

REPORT NO. MGA-94-N004

NEW CAR ASSESSMENT PROGRAM (NCAP)

FRONTAL BARRIER IMPACT TEST

Honda
1994 Honda Accord LX
4 Door
NHTSA NO. MR5301

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: March 1, 1994

Report Date: April 7, 1994

FINAL REPORT

Prepared For:

U. S. DEPARTMENT OF TRANSPORTATION
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 1994 Honda Accord LX Door at the MGA Proving Grounds and Crash Test Center in Burlington, WI. on March 1, 1994. The barrier impact velocity was 56.6 kph (35.2 mph), and the ambient temperature at the time of impact was 22° C. The post-test maximum static crush was 519 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 618 and the 3 msec. Clip (Chest g's) was 52.8 g's. The left and right maximum femur loads for the driver were 5719 and 3005 Newtons, respectively. The passenger's HIC was 935 and the 3 msec Clip was 51.5. The left and right femur maximum loads were 2622 and 2790 Newtons respectively.			
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SECTION 1

PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is part of the Composite FY'93 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 1994 Honda Accord LX 4-Door at a velocity of 56.6 kph (35.2 mph). The test was performed at the MGA Proving Grounds and Crash Test Center on March 1, 1994. 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 triaxial accelerometers, six channel neck transducers, chest displacement transducers, and right/left femur load cells. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver ATD (Serial No. 36) was used in a prior test and did not exceed the injury criteria limits. The right-front passenger ATD (Serial No. 37) was calibrated prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C and D.

The 50 channels of data were recorded on 5 computers. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

The driver's head struck the inflated airbag. The driver's HIC was 618. The maximum chest deceleration over 3 milliseconds was 52.8 G's. The left and right maximum femur loads were 5719 and 3005 Newtons respectively.

The right front passenger's head struck the inflated airbag. The right front passenger's HIC was 935 and maximum chest deceleration over 3 milliseconds was 51.5 g's. The left and right femur loads were 2622 and 2790 Newtons respectively.

GENERAL TEST AND VEHICLE PARAMETER DATA

Vehicle Yr/Make/Model/Body Style: 1994 Honda Accord LX 4 Door

NHTSA No.: MR5301 VIN.: 1HGCD5637RA054341

Body color: Red Date of Manufacture: 11-93

Engine: 4 Cylinders; 132 C.I.D.; liters; 2156 CC

X Gas; Diesel; Turbocharged

 Longitudinal; X Transverse

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

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

Date Received: 1-13-94 Odometer Reading: 96.3

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

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

Type of Occupant Restraint: 3 point lap and shoulder belts with adjustable D-ring. Driver and passenger airbags

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 2.25 kg/cm² 32 Psi; Rear 2.25 kg/cm² 32 Psi;

Recommended Tire Size: P185/70R14

Recommended Cold Tire Pressure: Front 2.25 kg/cm²; Rear 2.25 kg/cm²

Tires on Vehicle: P185/70R14; 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; X Lever; Rot. Knob

Vehicle Capacity Weight (VCW) = 385.6 kg. (A)

No. of Occupants x 68 kg. = 340 kg. (B)

Rated Cargo Weight (RCW) A-B = 45.6 kg.

GVWR 1775.8 kg. GAWR: Front 970.7 kg.; Rear 821 kg.

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

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

Right Front = 407.3 kg Right Rear = 249.5 kg
Left Front = 416.4 kg Left Rear = 242.7 kg
TOTAL FRONT WEIGHT = 823.7 kg (62.6% of Total Vehicle Weight)
TOTAL REAR WEIGHT = 492.2 kg (37.4% of Total Vehicle Weight)
TOTAL UNLOADED DELIVERED WEIGHT (UDW) = 1315.9 kg

CALCULATION FOR TARGET TEST WEIGHT:

UDW = Unloaded Delivered Weight 1315.9 kg
VCW = Vehicle Capacity Weight 385.6 kg DSC = Designated Seating Capacity 5
RCW = VCW - 68 (DSC) = 45.6 *kg
Target Test Weight = UDW + RCW + (2 dummies x 75.8 kg/dummy)
Target Test Weight = 1513.1 kg

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND CARGO:

Right Front = 436.8 kg Right Rear = 313.0 kg
Left Front = 443.6 kg Left Rear = 315.2 kg
TOTAL FRONT WEIGHT = 880.4 kg (58.6% of Total Vehicle Weight)
TOTAL REAR WEIGHT = 628.3 kg (41.4% of Total Vehicle Weight)
TOTAL TEST WEIGHT = 1508.7 kg
Weight of ballast secured in vehicle = 90.7 kg
Vehicle components removed to meet target weight or to make room for instrumentation: rear seat,
spare tire and jack, trunk carpeting, left rear tail light

VEHICLE ATTITUDE (all dimensions in mm):

Delivered Attitude: RF 702 LF 702 RR 690 LR 690
Test Attitude: RF 667 LF 676 RR 632 LR 630
Wheel Base: 2715 mm; C.G. = 1131 mm rearward of front wheel C/L
Remarks: None

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

GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

POST-IMPACT DATA:

Type of Test: 35 mph Frontal Impact Impact Angle: 90°
 Date of Test: March 1, 1994 Time of Test: 4:17 p.m.
 Ambient Temperature: 22 °C (Spec. Range = 18.8 to 25.6°C)
 Temperature in Occupant Compartment: 22 °C
 Windshield Molding Temperature: 22 °C
 Required Impact Velocity Range: 55.5 to 57.1 kph
 Impact Velocity: primary = 56.6 kph; secondary = 56.7 kph
 Distance From Front Bumper to Barrier Face When
 Entering Speed Trap: 1400 mm
 Exiting Speed Trap: 400 mm

VEHICLE REBOUND AND CRUSH (mm):

Vehicle Length: Pre-test = R 4430 C_L 4675 L 4475
 Post-test = R 3967 C_L 4050 L 4005
 Crush = R 463 C_L 625 L 470

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

R 536 mm C_L 515 mm L 564 mm

VISIBLE DUMMY CONTACT POINTS:

	<u>Driver</u>	<u>Passenger</u>
Head	<u>Airbag</u>	<u>Airbag</u>
Chest	<u>Airbag</u>	<u>Airbag</u>
Abdomen	<u>Unknown</u>	<u>Unknown</u>
Left Knee	<u>Dash panel</u>	<u>Dash panel</u>
Right Knee	<u>Dash panel</u>	<u>Dash panel</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>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>

	<u>Front</u>		<u>Rear</u>	
<u>Seat Movement</u>	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
Seat Back Movement	<u>0</u>	<u>0</u>	<u>N/A</u>	<u>N/A</u>
Seat Shift (mm)	<u>0</u>	<u>41 mm forward</u>	<u>N/A</u>	<u>N/A</u>

Glazing Damage

Backlight/Windshield Windshield

Other Notable Impact Effects: None

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.:

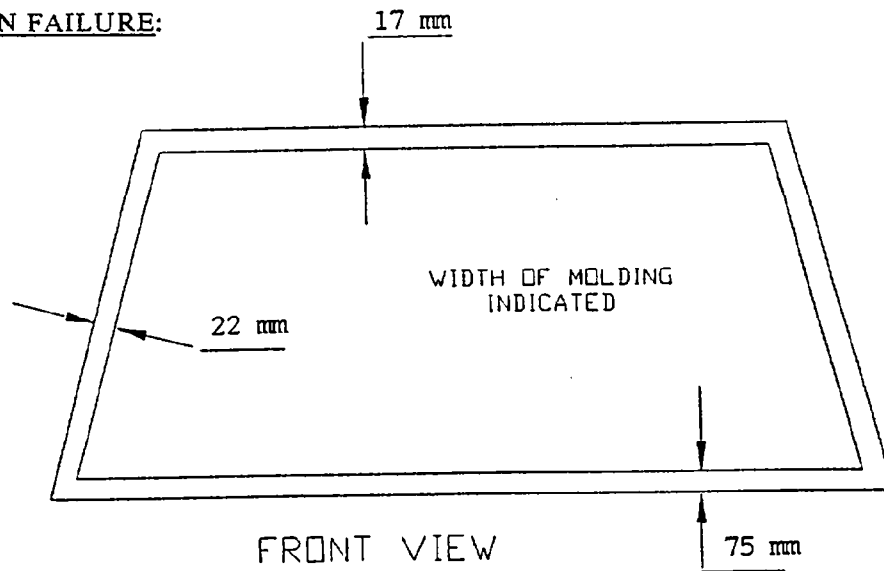
Rubber with glue retention

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	2188	2192	100%
LEFT SIDE	2188	2192	100%
TOTAL	4376	4384	100%

AREA OF RETENTION FAILURE:



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 top surface of the instrument panel including padding. Draw the locus of points on the inner surface of the windshield contacted 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= 1150 mm

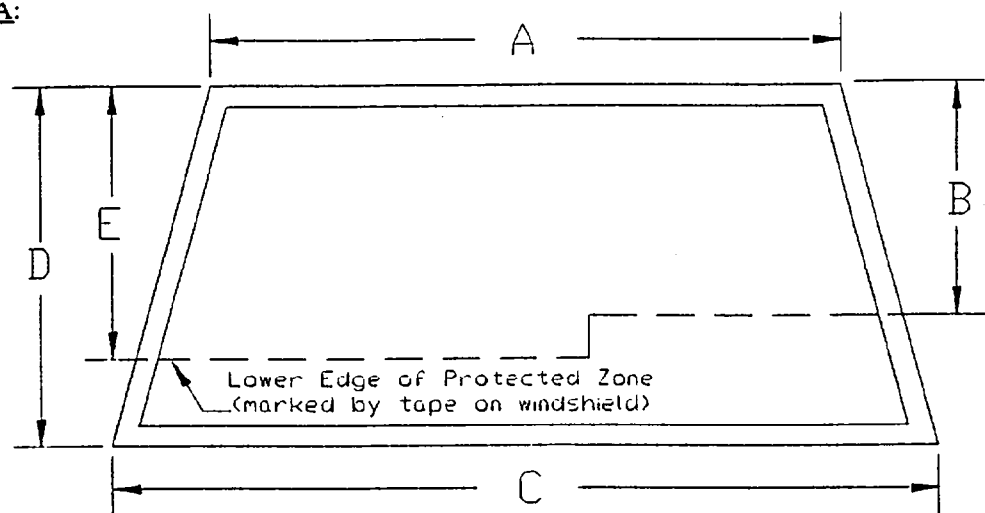
B= 438 mm

C= 1565 mm

D= 830 mm

E= 560 mm

F= 624 mm



FRONT VIEW

* Protected zone straight across windshield

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.: MR5301 Test Date: March 1, 1994

Vehicle Mfgr./Make/Model: Honda/Accord/LX 4 Door

Usable Capacity of Vehicle's Fuel Tank: 53 Liters
(figure furnished by vehicle manufacturer)

TEST REQUIREMENTS:

Test vehicle's engine operated to "run dry" condition, and then a small amount of stoddard solvent which has been dyed red shall be added to the vehicle's fuel tank. Operate the fuel pump enough to completely fill the fuel system ahead of the fuel tank, and add 92 to 94% of the stated **USABLE CAPACITY** to the fuel tank.

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

48.8 Liters which is 92 % of the stated USABLE CAPACITY.

[illegible]

FUEL SPILLAGE MEASUREMENT:

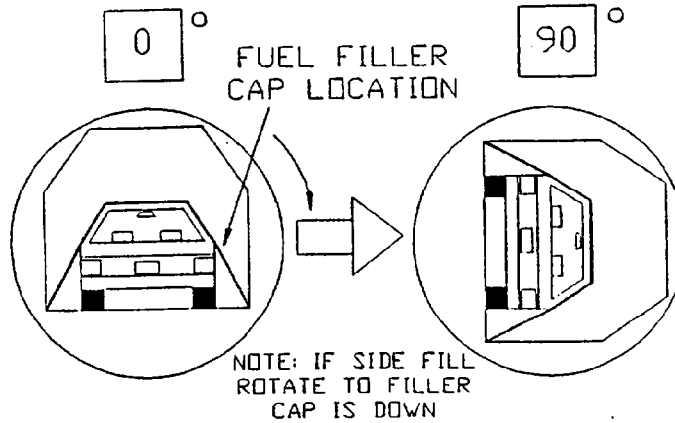
	ACTUAL	MAX ALLOWED
1. From impact until vehicle motion ceases	Ø	1 OZ
2. For 5 minute period after vehicle motion ceases	Ø	5 OZ
3. For next 25 minutes	Ø	1 oz./1 MIN

SOLVENT SPILLAGE DETAILS: None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 0° - 90°

Vehicle NHTSA ID No.: MR5301



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 50 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds
TOTAL 7 minutes 50 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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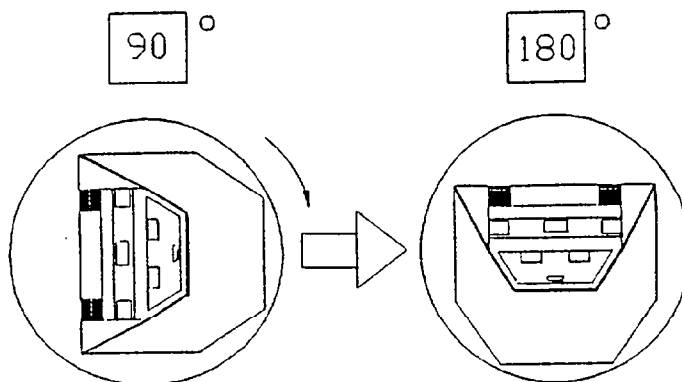
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 90° - 180°

Vehicle NHTSA ID No.: MR5301



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 36 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds
TOTAL 7 minutes 36 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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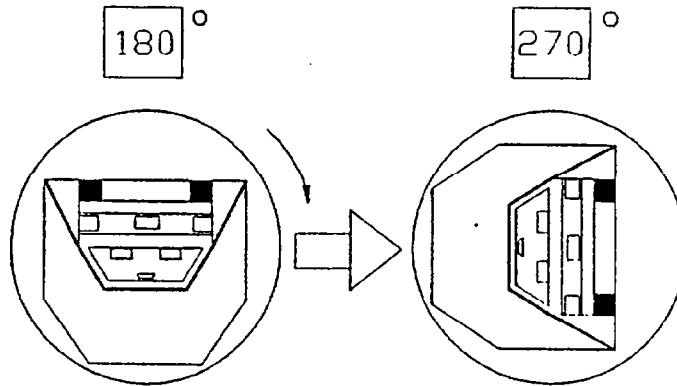
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 180° - 270°

Vehicle NHTSA ID No.: MR5301



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 19 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds
TOTAL 7 minutes 19 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
---	---	---	---

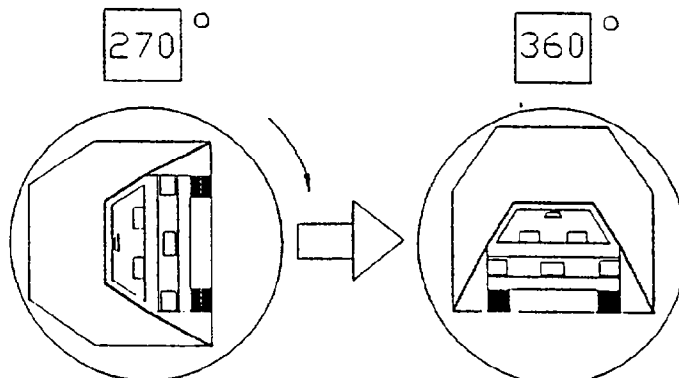
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: 270° - 360°

Vehicle NHTSA ID No.: MR5301



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 47 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 47 seconds
TOTAL 7 minutes 47 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. "Occupant Crash Protection Data Sheet"
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: 1994/Honda/Accord/LX 4 Door

VEH. NHTSA NO.: MR5301 TEST DATE: March 1, 1994

MAXIMUM ACCELERATION VALUES: (g's)	DRIVER DUMMY #36	PASSENGER DUMMY #37
Head Channel X	-58.8	-69.7
Head Channel Y	-19.0	-23.0
Head Channel Z	32.5	49.8
HEAD RESULTANT	67.1	84.8
Chest Channel X	-55.6	-51.8
Chest Channel Y	11.1	-9.9
Chest Channel Z	6.5	8.9
CHEST RESULTANT (CLIP)	52.8	51.5
TIME INTERVAL (msec) [0.003 seconds minimum]	t ₁ = 65.07 t ₂ = 68.13	t ₁ = 71.92 t ₂ = 74.98

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	618	935
t ₁ = (msec)	53.56	62.38
t ₂ = (msec)	86.86	94.20
Avg. Accel. t ₁ to t ₂ (g's)	51.0	61.3

[The maximum time interval from t₁ to t₂ is 36 milliseconds.]

MAXIMUM FEMUR FORCES:

Right Side (N)	-3005	-2790
Left Side (N)	-5719	-2622

MAXIMUM SEAT BELT FORCES:

Lap Belt (N)	5181	4502
Shoulder Belt (N)	6831	8622

NOTE: All values listed must occur during primary impact event.
(Head X,Y,Z and R listed must be during t₁ to t₂ HIC interval)

* Data Questionable

HYBRID III NECK AND CHEST DATA SHEET

VEHICLE YR./MAKE/MODEL/BODY STYLE: 1994/Honda/Accord/LX 4 Door

VEHICLE NHTSA NO.: MR5301 TEST DATE: March 1, 1994

MAXIMUM VALUES	DRIVER DUMMY # 36	PASSENGER DUMMY #37
Neck Load X (N)	-579	761
Neck Load Y (N)	191	356
Neck Load Z (N)	-1919	-1634
Neck Moment X (N.M)	-14.6	23.0
Neck Moment Y (N.M)	-76.2	-34.5
Neck Moment Z (N.M)	-21.5	-19.1
Chest Deflection X (mm)	45	41.0
Time of Max. Occurrence	76 msec	80 msec

PART 572 DUMMY IN-VEHICLE POSITION

Test No.: MR5301 Vehicle: Honda Accord LX 4 Door

SEAT TYPE:

 Bench
 X Bucket
 Split Bench

ADJUSTER TYPE:

Driver

 X Manual
 Power

Passenger

 X Manual
 Power

BUCKET SEAT BACK TYPE:

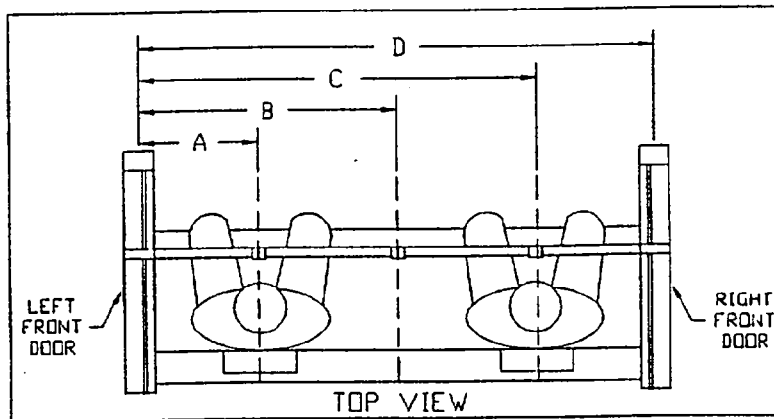
 Fixed
 X Adjustable Reclining

Driver

Seat notch 11 from rear most position
 out of 21

Passenger

Seat notch 11 from rear most position
 out of 21



36 DUMMY ID 37

A = Left Door to Driver Centerline	<u>408</u> mm
B = Left Door to Vehicle Centerline	<u>765</u> mm
C = Left Door to Right Passenger Centerline	<u>1138</u> mm
D = Left Door to Right Door	<u>1530</u> mm

FRONT SEAT MEASUREMENT TABLE

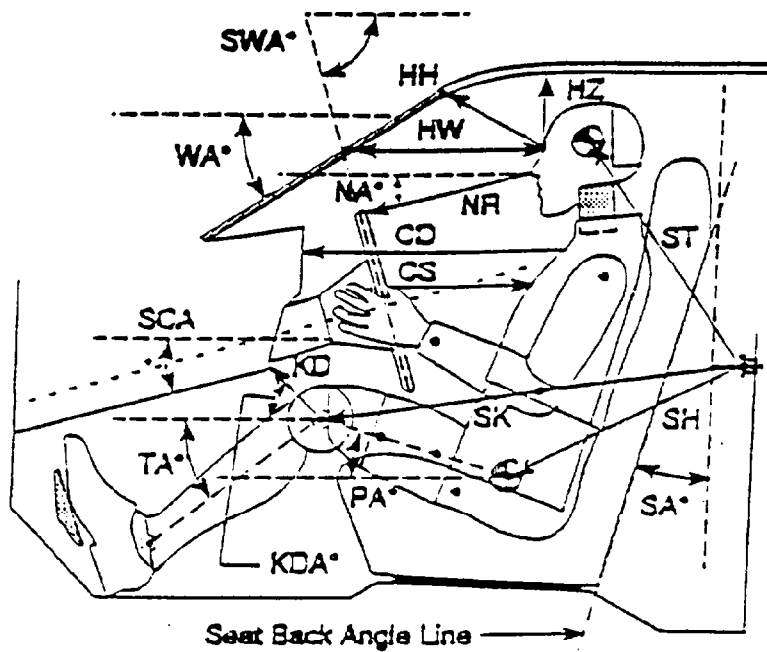
Units (mm)

	DRIVER (Serial #36)	PASSENGER (Serial #37)
WA°	26.8°	N/A
SWA°	65.5°	N/A
SCA°	24.5°	N/A
SA°	30°	30°
HZ	191	187
HH	342	333
HW	612	614
HR	204	200
NR	440 Angle 10.4°	N/A
CD	568	589
CS	331	N/A
RA	210	N/A
KDL	210 Angle 20.5°	228
KDR	192	214 Angle 17.7°
PA°	24.4°	21.4°
TA°	40.2°	41.3°
KK	312	242
ST	512 Angle 87.4°	499 Angle 85.4°
SK	565 Angle 4.7°	550 Angle .4°
SH	205 Angle 41.6°	243 Angle 36.5°
SHY	272	277
HS	284	242
HD	132	136
AD	114	86

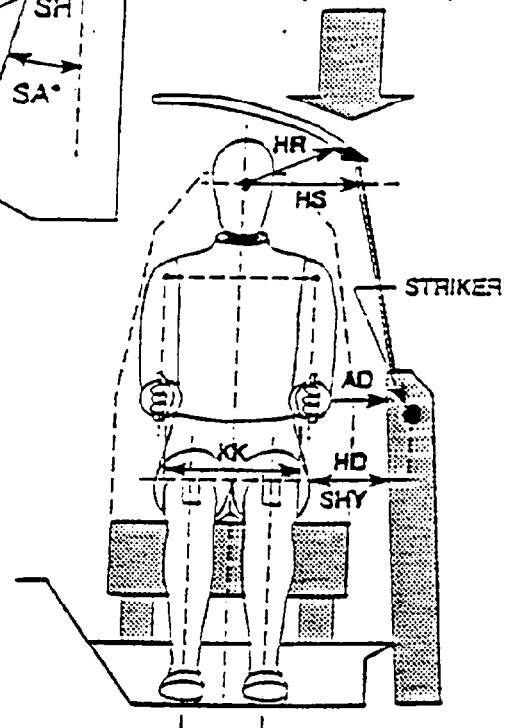
N/A = Not Applicable

N/R = Not Recordable

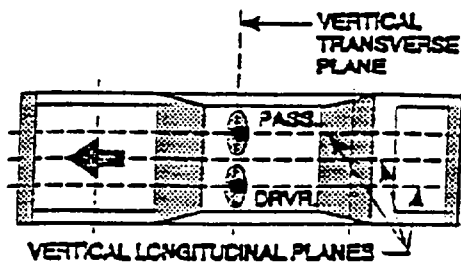
FRONT SEAT MEASUREMENTS



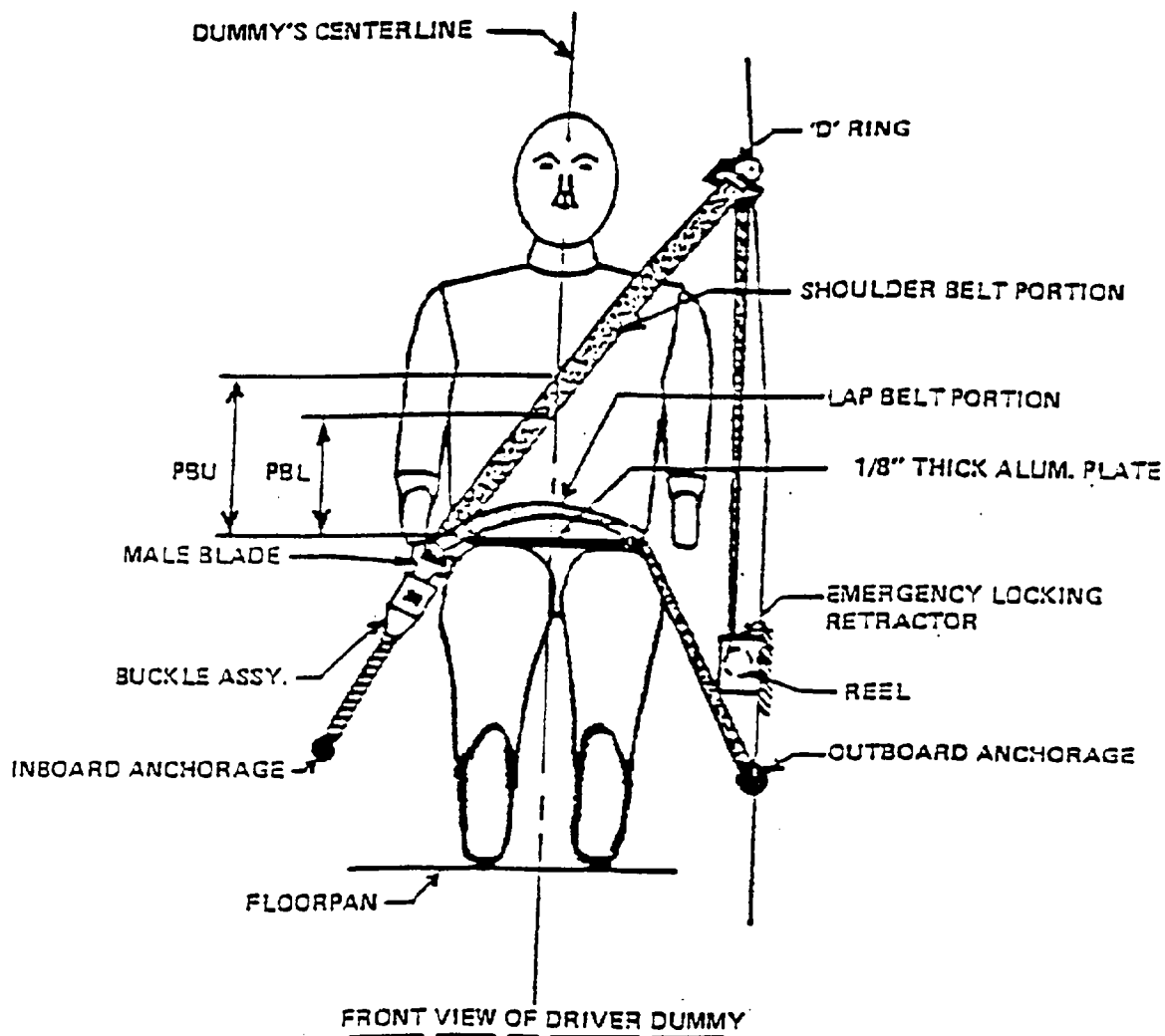
AD - Arm to Door
 HD - H-Point to Door
 HR - Head to Side Header
 HS - Head to Side Window
 KK - Knee to Knee
 SHY- Striker to H-Point (Y Direction)



CD - Chest to Dash
 CS - Steering Wheel to Chest
 HE - 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)

		DRIVER DUMMY	PASSENGER DUMMY
<u>PBU</u> --	Top surface of alum. plate to upper edge (mm)	336	327
<u>PBL</u> --	Top surface of alum. plate to belt lower edge (mm)	258	244
<u>LAP BELT TENSION</u> (kgs.)		<.9	<.9
<u>SHOULDER BELT TENSION</u> (kgs.)		<.9	<.9

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

<u>BELT LENGTH DATA:</u>	<u>Driver</u>	<u>Passenger</u>
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	<u>218 mm</u>	<u>212 mm</u>
Shoulder belt length as measured on Part 572 Dummy.	<u>847 mm</u>	<u>864 mm</u>
Lap belt length as measured on Part 572 Dummy.	<u>855 mm</u>	<u>832 mm</u>
Total	<u>1920</u>	<u>1908</u>

SHOULDER BELT SPOOL-OFF DATA:

As determined by film analysis	<u>51 mm</u>	<u>44 mm</u>
As determined mechanically	<u>75 mm**</u>	<u>79 mm**</u>
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>*</u>	<u>*</u>

RETRACTOR LOCK-UP TIME:

As determined by shoulder belt spool-off observed in on-board cameras	<u>47 msec</u>	<u>27 msec</u>
---	----------------	----------------

* No valid data record

** The surface that the belt spoolout was referenced to move during impact

NR = Not Recorded

CAMERA LOCATIONS

VEH. NHTSA NO.: MR5301 ; TEST DATE: March 1, 1994 ; TIME: 8:20 p.m.

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1994/Honda/Accord/LX 4 Door

	VIEW	CAMERA POSITIONS (mm.) *			ANGLE (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Left Side View						10	24
3	Left Front View	1050	7800	1100	90°	7390	25	1010
16	Steering Column Top	1930	7900	1560	90°	7490	25	800
15	Steering Column Bottom	1930	7900	1050	90°	-7490	25	1149
12	Left Driver Close- up	1600	8570	1100	90°	-8160	50	1000
*9	Left Angle	5500	6540	2200	50°	-6130	50	N/A
13	Driver Onboard Seat Belt						35	962
14	Passenger Onboard Seat Belt						35	1000
2	Right Overall	2850	-6770	1000	90°	-6360	13	976
17	Right Front	1400	-7400	1000	90°	-6990	25	1000
11	Right Passenger Close-up	1740	-6500	1000	90°	-6090	35	1000
10	Right Angle	7460	-5700	2400	50°	-5290	35	913
4	Top View Wide	300	0	4370		0	13	1111
8	Top Driver	-400	300	2440		100	13	1010
*7	Top Passenger	-400	-400	2440		10	13	N/A
5	Pit Engine	1000	0	-3150		0	13	909
6	Pit Fuel Tank	2750	0	-3150		0	13	870

COORDINATES:

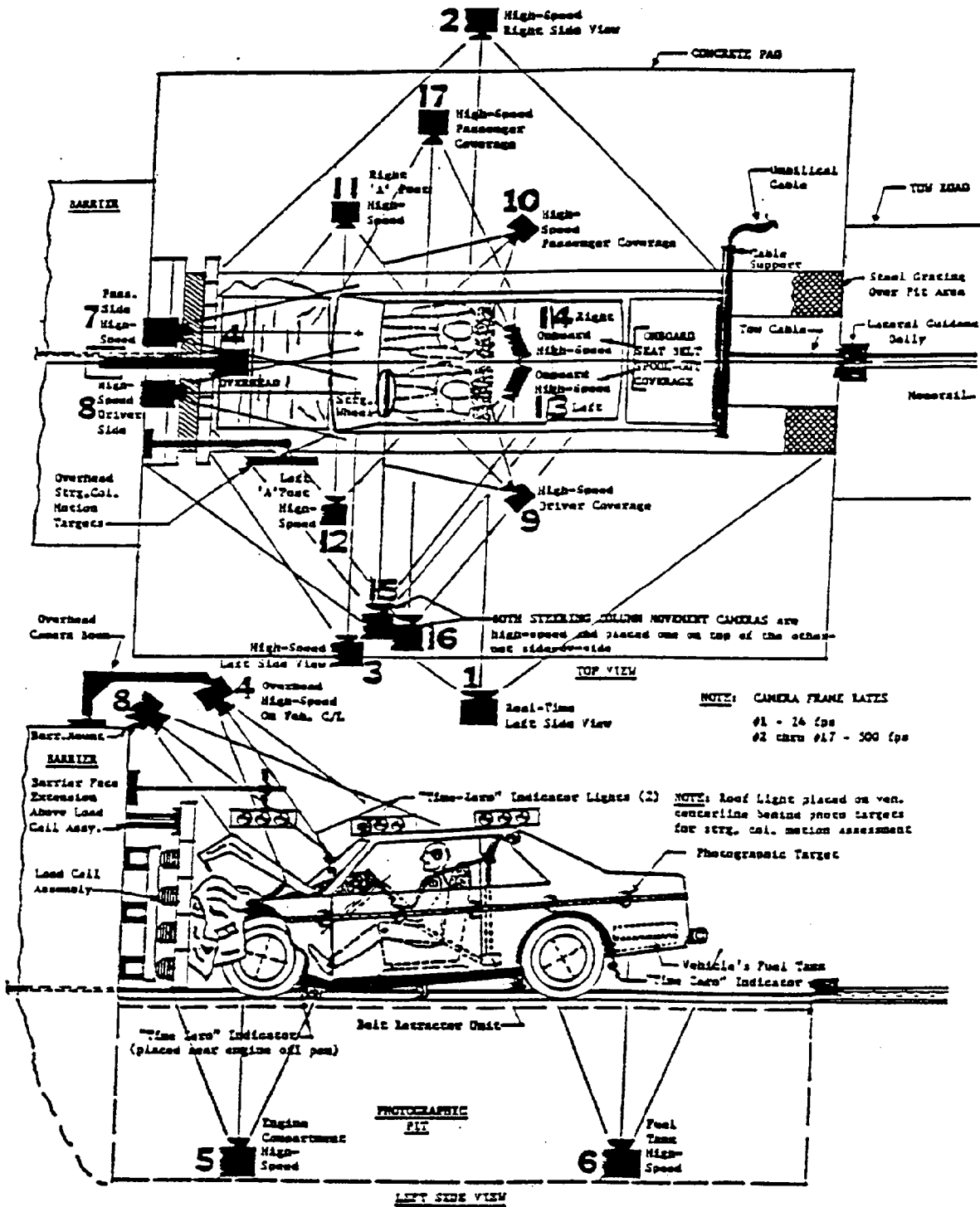
- * X = film plane to monorail centerline
- Y = film plane to barrier face
- Z = film plane to ground

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

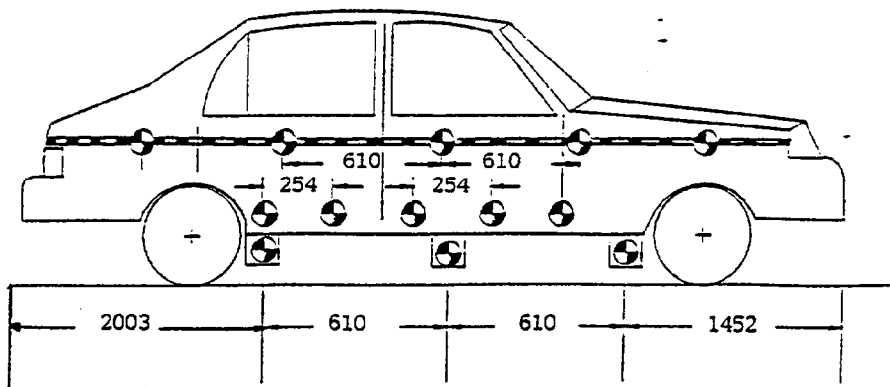
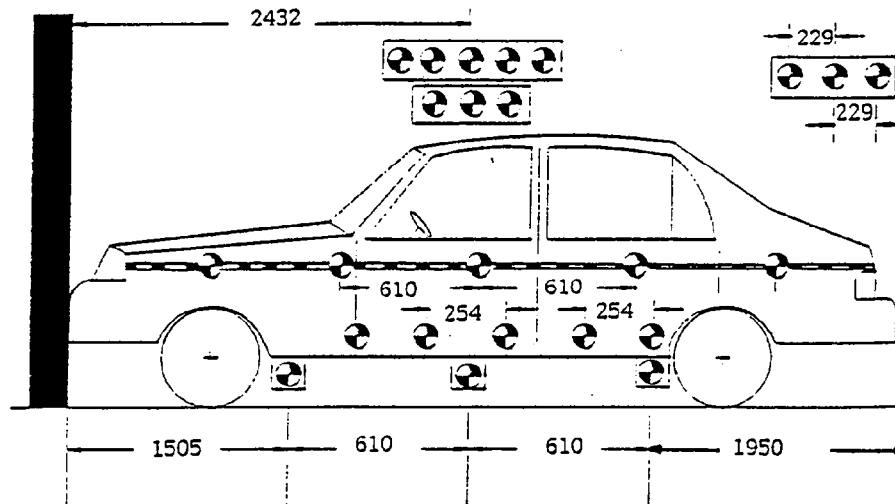
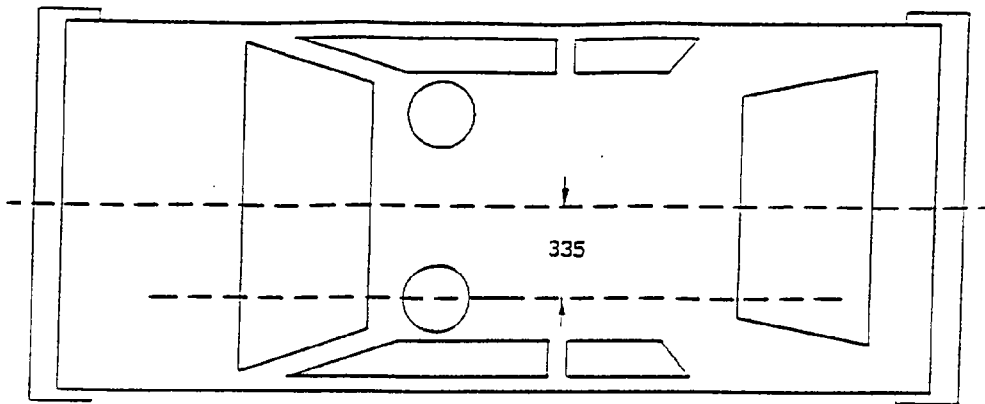
* Camera did not run during test

CAMERA LOCATIONS (CONTINUED)

CAMERA REQUIREMENTS FOR 15 MPH FRONTAL BARRIER IMPACT ASSESSMENT PROGRAM TEST



VEHICLE TARGET LOCATIONS



(DIMENSIONS IN MM)

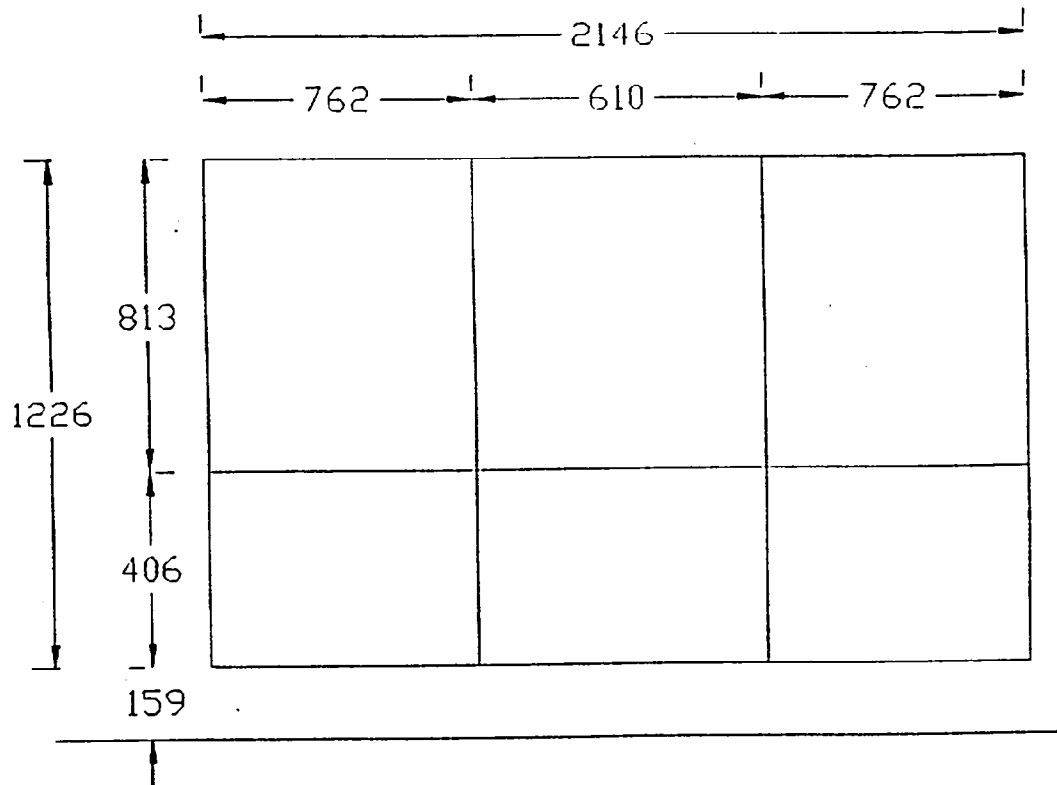
LOAD CELL LOCATIONS ON FIXED BARRIER

30 Load Cells

6 Rows

9 Columns

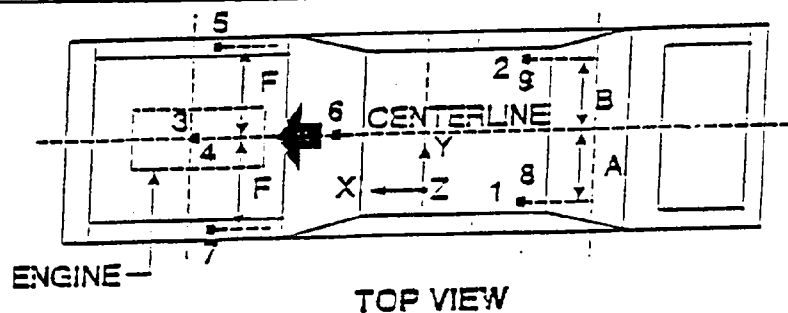
6 Groupings (5 cells/group)



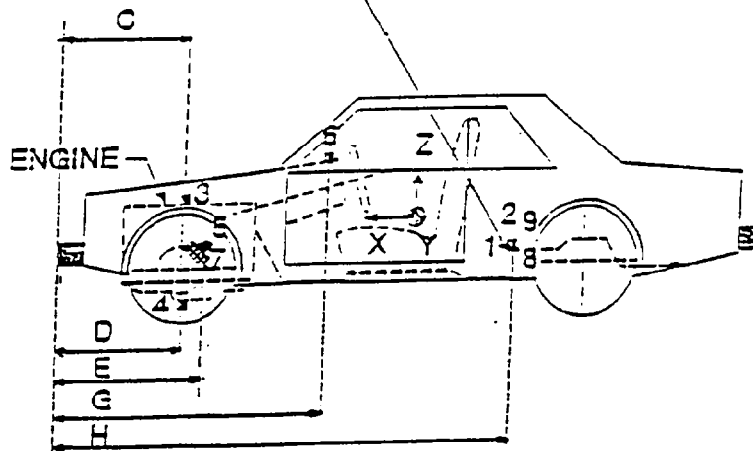
The following data is presented in Appendix B:

- (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



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



Units: (mm)

Dimension	Length
A	540
B	540
C	725
D	775
E	900
F	220
G	1530
H	2885

ACCELEROMETER	ACCELEROMETER LOCATION	DIRECTIO
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

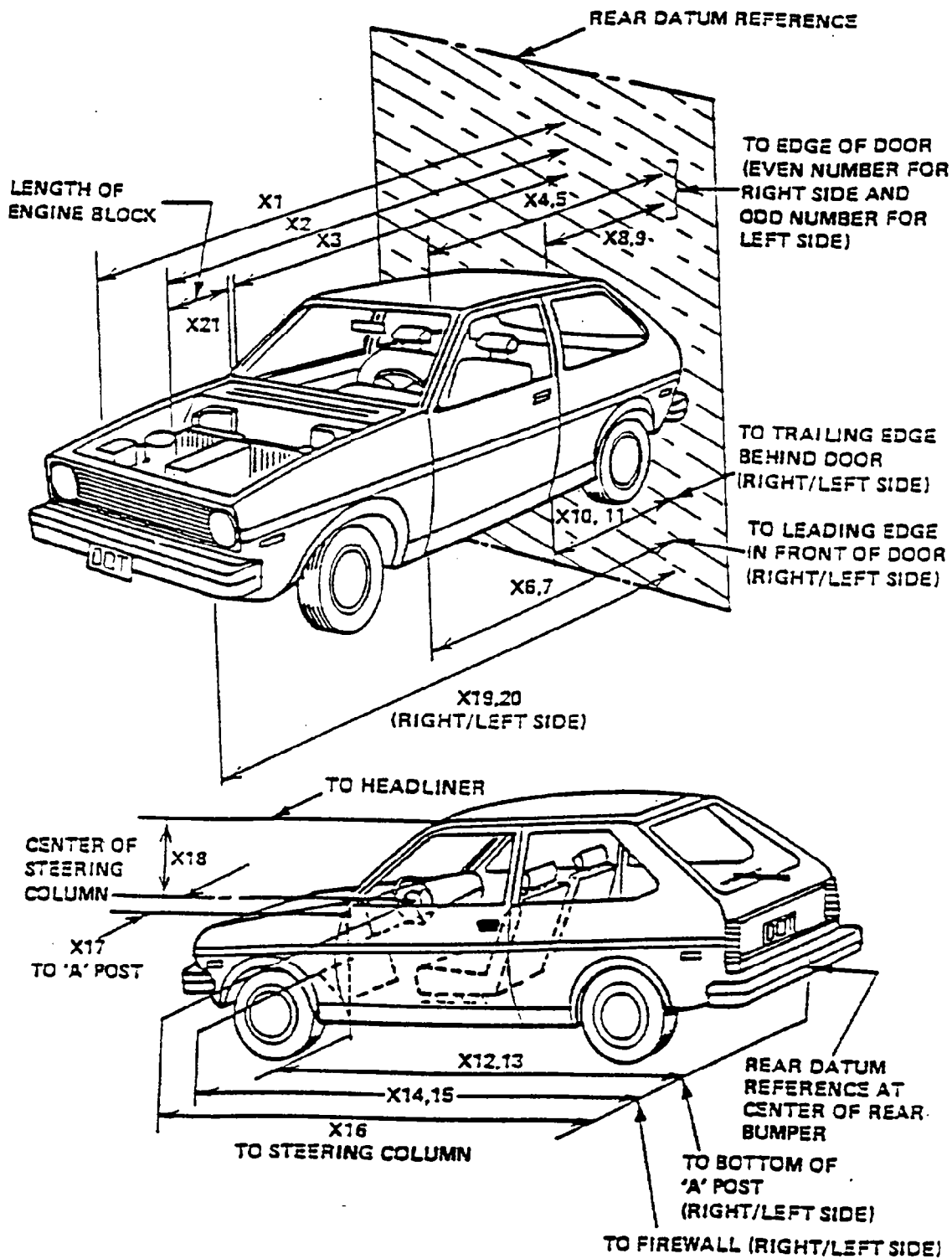
* The accelerometer pack number can be correlated with the vehicle response data traces in Appendix B.

TEST VEHICLE MEASUREMENTS

TEST VEHICLE MEASUREMENTS

No.	MEASUREMENT DESCRIPTION:	Pre-Test (mm)	Post-Test (mm)	Diff. (mm)
X1	Total Length of Test Vehicle at Centerline	4675	4050	625
X2	Rear Surface of Vehicle to Front of Engine	3990	3765	225
X3	Rear Surface of Vehicle to Firewall	3545	3450	95
X4	Rear Surface to Upr. Leading Edge of Rt. Door	3210	3205	5
X5	Rear Surface to Upr. Leading Edge of Left Door	3215	3200	15
X6	Rear Surface to Lwr. Leading Edge of Rt. Door	3235	3215	20
X7	Rear Surface to Lwr. Leading Edge of Left Door	3245	3217	28
X8	Rear Surface to Upr. Trailing Edge of Rt. Door	2115	2105	10
X9	Rear Surface to Upr. Trailing Edge of Left Door	2130	2110	20
X10	Rear Surface to Lwr. Trailing Edge of Rt. Door	2135	2117	18
X11	Rear Surface to Lwr. Trailing Edge of Left Door	2145	2120	25
X12	Rear Surface to Bottom of 'A' Post on Rt. Side	3245	3218	27
X13	Rear Surface to Bottom of 'A' Post on Left Side	3245	3220	25
X14	Rear Surface to Firewall on Right Side	3510	3462	48
X15	Rear Surface to Firewall on Left Side	3525	3490	35
X16	Rear Surface to Steering Column	2695	2637	58
X17	Center of Steering Column to 'A' Post	390	360	30
X18	Center of Steering Column to Headlining	455	420	35
X19	Rear Surface to Right Side of Front Bumper	4430	3967	463
X20	Rear Surface to Left Side of Front Bumper	4475	4005	470
X21	Length of Engine Block	470	470	0

TEST VEHICLE MEASUREMENTS



ACCIDENT INVESTIGATION DIVISION DATA
FOR 35 MPH FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Honda/Accord/LX 4 Door

VEH. NHTSA NO.: MR5301; VIN: 1HGCD5637RA054341

MODEL YEAR: 1994; BUILD DATE: 11-93; TEST DATE: 3-1-94

VEH. SIZE CATEGORY: Mid Size; TEST WEIGHT: 1508.7 kg

VEH. WHEELBASE: 2715 mm; FRONT OVERHANG: 965 mm; OVERALL WIDTH: 1580 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: 56.6 kph; TIME OF SEPARATION: 76 msec

VELOCITY CHANGE: 68.8 kph

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE:

F (Frontal)

CRUSH DEPTH C1 = 470 mm
DIMENSIONS:

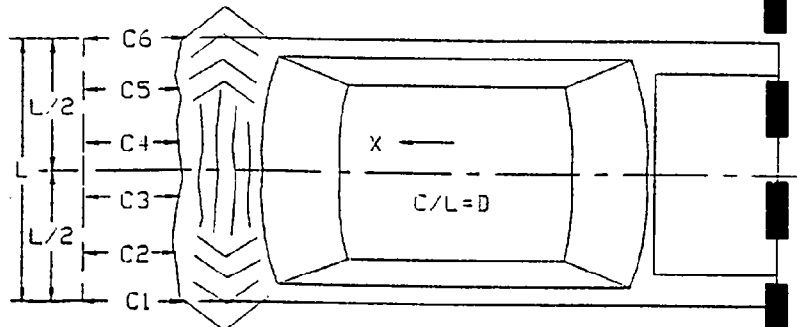
C2 = 648 mm

C3 = 525 mm

C4 = 509 mm

C5 = 465 mm

C6 = 463 mm



MIDPOINT OF DAMAGE: D = Vehicle Centerline
(Longitude)

LENGTH OF DAMAGED REGION: L = 1580 mm

APPENDIX A
PHOTOGRAPHS

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Photo No. A-39 - Rollover 270°	A-39
Photo No. A-40 - Rollover 360°	A-40



