u>Post-Test Door Opening</u>	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
(without use of tools)	<u>yes</u>	<u>yes</u>	<u>yes</u>	<u>yes</u>

	<u>Front</u>		<u>Rear</u>	
<u>Seat Movement</u>	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Seat Back Movement	<u>none</u>	<u>none</u>	<u>N/A</u>	<u>N/A</u>
Seat Shift (mm)	<u>none</u>	<u>none</u>	<u>N/A</u>	<u>N/A</u>

Glazing Damage

Backlight/Windshield windshield cracked

Other Notable Impact Effects: none noted

DATA SHEET 5

FMVSS NO. 212, "WINDSHIELD MOUNTING", DATA SHEET

Details of windshield mounting such as retention method, trim type, etc.:

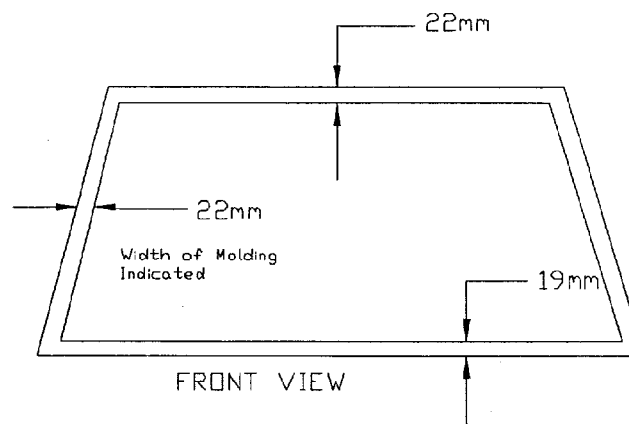
Windshield set in rubber molding with glue

FMVSS 212 Requirements: The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of windshield for vehicles equipped with automatic restraint systems for front occupants.

FMVSS 212 TEST DATA:

	WINDSHIELD PERIPHERY		PERCENT RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	2209	2209	100%
LEFT SIDE	2187	2187	100%
TOTAL	4396	4396	100%

AREA OF RETENTION FAILURE: None



FAILURE DETAILS: None

DATA SHEET 6

FMVSS NO. 219, "WINDSHIELD ZONE INTRUSION", DATA SHEET

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 6.5" dia. rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the surface of the instrument panel, including padding, and drawing the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contact points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and $\frac{1}{2}$ " distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection onto the outer surface of the windshield of this line.

FMVSS 219 TEST DATA:

A= 1078 mm

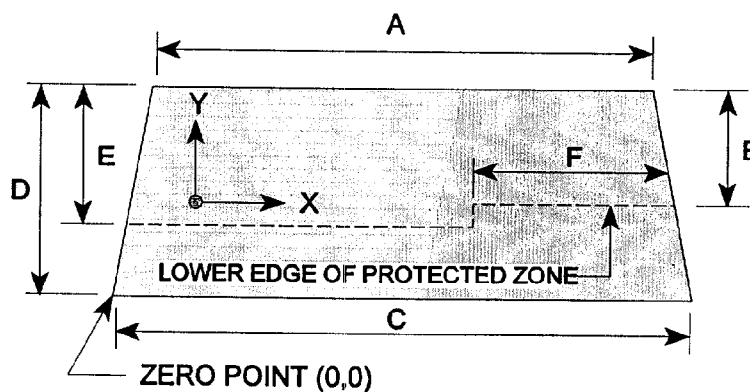
B= 442 mm

C= 1632 mm

D= 860 mm

E= 485 mm

F= 732 mm

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 1/4":

(Show location of penetration)

None

SOLVENT SPILLAGE DETAILS: None

Diagram illustrating the rear view of the unit, showing a 90° angle and a FILLER CAP.

Rollover Fixture 90° Rotation Time	<u>2</u> minutes <u>54</u> seconds
(Spec. Range = 1 to 3 minutes)	
FMVSS 301 Position Hold Time +	<u>5</u> minutes <u>0</u> seconds
TOTAL	<u>7</u> minutes <u>54</u> seconds
Next whole minute interval	<u>8</u> minutes

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

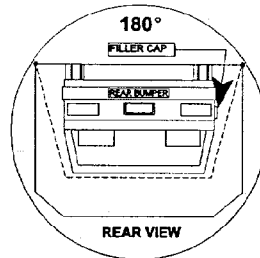
5 ounces	1 ounce	1 ounce	1 ounce
----------	---------	---------	---------

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

IV. SOLVENT SPILLAGE LOCATIONS(S): None

DATA SHEET 8
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (Cont'd)

TEST PHASE: 90° - 180°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 25 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 25 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:

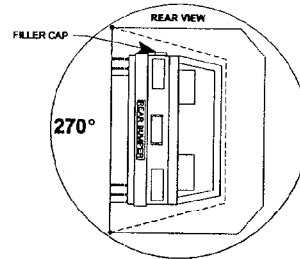
0	0	0	0
---	---	---	---

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

IV. SOLVENT SPILLAGE LOCATIONS(S): None

DATA SHEET 8

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (Cont'd)

TEST PHASE: 180° - 270°I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 23 seconds
 (Spec. Range = 1 to 3 minutes)
 FMVSS 301 Position Hold Time + 5 minutes 0 seconds
 TOTAL 7 minutes 23 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:

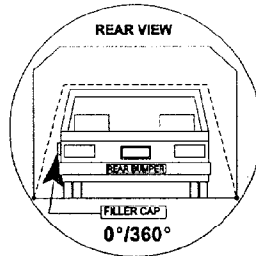
0	0	0	0
---	---	---	---

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

IV. SOLVENT SPILLAGE LOCATIONS(S): None

DATA SHEET 8
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (Cont'd)

TEST PHASE: 270° - 360°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 48 seconds
(Spec. Range = 1 to 3 minutes)
FMVSS 301 Position Hold Time + 5 minutes 0 seconds
TOTAL 7 minutes 48 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 LOCATIONS(S): None

DATA SHEET 9

DUMMY INJURY CRITERIA VALUES DATA SHEET

Vehicle Year/Make/Model/Body Style: 2000/Ford/Taurus/4 DoorTest Date: December 21, 1999

DESCRIPTION	UNIT	MAXIMUM VALUE			
		pos.	msec.	neg.	msec.
Pos. 1 Head X	G	2.0	195	-43.8	77
Pos. 1 Head Y	G	4.2	135	-7.4	94
Pos. 1 Head Z	G	25.6	66	-3.7	93
Pos. 1 Head Resultant	G	46.2	75	---	---
Pos. 2 Head X	G	1.0	29	-59.4	108
Pos. 2 Head Y	G	7.2	56	-3.1	61
Pos. 2 Head Z	G	20.8	76	-11.3	108
Pos. 2 Head Resultant	G	60.5	108	---	---
Pos. 1 Chest X	G	3.3	189	-40.2	67
Pos. 1 Chest Y	G	2.3	105	-4.8	57
Pos. 1 Chest Z	G	10.7	53	-10.7	90
Pos. 1 Chest Resultant	G	41.2	67	--	--
Pos. 1 Chest Displacement	mm	--	--	-26	94
Pos. 2 Chest X	G	2.2	166	-38.2	84
Pos. 2 Chest Y	G	9.9	78	-0.9	115
Pos. 2 Chest Z	G	11.0	77	-8.7	107
Pos. 2 Chest Resultant	G	38.6	84	--	--
Pos. 2 Chest Displacement	mm	--	--	-26	95
Pos. 1 Left Femur	N	199	82	-1246	52
Pos. 1 Right Femur	N	568	41	-6026	62
Pos. 2 Left Femur	N	454	114	-5499	54
Pos. 2 Right Femur	N	481	44	-2219	59

DATA SHEET 9
DUMMY INJURY CRITERIA VALUES DATA SHEET (Cont'd)

DESCRIPTION	UNIT	MAXIMUM VALUE			
		pos.	msec.	neg.	msec.
Pos. 1 Lap Belt Load	N	6939	64	--	--
Pos. 1 Torso Belt Load	N	4725	75	--	--
Pos. 2 Lap Belt Load	N	4724	57	--	--
Pos. 2 Torso Belt Load	N	4969	56	--	--
Pos. 1 Upper Neck Fx	N	632	68	-409	146
Pos. 1 Upper Neck Fy	N	294	77	-123	45
Pos. 1 Upper Neck Fz	N	1451	66	-298	136
Pos. 1 Neck Force Resultant	N	1567	66	--	--
Pos. 1 Upper Neck Mx	N•m	6.8	137	-13.0	88
Pos. 1 Upper Neck My	N•m	64.8	66	-16.7	45
Pos. 1 Upper Neck Mz	N•m	2.2	187	-8.3	74
Pos. 1 Neck Moment Result	N•m	65.5	66	--	--
Pos. 2 Upper Neck Fx	N	371	86	-291	166
Pos. 2 Upper Neck Fy	N	294	70	-99	190
Pos. 2 Upper Neck Fz	N	1199	58	-237	113
Pos. 2 Neck Force Result	N	1216	60	--	--
Pos. 2 Upper Neck Mx	N•m	14.7	107	-12.6	67
Pos. 2 Upper Neck My	N•m	21.3	168	-16.4	58
Pos. 2 Upper Neck Mz	N•m	7.8	105	-6.8	146
Pos. 2 Neck Moment Result	N•m	21.5	168	--	--
Pos. 1 Pelvic (X)	G	3.0	123	-89.6	62
Pos. 1 Pelvic (Y)	G	8.5	90	-31.1	62
Pos. 1 Pelvic (Z)	G	3.9	196	-30.9	81
Pos. 1 Pelvic Resultant	G	95.8	62	--	--

DATA SHEET 9

DUMMY INJURY CRITERIA VALUES DATA SHEET (Cont'd)

DESCRIPTION	UNIT	MAXIMUM VALUE			
		pos.	msec.	neg.	msec.
Pos. 2 Pelvic (X)	G	4.9	127	-67.4	53
Pos. 2 Pelvic (Y)	G	12.0	53	-4.5	71
Pos. 2 Pelvic (Z)	G	1.8	190	-18.3	82
Pos. 2 Pelvic Resultant	G	69.2	53	--	--
Pos. 1 Left Upper Tibia Mx	N•m	35.9	65	-13.8	121
Pos. 1 Left Upper Tibia My	N•m	21.2	129	-108.5	52
Pos. 1 Left Upper Tibia Fz	N	1050	86	-169	148
Pos. 1 Left Lower Tibia Mx	N•m	12.1	53	-44.3	58
Pos. 1 Left Lower Tibia My	N•m	56.2	87	-41.3	52
Pos. 1 Left Lower Tibia Fz	N	1336	52	-172	130
Pos. 1 Right Upper Tibia Mx	N•m	72.6	51	-70.1	63
Pos. 1 Right Upper Tibia My	N•m	10.5	158	-283.5	52
Pos. 1 Right Upper Tibia Fz	N	6242	51	-284	124
Pos. 1 Right Lower Tibia Mx	N•m	39.3	52	-69.8	56
Pos. 1 Right Lower Tibia My*	N•m	62.8	50	-169.0	71
Pos. 1 Right Lower Tibia Fz	N	8536	50	-458	142
Pos. 2 Left Upper Tibia Mx	N•m	35.8	54	-53.7	82
Pos. 2 Left Upper Tibia My	N•m	80.8	61	-105.3	41
Pos. 2 Left Lower Tibia Fz	N	3988	43	-391	85
Pos. 2 Left Lower Tibia Mx	N•m	46.1	54	-22.2	82
Pos. 2 Left Lower Tibia My	N•m	87.1	50	-30.2	83
Pos. 2 Left Lower Tibia Fz	N	4256	43	-471	84
Pos. 2 Right Upper Tibia Mx	N•m	40.8	57	-34.6	89
Pos. 2 Right Upper Tibia My	N•m	23.6	150	-95.0	44
Pos. 2 Right Upper Tibia Fz	N	2109	62	-182	148
Pos. 2 Right Lower Tibia Mx	N•m	31.0	56	-7.1	105
Pos. 2 Right Lower Tibia My	N•m	63.9	79	-35.7	44
Pos. 2 Right Lower Tibia Fz	N	2314	40	-138	156

* Data Spikes at 34 and 142 msec.

DATA SHEET 10 DUMMY POSITIONING IN VEHICLE

Vehicle: 2000/Ford/Taurus/4 Door

SEAT TYPE:

☐ Bench
☒ Bucket
☐ Split Bench

ADJUSTER TYPE:

Driver: ☐ Manual
☒ Power

Passenger: ☒ Manual
☐ Power

BUCKET SEAT BACK TYPE:

☐ Fixed
☒ Adjustable Reclining

☐ Fixed
☒ Adjustable Reclining

DRIVER SEAT POSITION

126mm of 252mm total travel

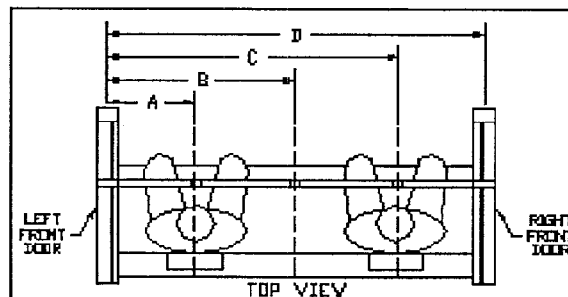
Seat back angle 27.3° (ref. sill)*

PASSENGER SEAT POSITION

7th detent of 13 detents

Seat back angle 27.5° (ref. sill)*

Steering column set to mid position; third of five total (18.5°).



066 DUMMY ID 065

A = Left Door to Driver Centerline 424 mm

B = Left Door to Center Passenger Centerline 807 mm

C = Left Door to Right Passenger Centerline 1186 mm

D = Left Door to Right Door 1614 mm

DATA SHEET 10
DUMMY POSITIONING IN VEHICLE (Cont'd)

Units (mm)

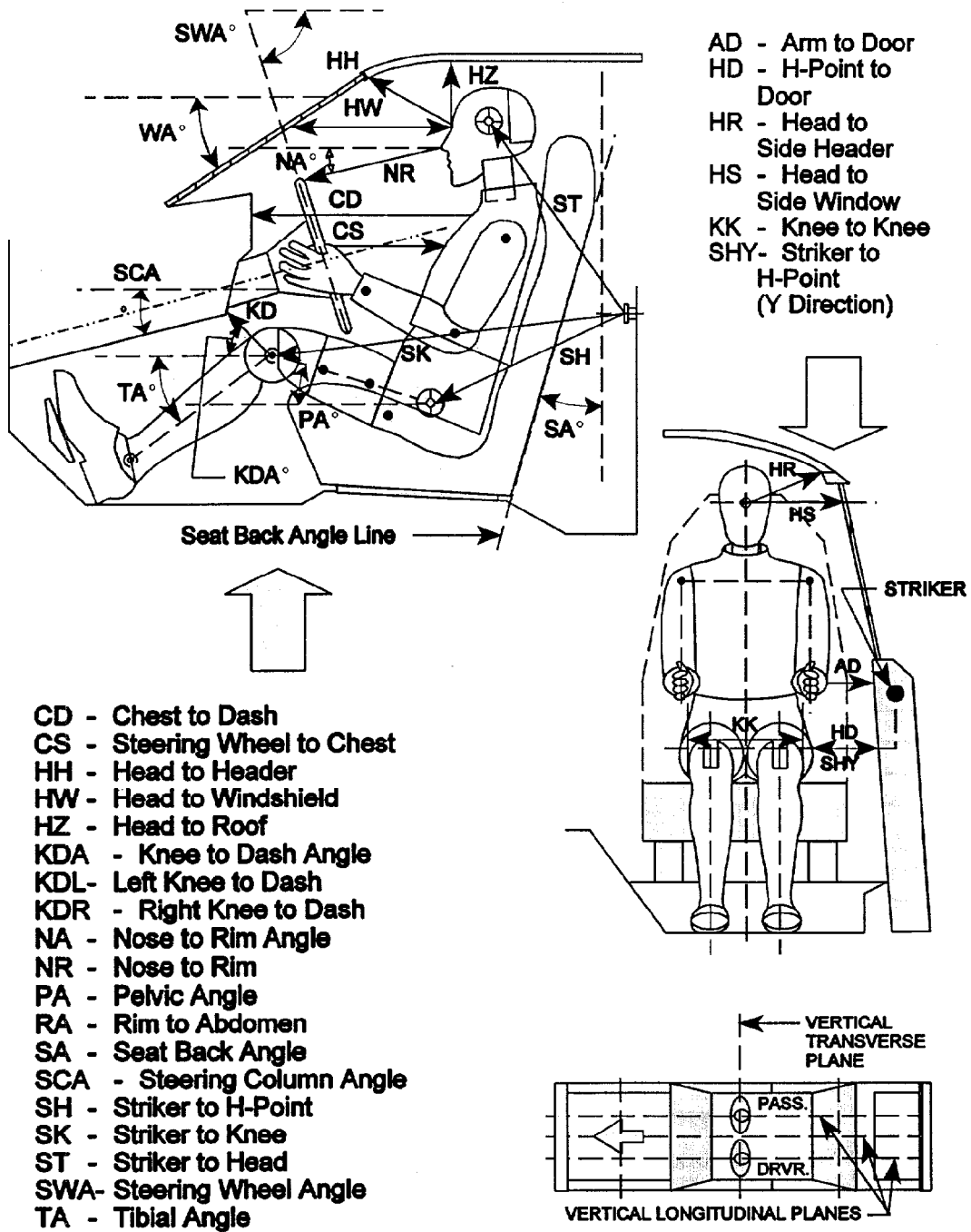
	DRIVER (Serial #066)	PASSENGER (Serial #065)
WA°	26.1°	
SWA°	71.9°	N/A
SCA°	18.5°	N/A
SA°	27.3°	27.5°
HZ	153	133
HH	312	300
HW	590	560
HR	195	195
NR	370 Angle 12.0 °	N/A
CD	524	507
CS	298	N/A
RA	207	N/A
KDL	168 Angle (KDA) 25.6°	135
KDR	165	143 Angle 27.3°
PA°	23.9°	22.0°
TA°	45.2°	44.8°
KK	279	260
ST*	515 Angle 7.2°	542 Angle 10.8°
SK*	568 Angle 90.4°	608 Angle 88.8°
SH*	203 Angle 124.7°	221 Angle 106.2°
SHY	266	268
HS	310	314
HD	144	143
AD	94	113

N/A = Not Applicable

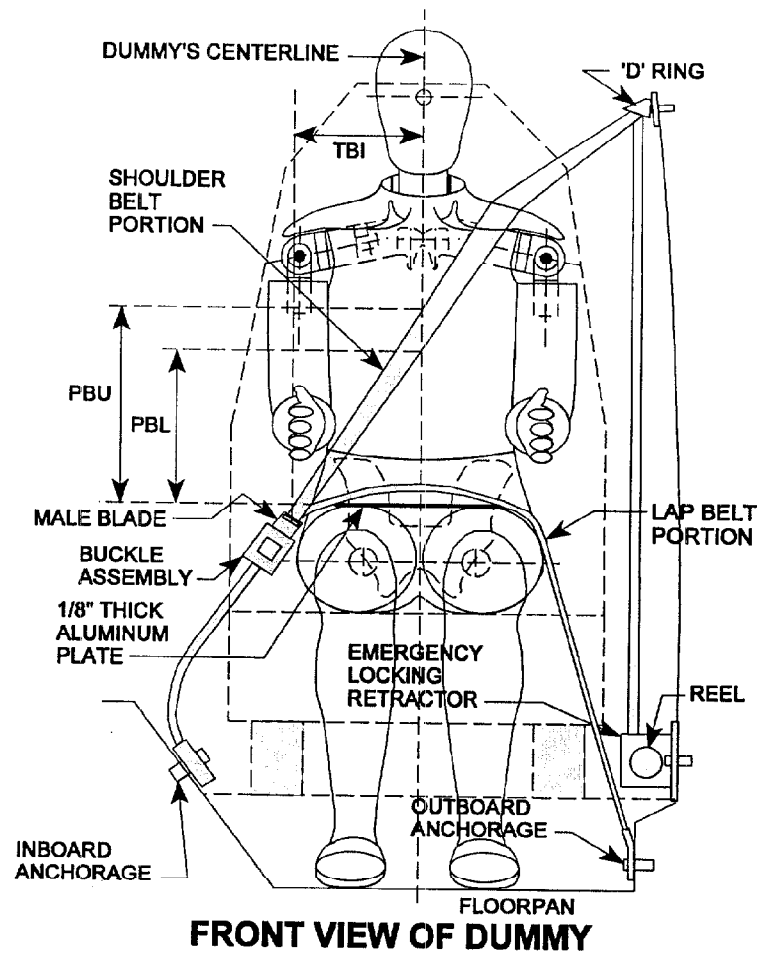
* angle measured with respect to vertical

** measured on headrest posts

FRONT SEAT MEASUREMENTS



DATA SHEET 11
SEAT BELT POSITIONING DATA



(illustration)

Dimension = mm		
	DRIVER DUMMY	PASSENGER DUMMY
PBU -- Top surface of alum. plate to upper edge	345	335
PBL -- Top surface of alum. plate to belt lower edge	270	253

DATA SHEET 12
SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

	<u>Driver</u>	<u>Passenger</u>
Length from trim above retractor reel to "D" ring as measured on dummy.	<u>140 mm</u>	<u>148 mm</u>
Shoulder belt length as measured on Part 572 Dummy.	<u>856 mm</u>	<u>852 mm</u>
Lap belt length as measured on Part 572 Dummy.	<u>710 mm</u>	<u>734 mm</u>

SHOULDER BELT SPOOL-OFF DATA:

As determined by film analysis	<u>138 mm</u>	<u>161 mm</u>
As determined mechanically at Retractor	<u>142 mm</u>	<u>196 mm</u>
As determined mechanically at D-Ring	<u>158 mm</u>	<u>206 mm</u>

BELT STRETCH DATA:

Measured electronically between shoulder belt load cell and the "D" ring.	<u>Not Recorded</u>	<u>Not Recorded</u>
Measured mechanically	<u>Not Recorded</u>	<u>Not Recorded</u>

RETRACTOR LOCK-UP TIME:

As determined by shoulder belt spool-off observed in on-board cameras	<u>84 msec.</u>	<u>88 msec.</u>
---	-----------------	-----------------

DATA SHEET 13
CAMERA LOCATIONS

Test Date: December 21, 1999

Vehicle Year/Make/Model/Body Style: 2000/Ford/Taurus/4 Door

CAMERA POSITION NO.	VIEW	CAMERA POSITIONS (mm.)*			ANGLE (deg)	LENS (mm)	SPEED (fps)
		X	Y	Z			
1	Real-Time Left Side View	-	-	-	-	18	32
2	Left Front View	890	-8190	1540	90	25	1015
3	Steering Column Top	2130	-7780	1550	90	25	**
4	Steering Column Bottom	2130	-7780	1020	90	25	1010
5	Driver Close-up	1340	-10090	1420	90	75	1010
6	Driver Angle	4840	-5150	2040		50	913
7	Onboard Driver					35	1000
8	Onboard Passenger					35	995
9	Right Overall	2150	7650	1310	90	13	1212
10	Right Passenger Half	1050	7920	1280	90	25	995
11	Right Close-up	1370	10280	1280	90	75	1227
12	Right Angle	4790	5600	2070		50	758
13	Windshield	-330	0	2470		13	1064
14	Top Driver	100	-450	1600		13	1000
15	Top Passenger	100	490	1600		13	897
16	Pit Front	1010	0	-3240		13	1000
17	Pit Rear	3000	0	-3240		13	990

* COORDINATES:

+X = film plane rearward of barrier

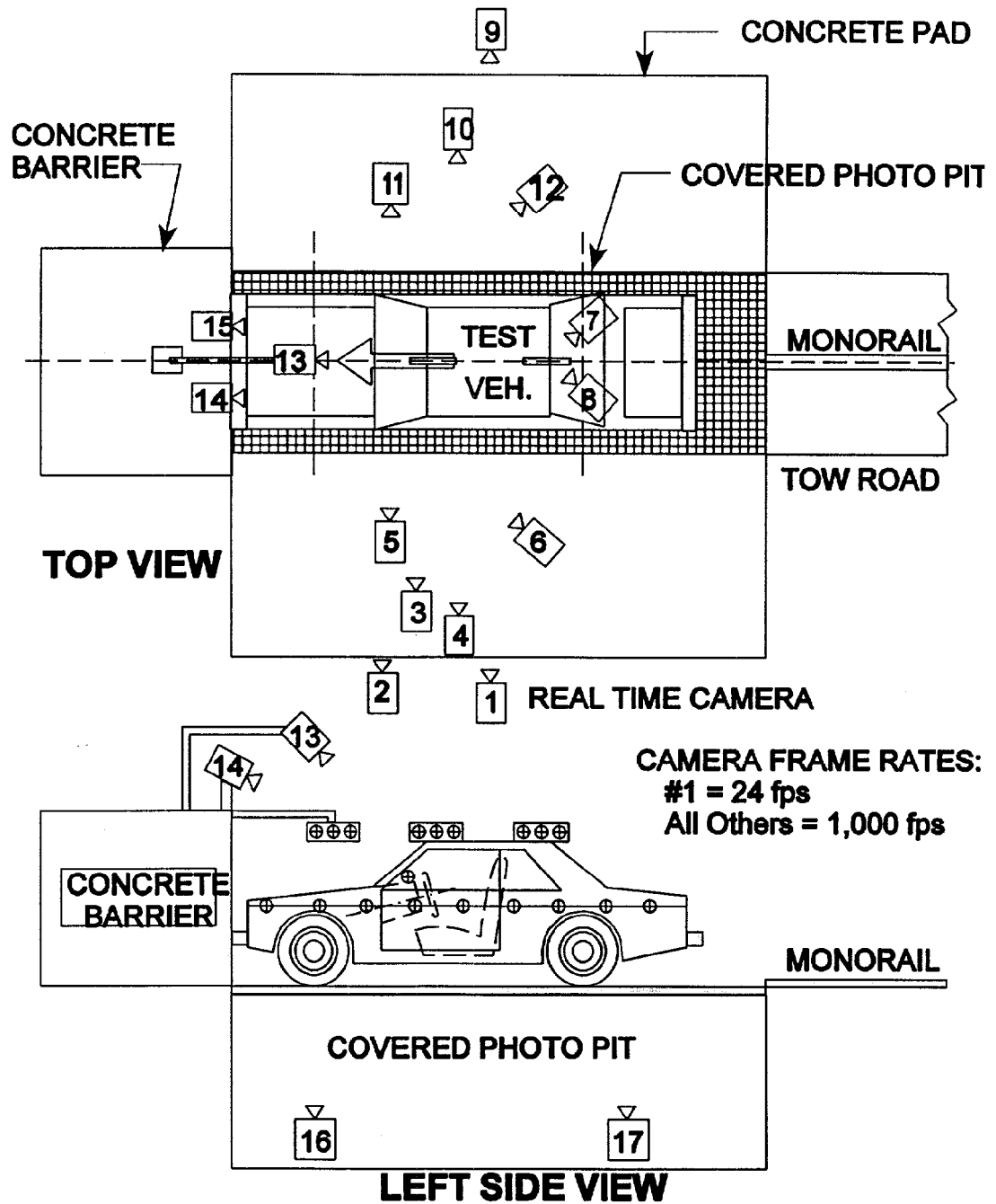
+Y = film plane to right of monorail centerline

+Z = film plane to above ground level

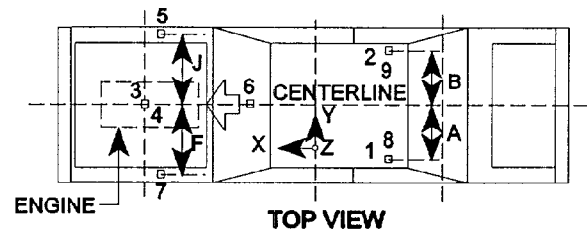
ORIGIN: For X and Y it is the Impact Point. For Z it is the Floor.

** Timing marks not visible.

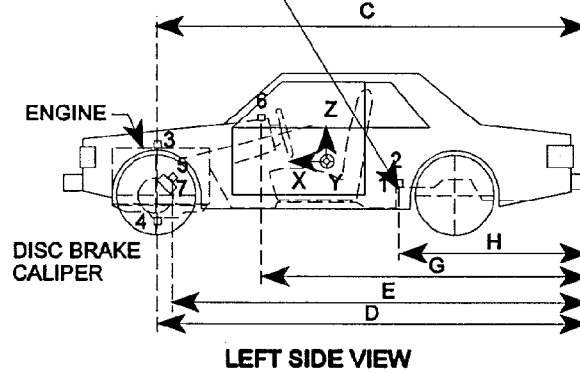
CAMERA LOCATIONS (Cont'd)

CAMERA POSITIONS FOR FRONTAL IMPACTS

DATA SHEET 15
VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



Units: (mm)

Dimension	Length	Accel. No.	Accelerometer	Direction
A	398	1 and 8	Left Rear Seat Crossmember	X
B	398	2 and 9	Right Rear Seat Crossmember	X
C	4140	3	Top of Engine	X
D	4108	4	Bottom of Engine	X
E	4040	5	Right Side Brake Caliper	X
F	692	6	Instrument Panel	X
G	3265	7	Left Side Brake Caliper	X
H	1942			
J	692			

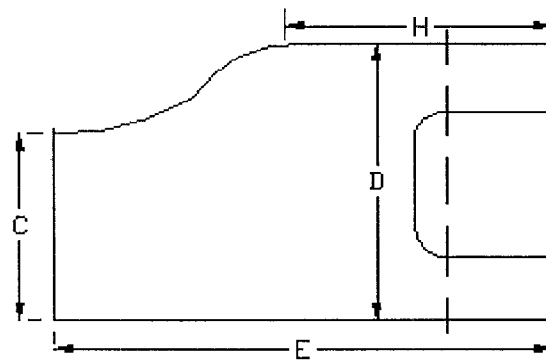
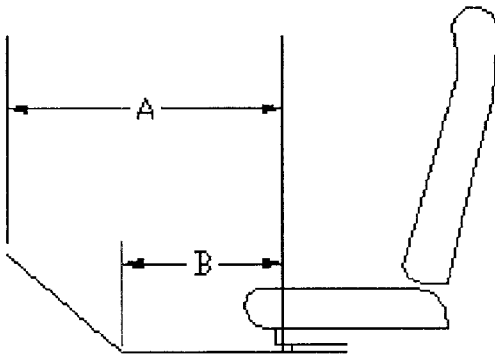
DATA SHEET 16
POST TEST AIRBAG DATA

- A. Number of Vent Holes: Driver 2; Passenger 2
- B. Size of Vent Holes: Driver 27 mm dia; Passenger 54 mm dia
- C. Total Vent Area; Driver 11.45 cm² Passenger 45.80 cm²
- D. Deflated Airbag Length and Width Dimensions or, if Round, Diameter
Driver; Length____mm, Width____mm, Diameter 560 mm
Passenger; Length 470 mm, Width 600 mm, Diameter ____ mm
- E. Is the Airbag Tethered?
Driver; X Yes; ____ No; If yes, record length of tether 220 mm
Passenger; ____ Yes; X No, If yes, record length of tether____mm

DATA SHEET 17
TEST VEHICLE MEASUREMENTS

STATIC FOOTWELL DEFORMATION

Driver's Side



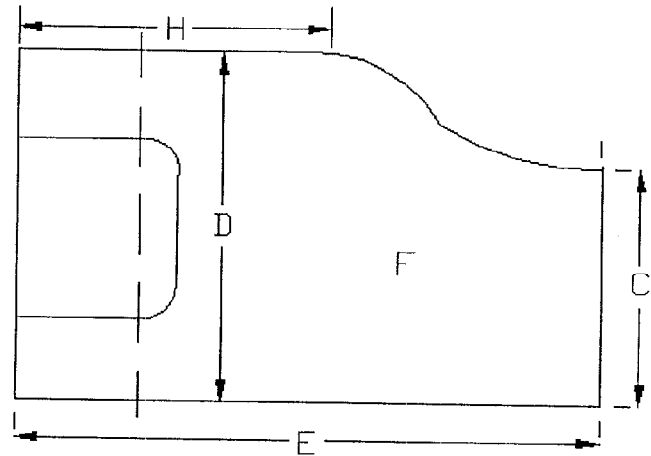
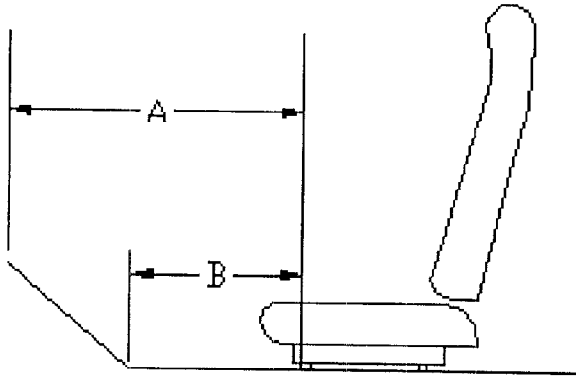
Units = mm

MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
A	2192	2045	147
B	1976	1938	38
C	433	420	13
D	490	486	4
E	1953	1898	55
H	1918	1870	48

DATA SHEET 17
TEST VEHICLE MEASUREMENTS (Cont'd)

STATIC FOOTWELL DEFORMATION

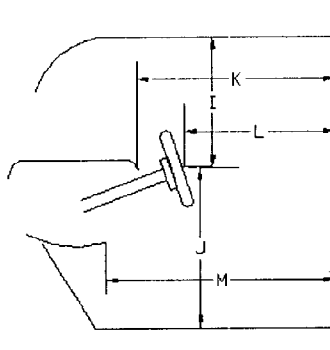
Passenger's Side



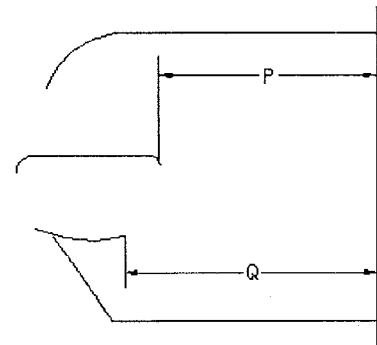
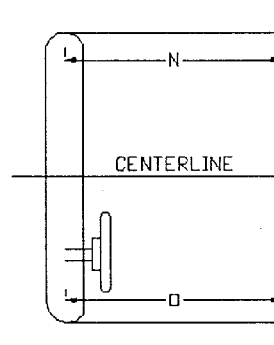
Units = mm

MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
A	702	535	167
B	475	393	82
C	420	395	25
D	405	400	5
E	2000	1850	150
H	2000	1932	68

DATA SHEET 17
 TEST VEHICLE MEASUREMENTS (Cont'd)
 STATIC PASSENGER COMPARTMENT INTRUSION



MEASUREMENTS
 FROM C-PILLAR
 BELT ANCHORAGE



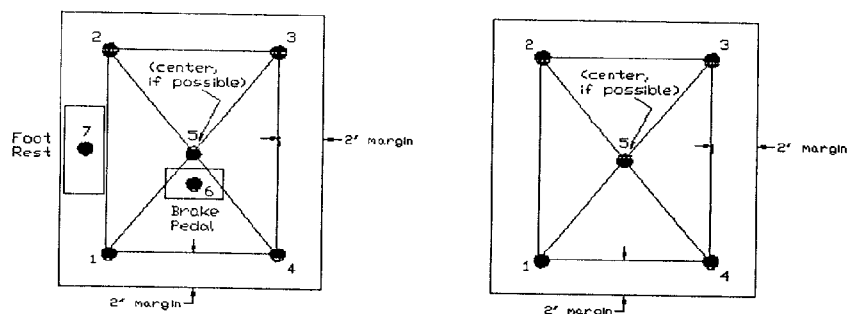
Units = mm

MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
I	410	405	5
J	604	695	-91
K	1746	1670	76
L	1532	1515	17
M	1896	1885	11
N	2260	2124	136
O	2131	2110	21
P	1705	1625	80
Q	1915	1800	115

DATA SHEET 17

TEST VEHICLE MEASUREMENTS (Cont'd)

TOE PAN MEASUREMENTS



DRIVER

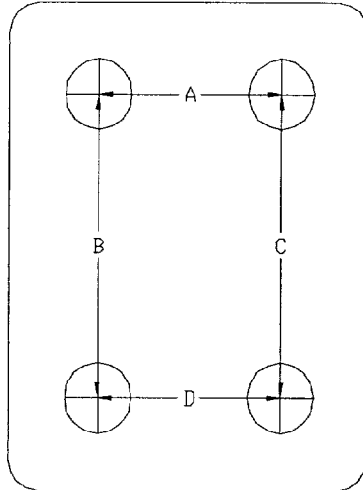
PASSENGER

Driver						
Location	X			Z		
	Pre-Test	Post-Test	Def.	Pre-Test	Post-Test	Def.
1	544	512	32	-15	-5	-10
2	718	605	113	175	190	-15
3	708	558	150	157	178	-21
4	482	428	54	-38	-52	14
5	643	495	148	68	98	-30
6	530	380	150	134	175	-41
7	531	473	58	90	94	-4
Passenger						
Location	X			Z		
	Pre-Test	Post-Test	Def.	Pre-Test	Post-Test	Def.
1	480	330	150	-95	-65	-30
2	658	500	158	12	65	-53
3	665	504	161	8	82	74
4	480	412	68	-112	-98	-14
5	572	447	125	-50	-25	-25

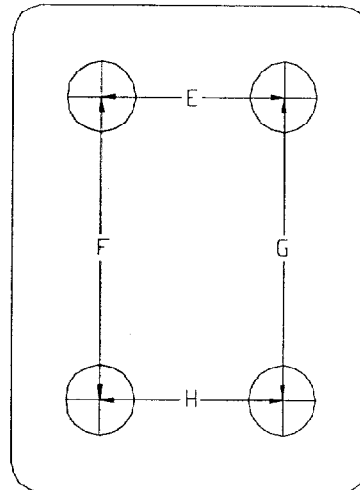
DATA SHEET 17
TEST VEHICLE MEASUREMENTS (Cont'd)

UNDERBODY FLOORBOARD DEFORMATION

DRIVER'S SIDE



PASSENGER'S SIDE

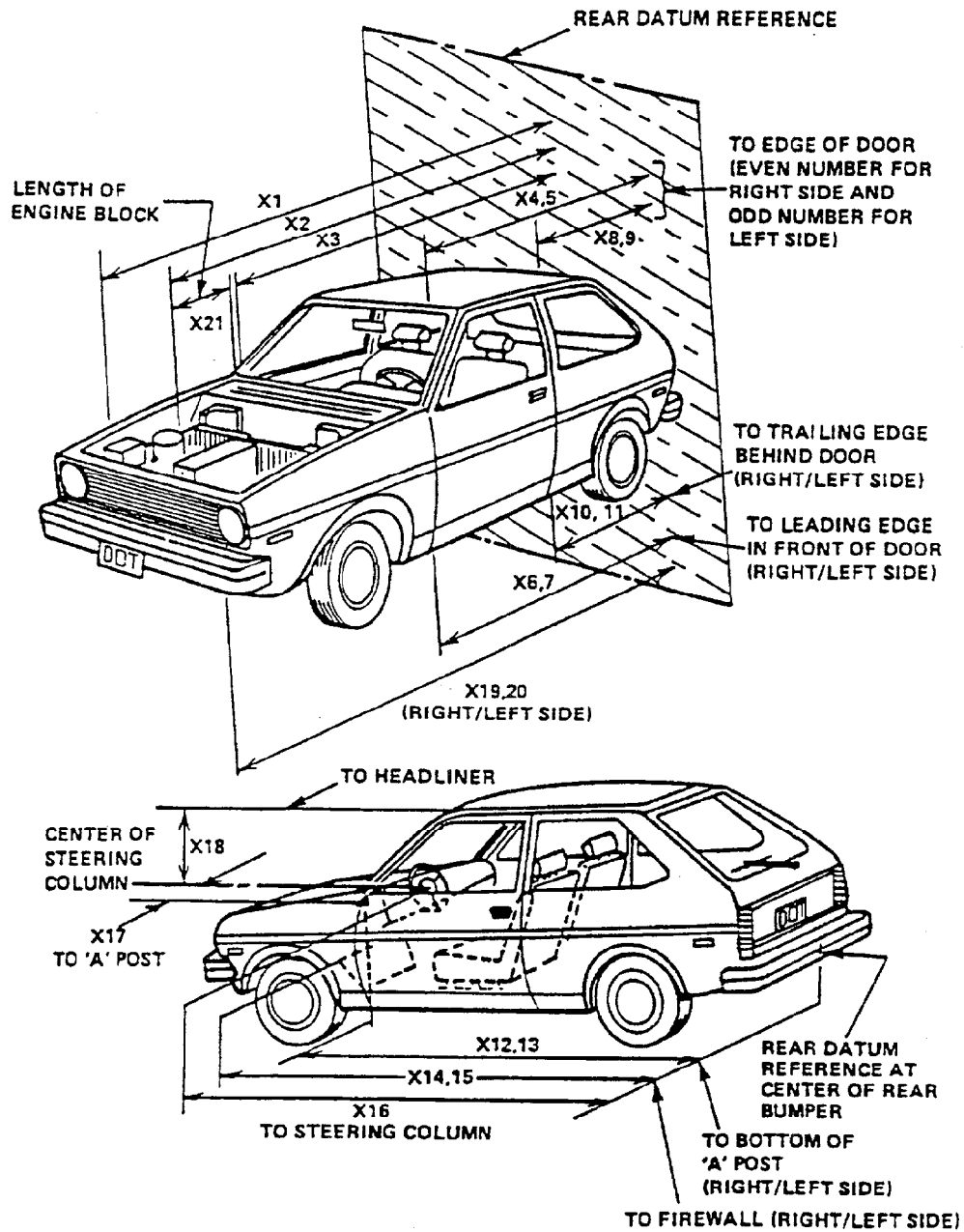


MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
A	291	294	-3
B	497	465	32
C	476	403	73
D	292	295	-3
E	325	325	0
F	484	396	88
G	497	437	60
H	290	294	-4

DATA SHEET 17
TEST VEHICLE MEASUREMENTS (Cont'd)

No.	MEASUREMENT DESCRIPTION:	Pre-Test (mm)	Post-Test (mm)	Diff. (mm)
X1	Total Length of Test Vehicle at Centerline	4970	4473	497
X2	Rear Surface of Vehicle to Front of Engine	4130	3916	214
X3	Rear Surface of Vehicle to Firewall	3874	3558	316
X4	Rear Surface to Upr. Leading Edge of Rt. Door	3405	3384	21
X5	Rear Surface to Upr. Leading Edge of Left Door	3391	3372	19
X6	Rear Surface to Lwr. Leading Edge of Rt. Door	3360	3352	8
X7	Rear Surface to Lwr. Leading Edge of Left Door	3355	3349	6
X8	Rear Surface to Upr. Trailing Edge of Rt. Door	2325	2305	20
X9	Rear Surface to Upr. Trailing Edge of Left Door	2318	2304	14
X10	Rear Surface to Lwr. Trailing Edge of Rt. Door	2293	2280	13
X11	Rear Surface to Lwr. Trailing Edge of Left Door	2286	2282	4
X12	Rear Surface to Bottom of A-Post on Rt. Side	3360	3352	8
X13	Rear Surface to Bottom of A-Post on Left Side	3358	3353	5
X14	Rear Surface to Firewall on Right Side	3758	3614	144
X15	Rear Surface to Firewall on Left Side	3739	3667	72
X16	Rear Surface to Steering Column	2923	2913	10
X17	Center of Steering Column to A-Post	316	326	-10
X18	Center of Steering Column to Headlining	380	411	-31
X19	Rear Surface to Right Side of Front Bumper	4751	4471	280
X20	Rear Surface to Left Side of Front Bumper	4750	4388	362
X21	Length of Engine Block	410	410	0

DATA SHEET 17
TEST VEHICLE MEASUREMENTS (Cont'd)



DATA SHEET 18
ACCIDENT INVESTIGATION DIVISION DATA
FOR 35 MPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: 2000/Ford/Taurus/4 Door

VIN: 1FAFP55U4Y127327

Model Year: 2000 ; Build Date: 11/99 ; Test Date: December 21, 1999

Veh. Size Category: Mid ; TEST WEIGHT: 1776.7 kg

Veh. Wheelbase: 2755 mm ; Front Overhang: 1055 mm ; Overall Width: 1856 mm

ACCELEROMETER DATA:

Location: As per measurements on pages 2-25

Calibration Procedure: As per MGA Calibration Procedure

Linearity: >99.9% ; Integration Algorithm: Trapezoidal

Veh: Impact Speed: 56.6 kph ; Time Of Separation: 174 msec

Velocity Change: 66.0 kph

Collision Deformation Classification (CDC) Code: F (Frontal)

Crush Depth C1 = 362 mm

Dimensions*: C2 = 497 mm

C3 = 507 mm

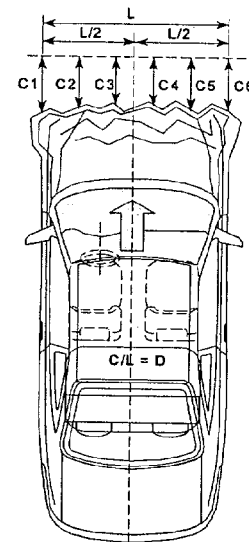
C4 = 485 mm

C5 = 453 mm

C6 = 280 mm

Midpoint Of Damage: D = Vehicle Centerline (Longitudinal)

Length Of Damaged Region: L = 1522 mm



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (Cont'd)

	<u>Page No.</u>
Photo No. A-30 - Post-Test Driver Airbag Contact	A-30
Photo No. A-31 - Post-Test Driver Knee Contact View	A-31
Photo No. A-32 - Pre-Test Driver Windshield View	A-32
Photo No. A-33 - Post-Test Driver Windshield View	A-33
Photo No. A-34 - Pre-Test Passenger Dummy Position Right Side View	A-34
Photo No. A-35 - Post-Test Passenger Dummy Position Right Side View	A-35
Photo No. A-36 - Pre-Test Pass. Dummy Position Right Side View (Door Open)	A-36
Photo No. A-37 - Post-Test Pass. Dummy Position Right Side View (Door Open)	A-37
Photo No. A-38 - Pre-Test Passenger Seat Position View	A-38
Photo No. A-39 - Post-Test Passenger Seat Position View	A-39
Photo No. A-40 - Pre-Test Passenger Dummy Knee Position	A-40
Photo No. A-41 - Post-Test Passenger Dummy Knee Position	A-41
Photo No. A-42 - Post-Test Passenger Airbag Contact	A-42
Photo No. A-43 - Post-Test Passenger Knee Contact View	A-43
Photo No. A-44 - Pre-Test Passenger Windshield View	A-44
Photo No. A-45 - Post-Test Passenger Windshield View	A-45
Photo No. A-46 - Vehicle Certification Label and Tire Placard	A-46
Photo No. A-47 - Vehicle Impact	A-47
Photo No. A-48 - Rollover 90°	A-48
Photo No. A-49 - Rollover 180°	A-49
Photo No. A-50 - Rollover 270°	A-50
Photo No. A-51 - Rollover 360°	A-51

TABLE OF PHOTOGRAPHS

	<u>Page No.</u>
Photo No. A-1 - Pre-Test Front View of Test Vehicle	A-1
Photo No. A-2 - Post-Test Front View of Test Vehicle	A-2
Photo No. A-3 - Pre-Test Rear View of Test Vehicle	A-3
Photo No. A-4 - Post-Test Rear View of Test Vehicle	A-4
Photo No. A-5 - Pre-Test Left Side View of Test Vehicle	A-5
Photo No. A-6 - Post-Test Left Side View of Test Vehicle	A-6
Photo No. A-7 - Pre-Test Left Rear Three-Quarter View of Test Vehicle	A-7
Photo No. A-8 - Post-Test Left Rear Three-Quarter View of Test Vehicle	A-8
Photo No. A-9 - Pre-Test Right Side View of Test Vehicle	A-9
Photo No. A-10 - Post-Test Right Side View of Test Vehicle	A-10
Photo No. A-11 - Pre-Test Right Front Three-Quarter View of Test Vehicle	A-11
Photo No. A-12 - Post-Test Right Front Three-Quarter View of Test Vehicle	A-12
Photo No. A-13 - Pre-Test Fuel Filler Cap View	A-13
Photo No. A-14 - Pre-Test Engine Compartment View	A-14
Photo No. A-15 - Post-Test Engine Compartment View	A-15
Photo No. A-16 - Pre-Test Front Underbody View	A-16
Photo No. A-17 - Post-Test Front Underbody View	A-17
Photo No. A-18 - Pre-Test Rear Underbody View	A-18
Photo No. A-19 - Post-Test Rear Underbody View	A-19
Photo No. A-20 - Pre-Test Windshield View	A-20
Photo No. A-21 - Post-Test Windshield View	A-21
Photo No. A-22 - Pre-Test Driver Dummy Position Left Side View	A-22
Photo No. A-23 - Post-Test Driver Dummy Position Left Side View	A-23
Photo No. A-24 - Pre-Test Driver Dummy Position Left Side View (Door Open)	A-24
Photo No. A-25 - Post-Test Driver Dummy Position Left Side View (Door Open)	A-25
Photo No. A-26 - Pre-Test Driver Seat Position View	A-26
Photo No. A-27 - Post-Test Driver Seat Position View	A-27
Photo No. A-28 - Pre-Test Driver Dummy Knee Position	A-28
Photo No. A-29 - Post-Test Driver Dummy Knee Position	A-29

TABLE OF PHOTOGRAPHS (Cont'd)

	<u>Page No.</u>
Photo No. A-30 - Post-Test Driver Airbag Contact	A-30
Photo No. A-31 - Post-Test Driver Knee Contact View	A-31
Photo No. A-32 - Pre-Test Driver Windshield View	A-32
Photo No. A-33 - Post-Test Driver Windshield View	A-33
Photo No. A-34 - Pre-Test Passenger Dummy Position Right Side View	A-34
Photo No. A-35 - Post-Test Passenger Dummy Position Right Side View	A-35
Photo No. A-36 - Pre-Test Pass. Dummy Position Right Side View (Door Open)	A-36
Photo No. A-37 - Post-Test Pass. Dummy Position Right Side View (Door Open)	A-37
Photo No. A-38 - Pre-Test Passenger Seat Position View	A-38
Photo No. A-39 - Post-Test Passenger Seat Position View	A-39
Photo No. A-40 - Pre-Test Passenger Dummy Knee Position	A-40
Photo No. A-41 - Post-Test Passenger Dummy Knee Position	A-41
Photo No. A-42 - Post-Test Passenger Airbag Contact	A-42
Photo No. A-43 - Post-Test Passenger Knee Contact View	A-43
Photo No. A-44 - Pre-Test Passenger Windshield View	A-44
Photo No. A-45 - Post-Test Passenger Windshield View	A-45
Photo No. A-46 - Vehicle Certification Label and Tire Placard	A-46
Photo No. A-47 - Vehicle Impact	A-47
Photo No. A-48 - Rollover 90°	A-48
Photo No. A-49 - Rollover 180°	A-49
Photo No. A-50 - Rollover 270°	A-50
Photo No. A-51 - Rollover 360°	A-51



Photo No. A-1 - Pre-Test Front View of Test Vehicle



Photo No. A-2 - Post-Test Front View of Test Vehicle



Photo No. A-3 - Pre-Test Rear View of Test Vehicle

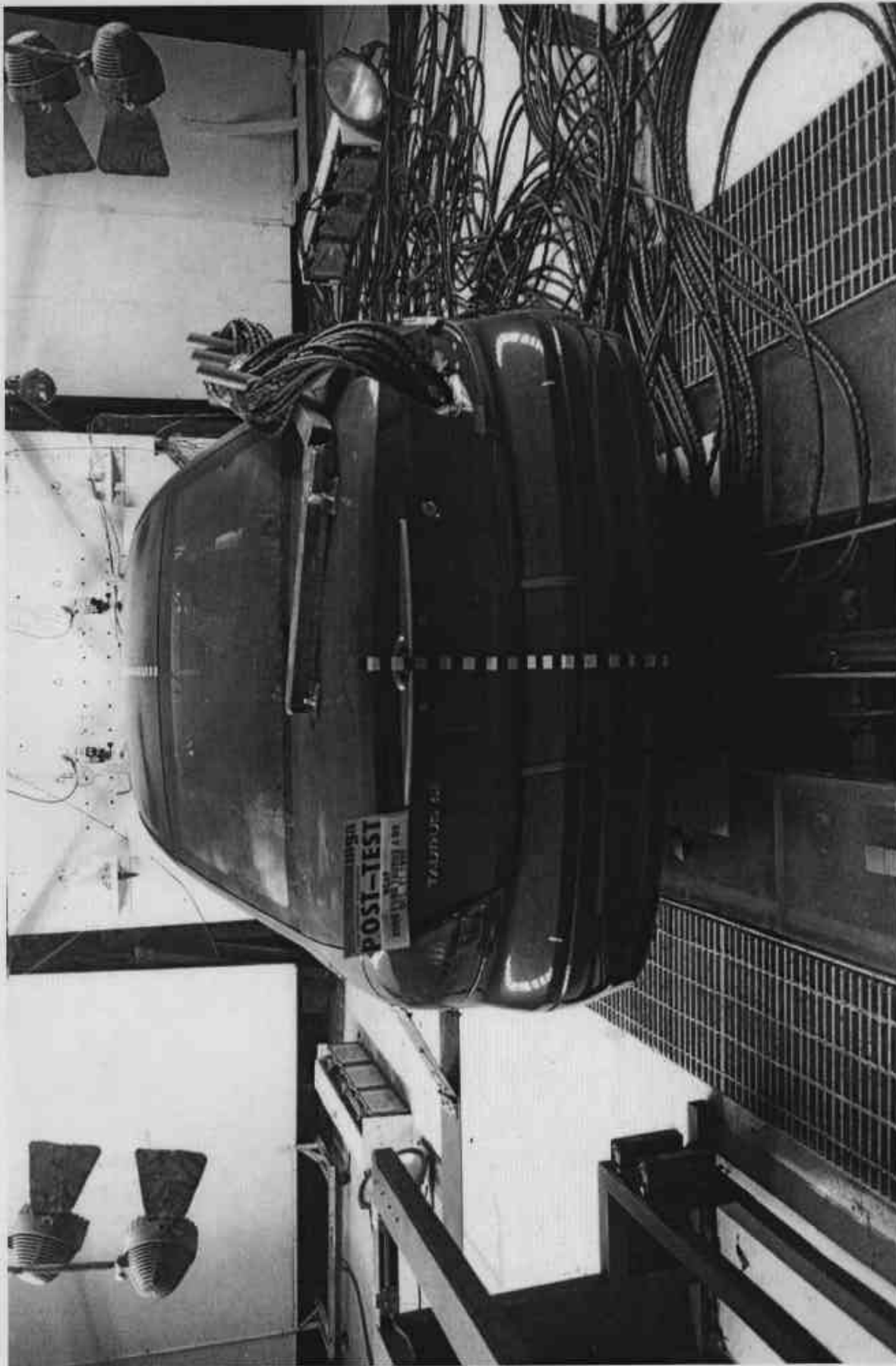


Photo No. A-4 - Post-Test Rear View of Test Vehicle

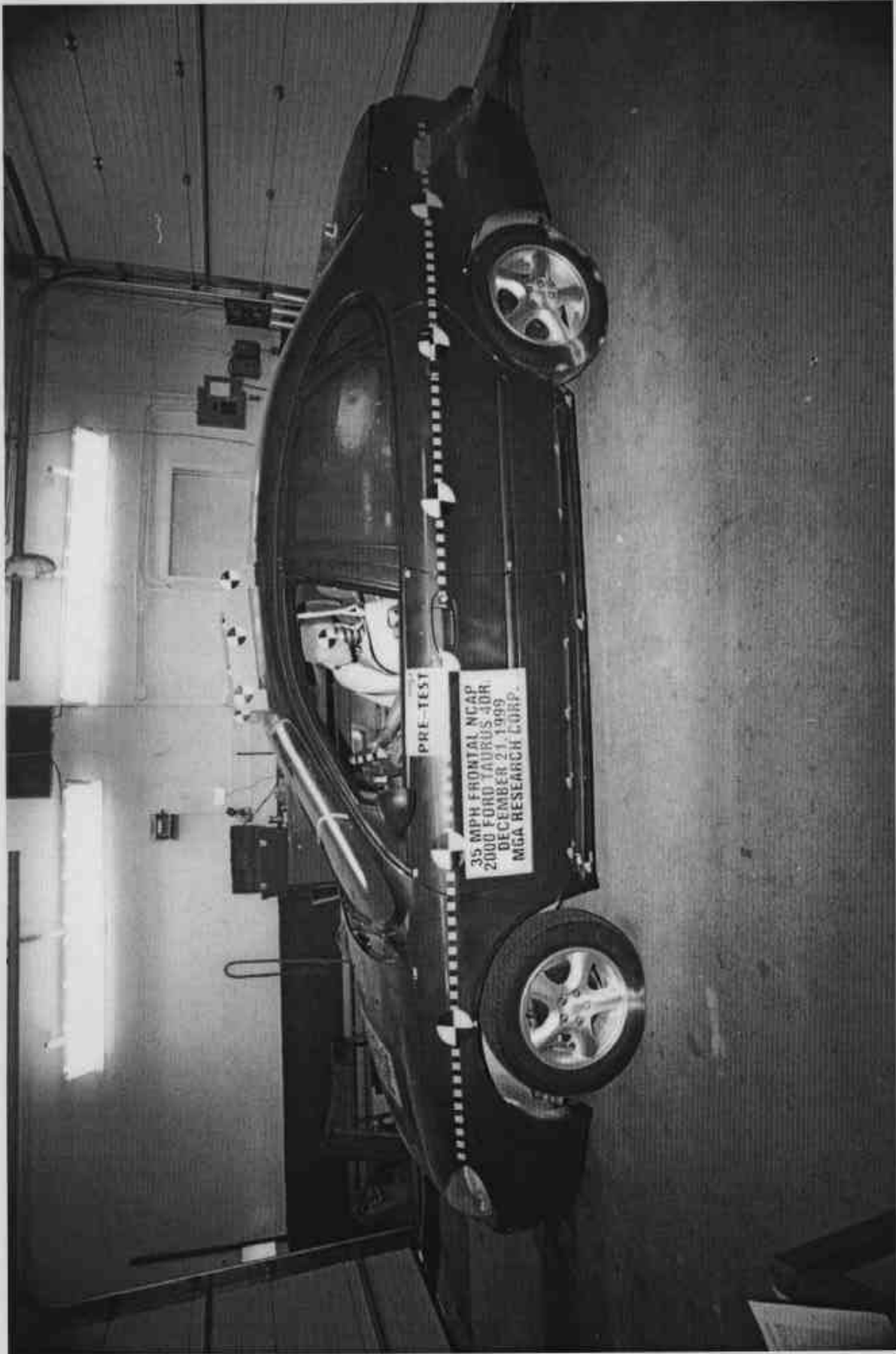


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

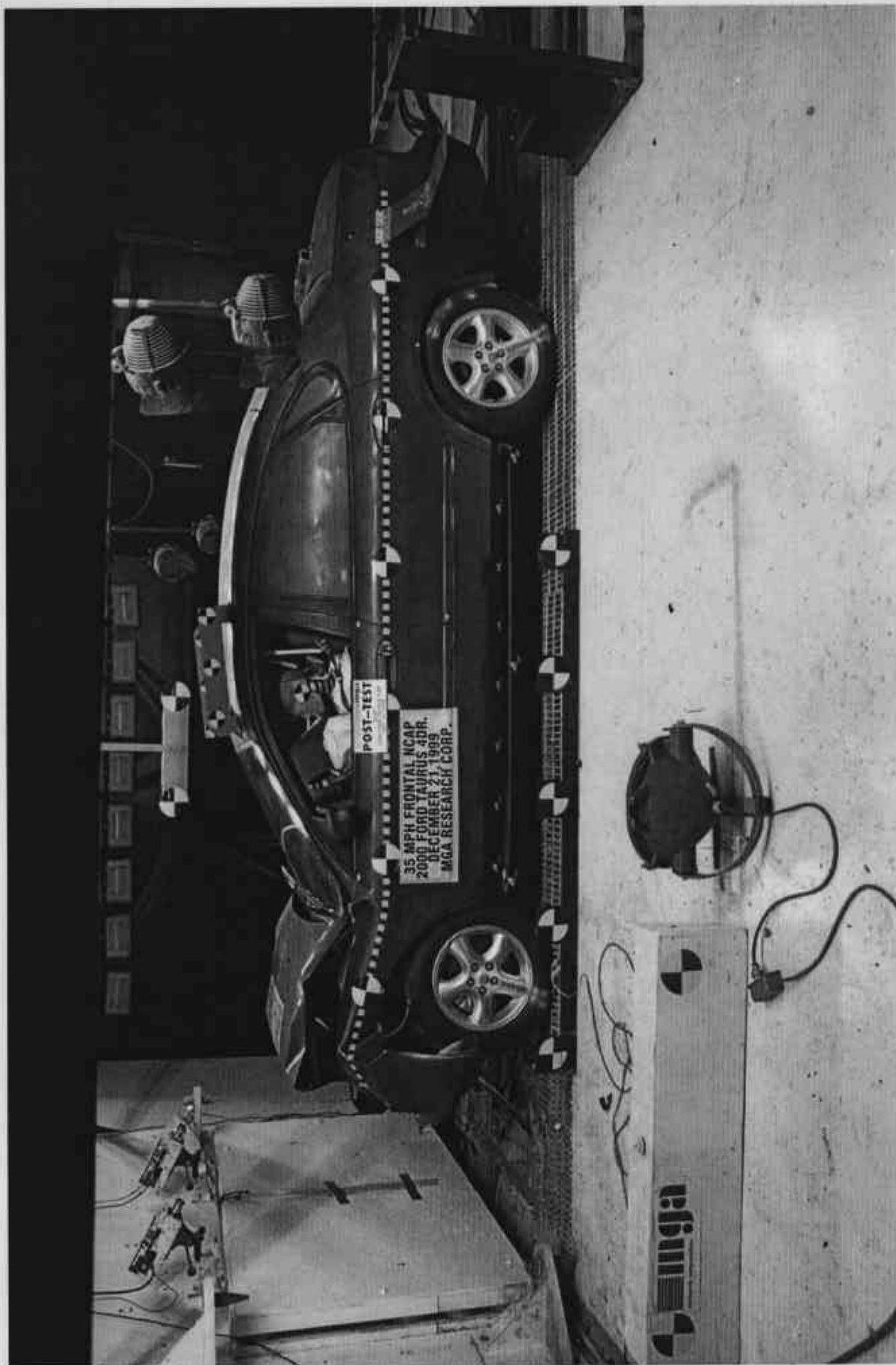


Photo No. A-6 - Post-Test Left Side View of Test Vehicle



Photo No. A-7 - Pre-Test Left Rear Three-Quarter View of Test Vehicle

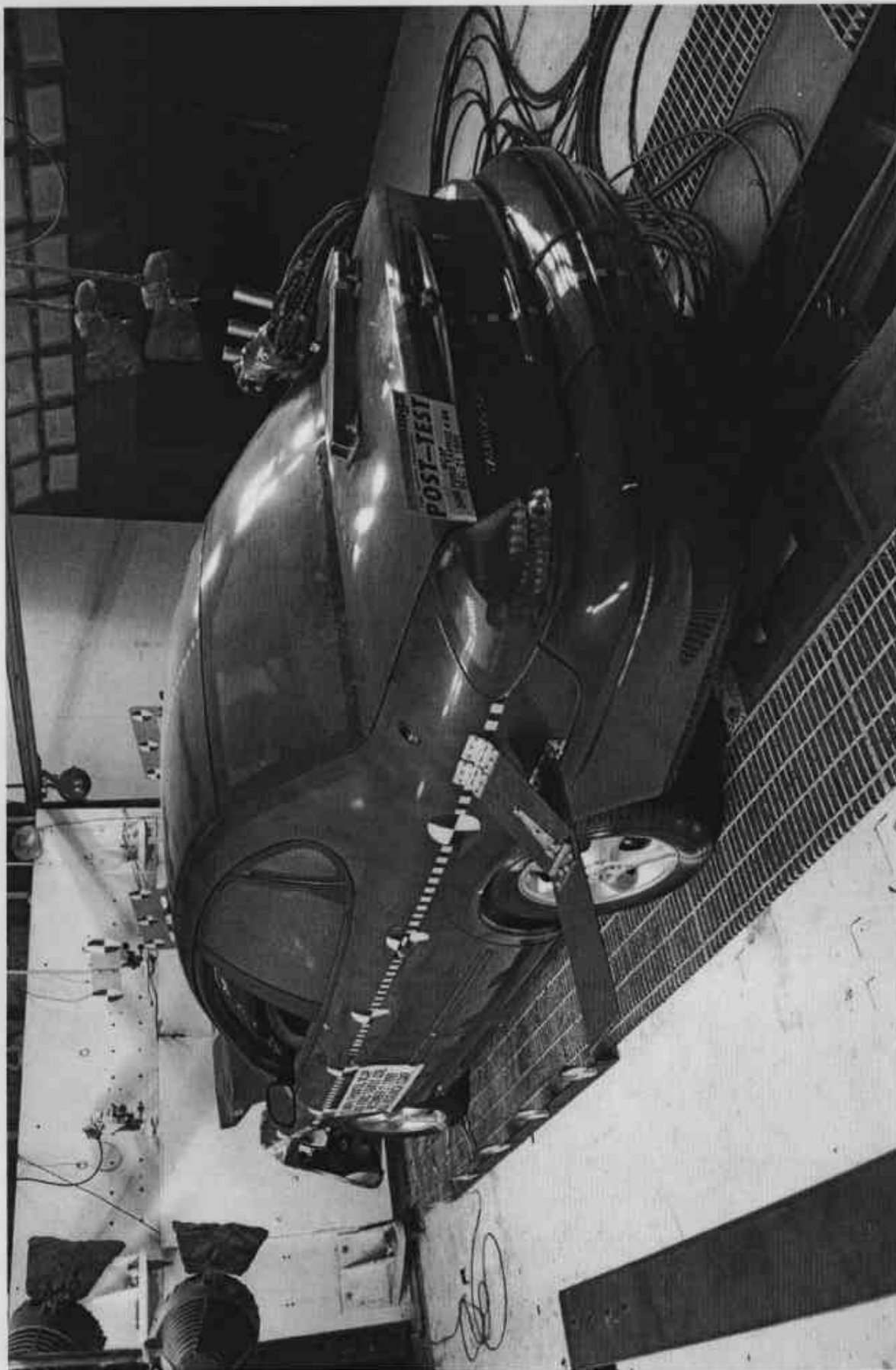


Photo No. A-8 - Post-Test Left Rear Three-Quarter View of Test Vehicle

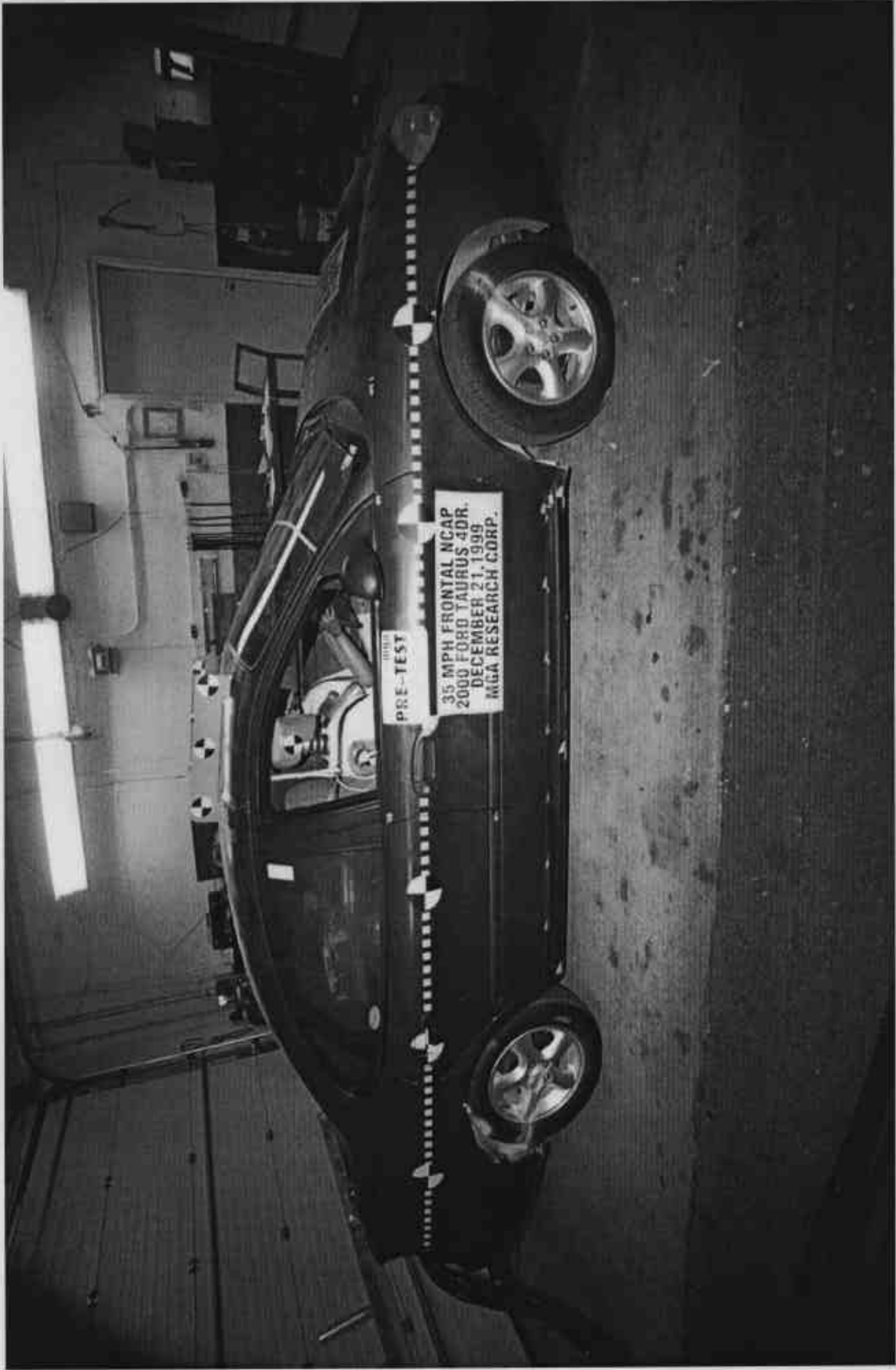


Photo No. A-9 - Pre-Test Right Side View of Test Vehicle

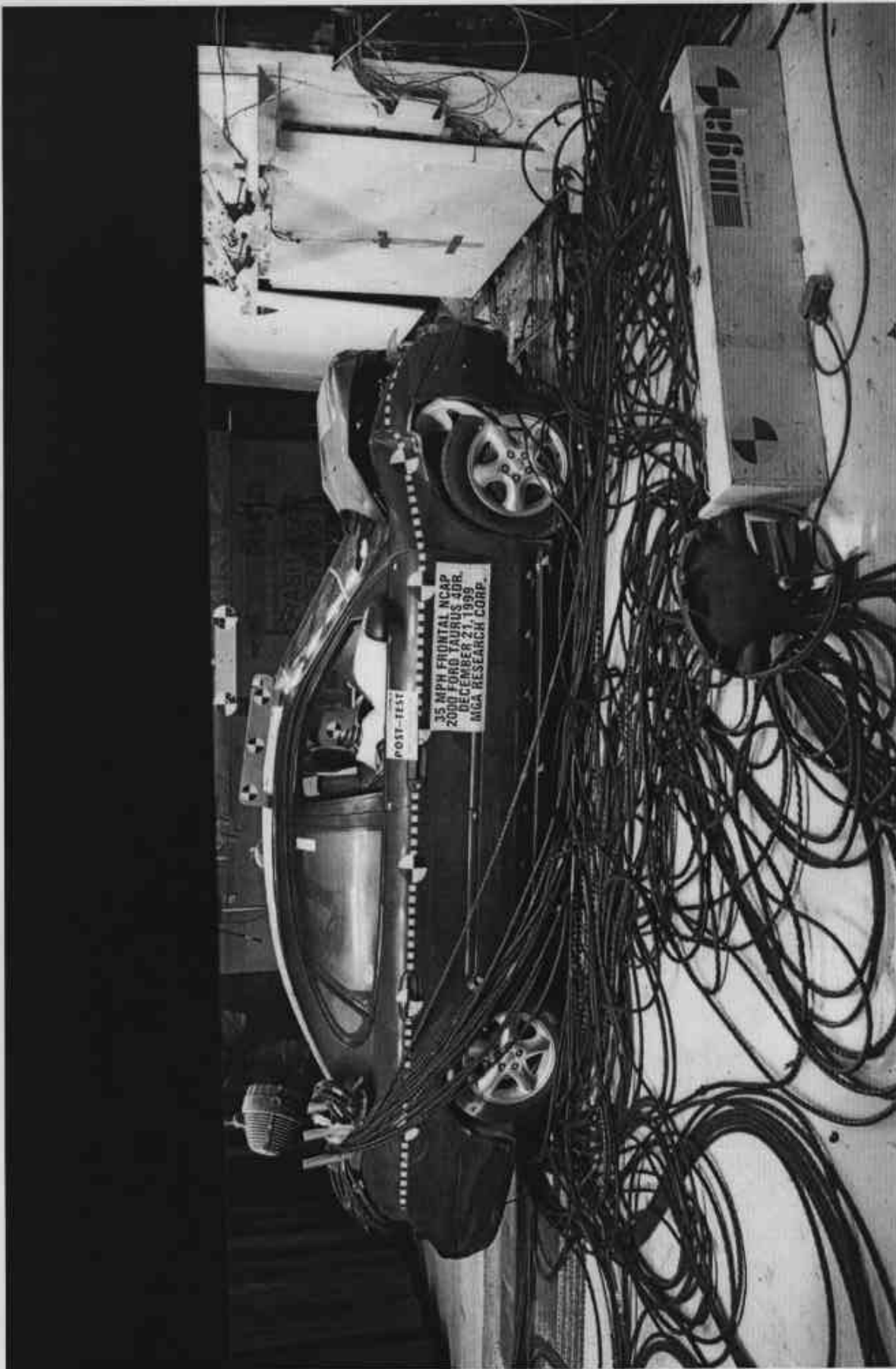


Photo No. A-10 - Post-Test Right Side View of Test Vehicle



Photo No. A-11 - Pre-Test Right Front Three-Quarter View of Test Vehicle

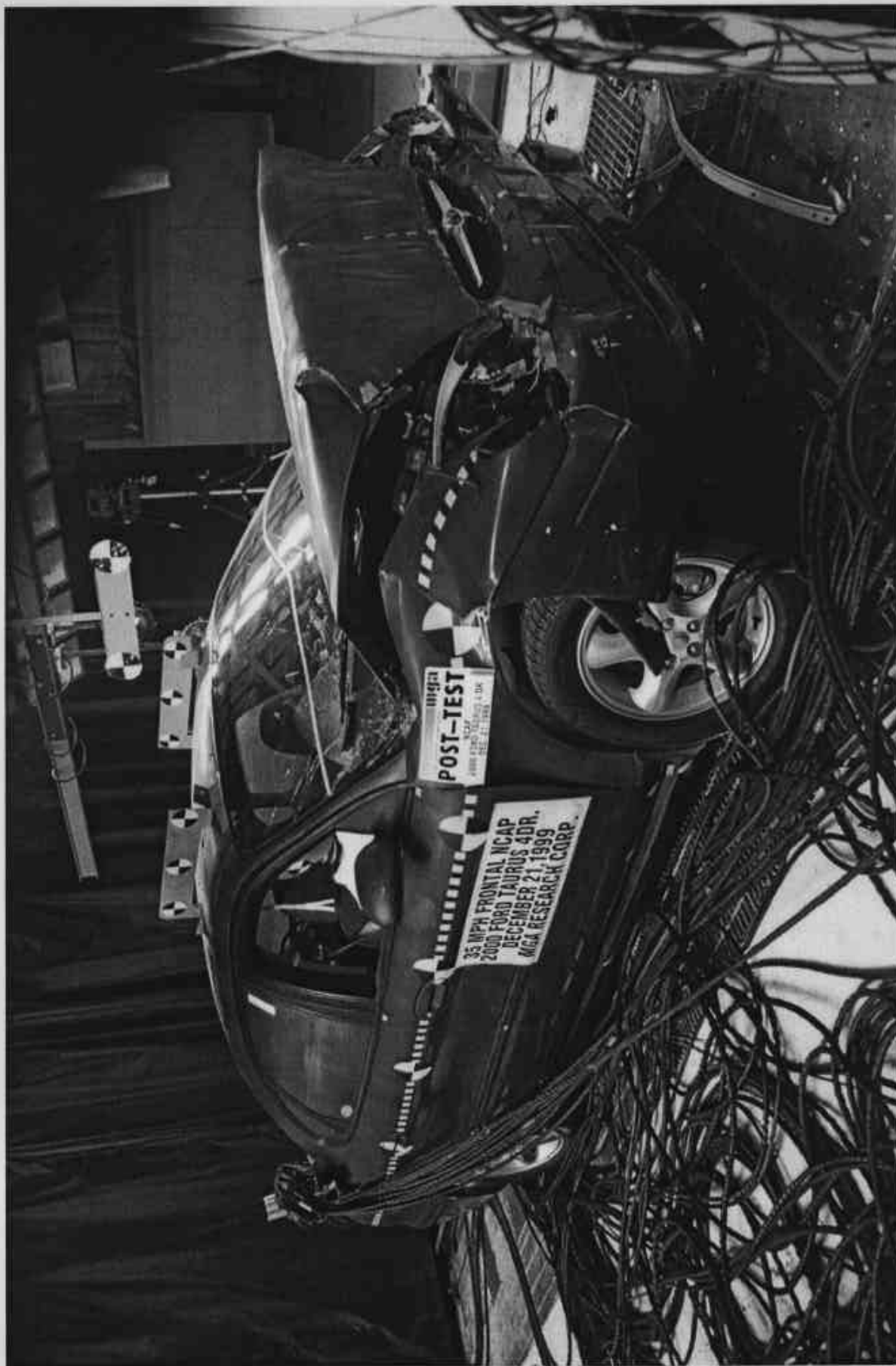


Photo No. A-12 - Post-Test Right Front Three-Quarter View of Test Vehicle



Photo No. A-13 - Pre-Test Fuel Filler Cap View

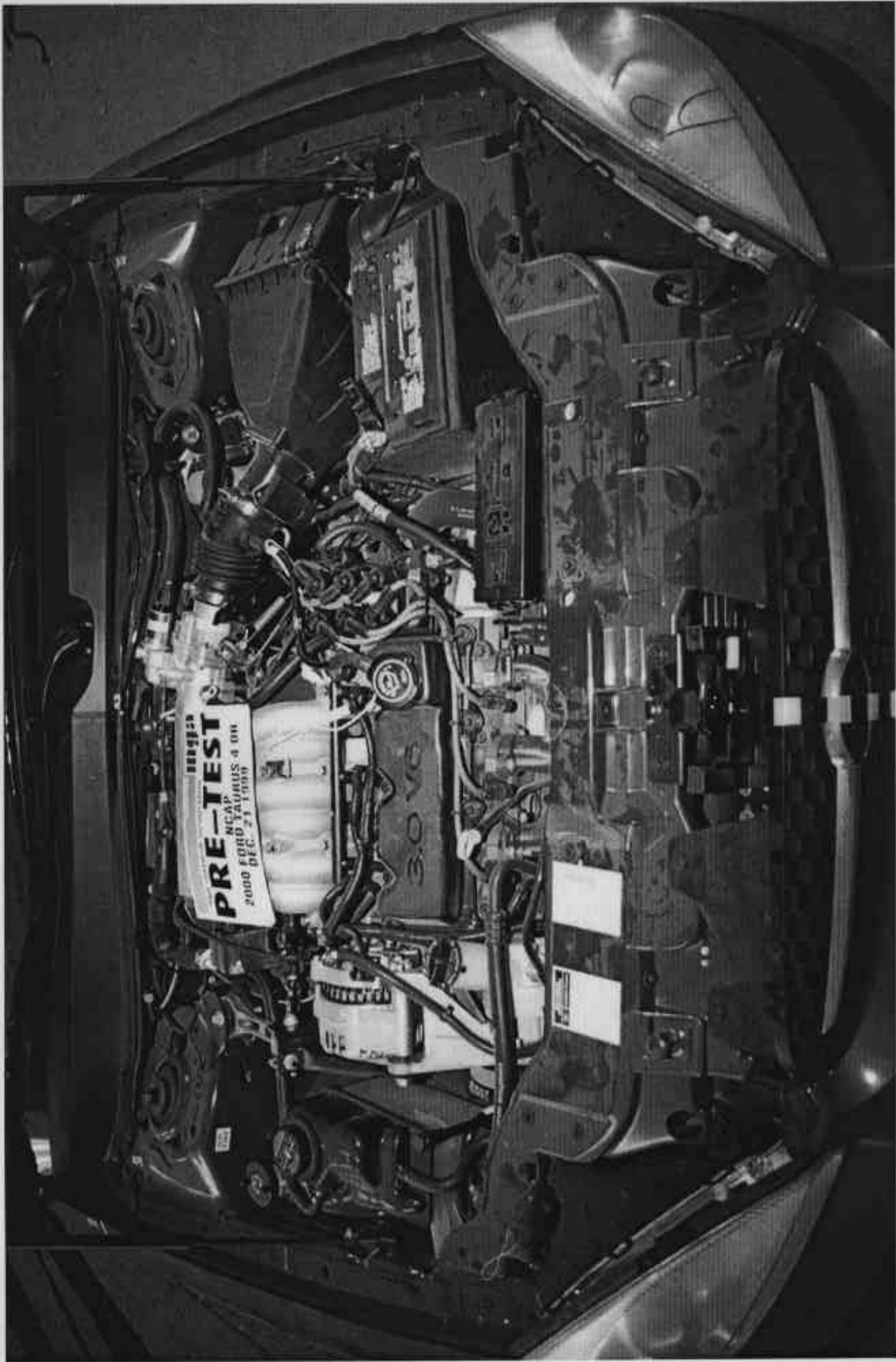


Photo No. A-14 - Pre-Test Engine Compartment View



Photo No. A-15 - Post-Test Engine Compartment View

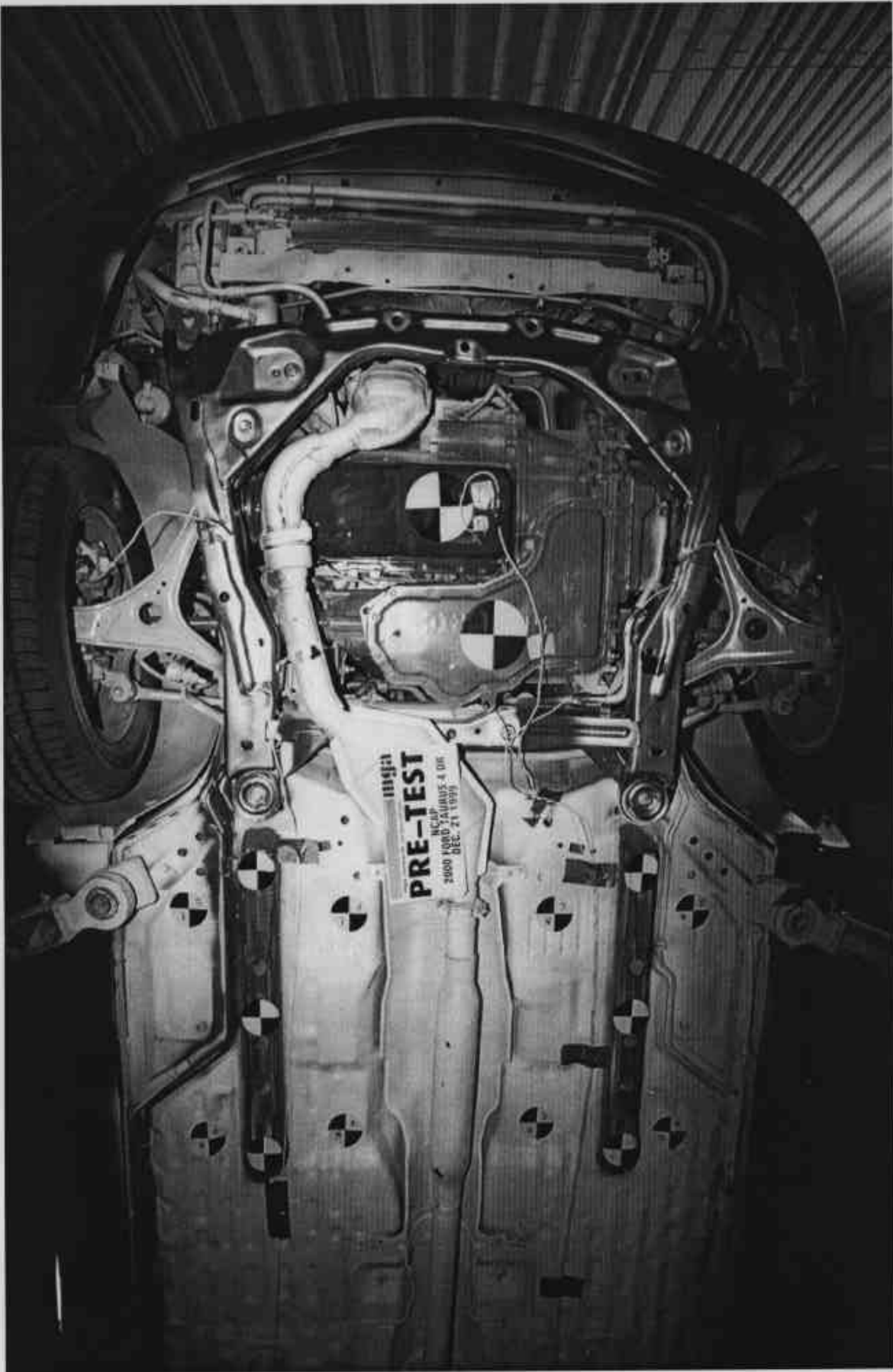


Photo No. A-16 - Pre-Test Front Underbody View

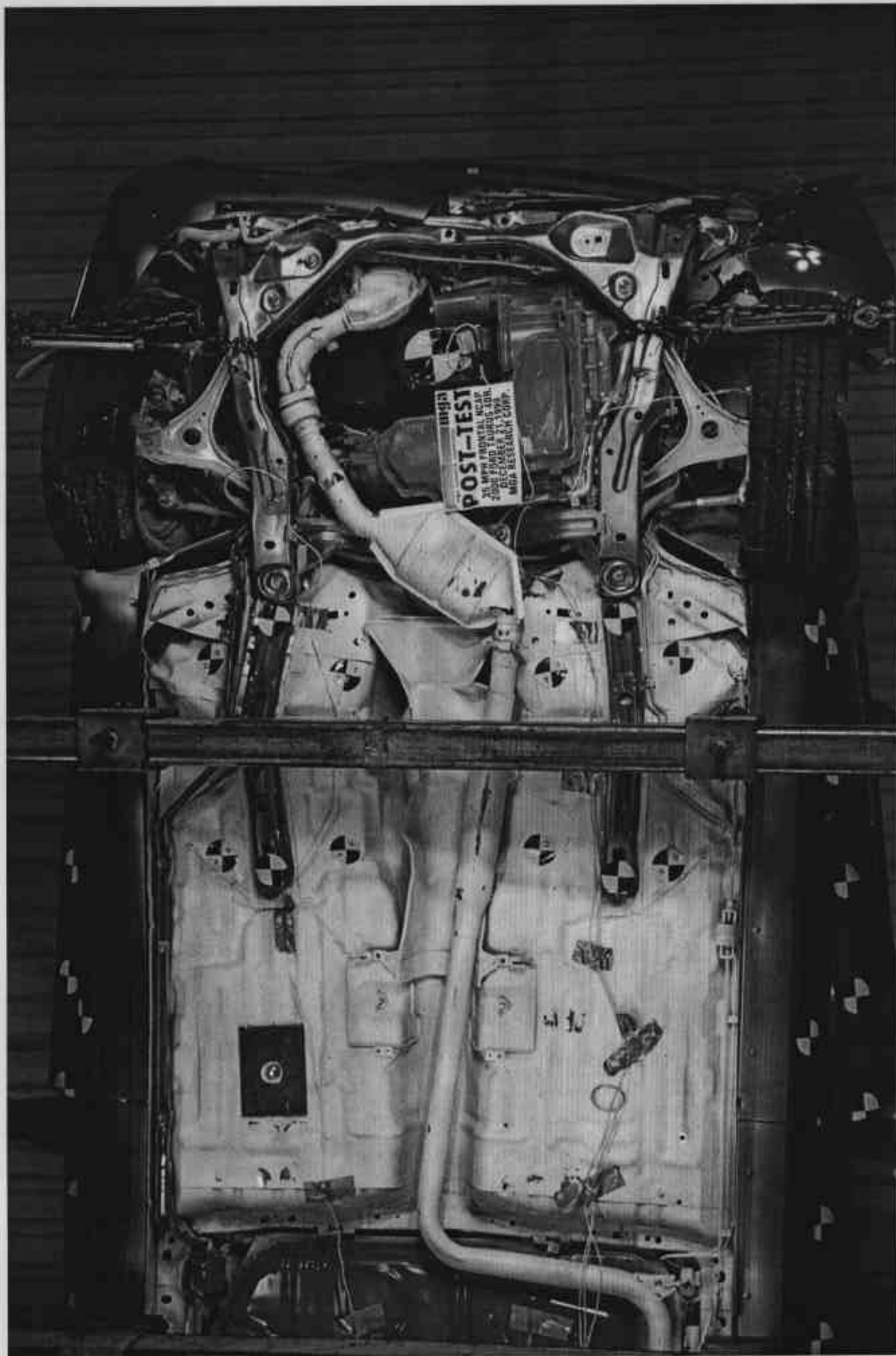


Photo No. A-17 - Post-Test Front Underbody View



Photo No. A-18 - Pre-Test Rear Underbody View

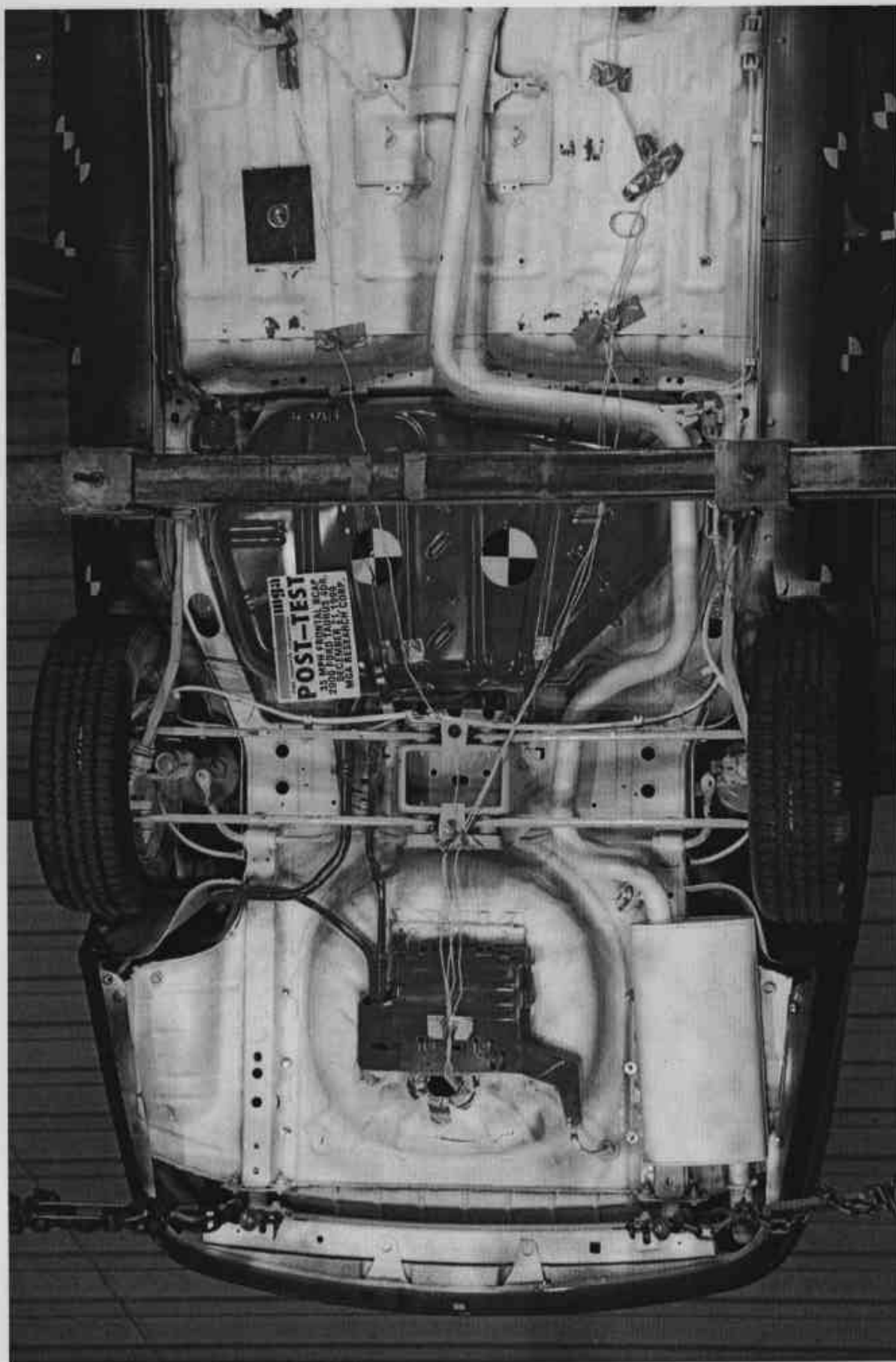


Photo No. A-19 - Post-Test Rear Underbody View



Photo No. A-20 - Pre-Test Windshield View

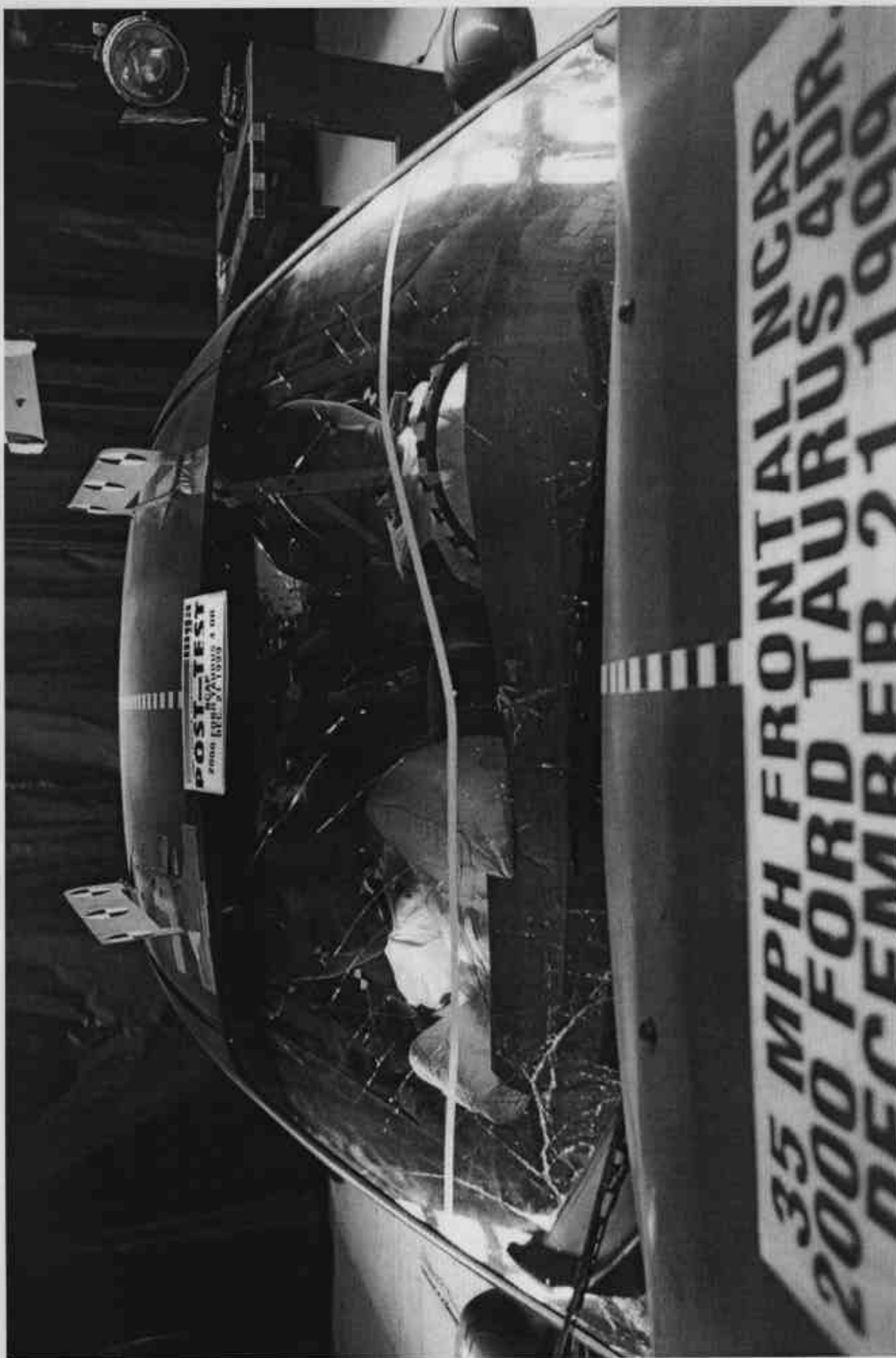


Photo No. A-21 - Post-Test Windshield View



Photo No. A-22 - Pre-Test Driver Dummy Position Left Side View



Photo A-23 - Post-Test Driver Dummy Position Left Side View



Photo No. A-24 - Pre-Test Driver Dummy Position Left Side View (Door Open)



