

REPORT NO. MGA-96-N005
NEW CAR ASSESSMENT PROGRAM (NCAP)

FRONTAL BARRIER IMPACT TEST

NISSAN MOTOR CORPORATION
1995 NISSAN SENTRA GXE
NHTSA NO. MS5203

MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: June 29, 1995

Report Date: July 13, 1995

Final Report

Prepared For:

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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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16. Abstract A 56 kph (35 mph) frontal barrier impact using a 30 load cell barrier was conducted on a 1995 Nissan Sentra GXE at the MGA Proving Grounds and Crash Test Center in Burlington, WI. on June 29, 1995. The barrier impact velocity was 56.3 kph (35.0 mph), and the ambient temperature at the time of impact was 21 °C. The post-test maximum static crush was 540 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 FMVSS 208, "Occupant Crash Protection" injury criteria, the driver's HIC was 583 and the 3 msec. Clip (Chest g's) was 51 g's. The left and right femur loads for the driver were 2181 and 1245 Newtons, respectively. The passenger's HIC was 599 and the 3 msec Clip was 50 g's. The left and right femur maximum loads were 3304 and 3541 Newtons respectively.					
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OCT 25 1990

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OCT 25 1990

Date of Report Acceptance

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SECTION 1

PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is part of the Composite FY'95 Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-90-D-12121. 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.

SECTION 2

SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 30 load cells was impacted by a 1995 Nissan Sentra GXE at a velocity of 56.3 kph (35.0 mph). The test was performed at the MGA Proving Grounds and Crash Test Center on June 29, 1995. 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 fully instrumented with head and chest primary and redundant triaxial accelerometers, pelvis triaxial accelerometers, chest displacement transducer, neck load cell, and right/left femur load cells, and right/left lower leg sensors. Seat belt load cells were also on the driver's and passenger's shoulder and lap belts to measure dummy torso and pelvic section loading. Calibrated ATDs, driver (serial No. 065), and the right front passenger (Serial No. 066), were used for this test. Certification details, along with instrumentation calibration data, are found in Appendix C and D.

The 96 channels of data were recorded on 9 computers. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

The driver's head struck the inflated airbag. The driver HIC was 583. The maximum chest (CLIP) deceleration over 3 milliseconds was 51 g's. The maximum chest displacement was 36 mm. The left and right femur loads were 2181 and 1245 Newtons respectively.

The right front passenger's head struck the inflated airbag. The passenger HIC was 599 and maximum chest (CLIP) deceleration over 3 milliseconds was 50 g's. The maximum chest displacement was 41 mm. The left and right femur loads were 3304 and 3541 Newtons respectively.

NOTE

Driver chest redundant X acceleration was substituted for driver chest X acceleration to calculate the driver CLIP.

GENERAL TEST AND VEHICLE PARAMETER DATA

Vehicle Yr/Make/Model/Body Style: 1995/Nissan/Sentra/GXE/4 Door

NHTSA No.: MS5203 VIN.: 1N4AB41D2SC755309

Body color: Teal Date of Manufacture: 5/95

Engine: 4 Cylinders; C.I.D.; 1.6 Liters;

 Gas; Diesel; Turbocharged

 Longitudinal; X Transverse

Transmission: 4 Speed; Manual; X Automatic; Overdrive

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

Odometer Reading: 67 miles

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

 P/seats; X Tilt Wheel; X Cruise Control;

Type of Occupant Restraint: Type II with driver and passenger airbag

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 240 kPa (35 Psi) Rear 240 kPa (35 Psi)

Recommended Tire Size: P175/70R13

Recommended Cold Tire Pressure: Front 228 kPa (33 Psi) Rear 200 kPa (29 Psi)

Tires on Vehicle: P175/70R13 ; Manufacturer: Michelin

Number of Occupants: 2 Front; 3 Rear; 3rd Seat; 5 TOTAL

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

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

Vehicle Capacity Weight (VCW) = 369.2 kg. (A) lbs

No. of Occupants x 68.0 kg. = 340.2 kg. (B) lbs

Rated Cargo Weight (RCW) A-B = 29.0 kg. lbs

GVWR 1548.1 kg. GAWR: Front 849.1 kg.; Rear 710.8 kg.

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

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

Right Front = 349.3 kg Right Rear = 203.2 kg
Left Front = 350.2 kg Left Rear = 210.5 kg
TOTAL FRONT WEIGHT = 699.5 kg (62.8% of Total Vehicle Weight)
TOTAL REAR WEIGHT = 413.7 kg (37.2% of Total Vehicle Weight)
TOTAL UNLOADED DELIVERED WEIGHT (UDW) = 1113.2 kg

CALCULATION FOR TARGET TEST WEIGHT:

UDW = Unloaded Delivered Weight 1113.2 kg
VCW = Vehicle Capacity Weight 369.2 kg DSC = Designated Seating Capacity 5
RCW = VCW - 68 (DSC) = 29.2 *kg
Target Test Weight = UDW + RCW + (2 dummies x 75.8 kg/dummy)
Target Test Weight = 1294.0 kg

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND CARGO:

Right Front = 396.4 kg Right Rear = 251.3 kg
Left Front = 389.6 kg Left Rear = 255.8 kg
TOTAL FRONT WEIGHT = 786.0 kg (60.8% of Total Vehicle Weight)
TOTAL REAR WEIGHT = 507.1 kg (39.2% of Total Vehicle Weight)
TOTAL TEST WEIGHT = 1293.1 kg
Weight of ballast secured in vehicle trunk area = 0 kg
Vehicle components removed to meet target weight: Rear seat, rear inner door panels, rear door windows, rear seatbelts, spare tire, jack, lug wrench, all trunk interior, rear decklid, rear bumper, and both taillights.

VEHICLE ATTITUDE (all dimensions in mm):

Delivered Attitude: RF 659 LF 661 RR 653 LR 646
Test Attitude: RF 638 LF 646 RR 625 LR 620
Wheel Base: 2537 mm; C.G. = 995 mm rearward of front wheel C/L

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

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

POST-IMPACT DATA:

Type of Test: 35 mph Frontal Impact Impact Angle: 90°

Date of Test: June 29, 1995 Time of Test: 1:22 p.m.

Ambient Temperature: 21 °C (Spec. Range = 18.8 to 25.6°C)

Temperature in Occupant Compartment: 21° C

Windshield Molding Temperature: 21° C

Required Impact Velocity Range: 55.5 to 57.1 kph

Impact Velocity: primary = 56.3 kph; secondary = 56.3 kph

Distance From Front Bumper to Barrier Face When

Entering Speed Trap: 1200 mm

Exiting Speed Trap: 200 mm

VEHICLE REBOUND AND CRUSH (mm):

Vehicle Length: Pre-test = R 4024 C_L 4088 L 4023

Post-test = R 3474 C_L 3548 L 3479

Crush = R 550 C_L 540 L 544

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

R 668 mm C_L 640 mm L 718 mm

VISIBLE DUMMY CONTACT POINTS:

	<u>Driver</u>	<u>Passenger</u>
Head	<u>to airbag</u>	<u>to airbag</u>
Chest	<u>to airbag</u>	<u>to airbag</u>
Abdomen	<u>no contact</u>	<u>no contact</u>
Left Knee	<u>dashboard, tilt lever</u>	<u>to glovebox</u>
Right Knee	<u>dashboard, steering column</u>	<u>to glovebox</u>

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

	<u>Front</u>		<u>Rear</u>	
<u>Door Opening</u>	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
(without use of tools)	<u>opened</u>	<u>opened</u>	<u>opened</u>	<u>opened</u>

	<u>Front</u>	
<u>Seat Movement</u>	<u>Left</u>	<u>Right</u>
Seat Back Movement	<u>Ø</u>	<u>Ø</u>
Seat Shift (mm)	<u>Ø</u>	<u>Ø</u>

Glazing Damage

Backlight/Windshield Windshield cracked

Other Notable Impact Effects: Both airbags deployed

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

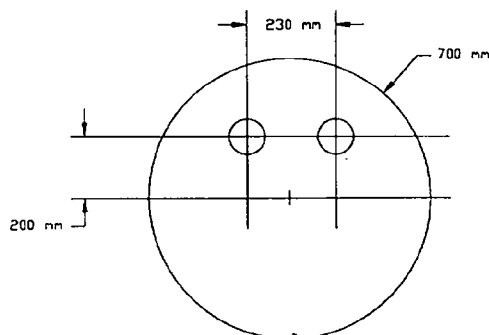
POST TEST AIRBAG DATA

Vehicle Year/Make/Model/Body Style: 1995/Nissan/Sentra GXE

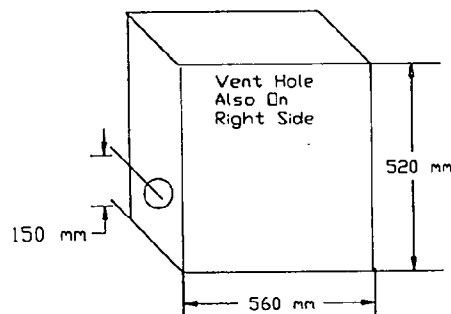
NHTSA No.: MS5203; Test Date: 6-29-95;

- A. Number of Vent Holes: Driver 2; Passenger 2
- B. Size of Vent Holes: Driver 60 mm dia; Passenger 75 mm dia
- C. Total Vent Area; Driver 5655 mm²; Passenger 8836 mm²
- D. Deflated Airbag Length and Width Dimensions or, if Round, Diameter
- Driver; Length , Width , Diameter 700 mm
- Passenger; Length 560 mm, Width 520 mm, Diameter mm
- E. Is the Airbag Tethered?
- Driver; X Yes; No; If yes, record length of tether 250 mm
- Passenger; Yes; X No; If yes, record length of tether mm

Driver Airbag



Passenger Airbag



F. Part Numbers and Manufacture Name of Airbag and Gas Generator

Driver; Mfr N/A; Airbag N/A; Gen KM1M5954275190

Passenger; Mfr N/A; Airbag N/A; Gen KP1M2954275205

SECTION 3

SUMMARY OF RESULTS FOR-----

FMVSS 212, "Windshield Mounting"

FMVSS 219 (Partial), "Windshield Zone Intrusion"

FMVSS 301-75, "Fuel System Integrity"

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

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

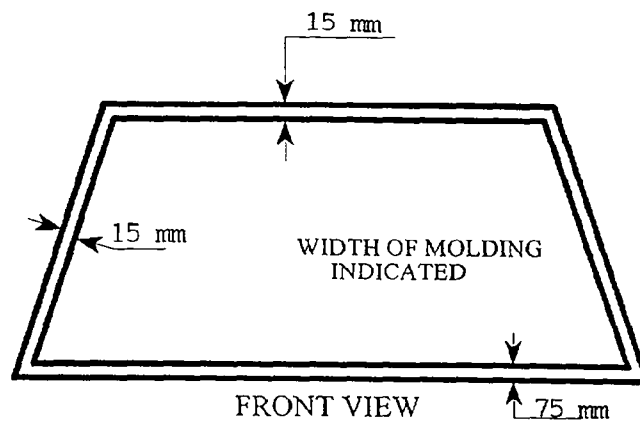
Rubber trim and glue

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	1985	1985	100%
LEFT SIDE	2002	2002	100%
TOTAL	3987	3987	100%

AREA OF RETENTION FAILURE: None



FAILURE DETAILS: None

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 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 = 1080 mm

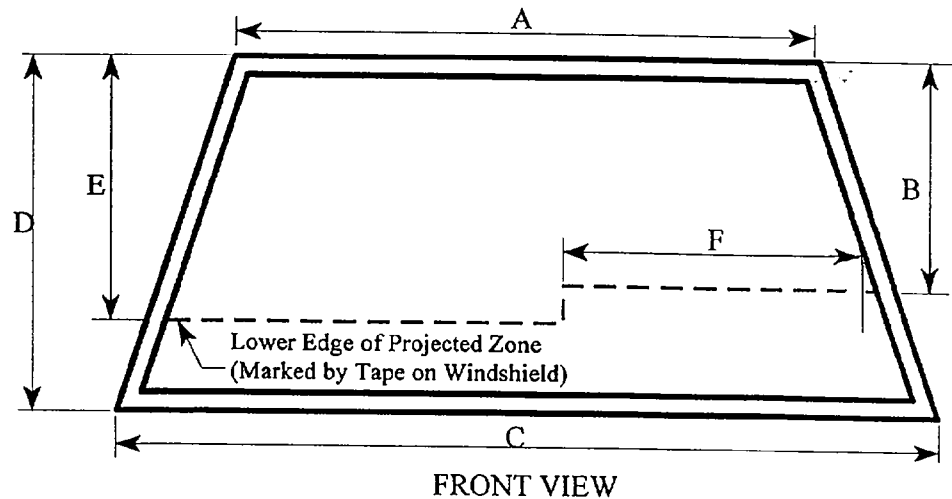
B = 418 mm

C = 1405 mm

D = 745 mm

E = 500 mm

F = 595 mm



DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 1/4":
(Show location of penetration)

NONE

FMVSS NO. 301-75, FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.: MS5203 Test Date: June 29, 1995

Vehicle Year./Make/Model: 1995/Nissan/Sentra GXE 4 Door

Usable Capacity of Vehicle's Fuel Tank: 50 Liters
(figure furnished by vehicle manufacturer)

TEST REQUIREMENTS:

Drain the test vehicle's fuel system and operate the engine until the fuel system is dry. Add Stoddard solvent, which has been dyed purple, until 92-94% of the stated usable capacity is reached. Operate the engine to assure the Stoddard solvent is present throughout the entire fuel system.

AMOUNT OF STODDARD SOLVENT ADDED TO VEHICLE'S FUEL TANK:

46.6 Liters which is 93 % of the stated USABLE CAPACITY.

TEST VEHICLE IMPACT TYPE:

- ☒ Frontal (35 mph)
☐ Oblique (30 mph) with ___° barrier face first
contacting (driver/passenger) side
☐ Rear Moving Barrier (30 mph)
☐ Side Impact MDB (33.2 mph)

FUEL SPILLAGE MEASUREMENT:

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

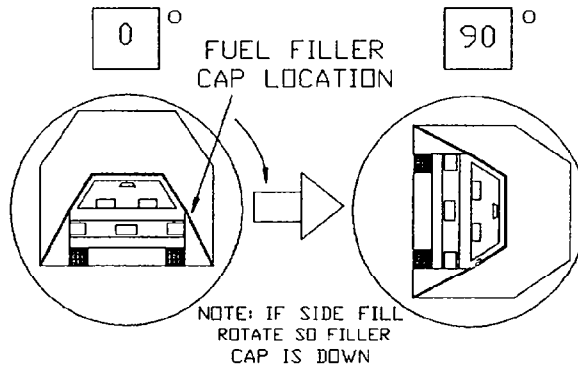
ACTUAL	MAX ALLOWED
0	1 OZ
0	5 OZ
0	1 oz./1 MIN

SOLVENT SPILLAGE DETAILS: None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 0° - 90°

Vehicle NHTSA ID No.: MS5203



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 45 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds
TOTAL 7 minutes 45 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
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III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0
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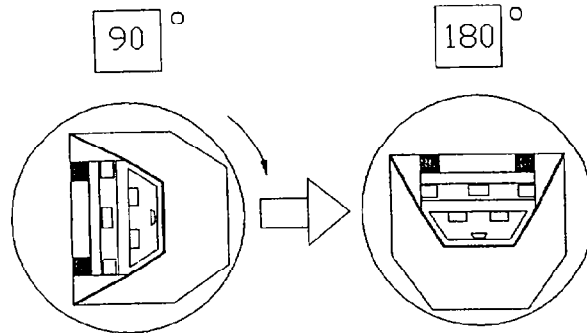
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 90° - 180°

Vehicle NHTSA ID No.: MS5203



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 31 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 31 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
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III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0	0	0	0
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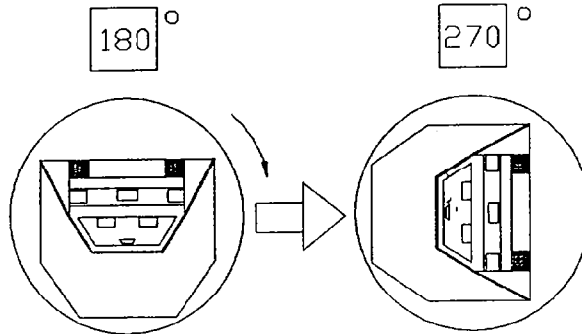
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 180° - 270°

Vehicle NHTSA ID No.: MS5203



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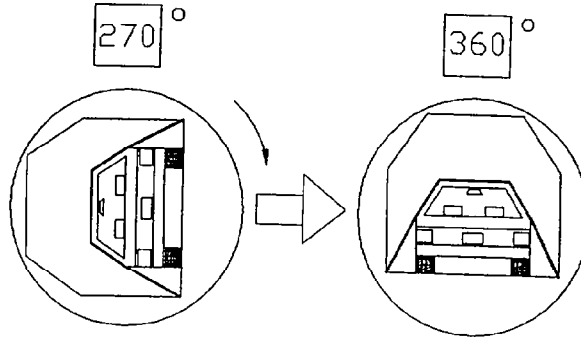
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 270° - 360°

Vehicle NHTSA ID No.: MS5203



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 26 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 26 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
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Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

SECTION 4
OMI FINAL DATA

Occupant and Vehicle Information

I. OMI DATA

1. Dummy Injury Criteria Data Summary
2. Dummy Positioning Data
3. Seat Belt Positioning Data
4. Seat Belt Performance Assessment Data
5. Camera Locations
6. Vehicle Target Locations

II. OVR DATA

1. Load Cell Barrier Data
2. Vehicle Accelerometer Data
3. Test Vehicle Measurements

III. AID DATA

1. Accident Investigation Damage Data Summary

FMVSS NO. 208, "OCCUPANT CRASH PROTECTION", DATA SHEET

VEH. YR./MAKE/MODEL/BODY STYLE: 1995/Nissan/Sentra GXE 4 Door

VEH. NHTSA NO.: MS5203 TEST DATE: June 29, 1995

MAX. ACCELERATION VALUES: (g's)	DRIVER #065	PASSENGER #066
Head Channel X	-59.9 @ 76 msec.	-53.1 @ 77 msec.
Head Channel Y	10.4 @ 89 msec.	10.0 @ 77 msec.
Head Channel Z	24.5 @ 72 msec.	29.5 @ 76 msec.
HEAD RESULTANT	64.4 @ 76 msec.	59.6 @ 77 msec.
Chest Channel X	*	-51.1 @ 68 msec.
Chest Channel Y	-4.4 @ 68 msec.	-8.6 @ 59 msec.
Chest Channel Z	7.0 @ 50 msec.	-7.6 @ 83 msec.
CHEST RESULTANT (CLIP)	51.0	49.6
TIME INTERVAL (msec) [0.003 seconds minimum]	$t_1 = 71.0$ $t_2 = 74.1$	$t_1 = 71.7$ $t_2 = 74.7$

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	588.0	599.2
$t_1 =$ (msec)	60.7	63.9
$t_2 =$ (msec)	96.7	99.9
Avg. Accel. t_1 to t_2 (g's)	48.3	48.8

[The maximum time interval from t_1 to t_2 is 36 milliseconds.]

MAX. COMPRESSIVE FEMUR FORCES:

Left Side (N)	2181.2	3304.1
Right Side (N)	1244.6	3540.8

MAXIMUM SEAT BELT FORCES:

Lap Belt (N)	6443.2	4857.6
Shoulder Belt (N)	7932.2	7184.6

NOTE: All values listed must occur during primary impact event.

(Head X,Y,Z and R listed must be during t_1 to t_2 HIC interval)

* No valid data collected.

HYBRID III NECK, CHEST AND PELVIS DATA SHEET

VEHICLE YR./MAKE/MODEL/BODY STYLE: 1995/Nissan/Sentra GXE 4 Door

VEHICLE NHTSA NO.: MS5203 TEST DATE: June 29, 1995

MAXIMUM VALUES	DRIVER DUMMY #065	PASSENGER DUMMY #066
Neck Load X (N)	489.4 @ 105 msec.	706.2 @ 121 msec.
Neck Load Y (N)	-144.3 @ 72 msec.	-246.8 @ 89 msec.
Neck Load Z (N)	-1839.6 @ 74 msec.	-1934.9 @ 71 msec.
Neck Moment X (NM)	-6.6 @ 69 msec.	-13.6 @ 99 msec.
Neck Moment Y (NM)	-44.6 @ 124 msec.	-47.3 @ 128 msec.
Neck Moment Z (NM)	10.2 @ 101 msec.	-5.4 @ 73 msec.
Chest Deflection X (mm)	36.0	40.7
Time of Max. Occurrence	90 msec.	87 msec.
Pelvis X Acceleration (g's)	-48.1 @ 70 msec.	-60.0 @ 60 msec.
Pelvis Y Acceleration (g's)	-8.8 @ 51 msec.	12.7 @ 60 msec.
Pelvis Z Acceleration (g's)	-29.6 @ 68 msec.	-25.9 @ 77 msec.
Pelvis Resultant (g's)	55.3 @ 70 msec.	64.2 @ 64 msec.

PART 572 DUMMY IN-VEHICLE POSITION

Vehicle NHTSA No.: MS5203 Vehicle: 1995 Nissan Sentra GXE 4 Door

SEAT TYPE:

 Bench
 X Bucket
 Split Bench

ADJUSTER TYPE:

Driver: X Manual
 Power

BUCKET SEAT BACK TYPE:

 Fixed
 X Adjustable Reclining

Passenger: X Manual

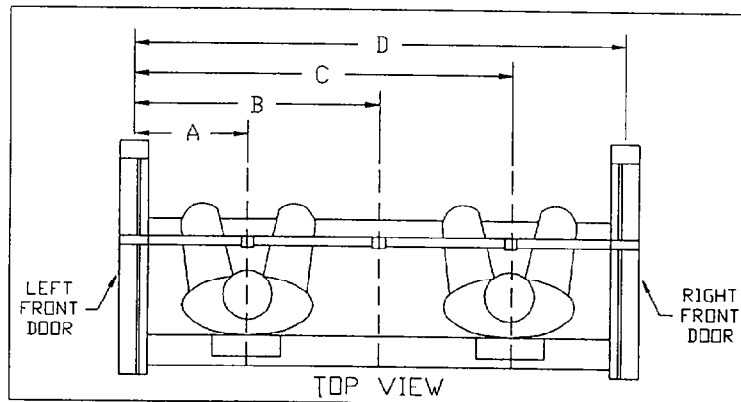
 Power

Driver Seat Position

11th notch from front
out of 20 total

Passenger Seat Position

11th notch from front
out of 20 total



065 DUMMY ID 066

A = Left Door to Driver Centerline	<u>418</u> mm
B = Left Door to Center Passenger Centerline	<u>750</u> mm
C = Left Door to Right Passenger Centerline	<u>1084</u> mm
D = Left Door to Right Door	<u>1500</u> mm

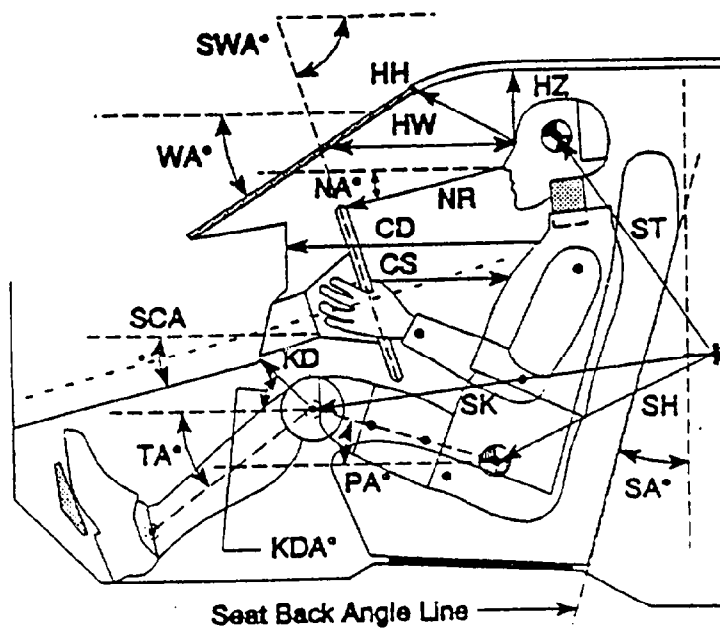
FRONT SEAT MEASUREMENT TABLE

Units (mm)

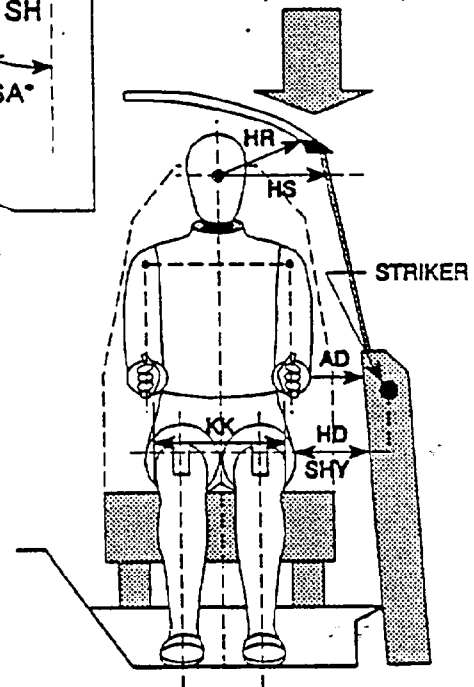
	DRIVER (Serial #065)	PASSENGER (Serial #066)
WA°	29.1°	
SWA°	24.5°	N/A
SCA°	24.2°	N/A
SA°	25.0°	25.0°
HZ	168	160
HH	348	335
HW	553	547
HR	252	248
NR	434 Angle 12.8°	N/A
CD	546	645
CS	345	N/A
RA	208	N/A
KDL	162 Angle 22.2°	158
KDR	160	174 Angle 6.4°
PA°	23.8°	23.9°
TA°	41.2°	37.9°
KK	200	280
ST	529 Angle 7.1°	546 Angle 5.6°
SK	597 Angle 88.5°	602 Angle 92.0°
SH	251 Angle 129.0°	230 Angle 129.1°
SHY	258	255
HS	302	296
HD	174	171
AD	102	105

N/A = Not Applicable

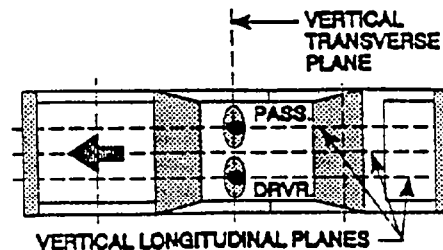
FRONT SEAT MEASUREMENTS



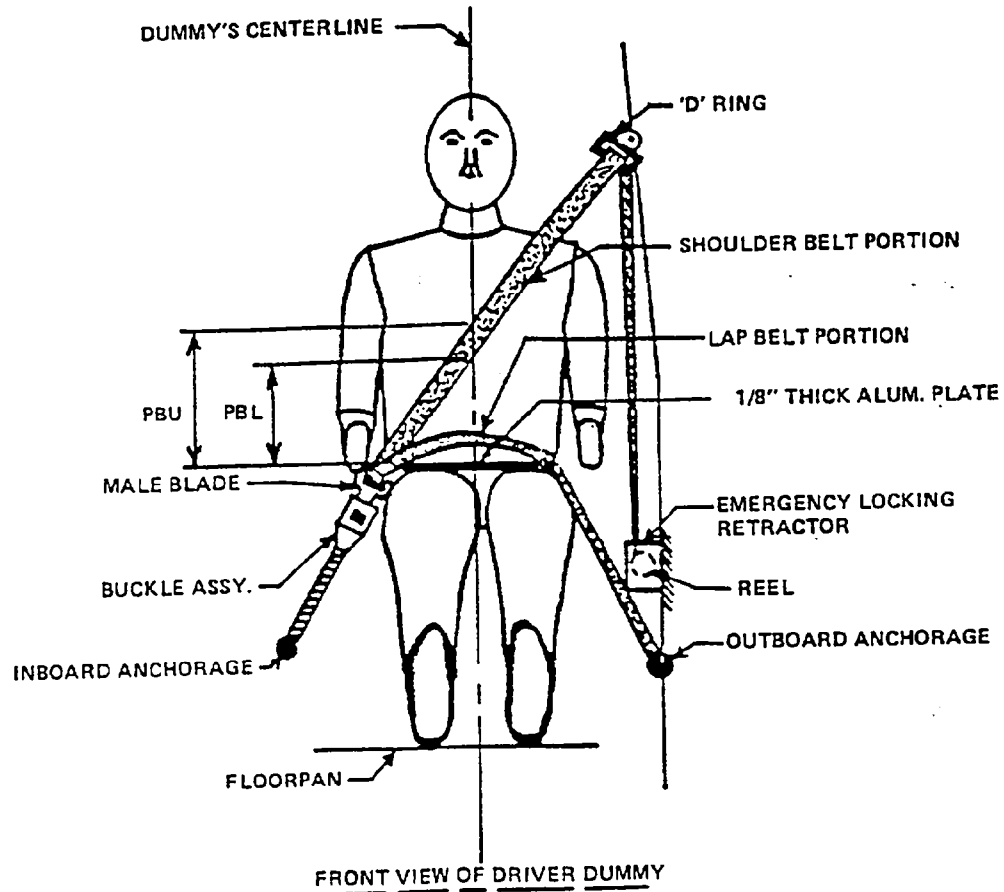
AD - Arm to Door
 HD - H-Point to Door
 HR - Head to Side Header
 HS - Head to Side Window
 KK - Knee to Knee
 SHY - Striker to H-Point (Y Direction)



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



SEAT BELT POSITIONING DATA



(illustration)

Dimension = mm		
	DRIVER DUMMY	PASSENGER DUMMY
<u>PBU</u> -- Top surface of alum. plate to upper edge	281	288
<u>PBL</u> -- Top surface of alum. plate to belt lower edge	205	210

Note: Adjustable "D" ring set in the fullup position.

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

	<u>Driver</u>	<u>Passenger</u>
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	<u>202 mm</u>	<u>222 mm</u>
Shoulder belt length as measured on Part 572 Dummy.	<u>890 mm</u>	<u>875 mm</u>
Lap belt length as measured on Part 572 Dummy.	<u>800 mm</u>	<u>812 mm</u>

SHOULDER BELT SPOOL-OFF DATA:

As determined by film analysis	<u>38 mm</u>	<u>N/A</u>
As determined mechanically	<u>48 mm</u>	<u>54 mm</u> at retractor
	<u>60 mm</u>	<u>60 mm</u> at D-ring
As determined electronically	<u>N/R</u>	<u>N/R</u>

BELT STRETCH DATA:

Measured electronically between shoulder belt load cell and the "D" ring.	<u>N/R</u>	<u>N/R</u>
Measured mechanically	<u>N/R</u>	<u>N/R</u>

RETRACTOR LOCK-UP TIME:

As determined by shoulder belt spool-off observed in on-board cameras	<u>70 msec</u>	<u>N/R</u>
---	----------------	------------

N/R = Not Recorded

CAMERA LOCATIONS

VEH. NHTSA NO.: MS5203 ; TEST DATE: June 29, 1995 ; TIME: 1:22 p.m.

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1995/Nissan/Sentra GXE 4 Door

CAMERA NO.	VIEW	CAMERA POSITIONS (mm.)*			ANGLE (deg)	FILM PLANE TO HEAD TARGET (mm)	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Left Side View	-	-	-	-	-	10	24
2	Left Front Half	1000	7630	1165	90°	7215	25	1036
3	Steering Column Top	1890	7430	1560	90°	7015	25	1000
4	Steering Column Bottom	1880	7430	1035	90°	7015	25	1026
5	Driver Close-up	1470	7100	1140	90°	6685	50	1000
6	Driver Angle	5000	7000	2070			50	985
7	Driver Onboard						35	1005
8	Passenger Onboard						35	N/A
9	Right Overall	2000	-6510	1230	90°	-6110	13	1015
10	Right Passenger	1590	-7340	1300	90°	-6940	25	1015
11	Right Passenger Close-up	1280	-6790	1270	90°	-6390	50	862
12	Right Angle	5000	-6860	2135			50	909
13	Top Overall	170	0	5230			8	1005
14	Top Driver	-420	340	2640			13	1026
15	Top Passenger	-360	370	2570			13	1000
16	Pit Front	1260	0	-3185			13	909
17	Pit Rear	2670	0	-3145			13	1020

* COORDINATES:

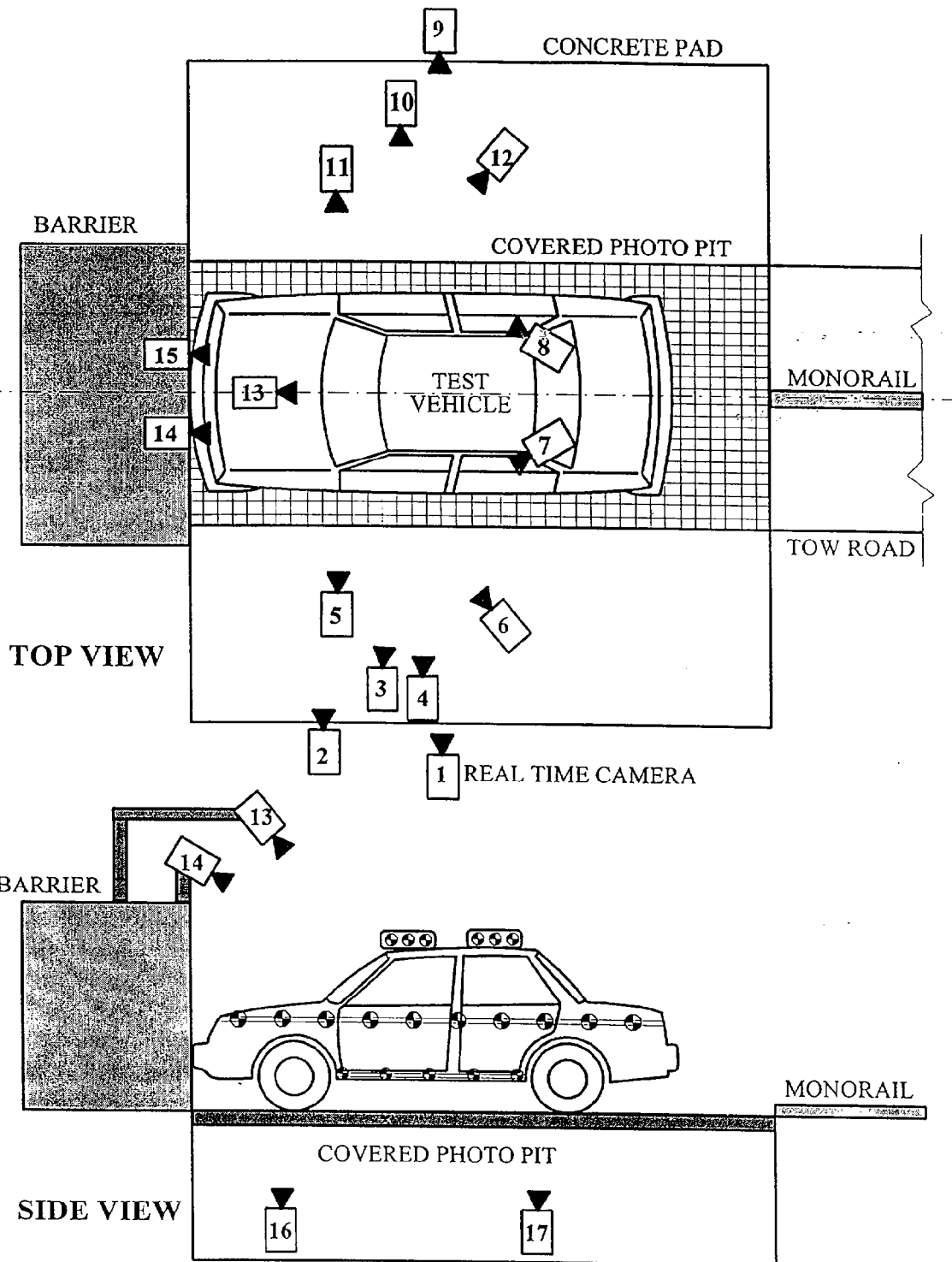
+X = film plane rearward of barrier

+Y = film plane to left of monorail centerline

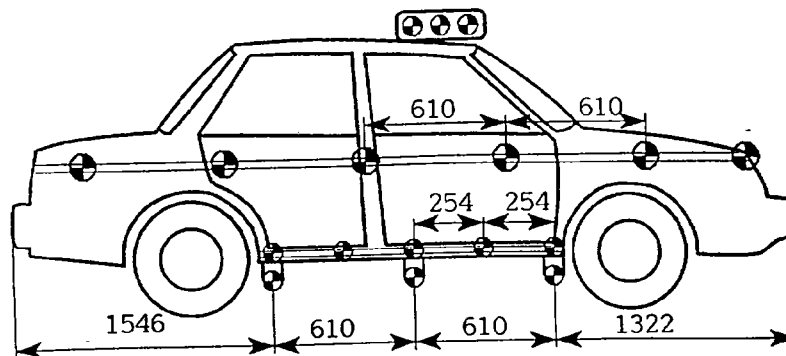
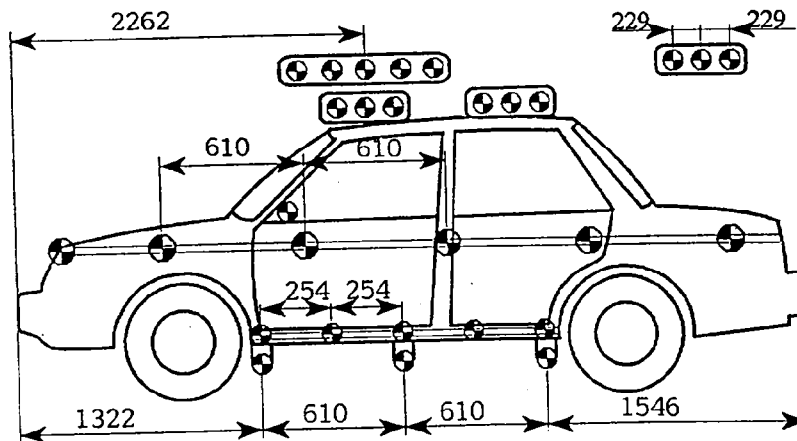
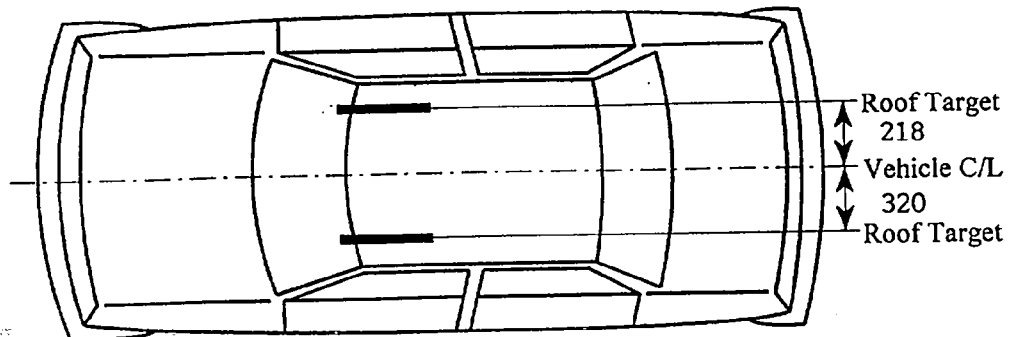
+Z = film plane to above ground level

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

CAMERA LOCATIONS (Cont'd)



VEHICLE TARGET LOCATIONS



(DIMENSIONS IN MM)

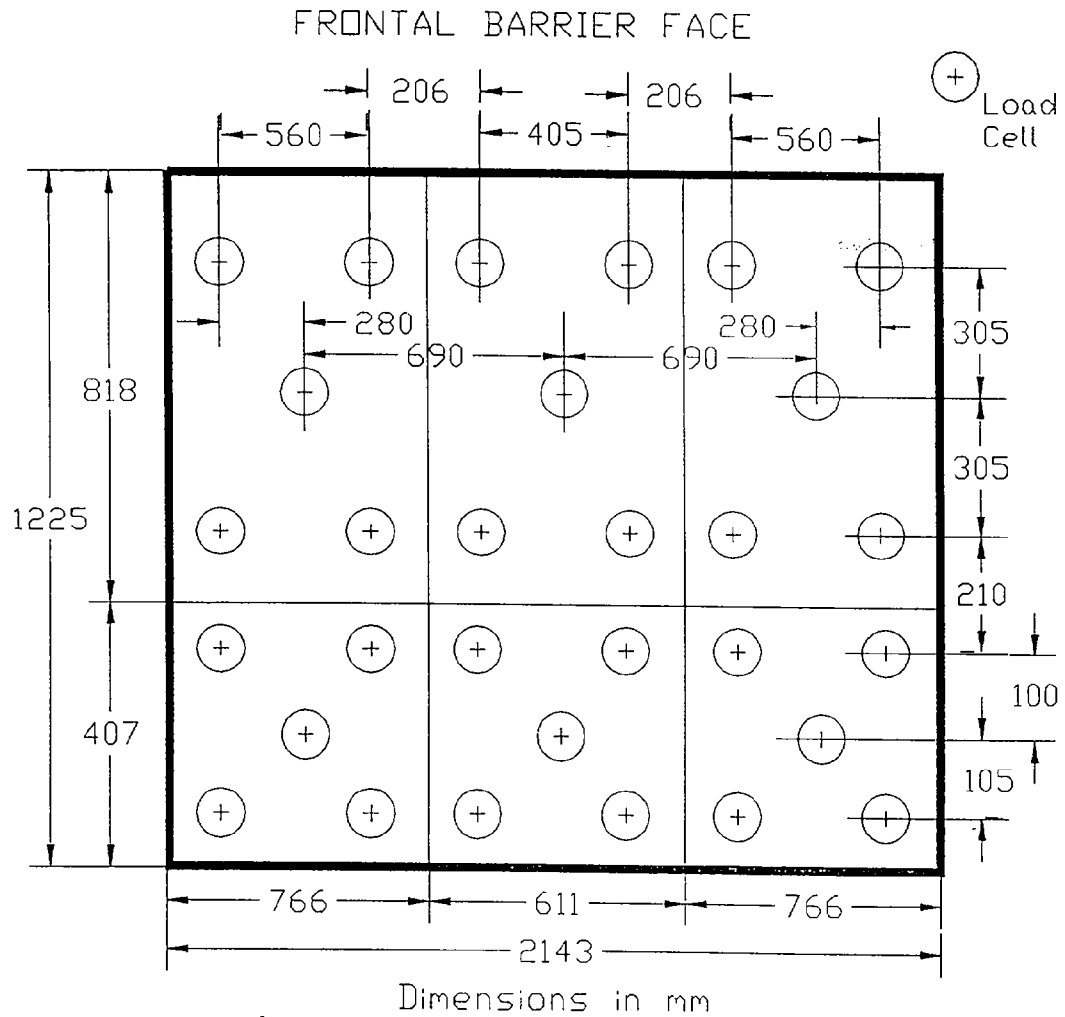
LOAD CELL LOCATIONS ON FIXED BARRIER

30 Load Cells

6 Rows

9 Columns

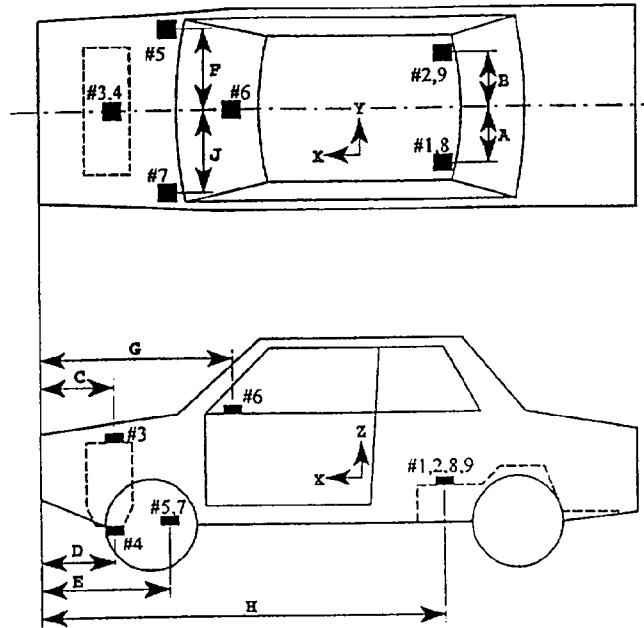
6 Groupings (5 cells/group)



The following data is presented in Appendix B:

- (1) Total or Sum of 30 individual load cells
- (2) Data from 6 Groupings shown above (5 cells/group)

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



Units: (mm)

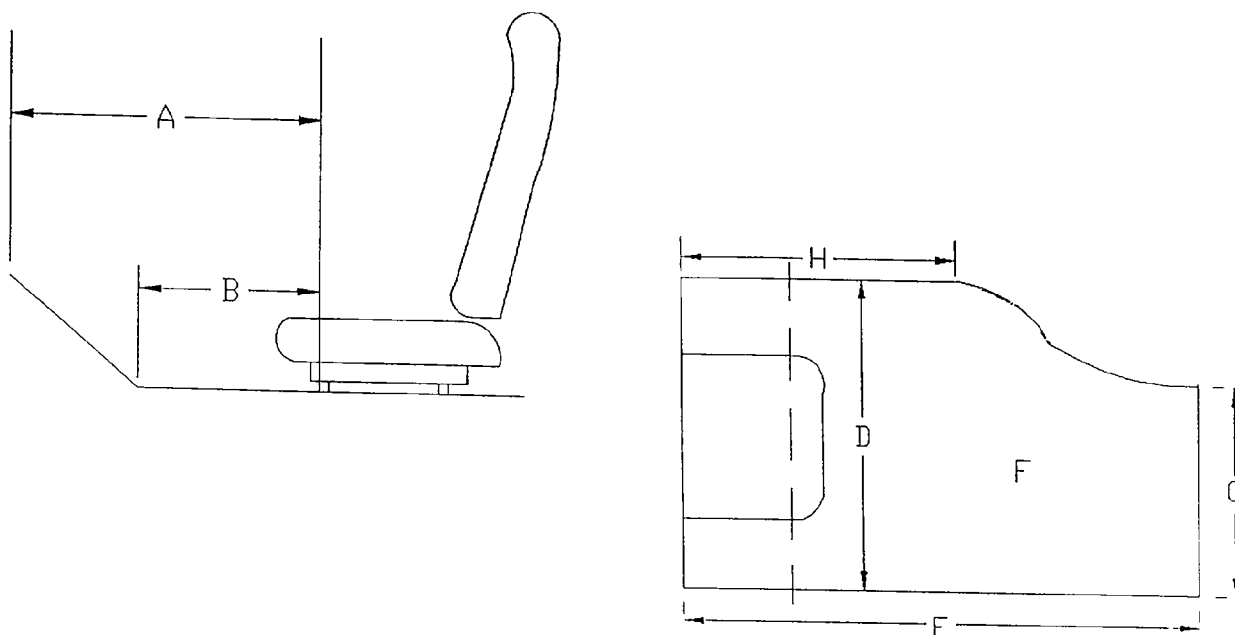
Dimension	Length
A	630
B	630
C	671
D	768
E	739
F	652
G	1540
H	2685
J	651

ACCEL. NO.	ACCELEROMETER	DIRECTION
1 and 8	Left Rear Seat Crossmember	X
2 and 9	Right Rear Seat Crossmember	X
3	Top of Engine	X
4	Bottom of Engine	X
5	Right Side Brake Caliper	X
6	Instrument Panel	X
7	Left Disc Brake Caliper	X

TEST VEHICLE MEASUREMENTS

STATIC FOOTWELL DEFORMATION

Driver's Side

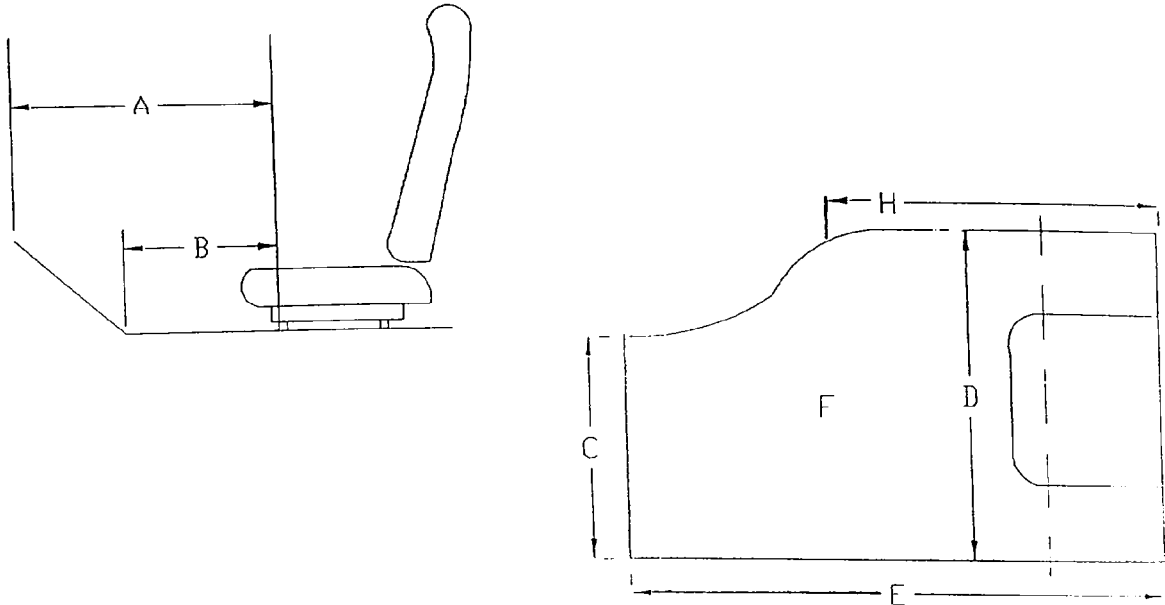


Units = mm

MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
A	791	589	202
B	550	472	78
C	415	425	10
D	542	523	19
E	1082	1002	80
H	709	718	9
F (cm ²)	5391	4962	429

TEST VEHICLE MEASUREMENTS
STATIC FOOTWELL DEFORMATION

Passenger's Side

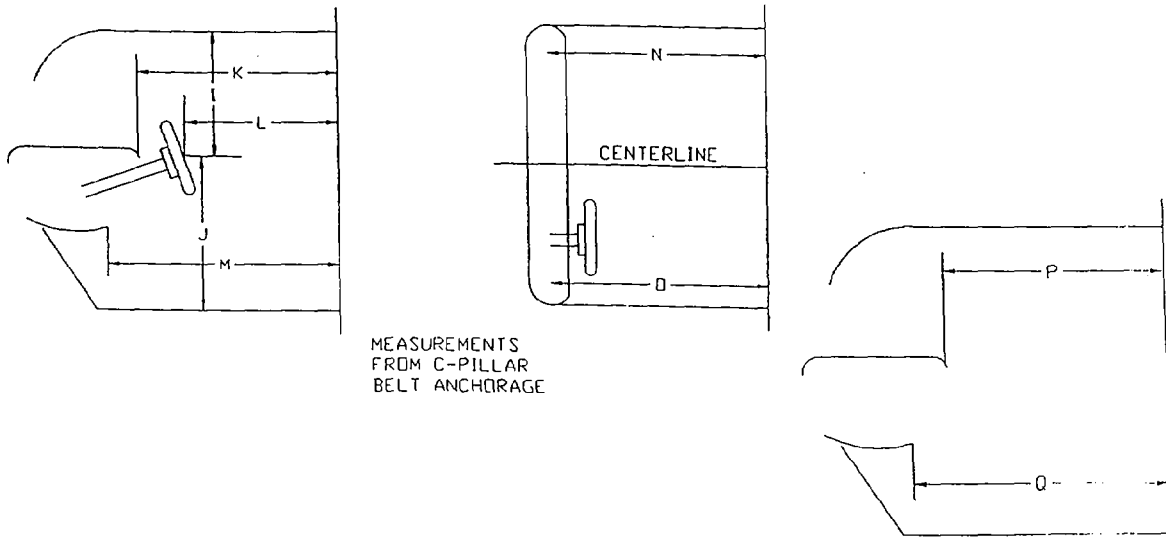


Units = mm

MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
A	762	618	144
B	565	468	97
C	540	535	5
D	542	543	1
E	1033	1020	13
H	728	751	23
F (cm ²)	5593	5517	76

TEST VEHICLE MEASUREMENTS (Cont'd)

STATIC PASSENGER COMPARTMENT INTRUSION



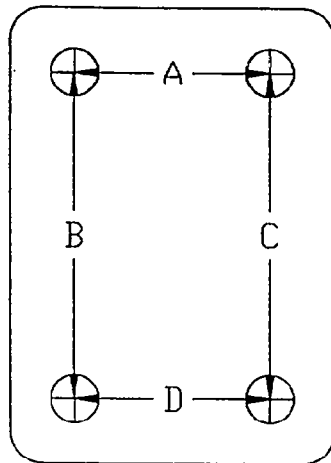
Units = mm

MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
I	424	423	1
J	647	656	9
K	744	734	10
L	562	558	4
M	895	884	11
N	922	915	7
O	927	909	18
P	842	833	9
Q	935	N/A	N/A

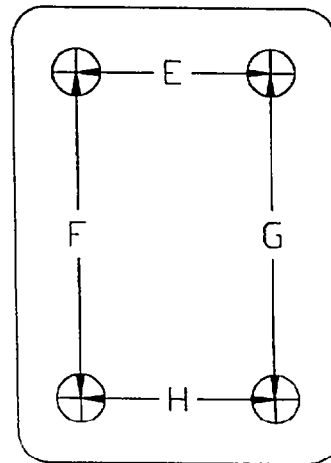
TEST VEHICLE MEASUREMENTS (Cont'd)

UNDERBODY FLOORBOARD DEFORMATION

Driver's Side



Passenger Side

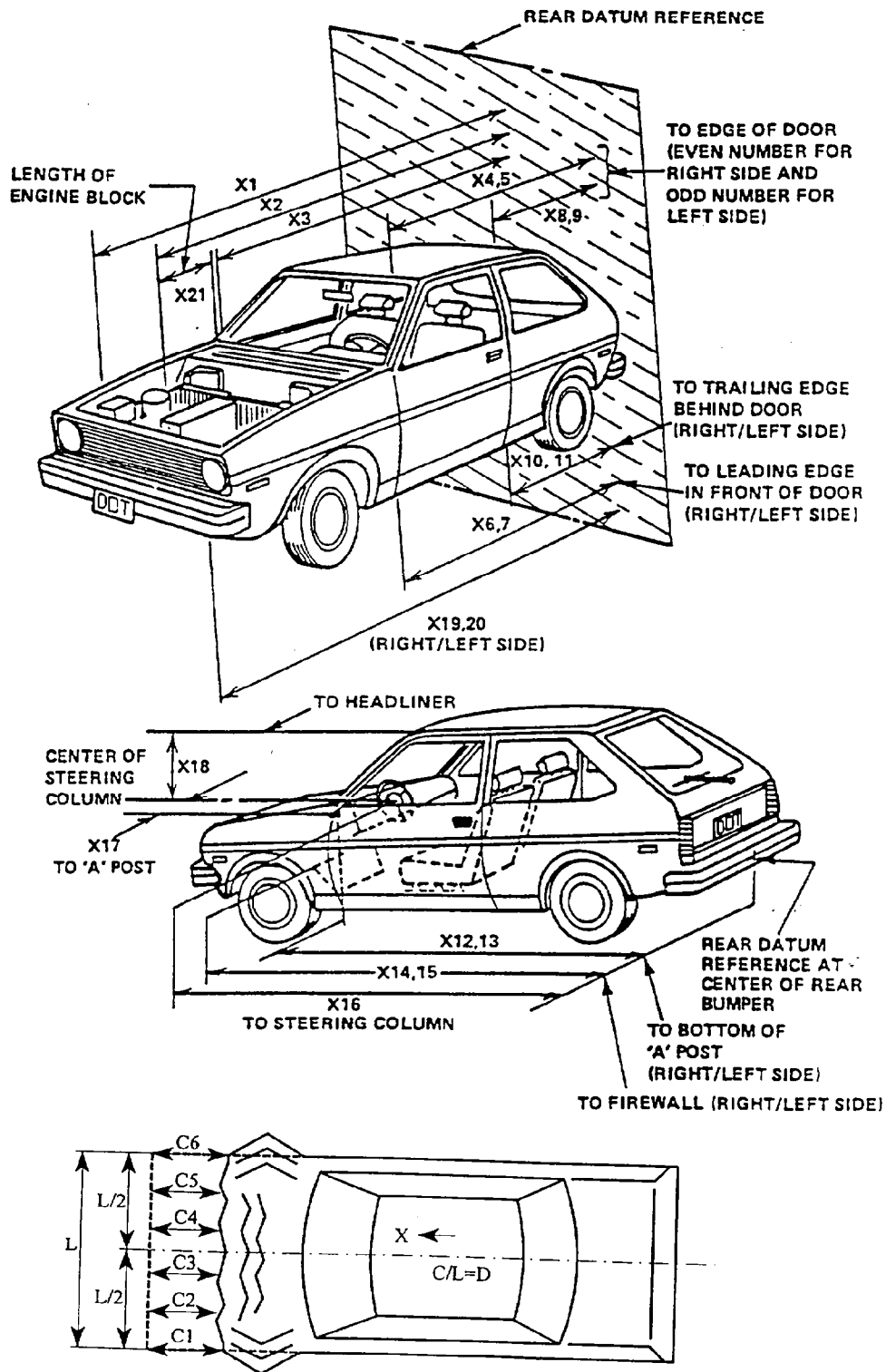


MEASUREMENT	PRE TEST	POST TEST	DIFFERENCE
A	417	384	33
B	435	444	9
C	439	464	25
D	342	322	20
E	388	370	18
F	378	425	47
G	407	398	9
H	428	362	66

TEST VEHICLE MEASUREMENTS (Cont'd)

No.	MEASUREMENT DESCRIPTION:	Pre-Test (mm)	Post-Test (mm)	Diff. (mm)
X1	Total Length of Test Vehicle at Centerline	4088	3548	540
X2	Rear Surface of Vehicle to Front of Engine	3556	3297	259
X3	Rear Surface of Vehicle to Firewall	3055	2930	125
X4	Rear Surface to Upr. Leading Edge of Rt. Door	2772	2764	8
X5	Rear Surface to Upr. Leading Edge of Left Door	2770	2770	0
X6	Rear Surface to Lwr. Leading Edge of Rt. Door	2761	2749	12
X7	Rear Surface to Lwr. Leading Edge of Left Door	2763	2763	0
X8	Rear Surface to Upr. Trailing Edge of Rt. Door	1692	1683	9
X9	Rear Surface to Upr. Trailing Edge of Left Door	1694	1690	4
X10	Rear Surface to Lwr. Trailing Edge of Rt. Door	1683	1674	9
X11	Rear Surface to Lwr. Trailing Edge of Left Door	1680	1682	-2
X12	Rear Surface to Bottom of A Post on Rt. Side	2753	2747	6
X13	Rear Surface to Bottom of A Post on Left Side	2756	2754	2
X14	Rear Surface to Firewall on Right Side	3032	2985	47
X15	Rear Surface to Firewall on Left Side	3030	2935	95
X16	Rear Surface to Steering Column	2293	2305	-12
X17	Center of Steering Column to A Post	372	389	-17
X18	Center of Steering Column to Headlining	415	409	6
X19	Rear Surface to Right Side of Front Bumper	4024	3474	550
X20	Rear Surface to Left Side of Front Bumper	4023	3479	544
X21	Length of Engine Block	444	444	0

TEST VEHICLE MEASUREMENTS (Cont'd)



ACCIDENT INVESTIGATION DIVISION DATA
FOR 35 MPH FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Nissan/Sentra GXE 4 Door

VEH. NHTSA NO.: MS5203; VIN: 1N4AB41D2SC755309

MODEL YEAR: 1995; BUILD DATE: 5/95; TEST DATE: June 29, 1995

VEH. SIZE CATEGORY: Sub Compact; TEST WEIGHT: 1293.1 kg

VEH. WHEELBASE: 2537 mm; FRONT OVERHANG: 853 mm; OVERALL WIDTH: 1704 mm

ACCELEROMETER DATA:

LOCATION: As per measurements on pages 4-13

CALIBRATION PROCEDURE: As per MGA Calibration Procedure

LINEARITY: >99.9%; INTEGRATION ALGORITHM: Trapezoidal

VEH. IMPACT SPEED: 56.3 kph; TIME OF SEPARATION: 122 msec

VELOCITY CHANGE: 66.9 kph

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE: F (Frontal)

CRUSH DEPTH
DIMENSIONS:

C1 = 544 mm

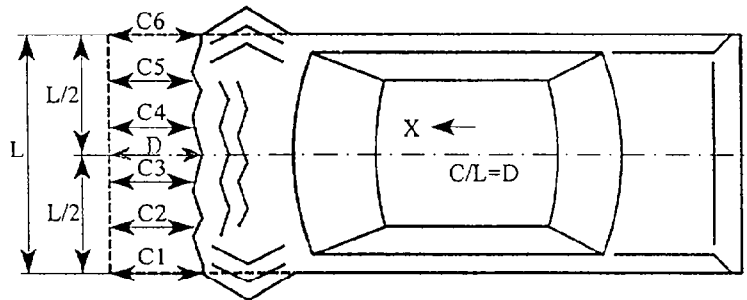
C2 = 547 mm

C3 = 562 mm

C4 = 541 mm

C5 = 534 mm

C6 = 550 mm



MIDPOINT OF
DAMAGE: D = Vehicle Centerline
(Longitude)

LENGTH OF
DAMAGED REGION: L = 1255 mm

APPENDIX A
PHOTOGRAPHS

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Photo No. A-51 - Rollover 270°	A-51
Photo No. A-52 - Rollover 360°	A-52

