

REPORT NO.: MGA-93-21406

SAFETY COMPLIANCE TESTING FOR FMVSS 214
"SIDE IMPACT PROTECTION STUDY - PASSENGER CARS"

TOYOTA MOTOR COMPANY
1994 TOYOTA CAMRY 4 DOOR SEDAN
NHTSA NO: CR5104

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



MGA Ref. No.: G93A-02

Test Date: June 7, 1994

Report Date: September 19, 1994

FINAL REPORT

Prepared For:

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16. Abstract Compliance tests were conducted on the subject 1994 Toyota Camry 4 Door Sedan in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure for the determination of FMVSS 214 compliance. The test was conducted at the MGA Research Proving Grounds and crash Test Center in Burlington, Wisconsin on June 7, 1994. The impact velocity of the Moving Barrier (MDB) was 33.1 mph and the ambient temperature of the struck side (driver's) of the target vehicle at the time of impact was 74°F. The test or target vehicle's performance is given below: <table style="width: 100%; border: none;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>Driver's SID</u></th> <th style="text-align: center;"><u>Left Rear SID</u></th> </tr> </thead> <tbody> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">64 g's</td> <td style="text-align: center;">53 g's</td> </tr> <tr> <td>Pelvis Acceleration</td> <td style="text-align: center;">80 g's</td> <td style="text-align: center;">85 g's</td> </tr> <tr> <td>Upper Rib Acceleration</td> <td style="text-align: center;">52.4 g's</td> <td style="text-align: center;">49.6 g's</td> </tr> <tr> <td>Lower Rib</td> <td style="text-align: center;">61.7 g's</td> <td style="text-align: center;">53.0 g's</td> </tr> <tr> <td>Lower Spine</td> <td style="text-align: center;">65.8 g's</td> <td style="text-align: center;">52.6 g's</td> </tr> </tbody> </table>							<u>Driver's SID</u>	<u>Left Rear SID</u>	Thoracic Trauma Index (TTI)	64 g's	53 g's	Pelvis Acceleration	80 g's	85 g's	Upper Rib Acceleration	52.4 g's	49.6 g's	Lower Rib	61.7 g's	53.0 g's	Lower Spine	65.8 g's	52.6 g's
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Section 1

PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY 94 FMVSS 214 "Dynamic" compliance test program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-93-C-02047. The purpose of this test was to evaluate side impact protection in a 1994 Toyota Camry 4 Door Sedan.

This test was conducted using the Office of Vehicle Safety Compliance's FMVSS 214 test procedure (TP-214D-03, dated May 17, 1993).

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes only.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A stationary 1994 Toyota Camry 4 Door Sedan was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 33.1 mph on June 7, 1994. The orientation angle of the striking vehicle was 90° counterclockwise with respect to the longitudinal axis of the struck vehicle. Pre- and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SIDs) are shown in Appendix A.

Two restrained Side Impact Dummies (SIDs) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to instructions specified in the Laboratory Test Procedure which is dated May 17, 1993. The side impact event was documented by nine high speed cameras. Camera locations and other pertinent camera information can be found in this report. Appendix B contains the vehicle and dummy response data traces.

The SIDs were instrumented with the following accelerometers.

1. Left Upper Rib (LUR) uniaxial accelerometer (Y-direction)
2. Left Lower Rib (LLR) uniaxial accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) uniaxial accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial accelerometer (Y-direction)

The driver's Thoracic Trauma Index (TTI) was 64 g's. Maximum pelvic Y acceleration was 80 g's.

The left rear passenger's TTI was 53 g's. Maximum pelvic Y acceleration was 85 g's.

TEST NOTES

Due to a broken wire, there was no valid data collected for the moving deformable barrier rear axle Y acceleration. Also, the lower left side "A" post accelerometer mounting separated at approximately 5 msec following impact.

SECTION 3
SUMMARY OF TEST DATA

TABLE 1
GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan
Vehicle NHTSA No.: CR5104 VIN: JT2SK11E7R0204965
Vehicle Body Color: Beige Month & Year of Manufacture: 10-93
Engine Data: 4 cylinders; CID; 2.2 Liter; cc
Placement Longitudinal; or X Lateral
Transmission: 5 speed; X Manual; Automatic; X Overdrive
Final Drive: Rear Wheel Drive; X Frt. Wheel Drive; Four
Wheel Drive
Odometer Reading 96 miles
Options: A/C; X Pwr. Steering; X Pwr. Brakes; Pwr. Windows
 Power Seats; X Tilt Wheel; Power Door Locks; Self Leveling System

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 29 psi FRONT
29 psi REAR
Recommended Tire Size: P195/70HR14
Tires on Test Vehicle: P195/70HR14 Manufacturer: Goodyear

Vehicle Capacity Data:

Number of Occupants: 2 Front; 3 Rear; N/A 3rd Seat 5 Total
Type of Front Seats: X Bucket; Bench; Split Bench
Type of Front Seat Back: Fixed; X Adjustable with X Lever
Vehicle Maximum Capacity Loading = 900 lbs (A)
No. of Occupants x 150 lbs. = 750 lbs (B)
Cargo Capacity (A-B) = 150 lbs

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>877</u> lbs	Right Rear	=	<u>585</u> lbs
Left Front	=	<u>889</u> lbs	Left Rear	=	<u>572</u> lbs
TOTAL FRONT	=	<u>1766</u> lbs	TOTAL REAR	=	<u>1157</u> lbs
% of Total Vehicle Weight	=	<u>60.4</u> %;	% of Total Weight	=	<u>39.6</u> %
TOTAL WEIGHT	=	<u>2923</u> lbs			

TABLE 2
TEST VEHICLE DATA

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan

Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids = 2923 lbs

Maximum Cargo Carrying Capacity of Test Vehicle = 150 lbs

Weight of 2 Side Impact Dummies (2 x 168 lbs.) = 336 lbs

TEST VEHICLE TARGET WEIGHT: = 3409 lbs

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front = 931 lbs Right Rear = 714 lbs

Left Front = 954 lbs Left Rear = 797 lbs

TOTAL FRONT = 1885 lbs TOTAL REAR = 1511 lbs

% of Total Weight = 55.5 % % of Total Weight = 44.5 %

TOTAL TEST WEIGHT = 3396 lbs

TEST VEHICLE ATTITUDE (all dimensions in inches):

CURB WEIGHT ATTITUDE: (in)

Right Front 28.1 Left Front 27.8 Right Rear 27.6 Left Rear 27.6

FULLY LOADED WEIGHT ATTITUDE: (in)

Right Front 28.0 Left Front 27.1 Right Rear 25.9 Left Rear 25.4

TEST ATTITUDE: (in)

Right Front 27.6 Left Front 27.2 Right Rear 26.1 Left Rear 25.6

Test Vehicle Wheelbase: 102.5 inches

C.G. = 45.6 inches rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 176.3 in

Centerline = 186.0 in

Left Side = 176.3 in

FIGURE 1
PRE-TEST CONDITIONS

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan
Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 8.9 in
Total Number of Adjustment Positions or Detents: 16
Test Position: 9th Detent from front

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 21 degrees (Third Notch)

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: Non Adjustable
Seat Back Adjustment Position: Non Adjustable

ADJUSTABLE STEERING COLUMN POSITION:

Adjusted to mid position

WINDOW POSITIONS:

Left Front closed Left Rear closed

Right Front removed Right Rear removed

Note: Windows will be in closed position on struck side of test vehicle
and in open position on opposite side.

AMOUNT OF STODDARD SOLVENT IN FUEL TANK: Fuel system usable capacity = 18.5 gallons

Test Volume: 17.3 gallons (92% of capacity)

LOCATIONS OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase: = 102.5 in

Impact Point is 14.25 inches rearward of front axle centerline (which
is 37 inches forward of the wheelbase midpoint)

TABLE 3
CRASH TEST SUMMARY FOR TEST VEHICLE

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan

Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

Overall Length = 186 in; Overall Width = 69.6 in

TEST WEIGHT:

Right Front	=	<u>931</u> lbs	Right Rear	=	<u>714</u> lbs
Left Front	=	<u>954</u> lbs	Left Rear	=	<u>797</u> lbs
TOTAL FRONT	=	<u>1885</u> lbs	TOTAL REAR	=	<u>1511</u> lbs
TOTAL VEHICLE WEIGHT <u>3396</u> lbs					
Wheelbase = <u>102.5</u> in					
Longitudinal C.G. front Center of Front Axle				=	<u>45.6</u> in
Impact Angle with Respect to Impactor				=	<u>90°</u> degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (9.5 in above ground) = 7.6 in
2. LEVEL 2 (19.4 in above ground) = 15.0 in
3. LEVEL 3 (23.8 in above ground) = 13.1 in
4. LEVEL 4 (35.0 in above ground) = 9.5 in
5. LEVEL 5 (51.7 in above ground) = 1.8 in

Maximum Post-Test Intrusion = 15.0 in

OCCUPANTS:

	<u>Front Passenger</u>	<u>Rear Passenger</u>
Type of Dummy	<u>SID</u>	<u>SID</u>
Restraints Used	<u>3 pt. lap and</u> <u>shoulder belt,</u> <u>airbag</u>	<u>3 pt. lap and</u> <u>shoulder belt</u>

INSTRUMENTATION:

Number of Vehicle Data Channels:	=	<u>16</u>
Number of Cameras: Onboard Vehicle	=	<u>3</u>
Offboard Vehicle	=	<u>4</u>
Deformable Barrier	=	<u>2</u>
TOTAL	=	<u>9</u>

TABLE 4
CRASH TEST SUMMARY FOR SIDE IMPACTOR

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan

Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

Overall Width of Framework Carriage	=	<u>49.3</u>	in
Overall Length of MDB (incl. honeycomb impact face)	=	<u>162</u>	in
Wheelbase of Framework Carriage	=	<u>102</u>	in
Tread of Framework Carriage (Front & Rear)	=	<u>74</u>	in
C.G. Location Rearward of Front Axle	=	<u>43.4</u>	in
C.G. Location From Center Line	=	<u>-.3</u>	in
C.G. Location Above Ground Level	=	<u>19.2</u>	in

MDB WEIGHT:

Left Front	=	<u>1095</u>	lbs	Left Rear	=	<u>413</u>	lbs
Right Front	=	<u>624</u>	lbs	Right Rear	=	<u>858</u>	lbs
TOTAL FRONT	=	<u>1719</u>	lbs	TOTAL REAR	=	<u>1271</u>	lbs
TOTAL MDB WEIGHT = <u>2990</u> lbs							

Impact Angle (MDB C/L to Target Vehicle C/L) = 90° degrees

Impact Speed = Primary: 33.1 mph Secondary: 33.2 mph

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1.	Row A Top of Stack (33 in)	=	<u>5.4</u>	in
2.	Row B Mid Stack (27 in)	=	<u>4.3</u>	in
3.	Row C Top of Bumper (21 in)	=	<u>3.1</u>	in
4.	Row D Center of Bumper (17 in)	=	<u>4.5</u>	in

INSTRUMENTATION:

Number of MDB Data Channels = 7

TABLE 5
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan

Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>to window</u>	<u>to "C" Post</u>
Arm	<u>to door trim panel</u>	<u>to door trim panel</u>
Pelvis	<u>to door trim panel</u>	<u>to door trim panel</u>
Left Knee	<u>to door trim panel</u>	<u>to door trim panel</u>
Right Knee	<u>to left knee</u>	<u>to left knee</u>

DOOR OPENING:

	<u>LEFT SIDE</u>	<u>RIGHT SIDE</u>
Front	<u>remained closed</u>	<u>remained closed</u>
Rear	<u>remained closed</u>	<u>remained closed</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: .5 in forward Vertical: 1.0 in high

ARM REST LOCATIONS:

Front: 9.4 inches below window opening
Rear: 10.3 inches below window opening

SEAT CRUSH:

Driver Seat Cushion: 2.0 inches Seat Back: 1.5 inches
Left Rear Seat Cushion: 5.0 inches Seat Back: 5.0 inches

GLAZING DAMAGE:

Both left side door windows broken and windshield cracked.

PILLAR PERFORMANCE:

No "A" or "B" pillar separation evident

SILL SEPARATION:

No sill separation noted

OTHER NOTABLE IMPACT EFFECTS:

Driver and passenger air bag deployed

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

TABLE 6

SIDE IMPACT DUMMY (SID) TEST DATA SUMMARYYear/Make/Model/Body Style: 1994/Toyota/Camry/4 Door SedanVehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

	Front Dummy ID # 270			Rear Dummy ID # 272		
	Pos. Direct.		Neg. Direct	Pos. Direct.		Neg. Direct
	Max (g)	Time (msec)	Max (g)	Max (g)	Time (msec)	Max (g)
RIB ACCELERATIONS:						
	Upper Rib Lateral.....Y	39	- 9.4	49.6	43	- 4.9
	Upper Rib Lateral....Y(R)	39	- 9.8	50.0	43	- 5.0
	Lower Rib Lateral.....Y	41	-12.3	53.0	41	-13.9
SPINE ACCELERATIONS:						
	Lower Lateral.....Y	36	- 9.8	52.6	45	-10.9
	Lower Lateral.....Y(R)	36	- 9.2	52.1	45	-12.2
PELVIC ACCELERATIONS:						
	Lateral.....Y	33	- 9.4	84.7	33	-13.7
	Lateral.....Y(R)	33	- 9.8	84.5	33	-13.9

REFERENCE:

Positive Direction - Longitudinal (X) = forward Negative Direction - Longitudinal (X) = rearward

Lateral (Y) = to right

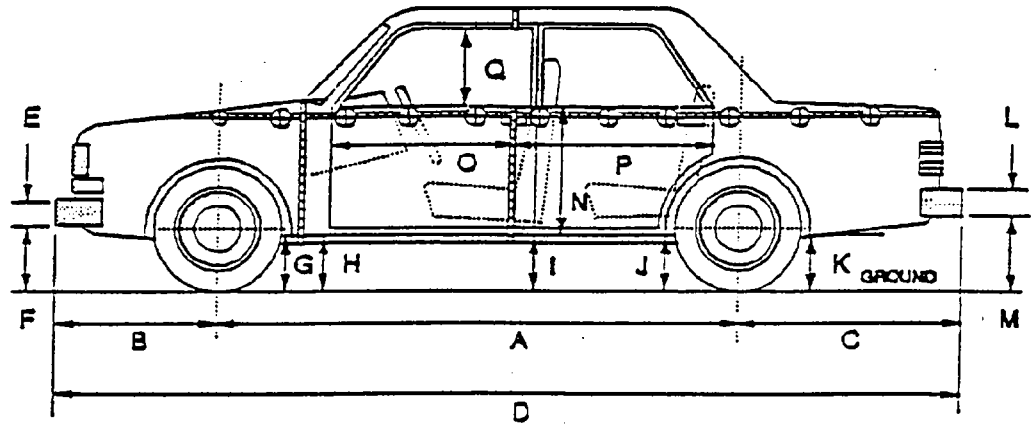
Lateral (Y) = to left

Vertical (Z) = up

Vertical (Z) = down

Note: Y(R) denotes redundant Y direction accelerometer.

FIGURE 2
PRE- AND POST-TEST MEASUREMENTS



LEFT SIDE VIEW

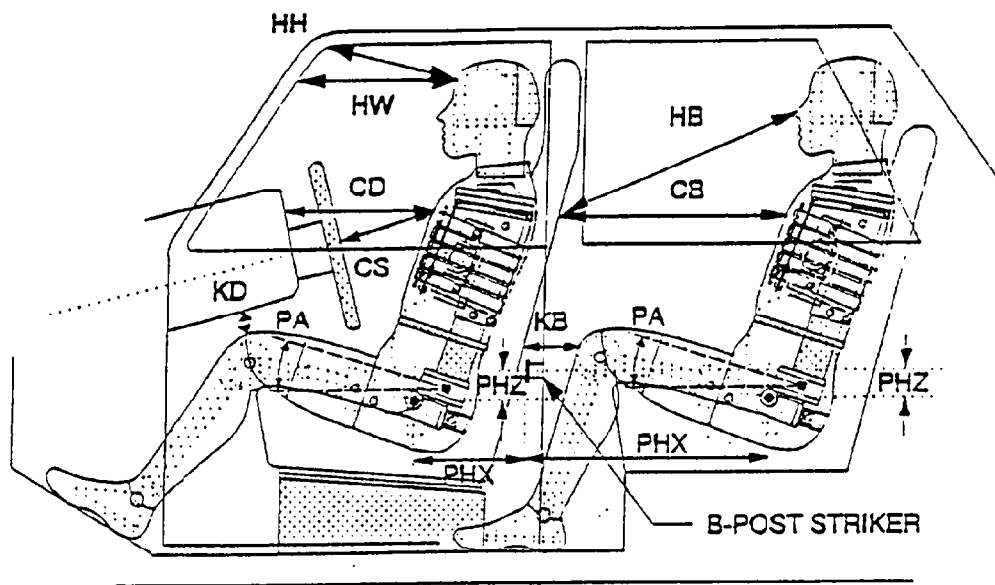
D = Length at Centerline
R = Right Side Length
S = Left Side Length
T = Width at B Post
E & L = Bumper Thickness

J1 = To Pinch Weld
J2 = To Sill

Units: in

LOCATION	PRE-TEST	POST-TEST	Δ CHANGE
A	102.5	100.9	1.6
B	39.5	39.8	.3
C	44.0	46.1	2.1
D	186.0	186.7	.7
E	7.6	8.0	.4
F	15.0	16.0	1.0
G	9.5	10.2	.7
H	7.1	7.7	.6
I	7.9	9.2	1.3
J1/J2	7.9/7.1	7.6/6.4	.3/.7
K	9.8	10.1	.3
L	13.3	13.4	.1
M	11.5	12.0	.5
N	23.3	21.2	2.1
O	31.9	31.0	.9
P	48.1	44.3	3.8
Q	16.3	15.9	.4
R	176.3	177.5	1.2
S	176.3	174.8	1.5
T	69.6	56.8	12.8

FIGURE 3
SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS



LEFT SIDE VIEW

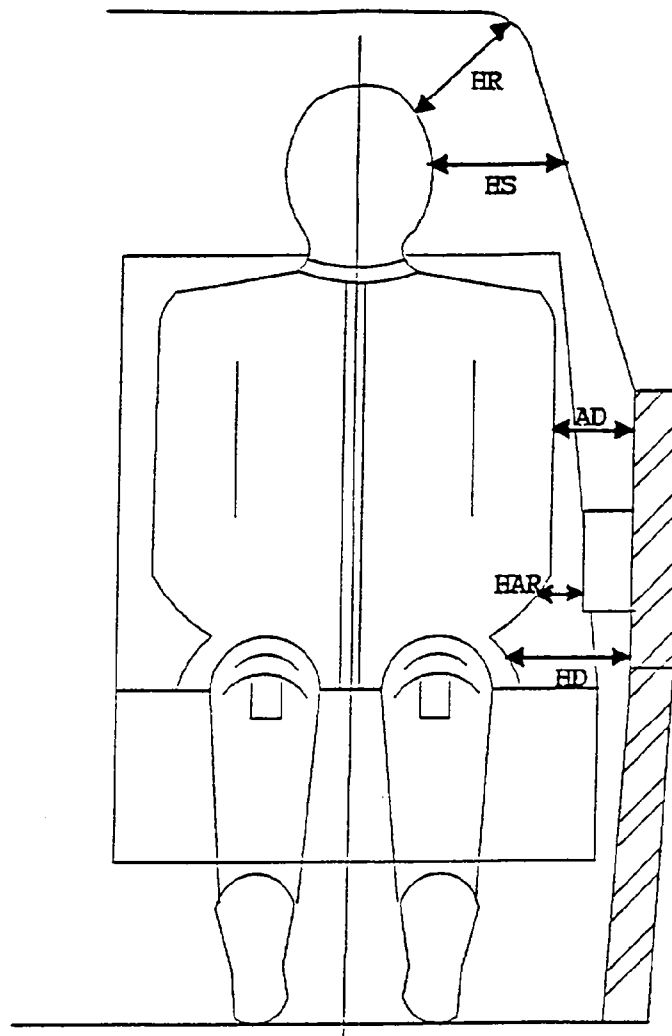
NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

NOTE: All dimensions are in inches

	DRIVER ID #270	LEFT REAR PASSENGER ID #272	
HH	14.0	---	
HW	21.5	---	
HB	---	27.7	
CD	21.2	CB	21.9
CS	11.5	---	
KDL	6.8	KBL	10.8
KDR	5.8	KBR	10.4
PA°	23.1	23.1	
PHX	8.7	10.1	
PHZ	7.0	14.1	

NOTE: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as reference point.

FIGURE 4
SIDE IMPACT DUMMY (SID) LATERAL CLEARANCE DIMENSIONS

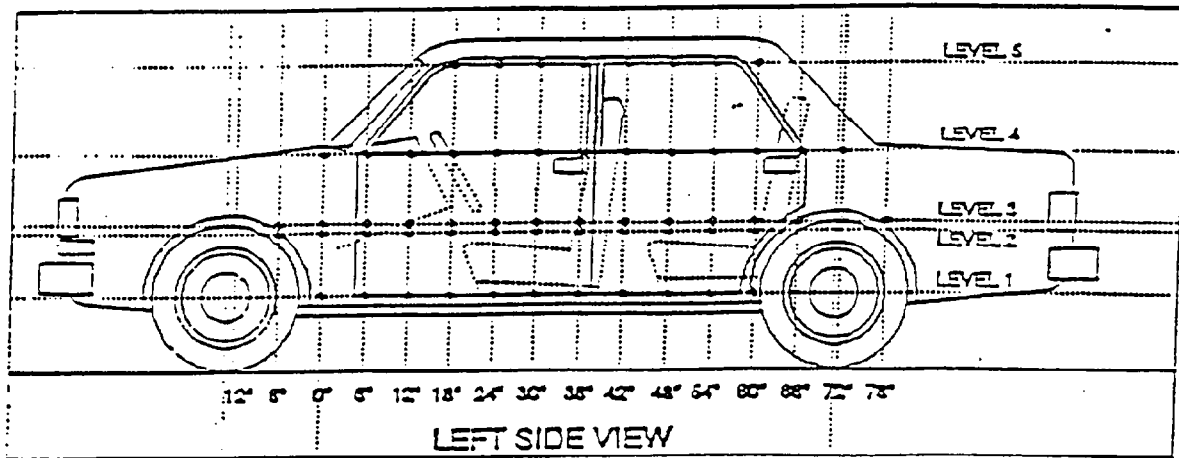


NOTE: All dimensions are in inches

	DRIVER ID #270	LEFT REAR PASSENGER ID #272
HR	4.8	4.3
HS	10.0	9.4
AD	5.4	3.4
HD	8.1	6.3

FIGURE 5
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan
Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994



As tested height measurements are with respect to ground along the vertical 30" line shown above:

<u>30" Side Profile</u>	
Level 5 @ Window Top	= <u>51.7</u> in
Level 4 @ Window Sill	= <u>35.0</u> in
Level 3 @ Mid Door	= <u>23.8</u> in
Level 2 @ Occupant H-Point	= <u>19.4</u> in
Level 1 @ Axle Centerline Height (or Sill Top Height)	= <u>9.5</u> in

TABLE 7

TEST VEHICLE EXTERIOR PROFILES FROM REFERENCE PLANE AND STATIC CRUSH

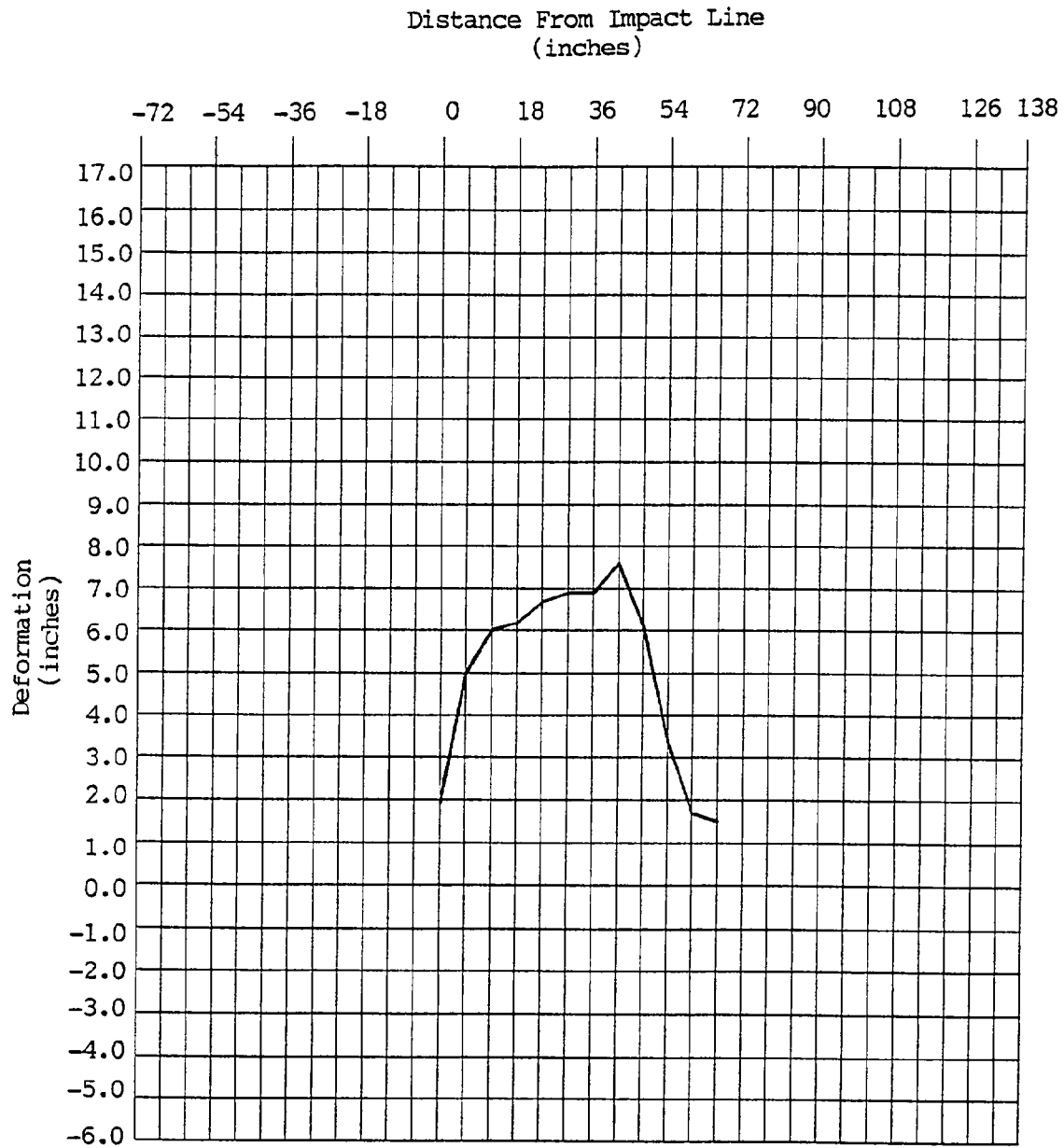
LEVEL 1 AT AXLE CENTER LINE

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door SedanVehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

Longitudinal Distance (in)	PRE-TEST (in)	POST-TEST (in)	STATIC CRUSH (in)
-72	_____	_____	_____
-66	_____	_____	_____
-60	_____	_____	_____
-54	_____	_____	_____
-48	_____	_____	_____
-42	_____	_____	_____
-36	_____	_____	_____
-30	_____	_____	_____
-24	_____	_____	_____
-18	_____	_____	_____
-12	_____	_____	_____
-6	_____	_____	_____
0	<u>32.4</u>	<u>34.3</u>	<u>1.9</u> (impact point)
6	<u>32.2</u>	<u>37.2</u>	<u>5.0</u>
12	<u>32.0</u>	<u>38.0</u>	<u>6.0</u>
18	<u>32.1</u>	<u>38.3</u>	<u>6.2</u>
24	<u>32.1</u>	<u>38.8</u>	<u>6.7</u>
30	<u>32.2</u>	<u>39.1</u>	<u>6.9</u>
36	<u>32.2</u>	<u>39.1</u>	<u>6.9</u>
42	<u>32.3</u>	<u>39.8</u>	<u>7.6</u>
48	<u>32.4</u>	<u>38.5</u>	<u>6.1</u>
54	<u>32.6</u>	<u>36.0</u>	<u>3.4</u>
60	<u>32.6</u>	<u>34.3</u>	<u>1.7</u>
66	<u>32.8</u>	<u>34.3</u>	<u>1.5</u>
72	_____	_____	_____
78	_____	_____	_____
84	_____	_____	_____
90	_____	_____	_____
96	_____	_____	_____
102	_____	_____	_____
108	_____	_____	_____
114	_____	_____	_____
120	_____	_____	_____
126	_____	_____	_____
132	_____	_____	_____
138	_____	_____	_____

Reference plane is parallel to test vehicle longitudinal centerline
 Given dimensions = reference plane to car body

FIGURE 6
VEHICLE EXTERIOR STATIC CRUSH



LEVEL 1 AT AXLE CENTER LINE

TABLE 7

TEST VEHICLE EXTERIOR PROFILES FROM REFERENCE PLANE AND STATIC CRUSH
LEVEL 2 AT OCCUPANT H-POINT

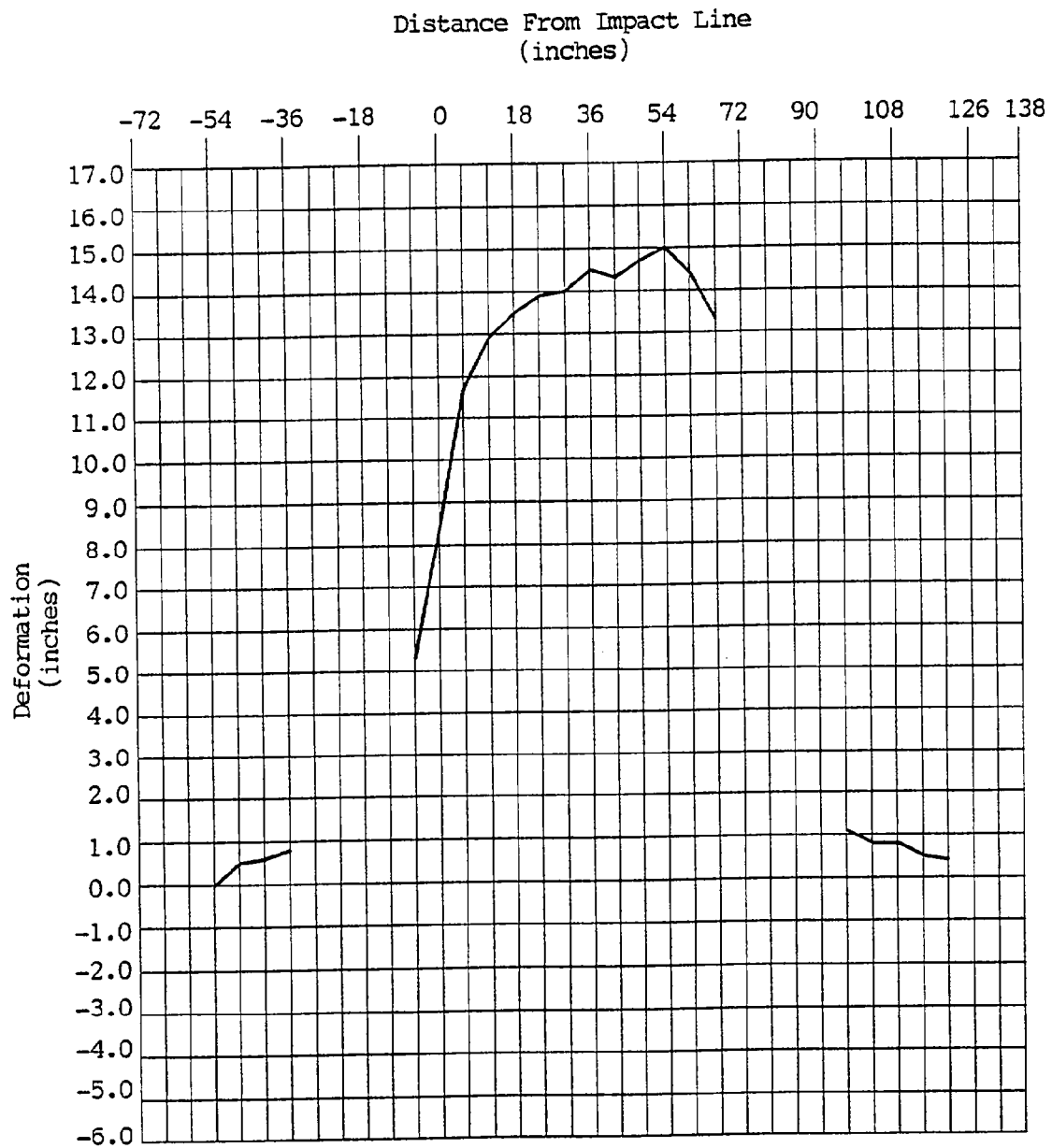
Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan

Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

Longitudinal Distance (in)	PRE-TEST (in)	POST-TEST (in)	STATIC CRUSH (in)
-72	_____	_____	_____
-66	_____	_____	_____
-60	_____	_____	_____
-54	<u>36.4</u>	<u>36.4</u>	<u>0</u>
-48	<u>33.7</u>	<u>33.2</u>	<u>0.5</u>
-42	<u>32.1</u>	<u>31.5</u>	<u>0.6</u>
-36	<u>31.1</u>	<u>30.3</u>	<u>0.8</u>
-30	_____	_____	_____
-24	_____	_____	_____
-18	_____	_____	_____
-12	_____	_____	_____
-6	<u>34.7</u>	<u>29.4</u>	<u>5.3</u>
0	<u>38.0</u>	<u>29.6</u>	<u>8.4</u> (impact point)
6	<u>41.3</u>	<u>29.6</u>	<u>11.7</u>
12	<u>42.5</u>	<u>29.6</u>	<u>12.9</u>
18	<u>43.0</u>	<u>29.5</u>	<u>13.5</u>
24	<u>43.4</u>	<u>29.4</u>	<u>13.9</u>
30	<u>43.7</u>	<u>29.4</u>	<u>14.0</u>
36	<u>43.9</u>	<u>29.4</u>	<u>14.5</u>
42	<u>43.8</u>	<u>29.5</u>	<u>14.3</u>
48	<u>44.2</u>	<u>29.5</u>	<u>14.7</u>
54	<u>44.4</u>	<u>29.4</u>	<u>15.0</u>
60	<u>43.8</u>	<u>29.4</u>	<u>14.4</u>
66	<u>42.8</u>	<u>29.5</u>	<u>13.3</u>
72	_____	_____	_____
78	_____	_____	_____
84	_____	_____	_____
90	_____	_____	_____
96	<u>31.1</u>	<u>30.0</u>	<u>1.1</u>
102	<u>31.7</u>	<u>30.9</u>	<u>0.8</u>
108	<u>32.3</u>	<u>31.5</u>	<u>0.8</u>
114	<u>32.9</u>	<u>32.4</u>	<u>0.5</u>
120	<u>33.9</u>	<u>33.5</u>	<u>0.4</u>
126	_____	_____	_____
132	_____	_____	_____
138	_____	_____	_____

Reference plane is parallel to test vehicle longitudinal centerline
Given dimensions = reference plane to car body

FIGURE 6 (Cont'd)
VEHICLE EXTERIOR STATIC CRUSH



LEVEL 2 AT OCCUPANT H-POINT

TABLE 7

TEST VEHICLE EXTERIOR PROFILES FROM REFERENCE PLANE AND STATIC CRUSH

LEVEL 3 AT MID-DOOR

Year/Make/Model/Body Style: 1994/Toyota/Camry/ 4 Door SedanVehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

Longitudinal Distance (in)	PRE-TEST (in)	POST-TEST (in)	STATIC CRUSH (in)
-72	_____	_____	_____
-66	_____	_____	_____
-60	_____	_____	_____
-54	_____	_____	_____
-48	<u>35.1</u>	<u>34.8</u>	<u>0.3</u>
-42	<u>33.2</u>	<u>32.6</u>	<u>0.6</u>
-36	<u>32.0</u>	<u>31.1</u>	<u>0.9</u>
-30	<u>30.5</u>	<u>29.4</u>	<u>1.1</u>
-24	_____	_____	_____
-18	_____	_____	_____
-12	_____	_____	_____
-6	<u>33.1</u>	<u>29.6</u>	<u>3.5</u>
0	<u>36.0</u>	<u>29.7</u>	<u>6.3</u> (impact point)
6	<u>39.4</u>	<u>29.7</u>	<u>9.7</u>
12	<u>40.4</u>	<u>29.6</u>	<u>10.8</u>
18	<u>41.0</u>	<u>29.6</u>	<u>11.4</u>
24	<u>41.5</u>	<u>29.6</u>	<u>11.9</u>
30	<u>41.5</u>	<u>29.6</u>	<u>11.9</u>
36	<u>41.5</u>	<u>29.5</u>	<u>12.0</u>
42	<u>41.9</u>	<u>29.6</u>	<u>12.3</u>
48	<u>42.6</u>	<u>29.6</u>	<u>13.0</u>
54	<u>42.7</u>	<u>29.6</u>	<u>13.1</u>
60	<u>42.3</u>	<u>29.6</u>	<u>12.7</u>
66	<u>42.5</u>	<u>29.6</u>	<u>12.9</u>
72	<u>39.6</u>	<u>29.6</u>	<u>10.0</u>
78	_____	_____	_____
84	_____	_____	_____
90	<u>30.8</u>	<u>29.7</u>	<u>1.1</u>
96	<u>31.5</u>	<u>30.5</u>	<u>1.0</u>
102	<u>32.1</u>	<u>34.2</u>	<u>0.9</u>
108	<u>32.6</u>	<u>31.9</u>	<u>0.7</u>
114	<u>33.3</u>	<u>32.8</u>	<u>0.5</u>
120	<u>35.9</u>	<u>35.5</u>	<u>0.4</u>
126	_____	_____	_____
132	_____	_____	_____
138	_____	_____	_____

Reference plane is parallel to test vehicle longitudinal centerline
 Given dimensions = reference plane to car body

FIGURE 6
VEHICLE EXTERIOR STATIC CRUSH

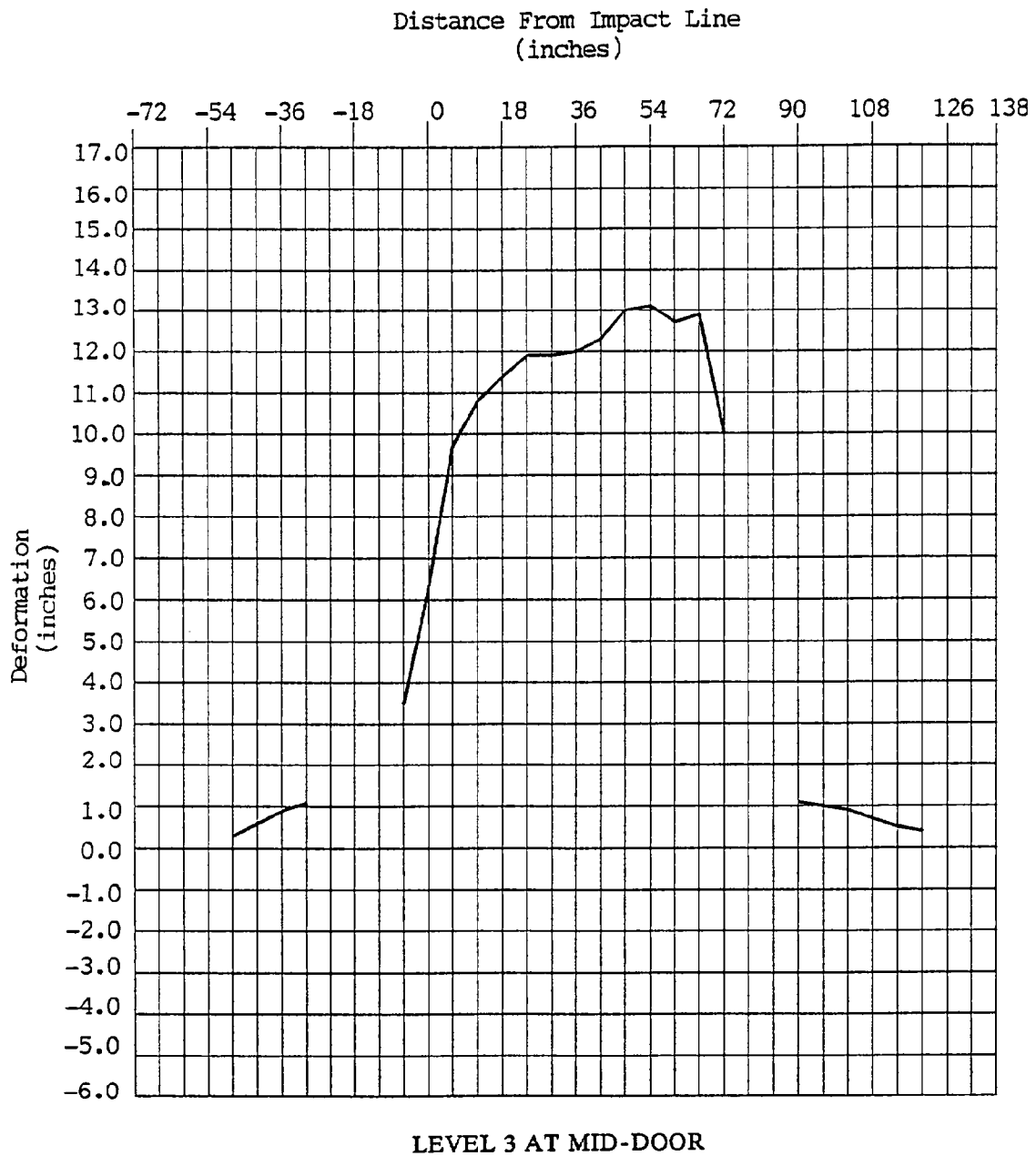


TABLE 7

TEST VEHICLE EXTERIOR PROFILES FROM REFERENCE PLANE AND STATIC CRUSH

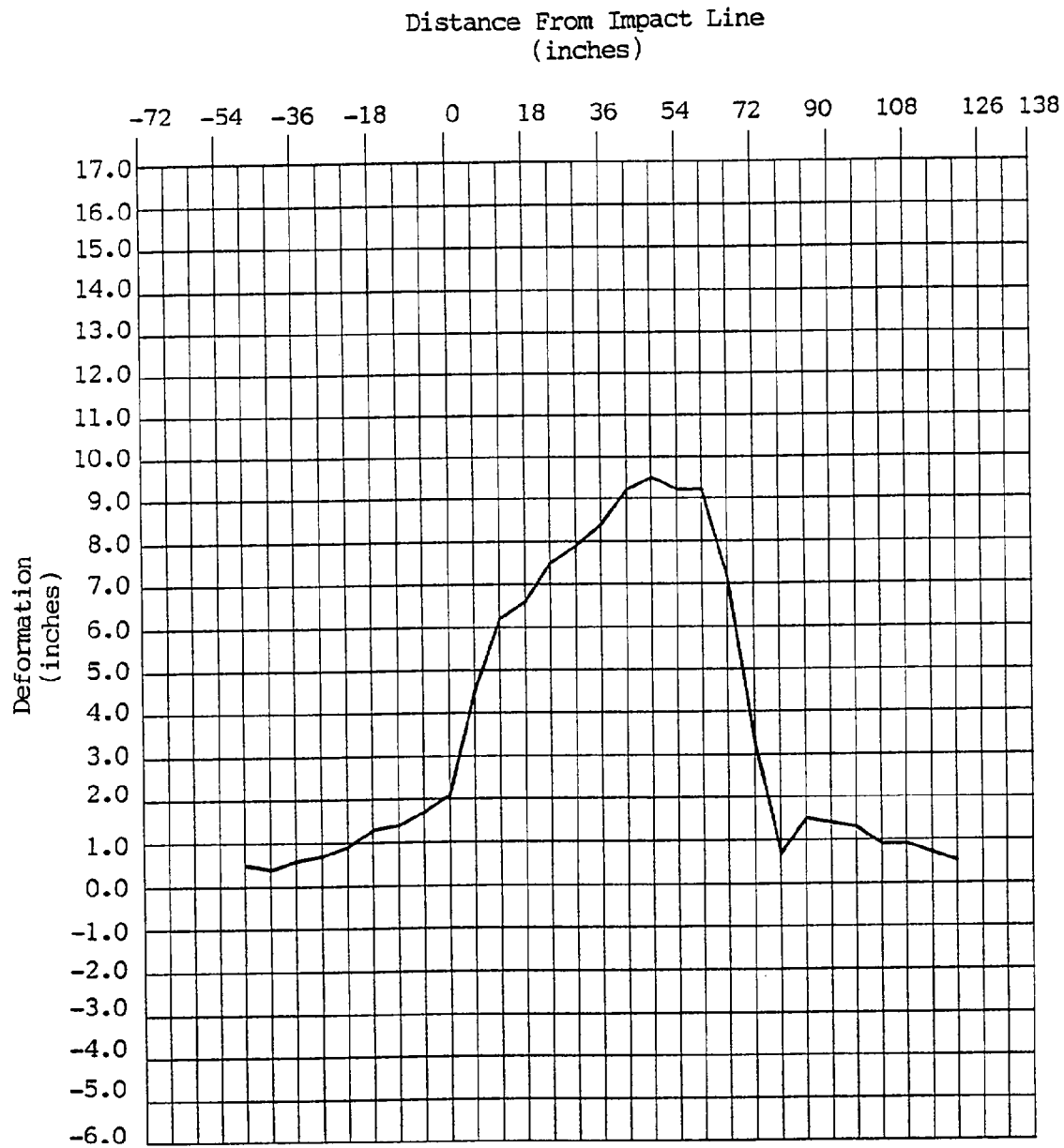
LEVEL 4 AT WINDOW SILL

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door SedanVehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

Longitudinal Distance (in)	PRE-TEST (in)	POST-TEST (in)	STATIC CRUSH (in)
-72	_____	_____	_____
-66	_____	_____	_____
-60	_____	_____	_____
-54	_____	_____	_____
-48	<u>37.4</u>	<u>36.9</u>	<u>0.5</u>
-42	<u>36.9</u>	<u>36.5</u>	<u>0.4</u>
-36	<u>36.4</u>	<u>35.8</u>	<u>0.6</u>
-30	<u>36.0</u>	<u>35.3</u>	<u>0.7</u>
-24	<u>35.7</u>	<u>34.8</u>	<u>0.9</u>
-18	<u>35.6</u>	<u>34.3</u>	<u>1.3</u>
-12	<u>35.5</u>	<u>34.1</u>	<u>1.4</u>
-6	<u>35.6</u>	<u>33.9</u>	<u>1.7</u>
0	<u>35.7</u>	<u>33.6</u>	<u>2.1</u> (impact point)
6	<u>38.0</u>	<u>33.5</u>	<u>4.5</u>
12	<u>39.4</u>	<u>33.2</u>	<u>6.2</u>
18	<u>39.8</u>	<u>33.2</u>	<u>6.6</u>
24	<u>40.4</u>	<u>32.9</u>	<u>7.5</u>
30	<u>40.8</u>	<u>32.9</u>	<u>7.9</u>
36	<u>41.3</u>	<u>32.9</u>	<u>8.4</u>
42	<u>42.0</u>	<u>32.8</u>	<u>9.2</u>
48	<u>42.4</u>	<u>32.9</u>	<u>9.5</u>
54	<u>42.1</u>	<u>32.9</u>	<u>9.2</u>
60	<u>42.1</u>	<u>32.9</u>	<u>9.2</u>
66	<u>40.0</u>	<u>32.9</u>	<u>7.1</u>
72	<u>36.2</u>	<u>32.9</u>	<u>3.3</u>
78	<u>33.6</u>	<u>32.9</u>	<u>0.7</u>
84	<u>34.4</u>	<u>32.9</u>	<u>1.5</u>
90	<u>34.7</u>	<u>33.3</u>	<u>1.4</u>
96	<u>34.8</u>	<u>33.5</u>	<u>1.3</u>
102	<u>35.0</u>	<u>34.1</u>	<u>0.9</u>
108	<u>35.6</u>	<u>34.7</u>	<u>0.9</u>
114	<u>36.3</u>	<u>35.6</u>	<u>0.7</u>
120	<u>37.9</u>	<u>37.4</u>	<u>0.5</u>
126	_____	_____	_____
132	_____	_____	_____
138	_____	_____	_____

Reference plane is parallel to test vehicle longitudinal centerline
 Given dimensions = reference plane to car body

FIGURE 6
VEHICLE EXTERIOR STATIC CRUSH



LEVEL 4 AT WINDOW SILL

TABLE 7

TEST VEHICLE EXTERIOR PROFILES FROM REFERENCE PLANE AND STATIC CRUSH

LEVEL 5 AT WINDOW TOP

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door SedanVehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

Longitudinal Distance (in)	PRE-TEST (in)	POST-TEST (in)	STATIC CRUSH (in)
-72	_____	_____	_____
-66	_____	_____	_____
-60	_____	_____	_____
-54	_____	_____	_____
-48	_____	_____	_____
-42	_____	_____	_____
-36	_____	_____	_____
-30	_____	_____	_____
-24	_____	_____	_____
-18	_____	_____	_____
-12	_____	_____	_____
-6	_____	_____	_____
0	_____	_____	_____ (impact point)
6	_____	_____	_____
12	_____	_____	_____
18	_____	_____	_____
24	<u>49.1</u>	<u>42.3</u>	<u>1.8</u>
30	<u>41.3</u>	<u>41.8</u>	<u>-0.5</u>
36	<u>42.2</u>	<u>41.6</u>	<u>0.6</u>
42	<u>42.3</u>	<u>41.6</u>	<u>0.7</u>
48	<u>43.5</u>	<u>41.7</u>	<u>1.8</u>
54	<u>42.5</u>	<u>41.9</u>	<u>0.6</u>
60	<u>41.4</u>	<u>42.0</u>	<u>-0.6</u>
66	<u>40.6</u>	<u>42.2</u>	<u>-1.6</u>
72	<u>44.4</u>	<u>43.0</u>	<u>1.4</u>
78	_____	_____	_____
84	_____	_____	_____
90	_____	_____	_____
96	_____	_____	_____
102	_____	_____	_____
108	_____	_____	_____
114	_____	_____	_____
120	_____	_____	_____
126	_____	_____	_____
132	_____	_____	_____
138	_____	_____	_____

Reference plane is parallel to test vehicle longitudinal centerline
 Given dimensions = reference plane to car body

FIGURE 6
VEHICLE EXTERIOR STATIC CRUSH

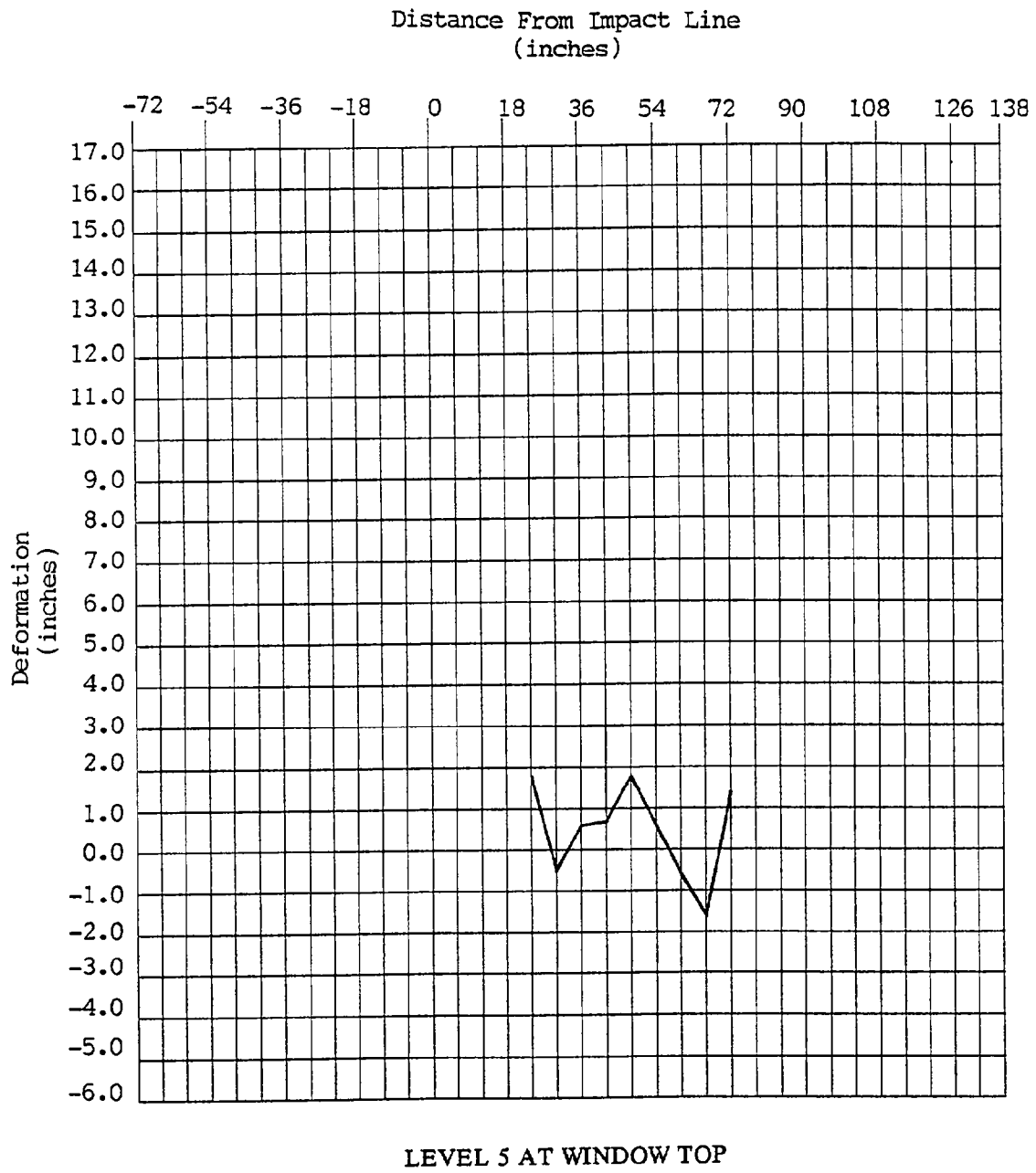
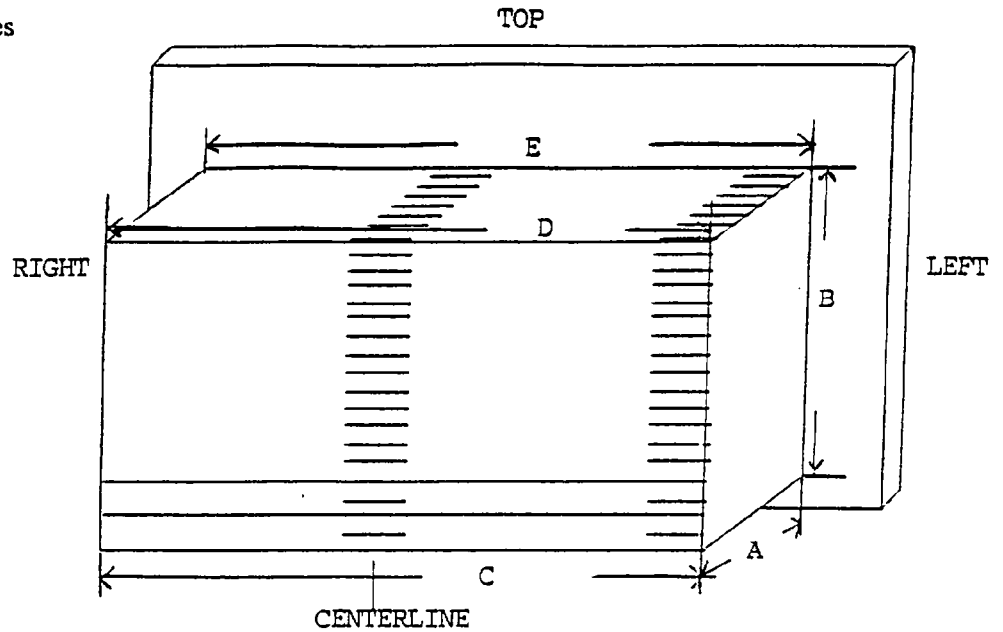


FIGURE 8
MDB FACE DIMENSIONS

Measurements in inches

A = 15.1
B = 22.0
C = 66.0
D = 66.0
E = 66.1



Measurements in inches

	Right	Left
A =	<u>11.0</u>	<u>11.1</u>
B =	<u>13.1</u>	<u>13.1</u>
C =	<u>21.0</u>	<u>21.0</u>
D =	<u>33.0</u>	<u>33.0</u>

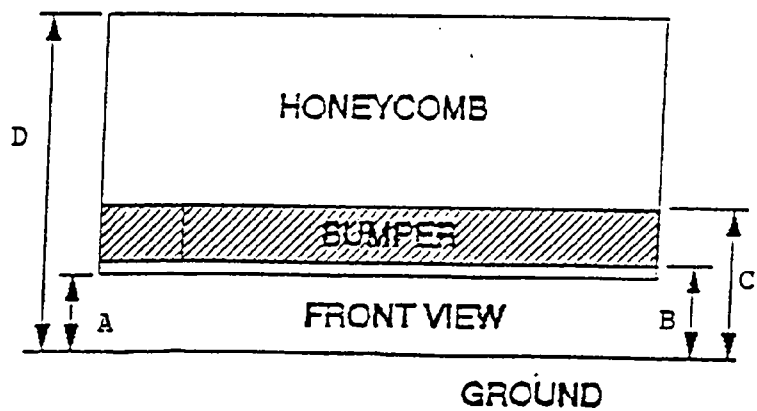


TABLE 8
EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan

Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

Location	Top of Stack (33 inches)	Mid-Stack (27 inches)	Top of Bumper (21 inches)	Center of Bumper (17 inches)
Horizontal Distance From Center	Crush (inches)	Crush (inches)	Crush (inches)	Crush (inches)
32"	5.4	4.3	3.1	3.2
28"	3.3	2.8	2.0	1.9
24"	1.6	0.8	1.5	1.1
20"	0.9	0.3	1.5	0.6
16"	0.9	0.1	1.1	0.3
12"	0.1	0.1	0.9	0.3
8"	0.1	0.1	0.8	0.3
4"	0	0.1	0.8	0.1
0"	0	0.1	0.6	0.1
4"	-0.1	0.1	0.5	0
8"	-0.1	0	0.5	-0.3
12"	-0.1	0	0.4	0
16"	-0.1	0	0.3	0.1
20"	0.1	0	0.4	0.1
24"	0.6	0	0.3	0.6
28"	0.3	0	1.3	1.5
32"	1.6	1.4	3.1	4.5

Left Side

Right Side

FIGURE 7

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan

Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

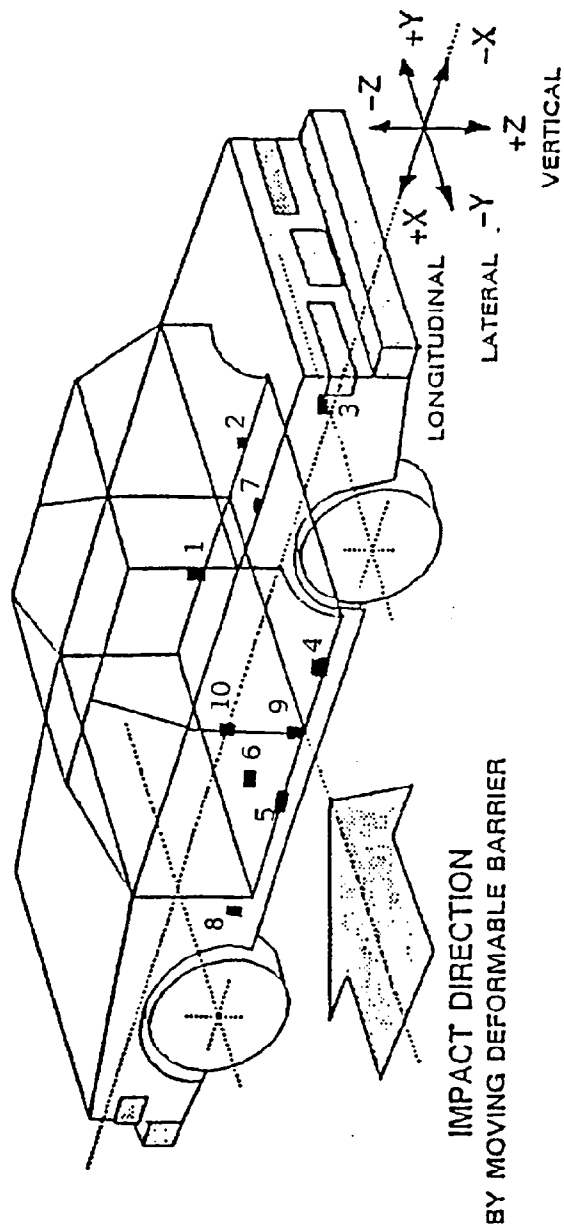


TABLE 9

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARYYear/Make/Model/Body Style: 1994/Toyota/Corolla/4 Door SedanVehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

Accel. No.	Description	Coordinates (in)			Long. (X) Maximums		Lat. (Y) Maximums		Vert. (Z) Maximums		Resultant
		X	Y	Z	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	
1	Rt. Side Sill @ Front Seat	111.5	28.0	12.0	1.8	-5.8	18.8	-2.2	3.6	-6.8	19.6
2	Rt. Side Sill @ Rear Seat	79.0	27.9	12.3	1.6	-6.1	19.5	-1.5	3.0	-6.8	21.3
3	Rr. Floorpan Above Axle	46.5	0	19.3	4.6	-5.5	18.1	-1.4	8.3	-4.4	20.1
4	Left Side Sill @ Rr. Seat	73.5	-29.0	9.5	---	---	40.4	-11.0	---	---	---
5	Left Side Sill @ Frt. Seat	108.5	-29.0	9.0	---	---	30.4	-5.2	---	---	---
6	Driver Left Seat Track	102.5	-23.8	11.5	---	---	45.4	-13.8	---	---	---
7	Right Rear Occupant Compartment	76.5	14.4	12.0	---	---	19.5	-1.7	---	---	---
8	Left A Post Lower	126.0	-28.9	18.0	---	---	133	-61	---	---	---
9	Left B Post Lower	86.5	-28.5	26.3	---	---	195	-30	---	---	---
10	Left B Post Mid	86.5	-28.5	33.0	---	---	127	-32	---	---	---

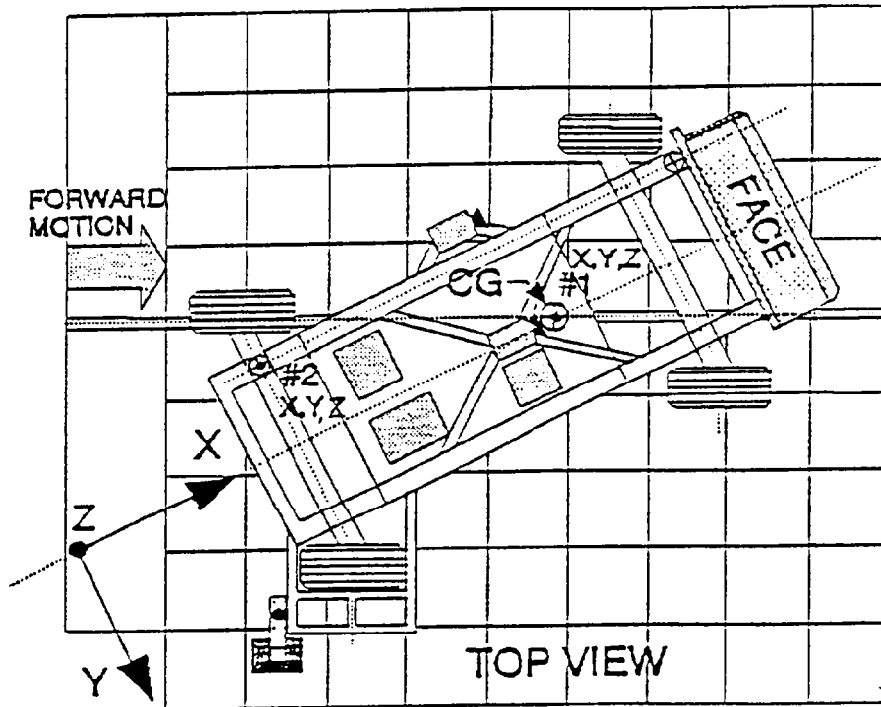
*Reference: X - Rear Bumper (+ Forward)
Y - Vehicle Centerline (+ To right)
Z - Ground Level (+ Up)

FIGURE 9

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan

Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994



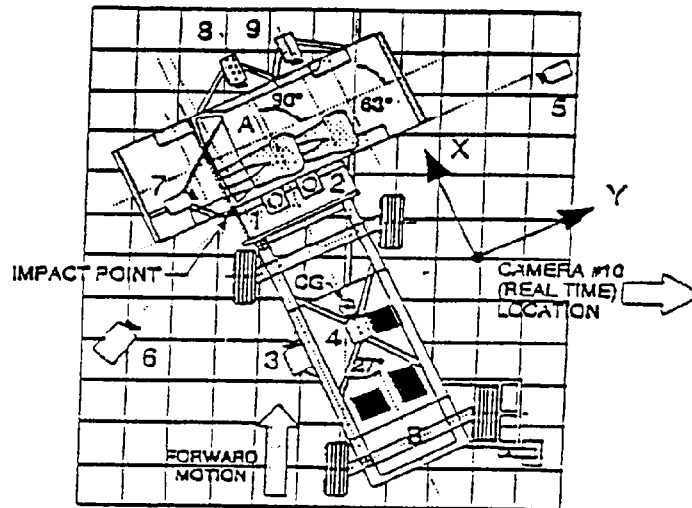
Accel. No.	Location	Coordinates (in)			Pos. Direct.		Neg. Direct.	
					Max (g)	Time (msec)	Max (g)	Time (msec)
		X	Y	Z				
1	MDB Center of Gravity							
	Longitudinal ... X				1.3	114	-15.1	38
	Lateral Y	-43	0	19.0	0.7	-4	-9.8	32
	Vertical Z				10.0	68	-9.9	64
	Resultant R				18.0	23	---	---
2	Rear Frame Member							
	Longitudinal ... X	-102	-24.6	24.5	1.6	187	-21.3	34
	Lateral Y				*	*	*	*

* Reference: X = Front Axle (+Forward)
Y = Vehicle Centerline (+ To Right)
Z = Ground Level (+ Up)

FIGURE 10
HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan

Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994



Camera No.	View	Coordinates (in)			Angle	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
	Real Time					10	24
6	Left Impact	-2420	2850	1320	45°	13	1015
8	Onboard Driver					7.5	781
7	Onboard Hood					13	1015
9	Onboard Passenger					8	930
5	Right Impact	1984	-8435	843	45°	35	976
2	Top Wide	400	0	5360		8	1111
1	Top Pointer	0	380	4920		13	1099
4	Cart					13	1020
3	Cart Pointer					35	740

* Reference: (from point of impact)

+X = Forward

+Y = To Right

+Z = Upward

TABLE 10
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan
Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

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

TEST VEHICLE IMPACT TYPE: X Side Impact MDB (33.1 mph)

FUEL SPILLAGE MEASUREMENT:

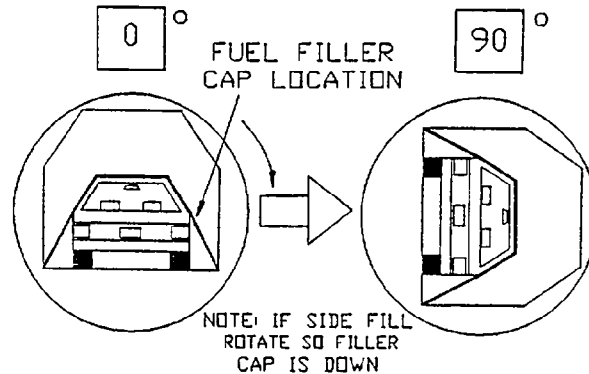
1. From impact until vehicle motion ceases
2. For 5 minute period after vehicle motion ceases
3. For next 25 minutes

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

SOLVENT SPILLAGE DETAILS:

None

TABLE 11

FMVSS NO. 301 STATIC ROLLOVER DATA SHEETYear/Make/Model/Body Style: 1994/Toyota/Camry/4 Door SedanVehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994TEST PHASE: 0° - 90°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 secondsTOTAL 7 minutes 36 secondsNext whole minute interval 8 minutesII. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

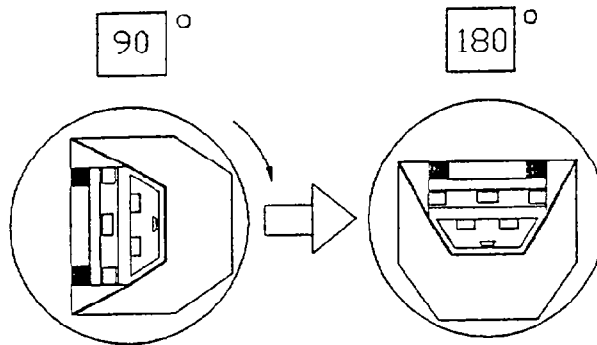
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

TABLE 11
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan
Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

TEST PHASE: 90° - 180°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 30 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds
TOTAL 7 minutes 30 seconds
Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

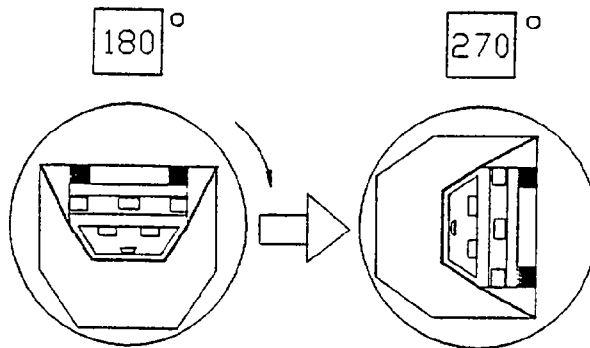
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S): None

TABLE 11
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan
 Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

TEST PHASE: 180° - 270°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 14 seconds
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds
TOTAL 7 minutes 14 seconds
 Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

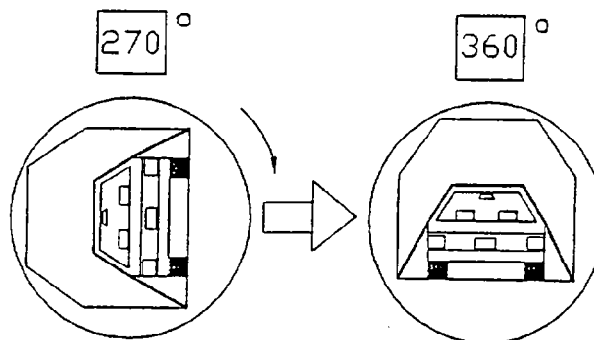
IV. SOLVENT SPILLAGE LOCATIONS(S): None

TABLE 11
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)

Year/Make/Model/Body Style: 1994/Toyota/Camry/4 Door Sedan

Vehicle NHTSA No.: CR5104 TEST DATE: June 7, 1994

TEST PHASE: 270° - 360°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 40 seconds
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds
 TOTAL 7 minutes 40 seconds
 Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

IV. SOLVENT SPILLAGE LOCATIONS(S): None

APPENDIX A - PHOTOGRAPHS

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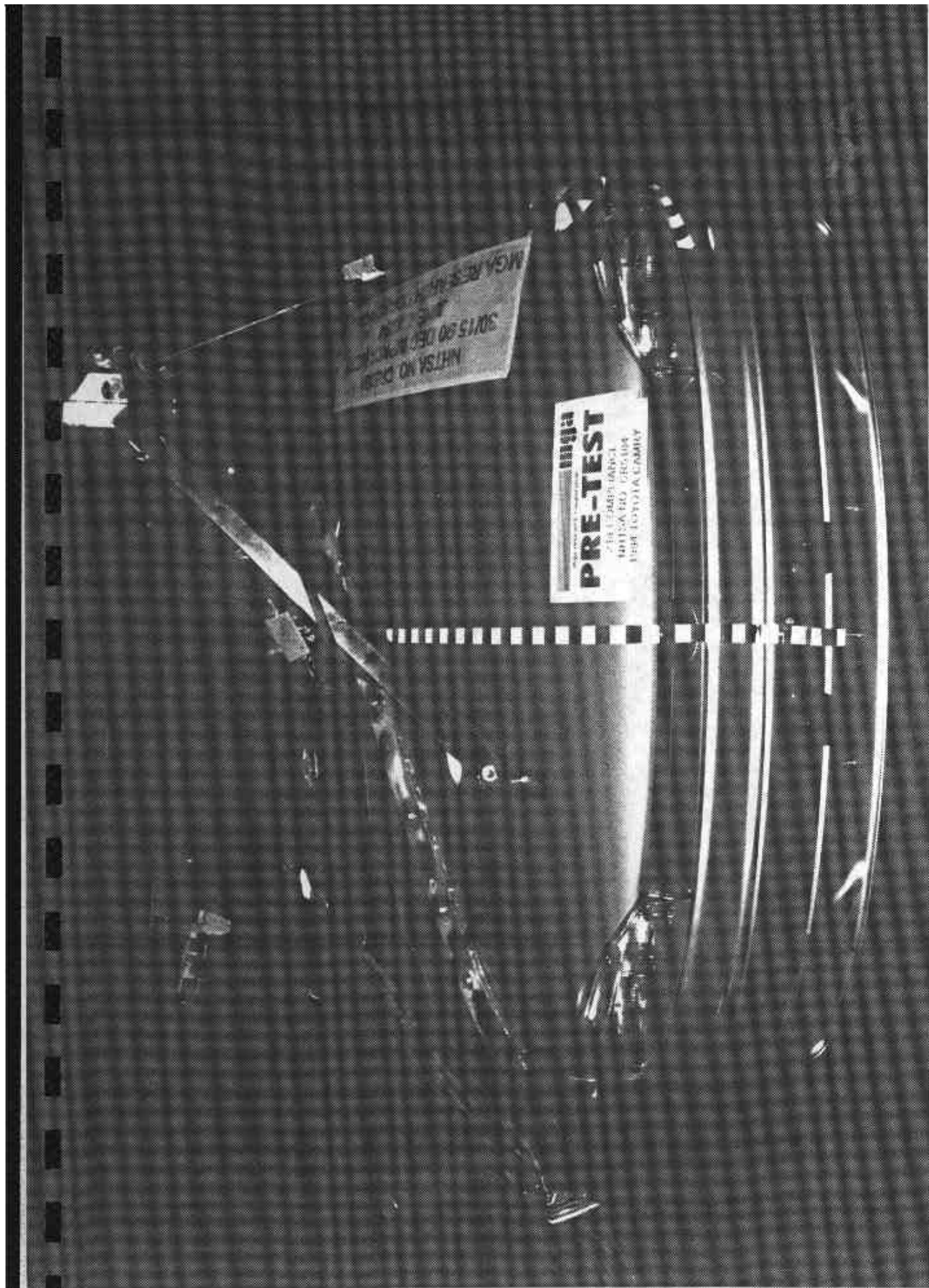