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

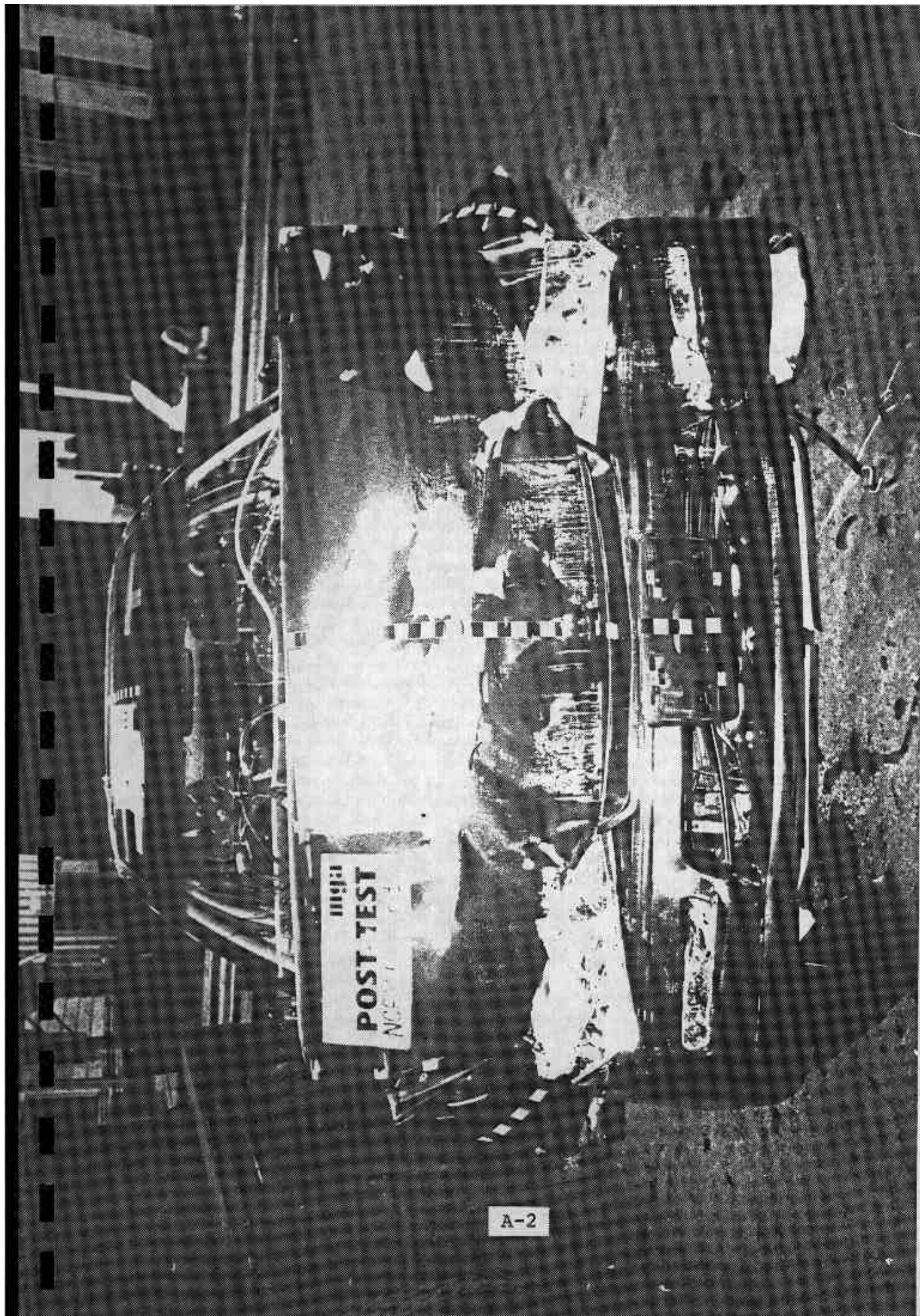


Photo No. A-2 - Post-Test Front View

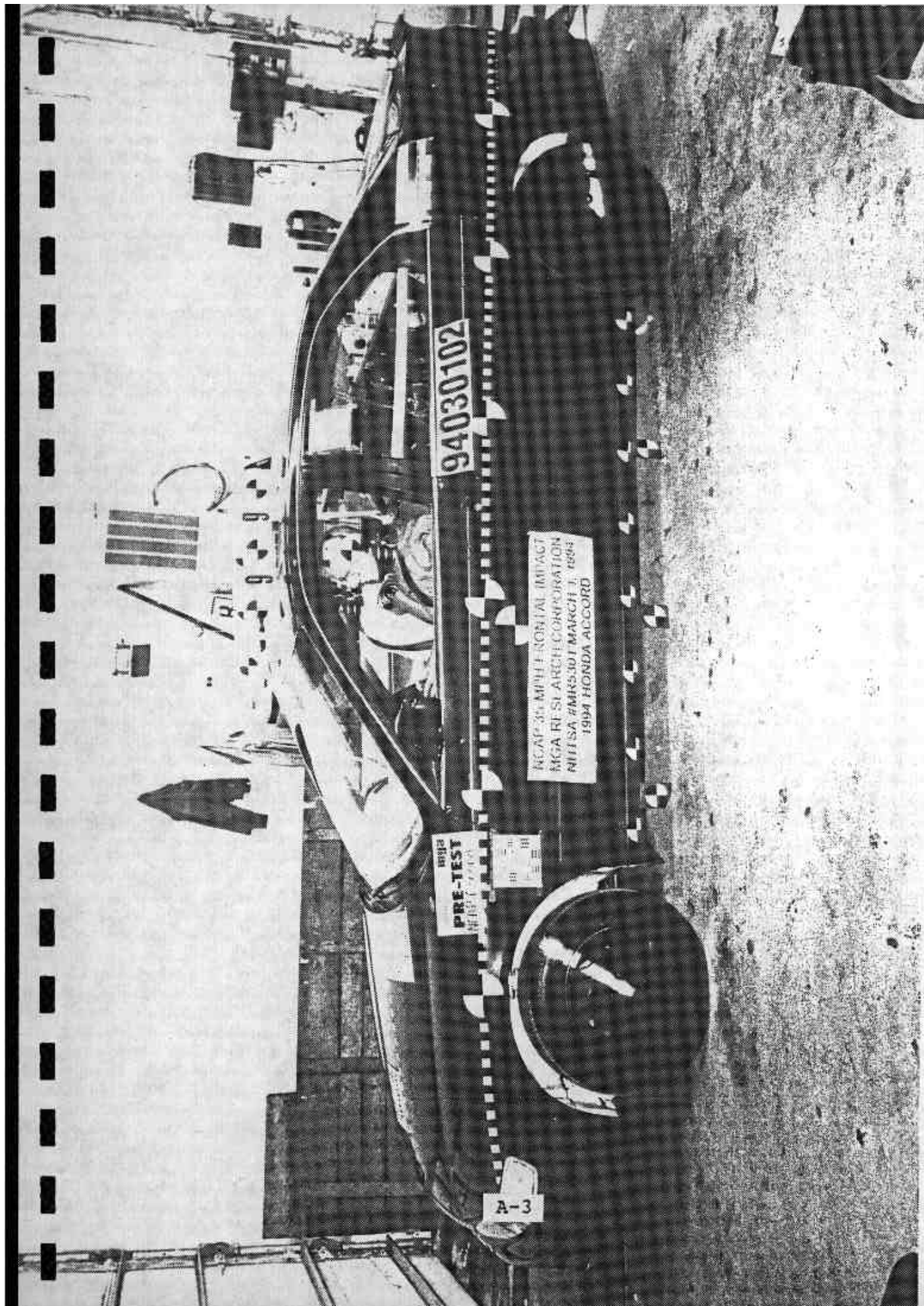


Photo No. A-3 - Pre-Test Left Side View

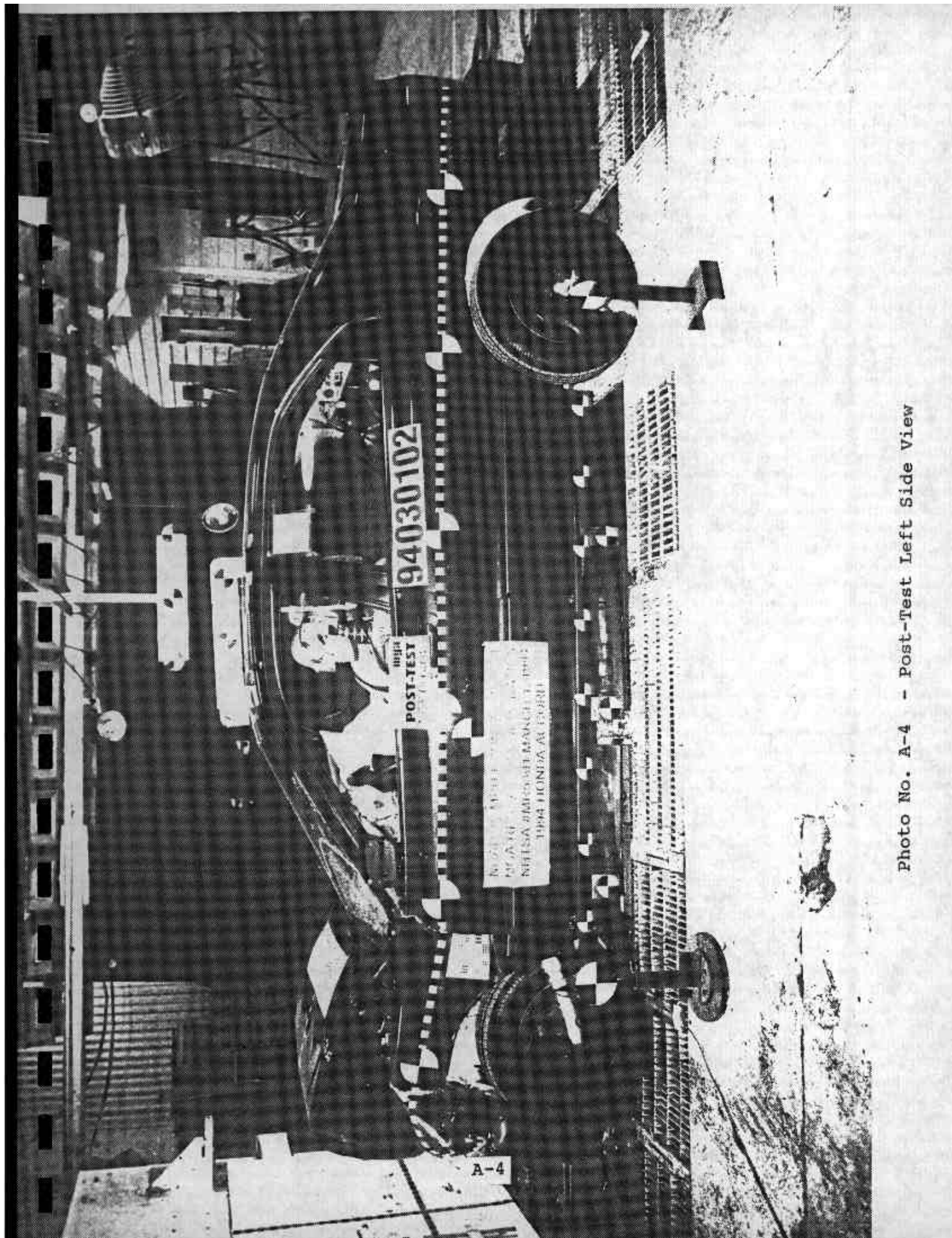


Photo No. A-4 - Post-Test Left Side View

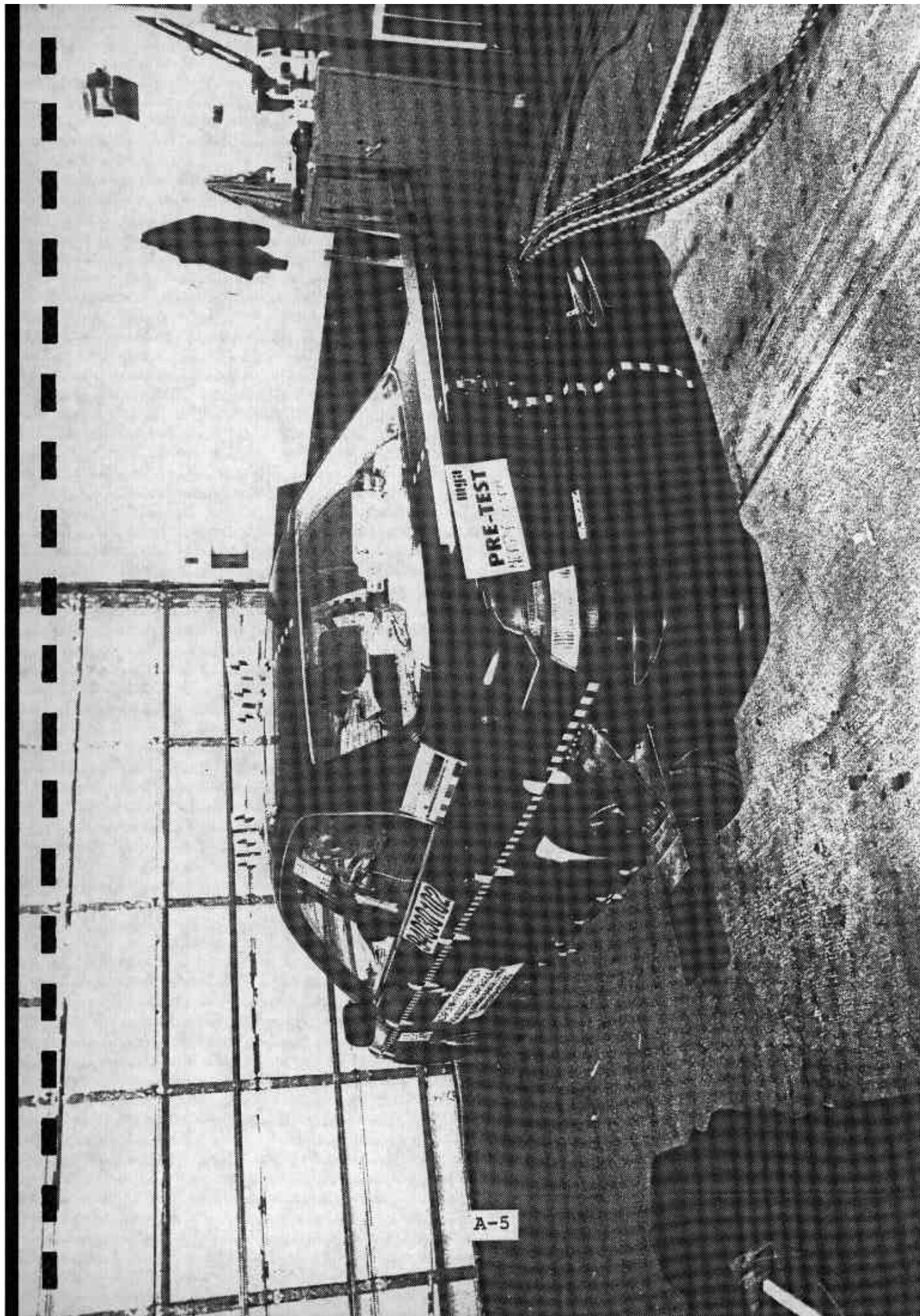


Photo No. A-5 - Pre-Test Left Rear Three-Quarter View

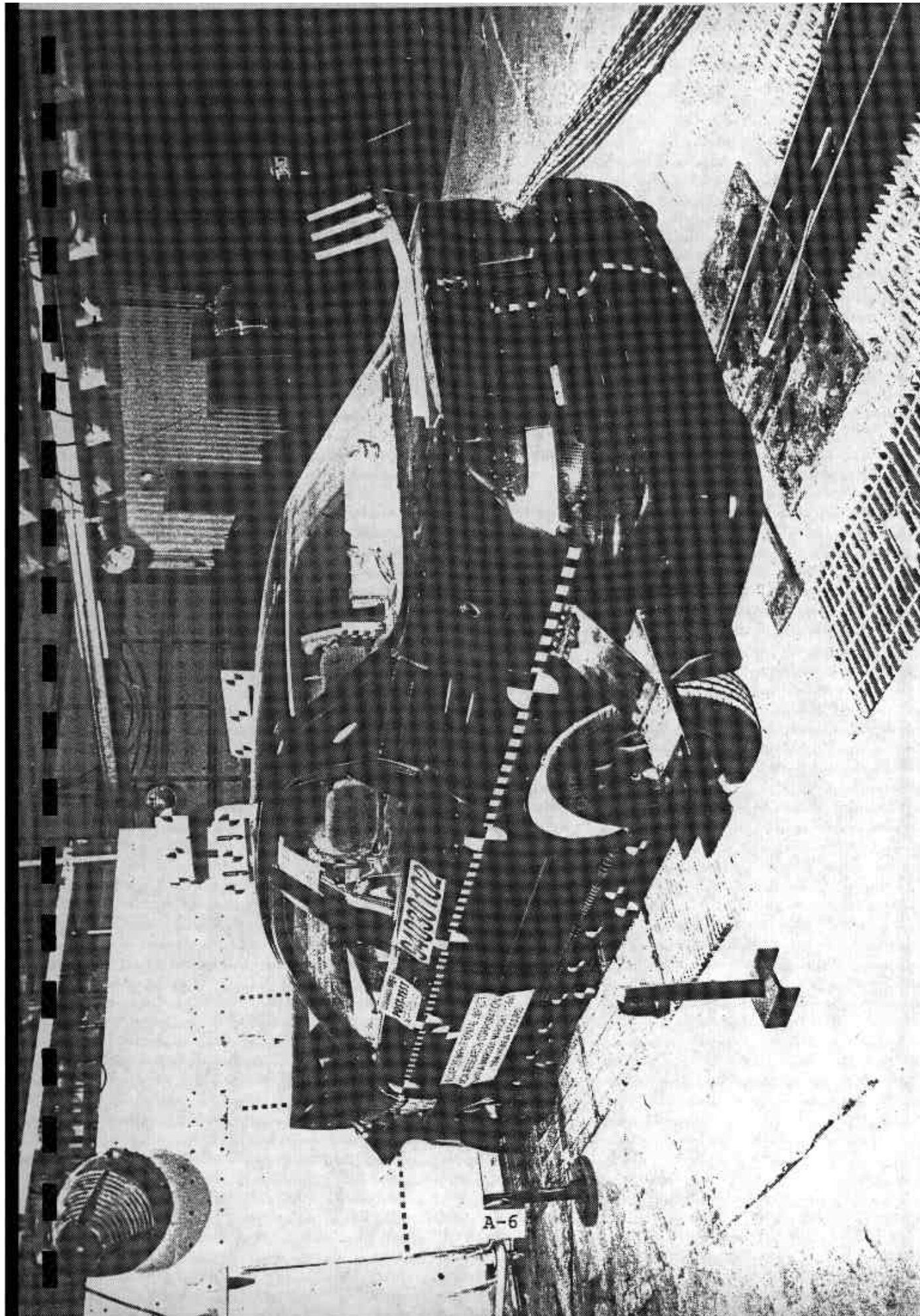


Photo No. A-6 - Post-Test Left Rear Three-Quarter View

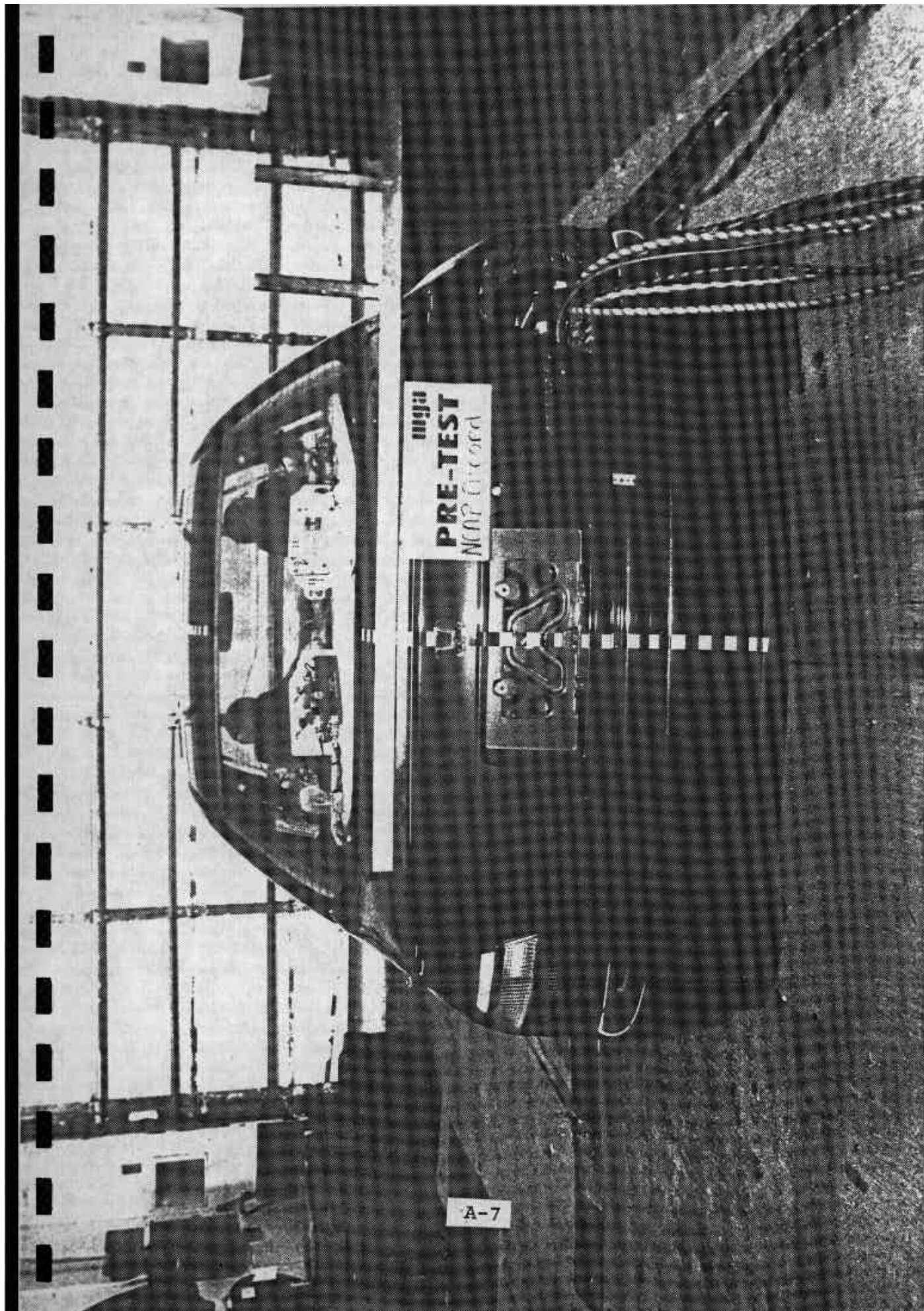


Photo No. A-7 - Pre-Test Rear View

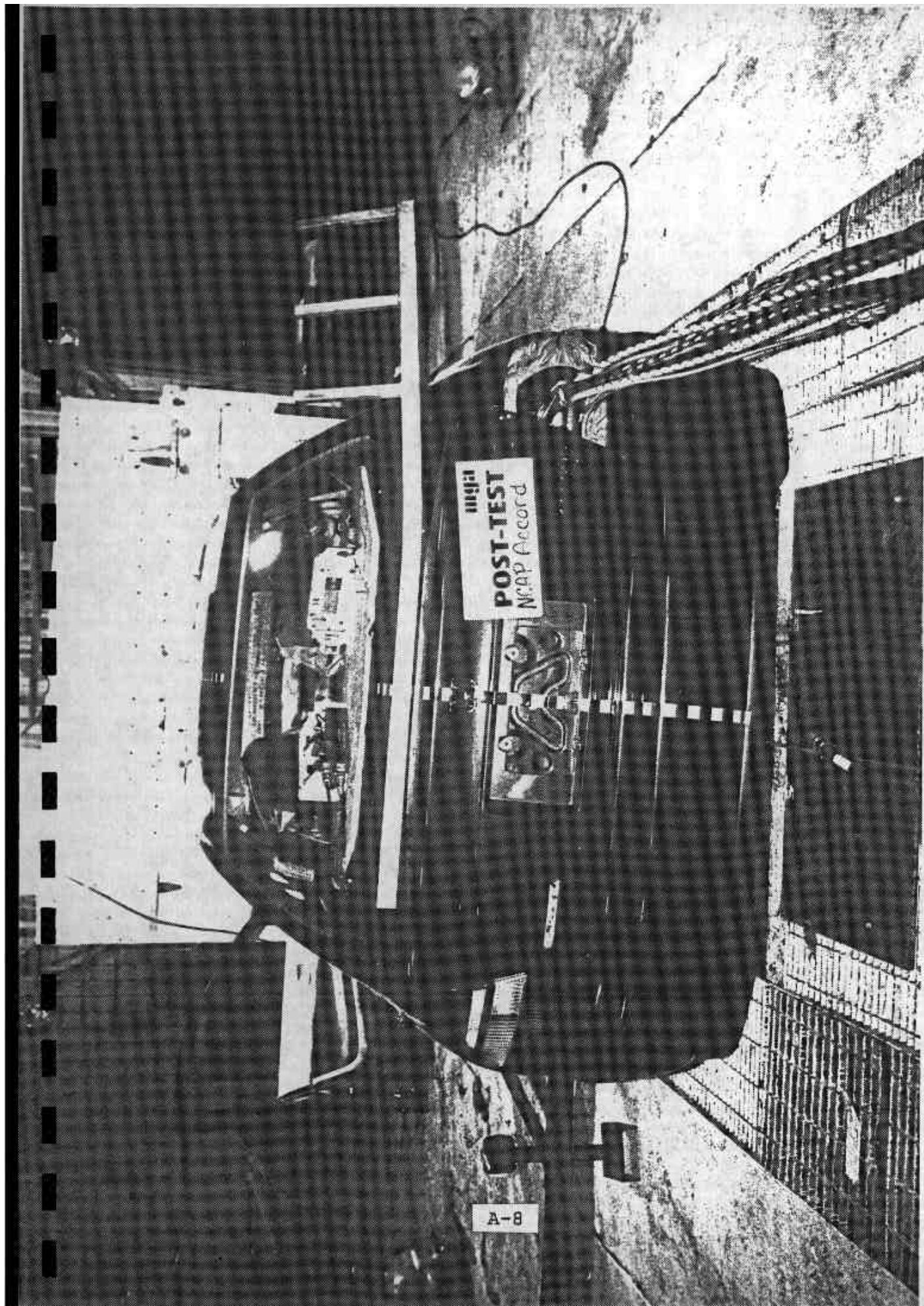


Photo No. A-8 - Post-Test Rear View

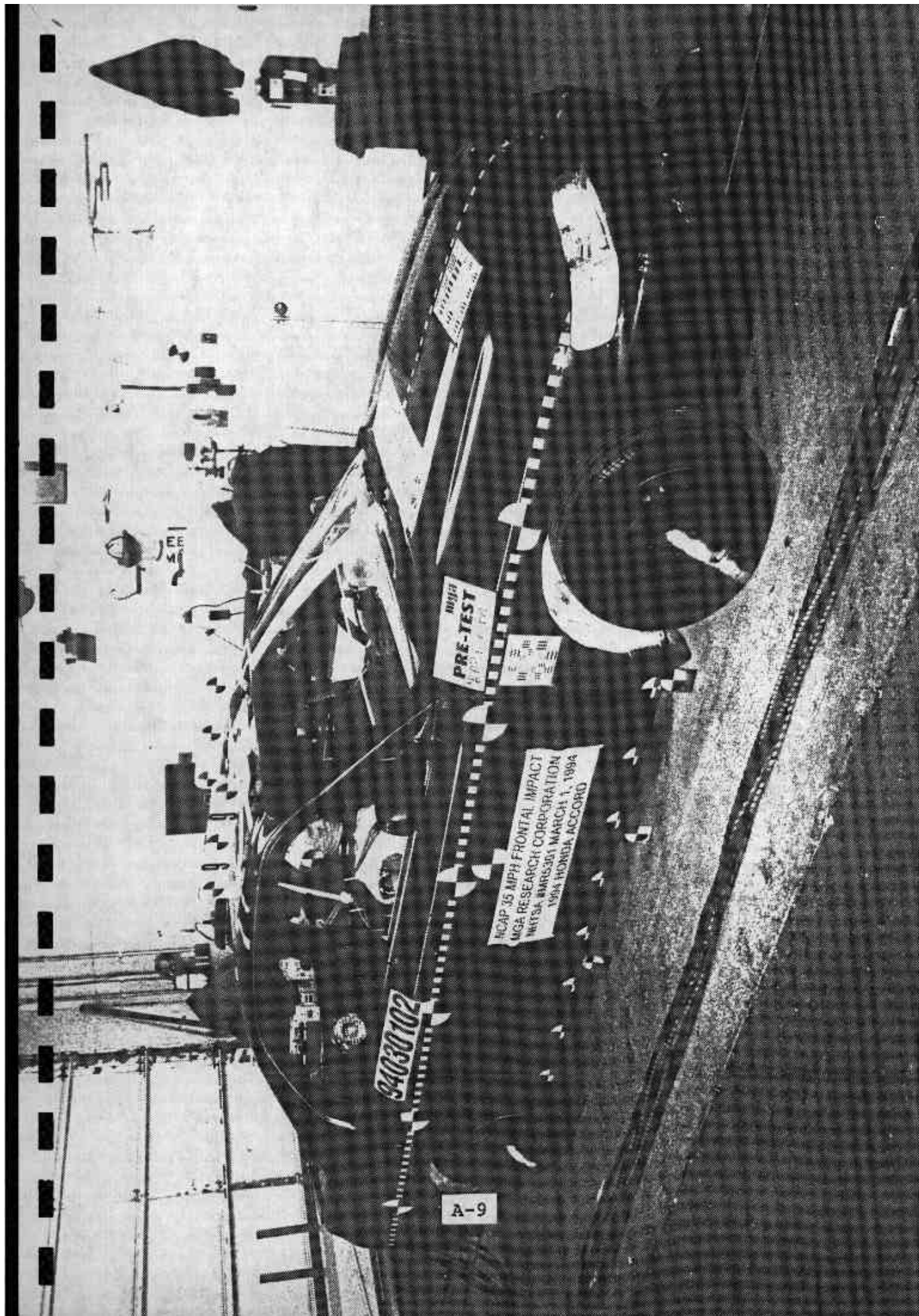


Photo No. A-9 - Pre-Test Right Side View

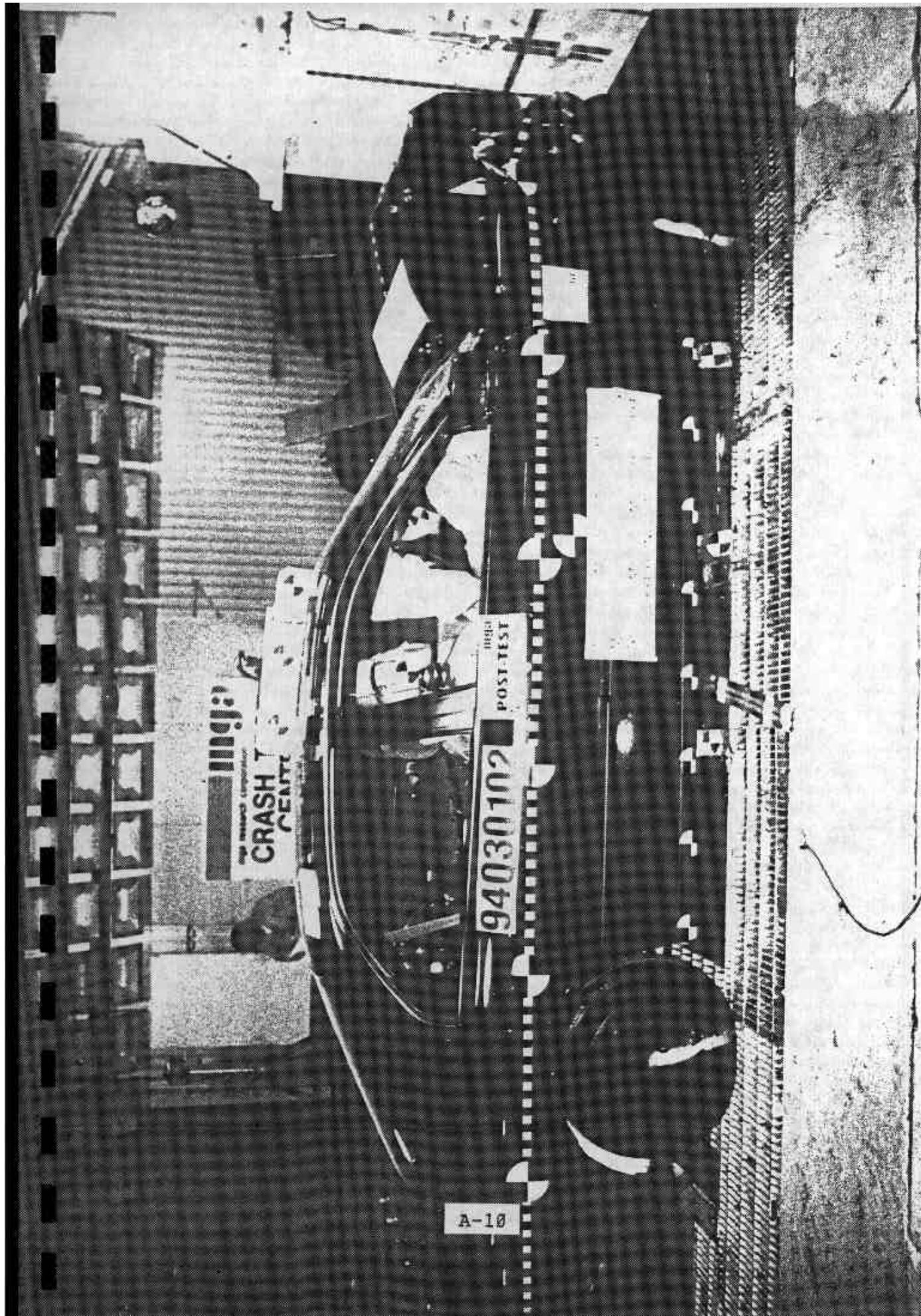


Photo No. A-10 - Post-Test Right Side View

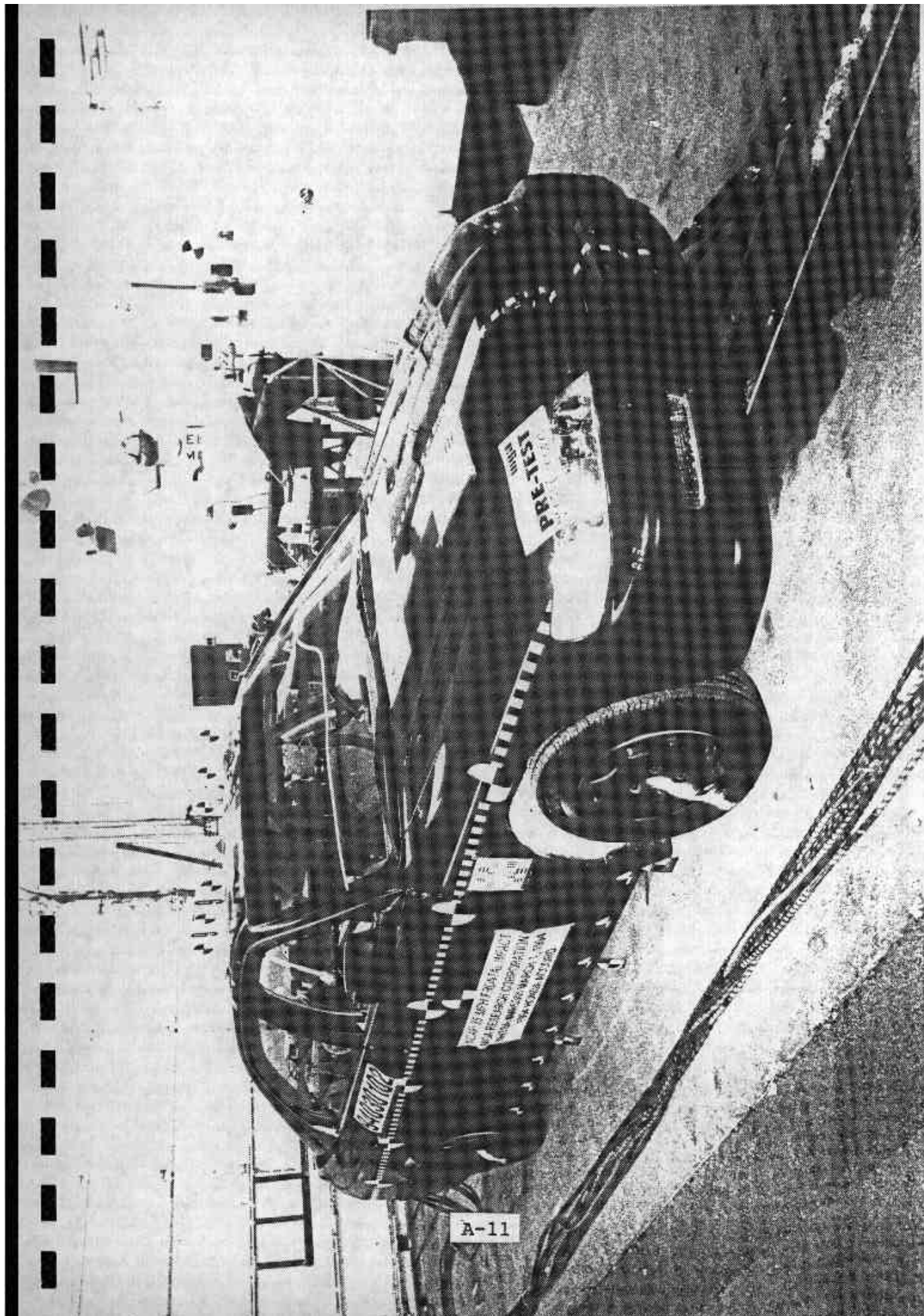


Photo No. A-11 - Pre-Test Right Front Three-Quarter View

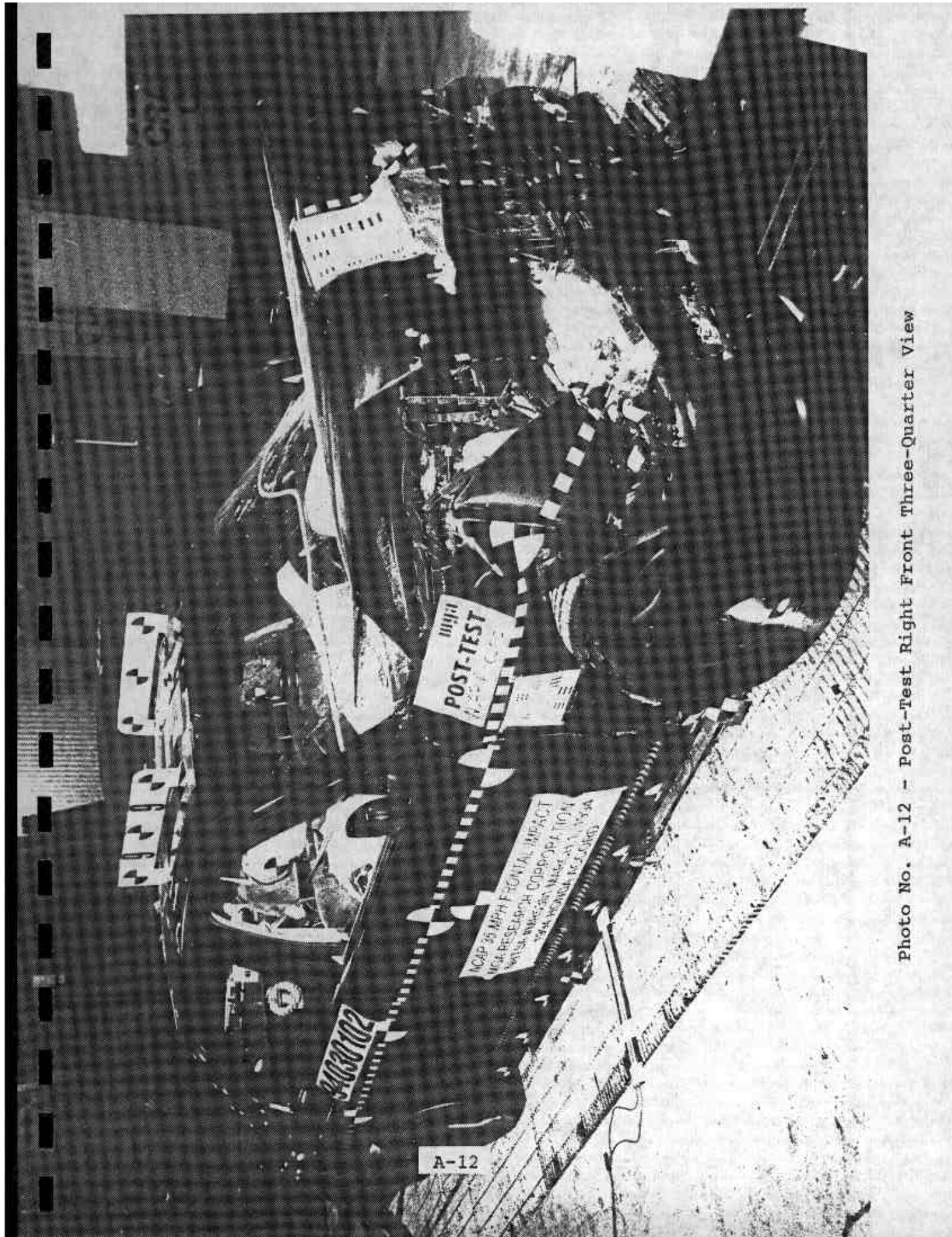


Photo No. A-12 - Post-Test Right Front Three-Quarter View

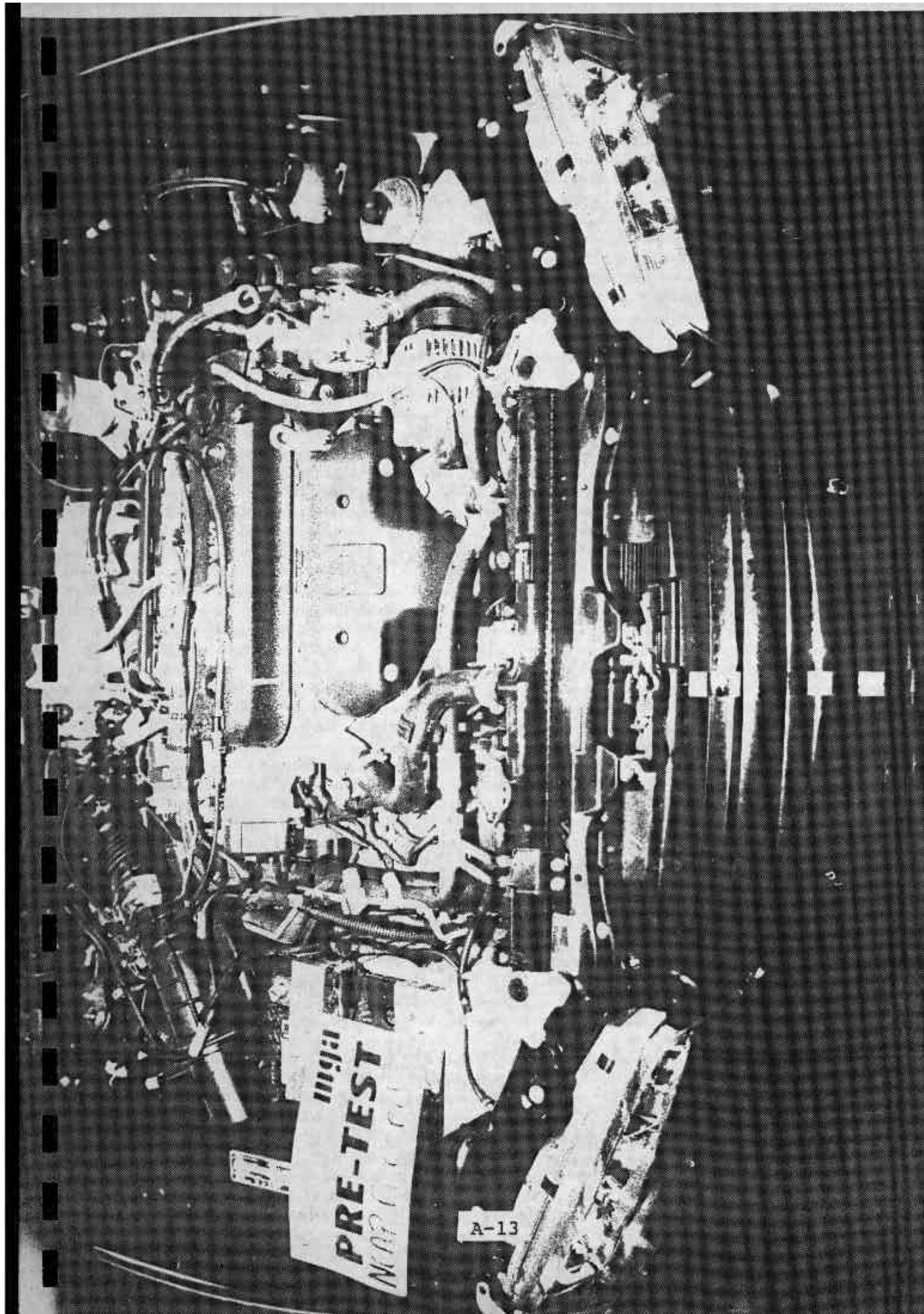


Photo No. A-13 - Pre-Test Engine Compartment View

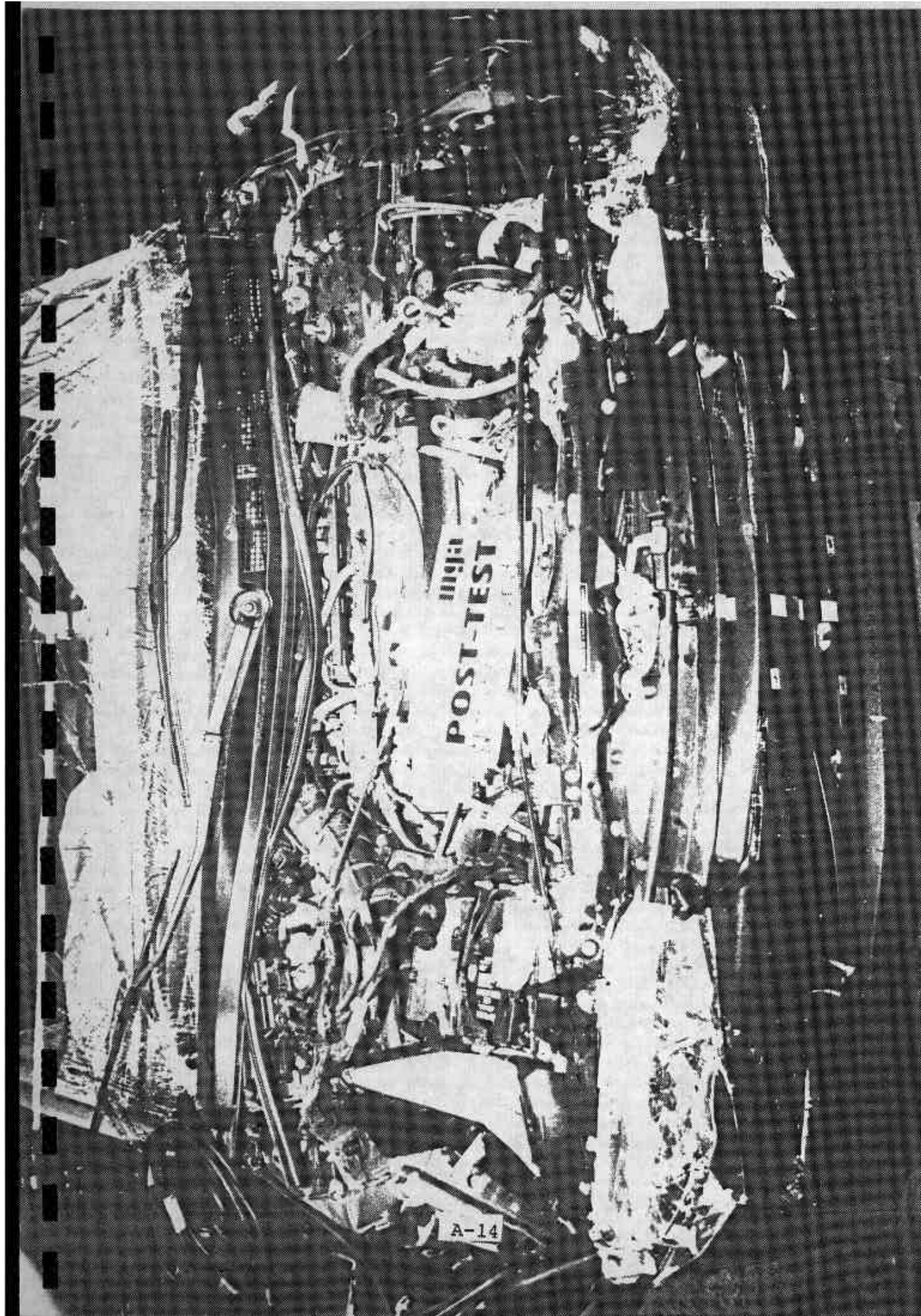
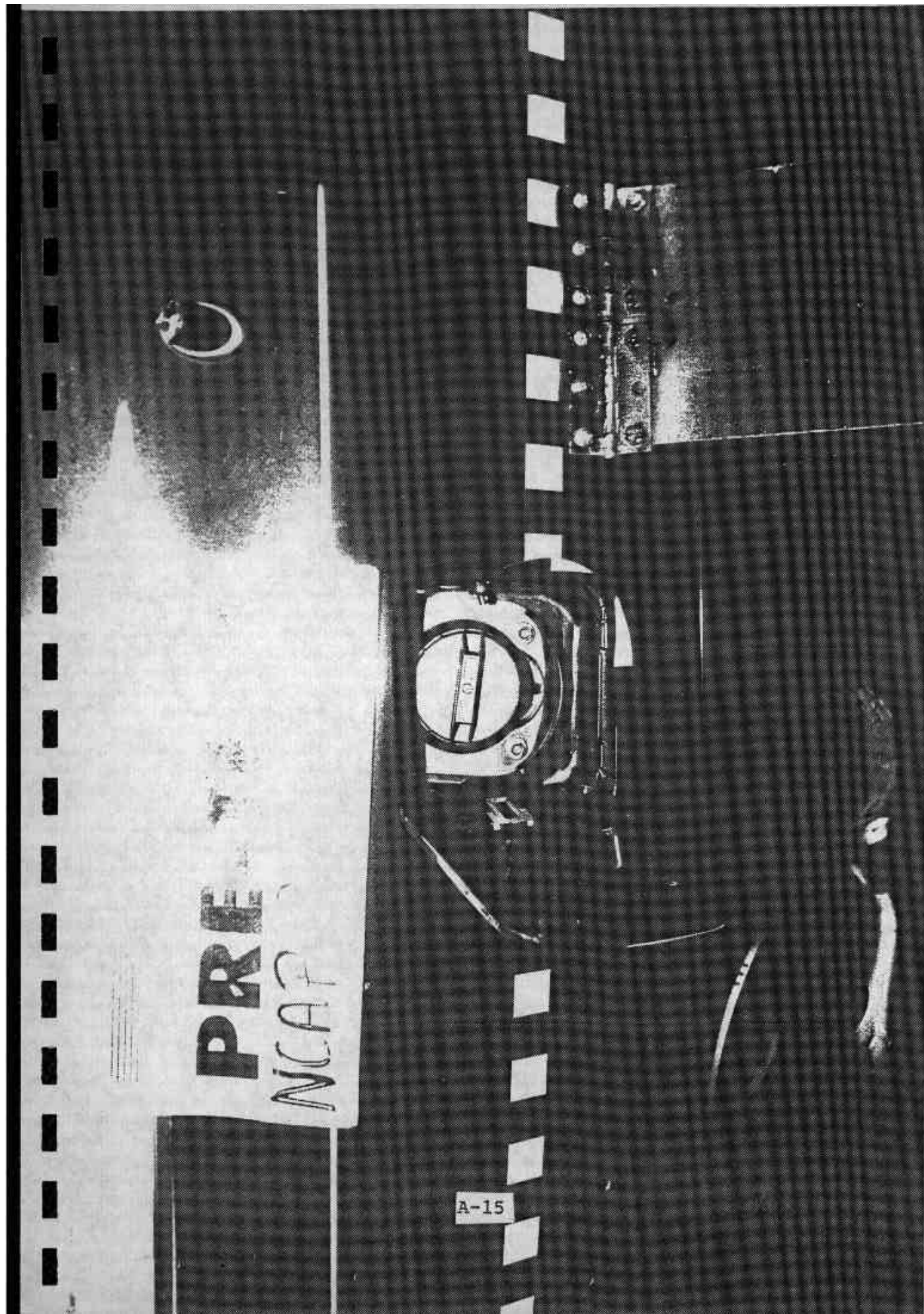


Photo No. A-14 - Post-Test Engine Compartment View

PRE
NCAF

A-15

Photo No. A-15 - Pre-Test Fuel Filler Cap View



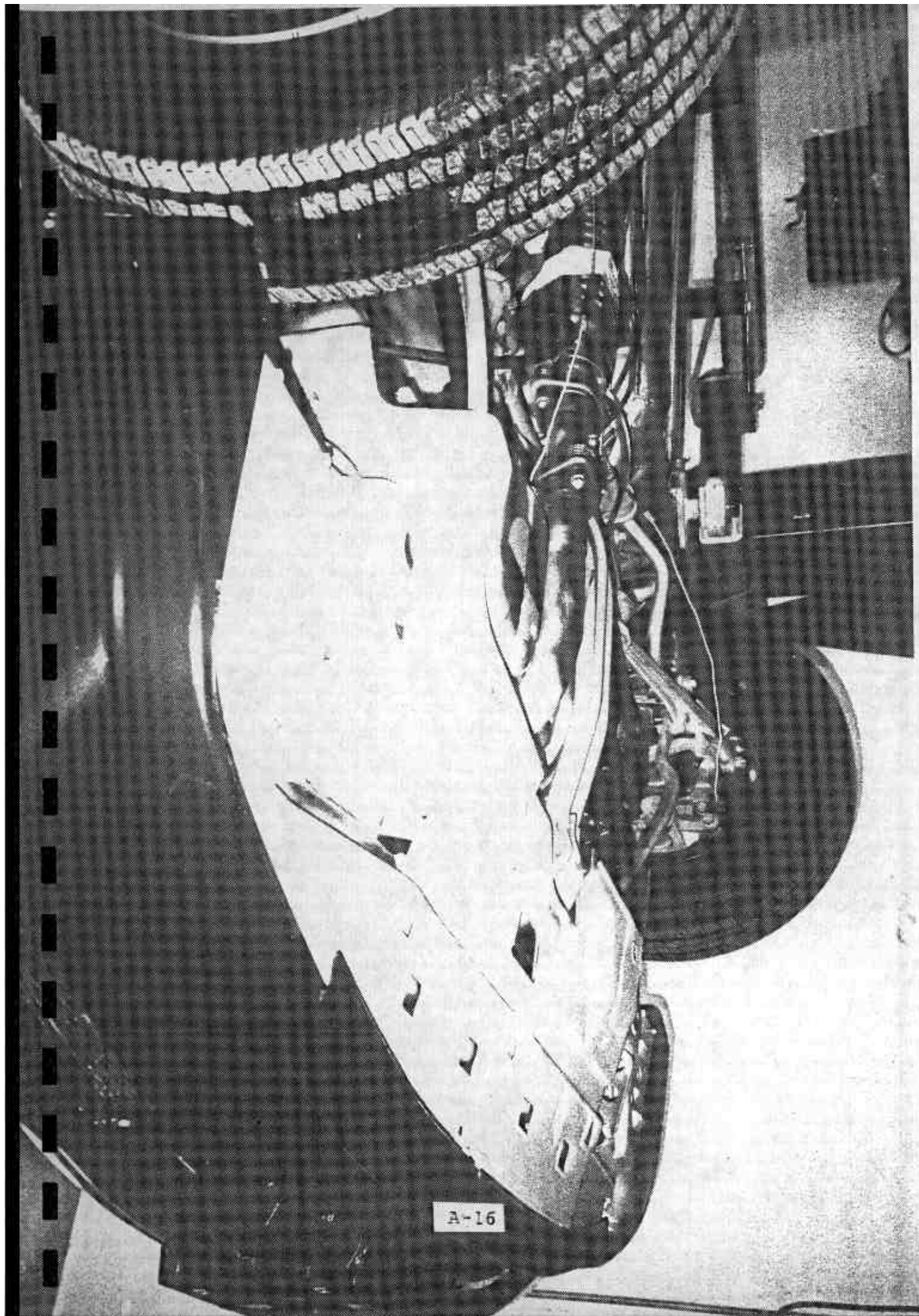


Photo No. A-16 - Pre-Test Front Underbody View



Photo No. A-17 - Pre-Test Rear Underbody View

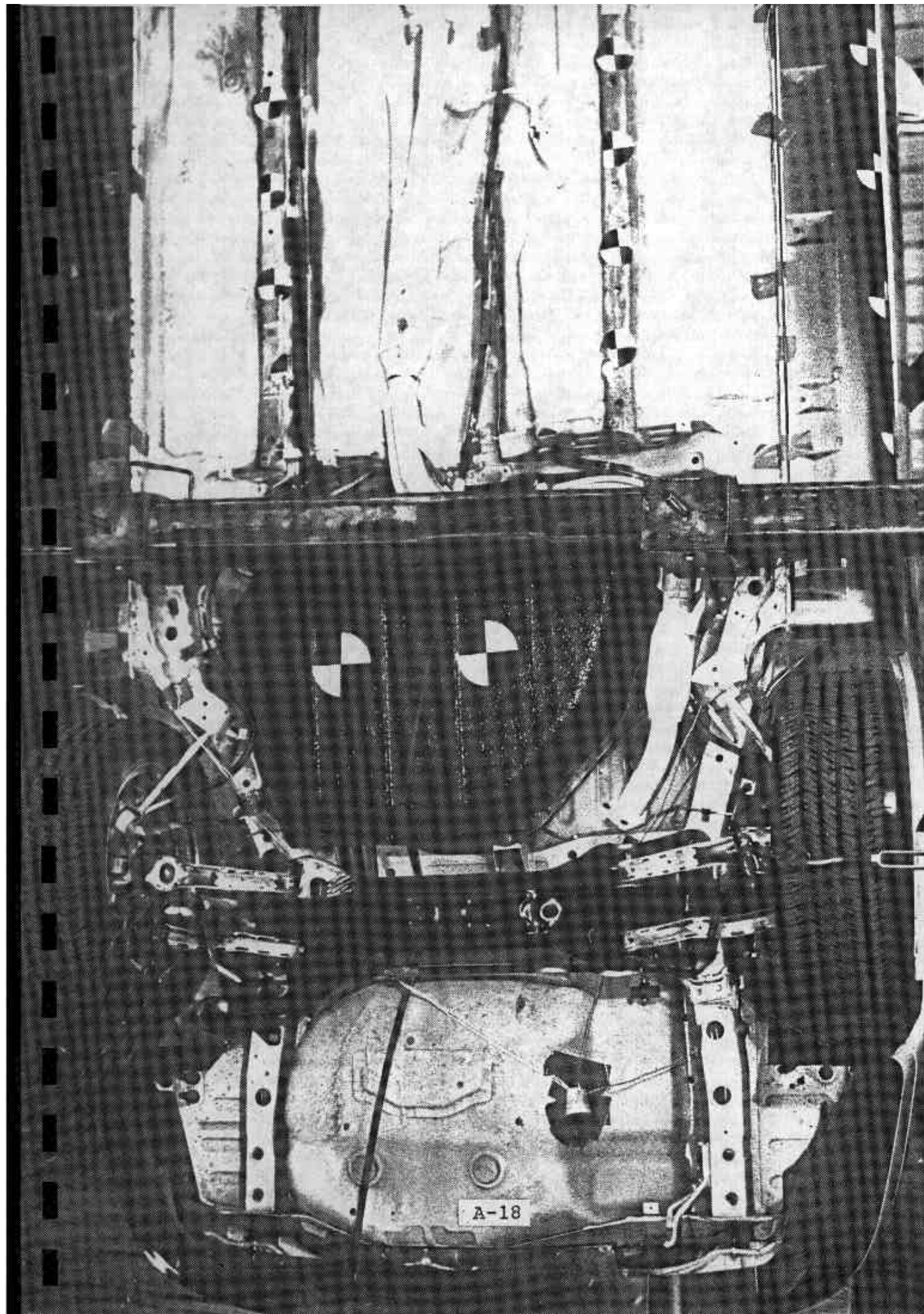


Photo No. A-18 - Post-Test Rear Underbody View

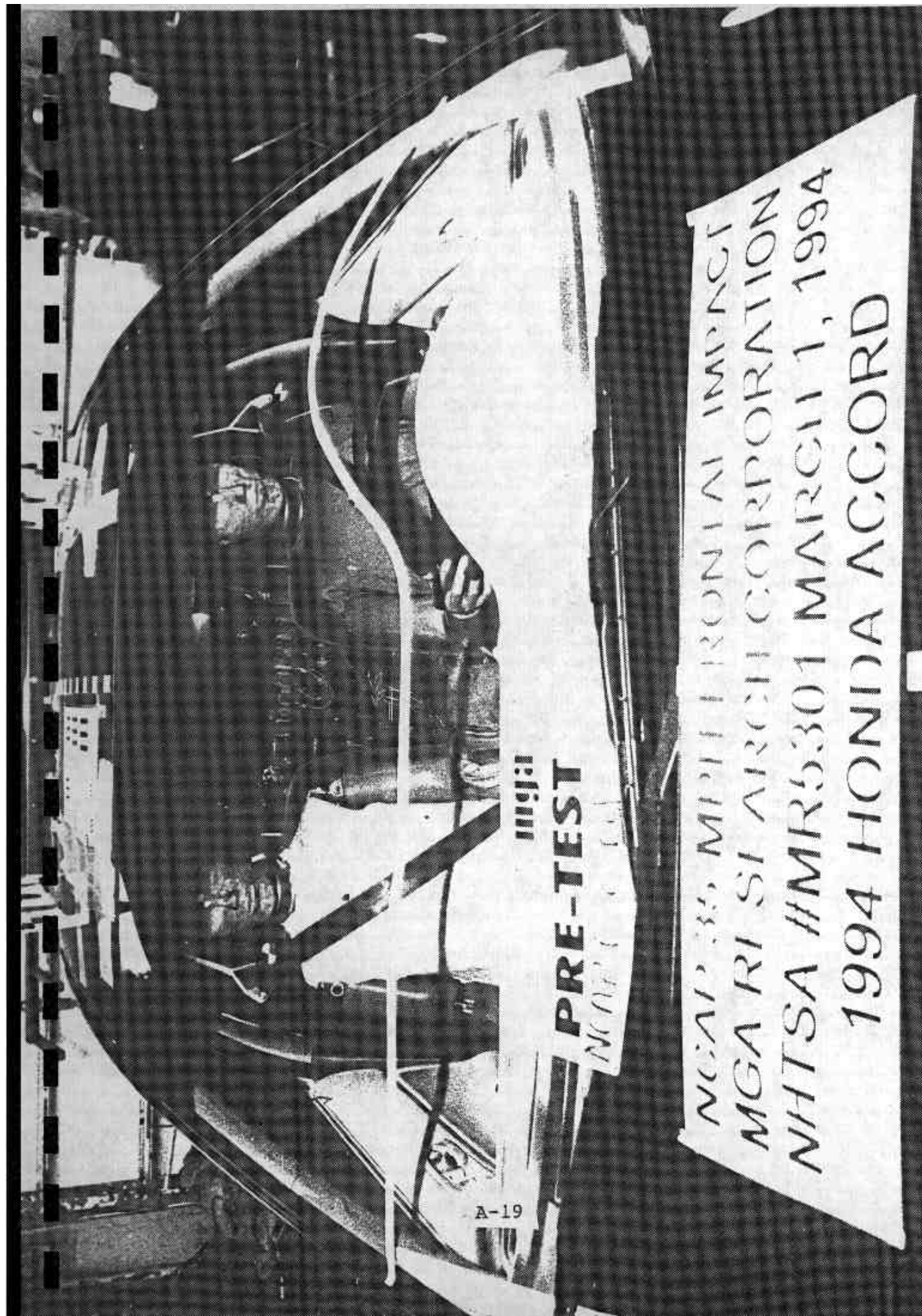
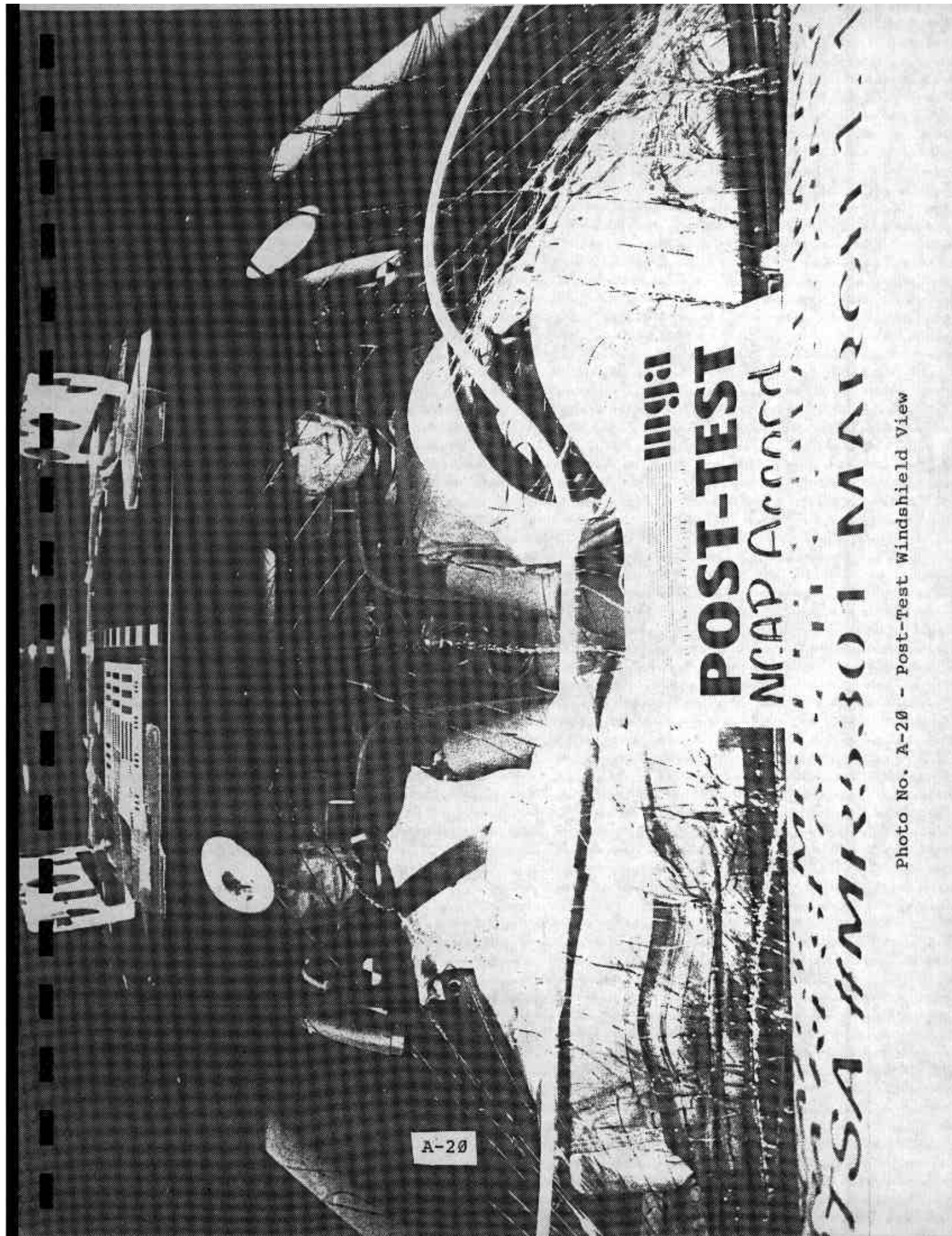


Photo No. A-19 - Pre-Test Windshield View



A-20

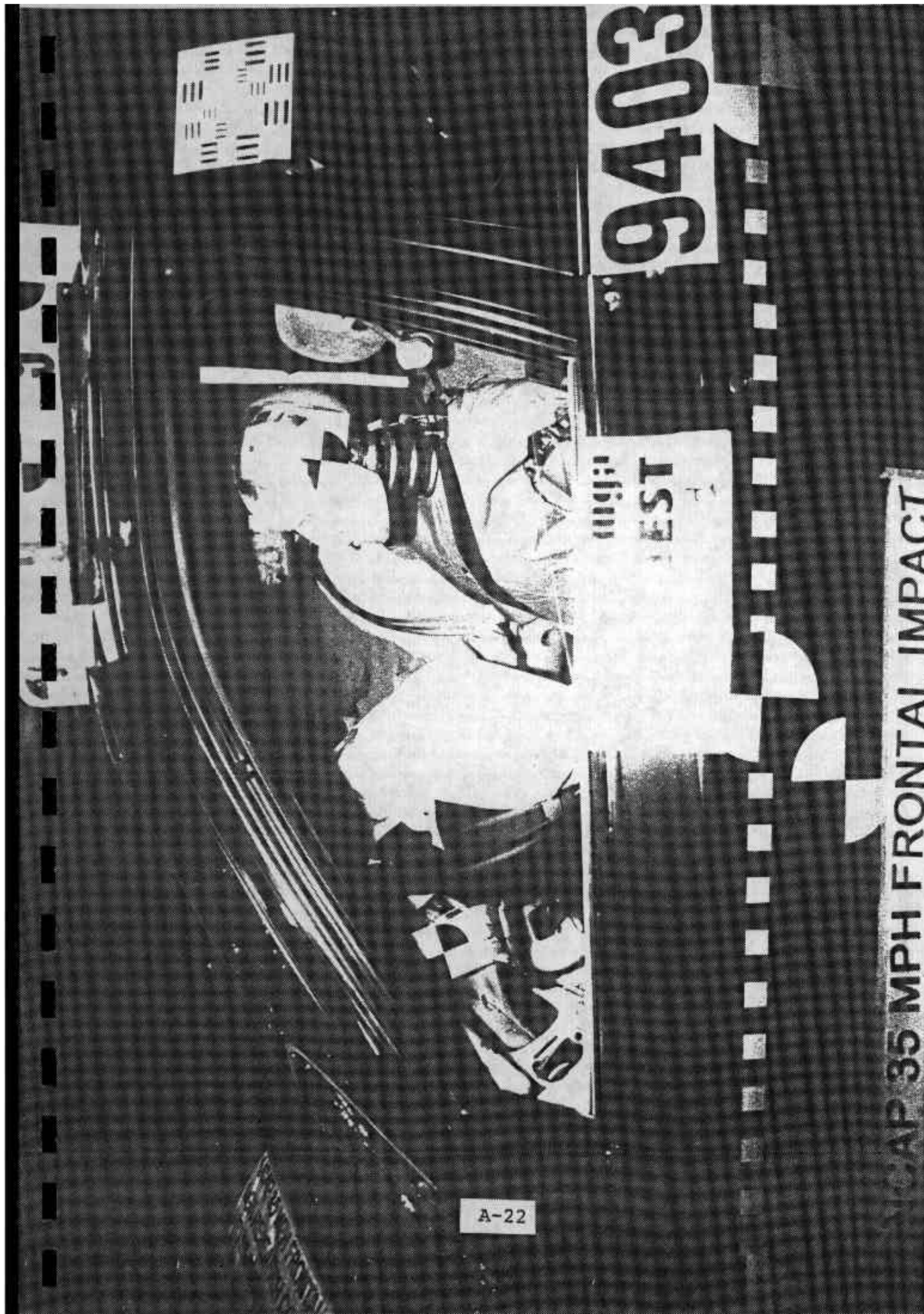
POST-TEST
NCAP Accord

TSA #M12301 MANIC

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



Photo No. A-21 - Pre-Test Driver Dummy Position View



NCAP 35 MPH FRONTAL IMPACT

Photo No. A-22 - Post-Test Driver Dummy Position View

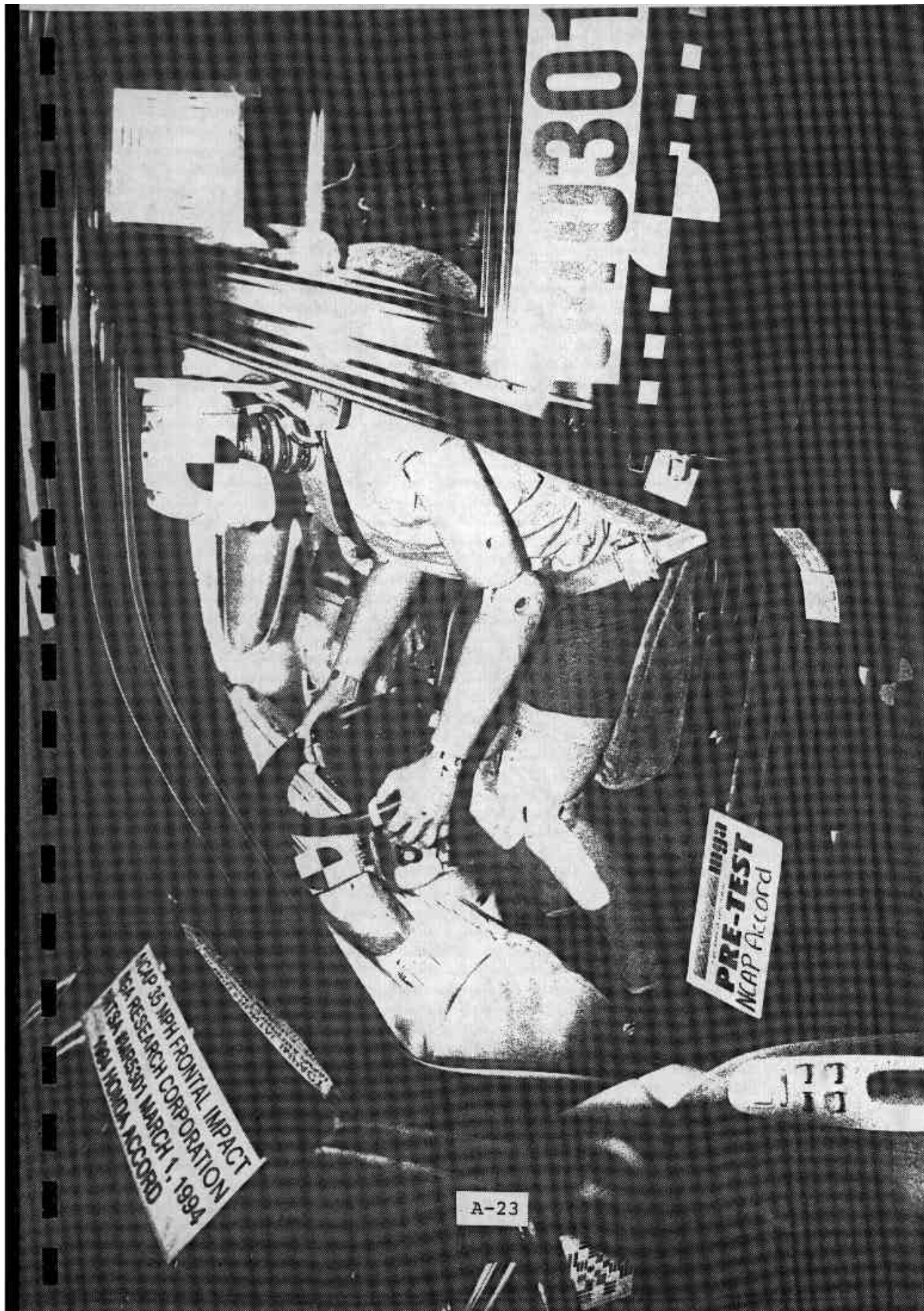


Photo No. A-23 - Pre-Test Driver Dummy Position View (Door Open)