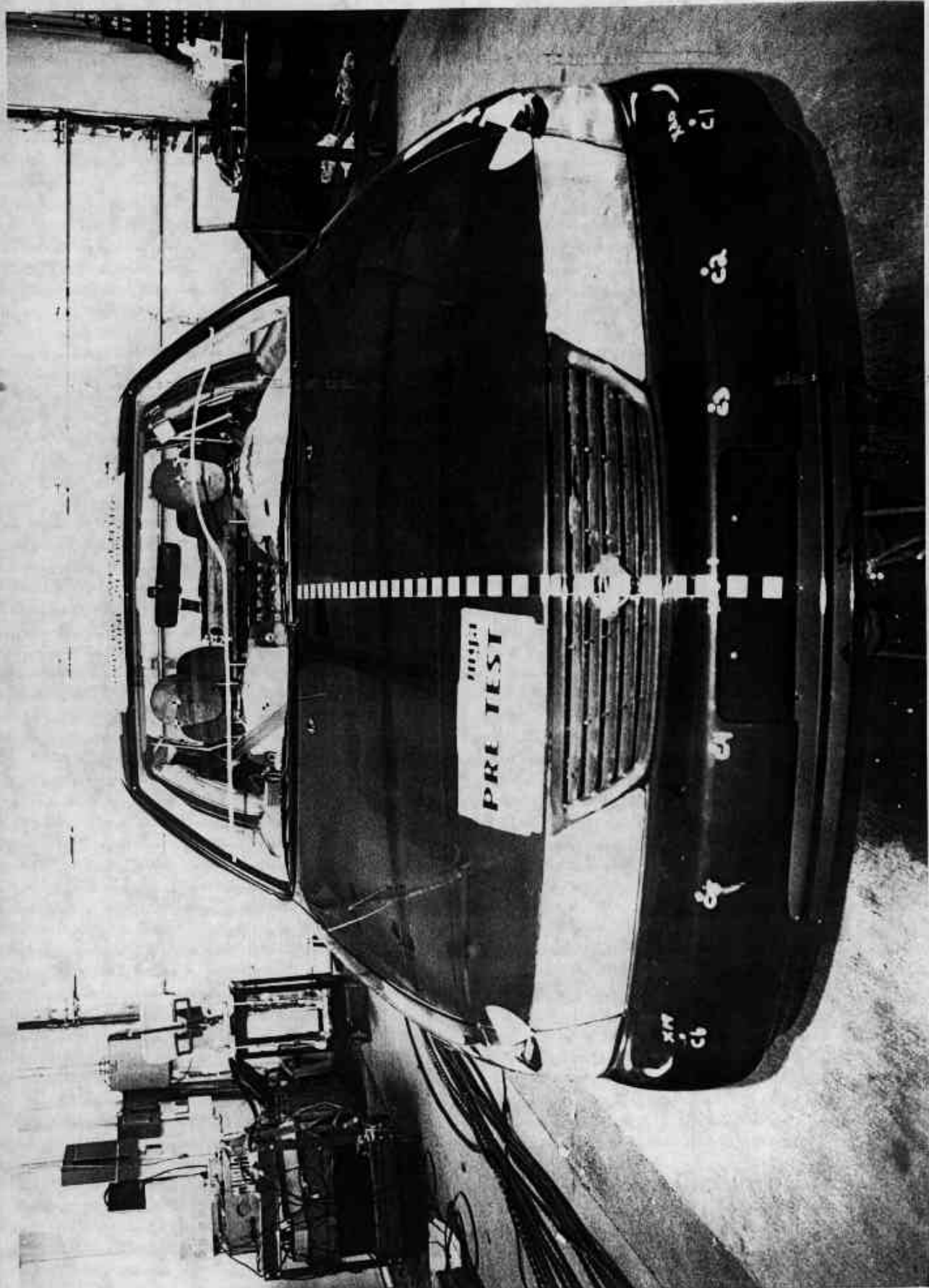


Photo No. A-1 - Pre-Test Front View of Test Vehicle

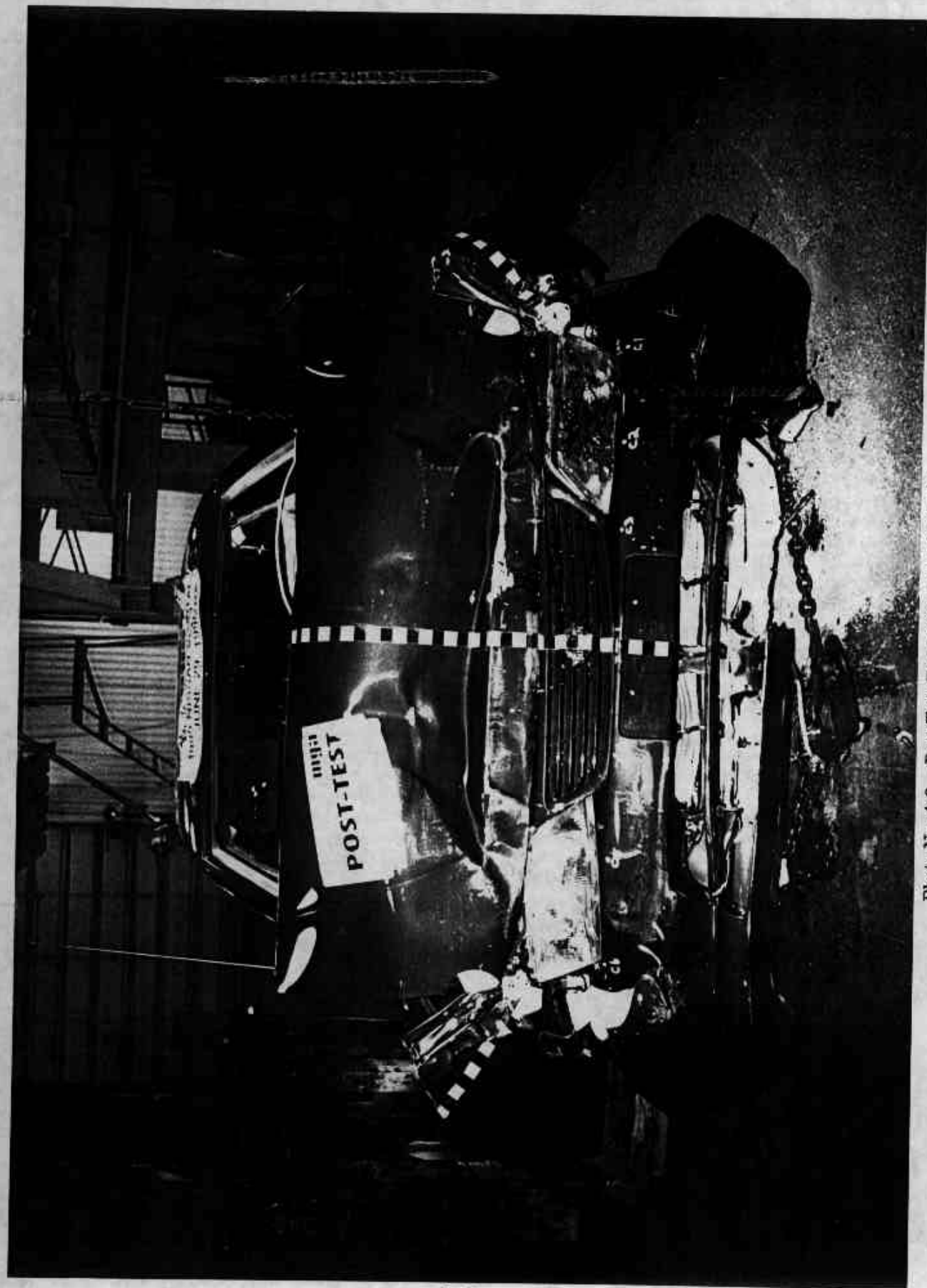


Photo No. A-2 - Post-Test Front View of Test Vehicle

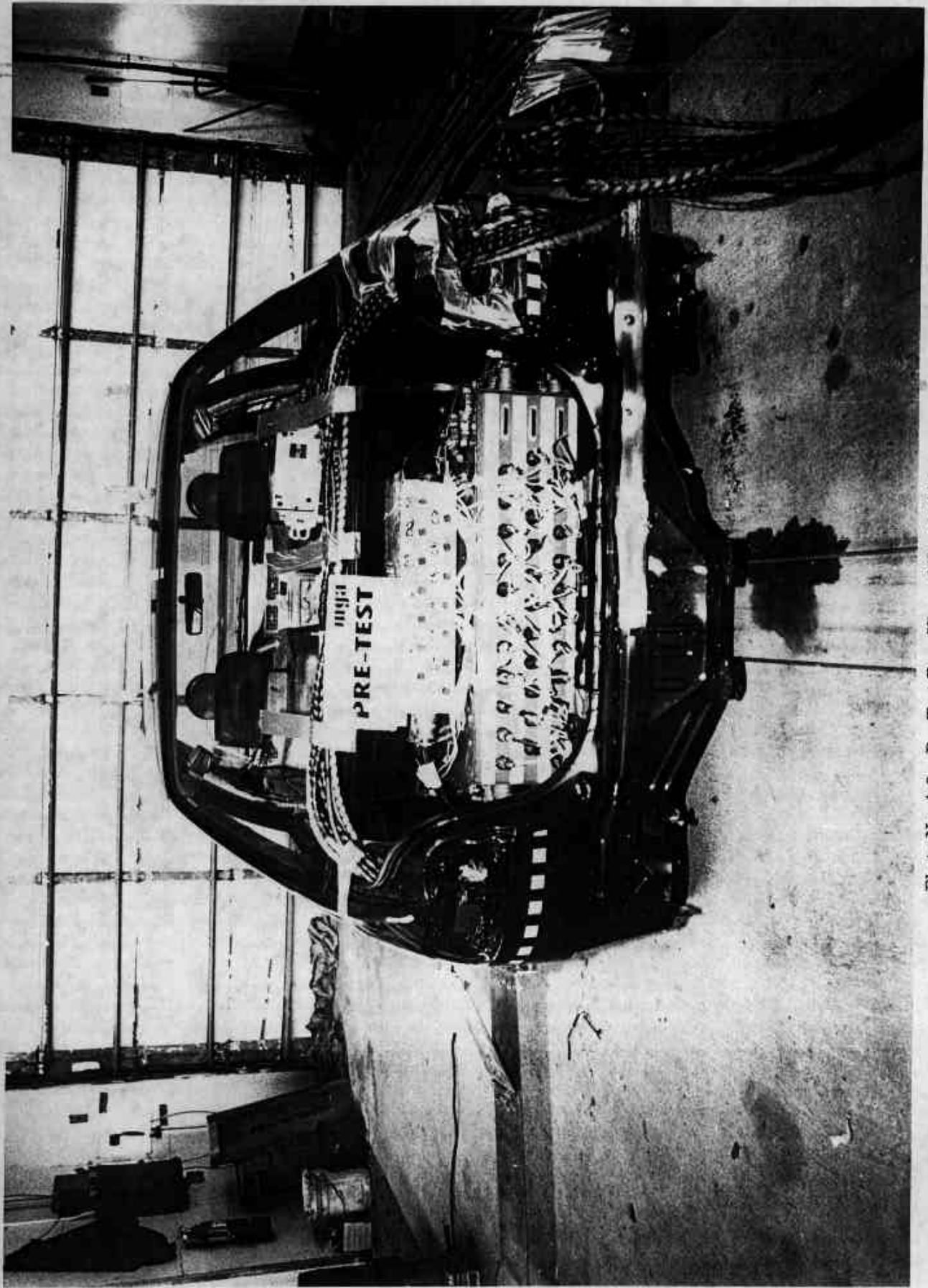


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

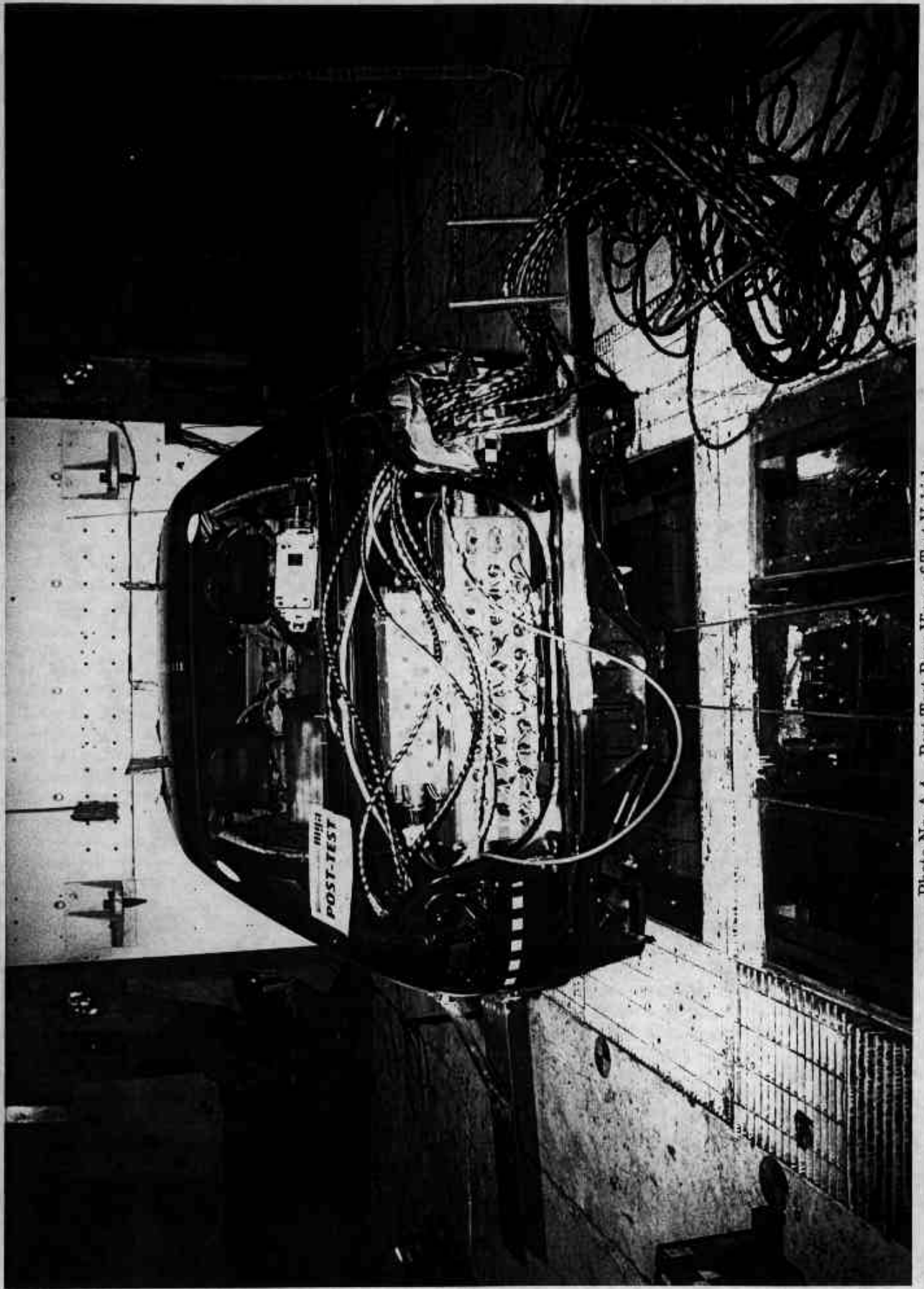


Photo No. A-4 - Post-Test Rear View of Test Vehicle

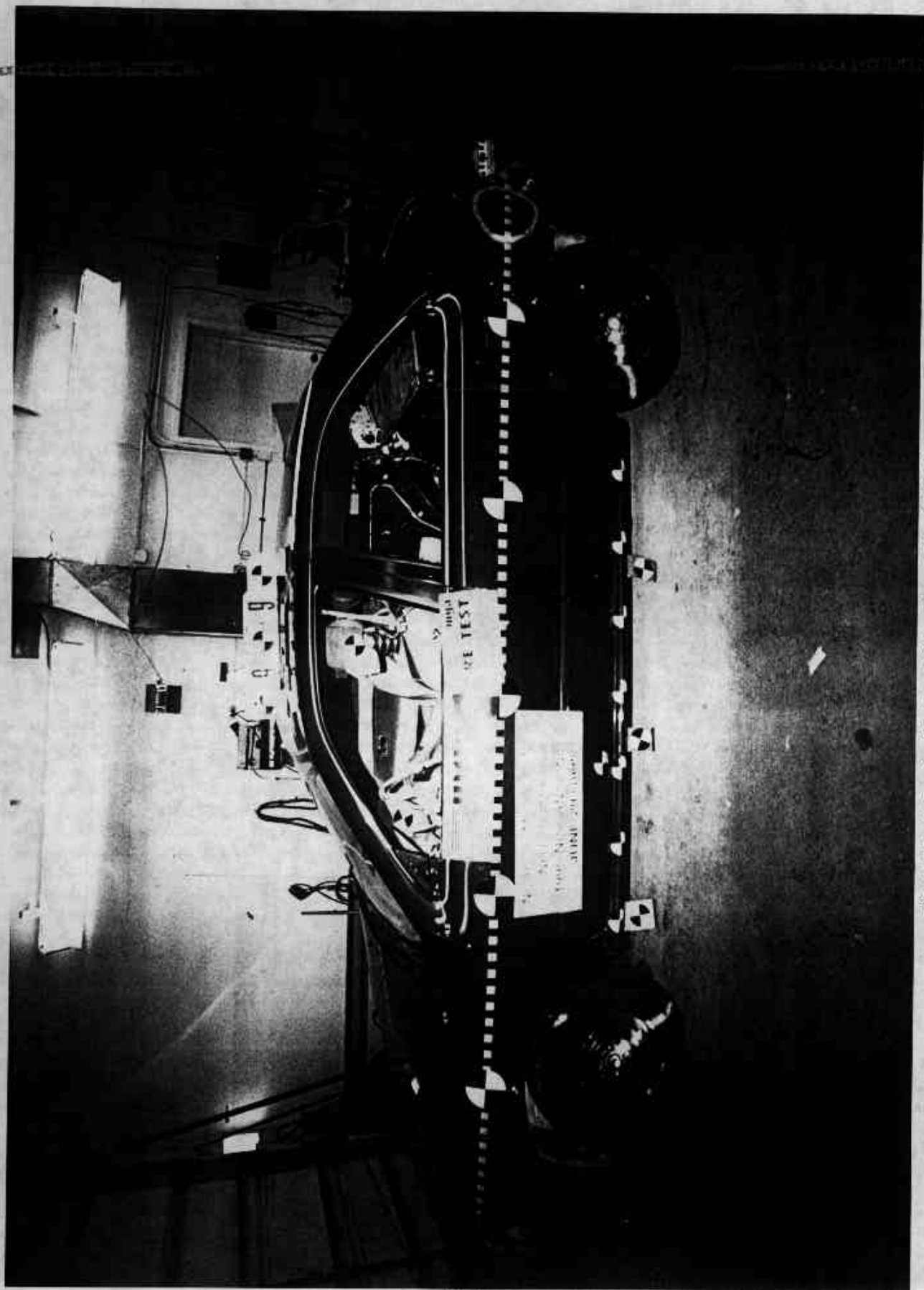


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

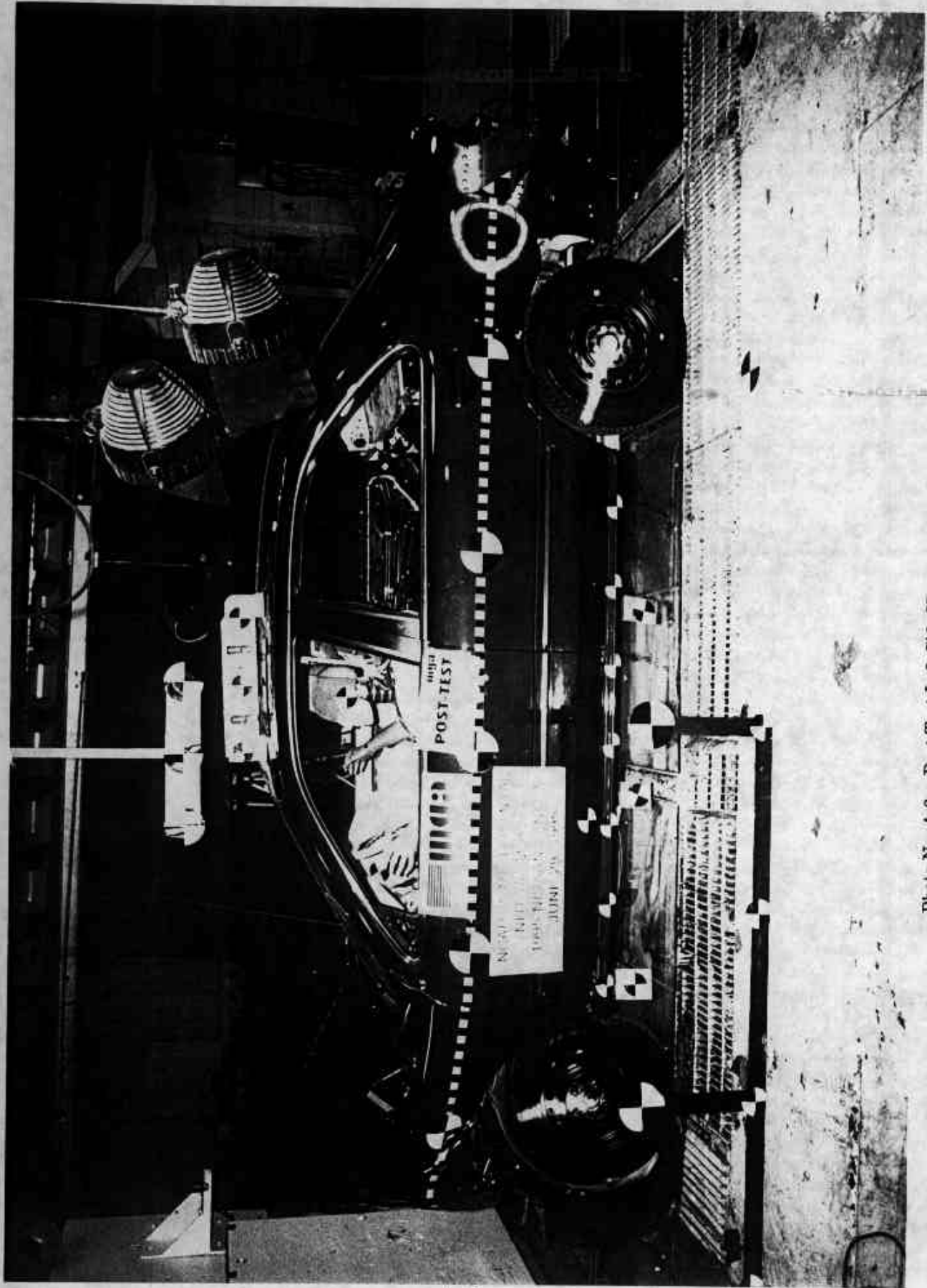


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

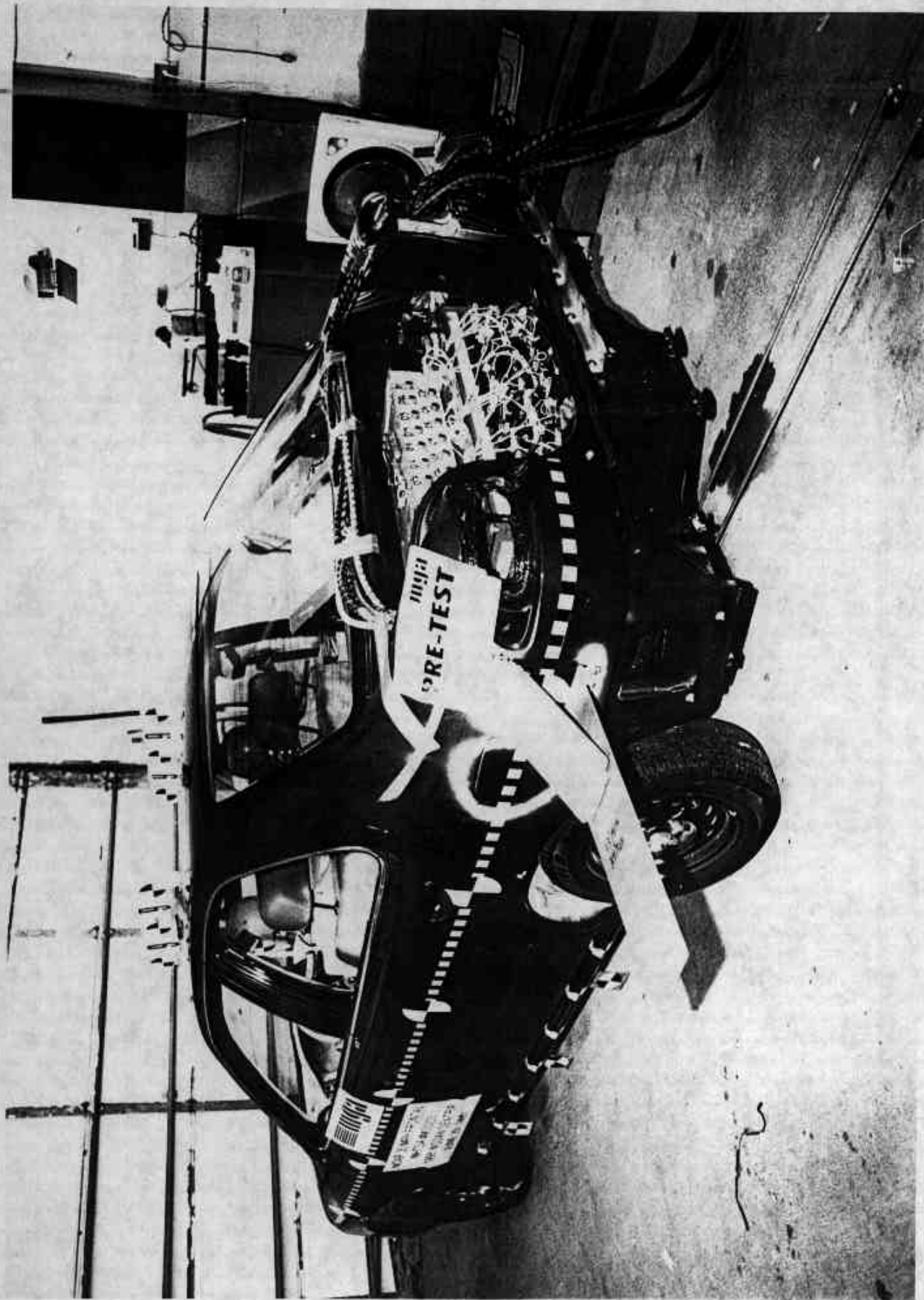


Photo No. A-7 - Pre-Test Left Rear Three-Quarter View of Test Vehicle

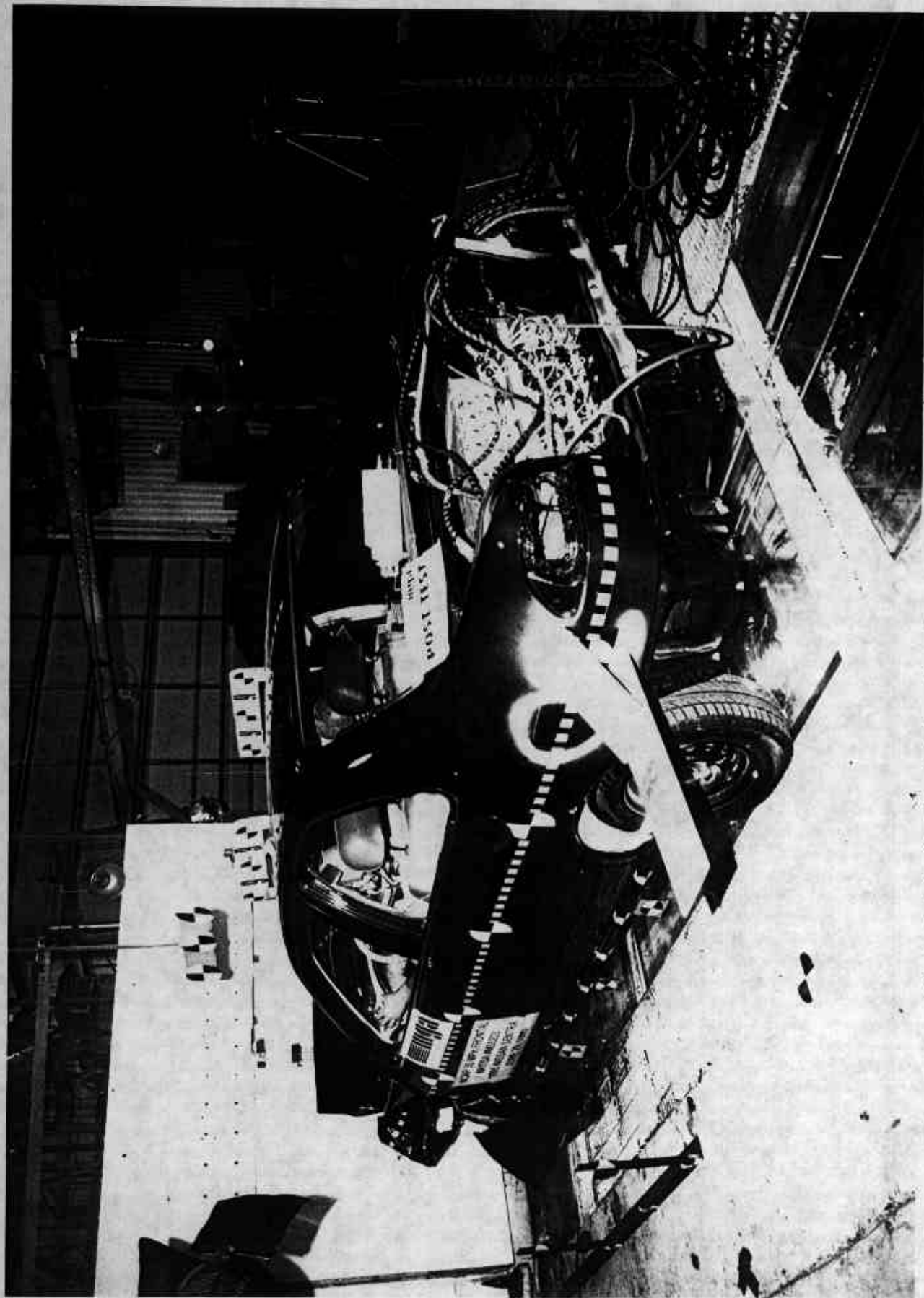


Photo No. A-8 - Post-Test Left Rear Three-Quarter View of Test Vehicle

A-8

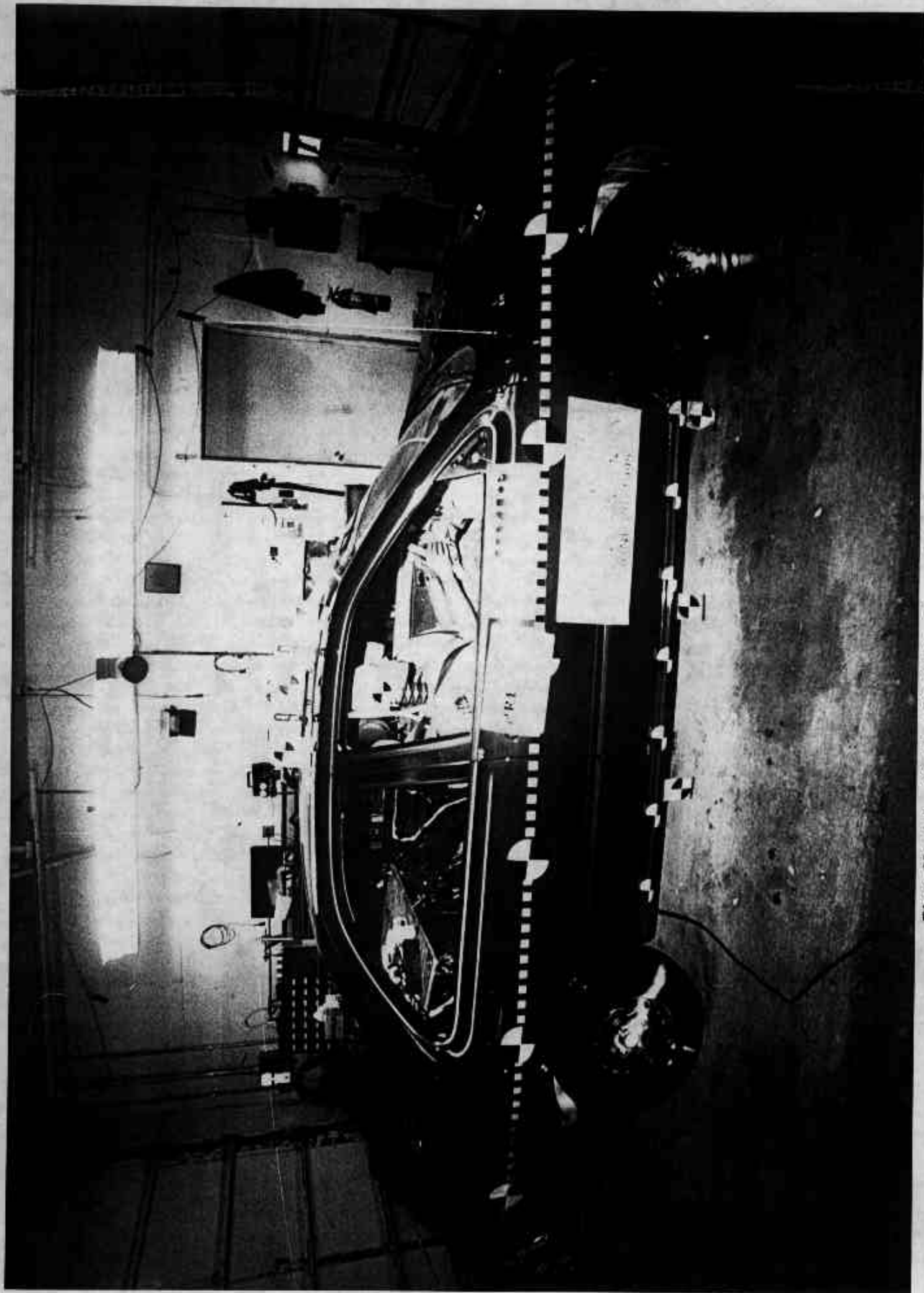


Photo No. A-9 - Pre-Test Right Side View of Test Vehicle

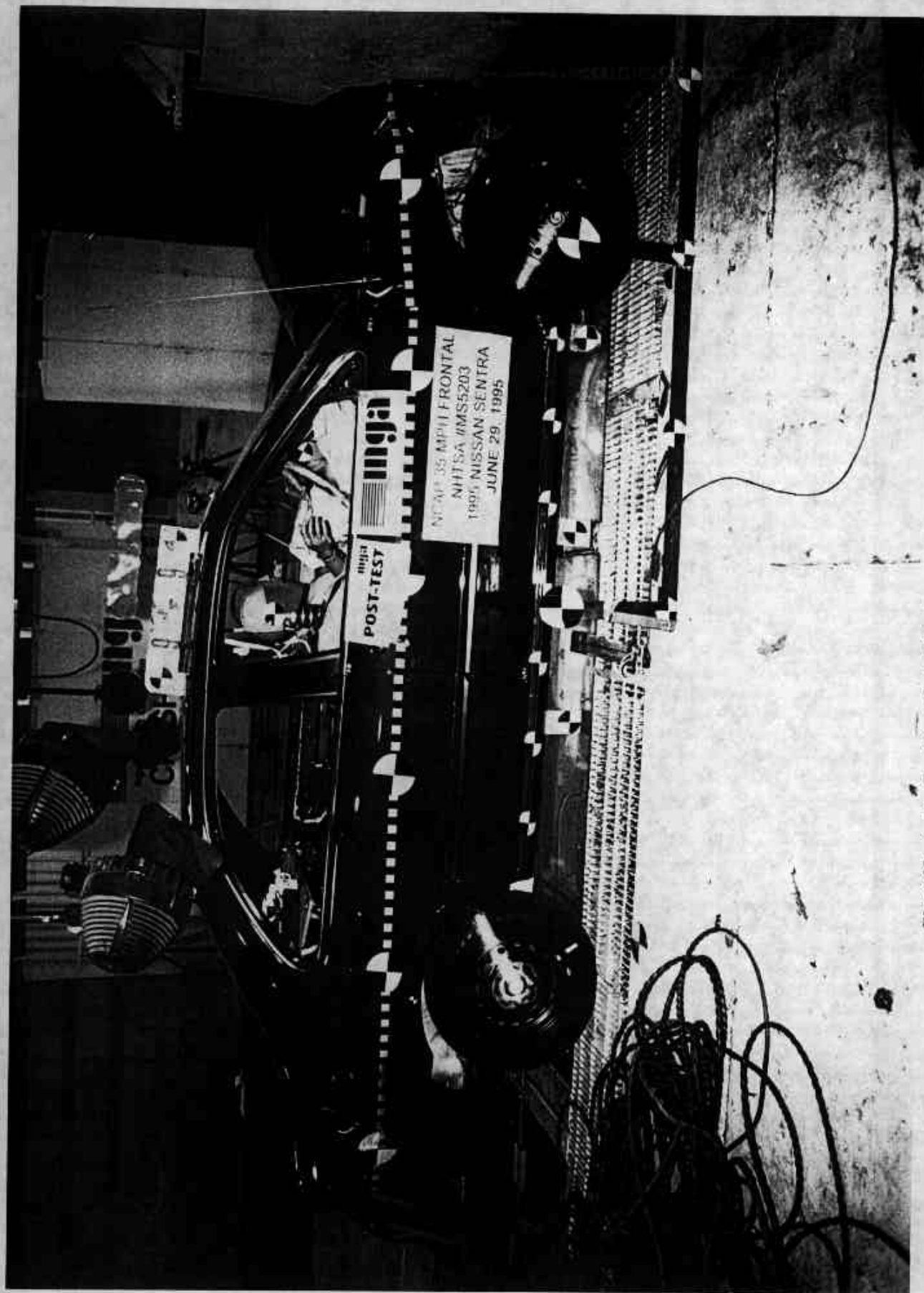


Photo No. A-10 - Post-Test Right Side View of Test Vehicle

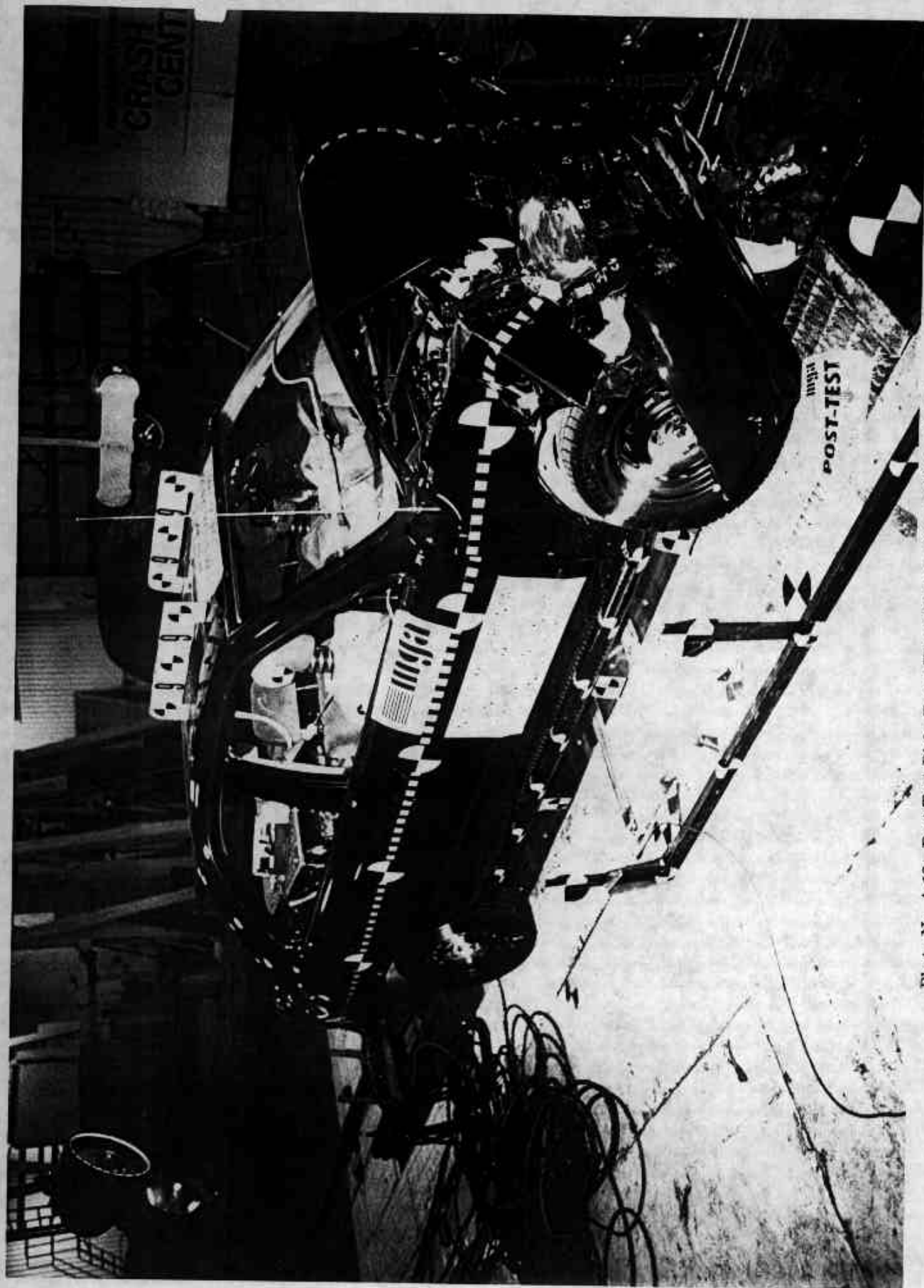


Photo No. A-12 - Post-Test Right Front Three-Quarter View of Test Vehicle

A-12

PRE-TEST

U.S. AIR FORCE

NCA

A-13

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

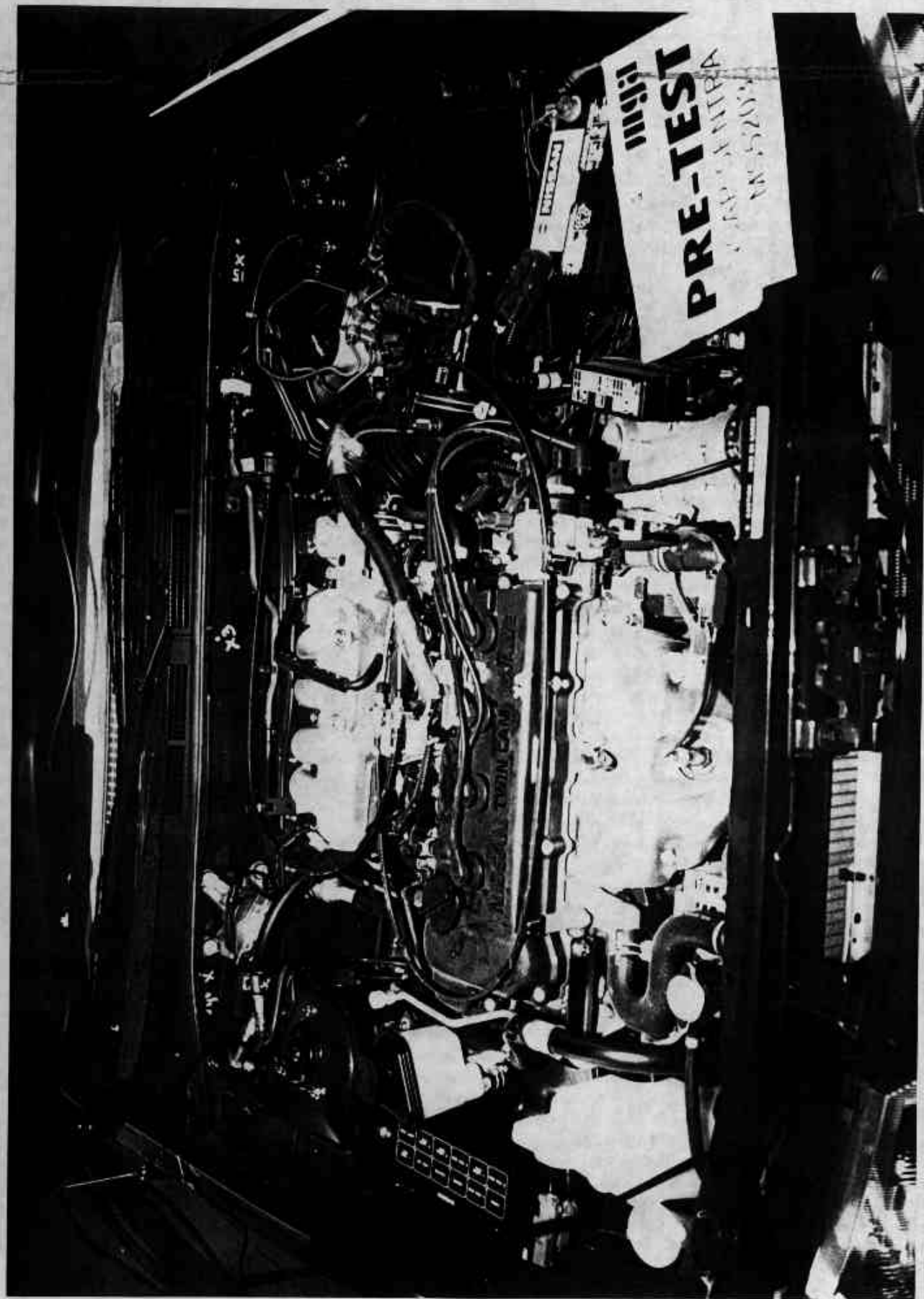
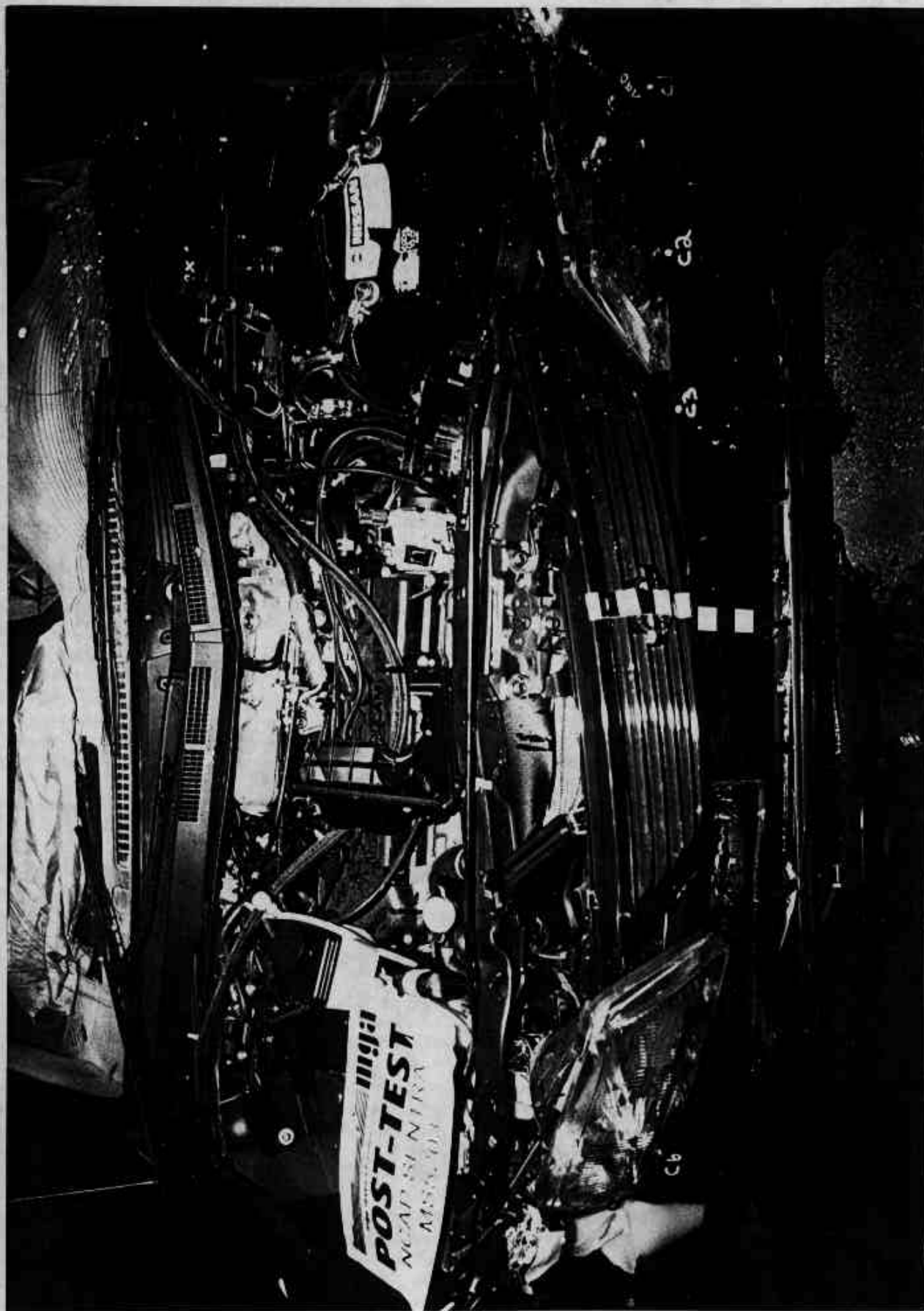


Photo No. A-14 - Pre-Test Engine Compartment View

A-14



A-15

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

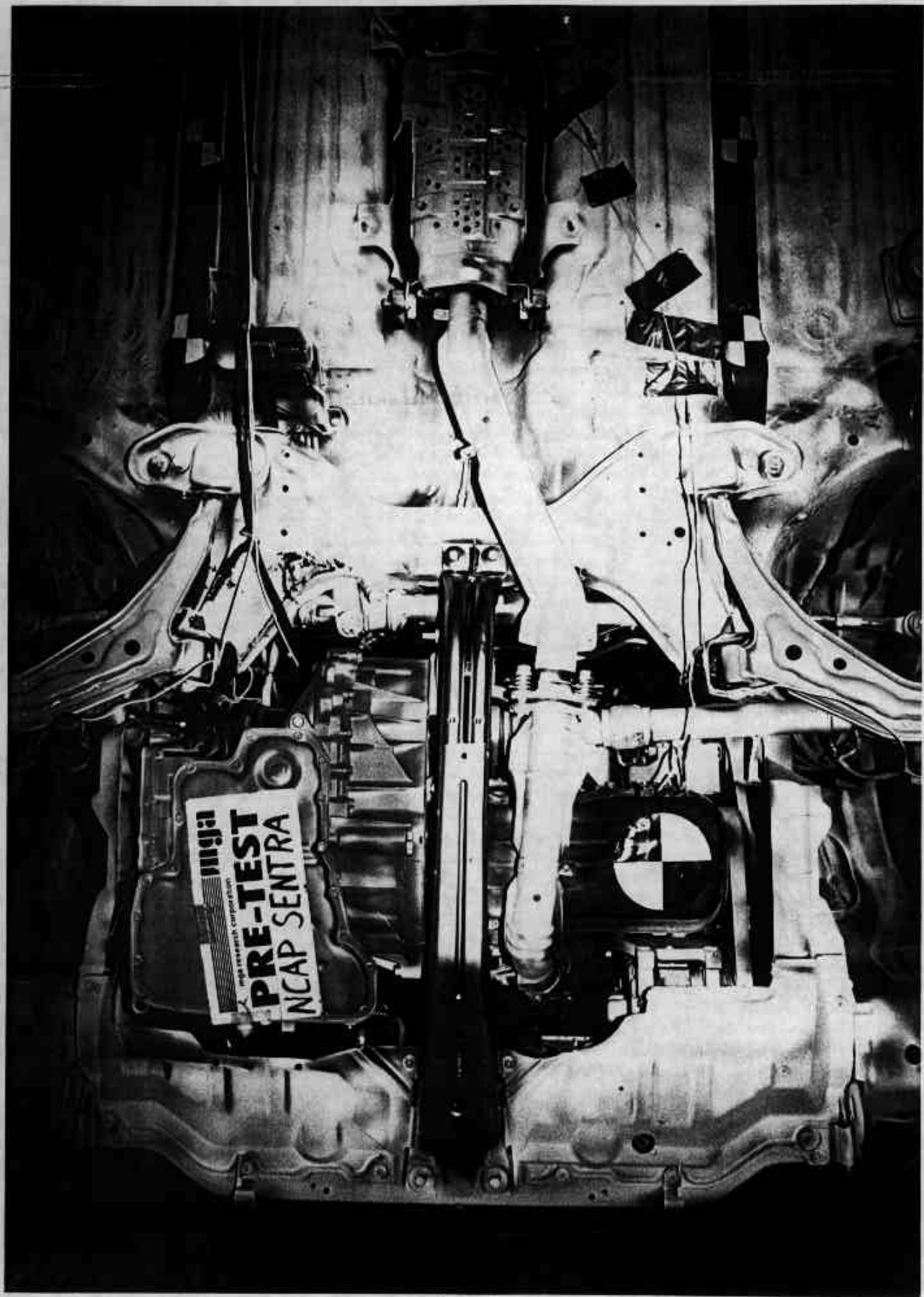


Photo No. A-16 - Pre-Test Front Underbody View

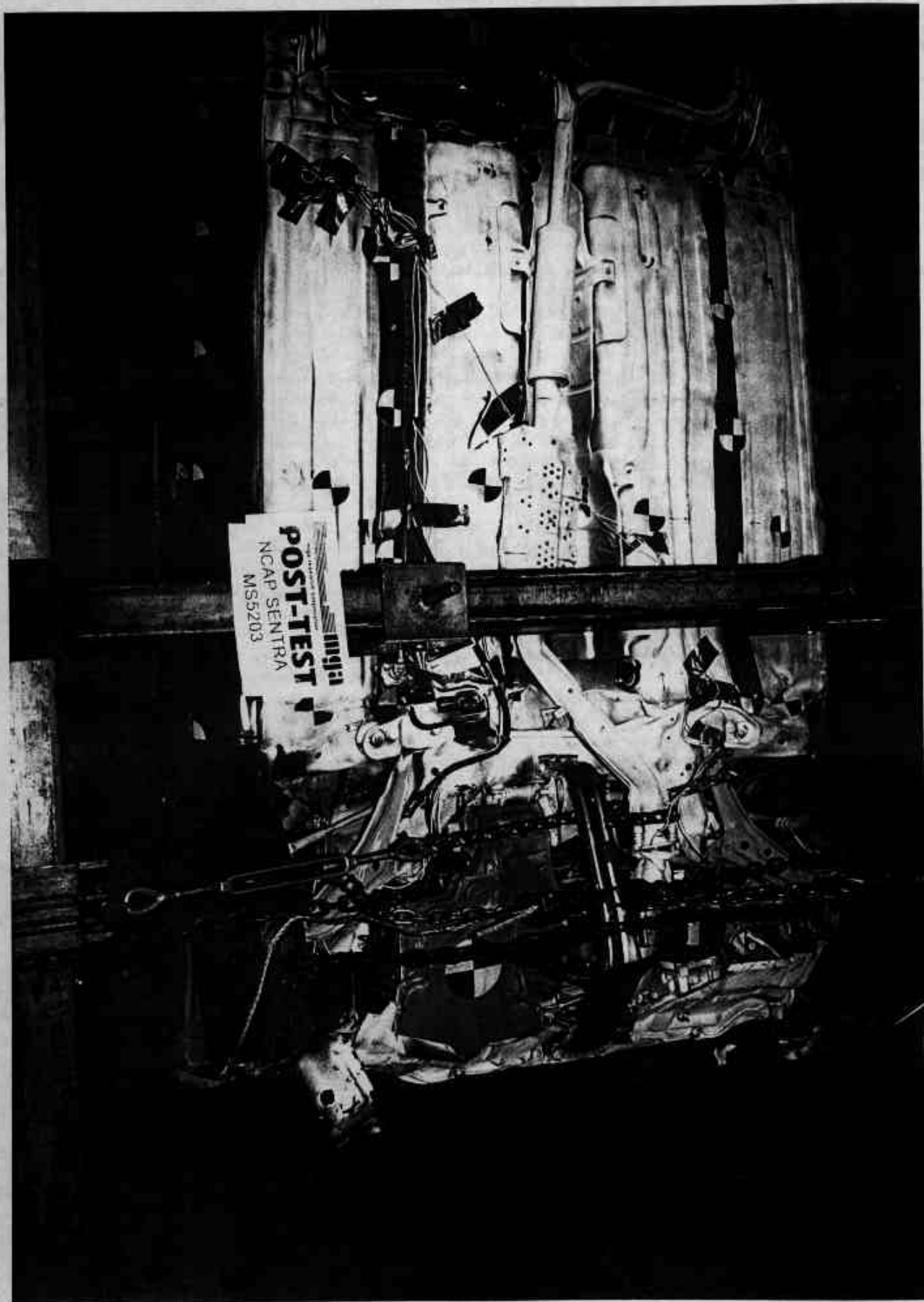


Photo No. A-17 - Post-Test Front Underbody View

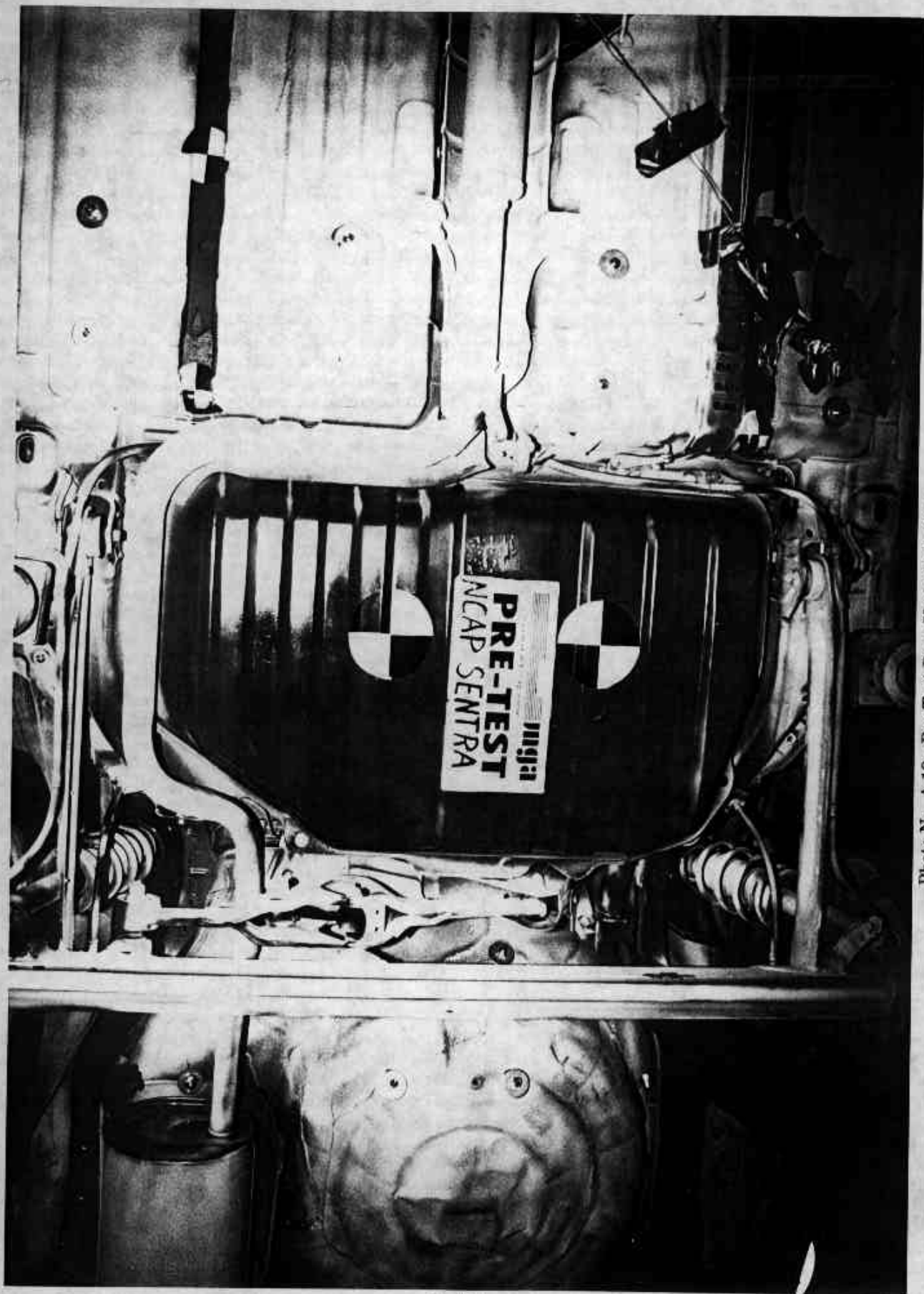


Photo No. A-18 - Pre-Test Rear Underbody View

A-18

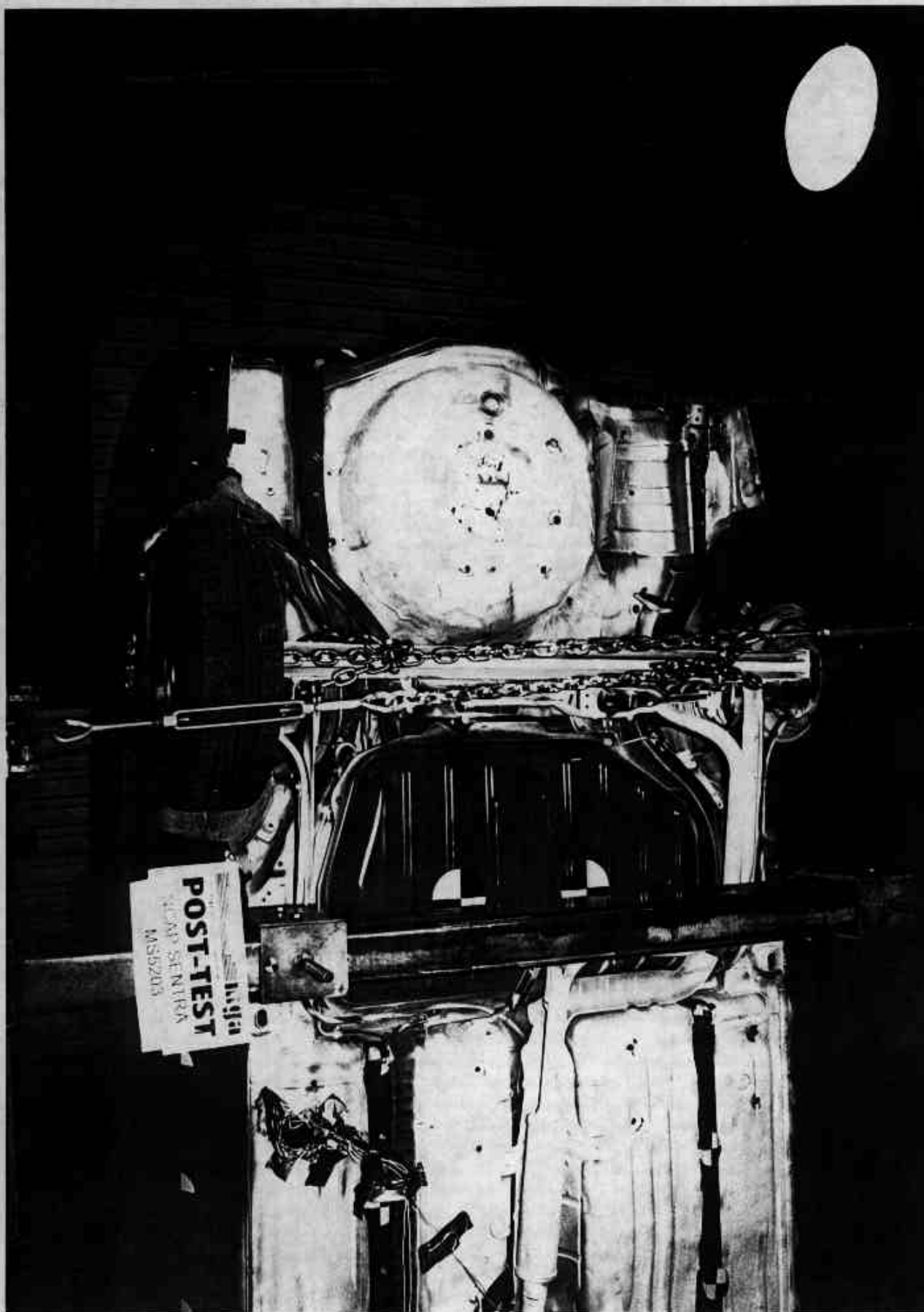


Photo No. A-19 - Post-Test Rear Underbody View

A-19

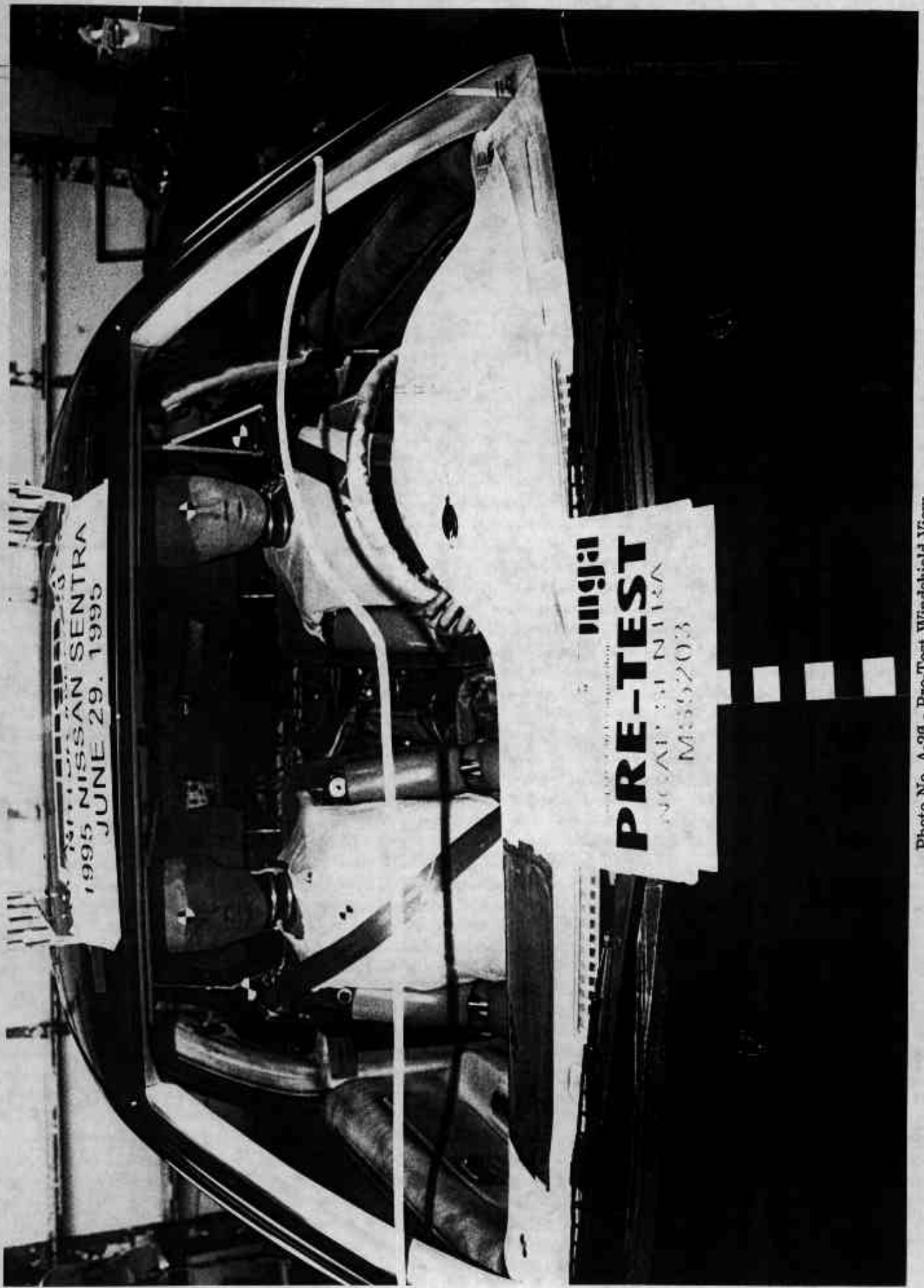


Photo No. A-20 - Pre-Test Windshield View

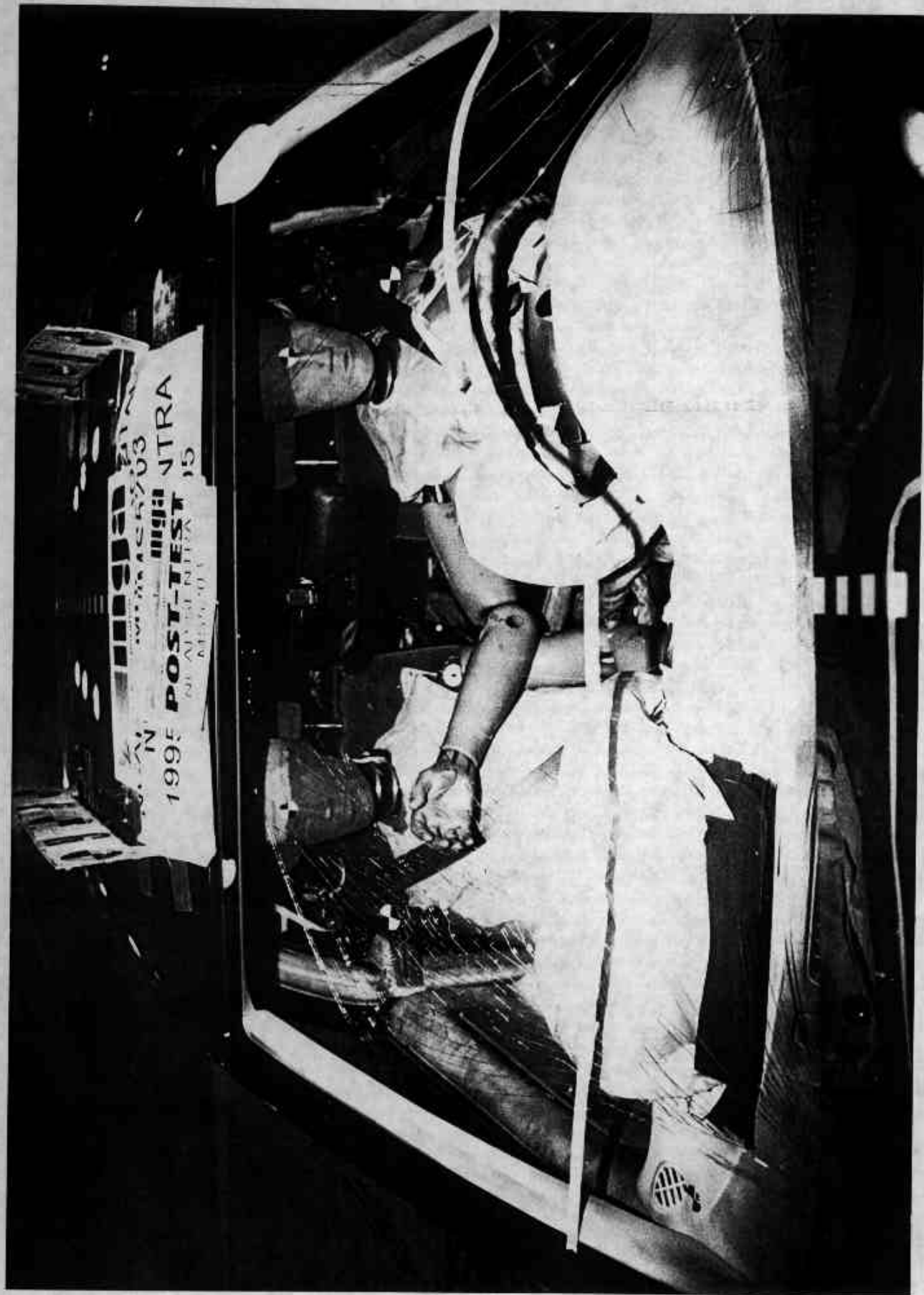
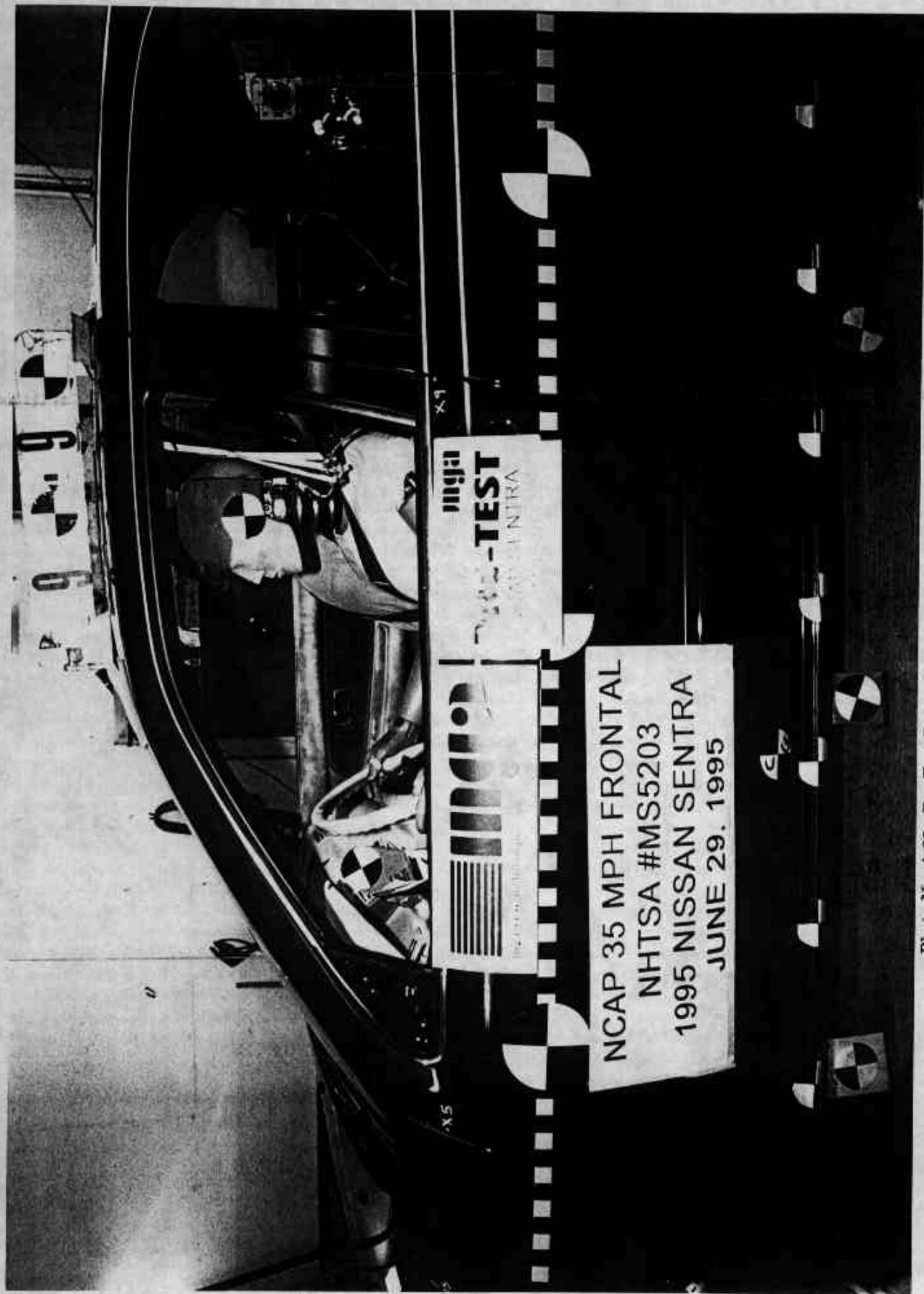


Photo No. A-21 - Post-Test Windshield View

A-21



A-22

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

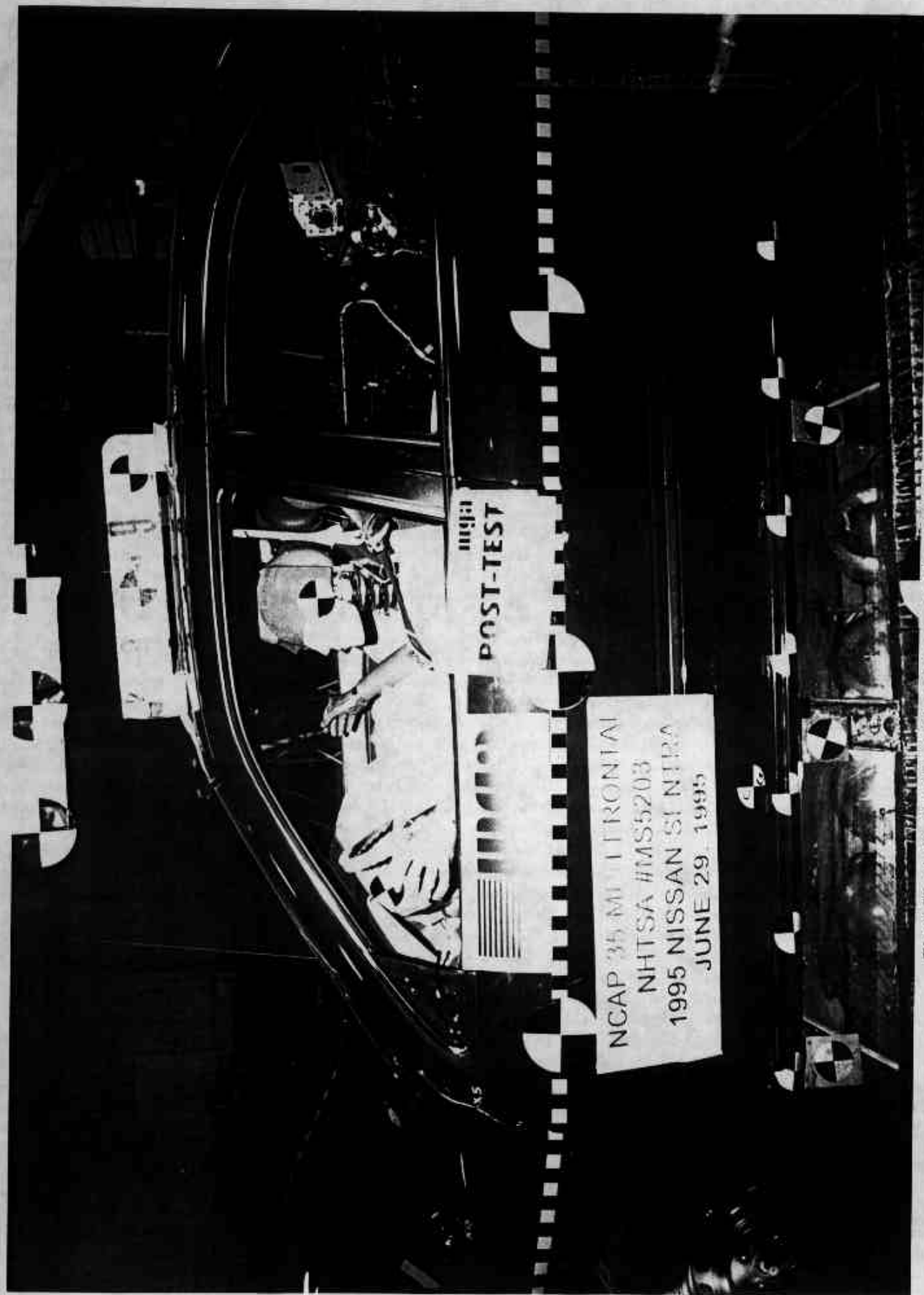


Photo No. A-23 - Post-Test Driver Dummy Position Left Side View

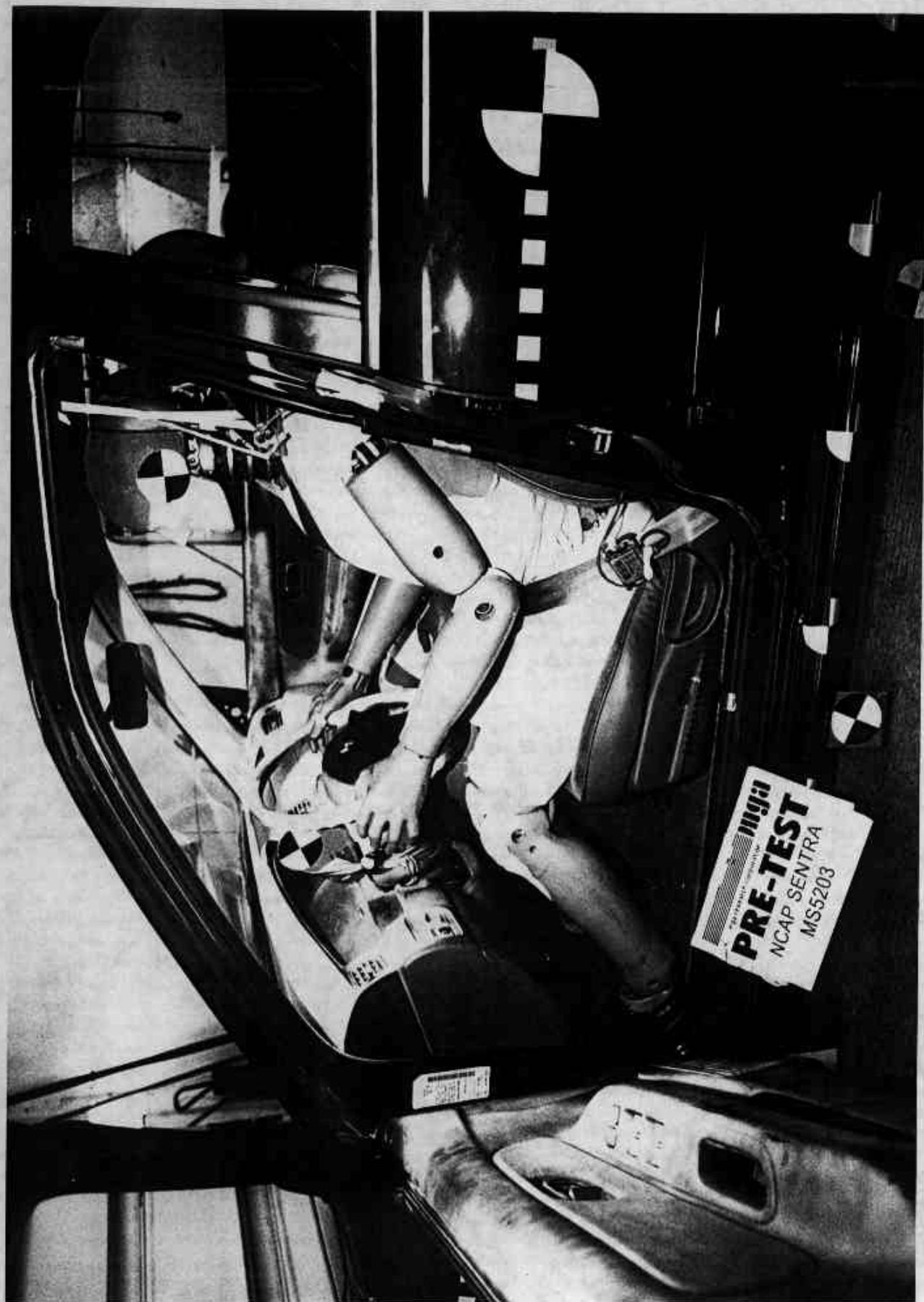
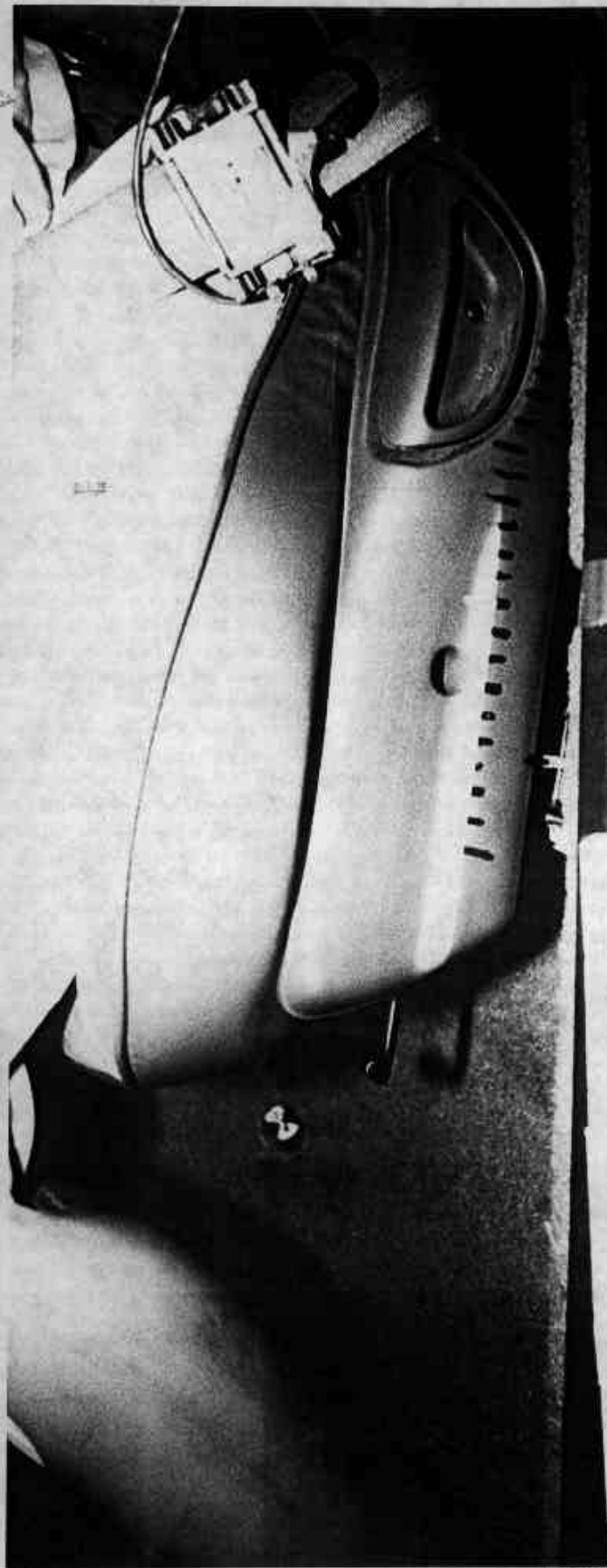


Photo No. A-24 - Pre-Test Driver Dummy Position Left Side View (Door Open)



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

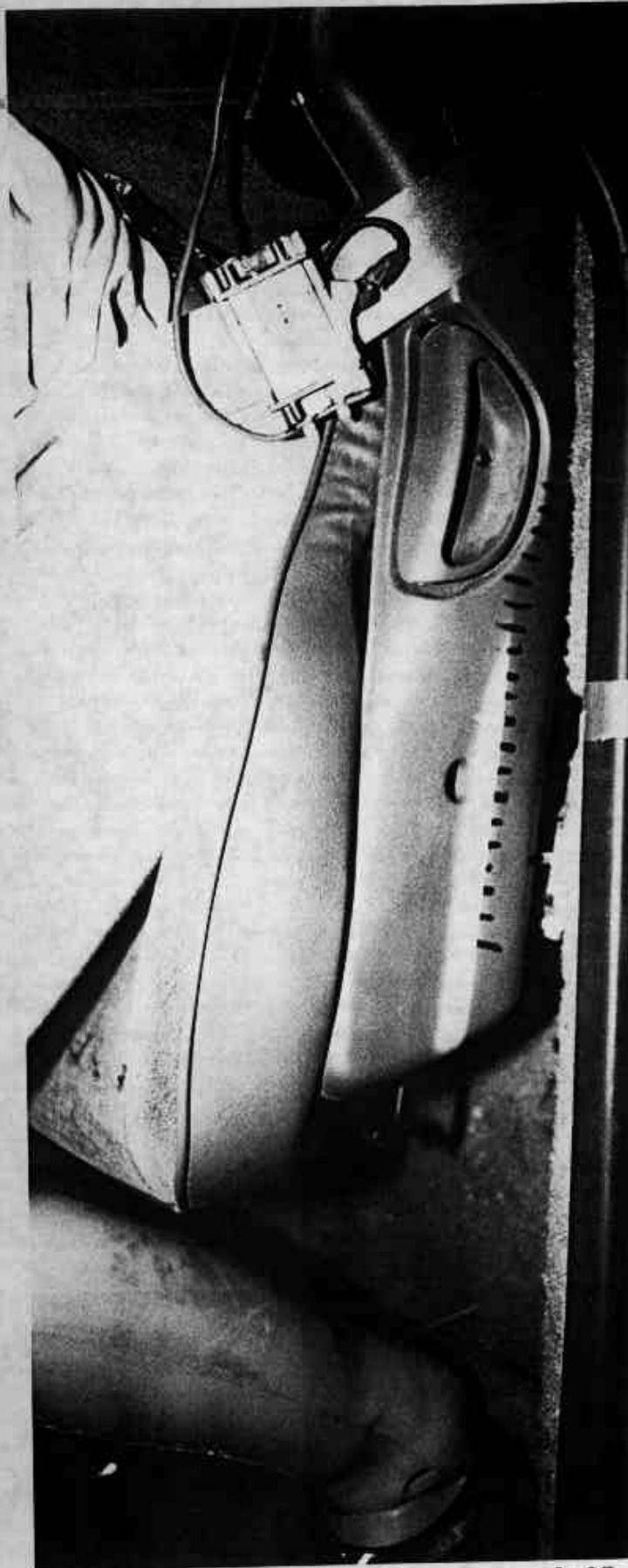
A-25



A-26

mga research corporation
PRE-TEST
NCAP SENTRA
MS5203

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



A-27



POST-TEST

NCAP SENTRA

MS5203

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



A-30

Photo No. A-30 - Pre-Test Driver Windshield View

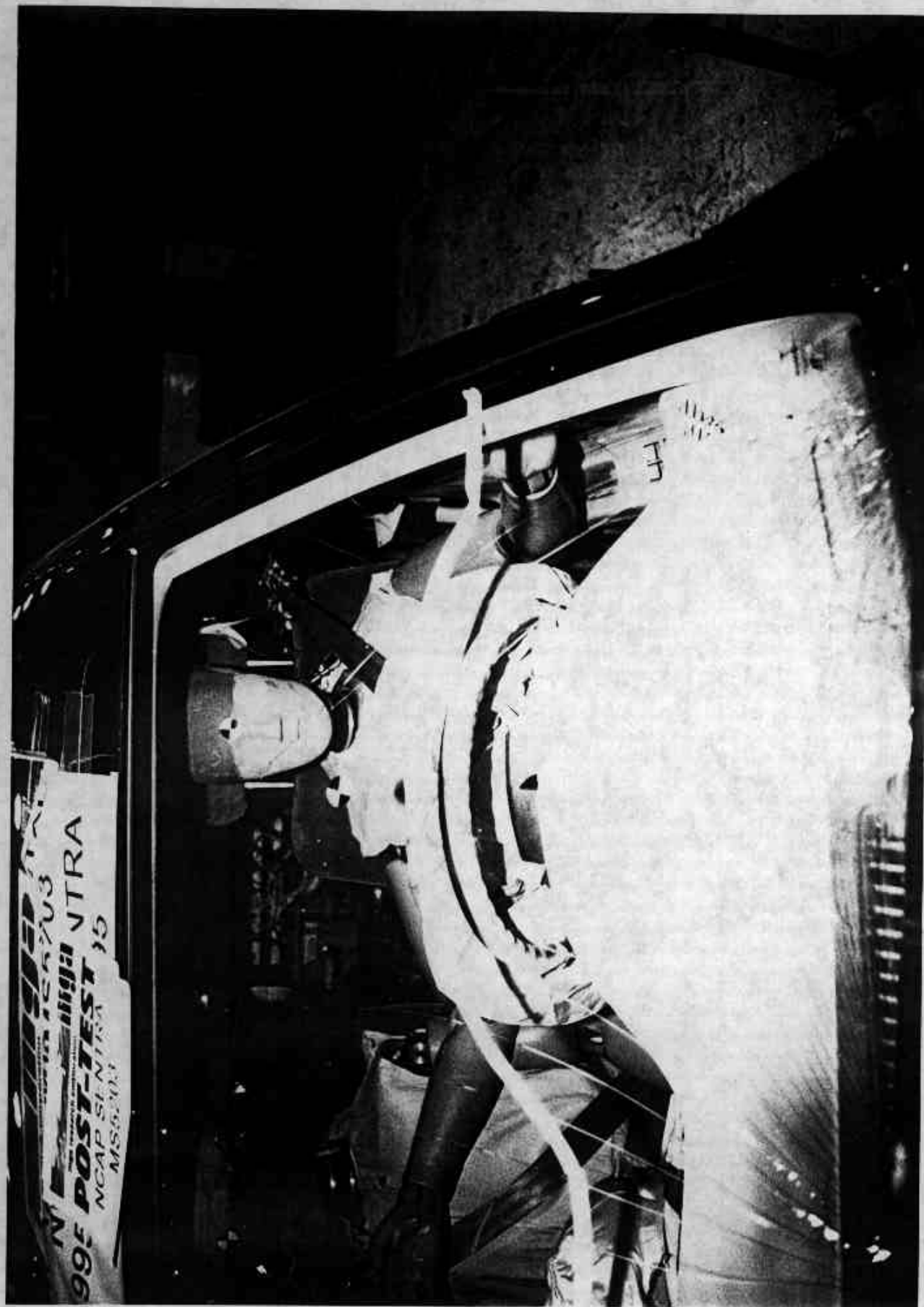


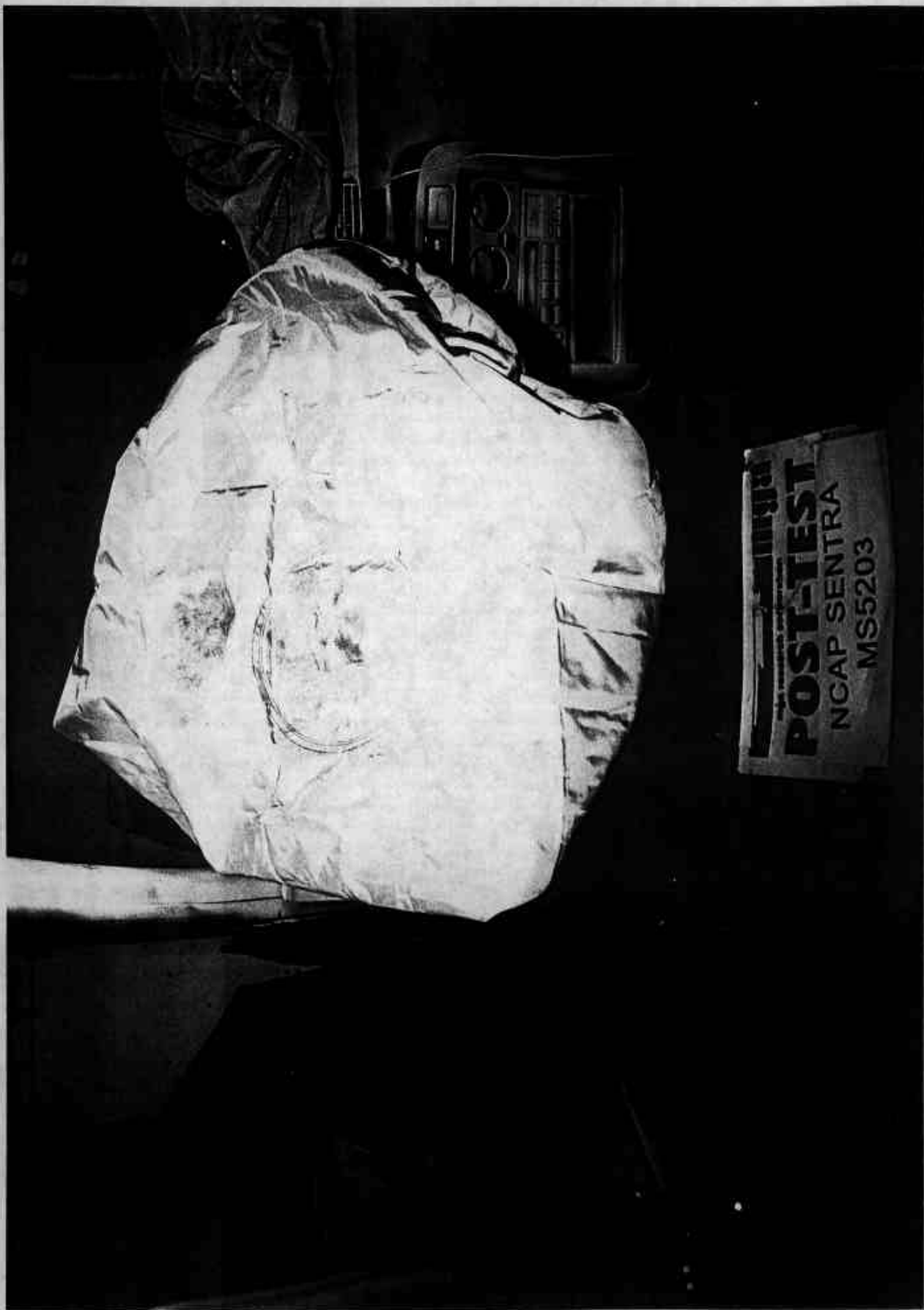
Photo No. A-31 - Post-Test Driver Windshield View

A-31



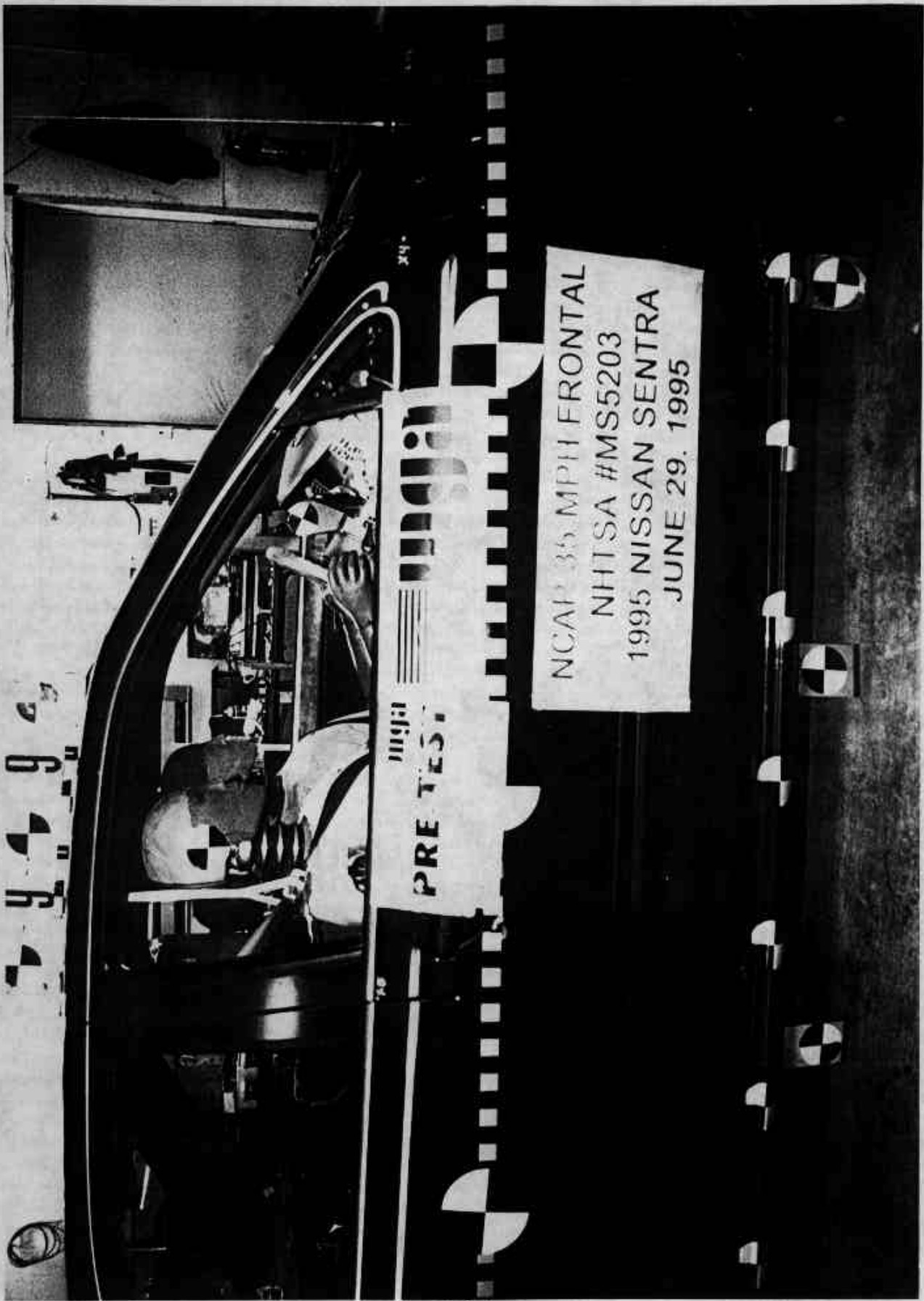
A-32

Photo No. A-32 - Post-Test Driver Knee Contact



A-33

Photo No. A-33 - Post-Test Driver Airbag Contact



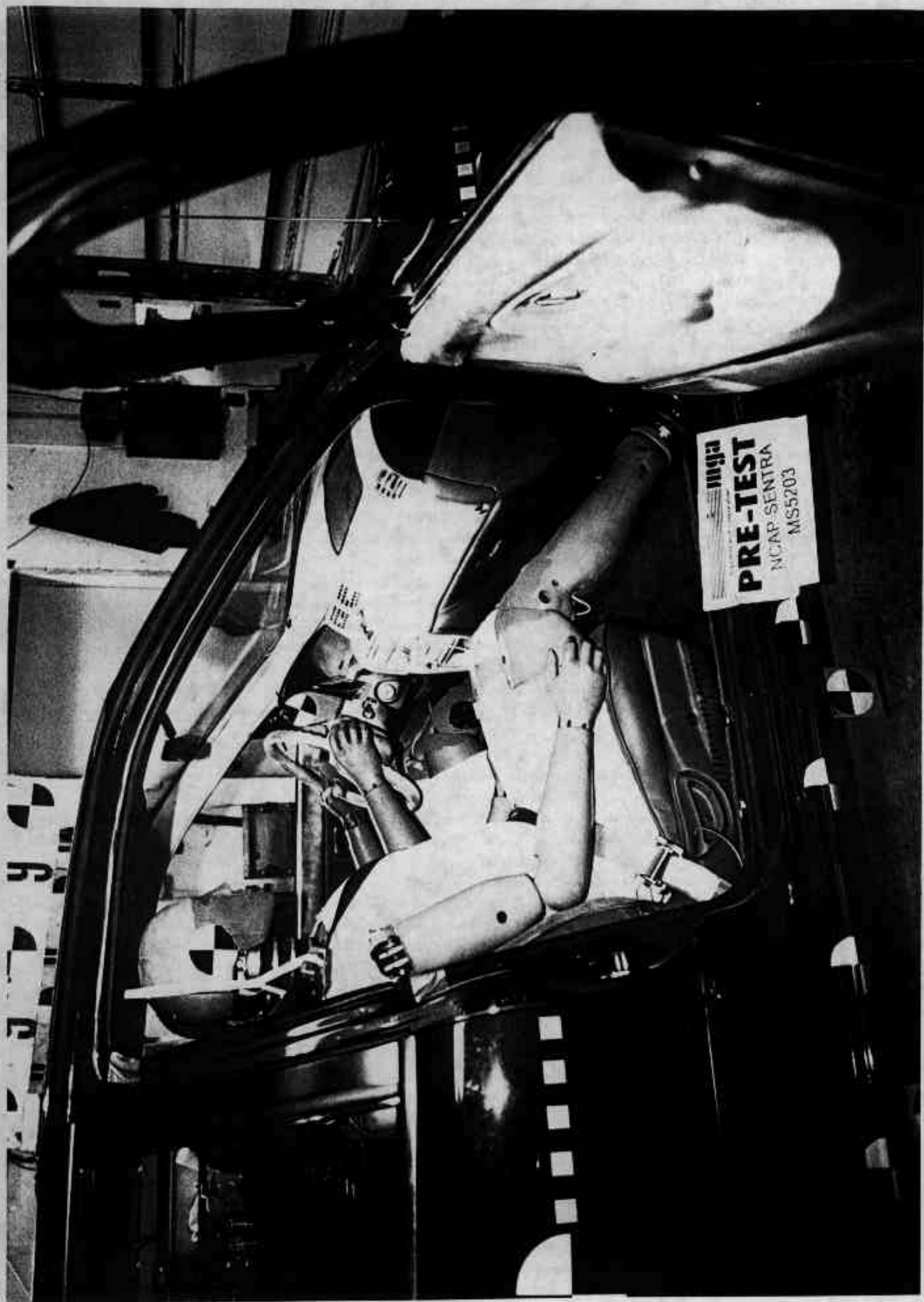
A-34

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



A-35

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



A-36

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)

A-37



A-38

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



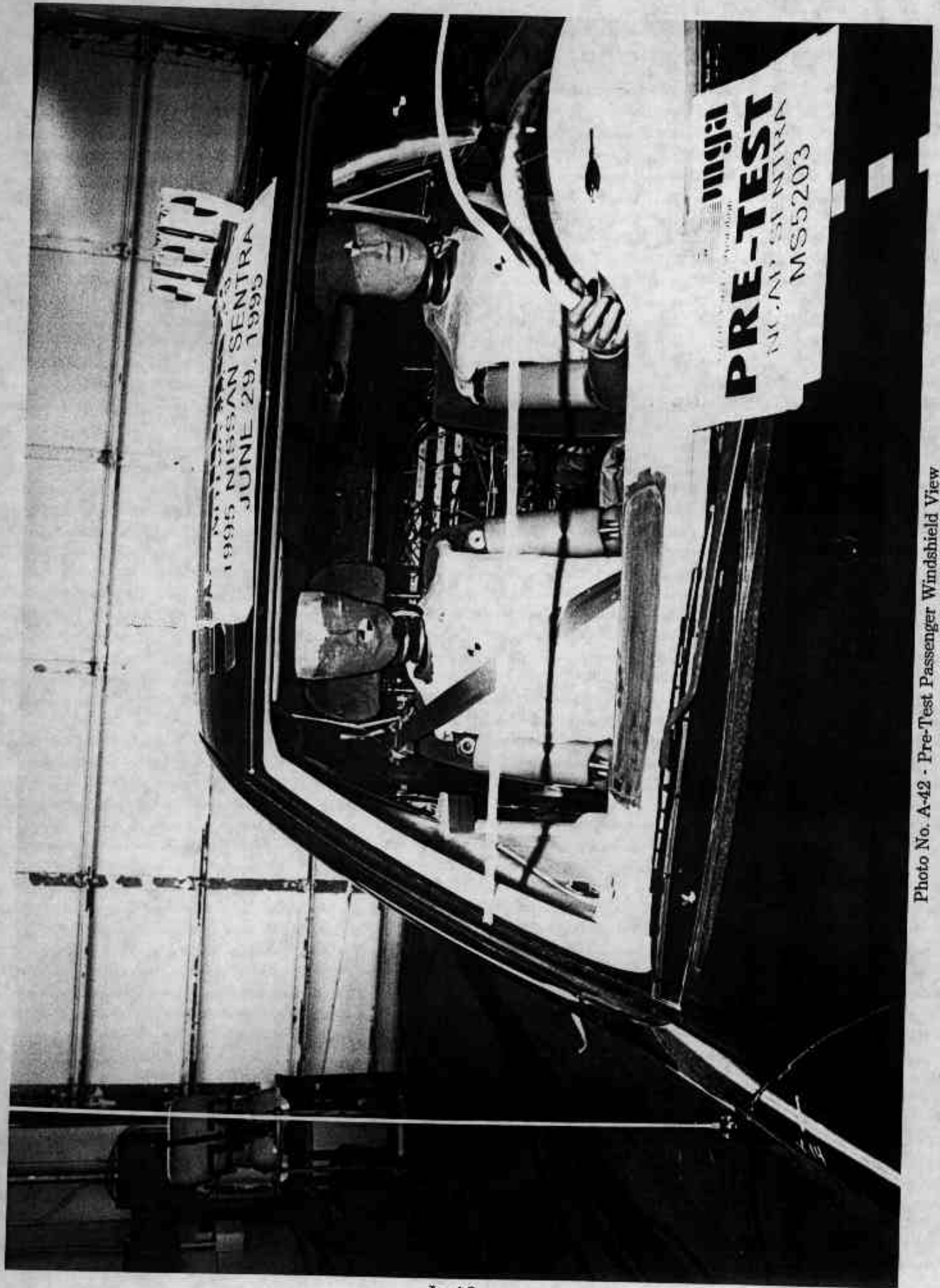
Photo No. A-39 - Post-Test Passenger Seat Position View



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

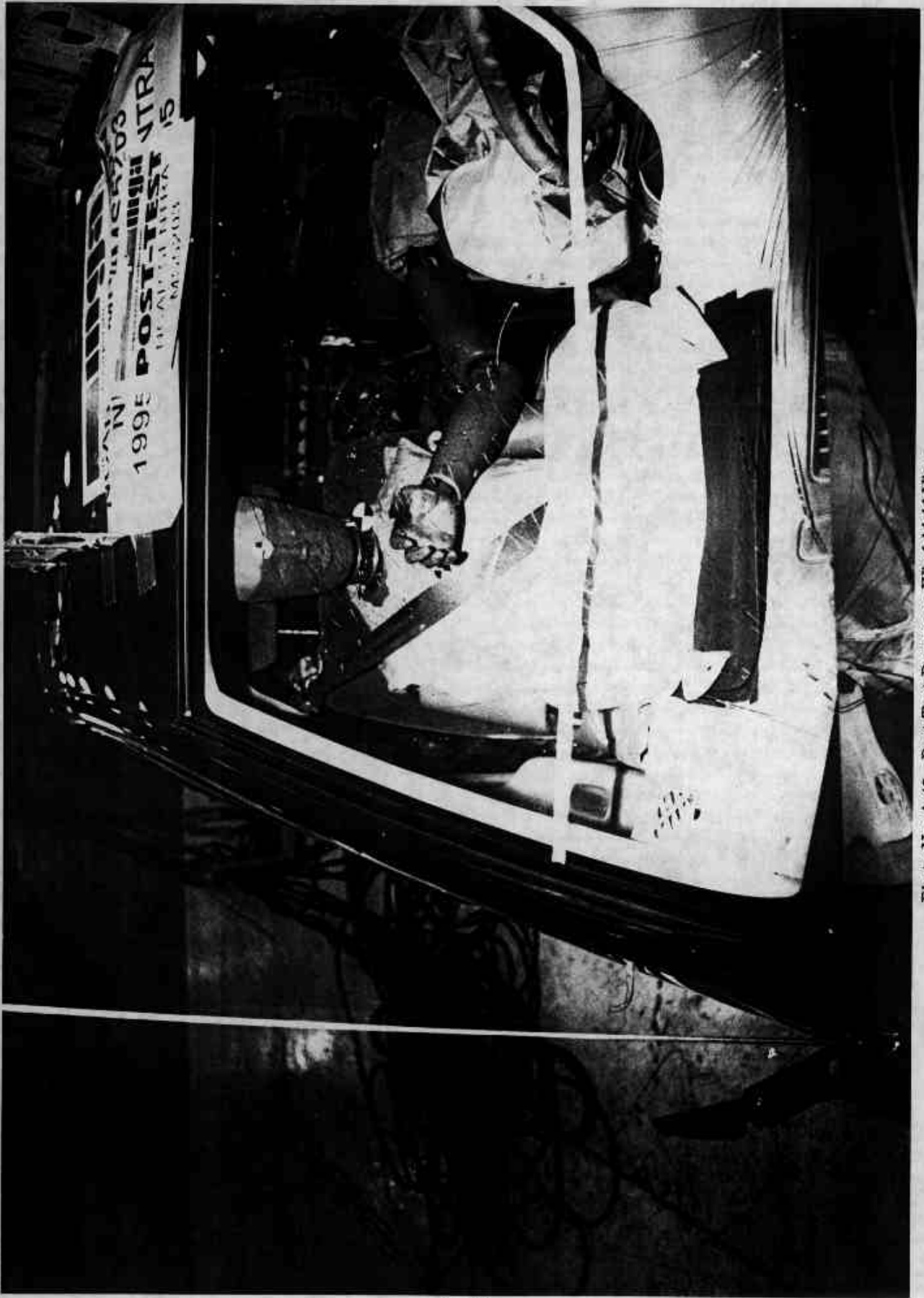


Photo No. A-41 - Post-Test Passenger Dummy Knee Position



A-42

Photo No. A-42 - Pre-Test Passenger Windshield View



A-43

Photo No. A-43 - Post-Test Passenger Windshield View



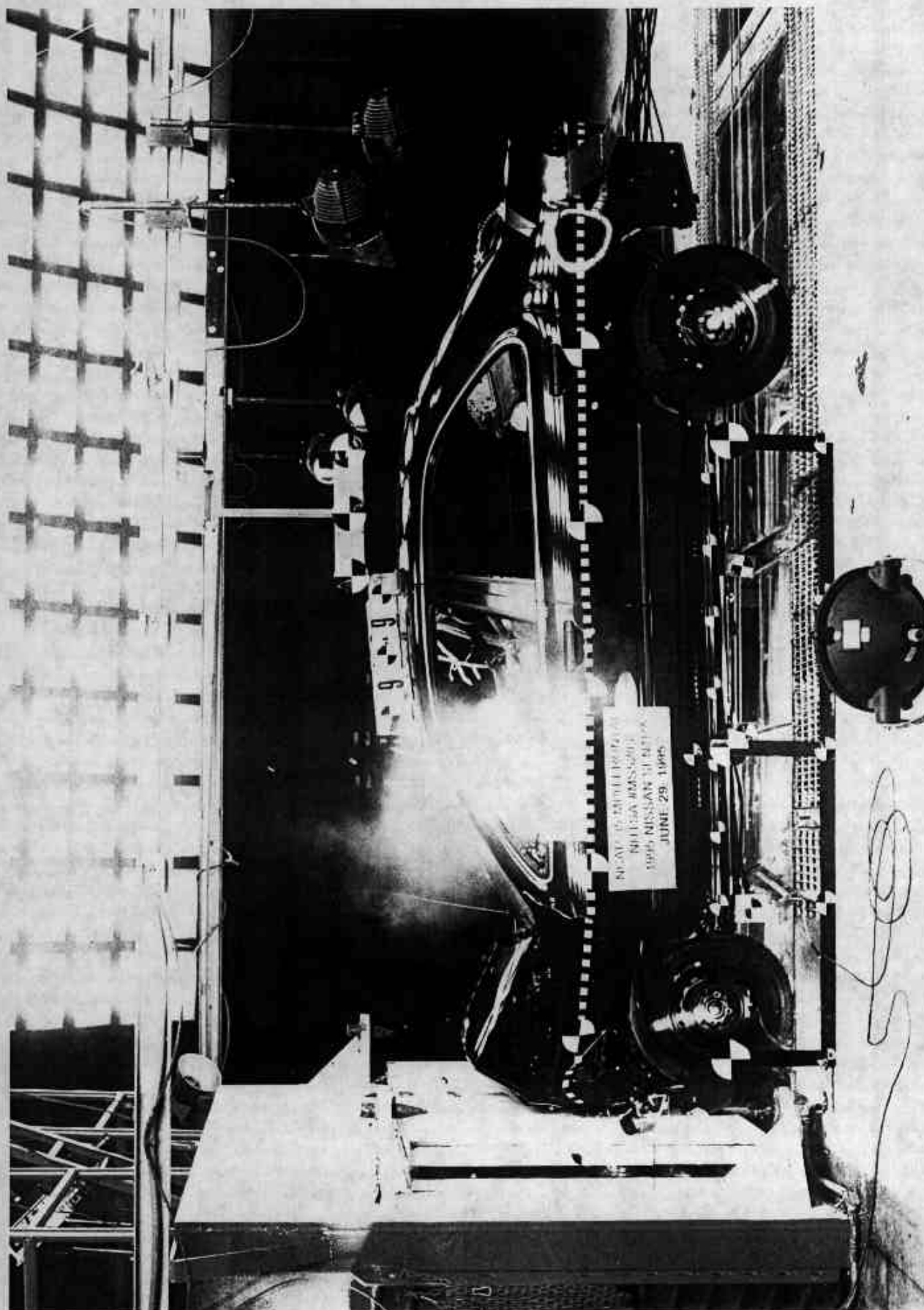
A-44

Photo No. A-44 - Post-Test Passenger Knee Contact



A-45

Photo No. A-45 - Post-Test Passenger Airbag Contact



A-46

Photo No. A-46 - Vehicle Impact

25 95
343 18
1872 18
1567 18

12412410260A 55303

1N4AB41D28075389

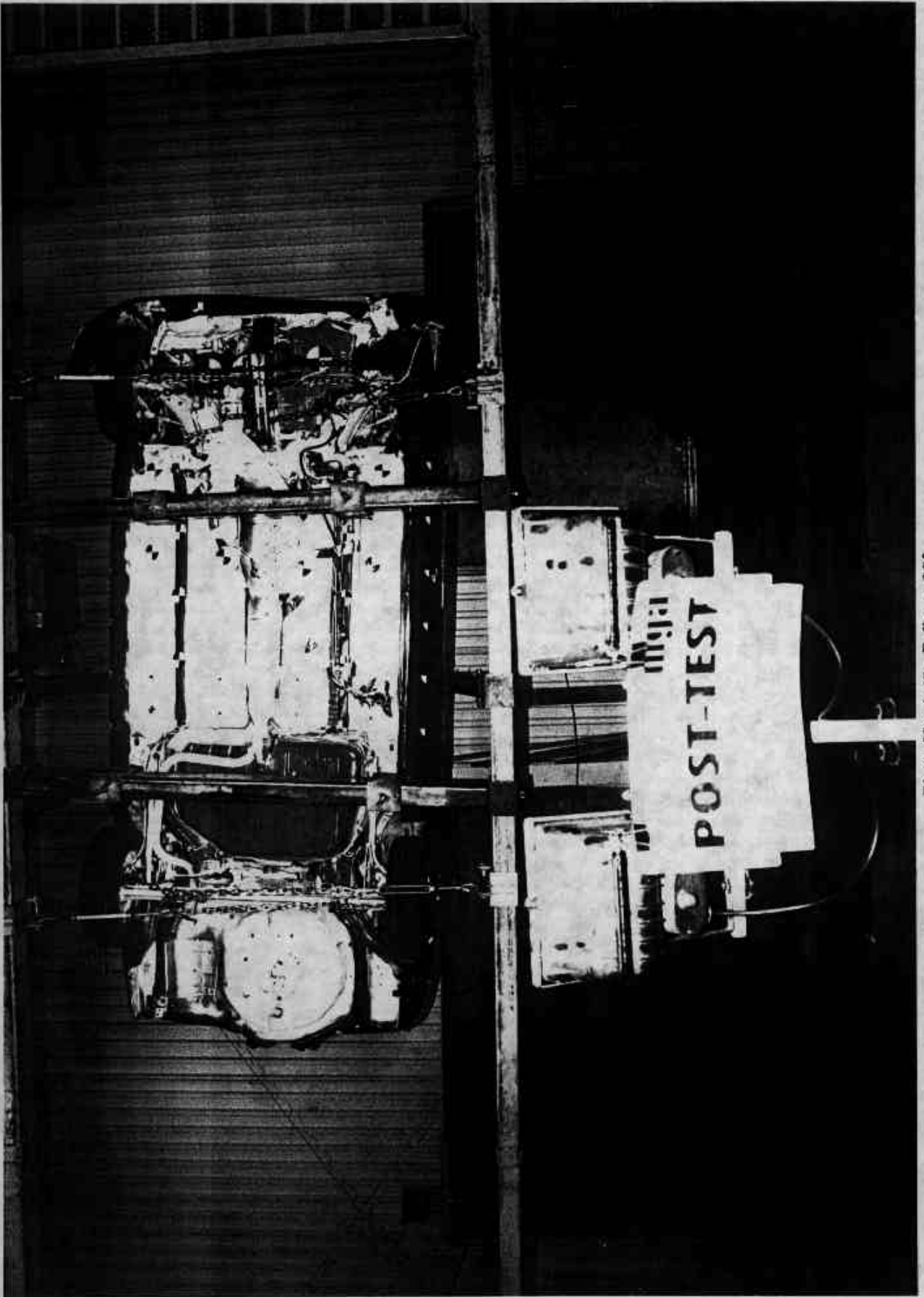
BHY4LBH-EUA

FN4 K RL4F03A

FL38 GA160E 1597CC

VEHICLE CAPACITY WEIGHT		814 LBS		SEATING CAPACITY		FRONT 2 AVANT		TOTAL TOTAL		PSI kPa)	
POIDS UTILE DU VEHICULE		369 kg		NOMBRE DE PLACES		REAR 3 ARRIERE		5		60 (420)	
RECOMMENDED COLD TIRE INFLATION PRESSURE PRESSION DE GONFLAGE RECOMMANDEE DES PNEUS FROIDS.											
TIRE SIZE DIMENSIONS		FRONT psi AVANT (kPa)		REAR psi ARRIERE (kPa)							
P175/70R13 82S		33 (230)		29 (200)							
DO NOT EXCEED 50 MPH (80 km/h). SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION. MAX 50 MPH, 80 km/h. POUR LES DETAILS SE REFERER AU MANUEL DU CONDUCTEUR.											