Photo No. A-1 - Pre-Test Front View of Test Vehicle

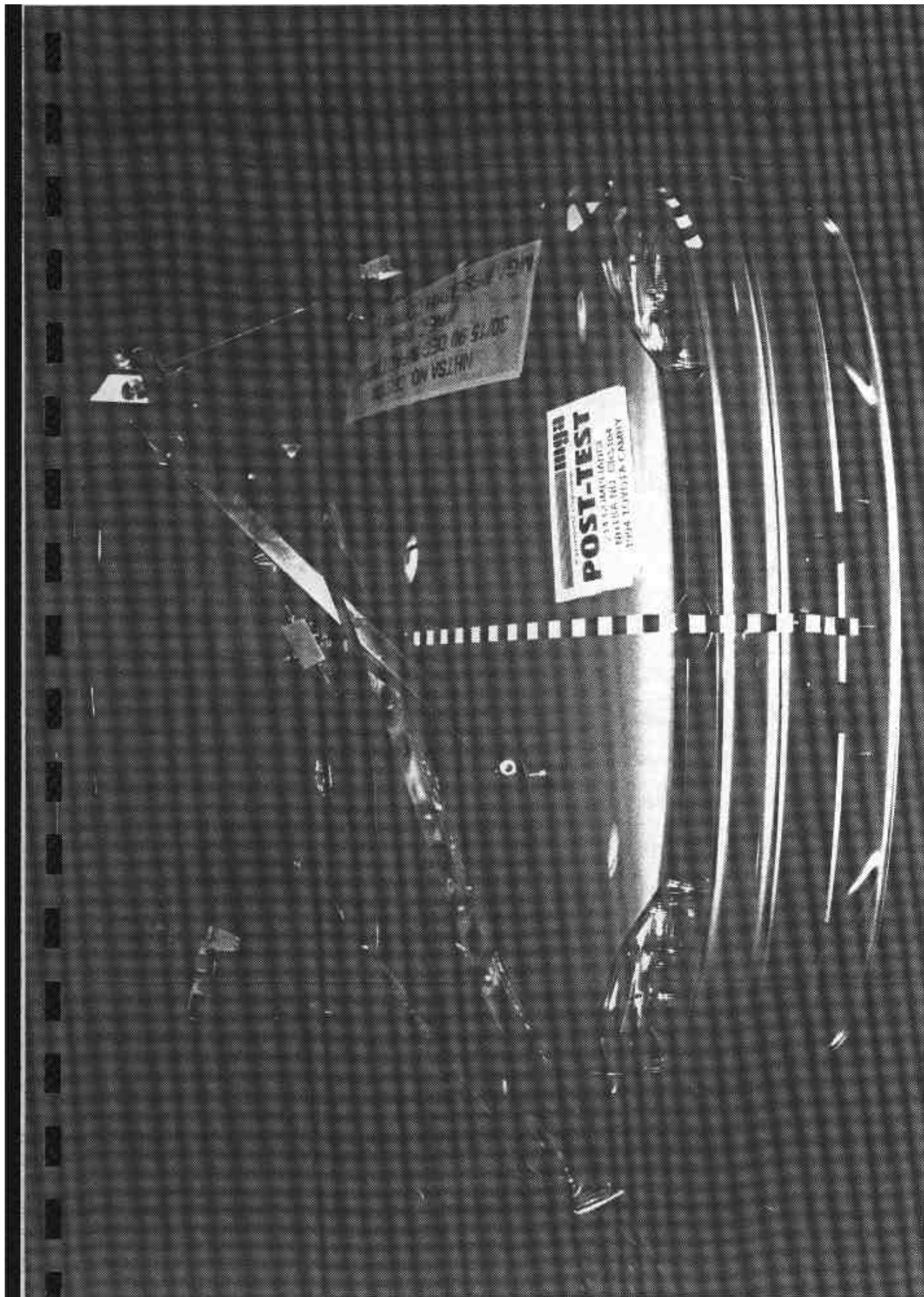


Photo No. A-2 - Post-Test Front View of Test Vehicle

PRE-TEST
214 COMPLIANCE
NHTSA NO. CR5104
1994 TOYOTA CAMRY

NHTSA NO. CR5104
30/15 90 DEG IMPACT (MDB)
JUNE 7, 1994
MGA RESEARCH CORPORATION

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

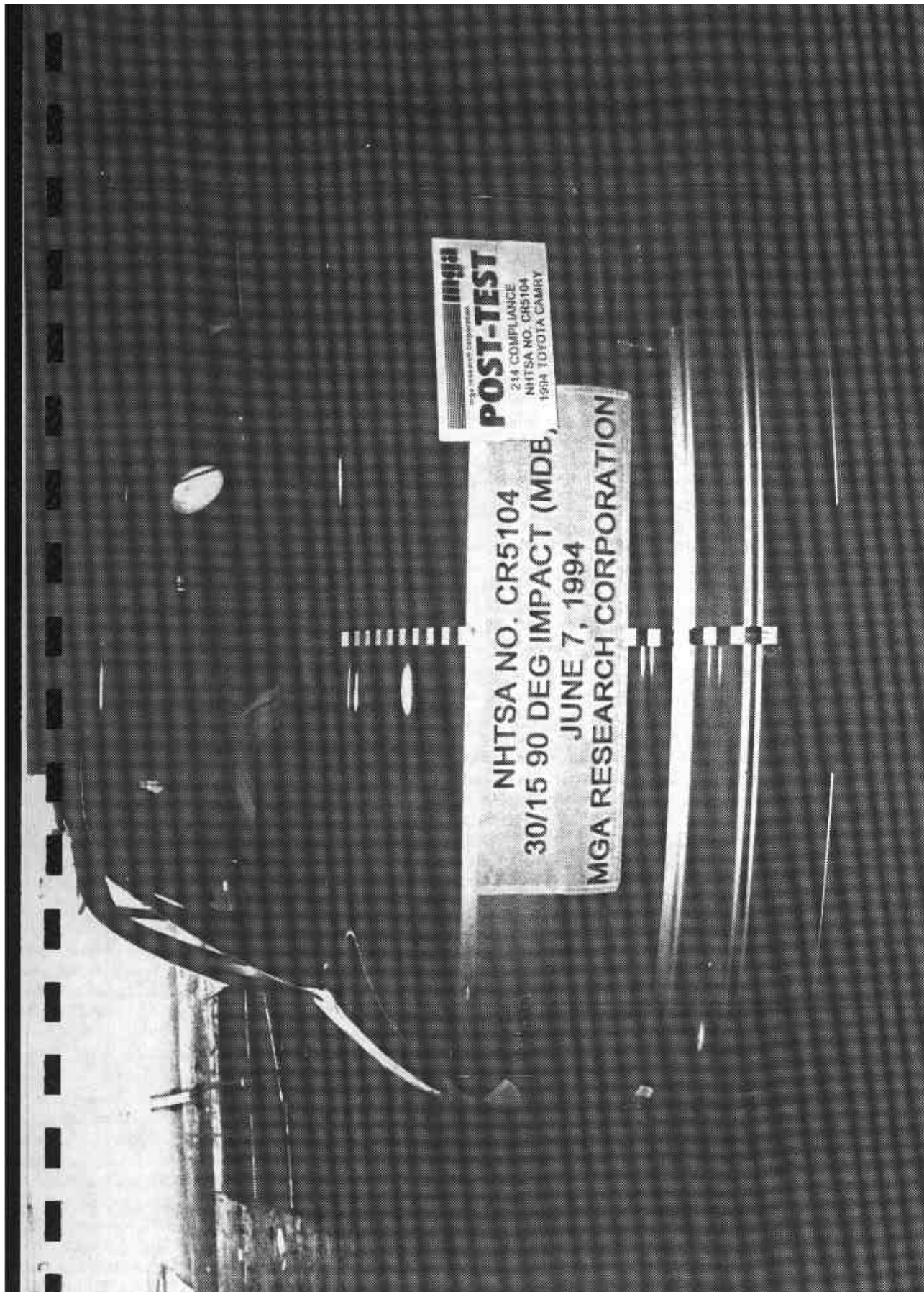


Photo No. A-4 - Post-Test Rear View of Test Vehicle

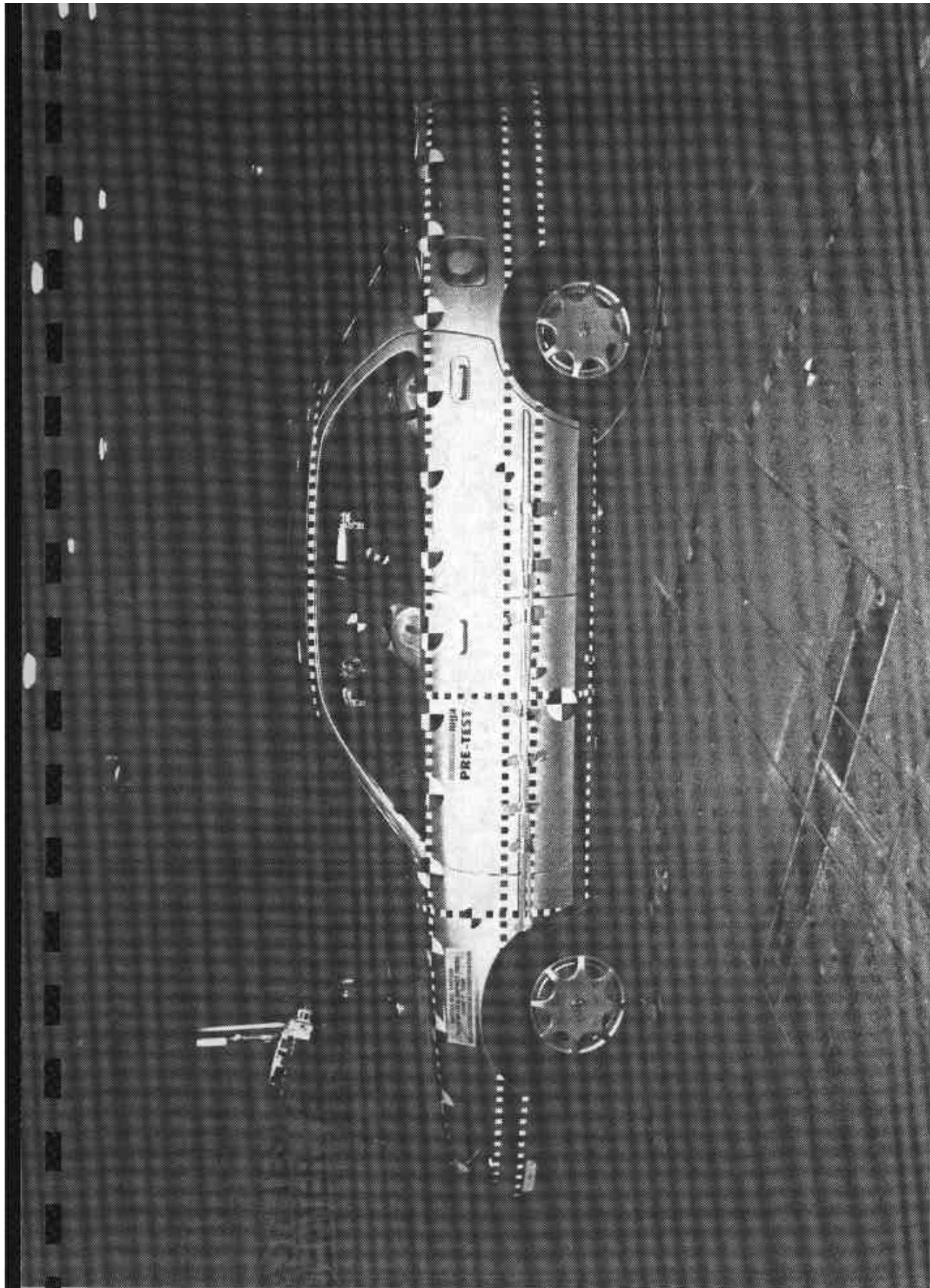


Photo No. A-5 - pre-Test Left Side View of Test Vehicle

POST-TEST
214 COMPLIANCE
WH15A NO. C8515A
1994 TOYOTA CAMRY

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

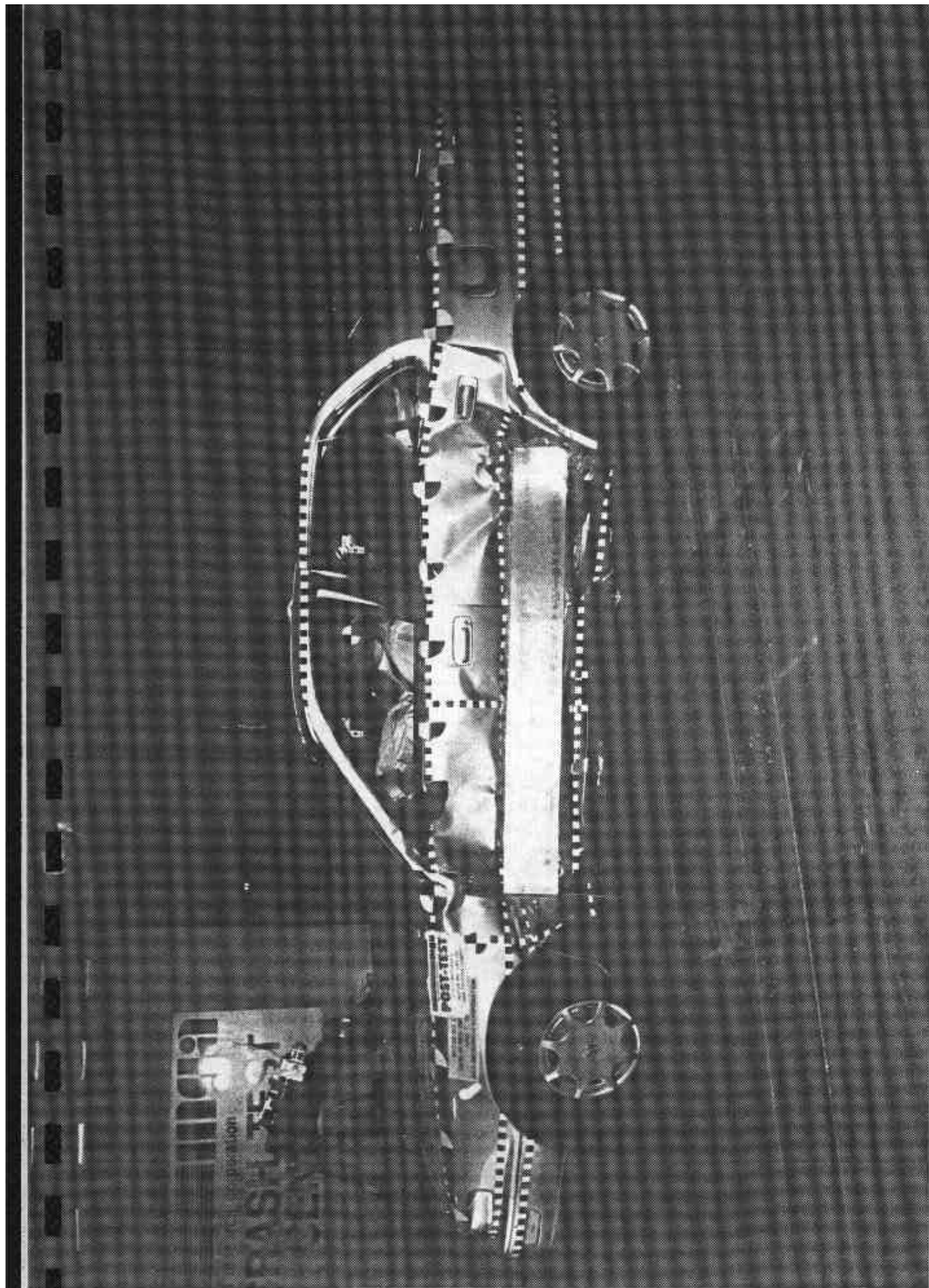


Photo No. A-7 - Post-Test Left Side View of Test Vehicle (bumper removed)

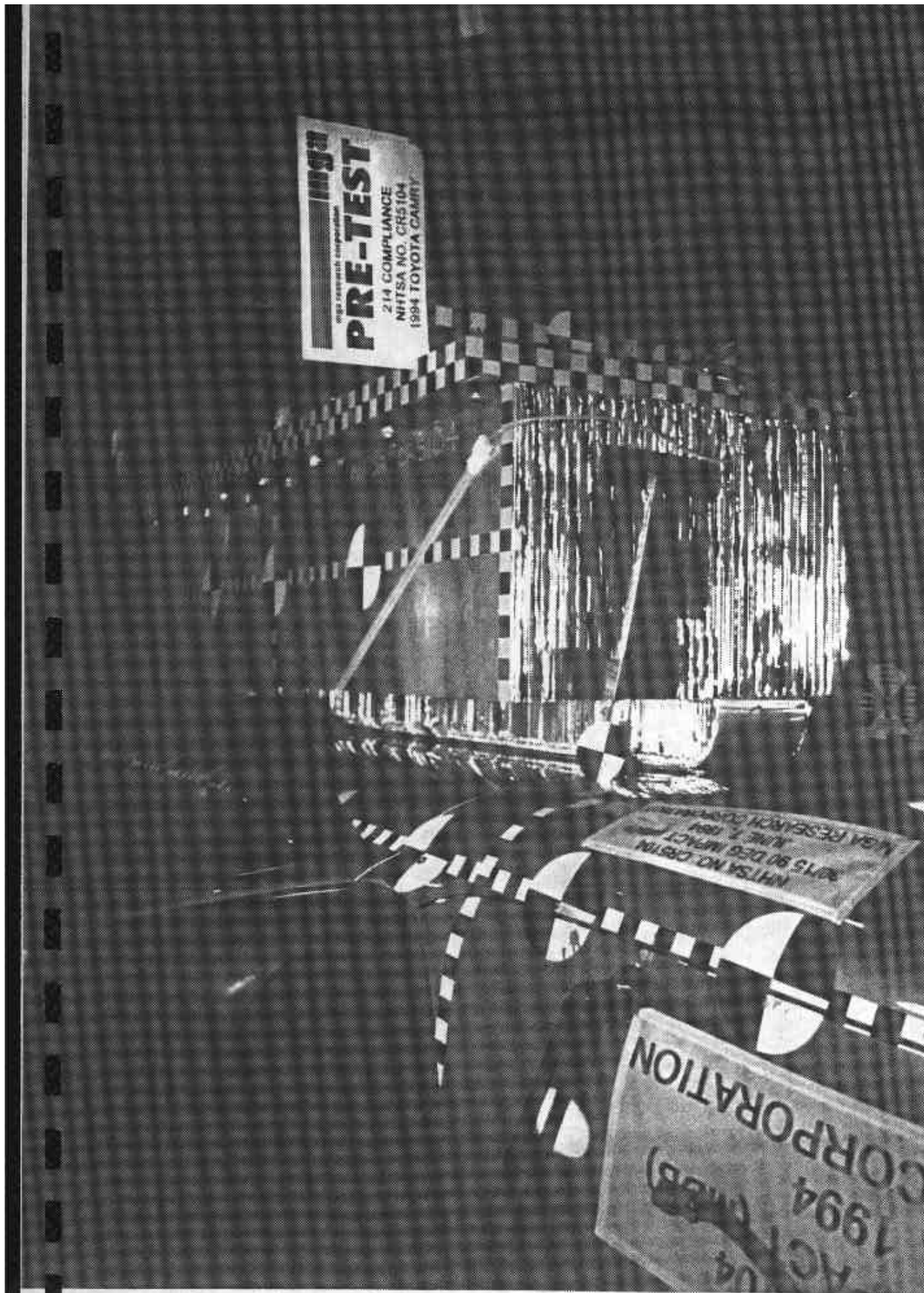


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (left side)

PRE-TEST
21A COMPLIANCE
NHTSA NO. CRS04
1984 TOYOTA CAMRY

Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle (right side)

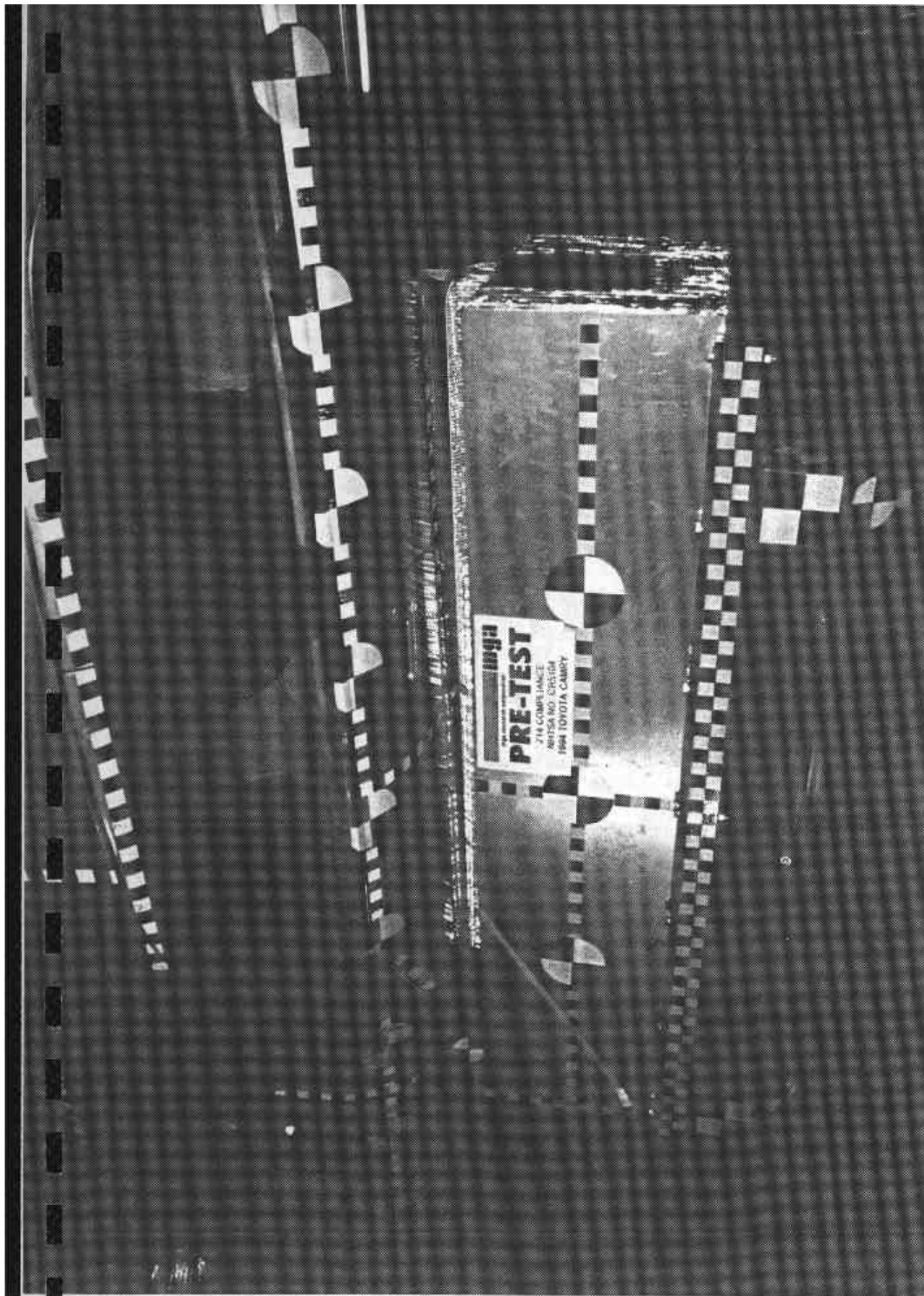


Photo No. A-10 - Pre-Test MDB Position Against Vehicle Overhead View

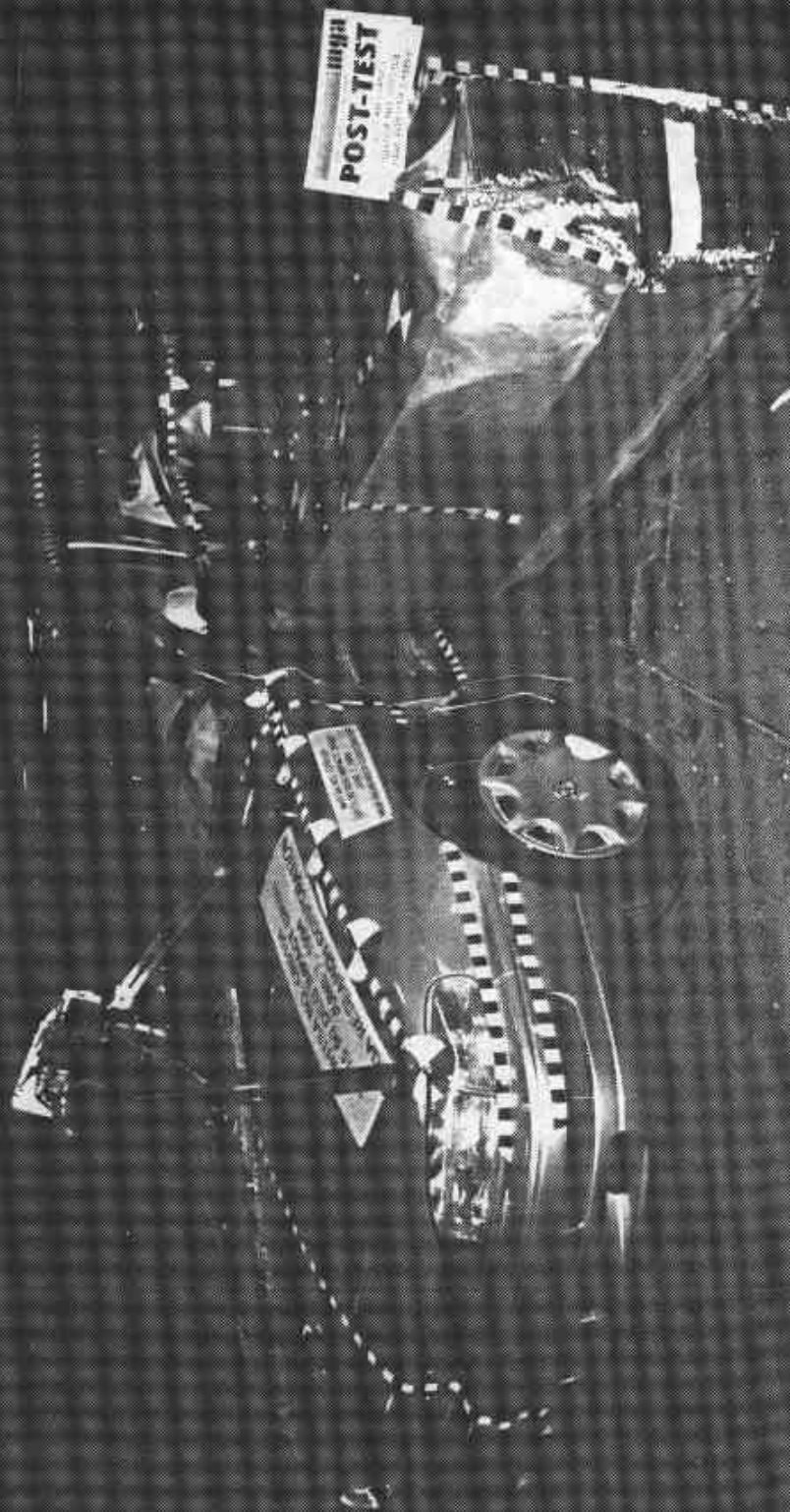


Photo No. A-11 - Post-Test MDB and Vehicle Left Side Front View

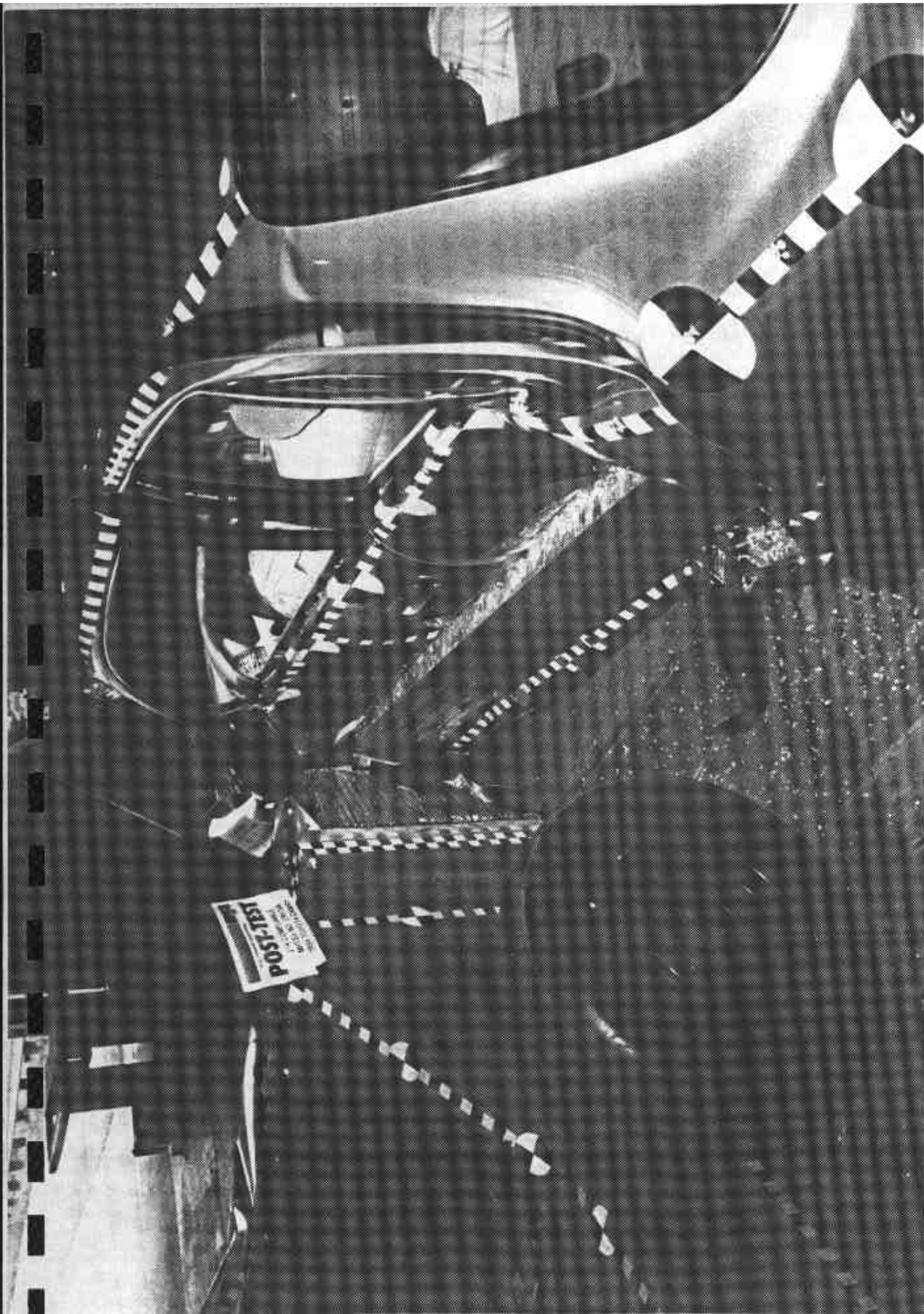


Photo No. A-12 - Post-Test MDB and Vehicle Right Side Rear View

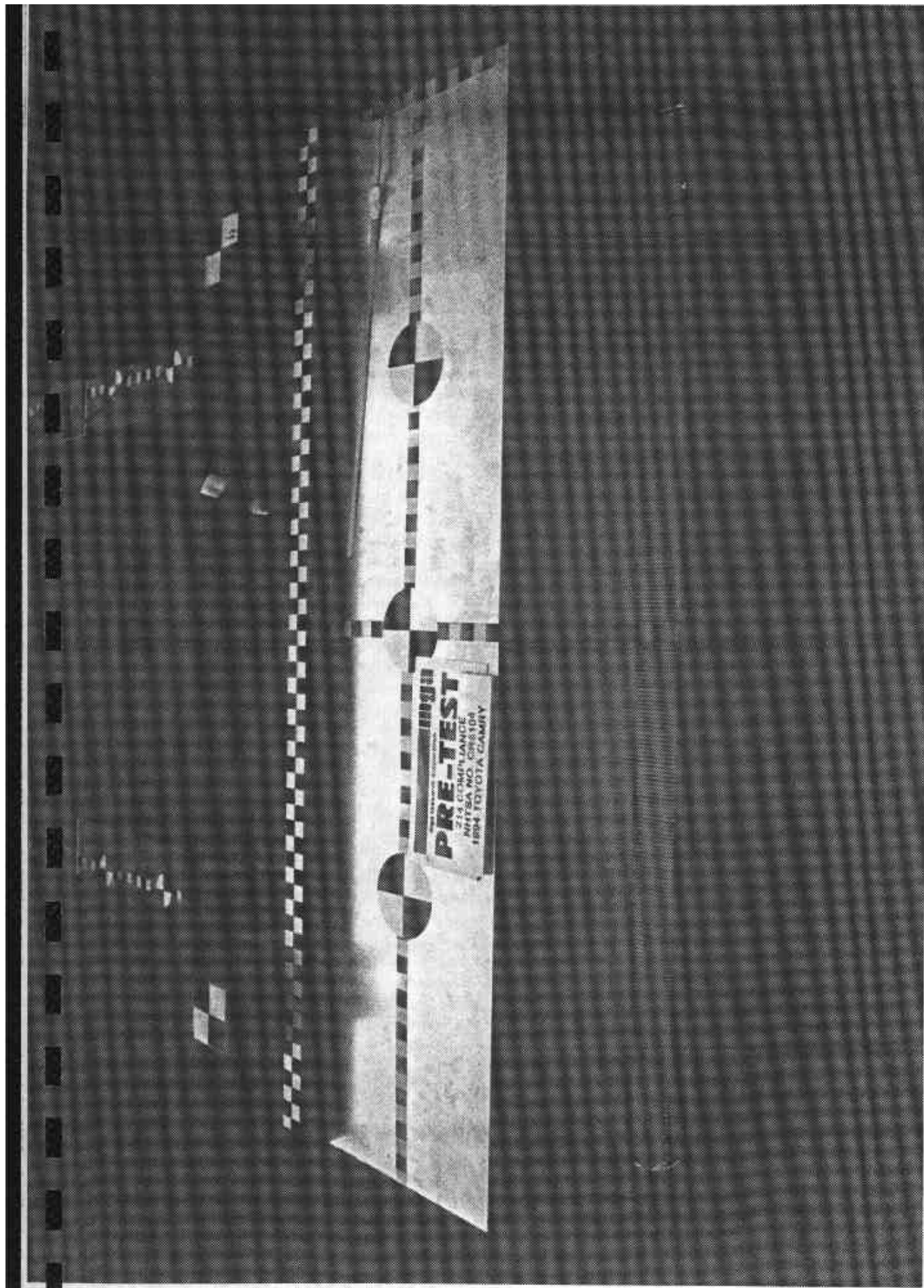


Photo No. A-13 - Pre-Test MDB Top View

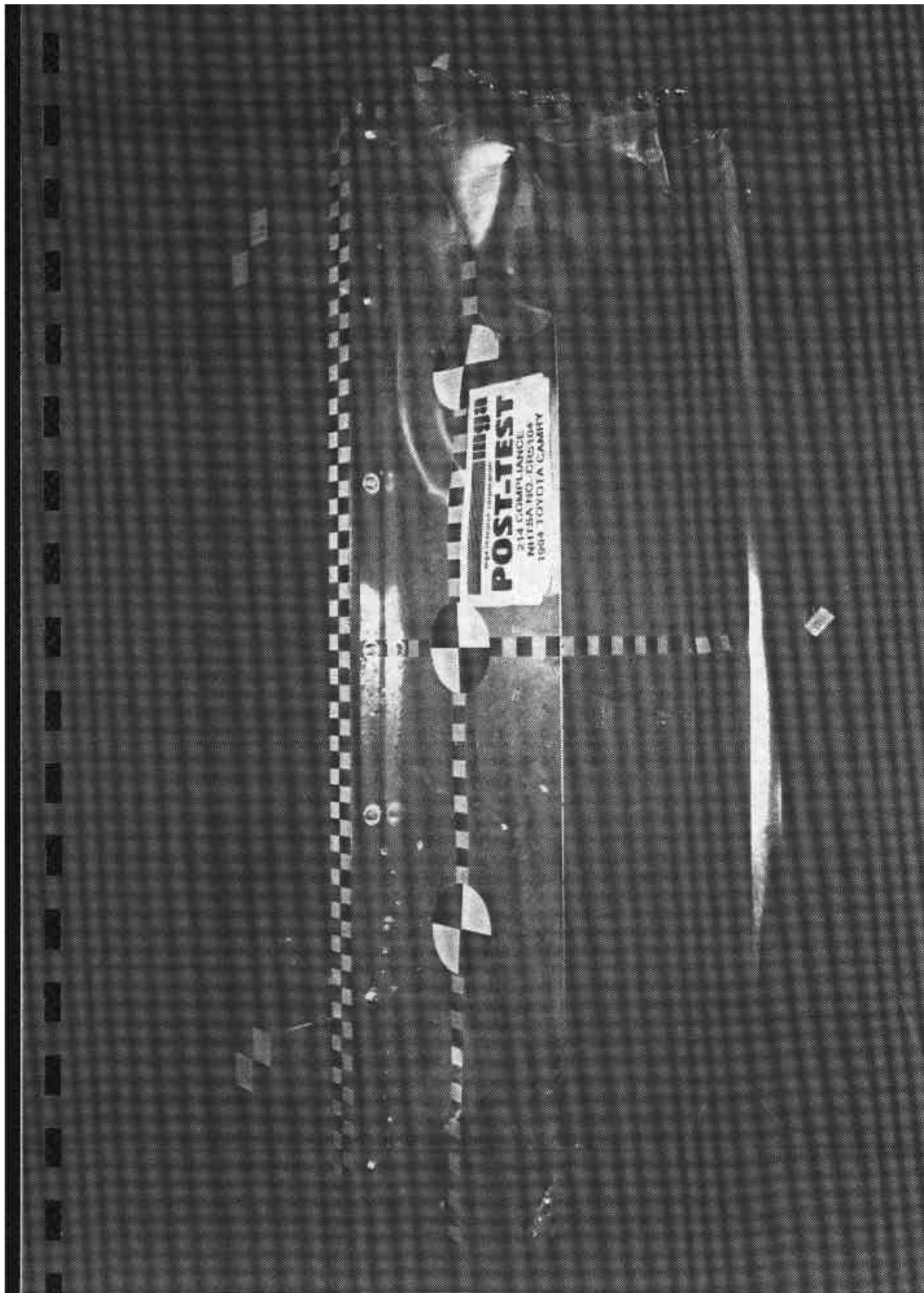


Photo No. A-14 - Post-Test MDB Top View

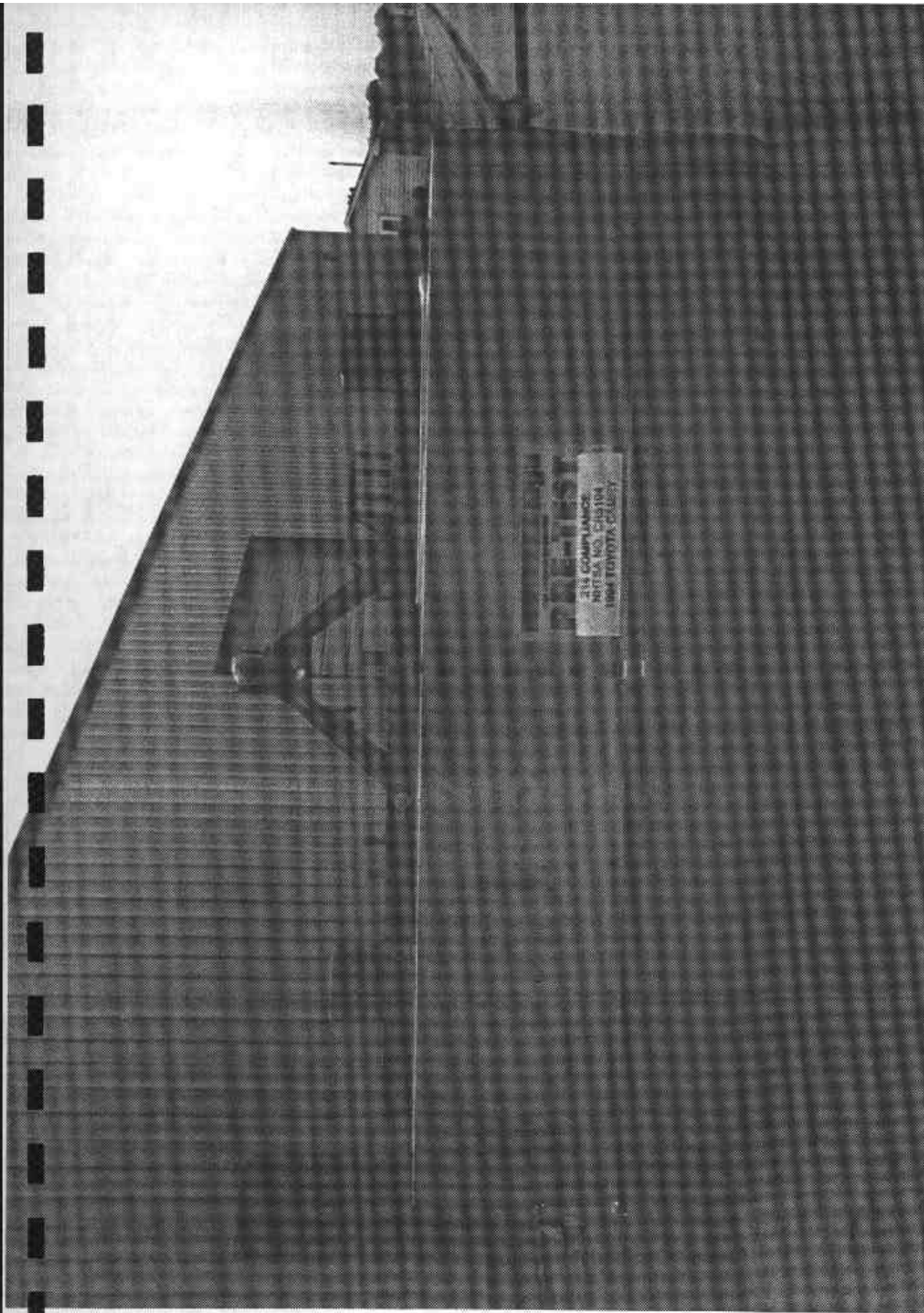


Photo No. A-15 - Pre-Test MDB Front View

POST-TEST
MATTER NO. C-101
1984 TOYOTA CAMRY

Photo No. A-16 - Post-Test MDB Front View

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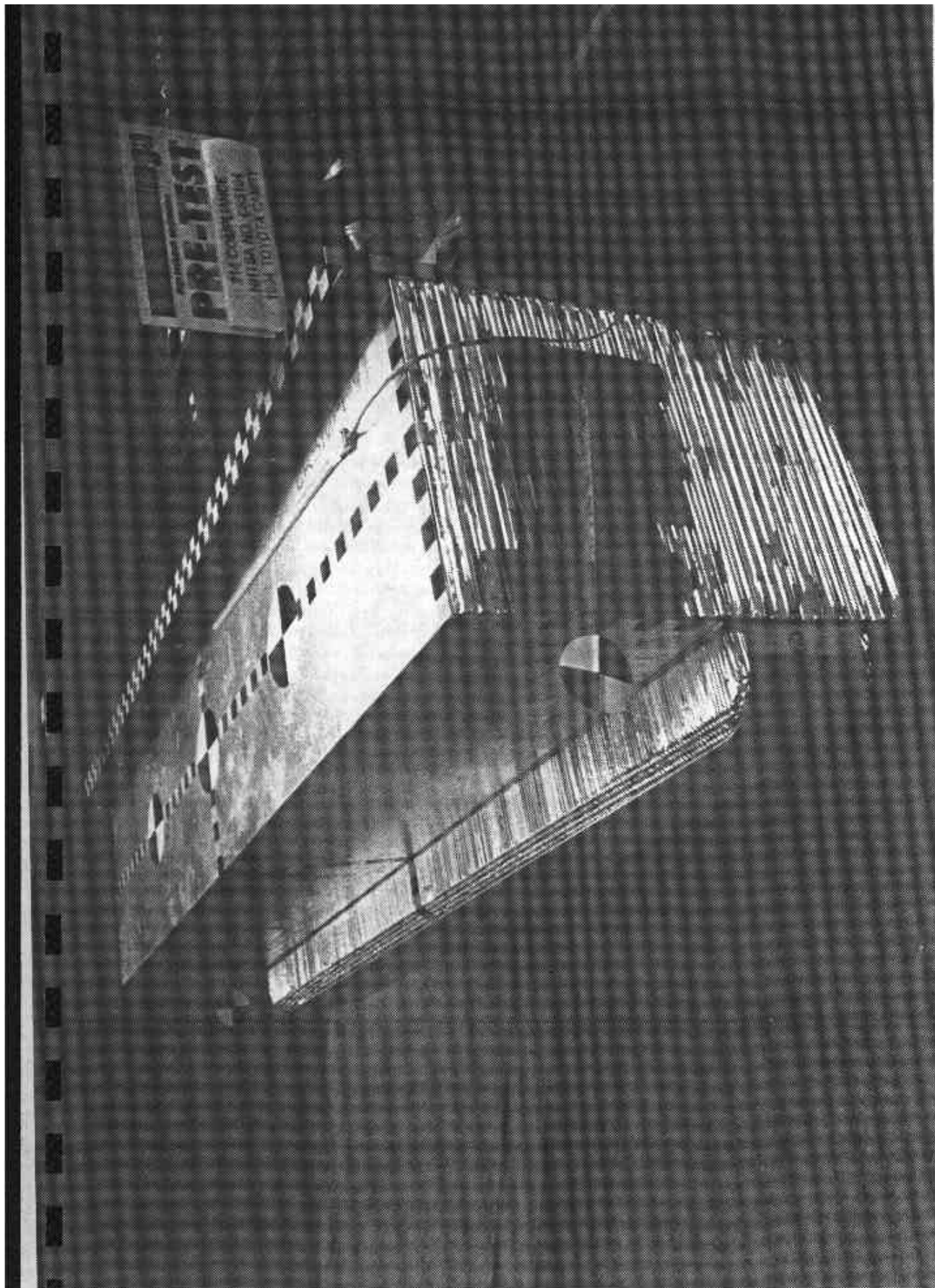


Photo No. A-17 - Pre-Test MDB Left Side View

POST-TEST
214 COMPLIANCE
NHTSA 180 CDR-18A
UPON TOYOTA CAMRY

Photo No. A-18 - Post-Test MDB Left Side View

POST-TEST
214 COMPLIANCE
NHTSA NO. CR5104
1994 TOYOTA CAMRY

Photo No. A-20 - Post-Test MDB Right Side View



Photo No. A-21 - Post-Test MDB and Vehicle Overhead View

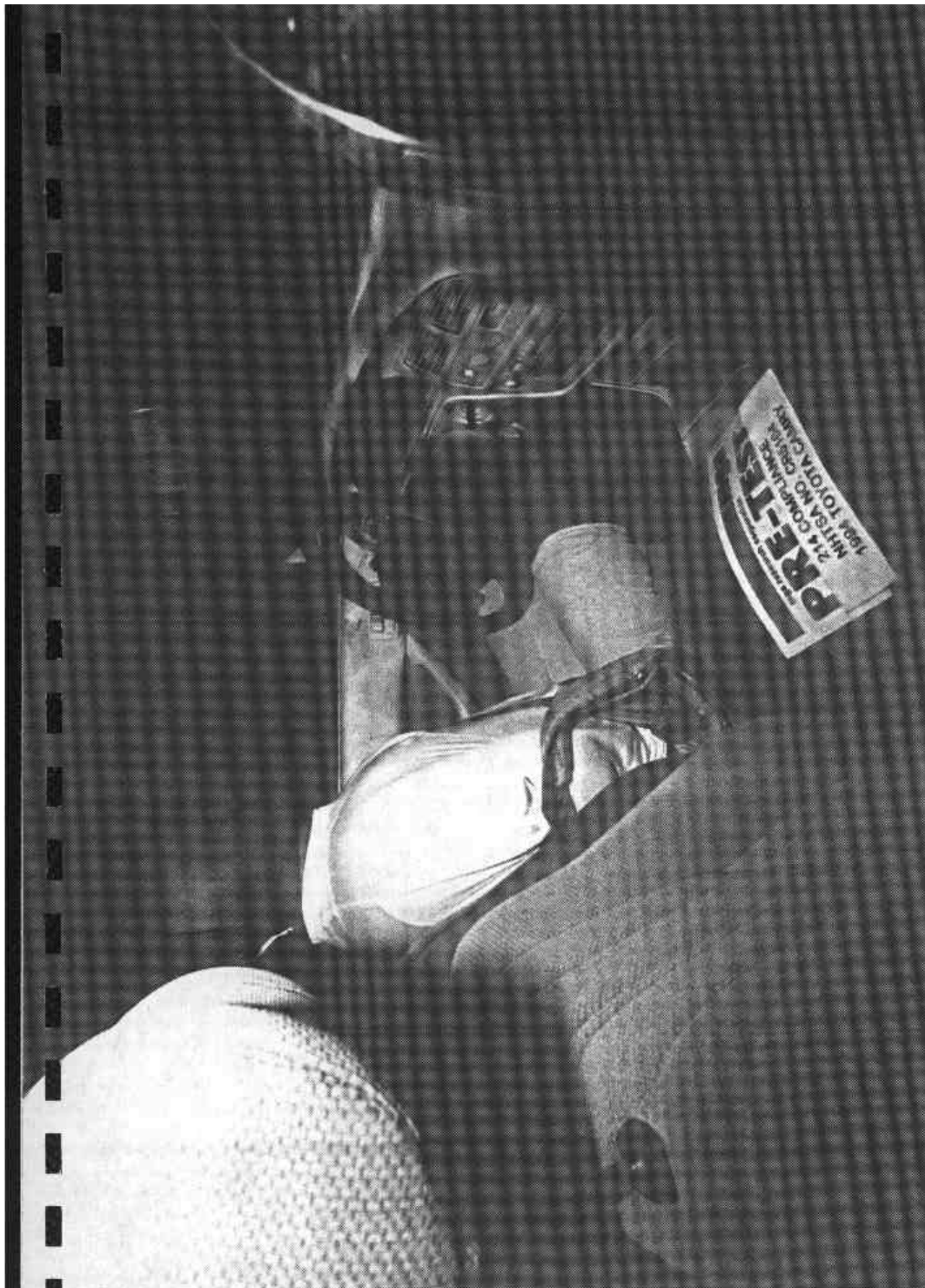


Photo No. A-22 - Pre-Test Driver Dummy Right Side View



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

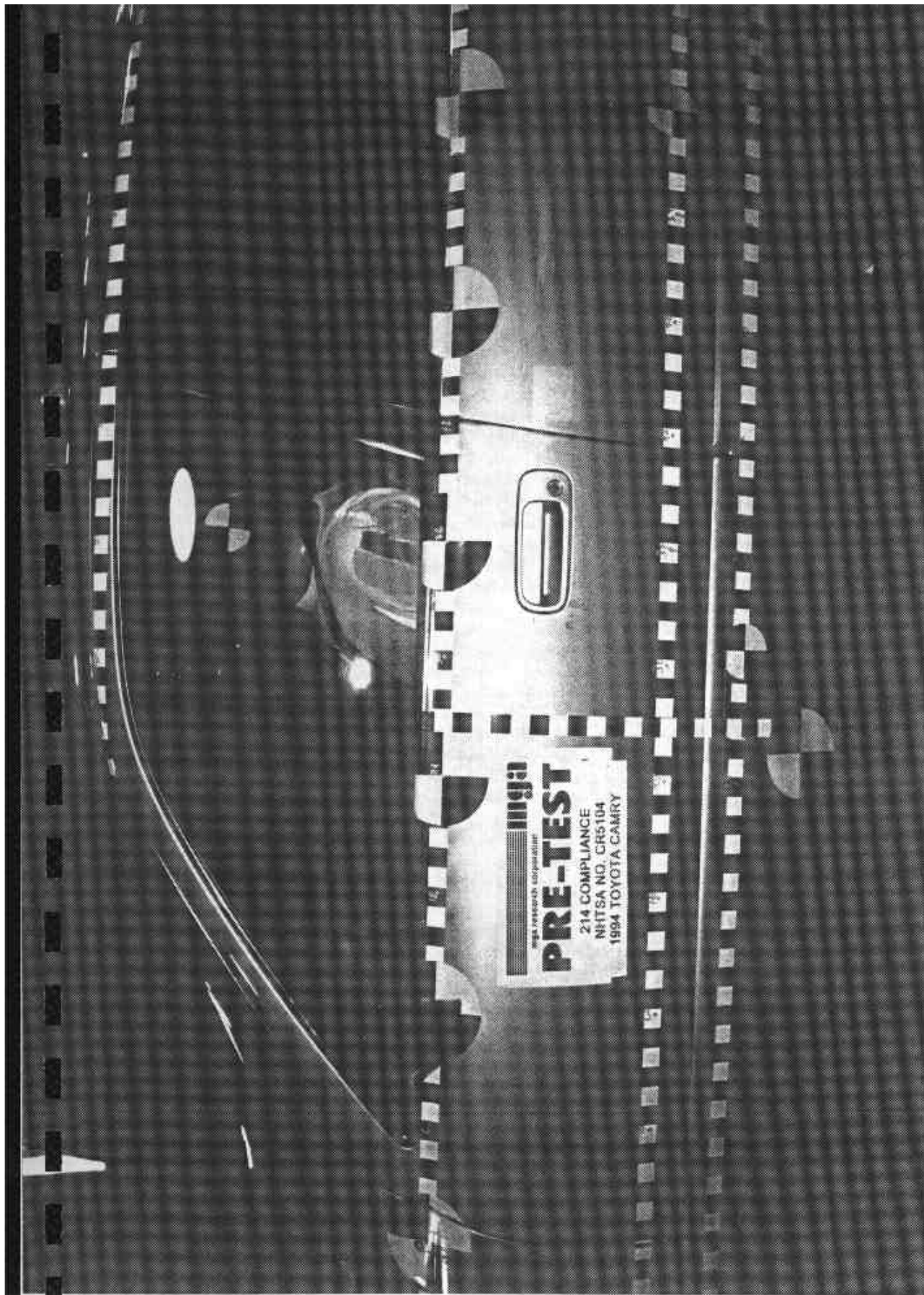


Photo No. A-24 - Pre-Test Driver Dummy Left Side View

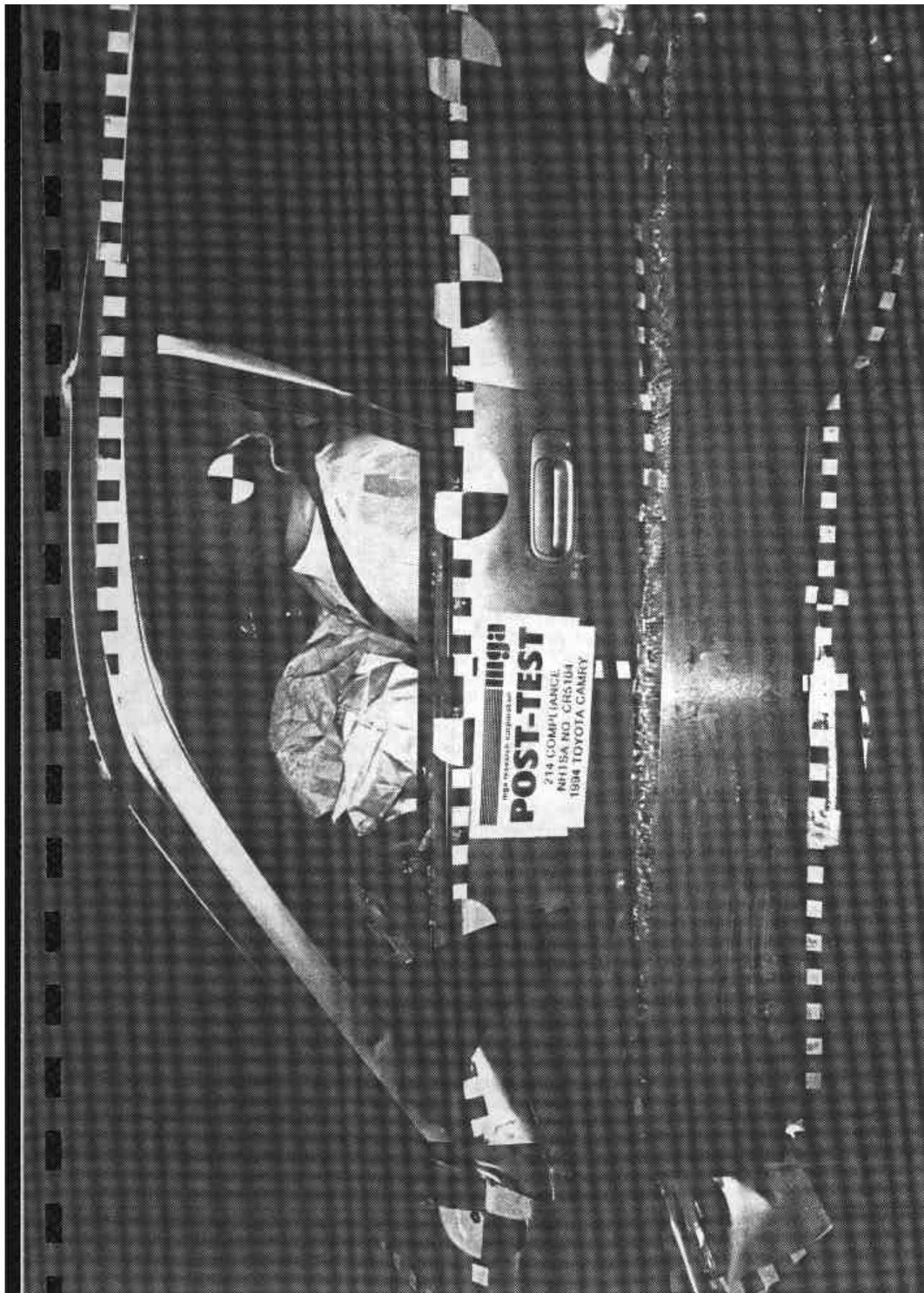


Photo No. A-25 - Post-Test Driver Dummy Left Side View

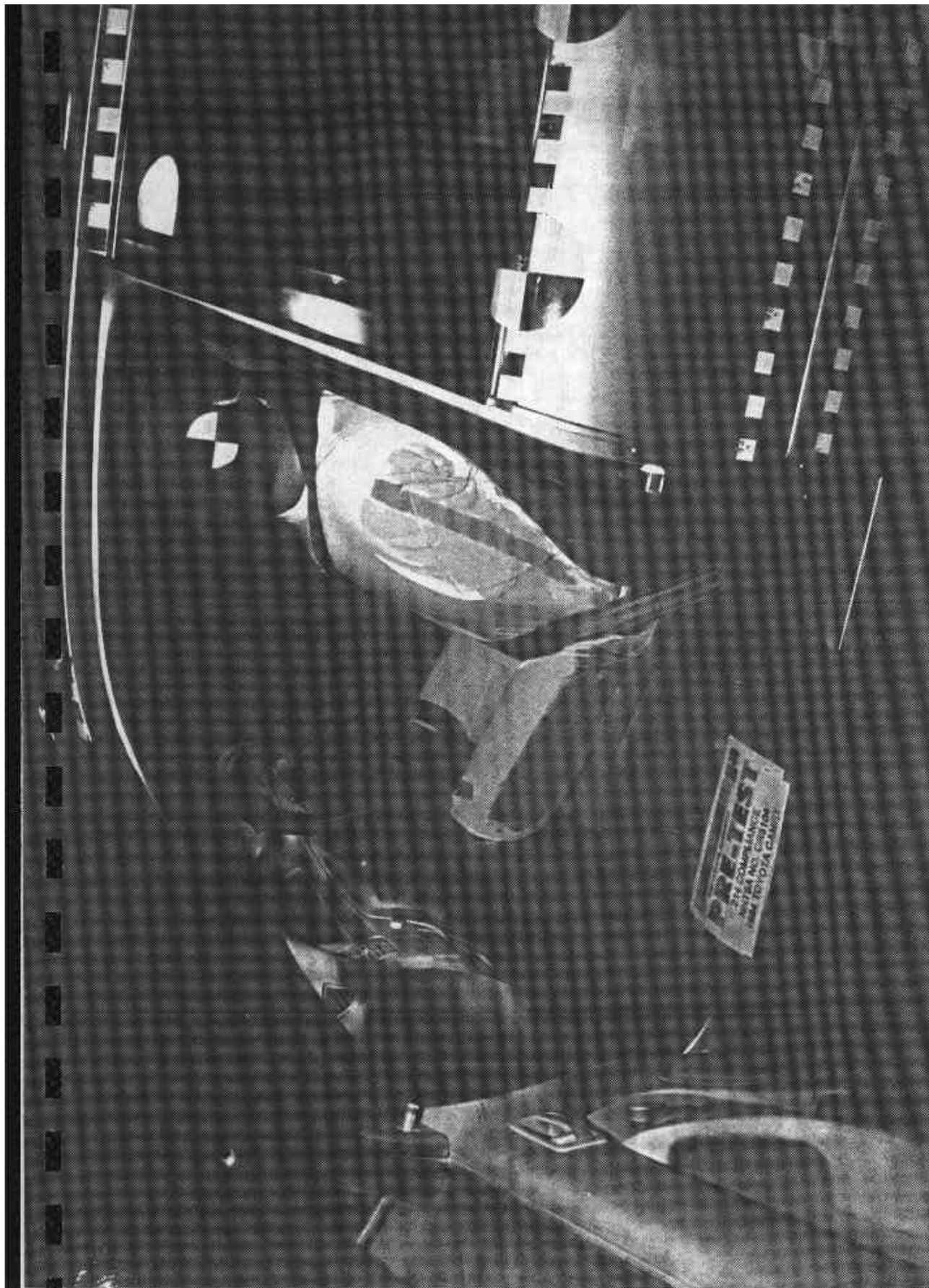


Photo No. A-26 - Pre-Test Driver Dummy Left Side View (Door Open)

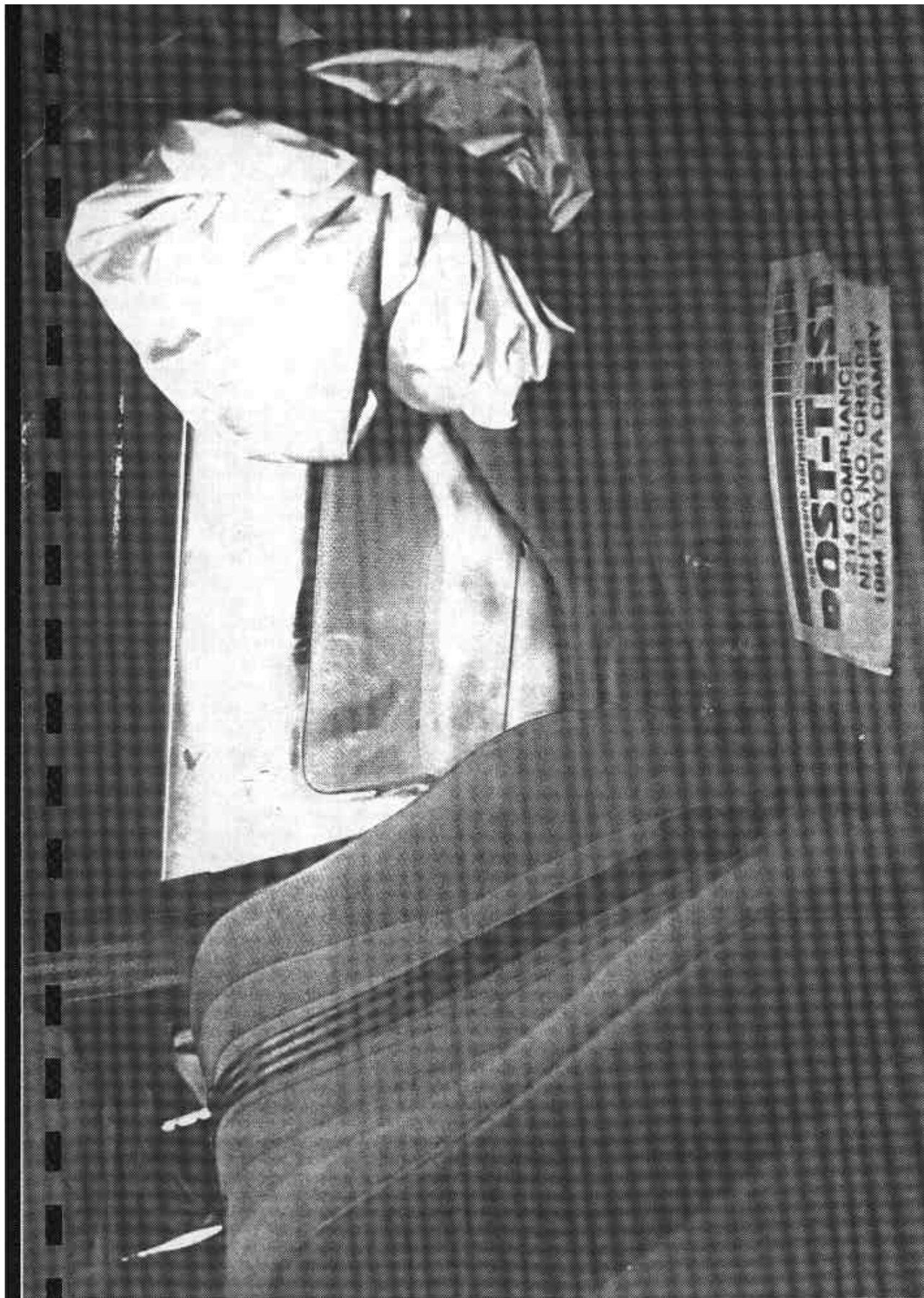


Photo No. A-27 - Post-Test Driver Dummy Impact

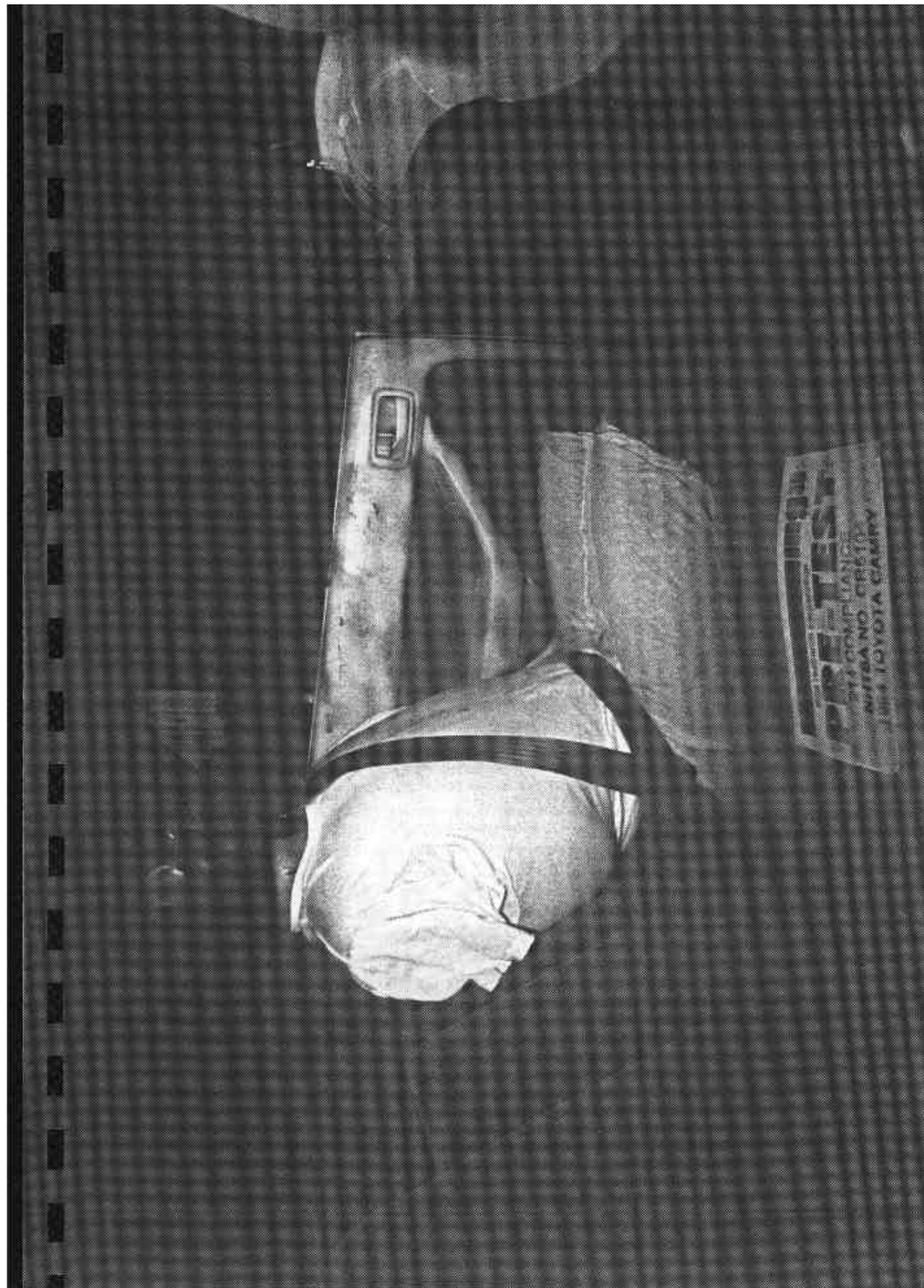


Photo No. A-28 - Pre-Test Passenger Dummy Right Side View

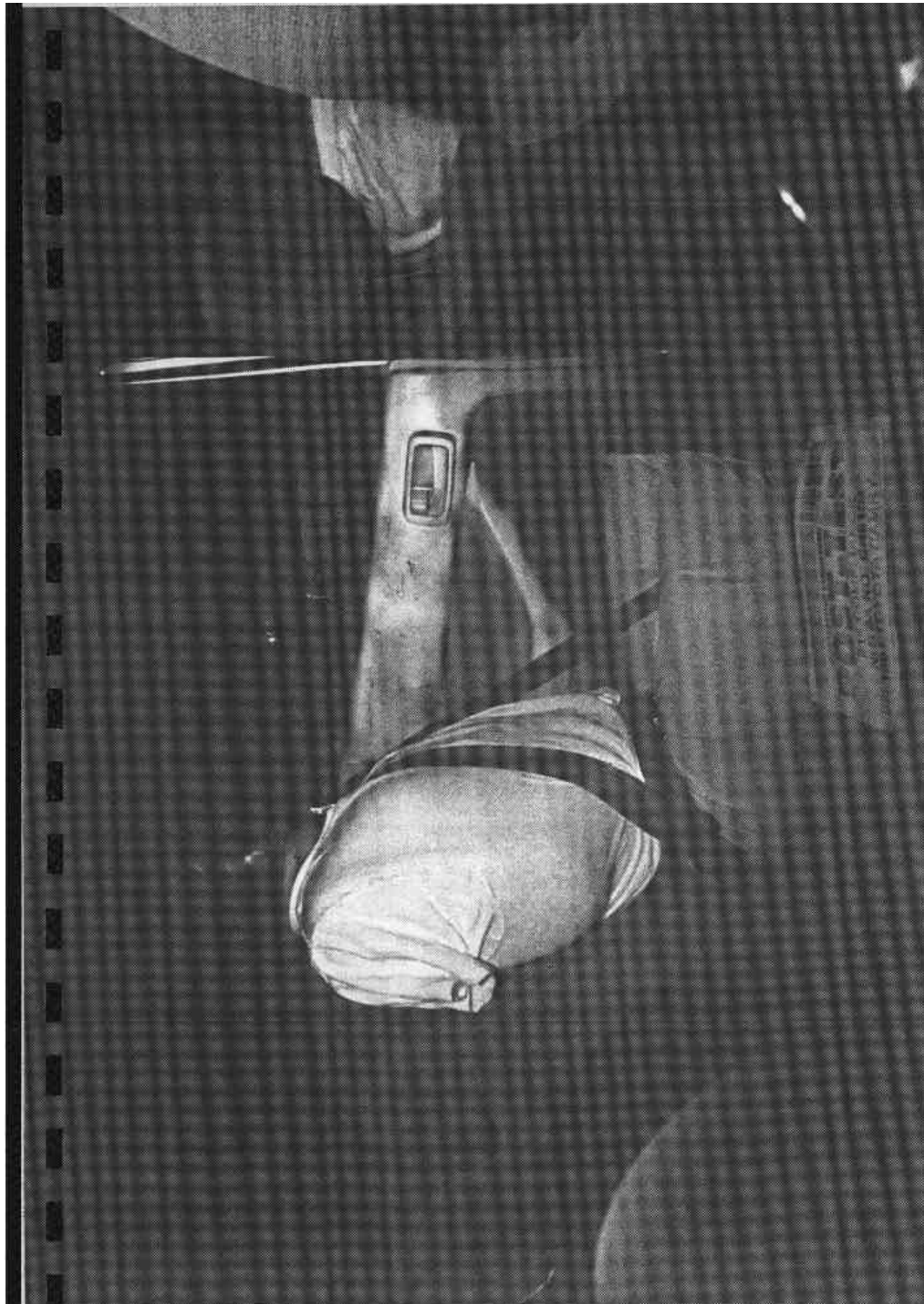


Photo No. A-29 - Post-Test Passenger Dummy Right Side View

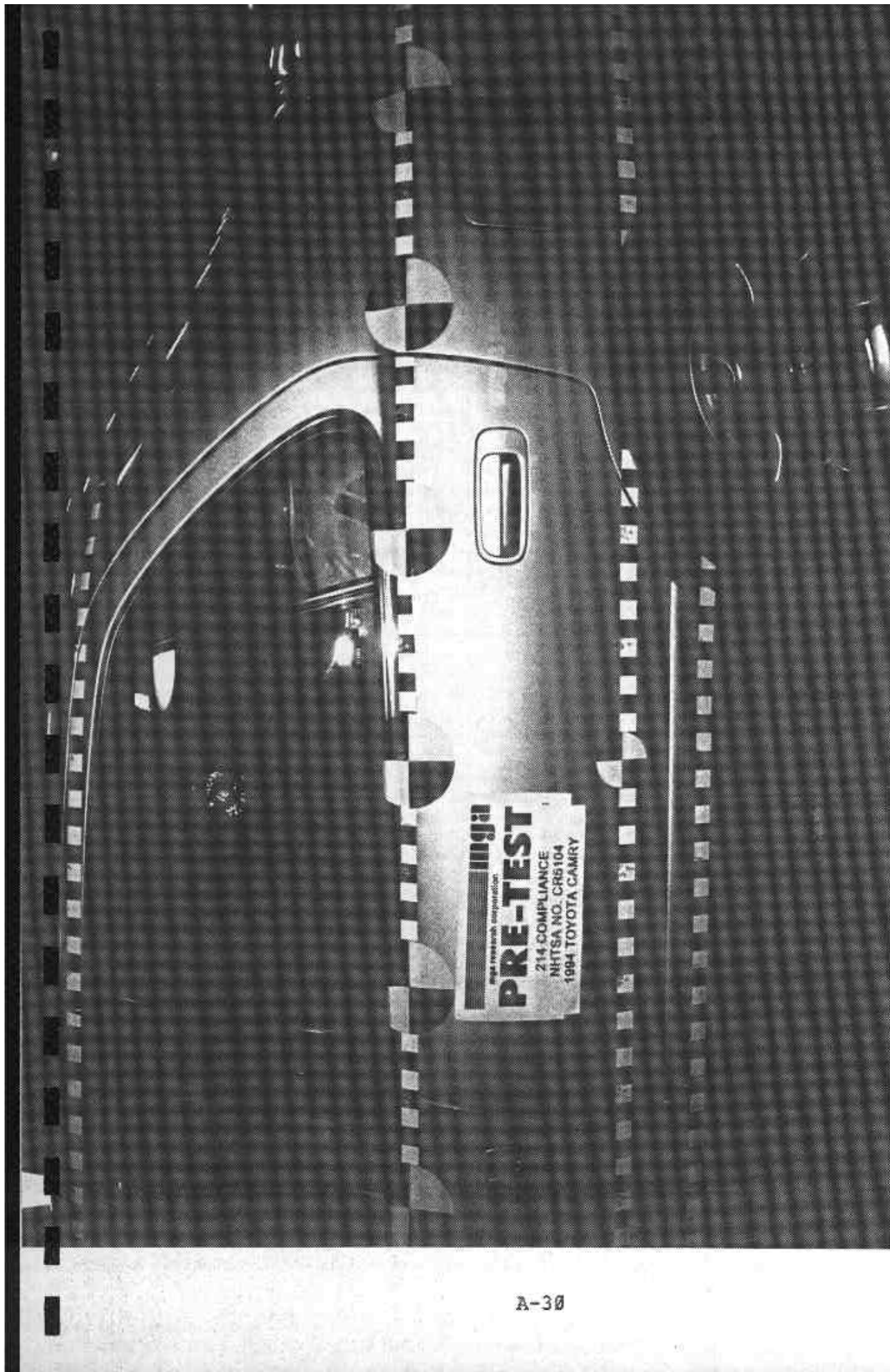


Photo No. A-30 - Pre-Test Passenger Dummy Left Side View

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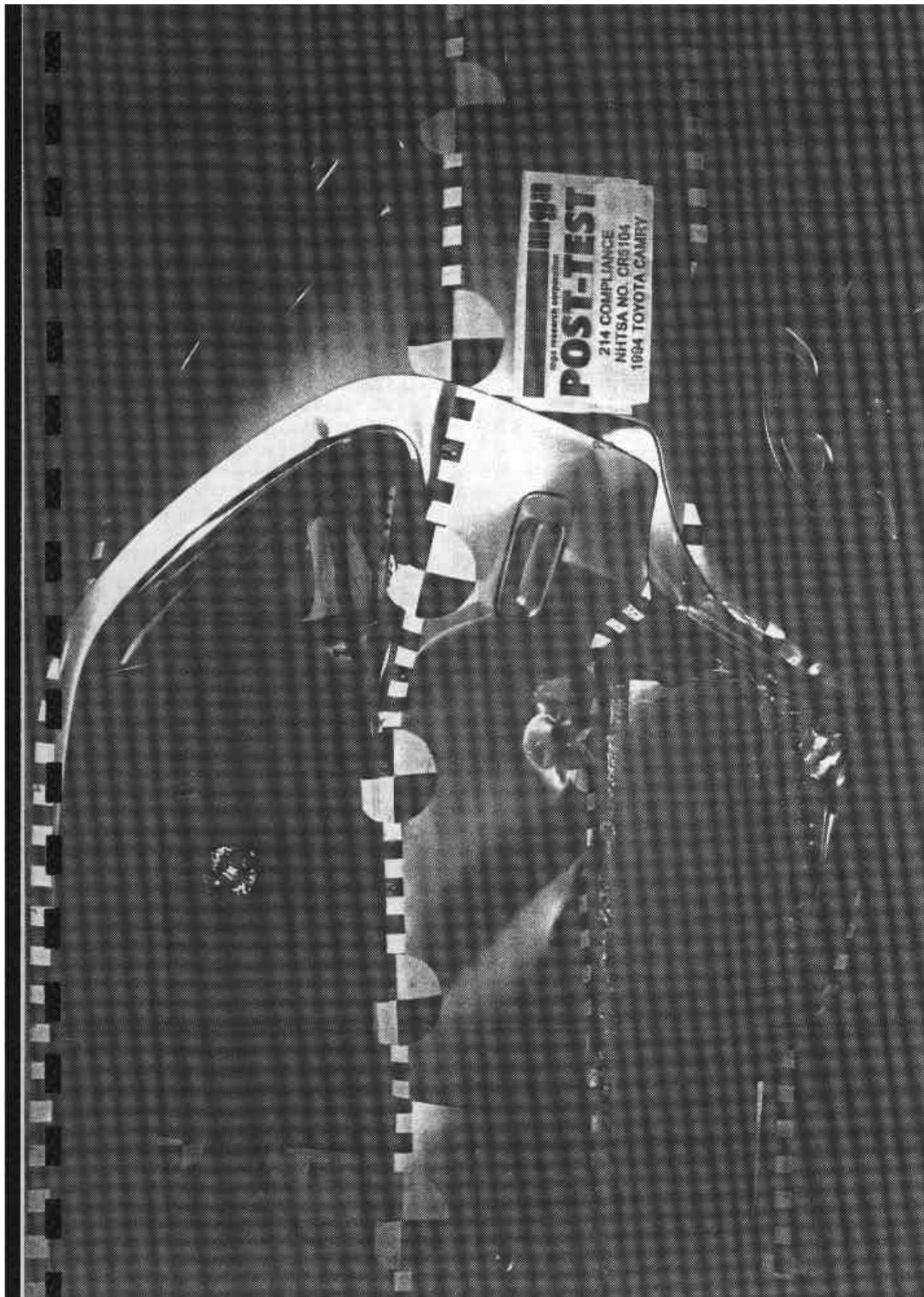


Photo No. A-31 - Post-Test Passenger Dummy Left Side View

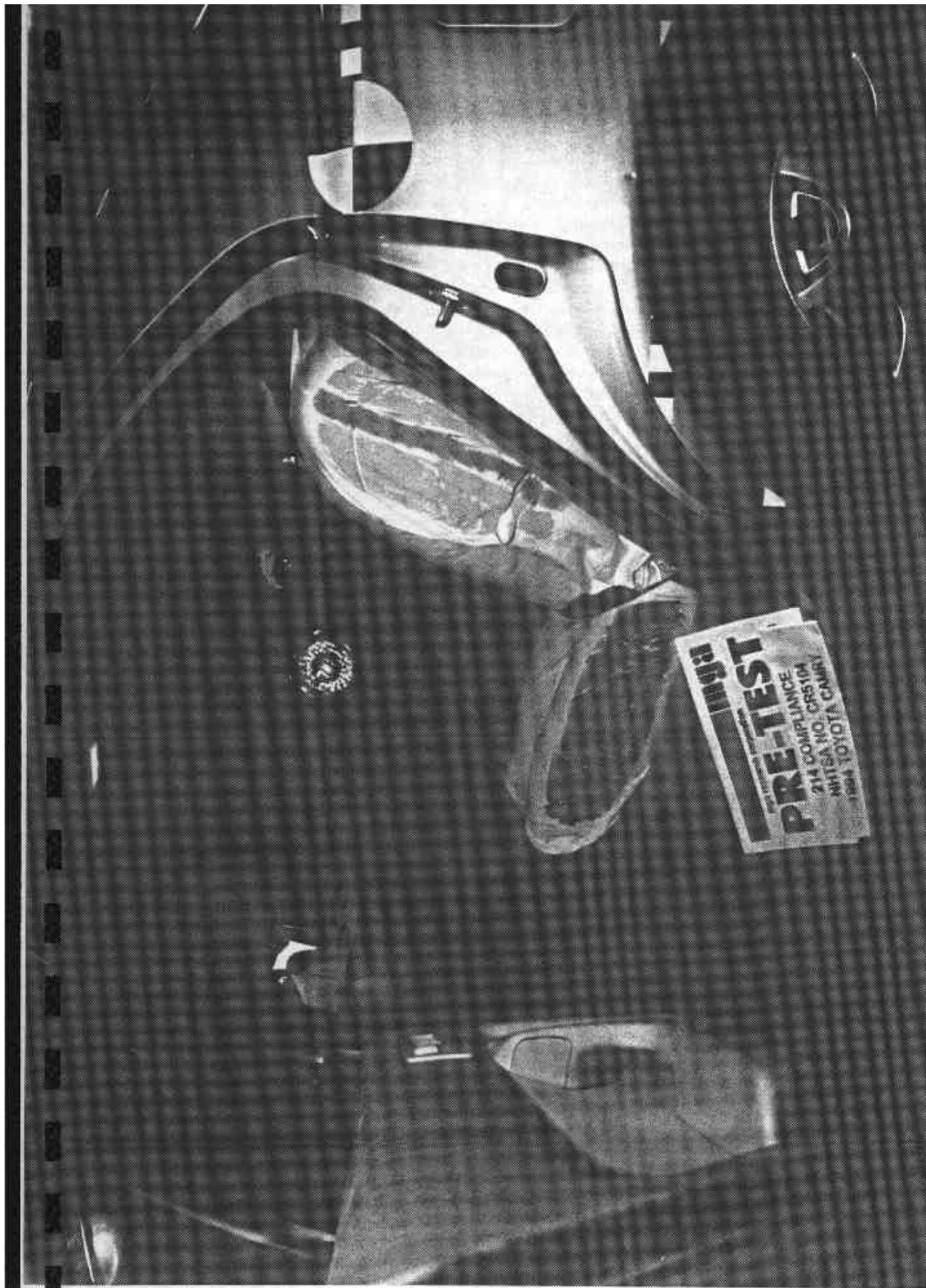


Photo No. A-32 - Pre-Test Passenger Dummy Left Side View (Door Open)