A-25

Photo No. A-25 - Post-Test Driver Dummy Position Left Side View (Door Open)



Photo No. A-26 - Pre-Test Driver Seat Position View



Photo No. A-27 - Post-Test Driver Seat Position View



Photo No. A-28 - Pre-Test Driver Dummy Knee Position



Photo No. A-29 - Post-Test Driver Dummy Knee Position



Photo No. A-30 - Post-Test Driver Airbag Contact



Photo No. A-31 - Post-Test Driver Knee Contact View



Photo No. A-32 - Pre-Test Driver Windshield View



Photo No. A-33 - Post-Test Driver Windshield View

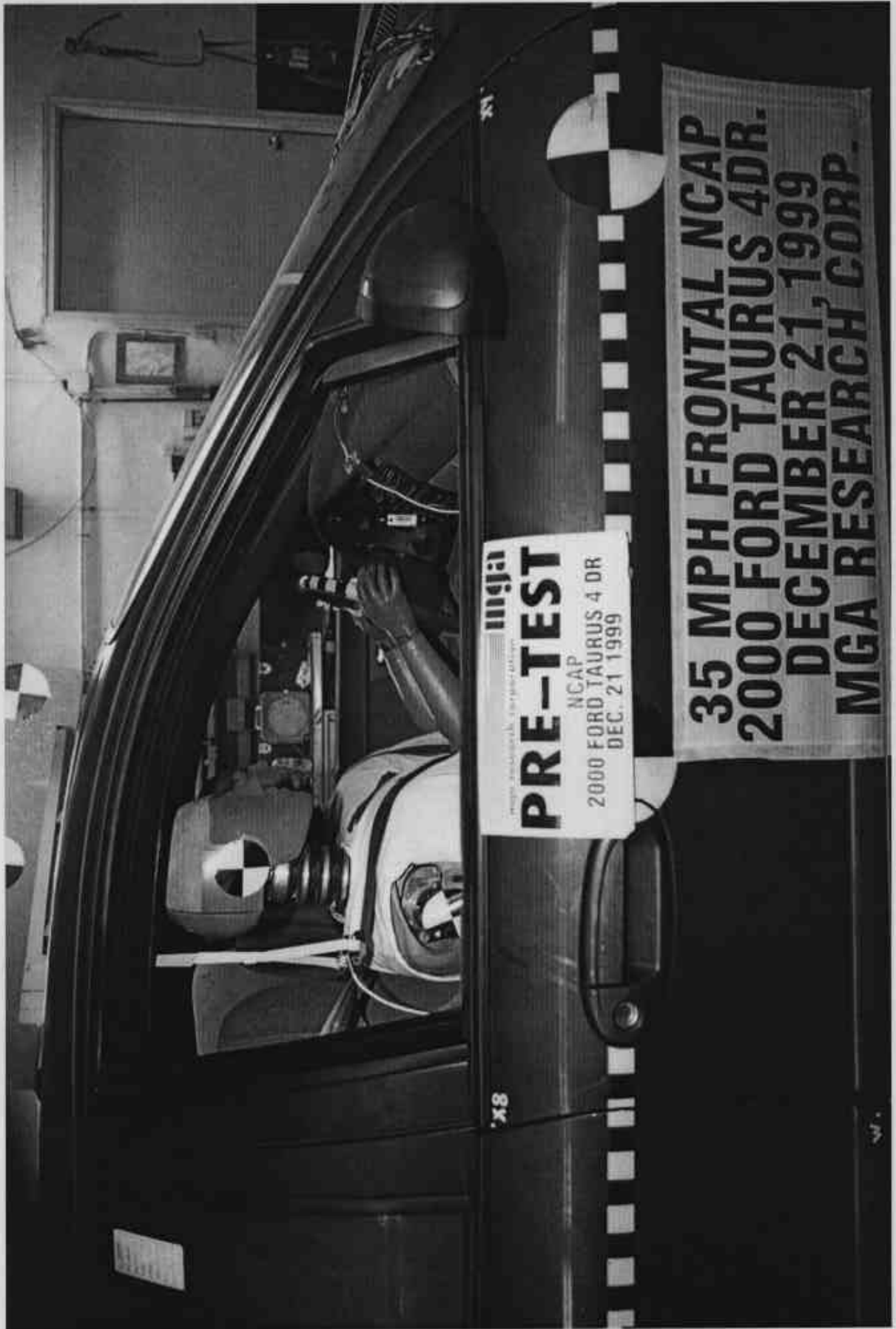


Photo No. A-34 - Pre-Test Passenger Dummy Position Right Side View



Photo No. A-35 - Post-Test Passenger Dummy Position Right Side View



Photo No. A-36 - Pre-Test Passenger Dummy Position Right Side View (Door Open)



Photo No. A-37 - Post-Test Passenger Dummy Position Right Side View (Door Open)



Photo No. A-38 - Pre-Test Passenger Seat Position View



Photo No. A-39 - Post-Test Passenger Seat Position View



Photo No. A-40 - Pre-Test Passenger Dummy Knee Position

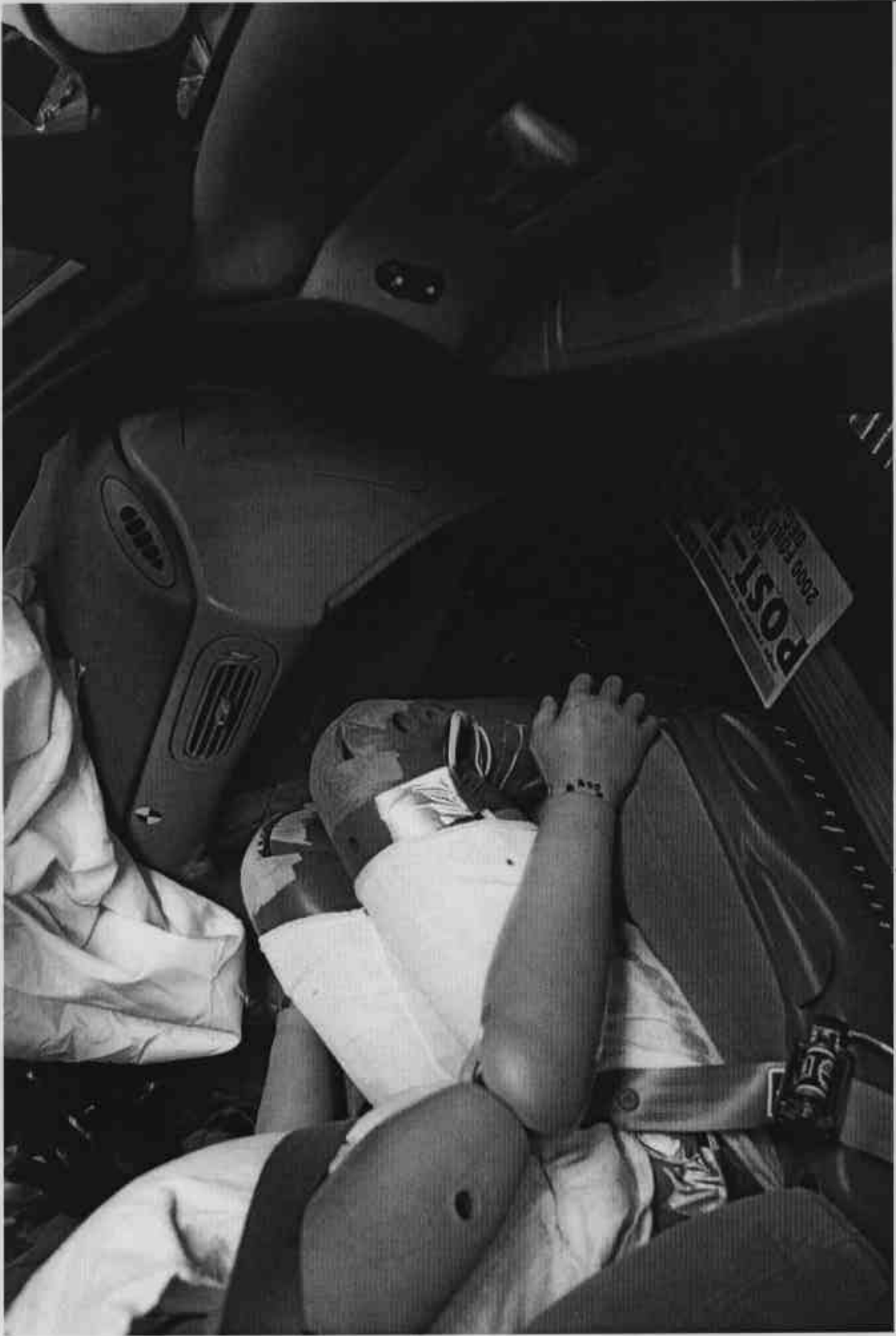


Photo No. A-41 - Post-Test Passenger Dummy Knee Position



A-42

Photo No. A-42 - Post-Test Passenger Airbag Contact



Photo No. A-43 - Post-Test Passenger Knee Contact View



Photo No. A-45 - Post-Test Passenger Windshield View



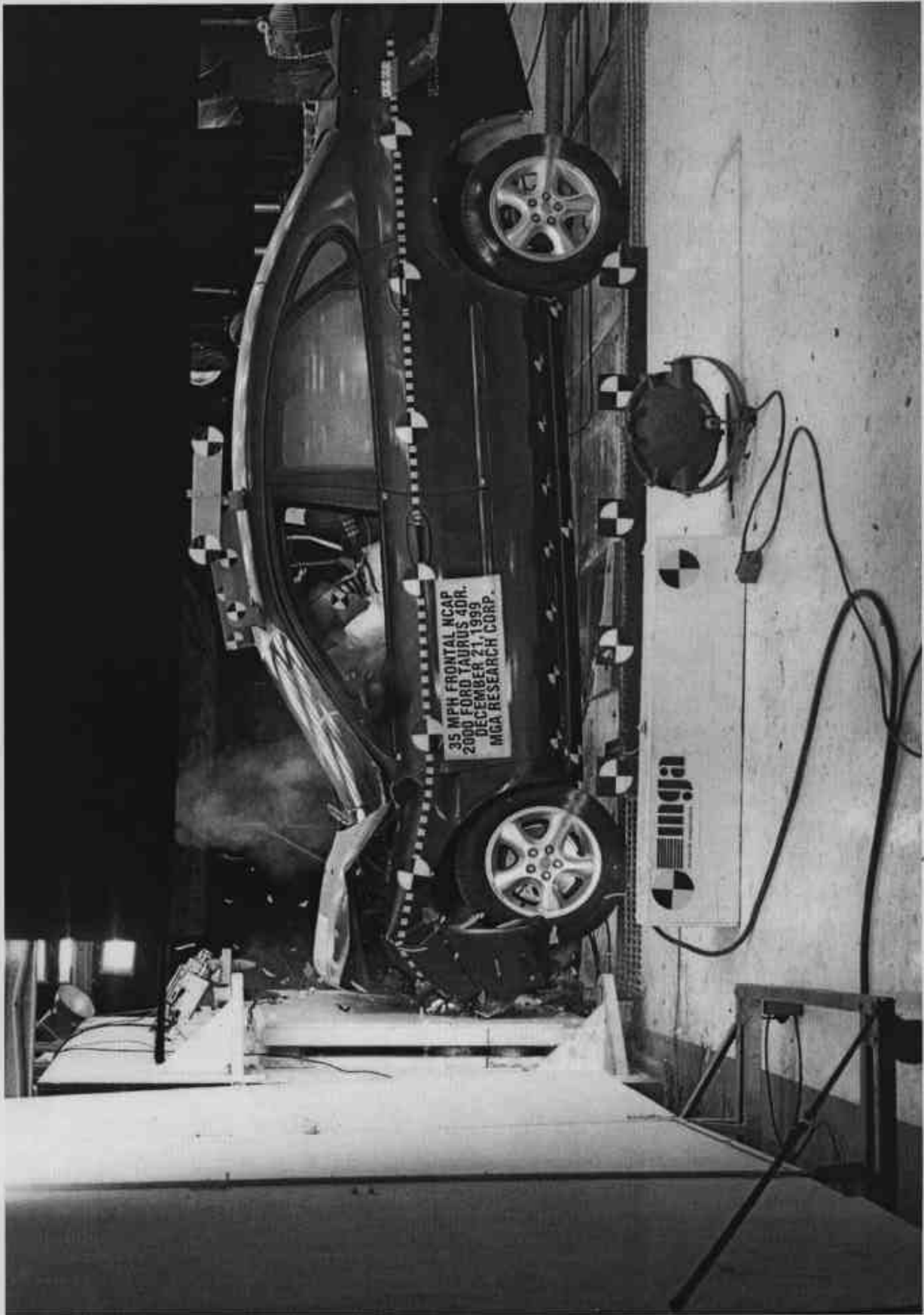


Photo No. A-47 - Vehicle Impact

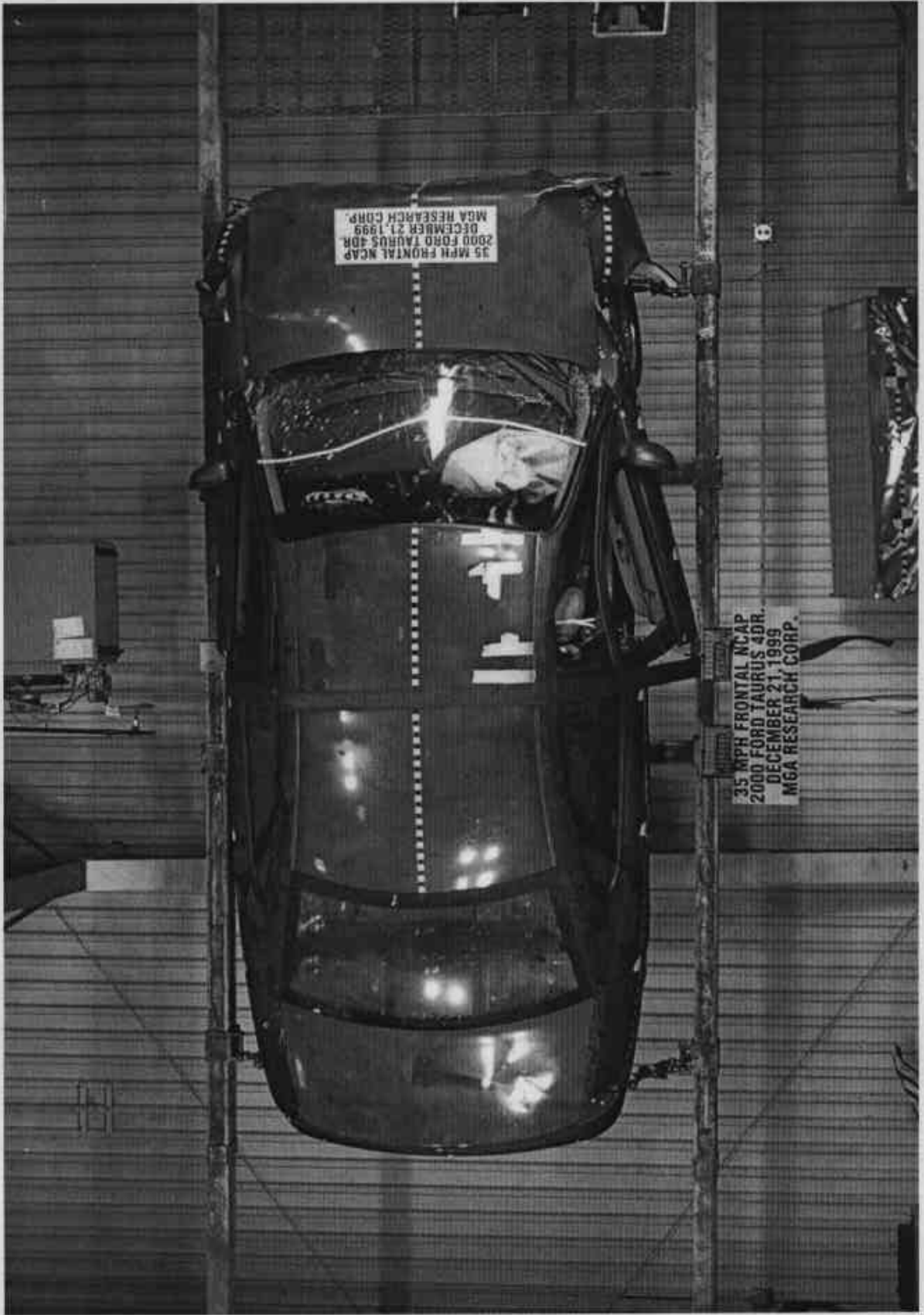


Photo No. A-48 - Rollover 90°

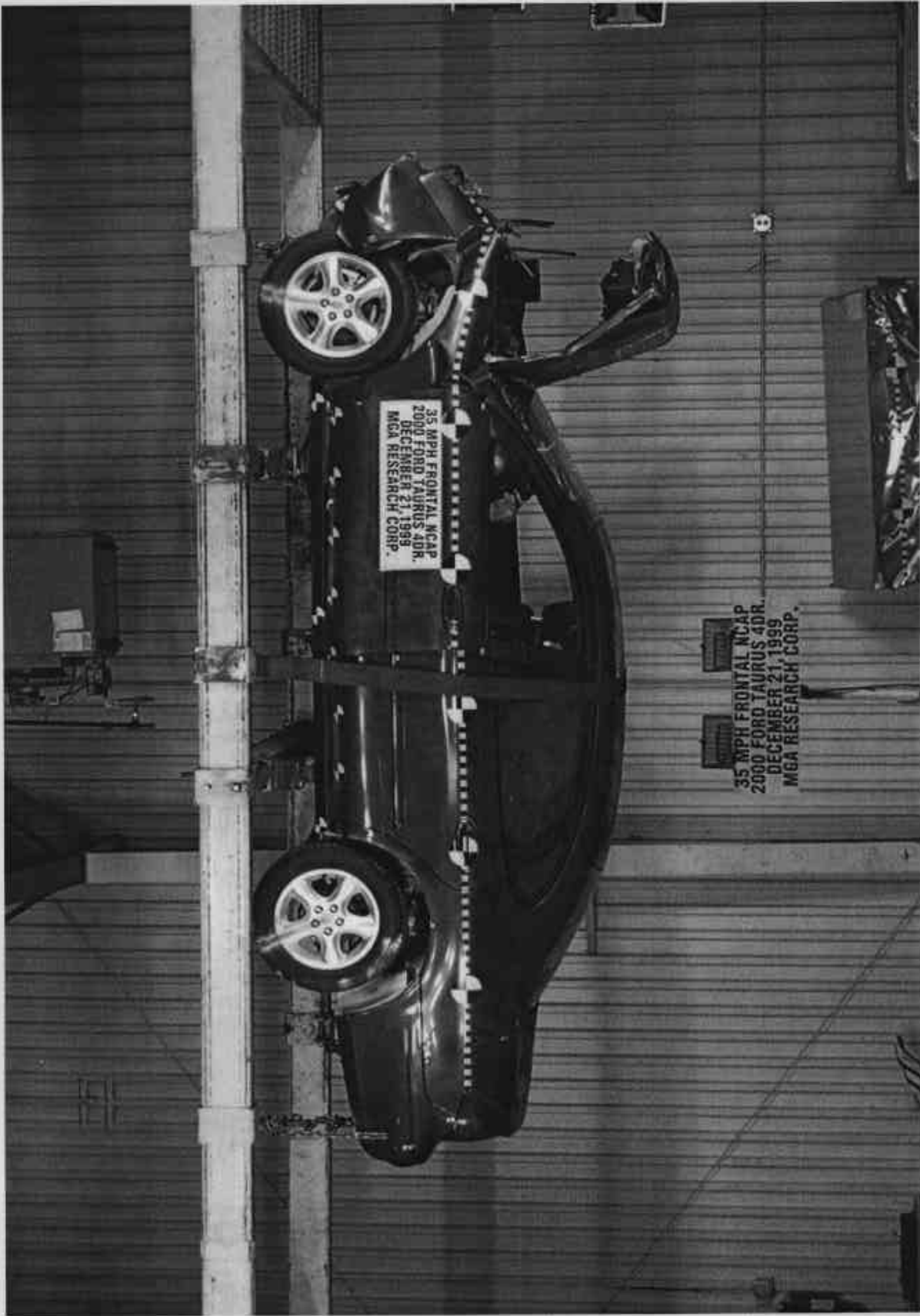


Photo No. A-49 - Rollover 180°

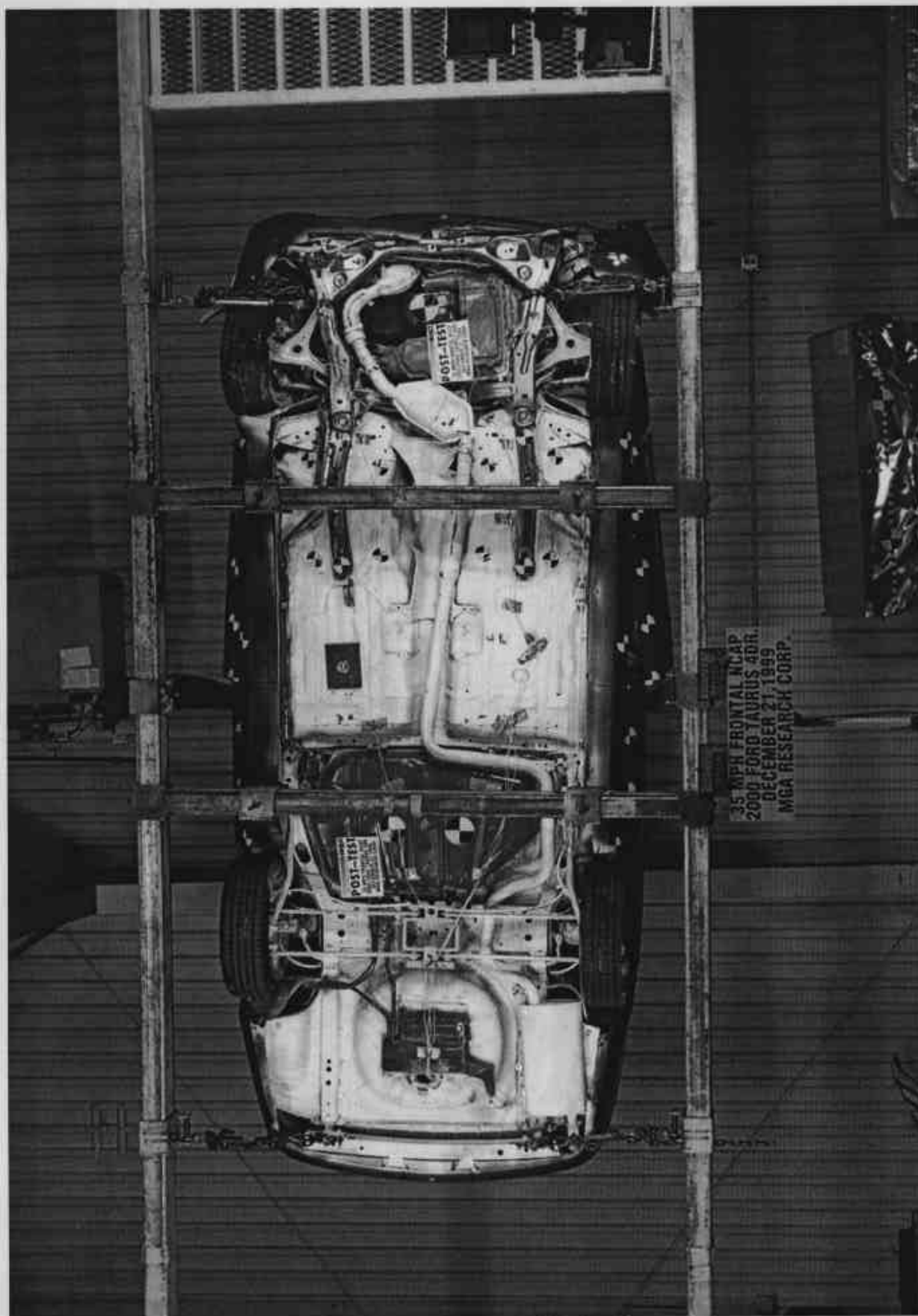


Photo No. A-50 - Rollover 270°

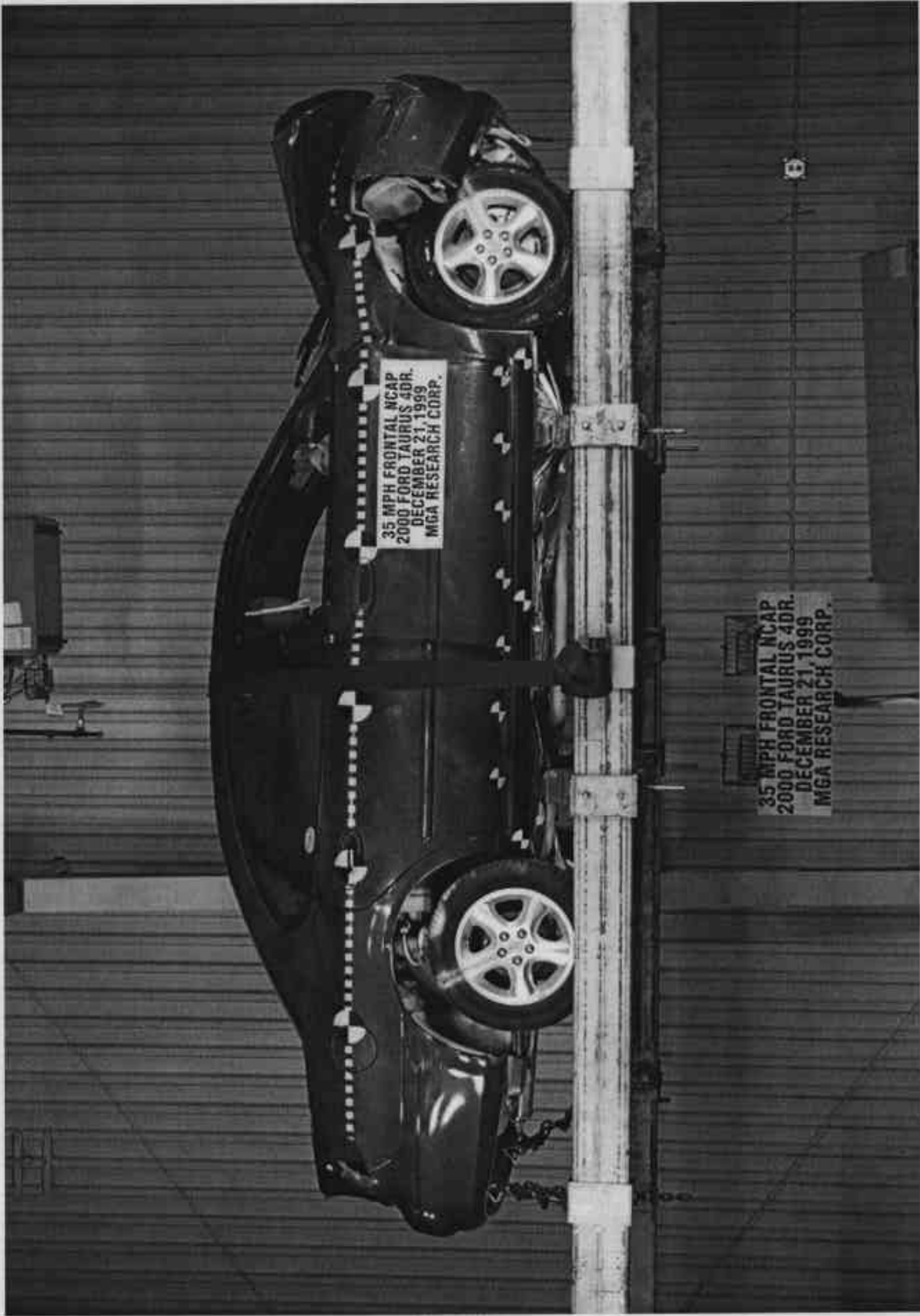


Photo No. A-51 - Rollover 360°

APPENDIX B
VEHICLE, LOAD CELL BARRIER AND DUMMY RESPONSE DATA

2000 Ford Taurus 4 Door

VEHICLE DATA FILTER CHANNEL CLASS

Head Accelerations 1000 (1650 Hz)

Chest Accelerations 180 (300 Hz)

Vehicle Accelerations 60 (100 Hz)

Barrier Load Cells 60 (100 Hz)

Femur Load Cells 600 (1000 Hz)

Lap and Torso Belts 60 (100 Hz)

Occupant Data

Page No.

Figure B-1 - Driver Head X Acceleration vs. Time	B-1
Figure B-2 - Driver Head Y Acceleration vs. Time	B-2
Figure B-3 - Driver Head Z Acceleration vs. Time	B-3
Figure B-4 - Driver Head Resultant Acceleration vs. Time	B-4
Figure B-5 - Driver Head X Velocity vs. Time	B-5
Figure B-6 - Driver Head Redundant X Acceleration vs. Time	B-6
Figure B-7 - Driver Head Redundant Y Acceleration vs. Time	B-7
Figure B-8 - Driver Head Redundant Z Acceleration vs. Time	B-8
Figure B-9 - Driver Head Redundant Resultant Acceleration vs. Time	B-9
Figure B-10 - Driver Head Redundant X Velocity vs. Time	B-10
Figure B-11 - Driver Neck Force X vs. Time	B-11
Figure B-12 - Driver Neck Force Y vs. Time	B-12
Figure B-13 - Driver Neck Force Z vs. Time	B-13
Figure B-14 - Driver Neck Force Resultant vs. Time	B-14
Figure B-15 - Driver Neck Moment X vs. Time	B-15
Figure B-16 - Driver Neck Moment Y vs. Time	B-16
Figure B-17 - Driver Neck Moment Z vs. Time	B-17
Figure B-18 - Driver Neck Moment Resultant vs. Time	B-18
Figure B-19 - Driver Chest X Acceleration vs. Time	B-19
Figure B-20 - Driver Chest Y Acceleration vs. Time	B-20
Figure B-21 - Driver Chest Z Acceleration vs. Time	B-21
Figure B-22 - Driver Chest Resultant Acceleration vs. Time	B-22
Figure B-23 - Driver Chest X Velocity vs. Time	B-23
Figure B-24 - Driver Chest Redundant X Acceleration vs. Time	B-24

<u>Occupant Data: (Cont'd)</u>	<u>Page No.</u>
Figure B-25 - Driver Chest Redundant Y Acceleration vs. Time	B-25
Figure B-26 - Driver Chest Redundant Z Acceleration vs. Time	B-26
Figure B-27 - Driver Chest Redundant Resultant Acceleration vs. Time	B-27
Figure B-28 - Driver Chest Redundant X Velocity vs. Time	B-28
Figure B-29 - Driver Chest Compression vs. Time	B-29
Figure B-30 - Driver Pelvis X Acceleration vs. Time	B-30
Figure B-31 - Driver Pelvis Y Acceleration vs. Time	B-31
Figure B-32 - Driver Pelvis Z Acceleration vs. Time	B-32
Figure B-33 - Driver Pelvis Resultant Acceleration vs. Time	B-33
Figure B-34 - Driver Pelvis X Velocity vs. Time	B-34
Figure B-35 - Driver Left Femur Force vs. Time	B-35
Figure B-36 - Driver Right Femur Force vs. Time	B-36
Figure B-37 - Driver Left Upper Tibia Moment X vs. Time	B-37
Figure B-38 - Driver Left Upper Tibia Moment Y vs. Time	B-38
Figure B-39 - Driver Left Upper Tibia Force Z vs. Time	B-39
Figure B-40 - Driver Left Lower Tibia Moment X vs. Time	B-40
Figure B-41 - Driver Left Lower Tibia Moment Y vs. Time	B-41
Figure B-42 - Driver Left Lower Tibia Force Z vs. Time	B-42
Figure B-43 - Driver Right Upper Tibia Moment X vs. Time	B-43
Figure B-44 - Driver Right Upper Tibia Moment Y vs. Time	B-44
Figure B-45 - Driver Right Upper Tibia Force Z vs. Time	B-45
Figure B-46 - Driver Right Lower Tibia Moment X vs. Time	B-46
Figure B-47 - Driver Right Lower Tibia Moment Y vs. Time*	B-47
Figure B-48 - Driver Right Lower Tibia Force Z vs. Time	B-48
Figure B-49 - Driver Left Foot Ball Z Acceleration vs. Time	B-49
Figure B-50 - Driver Left Heel X Acceleration vs. Time	B-50
Figure B-51 - Driver Left Heel Z Acceleration vs. Time	B-51
Figure B-52 - Driver Right Foot Ball Z Acceleration vs. Time	B-52
Figure B-53 - Driver Right Heel X Acceleration vs. Time	B-53
Figure B-54 - Driver Right Heel Z Acceleration vs. Time	B-54
Figure B-55 - Driver Shoulder Belt Force vs. Time	B-55
Figure B-56 - Driver Lap Belt Force vs. Time	B-56

* Data Spikes at 34 and 142 msec.

Occupant Data: (Cont'd)

Page No.

Figure B-57 - Passenger Head X Acceleration vs. Time	B-57
Figure B-58 - Passenger Head Y Acceleration vs. Time	B-58
Figure B-59 - Passenger Head Z Acceleration vs. Time	B-59
Figure B-60 - Passenger Head Resultant Acceleration vs. Time	B-60
Figure B-61 - Passenger Head X Velocity vs. Time	B-61
Figure B-62 - Passenger Head Redundant X Acceleration vs. Time	B-62
Figure B-63 - Passenger Head Redundant Y Acceleration vs. Time	B-63
Figure B-64 - Passenger Head Redundant Z Acceleration vs. Time	B-64
Figure B-65 - Passenger Head Redundant Resultant Acceleration vs. Time	B-65
Figure B-66 - Passenger Head Redundant X Velocity vs. Time	B-66
Figure B-67 - Passenger Neck Force X vs. Time	B-67
Figure B-68 - Passenger Neck Force Y vs. Time	B-68
Figure B-69 - Passenger Neck Force Z vs. Time	B-69
Figure B-70 - Passenger Neck Force Resultant vs. Time	B-70
Figure B-71 - Passenger Neck Moment X vs. Time	B-71
Figure B-72 - Passenger Neck Moment Y vs. Time	B-72
Figure B-73 - Passenger Neck Moment Z vs. Time	B-73
Figure B-74 - Passenger Neck Moment Resultant vs. Time	B-74
Figure B-75 - Passenger Chest X Acceleration vs. Time	B-75
Figure B-76 - Passenger Chest Y Acceleration vs. Time	B-76
Figure B-77 - Passenger Chest Z Acceleration vs. Time	B-77
Figure B-78 - Passenger Chest Resultant Acceleration vs. Time	B-78
Figure B-79 - Passenger Chest X Velocity vs. Time	B-79
Figure B-80 - Passenger Chest Redundant X Acceleration vs. Time	B-80
Figure B-81 - Passenger Chest Redundant Y Acceleration vs. Time	B-81
Figure B-82 - Passenger Chest Redundant Z Acceleration vs. Time	B-82
Figure B-83 - Passenger Chest Redundant Resultant Acceleration vs. Time	B-83
Figure B-84 - Passenger Chest Redundant X Velocity vs. Time	B-84
Figure B-85 - Passenger Chest Compression vs. Time	B-85
Figure B-86 - Passenger Pelvis X Acceleration vs. Time	B-86
Figure B-87 - Passenger Pelvis Y Acceleration vs. Time	B-87
Figure B-88 - Passenger Pelvis Z Acceleration vs. Time	B-88

Occupant Data: (Cont'd)Page No.

Figure B-89 - Passenger Pelvis Resultant Acceleration vs. Time	B-89
Figure B-90 - Passenger Pelvis X Velocity vs. Time	B-90
Figure B-91 - Passenger Left Femur Force vs. Time	B-91
Figure B-92 - Passenger Right Femur Force vs. Time	B-92
Figure B-93 - Passenger Left Upper Tibia Moment X vs. Time	B-93
Figure B-94 - Passenger Left Upper Tibia Moment Y vs. Time	B-94
Figure B-95 - Passenger Left Upper Tibia Force Z vs. Time	B-95
Figure B-96 - Passenger Left Lower Tibia Moment X vs. Time	B-96
Figure B-97 - Passenger Left Lower Tibia Moment Y vs. Time	B-97
Figure B-98 - Passenger Left Lower Tibia Force Z vs. Time	B-98
Figure B-99 - Passenger Right Upper Tibia Moment X vs. Time	B-99
Figure B-100 - Passenger Right Upper Tibia Moment Y vs. Time	B-100
Figure B-101 - Passenger Right Upper Tibia Force Z vs. Time	B-101
Figure B-102 - Passenger Right Lower Tibia Moment X vs. Time	B-102
Figure B-103 - Passenger Right Lower Tibia Moment Y vs. Time	B-103
Figure B-104 - Passenger Right Lower Tibia Force Z vs. Time	B-104
Figure B-105 - Passenger Left Foot Ball Z Acceleration vs. Time	B-105
Figure B-106 - Passenger Left Heel X Acceleration vs. Time	B-106
Figure B-107 - Passenger Left Heel Z Acceleration vs. Time	B-107
Figure B-108 - Passenger Right Foot Ball Z Acceleration vs. Time*	B-108
Figure B-109 - Passenger Right Heel X Acceleration vs. Time	B-109
Figure B-110 - Passenger Right Heel Z Acceleration vs. Time	B-110
Figure B-111 - Passenger Shoulder Belt Force vs. Time	B-111
Figure B-112 - Passenger Lap Belt Force vs. Time	B-112

Vehicle and Barrier Data:

Figure B-113- Left Rear Seat Crossmember X Acceleration vs. Time	B-113
Figure B-114 - Left Rear Seat Crossmember X Velocity vs. Time	B-114
Figure B-115 - Left Rear Seat Crossmember X Displacement vs. Time	B-115
Figure B-116 - Right Rear Seat Crossmember X Acceleration vs. Time	B-116
Figure B-117- Right Rear Seat Crossmember X Velocity vs. Time	B-117
Figure B-118 - Right Rear Seat Crossmember X Displacement vs. Time	B-118

* No Valid Data After 95 msec.

<u>Vehicle and Barrier Data:</u>	<u>Page No.</u>
Figure B-119 - Top of Engine Block X Acceleration vs. Time	B-119
Figure B-120 - Top of Engine Block X Velocity vs. Time	B-120
Figure B-121 - Top of Engine Block X Displacement vs. Time	B-121
Figure B-122 - Bottom of Engine X Acceleration vs. Time	B-122
Figure B-123 - Bottom of Engine X Velocity vs. Time	B-123
Figure B-124 - Bottom of Engine X Displacement vs. Time	B-124
Figure B-125 - Left Front Brake Caliper X Acceleration vs. Time	B-125
Figure B-126 - Left Front Brake Caliper X Velocity vs. Time	B-126
Figure B-127 - Left Front Brake Caliper X Displacement vs. Time	B-127
Figure B-128 - Right Front Brake Caliper X Acceleration vs. Time*	B-128
Figure B-129 - Right Front Brake Caliper X Velocity vs. Time*	B-129
Figure B-130 - Right Front Brake Caliper X Displacement vs. Time*	B-130
Figure B-131 - Instrument Panel X Acceleration vs. Time	B-131
Figure B-132 - Instrument Panel X Velocity vs. Time	B-132
Figure B-133 - Instrument Panel X Displacement vs. Time	B-133
Figure B-134 - Left Rear Seat Crossmember Redundant X Acceleration vs. Time	B-134
Figure B-135 - Left Rear Seat Crossmember Redundant X Velocity vs. Time	B-135
Figure B-136 - Left Rear Seat Crossmember Redundant X Displacement vs. Time	B-136
Figure B-137 - Right Rear Seat Crossmember Redundant X Acceleration vs. Time	B-137
Figure B-138 - Right Rear Seat Crossmember Redundant X Velocity vs. Time	B-138
Figure B-139 - Right Rear Seat Crossmember Redundant X Displacement vs. Time	B-139
Figure B-140 - Upper Left Barrier Force vs. Time	B-140
Figure B-141 - Upper Center Barrier Force vs. Time	B-141
Figure B-142 - Upper Right Barrier Force vs. Time	B-142
Figure B-143 - Lower Left Barrier Force vs. Time	B-143
Figure B-144 - Lower Center Barrier Force vs. Time	B-144
Figure B-145 - Lower Right Barrier Force vs. Time	B-145
Figure B-146 - Sum of Left Barrier Forces vs. Time	B-146
Figure B-147 - Sum of Center Barrier Forces vs. Time	B-147
Figure B-148 - Sum of Right Barrier Forces vs. Time	B-148
Figure B-149 - Sum of Barrier Forces vs. Time	B-149

* No Valid Data After 90 msec.

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

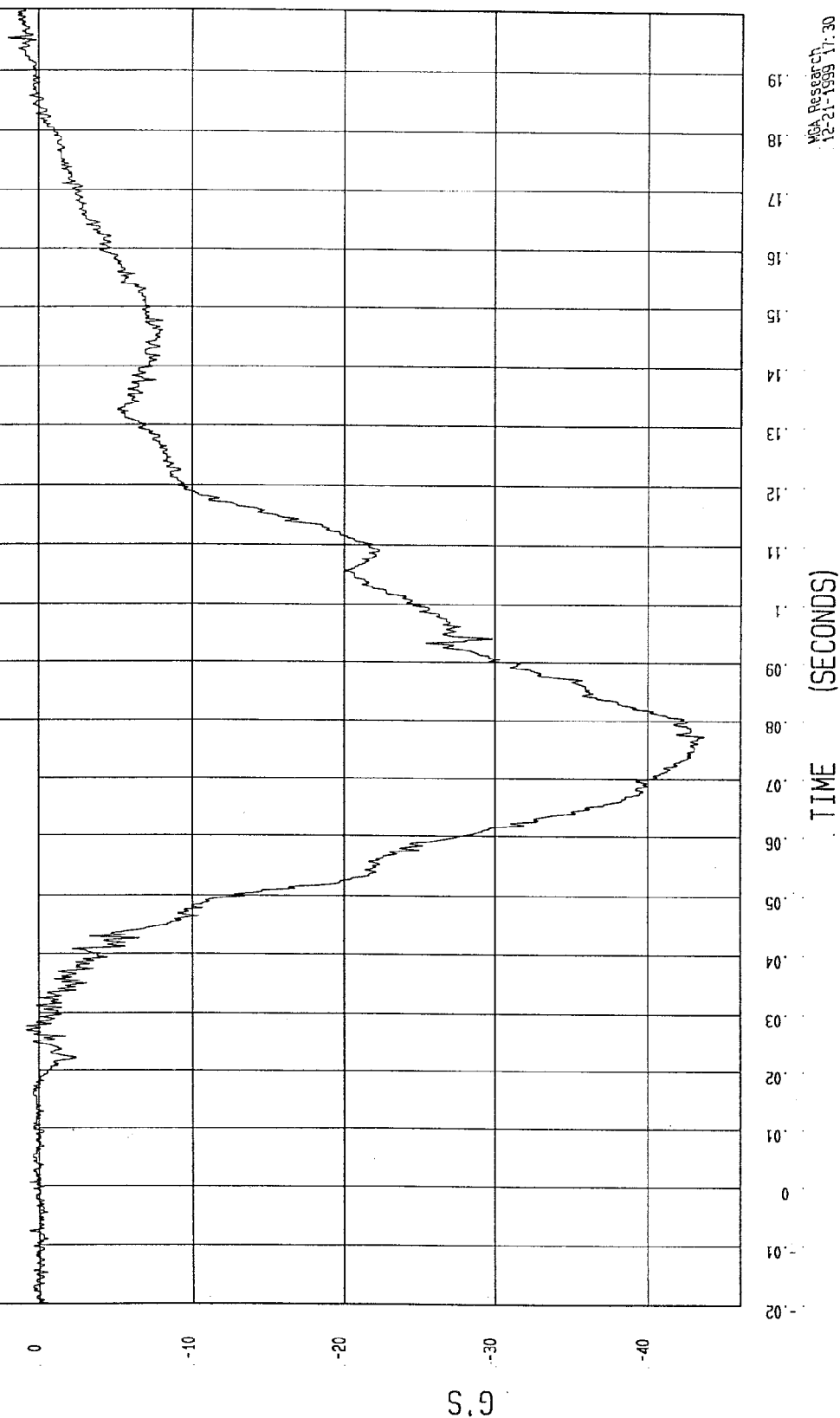
Speed: 35.2 MPH 56.6 KPH

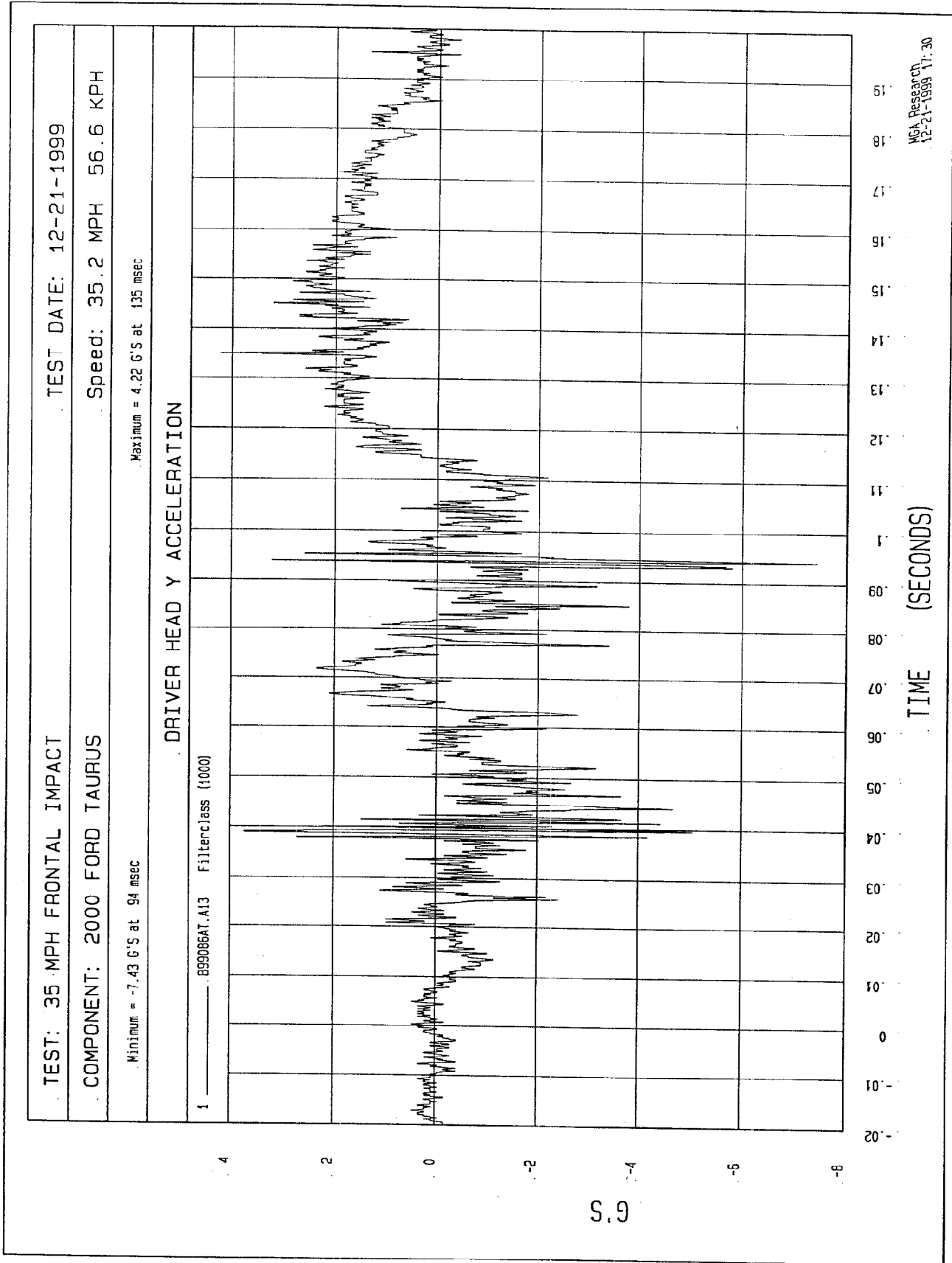
Minimum = -43.8 G'S at 77 msec

Maximum = 1.99 G'S at 195 msec

DRIVER HEAD X ACCELERATION

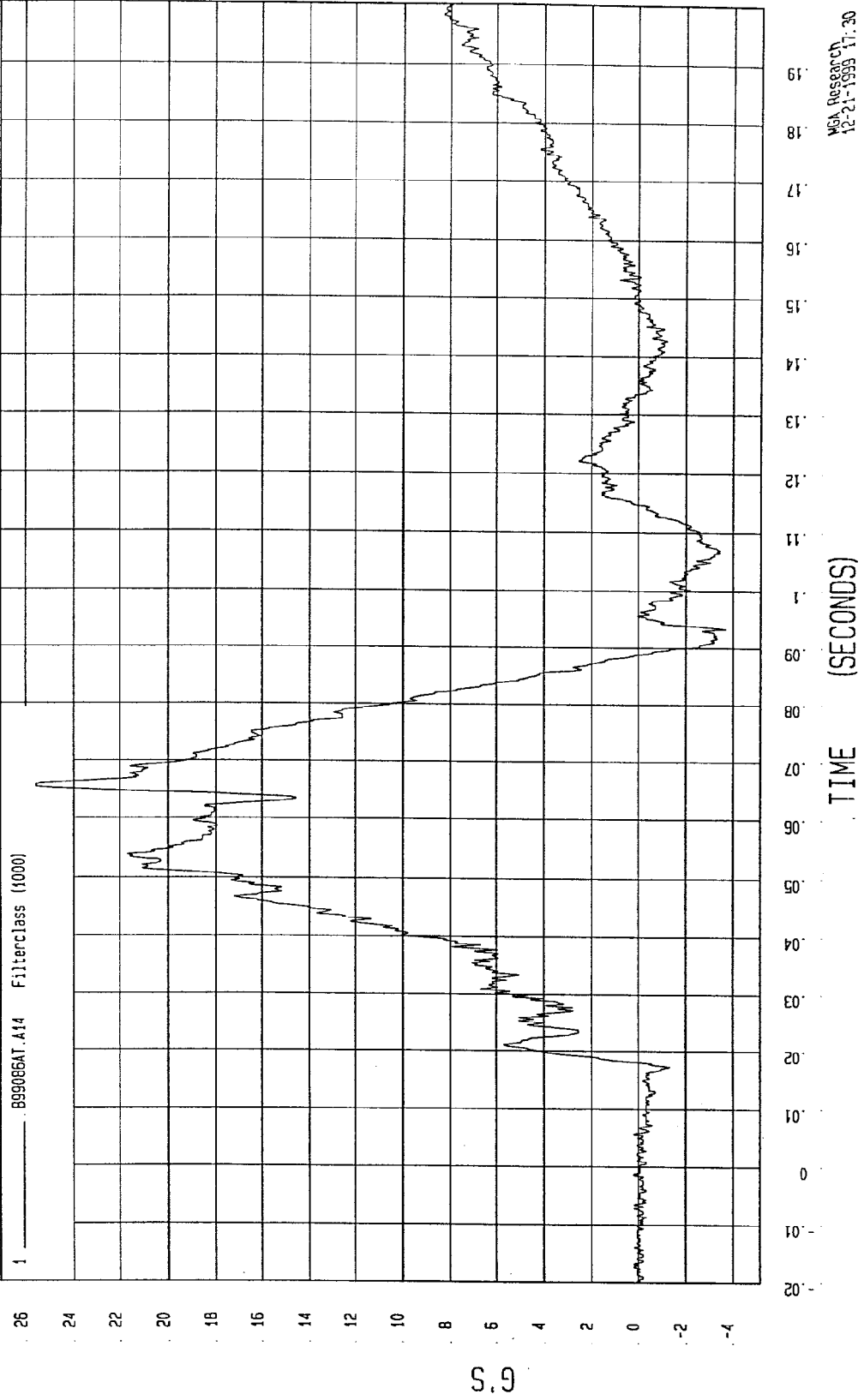
1 899086AT.A12 Filterclass (1000)

MCA Research
12-21-1999 17:30



TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH
Minimum = -3.7 G'S at 93 msec Maximum = 25.58 G'S at 66 msec

DRIVER HEAD Z ACCELERATION



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

Speed: 35.2 MPH 56.6 KPH

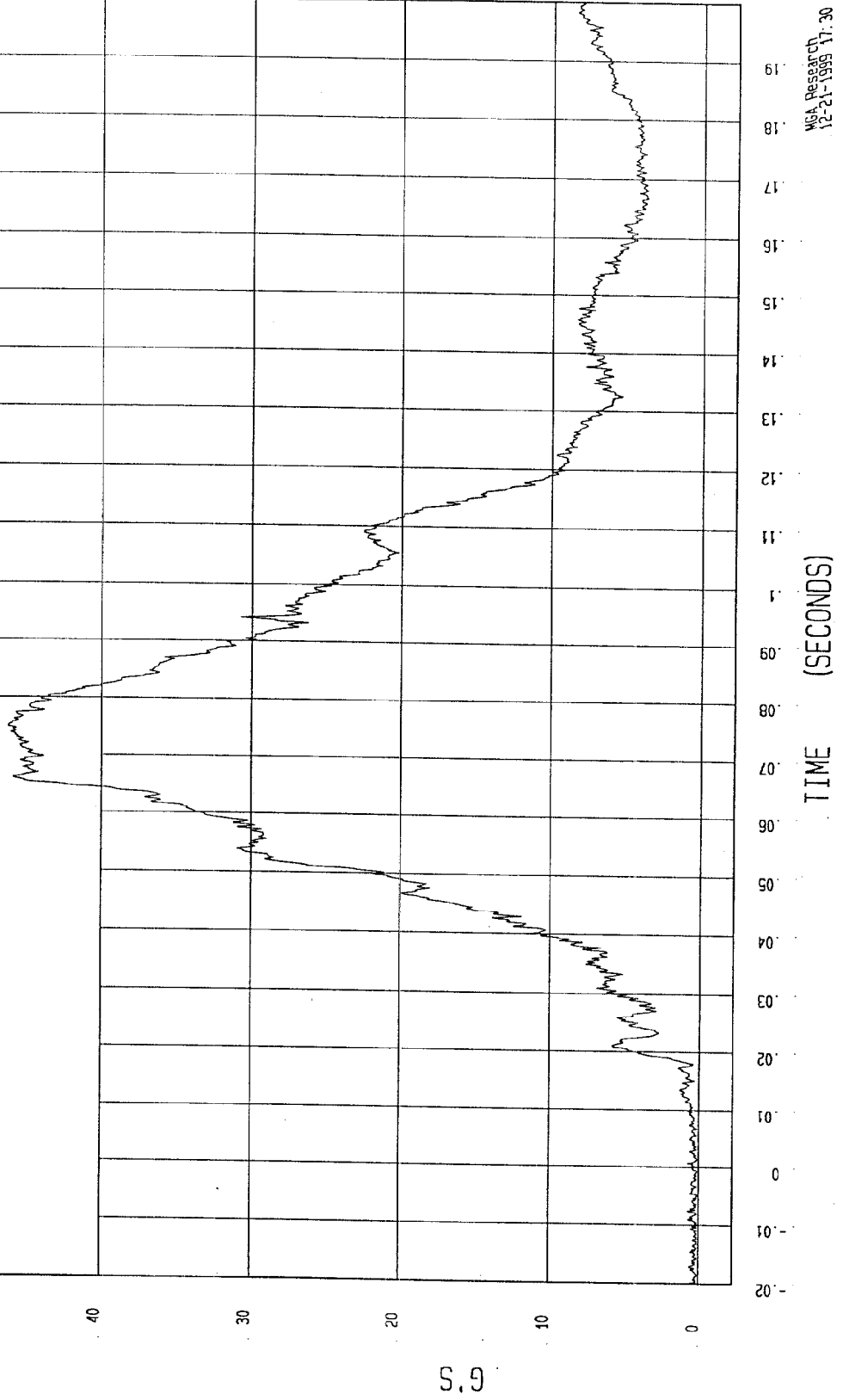
COMPONENT: 2000 FORD TAURUS

Maximum = 46.15 G'S at 75 msec

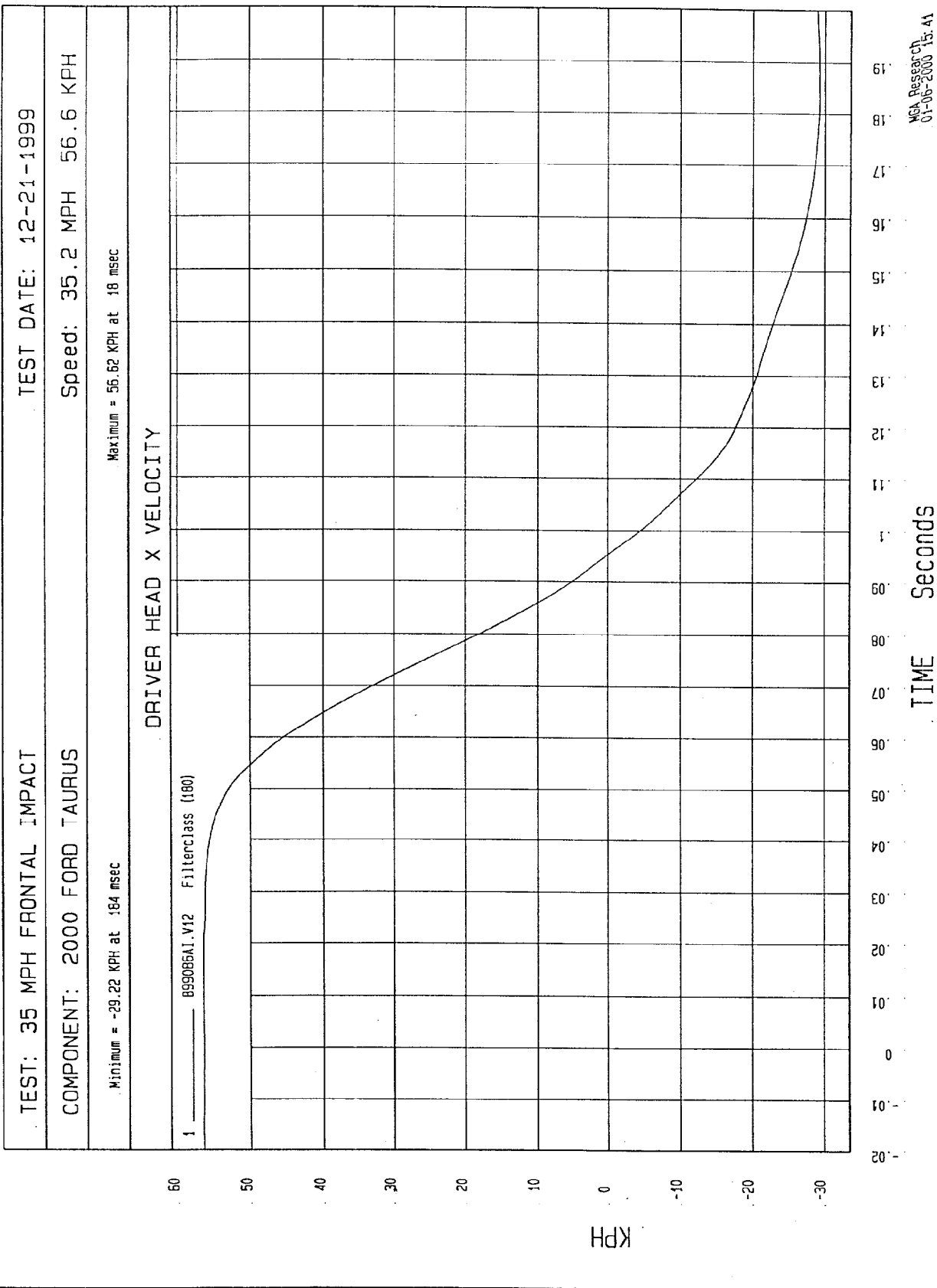
Minimum = 9.80E-02 G'S at -19 msec

DRIVER HEAD RESULTANT ACCELERATION

1 ——— B99065AV A12 Filterclass (1000)



NSA Research
12-21-1999 17:30



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

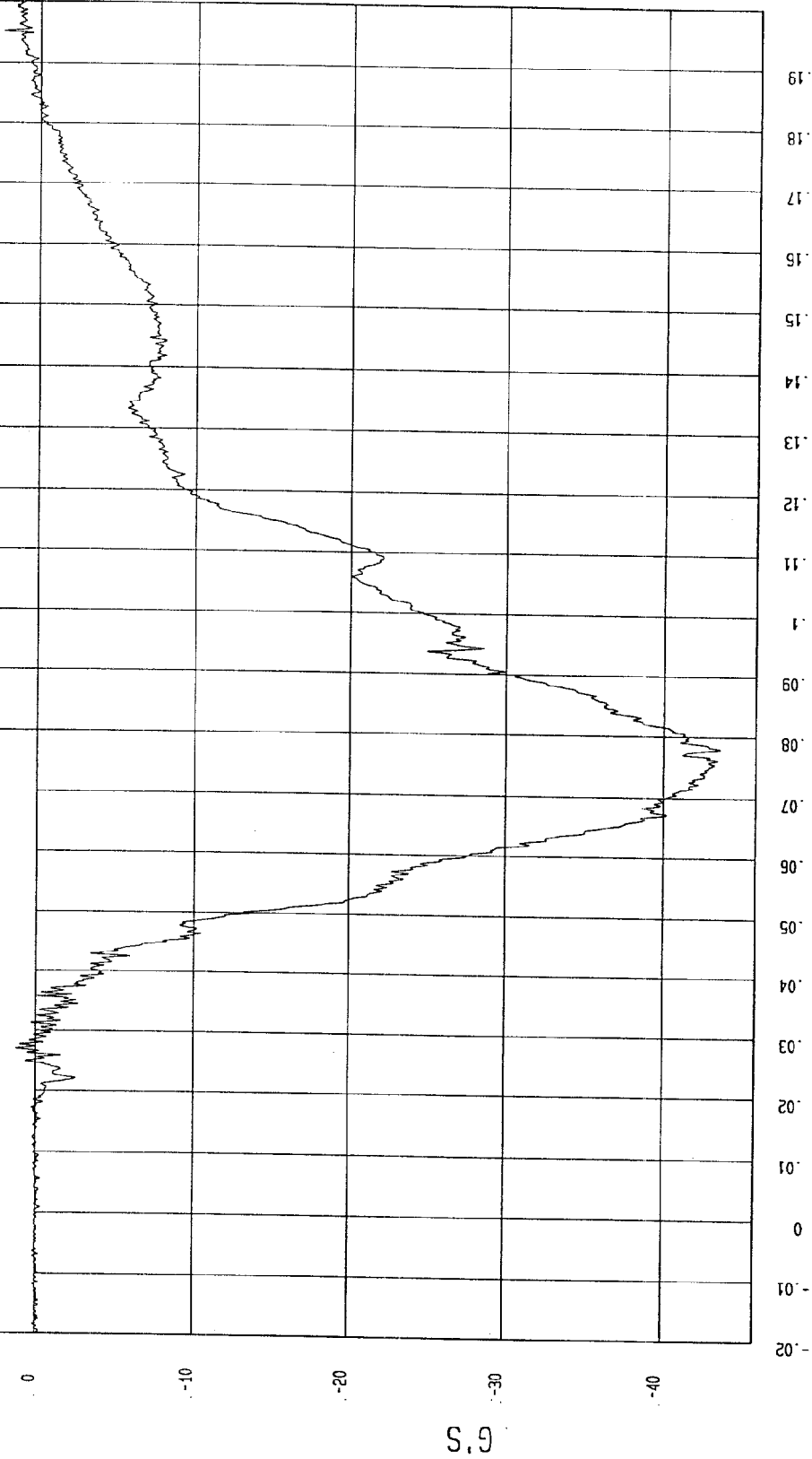
Speed: 35.2 MPH 56.6 KPH

Minimum = -43.48 G'S at 78 msec

Maximum = 2.36 G'S at 195 msec

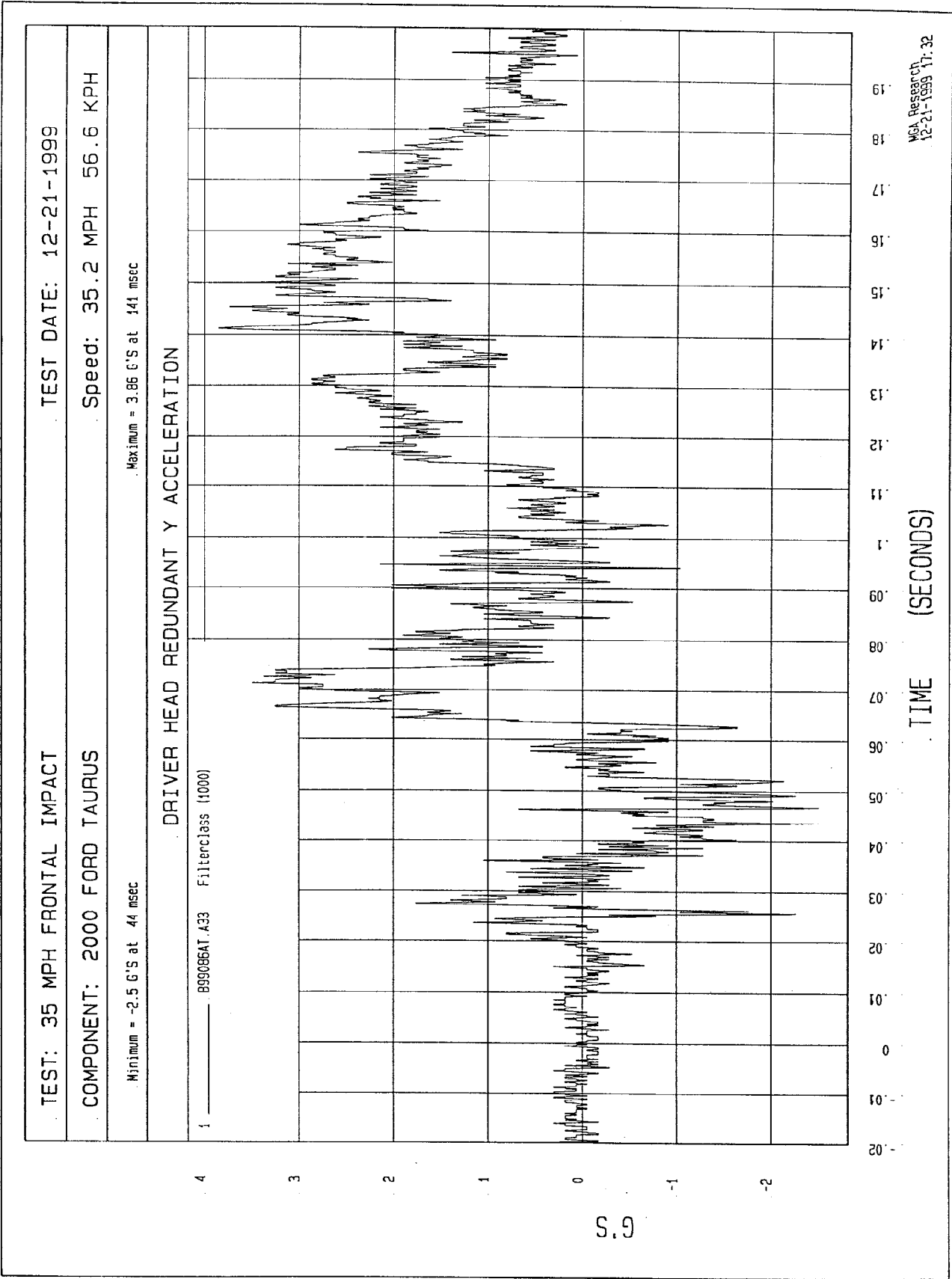
DRIVER HEAD REDUNDANT X ACCELERATION

1 B99066AT.A32 Filterclass (1000)



MCA Research
12-21-1999 17.32

TIME (SECONDS)

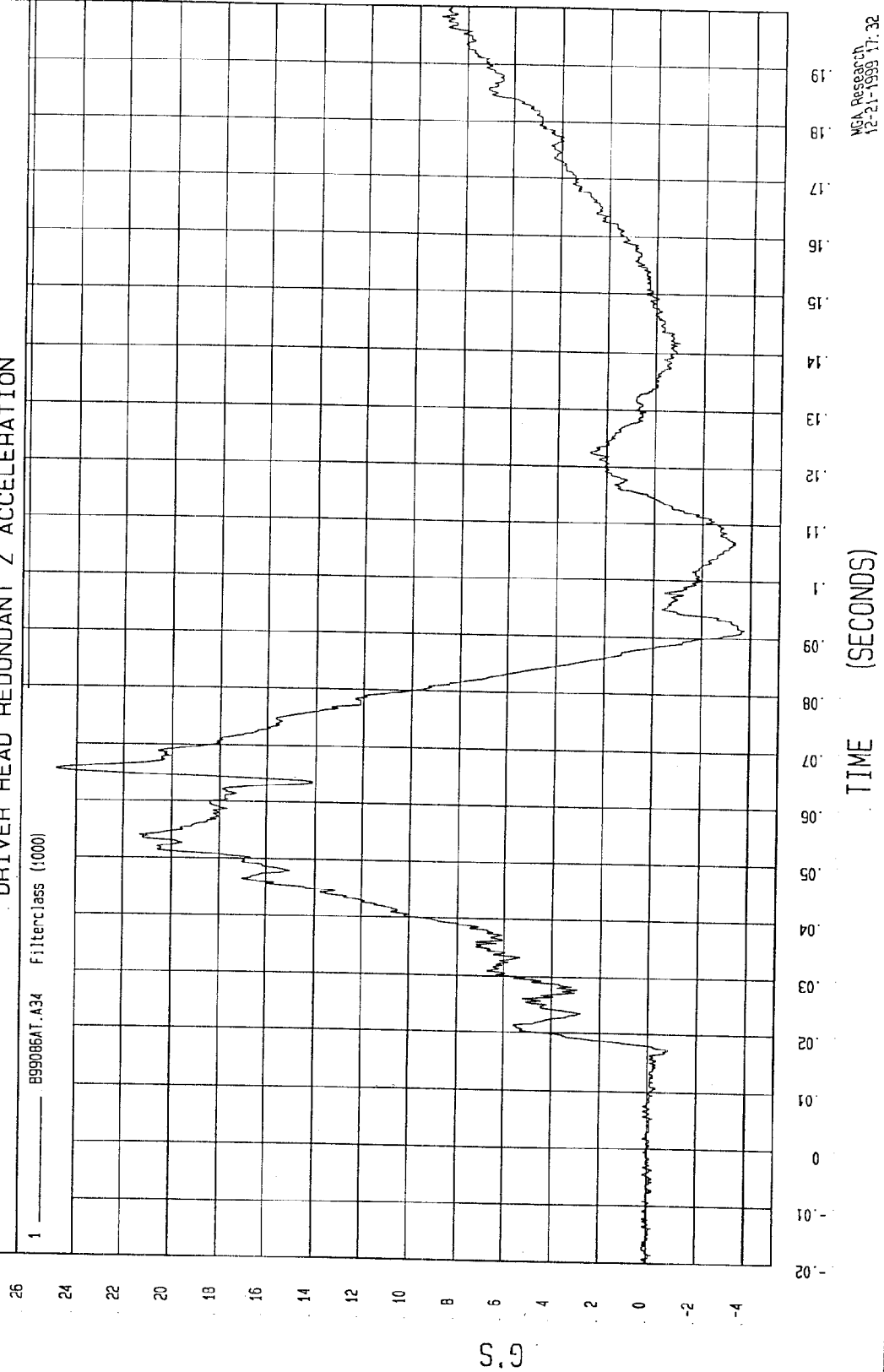


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

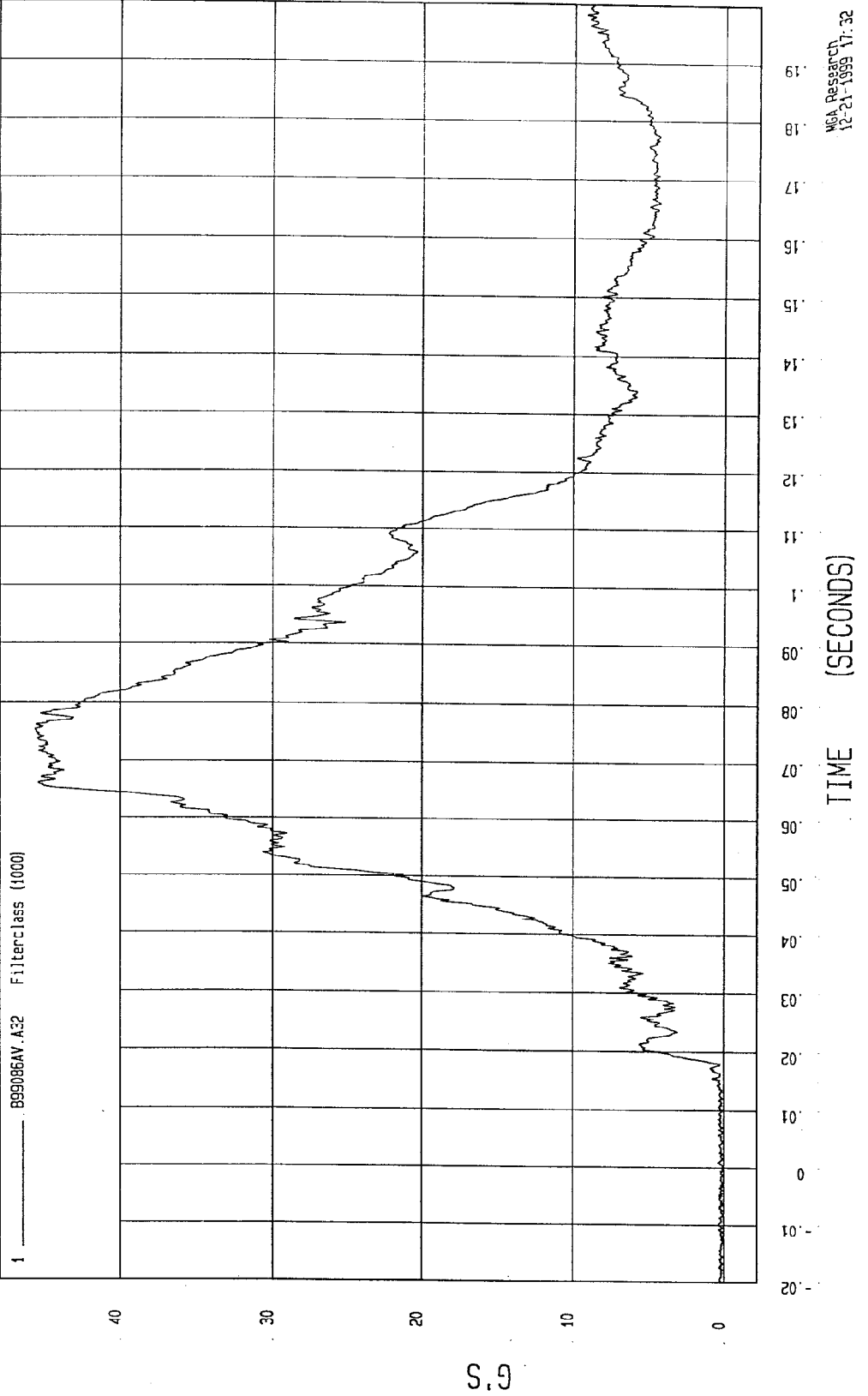
Minimum = -3.74 G'S at 91 msec
Maximum = 24.83 G'S at 66 msec

DRIVER HEAD REDUNDANT Z ACCELERATION



TEST: 35 MPH FRONTAL IMPACT
TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS
Speed: 35.2 MPH 55.6 KPH
Minimum = 6.88E-02 G'S at -17 msec
Maximum = 45.61 G'S at 75 msec

DRIVER HEAD REDUNDANT RESULTANT ACCELERATION



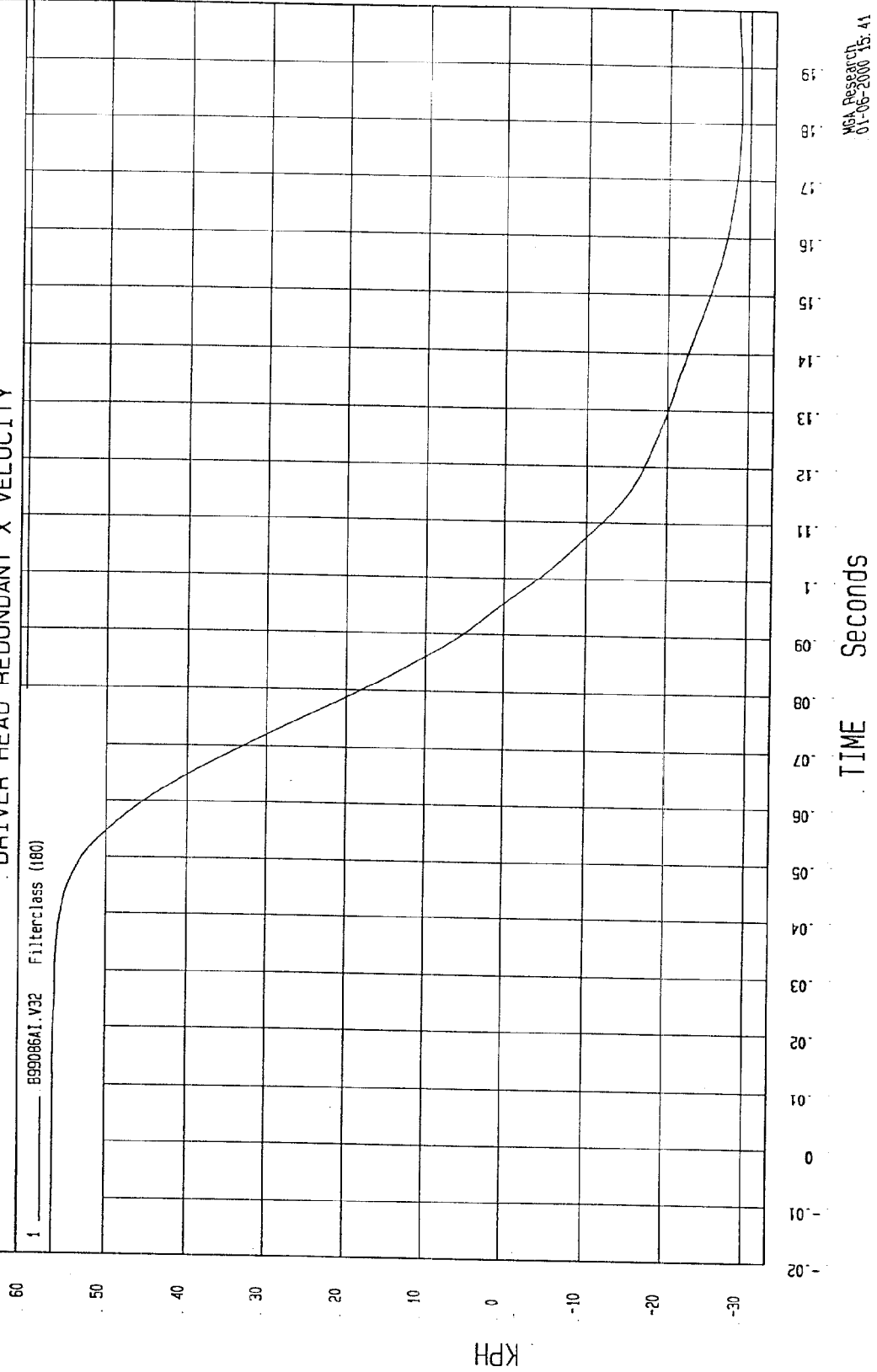
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -28.88 KPH at 184 msec
Maximum = 56.6 KPH at -20 msec

DRIVER HEAD REDUNDANT X VELOCITY

1 _____ B99086A1.V32 Filterclass (180)

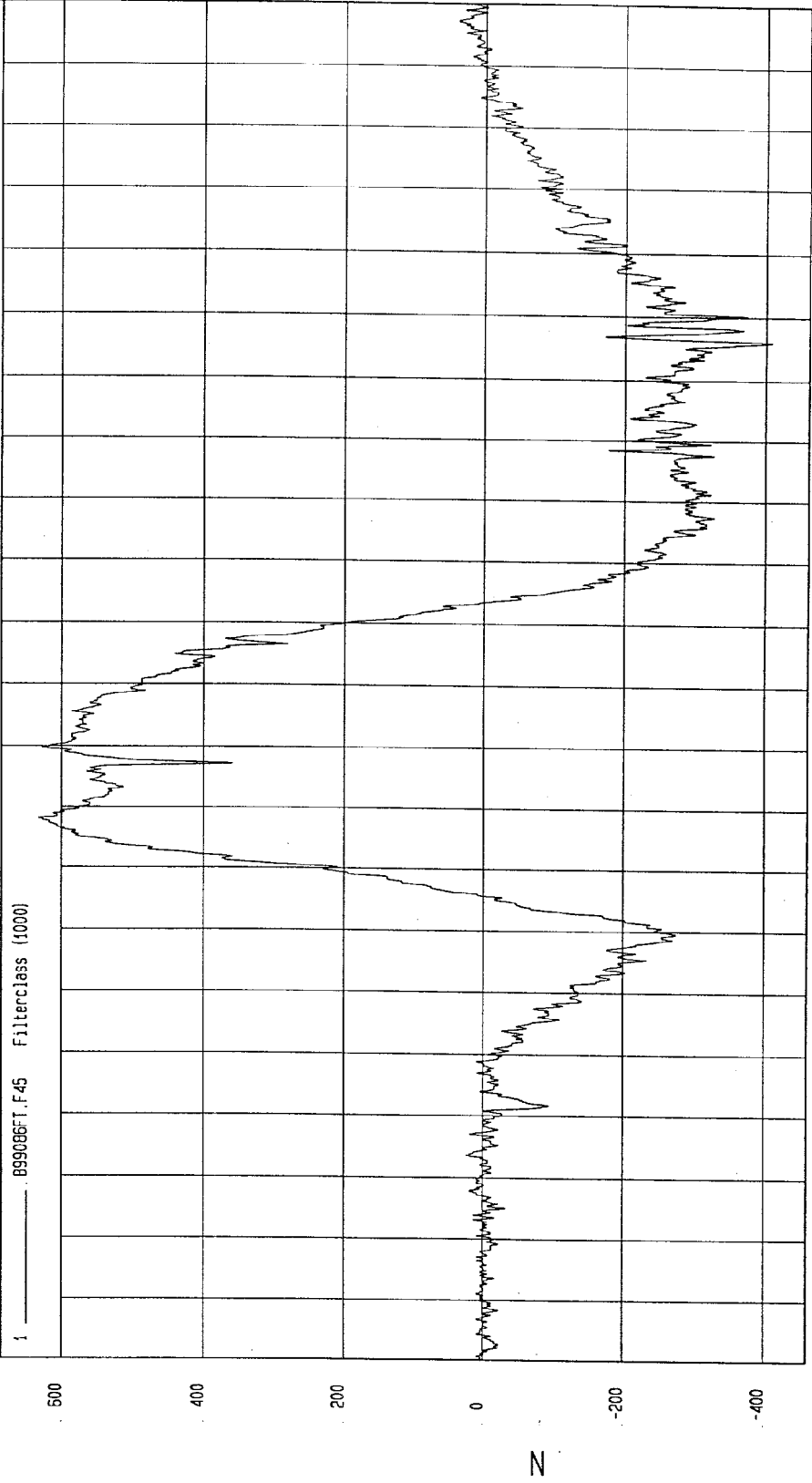


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -408.79 N at 146 msec Maximum = 632.12 N at 68 msec

DRIVER NECK FORCE X



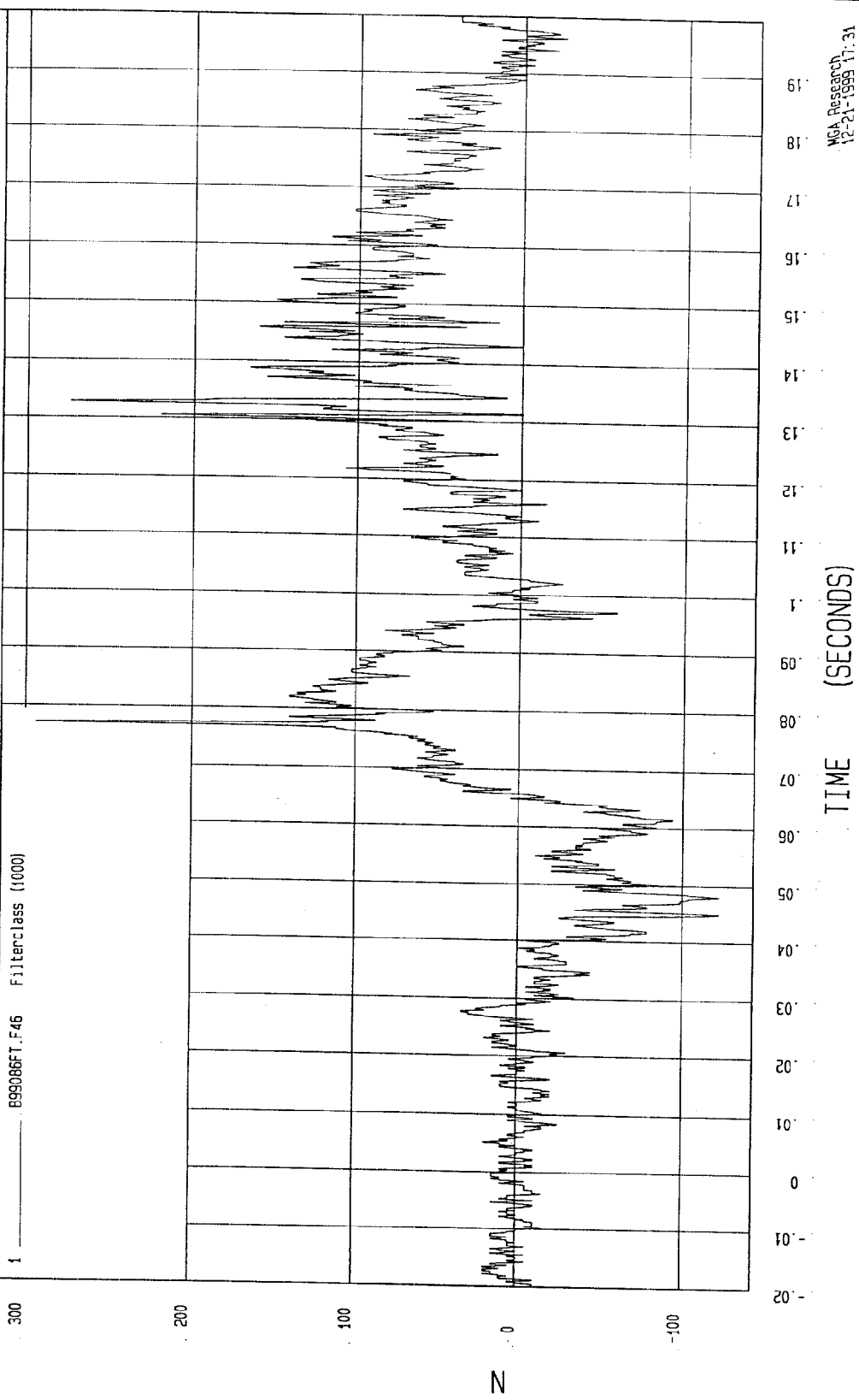
MCA Research
12-21-1999 17:31

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -123 N at 45 msec Maximum = 293.71 N at 77 msec

DRIVER NECK FORCE Y



TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

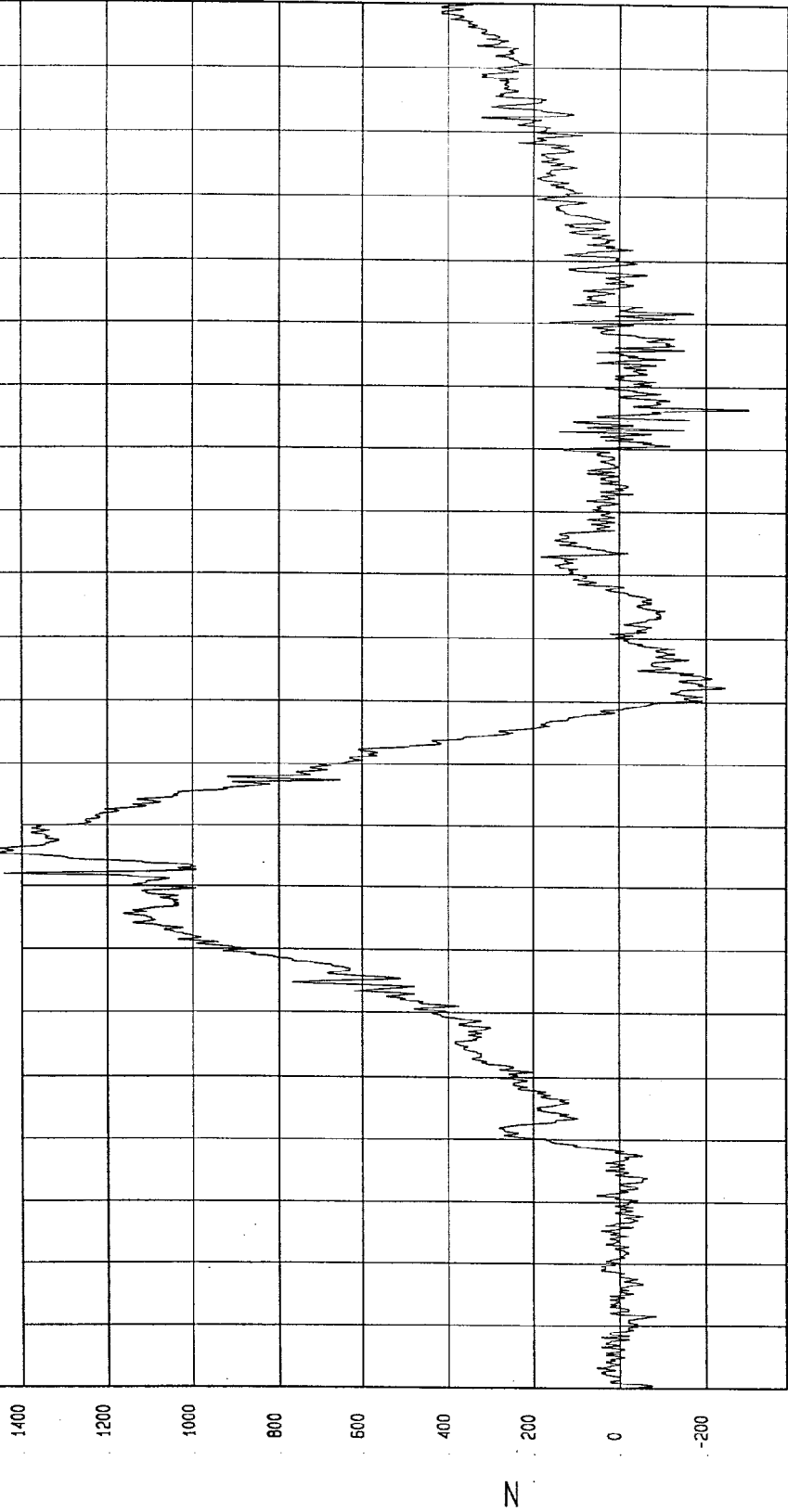
SPEED: 35.2 MPH 56.6 KPH

Maximum = 1451.35 N at 56 msec

Minimum = -297.92 N at 135 msec

DRIVER NECK FORCE Z

1 899086FT.F47 FilterClass (1000)