4B010



A-49

Photo No. A-49 - Rollover 90°

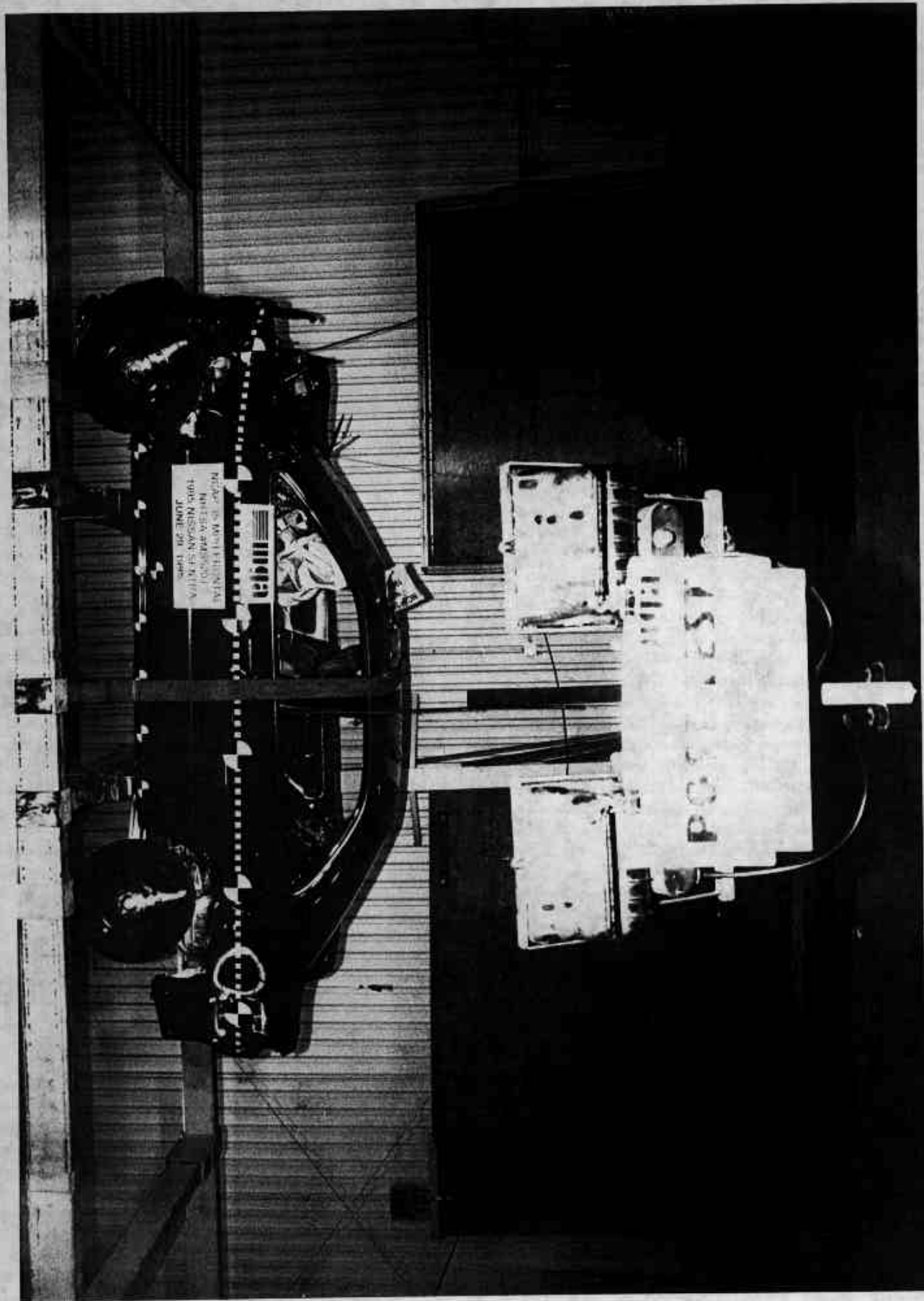
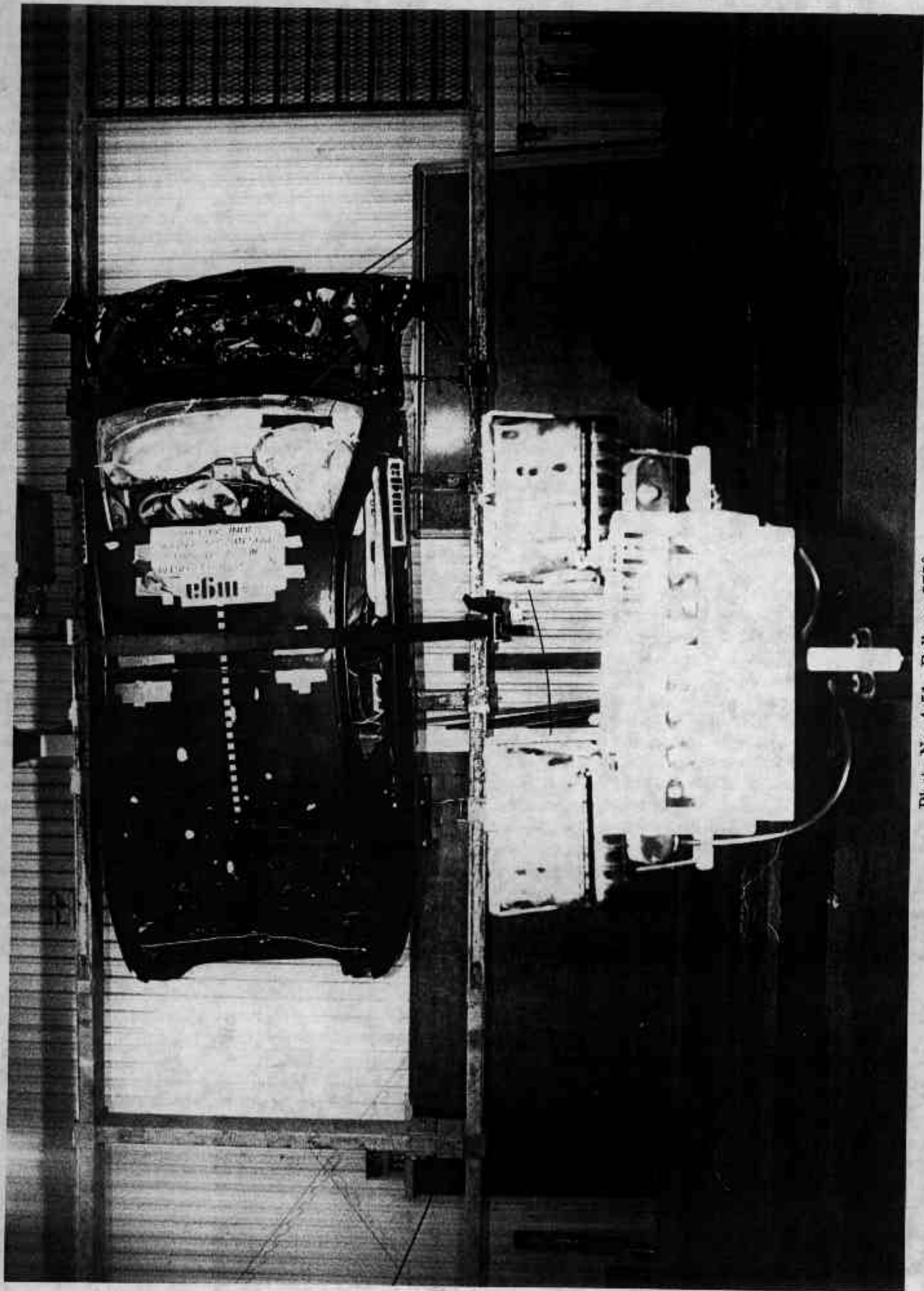
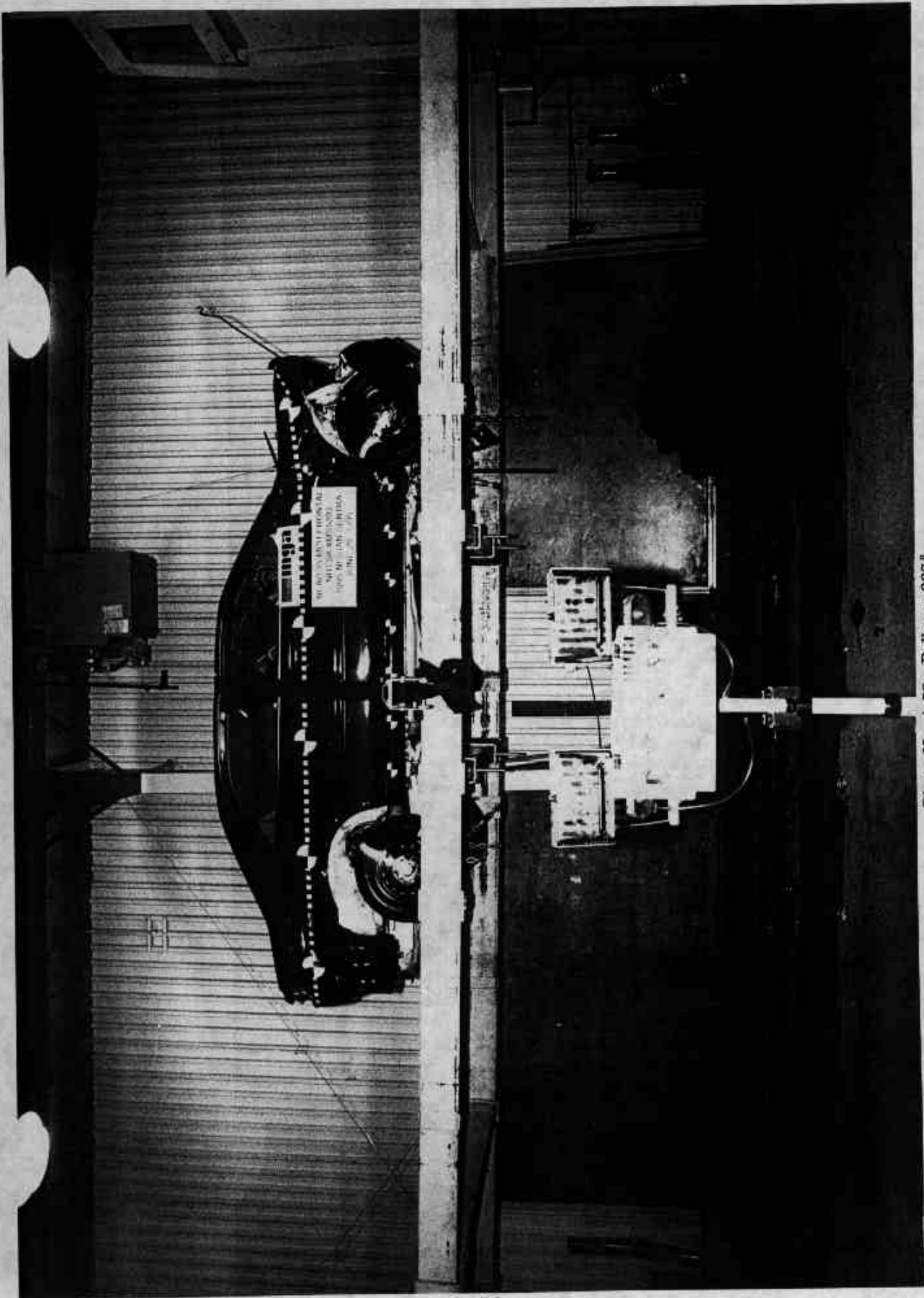


Photo No. A-50 - Rollover 180°



A-51

Photo No. A-51 - Rollover 270°



1995 Nissan Sentra GXE 4 Door

NHTSA NO.: MS5203

VEHICLE DATA FILTER CHANNEL CLASS

Head Accelerations 1000(1650 Hz)

Chest Accelerometers 180(300 Hz)

Vehicle Accelerometers 60(100 Hz)

Barrier Load Cells 60(100 Hz)

Femur Load Cells 600(1000 Hz)

Lap and Torso Belts 60(100 Hz)

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* No valid data collected

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* No valid data collected

<u>Data Plot</u>	<u>Page No.</u>
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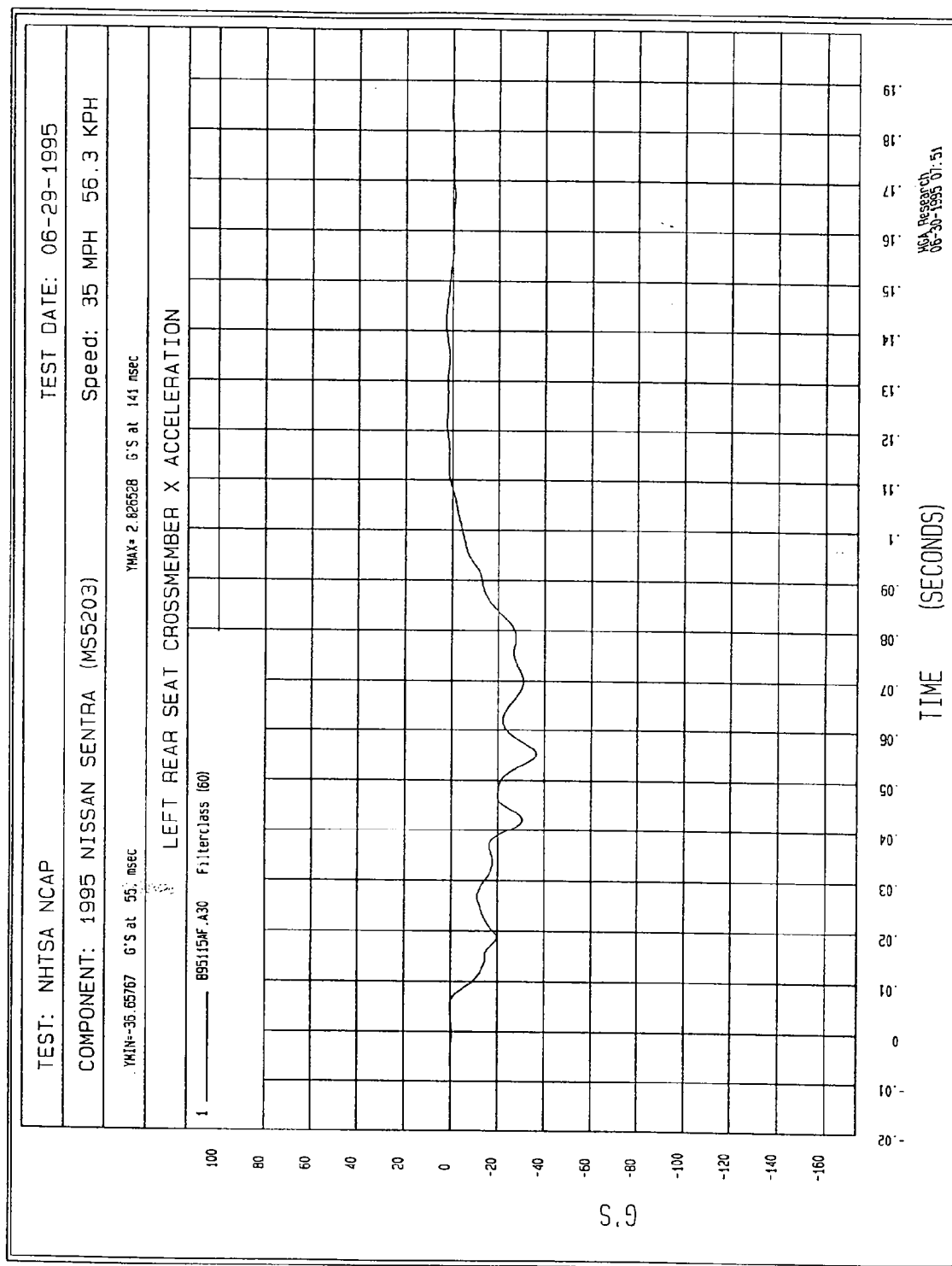


Figure B-1 - Left Rear Seat Crossmember X Acceleration vs. Time

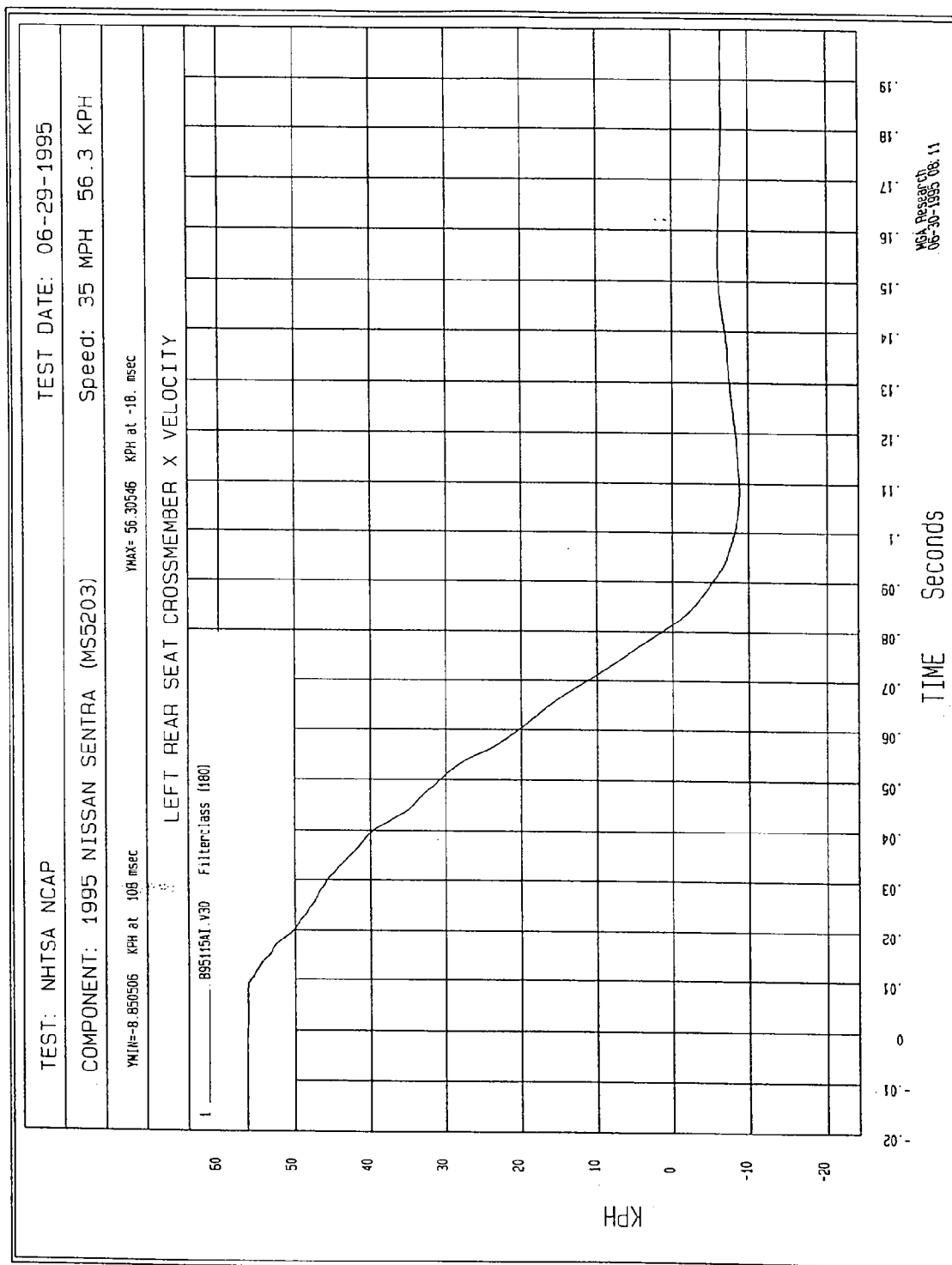


Figure B-2 - Left Rear Seat Crossmember X Velocity vs. Time

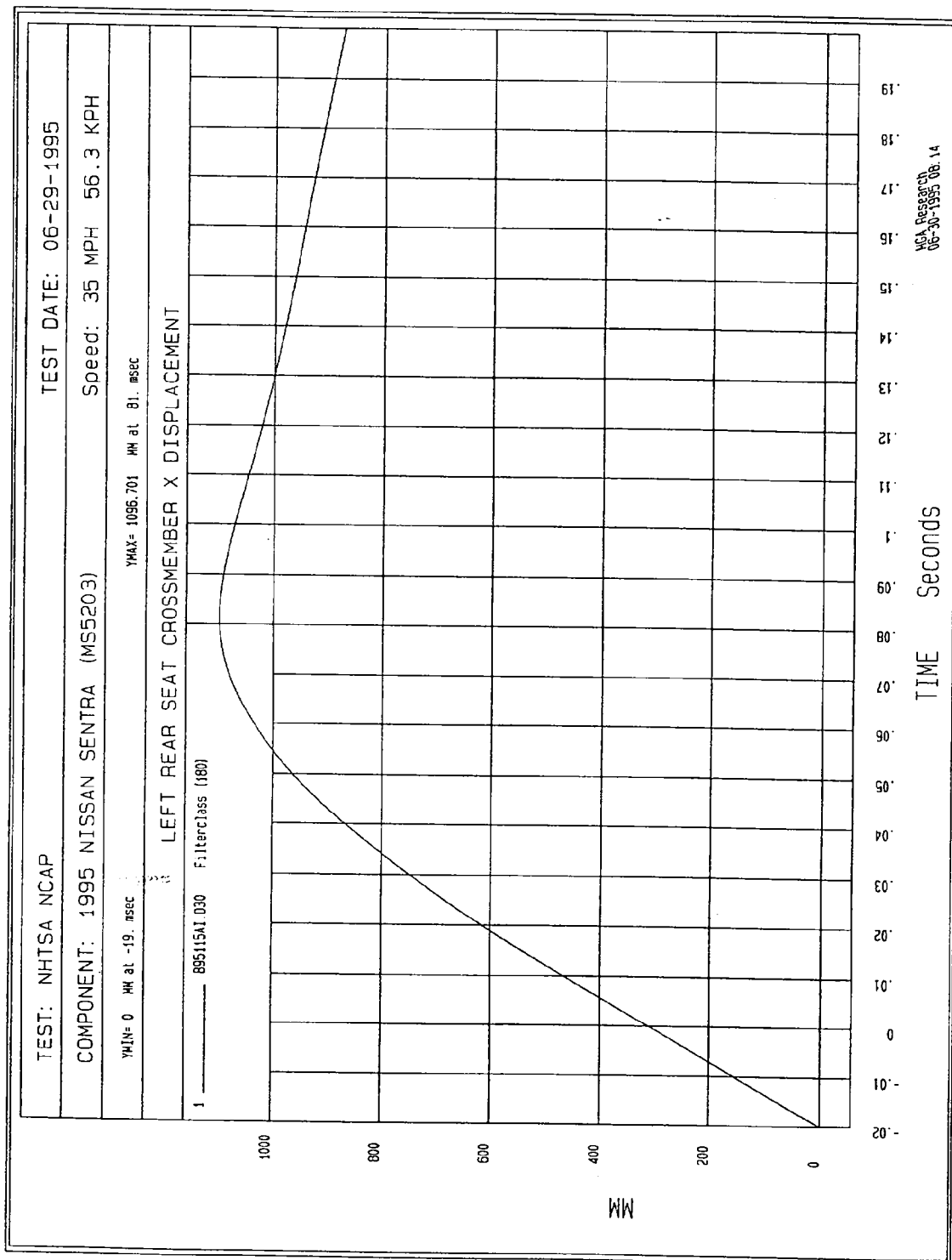


Figure B-3 - Left Rear Seat Crossmember X Displacement vs. Time

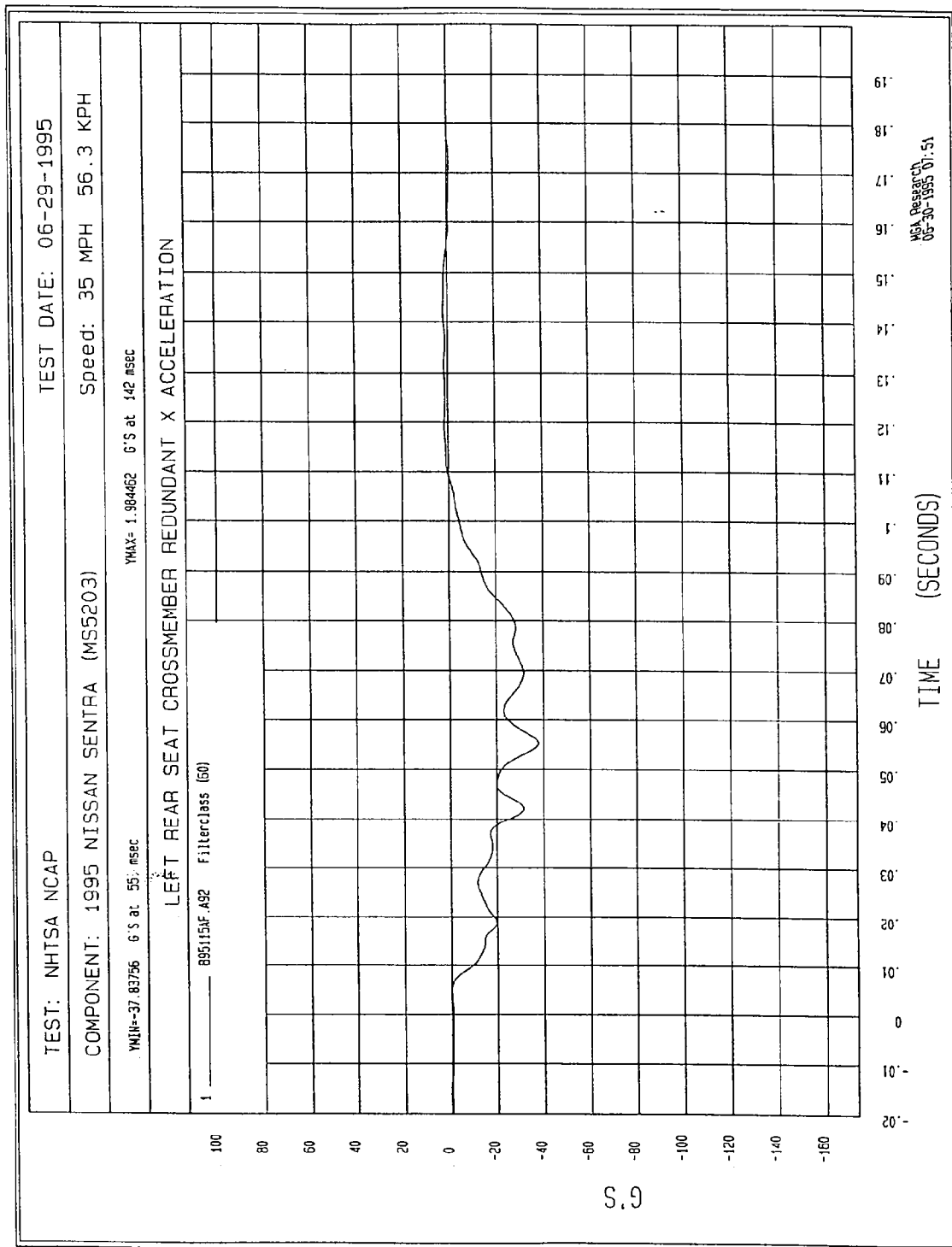


Figure B-4 - Left Rear Seat Crossmember Redundant X Acceleration vs. Time

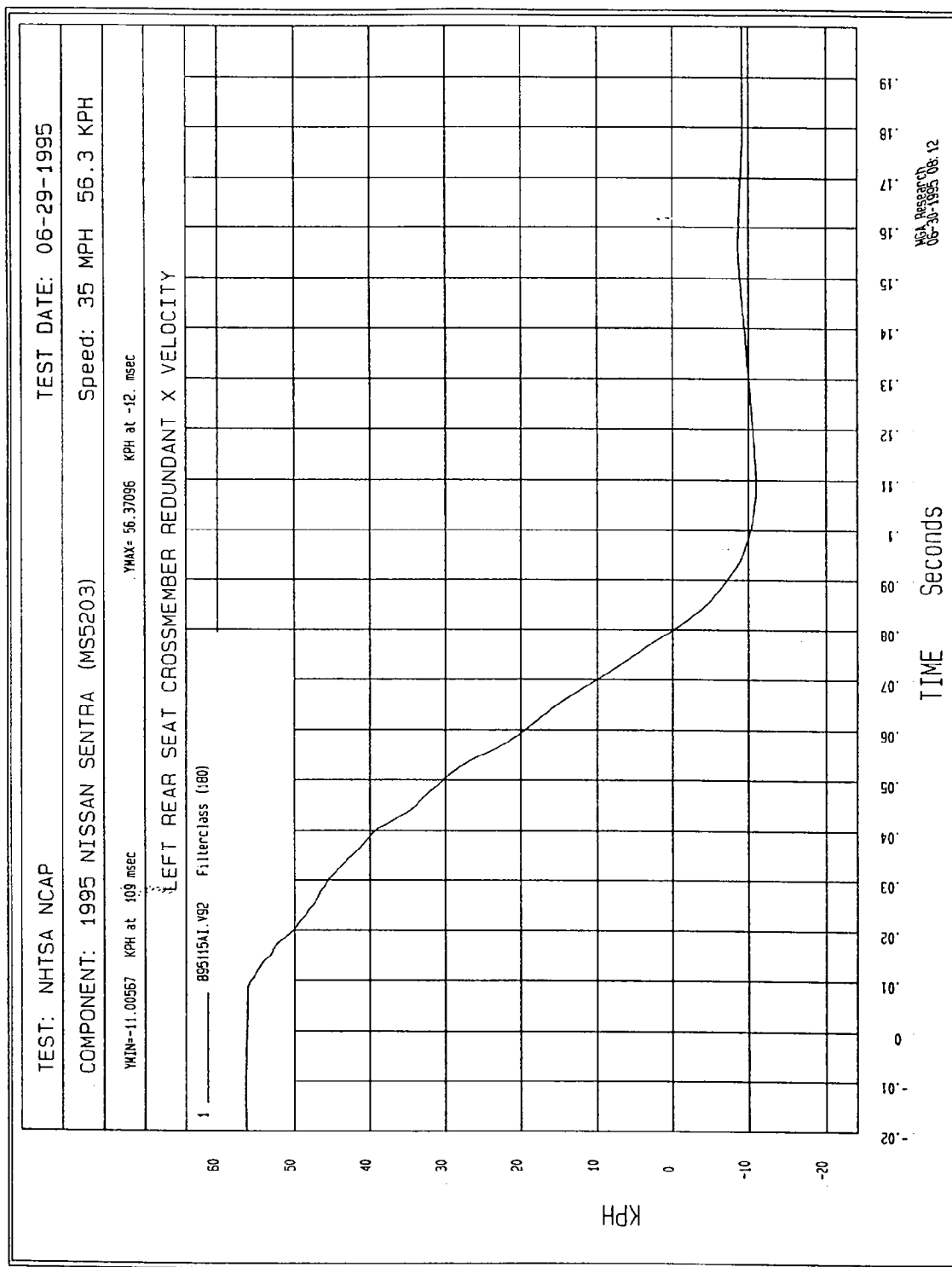


Figure B-5 - Left Rear Seat Crossmember Redundant X Velocity vs. Time

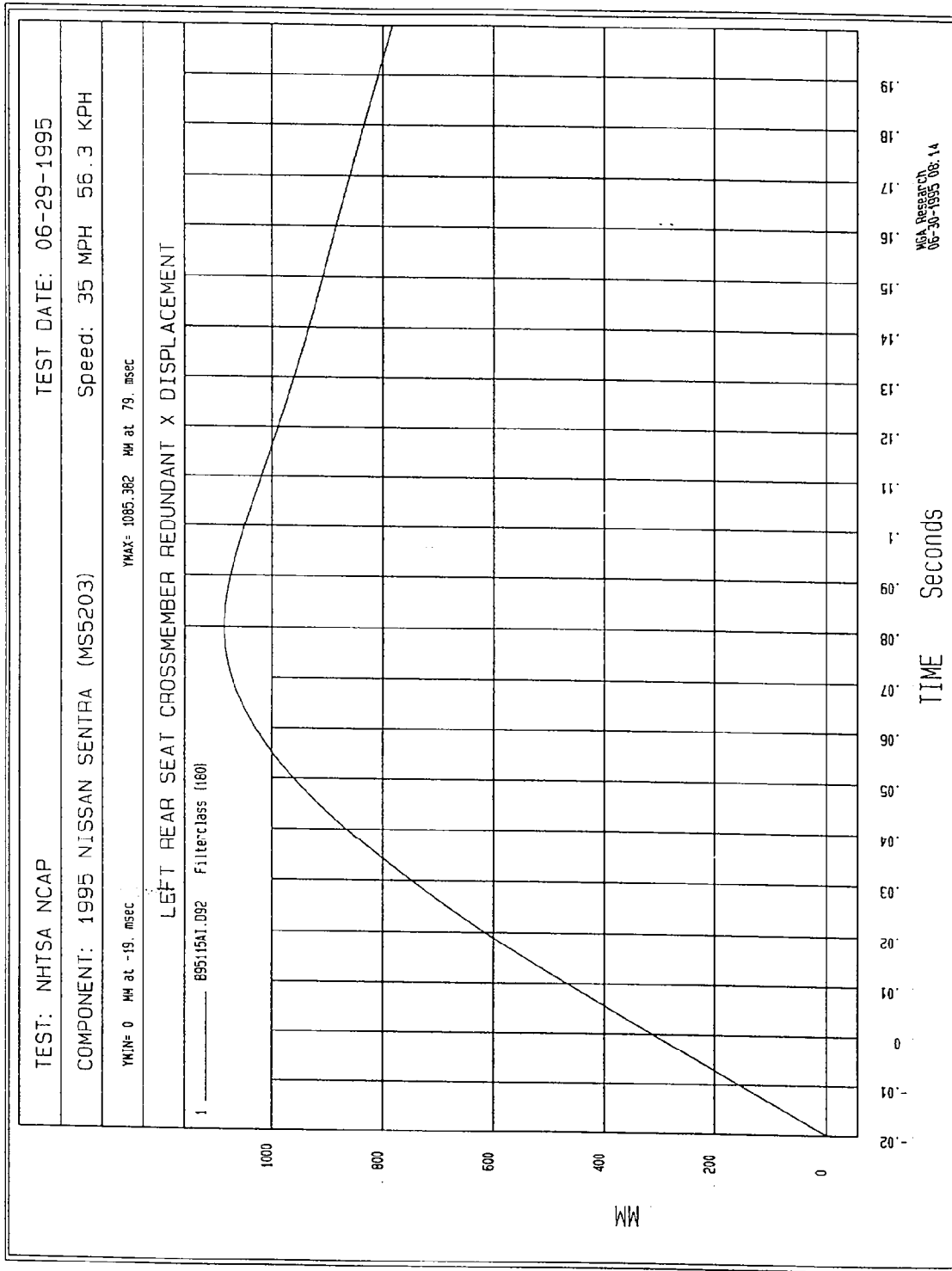


Figure B-6 - Left Rear Seat Crossmember Redundant X Displacement vs. Time

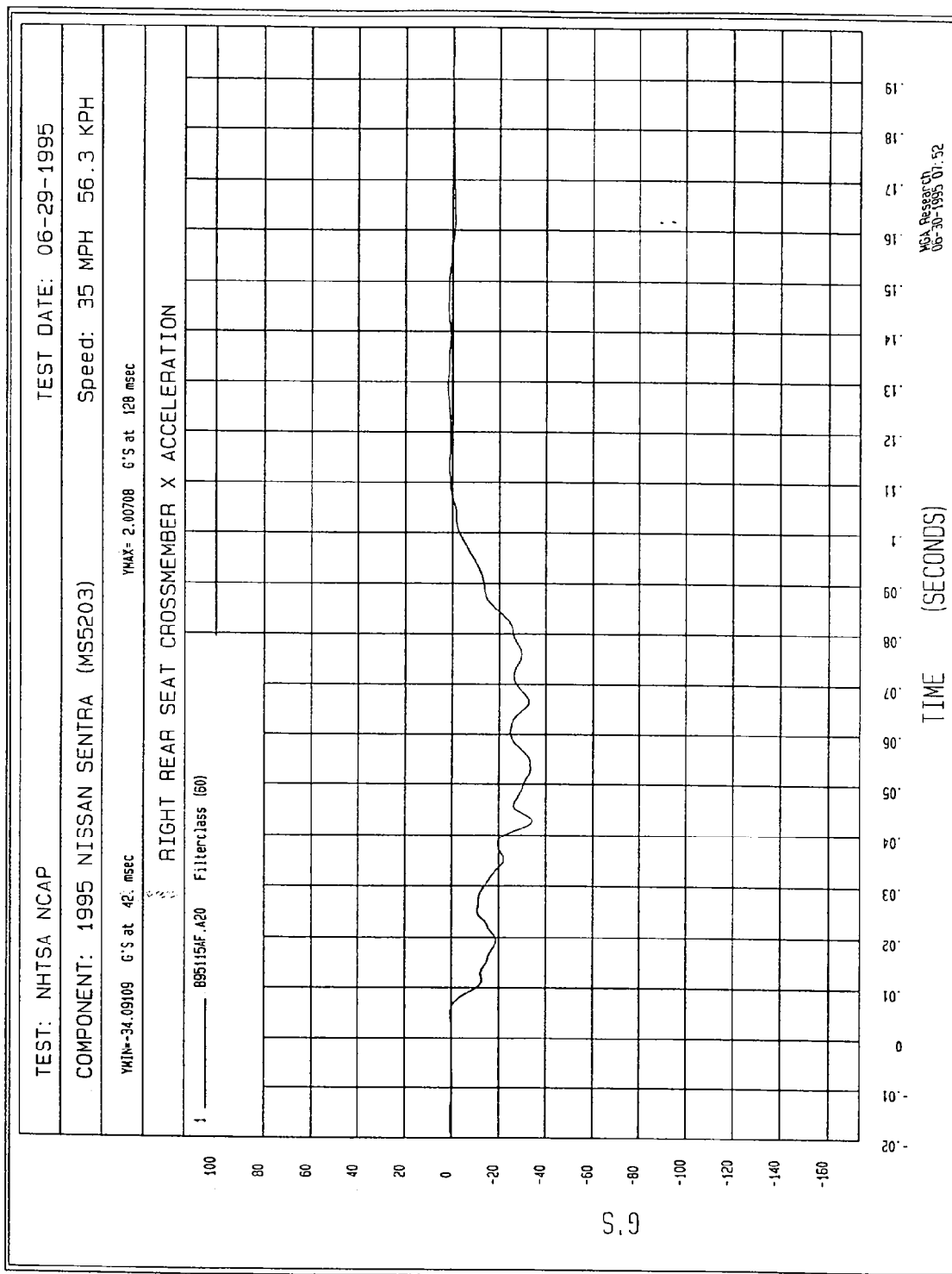


Figure B-7 - Right Rear Seat Crossmember X Acceleration vs. Time

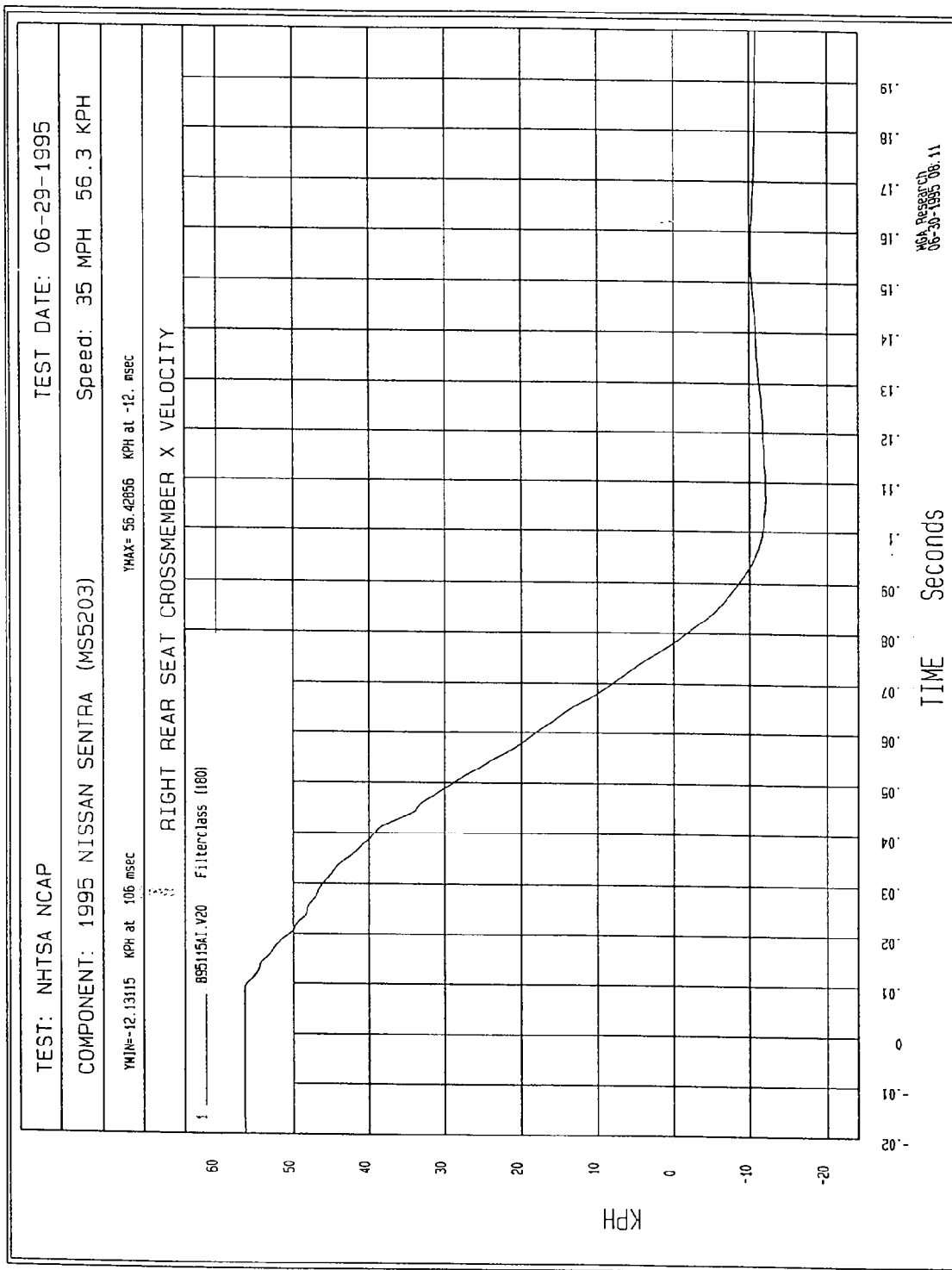


Figure B-8 - Right Rear Seat Crossmember X Velocity vs. Time

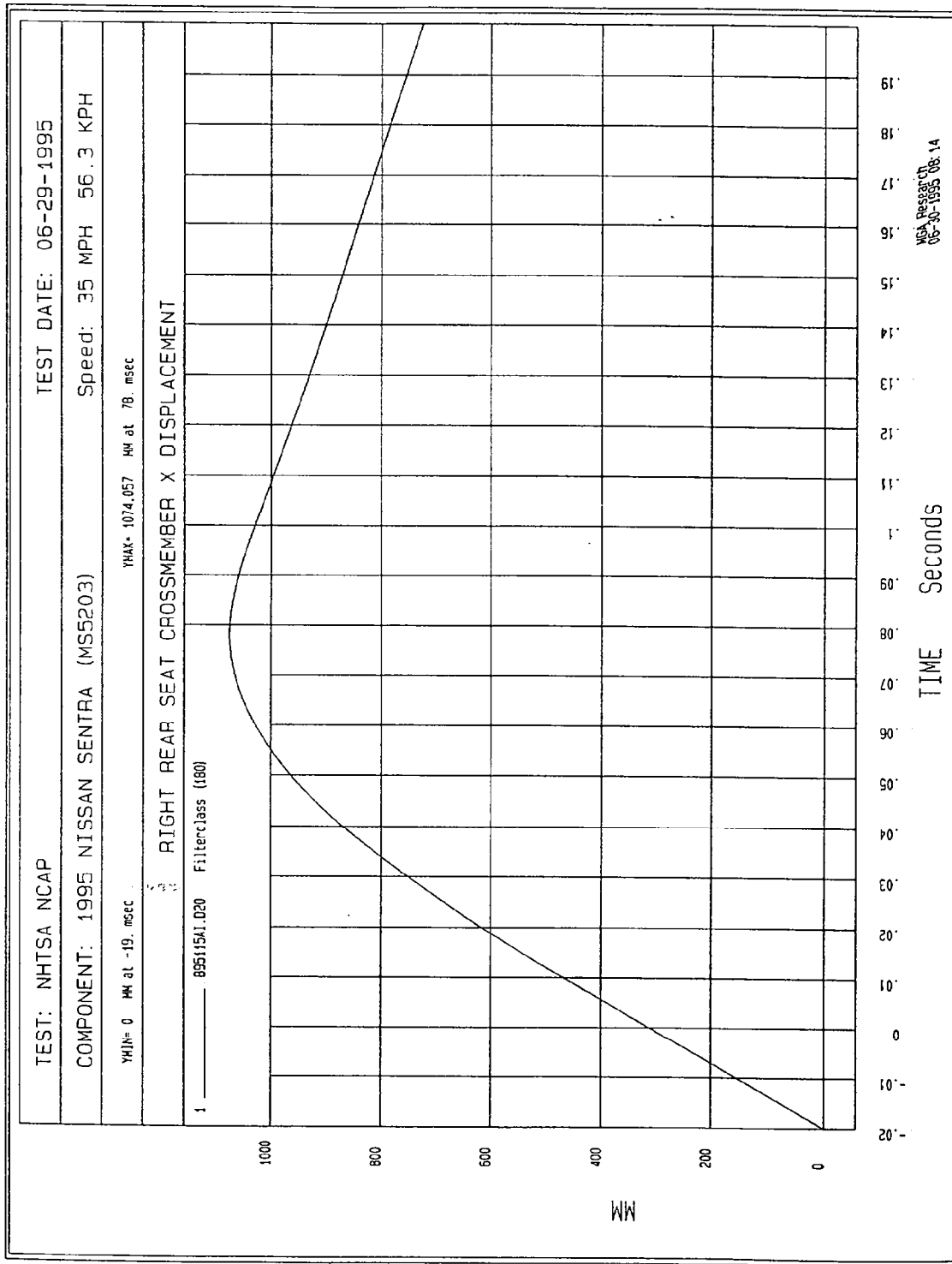


Figure B-9 - Right Rear Seat Crossmember X Displacement vs. Time

B-10

RIGHT REAR SEAT CROSSMEMBER REDUNDANT X ACCELERATION VS. TIME

NO VALID DATA COLLECTED

Figure B-10 - Right Rear Seat Crossmember Redundant X Acceleration vs. Time

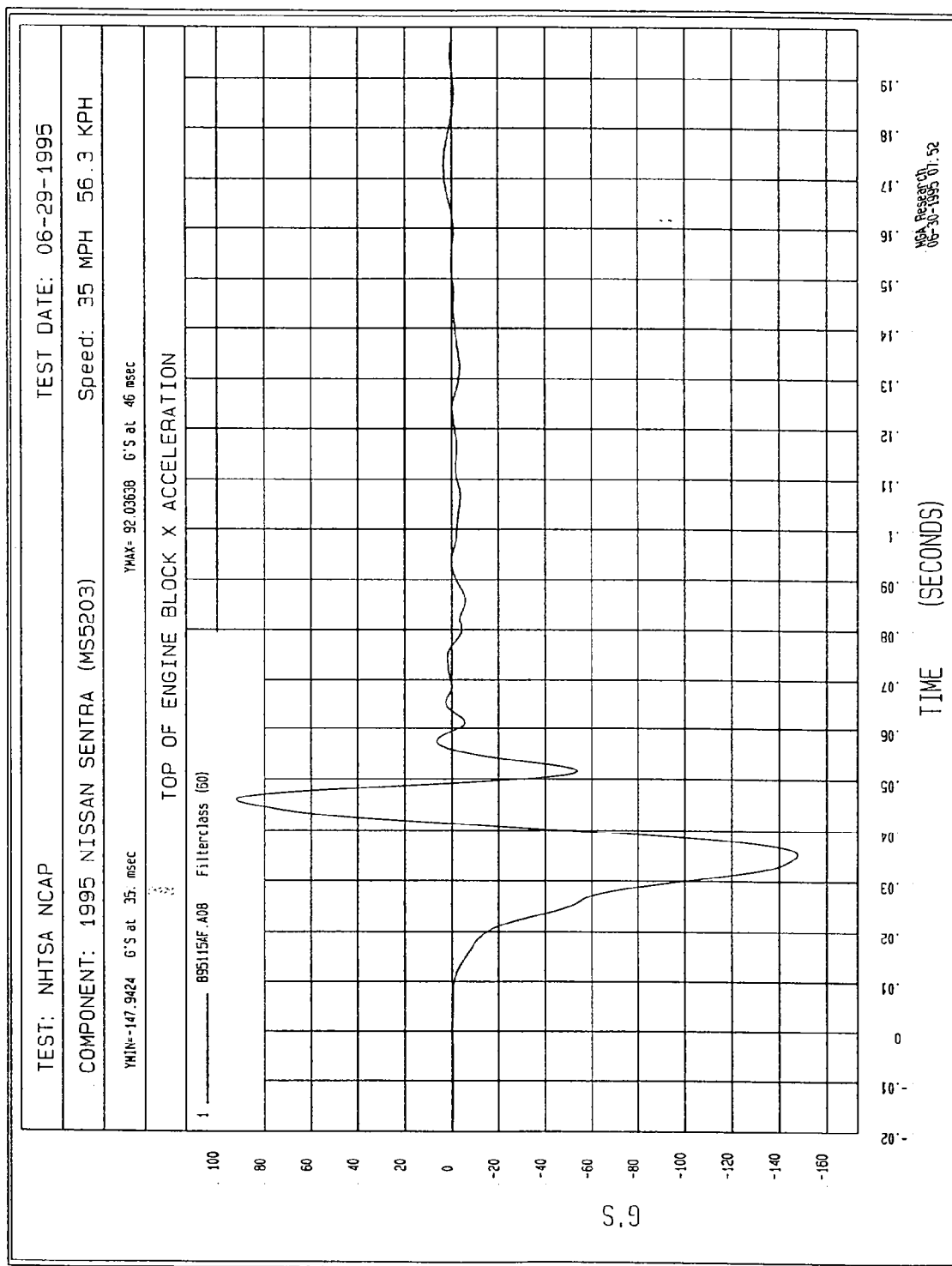


Figure B-11 - Top of Engine Block X Acceleration vs. Time

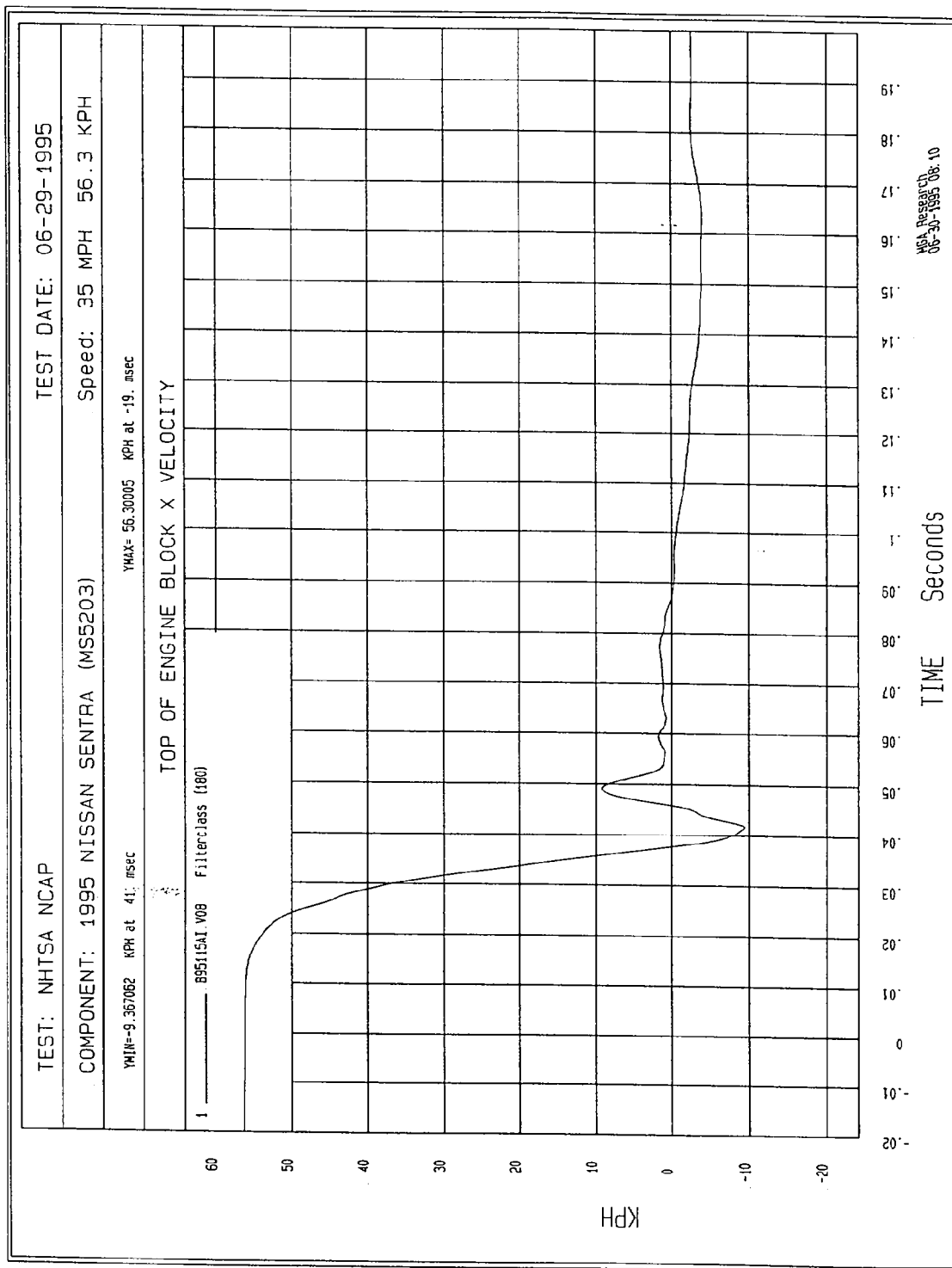


Figure B-12 - Top of Engine Block X Velocity vs. Time

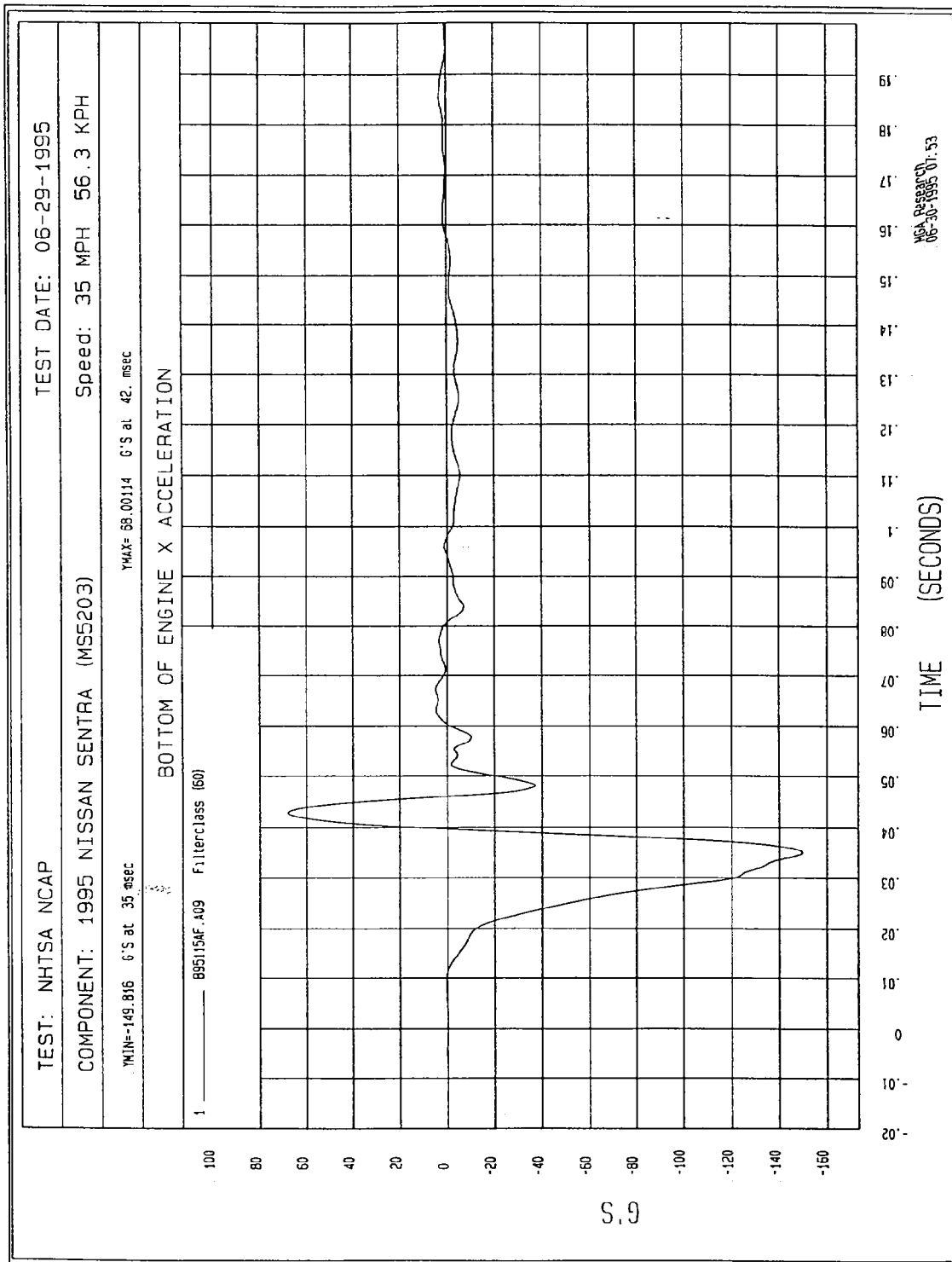


Figure B-13 - Bottom of Engine X Acceleration vs. Time

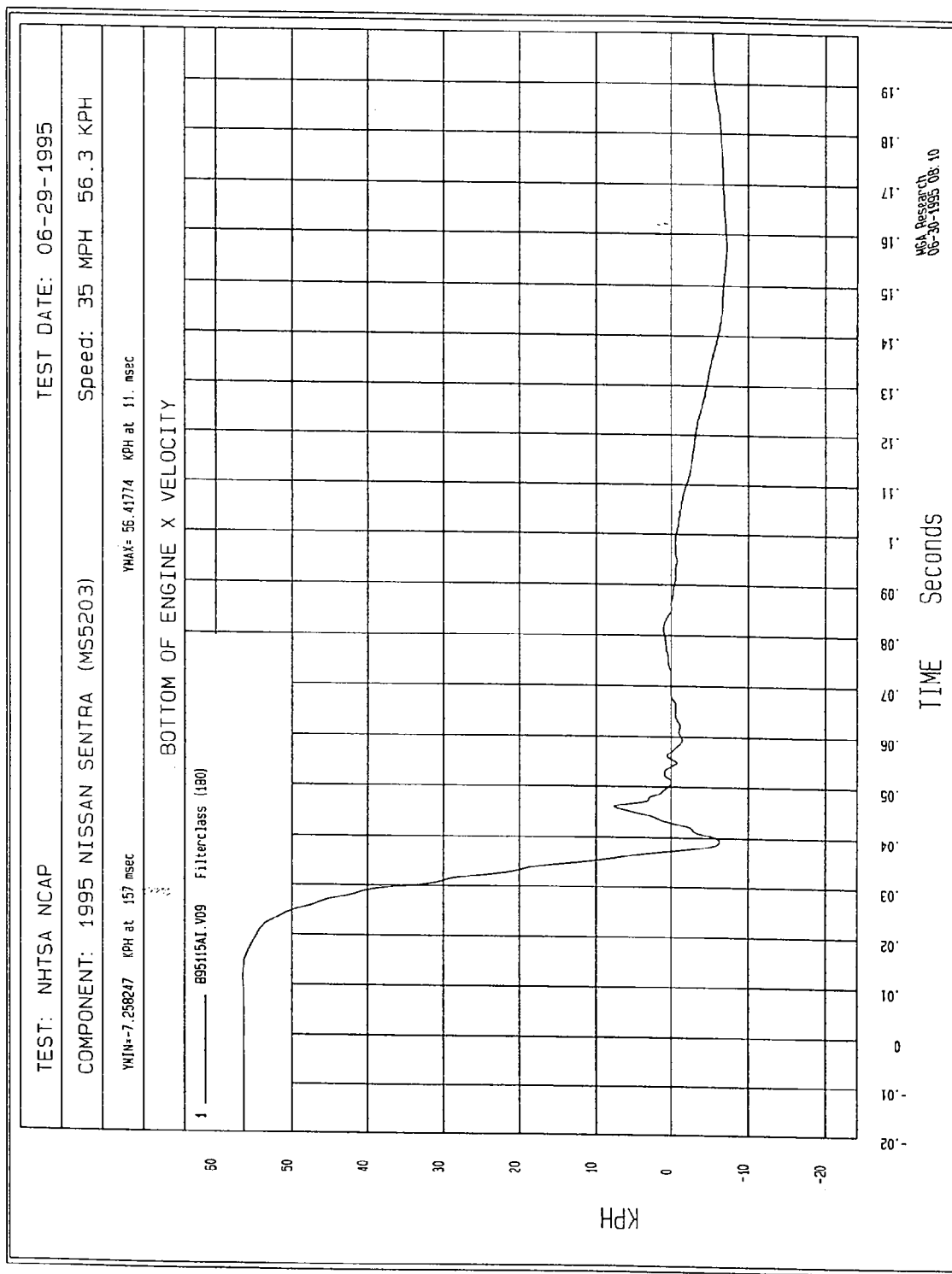


Figure B-14 - Bottom of Engine X Velocity vs. Time

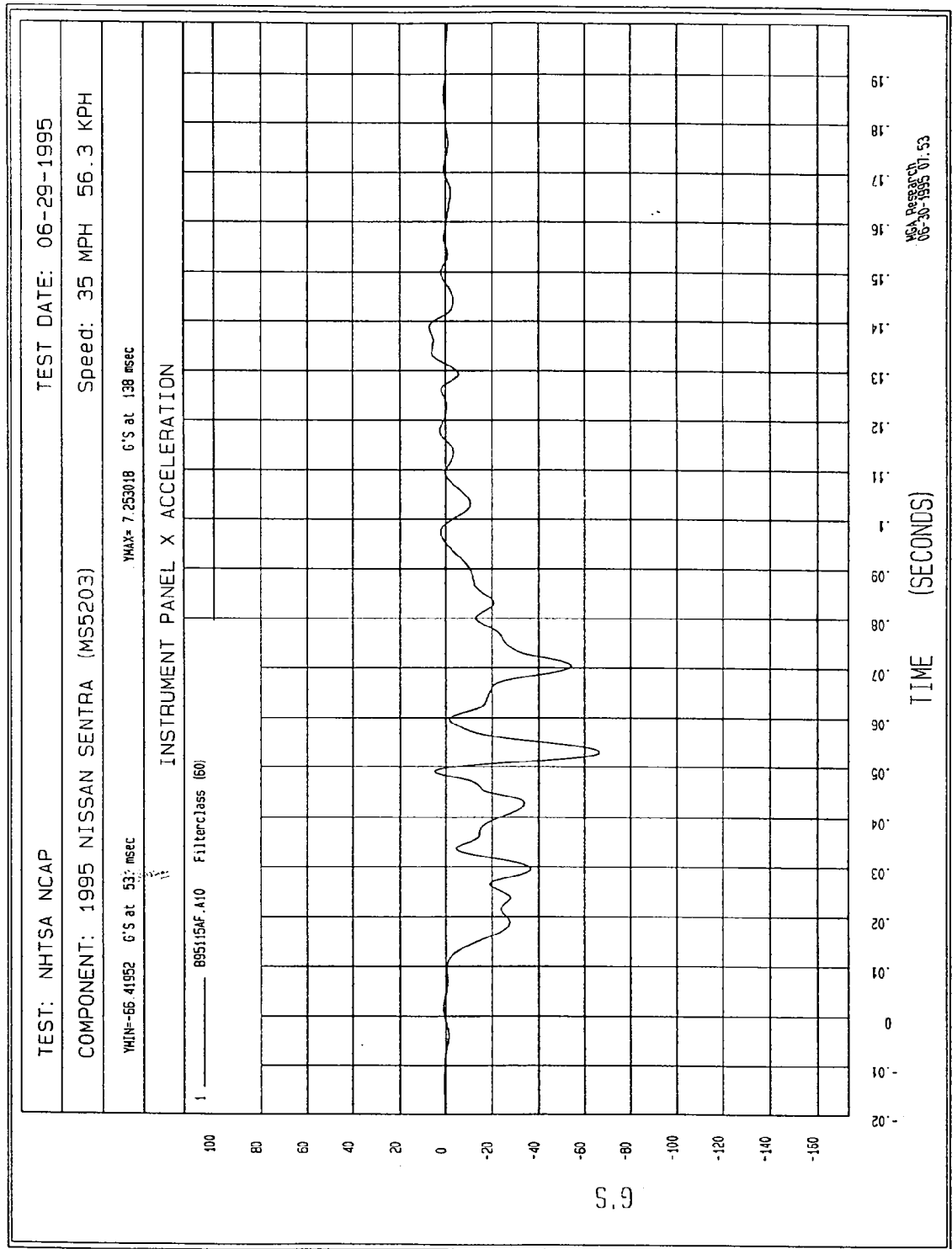


Figure B-15 • Instrument Panel X Acceleration vs. Time

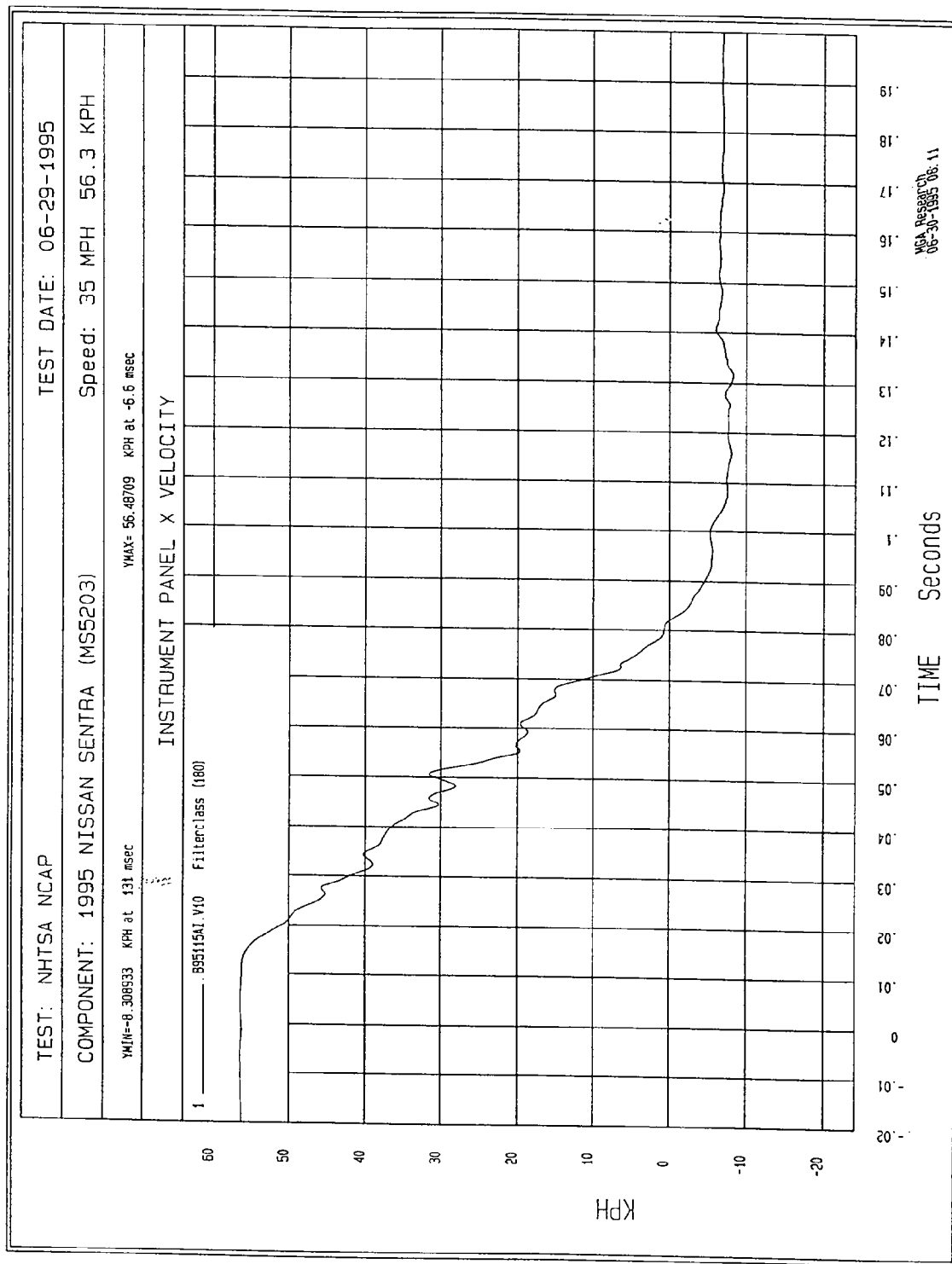


Figure B-16 - Instrument Panel X Velocity vs. Time

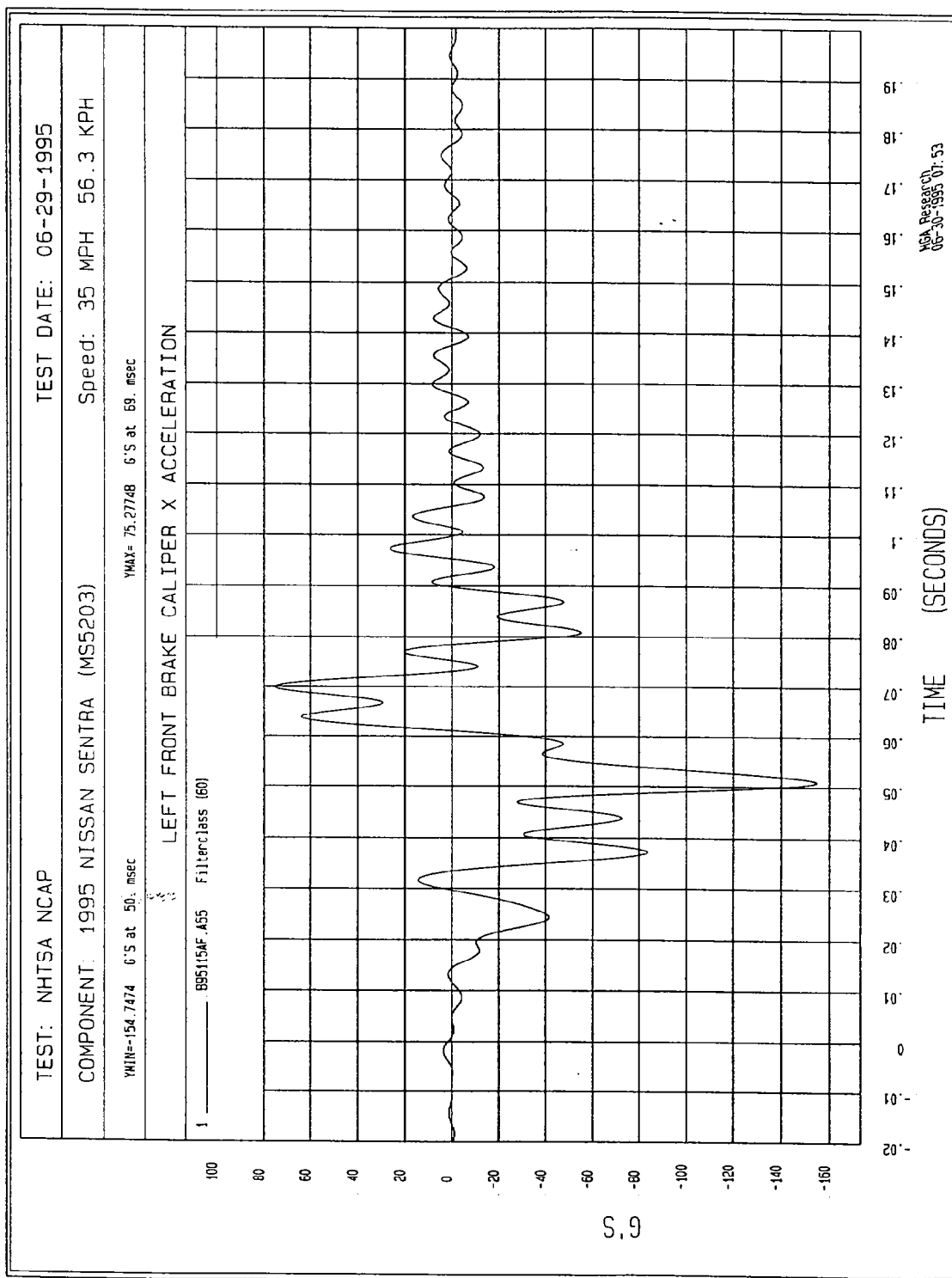
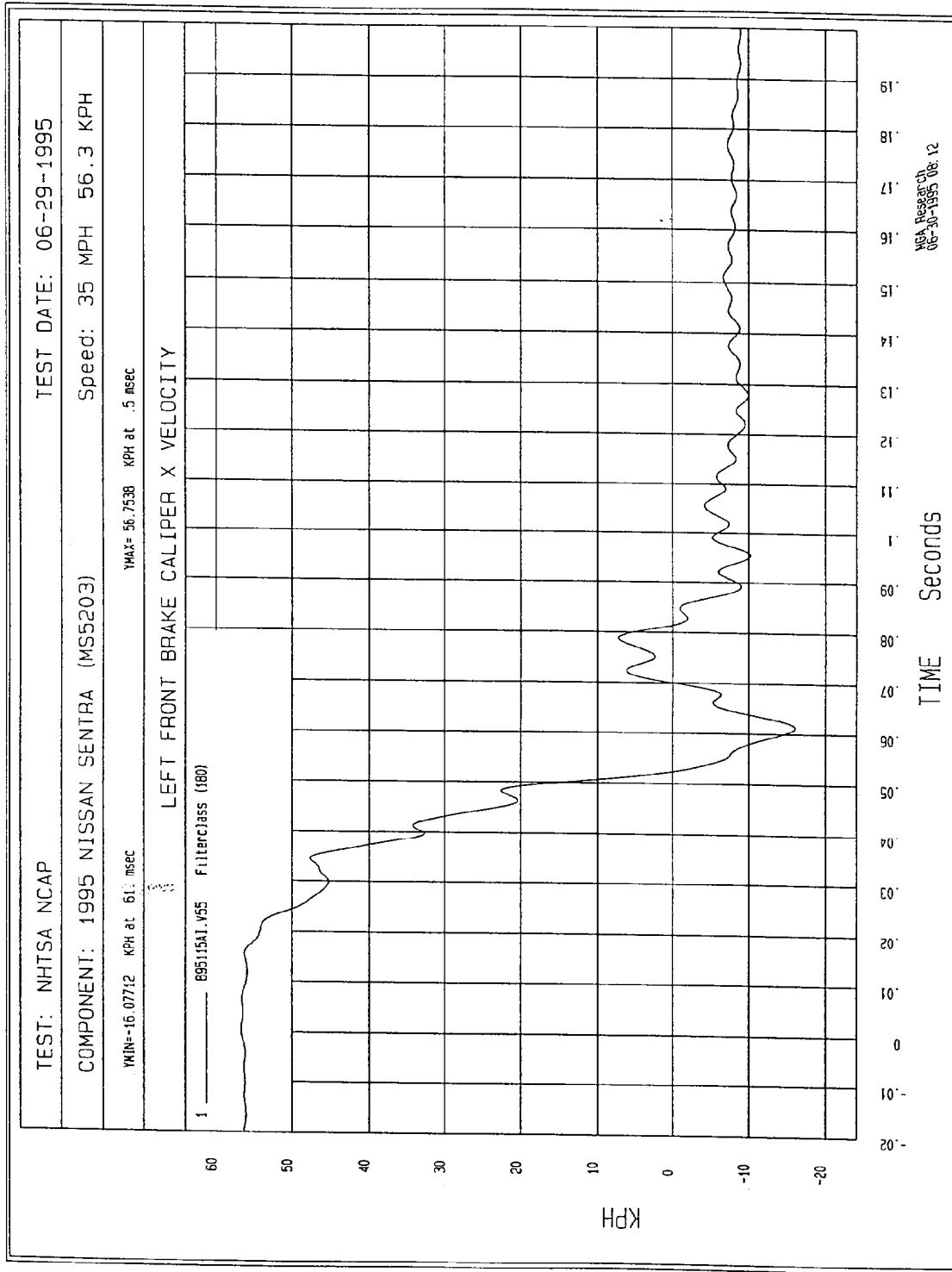