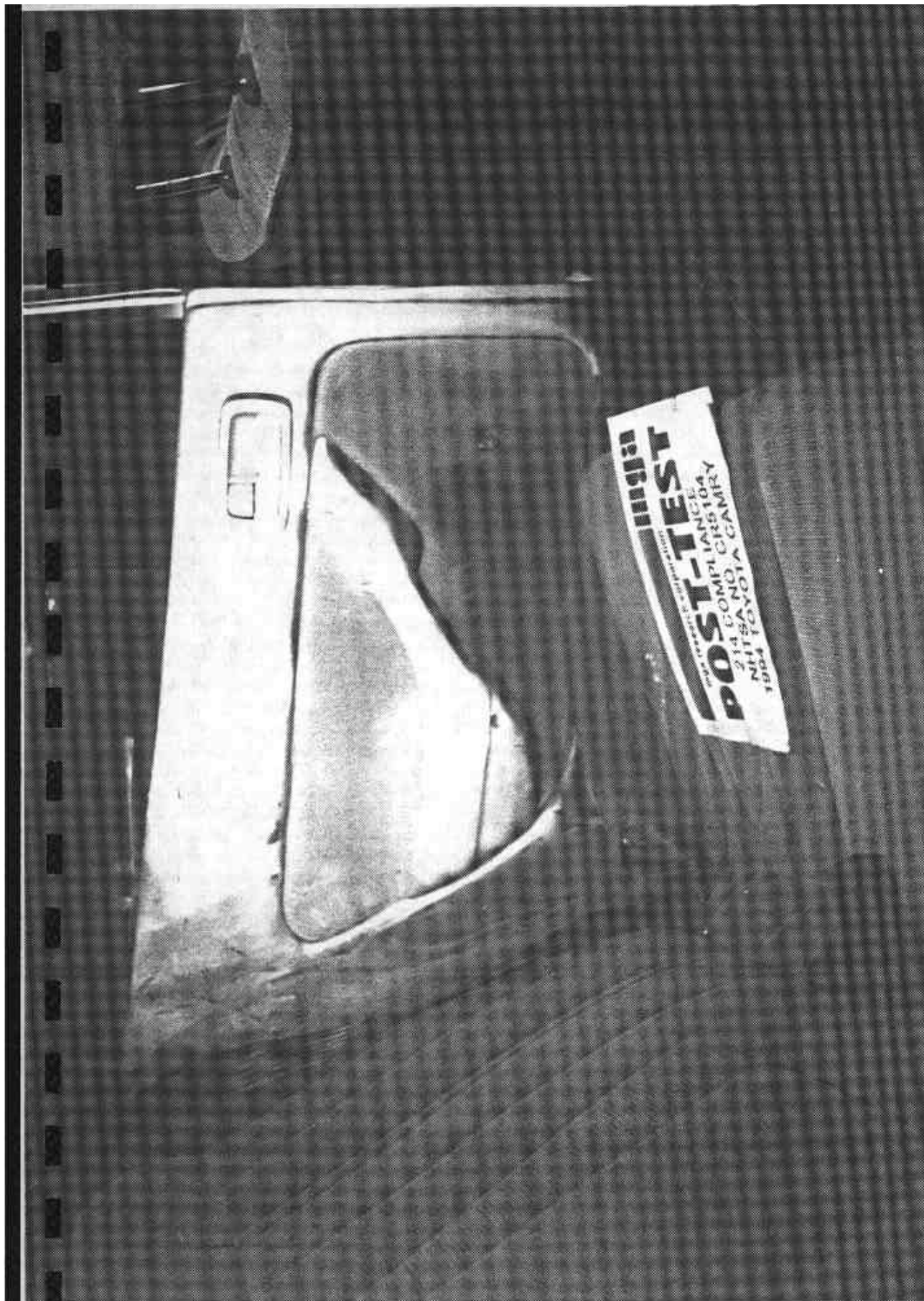


Photo No. A-33 - Post-Test Passenger Dummy Impact

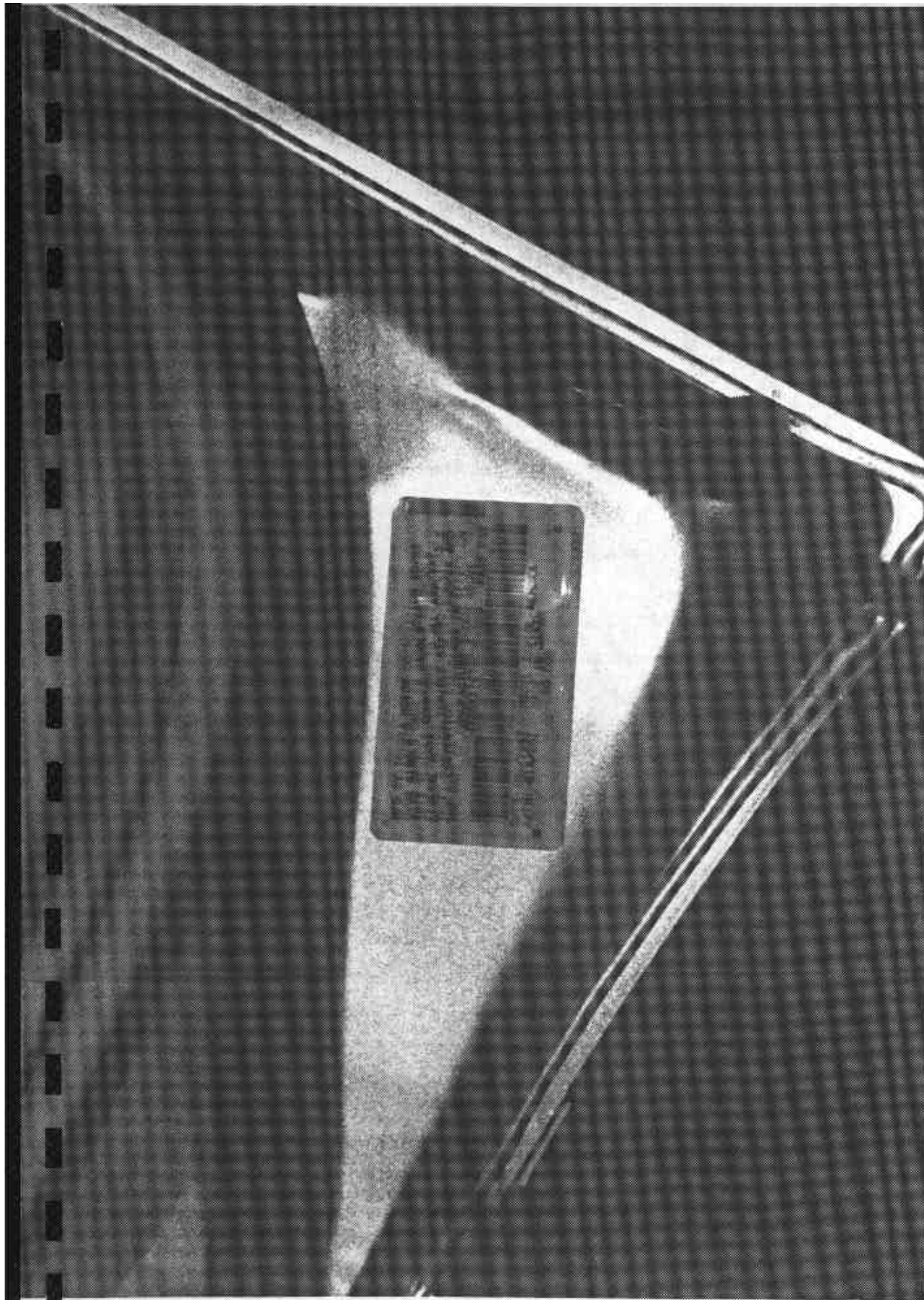


Photo No. A-35 - Vehicle Certification Label



Photo No. A-36 - Impact



Photo No. A-37 - Rollover 90°

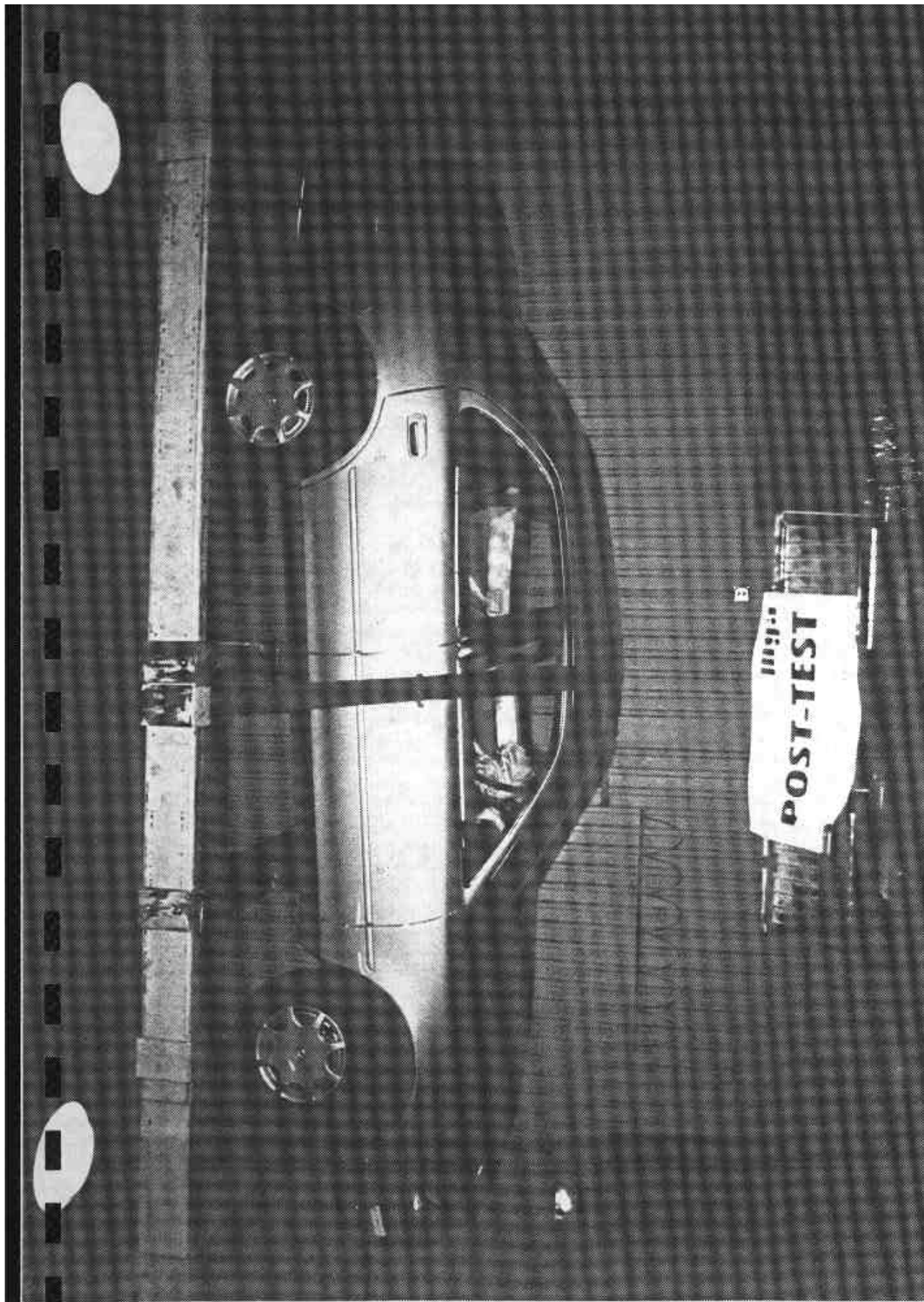


Photo No. A-38 - Rollover 180°

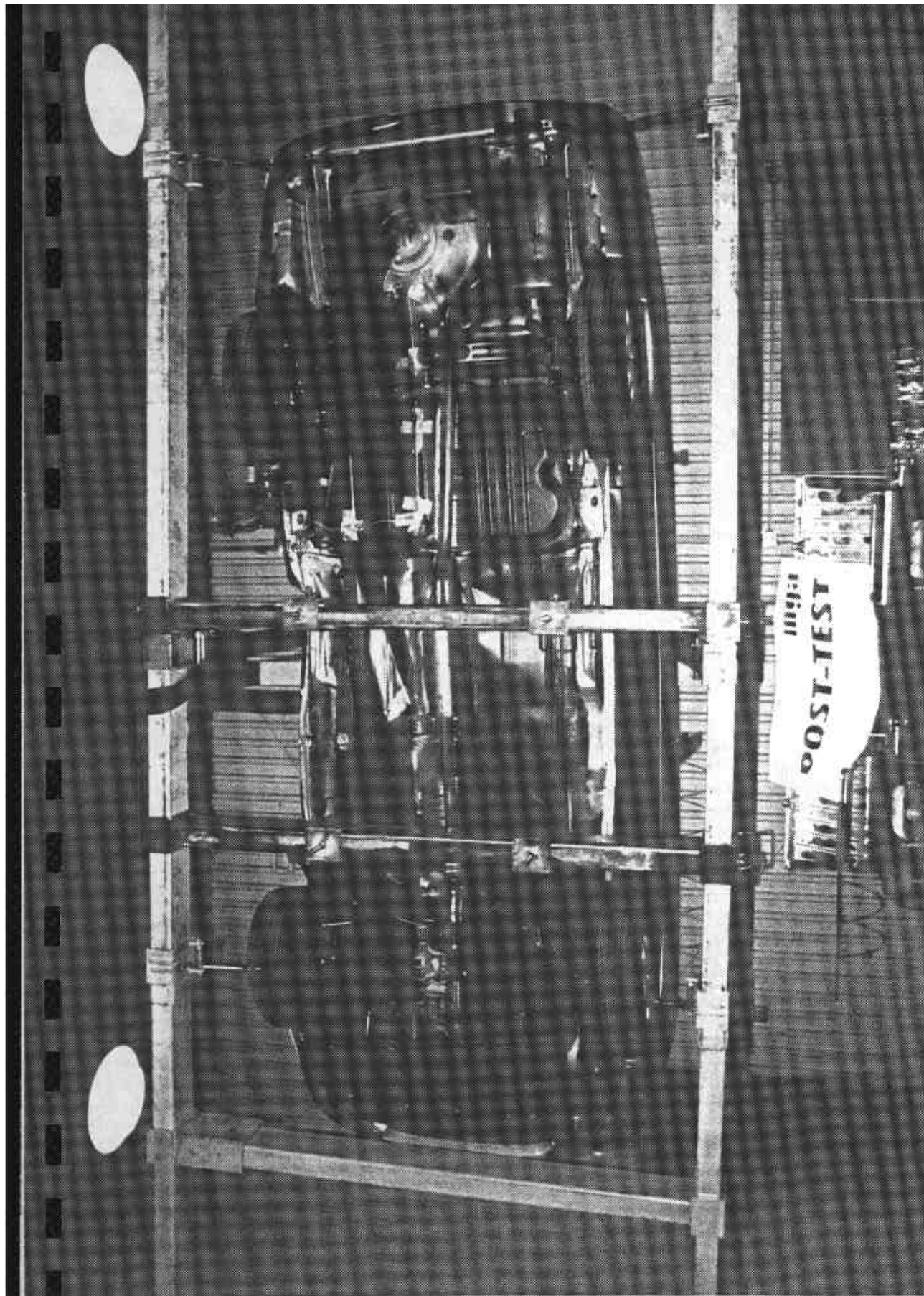


Photo No. A-39 - Rollover 270°

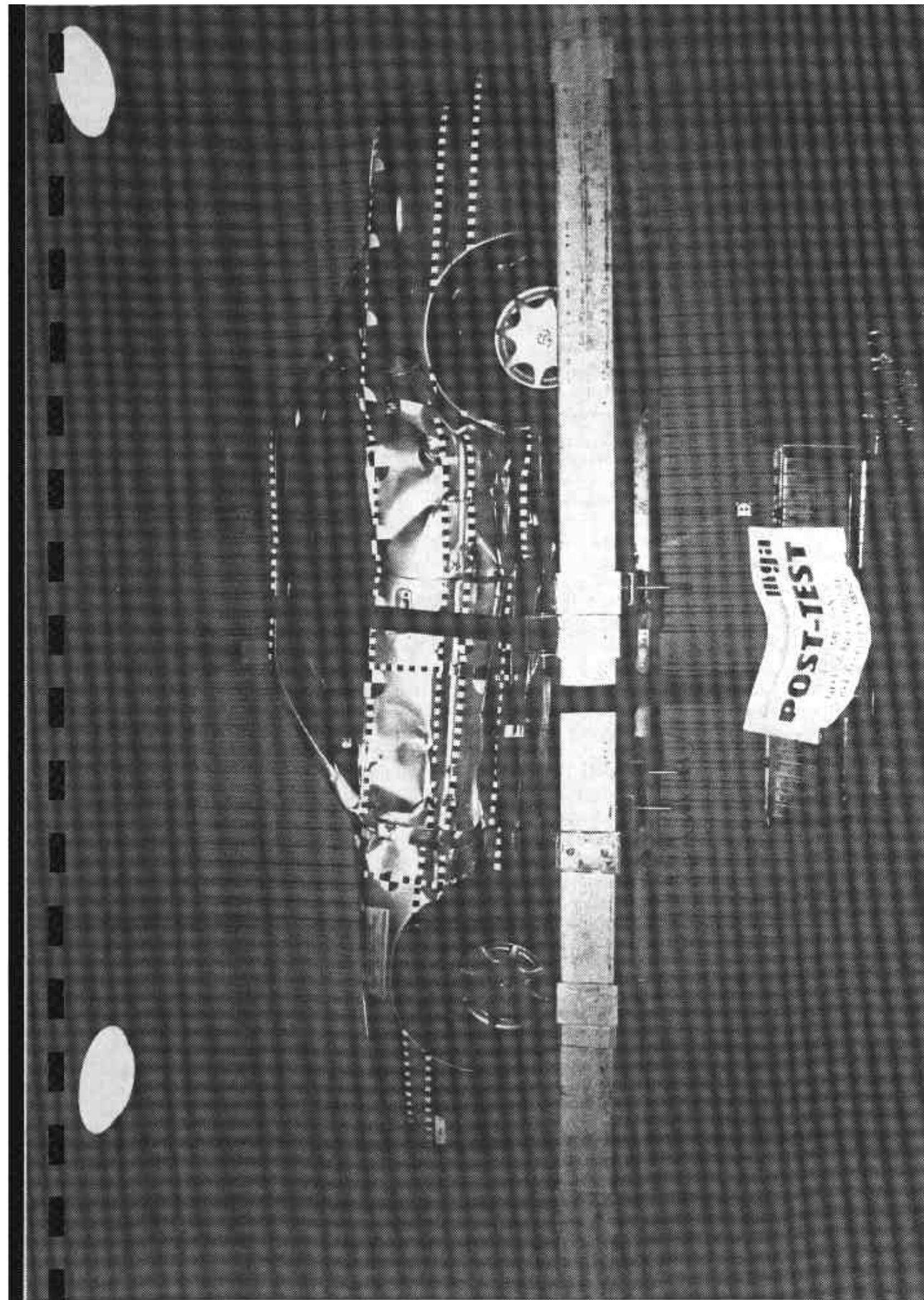


Photo No. A-40 - Rollover 360°

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* No valid data collected

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Filter: class 180 (300 Hz)

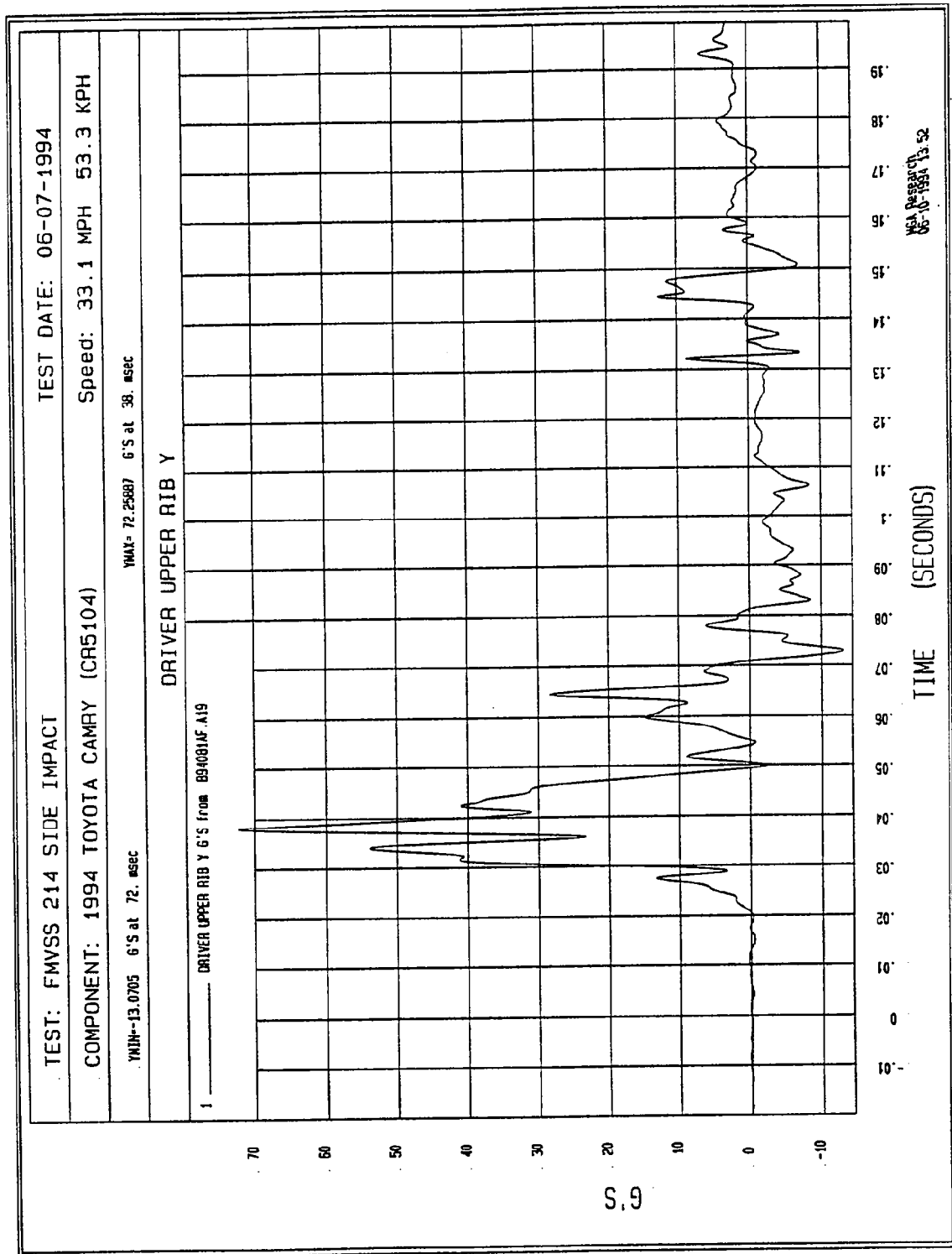


Figure B-1 - Driver Upper Rib Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

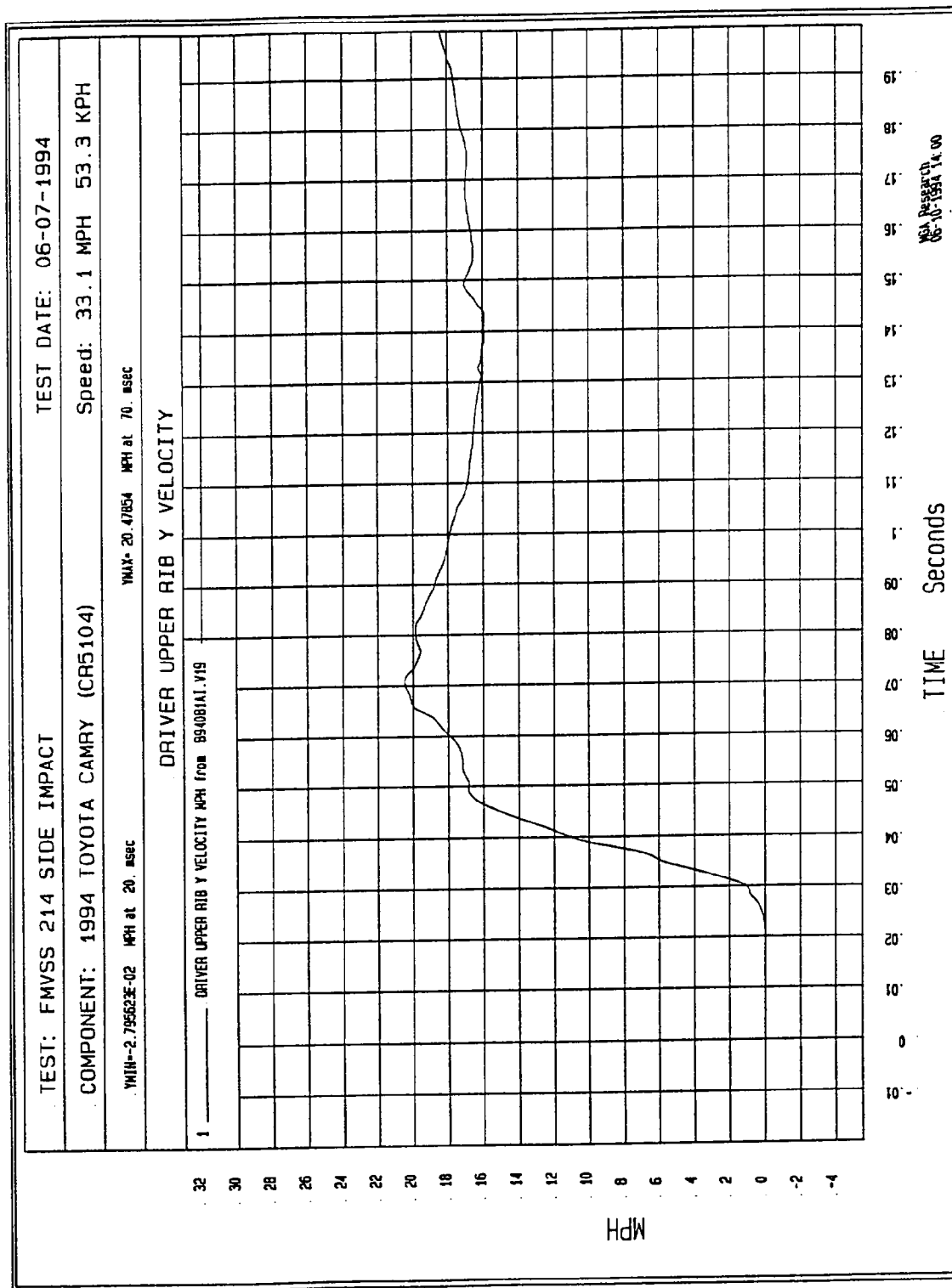


Figure B-2 - Driver Upper Rib Y Velocity vs. Time

Filter: Class 180 (300 Hz)

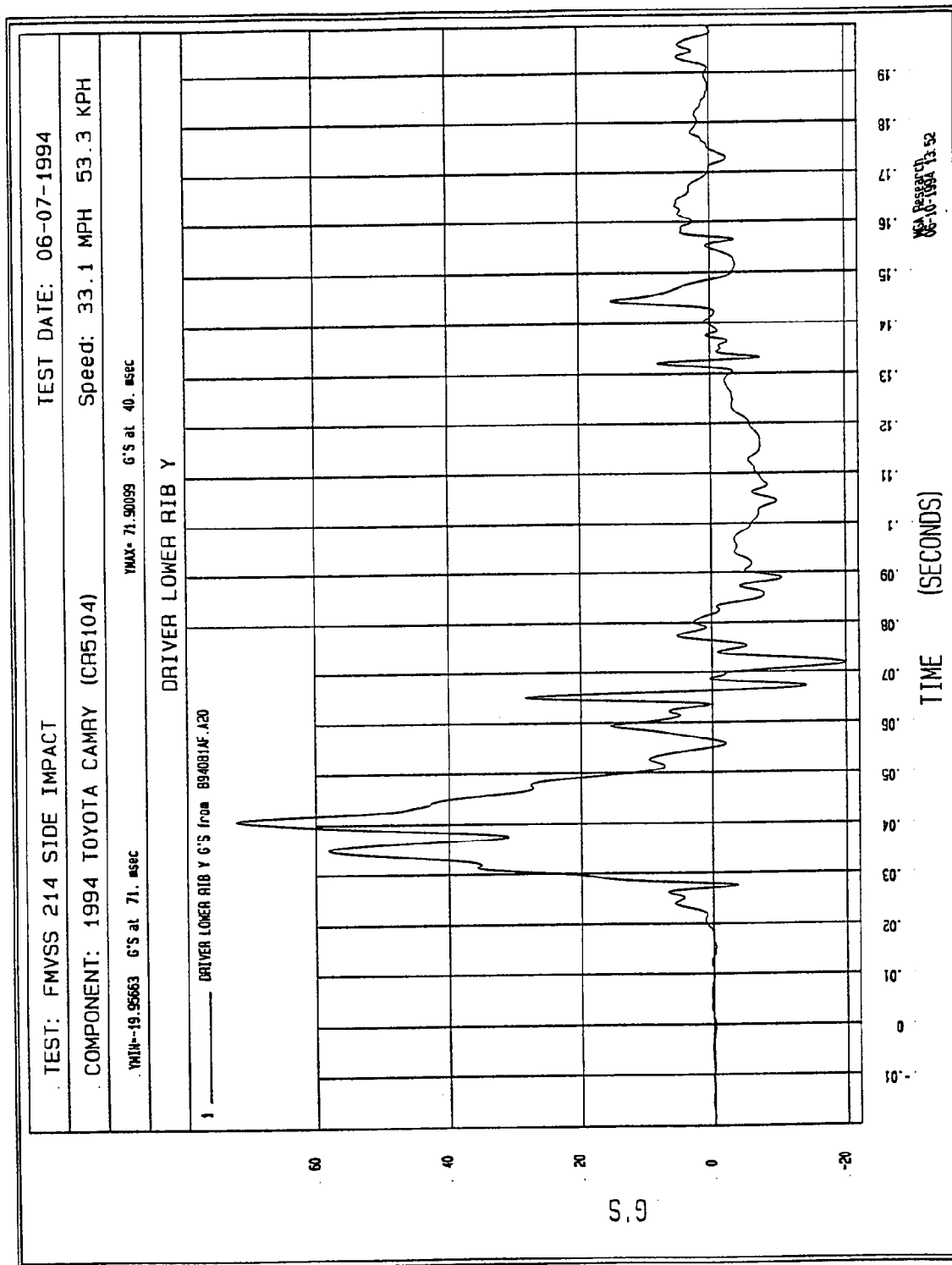


Figure B-3 - Driver Lower Rib Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

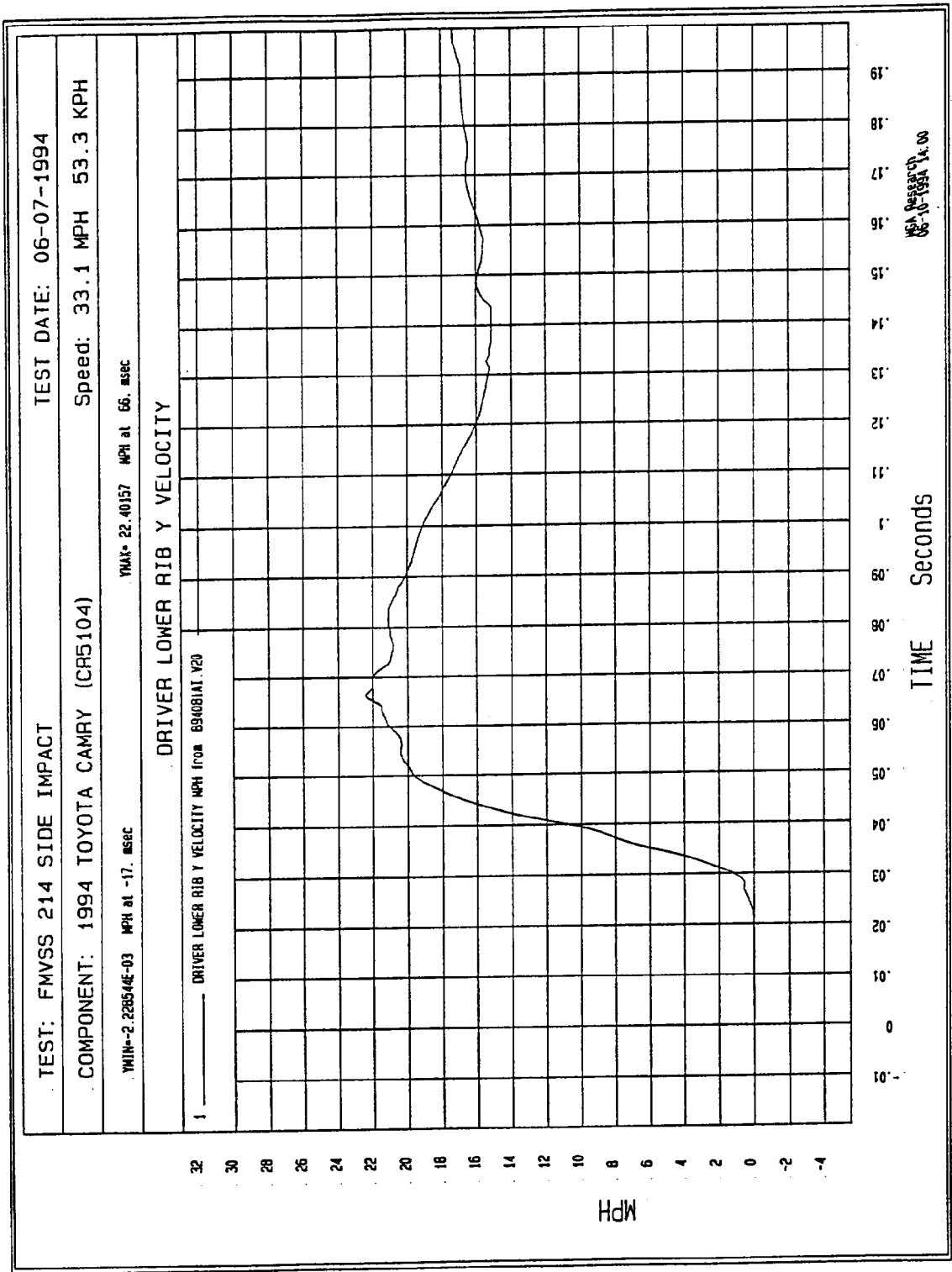


Figure B-4 - Driver Lower Rib Y Velocity vs. Time

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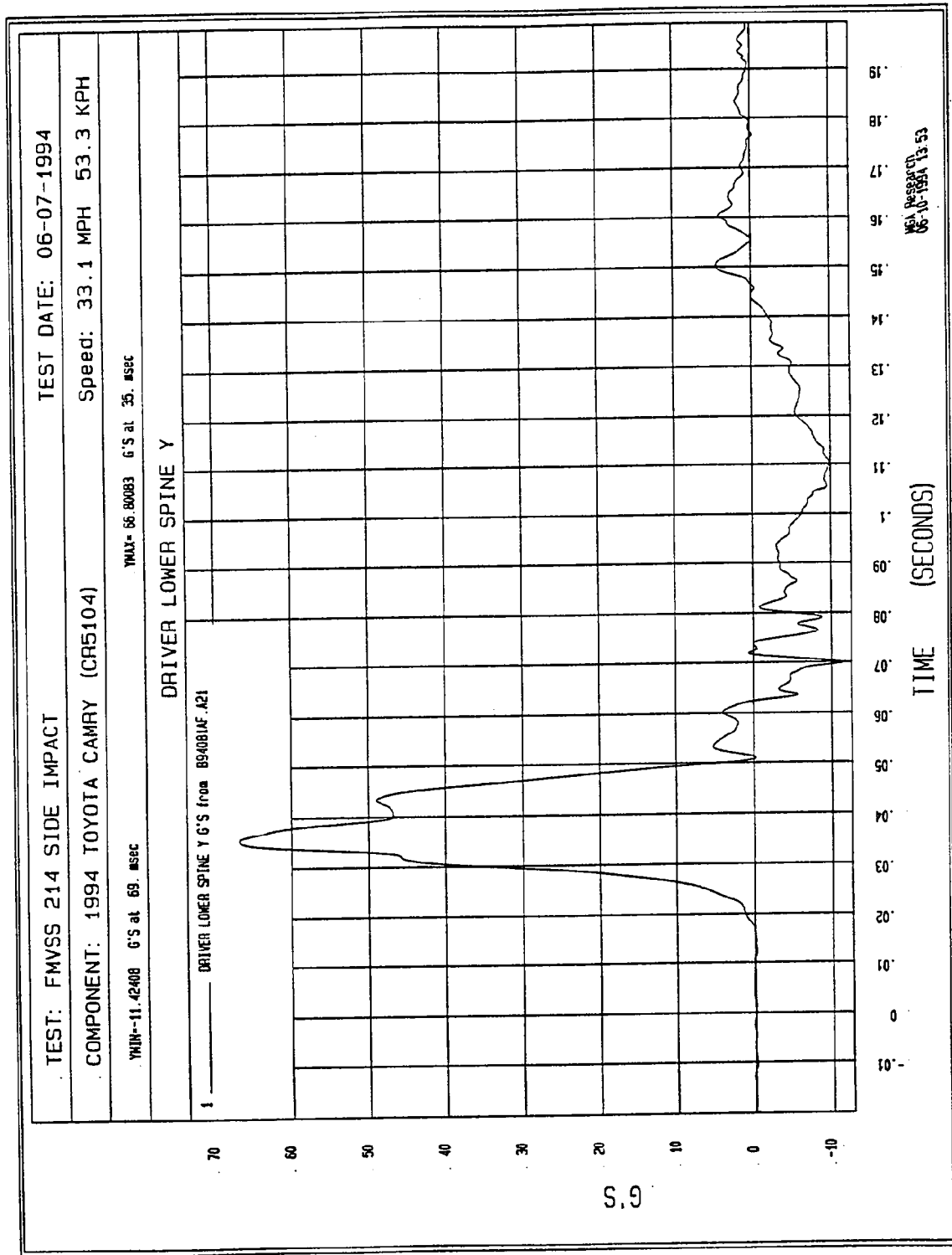


Figure B-5 - Driver Lower Spine Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

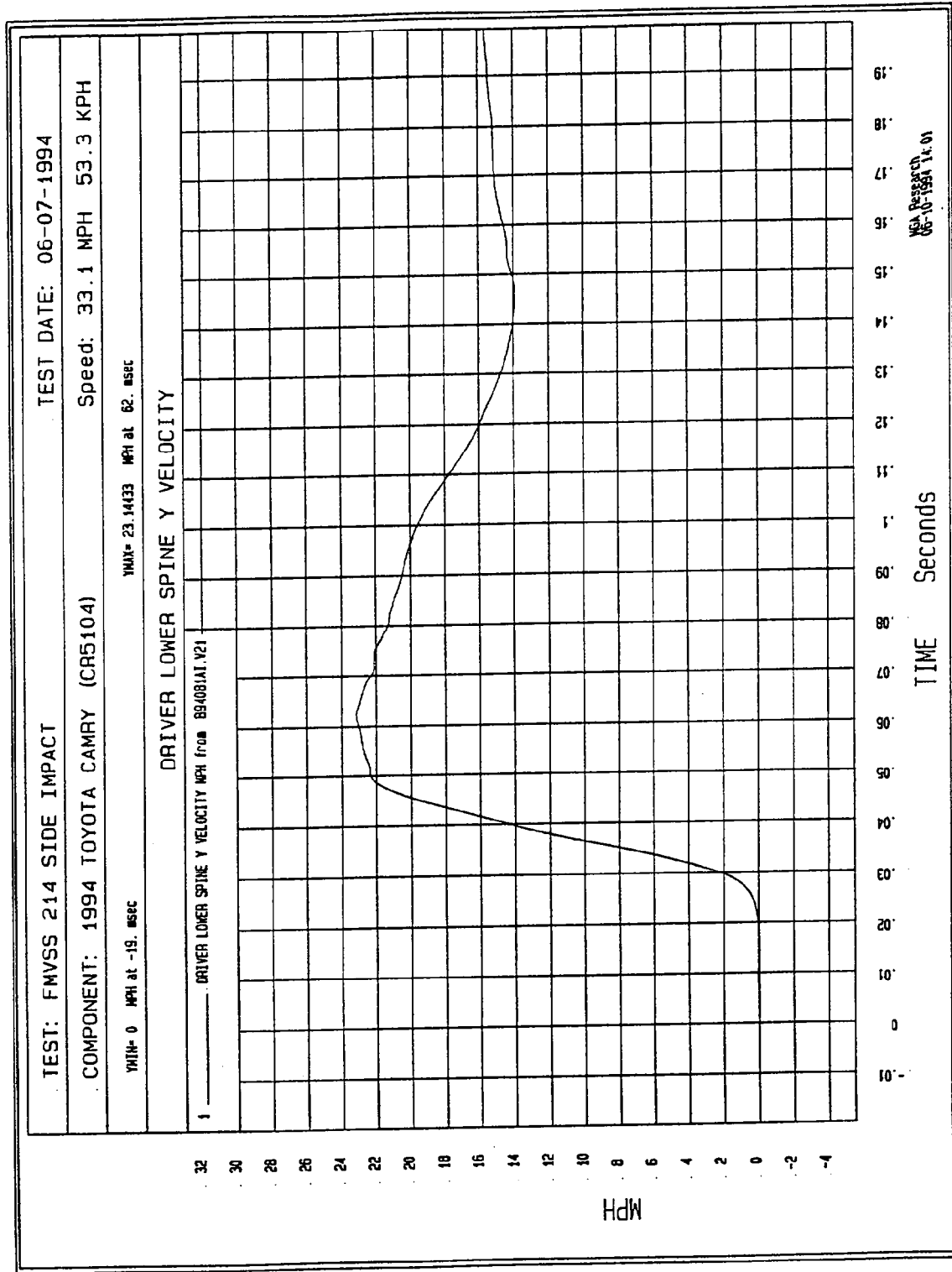


Figure B-6 - Driver Lower Spine Y Velocity vs. Time

Filter: Class 180 (300 Hz)

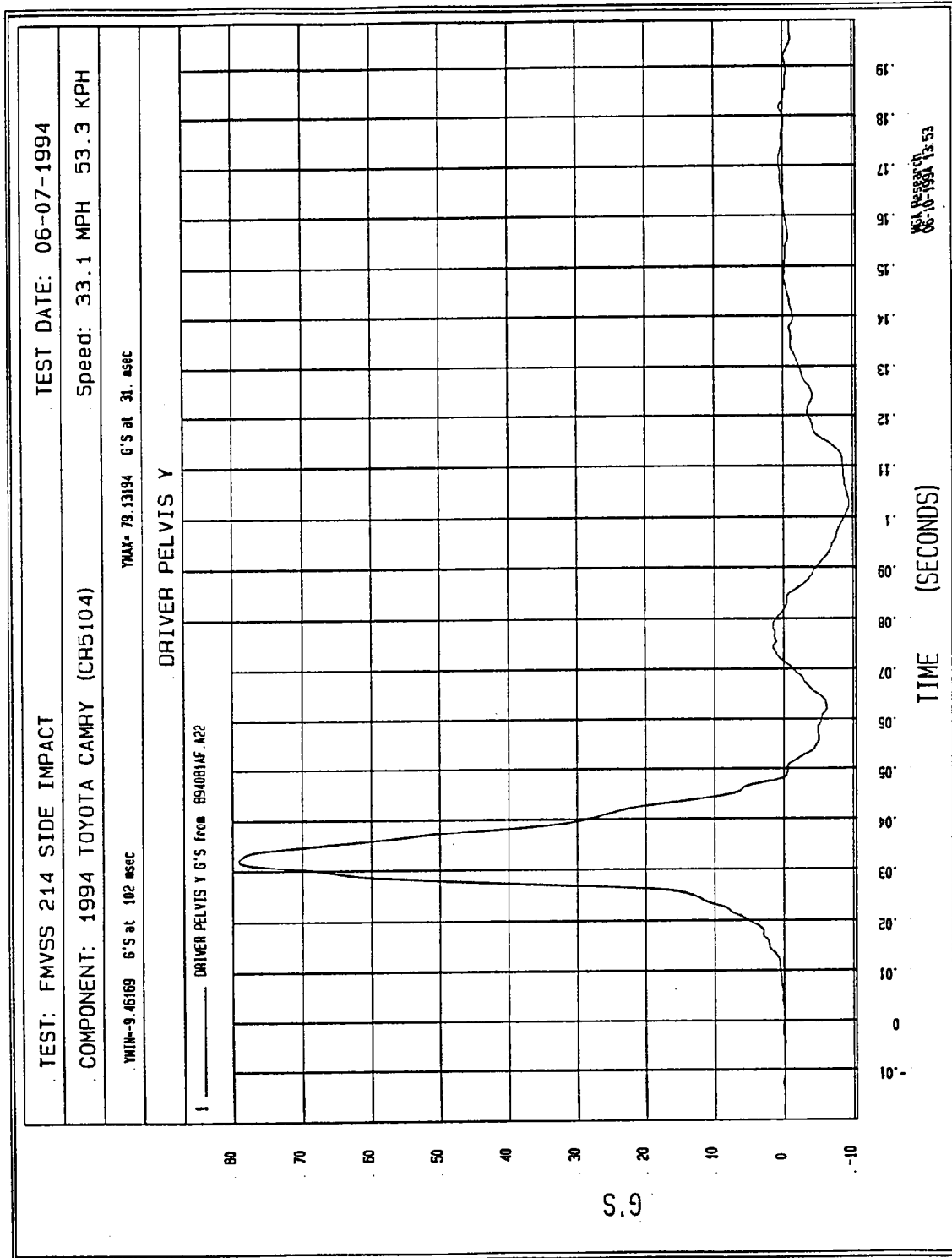


Figure B-7 - Driver Pelvis Y Acceleration vs. Time

Fitler: Class 180 (300 Hz)

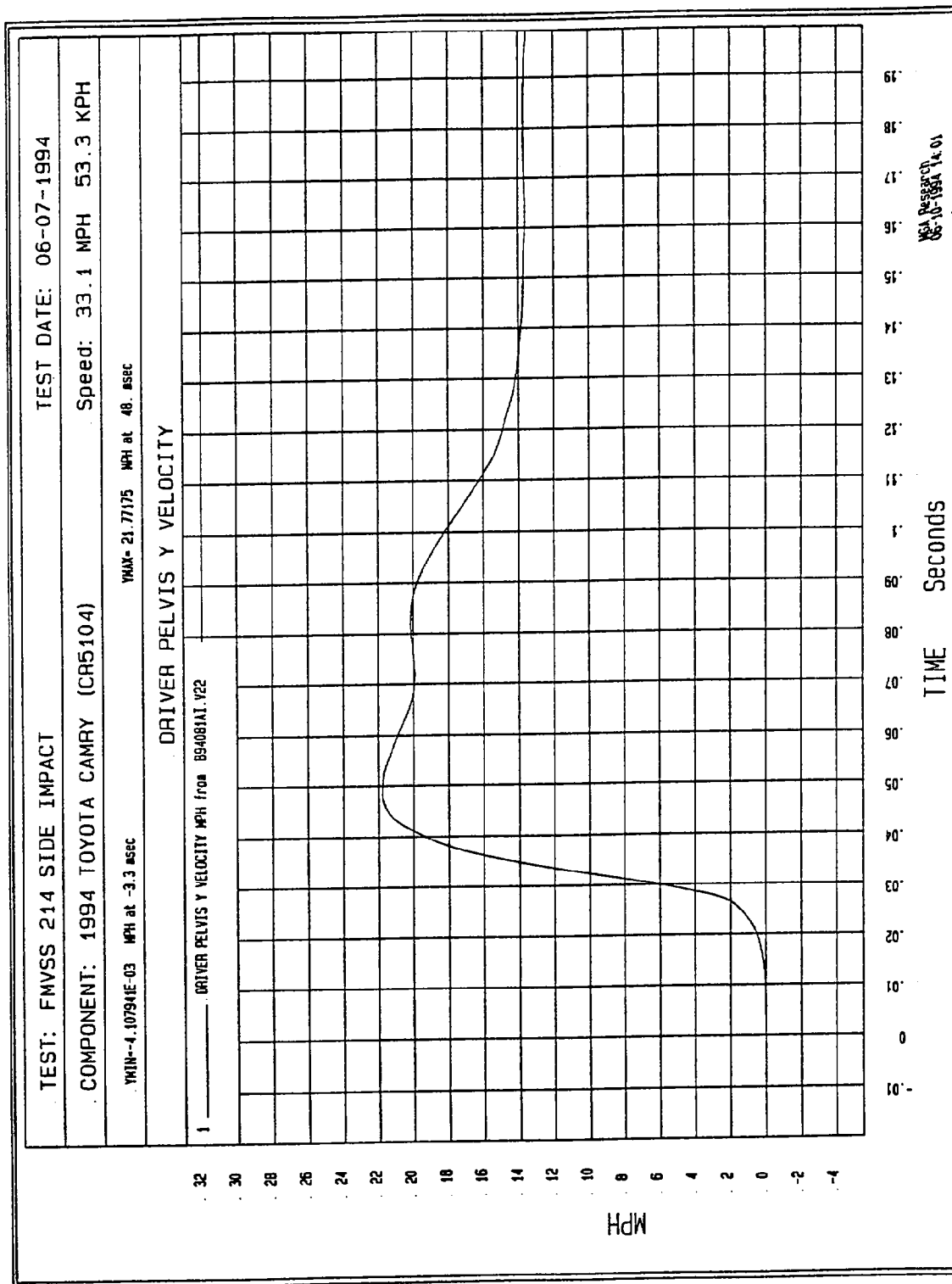


Figure B-8 - Driver Pelvis Y Velocity vs. Time

Filter: Class 180 (300 Hz)

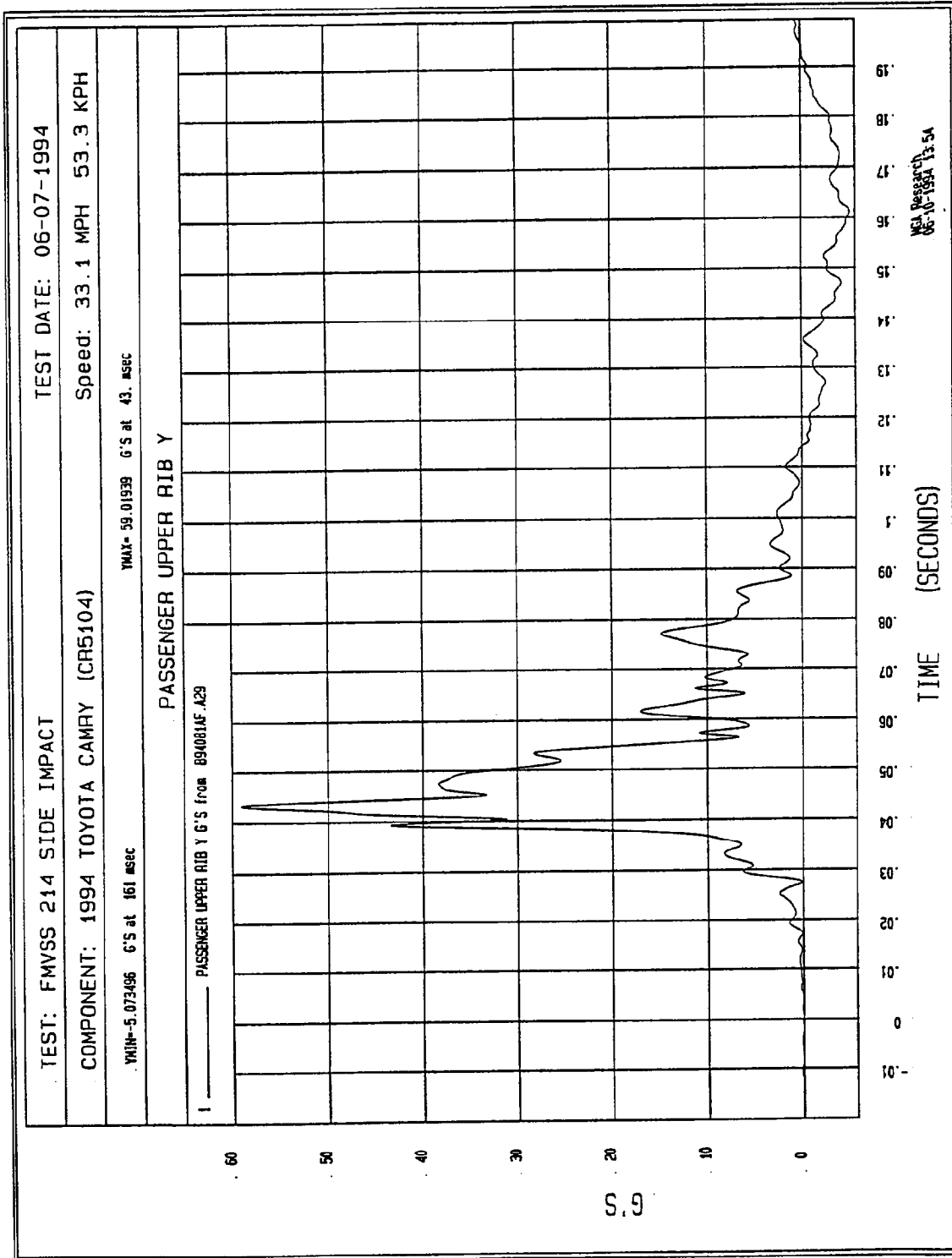


Figure B-9 - Passenger Upper Rib Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

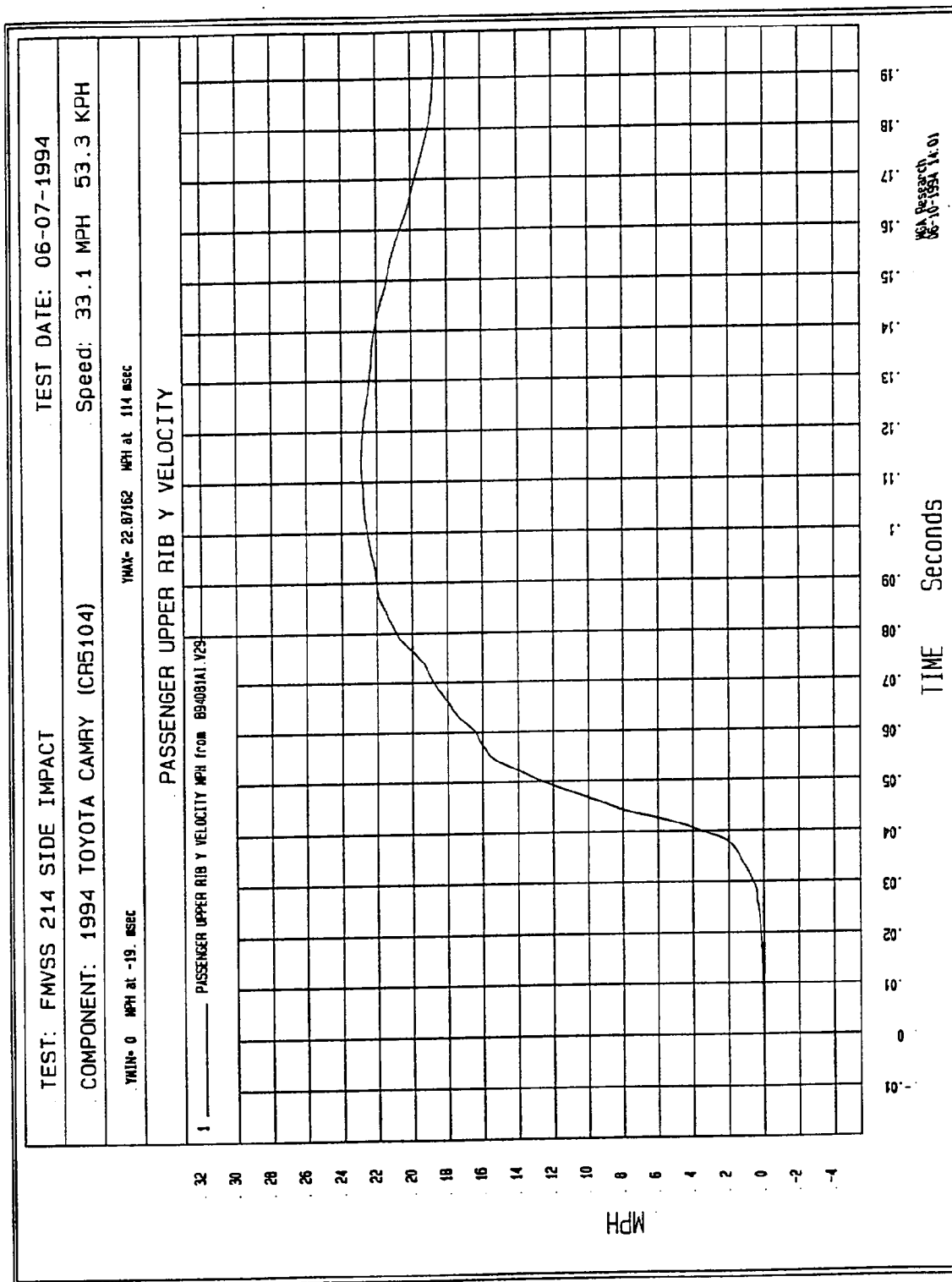


Figure B-10 - Passenger Upper Rib Y Velocity vs. Time

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 06-07-1994

COMPONENT: 1994 TOYOTA CAMRY (CR5104) Speed: 33.1 MPH 53.3 KPH

YMIN=-15.18172 G'S at 70. msec YMAX= 59.8329 G'S at 39. msec

PASSENGER LOWER RIB Y

1 PASSENGER LOWER RIB Y G'S from 894081AF.A30

TIME (SECONDS)

MOA Research
06-10-1994 13:54

Figure B-11 - Passenger Lower Rib Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

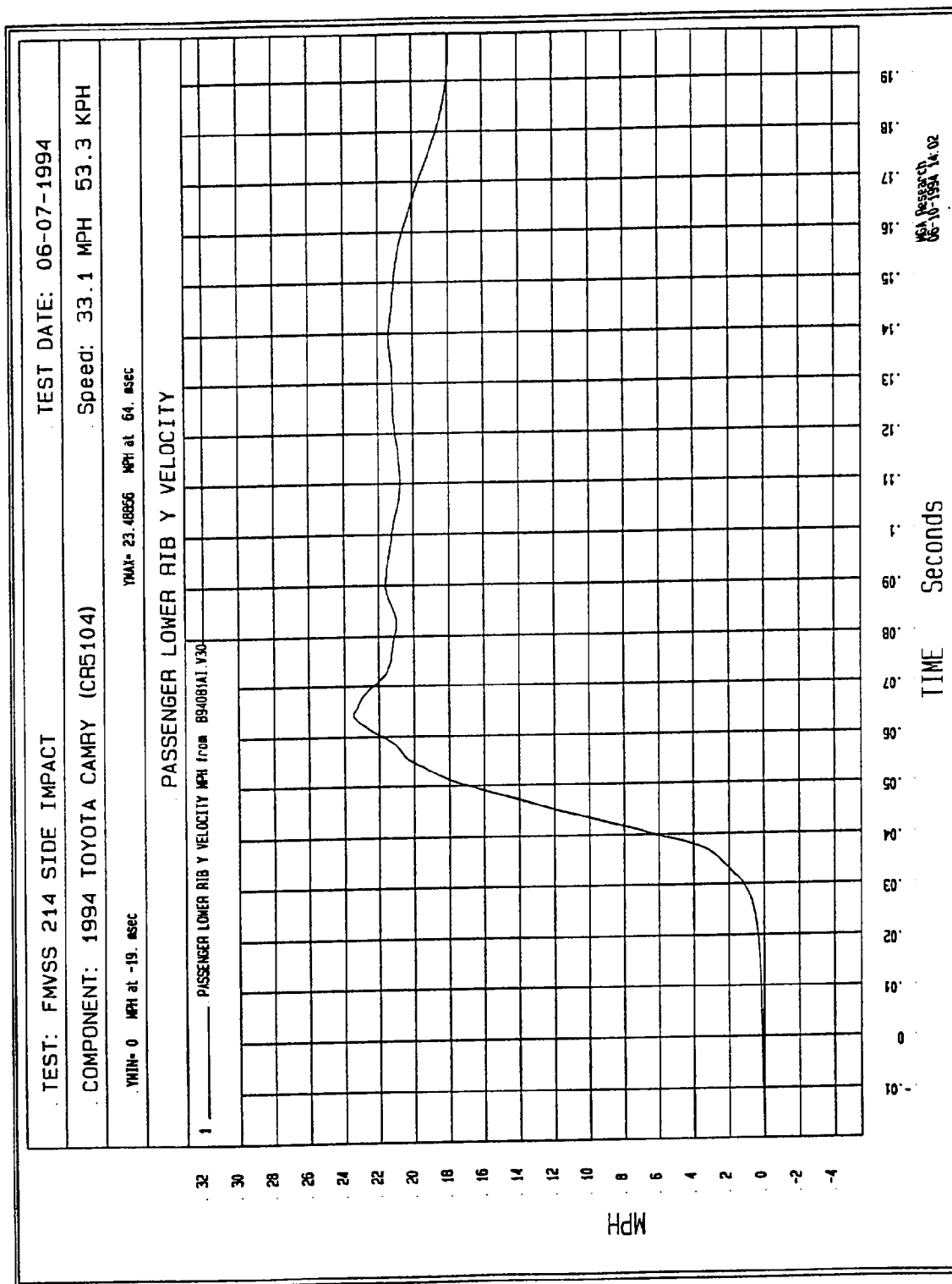


Figure B-12 - Passenger Lower Rib Y Velocity vs. Time

Filter: Class 180 (300 Hz)

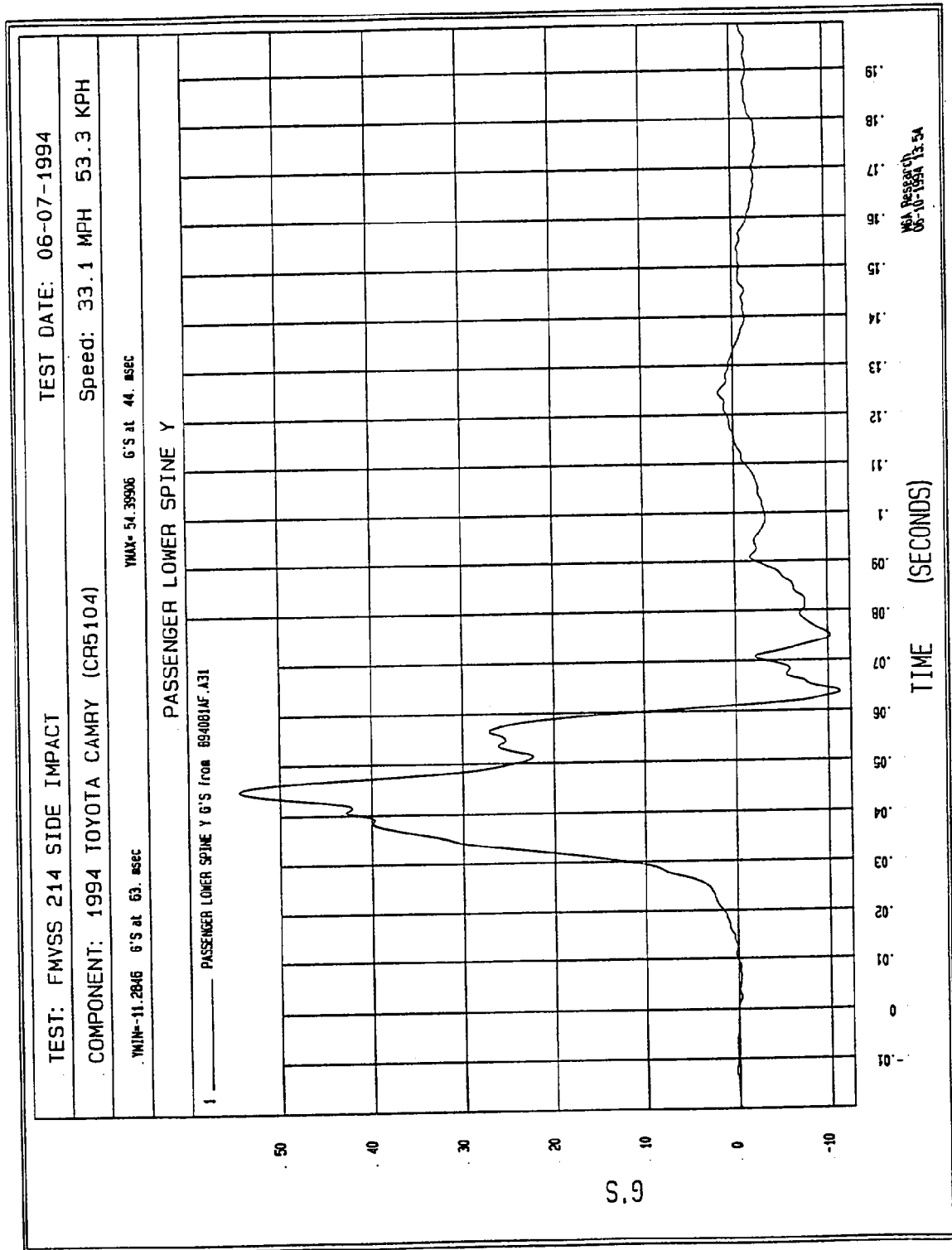


Figure B-13 - Passenger Lower Spine Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

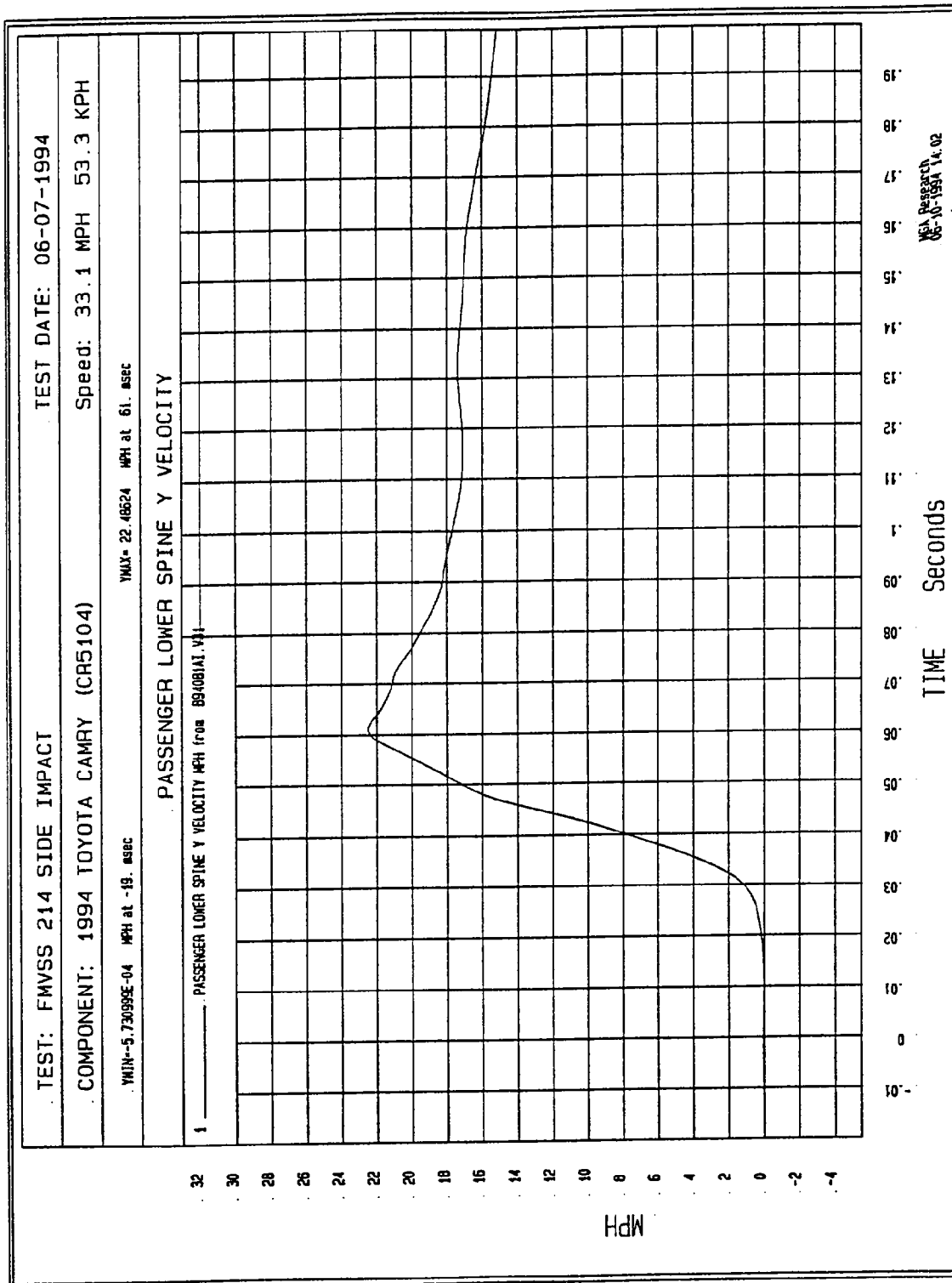


Figure B-14 - Passenger Lower Spine Y Velocity vs. Time

Filter: Class 180 (300 Hz)

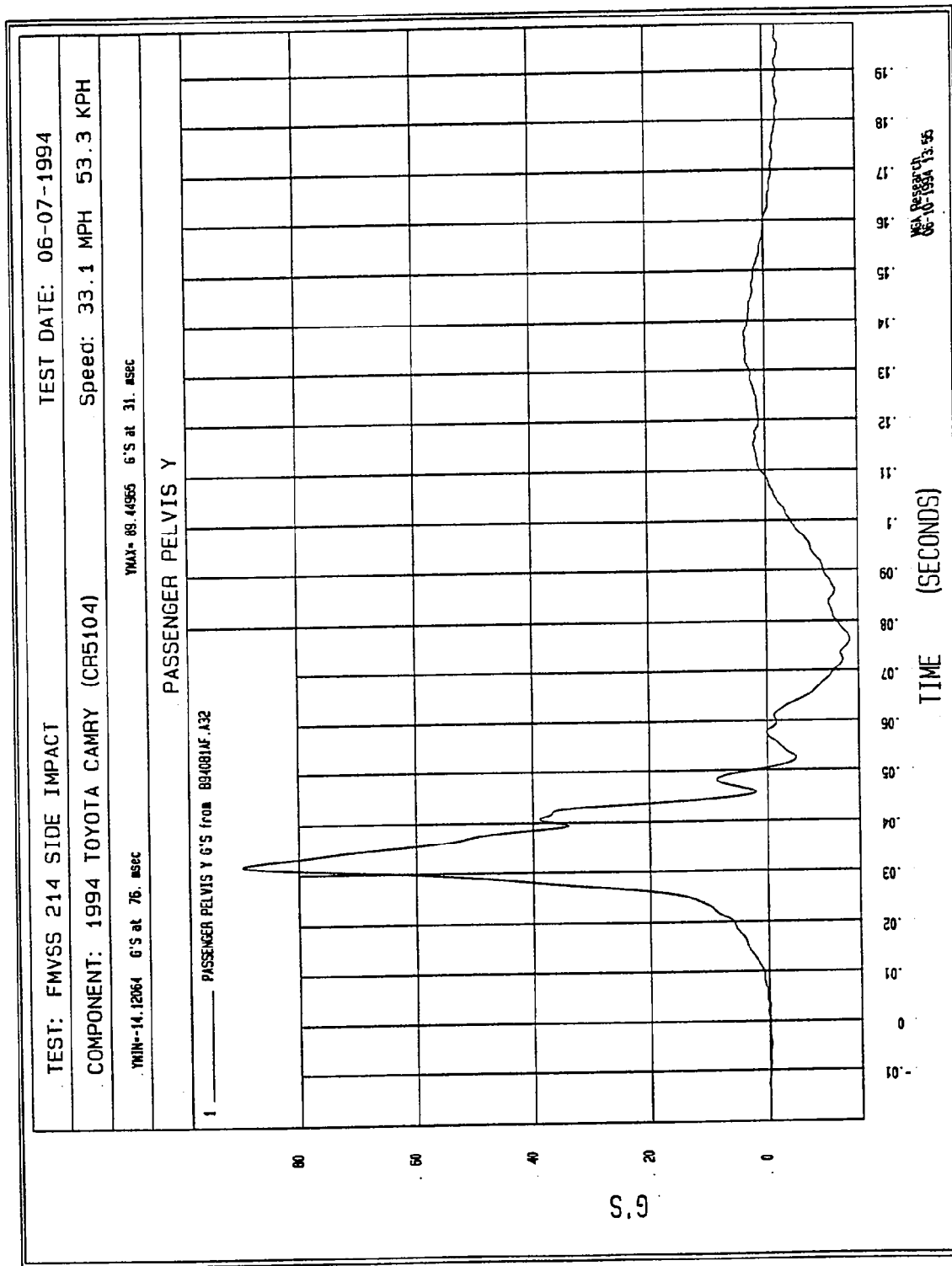


Figure B-15 - Passenger Pelvis Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

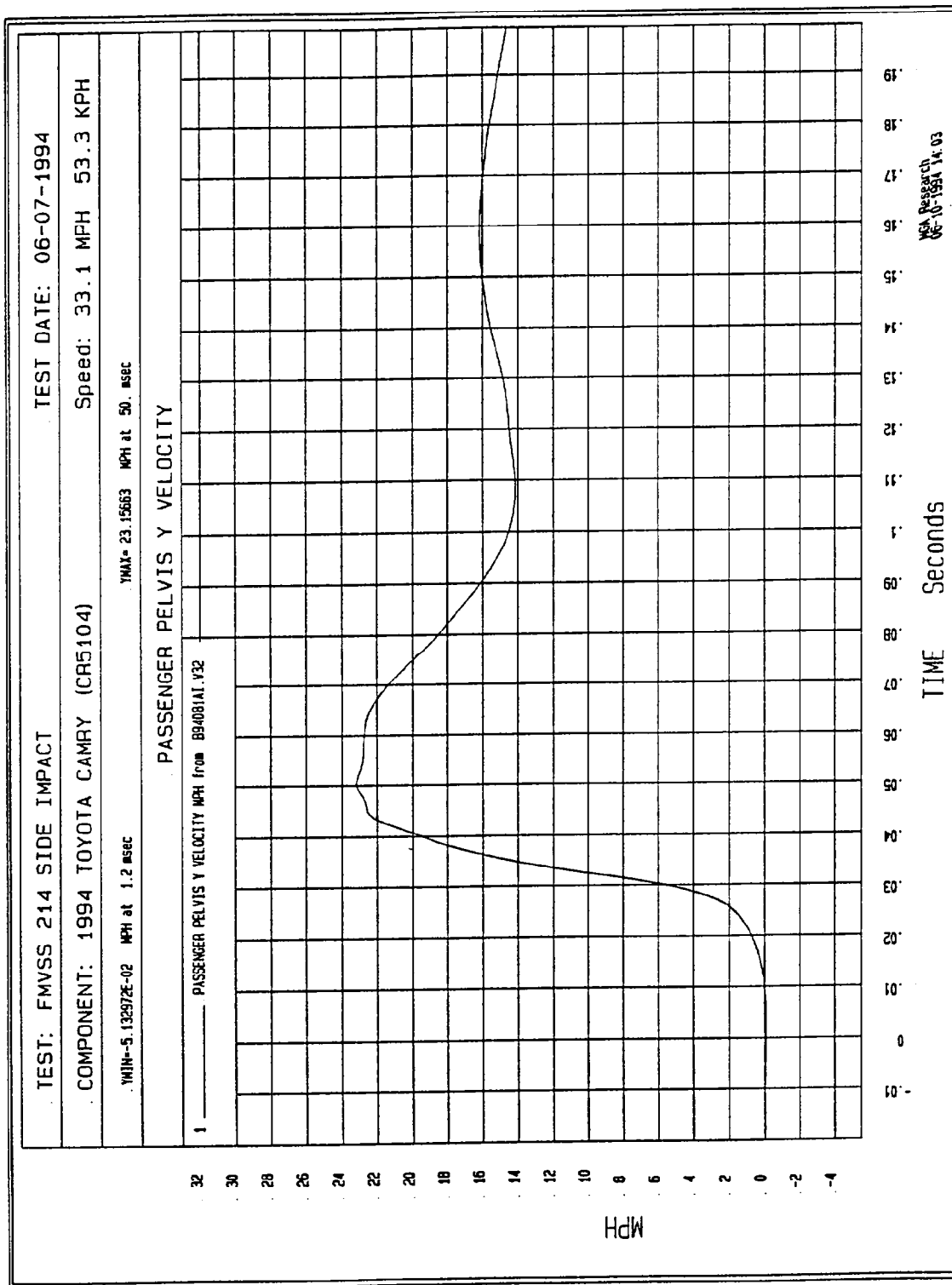


Figure B-16 - Passenger Pelvis Y Velocity vs. Time

Filter: Class 60 (100 Hz)

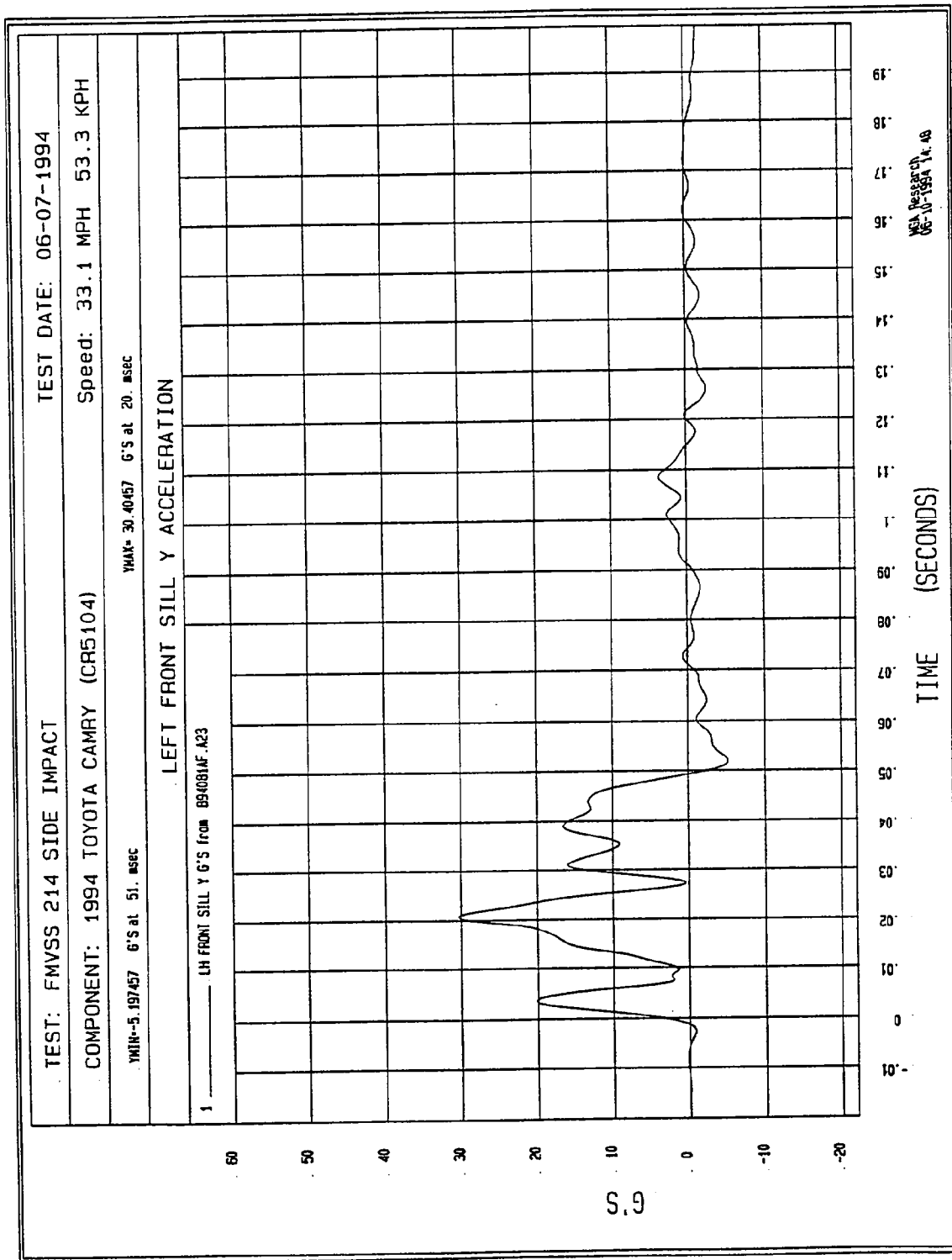


Figure B-17 - Left Front Sill Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