Photo No. A-24 - Post-Test Driver Dummy Position View (Door Open)

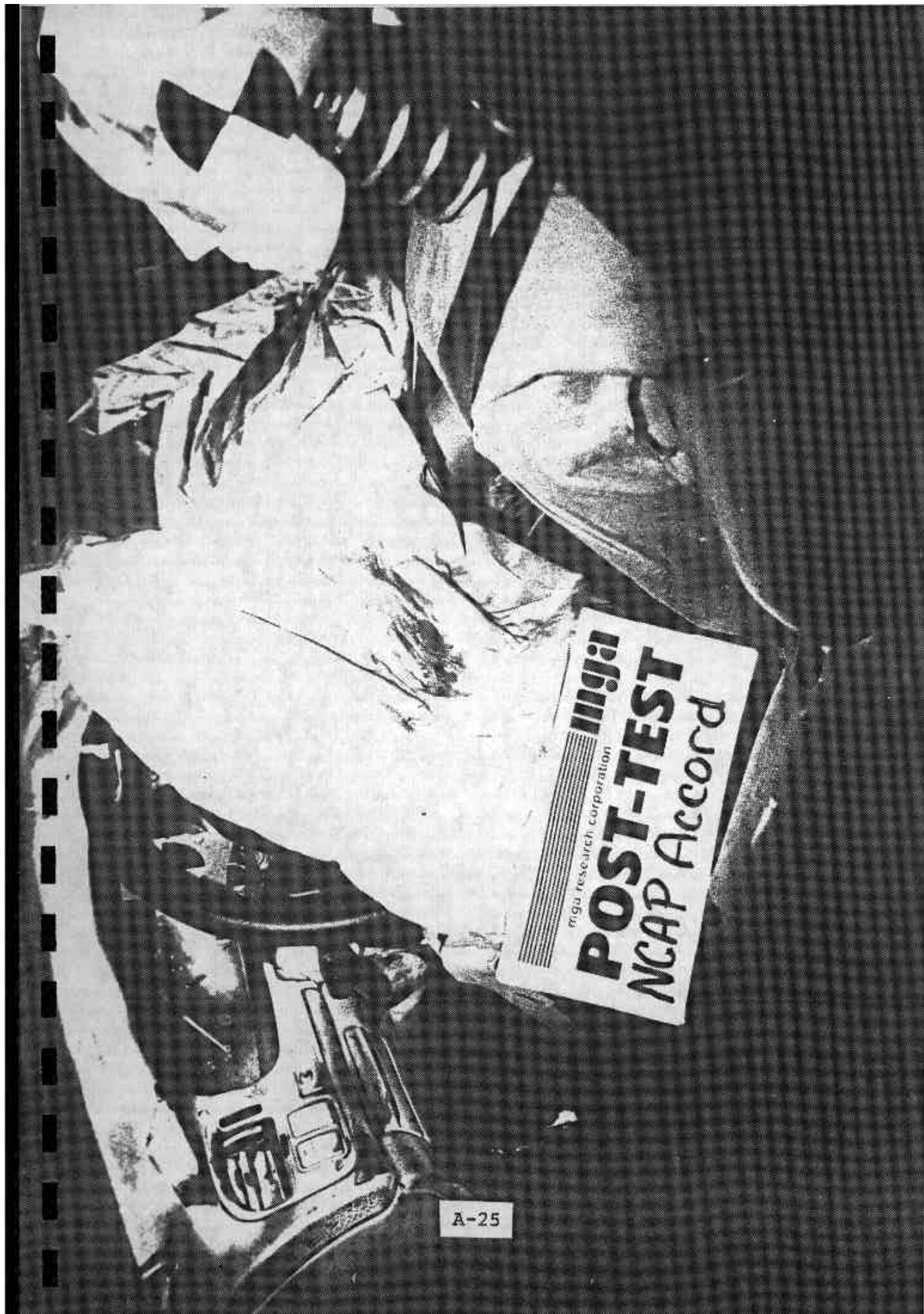


Photo No. A-25 - Post-Test Driver Airbag Contact



A-26

Photo No. A-26 - Post-Test Driver Knee Position View

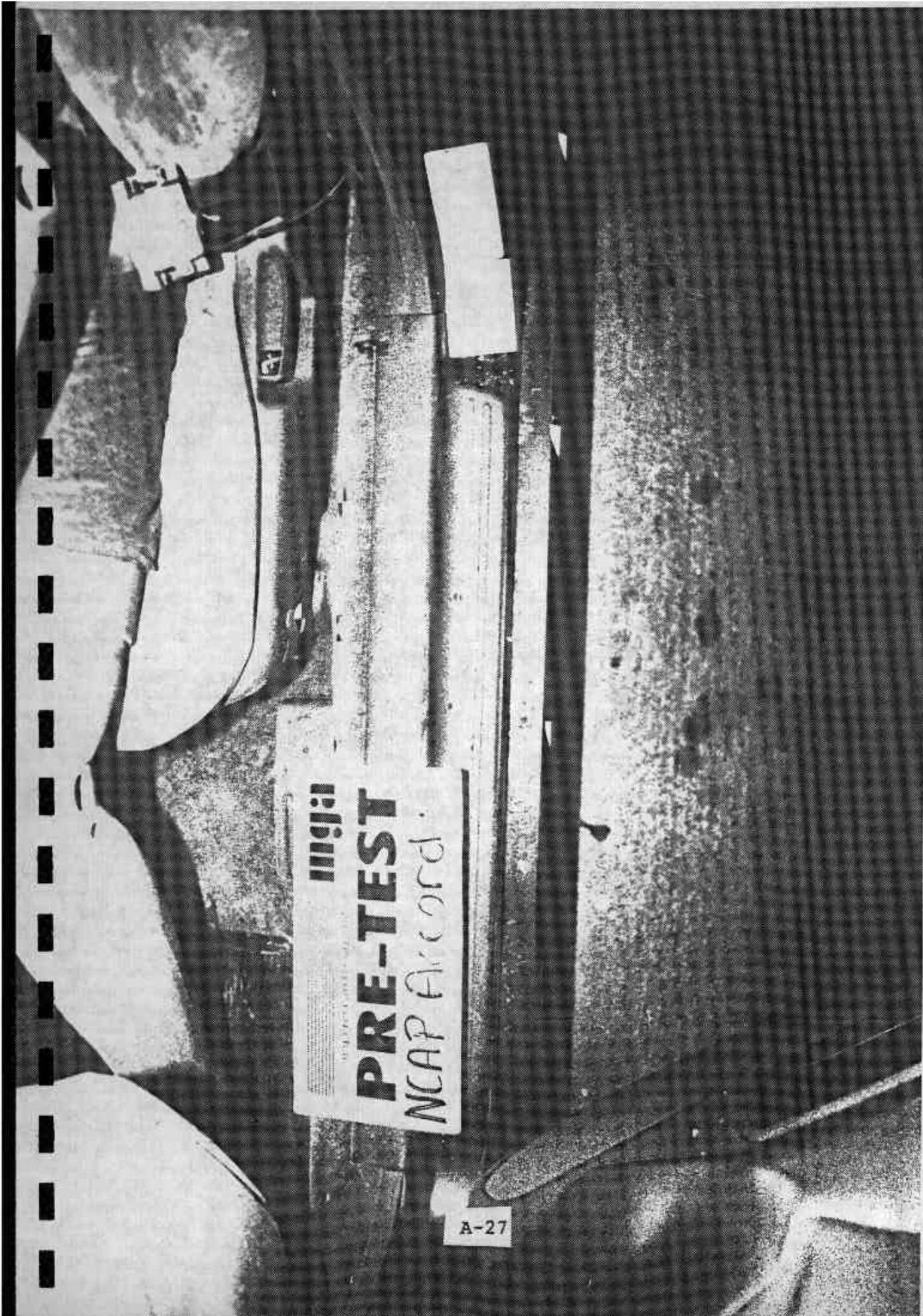


Photo No. A-27 - Pre-Test Driver Seat Position View

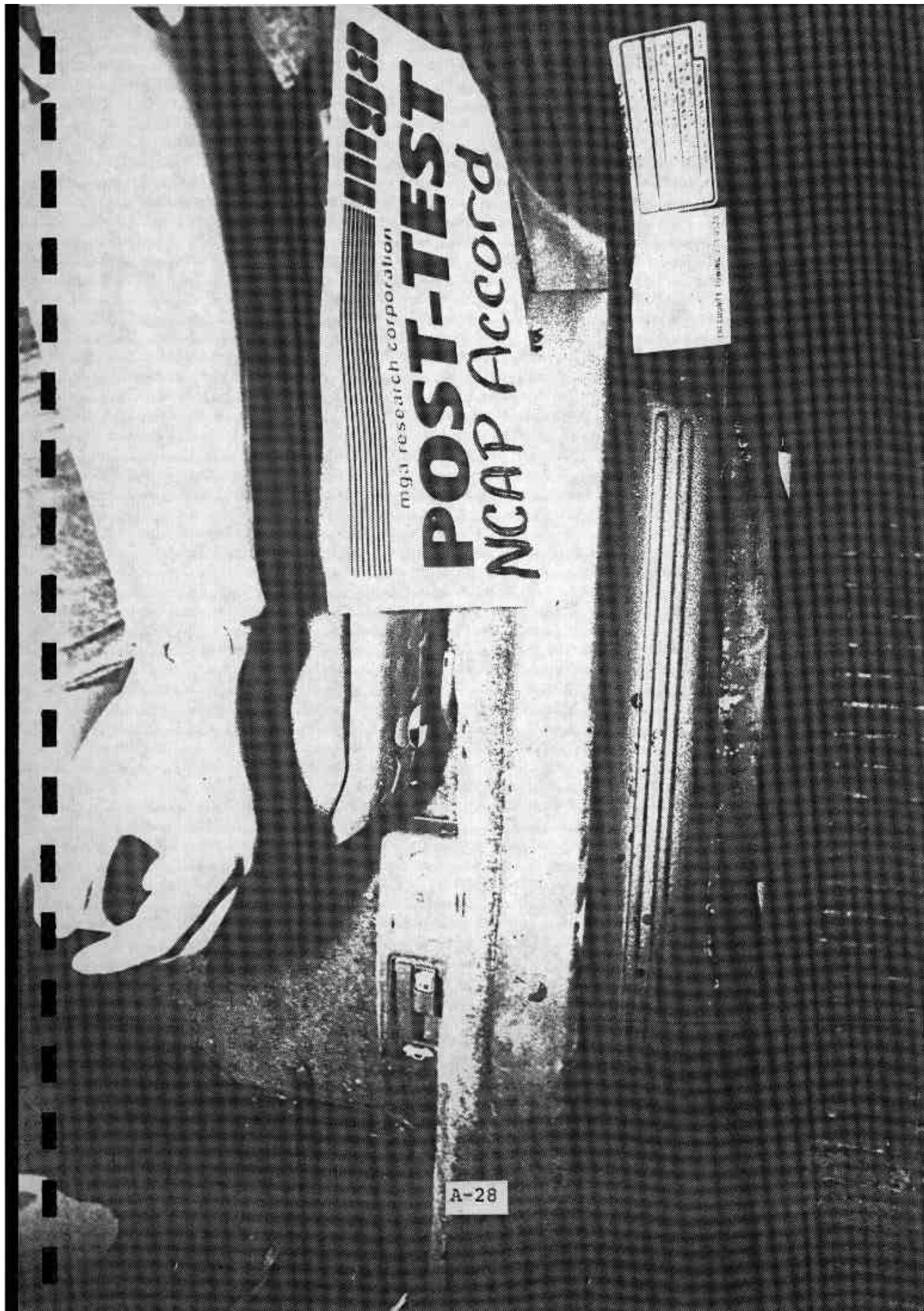


Photo No. A-28 - Post-Test Driver Seat Position View

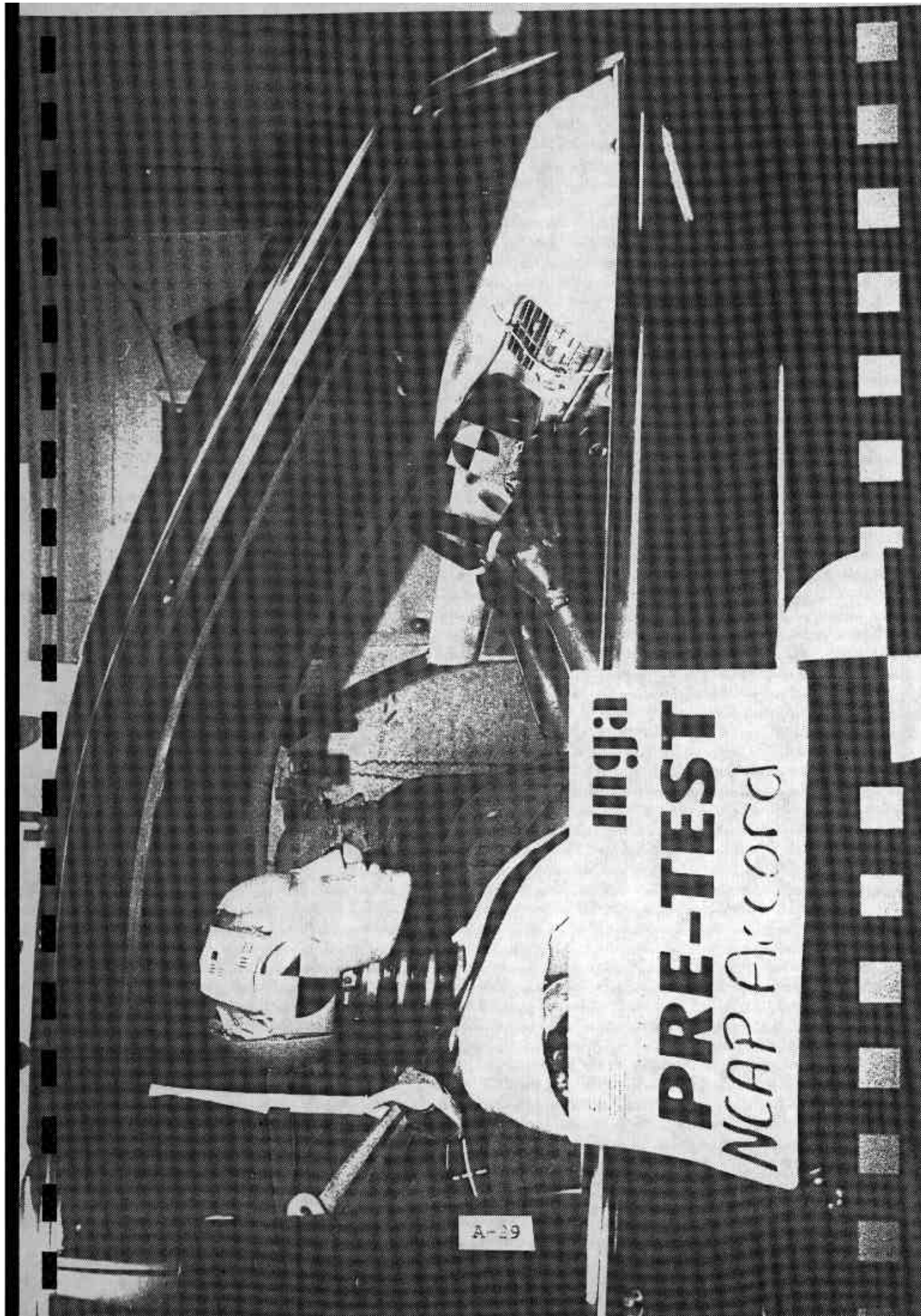


Photo No. A-29 - Pre-Test Passenger Dummy Position View

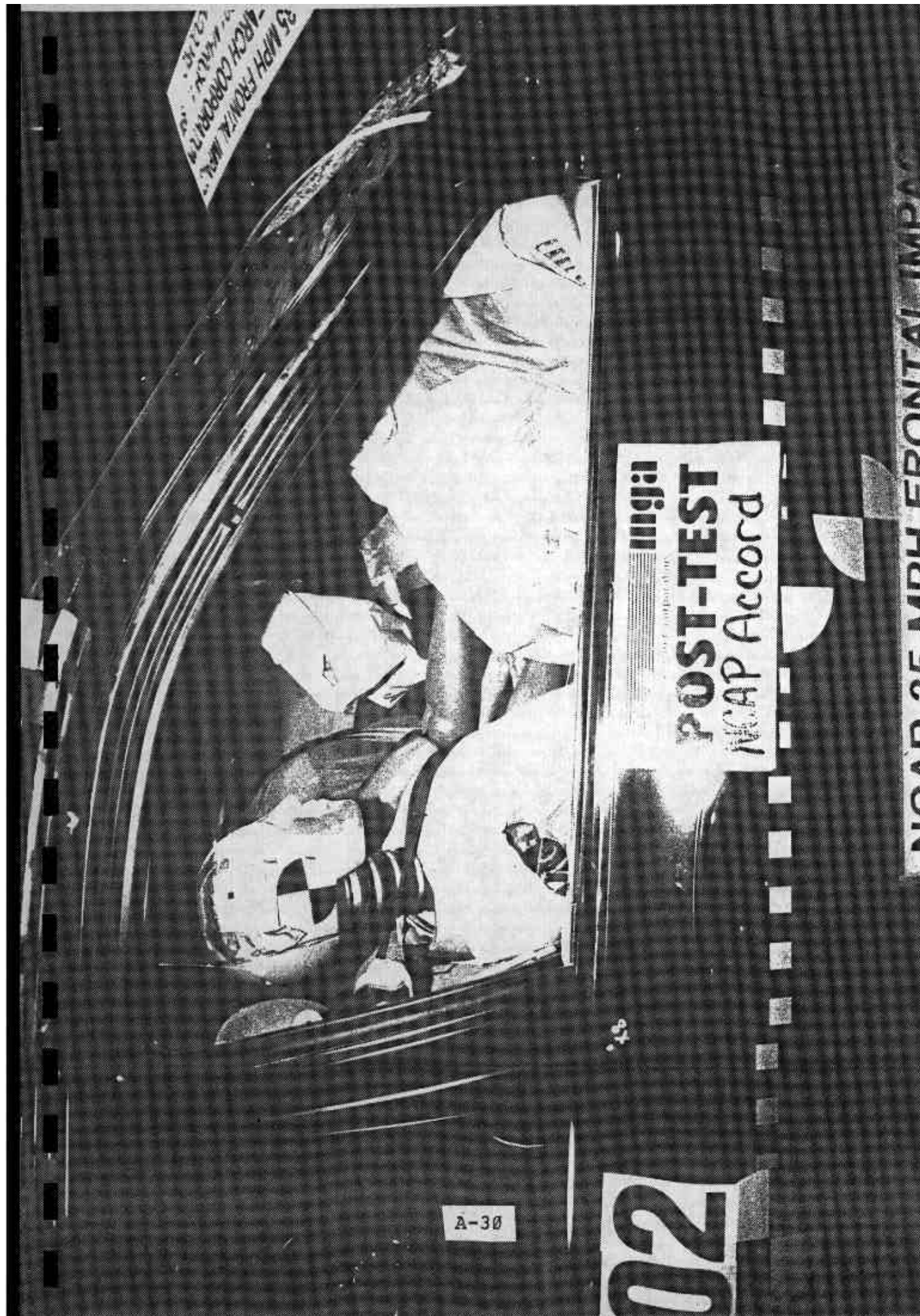


Photo No. A-30 - Post-Test Passenger Dummy Position View

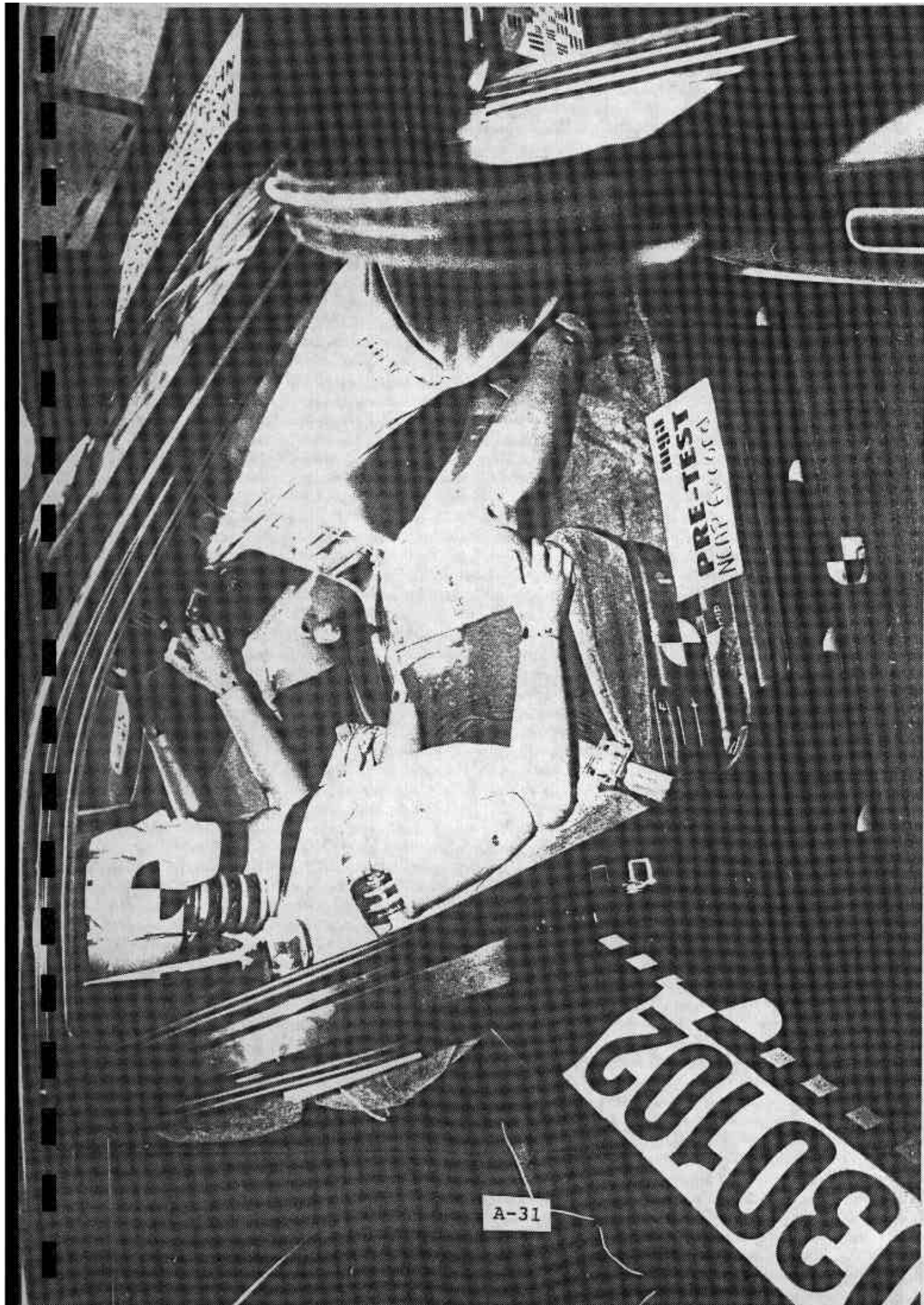


Photo No. A-31 - Pre-Test Passenger Dummy Position View (Door Open)

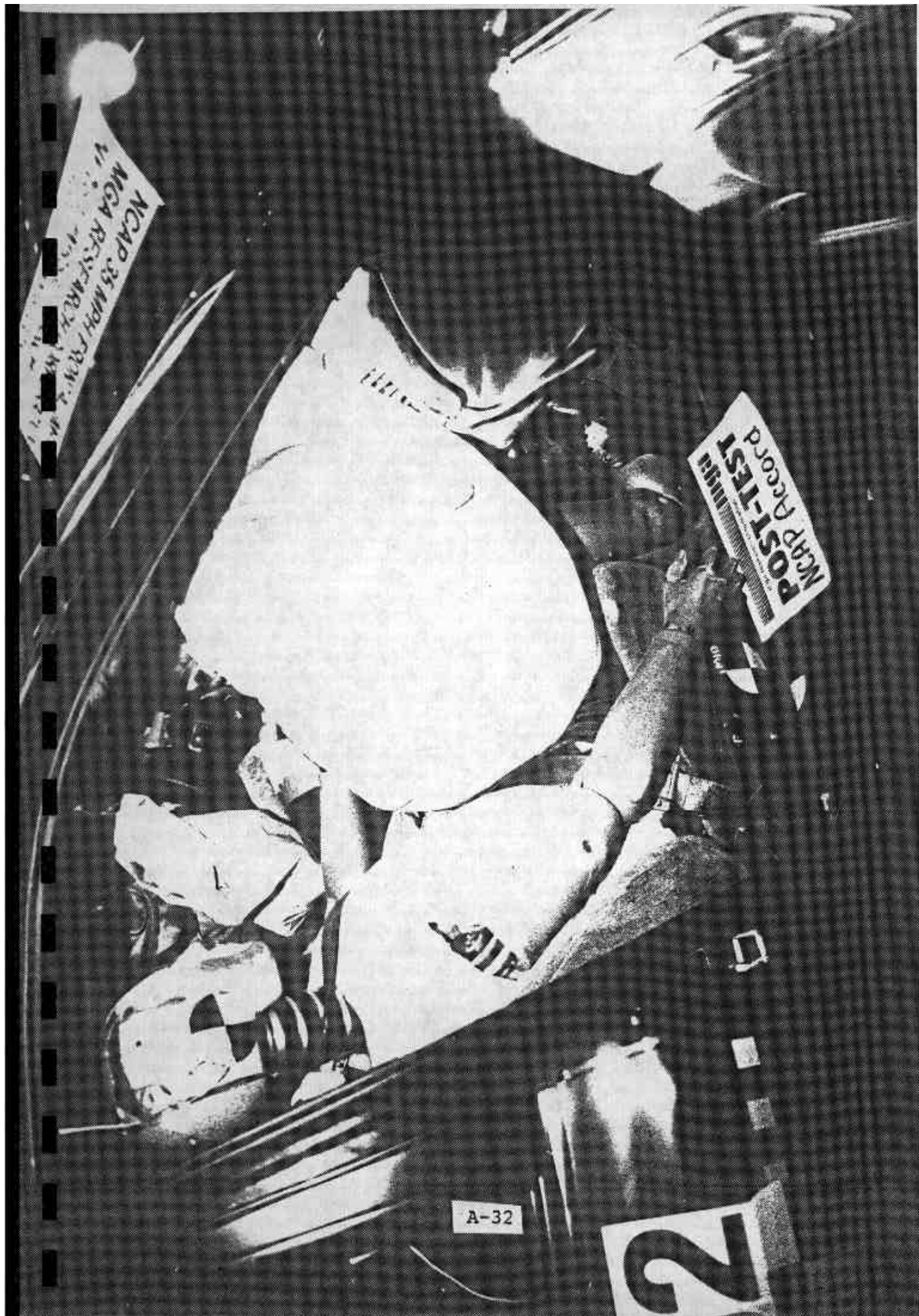


Photo No. A-32 - Post-Test Passenger Dummy Position View (Door Open)



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



Photo No. A-34 - Post-Test Passenger Knee Position View



Photo No. A-35 - Pre-Test Passenger Seat Position View



Photo No. A-36 - Post-Test Passenger Seat Position View

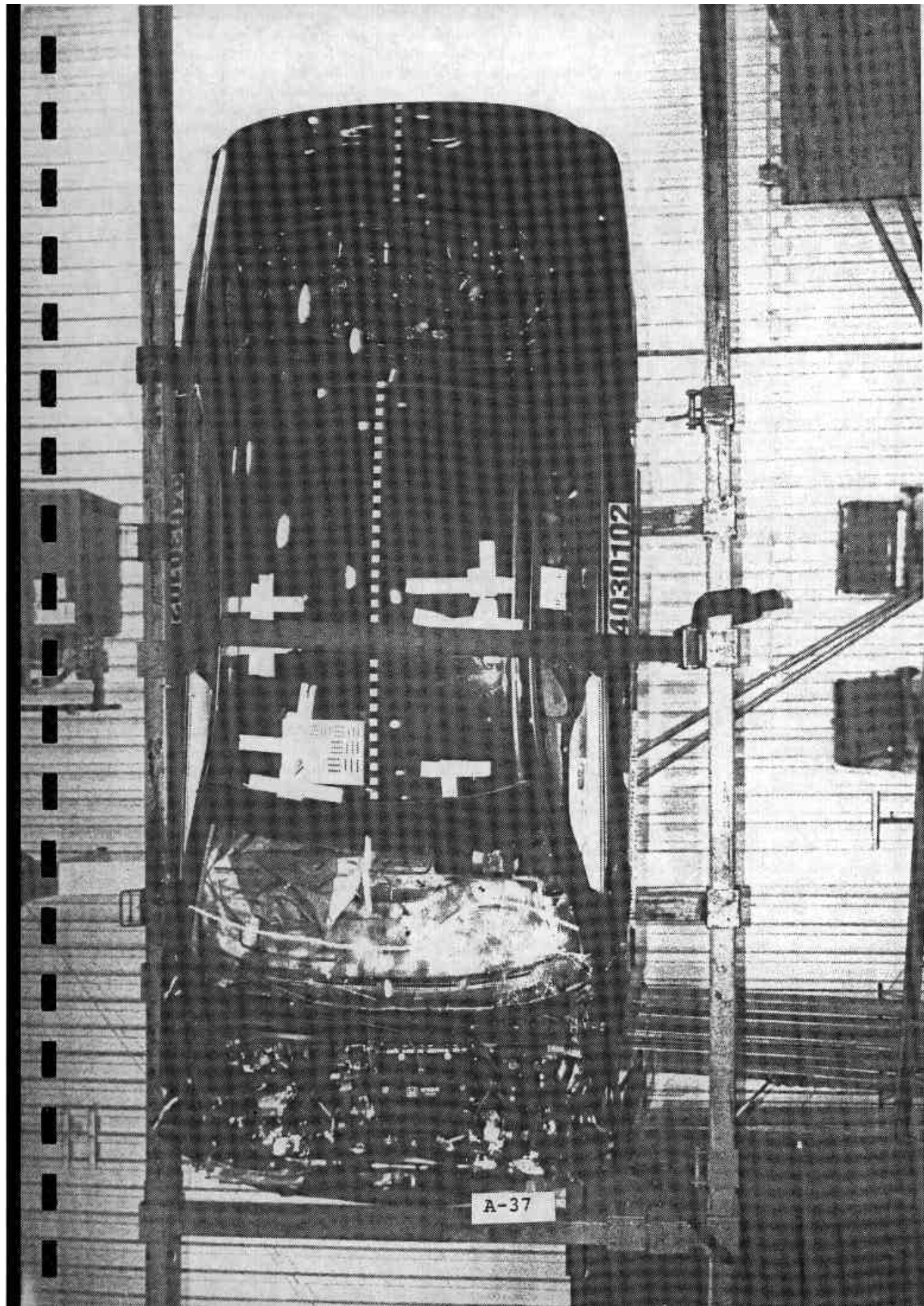
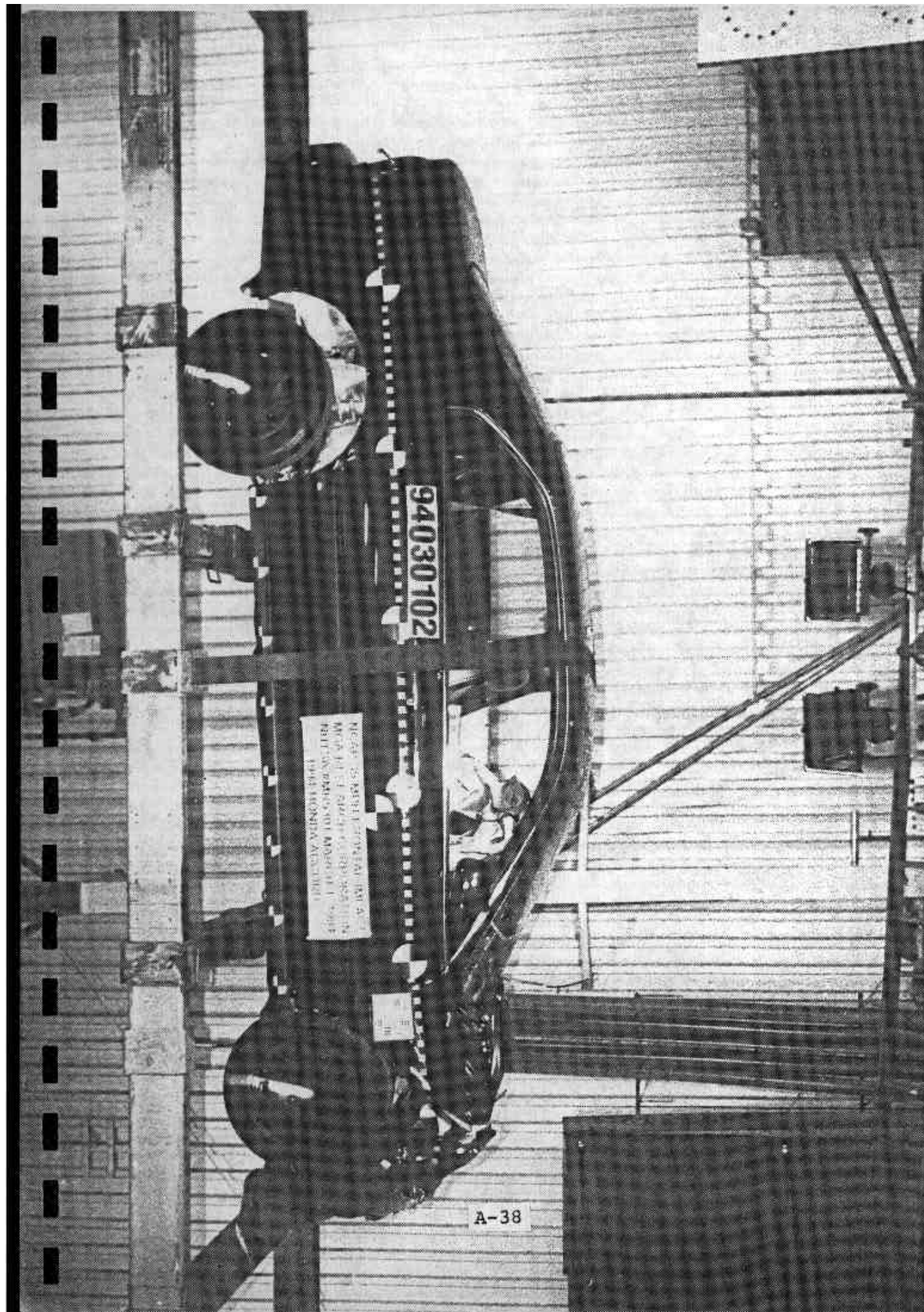


Photo No. A-37 - Rollover 90°



A-38

Photo No. A-38 - Rollover 180°

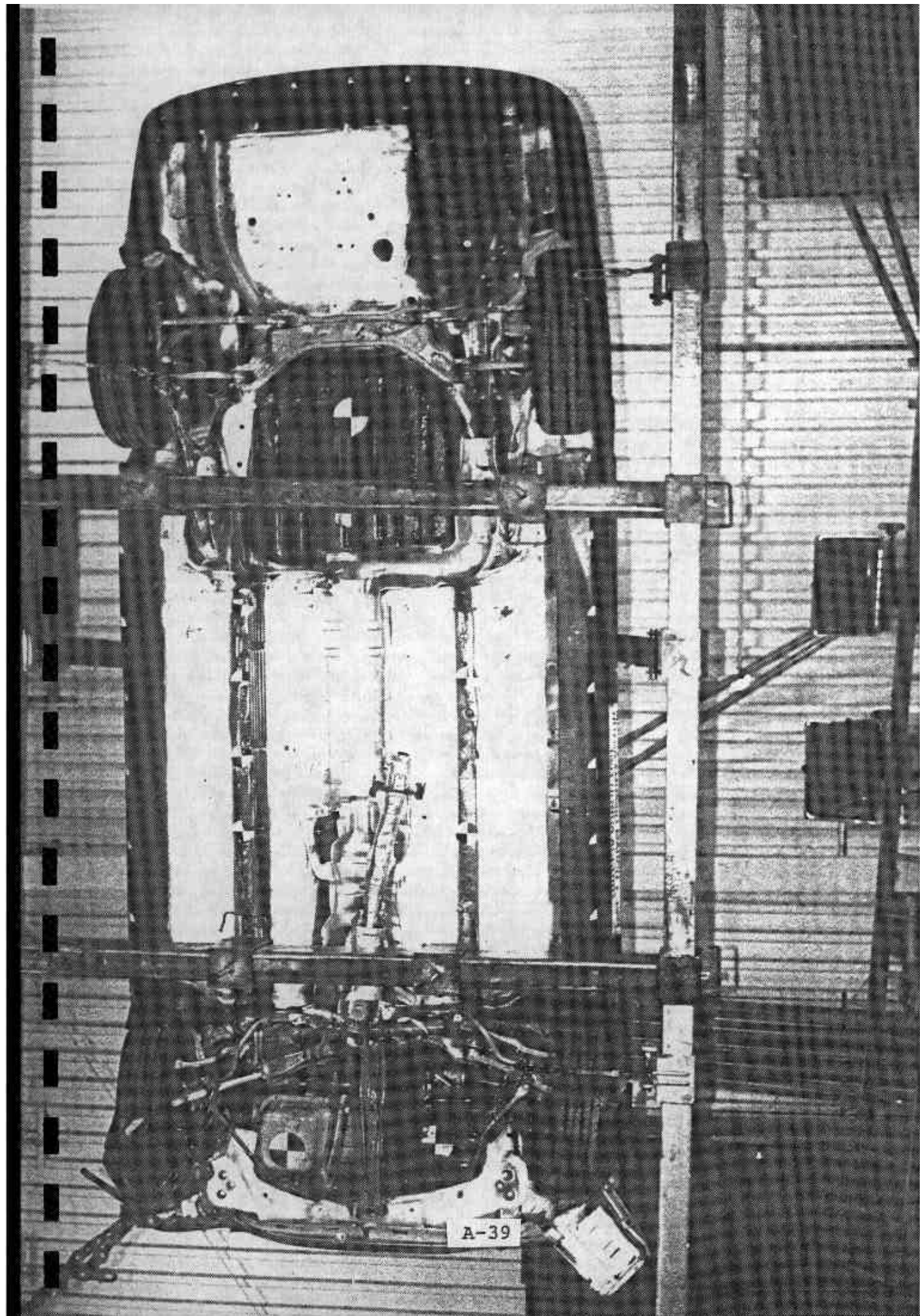


Photo No. A-39 - Rollover 270°

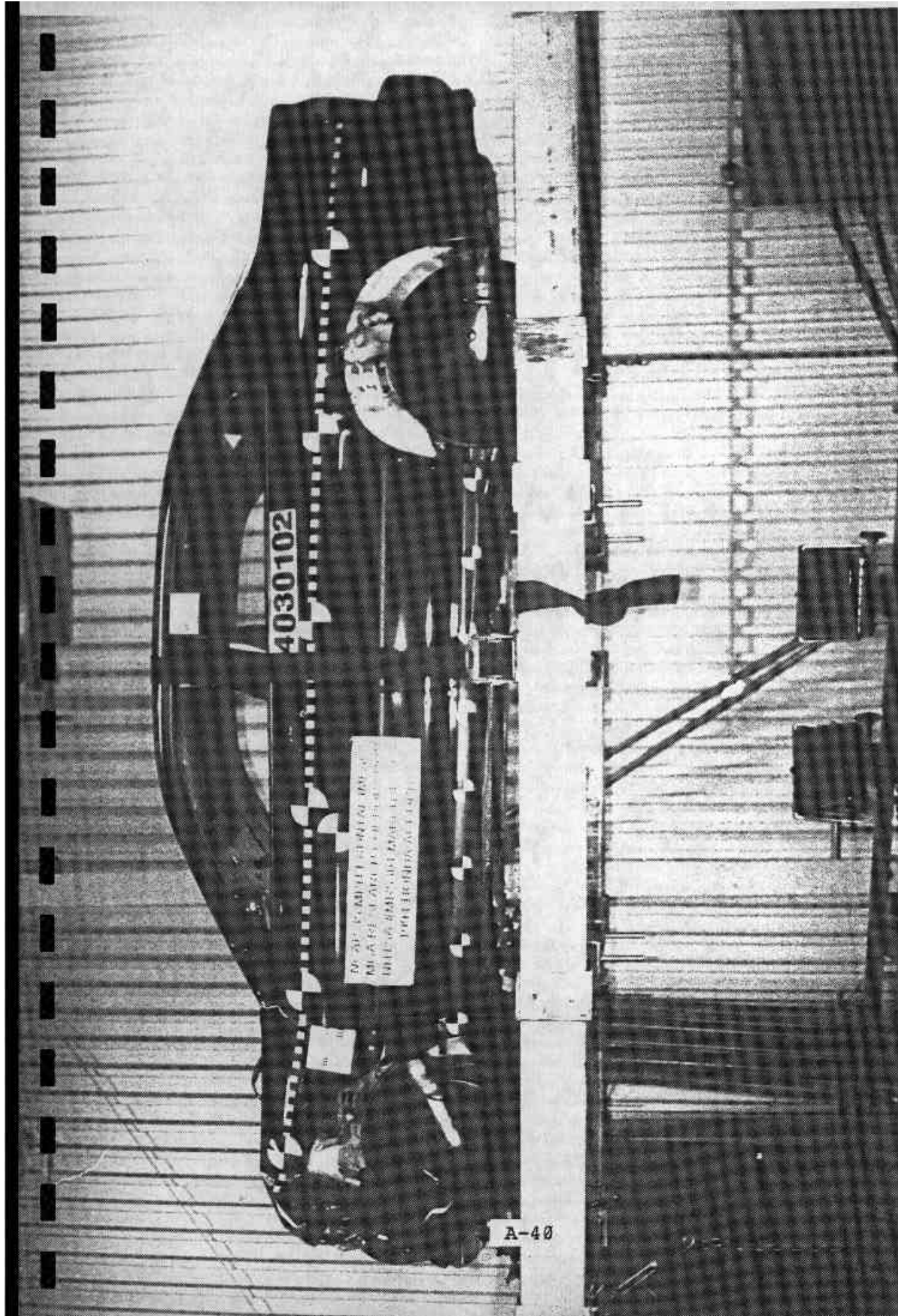


Photo No. A-40 - Rollover 360°

APPENDIX B

Vehicle, Load Cell Barrier and Dummy Response Data

1994 HONDA ACCORD LX 4 DOOR
NHTSA NO.: MR5301

<u>VEHICLE DATA</u>	<u>FILTER CHANNEL CLASS</u>
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)

<u>Data Plot</u>	<u>Page No.</u>
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Figure B-9 - Left Rear Seat Crossmember X Displacement vs. Time*	B-9
Figure B-10 - Left Rear Seat Crossmember X Redundant Acceleration vs. Time	B-10
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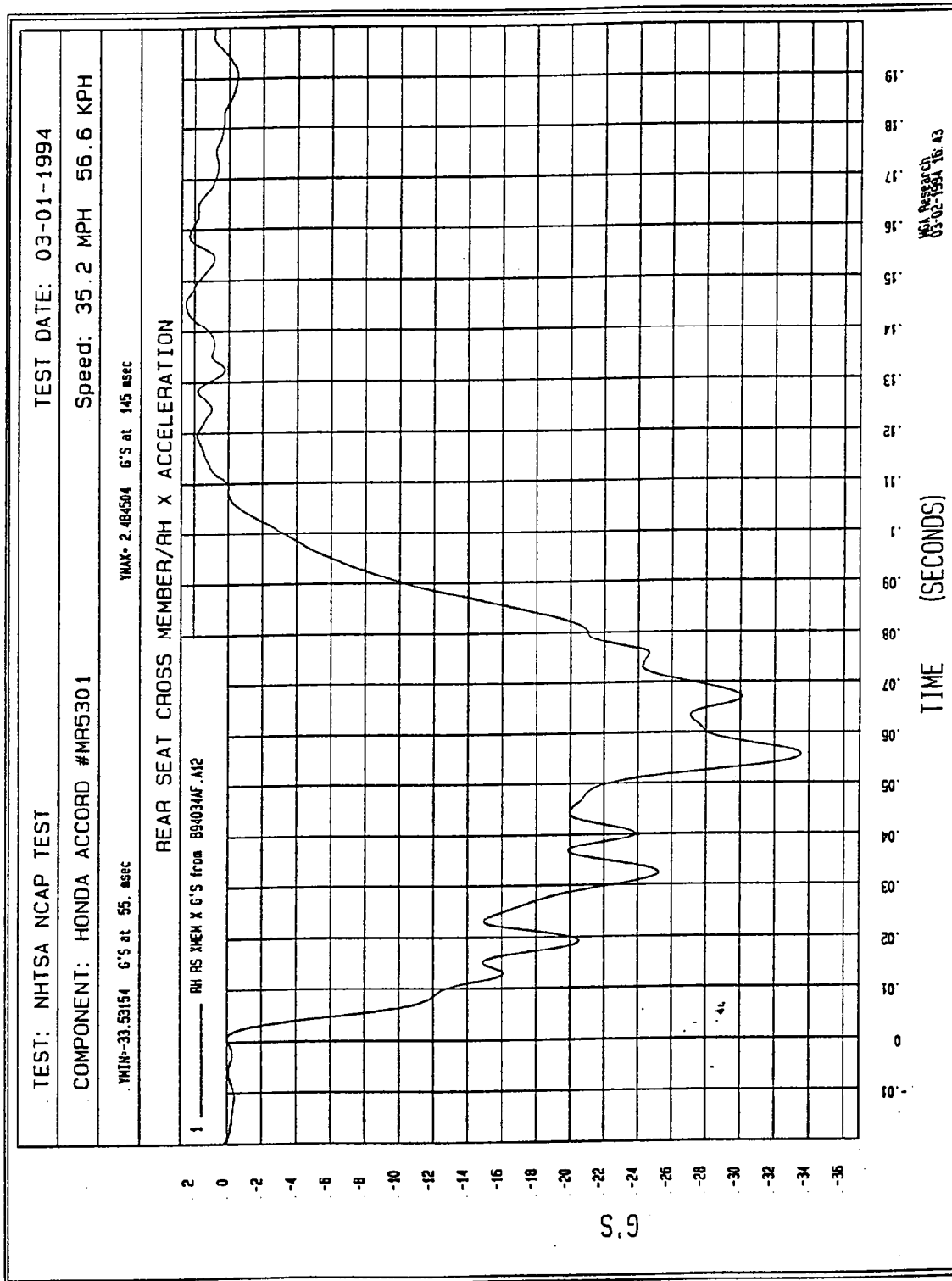


Figure B-1 - Right Rear Seat Crossmember X Acceleration vs. Time

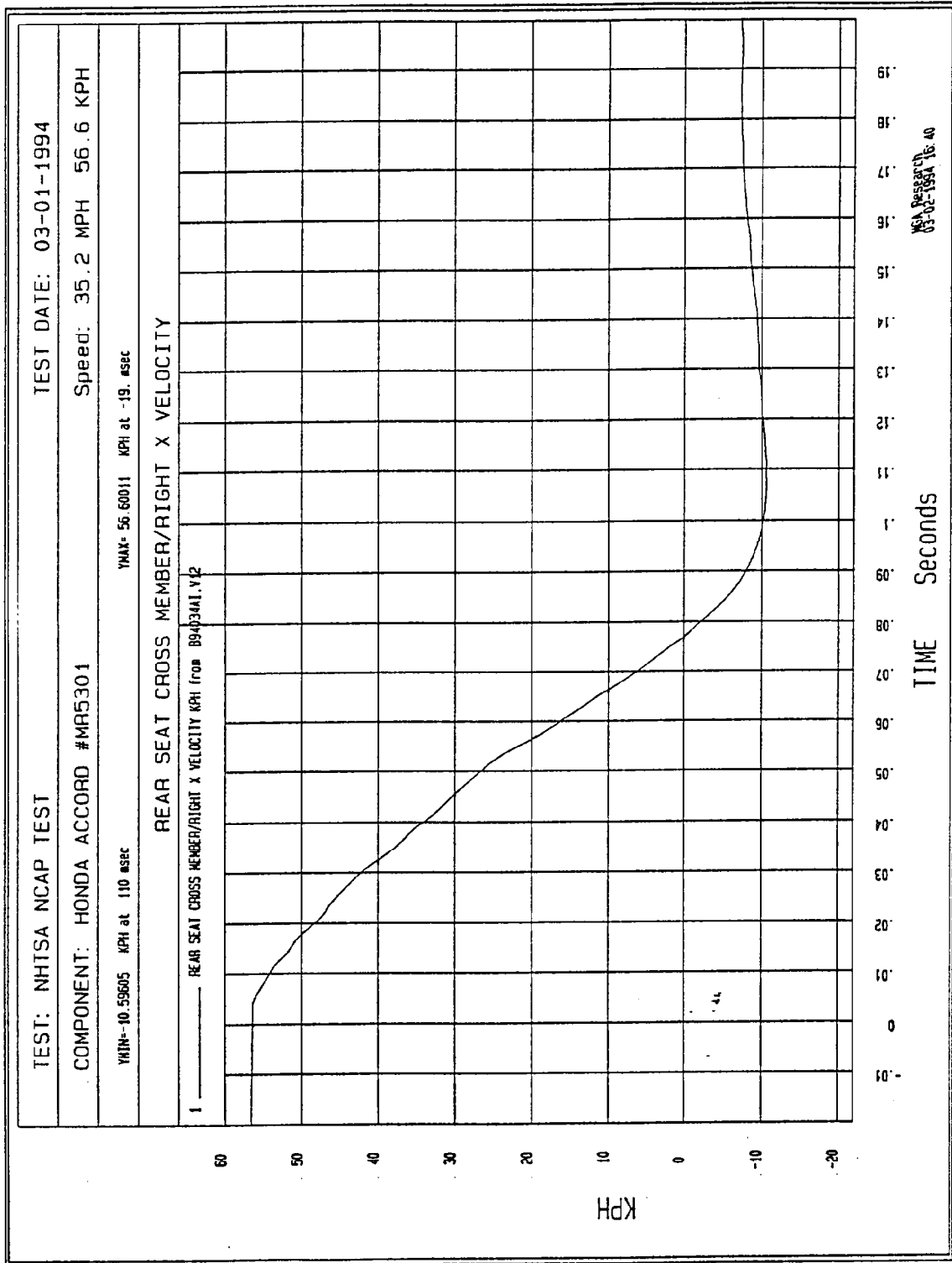


Figure B-2 - Right Rear Seat Crossmember X Velocity vs. Time

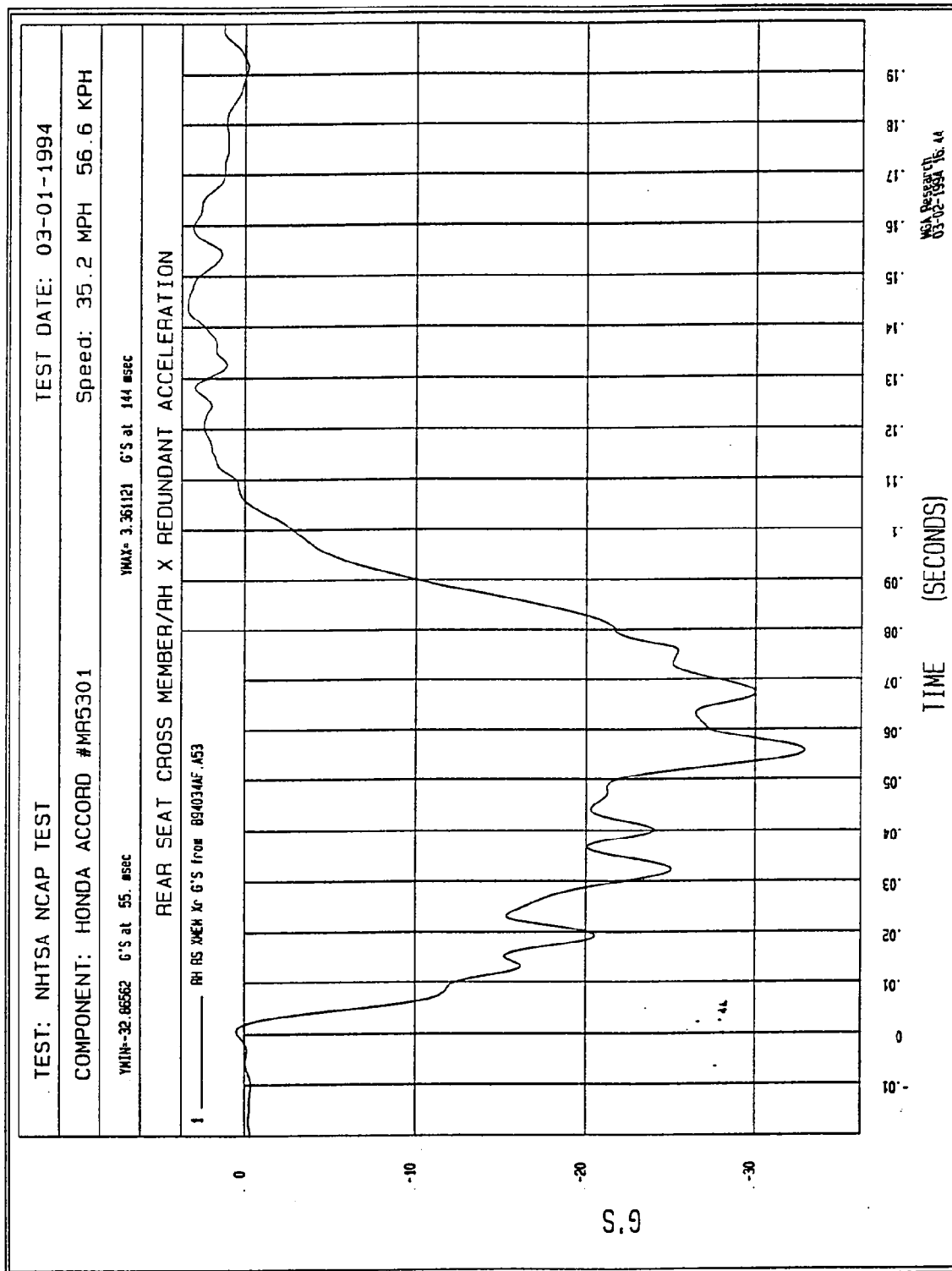


Figure B-4 - Right Rear Seat Crossmember X Redundant Acceleration vs. Time

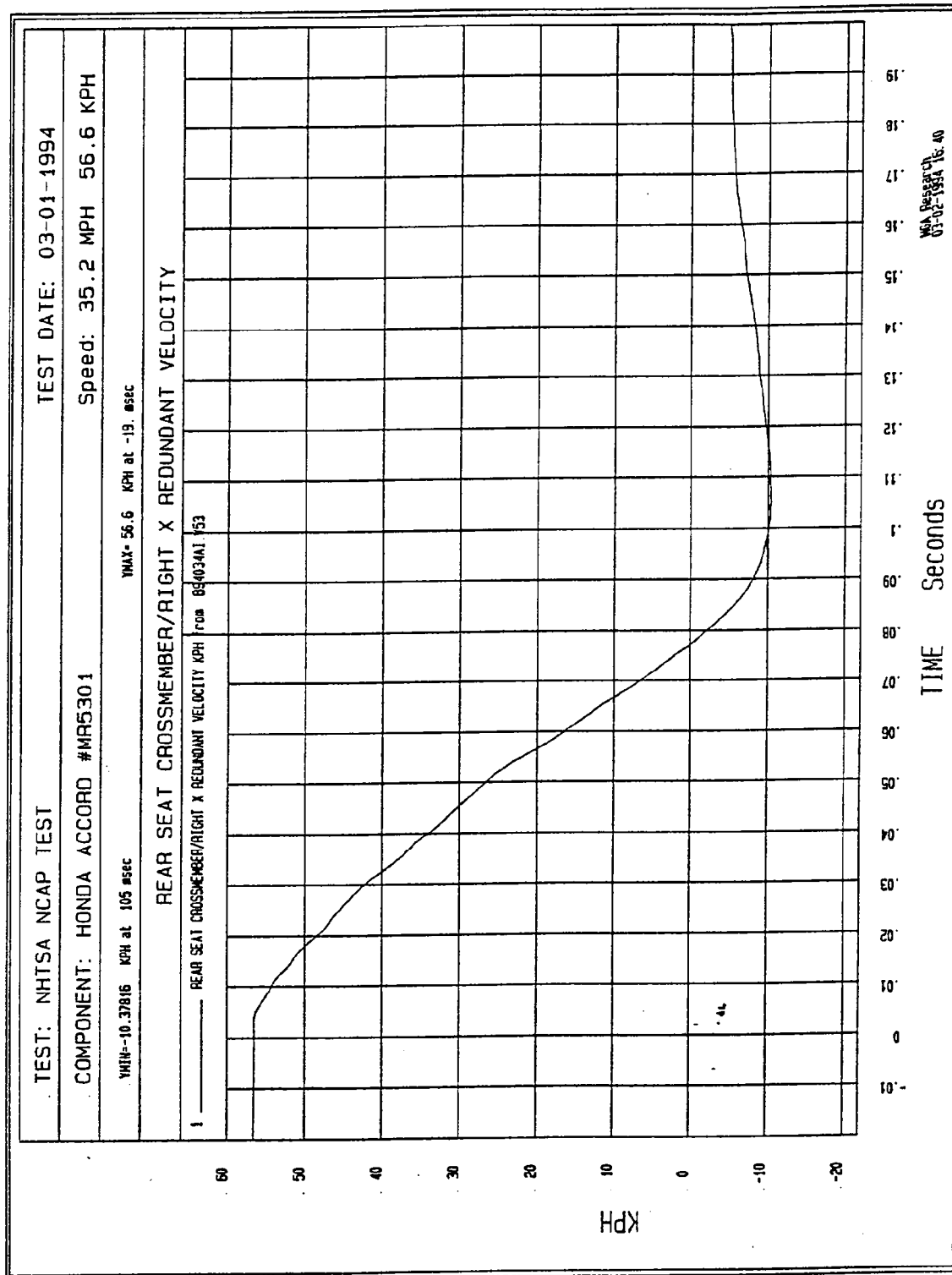
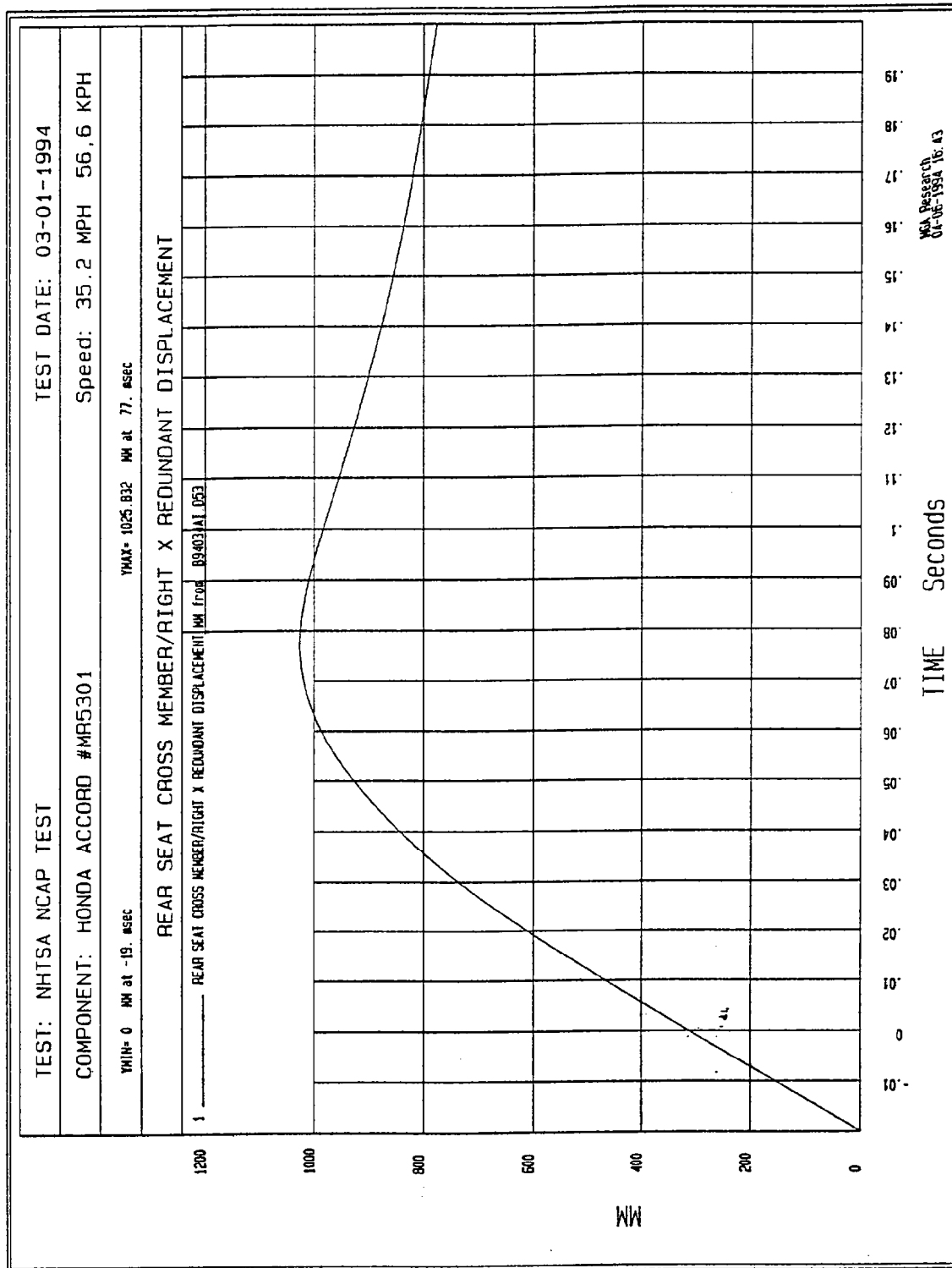