MOA Research
12-21-1999 17:31

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

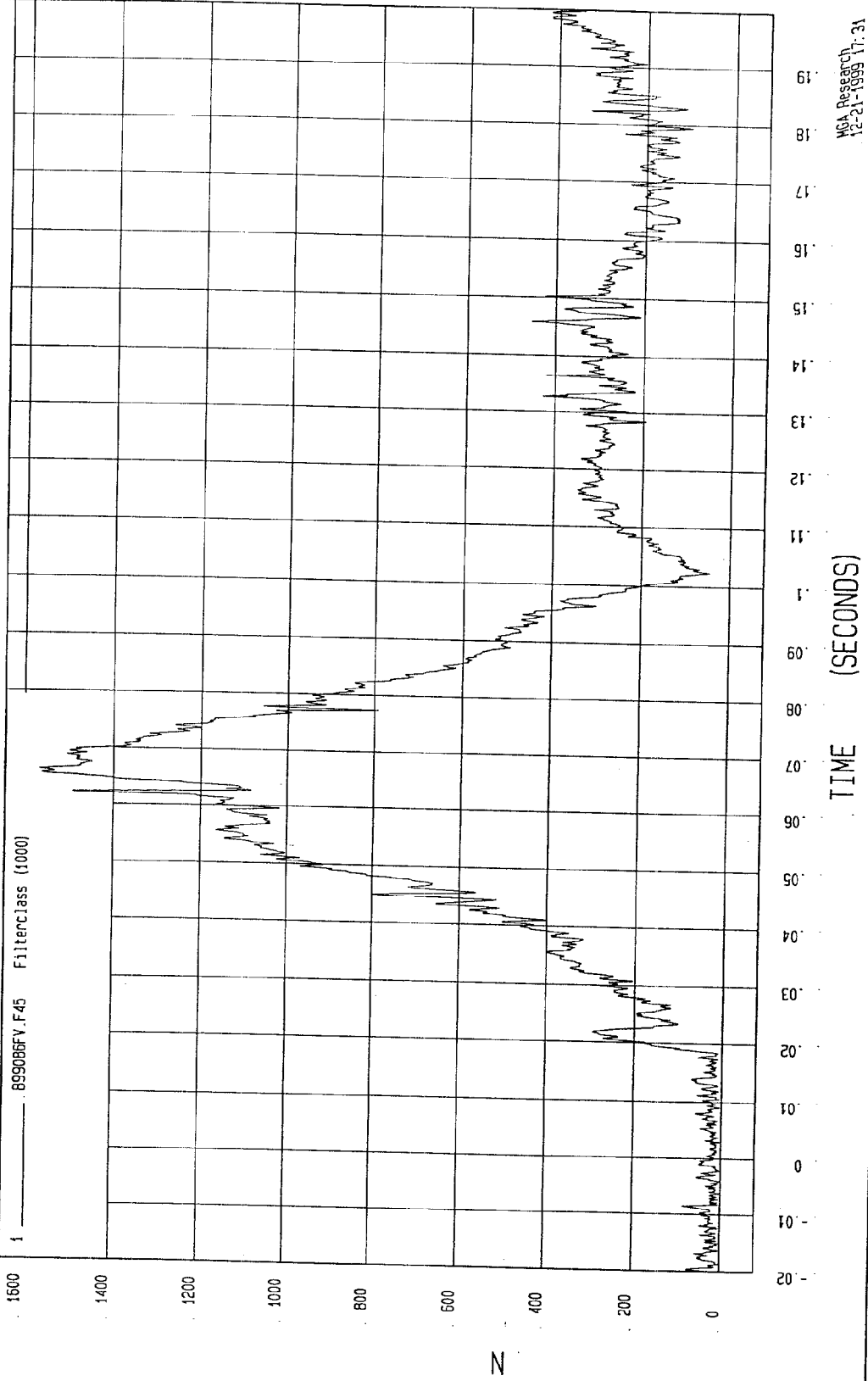
COMPONENT: 2000 FORD TAURUS

Speed: 35.2 MPH 56.6 KPH

Minimum = 1.91 N at -19 msec

Maximum = 1567.4 N at 56 msec

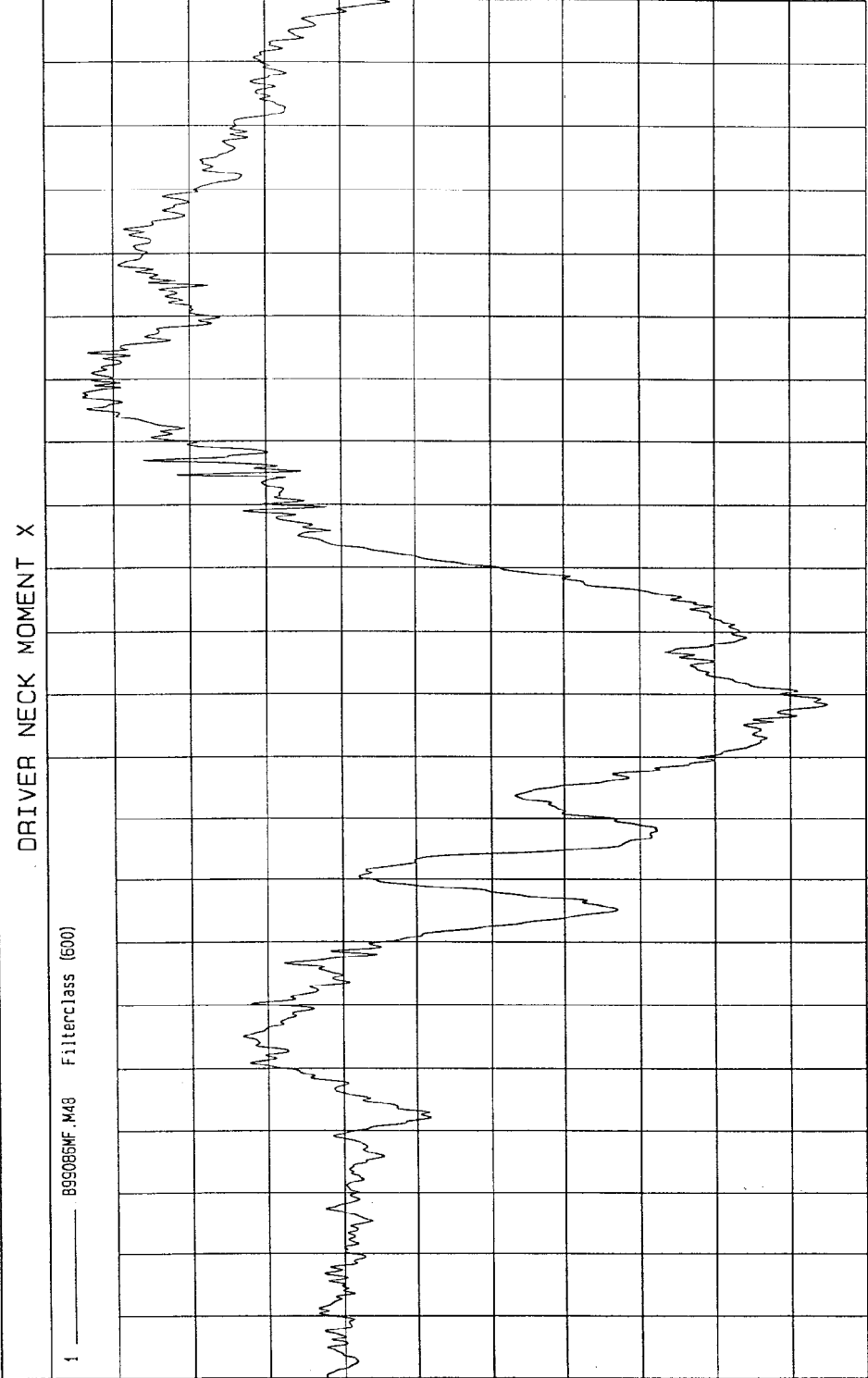
DRIVER NECK FORCE RESULTANT



TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -13.01 NM at 88 msec Maximum = 6.8 NM at 137 msec



TIME (SECONDS)

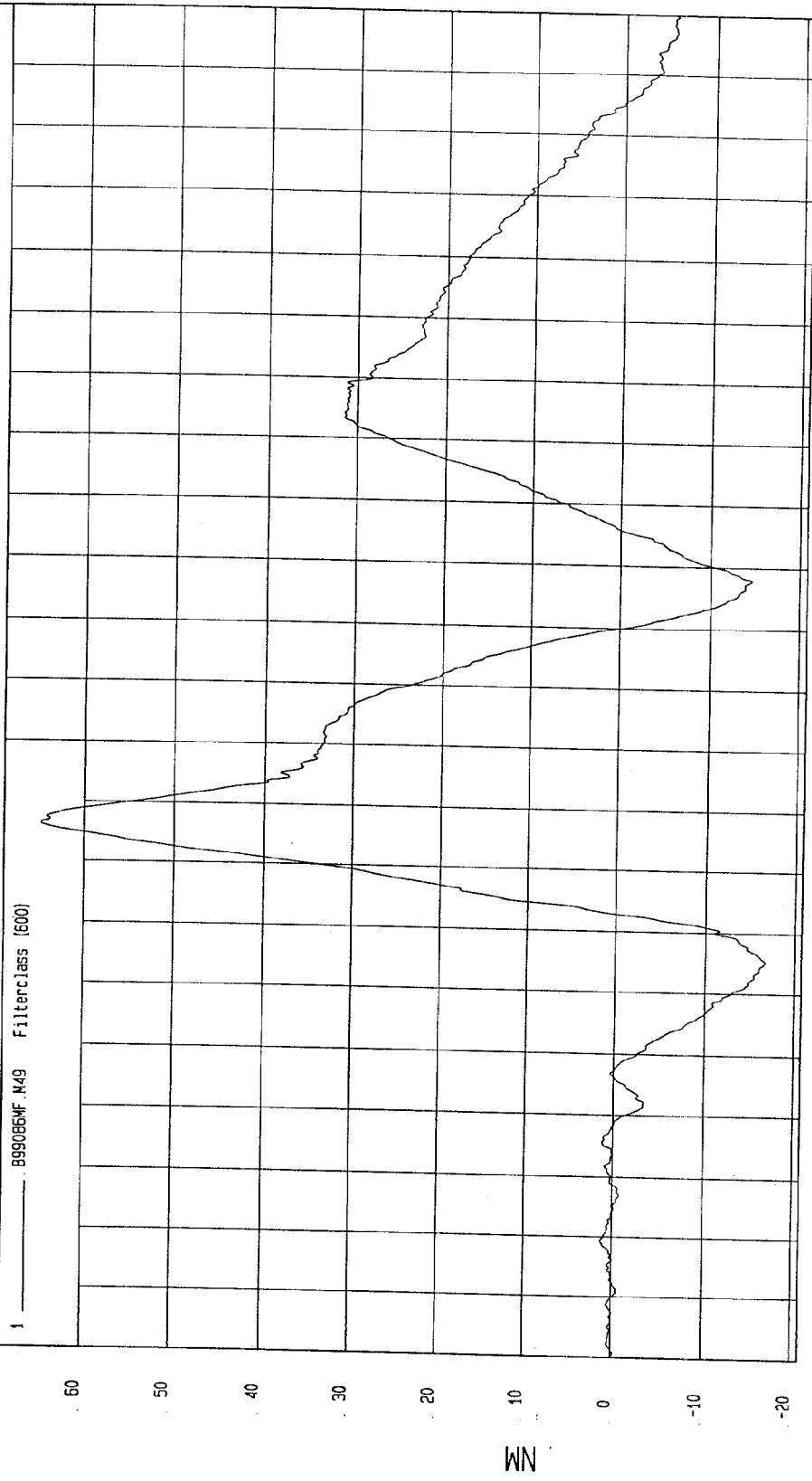
MGA Research
12-21-1999 17:31

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -15.72 NM at 45 msec Maximum = 64.84 NM at 56 msec

DRIVER NECK MOMENT Y



MSA Research
12-21-1999 17:32

TEST DATE: 12-21-1999

TEST: 35 MPH FRONTAL IMPACT

Speed: 35.2 MPH 56.6 KPH

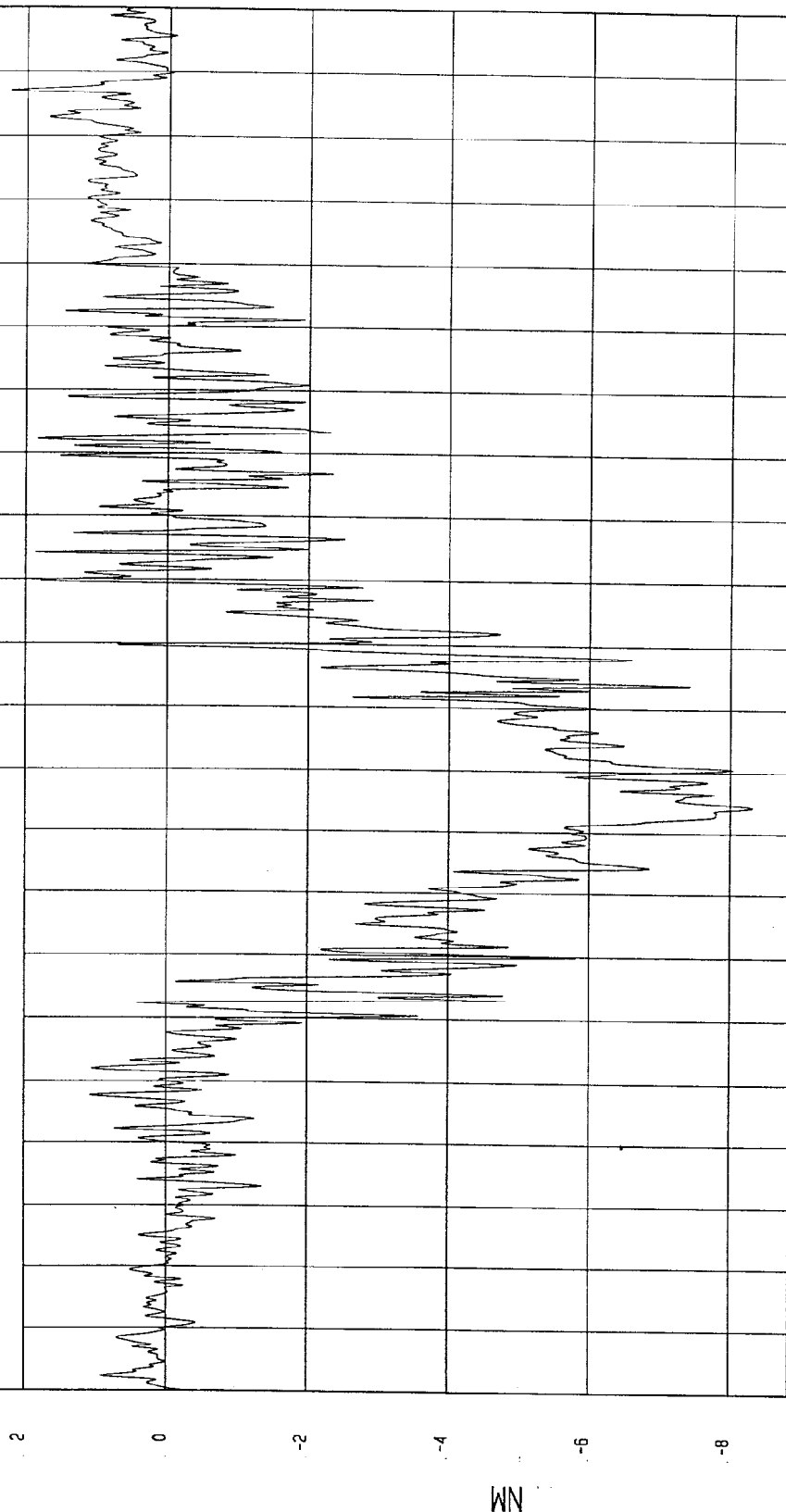
COMPONENT: 2000 FORD TAURUS

Maximum = 2.23 NM at 187 msec

Minimum = -8.32 NM at 74 msec

DRIVER NECK MOMENT Z

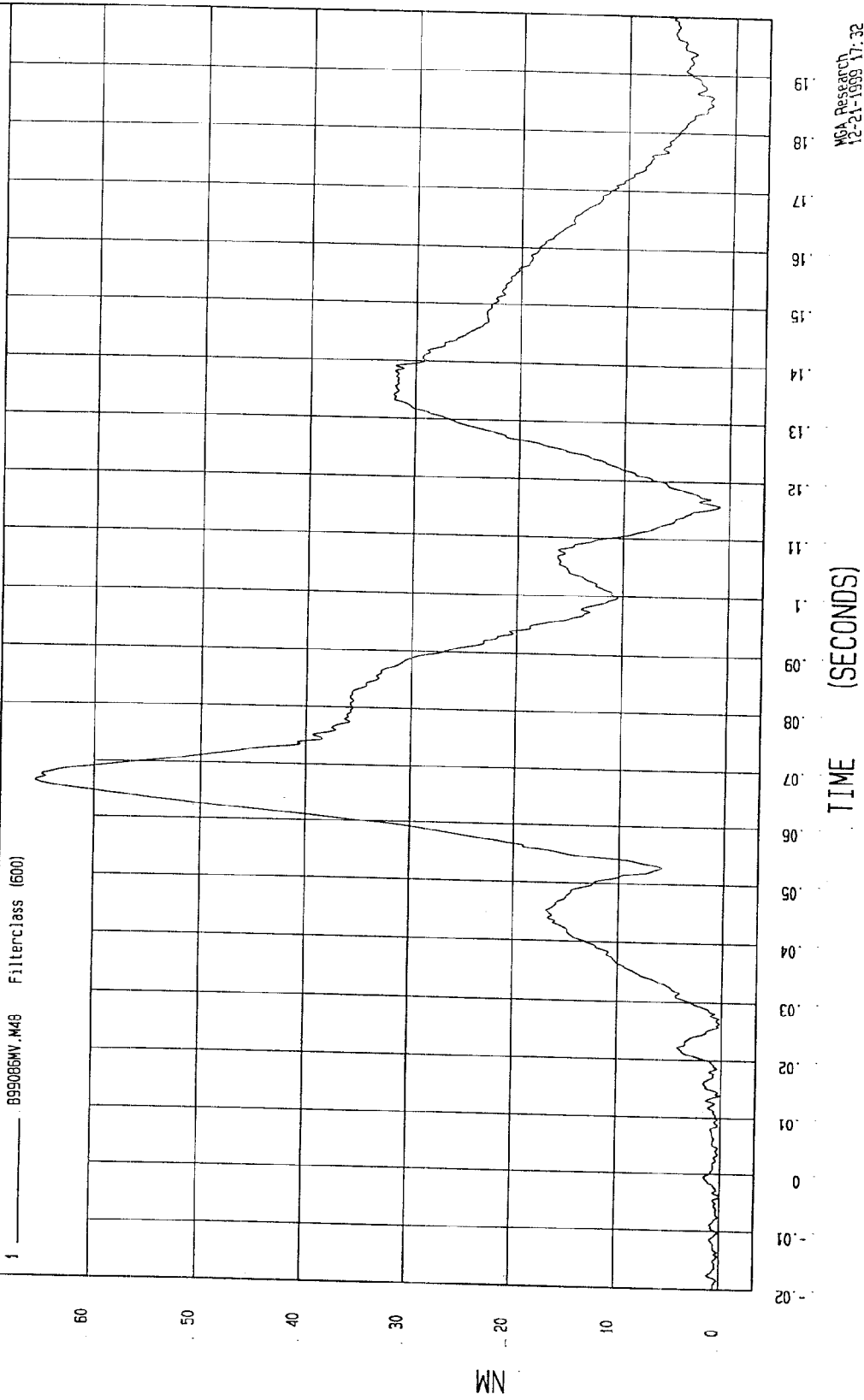
1 ——— B99086MF.M50 Filterclass (500)



MCA Research
12-21-1999 17.32

TEST: 35 MPH FRONTAL IMPACT
TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS
Speed: 35.2 MPH 56.6 KPH
Minimum = 2.03E-02 NM at -4 msec
Maximum = 65.52 NM at 66 msec

DRIVER NECK MOMENT RESULTANT

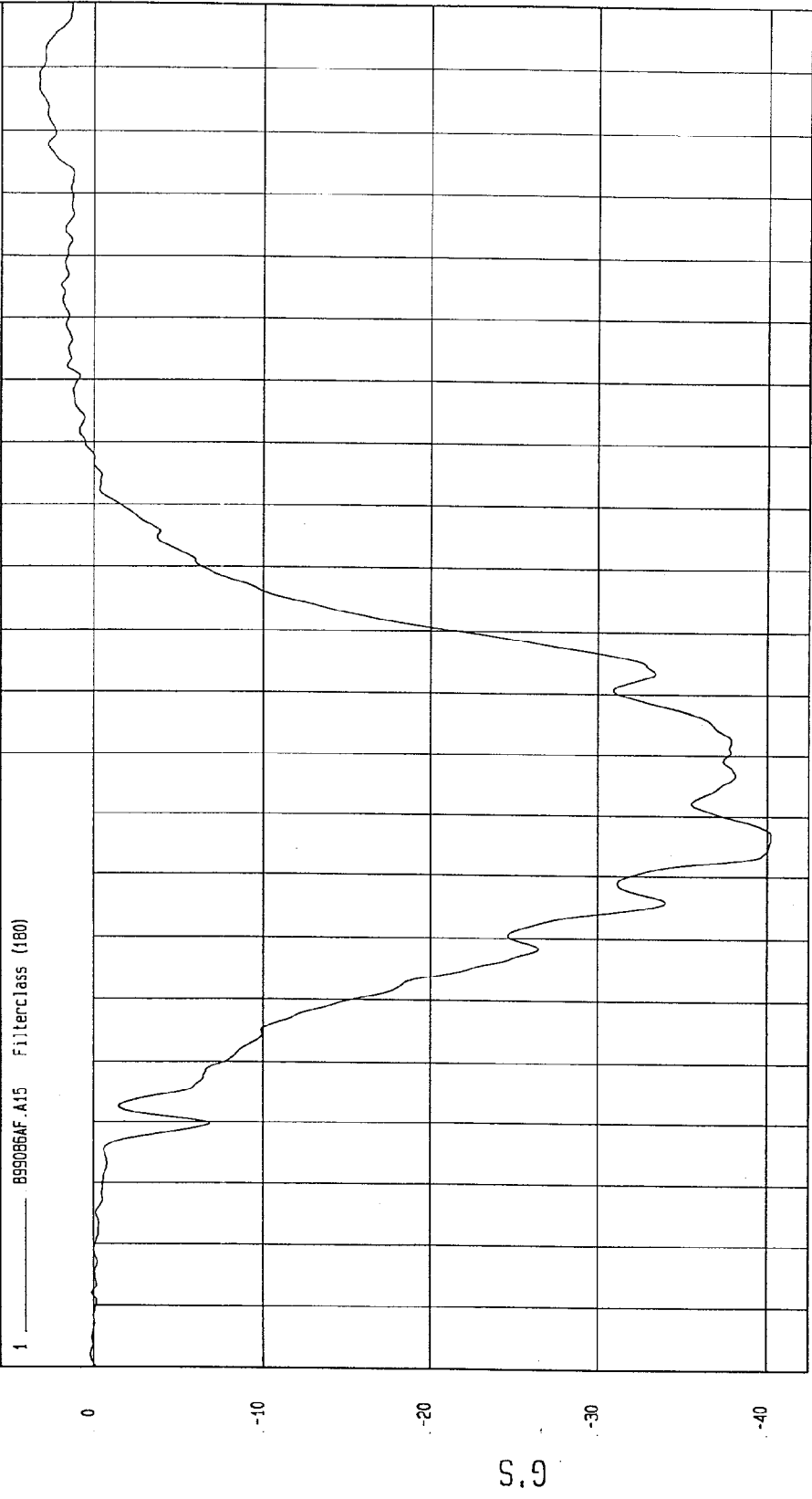


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -40.23 G'S at 67 msec Maximum = 3.25 G'S at 189 msec

DRIVER CHEST X ACCELERATION



TIME (SECONDS)

MCA Research
12-21-1999 17:30

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

Speed: 35.2 MPH 56.6 KPH

Minimum = -4.78 G'S at 57 msec

Maximum = 2.32 G'S at 105 msec

DRIVER CHEST Y ACCELERATION

1 ——— B99066AF.A16 FilterClass (180)

2

1

0

-1

-2

-3

-4

-5

G'S

-0.02

-0.01

0

.01

.02

.03

.04

.05

.06

.07

.08

.09

.1

.11

.12

.13

.14

.15

.16

.17

.18

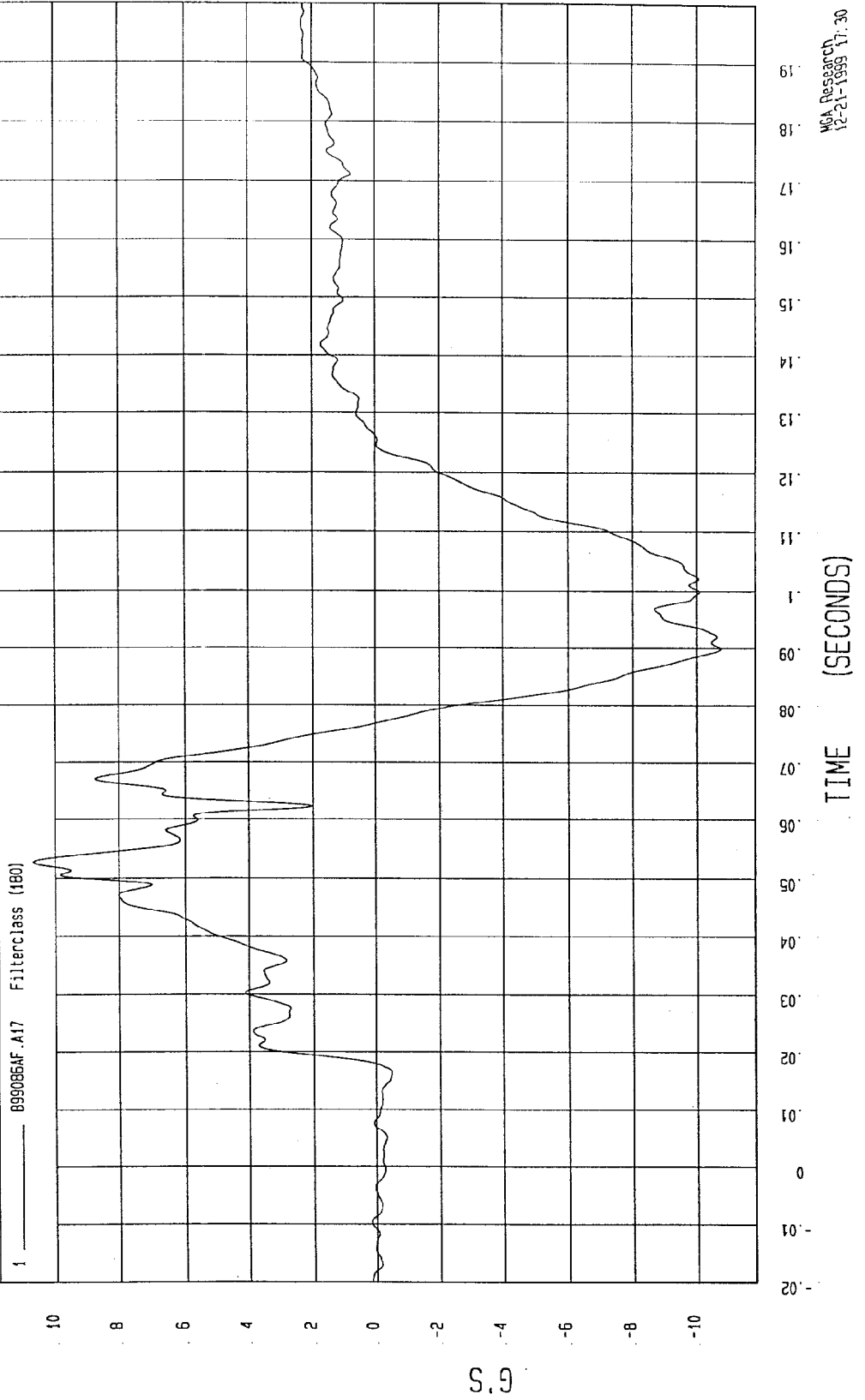
.19

TIME (SECONDS)

MCA Research
12-21-1999 17:30

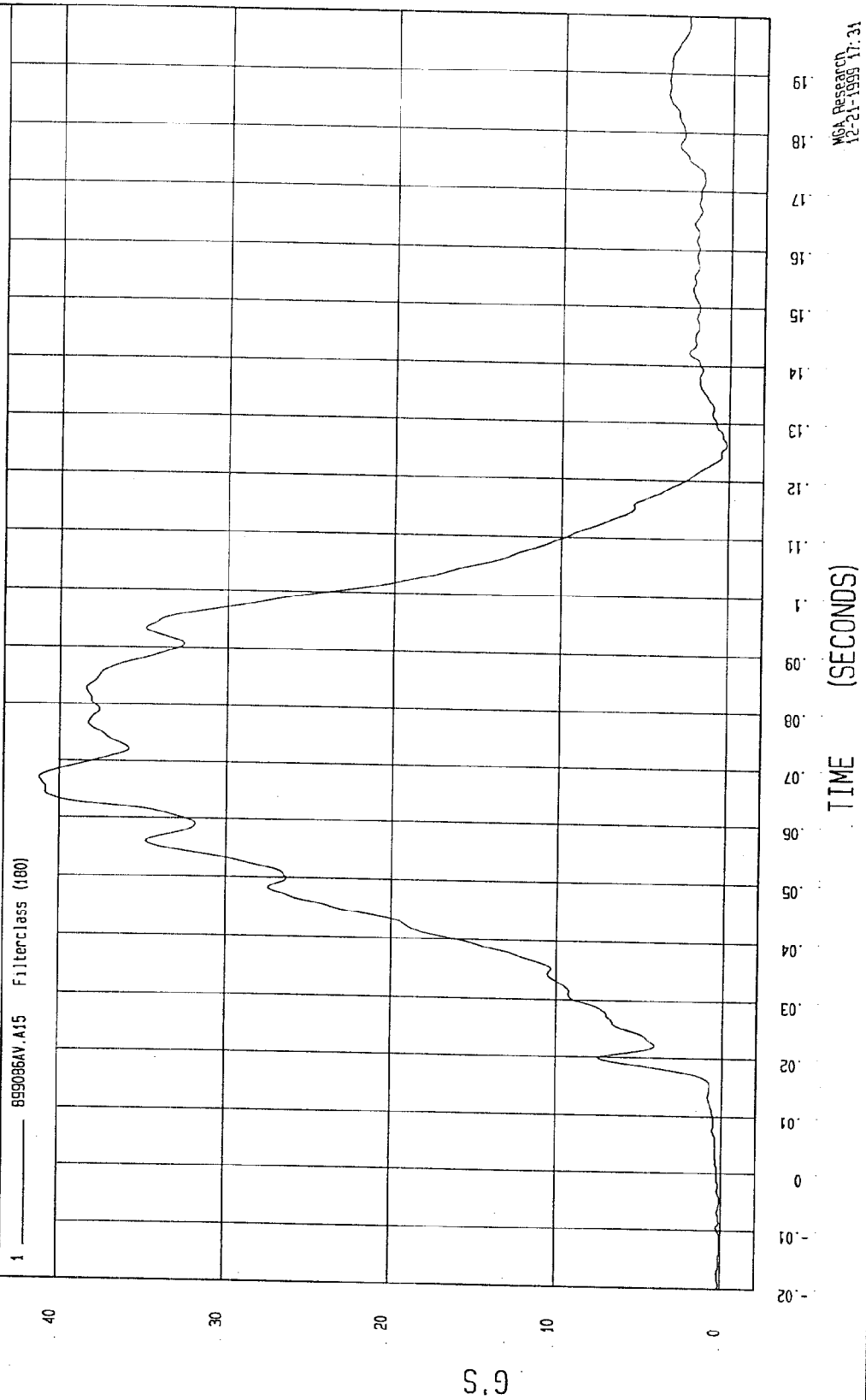
TEST: 35 MPH FRONTAL IMPACT	TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS	Speed: 35.2 MPH 56.6 KPH
Minimum = -10.74 G'S at 90 msec	
Maximum = 10.67 G'S at 53 msec	

DRIVER CHEST Z ACCELERATION



TEST: 35 MPH FRONTAL IMPACT
TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS
Speed: 35.2 MPH 56.6 KPH
Minimum = 2.05E-02 G'S at -14 msec
Maximum = 41.22 G'S at 67 msec

DRIVER CHEST RESULTANT ACCELERATION



MSA Research
12-21-1999 17:31

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

Speed: 35.2 MPH 56.6 KPH

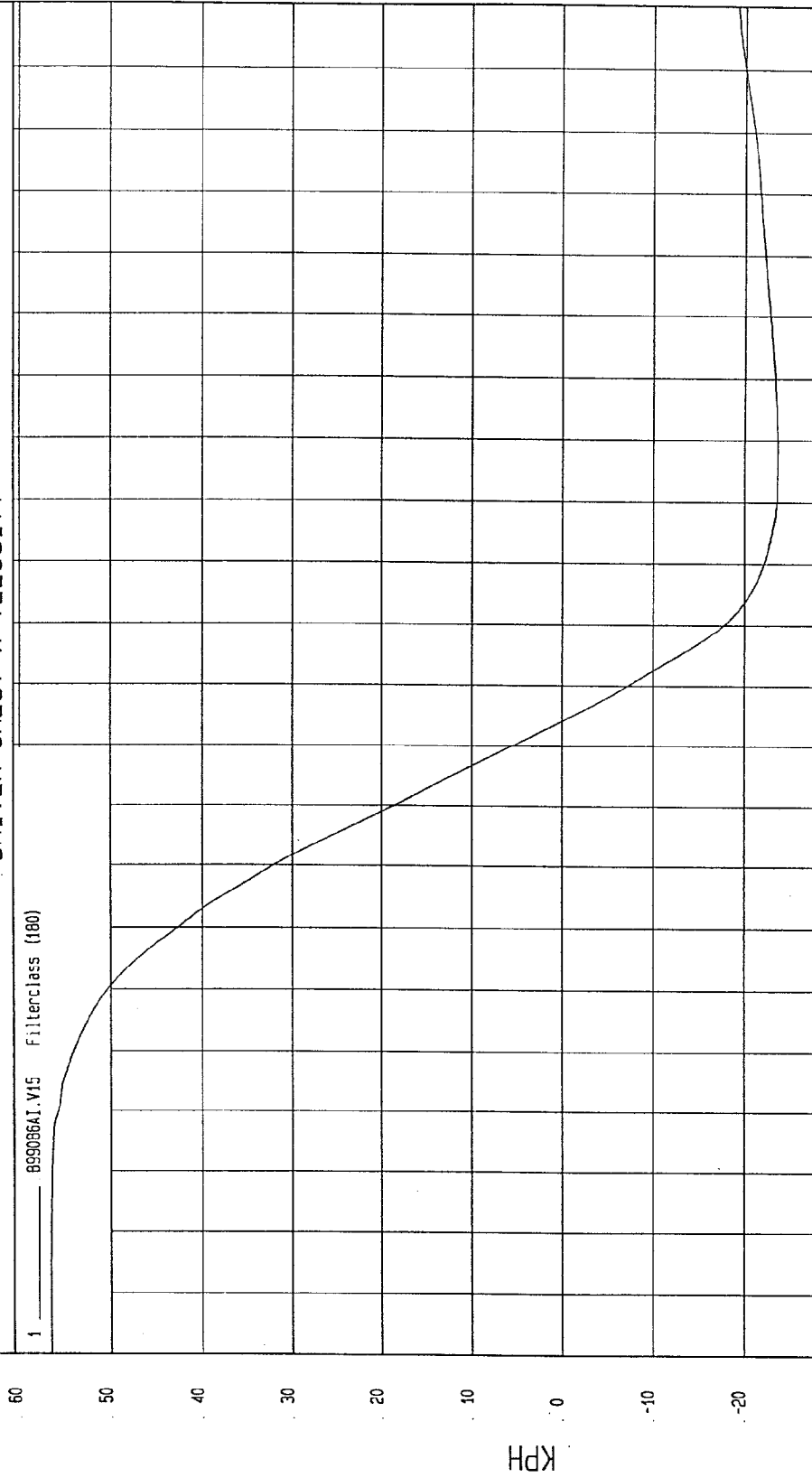
COMPONENT: 2000 FORD TAURUS

Maximum = 56.62 KPH at -14 msec

Minimum = -23.64 KPH at 128 msec

DRIVER CHEST X VELOCITY

1 B99086A1.V15 Filterclass (180)



WCA Research
01-06-2000 15:41

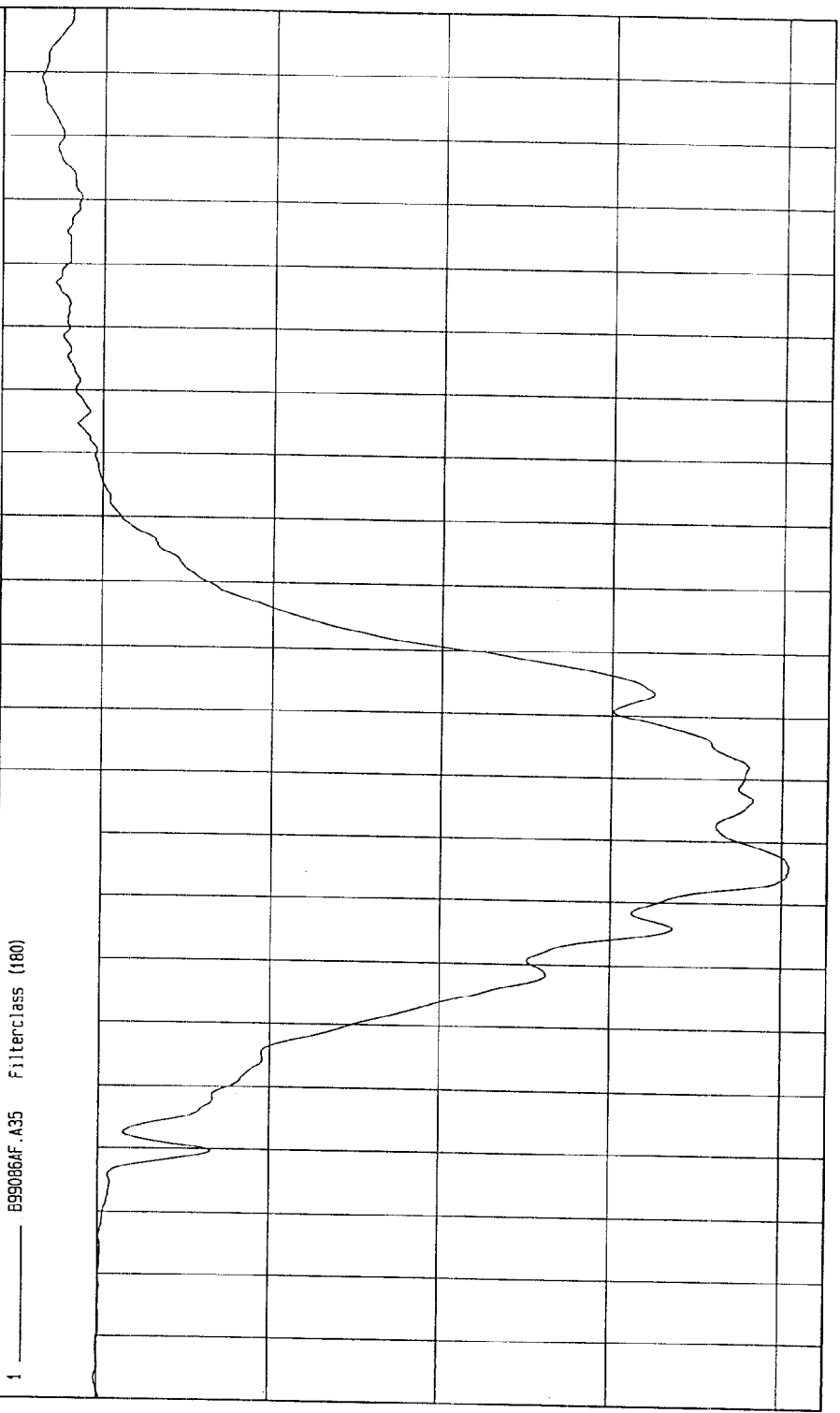
TIME Seconds

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -40.43 G'S at 66 msec Maximum = 3.65 G'S at 189 msec

DRIVER CHEST REDUNDANT X ACCELERATION



TIME (SECONDS)

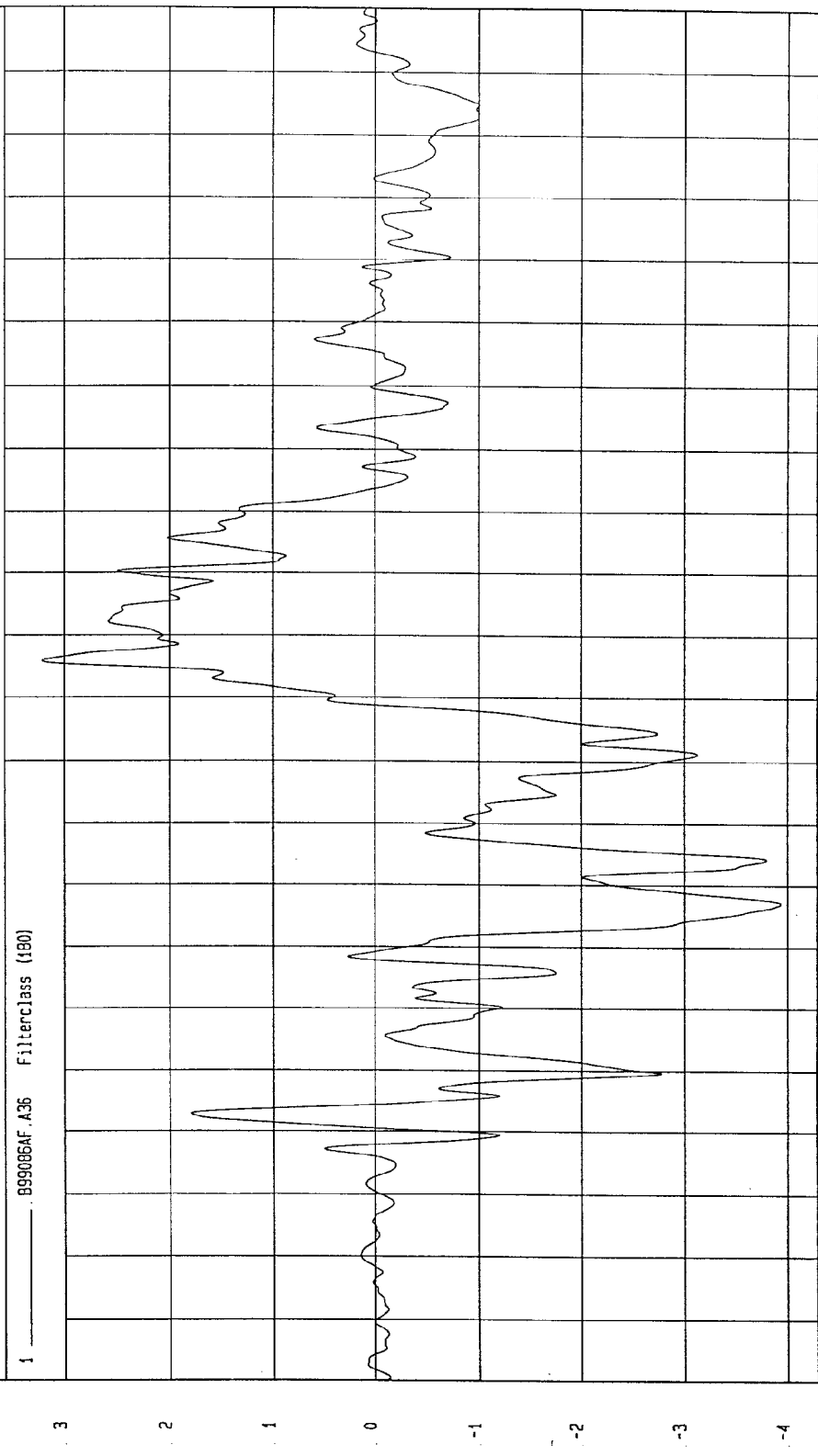
NSA Research
12-21-1999 17:32

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -3.94 G'S at 57 msec Maximum = 3.22 G'S at 96 msec

DRIVER CHEST REDUNDANT Y ACCELERATION



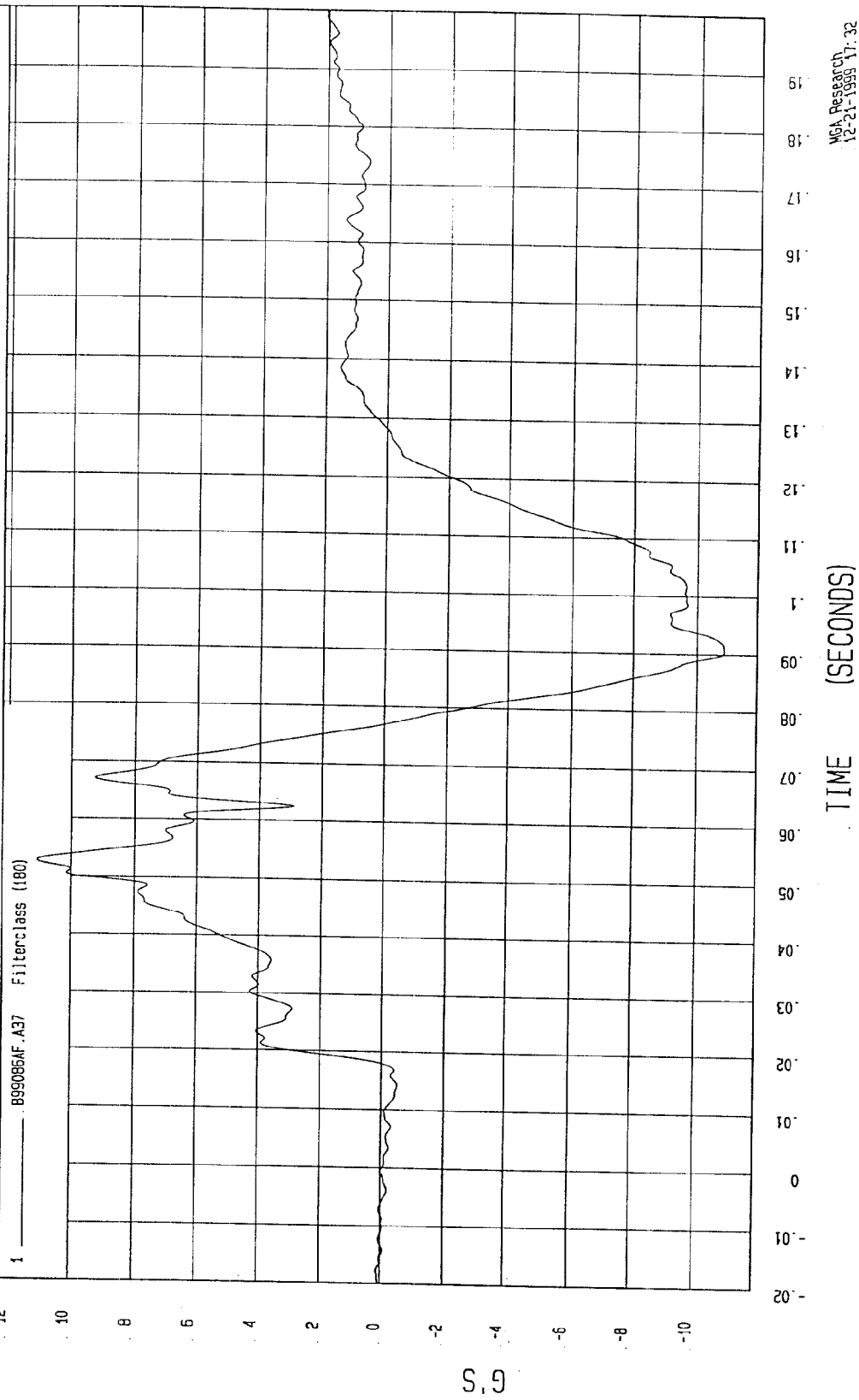
MSA Research
12-21-1999 17:32

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -10.88 G'S at 90 msec Maximum = 11.16 G'S at 53 msec

DRIVER CHEST REDUNDANT Z ACCELERATION



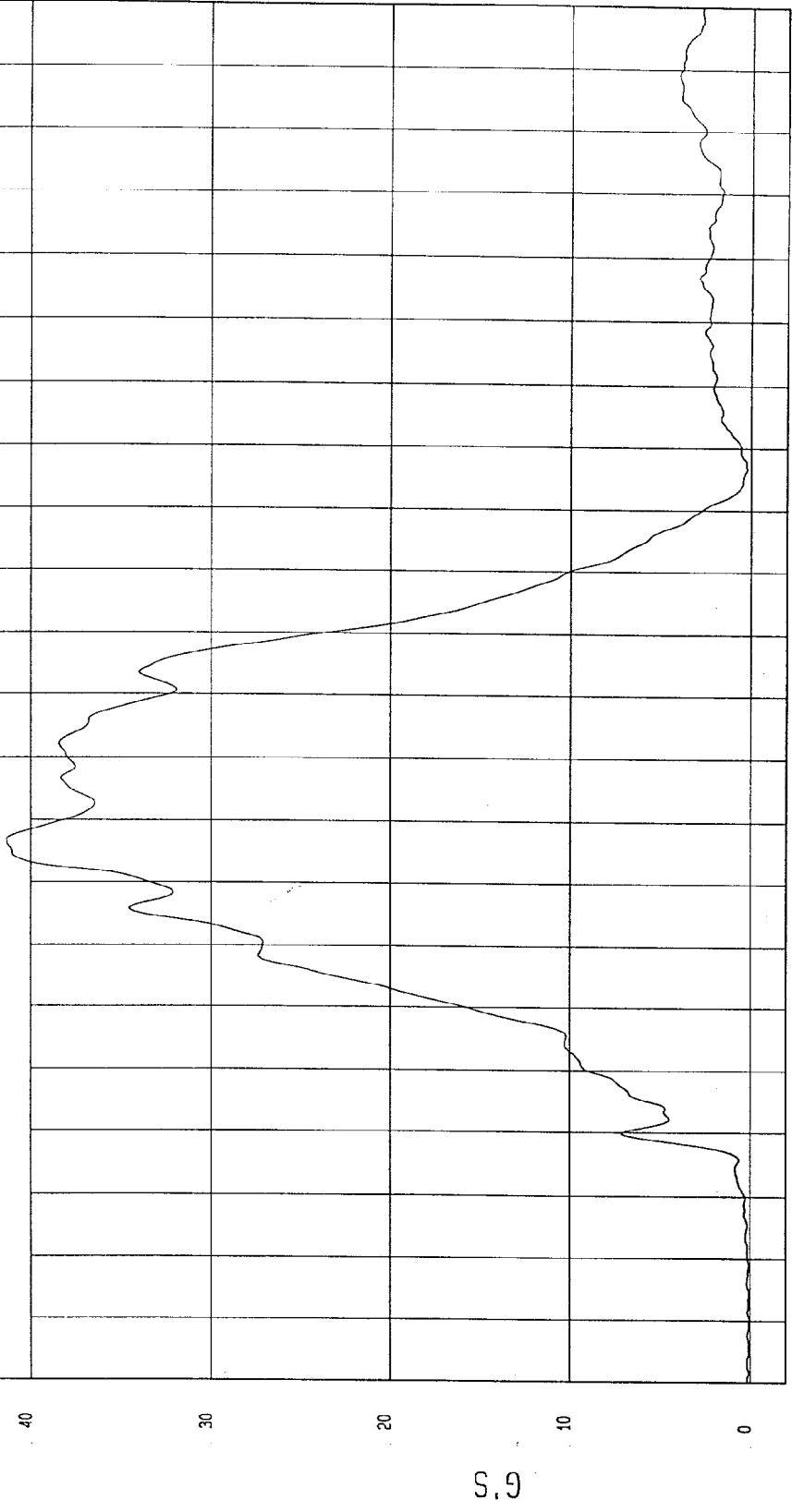
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = 4.75E-02 G'S at -10 msec Maximum = 41.35 G'S at 67 msec

DRIVER CHEST REDUNDANT RESULTANT ACCELERATION

1 _____ 059085AV.A35 Filterclass (100)



MCA Research
12-21-1999 17:32

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

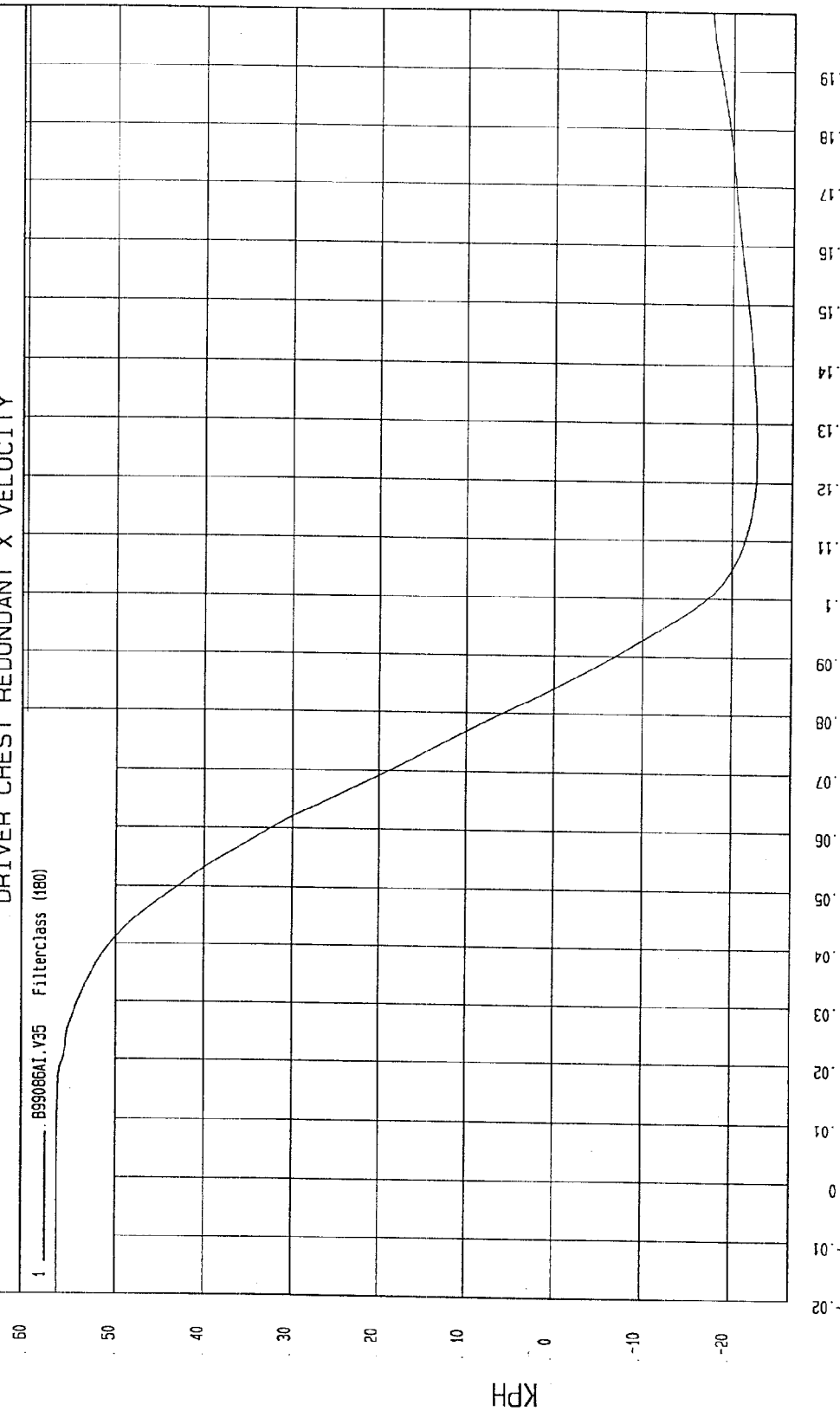
Speed: 35.2 MPH 56.6 KPH

Minimum = -22.86 KPH at 125 msec

Maximum = 56.62 KPH at -10 msec

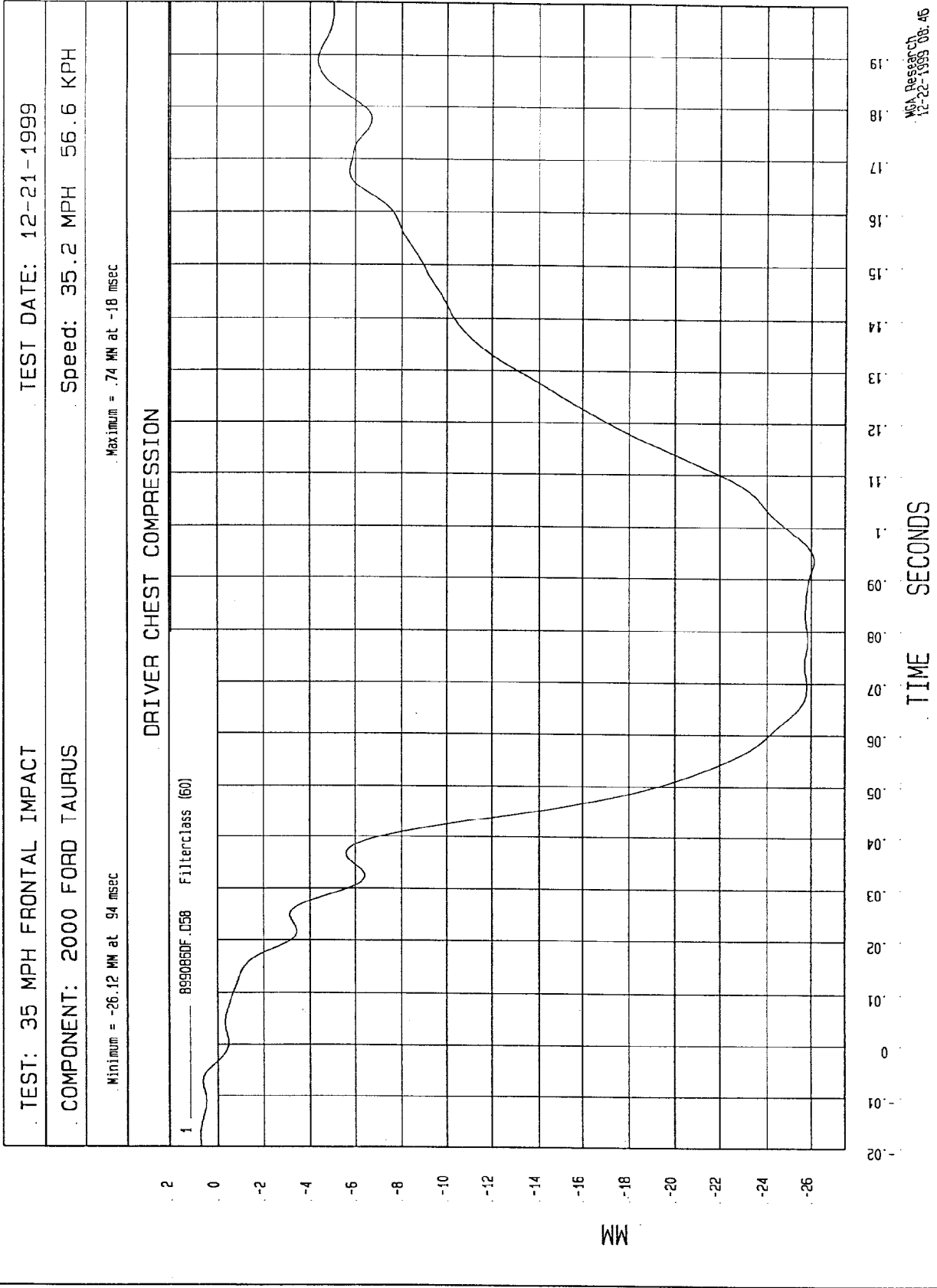
DRIVER CHEST REDUNDANT X VELOCITY

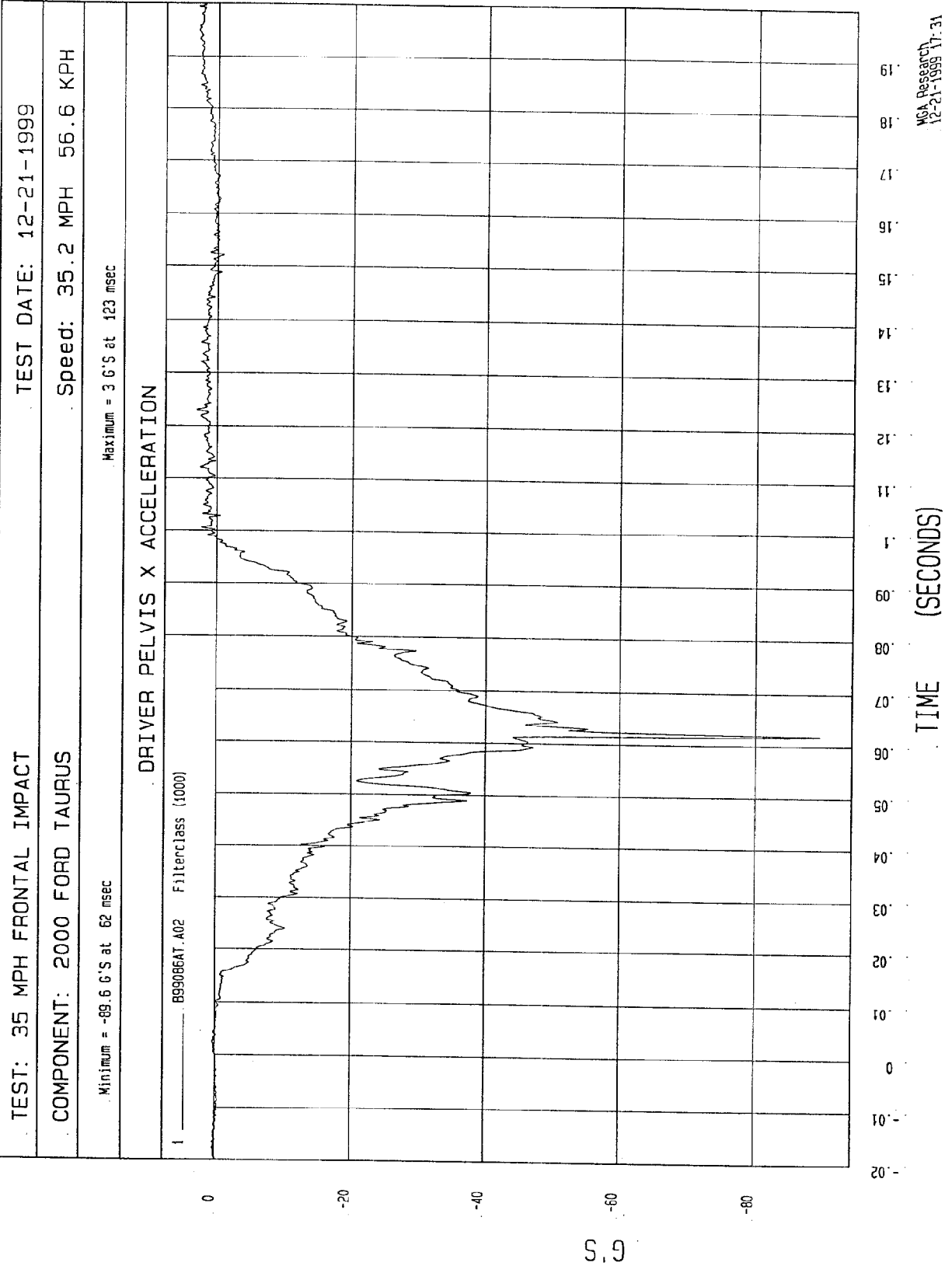
1 B99086A1.V35 Filterclass (180)



NSA Research
01-06-2000 15:41

TIME Seconds



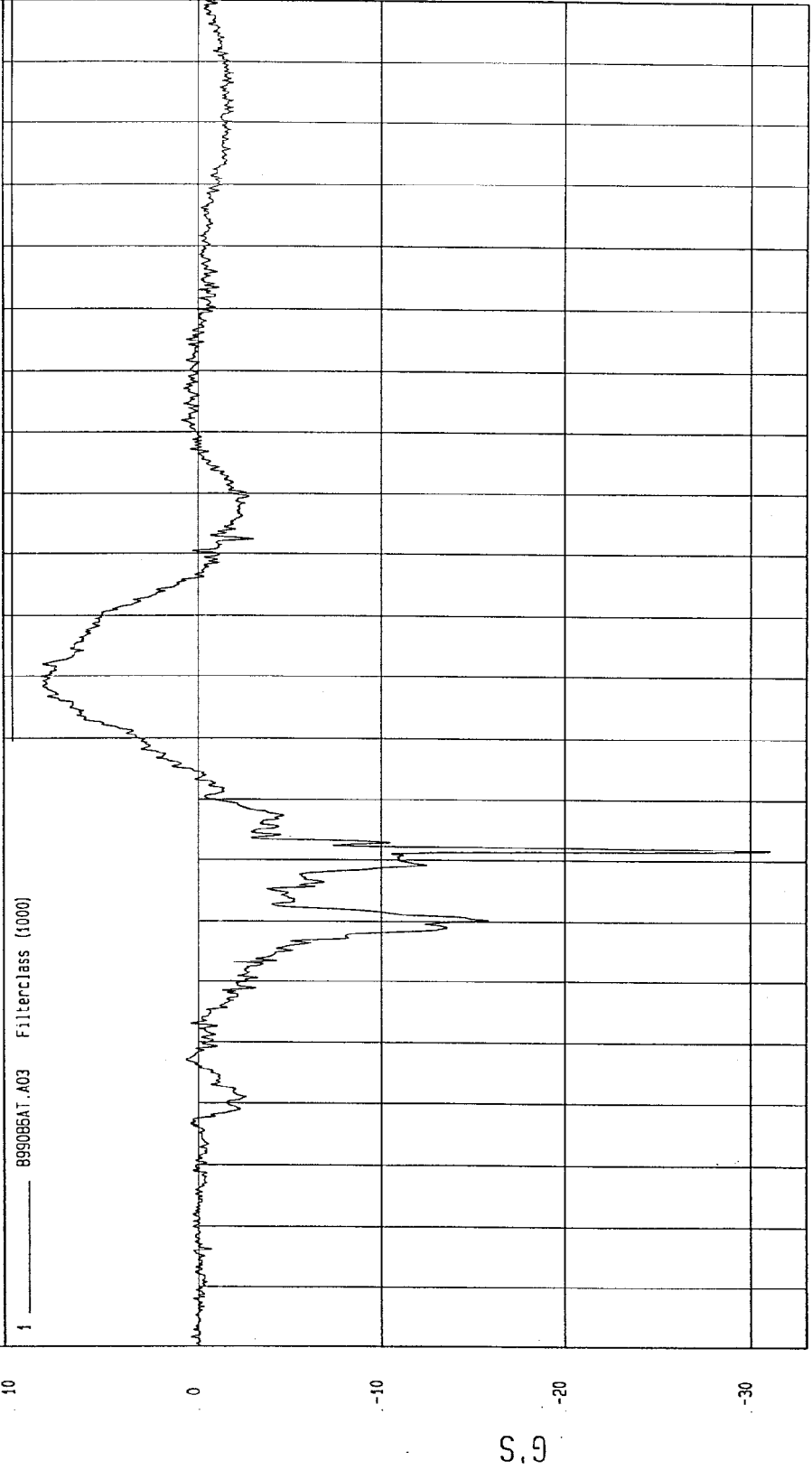


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -31.05 G'S at 62 msec Maximum = 8.5 G'S at 90 msec

DRIVER PELVIS Y ACCELERATION



TIME (SECONDS)

WCA Research
12-21-1999 17:31

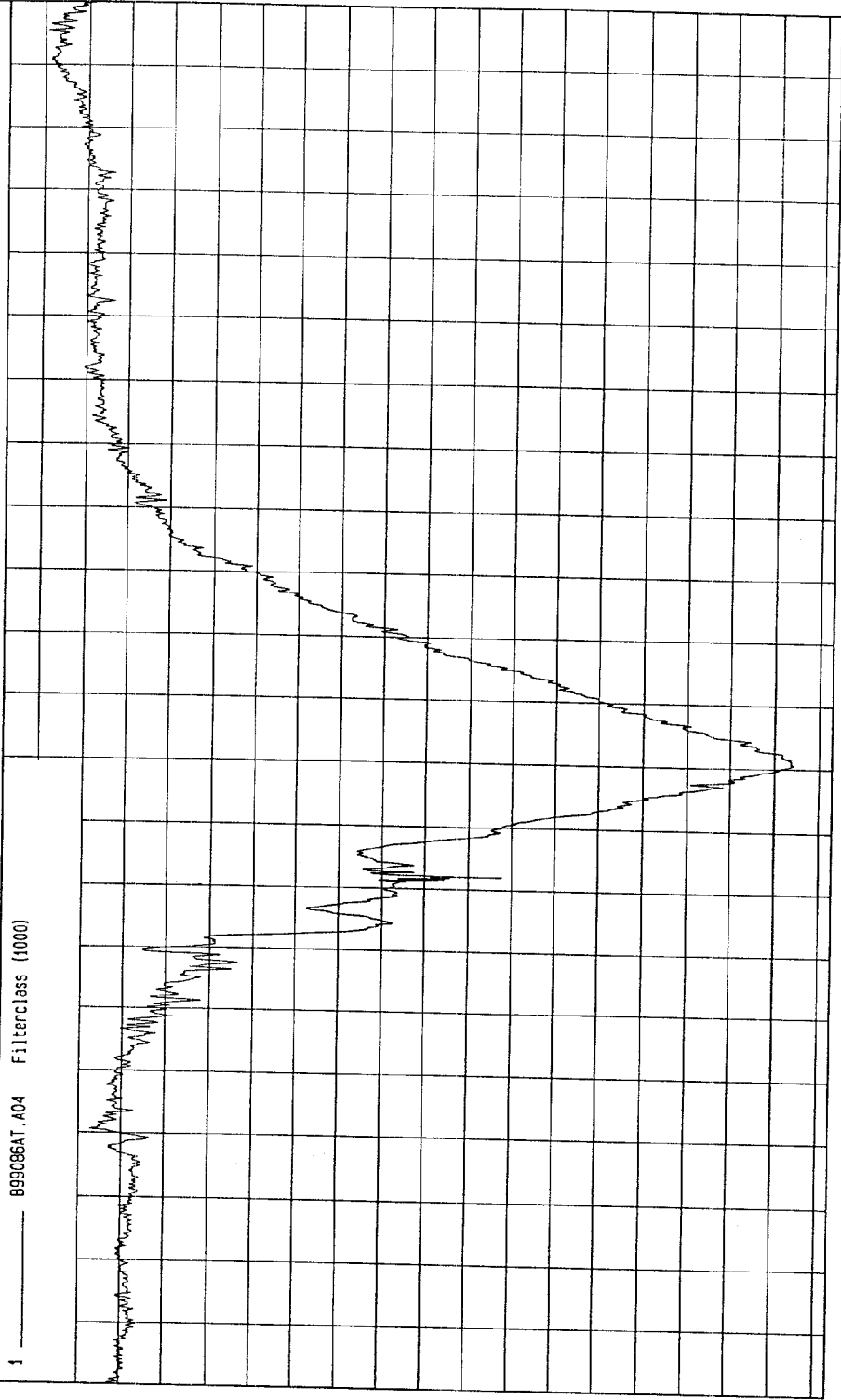
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -30.85 G'S at 81 msec
Maximum = 3.87 G'S at 196 msec

DRIVER PELVIS Z ACCELERATION

1 ——— 899086AT.A04 Filterclass (1000)



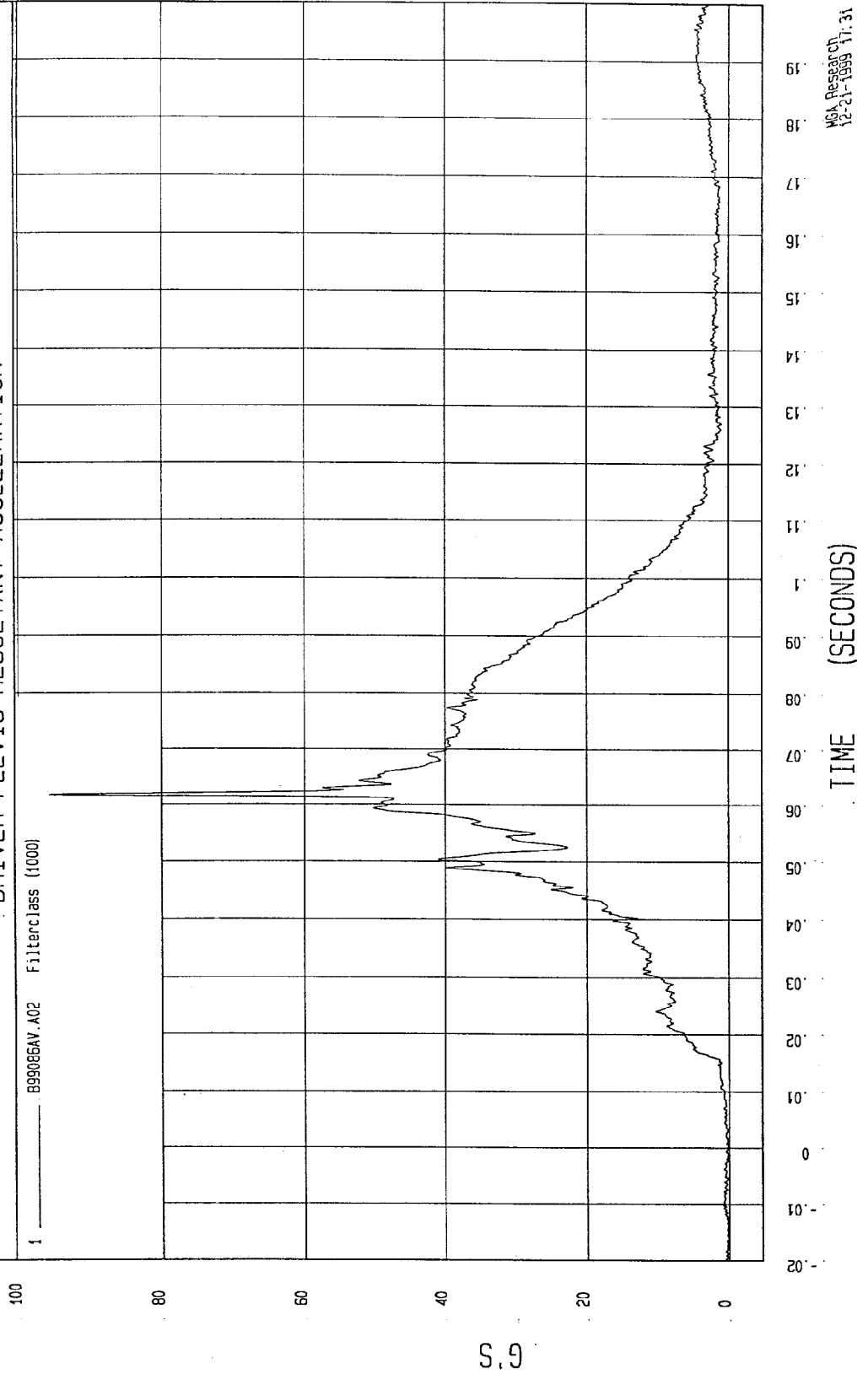
WGA Research
12-21-1999 17:31

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = 9.90E-02 G'S at -17 msec Maximum = 95.76 G'S at 62 msec

DRIVER PELVIS RESULTANT ACCELERATION

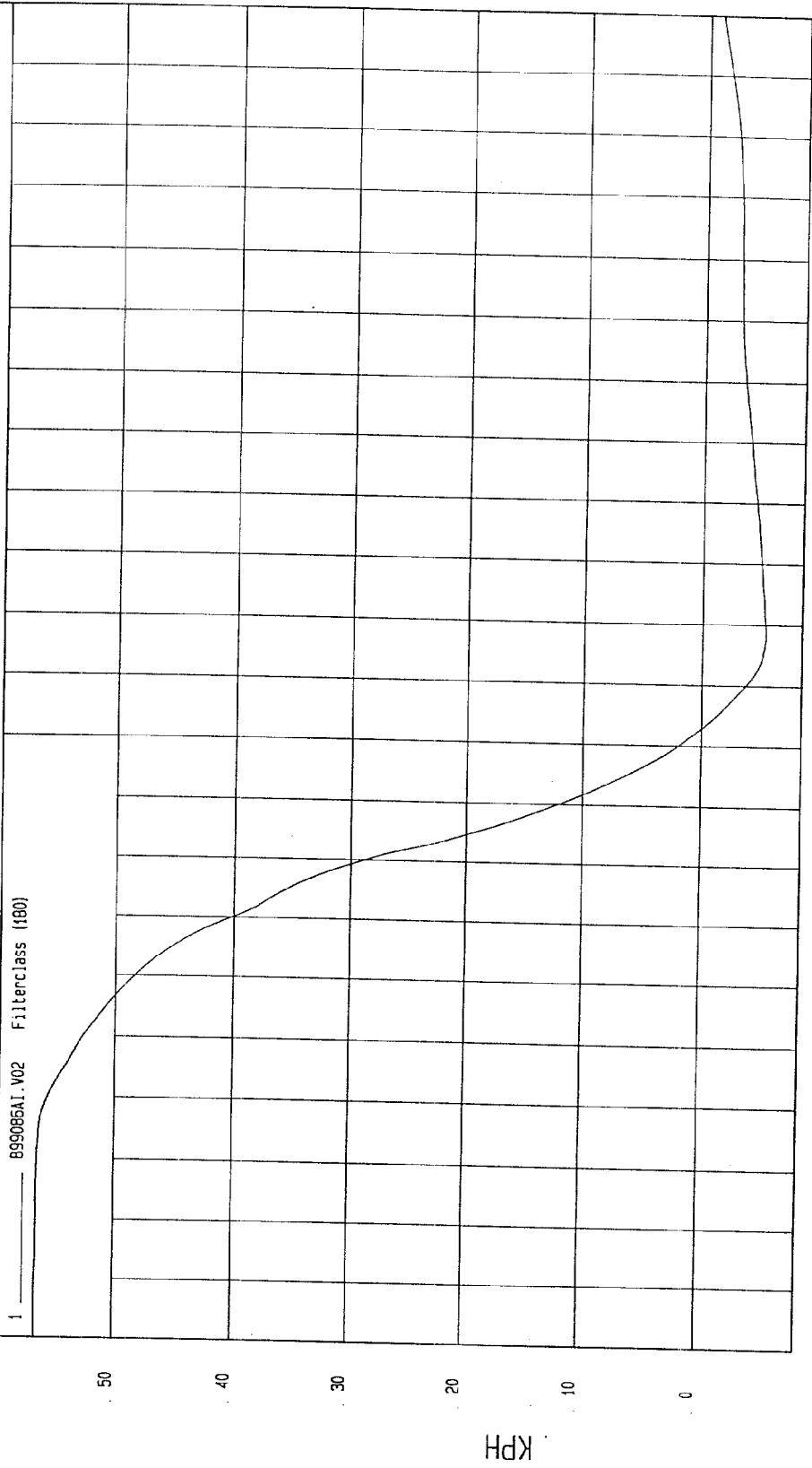


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -5.44 KPH at 98 msec Maximum = 56.63 KPH at -14 msec

DRIVER PELVIS X VELOCITY



MCA Research
01-06-2000 15:41

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

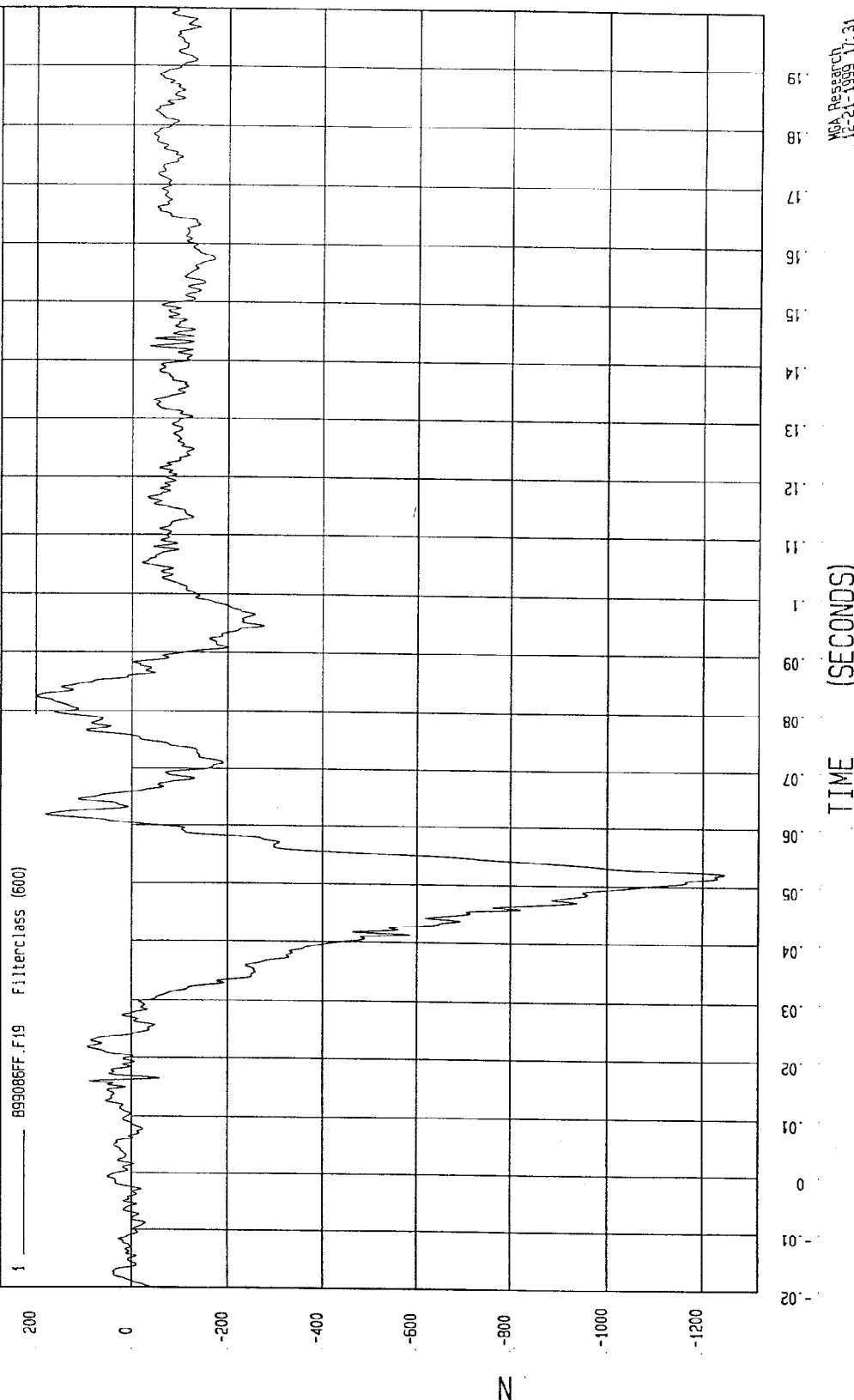
SPEED: 35.2 MPH 55.6 KPH

COMPONENT: 2000 FORD TAURUS

Maximum = 199.24 N at 82 msec

Minimum = -1245.75 N at 52 msec

DRIVER LEFT FEMUR FORCE



MCA Research
12-21-1999 17:31

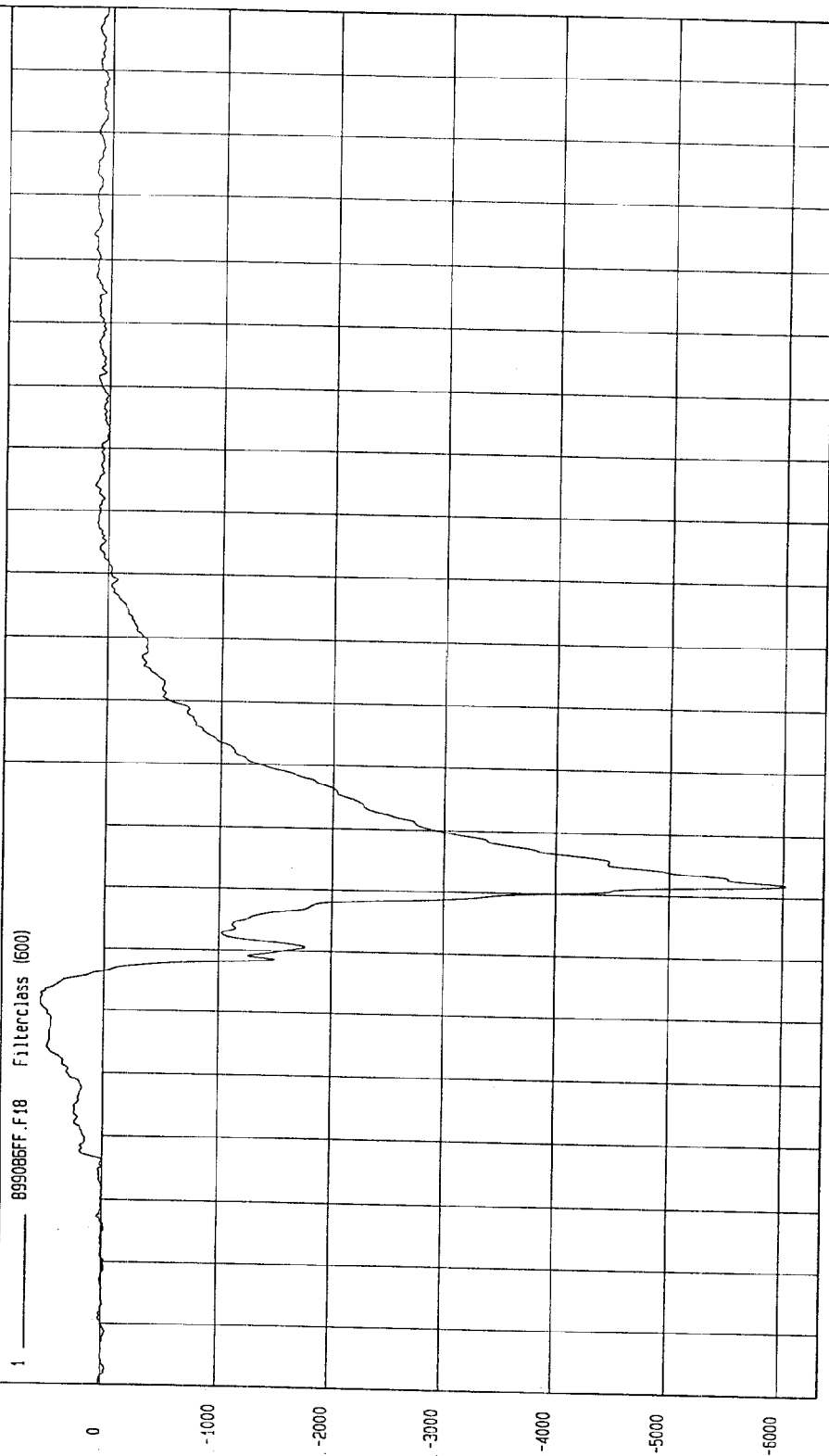
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -5025.65 N at 62 msec
Maximum = 568.12 N at 41 msec

DRIVER RIGHT FEMUR FORCE

1 ——— 899086FF.F18 Filterclass (600)



MCA Research
12-21-1999 17:31

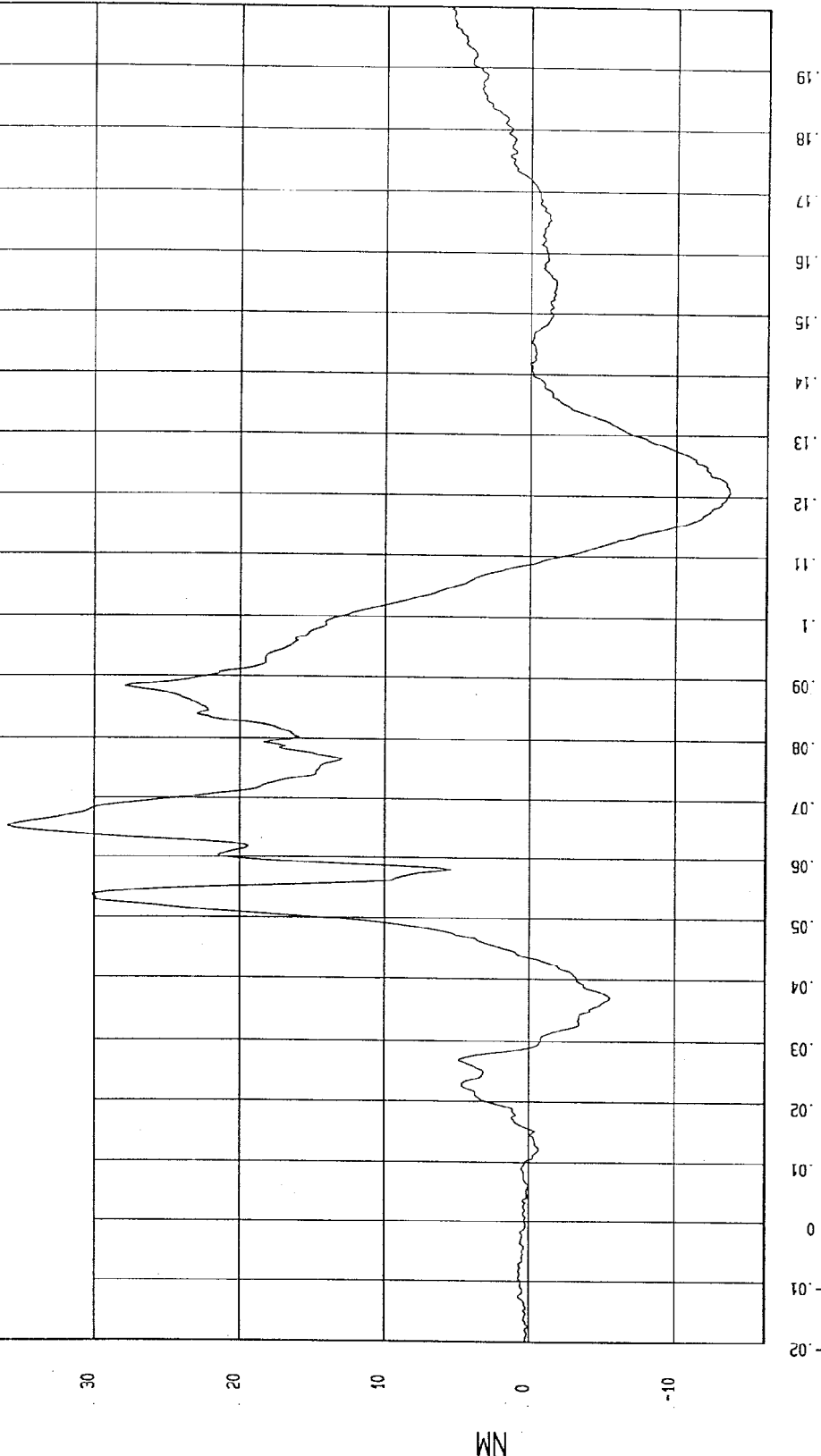
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -13.77 NM at 121 msec Maximum = 35.93 NM at 65 msec

DRIVER LEFT UPPER TIBIA MOMENT X

1 ——— 895086NF.M80 Filterclass (600)



