

REPORT NO. MGA-95-21418

SAFETY COMPLIANCE TESTING FOR FMVSS 214

"SIDE IMPACT PROTECTION - PASSENGER CARS"

SAAB AUTOMOBILE AB

1995 SAAB 900 SE CONVERTIBLE
NHTSA NO. CS0506

MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: March 17, 1995

Report Date: March 27, 1995

FINAL REPORT

Prepared For:

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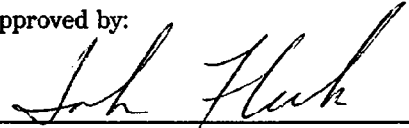
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16. Abstract Compliance tests were conducted on the subject 1995 Saab 900 SE Convertible in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure for the determination of FMVSS 214 compliance. The test was conducted at the MGA Research Proving Grounds and Crash Test Center in Burlington, Wisconsin on March 17, 1995. The impact velocity of the Moving Barrier (MDB) was 32.81 mph (52.8 kph) and the ambient temperature of the struck side (driver's) of the target vehicle at the time of impact was 73 °F. The maximum static crush of the impacted vehicle was 272 mm at the Window Sill level of the struck vehicle. The test or target vehicle's performance is given below:																							
<table border="0"> <thead> <tr> <th></th> <th align="center"><u>Driver's SID</u></th> <th align="center"><u>Left Rear SID</u></th> </tr> </thead> <tbody> <tr> <td>Thoracic Trauma Index (TTI)</td> <td align="center">59 g's</td> <td align="center">61 g's</td> </tr> <tr> <td>Pelvis Acceleration</td> <td align="center">55 g's</td> <td align="center">58 g's</td> </tr> <tr> <td>Upper Rib Acceleration</td> <td align="center">52.9 g's</td> <td align="center">63.7 g's</td> </tr> <tr> <td>Lower Rib</td> <td align="center">53.4 g's</td> <td align="center">63.7 g's</td> </tr> <tr> <td>Lower Spine</td> <td align="center">65.4 g's</td> <td align="center">58.9 g's</td> </tr> </tbody> </table>							<u>Driver's SID</u>	<u>Left Rear SID</u>	Thoracic Trauma Index (TTI)	59 g's	61 g's	Pelvis Acceleration	55 g's	58 g's	Upper Rib Acceleration	52.9 g's	63.7 g's	Lower Rib	53.4 g's	63.7 g's	Lower Spine	65.4 g's	58.9 g's
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Approved by:



John Fleck, Facility Director

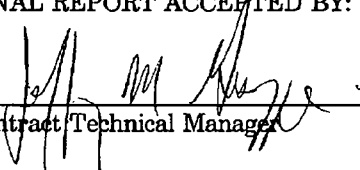
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David Winkelbauer, Project Engineer

Date: 3/27/95

FINAL REPORT ACCEPTED BY:



Contract Technical Manager

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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 1995 Saab 900 SE Convertible.

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 1995 Saab 900 SE Convertible 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 32.81 mph (52.8 kph) on March 17, 1995. 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. The SID in the driver position (Pos. #1) and left rear position (Pos. #4) were placed according to instructions specified in the Laboratory Test Procedure. 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 summary of the side impact dummy (SID) configuration and performance verification test data are shown in Appendix C. Dummy and vehicle calibration data can be found in Appendix D of this report.

The driver's Thoracic Trauma Index (TTI) was 59 g's. Maximum pelvic Y acceleration was 55 g's.

The left rear passenger's TTI was 61 g's. Maximum pelvic Y acceleration was 58 g's.

TEST NOTES

Due to a problem, most of the pre-test photographs from March 17, 1995 are unavailable. Pre-test photographs from March 15, 1995 were substituted in place of the missing photographs from March 17, 1995.

SECTION 3
SUMMARY OF TEST DATA

TABLE 1

GENERAL TEST AND VEHICLE PARAMETER DATATEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible
 Vehicle NHTSA No.: CS0506 VIN: YS3DF75N9S7000434
 Vehicle Body Color: Red Month & Year of Manufacture: 5/94
 Engine Data: 4 cylinders; ___ CID; 2.0 Liter; ___ cc
 Placement ___ Longitudinal; or X Lateral
 Transmission: 5 speed; X Manual; ___ Automatic; ___ Overdrive
 Final Drive: ___ Rear Wheel Drive; X Frt. Wheel Drive; ___ Four Wheel Drive
 Odometer Reading 111 miles
 Options: X A/C; X Pwr. Steering; X Pwr. Brakes; X Pwr. Windows; X Soft Top Convertible;
 ___ Tilt Wheel; ___ Power Door Locks; X Telescoping Steering Column

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 33 Psi FRONT (228 kpa)
35 Psi REAR (241 kpa)
 Recommended Tire Size: 20550ZR16
 Tires on Test Vehicle: 20550ZR16 Manufacturer: Michelin

Vehicle Capacity Data:

Number of Occupants: 2 Front; 2 Rear; ___ 3rd Seat 4 Total
 Type of Front Seats: X Bucket; ___ Bench; ___ Split Bench
 Type of Front Seat Back: ___ Fixed; X Adjustable with X Power
 Vehicle Maximum Capacity Loading = 720 lbs (A) (326.6 kg)
 No. of Occupants x 150 lbs. = 600 lbs (B) (272.2 kg)
 Cargo Capacity (A-B) = 120 lbs (54.4 kg)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>941</u> lbs (426.8 kg)	Right Rear	=	<u>608</u> lbs (275.8 kg)
Left Front	=	<u>953</u> lbs (432.3 kg)	Left Rear	=	<u>615</u> lbs (279.0 kg)
TOTAL FRONT	=	<u>1894</u> lbs (859.1 kg)	TOTAL REAR	=	<u>1223</u> lbs (554.8 kg)
% of Total Vehicle Weight	=	<u>60.8</u> %;	% of Total Weight	=	<u>39.2</u> %
TOTAL WEIGHT	=	<u>3117</u> lbs (1413.9 kg)			

TABLE 2
TEST VEHICLE DATA

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	=	<u>3117</u> lbs (1413.9 kg)
Cargo Carrying Capacity of Test Vehicle	=	<u>120</u> lbs (54.4 kg)
Weight of 2 Side Impact Dummies (2 x <u>178</u> lbs.)	=	<u>356</u> lbs (161.5 kg)
TEST VEHICLE TARGET WEIGHT:	=	<u>3593</u> lbs (1629.8 kg)

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front	=	<u>1003</u> lbs (455.0 kg)	Right Rear	=	<u>750</u> lbs (340.2 kg)
Left Front	=	<u>1077</u> lbs (488.5 kg)	Left Rear	=	<u>750</u> lbs (340.2 kg)
TOTAL FRONT	=	<u>2080</u> lbs (943.5 kg)	TOTAL REAR	=	<u>1500</u> lbs (680.4 kg)
% of Total Weight	=	<u>58.1%</u>	% of Total Weight	=	<u>41.9%</u>
TOTAL TEST WEIGHT	=	<u>3580</u> lbs (1623.9 kg)			

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE: in (mm)

Right Front 26.4 (671) Left Front 26.5 (672) Right Rear 26.9 (682) Left Rear 26.8 (681)

FULLY LOADED WEIGHT ATTITUDE: in (mm)

Right Front 26.3 (668) Left Front 25.9 (659) Right Rear 25.7 (652) Left Rear 25.6 (650)

TEST ATTITUDE: in (mm)

Right Front 26.0 (661) Left Front 26.0 (661) Right Rear 26.1 (662) Left Rear 25.7 (652)

Test Vehicle Wheelbase: 102.4 inches (2600 mm)

C.G. = 42.9 inches (1089 mm) rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side	=	<u>172.0</u> in (4370 mm)
Centerline	=	<u>179.5</u> in (4560 mm)
Left Side	=	<u>172.0</u> in (4370 mm)

FIGURE 1
PRE-TEST CONDITIONS

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 8.5 in (215 mm)

Test Position: Midway between forward most and rearward most horizontal position,
lowest vertical position

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 16° degrees

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: N/A

Seat Back Adjustment Position: N/A

ADJUSTABLE STEERING COLUMN POSITION: Telescoping adjusted to mid position

WINDOW POSITIONS: Left Front closed Left Rear closed

Right Front open Right Rear open

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 = 16.91 gallons (64.0 liters)

Test Volume: 15.7 gallons (59.5 liters) 93.0% of capacity

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

Wheelbase: = 102.4 in (2600 mm)

Impact Point is 14.2 in (360 mm) rearward of front axle centerline

TABLE 3
CRASH TEST SUMMARY FOR TEST VEHICLE

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

Overall Length = 179.5 in (4560 mm); Overall Width = 66.9 in (1698 mm)

TEST WEIGHT:

Right Front = 1003 lbs (455.0 kg) Right Rear = 750 lbs (340.2 kg)

Left Front = 1077 lbs (488.5 kg) Left Rear = 750 lbs (340.2 kg)

TOTAL FRONT = 2080 lbs (943.5 kg) TOTAL REAR = 1500 lbs (680.4 kg)

% of Total Weight = 58.1 % % of Total Weight = 41.9 %

TOTAL VEHICLE WEIGHT 3580 lbs (1623.9 kg)

Wheelbase = 102.4 in (2600 mm)

Longitudinal C.G. from Center of Front Axle = 42.9 in (1089 mm)

Impact Angle with Respect to Impactor = 90° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (296 mm 11.7 in above ground) = 113 mm (4.4 in)

2. LEVEL 2 (480 mm 18.9 in above ground) = 266 mm (10.5 in)

3. LEVEL 3 (607 mm 23.9 in above ground) = 253 mm (10.0 in)

4. LEVEL 4 (885 mm 34.8 in above ground) = 272 mm (11.0 in)

5. LEVEL 5 (1290 mm 50.8 in above ground) = 43 mm (1.7 in)

Maximum Post-Test Intrusion = 272 mm (10.7 in)

OCCUPANTS:

	<u>Left Front Passenger</u>	<u>Left Rear Passenger</u>
Type of Dummy	<u>SID</u>	<u>SID</u>
Restraints Used	<u>type 2 lap & shoulder belt with airbag</u>	<u>type 2 lap & shoulder belt</u>

INSTRUMENTATION:

Number of Vehicle Data Channels:	= <u>16</u>
Number of Cameras: Onboard Vehicle	= <u>3</u>
Offboard Vehicle	= <u>5</u>
Deformable Barrier	= <u>2</u>
TOTAL	= <u>10</u>

TABLE 4

CRASH TEST SUMMARY FOR SIDE IMPACTOR

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

Overall Width of Framework Carriage	=	<u>49.3</u> in (1252.2 mm)
Overall Length of MDB (incl. honeycomb impact face)	=	<u>162</u> in (4114.8 mm)
Wheelbase of Framework Carriage	=	<u>102</u> in (2590.8 mm)
Tread of Framework Carriage (Front & Rear)	=	<u>74</u> in (1879.6 mm)
C.G. Location Rearward of Front Axle	=	<u>43.4</u> in (1102.4 mm)
C.G. Location From Center Line	=	<u>-0.3</u> in (-7.62 mm)
C.G. Location Above Ground Level	=	<u>19.2</u> in (487.7 mm)

MDB WEIGHT:

Left Front	=	<u>1095</u> lbs (496.7 kg)	Left Rear	=	<u>413</u> lbs (187.3 kg)
Right Front	=	<u>624</u> lbs (283.0 kg)	Right Rear	=	<u>858</u> lbs (389.2 kg)
TOTAL FRONT	=	<u>1719</u> lbs (779.7 kg)	TOTAL REAR	=	<u>1271</u> lbs (576.5 kg)
TOTAL MDB WEIGHT	=	<u>2990</u> lbs (1356.2 kg)			

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

Impact Speed = Primary: 32.81 mph (52.8 kph) Secondary: 32.89 mph (52.9 kph)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1.	Row A Top of Stack (33 in)	=	<u>100</u> mm
2.	Row B Mid Stack (27 in)	=	<u>81</u> mm
3.	Row C Top of Bumper (21 in)	=	<u>55</u> mm
4.	Row D Center of Bumper (17 in)	=	<u>90</u> mm

INSTRUMENTATION:

Number of MDB Data Channels = 7

TABLE 5
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible
Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>to shoulder belt and shoulder</u>	<u>to soft top</u>
Arm	<u>to door</u>	<u>to C post</u>
Pelvis	<u>to armrest</u>	<u>to armrest</u>
Left Knee	<u>to armrest</u>	<u>to armrest and window</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>N/A</u>	<u>N/A</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 10 mm (.3 in) forward Vertical: 2 mm (.08 in) high

ARM REST LOCATIONS:

Front: 245 mm (9.6 in) below window opening
Rear: 305 mm (12.0 in) below window opening

SEAT CRUSH:

Driver Seat Back: 32 mm (1.3 in) Driver Seat Cushion: 25 mm (1.0 in)
Left Rear Seat Back: 28 mm (1.1 in) Left Rear Seat Cushion: 75 mm (3.0 in)

GLAZING DAMAGE:

Front and rear left side windows broke, windshield cracked on driver side

PILLAR PERFORMANCE:

No separation evident

SILL SEPARATION:

No sill separation evident

OTHER NOTABLE IMPACT EFFECTS:

Airbags did not deploy

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

TABLE 6

SIDE IMPACT DUMMY (SID) TEST DATA SUMMARY

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible
 Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

	Front Dummy ID # 269				Rear Dummy ID # 272			
	Pos. Direct.		Neg. Direct.		Pos. Direct.		Neg. Direct.	
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS:								
Upper Rib Lateral.....Y	52.9	15	8.2	63	63.7	26	3.6	185
Upper Rib Lateral.....Y(R)	54.6	15	7.2	63	62.9	26	3.8	174
Lower Rib Lateral.....Y	53.4	16	8.9	80	63.7	27	5.2	55
Lower Rib Lateral.....Y(R)	52.3	16	9.3	80	63.0	26	5.4	55
SPINE ACCELERATIONS:								
Lower Lateral.....Y	65.4	20	9.9	67	58.9	31	16.0	59
Lower Lateral.....Y(R)	64.9	20	9.9	83	58.1	31	16.9	60
PELVIC ACCELERATIONS:								
Lateral.....Y	55.4	17	13.9	93	57.8	23	7.2	95
Lateral.....Y(R)	55.2	17	13.6	93	58.1	23	7.4	82

REFERENCE:

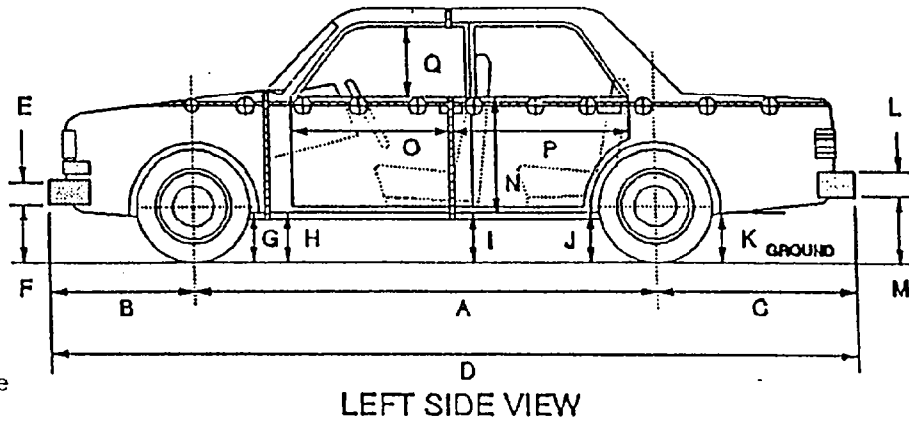
Positive Direction - Longitudinal (X) = forward

Lateral (Y) = to right

Vertical (Z) = up

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

FIGURE 2
PRE- AND POST-TEST MEASUREMENTS



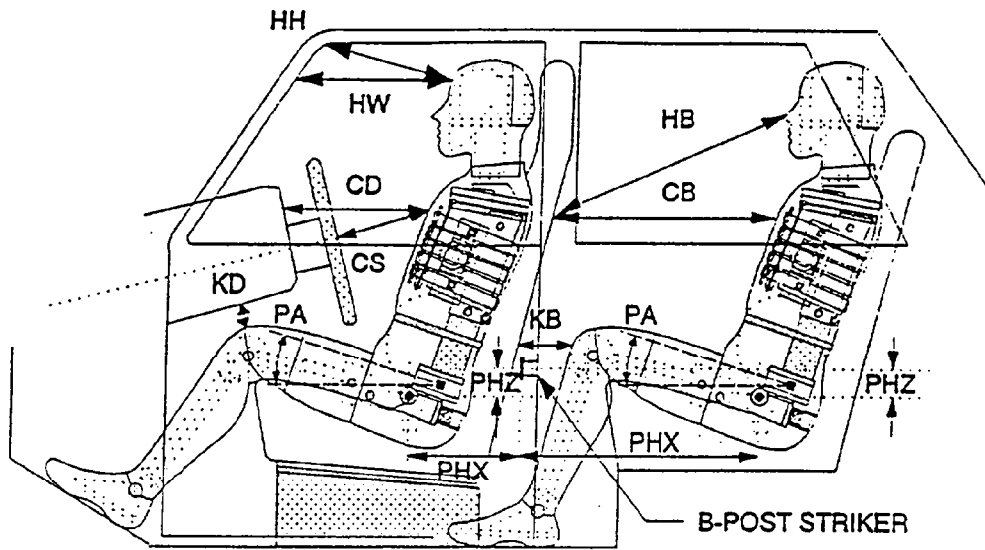
D = Length at Centerline
R = Right Side Length
S = Left Side Length
T = Width at B Post
E & L = Bumper Thickness

J1 = To Pinch Weld
J2 = To Sill

Units: mm

LOCATION	PRE-TEST	POST-TEST	Δ CHANGE
A	2600	2589	11
B	960	943	17
C	1000	986	14
D	4560	4518	42
E	197	197	0
F	347	358	11
G	185	217	32
H	188	229	41
I	192	255	63
J1	189	239	50
J2	182	200	18
K	230	261	31
L	228	228	0
M	340	384	44
N	675	631	44
O	782	765	17
P	516	515	1
Q	372	394	22
R	4370	4369	1
S	4370	4363	7
T	1698	1482	216

FIGURE 3
SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS



LEFT SIDE VIEW

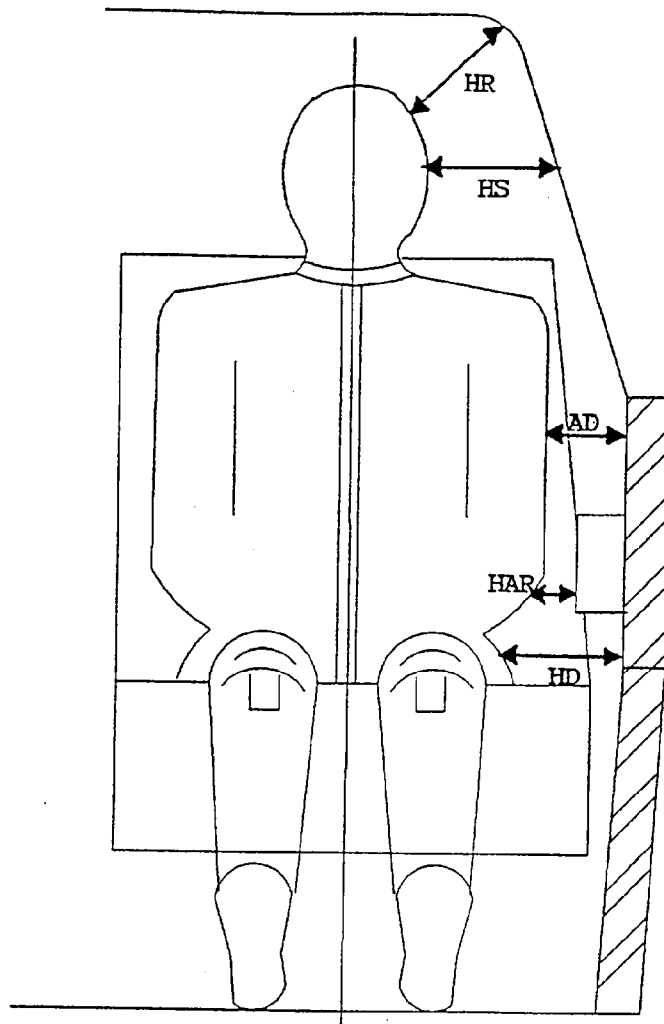
NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

NOTE: All dimensions are in mm

	DRIVER ID #269	LEFT REAR PASSENGER ID #272	
HH	365	N/A	
HW	626	N/A	
HS	N/A	591	
CD	564	CB	480
CS	340	N/A	
KDL	80	KBL	93
KDR	76	KBR	85
PA°	24.8°	24.5°	
PHX	380	440	
PHZ	212	173	

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

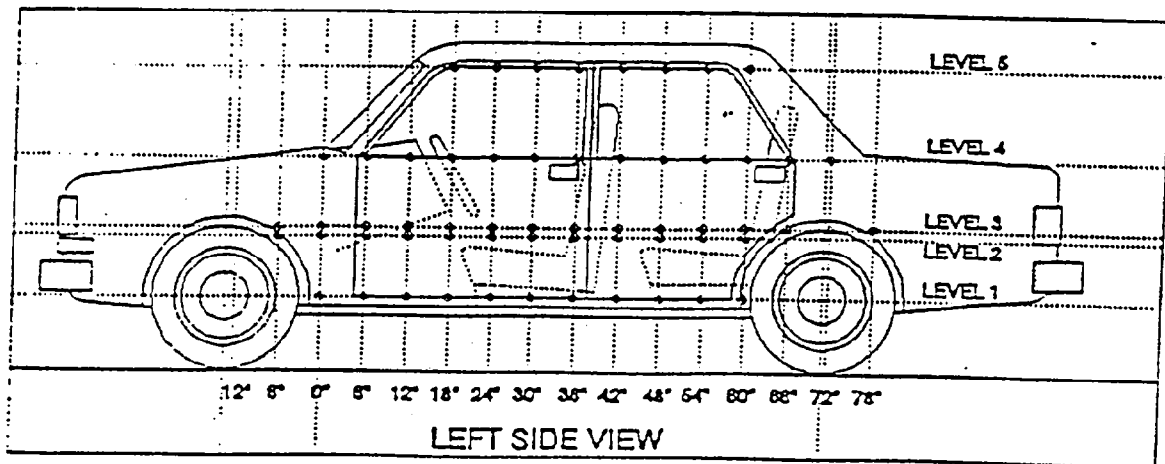


NOTE: All dimensions are in mm

	DRIVER ID #269	LEFT REAR PASSENGER ID #272
HR	135	211
HS	250	206
AD	95	21
HD	140	106

FIGURE 5
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible
 Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995



As tested height measurements are with respect to ground along the vertical 33" line shown above:

<u>33" Side Profile</u>	
Level 5 @ Window Top	= <u>1290</u> mm (50.8 in)
Level 4 @ Window Sill	= <u>885</u> mm (34.8 in)
Level 3 @ Mid Door	= <u>607</u> mm (23.9 in)
Level 2 @ Occupant H-Point	= <u>480</u> mm (18.9 in)
Level 1 @ Axle Centerline Height (or Sill Top Height)	= <u>296</u> mm (11.7 in)

TABLE 7

TEST VEHICLE EXTERIOR PROFILES FROM REFERENCE PLANE AND STATIC CRUSH

LEVEL 1 AT AXLE CENTER LINE

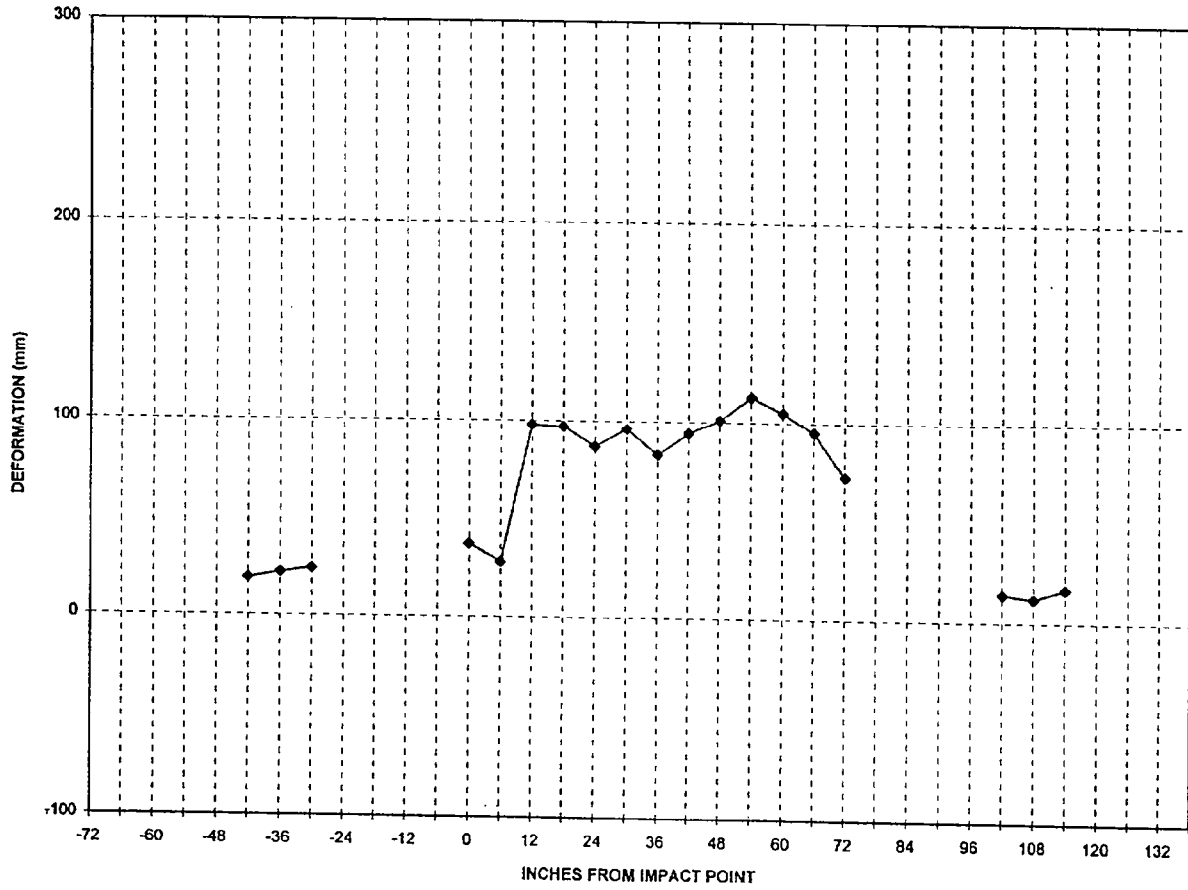
Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

Longitudinal Distance (in)	PRE-TEST mm	POST-TEST mm	STATIC CRUSH mm
-72	---	---	---
-66	---	---	---
-60	---	---	---
-54	---	---	---
-48	---	---	---
-42	<u>1067</u>	<u>1086</u>	<u>19</u>
-36	<u>1026</u>	<u>1048</u>	<u>22</u>
-30	<u>1000</u>	<u>1024</u>	<u>24</u>
-24	---	---	---
-18	---	---	---
-12	---	---	---
-6	---	---	---
0	<u>979</u>	<u>1016</u>	<u>37</u> (impact point)
6	<u>983</u>	<u>1011</u>	<u>28</u>
12	<u>993</u>	<u>1091</u>	<u>98</u>
18	<u>996</u>	<u>1093</u>	<u>97</u>
24	<u>1000</u>	<u>1087</u>	<u>87</u>
30	<u>1000</u>	<u>1096</u>	<u>96</u>
36	<u>1000</u>	<u>1083</u>	<u>83</u>
42	<u>1000</u>	<u>1094</u>	<u>94</u>
48	<u>1000</u>	<u>1101</u>	<u>101</u>
54	<u>1000</u>	<u>1113</u>	<u>113</u>
60	<u>997</u>	<u>1102</u>	<u>105</u>
66	<u>994</u>	<u>1089</u>	<u>95</u>
72	<u>990</u>	<u>1062</u>	<u>72</u>
78	---	---	---
84	---	---	---
90	---	---	---
96	---	---	---
102	<u>1004</u>	<u>1018</u>	<u>14</u>
108	<u>1027</u>	<u>1039</u>	<u>12</u>
114	<u>1050</u>	<u>1067</u>	<u>17</u>
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

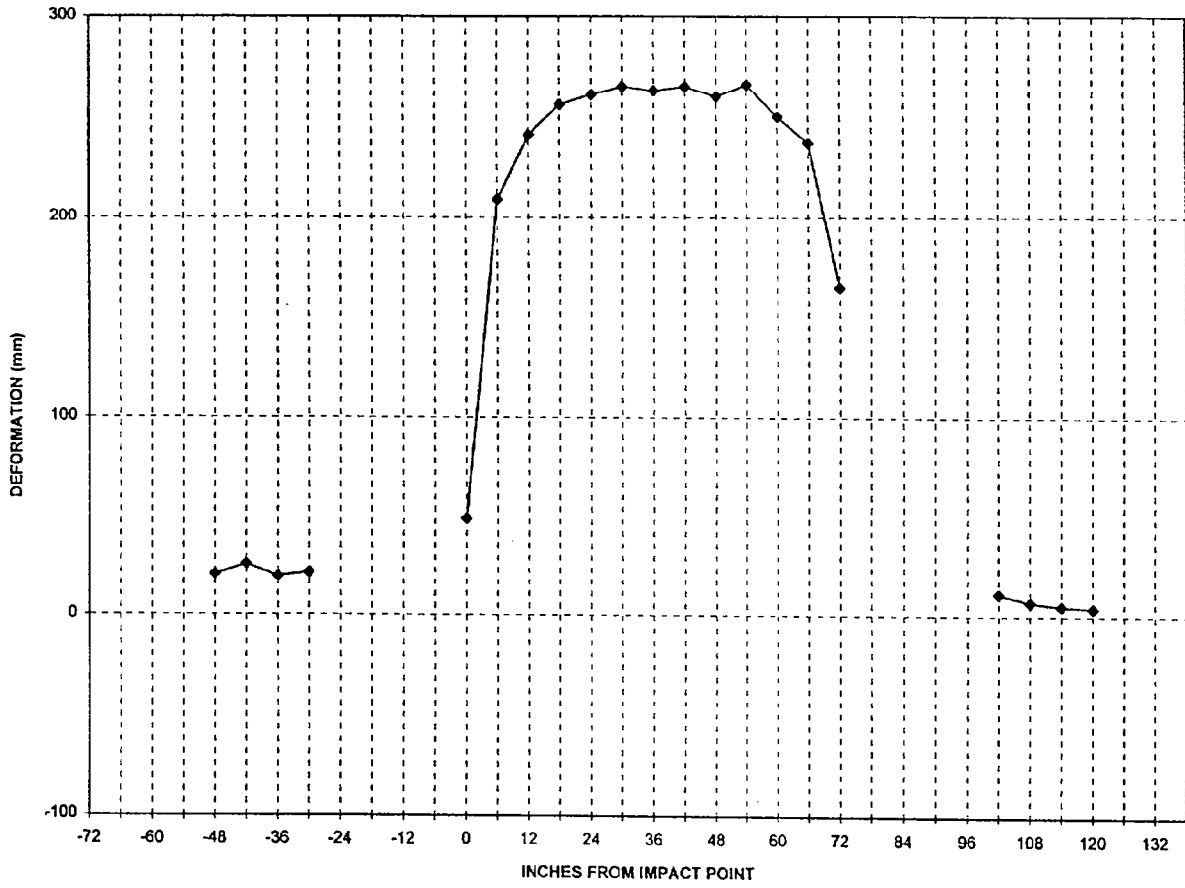
LEVEL 2 AT OCCUPANT H-POINT

Year/Make/Model/Body Style: 1995/Saab/900 SE/ConvertibleVehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

Longitudinal Distance (in)	PRE-TEST (mm)	POST-TEST (mm)	STATIC CRUSH (mm)
-72	---	---	---
-66	---	---	---
-60	---	---	---
-54	---	---	---
-48	<u>1102</u>	<u>1123</u>	<u>21</u>
-42	<u>1030</u>	<u>1056</u>	<u>26</u>
-36	<u>996</u>	<u>1016</u>	<u>20</u>
-30	<u>979</u>	<u>1001</u>	<u>22</u>
-24	---	---	---
-18	---	---	---
-12	---	---	---
-6	---	---	---
0	<u>964</u>	<u>1013</u>	<u>49</u> (impact point)
6	<u>963</u>	<u>1172</u>	<u>209</u>
12	<u>962</u>	<u>1203</u>	<u>241</u>
18	<u>960</u>	<u>1216</u>	<u>256</u>
24	<u>960</u>	<u>1221</u>	<u>261</u>
30	<u>958</u>	<u>1223</u>	<u>265</u>
36	<u>956</u>	<u>1219</u>	<u>263</u>
42	<u>956</u>	<u>1221</u>	<u>265</u>
48	<u>956</u>	<u>1216</u>	<u>260</u>
54	<u>957</u>	<u>1223</u>	<u>266</u>
60	<u>957</u>	<u>1207</u>	<u>250</u>
66	<u>960</u>	<u>1197</u>	<u>237</u>
72	<u>961</u>	<u>1126</u>	<u>165</u>
78	---	---	---
84	---	---	---
90	---	---	---
96	---	---	---
102	<u>969</u>	<u>980</u>	<u>11</u>
108	<u>982</u>	<u>989</u>	<u>7</u>
114	<u>1001</u>	<u>1006</u>	<u>5</u>
120	<u>1027</u>	<u>1031</u>	<u>4</u>
126	---	---	---
132	---	---	---
138	---	---	---
144	---	---	---

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

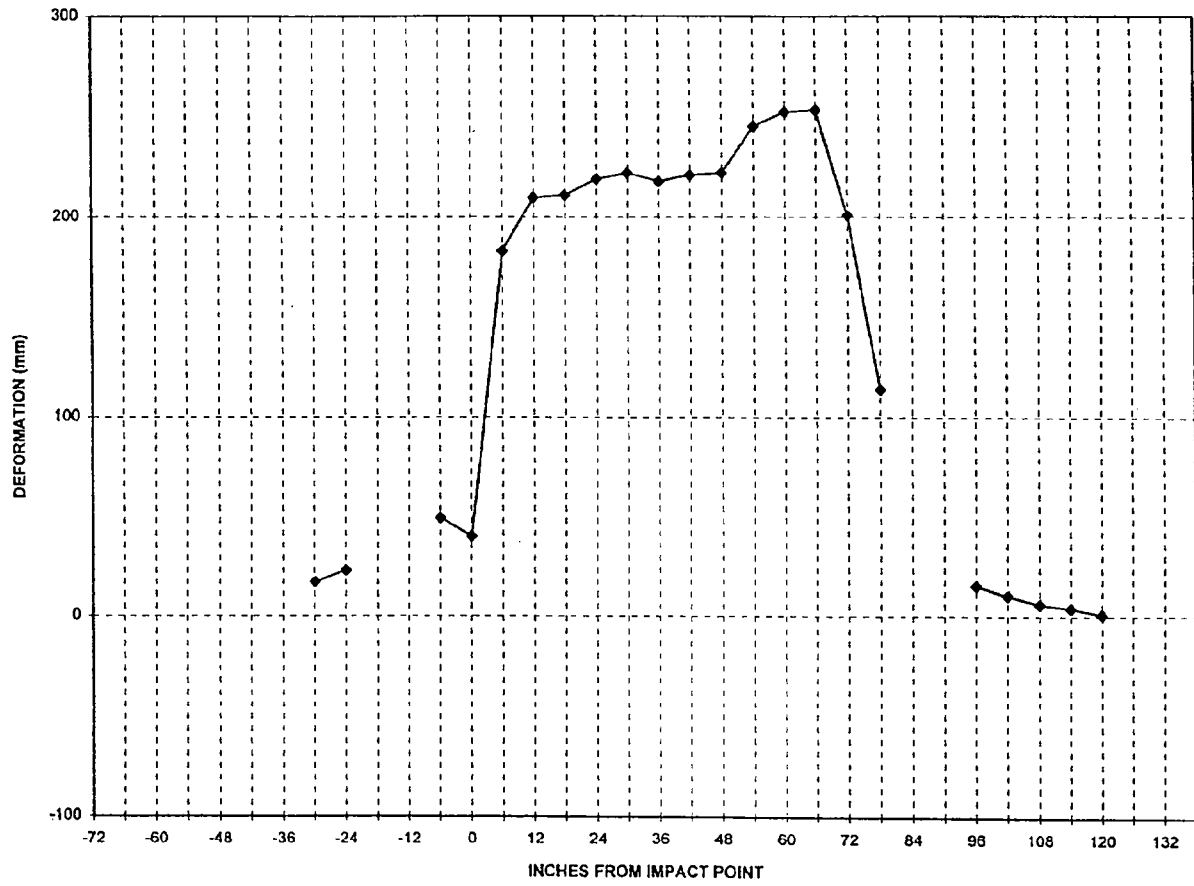
LEVEL 3 AT MID-DOOR

Year/Make/Model/Body Style: 1995/Saab/900 SE/ConvertibleVehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

Longitudinal Distance (in)	PRE-TEST (mm)	POST-TEST (mm)	STATIC CRUSH (mm)
-72	---	---	---
-66	---	---	---
-60	---	---	---
-54	---	---	---
-48	---	---	---
-42	---	---	---
-36	---	---	---
-30	999	1016	17
-24	968	991	23
-18	---	---	---
-12	---	---	---
-6	949	998	49
0	959	999	40 (impact point)
6	956	1139	183
12	951	1161	210
18	950	1161	211
24	945	1164	219
30	943	1165	222
36	941	1159	218
42	940	1161	221
48	940	1162	222
54	941	1186	245
60	942	1194	252
66	945	1198	253
72	948	1149	201
78	952	1066	114
84	---	---	---
90	---	---	---
96	967	982	15
102	987	997	10
108	1009	1015	6
114	1035	1039	4
120	1080	1081	1
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 3 AT MID-DOOR

TABLE 7

TEST VEHICLE EXTERIOR PROFILES FROM REFERENCE PLANE AND STATIC CRUSH

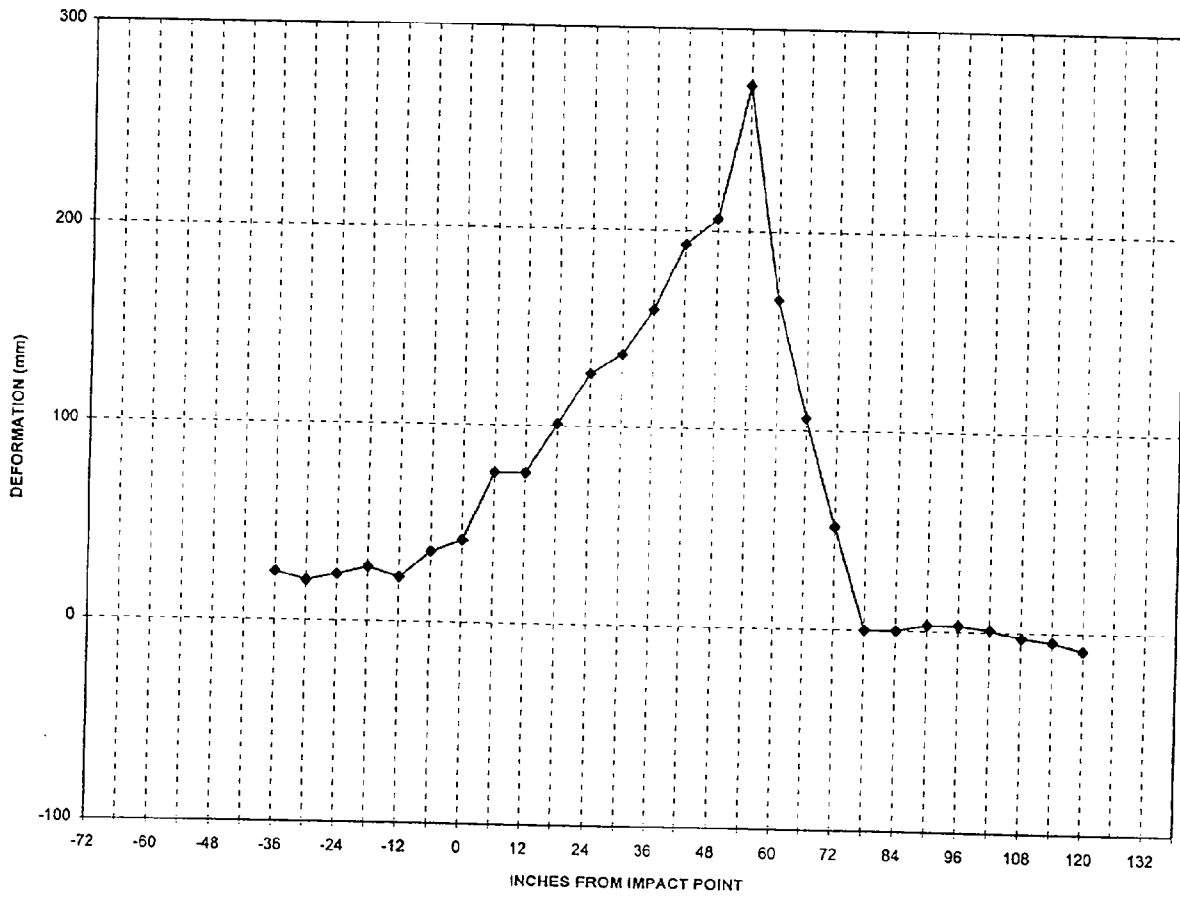
LEVEL 4 AT WINDOW SILL

Year/Make/Model/Body Style: 1995/Saab/900 SE/ConvertibleVehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

Longitudinal Distance (in)	PRE-TEST (mm)	POST-TEST (mm)	STATIC CRUSH (mm)
-72	---	---	---
-66	---	---	---
-60	---	---	---
-54	---	---	---
-48	---	---	---
-42	---	---	---
-36	1109	1133	24
-30	1093	1113	20
-24	1080	1103	23
-18	1069	1096	27
-12	1060	1082	22
-6	1054	1089	35
0	1047	1088	41 (impact point)
6	1037	1113	76
12	1036	1112	76
18	1030	1131	101
24	1029	1156	127
30	1029	1166	137
36	1022	1182	160
42	1019	1212	193
48	1018	1224	206
54	1021	1293	272
60	1021	1187	166
66	1026	1132	106
72	1029	1080	51
78	1036	1036	0
84	1042	1042	0
90	1051	1054	3
96	1066	1069	3
102	1077	1078	1
108	1093	1090	-3
114	1112	1107	-5
120	1151	1142	-9
126	---	---	---
132	---	---	---
138	---	---	---
144	---	---	---

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: 1995/Saab/900 SE/Convertible

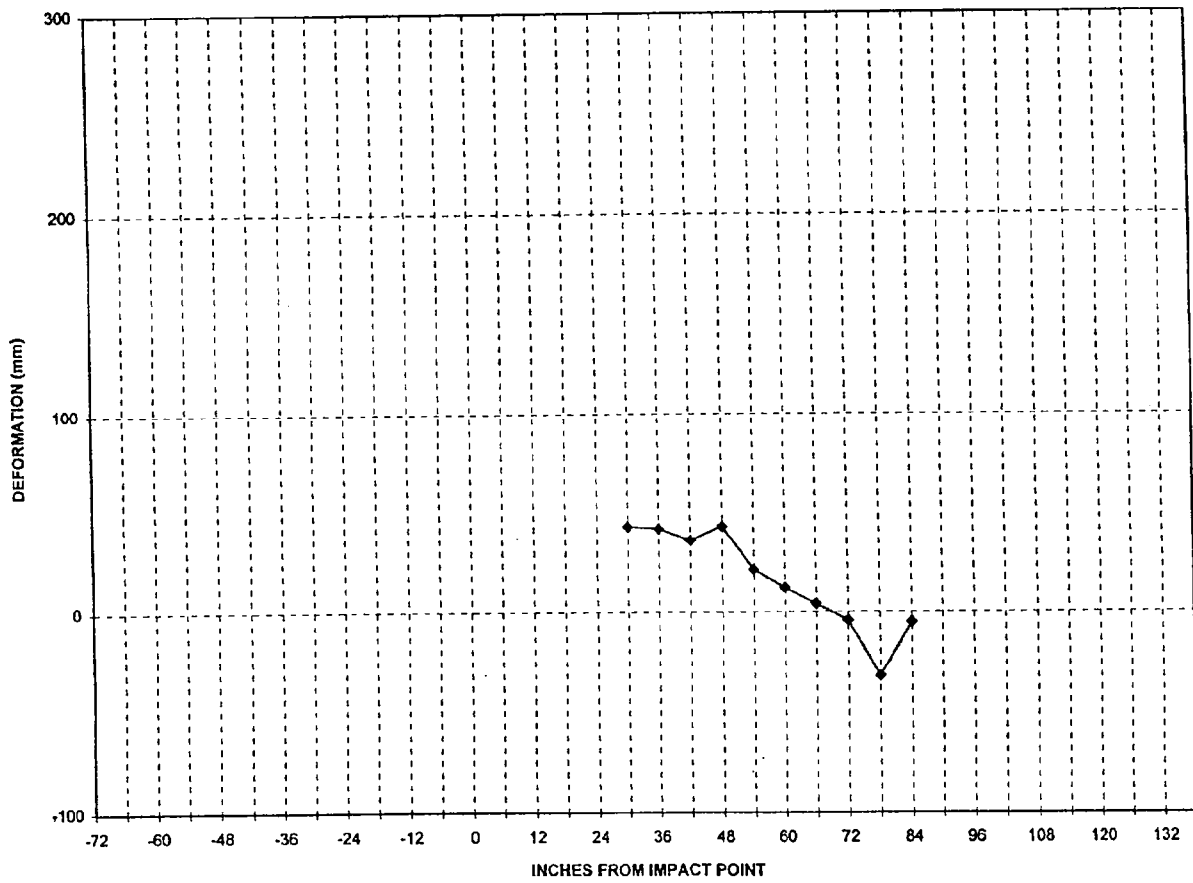
Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

Longitudinal Distance (in)	PRE-TEST (mm)	POST-TEST (mm)	STATIC CRUSH (mm)
-72	---	---	---
-66	---	---	---
-60	---	---	---
-54	---	---	---
-48	---	---	---
-42	---	---	---
-36	---	---	---
-30	---	---	---
-24	---	---	---
-18	---	---	---
-12	---	---	---
-6	---	---	---
0	---	---	---
6	---	---	---
12	---	---	---
18	---	---	---
24	---	---	---
30	<u>1204</u>	<u>1247</u>	<u>43</u>
36	<u>1204</u>	<u>1246</u>	<u>42</u>
42	<u>1205</u>	<u>1241</u>	<u>36</u>
48	<u>1206</u>	<u>1249</u>	<u>43</u>
54	<u>1207</u>	<u>1228</u>	<u>21</u>
60	<u>1220</u>	<u>1232</u>	<u>12</u>
66	<u>1229</u>	<u>1233</u>	<u>4</u>
72	<u>1249</u>	<u>1245</u>	<u>-4</u>
78	<u>1260</u>	<u>1228</u>	<u>-32</u>
84	<u>1298</u>	<u>1293</u>	<u>-5</u>
90	---	---	---
96	---	---	---
102	---	---	---
108	---	---	---
114	---	---	---
120	---	---	---
126	---	---	---
132	---	---	---
138	---	---	---

(impact point)

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

FIGURE 6
VEHICLE EXTERIOR STATIC CRUSH



LEVEL 5 AT WINDOW TOP

FIGURE 7
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible
Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

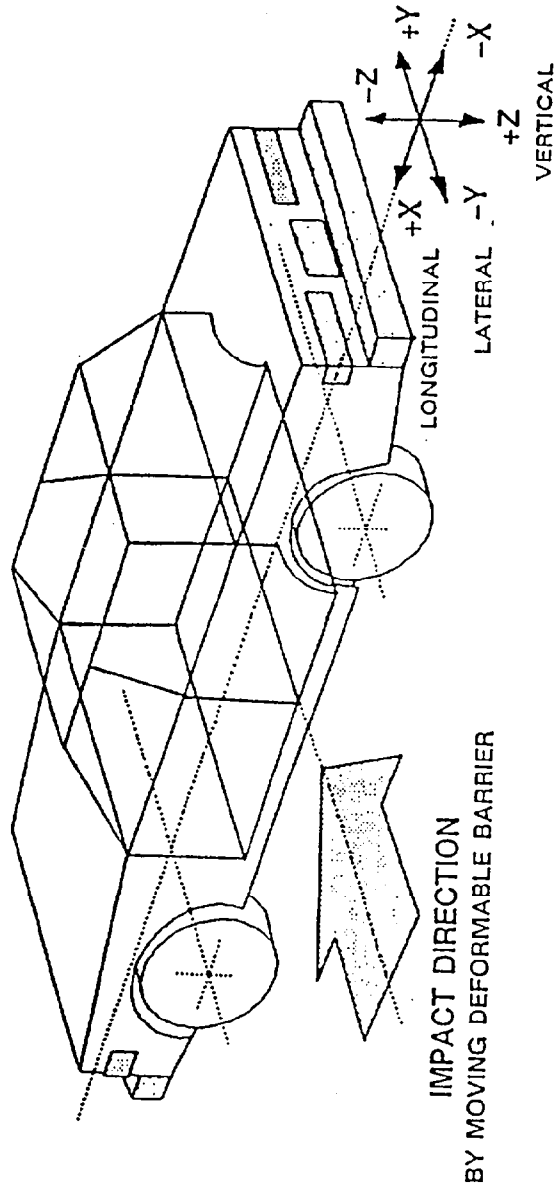
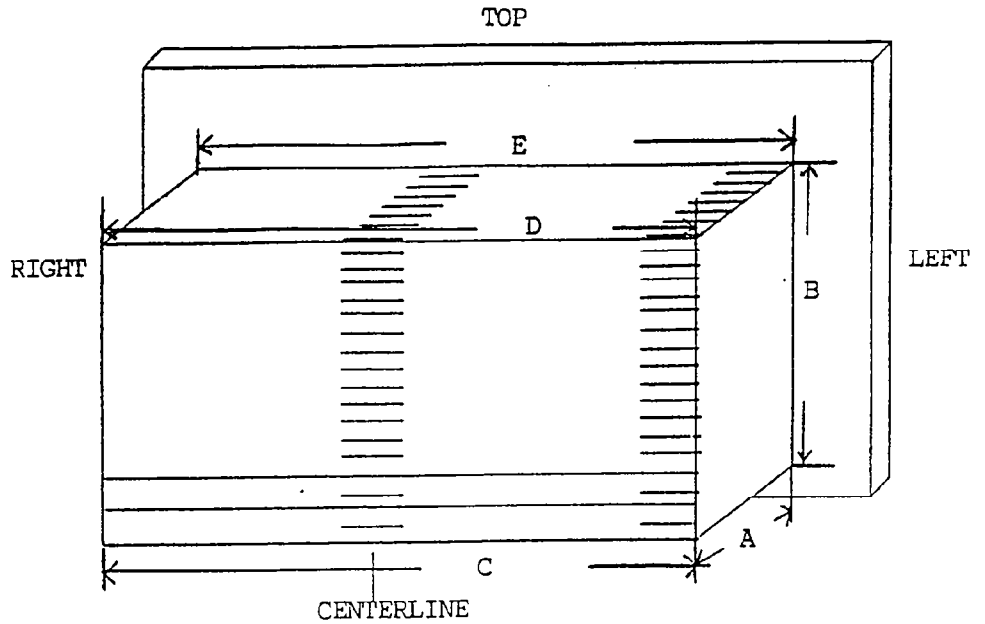


FIGURE 8
MDB FACE DIMENSIONS

Measurements in inches

- A = 15.1
- B = 21.9
- C = 66.2
- D = 66.2
- E = 66.3



Measurements in inches

	Right	Left
A =	<u>11.1</u>	<u>11</u>
B =	<u>13.1</u>	<u>13</u>
C =	<u>21.1</u>	<u>21</u>
D =	<u>33.1</u>	<u>33</u>

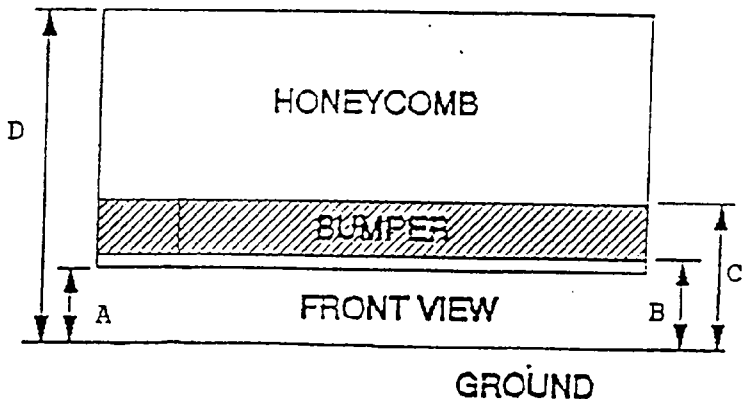


TABLE 8
 EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible
 Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

Location	Top of Stack (33 inches)		Mid-Stack (27 inches)		Top of Bumper (21 inches)		Center of Bumper (17 inches)	
	Crush inches (mm)		Crush inches (mm)		Crush inches (mm)		Crush inches (mm)	
32"	3.2 (81)		1.0 (25)		1.7 (44)		3.5 (90)	
28"	1.2 (31)		-.4 (-10)		1.6 (41)		3.3 (89)	
24"	-.1 (-3)		-.5 (-12)		1.5 (38)		3.4 (86)	
20"	-.2 (-4)		-.4 (-11)		1.3 (34)		3.1 (80)	
16"	-.2 (-4)		-.4 (-9)		1.2 (31)		3.0 (75)	
12"	0 (0)		-.4 (-9)		1.2 (31)		2.9 (73)	
8"	-.1 (-3)		-.3 (-8)		1.3 (32)		2.8 (71)	
4"	-.08 (-1)		-.1 (-5)		1.1 (29)		2.8 (70)	
0"	.03 (1)		-.2 (-6)		1.2 (30)		2.7 (68)	
4"	.1 (3)		-.1 (-3)		1.0 (26)		2.7 (68)	
8"	.2 (5)		-.03 (-1)		1.1 (29)		2.7 (68)	
12"	.3 (7)		0 (0)		1.2 (31)		2.7 (69)	
16"	.4 (10)		.08 (2)		1.2 (31)		2.7 (69)	
20"	1.1 (28)		0 (0)		1.3 (34)		2.7 (68)	
24"	1.9 (49)		.9 (23)		1.4 (35)		2.9 (73)	
28"	2.6 (67)		1.6 (40)		1.7 (42)		3.5 (90)	
32"	3.9 (100)		3.2 (81)		2.2 (55)		3.5 (89)	

Right

Left

TABLE 9

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

Accel. No.	Description	Coordinates (mm)*			Long. (X) Maximums (g's)		Lat. (Y) Maximums (g's)		Vert. (Z) Maximums (g's)		Resultant (g's)
		X	Y	Z	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	
1	Rt. Side Sill @ Front Seat	2635	655	325	4.7	3.9	22.8	3.3	4.3	4.5	23.0
2	Rt. Side Sill @ Rear Seat	2083	630	310	4.0	4.0	24.5	3.1	6.2	8.9	24.7
3	Rr. Floorpan Above Axle	1105	5	700	2.3	5.6	22.1	2.3	5.6	11.5	24.7
4	Left Side Sill @ Rr. Seat	1844	-644	187	---	---	28.1	5.7	---	---	---
5	Left Side Sill @ Frt. Seat	2570	-613	207	---	---	34.2	4.3	---	---	---
6	Left Lower A-Post	3073	-610	307	---	---	32.6	12.3	---	---	---
7	Left Mid A-Post	3144	-757	662	---	---	104.4	23.1	---	---	---
8	Left B-Post Lower	2017	-647	316	---	---	39.5	5.3	---	---	---
9	Right Rear Occupant Compartment	1095	322	265	---	---	24.1	2.8	---	---	---
10	Driver Left Seat Track	2261	-466	244	---	---	37.6	7.3	---	---	---

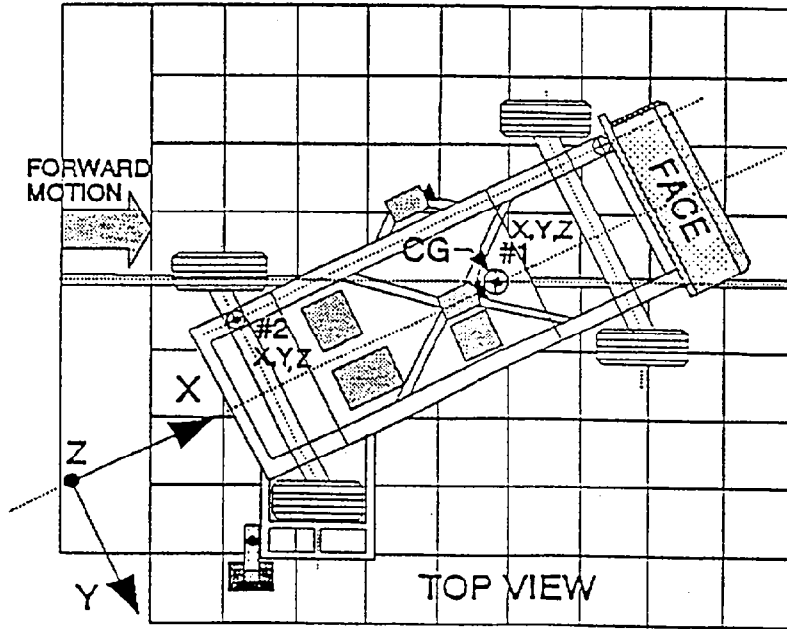
*Reference: X - Rear Bumper (+ Forward)
 Y - Vehicle Centerline (+ To right)
 Z - Ground Level (+ Up)

FIGURE 9

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995



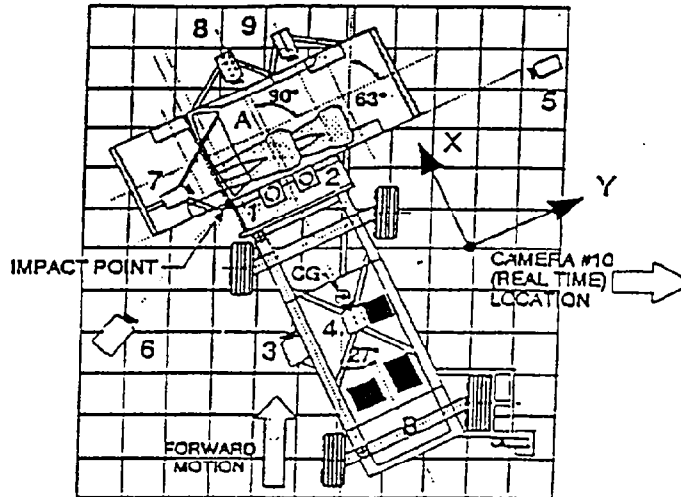
Accel. No.	Location	Coordinates (mm)			Pos. Direct.		Neg. Direct.	
		X	Y	Z	Max (g)	Time (msec)	Max (g)	Time (msec)
1	MDB Center of Gravity							
	Longitudinal ... X				3.7	195	17.9	37
	Lateral Y	-1092	0	483	.7	106	7.0	38
	Vertical Z				11.1	37	11.4	24
	Resultant R				21.9	37	N/A	N/A
2	Rear Frame Member							
	Longitudinal ... X	-2591	-625	622	2.1	197	21.3	38
	Lateral Y				5.3	39	2.4	96

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: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995



Camera No.	View	Coordinates (mm)			Angle	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
	Real Time					13	24
1	Top Impact	-350	850	5420		13	980
2	Top Wide	700	0	5130		8	855
3	Cart Pointer					35	1000
4	Cart					13	971
5	Right Impact	3390	6760	780	90°	25	1020
6	Left Impact	2950	2430	1545	90°	13	885
7	Onboard Driver					7.5	1000
8	Onboard Hood					13	935
9	Onboard Passenger					8	980

* 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: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

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 33.81 mph (52.8 kph)

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:

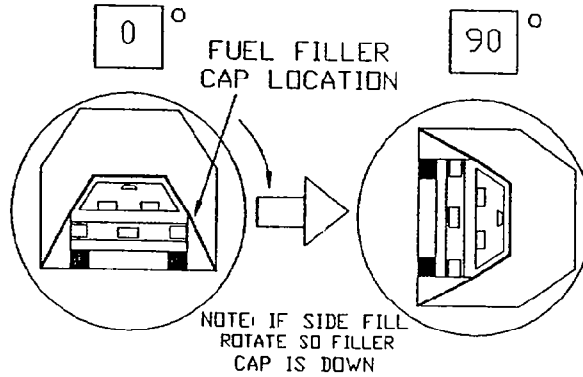
None

TABLE 11
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

TEST PHASE: 0° - 90°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 39 seconds
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 39 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:

1.5 ounces	0	0	0
------------	---	---	---

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

IV. SOLVENT SPILLAGE LOCATIONS(S): gas cap

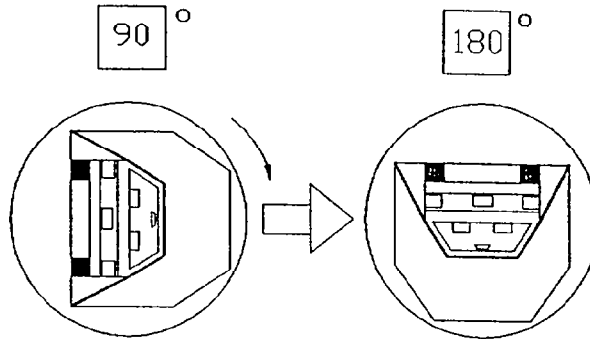
TABLE 11

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

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

TEST PHASE: 90° - 180°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 32 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 32 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:

.4 ounces	0	0	0
-----------	---	---	---

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

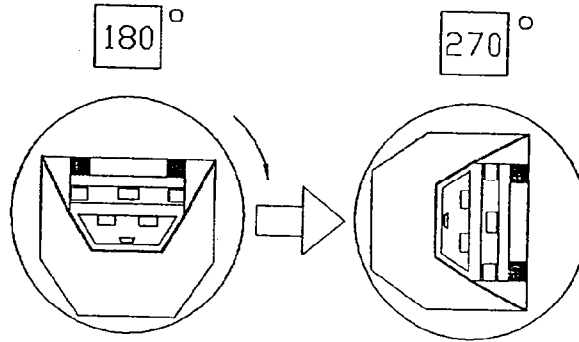
IV. SOLVENT SPILLAGE LOCATIONS(S): gas cap

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

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

TEST PHASE: 180° - 270°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 27 seconds
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 27 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:

.2 ounces	0	0	0
-----------	---	---	---

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

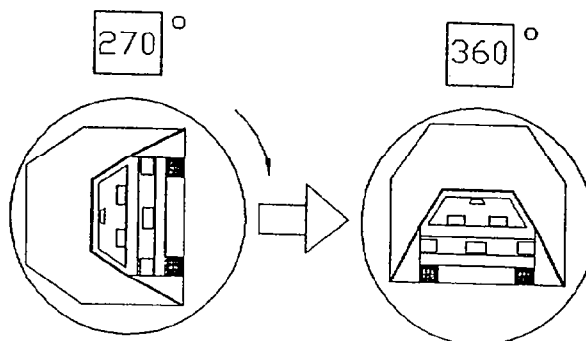
IV. SOLVENT SPILLAGE LOCATIONS(S): gas cap

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

Year/Make/Model/Body Style: 1995/Saab/900 SE/Convertible

Vehicle NHTSA No.: CS0506 TEST DATE: March 17, 1995

TEST PHASE: 270° - 360°



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

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

FMVSS 301 Position Hold Time + 5 minutes 0 seconds
 TOTAL 7 minutes 45 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

IV. SOLVENT SPILLAGE LOCATIONS(S): None

APPENDIX A - PHOTOGRAPHS

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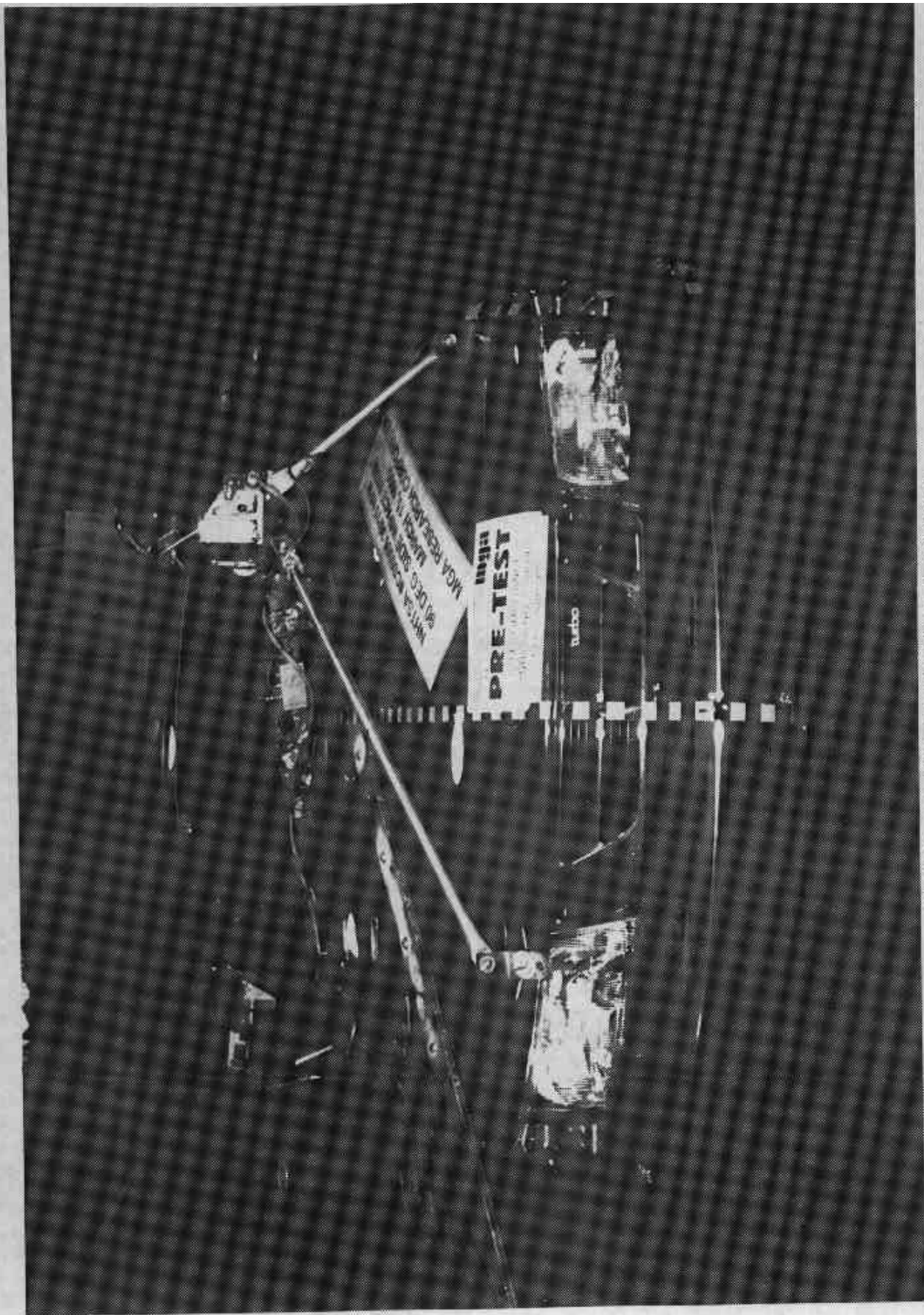


Photo No. A-1 - Pre-Test Front View of Test Vehicle

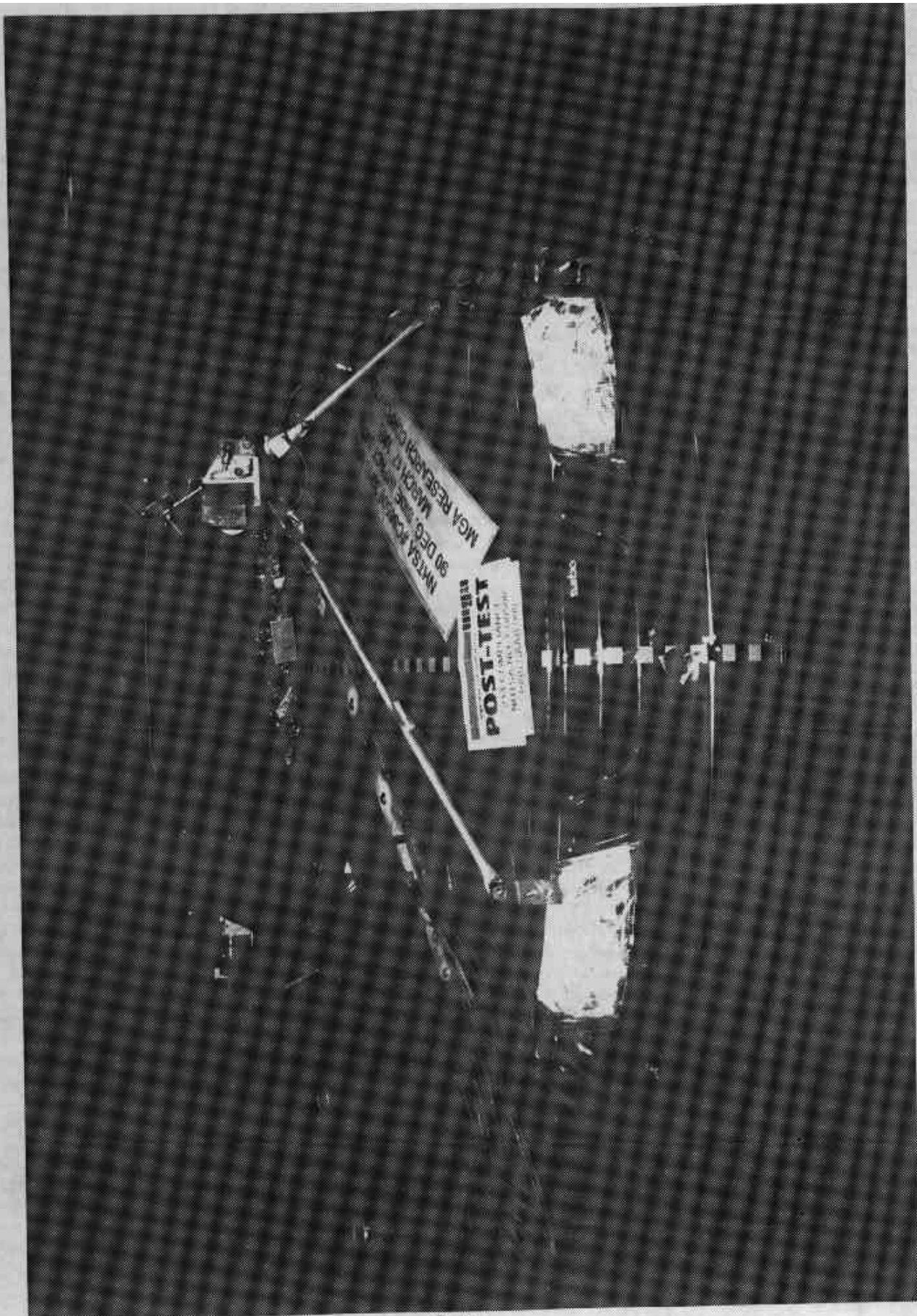
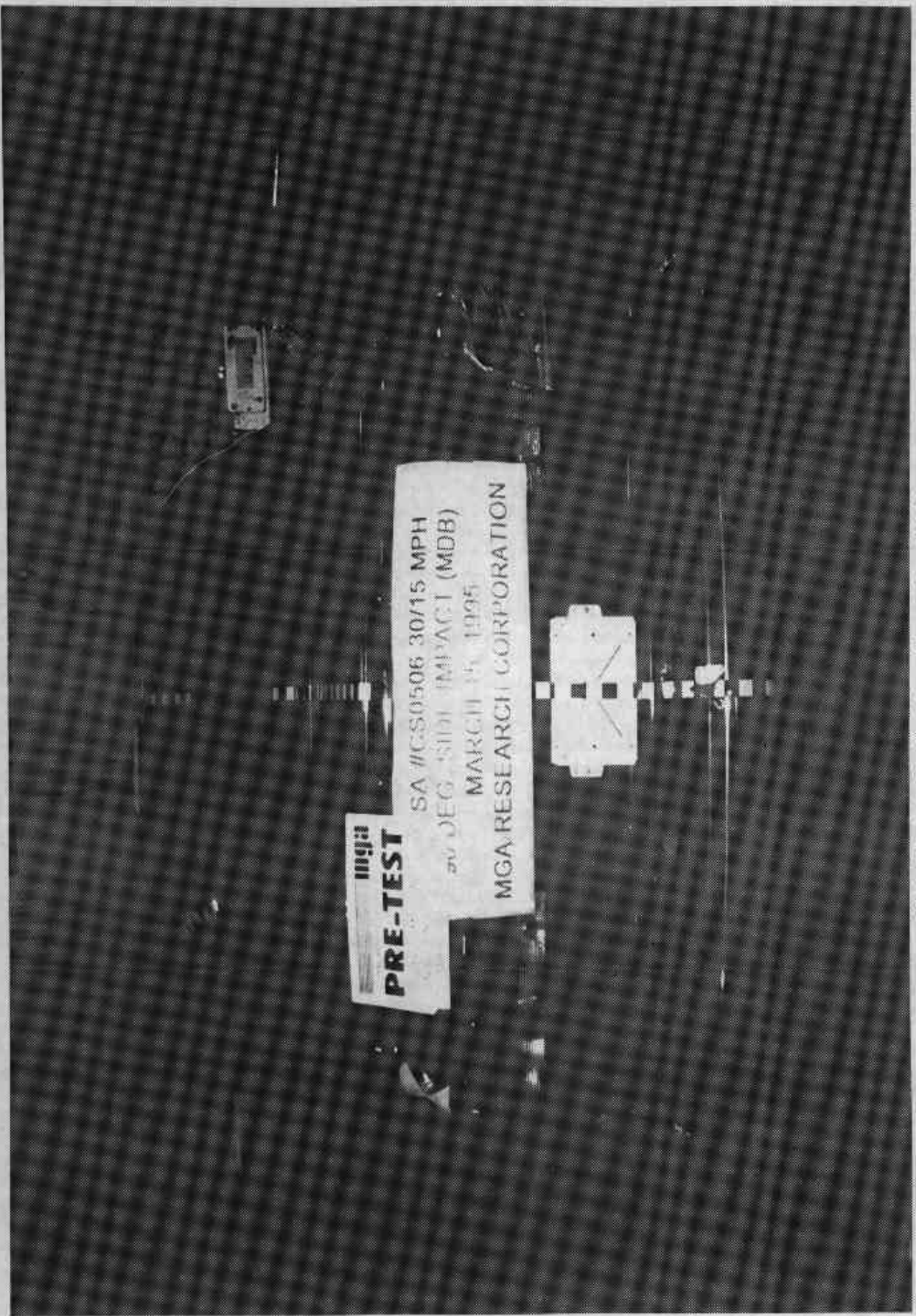
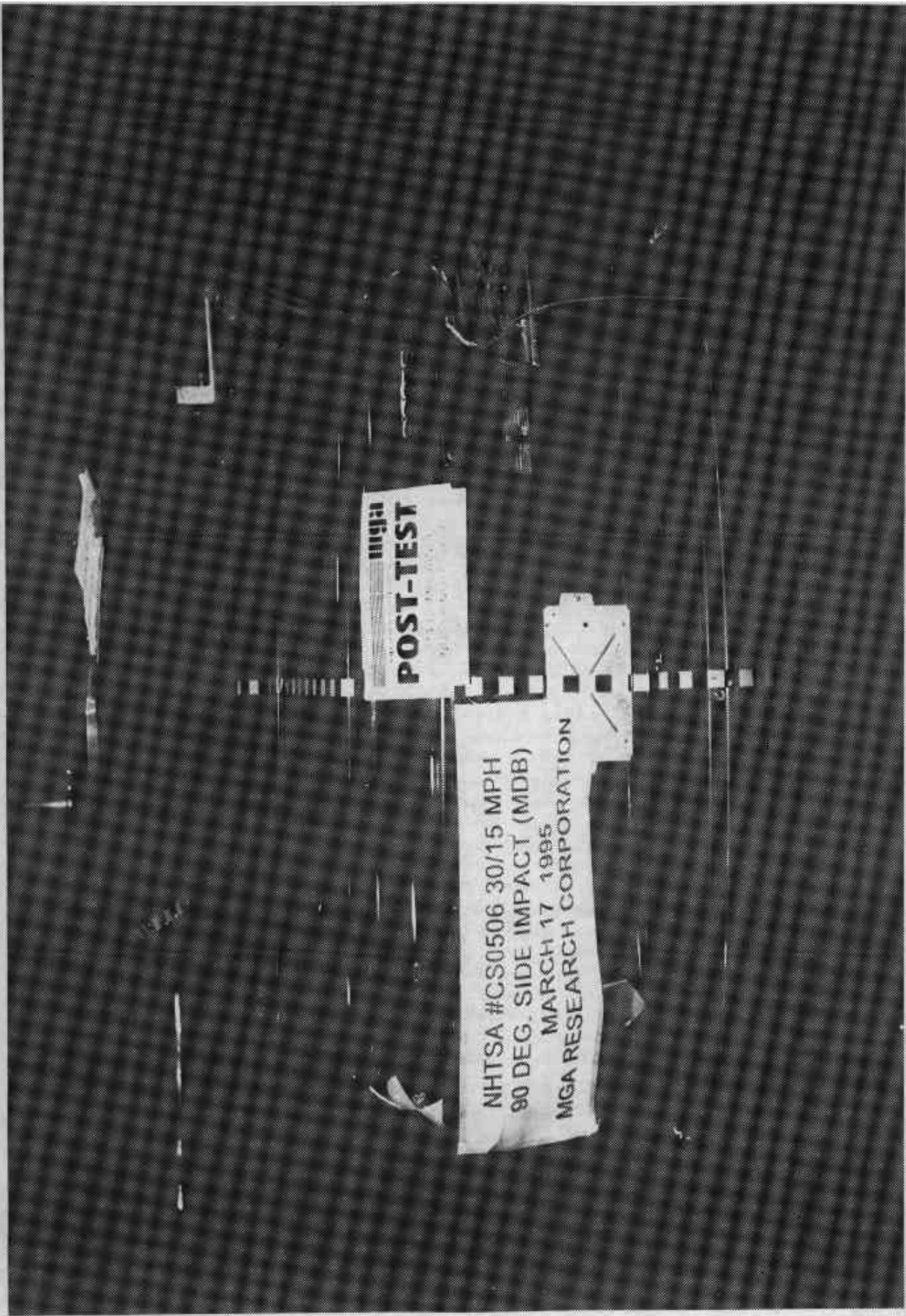