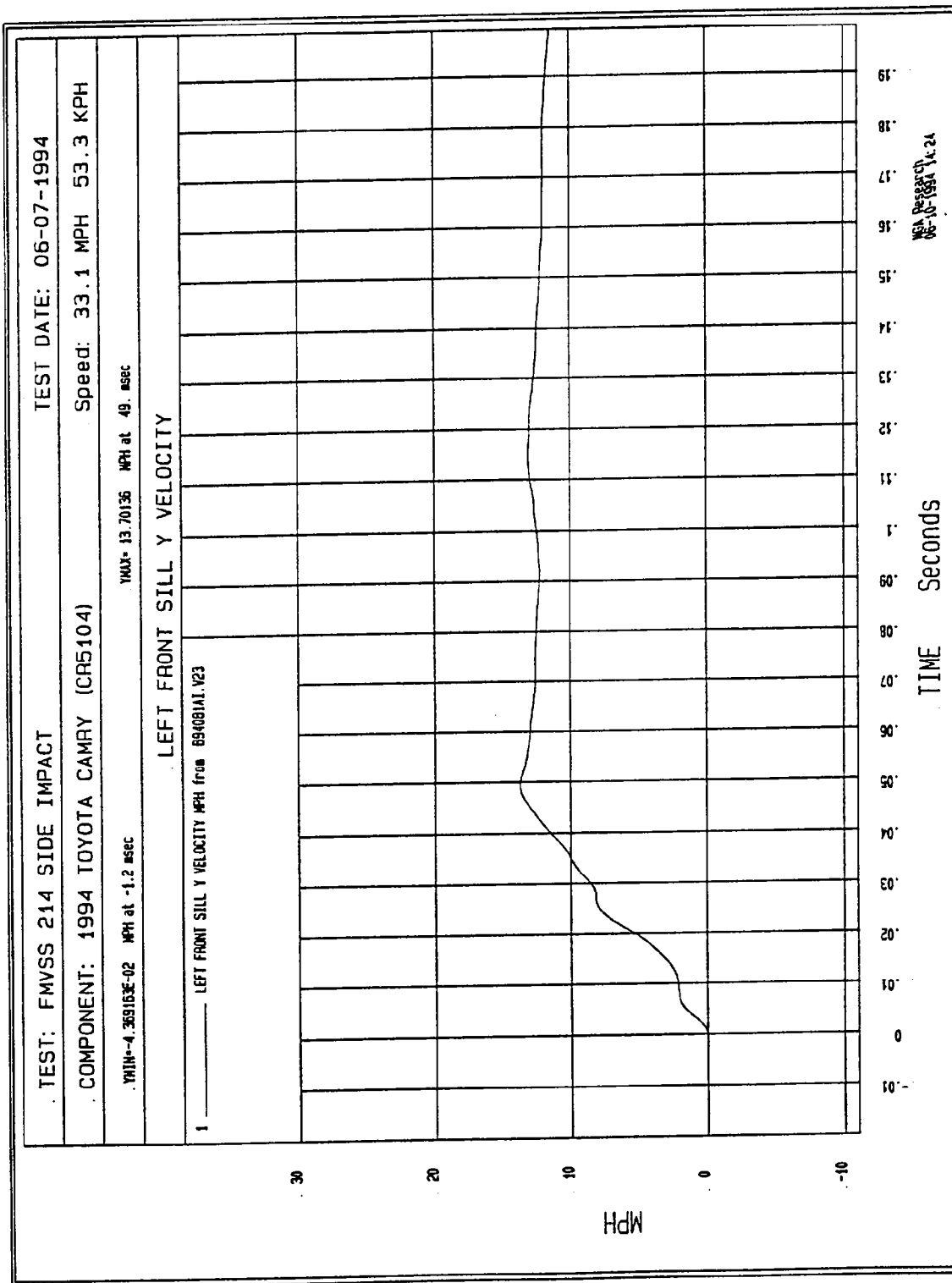


Figure B-18 - Left Front Sill Y Velocity vs. Time

Filter: Class 60 (100 Hz)

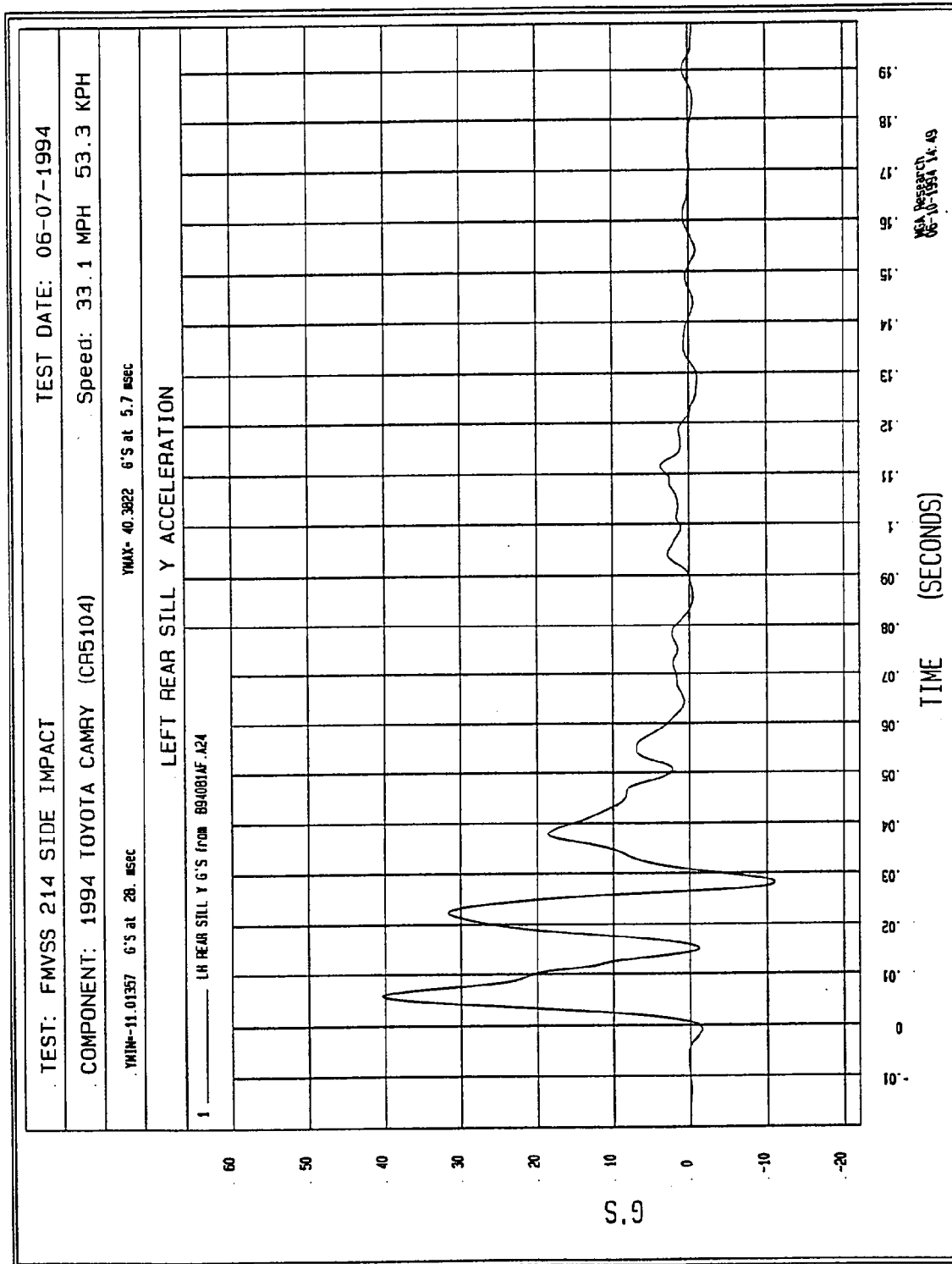
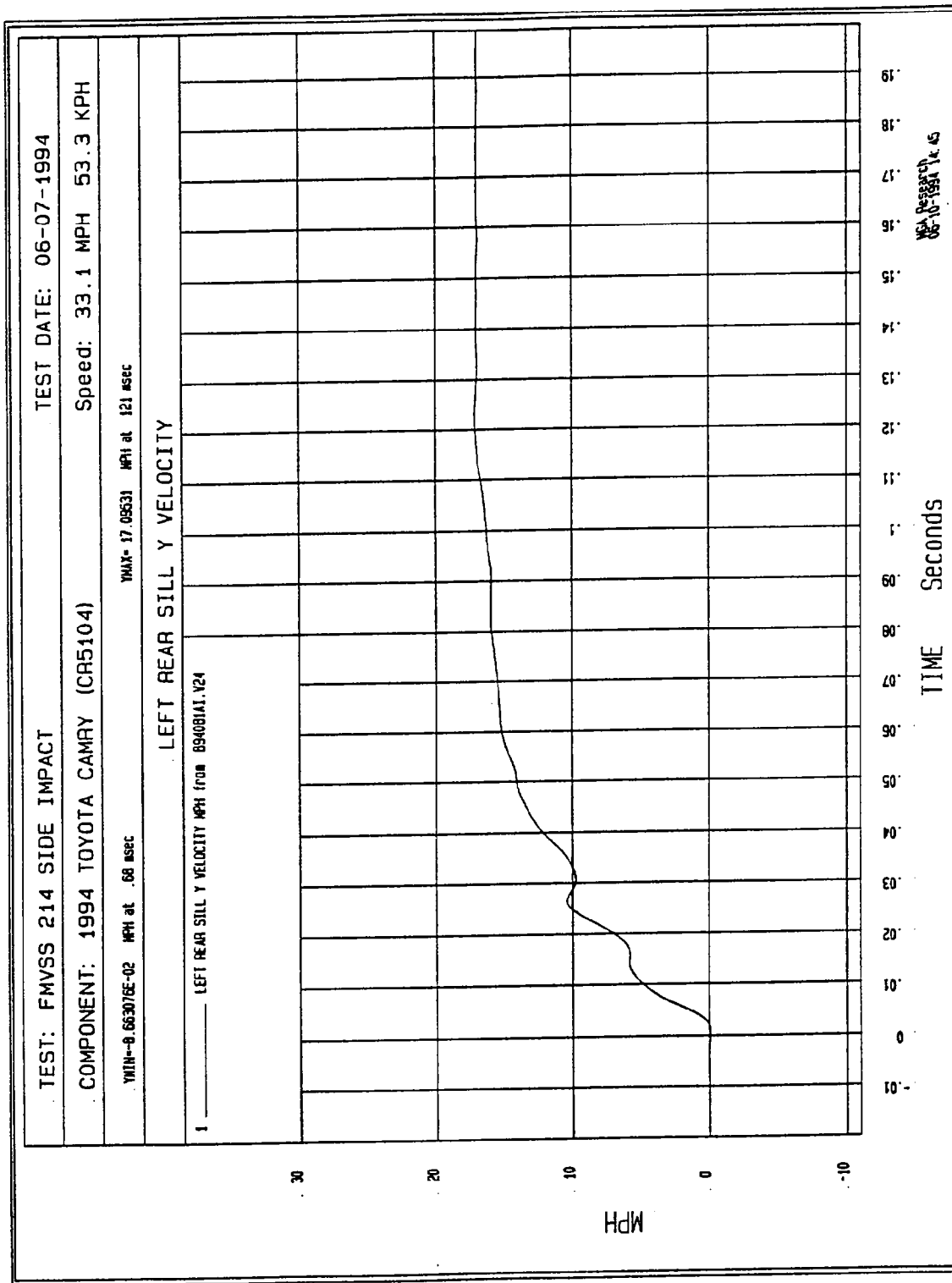


Figure B-19 - Left Rear Sill Y Acceleration vs. Time

Filter: Class 180 (300 Hz)



B-20

Figure B-20 - Left Rear Sill Y Velocity vs. Time

Filter: Class 60 (100 Hz)

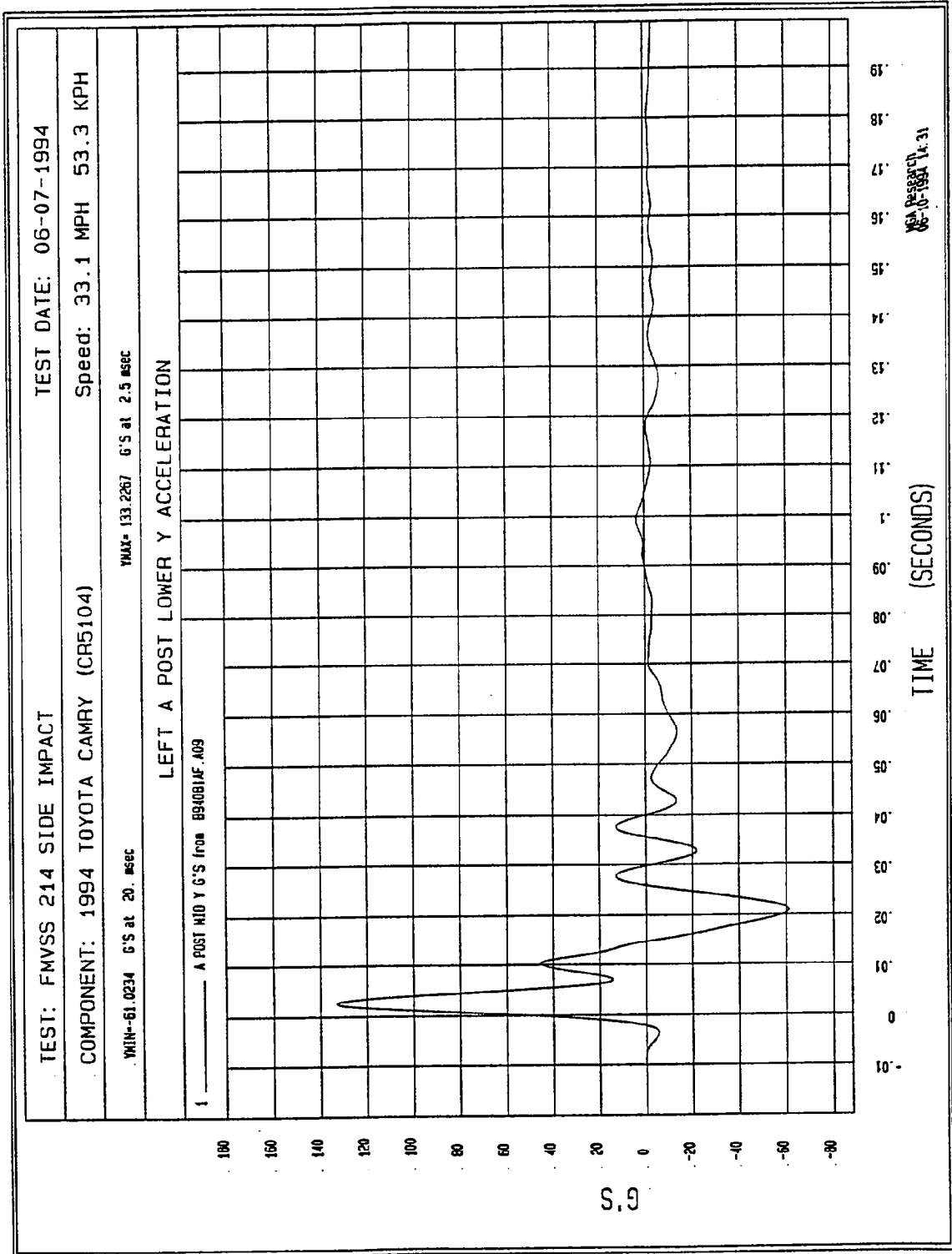


Figure B-21 - Left A Post Lower Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

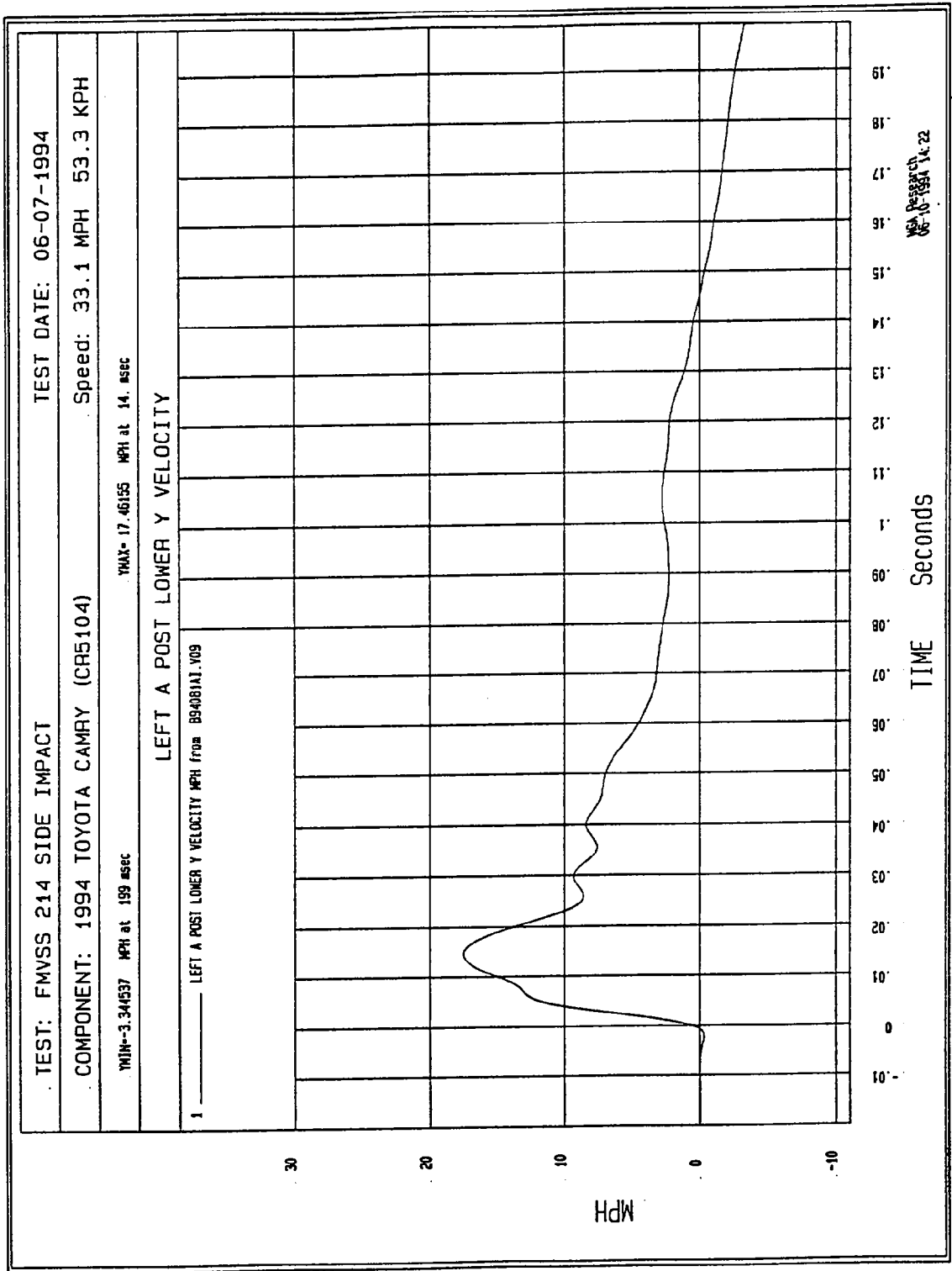


Figure B-22 - Left A Post Lower Y Velocity vs. Time

Filter: Class 60 (100 Hz)

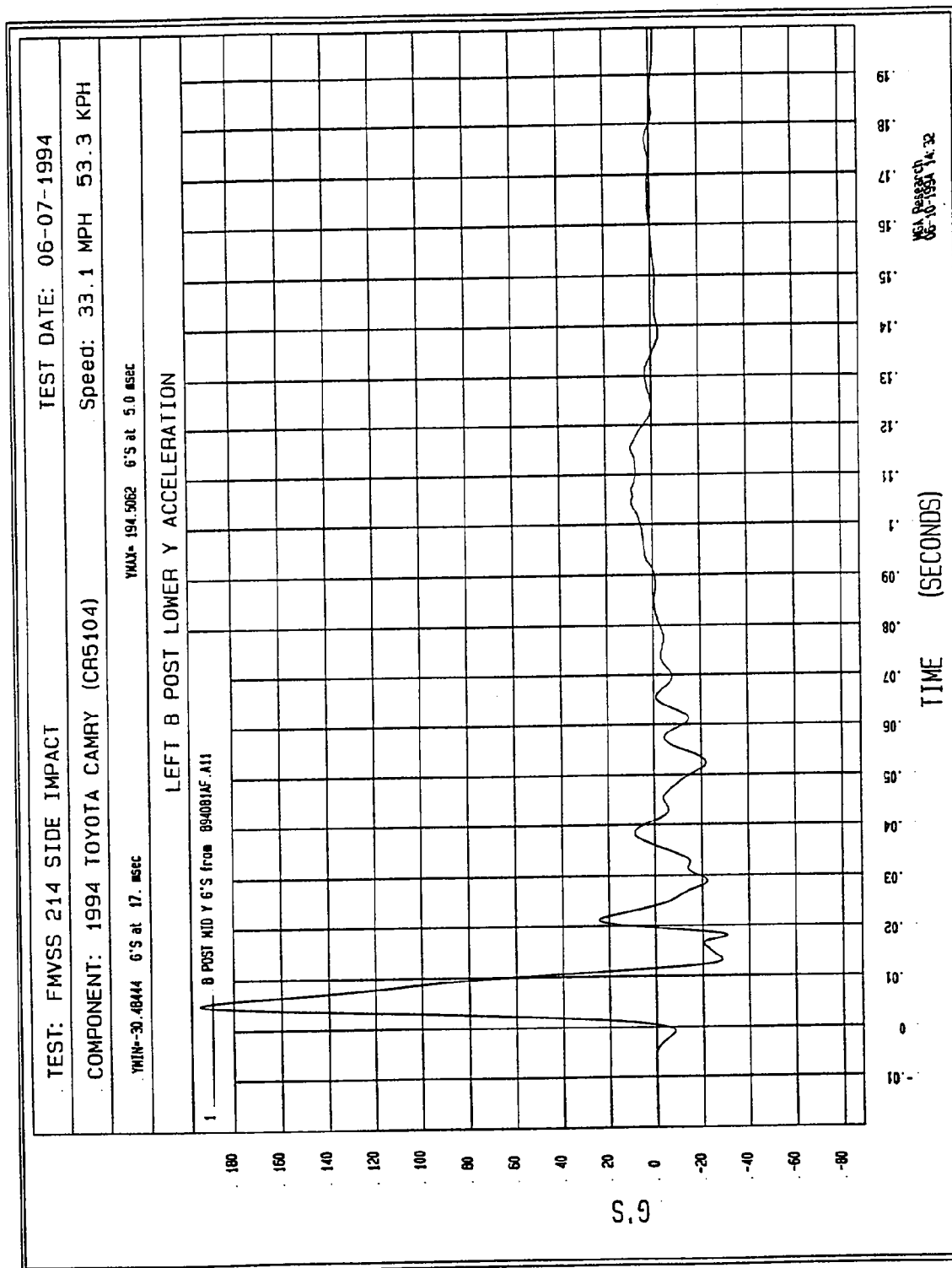


Figure B-23 - Left B Post Lower Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

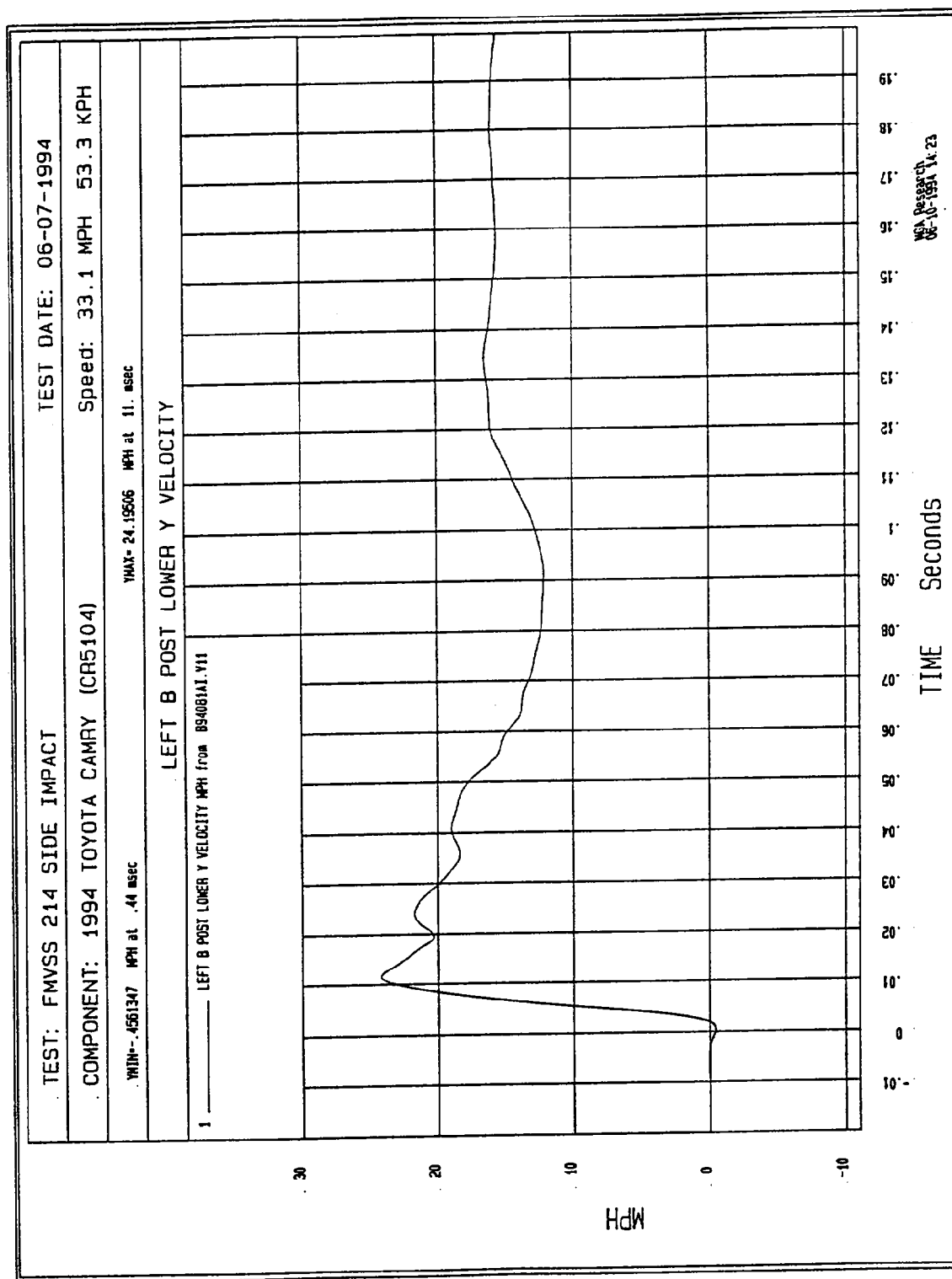


Figure B-24 - Left B Post Lower Y Velocity vs. Time

Filter: Class 60 (100 Hz)

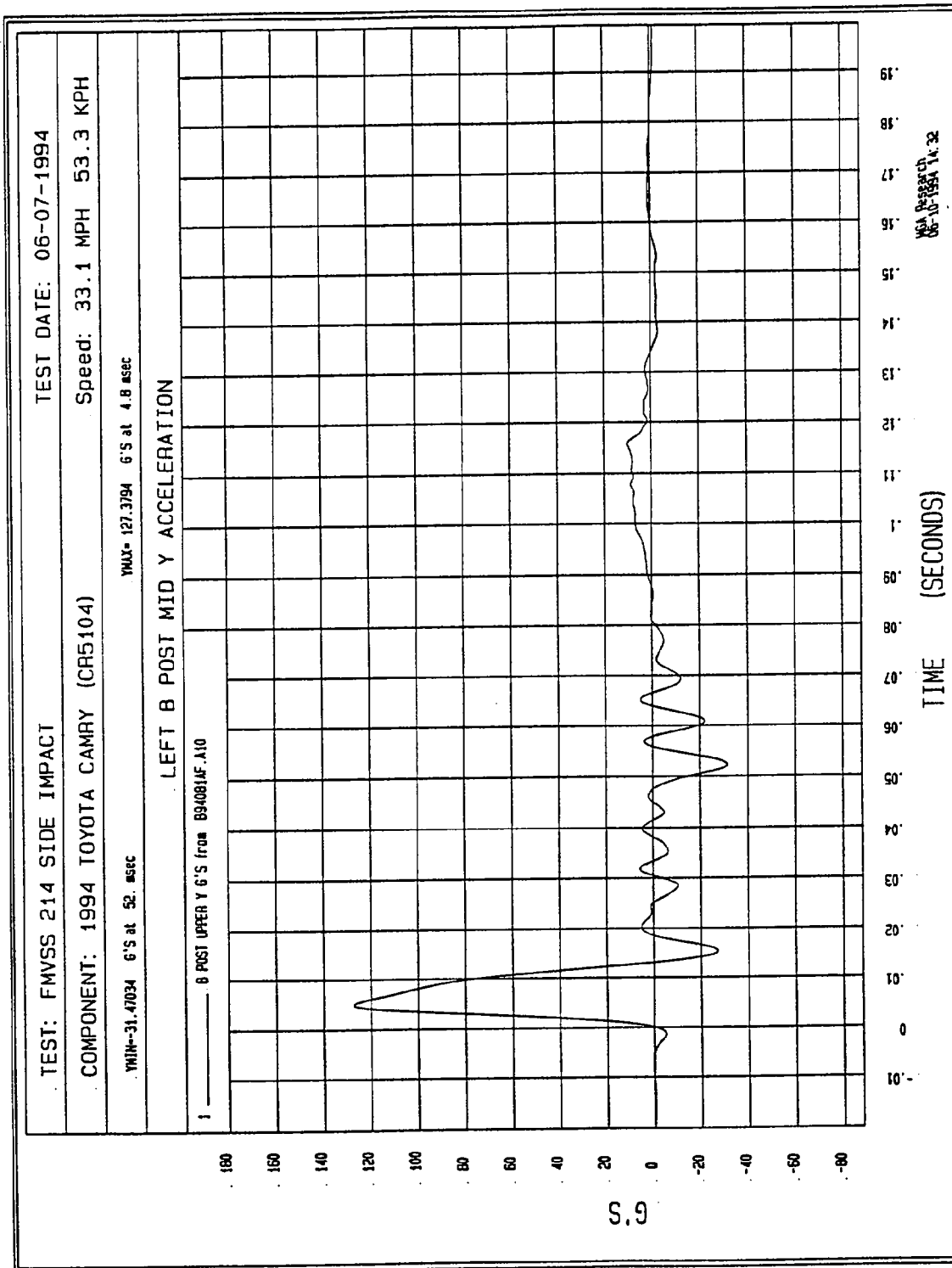


Figure B-25 - Left B Post Mid Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

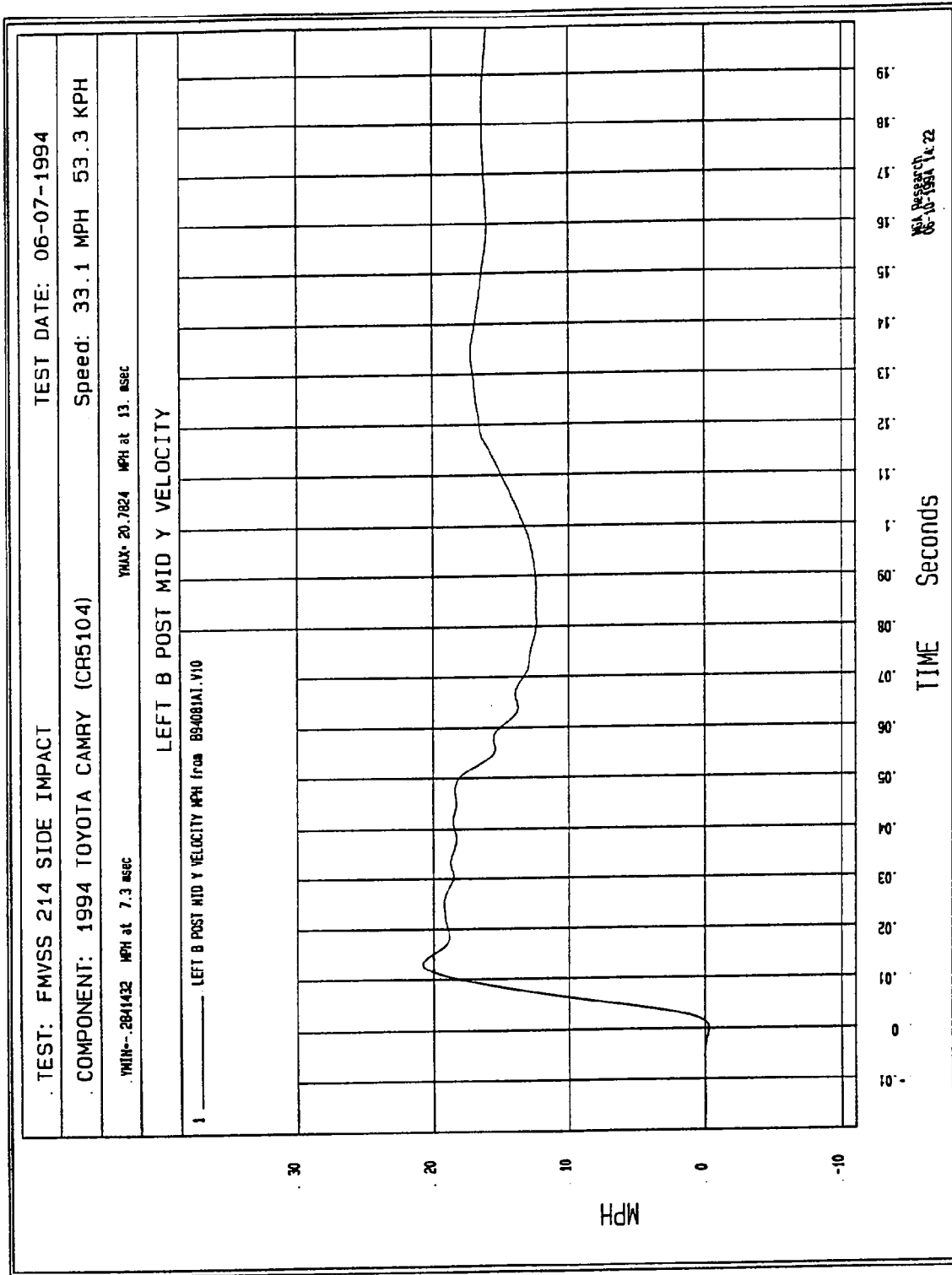


Figure B-26 - Left B Post Mid Y Velocity vs. Time

Filter: Class 60 (100 Hz)

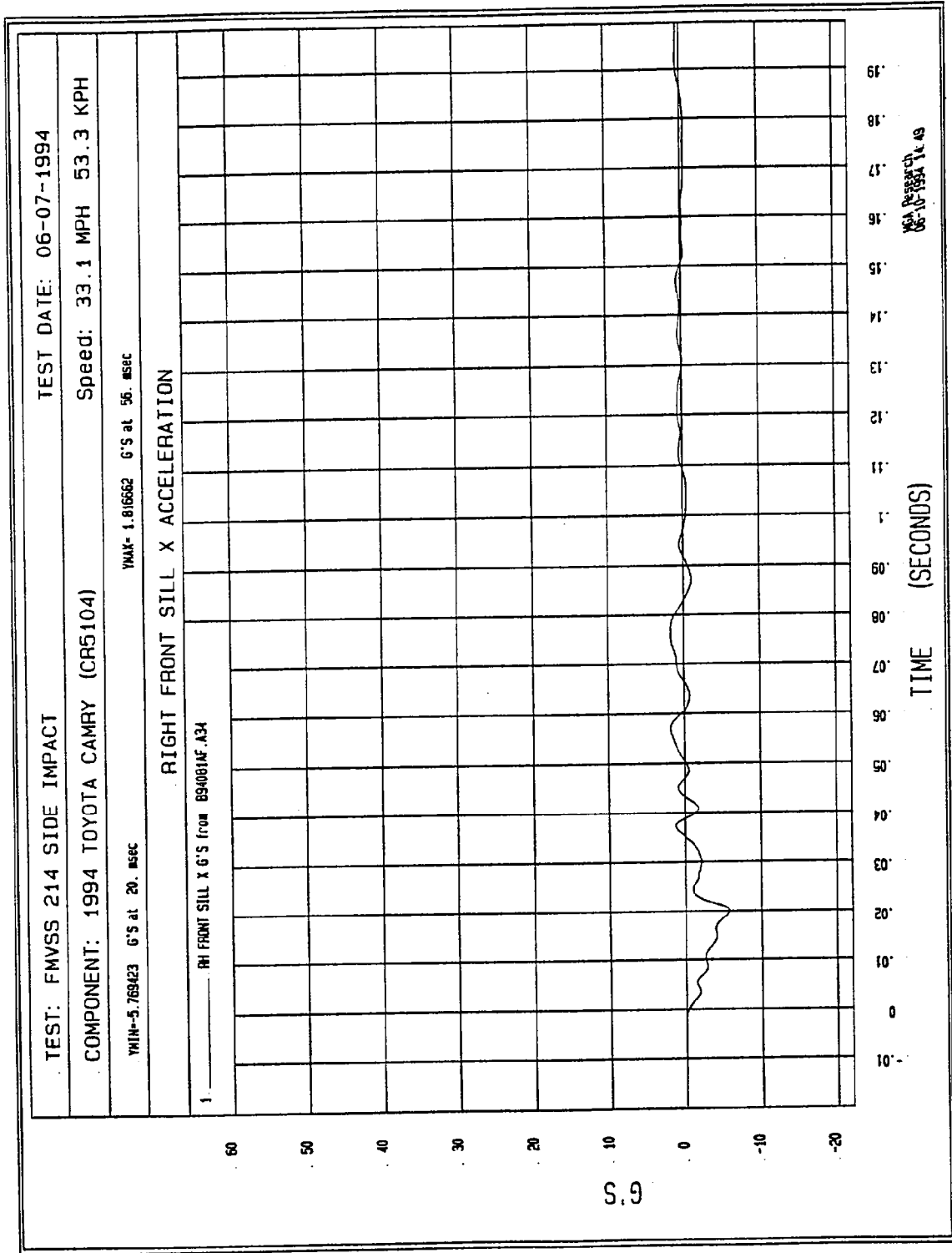


Figure B-27 - Right Front Sill X Acceleration vs. Time

Filter: Class 180 (300 Hz)

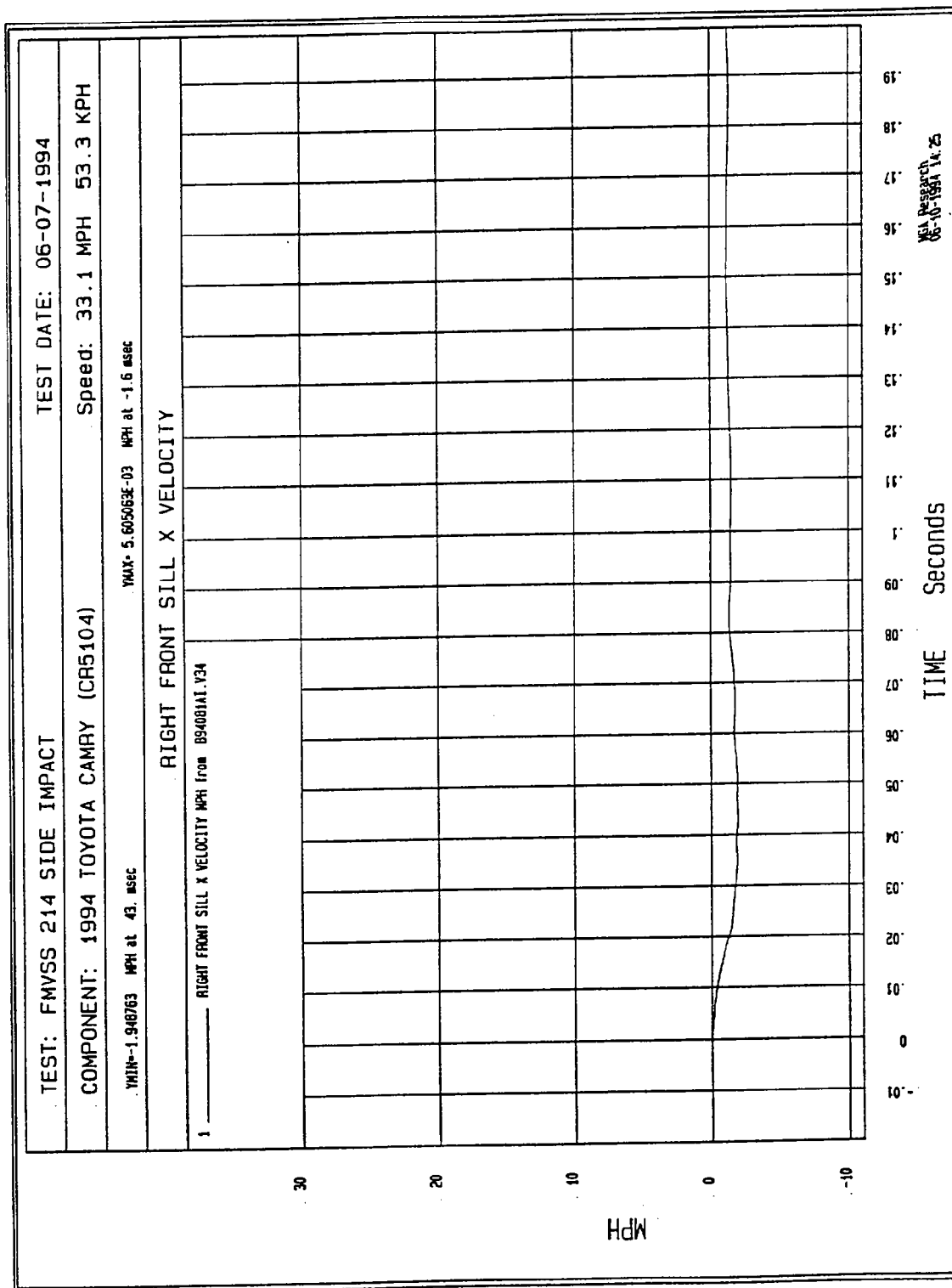


Figure B-28 - Right Front Sill X Velocity vs. Time

Filter: Class 60 (100 Hz)

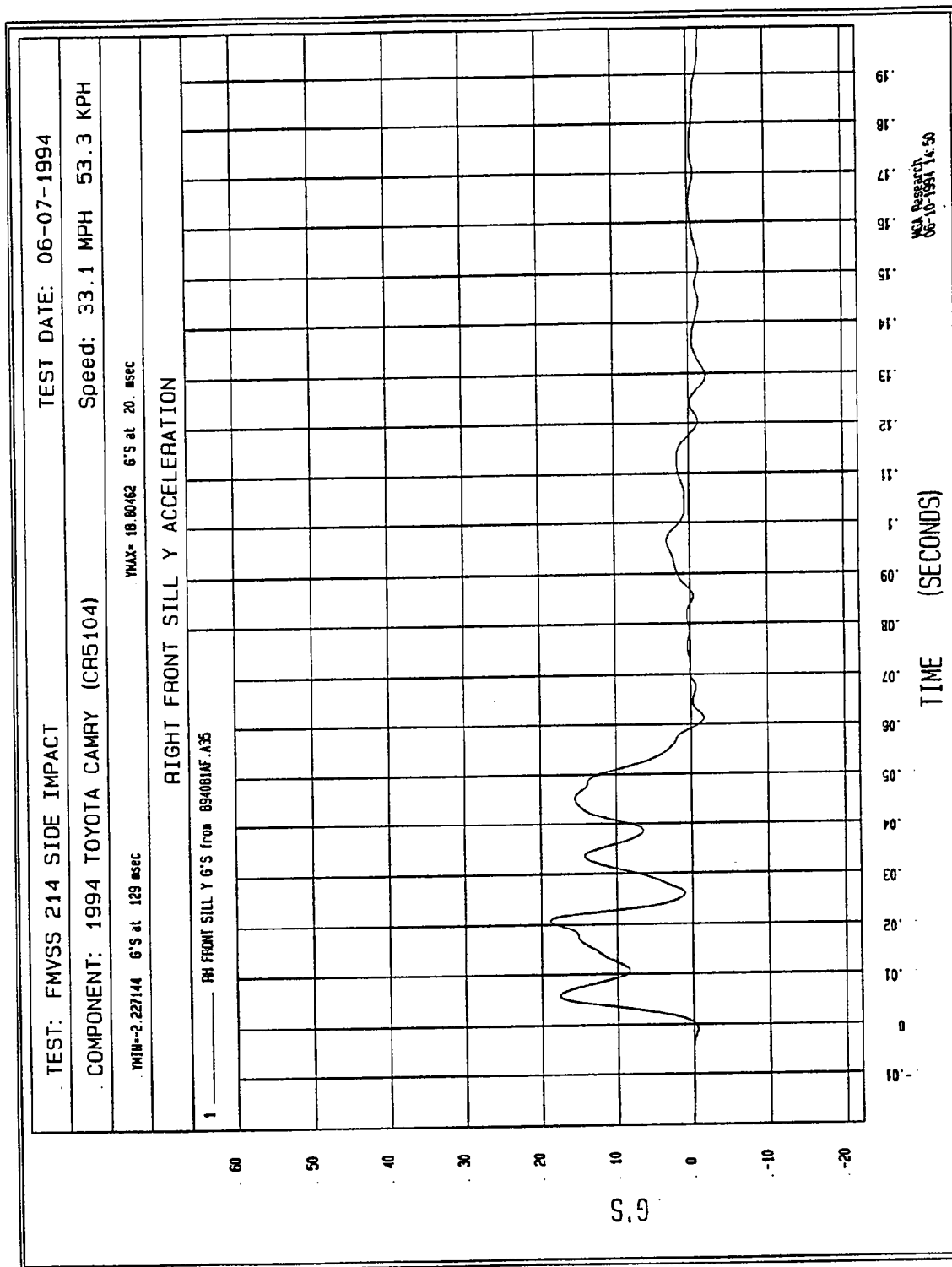
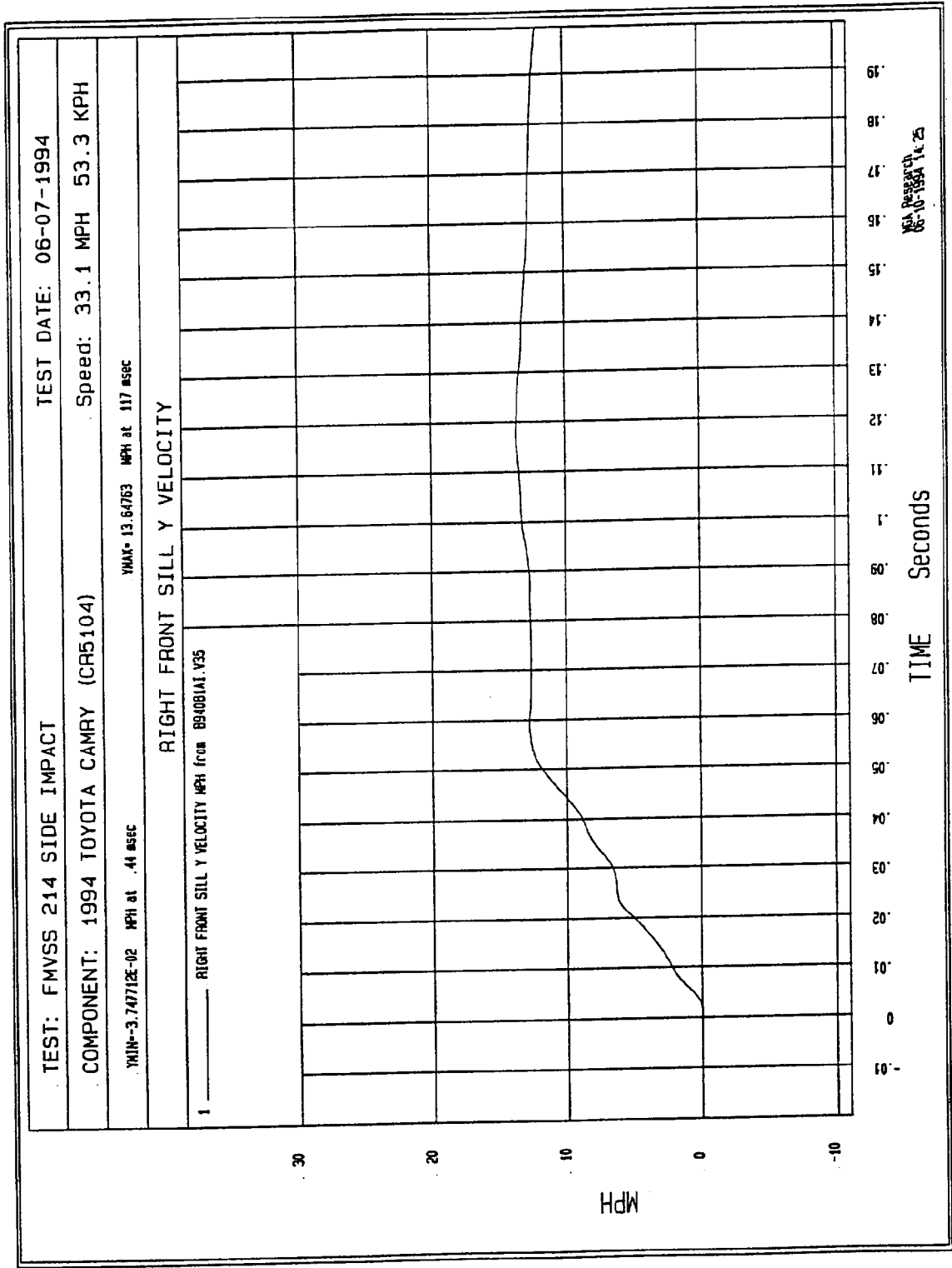


Figure B-29 - Right Front Sill Y Acceleration vs. Time

Filter: Class 180 (300 Hz)



B-30

Figure B-30 - Right Front Sill Y Velocity vs. Time

Filter: Class 60 (100 Hz)

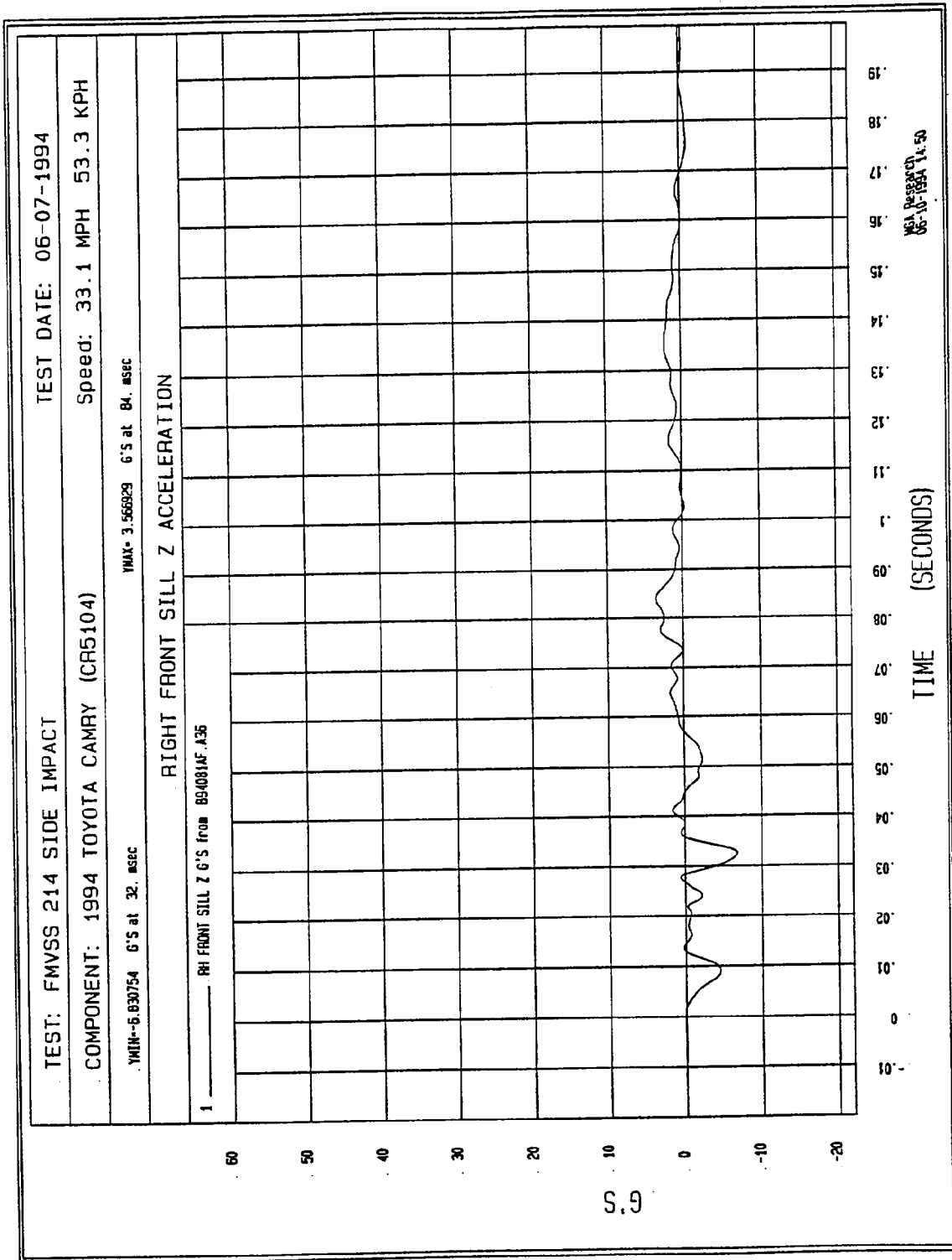
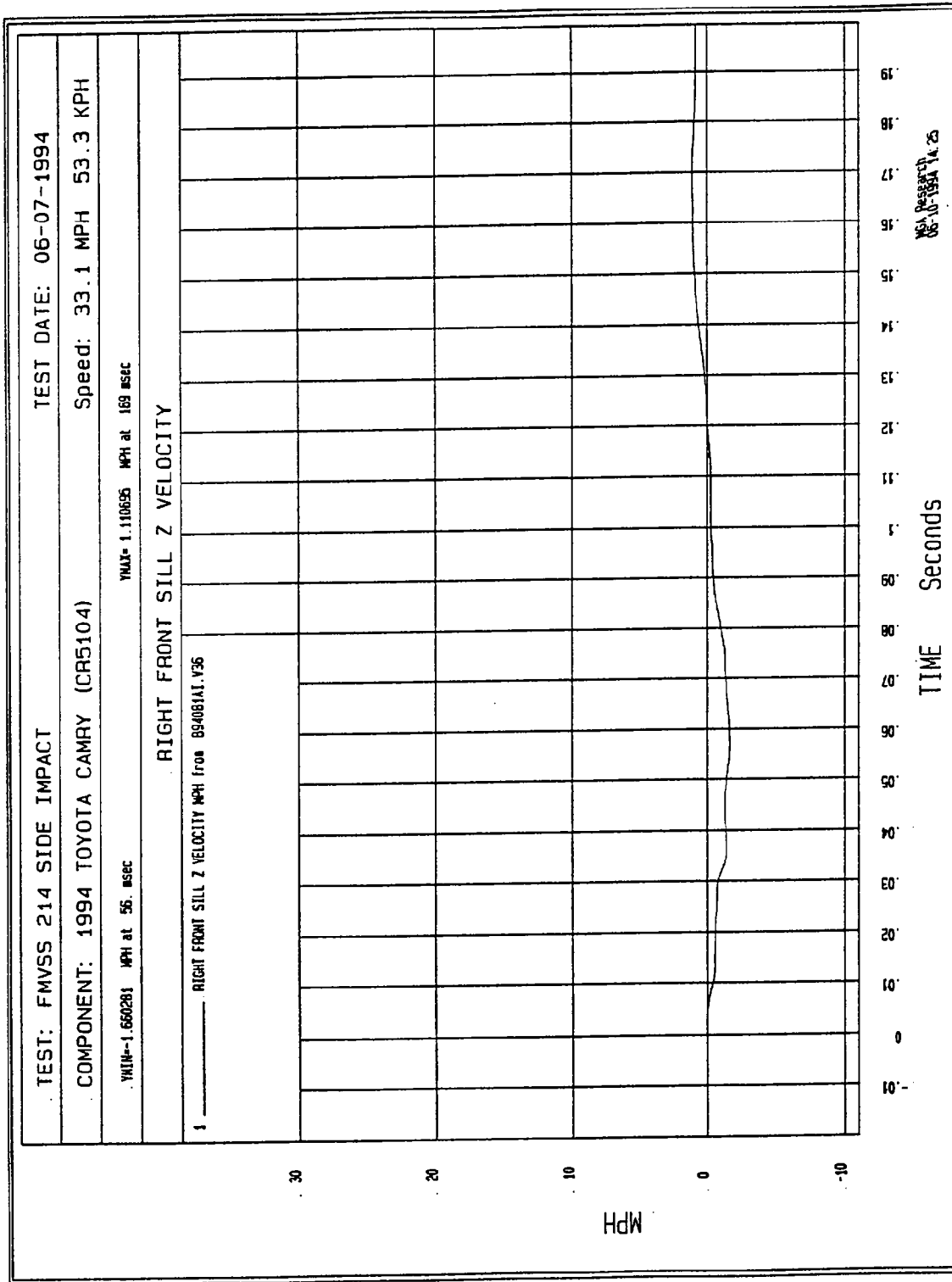


Figure B-31 - Right Front Sill Z Acceleration vs. Time

Filter: Class 180 (300 Hz)



Filter: Class 60 (100 Hz)

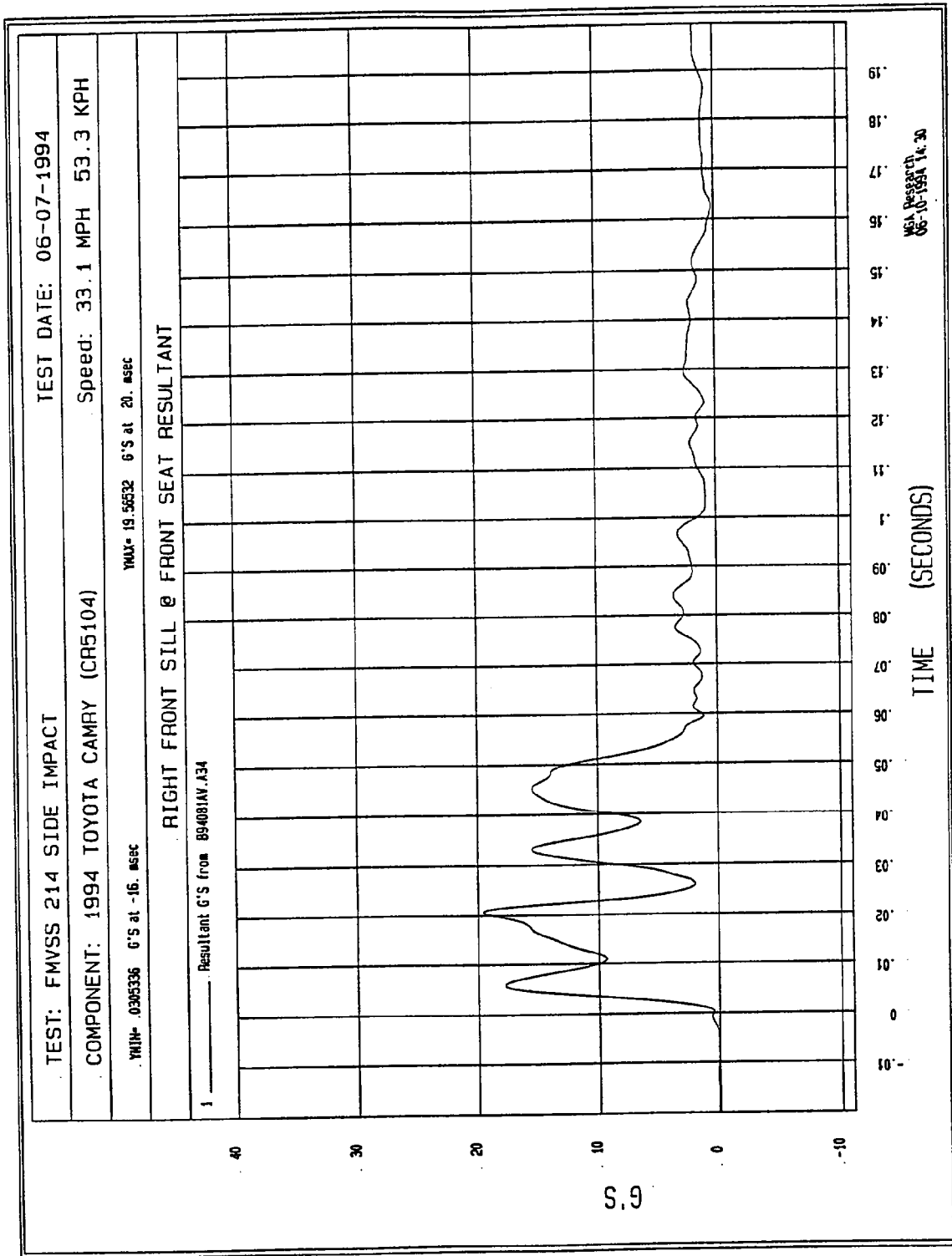


Figure B-33 - Right Front Sill at Front Seat Resultant vs. Time

Filter: Class 60 (100 Hz)

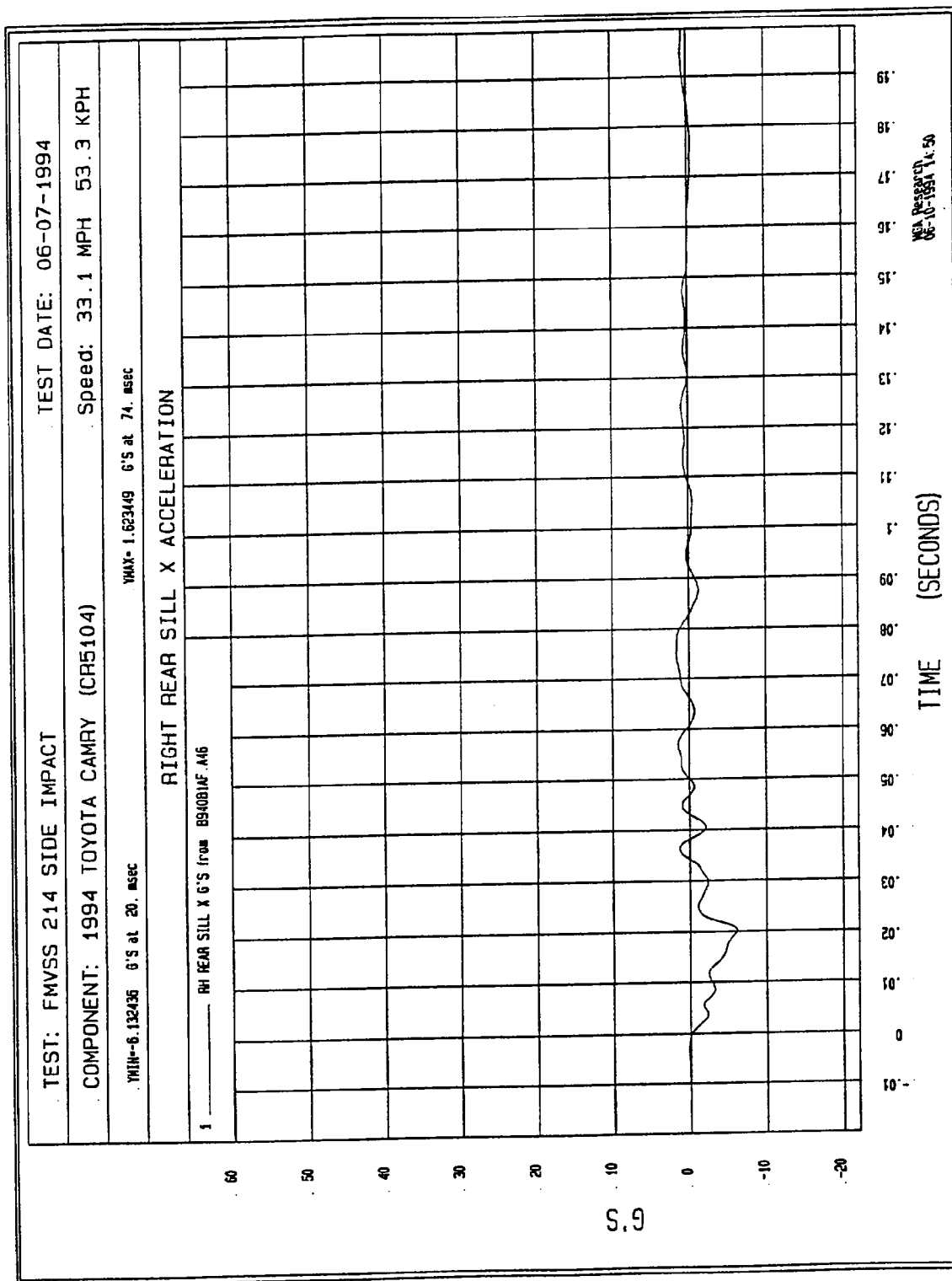


Figure B-34 - Right Rear Sill X Acceleration vs. Time

Filter: Class 180 (300 Hz)

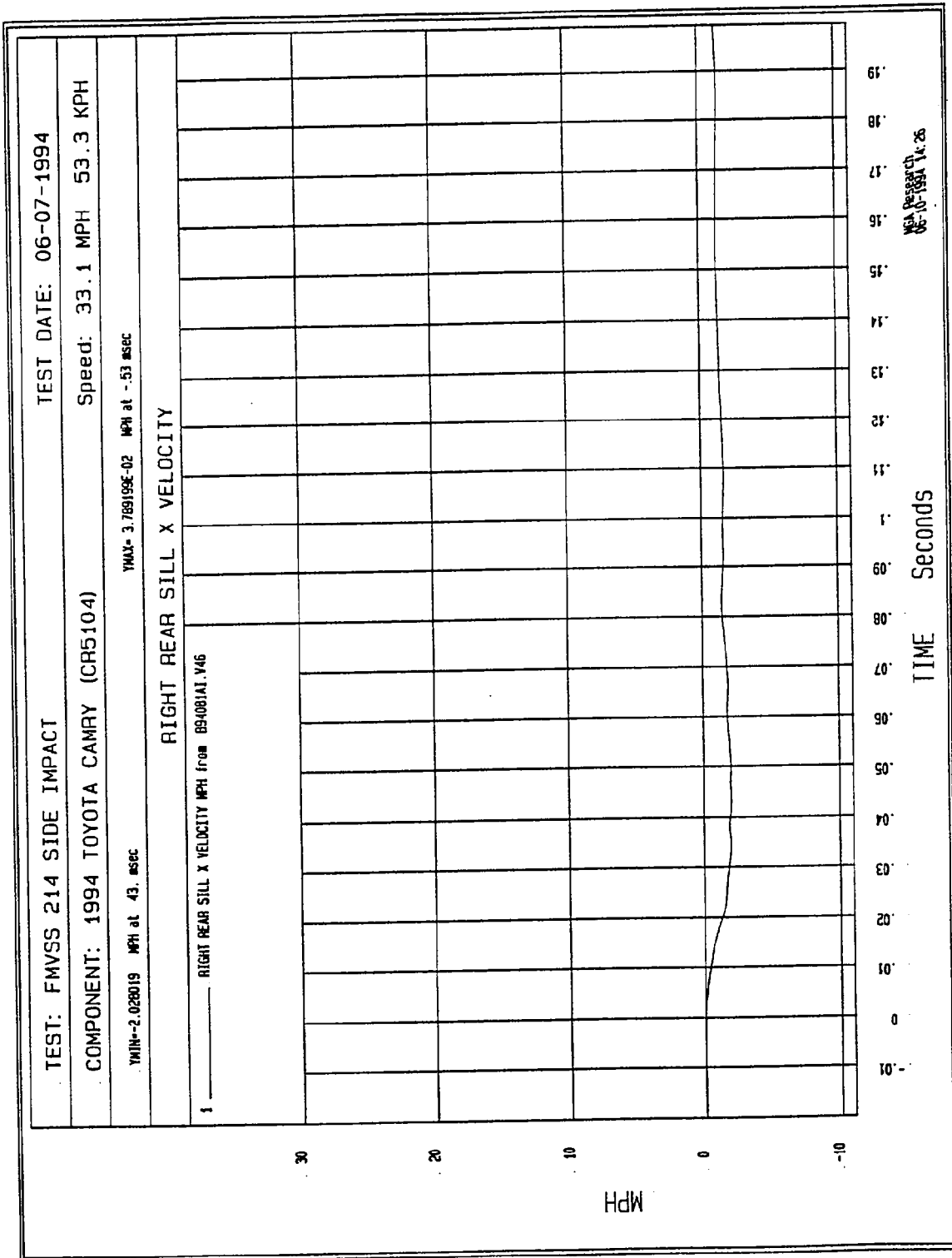


Figure B-35 - Right Rear Sill X Velocity vs. Time

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 06-07-1994

COMPONENT: 1994 TOYOTA CAMRY (CR5104) Speed: 33.1 MPH 53.3 KPH

YMIN=-1.460563 G'S at 129 msec YMAX= 19.53374 G'S at 20. msec

RIGHT REAR SILL Y ACCELERATION

1 _____ RH REAR SILL Y G'S from 894081AF.147

TIME (SECONDS)

19.53374
19.5
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2

0 10 20 30 40 50 60

Figure B-36 - Right Rear Sill Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

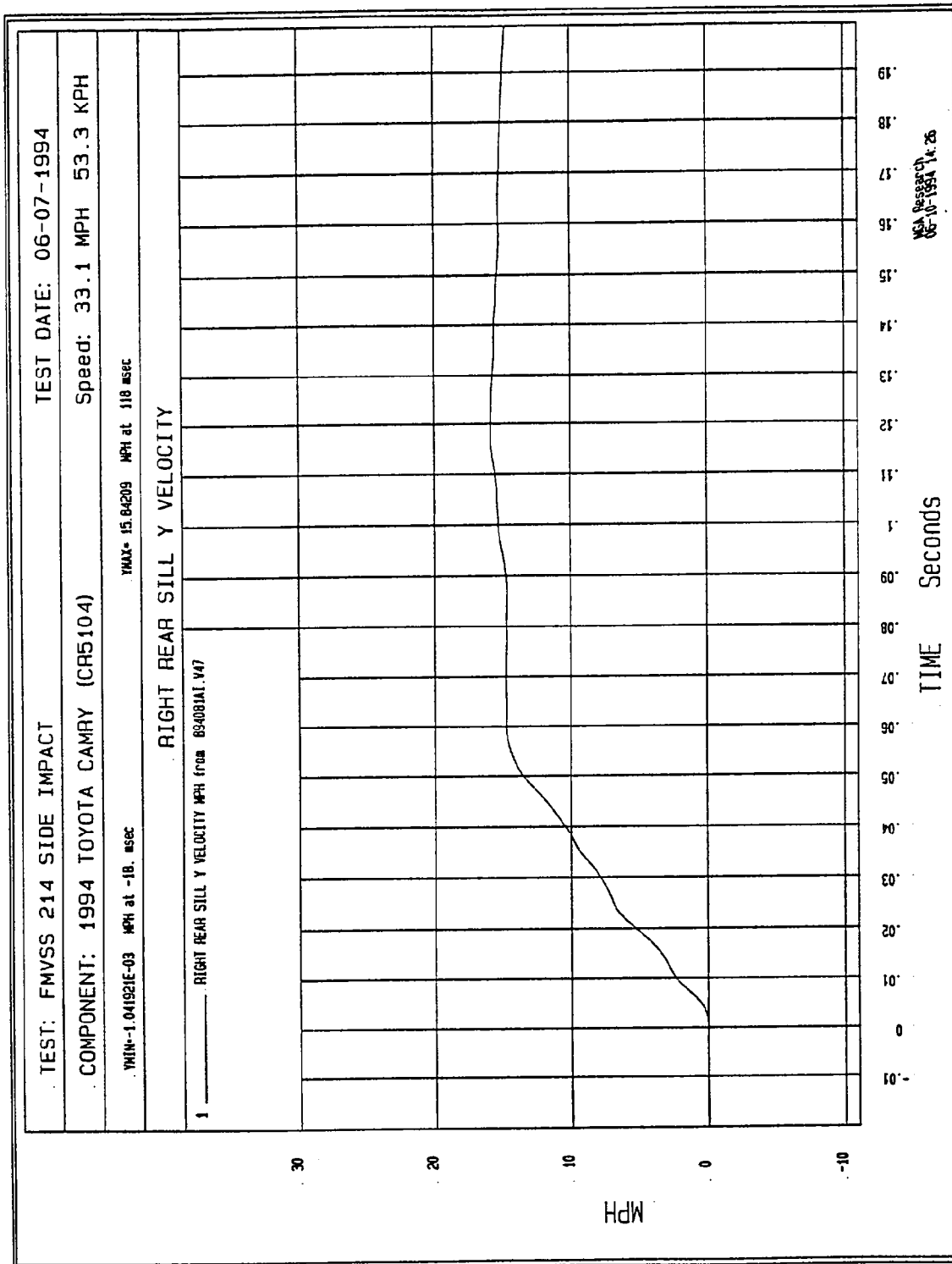


Figure B-37 - Right Rear Sill Y Velocity vs. Time

Filter: Class 60 (100 Hz)

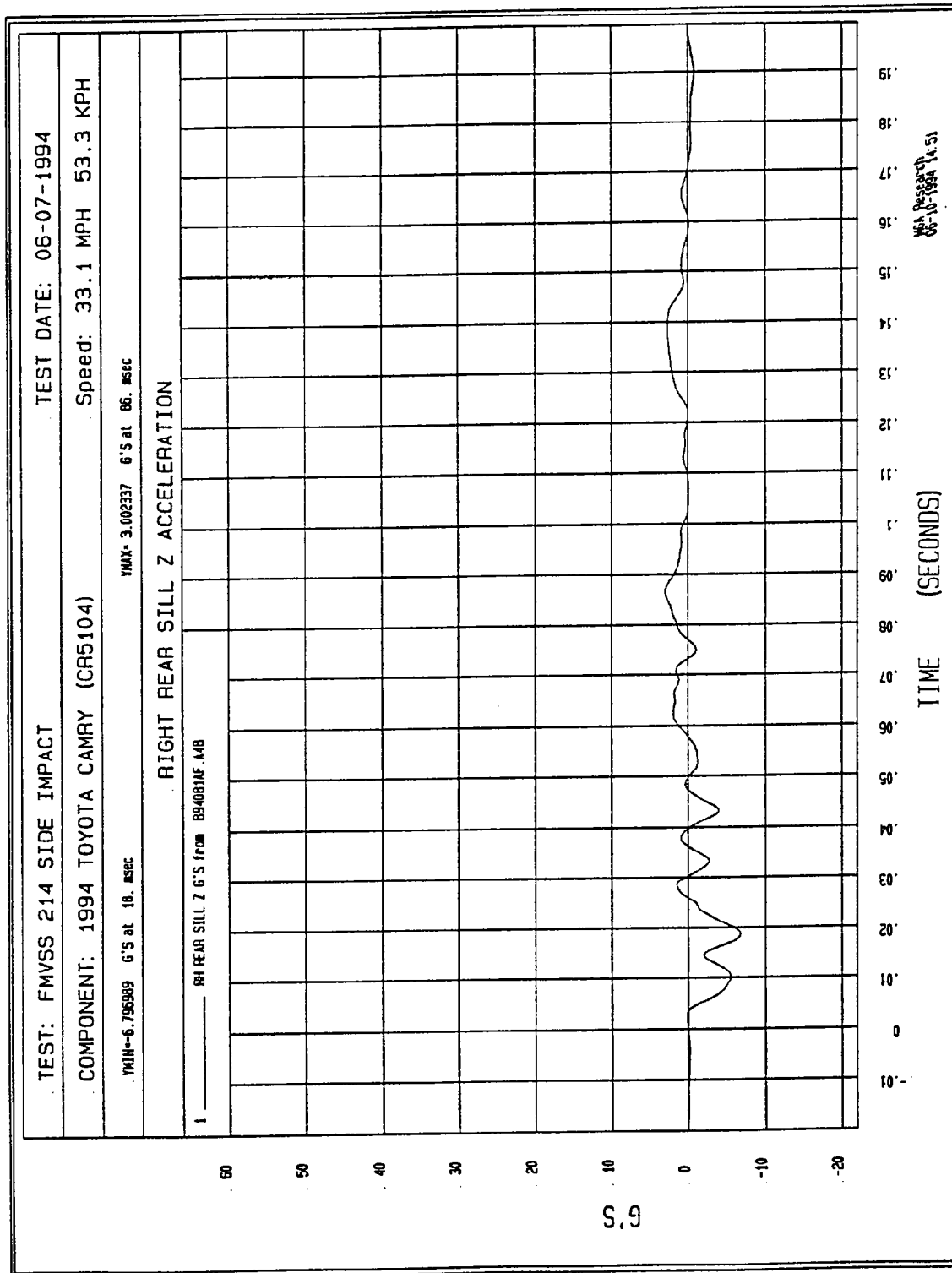


Figure B-38 - Right Rear Sill Z Acceleration vs. Time

Filter: Class 60 (100 Hz)

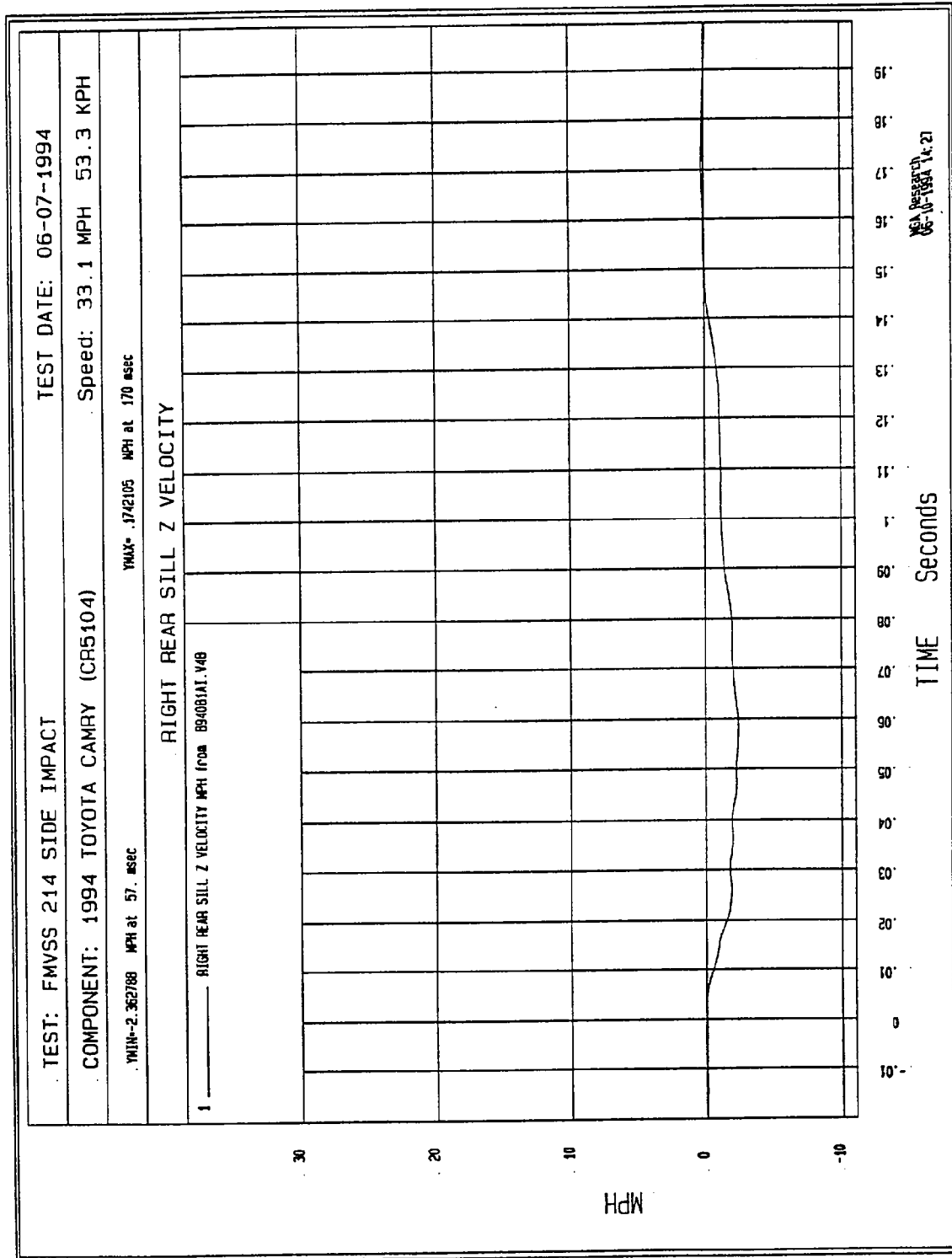


Figure B-39 - Right Rear Sill Z Velocity vs. Time

Filter: Class 60 (100 Hz)