MGA Research
01-05-2000 15:25

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

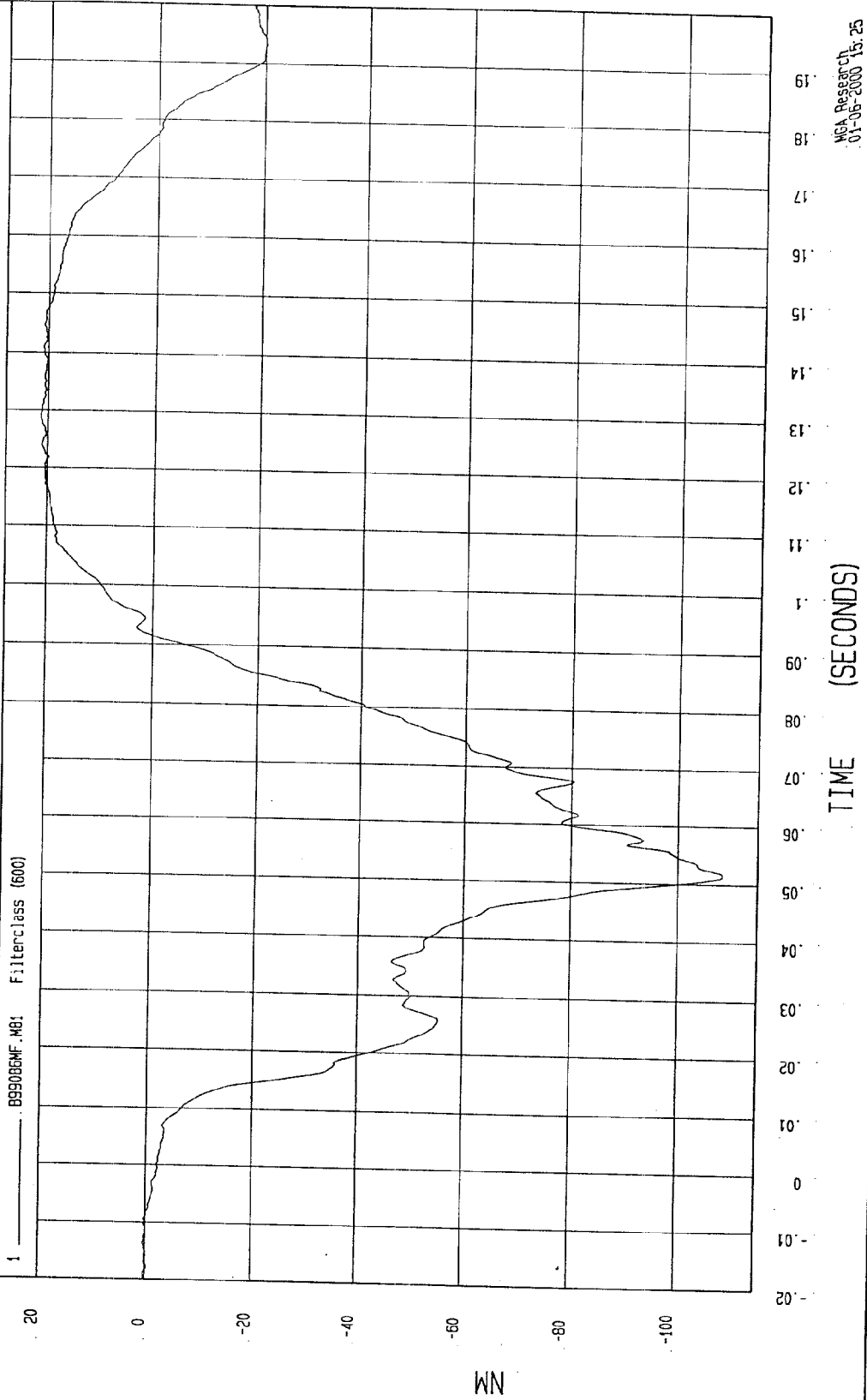
COMPONENT: 2000 FORD TAURUS

Speed: 35.2 MPH 56.6 KPH

Minimum = -108.49 NM at 52 msec

Maximum = 21.24 NM at 129 msec

DRIVER LEFT UPPER TIBIA MOMENT Y



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

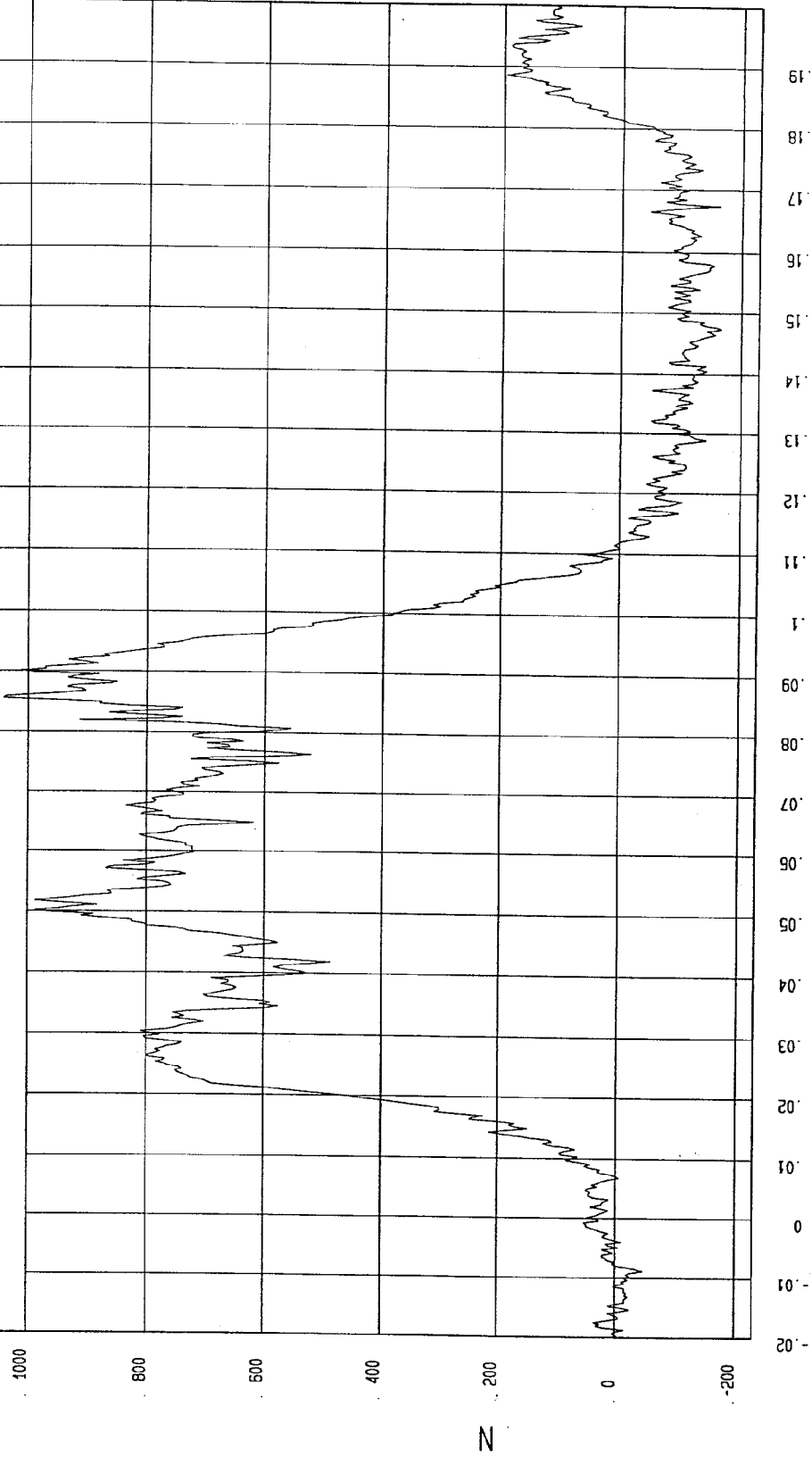
Speed: 35.2 MPH 56.6 KPH

Minimum = -168.66 N at 148 msec

Maximum = 1049.52 N at 86 msec

DRIVER LEFT UPPER TIBIA FORCE Z

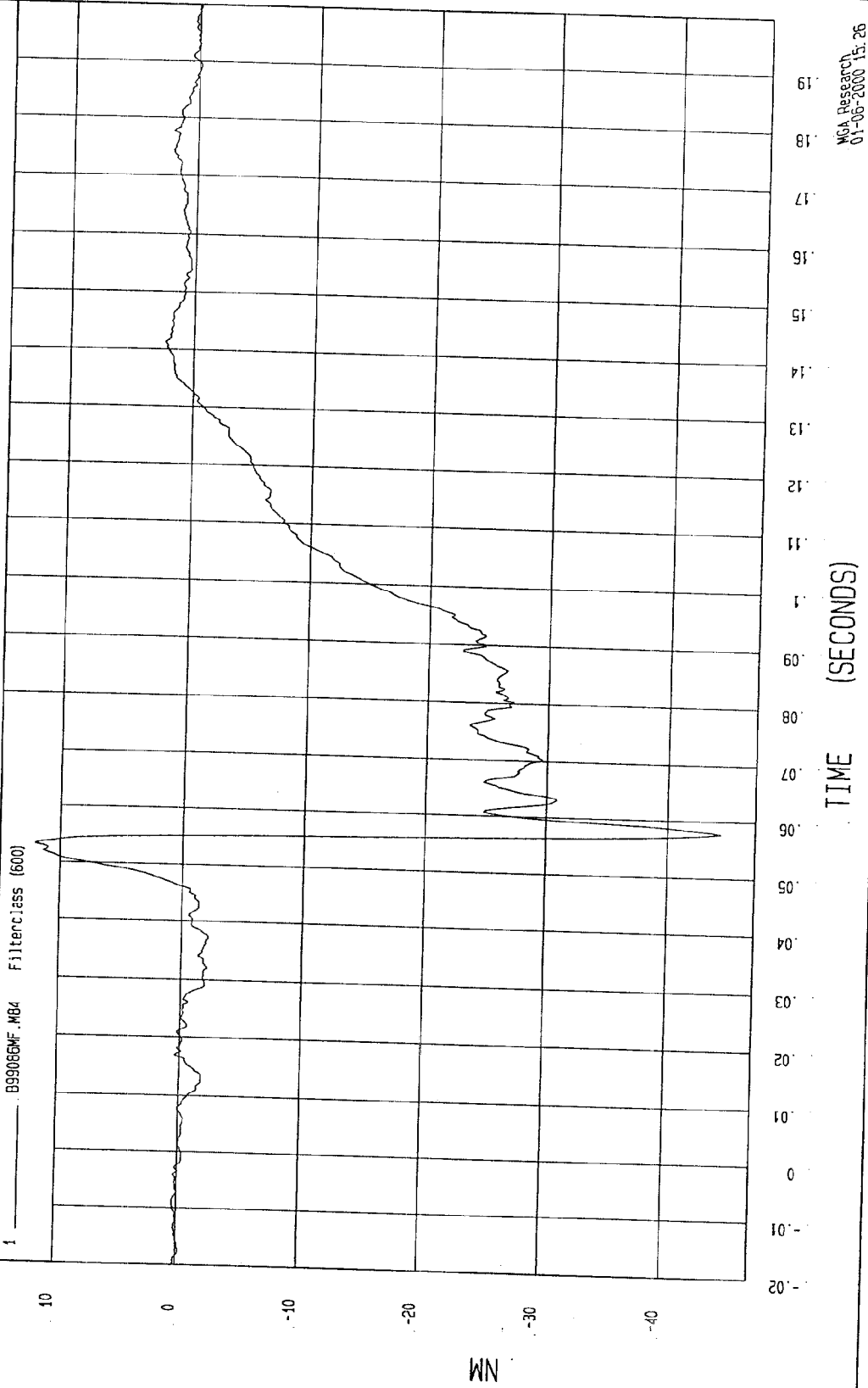
1 B99066FF.F02 Filterclass (600)



MCA Research
01-06-2000 15:26

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH
Minimum = -44.3 NM at 56 msec Maximum = 12.1 NM at 53 msec

DRIVER LEFT LOWER TIBIA MOMENT X

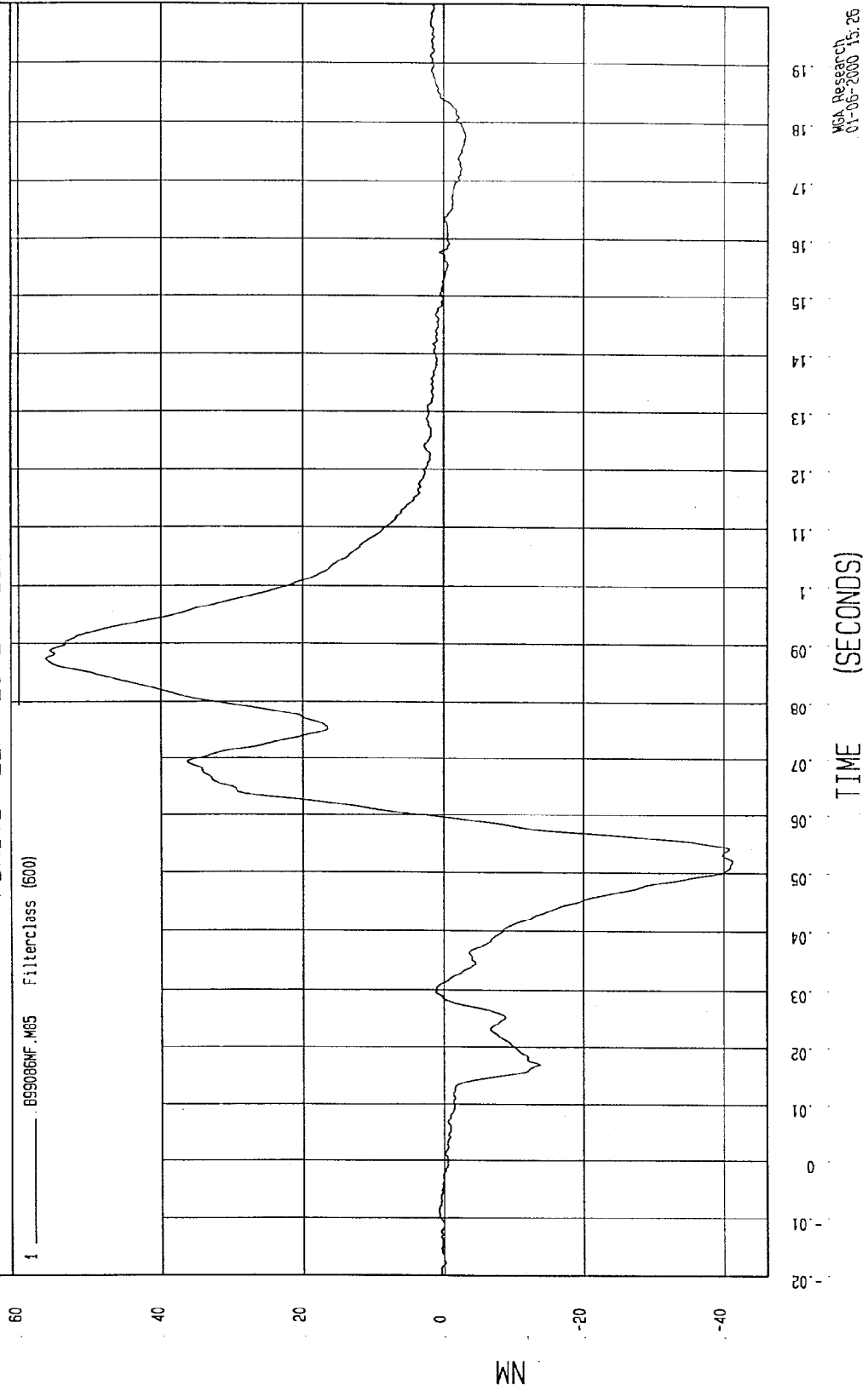


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -41.28 NM at 52 msec Maximum = 56.2 NM at 87 msec

DRIVER LEFT LOWER TIBIA MOMENT Y



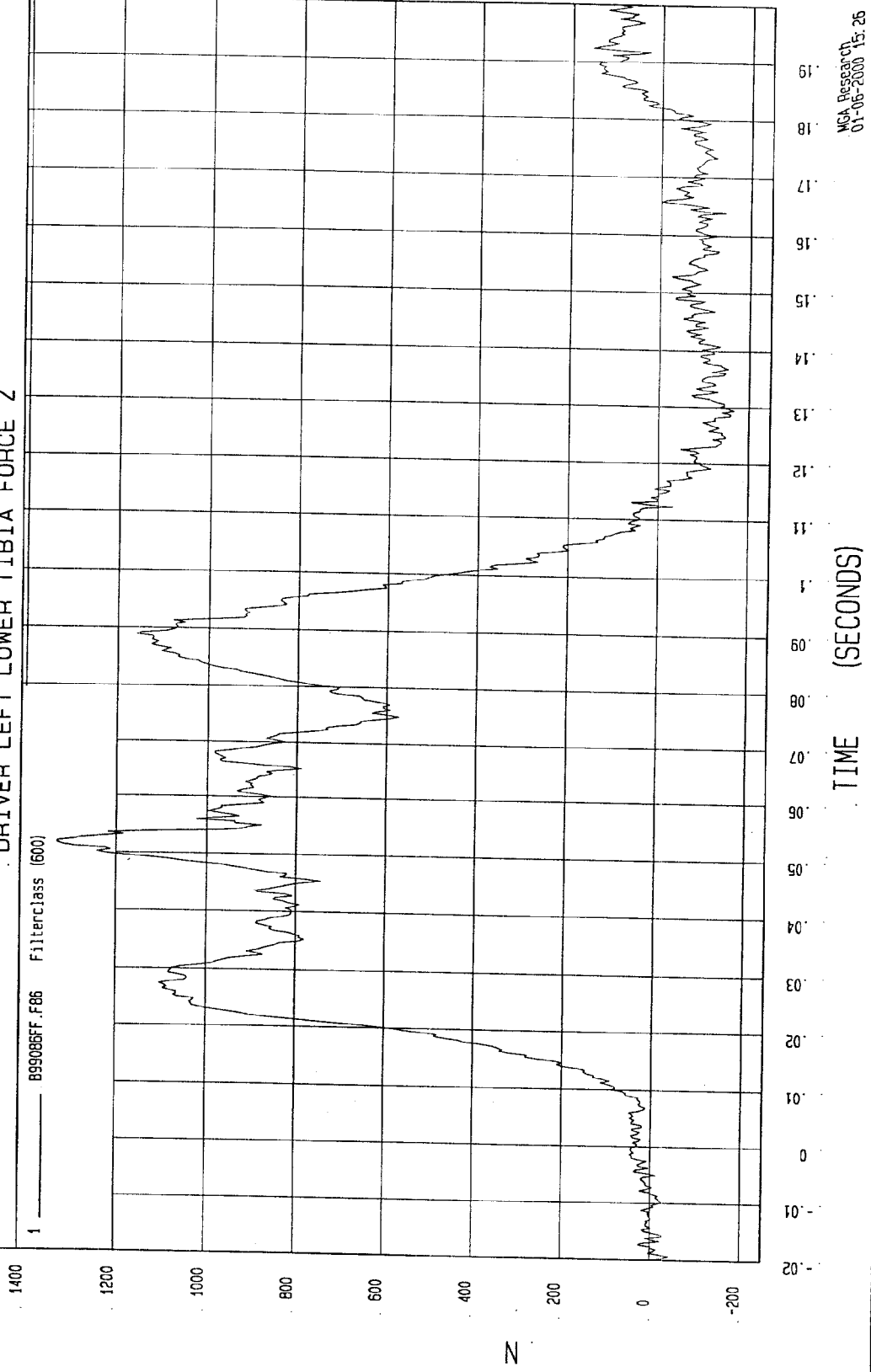
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -171.91 N at 130 msec
Maximum = 1335.96 N at 52 msec

DRIVER LEFT LOWER TIBIA FORCE Z

1 ——— B99085FF.F86 Filterclass (600)

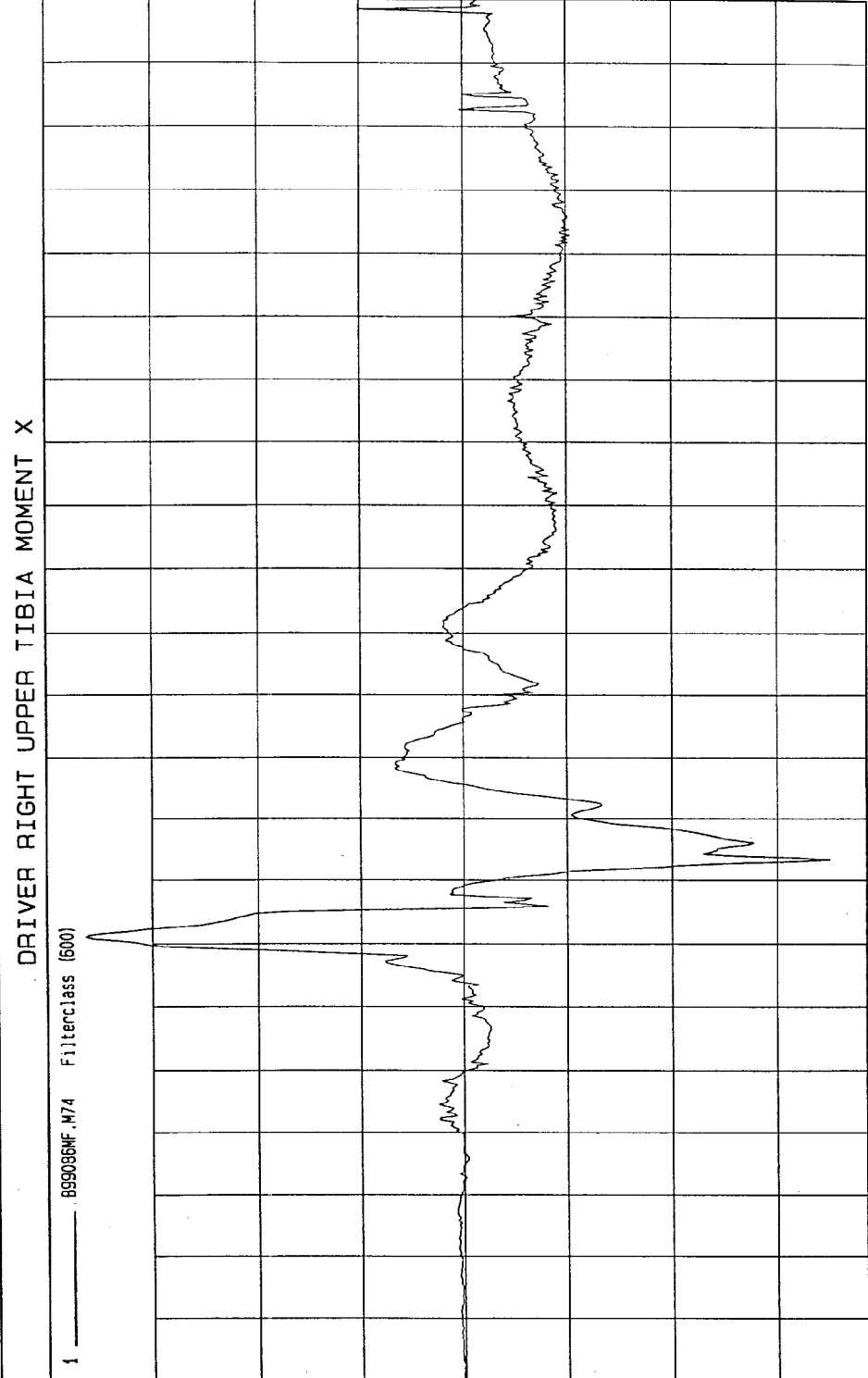


MCA Research
01-06-2000 15:25

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -70.05 NM at 63 msec Maximum = 72.64 NM at 51 msec



TIME (SECONDS)

WCA Research
01-06-2000 15:26

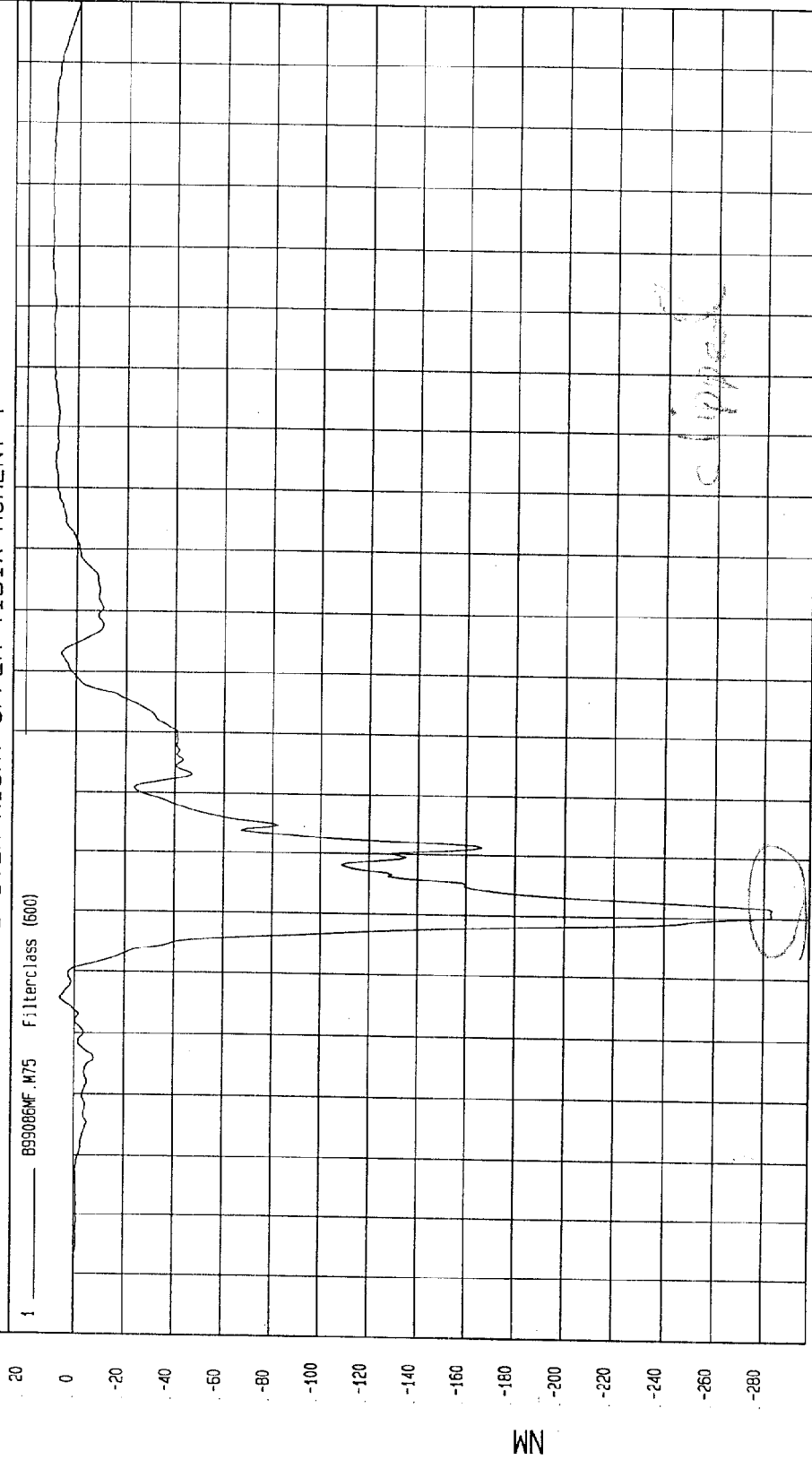
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -283.45 NM at 52 msec
Maximum = 10.54 NM at 158 msec

DRIVER RIGHT UPPER TIBIA MOMENT Y

1 ——— B93086MF.M75 Filterclass (600)



MSA Research
01-06-2000 15:26

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

Speed: 35.2 MPH 56.6 KPH

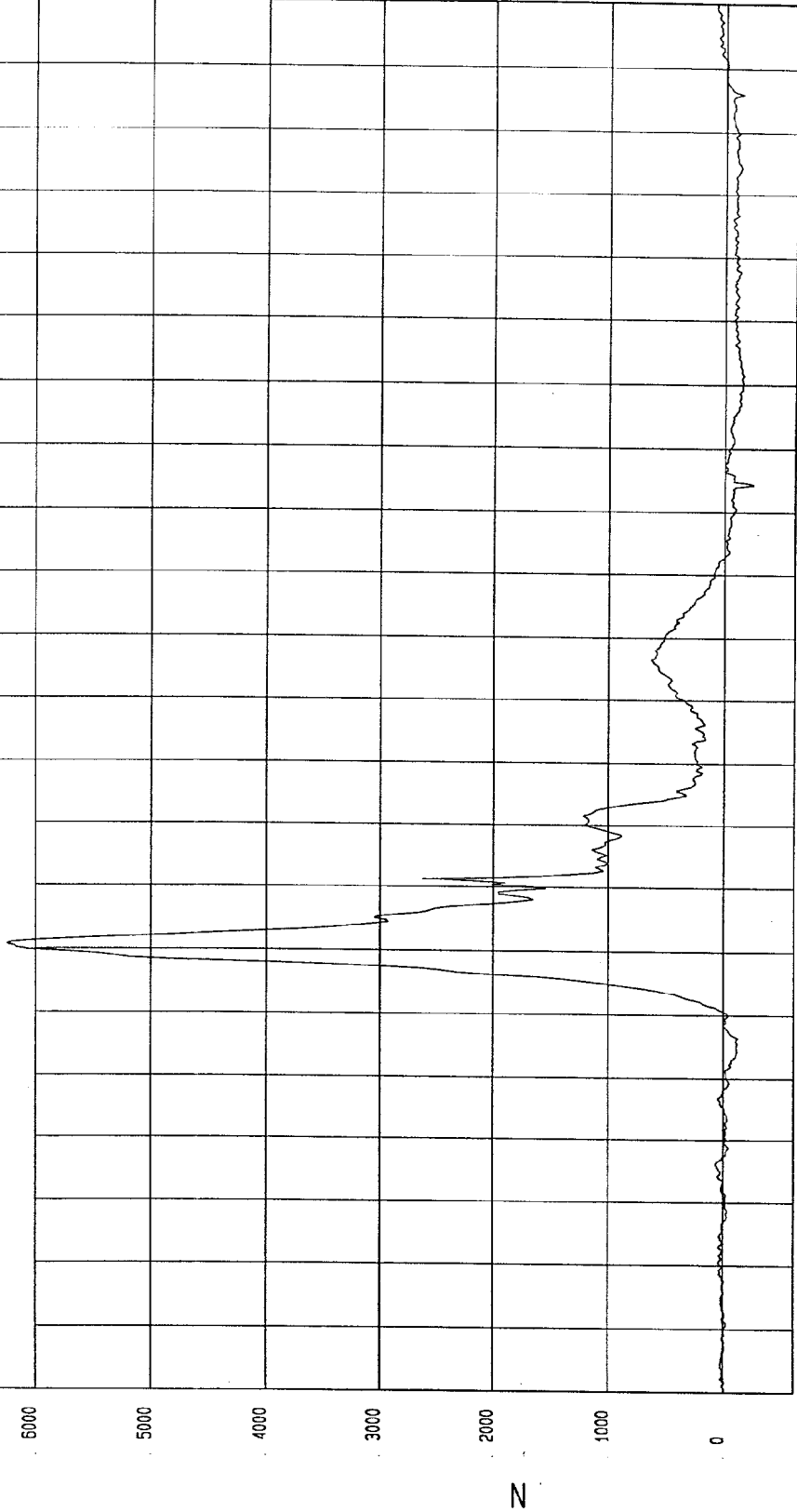
COMPONENT: 2000 FORD TAURUS

Maximum = 6242.03 N at 51 msec

Minimum = -284.44 N at 124 msec

DRIVER RIGHT UPPER TIBIA FORCE Z

1 ——— B99086FF.F76 Filterclass (600)



TIME (SECONDS)

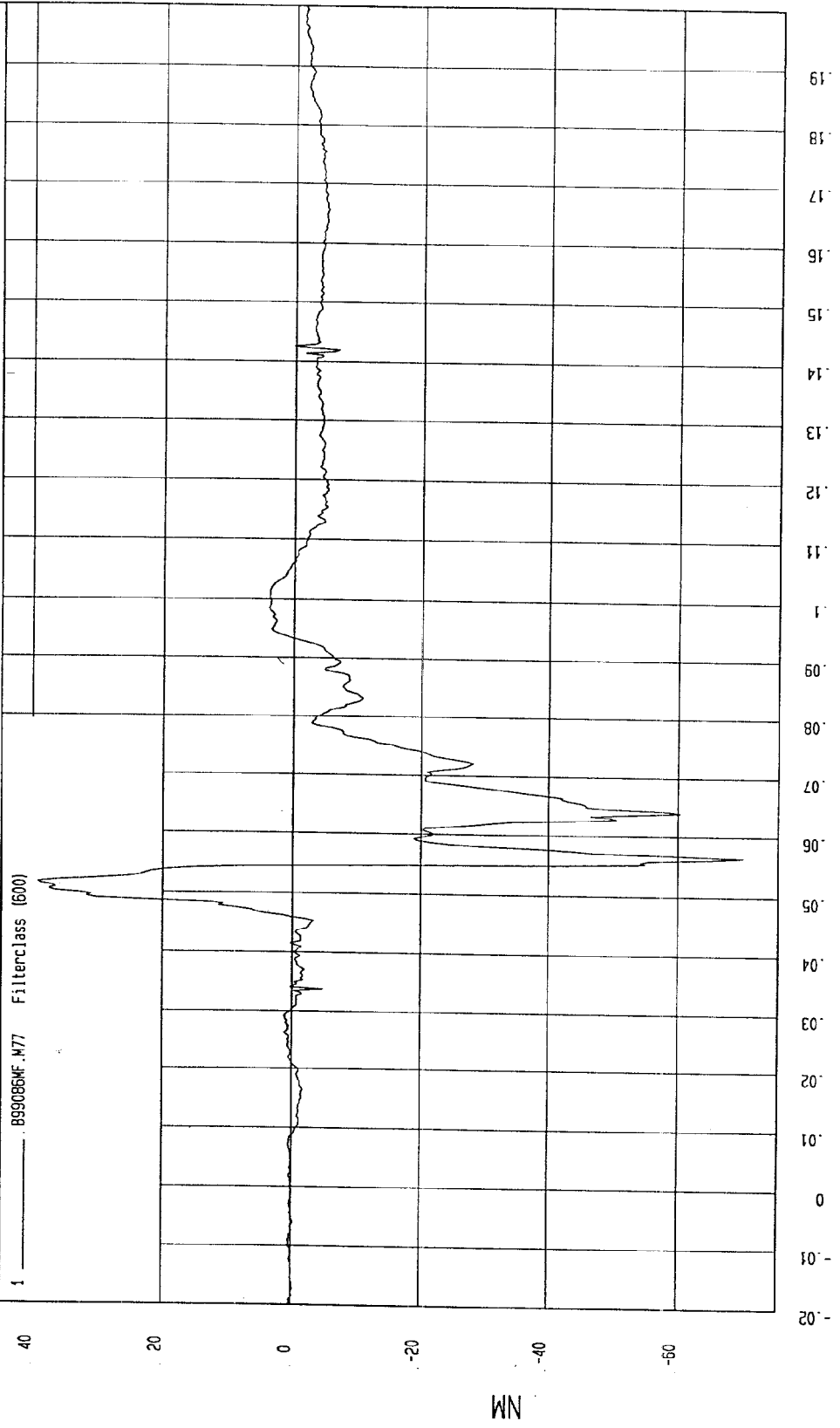
NCA Research
01-06-2000 15:26

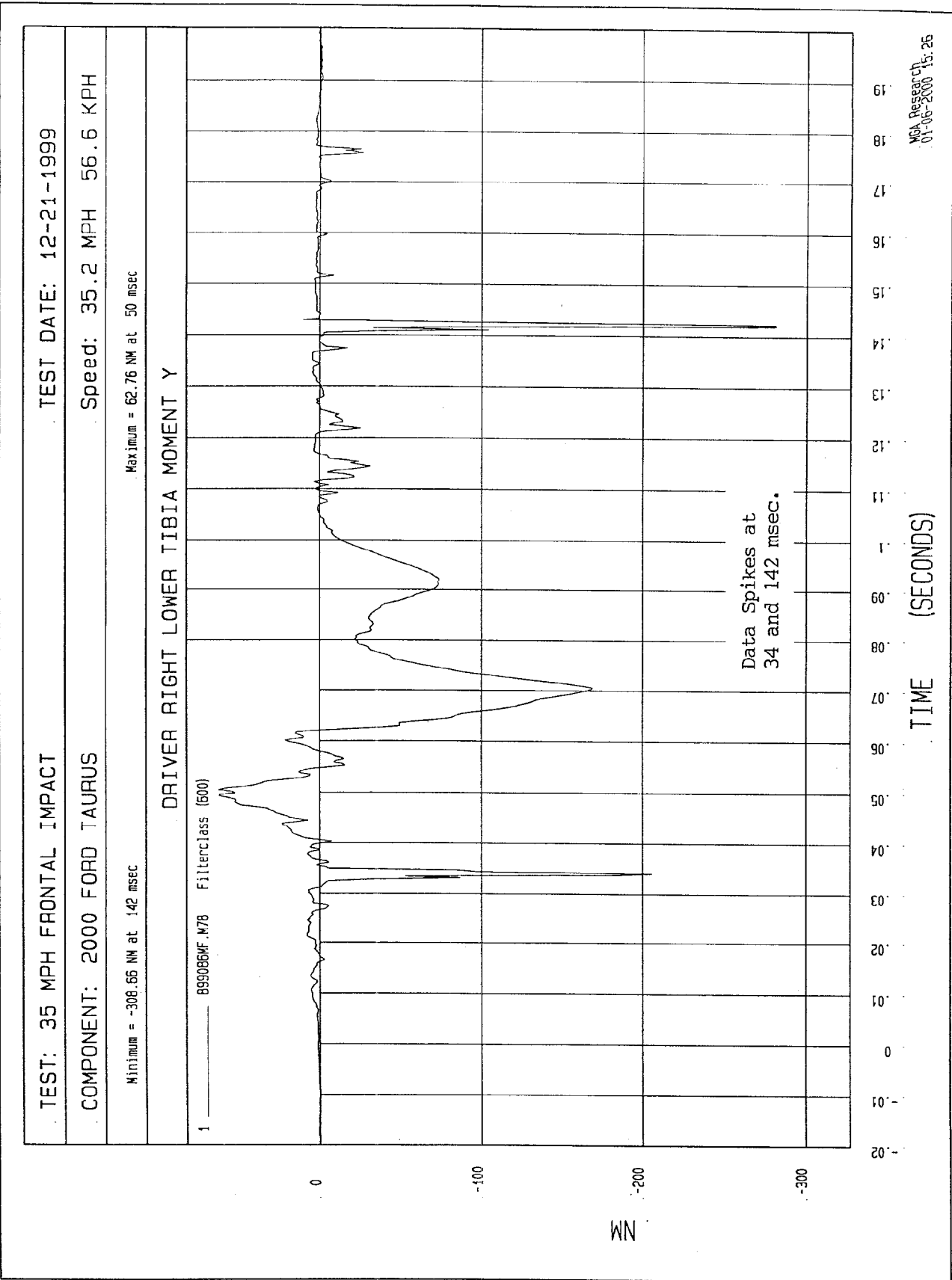
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -59.82 NM at 56 msec Maximum = 39.32 NM at 52 msec

DRIVER RIGHT LOWER TIBIA MOMENT X



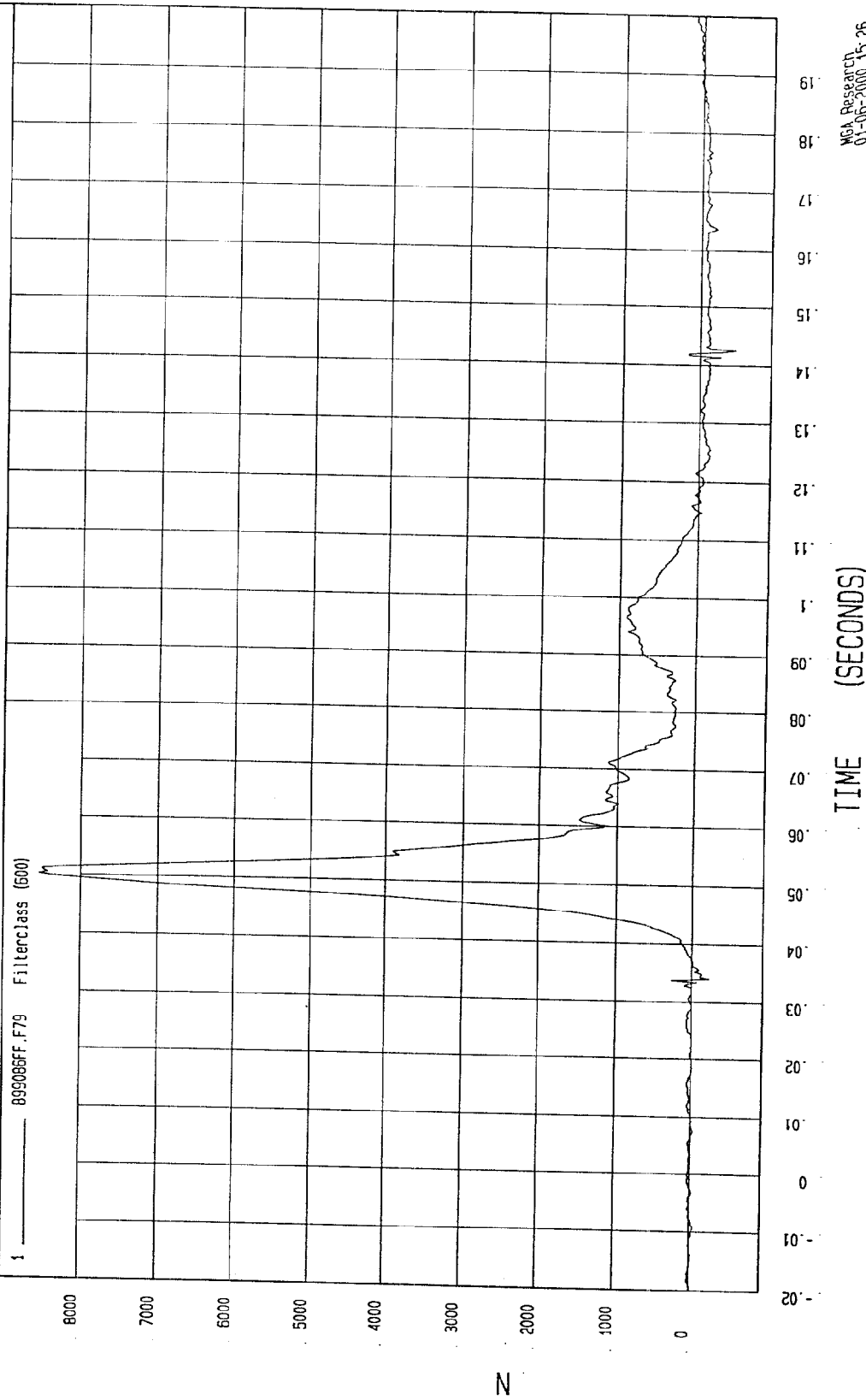


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -458.05 N at 142 msec Maximum = 8536.05 N at 50 msec

DRIVER RIGHT LOWER TIBIA FORCE Z



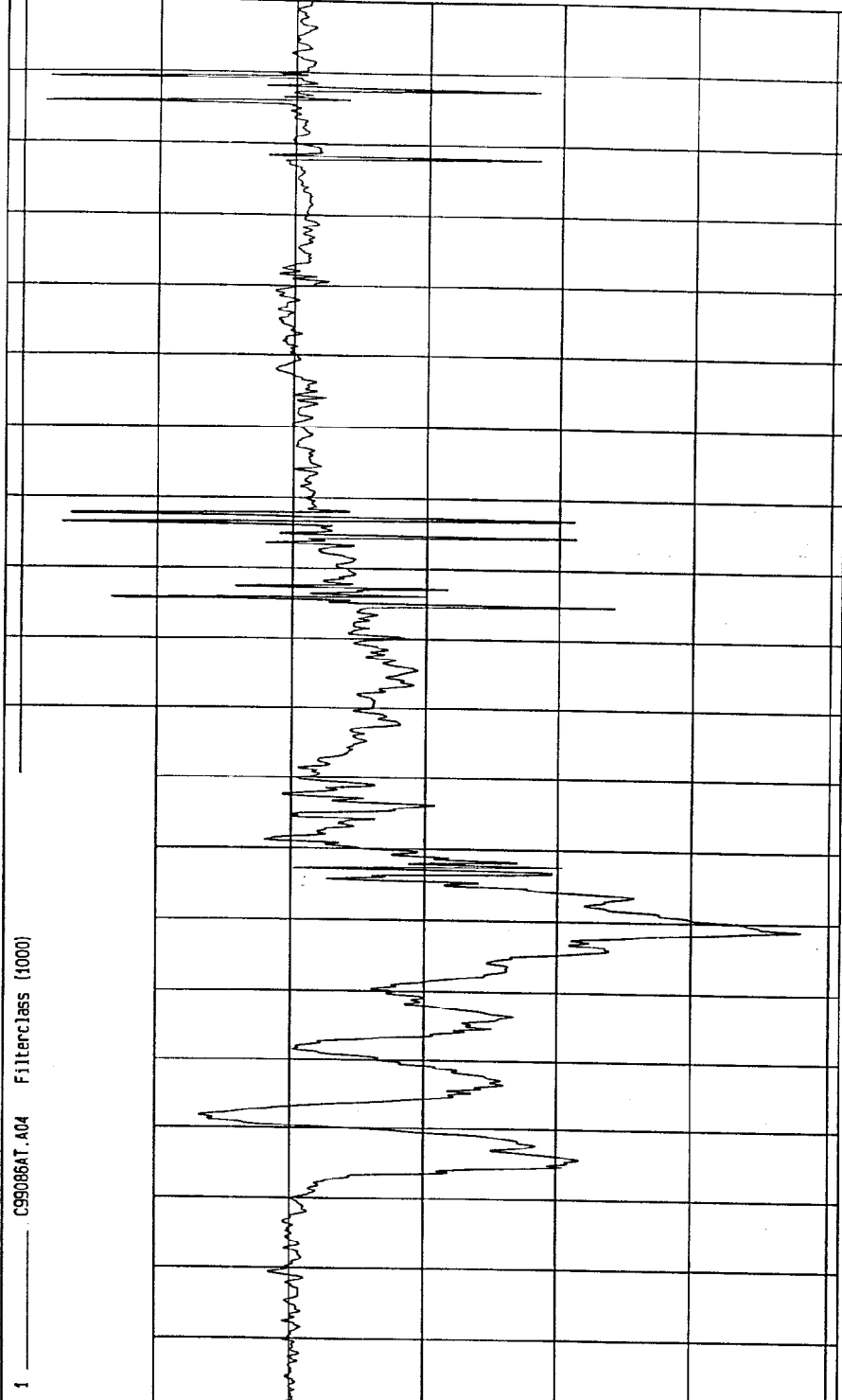
MCA Research
01-06-2000 15:26

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -76.01 G'S at 49 msec Maximum = 36.81 G'S at 166 msec

DRIVER LEFT FOOT BALL Z ACCELERATION



TIME (seconds)

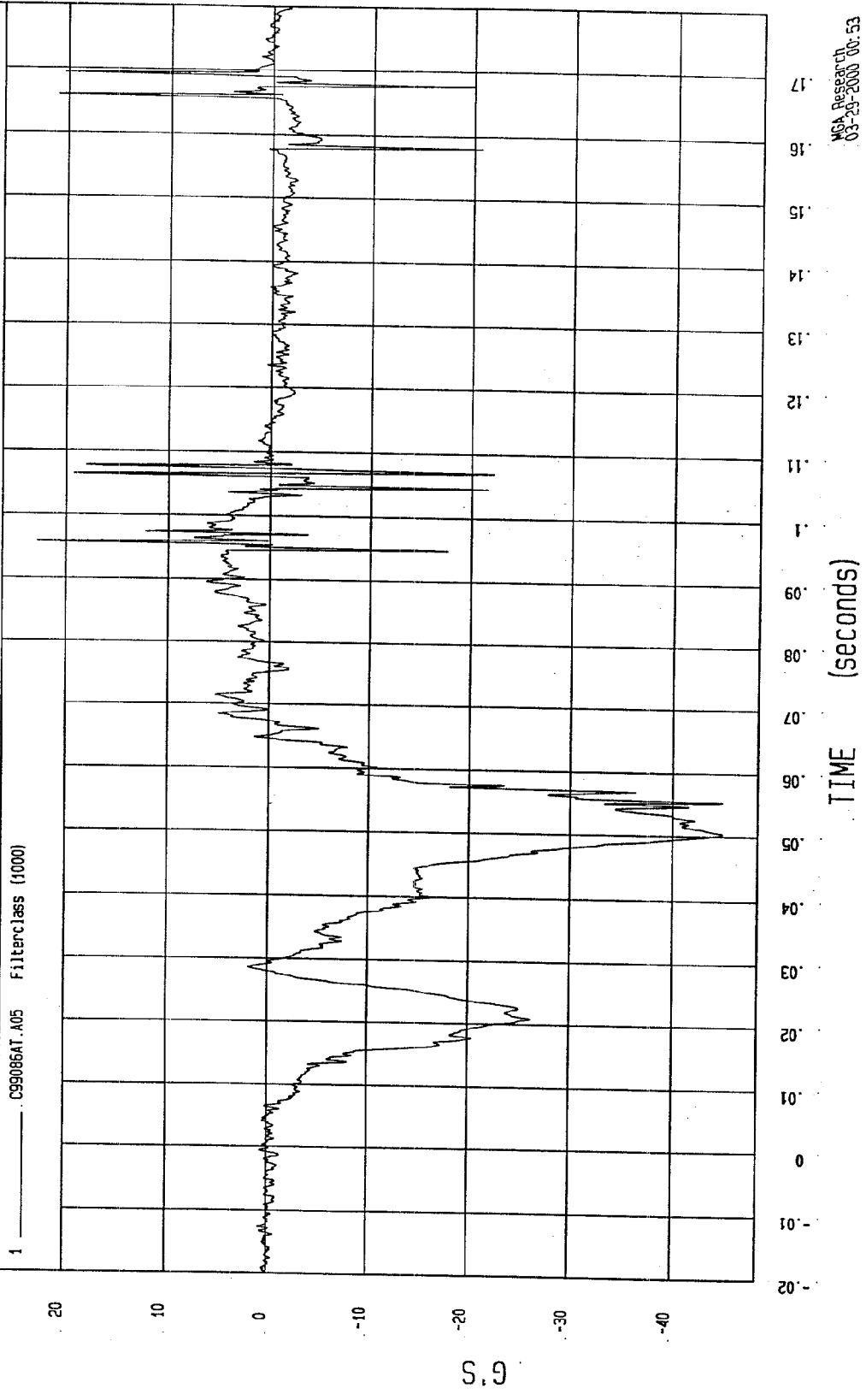
MCA Research
03-29-2000 06:53

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

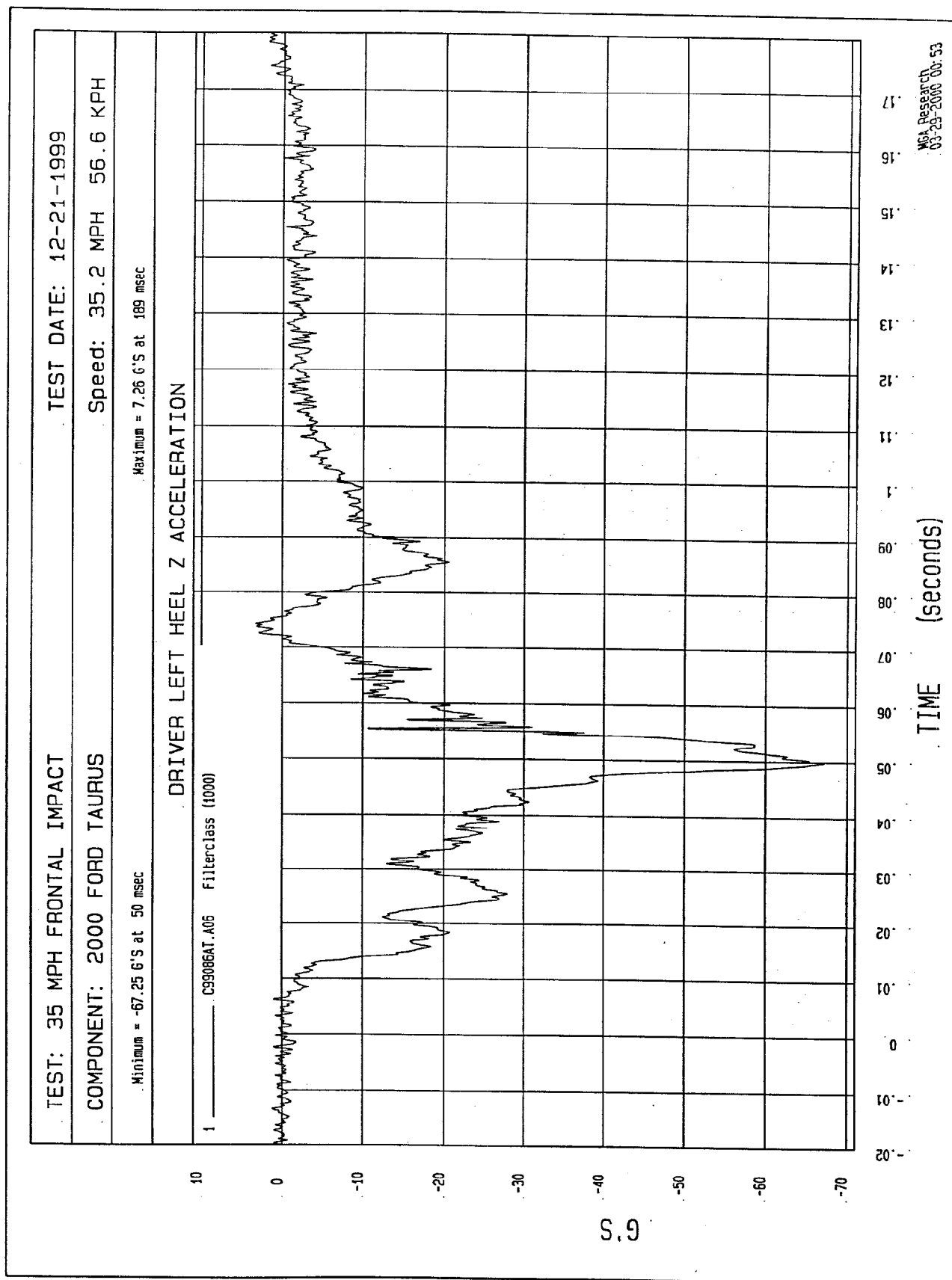
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

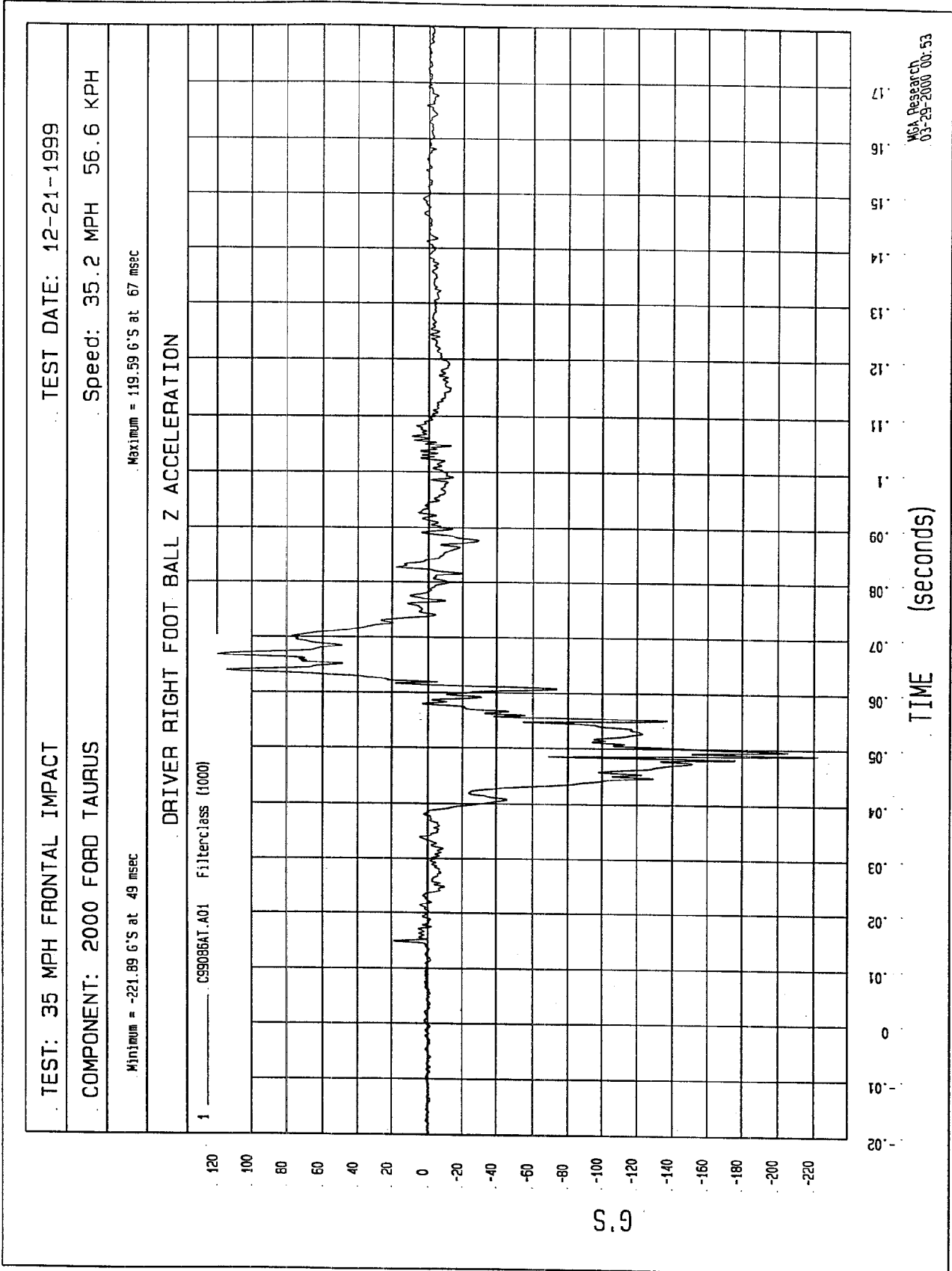
Minimum = -44.82 G'S at 50 msec Maximum = 22.82 G'S at 96 msec

DRIVER LEFT HEEL X ACCELERATION



MSA Research
03-29-2000 00:53



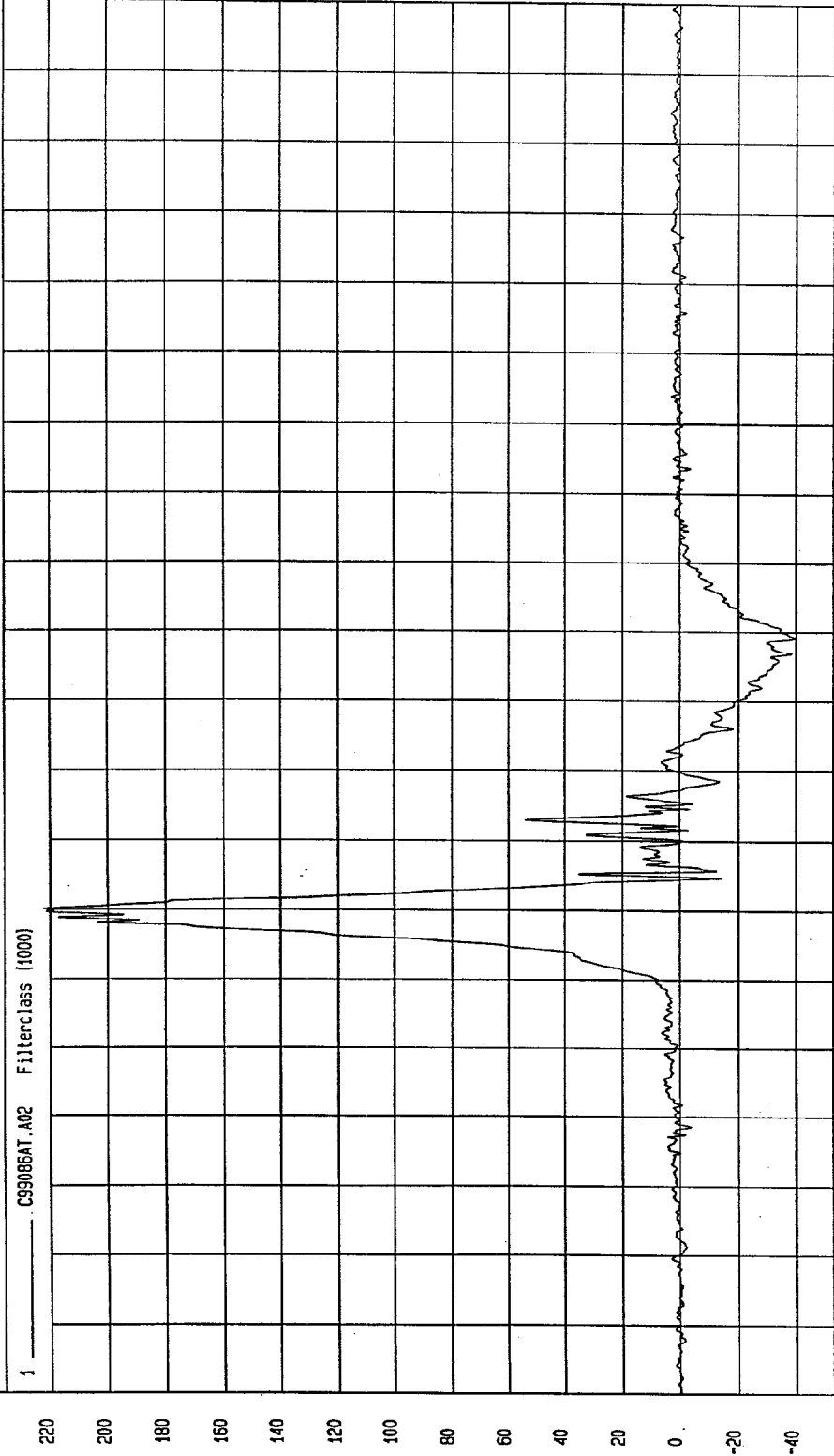


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -39.65 G'S at 89 msec Maximum = 222.43 G'S at 50 msec

DRIVER RIGHT HEEL X ACCELERATION



TIME (seconds)

MGA Research
03-29-2000 00:53

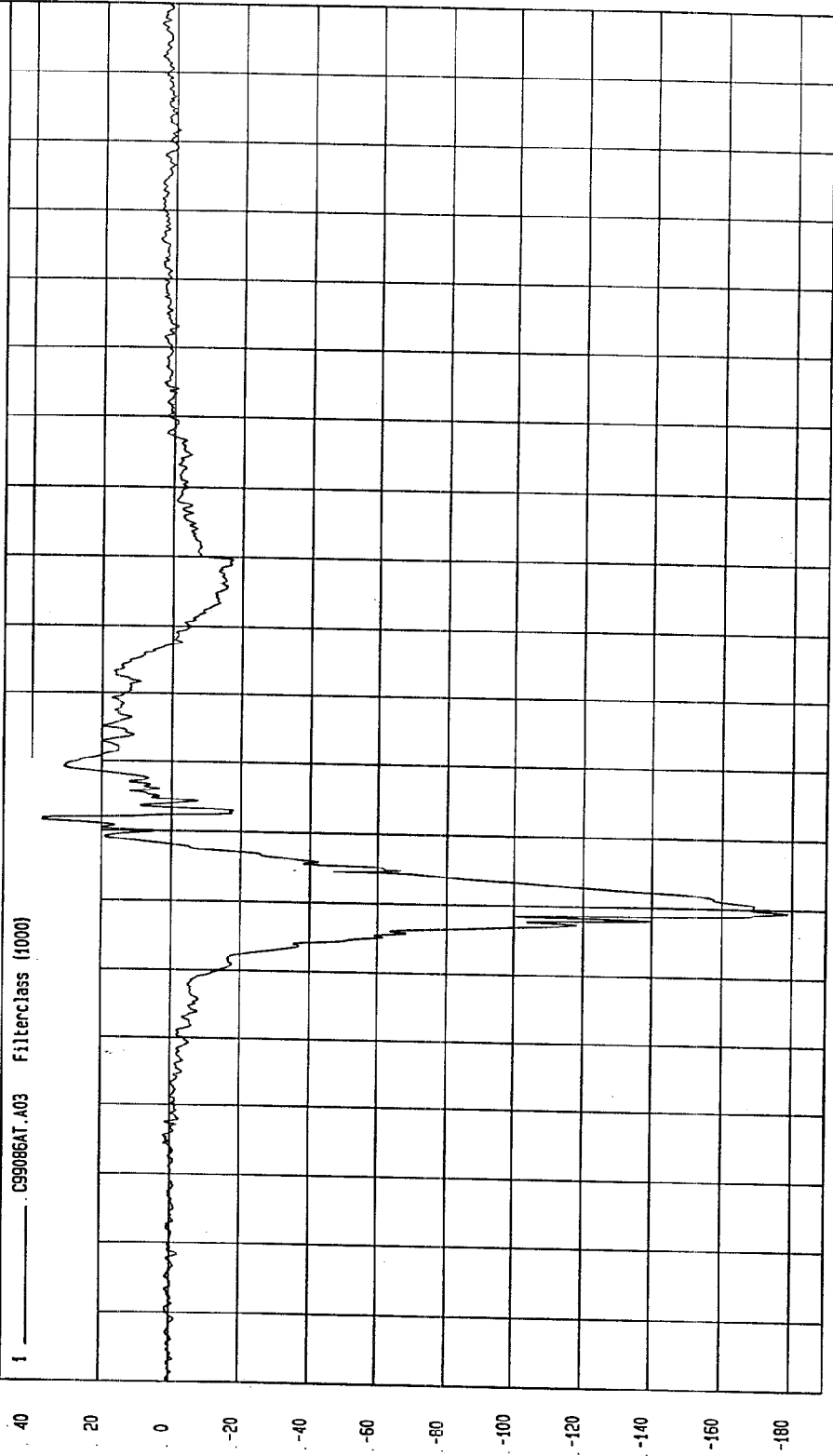
5.9

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -178.68 G'S at 50 msec Maximum = 37.19 G'S at 62 msec

DRIVER RIGHT HEEL Z ACCELERATION

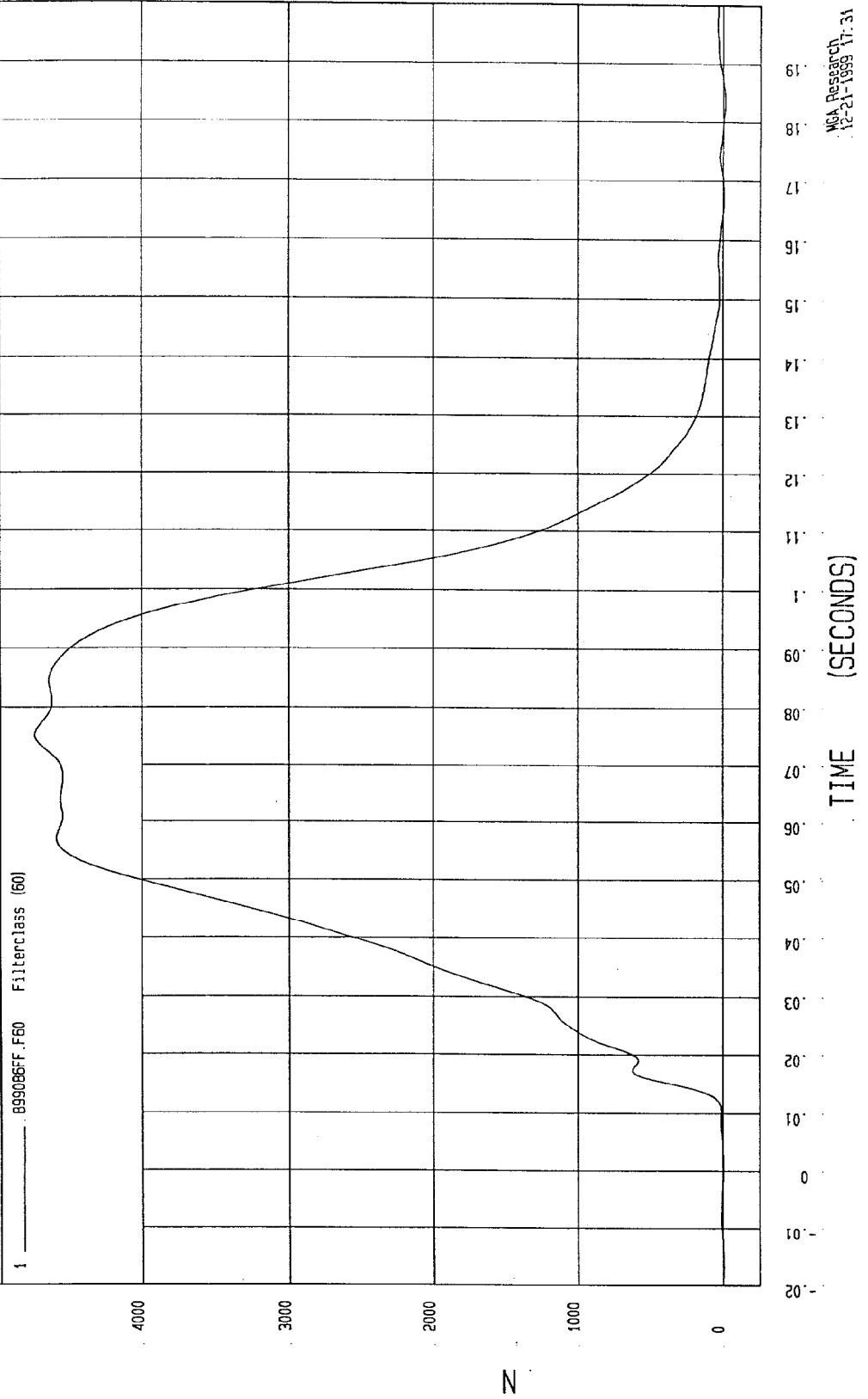


MCA Research
03-29-2000 00:53

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -18.58 N at 184 msec Maximum = 4725.24 N at 75 msec

DRIVER SHOULDER BELT FORCE

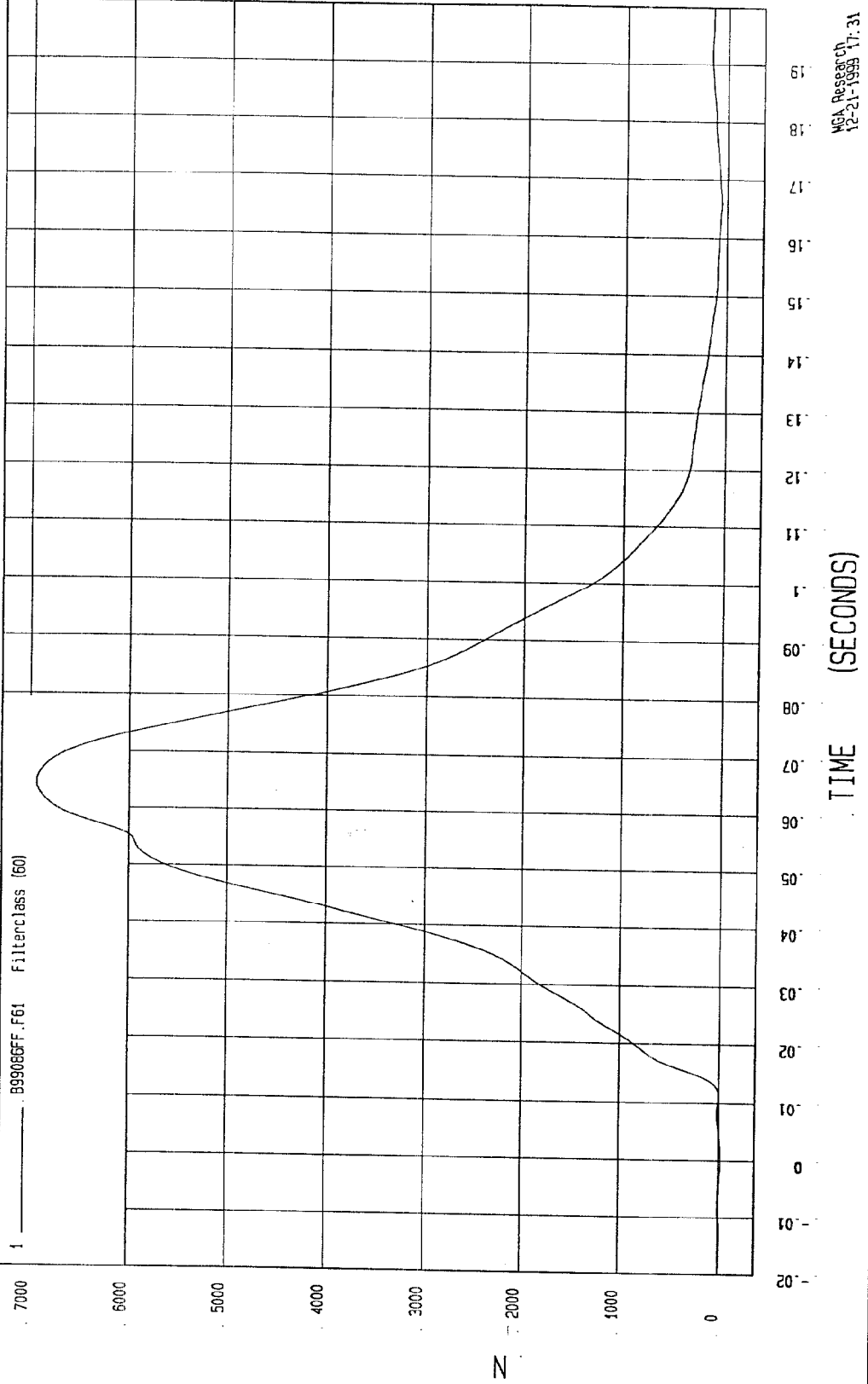


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -20.79 N at 0 msec Maximum = 6938.53 N at 64 msec

DRIVER LAP BELT FORCE

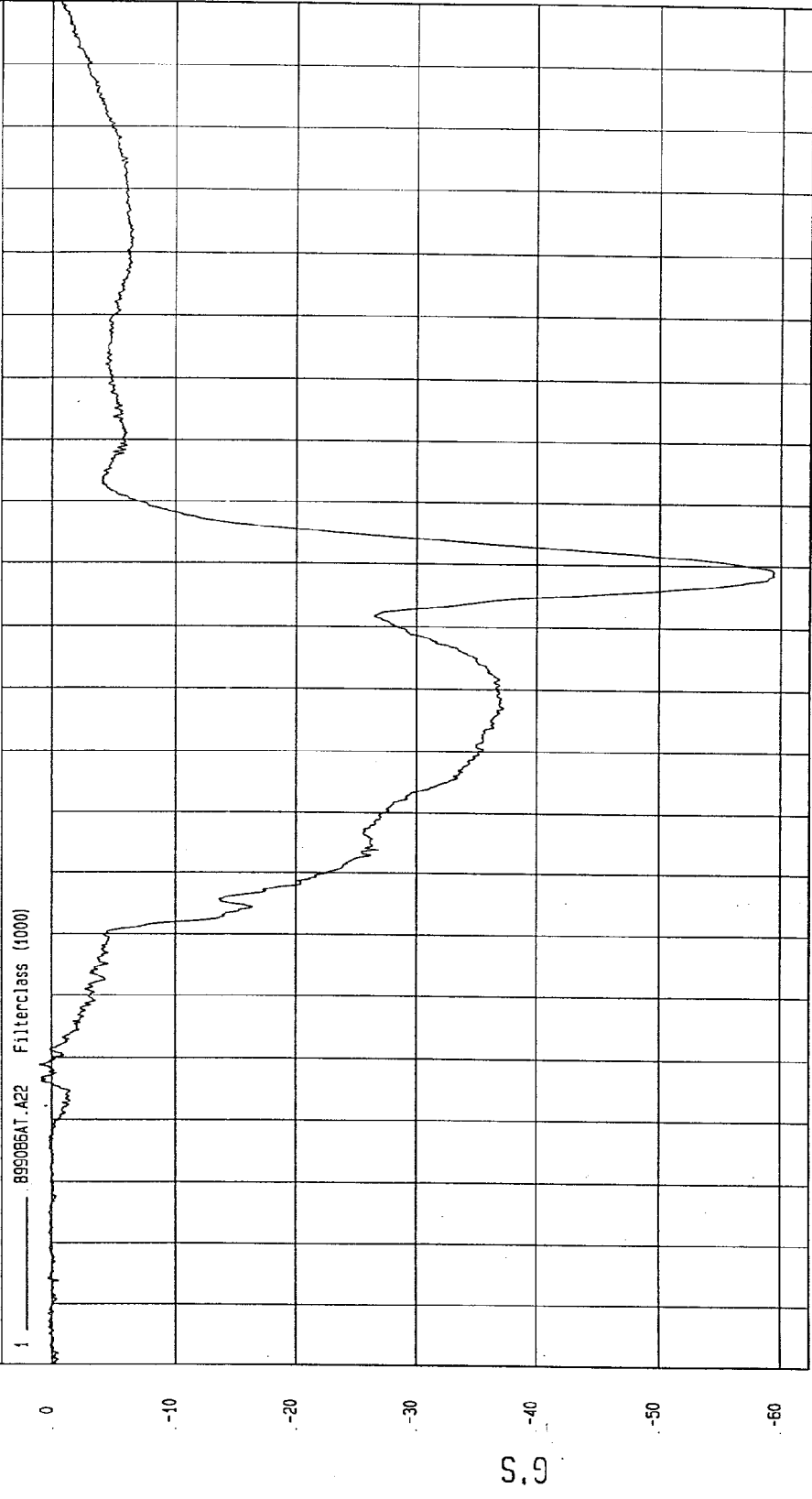


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -59.41 G'S at 108 msec Maximum = 1.03 G'S at 29 msec

PASSENGER HEAD X ACCELERATION



MCA Research
12-21-1999 17:32

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

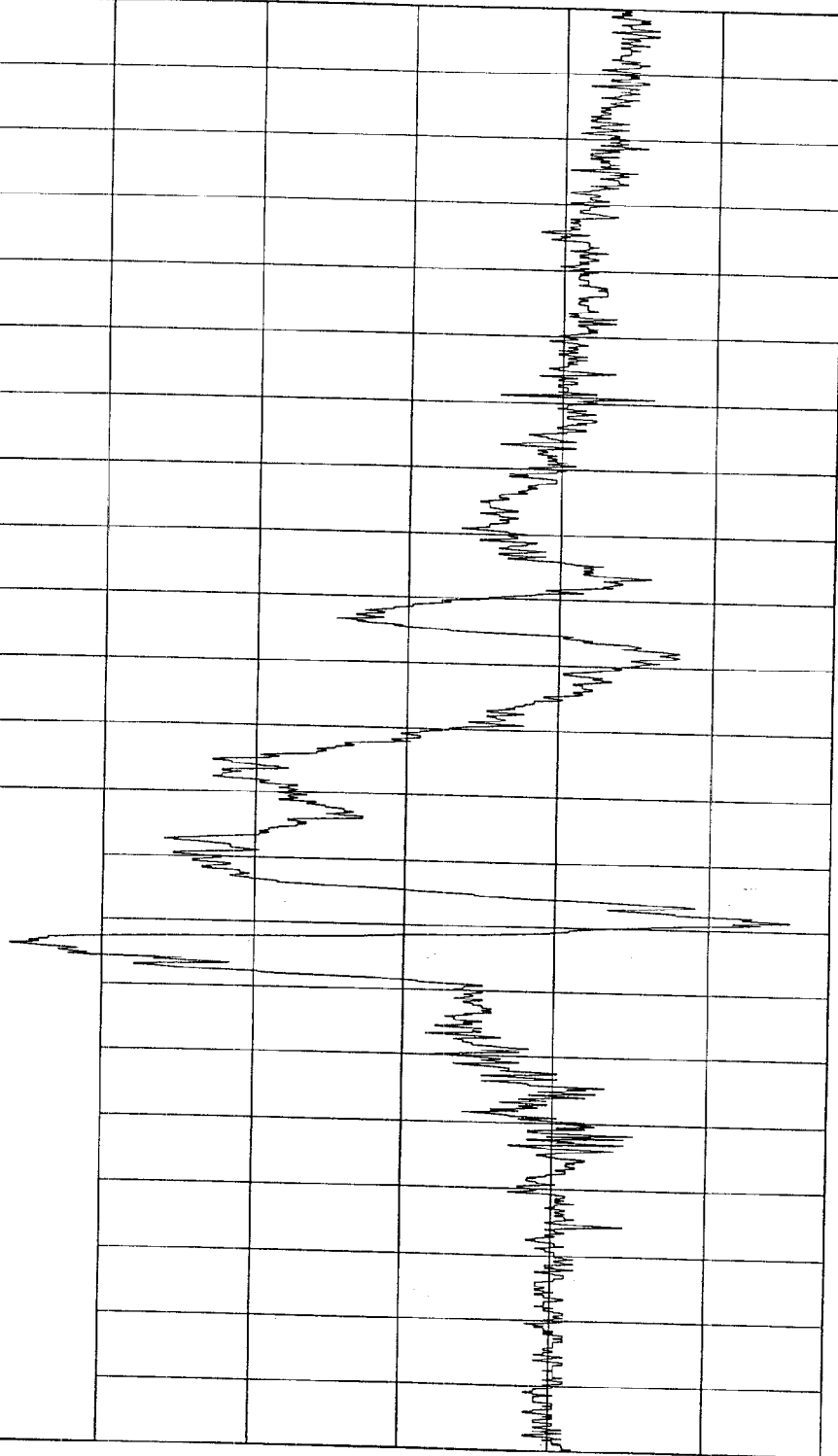
Speed: 35.2 MPH 56.6 KPH

Minimum = -3.06 G'S at 51 msec

Maximum = 7.21 G'S at 56 msec

PASSENGER HEAD Y ACCELERATION

1 _____ B99066AT.A23 Filterclass (1000)



MSA Research
12-21-1999 17:32

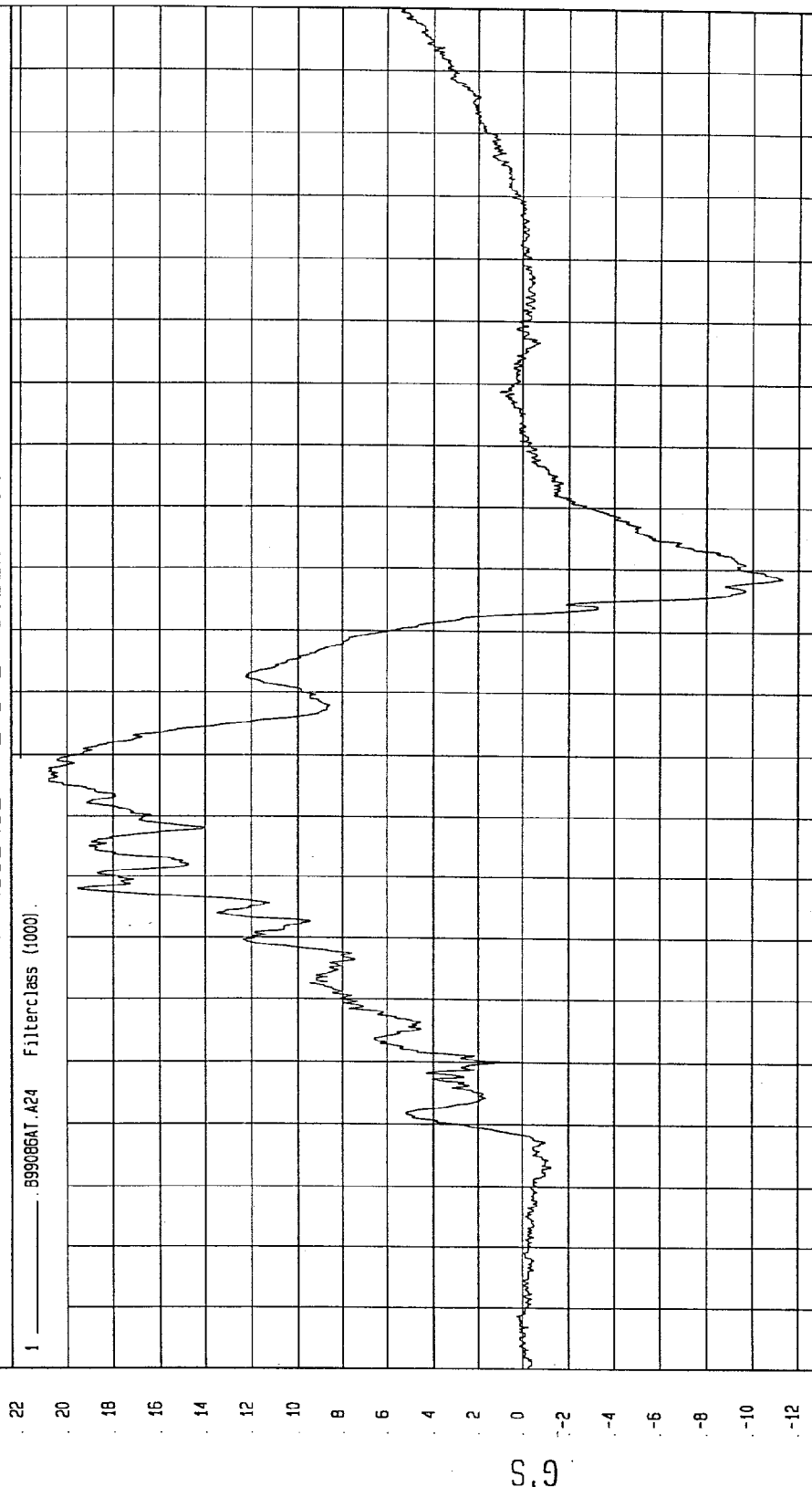
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -11.32 G's at 108 msec
Maximum = 20.8 G's at 76 msec

PASSENGER HEAD Z ACCELERATION

1 _____ 899086AT A24 Filterclass (1000)



NSA Research
12-21-1999 17:32

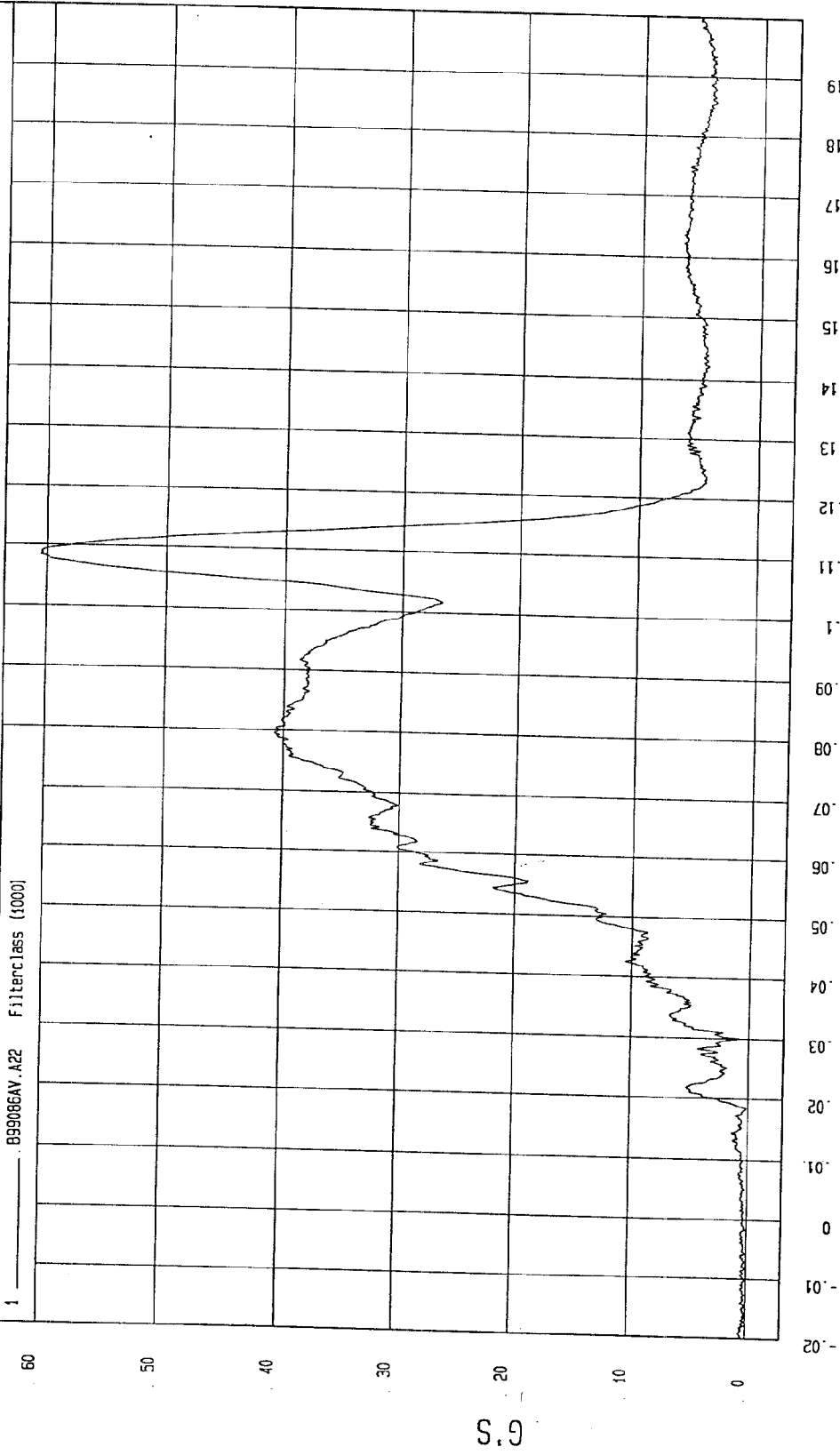
TIME (SECONDS)

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = 6.56E-02 G's at -17 msec Maximum = 60.51 G's at 109 msec

PASSENGER HEAD RESULTANT ACCELERATION



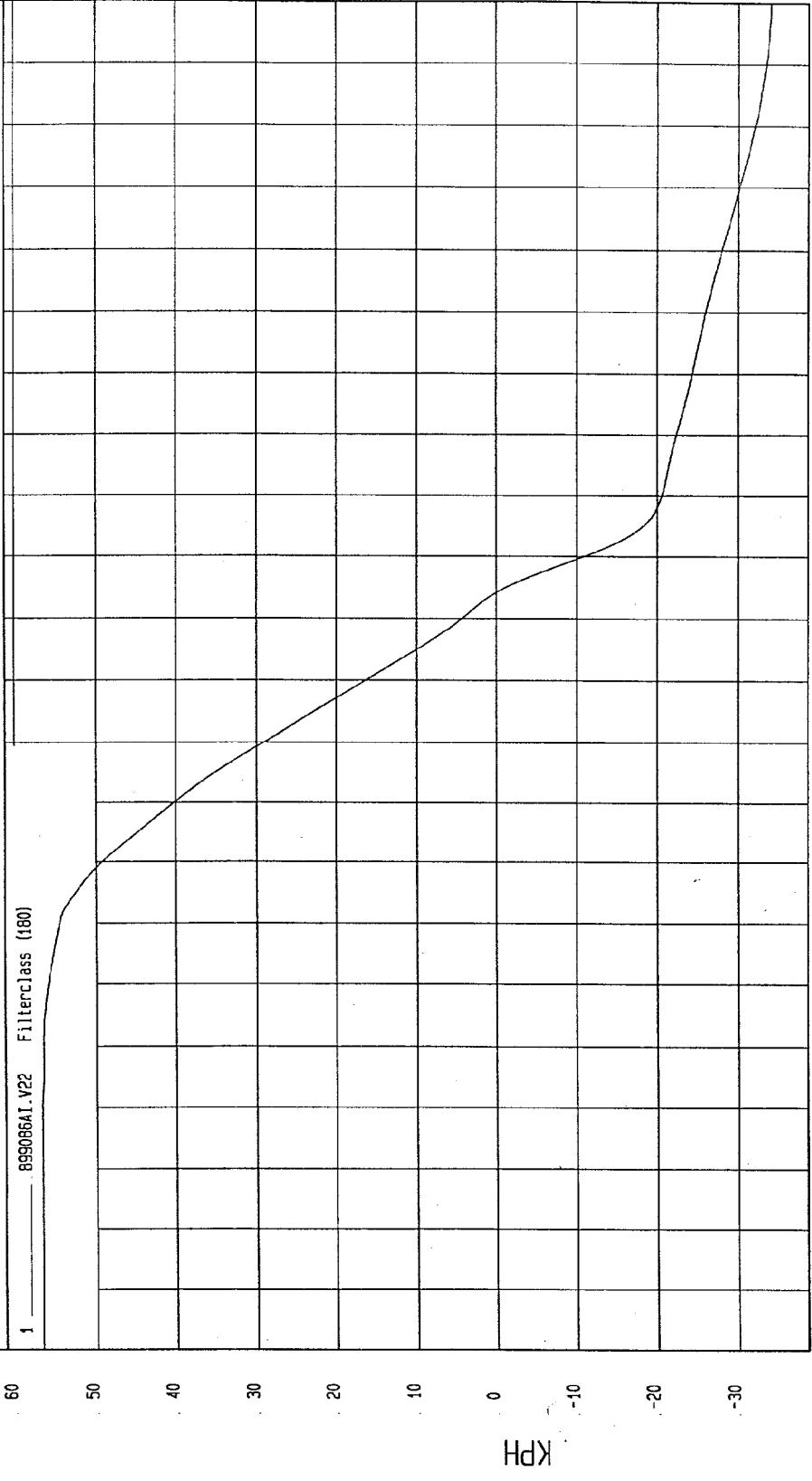
WGA Research
12-21-1999 17:33

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 55.6 KPH

Minimum = -34.19 KPH at 200 msec Maximum = 56.64 KPH at 18 msec

PASSENGER HEAD X VELOCITY



TIME Seconds

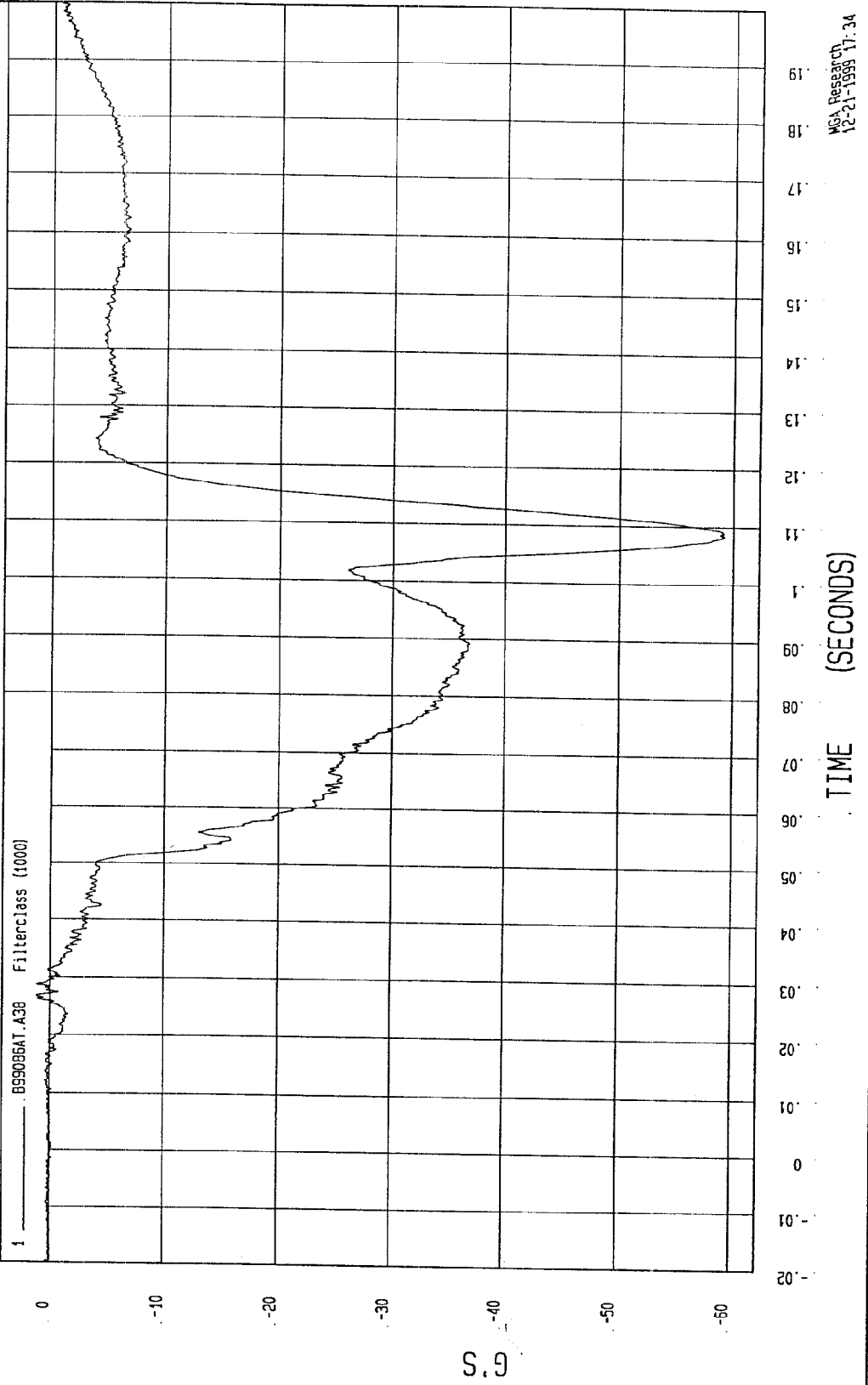
NEA Research
01-06-2000 15:41

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -59.23 G'S at 108 msec
Maximum = 1.19 G'S at 27 msec