Photo No. A-2 - Post-Test Front View of Test Vehicle



A-3

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



A-4

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

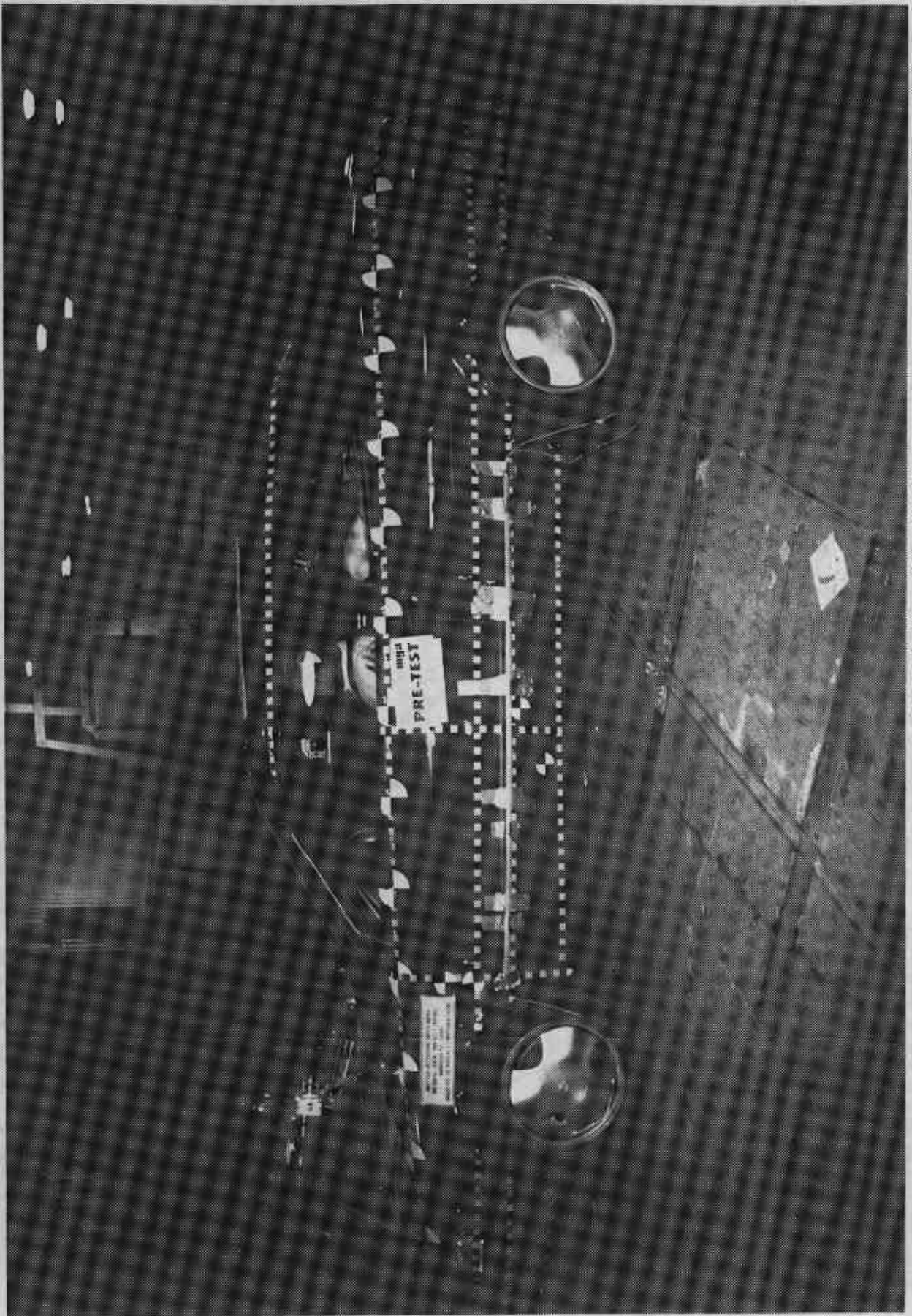


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

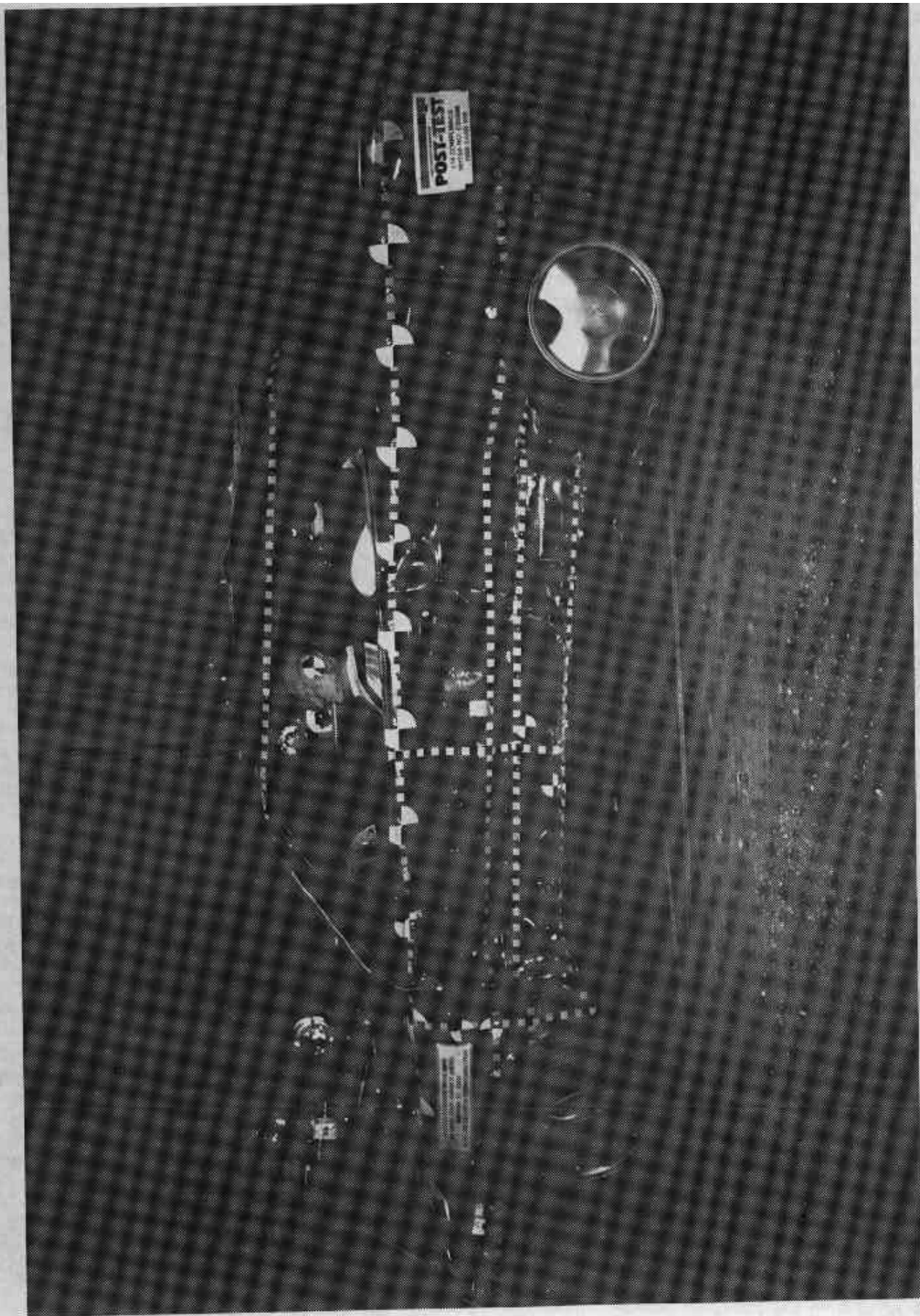


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

A-6

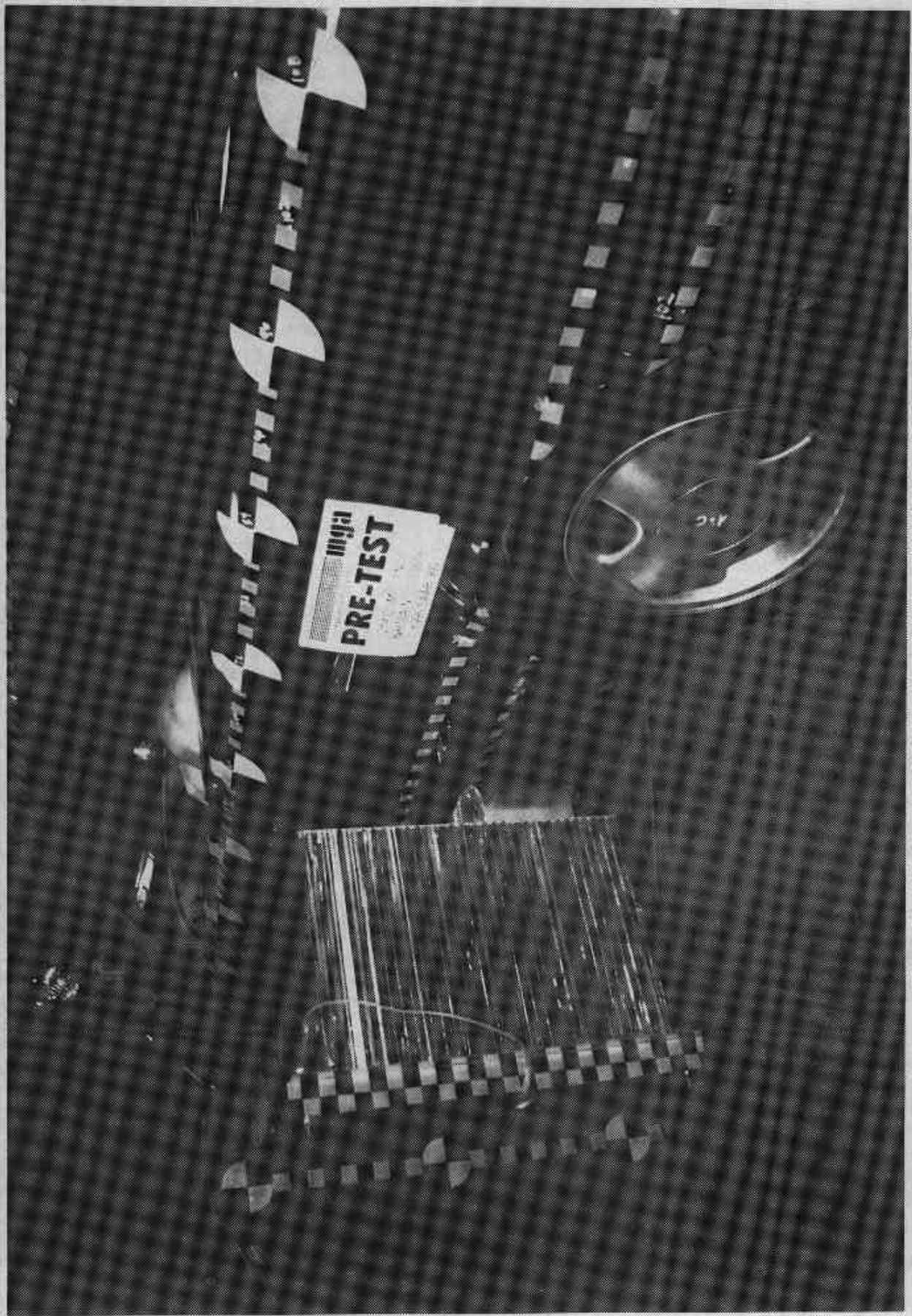


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

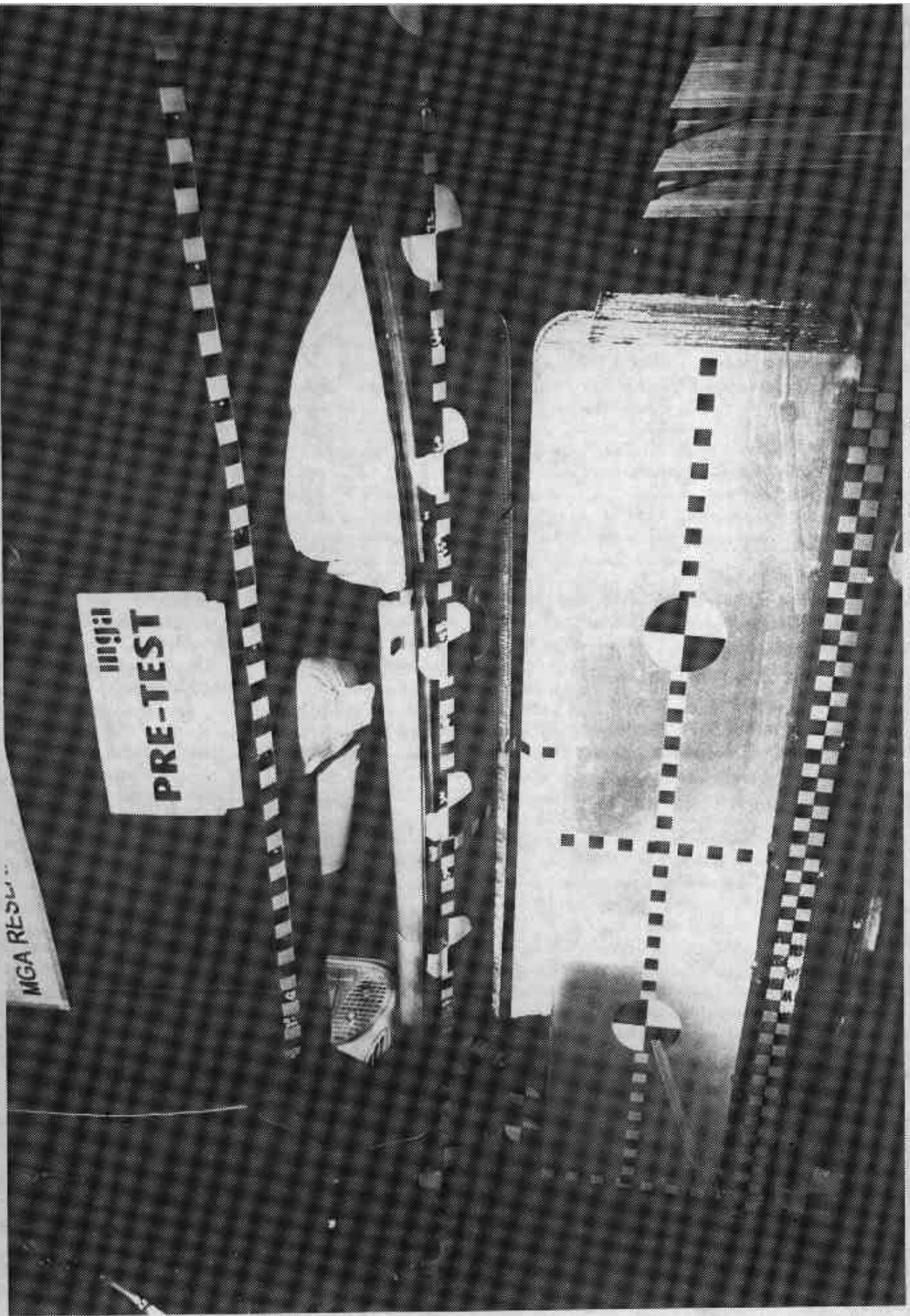
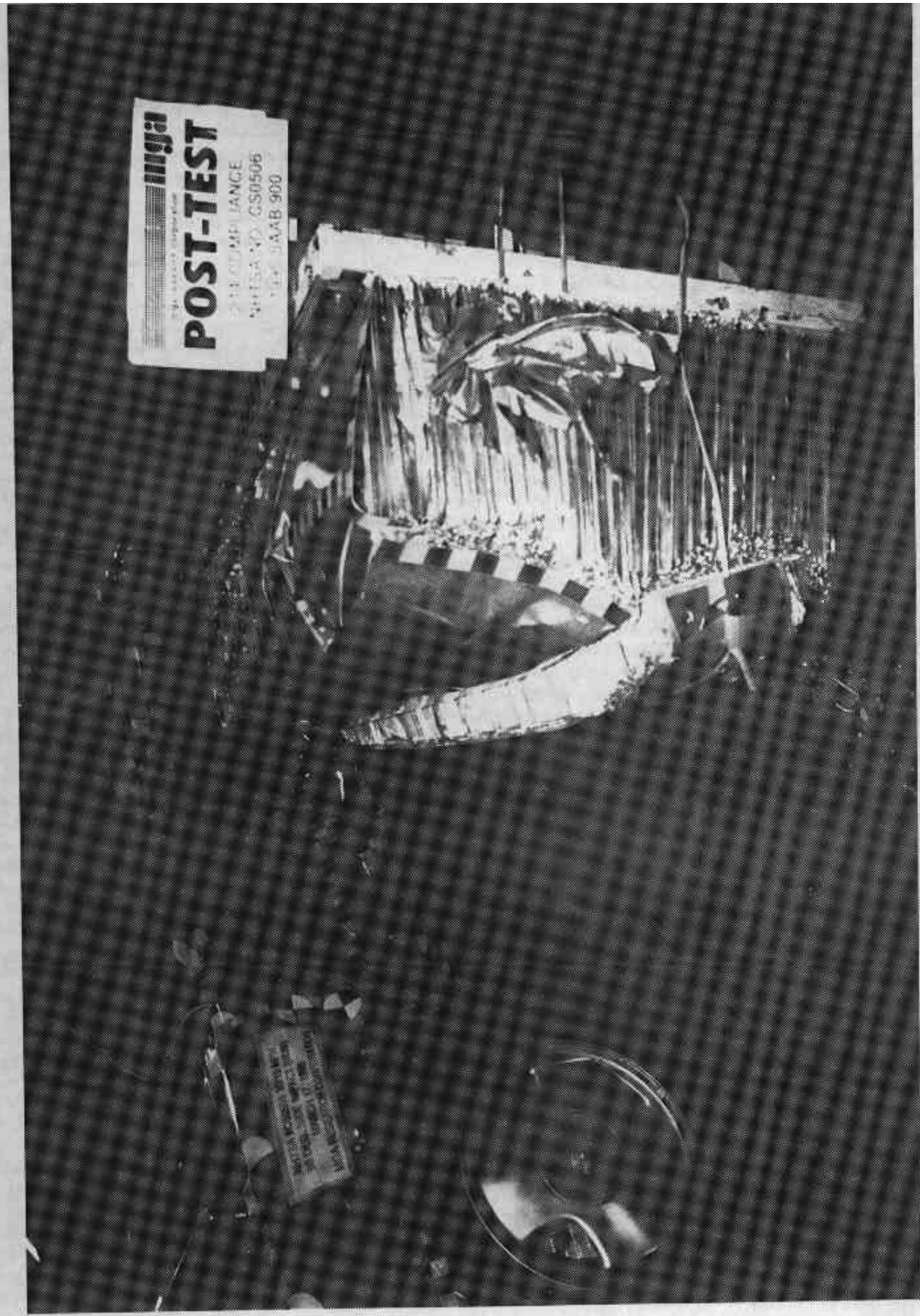


Photo No. A-9 - Pre-Test MDB Position Against Vehicle Overhead View

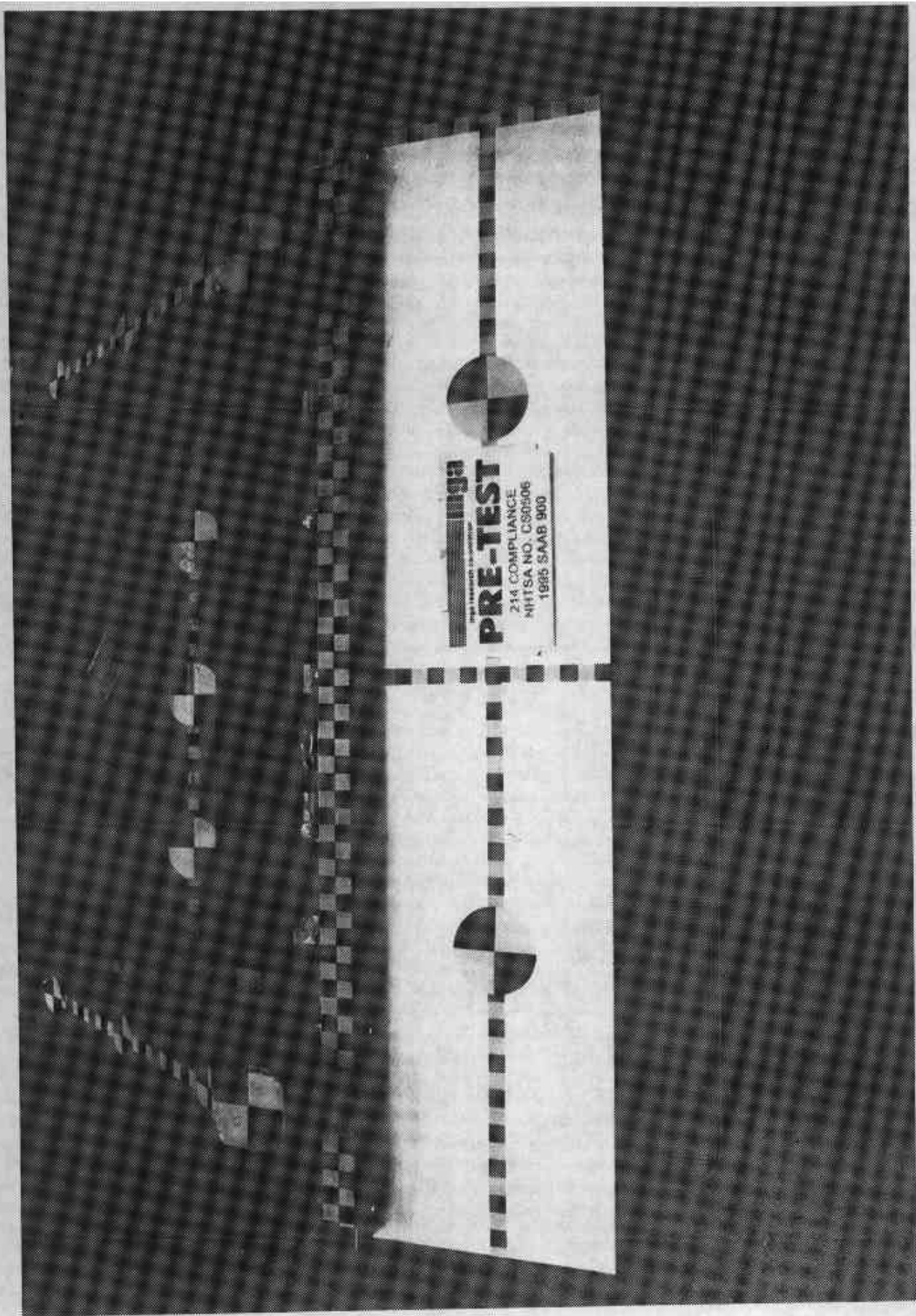


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POST-TEST
PERFORMANCE
NHTSA NO. GS0506
TEL. 344B-900

Photo No. A-10 - Post-Test MDB Position Against Vehicle (left side)

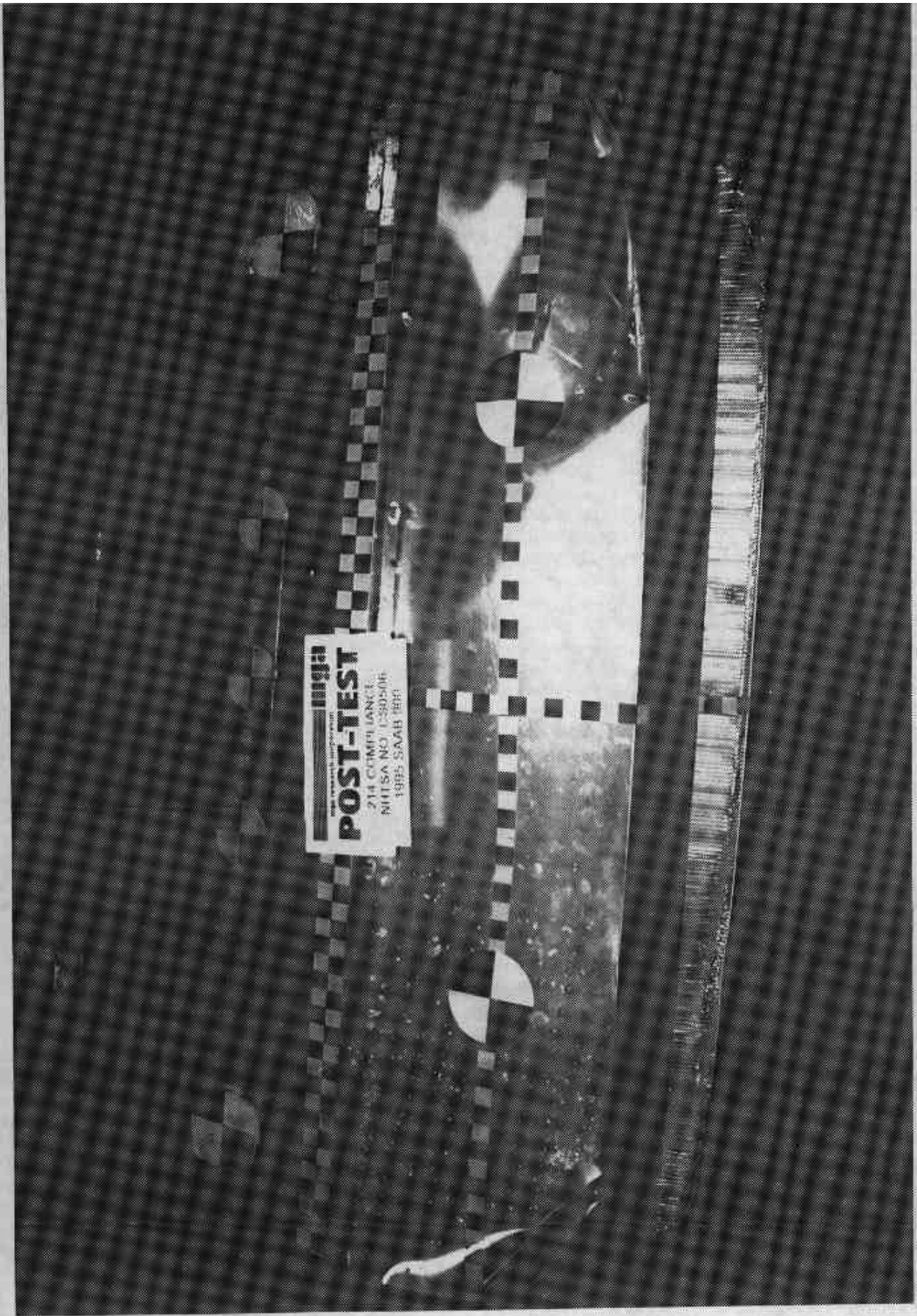


Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)



A-12

Photo No. A-12 - Pre-Test MDB Top View



POST-TEST
214 CAMP LANE
MILWAUKEE, WI 53206
1985 SAAB 900

A-13

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

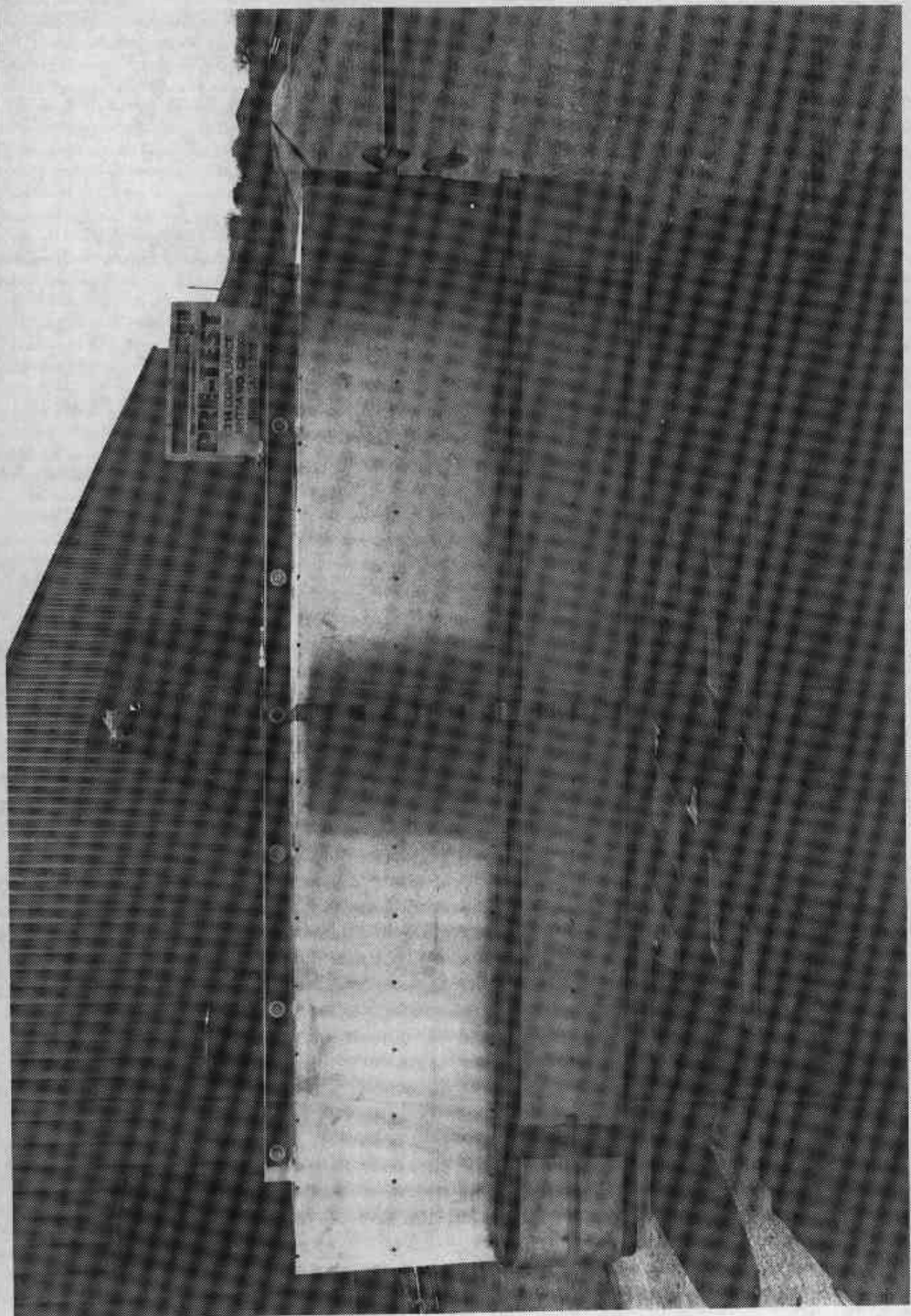
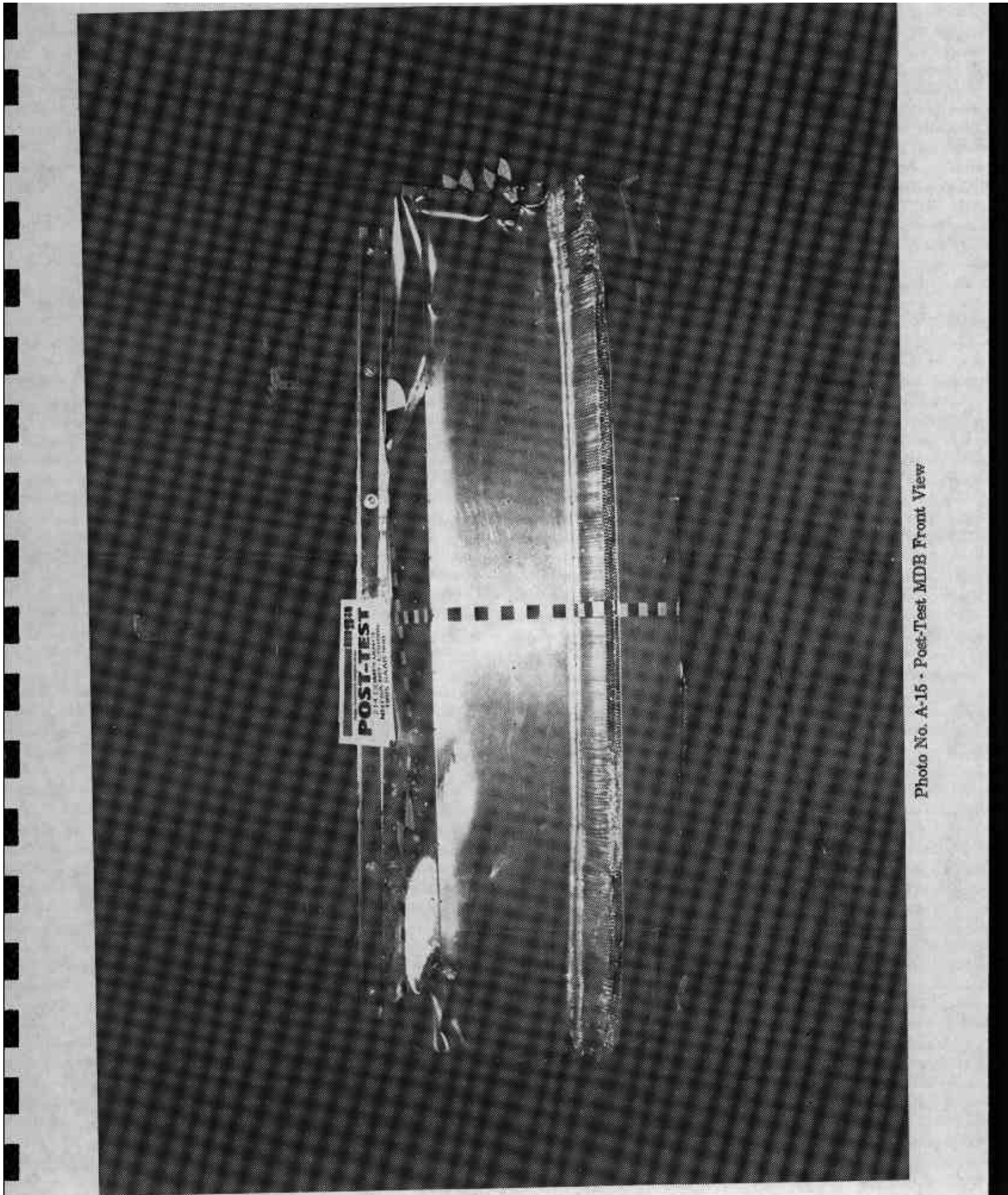


Photo No. A-14 - Pre-Test MDB Front View

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POST-TEST
POST-TEST MDE

Photo No. A-15 - Post-Test MDE Front View

A-15

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1995 SAAB 900

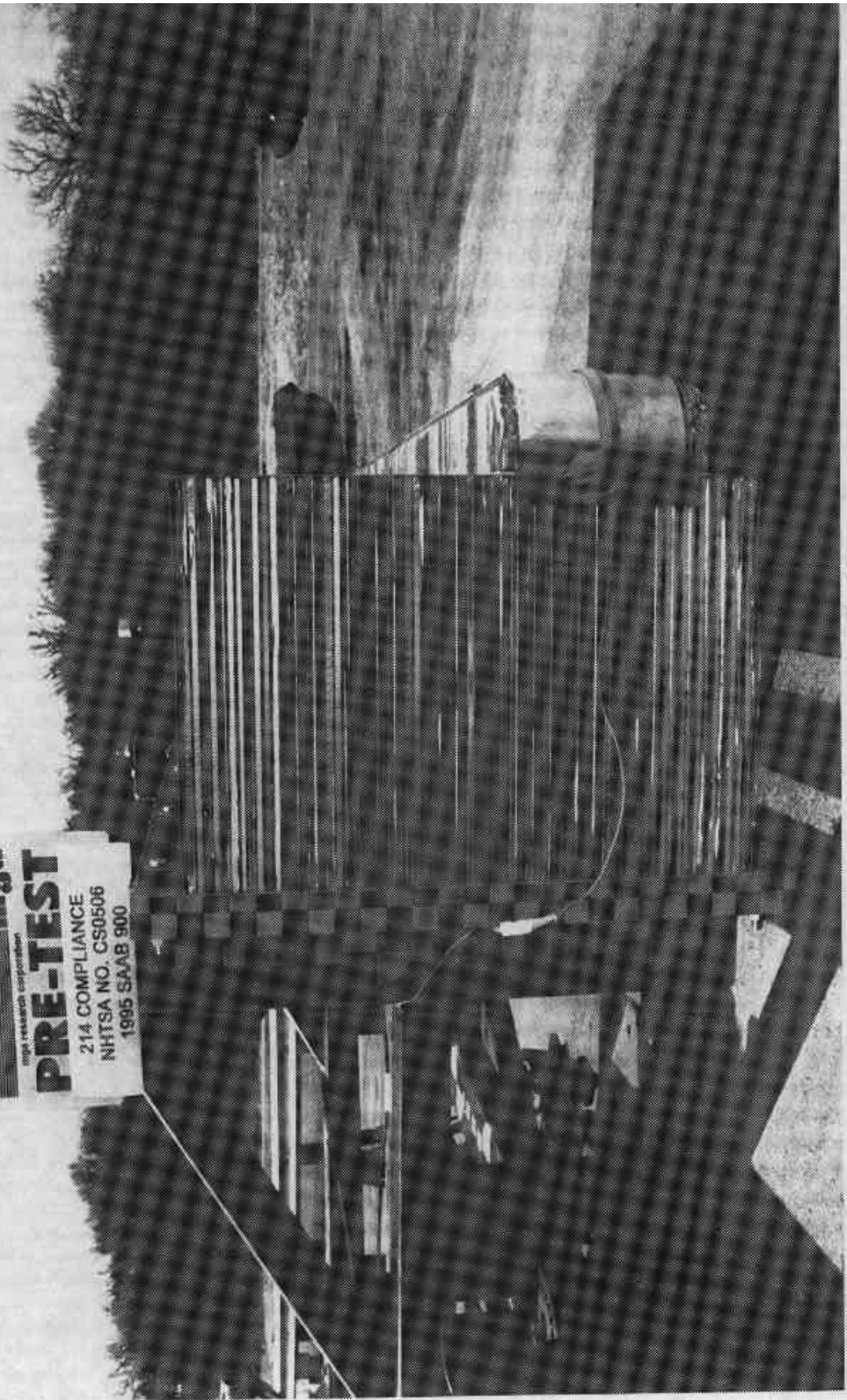


Photo No. A-16 - Pre-Test MDB Right Side View

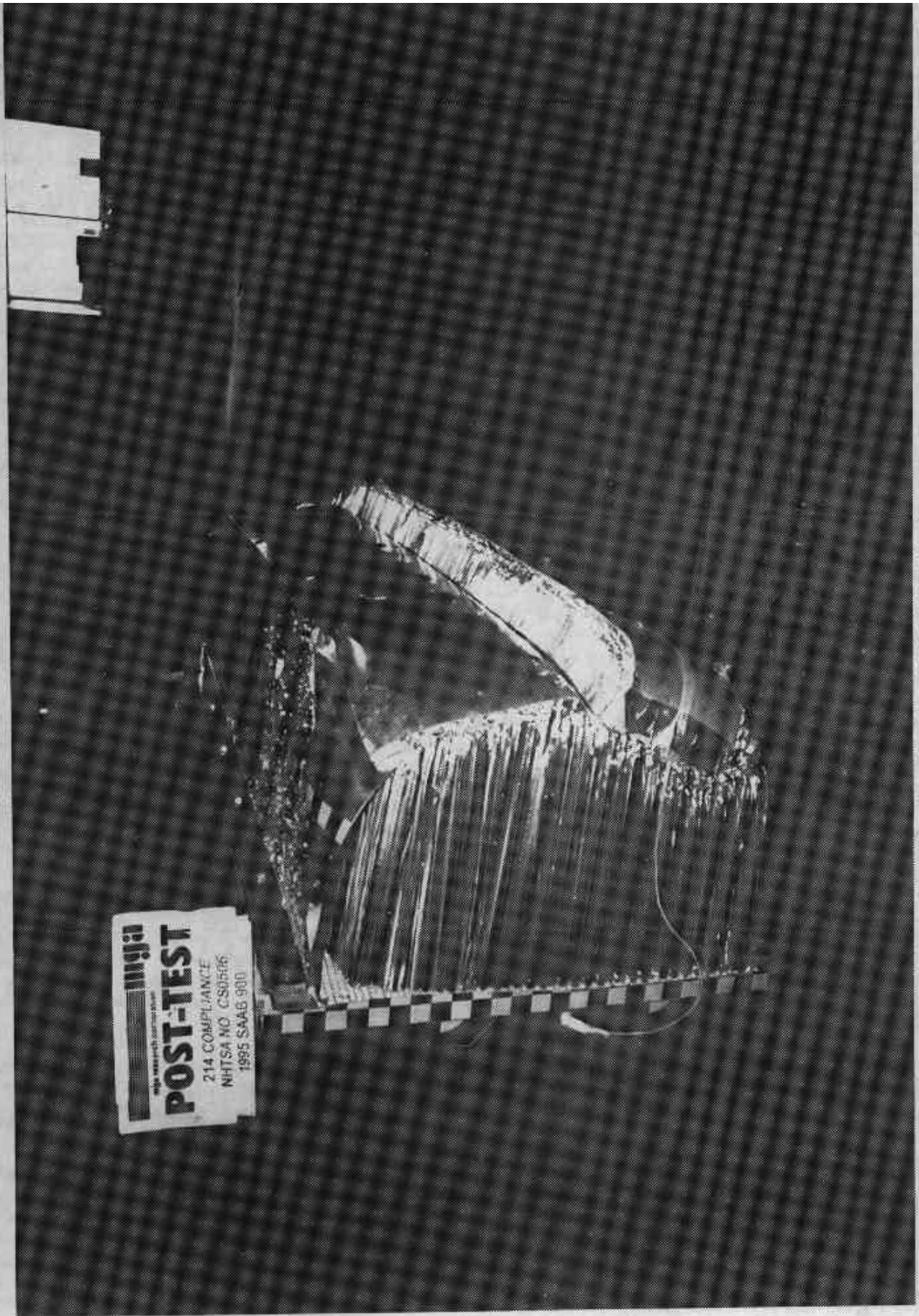
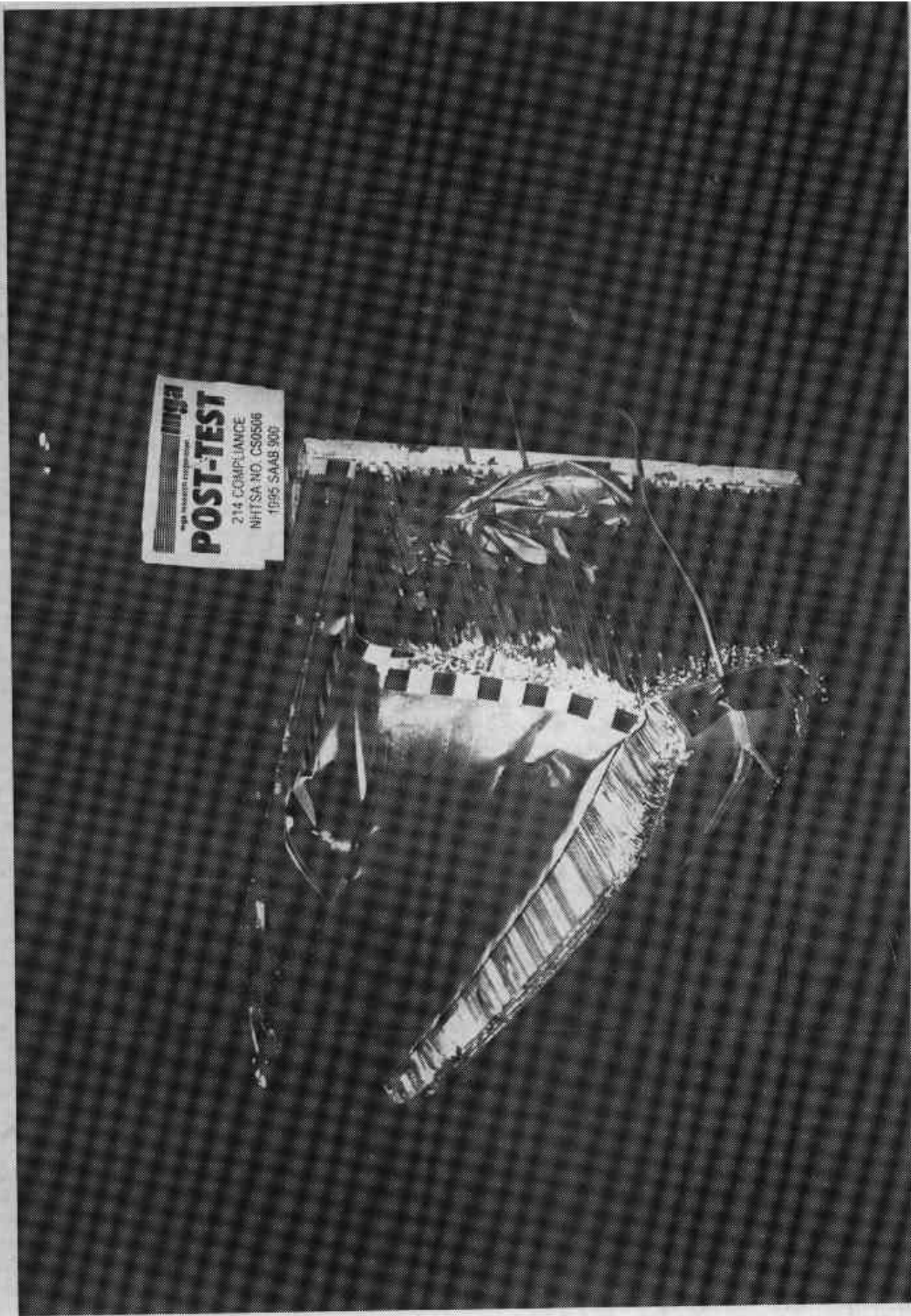


Photo No. A-17 - Post-Test MDB Right Side View



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

A-18



POST-TEST
NHTSA COMPLIANCE
NHTSA NO. CS0506
1995 SAAB 900

Photo No. A-19 - Post-Test MVB Left Side View

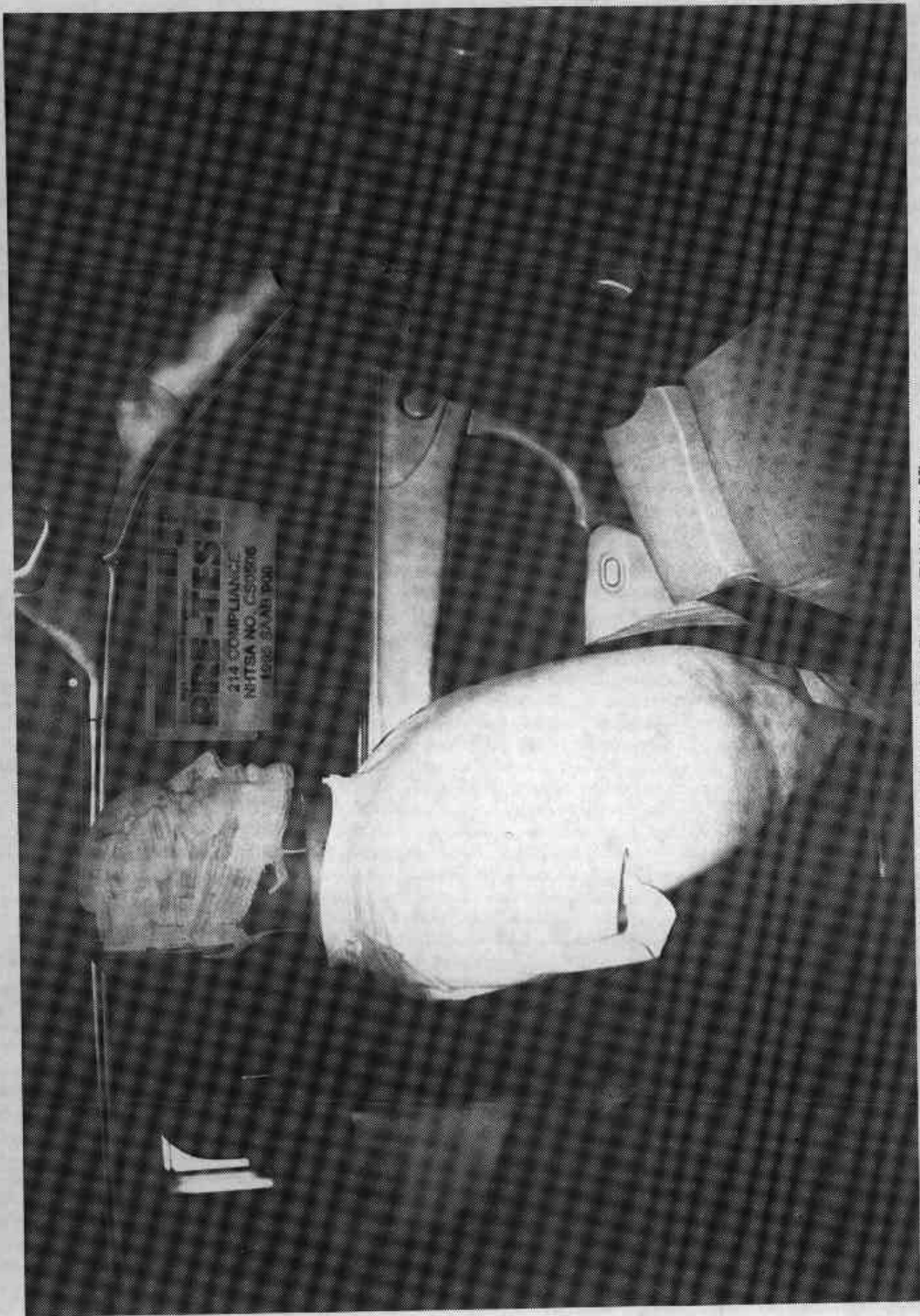


Photo No. A-26 - Pre-Test Driver Dummy Right Side View



Photo No. A-21 - Post-Test Driver Dummy Right Side View

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A-22

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

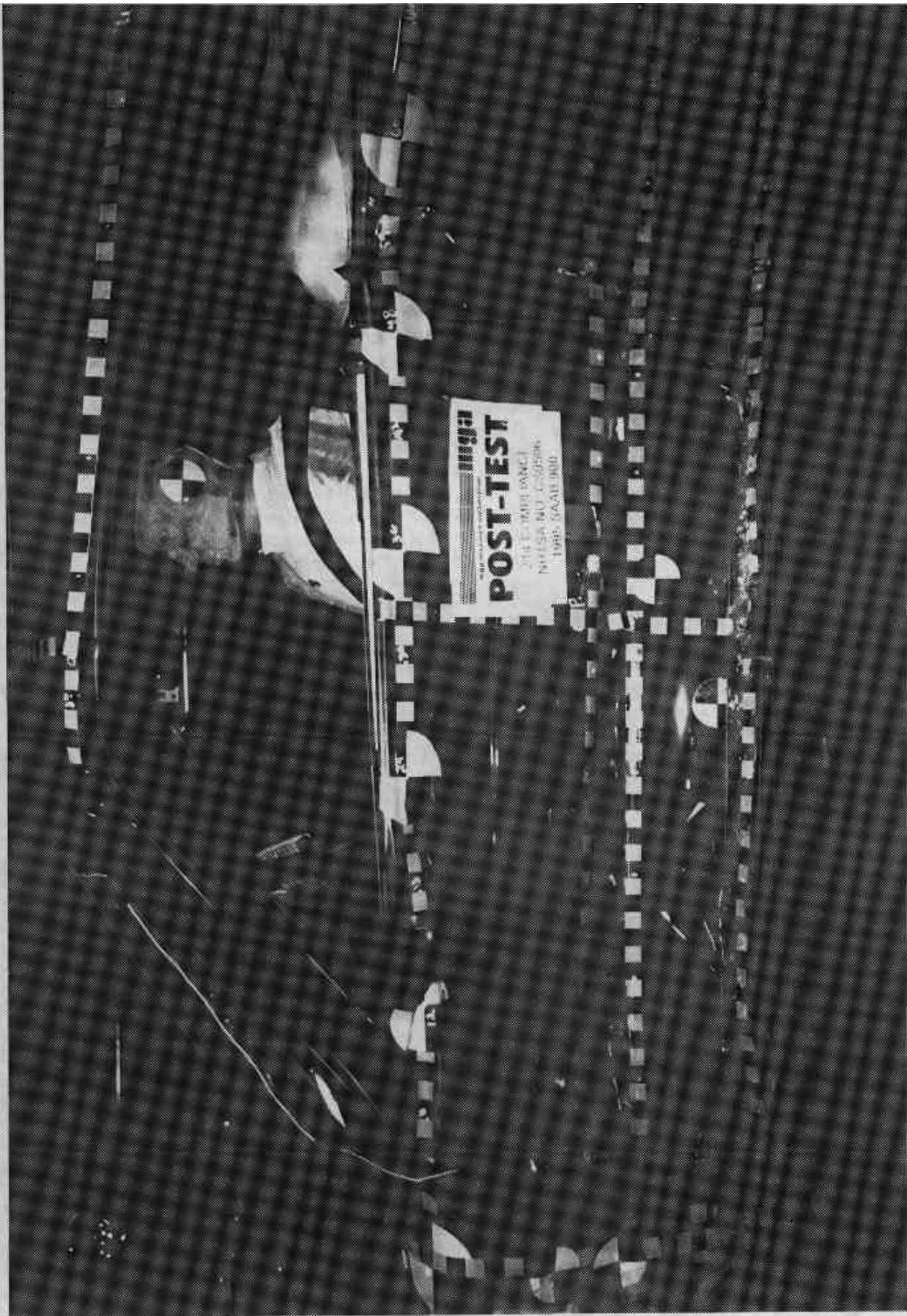


Photo No. A-23 - Post-Test Driver Dummy Left Side View

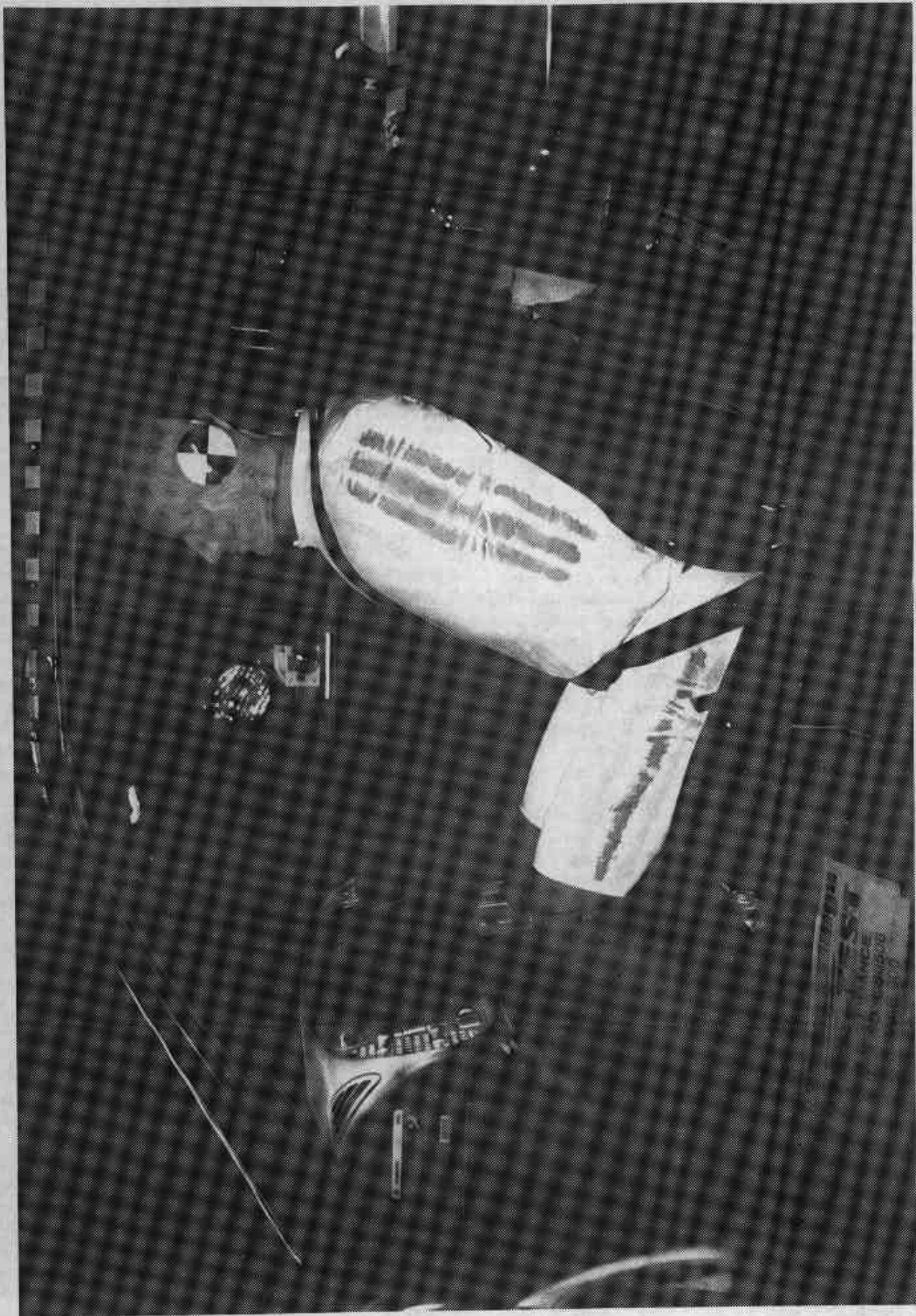


Photo No. A-24 - Pre-Test Driver Dummy Left Side View (Door Open)

A-24



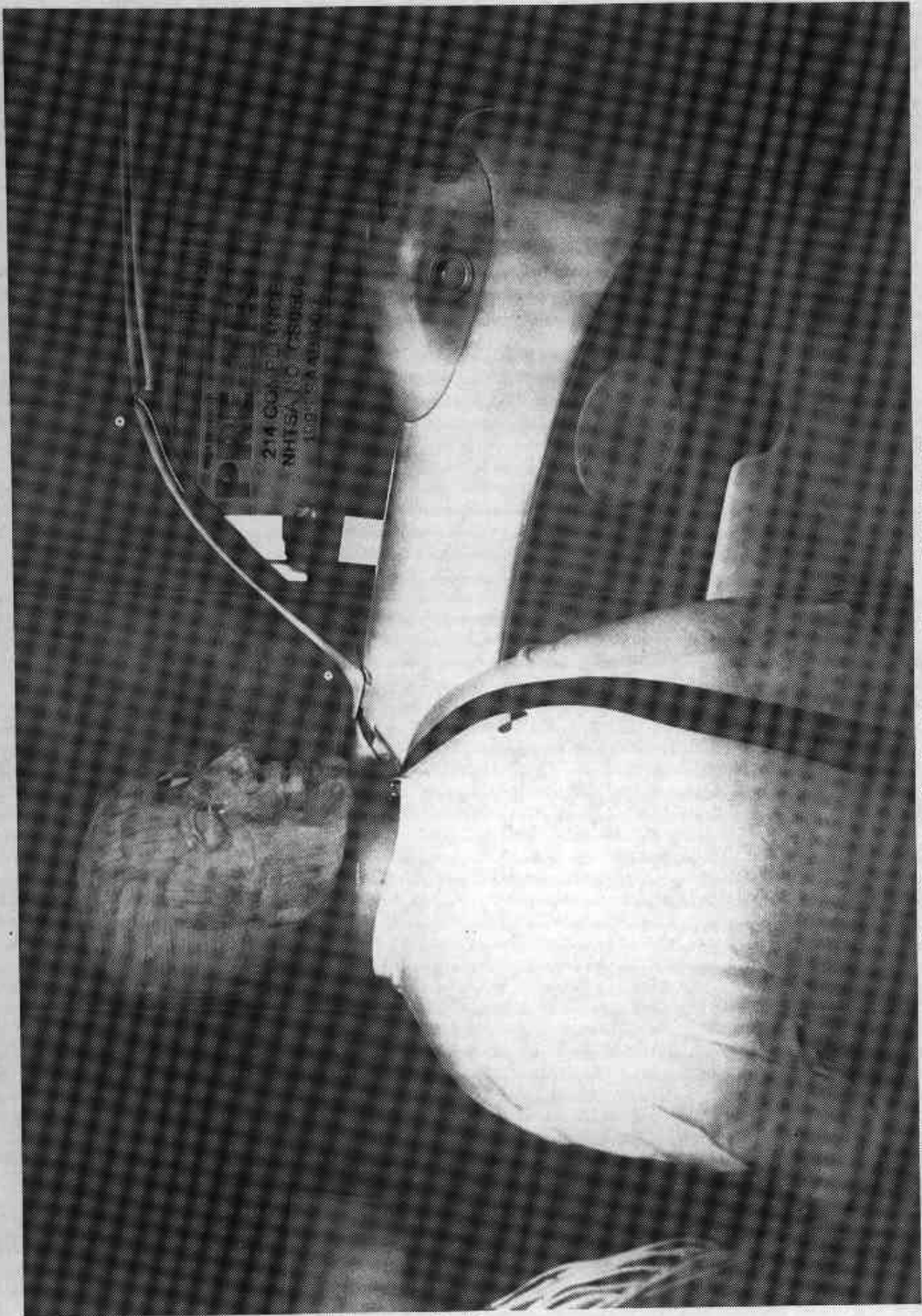
Photo No. A-25 - Pre-Test Driver Dummy Shoulder and Door Top View



Photo No. A-26 - Post-Test Driver Dummy Shoulder and Door Top View



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



A-28

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

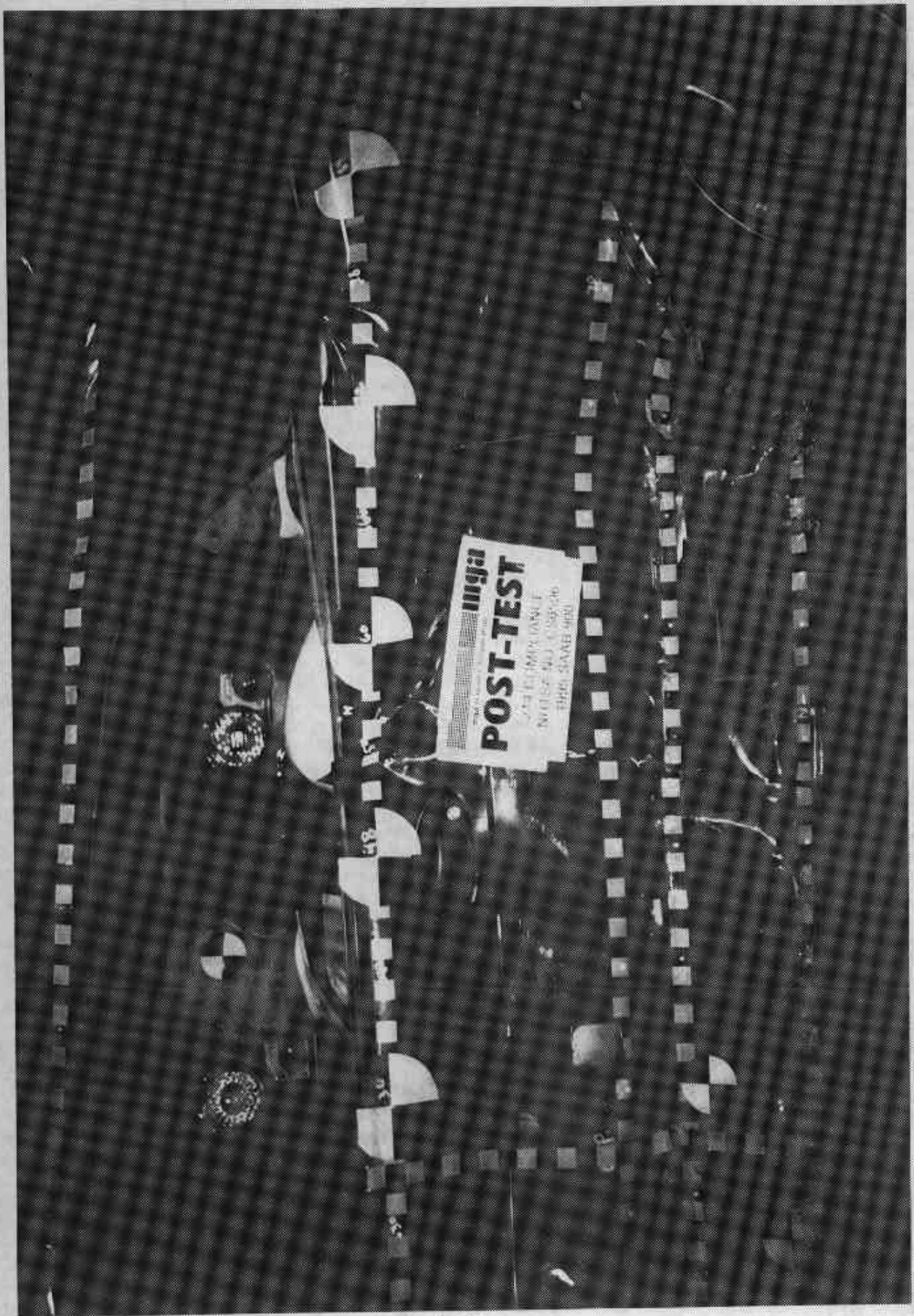


Photo No. A-29 - Post-Test Passenger Dummy Right Side View



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

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A-31

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

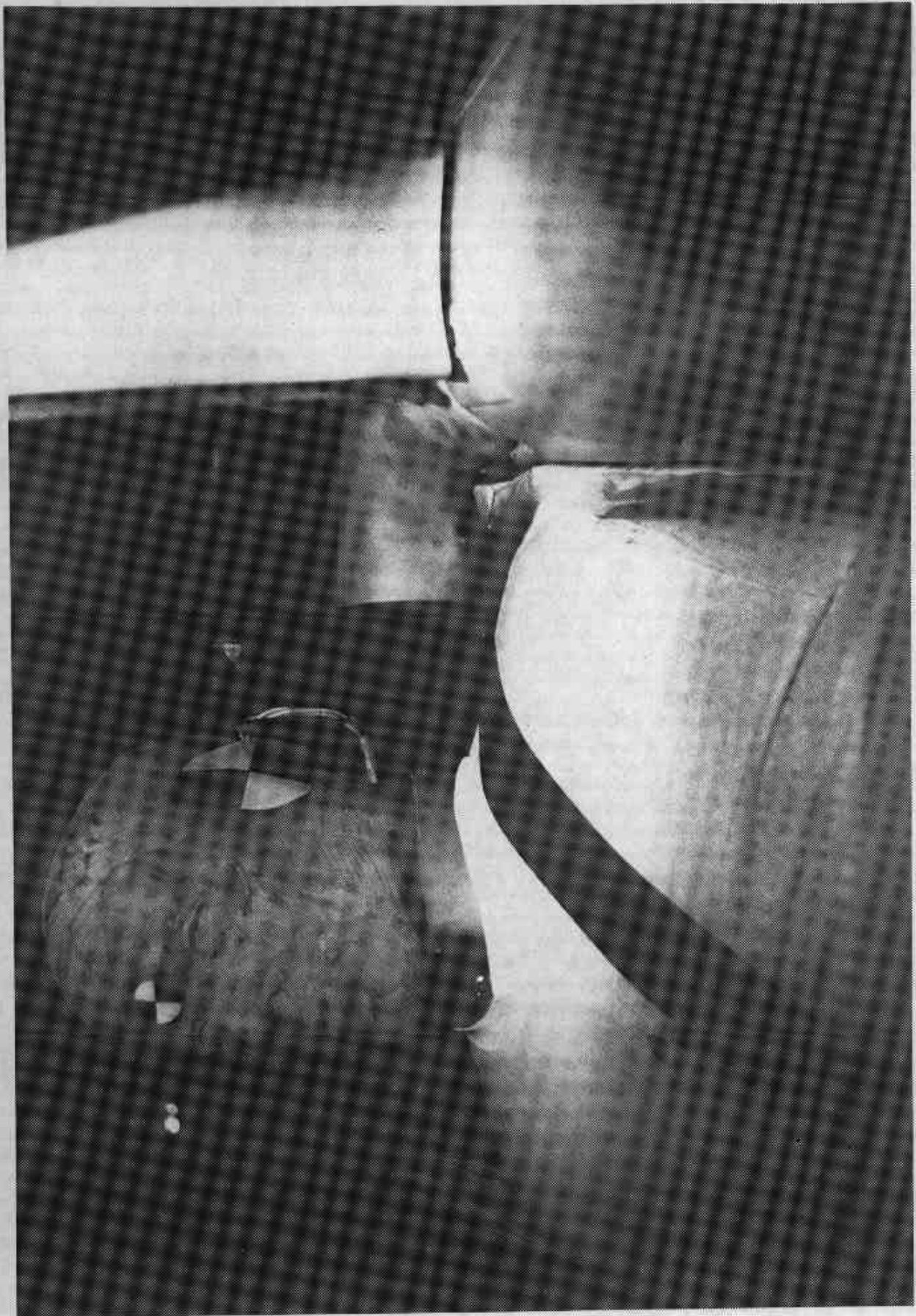


Photo No. A-32 - Pre-Test Passenger Dummy Shoulder and Door Top View

A-32

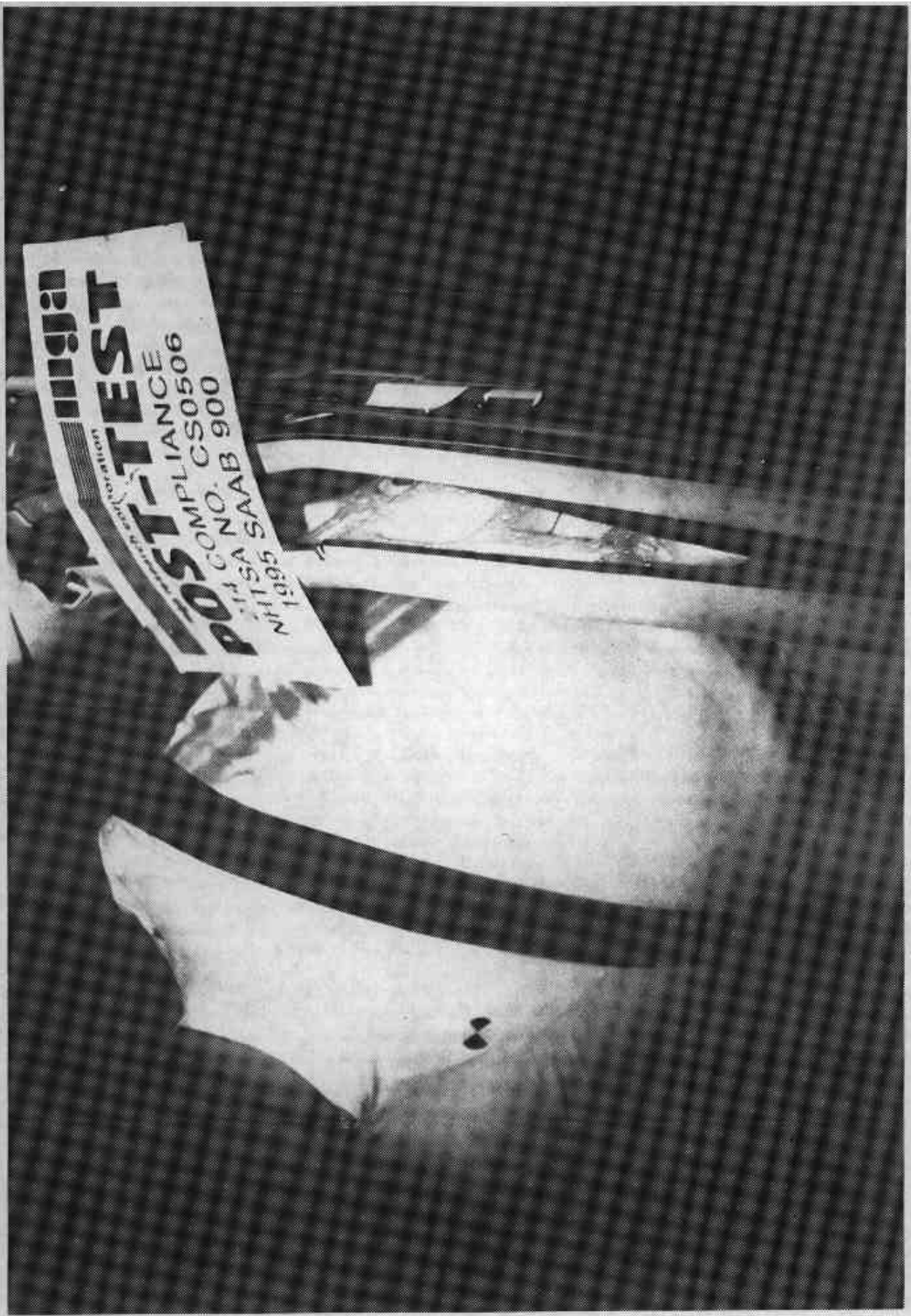


Photo No. A-83 - Post-Test Passenger Dummy Shoulder and Door Top View



Photo No. A-94 - Post-Test Passenger Dummy Contact

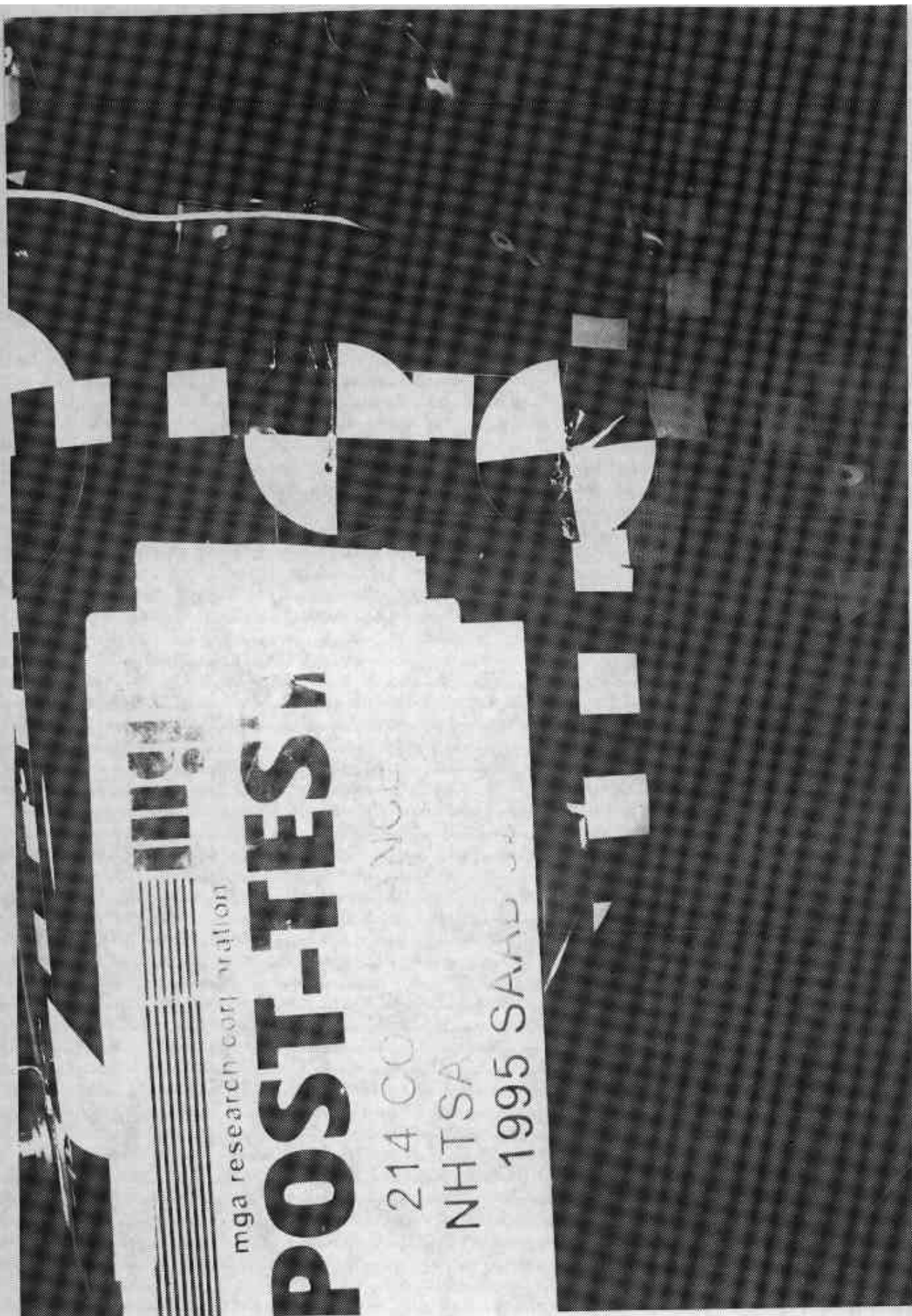
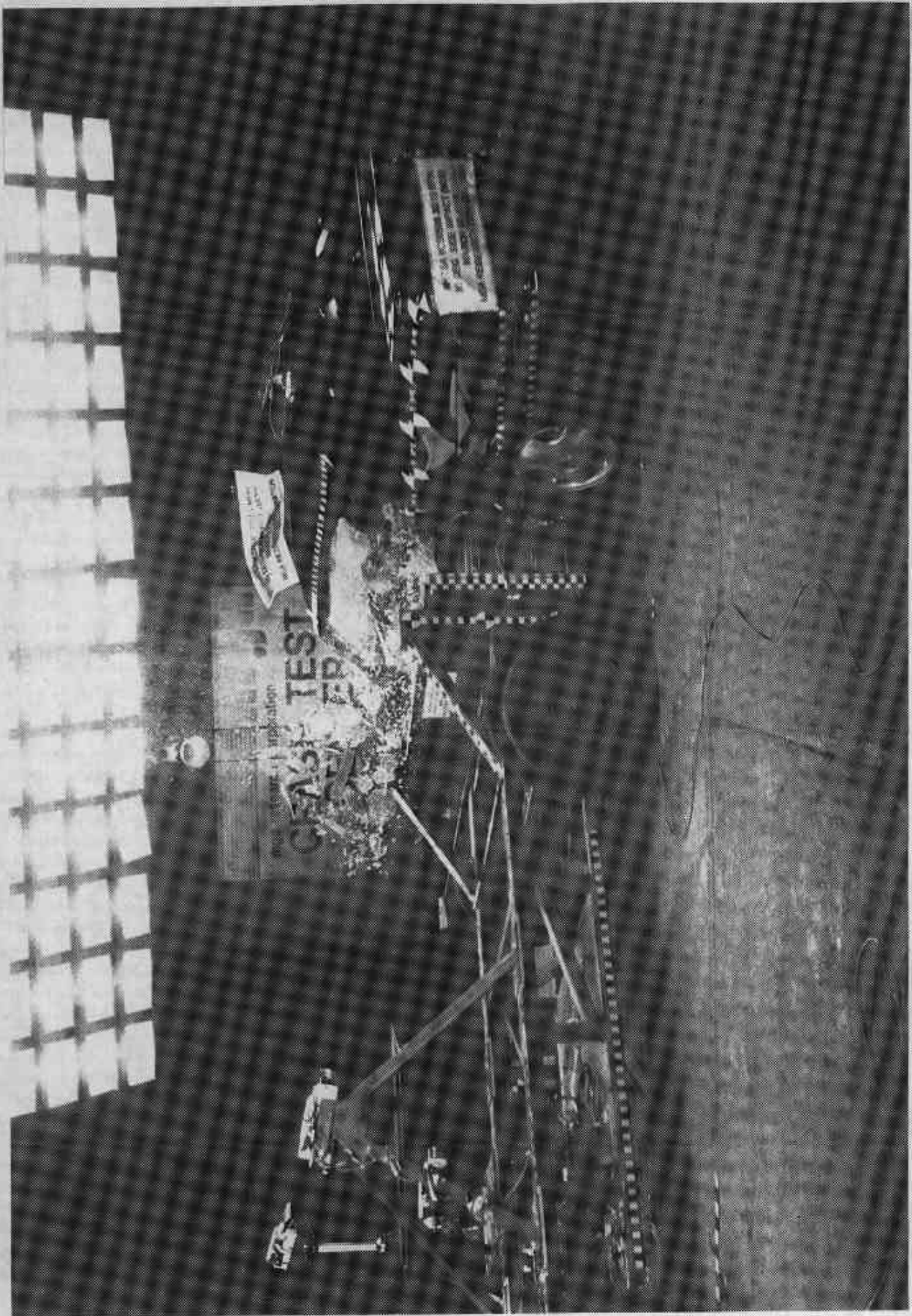


Photo No. A-35 - Left Front Impact Point on Vehicle



A-38

Photo No. A-38 - Impact.