Figure B-17 - Left Front Brake Caliper X Acceleration vs. Time



B-18

Figure B-18 - Left Front Brake Caliper X Velocity vs. Time

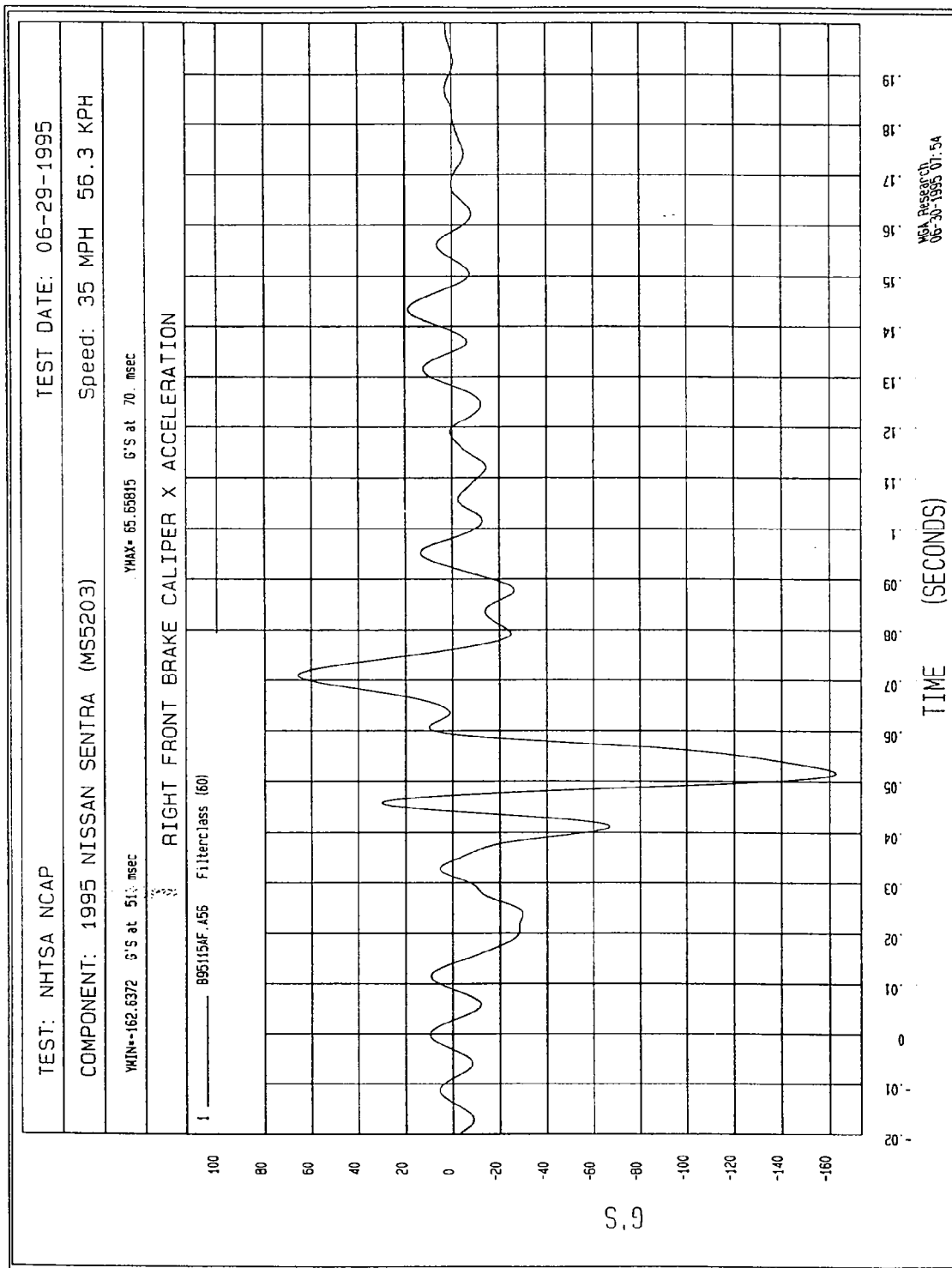


Figure B-19 - Right Front Brake Caliper X Acceleration vs. Time

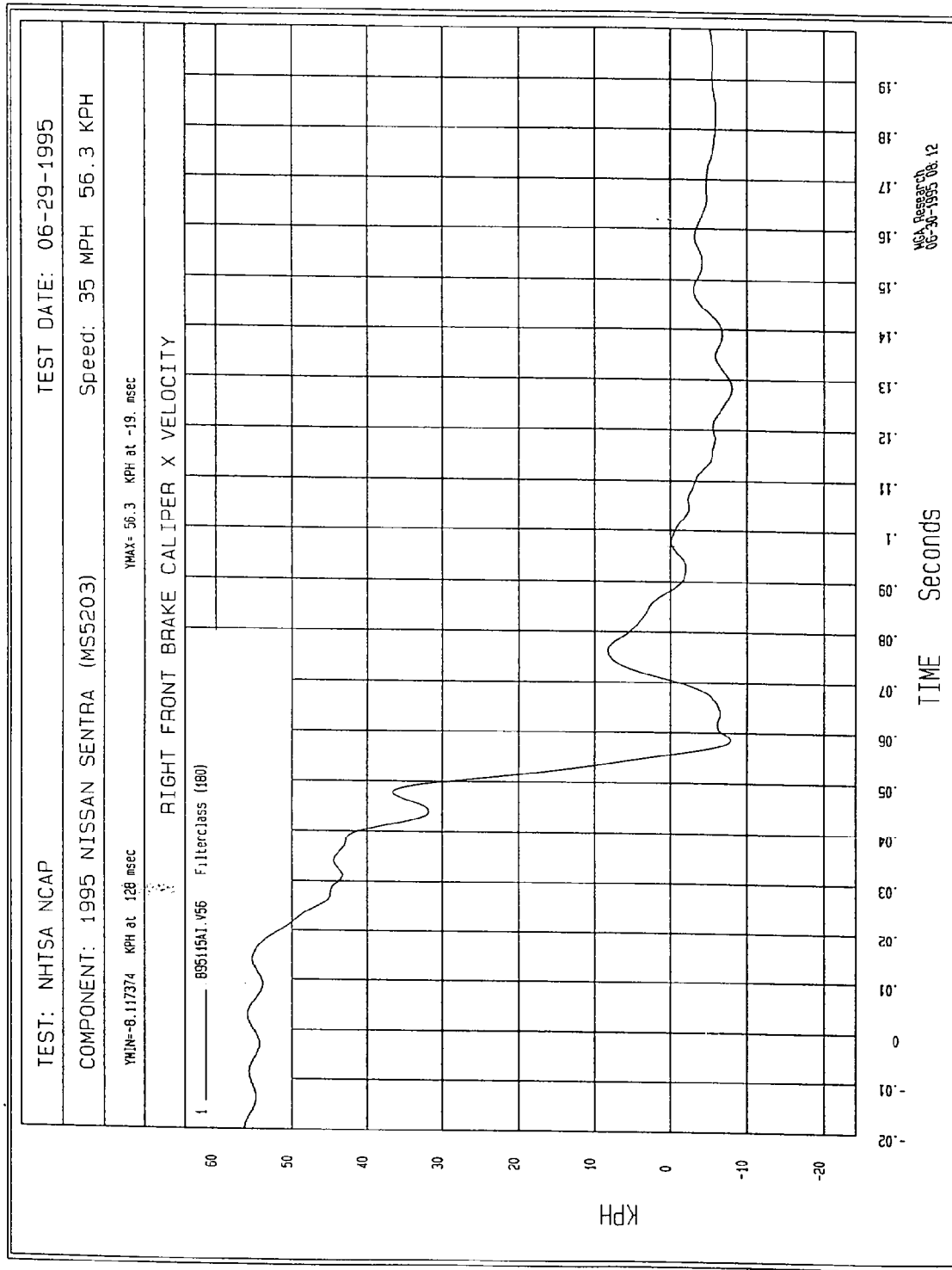


Figure B-20 - Right Front Brake Caliper X Velocity vs. Time

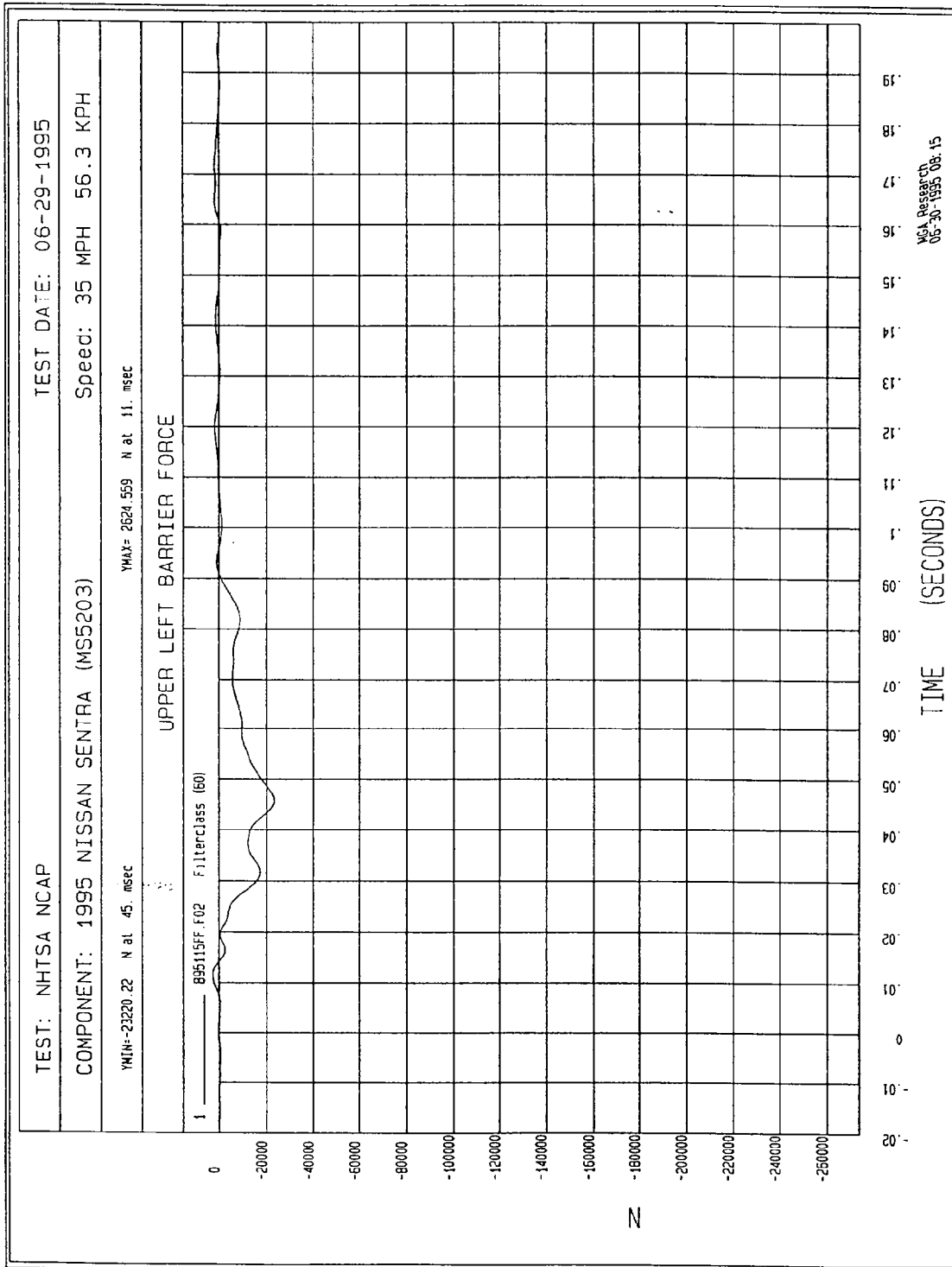


Figure B-21 - Upper Left Barrier Force vs. Time

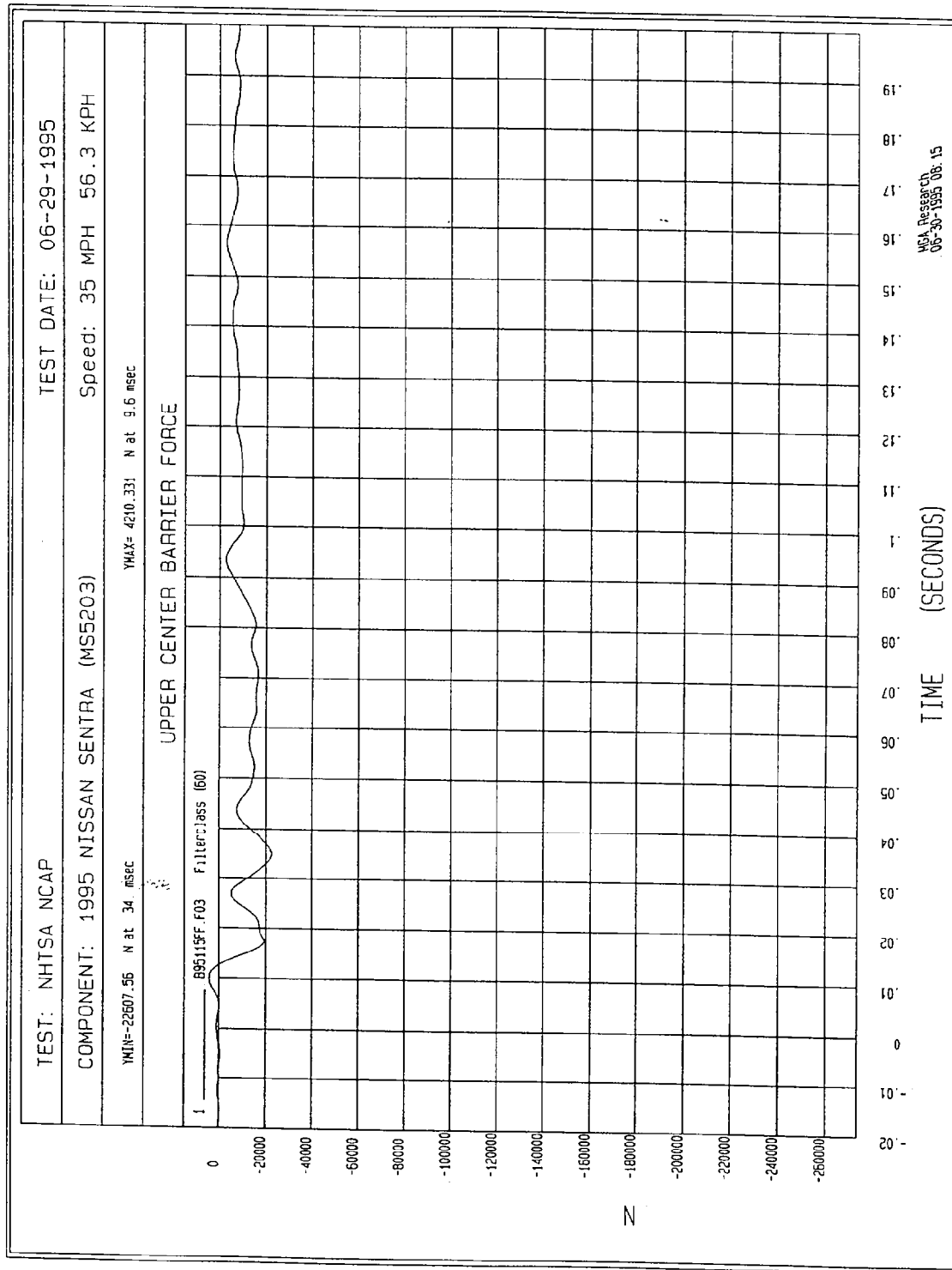


Figure B-22 - Upper Center Barrier Force vs. Time

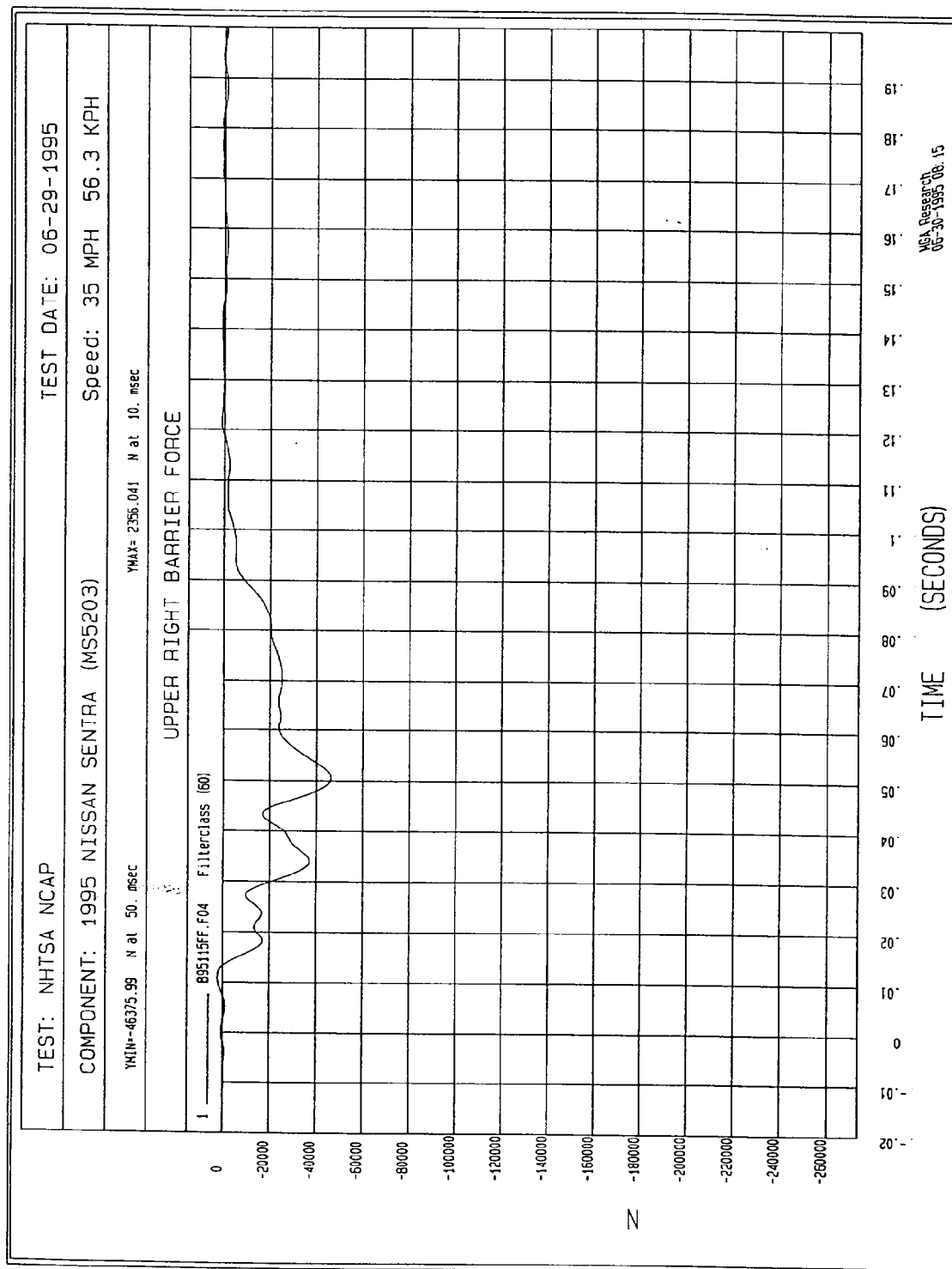
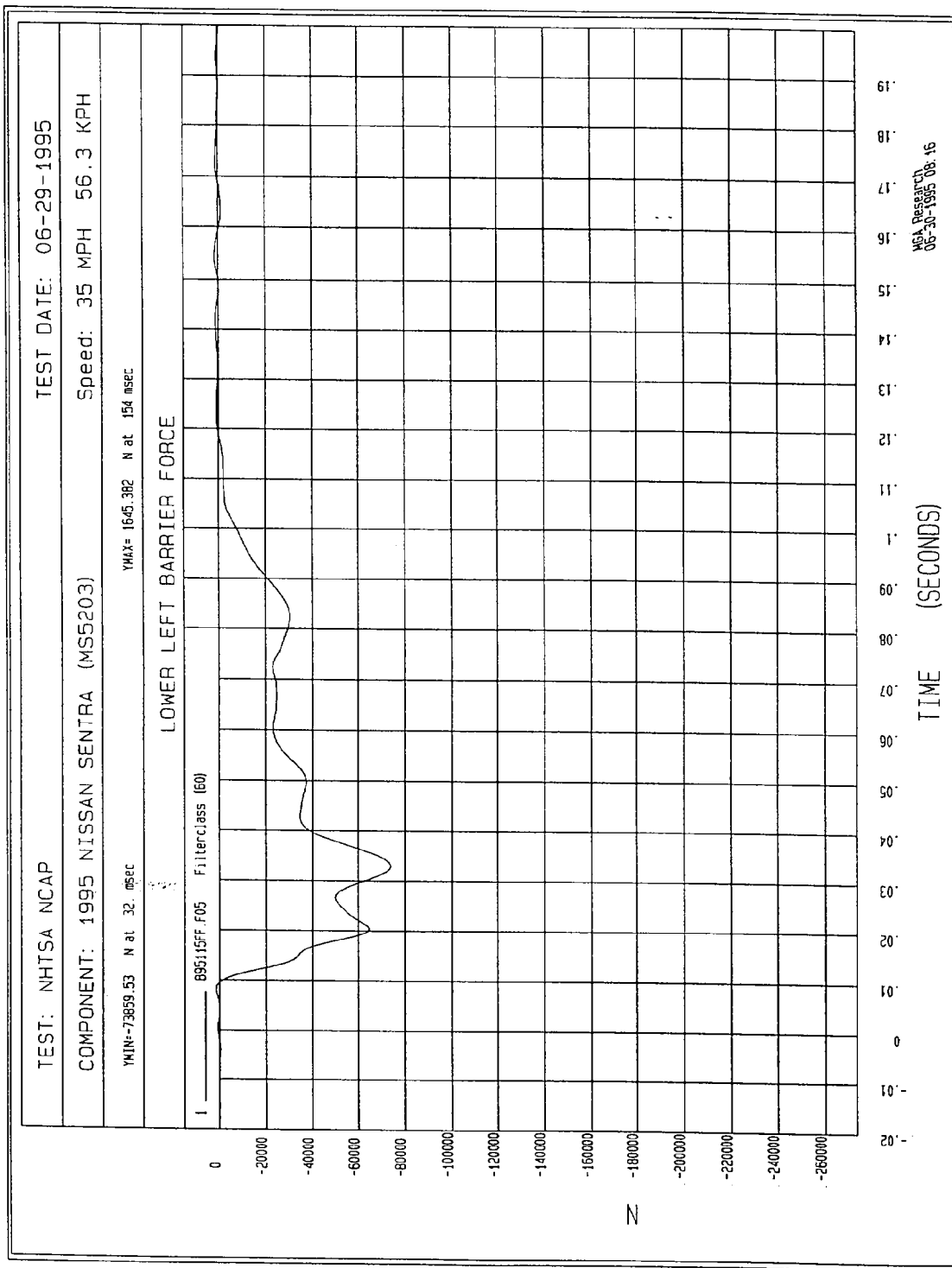


Figure B-23 - Upper Right Barrier Force vs. Time



B-24

Figure B-24 - Lower Left Barrier Force vs. Time

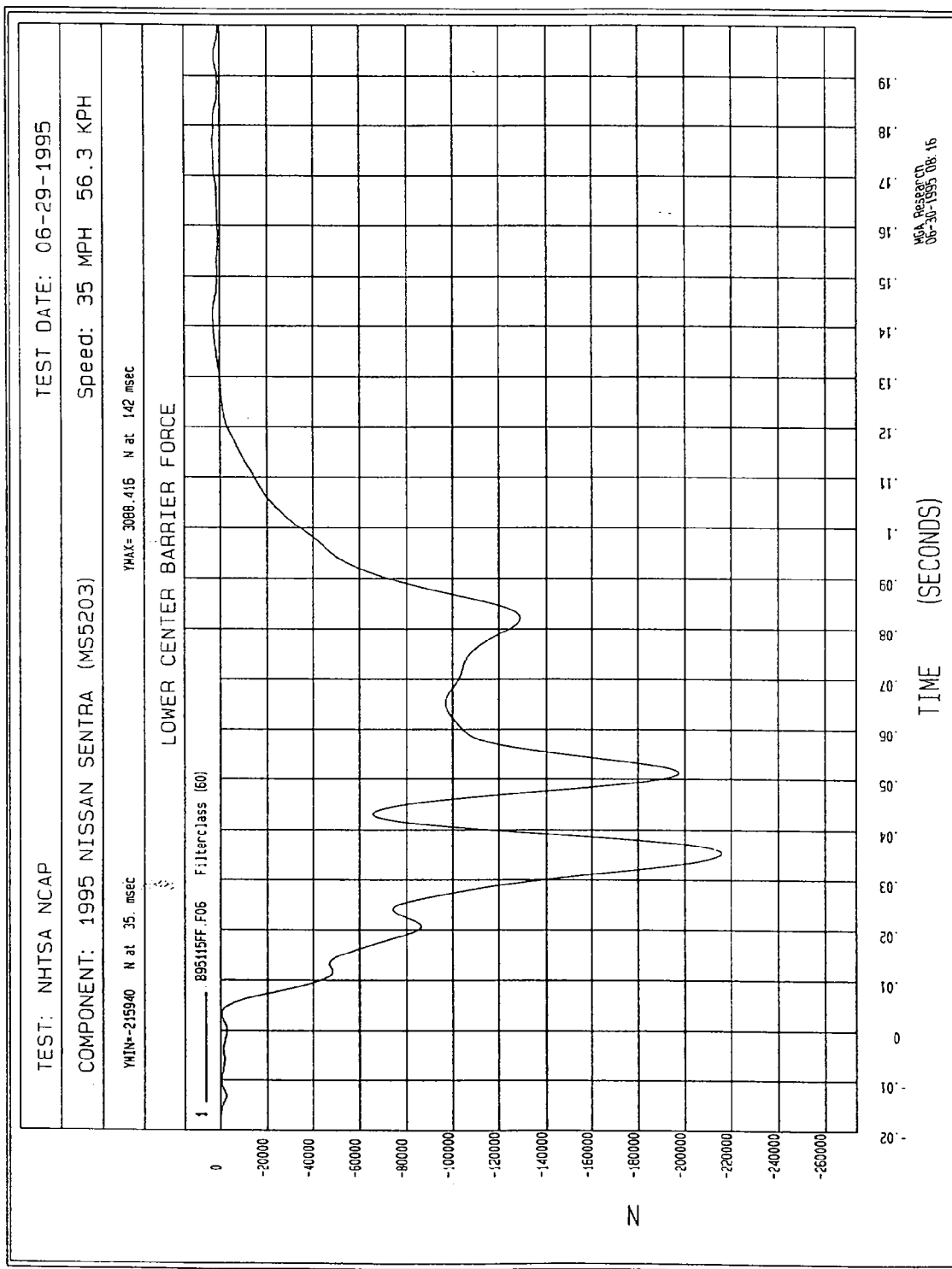


Figure B-25 - Lower Center Barrier Force vs. Time

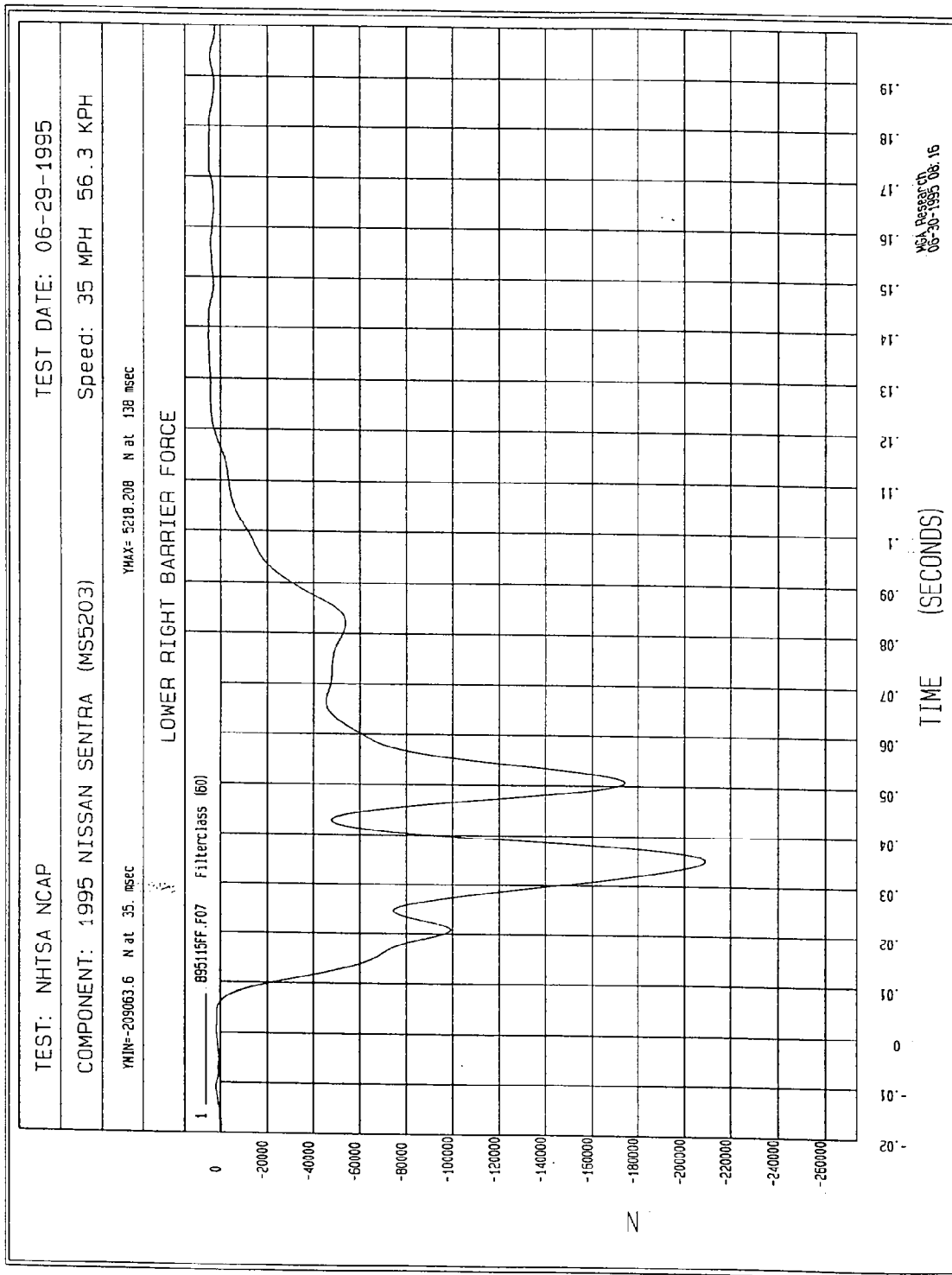
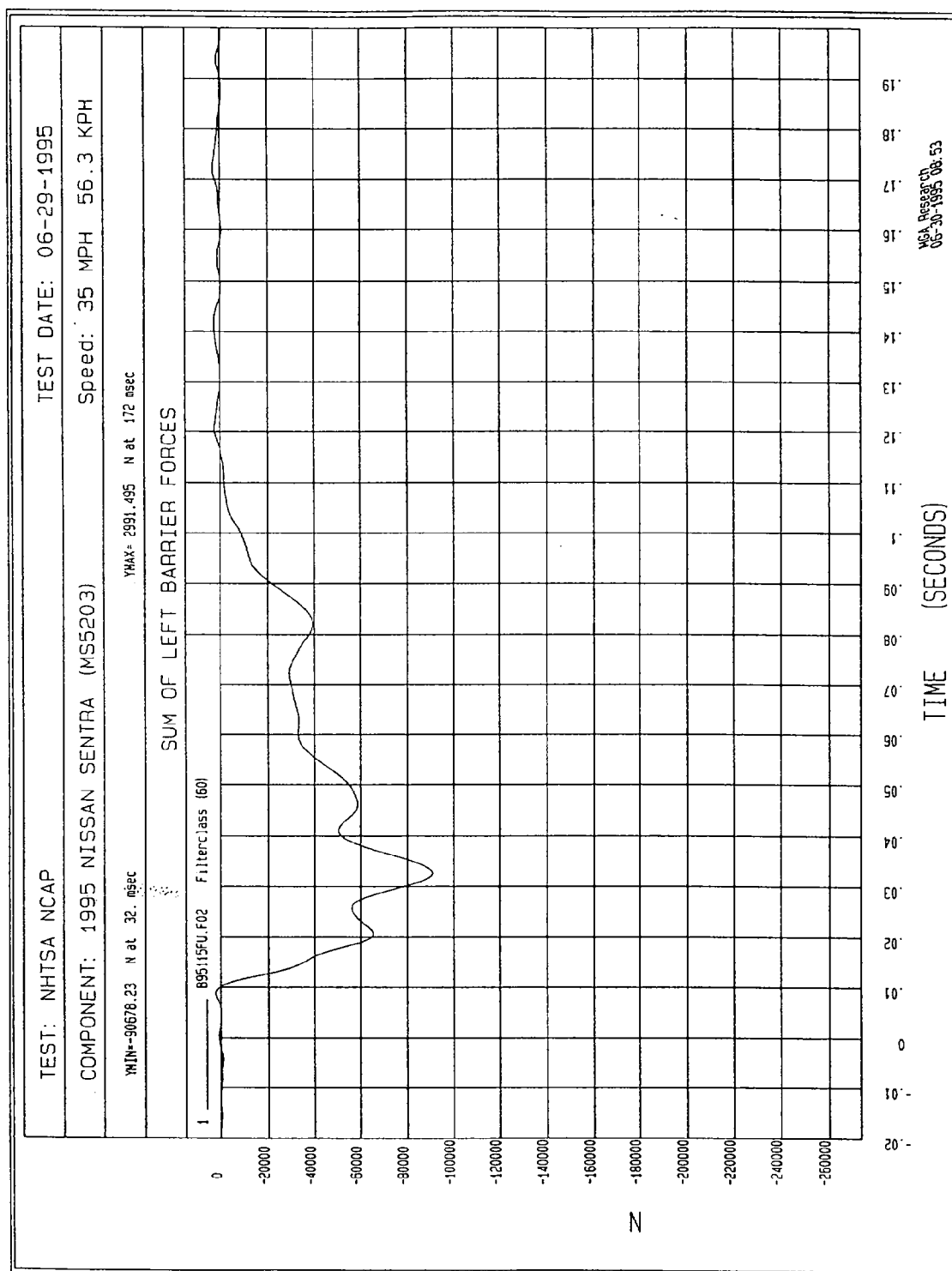


Figure B-26 - Lower Right Barrier Force vs. Time



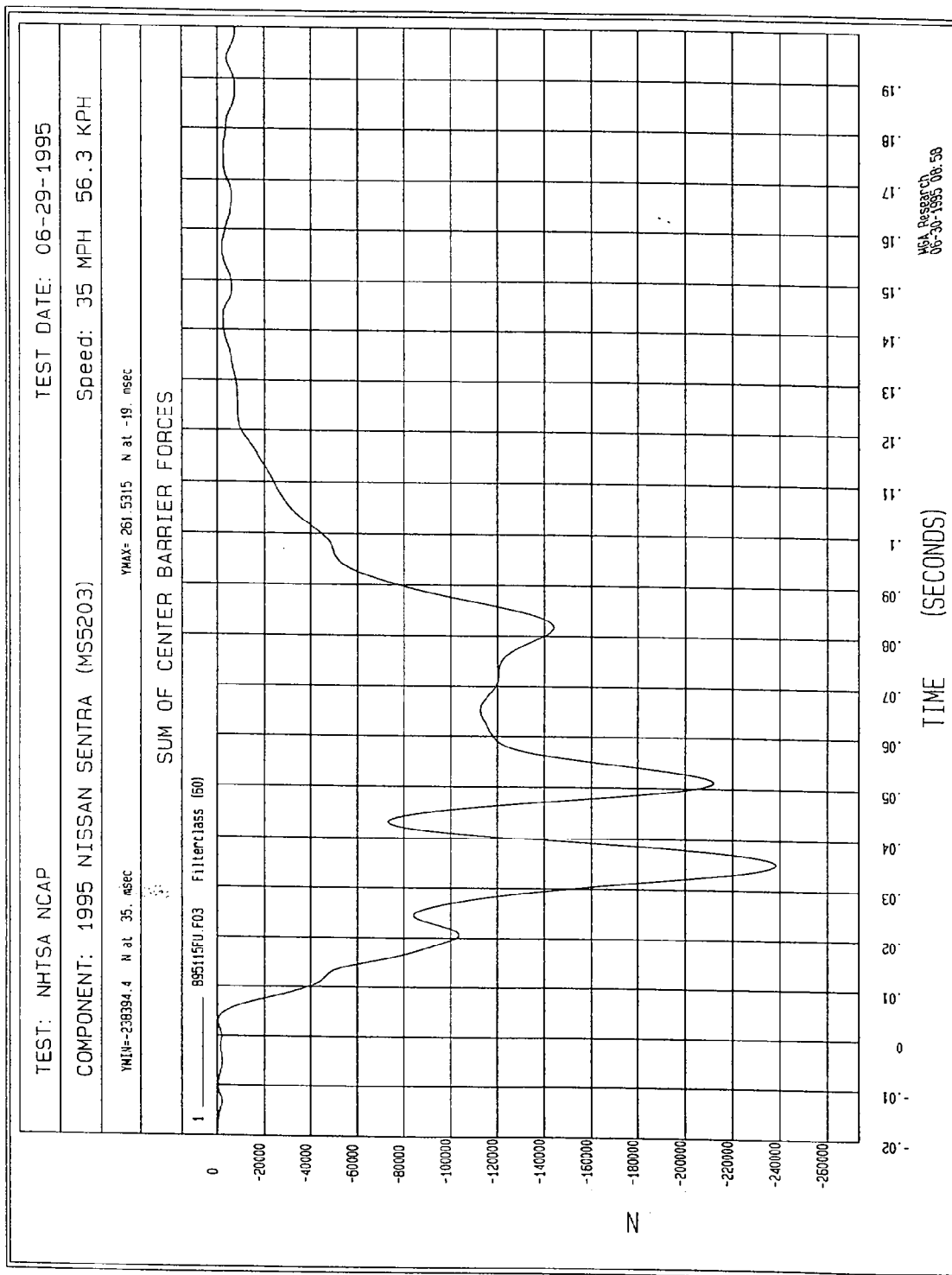


Figure B-28 - Sum of Center Barrier Forces vs. Time

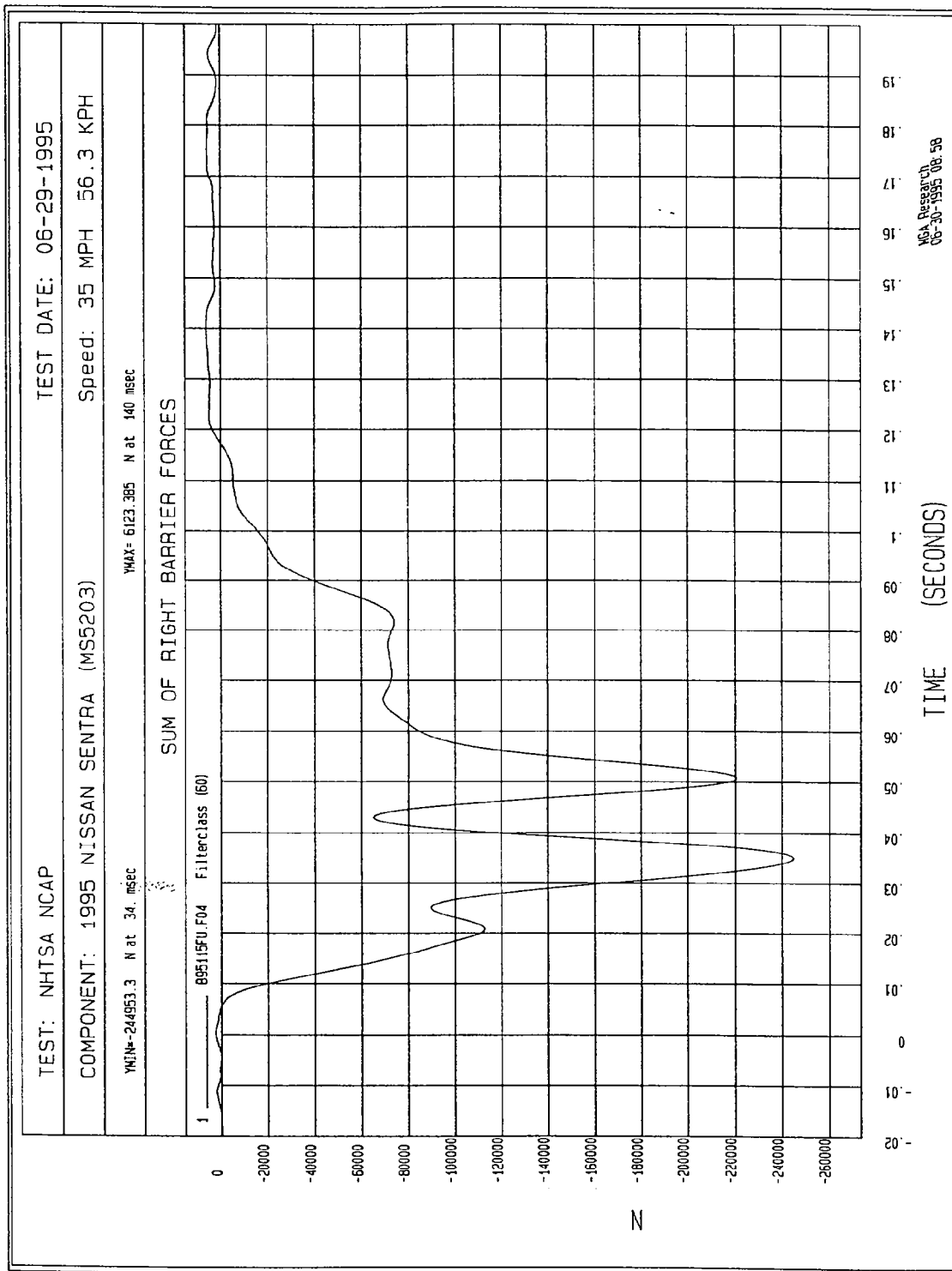
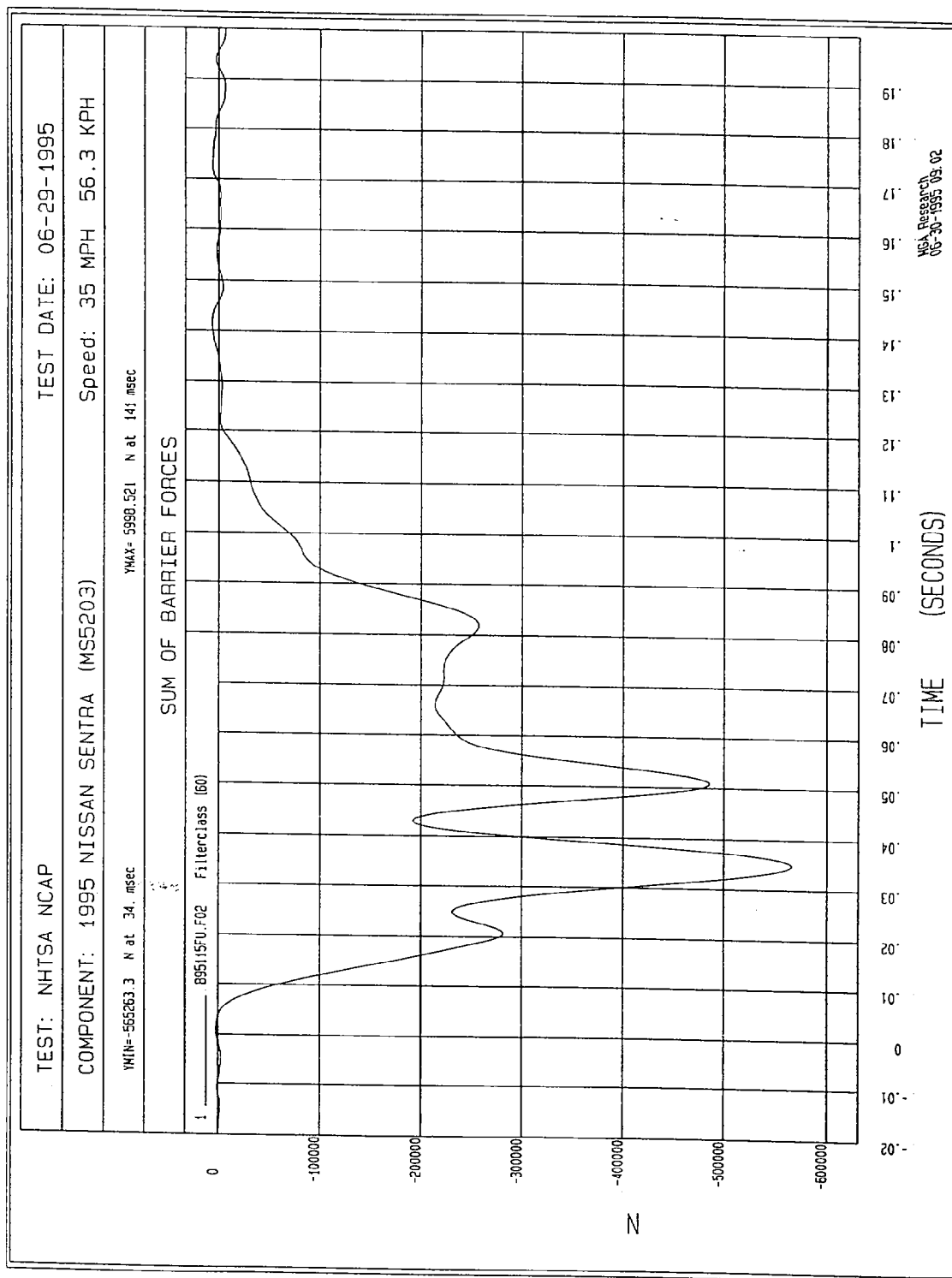


Figure B-29 - Sum of Right Barrier Forces vs. Time



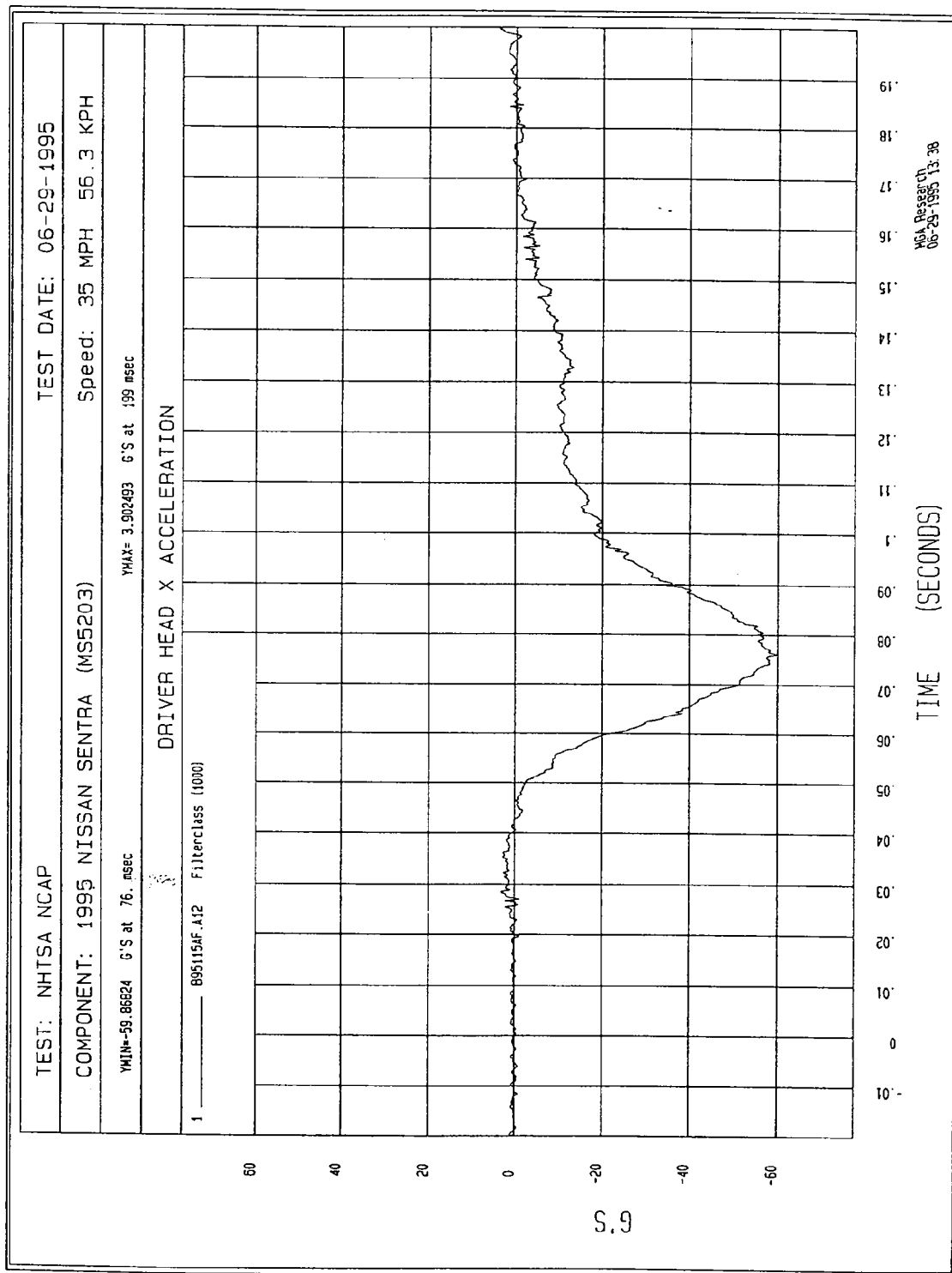


Figure B-31 - Driver Head X Acceleration vs. Time

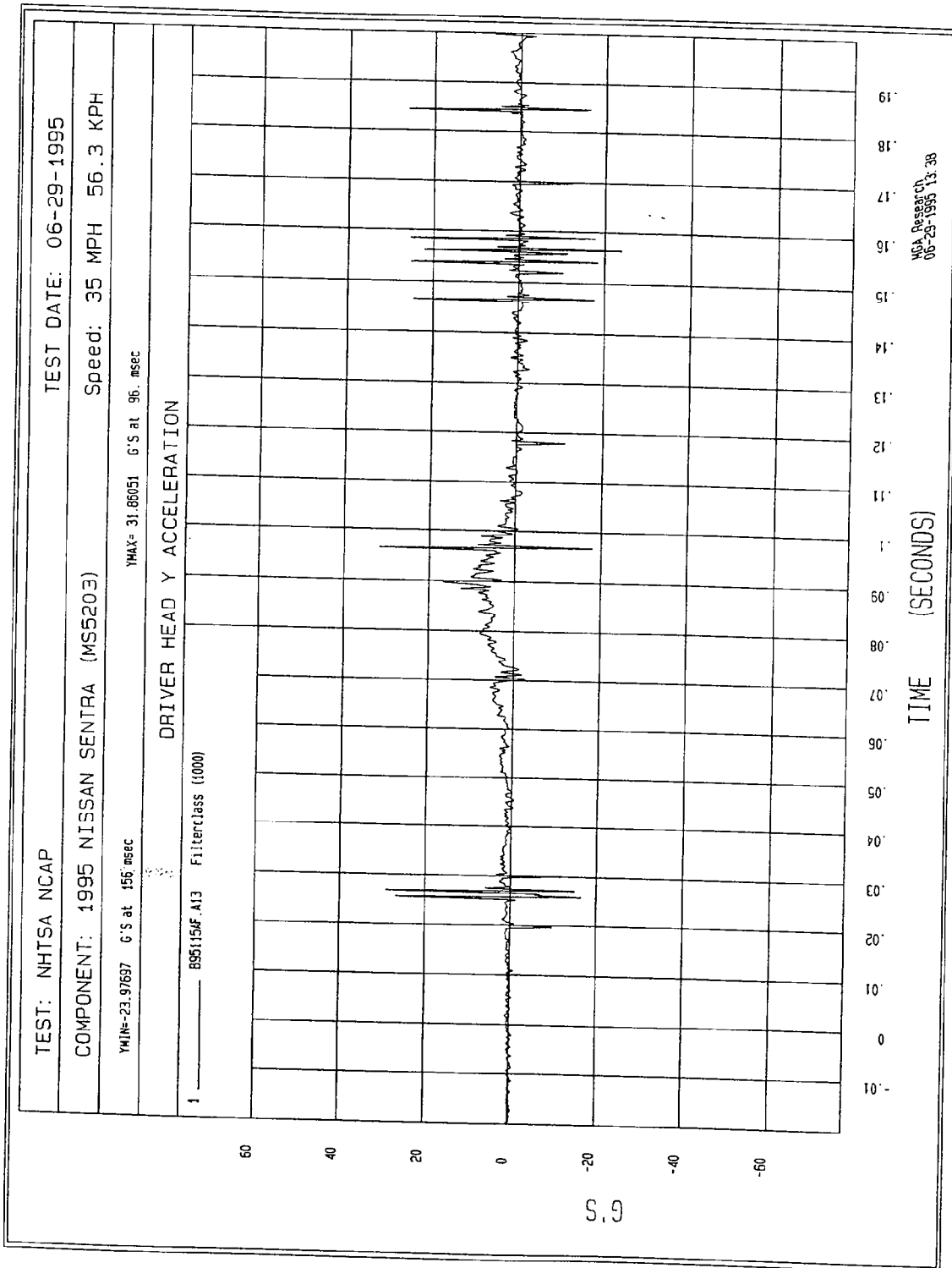


Figure B-32 - Driver Head Y Acceleration vs. Time

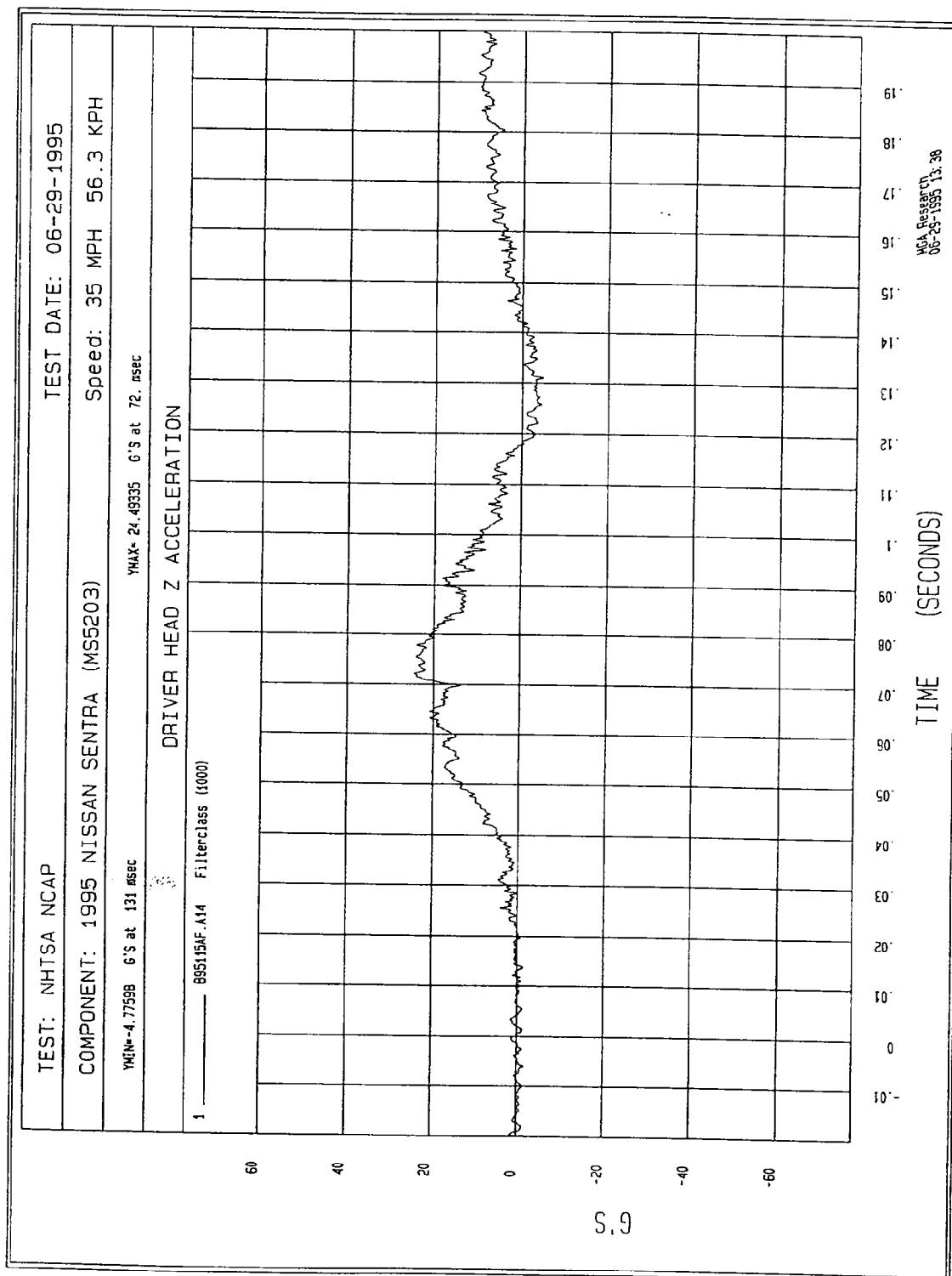
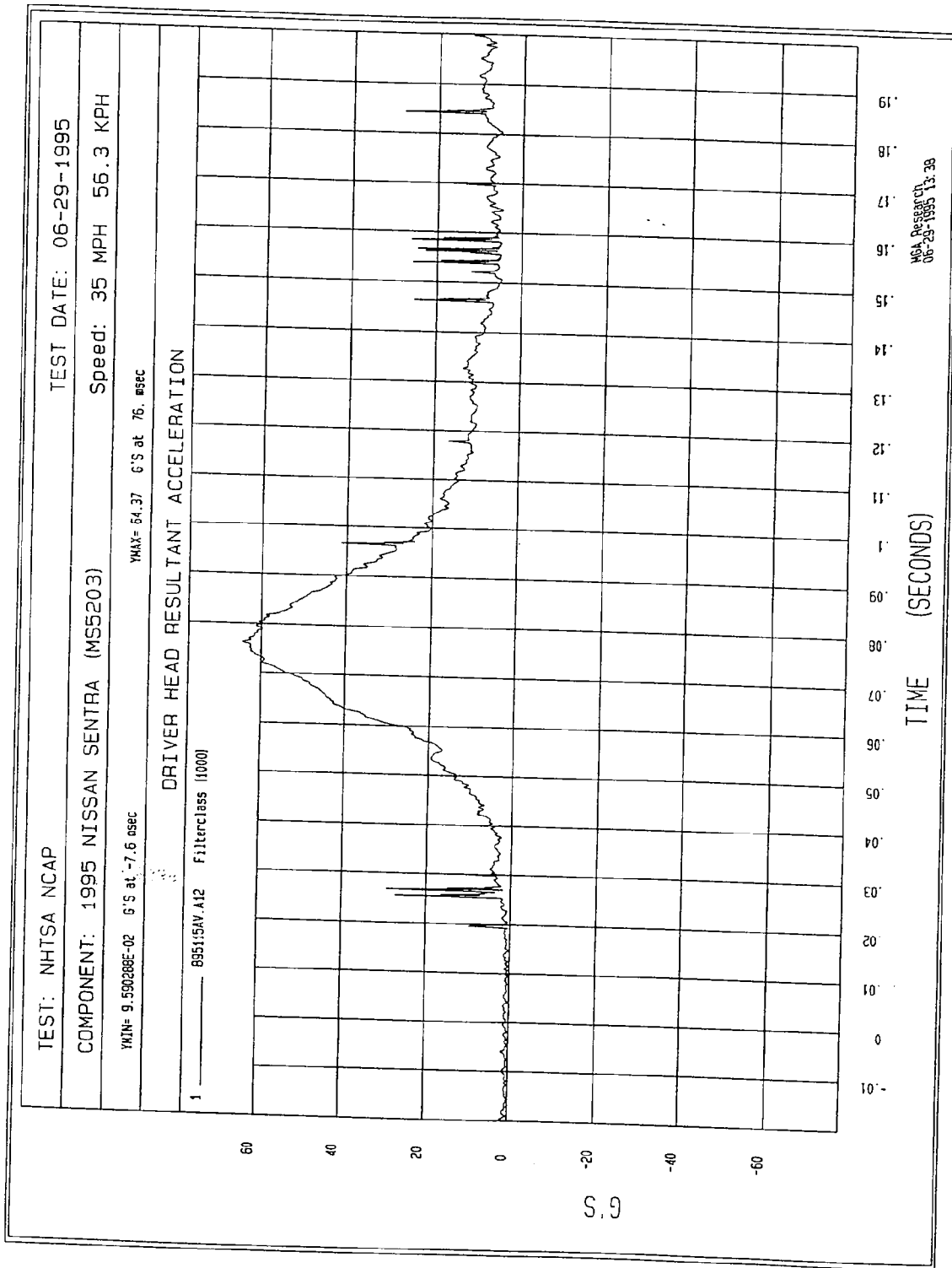


Figure B-33 - Driver Head Z Acceleration vs. Time



B-34

Figure B-34 - Driver Head Resultant Acceleration vs. Time

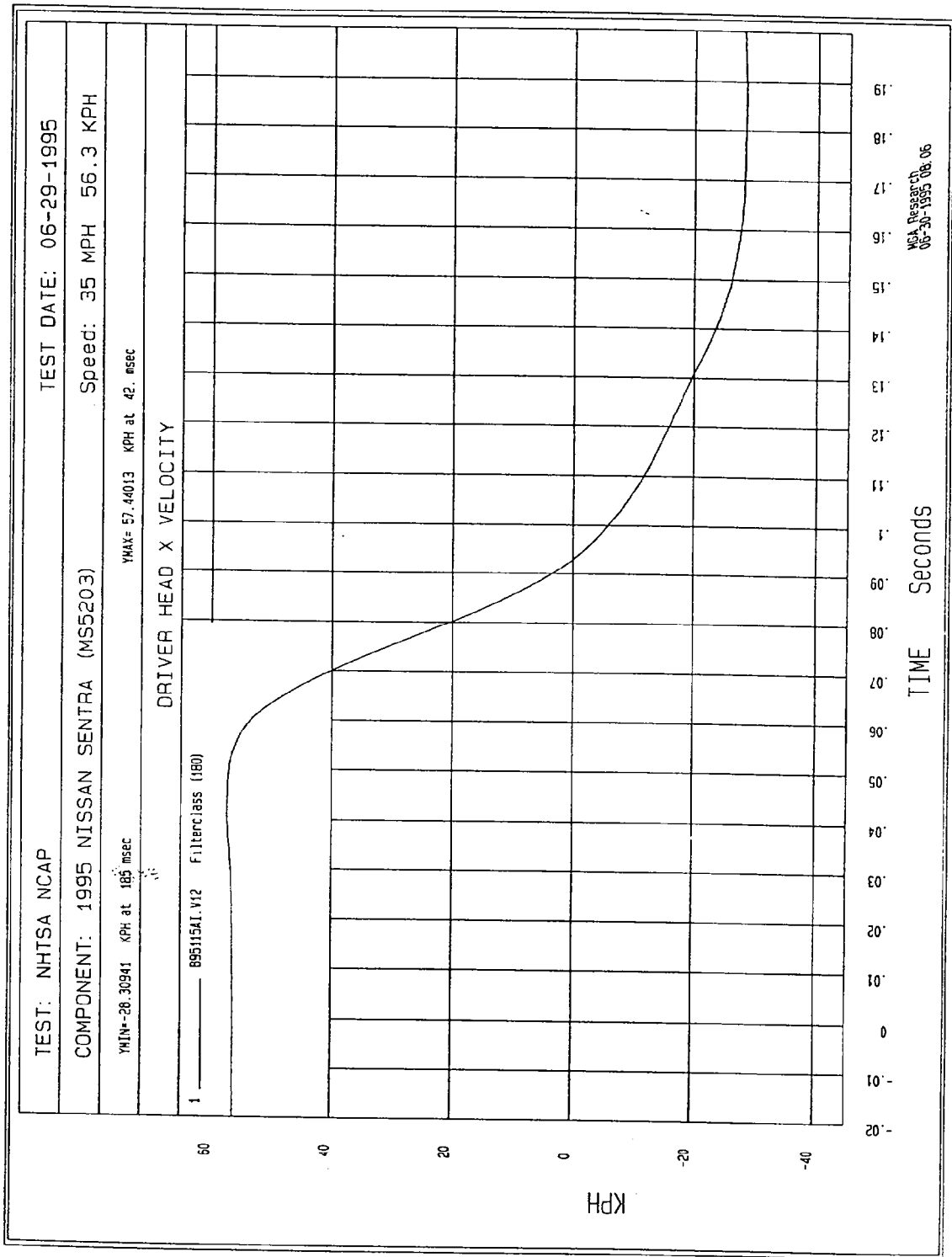


Figure B-35 - Driver Head X Velocity vs. Time

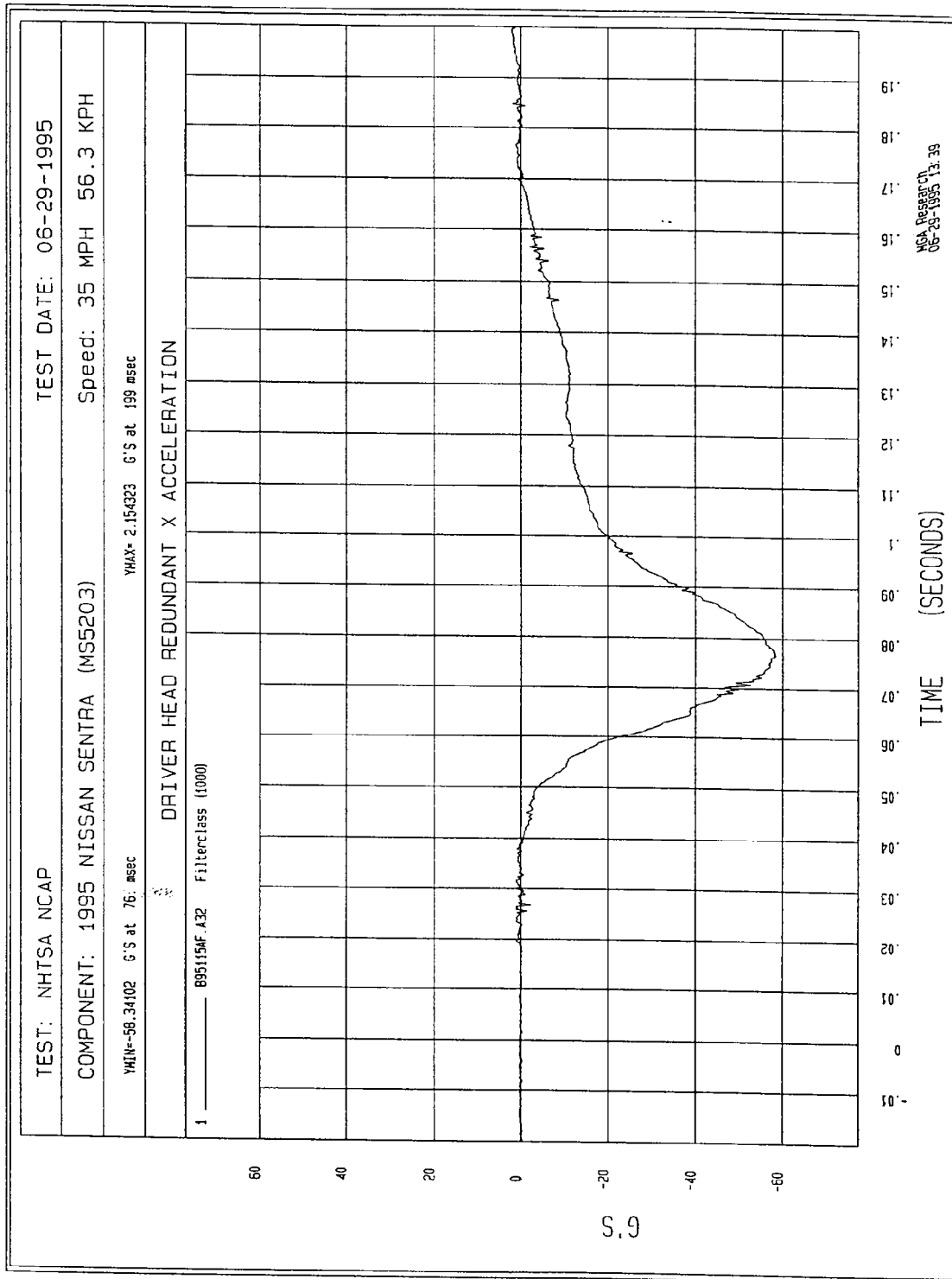
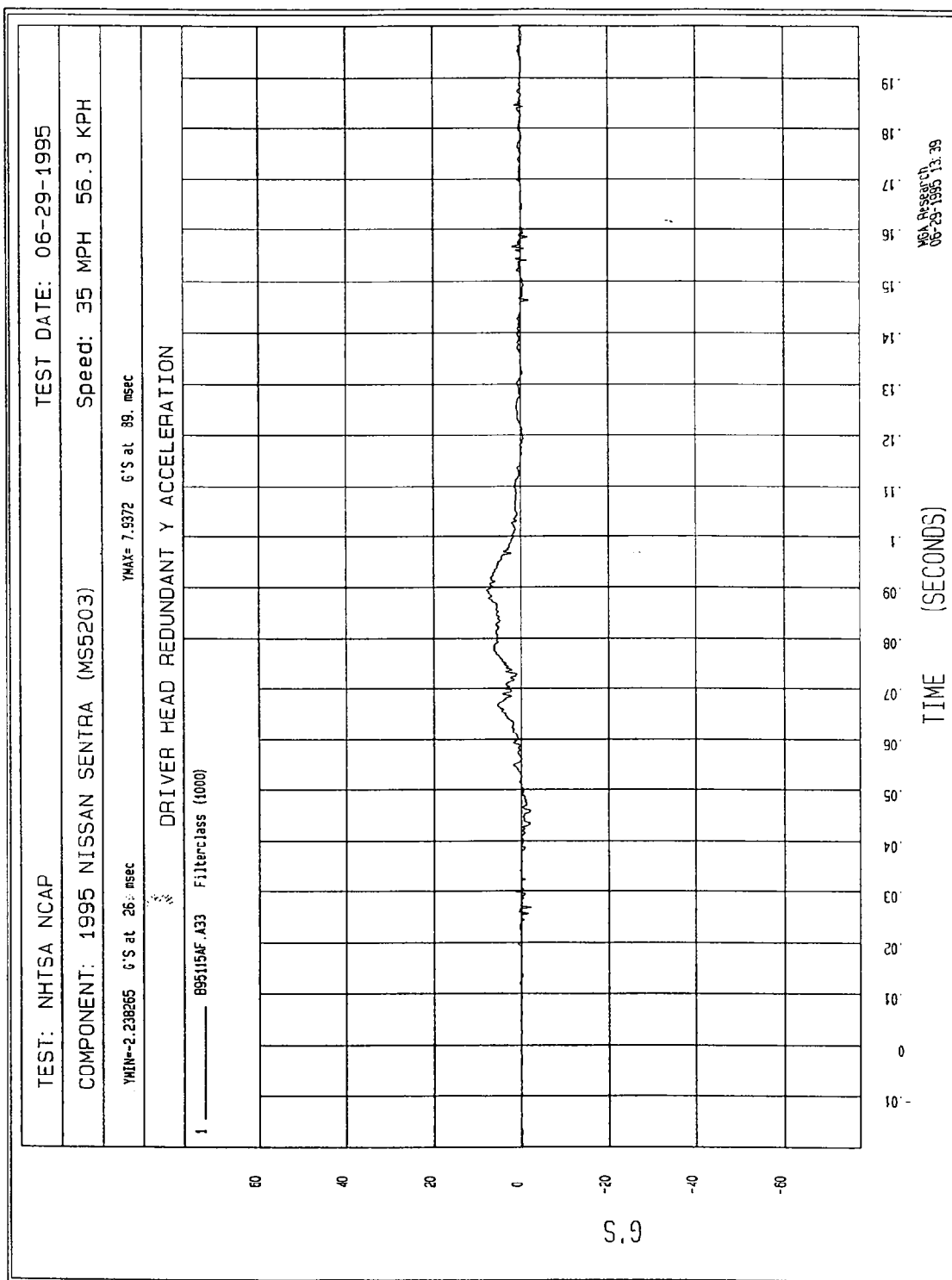


Figure B-36 - Driver Head Redundant X Acceleration vs. Time



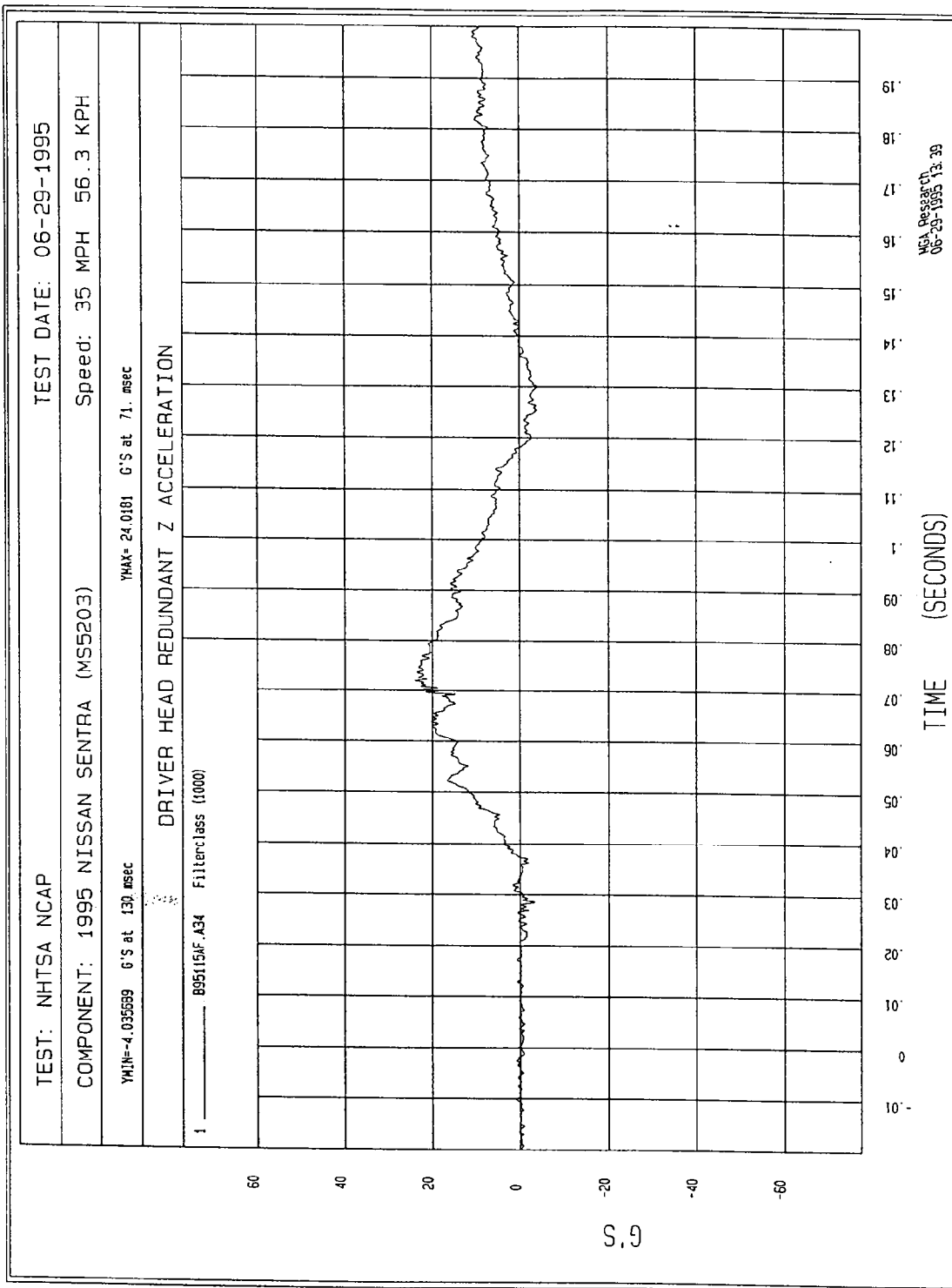


Figure B-38 - Driver Head Redundant Z Acceleration vs. Time

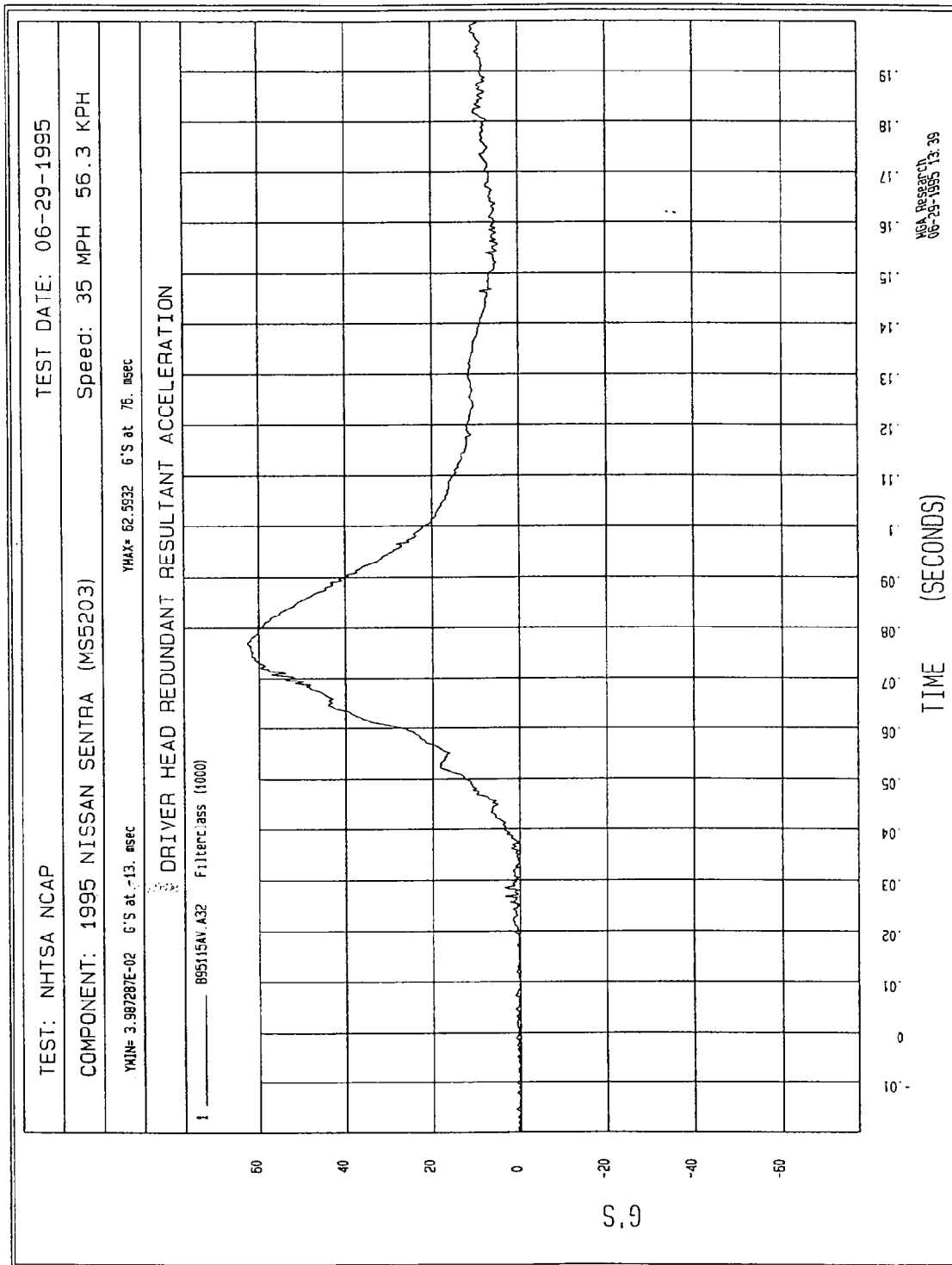
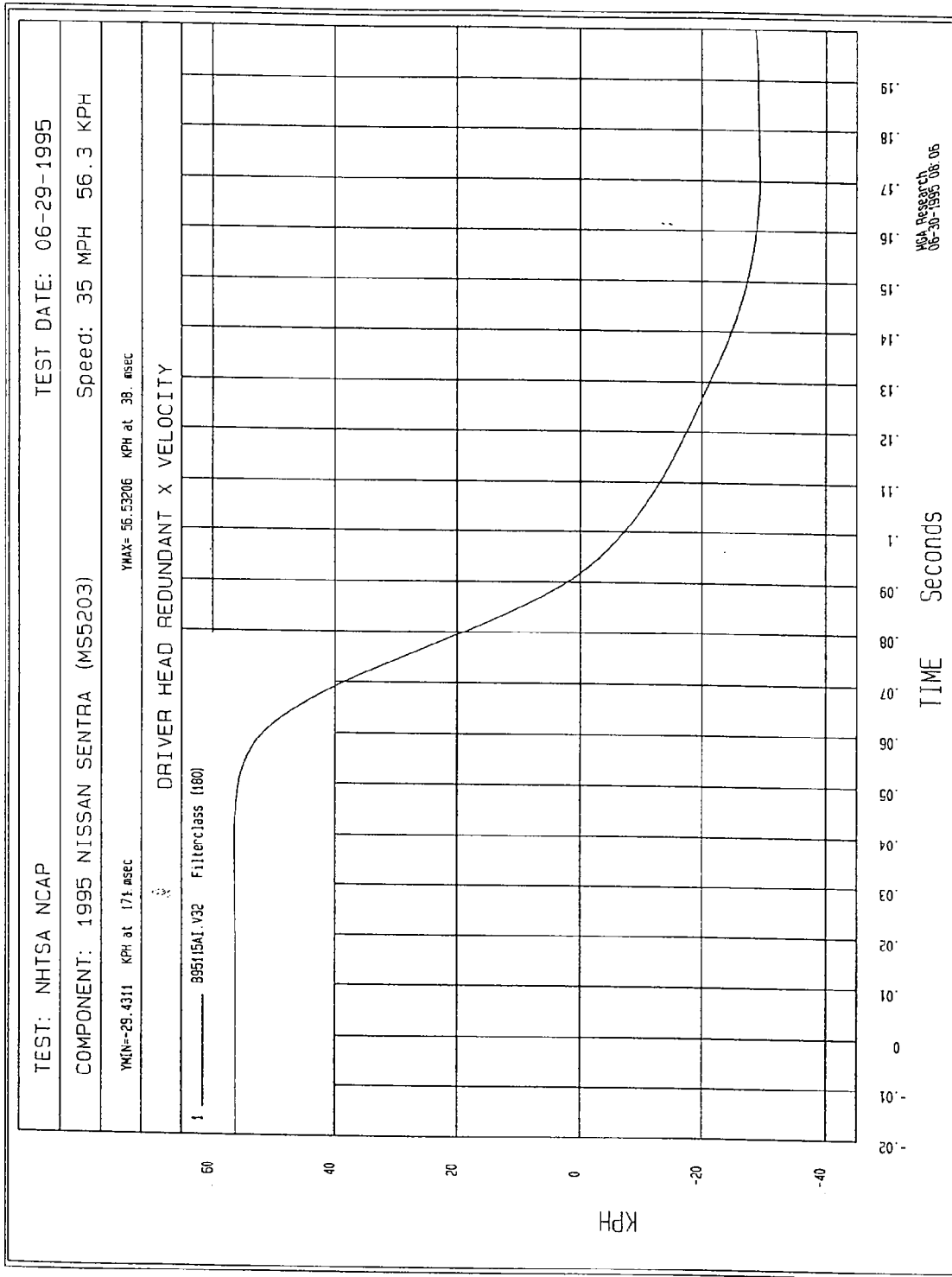