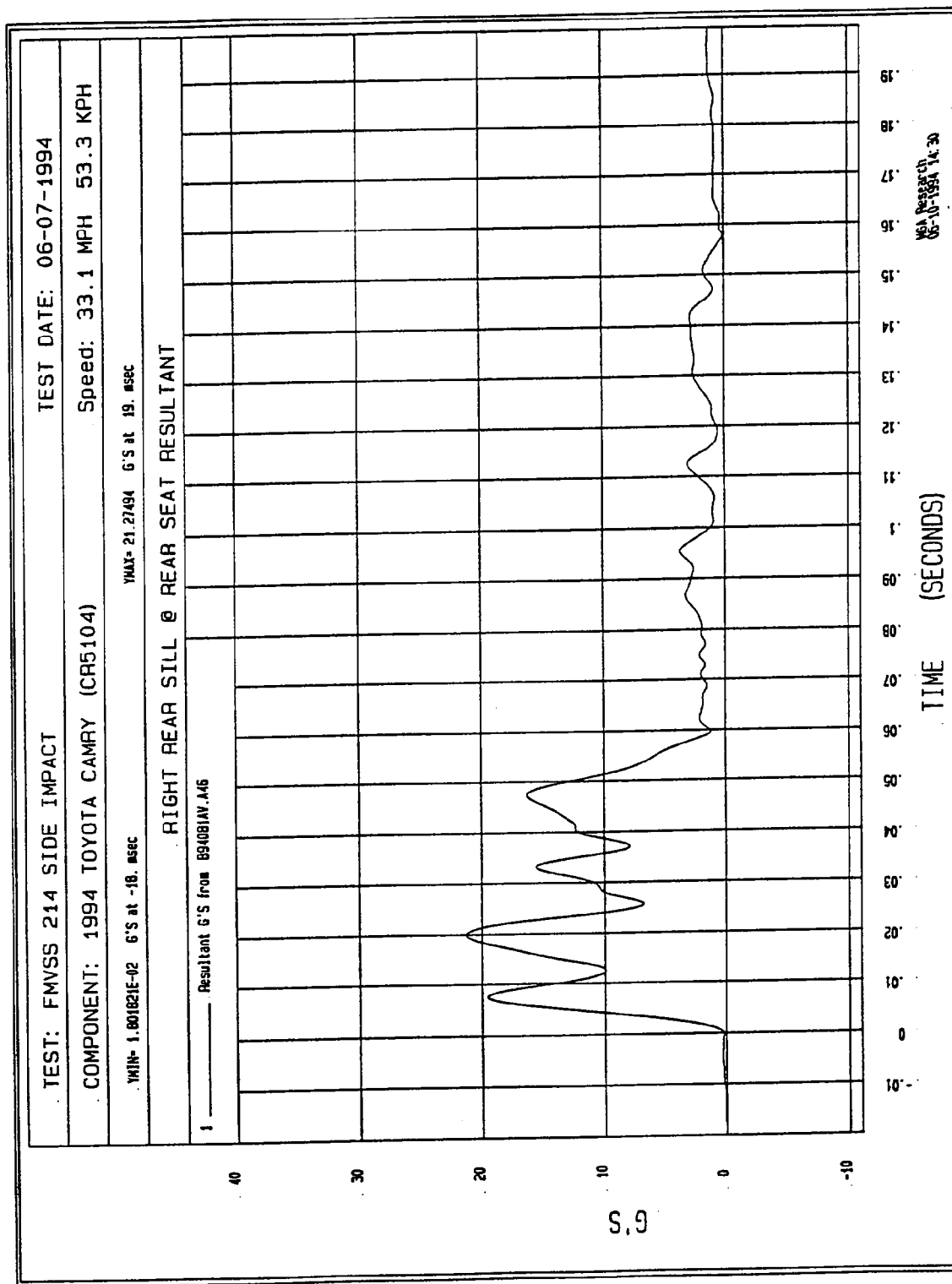


Figure B-40 - Right Rear Sill at Rear Seat Resultant vs. Time

TEST: FMVSS 214 SIDE IMPACT

TEST DATE: 06-07-1994

SPEED: 33.1 MPH 53.3 KPH

COMPONENT: 1994 TOYOTA CAMRY (CR5104)

YMIN=-13.78822 G'S at 50. msec

YMAX= 45.36334 G'S at 19. msec

DRIVER SEAT TRACK Y ACCELERATION

1 DRIVER SEAT TRACK Y G'S from 894081AF.A33

TIME (SECONDS)

60
50
40
30
20
10
0
-10
-20

0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05 1.10 1.15 1.20 1.25 1.30 1.35 1.40 1.45 1.50

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Figure B-41 - Driver Seat Track Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

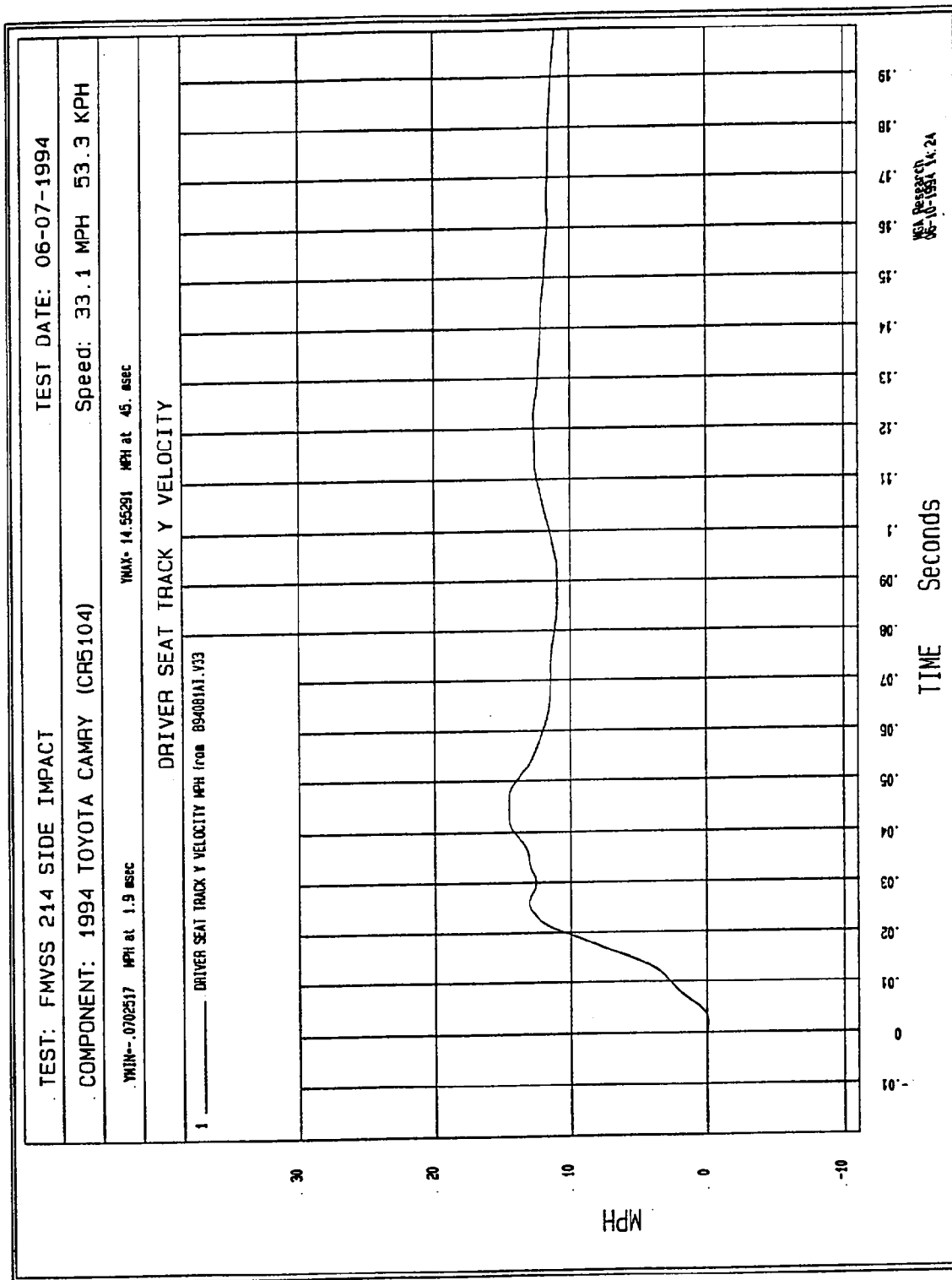


Figure B-42 - Driver Seat Track Y Velocity vs. Time

Filter: Class 60 (100 Hz)

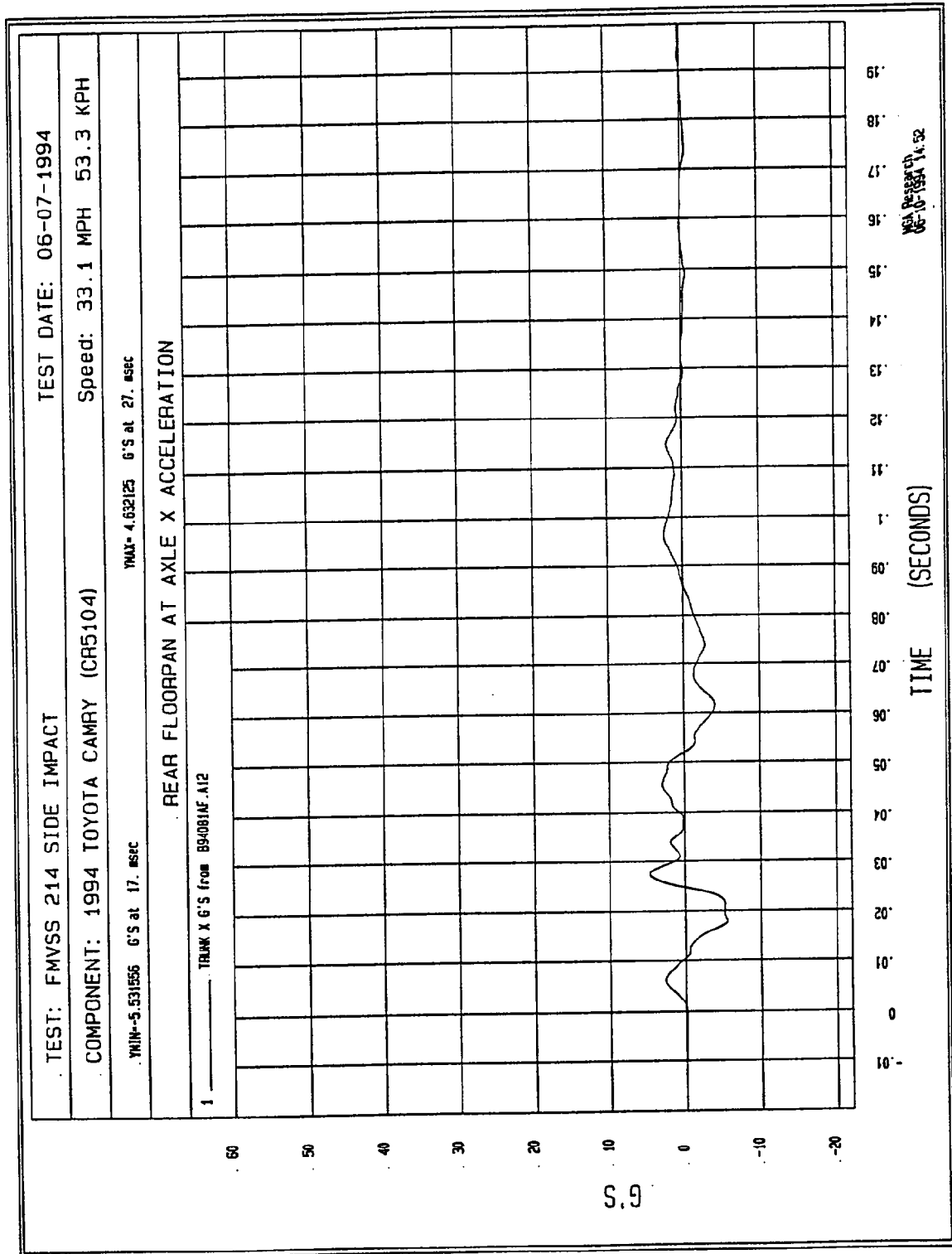


Figure B-43 - Rear Floorpan at Axle X Acceleration vs. Time

Filter: Class 180 (300 Hz)

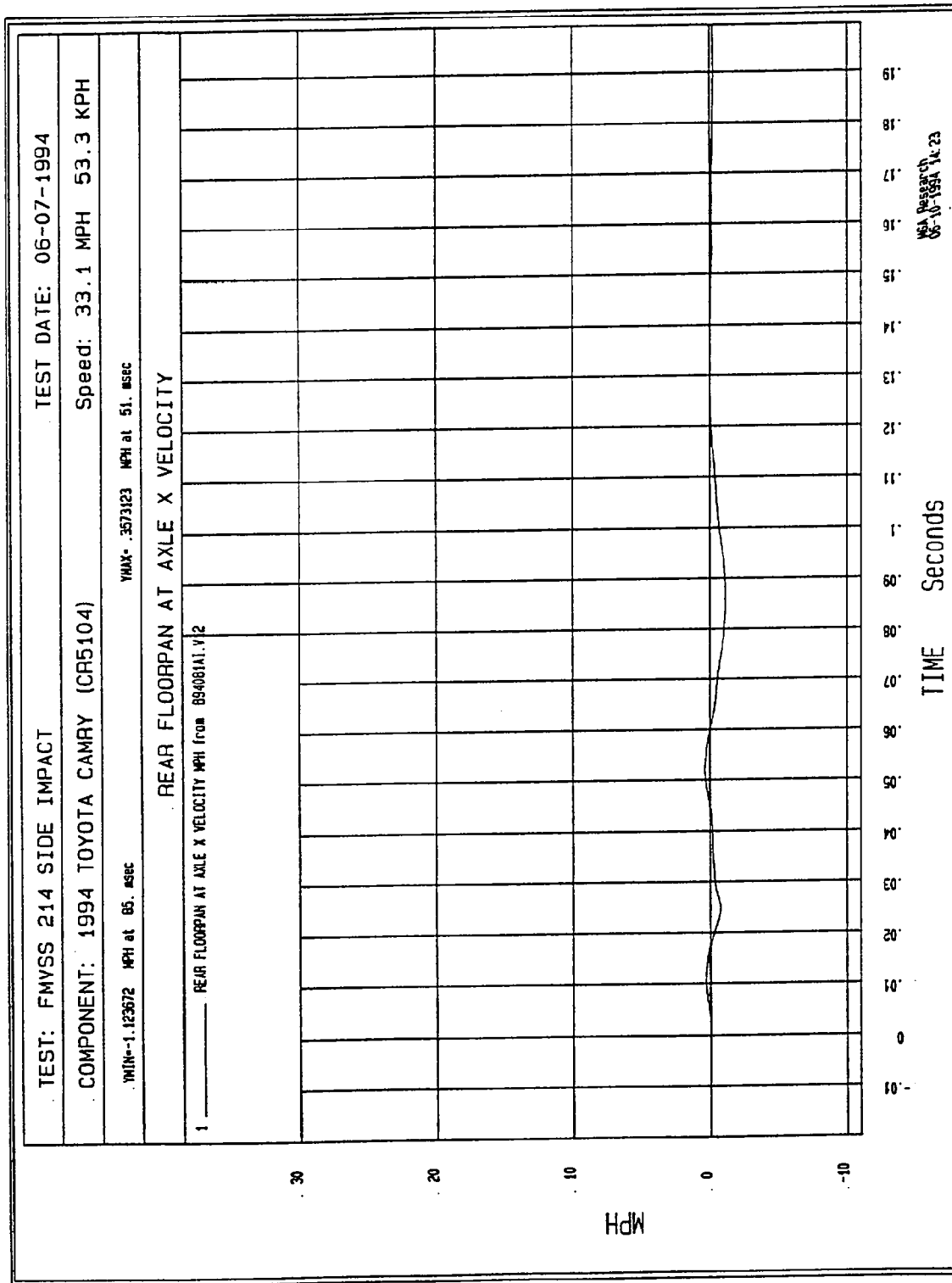


Figure B-44 - Rear Floorpan at Axle X Velocity vs. Time

Filter: Class 60 (100 Hz)

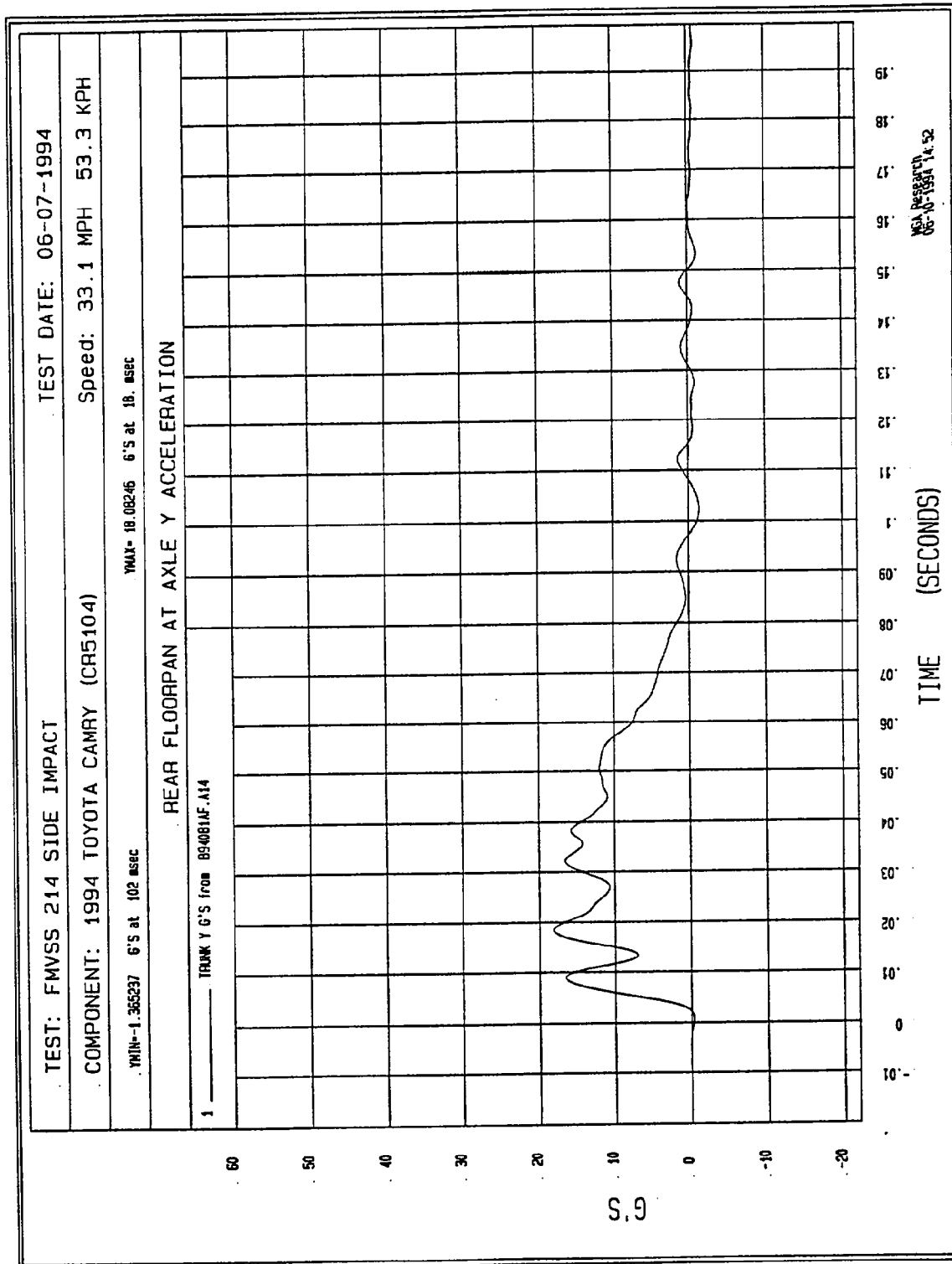


Figure B-45 - Rear Floorpan at Axle Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

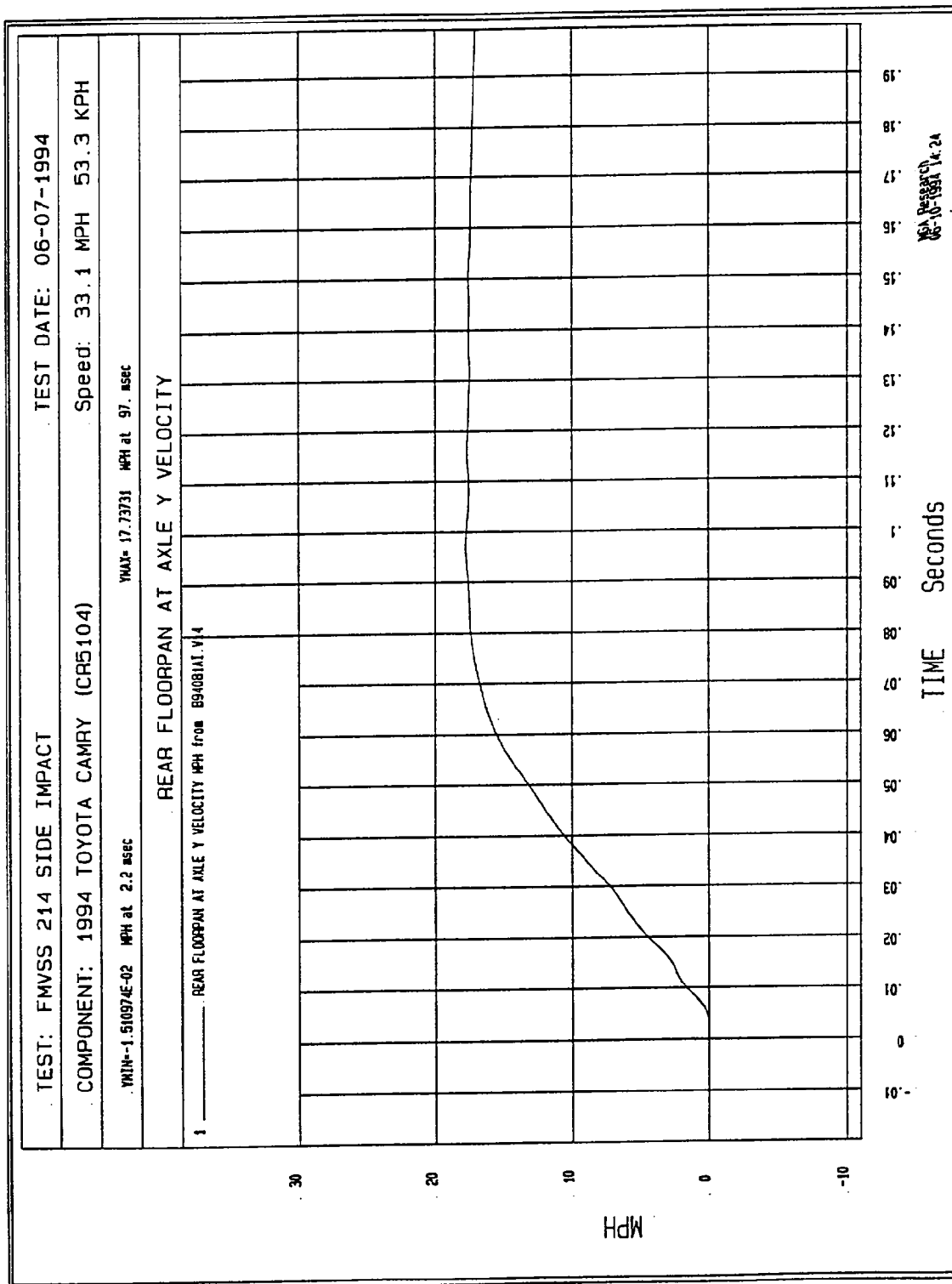


Figure B-46 - Rear Floorpan at Axle Y Velocity vs. Time

Filter: Class 60 (100 Hz)

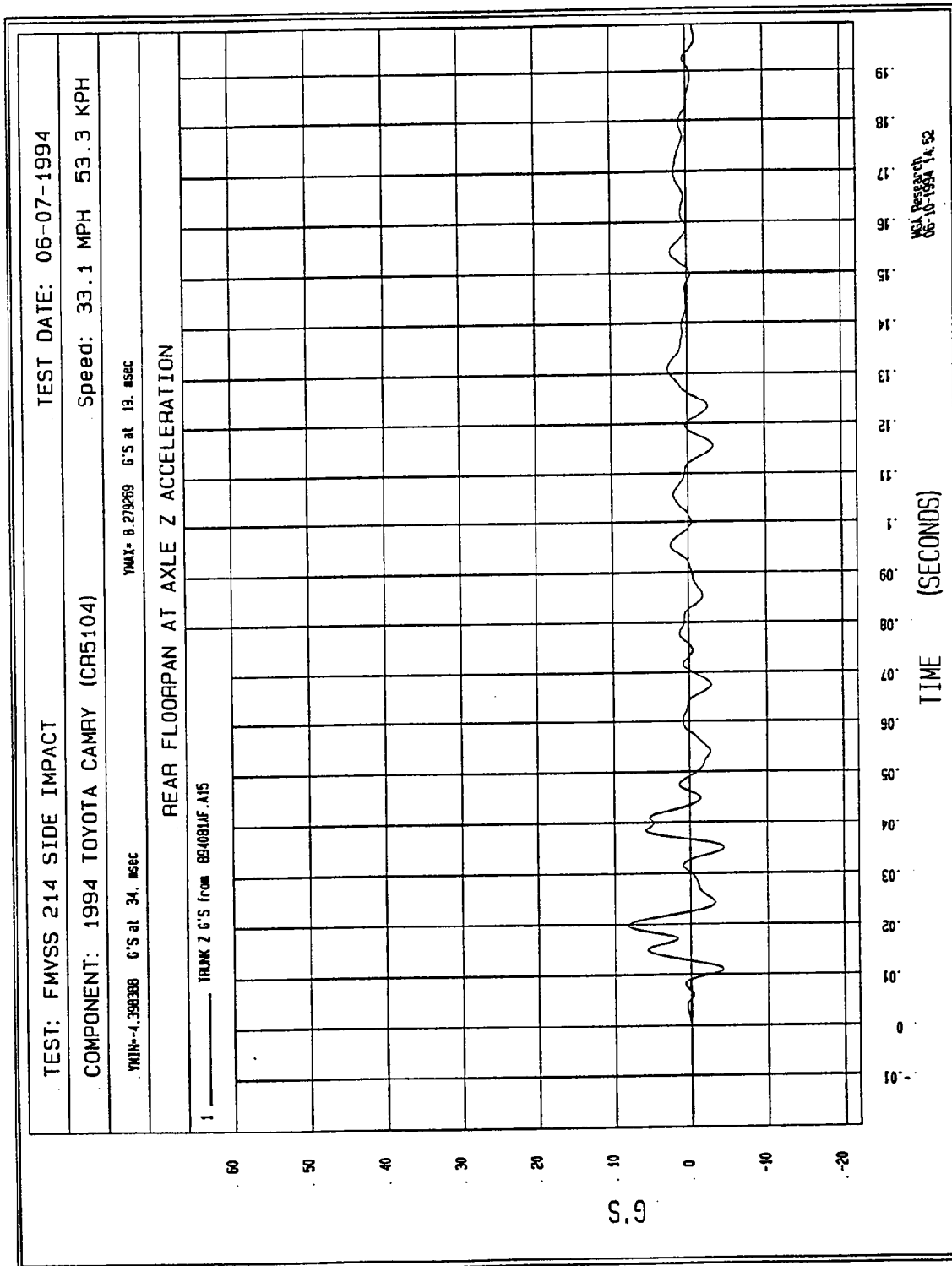


Figure B-47 - Rear Floorpan at Axle Z Acceleration vs. Time

Filter: Class 180 (300 Hz)

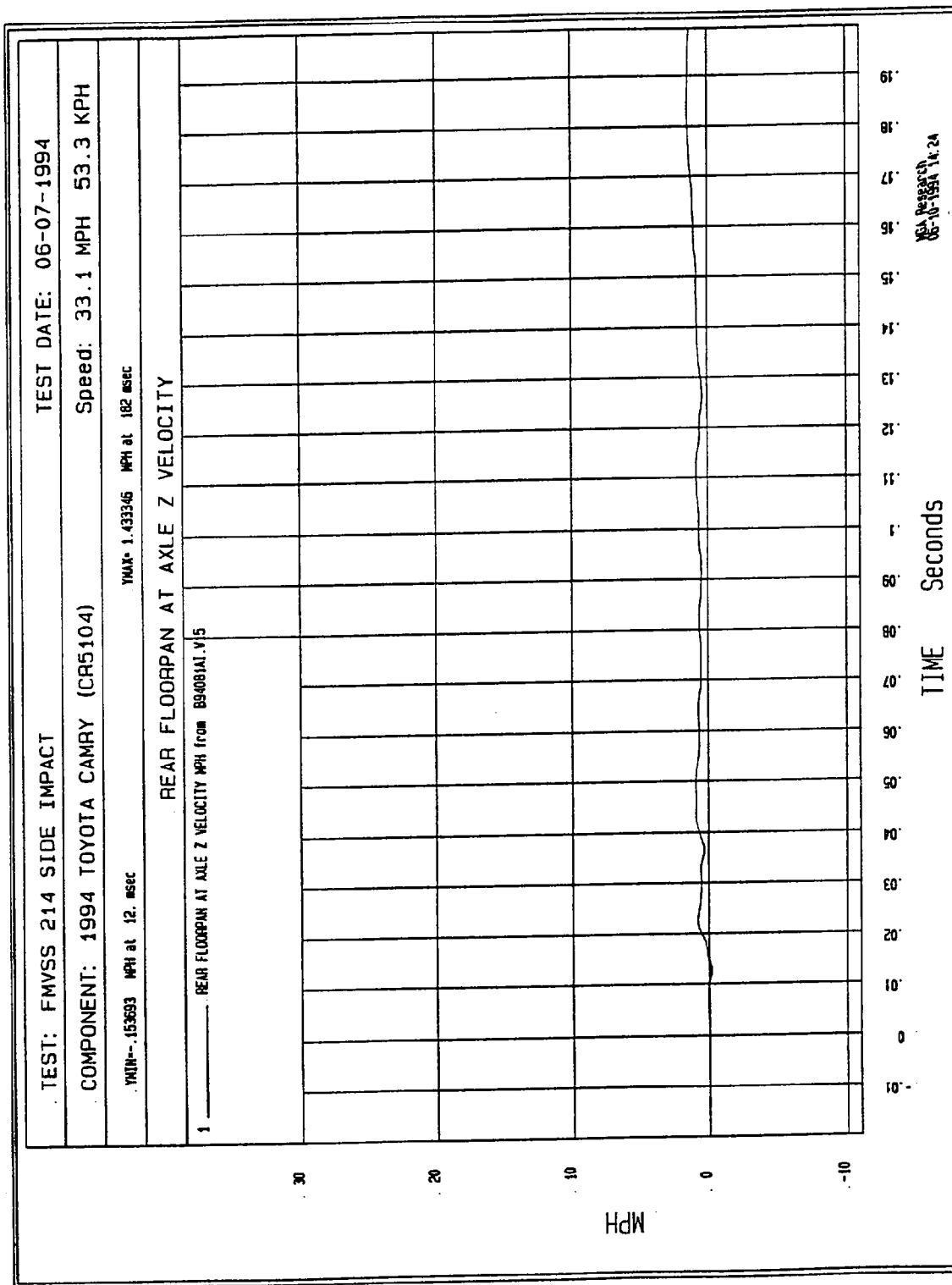


Figure B-48 - Rear Floorpan at Axle Z Velocity vs. Time

Filter: Class 60 (100 Hz)

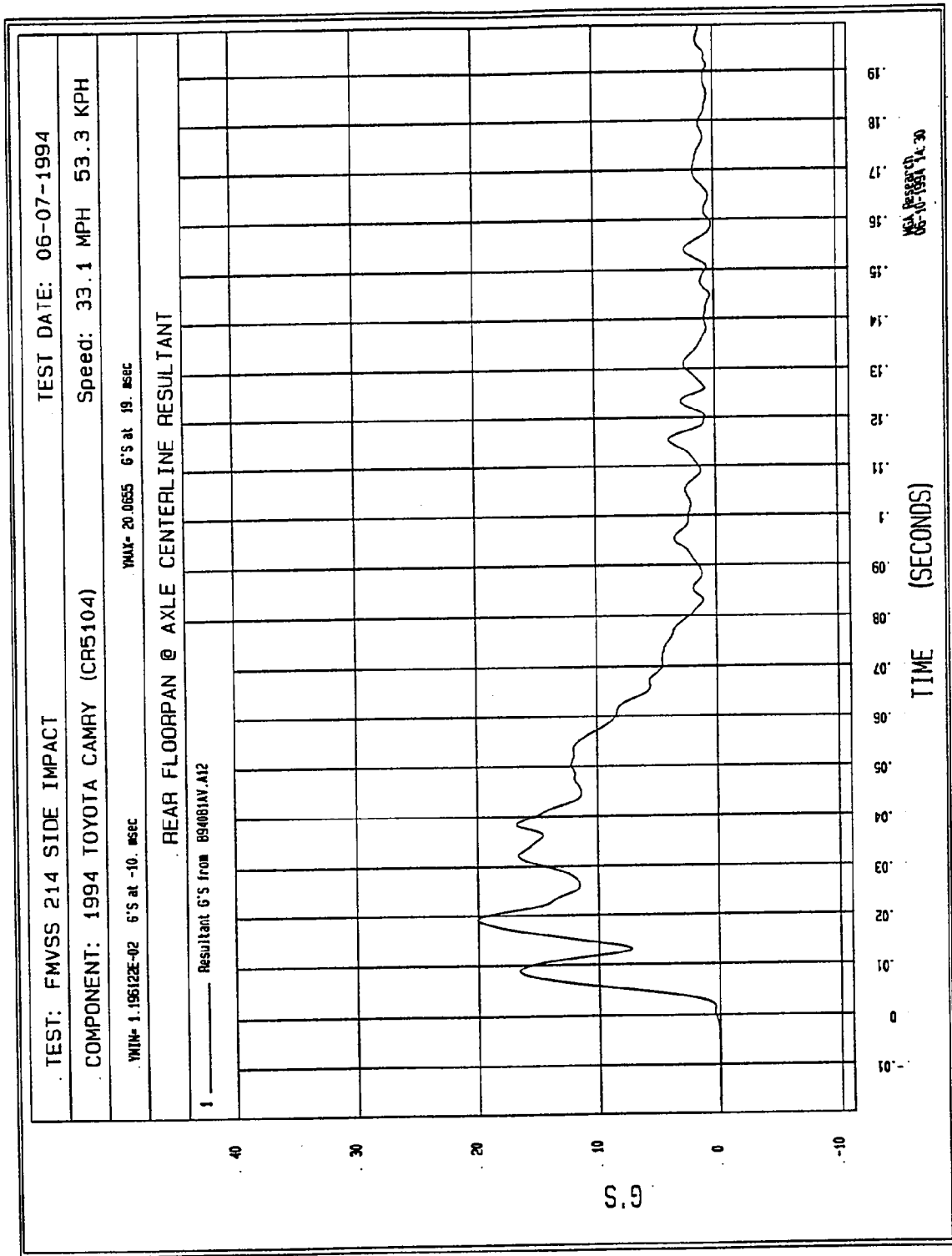


Figure B-49 - Rear Floorpan at Axle Centerline Resultant vs. Time

Filter: Class 60 (100 Hz)

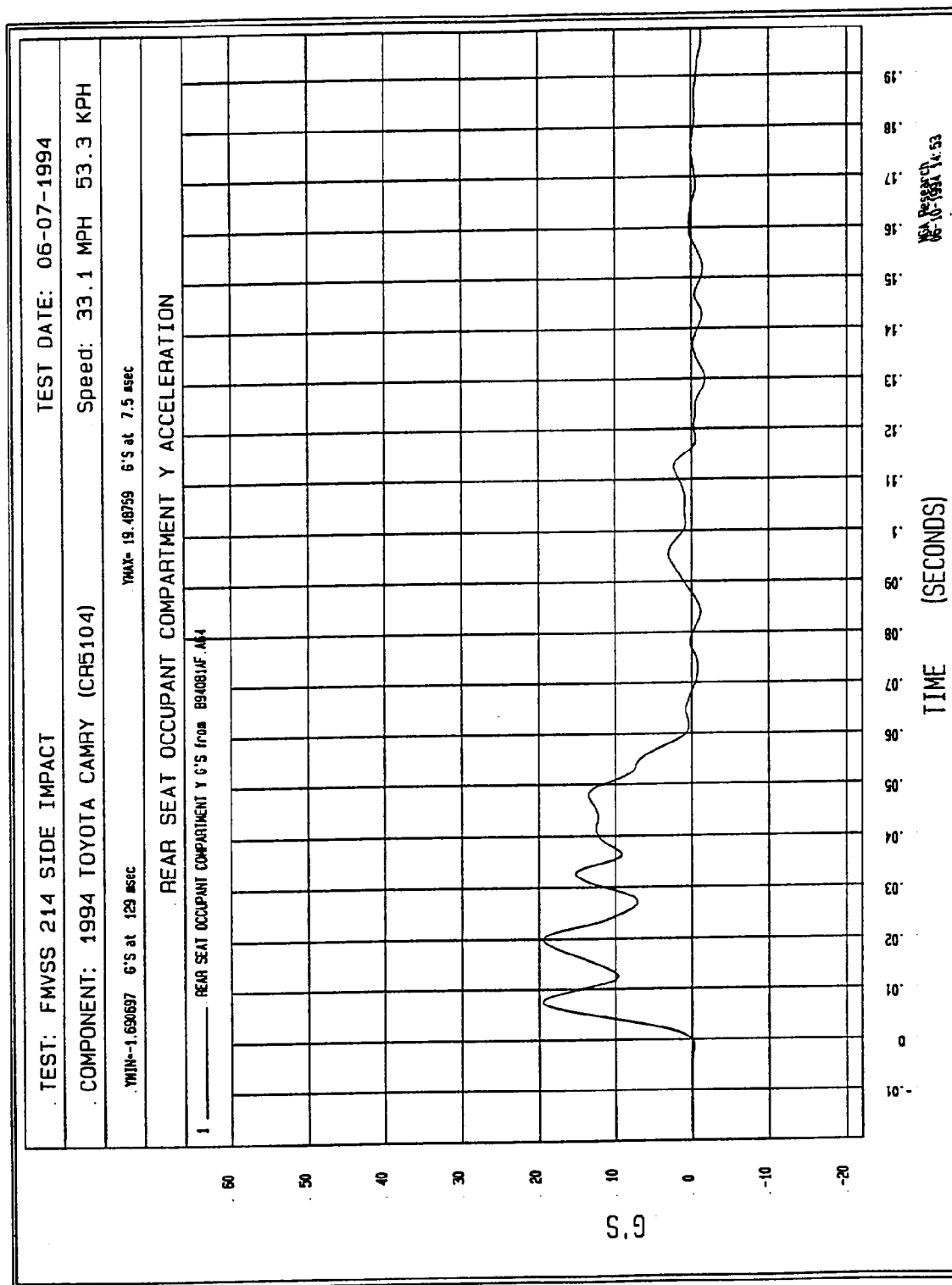


Figure B-50 - Rear Seat Occupant Compartment Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

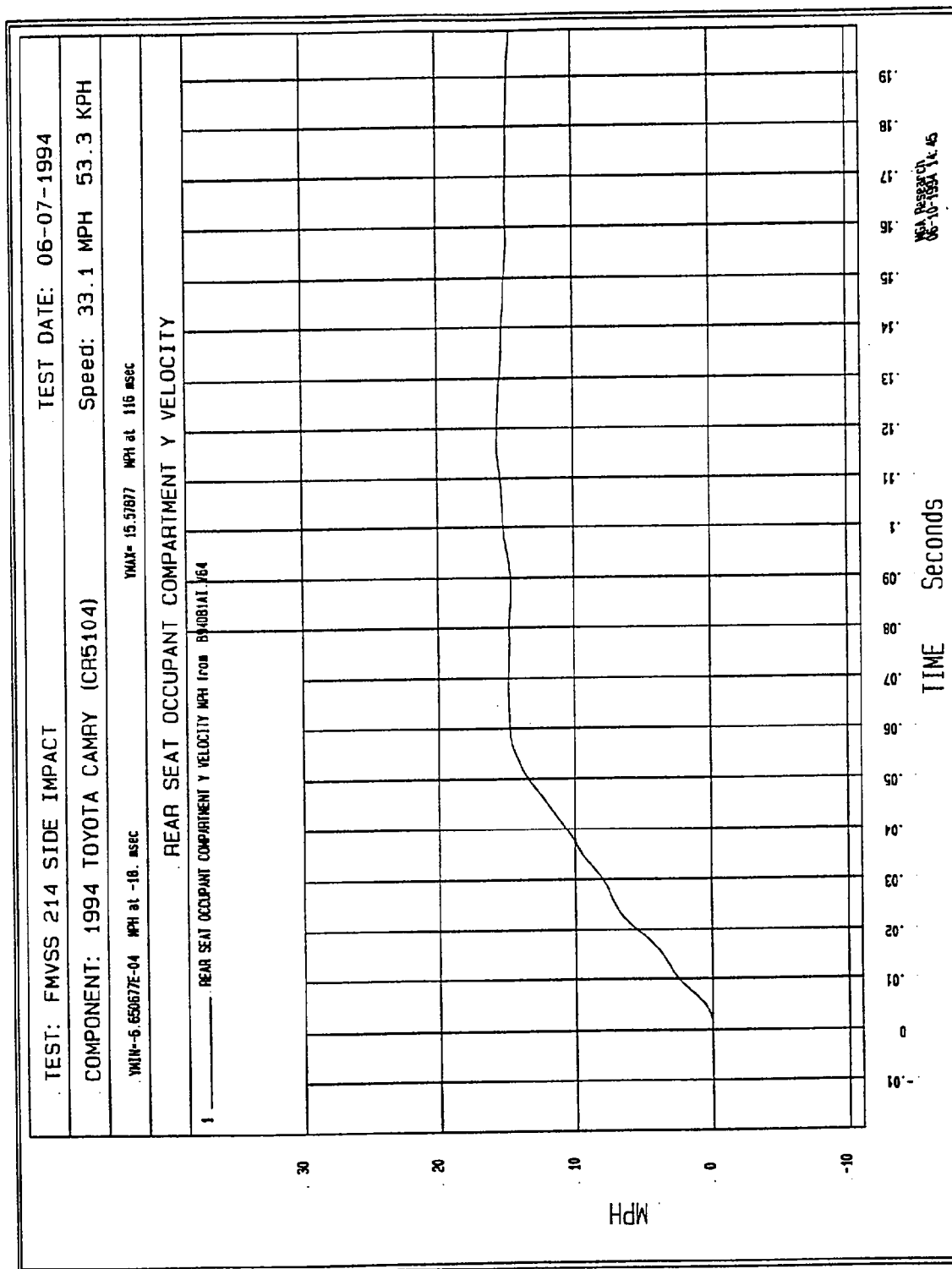


Figure B-51 - Rear Seat Occupant Compartment Y Velocity vs. Time

Filter: Class 180 (300 Hz)

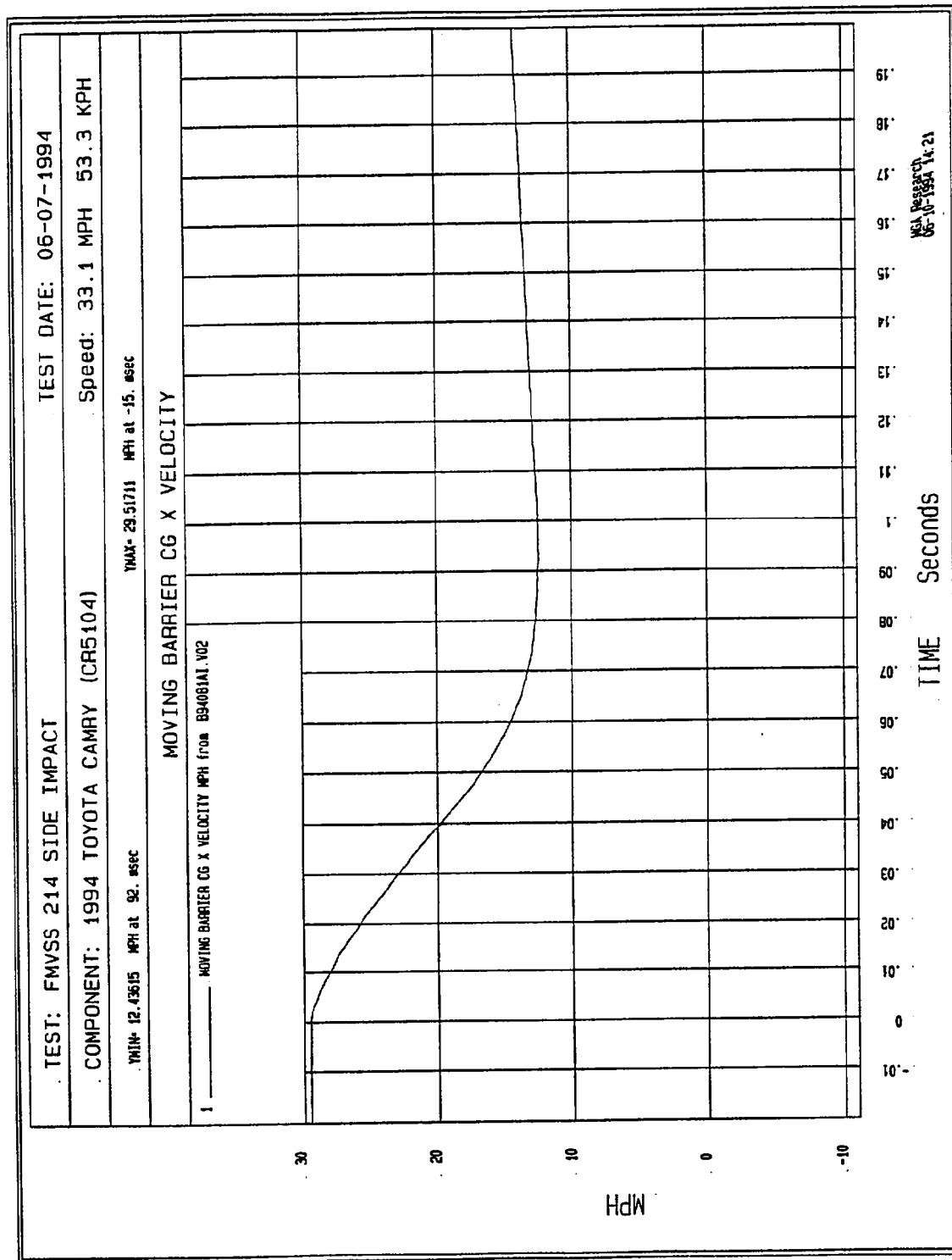


Figure B-53 - Moving Barrier Center of Gravity X Velocity vs. Time

1. *Chlorophyll a* (Chl *a*)

2. *Chlorophyll b* (Chl *b*)

3. *Carotenoids* (Car)

4. *Phaeophytin a* (Phe *a*)

5. *Phaeophytin b* (Phe *b*)

6. *Phaeoerythrin* (Phe *er*)

7. *Phaeoxanthophyll* (Phe *x*)

8. *Phaeo-zeaxanthin* (Phe *z*)

9. *Phaeo-lutein* (Phe *l*)

10. *Phaeo-fucoanthoxanthin* (Phe *f*)

11. *Phaeo-peridinin* (Phe *p*)

12. *Phaeo-zeaxanthin* (Phe *z*)

13. *Phaeo-lutein* (Phe *l*)

14. *Phaeo-fucoanthoxanthin* (Phe *f*)

15. *Phaeo-peridinin* (Phe *p*)

16. *Phaeo-zeaxanthin* (Phe *z*)

17. *Phaeo-lutein* (Phe *l*)

18. *Phaeo-fucoanthoxanthin* (Phe *f*)

19. *Phaeo-peridinin* (Phe *p*)

20. *Phaeo-zeaxanthin* (Phe *z*)

21. *Phaeo-lutein* (Phe *l*)

22. *Phaeo-fucoanthoxanthin* (Phe *f*)

23. *Phaeo-peridinin* (Phe *p*)

24. *Phaeo-zeaxanthin* (Phe *z*)

25. *Phaeo-lutein* (Phe *l*)

26. *Phaeo-fucoanthoxanthin* (Phe *f*)

27. *Phaeo-peridinin* (Phe *p*)

28. *Phaeo-zeaxanthin* (Phe *z*)

29. *Phaeo-lutein* (Phe *l*)

30. *Phaeo-fucoanthoxanthin* (Phe *f*)

31. *Phaeo-peridinin* (Phe *p*)

32. *Phaeo-zeaxanthin* (Phe *z*)

33. *Phaeo-lutein* (Phe *l*)

34. *Phaeo-fucoanthoxanthin* (Phe *f*)

35. *Phaeo-peridinin* (Phe *p*)

36. *Phaeo-zeaxanthin* (Phe *z*)

37. *Phaeo-lutein* (Phe *l*)

38. *Phaeo-fucoanthoxanthin* (Phe *f*)

39. *Phaeo-peridinin* (Phe *p*)

40. *Phaeo-zeaxanthin* (Phe *z*)

41. *Phaeo-lutein* (Phe *l*)

42. *Phaeo-fucoanthoxanthin* (Phe *f*)

43. *Phaeo-peridinin* (Phe *p*)

44. *Phaeo-zeaxanthin* (Phe *z*)

45. *Phaeo-lutein* (Phe *l*)

46. *Phaeo-fucoanthoxanthin* (Phe *f*)

47. *Phaeo-peridinin* (Phe *p*)

48. *Phaeo-zeaxanthin* (Phe *z*)

49. *Phaeo-lutein* (Phe *l*)

50. *Phaeo-fucoanthoxanthin* (Phe *f*)

51. *Phaeo-peridinin* (Phe *p*)

52. *Phaeo-zeaxanthin* (Phe *z*)

53. *Phaeo-lutein* (Phe *l*)

54. *Phaeo-fucoanthoxanthin* (Phe *f*)

55. *Phaeo-peridinin* (Phe *p*)

56. *Phaeo-zeaxanthin* (Phe *z*)

57. *Phaeo-lutein* (Phe *l*)

58. *Phaeo-fucoanthoxanthin* (Phe *f*)

59. *Phaeo-peridinin* (Phe *p*)

60. *Phaeo-zeaxanthin* (Phe *z*)

61. *Phaeo-lutein* (Phe *l*)

62. *Phaeo-fucoanthoxanthin* (Phe *f*)

63. *Phaeo-peridinin* (Phe *p*)

64. *Phaeo-zeaxanthin* (Phe *z*)

65. *Phaeo-lutein* (Phe *l*)

66. *Phaeo-fucoanthoxanthin* (Phe *f*)

67. *Phaeo-peridinin* (Phe *p*)

68. *Phaeo-zeaxanthin* (Phe *z*)

69. *Phaeo-lutein* (Phe *l*)

70. *Phaeo-fucoanthoxanthin* (Phe *f*)

71. *Phaeo-peridinin* (Phe *p*)

72. *Phaeo-zeaxanthin* (Phe *z*)

73. *Phaeo-lutein* (Phe *l*)

74. *Phaeo-fucoanthoxanthin* (Phe *f*)

75. *Phaeo-peridinin* (Phe *p*)

76. *Phaeo-zeaxanthin* (Phe *z*)

77. *Phaeo-lutein* (Phe *l*)

78. *Phaeo-fucoanthoxanthin* (Phe *f*)

79. *Phaeo-peridinin* (Phe *p*)

80. *Phaeo-zeaxanthin* (Phe *z*)

81. *Phaeo-lutein* (Phe *l*)

82. *Phaeo-fucoanthoxanthin* (Phe *f*)

83. *Phaeo-peridinin* (Phe *p*)

84. *Phaeo-zeaxanthin* (Phe *z*)

85. *Phaeo-lutein* (Phe *l*)

86. *Phaeo-fucoanthoxanthin* (Phe *f*)

87. *Phaeo-peridinin* (Phe *p*)

88. *Phaeo-zeaxanthin* (Phe *z*)

89. *Phaeo-lutein* (Phe *l*)

90. *Phaeo-fucoanthoxanthin* (Phe *f*)

91. *Phaeo-peridinin* (Phe *p*)

92. *Phaeo-zeaxanthin* (Phe *z*)

93. *Phaeo-lutein* (Phe *l*)

94. *Phaeo-fucoanthoxanthin* (Phe *f*)

95. *Phaeo-peridinin* (Phe *p*)

96. *Phaeo-zeaxanthin* (Phe *z*)

97. *Phaeo-lutein* (Phe *l*)

98. *Phaeo-fucoanthoxanthin* (Phe *f*)

99. *Phaeo-peridinin* (Phe *p*)

100. *Phaeo-zeaxanthin* (Phe *z*)

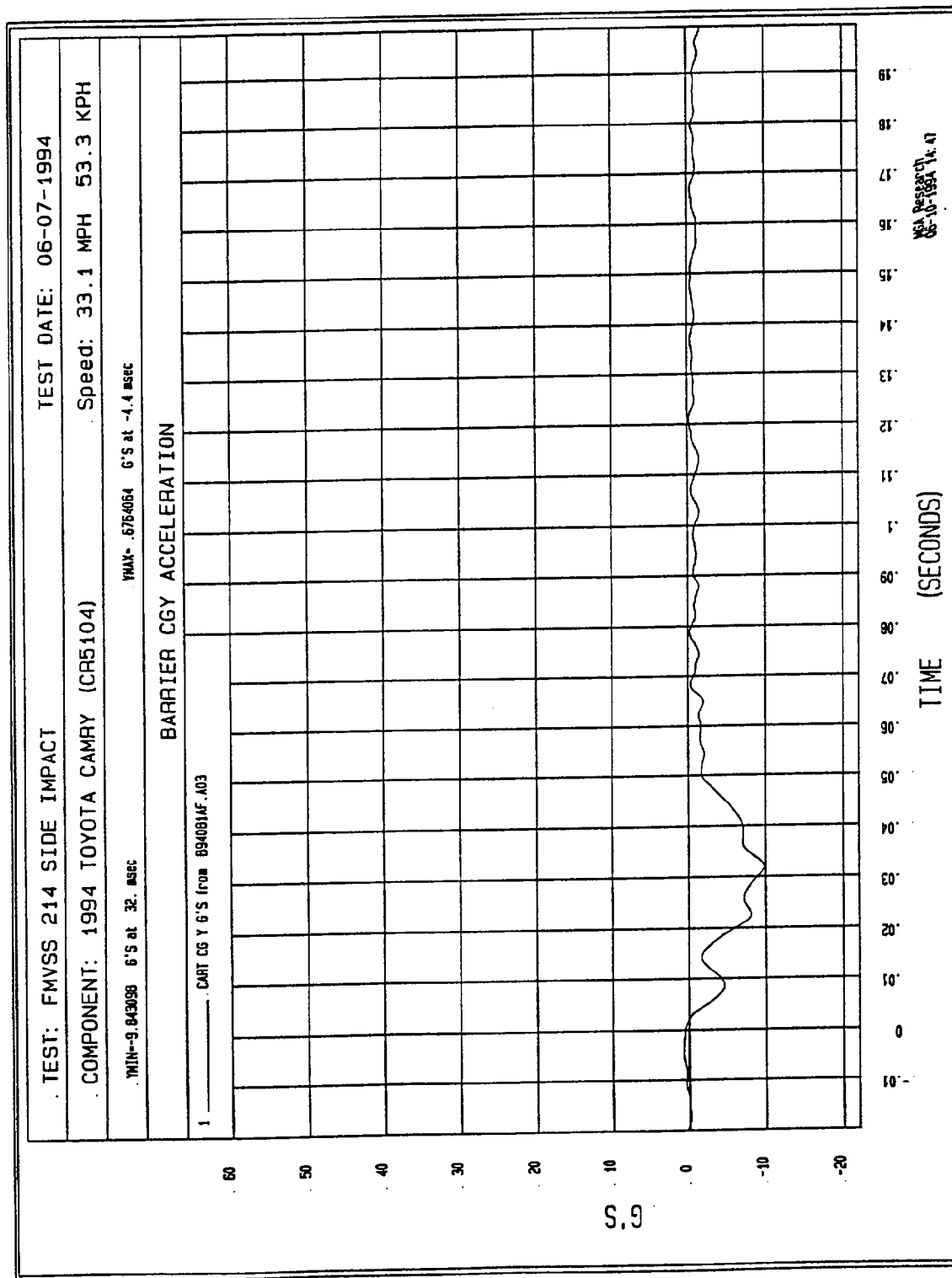


Figure B-54 - Moving Barrier Center of Gravity Y Acceleration vs. Time

Filter: Class 180 (300 Hz)

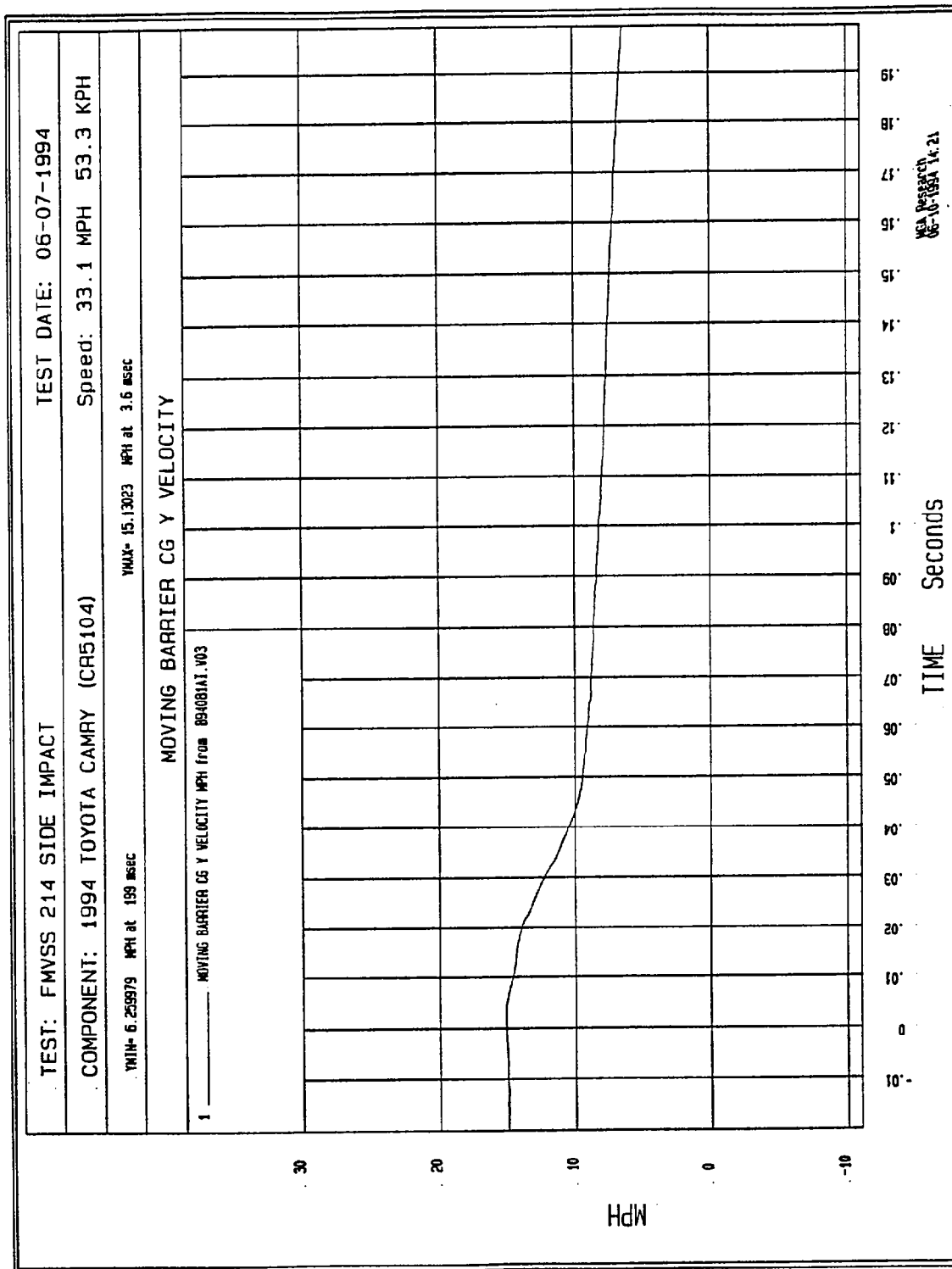


Figure B-55 - Moving Barrier Center of Gravity Y Velocity vs. Time

Filter: Class 60 (100 Hz)

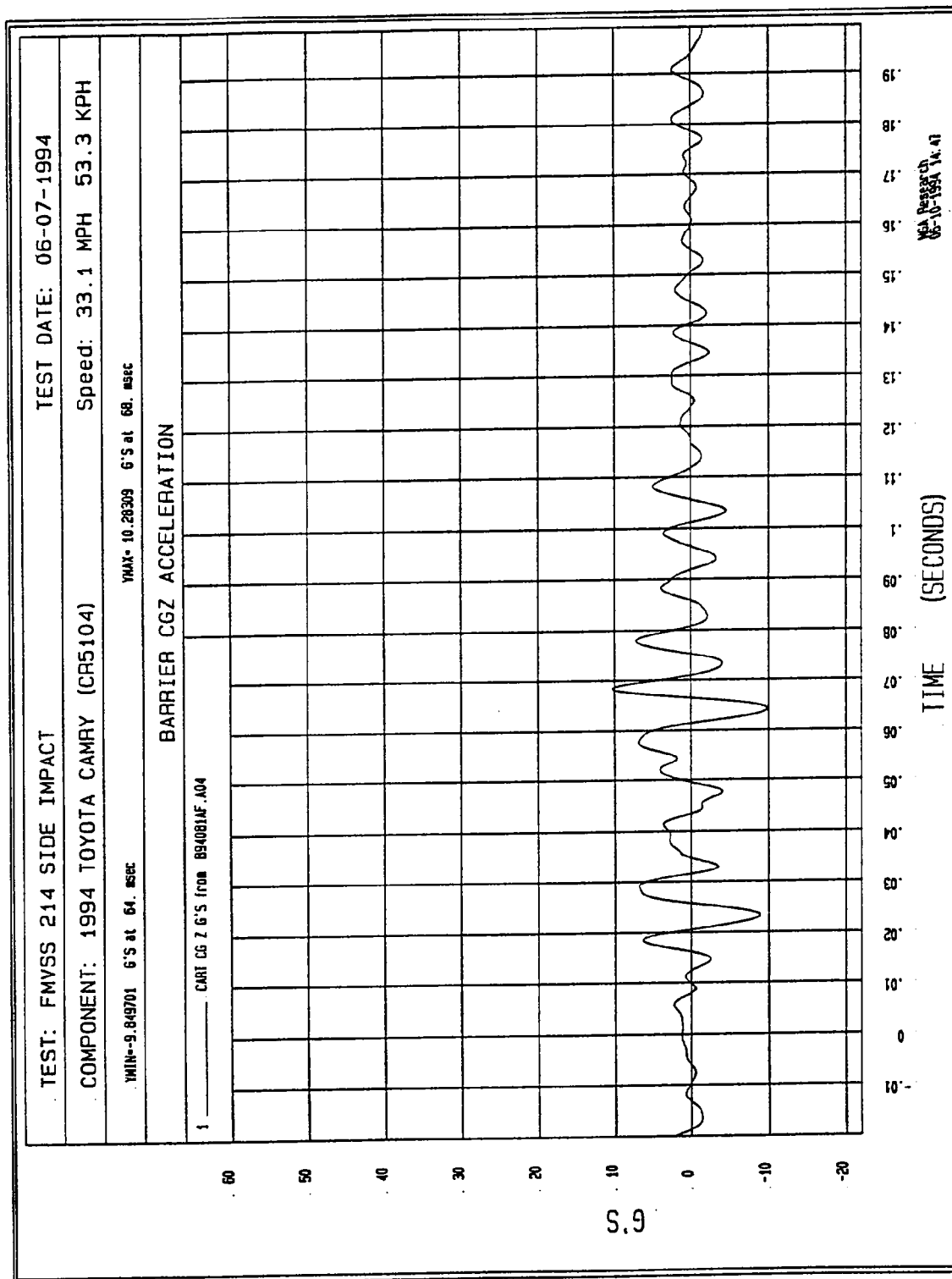


Figure B-56 - Moving Barrier Center of Gravity Z Acceleration vs. Time

Filter: Class 180 (300 Hz)

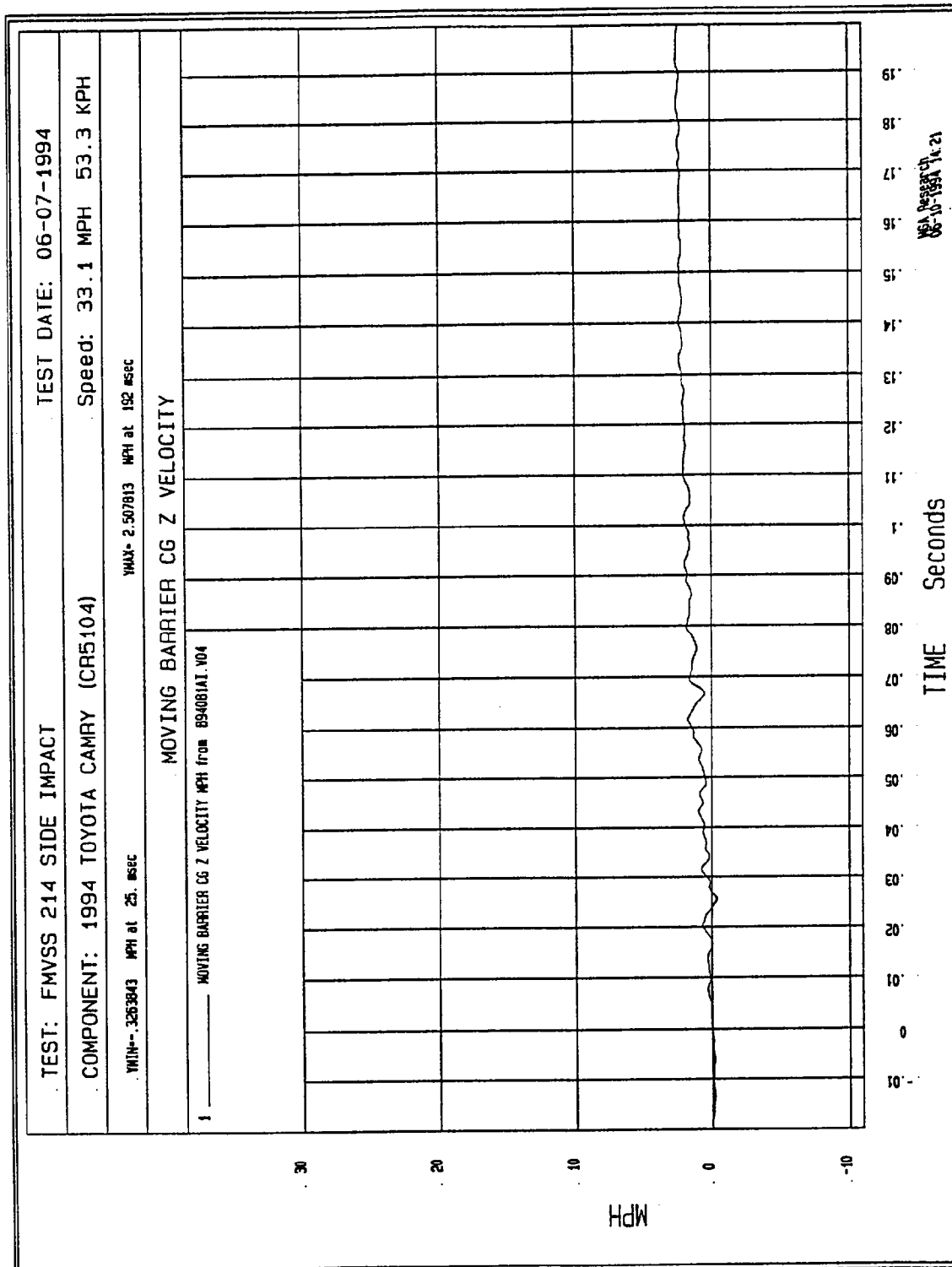


Figure B-57 - Moving Barrier Center of Gravity Z Velocity vs. Time

Filter: Class 60 (100 Hz)

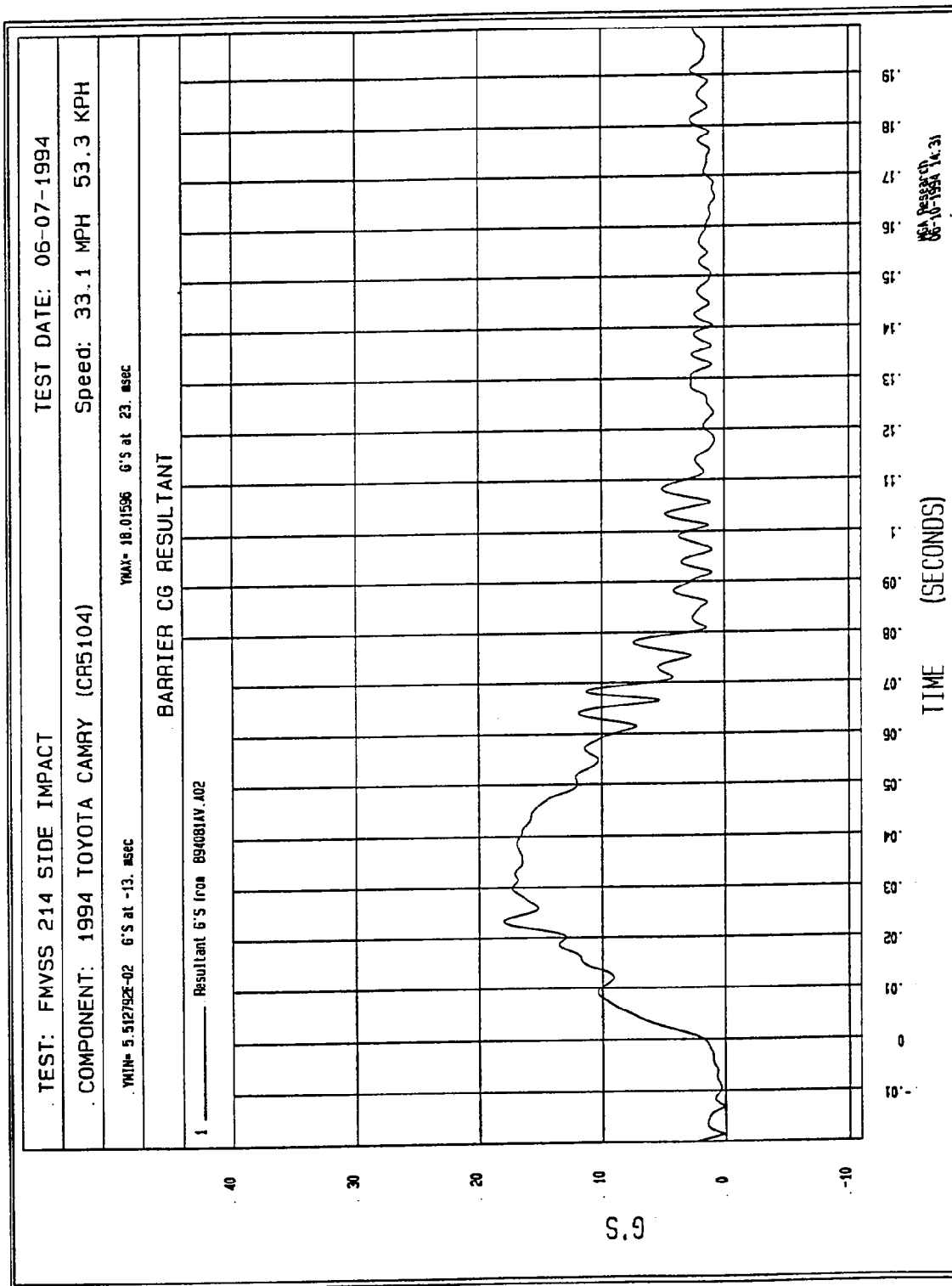


Figure B-58 - Moving Barrier Center of Gravity Resultant vs. Time

Filter: Class 60 (100 Hz)

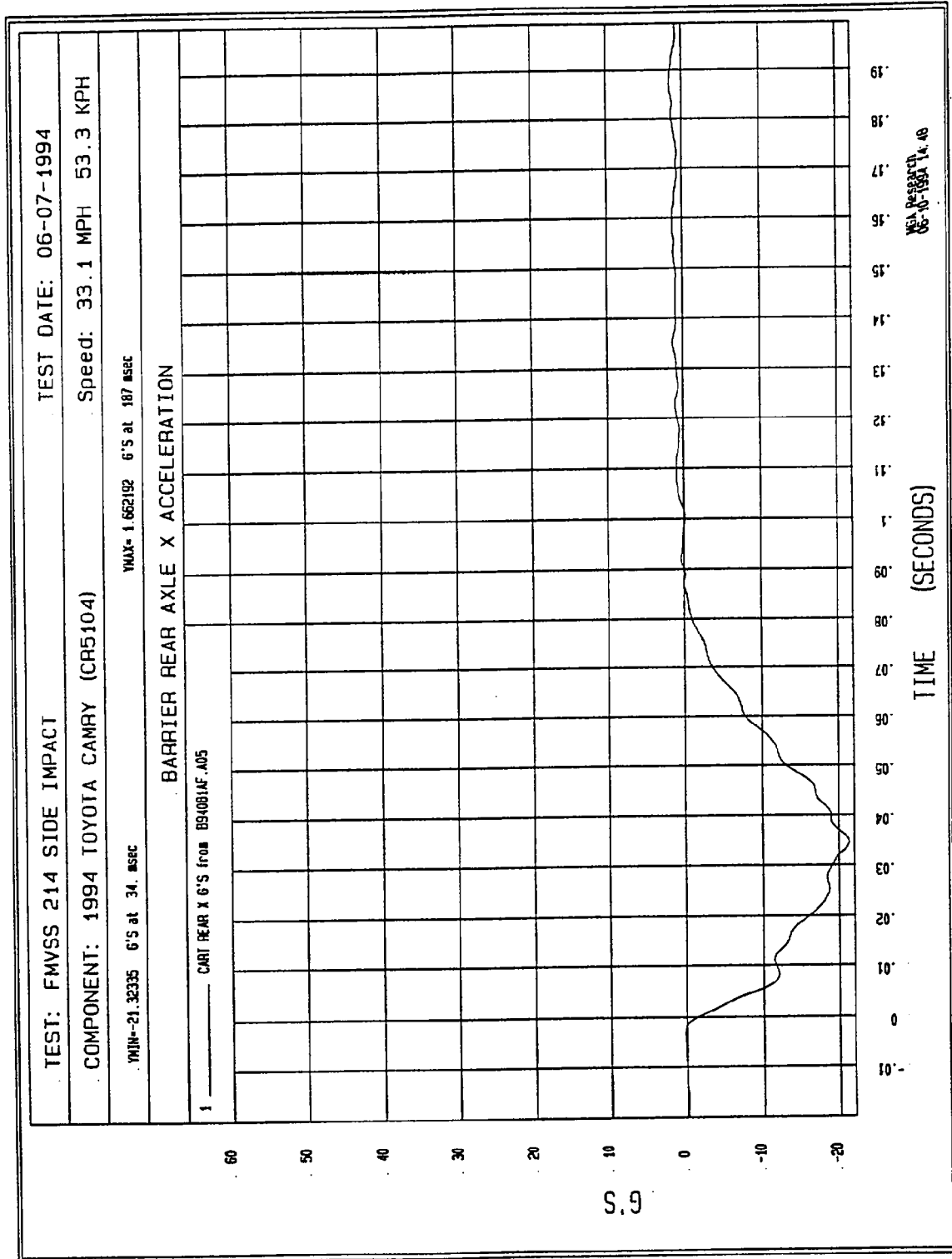


Figure B-59 - Moving Barrier Rear Axle X Acceleration vs. Time

Filter: Class 180 (300 Hz)