Figure B-5 - Right Rear Seat Crossmember X Redundant Velocity vs. Time



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

NO VALID DATA COLLECTED

B-7

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

NO VALID DATA COLLECTED

B-8

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

NO VALID DATA COLLECTED

B-9

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

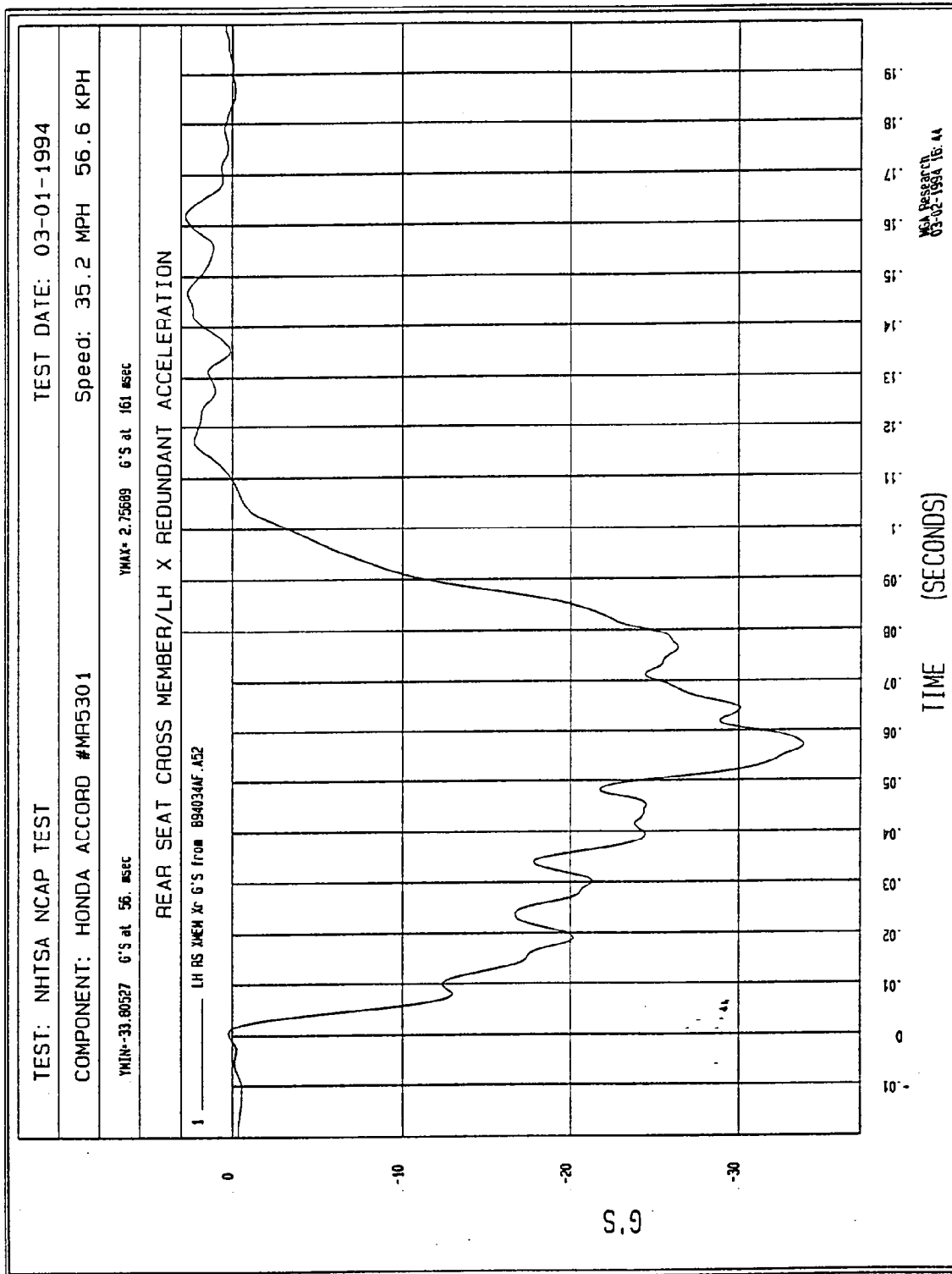


Figure B-10 - Left Rear Seat Crossmember X Redundant Acceleration vs. Time

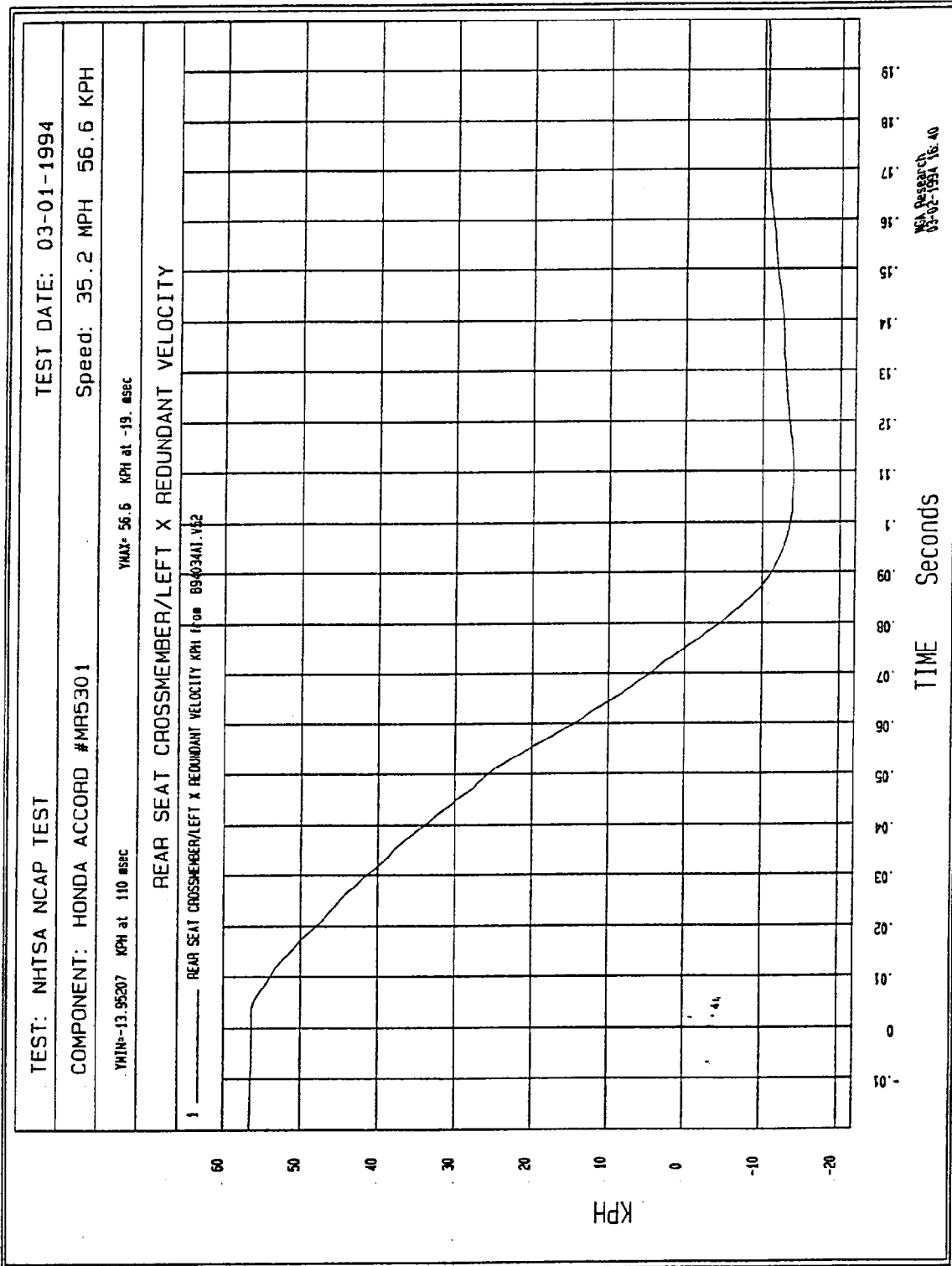


Figure B-11 - Left Rear Seat Crossmember X Redundant Velocity vs. Time

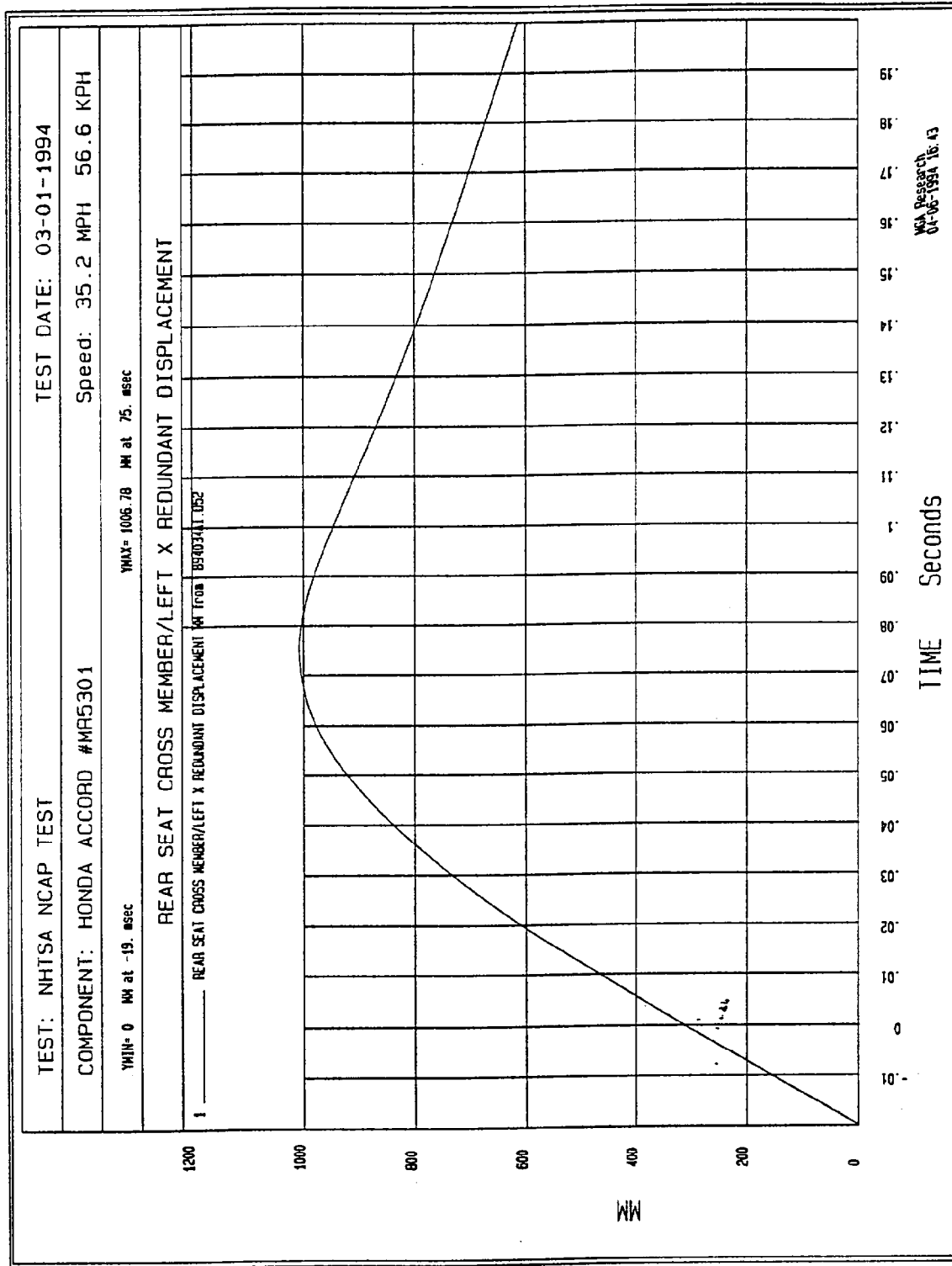


Figure B-12 - Left Rear Seat Crossmember X Redundant Displacement vs. Time

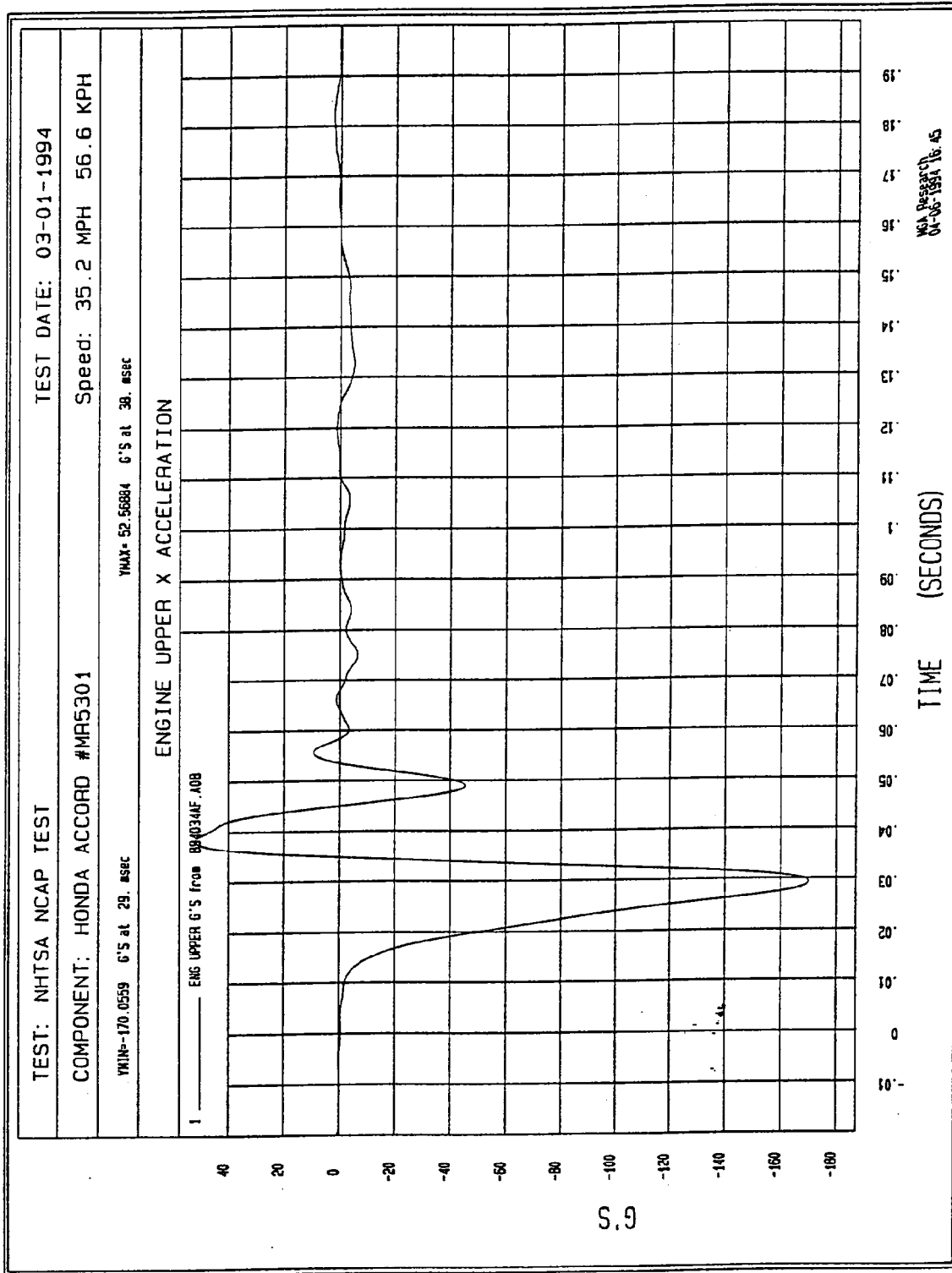


Figure B-13 - Upper Engine Block X Acceleration vs. Time

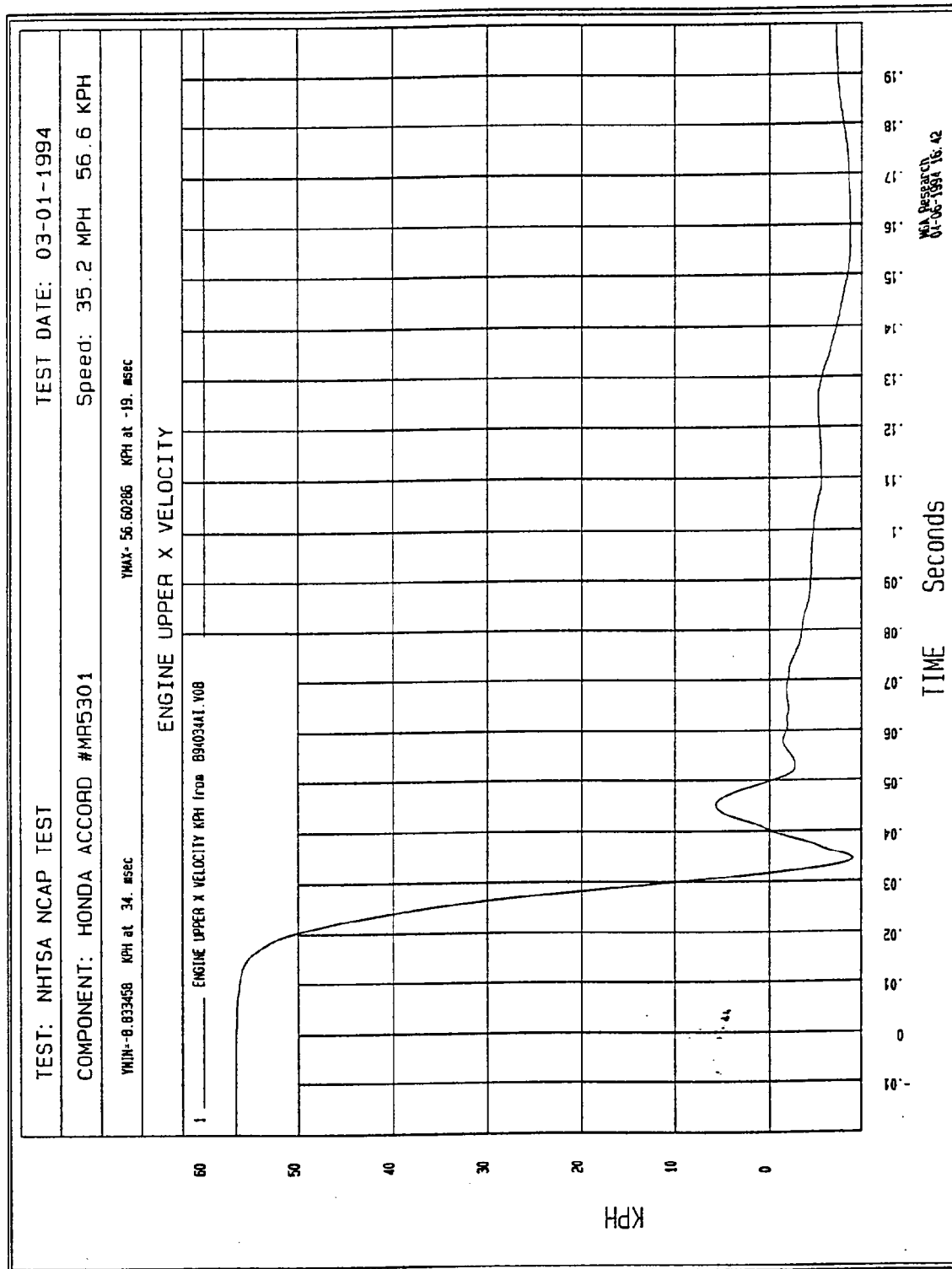


Figure B-14 - Upper Engine Block X Velocity vs. Time

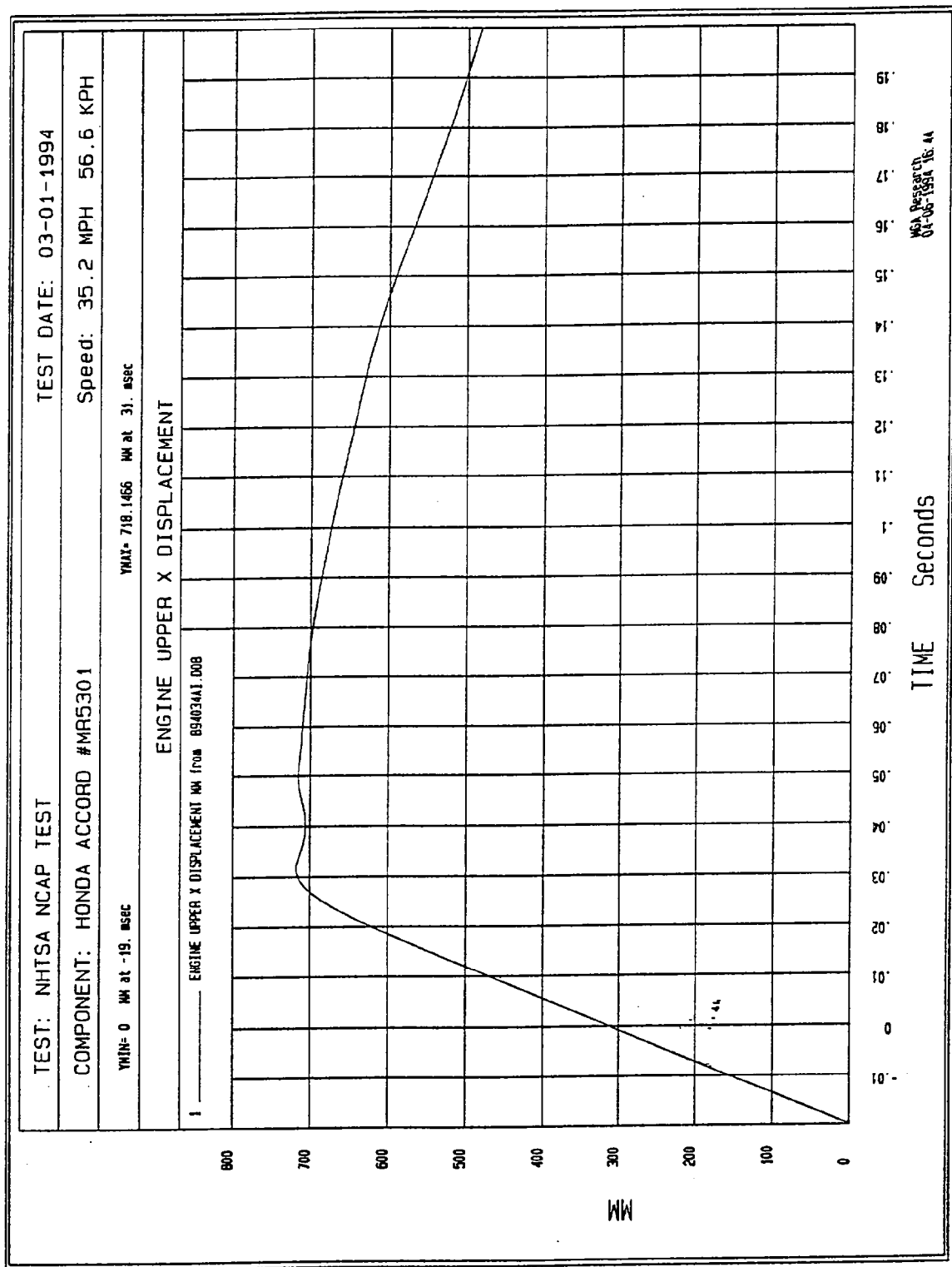


Figure B-15 - Upper Engine Block X Displacement vs. Time

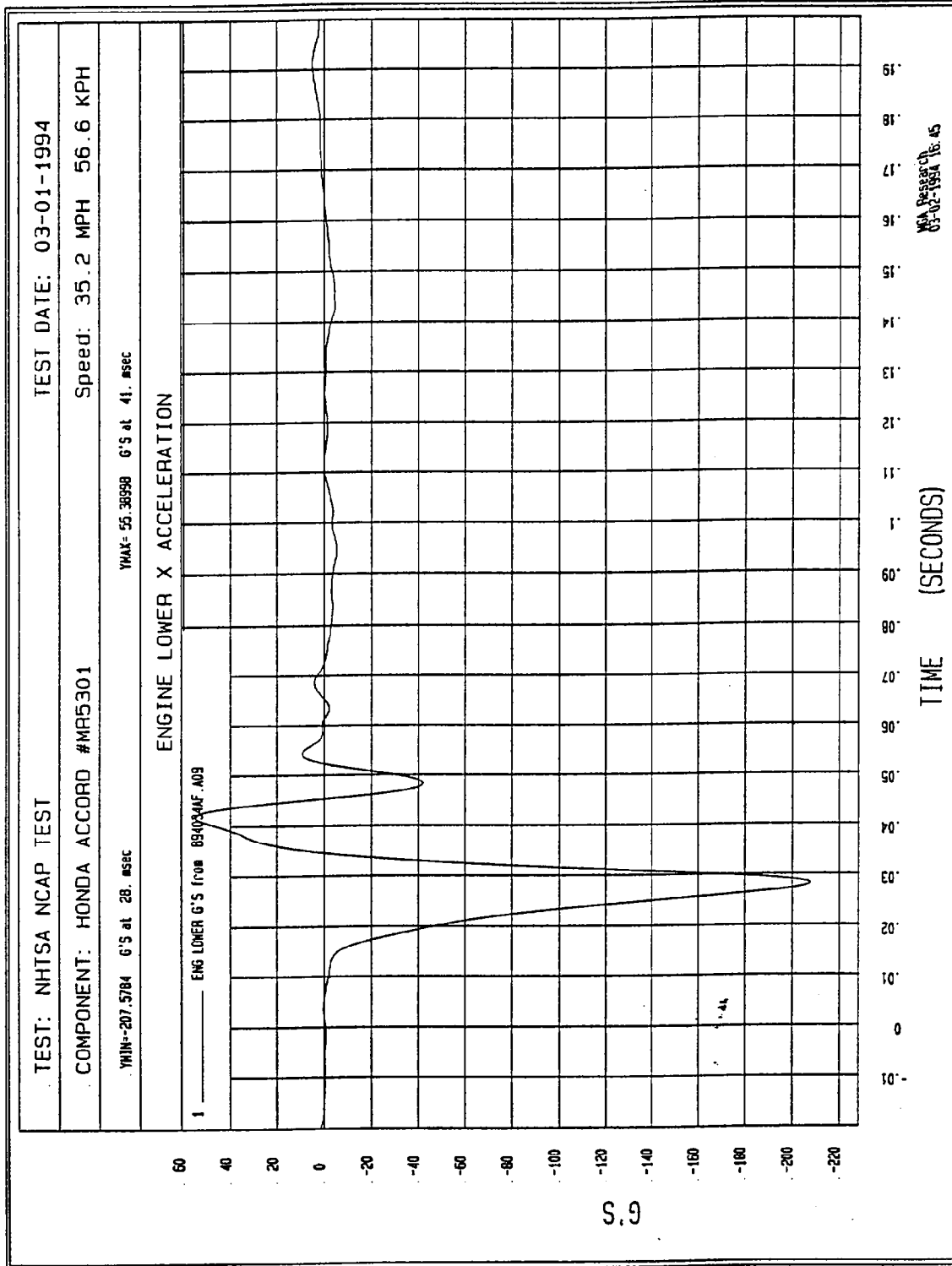


Figure B-16 - Bottom of Engine Block X Acceleration vs. Time

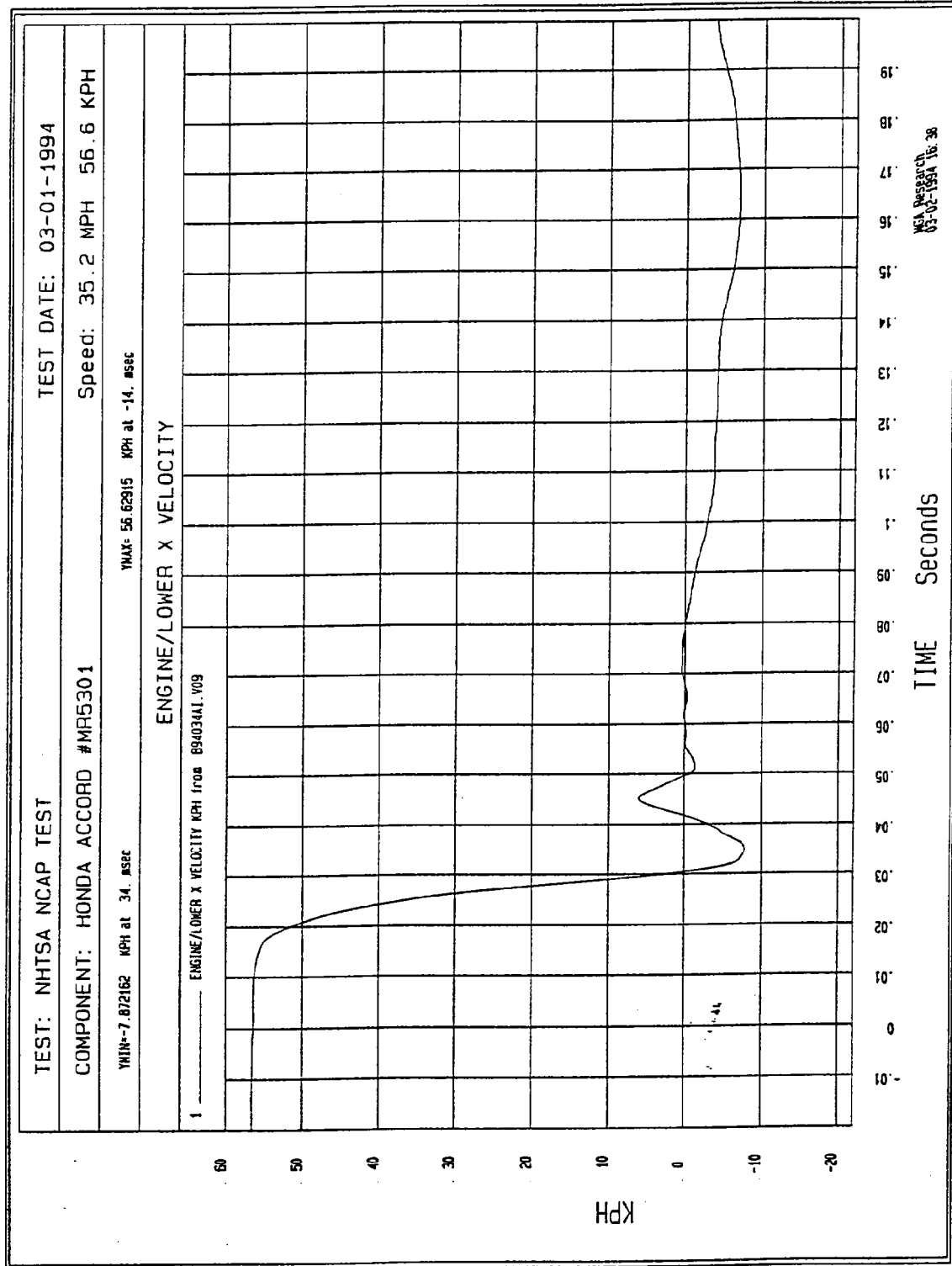


Figure B-17 - Bottom of Engine Block X Velocity vs. Time

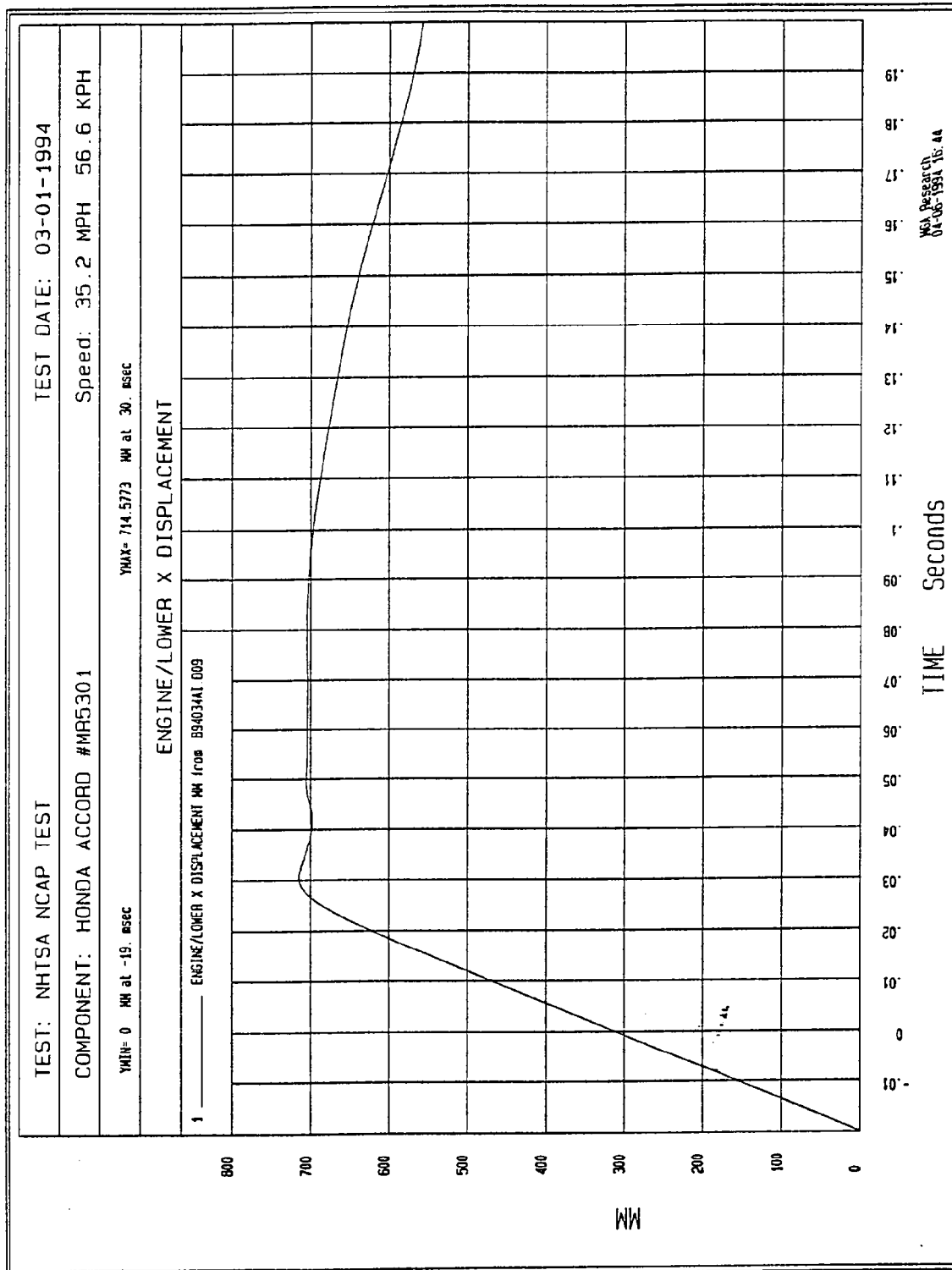


Figure B-18 - Bottom of Engine Block X Displacement vs. Time

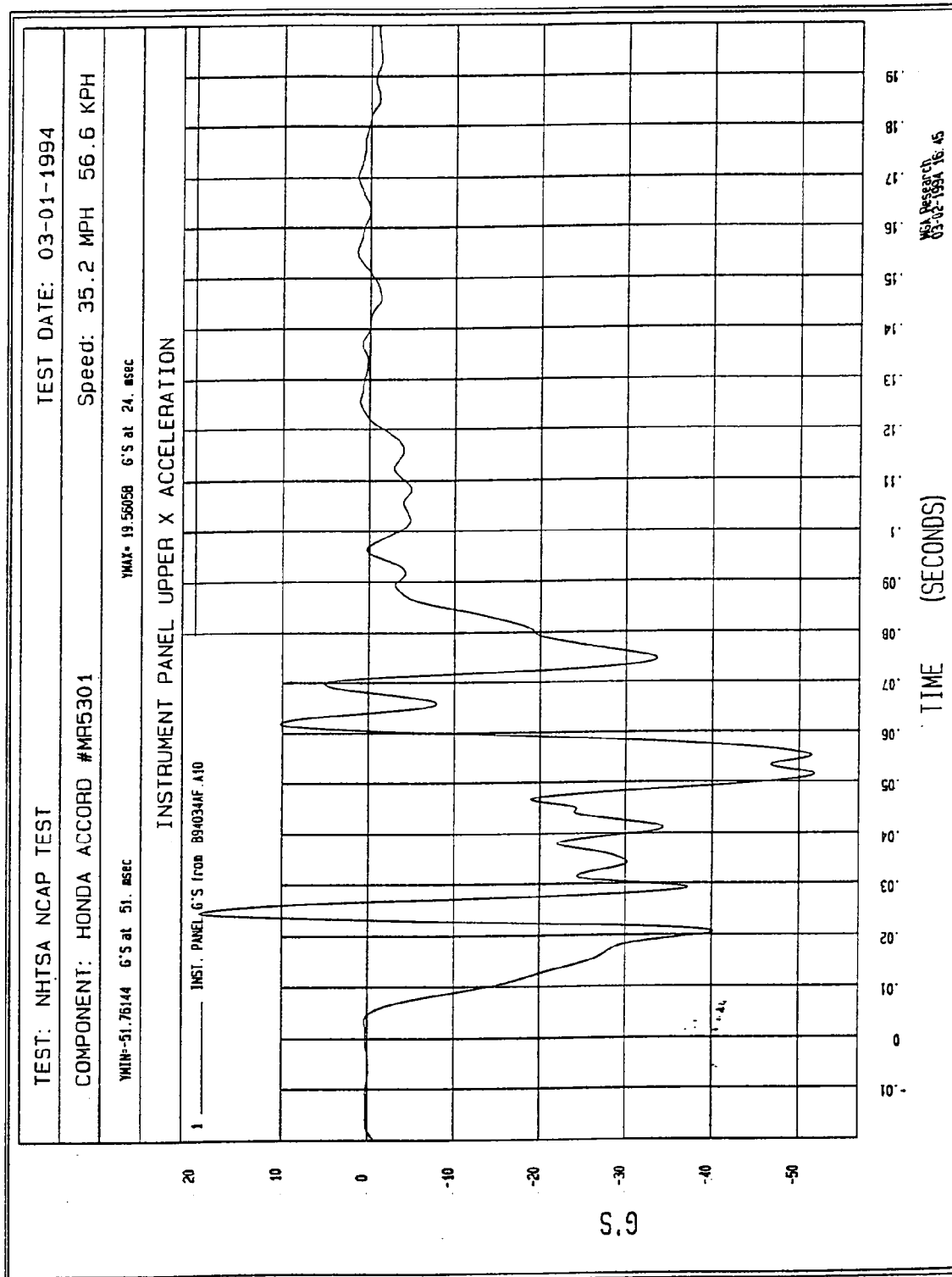
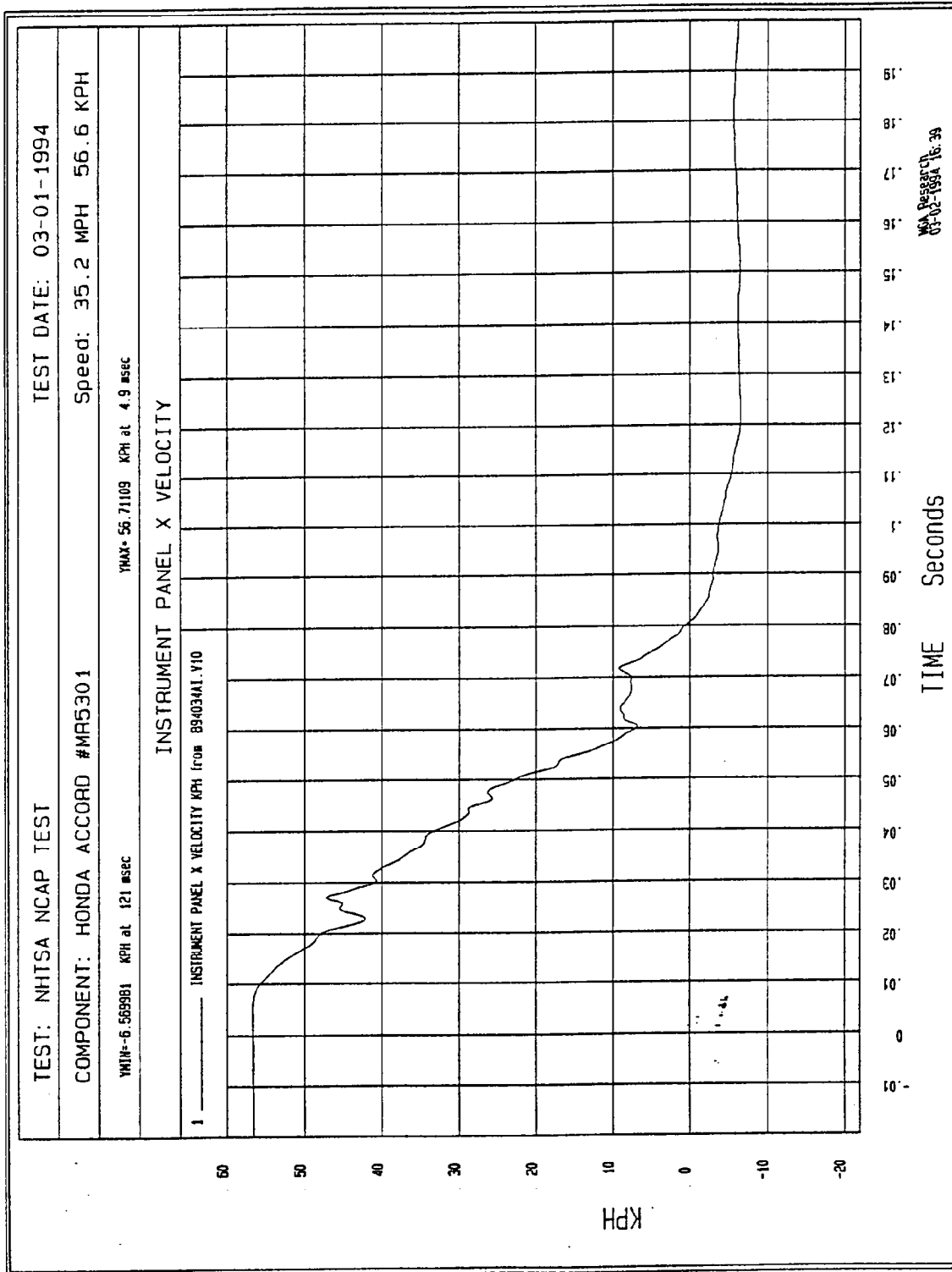


Figure B-19 - Instrument Panel X Acceleration vs. Time



B-20

Figure B-20 - Instrument Panel X Velocity vs. Time

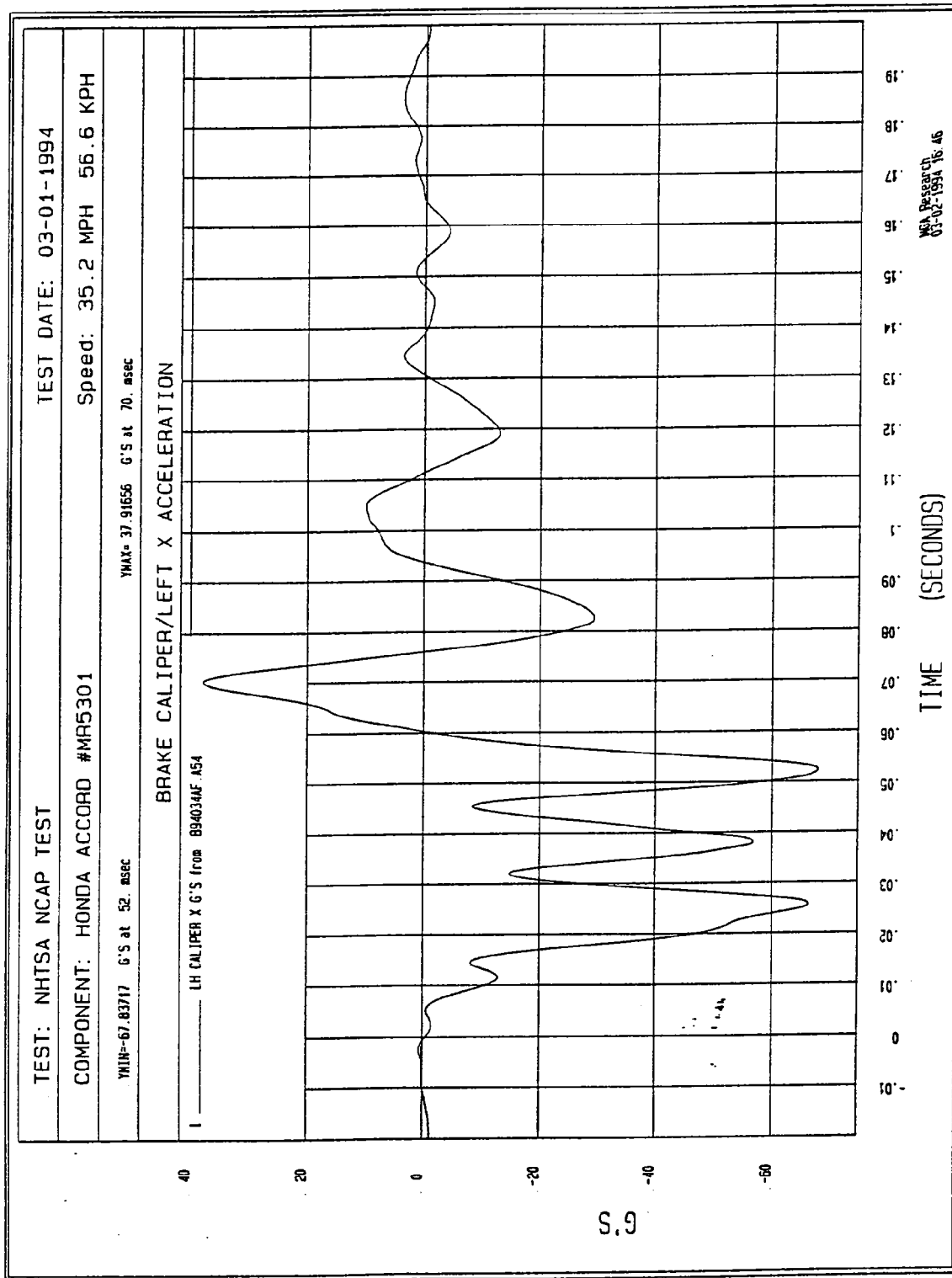
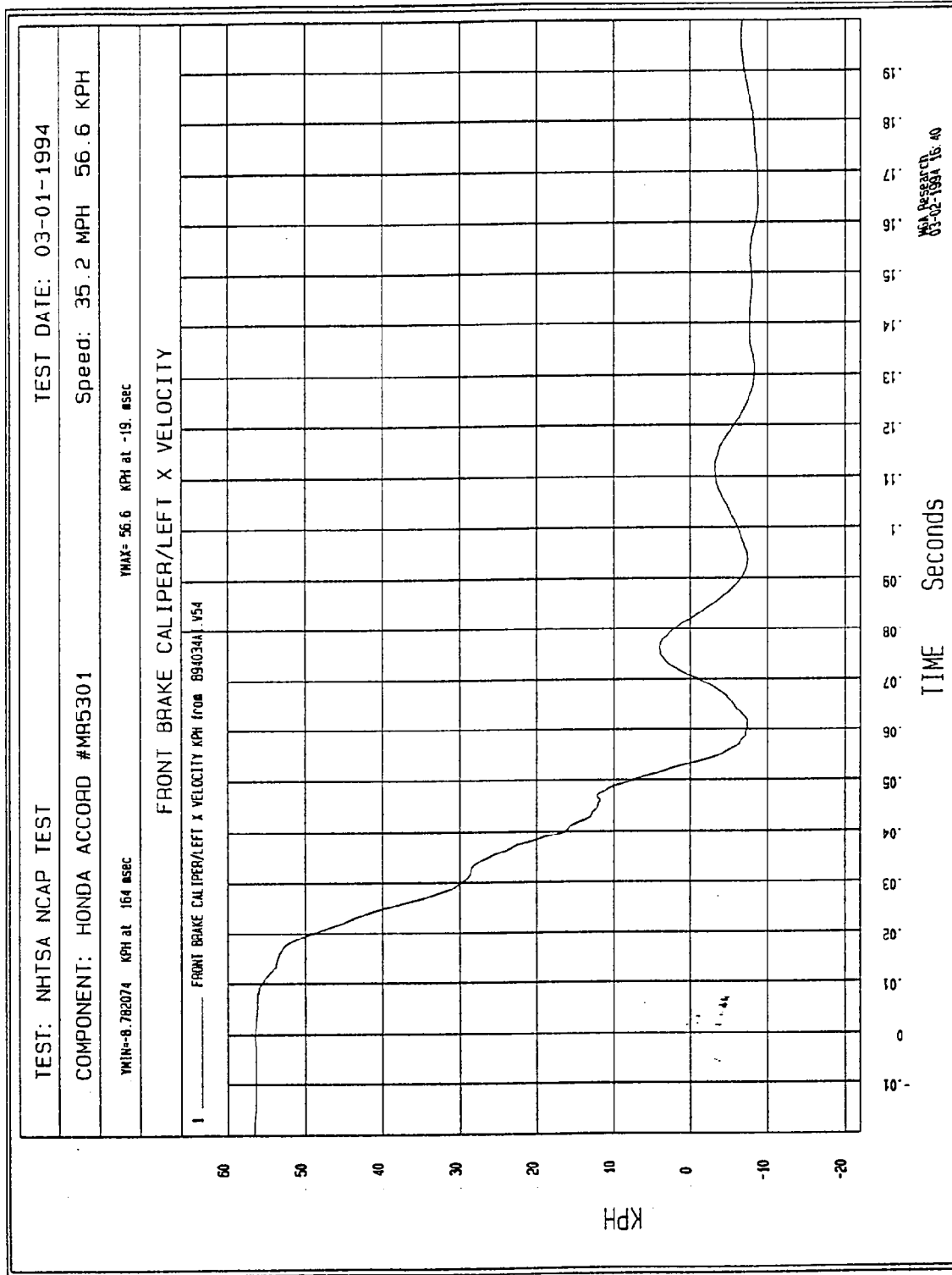