Figure B-39 - Driver Head Redundant Resultant Acceleration vs. Time



B-40

Figure B-40 - Driver Head Redundant X Velocity vs. Time

DRIVER CHEST X ACCELERATION VS. TIME

NO VALID DATA COLLECTED

B-41

Figure B-41 - Driver Chest X Acceleration vs. Time

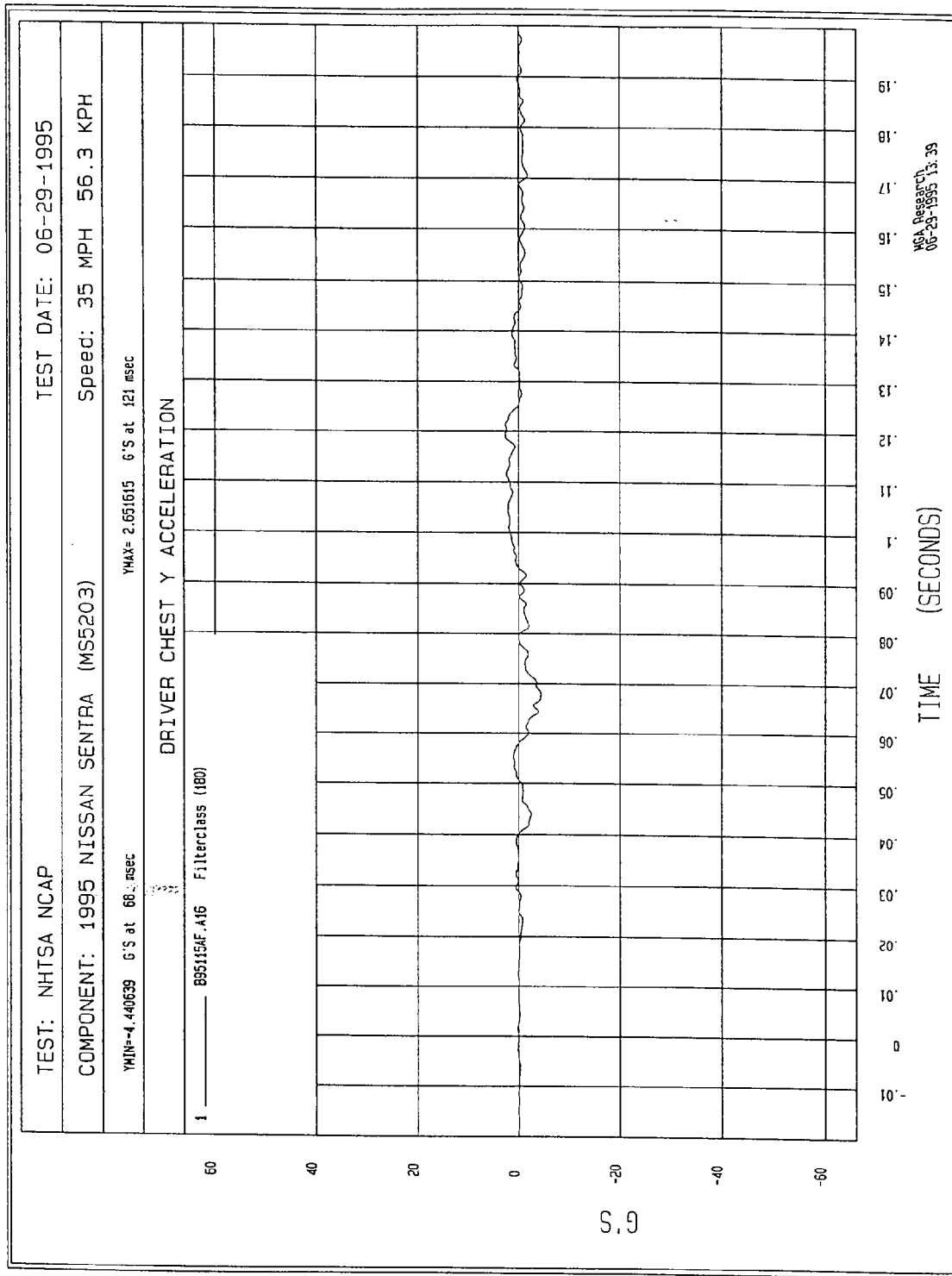


Figure B-42 - Driver Chest Y Acceleration vs. Time

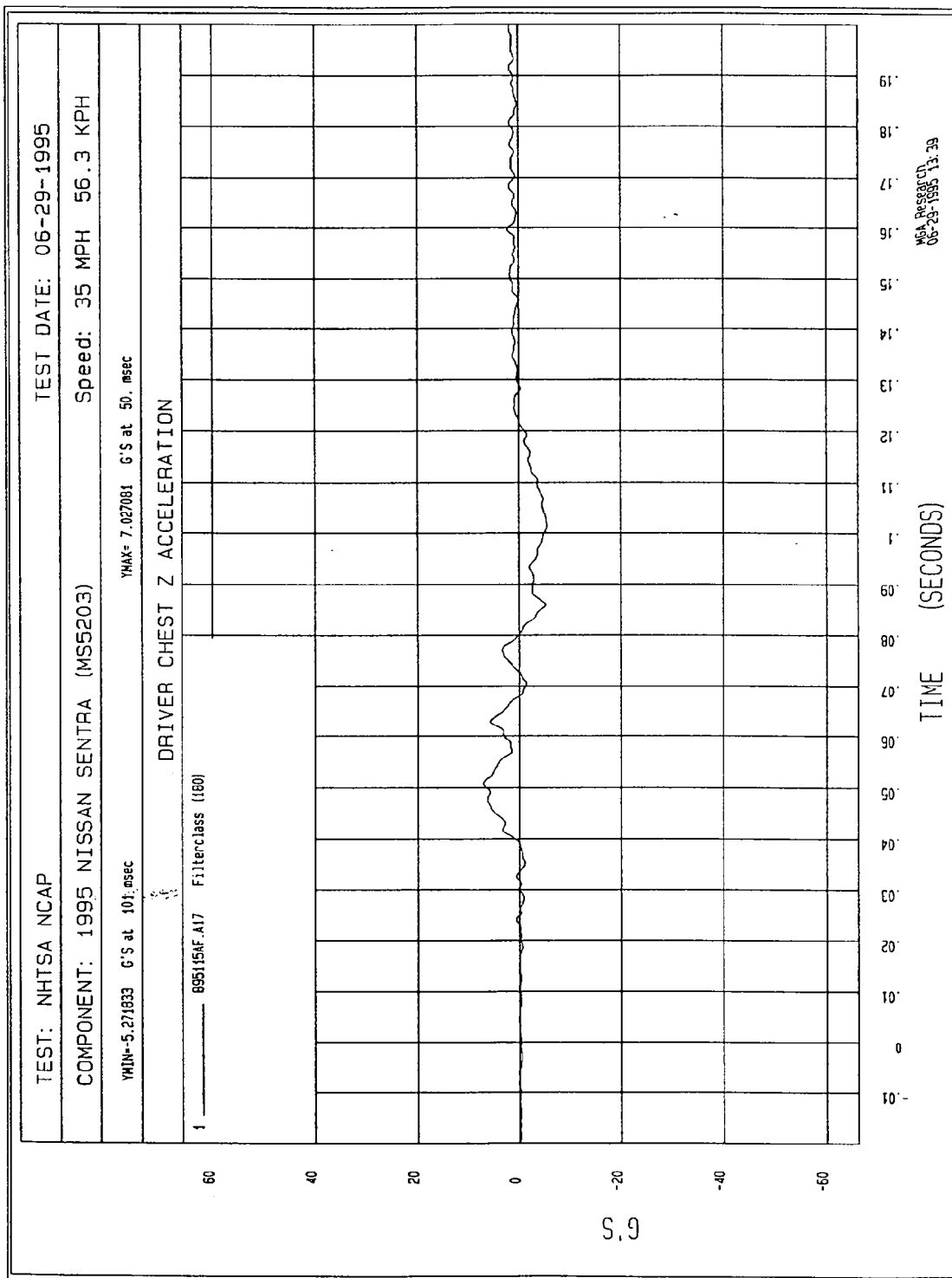


Figure B-43 - Driver Chest Z Acceleration vs. Time

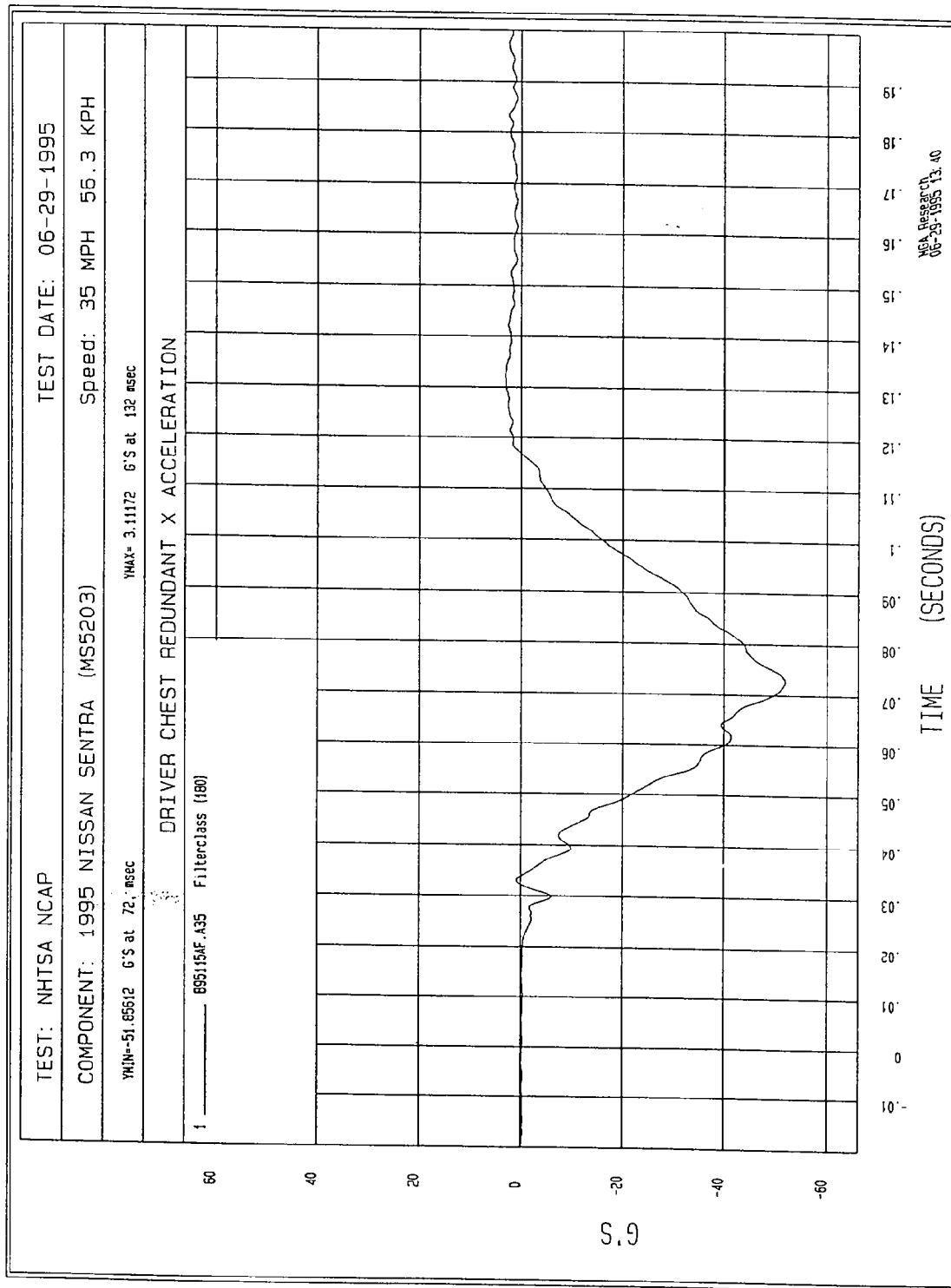


Figure B-44 - Driver Chest Redundant X Acceleration vs. Time

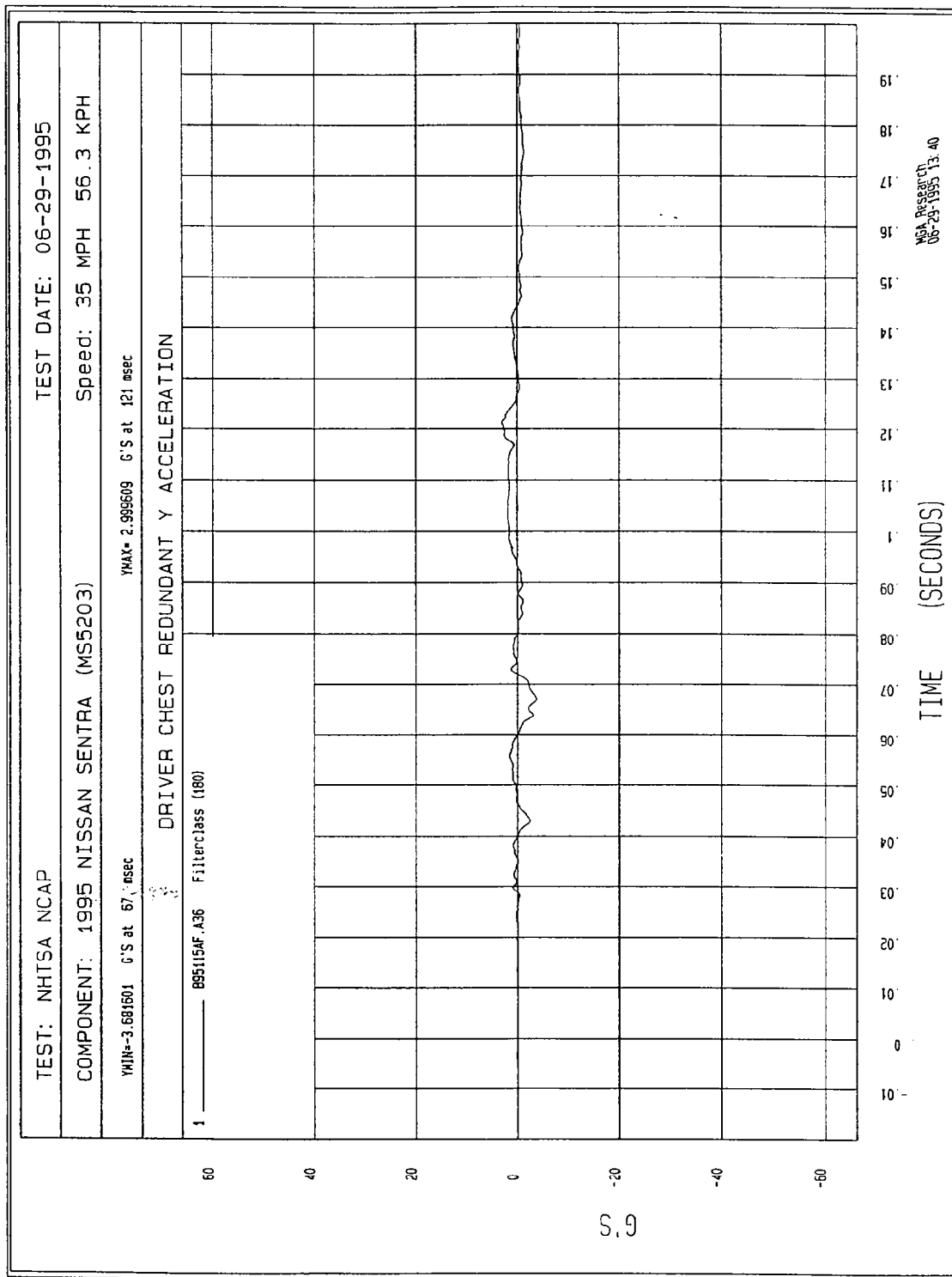


Figure B-45 - Driver Chest Redundant Y Acceleration vs. Time

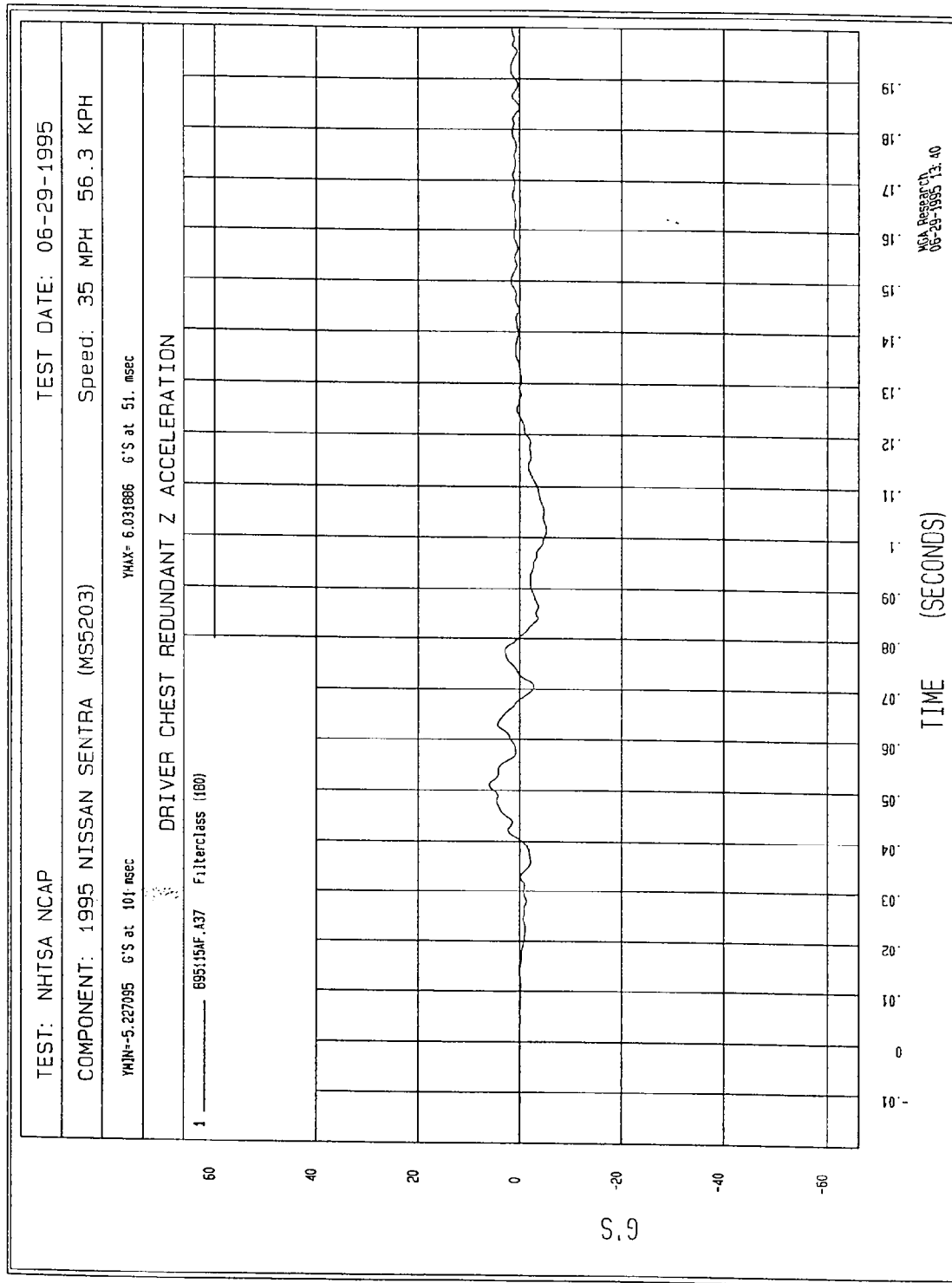


Figure B-46 - Driver Chest Redundant Z Acceleration vs. Time

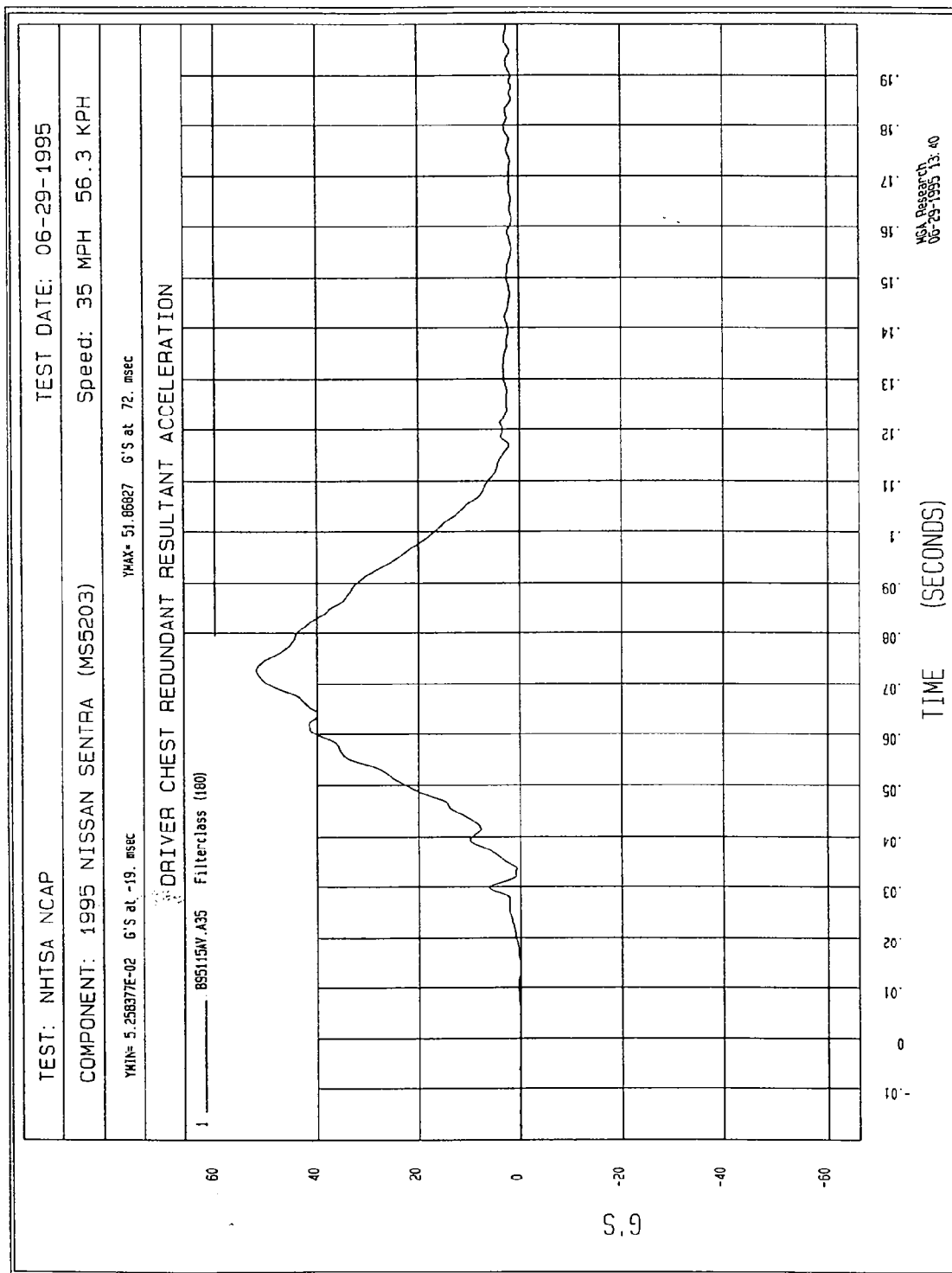


Figure B-47 - Driver Chest Redundant Resultant Acceleration vs. Time

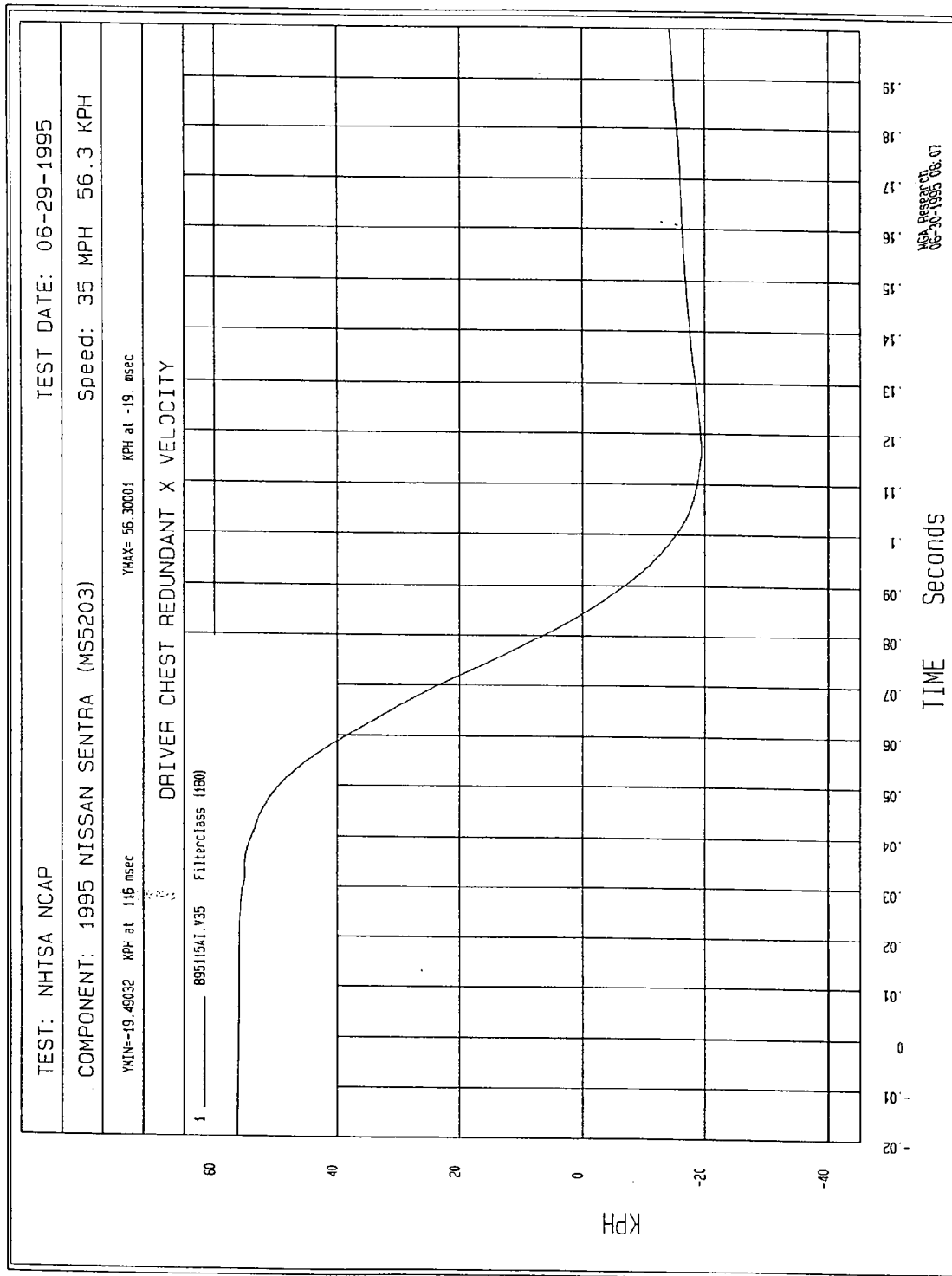


Figure B-48 - Driver Chest Redundant X Velocity vs. Time

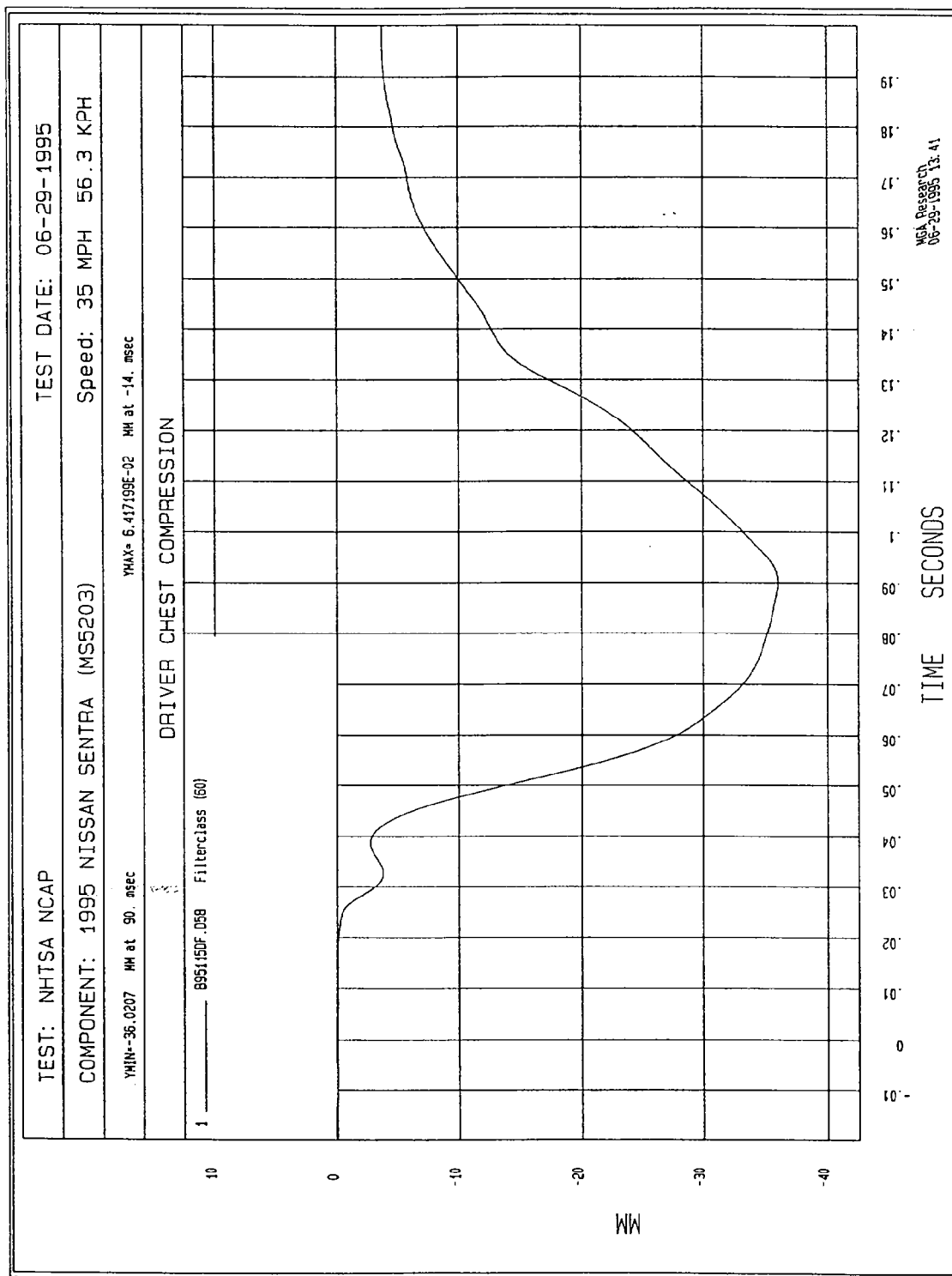
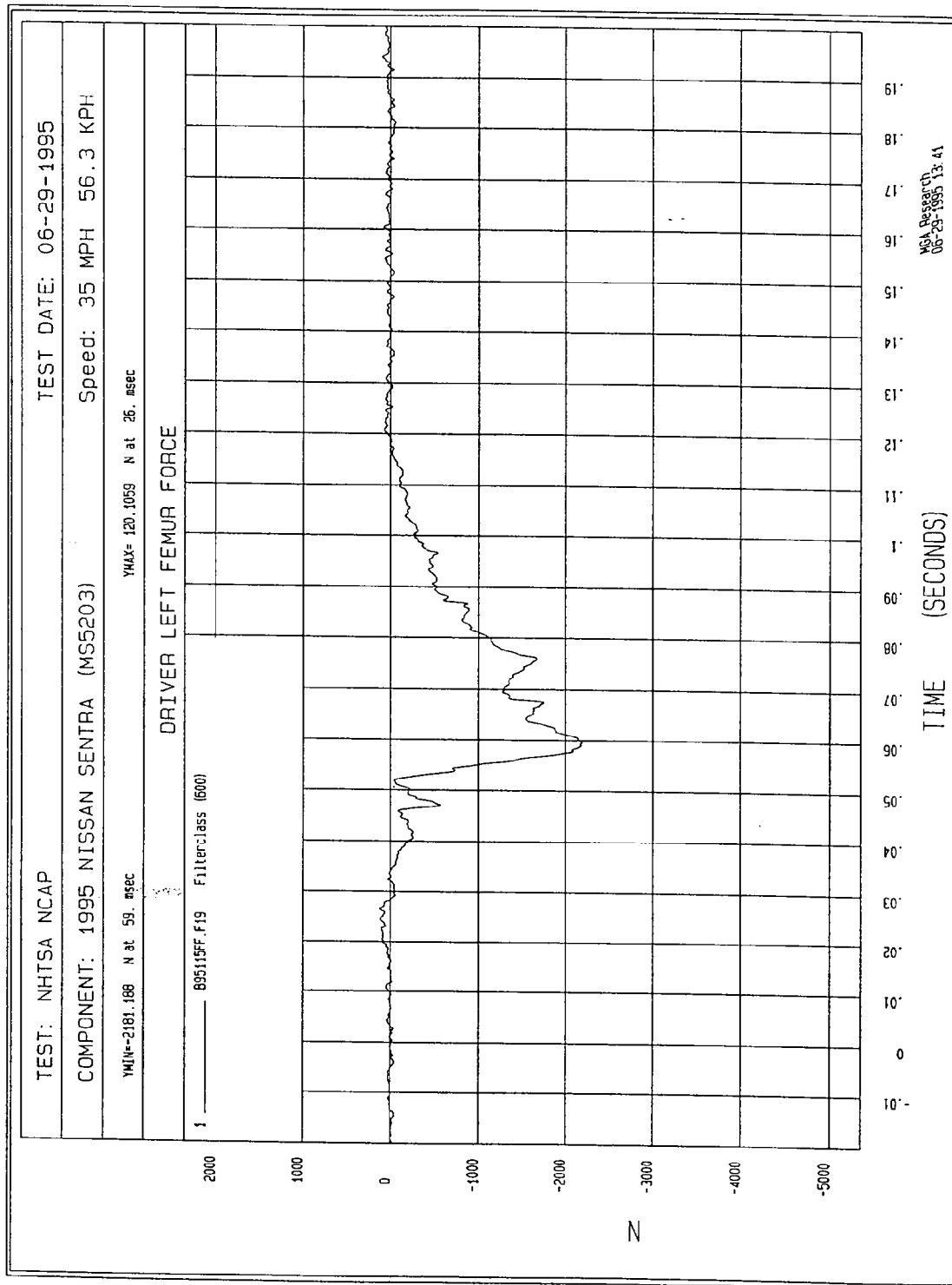


Figure B-49 - Driver Chest Compression vs. Time



B-50

Figure B-50 - Driver Left Femur Force vs. Time

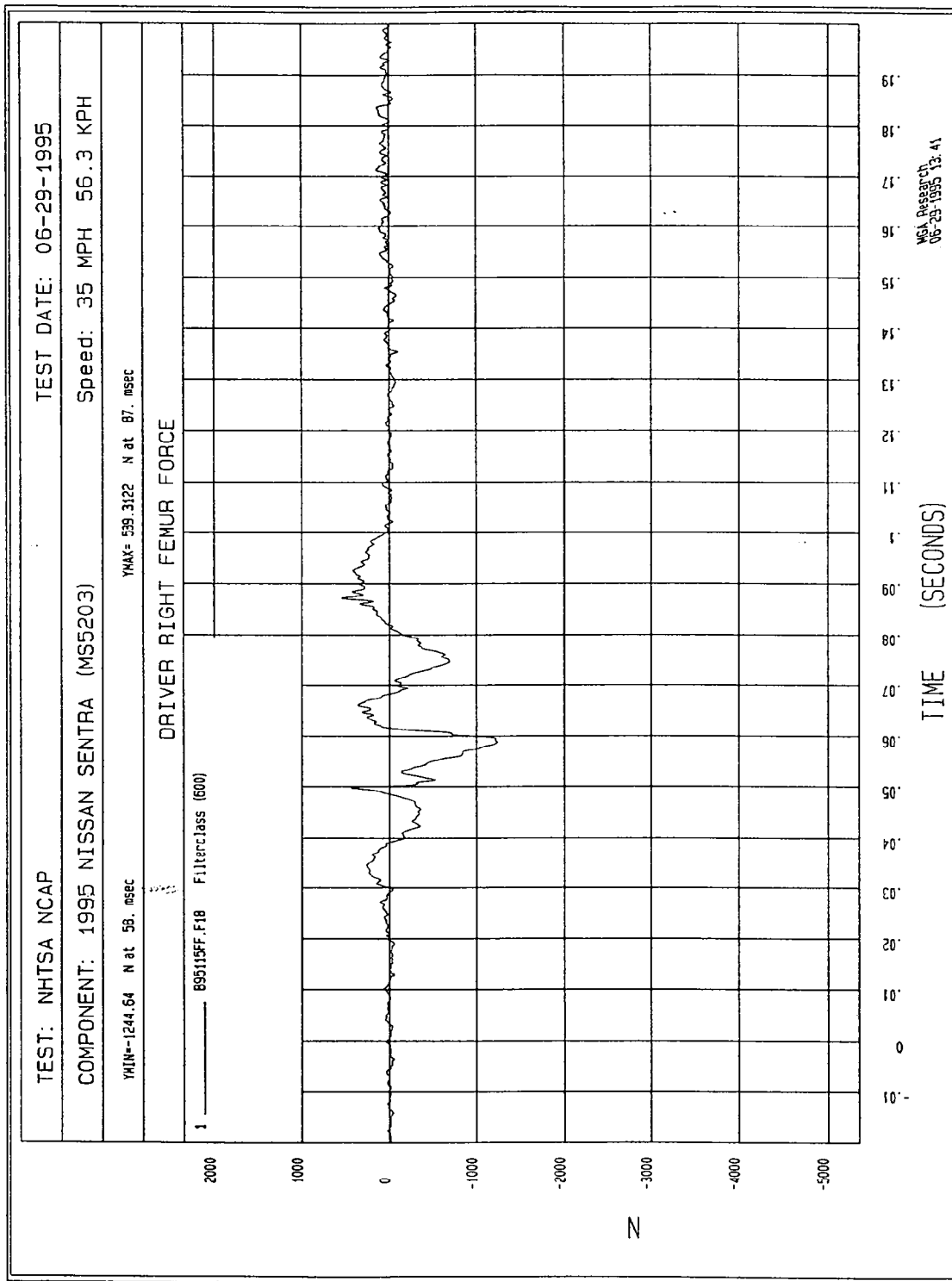


Figure B-51 - Driver Right Femur Force vs. Time

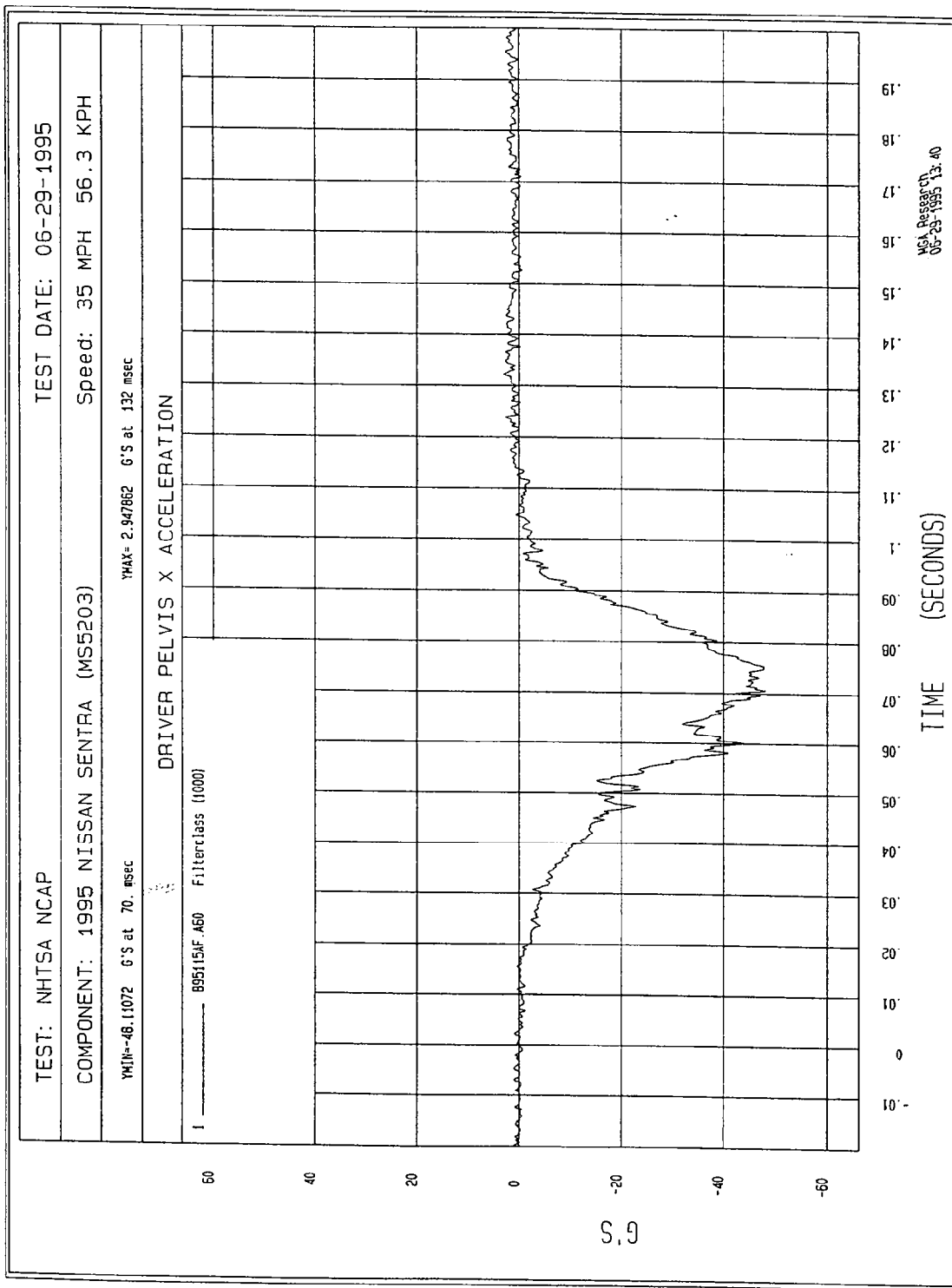


Figure B-52 - Driver Pelvis X Acceleration vs. Time

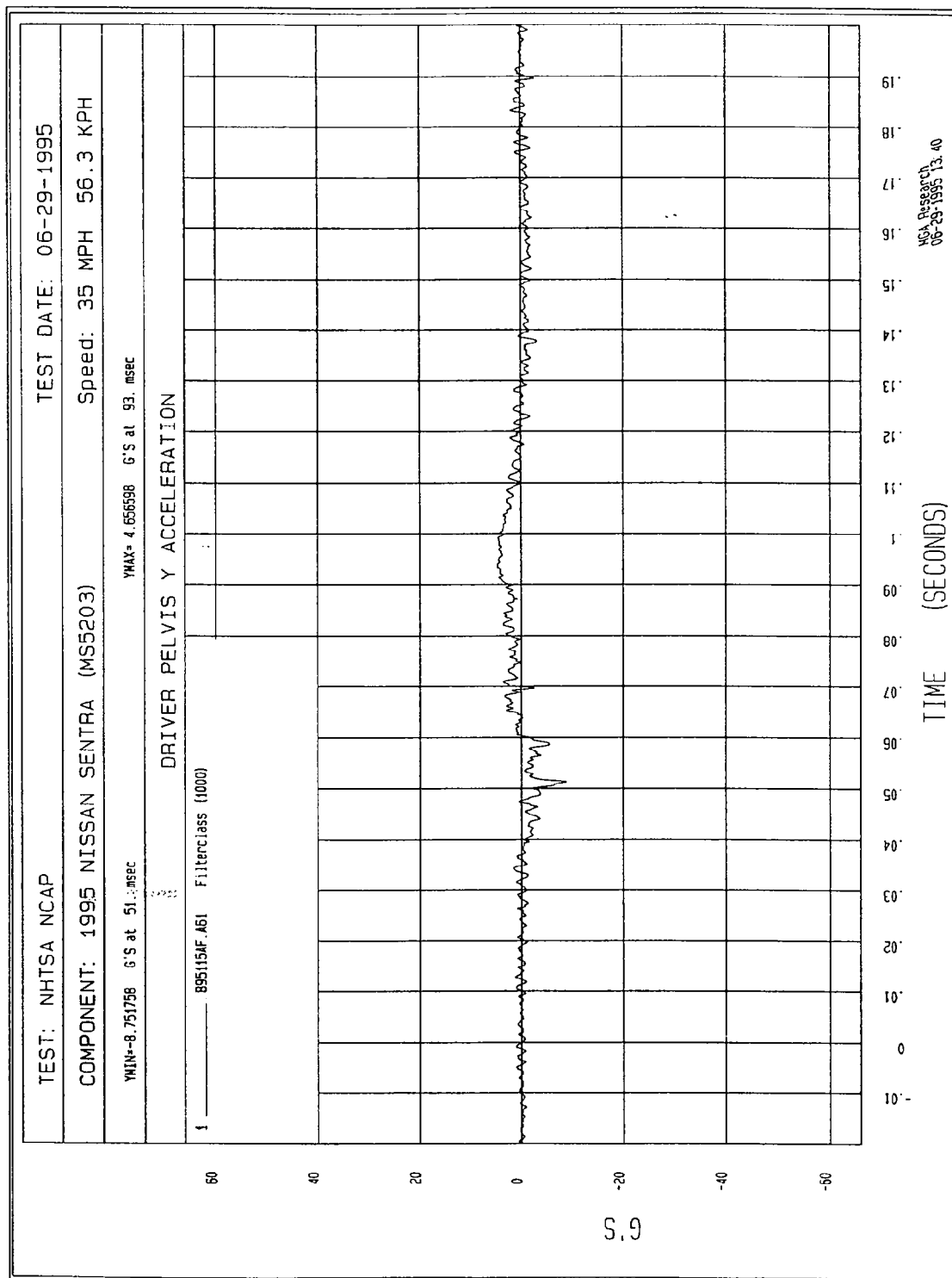


Figure B-53 - Driver Pelvis Y Acceleration vs. Time

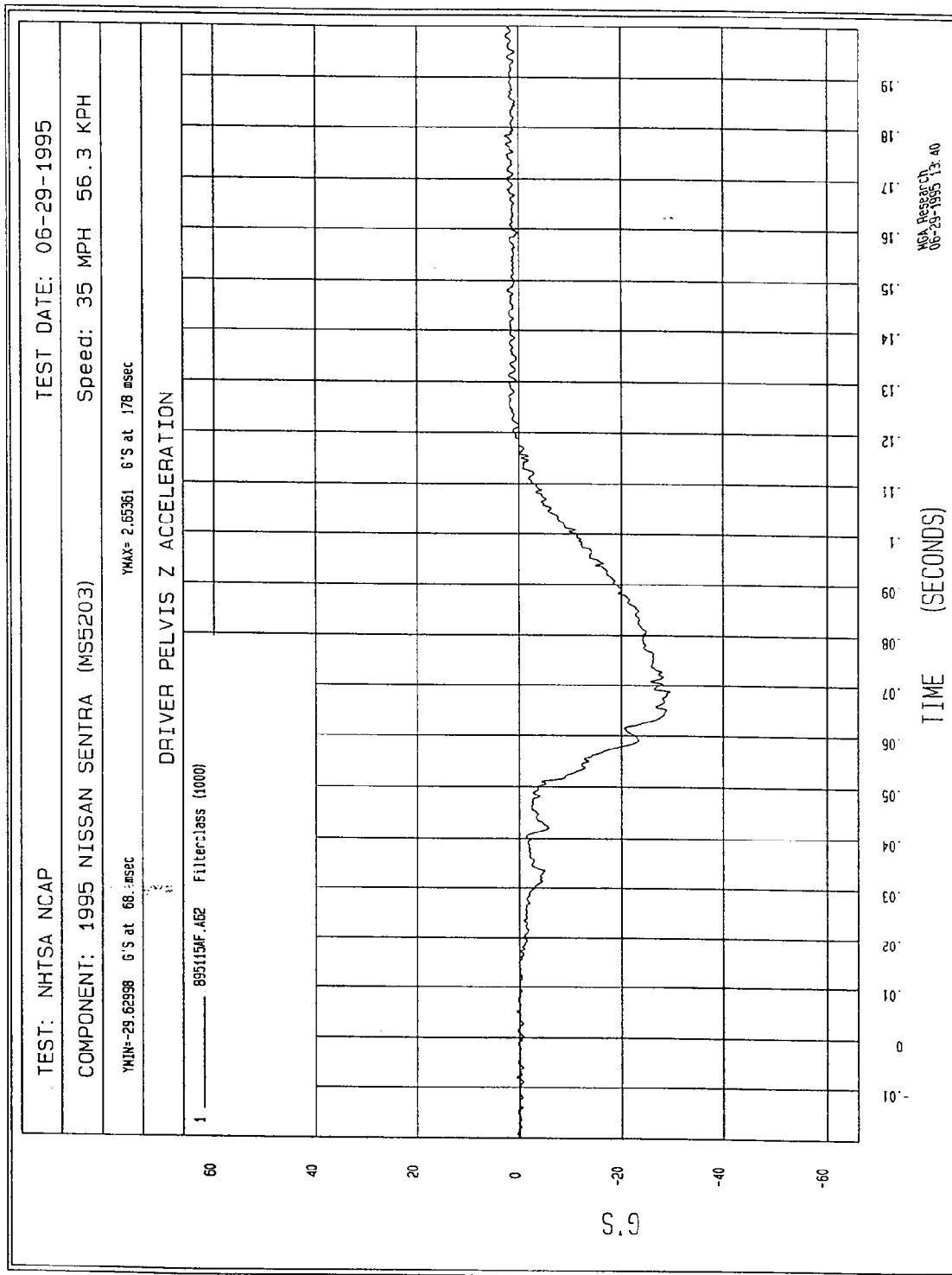


Figure B-54 - Driver Pelvis Z Acceleration vs. Time

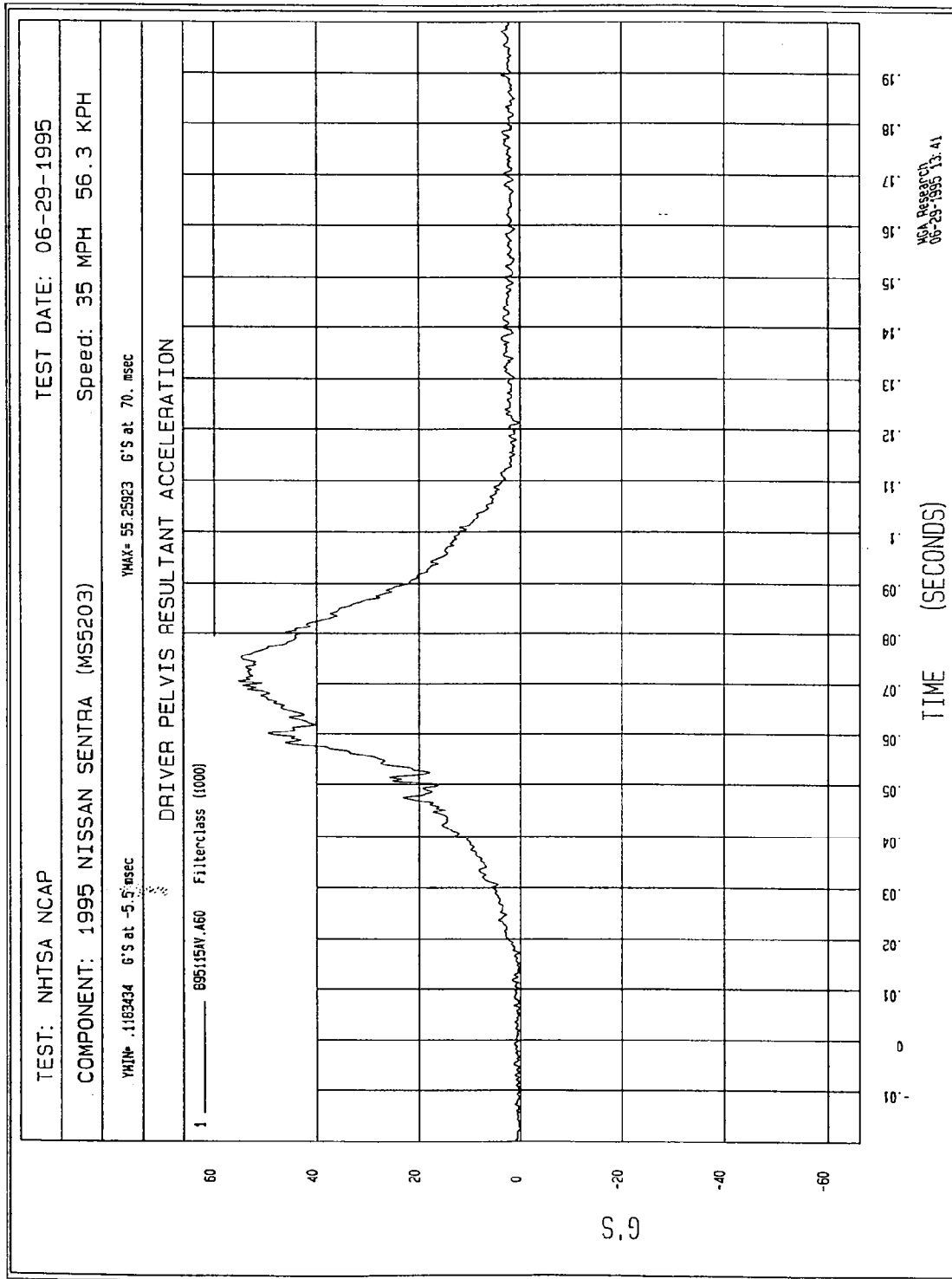


Figure B-55 - Driver Pelvis Resultant Acceleration vs. Time

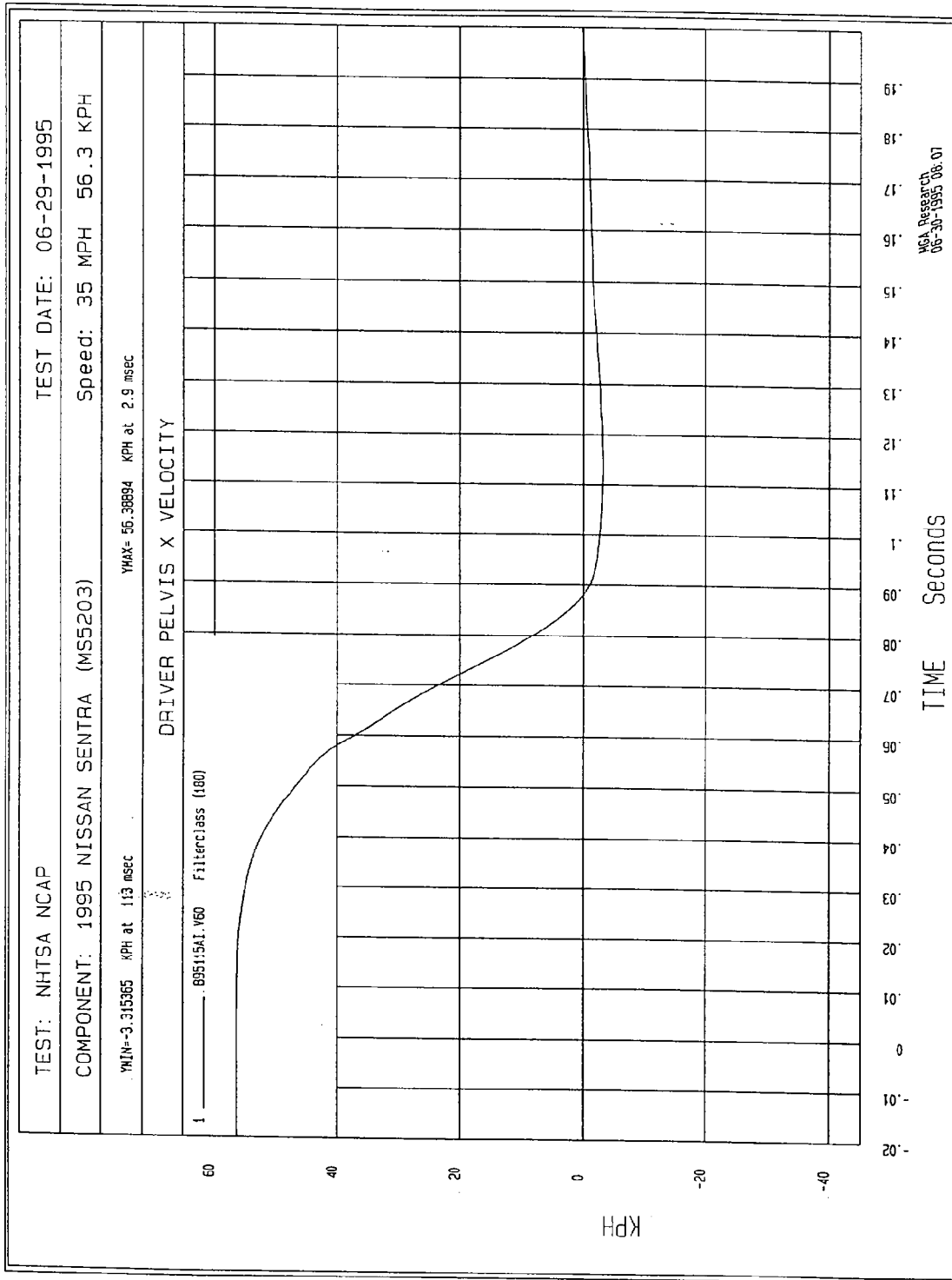


Figure B-56 - Driver Pelvis X Velocity vs. Time

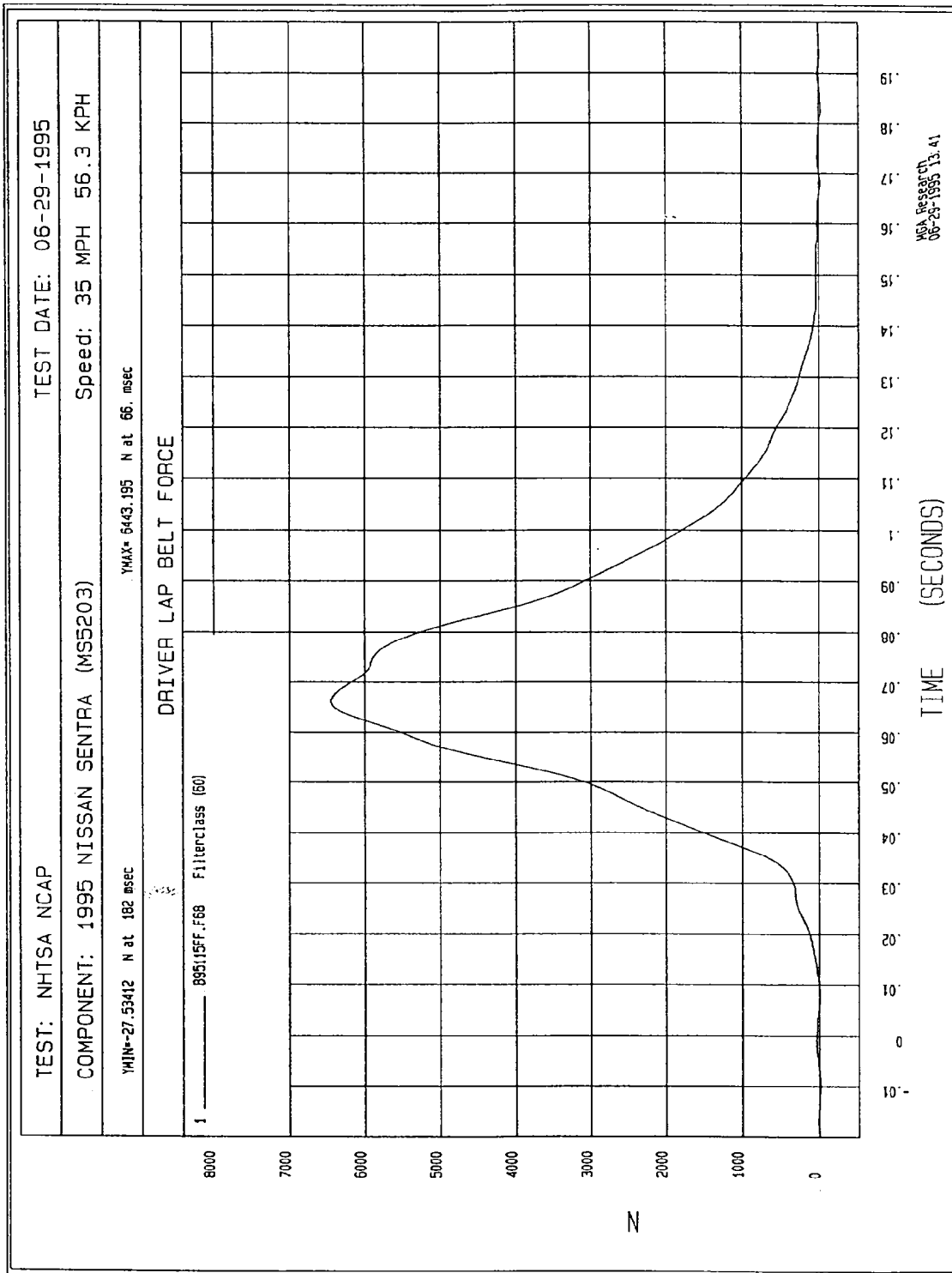


Figure B-57 - Driver Lap Belt Force vs. Time

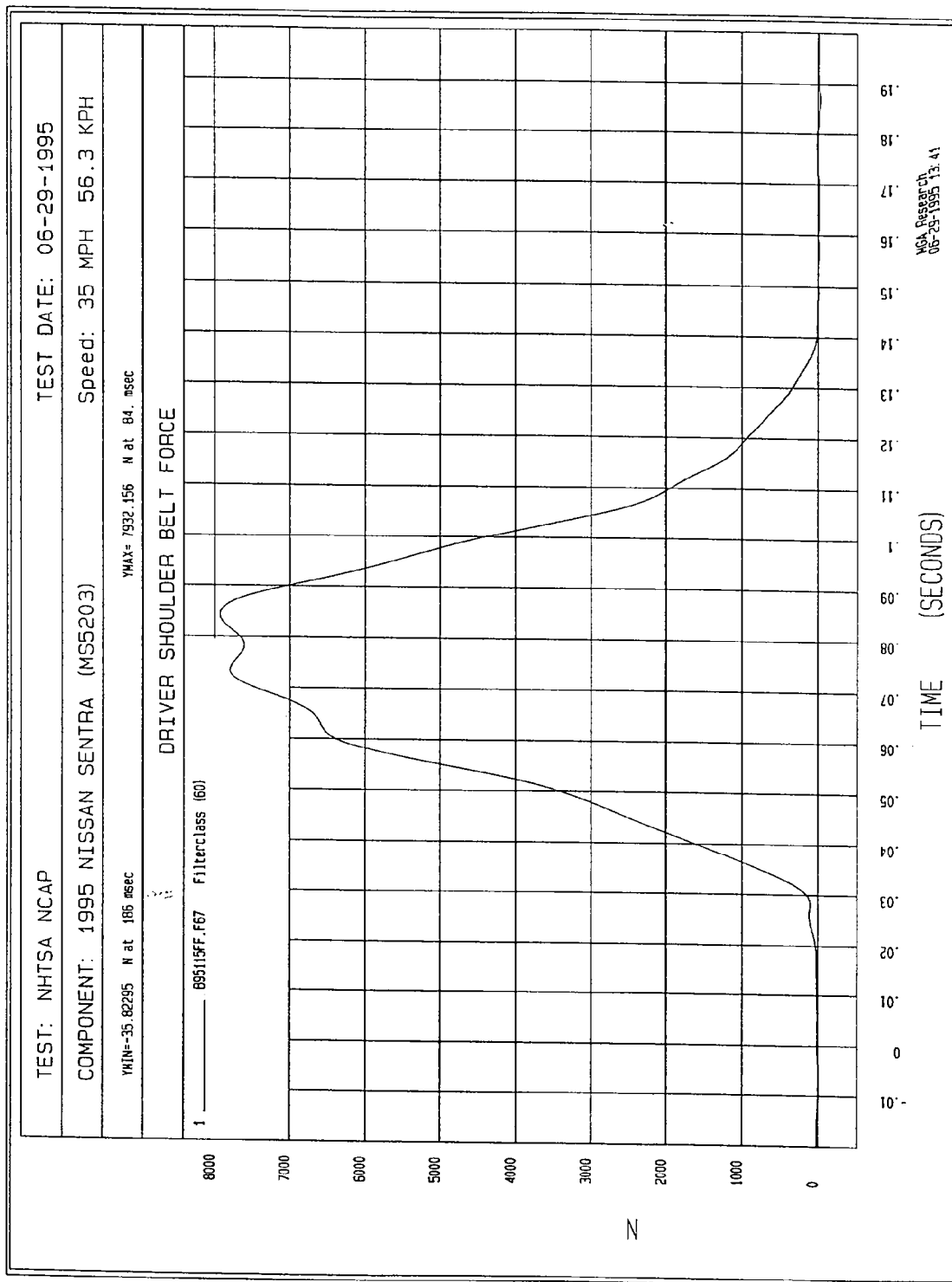


Figure B-58 - Driver Shoulder Belt Force vs. Time

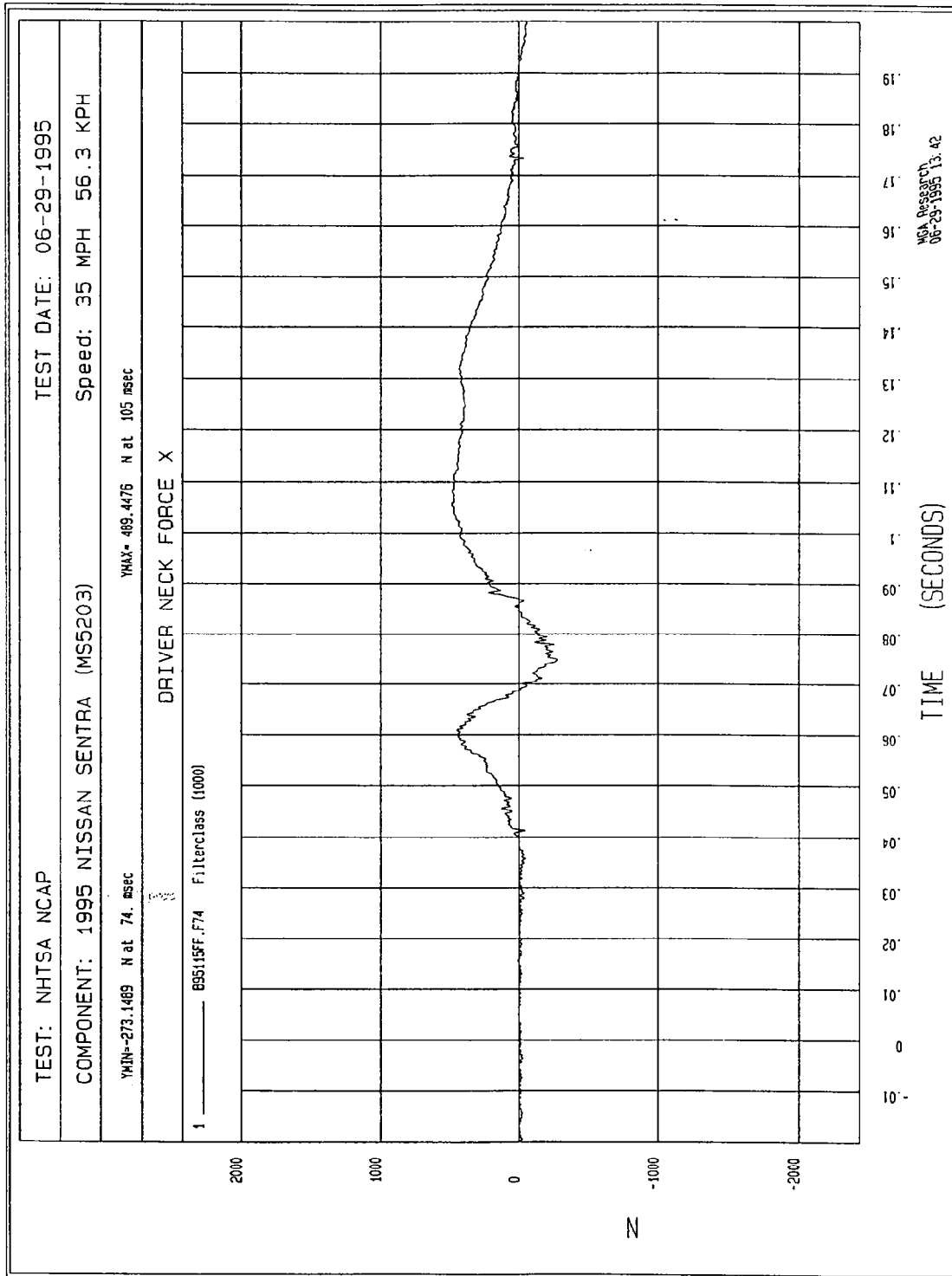


Figure B-59 - Driver Neck Force X vs. Time

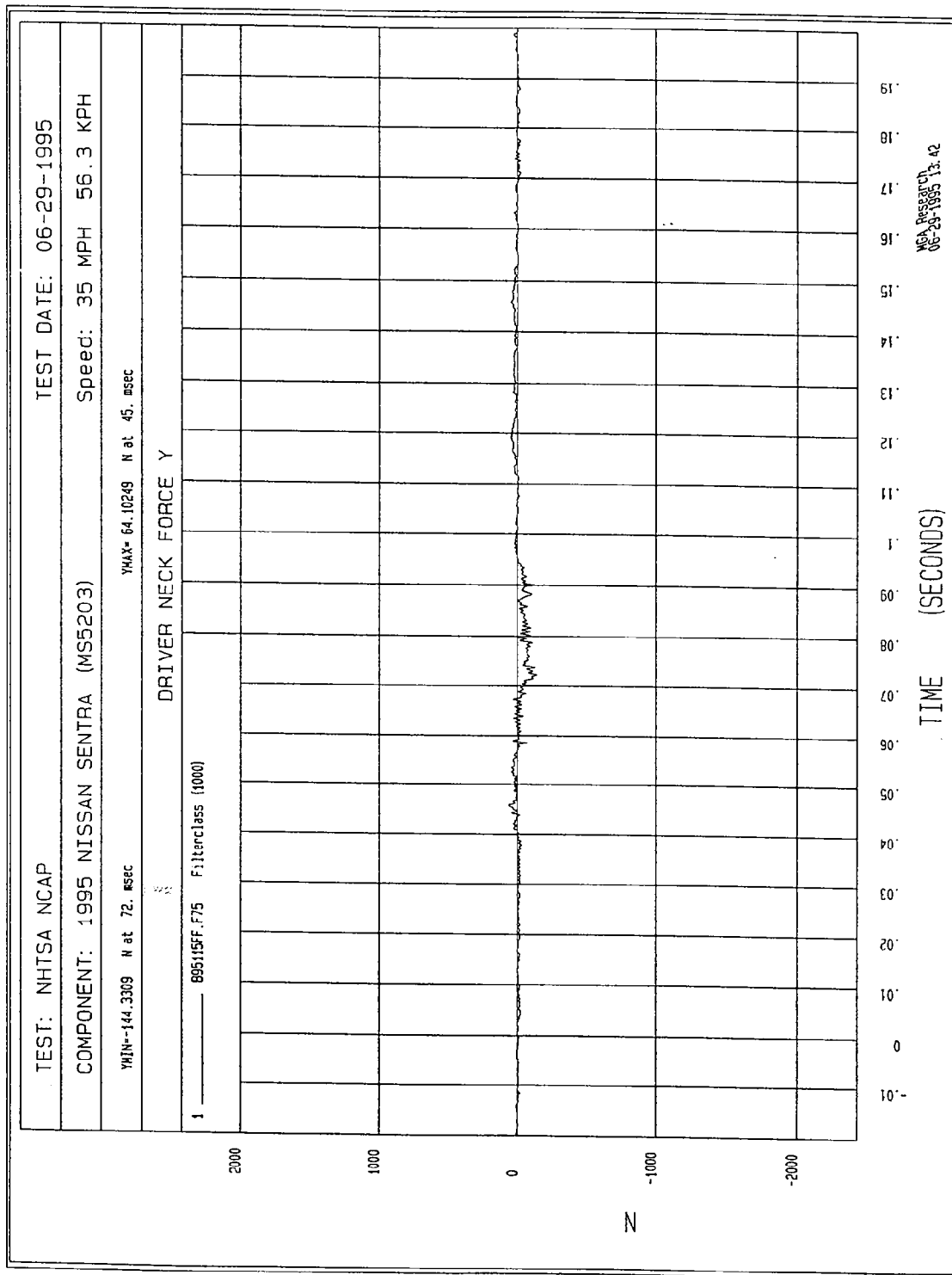


Figure B-60 - Driver Neck Force Y vs. Time

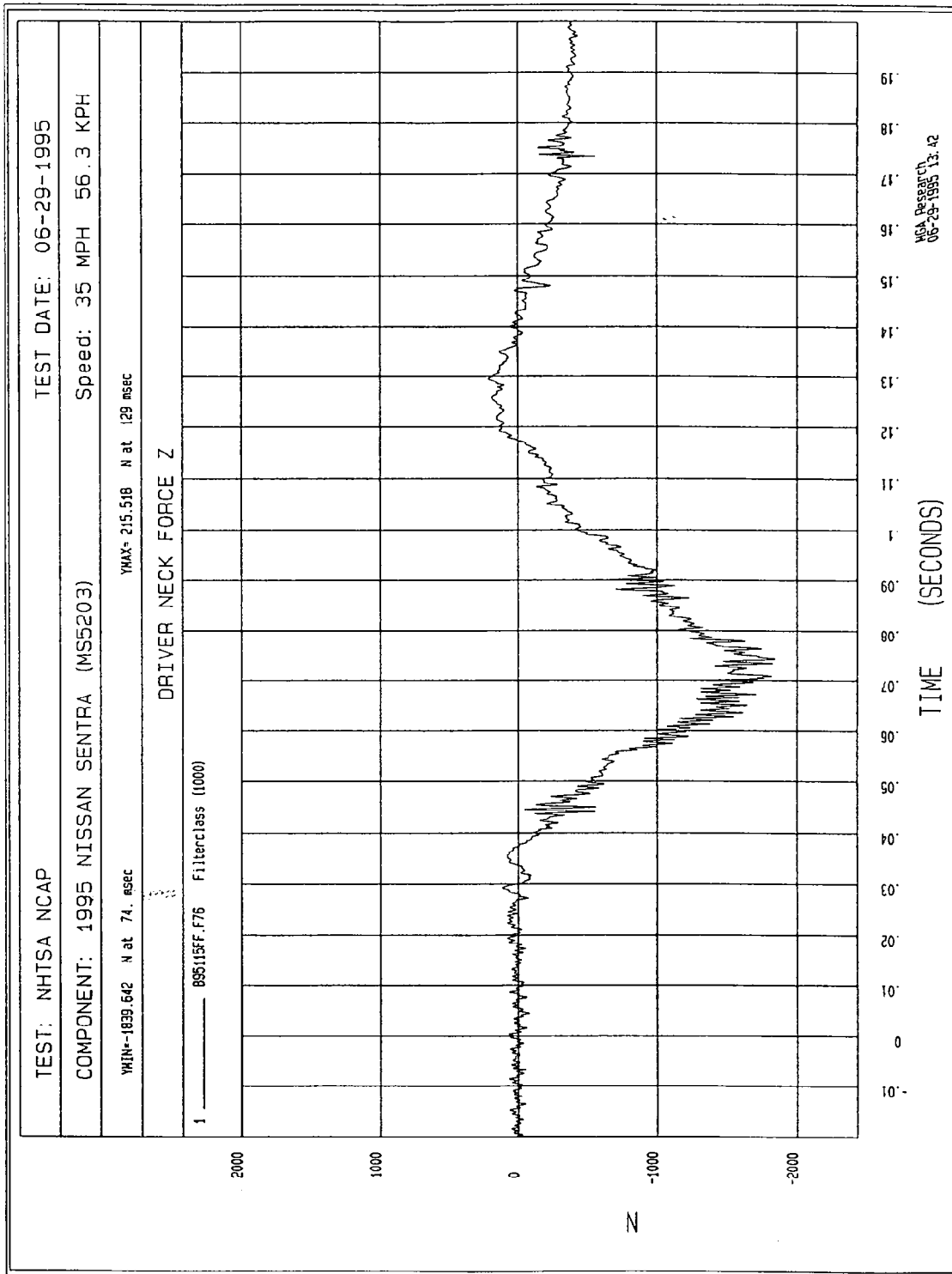
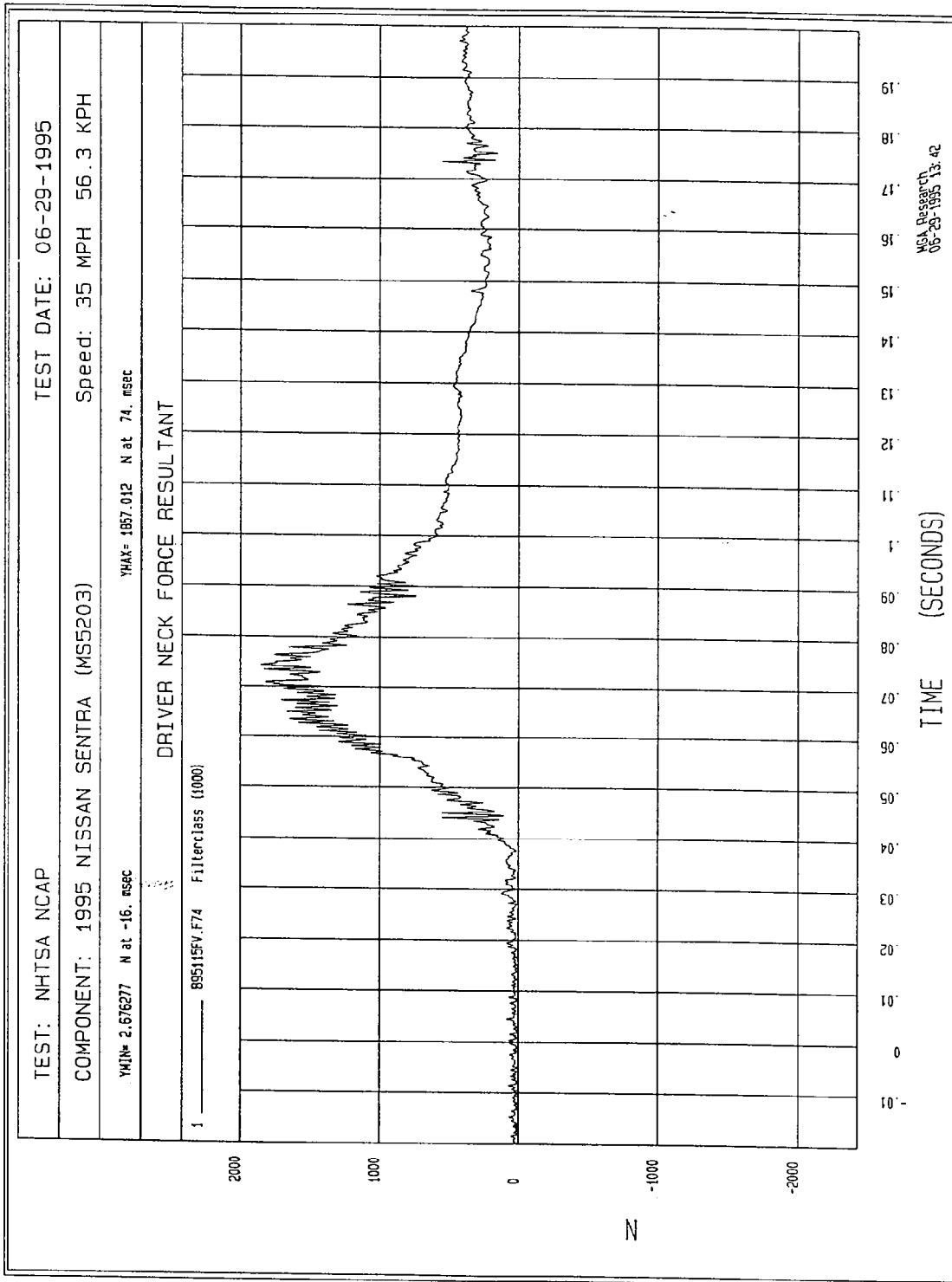


Figure B-61 - Driver Neck Force Z vs. Time



B-62

Figure B-62 - Driver Neck Force Resultant vs. Time

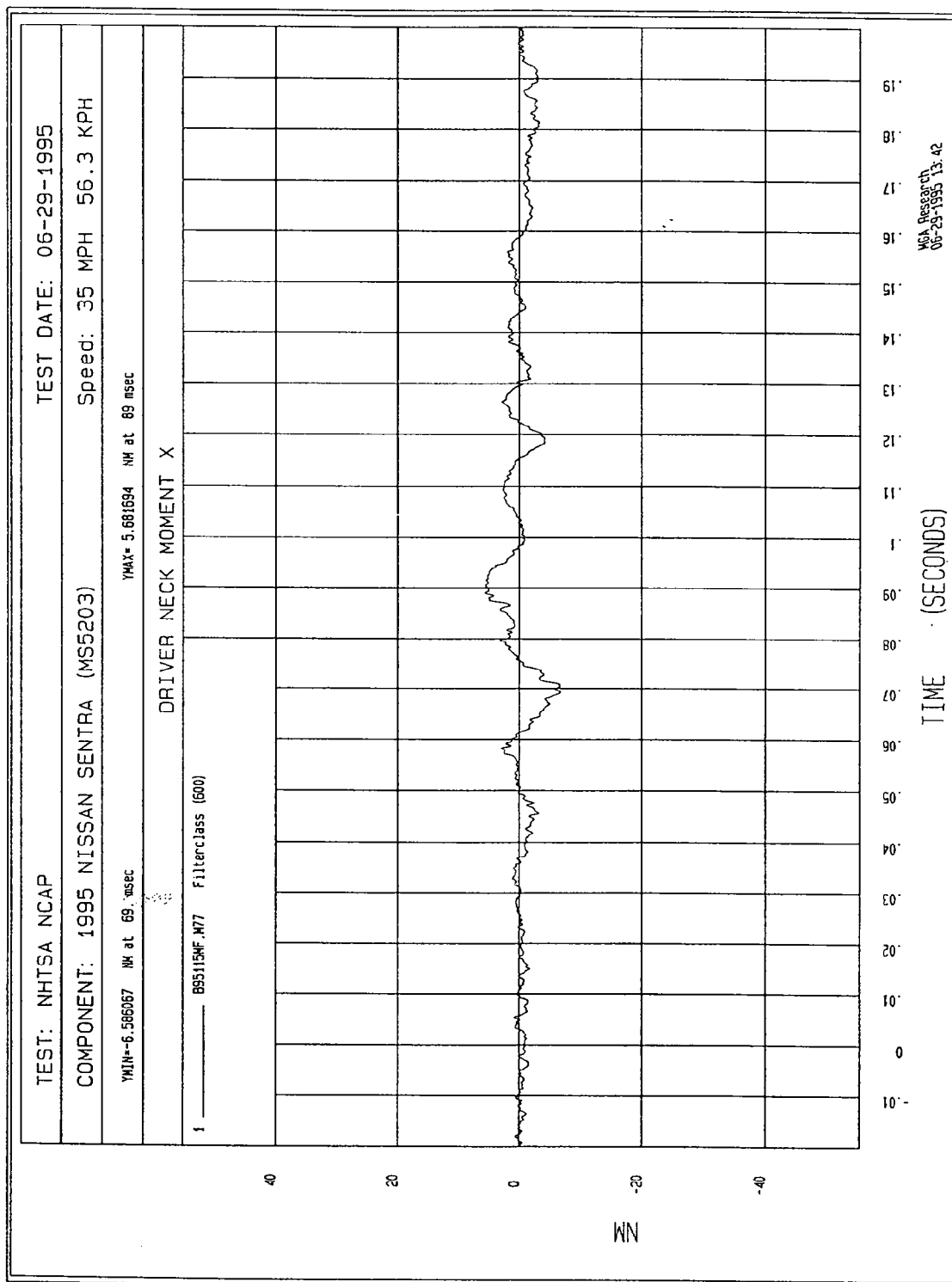
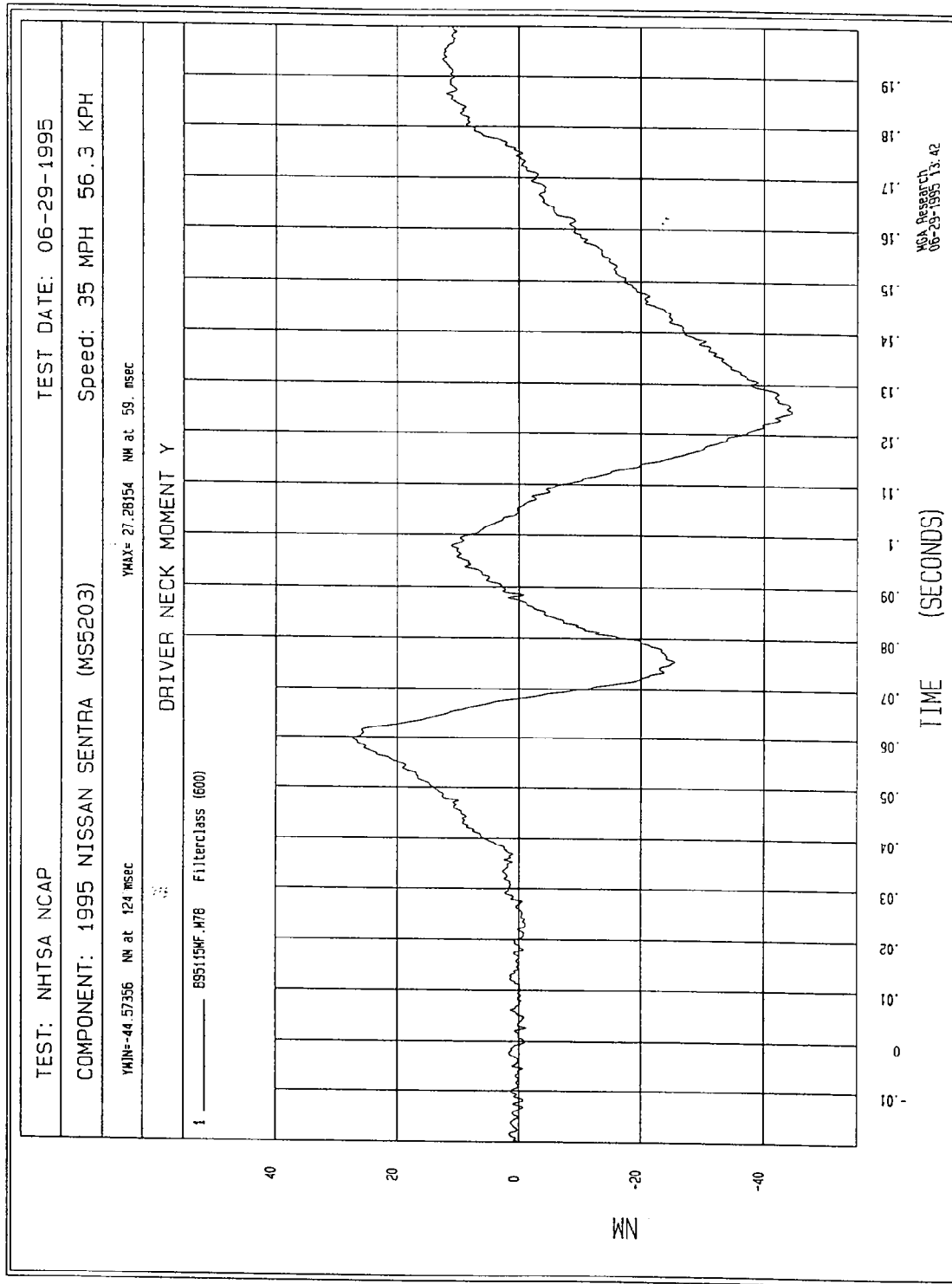


Figure B-63 - Driver Neck Moment X vs. Time



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Figure B-64 - Driver Neck Moment Y vs. Time