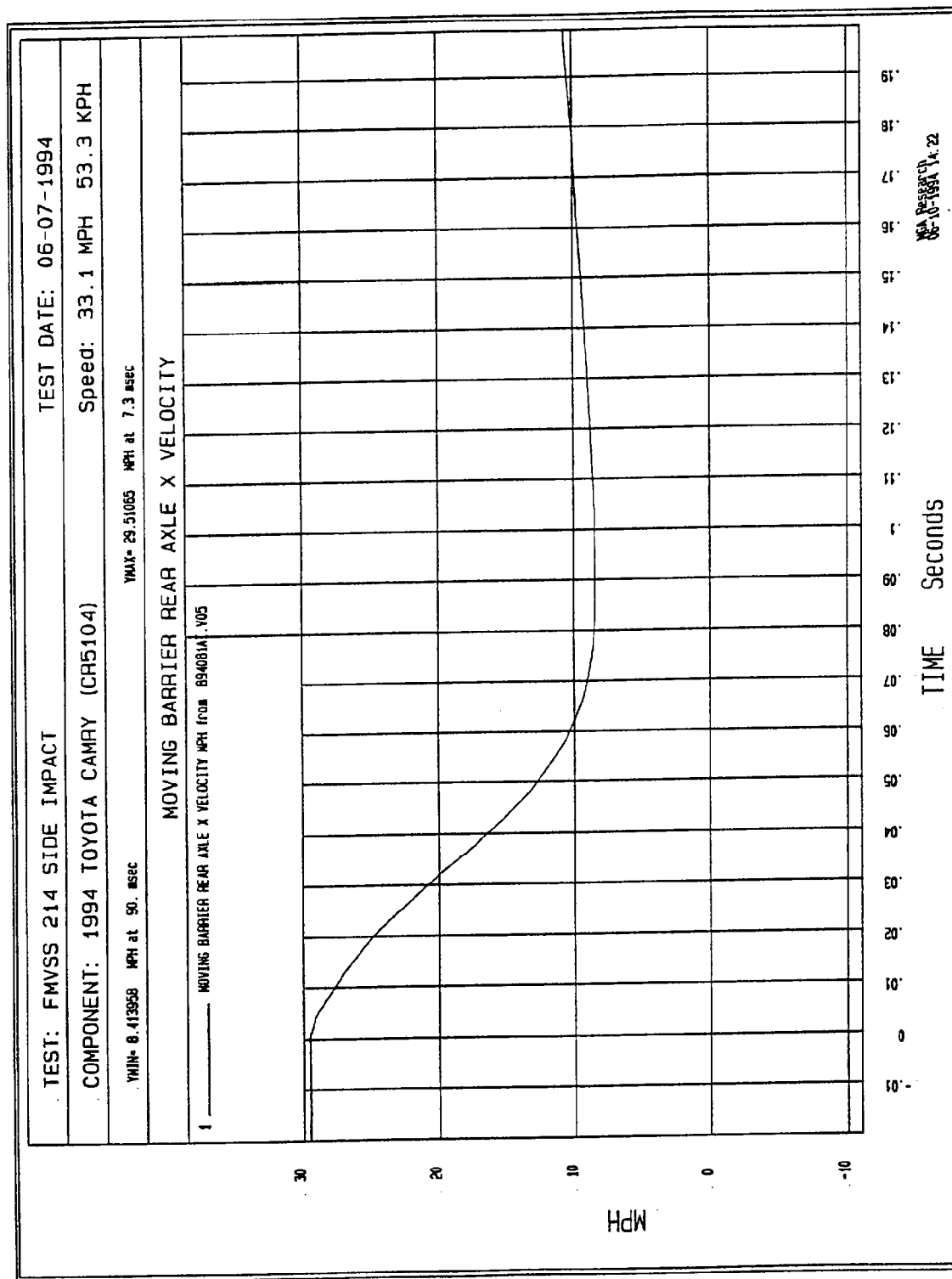


Figure B-60 - Moving Barrier Rear Axle X Velocity vs. Time

B-60

NO VALID DATA COLLECTED

B-61

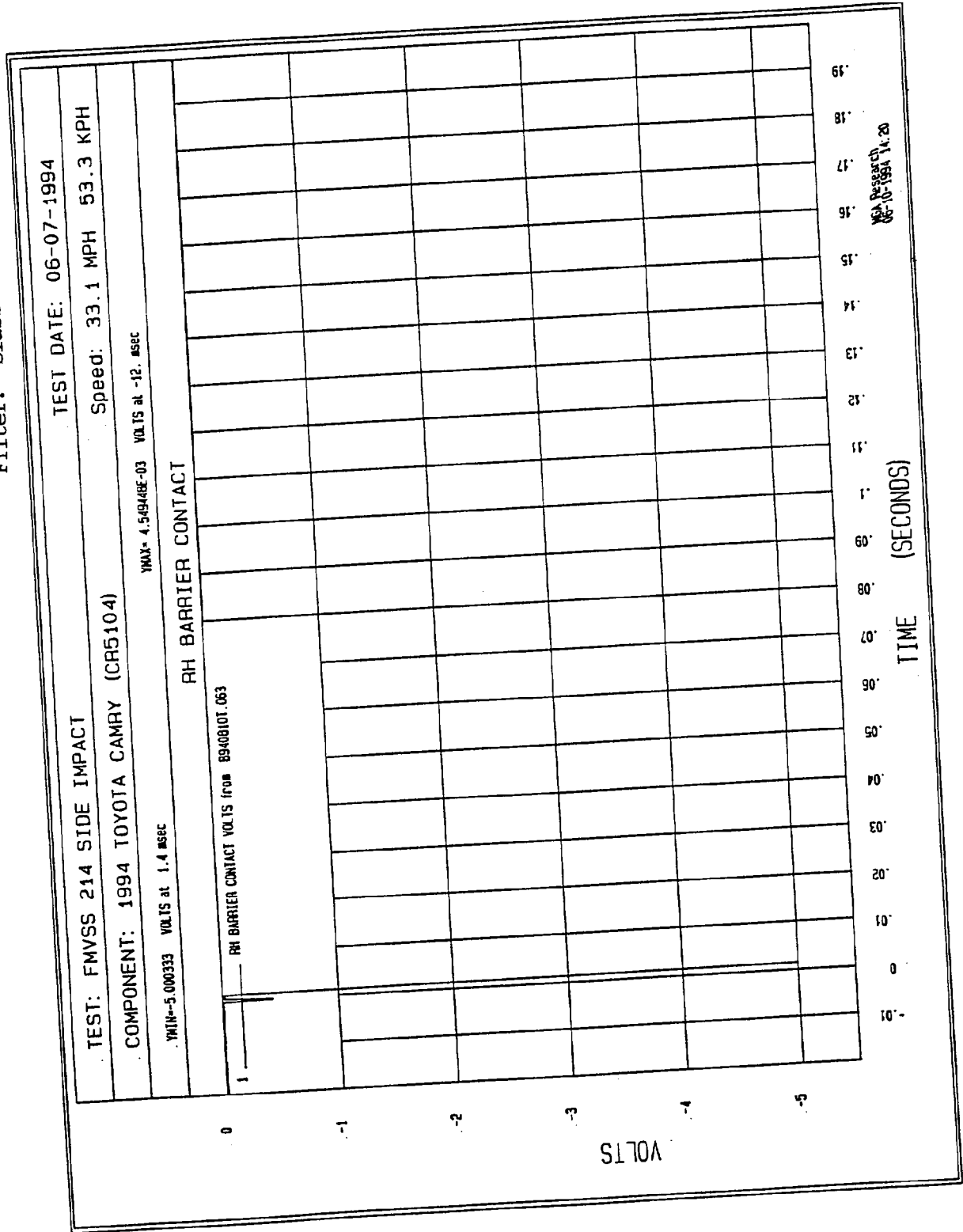
Figure B-61 - Moving Barrier Rear Axle Y Acceleration vs. Time

NO VALID DATA COLLECTED

B-62

Figure B-62 - Moving Barrier Rear Axle Y Velocity vs. Time

Filter: Class 1000 (1650 Hz)



B-63

Figure B-63 - Right Hand Barrier Contact

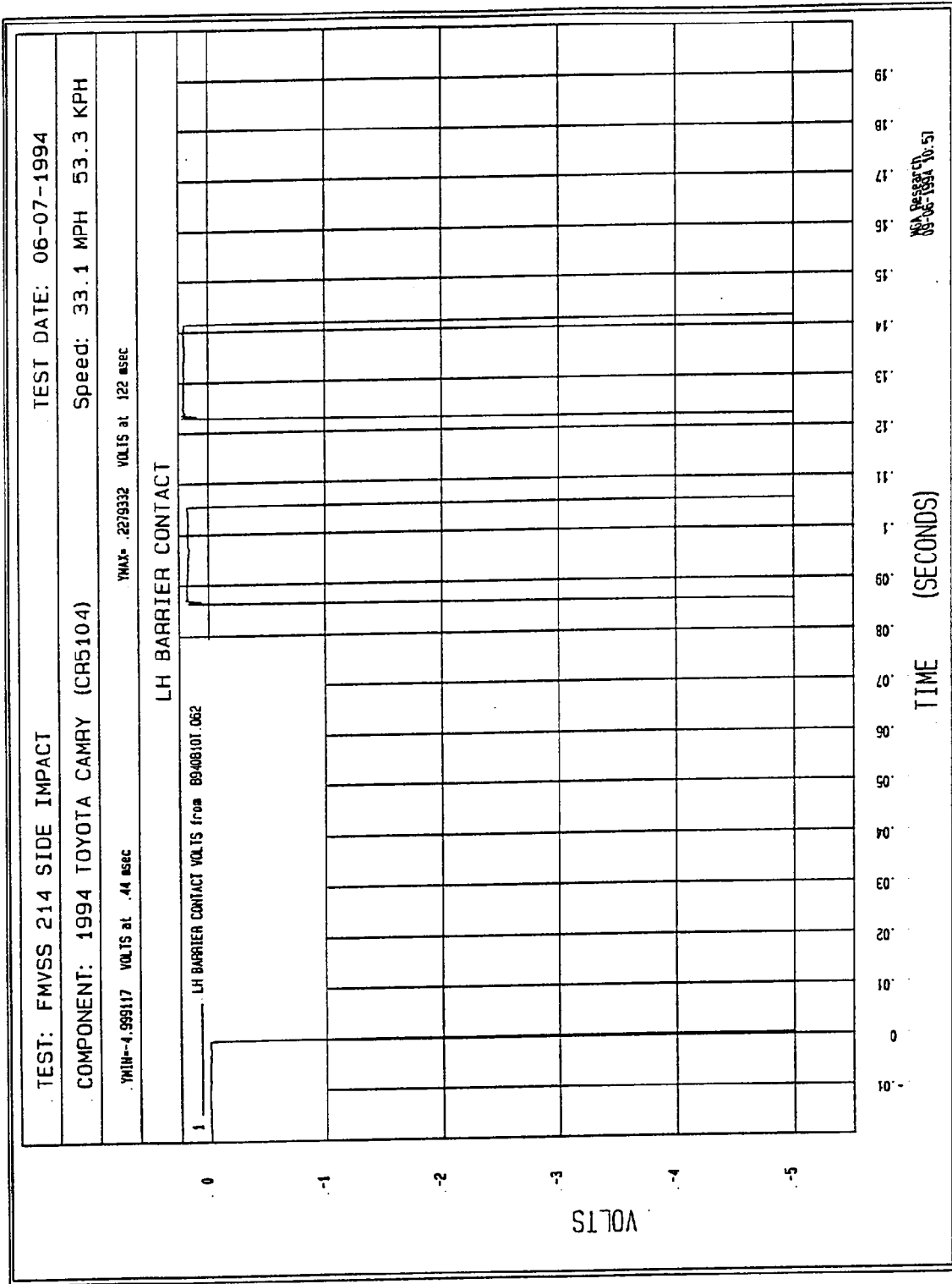


Figure B-64 - Left Hand Barrier Contact

Filter: Class 180 (300 Hz)

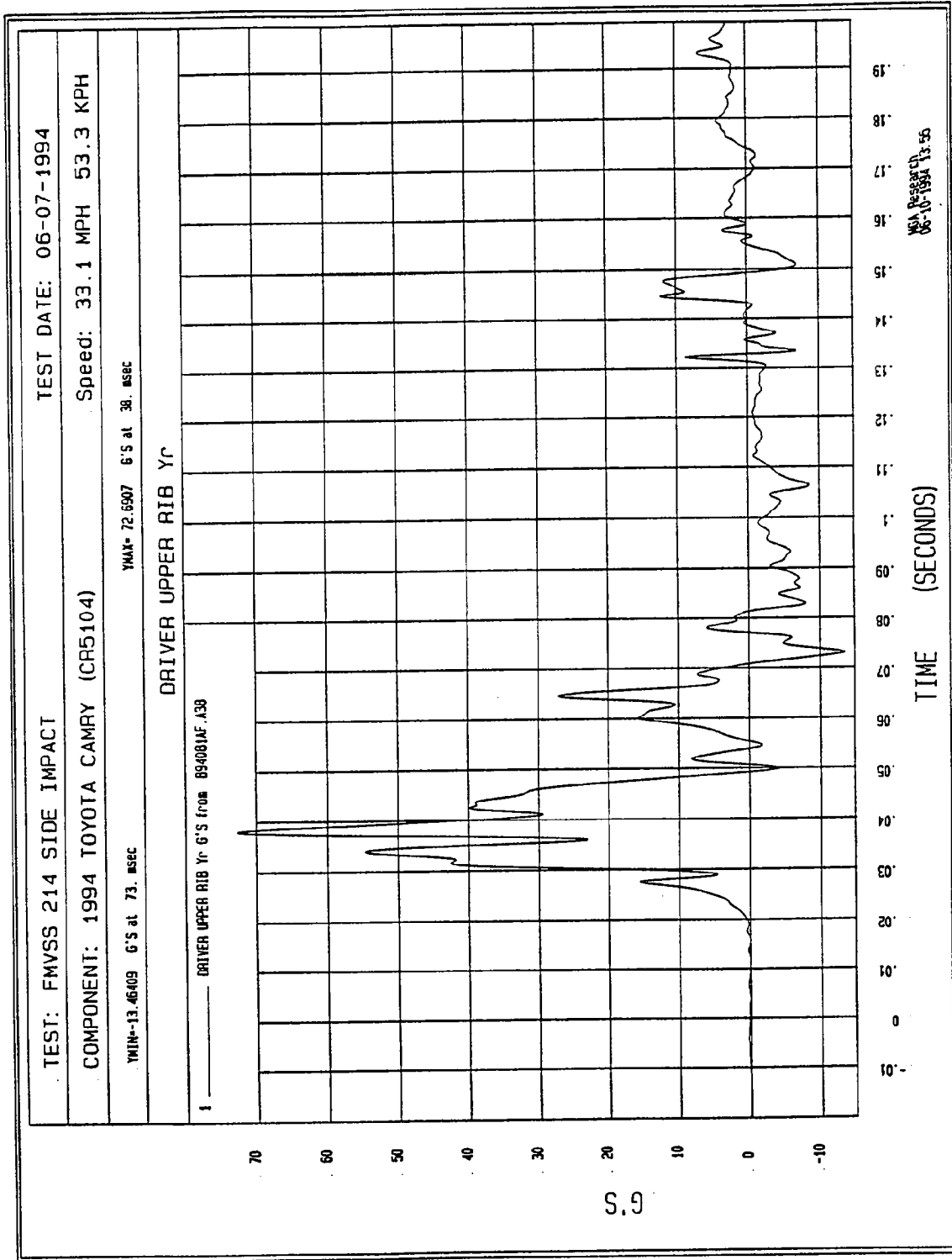


Figure B-65 - Driver Upper Rib Y Redundant Acceleration vs. Time

Filter: Class 180 (300 Hz)

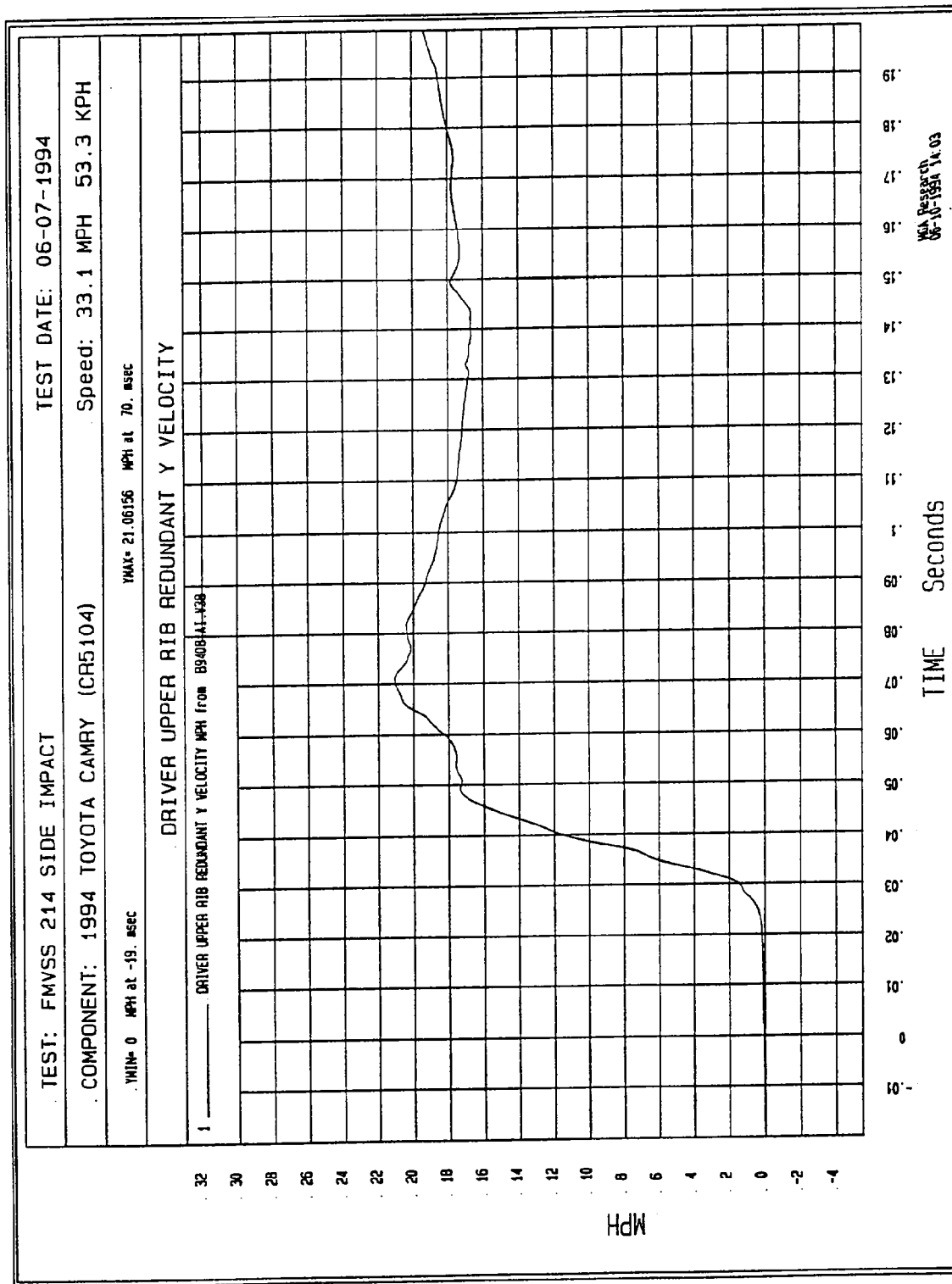


Figure B-66 - Driver Upper Rib Y Redundant Velocity vs. Time

Filter: Class 180 (300 Hz)

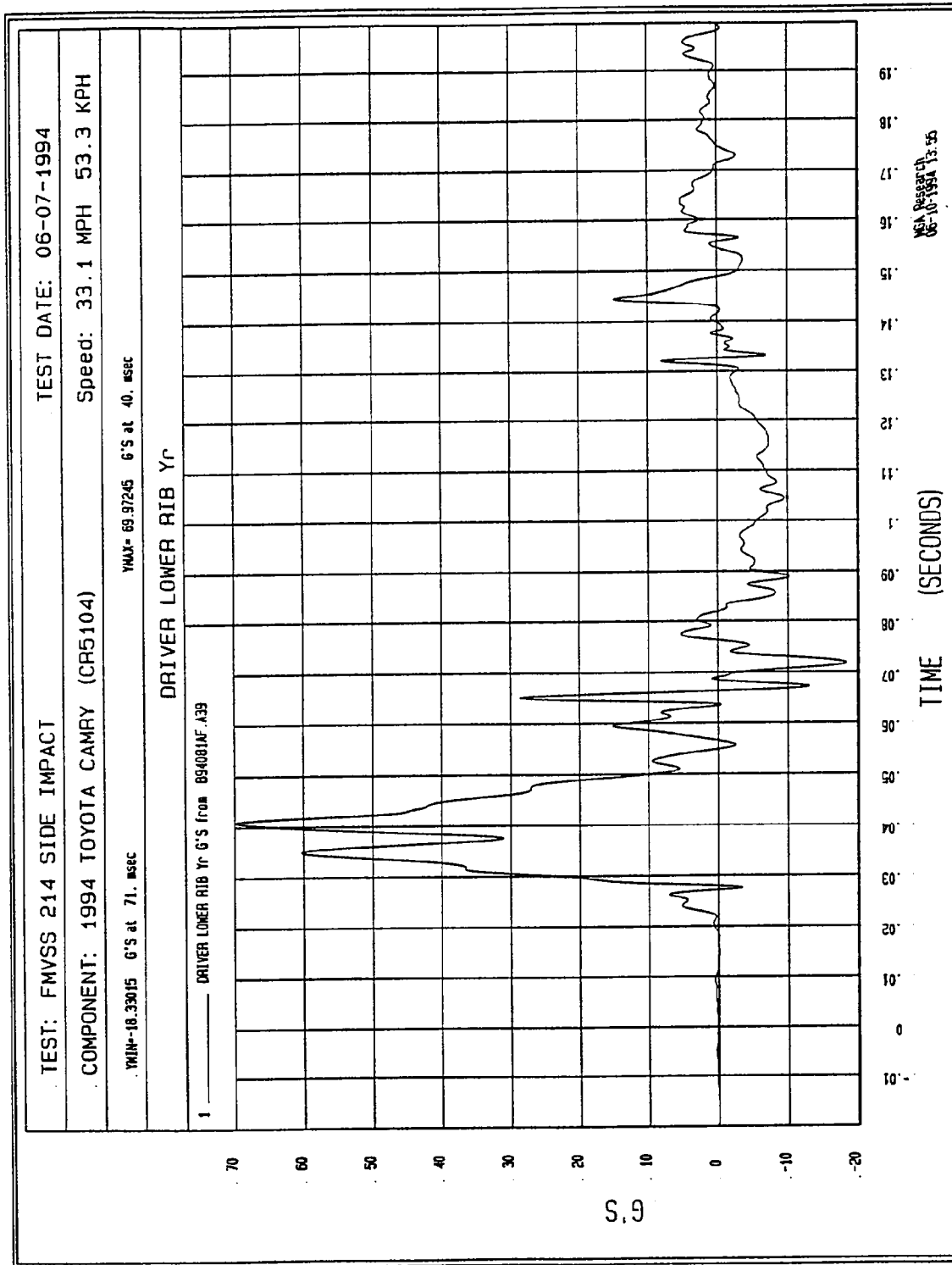
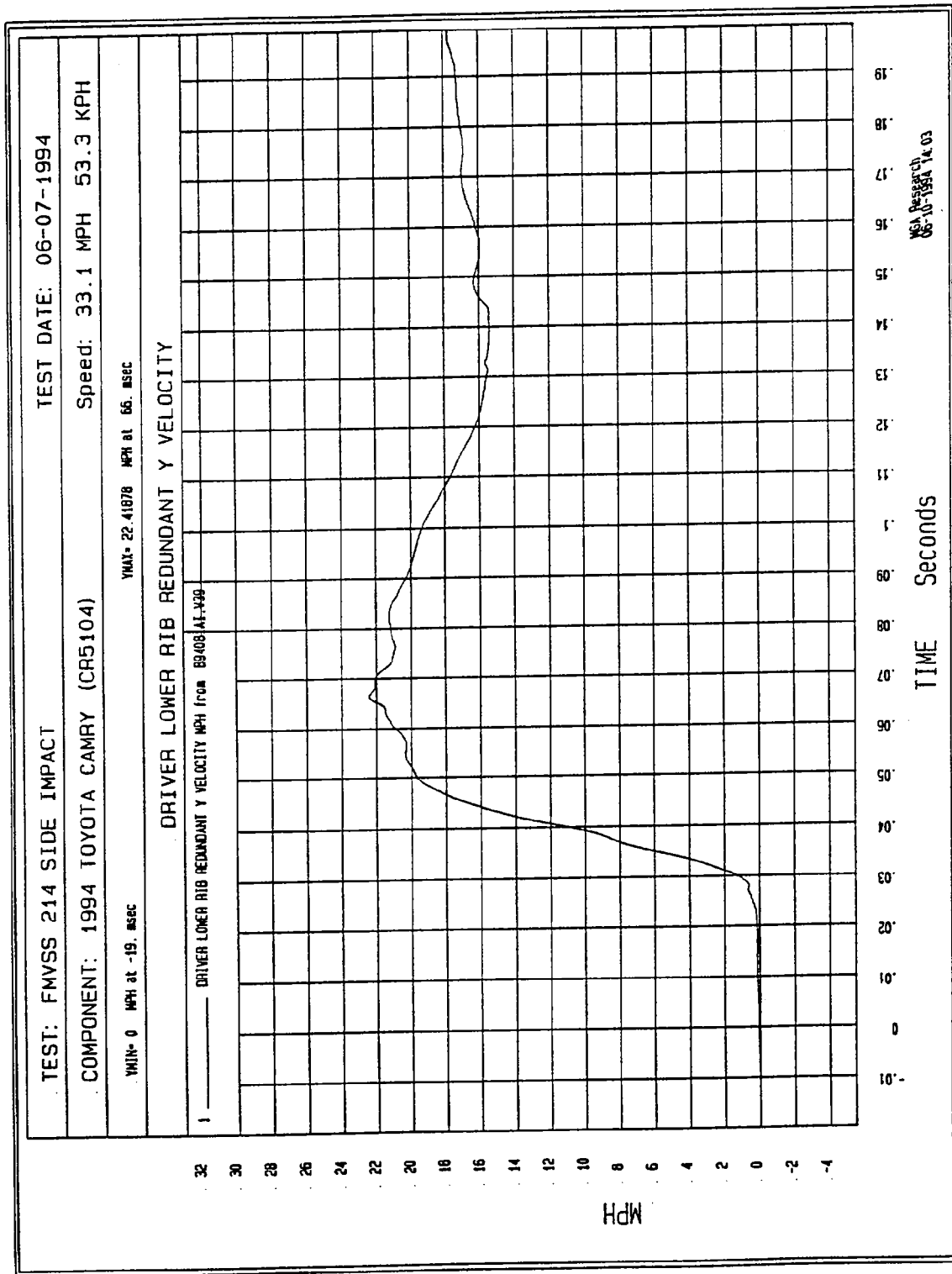


Figure B-67 - Driver Lower Rib Y Redundant Acceleration vs. Time

Filter: Class 180 (300 Hz)



B-68

Figure B-68 - Driver Lower Rib Y Redundant Velocity vs. Time

Filter: Class 180 (300 Hz)

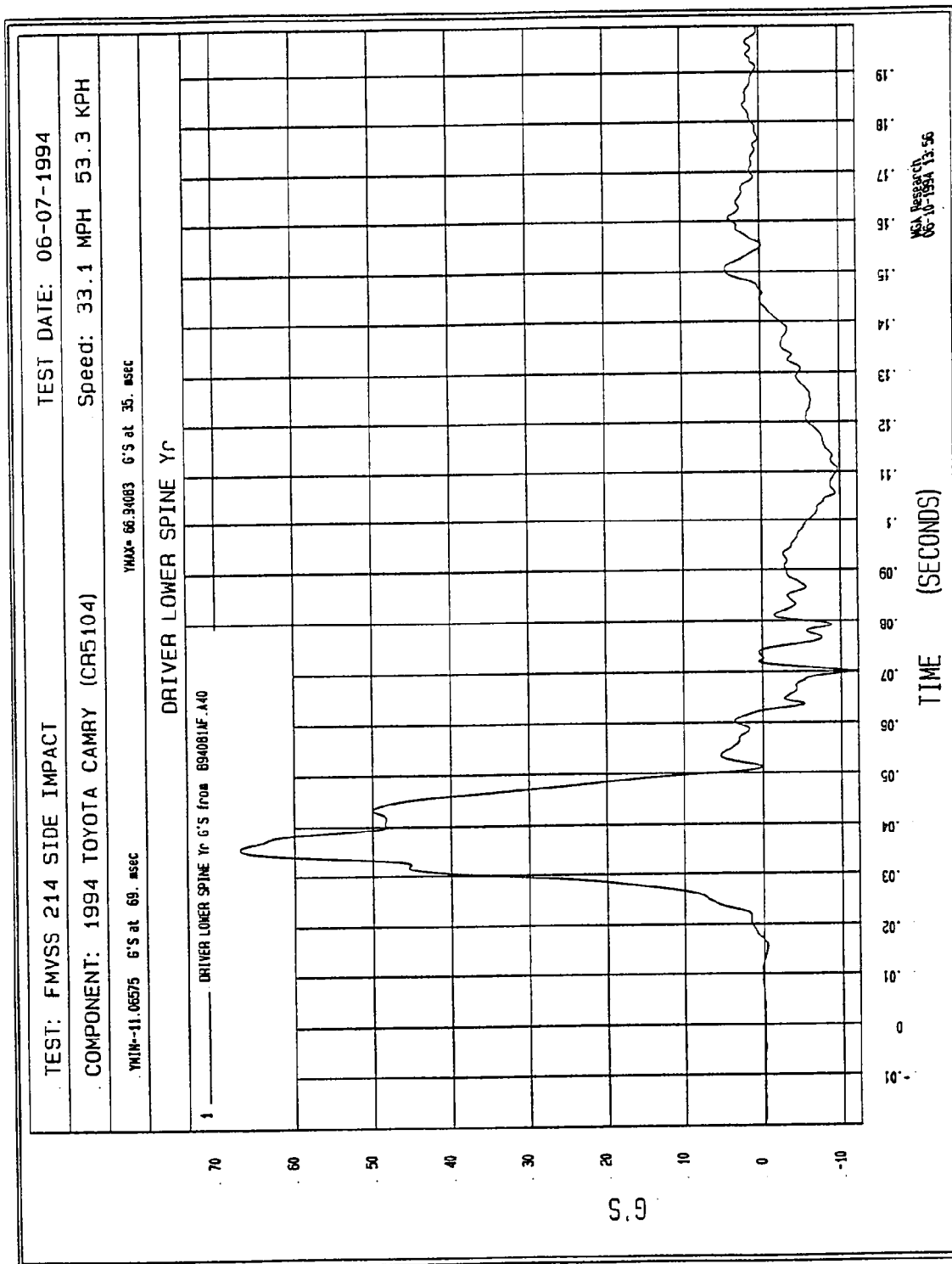
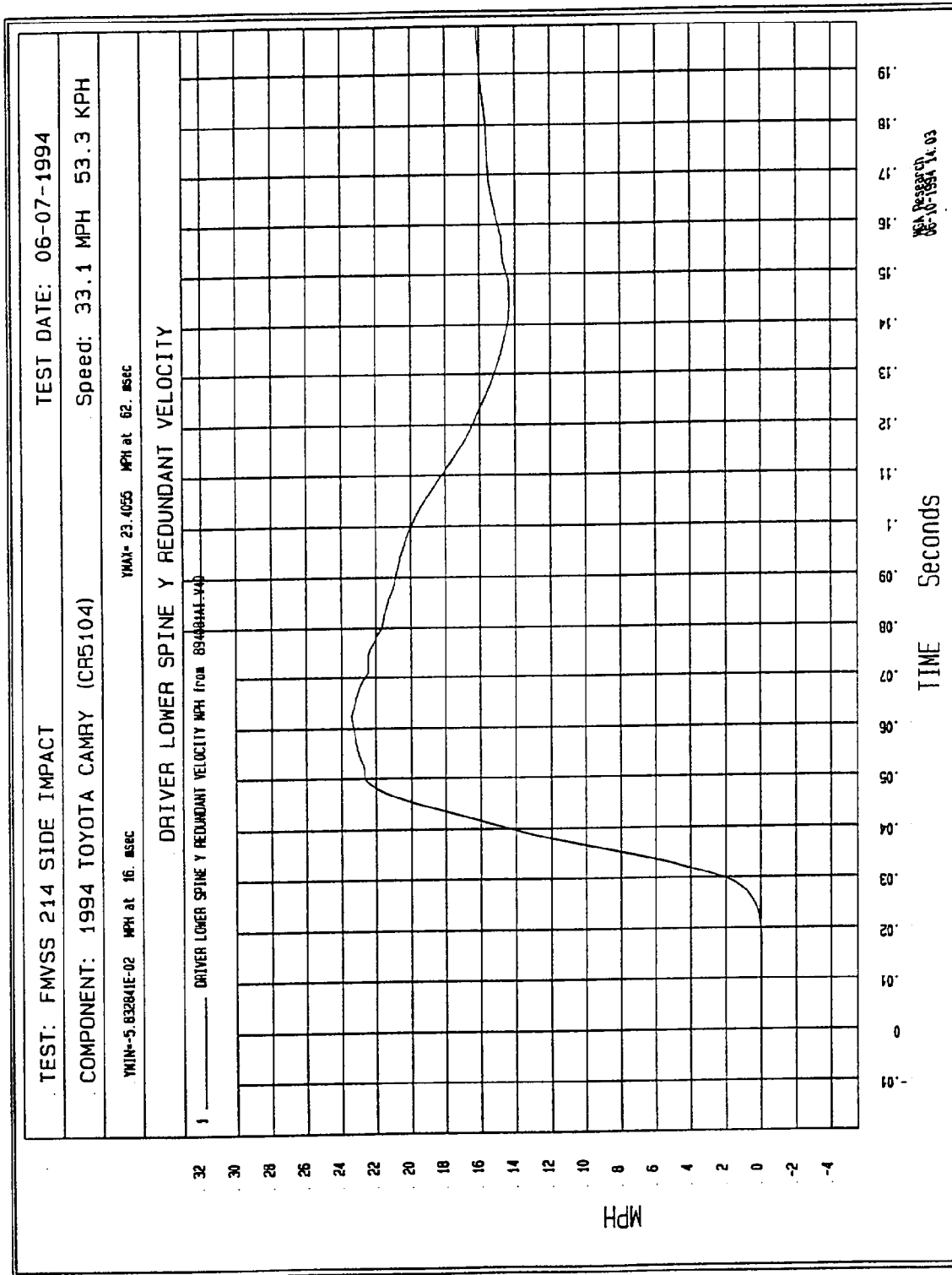


Figure B-69 - Driver Lower Spine Y Redundant Acceleration vs. Time

Filter: Class 180 (300 Hz)



B-70

Figure B-70 - Driver Lower Spine Y Redundant Velocity vs. Time

Filter: Class 180 (300 Hz)

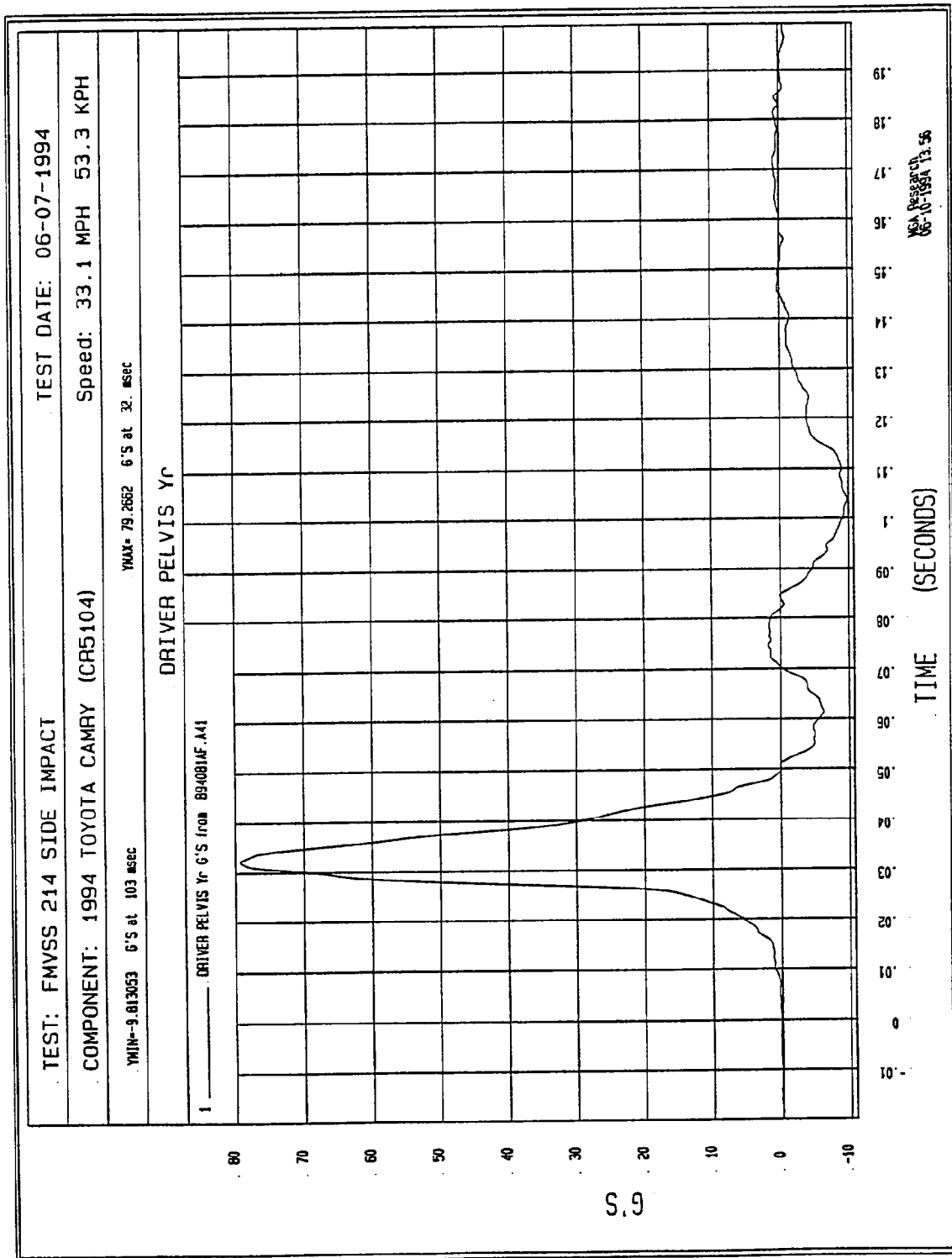


Figure B-71 - Driver Pelvis Y Redundant Acceleration vs. Time

Filter: Class 180 (300 Hz)

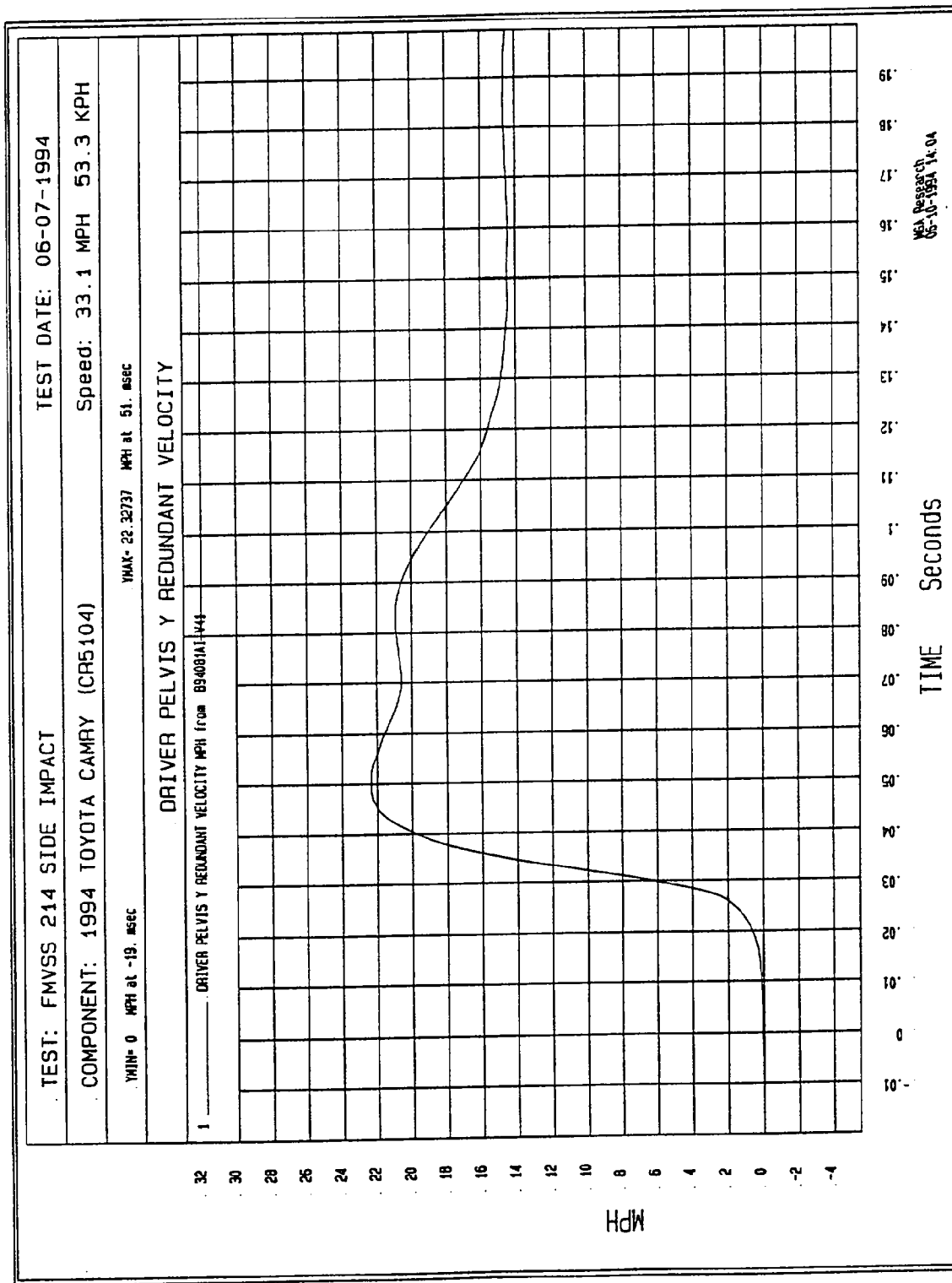


Figure B-72 - Driver Pelvis Y Redundant Velocity vs. Time

Filter: Class 180 (300 Hz)

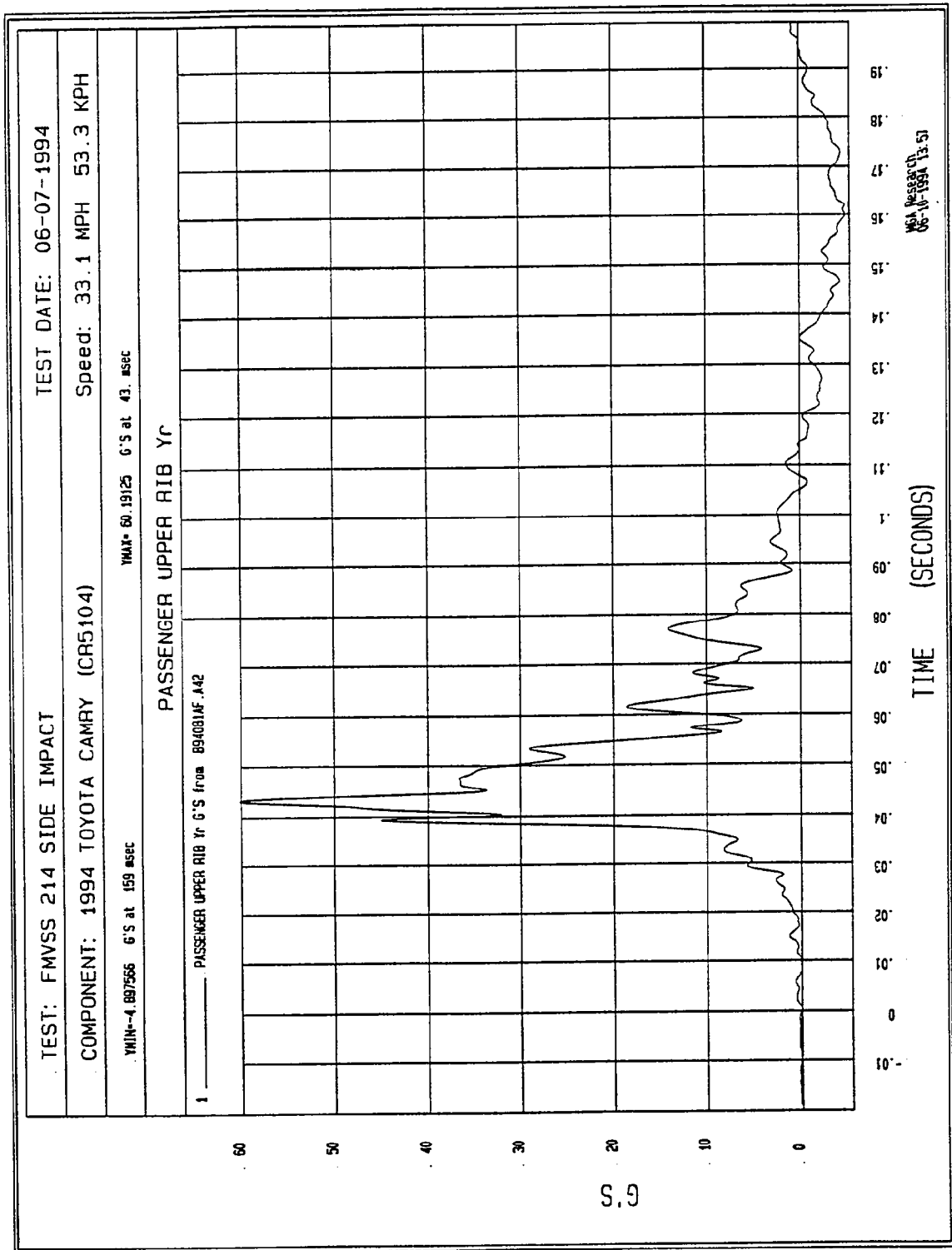
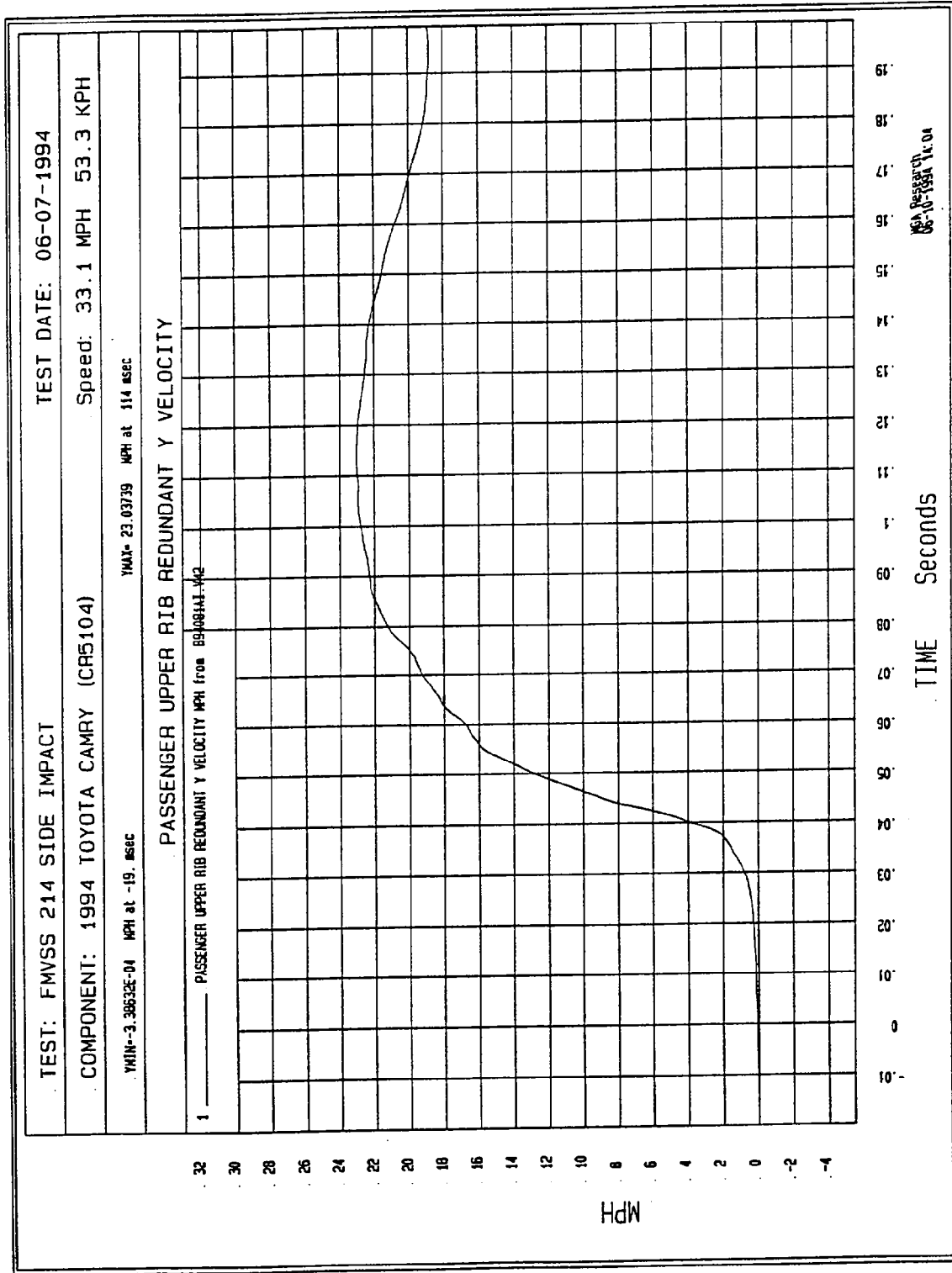


Figure B-73 - Passenger Upper Rib Y Redundant Acceleration vs. Time

Filter: Class 180 (300 Hz)



B-74

Figure B-74 - Passenger Upper Rib Y Redundant Velocity vs. Time

Filter: Class 180 (300 Hz)

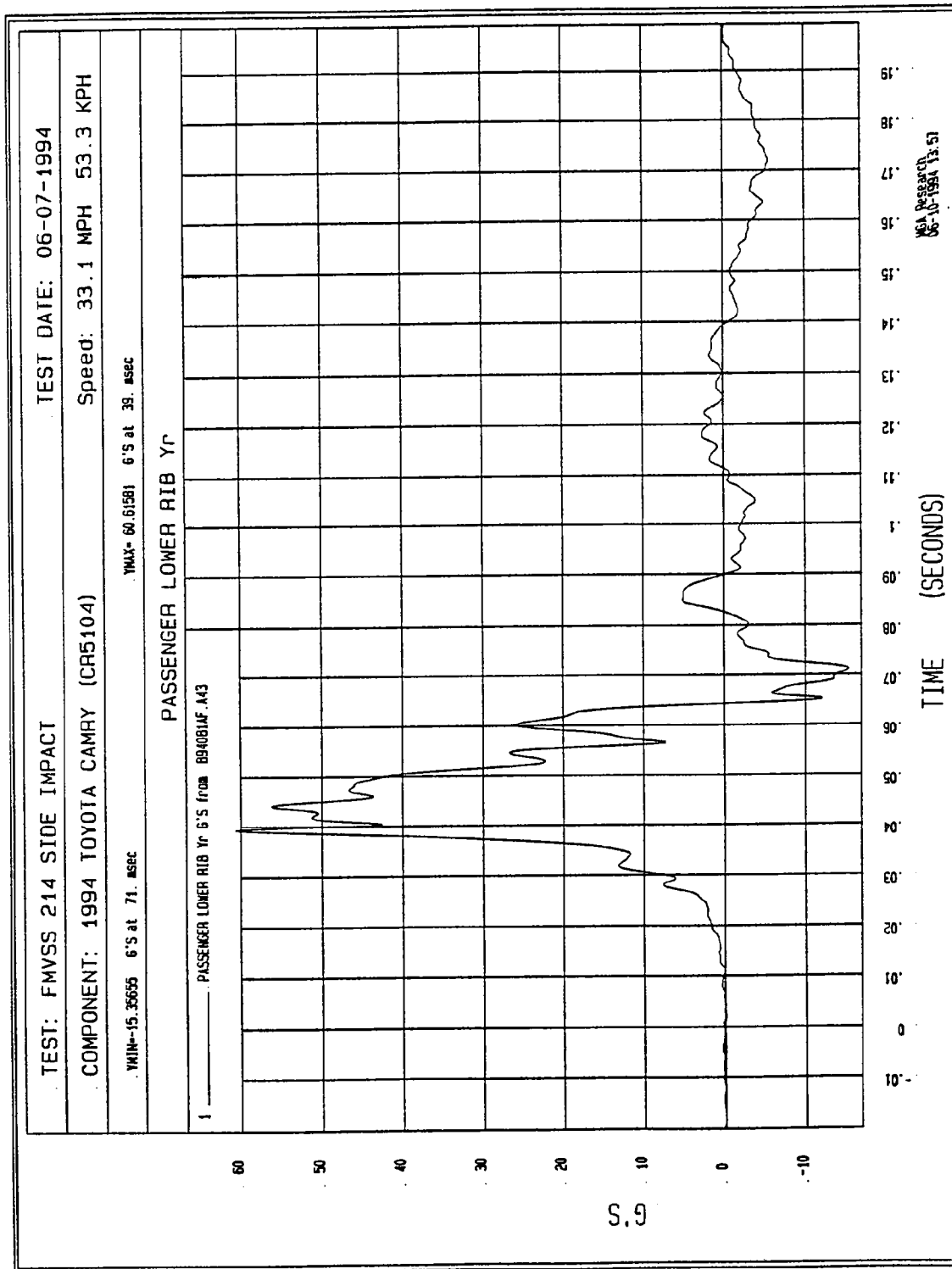


Figure B-75 - Passenger Lower Rib Y Redundant Acceleration vs. Time

Filter: Class 180 (300 Hz)

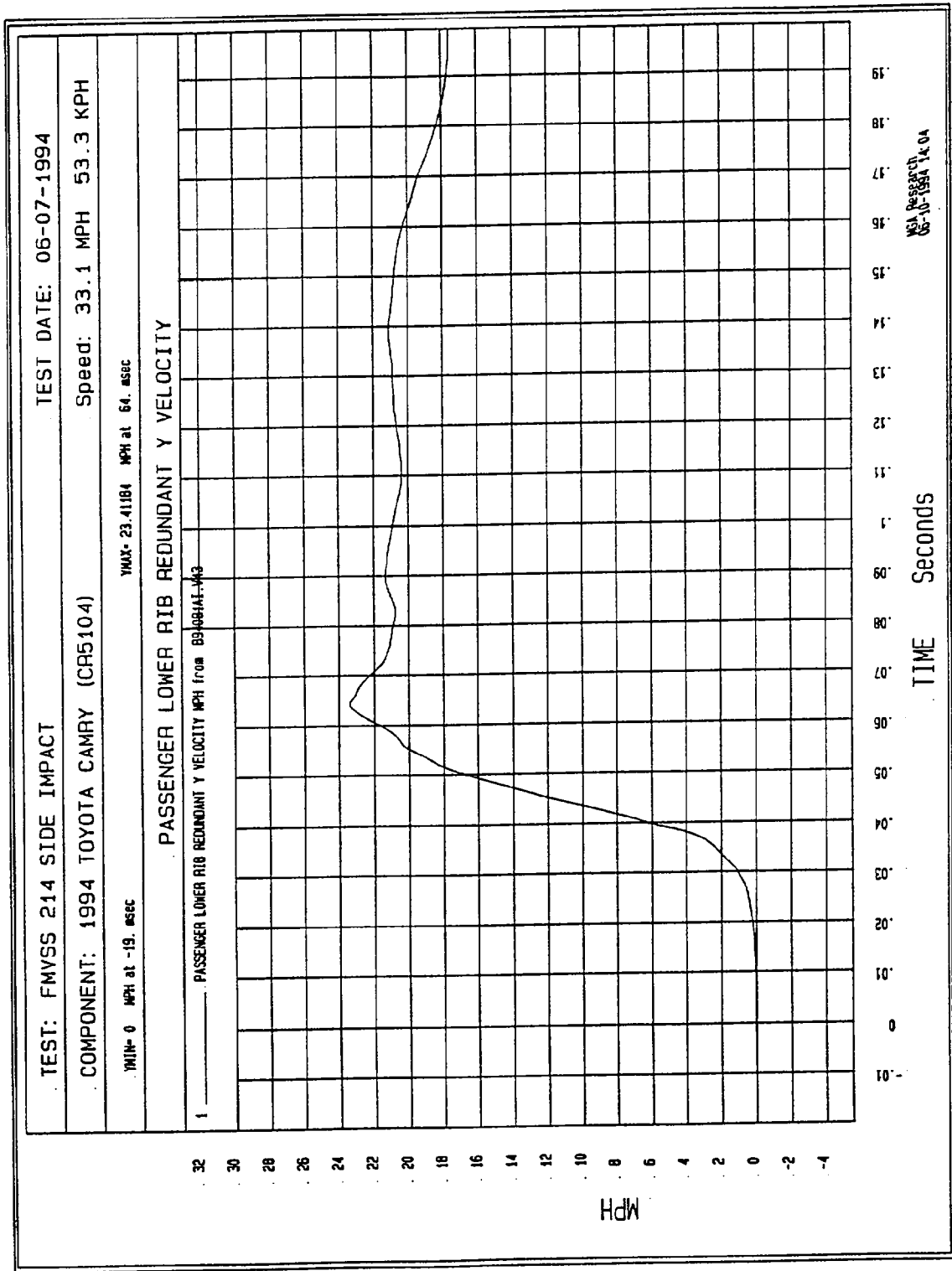


Figure B-76 - Passenger Lower Rib Y Redundant Velocity vs. Time

Filter: Class 180 (300 Hz)

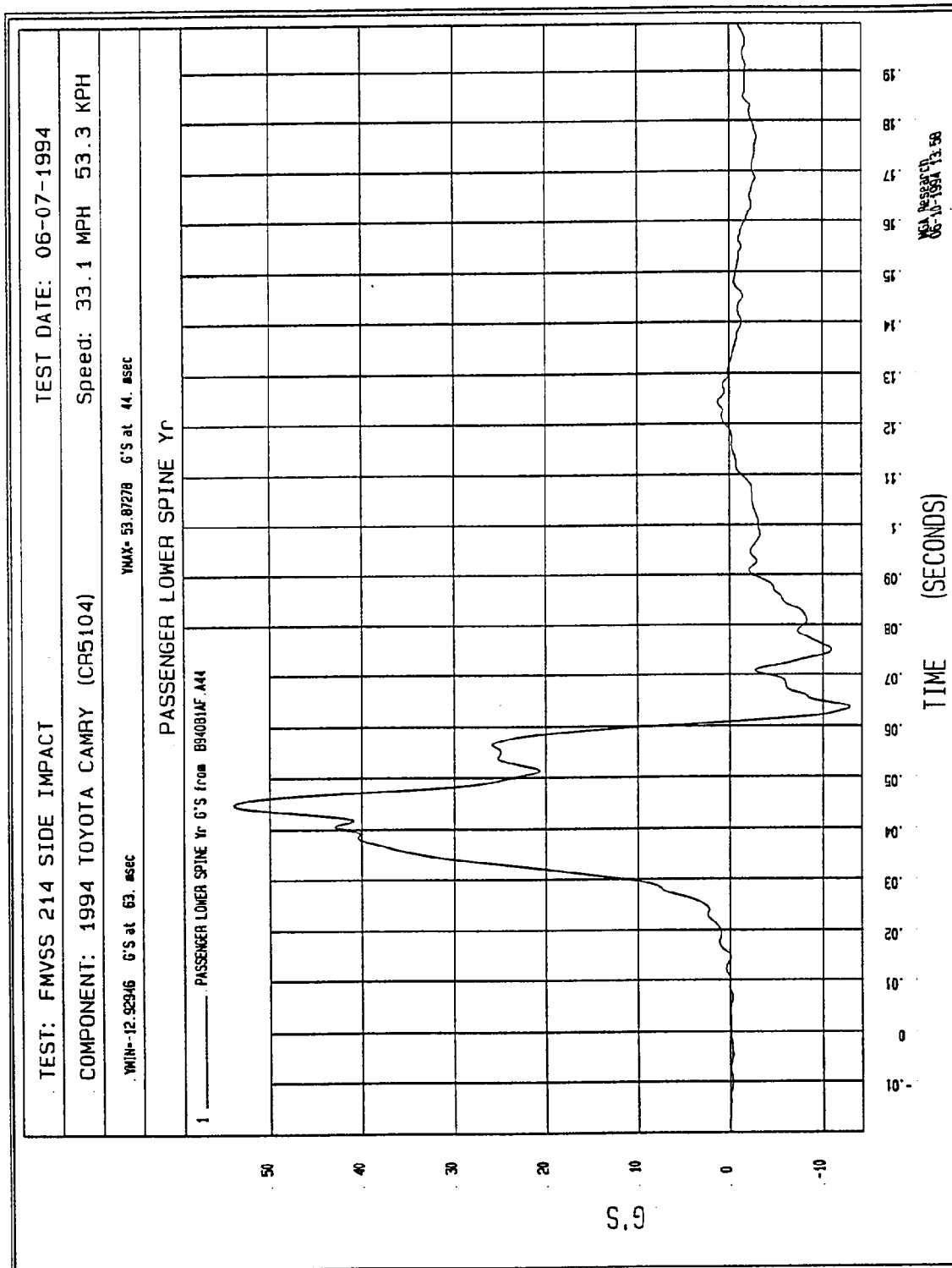
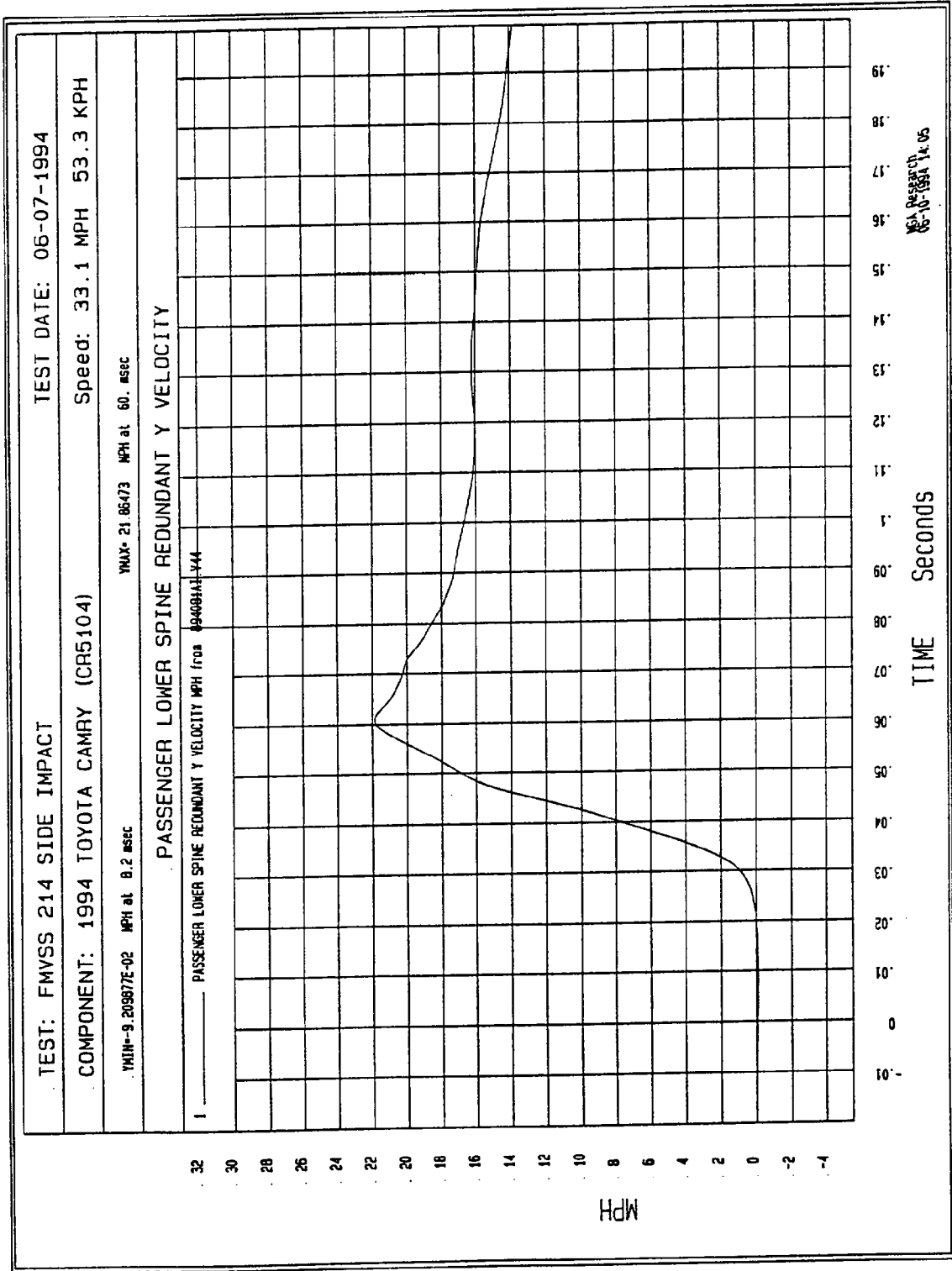


Figure B-77 - Passenger Lower Spine Y Redundant Acceleration vs. Time

Filter: Class 180 (300 Hz)



B-78

Figure B-78 - Passenger Lower Spine Y Redundant Velocity vs. Time

Filter: Class 180 (300 Hz)

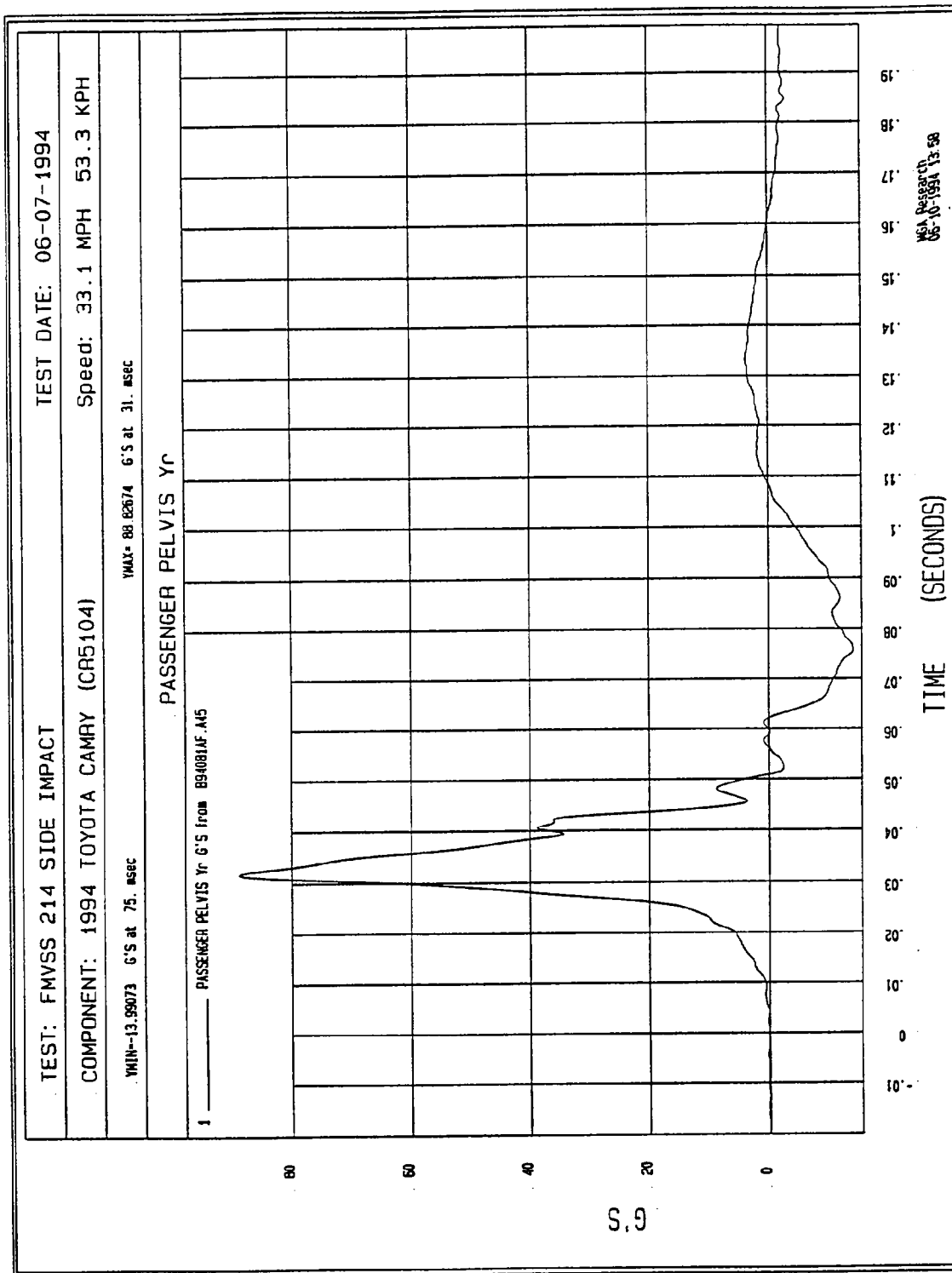


Figure B-79 - Passenger Pelvis Y Redundant Acceleration vs. Time

Filter: Class 180 (300 Hz)

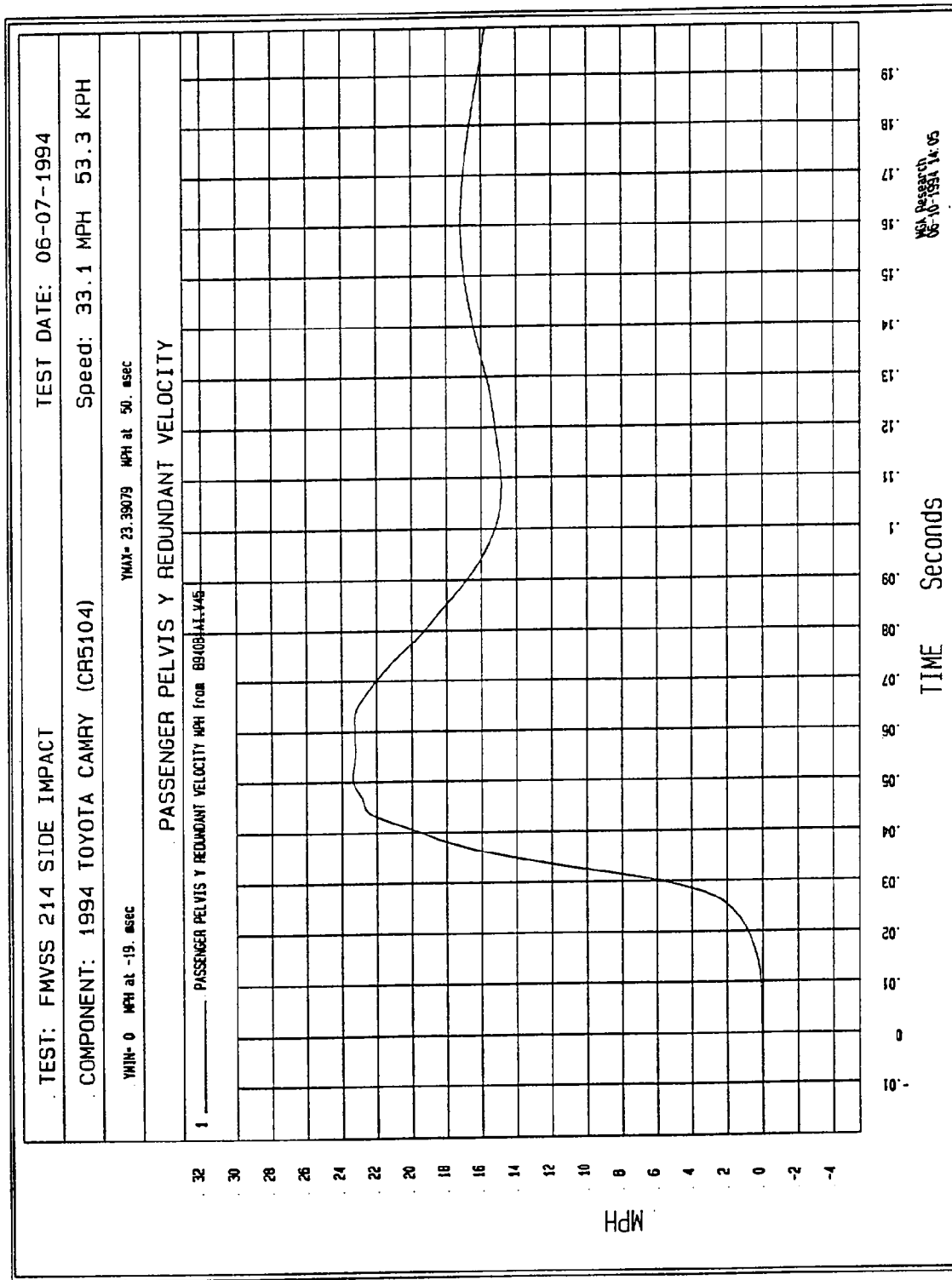


Figure B-80 - Passenger Pelvis Y Redundant Velocity vs. Time

FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

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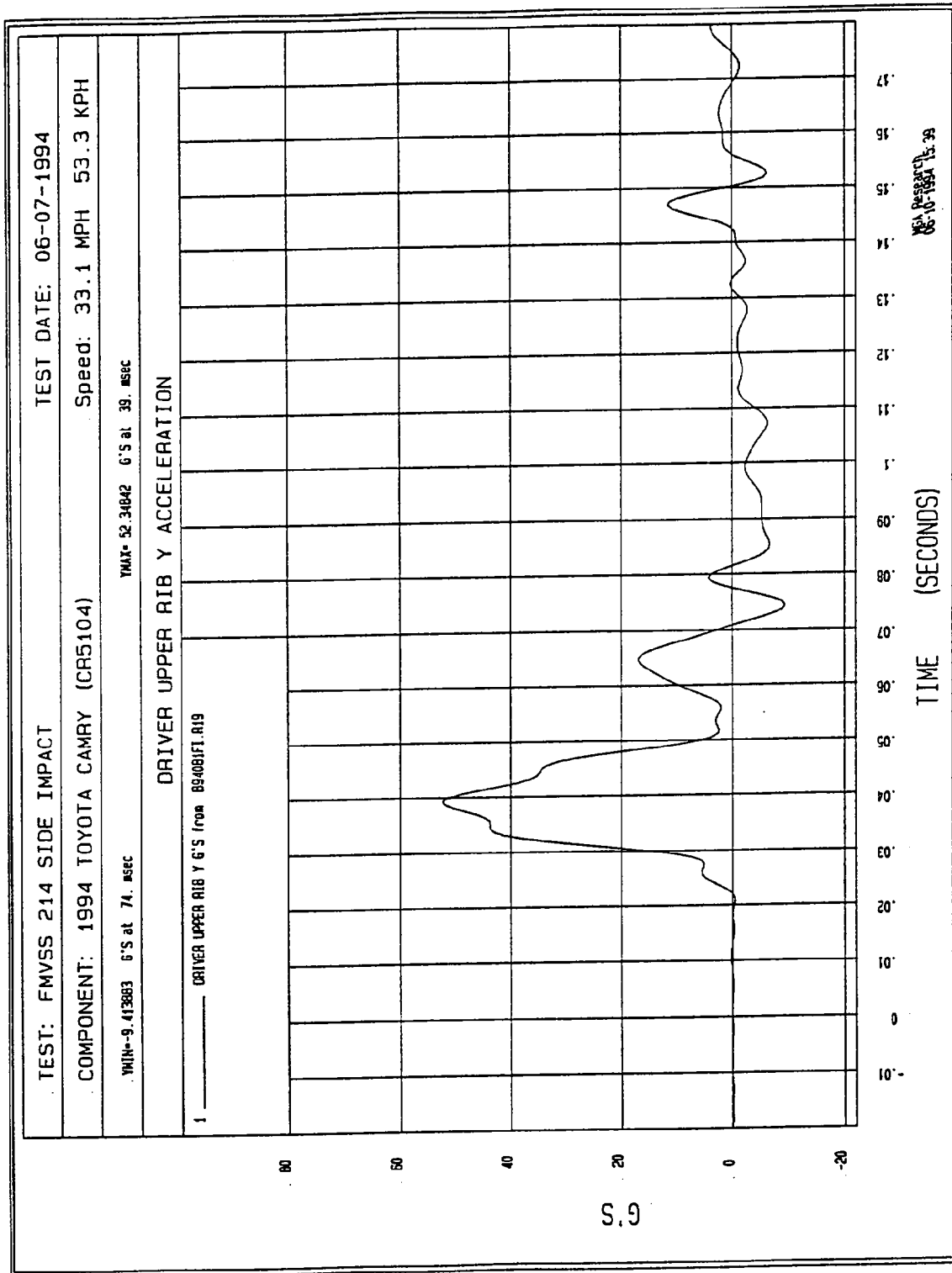