Figure B-21 - Left Brake Caliper X Acceleration vs. Time



B-22

Figure B-22 - Left Brake Caliper x Velocity vs. Time

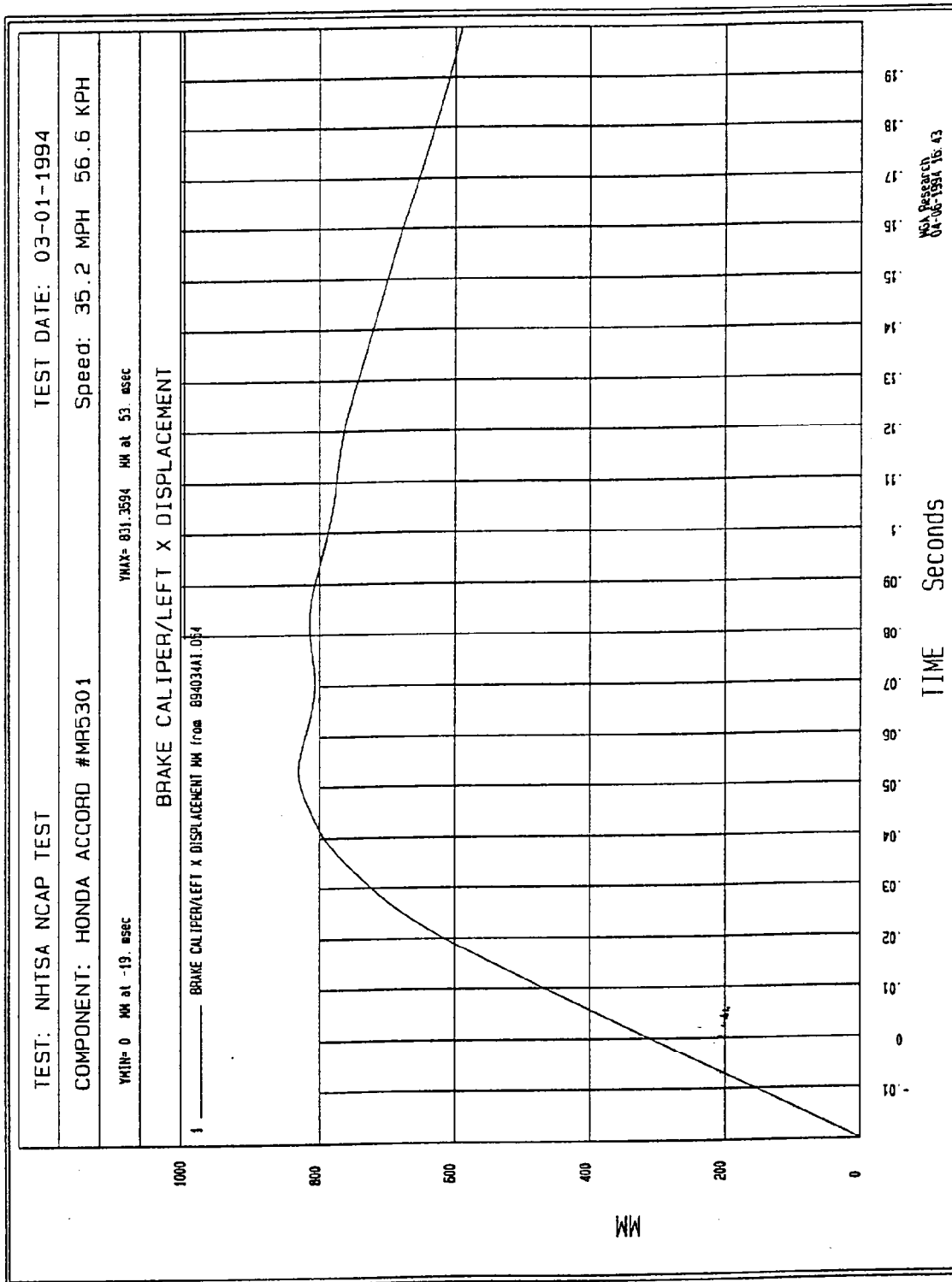


Figure B-23 - Left Brake Caliper X Displacement vs. Time

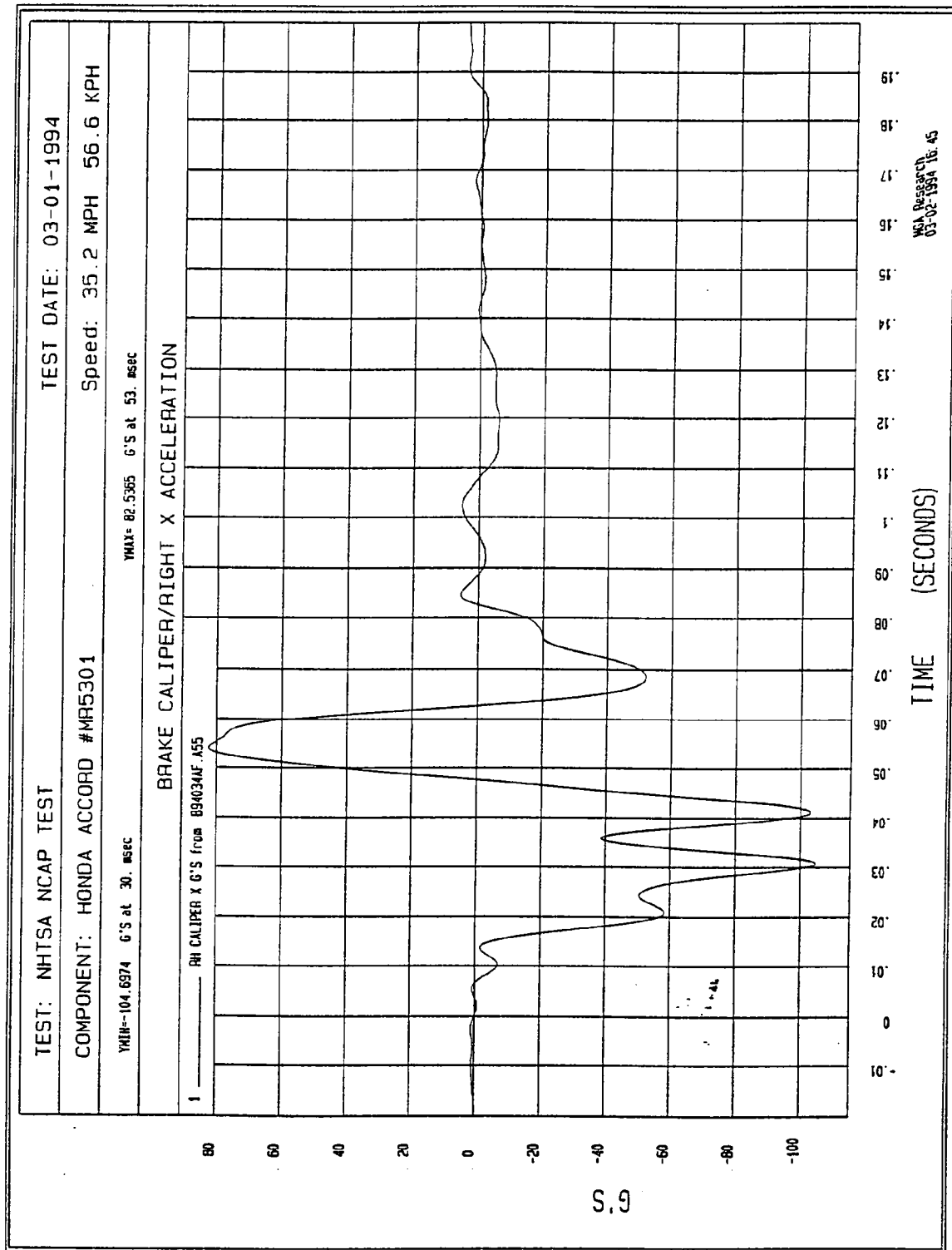


Figure B-24 - Right Brake Caliper X Acceleration vs. Time

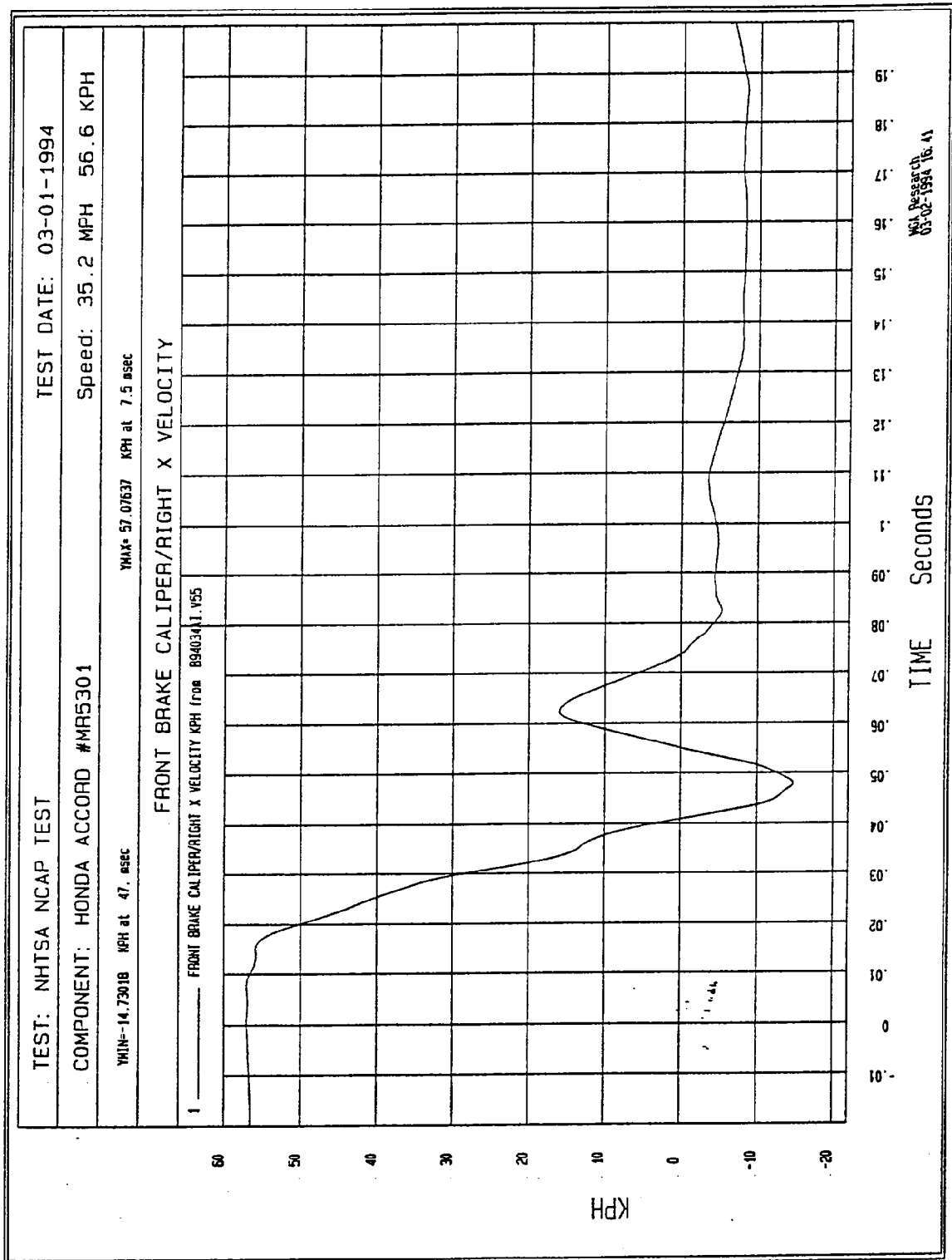


Figure B-25 - Right Brake Caliper X Velocity vs. Time

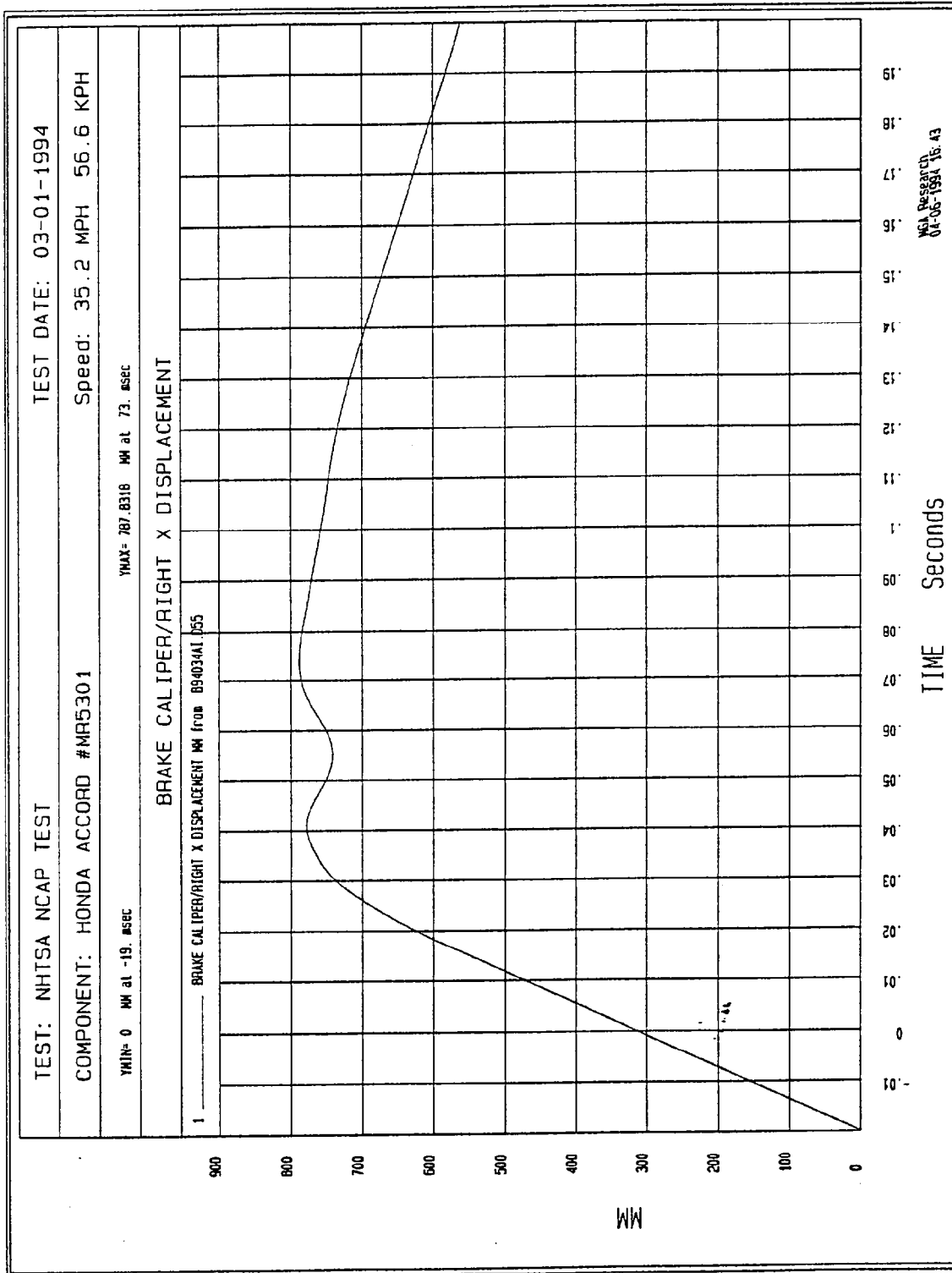


Figure B-26 - Right Brake Caliper X Displacement vs. Time

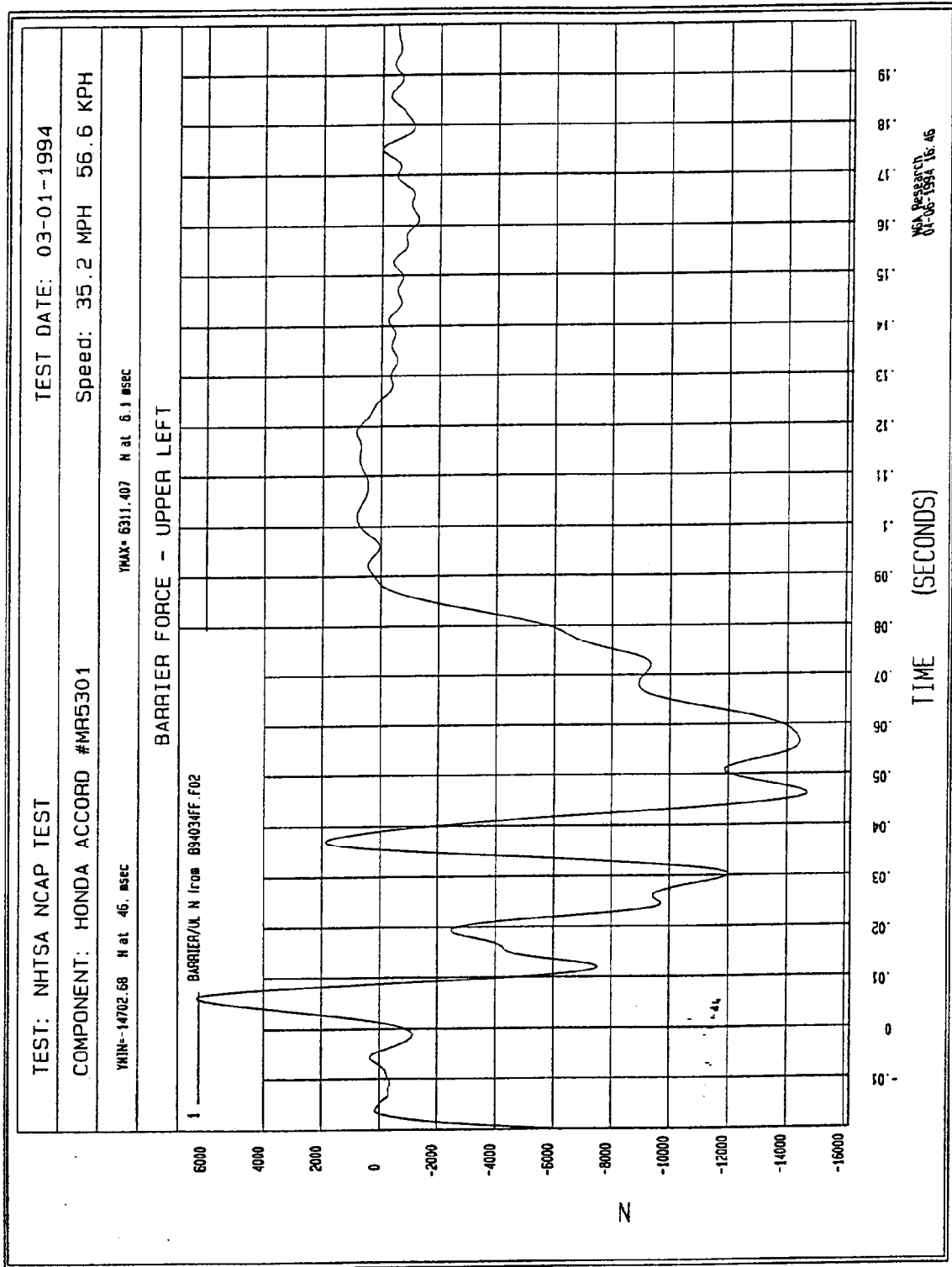


Figure B-27 - Upper Left Barrier Force vs. Time

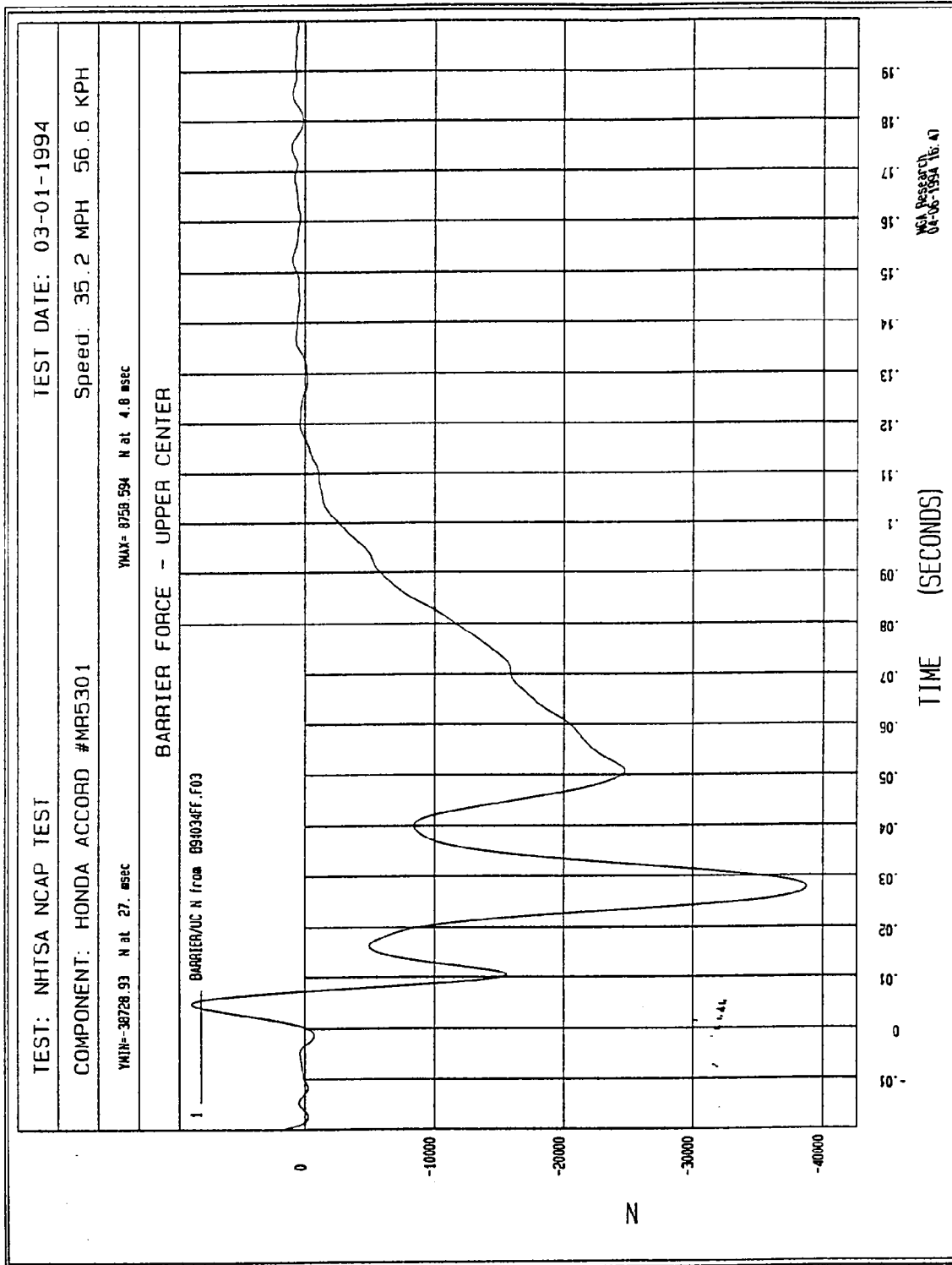


Figure B-28 - Upper Center Barrier Force vs. Time

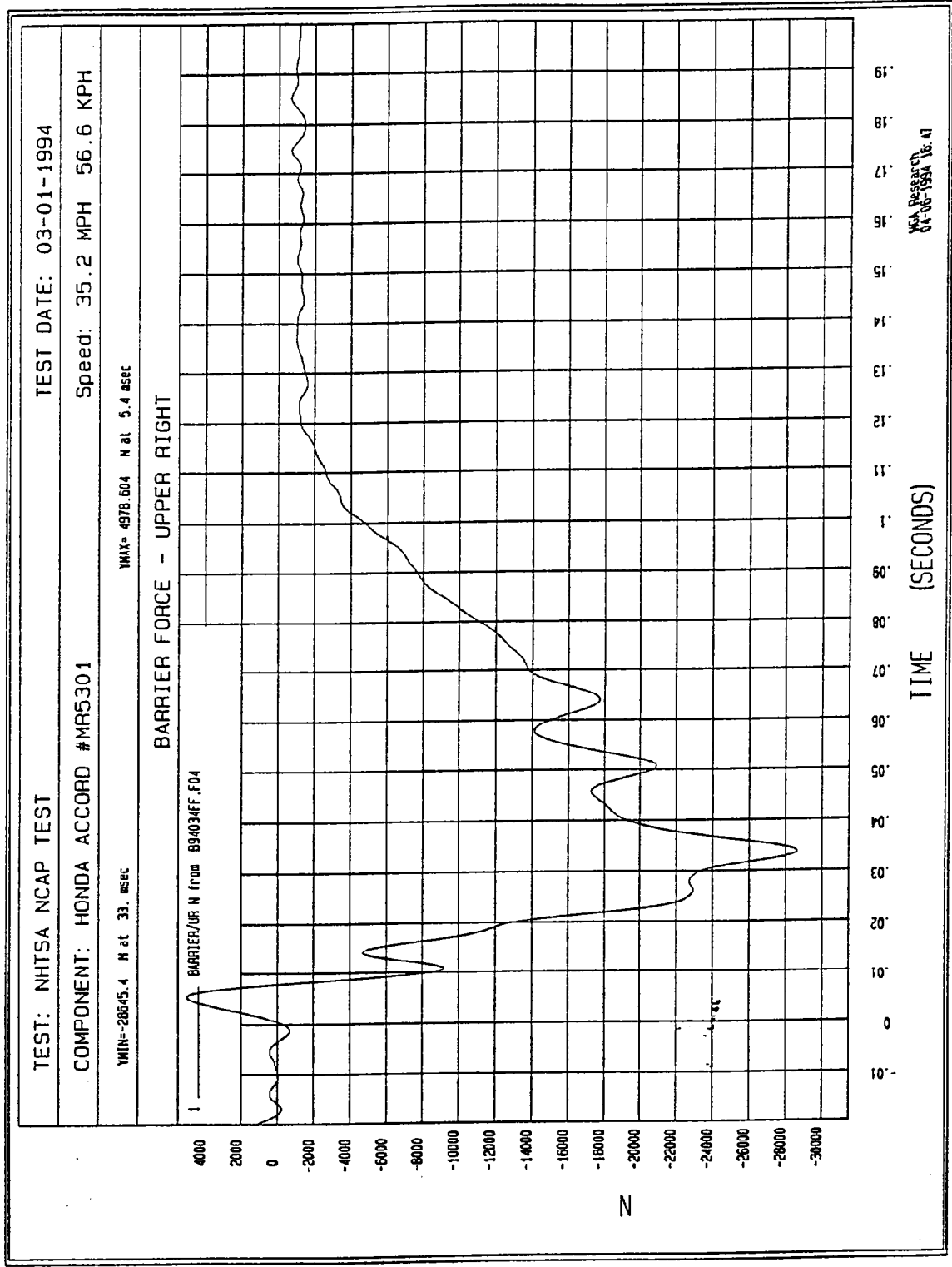


Figure B-29 - Upper Right Barrier Force vs. Time

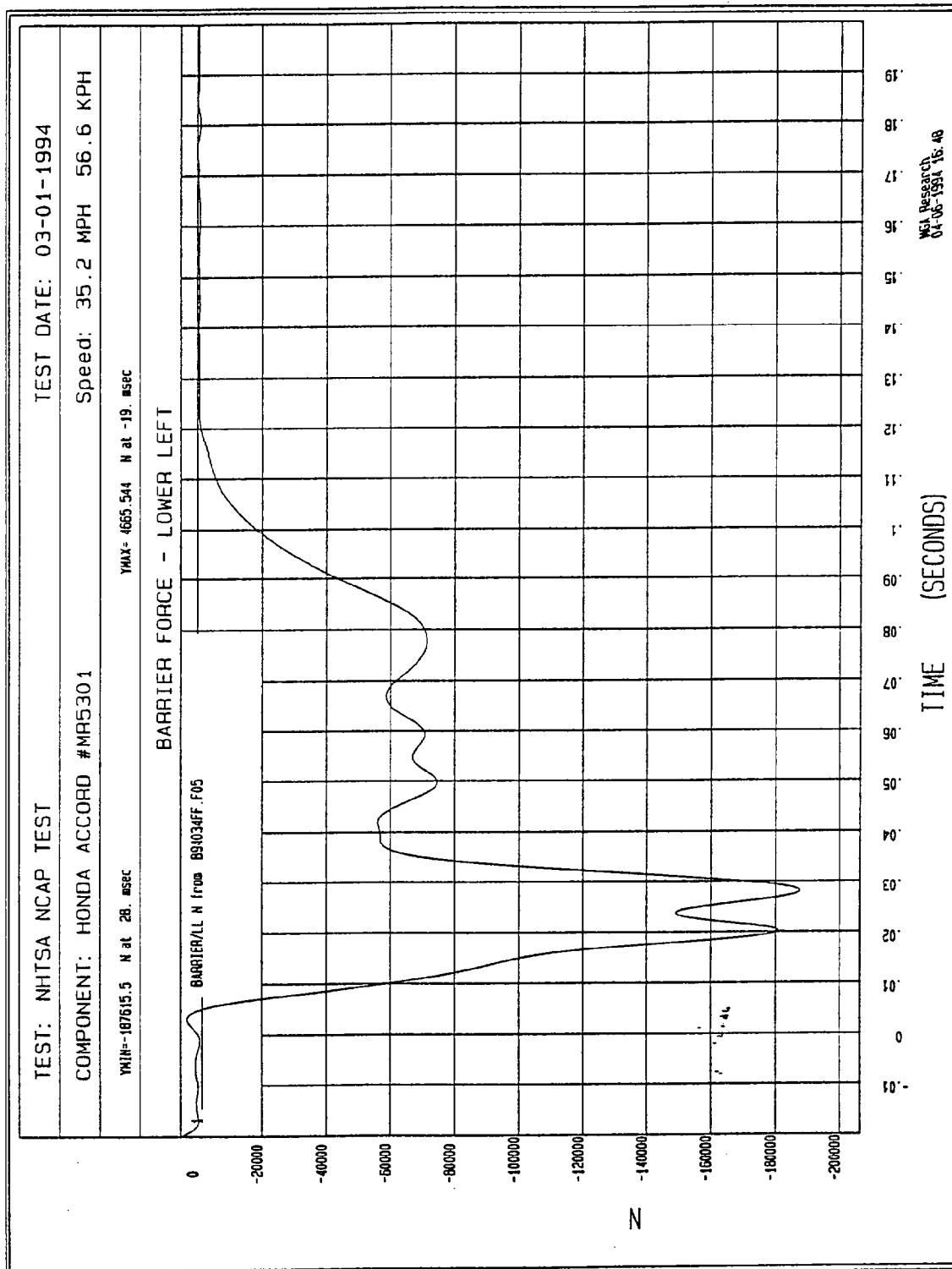


Figure B-30 - Lower Left Barrier Force vs. Time

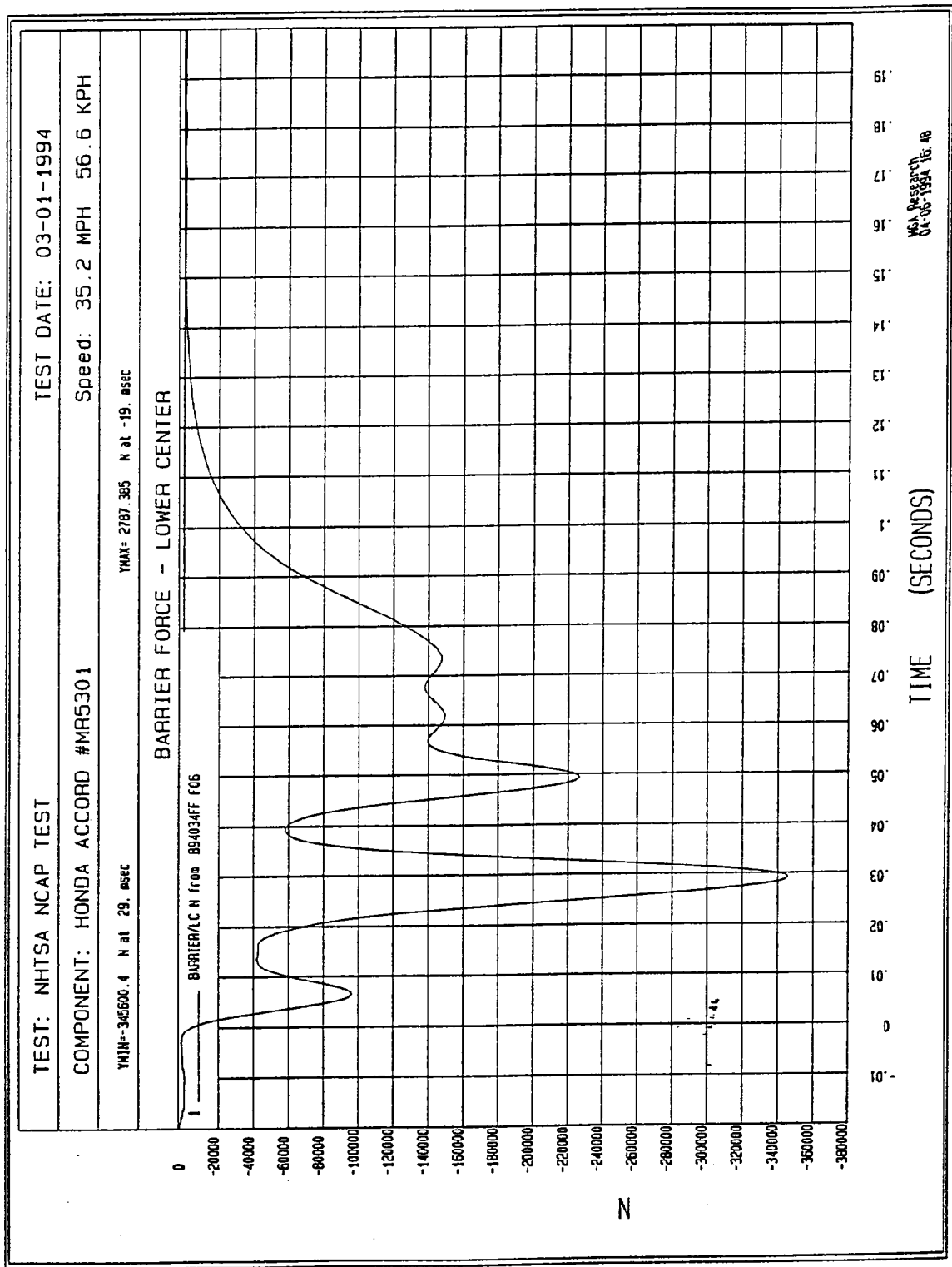


Figure B-31 - Lower Center Barrier Force vs. Time

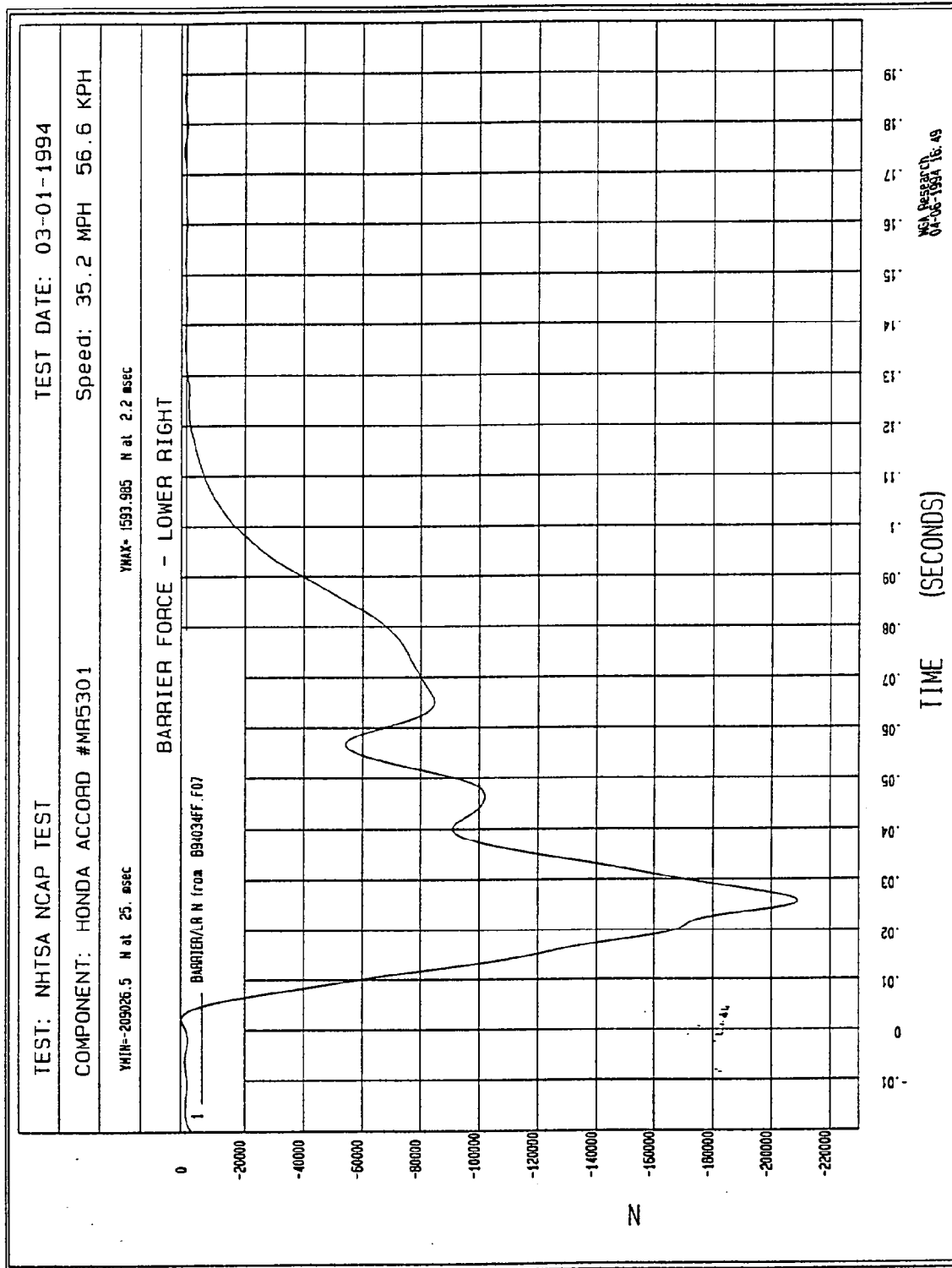


Figure B-32 - Lower Right Barrier Force vs. Time

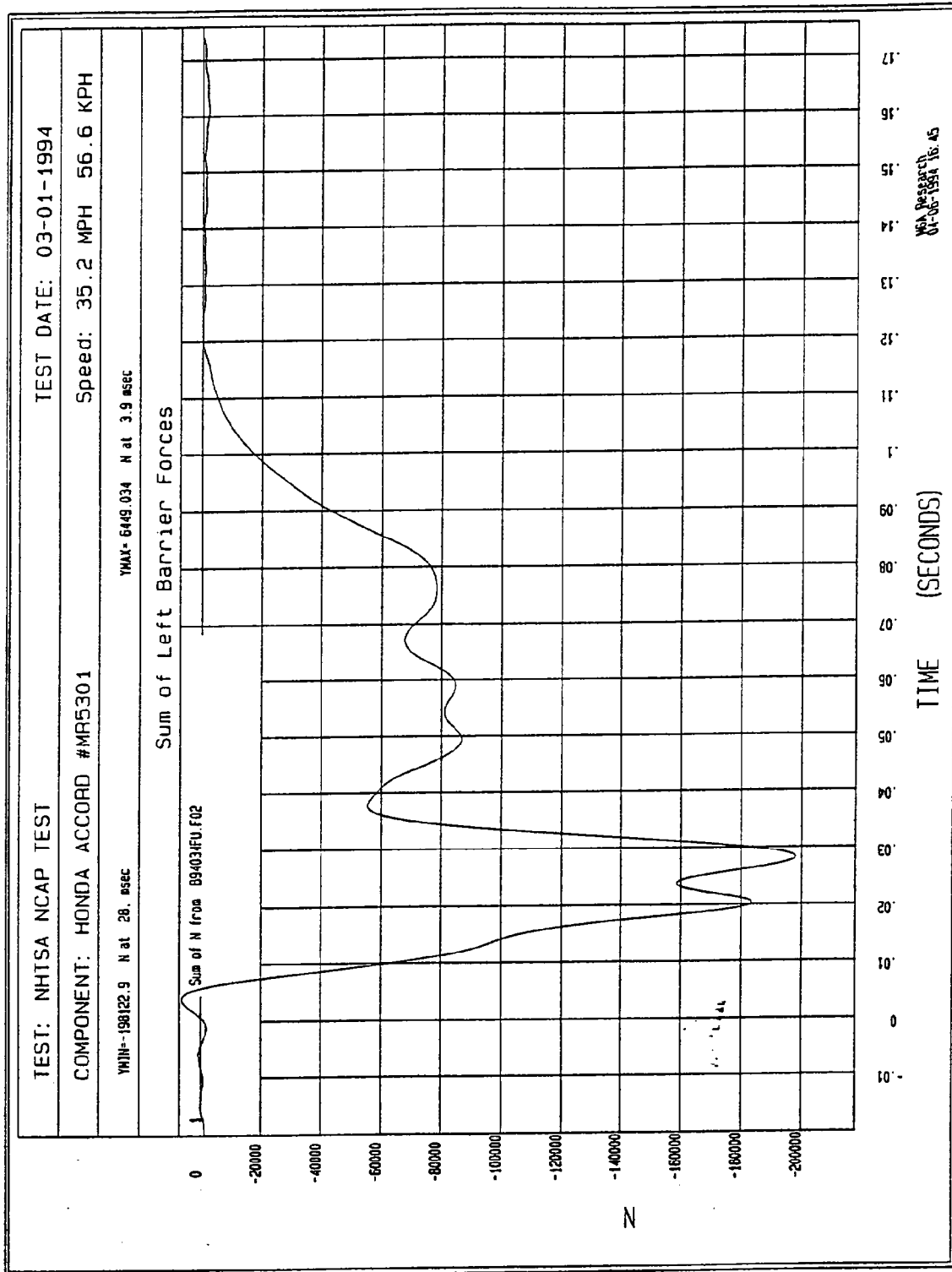


Figure B-33 - Sum of Left Barrier Forces vs. Time

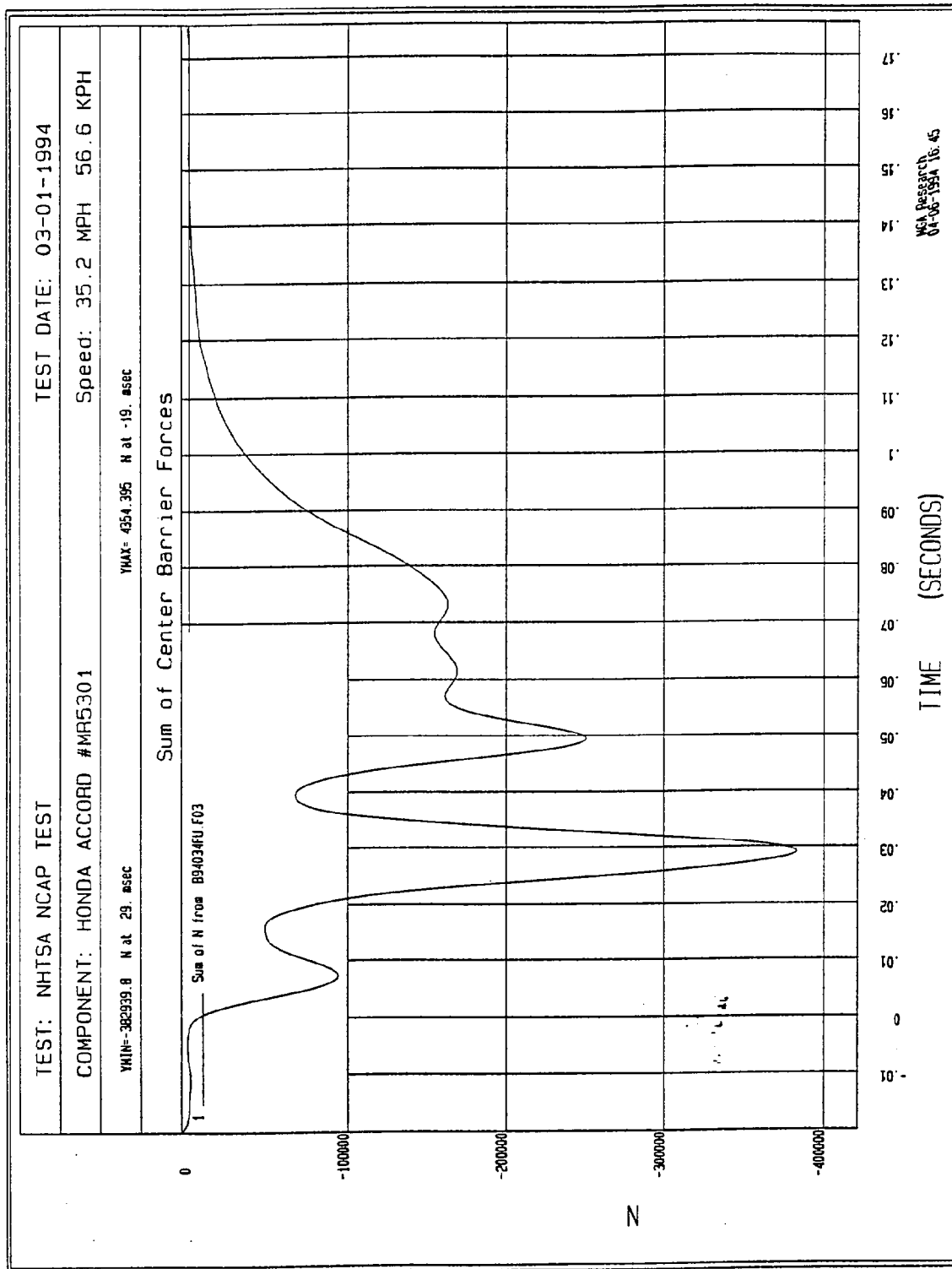


Figure B-34 - Sum of Center Barrier Forces vs. Time

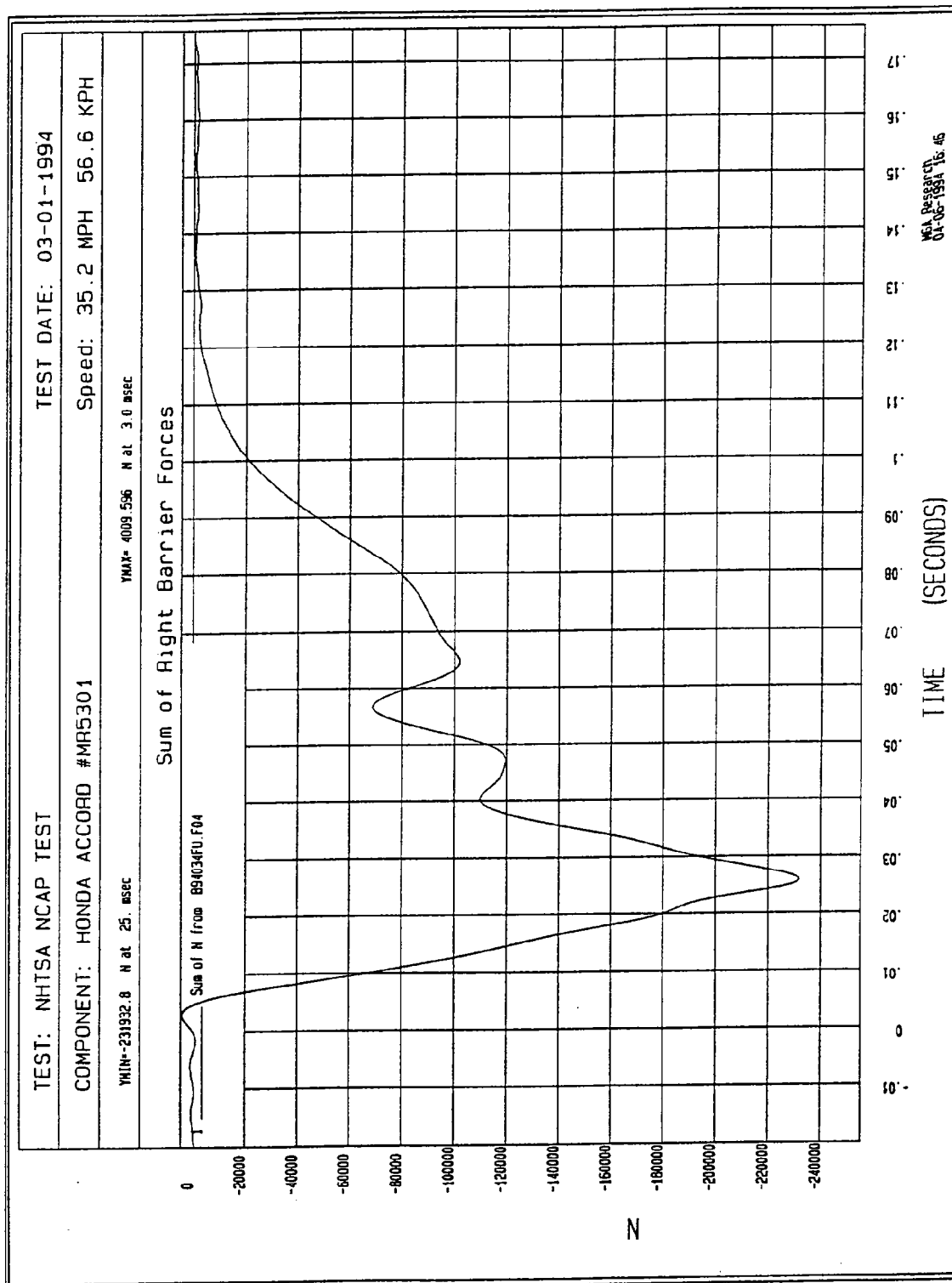
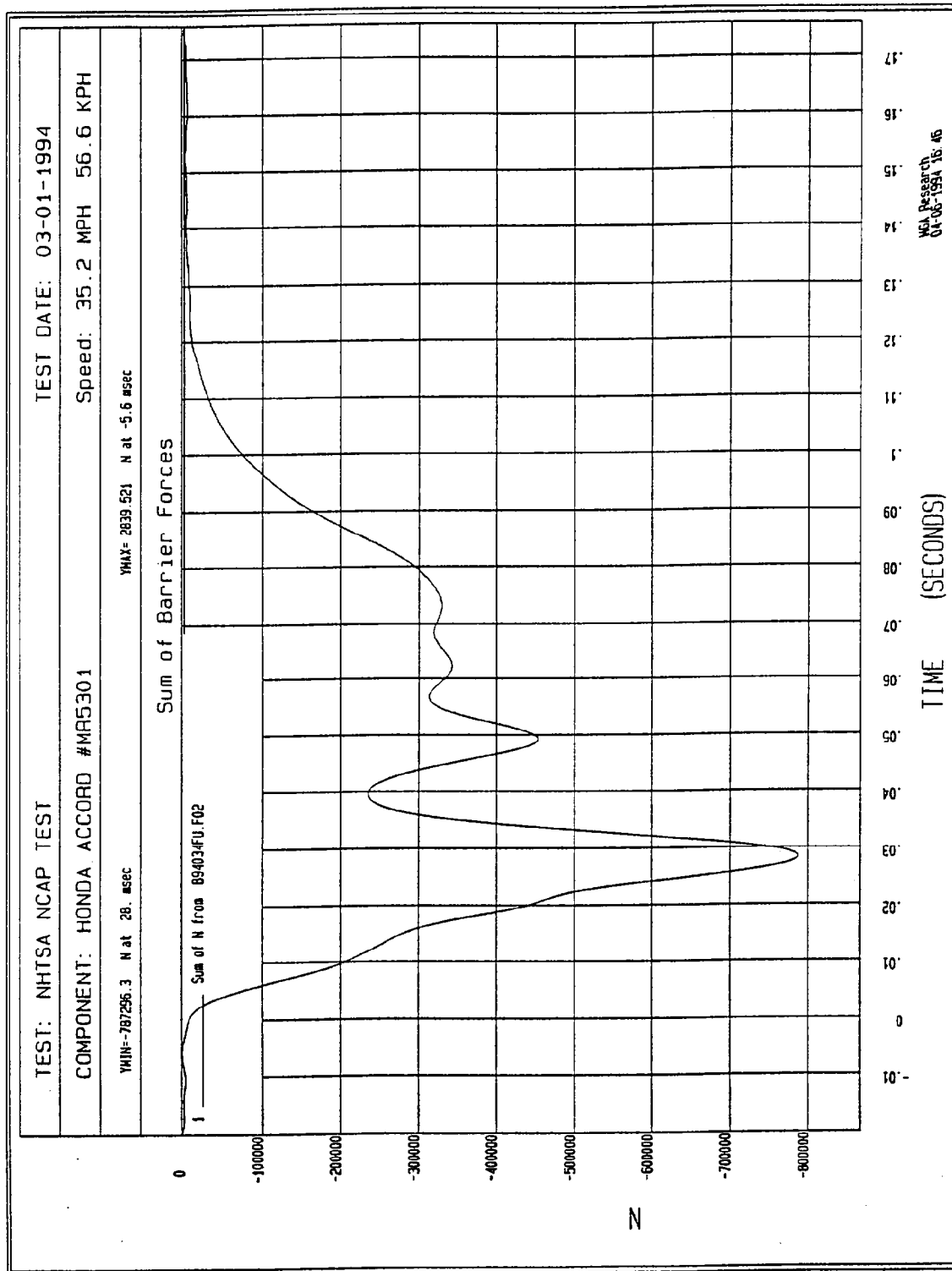


Figure B-35 - Sum of Right Barrier Forces vs. Time



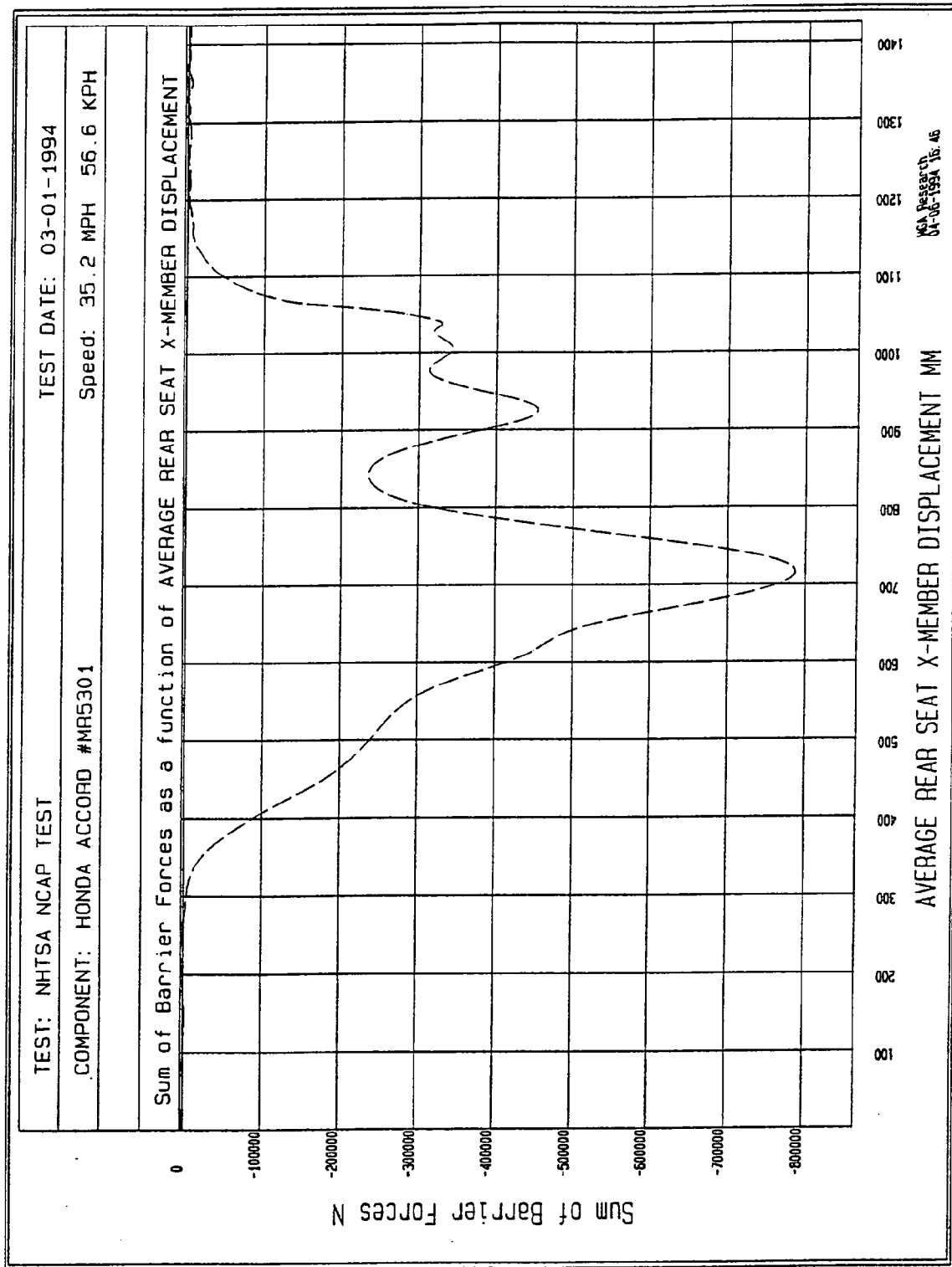


Figure B-37 - Sum of Barrier Forces as a Function of Average Rear Seat X-member Displacement