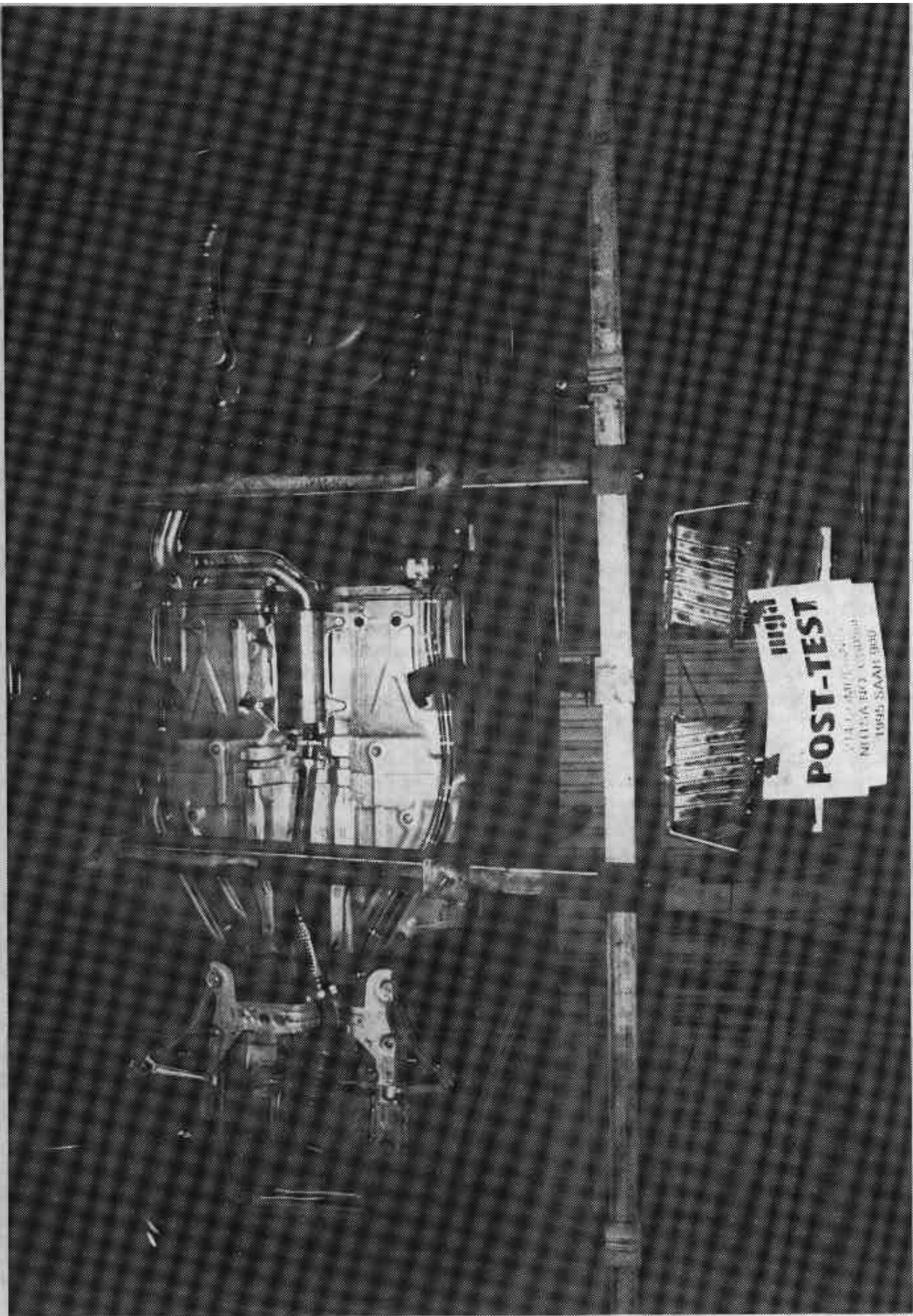


Photo No. A-39 - Rollover 90°



Photo No. A-40 - Hollover 186*

A-40

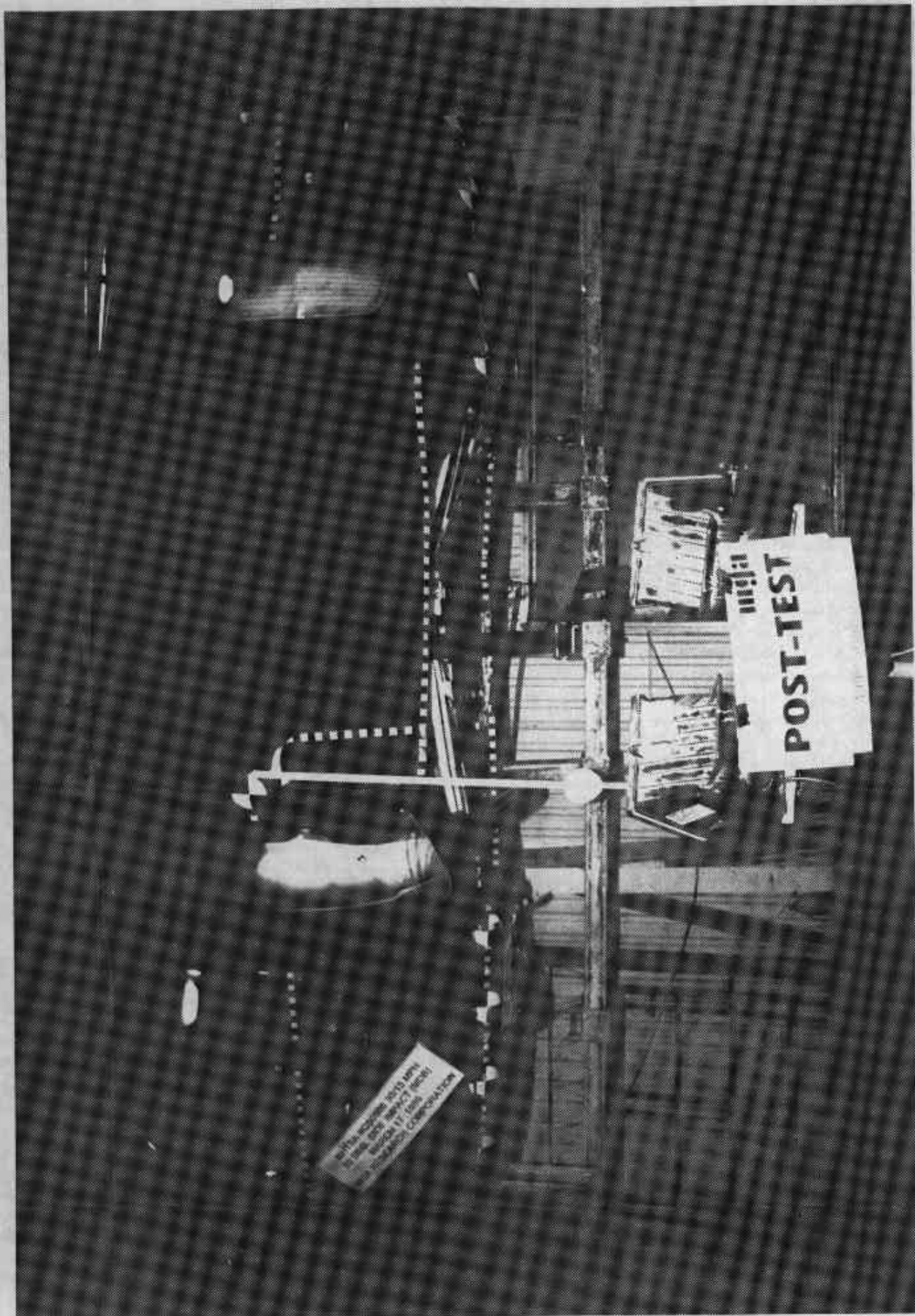


Photo No. A-41 - Rollover 270*

A-41

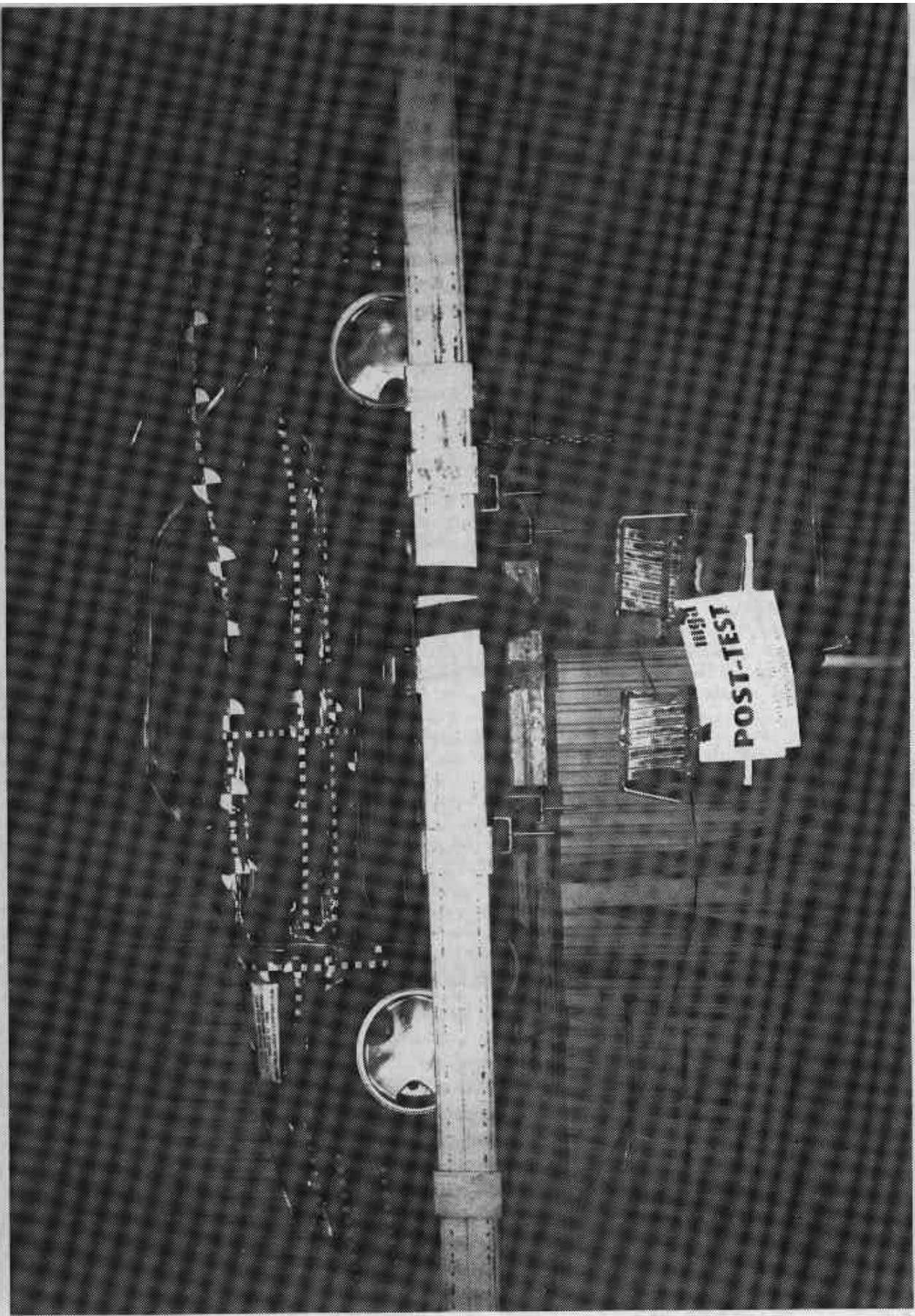


Photo No. A-42 - Rollover 366°

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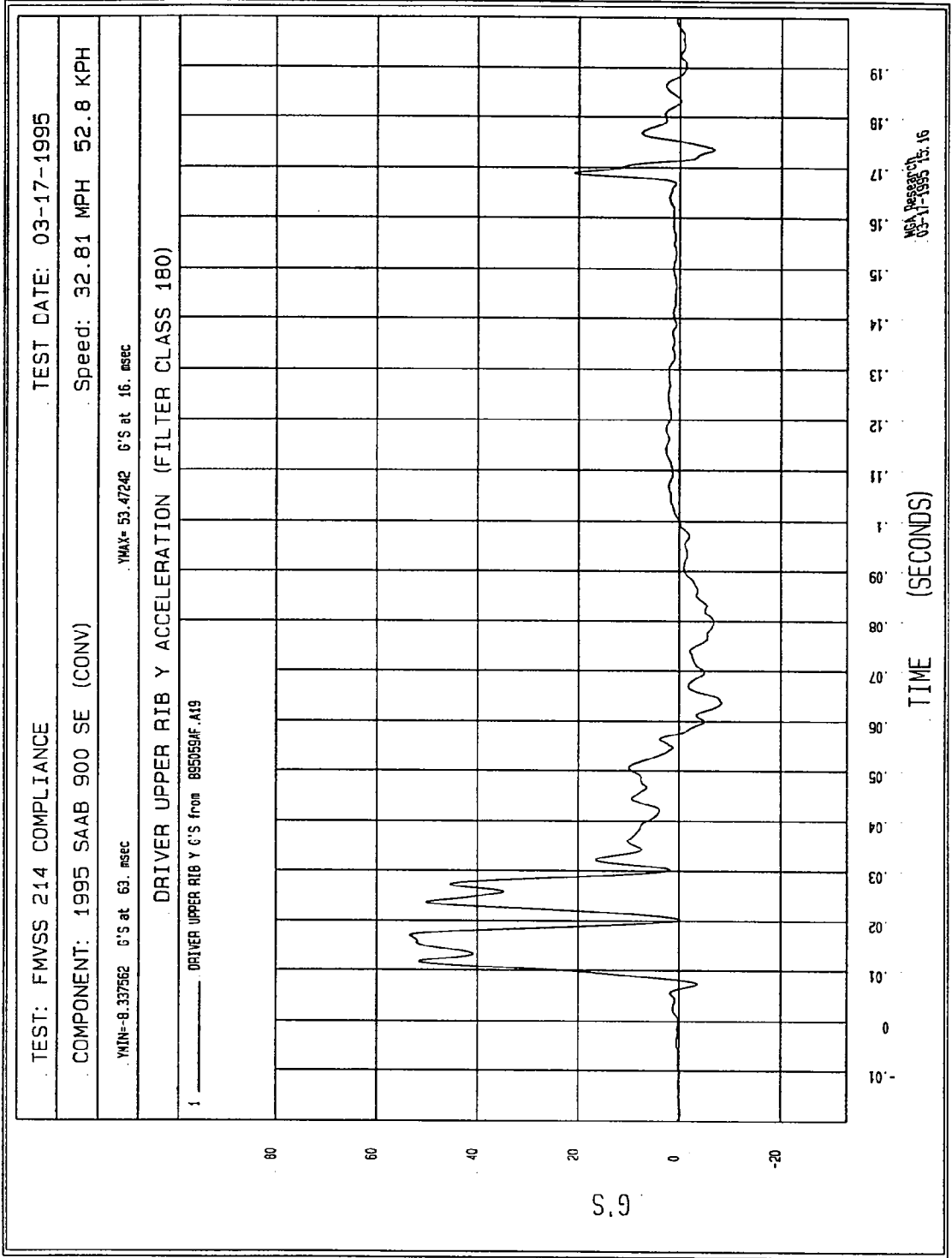


Figure B-1 - Driver Upper Rib Y Acceleration vs. Time

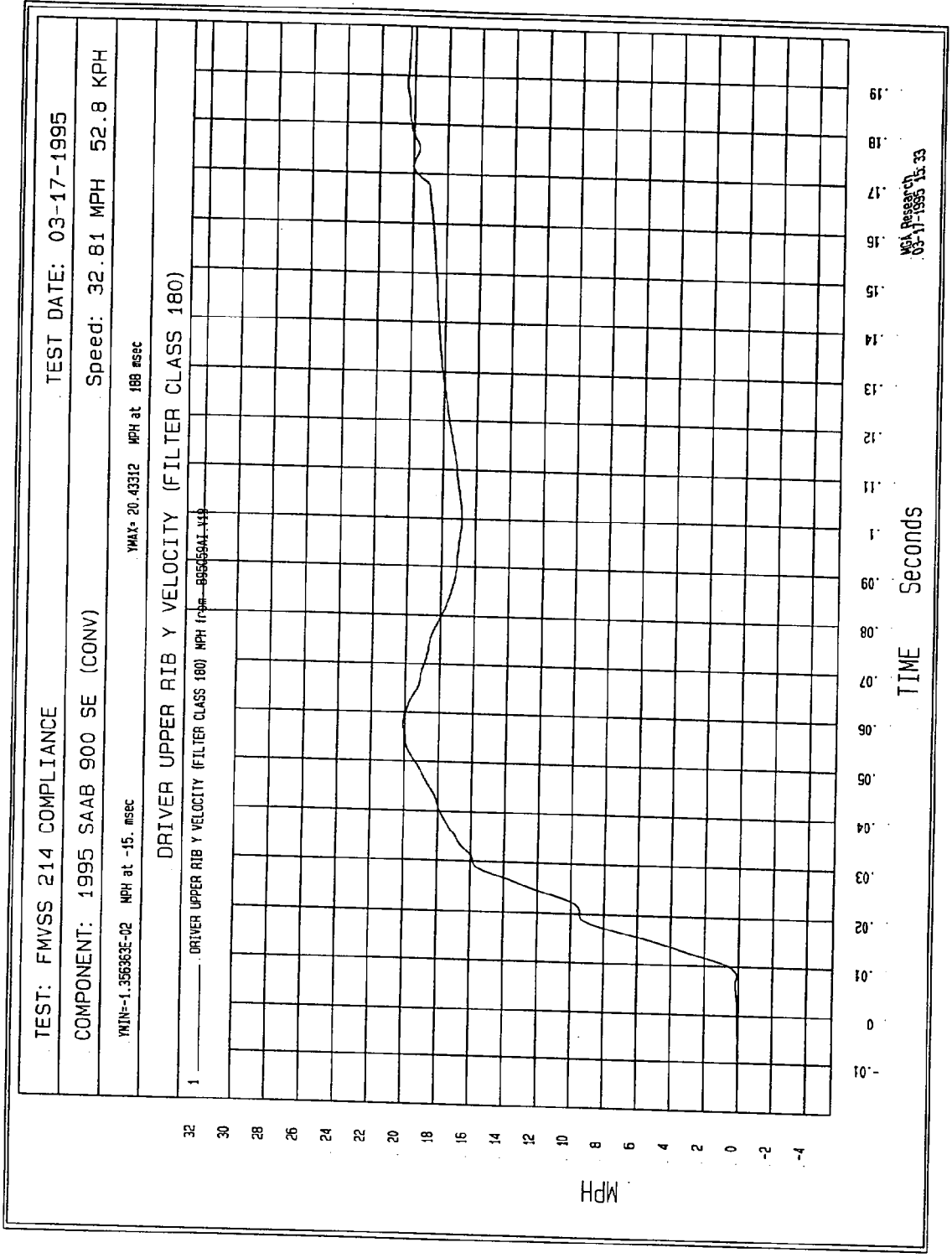


Figure B-2 - Driver Upper Rib Y Velocity vs. Time

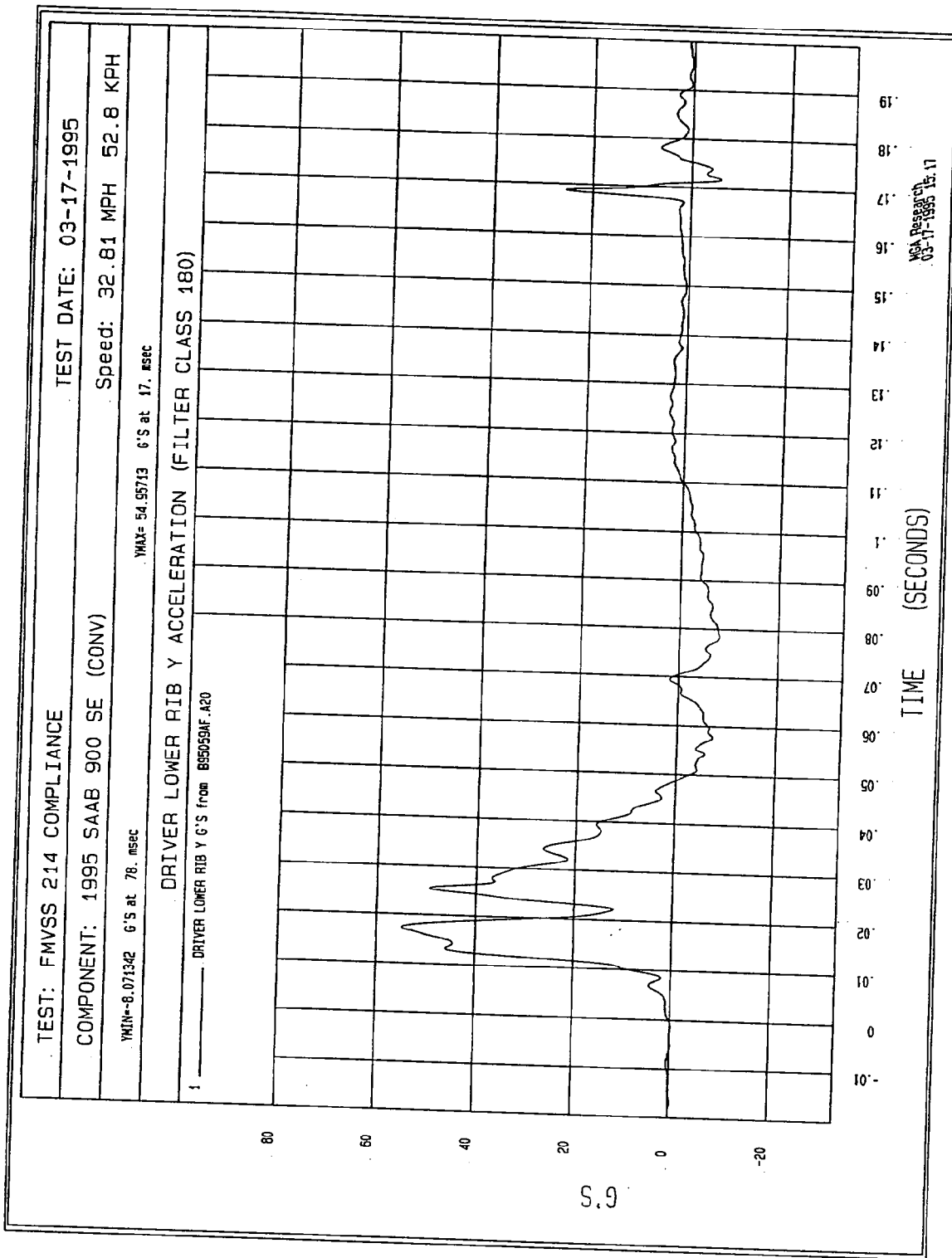


Figure B-3 - Driver Lower Rib Y Acceleration vs. Time

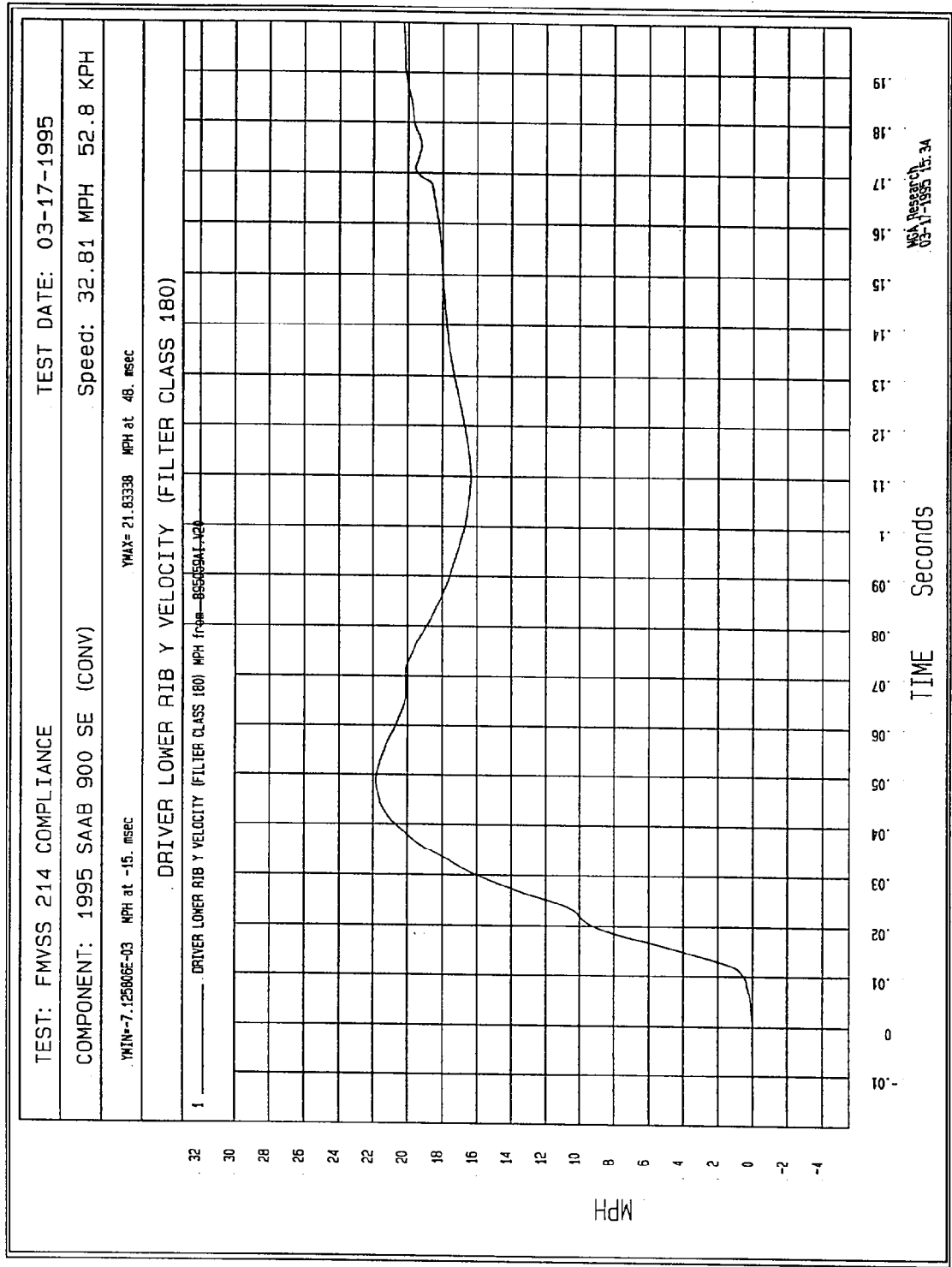


Figure B-4 - Driver Lower Rib Y Velocity vs. Time

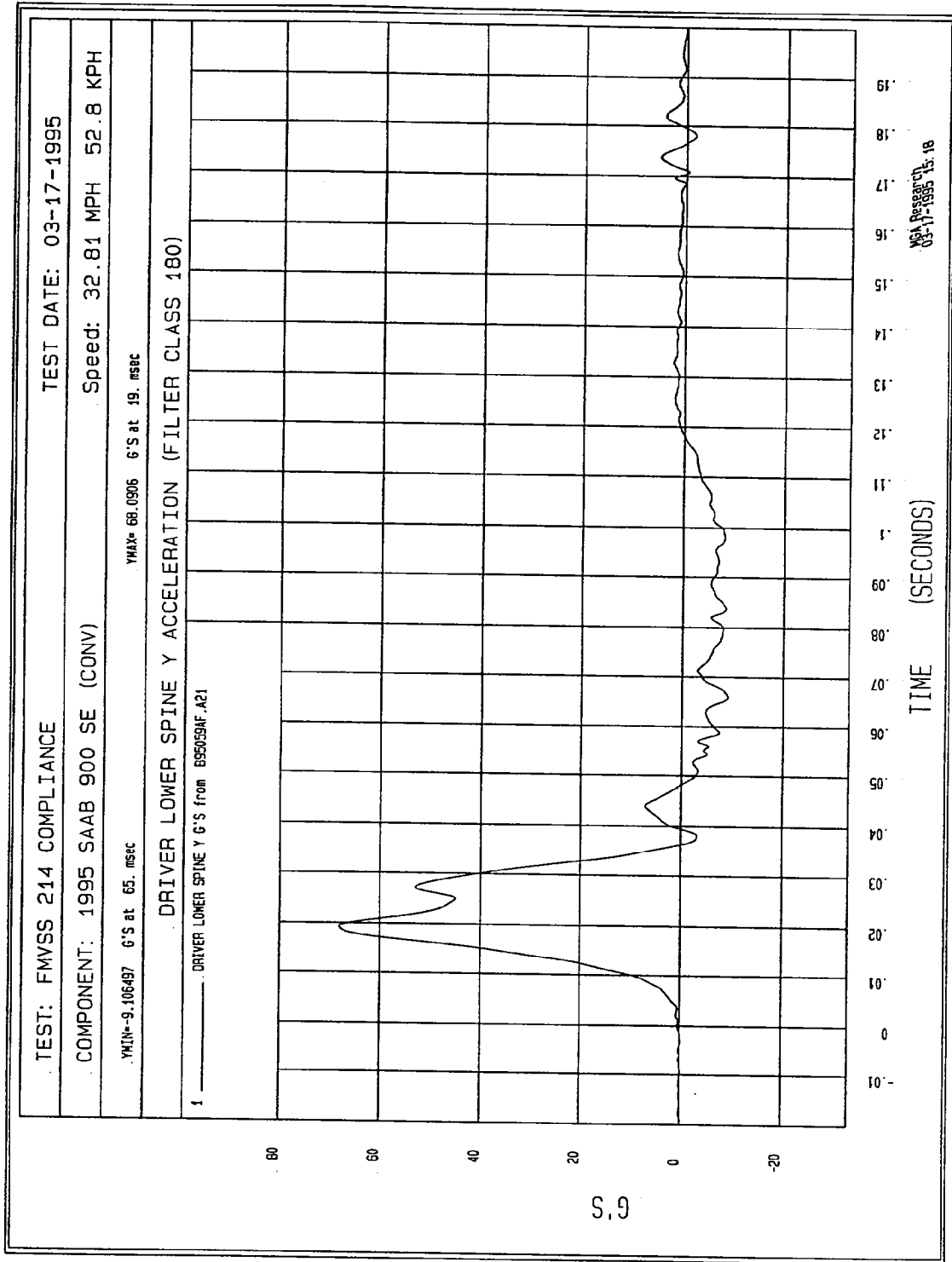


Figure B-5 - Driver Lower Spine Y Acceleration vs. Time

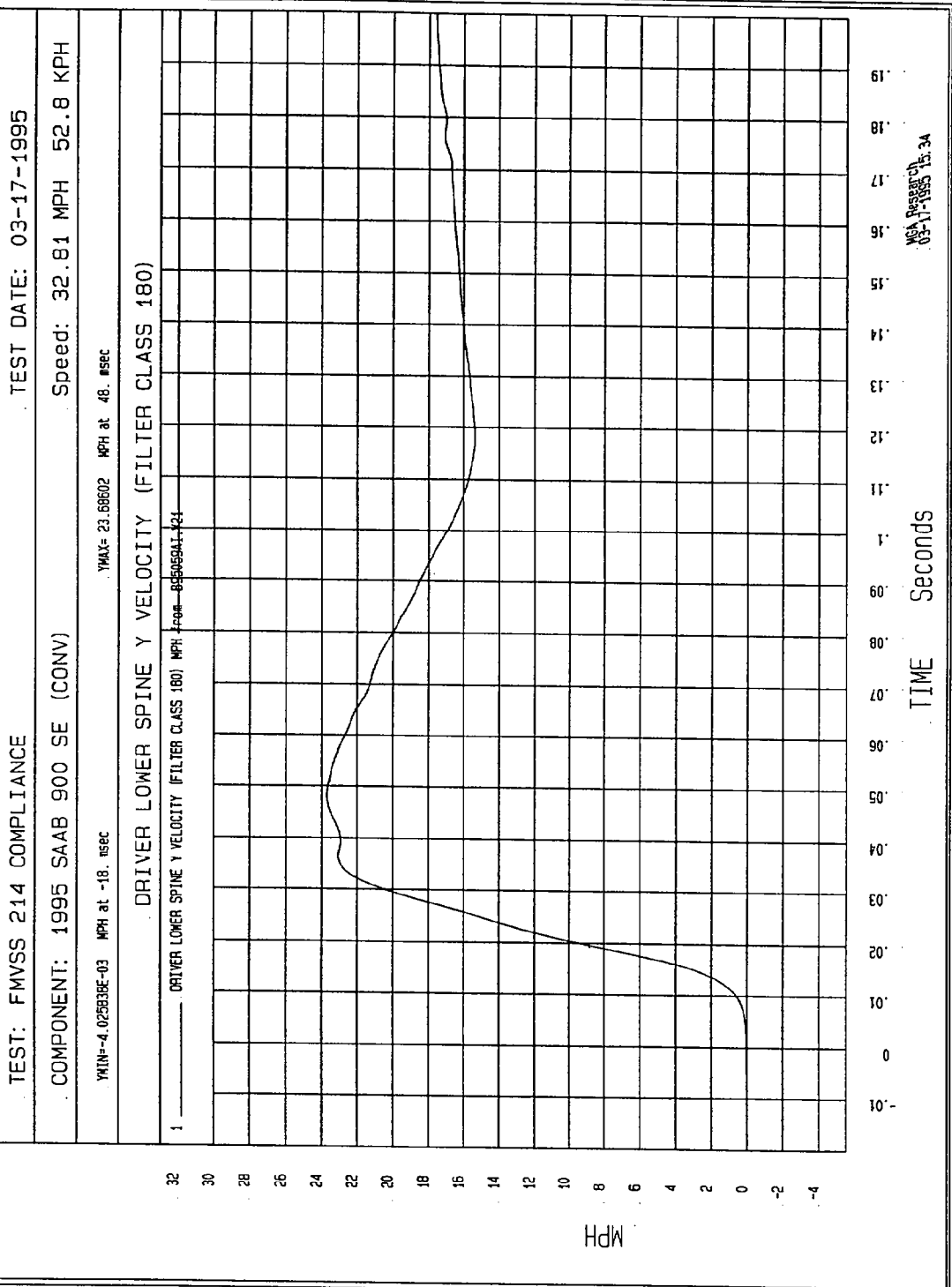


Figure B-6 - Driver Lower Spine Y Velocity vs. Time

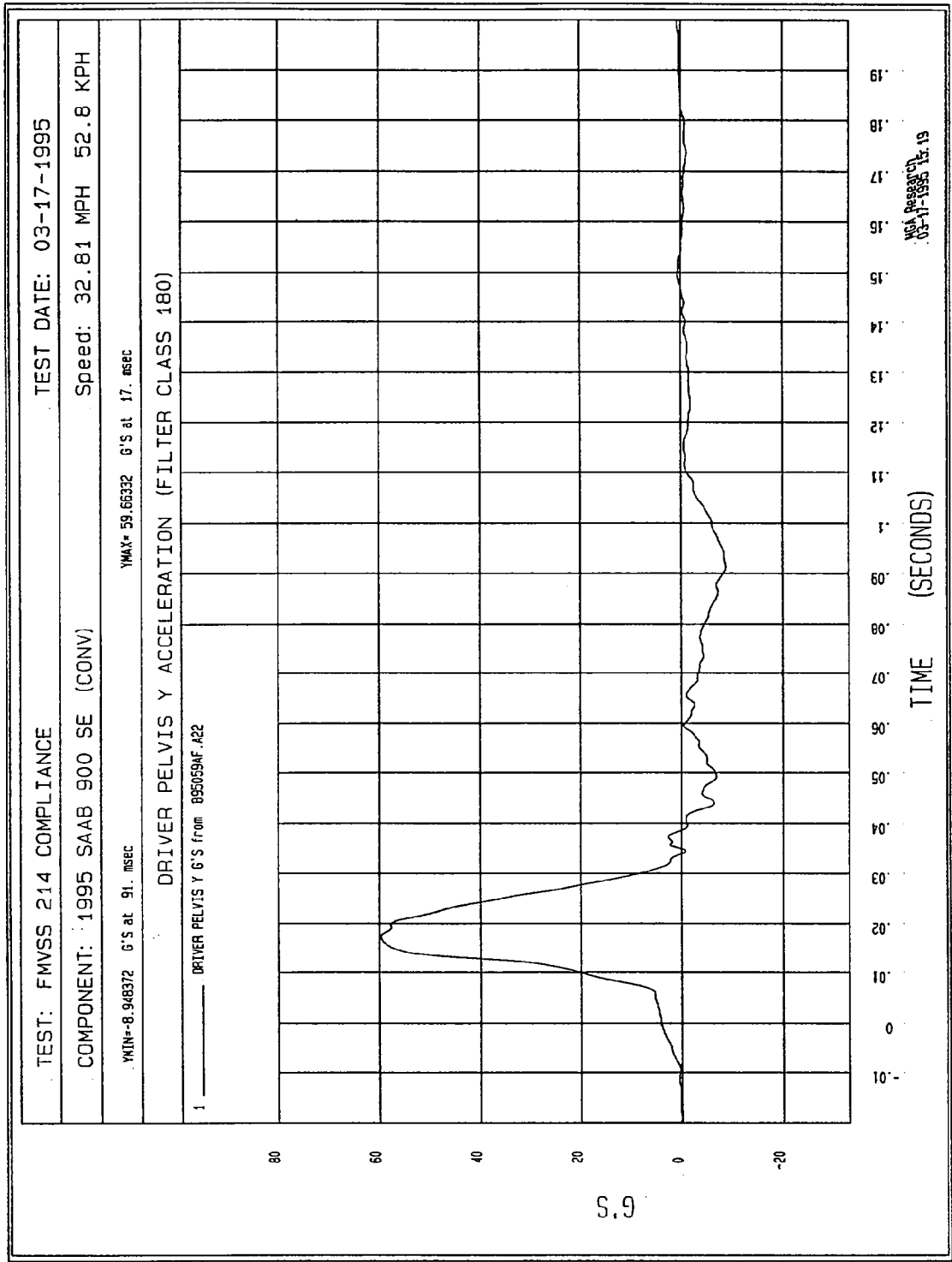
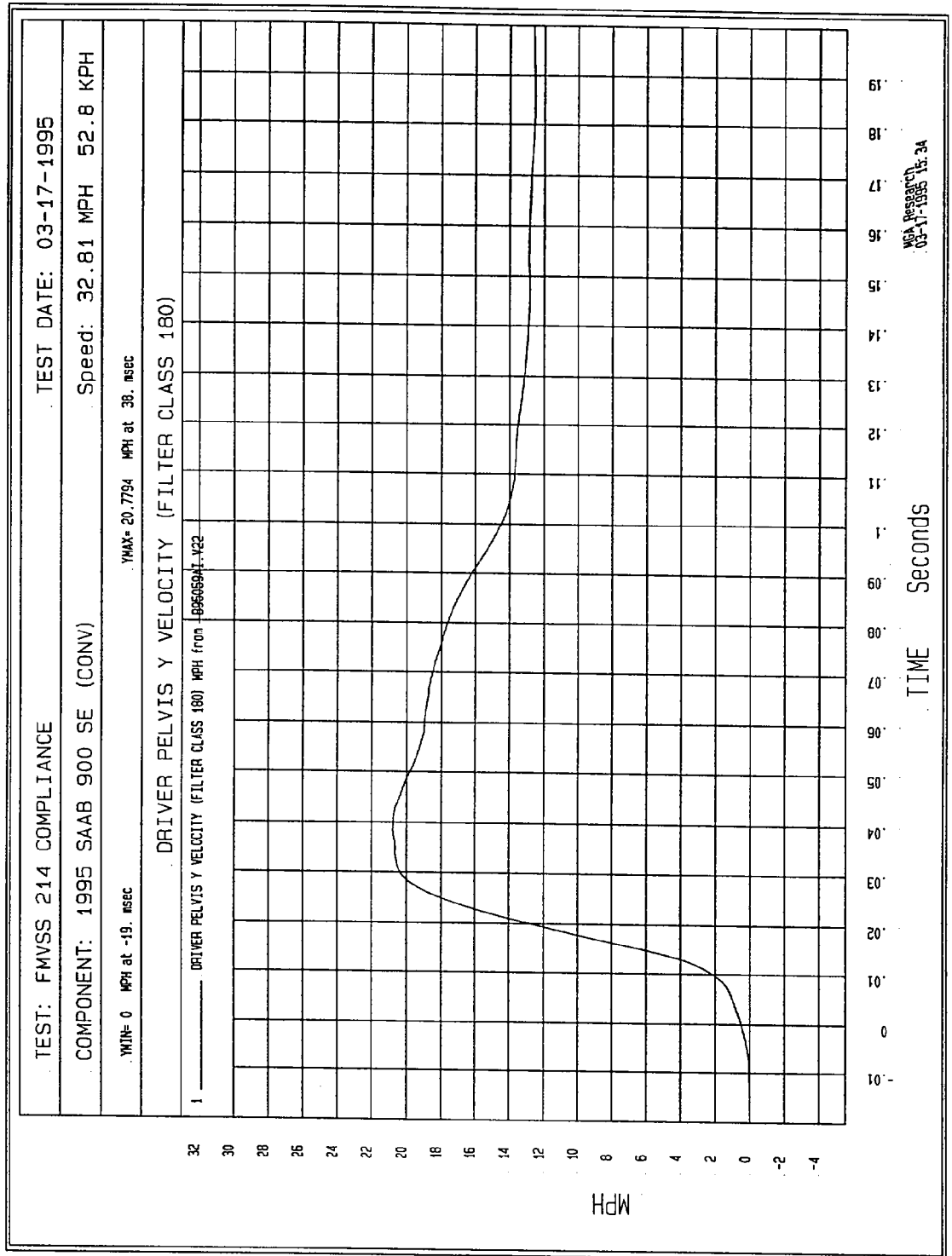


Figure B-7 - Driver Pelvis Y Acceleration vs. Time



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

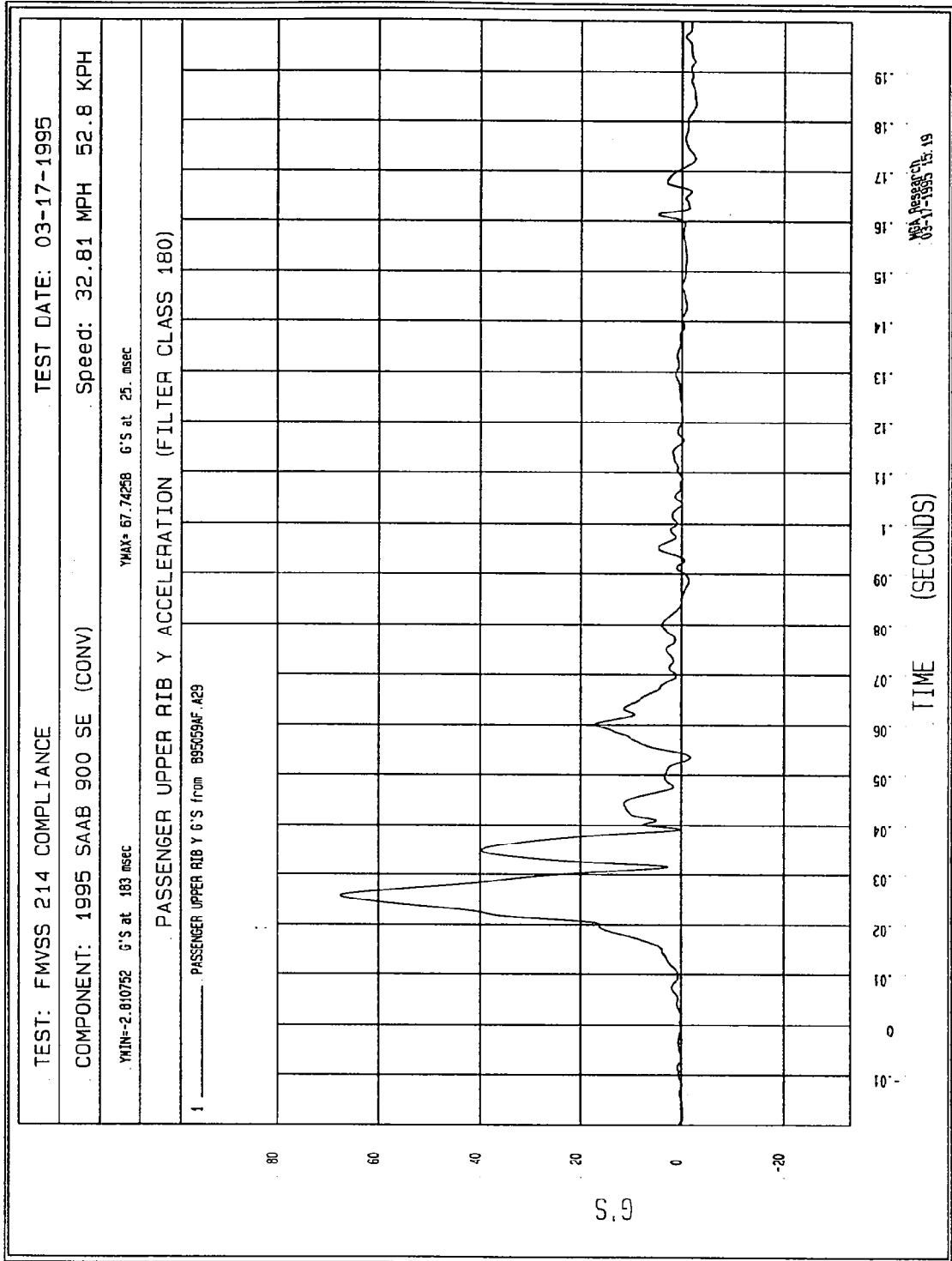


Figure B-9 - Passenger Upper Rib Y Acceleration vs. Time

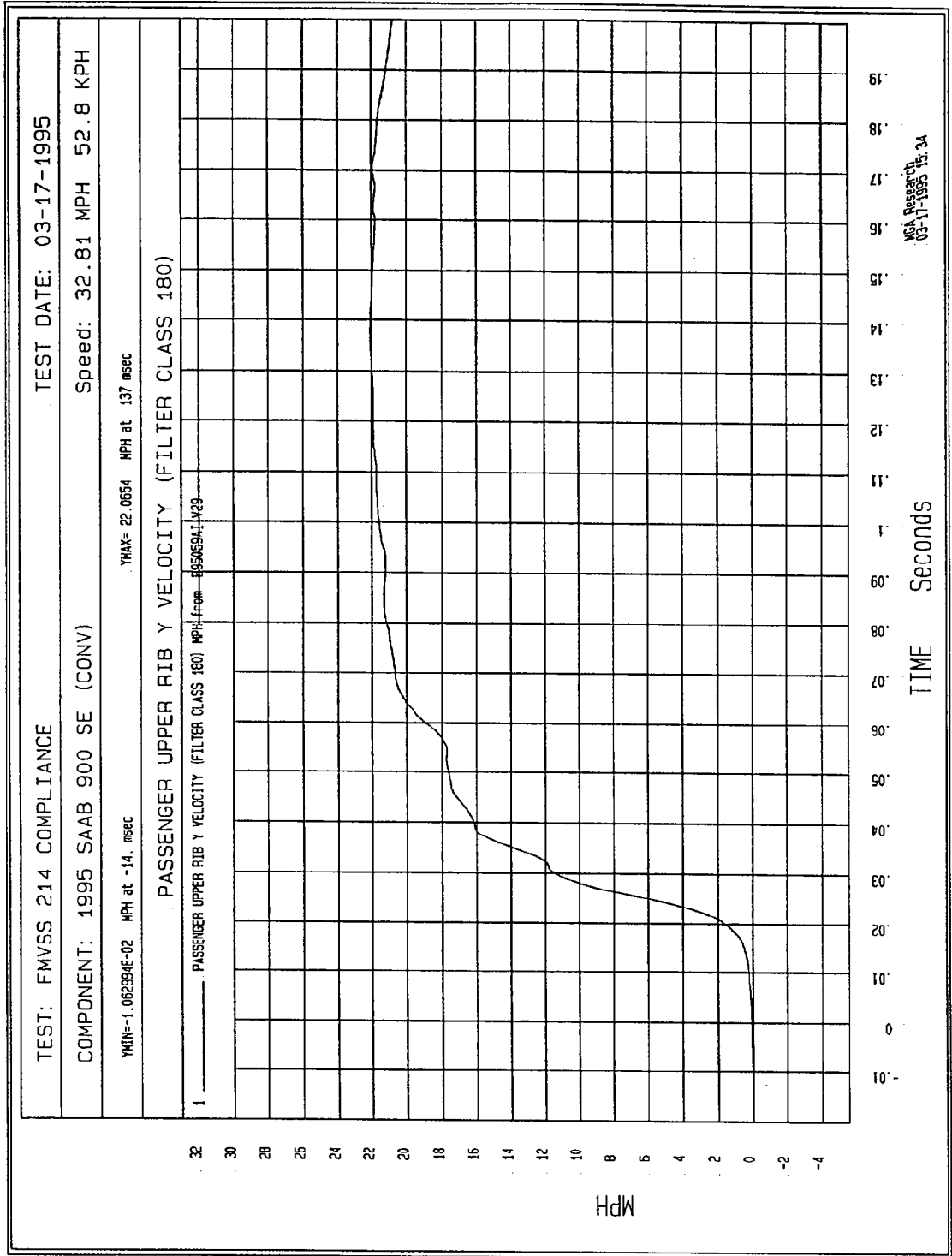


Figure B-10 - Passenger Upper Rib Y Velocity vs. Time

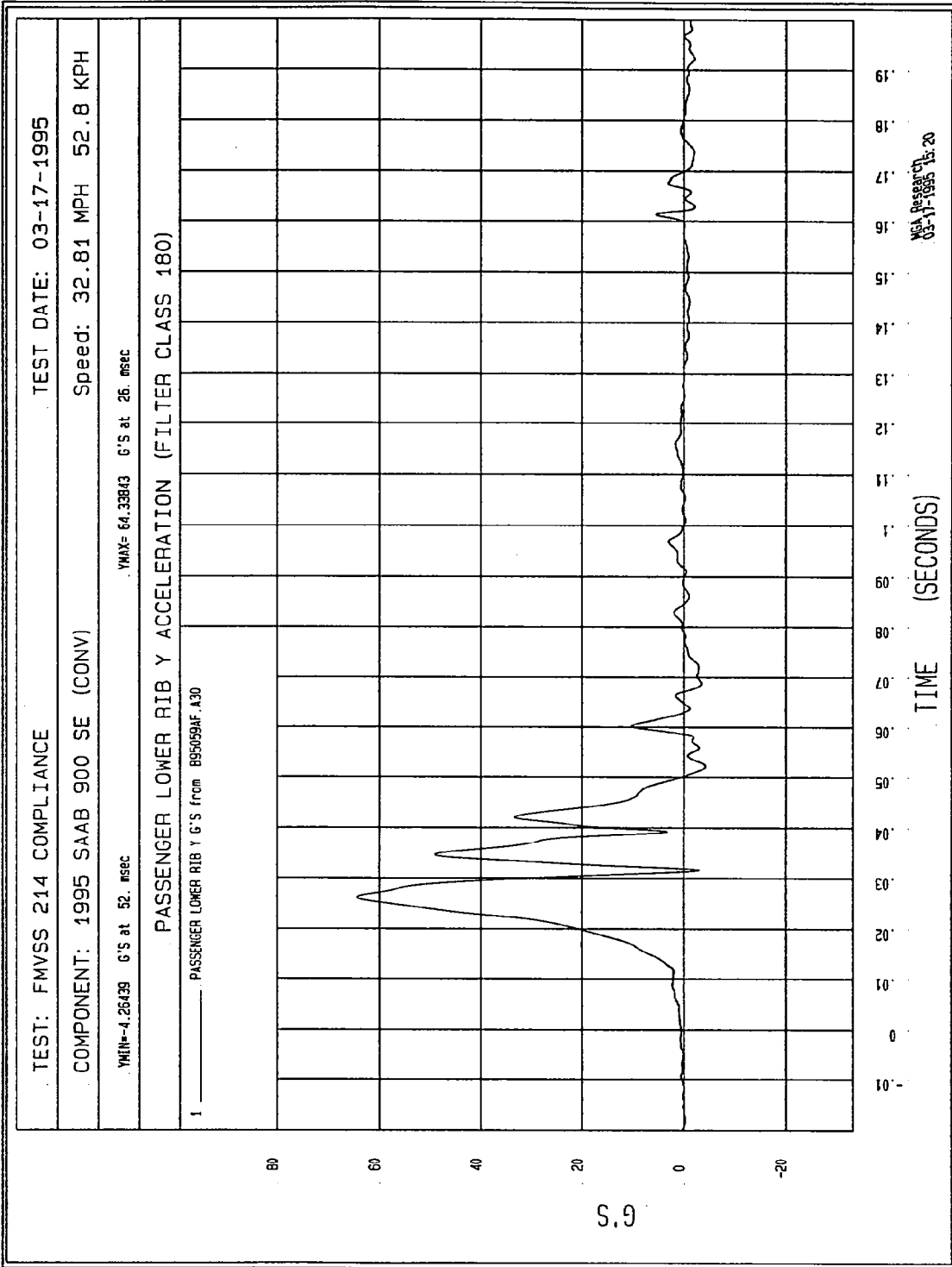
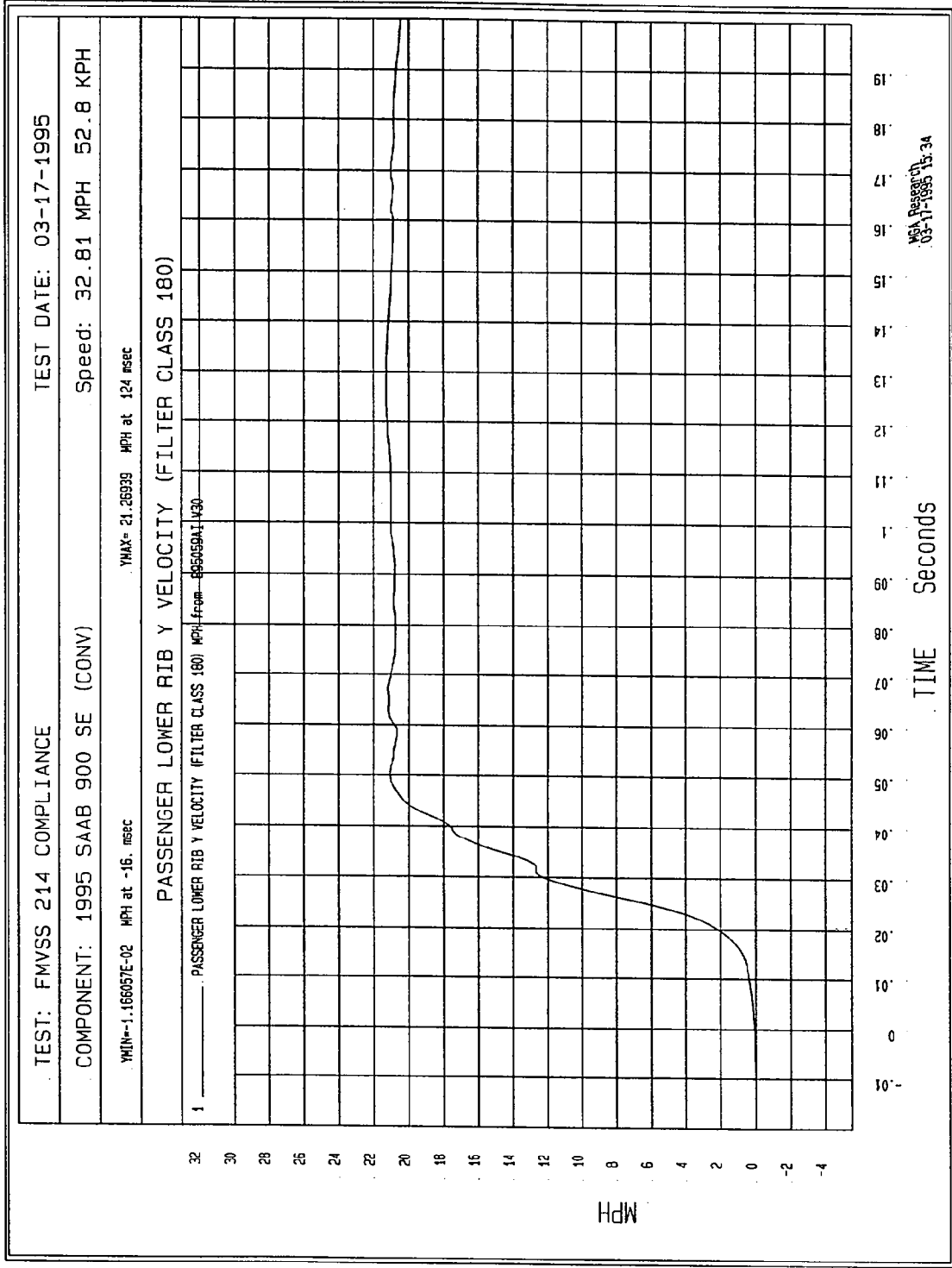


Figure B-11 - Passenger Lower Rib Y Acceleration vs. Time



B-12

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

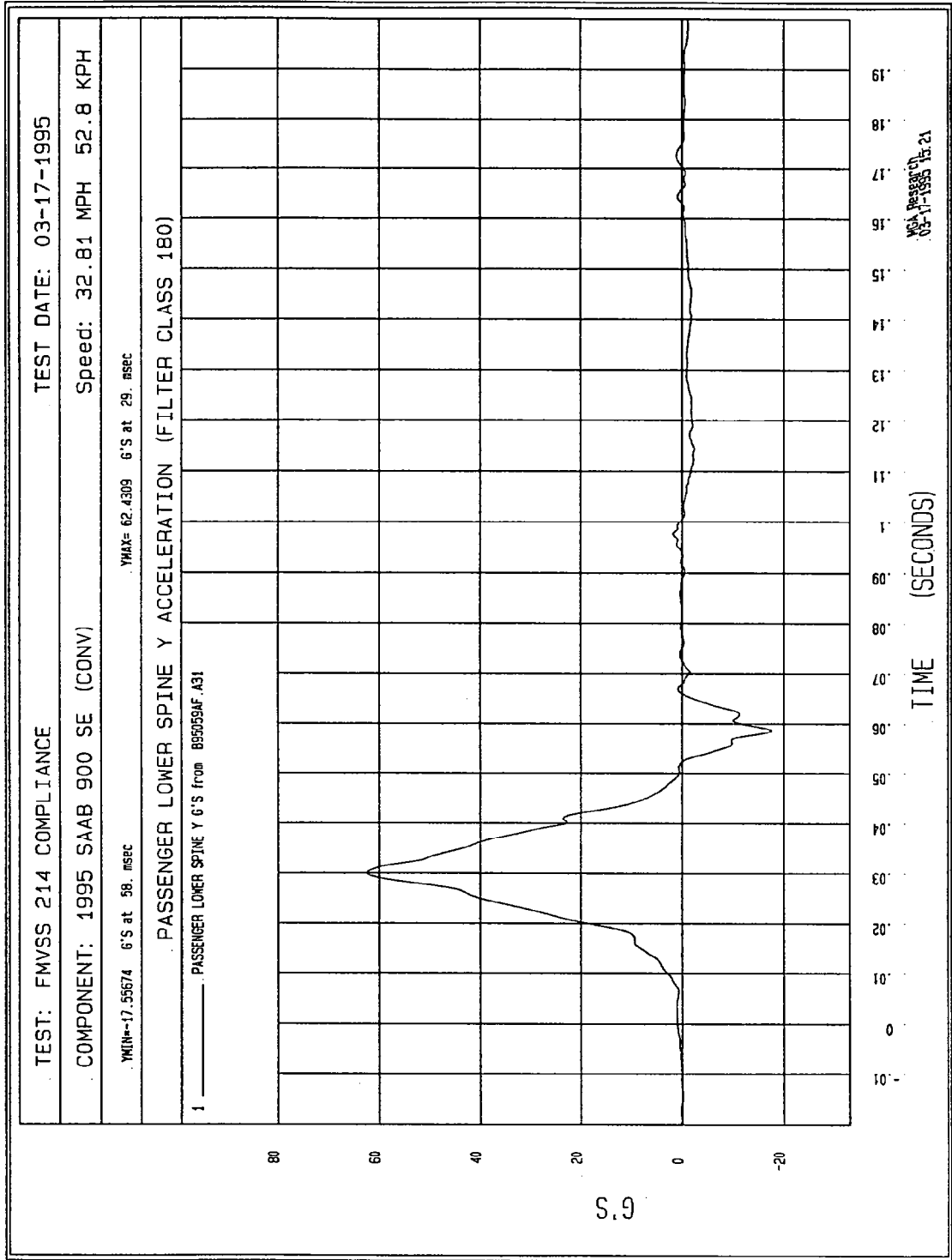


Figure B-13 - Passenger Lower Spine Y Acceleration vs. Time

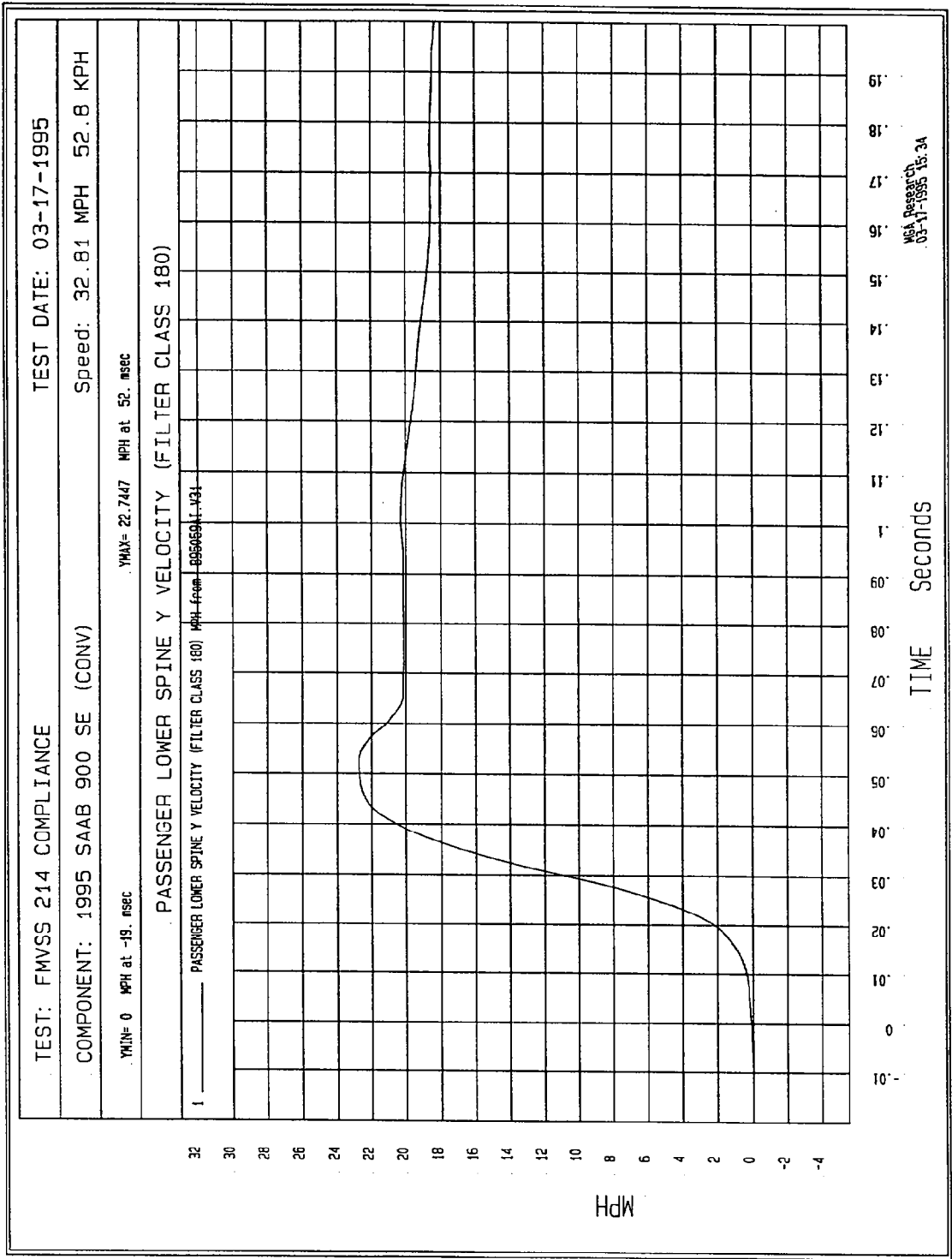
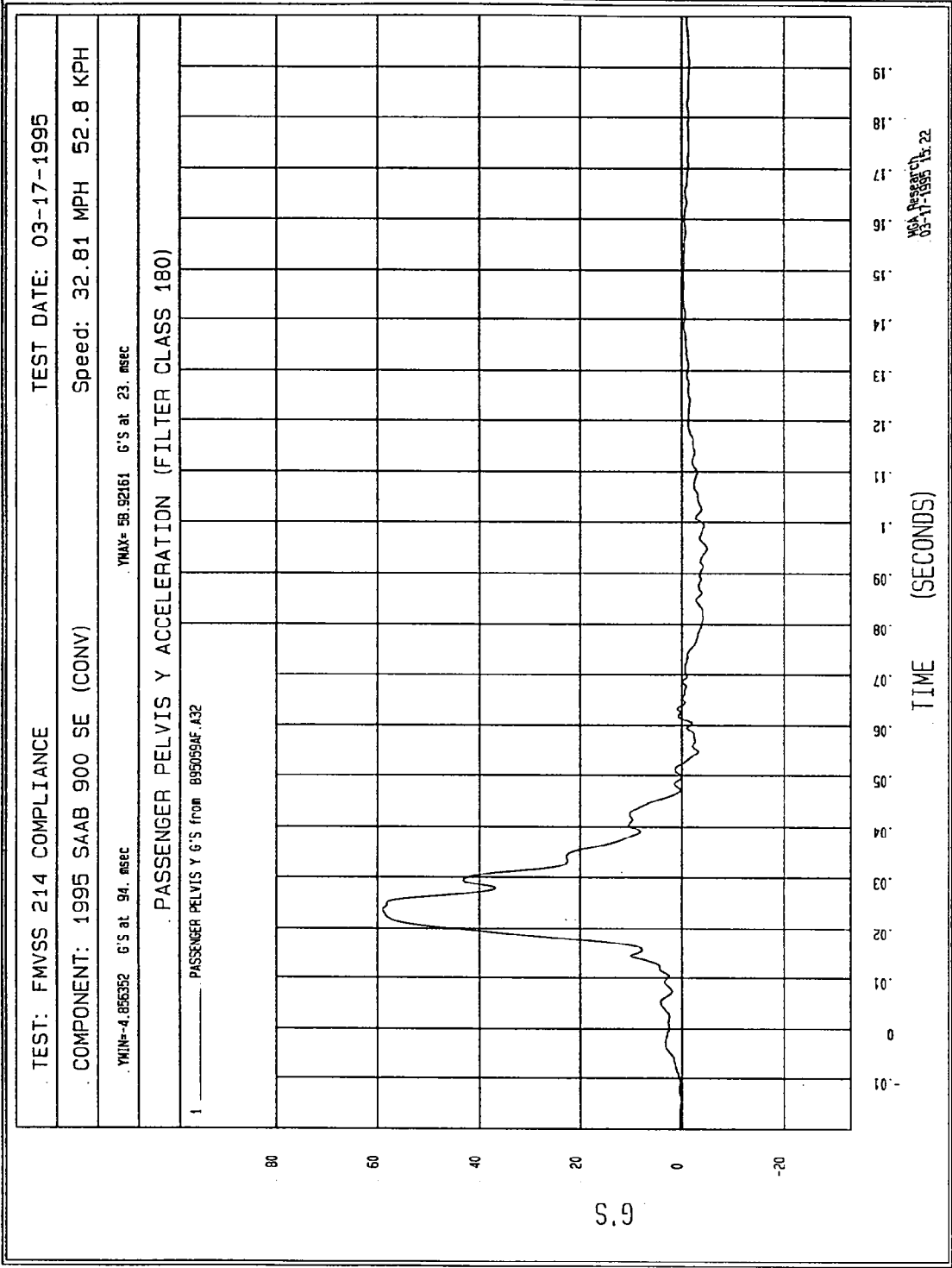
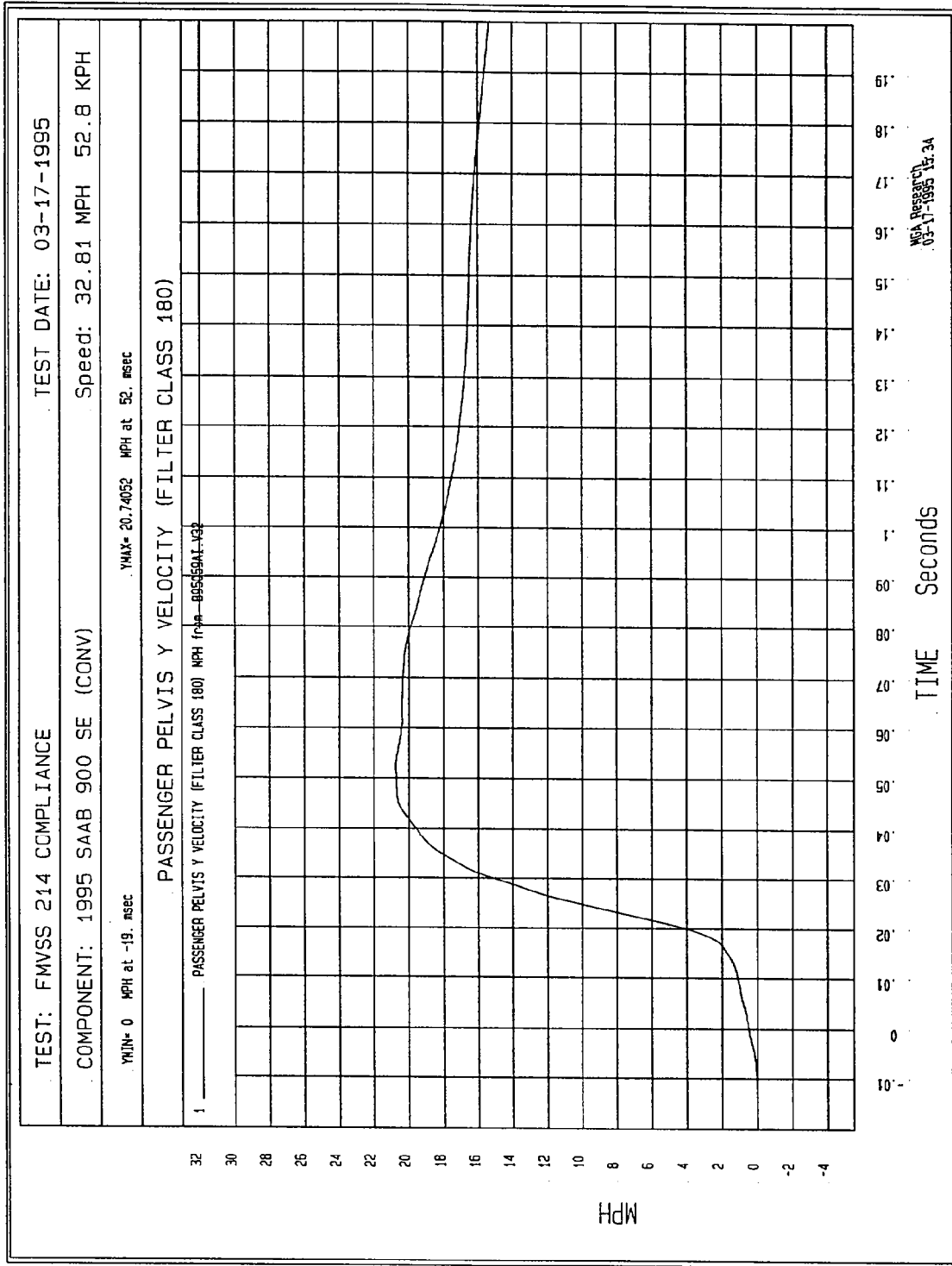