PASSENGER HEAD REDUNDANT X ACCELERATION

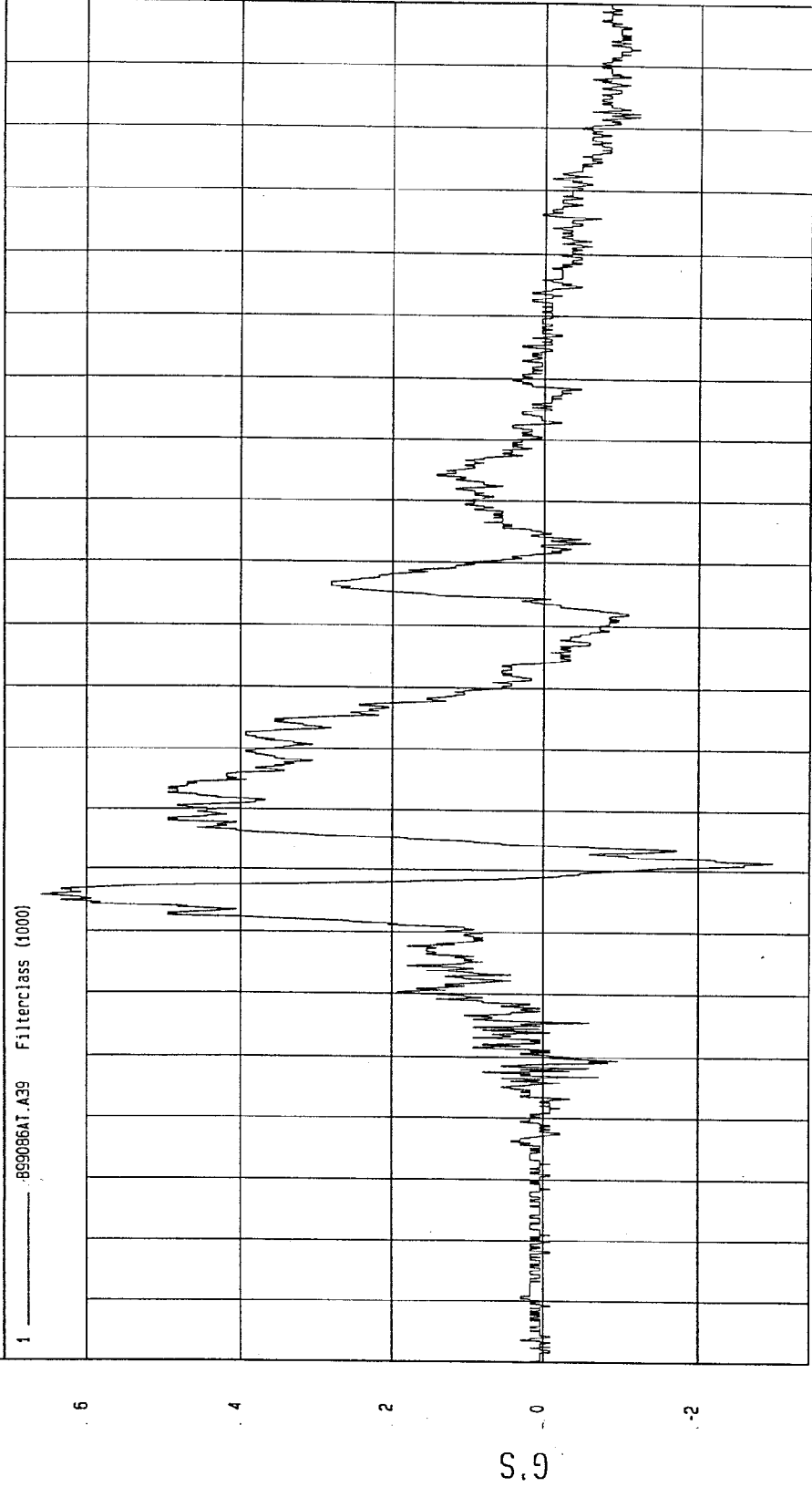


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -2.98 G'S at 61 msec Maximum = 6.57 G'S at 56 msec

PASSENGER HEAD REDUNDANT Y ACCELERATION



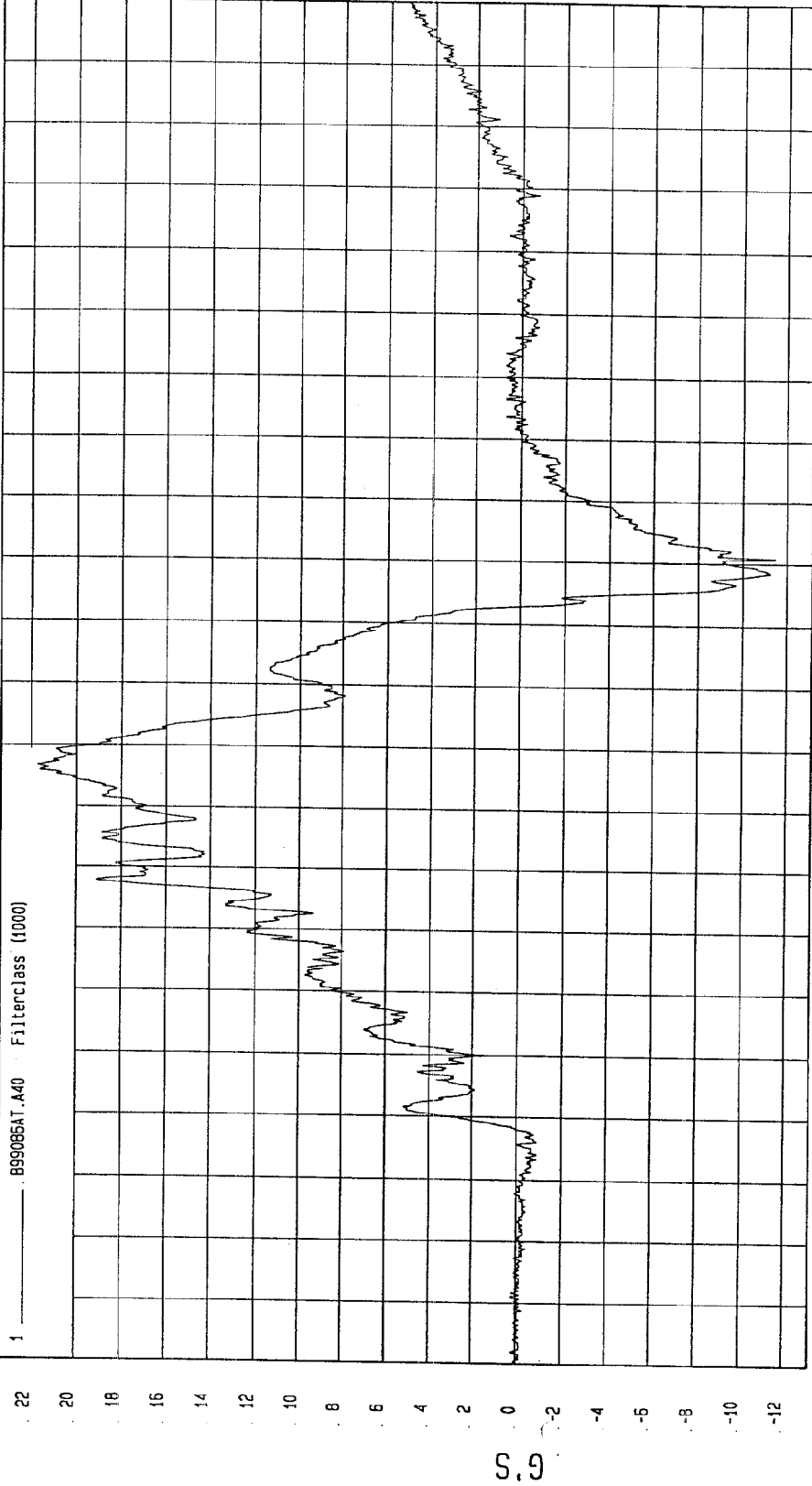
NSA Research
12-21-1999 17:34

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -11.48 G'S at 111 msec
Maximum = 21.73 G'S at 77 msec

PASSENGER HEAD REDUNDANT Z ACCELERATION

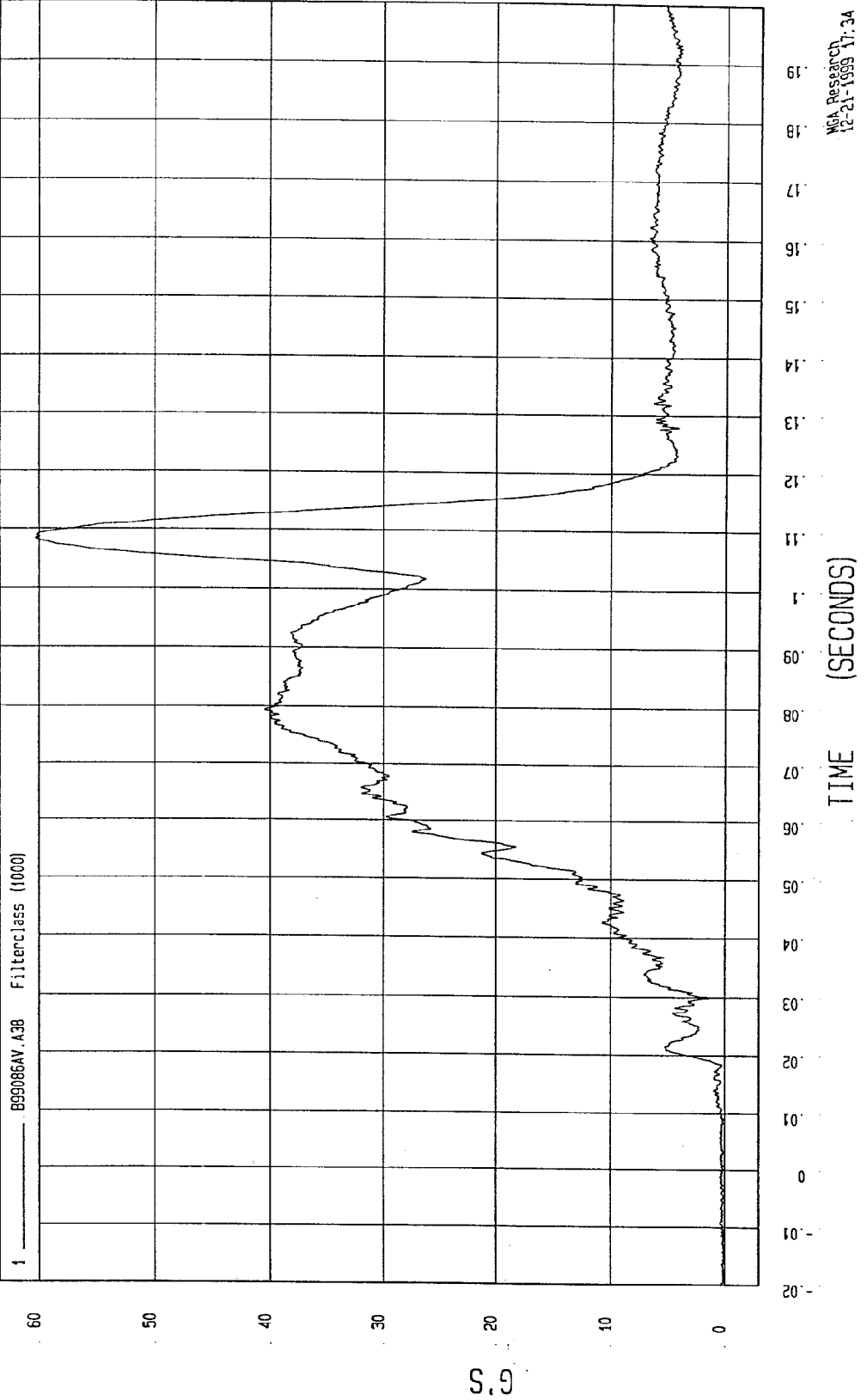


TIME (SECONDS)

MGA Research
12-21-1999 17.34

TEST: 35 MPH FRONTAL IMPACT
TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS
Speed: 35.2 MPH 56.6 KPH
Minimum = 8.52E-02 G'S at -19 msec
Maximum = 60.31 G'S at 108 msec

PASSENGER HEAD REDUNDANT RESULTANT ACCELERATION



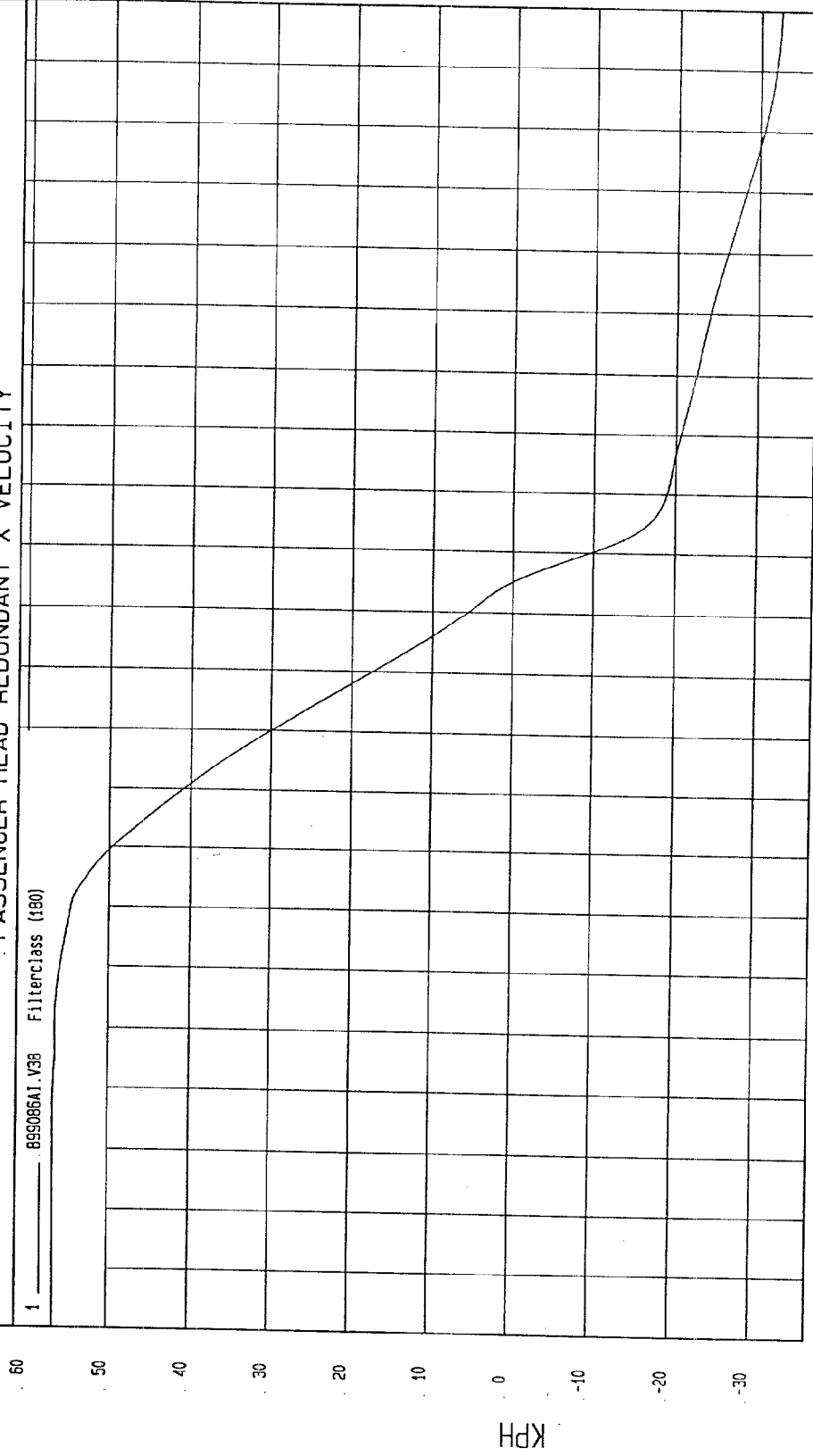
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -32.43 KPH at 200 msec
Maximum = 56.72 KPH at 17 msec

PASSENGER HEAD REDUNDANT X VELOCITY

1 ——— B99085A1.V38 Filterclass (180)



WGA Research
01-06-2000 15:41

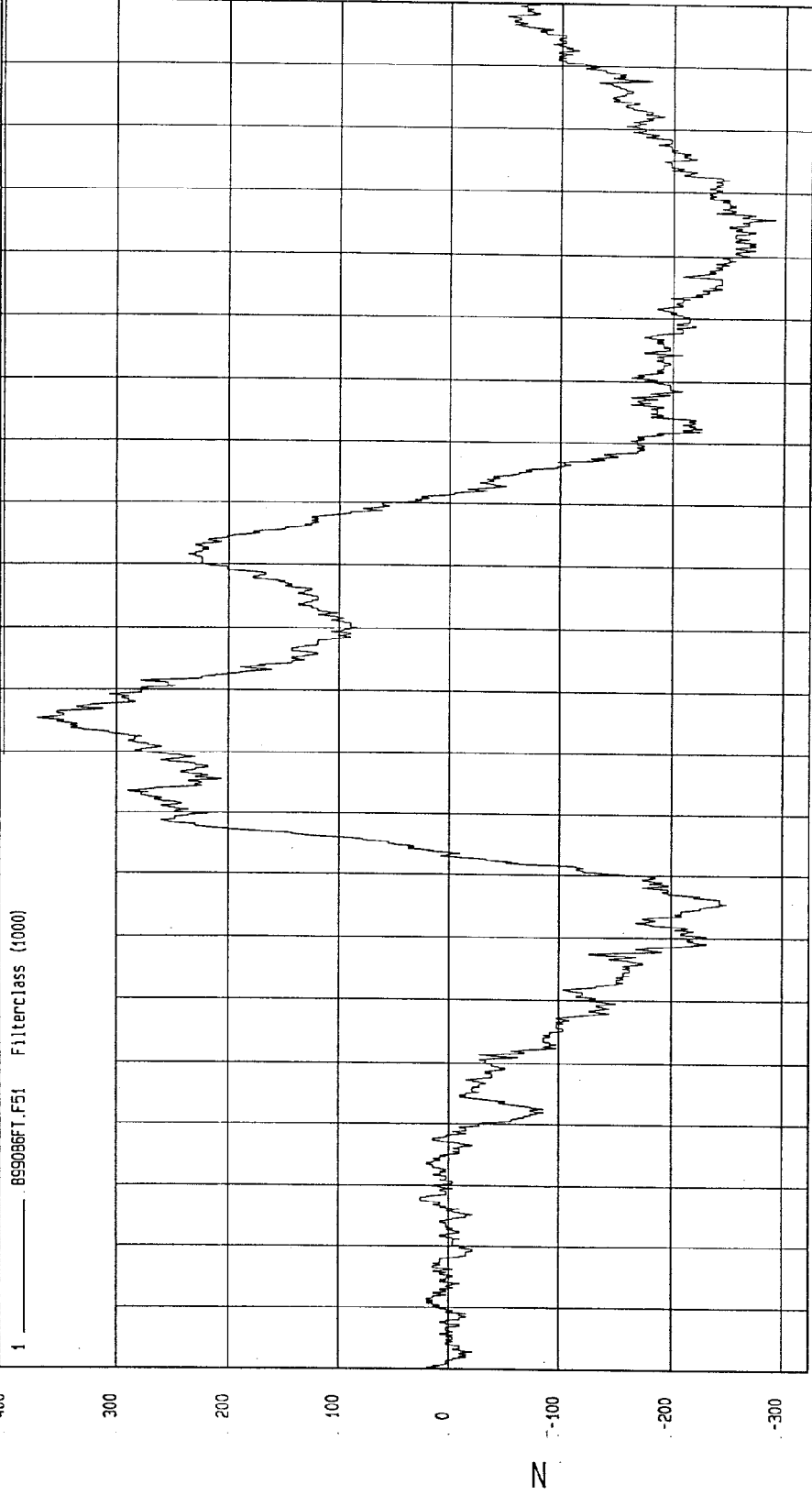
TIME Seconds

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -290.9 N at 165 msec Maximum = 371.03 N at 86 msec

PASSENGER NECK FORCE X

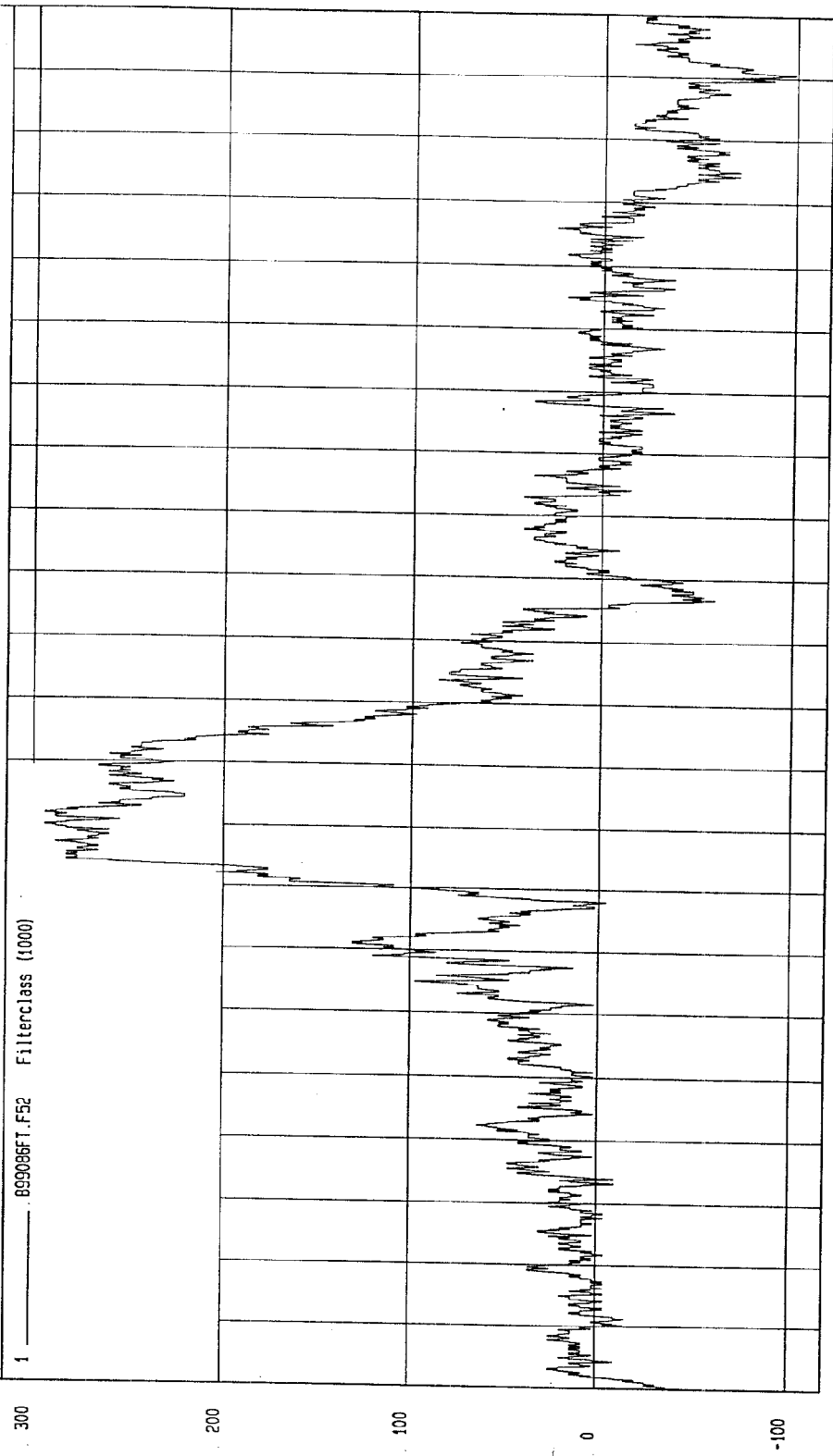


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -98.9 N at 190 msec Maximum = 293.97 N at 70 msec

PASSENGER NECK FORCE Y



TIME (SECONDS)

MSA Research
12-21-1999 17:34

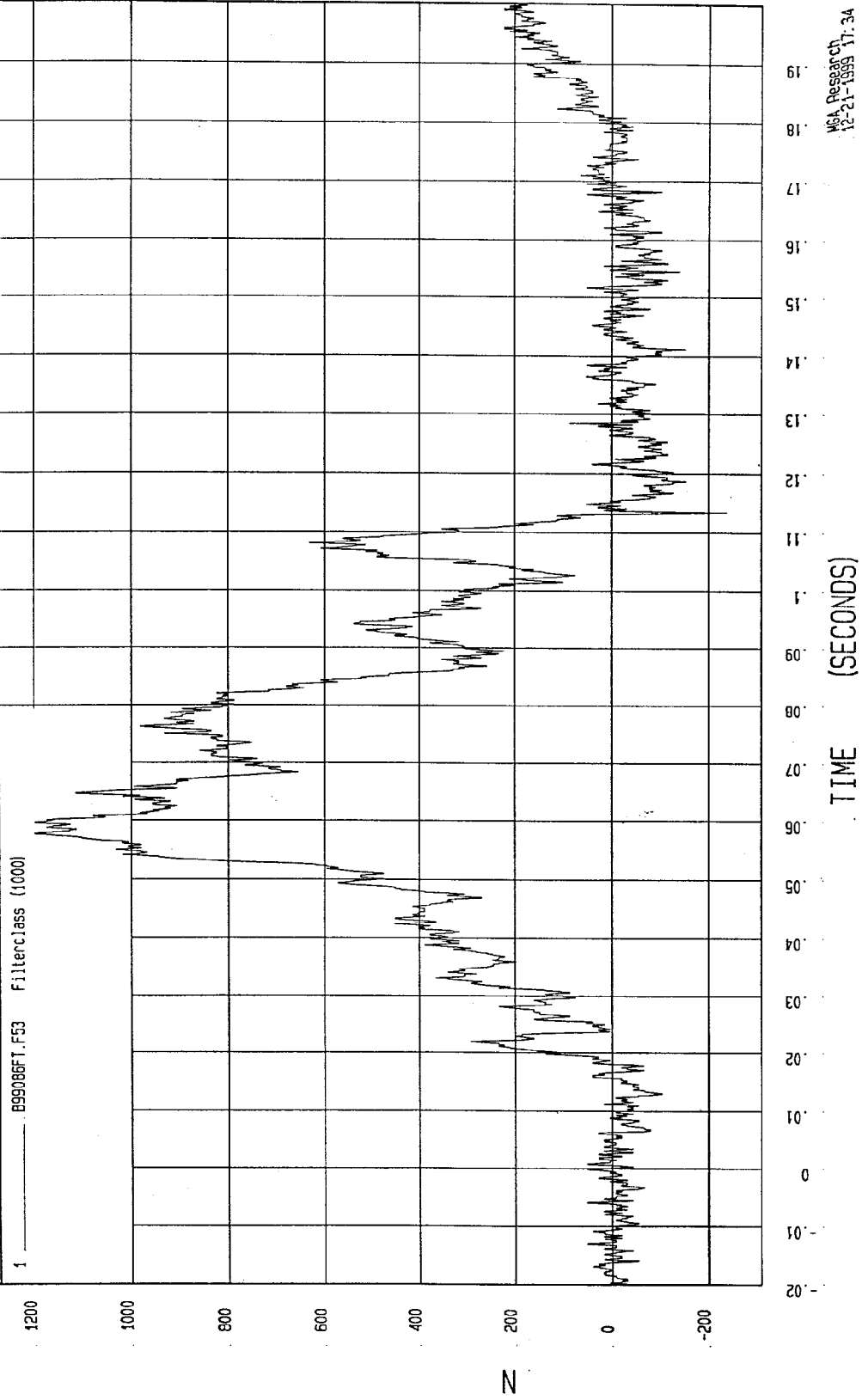
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

SPEED: 35.2 MPH 56.6 KPH

Maximum = 1196.82 N at 58 msec

Minimum = -236.83 N at 113 msec

PASSENGER NECK FORCE Z

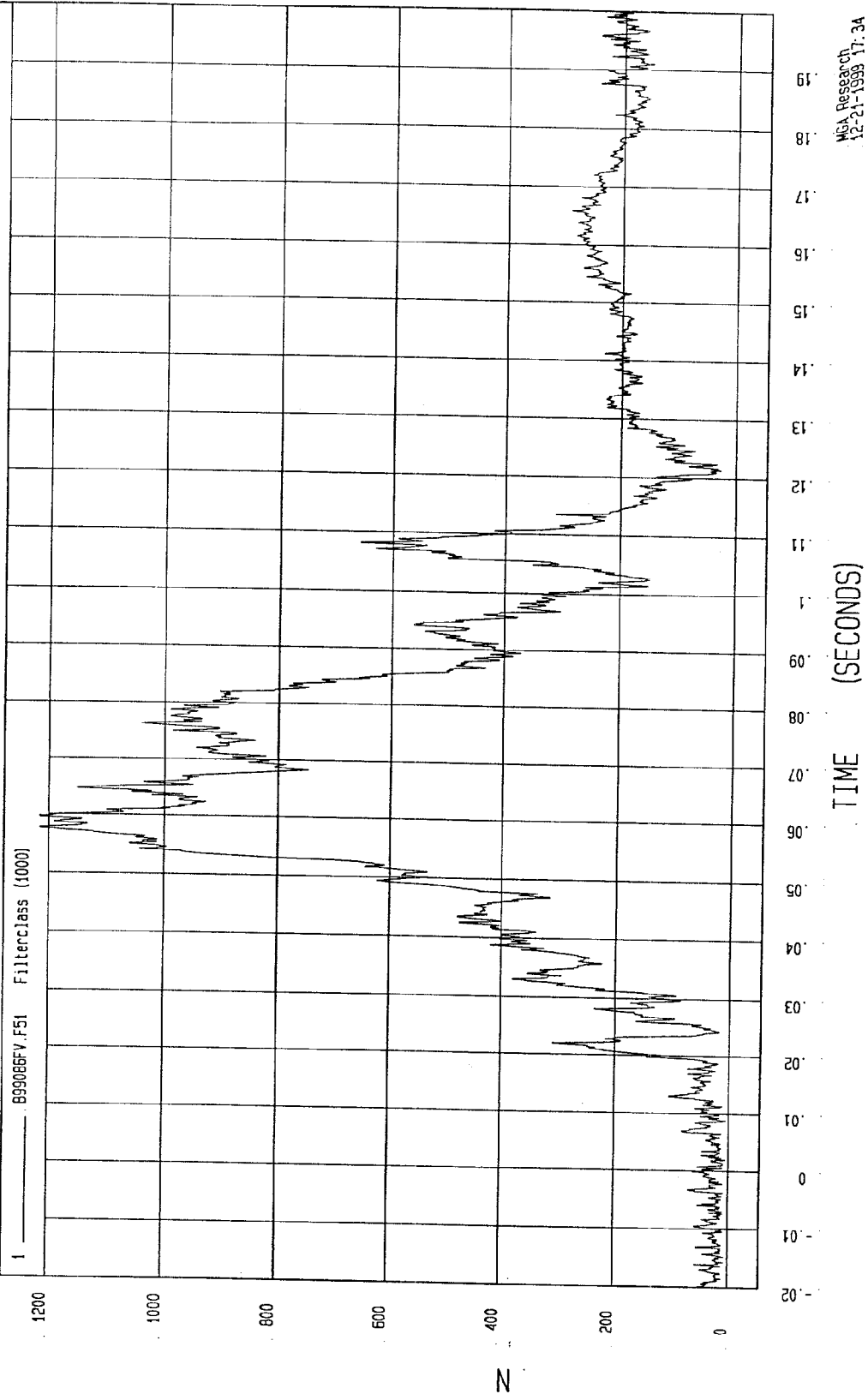


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = 5.32 N at -15 msec Maximum = 1216.14 N at 60 msec

PASSENGER NECK FORCE RESULTANT



WCA Research
12-21-1999 17:34

TEST: 35 MPH FRONTAL IMPACT
TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS
Speed: 35.2 MPH 56.6 KPH
Minimum = -12.6 NM at 67 msec
Maximum = 14.67 NM at 107 msec

PASSENGER NECK MOMENT X

1 B9906MF.M54 Filterclass (600)

16

14

12

10

8

6

4

2

0

-2

-4

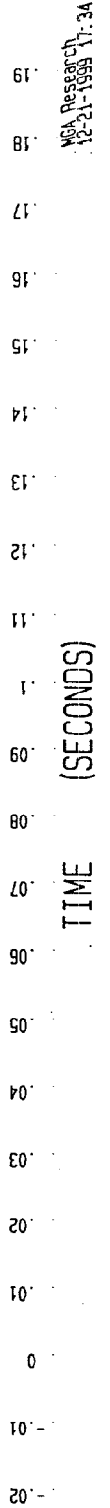
-6

-8

-10

-12

NM



TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

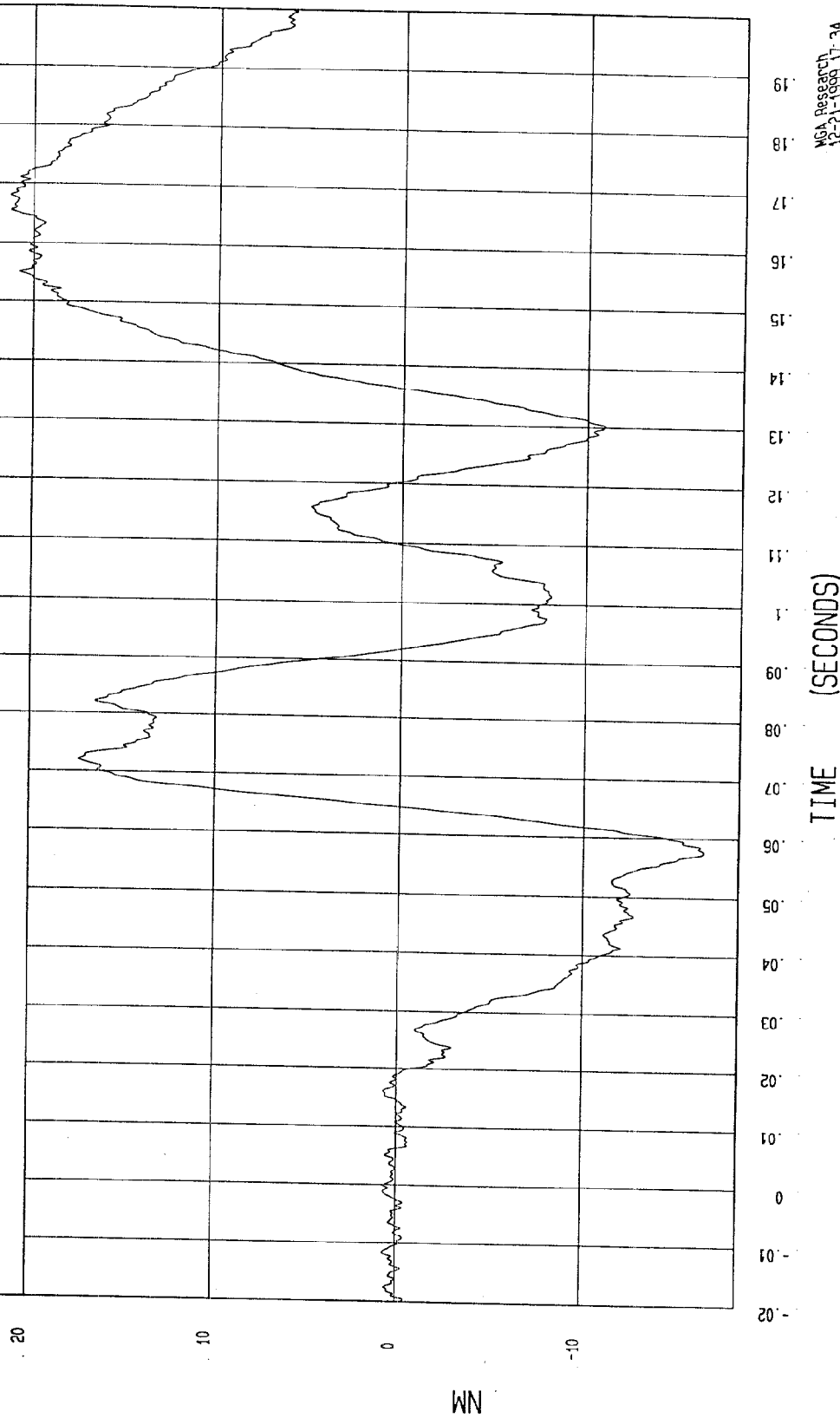
SPEED: 35.2 MPH 56.6 KPH

Maximum = 21.27 NM at 168 msec

Minimum = -16.42 NM at 58 msec

PASSENGER NECK MOMENT Y

1 899085F.M55 Filterclass (600)



MCA Research
12-21-1999 17:34

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

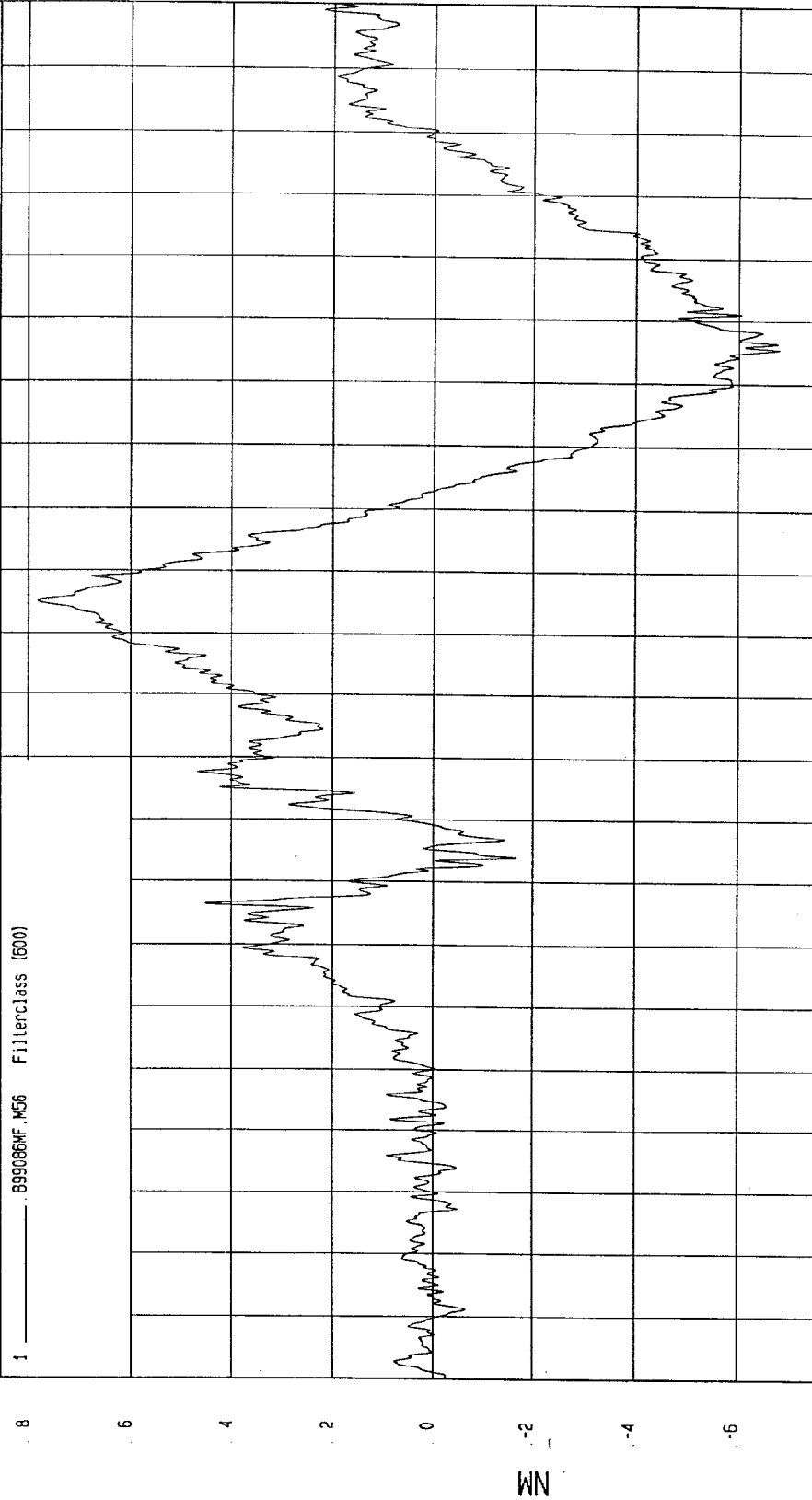
SPEED: 35.2 MPH 56.6 KPH

Maximum = 7.81 NM at 105 msec

PASSENGER NECK MOMENT Z

1 899085WF M56 Filterclass (600)

Minimum = -6.81 NM at 146 msec



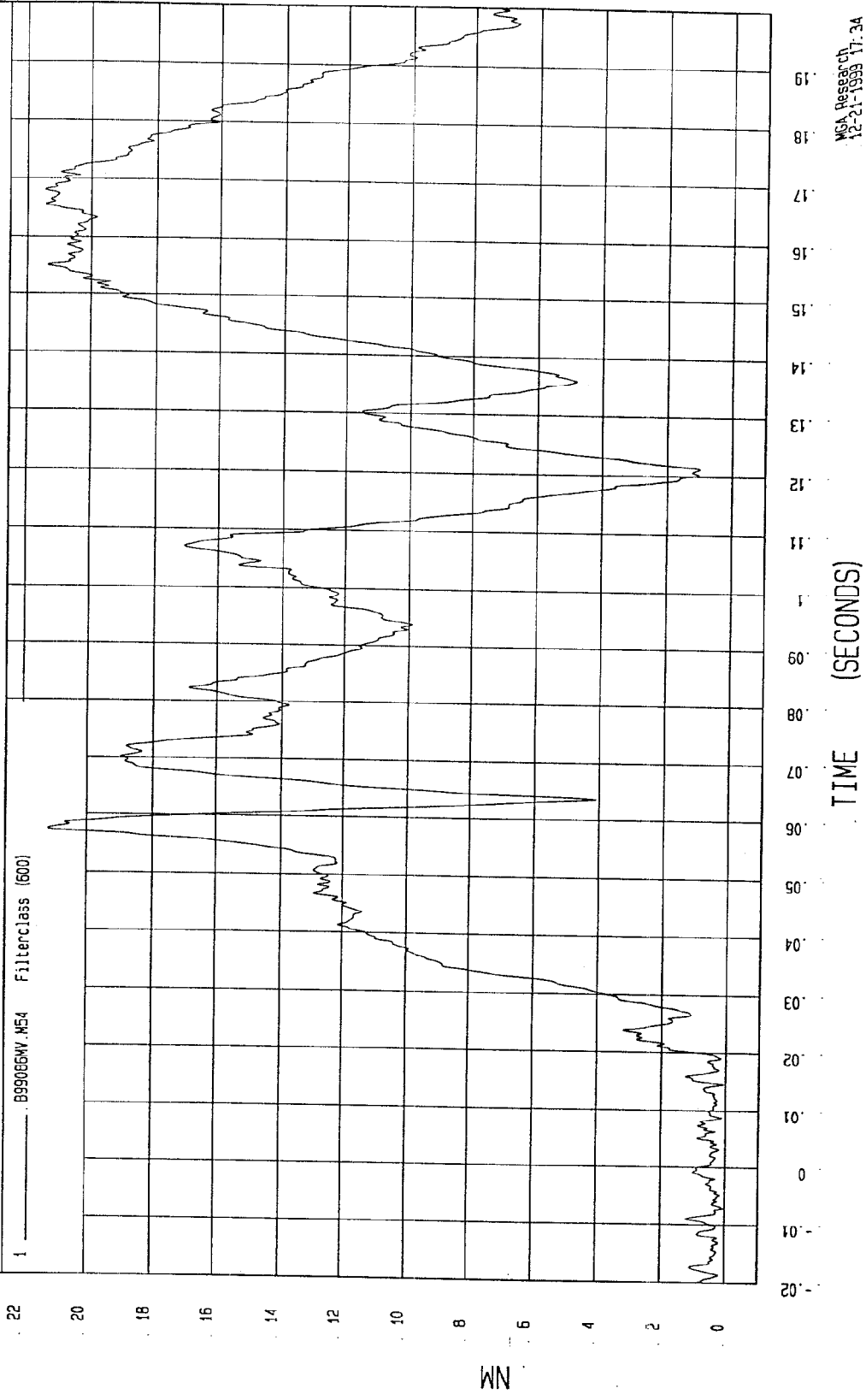
MSA Research
12-21-1999 17:34

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = 3.55E-02 NM at -7 msec Maximum = 21.46 NM at 168 msec

PASSENGER NECK MOMENT RESULTANT



MSA Research
12-21-1999 17:34

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

SPEED: 35.2 MPH 56.6 KPH

COMPONENT: 2000 FORD TAURUS

Maximum = 2.15 G'S at 166 msec

Minimum = -38.17 G'S at 84 msec

PASSENGER CHEST X ACCELERATION

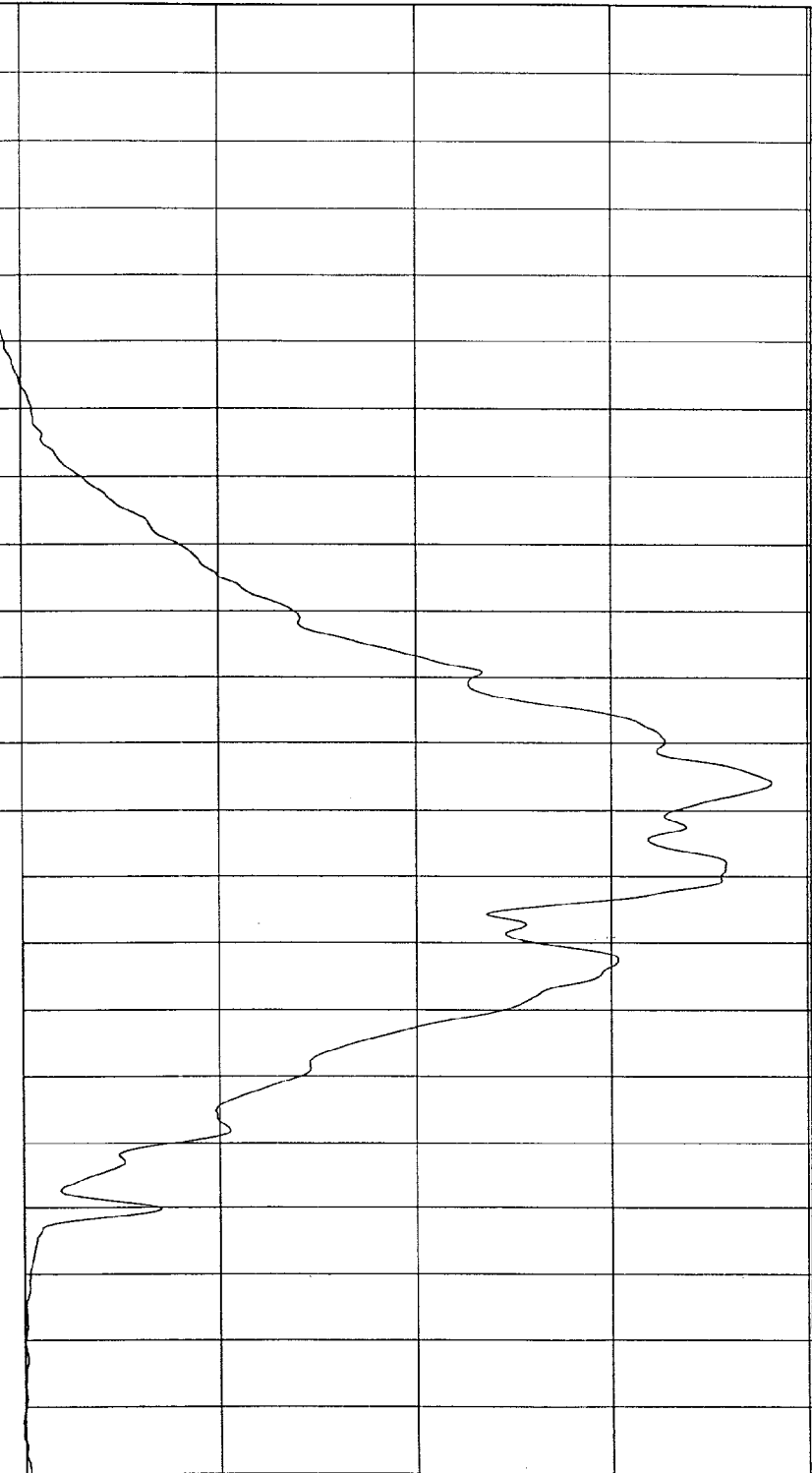
1 899086AF.A25 Filterclass (180)

G'S

0 -10 -20 -30 -40

TIME (SECONDS)

MOA Research
12-21-1999 17:33

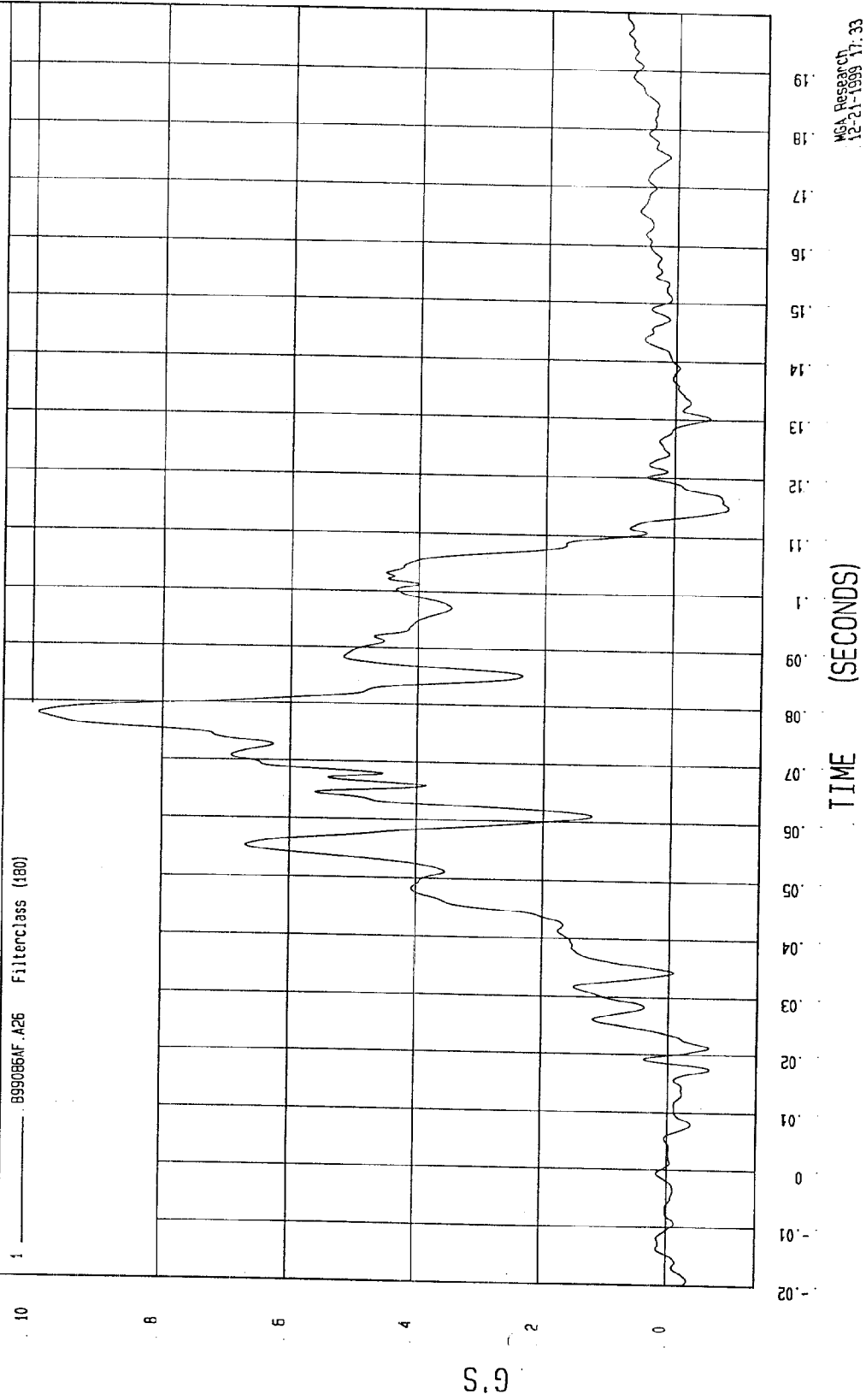


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -.85 G'S at 115 msec Maximum = 9.91 G'S at 78 msec

PASSENGER CHEST Y ACCELERATION



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

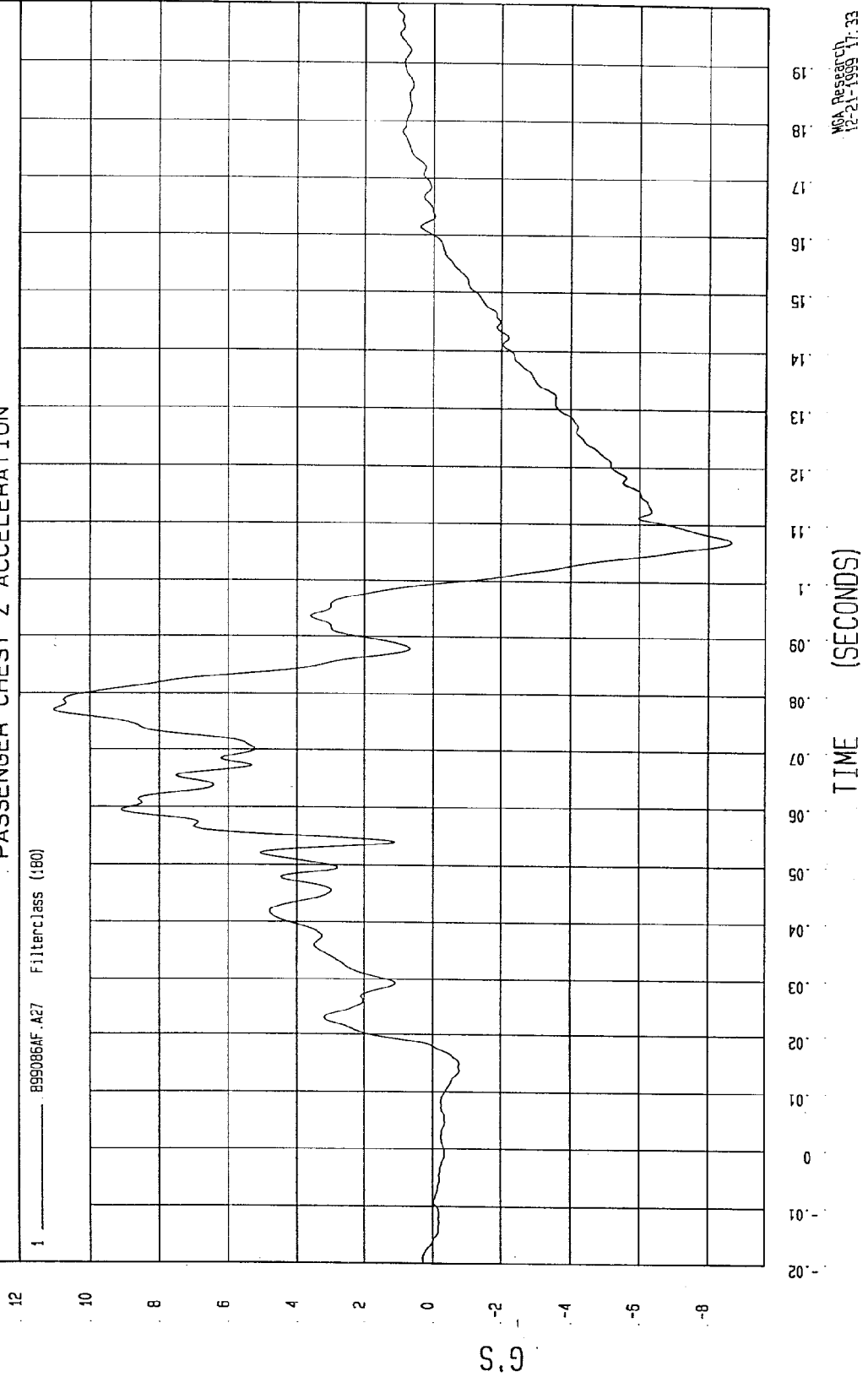
Speed: 35.2 MPH 56.6 KPH

COMPONENT: 2000 FORD TAURUS

Maximum = 11.04 G'S at 77 msec

Minimum = -8.68 G'S at 107 msec

PASSENGER CHEST Z ACCELERATION

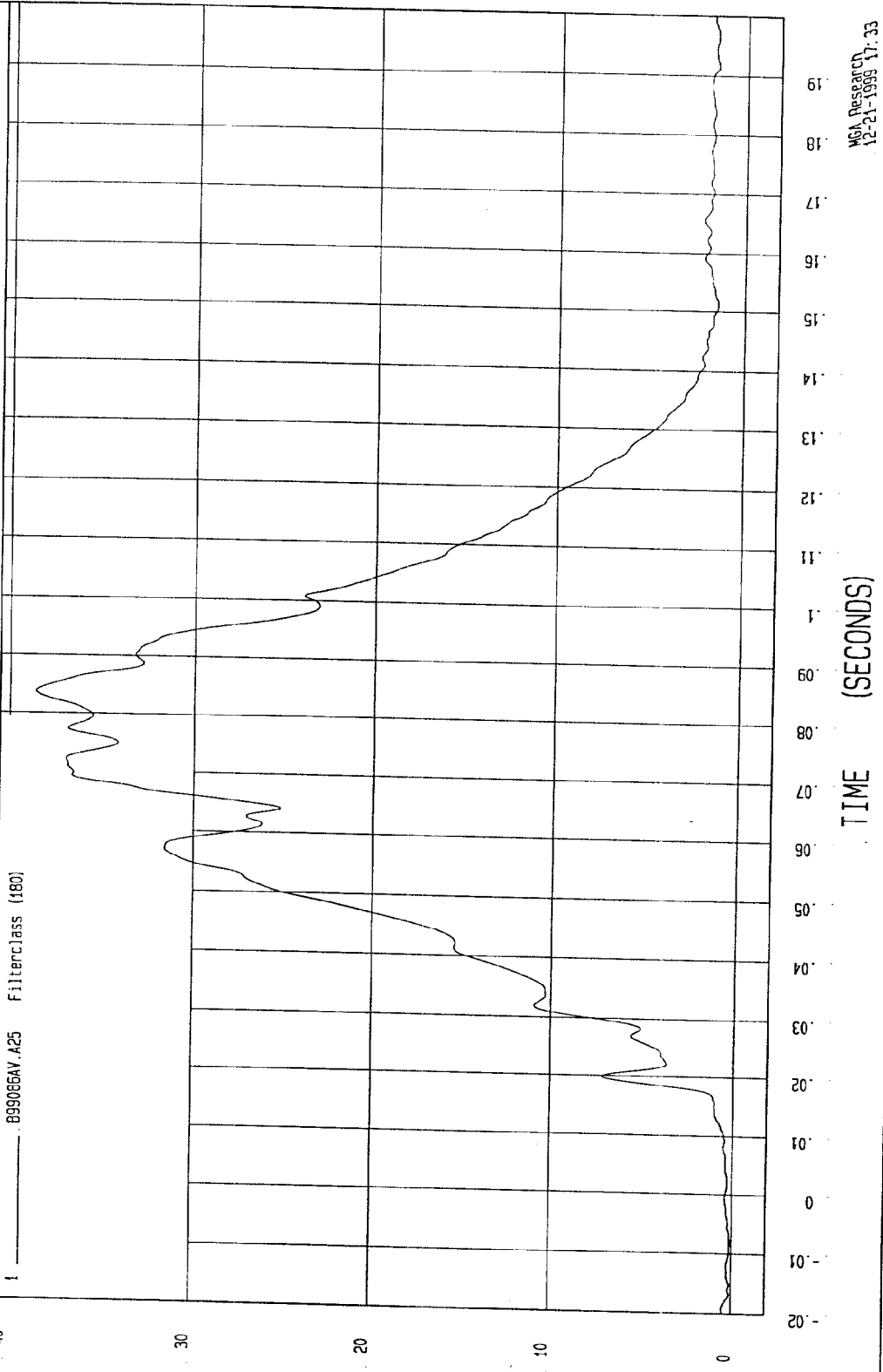


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = .11 G'S at -8 msec Maximum = 38.62 G'S at 84 msec

PASSENGER CHEST RESULTANT ACCELERATION



WGA Research
12-21-1999 17:33

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

SPEED: 35.2 MPH 56.6 KPH

COMPONENT: 2000 FORD TAURUS

Maximum = 56.6 KPH at -20 msec

Minimum = -22.29 KPH at 143 msec

PASSENGER CHEST X VELOCITY

1 _____ B99085A1.V25 Filterclass (100)

50

50

40

30

20

10

0

-10

-20

KPH

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

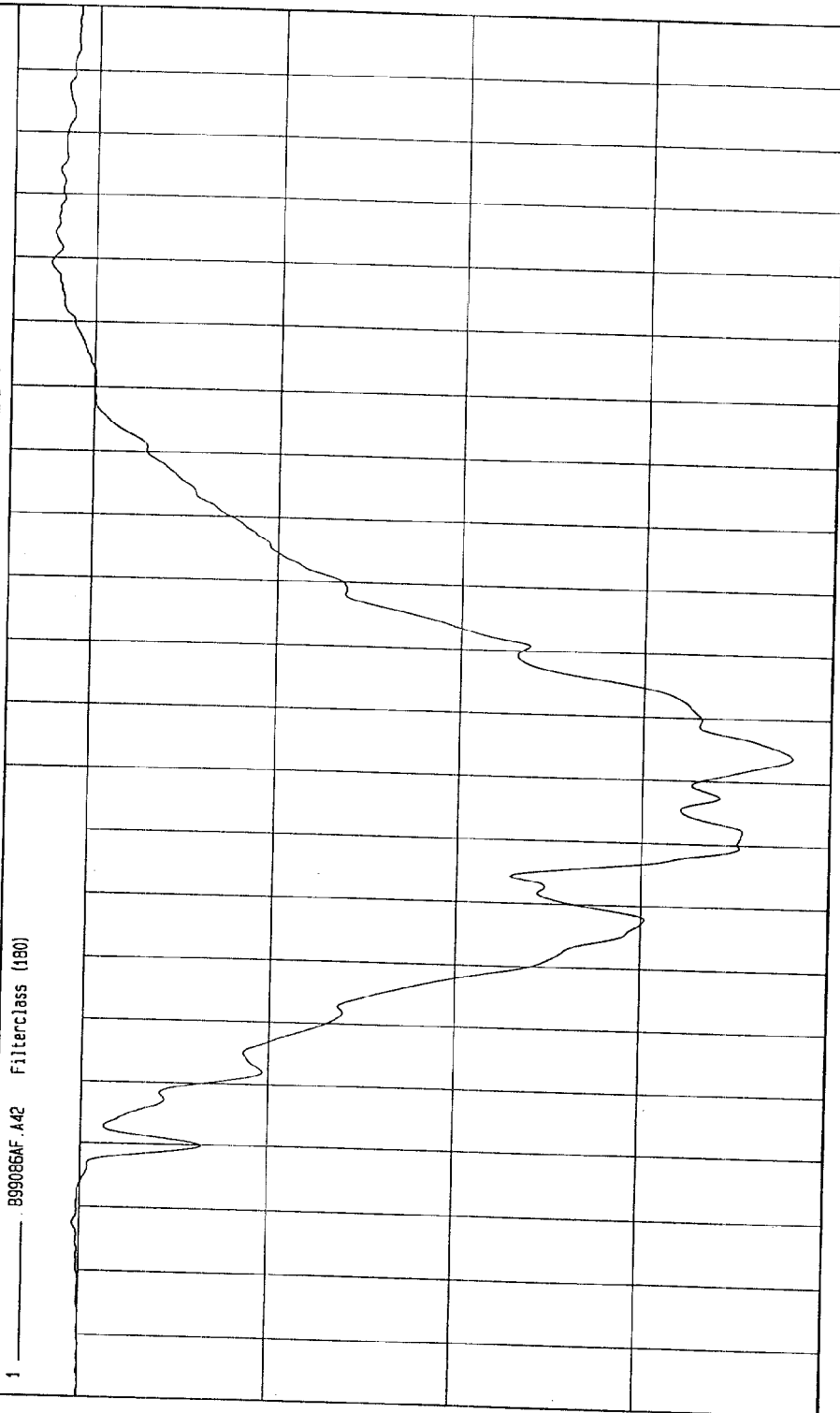
-02

TIME Seconds

NCA Research
01-05-2000 15:41

TEST: 35 MPH FRONTAL IMPACT
 TEST DATE: 12-21-1999
 COMPONENT: 2000 FORD TAURUS
 Speed: 35.2 MPH 56.6 KPH
 Minimum = -38.04 G'S at 84 msec
 Maximum = 2.35 G'S at 159 msec

PASSENGER CHEST REDUNDANT X ACCELERATION



TIME (SECONDS)

MCA Research
 12-21-1999 17:34

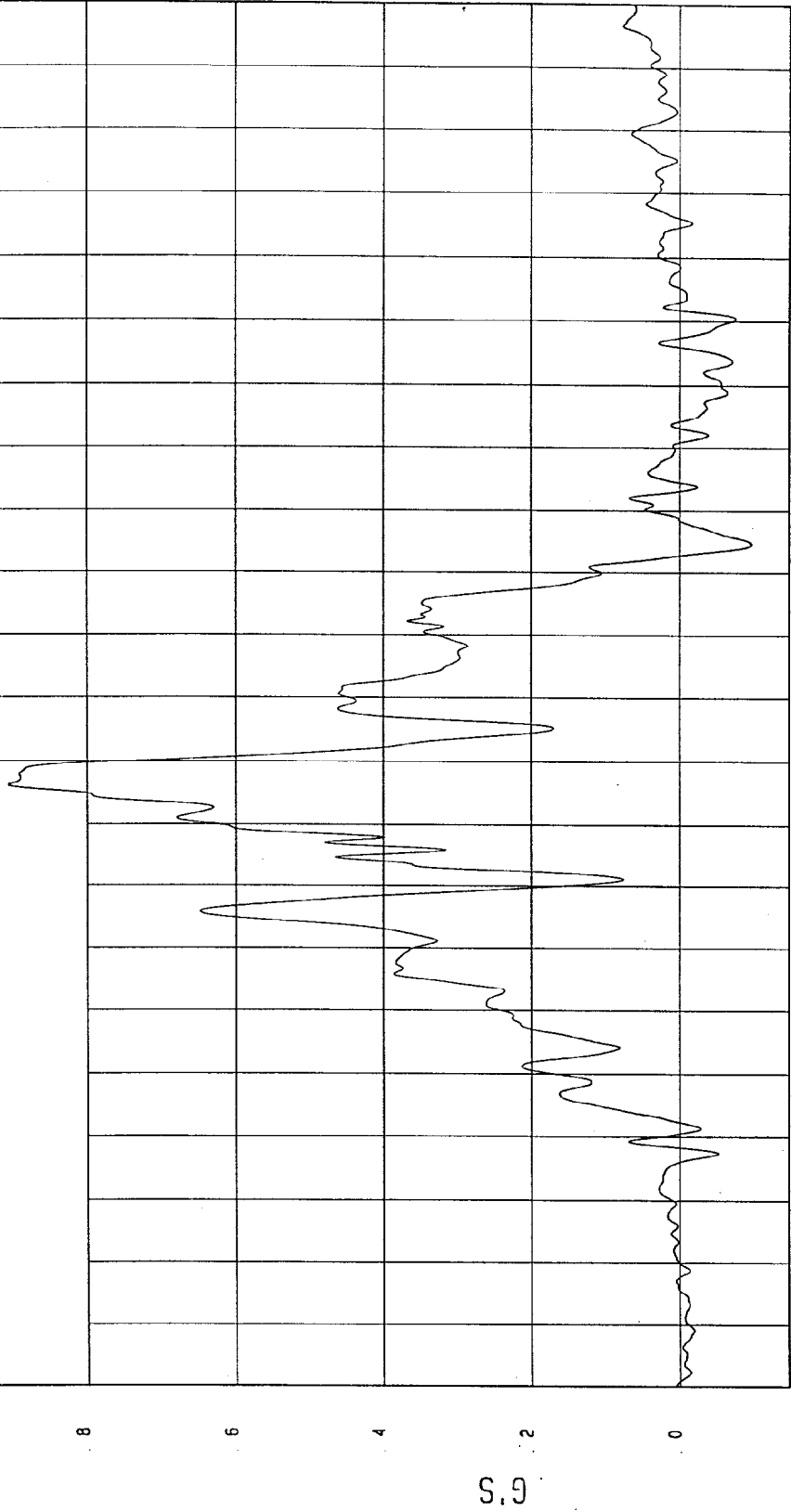
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -.98 G'S at 115 msec Maximum = 9.07 G'S at 76 msec

PASSENGER CHEST REDUNDANT Y ACCELERATION

1 _____ B99086AF.A43 FilterClass (180)



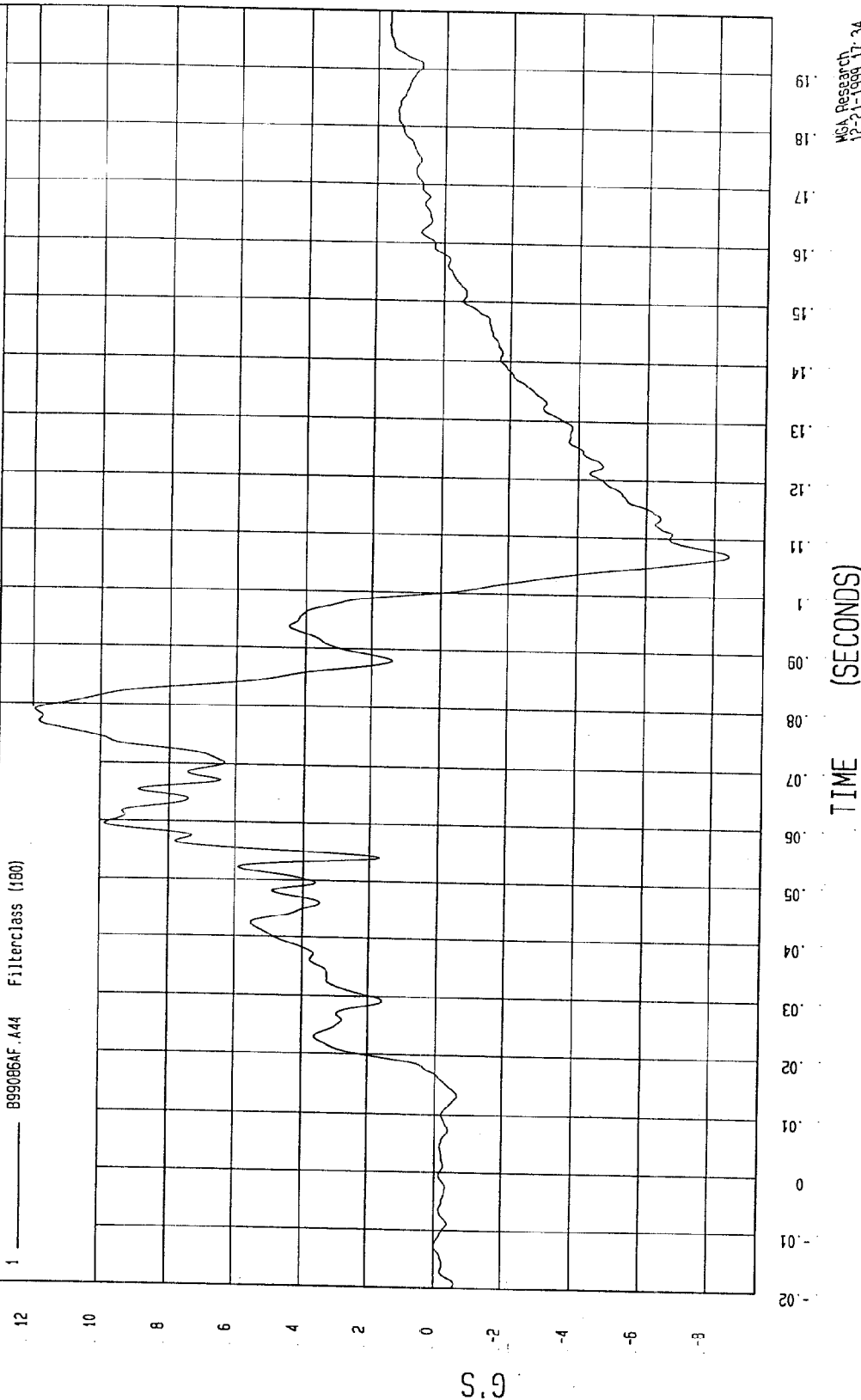
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -8.43 G'S at 107 msec Maximum = 11.93 G'S at 79 msec

PASSENGER CHEST REDUNDANT Z ACCELERATION

1 ——— B99086AF.A44 Filterclass (100)



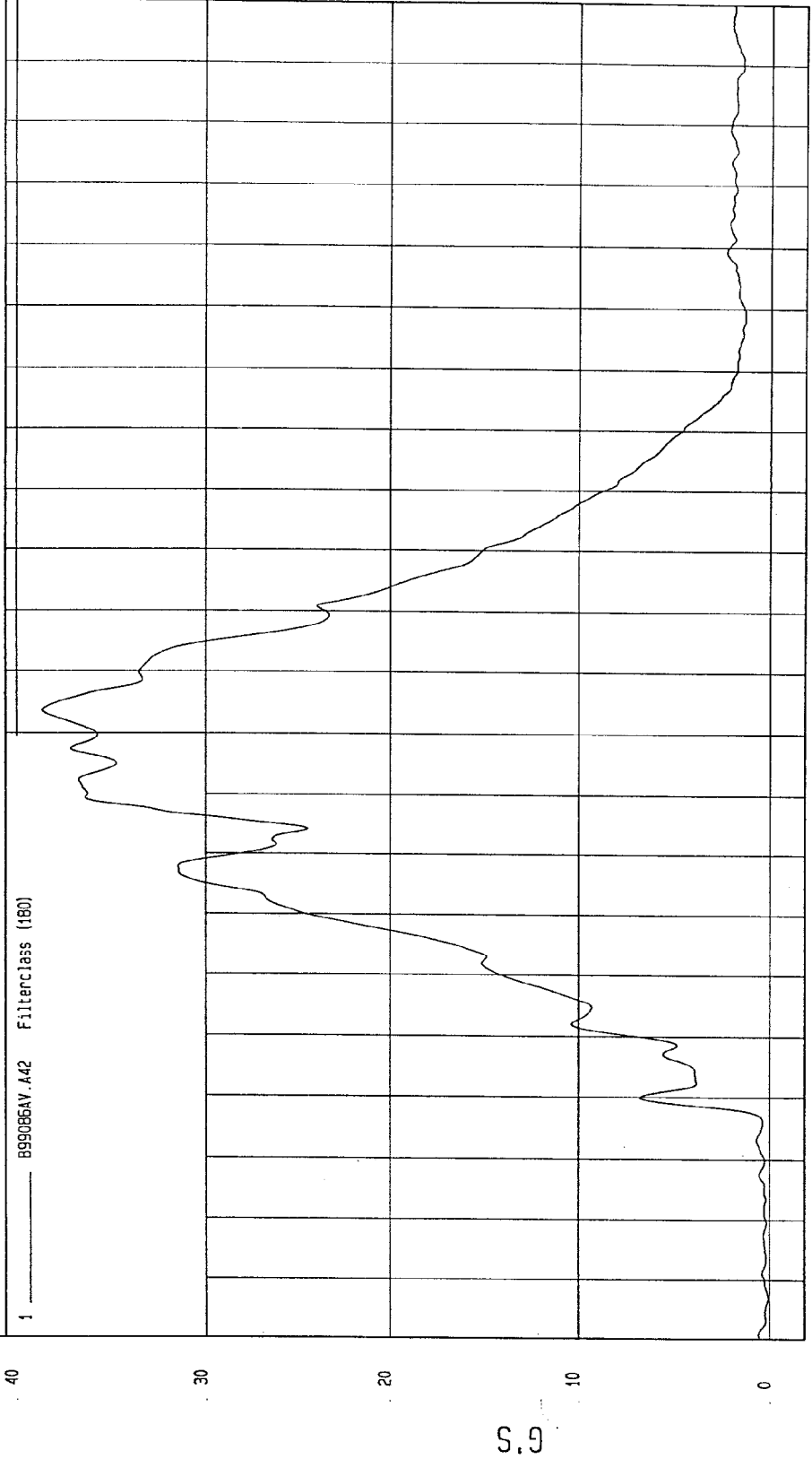
MCA Research
12-21-1999 17:34

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = 7.37E-02 G'S at -13 msec Maximum = 38.65 G'S at 84 msec

PASSENGER CHEST REDUNDANT RESULTANT ACCELERATION

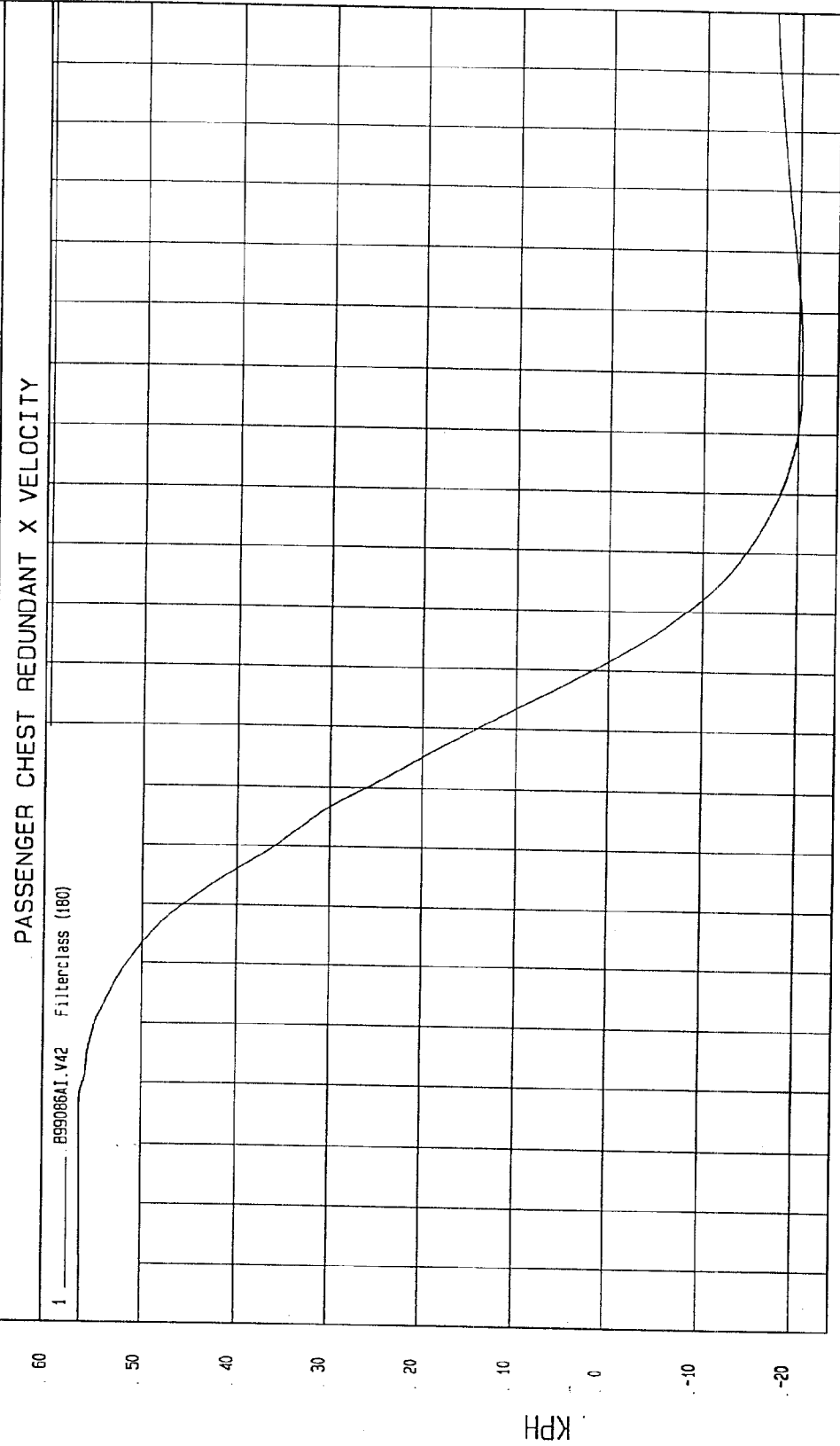


MGA Research
12-21-1999 17:35

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -20.35 KPH at 143 msec Maximum = 56.72 KPH at 14 msec



TIME Seconds

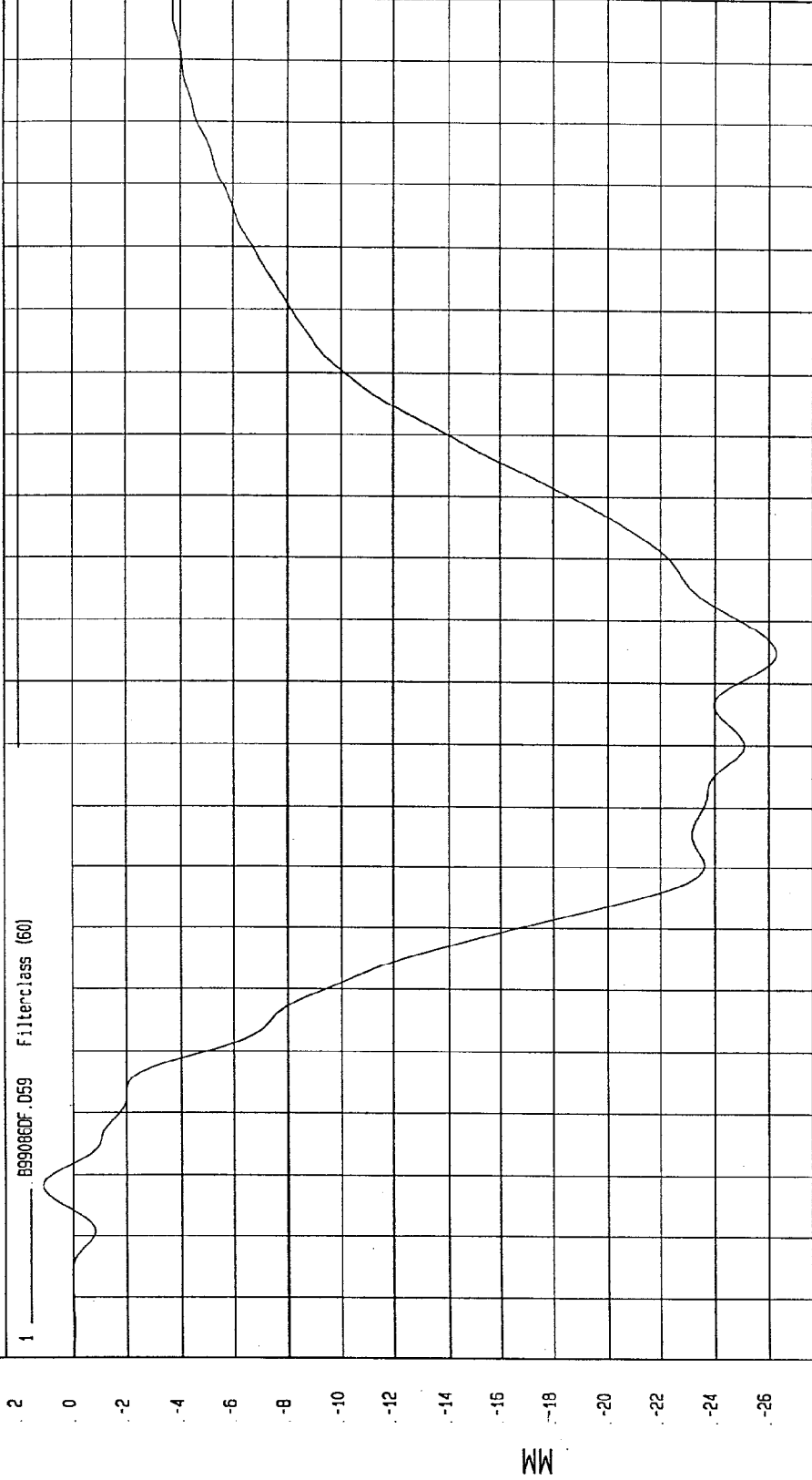
WGA Research
01-06-2000 15: 41

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -26.27 MM at 95 msec Maximum = 1.14 MM at 8 msec

PASSENGER CHEST COMPRESSION



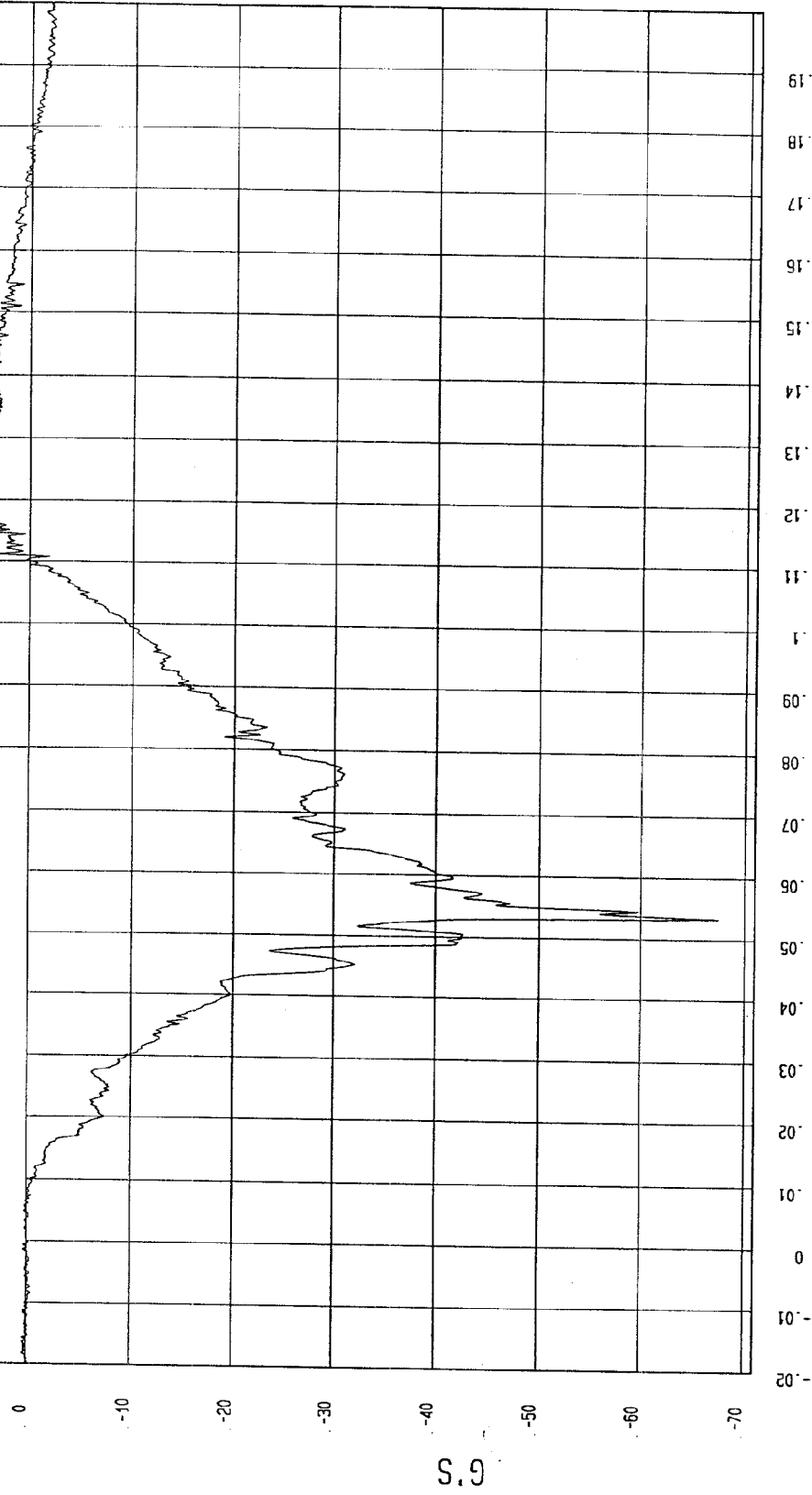
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -57.36 G'S at 53 msec
Maximum = 4.86 G'S at 127 msec

PASSENGER PELVIS X ACCELERATION

1 B99085AT.A05 Filterclass (1000)



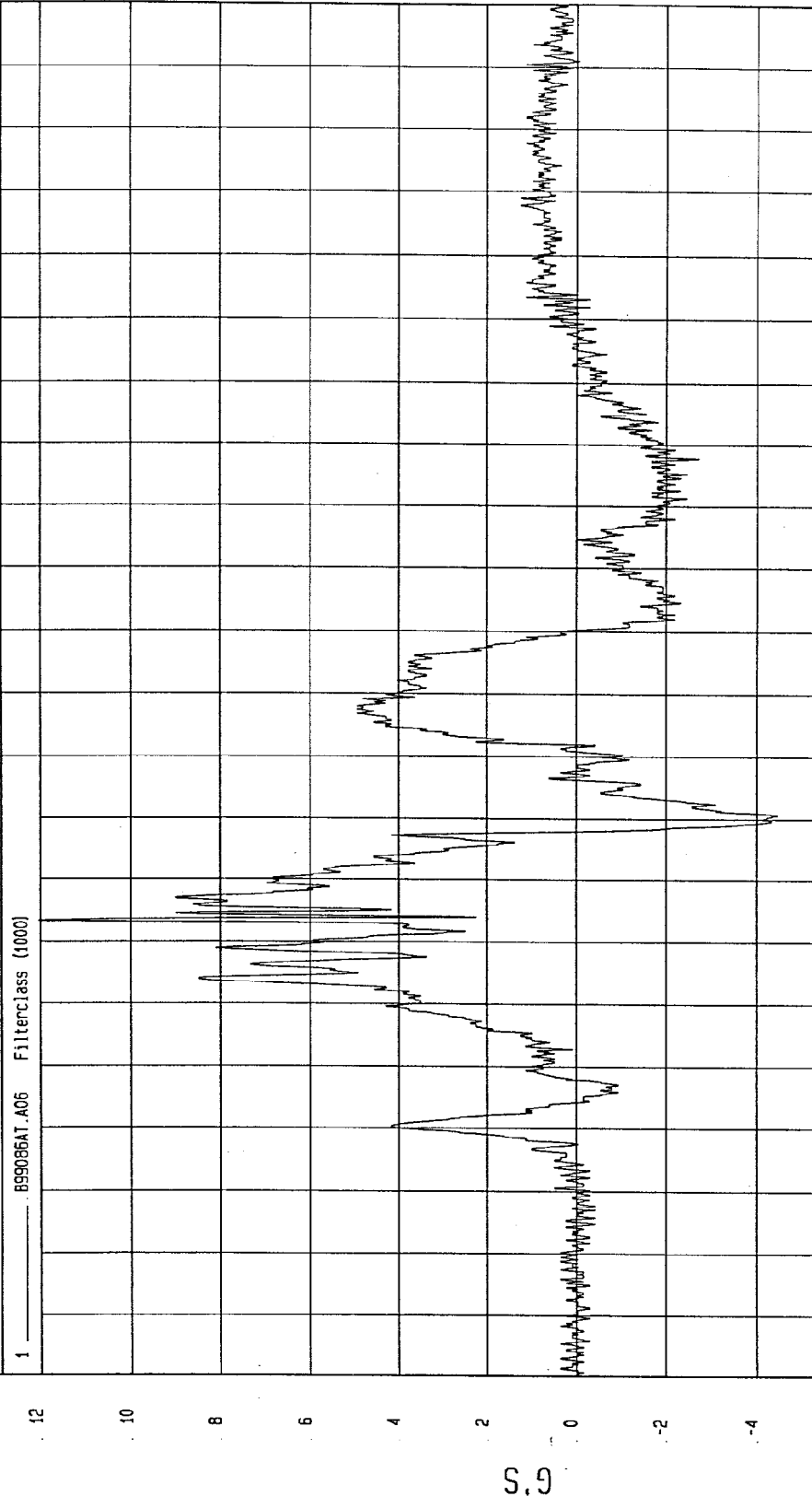
WCA Research
12-21-1999 17:33

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -4.47 G'S at 71 msec Maximum = 12.03 G'S at 53 msec

PASSENGER PELVIS Y ACCELERATION



TIME (SECONDS)