Figure B-81 - Driver Upper Rib Y Acceleration vs. Time

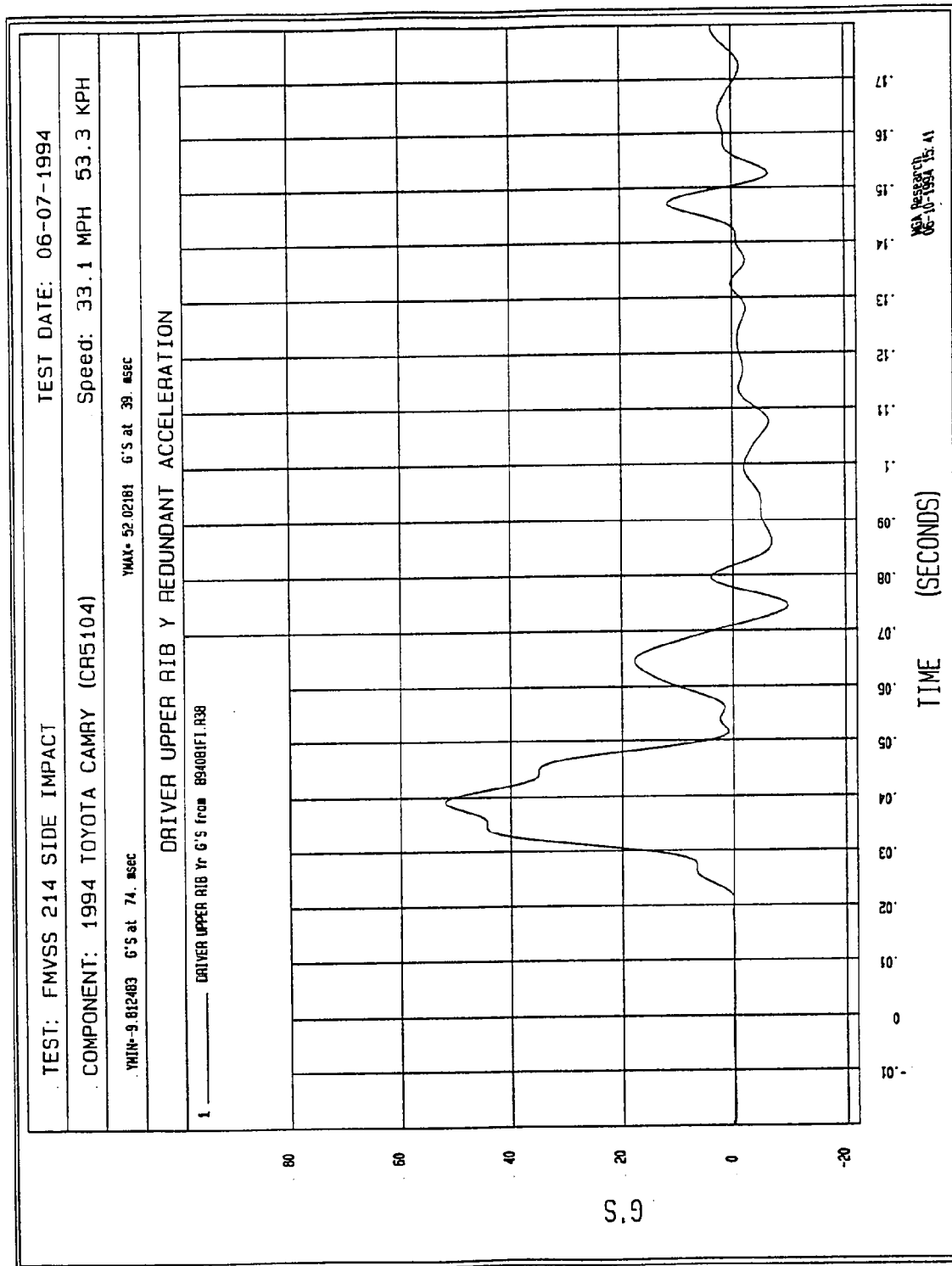


Figure B-82 - Driver Upper Rib Y Redundant Acceleration vs. Time

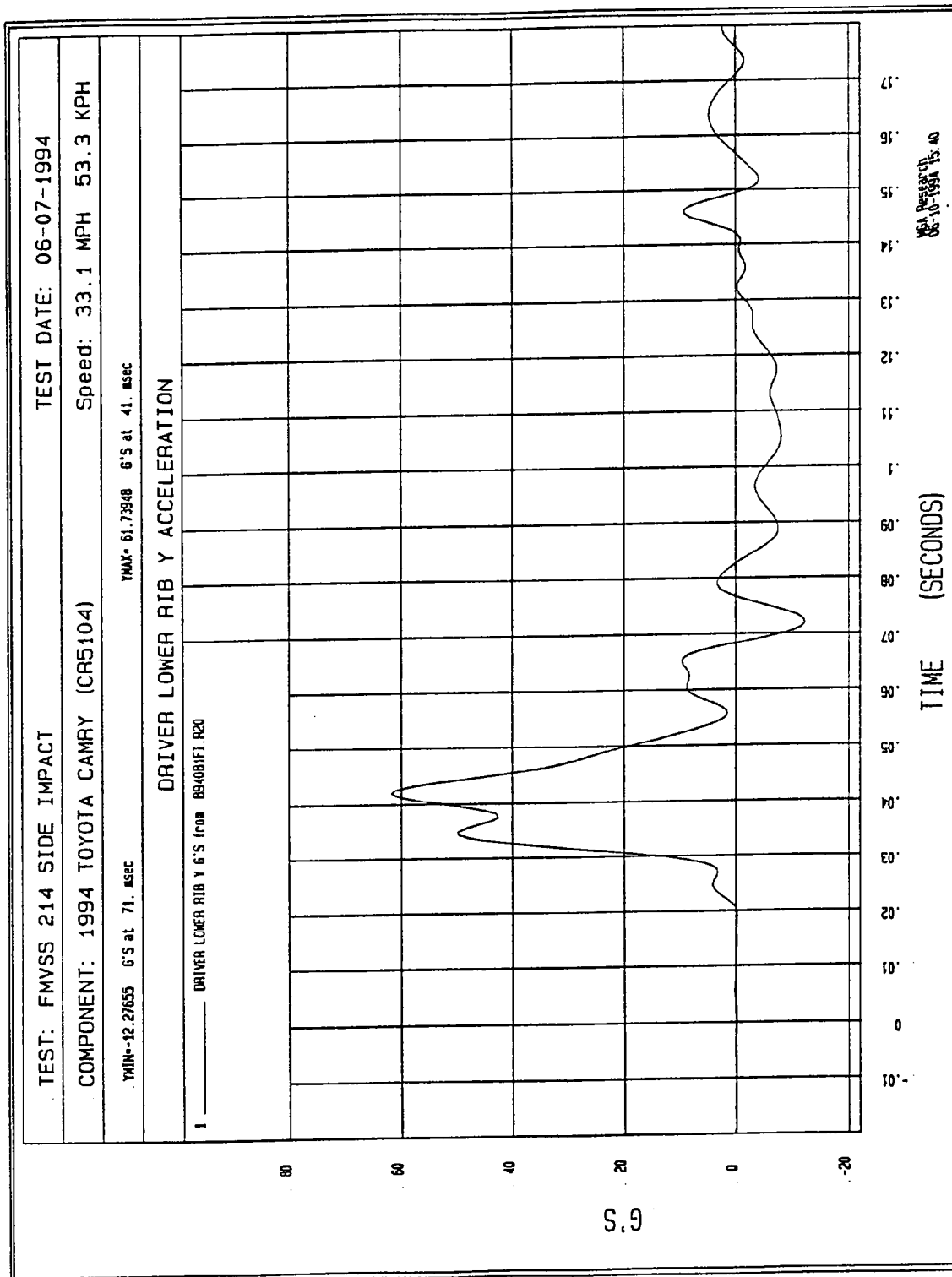


Figure B-83 - Driver Lower Rib Y Acceleration vs. Time

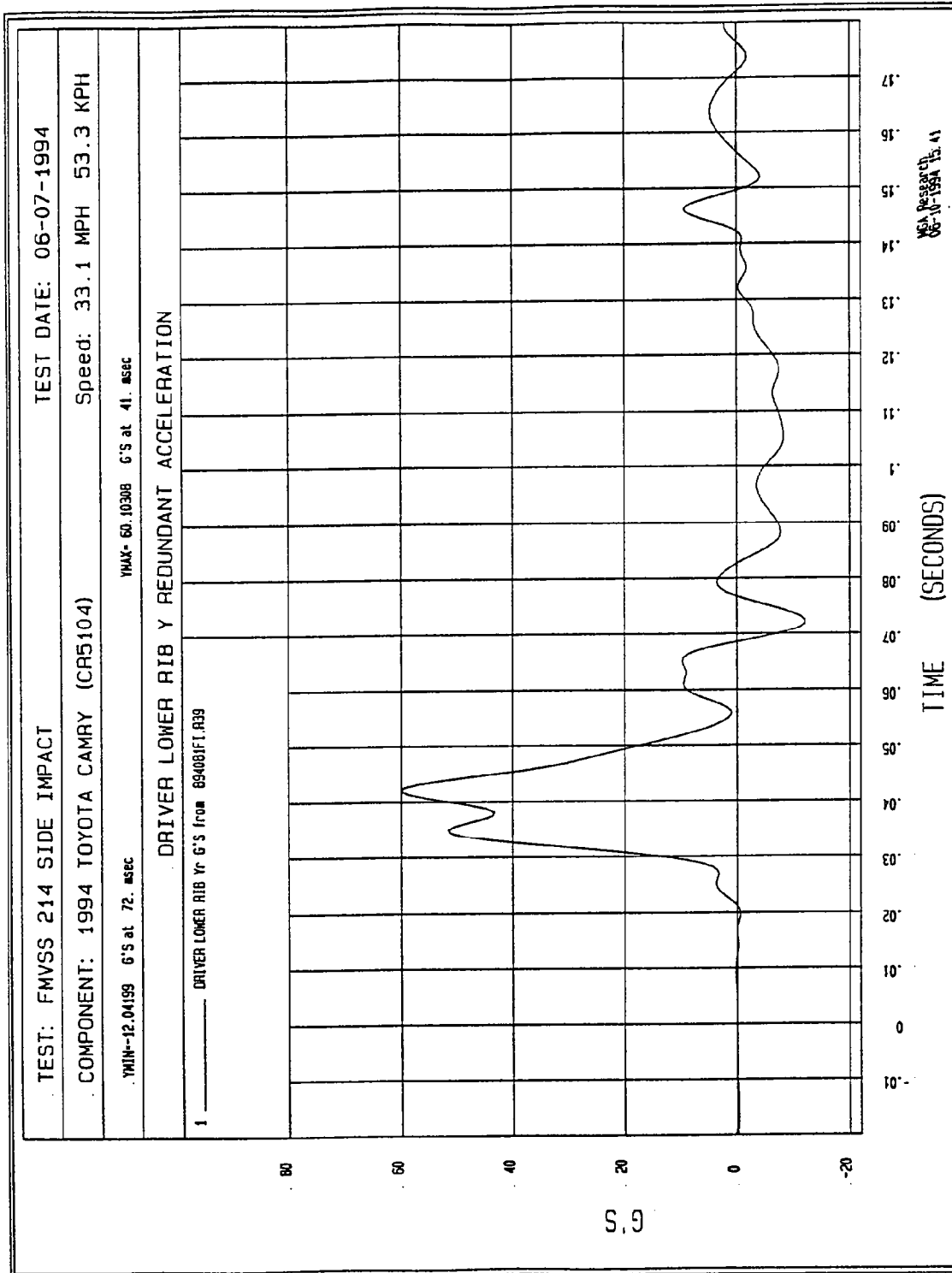


Figure B-84 - Driver Lower Rib Y Redundant Acceleration vs. Time

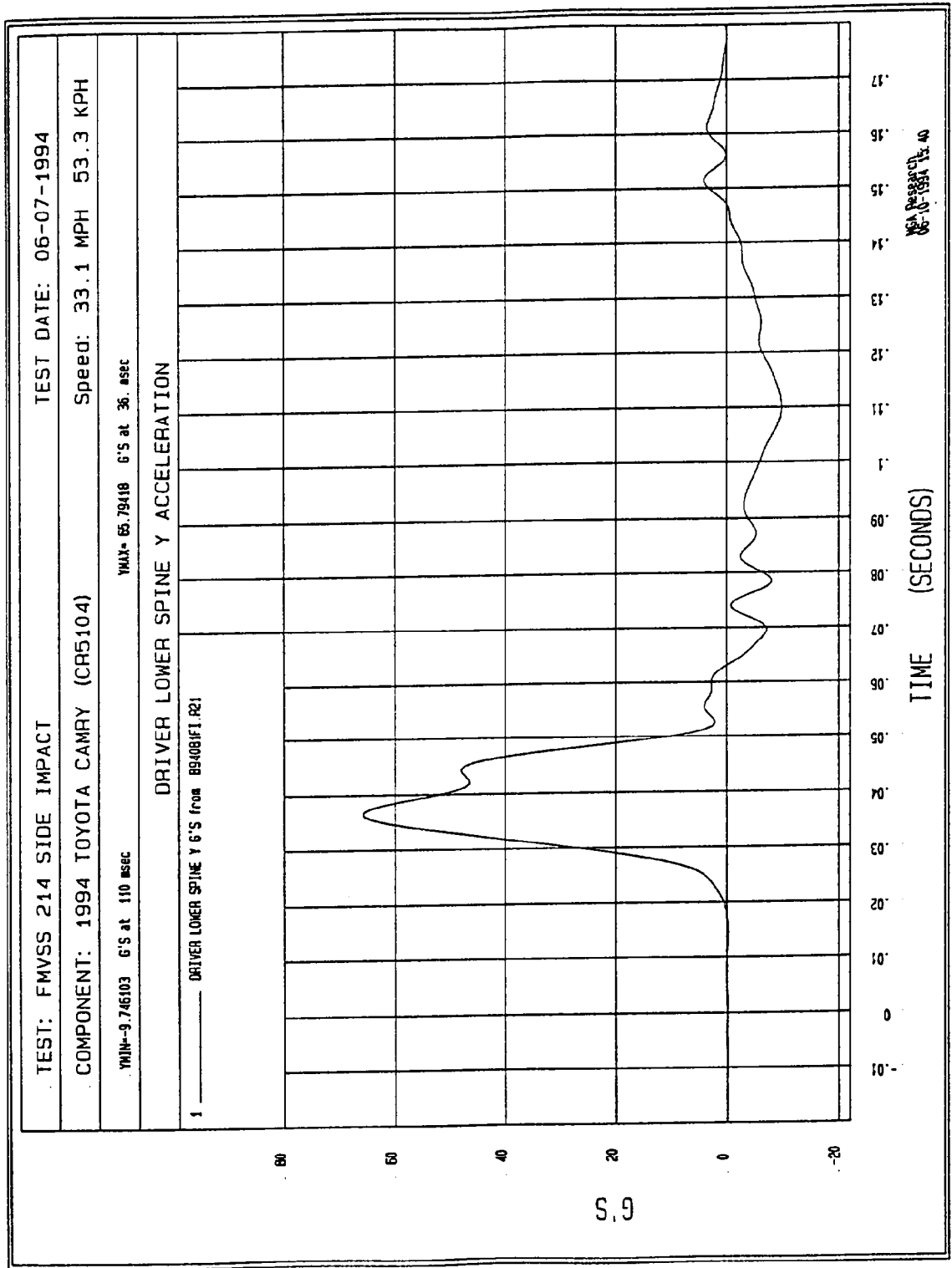


Figure B-85 - Driver Lower Spine Y Acceleration vs. Time

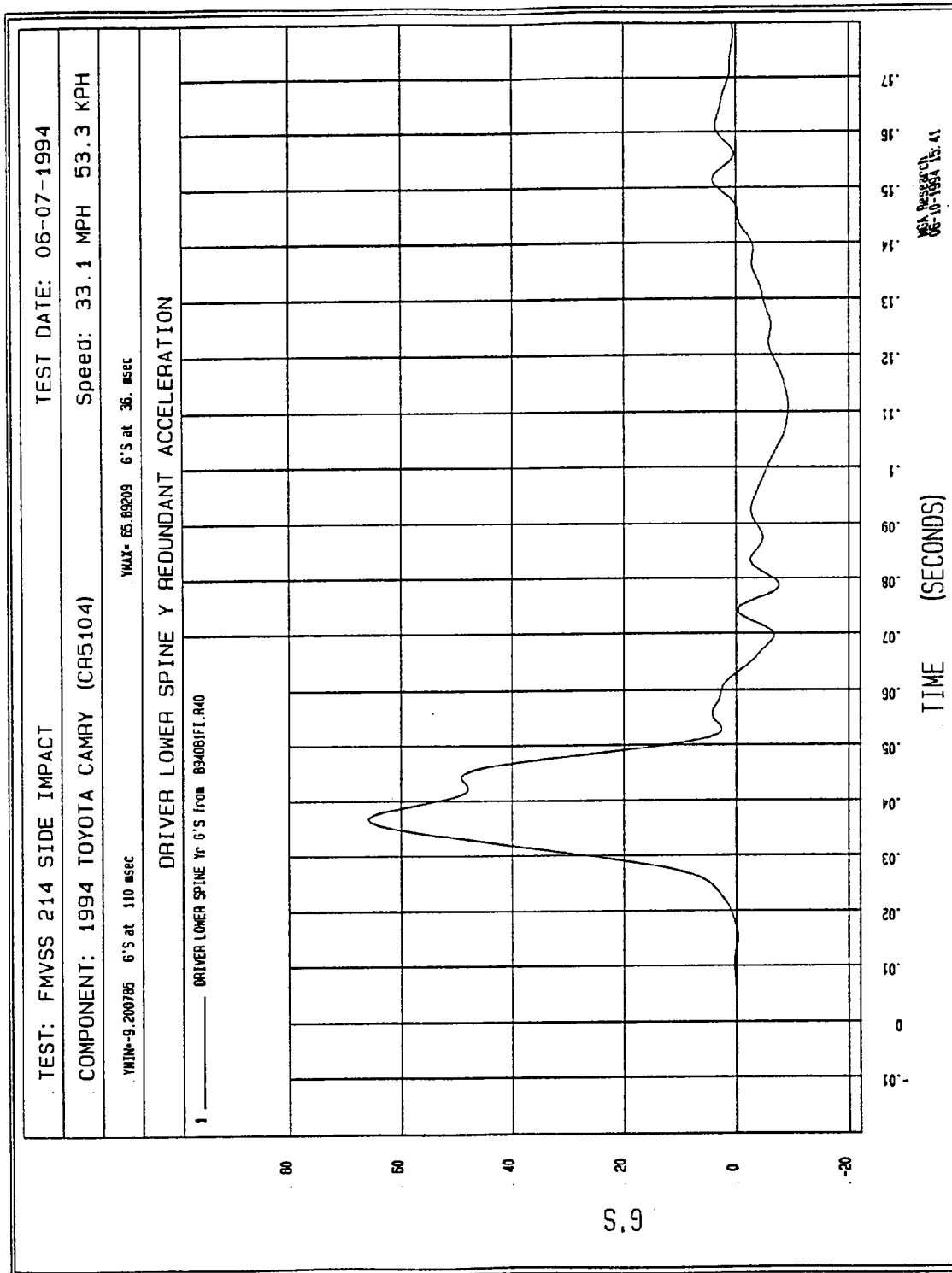


Figure B-86 - Driver Lower Spine Y Redundant Acceleration vs. Time

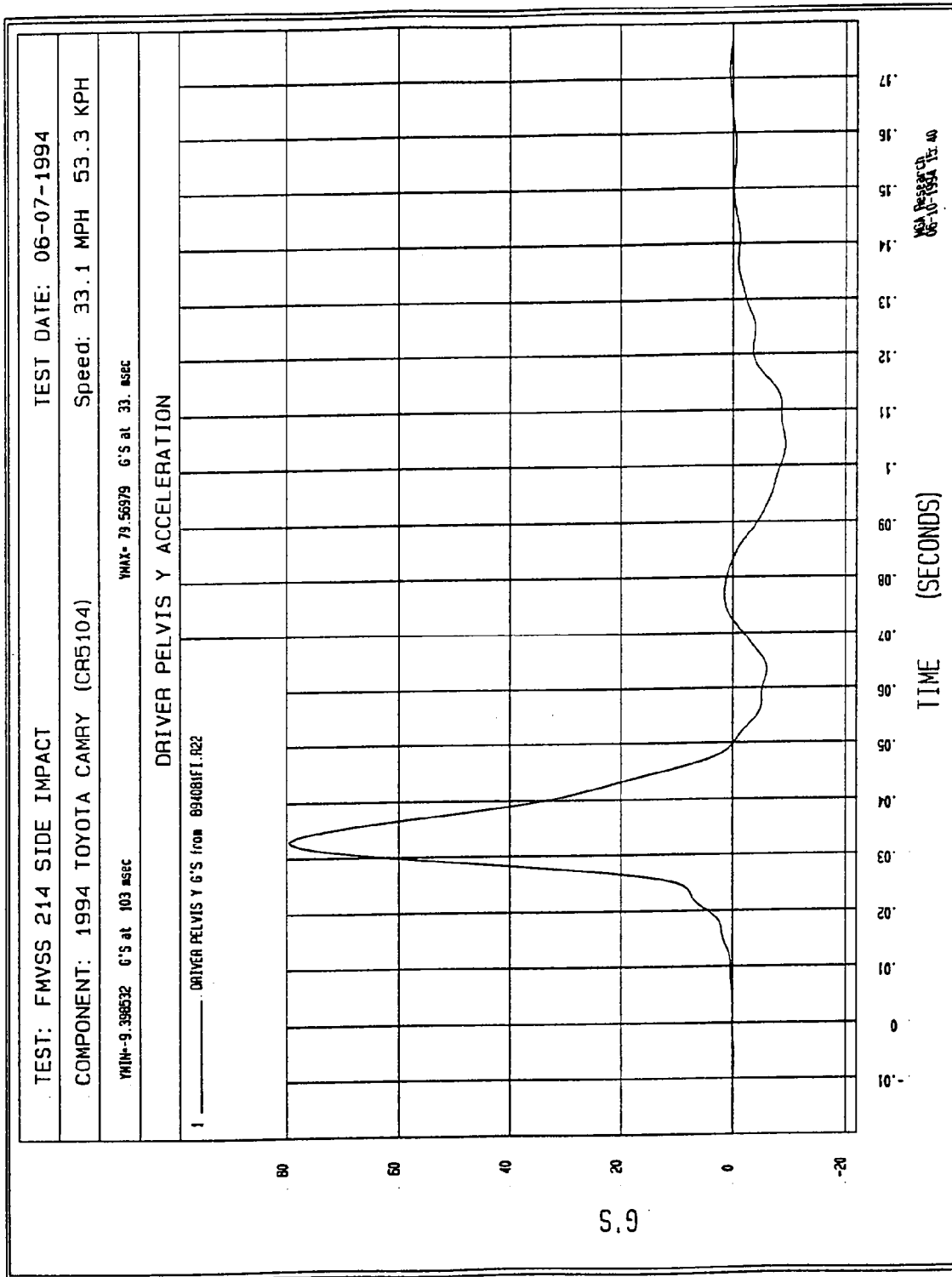


Figure B-87 - Driver Pelvis Y Acceleration vs. Time

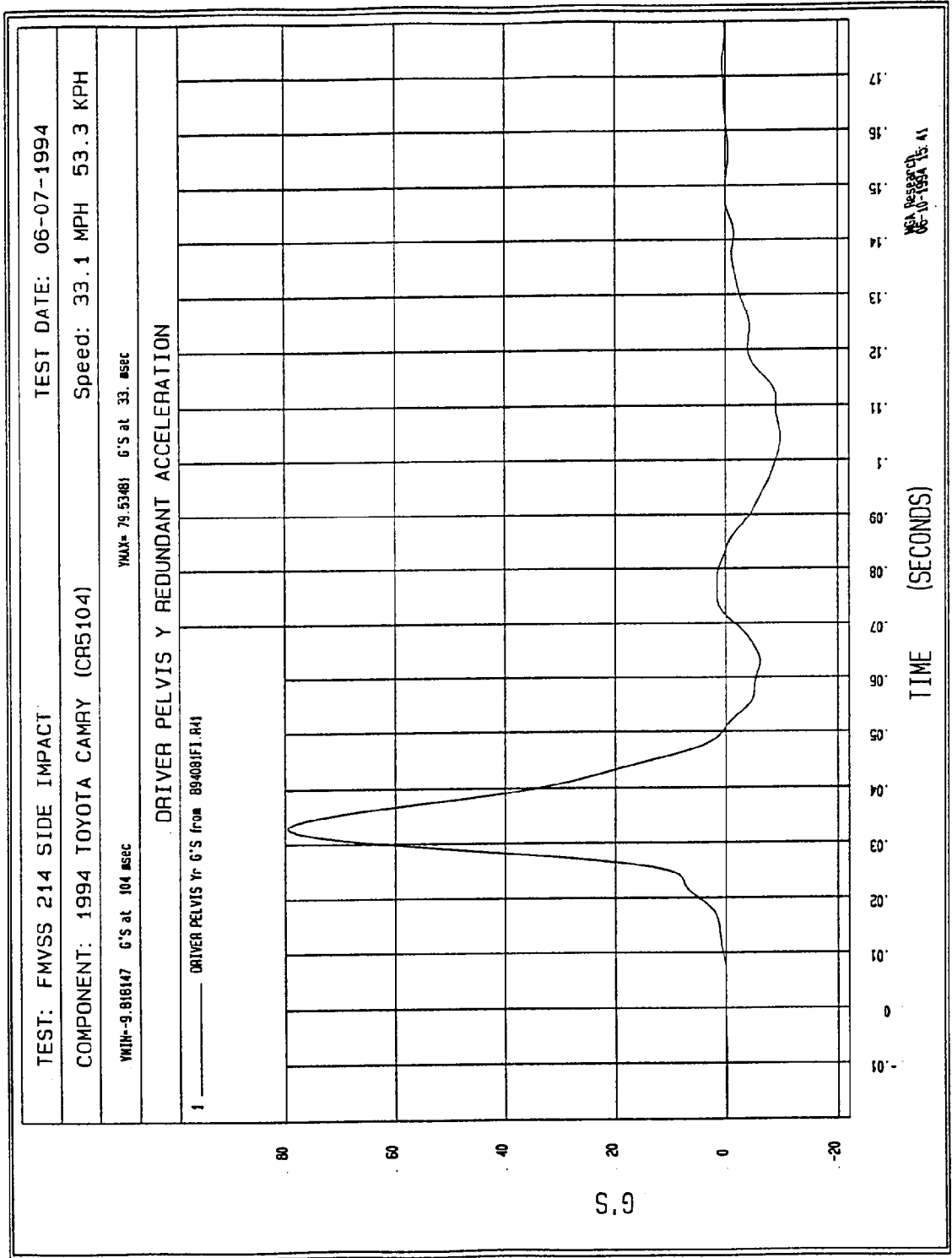


Figure B-88 - Driver Pelvis Y Redundant Acceleration vs. Time

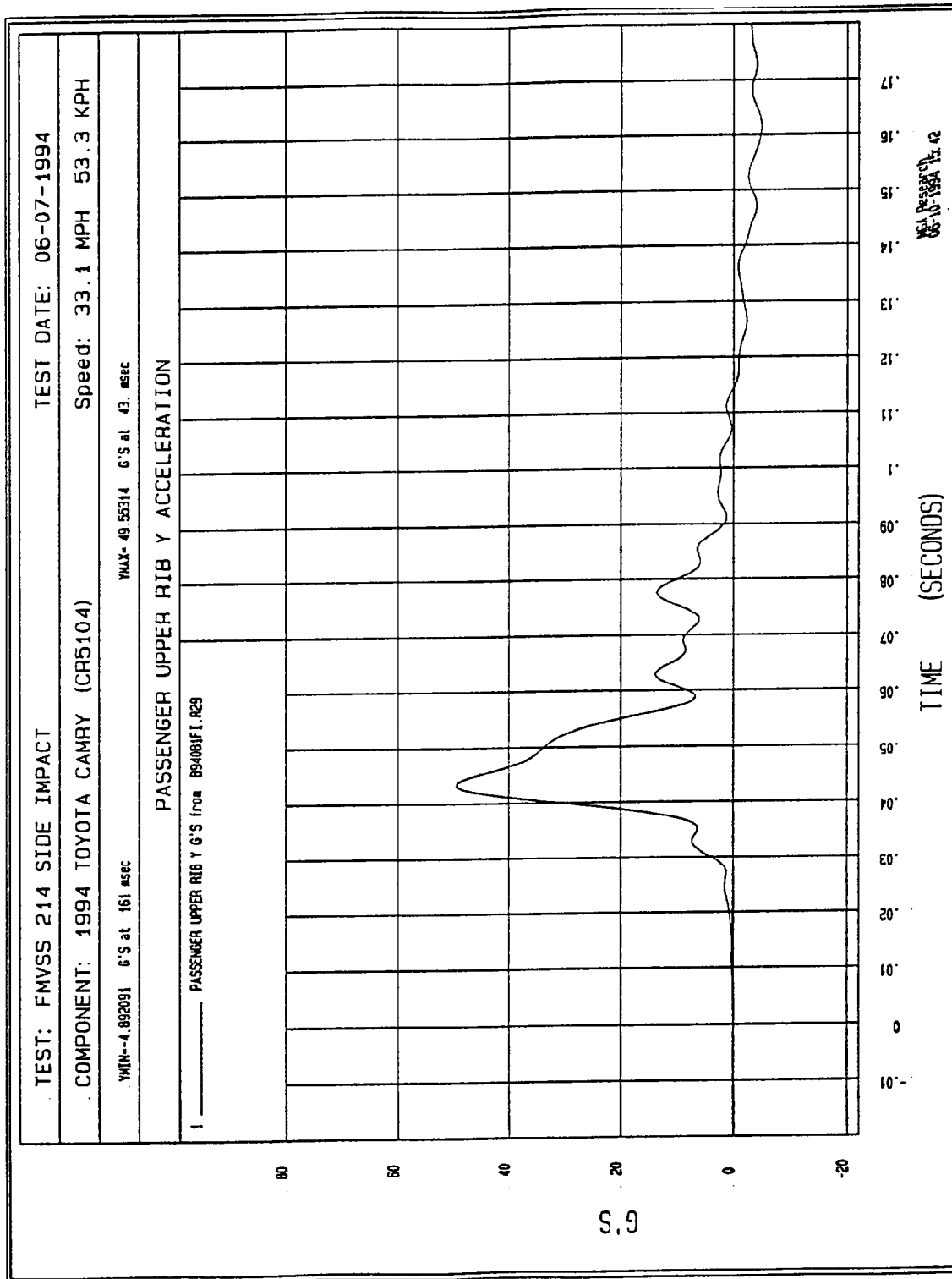


Figure B-89 - Passenger Upper Rib Y Acceleration vs. Time

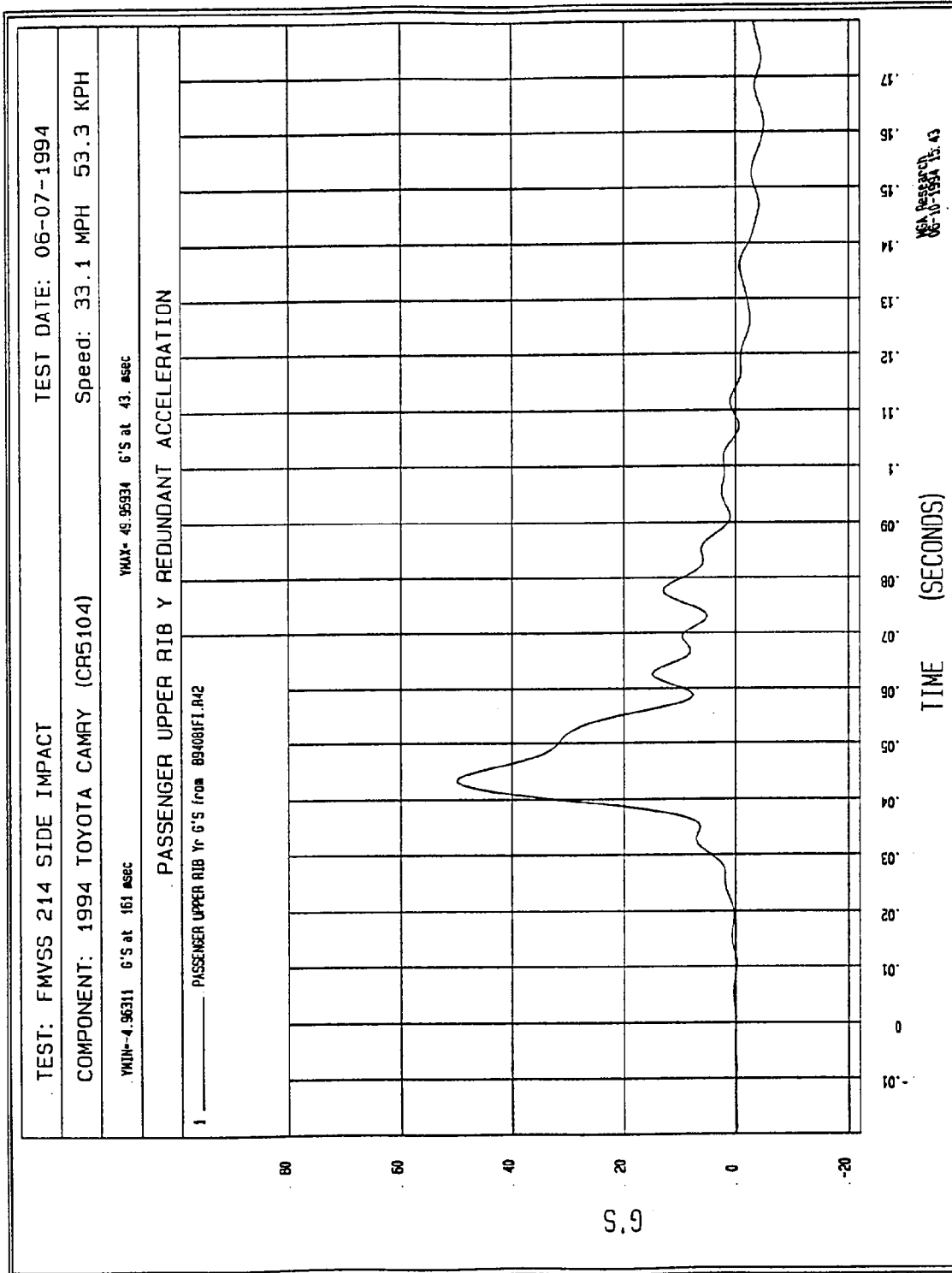


Figure B-90 - Passenger Upper Rib Y Redundant Acceleration vs. Time

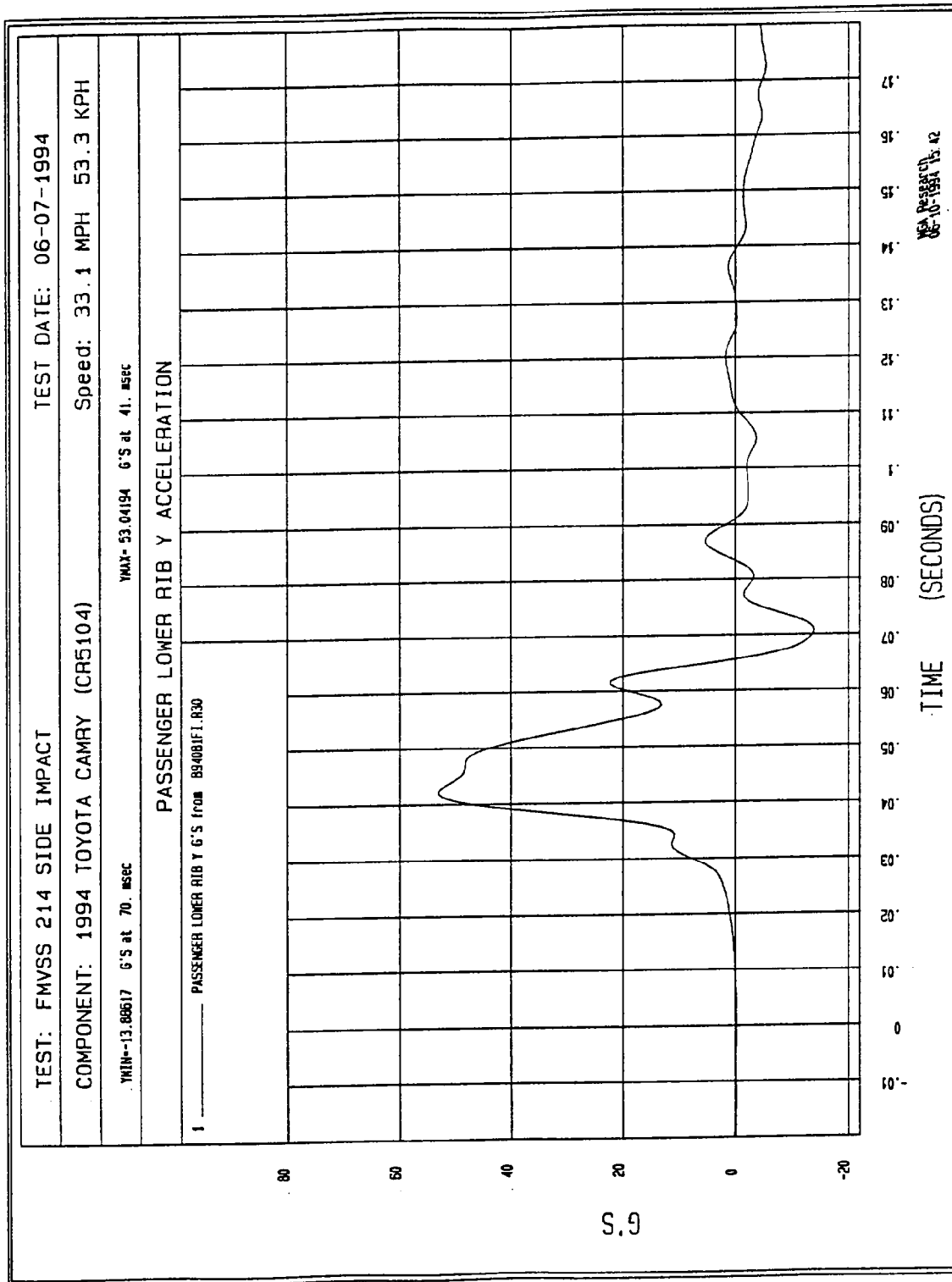


Figure B-91 - Passenger Lower Rib Y Acceleration vs. Time

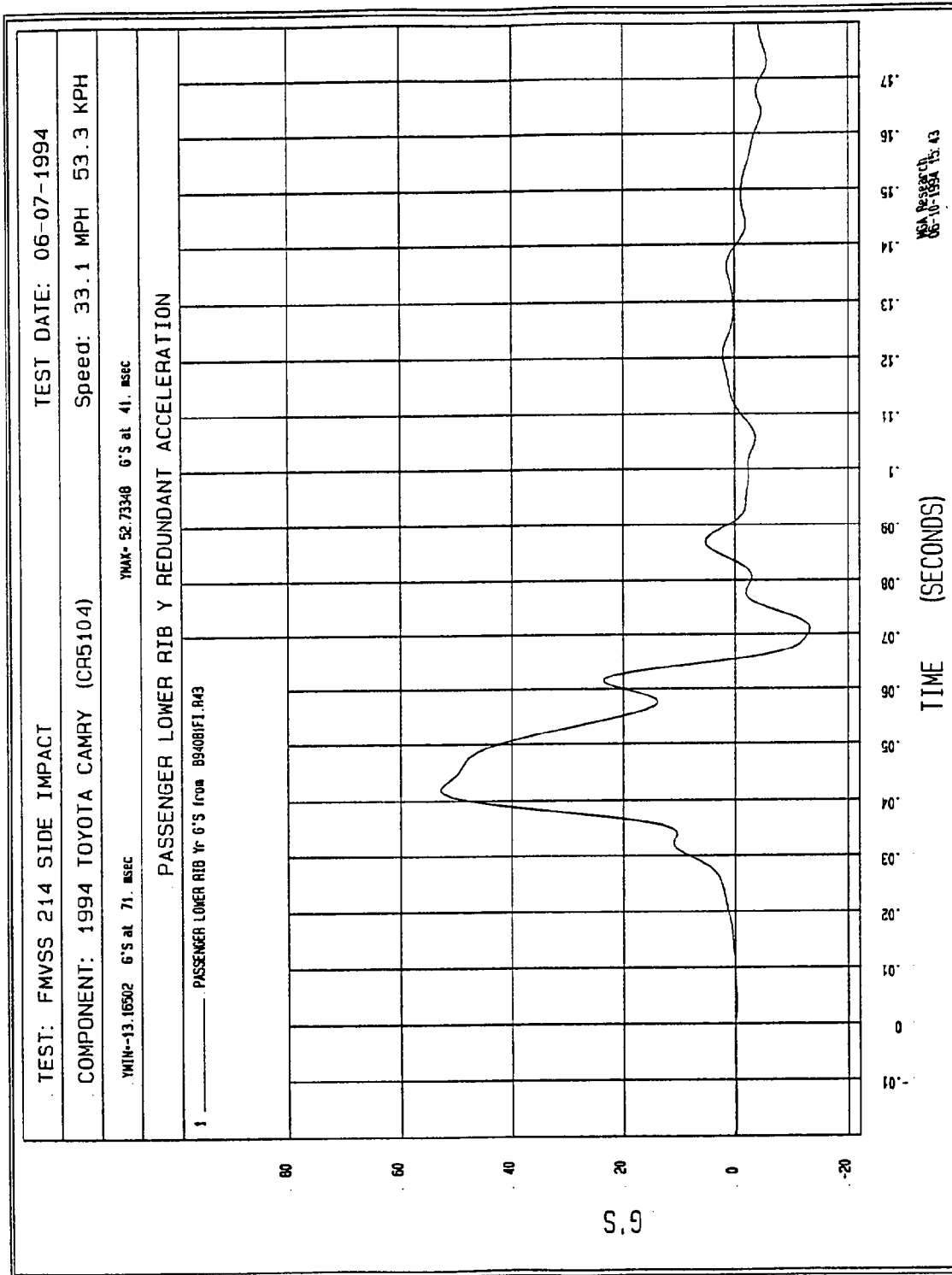


Figure B-92 - Passenger Lower Rib Y Redundant Acceleration vs. Time

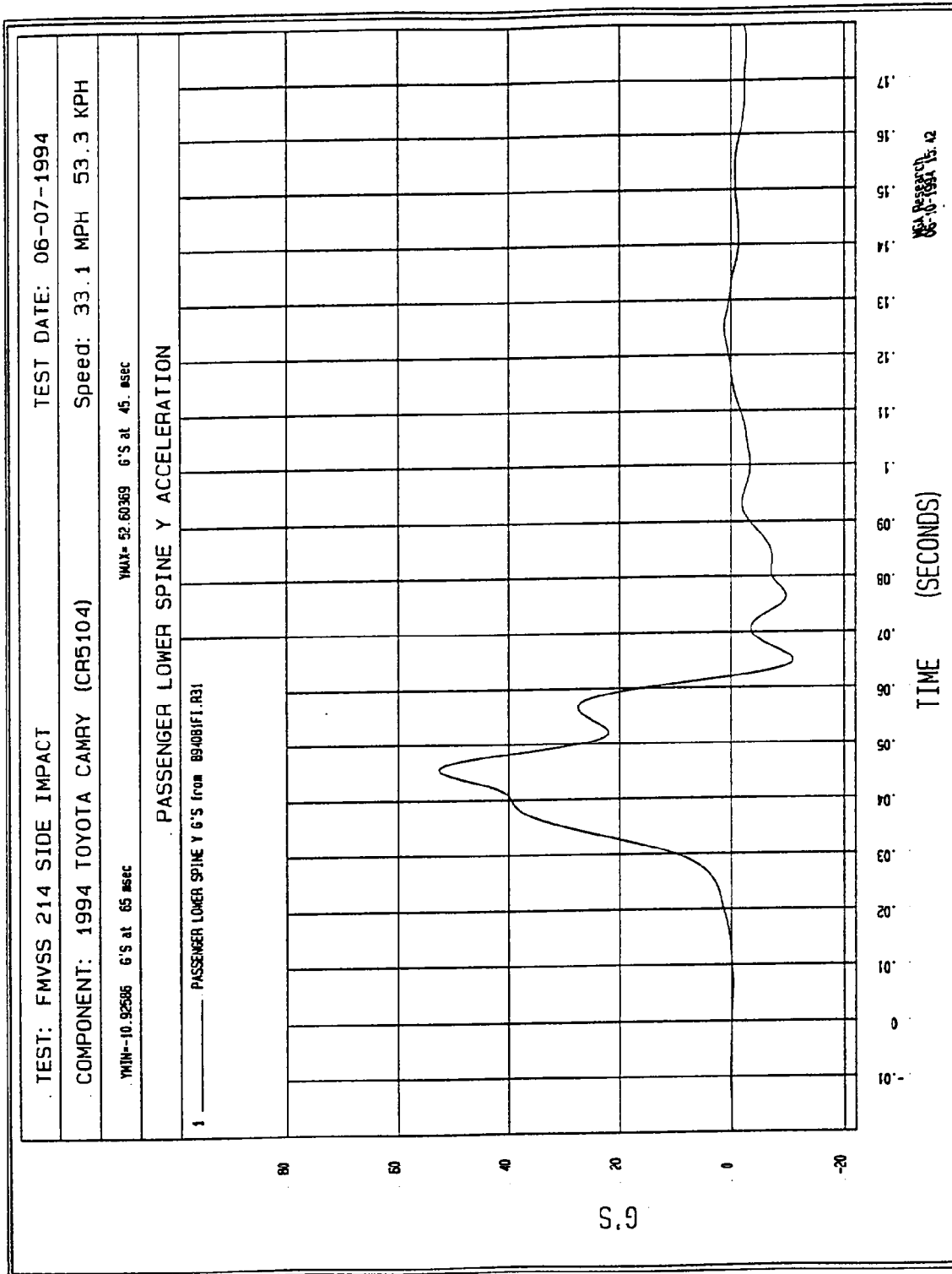


Figure B-93 - Passenger Lower Spine Y Acceleration vs. Time

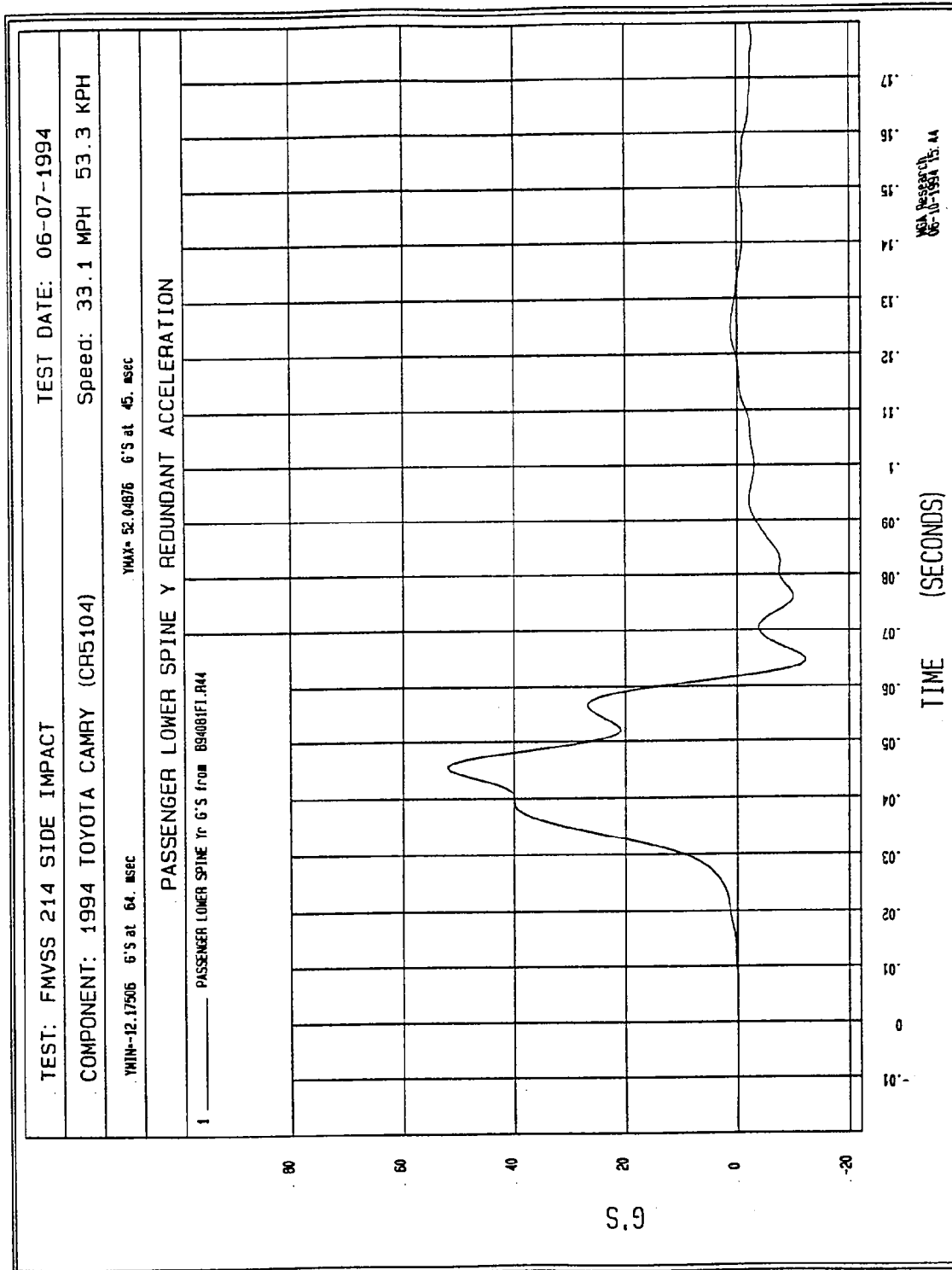


Figure B-94 - Passenger Lower Spine Y Redundant Acceleration vs. Time

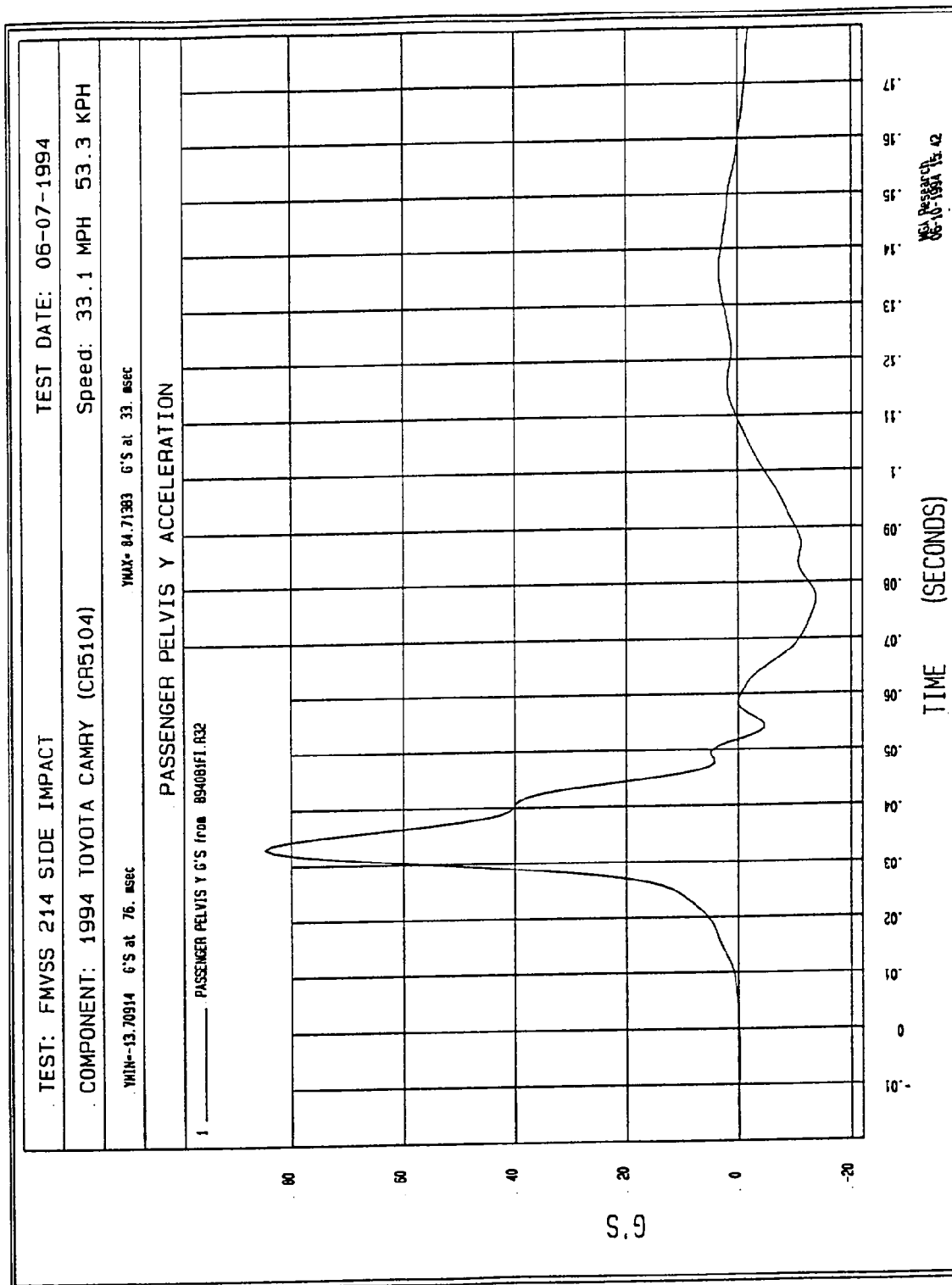


Figure B-95 - Passenger Pelvis Y Acceleration vs. Time

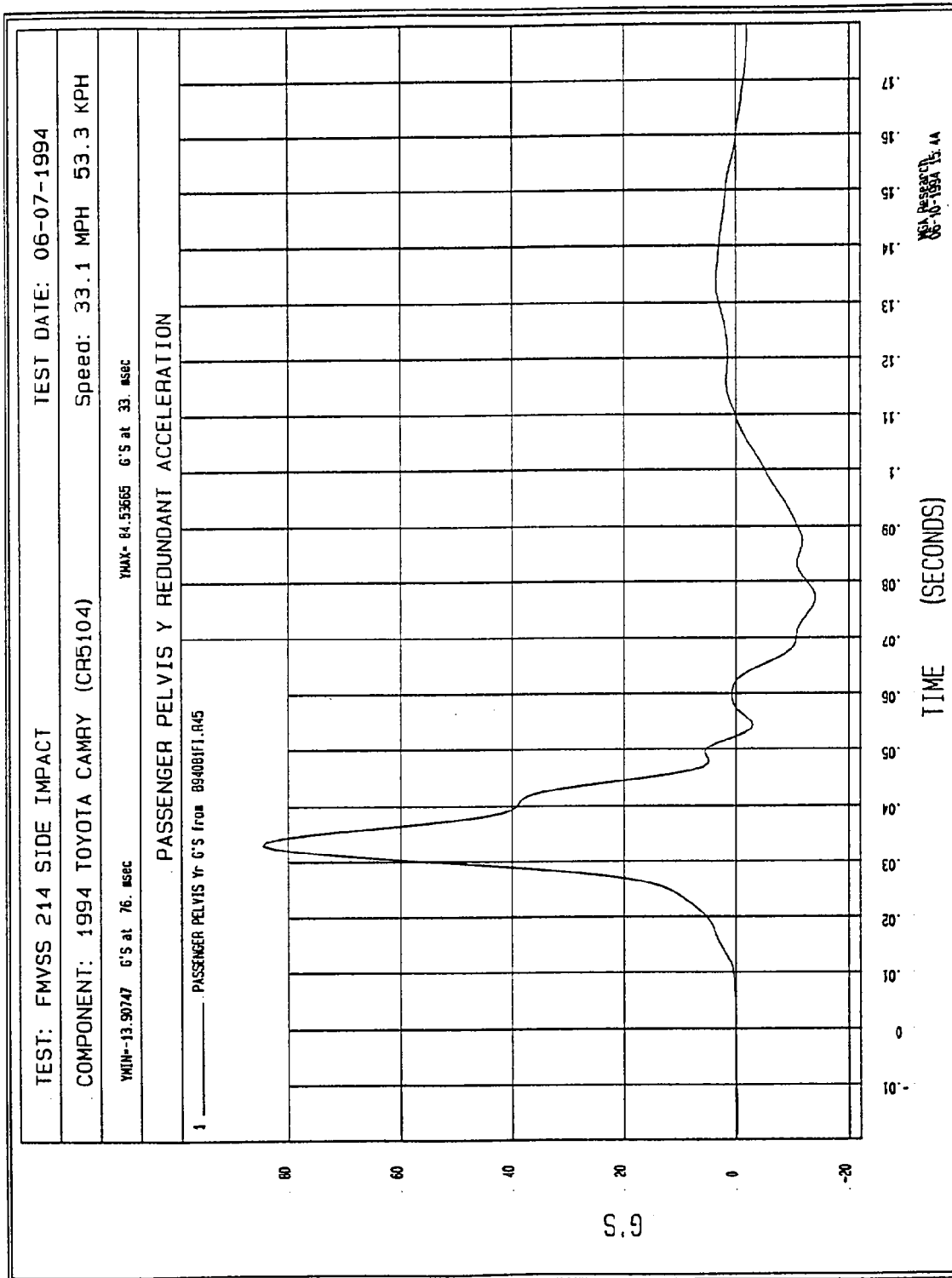


Figure B-96 - Passenger Pelvis Y Redundant Acceleration vs. Time

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-94-DC006

DUMMY PERFORMANCE CALIBRATIONS

FMVSS 214 - SIDE IMPACT TEST

TOYOTA MOTOR COMPANY
1994 TOYOTA CAMRY 4 DOOR SEDAN
NHTSA NO. CR5104

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: May 12, 1994

Report Date: September 19, 1994

FINAL REPORT

Prepared For:

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NEF-30
400 SEVENTH STREET, S.W., ROOM 6115
Washington, D.C. 20590

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PRE-TEST CERTIFICATION DATA

Driver Dummy Serial Number: 270

Calibration Test Results Summary

Dummy Serial Number: 270

Pre-Test Calibration

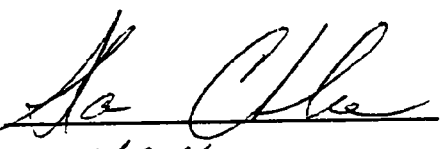
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvis Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

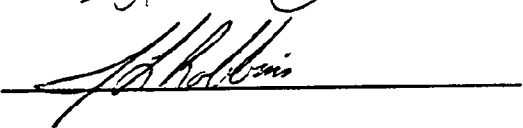
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

DATE OF VERIFICATION: June 2, 1994

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.7
RH - Rib Height	19.75 - 20.5"	20.5
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.2
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.7
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	14.8

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: June 2, 1994

DUMMY NUMBER: 270

TEST NUMBER: D94892

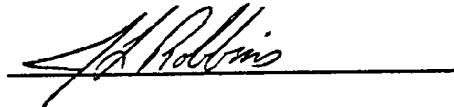
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
PROBE SPEED	13.8 - 14.2 fps	13.8
UPPER RIB	37 - 46 g's	43
LOWER RIB	37 - 46 g's	40
LOWER SPINE	15 - 22 g's	18

TEST MEETS SPECIFICATIONS

TECHNICIAN

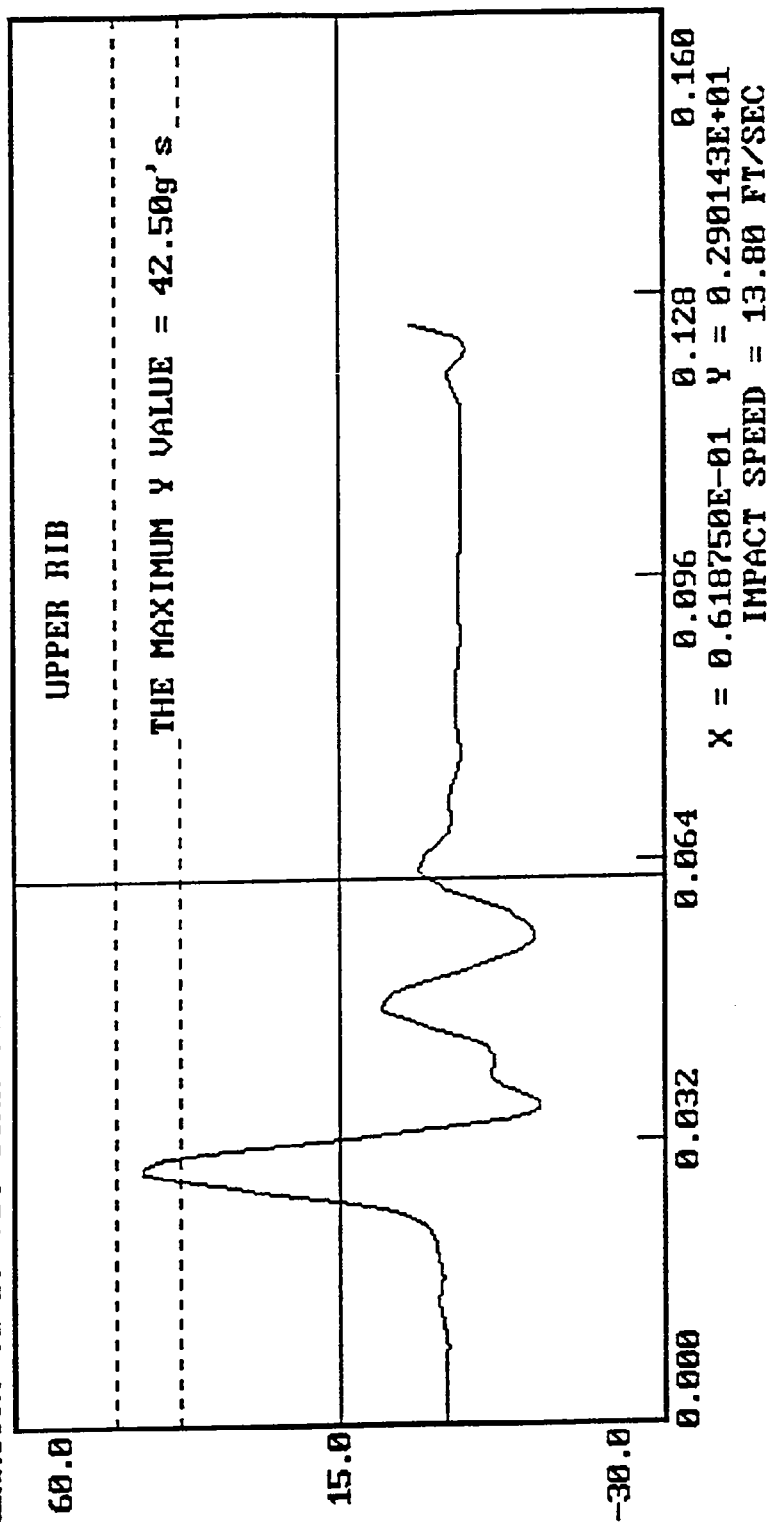


APPROVED BY



06-02-1994 13:49

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))

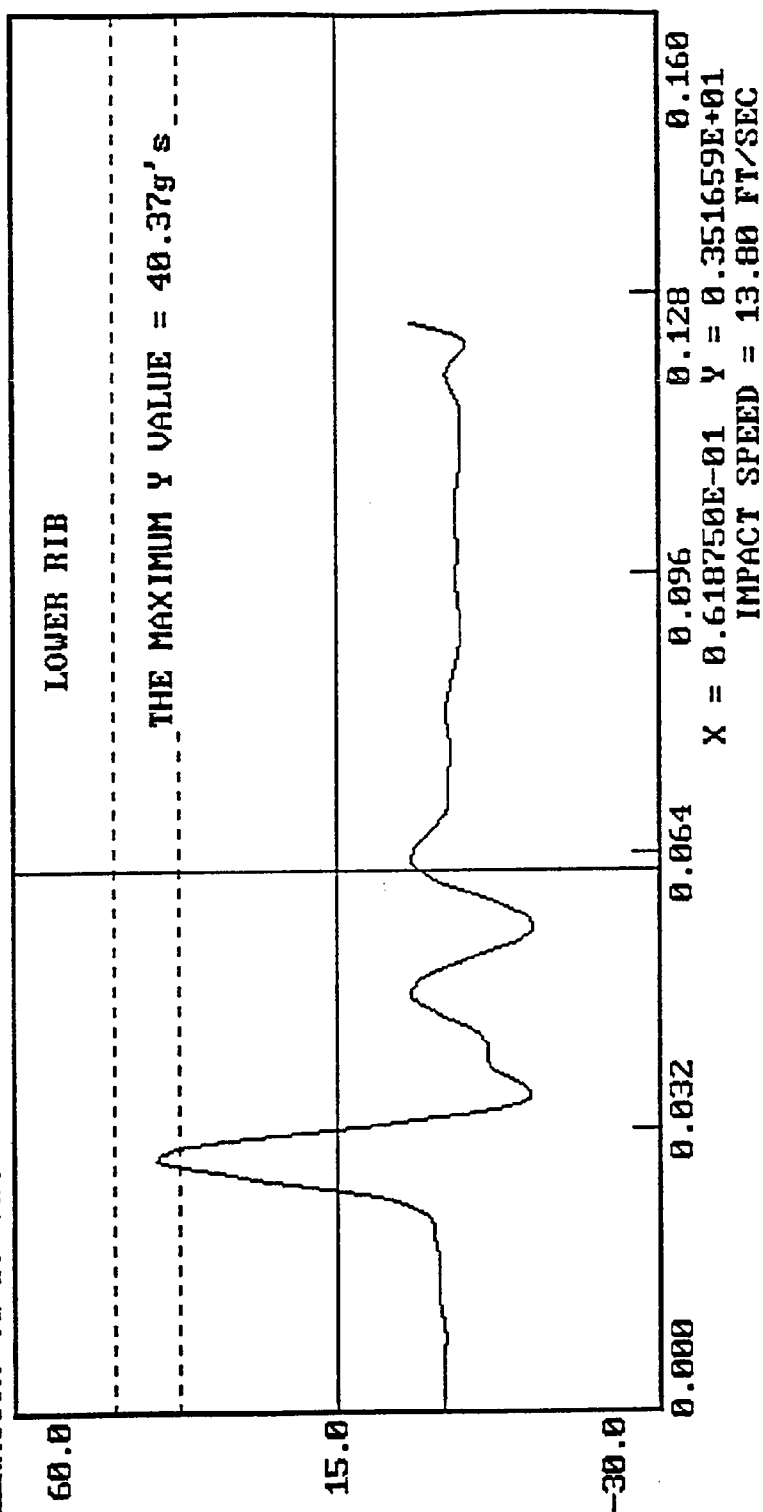


06-02-1994 13:49

DUMMY CALIBRATION - THORAX IMPACT

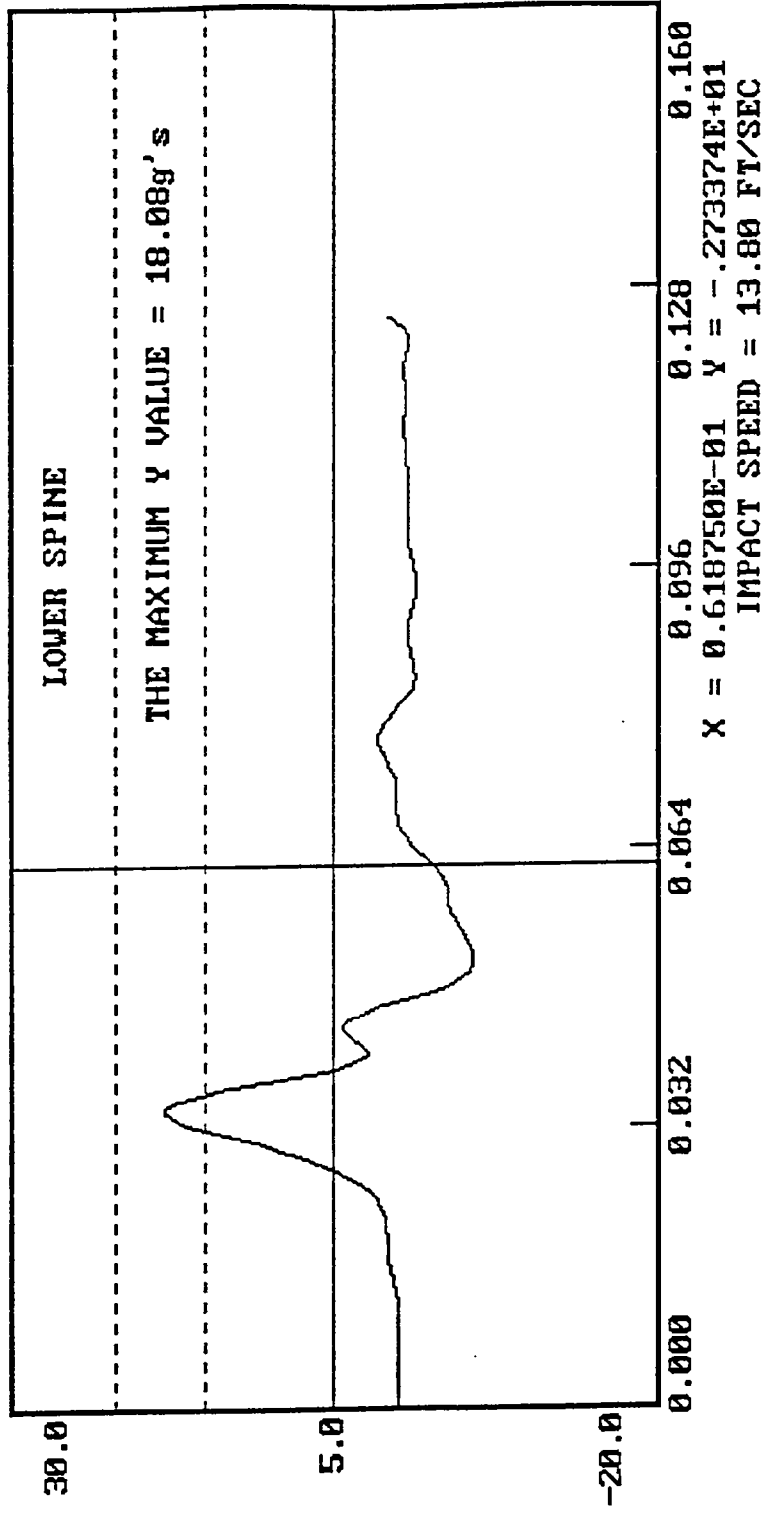
DUMMY # 270

ACCELERATION (G'S) VS. TIME ((SECONDS))



06-02-1994 13:49

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST
SIDE IMPACT DUMMY (SID)

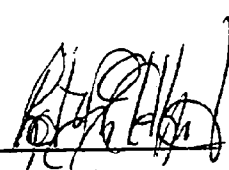
DATE: June 2, 1994

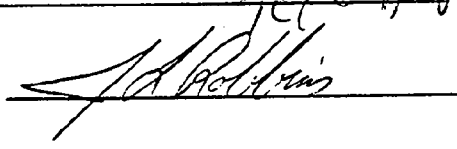
DUMMY NUMBER: 270

TEST NUMBER: D94893

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
PROBE SPEED	13.8 - 14.2 fps	13.9
PELVIS ACCELERATION	40 - 60 g's	54

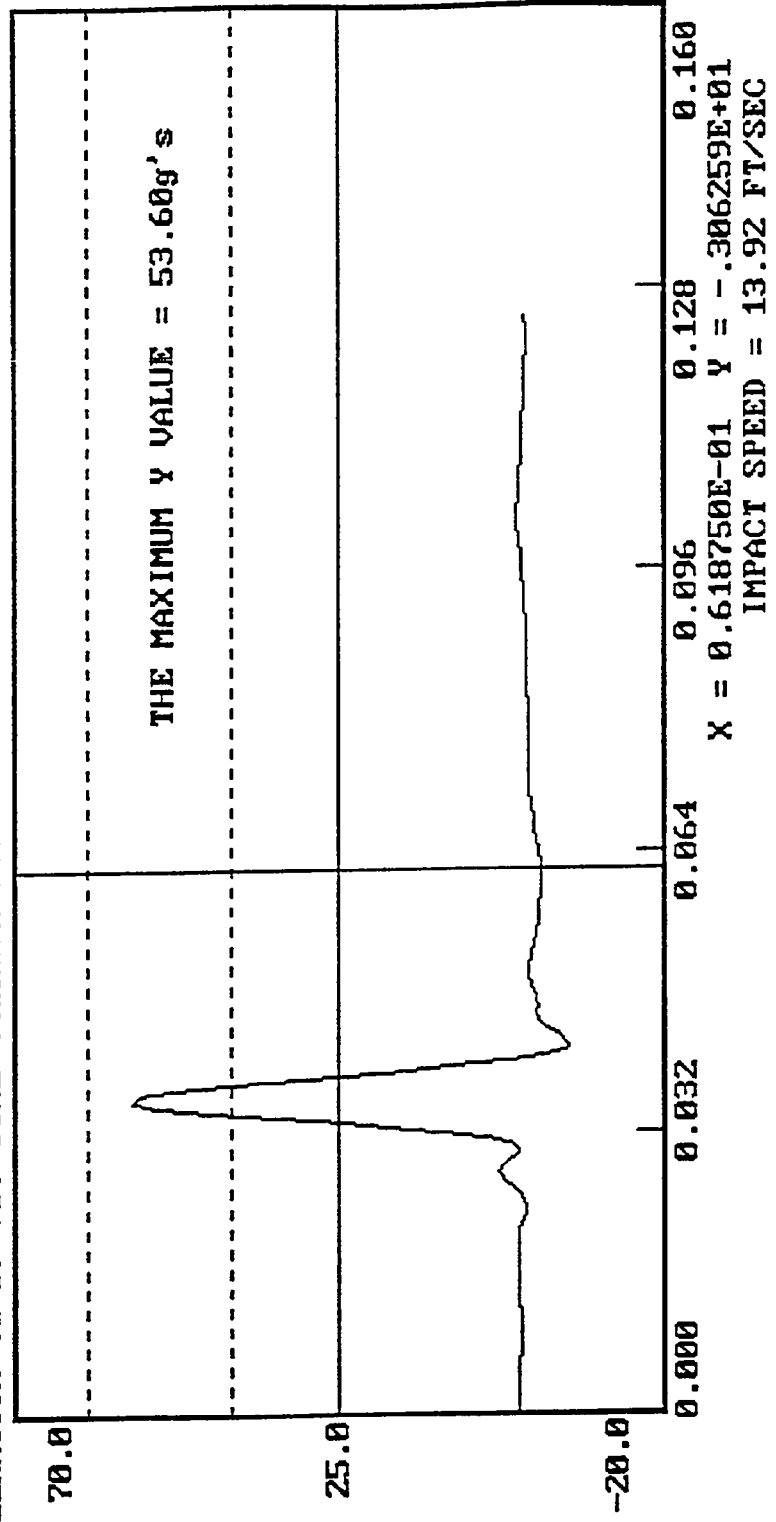
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

06-02-1994 09:40

DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)
SIDE IMPACT DUMMY (SID)

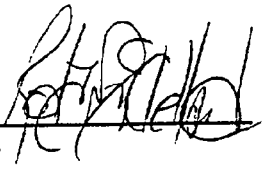
DATE: June 3, 1994

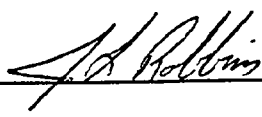
DUMMY NUMBER: 270

TEST NUMBER: D94894

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	74°
RELATIVE HUMIDITY	10 - 70%	33%
FORCE @ 0.5 in	23.3 - 36.5 lbs	33.8
FORCE @ 0.75 in	36.7 - 49.8 lbs	47.3
FORCE @ 1.0 in	50 - 63 lbs	61
FORCE @ 1.3 in	73 - 88 lbs	84

TEST MEETS SPECIFICATIONS

TECHNICIAN 

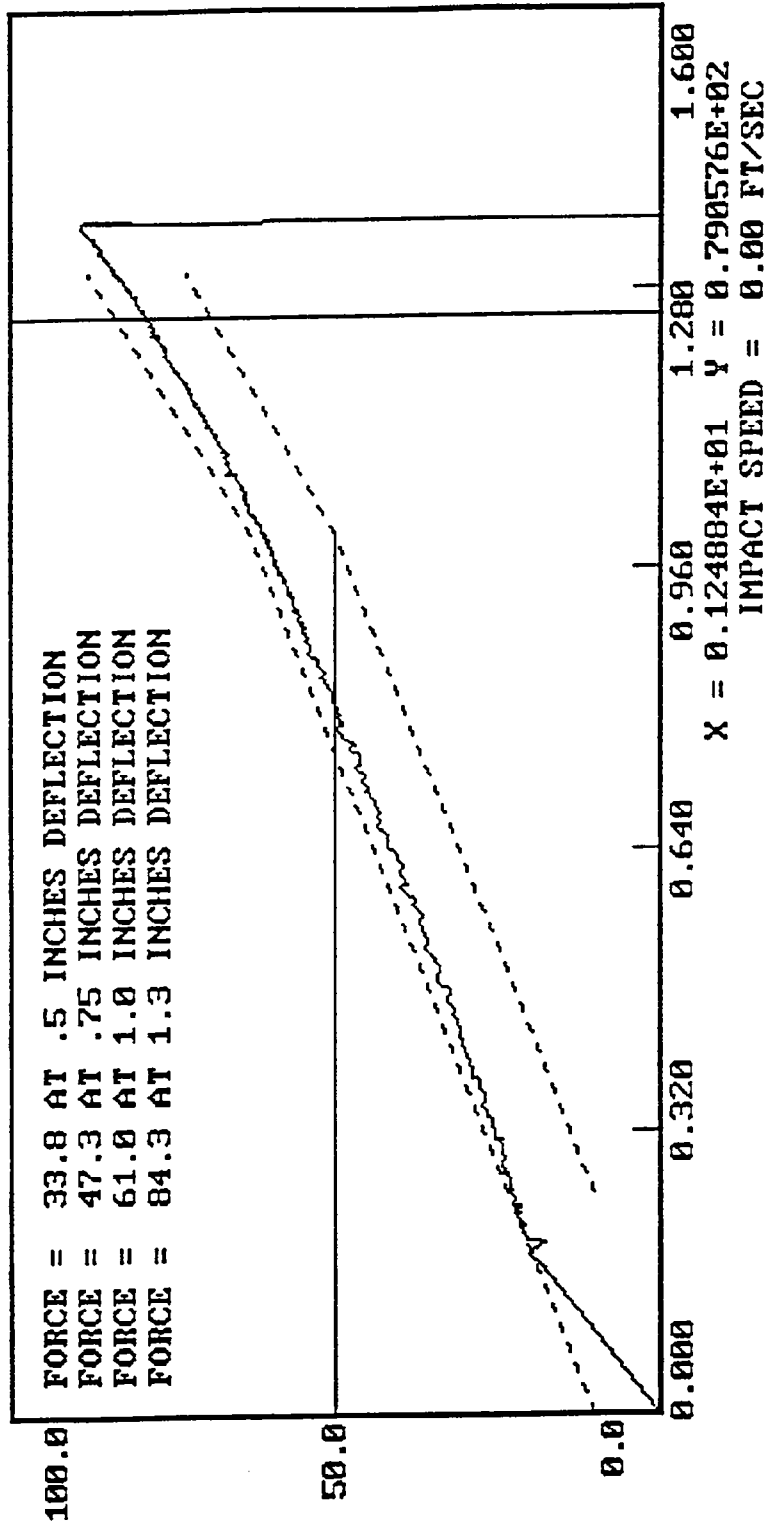
APPROVED BY 

06-03-1994 09:07

DUMMY CALIBRATION - ABDOMEN COMPRESSION

DUMMY # 270

ABDOMEN FORCE () VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

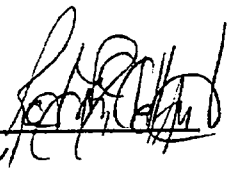
DATE: June 3, 1994

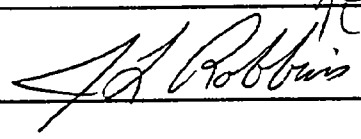
DUMMY NUMBER: 270

TEST NUMBER: D94895

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	74°
RELATIVE HUMIDITY	10 - 70%	33%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	31
FORCE @ 30°	34 - 46 lbs	41
FORCE @ 40°	46 - 58 lbs	47
RETURN ANGLE	12° maximum	3°

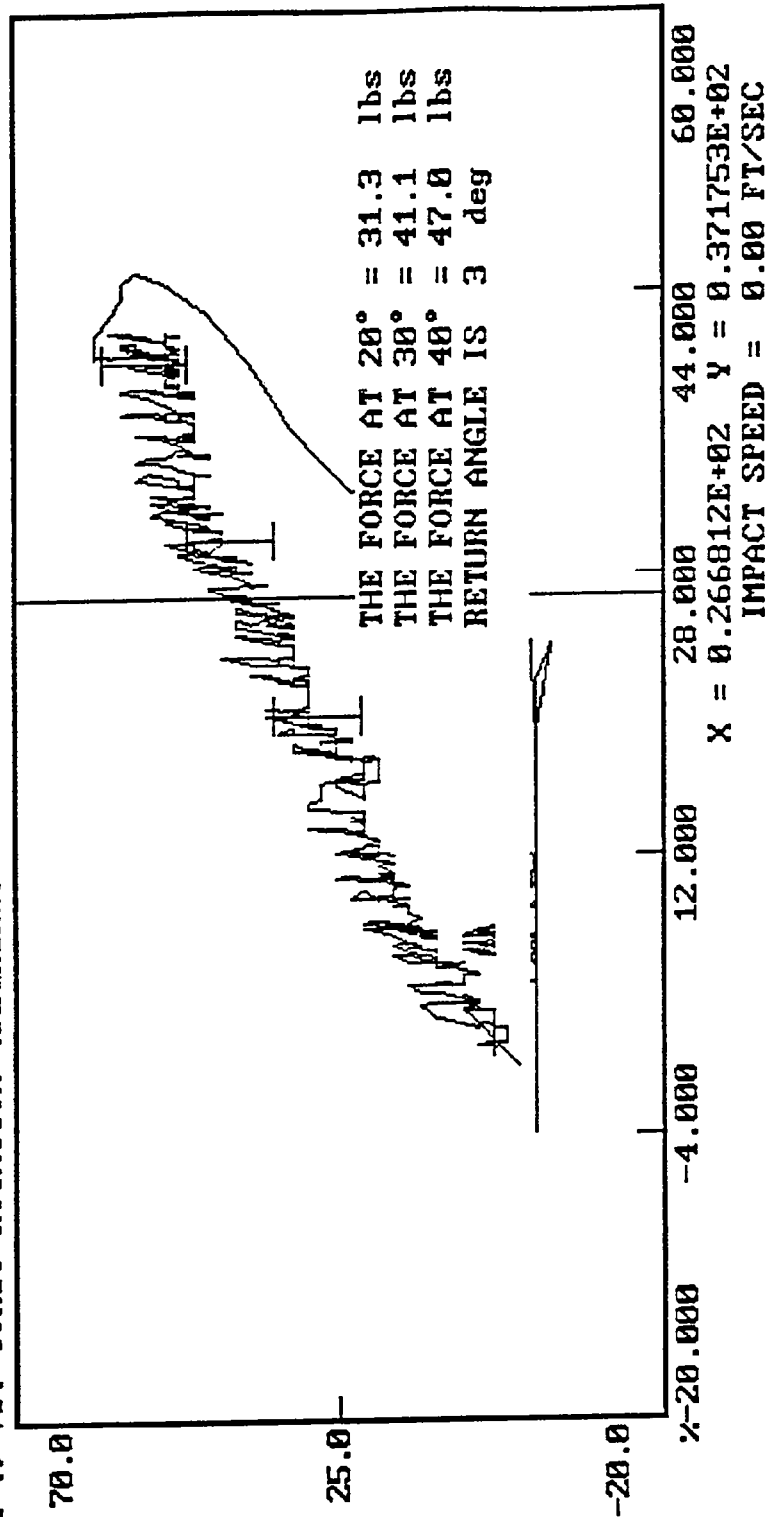
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 270
 FORCE () VS. TORSO ROTATION (DEGREES)

06-03-1994 11:47



PRE-TEST CERTIFICATION DATA

Passenger Dummy Serial Number: 272

Calibration Test Results Summary

Passenger Serial Number: 272

Pre-Test Calibration

External Dimensions: The dummy passed all external dimension requirements.

Thorax Impact Test: The thorax passed all impact test requirements.

Pelvis Impact Tests: The pelvis passed all impact test requirements.

Abdominal Compression Test: The abdomen passed all compression test requirements.