Figure B-14 - Passenger Lower Spine Y Velocity vs. Time





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

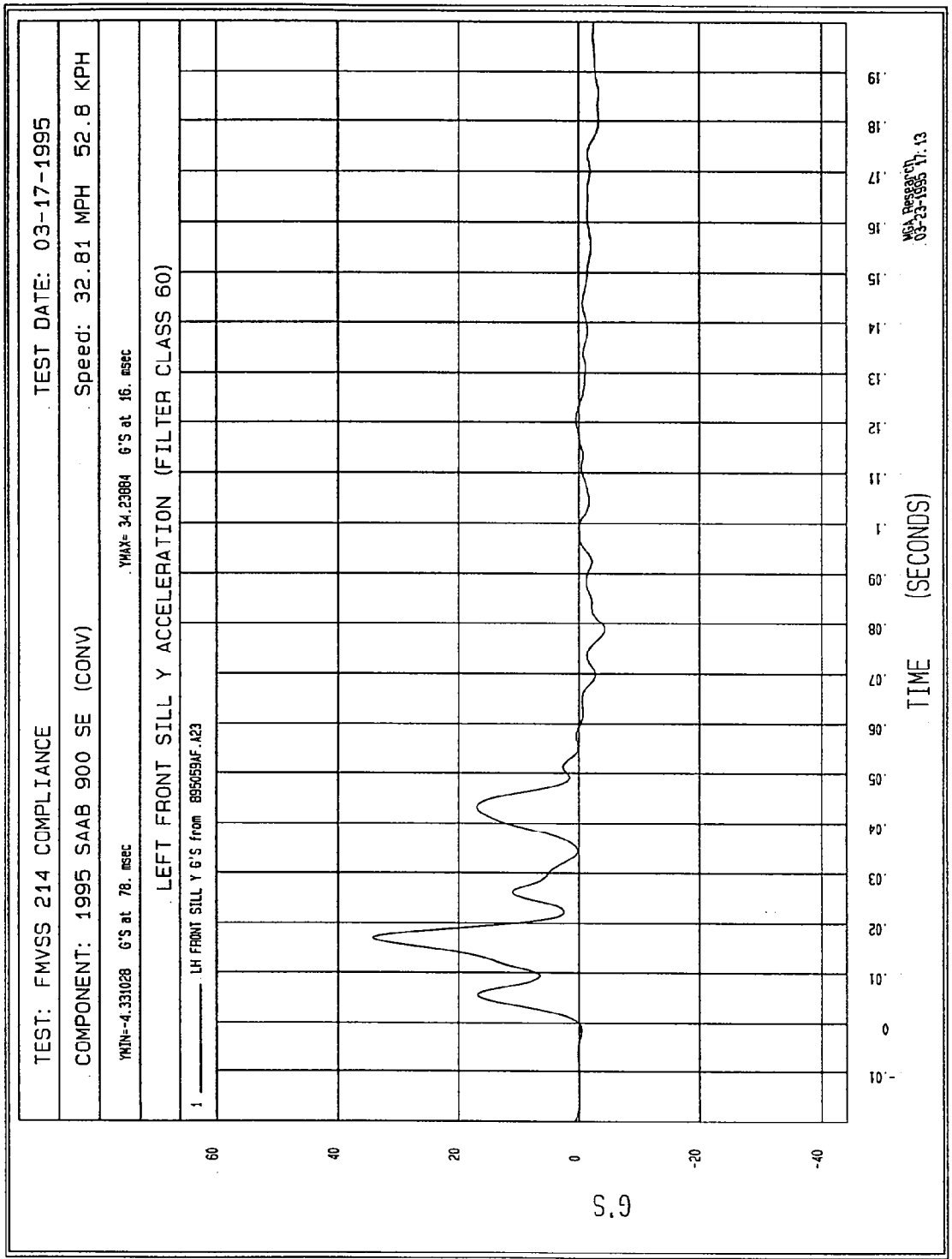


Figure B-17 - Left Front Sill Y Acceleration vs. Time

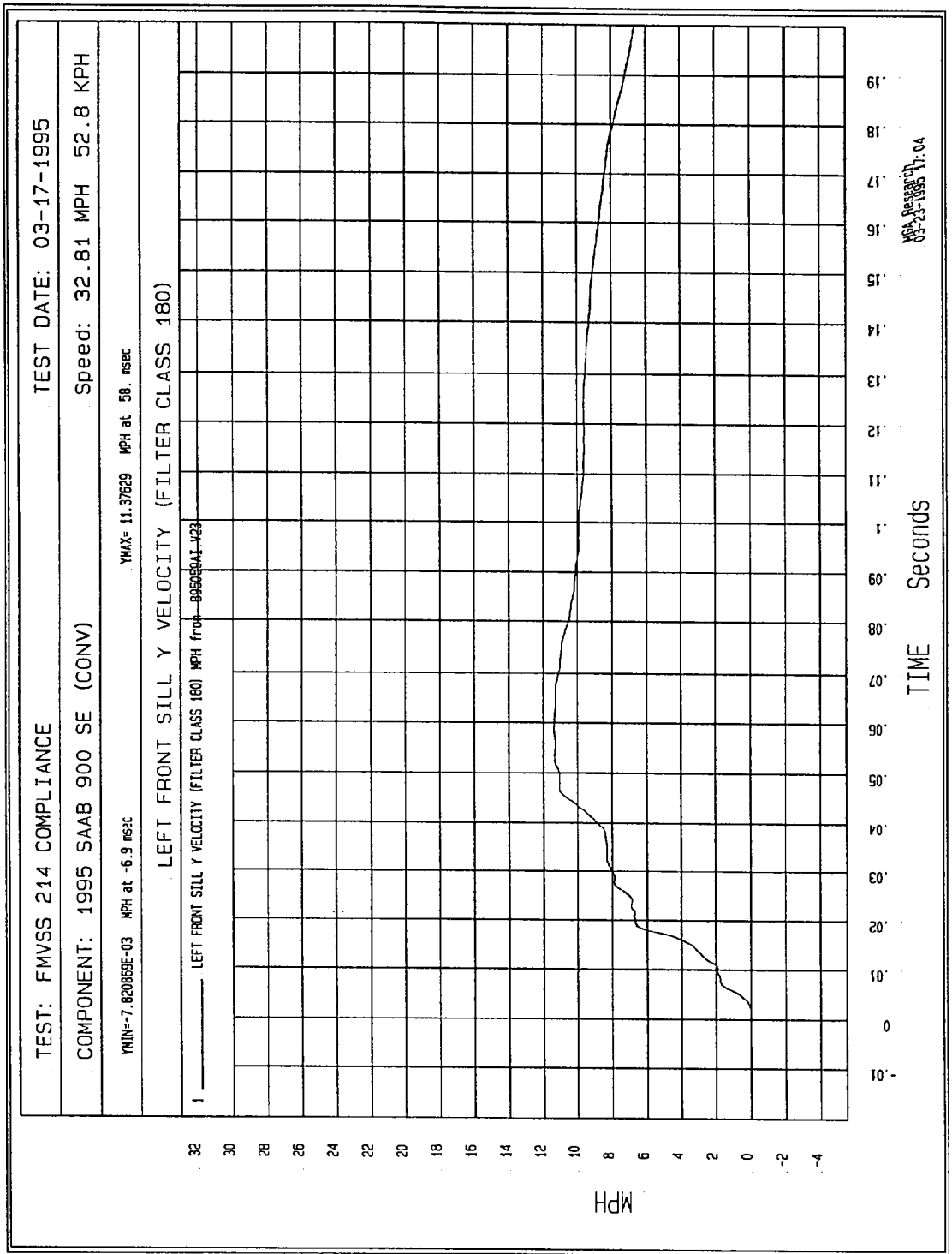


Figure B-18 - Left Front Sill Y Velocity vs. Time

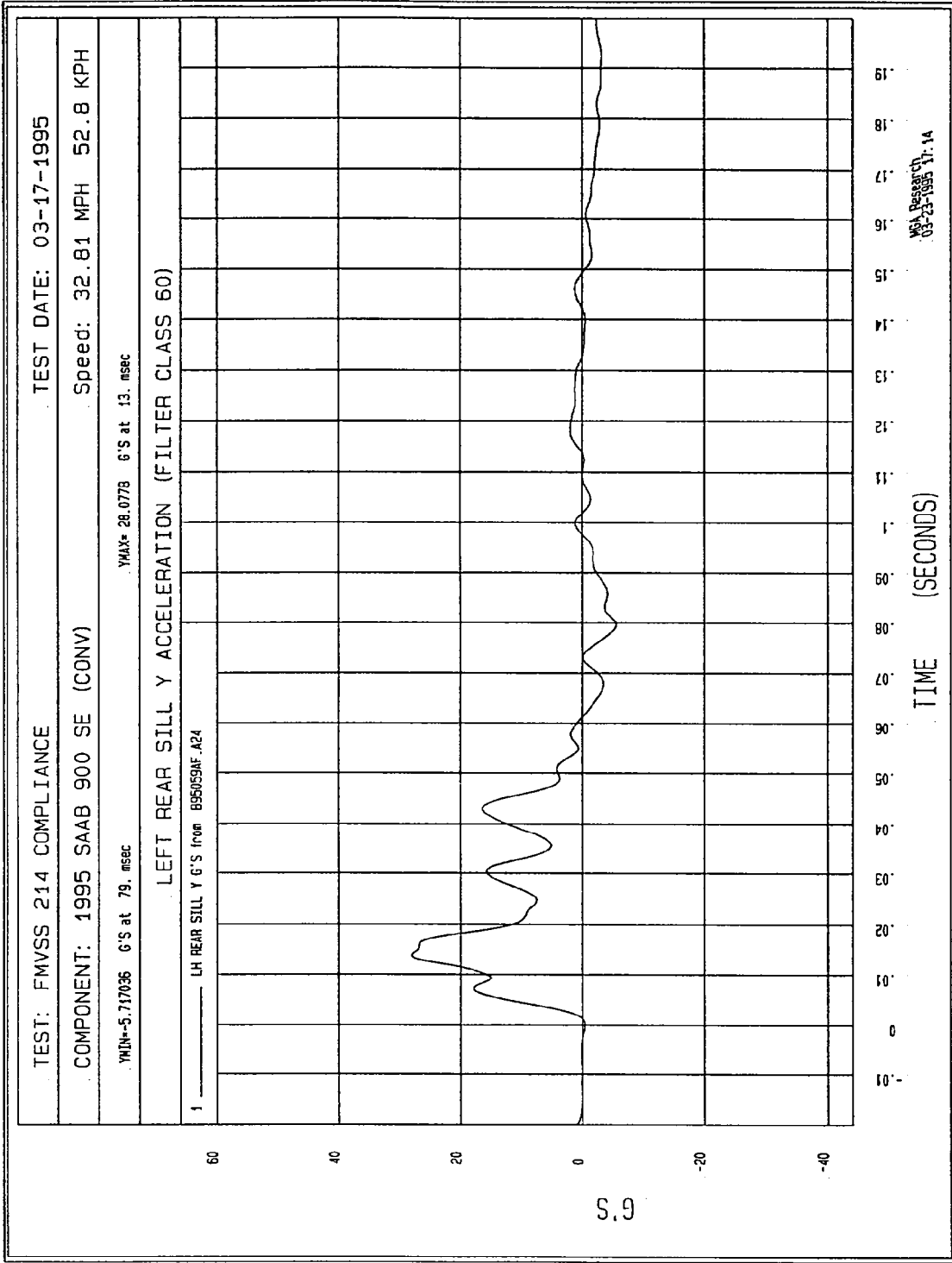


Figure B-19 - Left Rear Sill Y Acceleration vs. Time

TEST: FMVSS 214 COMPLIANCE TEST DATE: 03-17-1995

COMPONENT: 1995 SAAB 900 SE (CONV) Speed: 32.81 MPH 52.8 KPH

YMIN= 0 MPH at -19. msec YMAX= 14.22743 MPH at 51. msec

LEFT REAR SILL Y VELOCITY (FILTER CLASS 180)

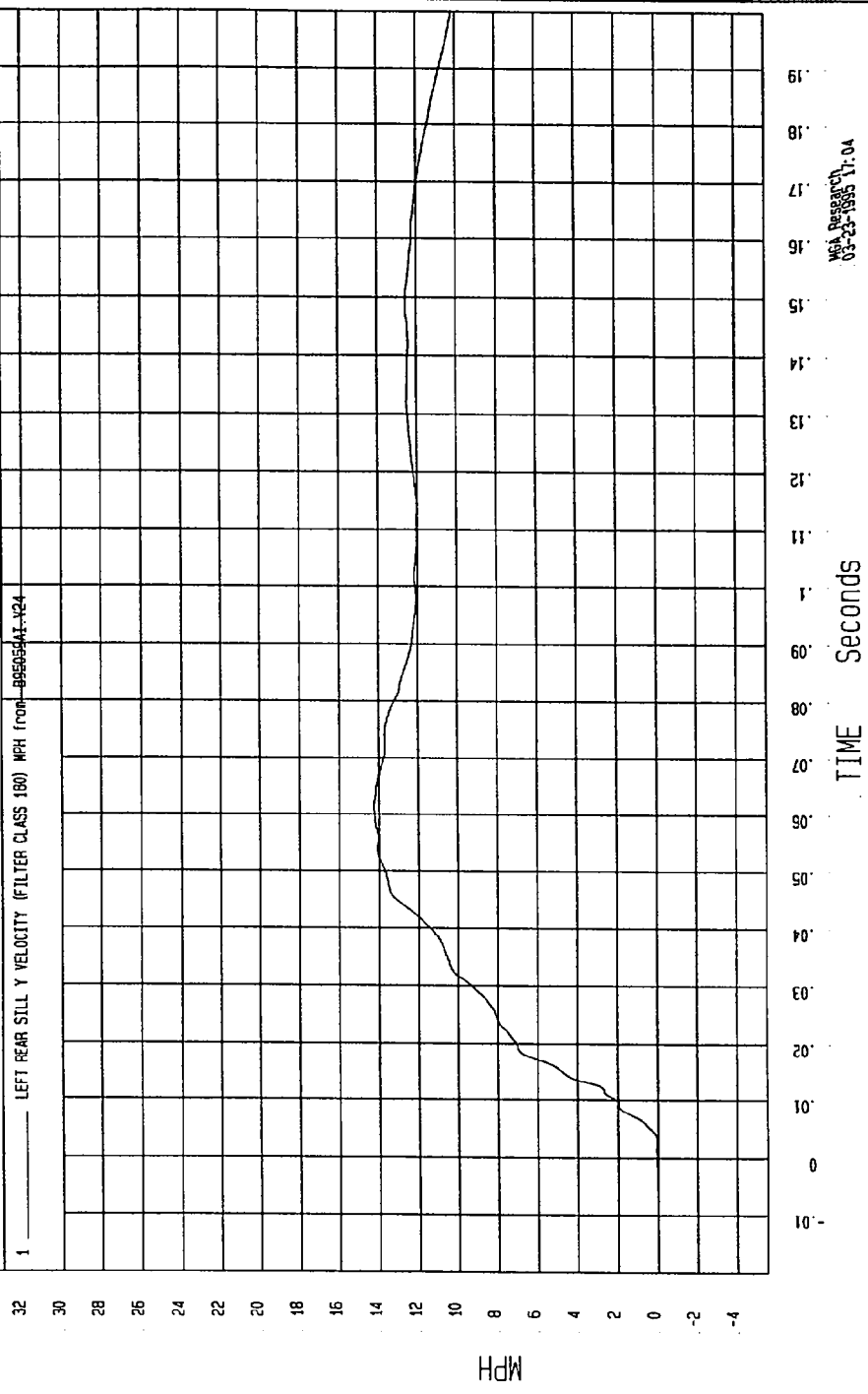


Figure B-20 - Left Rear Sill Y Velocity vs. Time

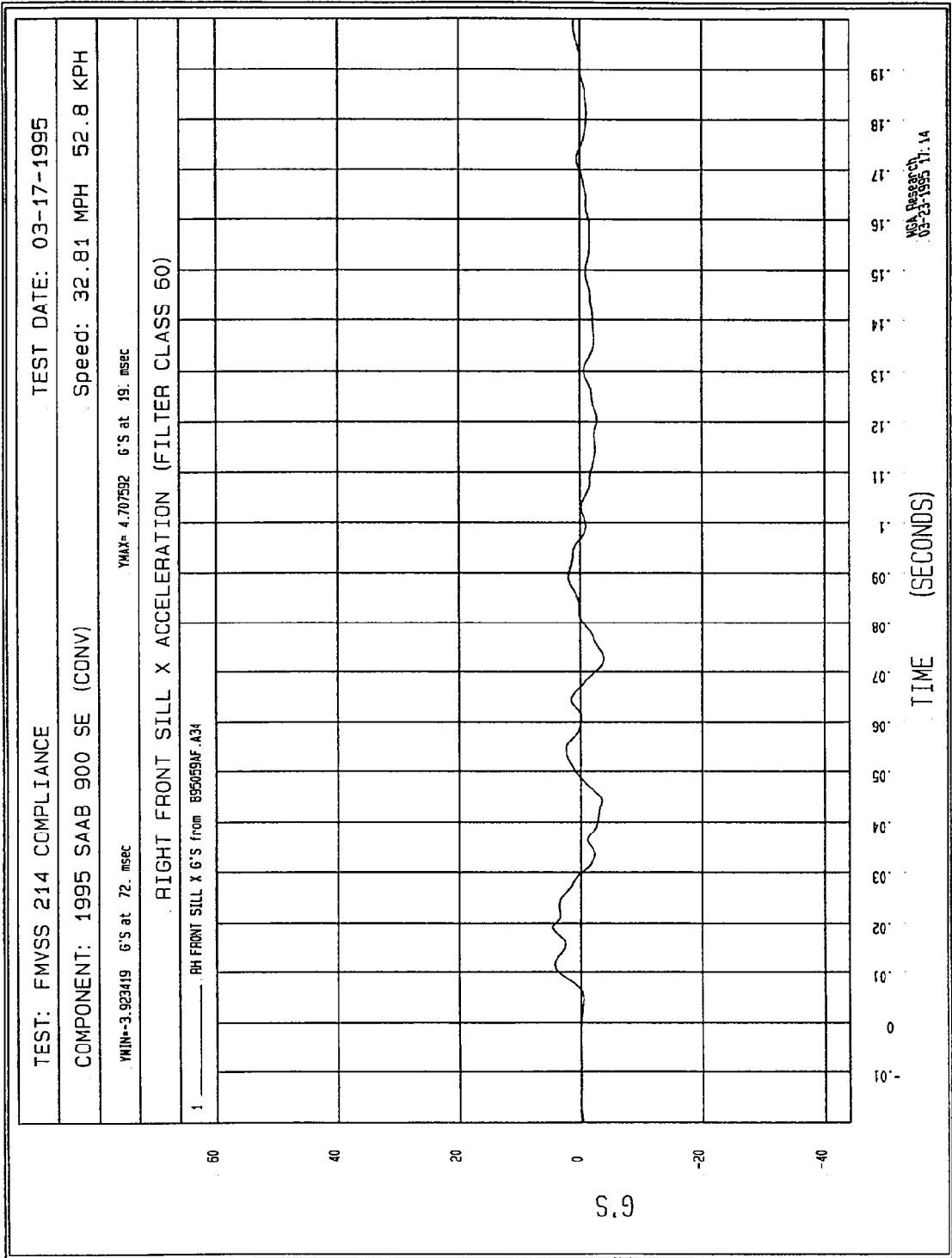


Figure B-21 - Right Front Sill X Acceleration vs. Time

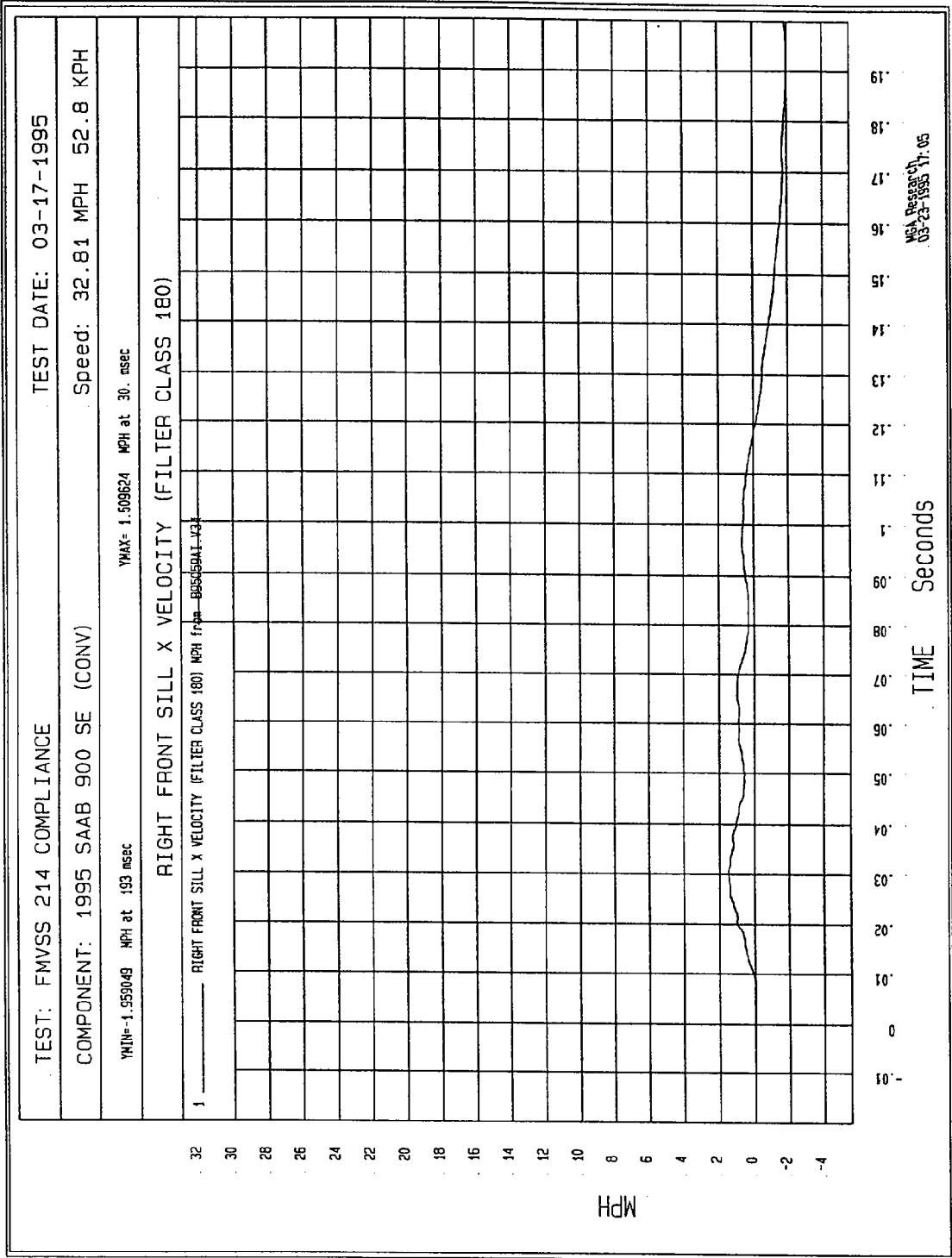


Figure B-22 - Right Front Sill X Velocity vs. Time

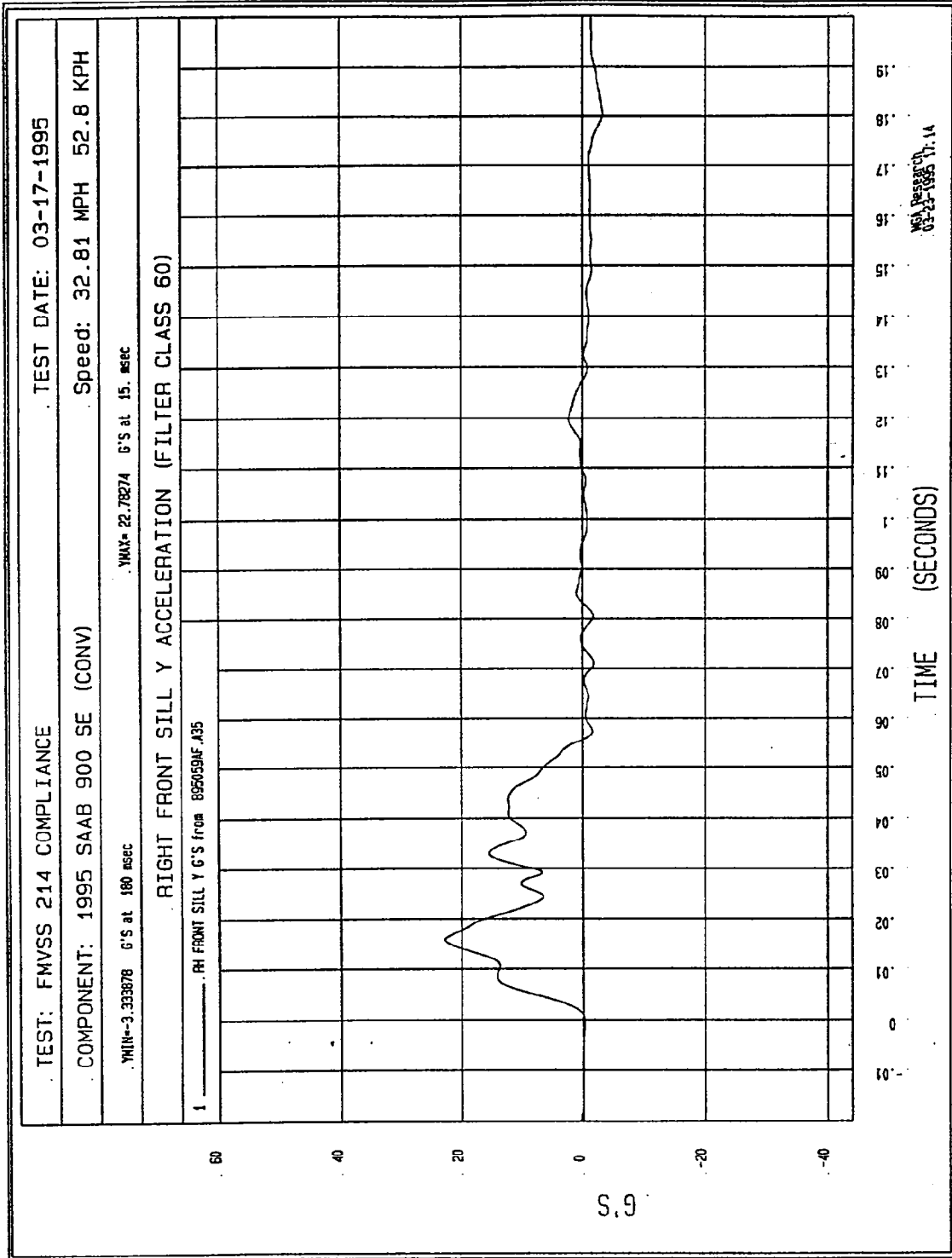


Figure B-28 - Right Front Sill Y Acceleration vs. Time

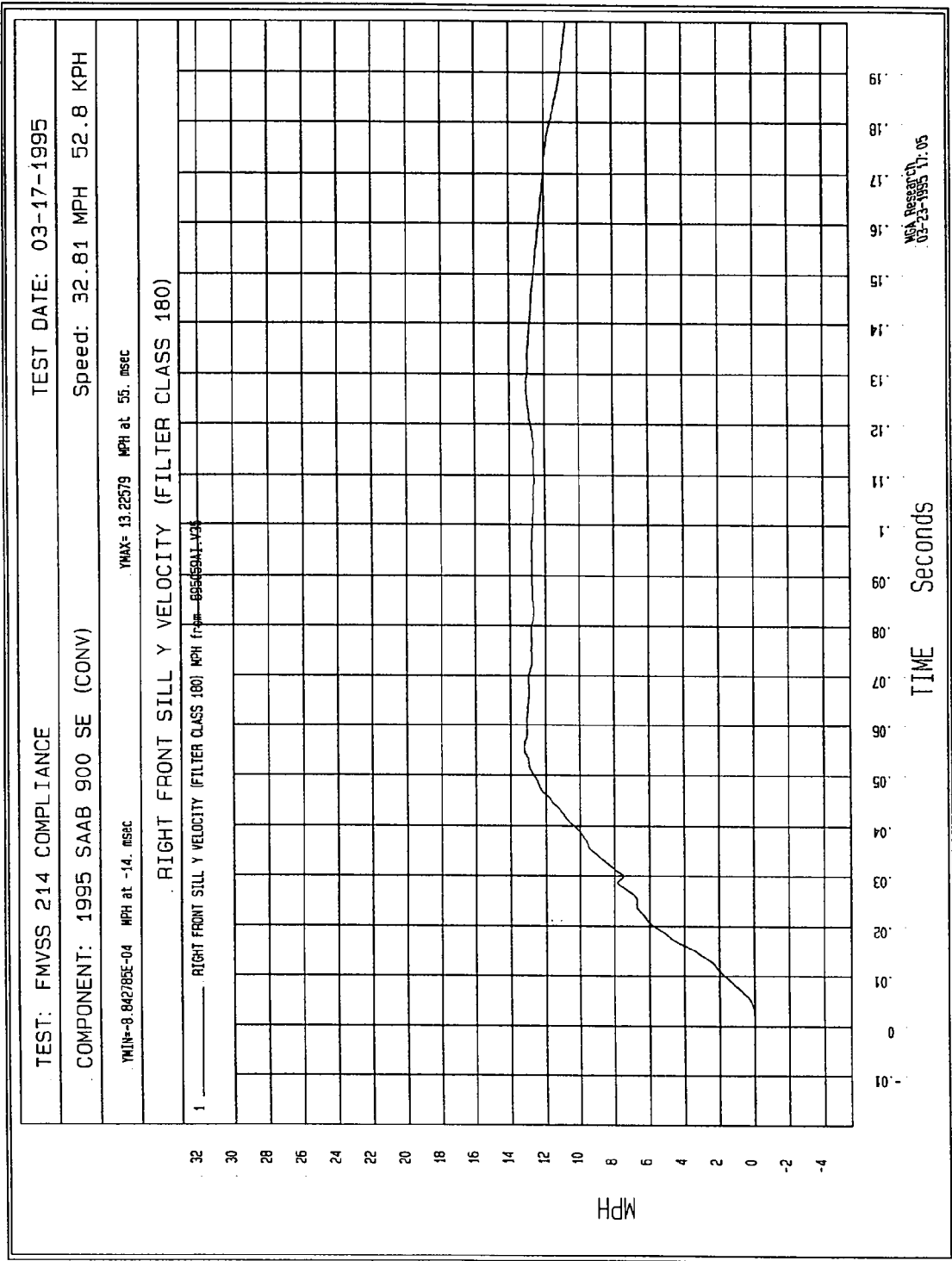


Figure B-24 - Right Front Sill Y Velocity vs. Time

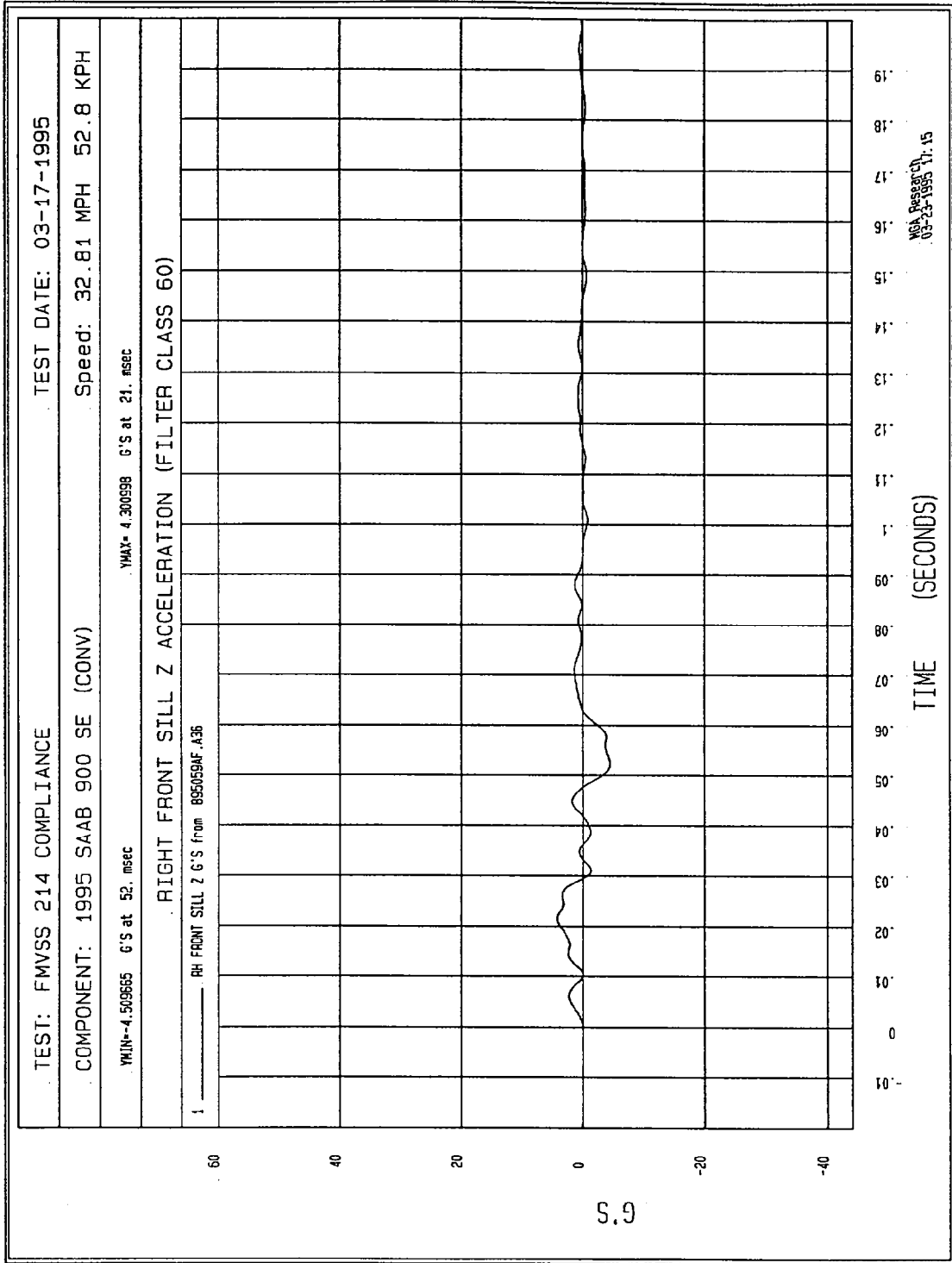


Figure B-25 - Right Front Sill Z Acceleration vs. Time

TEST: FMVSS 214 COMPLIANCE TEST DATE: 03-17-1995

SPEED: 32.81 MPH 52.8 KPH

COMPONENT: 1995 SAAB 900 SE (CONV)

YMIN=-2.071726E-03 MPH at -15. msec

YMAX= 1.411291 MPH at 29. msec

RIGHT FRONT SILL Z VELOCITY (FILTER CLASS 180)

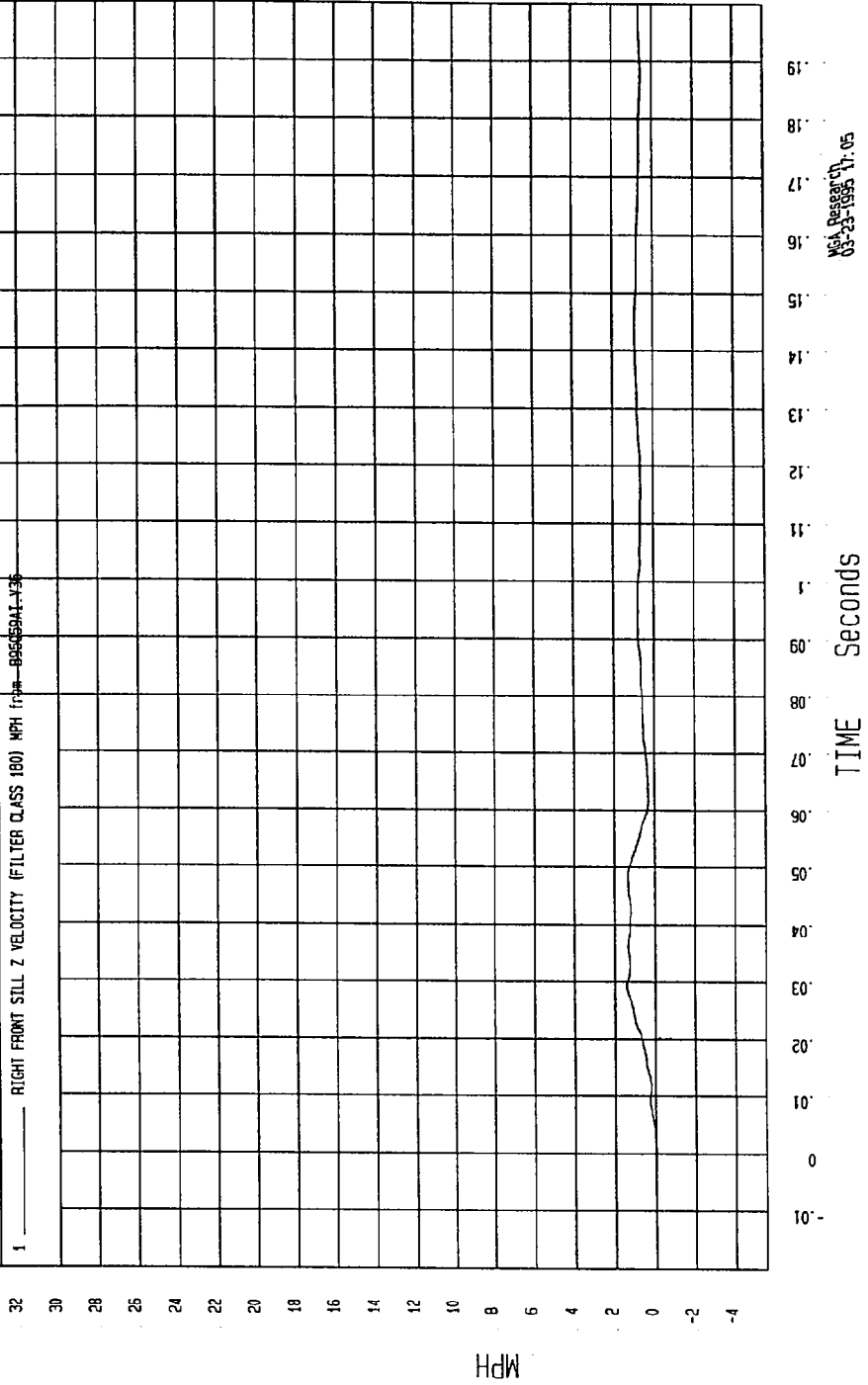


Figure B-26 - Right Front Sill Z Velocity vs. Time

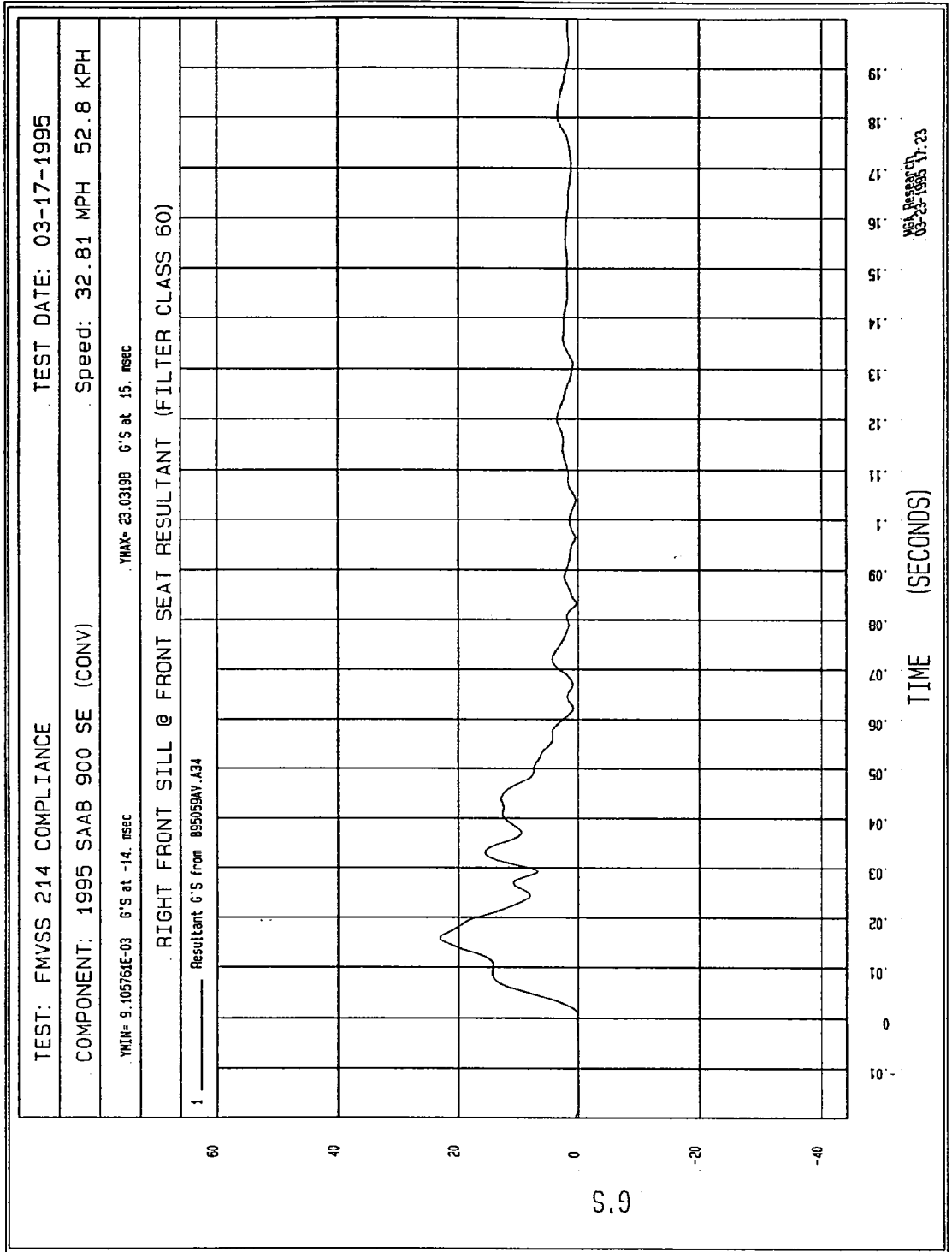


Figure B-27 - Right Front Sill at Front Seat Resultant vs. Time

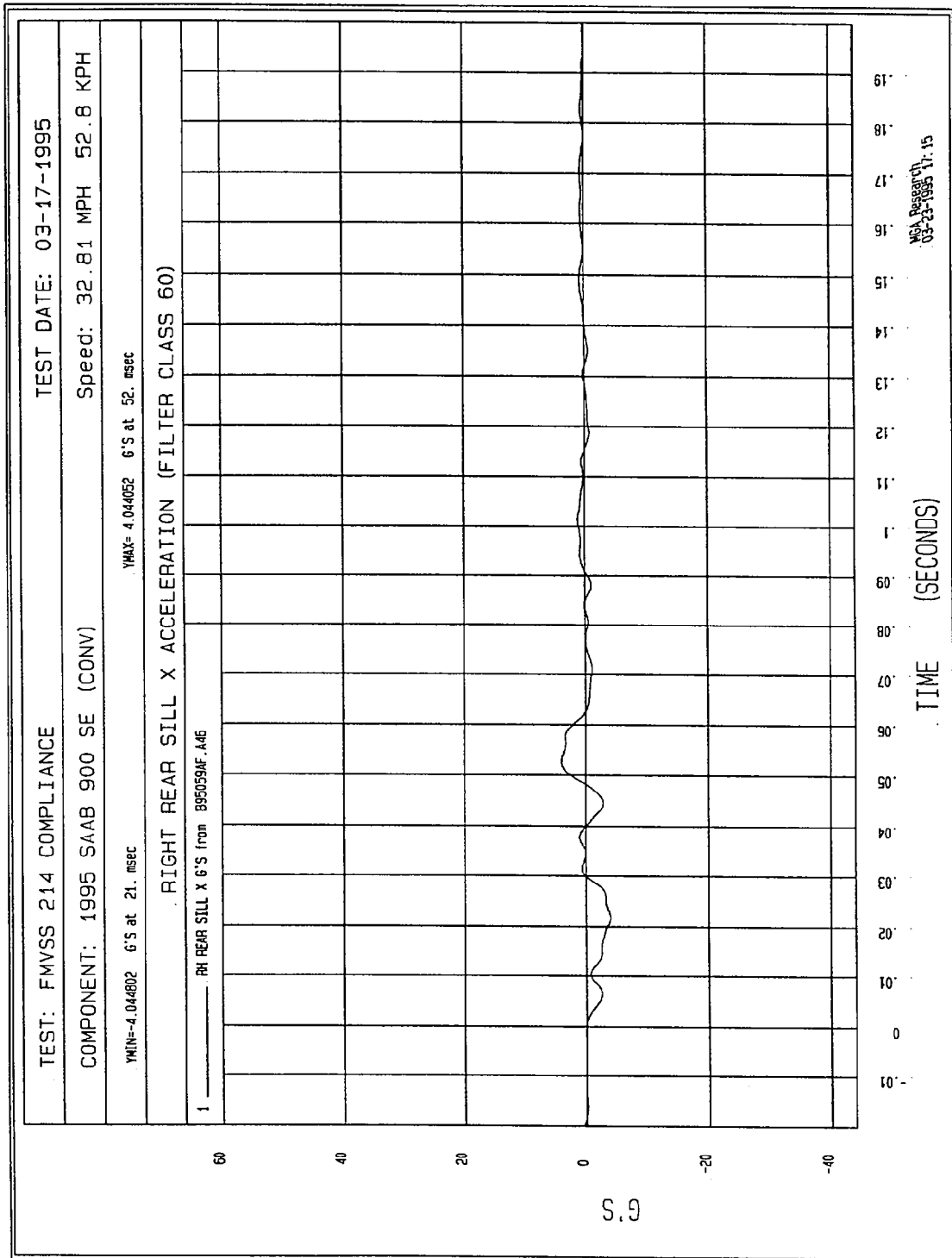
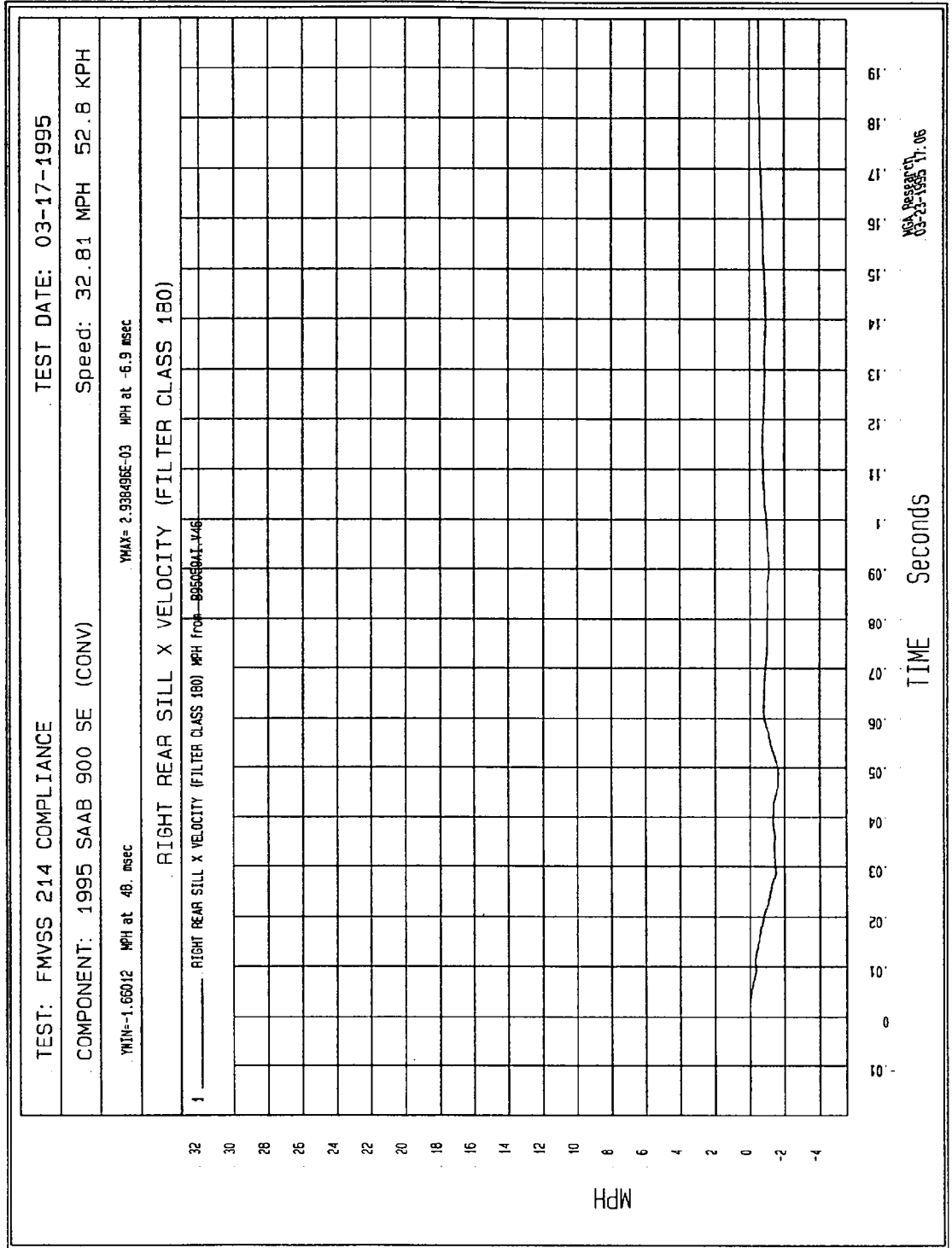