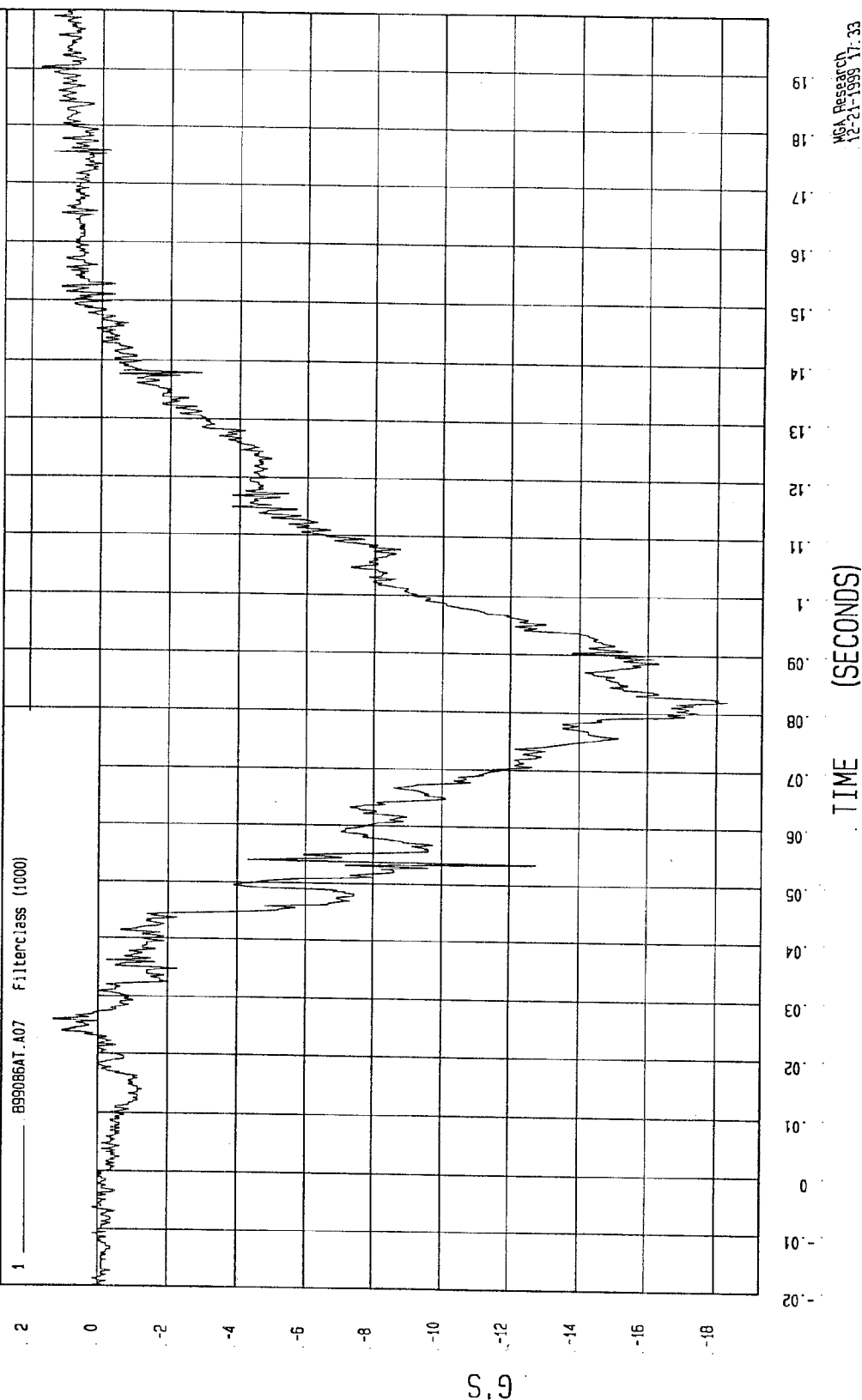
MCA Research
12-21-1999 17:33

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -18.32 G'S at 82 msec
Maximum = 1.76 G'S at 190 msec

PASSENGER PELVIS Z ACCELERATION

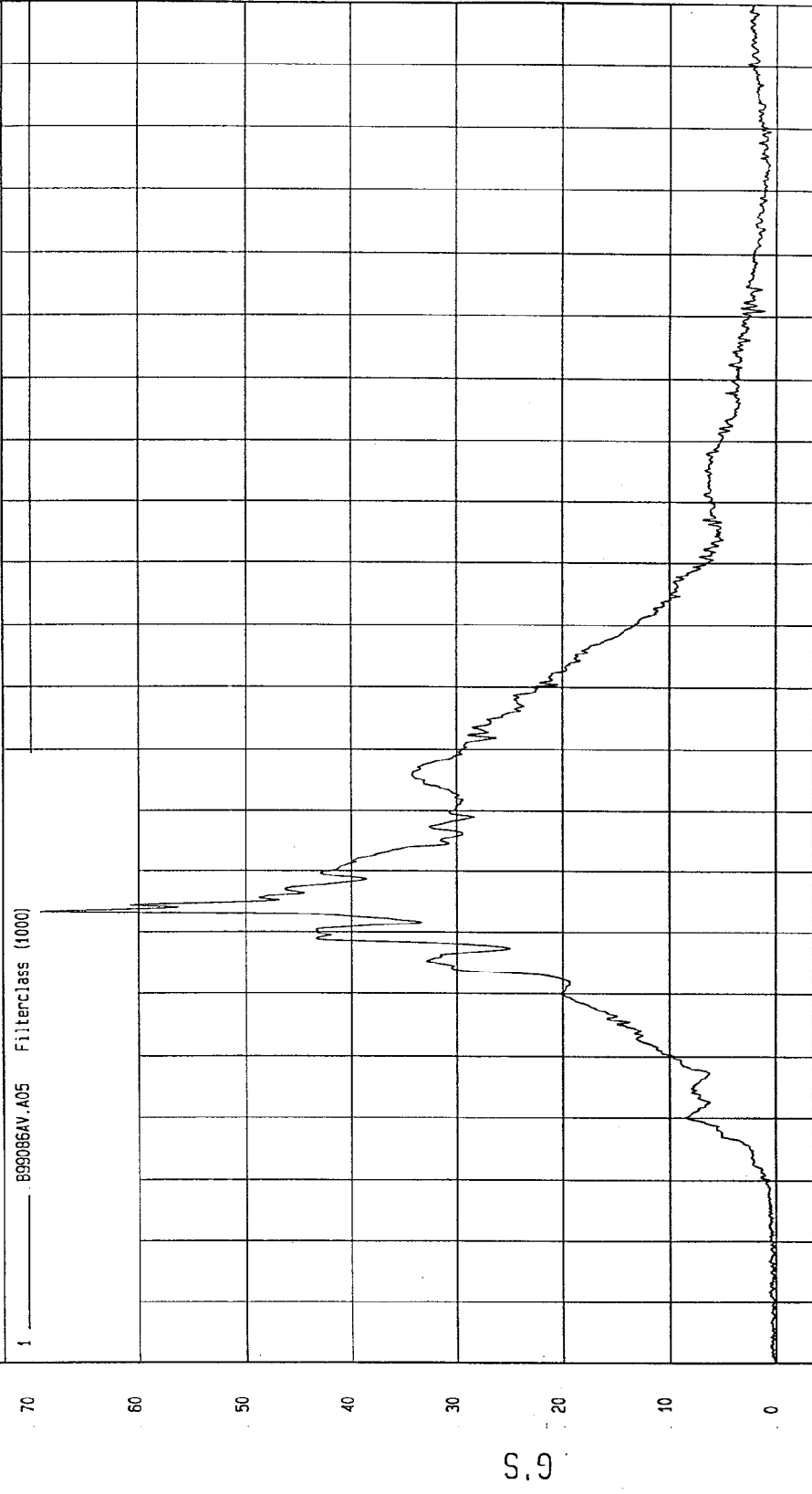


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = .05 G's at -20 msec Maximum = 69.17 G's at 53 msec

PASSENGER PELVIS RESULTANT ACCELERATION



TIME (SECONDS)

WCA Research
12-21-1999 17:33

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -12.39 KPH at 110 msec
Maximum = 56.63 KPH at -11 msec

PASSENGER PELVIS X VELOCITY

1 ——— .895085AI.V05 FilterClass (180)

60

50

40

30

20

10

0

-10

KPH

-0.02

-0.01

0

0.01

0.02

0.03

0.04

0.05

0.06

0.07

0.08

0.09

0.1

0.11

0.12

0.13

0.14

0.15

0.16

0.17

0.18

0.19

TIME Seconds

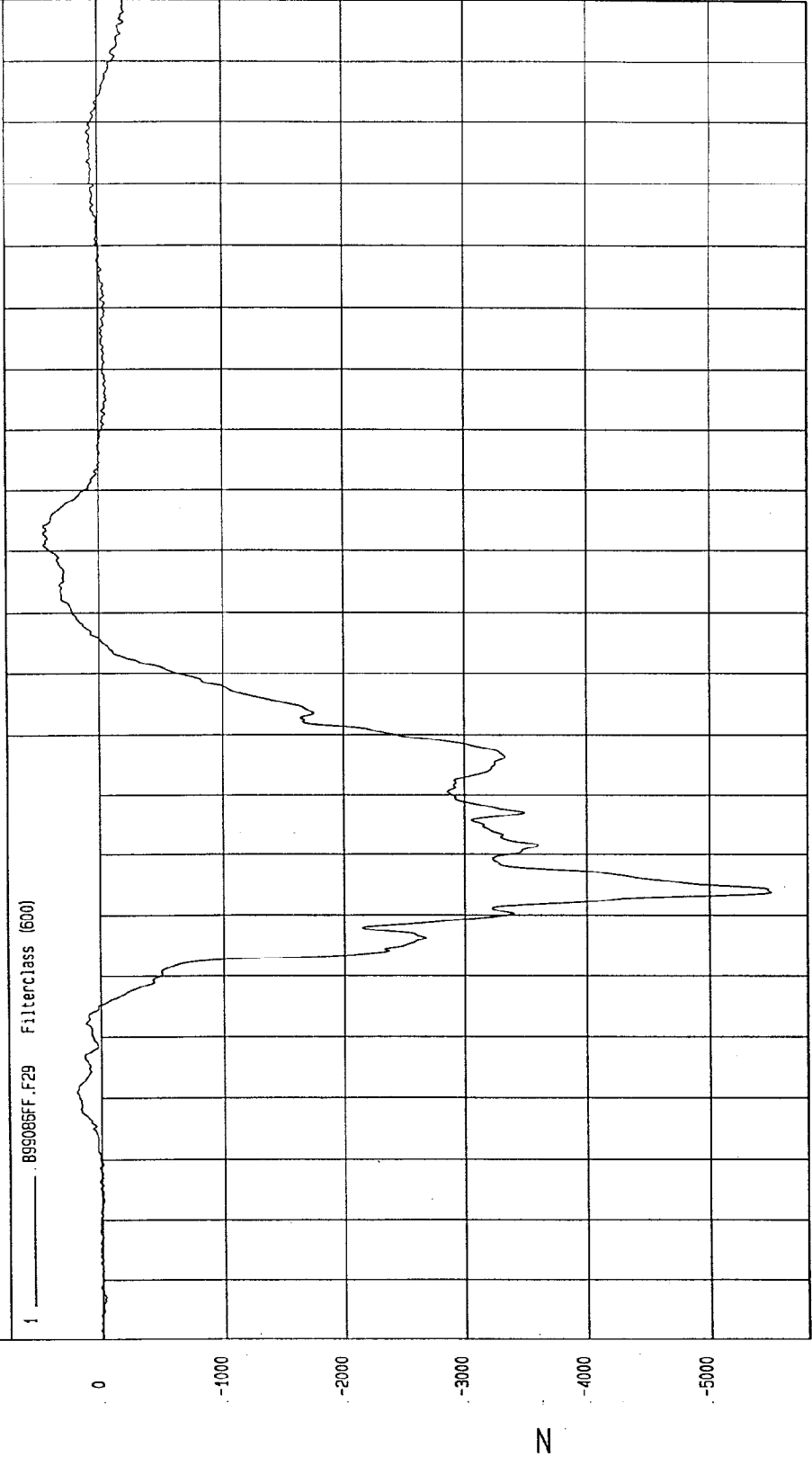
MCA Research
01-06-2000 15:41

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -5498.71 N at 54 msec Maximum = 454.14 N at 114 msec

PASSENGER LEFT FEMUR FORCE

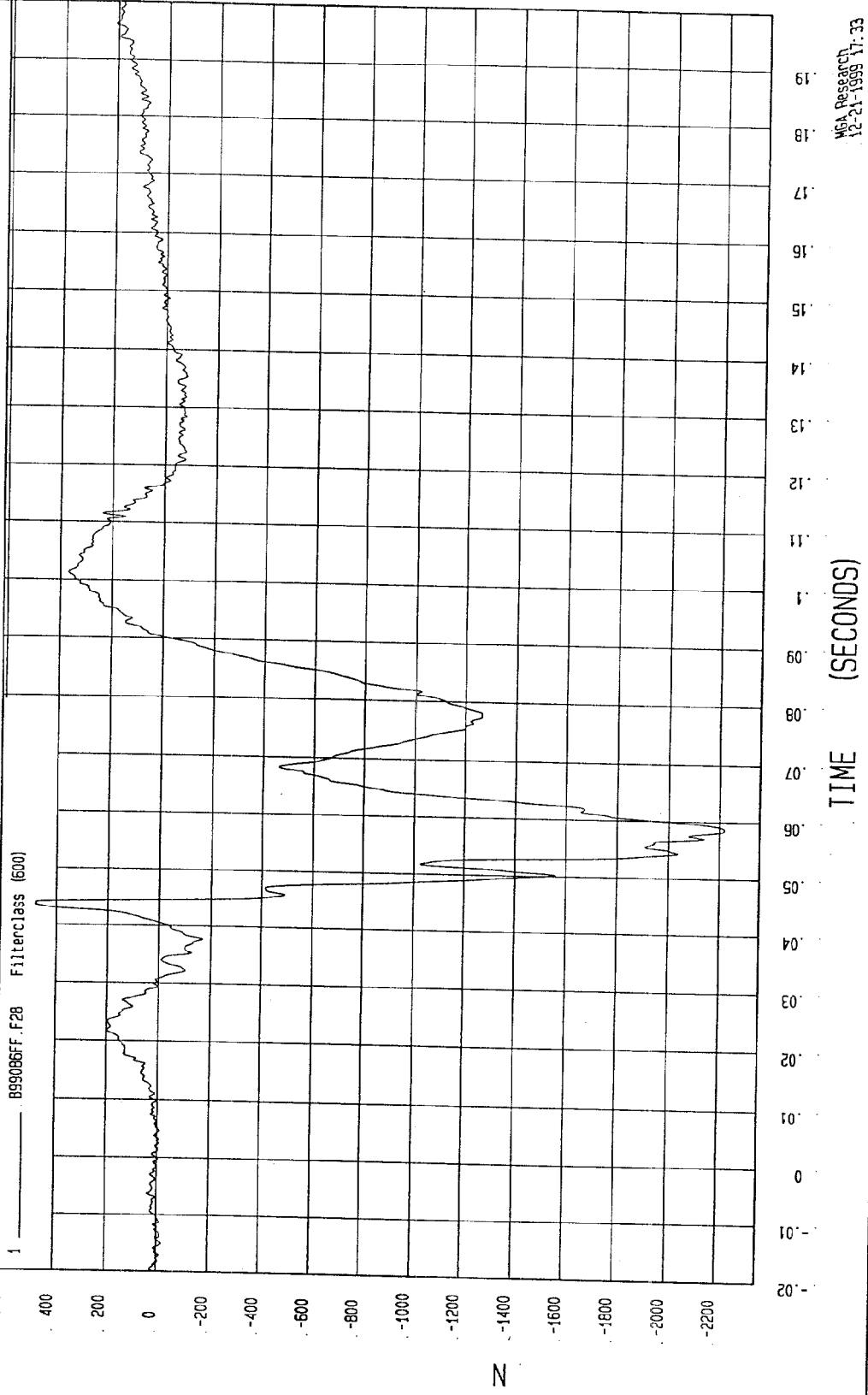


TIME (SECONDS)

MCA Research
12-21-1999 17:33

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH
Minimum = -2218.5 N at 59 msec Maximum = 480.94 N at 44 msec

PASSENGER RIGHT FEMUR FORCE



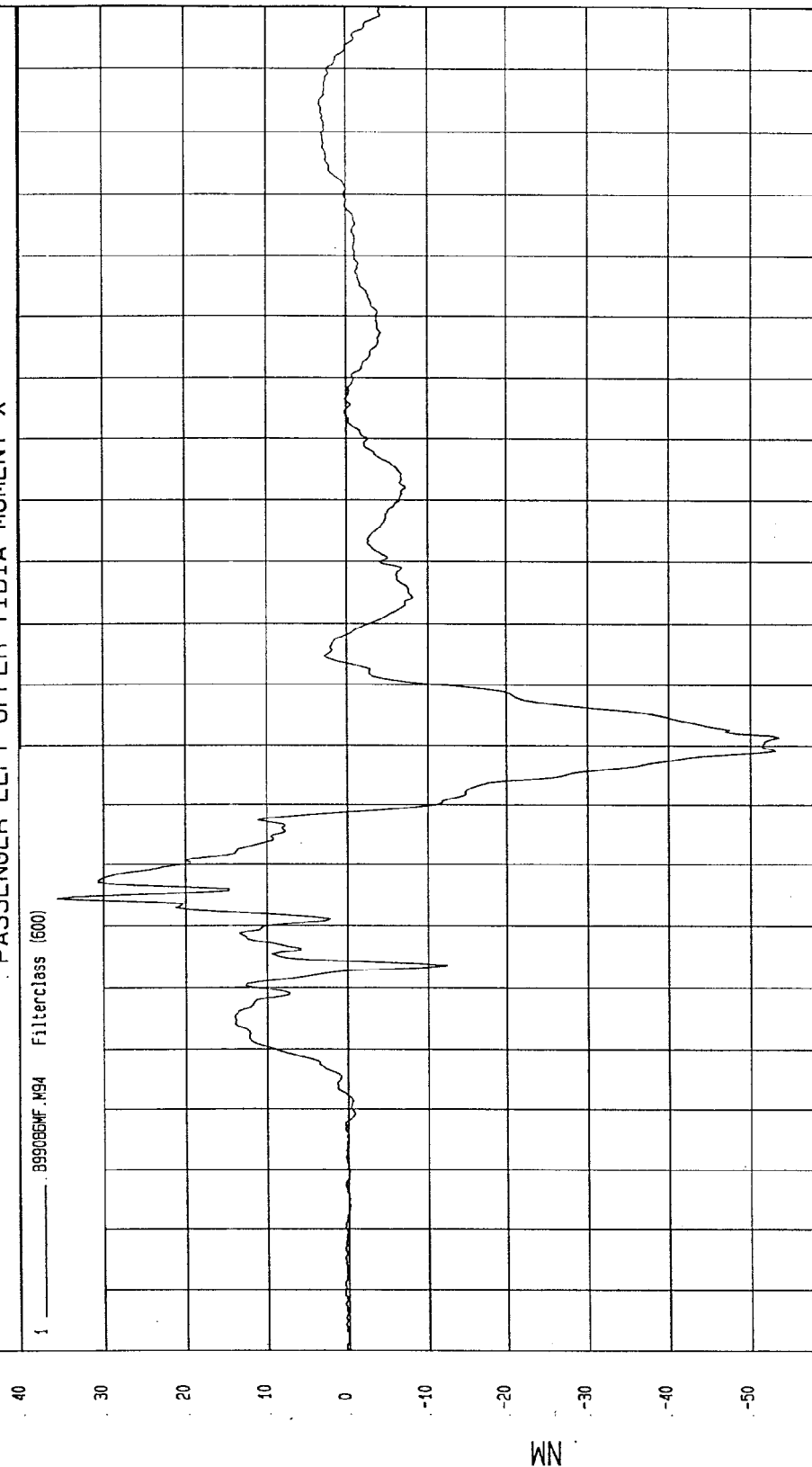
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -53.68 NM at 82 msec Maximum = 35.77 NM at 54 msec

PASSENGER LEFT UPPER TIBIA MOMENT X

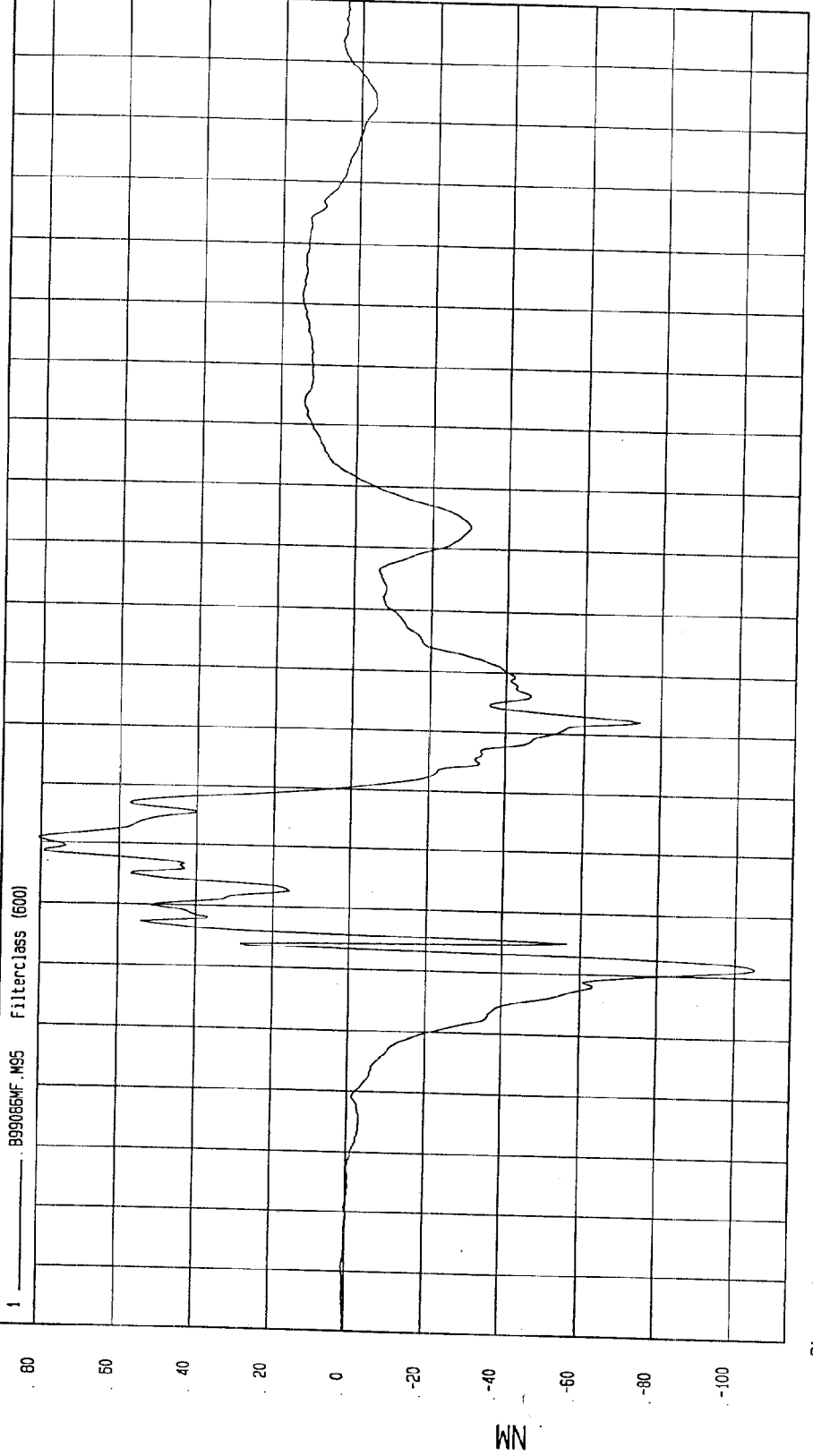
1 89905MF.M94 Filterclass (600)



MSA Research
01-06-2000 15:25

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH
Minimum = -105.27 NM at 41 msec Maximum = 80.75 NM at 61 msec

PASSENGER LEFT UPPER TIBIA MOMENT Y



MGA Research
01-06-2000 15:26

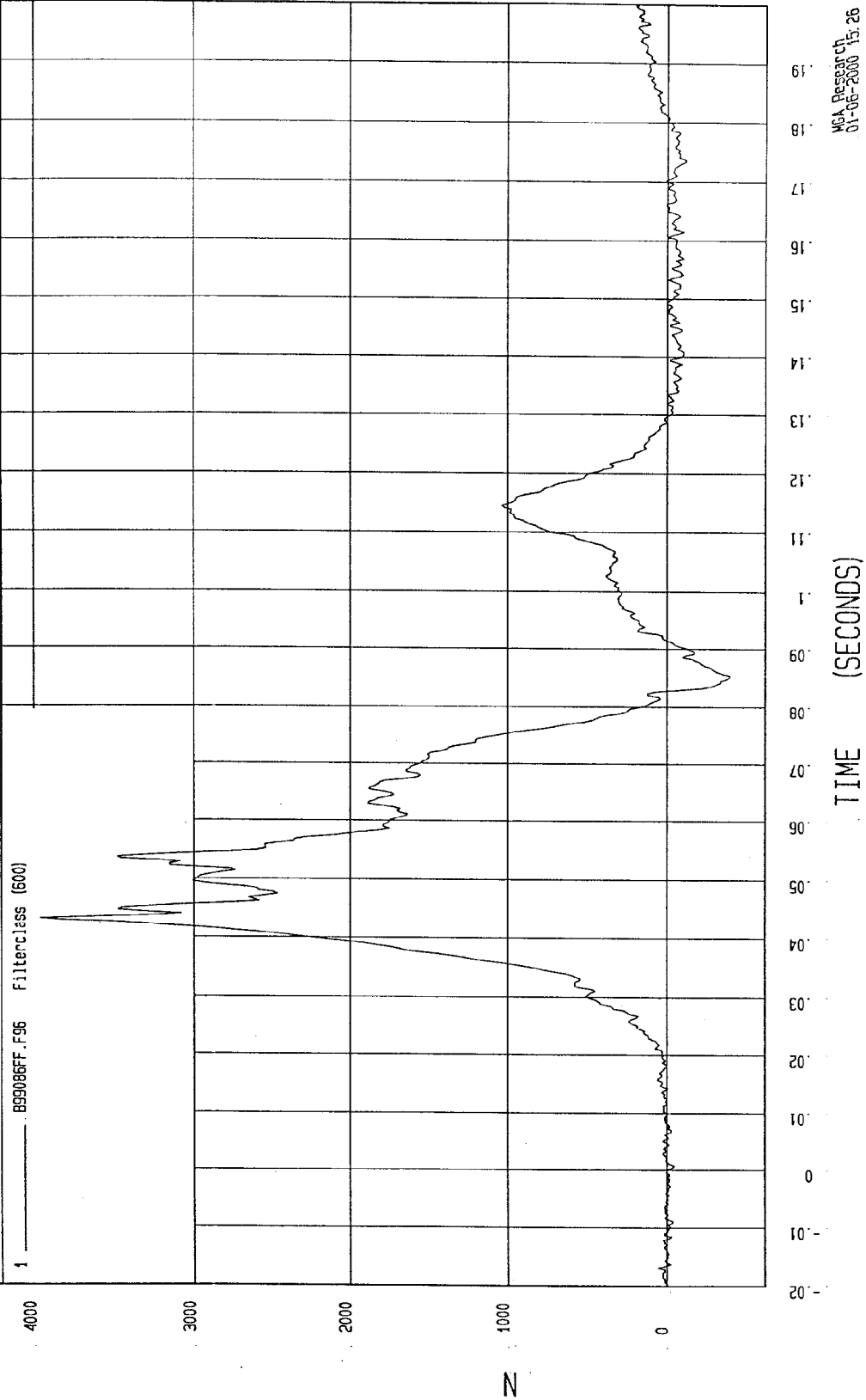
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

SPEED: 35.2 MPH 56.6 KPH

Maximum = 3987.8 N at 43 msec

Minimum = -391.15 N at 85 msec

PASSENGER LEFT UPPER TIBIA FORCE Z



MGA Research
01-06-2000 15:26

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

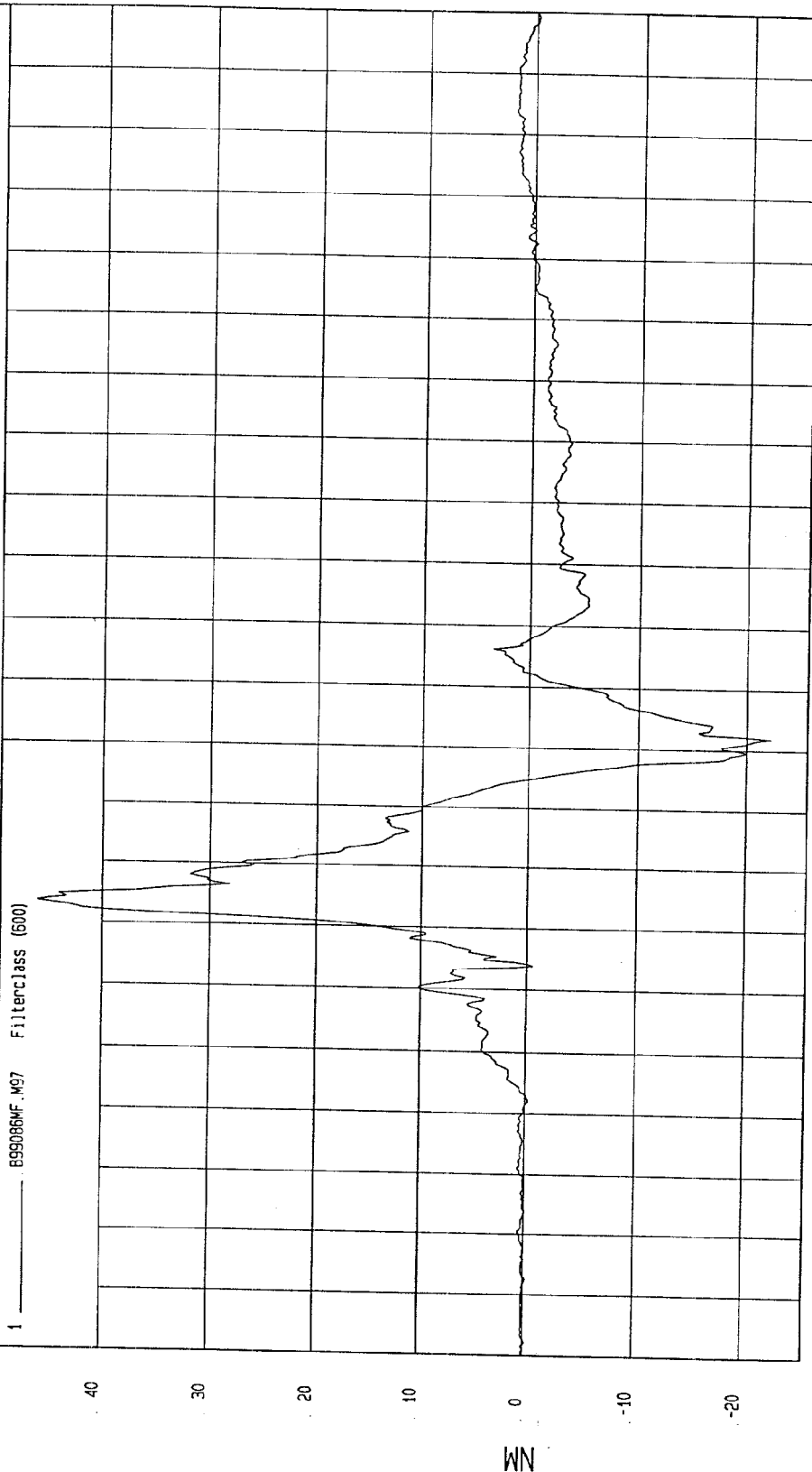
Speed: 35.2 MPH 56.6 KPH

Minimum = -22.19 NM at 82 msec

Maximum = 46.06 NM at 54 msec

PASSENGER LEFT LOWER TIBIA MOMENT X

1 ——— B99086MF.M97 Filterclass (600)



TIME (SECONDS)

NCA Research
01-06-2000 13:26

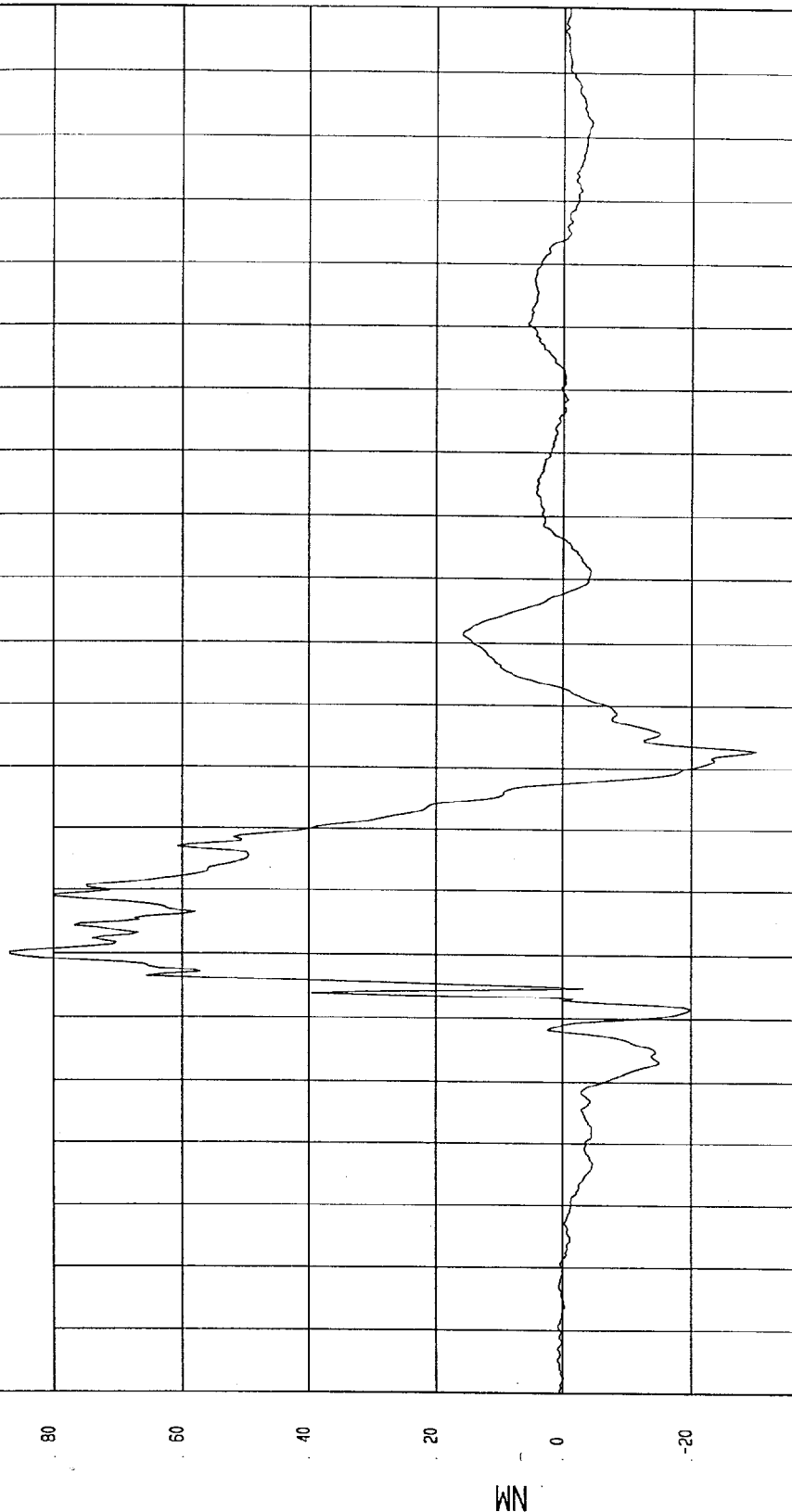
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -30.21 NM at 83 msec Maximum = 87.11 NM at 50 msec

PASSENGER LEFT LOWER TIBIA MOMENT Y

1 899085MF.N98 Filterclass (500)



MCA Research
01-06-2000 15:26

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

SPEED: 35.2 MPH 56.6 KPH

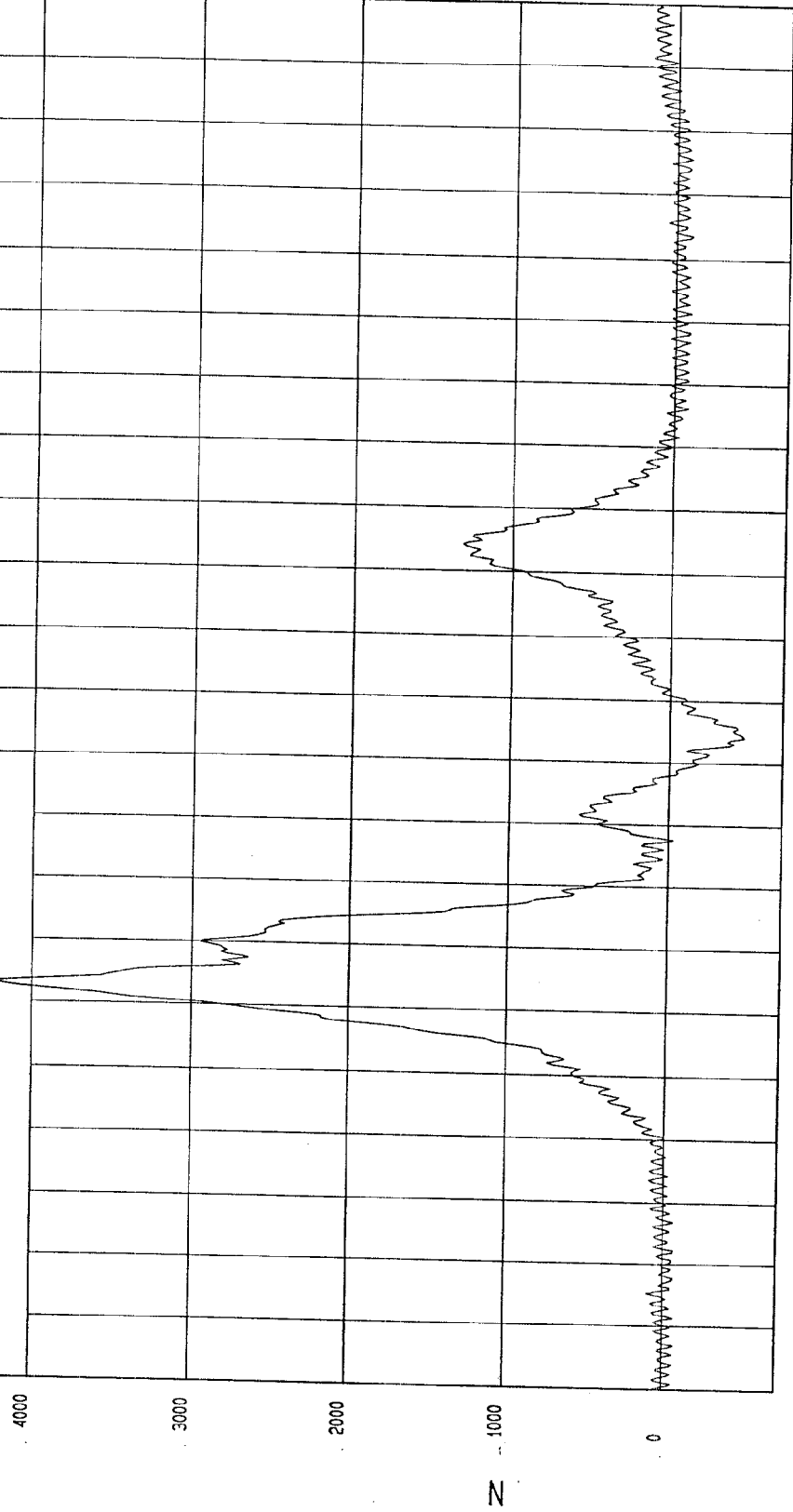
COMPONENT: 2000 FORD TAURUS

Minimum = -471.18 N at 84 msec

Maximum = 4256.41 N at 43 msec

PASSENGER LEFT LOWER TIBIA FORCE Z

1 ——— B99085FF.F99 Filterclass (600)



MCA Research
01-06-2000 15:35

TIME (SECONDS)

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -34.59 NM at 89 msec Maximum = 40.78 NM at 57 msec

PASSENGER RIGHT UPPER TIBIA MOMENT X

1 899086MF.M87 FilterClass (600)



WCA Research
01-06-2000 15:26

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

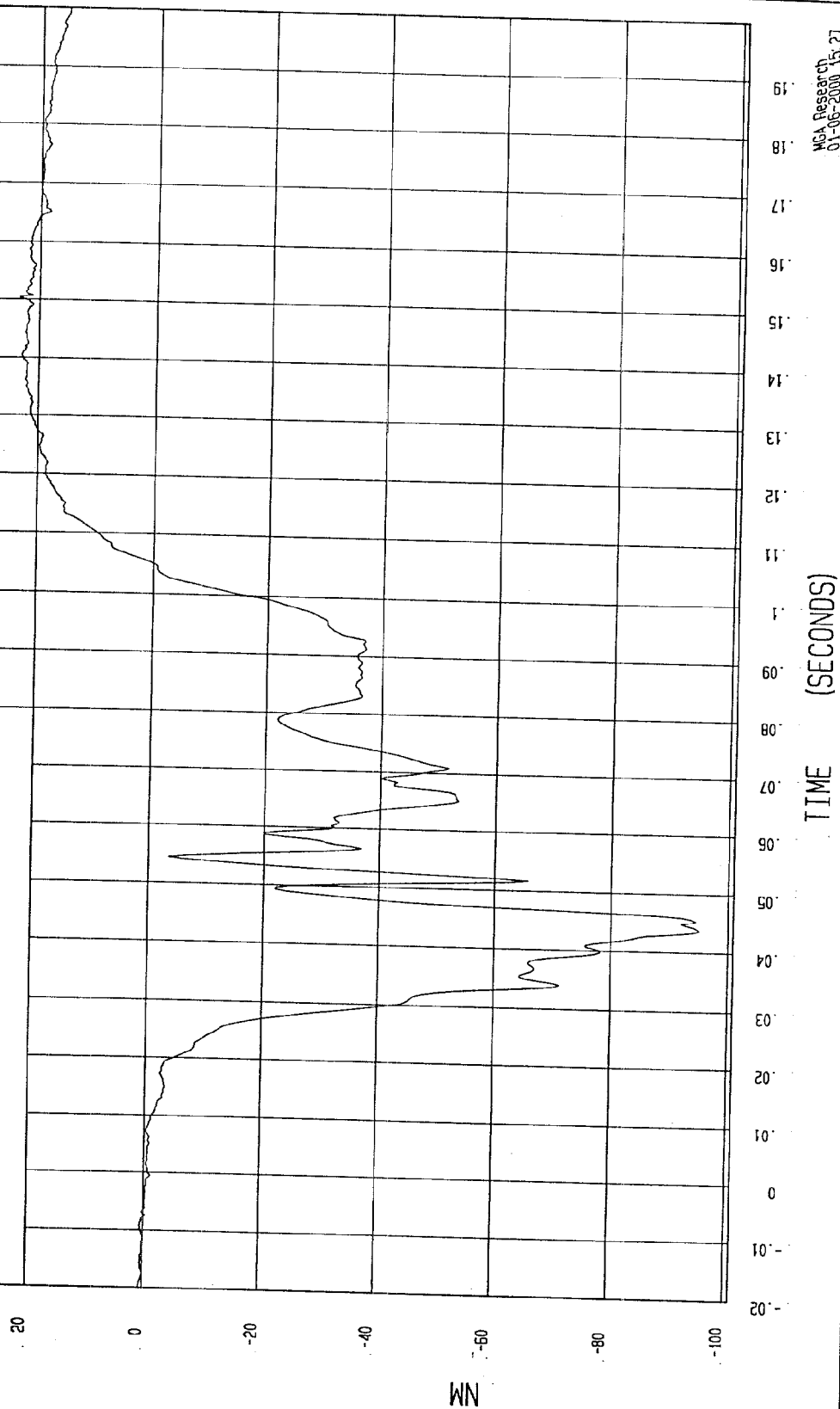
Speed: 35.2 MPH 56.6 KPH

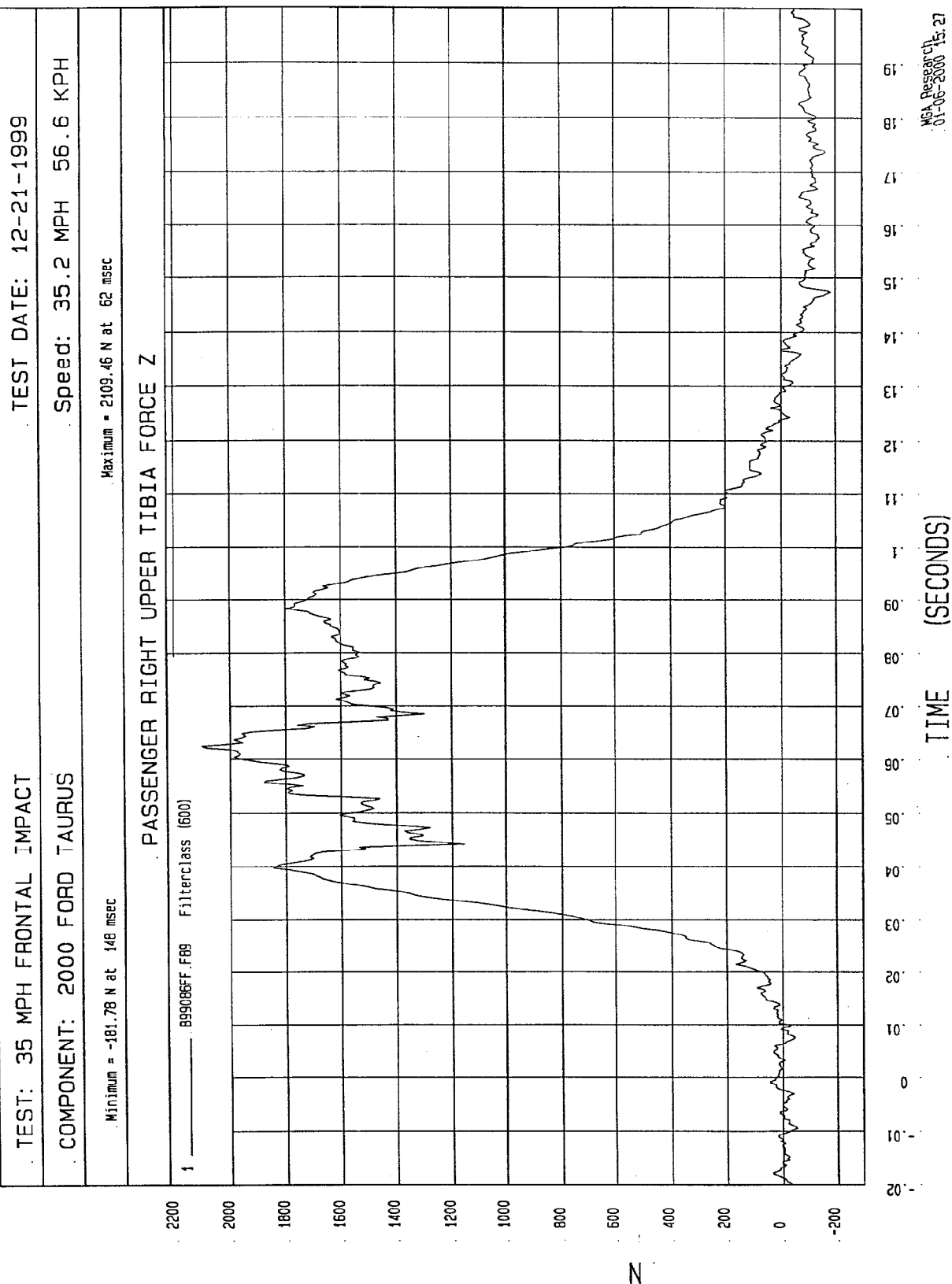
Minimum = -95.03 NM at 44 msec

Maximum = 23.61 NM at 150 msec

PASSENGER RIGHT UPPER TIBIA MOMENT Y

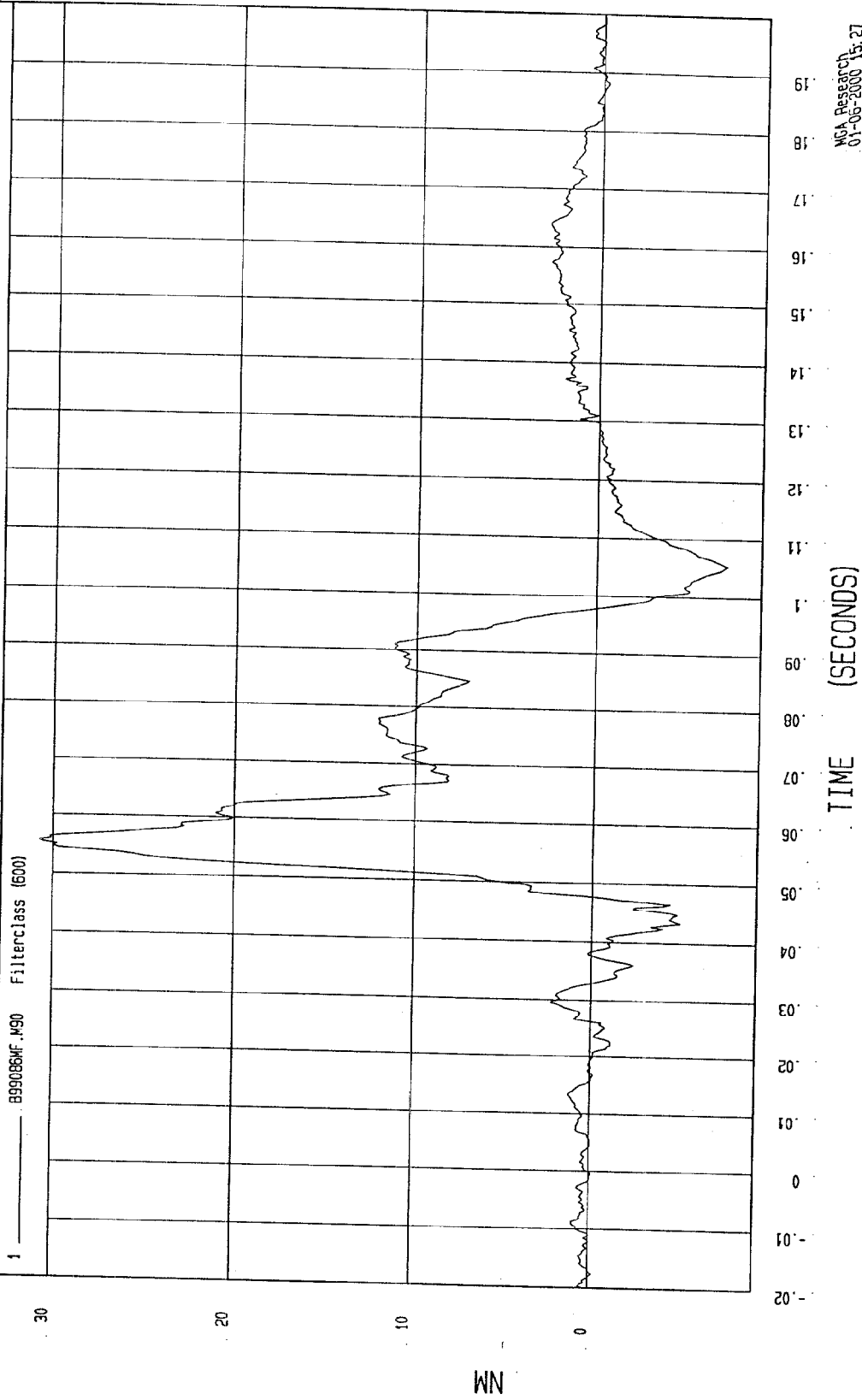
1 — B99086MF.MBB Filterclass (600)

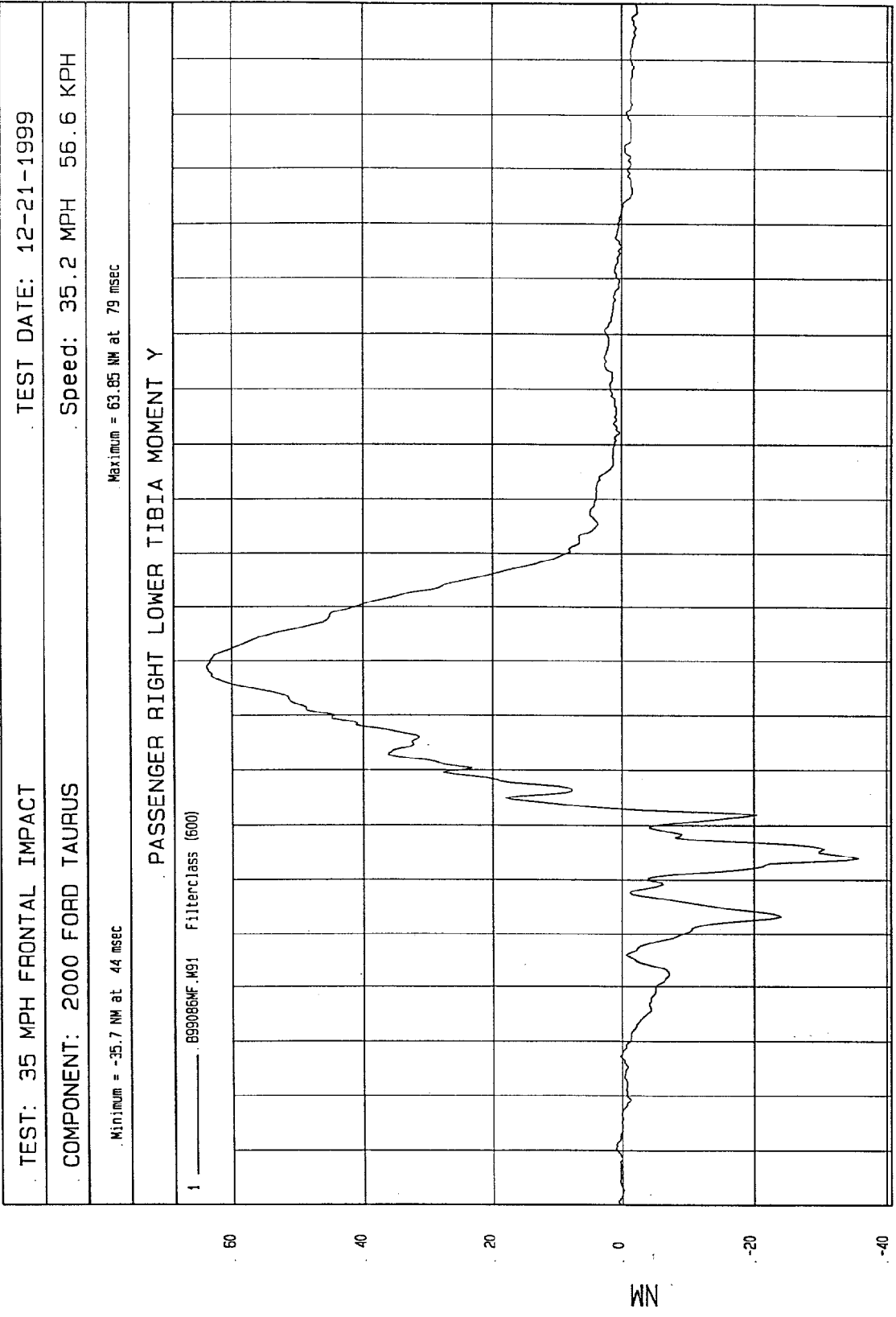
MCA Research
01-06-2000 15:27



TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH
Minimum = -7.14 NM at 105 msec Maximum = 30.95 NM at 56 msec

PASSENGER RIGHT LOWER TIBIA MOMENT X





WCA Research
01-06-2000 15: 27

TIME (SECONDS)

NM

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

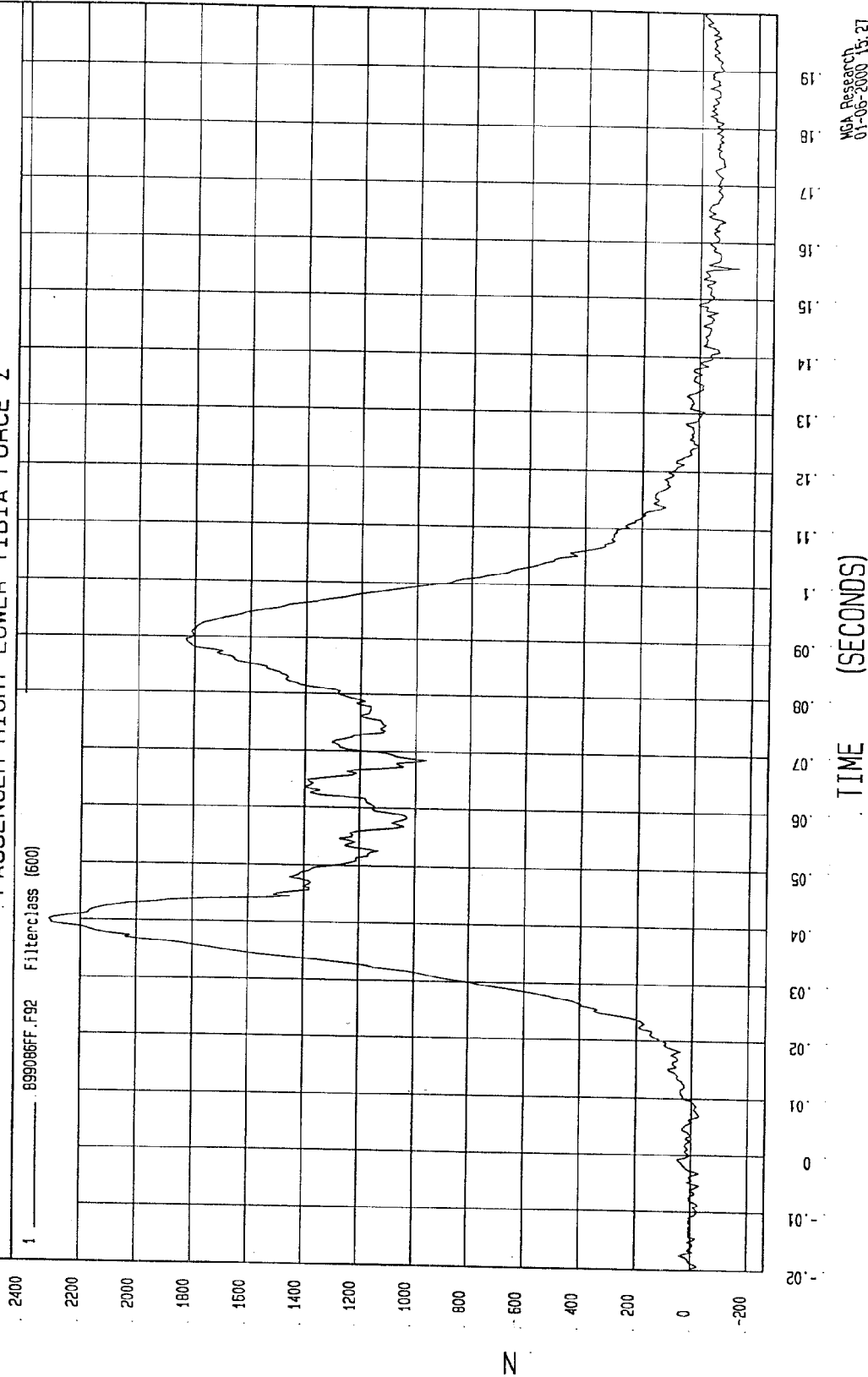
Speed: 35.2 MPH 56.6 KPH

Minimum = -138.12 N at 156 msec

Maximum = 2313.66 N at 40 msec

PASSENGER RIGHT LOWER TIBIA FORCE Z

1 — 899086FF.F92 Filterclass (600)

NSA Research
01-06-2000 15:27

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

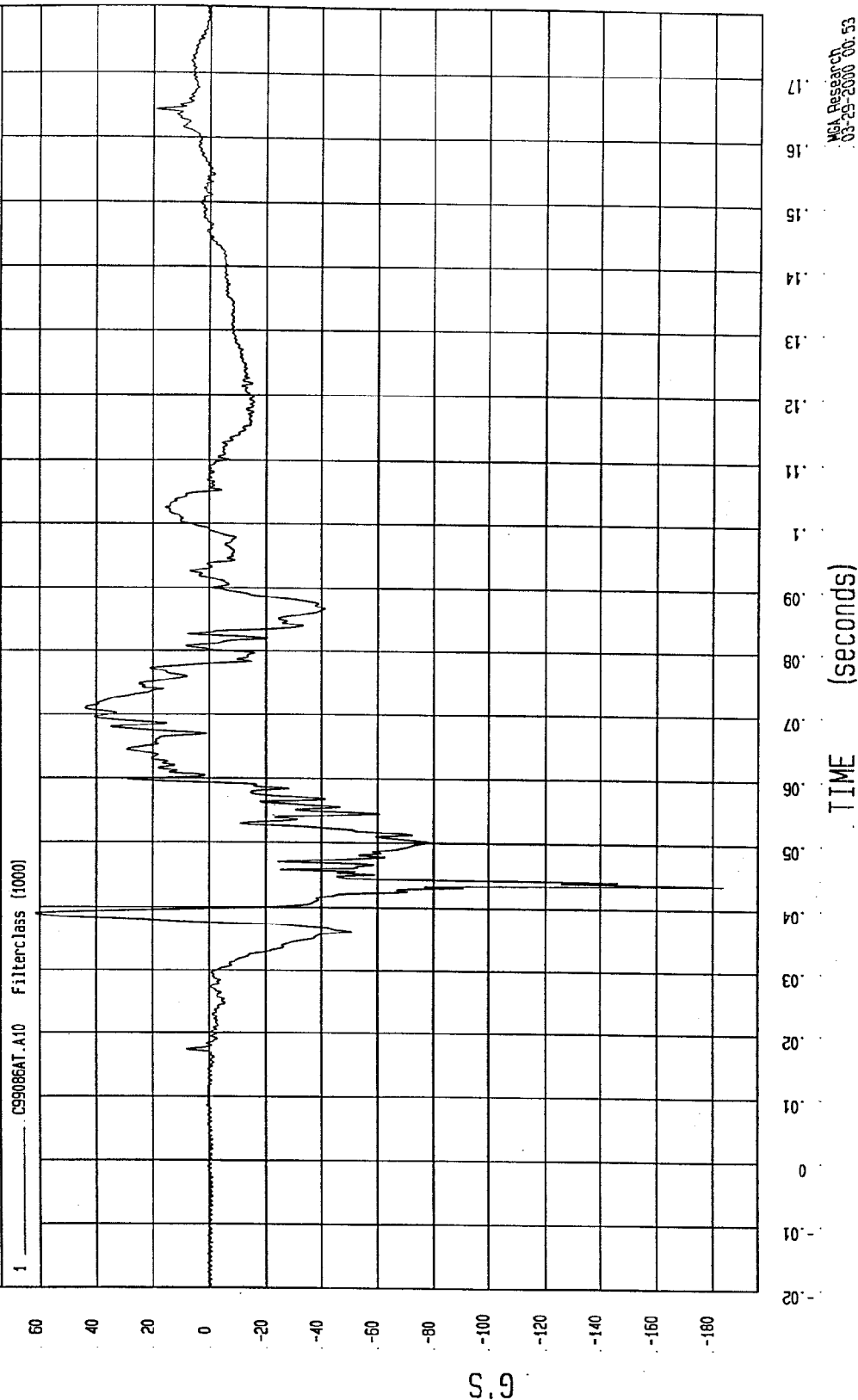
SPEED: 35.2 MPH 56.6 KPH

COMPONENT: 2000 FORD TAURUS

Maximum = 61.56 G'S at 39 msec

Minimum = -183.72 G'S at 44 msec

PASSENGER LEFT FOOT BALL Z ACCELERATION

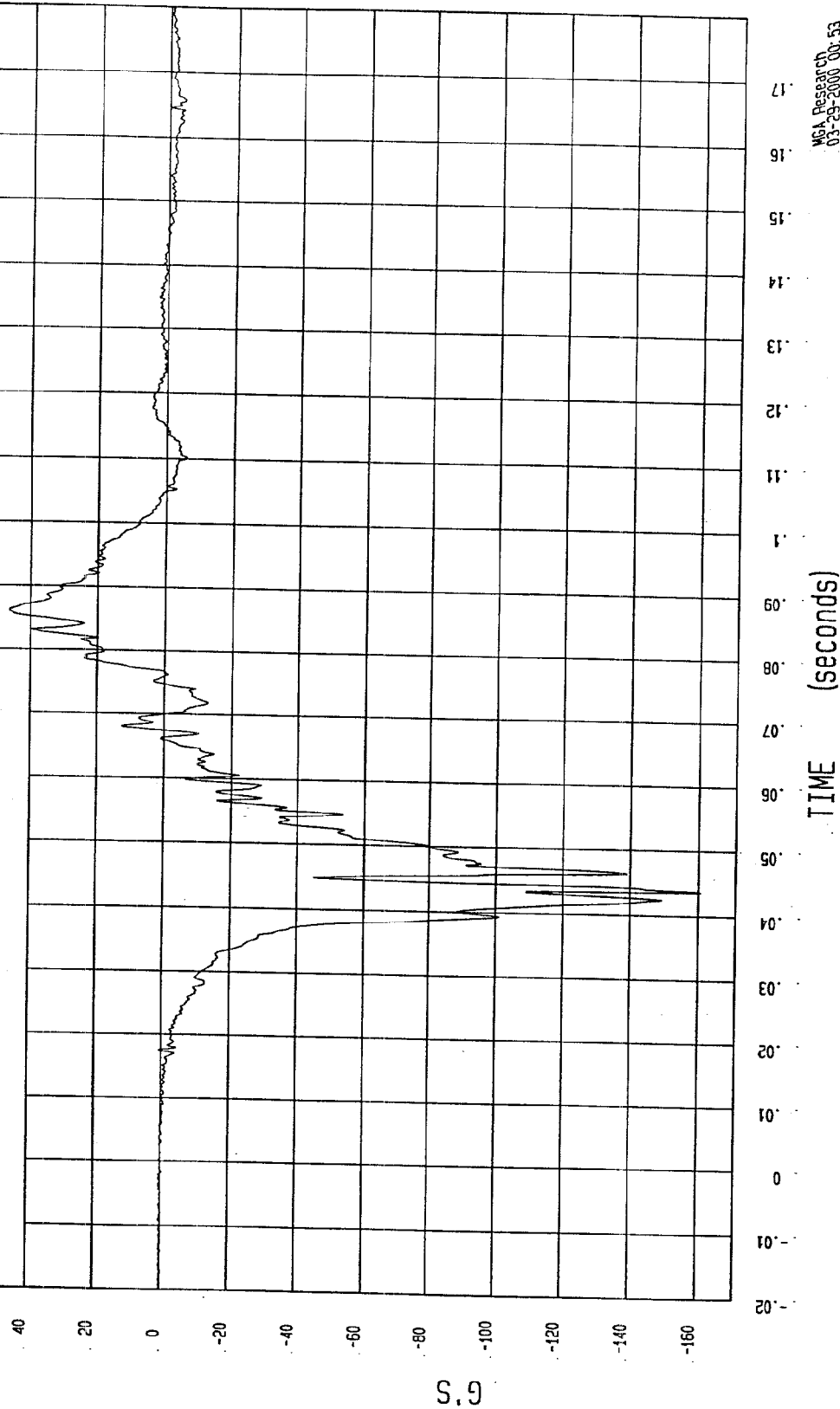


MCA Research
03-29-2000 00:53

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH
Minimum = -160.65 G'S at 44 msec Maximum = 46.31 G'S at 86 msec

PASSENGER LEFT HEEL X ACCELERATION

1 C99056AT.A11 Filterclass (1000)

MCA Research
03-29-2000 00:53

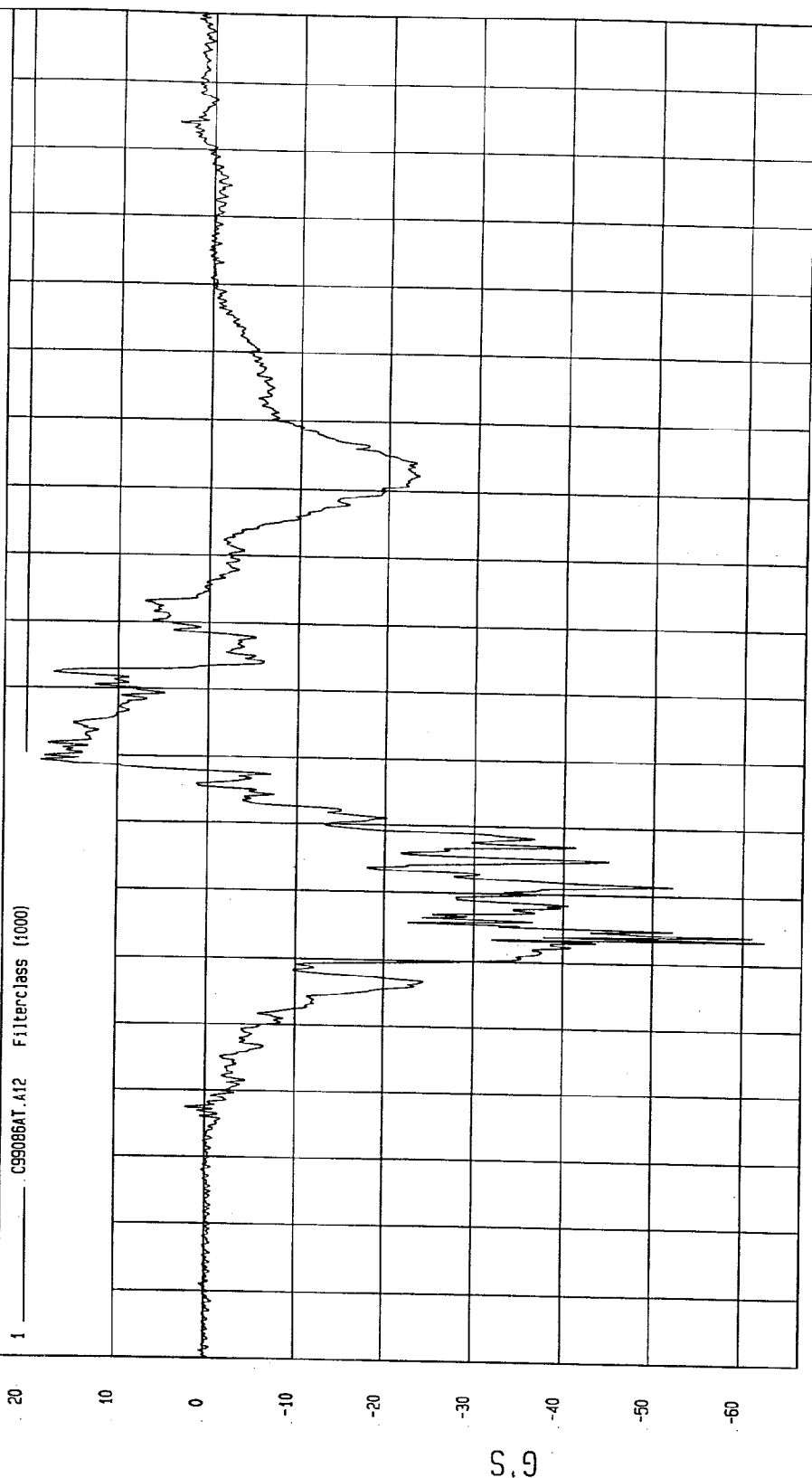
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -62.42 G'S at 43 msec
Maximum = 18.48 G'S at 69 msec

PASSENGER LEFT HEEL Z ACCELERATION

1 C99086AT.A12 FilterClass (1000)



MCA Research
03-29-2000 00:53

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

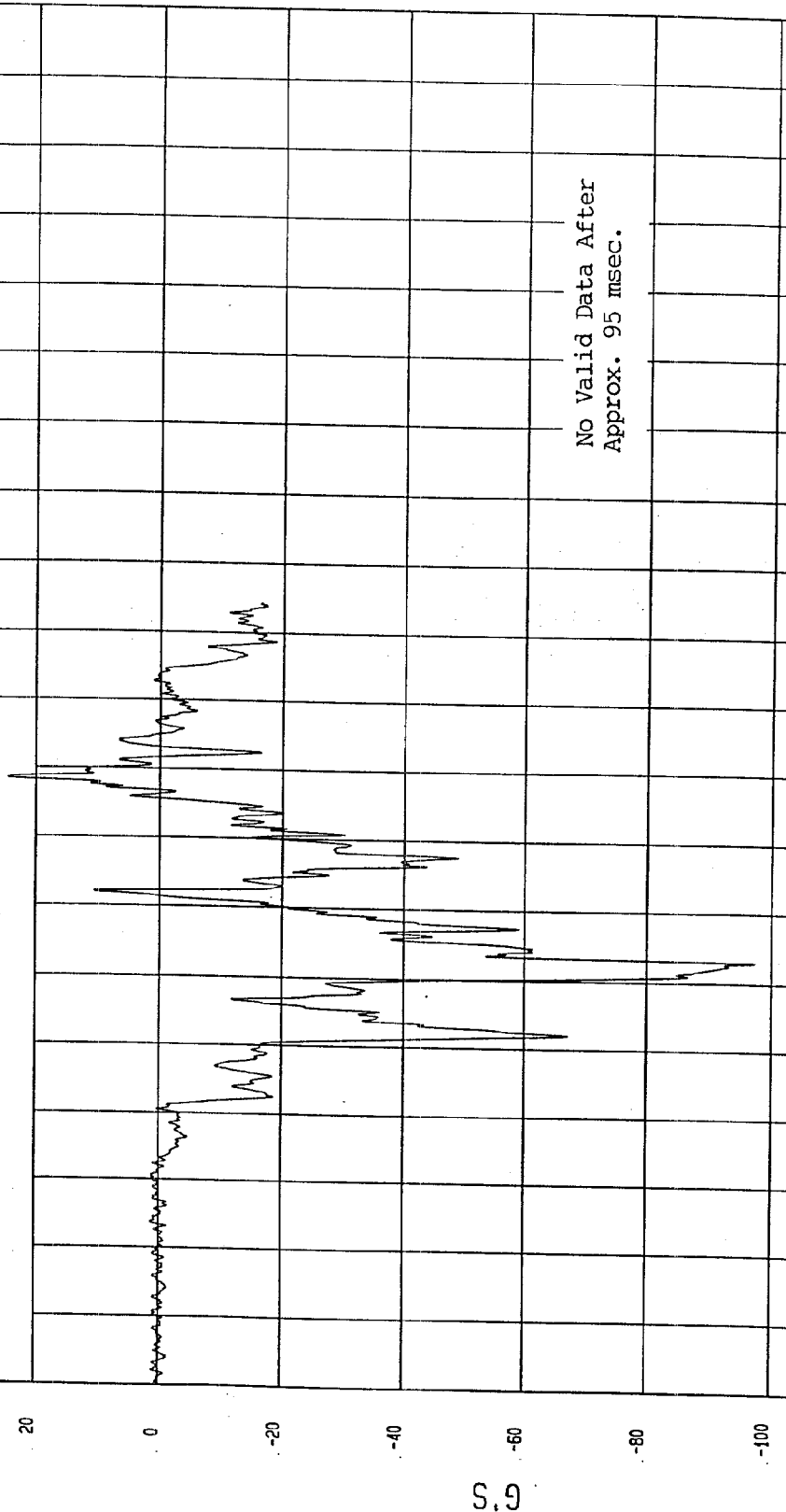
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -97.28 G'S at 43 msec

Maximum = 24.58 G'S at 69 msec

PASSENGER RIGHT FOOT BALL Z ACCELERATION

1 C99086AT.A07 Filterclass (1000)



No Valid Data After
Approx. 95 msec.

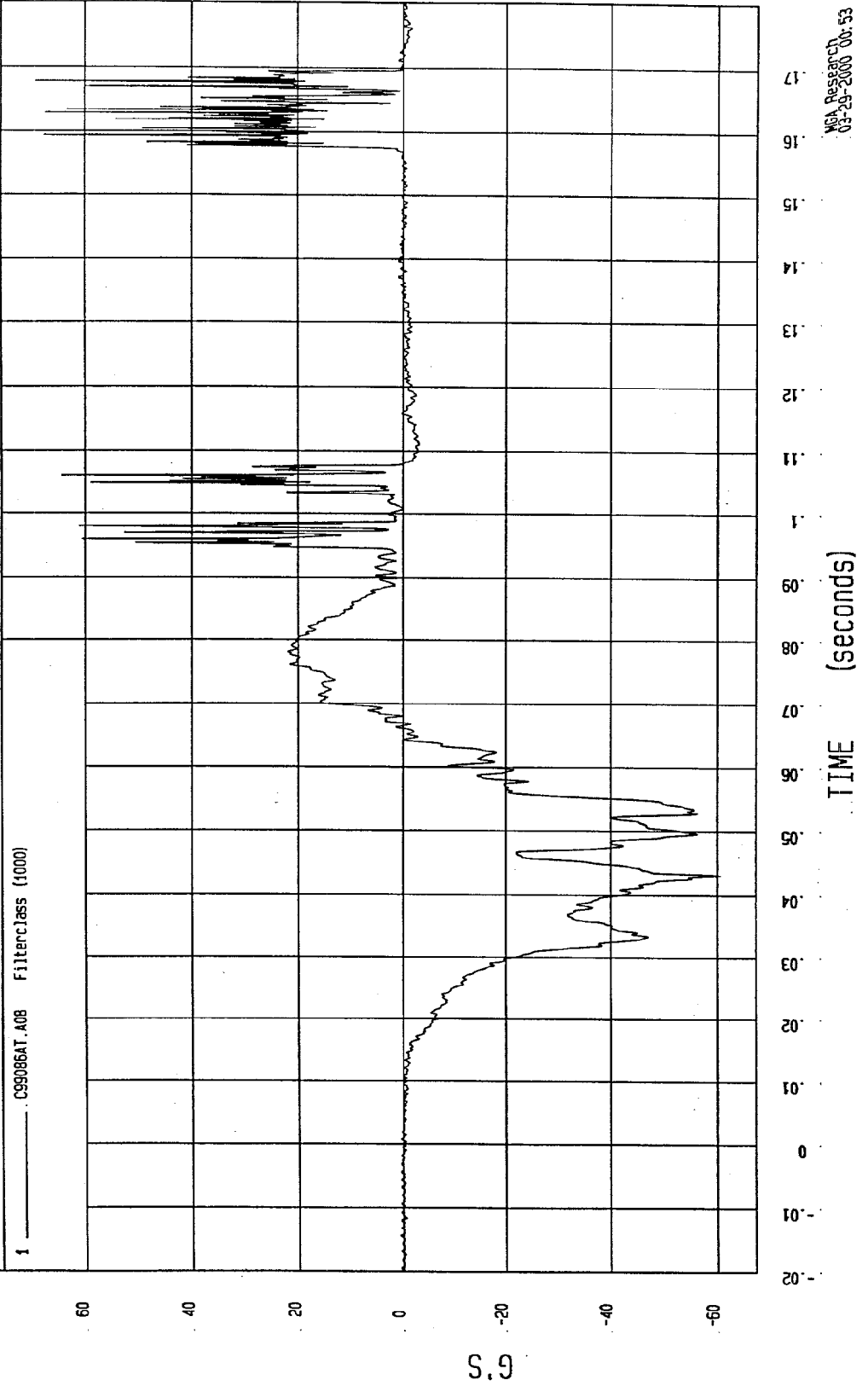
MCA Research
03-29-2000 03:46

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -60.66 G'S at 43 msec Maximum = 69.33 G'S at 168 msec

PASSENGER RIGHT HEEL X ACCELERATION

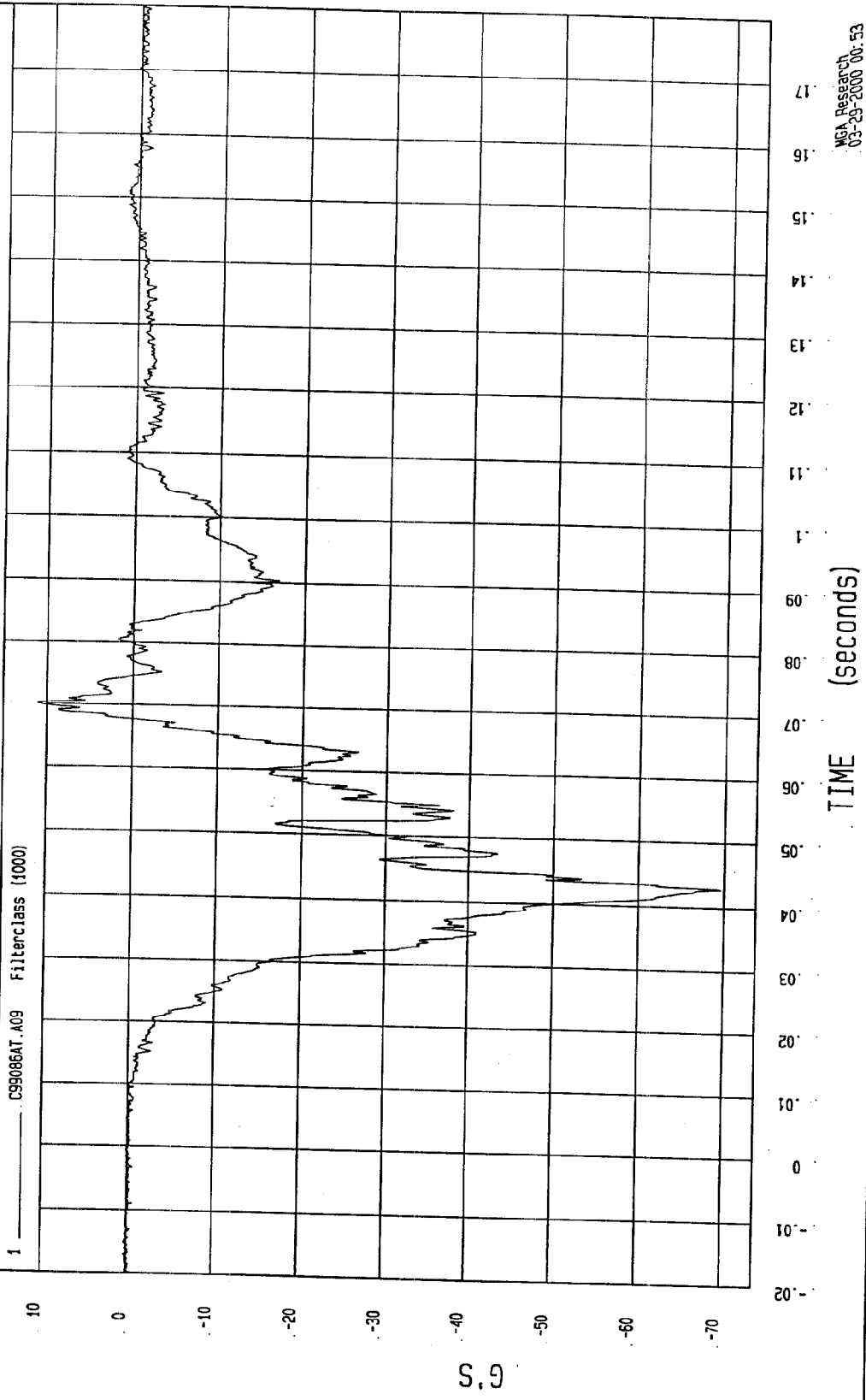


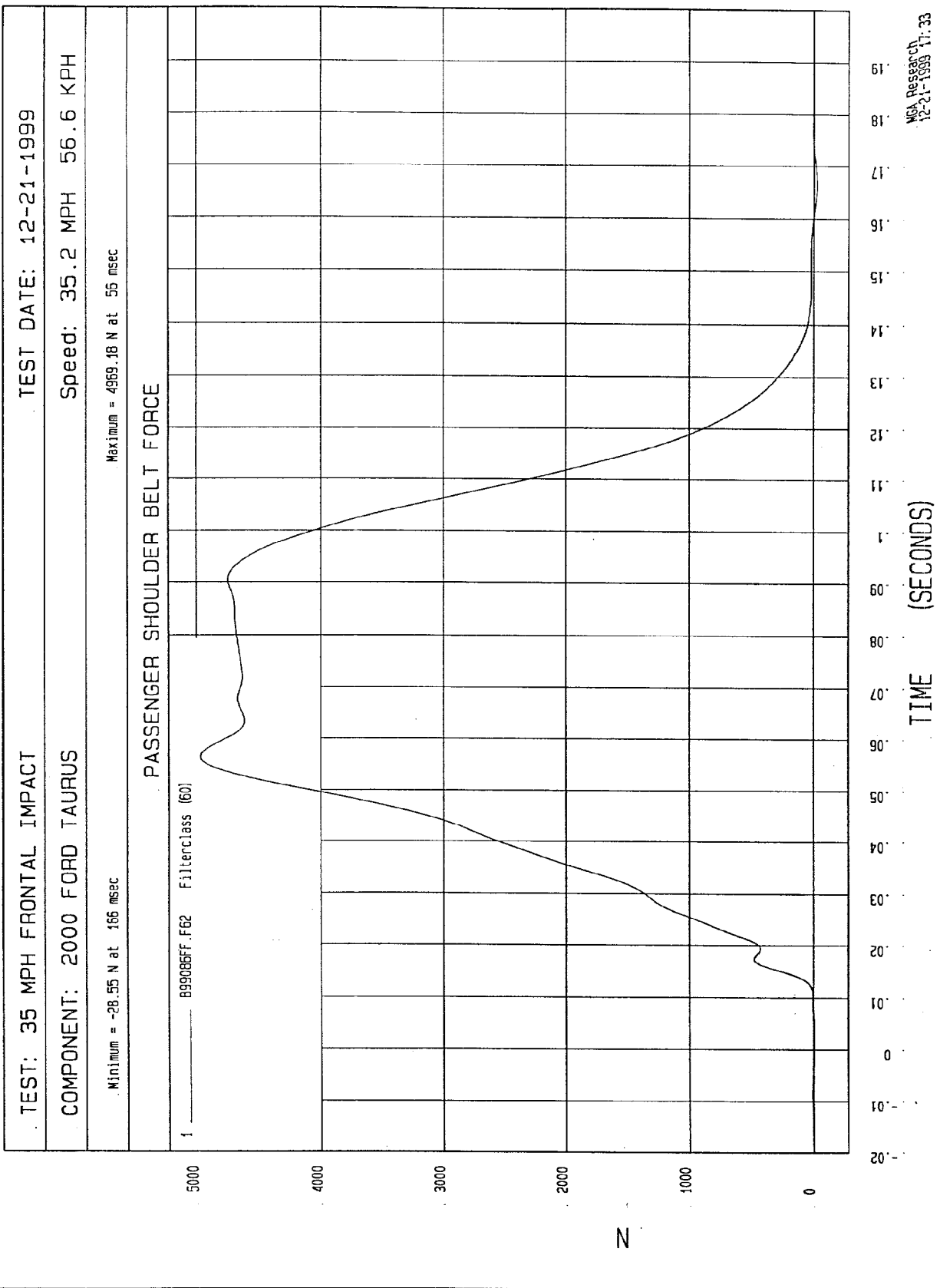
TEST: 35 MPH FRONTAL IMPACT
COMPONENT: 2000 FORD TAURUS
Minimum = -69.63 G'S at 43 msec
Maximum = 11.02 G'S at 70 msec

TEST DATE: 12-21-1999

Speed: 35.2 MPH 56.6 KPH

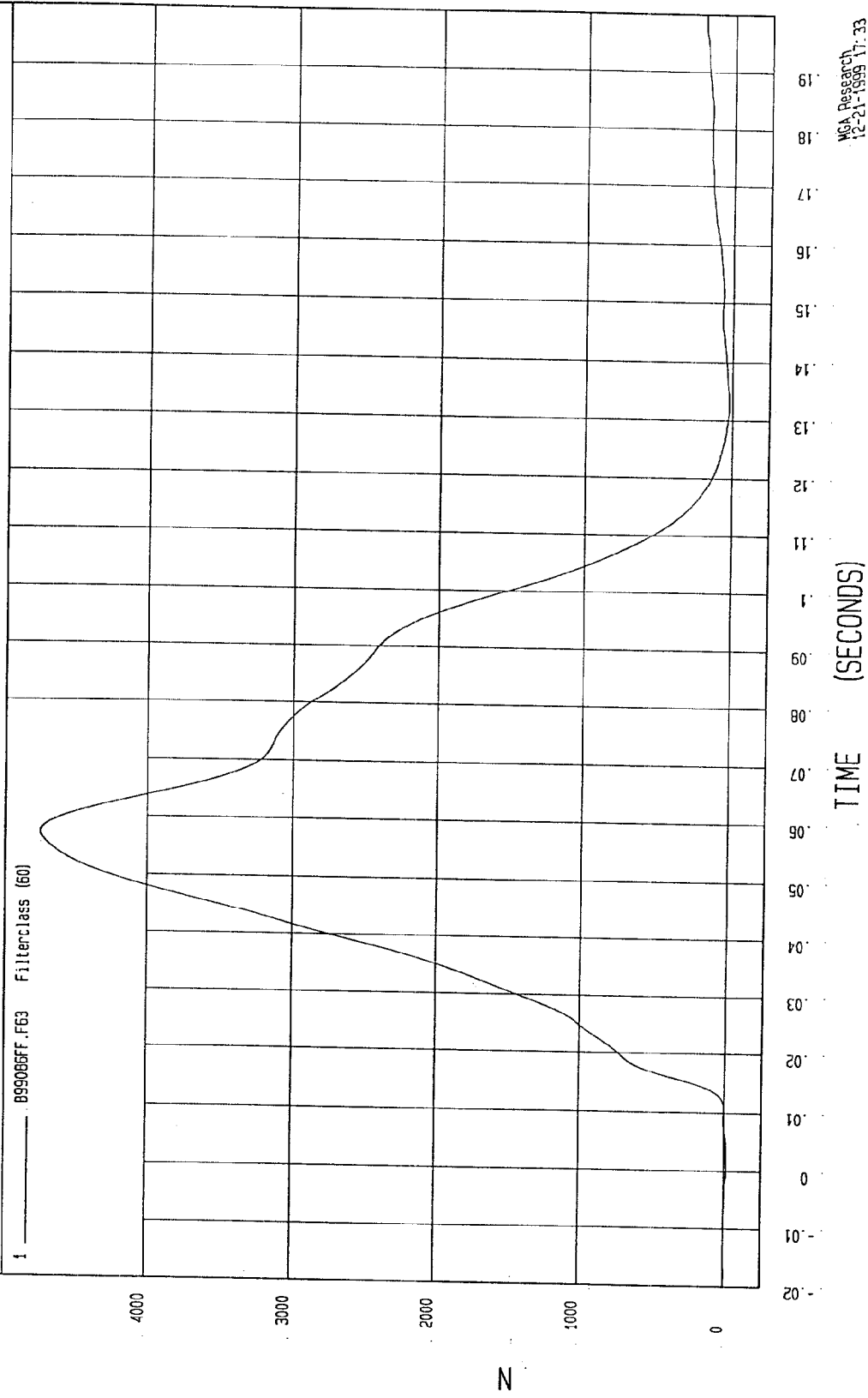
PASSENGER RIGHT HEEL Z ACCELERATION





TEST: 35 MPH FRONTAL IMPACT
TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS
Speed: 35.2 MPH 56.6 KPH
Minimum = -15.05 N at 0 msec
Maximum = 4724.24 N at 57 msec

PASSENGER LAP BELT FORCE

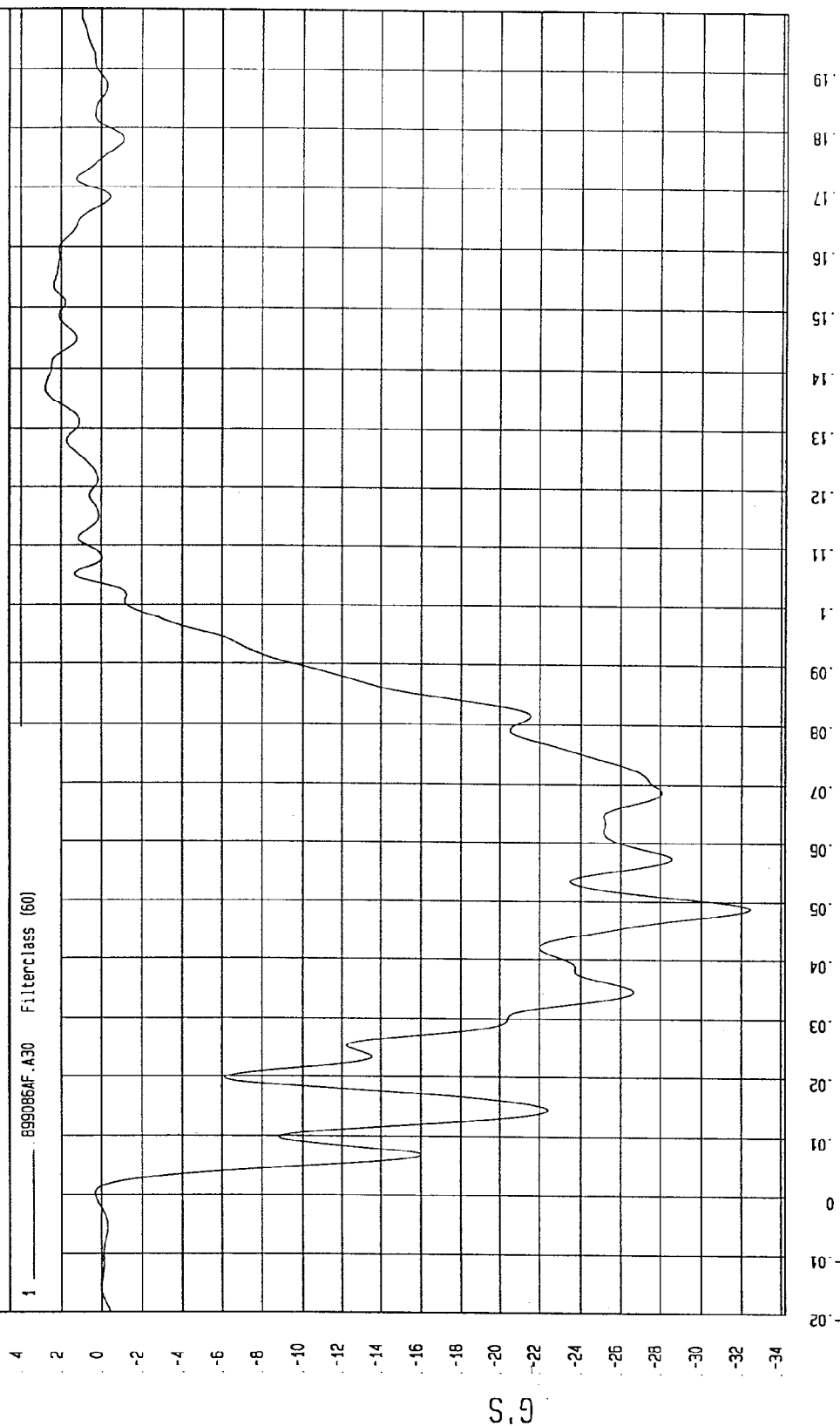


TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -32.44 G'S at 49 msec Maximum = 2.8 G'S at 137 msec