Lumbar Flexion Test: The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 272

DATE OF VERIFICATION: June 2, 1994

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.6
RH - Rib Height	19.75 - 20.5"	20.4
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.1
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.3
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY:



APPROVED BY:



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

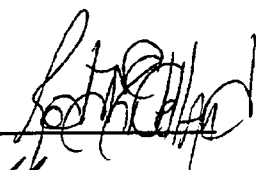
DATE: June 2, 1994

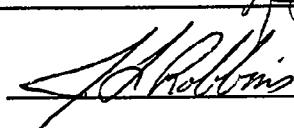
DUMMY NUMBER: 272

TEST NUMBER: D94902

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	45
LOWER RIB	37 - 46 g's	42
LOWER SPINE	15 - 22 g's	20

TEST MEETS SPECIFICATIONS

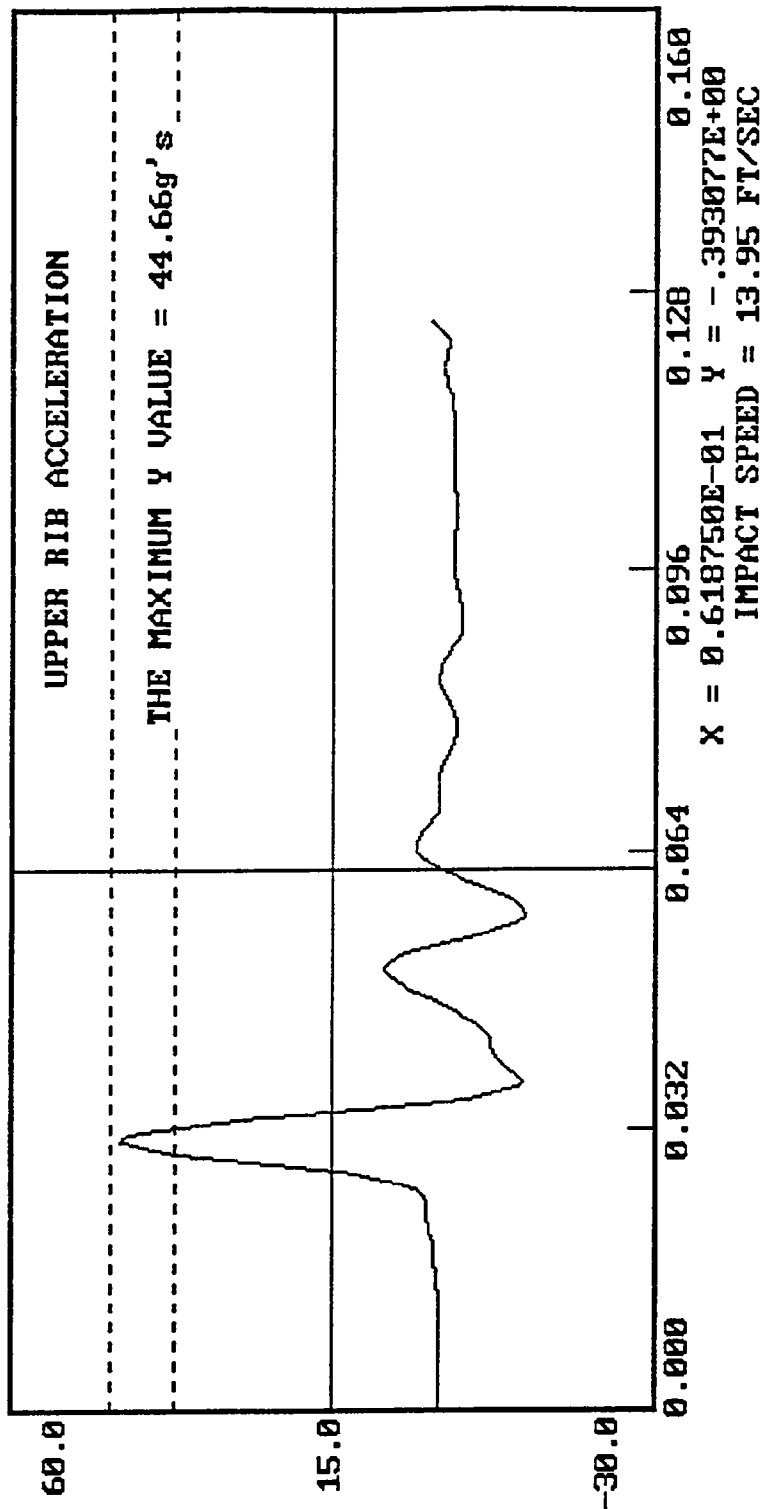
TECHNICIAN 

APPROVED BY 

DUMMYY CALIBRATION - THORAX IMPACT

DUMMYY # 272

ACCELERATION (G'S) VS. TIME ((SECONDS))

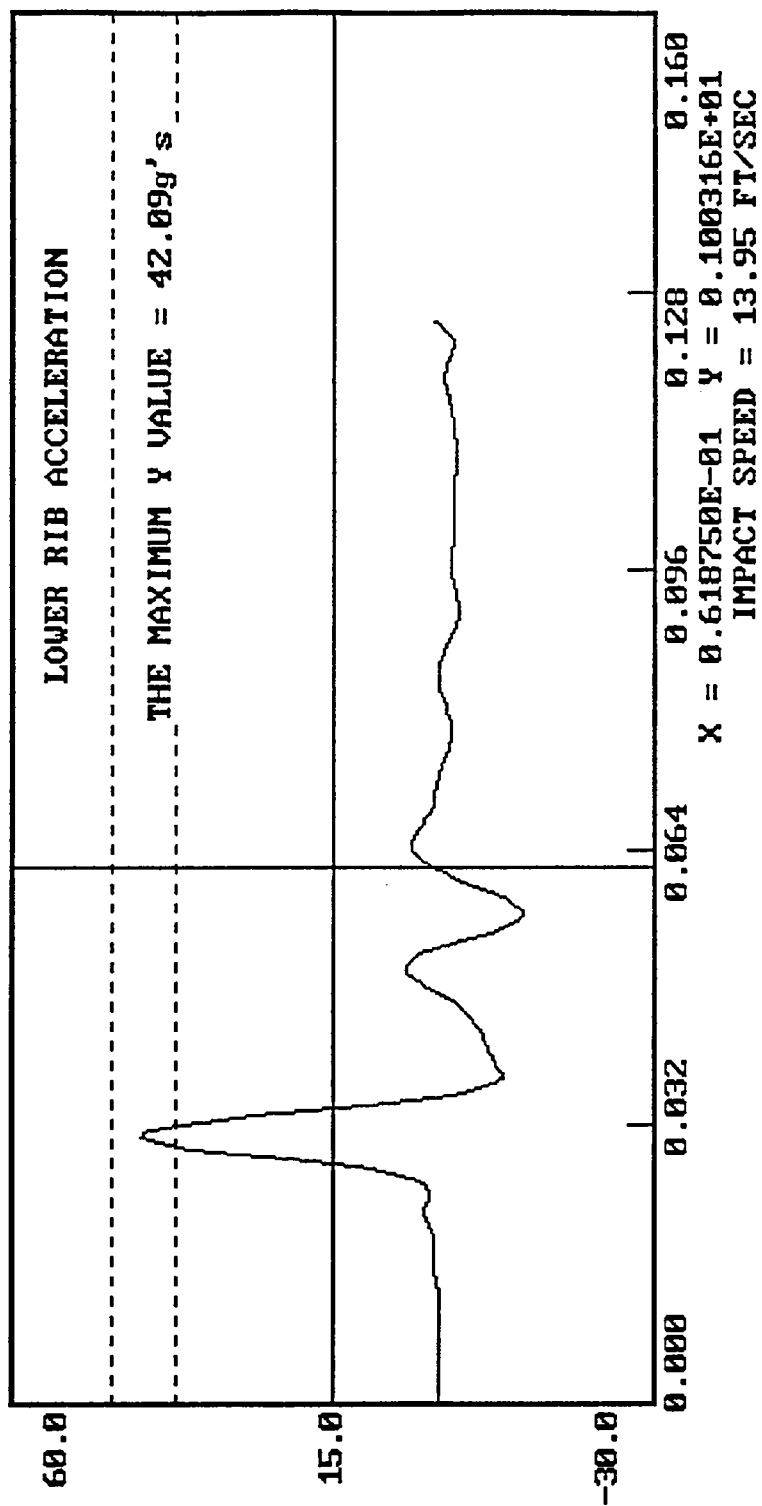


06-02-1994 14:47

DUMMY CALIBRATION - THORAX IMPACT

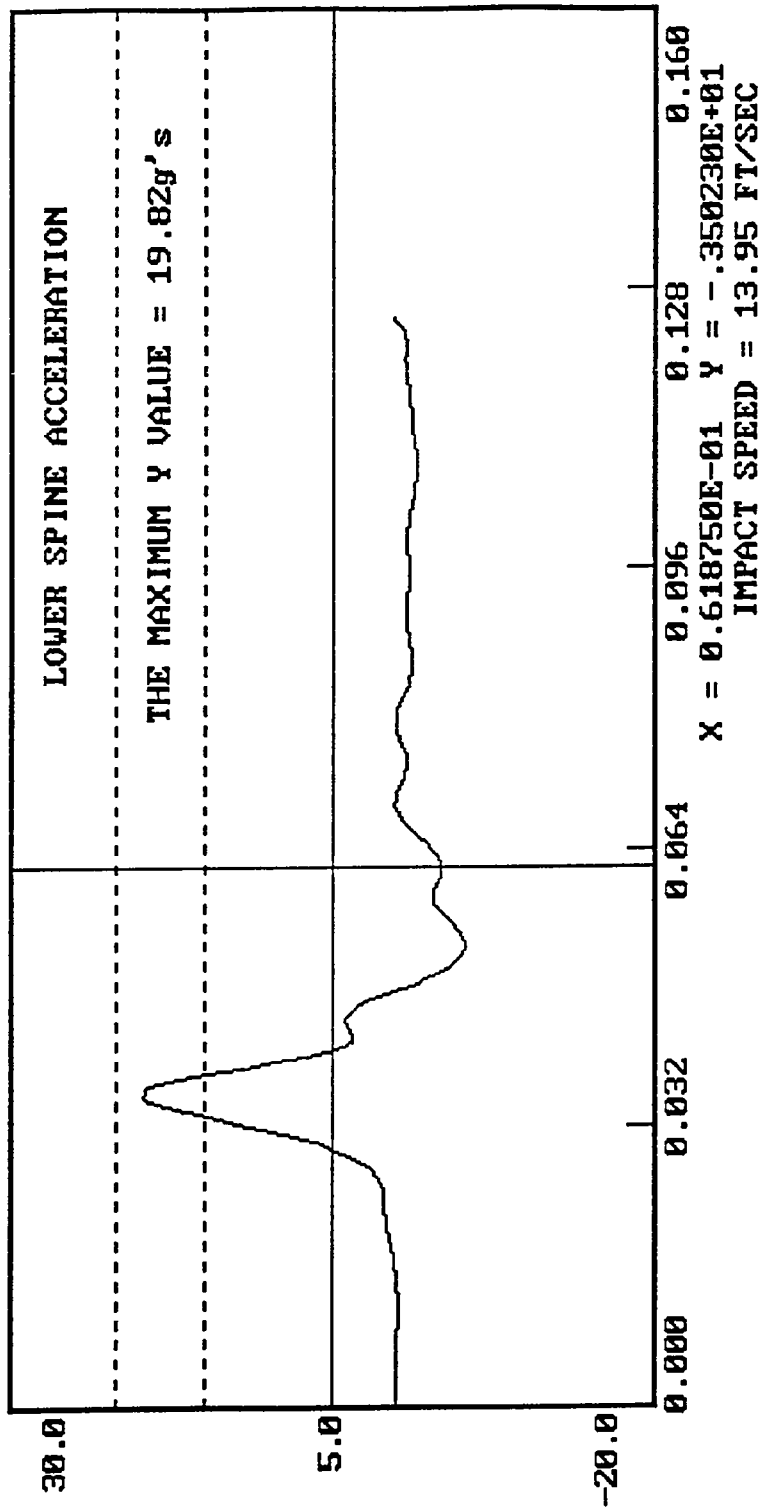
DUMMY # 272

ACCELERATION (G'S) VS. TIME ((SECONDS))



06-02-1994 14:47

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 272
ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: June 2, 1994

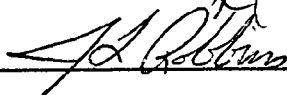
DUMMY NUMBER: 272

TEST NUMBER: D94903

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
PROBE SPEED	13.8 - 14.2 fps	14.0
PELVIS ACCELERATION	40 - 60 g's	57

TEST MEETS SPECIFICATIONS

TECHNICIAN 

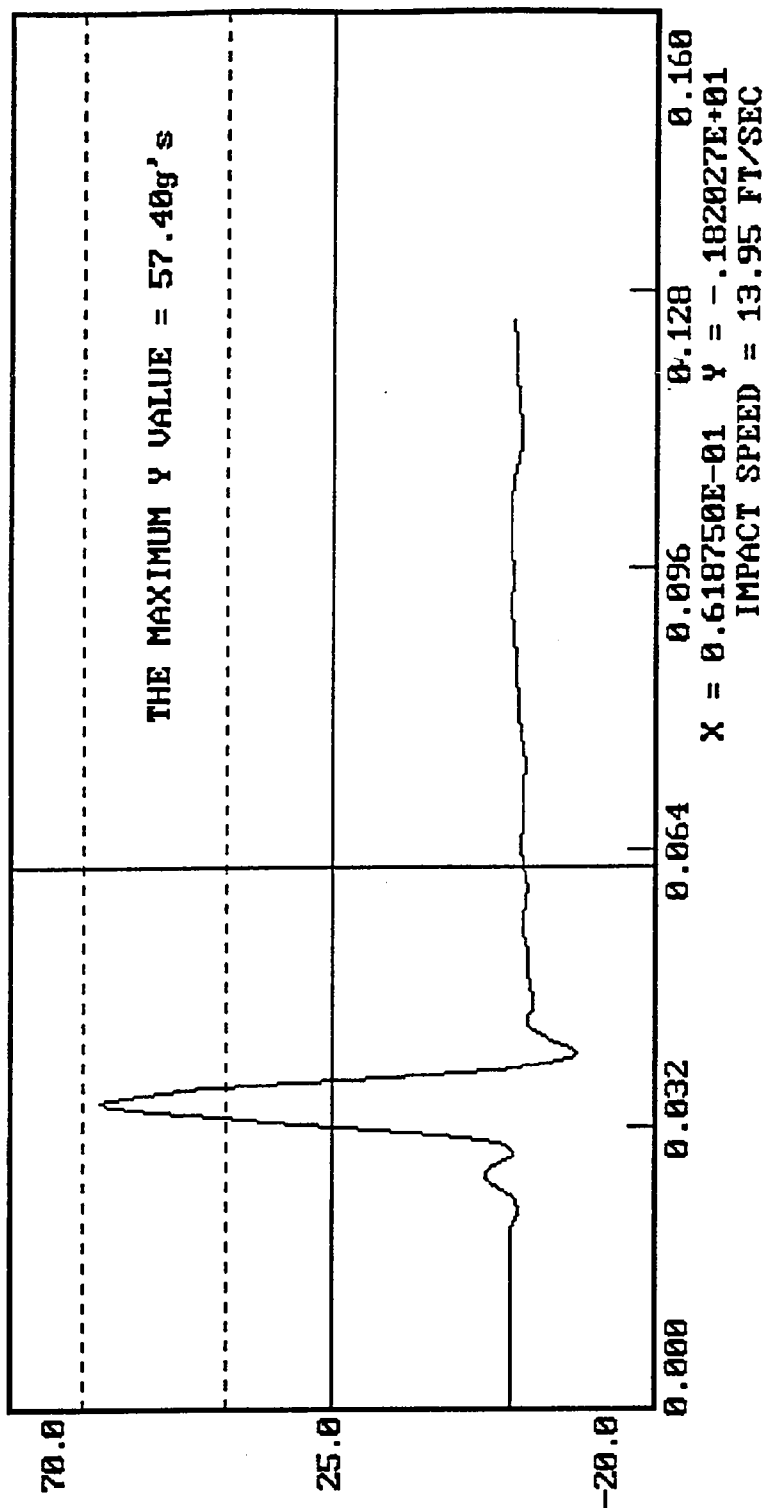
APPROVED BY 

06-02-1994 09:52

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 272

ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)
SIDE IMPACT DUMMY (SID)

DATE: June 3, 1994

DUMMY NUMBER: 272

TEST NUMBER: D94904

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	72°
RELATIVE HUMIDITY	10 - 70%	34%
FORCE @ 0.5 in	23.3 - 36.5 lbs	32.0
FORCE @ 0.75 in	36.7 - 49.8 lbs	44.5
FORCE @ 1.0 in	50 - 63 lbs	57
FORCE @ 1.3 in	73 - 88 lbs	80

TEST MEETS SPECIFICATIONS

TECHNICIAN



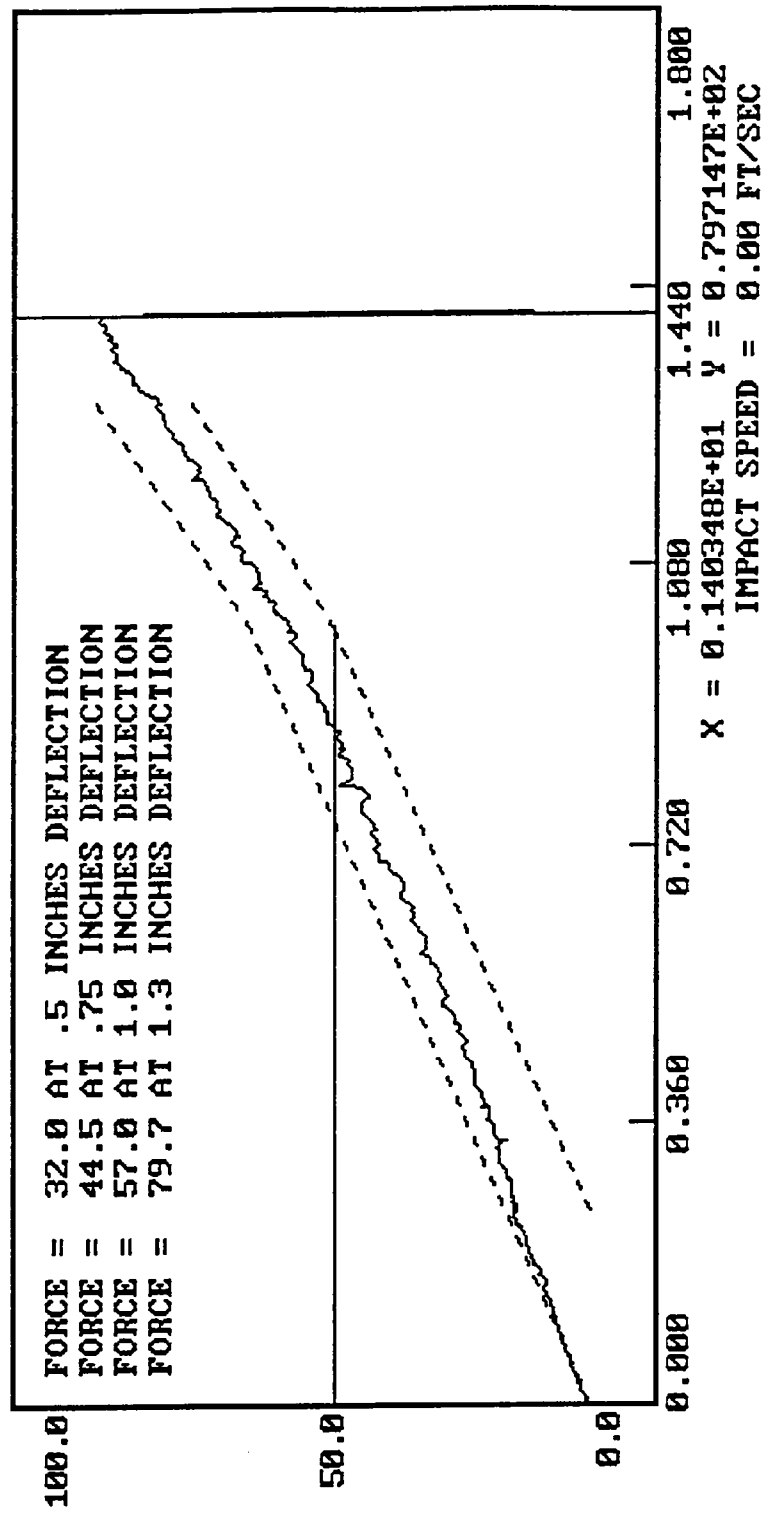
APPROVED BY



DUMY CALIBRATION - ABDOMEN COMPRESSION

DUMY # 272

ABDOMEN FORCE () VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: June 3, 1994

DUMMY NUMBER: 272

TEST NUMBER: D94905

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	72°
RELATIVE HUMIDITY	10 - 70%	34%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	33
FORCE @ 30°	34 - 46 lbs	45
FORCE @ 40°	46 - 58 lbs	51
RETURN ANGLE	12° maximum	4°

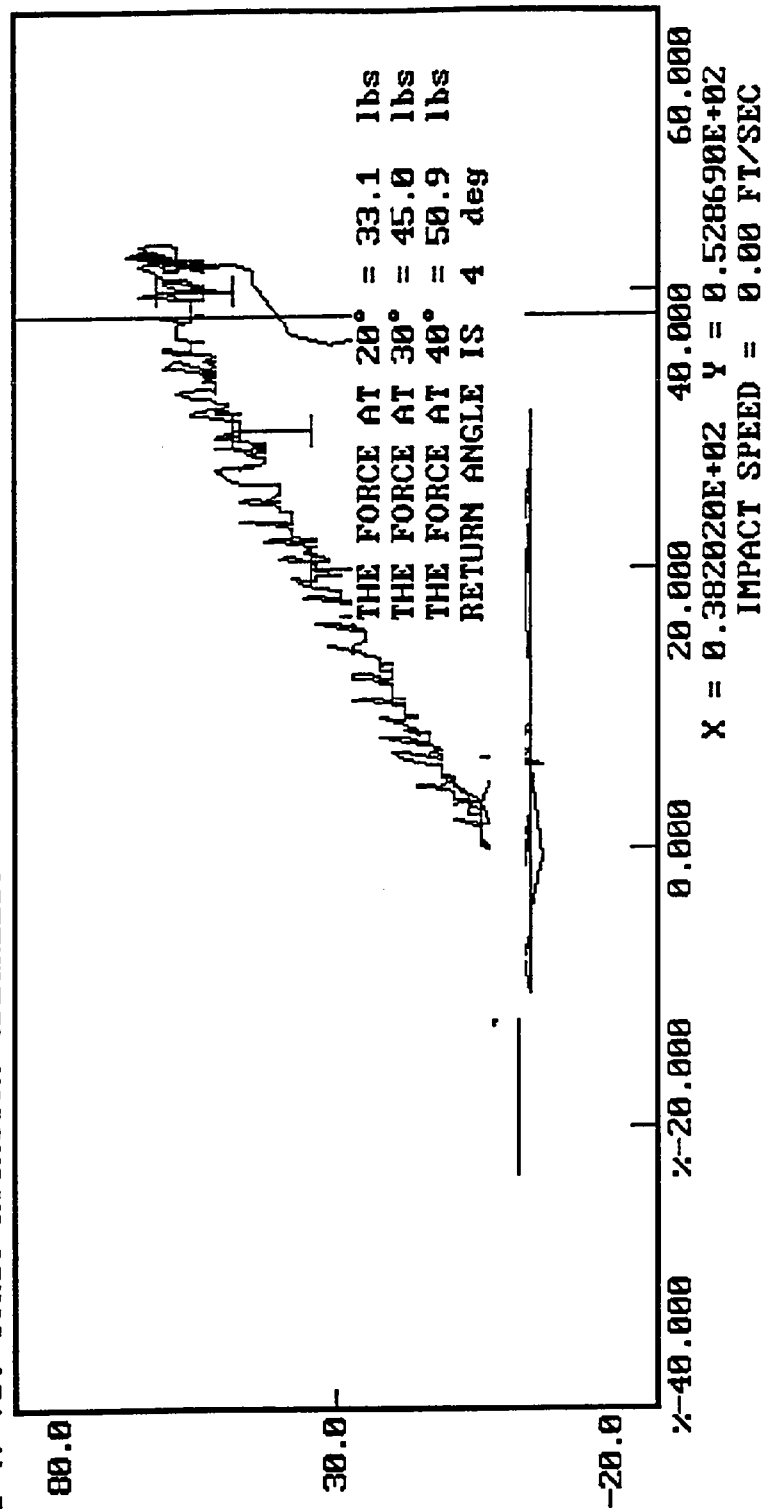
TEST MEETS SPECIFICATIONS

TECHNICIAN _____

APPROVED BY _____

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 272
 FORCE () VS. TORSO ROTATION (DEGREES)

06-03-1994 14:22



POST-TEST CERTIFICATION DATA

Driver Dummy Serial Number: 270

Calibration Test Results Summary

Dummy Serial Number: 270

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Tests:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

DATE OF VERIFICATION: June 8, 1994

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.7
RH - Rib Height	19.75 - 20.5"	20.5
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.3
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.7
SW - Knee Pivot to Floor	19.3" - 19.9"	19.6
HW - Hip Width	14.0" - 15.4"	14.8

MEASUREMENTS BY: _____

APPROVED BY: _____

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: June 8, 1994

DUMMY NUMBER: 270

TEST NUMBER: D94952

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	32%
PROBE SPEED	13.8 - 14.2 fps	13.9
UPPER RIB	37 - 46 g's	43
LOWER RIB	37 - 46 g's	40
LOWER SPINE	15 - 22 g's	17

TEST MEETS SPECIFICATIONS

TECHNICIAN

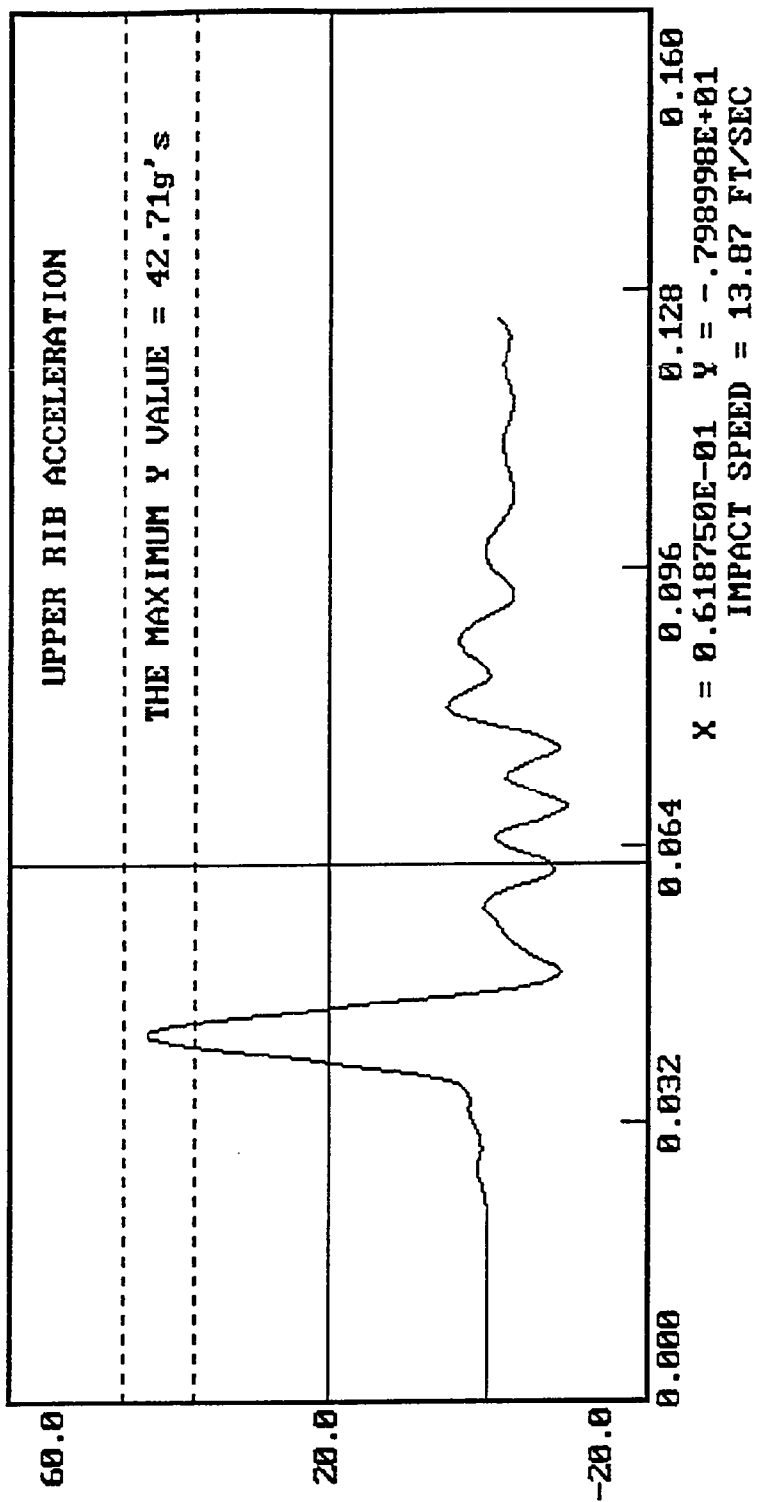
He Chiu

APPROVED BY

J. Robbins

06-08-1994 11:04

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))

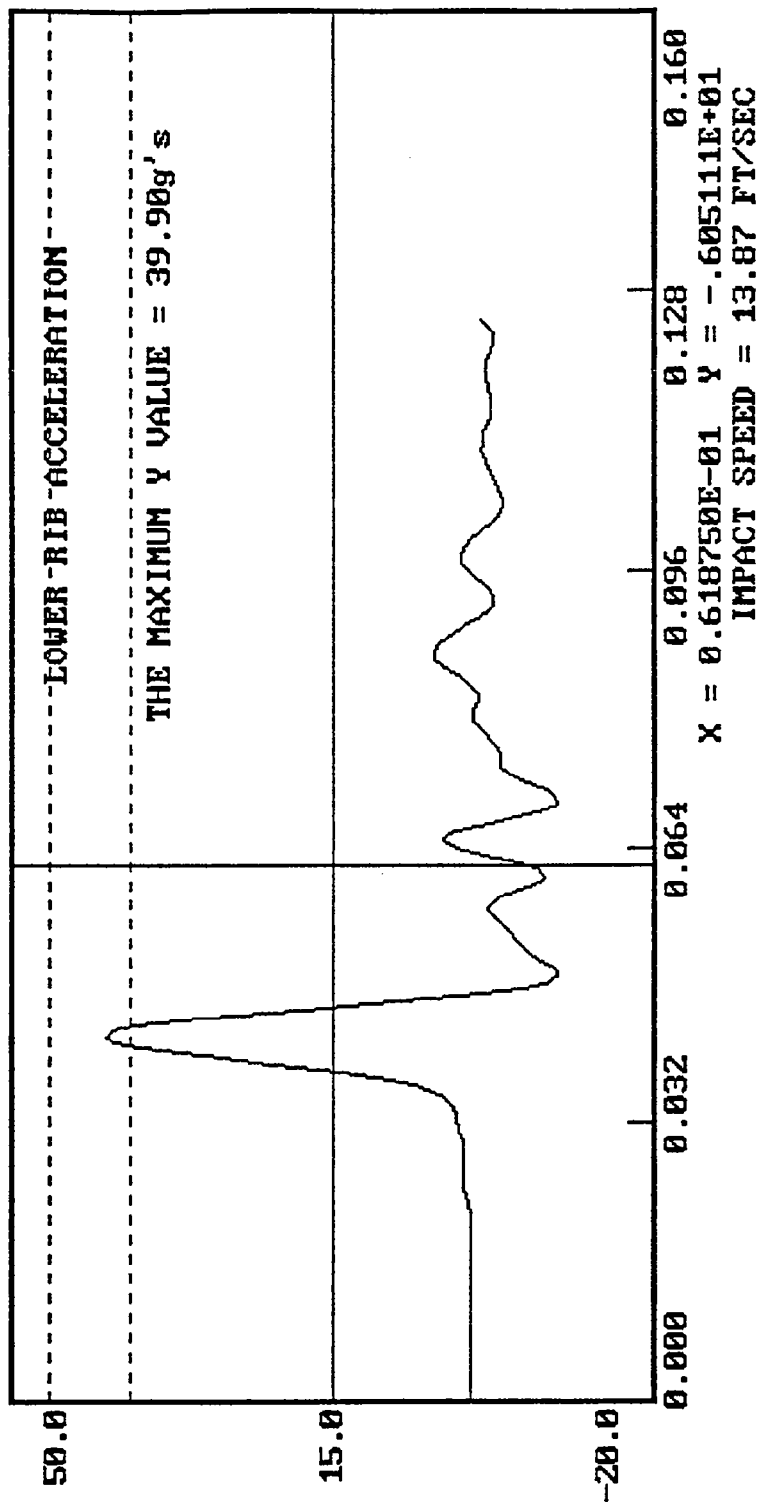


DUMY CALIBRATION - THORAX IMPACT

DUMY # 270

ACCELERATION (G'S) VS. TIME ((SECONDS))

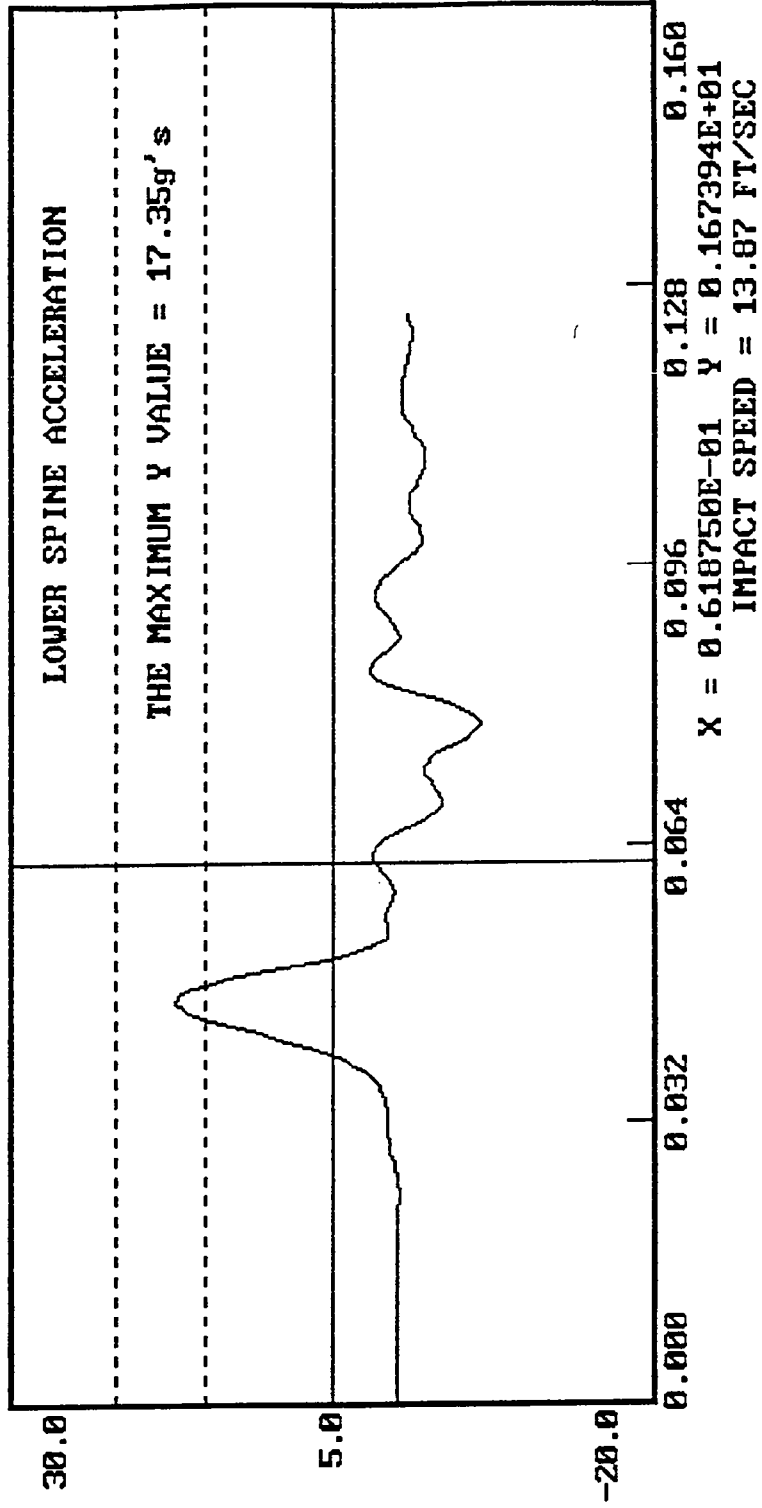
06-08-1994 11:04



DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 270

06-08-1994 11:04

ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

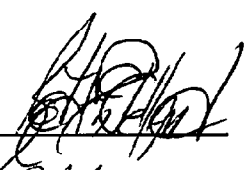
DATE: June 8, 1994

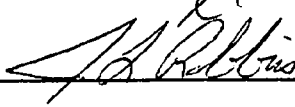
DUMMY NUMBER: 270

TEST NUMBER: D94953

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	32%
PROBE SPEED	13.8 - 14.2 fps	13.9
PELVIS ACCELERATION	40 - 60 g's	53

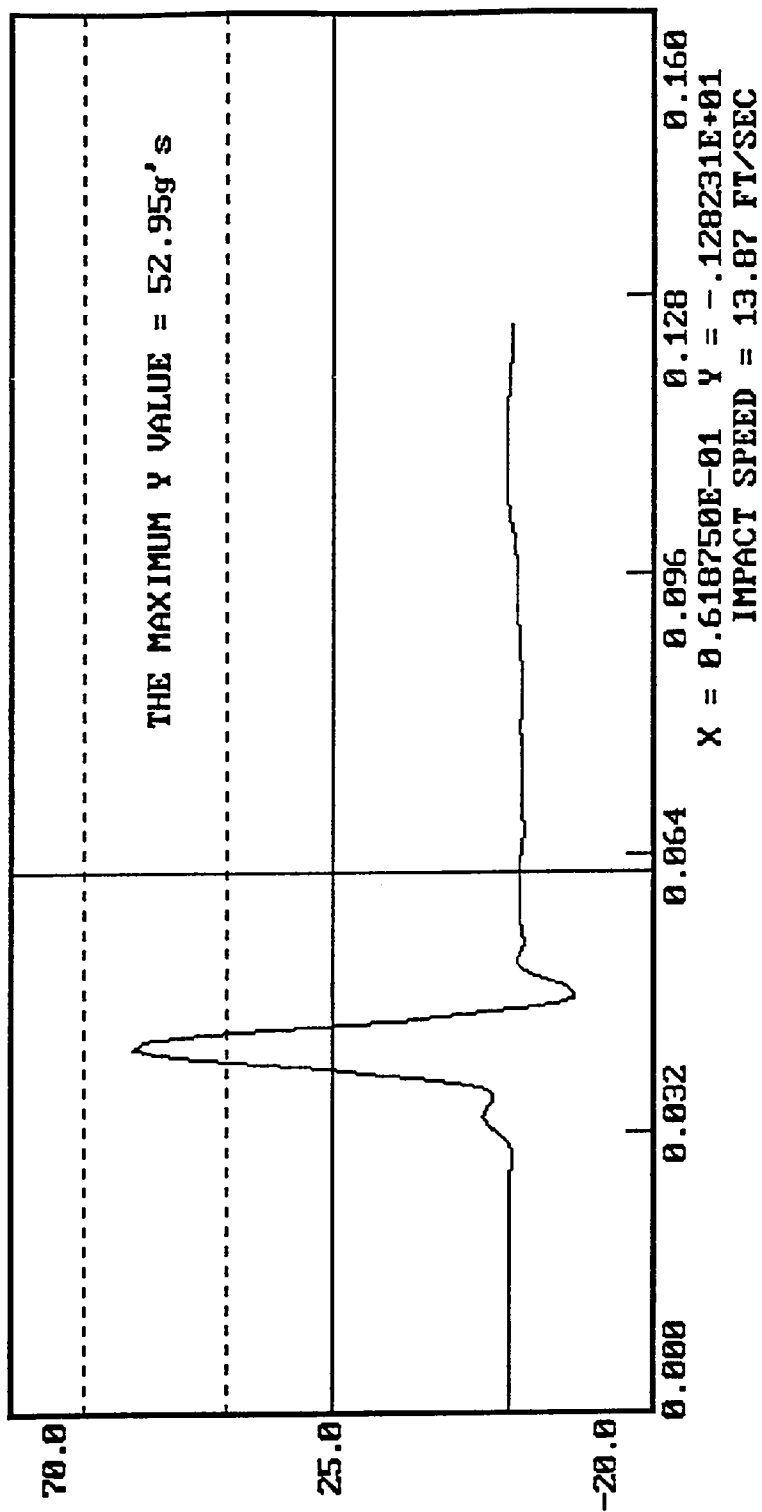
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

06-08-1994 11:17

DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: June 8, 1994

DUMMY NUMBER: 270

TEST NUMBER: D94954

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	32%
FORCE @ 0.5 in	23.3 - 36.5 lbs	34.7
FORCE @ 0.75 in	36.7 - 49.8 lbs	47.2
FORCE @ 1.0 in	50 - 63 lbs	62
FORCE @ 1.3 in	73 - 88 lbs	81

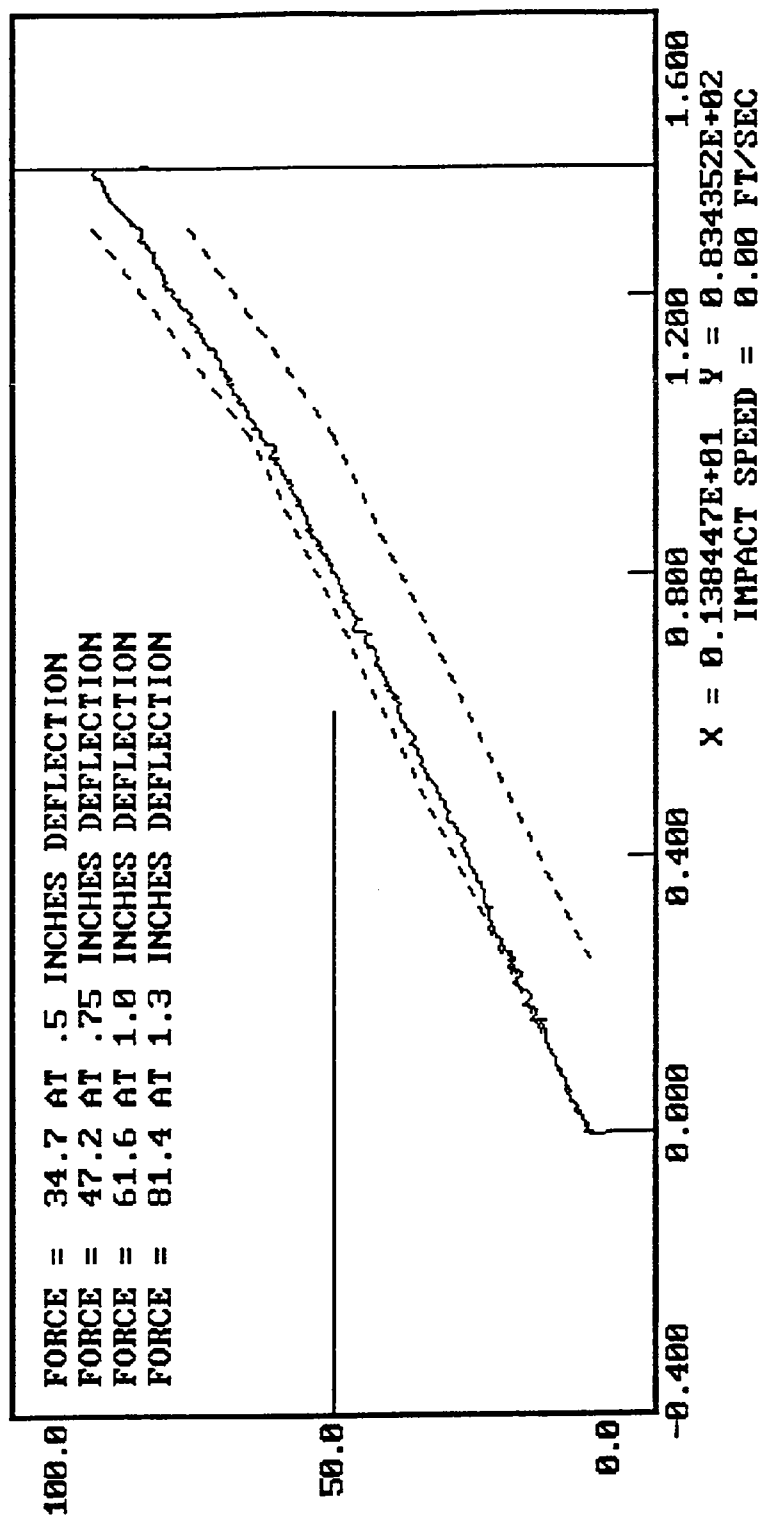
TEST MEETS SPECIFICATIONS

TECHNICIAN *He C. Chen*

APPROVED BY *J. Robbins*

06-08-1994 14:51

DUMMY CALIBRATION - ABDOMEN COMPRESSION
DUMMY # 270
ABDOMEN FORCE () VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: June 8, 1994

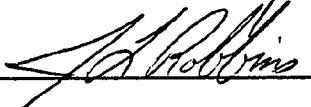
DUMMY NUMBER: 270

TEST NUMBER: D94955

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	32%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	32
FORCE @ 30°	34 - 46 lbs	42
FORCE @ 40°	46 - 58 lbs	58
RETURN ANGLE	12° maximum	3°

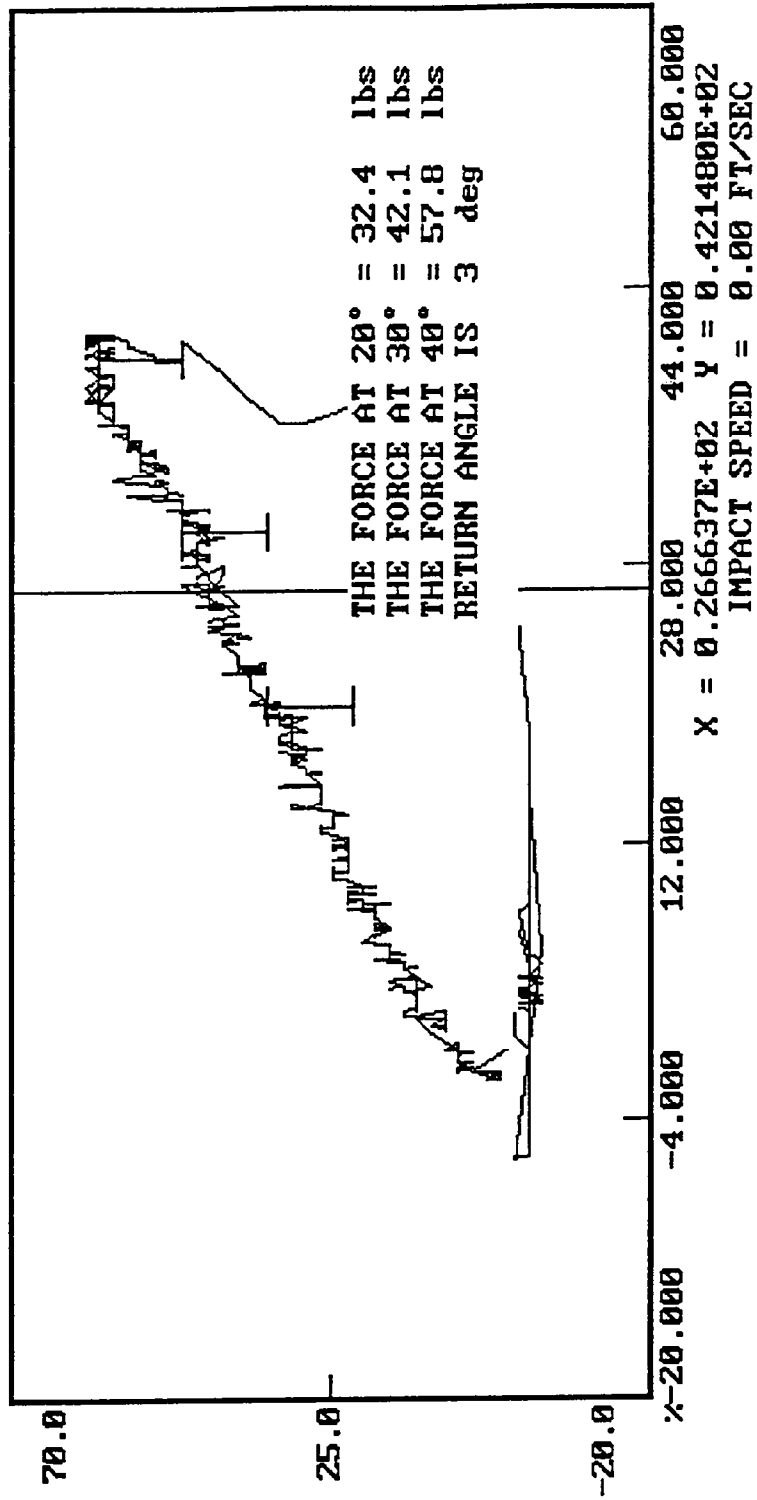
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

06-08-1994 15:23

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 270
FORCE () VS. TORSO ROTATION (DEGREES)



POST-TEST CERTIFICATION DATA

Passenger Dummy Serial Number: 272

Calibration Test Results Summary

Dummy Serial Number: 272

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Tests:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

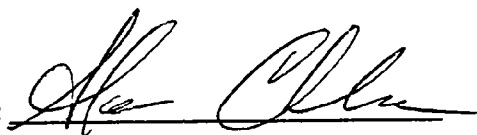
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 272

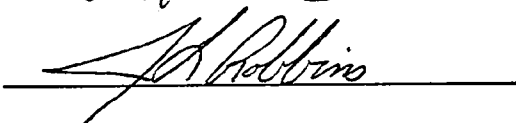
DATE OF VERIFICATION: June 8, 1994

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.6
RH - Rib Height	19.75 - 20.5"	20.4
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.1
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.4
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY:



APPROVED BY:



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: June 8, 1994

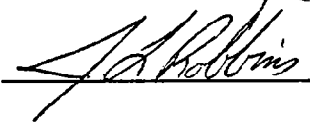
DUMMY NUMBER: 272

TEST NUMBER: D94962

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	32%
PROBE SPEED	13.8 - 14.2 fps	13.9
UPPER RIB	37 - 46 g's	41
LOWER RIB	37 - 46 g's	39
LOWER SPINE	15 - 22 g's	20

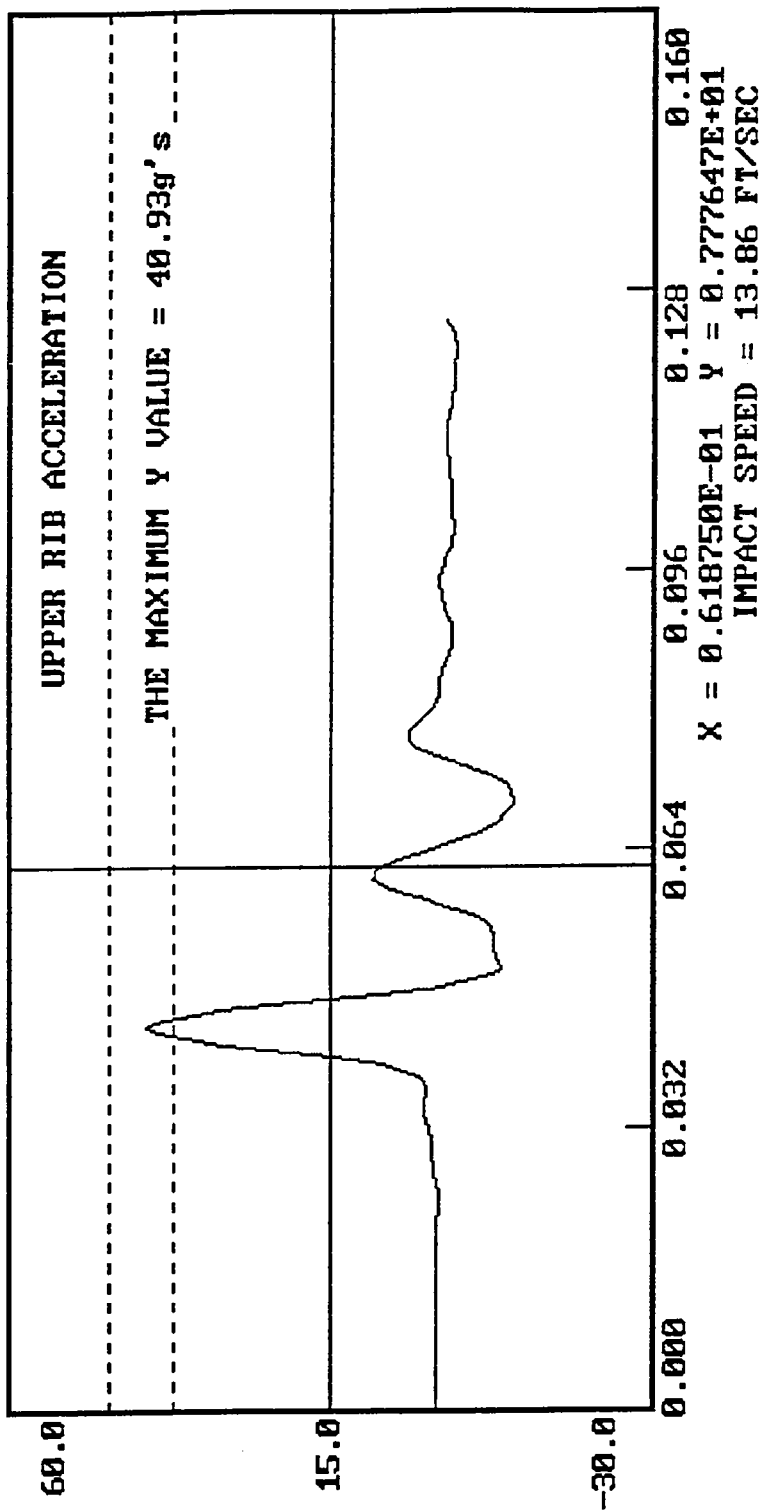
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

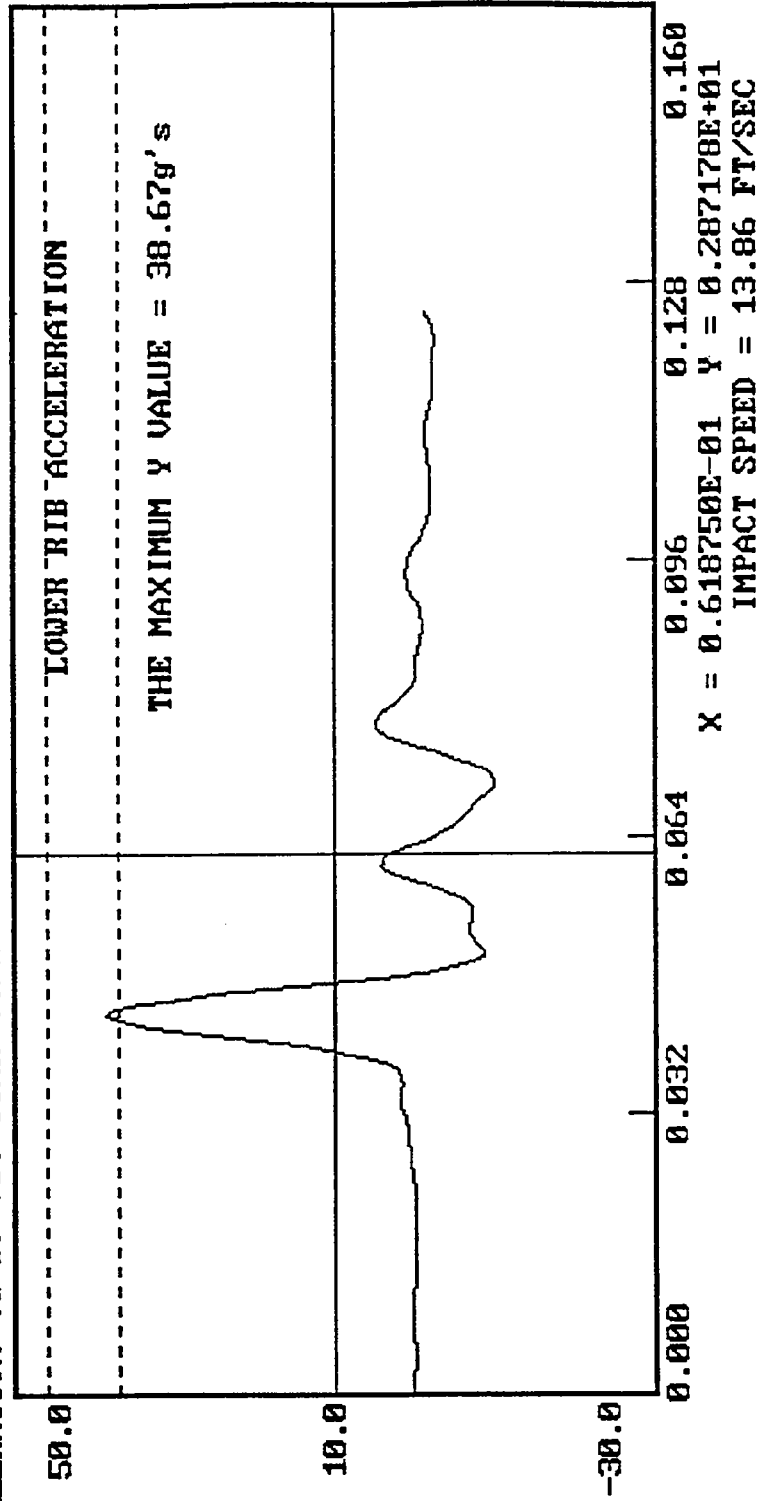
06-08-1994 10:29

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 272
ACCELERATION (G'S) VS. TIME ((SECONDS))



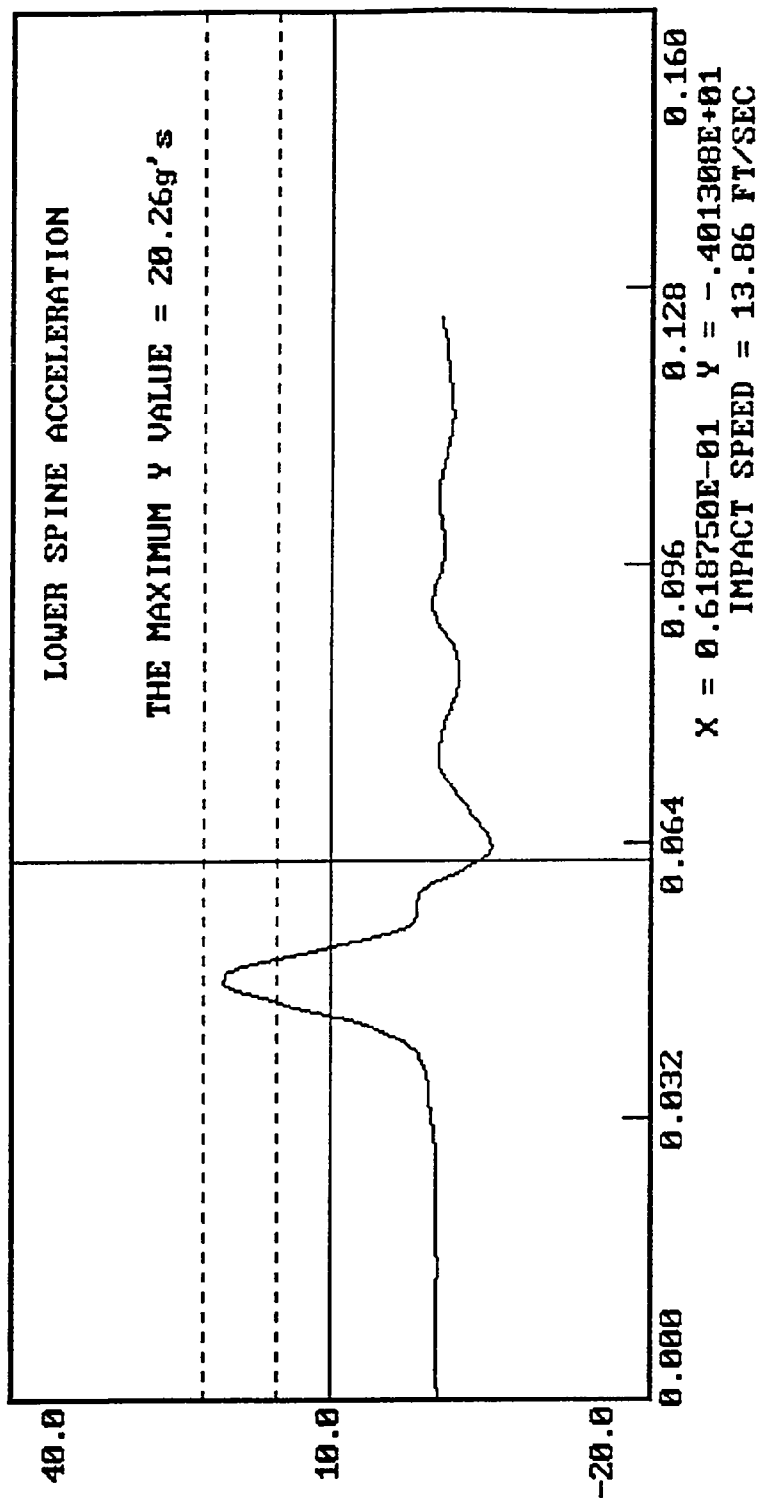
06-08-1994 10:29

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 272
ACCELERATION (G'S) VS. TIME ((SECONDS))



06-08-1994 10:29

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 272
ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

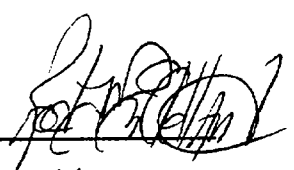
DATE: June 8, 1994

DUMMY NUMBER: 272

TEST NUMBER: D94963

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	32%
PROBE SPEED	13.8 - 14.2 fps	13.9
PELVIS ACCELERATION	40 - 60 g's	60

TEST MEETS SPECIFICATIONS

TECHNICIAN 

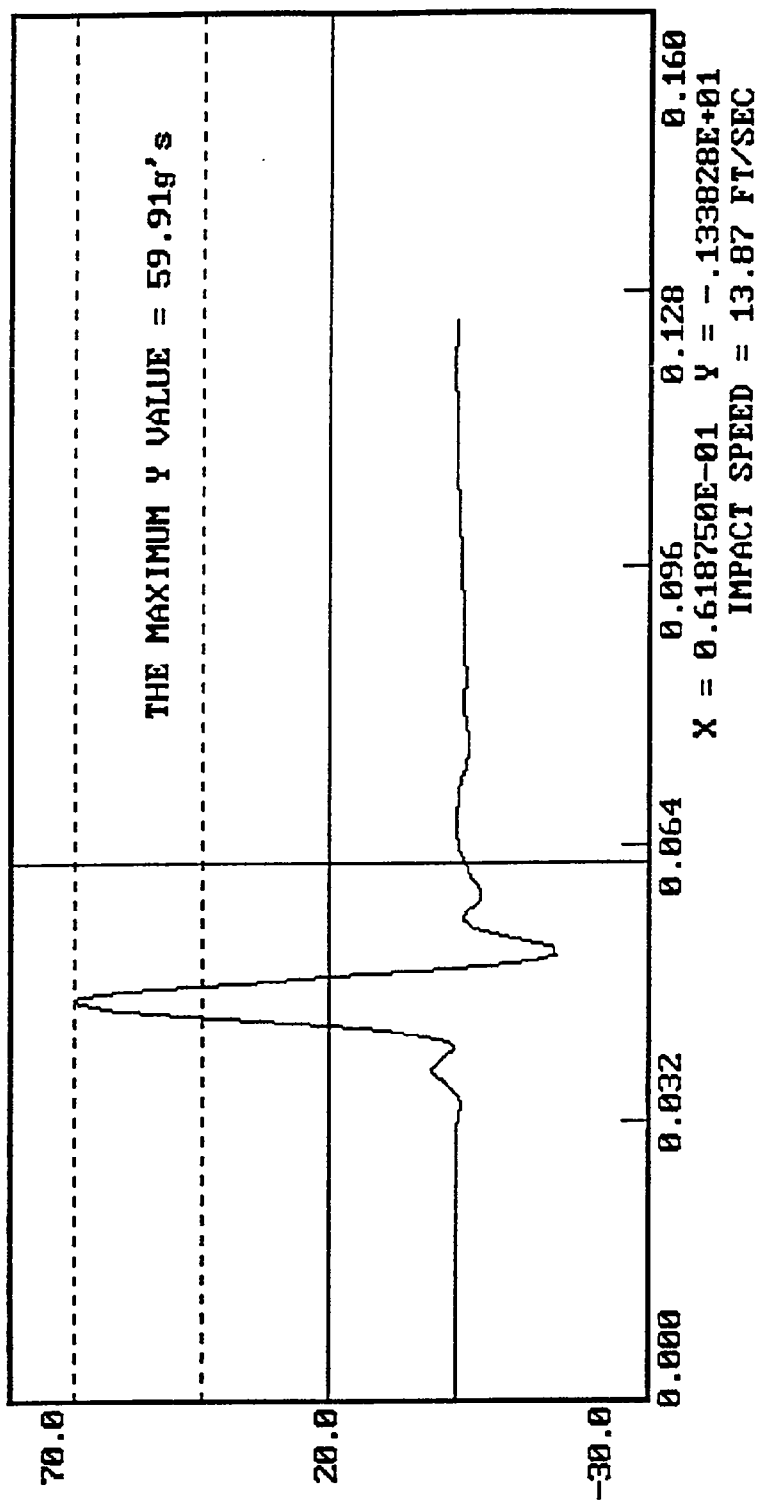
APPROVED BY 

06-08-1994 11:26

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 272

ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)
SIDE IMPACT DUMMY (SID)

DATE: June 8, 1994

DUMMY NUMBER: 272

TEST NUMBER: D94964

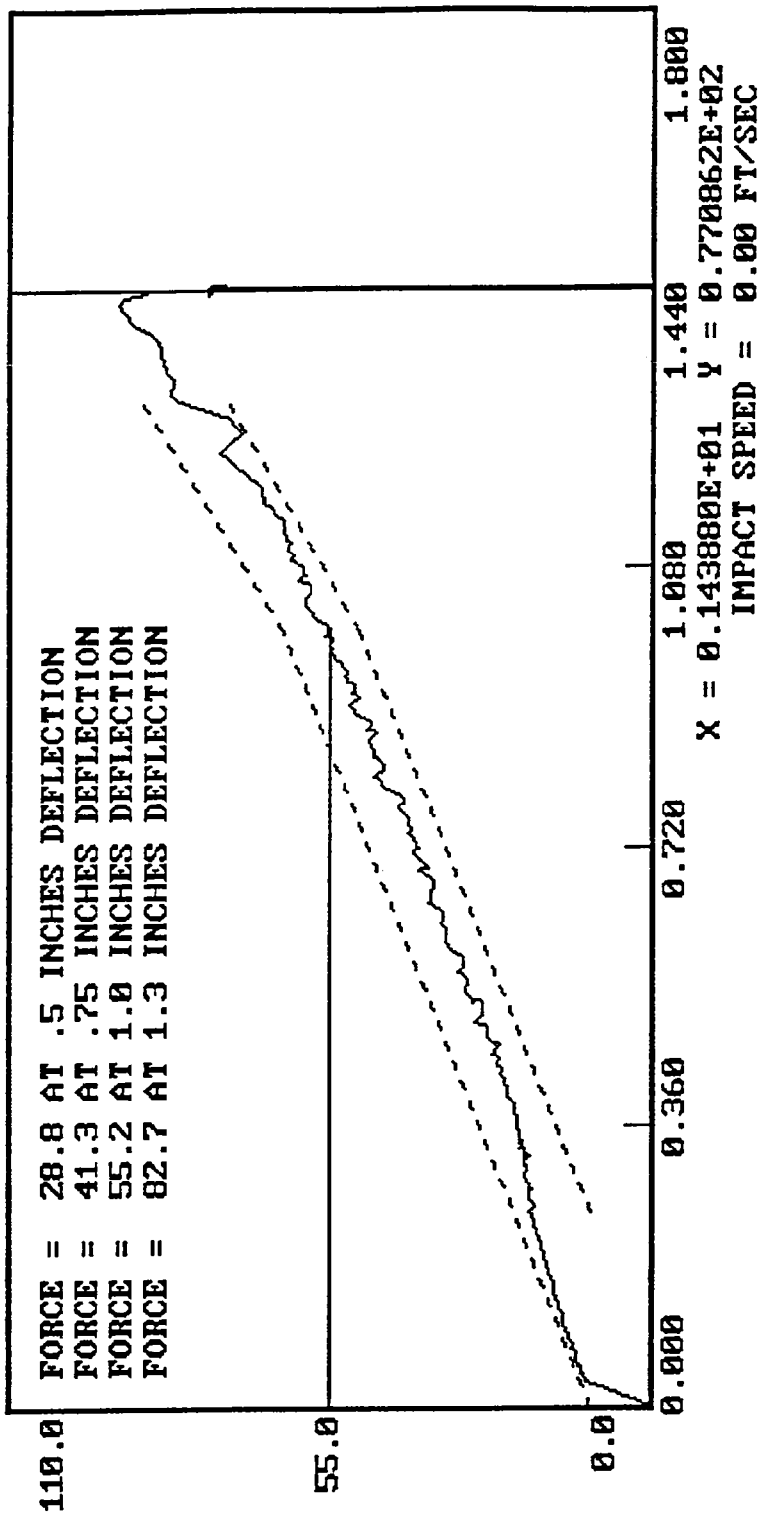
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	32%
FORCE @ 0.5 in	23.3 - 36.5 lbs	28.8
FORCE @ 0.75 in	36.7 - 49.8 lbs	41.3
FORCE @ 1.0 in	50 - 63 lbs	55
FORCE @ 1.3 in	73 - 88 lbs	83

TEST MEETS SPECIFICATIONS

TECHNICIAN _____

APPROVED BY _____

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 272
 06-08-1994 14:54
 ABDOMEN FORCE () VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: June 8, 1994

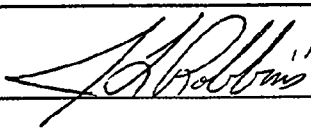
DUMMY NUMBER: 272

TEST NUMBER: D94965

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	32%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	25
FORCE @ 30°	34 - 46 lbs	40
FORCE @ 40°	46 - 58 lbs	50
RETURN ANGLE	12° maximum	5°

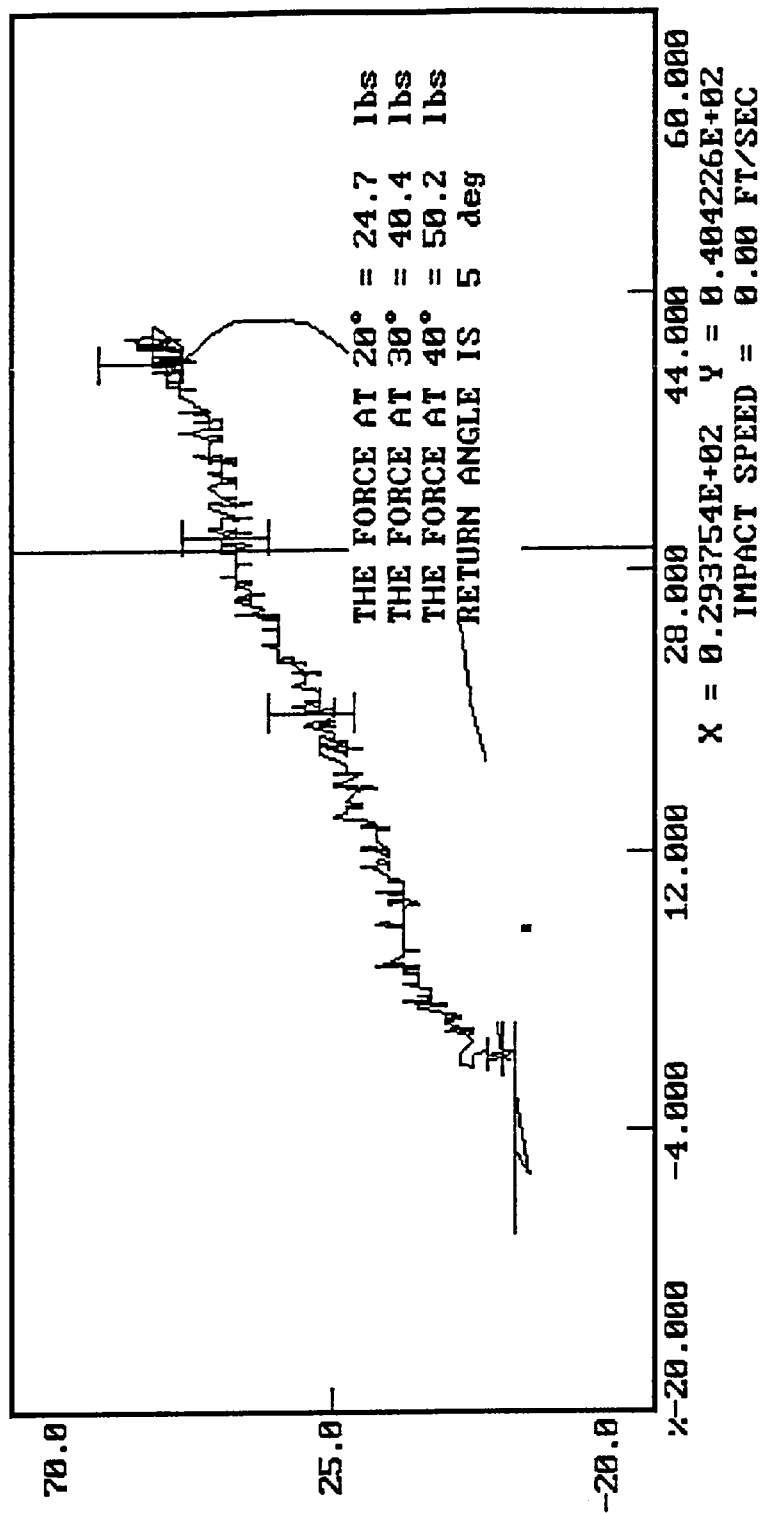
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

06-08-1994 14:59

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 272
FORCE () VS. TORSO ROTATION (DEGREES)



POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 270

Inspected By: Jeff Robbins

Date: June 8, 1994

<u>Part</u>	<u>Items Checked</u>	<u>Comments</u>
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual, cable torque	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure, stiffeners	OK
Sternum	visual	OK
Lumbar spine	visual	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual	OK
Knees	visual, stops, inserts	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

NOTES: (include component/problem/action/reason):

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 272

Inspected By: Jeff Robbins

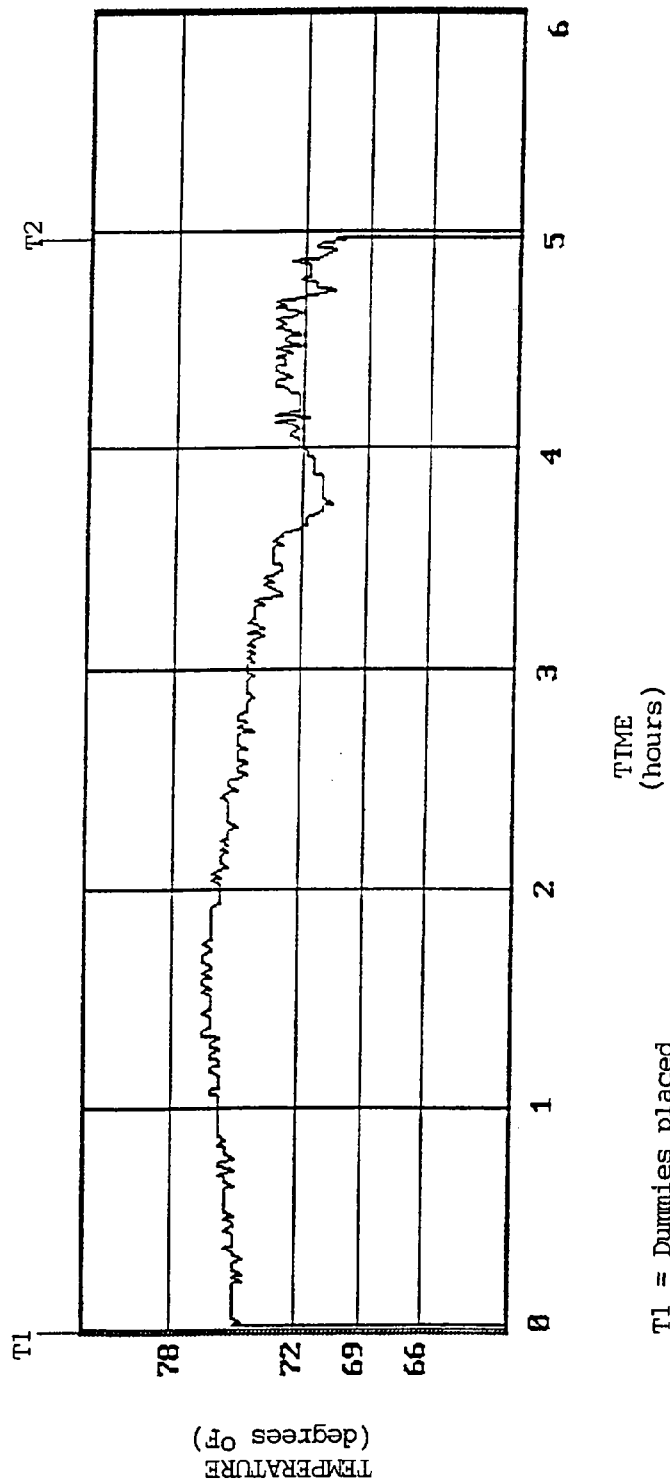
Date: June 8, 1994

<u>Part</u>	<u>Items Checked</u>	<u>Comments</u>
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual, cable torque	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure, stiffeners	OK
Sternum	visual	OK
Lumbar spine	visual	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual	OK
Knees	visual, stops, inserts	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

NOTES: (include component/problem/action/reason):

VEHICLE AND DUMMY TEMPERATURE

VEHICLE AND DUMMY TEMPERATURE RECORDING



T1 = Dummies placed
in vehicle

T2 = Test conducted

APPENDIX D
DUMMY AND VEHICLE CALIBRATION DATA

**DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION
INSTRUMENTS FOR DRIVER DUMMY NO. 270**

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib	AGRW3	Endevco	May 25, 1994
Lower Rib	AHTW4	Endevco	May 24, 1994
Lower Spine	AGRD5	Endevco	May 24, 1994
Pelvis	AE9C8	Endevco	May 25, 1994
Upper Rib Redundant	AGTPG	Endevco	May 24, 1994
Lower Rib Redundant	AHWL7	Endevco	May 24, 1994
Lower Spine Redundant	ACGJ4	Endevco	May 06, 1994
Pelvis Redundant	AE9C8	Endevco	May 25, 1994

INSTRUMENTS FOR PASSENGER DUMMY NO. 272

	LEFT REAR PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib	AGTM2	Endevco	May 24, 1994
Lower Rib	AGTB5	Endevco	May 24, 1994
Lower Spine	AGR57	Endevco	May 25, 1994
Pelvis	AHTL9	Endevco	May 25, 1994
Upper Rib Redundant	AGTB5	Endevco	May 24, 1994
Lower Rib Redundant	AHTP3	Endevco	May 24, 1994
Lower Spine Redundant	AGTG8	Endevco	May 25, 1994
Pelvis Redundant	AC9B7	Endevco	May 25, 1994

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
MDB CG X	MGA132	Entran	May 06, 1994
MDB CG Y	MGA007	Entran	May 06, 1994
MDB CG Z	MGA016	Entran	May 06, 1994
MDB Rear Axle X	MGA134	Entran	May 06, 1994
MDB Rear Axle Y	MGA147	Entran	April 28, 1994
Mid Left A-Post Y	MGA146	Entran	May 06, 1994
Upper Left B-Post Y	MGA114	Entran	April 25, 1994
Mid Left B-Post Y	AN47	Endevco	June 22, 1994
Trunk Centerline X	MGA165	Entran	March 31, 1994
Trunk Centerline Y	MGA122	Entran	May 24, 1994
Trunk Centerline Z	MGA054	Entran	May 06, 1994
Driver Seat Track Y	MGA137	Entran	May 24, 1994
Right Front Sill X	MGA073	Entran	May 24, 1994
Right Front Sill Y	MGA125	Entran	May 24, 1994
Right Front Sill Z	MGA130	Entran	May 24, 1994
Right Rear Sill X	MGA128	Entran	May 17, 1994
Right Rear Sill Y	MGA143	Entran	May 17, 1994
Right Rear Sill Z	MGA158	Entran	May 17, 1994
Right Rear Seat Occupant Compartment Y	MGA004	Entran	June 02, 1994
Left Front Sill Y	AC815	Endevco	May 06, 1994
Left Rear Sill Y	MGA124	Entran	May 06, 1994

Note: All Endevco accelerometers are Model No. 7264-2000
All Entran accelerometers are Model No. EGE-72