Figure B-28 - Right Rear Sill X Acceleration vs. Time



NSA 03-17-1995
 03-23-1995 11:06

Figure B-29 - Right Rear Sill X Velocity vs. Time

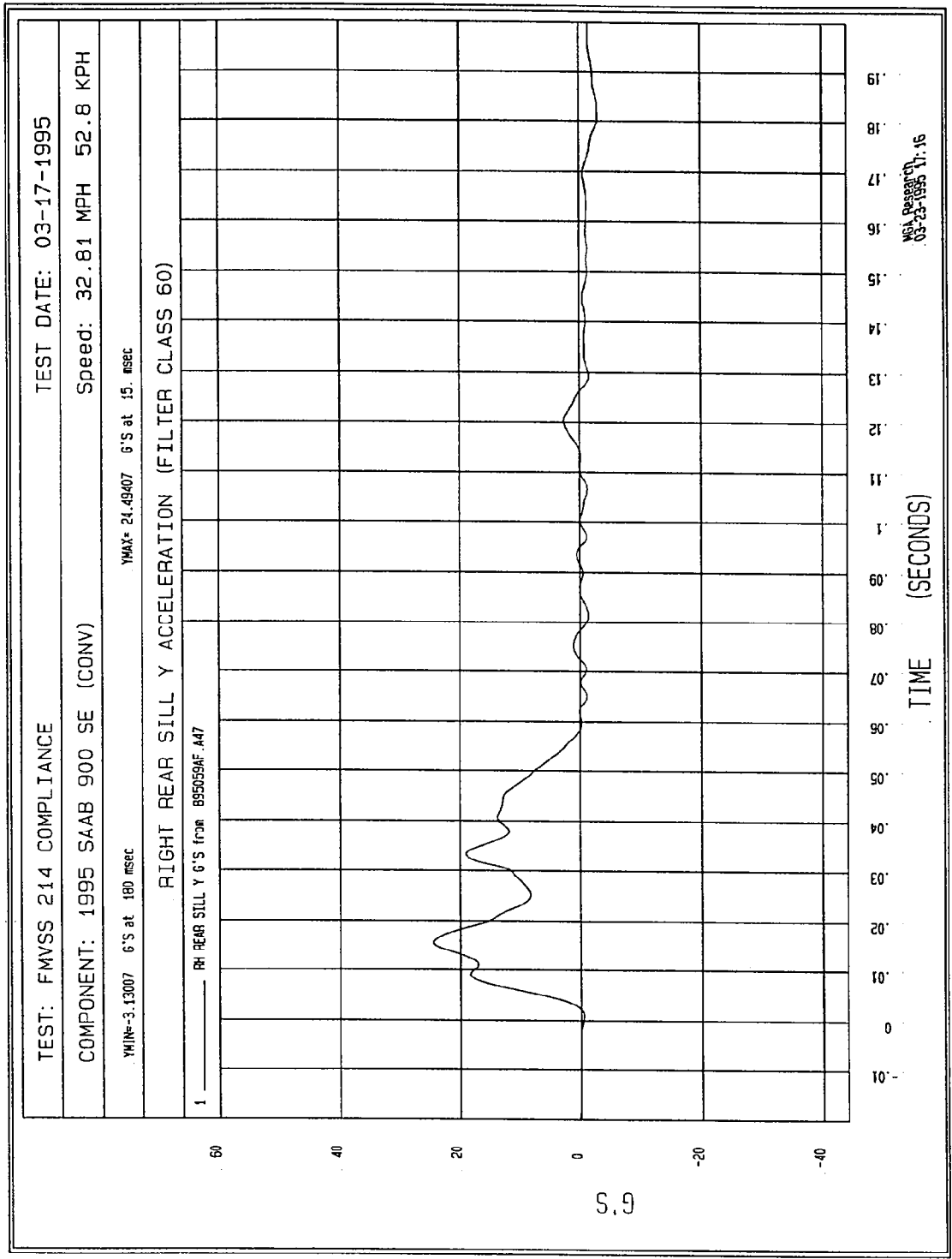


Figure B-30 - Right Rear Sill Y Acceleration vs. Time

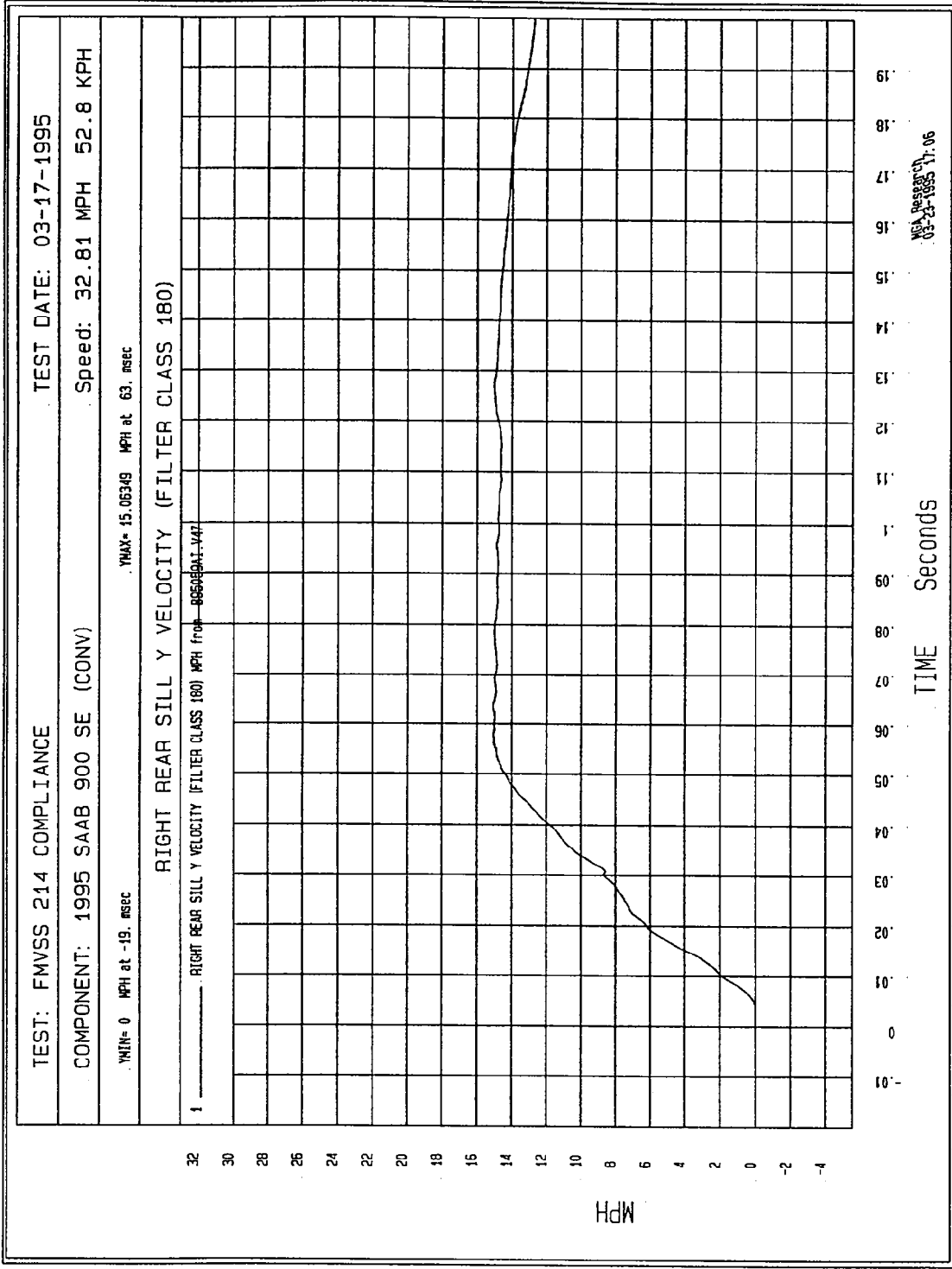


Figure B-31 - Right Rear Sill Y Velocity vs. Time

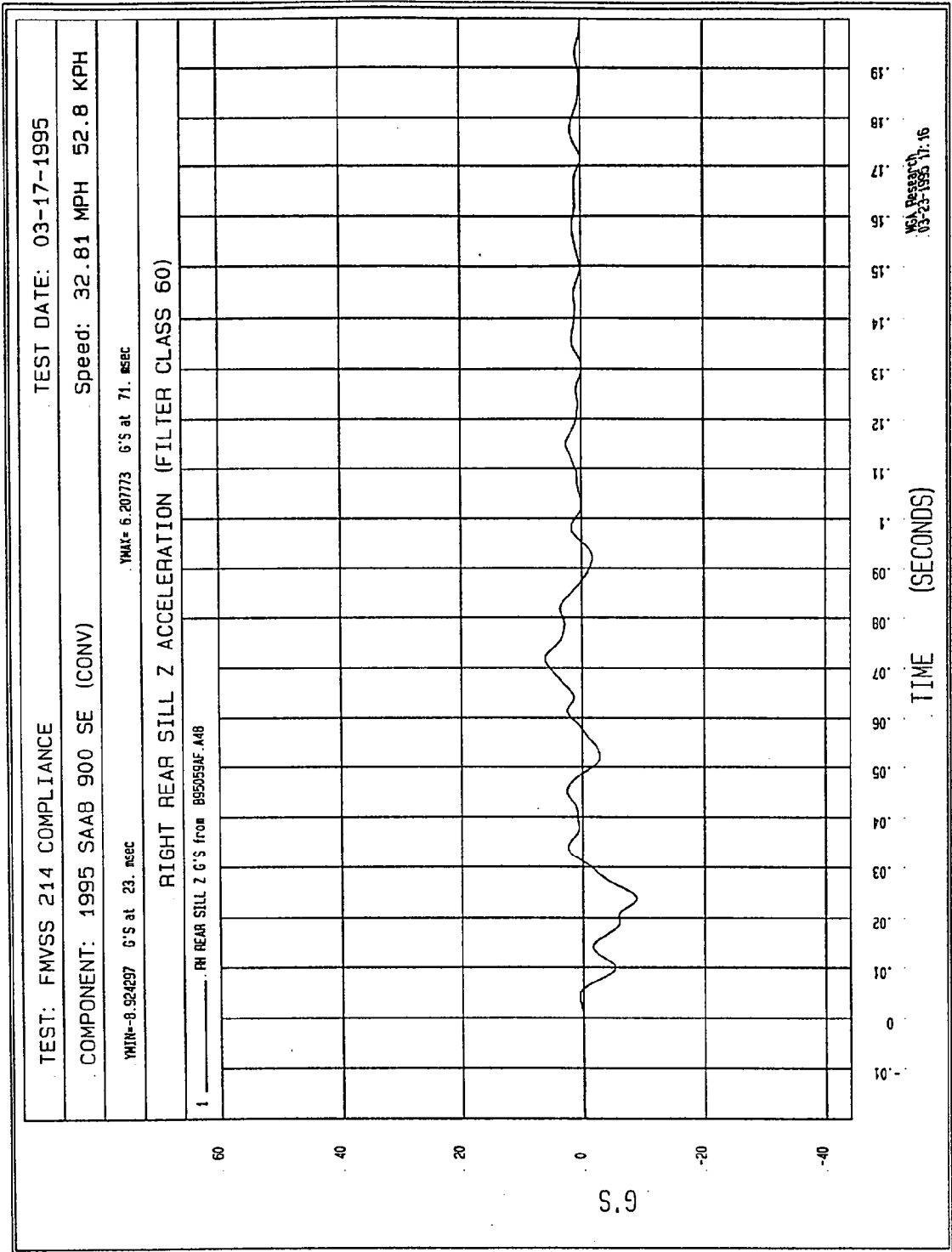


Figure B-32 - Right Rear Sill Z Acceleration vs. Time

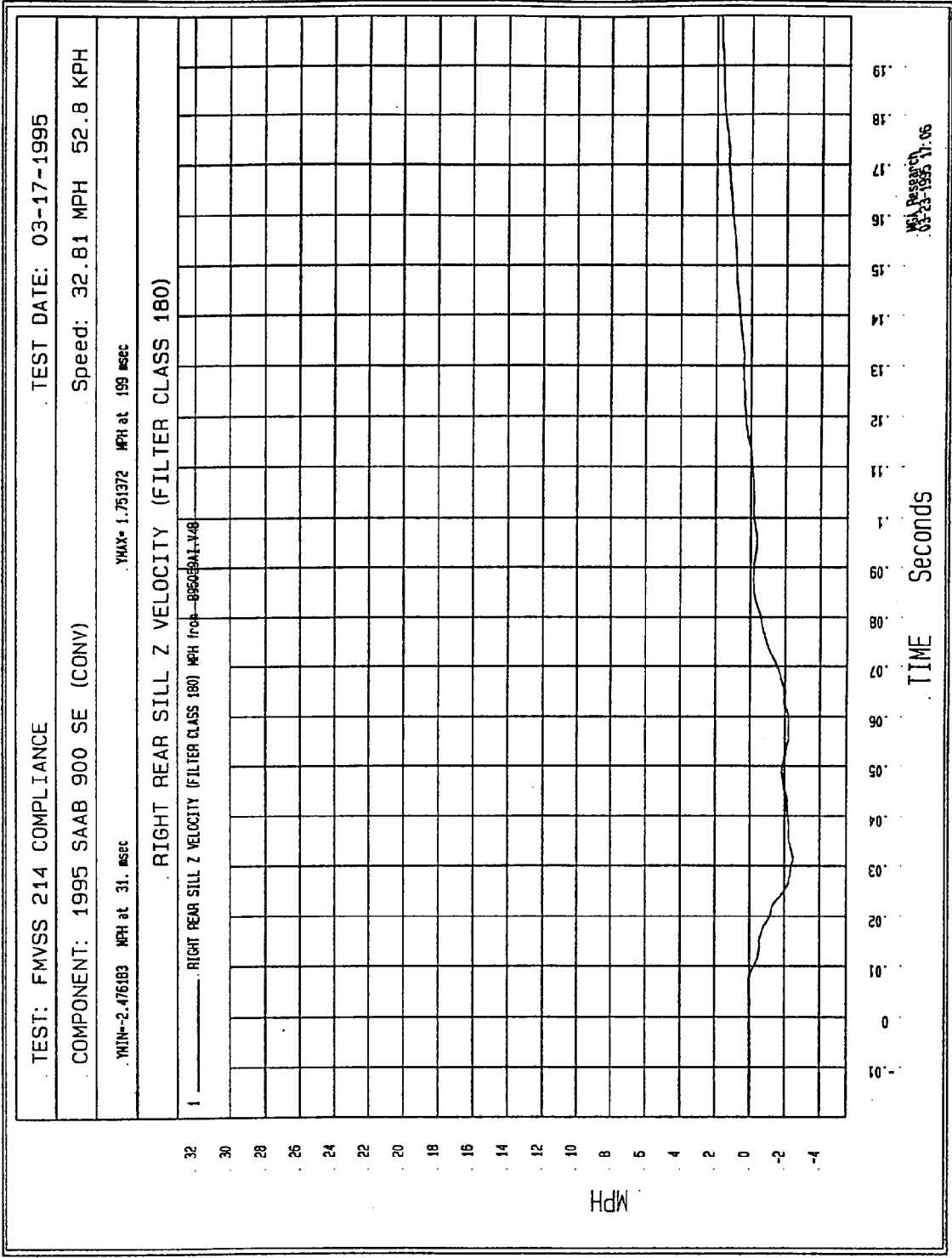


Figure B-33 - Right Rear Sill Z Velocity vs. Time

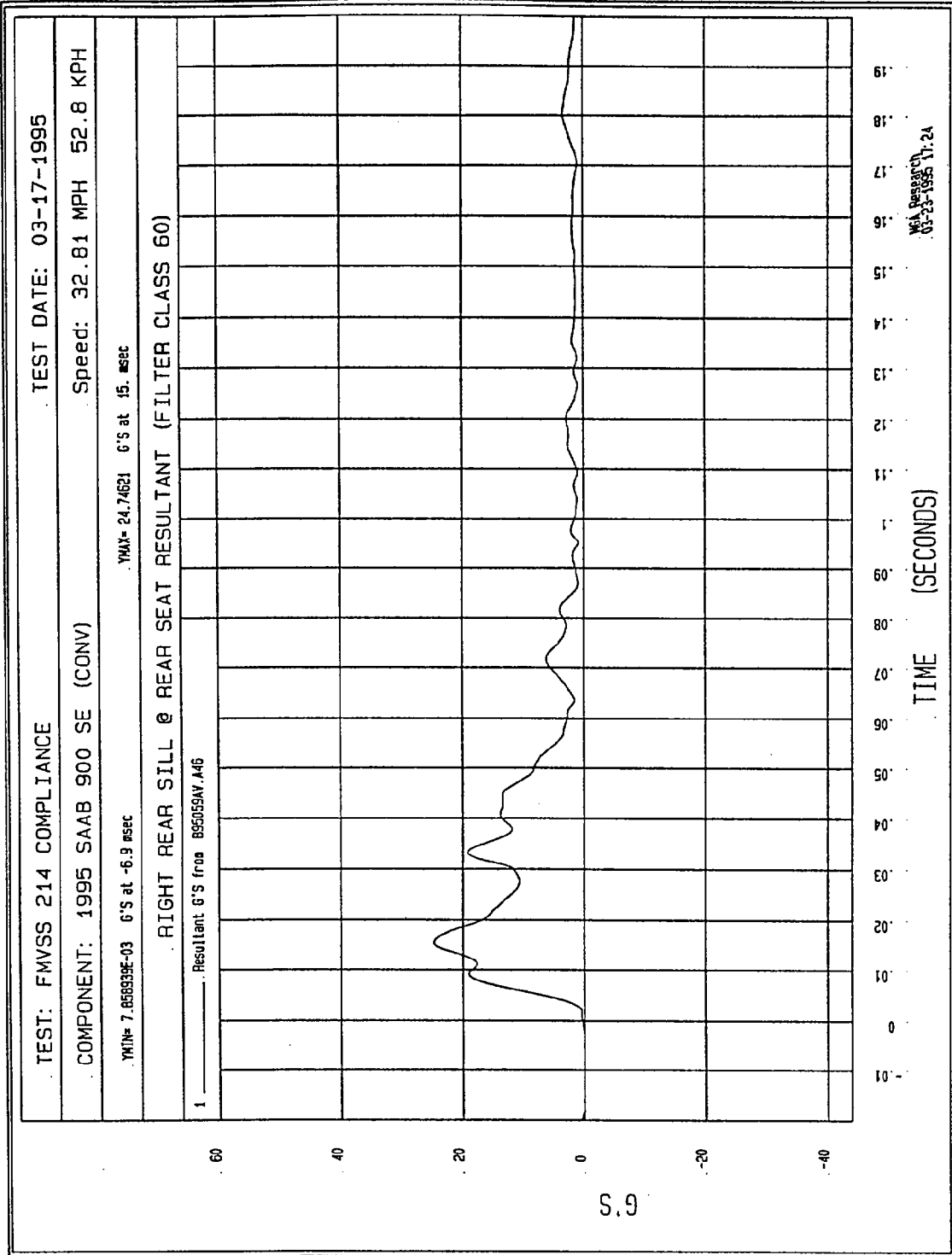


Figure B-34 - Right Rear Sill at Rear Seat Resultant vs. Time

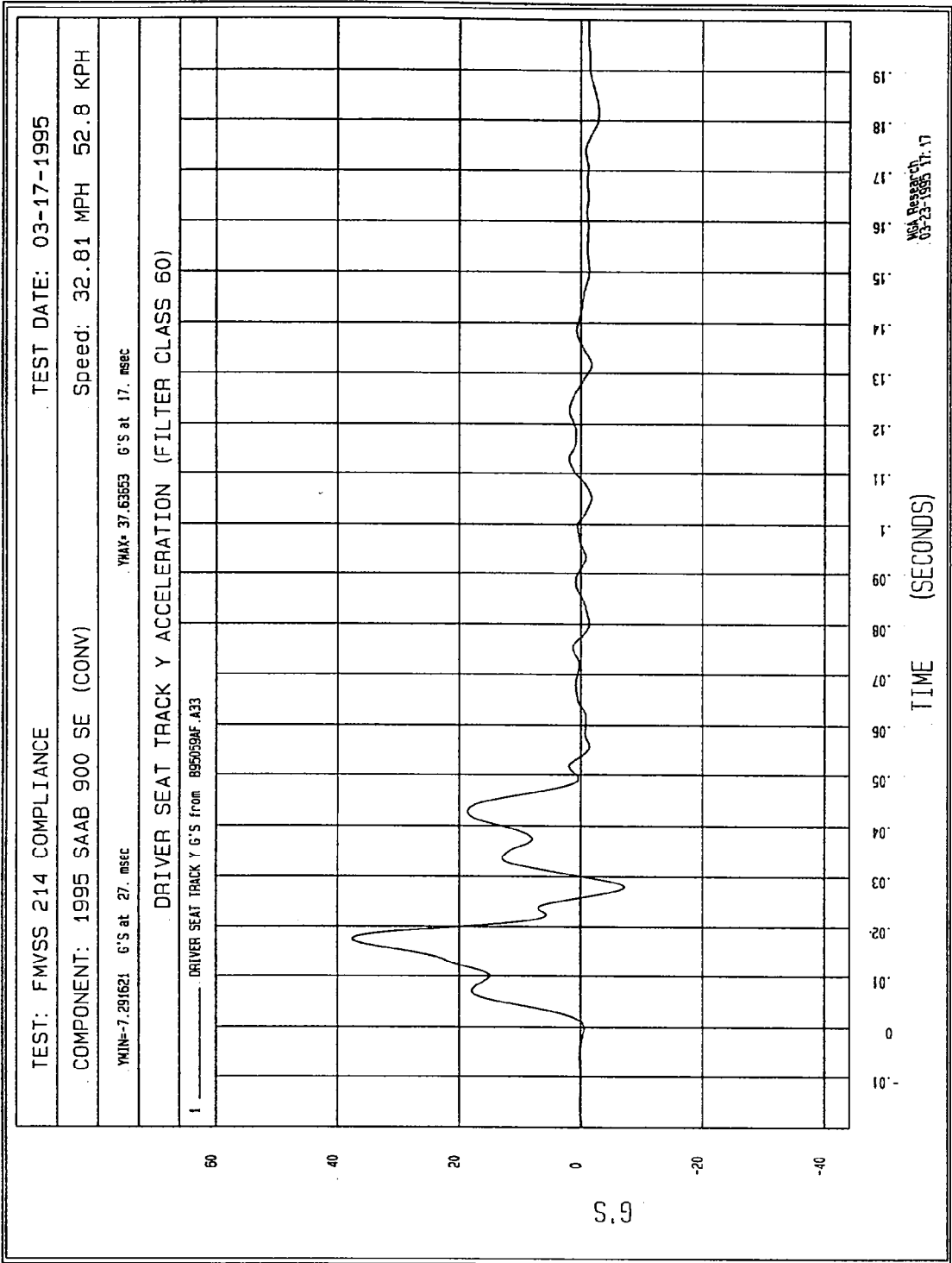


Figure B-35 - Driver Seat Track Y Acceleration vs. Time

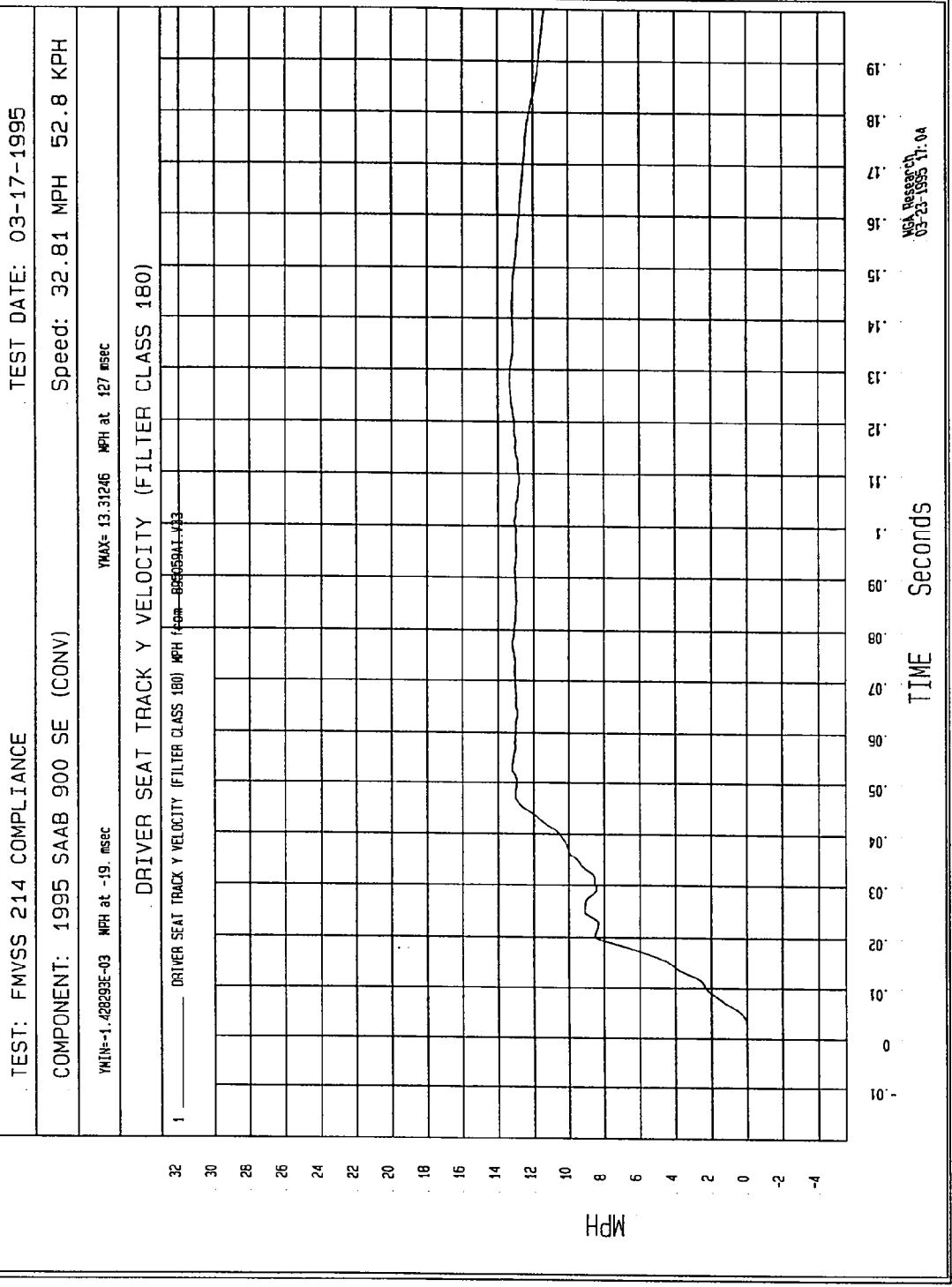


Figure B-36 - Driver Seat Track Y Velocity vs. Time

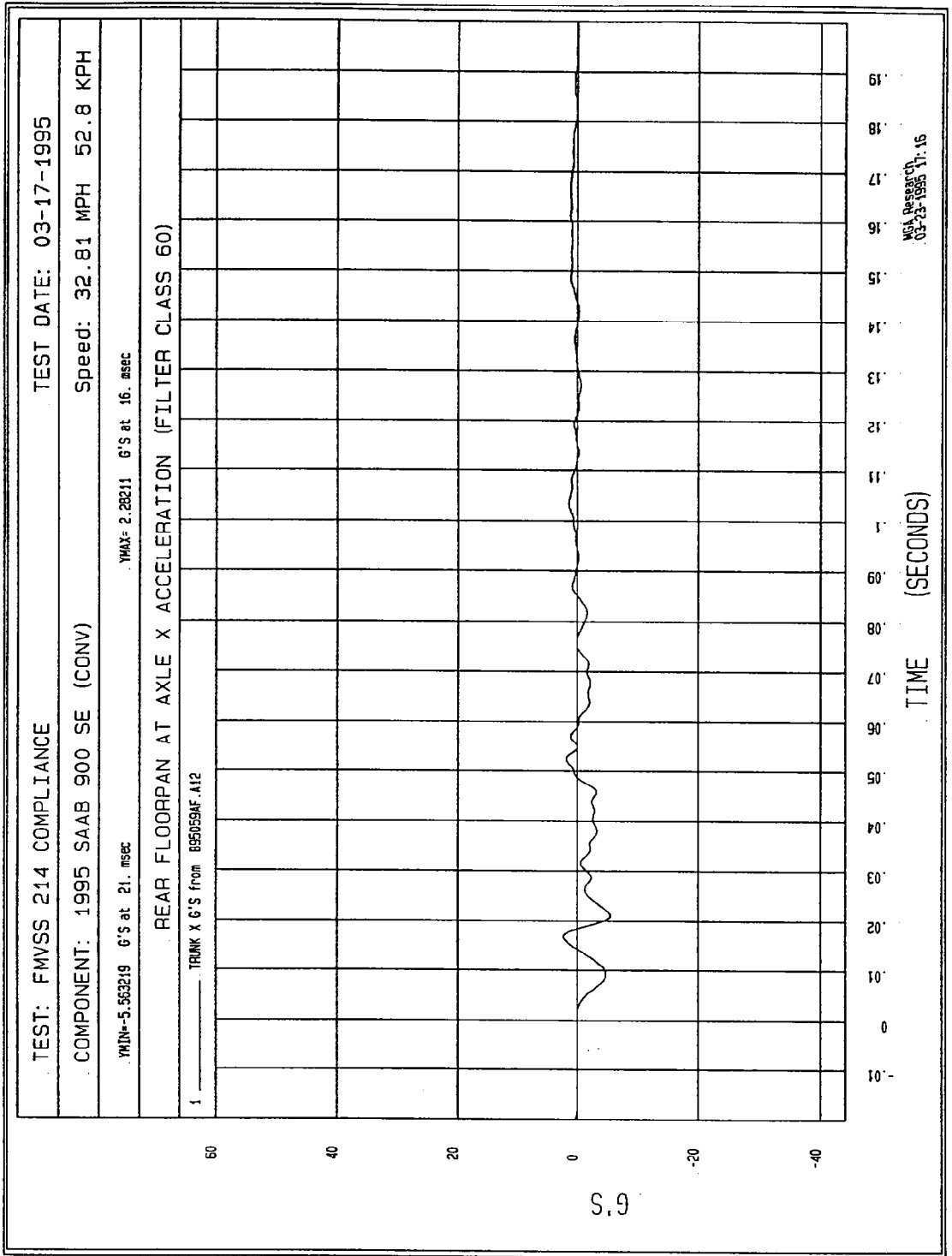


Figure B-37 - Rear Floorpan at Axle X Acceleration vs. Time

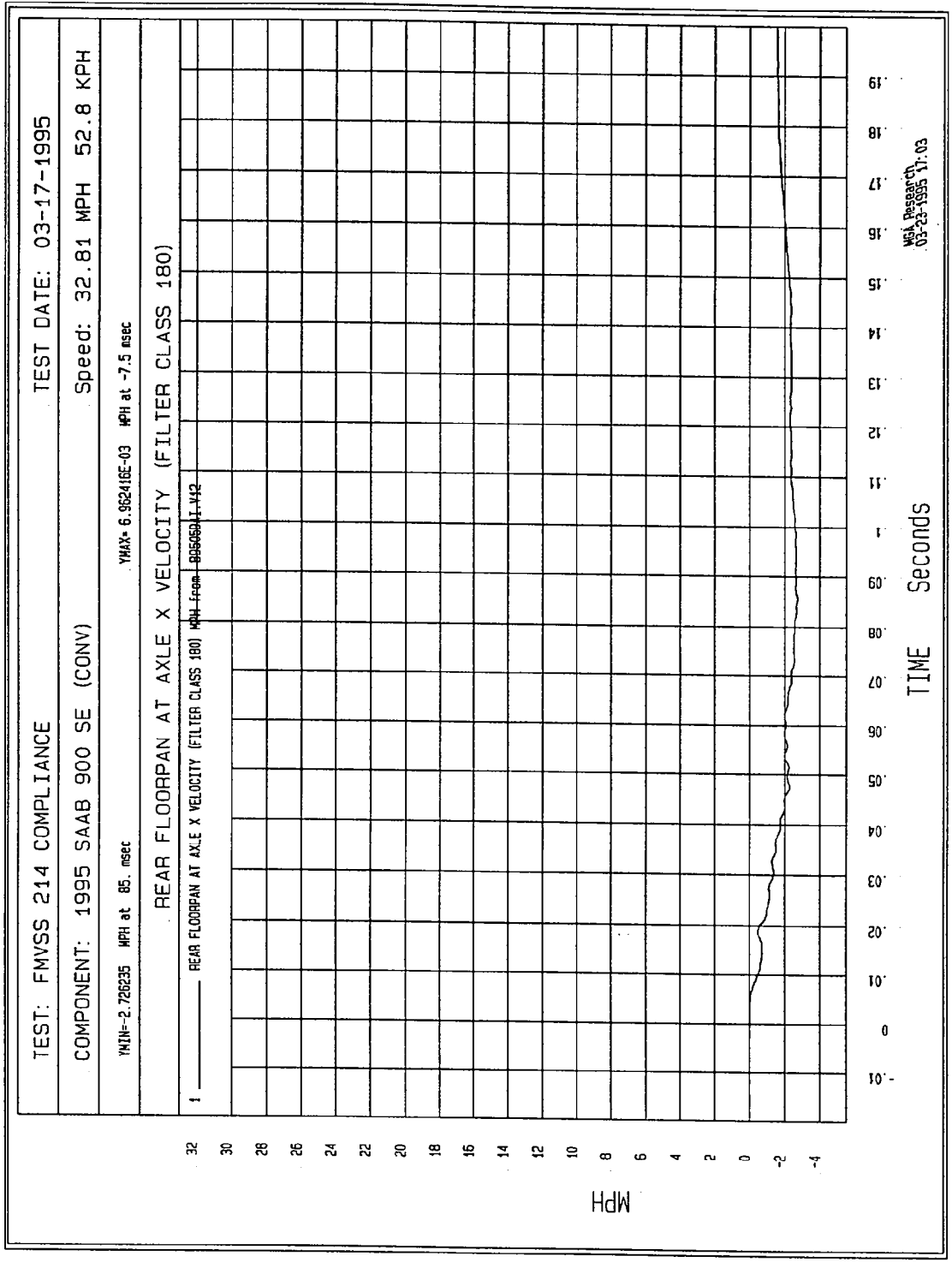


Figure B-38 - Rear Floorpan at Axle X Velocity vs. Time

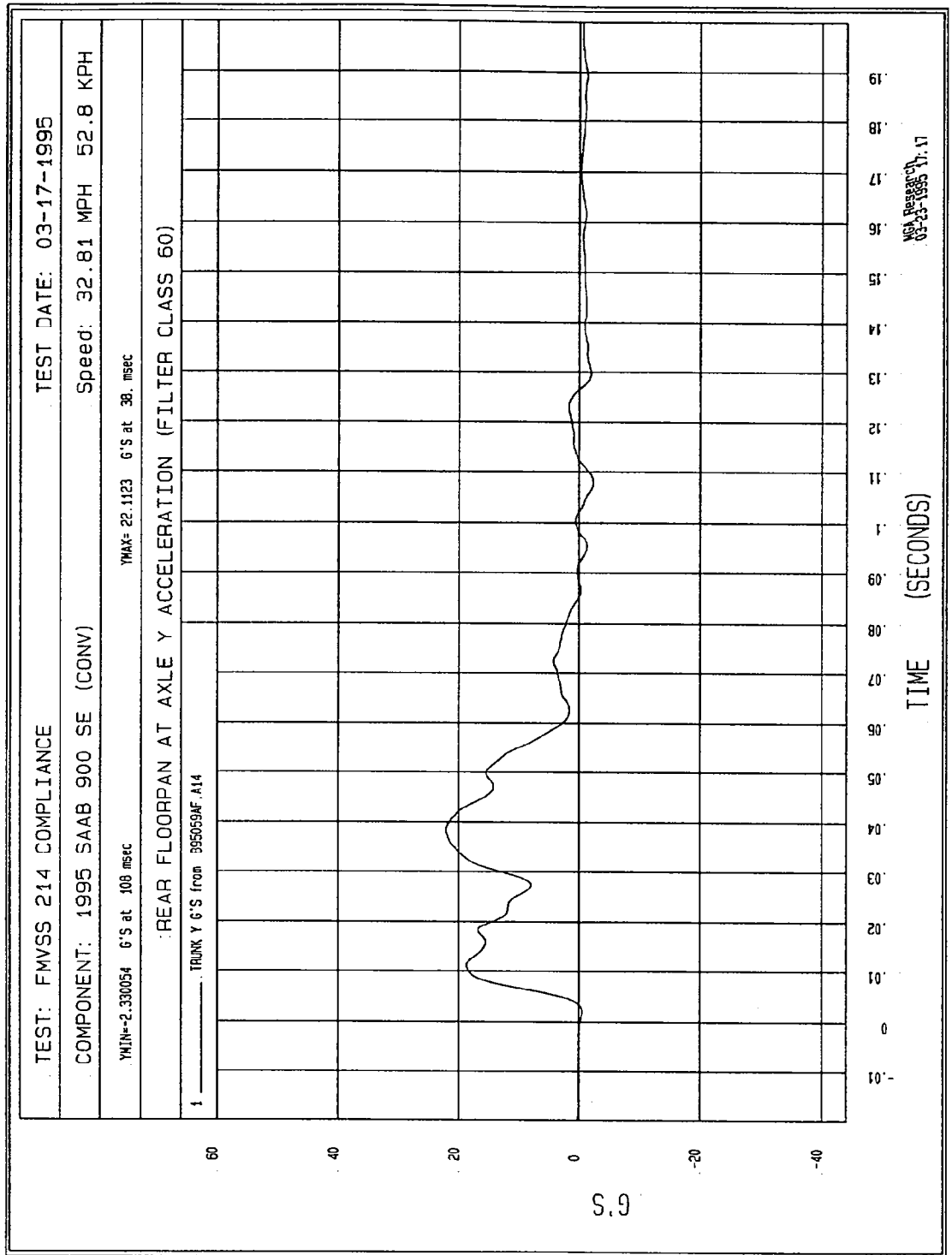


Figure B-39 - Rear Floorpan at Axle Y Acceleration vs. Time

TEST DATE: 03-17-1995

TEST: FMVSS 214 COMPLIANCE

Speed: 32.81 MPH 52.8 KPH

COMPONENT: 1995 SAAB 900 SE (CONV)

MIN= 0 MPH at .19. 85SEC

MAX= 19.12217 MPH at 92. msec

REAR FLOORPAN AT AXLE Y VELOCITY (FILTER CLASS 180)