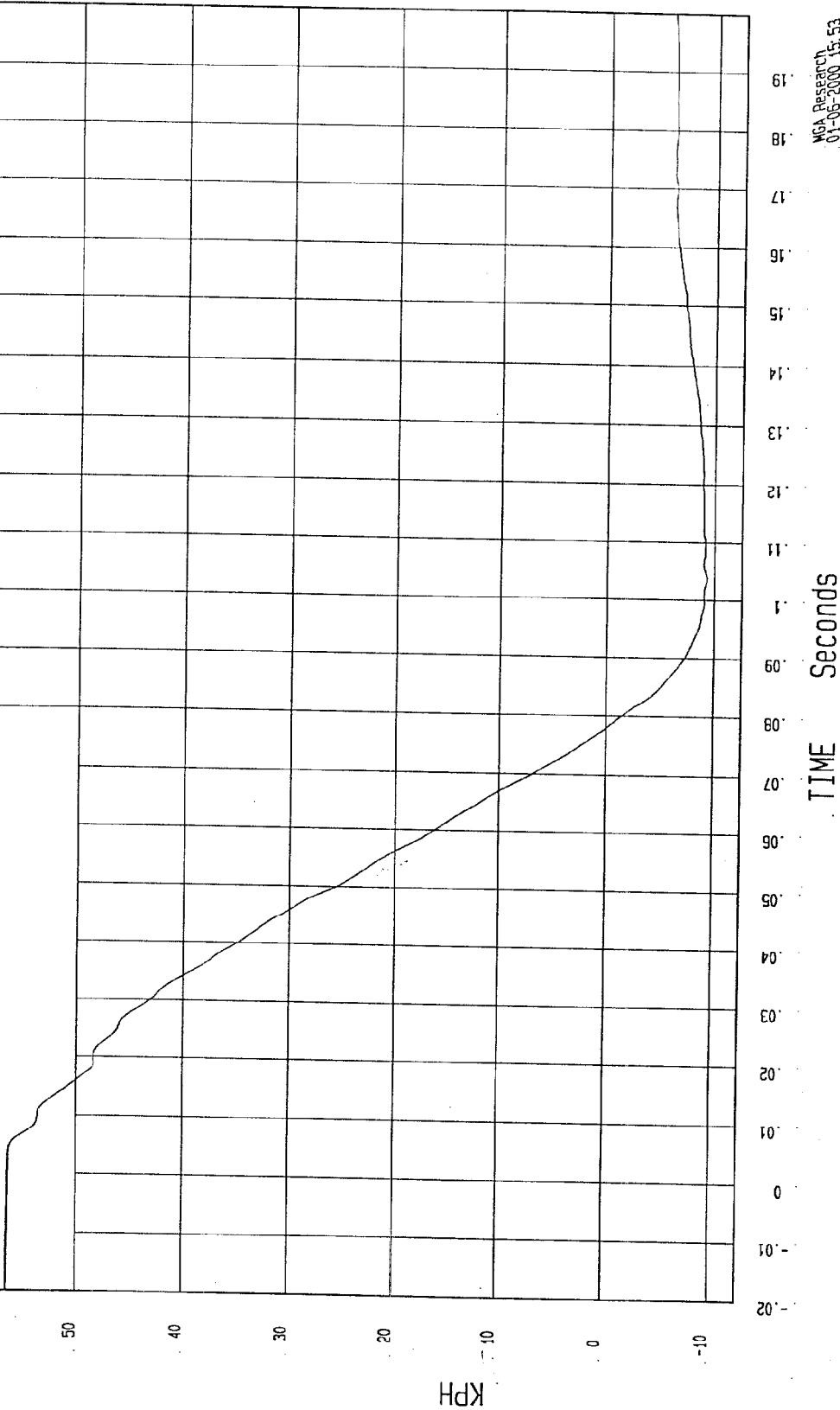
LEFT REAR SEAT CROSSMEMBER X ACCELERATION



TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH
Minimum = -9.3 KPH at 104 msec Maximum = 56.6 KPH at -20 msec

LEFT REAR SEAT CROSSMEMBER X VELOCITY

1 — B99086A1.V30 Filterclass (180)

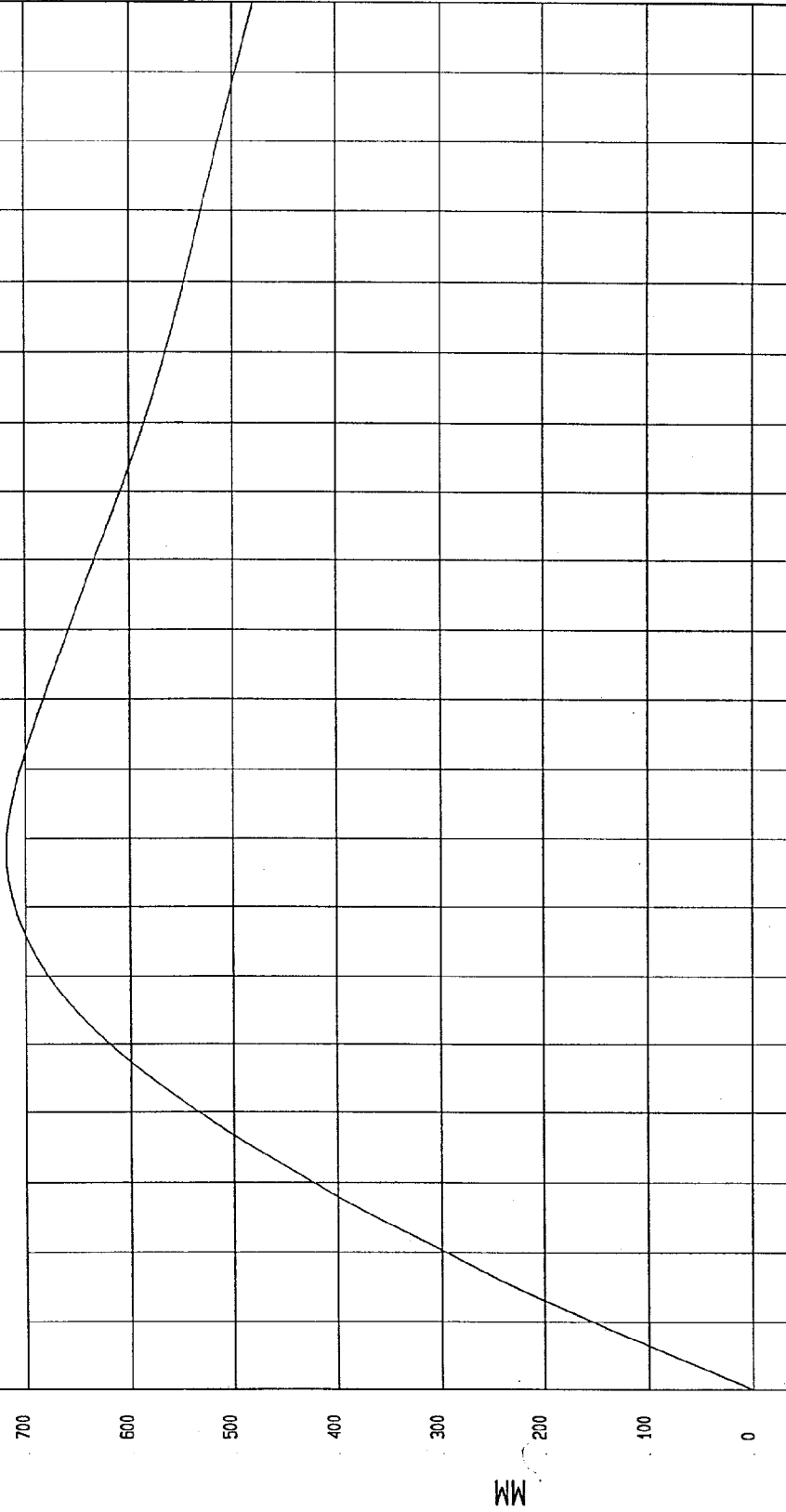


TEST: 35 MPH FRONTAL IMPACT
TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS
Speed: 35.2 MPH 56.6 KPH

Minimum = 0 MM at 0 msec
Maximum = 718.22 MM at 78 msec

LEFT REAR SEAT CROSSMEMBER X DISPLACEMENT

1 B99086AT.D30 Filterclass (180)



TIME Seconds
NCA Research
01-06-2000 17.19

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

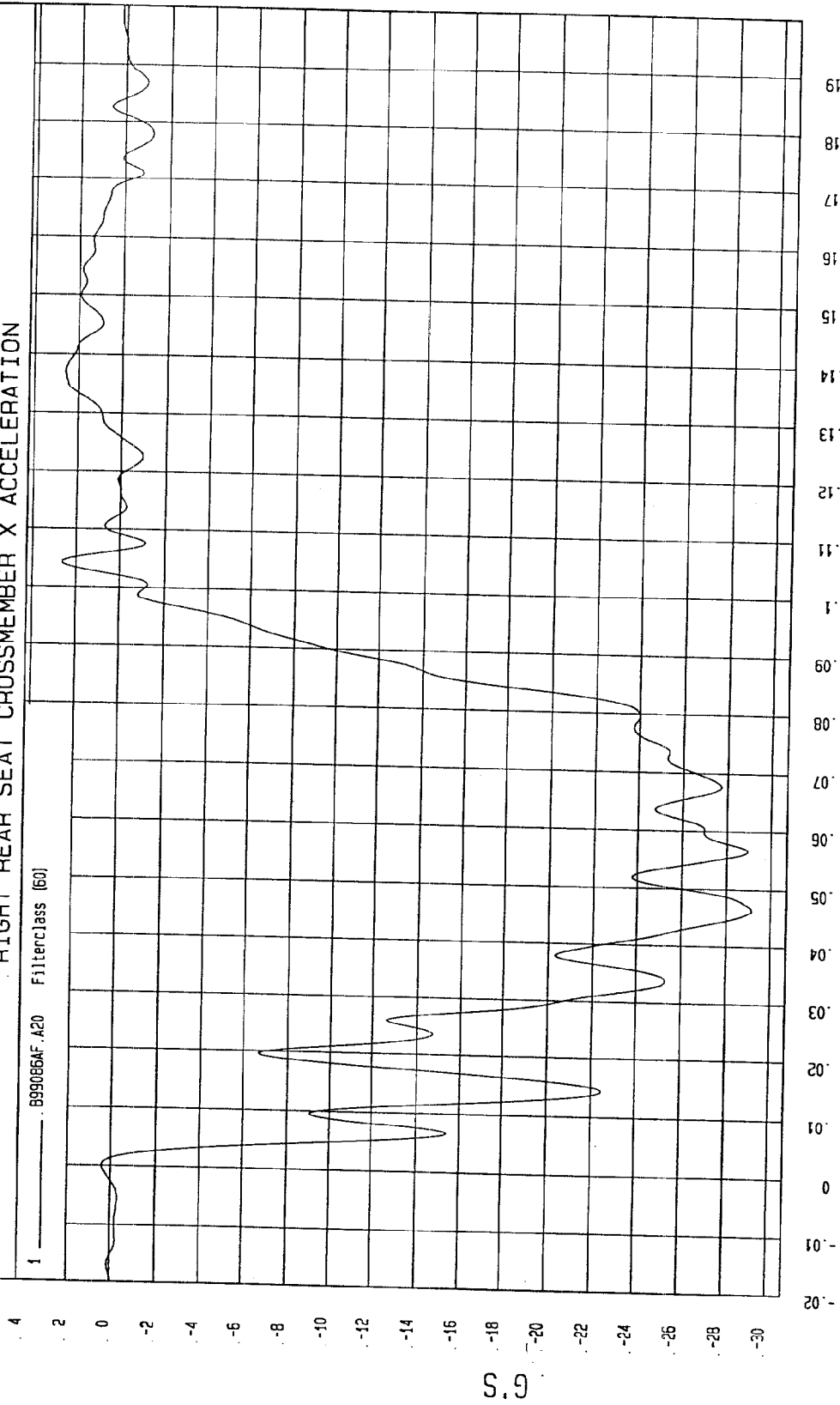
Speed: 35.2 MPH 56.6 KPH

Minimum = -29.13 G'S at 46 msec

Maximum = 2.65 G'S at 104 msec

RIGHT REAR SEAT CROSSMEMBER X ACCELERATION

1 B99065AF.A20 FilterClass (60)



MGA Research
01-05-2000 15:52

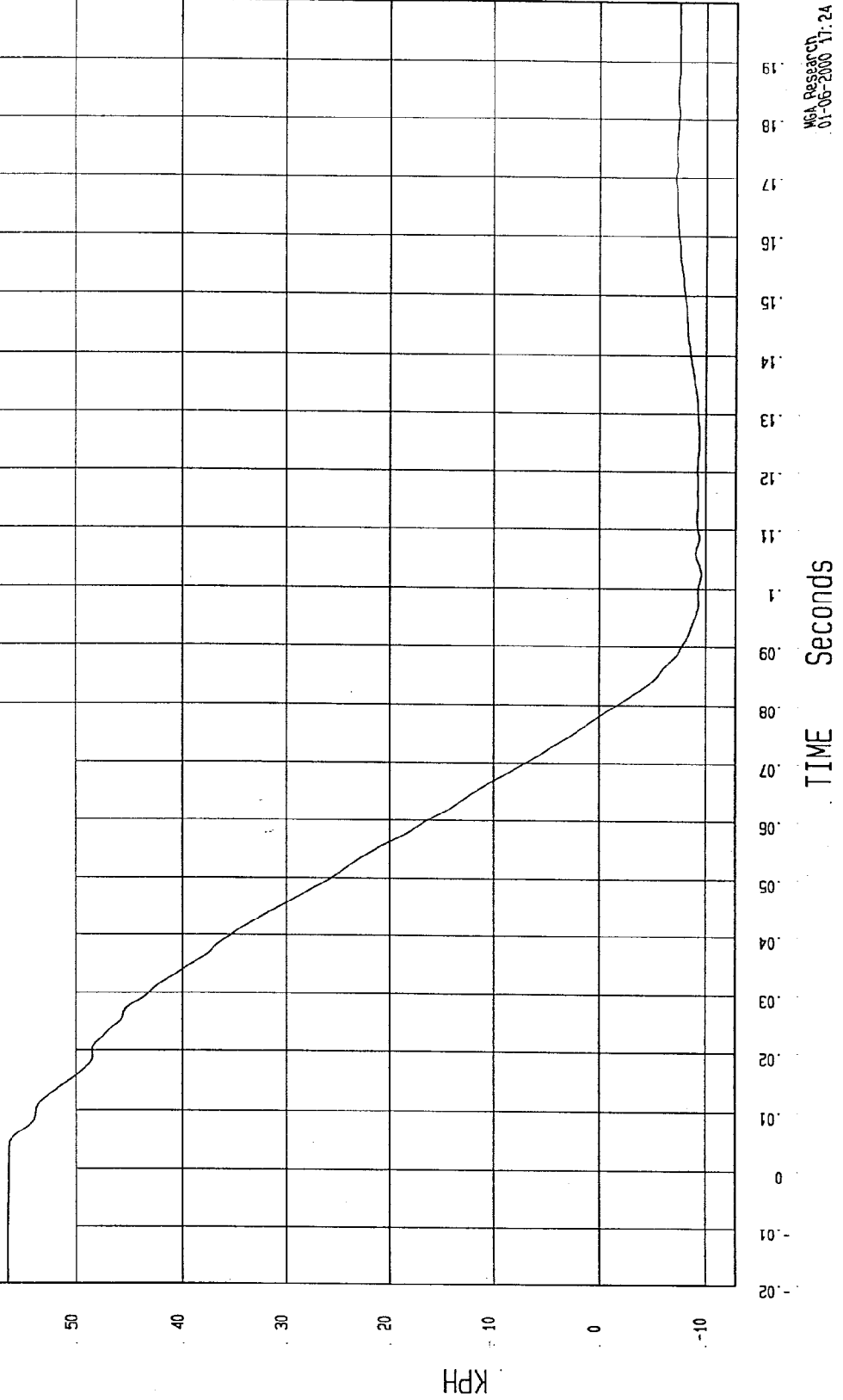
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -9.55 KPH at 102 msec Maximum = 56.62 KPH at -15 msec

RIGHT REAR SEAT CROSSMEMBER X VELOCITY

1 ——— B99086A1.V20 FilterClass (180)



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

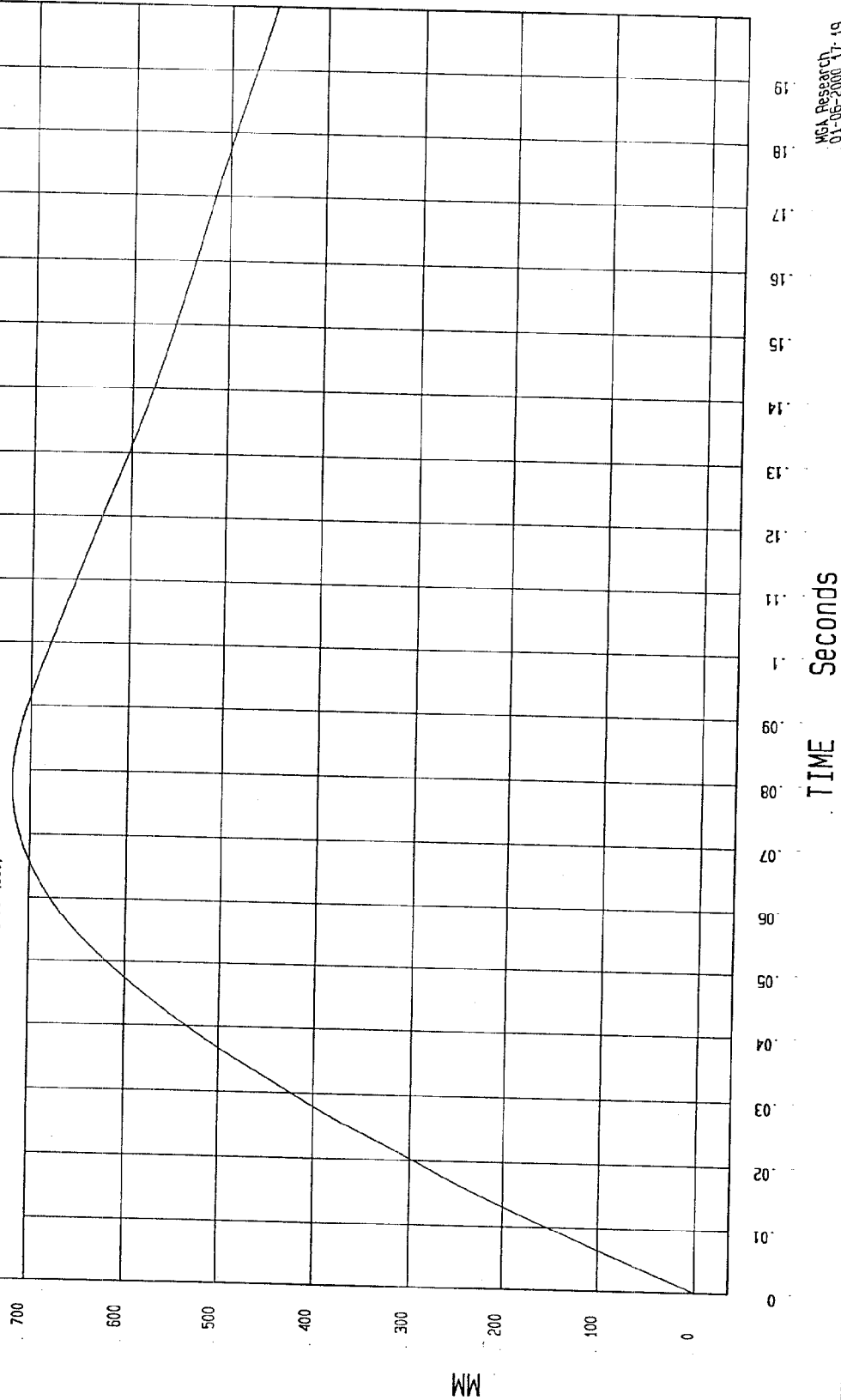
Speed: 35.2 MPH 56.6 KPH

Minimum = 0 MM at 0 msec

Maximum = 718.5 MM at 78 msec

RIGHT REAR SEAT CROSSMEMBER X DISPLACEMENT

1 ——— B99086A1.D20 Filterclass (f80)

NSA Research
01-06-2000 17:19

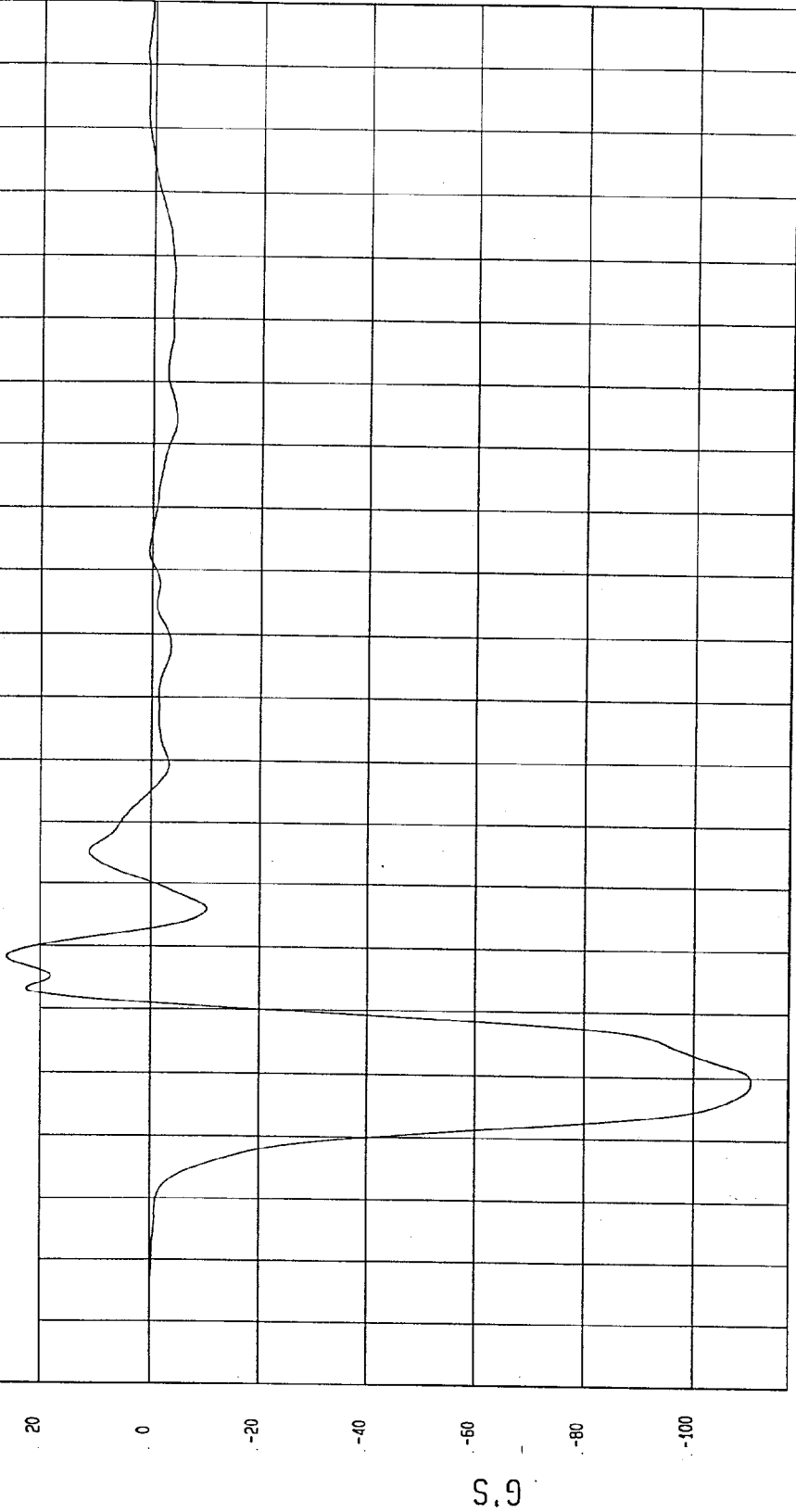
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -110.6 G'S at 29 msec Maximum = 26.08 G'S at 48 msec

TOP OF ENGINE BLOCK X ACCELERATION

1 ——— B99086AF.A08 Filterclass (60)



TIME (SECONDS)

19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
-12
-13
-14
-15
-16
-17
-18
-19
-20

MCA Research
01-06-2000 15:52

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

Speed: 35.2 MPH 56.6 KPH

Minimum = -11.64 KPH at 41 msec

Maximum = 56.63 KPH at -3 msec

TOP OF ENGINE BLOCK X VELOCITY

1 B99086A1.V08 Filterclass (180)

60

50

40

30

20

10

0

-10

KPH

-02

-01

0

01

02

03

04

05

06

07

08

09

1

11

12

13

14

15

16

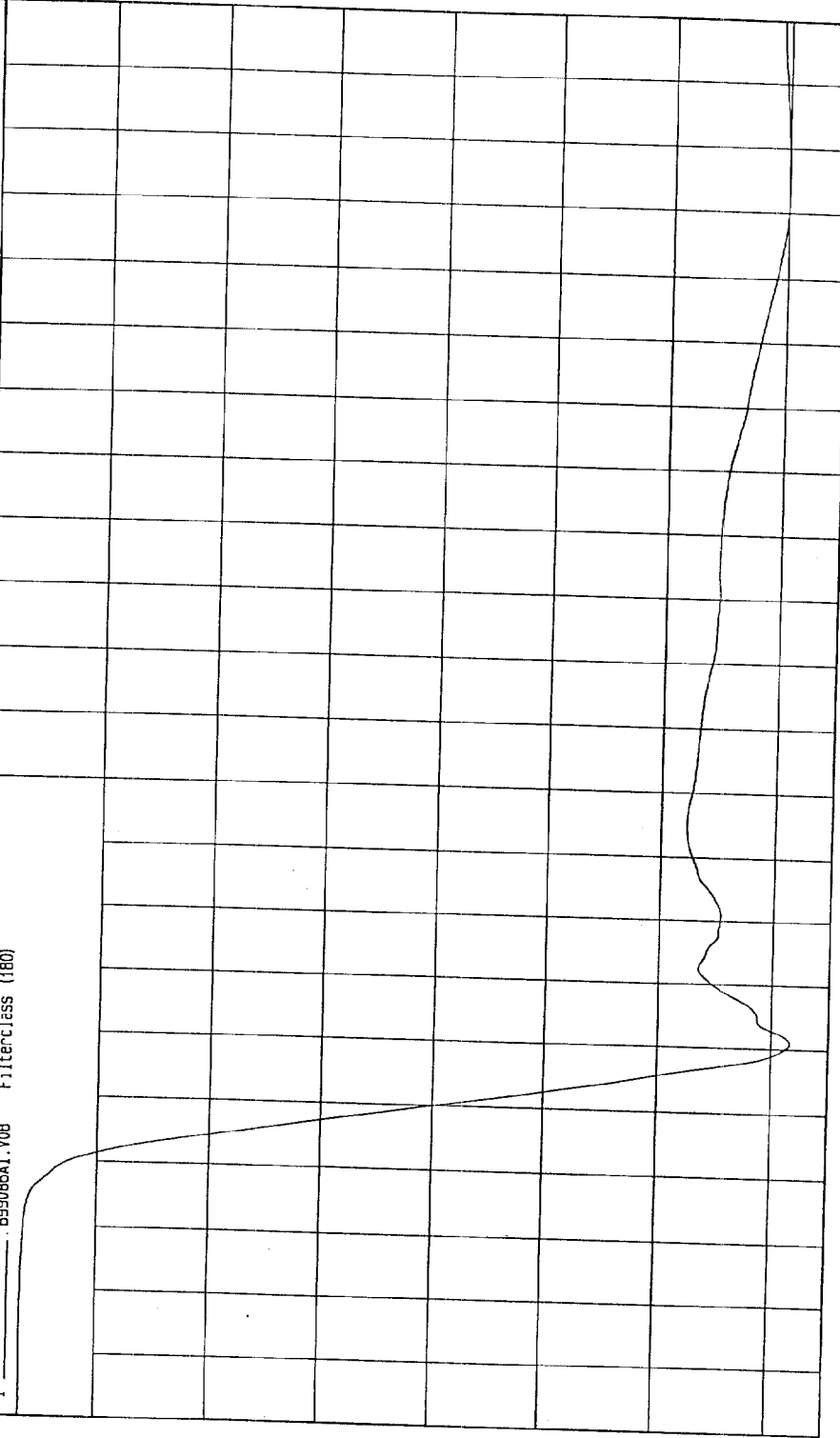
17

18

19

TIME Seconds

MCA Research
01-05-2000 13:53



TEST DATE: 12-21-1999

TEST: 35 MPH FRONTAL IMPACT

Speed: 35.2 MPH 56.6 KPH

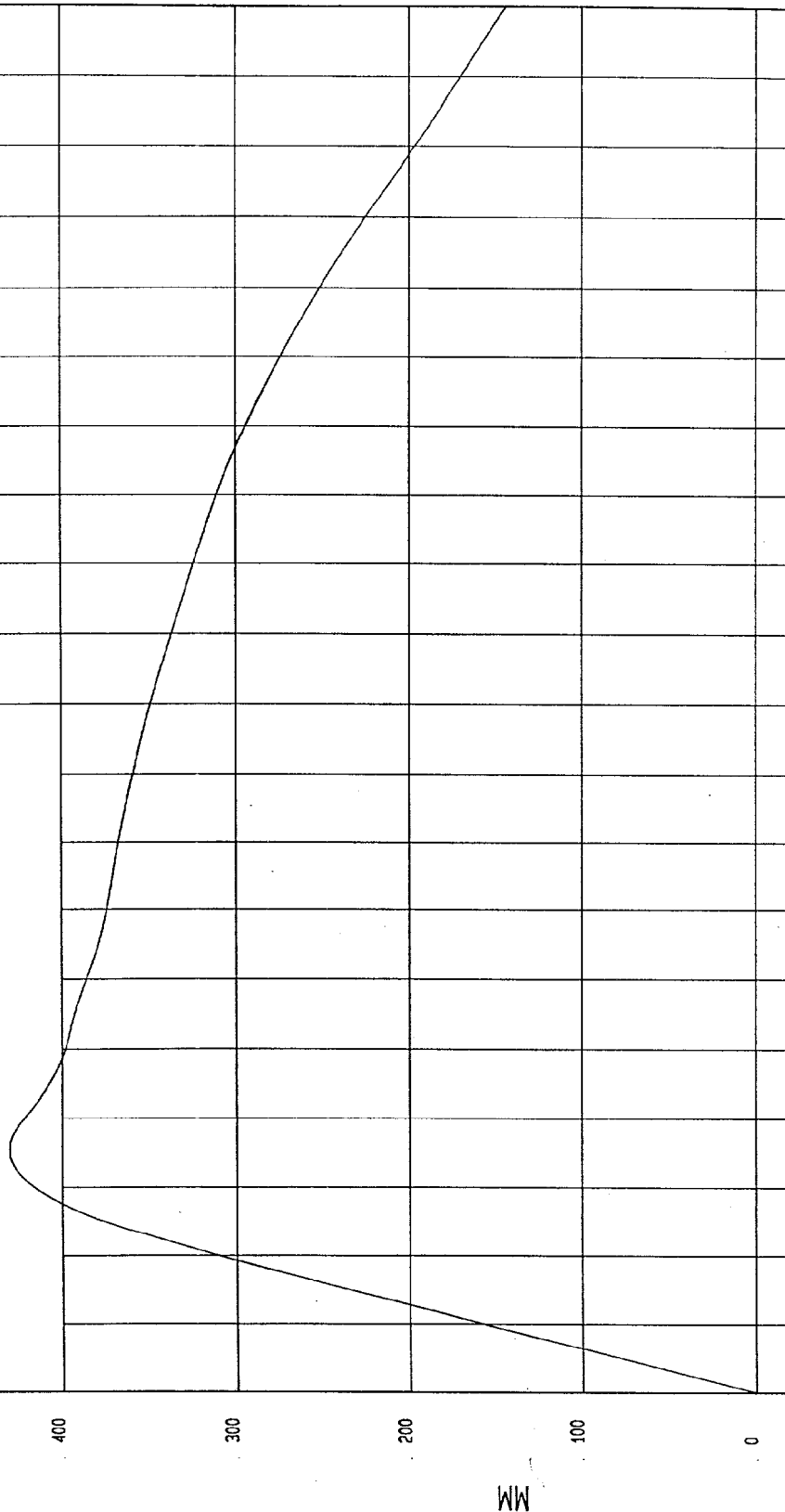
COMPONENT: 2000 FORD TAURUS

Maximum = 430.37 MM at 36 msec

Minimum = 0 MM at 0 msec

TOP OF ENGINE BLOCK X DISPLACEMENT

1 B99086A1.008 Filterclass (180)

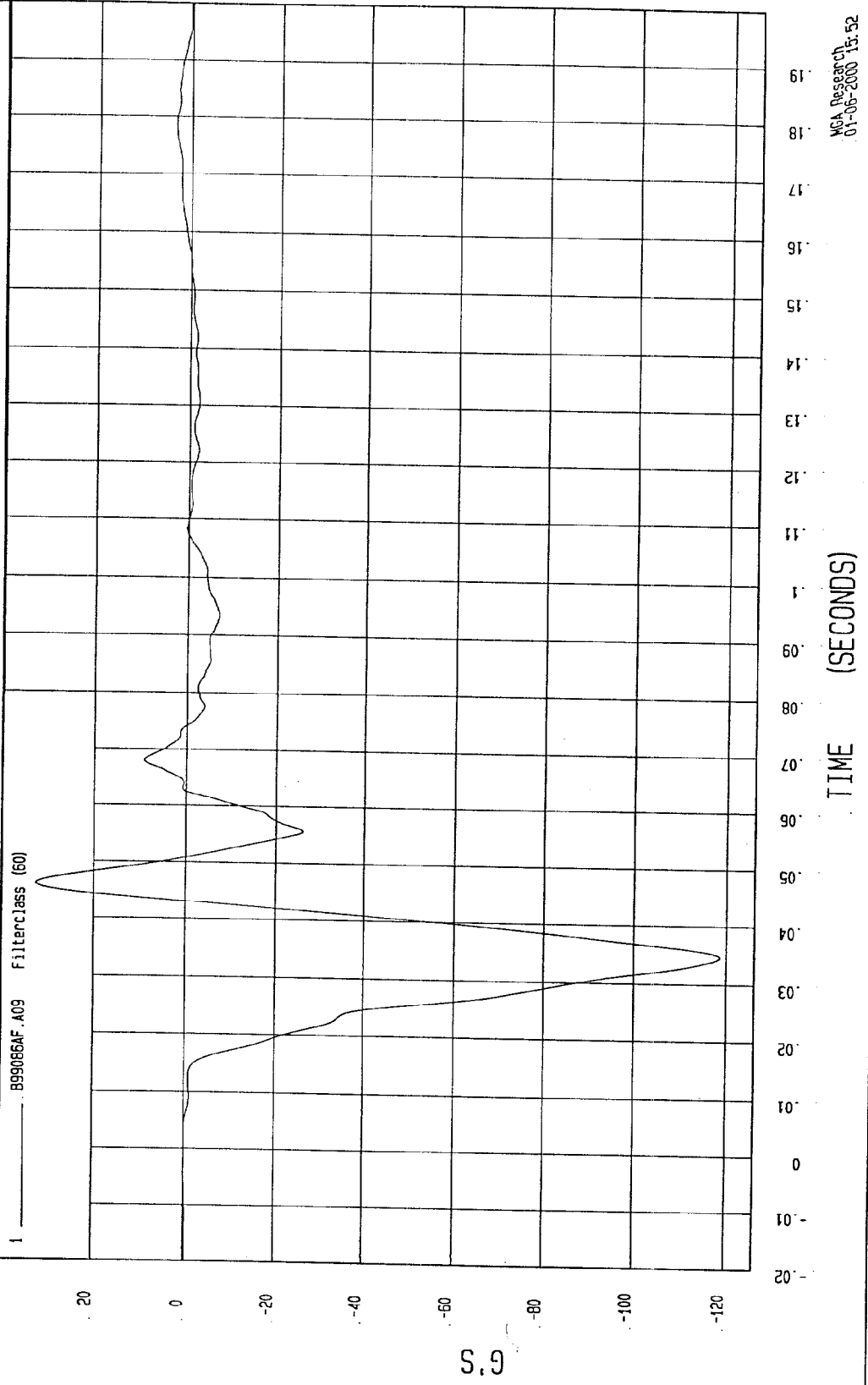


TIME Seconds

MCA Research
01-05-2000 17:19

TEST: 35 MPH FRONTAL IMPACT
SPEED: 35.2 MPH 56.6 KPH
COMPONENT: 2000 FORD TAURUS
Minimum = -118.58 G'S at 35 msec
Maximum = 32.77 G'S at 46 msec

BOTTOM OF ENGINE X ACCELERATION



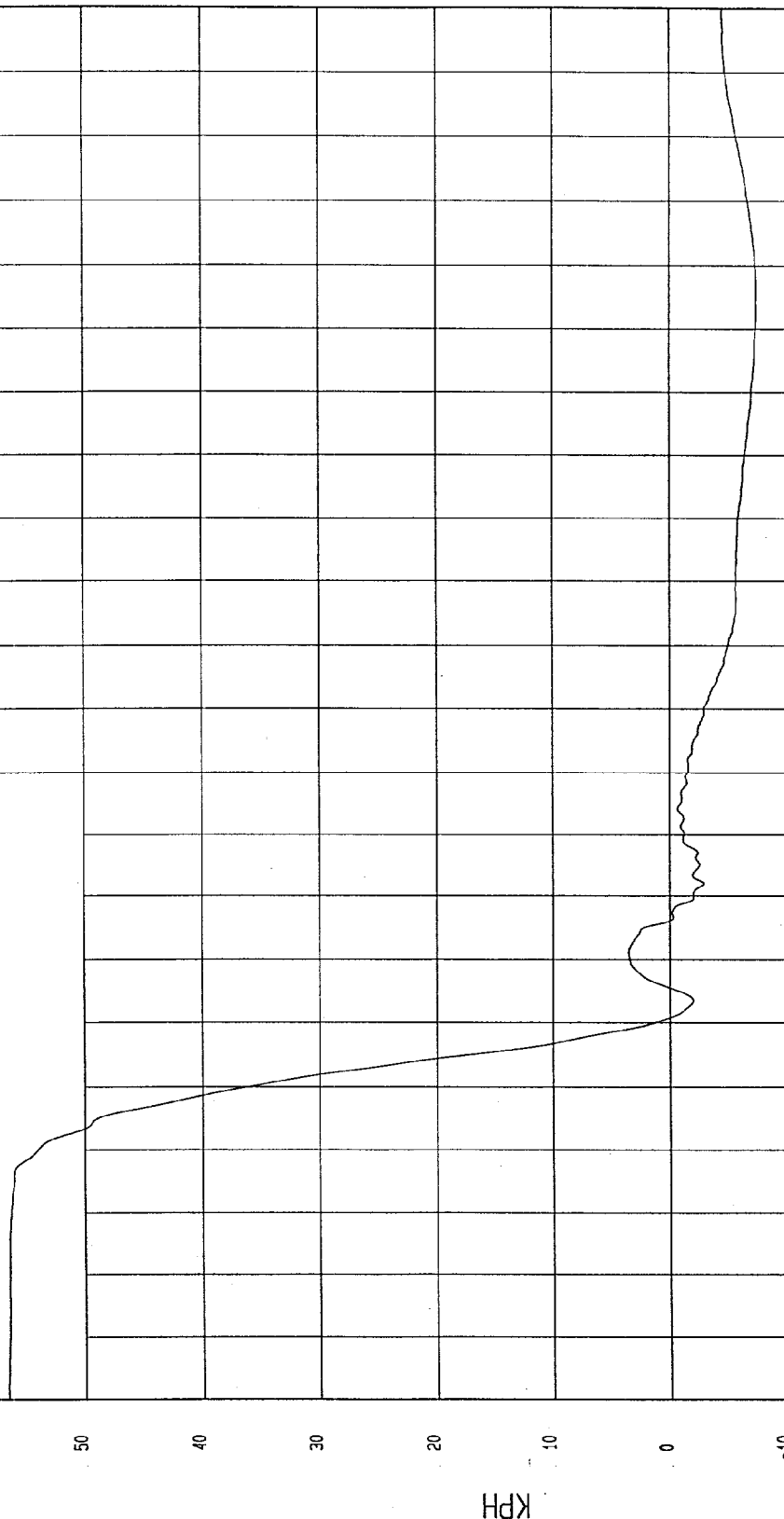
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -7.37 KPH at 157 msec
Maximum = 56.6 KPH at -20 msec

BOTTOM OF ENGINE X VELOCITY

1 B99086A1.V09 FilterClass (180)



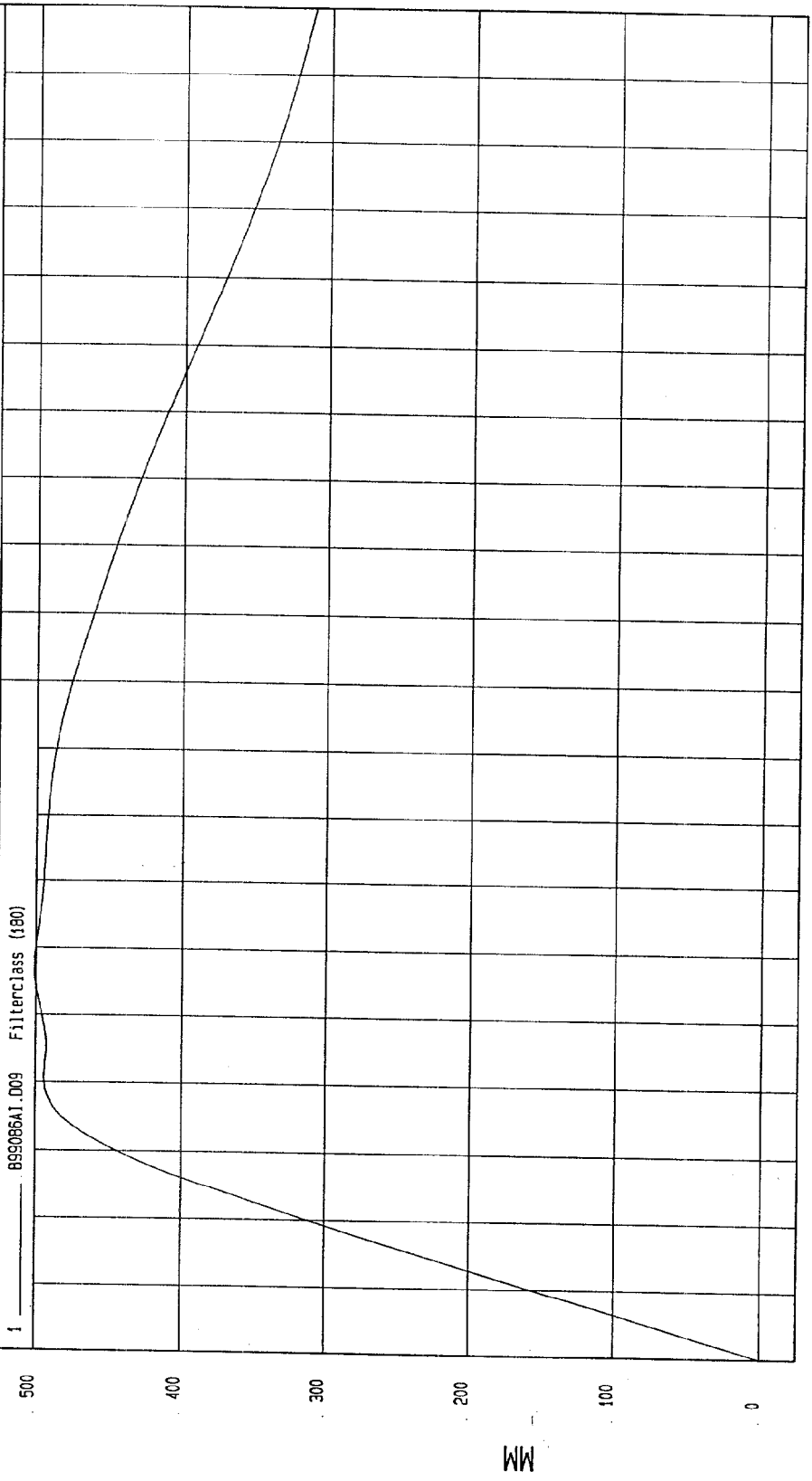
MCA Research
01-06-2000 15:53

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = 0 MM at 0 msec Maximum = 500.74 MM at 56 msec

BOTTOM OF ENGINE X DISPLACEMENT



WCA Research
01-06-2000 17:19

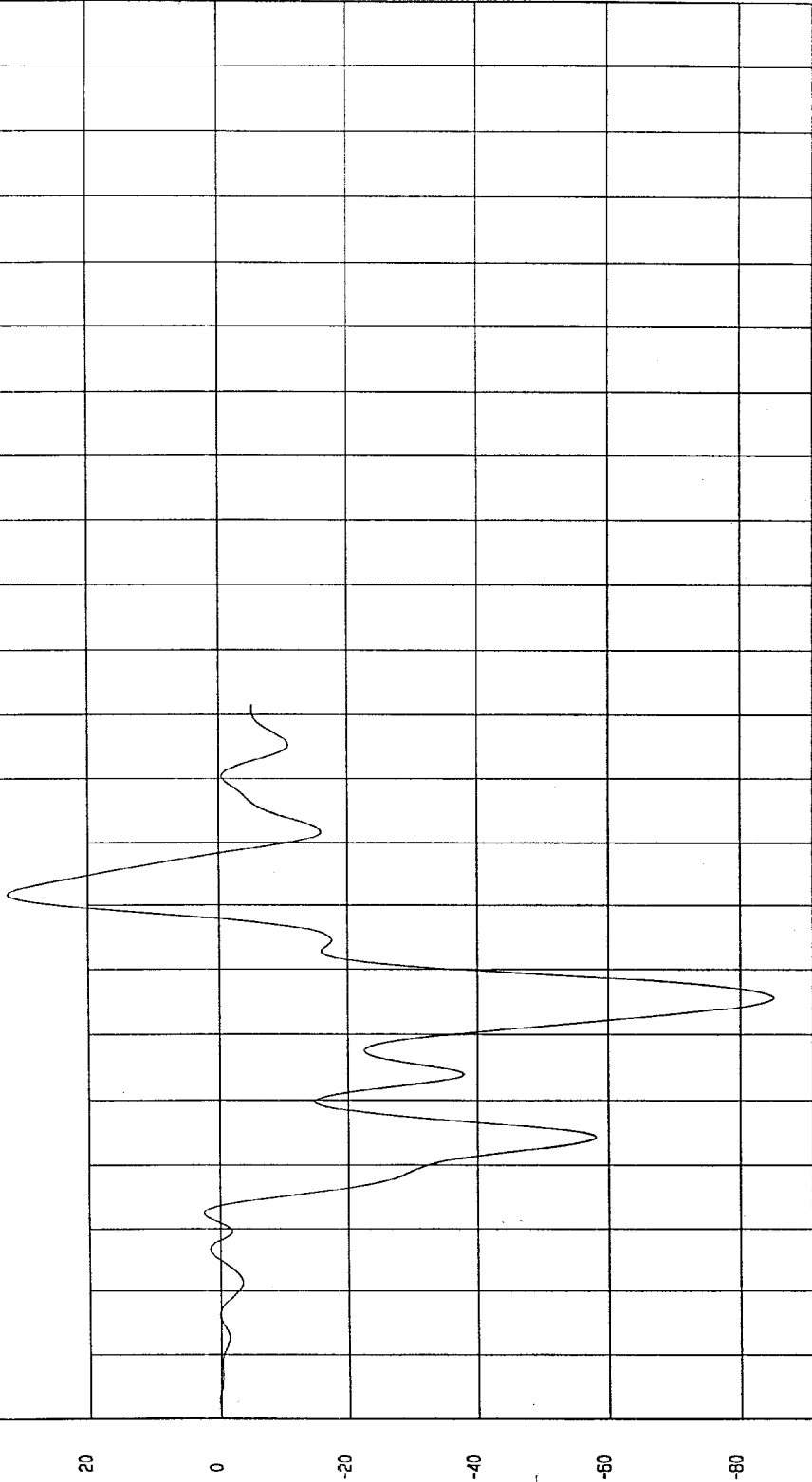
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -85.1 G'S at 46 msec
Maximum = 32.21 G'S at 62 msec

LEFT FRONT BRAKE CALIPER X ACCELERATION

1 C99086AF.A14 Filterclass (60)



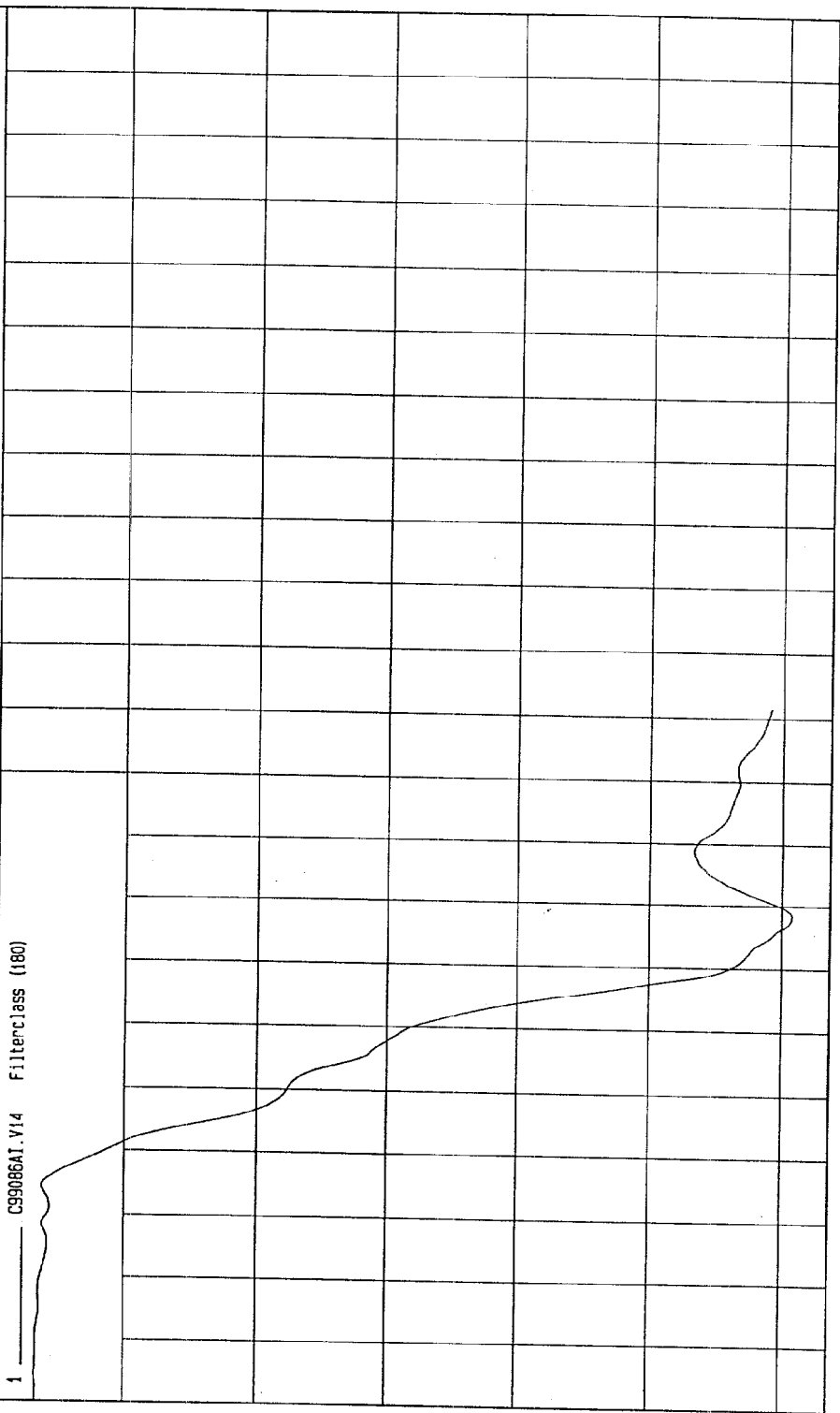
NGA Research
01-06-2000 19:17

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -76 KPH at 58 msec Maximum = 56.66 KPH at -16 msec

LEFT FRONT BRAKE CALIPER X VELOCITY



KPH

TIME Seconds

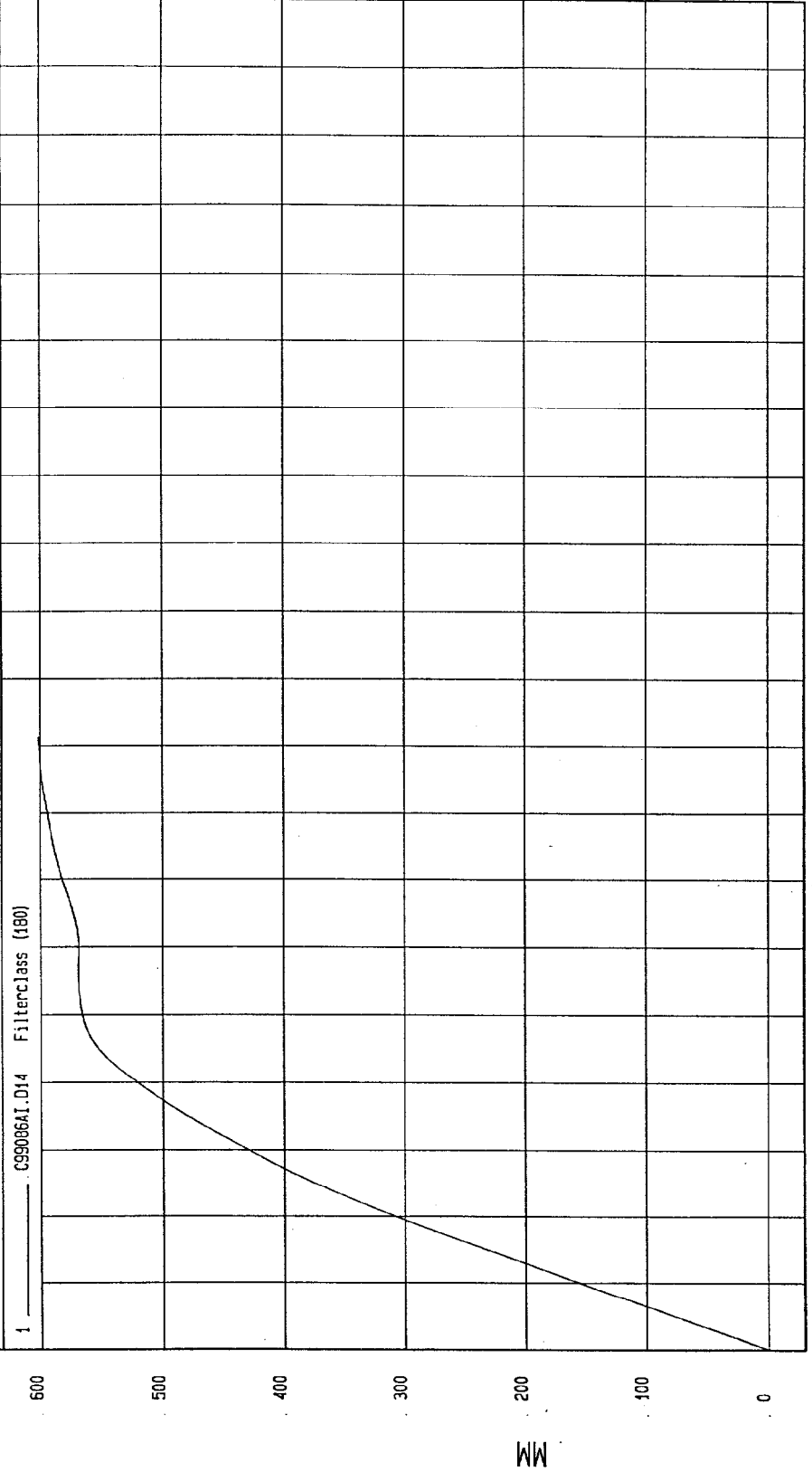
NSA Research
01-06-2000 19:17

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = 0 MM at 0 msec Maximum = 601.4 MM at 92 msec

LEFT FRONT BRAKE CALIPER X DISPLACEMENT



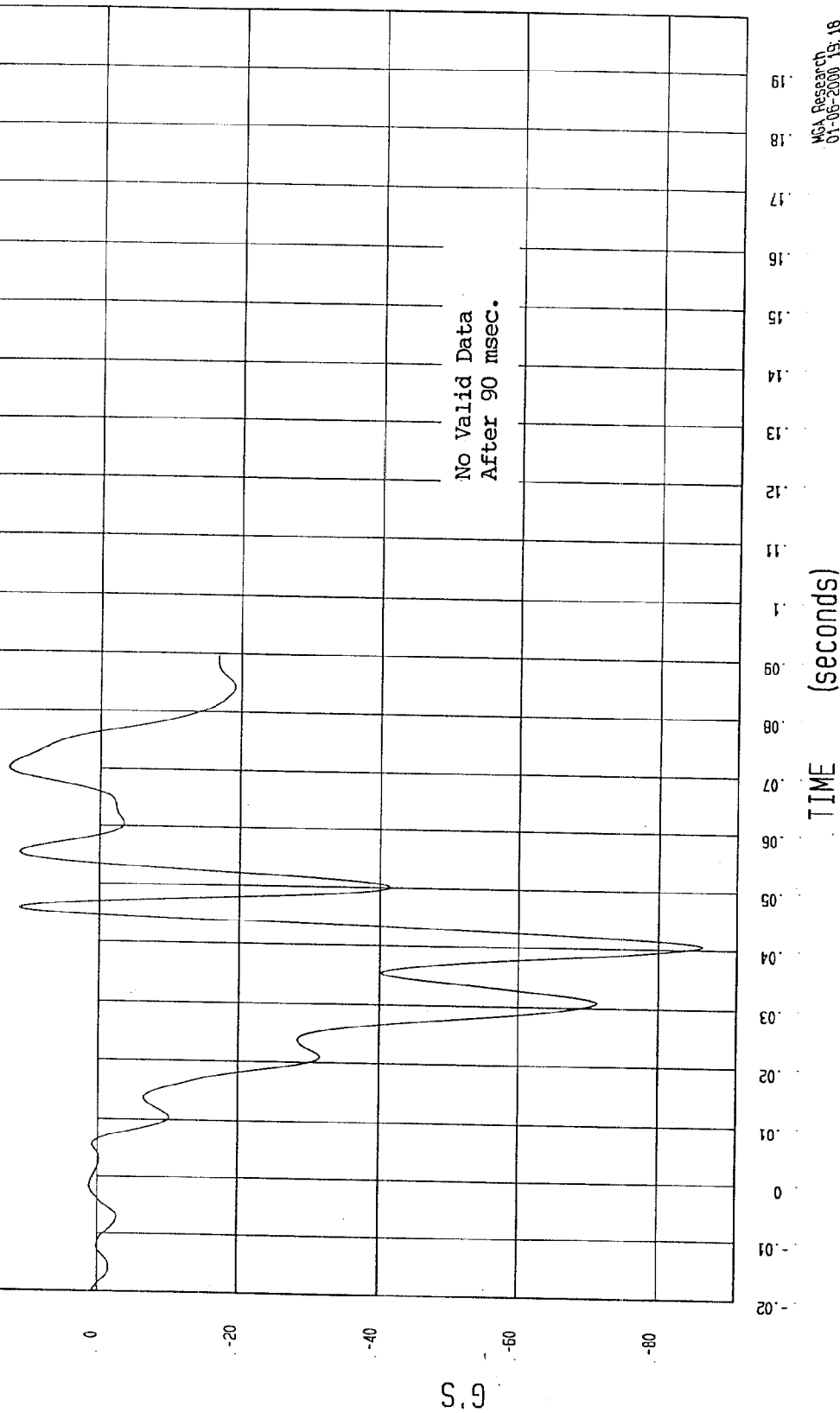
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -86.17 G'S at 41 msec Maximum = 13.06 G'S at 70 msec

RIGHT FRONT BRAKE CALIPER X ACCELERATION

1 _____ C99085AF.A13 FilterClass (60)



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

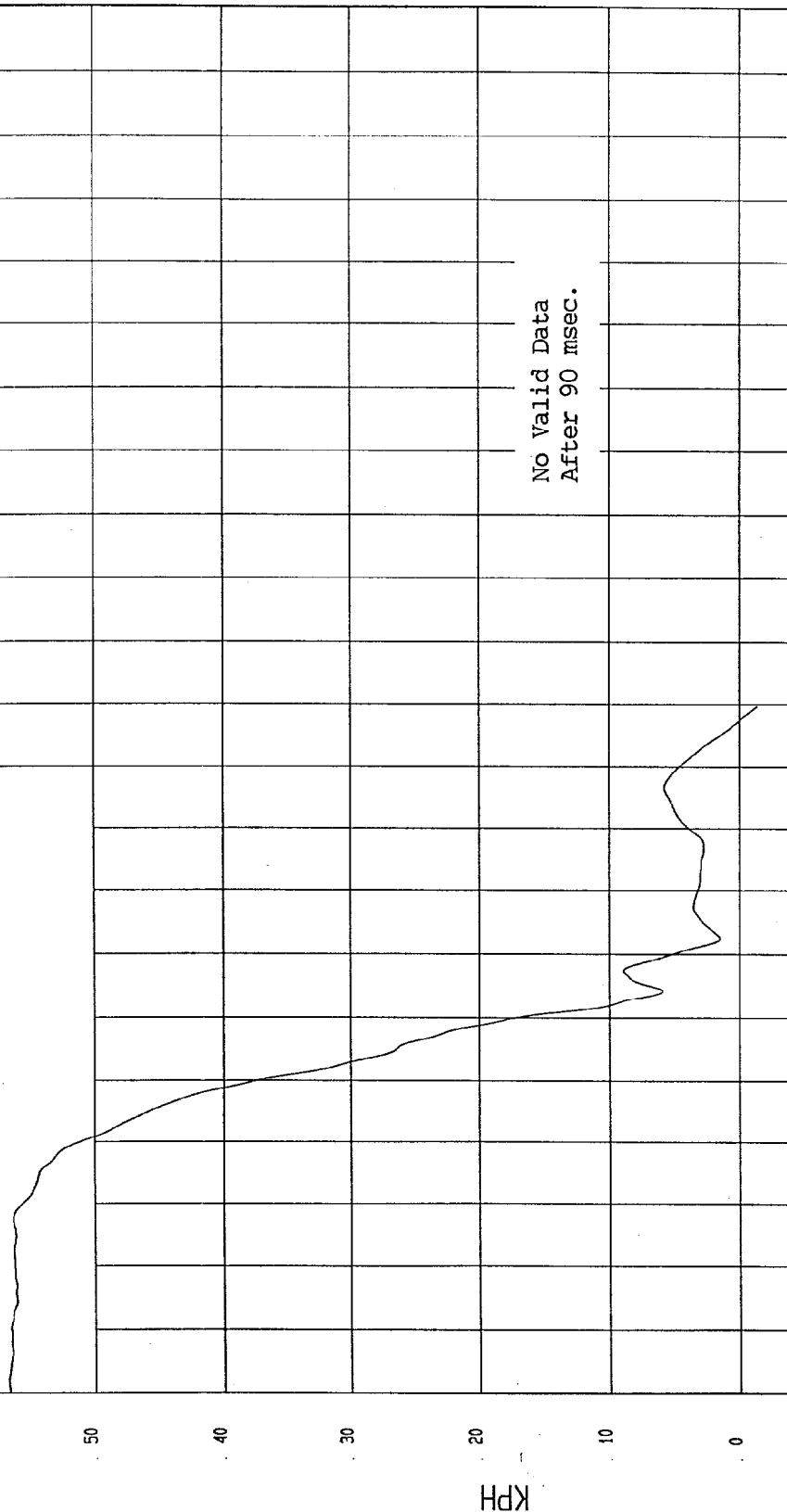
Speed: 35.2 MPH 56.6 KPH

Minimum = -1.38 KPH at 90 msec

Maximum = 56.7 KPH at -18 msec

RIGHT FRONT BRAKE CALIPER X VELOCITY

1 C99066AI.V13 Filterclass (180)



MSA Research
01-06-2000 12:18

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

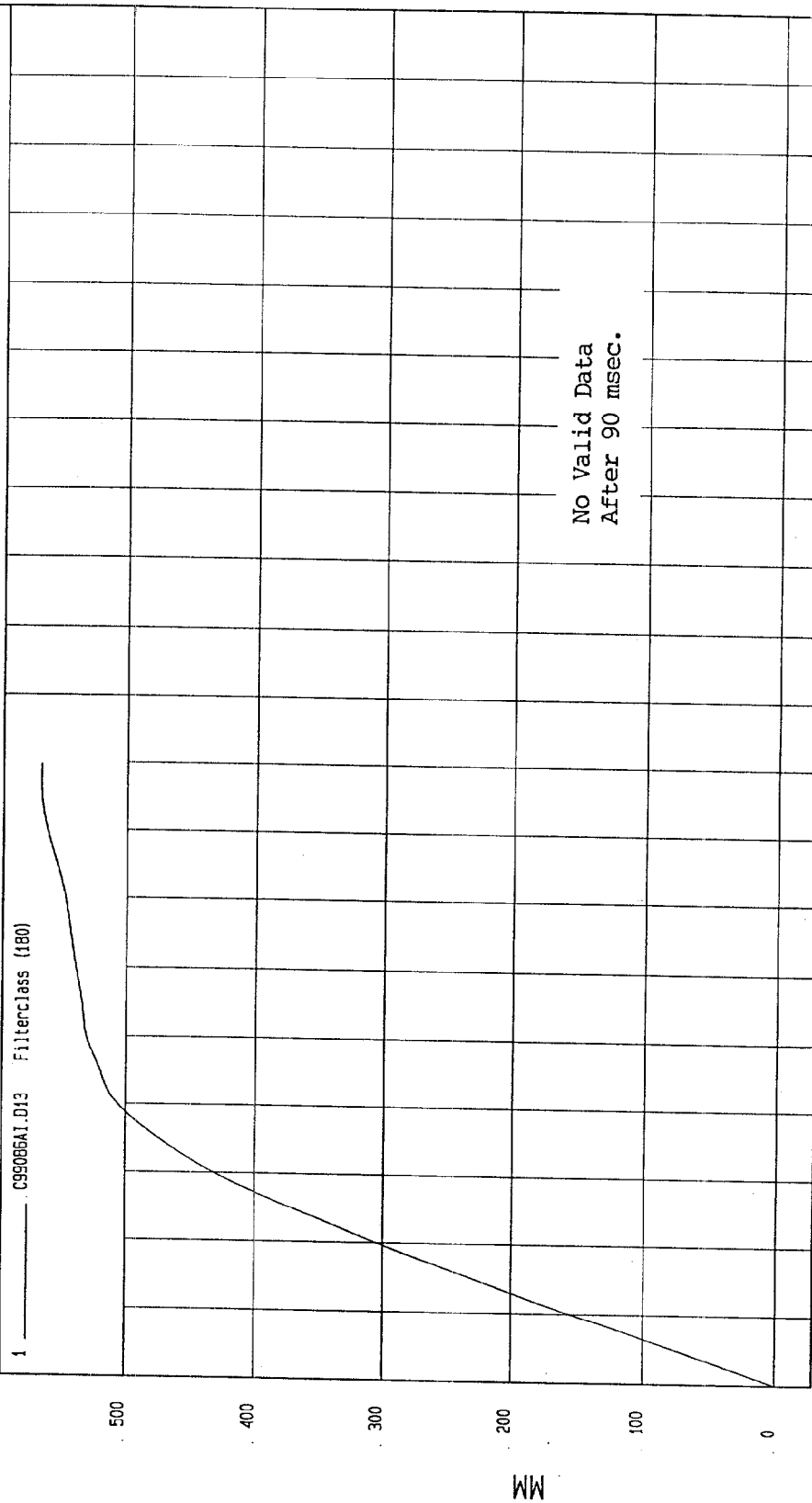
Speed: 35.2 MPH 56.6 KPH

Minimum = 0 MM at 0 msec

Maximum = 565.8 MM at 87 msec

RIGHT FRONT BRAKE CALIPER X DISPLACEMENT

1 _____ C99085A1.D13 Filterclass (180)

TIME
SecondsMCA Research
01-06-2000 19:21

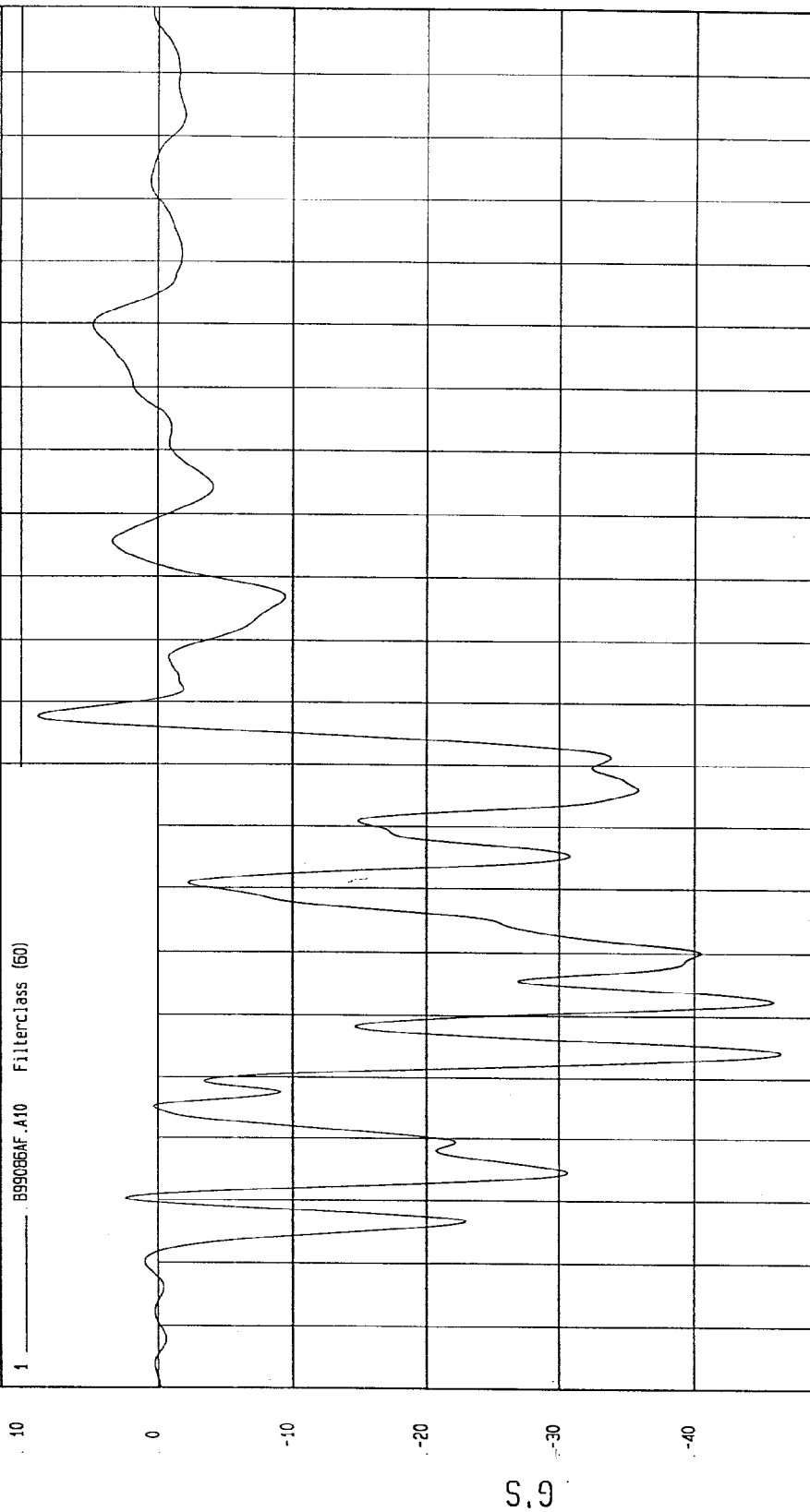
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -46.38 G's at 34 msec
Maximum = 8.75 G's at 88 msec

INSTRUMENT PANEL X ACCELERATION

1 _____ B99086AF.A10 FilterClass (60)



TIME (SECONDS)

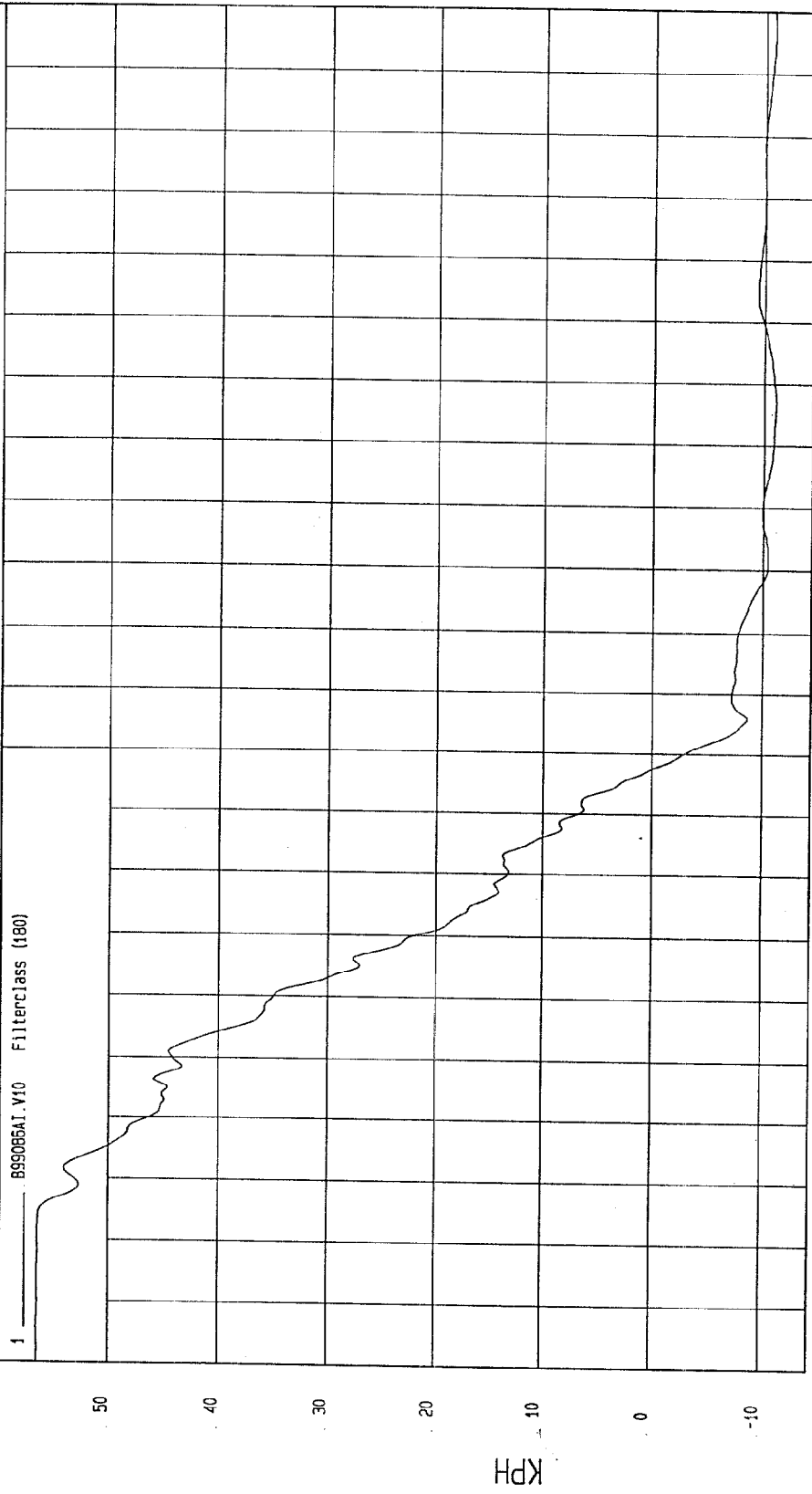
NGA Research
01-06-2000 15:52

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

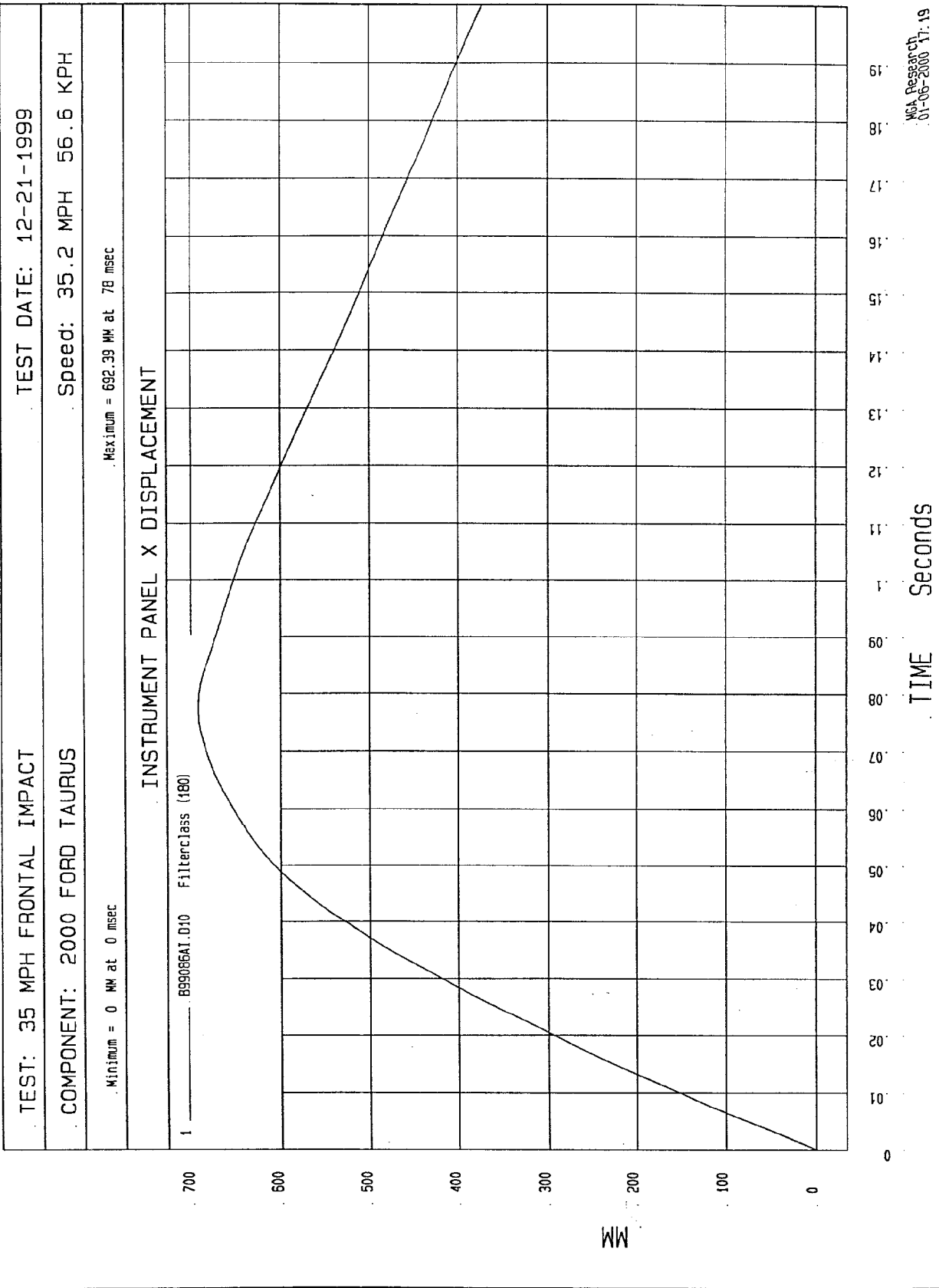
Minimum = -11.11 KPH at 137 msec Maximum = 56.63 KPH at -14 msec

INSTRUMENT PANEL X VELOCITY



TIME Seconds

MGA Research
01-06-2000 15:53



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

Speed: 35.2 MPH 56.6 KPH

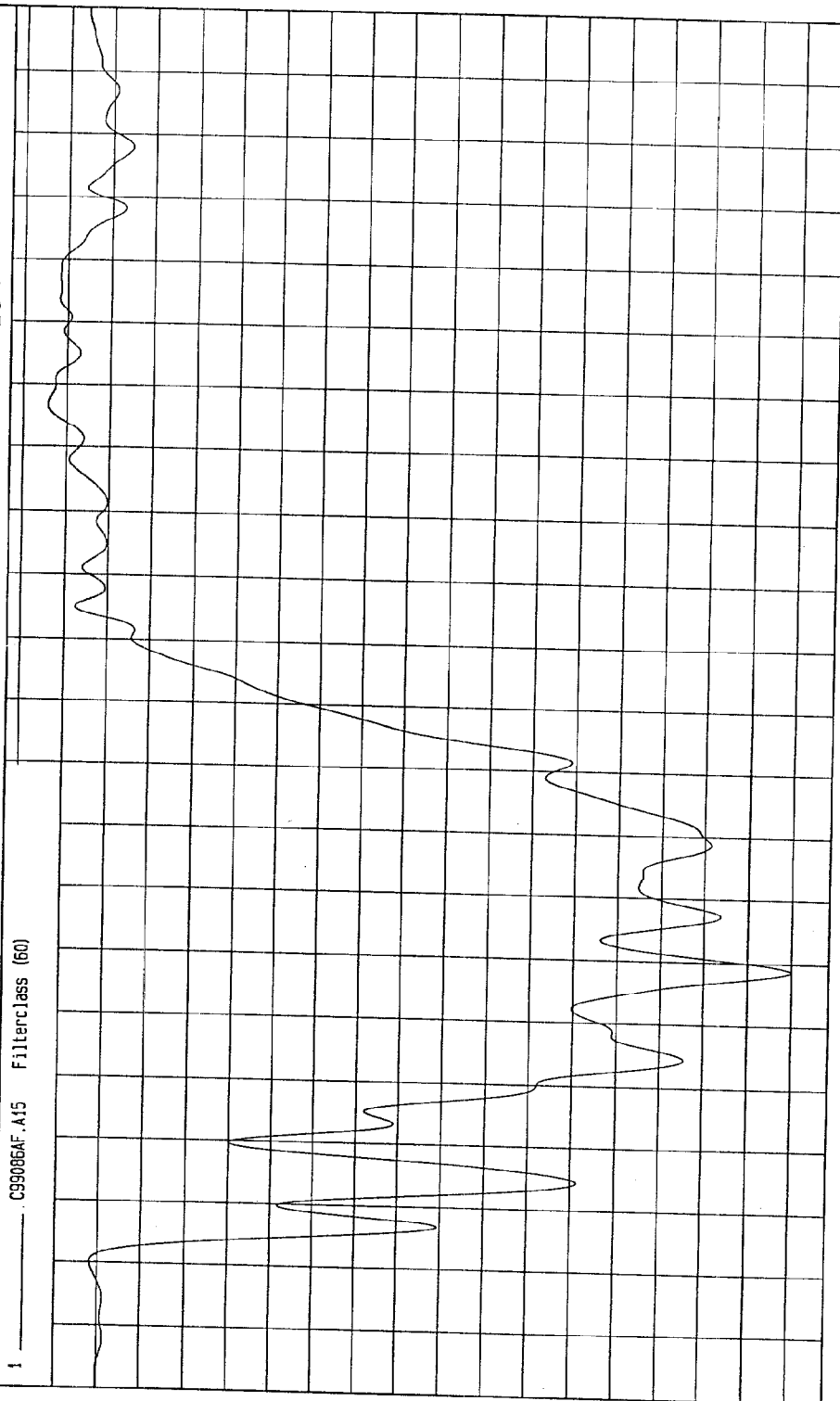
Minimum = -31.99 G'S at 49 msec

Maximum = 2.86 G'S at 137 msec

LEFT REAR SEAT CROSSMEMBER REDUNDANT X ACCELERATION

1 C99086AF.A15 FilterClass (60)

G.S



TIME (seconds)

MSA Research
01-06-2000 19:02

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

SPEED: 35.2 MPH 56.6 KPH

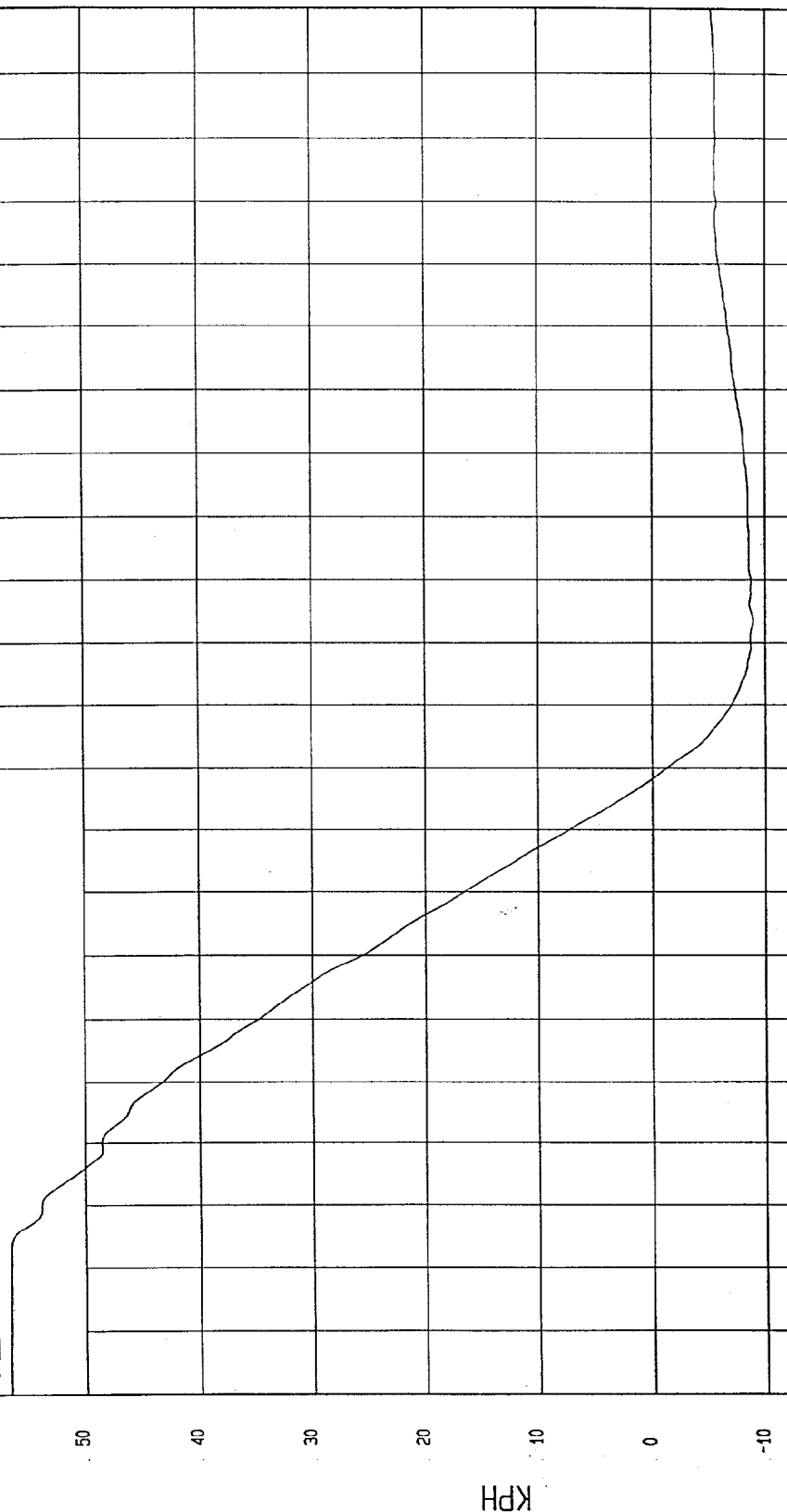
COMPONENT: 2000 FORD TAURUS

Minimum = -9 KPH at 104 msec

Maximum = 56.61 KPH at -16 msec

LEFT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY

1 C99086A1.V15 FilterClass (180)



MGA Research
01-06-2000 19:02

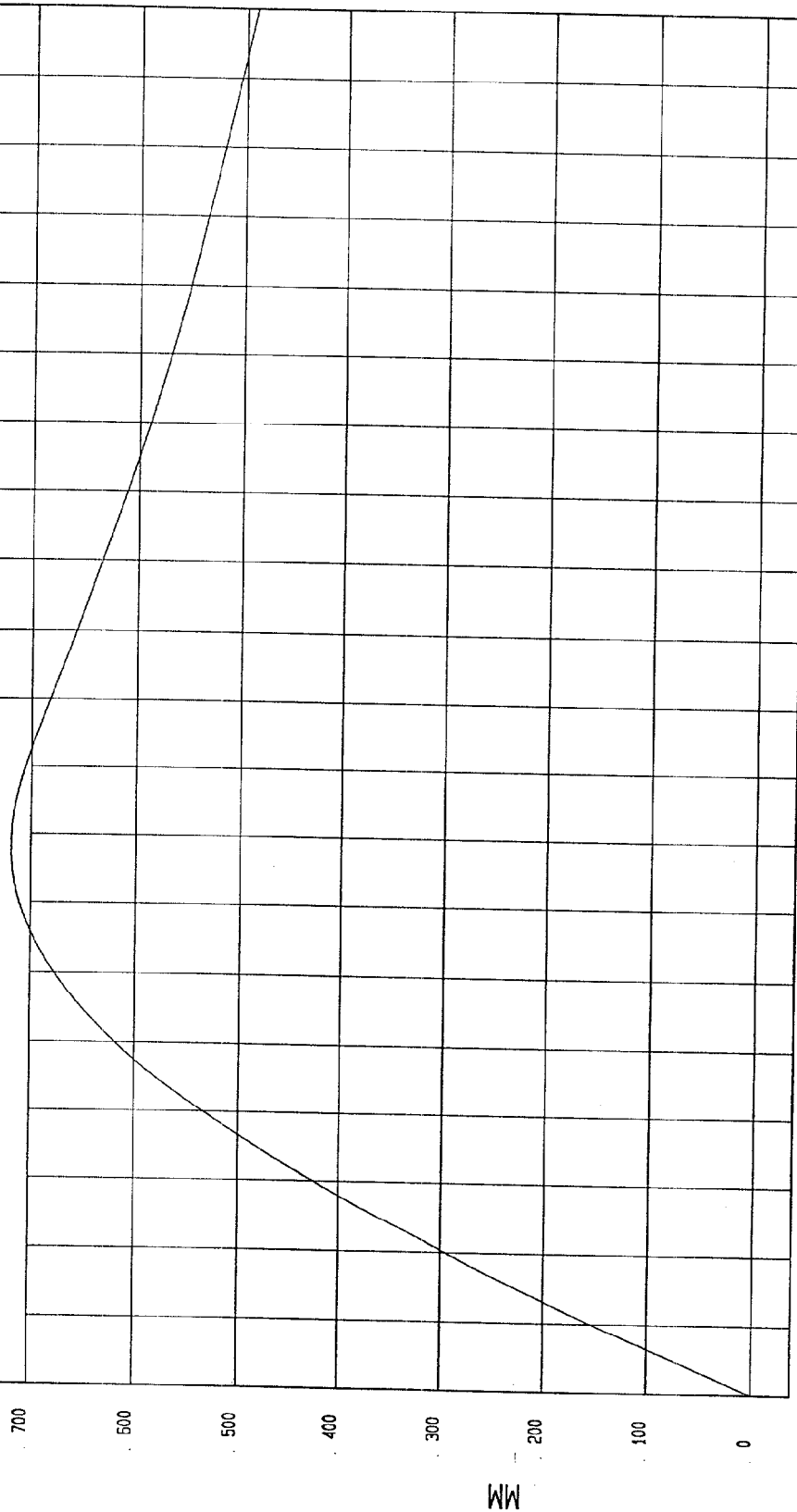
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = 0 MM at 0 msec Maximum = 718.44 MM at 78 msec