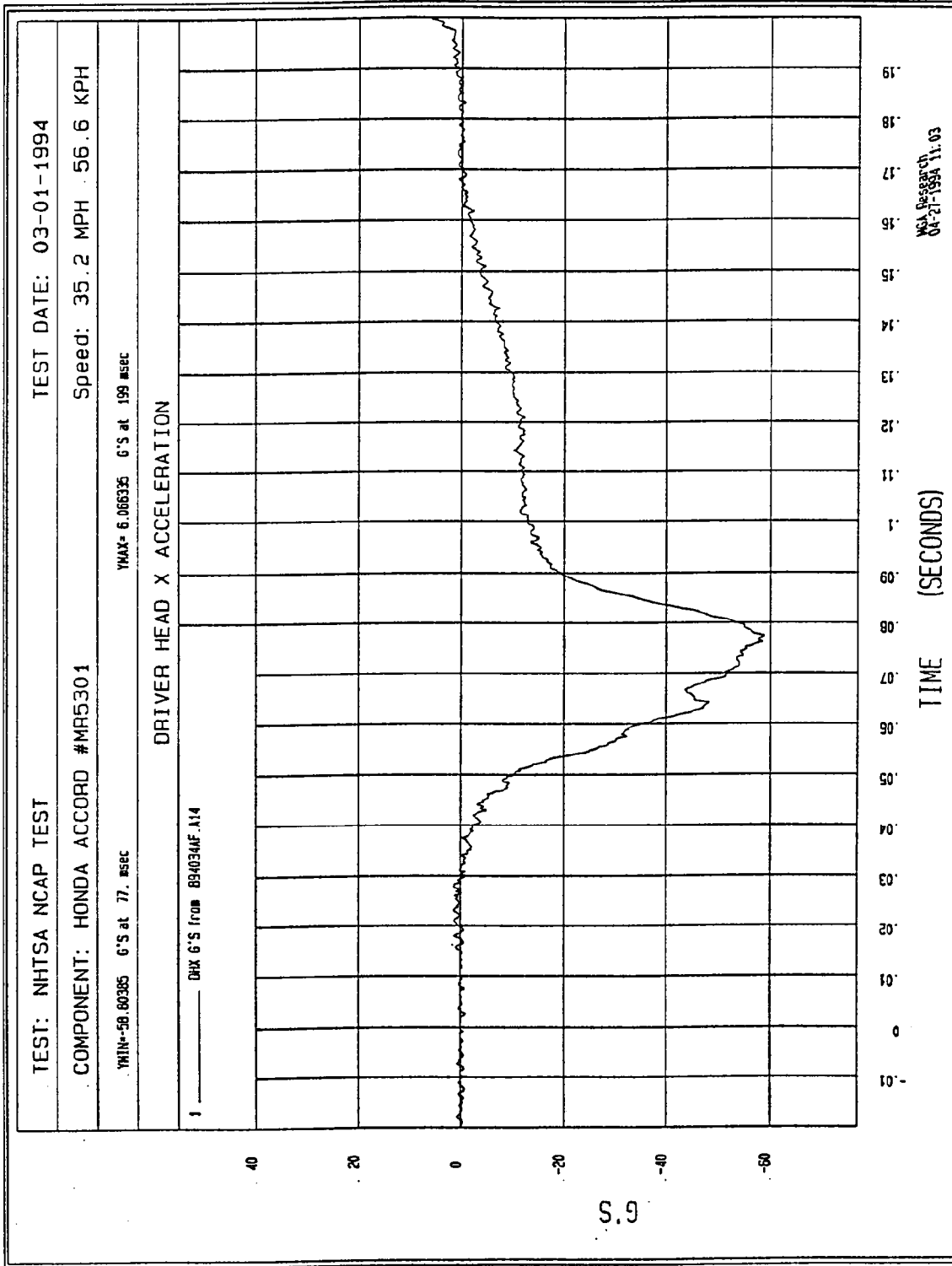


Figure B-38 - Driver Head X Acceleration vs. Time

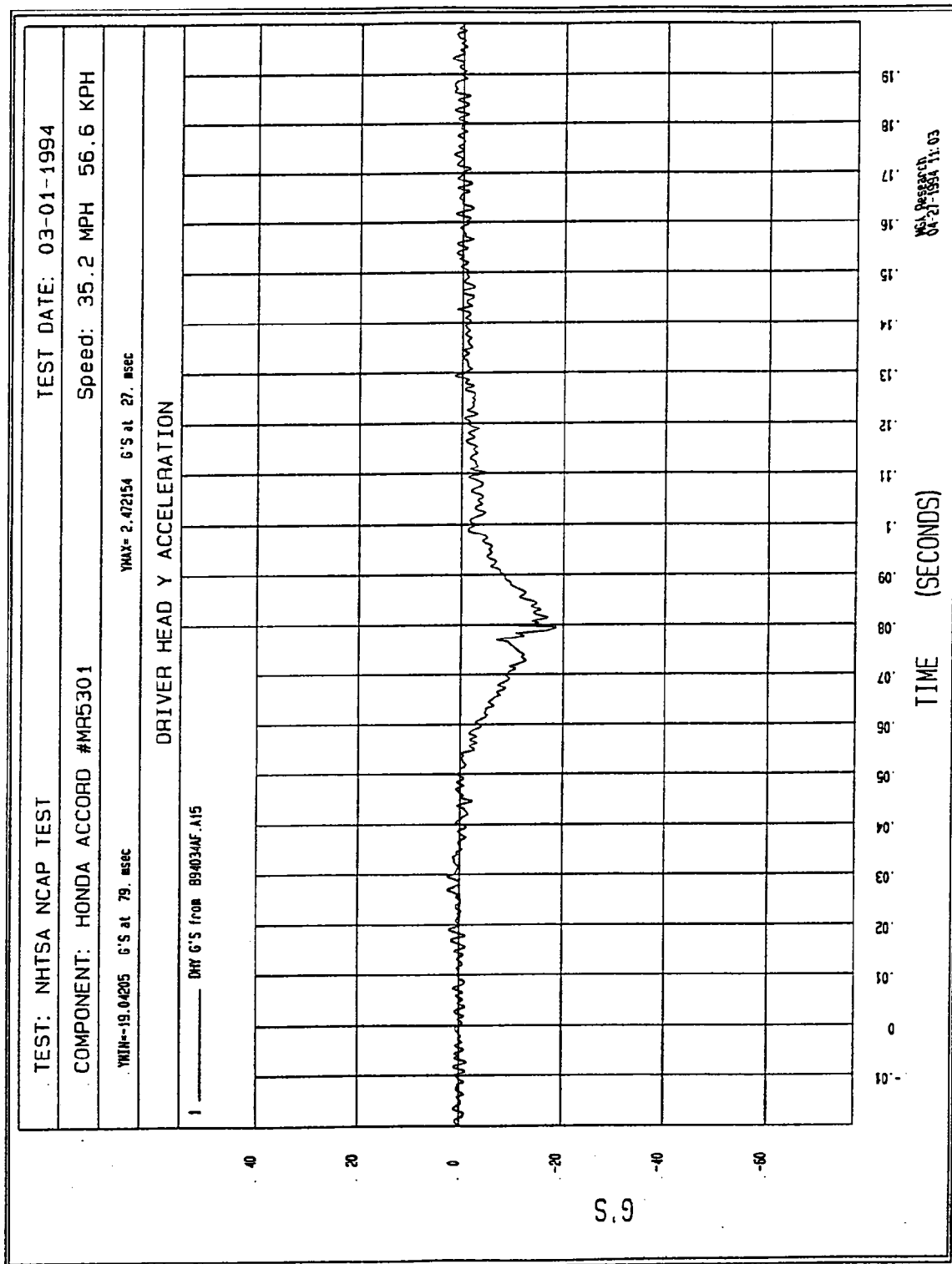


Figure B-39 - Driver Head Y Acceleration vs. Time

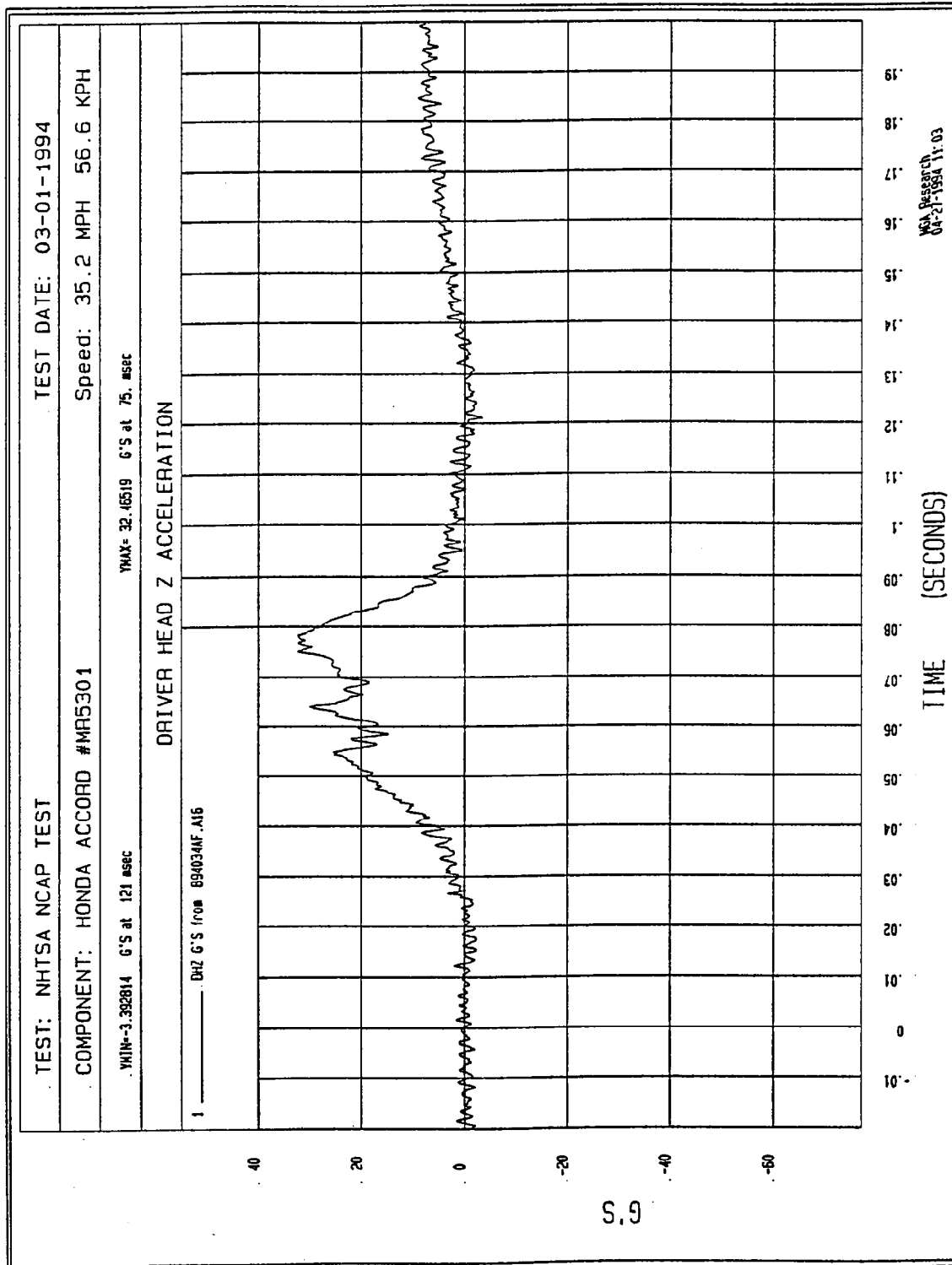


Figure B-40 - Driver Head Z Acceleration vs. Time

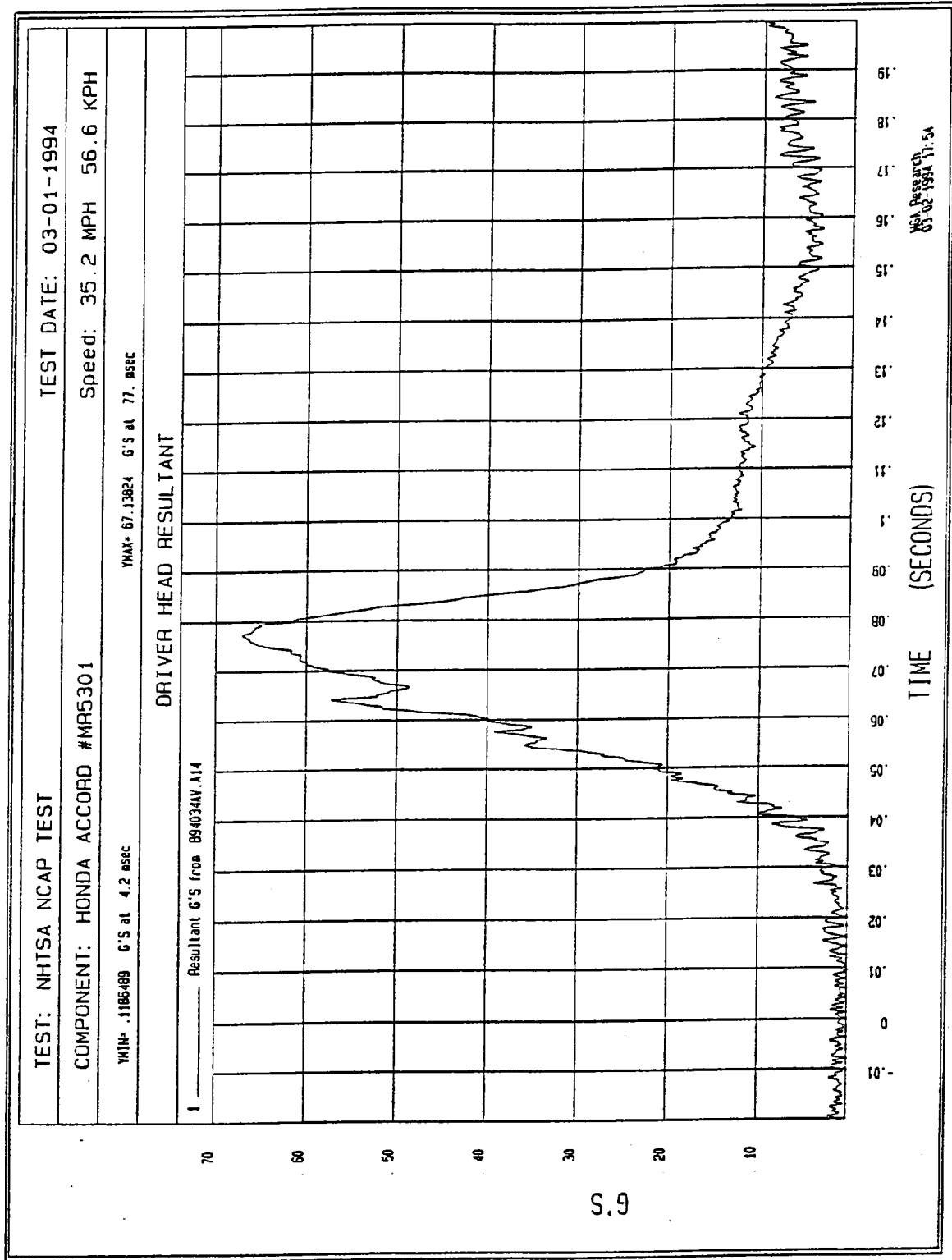


Figure B-41 - Driver Head Resultant Acceleration vs. Time

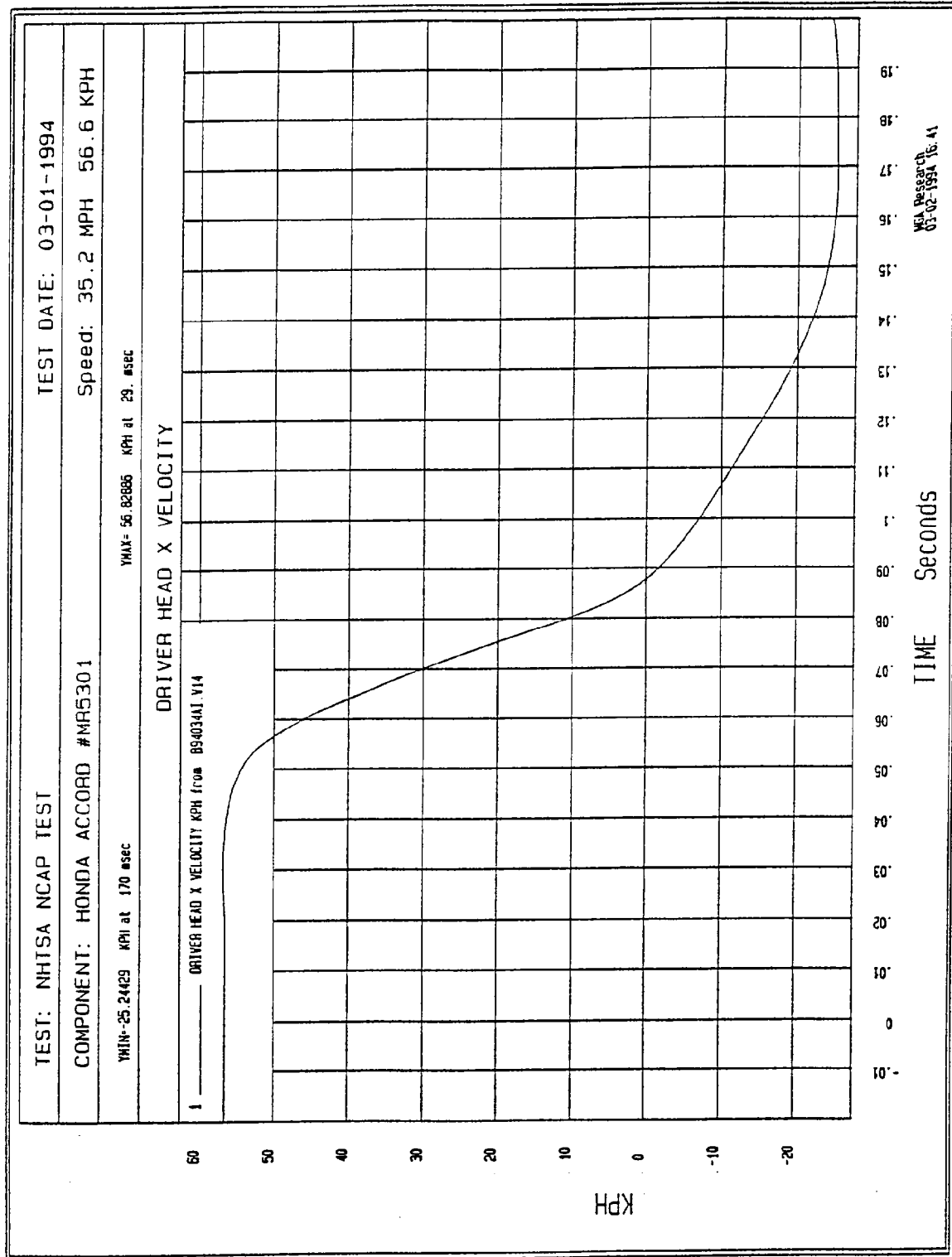


Figure B-42 - Driver Head X Velocity vs. Time

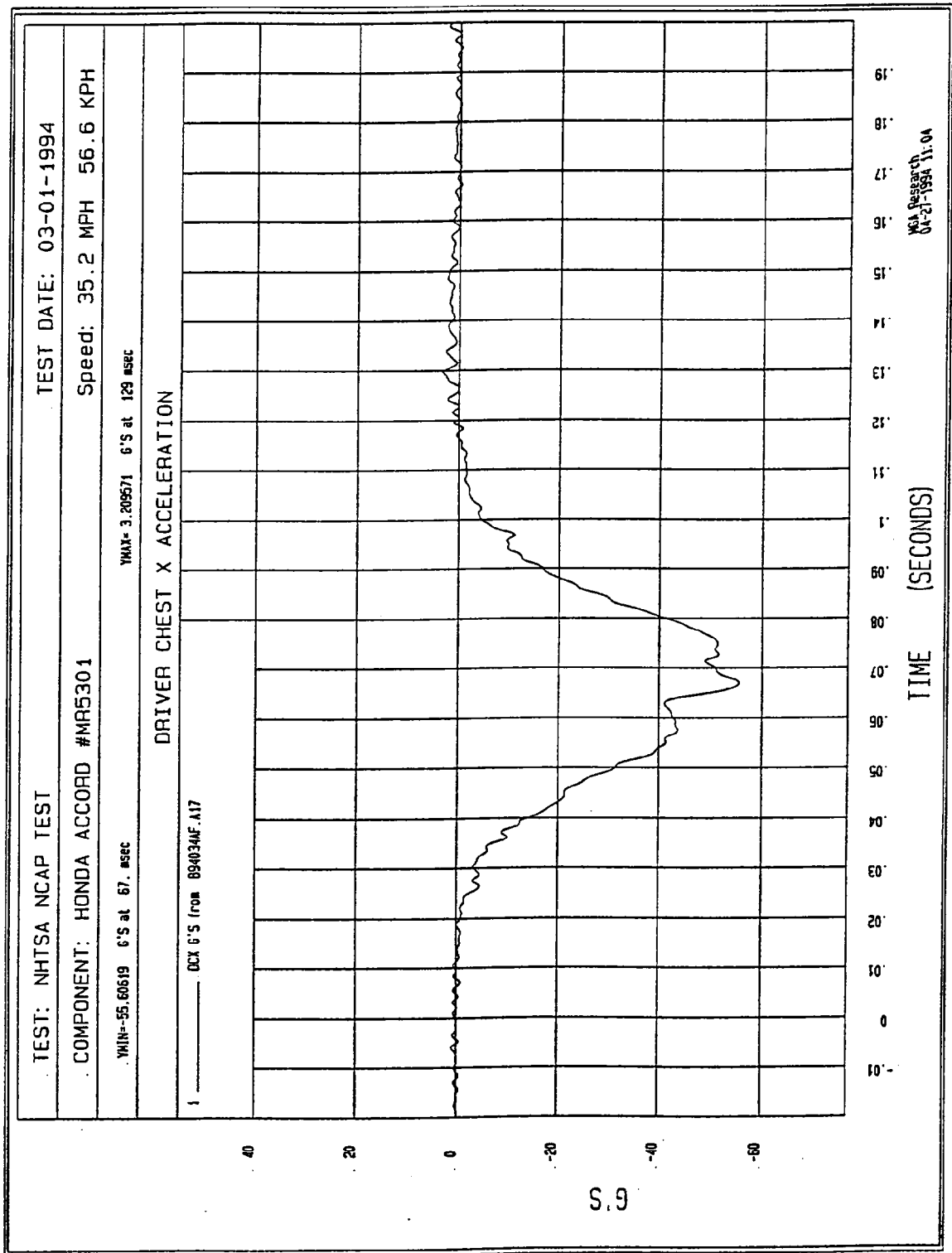


Figure B-43 - Driver Chest X Acceleration vs. Time

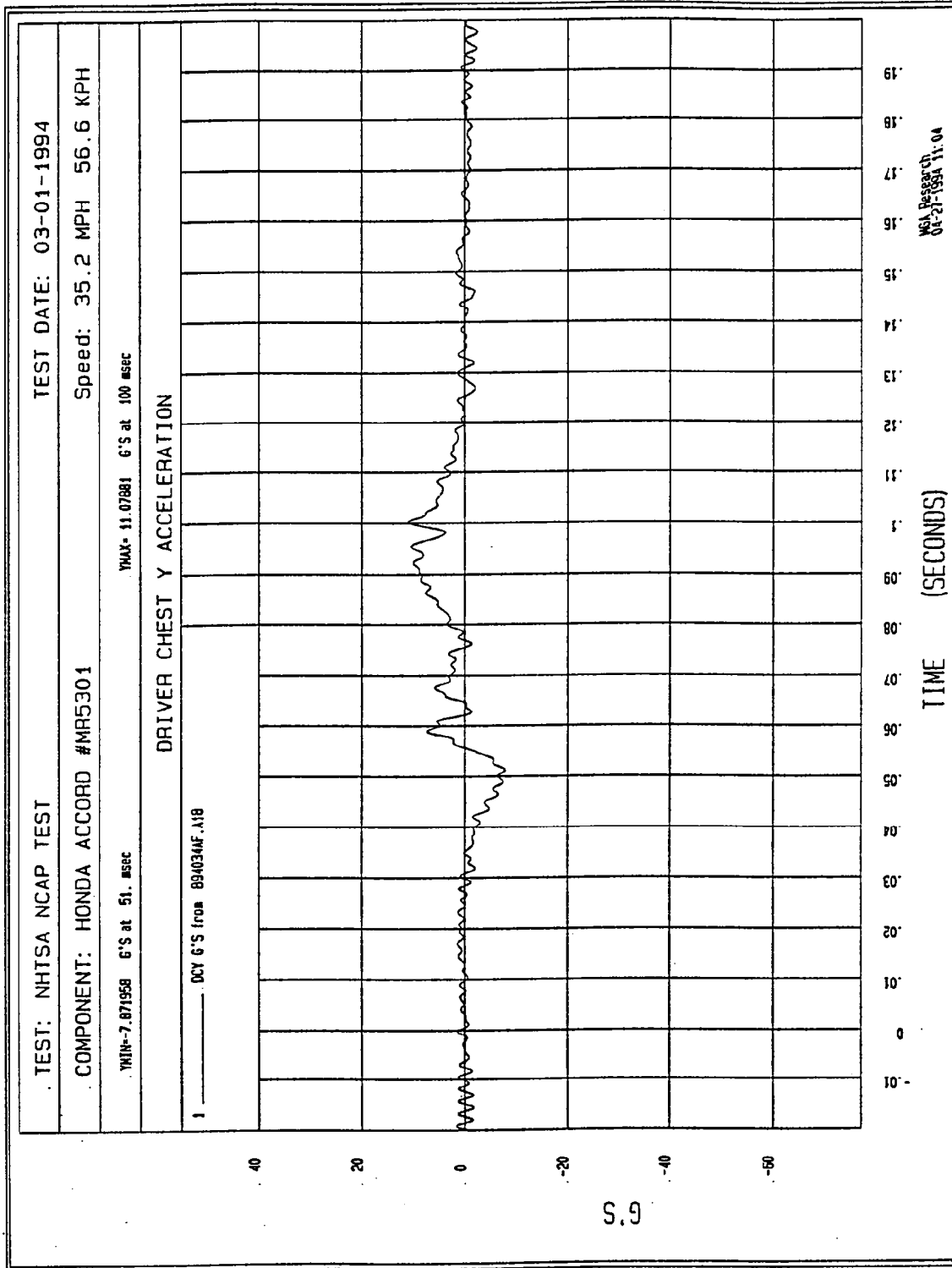


Figure B-44 - Driver Chest Y Acceleration vs. Time

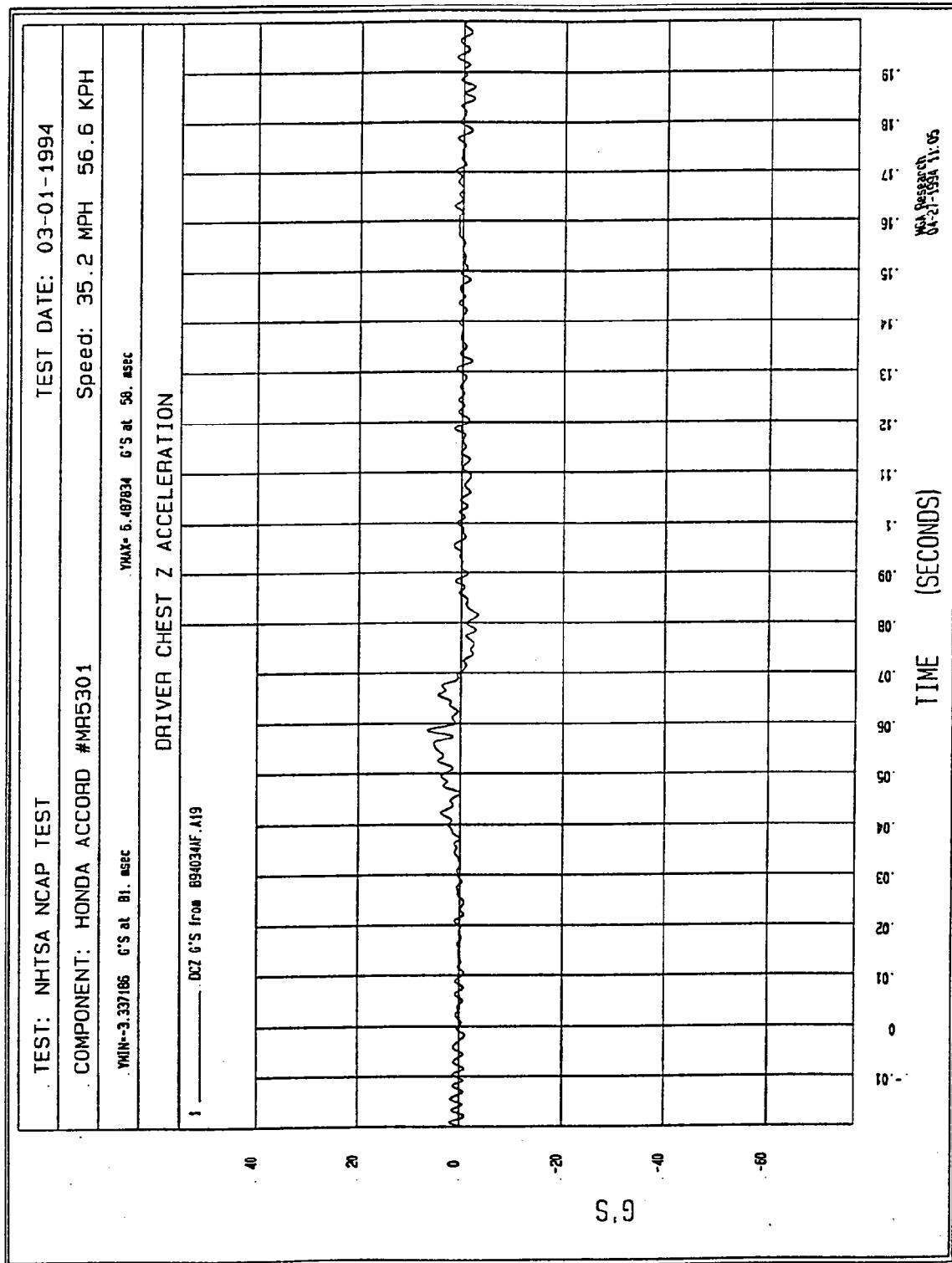


Figure B-45 - Driver Chest Z Acceleration vs. Time

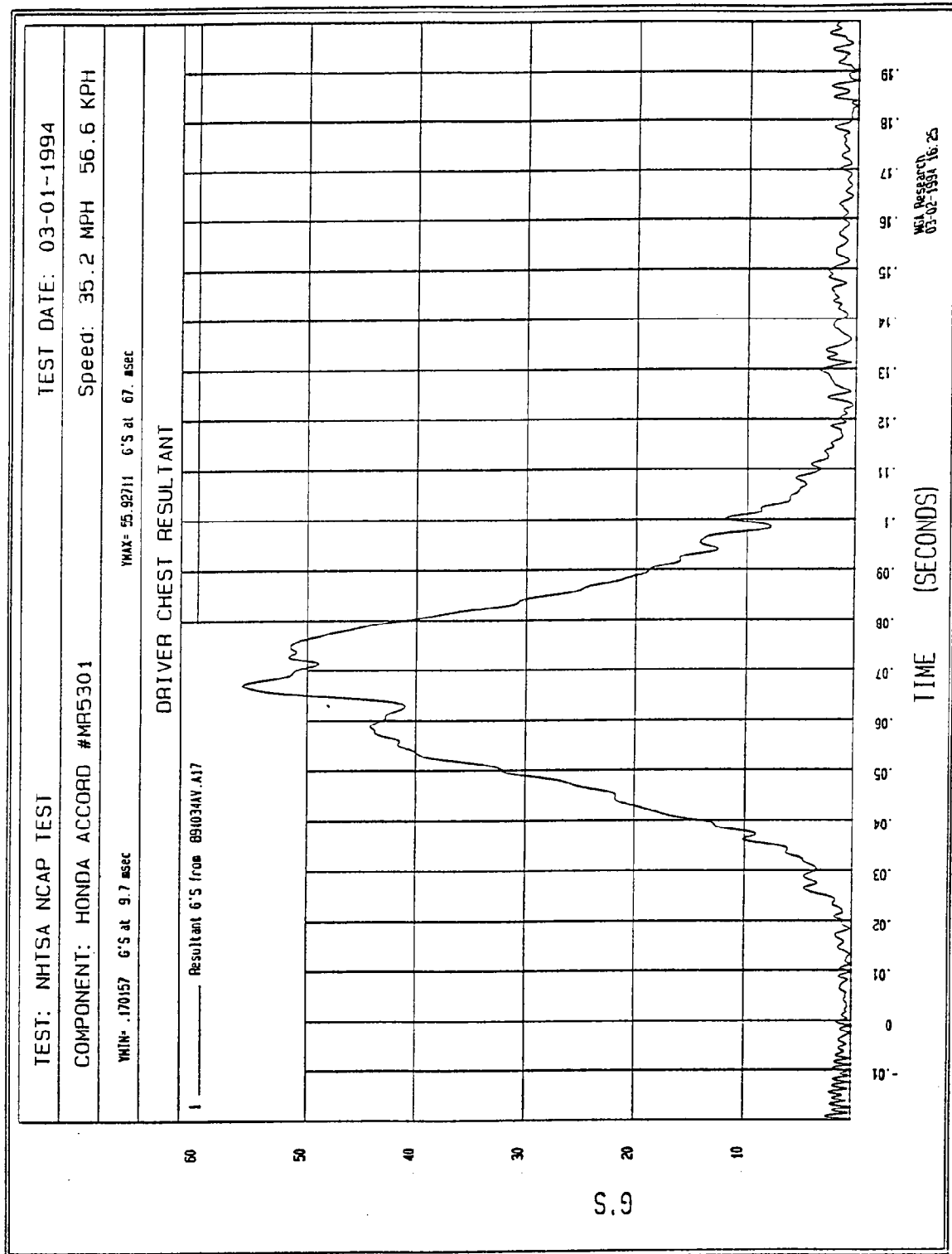


Figure B-46 - Driver Chest Resultant vs. Time

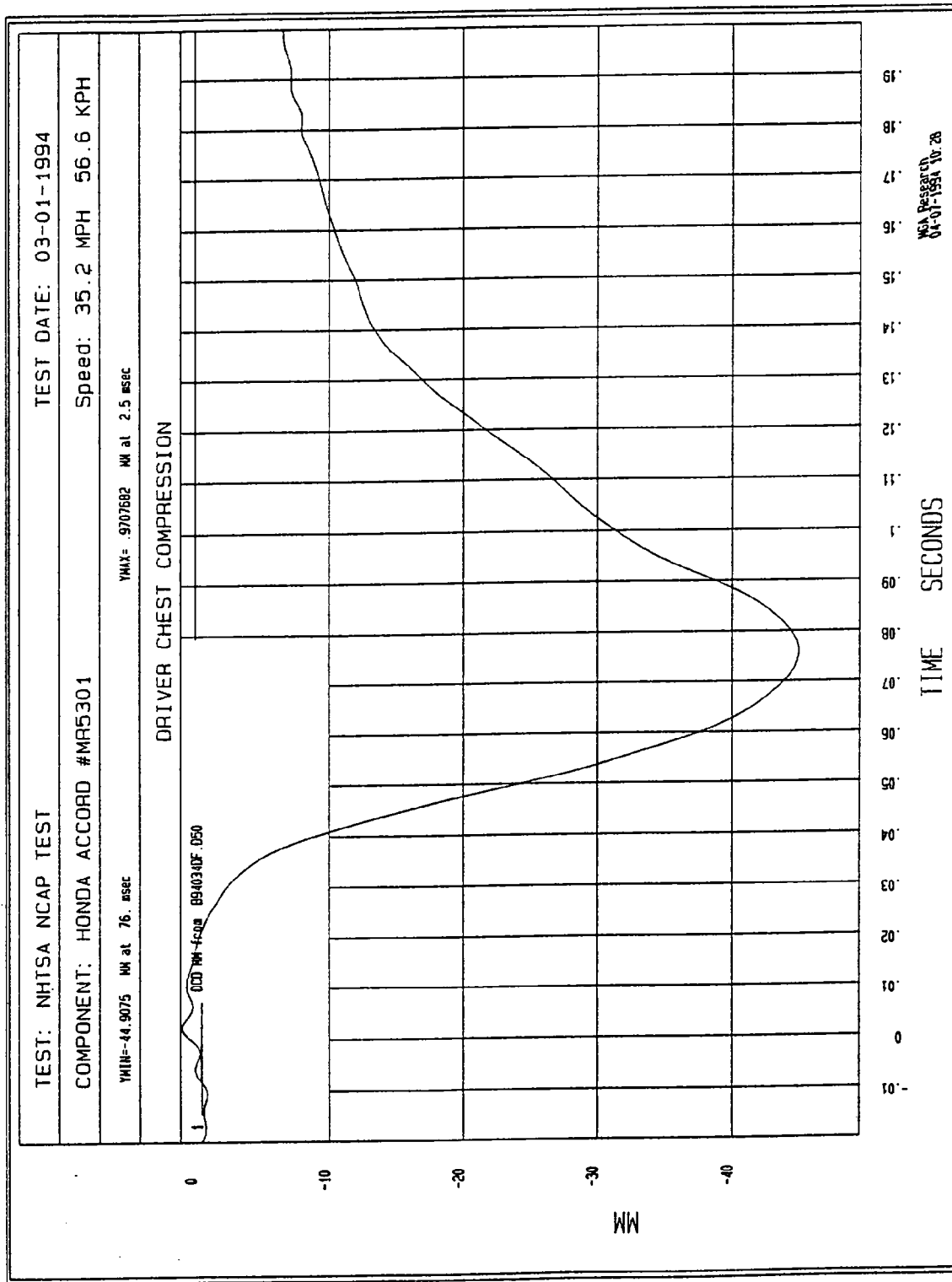


Figure B-47 - Driver Chest Compression vs. Time

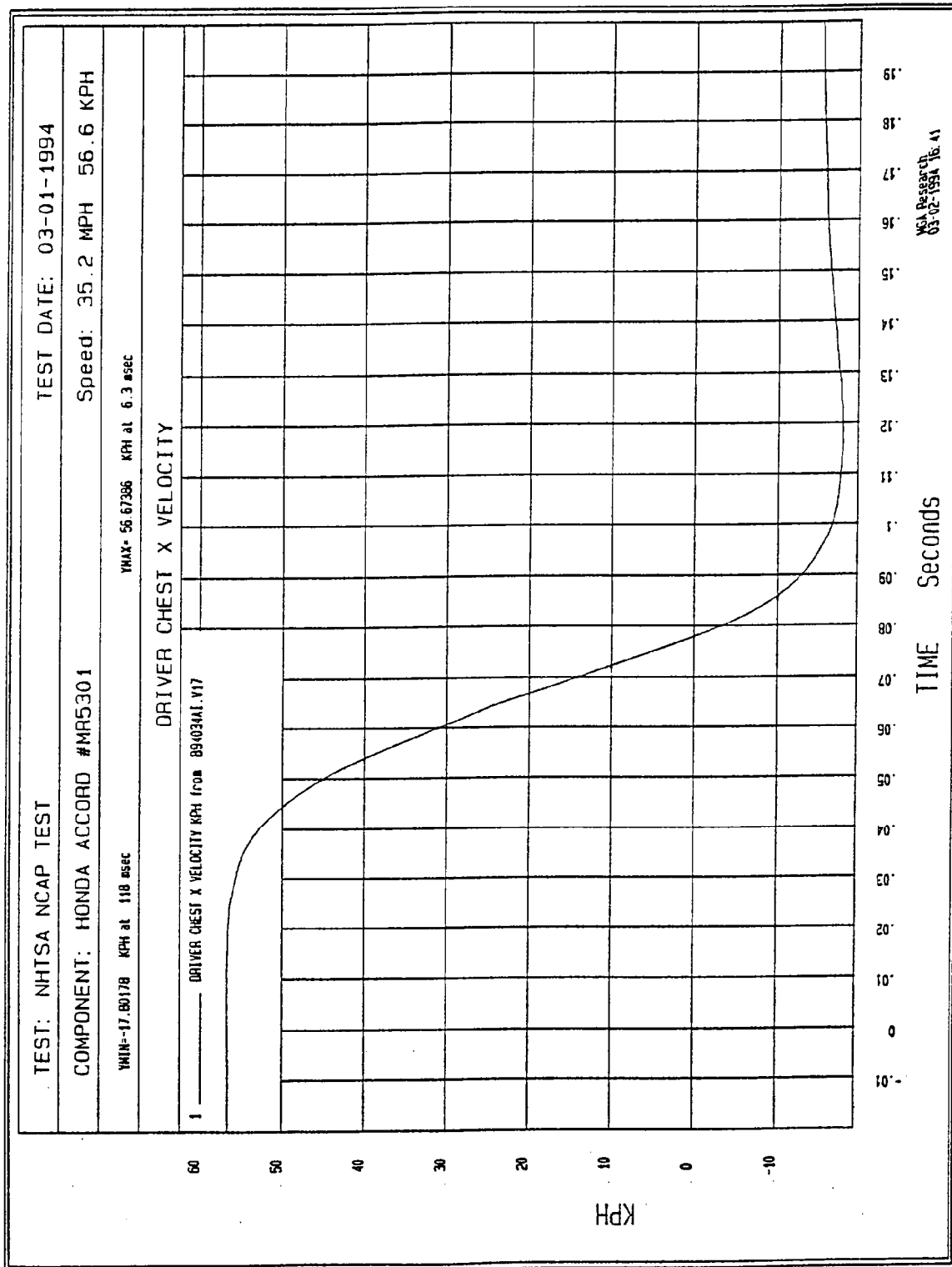


Figure B-48 - Driver Chest X Velocity vs. Time

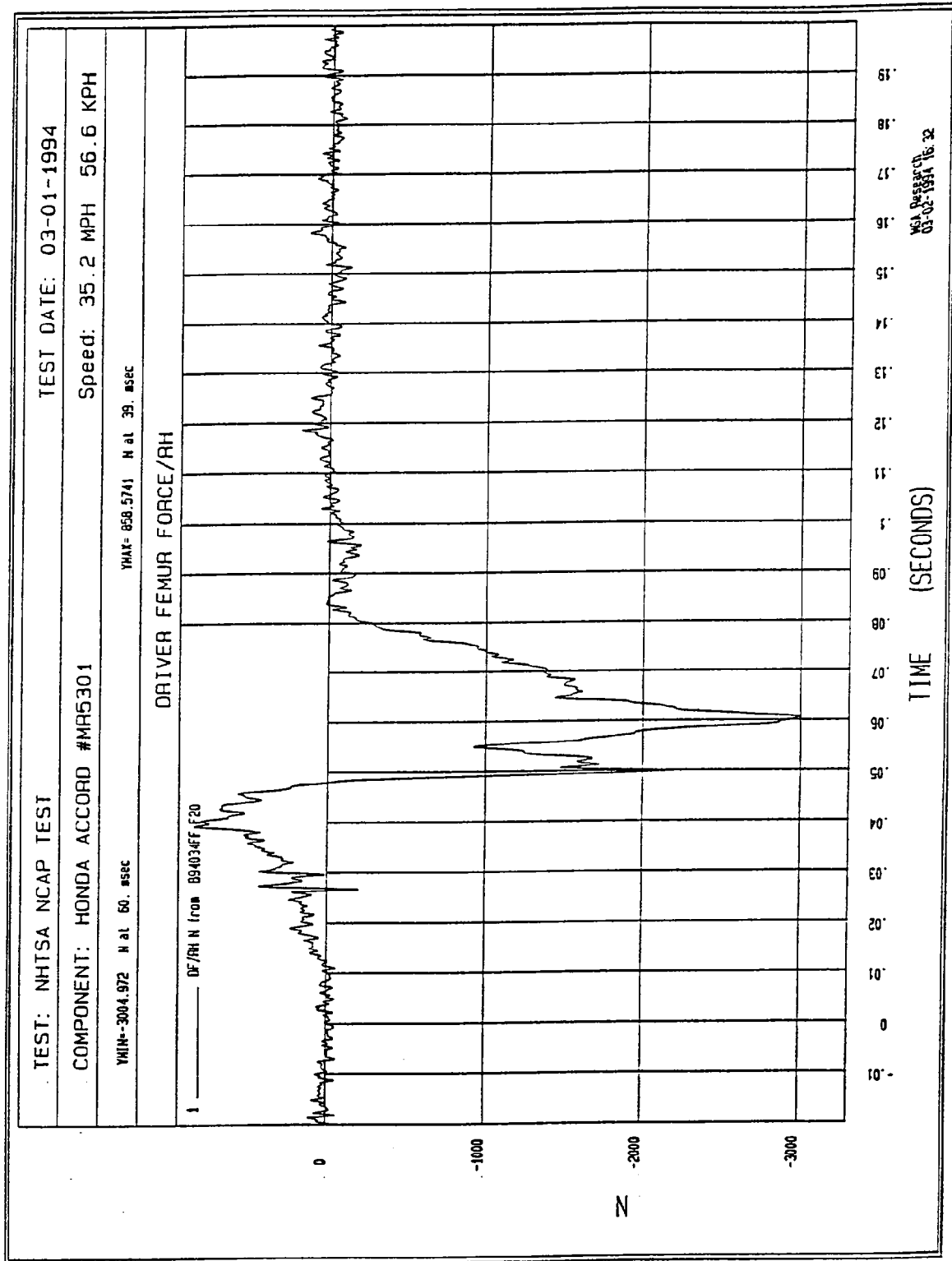


Figure B-49 - Driver Right Femur Force vs. Time

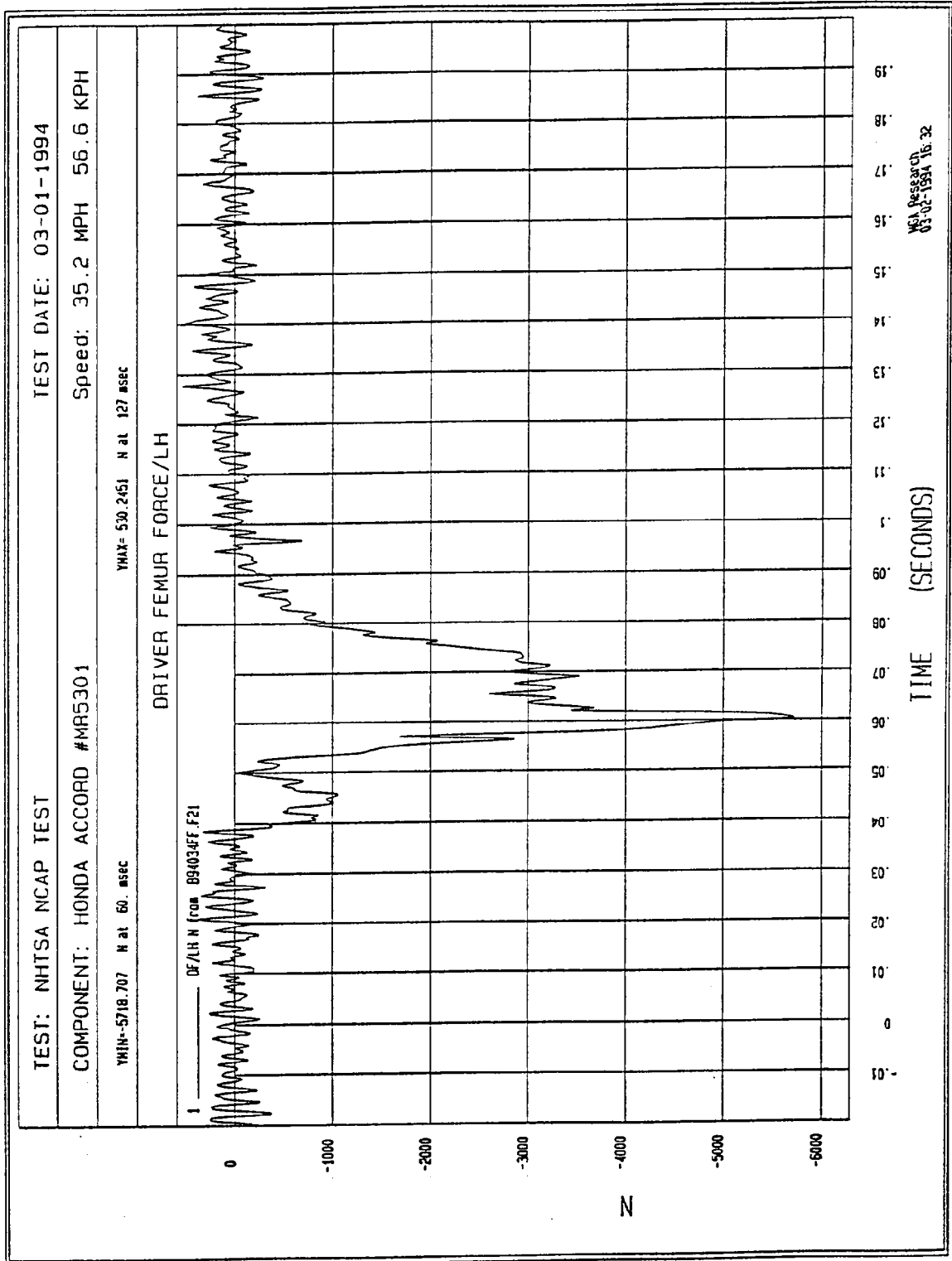


Figure B-50 - Driver Left Femur Force vs. Time

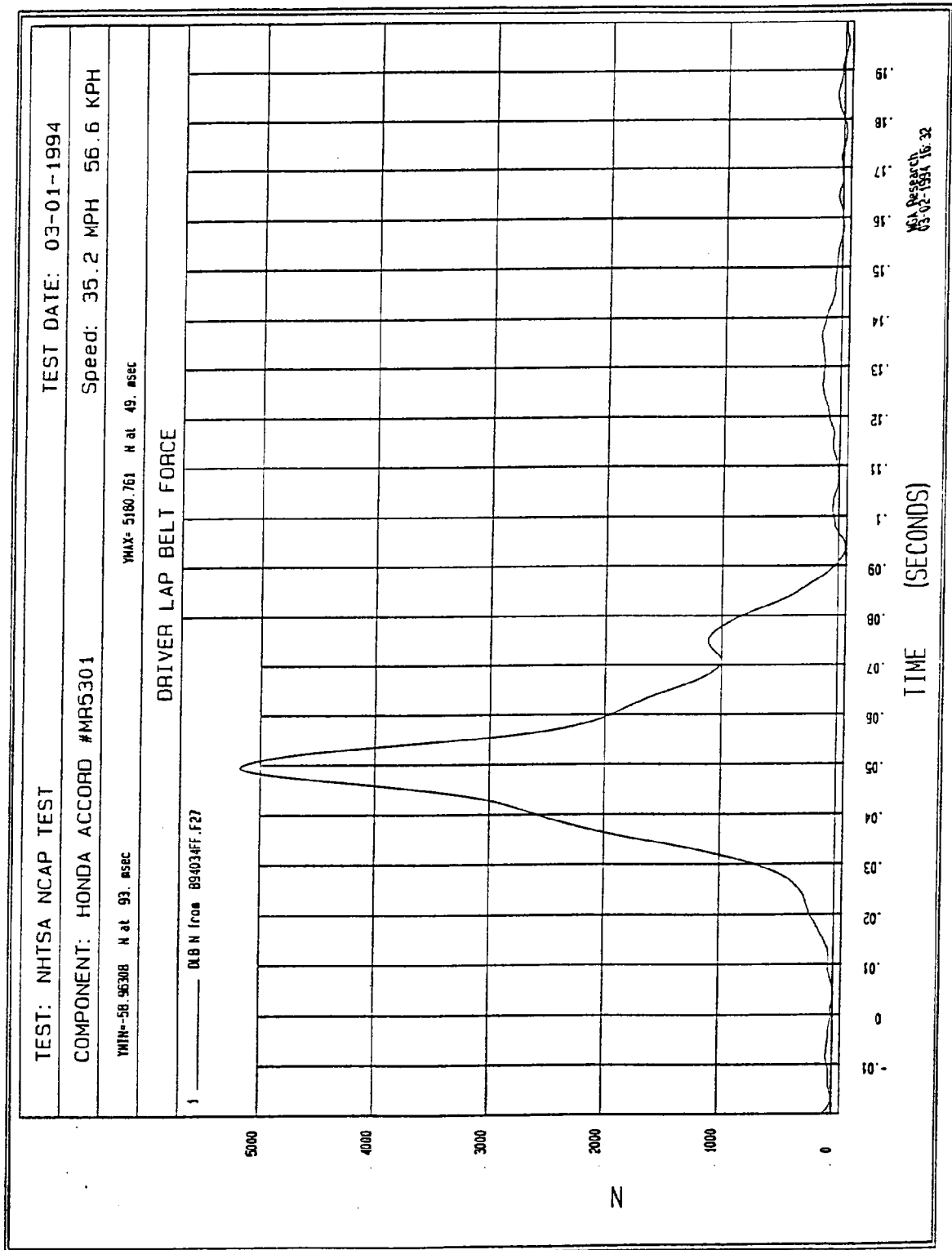


Figure B-51 - Driver Lap Belt Force vs. Time

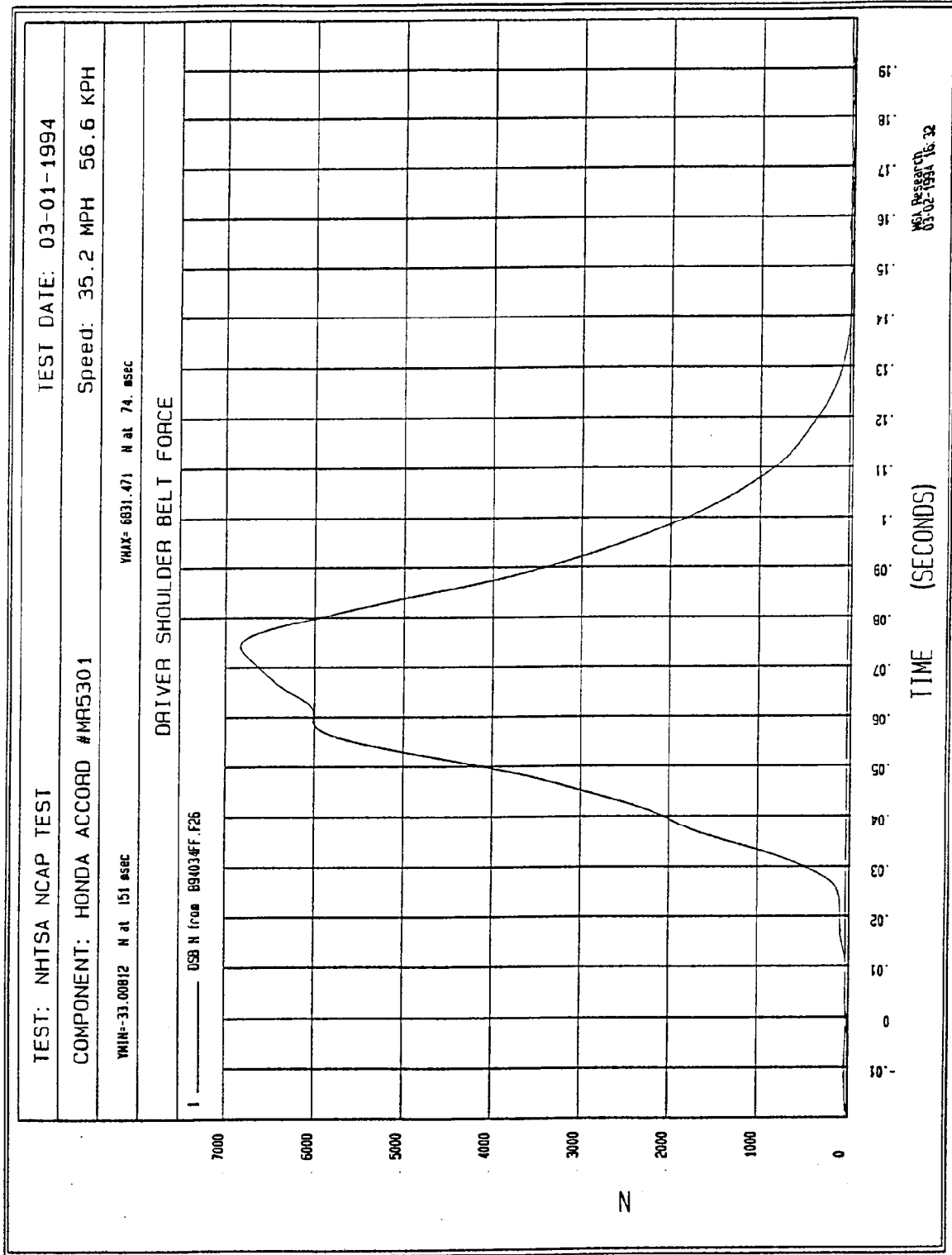


Figure B-52 - Driver Shoulder Belt Force vs. Time

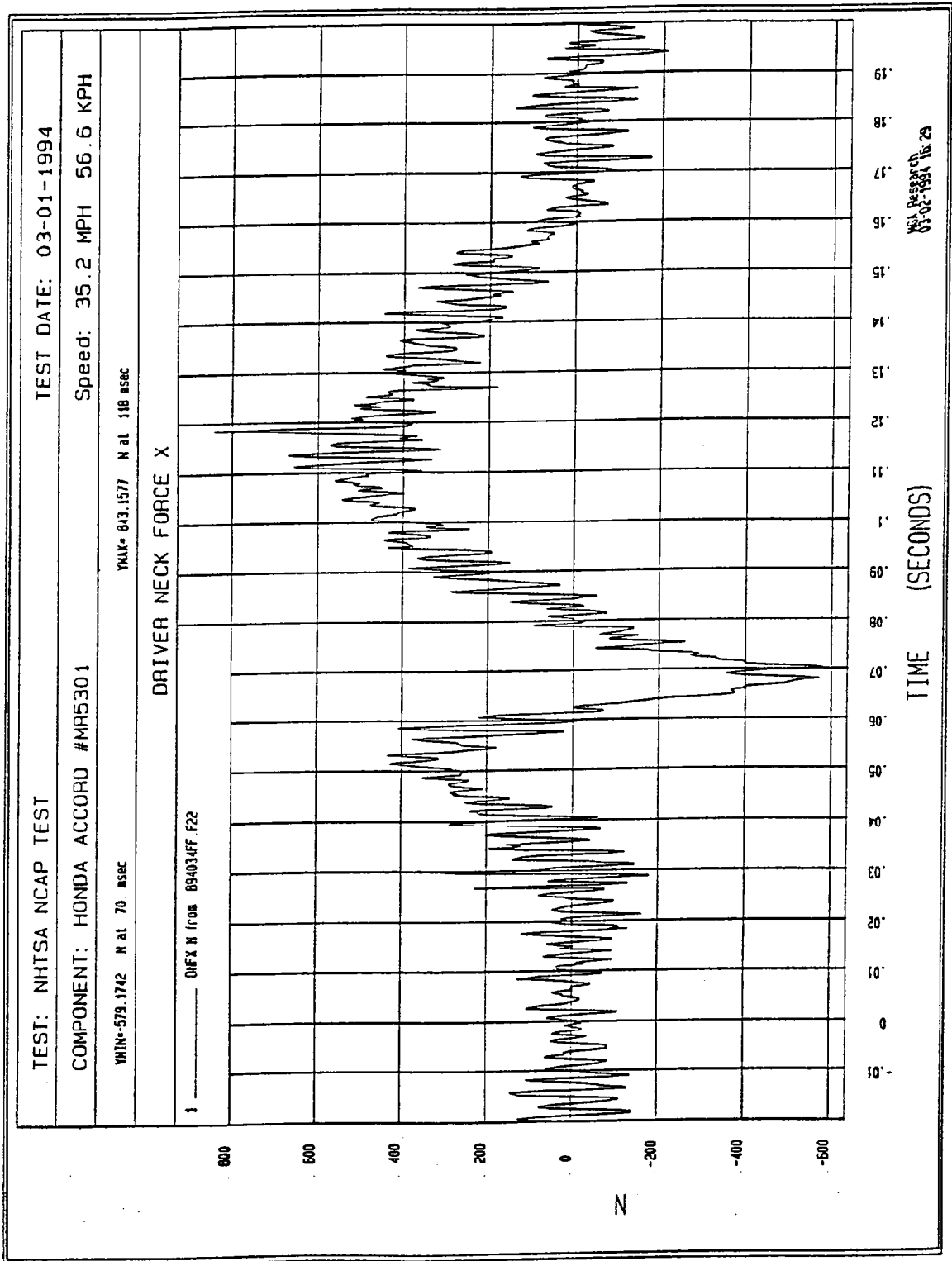


Figure B-53 - Driver Neck Force X vs. Time

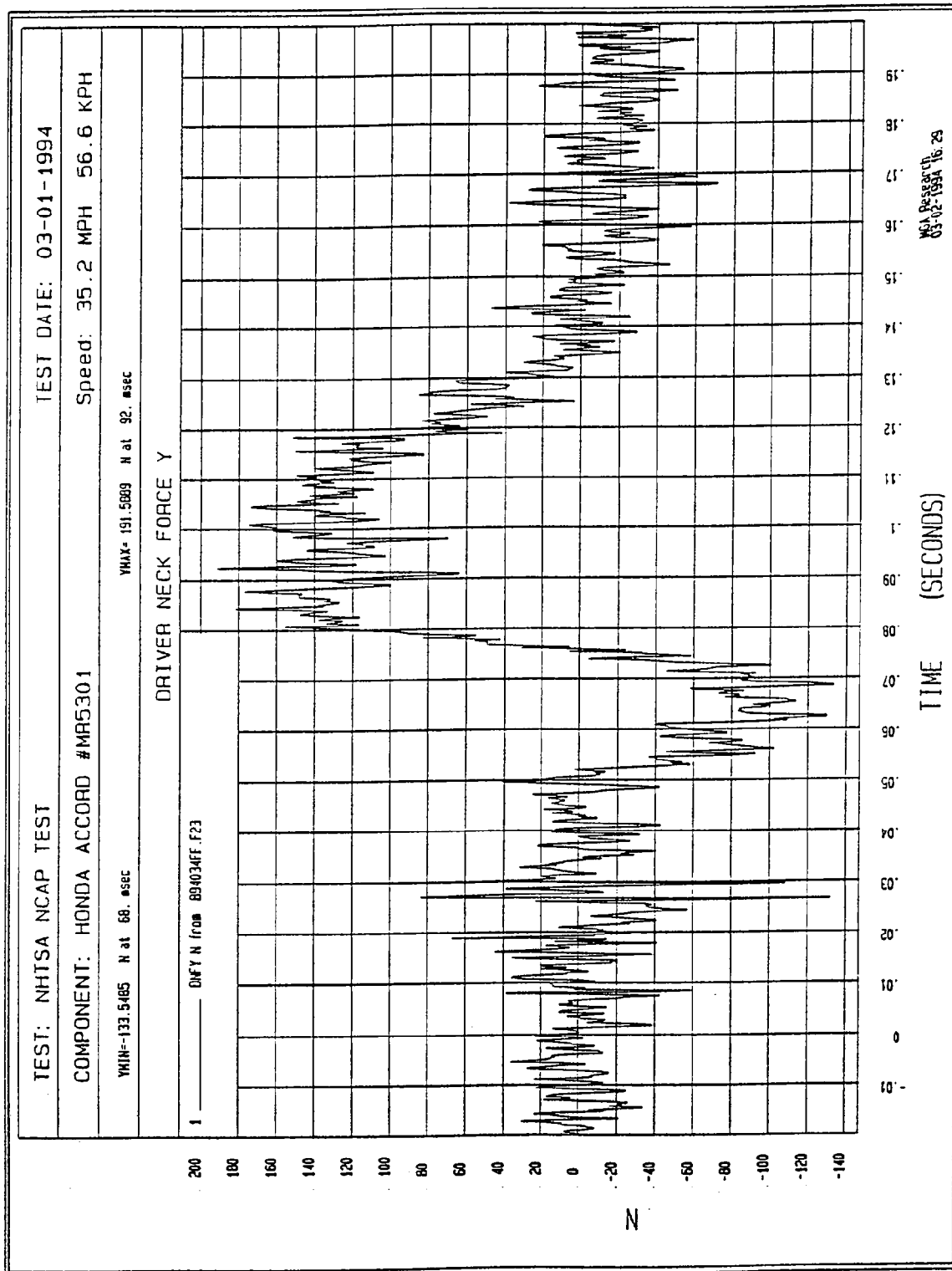


Figure B-54 - Driver Neck Force Y vs. Time

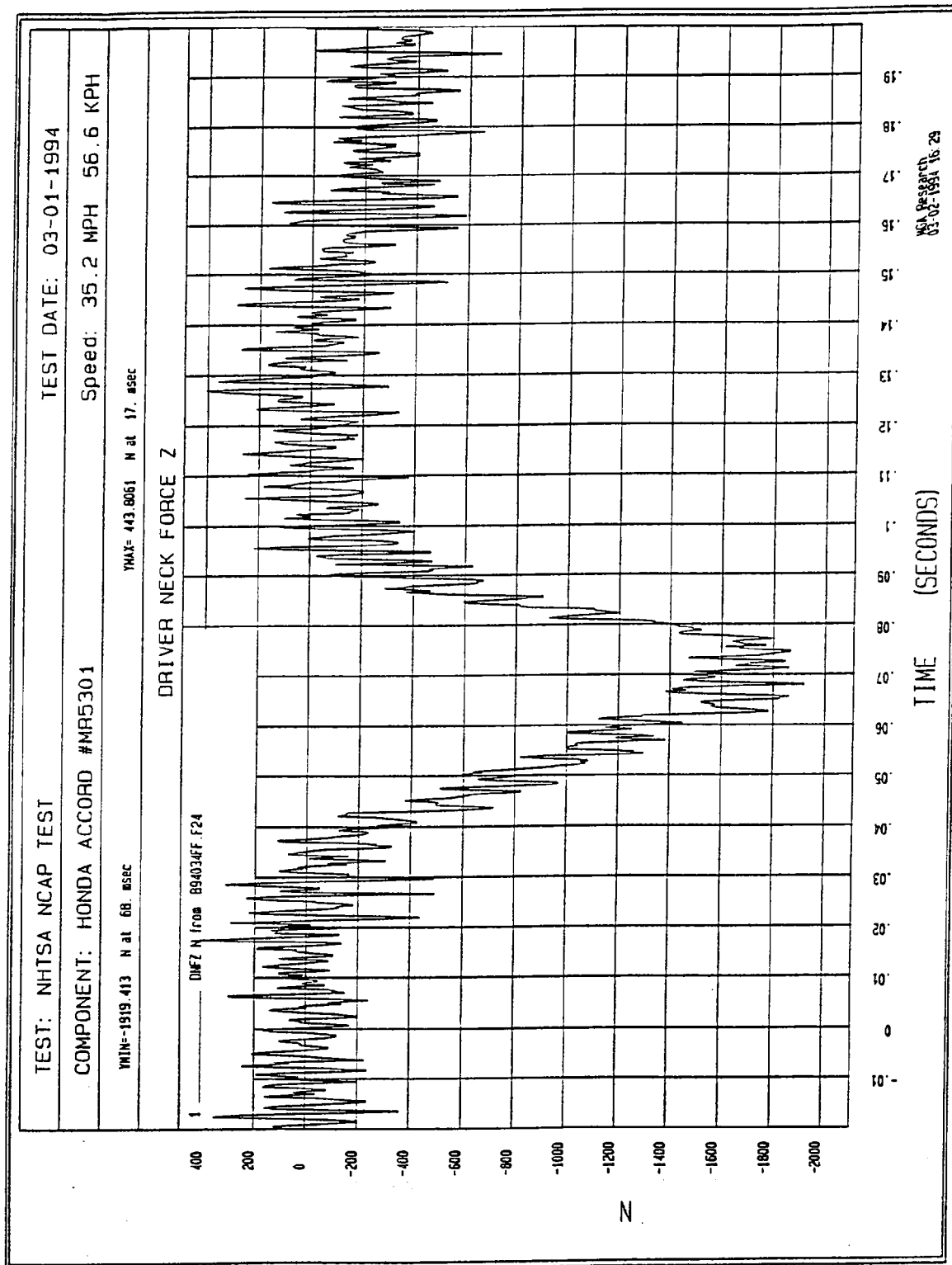


Figure B-55 - Driver Neck Force Z vs. Time

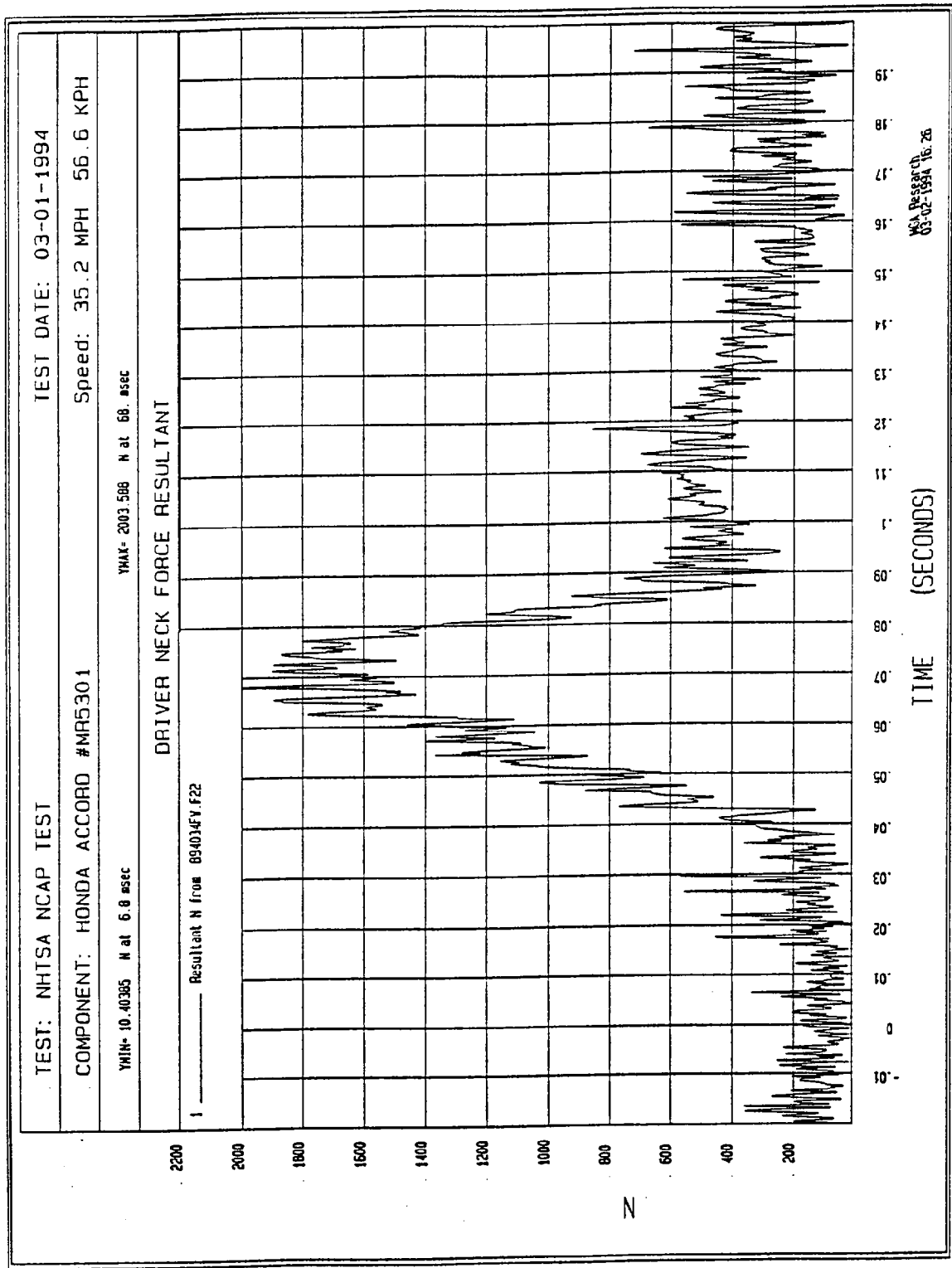


Figure B-56 - Driver Neck Force Resultant vs. Time

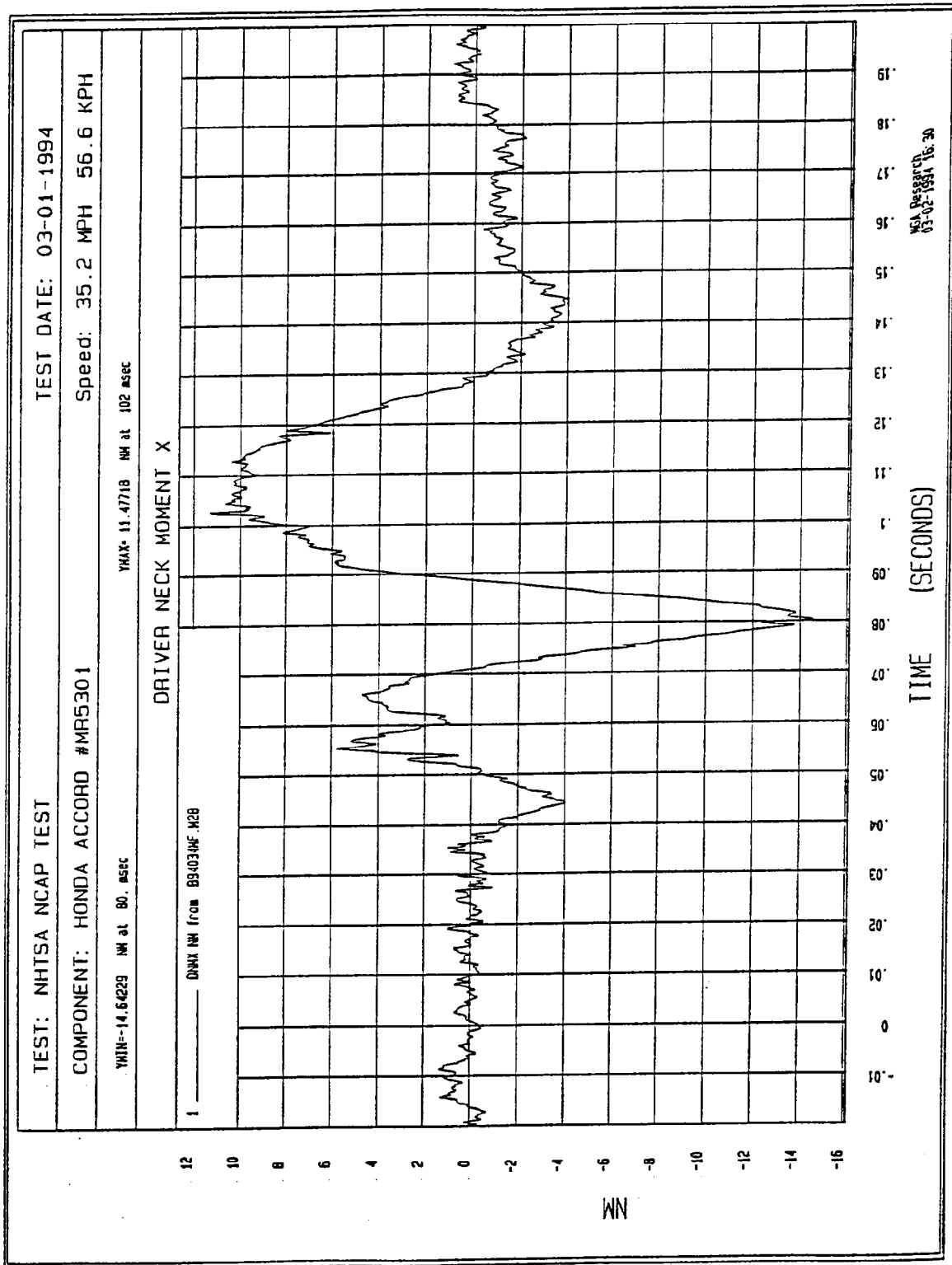


Figure B-57 - Driver Neck Moment X vs. Time

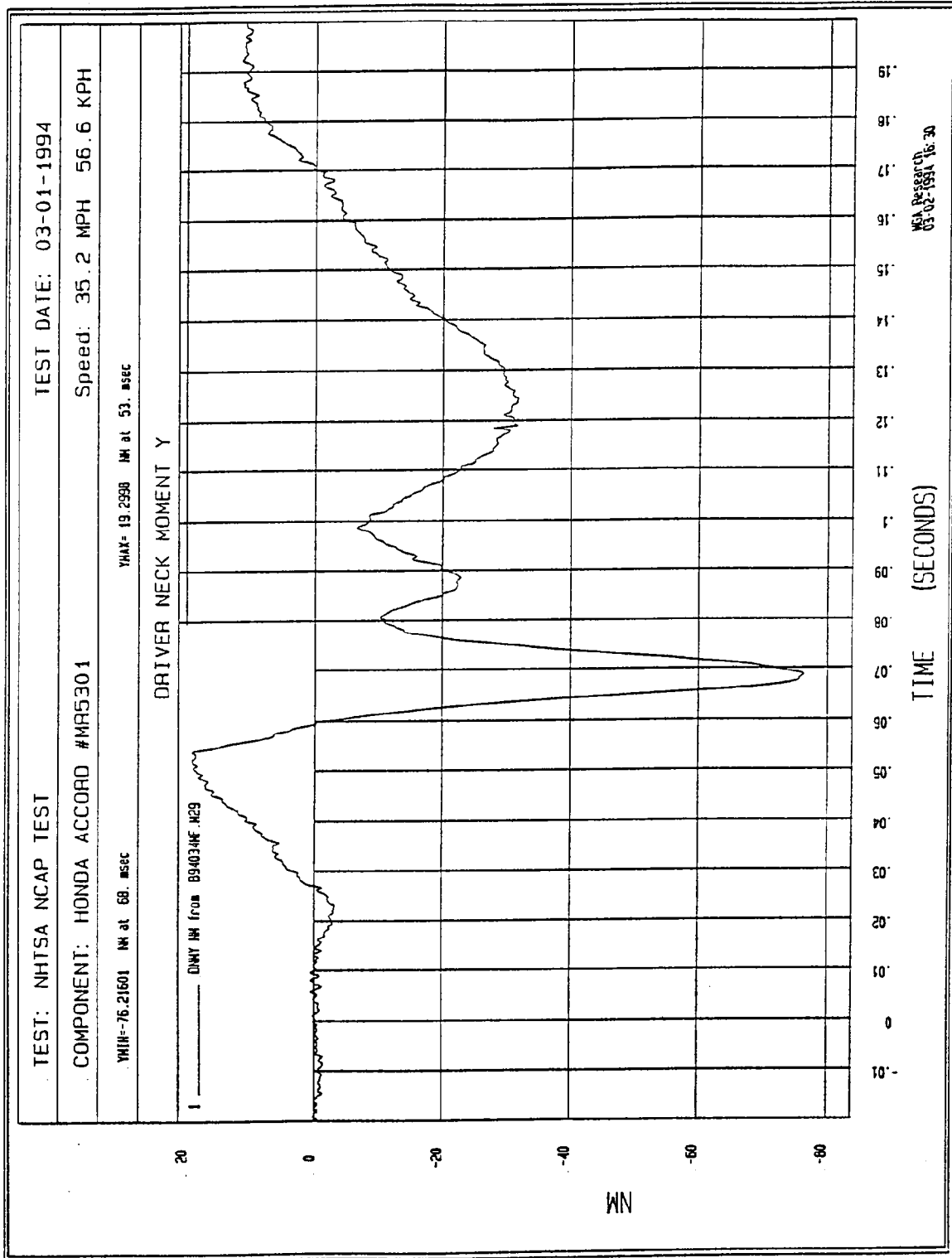


Figure B-58 - Driver Neck Moment Y vs. Time

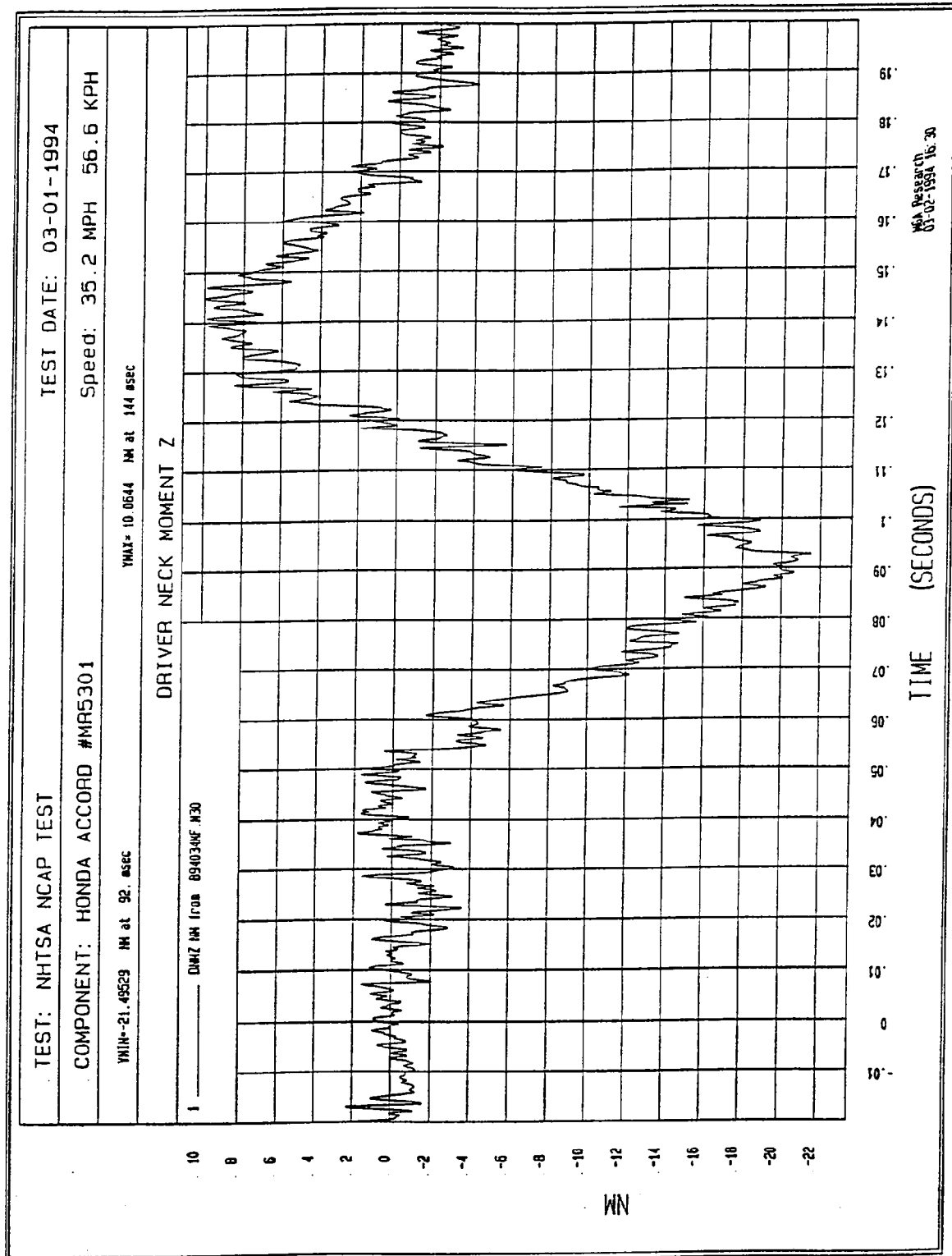
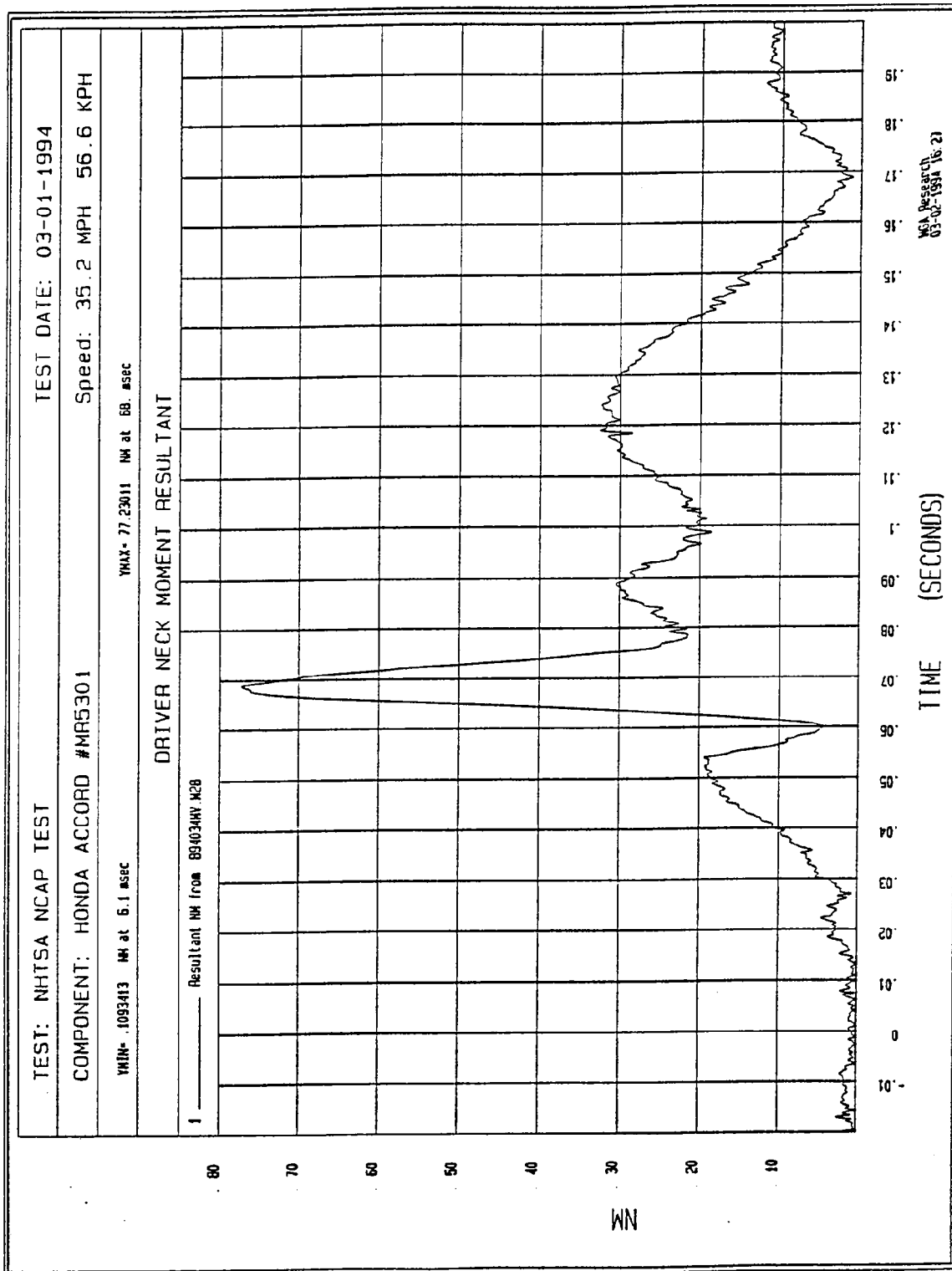