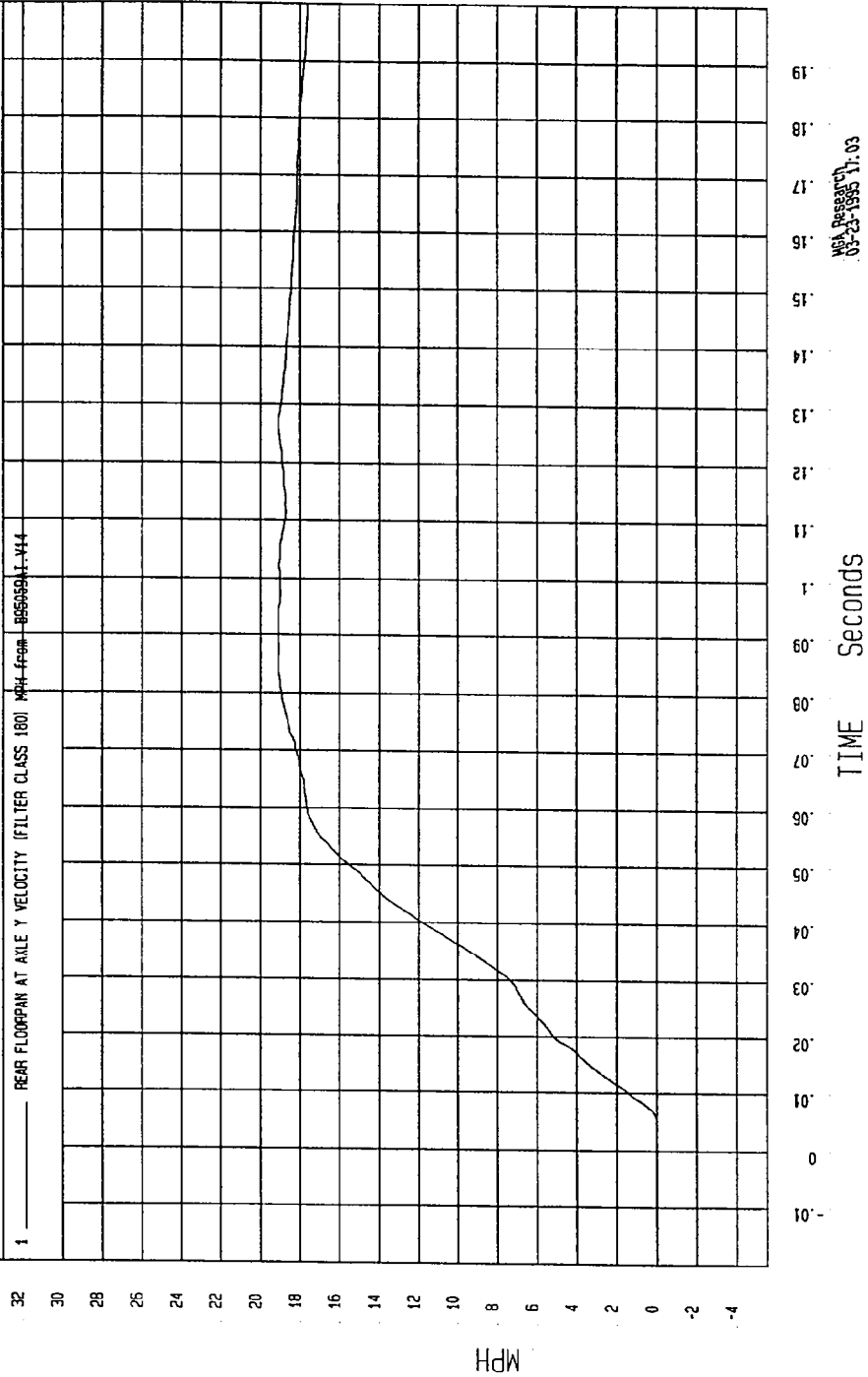


Figure B-40 - Rear Floorpan at Axle Y Velocity vs. Time

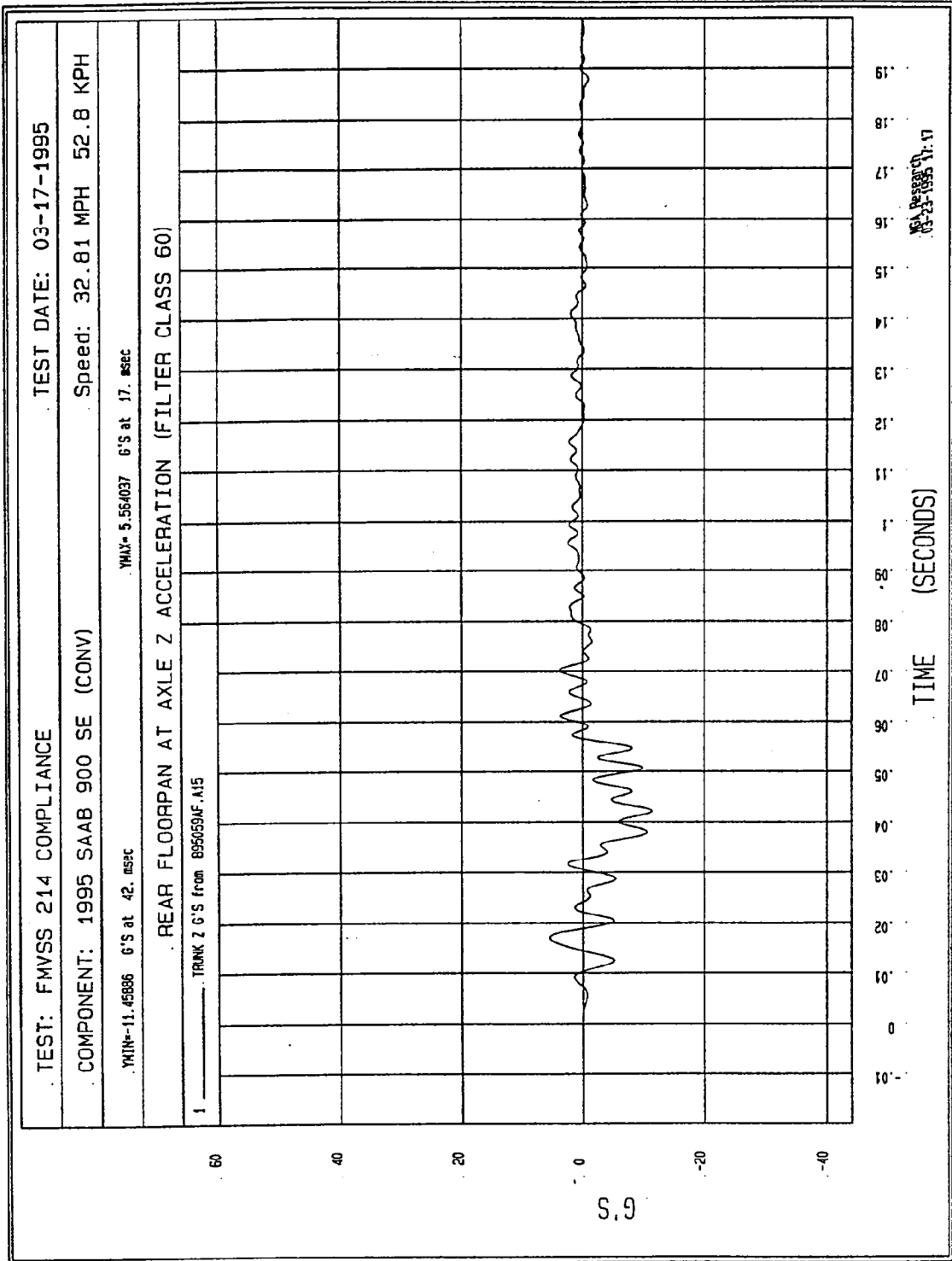


Figure B-41 - Rear Floorpan at Axle Z Acceleration vs. Time

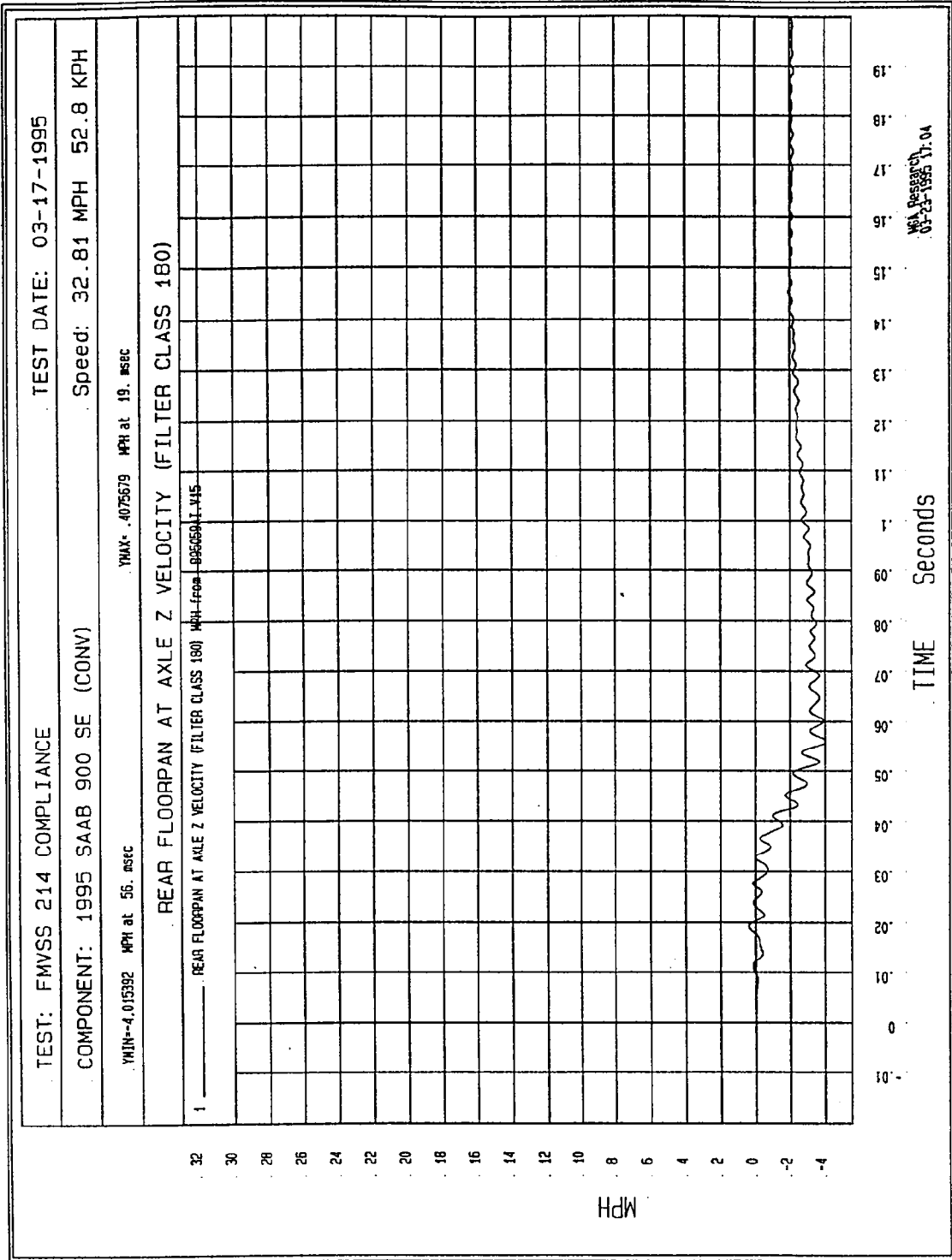


Figure B-42 - Rear Floorpan at Axle Z Velocity vs. Time

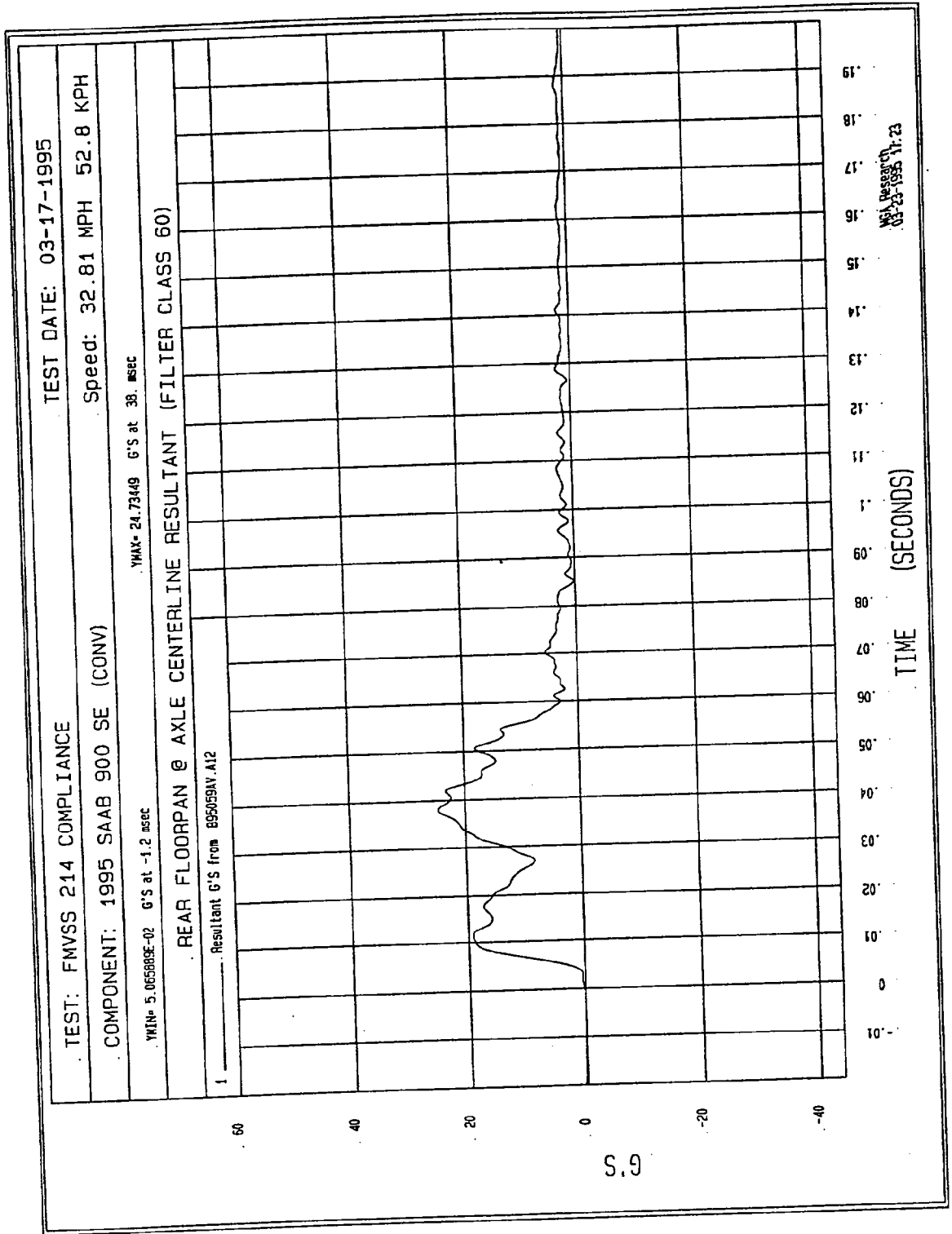


Figure B-43 - Rear Floorpan at Axle Centerline Resultant vs. Time

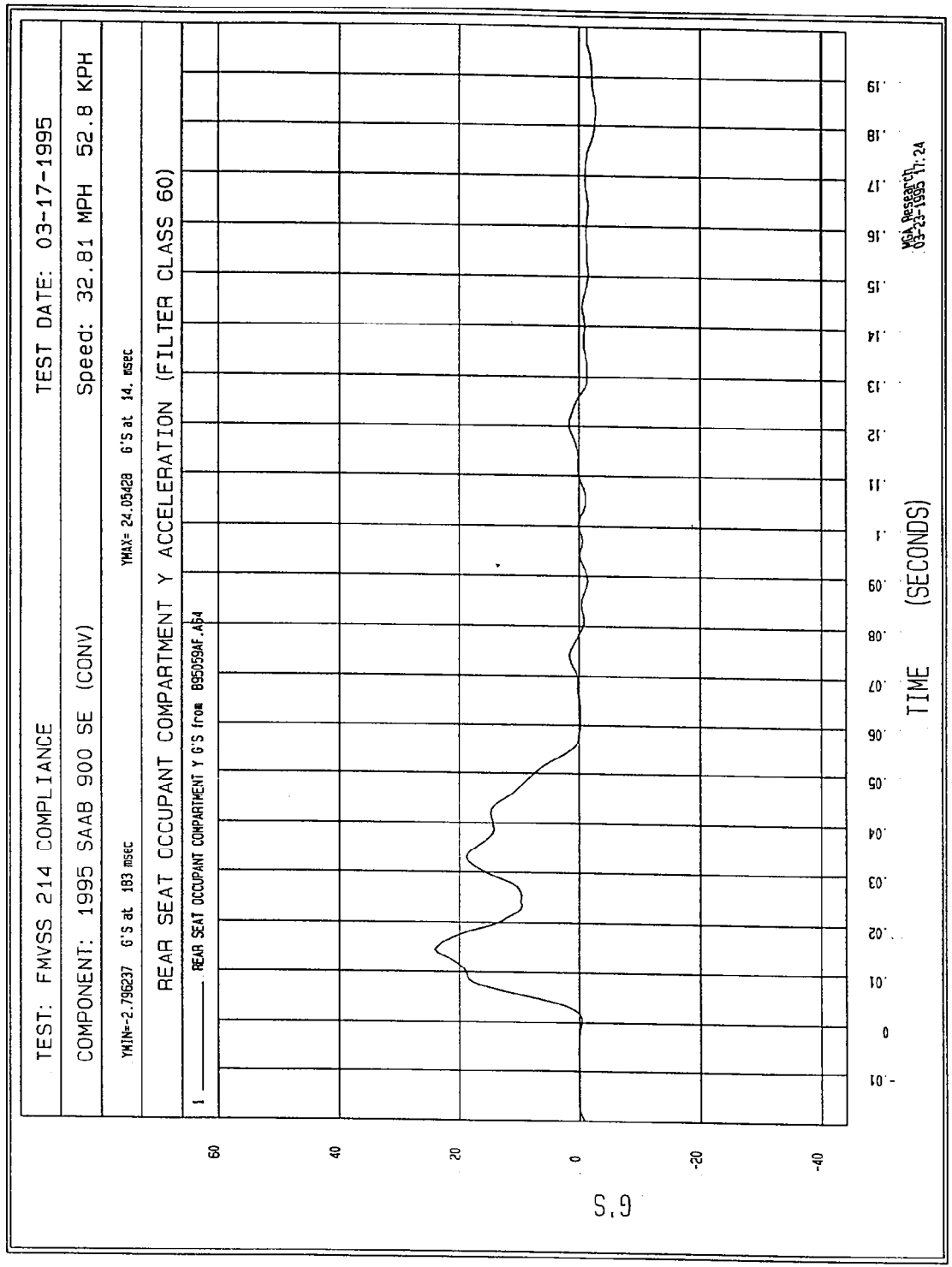


Figure B-44 - Rear Seat Occupant Compartment Y Acceleration vs. Time

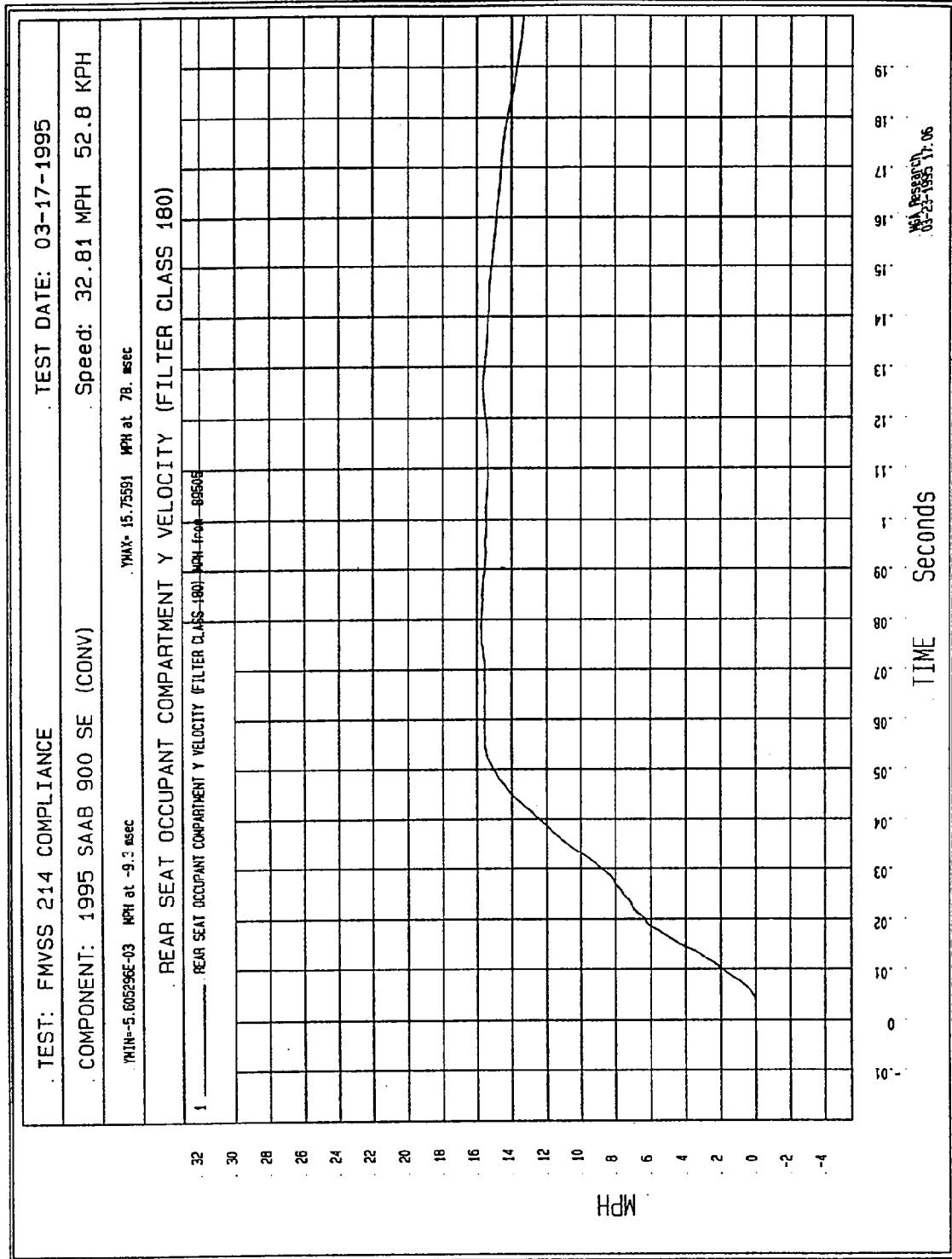


Figure B-45 - Rear Seat Occupant Compartment Y Velocity vs. Time

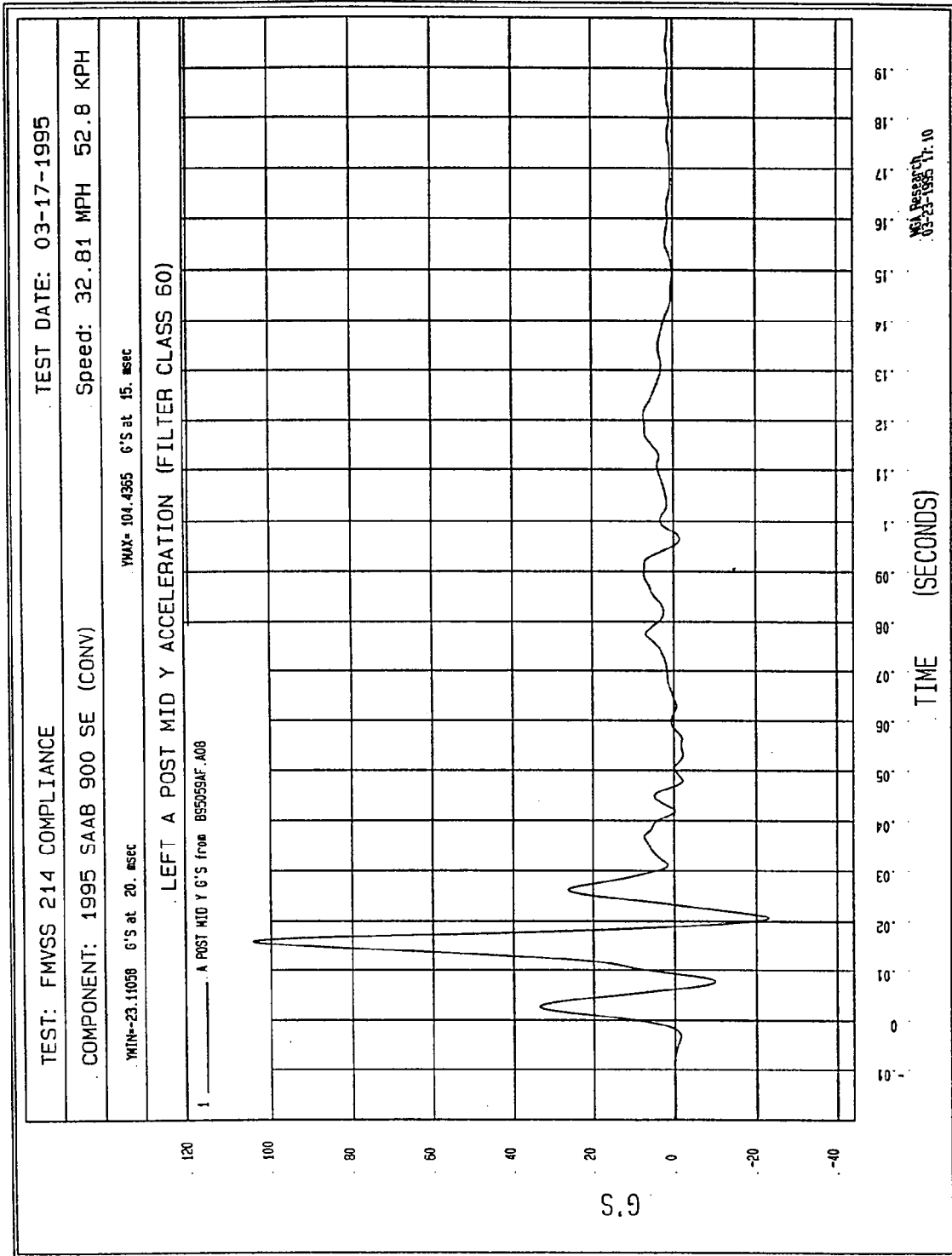


Figure B-46 - Left A Post Mid Y Acceleration vs. Time

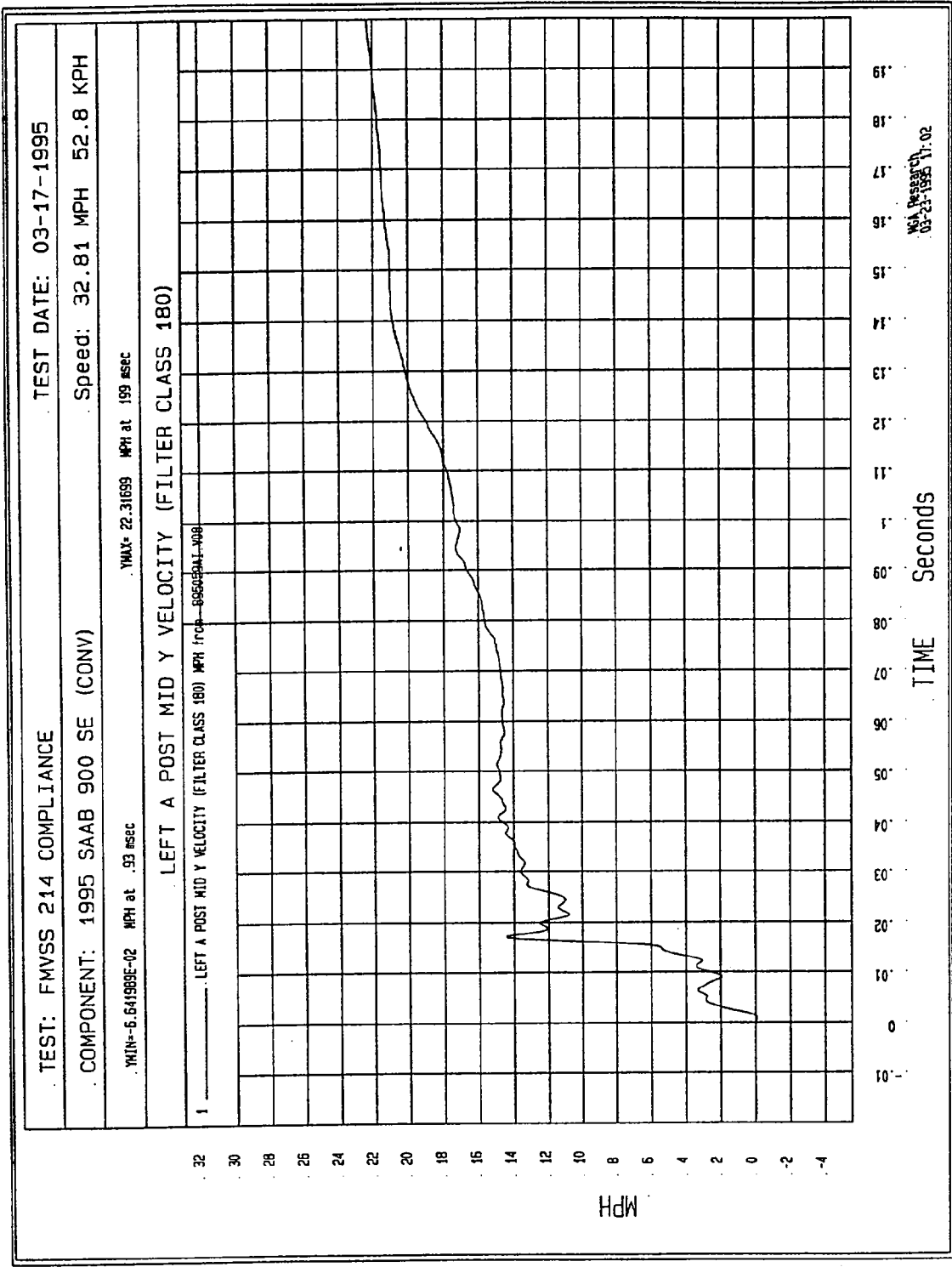


Figure B-47 - Left A Post Mid Y Velocity vs. Time

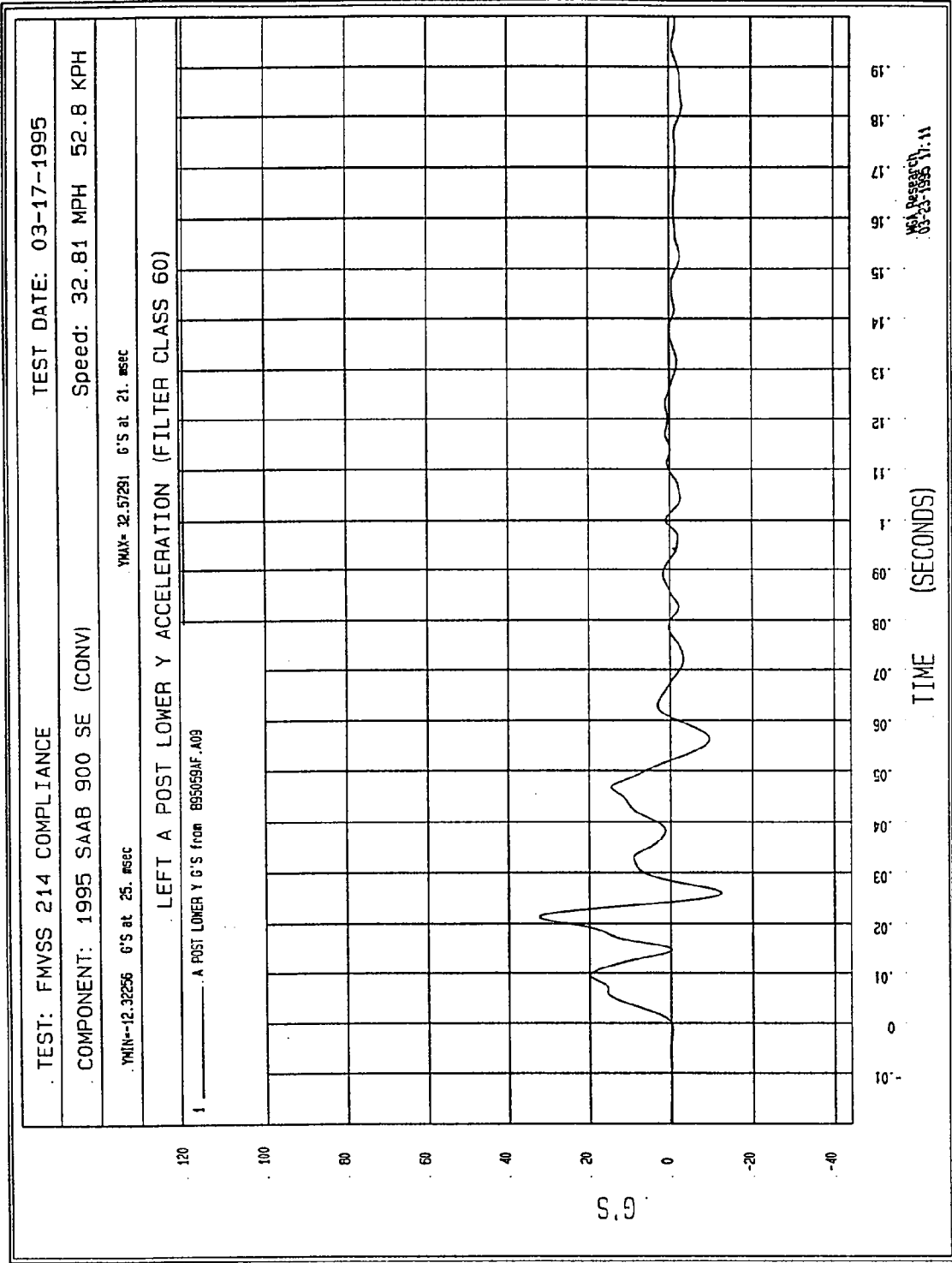


Figure B-48 - Left A Post Lower Y Acceleration vs. Time

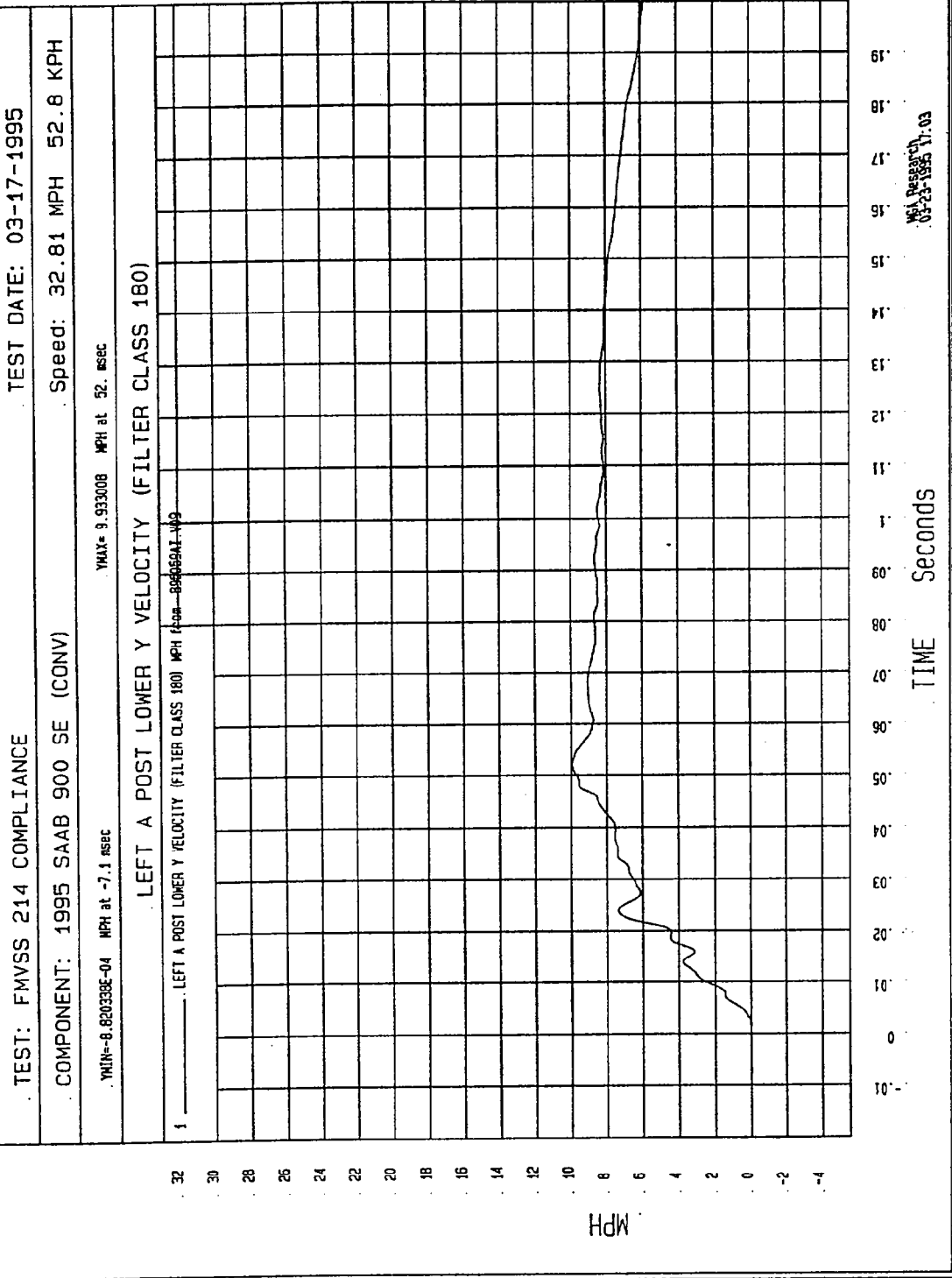


Figure B-49 - Left A Post Lower Y Velocity vs. Time

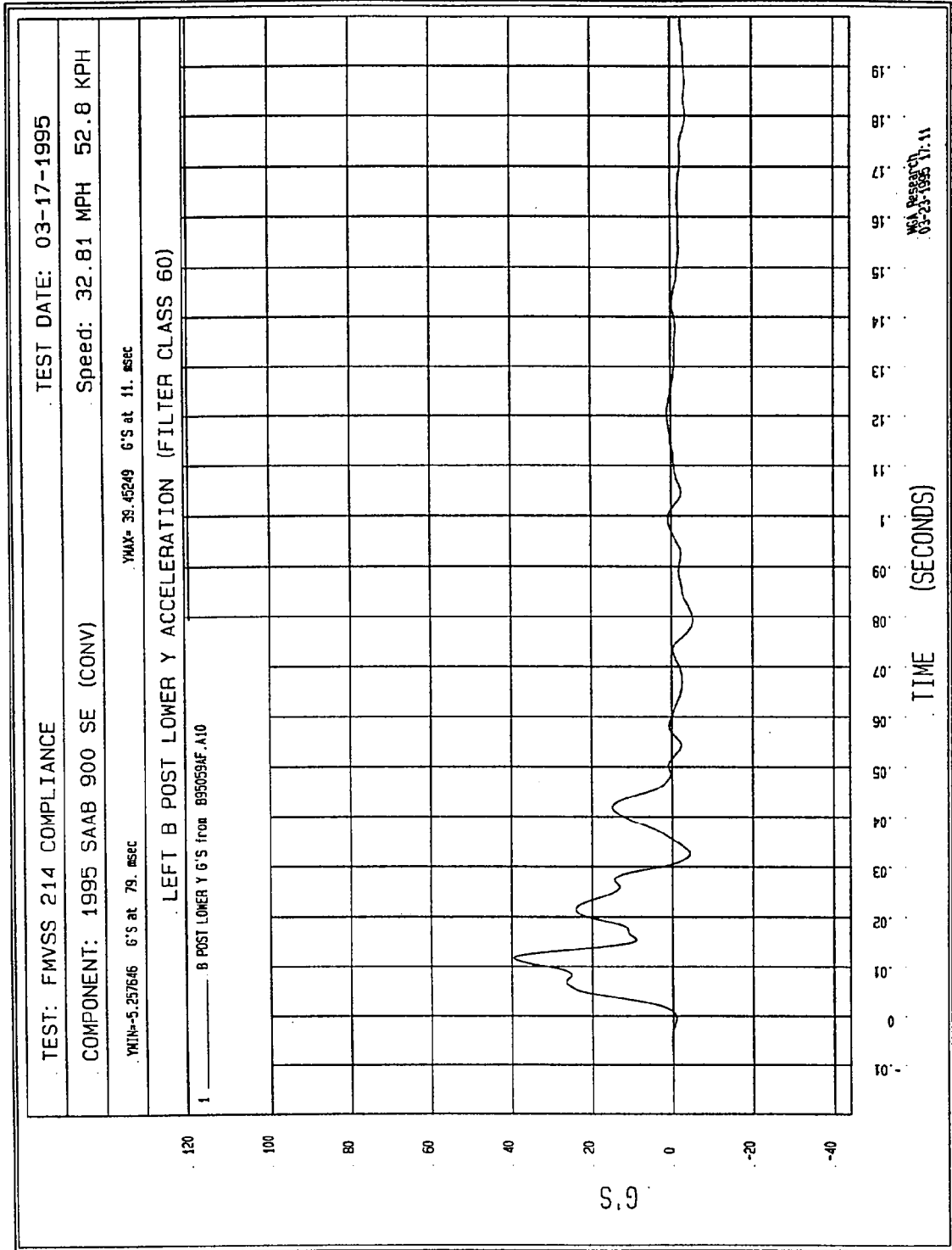


Figure B-50 - Left B Post Lower Y Acceleration vs. Time

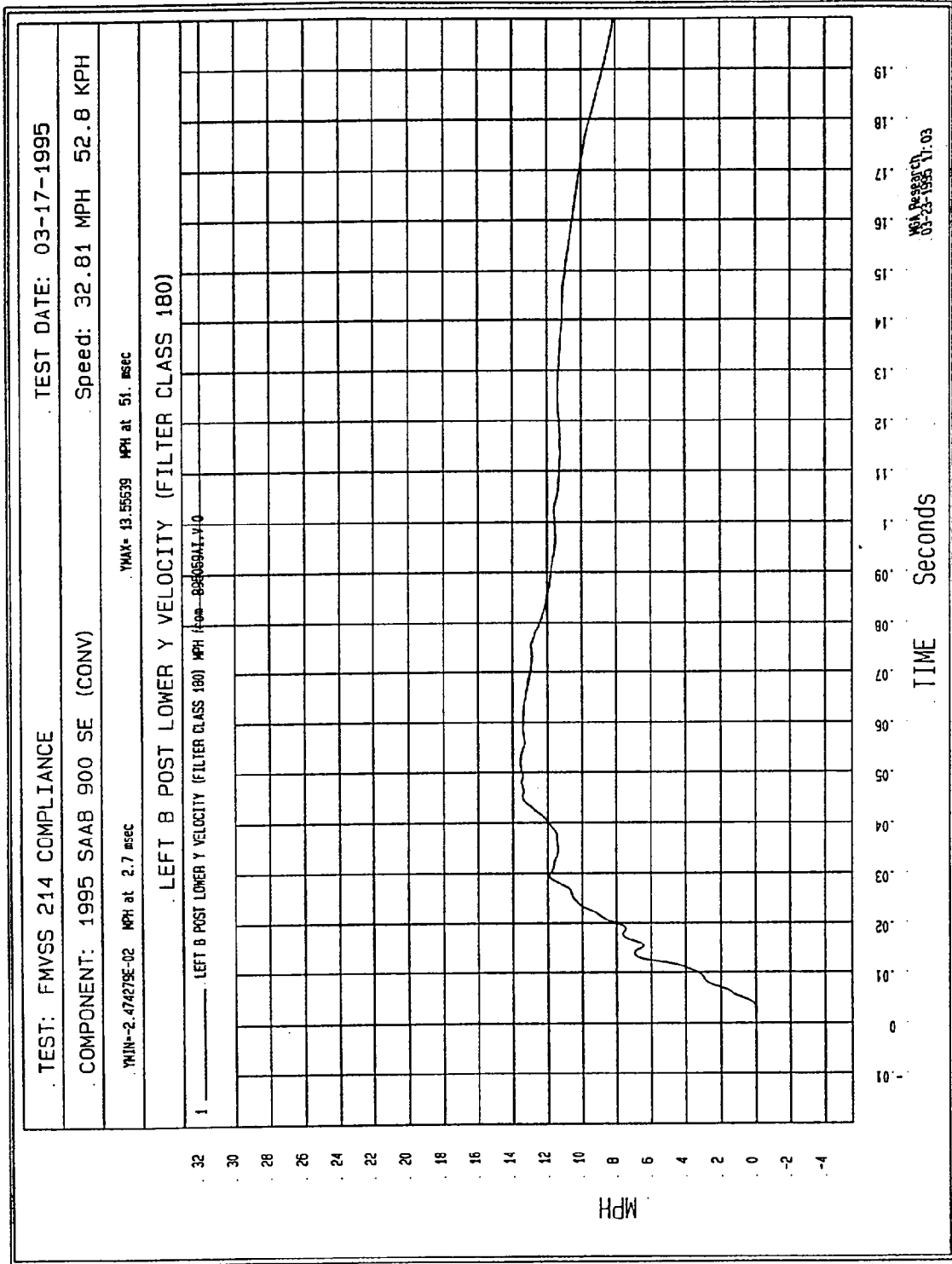


Figure B-51 - Left B Post Lower Y Velocity vs. Time

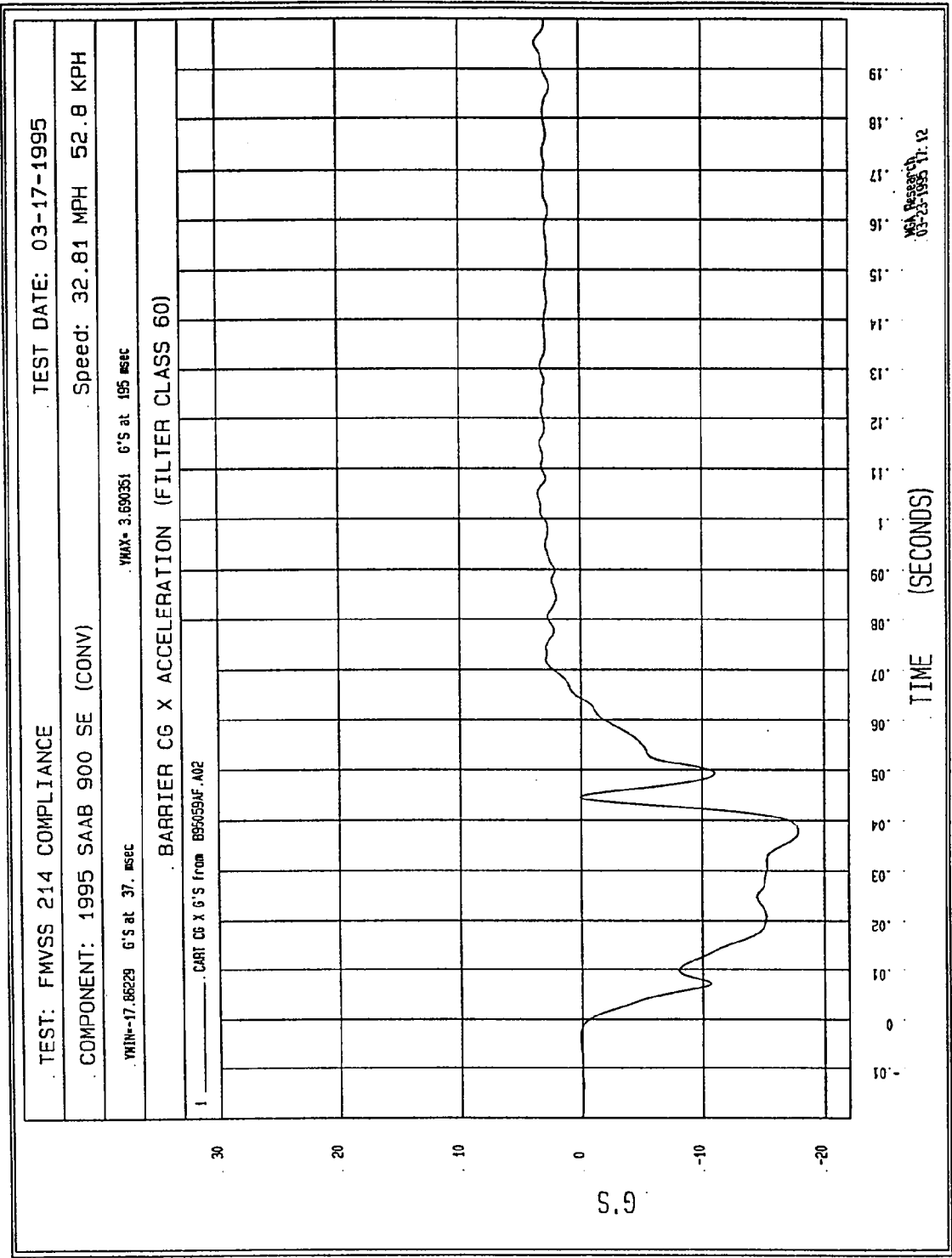


Figure B-52 - Moving Barrier Center of Gravity X Acceleration vs. Time

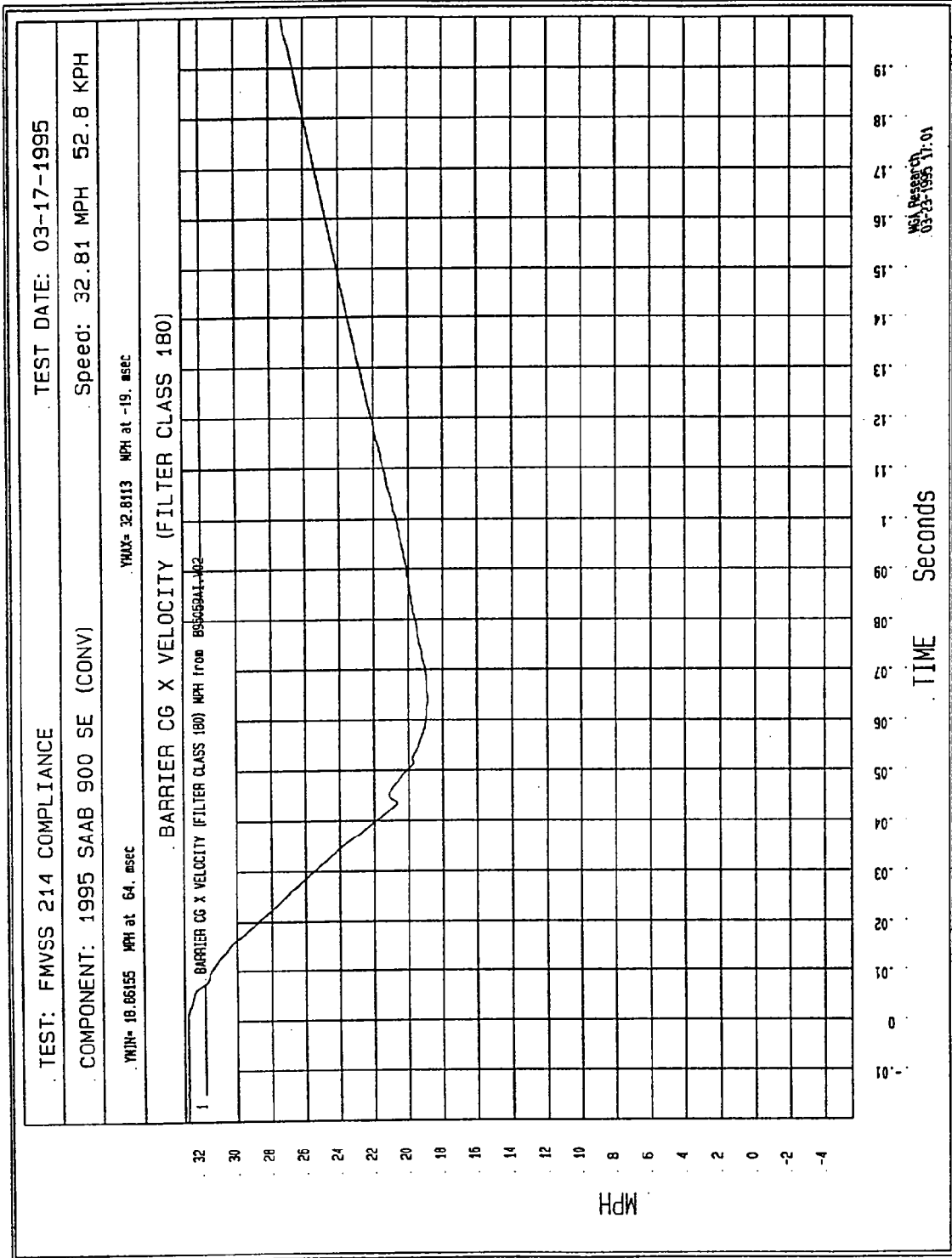


Figure B-53 - Moving Barrier Center of Gravity X Velocity vs. Time

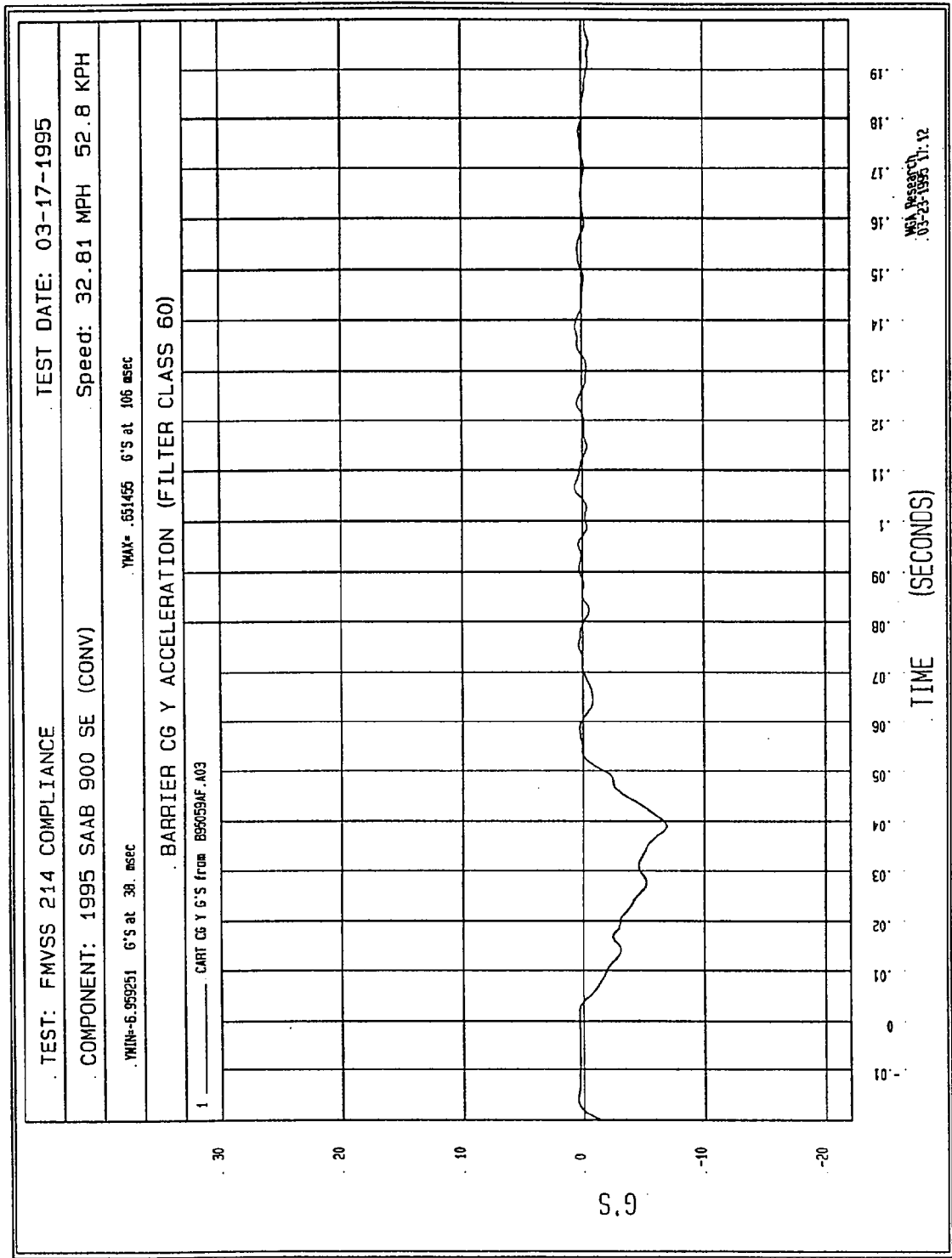


Figure B-54 - Moving Barrier Center of Gravity Y Acceleration vs. Time

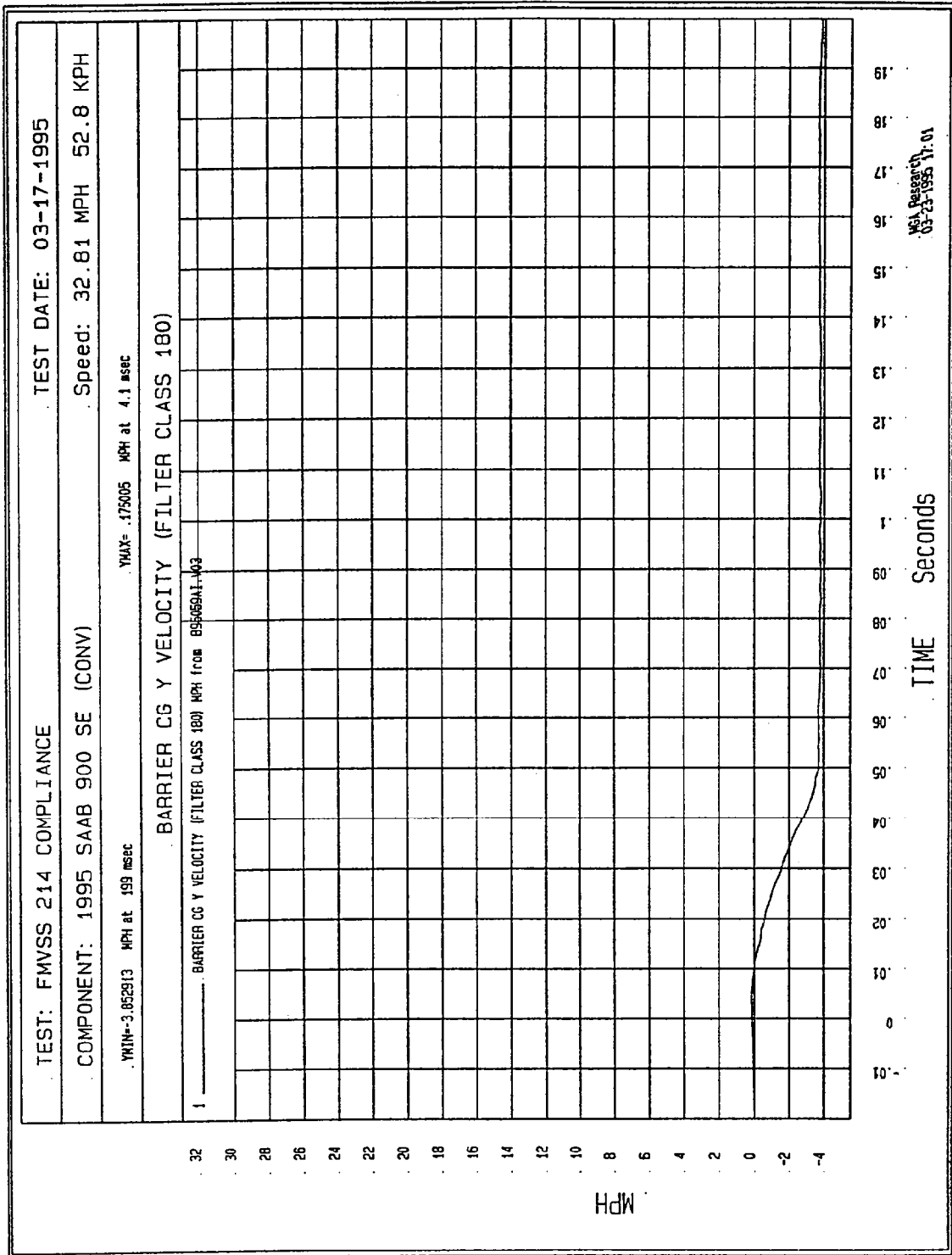


Figure B-55 - Moving Barrier Center of Gravity Y Velocity vs. Time

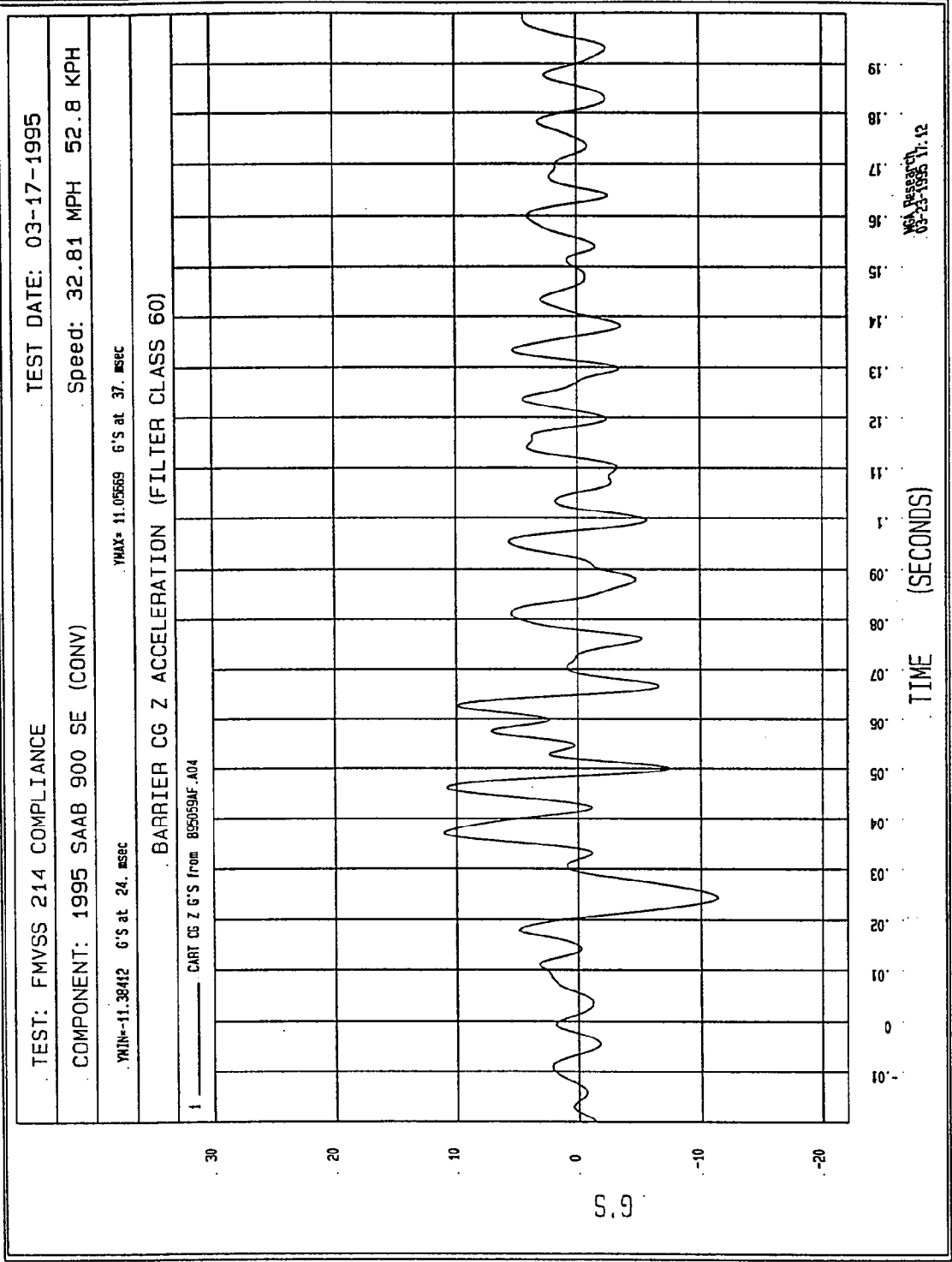


Figure B-56 - Moving Barrier Center of Gravity Z Acceleration vs. Time

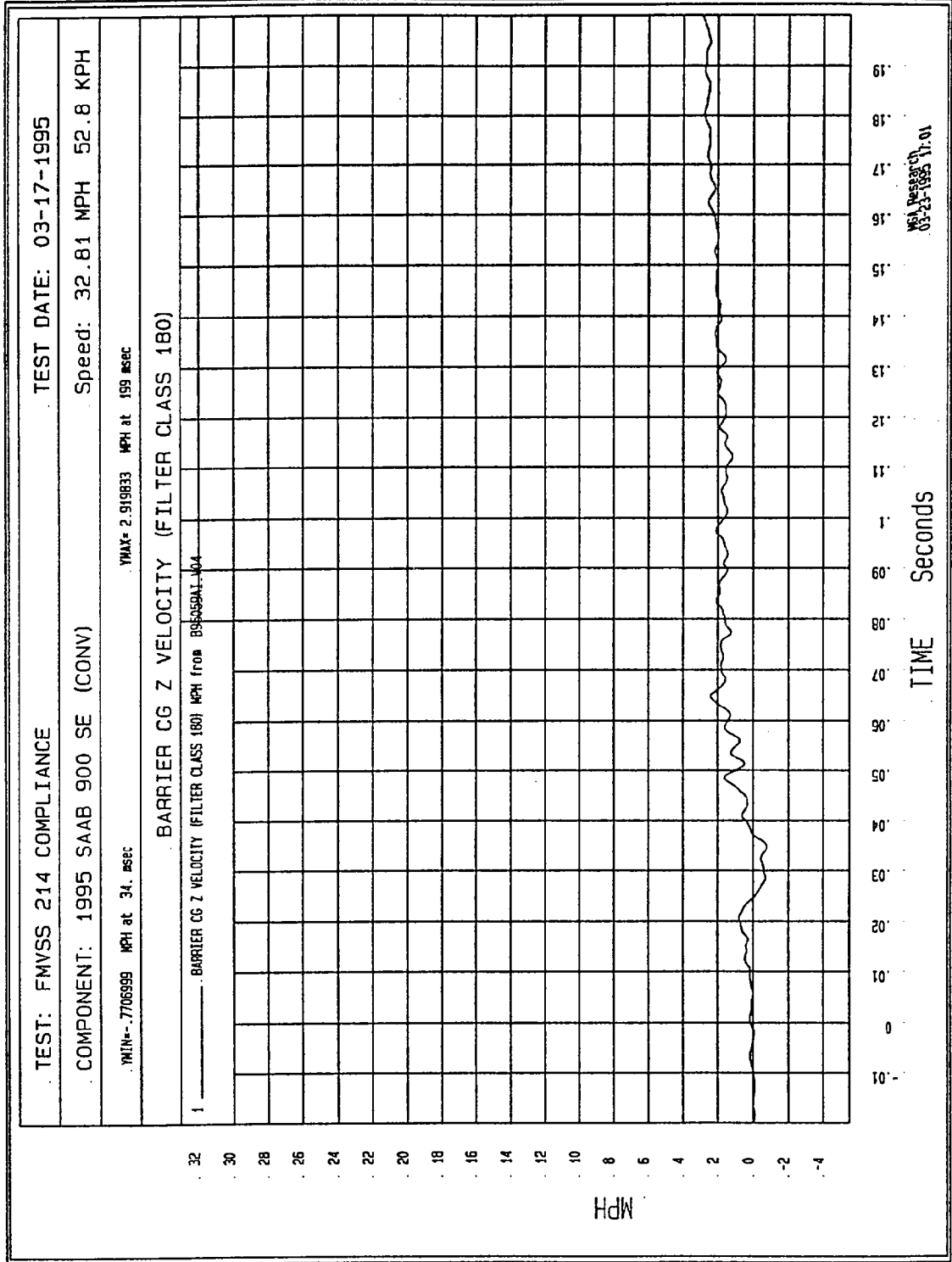


Figure B-57 - Moving Barrier Center of Gravity Z Velocity vs. Time

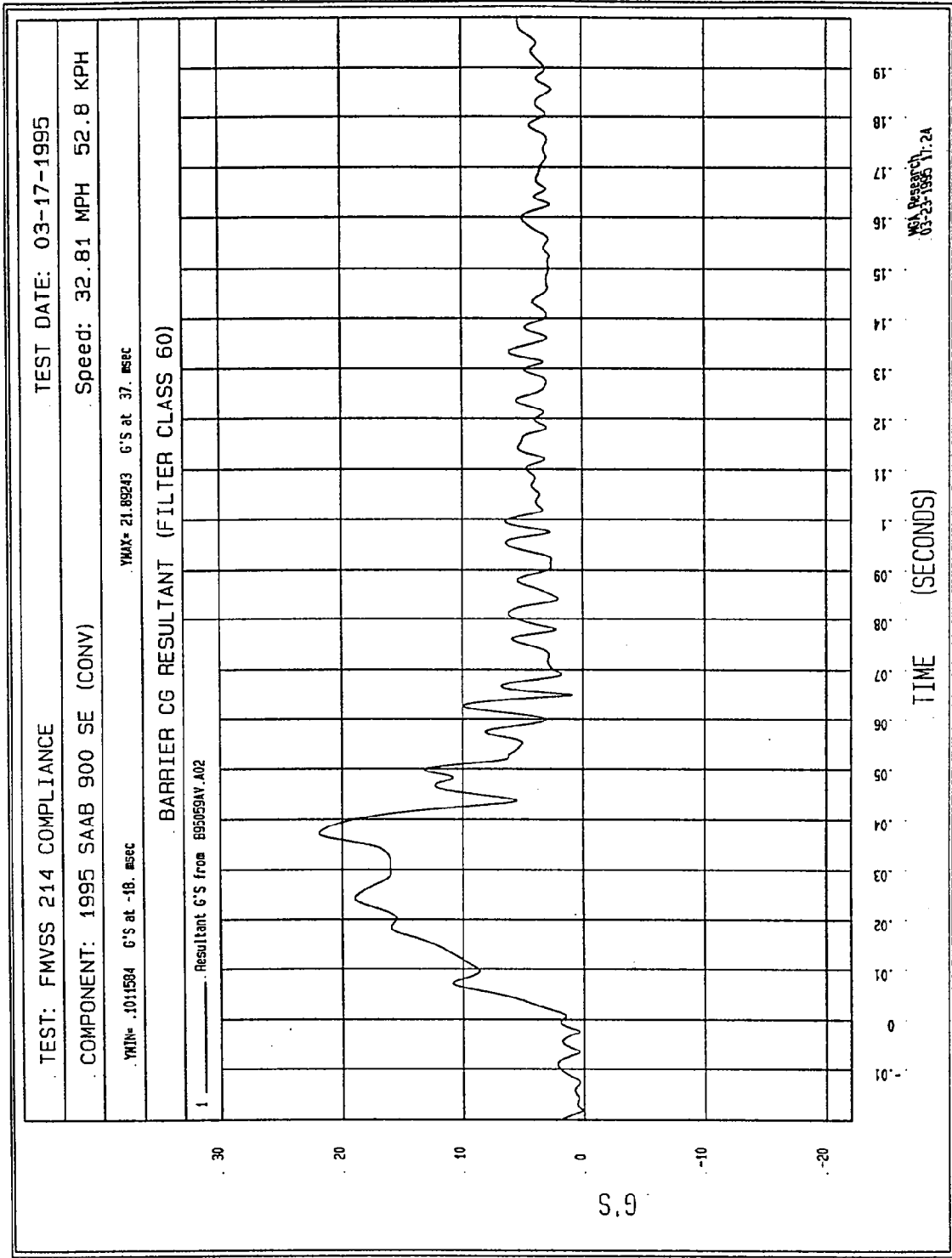


Figure B-58 - Moving Barrier Center of Gravity Resultant vs. Time

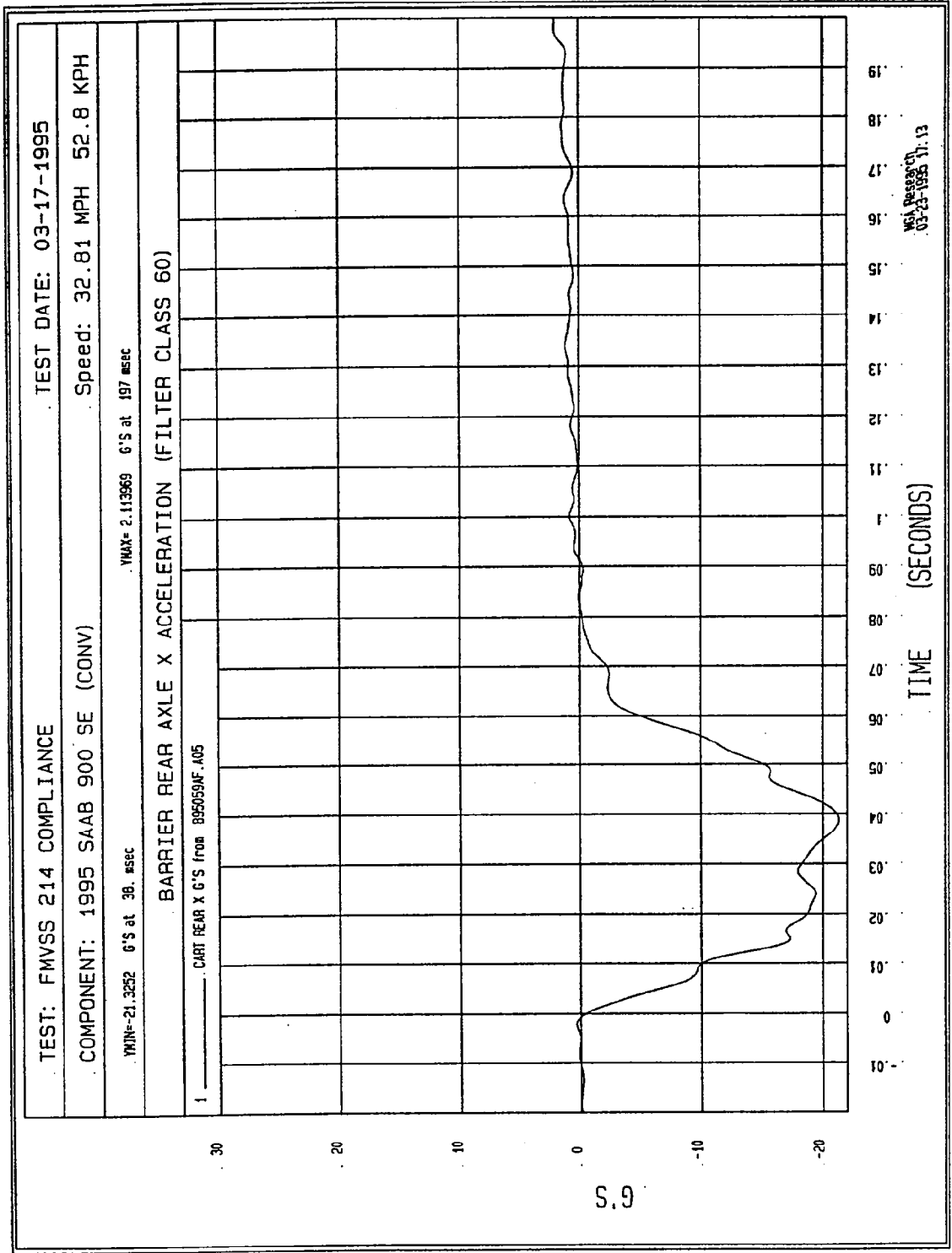


Figure B-59 - Moving Barrier Rear Axle X Acceleration vs. Time

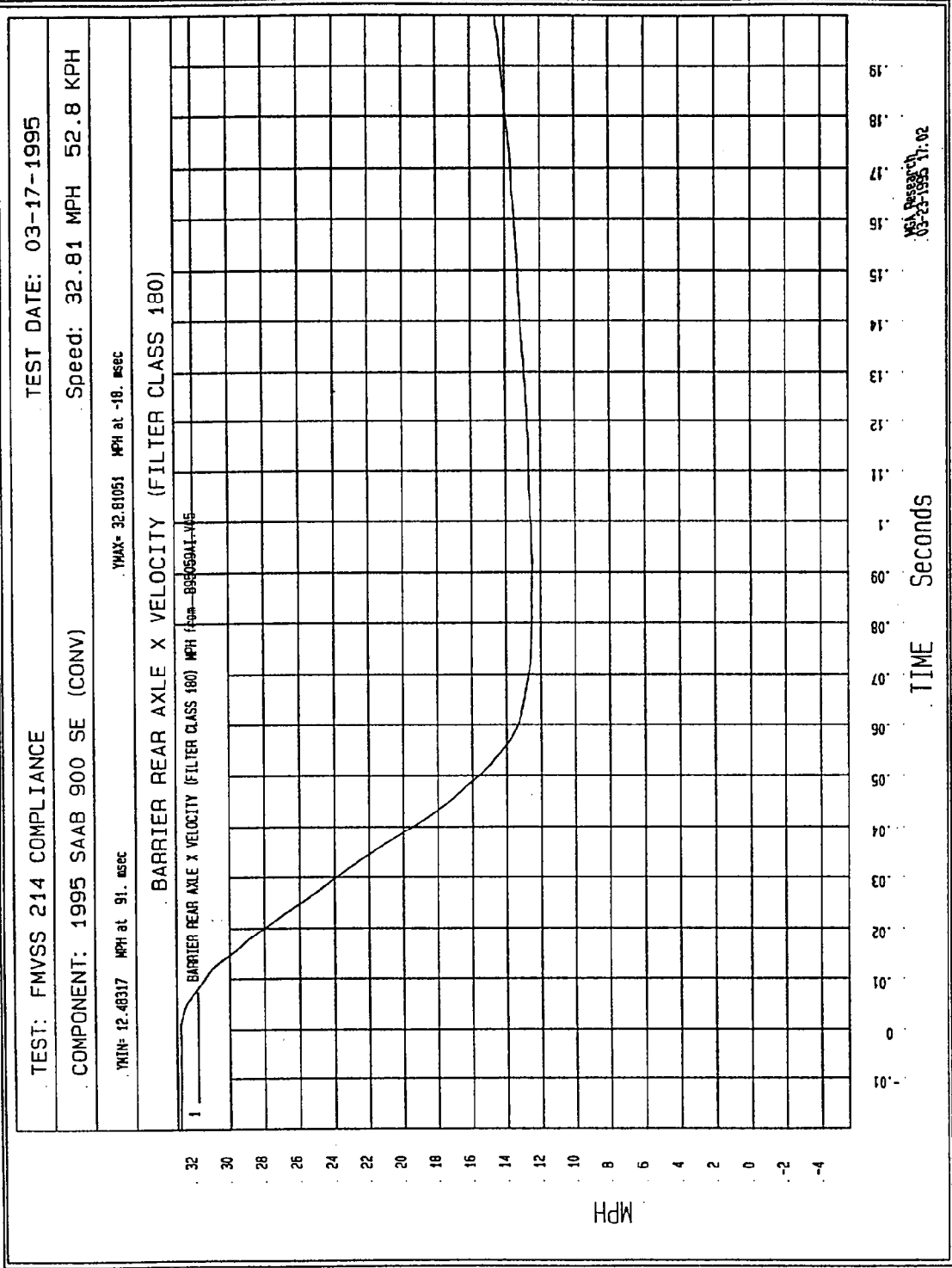


Figure B-60 - Moving Barrier Rear Axle X Velocity vs. Time

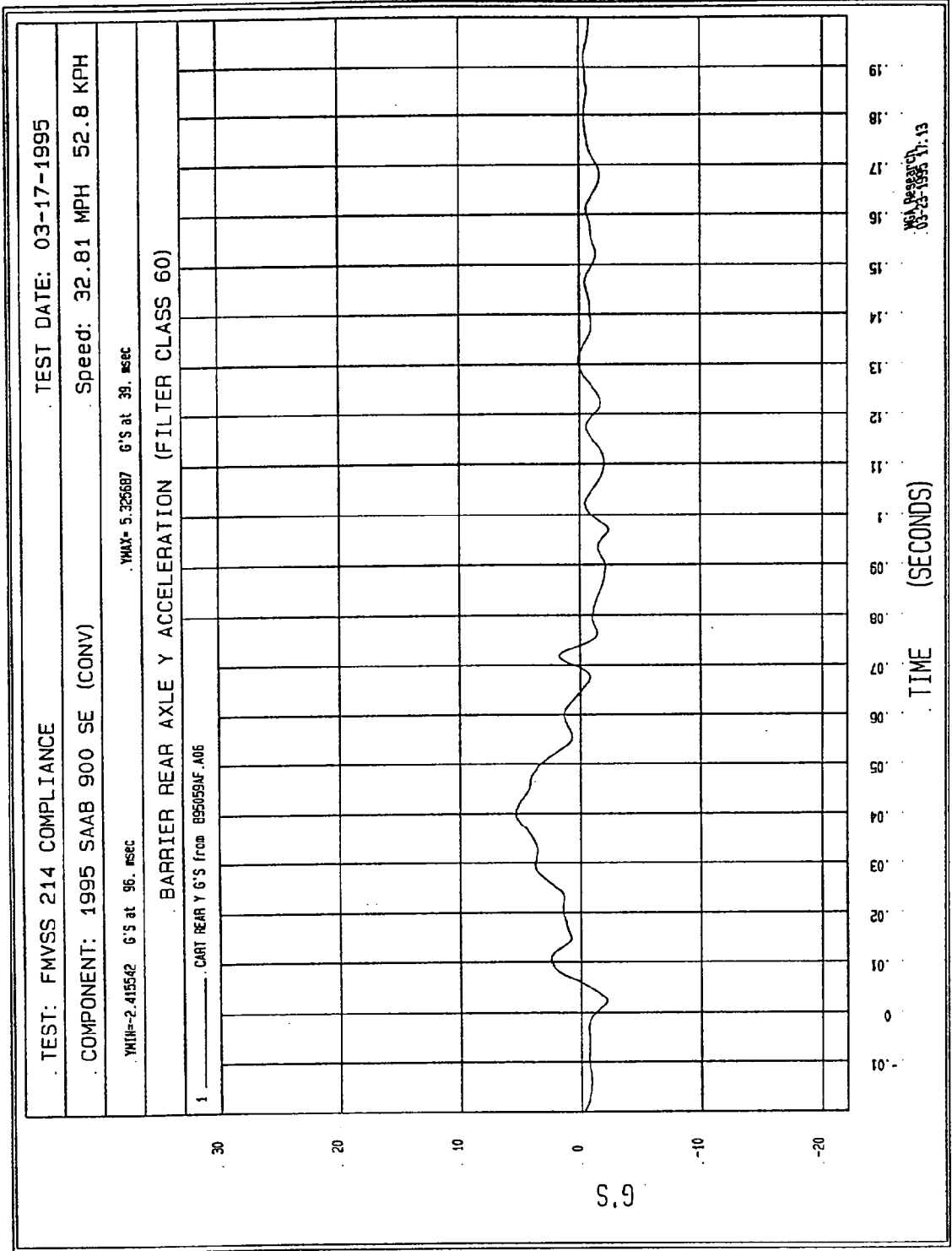


Figure B-61 - Moving Barrier Rear Axle Y Acceleration vs. Time

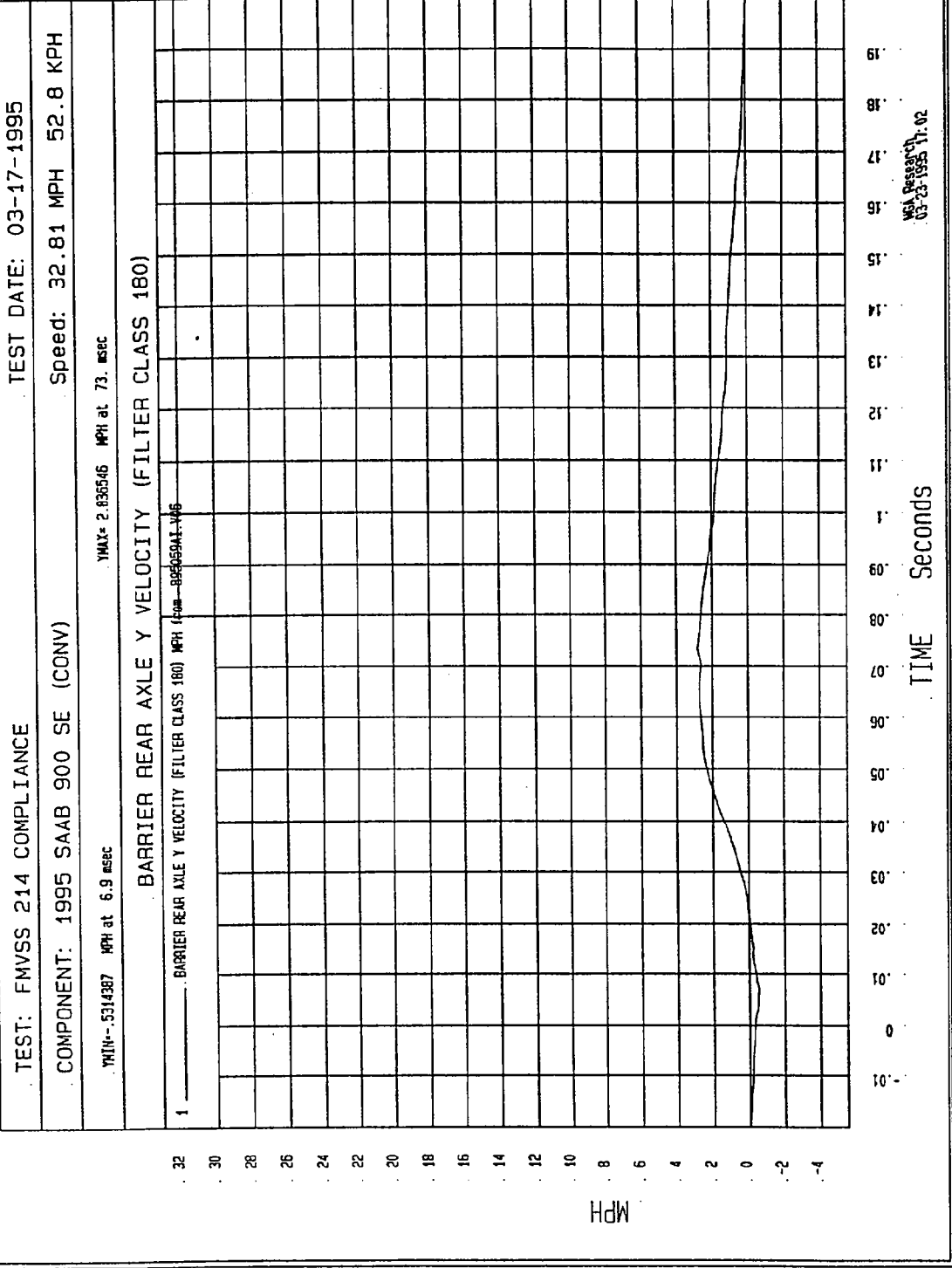


Figure B-62 - Moving Barrier Rear Axle Y Velocity vs. Time

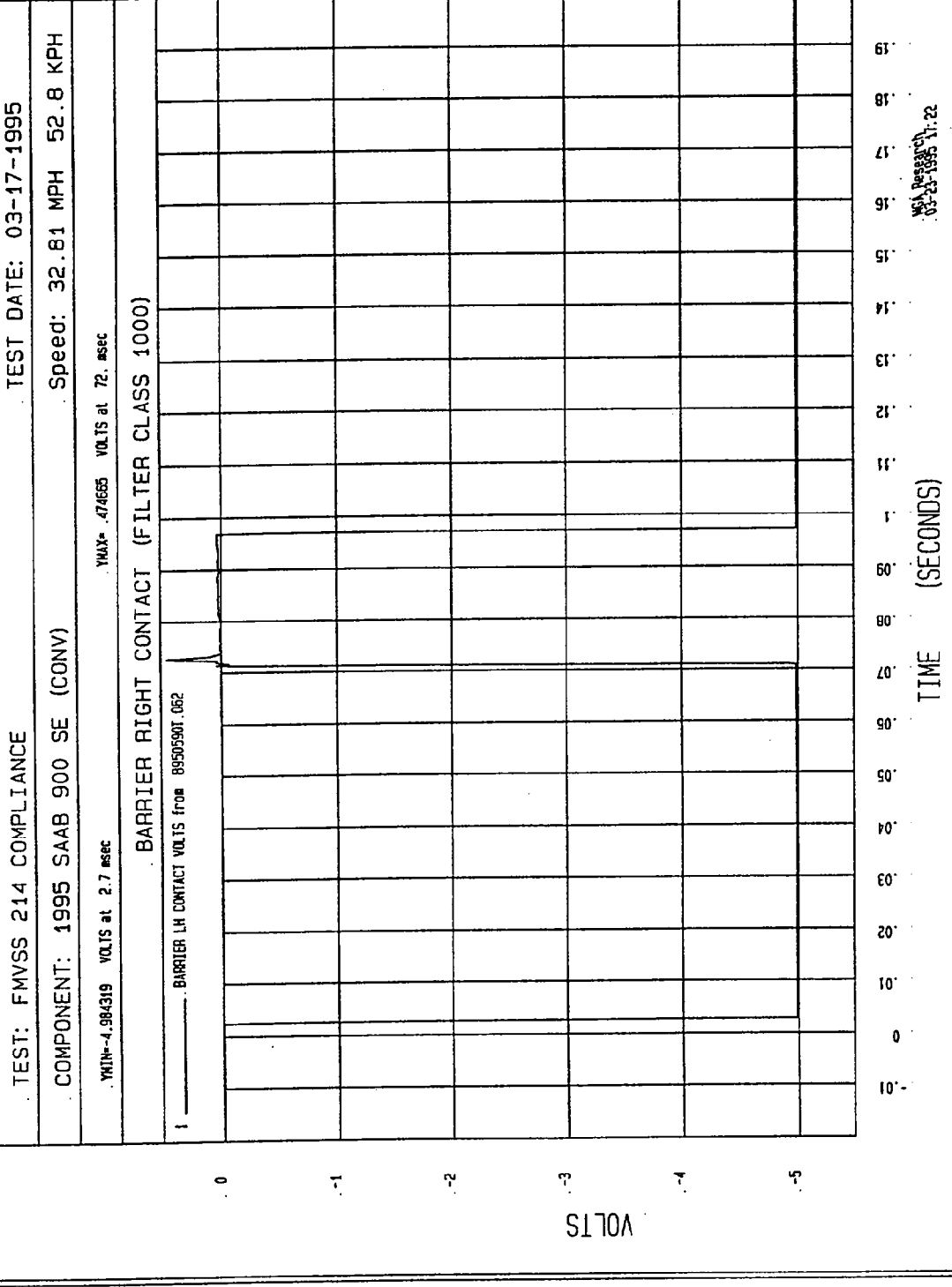


Figure B-68 - Right Hand Barrier Contact

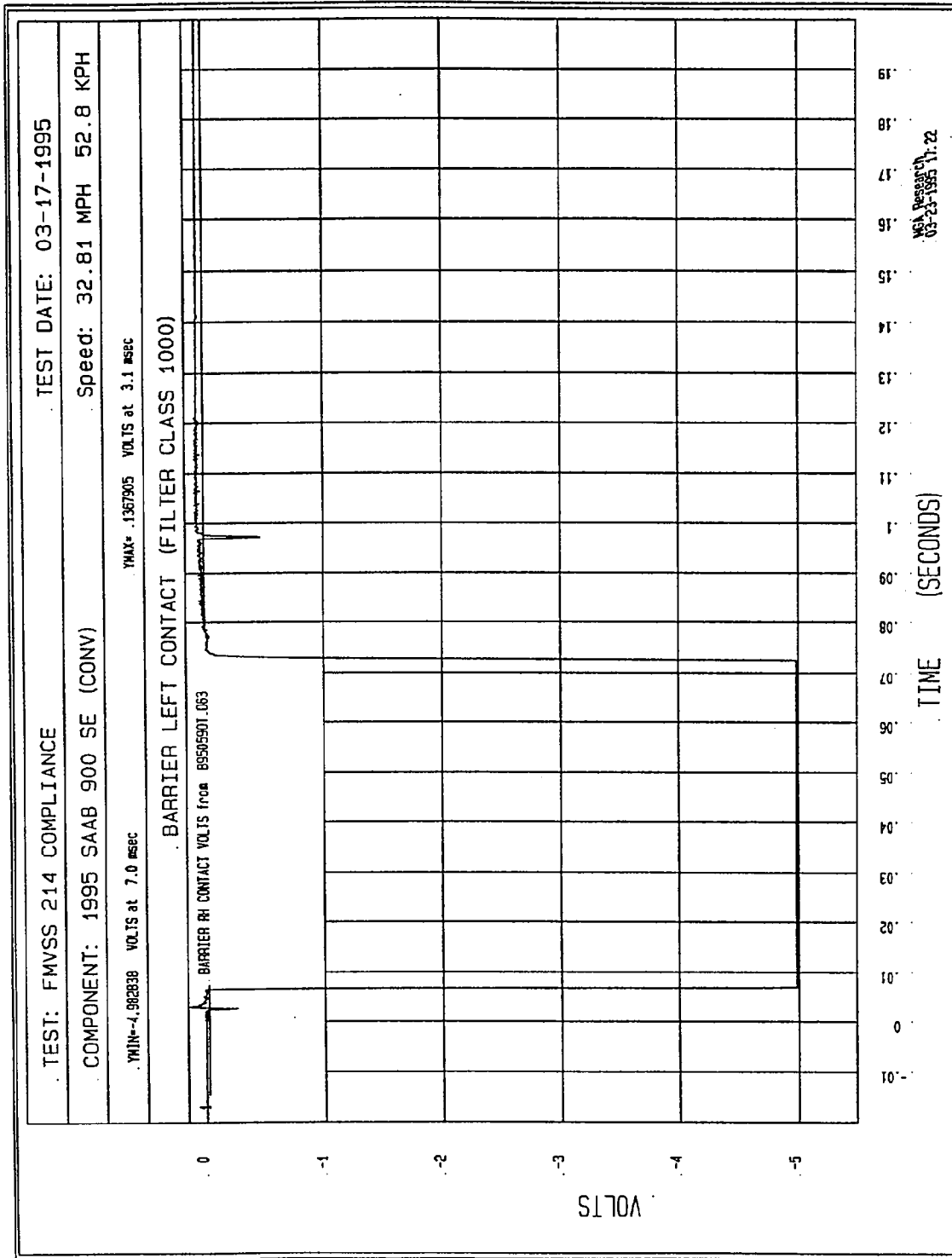


Figure B-64 - Left Hand Barrier Contact

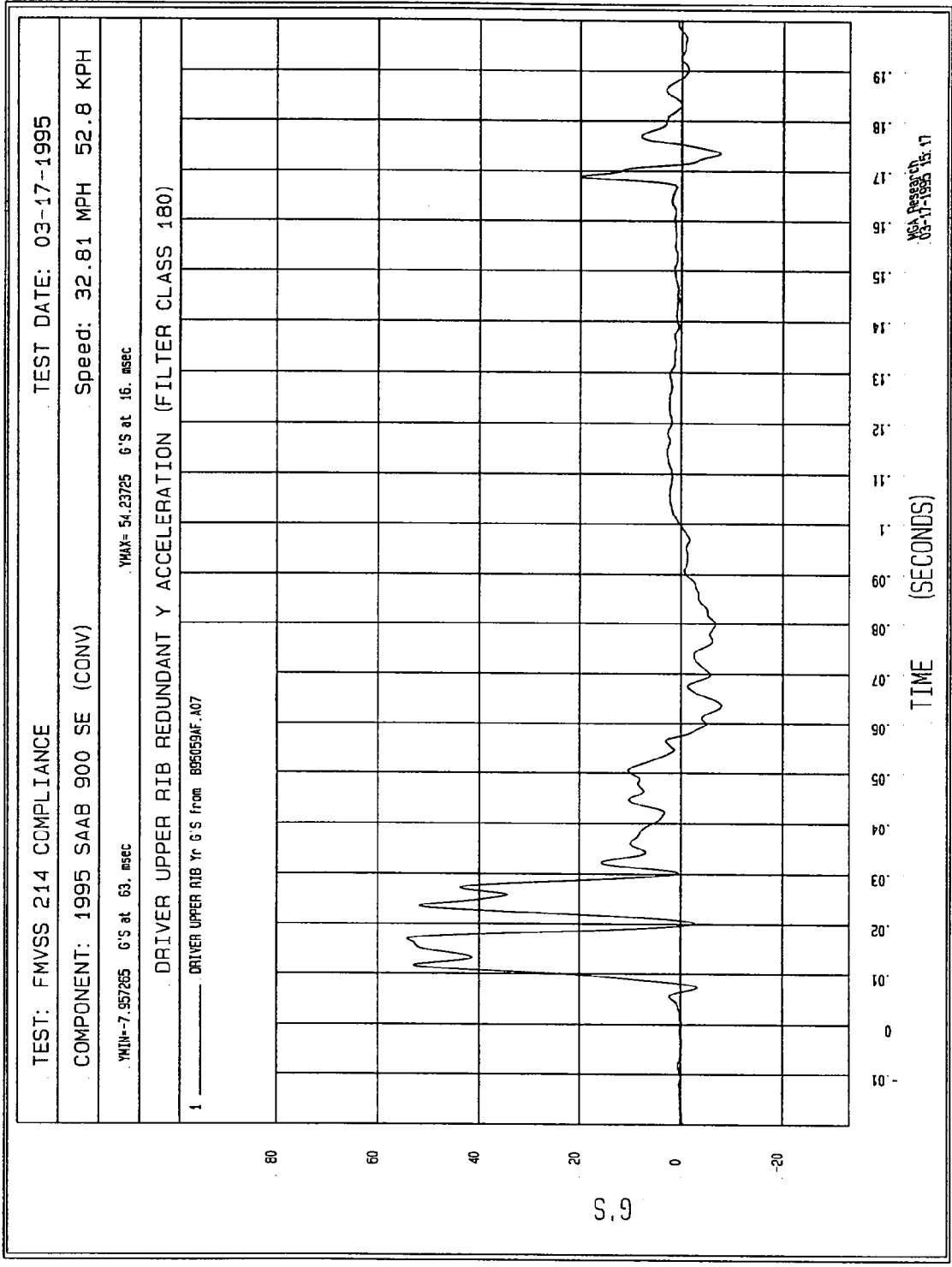


Figure B-65 - Driver Upper Rib Y Redundant Acceleration vs. Time

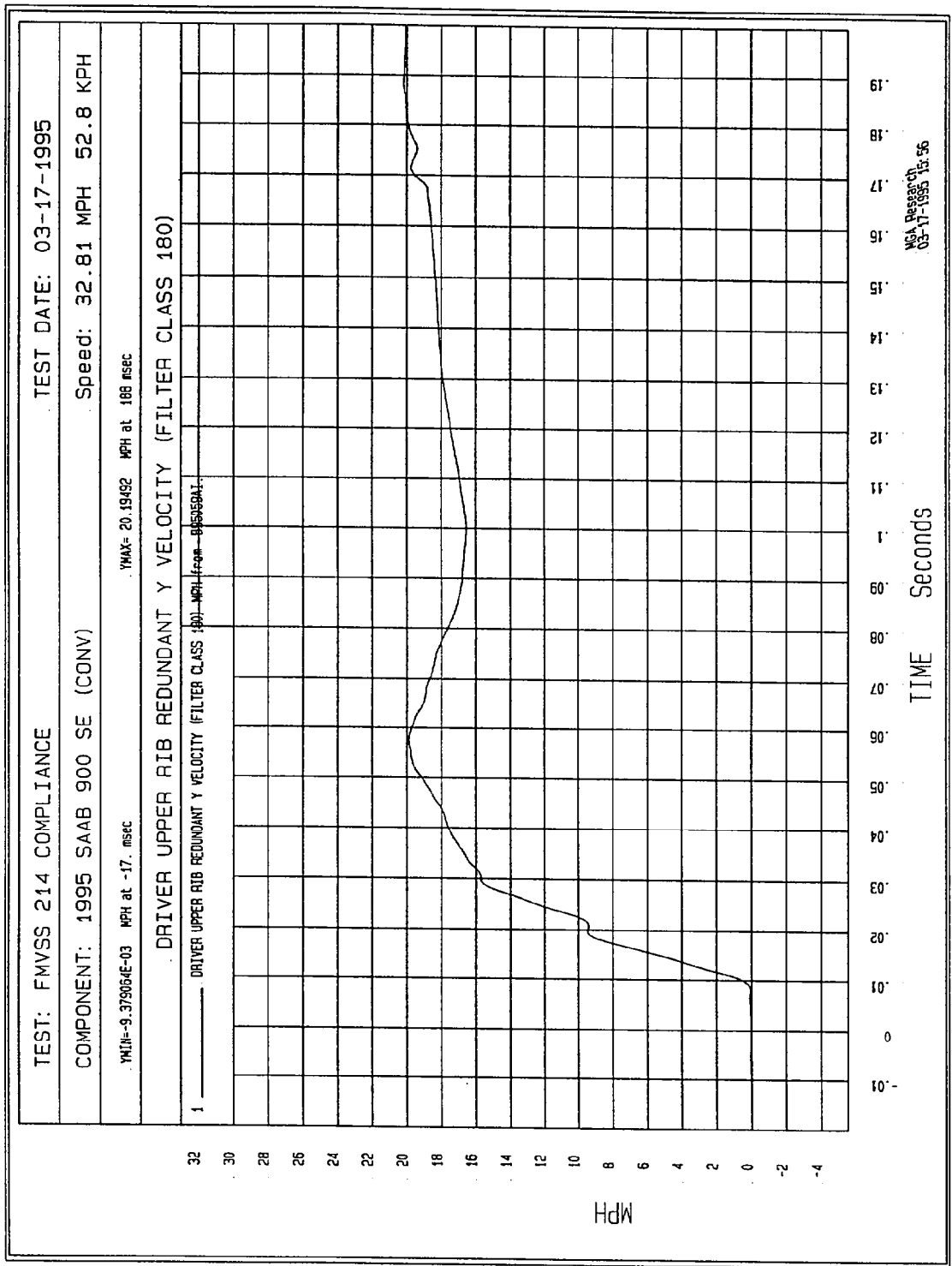


Figure B-66 - Driver Upper Rib Y Redundant Velocity vs. Time

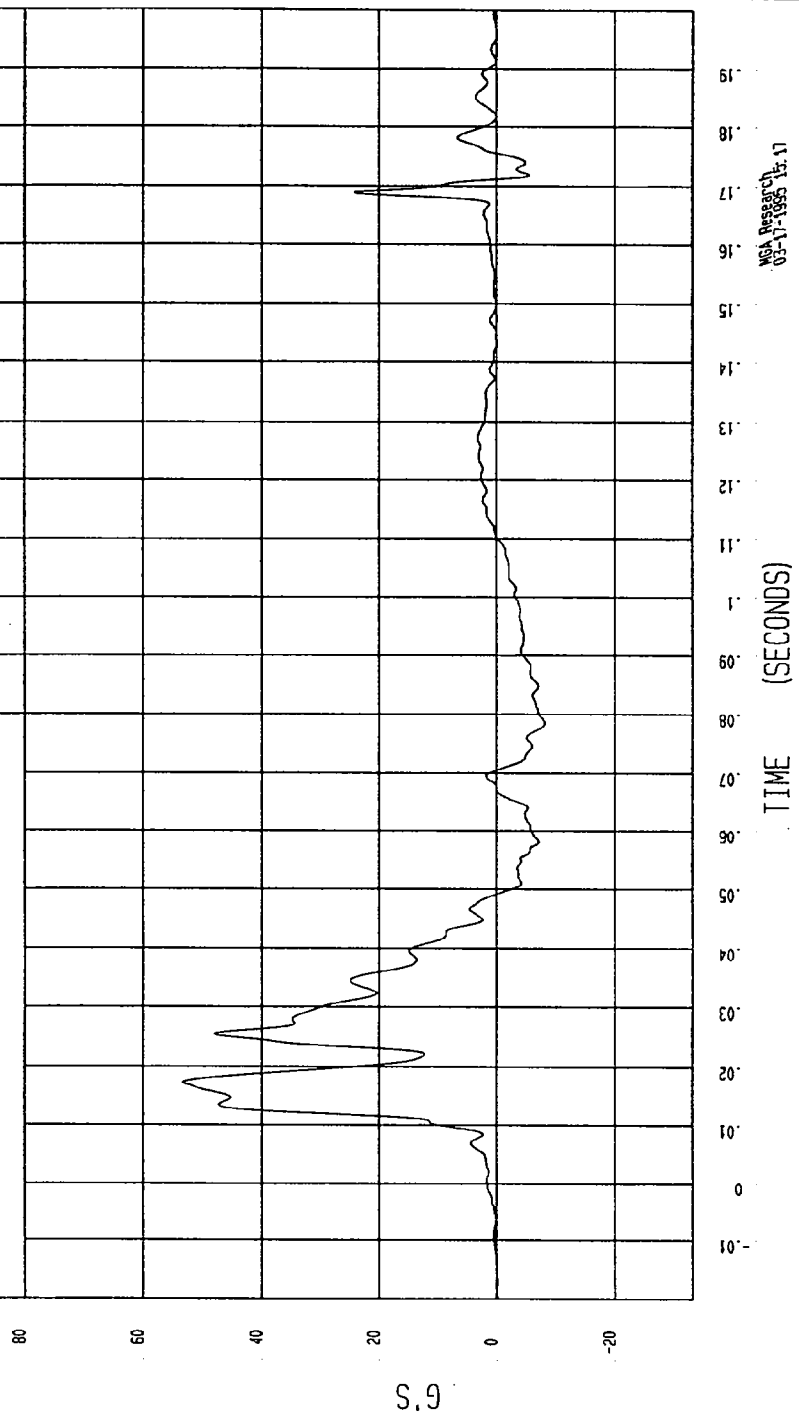
TEST: FMVSS 214 COMPLIANCE TEST DATE: 03-17-1995

COMPONENT: 1995 SAAB 900 SE (CONV) Speed: 32.81 MPH 52.8 KPH

MIN=-8.141736 G'S at 78. msec MAX= 53.30169 G'S at 17. msec

DRIVER LOWER RIB REDUNDANT Y ACCELERATION (FILTER CLASS 180)

1 DRIVER LOWER RIB Yr G'S from 895059K A39



MGA Research
03-17-1995 15.17

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

TEST: FMVSS 214 COMPLIANCE TEST DATE: 03-17-1995

COMPONENT: 1995 SAAB 900 SE (CONV) Speed: 32.81 MPH 52.8 KPH

YMIN=-1.03032E-02 MPH at -14. msec YMAX= 21.47007 MPH at 49. msec

DRIVER LOWER RIB REDUNDANT Y VELOCITY (FILTER CLASS 180)

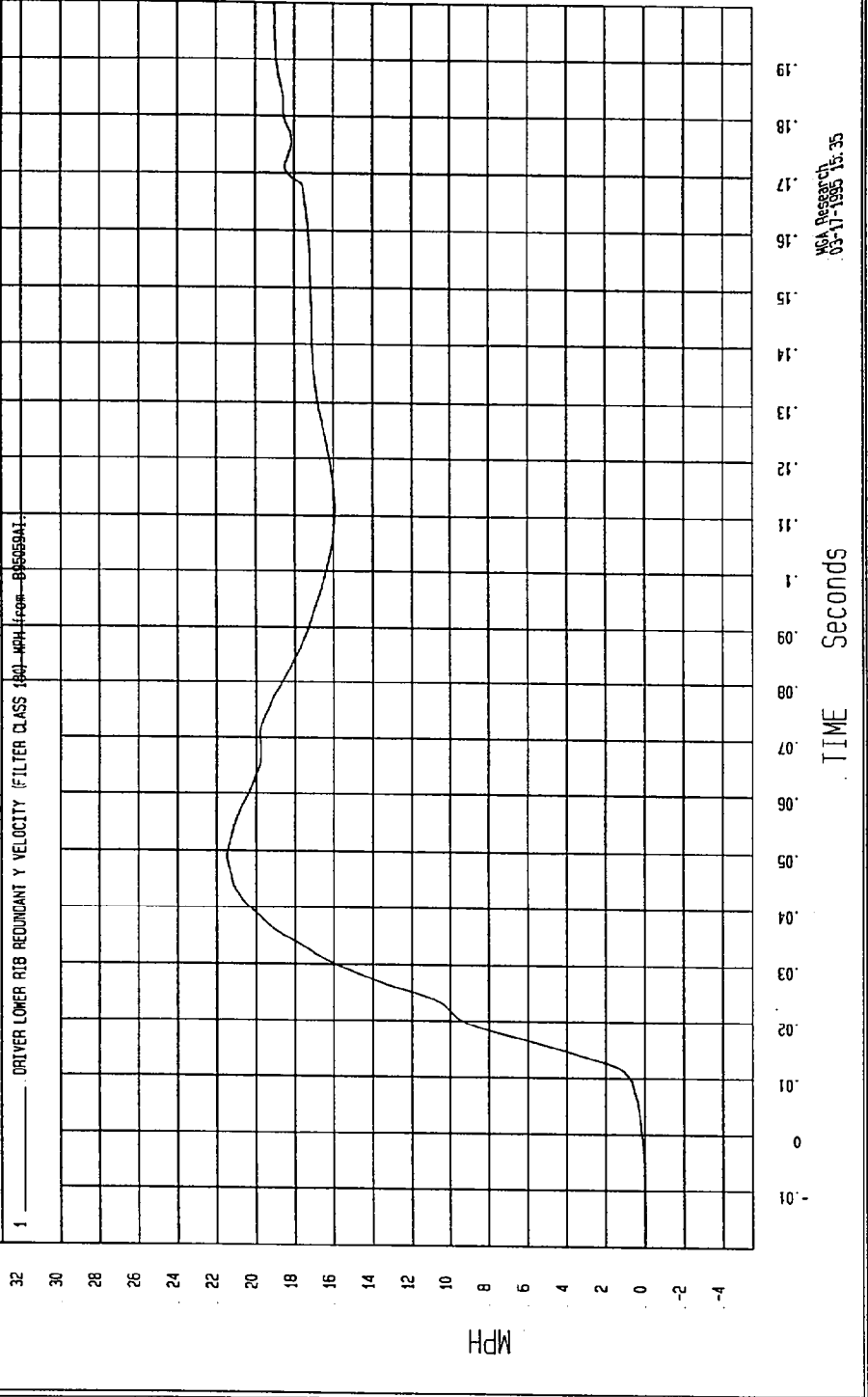


Figure B-68 - Driver Lower Rib Y Redundant Velocity vs. Time

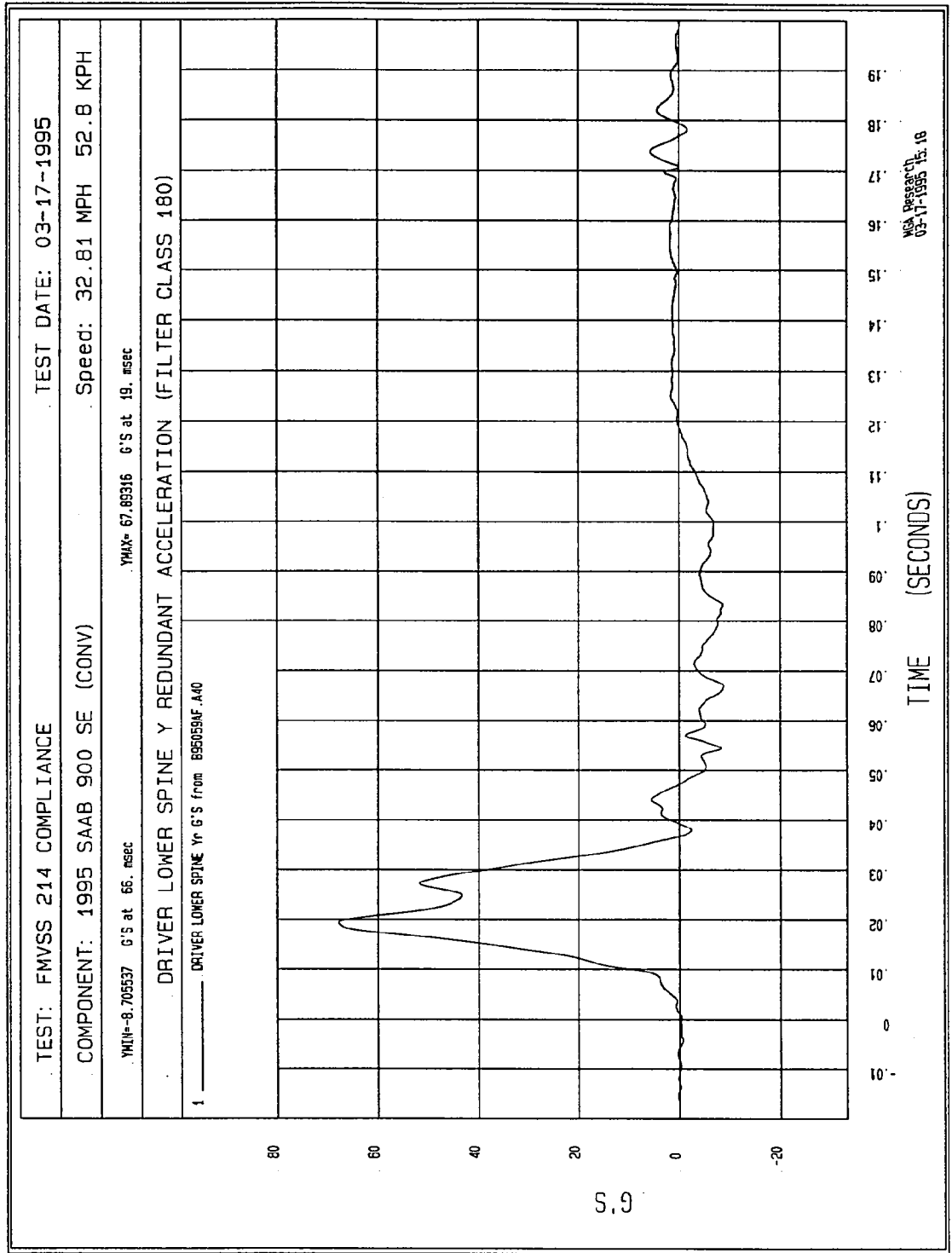


Figure B-69 - Driver Lower Spine Y Redundant Acceleration vs. Time

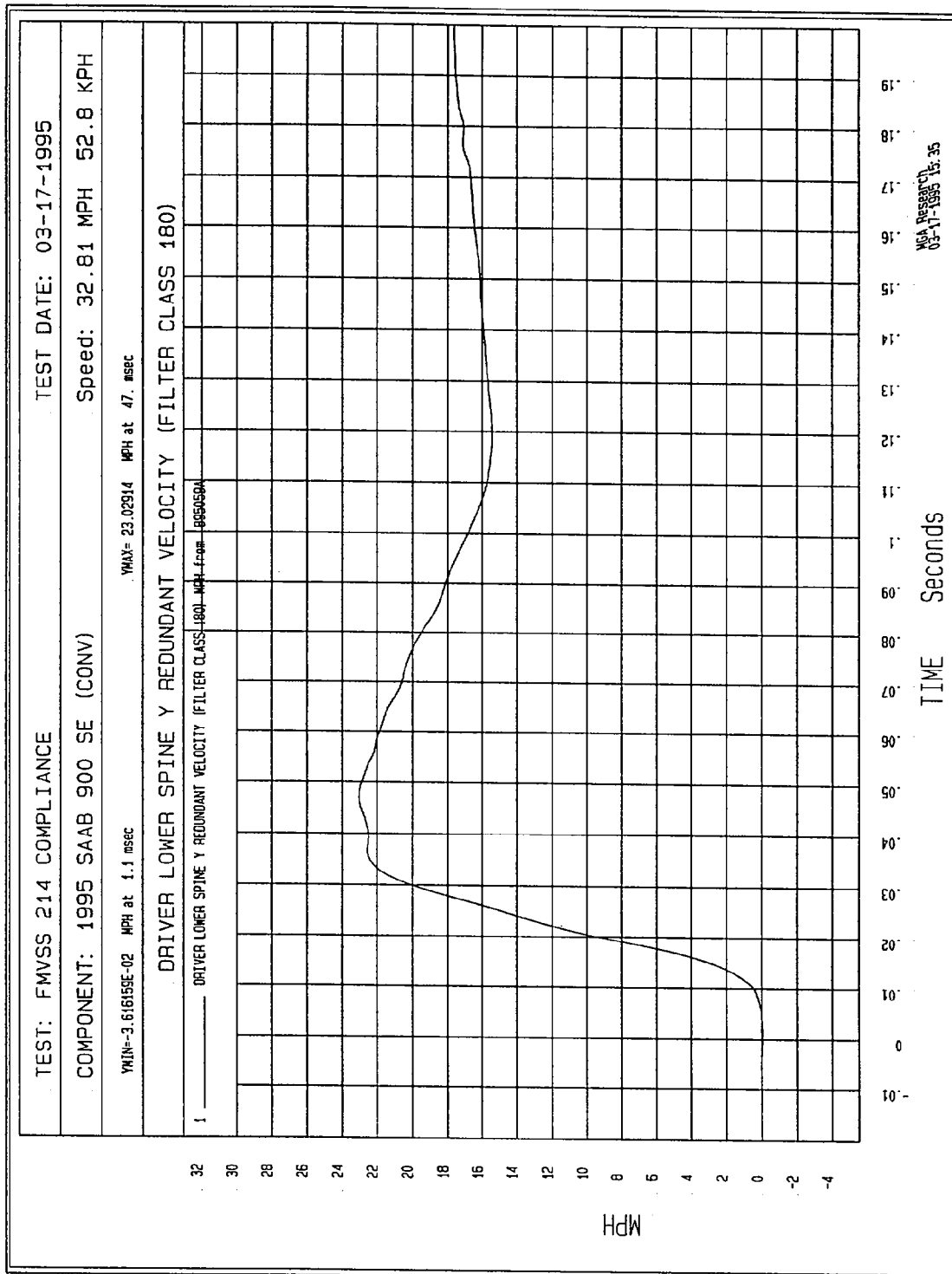


Figure B-70 - Driver Lower Spine Y Redundant Velocity vs. Time

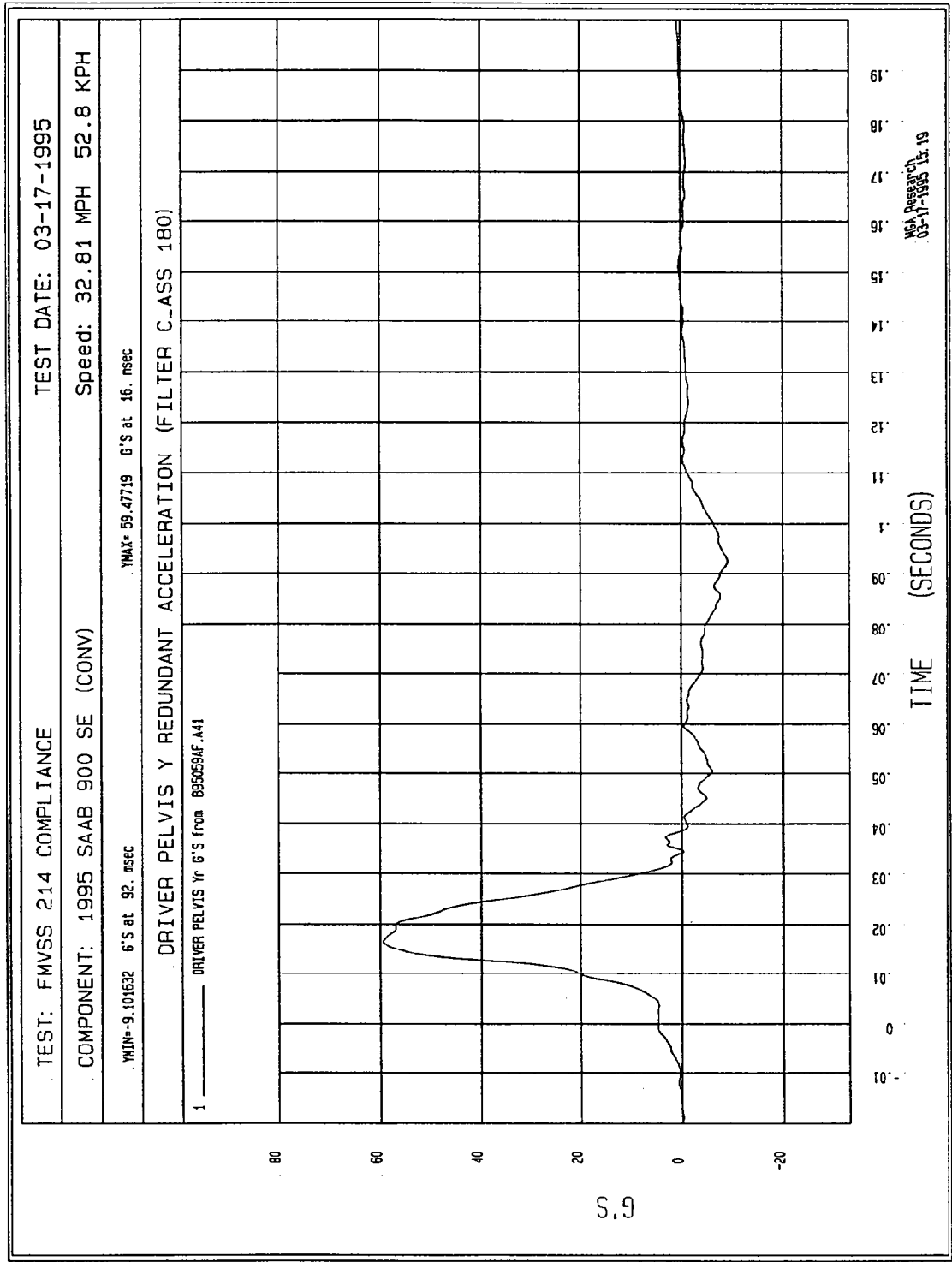


Figure B-71 - Driver Pelvis Y Redundant Acceleration vs. Time

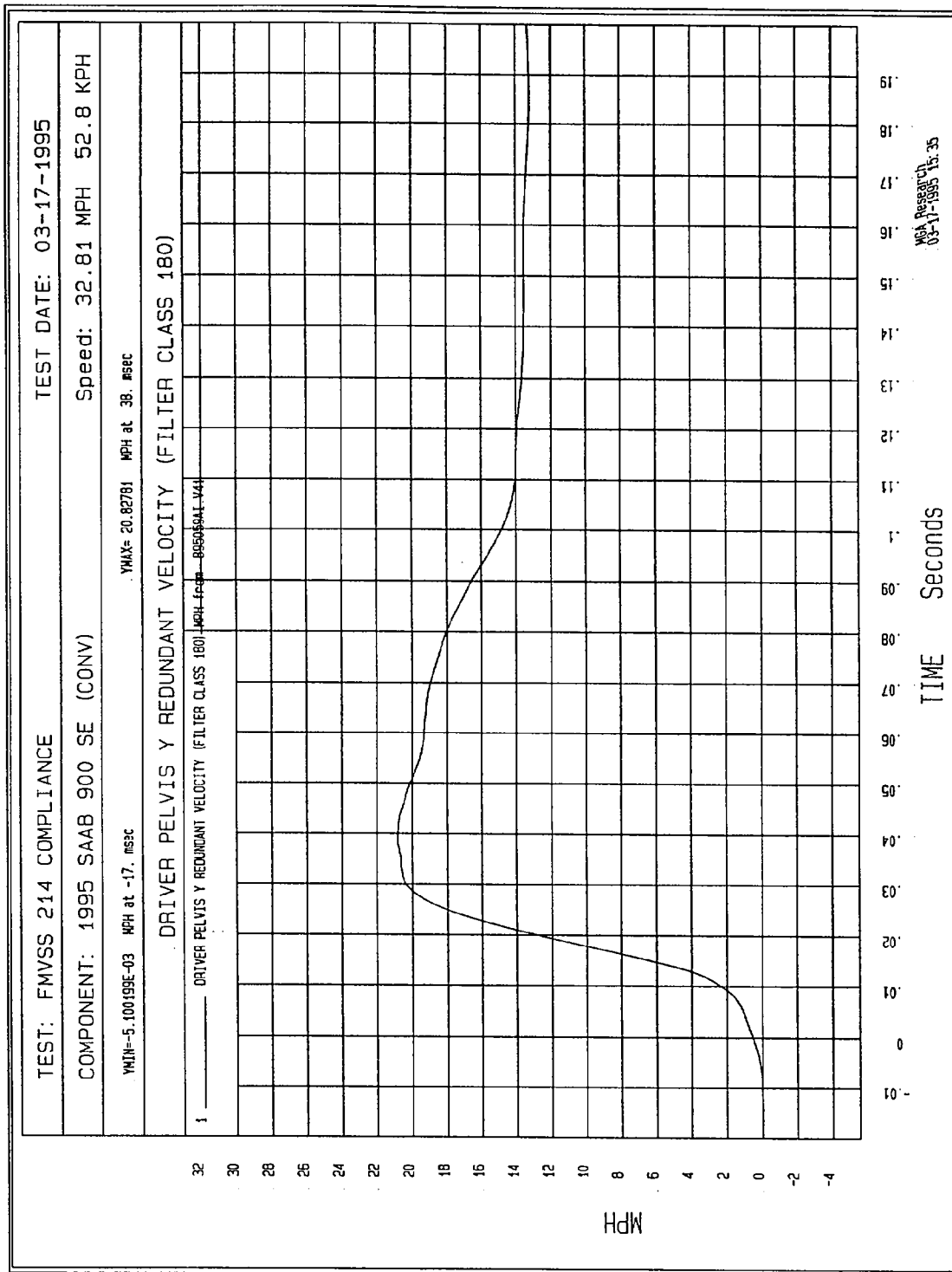


Figure B-72 - Driver Pelvis Y Redundant Velocity vs. Time

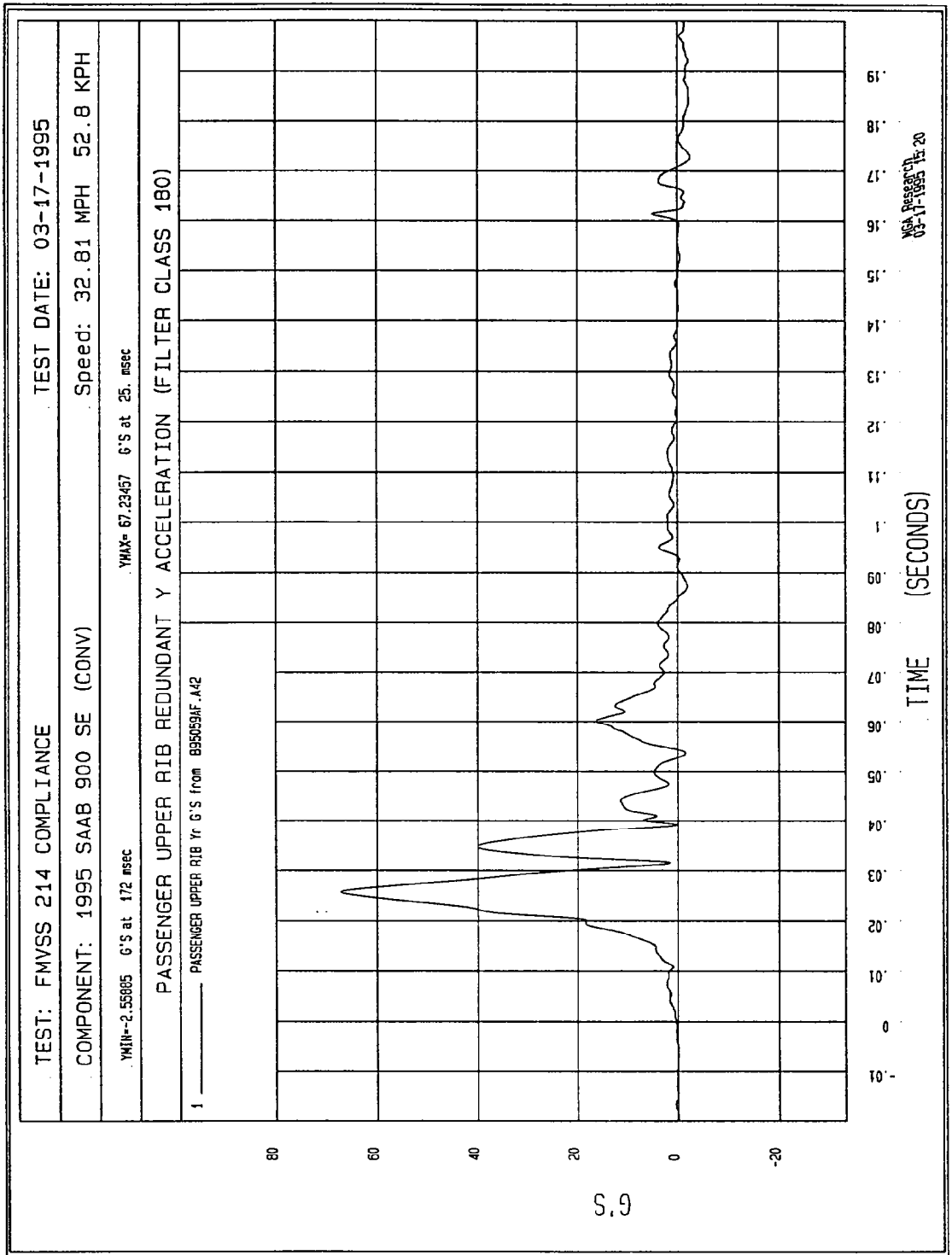
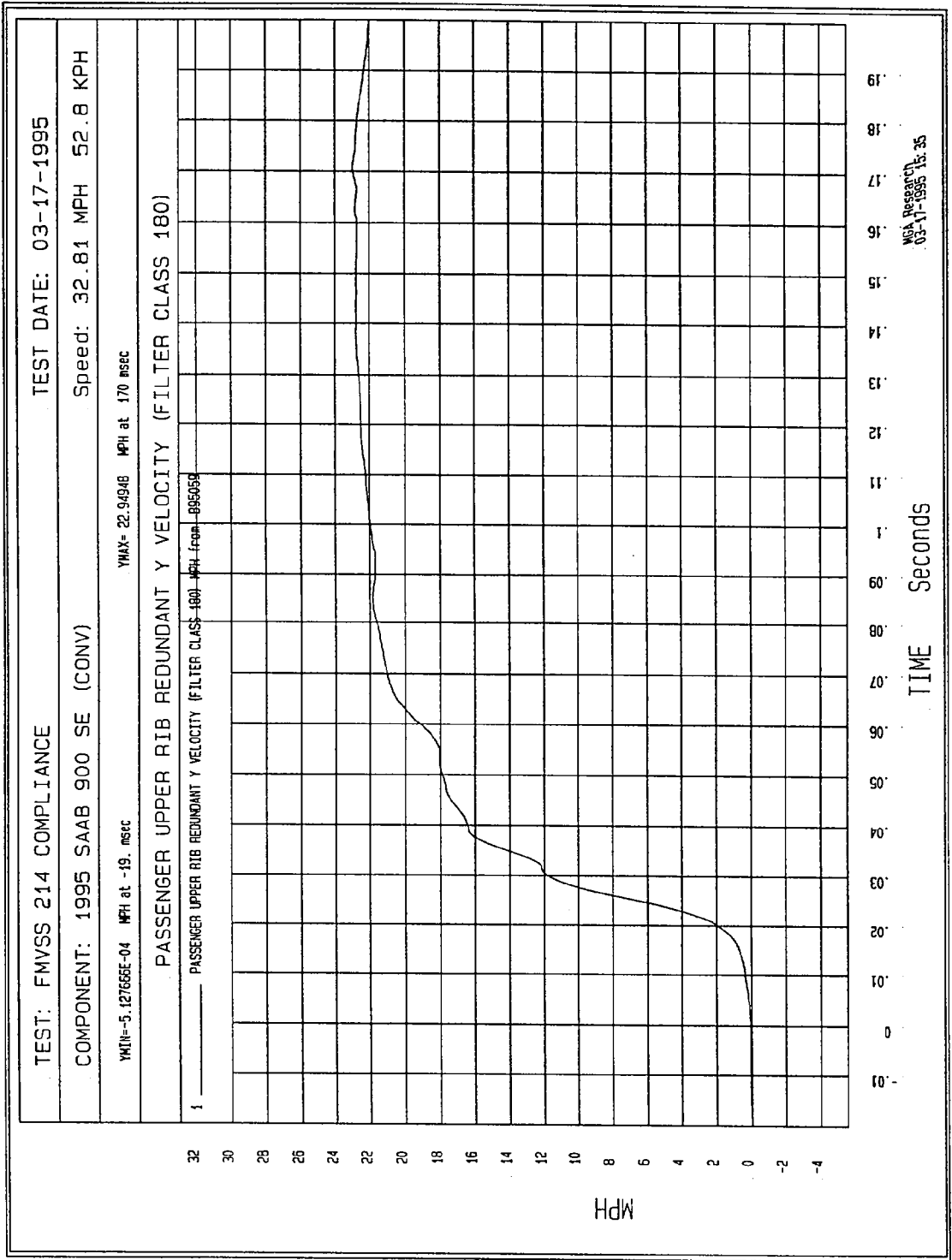


Figure B-73 - Passenger Upper Rib Y Redundant Acceleration vs. Time



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

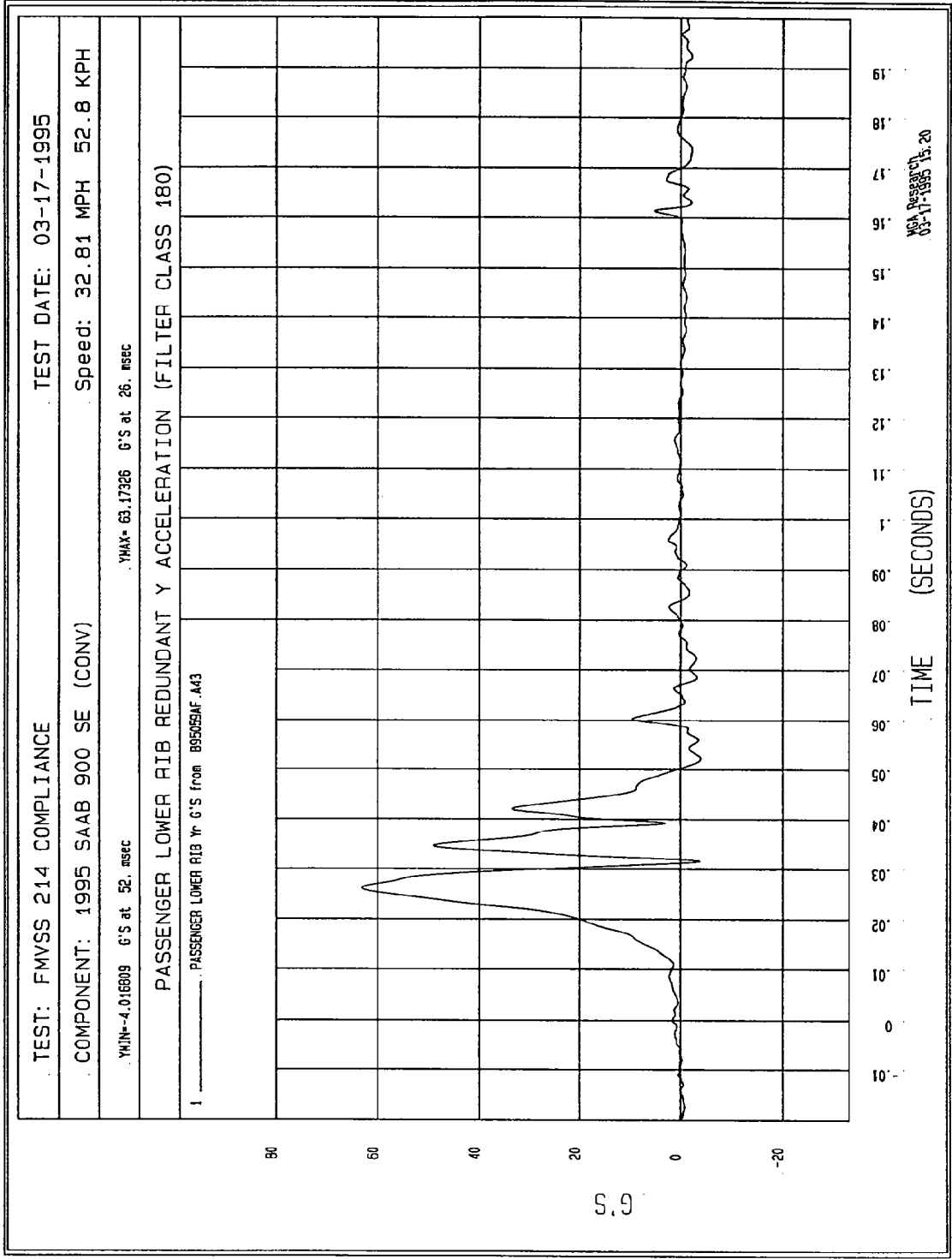


Figure B-75 - Passenger Lower Rib Y Redundant Acceleration vs. Time

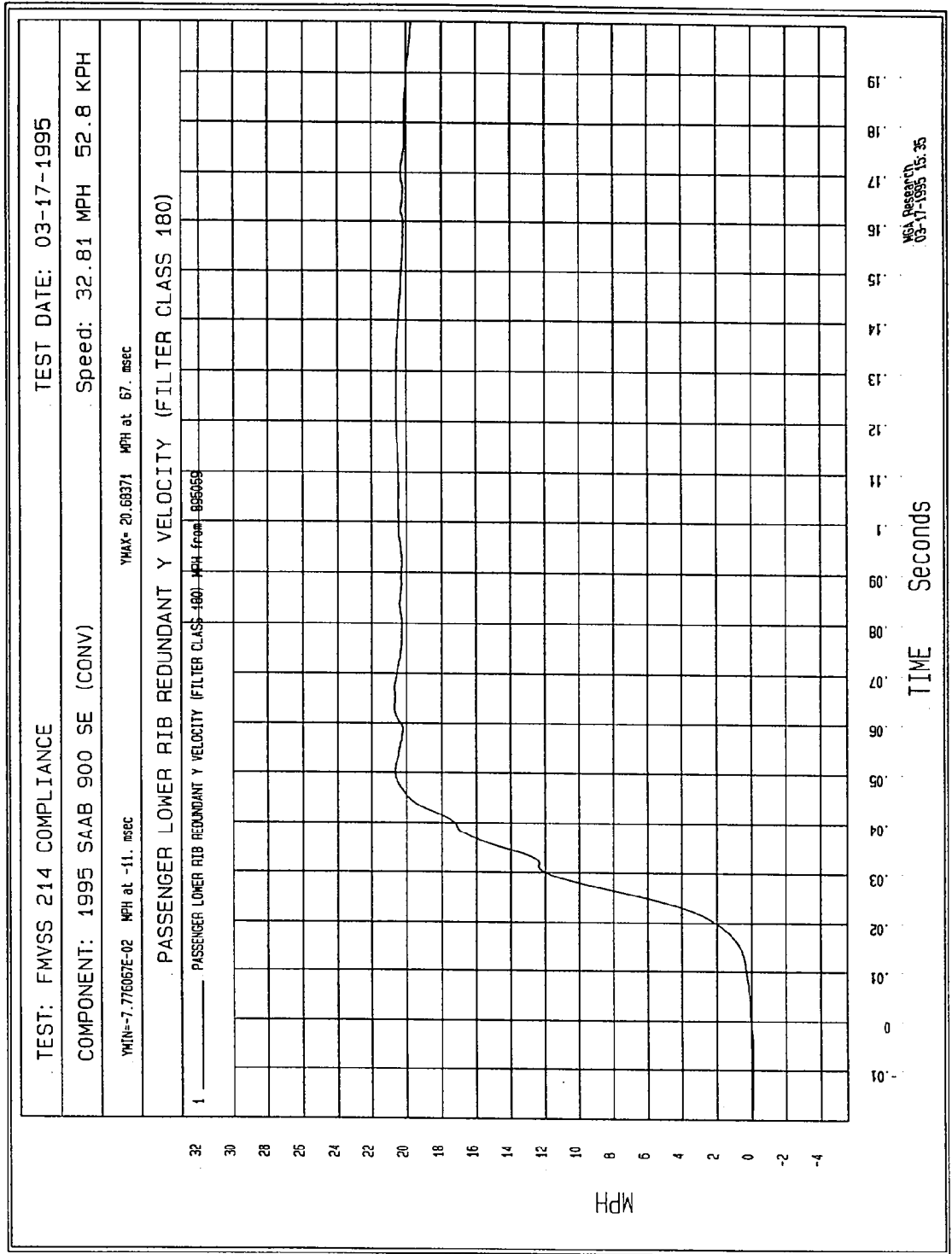


Figure B-76 - Passenger Lower Rib Y Redundant Velocity vs. Time

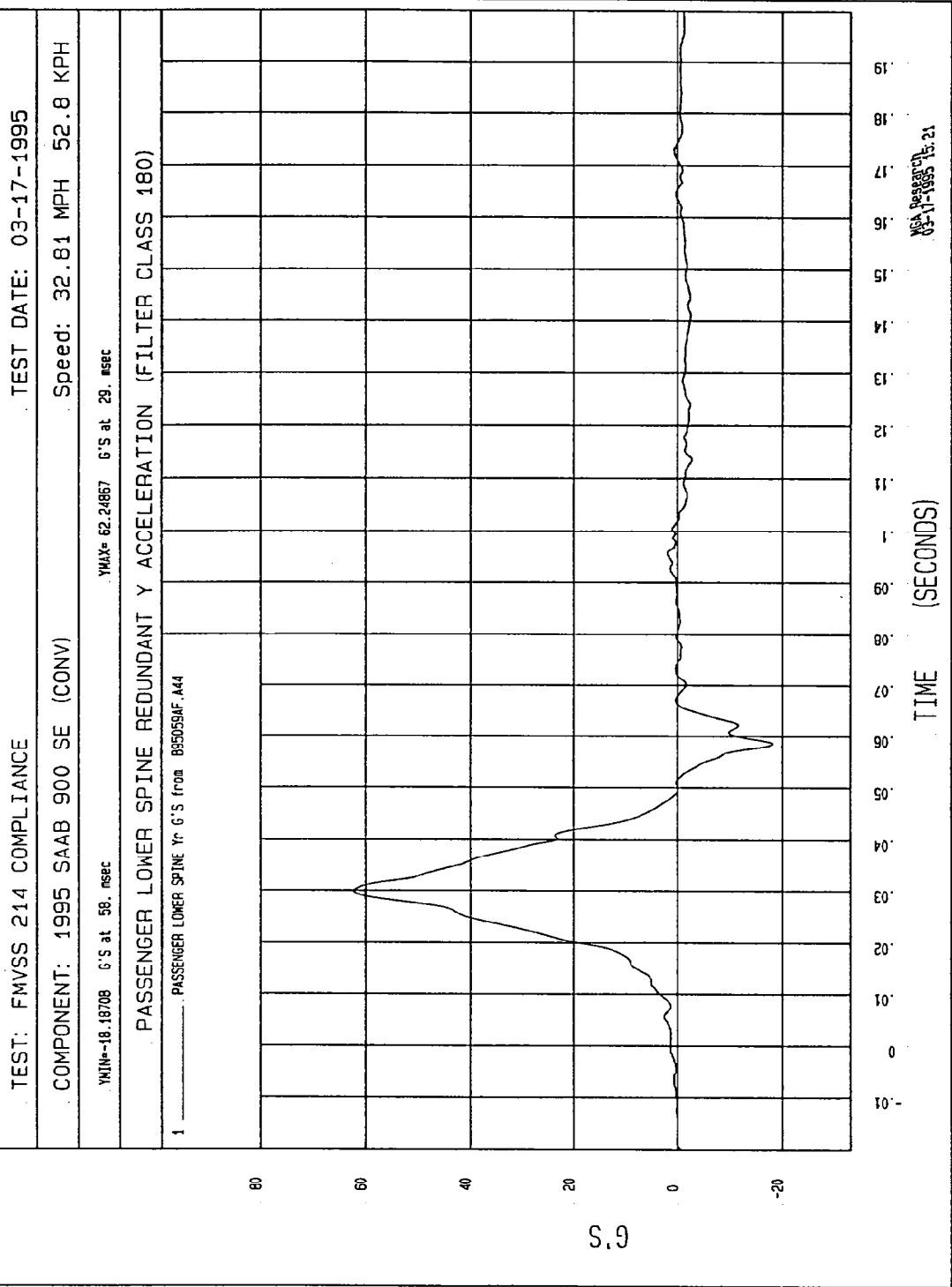


Figure B-77 - Passenger Lower Spine Y Redundant Acceleration vs. Time

TEST: FMVSS 214 COMPLIANCE TEST DATE: 03-17-1995

COMPONENT: 1995 SAAB 900 SE (CONV) Speed: 32.81 MPH 52.8 KPH

YMIN=-3.761973E-03 MPH at -19. msec

YMAX=22.70348 MPH at 51. msec

PASSENGER LOWER SPINE REDUNDANT Y VELOCITY (FILTER CLASS 180)