LEFT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT

1 C99086A1.D15 Filterclass (180)



MCA Research
01-06-2000 19:02

TIME Seconds

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

Speed: 35.2 MPH 56.6 KPH

COMPONENT: 2000 FORD TAURUS

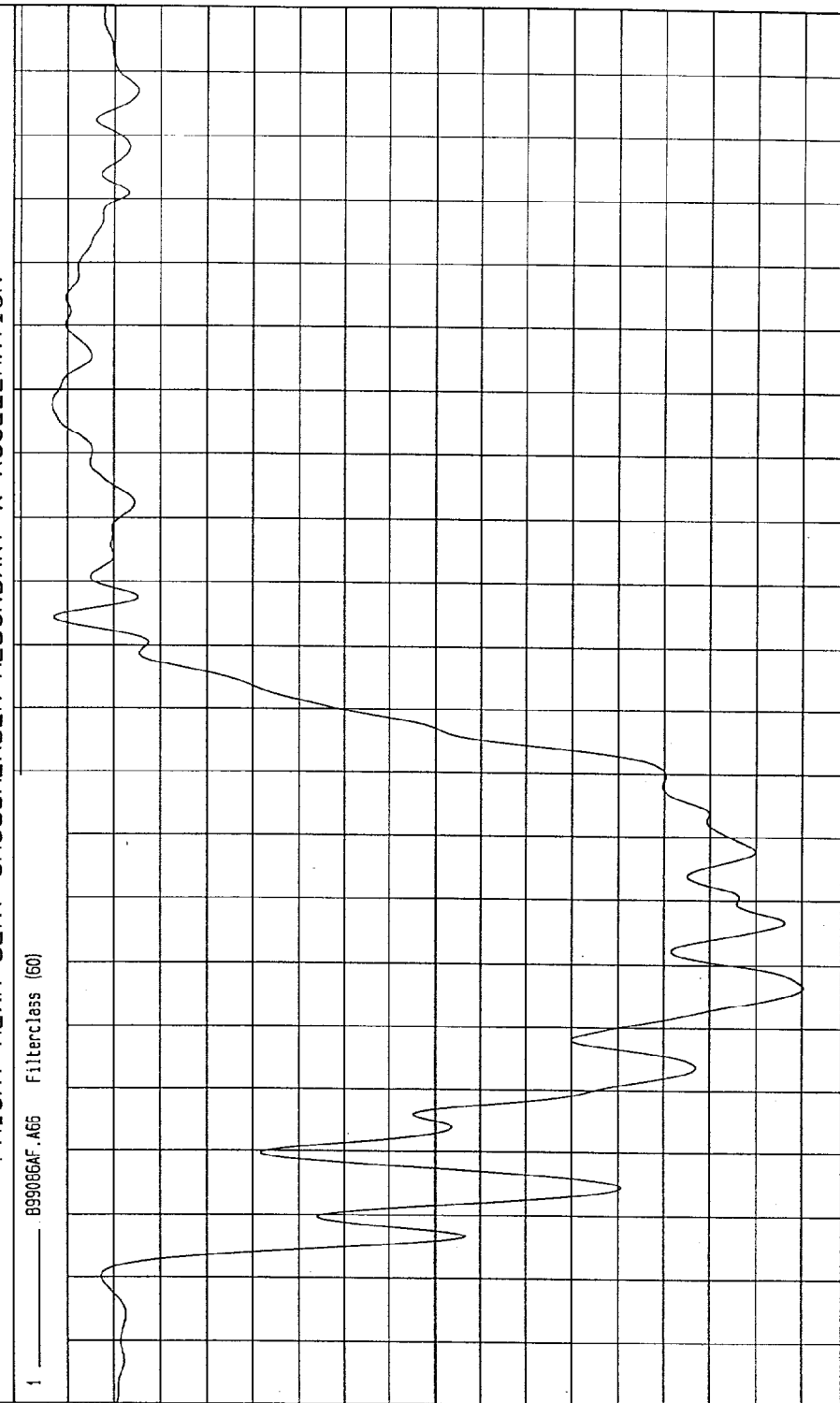
Minimum = -30.06 G'S at 46 msec

Maximum = 2.66 G'S at 138 msec

RIGHT REAR SEAT CROSSMEMBER REDUNDANT X ACCELERATION

1 B99066AF.A65 Filterclass (60)

G.S



MCA Research
01-06-2000 15:52

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

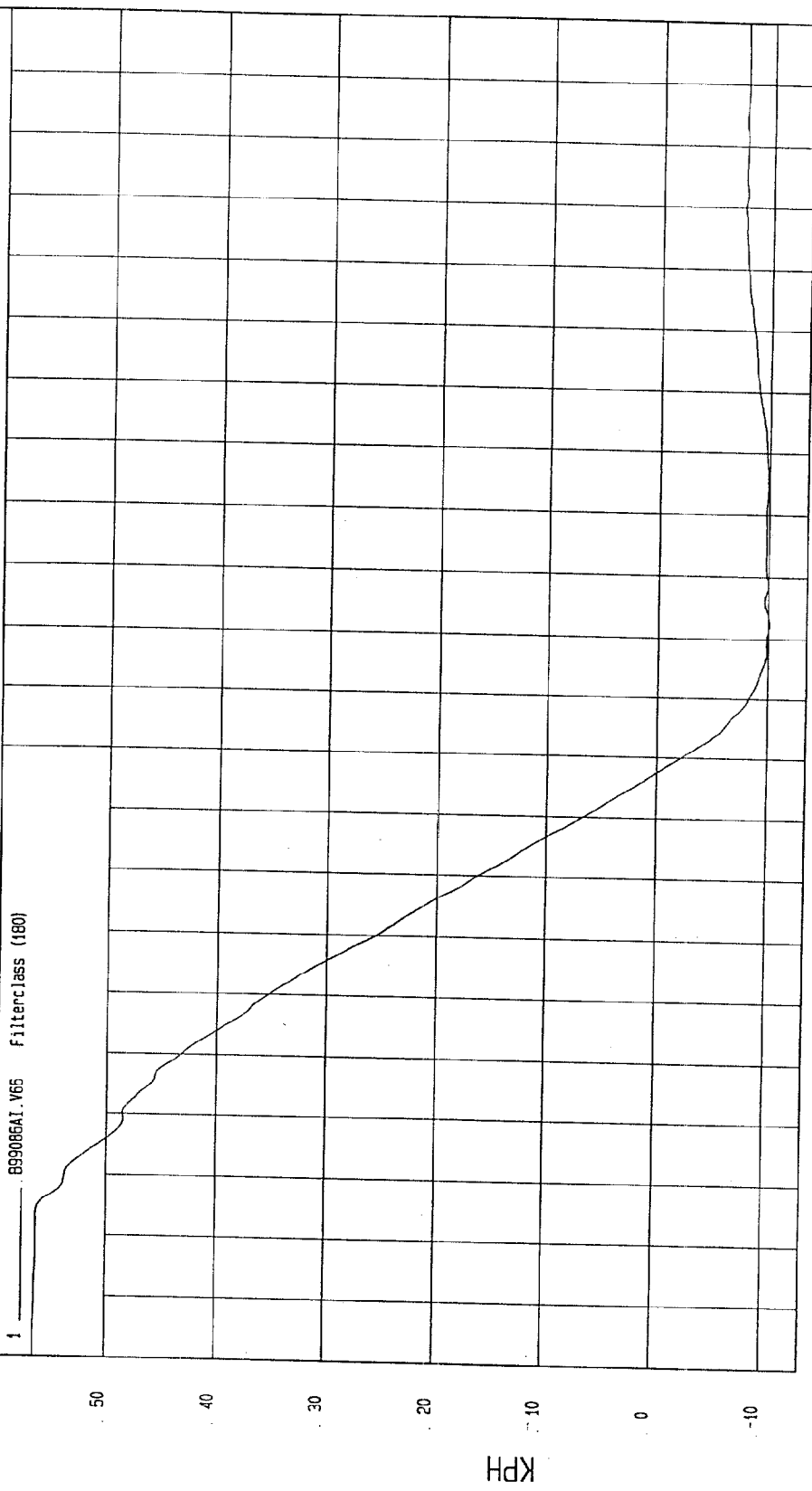
Speed: 35.2 MPH 56.6 KPH

Minimum = -10.14 KPH at 102 msec

Maximum = 56.6 KPH at -20 msec

RIGHT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY

1 899086A1.V65 Filterclass (180)



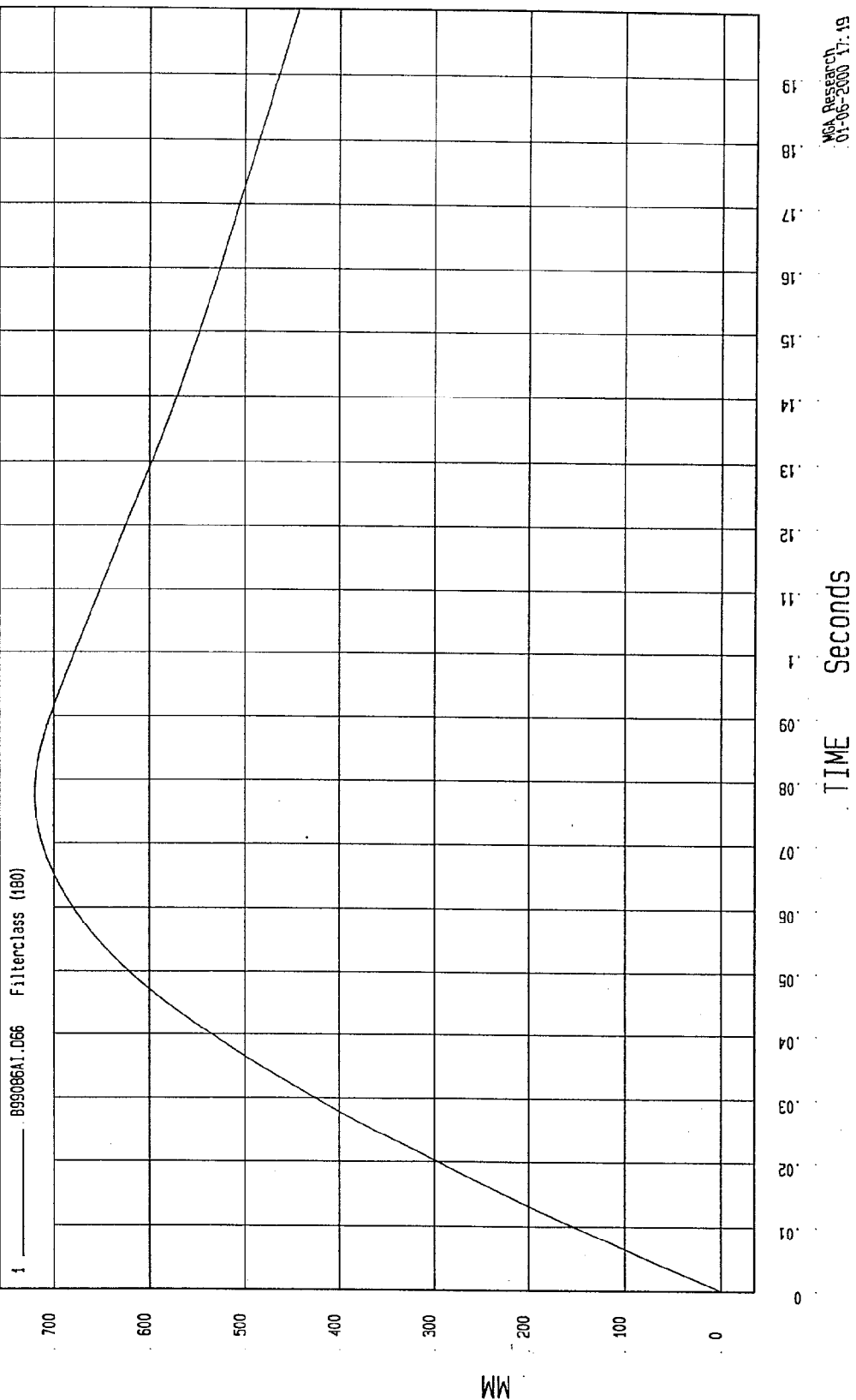
WCA Research
01-06-2000 15:53

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = 0 MM at 0 msec Maximum = 719.19 MM at 78 msec

RIGHT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT



MCA Research
01-06-2000 17:19

TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

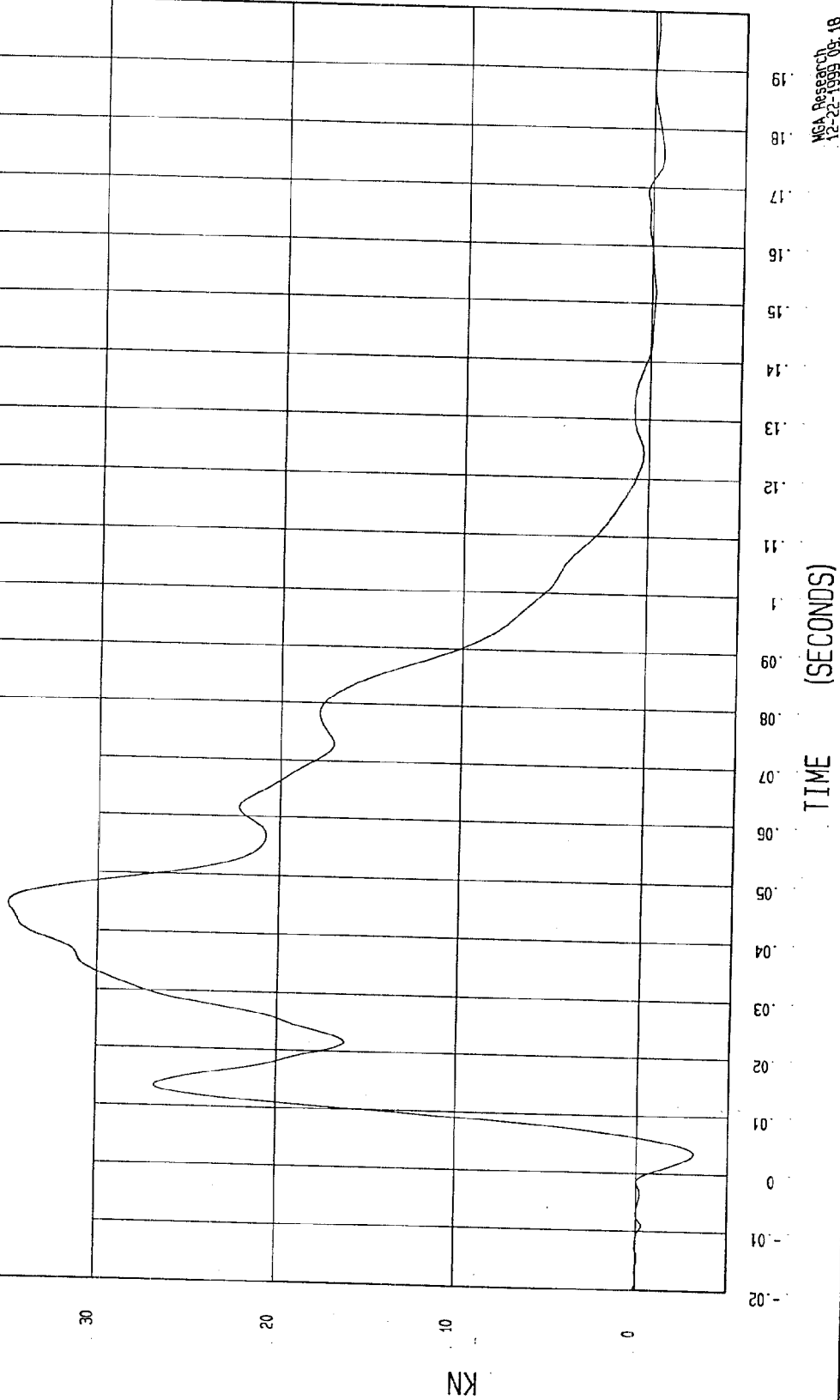
Speed: 35.2 MPH 56.6 KPH

Minimum = -3.09 KN at 4 msec

Maximum = 34.91 KN at 45 msec

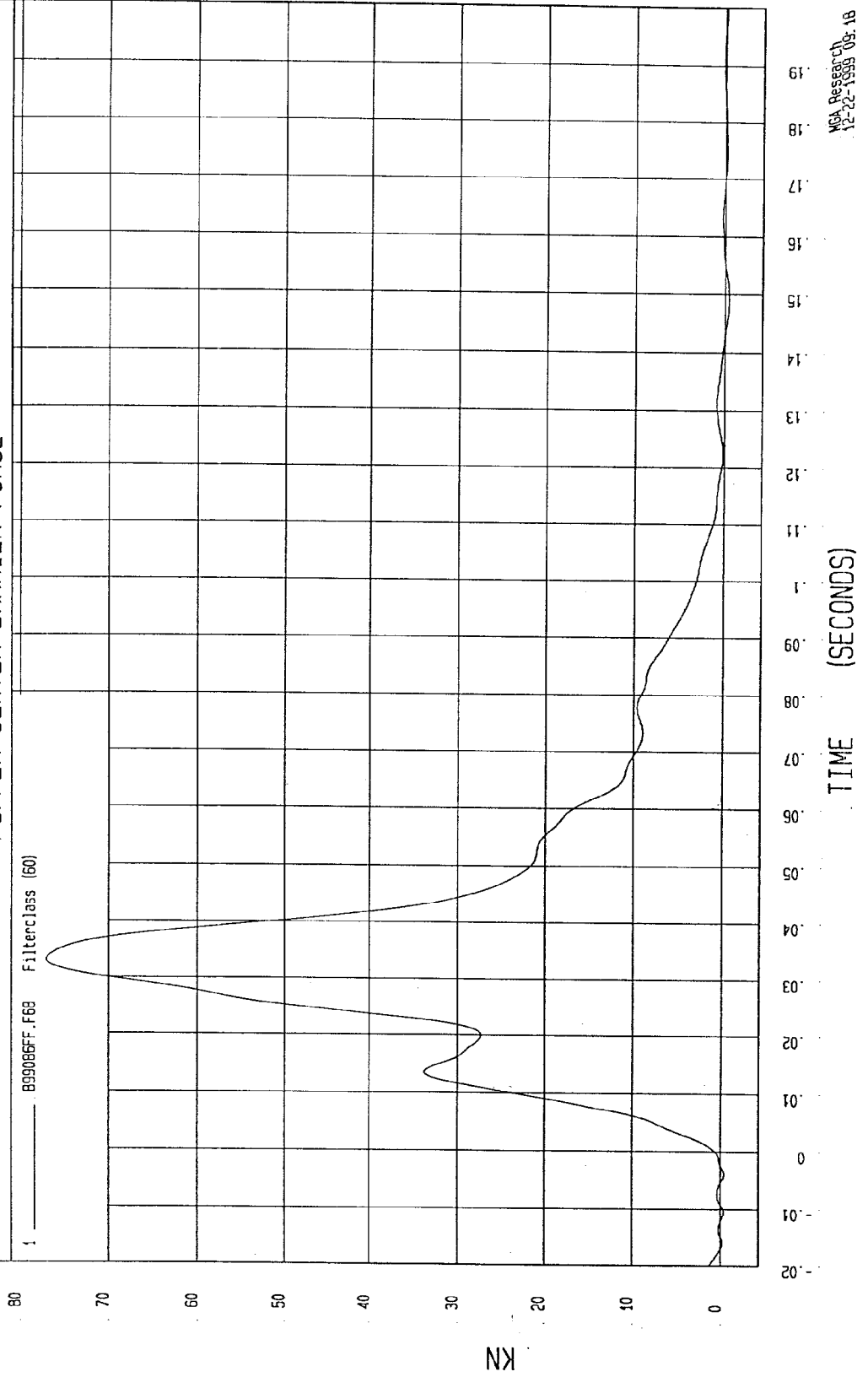
UPPER LEFT BARRIER FORCE

1 ——— B99085FF.F67 Filterclass (50)



TEST: 35 MPH FRONTAL IMPACT
TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS
Speed: 35.2 MPH 56.6 KPH
Minimum = -48 KN at 149 msec
Maximum = 77.12 KN at 33 msec

UPPER CENTER BARRIER FORCE



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

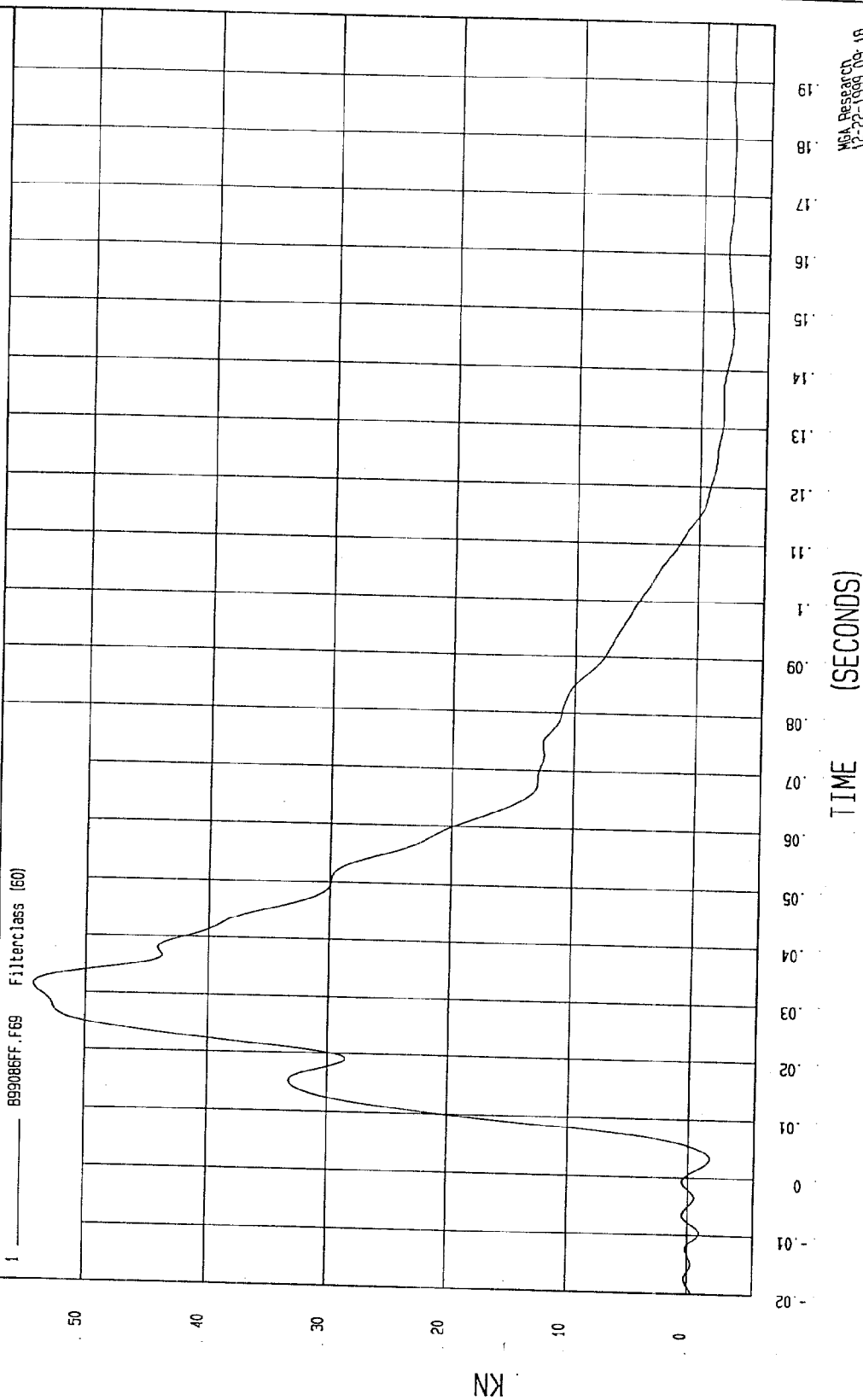
Speed: 35.2 MPH 56.6 KPH

Minimum = -2.62 KN at 146 msec

Maximum = 54.39 KN at 31 msec

UPPER RIGHT BARRIER FORCE

1 ——— B99086FF.F69 Filterclass (60)

MSA Research
12-22-1999 09:10

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

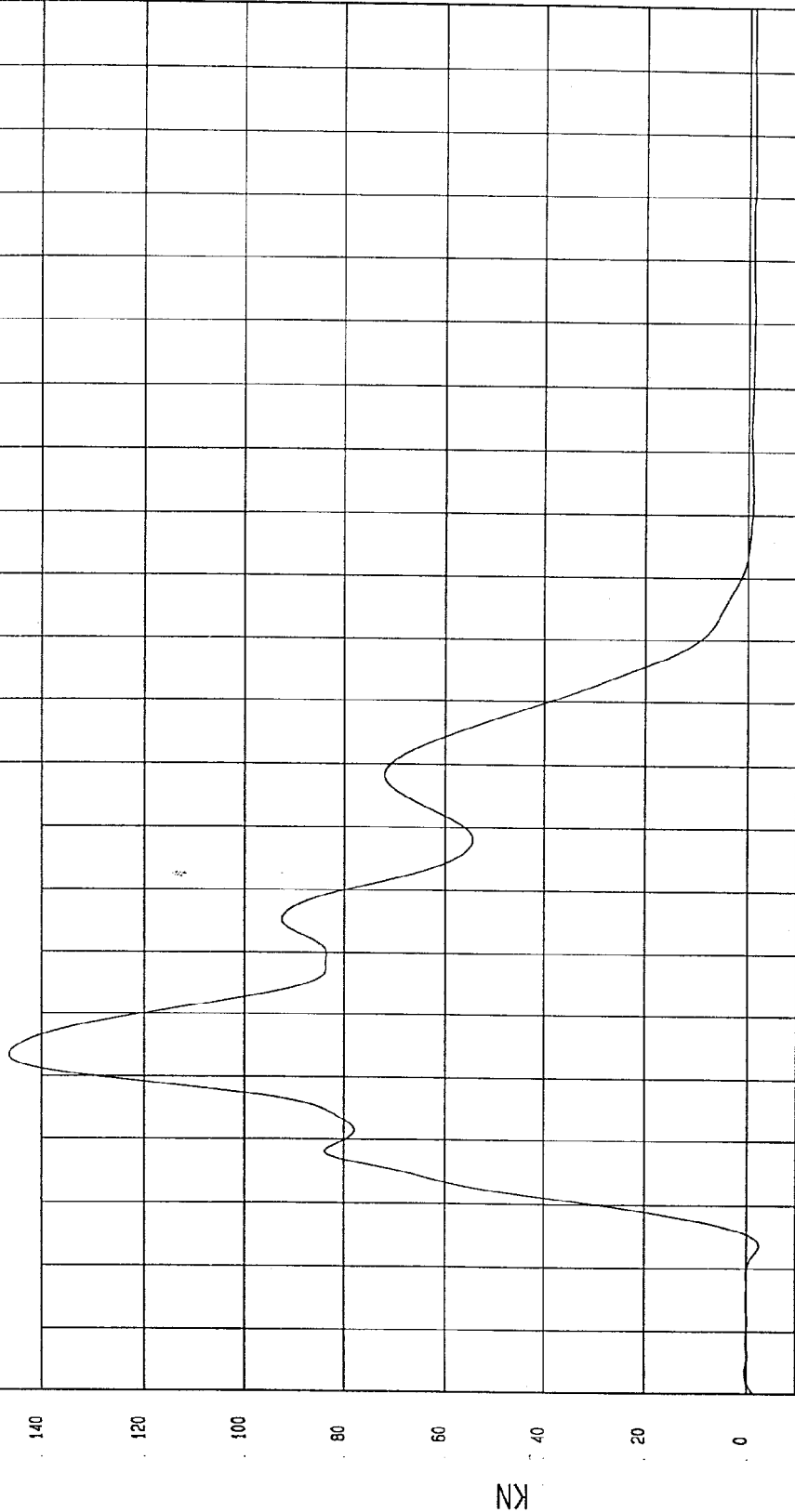
SPEED: 35.2 MPH 56.6 KPH

Maximum = 146.55 KN at 33 msec

Minimum = -2.42 KN at 4 msec

LOWER LEFT BARRIER FORCE

1 899086FF.F70 Filterclass (60)



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

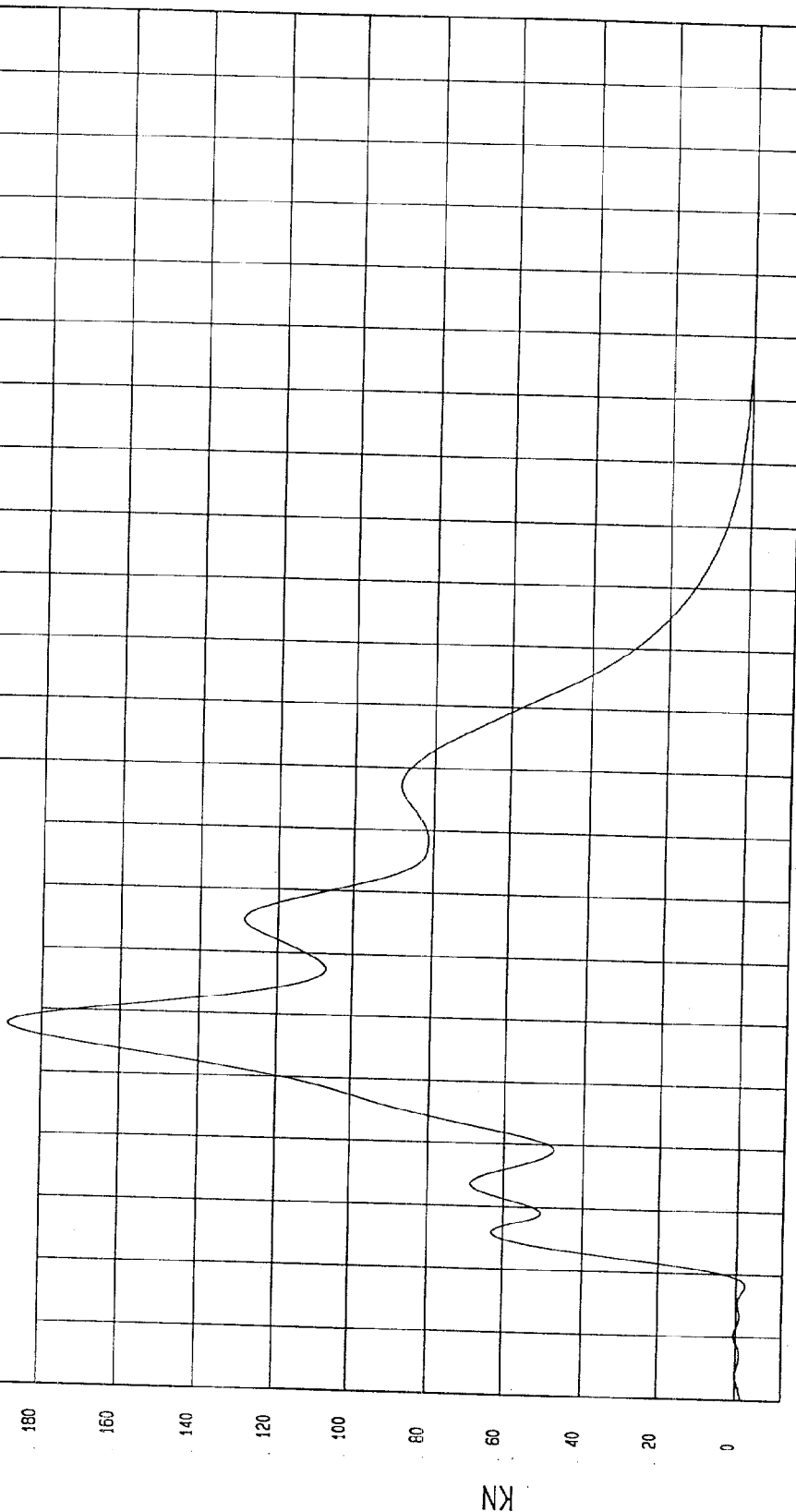
Speed: 35.2 MPH 56.6 KPH

Minimum = -2.23 KN at -2 msec

Maximum = 168.46 KN at 38 msec

LOWER CENTER BARRIER FORCE

1 ——— B9906FF.F71 Filterclass (60)

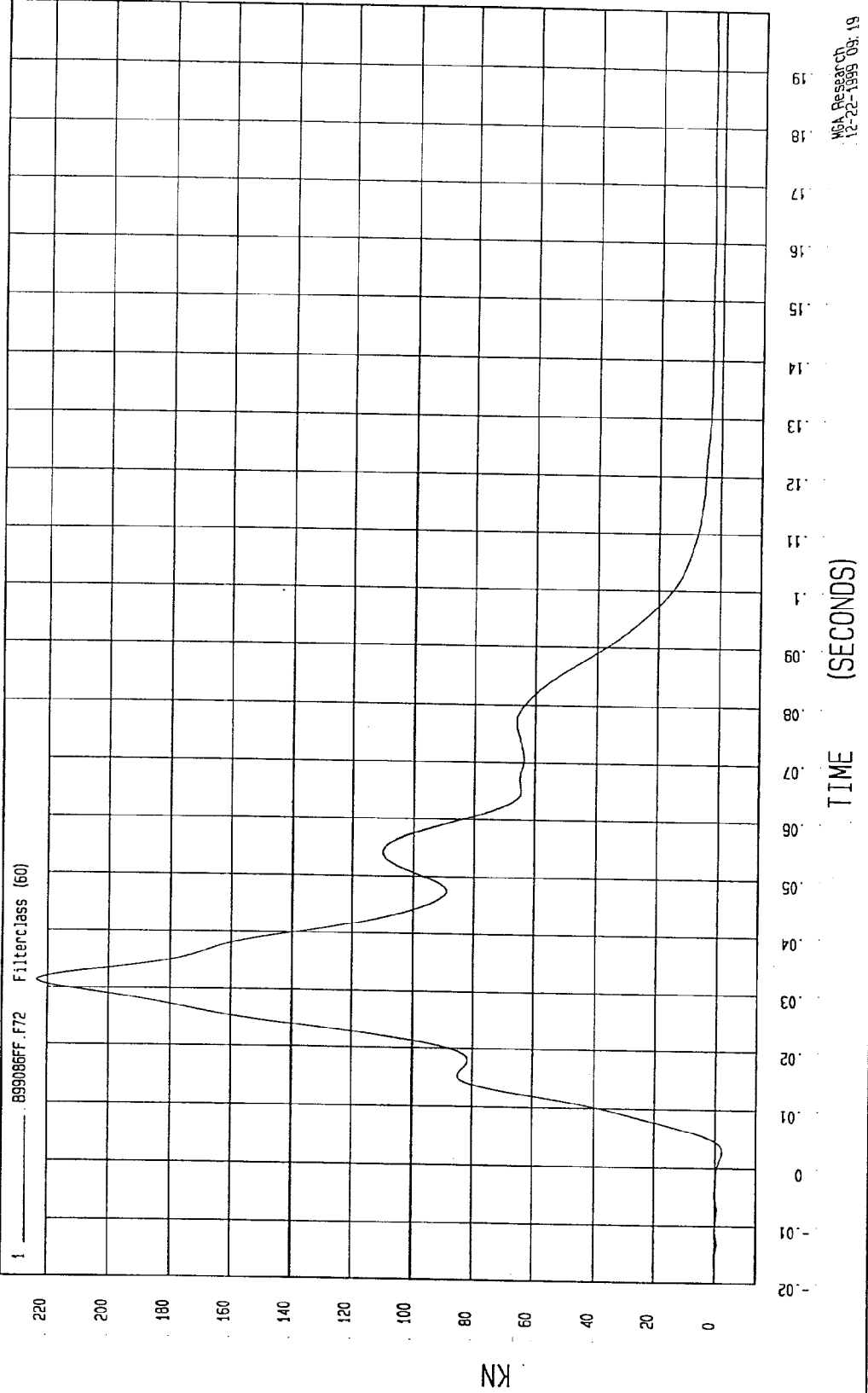


TIME (SECONDS)

MGA Research
12-22-1999 09:18

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999
COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH
Minimum = -2.37 KN at 3 msec Maximum = 223.36 KN at 31 msec

LOWER RIGHT BARRIER FORCE



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

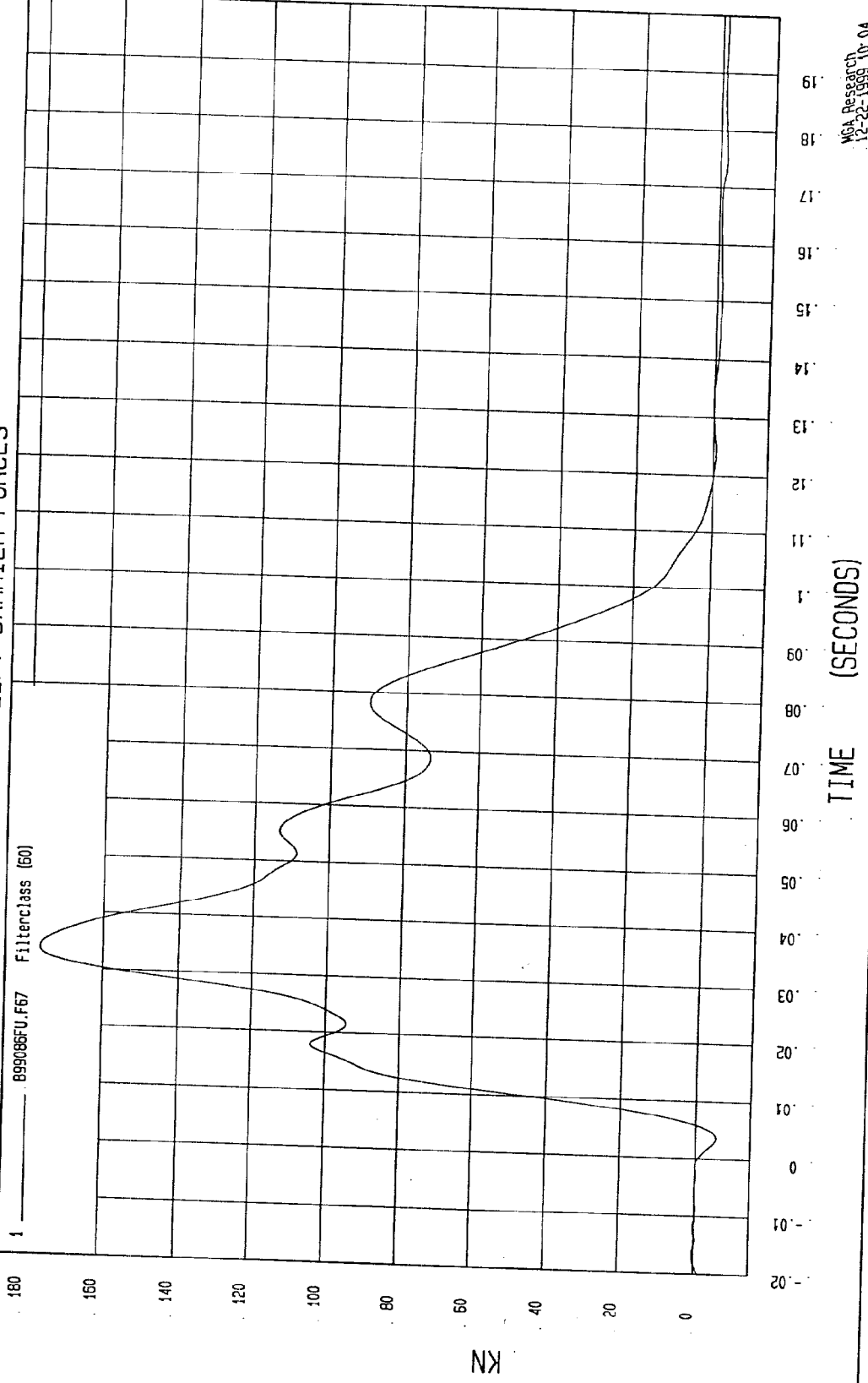
Speed: 35.2 MPH 56.6 KPH

Minimum = -5.5 KN at 4 msec

Maximum = 176.87 KN at 34 msec

SUM OF LEFT BARRIER FORCES

1 ——— 899086FU.F67 FilterClass (60)



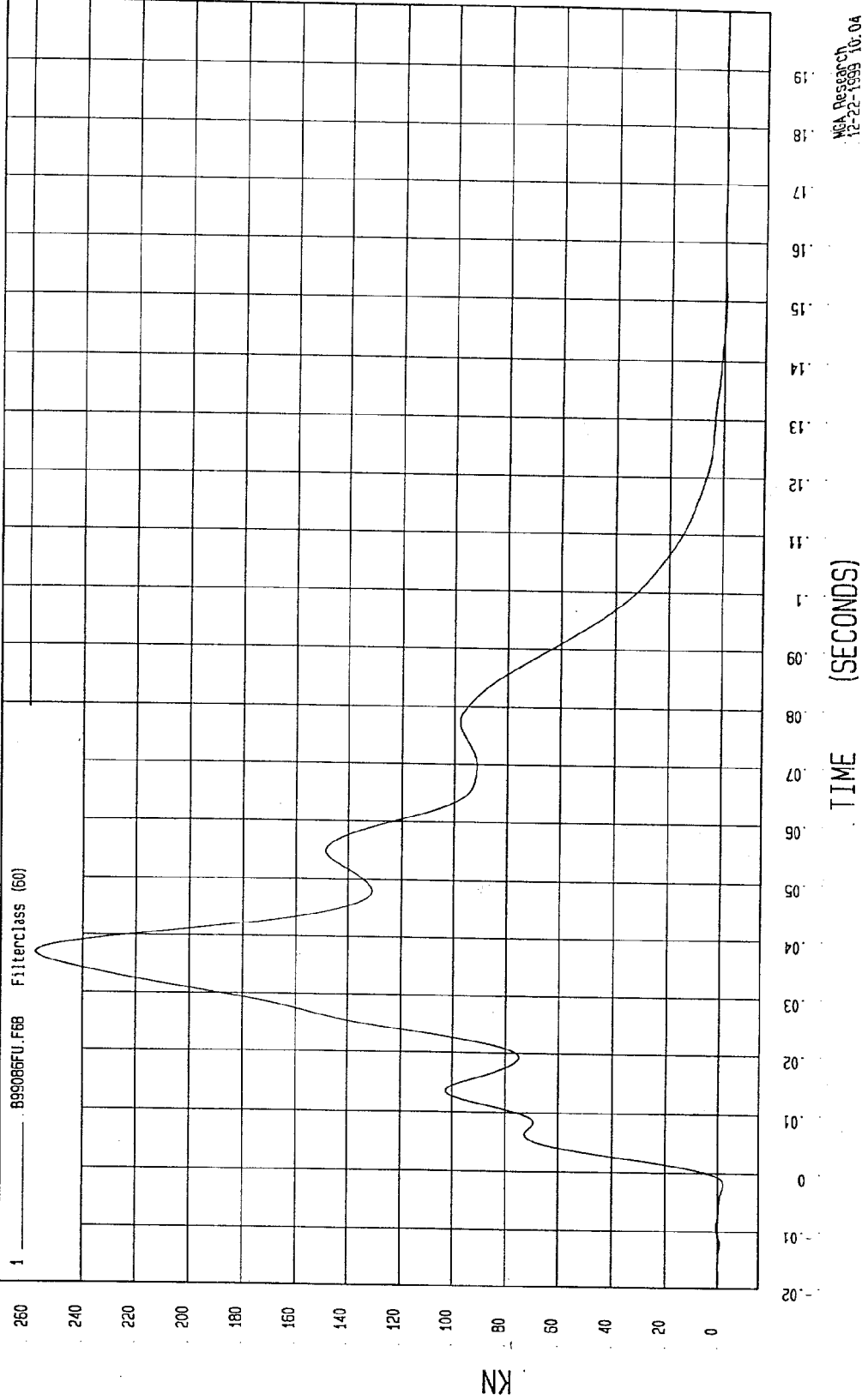
MSA Research
12-22-1999 10:04

TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -2.09 KN at -2 msec
Maximum = 257.46 KN at 37 msec

SUM OF CENTER BARRIER FORCES



TEST: 35 MPH FRONTAL IMPACT

TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS

Speed: 35.2 MPH 56.6 KPH

Minimum = -4.1 KN at 3 msec

Maximum = 277.75 KN at 31 msec

SUM OF RIGHT BARRIER FORCES

1 ——— .B95086FU.F69 Filterclass (60)

280

260

240

220

200

180

160

140

120

100

80

60

40

20

0

KN

-02

-01

0

01

02

03

04

05

06

07

08

09

1

11

12

13

14

15

16

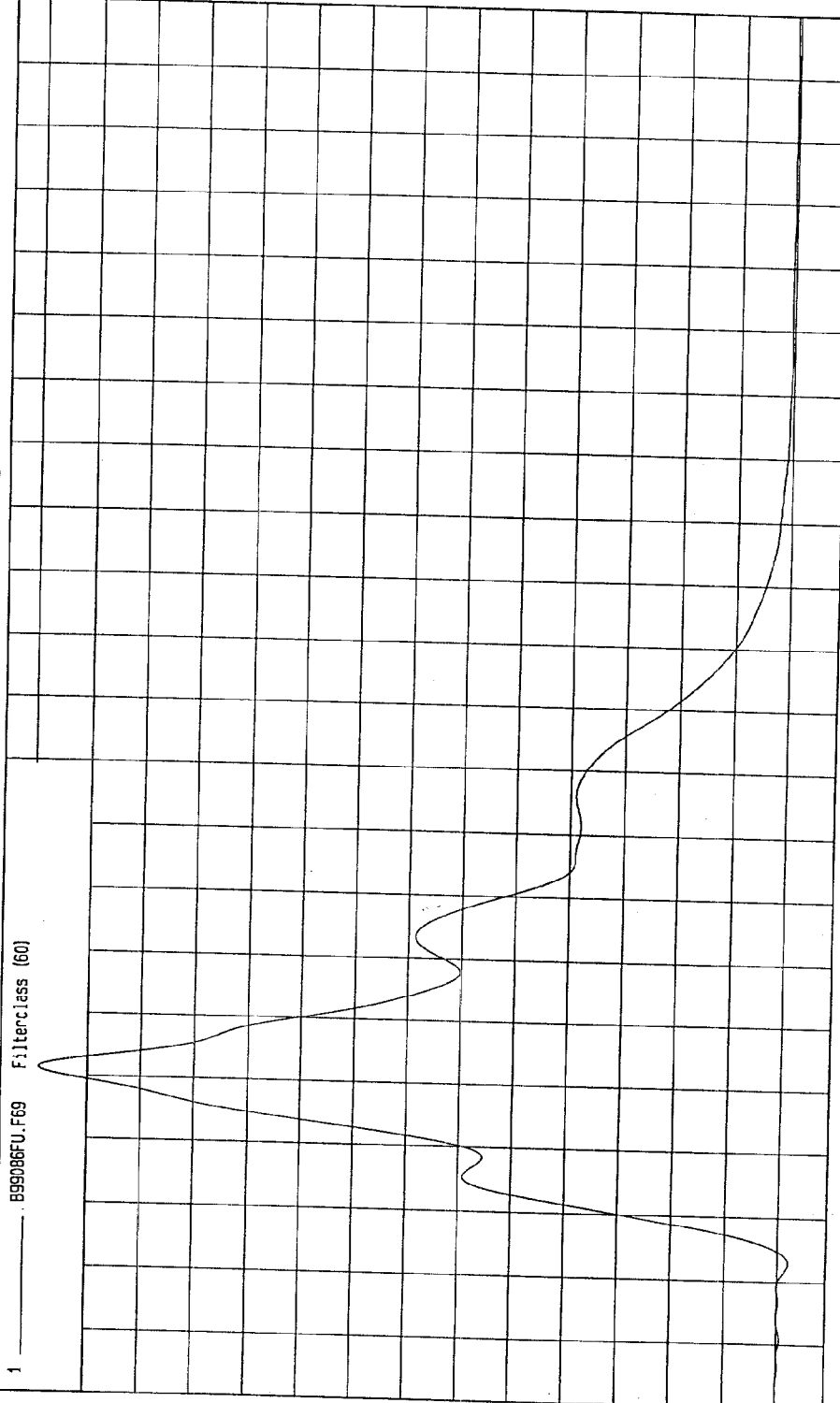
17

18

19

TIME (SECONDS)

M&A Research
12-22-1999 10:04



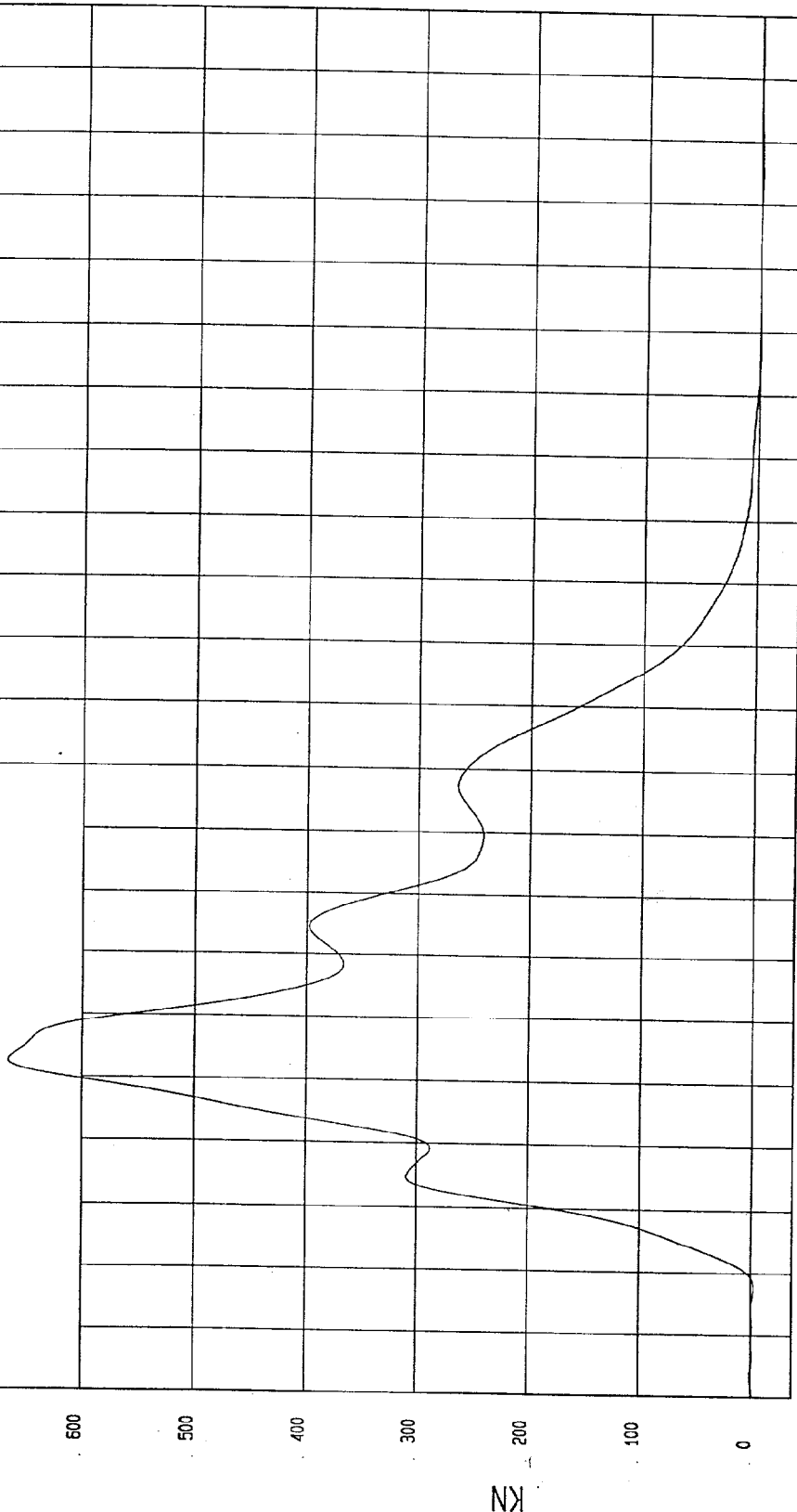
TEST: 35 MPH FRONTAL IMPACT TEST DATE: 12-21-1999

COMPONENT: 2000 FORD TAURUS Speed: 35.2 MPH 56.6 KPH

Minimum = -2.46 KN at -2 msec Maximum = 564.92 KN at 32 msec

SUM OF BARRIER FORCES

1 B99086FU F67 Filter: class (60)



MSA Research
12-22-1999 10:04

APPENDIX C
DUMMY CONFIGURATION & PERFORMANCE VERIFICATION DATA

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 066 DUMMY CALIBRATION BY: Tim Michnay

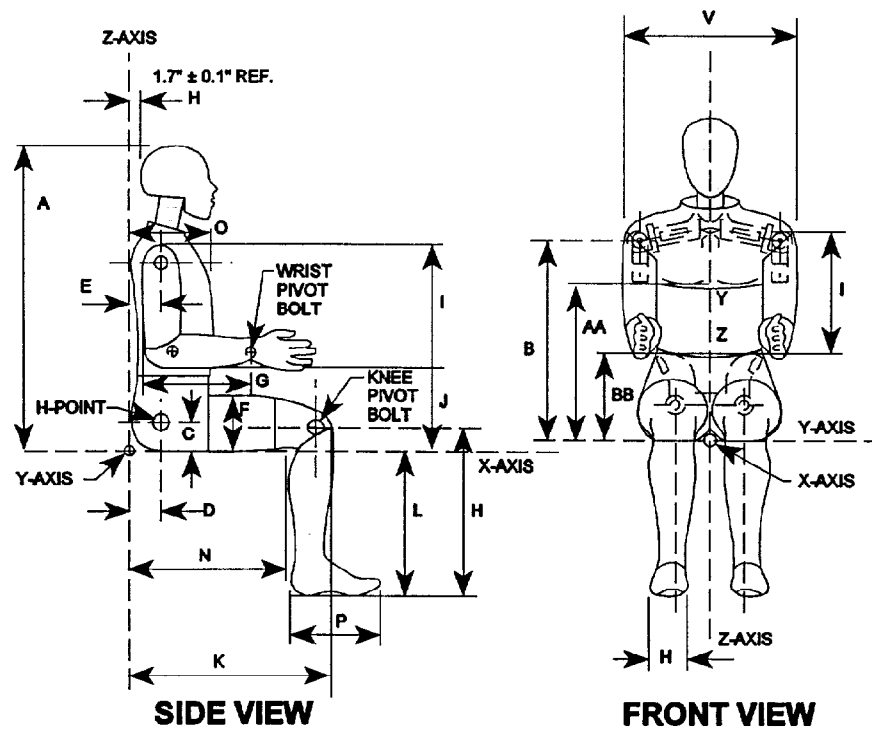
I. CONFIGURATION VERIFICATION DATA

DATE OF VERIFICATION: November 16, 1999

DESCRIPTION	SPECIFICATION (Inches)	ACTUAL MEASUREMENT (inches)
A - Total Sitting Height	34.6 - 35.0	34.8
B - Shoulder Pivot Height	19.9 - 20.5	20.3
C - "H" Point Height	3.3 - 3.5	3.4
D - "H" Point from Seat Back	5.3 - 5.5	5.4
E - Shoulder Pivot From Backline	3.3 - 3.7	3.6
F - Thigh Clearance	5.5 - 6.1	5.9
G - Back of Elbow to Wrist Pivot	11.4 - 12.0	11.8
H - Skull Cap Skin to Backline	1.6 - 1.8	1.7
I - Shoulder Elbow Length	13.0 - 13.6	13.4
J - Elbow Rest Height	7.5 - 8.3	7.8
K - Buttock Knee Length	22.8 - 23.8	23.3
L - Popliteal Height	16.9 - 17.9	17.2
M - Knee Pivot Height	19.1 - 19.9	19.5
N - Buttock Popliteal Length	17.8 - 18.8	18.4
O - Chest Depth at 3rd Rib	8.4 - 9.0	8.8
P - Foot Length	9.9 - 10.5	10.3
V - Shoulder Breadth	16.6 - 17.2	16.8
W - Foot Breadth	3.5 - 4.2	3.5
Y - Chest Circumference	38.2 - 39.4	38.9
Z - Waist Circumference	32.9 - 34.1	33.4

Note: (See next page for external dimensions)

HYBRID III EXTERNAL DIMENSIONS



Note: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude.

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET

DUMMY NO.: 066 DUMMY CALIBRATION BY: Tim MichnayVERIFICATION DATE: November 16, 1999VERIFICATION LABORATORY TEMPERATURE (66° - 78°): 70°

1.0 HEAD DROP TEST

	SPECIFICATION	MEASUREMENT
Peak Resultant Acceleration	225 - 275 G	259
Peak Lateral Acceleration	15 G. MAX	8
Is Acceleration Curve Unimodal	within 10% of peak	yes

2.0 NECK FLEXION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		22.6 - 23.4 FT/SEC	22.8
Pendulum Deceleration	10 MS	22.50 - 27.50 G	23.92
	20 MS	17.60 - 22.60 G	19.92
	30 MS	12.50 - 18.50 G	14.88
Max. Pendulum G Above 30 MS		29.0 G MAX	14.9
Deceleration - Time Curve Decay Time to 5 G		34 - 42 MS	37
D Plane Rotation	MAX	64 - 78 DEG.	69
	TIME	57 - 64 MS	58
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 MS	118
Moment About Occipital Condyle	MAX.	65 - 80 FT.LBS	71
	TIME	47 - 58 MS	51
Positive Moment - Time Curve Decay Time to Zero		97 - 107 MS	98

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

3.0 NECK EXTENSION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		19.50 - 20.30 F/S	20.10
Pendulum Deceleration	10 MS	17.20 - 21.20 G	18.65
	20 MS	14.00 - 19.00 G	16.58
	30 MS	11.00 - 16.00 G	12.44
Max. Pendulum G Above 30 MS		22 G Max	12
Deceleration - Time Curve Decay Time to 5 G		38 - 46 MS	42
D Plane Rotation	MAX	81 - 106 DEG.	95
	TIME	72 - 82 MS	75
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 MS	153
Moment About Occipital Condyle	MIN.	-59.0/-39.0 FT LBS	-41.2
	TIME	65 - 79 MS	70
Positive Moment - Time Curve Decay Time to Zero		120 - 148 MS	139

4.0 CHEST IMPACT TESTS

	SPECIFICATION	MEASUREMENT
Probe Speed	21.6 to 22.4 F/S	21.9
Peak Deflection	2.50 to 2.86 IN.	2.78
Peak Resistive Force	1160 to 1325 LBS.	1281
Internal Hysteresis	69 to 85%	74%

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

5.0 KNEE IMPACT TESTS

RIGHT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	7.0
Maximum Force	1060 - 1300 LBS.	1224

LEFT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	6.8
Maximum Force	1060 - 1300 LBS.	1136

6.0 HIP JOINT-FEMUR FLEXION TEST

LEFT KNEE	SPECIFICATION	MEASUREMENT	
		LEFT	RIGHT
Relative Humidity	10 - 70%	26%	
Rotation Rate	5-10 DEG/SEC.	yes	yes
30 DEGREE MAX. ROTATION	70 FT-LBF	48	51
150 FT-LBF	40-50 DEGREE MAX. ROTATION	44°	43°

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 065 DUMMY CALIBRATION BY: Tim Michnay

I. CONFIGURATION VERIFICATION DATA

DATE OF VERIFICATION: November 16, 1999

DESCRIPTION	SPECIFICATION (Inches)	ACTUAL MEASUREMENT (inches)
A - Total Sitting Height	34.6 - 35.0	34.7
B - Shoulder Pivot Height	19.9 - 20.5	20.2
C - "H" Point Height	3.3 - 3.5	3.4
D - "H" Point from Seat Back	5.3 - 5.5	5.5
E - Shoulder Pivot From Backline	3.3 - 3.7	3.5
F - Thigh Clearance	5.5 - 6.1	5.7
G - Back of Elbow to Wrist Pivot	11.4 - 12.0	11.9
H - Skull Cap Skin to Backline	1.6 - 1.8	1.7
I - Shoulder Elbow Length	13.0 - 13.6	13.4
J - Elbow Rest Height	7.5 - 8.3	7.7
K - Buttock Knee Length	22.8 - 23.8	23.1
L - Popliteal Height	16.9 - 17.9	17.3
M - Knee Pivot Height	19.1 - 19.9	19.5
N - Buttock Popliteal Length	17.8 - 18.8	18.5
O - Chest Depth at 3rd Rib	8.4 - 9.0	8.7
P - Foot Length	9.9 - 10.5	10.3
V - Shoulder Breadth	16.6 - 17.2	16.9
W - Foot Breadth	3.5 - 4.2	4.0
Y - Chest Circumference	38.2 - 39.4	39.2
Z - Waist Circumference	32.9 - 34.1	33.2

Note: (See page C-2 for external dimensions)

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

DUMMY NO.: 065 DUMMY CALIBRATION BY: Tim MichnayVERIFICATION DATE: November 15, 1999VERIFICATION LABORATORY TEMPERATURE (66° - 78°): 70°

1.0 HEAD DROP TEST

	SPECIFICATION	MEASUREMENT
Peak Resultant Acceleration	225 - 275 G	232
Peak Lateral Acceleration	15 G. MAX	10
Is Acceleration Curve Unimodal	within 10% of peak	yes

2.0 NECK FLEXION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		22.6 - 23.4 FT/SEC	23.0
Pendulum Deceleration	10 MS	22.50 - 27.50 G	23.46
	20 MS	17.60 - 22.60 G	19.49
	30 MS	12.50 - 18.50 G	14.73
Max. Pendulum G Above 30 MS		29.0 G MAX	14.7
Deceleration - Time Curve Decay Time to 5 G		34 - 42 MS	38
D Plane Rotation	MAX	64 - 78 DEG.	70
	TIME	57 - 64 MS	58
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 MS	114
Moment About Occipital Condyle	MAX.	65 - 80 FT.LBS	67
	TIME	47 - 58 MS	52
Positive Moment - Time Curve Decay Time to Zero		97 - 107 MS	101

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

3.0 NECK EXTENSION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		19.50 - 20.30 F/S	19.56
Pendulum Deceleration	10 MS	17.20 - 21.20 G	19.46
	20 MS	14.00 - 19.00 G	15.99
	30 MS	11.00 - 16.00 G	13.37
Max. Pendulum G Above 30 MS		22 G Max	14
Deceleration - Time Curve Decay Time to 5 G		38 - 46 MS	40
D Plane Rotation	MAX	81 - 106 DEG.	98
	TIME	72 - 82 MS	75
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 MS	154
Moment About Occipital Condyle	MIN.	-59.0/-39.0 FT LBS	-48.1
	TIME	65 - 79 MS	71
Positive Moment - Time Curve Decay Time to Zero		120 - 148 MS	144

4.0 CHEST IMPACT TESTS

	SPECIFICATION	MEASUREMENT
Probe Speed	21.6 to 22.4 F/S	21.9
Peak Deflection	2.50 to 2.86 IN.	2.80
Peak Resistive Force	1160 to 1325 LBS.	1272
Internal Hysteresis	69 to 85%	71%

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

5.0 KNEE IMPACT TESTS

RIGHT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	6.8
Maximum Force	1060 - 1300 LBS.	1214

LEFT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	7.0
Maximum Force	1060 - 1300 LBS.	1155

6.0 HIP JOINT-FEMUR FLEXION TEST

LEFT KNEE	SPECIFICATION	MEASUREMENT	
		LEFT	RIGHT
Relative Humidity	10 - 70%	26%	
Rotation Rate	5-10 DEG/SEC.	yes	yes
30 DEGREE ROTATION	70 FT-LBF	51	49
150 FT-LBF	40-50 degree maximum rotation	44°	44°

APPENDIX D
TEST EQUIPMENT & INSTRUMENTATION CALIBRATION

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION
INSTRUMENTS FOR DUMMY NO. 066

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	ACCY6	Endevco	November 12, 1999
Head Y	ACCH1	Endevco	November 12, 1999
Head Z	AAMW5	Endevco	November 12, 1999
Head X Redundant	AJ9D2	Endevco	November 12, 1999
Head Y Redundant	AH1E2	Endevco	November 12, 1999
Head Z Redundant	AJ7K3	Endevco	November 12, 1999
Chest X	ACC78	Endevco	November 12, 1999
Chest Y	ACCE6	Endevco	November 12, 1999
Chest Z	ACCY3	Endevco	November 12, 1999
Chest X Redundant	AJ9J7	Endevco	November 12, 1999
Chest Y Redundant	AJ7A2	Endevco	November 12, 1999
Chest Z Redundant	AJ819	Endevco	November 12, 1999
Right Femur Load Cell	261	Denton	November 11, 1999
Left Femur Load Cell	262	Denton	November 11, 1999
Pelvis X	J10866	Endevco	November 12, 1999
Pelvis Y	AP2D6	Endevco	November 12, 1999
Pelvis Z	J11548	Endevco	November 12, 1999

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 066

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Neck Load Cell X	443	Denton	August 27, 1999
Neck Load Cell Y	443	Denton	August 27, 1999
Neck Load Cell Z	443	Denton	August 27, 1999
Neck Moment X	443	Denton	August 27, 1999
Neck Moment Y	443	Denton	August 27, 1999
Neck Moment Z	443	Denton	August 27, 1999
Chest Deflection Gauge	066	Servo	November 16, 1999
Lap Belt Load Cell	199	Denton	November 26, 1999
Shoulder Belt Load Cell	196	Denton	November 26, 1999

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION
INSTRUMENTS FOR DUMMY NO. 066

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Right Upper Tibia Moment X	106	Denton	December 6, 1999
Upper Right Upper Tibia Moment Y	106	Denton	December 6, 1999
Upper Right Upper Tibia Force Z	106	Denton	December 6, 1999
Lower Right Lower Tibia Moment X	135	Denton	December 6, 1999
Lower Right Lower Tibia Moment Y	135	Denton	December 6, 1999
Lower Right Lower Tibia Force Z	135	Denton	December 6, 1999
Upper Left Upper Tibia Moment X	109	Denton	December 6, 1999
Upper Left Upper Tibia Moment Y	109	Denton	December 6, 1999
Upper Left Upper Tibia Force Z	109	Denton	December 6, 1999
Lower Left Lower Tibia Moment X	138	Denton	December 6, 1999
Lower Left Lower Tibia Moment Y	138	Denton	December 6, 1999
Lower Left Lower Tibia Force Z	138	Denton	December 6, 1999
Left Foot Ball Z Acceleration	AHWP2	Endevco	November 12, 1999
Left Heel X Acceleration	AHY98	Endevco	November 12, 1999
Left Heel Z Acceleration	AHTW6	Endevco	November 12, 1999
Right Foot Ball Z Acceleration	AMWC8	Endevco	November 12, 1999
Right Heel X Acceleration	AJ436	Endevco	November 12, 1999
Right Heel Z Acceleration	AGT81	Endevco	November 12, 1999

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION
INSTRUMENTS FOR DUMMY NO. 065

	PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	AAMN8	Endevco	November 12, 1999
Head Y	ACC61	Endevco	November 12, 1999
Head Z	ACCW9	Endevco	November 12, 1999
Head X Redundant	AJ621	Endevco	November 12, 1999
Head Y Redundant	AJ619	Endevco	November 12, 1999
Head Z Redundant	AHY54	Endevco	November 12, 1999
Chest X	ACCY1	Endevco	November 12, 1999
Chest Y	ACCC8	Endevco	November 12, 1999
Chest Z	ACCT7	Endevco	November 12, 1999
Chest X Redundant	AJ9D4	Endevco	November 12, 1999
Chest Y Redundant	AJ9F3	Endevco	November 12, 1999
Chest Z Redundant	AJ9D9	Endevco	November 12, 1999
Right Femur Load Cell	259	Denton	November 11, 1999
Left Femur Load Cell	260	Denton	November 11, 1999
Pelvis X	ANAM1	Endevco	November 12, 1999
Pelvis Y	AJ9Y3	Endevco	November 12, 1999
Pelvis Z	ANAN7	Endevco	November 12, 1999

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 065

	PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Neck Load Cell X	442	Denton	August 27, 1999
Neck Load Cell Y	442	Denton	August 27, 1999
Neck Load Cell Z	442	Denton	August 27, 1999
Neck Moment X	442	Denton	August 27, 1999
Neck Moment Y	442	Denton	August 27, 1999
Neck Moment Z	442	Denton	August 27, 1999
Chest Deflection Gauge	065	Servo	November 16, 1999
Lap Belt Load Cell	197	Denton	November 26, 1999
Shoulder Belt Load Cell	198	Denton	November 26, 1999

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION
INSTRUMENTS FOR DUMMY NO. 065

	PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Right Upper Tibia Moment X	103	Denton	December 6, 1999
Upper Right Upper Tibia Moment Y	103	Denton	December 6, 1999
Upper Right Upper Tibia Force Z	103	Denton	December 6, 1999
Lower Right Lower Tibia Moment X	133	Denton	December 6, 1999
Lower Right Lower Tibia Moment Y	133	Denton	December 6, 1999
Lower Right Lower Tibia Force Z	133	Denton	December 6, 1999
Upper Left Upper Tibia Moment X	105	Denton	December 6, 1999
Upper Left Upper Tibia Moment Y	105	Denton	December 6, 1999
Upper Left Upper Tibia Force Z	105	Denton	December 6, 1999
Lower Left Lower Tibia Moment X	134	Denton	December 6, 1999
Lower Left Lower Tibia Moment Y	134	Denton	December 6, 1999
Lower Left Lower Tibia Force Z	134	Denton	December 6, 1999
Left Foot Ball Z Acceleration	AJ820	Endevco	November 12, 1999
Left Heel X Acceleration	AJ8Y6	Endevco	November 12, 1999
Left Heel Z Acceleration	AGTG8	Endevco	November 12, 1999
Right Foot Ball Z Acceleration	AHTB2	Endevco	November 12, 1999
Right Heel X Acceleration	J18953	Endevco	November 12, 1999
Right Heel Z Acceleration	J18843	Endevco	November 12, 1999

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

VEHICLE ACCELEROMETERS			
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	G01-J18	Entran	November 22, 1999
Right Rear Seat Crossmember X	E13-D07	Entran	November 5, 1999
Top of Engine Block X	E10-F20	Entran	September 24, 1999
Bottom of Engine X	E23-R06	Entran	August 17, 1999
Left Brake Caliper X	K11-J11	Entran	November 22, 1999
Right Brake Caliper X	K19-A11	Entran	December 8, 1999
Instrument Panel X	K11-J12	Entran	November 22, 1999
Redundant Left Rear Seat Crossmember X	H02-J01	Entran	November 22, 1999
Redundant Right Rear Seat Crossmember X	A10-G07	Entran	November 22, 1999

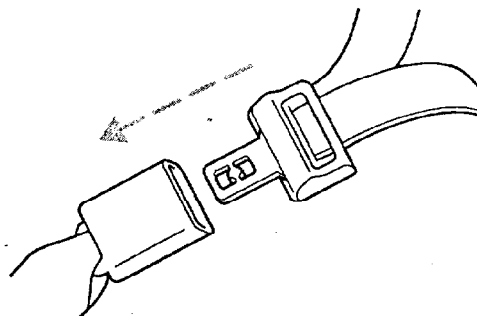
LABORATORY INSTRUMENTS		
	SERIAL NO.	CALIBRATION DATE
Neck Bending Pendulum Accelerometer	C12885	August 3, 1999
Neck Bending Head Rotary Potentiometer	019	November 11, 1999
Neck Bending Pendulum Rotary Potentiometer	018	November 11, 1999
Chest Probe Accelerometer	J13780	August 3, 1999
Knee Impact Accelerometer	AMHIP6	August 3, 1999

APPENDIX E
VEHICLE OWNER'S OCCUPANT RESTRAINT
SYSTEM INSTRUCTIONS

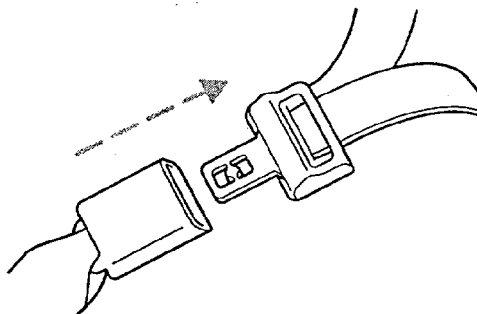
Seating and safety restraints

Combination lap and shoulder belts

1. Insert the belt tongue into the proper buckle (the buckle closest to the direction the tongue is coming from) until you hear a snap and feel it latch. Make sure the tongue is securely fastened in the buckle.



2. To unfasten, push the release button and remove the tongue from the buckle.



The front and rear outboard safety restraints in the vehicle are combination lap and shoulder belts. The front passenger and rear seat outboard safety belts have two types of locking modes described below:

Energy management retractors

Your vehicle has a seat belt system equipped with energy management retractors at the driver and front outboard passenger seating positions.

An energy management retractor is a device which pays out webbing in a controlled manner. This feature is designed to help further reduce the risk of force-related injuries to the occupant.

Seat belt systems equipped with an energy management retractor must be replaced if they were in use during a frontal collision which resulted in deployment of the frontal air bags. Refer to the *Safety belt maintenance* section in this chapter.



In the event of a collision resulting in the deployment of the front air bags, the front safety belts must be replaced if they were in use.



After any vehicle collision, the seat belt system at all outboard seating positions (except driver, which has no "automatic locking retractor" feature) must be checked by a qualified technician to verify that the "automatic locking retractor" feature for child seats is still functioning properly, in addition to other checks for proper seat belt system function.



BELT AND RETRACTOR ASSEMBLY MUST BE REPLACED if the seat belt assembly "automatic locking retractor" feature or any other seat belt function is not operating properly when checked according to the procedures in Workshop Manual.



Failure to replace the Belt and Retractor assembly could increase the risk of injury in collisions.

Vehicle sensitive mode

The vehicle sensitive mode is the normal retractor mode, allowing free shoulder belt length adjustment to your movements and locking in response to vehicle movement. For example, if the driver brakes suddenly or turns a corner sharply, or the vehicle receives an impact of approximately 8 km/h (5 mph) or more, the combination safety belts will lock to help reduce forward movement of the driver and passengers.

Automatic locking mode

In this mode, the shoulder belt is automatically pre-locked. The belt will still retract to remove any slack in the shoulder belt.

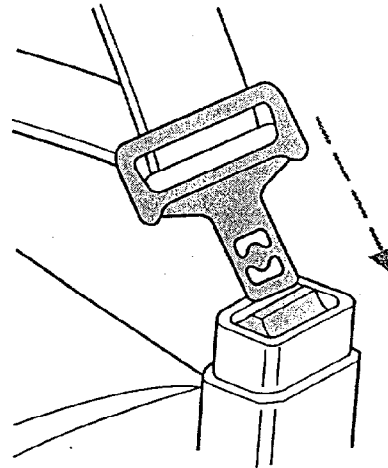
The automatic locking mode is not available on the driver safety belt.

When to use the automatic locking mode

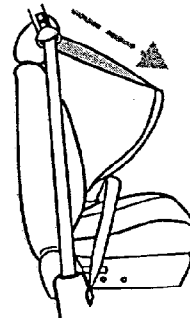
- **Anytime** a child safety seat is installed in the vehicle. Children 12 years old and under should be properly restrained in the rear seat whenever possible. Refer to *Safety Restraints for Children* or *Safety Seats for Children* later in this chapter.

How to use the automatic locking mode

- Buckle the combination lap and shoulder belt.



- Grasp the shoulder portion and pull downward until the entire belt is extracted.



- Allow the belt to retract. As the belt retracts, you will hear a clicking sound. This indicates the safety belt is now in the automatic locking mode.

How to disengage the automatic locking mode

Disconnect the combination lap/shoulder belt and allow it to retract completely to disengage the automatic locking mode and activate the vehicle sensitive (emergency) locking mode.

 After any vehicle collision, the seat belt system at all outboard seating positions (except driver, which has no "automatic locking retractor" feature) must be checked by a qualified technician to verify that the "automatic locking retractor" feature for child seats is still functioning properly, in addition to other checks for proper seat belt system function.

 **BELT AND RETRACTOR ASSEMBLY MUST BE REPLACED** if the seat belt assembly "automatic locking retractor" feature or any other seat belt function is not operating properly when checked according to the procedures in Workshop Manual.

 Failure to replace the Belt and Retractor assembly could increase the risk of injury in collisions.

Safety belt pretensioner

Your vehicle is equipped with safety belt pretensioners at the driver and front outboard passenger seating positions.

The safety belt pretensioners are designed to activate only when the safety belts are fastened during certain frontal or near-frontal collisions with sufficient longitudinal deceleration. A safety belt pretensioner is a device which tightens the webbing of the lap and shoulder belts in such a way that they fit more snugly against the body.

The driver and front outboard passenger safety belt system (including retractors, buckles and height adjusters) must be replaced if the vehicle is involved in a collision that results in the activation of the safety belt pretensioners. Refer to the *Safety belt maintenance* section in this chapter.

Safety belt usage sensors

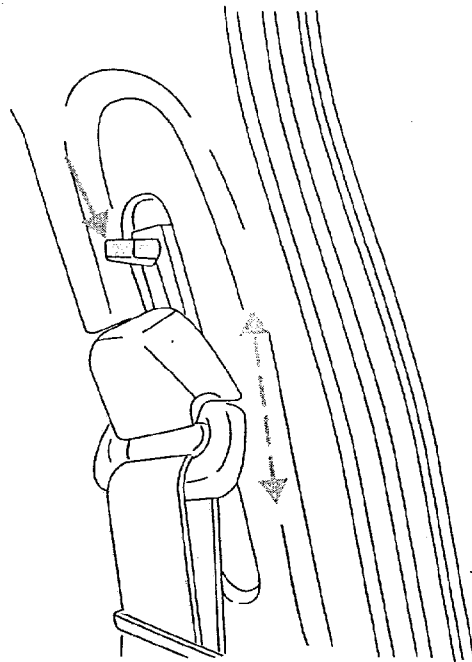
The driver and front outboard passenger safety belt buckles are equipped with sensors that detect if the safety belts are fastened. The sensors provide information to the Personal Safety System which can then adapt the air bag deployment or safety belt pretensioner activation based upon safety belt usage.

 The Personal Safety System provides the most benefit to belted occupants. The system monitors and tailors the air bag deployment based upon safety belt usage. Failure to properly wear your safety belt will increase your risk of injury.

Front safety belt height adjustment

Your vehicle has safety belt height adjustments for the driver and front passenger. Adjust the height of the shoulder belt so the belt rests across the middle of your shoulder.

To lower the shoulder belt height, pull the control down and slide the height adjuster down. To raise the height of the shoulder belt, slide the height adjuster up. Pull down on the height adjuster to make sure it is locked in place.



 Position the shoulder belt height adjuster so that the belt rests across the middle of your shoulder. Failure to adjust the safety belt properly could reduce the effectiveness of the safety belt and increase the risk of injury in a collision.

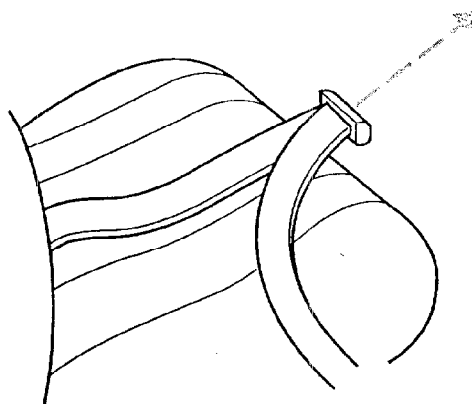
Lap belts

Adjusting the lap belt

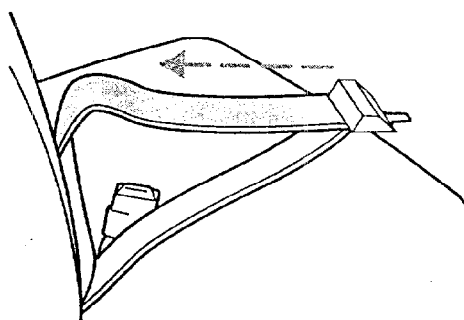
The lap belt does not adjust automatically.

 The lap belts should fit snugly and as low as possible around the hips, not around the waist.

Insert the tongue into the correct buckle (the buckle closest to the direction the tongue is coming from). To lengthen the belt, turn the tongue at a right angle to the belt and pull across your lap until it reaches the buckle. To tighten the belt, pull the loose end of the belt through the tongue until it fits snugly across the hips.



Shorten and fasten the belt when not in use.



Safety belts for rear-facing occupants (wagon only)



Never use child safety seats in the third seat of a wagon.

Your vehicle is equipped with safety belts containing an adjust tongue at the rear-facing seating positions.

When the adjust tongue of the lap/shoulder combination seat belt is latched into the buckle, the tongue will allow the lap portion to become shorter, but locks the webbing in place to restrict it from becoming longer.

Before you reach and latch a combination lap and shoulder belt having an adjust tongue into the buckle, you may have to lengthen the lap belt portion of it. To lengthen the lap belt, pull some webbing out of the shoulder belt retractor. While holding the webbing below the tongue,

grasp the tongue so that it is parallel to the webbing and slide the tongue upward. Provide enough length so that the tongue can reach the buckle.

To fasten the belt, pull the combination lap and shoulder belt from the retractor so that the shoulder belt portion of the safety belt crosses your shoulder and chest. Be sure the belt is not twisted. If the belt is twisted, remove the twist. Insert the tongue into the proper buckle for your seating position until you hear a snap and feel it latch. Make sure the tongue is securely fastened to the buckle by pulling on the tongue.



The lap belts should fit snugly and as low as possible around the hips, not around the waist.



Front and rear seat occupants, including pregnant women, should wear safety belts for optimum protection in an accident.



Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue that are designed to be used as a pair. 1) Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. 2) Never swing the safety belt around your neck over the inside shoulder. 3) Never use a single belt for more than one person.

Due to folding rear seats, sometimes the buckles and tongues toward the center of the vehicle may be hidden by the rear edge of the seat cushion. Pull them out so they will be accessible.

While you are fastened in the seat belt, the shoulder belt adjusts to your movement. However, if you brake hard, turn hard or your vehicle receives an impact of 8 km/h (5 mph) or more, the safety belt will become locked and help reduce your forward movement.

To unfasten the belt, push the red release button on the end of the buckle. This allows the tongue to unlatch from the buckle. While the belt retracts, guide the tongue to its original position to prevent it from striking you or the vehicle.

Safety belt extension assembly

If the safety belt assembly is too short, even when fully extended, 20 cm (8 inches) can be added to the safety belt assembly by adding a safety

belt extension assembly (part number 611C22). Safety belt extension assemblies can be obtained from your dealer at no cost.

Use only extensions manufactured by the same supplier as the safety belt. Manufacturer identification is located at the end of the webbing on the label. Also, use the safety belt extension only if the safety belt is too short for you when fully extended. Do not use extensions to change the fit of the shoulder belt across the torso.

Safety belt warning light and indicator chime

The seat belt warning light illuminates in the instrument cluster and a chime sounds to remind the occupants to fasten their safety belts.

Conditions of operation

If...	Then...
The driver's safety belt is not buckled before the ignition switch is turned to the ON position...	The safety belt warning light illuminates 1-2 minutes and the warning chime sounds 4-8 seconds.
The driver's safety belt is buckled while the indicator light is illuminated and the warning chime is sounding...	The safety belt warning light and warning chime turn off.
The driver's safety belt is buckled before the ignition switch is turned to the ON position...	The safety belt warning light and indicator chime remain off.

Belt Minder (if equipped)

The Belt Minder feature is a supplemental warning to the safety belt warning function. This feature provides additional reminders to the driver that the driver's safety belt is unbuckled by intermittently sounding a chime and illuminating the safety belt warning lamp in the instrument cluster.

If...	Then...
The driver's safety belt is not buckled before the vehicle has reached at least 5 km/h (3 mph) and 1-2 minutes have elapsed since the ignition switch has been turned to ON...	The Belt Minder feature is activated - the safety belt warning light illuminates and the warning chime sounds for 6 seconds every 30 seconds, repeating for approximately 5 minutes or until safety belt is buckled.
The driver's safety belt is buckled while the safety belt indicator light is illuminated and the safety belt warning chime is sounding...	The Belt Minder feature will not activate.
The driver's safety belt is buckled before the ignition switch is turned to the ON position...	The Belt Minder feature will not activate.

The purpose of the Belt Minder is to remind occasional wearers to wear safety belts all of the time.

The following are reasons most often given for not wearing safety belts: (All statistics based on U.S. data)

Reasons given...	Consider...
"Crashes are rare events"	36 700 crashes occur every day. The more we drive, the more we are exposed to "rare" events, even for good drivers. <i>1 in 4 of us will be seriously injured in a crash during our lifetime.</i>
"I'm not going far"	3 of 4 fatal crashes occur within 25 miles of home.

3. Buckle then unbuckle the safety belt three times, ending with the safety belt unbuckled. This can be done before or during Belt Minder warning activation.
4. Turn on the parklamps/headlamps, turn off the parklamps/headlamps.
5. Buckle then unbuckle the safety belt three times, ending with the safety belt unbuckled.
 - After step 5 the safety belt warning light will be turned on for three seconds.
6. Within seven seconds of the safety belt warning light turning off, buckle then unbuckle the safety belt.
 - This will disable Belt Minder if it is currently enabled, or enable Belt Minder if it is currently disabled.
7. Confirmation of disabling Belt Minder is provided by flashing the safety belt warning light four times per second for three seconds.
8. Confirmation of enabling Belt Minder is provided by flashing the safety belt warning light four times per second for three seconds, followed by three seconds with the safety belt warning light off, then followed by flashing the safety belt warning light four times per second for three seconds again.
9. After receiving confirmation, the deactivation/activation procedure is complete.

Safety belt maintenance

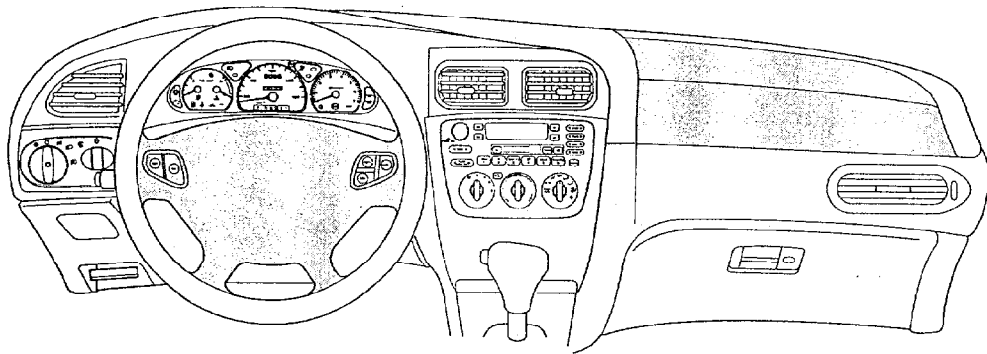
Inspect the safety belt systems periodically to make sure they work properly and are not damaged. Inspect the safety belts to make sure there are no nicks, wears or cuts, replacing if necessary. All safety belt assemblies, including retractors, buckles, front seat belt buckle assemblies, buckle support assemblies (slide bar-if equipped), shoulder belt height adjusters (if equipped), shoulder belt guide on seatback (if equipped), child safety seat tether bracket assemblies (if equipped), and attaching hardware, should be inspected after a collision. Ford recommends that all safety belt assemblies used in vehicles involved in a collision be replaced. However, if the collision was minor and a qualified technician finds that the belts do not show damage and continue to operate properly, they do not need to be replaced. Safety belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.



Failure to inspect and if necessary replace the safety belt assembly under the above conditions could result in severe personal injuries in the event of a collision.

Refer to *Cleaning and maintaining the safety belts* in the *Maintenance and care* section.

AIR BAG SUPPLEMENTAL RESTRAINT SYSTEM



Your vehicle is equipped with a crash sensing and diagnostic module which records information about the air bag and sensor systems. In the event of a collision this module may save information related to the collision including information about the air bag system and impact severity. This information will assist Ford in the servicing of your vehicle and may help Ford better understand real world collisions and further improve the safety of future vehicles.

The air bag supplemental restraint system is designed to work in conjunction with the safety belts to help protect the driver and front outboard passenger from certain upper body injuries. The term "supplemental restraint" means the air bags are intended as a supplement to the safety belts. Air bags alone cannot protect as well as air bags plus safety belts in impacts for which the air bags are designed to deploy, and air bags do not offer any protection in crashes for which they do not deploy.

HOW DO THE AIR BAG SUPPLEMENTAL RESTRAINTS WORK?

The air bag supplemental restraint system consists of:

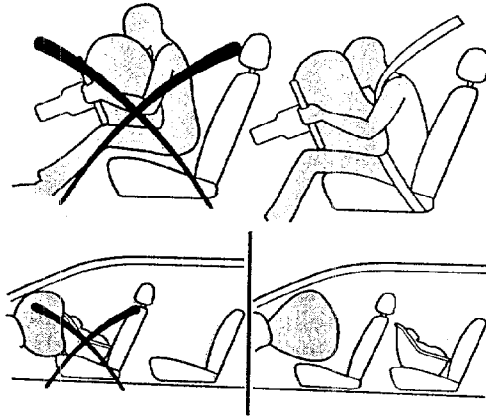
- driver and passenger dual stage air bag modules (which include the inflators and air bags).

- side air bags (if equipped). Refer to *Side air bag system* later in this chapter.
- one or more impact and safing sensors.
- the same indicator light, RCM (restraints control module) and diagnostic unit used for the Personal safety system.

The air bag supplemental restraints are an integral part of the Personal Safety System. They are designed to be deployed in cases where the Personal Safety System has determined the occupant conditions and crash severity are appropriate to activate these devices. Refer to the *Personal Safety System* section in this chapter.

Important supplemental restraint system precautions

Air bags DO NOT inflate slowly or gently and the risk of injury from a deploying air bag is greatest close to the trim covering the air bag module.



 All occupants of the vehicle, including the driver, should always properly wear their safety belts, even when an air bag supplemental restraint is provided.

 Always transport children 12 years old and under in the back seat and always properly use appropriate child restraints.

 National Highway Traffic Safety Administration (NHTSA) recommends a minimum distance of at least 25 cm (10 inches) between an occupant's chest and the driver air bag module.



Never place your arm over the air bag module as a deploying air bag can result in serious arm fractures or other injuries.

Steps you can take to properly position yourself away from the airbag:

- Move your seat to the rear as far as you can while still reaching the pedals comfortably.
- Recline the seat slightly (one or two degrees) from the upright position.



Do not put anything on or over the air bag module. Placing objects on or over the air bag inflation area may cause those objects to be propelled by the air bag into your face and torso causing serious injury.

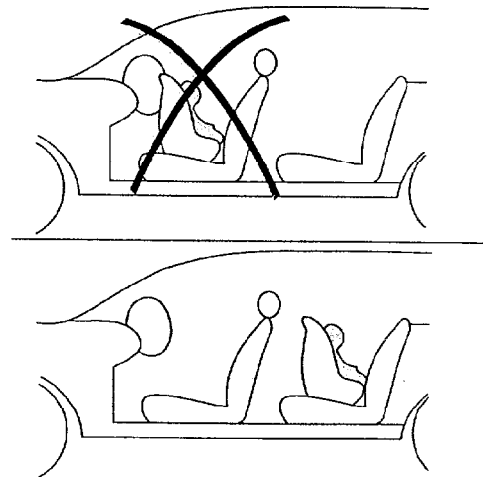


Do not attempt to service, repair, or modify the air bag supplemental restraint system or its fuses. See your Ford or Lincoln-Mercury dealer.

Children and air bags

For additional important safety information, read all information on safety restraints in this guide.

Children must always be properly restrained. Accident statistics suggest that children are safer when properly restrained in the rear seating positions than in the front seating position. Failure to follow these instructions may increase the risk of injury in a collision.



 Air bags can kill or injure a child in a child seat. **NEVER** place a rear-facing child seat in front of an active air bag. If you must use a forward-facing child seat in the front seat, move the seat all the way back.

Determining if the system is operational

The supplemental restraint system uses a warning indicator in the instrument cluster or a back-up tone to indicate the condition of the system. Refer to the *Restraints Warning Indicator* section in the *Instrumentation* chapter. Routine maintenance of the air bag is not required.

A difficulty with the system is indicated by one or more of the following:

- The readiness light (same light for front and side air bag system) will either flash or stay lit.
- The readiness light will not illuminate immediately after ignition is turned on.
- A series of five beeps will be heard. The tone pattern will repeat periodically until the problem and light are repaired.



If any of these things happen, even intermittently, have the supplemental restraint system serviced at your dealership or by a qualified technician immediately. Unless serviced, the system may not function properly in the event of a collision.

How do the air bag supplemental restraints work?

The air bags inflate and deflate rapidly upon activation. After air bag deployment, it is normal to notice a smoke-like, powdery residue or smell the burnt propellant. This may consist of cornstarch, talcum powder (to lubricate the bag) or sodium compounds (e.g., baking soda) that result from the combustion process that inflates the air bag. Small amounts of sodium hydroxide may be present which may irritate the skin and eyes, but none of the residue is toxic.



While the system is designed to help reduce serious injuries, contact with a deploying air bag may also cause abrasions, swelling or temporary hearing loss. Because air bags must inflate rapidly and with considerable force, there is the risk of death or serious injuries such as fractures, facial and eye injuries or internal injuries, particularly to occupants who are not properly restrained or are otherwise out of position at the time of air bag deployment. Thus, it is extremely important that occupants be properly restrained as far away from the air bag module as possible while maintaining vehicle control.



Several air bag system components get hot after inflation. Do not touch them after inflation.



If the air bag is inflated, **the air bag will not function again and must be replaced immediately.** If the air bag is not replaced, the unrepaired area will increase the risk of injury in a collision.

Side air bag system (if equipped)

Do not place objects or mount equipment on or near the air bag cover on the side of the seatbacks of the front seats or in front seat areas that may come into contact with a deploying air bag. Failure to follow these instructions may increase the risk of personal injury in the event of a collision.



Do not use accessory seat covers. The use of accessory seat covers may prevent the deployment of the side air bags and increase the risk of injury in an accident.



Do not lean your head on the door. The side air bag could injure you as it deploys from the side of the seatback.



Do not attempt to service, repair, or modify the air bag Supplemental Restraint System, its fuses or the seat cover on a seat containing an air bag. See your Ford or Lincoln Mercury dealer.

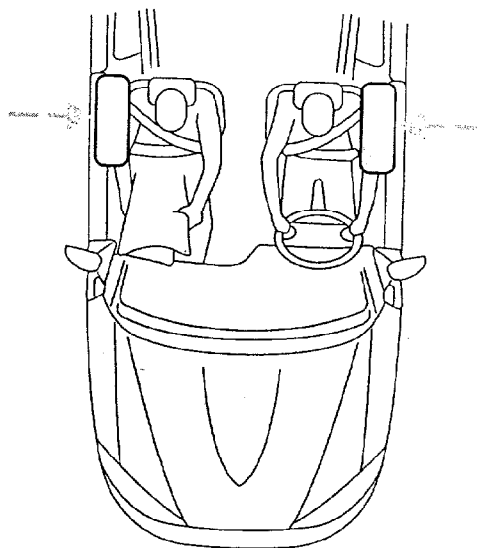


All occupants of the vehicle including the driver should always wear their safety belts even when an air bag SRS is provided.

How does the side air bag system work?

The side air bag system consists of the following:

- An inflatable nylon bag (air bag) with a gas generator concealed behind the outboard bolster of the driver and front passenger seatbacks.
- A special seat cover designed to allow airbag deployment.
- The same warning light, electronic control and diagnostic unit as used for the front air bags.
- Two crash sensors located under the outboard side of the front seats, attached to the floor.



Side air bags, in combination with seat belts, can help reduce the risk of severe injuries in the event of a significant side impact collision.

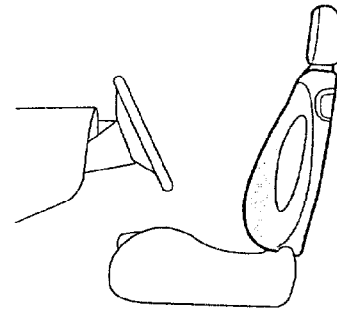
The side air bags are fitted on the outboard side of the seatbacks of the front seats. In certain lateral collisions, the air bag on the side affected by the collision will be inflated, even if the respective seat is not occupied. The air bag was designed to inflate between the door panel and occupant to further enhance the protection provided occupants in side impact collisions.

The air bag SRS is designed to activate when the vehicle sustains lateral deceleration sufficient to cause the sensors to close an electrical circuit that initiates air bag inflation.

The fact that the air bags did not inflate in a collision does not mean that something is wrong with the system. Rather, it means the forces were not of the type sufficient to cause activation. Side air bags are designed to inflate in side-impact collisions, not roll-over, rear-impact, frontal or near-frontal collisions, unless the collision causes sufficient lateral deceleration.

⚠ Several air bag system components get hot after inflation. Do not touch them after inflation.

⚠ If the side air bag has deployed, **the air bag will not function again. The side air bag system (including the seat) must be inspected and serviced by a qualified technician in accordance with the vehicle service manual.** If the air bag is not replaced, the unrepaired area will increase the risk of injury in a collision.



Disposal of air bags and air bag equipped vehicles

For disposal of air bags or air bag equipped vehicles, see your local dealership or qualified technician. Air bags **MUST BE** disposed of by qualified personnel.