Figure B-59 - Driver Neck Moment Z vs. Time



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Figure B-60 - Driver Neck Moment Resultant vs. Time

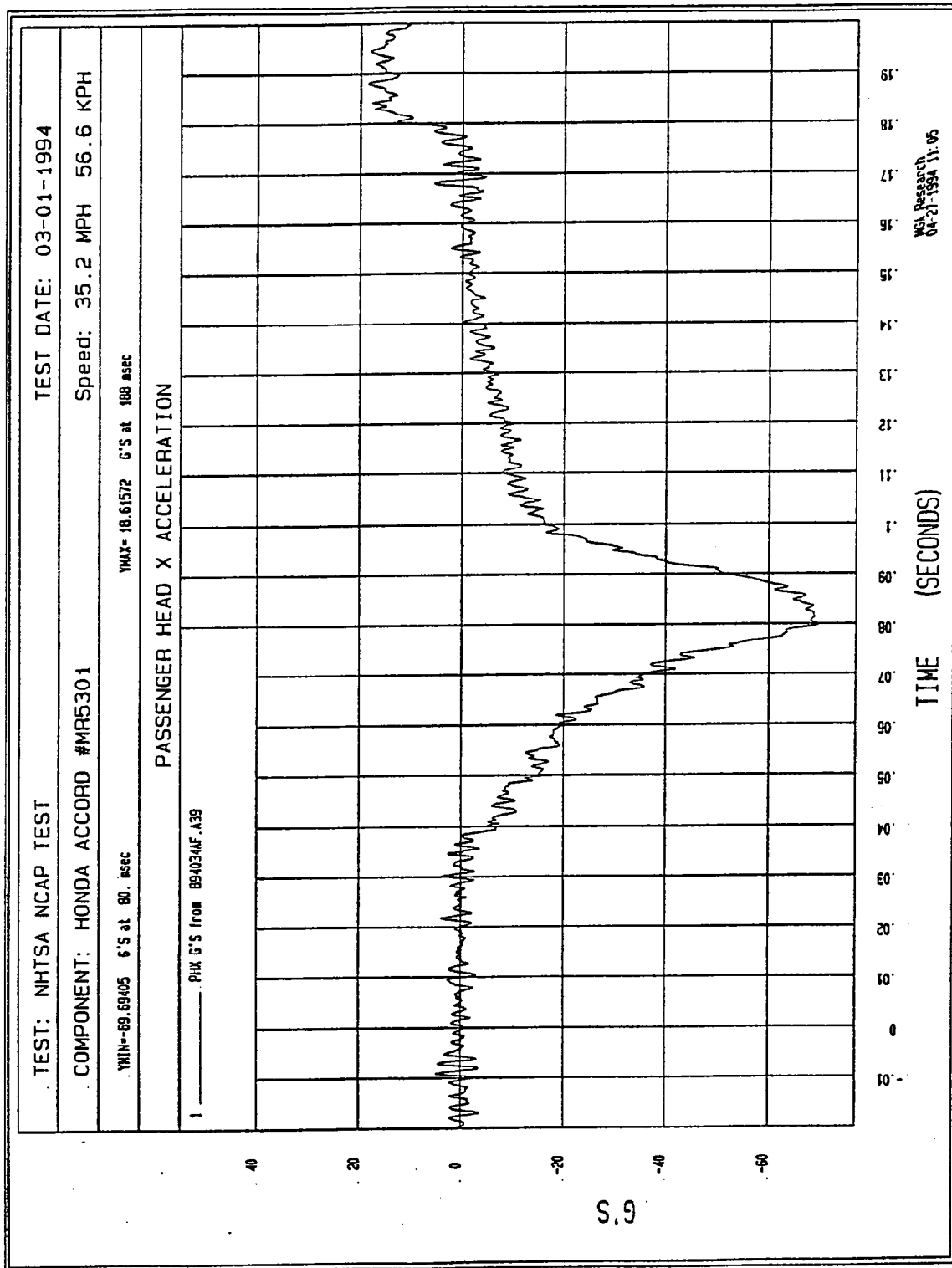


Figure B-61 - Passenger Head X Acceleration vs. Time

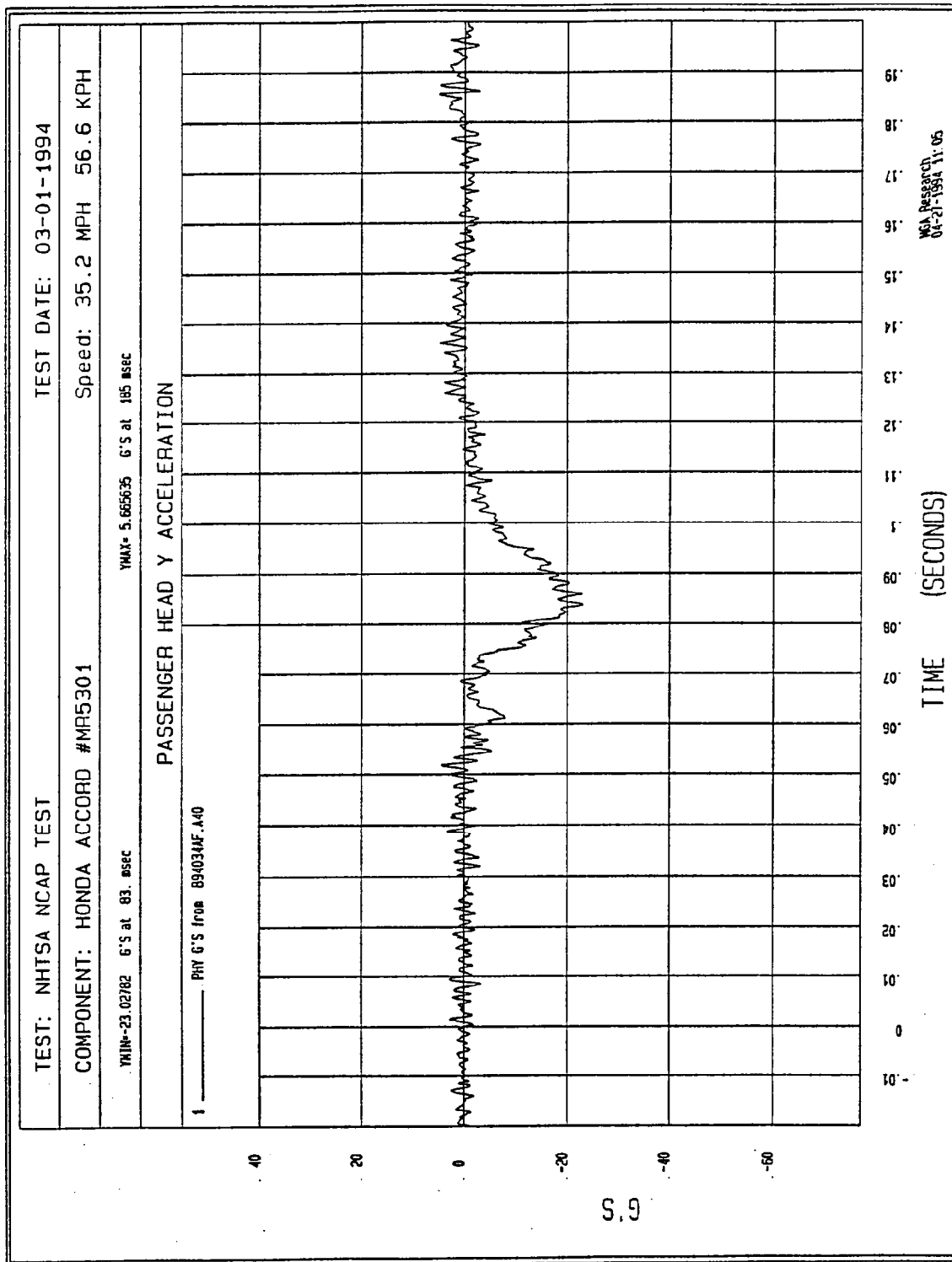


Figure B-62 - Passenger Head Y Acceleration vs. Time

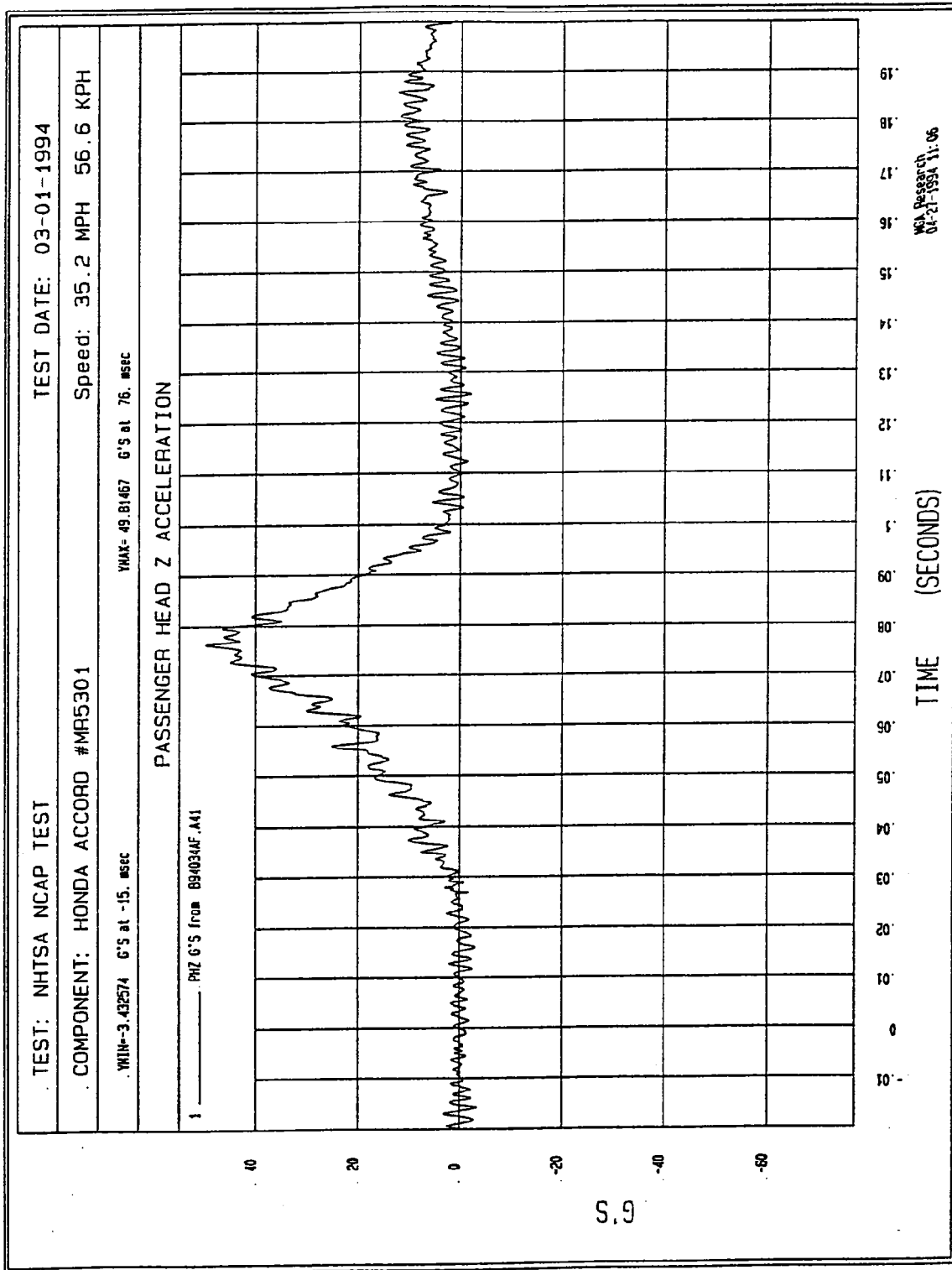


Figure B-63 - Passenger Head Z Acceleration vs. Time

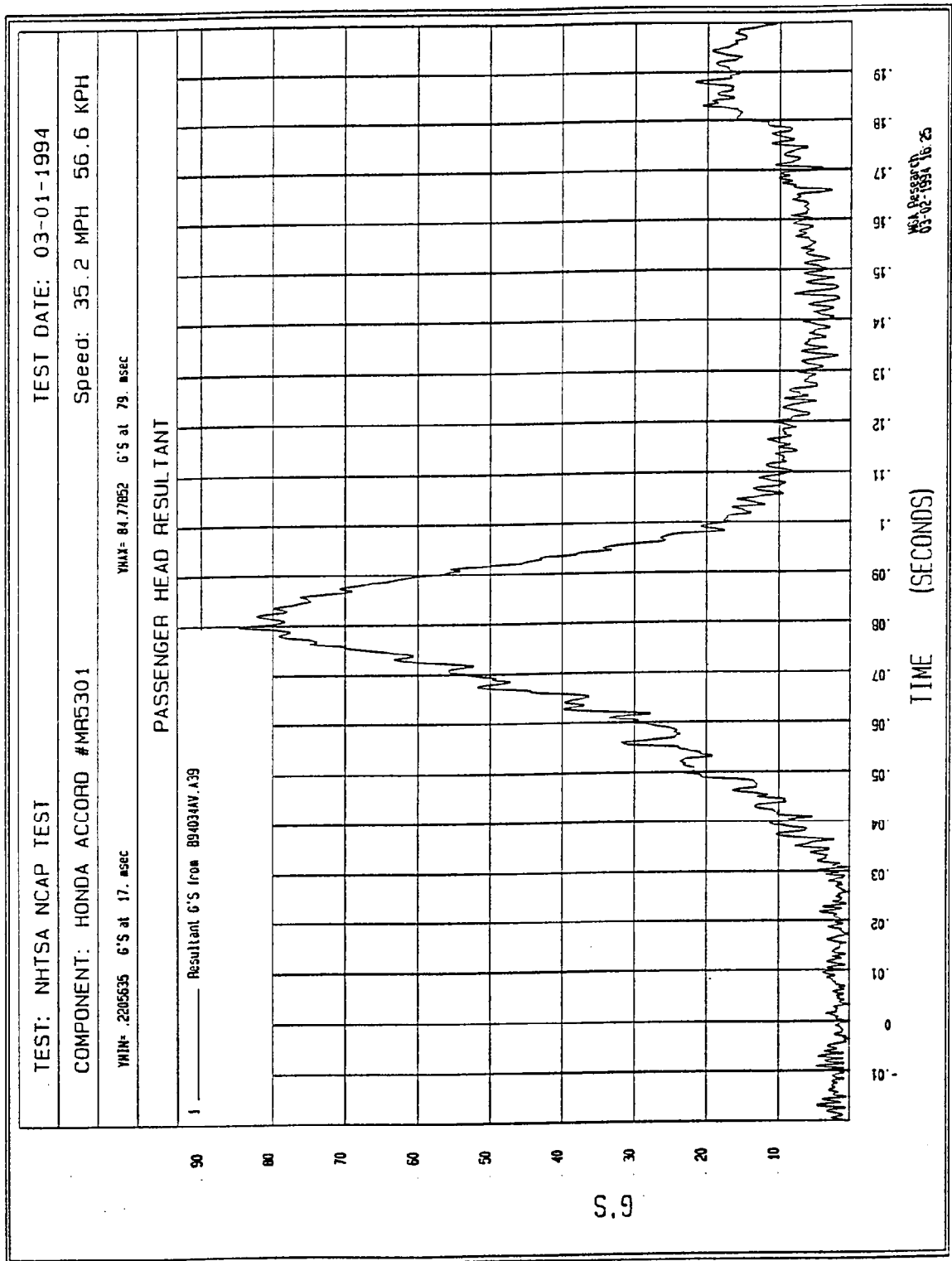


Figure B-64 - Passenger Head Resultant Acceleration vs. Time

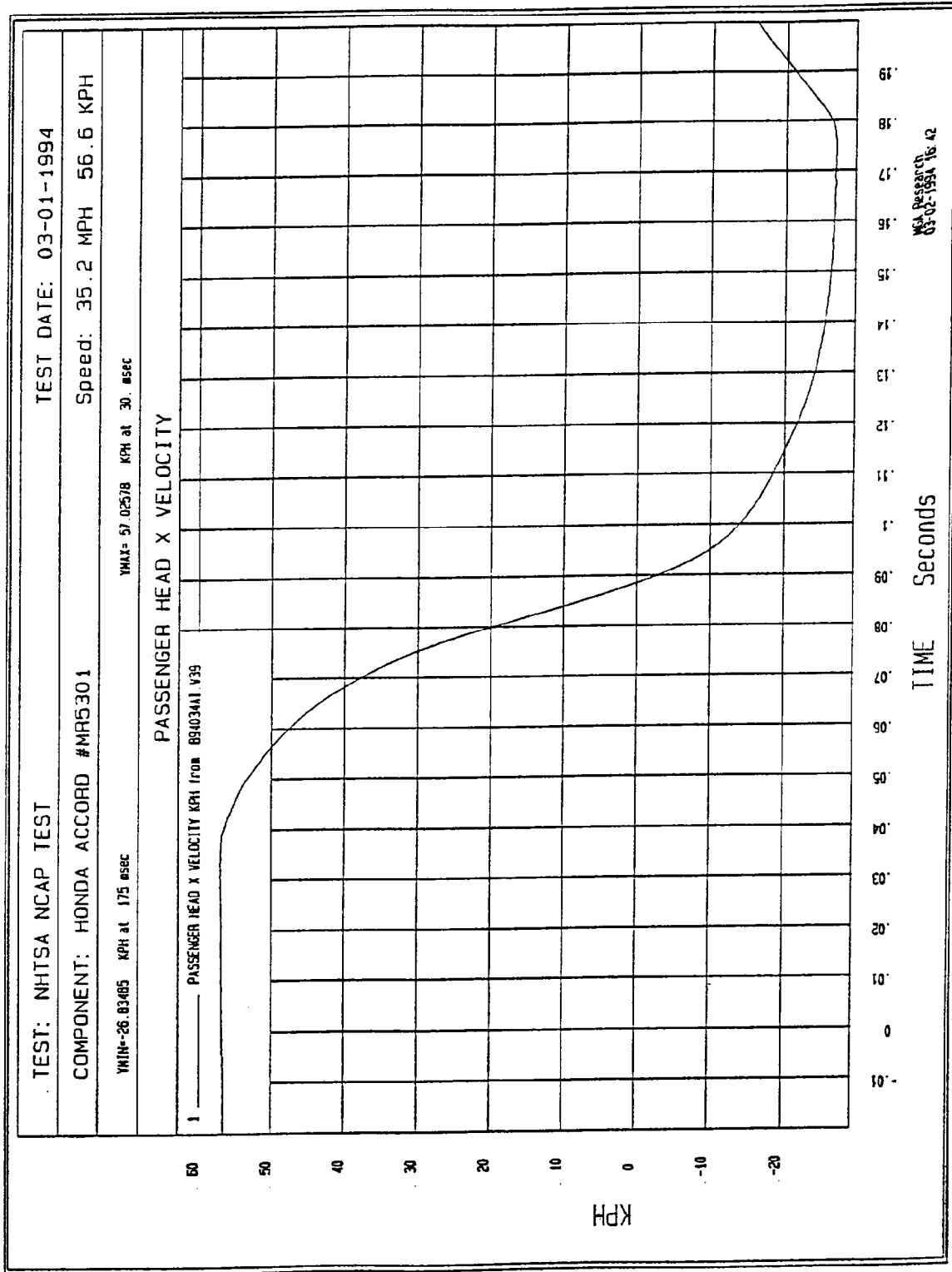


Figure B-65 - Passenger Head X Velocity vs. Time

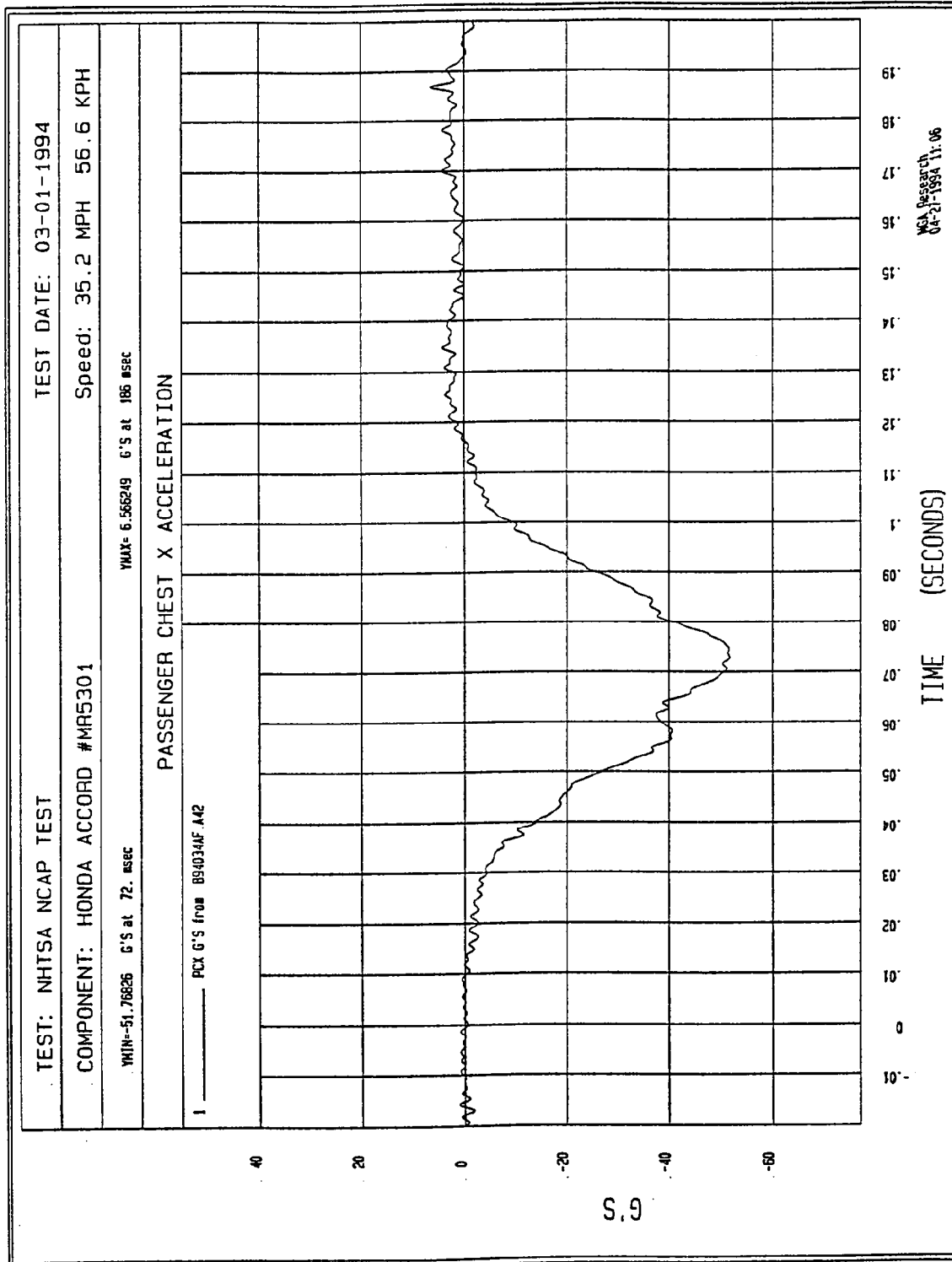


Figure B-66 - Passenger Chest X Acceleration vs. Time

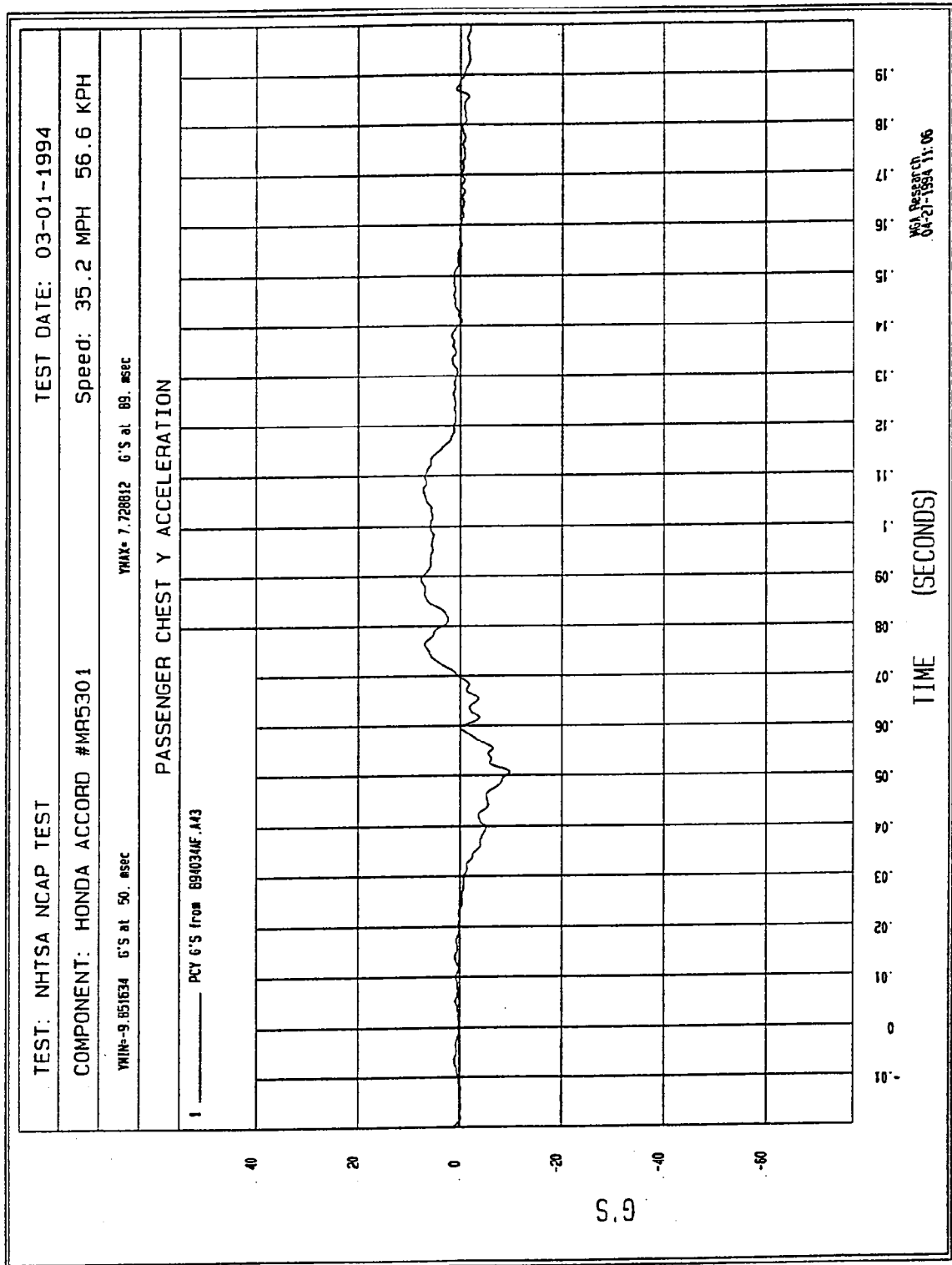


Figure B-67 - Passenger Chest Y Acceleration vs. Time

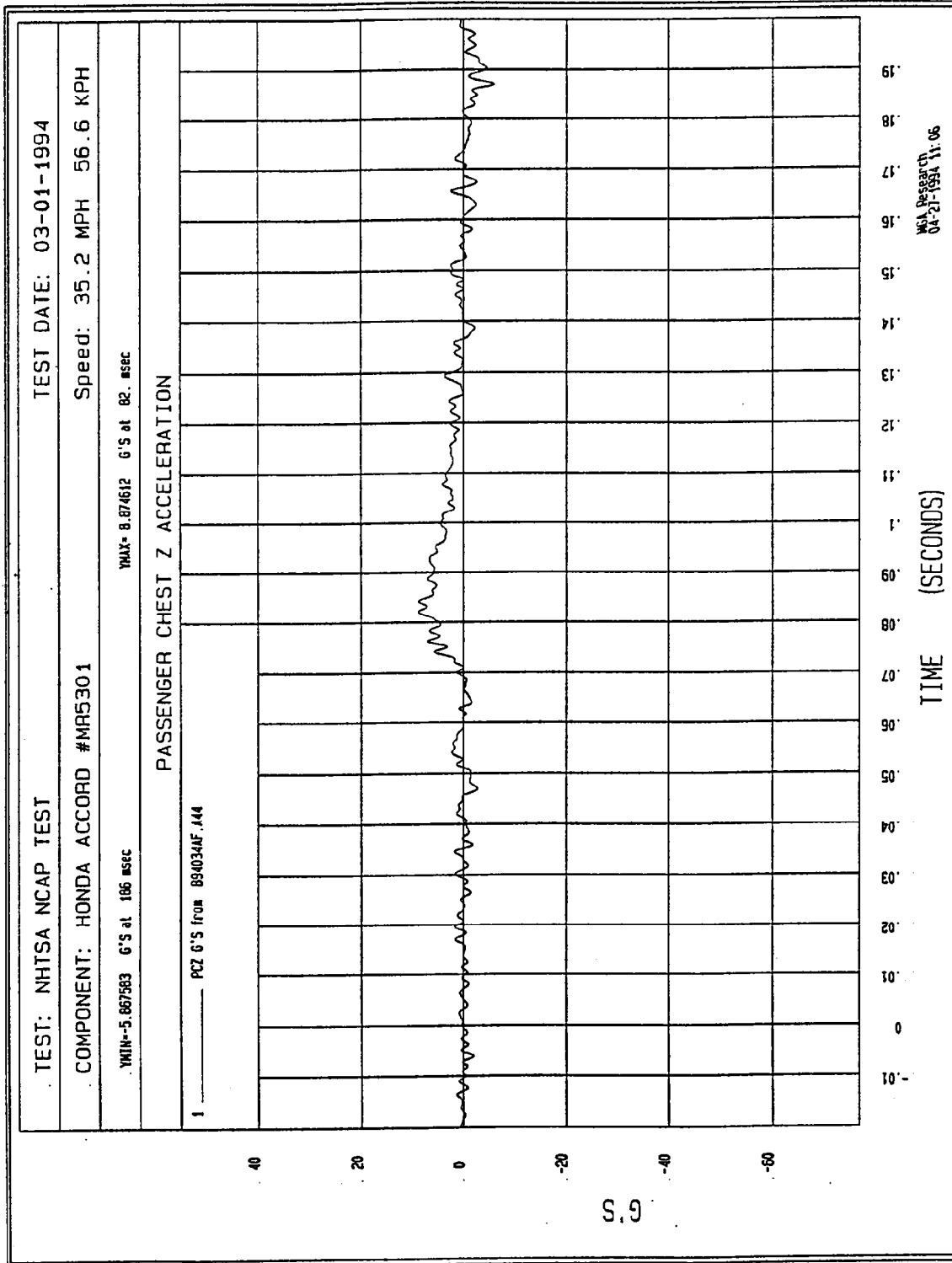


Figure B-68 - Passenger Chest Z Acceleration vs. Time

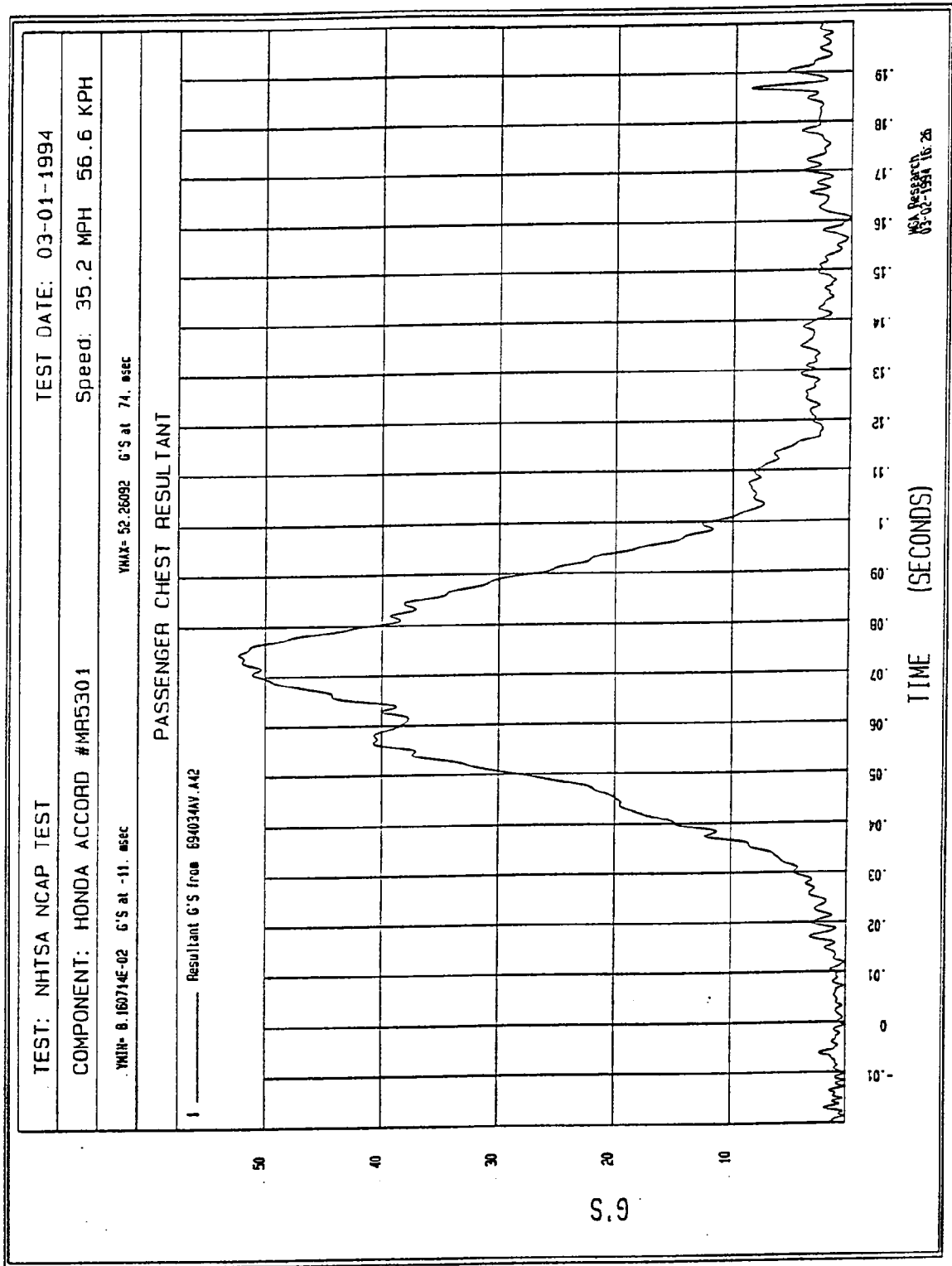
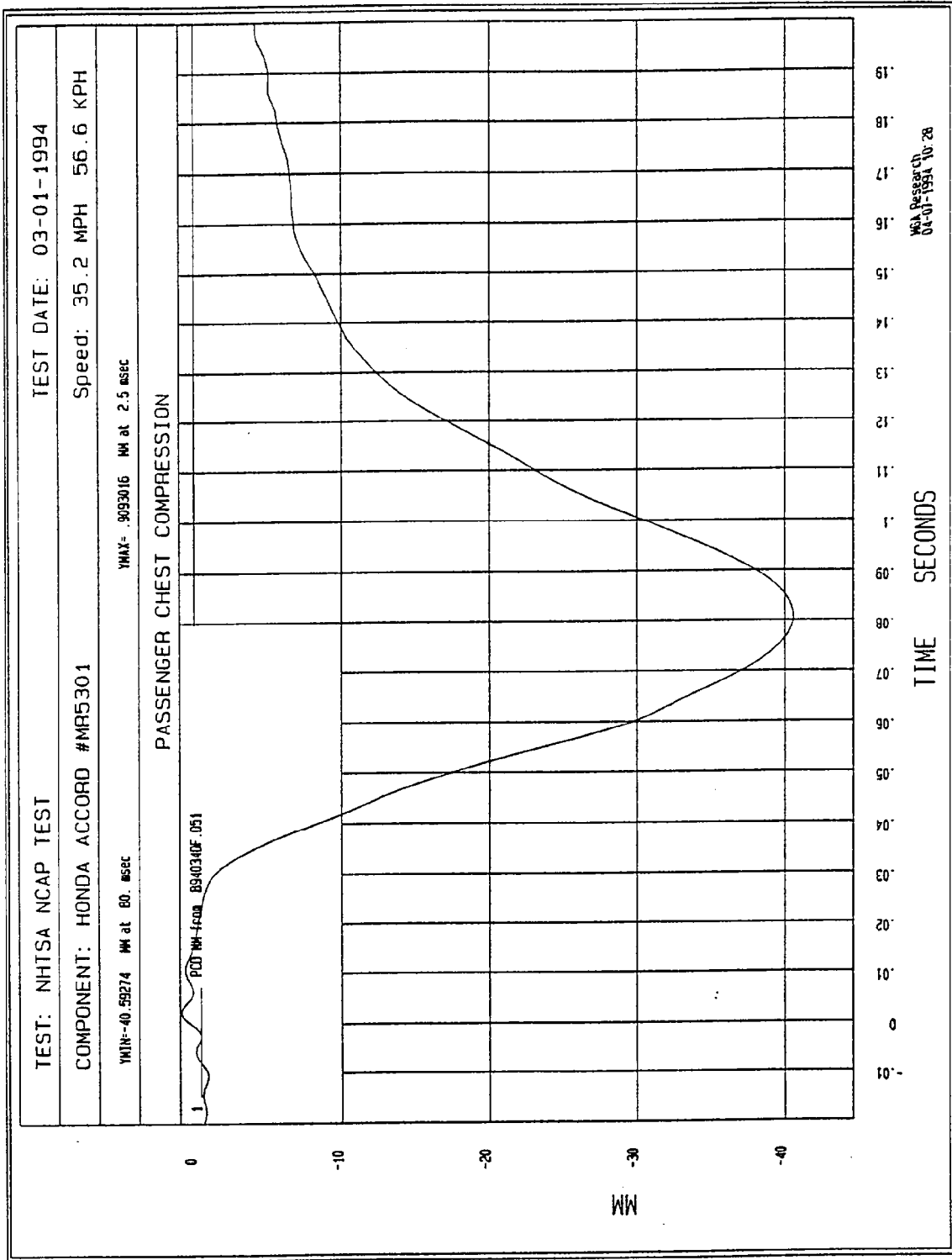


Figure B-69 - Passenger Chest Resultant vs. Time



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Figure B-70 - Passenger Chest Compression vs. Time

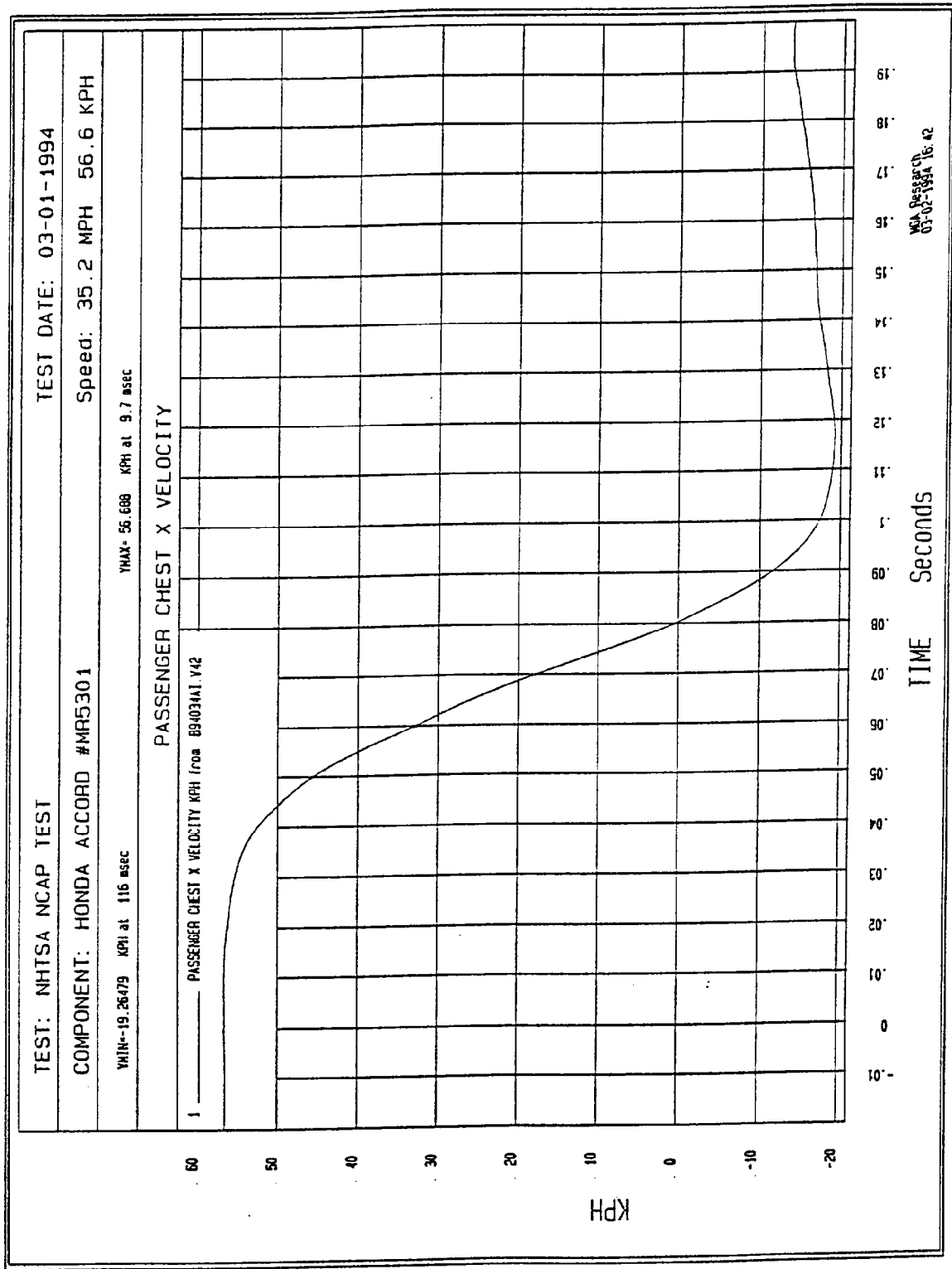
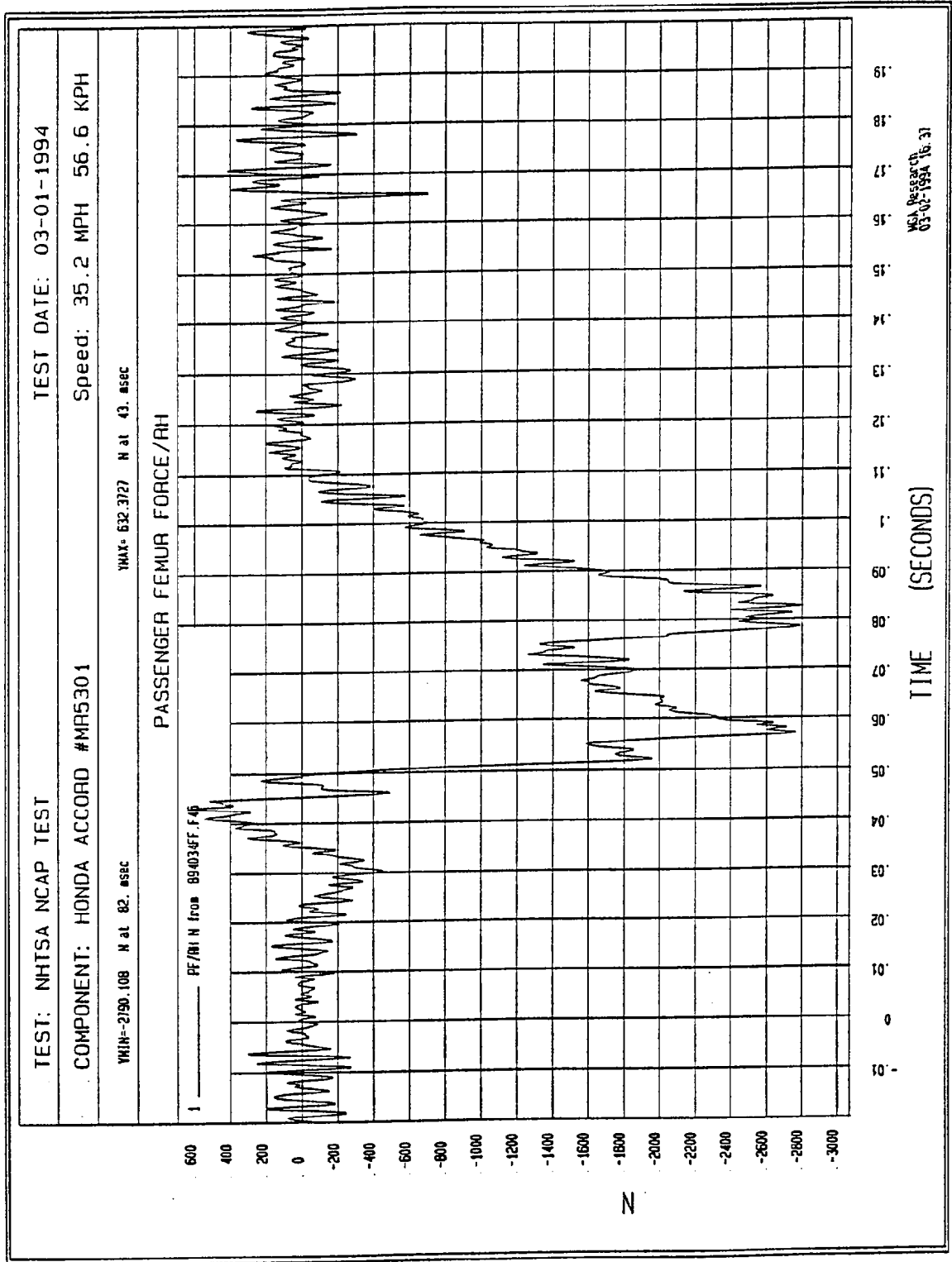
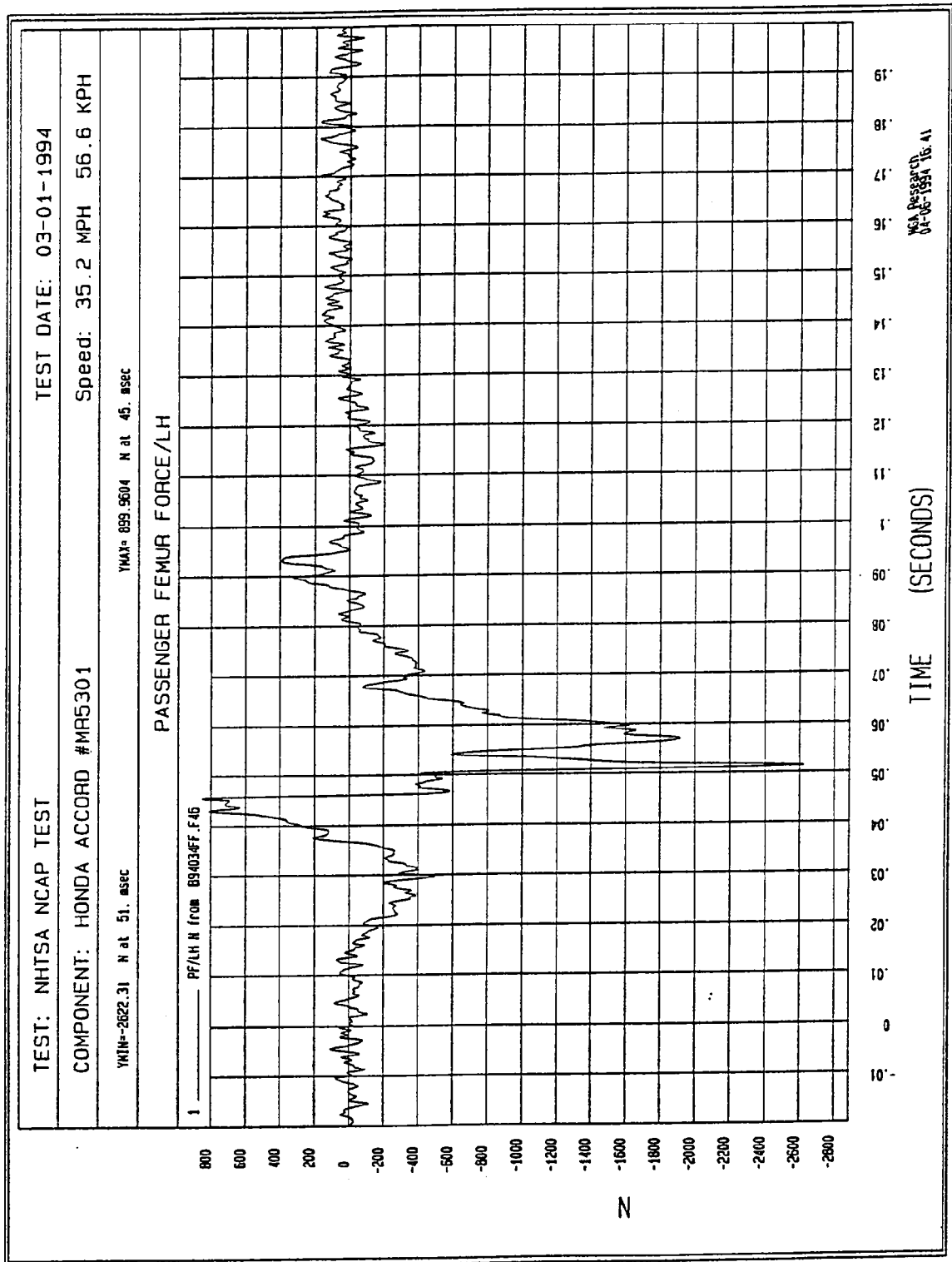


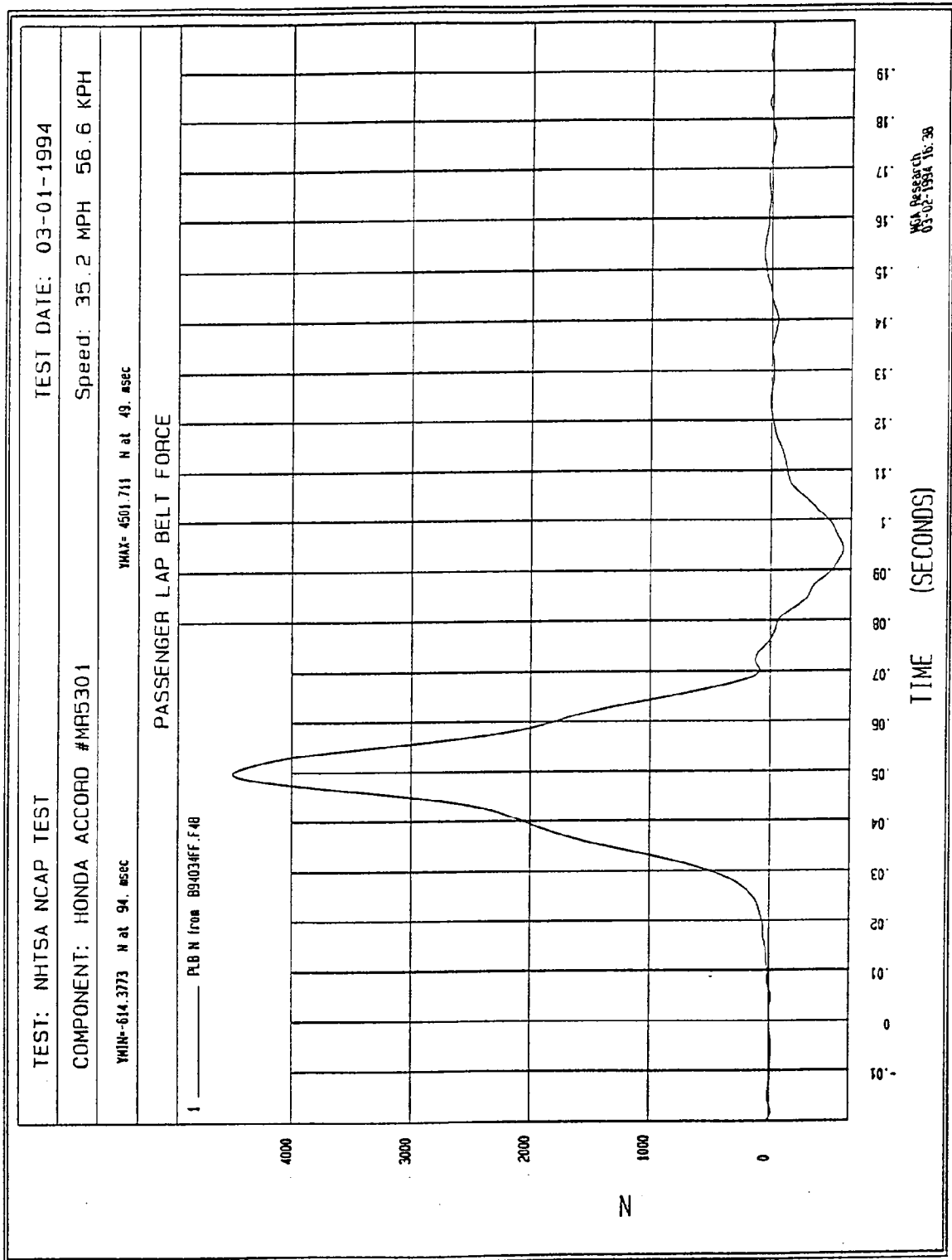
Figure B-71 - Passenger Chest X Velocity vs. Time