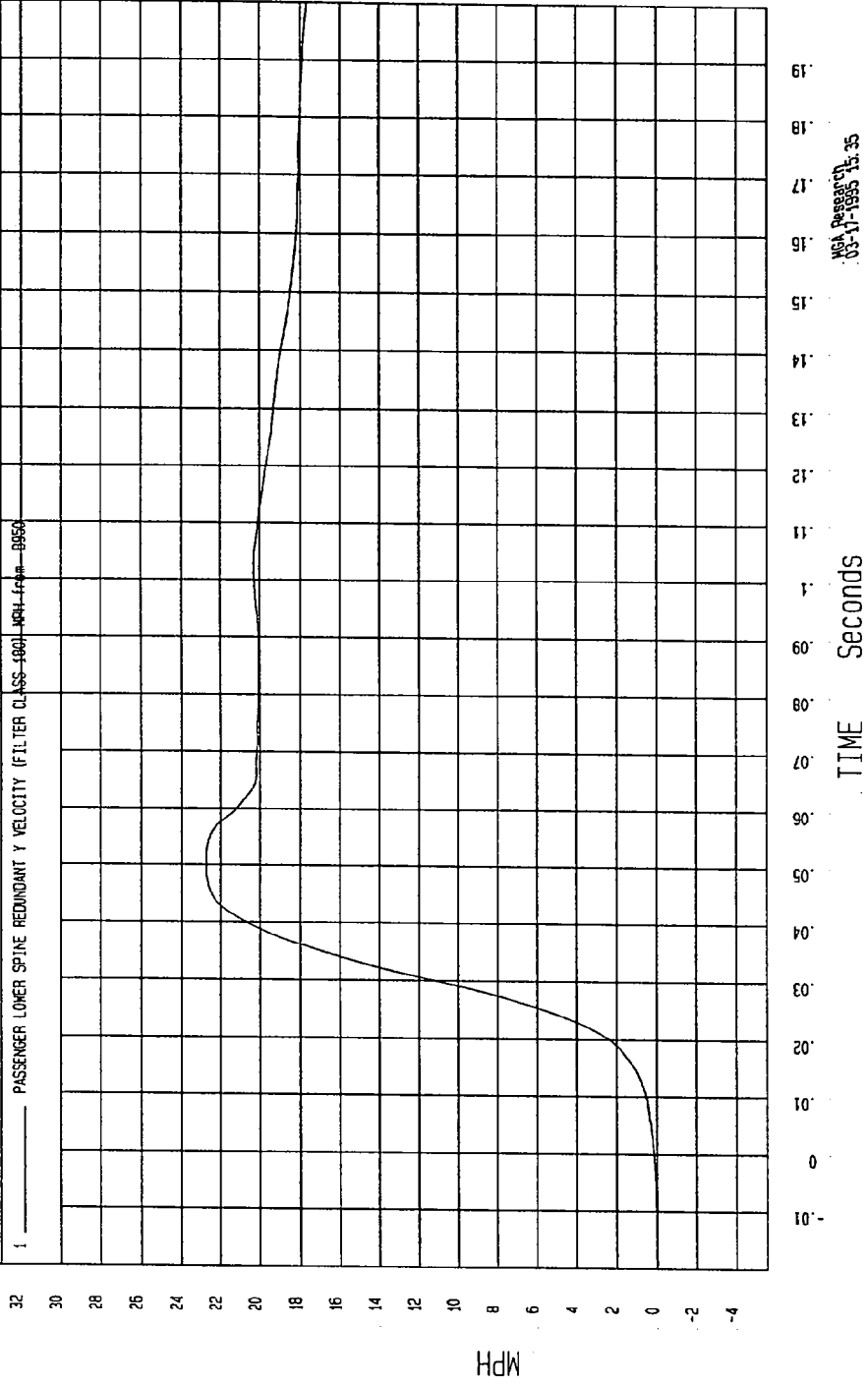


Figure B-78 - Passenger Lower Spine Y Redundant Velocity vs. Time

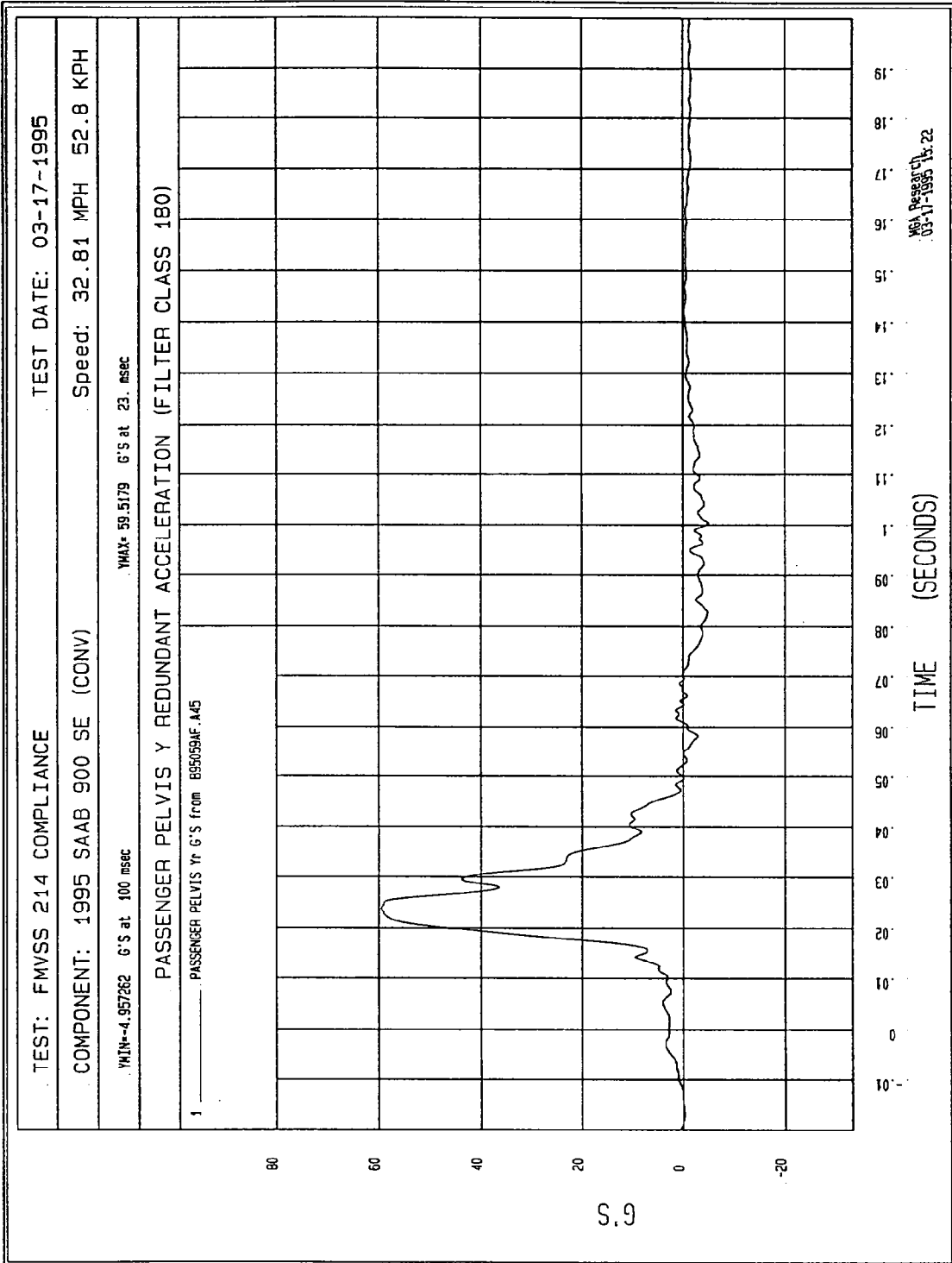


Figure B-79 - Passenger Pelvis Y Redundant Acceleration vs. Time

TEST: FMVSS 214 COMPLIANCE TEST DATE: 03-17-1995

COMPONENT: 1995 SAAB 900 SE (CONV) Speed: 32.81 MPH 52.8 KPH

YMIN=-6.721466E-03 MPH at -14. msec YMAX= 20.89135 MPH at 52. msec

PASSENGER PELVIS Y REDUNDANT VELOCITY (FILTER CLASS 180)

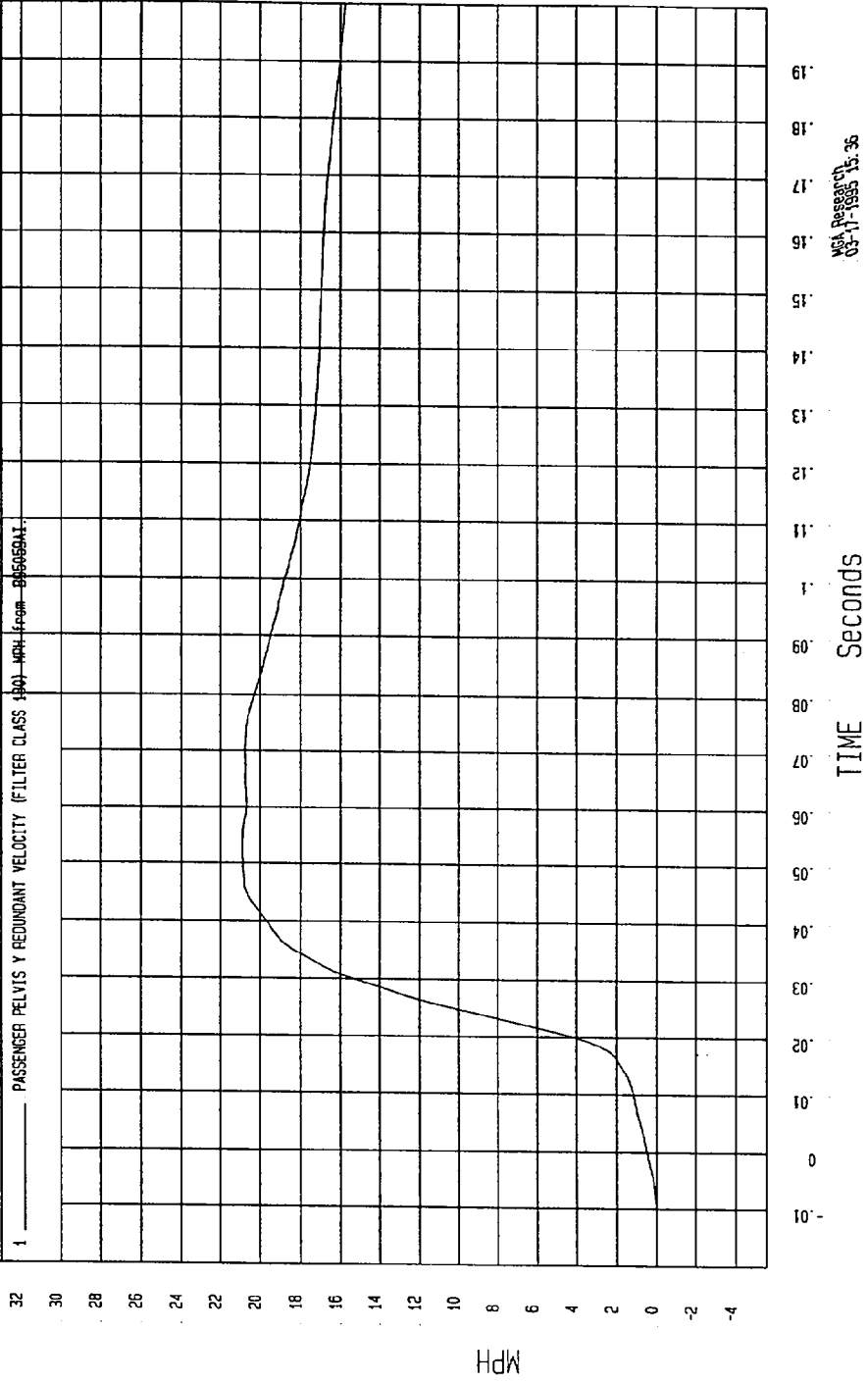


Figure B-80 - Passenger Pelvis Y Redundant Velocity vs. Time

FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

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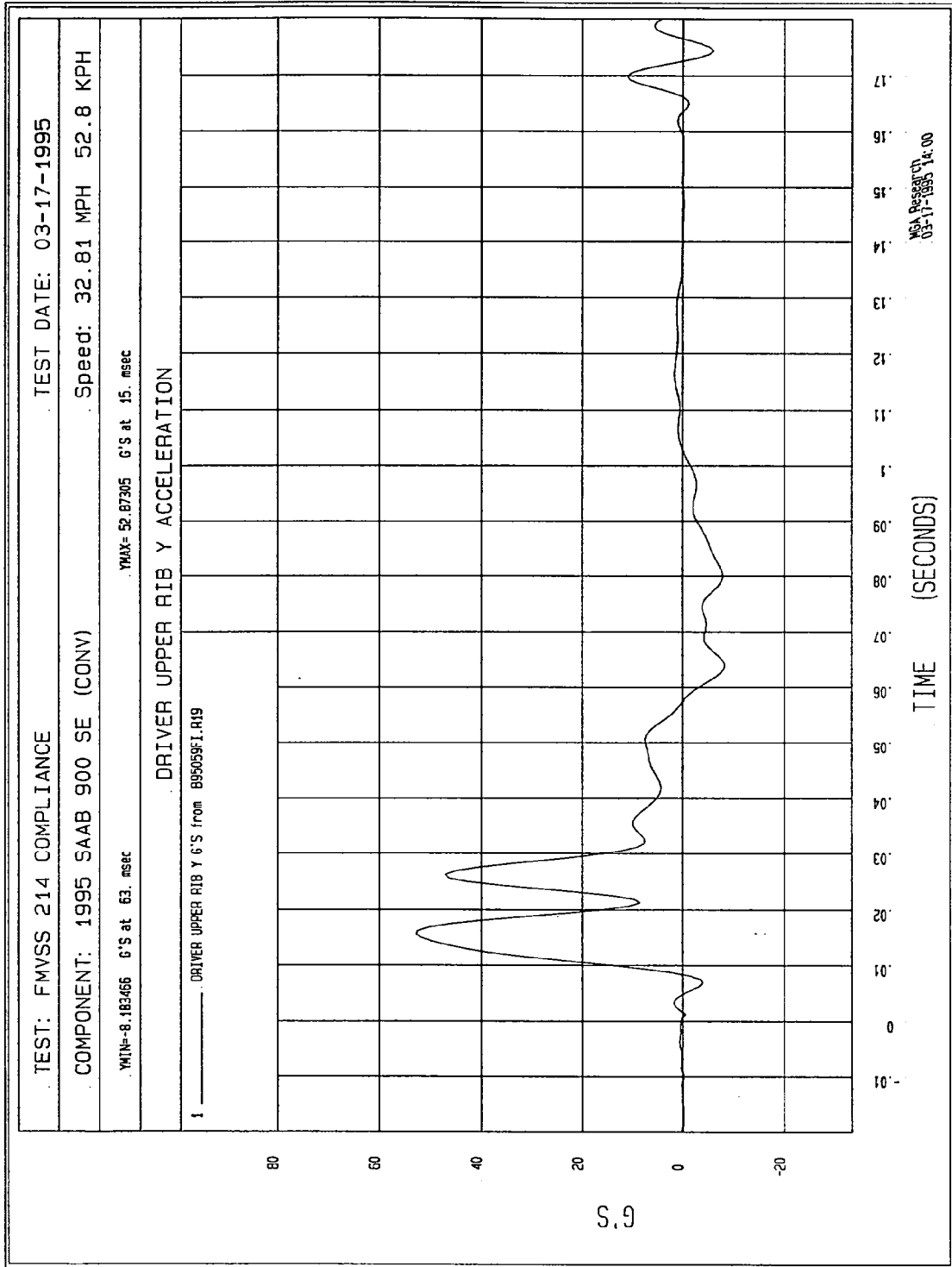


Figure B-81 - Driver Upper Rib Y Acceleration vs. Time

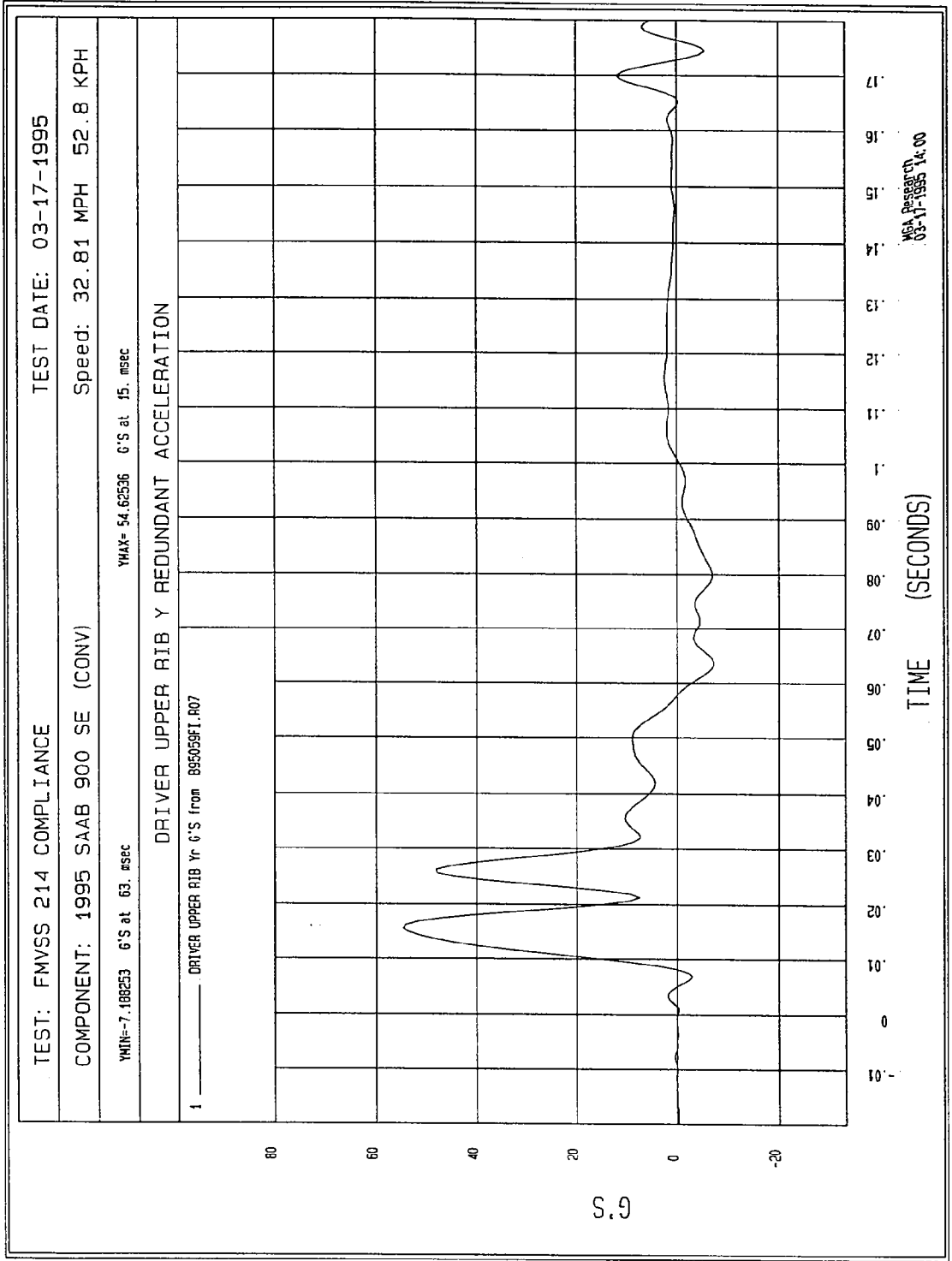


Figure B-82 • Driver Upper Rib Y Redundant Acceleration vs. Time

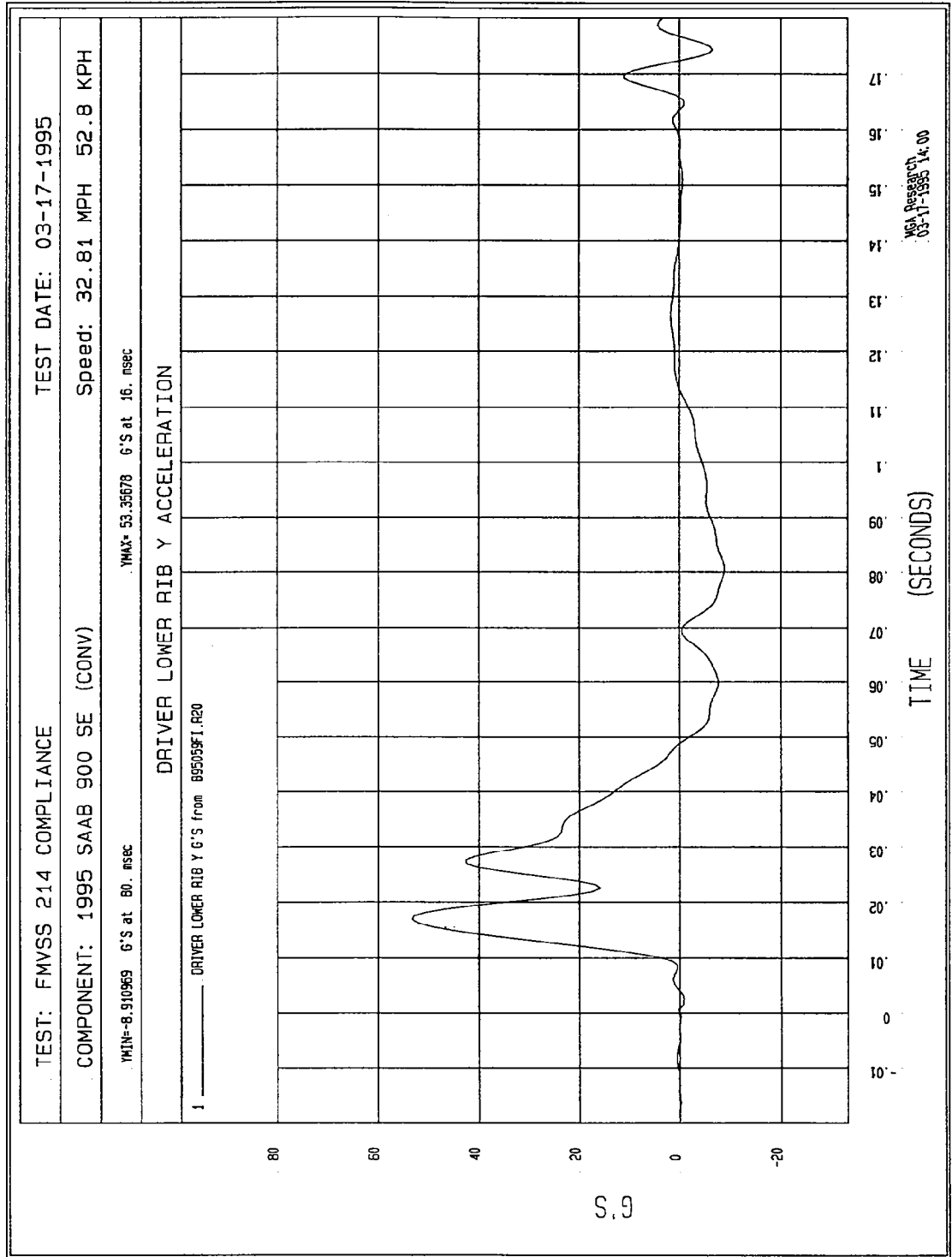


Figure B-83 - Driver Lower Rib Y Acceleration vs. Time

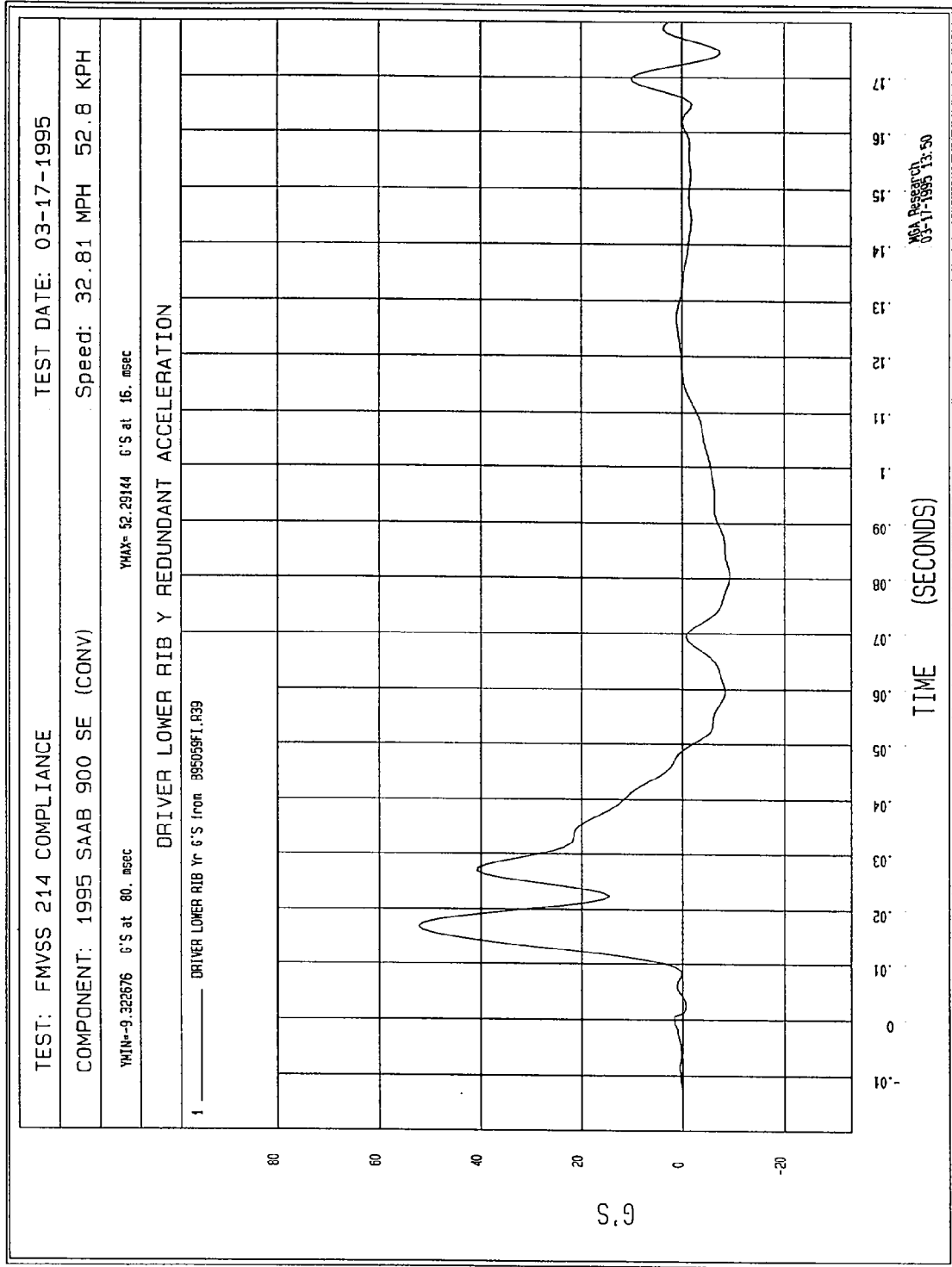


Figure B-84 - Driver Lower Rib Y Redundant Acceleration vs. Time

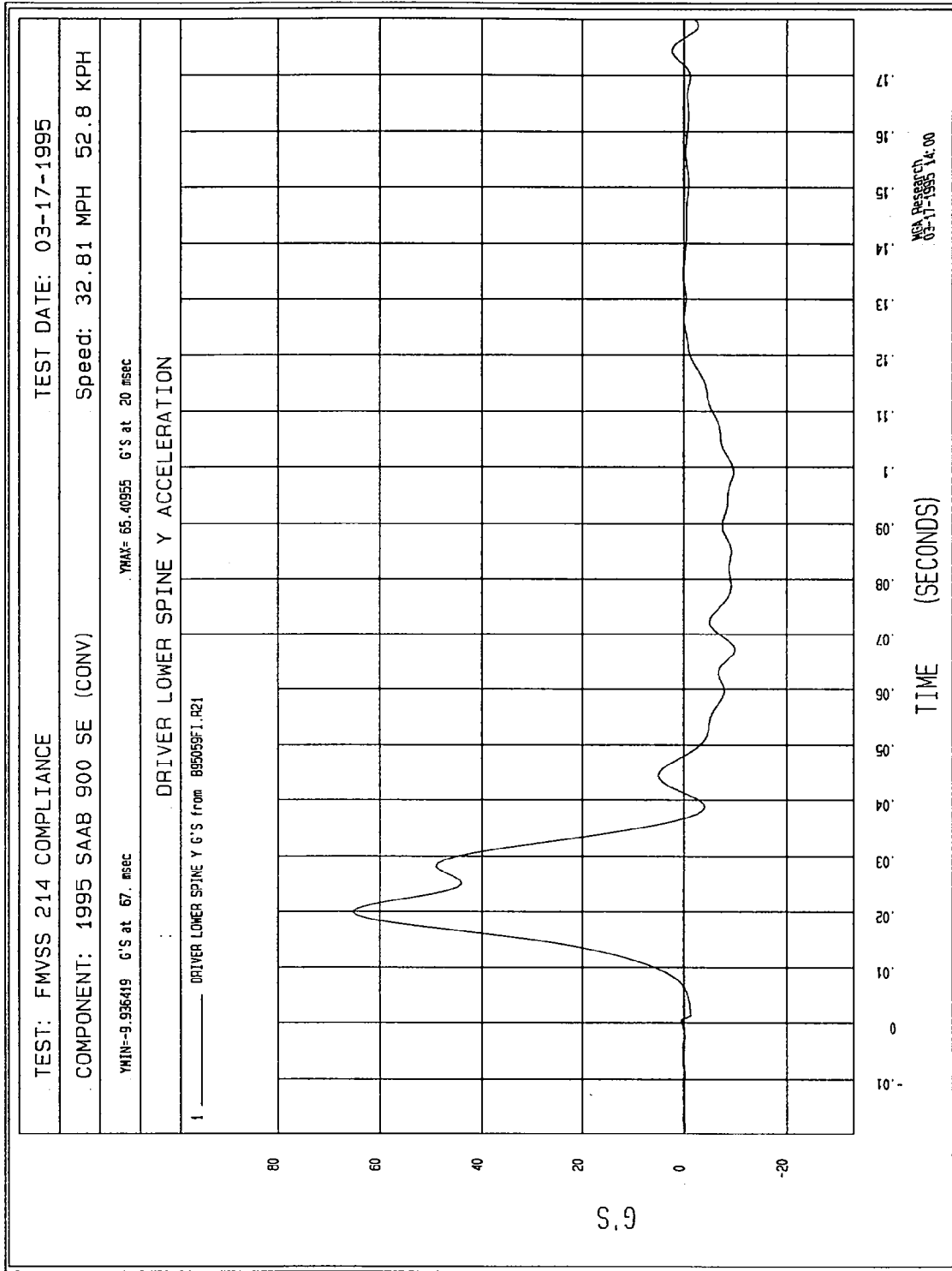


Figure B-85 - Driver Lower Spine Y Acceleration vs. Time

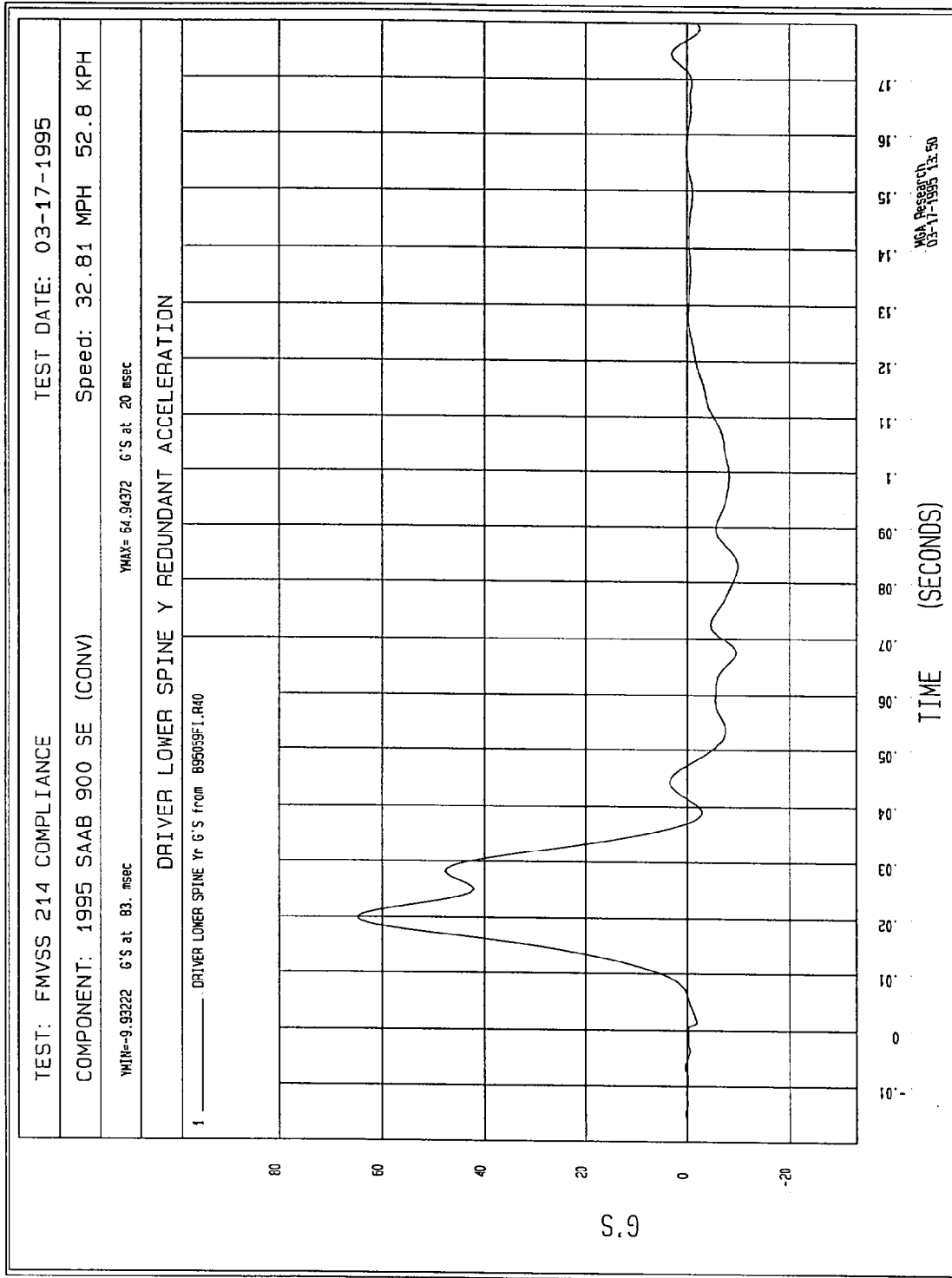


Figure B-86 - Driver Lower Spine Y Redundant Acceleration vs. Time

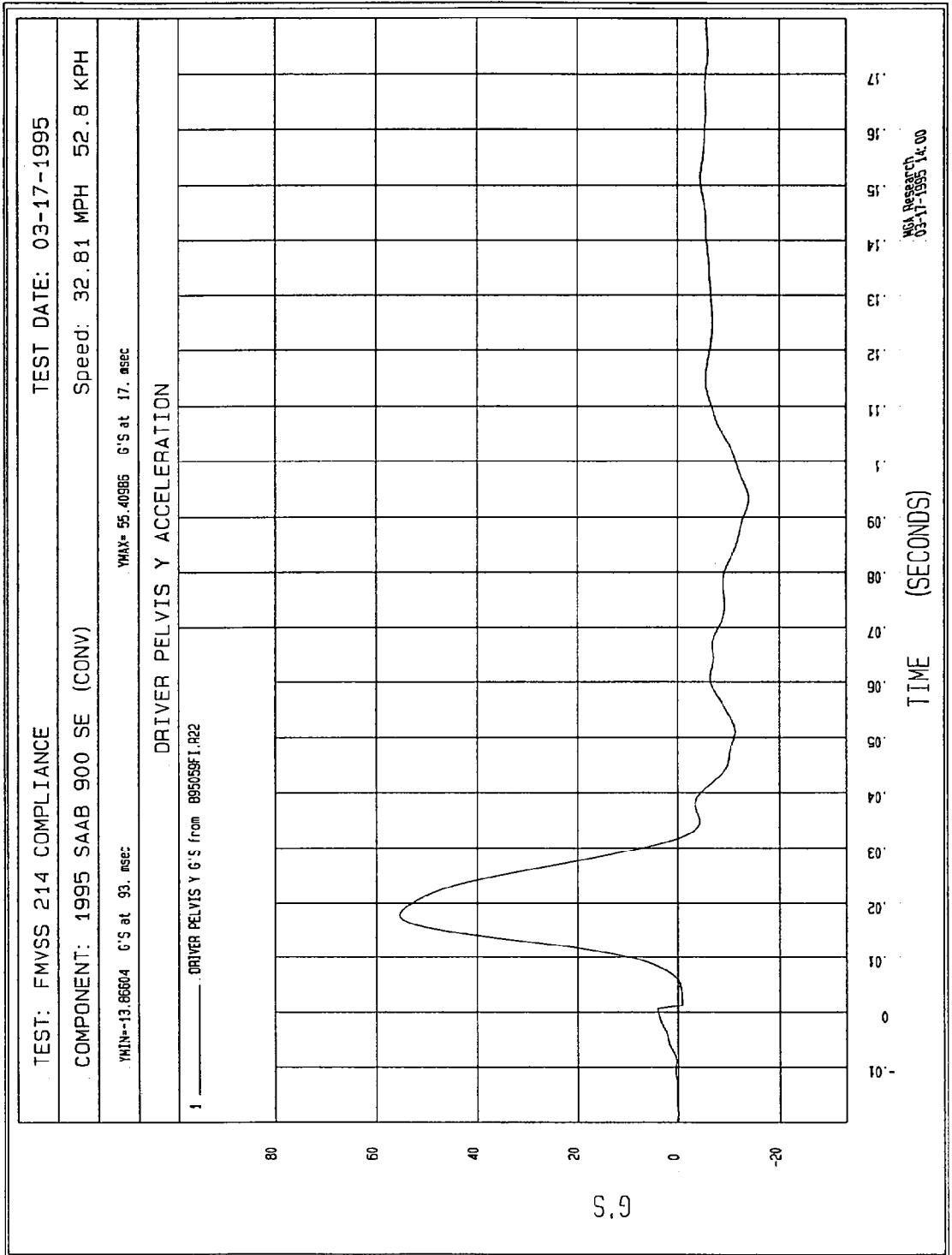


Figure B-87 - Driver Pelvis Y Acceleration vs. Time

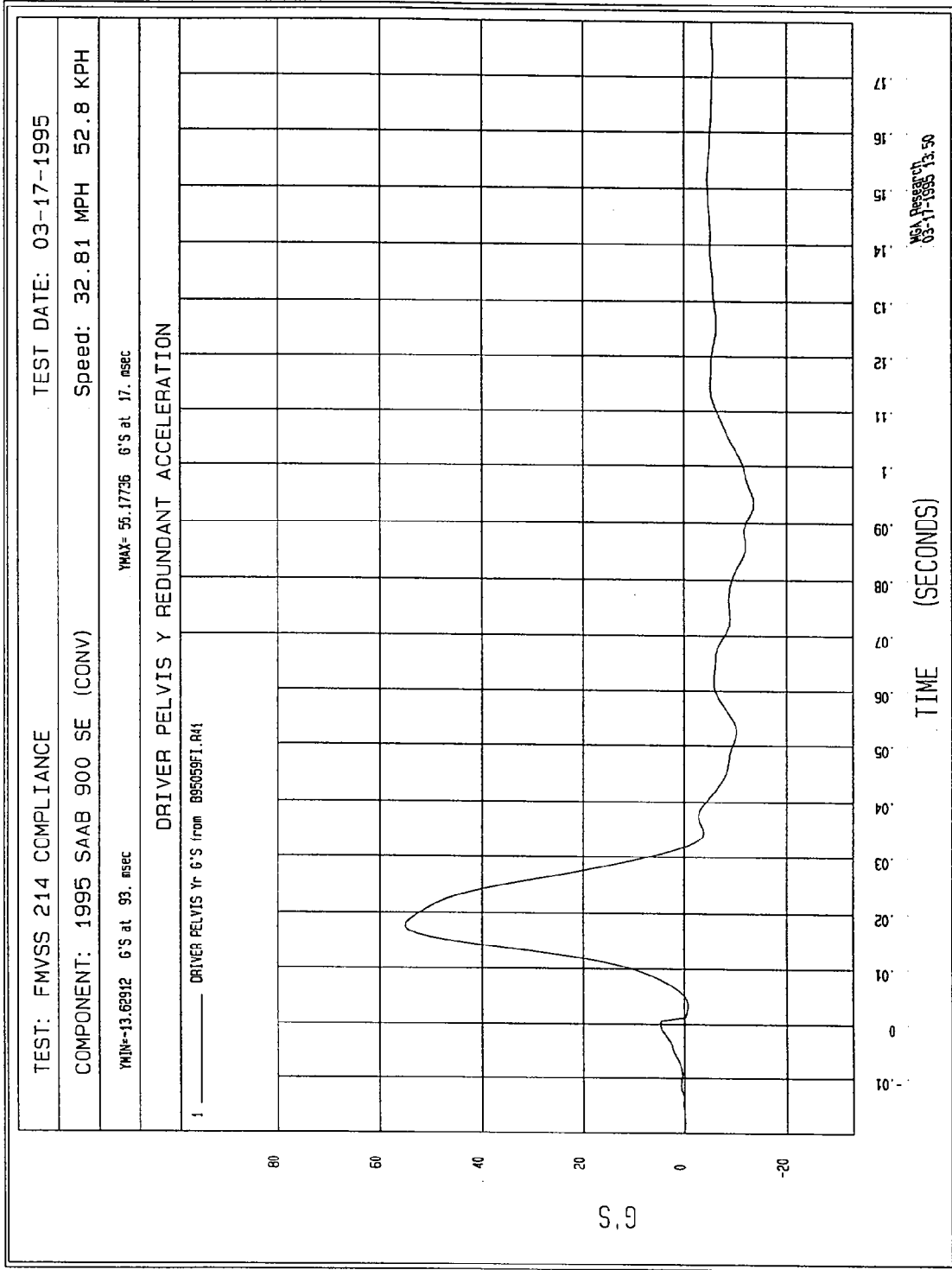


Figure B-88 - Driver Pelvis Y Redundant Acceleration vs. Time

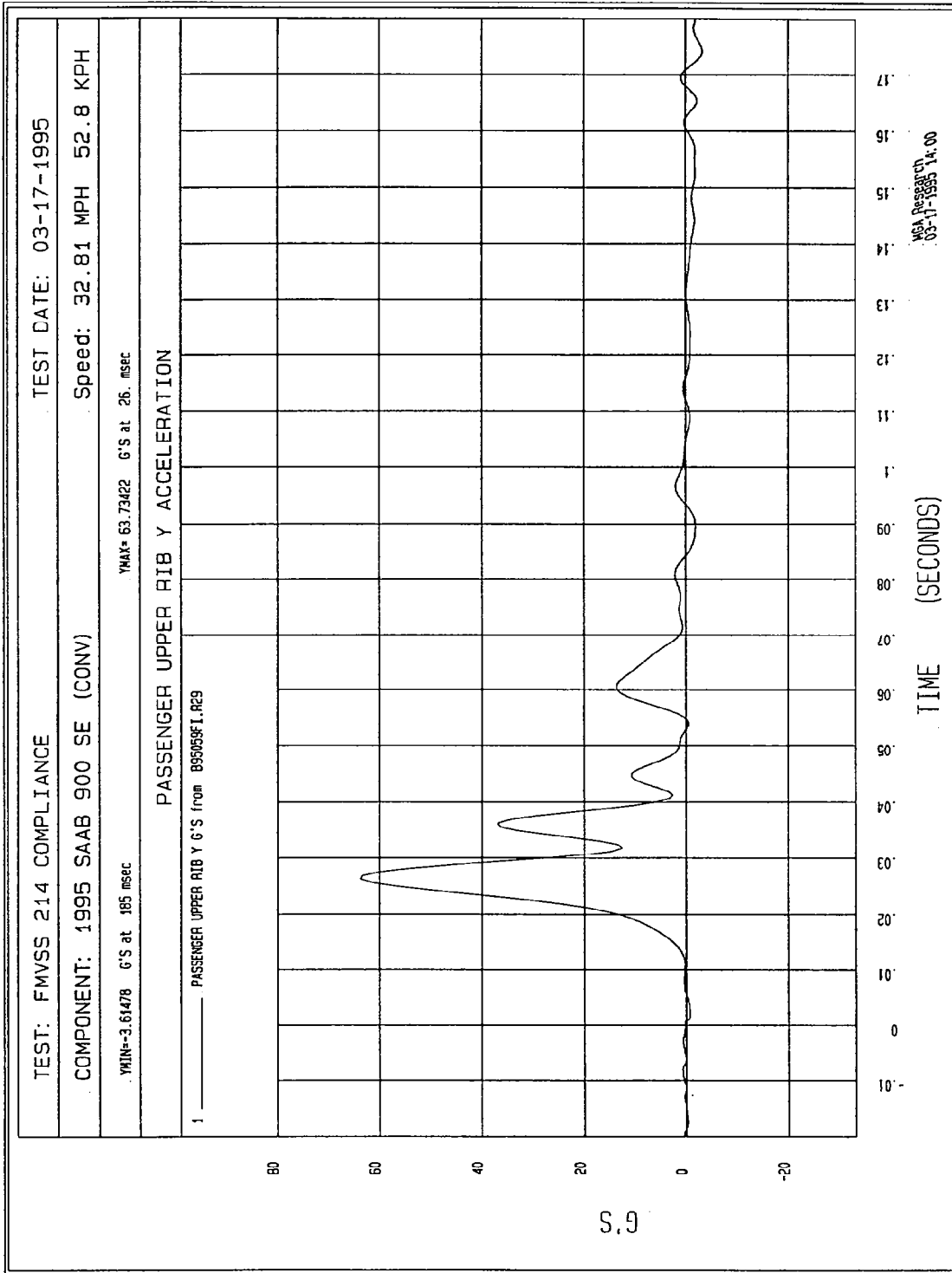


Figure B-89 - Passenger Upper Rib Y Acceleration vs. Time

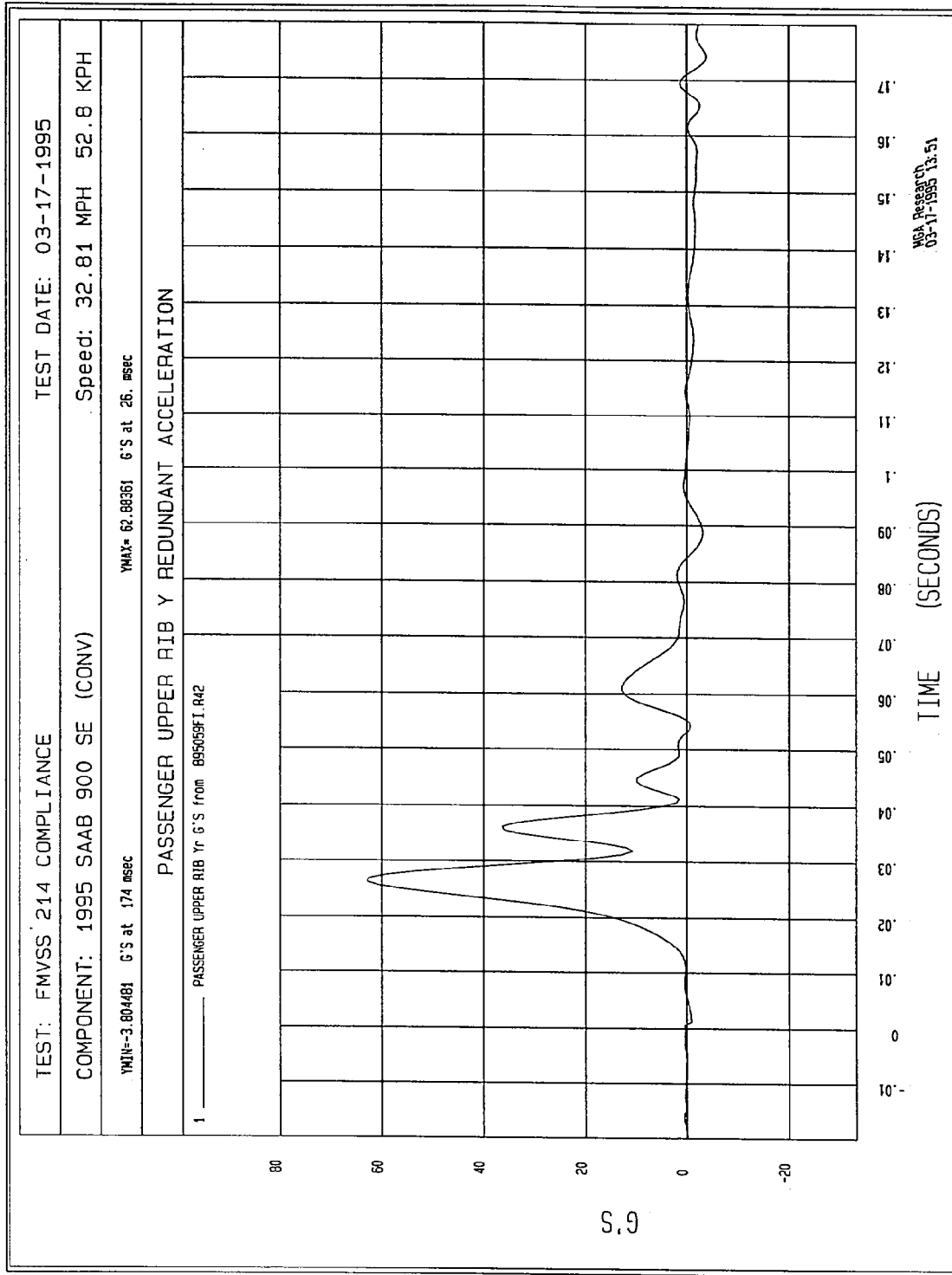


Figure B-90 - Passenger Upper Rib Y Redundant Acceleration vs. Time

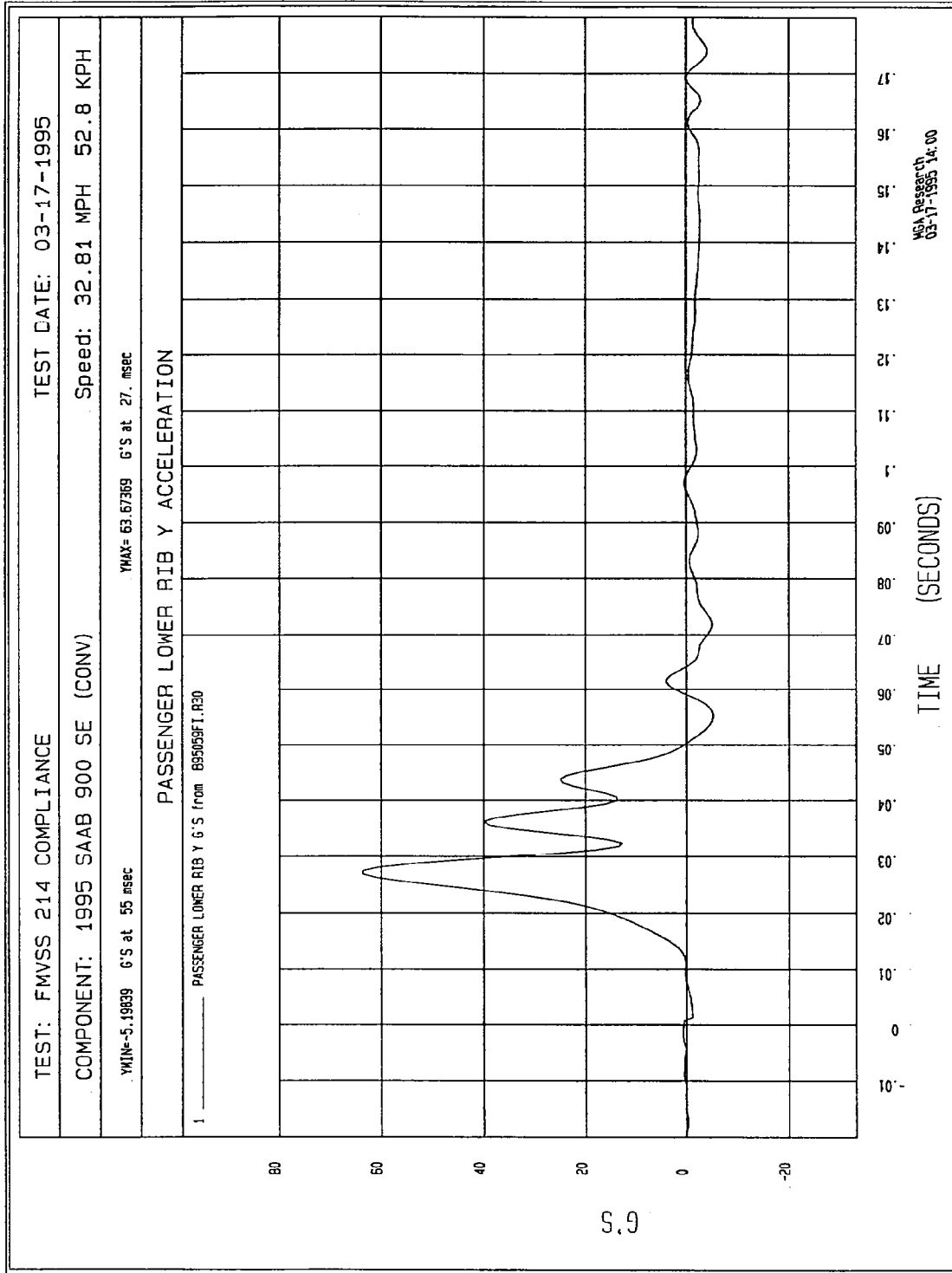


Figure B-91 - Passenger Lower Rib Y Acceleration vs. Time

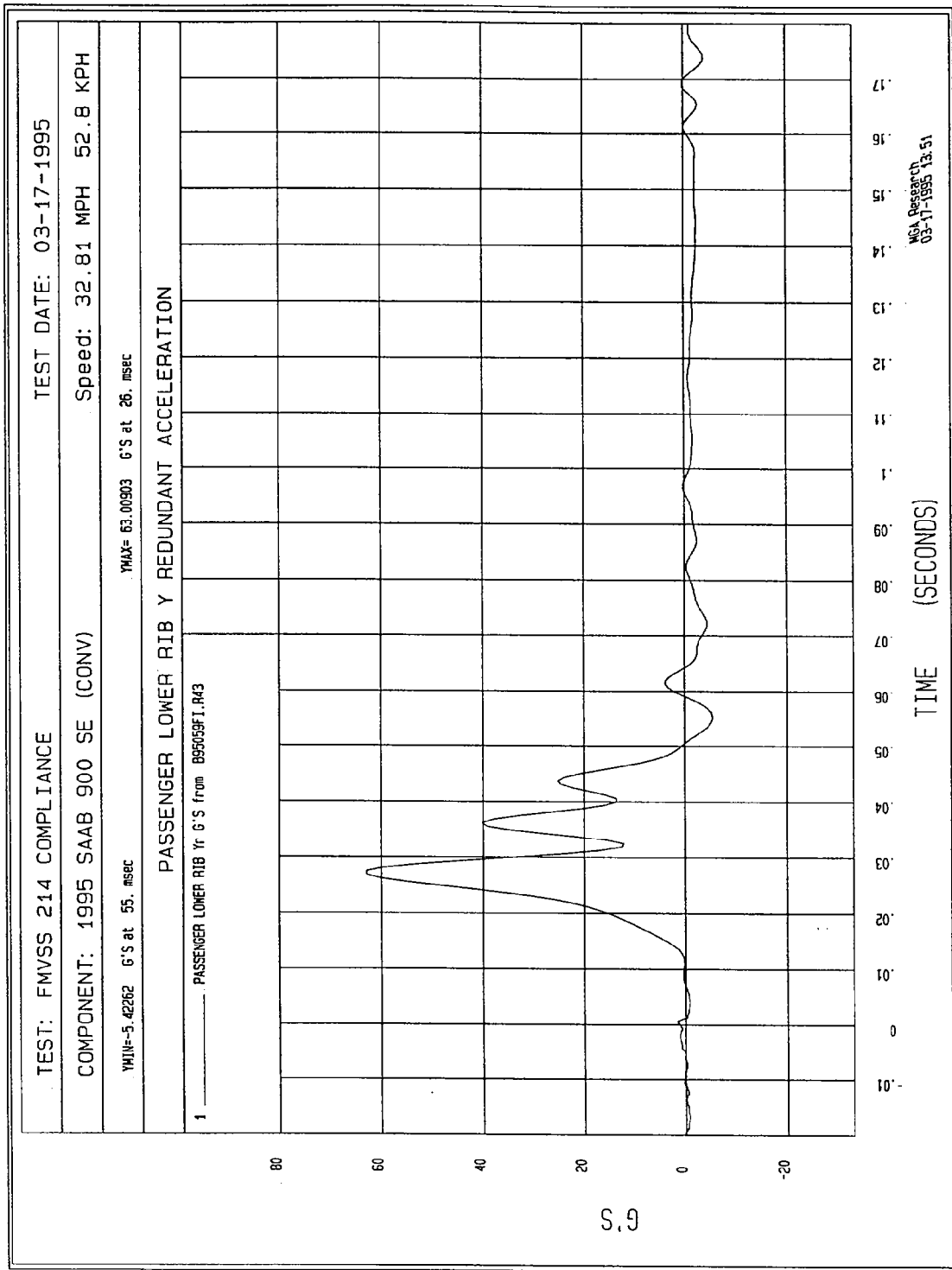


Figure B-92 - Passenger Lower Rib Y Redundant Acceleration vs. Time

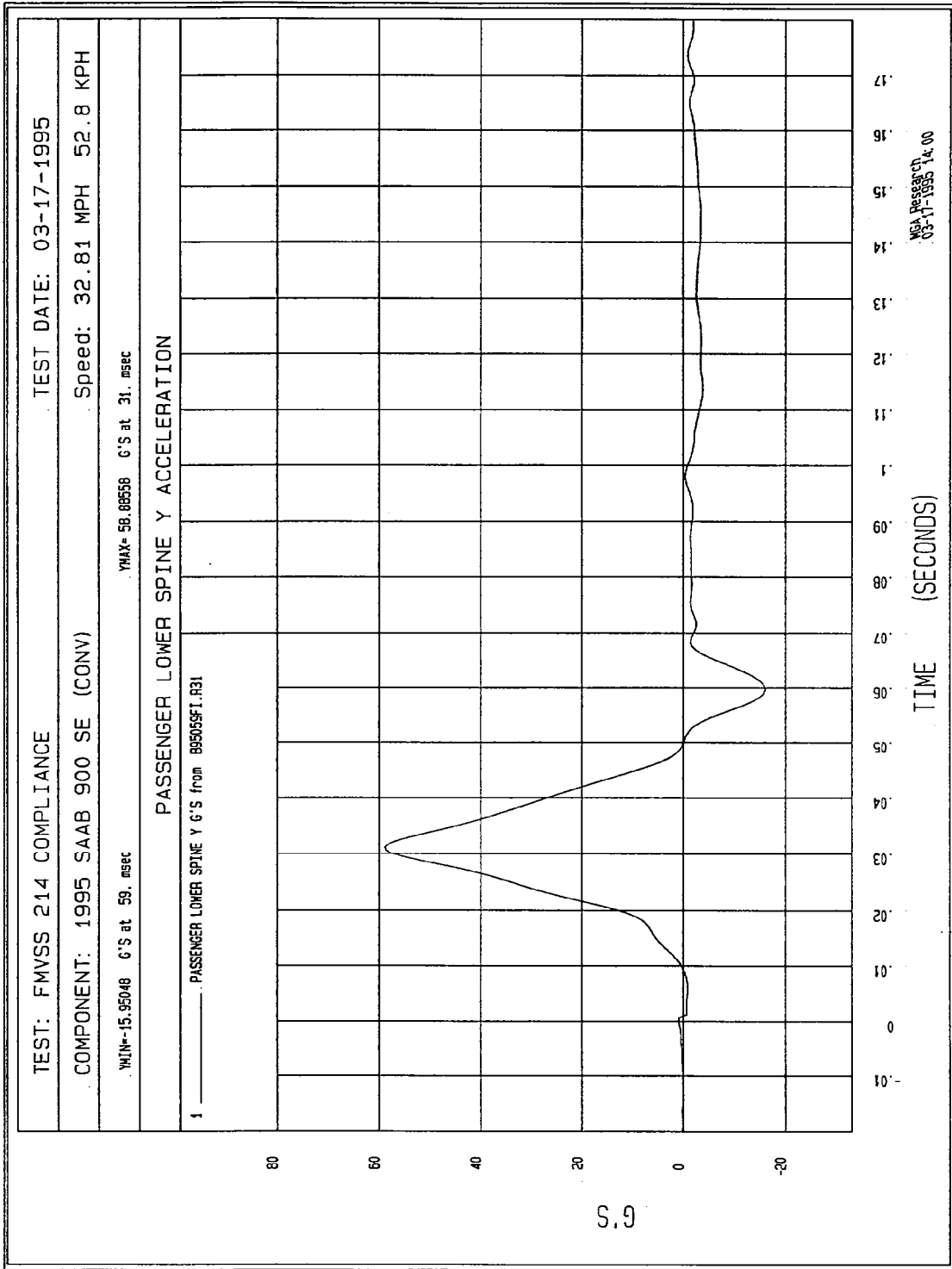


Figure B-93 - Passenger Lower Spine Y Acceleration vs. Time

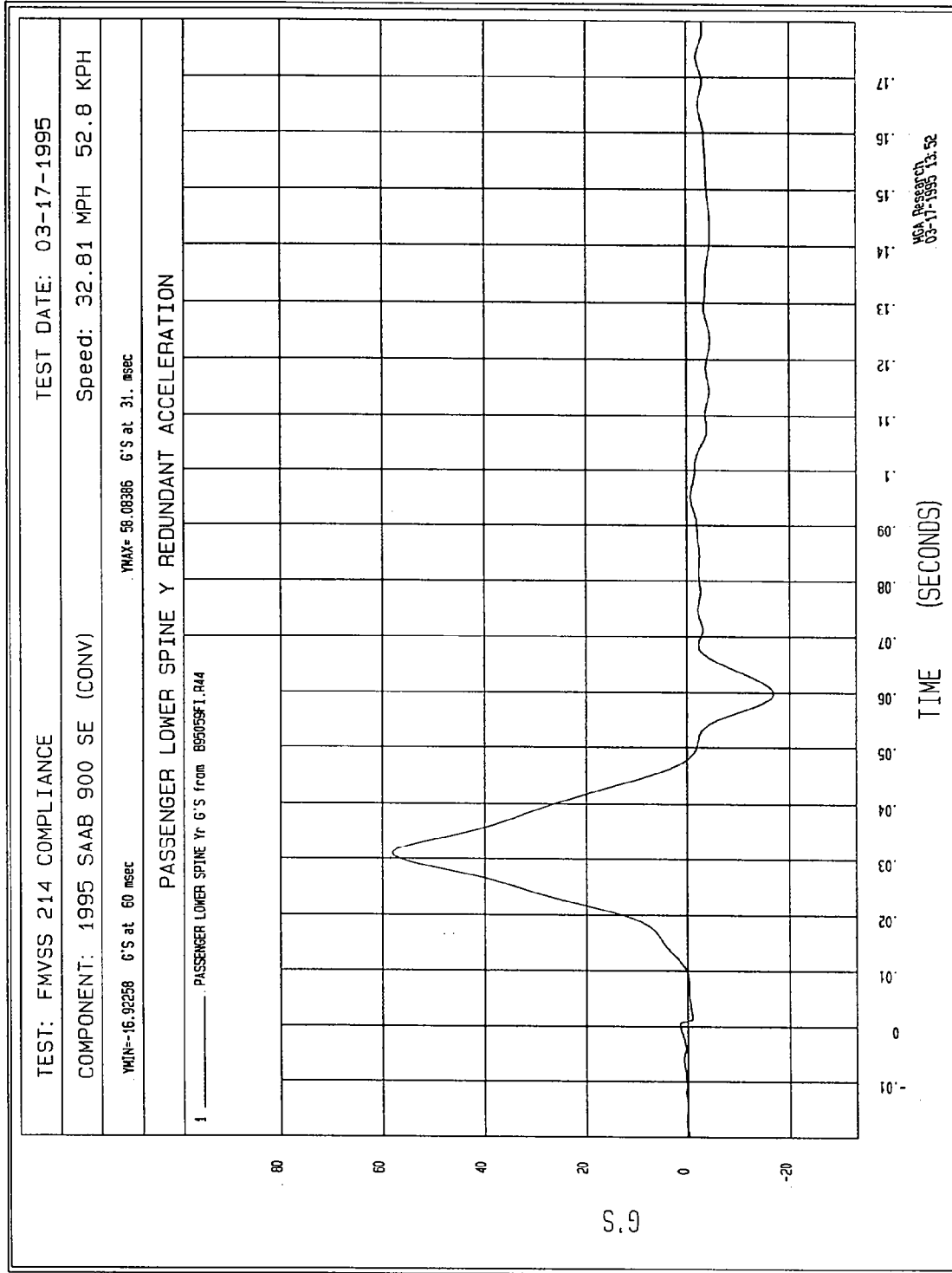


Figure B-94 - Passenger Lower Spine Y Redundant Acceleration vs. Time

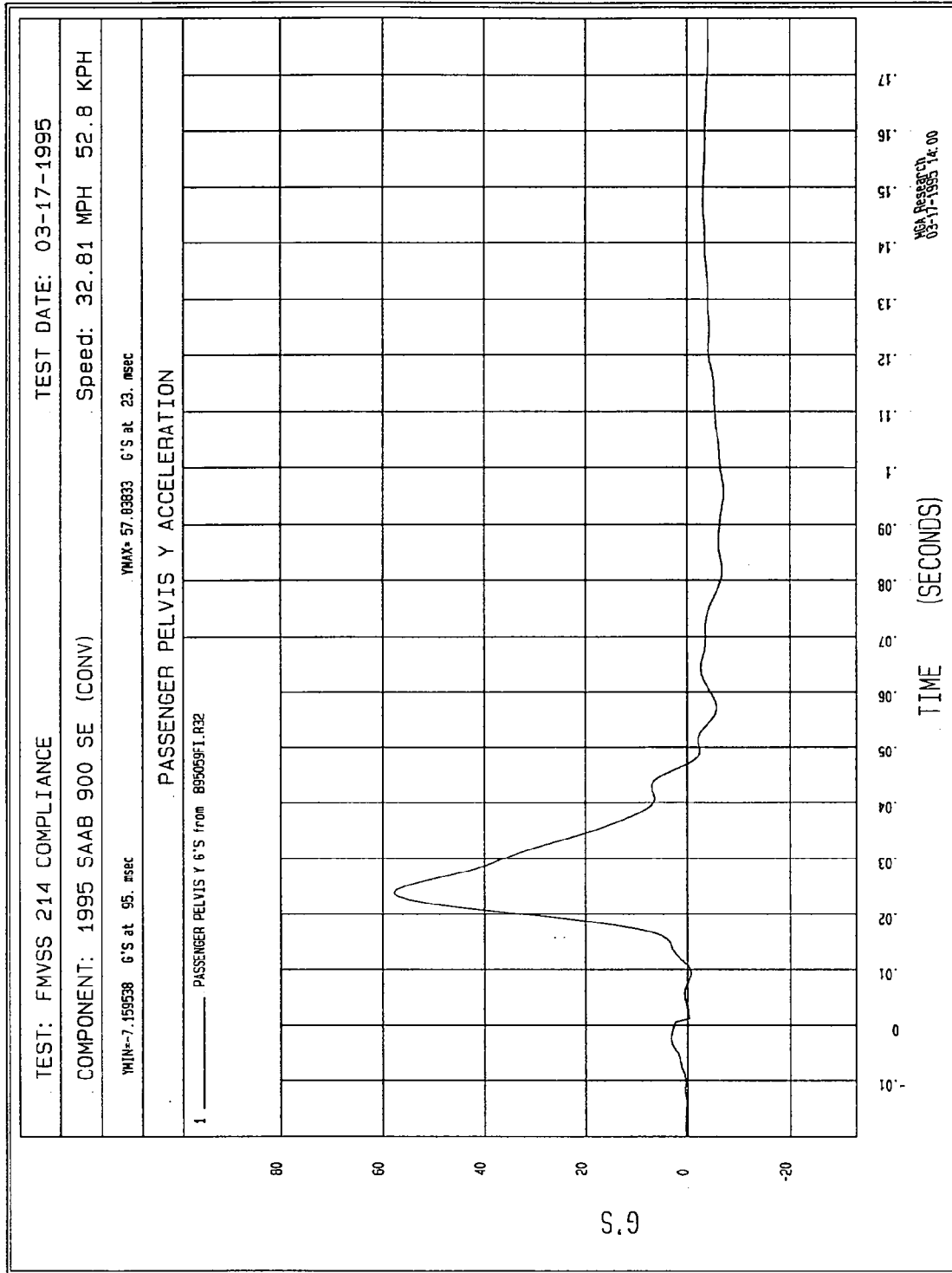


Figure B-95 - Passenger Pelvis Y Acceleration vs. Time

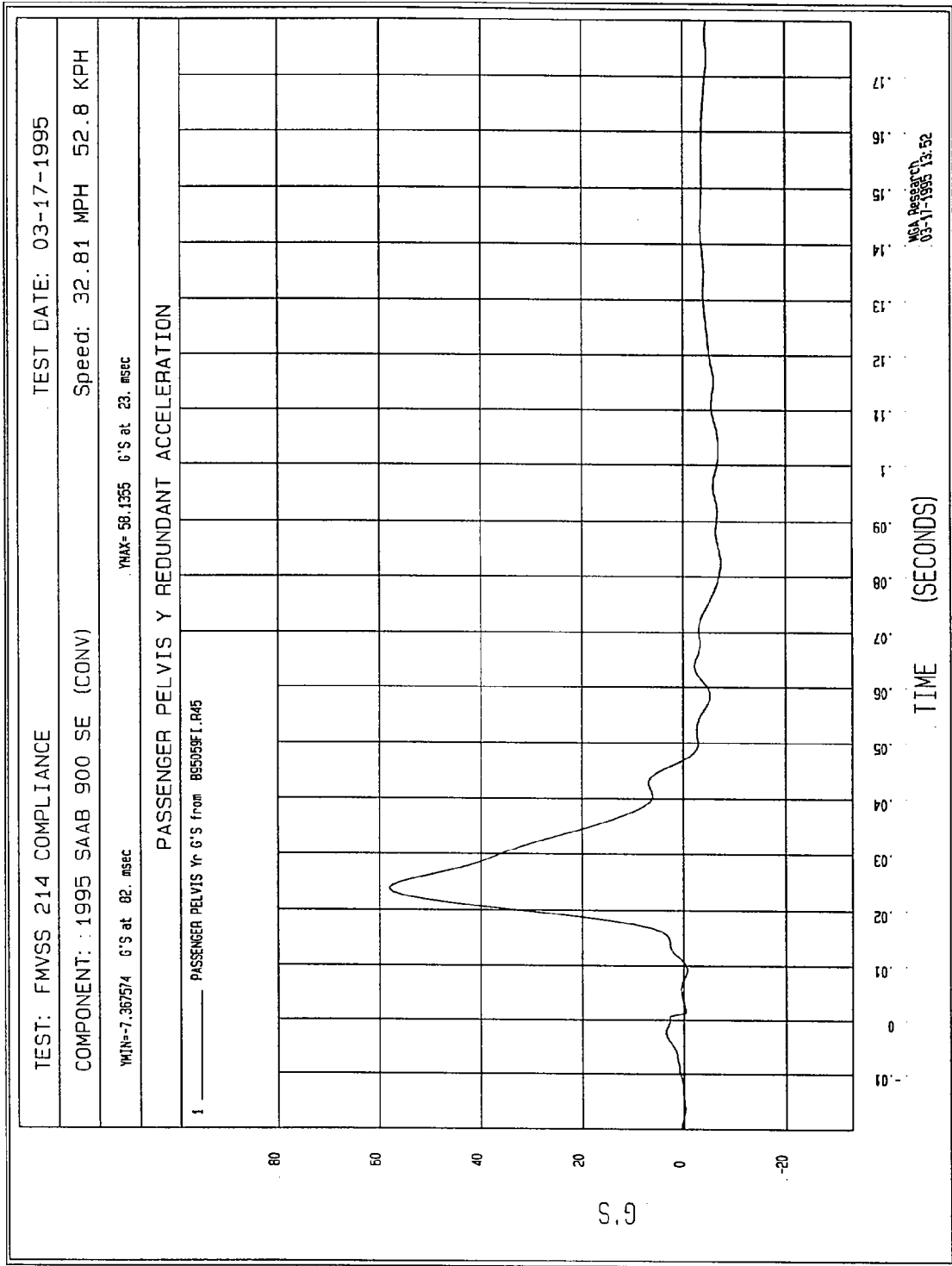


Figure B-96 - Passenger Pelvis Y Redundant Acceleration vs. Time

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-95-DC018

DUMMY PERFORMANCE CALIBRATIONS

FMVSS 214 - SIDE IMPACT TEST

SAAB AUTOMOBILE AB
1995 SAAB 900 SE CONVERTIBLE
NHTSA NO. CS0506

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: March 17, 1995

Report Date: March 27, 1995

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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DUMMY S/N: 272	POST-TEST CERTIFICATION DATA	4-1
DUMMY S/N: 269	POST-TEST INSPECTION CHECKLIST	5-1
DUMMY S/N: 272	POST-TEST INSPECTION CHECKLIST	6-1
	VEHICLE AND DUMMY TEMPERATURE	7-1