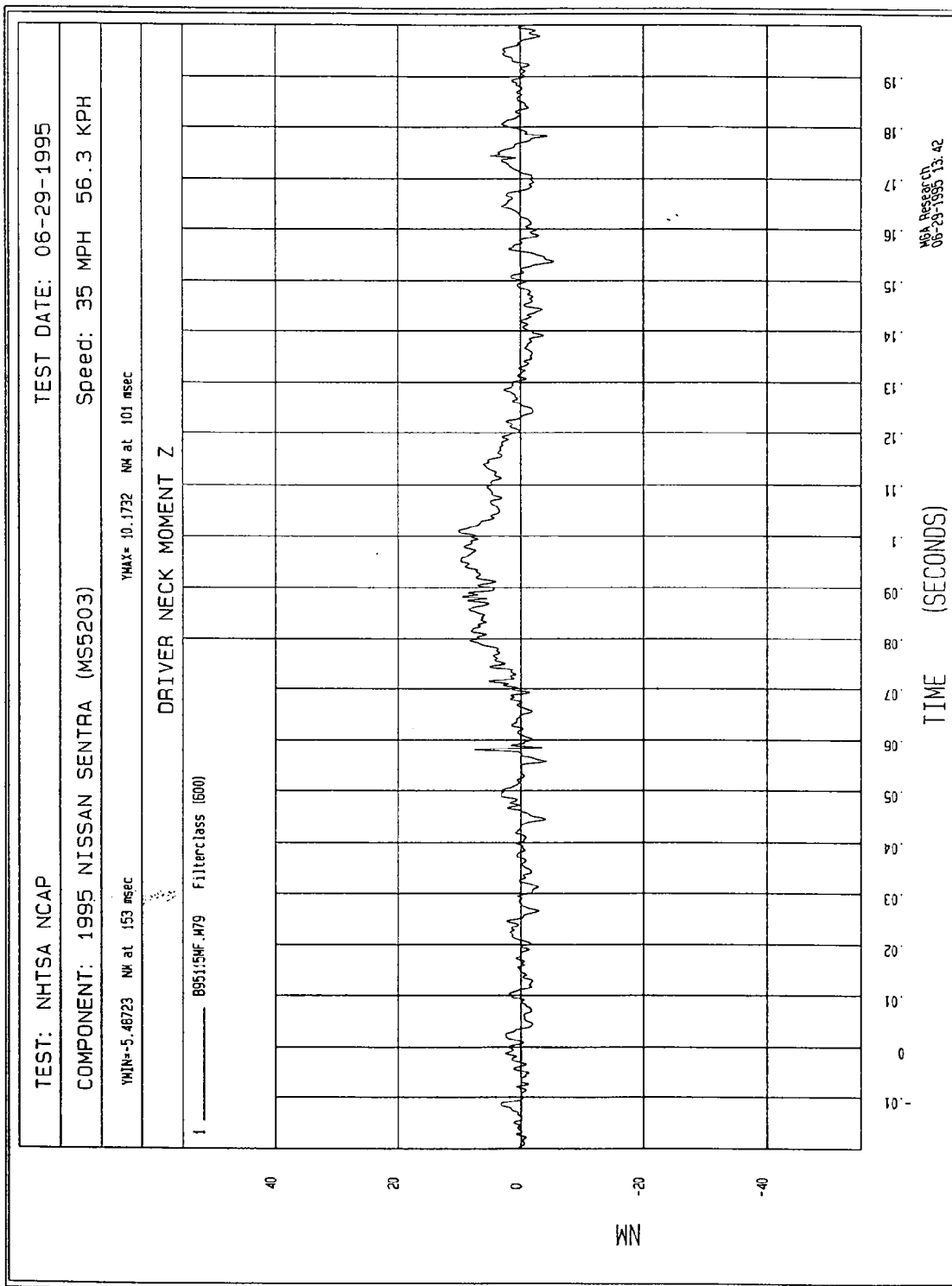
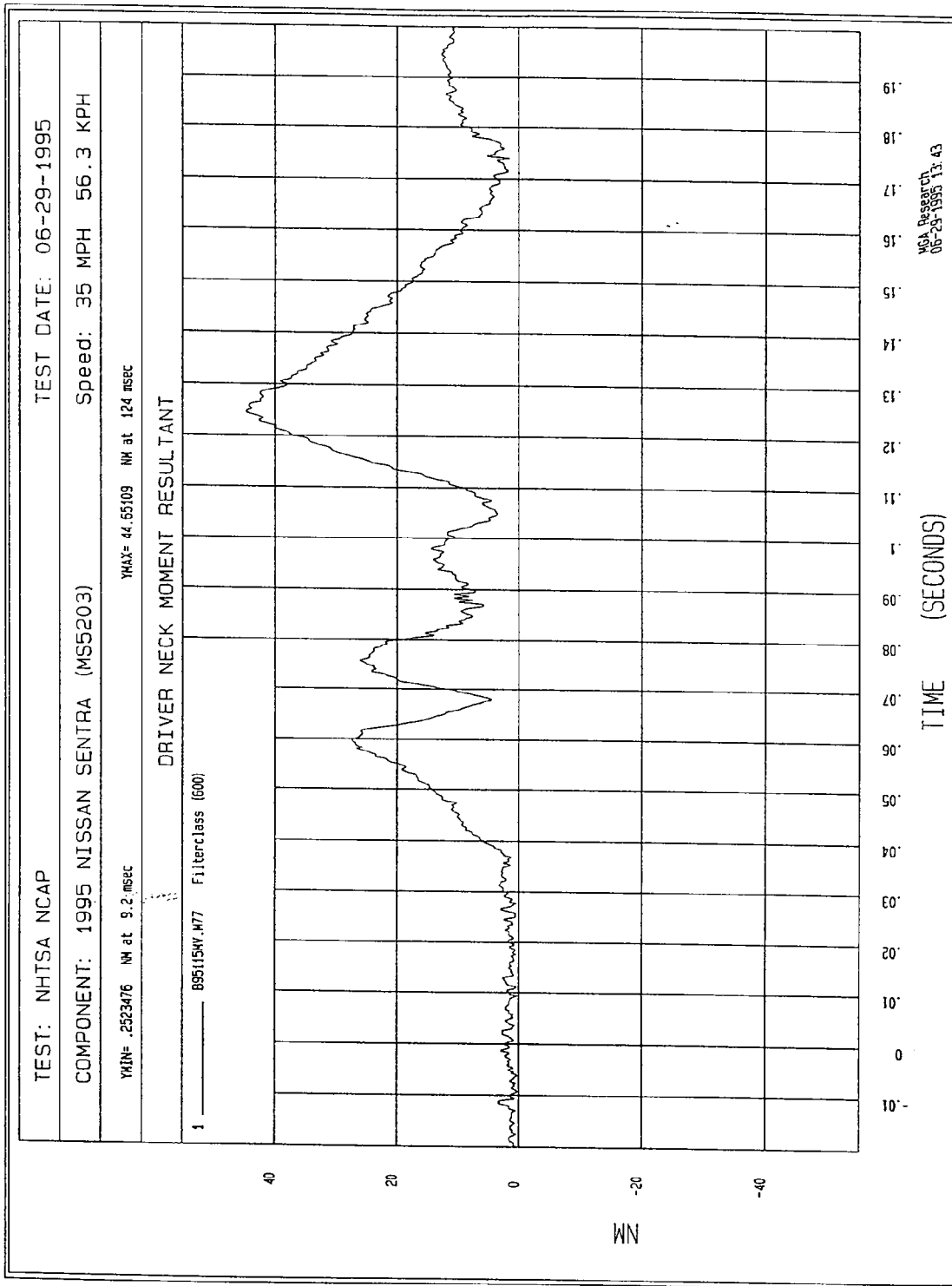


Figure B-65 - Driver Neck Moment Z vs. Time



B-66

Figure B-66 - Driver Neck Moment Resultant vs. Time

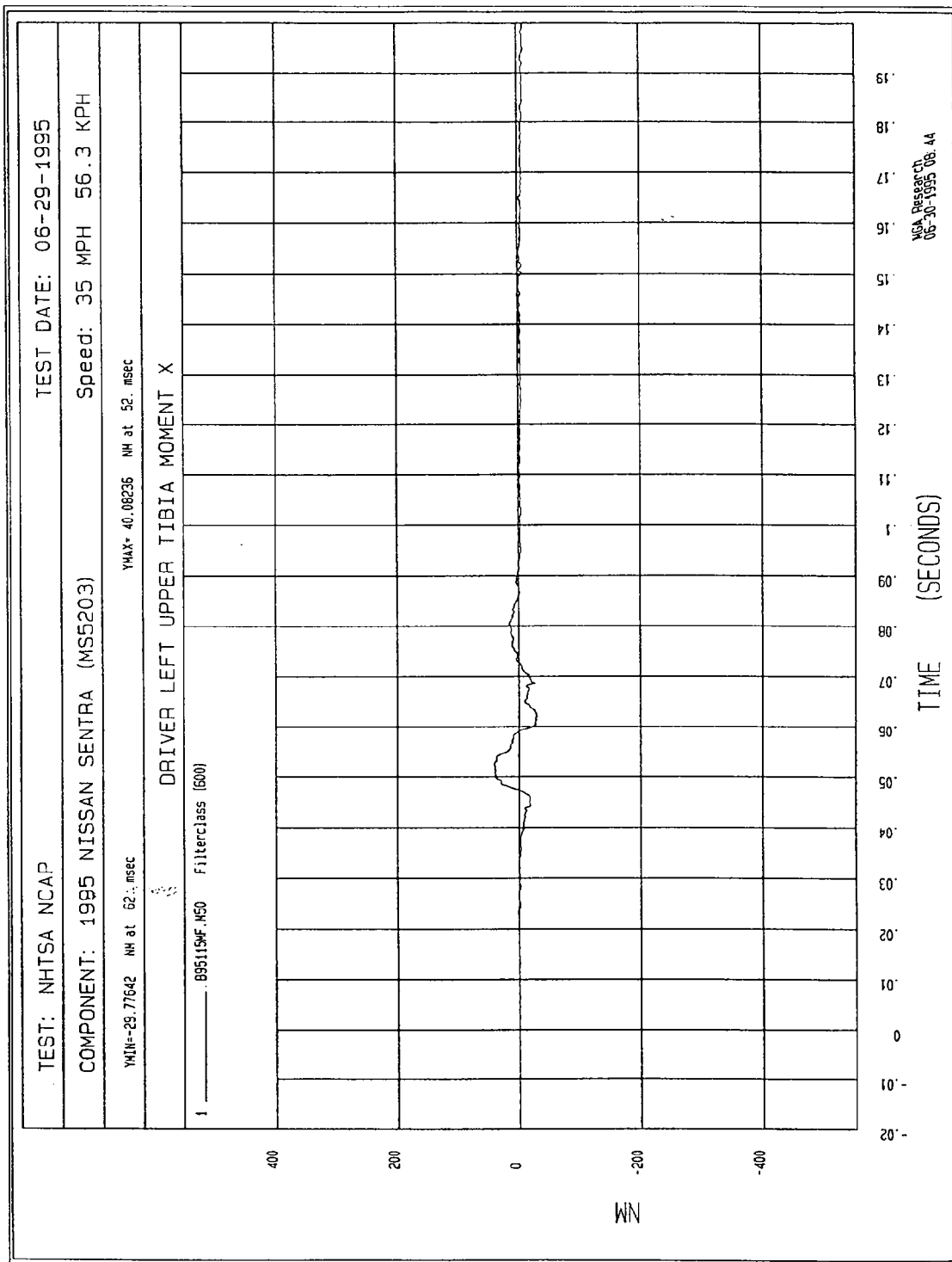


Figure B-67 - Driver Left Upper Tibia Moment X vs. Time

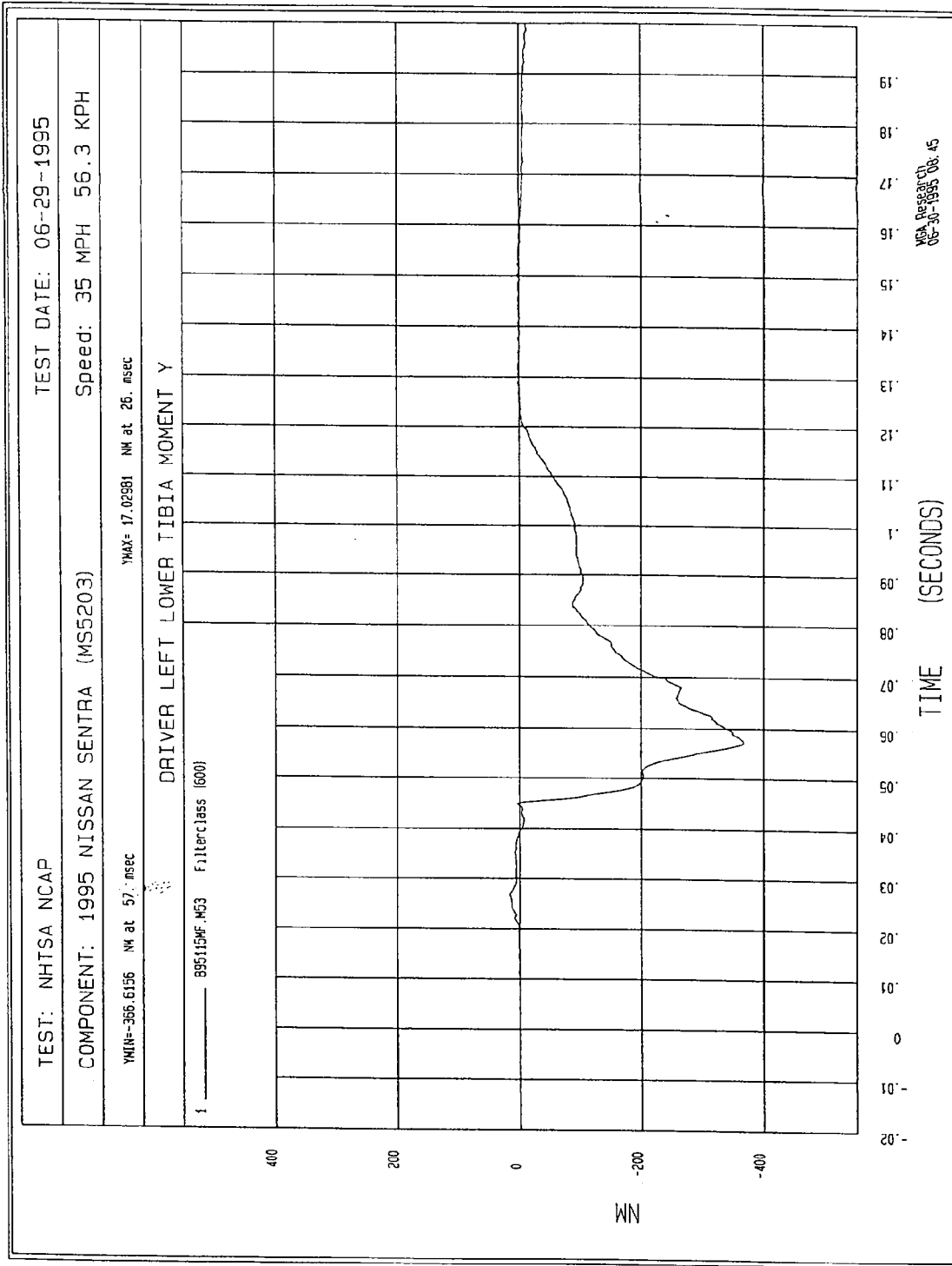


Figure B-70 - Driver Left Lower Tibia Moment Y vs. Time

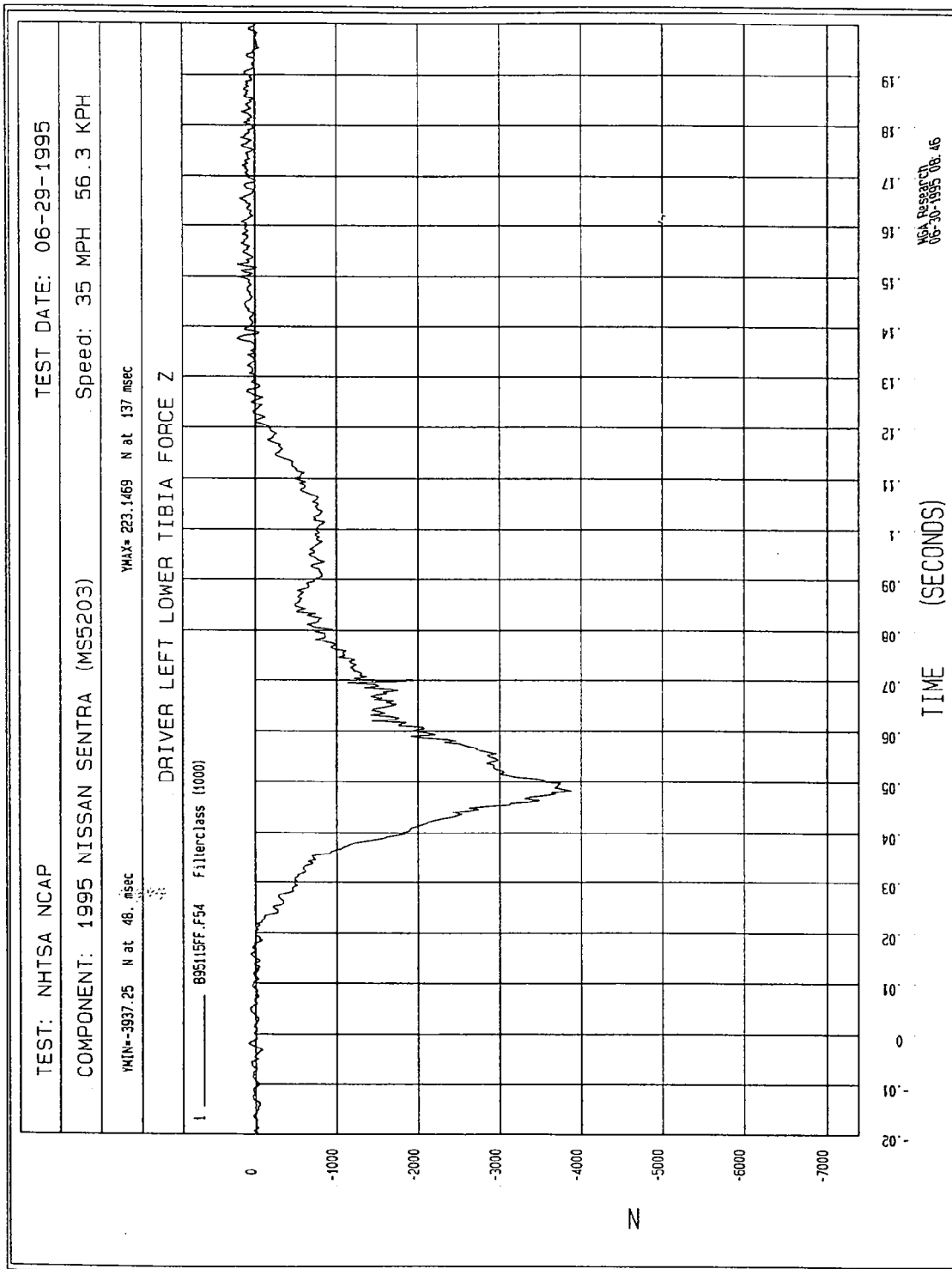


Figure B-71 - Driver Left Lower Tibia Force Z vs. Time

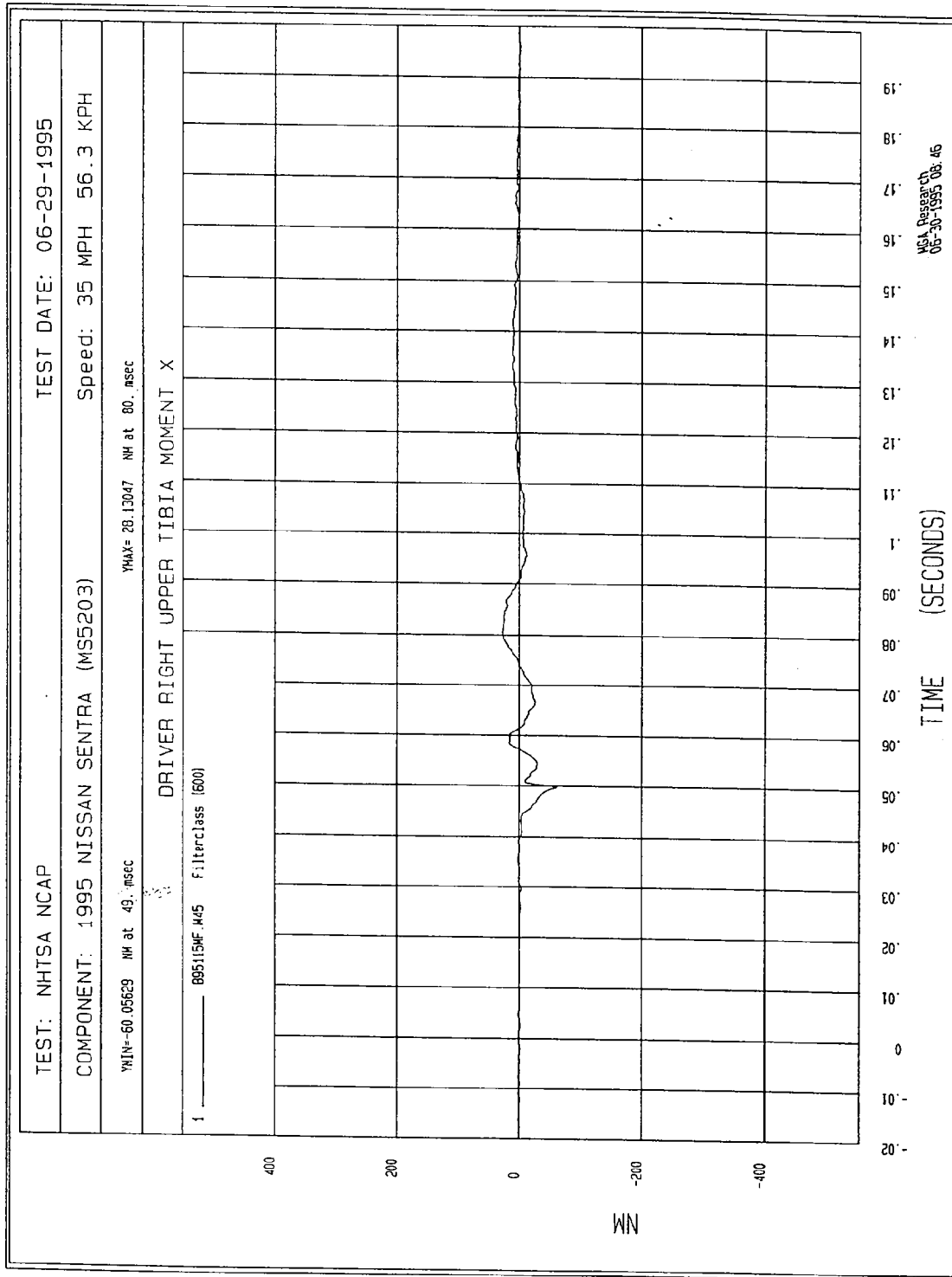


Figure B-72 - Driver Right Upper Tibia Moment X vs. Time

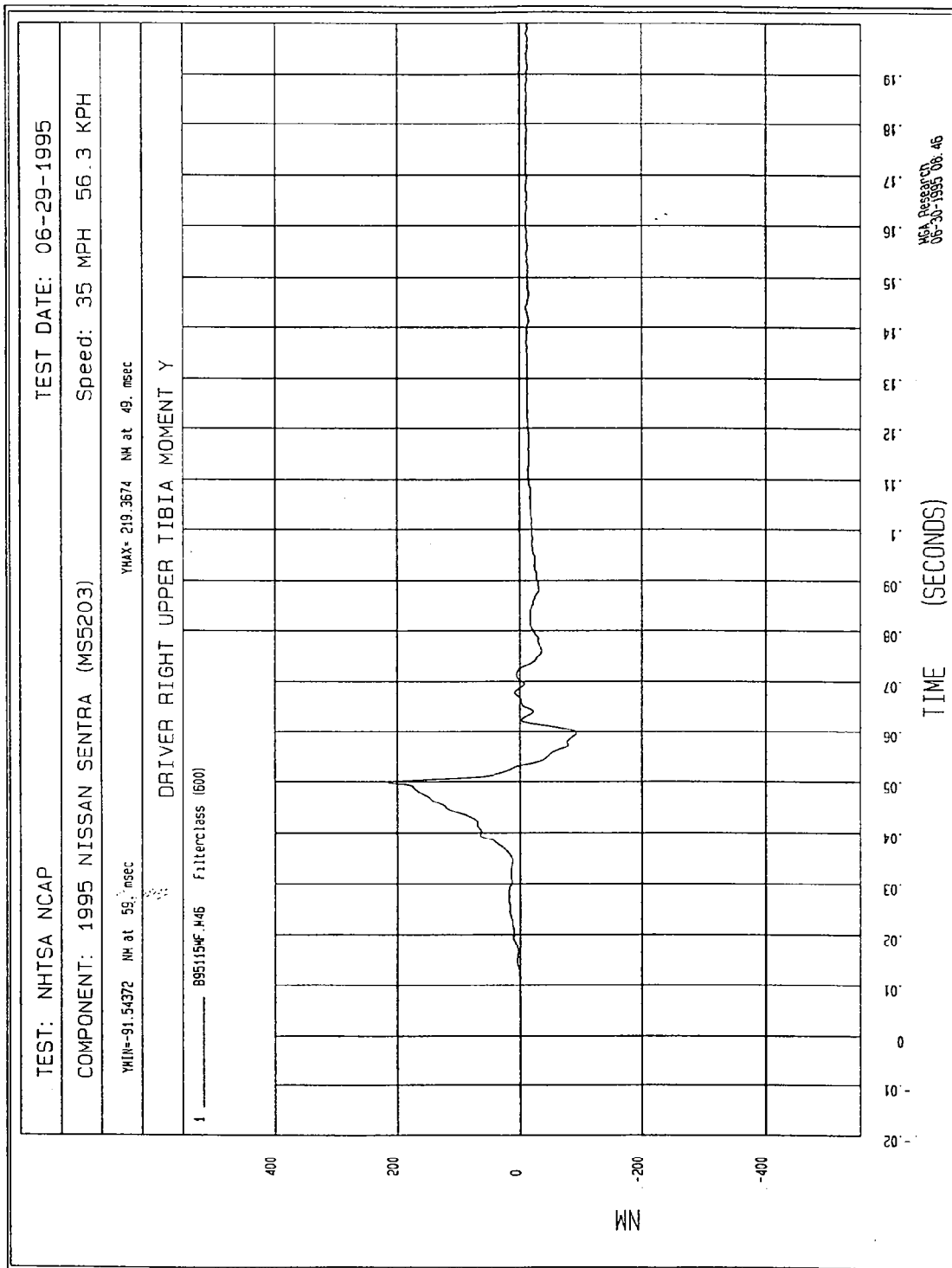


Figure B-73 - Driver Right Upper Tibia Moment Y vs. Time

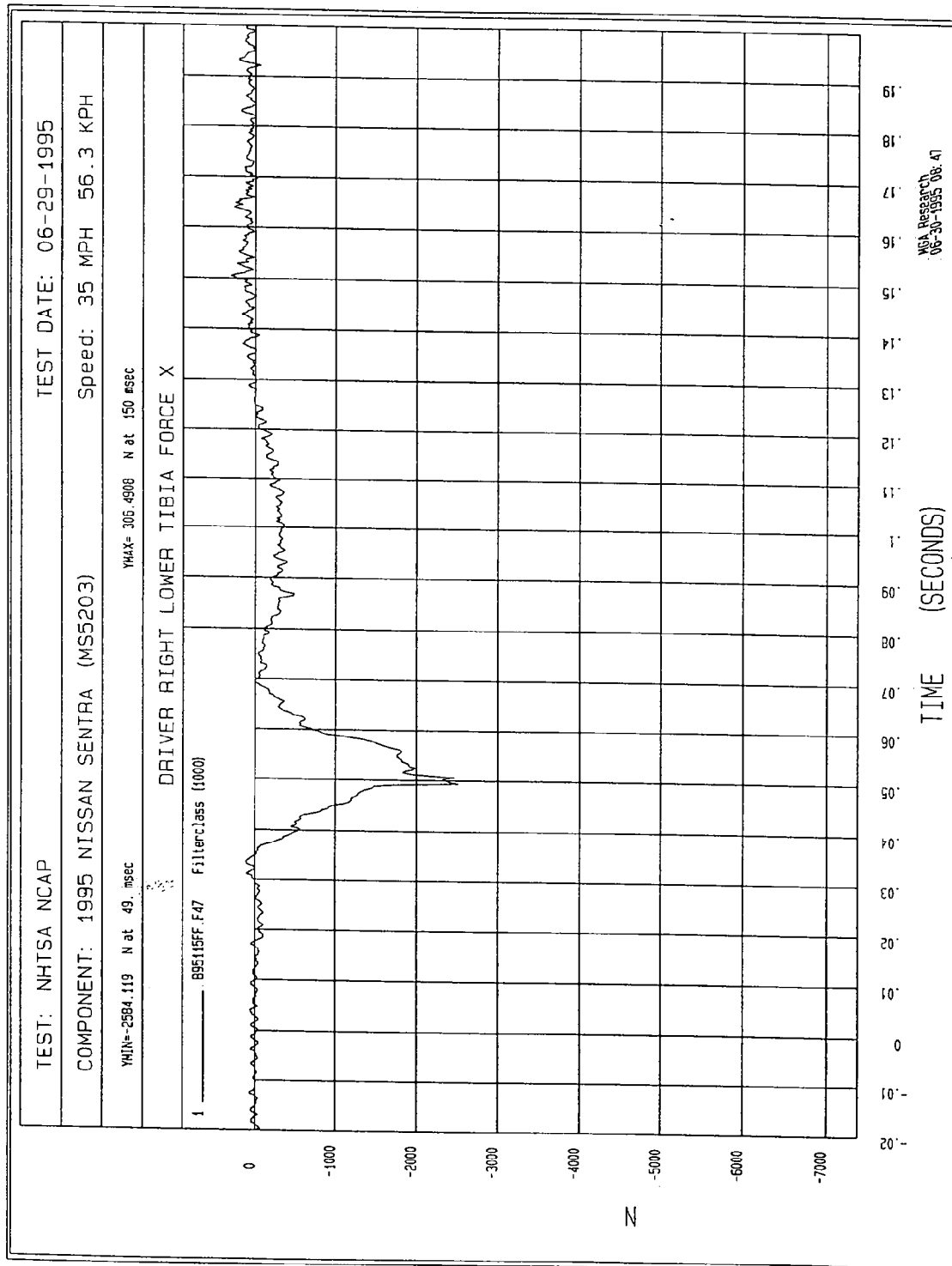


Figure B-74 - Driver Right Lower Tibia Force X vs. Time

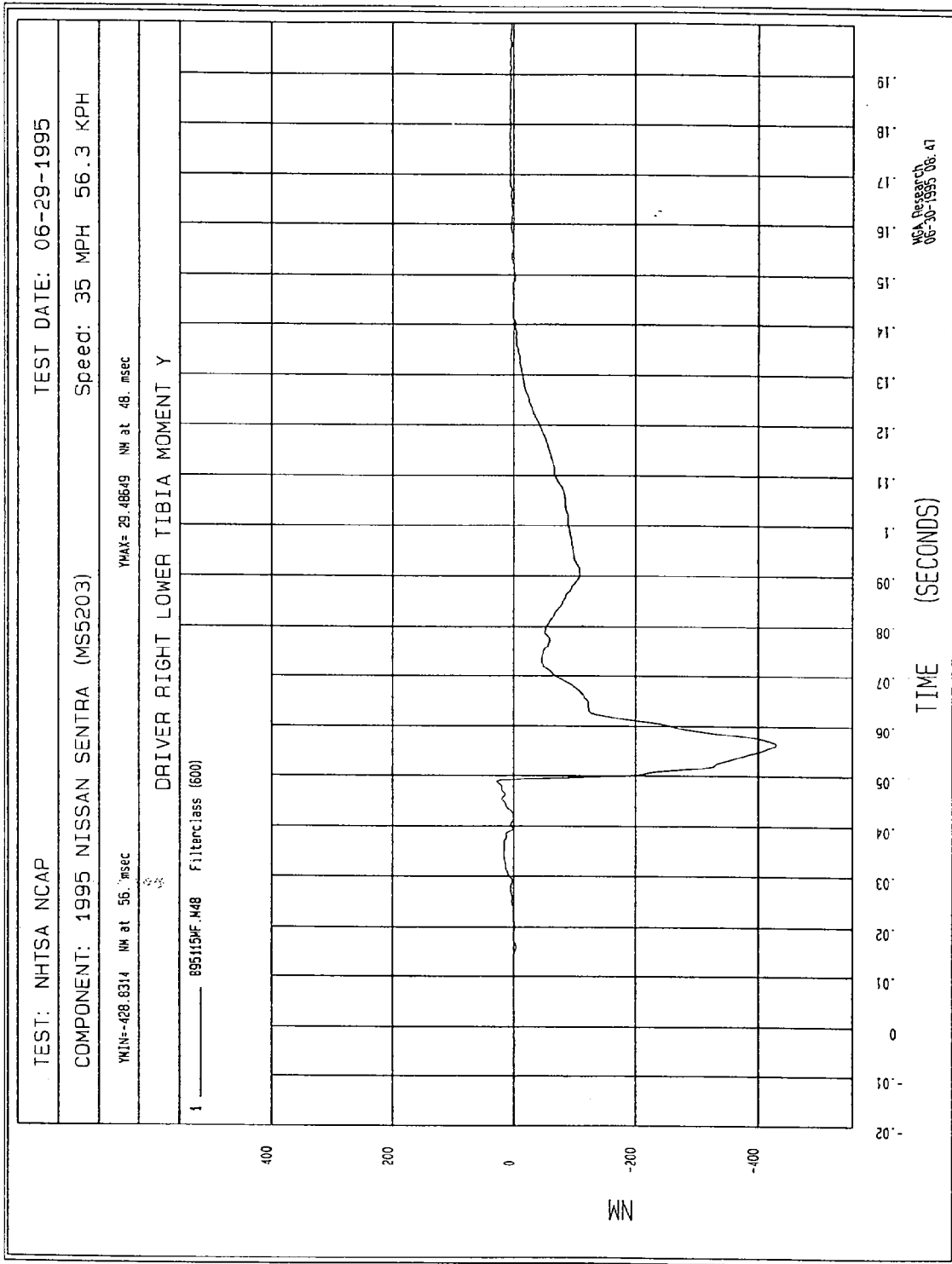


Figure B-75 - Driver Right Lower Tibia Moment Y vs. Time

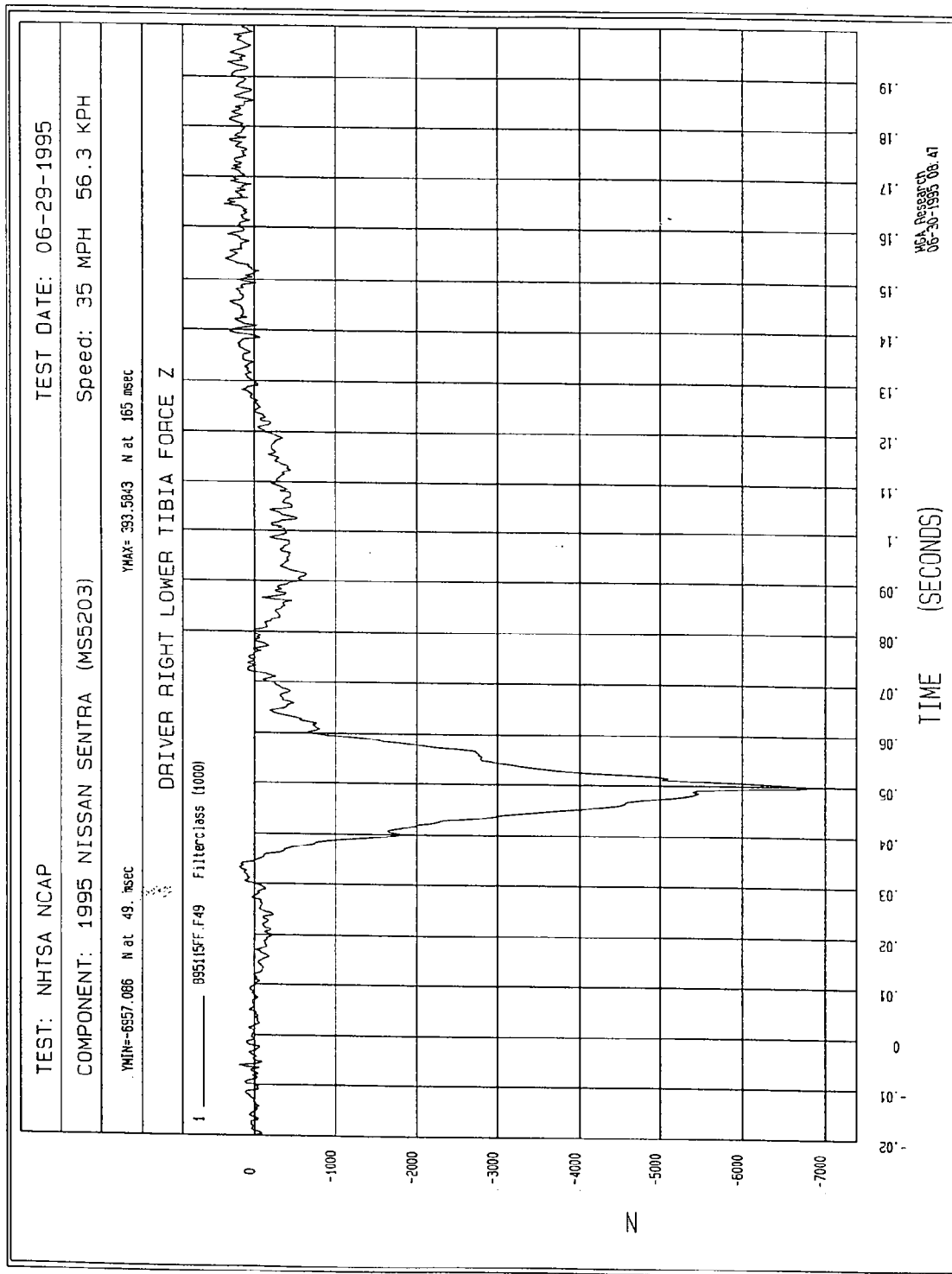


Figure B-76 - Driver Right Lower Tibia Force Z vs. Time

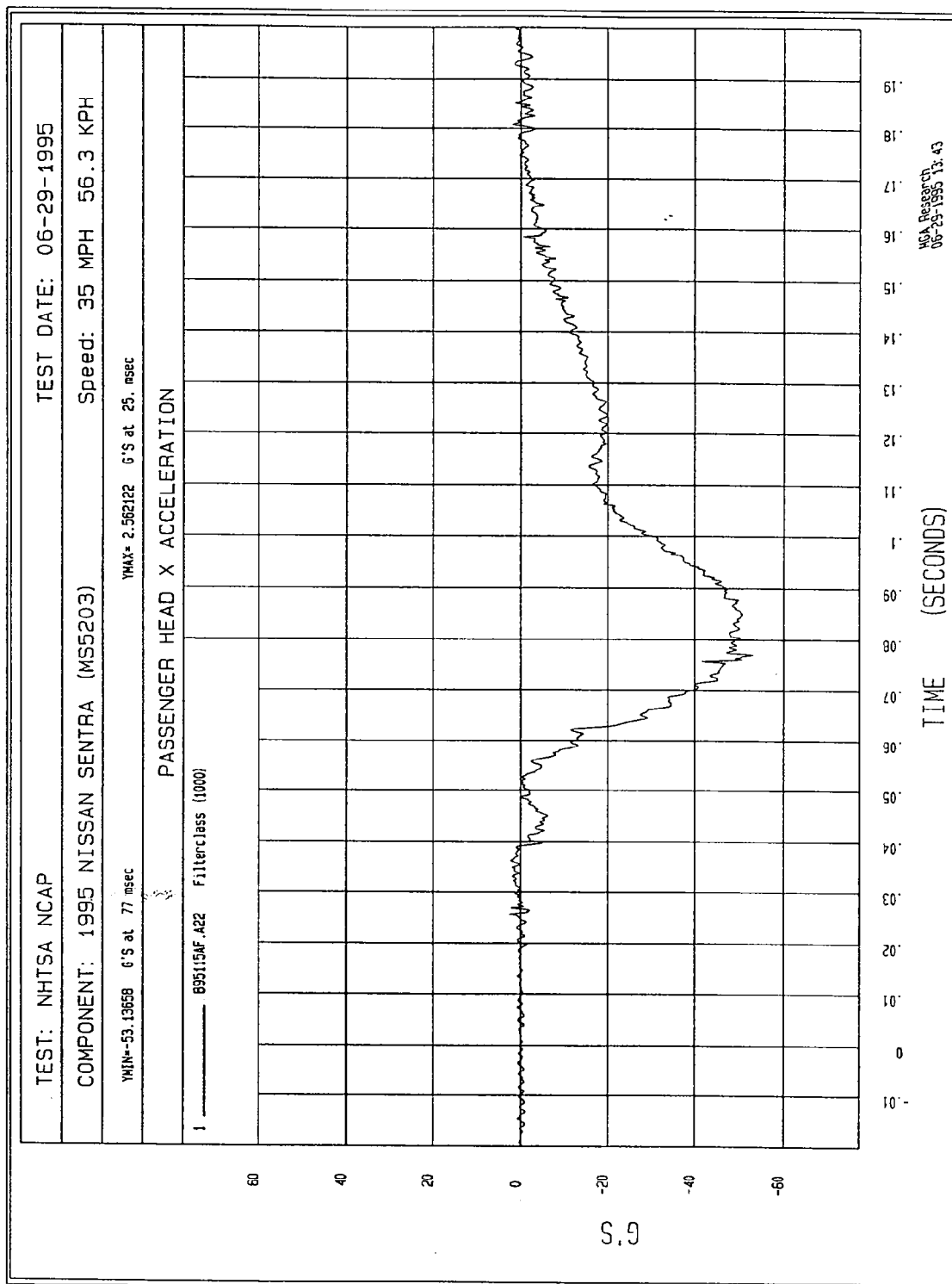


Figure B-77 - Passenger Head X Acceleration vs. Time

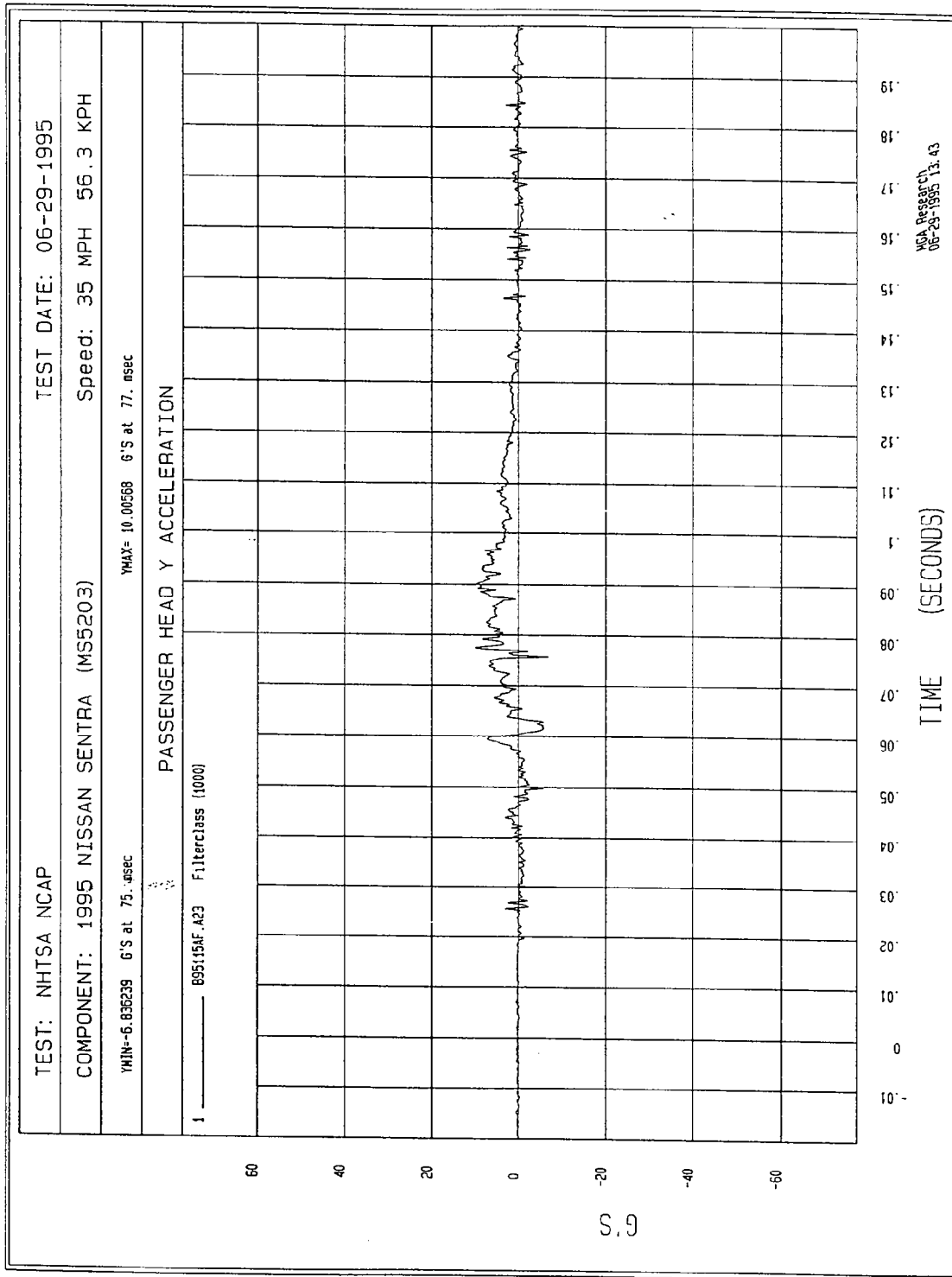


Figure B-78 - Passenger Head Y Acceleration vs. Time

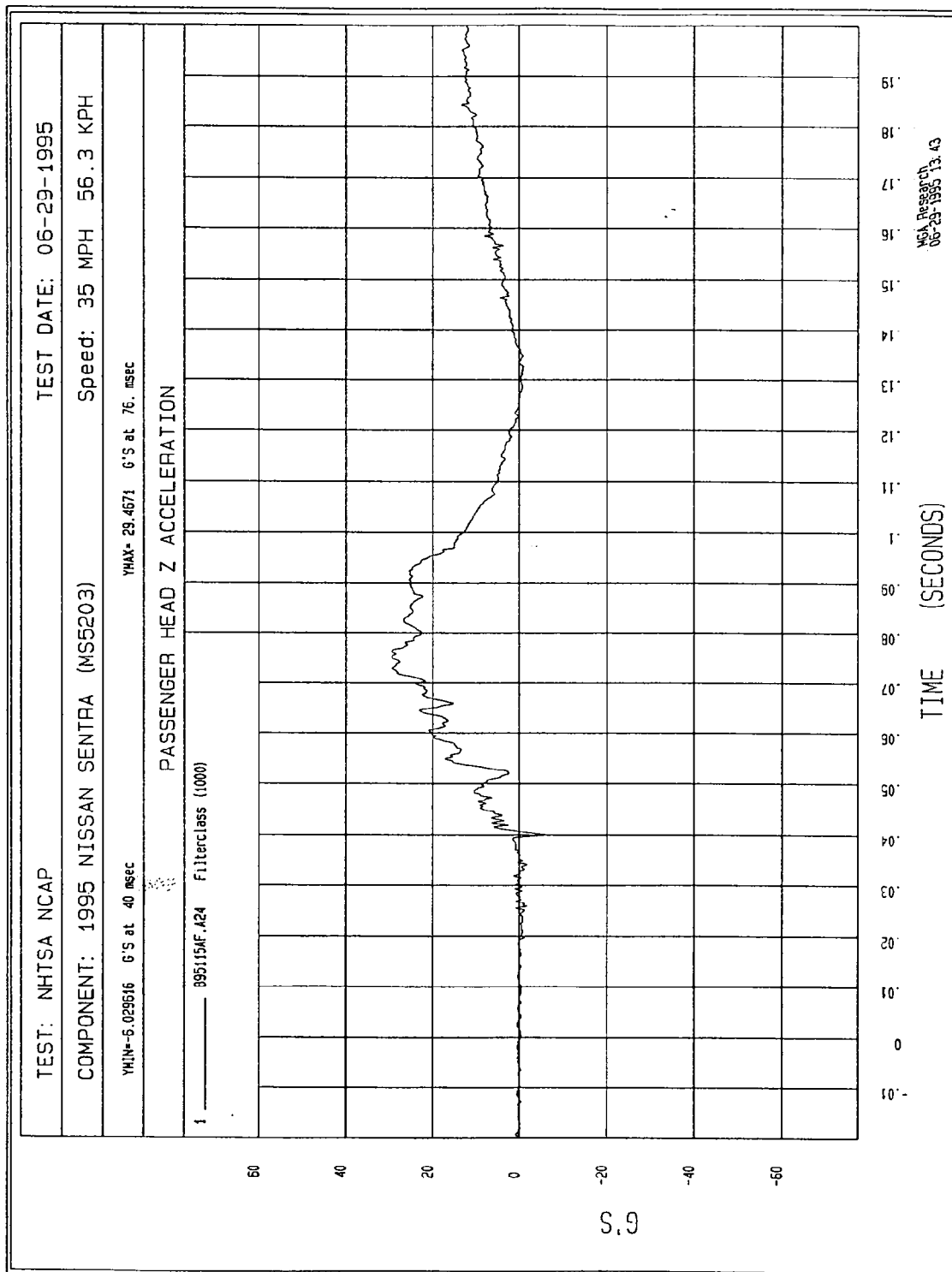
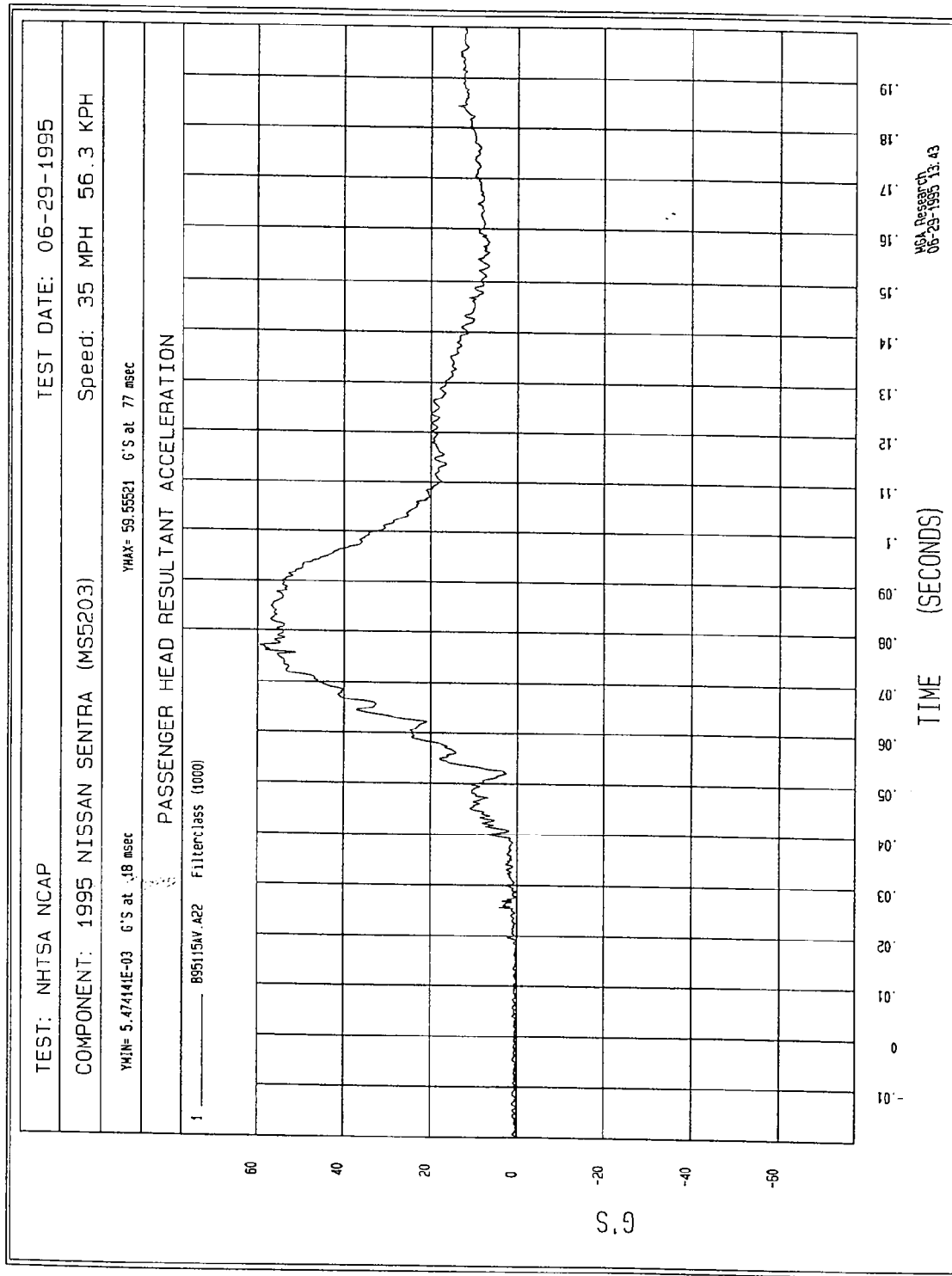


Figure B-79 - Passenger Head Z Acceleration vs. Time



B-80

Figure B-80 - Passenger Head Resultant Acceleration vs. Time

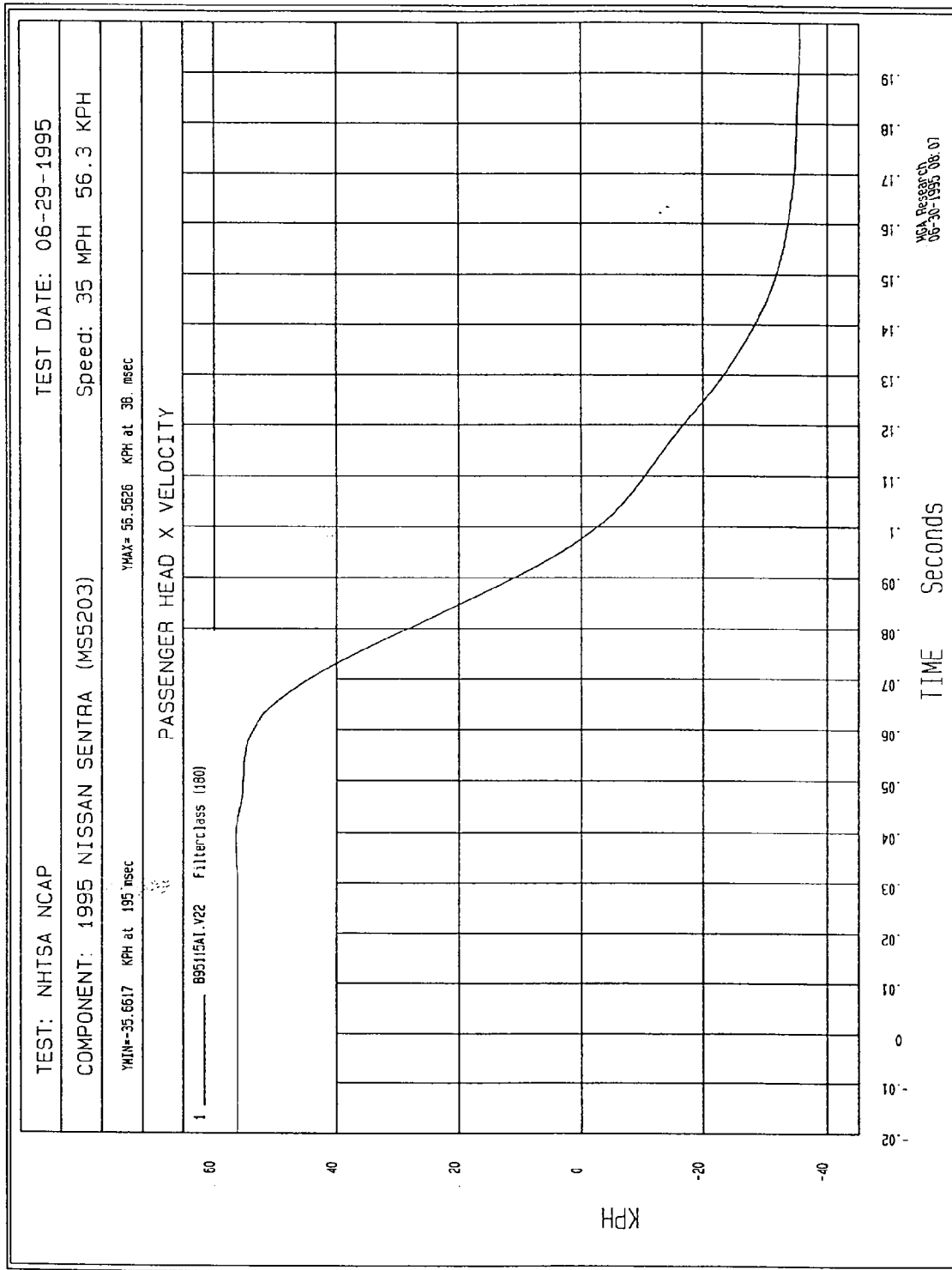


Figure B-81 - Passenger Head X Velocity vs. Time

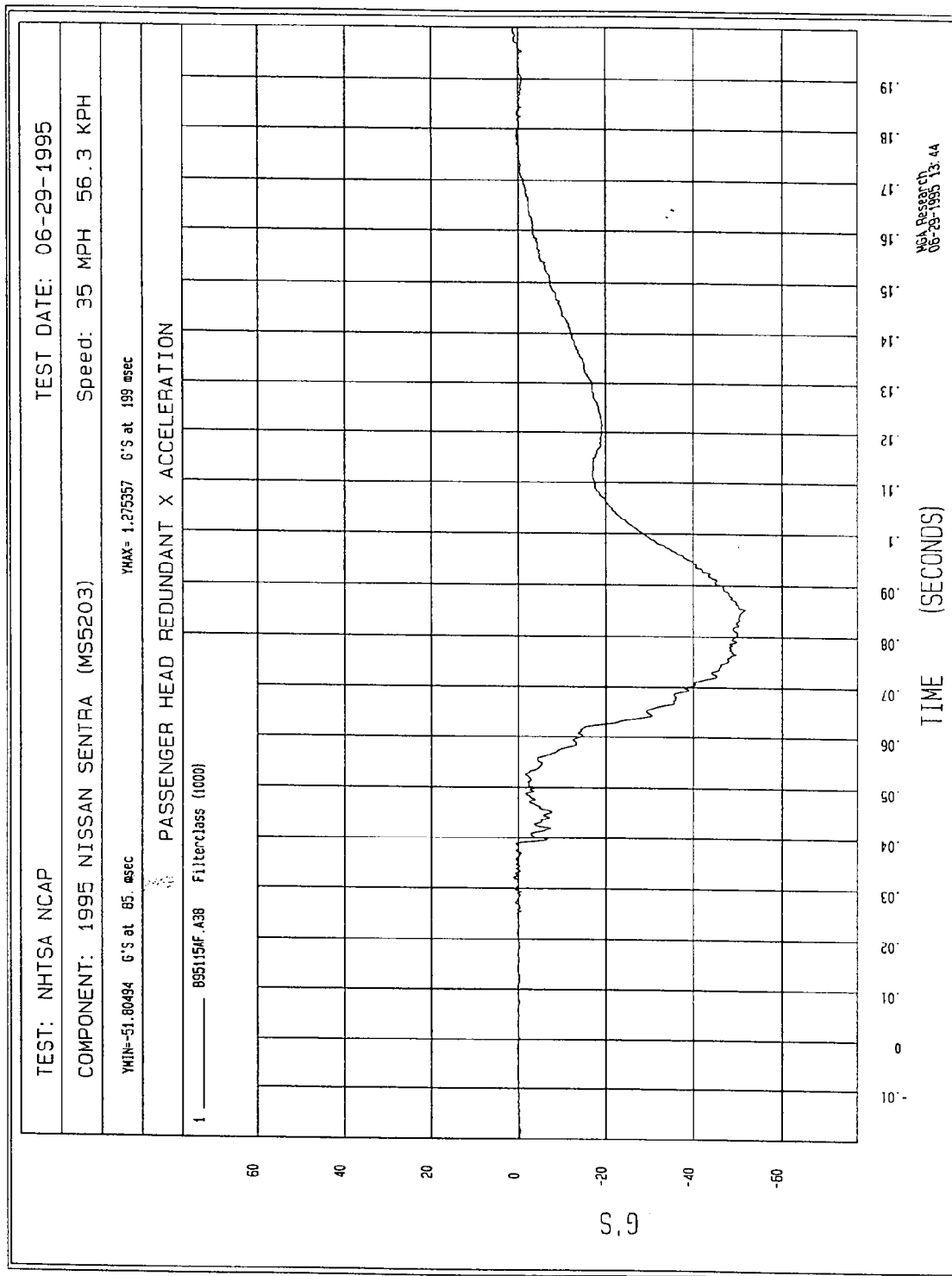


Figure B-82 - Passenger Head Redundant X Acceleration vs. Time

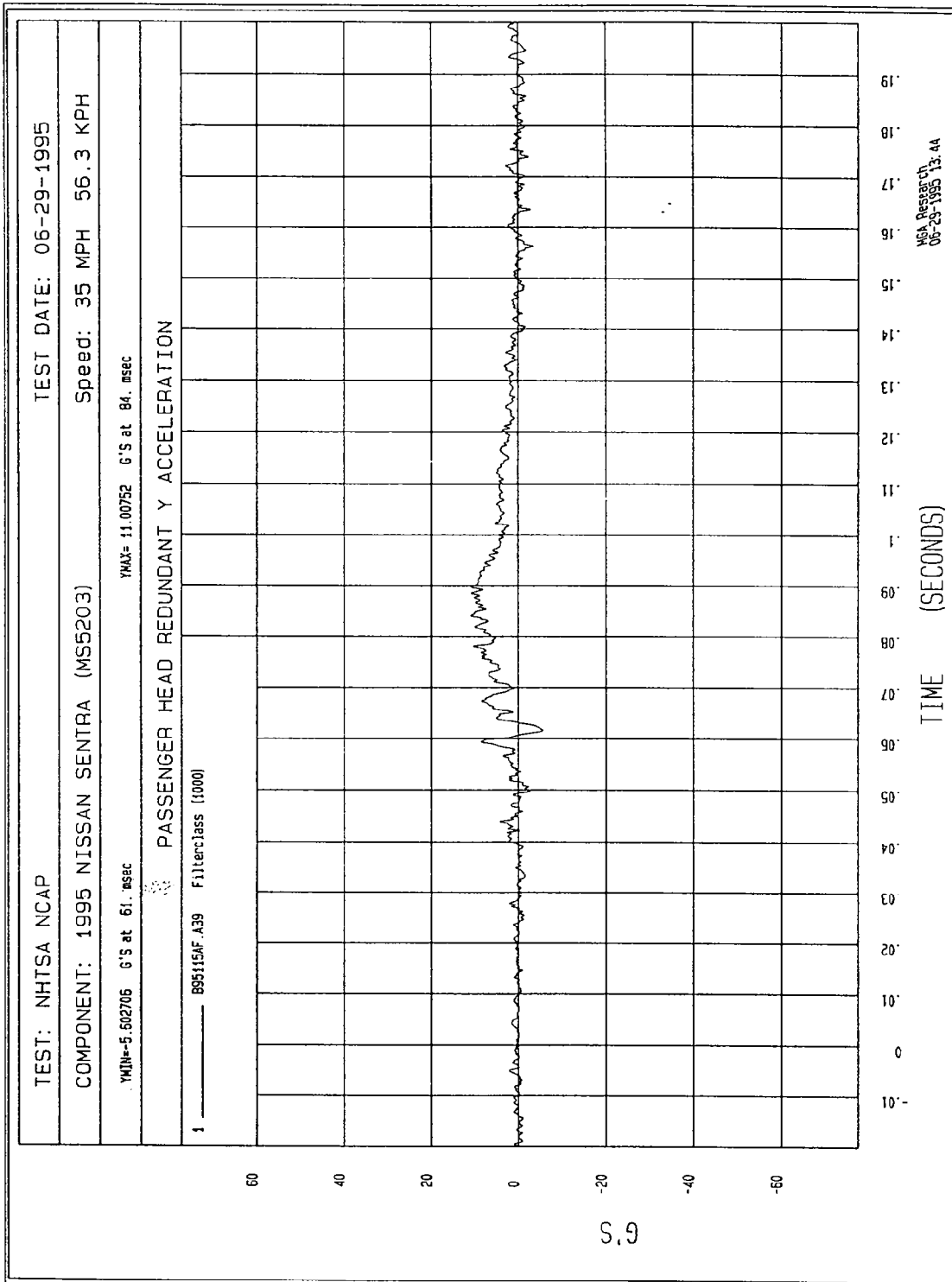


Figure B-83 - Passenger Head Redundant Y Acceleration vs. Time

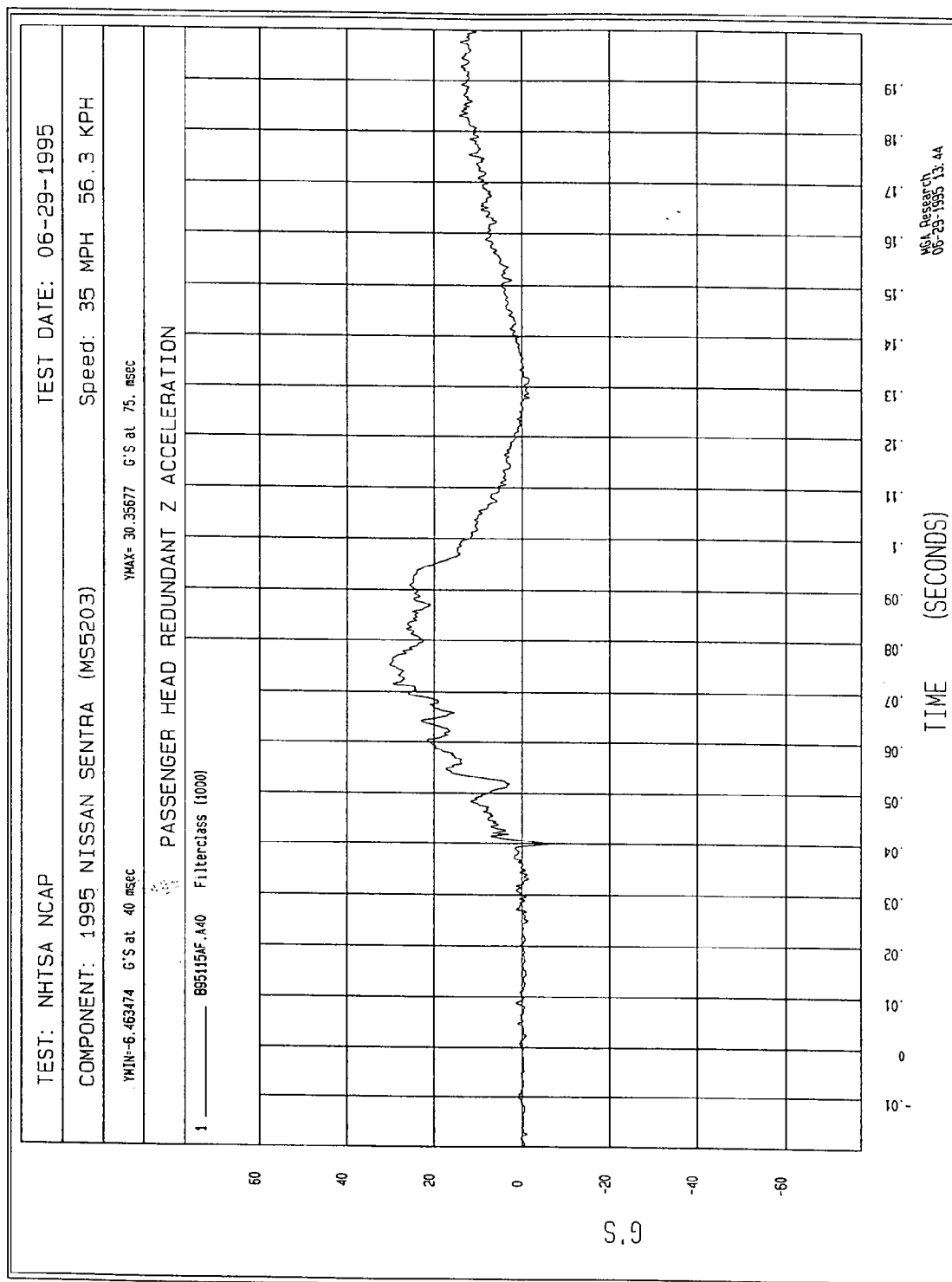
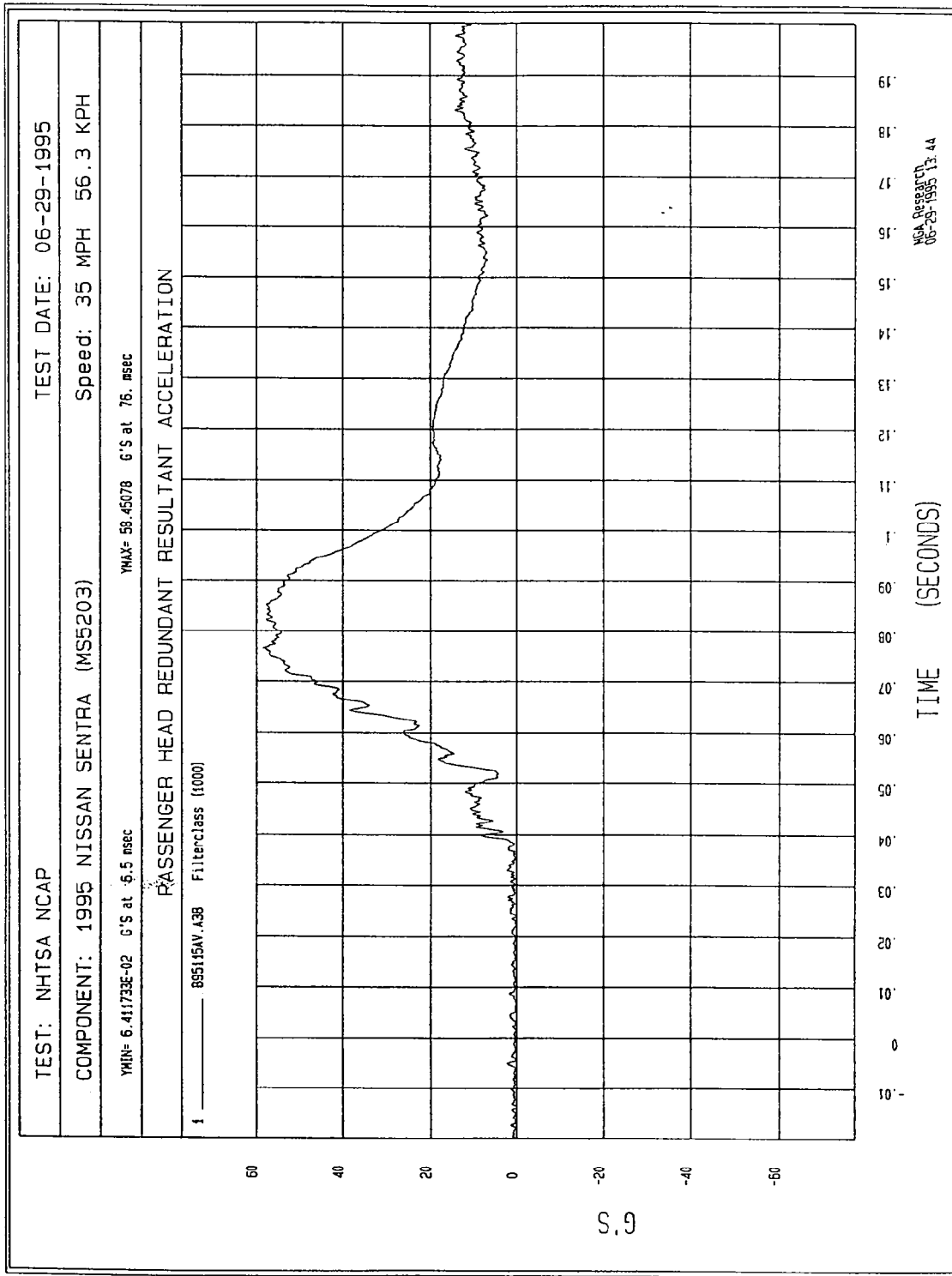


Figure B-84 - Passenger Head Redundant Z Acceleration vs. Time



B-85

Figure B-85 - Passenger Head Redundant Resultant Acceleration vs. Time

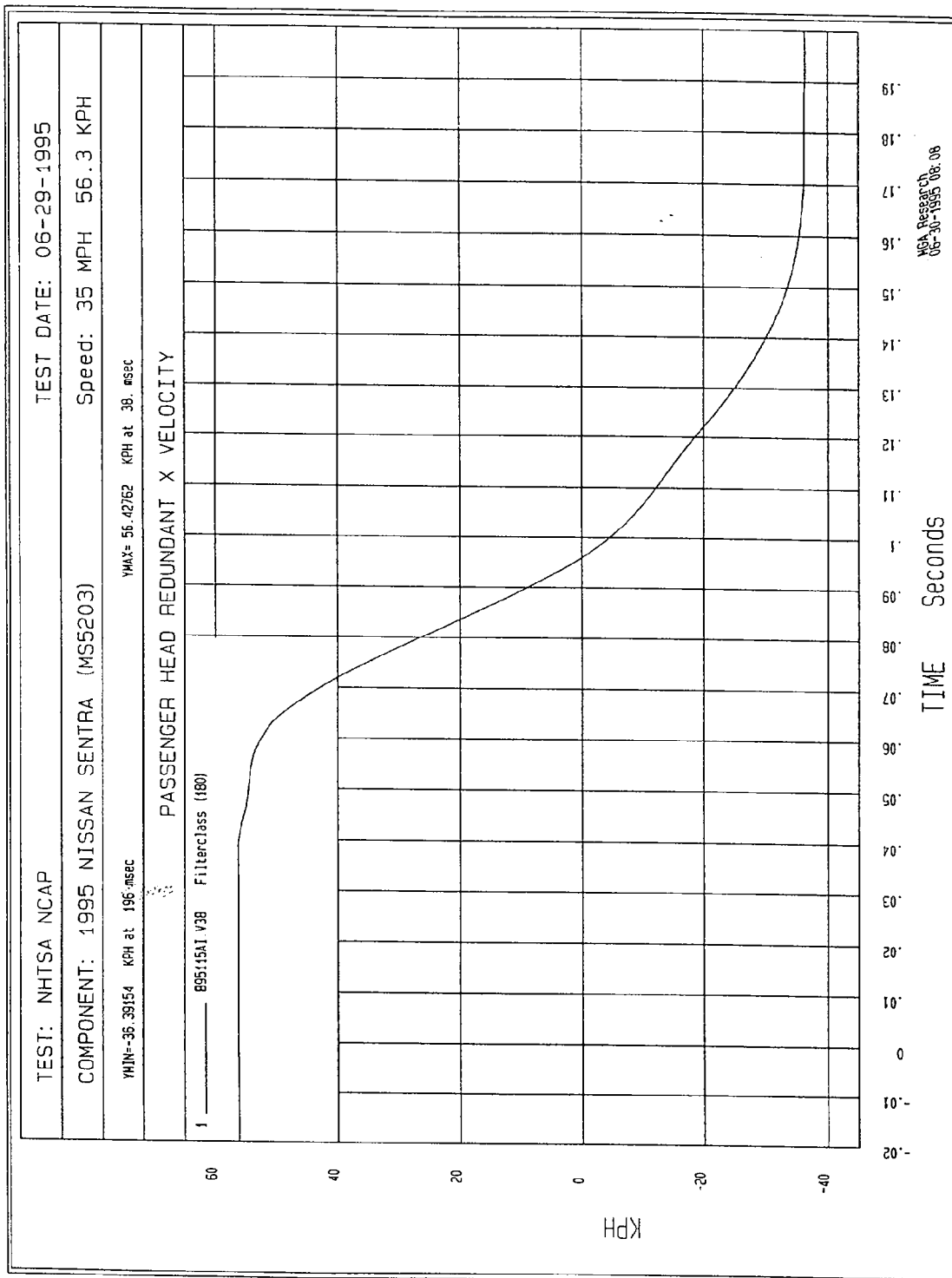


Figure B-86 - Passenger Head Redundant X Velocity vs. Time

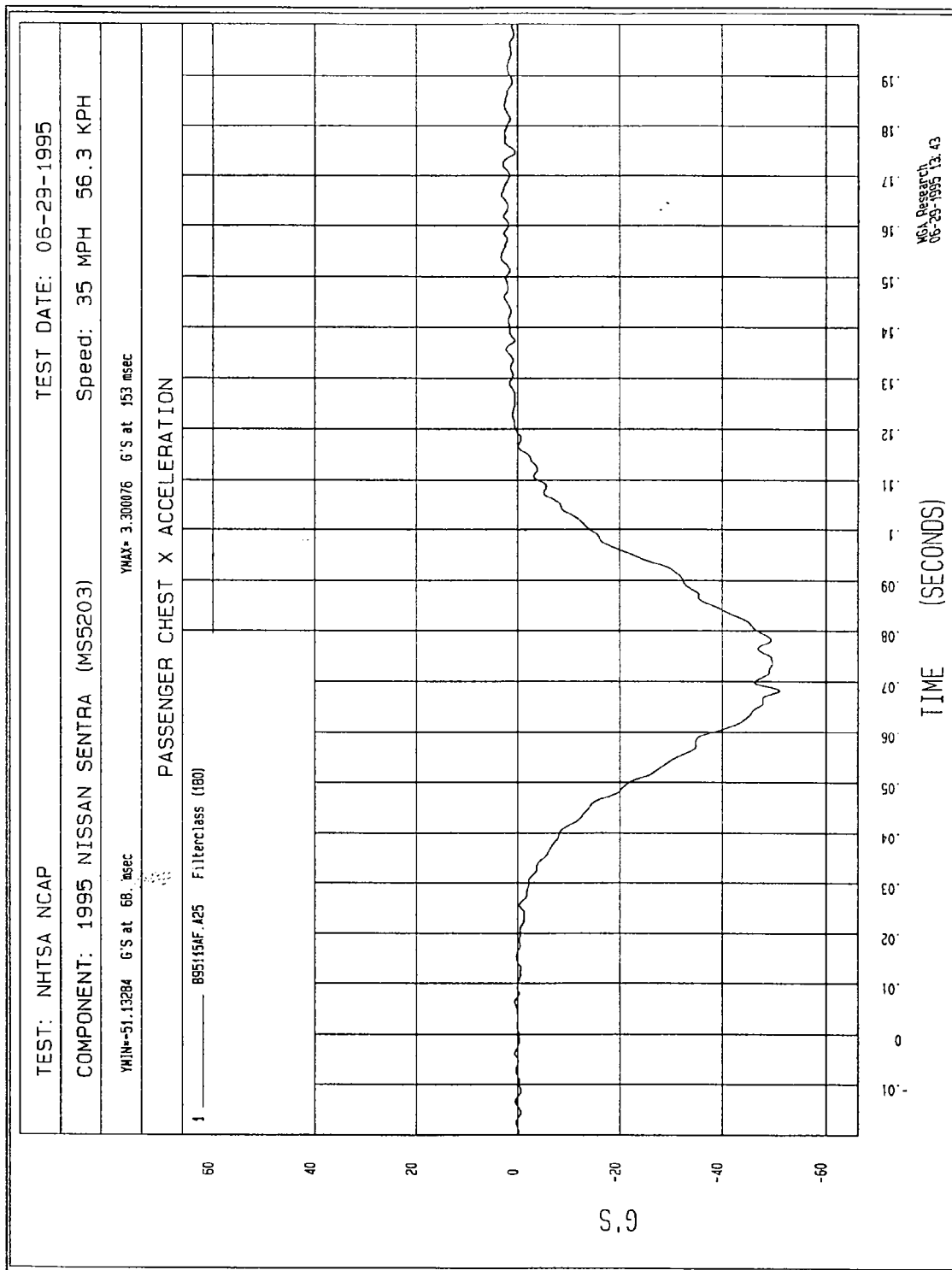
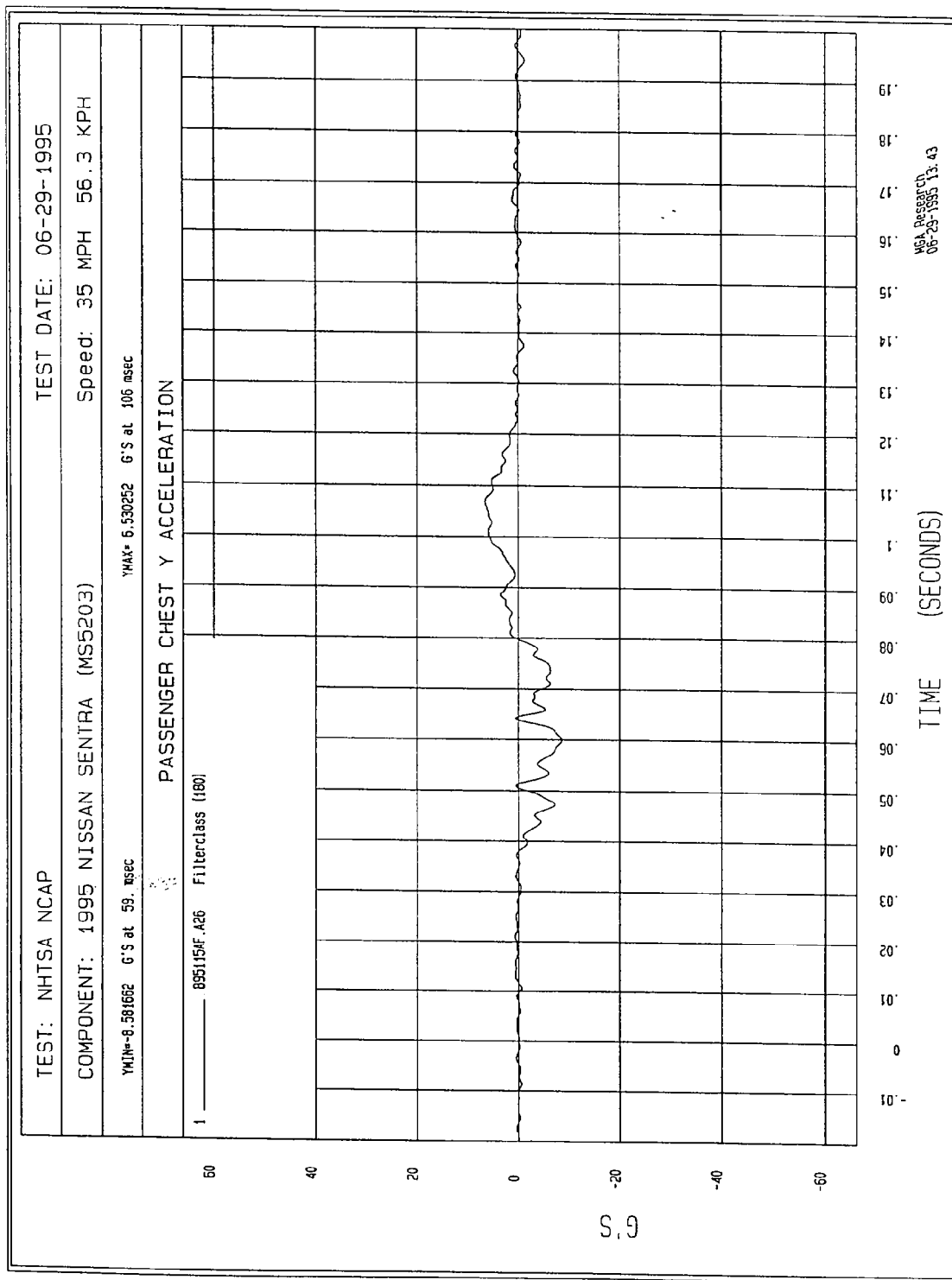
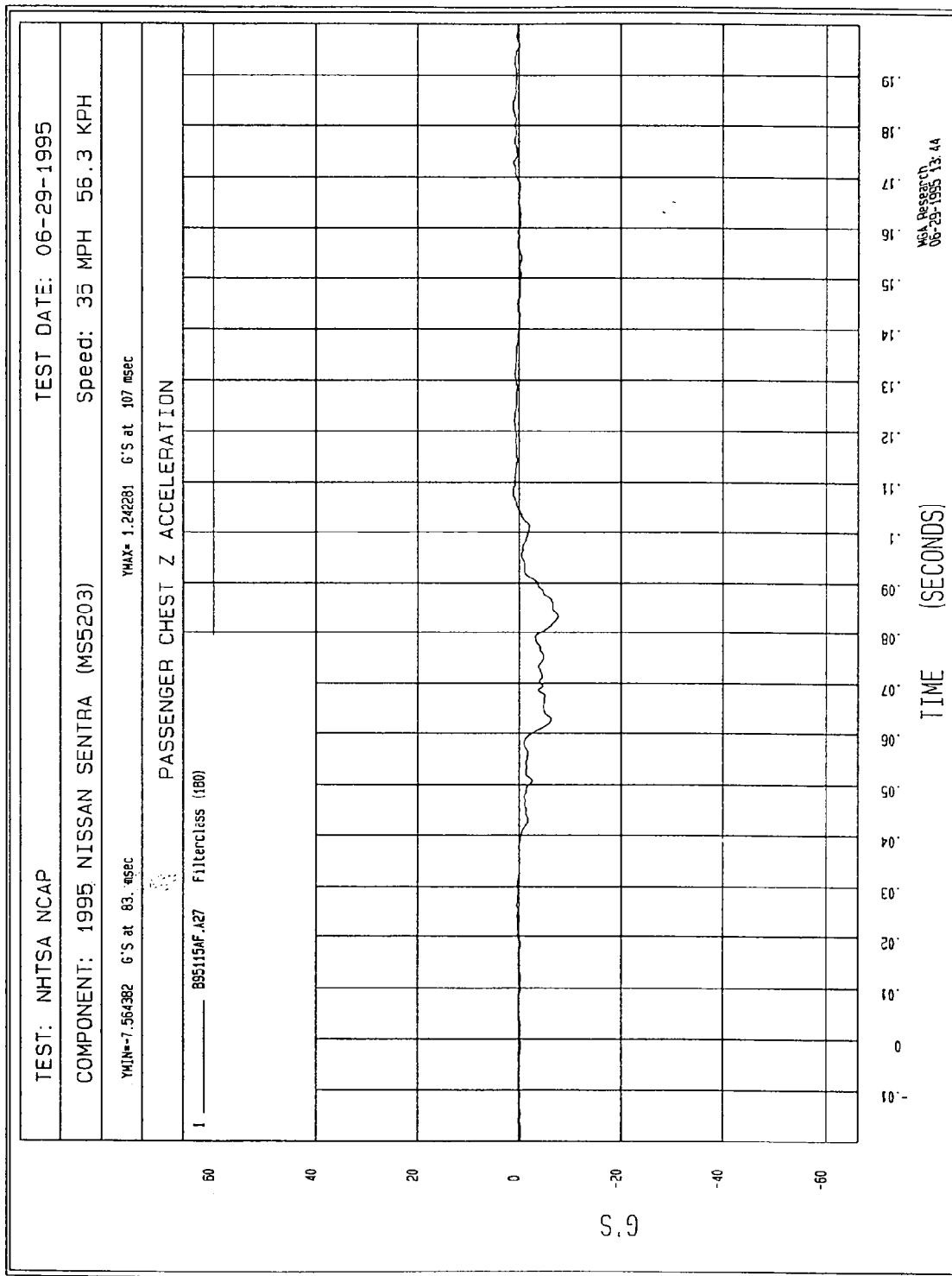