B-72

Figure B-72 - Passenger Right Femur Force vs. Time





B-74

Figure B-74 - Passenger Lap Belt Force vs. Time

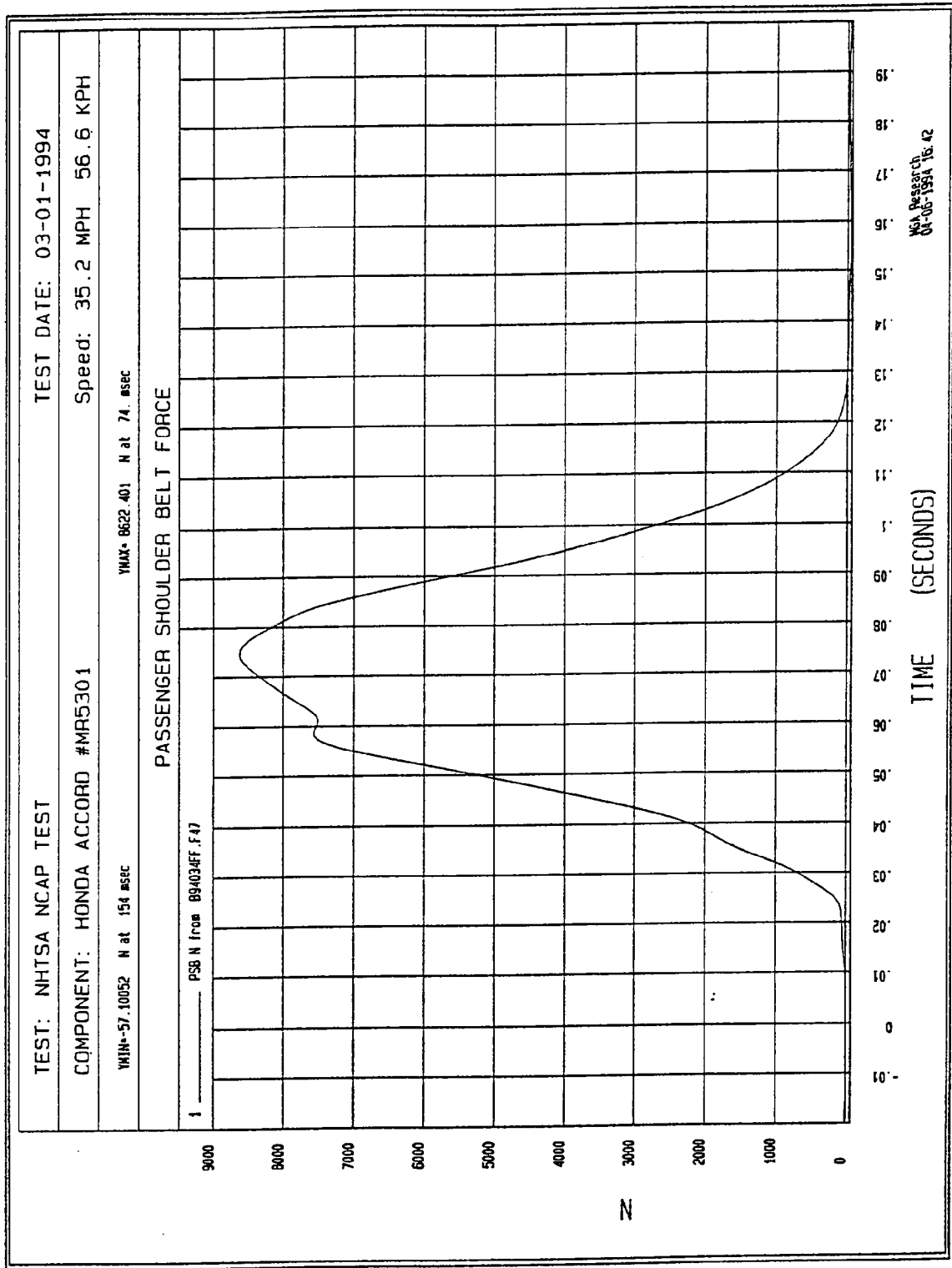


Figure B-75 - Passenger Shoulder Belt Force vs. Time

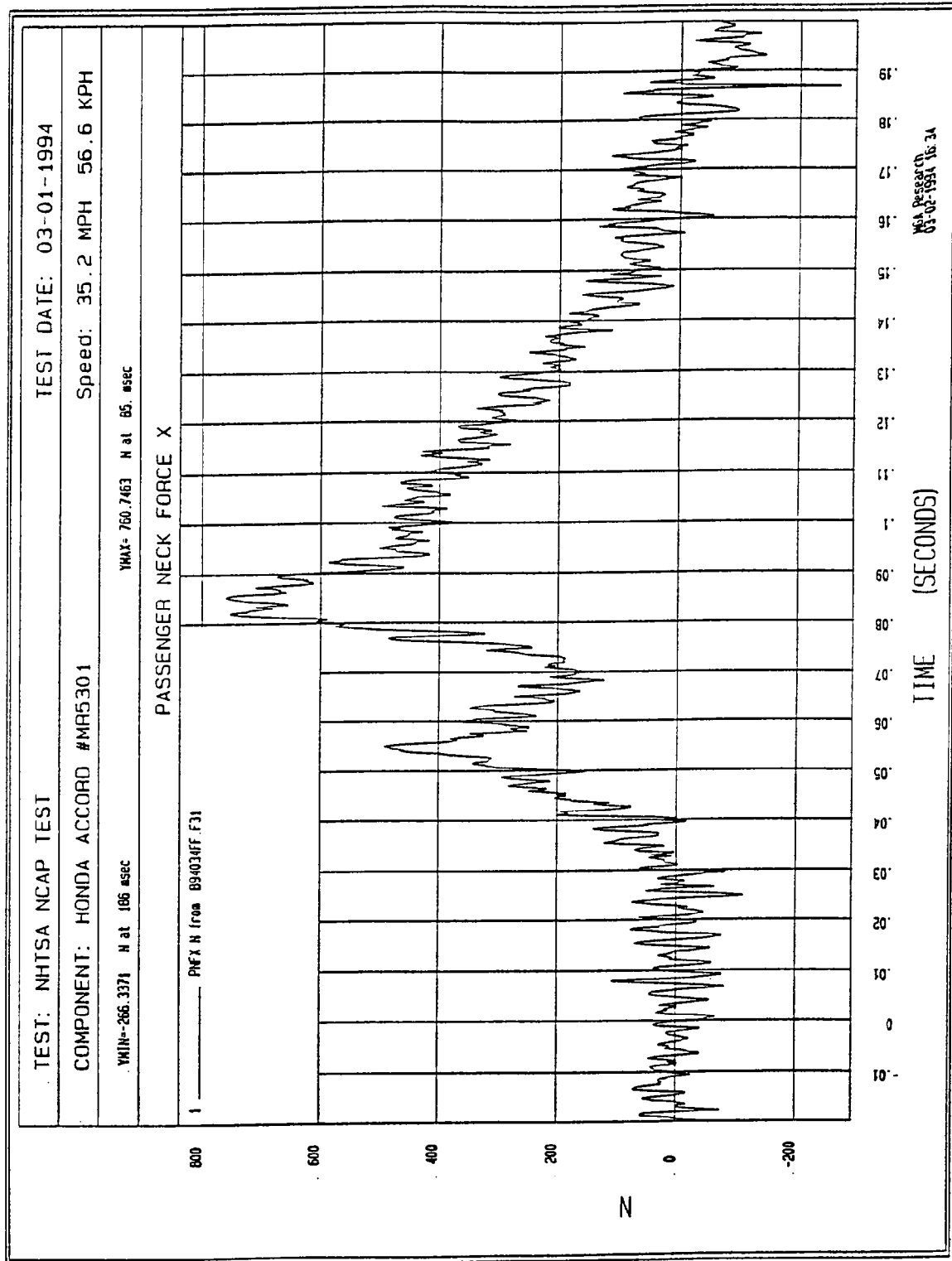


Figure B-76 - Passenger Neck Force X vs. Time

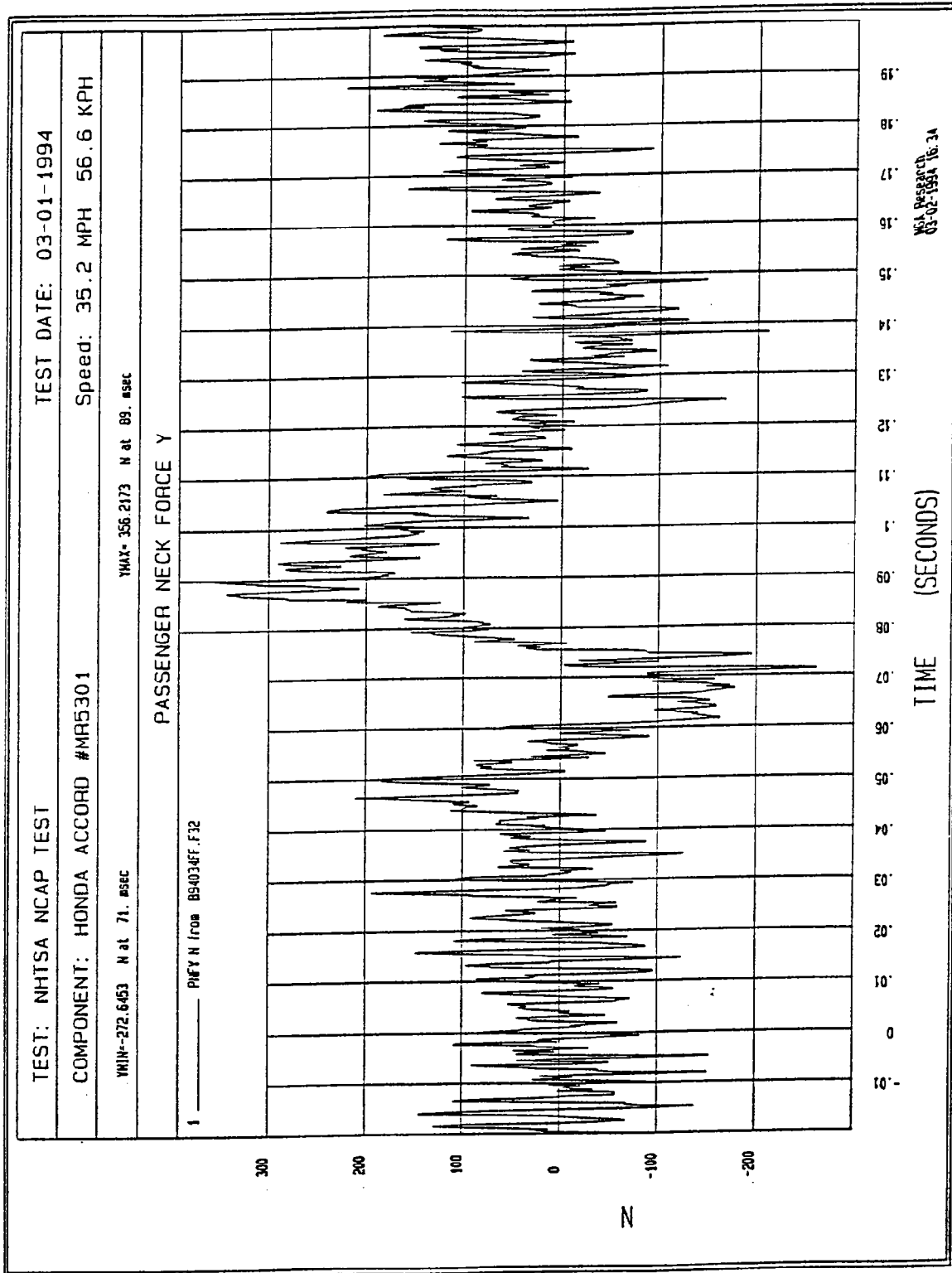
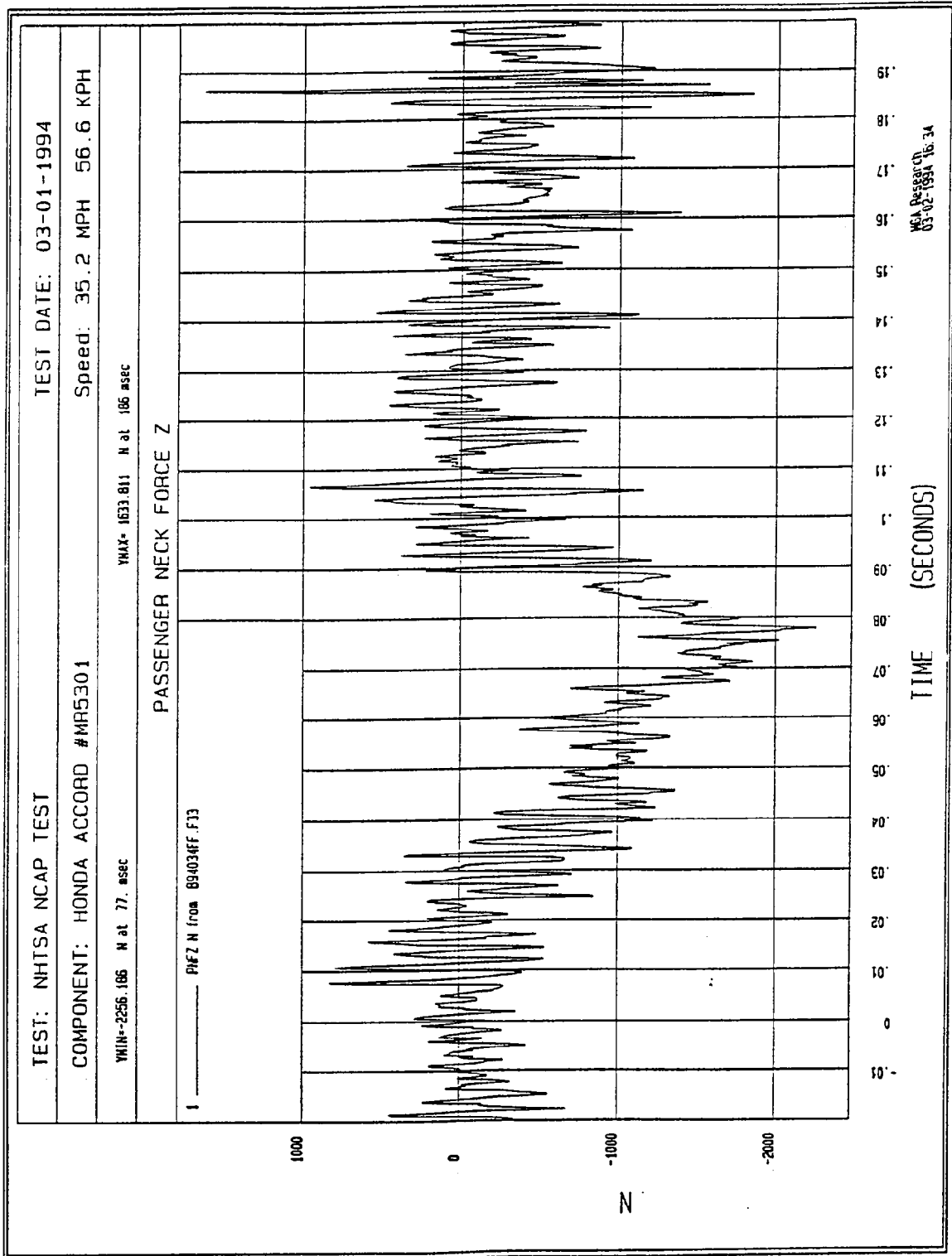


Figure B-77 - Passenger Neck Force Y vs. Time



B-78

Figure B-78 - Passenger Neck Force Z vs. Time

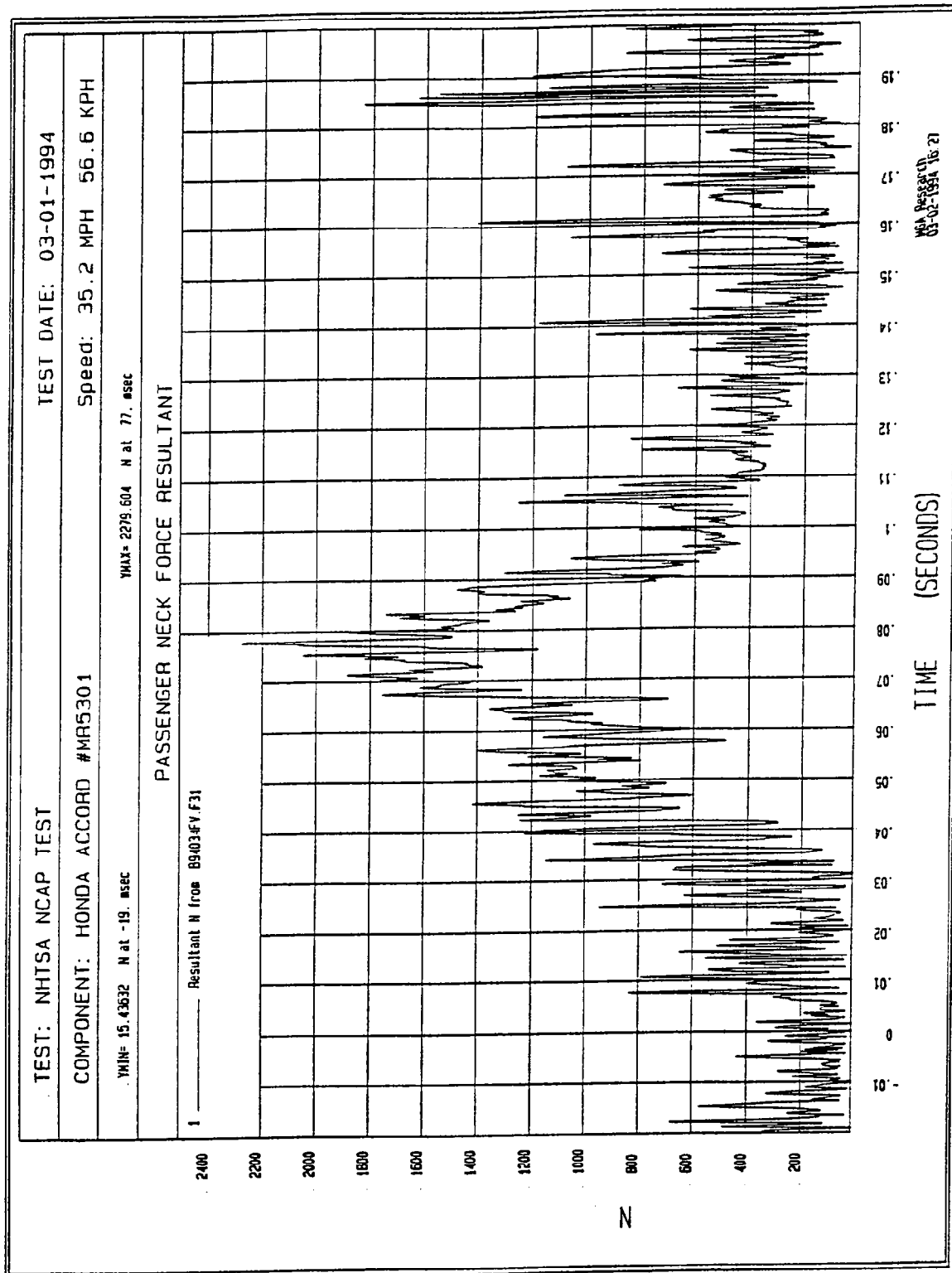
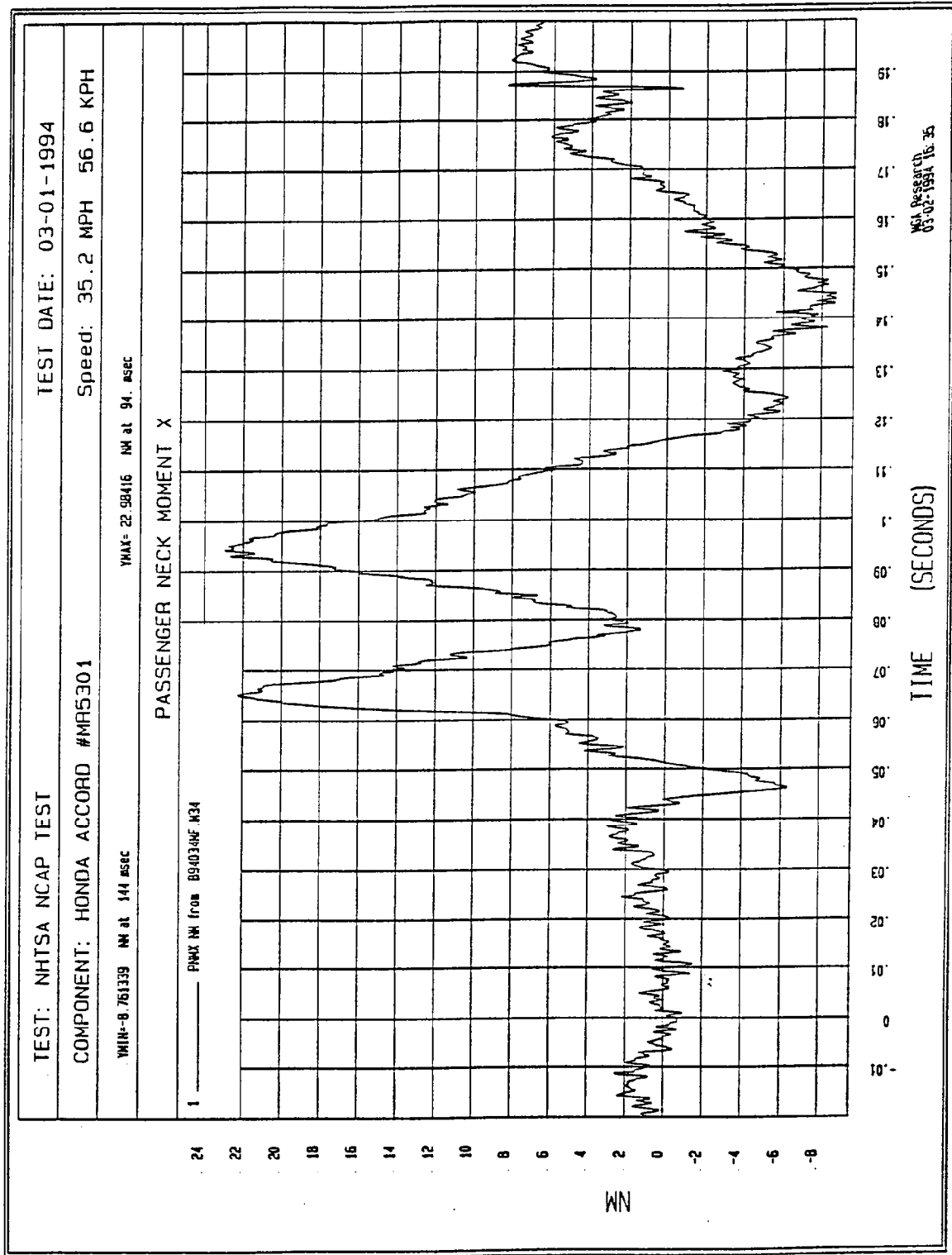


Figure B-79 - Passenger Neck Force Resultant vs. Time



B-80

Figure B-80 - Passenger Neck Moment X vs. Time

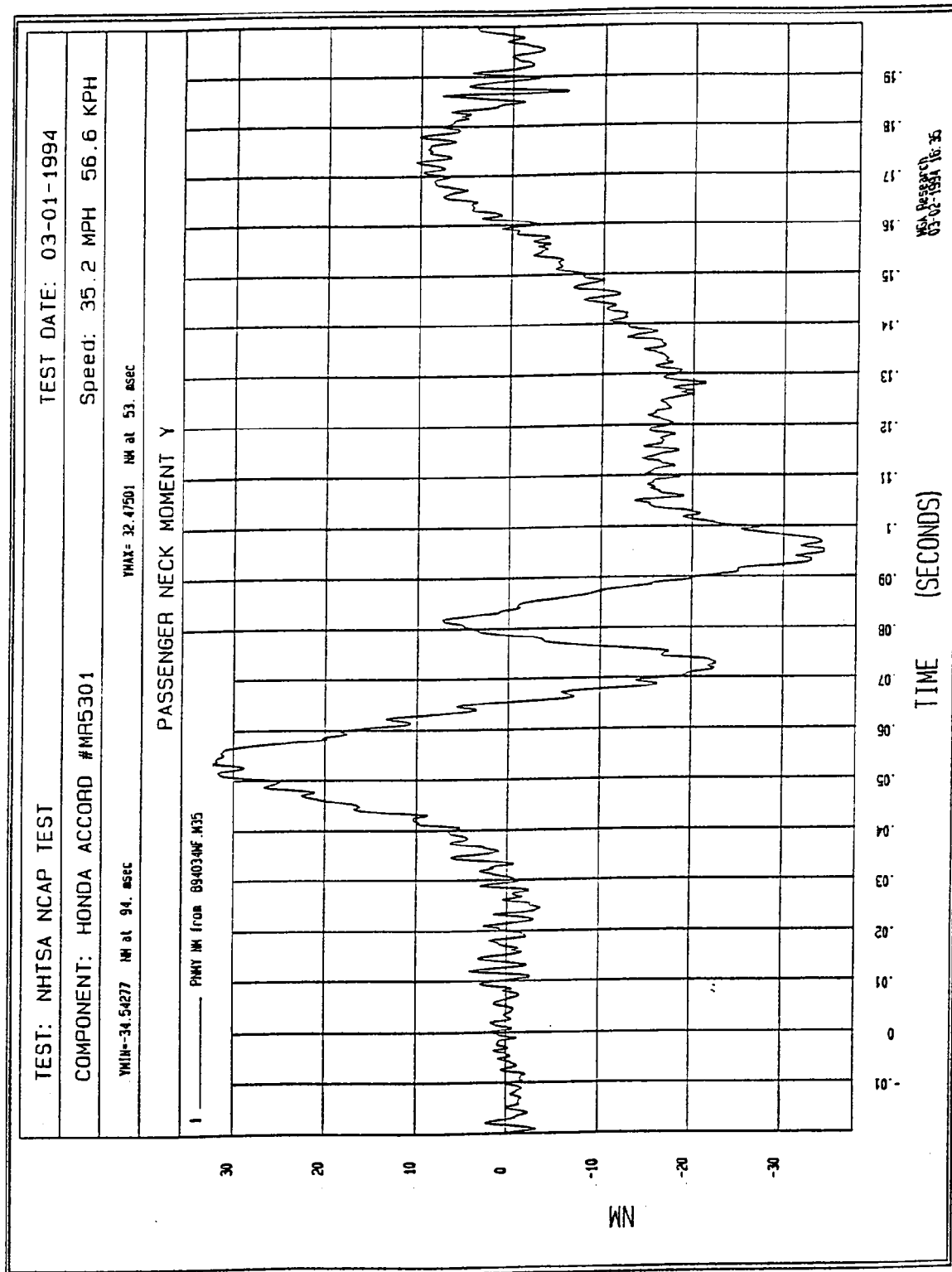
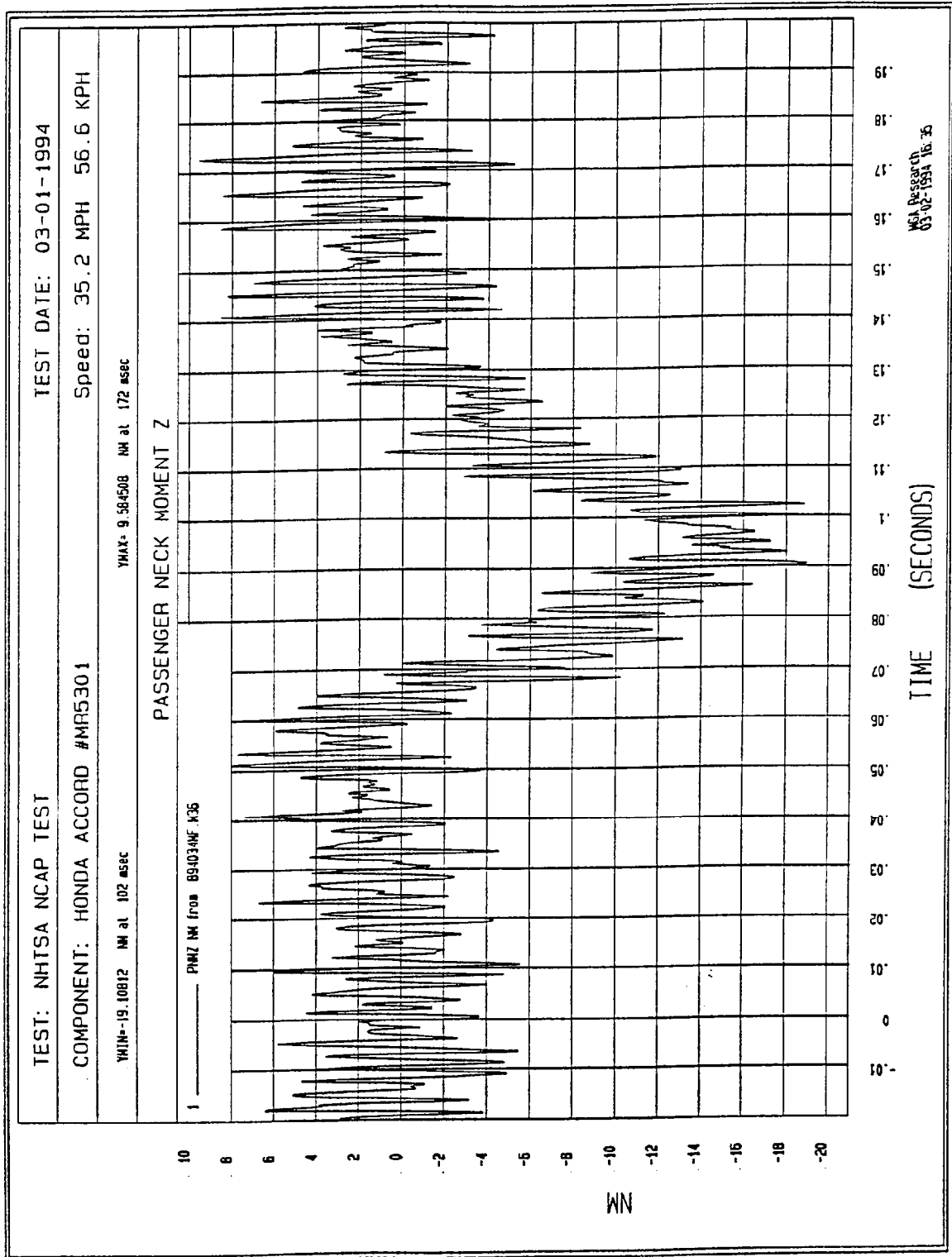


Figure B-81 - Passenger Neck Moment Y vs. Time



B-82

Figure B-82 - Passenger Neck Moment Z vs. Time

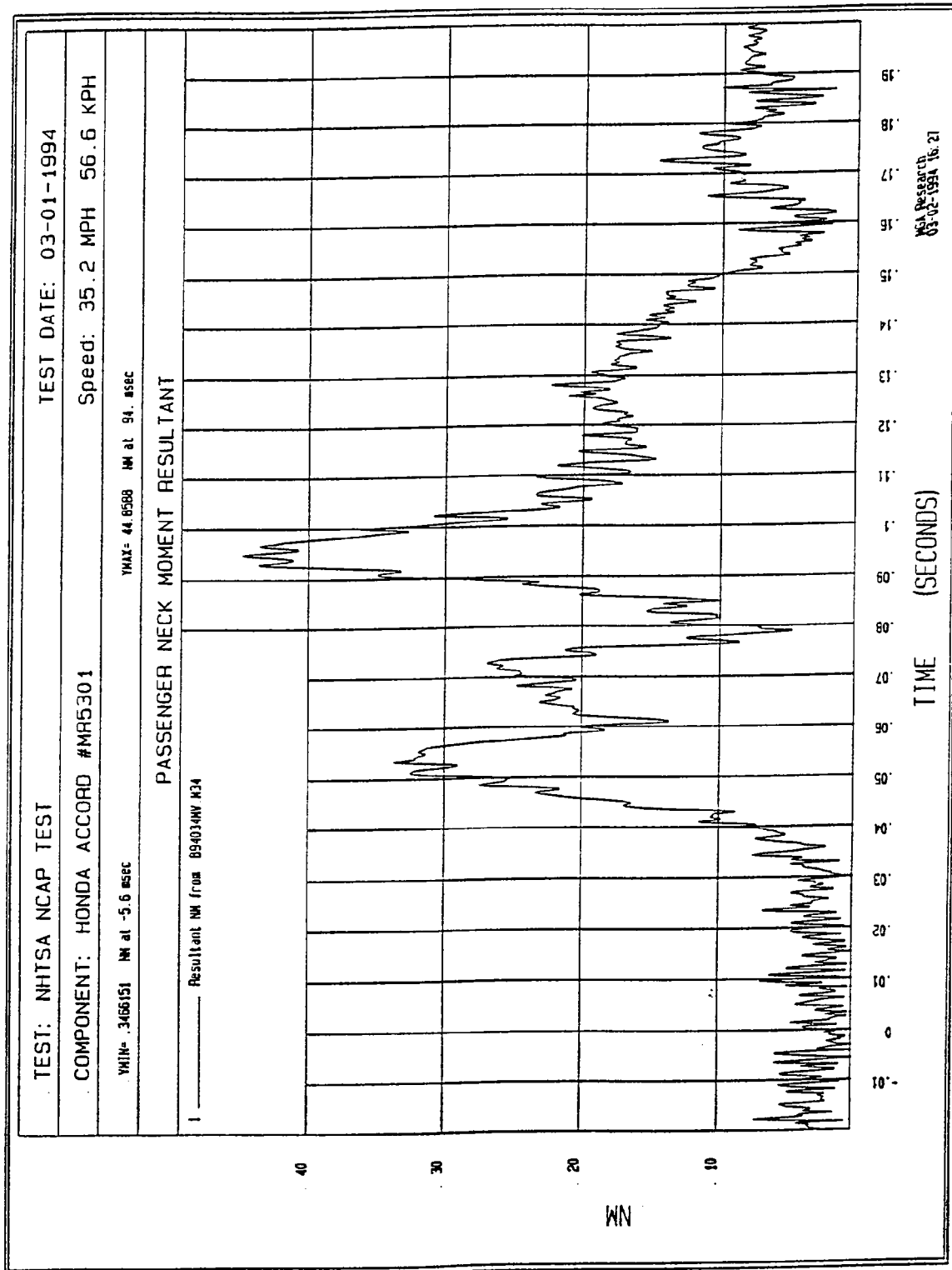


Figure B-83 - Passenger Neck Moment Resultant vs. Time

APPENDIX C
Dummy Configuration & Performance Verification Data

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 36 DUMMY CALIBRATION BY: Rod McClelland

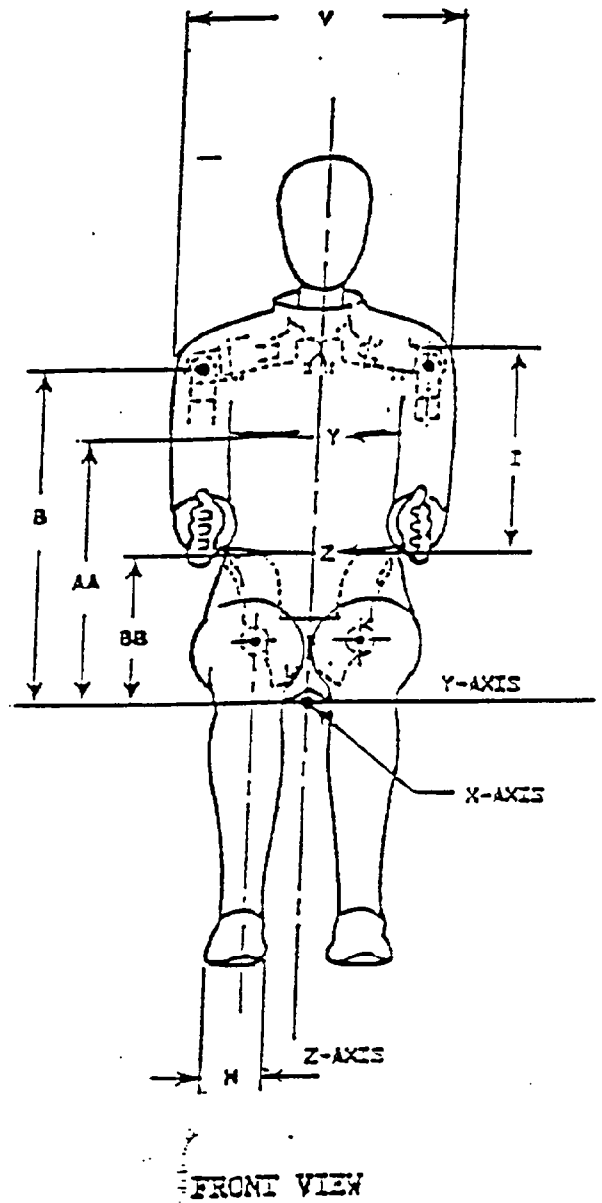
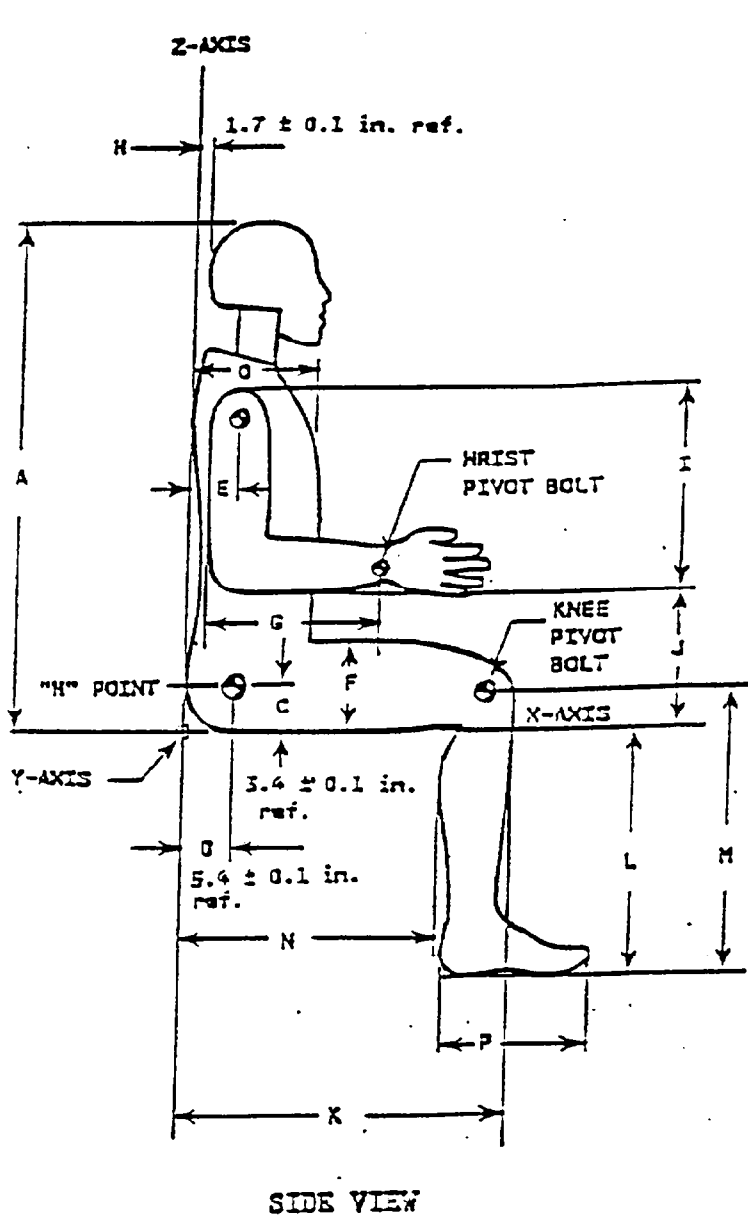
I. CONFIGURATION VERIFICATION DATA

DATE OF VERIFICATION: 01-25-94

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 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



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.: 36 DUMMY CALIBRATION BY: Jeff Robbins

VERIFICATION DATE: 01-25-93

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

1.0 HEAD DROP TEST

	SPECIFICATION	MEASUREMENT
Peak Resultant Acceleration	225 - 275 G	259
Peak Lateral Acceleration	15 G. MAX	3
Is Acceleration Curve Unimodal	within 10% of peak	Yes

2.0 NECK FLEXION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		22.6 - 23.4 FT/SEC	23.00
Pendulum Deceleration	10 MS	22.50 - 27.50 G	25.00
	20 MS	17.60 - 22.60 G	19.62
	30 MS	12.50 - 18.50 G	15.60
Max. Pendulum G Above 30 MS		29.0 G MAX	15.7
Deceleration - Time Curve Decay Time to 5 G		34 - 42 MS	38
D Plane Rotation	MAX	64 - 78 DEG.	75
	TIME	57 - 64 MS	57
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 MS	114
Moment About Occipital Condyle	MIN.	65 - 80 FT.LBS	70
	TIME	47 - 58 MS	52
Positive Moment - Time Curve Decay Time to Zero		97 - 107 MS	100

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

3.0 NECK EXTENSION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		19.50 - 20.30 F/S	20.05
Pendulum Deceleration	10 MS	17.20 - 21.20 G	18.48
	20 MS	14.00 - 19.00 G	15.03
	30 MS	11.00 - 16.00 G	12.32
Max. Pendulum G Above 30 MS		22 G Max	12
Deceleration - Time Curve Decay Time to 5 G		38 - 46 MS	45
D Plane Rotation	MAX	81 - 106 DEG.	95
	TIME	72 - 82 MS	82
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 MS	155
Moment About Occipital Condyle	MIN.	-59.0/-39.0 FT LBS	-47.2
	TIME	65 - 79 MS	72
Positive Moment - Time Curve Decay Time to Zero		120 - 148 MS	144

4.0 CHEST IMPACT TESTS

	SPECIFICATION	MEASUREMENT
Probe Speed	21.6 to 22.4 F/S	21.7
Peak Deflection	2.50 to 2.86 IN.	2.52
Peak Resistive Force	1160 to 1325 LBS.	1277
Internal Hysteresis	69 to 85%	70

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.	1073

RIGHT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	6.9
Maximum Force	1060 - 1300 LBS.	1077

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 37 DUMMY CALIBRATION BY: Jeff Robbins

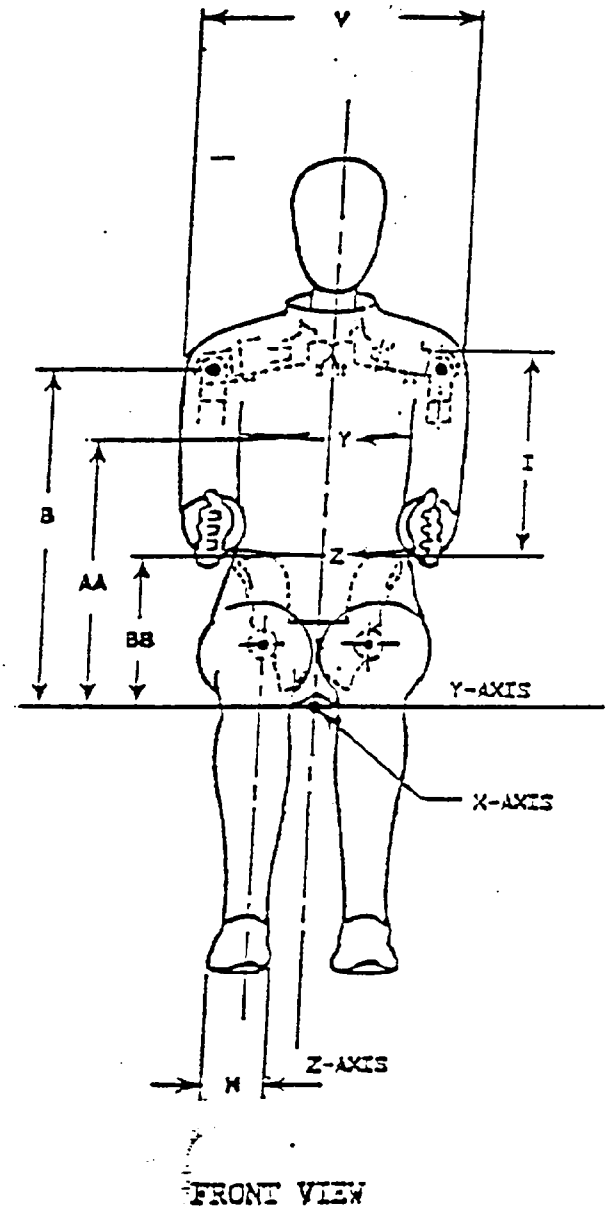
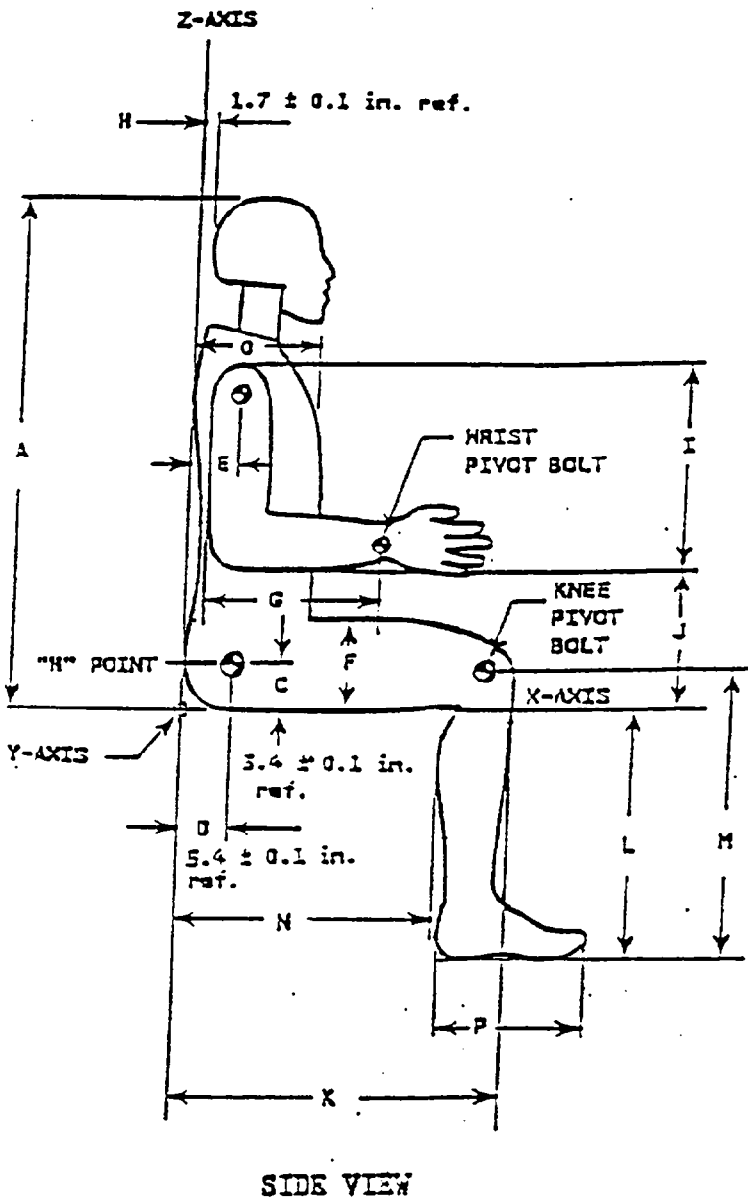
I. CONFIGURATION VERIFICATION DATA

DATE OF VERIFICATION: 02-21-93

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 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



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.: 37 DUMMY CALIBRATION BY: Jeff Robbins

VERIFICATION DATE: 02-21-93

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

1.0 HEAD DROP TEST

	SPECIFICATION	MEASUREMENT
Peak Resultant Acceleration	225 - 275 G	233
Peak Lateral Acceleration	-15 G. MAX	3.41
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	24.55
	20 MS	17.60 - 22.60 G	19.97
	30 MS	12.50 - 18.50 G	14.20
Max. Pendulum G Above 30 MS		29.0 G MAX	14.1
Deceleration - Time Curve Decay Time to 5 G		34 - 42 MS	40
D Plane Rotation	MAX	64 - 78 DEG.	74
	TIME	57 - 64 MS	59
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 MS	117
Moment About Occipital Condyle	MIN.	65 - 80 FT.LBS	66
	TIME	47 - 58 MS	54
Positive Moment - Time Curve Decay Time to Zero		97 - 107 MS	106

HYBRID III DUMMY CALIBRATION DATA SUMMARY SHEET (CONT.)

3.0 NECK EXTENSION TEST

		SPECIFICATION	MEASUREMENT
Pendulum Speed		19.50 - 20.30 F/S	19.95
Pendulum Deceleration	10 MS	17.20 - 21.20 G	18.38
	20 MS	14.00 - 19.00 G	16.70
	30 MS	11.00 - 16.00 G	12.52
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.	97
	TIME	72 - 82 MS	81
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 MS	159
Moment About Occipital Condyle	MIN.	-59.0/-39.0 FT LBS	-45.5
	TIME	65 - 79 MS	69
Positive Moment - Time Curve Decay Time to Zero		120 - 148 MS	141

4.0 CHEST IMPACT TESTS

	SPECIFICATION	MEASUREMENT
Probe Speed	21.6 to 22.4 F/S	21.75
Peak Deflection	2.50 to 2.86 IN.	2.84
Peak Resistive Force	1160 to 1325 LBS.	1186.02
Internal Hysteresis	69 to 85%	76.4

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.	1077

RIGHT KNEE	SPECIFICATION	MEASUREMENT
Probe Speed	6.8 to 7.0 F/S	7.0
Maximum Force	1060 - 1300 LBS.	1062

APPENDIX D

Dummy, Vehicle and Laboratory Calibration Data

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 36

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	ACDE7	Endevco	1/25/94
Head Y	ACC70	Endevco	1/25/94
Head Z	ACCW9	Endevco	1/25/94
Chest X	ACC78	Endevco	1/25/94
Chest Y	ACCE6	Endevco	1/25/94
Chest Z	ACC93	Endevco	1/25/94
Right Femur Load Cell	259	Denton	1/27/94
Left Femur Load Cell	260	Denton	1/27/94
Neck Load Cell X	442	Denton	2/9/94
Neck Load Cell Y	442	Denton	2/9/94
Neck Load Cell Z	442	Denton	2/9/94
Neck Moment X	442	Denton	2/9/94
Neck Moment Y	442	Denton	2/9/94
Neck Moment Z	442	Denton	2/9/94
Chest Deflection Gauge	36G	Bourns	2/21/94
Lap Belt Load Cell	625	Lebow	11/22/93
Torso Belt Load Cell	211	GSE	11/22/93

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENTS FOR DUMMY NO. 37

	PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	ACCY6	Endevco	1/25/94
Head Y	ACCH1	Endevco	1/25/94
Head Z	AAMW5	Endevco	1/25/94
Chest X	ACCY1	Endevco	1/25/94
Chest Y	ACCC8	Endevco	1/25/94
Chest Z	ACCT7	Endevco	1/25/94
Right Femur Load Cell	261	Denton	1/27/94
Left Femur Load Cell	262	Denton	1/27/94
Neck Load Cell X	443	Denton	2/9/94
Neck Load Cell Y	443	Denton	2/9/94
Neck Load Cell Z	443	Denton	2/9/94
Neck Moment X	443	Denton	2/9/94
Neck Moment Y	443	Denton	2/9/94
Neck Moment Z	443	Denton	2/9/94
Chest Deflection Gauge	37G	Bourns	2/22/94
Lap Belt Load Cell	661	Lebow	11/22/93
Torso Belt Load Cell	212	GSE	11/22/93

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	ED47	Endevco	12/22/93
Right Rear Seat Crossmember X	MGA042	Entran	11/30/93
Top of Engine X	MGA031	Entran	12/21/93
Bottom of Engine X	MGA054	Entran	11/4/93
Left Brake Caliper X	ACCA3	Endevco	1/10/94
Right Brake Caliper X	MGA134	Entran	10/22/93
Instrument Panel X	MGA084	Entran	1/27/94
Redundant Left Rear Seat Crossmember X	MGA148	Entran	11/4/93
Redundant Right Rear Seat Crossmember X	MGA129	Entran	11/16/93

	LABORATORY INSTRUMENTS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Neck Bending Pendulum Accelerometer	MGA126	Entran	10/22/93
Neck Bending Rotary Potentiometer	N/A	Bourns	Prior to use
Neck Bending Linear Potentiometer	N/A	Bourns	Prior to use
Femur/Chest/Thorax Probe Accelerometer	282396	Sensotec	2/1/94
Abdomen Compression Force Gauge	N/A	Transducers Inc.	N/A

APPENDIX E

Vehicle Owner's Occupant Restraint System Instructions

Your Occupant Protection System

Your Honda is equipped with seat belts and other features that work together to protect you and your passenger during a crash.

Seat belts are the most important part of your occupant protection system. When worn properly, seat belts can reduce the chance of serious injury or death in a crash.

For added protection during a severe frontal collision, your Accord has a Supplemental Restraint System (SRS) with airbags for the driver and a front seat passenger.

Two indicator lights are also part of your safety system. One reminds you to make sure you and your passengers wear seat belts. The other alerts you to a possible problem with your supplemental restraint system (see page 15).

The seats, head restraints, and door locks also play a role in occupant safety. For example, reclining the seat-back can decrease the effectiveness of your seat belt. Head restraints can help protect your neck and head, especially during rear-end impacts. Door locks help keep your doors from being accidentally opened during a crash.

To get the maximum protection from your occupant protection system, check the following before you drive away:

- Everyone in the car is wearing a seat belt properly (see page 7).
- Infants and small children are properly secured in child safety seats (see page 19).
- All doors are closed and locked (see page 18).
- Seat-backs are upright and head restraints are properly adjusted (see pages 17 and 57).
- There are no loose items that could be thrown around and hurt someone during a crash or sudden stop (see page 18).

By following these guidelines, you can reduce injuries to yourself and your passengers in many crash situations. Remember, however, that no safety system can prevent all injuries or deaths that can occur in severe crashes.

The Seat Belt System and How It Works

Why Wear Seat Belts

Wearing seat belts, and wearing them properly, is fundamental to your safety and the safety of your passengers.

During a crash or emergency stop, seat belts can help keep you from being thrown against the inside of the car, against other occupants, or out of the car.

Of course, seat belts cannot completely protect you in every crash. But, in most cases, seat belts reduce your chance of serious injury. They can even save your life. That is why many states and all Canadian provinces require you to wear seat belts.

WARNING

Not wearing a seat belt increases the chance of being killed or seriously hurt in a crash.

Be sure you and your passengers always wear seat belts and wear them properly.

Important Safety Reminders

Seat belts are designed for adults and larger children. All infants and small children must be properly restrained in child safety seats (see page 19).

A pregnant woman needs to wear a seat belt to protect herself and her unborn child (see page 10).

Two people should never use the same seat belt. If they do, they could be very seriously injured in a crash.

Do not place the shoulder portion of a lap/shoulder belt under your arm or behind your back. This could increase the chance of serious injuries in a crash.

Do not put shoulder belt pads or other accessories on seat belts. They can reduce the effectiveness of the belts and increase the chance of injury.

The Seat Belt System and How It Works

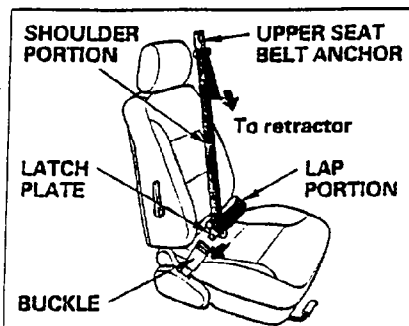
Seat Belt System Components

Your Honda has seat belts in all five seating positions. The front seats and the outside positions of the rear seat have lap/shoulder belts. The center position of the rear seat has a lap belt.

Your seat belt system also includes a light on the instrument panel to remind you to fasten your seat belt, and to make sure your passengers fasten theirs. This light comes on when you turn on the ignition if you have not fastened your seat belt. A beeper also sounds for several seconds (see page 34).

The following pages cover more about the seat belt components and how they work.

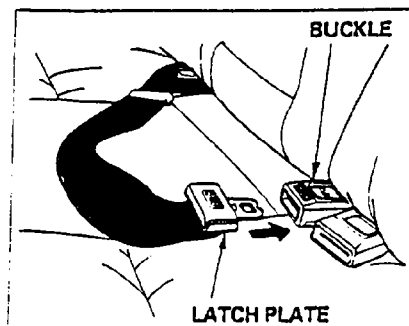
Lap/Shoulder Belt



This style of seat belt has a single belt that goes over your shoulder, across your chest, and across your hips.

Each lap/shoulder belt has an emergency locking retractor. In normal driving, the retractor lets you move freely in your seat while it keeps some tension on the belt. During a collision or sudden stop, the retractor automatically locks the belt to help restrain your body.

Lap Belt



The lap belt has one manually-adjusted belt that fits across the hips. It is similar to safety belts used in airplanes.

The Seat Belt System and How It Works

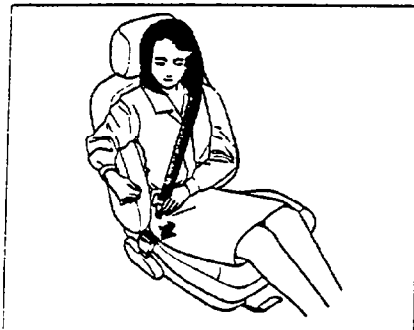
Wearing Seat Belts Properly

You can increase the effectiveness of your seat belts if you take a little time to read the following pages and make sure you know how to wear seat belts properly.

WARNING
Not wearing a seat belt properly increases the chance of serious injury or death in a crash.

Be sure you and your passengers always wear seat belts and wear them properly.

Wearing a Lap/Shoulder Belt



Before putting on a front seat belt, be sure your seat is adjusted forward or backward to a good driving or riding position and the back of your seat is upright (see page 54).

1. Pull the latch plate across your body and insert it into the buckle. Tug on the belt to make sure the latch is securely locked.

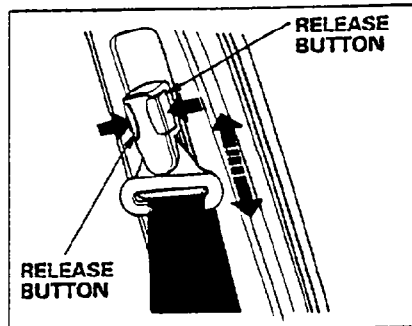


2. Check that the belt is not twisted.
3. Position the lap portion of the belt as low as possible across your hips, not across your stomach. This lets your strong pelvic bones take the force of a crash.

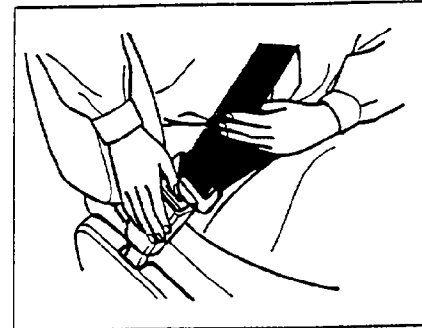
The Seat Belt System and How It Works



4. Pull up on the shoulder part of the belt to remove any slack. Make sure the belt goes over your collarbone and across your chest.



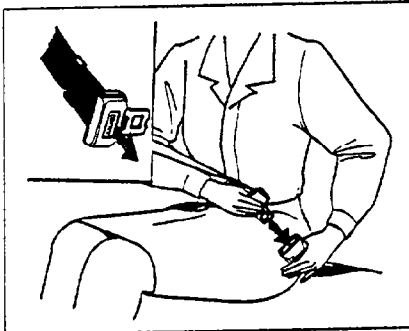
5. If the belt crosses your neck, you need to adjust the belt anchor height or your seating position.
- Front seats:*
Adjust the belt anchor by squeezing the two buttons and sliding the anchor downward (it has four positions).
- Rear seat:*
Move toward the center of the seat until the belt fits over your collarbone.



To unlatch the seat belt, push the red PRESS button on the buckle. Guide the belt across your body to the door pillar. If the belt doesn't retract easily, pull it out and check for twists or kinks.

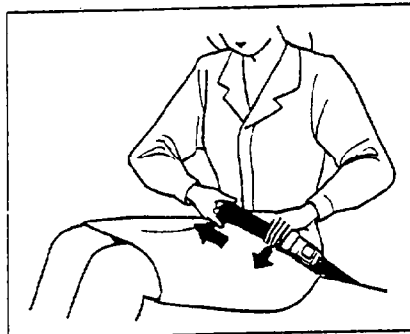
The Seat Belt System and How It Works

Wearing the Lap Belt

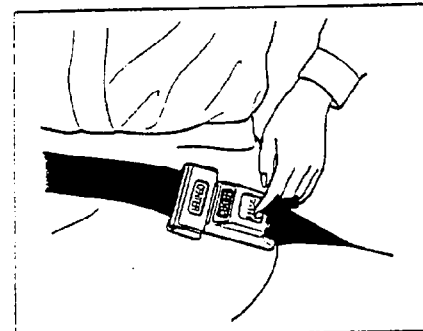


1. Pull the latch plate across your hips and insert it into the buckle marked CENTER.

If the belt is too short, hold the latch plate at a right angle and pull to extend the belt. Insert the latch plate into the buckle.



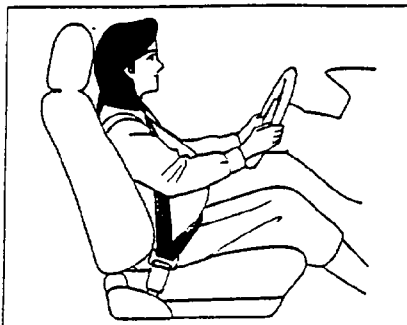
2. Position the belt as low as possible across your hips and pelvic bones, not across your stomach. Pull the loose end of the belt to adjust for a snug but comfortable fit.



To unlatch the belt, push the red PRESS button on the buckle.

The Seat Belt System and How It Works

Advice for Pregnant Women



Protecting the mother is the best way to protect her unborn child. Therefore, a pregnant woman should wear a properly-positioned seat belt whenever she drives or rides in a car.

If possible, use the lap/shoulder seat belt, remembering to keep the lap portion as low as possible (see page 7).

Each time you have a check-up, ask your doctor if it's okay for you to drive and how you should position a lap/shoulder seat belt.

Seat Belt Maintenance

For safety, you should check the condition of your seat belts regularly.

Pull out each belt fully and look for frays, cuts, burns, and wear. Check that the latches work smoothly and the lap/shoulder belts retract easily. Any belt not in good condition or not working properly should be replaced.

If a seat belt is worn during a crash, have your dealer replace the belt and inspect the anchors for damage.

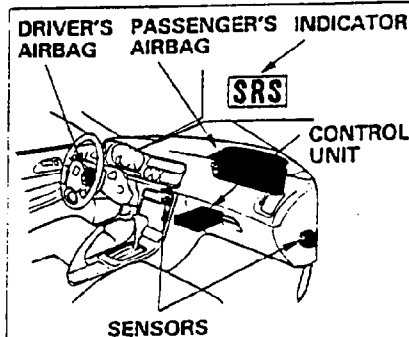
For information on how to clean your seat belts, see page 184.

Supplemental Restraint System

Your Honda is equipped with a Supplemental Restraint System (SRS) to help protect your head and chest during a severe frontal collision. *This system does not replace your seat belt.* It supplements, or adds to, the protection offered by your seat belt. The system also includes a front passenger's airbag.

Not wearing a seat belt properly increases the chance of serious injury or death in a crash, even if you have airbags.

Be sure you and your passengers always wear seat belts and wear them properly.



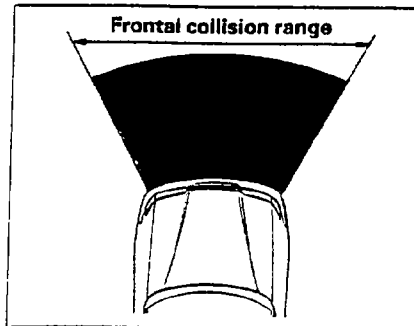
The main components in your SRS are:

- One airbag in the steering wheel for the driver and another in the dashboard for the passenger.
- A diagnostic system that, when the ignition is ON (II), continually monitors the sensors, control unit, airbag activator, and all related wiring.

Supplemental Restraint System

- An indicator light to warn you of a possible problem with the system.
- Emergency power backup in case your car's electrical system is disconnected in a crash.

Important Safety Reminder



Even with an airbag, you need to wear a seat belt. The reasons are:

- Airbags only inflate in severe frontal collisions. They offer no protection in rear impacts, side impacts, rollovers, or moderate frontal collisions.

- An airbag inflates and deflates very quickly. It cannot protect you during any additional impacts that can occur during a crash.
- A seat belt helps keep you in the proper position when an airbag inflates. An airbag opens with considerable force and can hurt you if you are not in the proper position.

Supplemental Restraint System

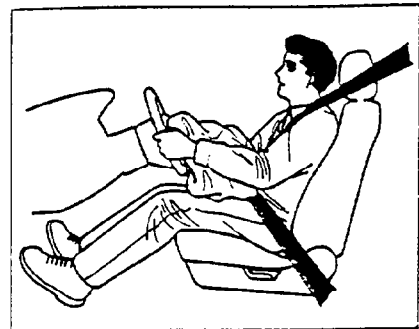
How the Driver's Airbag Works



If you ever have a severe frontal collision, your airbag will instantly inflate to help protect your head and chest.

When the airbag inflates, you may hear a fairly loud noise and you might see smoke or powder. This is normal; it is caused by the inflation of the airbag.

To do its job, the airbag inflates with considerable force. So, while it can reduce serious injuries and even save your life, the airbag might cause some facial abrasions or other injuries. For this reason, you should always sit as far back from the steering wheel as comfortable while still maintaining control.



After the bag completely inflates, it immediately starts deflating so it won't interfere with your visibility, ability to steer, or ability to operate other controls. The total time for inflation and deflation takes less than one-tenth of a second. You may not even be aware that the airbag has been fully inflated.

CONTINUED

Supplemental Restraint System

The airbag is stored in the center of the steering wheel. For your safety, do not attach any items to the steering wheel. They could interfere with the proper operation of the airbag. Or, if the airbag inflates, they could be propelled inside the car and hurt someone.

How the Passenger's Airbag Works



If you ever have a severe frontal collision, the passenger's airbag will inflate at the same time as the driver's airbag.

This airbag is quite large and inflates with considerable force. It can seriously hurt a front seat passenger who is not in the proper position and wearing the seat belt properly. Front seat passenger's should move the seat as far back as practical and sit well back in the seat.

Because of the airbag, we strongly recommend that you do not put an infant seat in the front passenger's seat. If the airbag inflates, it can dislodge the infant seat and seriously injure the infant.

If a toddler seat is used in the front passenger's seat, the vehicle seat should be moved as far back as possible. If the passenger's bag inflates, it could seriously hurt a toddler who is not in the proper position or properly restrained.

Supplemental Restraint System

The passenger's airbag is stored near the top of the dashboard, under a lid marked SRS. Do not place any objects on top of this lid. If the airbag inflates, those objects can be propelled inside the car and possibly hurt someone.

SRS

How the SRS Indicator Light Works

The purpose of the SRS light on your instrument panel is to alert you of a potential problem with your supplemental restraint system.

Have the system checked if:

- The light does not come on when you turn the ignition ON (II).
- The light stays on after the engine starts.
- The light comes on or flashes while you are driving.

System Service

Your supplemental restraint system is virtually maintenance-free. There are no parts you can safely service. You must have the system serviced by an authorized Honda dealer:

- If your airbag ever inflates. The airbag must be replaced. Do not try to remove or discard the airbag by yourself. This must be done by a Honda dealer.
- If the SRS indicator light alerts you of a problem. Have the supplemental restraint system checked as soon as possible. Otherwise, the airbags might not inflate when you need it.
- When the car is ten years old. Have the dealer inspect the system. The production date is on the driver's door jamb for your convenience.

Supplemental Restraint System

System Service Precautions

Do not modify your steering wheel or any other part of the supplemental restraint system. Modifications could make the system ineffective.

Do not tamper with the system's components or wiring. This could cause the airbags to inflate inadvertently, possibly injuring someone very seriously.

Tell anyone who works on your car that you have a supplemental restraint system. Failure to follow the procedures and precautions in the official Honda service manual could result in personal injury or damage to the system.

Scrapping an entire car that has an uninflated airbag can be dangerous. Get assistance from a Honda dealer if your car must be scrapped.

If you sell your car, please be sure to tell the new owner that the car has a supplemental restraint system. Alert them to the information and precautions in this part of the owner's manual.