Figure B-87 - Passenger Chest X Acceleration vs. Time



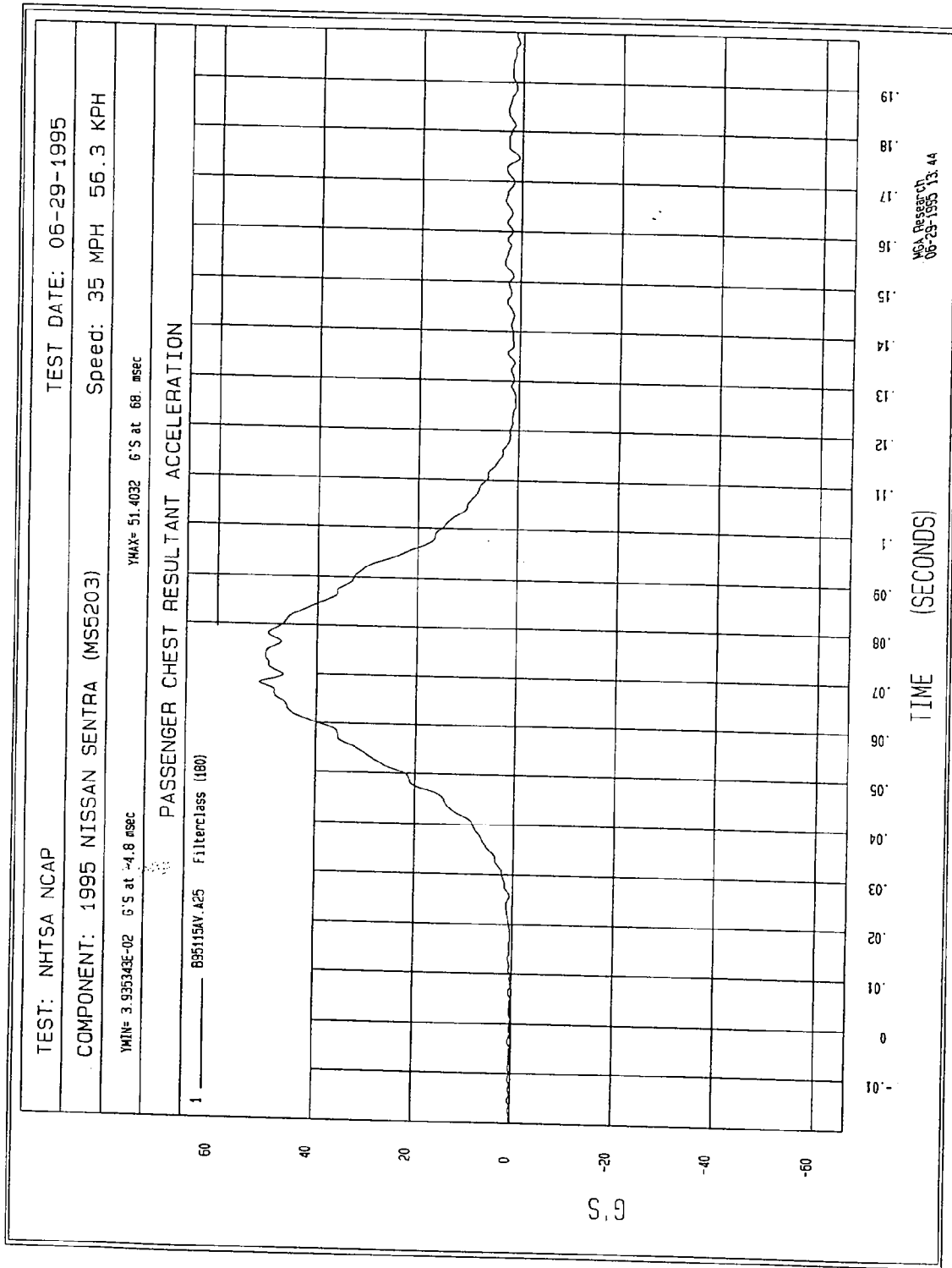
B-88

Figure B-88 - Passenger Chest Y Acceleration vs. Time



B-89

Figure B-89 - Passenger Chest Z Acceleration vs. Time



B-90

Figure B-90 - Passenger Chest Resultant Acceleration vs. Time

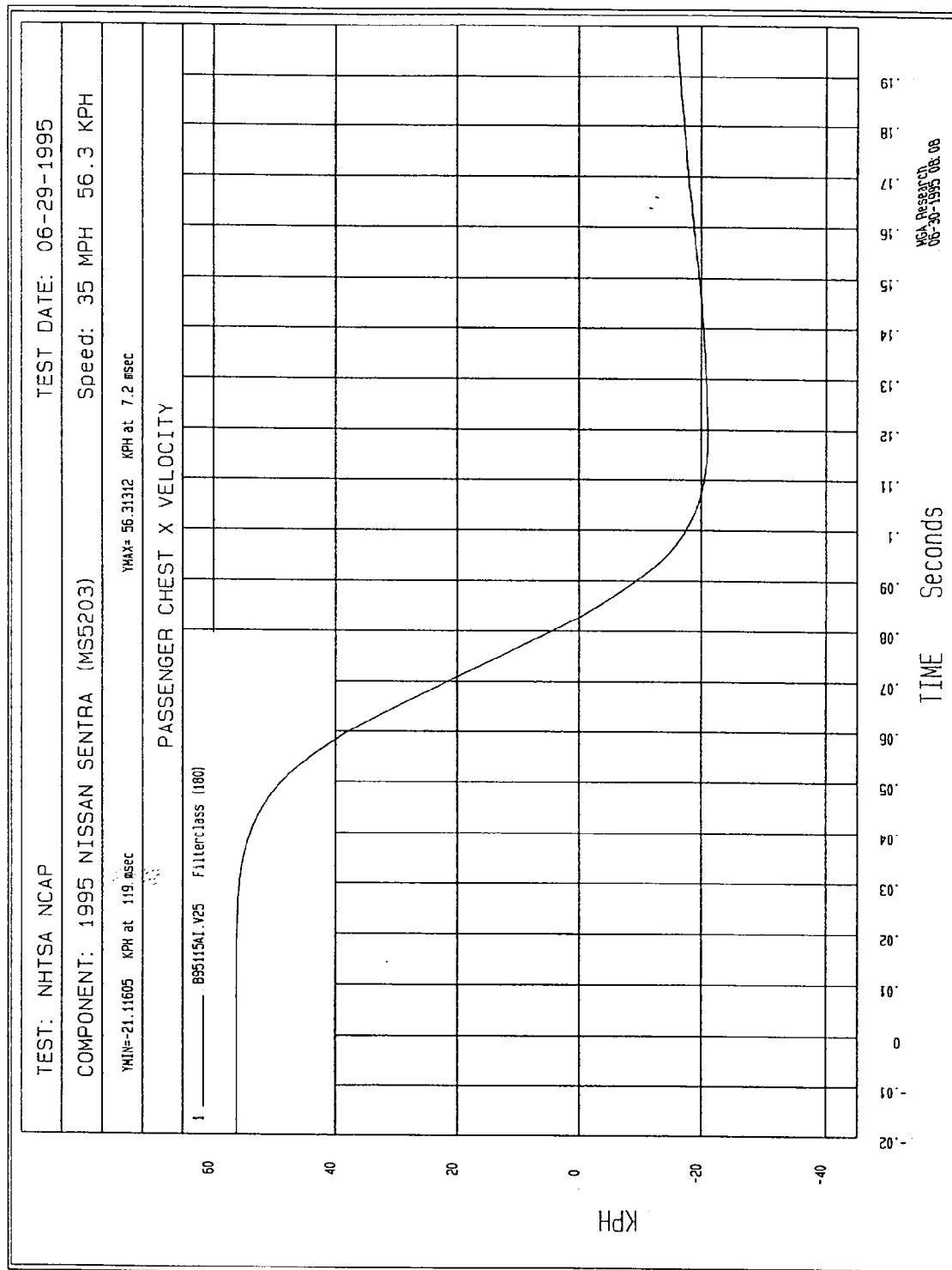


Figure B-91 - Passenger Chest X Velocity vs. Time

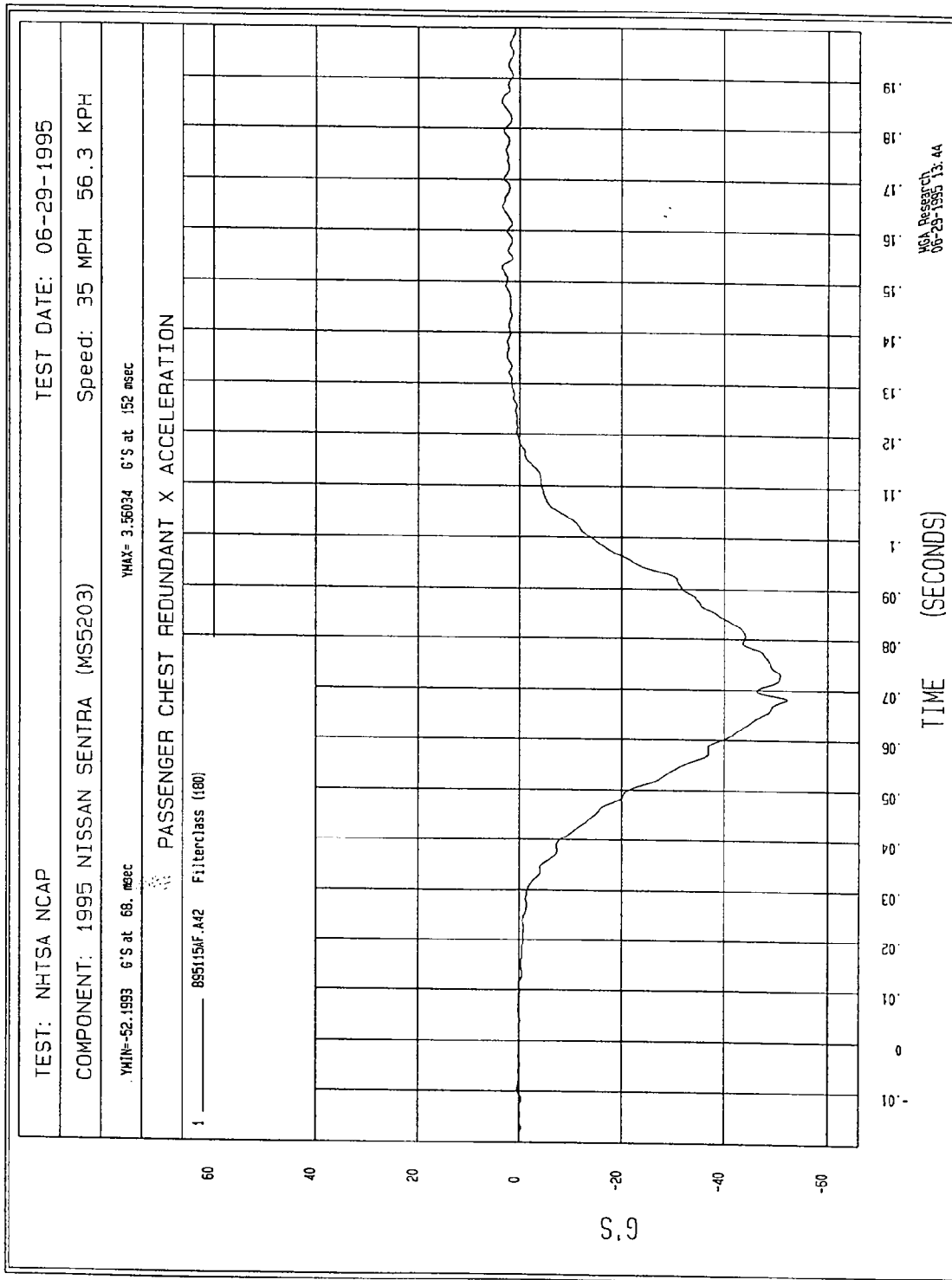


Figure B-92 - Passenger Chest Redundant X Acceleration vs. Time

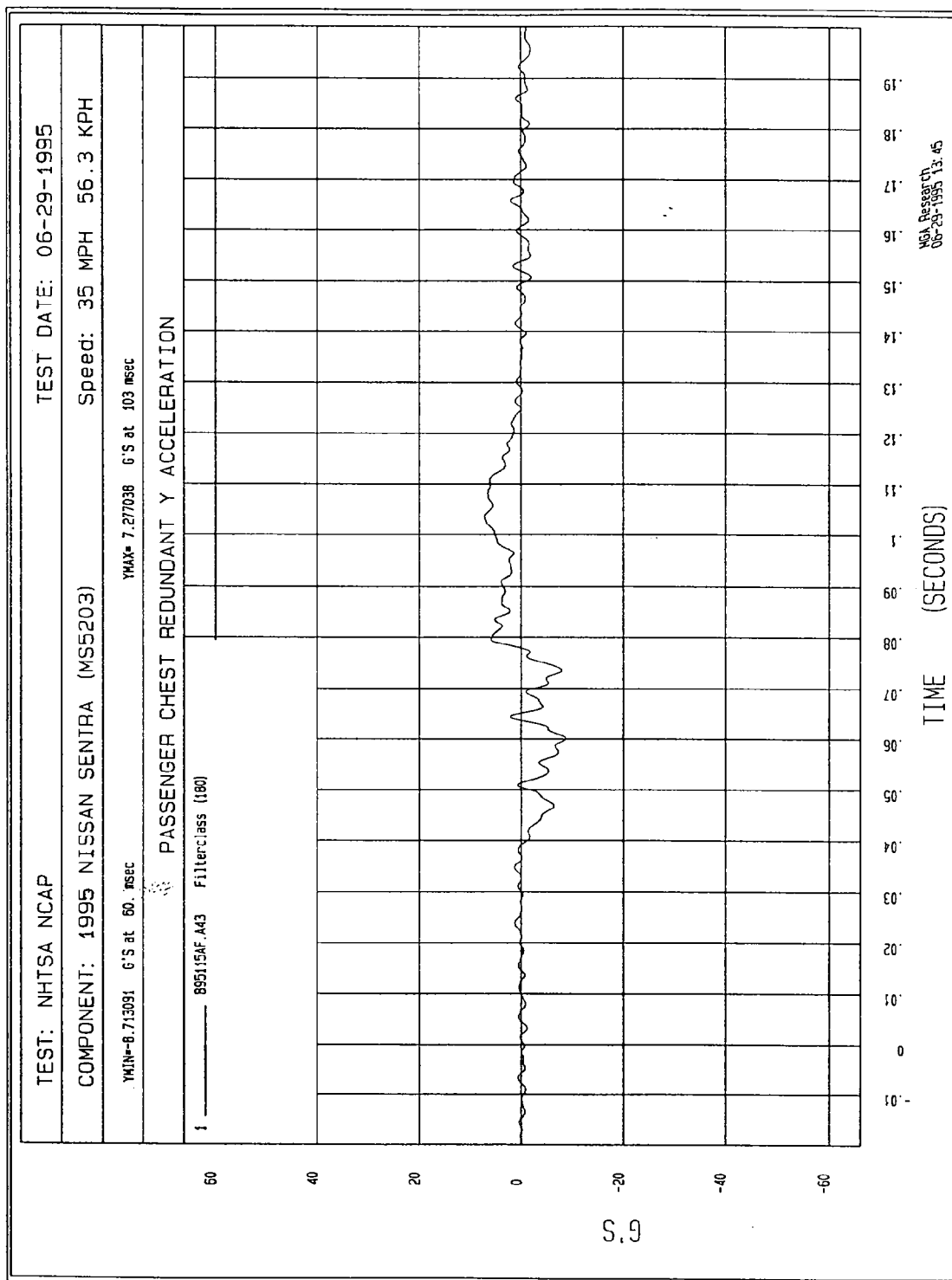
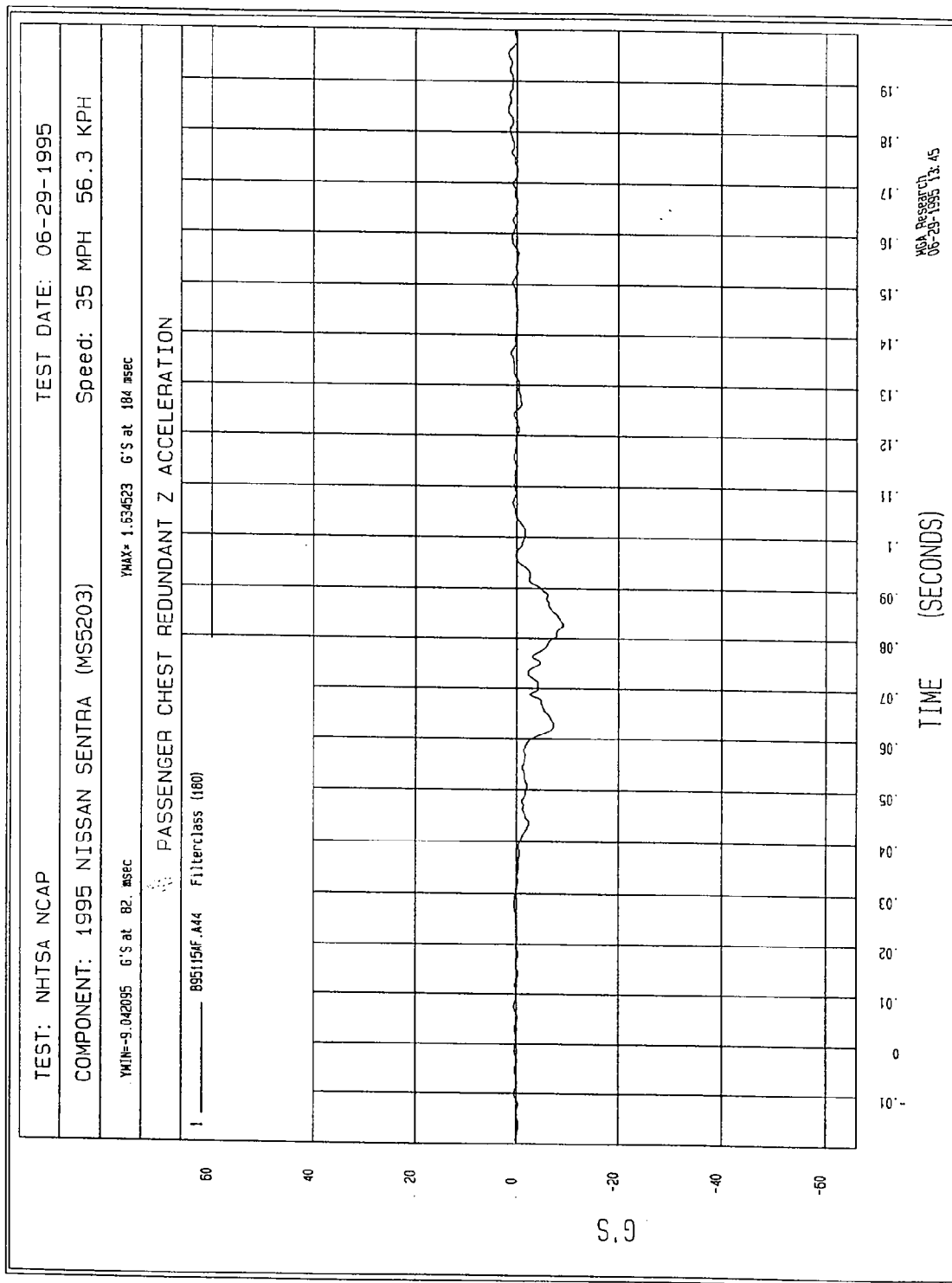


Figure B-93 - Passenger Chest Redundant Y Acceleration vs. Time



B-94

Figure B-94 - Passenger Chest Redundant Z Acceleration vs. Time

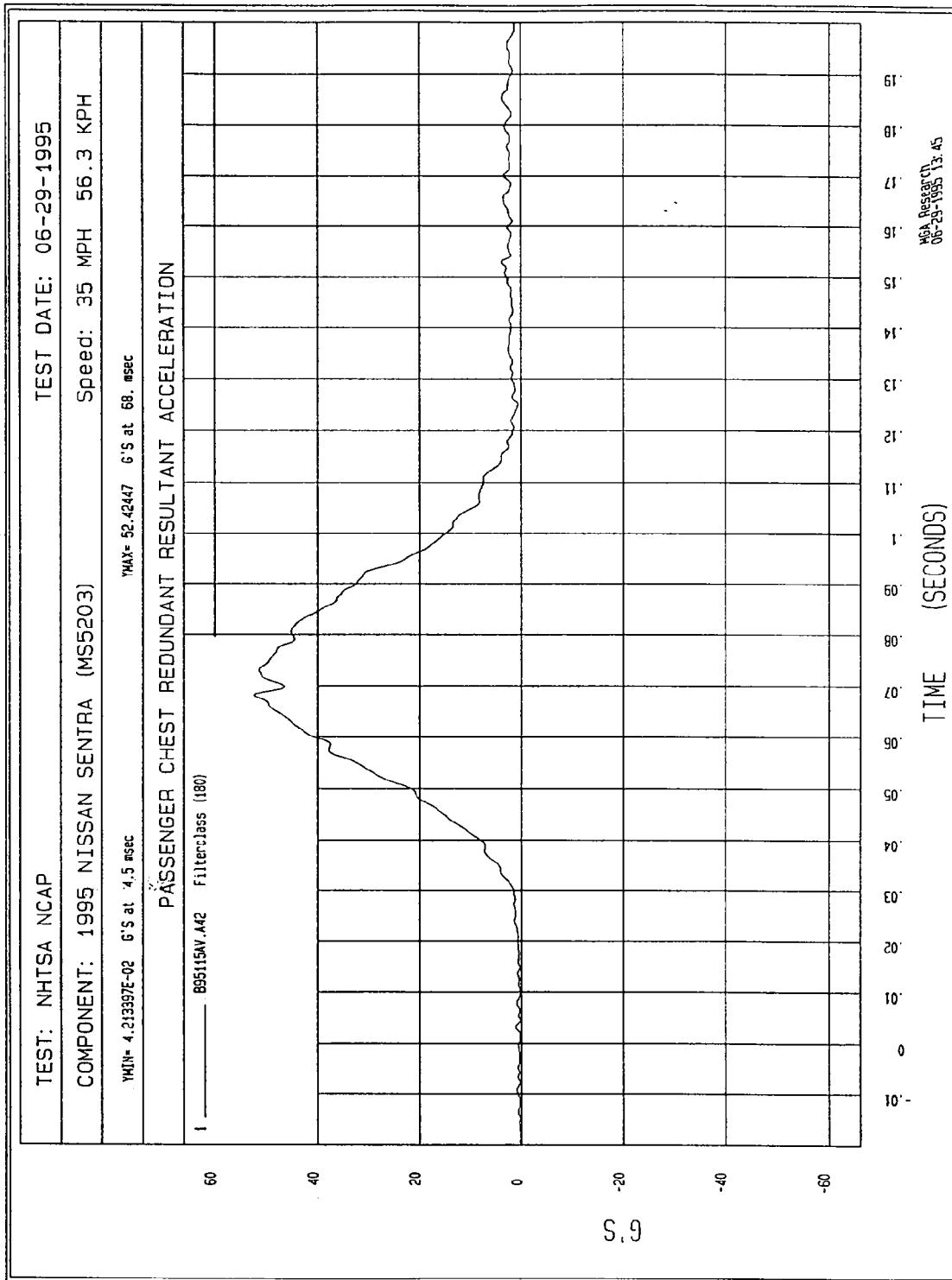


Figure B-95 - Passenger Chest Redundant Resultant Acceleration vs. Time

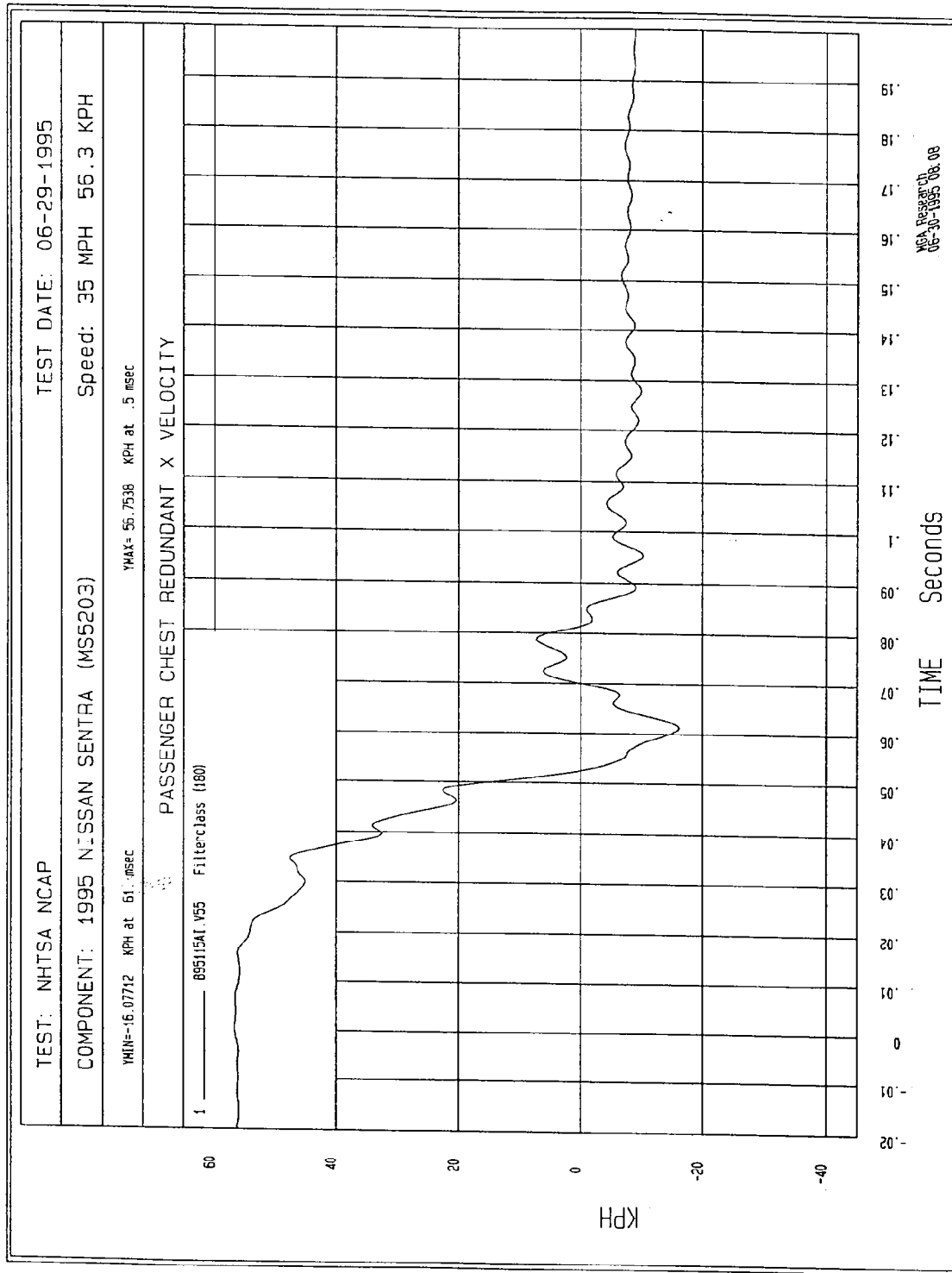
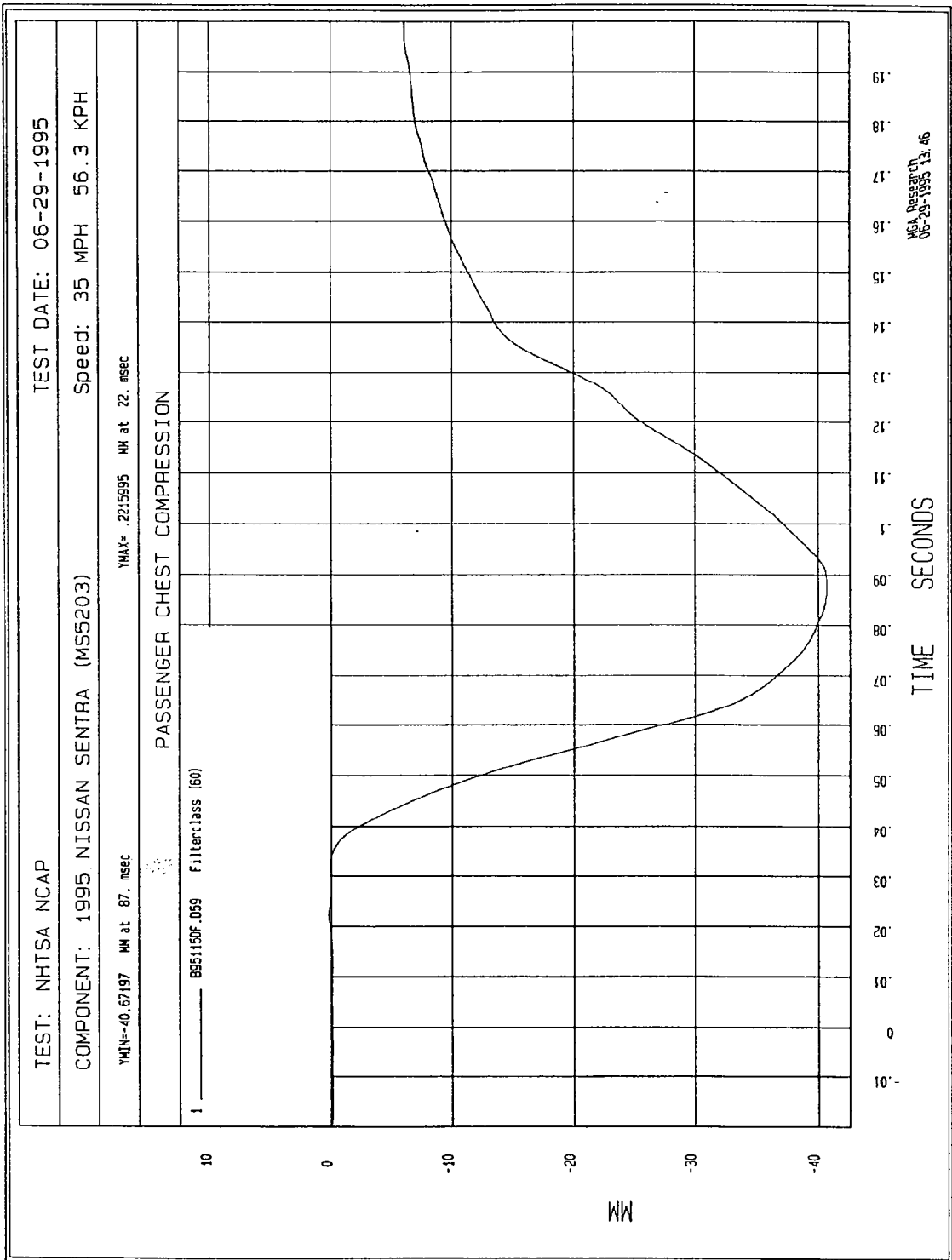
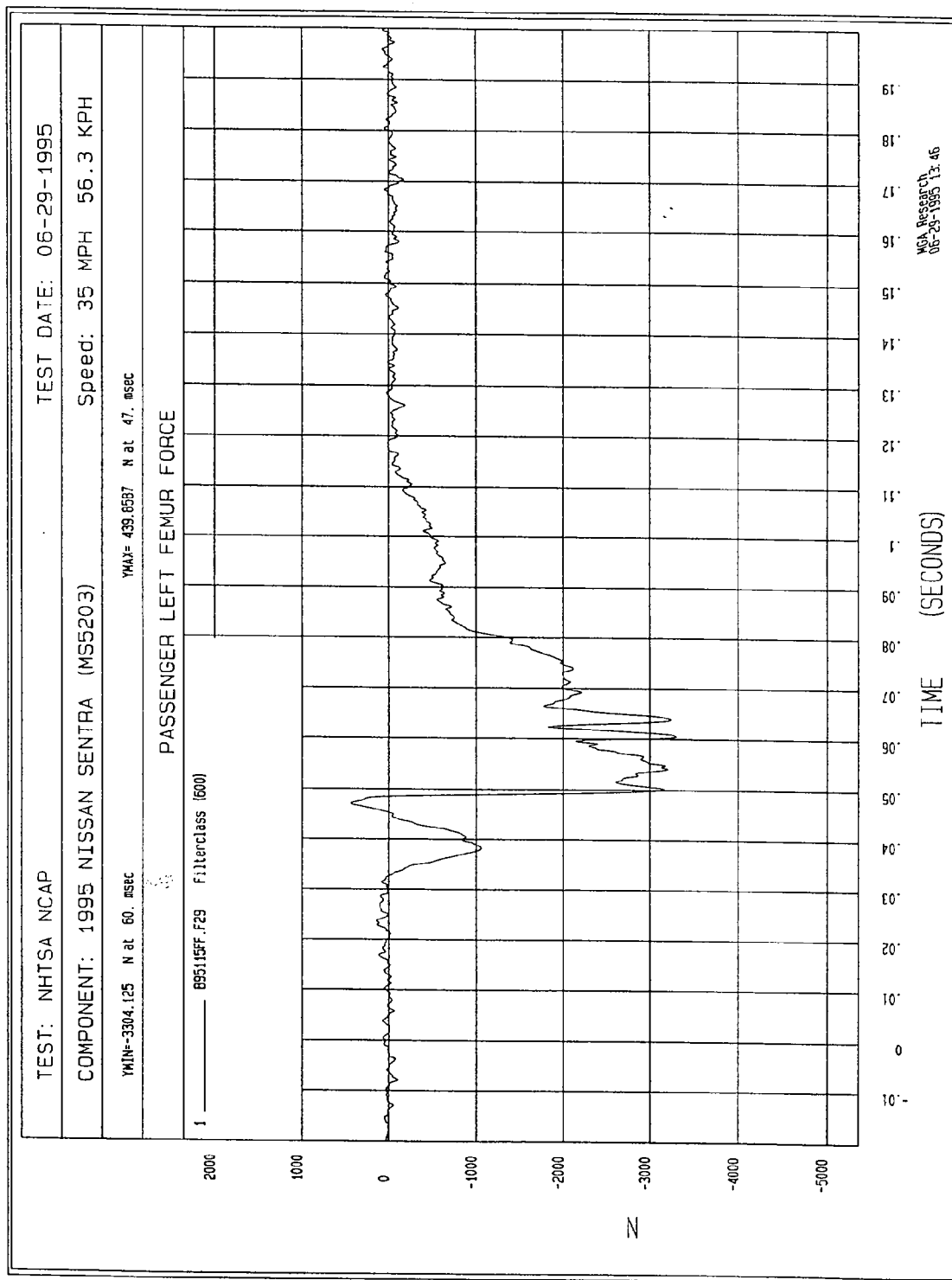


Figure B-96 - Passenger Chest Redundant X Velocity vs. Time



B-97

Figure B-97 - Passenger Chest Compression vs. Time



B-98

Figure B-98 - Passenger Left Femur Force vs. Time

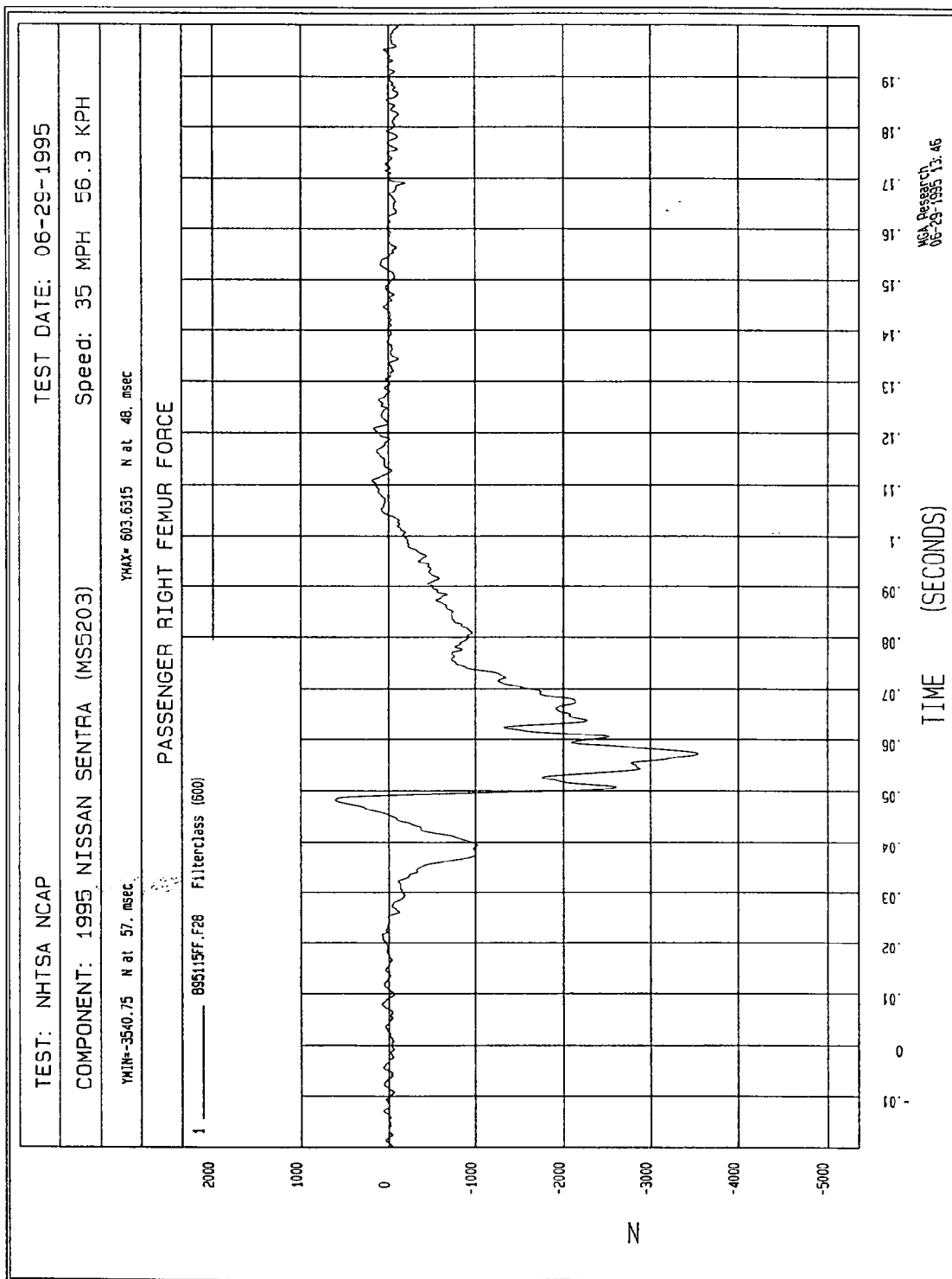
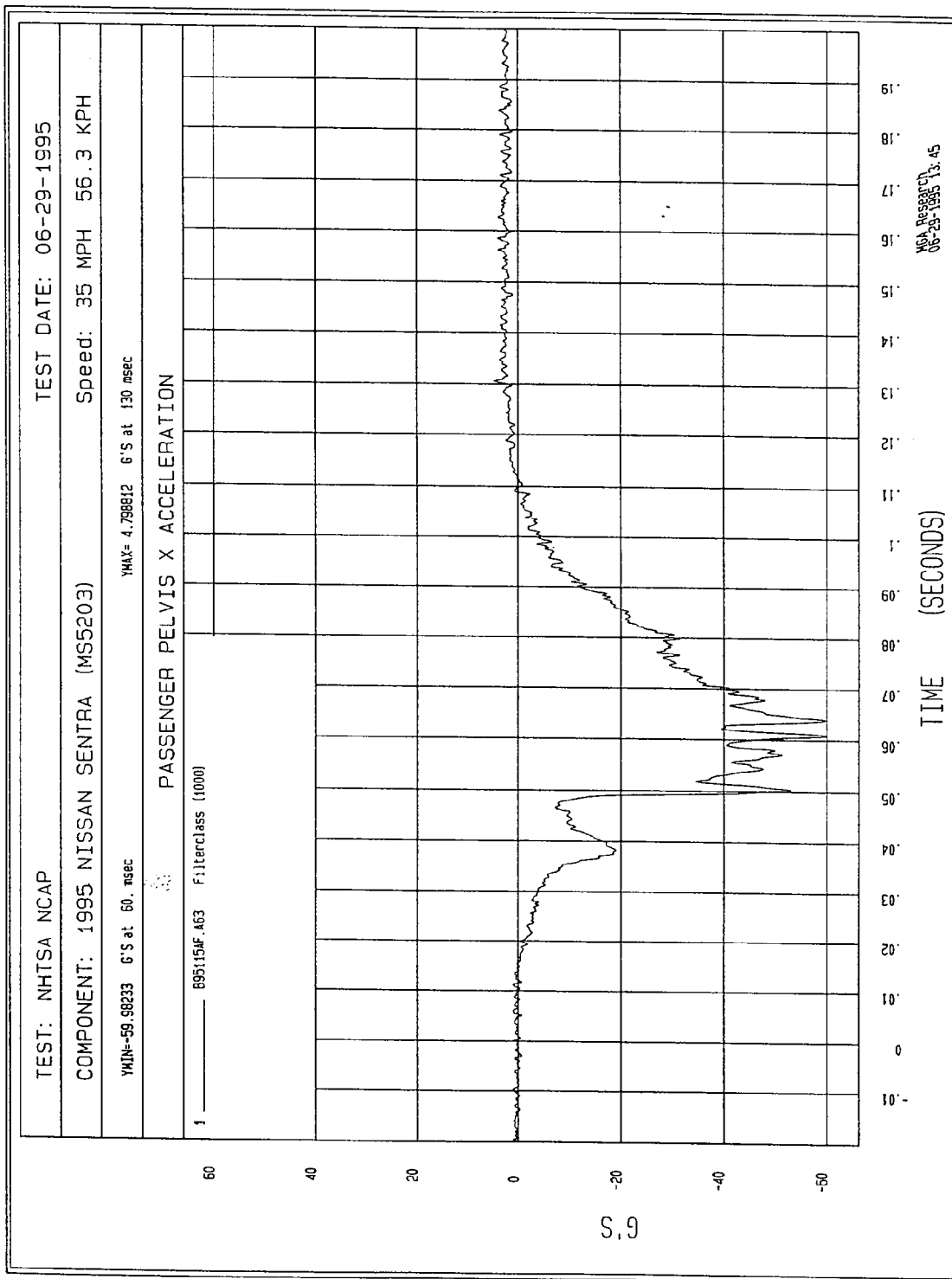


Figure B-99 - Passenger Right Femur Force vs. Time



B-100

Figure B-100 - Passenger Pelvis X Acceleration vs. Time

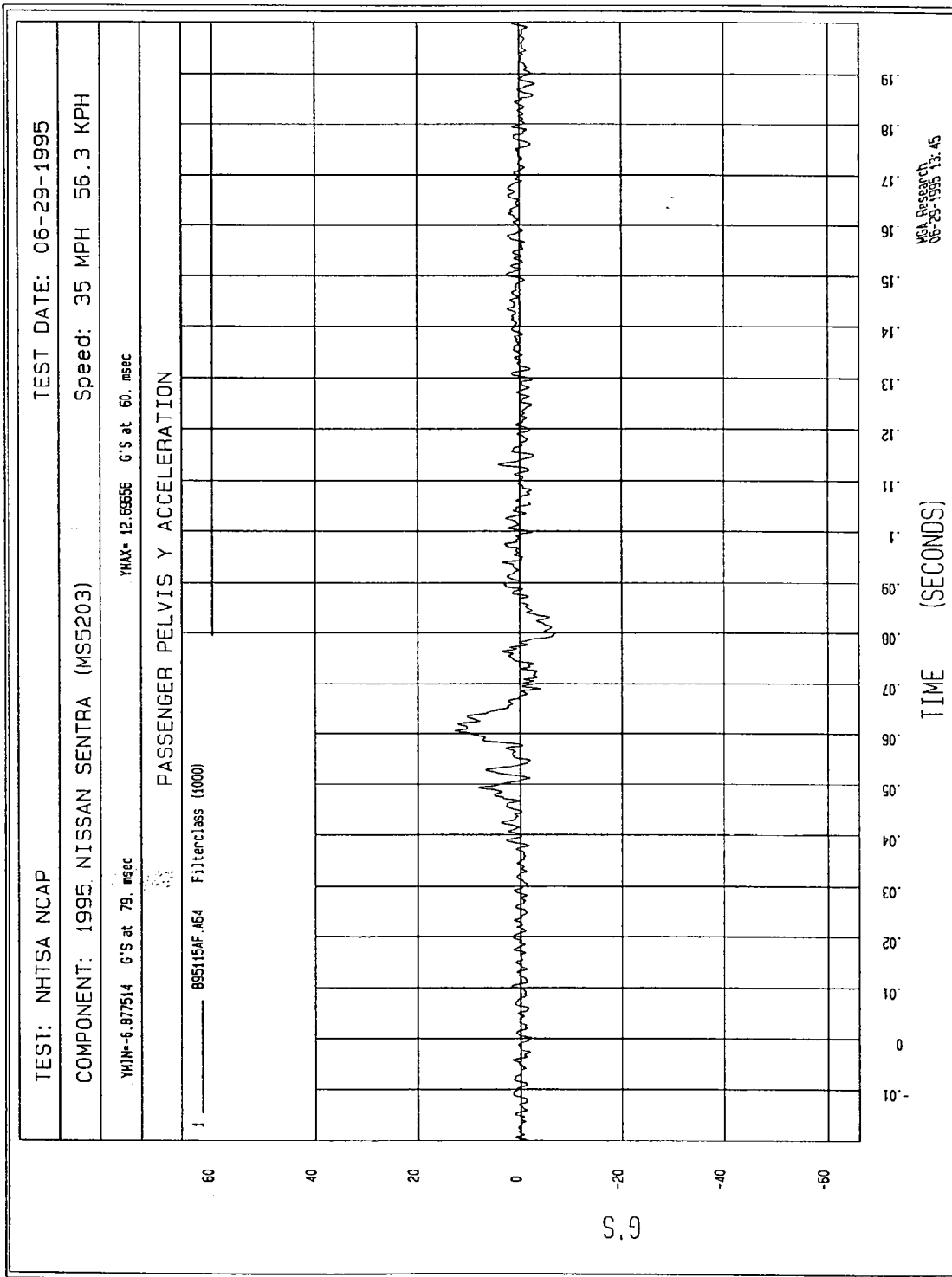


Figure B-101 - Passenger Pelvis Y Acceleration vs. Time

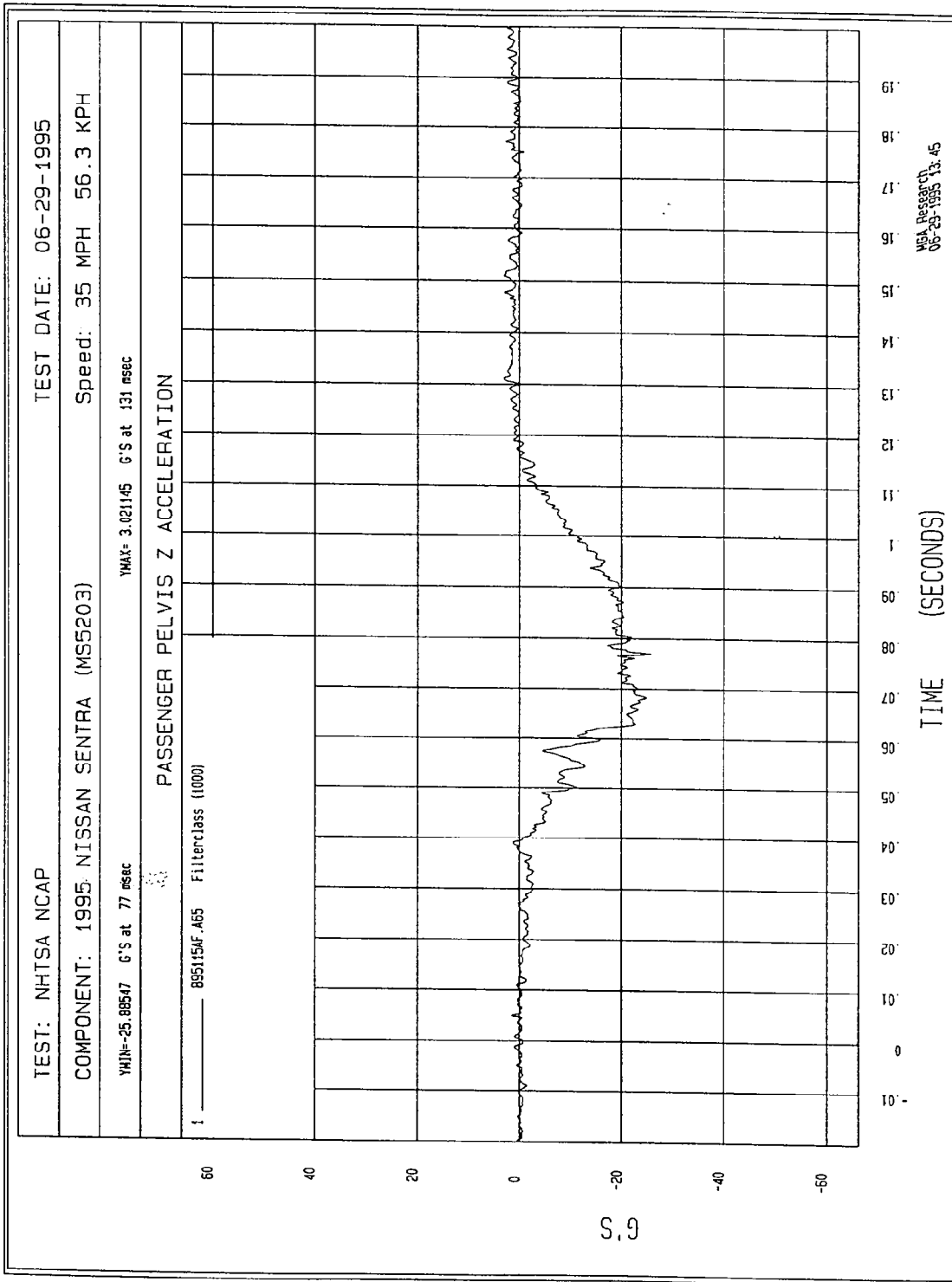
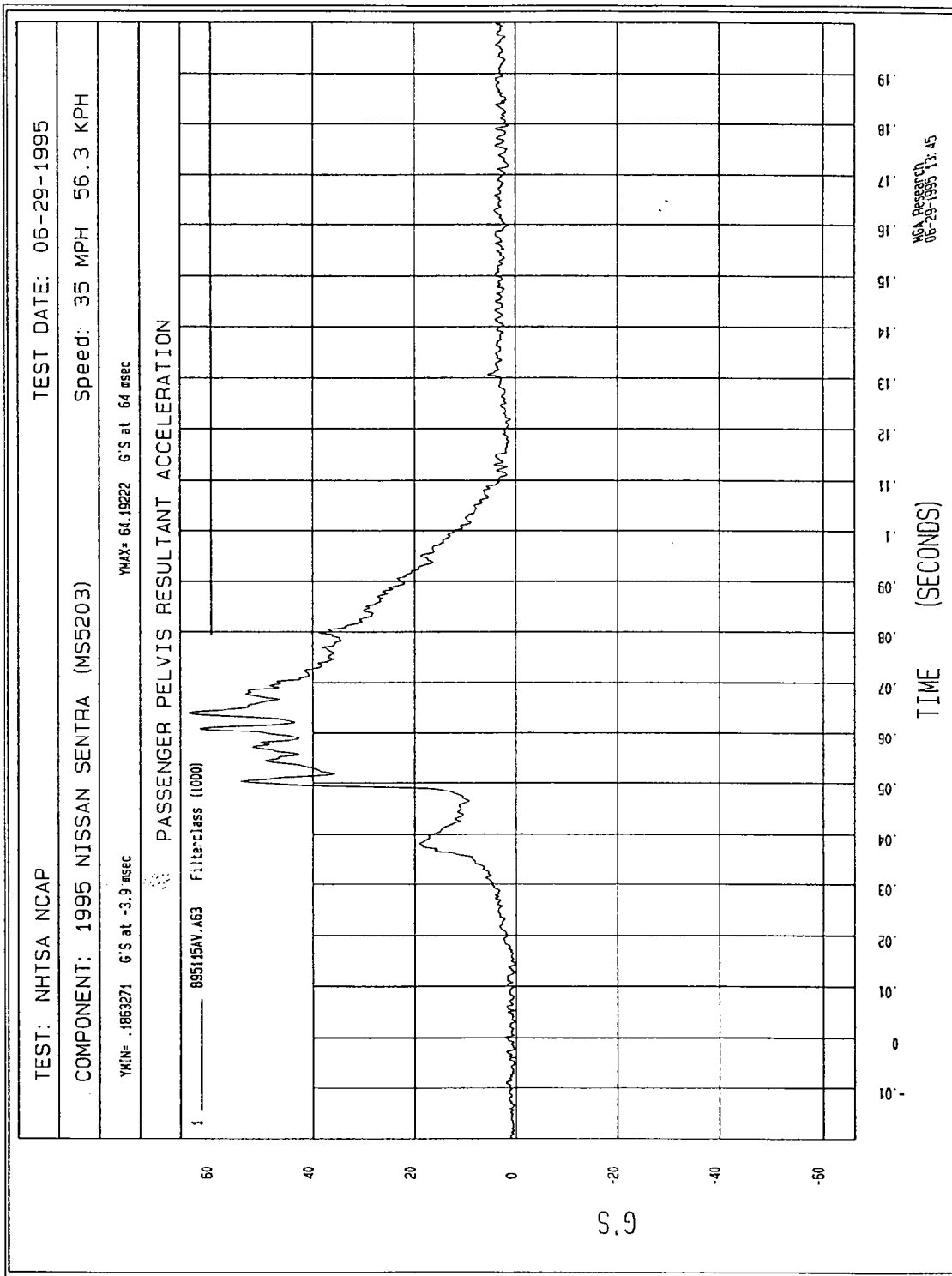
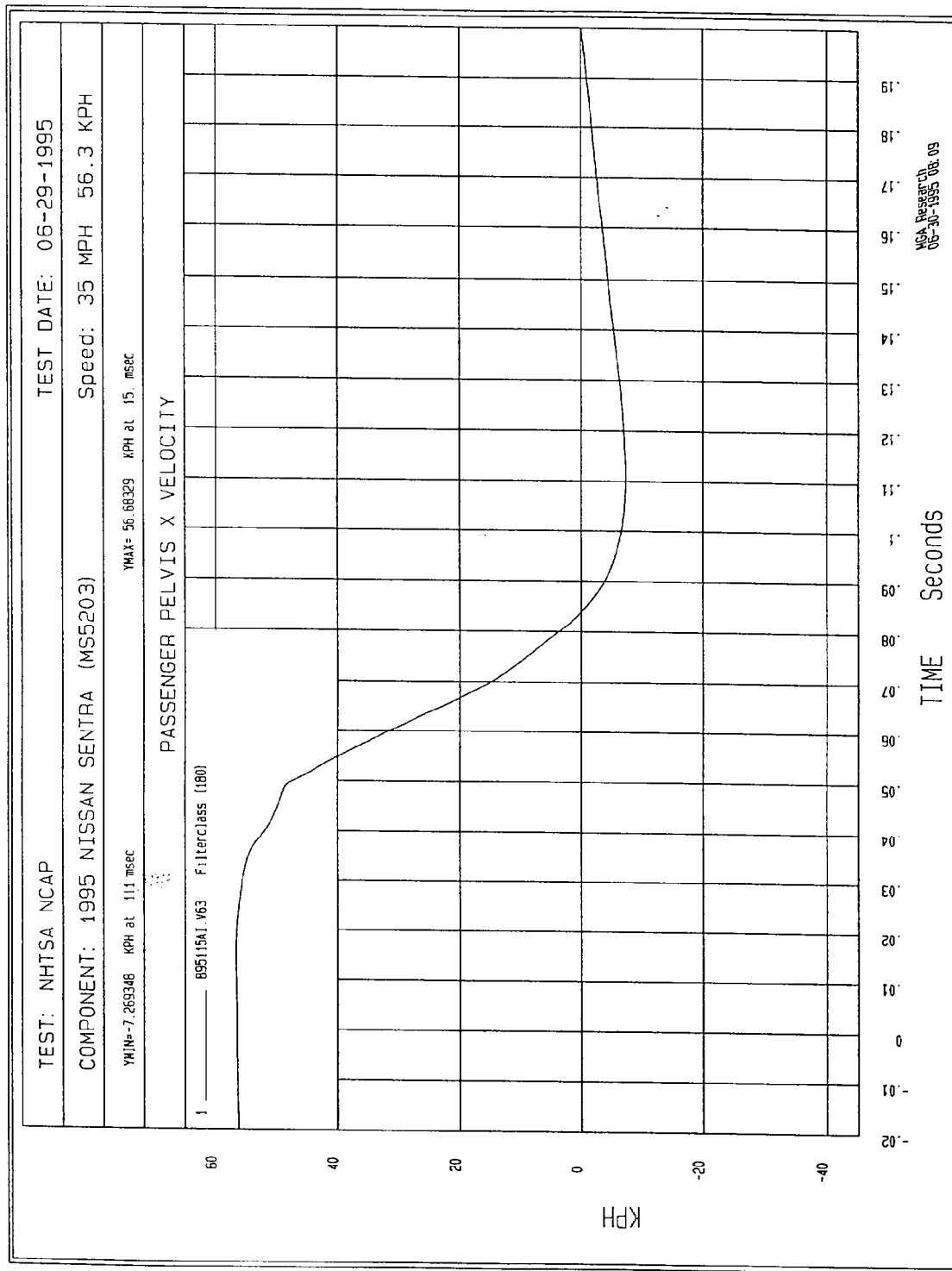


Figure B-102 - Passenger Pelvis Z Acceleration vs. Time



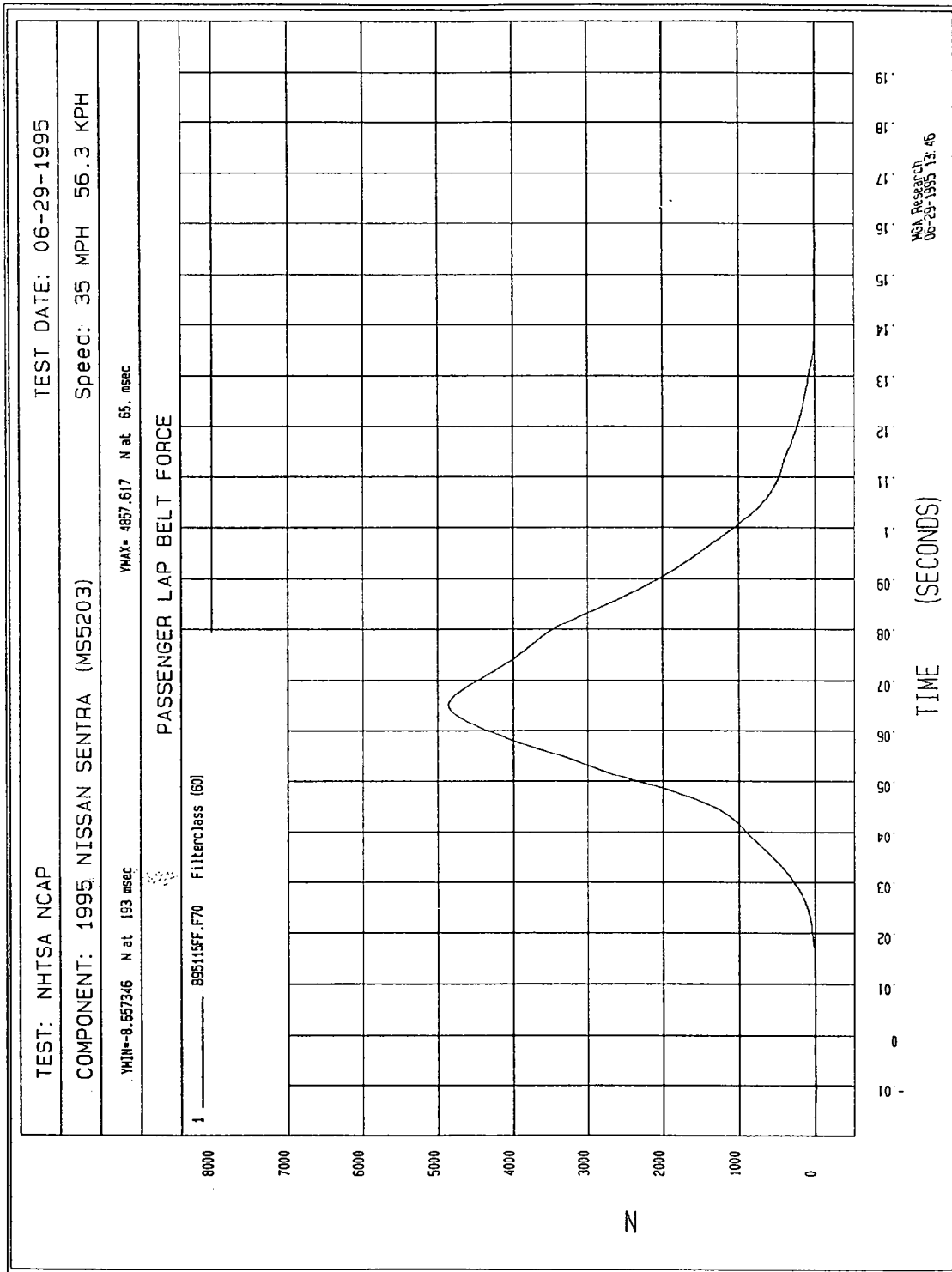
B-103

Figure B-103 - Passenger Pelvis Resultant Acceleration vs. Time



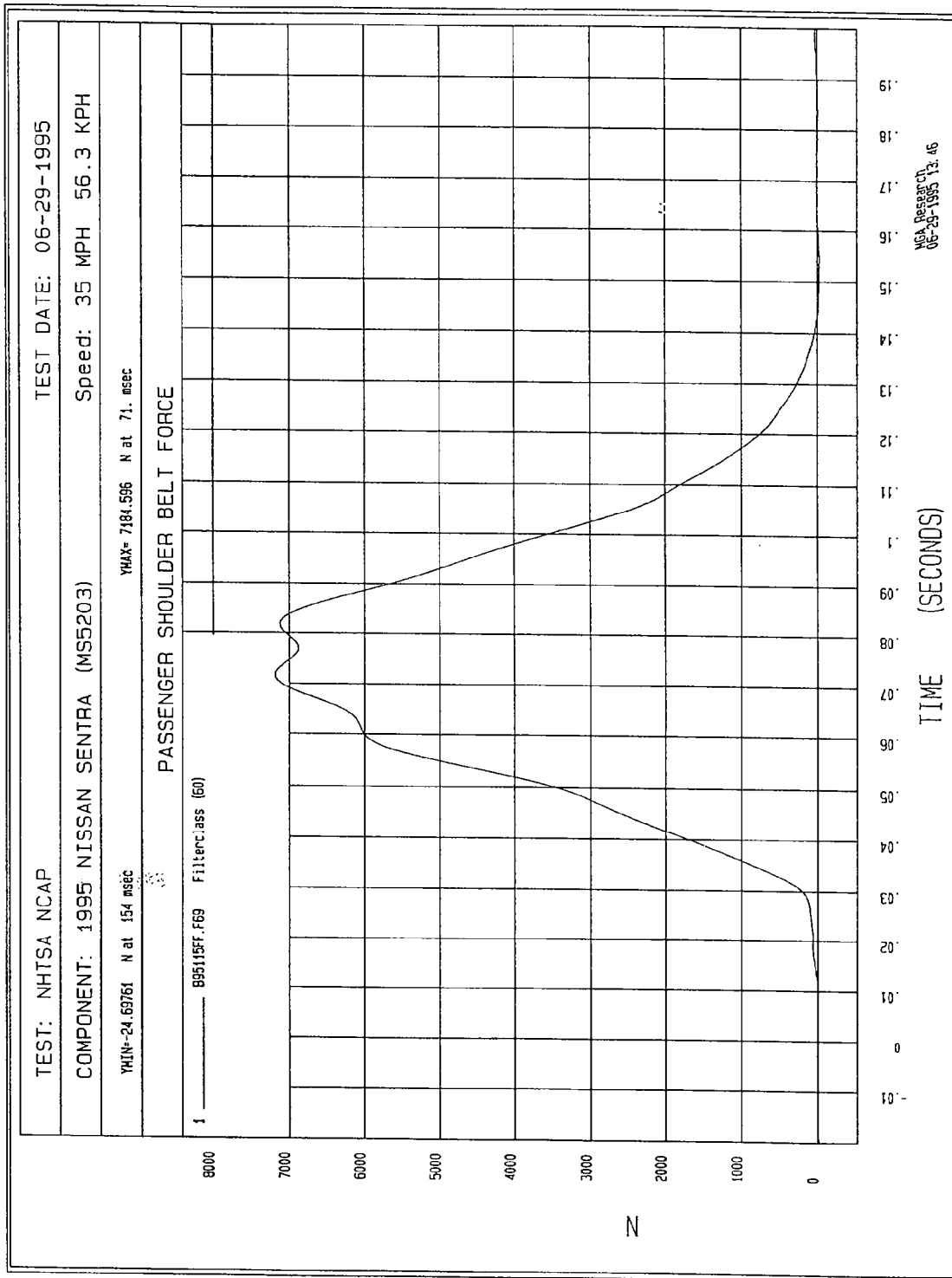
B-104

Figure B-104 - Passenger Pelvis X Velocity vs. Time



B-105

Figure B-105 - Passenger Lap Belt Force vs. Time



B-106

Figure B-106 - Passenger Shoulder Belt Force vs. Time

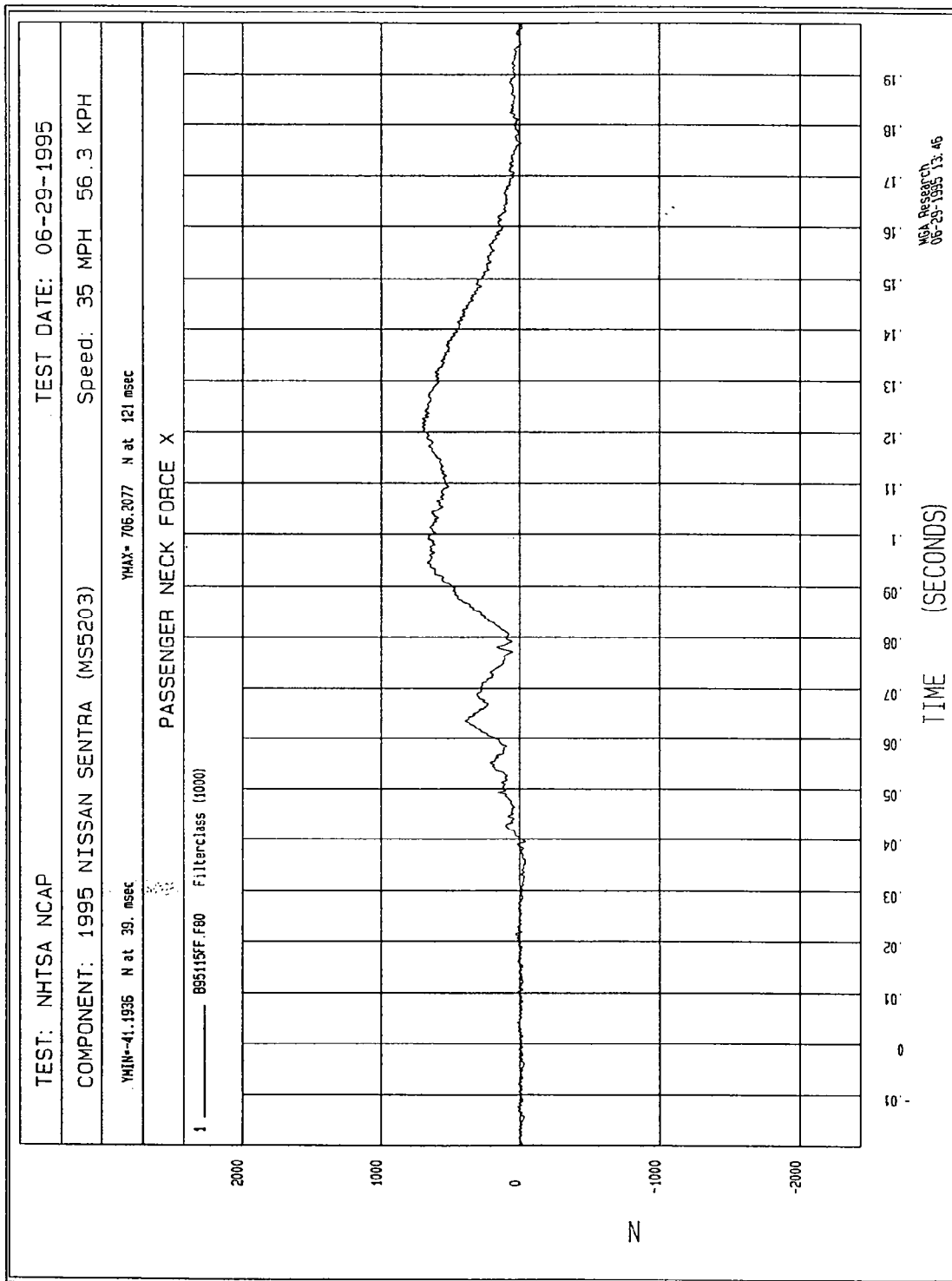


Figure B-107 - Passenger Neck Force X vs. Time

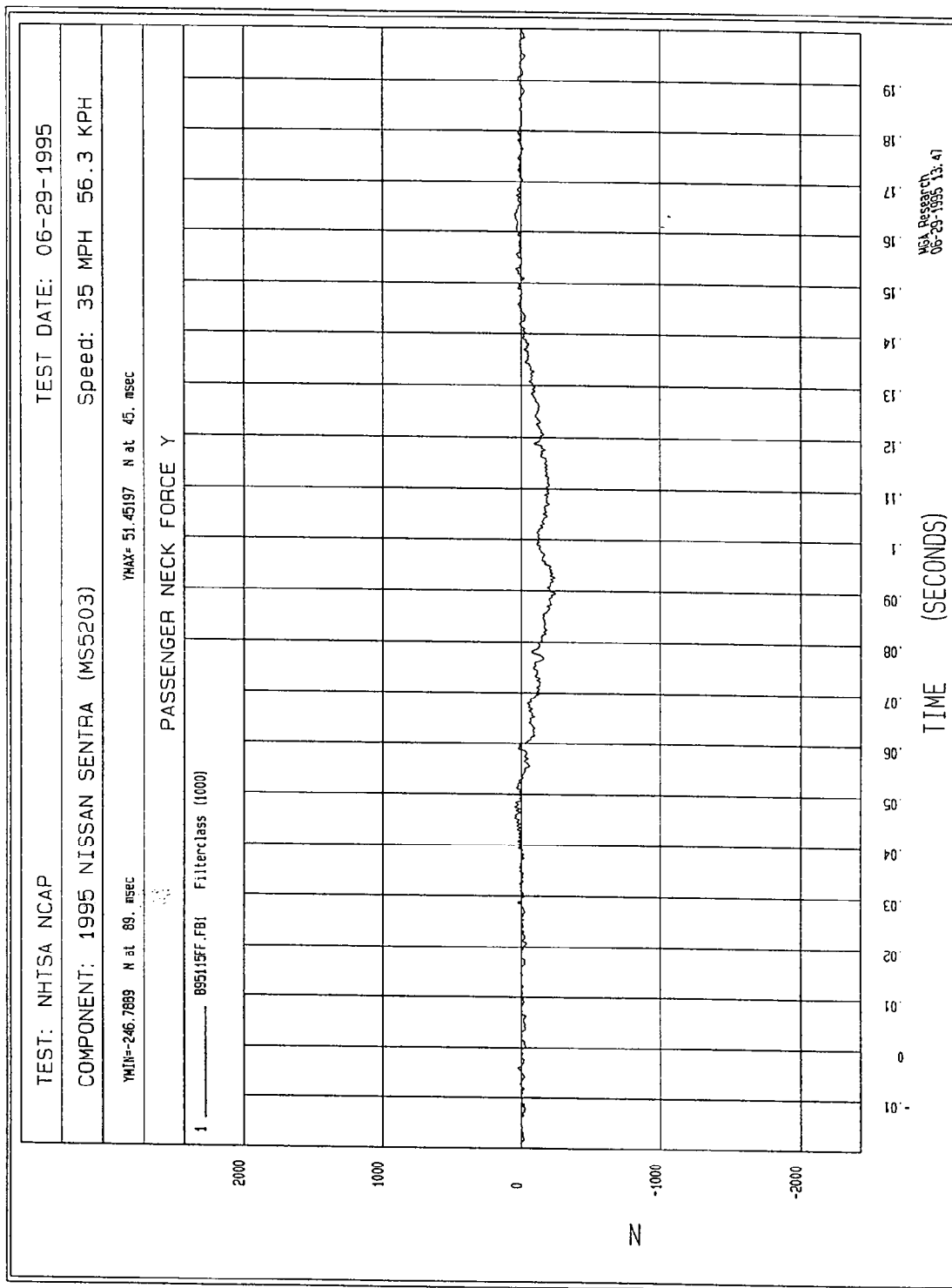


Figure B-108 - Passenger Neck Force Y vs. Time

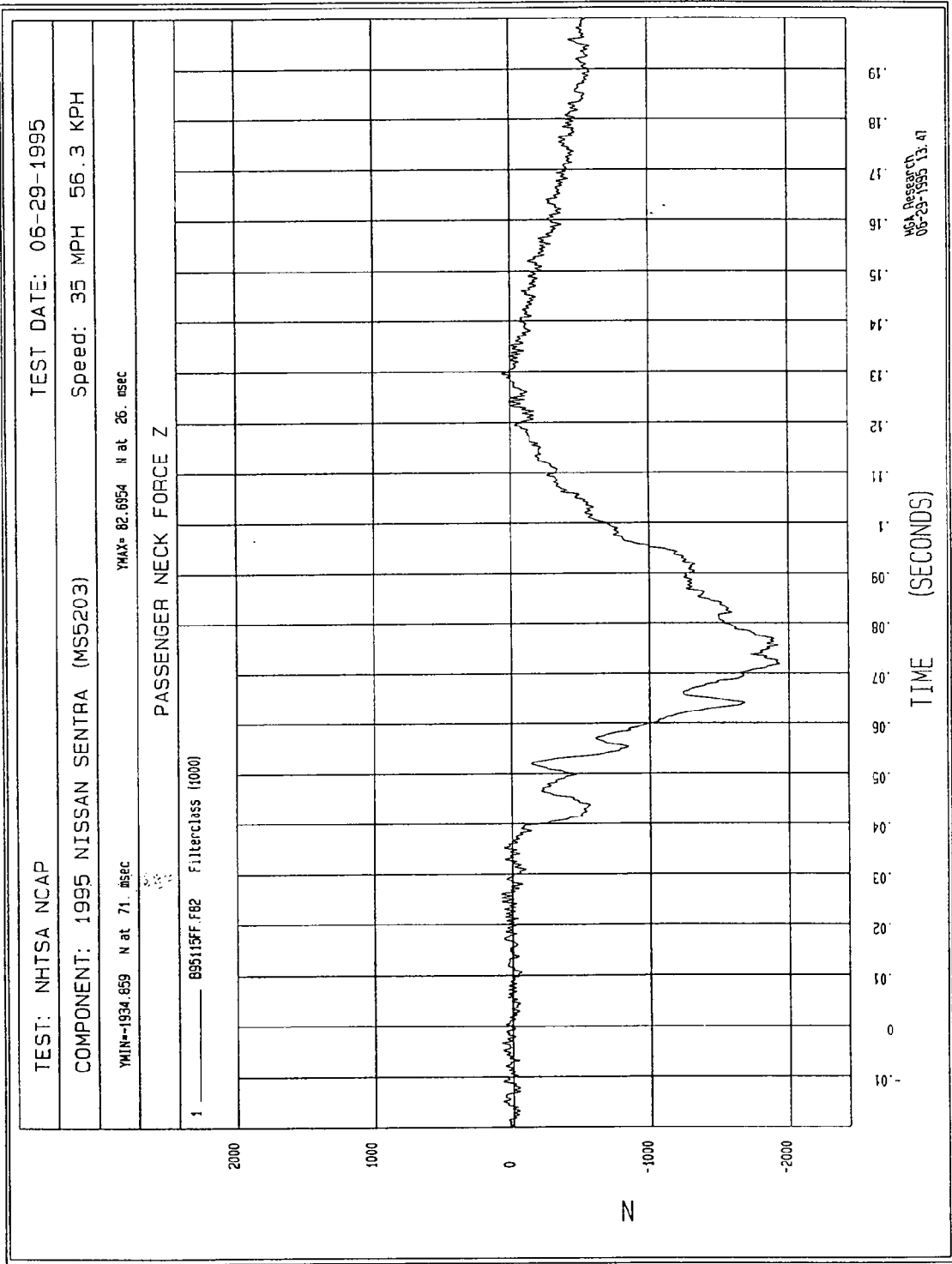
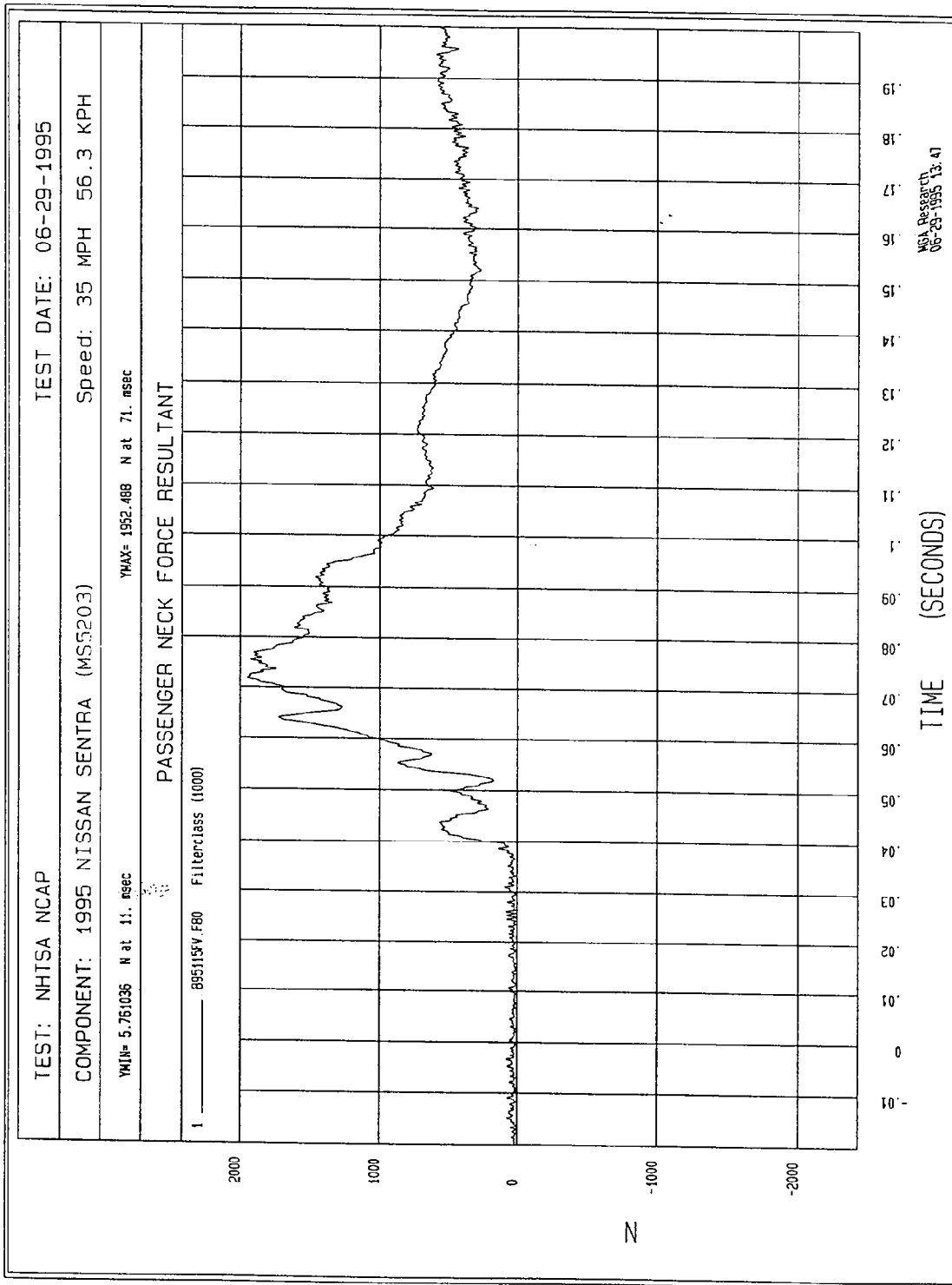


Figure B-109 - Passenger Neck Force Z vs. Time



B-110

Figure B-110 - Passenger Neck Force Resultant vs. Time

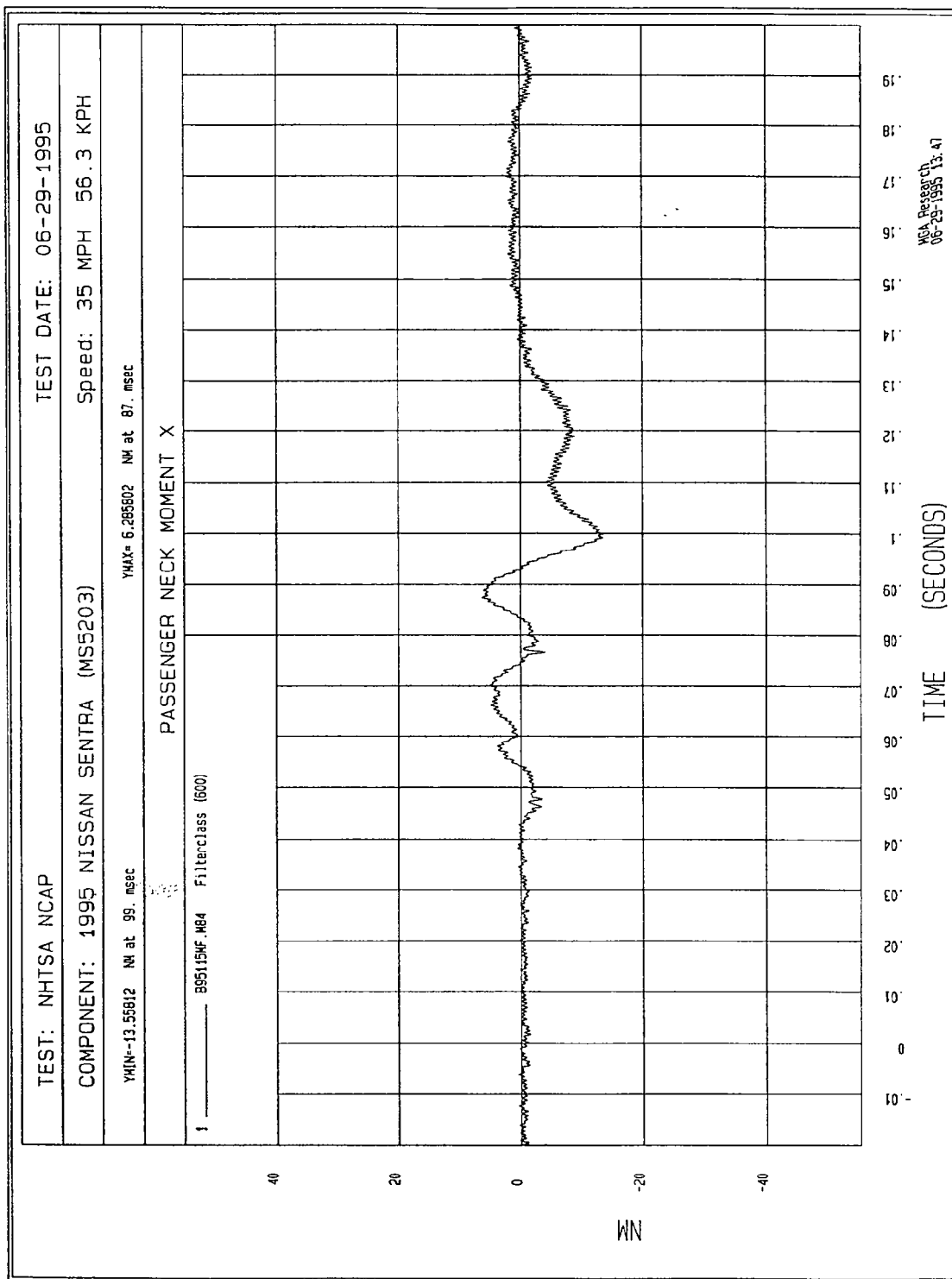
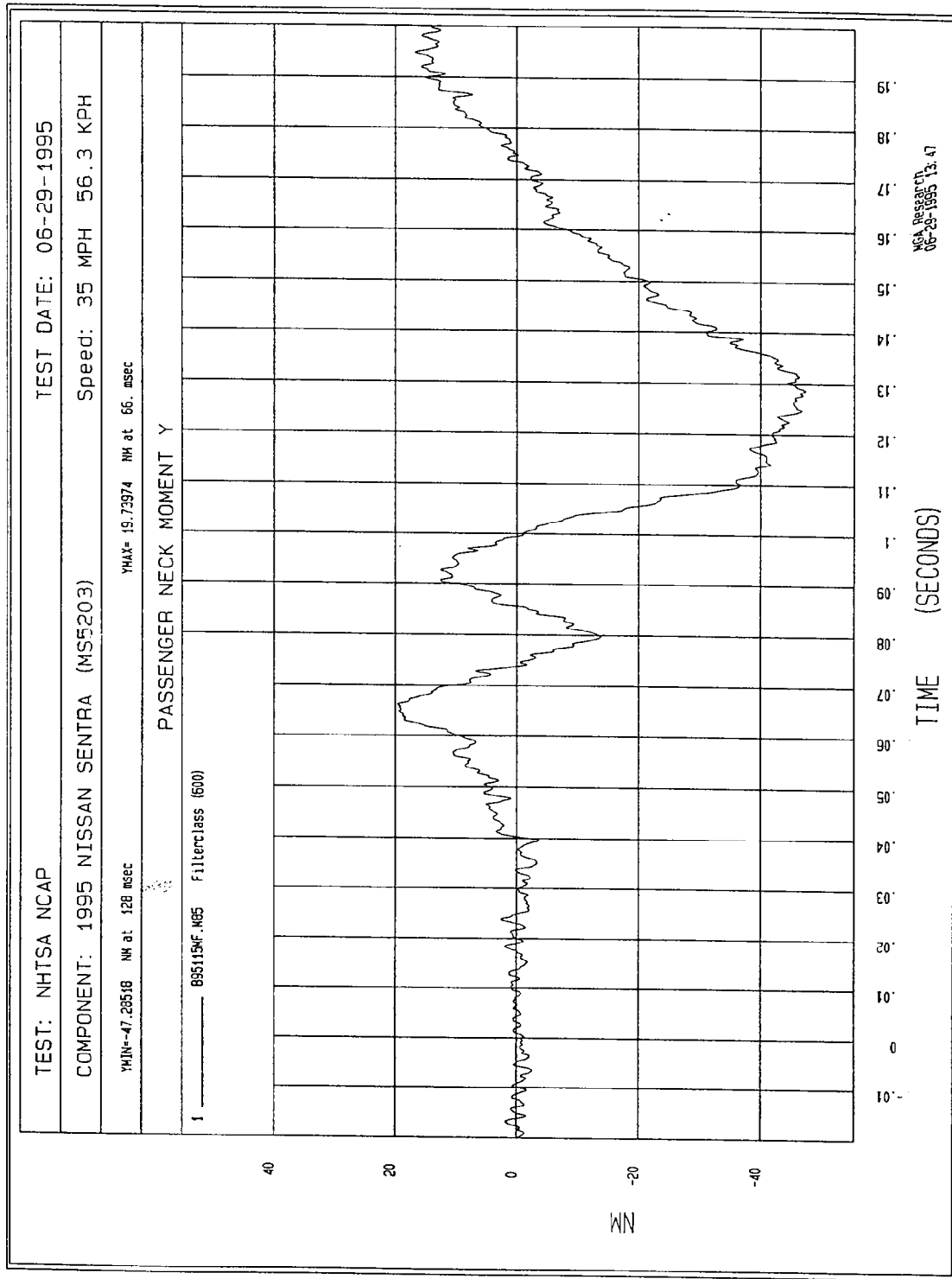


Figure B-111 - Passenger Neck Moment X vs. Time



B-112

Figure B-112 - Passenger Neck Moment Y vs. Time

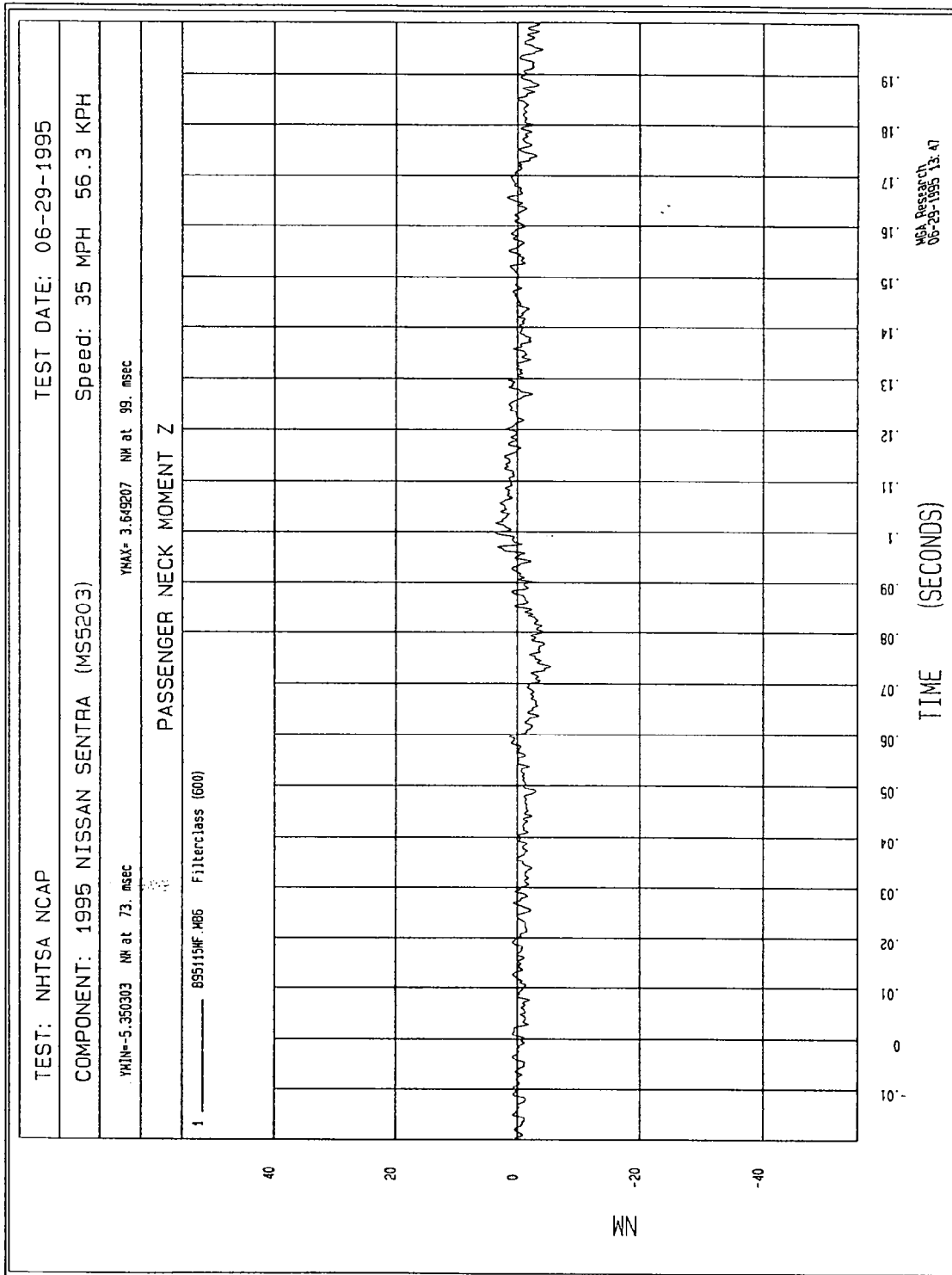
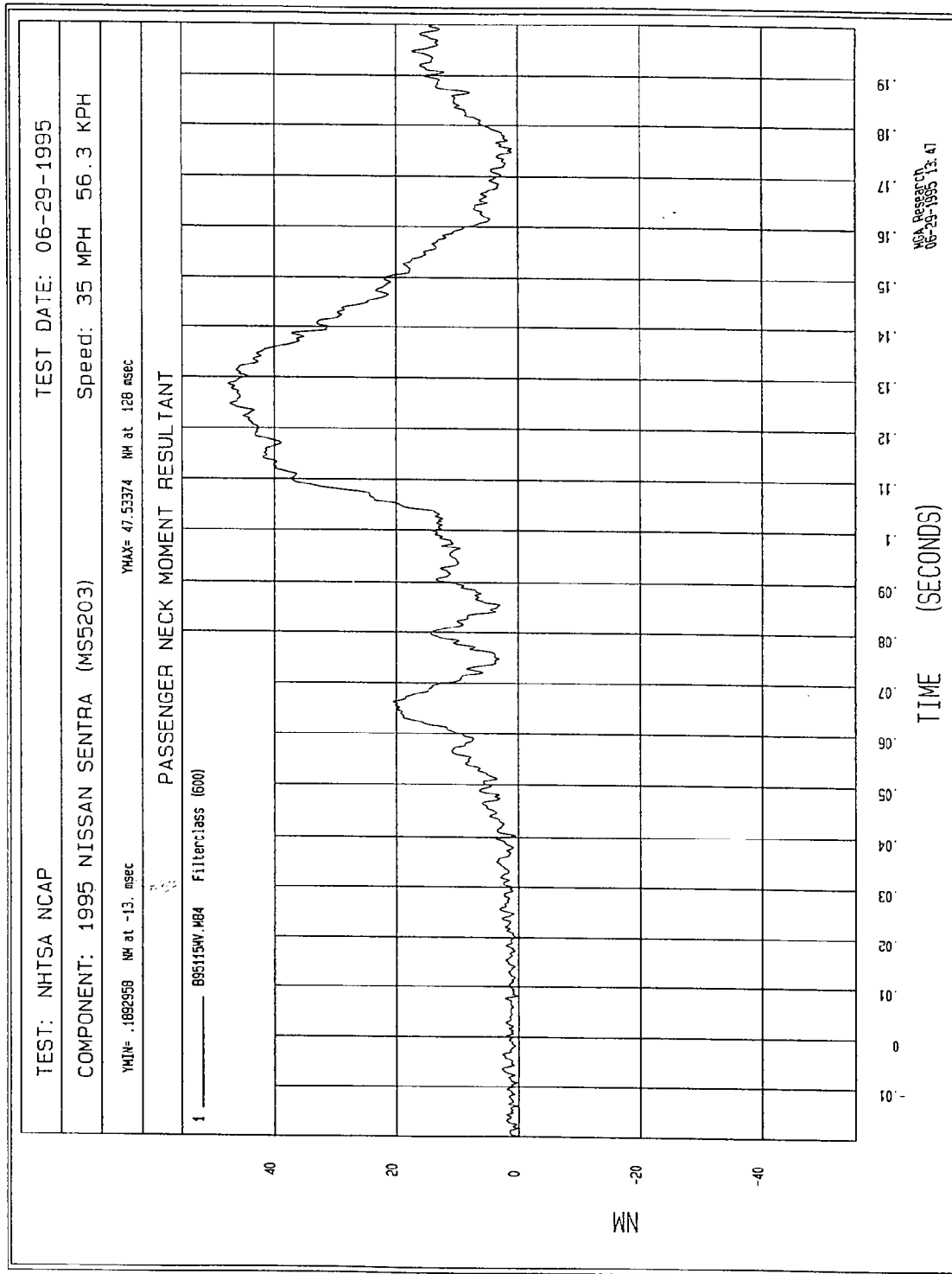


Figure B-113 - Passenger Neck Moment Z vs. Time



B-114

Figure B-114 - Passenger Neck Moment Resultant vs. Time

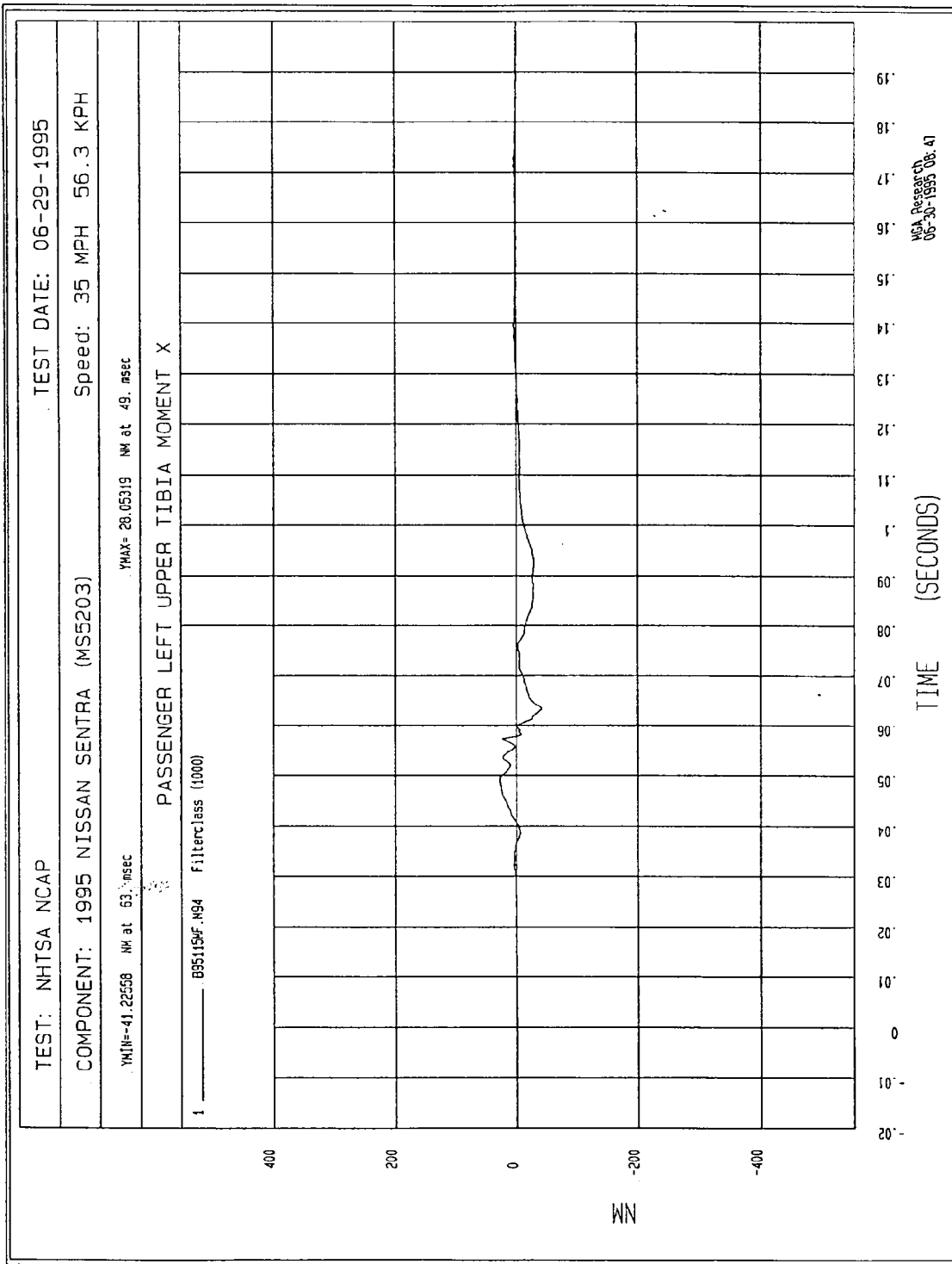


Figure B-115 - Passenger Left Upper Tibia Moment X vs. Time

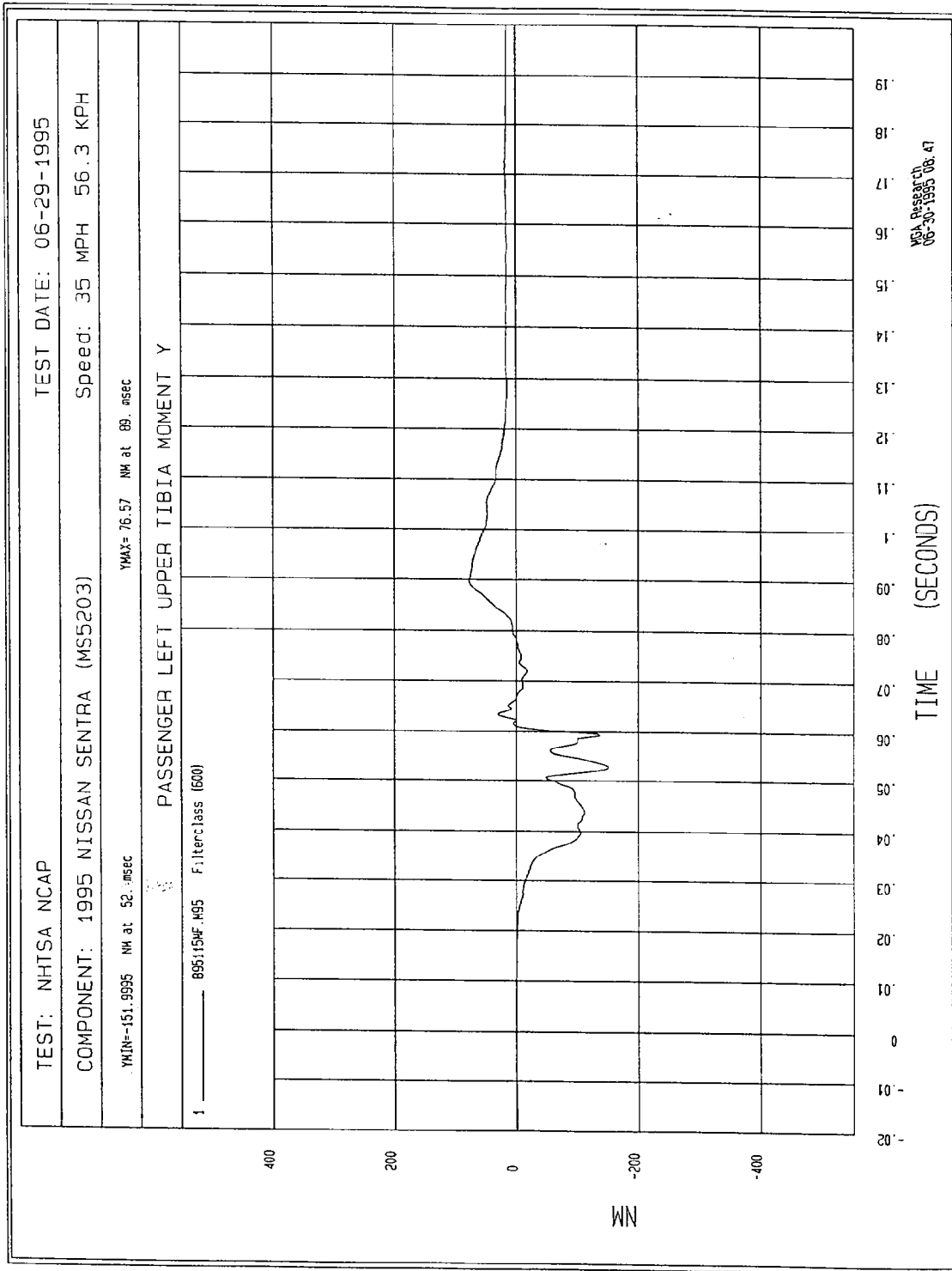


Figure B-116 - Passenger Left Upper Tibia Moment Y vs. Time

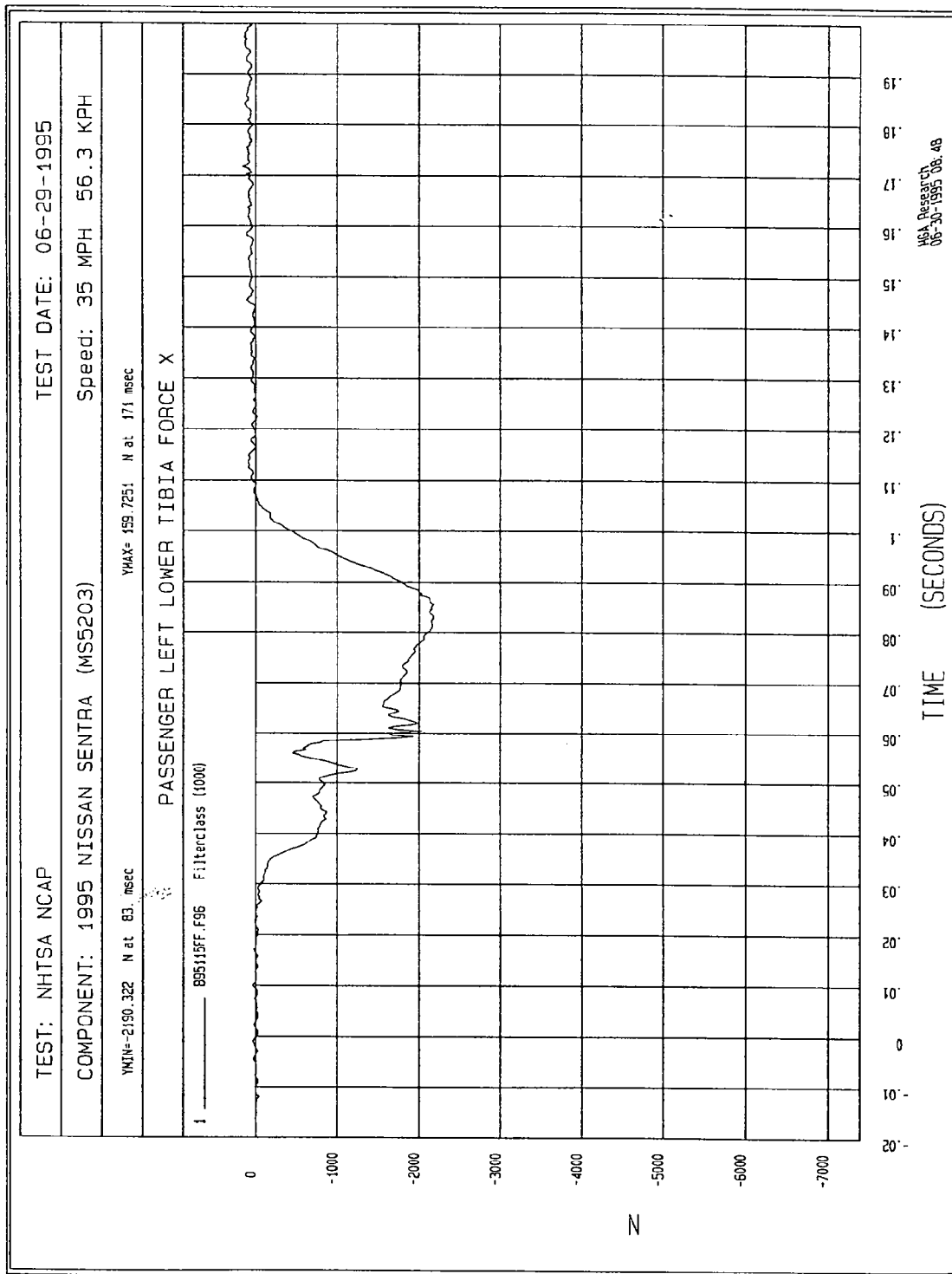


Figure B-117 - Passenger Left Lower Tibia Force X vs. Time

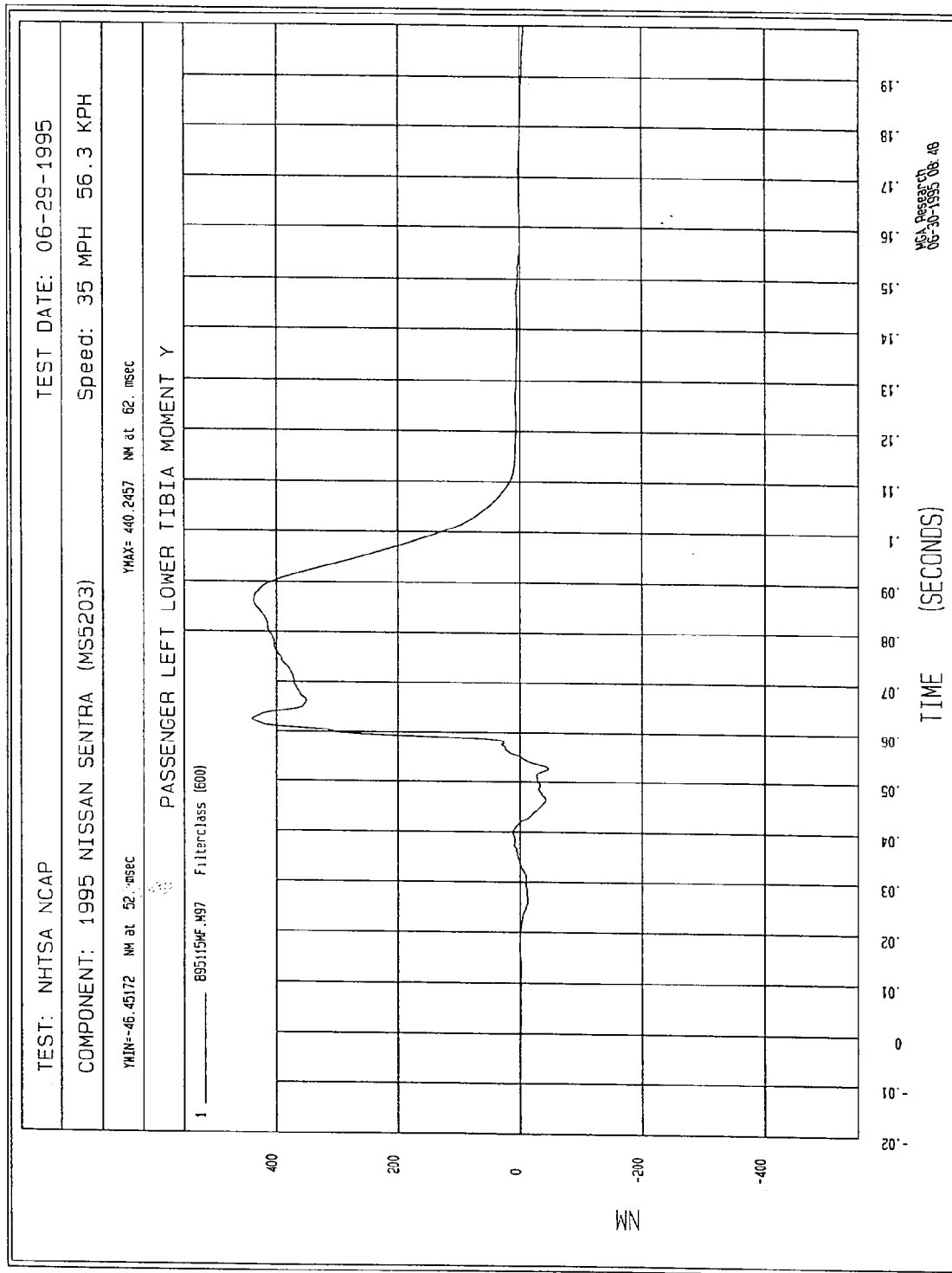


Figure B-118 - Passenger Left Lower Tibia Moment Y vs. Time

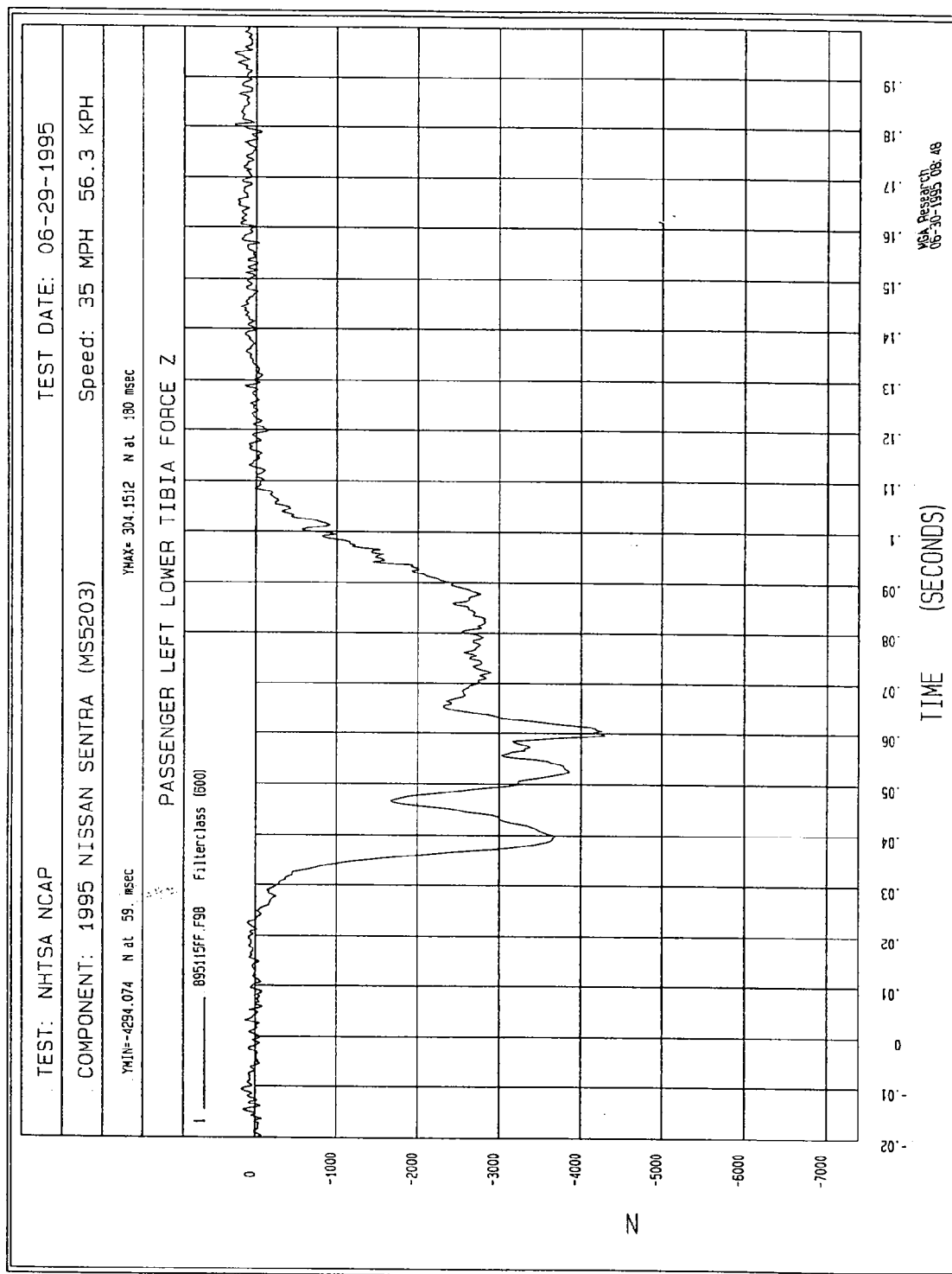
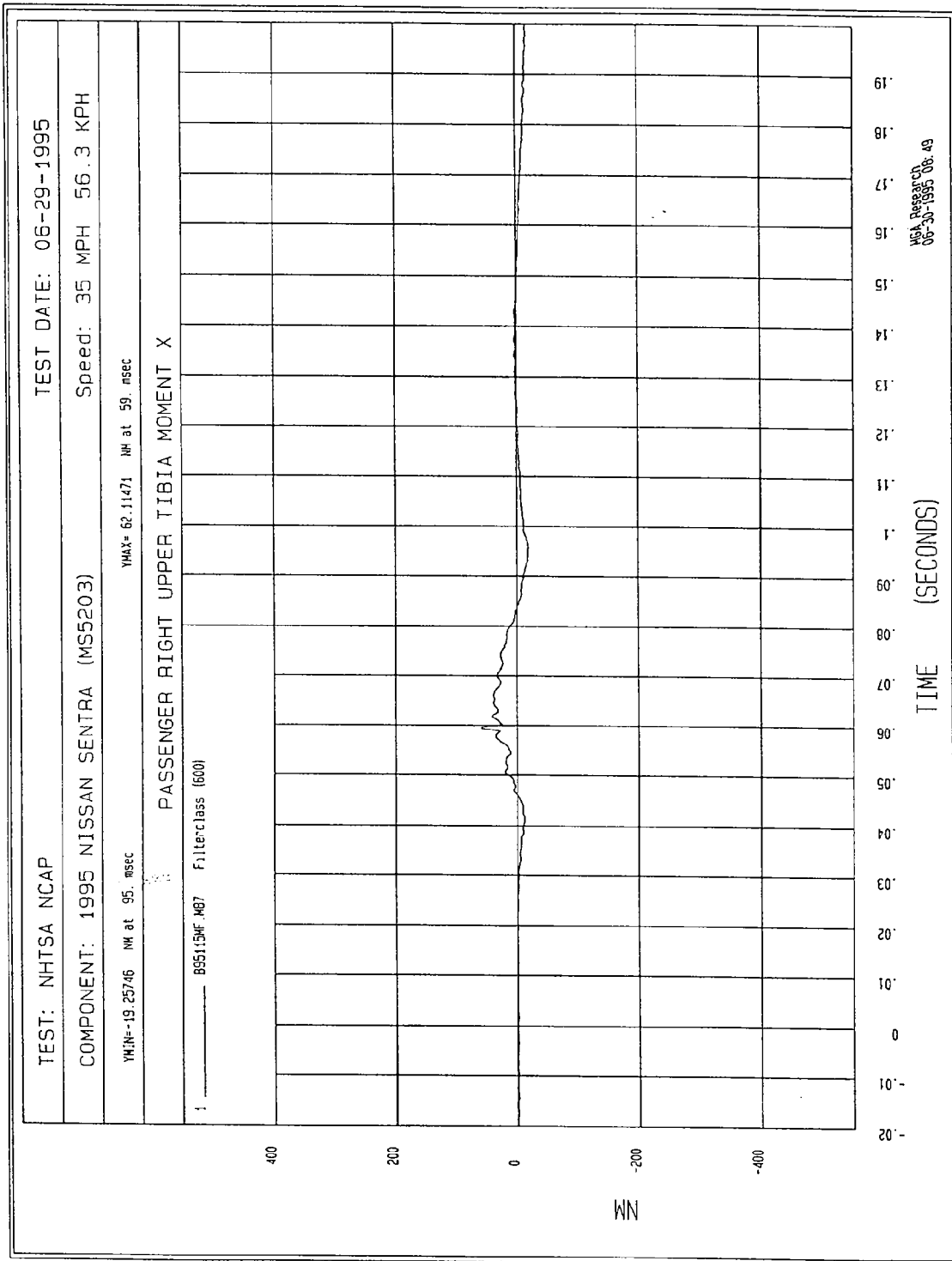


Figure B-119 - Passenger Left Lower Tibia Force Z vs. Time



B-120

Figure B-120 - Passenger Right Upper Tibia Moment X vs. Time

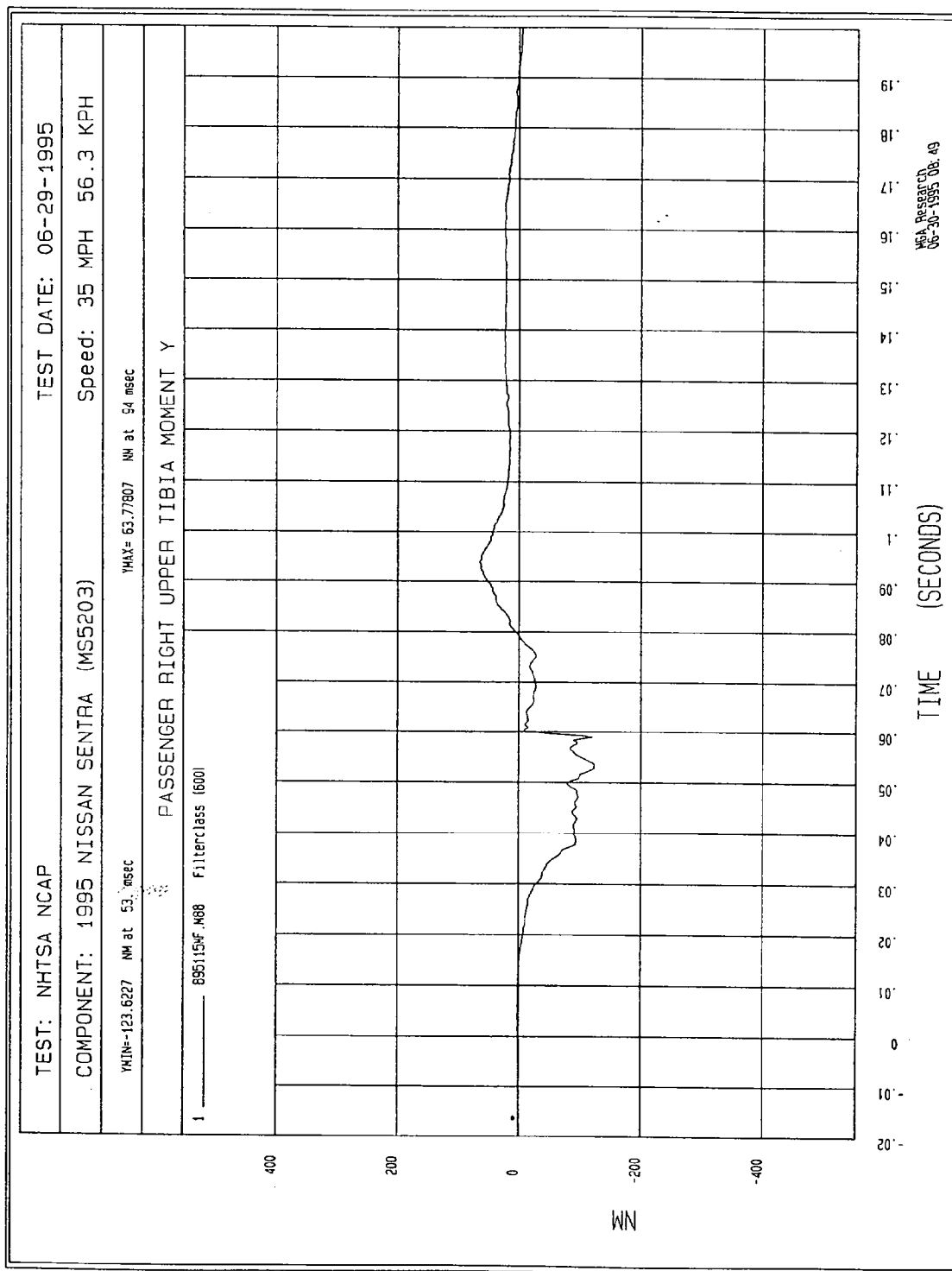


Figure B-121 - Passenger Right Upper Tibia Moment Y vs. Time

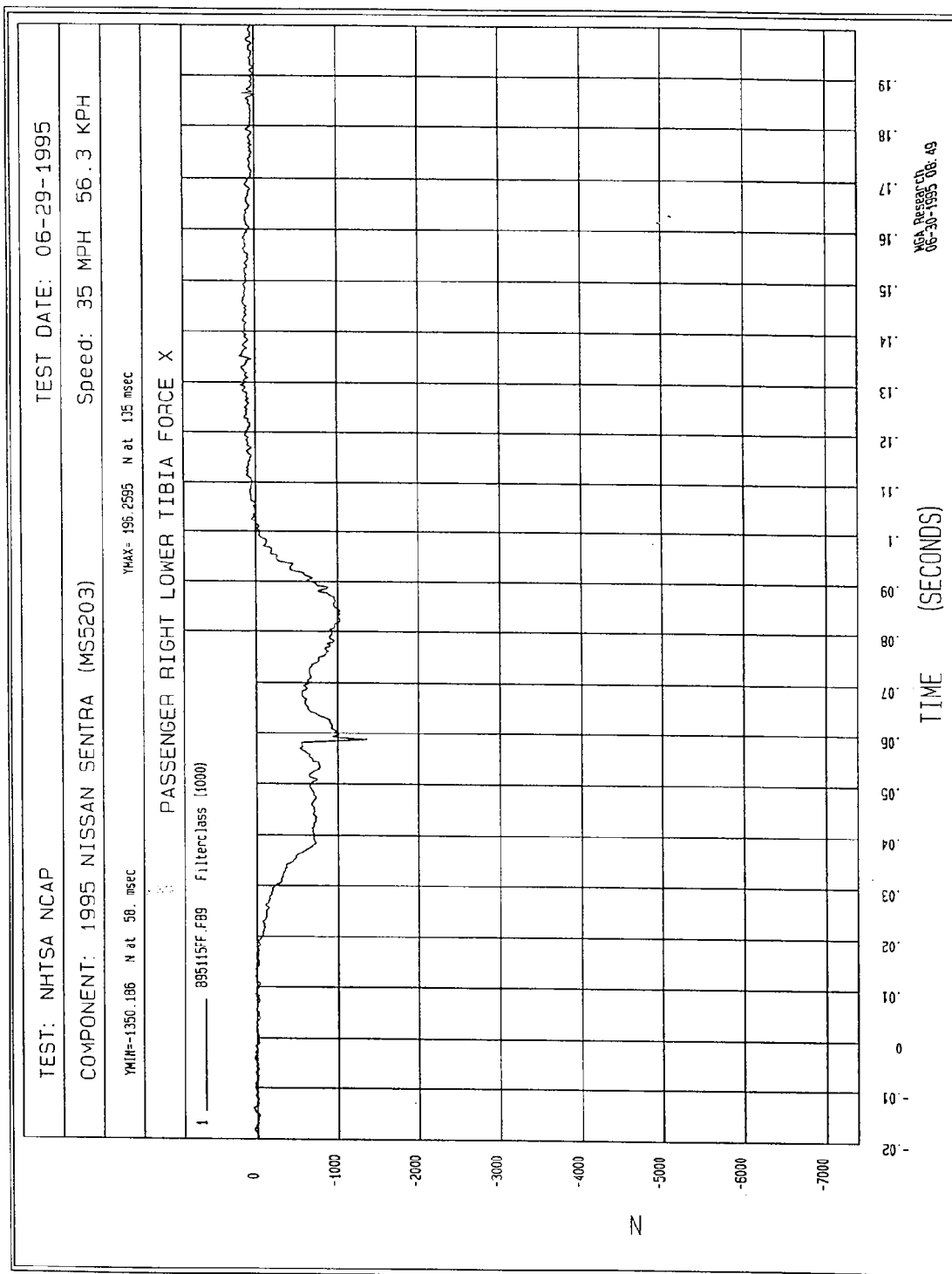


Figure B-122 - Passenger Right Lower Tibia Force X vs. Time

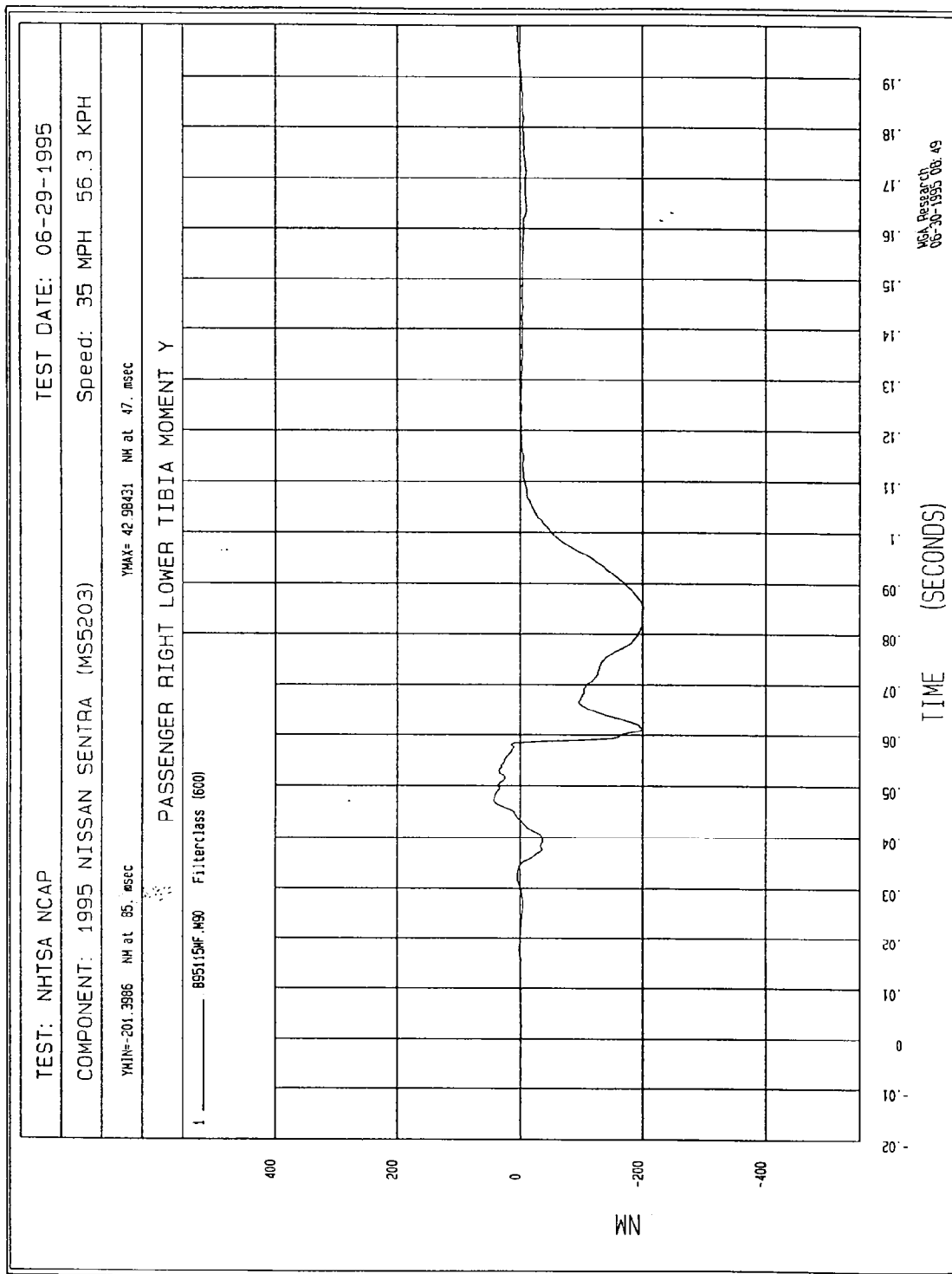


Figure B-123 - Passenger Right Lower Tibia Moment Y vs. Time

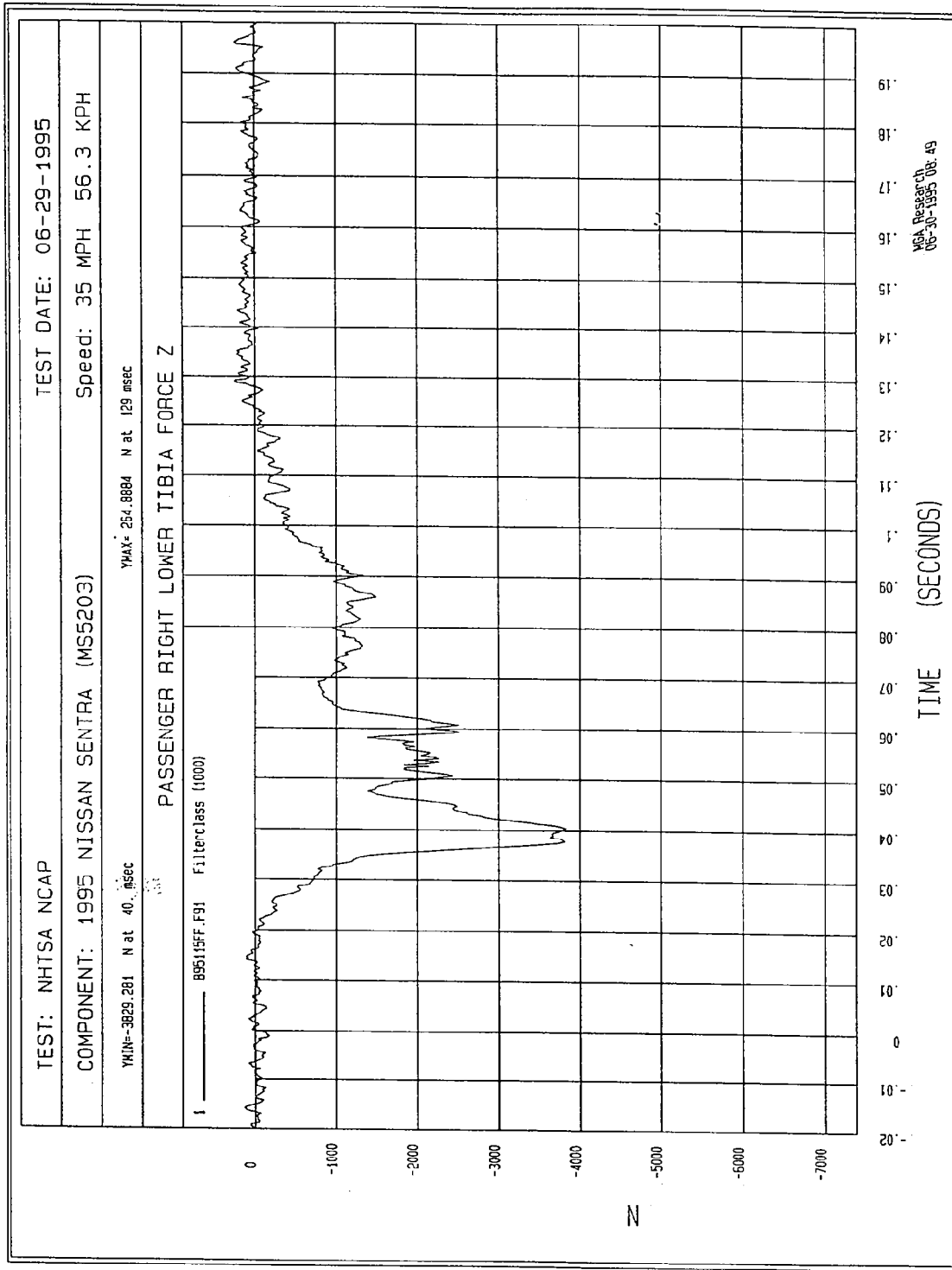


Figure B-124 - Passenger Right Lower Tibia Force Z vs. Time

APPENDIX C

Dummy Configuration & Performance Verification Data

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 065 DUMMY CALIBRATION BY: Al Chalmers

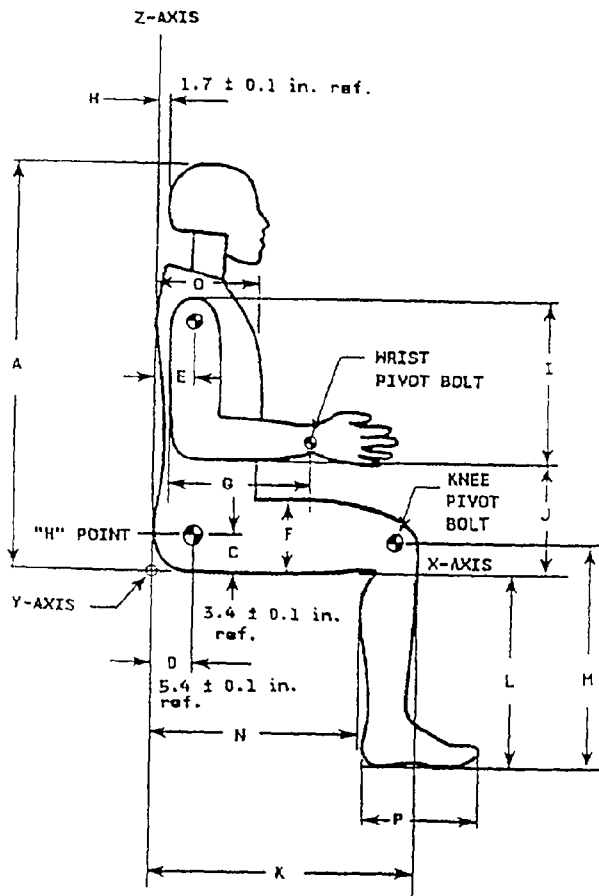
I. CONFIGURATION VERIFICATION DATA

DATE OF VERIFICATION: 06-09-95

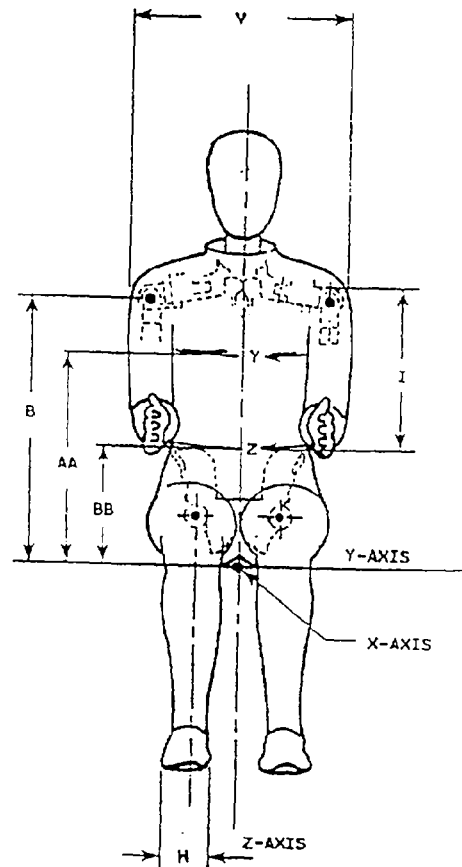
DESCRIPTION	SPECIFICATION (inches)	ACTUAL MEASUREMENT (inches)
A - Total Sitting Height	34.6 - 35.0	34.9
B - Shoulder Pivot Height	19.9 - 20.5	20.5
C - "H" Point Height	3.3 - 3.5	3.5
D - "H" Point from Seat Back	5.3 - 5.5	5.5
E - Shoulder Pivot From Backline	3.3 - 3.7	3.5
F - Thigh Clearance	5.5 - 6.1	6.1
G - Back of Elbow to Wrist Pivot	11.4 - 12.0	11.5
H - Skull Cap Skin to Backline	1.6 - 1.8	1.7
I - Shoulder - Elbow Length	13.0 - 13.6	13.0
J - Elbow Rest Height	7.5 - 8.3	8.0
K - Buttock to Knee Length	22.8 - 23.8	23.5
L - Popliteal Height	16.9 - 17.9	17.0
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	8.8
P - Foot Length	9.9 - 10.5	10.3
V - Shoulder Breadth	16.6 - 17.2	16.8
W - Foot Breadth	3.6 - 4.2	4.0
Y - Chest Circumference	38.2 - 39.4	39.0
Z - Waist Circumference	32.9 - 34.1	33.5

Note: (See next page for external dimensions)

HYBRID III EXTERNAL DIMENSIONS



SIDE VIEW.



FRONT VIEW

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.: 065 DUMMY CALIBRATION BY: Al Chalmers

VERIFICATION DATE: 06-09-95

VERIFICATION LABORATORY TEMPERATURE (66° - 78°): 70°

1.0 HEAD DROP TEST

	SPECIFICATION	MEASUREMENT
Peak Resultant Acceleration	225 - 275 G	231
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	23.0
Pendulum Deceleration	10 MS	22.50 - 27.50 G	22.71
	20 MS	17.60 - 22.60 G	21.00
	30 MS	12.50 - 18.50 G	15.92
Max. Pendulum G Above 30 MS		29.0 G MAX	15.9
Deceleration - Time Curve Decay Time to 5 G		34 - 42 MS	39
D Plane Rotation	MAX	64 - 78 DEG.	73
	TIME	57 - 64 MS	62
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 MS	115
Moment About Occipital Condyle	MIN.	65 - 80 FT.LBS	72
	TIME	47 - 58 MS	52
Positive Moment - Time Curve Decay Time to Zero		97 - 107 MS	103

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

3.0 NECK EXTENSION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		19.50 - 20.30 F/S	19.94
Pendulum Deceleration	10 MS	17.20 - 21.20 G	18.79
	20 MS	14.00 - 19.00 G	17.46
	30 MS	11.00 - 16.00 G	13.39
Max. Pendulum G Above 30 MS		22 G Max	13
Deceleration - Time Curve Decay Time to 5 G		38 - 46 MS	42
D Plane Rotation	MAX	81 - 106 DEG.	100
	TIME	72 - 82 MS	77
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 MS	157
Moment About Occipital Condyle	MIN.	-59.0/-39.0 FT LBS	-49.5
	TIME	65 - 79 MS	72
Positive Moment - Time Curve Decay Time to Zero		120 - 148 MS	142

4.0 CHEST IMPACT TESTS

	SPECIFICATION	MEASUREMENT
Probe Speed	21.6 to 22.4 F/S	21.8
Peak Deflection	2.50 to 2.86 IN.	2.53
Peak Resistive Force	1160 to 1325 LBS.	1292
Internal Hysteresis	69 to 85%	70

5.0 KNEE IMPACT TESTS

LEFT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	7.0
Maximum Force	1060 - 1300 LBS.	1104

RIGHT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	7.0
Maximum Force	1060 - 1300 LBS.	1064

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 066 DUMMY CALIBRATION BY: Al Chalmers

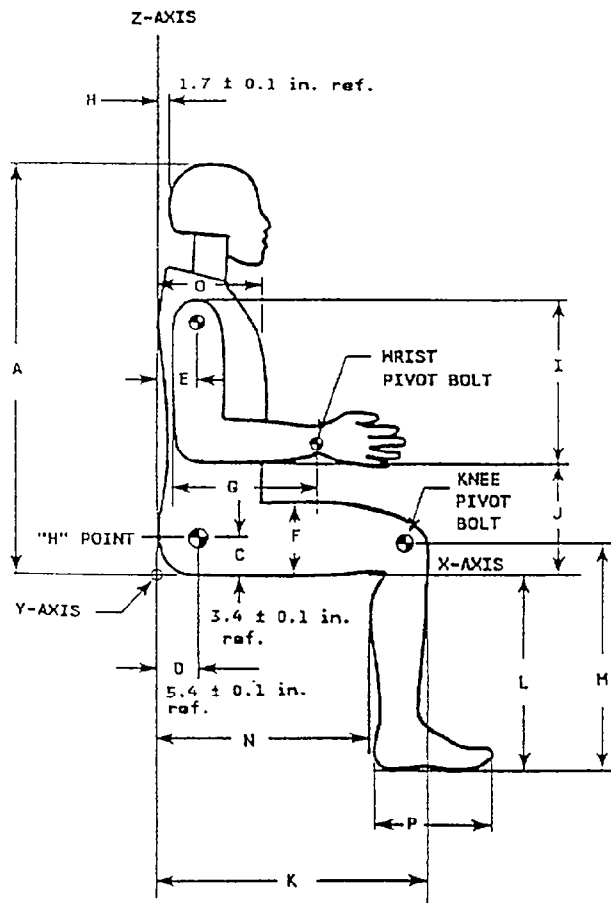
I. CONFIGURATION VERIFICATION DATA

DATE OF VERIFICATION: 06-09-95

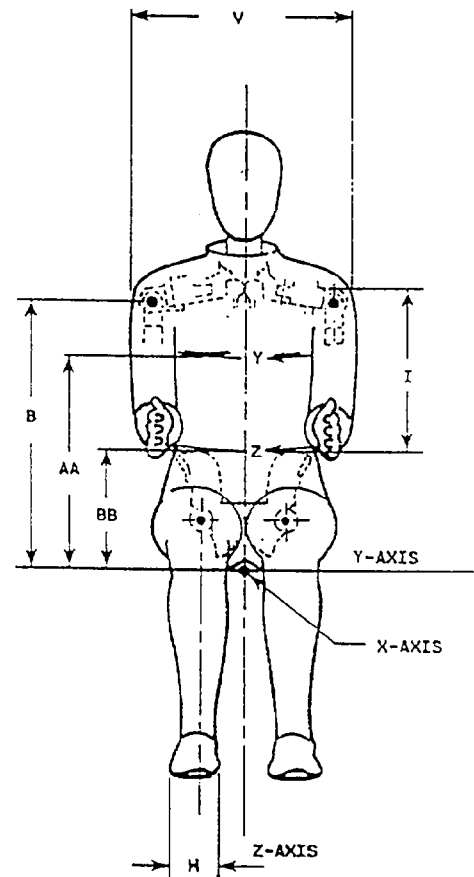
DESCRIPTION	SPECIFICATION (Inches)	ACTUAL MEASUREMENT (inches)
A - Total Sitting Height	34.6 - 35.0	34.8
B - Shoulder Pivot Height	19.9 - 20.5	20.5
C - "H" Point Height	3.3 - 3.5	3.5
D - "H" Point from Seat Back	5.3 - 5.5	5.5
E - Shoulder Pivot From Backline	3.3 - 3.7	3.5
F - Thigh Clearance	5.5 - 6.1	6.1
G - Back of Elbow to Wrist Pivot	11.4 - 12.0	11.5
H - Skull Cap Skin to Backline	1.6 - 1.8	1.7
I - Shoulder Elbow Length	13.0 - 13.6	13.0
J - Elbow Rest Height	7.5 - 8.3	8.0
K - Buttock Knee Length	22.8 - 23.8	23.5
L - Popliteal Height	16.9 - 17.9	17.0
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	8.8
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	4.0
Y - Chest Circumference	38.2 - 39.4	39.0
Z - Waist Circumference	32.9 - 34.1	33.5

Note: (See next page for external dimensions)

HYBRID III EXTERNAL DIMENSIONS



SIDE VIEW.



FRONT VIEW

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 (CONT.)

DUMMY NO.: 066 DUMMY CALIBRATION BY: Al Chalmers

VERIFICATION DATE: 06-09-95

VERIFICATION LABORATORY TEMPERATURE (66° - 78°): 70°

1.0 HEAD DROP TEST

	SPECIFICATION	MEASUREMENT
Peak Resultant Acceleration	225 - 275 G	261
Peak Lateral Acceleration	15 G. MAX	6
Is Acceleration Curve Unimodal	within 10% of peak	Yes

2.0 NECK FLEXION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		22.6 - 23.4 FT/SEC	22.9
Pendulum Deceleration	10 MS	22.50 - 27.50 G	22.95
	20 MS	17.60 - 22.60 G	20.72
	30 MS	12.50 - 18.50 G	14.13
Max. Pendulum G Above 30 MS		29.0 G MAX	14.1
Deceleration - Time Curve Decay Time to 5 G		34 - 42 MS	39
D Plane Rotation	MAX	64 - 78 DEG.	74
	TIME	57 - 64 MS	59
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 MS	116
Moment About Occipital Condyle	MIN.	65 - 80 FT.LBS	71
	TIME	47 - 58 MS	52
Positive Moment - Time Curve Decay Time to Zero		97 - 107 MS	105

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

3.0 NECK EXTENSION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		19.50 - 20.30 F/S	19.97
Pendulum Deceleration	10 MS	17.20 - 21.20 G	18.23
	20 MS	14.00 - 19.00 G	16.09
	30 MS	11.00 - 16.00 G	12.74
Max. Pendulum G Above 30 MS		22 G Max	13
Deceleration - Time Curve Decay Time to 5 G		38 - 46 MS	45
D Plane Rotation	MAX	81 - 106 DEG.	101
	TIME	72 - 82 MS	78
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 MS	158
Moment About Occipital Condyle	MIN.	-59.0/-39.0 FT LBS	-48.3
	TIME	65 - 79 MS	72
Positive Moment - Time Curve Decay Time to Zero		120 - 148 MS	145

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.	2.52
Peak Resistive Force	1160 to 1325 LBS.	1318
Internal Hysteresis	69 to 85%	73

5.0 KNEE IMPACT TESTS

LEFT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	6.9
Maximum Force	1060 - 1300 LBS.	1079

RIGHT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	6.9
Maximum Force	1060 - 1300 LBS.	1073

APPENDIX D

Dummy, Vehicle and Laboratory Calibration Data

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 065

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	AAMN8	Endevco	02/05/95
Head Y	ACC61	Endevco	01/11/95
Head Z	ACCW9	Endevco	02/02/95
Head X Redundant	AJ621	Endevco	02/02/95
Head Y Redundant	AJ619	Endevco	02/02/95
Head Z Redundant	AHY54	Endevco	02/02/95
Chest X	ACC78	Endevco	02/07/95
Chest Y	ACCE6	Endevco	02/07/95
Chest Z	ACCY3	Endevco	02/07/95
Chest X Redundant	AJ9J7	Endevco	02/07/95
Chest Y Redundant	AJ7A2	Endevco	02/07/95
Chest Z Redundant	AJ819	Endevco	02/07/95
Right Femur Load Cell	259	Denton	02/13/95
Left Femur Load Cell	260	Denton	02/13/95
Pelvis X	ALB87	Endevco	02/10/95
Pelvis Y	AGNB3	Endevco	02/10/95
Pelvis Z	AJ834	Endevco	02/10/95

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 065

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Neck Load Cell X	442	Denton	01/14/95
Neck Load Cell Y	442	Denton	01/14/95
Neck Load Cell Z	442	Denton	01/14/95
Neck Moment X	442	Denton	01/14/95
Neck Moment Y	442	Denton	01/14/95
Neck Moment Z	442	Denton	01/14/95
Chest Deflection Gauge	065	Servo	03/13/95
Lap Belt Load Cell	690	Lebow	04/12/95
Torso Belt Load Cell	624	Lebow	04/13/95

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 065

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Right Tibia Moment X	040	Denton	04/14/95
Upper Right Tibia Moment Y	040	Denton	04/14/95
Lower Right Tibia Moment Y	034	Denton	04/13/95
Lower Right Tibia Force X	034	Denton	04/13/95
Lower Right Tibia Force Z	034	Denton	04/13/95
Upper Left Tibia Moment X	023	Denton	04/14/95
Upper Left Tibia Moment Y	023	Denton	04/14/95
Lower Left Tibia Moment Y	019	Denton	04/13/95
Lower Left Tibia Force X	019	Denton	04/13/95
Lower Left Tibia Force Z	019	Denton	04/13/95

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 066

	PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	ACCY6	Endevco	03/17/95
Head Y	ACCH1	Endevco	08/17/95
Head Z	AAMW5	Endevco	03/17/95
Head X Redundant	AJ9D2	Endevco	03/17/95
Head Y Redundant	AH1E2	Endevco	03/17/95
Head Z Redundant	AJ7K3	Endevco	03/17/95
Chest X	ACCY1	Endevco	02/02/95
Chest Y	ACCC8	Endevco	02/02/95
Chest Z	ACCT7	Endevco	02/02/95
Chest X Redundant	AJ9D4	Endevco	02/06/95
Chest Y Redundant	AJ9F3	Endevco	02/02/95
Chest Z Redundant	AJ9D9	Endevco	02/06/95
Right Femur Load Cell	261	Denton	02/13/95
Left Femur Load Cell	262	Denton	02/13/95
Pelvis X	ALDY8	Endevco	02/10/95
Pelvis Y	ALEK9	Endevco	02/10/95
Pelvis Z	ALE80	Endevco	02/10/95

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 066

	PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Neck Load Cell X	443	Denton	01/14/95
Neck Load Cell Y	443	Denton	01/14/95
Neck Load Cell Z	443	Denton	01/14/95
Neck Moment X	443	Denton	01/14/95
Neck Moment Y	443	Denton	01/14/95
Neck Moment Z	443	Denton	01/14/95
Chest Deflection Gauge	066	Servo	01/31/95
Lap Belt Load Cell	657	Denton	04/12/95
Torso Belt Load Cell	691	Denton	04/12/95

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 066

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Right Tibia Moment X	439	Denton	04/17/95
Upper Right Tibia Moment Y	439	Denton	04/17/95
Lower Right Tibia Moment Y	427	Denton	04/14/95
Lower Right Tibia Force X	427	Denton	04/14/95
Lower Right Tibia Force Z	427	Denton	04/14/95
Upper Left Tibia Moment X	437	Denton	04/17/95
Upper Left Tibia Moment Y	437	Denton	04/17/95
Lower Left Tibia Moment Y	425	Denton	04/17/95
Lower Left Tibia Force X	425	Denton	04/17/95
Lower Left Tibia Force Z	425	Denton	04/17/95

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

VEHICLE ACCELEROMETERS		
	SERIAL NO.	CALIBRATION DATE
Left Rear Seat Crossmember X	E24-G05	06/26/95
Right Rear Seat Crossmember X	E25-G11	06/26/95
Top of Engine Block X	L15-G06	02/08/95
Bottom of Engine X	MGA122	04/24/95
Left Brake Caliper X	B12-G18	04/10/95
Right Brake Caliper X	MGA141	12/12/94
Instrument Panel X	E24-G04	06/26/95
Redundant Left Rear Seat Crossmember X	E24-G01	06/26/95
Redundant Right Rear Seat Crossmember X	E24-G07	06/26/95

LABORATORY INSTRUMENTS		
	SERIAL NO.	CALIBRATION DATE
Neck Bending Pendulum Accelerometer	AH5N9	05/08/95
Neck Bending Head Rotary Potentiometer	018	03/13/95
Neck Bending Rendulum Rotary Potentiometer	019	03/13/95
Chest Probe Accelerometer	403071	01/11/95
Knee Impact Accelerometer	MGA001	04/21/95

APPENDIX E

Vehicle Owner's Occupant Restraint System Instructions

SEAT BELTS

PRECAUTIONS ON SEAT BELT USAGE

Your chances of being injured or killed in an accident and/or the severity of injury may be greatly reduced if you are wearing your seat belt and it is properly adjusted. NISSAN strongly encourages you and all of your passengers to buckle up every time you drive, even if your seating position includes an air bag.

Some states, provinces or territories require that seat belts be worn at all times when a vehicle is being driven.

WARNING:

- Every person who drives or rides in this vehicle should use a seat belt at all times. Children should be in appropriate child restraints.
- The belt should be properly adjusted to a snug fit. Failure to do so will reduce the effectiveness of the entire restraint system and increases the chances or severity of injury in an accident.
- Do not wear the belt inside out or twisted. Be sure the seat belt tongue

is securely fastened to the proper buckle.

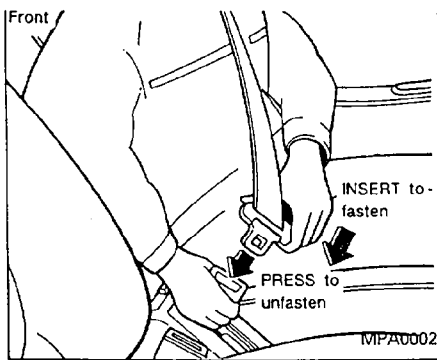
- Do not allow more than one person to use the same belt.
- All seat belt assemblies including retractors and attaching hardware should be inspected by your NISSAN dealer after any collision. NISSAN recommends that all seat belt assemblies in use during a collision be replaced unless the collision was minor and the belts show no damage and continue to operate properly. Seat belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.
- Never carry more people in the vehicle than there are seat belts.

If the seat belt warning lamp glows continuously while the ignition is turned "ON" with all doors closed and all seat belts fastened, it may indicate a malfunction in the system. Have the system checked by your NISSAN dealer.

Be sure to observe the following cautions when using seat belts. Failure to do

so could increase the chance and/or severity of injury in an accident.

- Always route the shoulder belt over your outer shoulder and across your chest. Never run the belt under your arm or across your neck. The belt should be away from your face and neck, but not falling off your shoulder.
- Position the lap belt as low as possible AROUND THE HIPS, NOT THE WAIST.
- Serious injury or death can occur if seat belt is not worn properly.



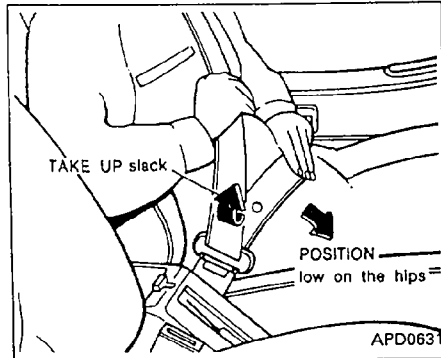
3-POINT TYPE WITH RETRACTOR

Every person who drives or rides in this vehicle should wear a seat belt at all times.

Fastening the belts

1. Adjust the seat.

The seatback should not be reclined any more than needed for comfort. Seat belts are most effective when the passenger sits well back and straight up in the seat. If the seat is reclined, the risk of sliding under the lap belt and being injured is increased.



3. Position the lap belt portion **low on the hips** as shown.
4. Pull the shoulder belt portion toward the retractor to take up extra slack.

The front seat passenger side lap belt and rear 3-point seat belts have a cinching mechanism for child seat installation. It is referred to as the automatic locking mode.

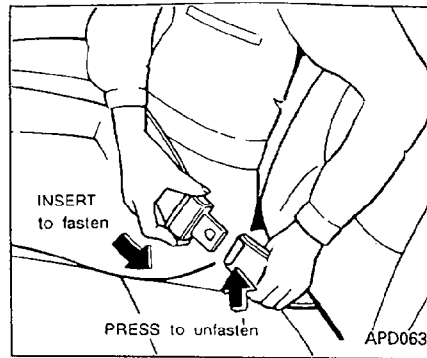
When the cinching mechanism is activated the seat belt cannot be withdrawn again until the seat belt tongue is detached from the buckle and fully retracted. Refer to "Child Restraints for Infants and Small Children" later in this section for more information.

WARNING:

- The automatic locking mode should be used only for child seat installation. During normal seat belt use by a passenger, the locking mode should not be activated. If it is activated it may cause uncomfortable seat belt tension.

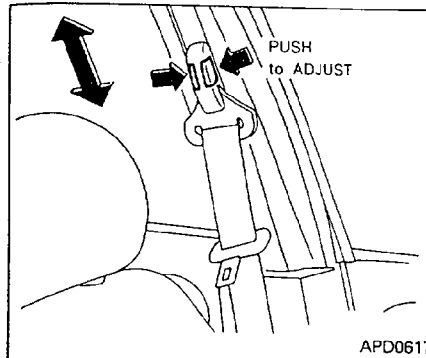
Unfastening the belts

To unfasten the belt, press the button on the buckle. The seat belt will automatically retract.



2. Slowly pull the seat belt out of the retractor and insert the tongue into the buckle until it snaps.

The retractor is designed to lock during a sudden stop or on impact. A slow pulling motion will permit the belt to move, and allow you some freedom of movement in the seat.



Shoulder belt height adjustment (For front seats) (If so equipped)

The shoulder belt anchor height should be adjusted to the position best for you. (See "Precautions on Seat Belt Usage".) To adjust, press both release buttons and move it to the desired position so that the belt passes over the center of the shoulder. The belt should be away from your face and neck, but not falling off of your shoulder.

WARNING:

After adjustment, release the button and check that it does not move up and down

to make sure the shoulder belt anchor is securely fixed in position.

Checking seat belt operation (3-point type with retractor)

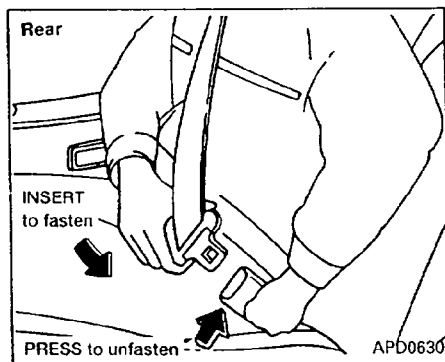
Your seat belt retractors are designed to lock belt movement by two separate methods:

- 1) When the belt is pulled quickly from the retractor.
- 2) When the vehicle slows down rapidly.

To increase your confidence in the belts, check the operation as follows:

- Grasp the shoulder belt and pull forward quickly. The retractor should lock and restrict further belt movement.

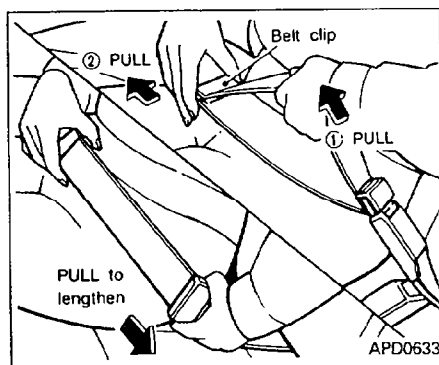
If the retractor does not lock during the check or if you have any question about the operation, see your NISSAN dealer.



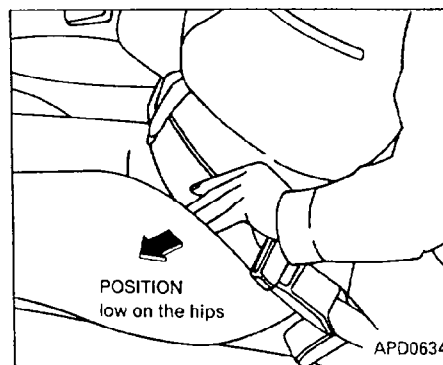
2-POINT TYPE WITHOUT RETRACTOR (rear center lap belt)

Fastening the belts

1. Insert the tongue into the buckle marked **CENTER** until it snaps.



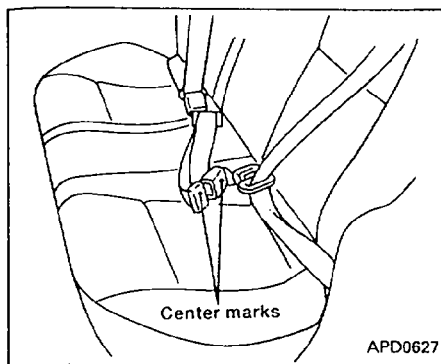
2. To lengthen, hold the tongue at a right angle to the belt and pull on the belt. To shorten, pull the end of the belt attached to the belt clip away from the tongue, then pull the belt clip to take up the slack.



3. Position the lap belt **low on the hips** as illustrated.

Unfastening the belts

To unfasten the belt, press the button on the buckle.



Selecting correct set of belts

The center seat belt buckle and tongue are identified by the "CENTER" label. The center seat belt tongue can be fastened **only** into the center seat belt buckle.

SEAT BELT EXTENDERS

If, because of body size or driving position, it is not possible to properly fit the lap-shoulder belt and fasten it, an extender is available which is compatible with the installed seat belts. The extender adds approximately 8 inches (200 mm) of length and may be used for either the driver or front passenger seating position. See your NISSAN dealer for assistance if the extender is required.

WARNING:

- Only NISSAN belt extenders, made by the same company which made the original equipment belts, should be used with NISSAN belts.
- Persons who can use the standard seat belt should not use an extender. Such unnecessary use could result in serious personal injury in the event of an accident.

SEAT BELT MAINTENANCE

- To clean the belt webbing, apply a mild soap solution or any solution recommended for cleaning upholstery or carpets. Then brush the webbing, wipe it with a cloth and allow it to dry in the shade. Do not allow the belts to retract until they are completely dry.
- Periodically check to see that the belt and metal components, such as buckles, tongues, retractors, flexible wires and anchors work properly. If loose parts, deterioration, cuts or other damage on the webbing is found, the entire belt assembly should be replaced.

SUPPLEMENTAL RESTRAINT SYSTEM (AIR BAG SYSTEM)

This Supplemental Restraint System section contains important information concerning the driver and passenger air bags. The Supplemental Restraint System Air Bag can help reduce impact force to the driver and to the front passenger in certain frontal collisions. The air bags are designed to **supplement** the crash protection provided by the driver and front passenger seat belts and are **not a substitute** for them. The seat belts should always be correctly worn and the driver and front passenger seated a suitable distance from the steering wheel and instrument panel. (See "Seat belts" for instructions and precautions on seat belt usage.)

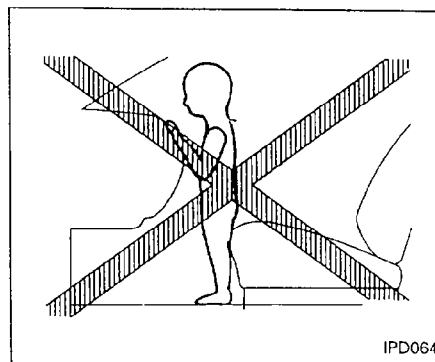
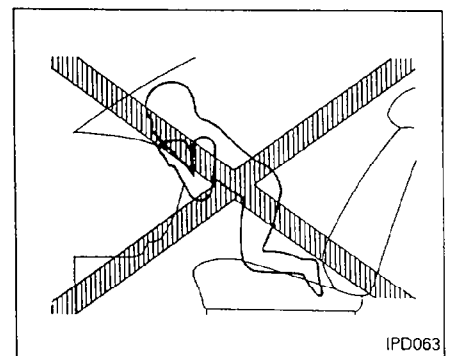
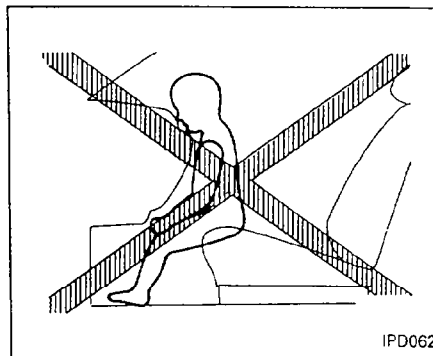
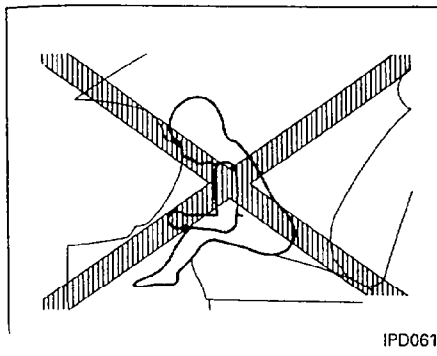
The air bags will operate only when the ignition switch is in the "ON" or "START" position.

WARNING:

The air bags ordinarily will not inflate in the event of a side impact, rear impact, roll over, or lower severity frontal collision; so always wear your seat belts to help reduce the risk or severity of injury in various kinds of accidents.

WARNING:

The seat belts and the air bags are most effective when you are sitting back and upright in the seat. Air bags inflate with great force. If you are unrestrained, leaning forward, sitting sideways or out of position in any way, you are at greater risk of injury or death in a crash and may also receive serious or fatal injuries from the air bag if you are up against it when it inflates. Always sit back against the seatback and use the seatbelts.

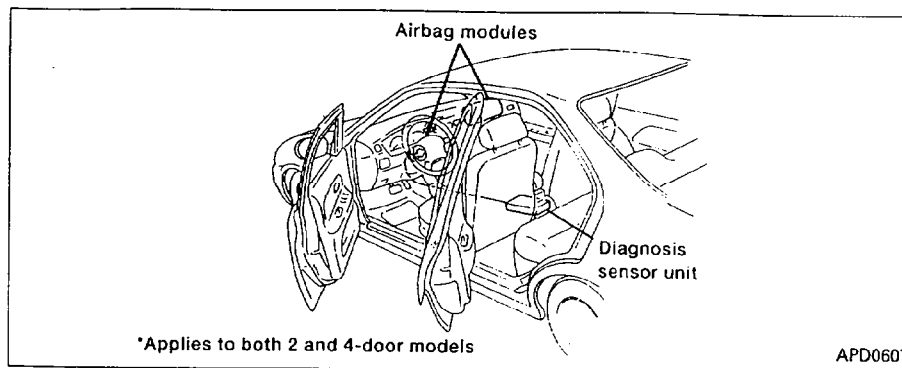


WARNING:

Never let children ride unrestrained as shown in the previous illustrations.

Children may be severely injured or killed when the air bag inflates if they are not properly restrained.

Also, never install a rear-facing child restraint in the front seat. See "Child restraints for infants and small children" for details.



Air bag system

The driver air bag is located in the center of the steering wheel; the front passenger air bag is mounted in the dashboard above the glove box. The air bag system is designed to inflate in higher severity frontal collisions, although it may inflate if the forces in another type of collision are similar to those of a higher severity frontal impact. It may not inflate in certain frontal collisions. Vehicle damage (or lack of it) is not always an indication of proper air bag operation.

When the air bag inflates, a fairly loud noise may be heard, followed by release of

smoke. This smoke is not harmful and does not indicate a fire, but care should be taken not to intentionally inhale it, as it may cause irritation and choking. Those with a history of breathing trouble should get fresh air promptly.

Air bags, along with the use of the seat belts, help to cushion the impact force on the face and chest of the occupant. They can help save lives and reduce serious injuries. However, an inflating air bag may cause facial abrasions or other injuries. Air bags do not provide restraint to the lower body.

The seat belts should be correctly worn and the driver and passenger be seated upright as far as practical away from the steering wheel or dashboard. Since the air bag inflates quickly in order to help protect the occupant, the force of the air bag inflating can increase the risk of injury if the occupant is too close to or is against the air bag module during inflation.

The air bag will deflate quickly after a collision.

The air bags will operate only when the ignition switch is in the "ON" or "START" position.

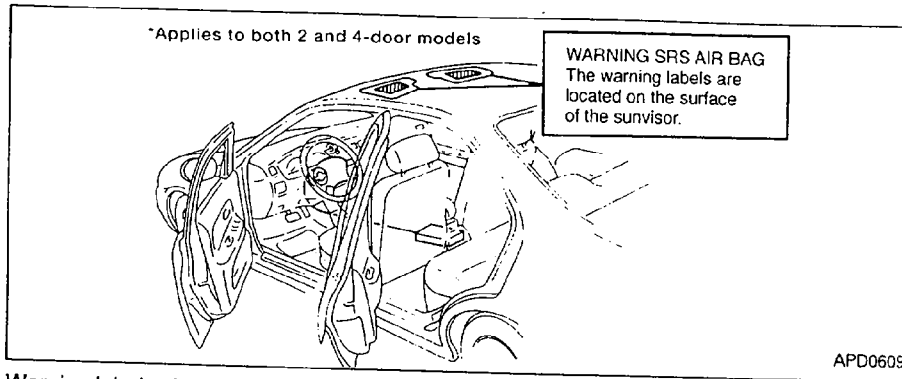
WARNING:

- Right after inflation, several air bag system components will be hot. Do not touch them; you may severely burn yourself.
- No unauthorized changes should be made to any components or wiring of the air bag system. This is to prevent accidental inflation of the air bag or damage to the air bag system.
- Tampering with the air bag system may result in serious personal injury.

Tampering includes changes to or replacement of the steering wheel, placing material over the steering wheel pad and above the dashboard or, installing additional trim material around the air bag system.

- Do not place objects on the steering wheel pad or on the instrument panel. Also, do not place any objects between any occupant and the steering wheel or instrument panel. Such objects may become dangerous projectiles and cause injury if the air bag inflates.
- Work around and on the air bag system should be done by an authorized NISSAN dealer. Installation of electrical equipment should also be done by an authorized NISSAN dealer. The yellow SRS wiring should not be modified or disconnected. Unauthorized electrical test equipment and probing devices should not be used on the air bag system.

WARNING LABELS



Warning labels about the air bag system are placed in the vehicle as shown in the illustration.

"START" position, the air bag warning light will illuminate for about 7 seconds and then turn off. This means the system is operational.

If any of the following conditions occur, the air bag needs servicing:

1. The air bag light does not come on and remain on for 7 seconds and then go off as described above.
2. The air bag light flashes intermittently or remains on.
3. The air bag light does not come on at all.

Under these conditions, the Supplemental Restraint System Air Bag will not operate properly. It must be checked and repaired. Take your vehicle to the nearest authorized NISSAN dealer.

Repair and replacement procedure

The air bag system is designed to inflate on a one-time-only basis. As a reminder, unless it is damaged, the air bag light will remain illuminated after inflation has occurred. Repair and replacement of the air bag system should be done only by an authorized NISSAN dealer.

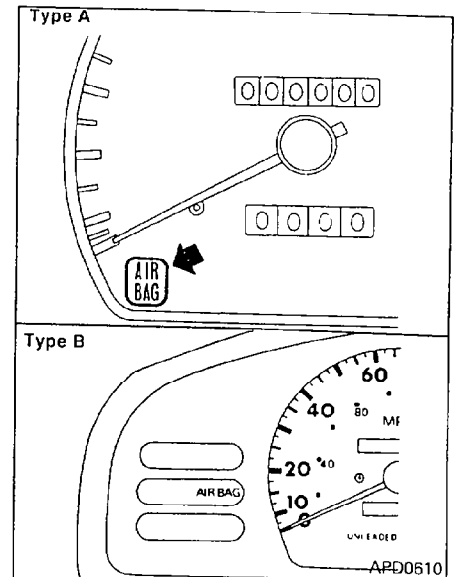
To ensure long-term functioning, the system must be inspected 10 years after the date of manufacture as noted on the certification label located on the driver side center pillar.

When maintenance work is required on the vehicle, the air bag system and related parts should be pointed out to the person conducting the maintenance. The ignition key must always be in the "LOCK" position when working under the hood or inside the vehicle.

WARNING:

- Once the air bag inflates, the air bag module will not function again and must be replaced. The air bag module cannot be repaired.
- After an air bag inflates, the front instrument panel assembly should be replaced by your NISSAN dealer.
- The air bag system should be inspected by an authorized NISSAN dealer if there is any damage to the front end portion of the vehicle or if the air bag has inflated.
- When selling your vehicle, we request

AIR BAG WARNING LIGHT



The air bag light, displaying "AIR BAG" in the instrument panel, monitors the circuits of the air bag. The circuits monitored by the air bag light are the diagnosis sensor unit, air bag modules and all related wiring.

When the ignition key is in the "ON" or

that you inform the buyer about the air bag system and guide the buyer to the appropriate sections in this Owner's Manual.

- If you need to dispose of the air bag or scrap the vehicle, contact an authorized NISSAN dealer. Correct air bag disposal procedures are set forth in the appropriate NISSAN Service Manual. Incorrect disposal procedures could cause personal injury.