PRE-TEST CERTIFICATION DATA

Driver Dummy Serial Number: 269

Calibration Test Results Summary

Dummy Serial Number: 269

Pre-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic 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.: 269

DATE OF VERIFICATION: January 25, 1995

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.00
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"	19.5
HW - Hip Width	14.0" - 15.4"	15.2

MEASUREMENTS BY: Tom Wilby

APPROVED BY: Steve Kabatek

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 25, 1995

DUMMY NUMBER: 269

TEST NUMBER: D95152

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	41
LOWER RIB	37 - 46 g's	40
LOWER SPINE	15 - 22 g's	21

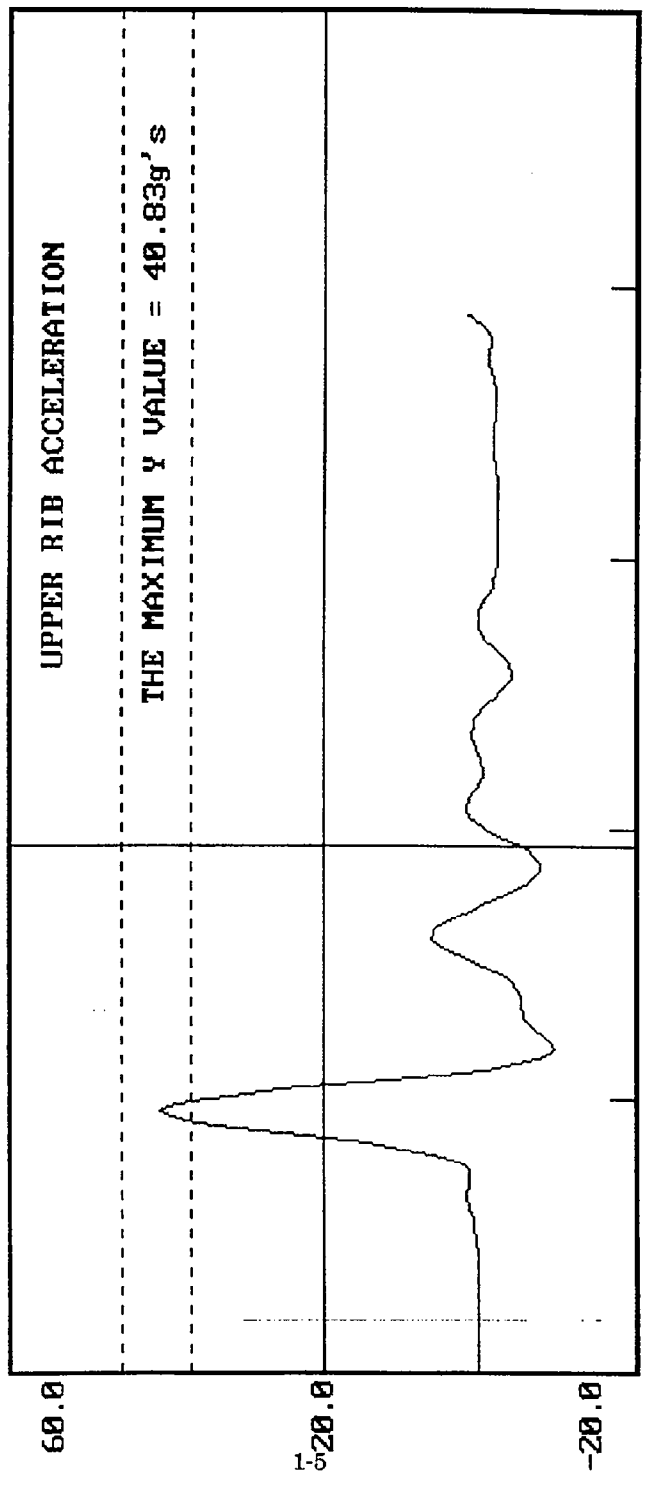
TEST MEETS SPECIFICATIONS

TECHNICIAN *Tim M. [Signature]*

APPROVED BY *Paul K. [Signature]*

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))

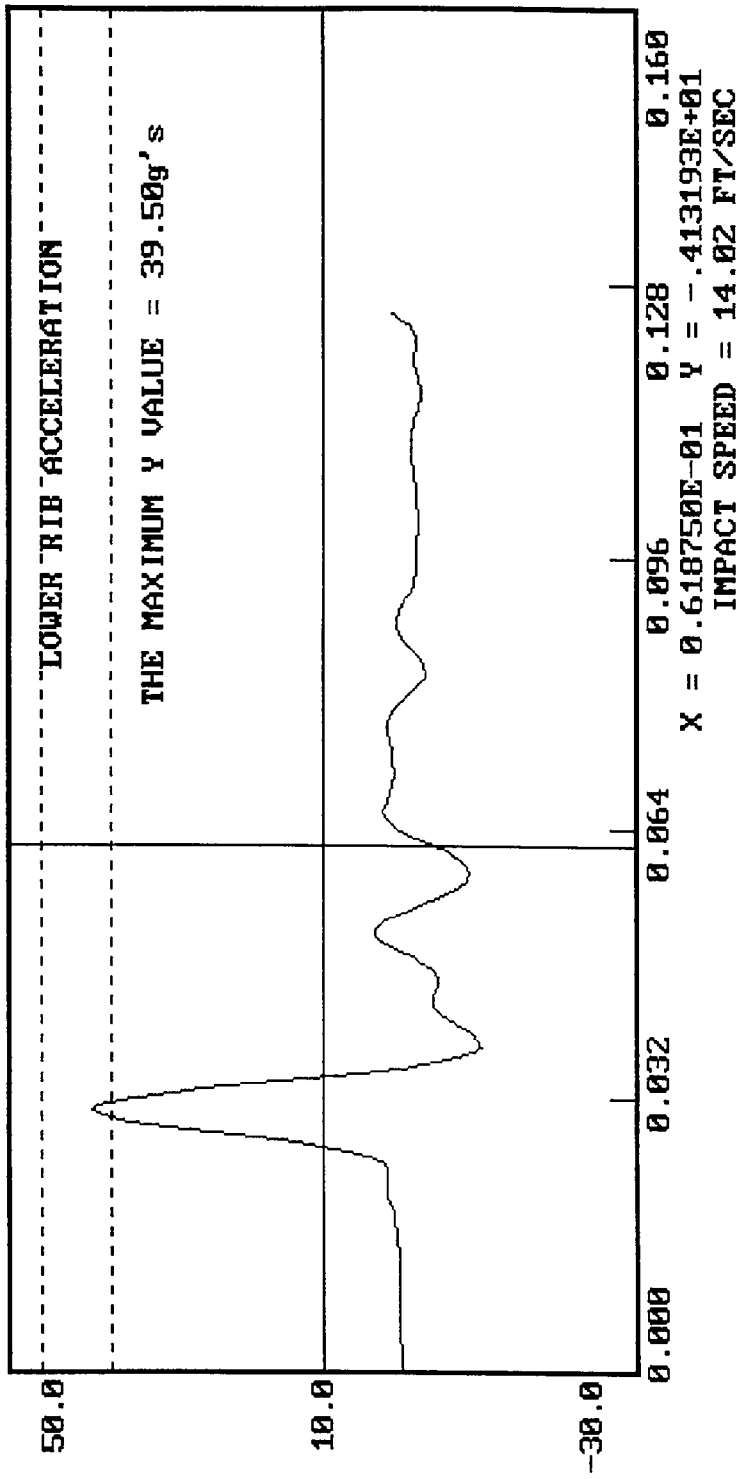
01-25-1995 11:07



X = 0.618750E-01 Y = -.543967E+01
IMPACT SPEED = 14.02 FT/SEC

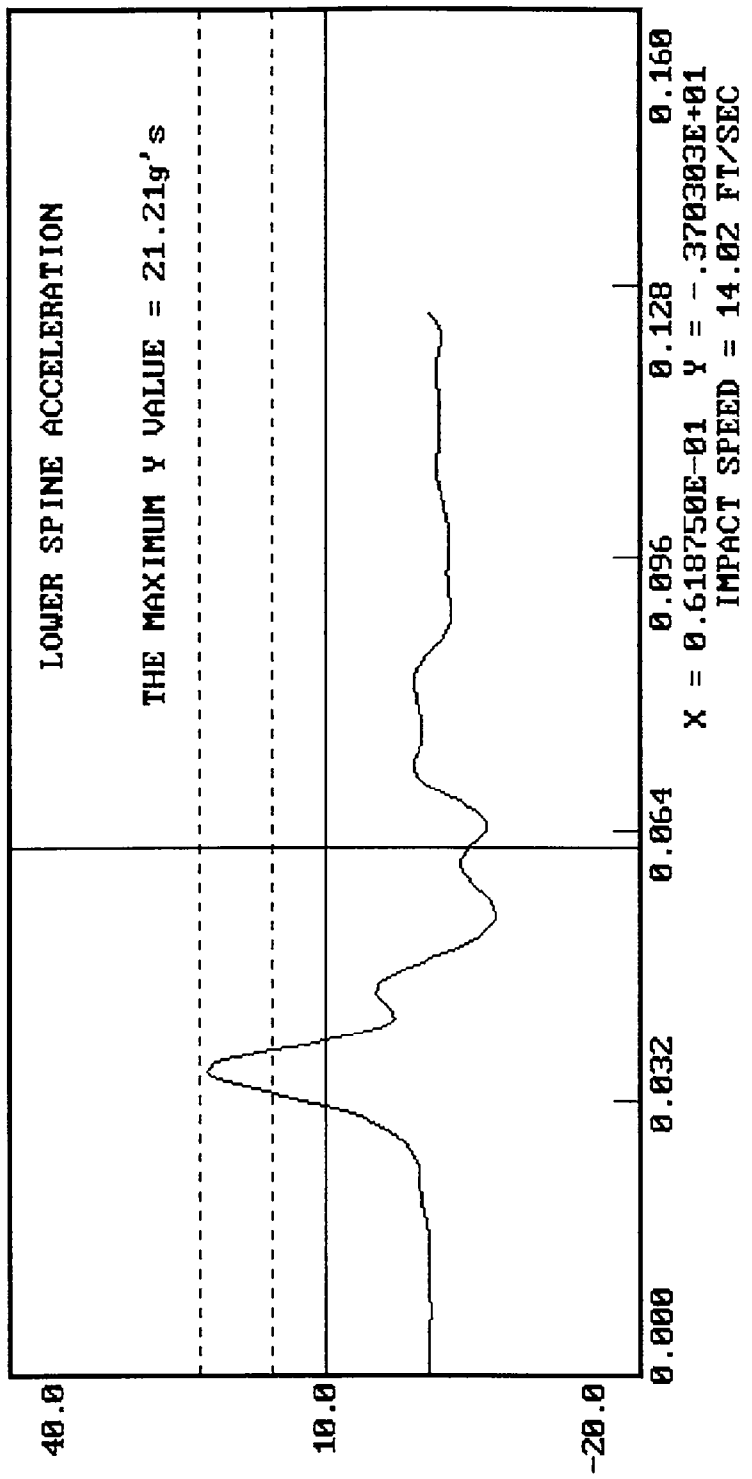
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))

01-25-1995 11:07



01-25-1995 11:07

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 25, 1995

DUMMY NUMBER: 269

TEST NUMBER: D95153

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	56

TEST MEETS SPECIFICATIONS

TECHNICIAN *James McInerney*

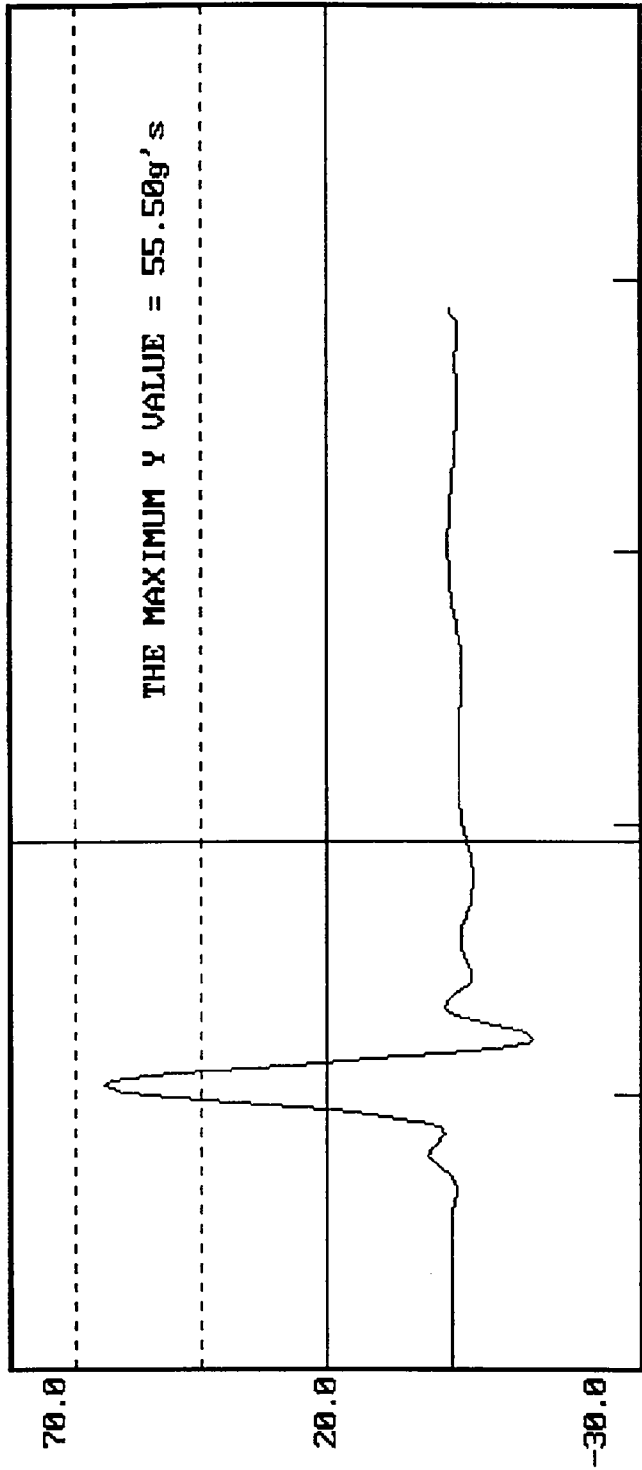
APPROVED BY *Steve Krasinski*

01-25-1995 08:58

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 269

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



1-9

X = 0.096 0.128 0.160
Y = 0.618750E-01 Y = -.247524E+01
IMPACT SPEED = 14.04 FT/SEC

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

DATE: January 25, 1995

DUMMY NUMBER: 269

TEST NUMBER: D95154

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0.5 in	23.3 - 36.5 lbs	32.3
FORCE @ 0.75 in	36.7 - 49.8 lbs	46.1
FORCE @ 1.0 in	50 - 63 lbs	62
FORCE @ 1.3 in	73 - 88 lbs	79

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Willey

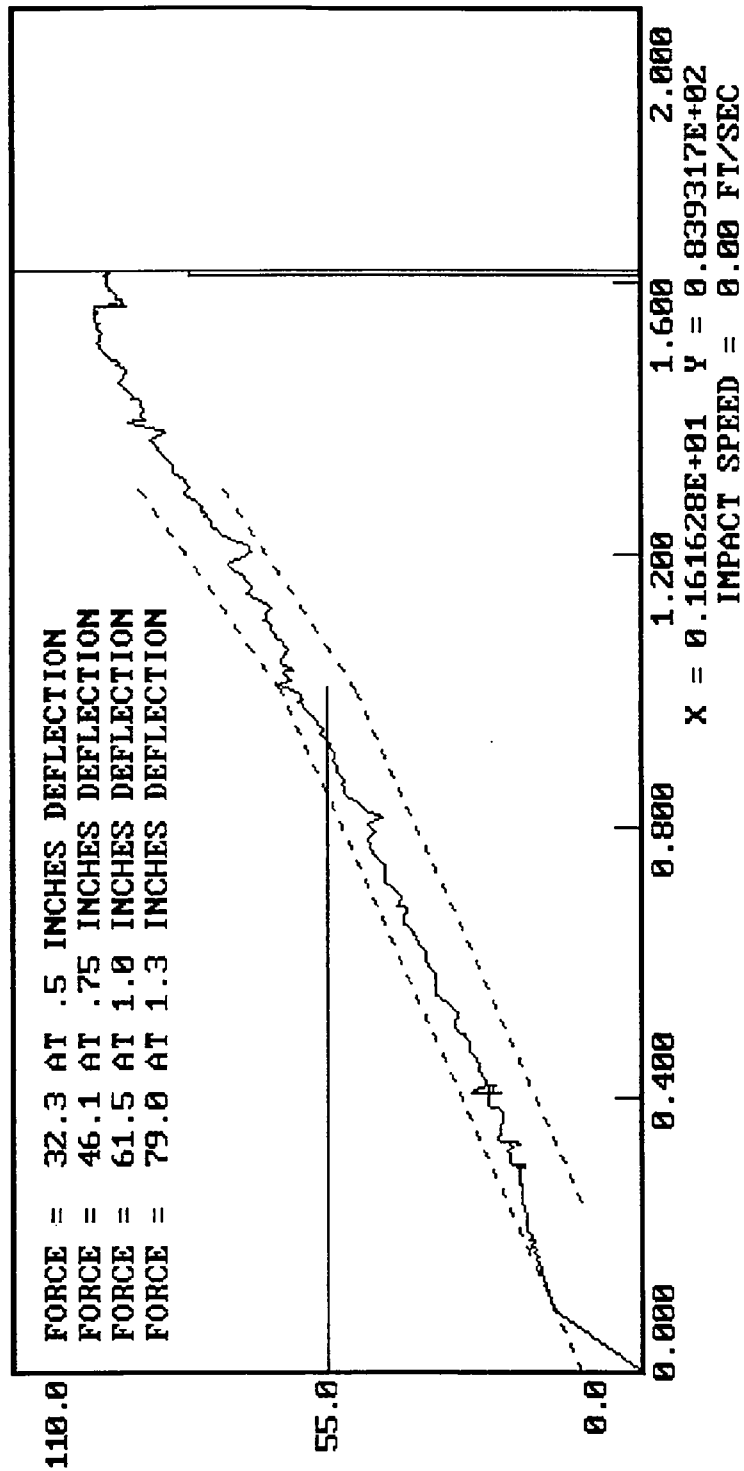
APPROVED BY Steve Koshke

01-25-1995 14:15

DUMMY CALIBRATION - ABDOMEN COMPRESSION

DUMMY # 269

ABDOMEN FORCE () VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: January 25, 1995

DUMMY NUMBER: 269

TEST NUMBER: D95155

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	26
FORCE @ 30°	34 - 46 lbs	38
FORCE @ 40°	46 - 58 lbs	49
RETURN ANGLE	12° maximum	9°

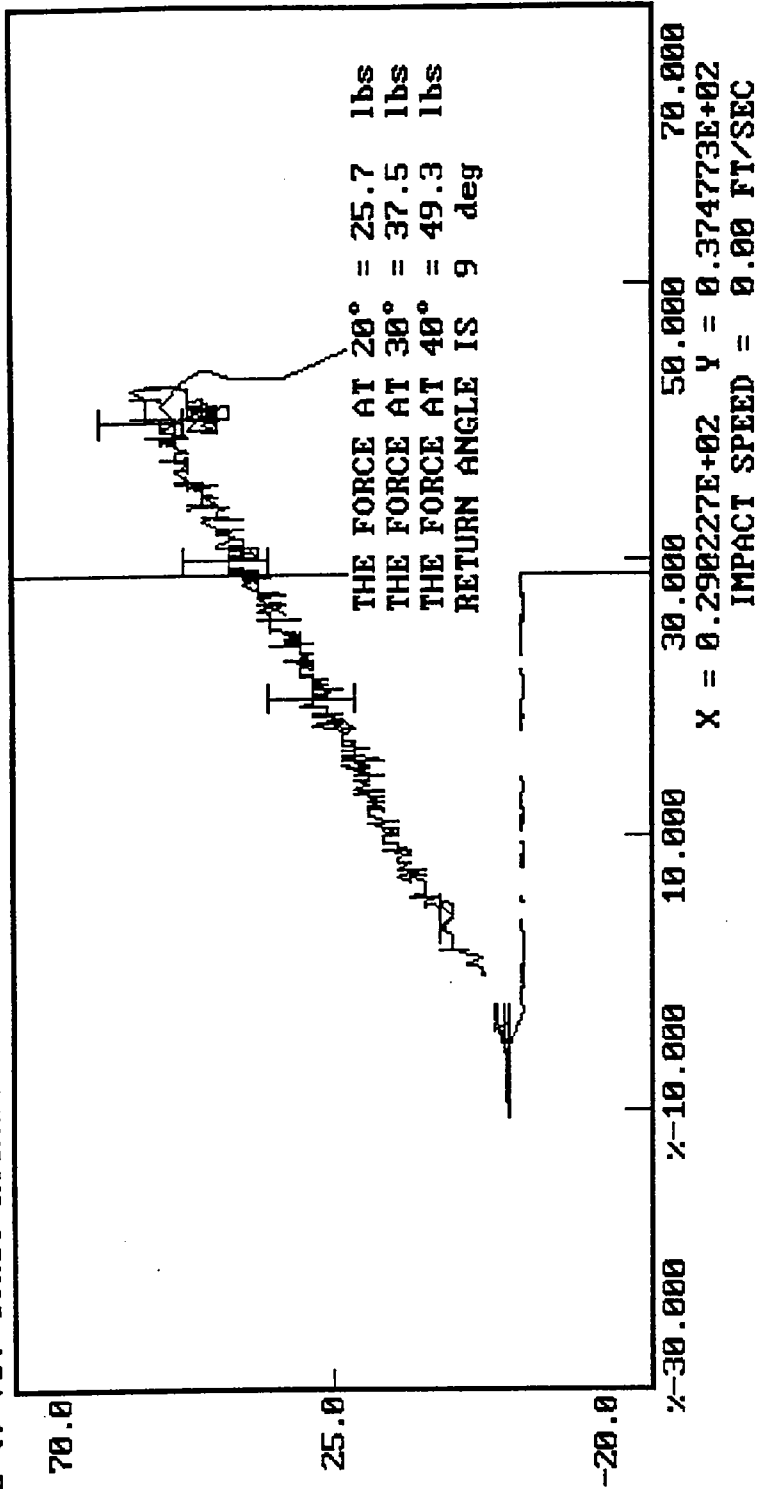
TEST MEETS SPECIFICATIONS

TECHNICIAN Tim Melinsky

APPROVED BY Paul Kabeke

01-25-1995 14:56

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 269
FORCE () VS. TORSO ROTATION (DEGREES)



PRE-TEST CERTIFICATION DATA

Passenger Dummy Serial Number: 272

Calibration Test Results Summary

Passenger Serial Number: 272

Pre-Test Calibration

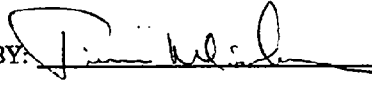
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 272

DATE OF VERIFICATION: January 25, 1995

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.3
RH - Rib Height	19.75" - 20.50"	20.00
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"	20.5
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.1

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 25, 1995

DUMMY NUMBER: 272

TEST NUMBER: D95162

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	44
LOWER RIB	37 - 46 g's	42
LOWER SPINE	15 - 22 g's	21

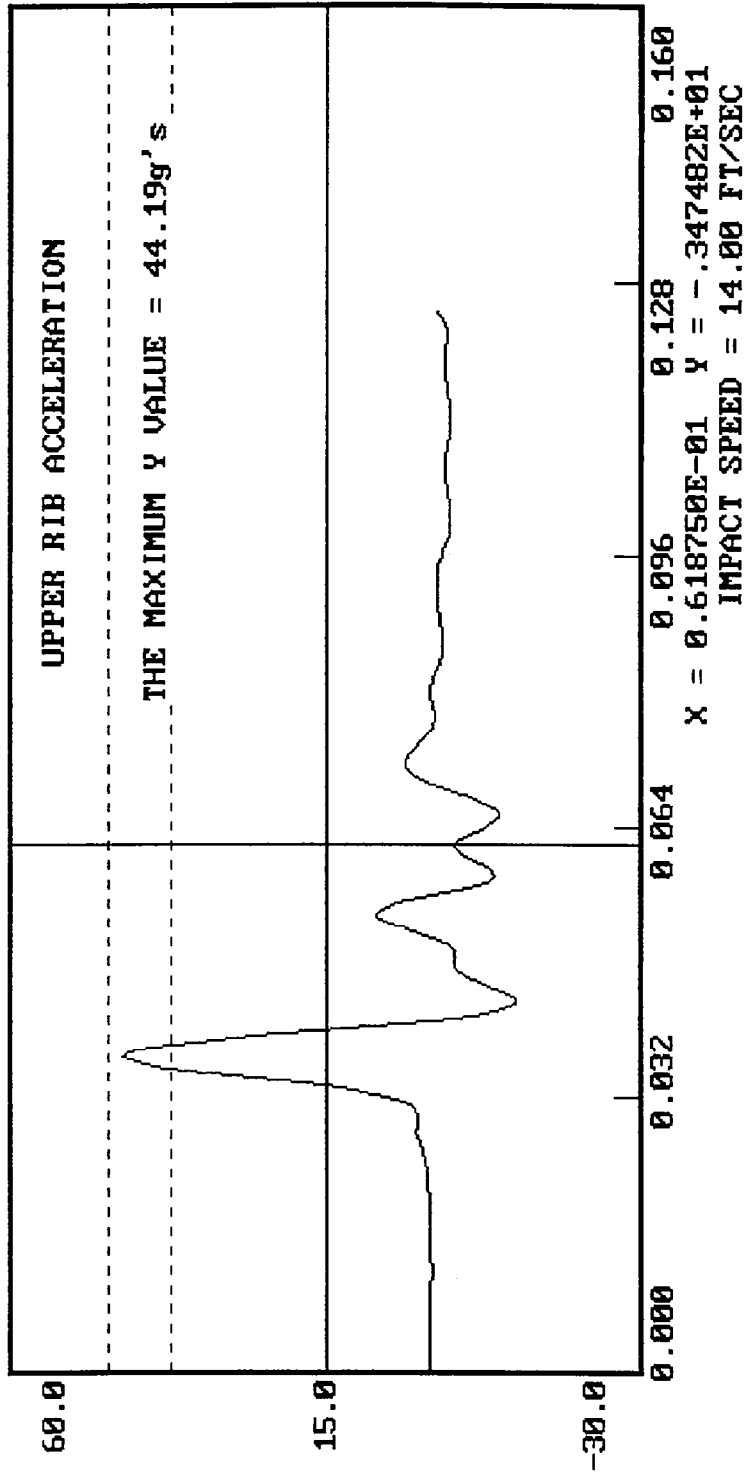
TEST MEETS SPECIFICATIONS

TECHNICIAN *Tim Helander*

APPROVED BY *Steve Korbak*

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

01-25-1995 09:43

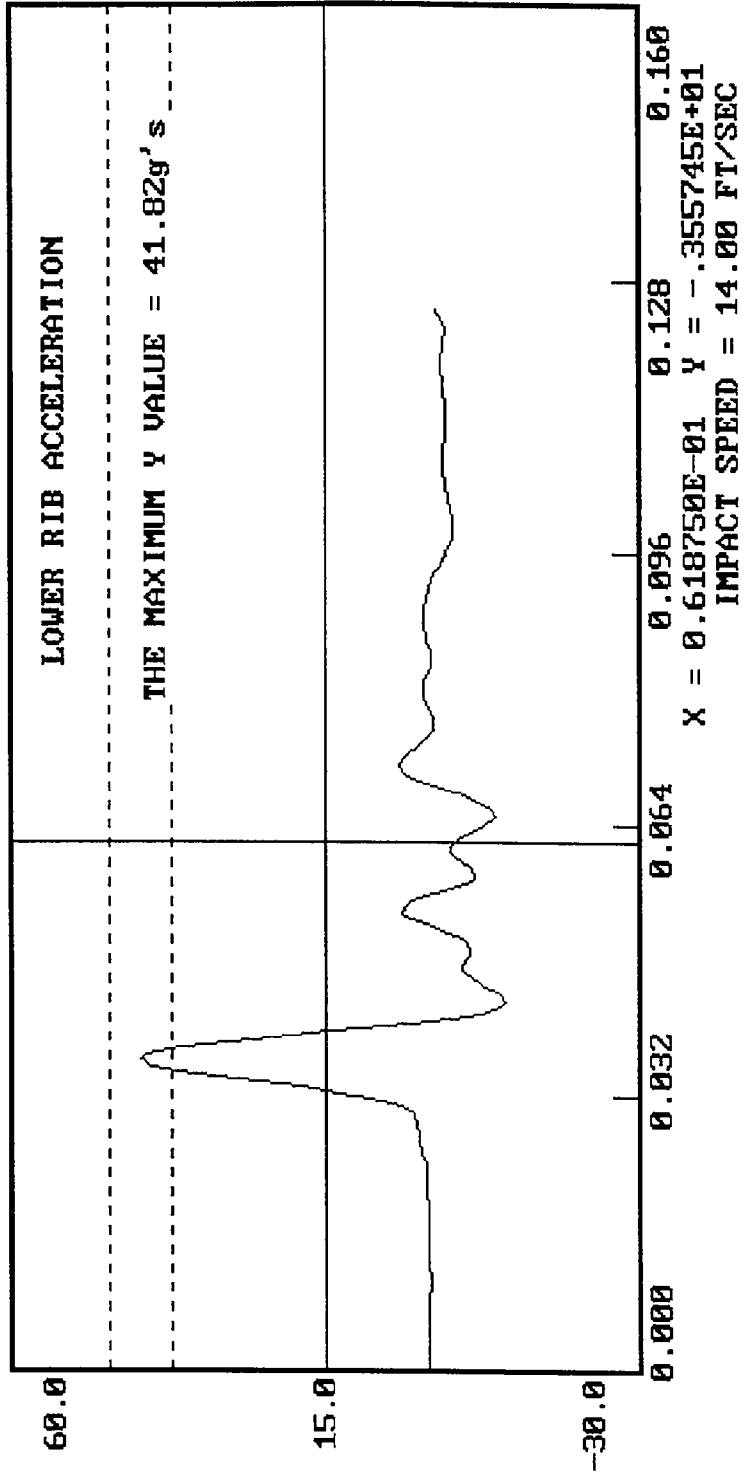


01-25-1995 09:43

DUMMY CALIBRATION - THORAX IMPACT

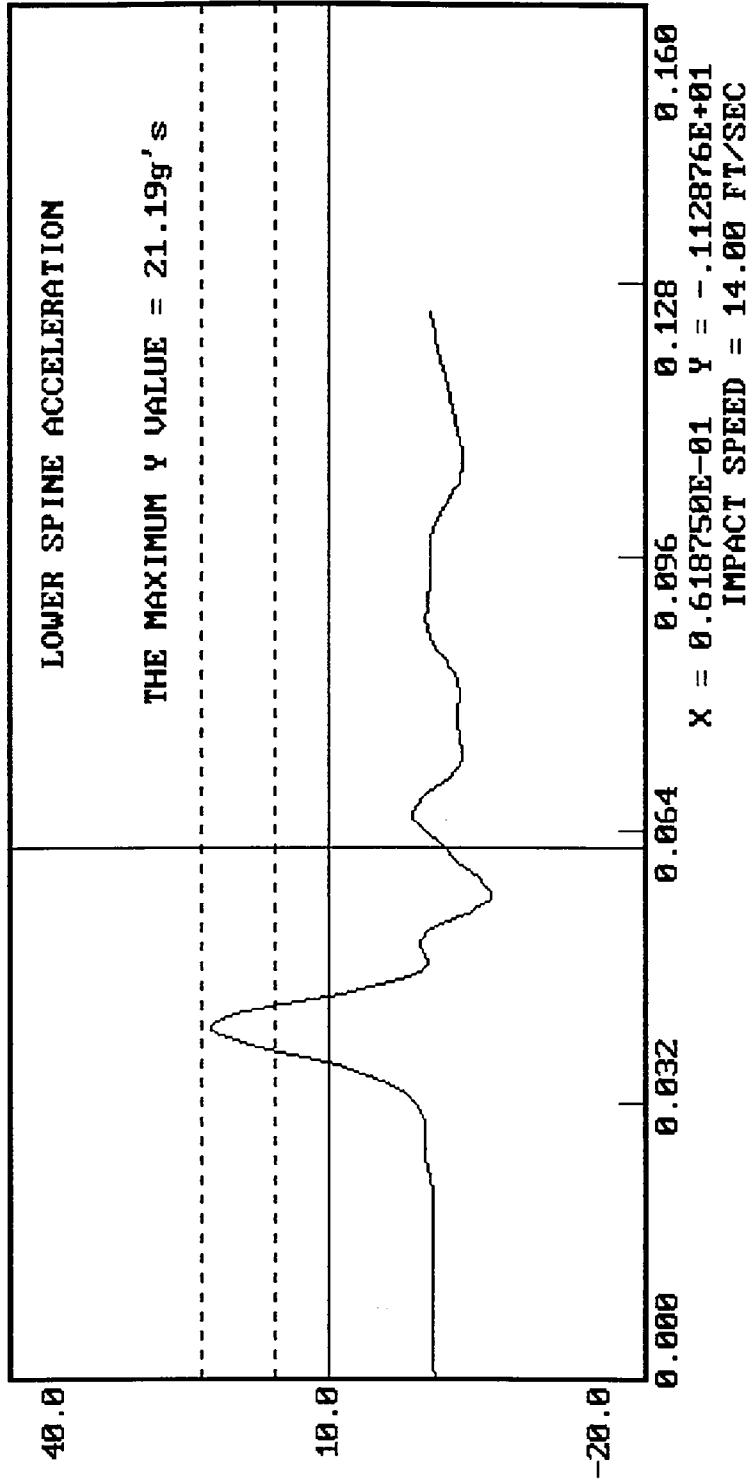
DUMMY # 272

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



01-25-1995 09:43

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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 25, 1995

DUMMY NUMBER: 272

TEST NUMBER: D95163

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 ° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	58

TEST MEETS SPECIFICATIONS

TECHNICIAN

Tim M. L.

APPROVED BY

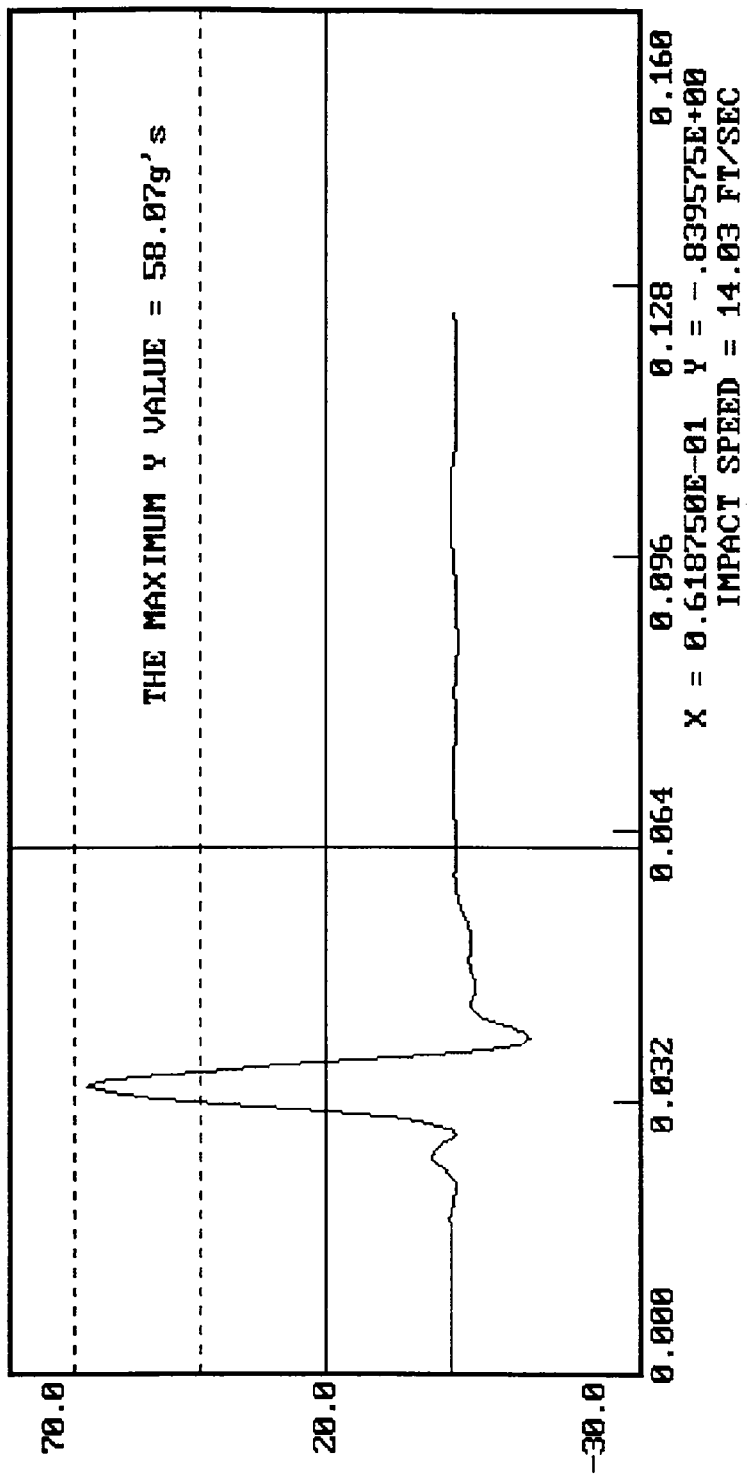
Dave Kurbak

01-25-1995 09:09

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)

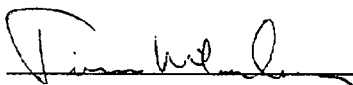
DATE: January 25, 1995


DUMMY NUMBER: 272

TEST NUMBER: D95164

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.2
FORCE @ 0.75 in	36.7 - 49.8 lbs	45.5
FORCE @ 1.0 in	50 - 63 lbs	59
FORCE @ 1.3 in	73 - 88 lbs	79

TEST MEETS SPECIFICATIONS

TECHNICIAN 

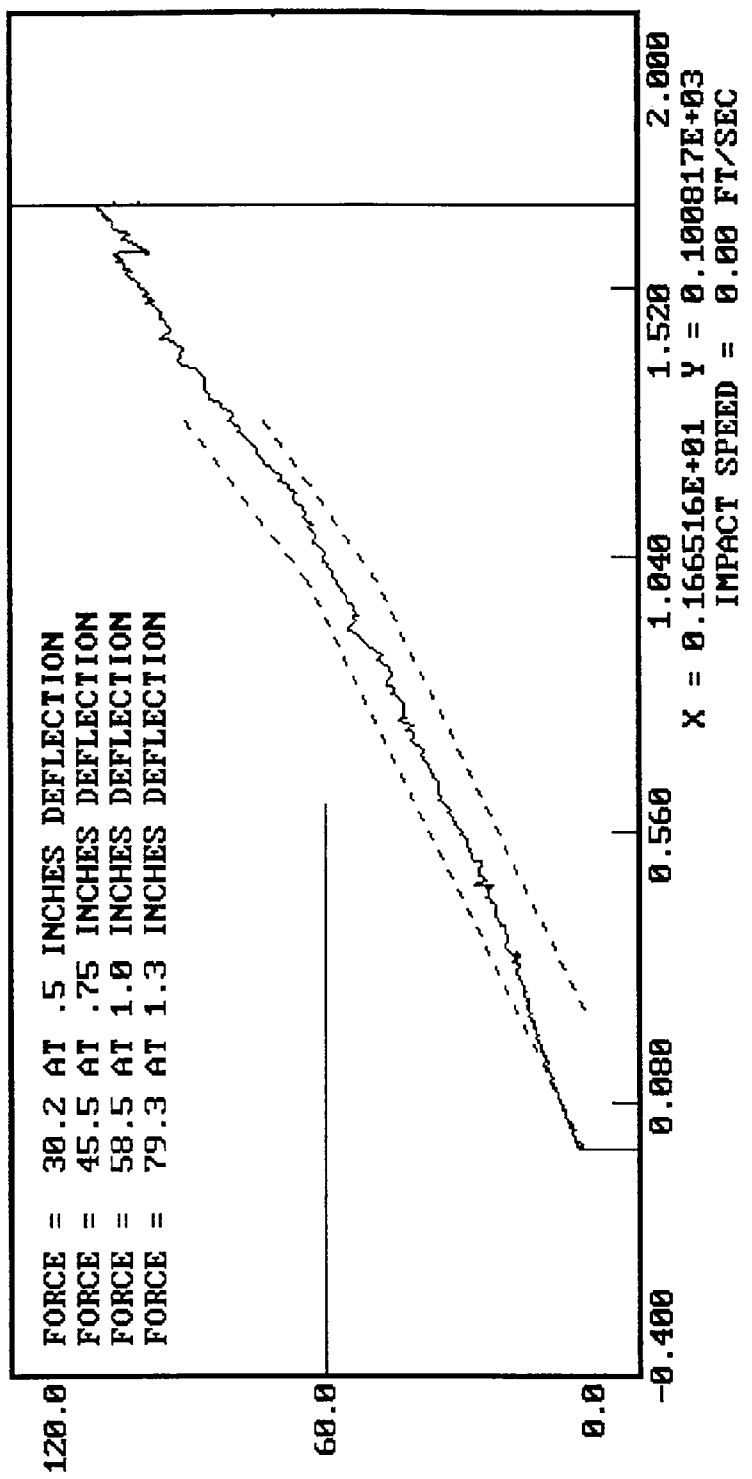
APPROVED BY 

01-25-1995 14:19

DUMMY CALIBRATION - ABDOMEN COMPRESSION

DUMMY # 272

ABDOMEN FORCE () VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: January 25, 1995

DUMMY NUMBER: 272

TEST NUMBER: D95165

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	26
FORCE @ 30°	34 - 46 lbs	42
FORCE @ 40°	46 - 58 lbs	55
RETURN ANGLE	12° maximum	6°

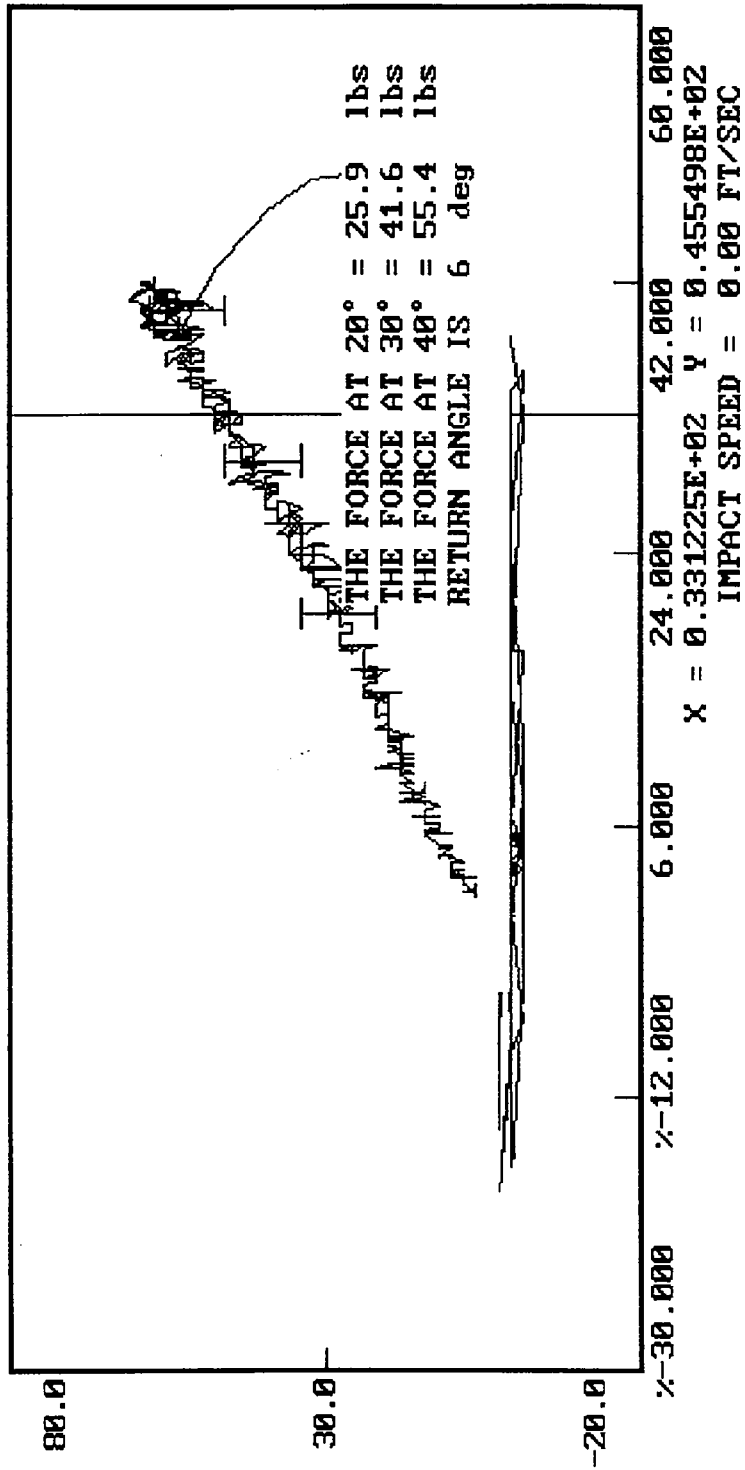
TEST MEETS SPECIFICATIONS

TECHNICIAN Jim [Signature]

APPROVED BY Steve [Signature]

01-25-1995 14:48

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



POST-TEST CERTIFICATION DATA

Driver Dummy Serial Number: 269

Calibration Test Results Summary

Dummy Serial Number: 269

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic 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.: 269

DATE OF VERIFICATION: March 24, 1995

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.00
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"	19.5
HW - Hip Width	14.0" - 15.4"	15.2

MEASUREMENTS BY: Tim Pittalony

APPROVED BY: Paul Kachube

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

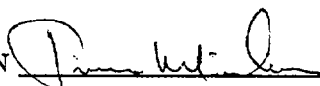
DATE: March 23, 1995


DUMMY NUMBER: 269

TEST NUMBER: D95462

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 °F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 fps	13.9
UPPER RIB	37 - 46 g's	38
LOWER RIB	37 - 46 g's	40
LOWER SPINE	15 - 22 g's	21

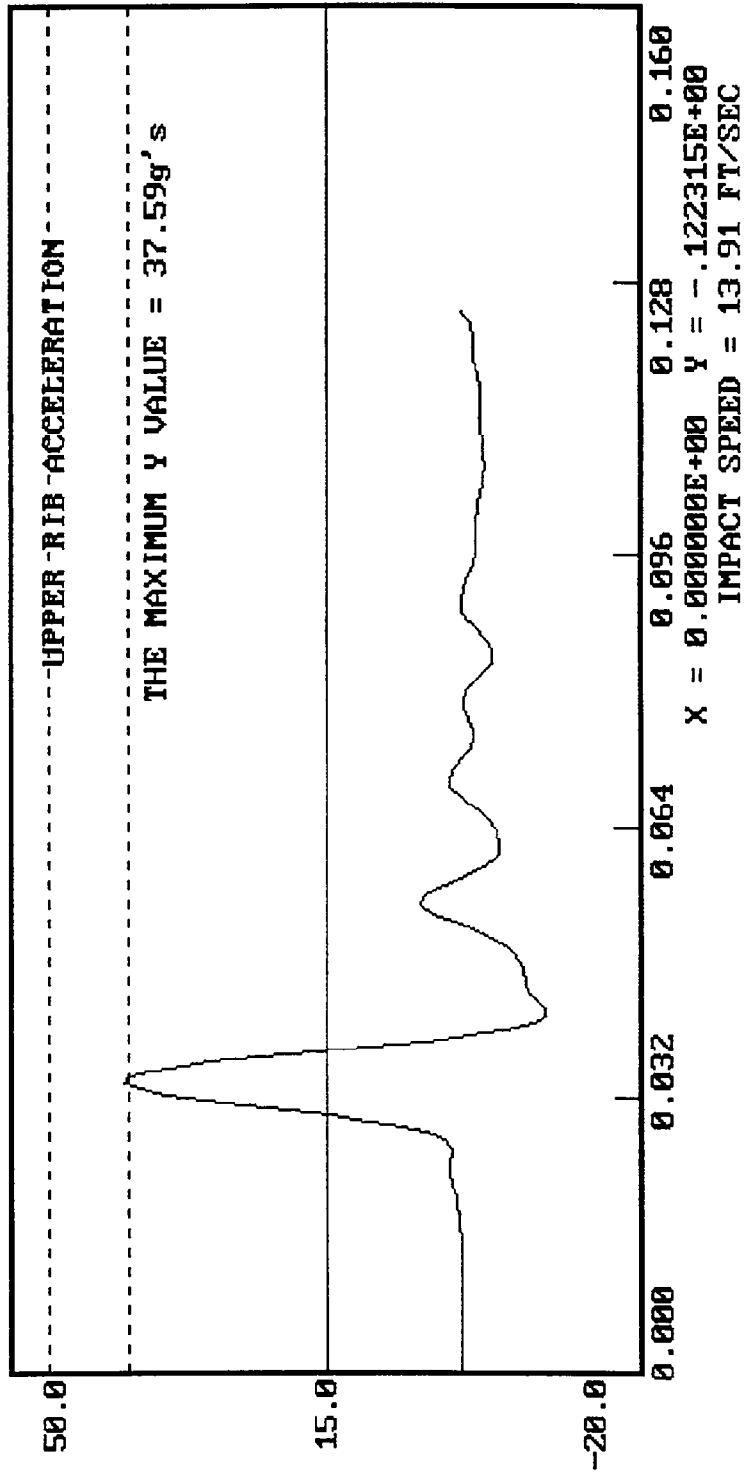
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

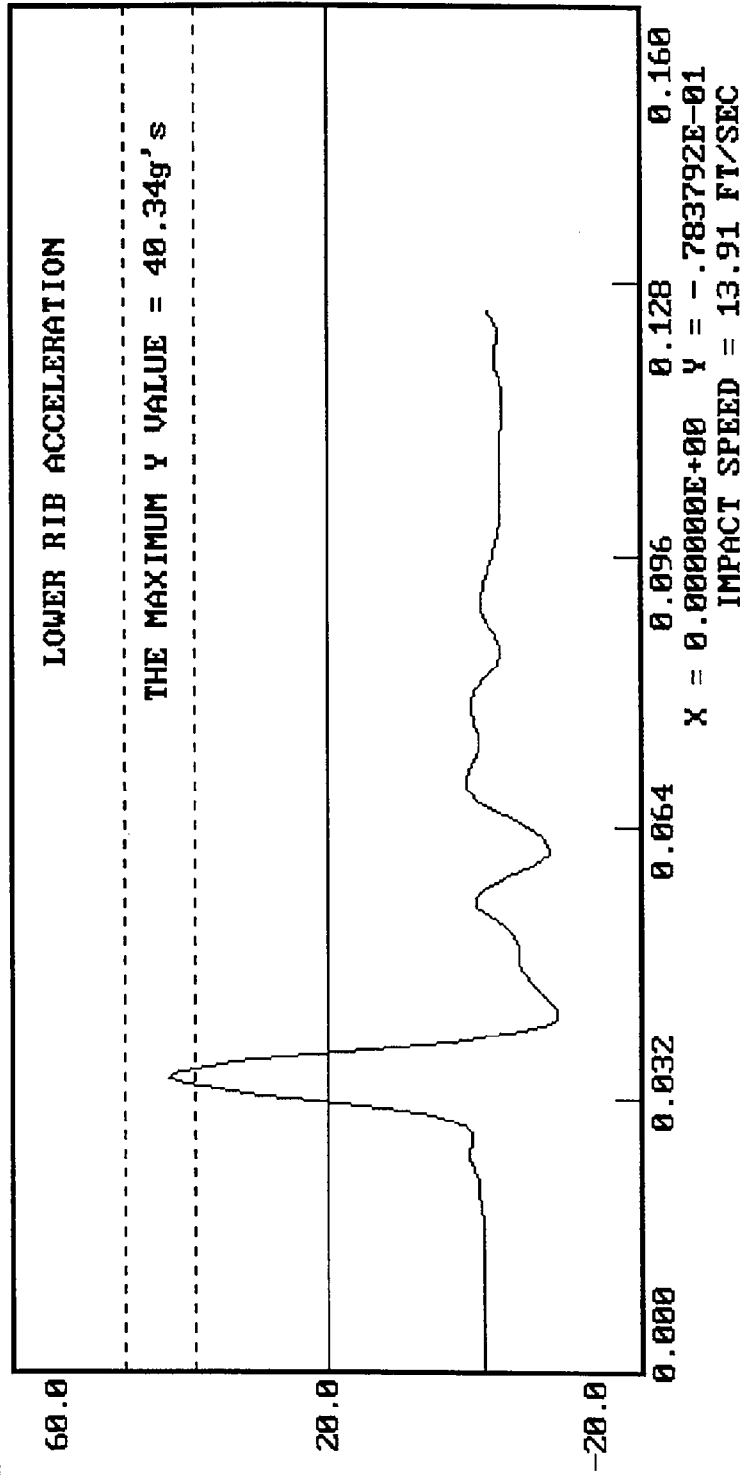
03-23-1995 11:17

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))



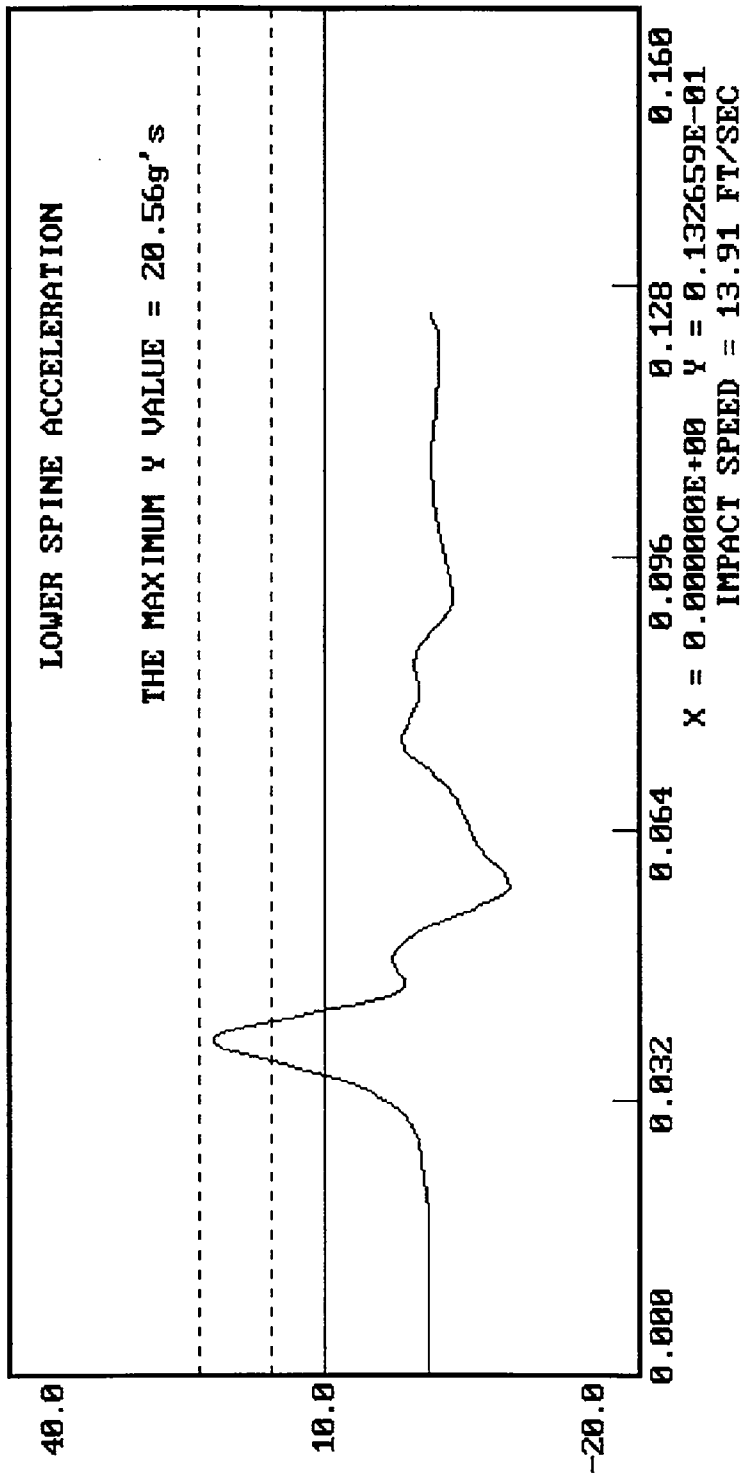
03-23-1995 11:17

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))



03-23-1995 11:17

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: March 23, 1995

DUMMY NUMBER: 269

TEST NUMBER: D95463

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 f/s	13.9
PELVIS ACCELERATION	40 - 60 g's	53

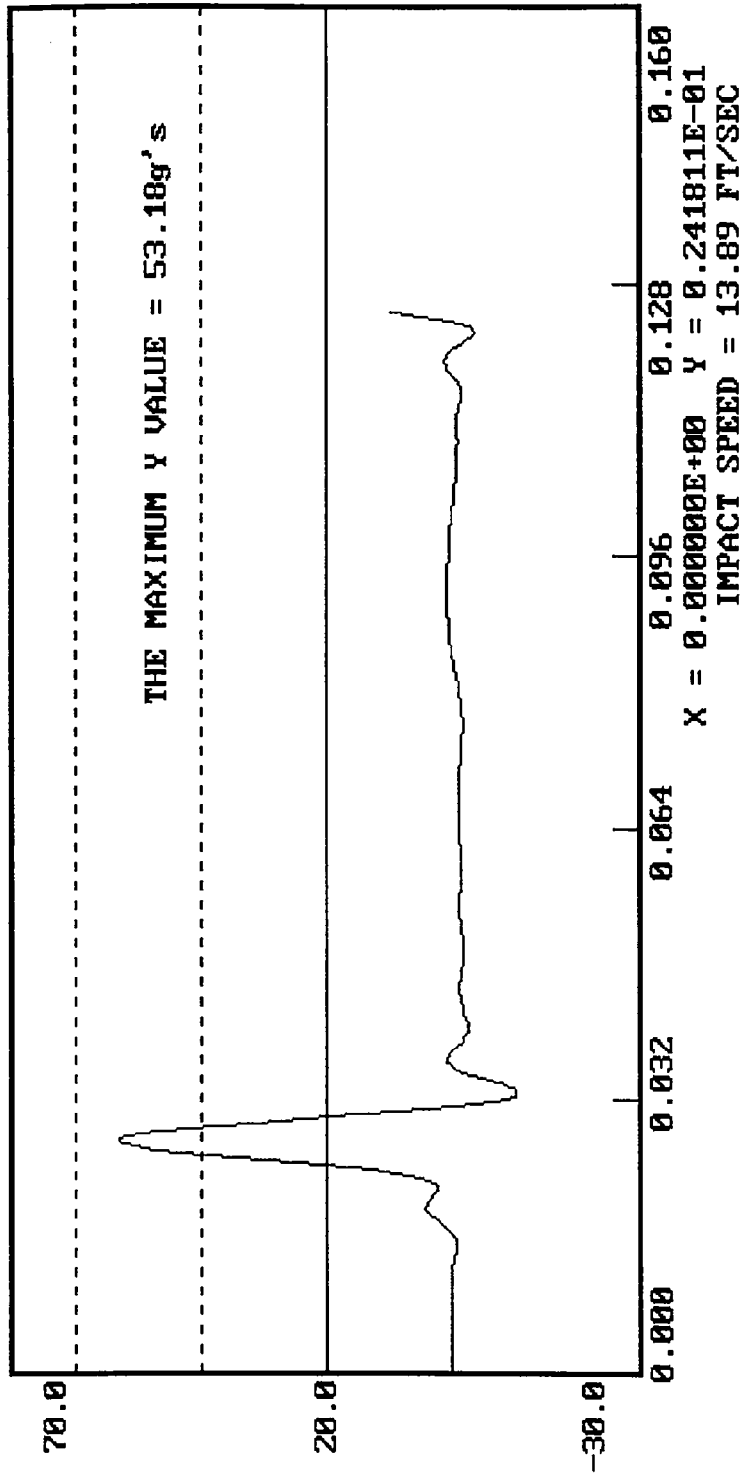
TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Wilson

APPROVED BY Paul Kabala

03-23-1995 11:09

DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))



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

DATE: March 24, 1995

DUMMY NUMBER: 269

TEST NUMBER: D95464

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	18%
FORCE @ 0.5 in	23.3 - 36.5 lbs	32.1
FORCE @ 0.75 in	36.7 - 49.8 lbs	45.7
FORCE @ 1.0 in	50 - 63 lbs	60
FORCE @ 1.3 in	73 - 88 lbs	82

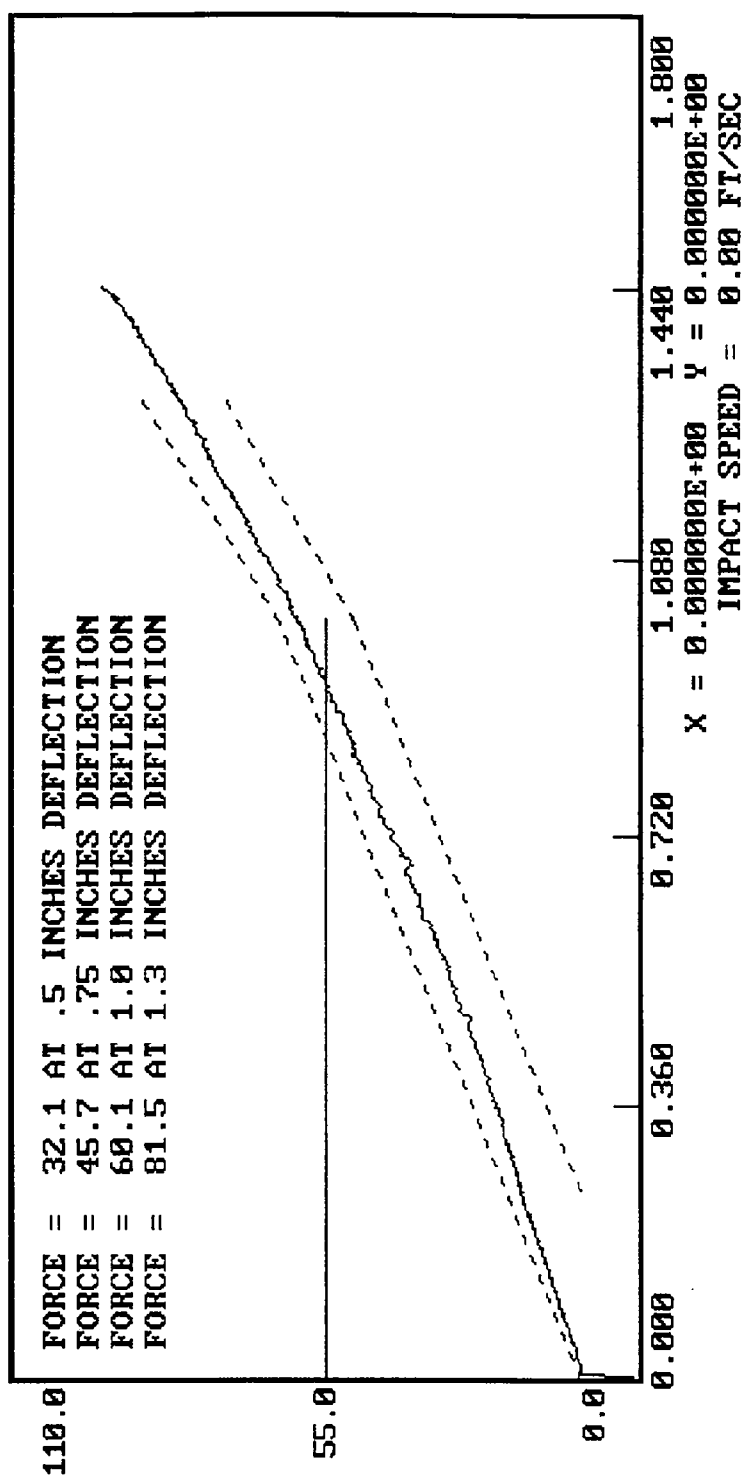
TEST MEETS SPECIFICATIONS

TECHNICIAN Tim Wilkin

APPROVED BY Don Korbak

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 269
 03-24-1995 16:03

ABDOMEN FORCE () VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: March 24, 1995

DUMMY NUMBER: 269

TEST NUMBER: D95465

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	18%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	31
FORCE @ 30°	34 - 46 lbs	41
FORCE @ 40°	46 - 58 lbs	51
RETURN ANGLE	12° maximum	5°

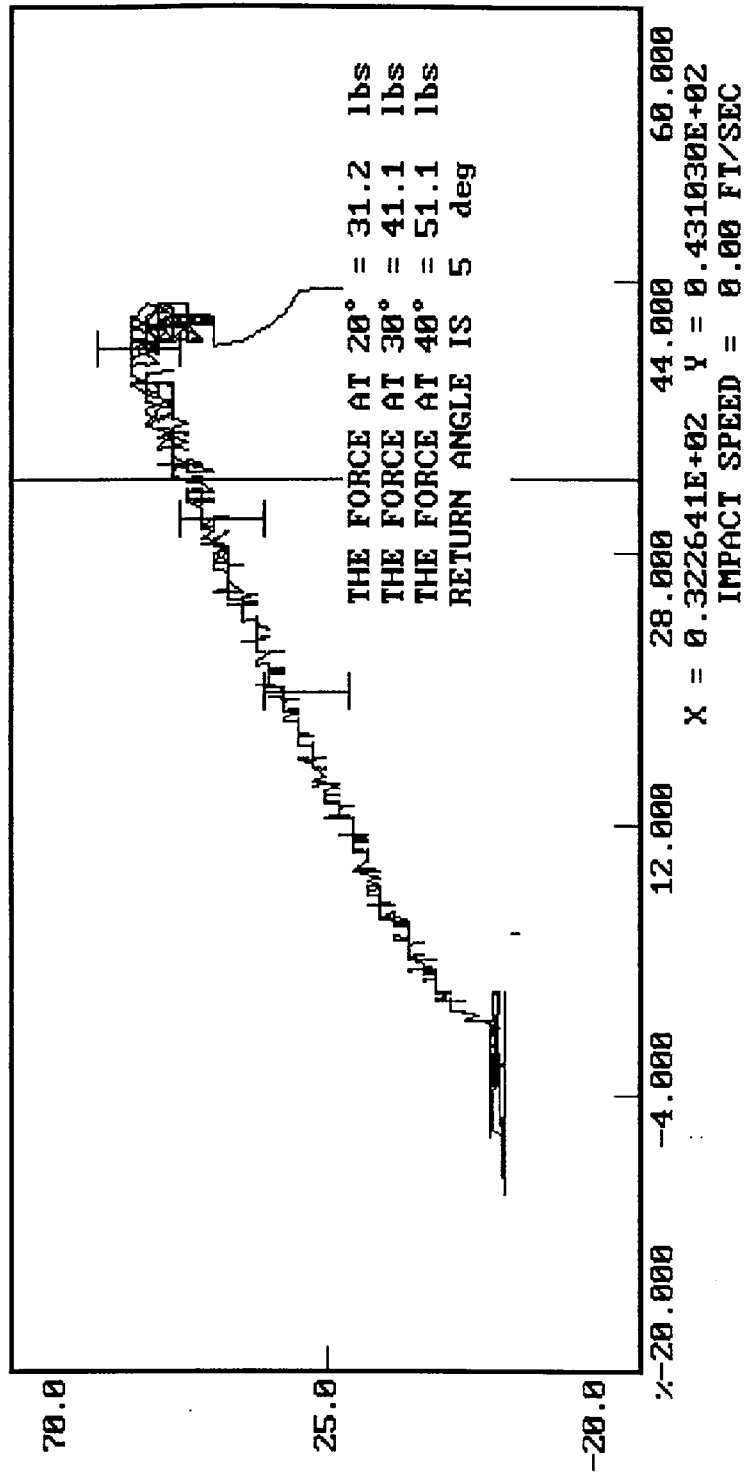
TEST MEETS SPECIFICATIONS

TECHNICIAN *Tim Wilson*

APPROVED BY *Dave Kobake*

03-24-1995 09:19

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 269
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 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.: 272

DATE OF VERIFICATION: March 24, 1995

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.3
RH - Rib Height	19.75" - 20.50"	20.00
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"	20.5
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.1

MEASUREMENTS BY: *Tim Weil*

APPROVED BY: *Steve Katsche*

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: March 22, 1995

DUMMY NUMBER: 272

TEST NUMBER: D95472

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 °F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 fps	13.9
UPPER RIB	37 - 46 g's	44
LOWER RIB	37 - 46 g's	43
LOWER SPINE	15 - 22 g's	22

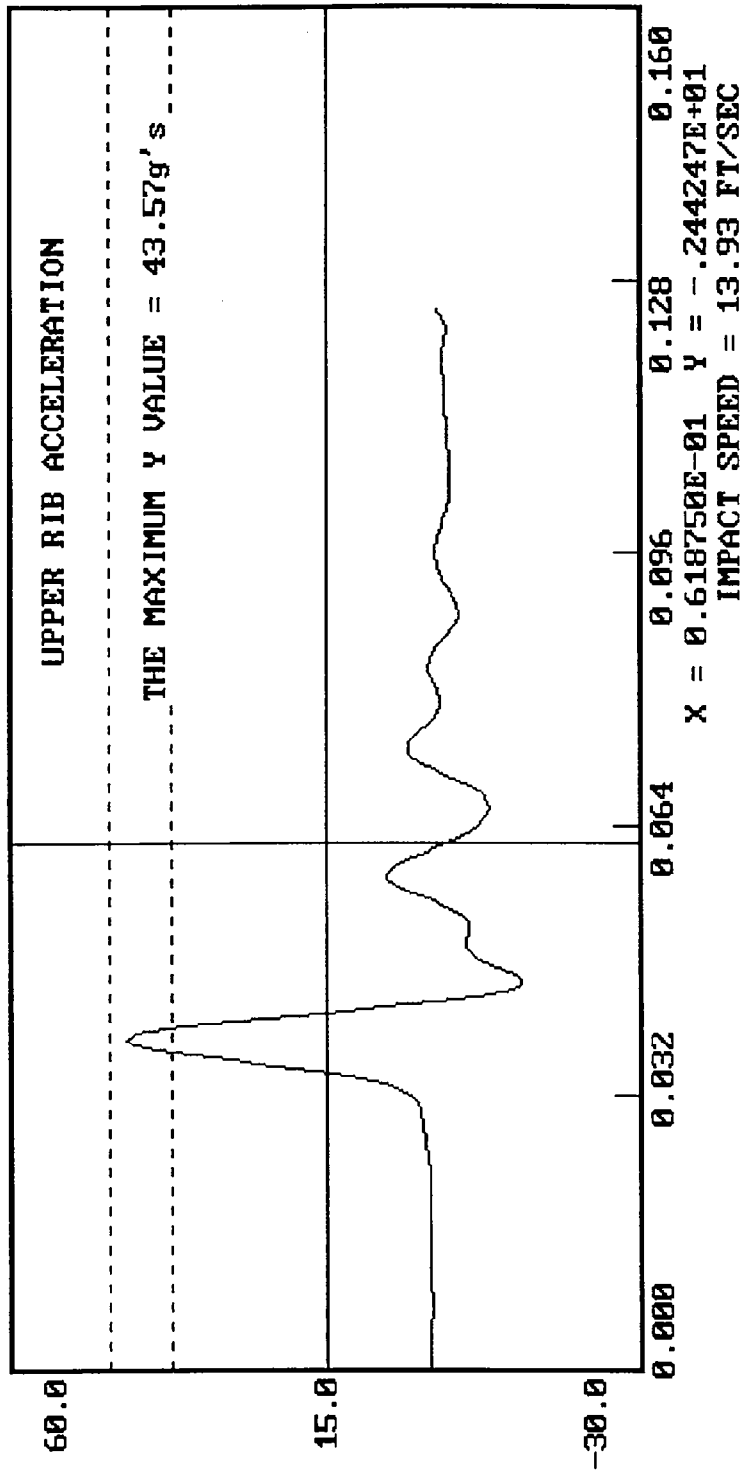
TEST MEETS SPECIFICATIONS

TECHNICIAN *Jim McIl*

APPROVED BY *Bob Koebke*

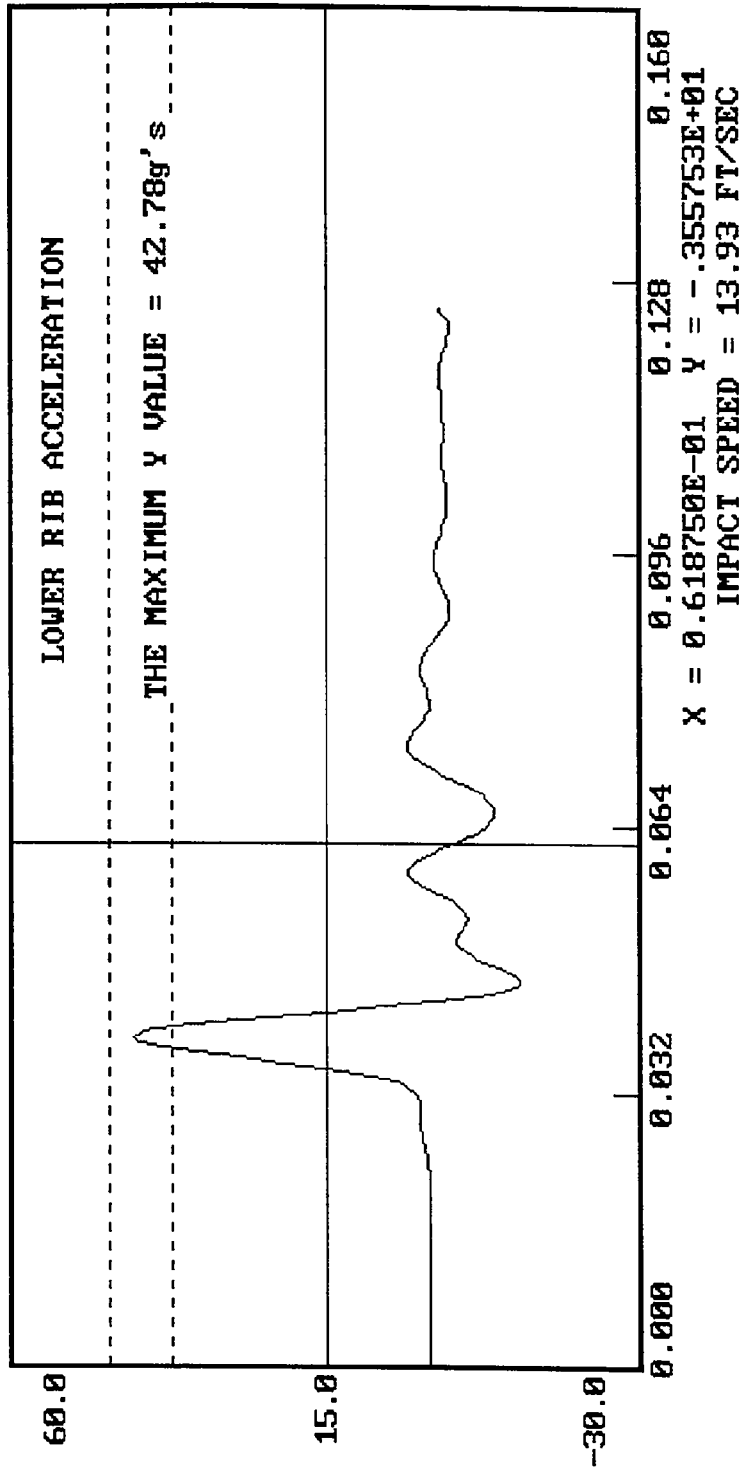
03-22-1995 17:21

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



03-22-1995 17:21

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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: March 22, 1995

DUMMY NUMBER: 272

TEST NUMBER: D95473

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 f/s	13.9
PELVIS ACCELERATION	40 - 60 g's	59

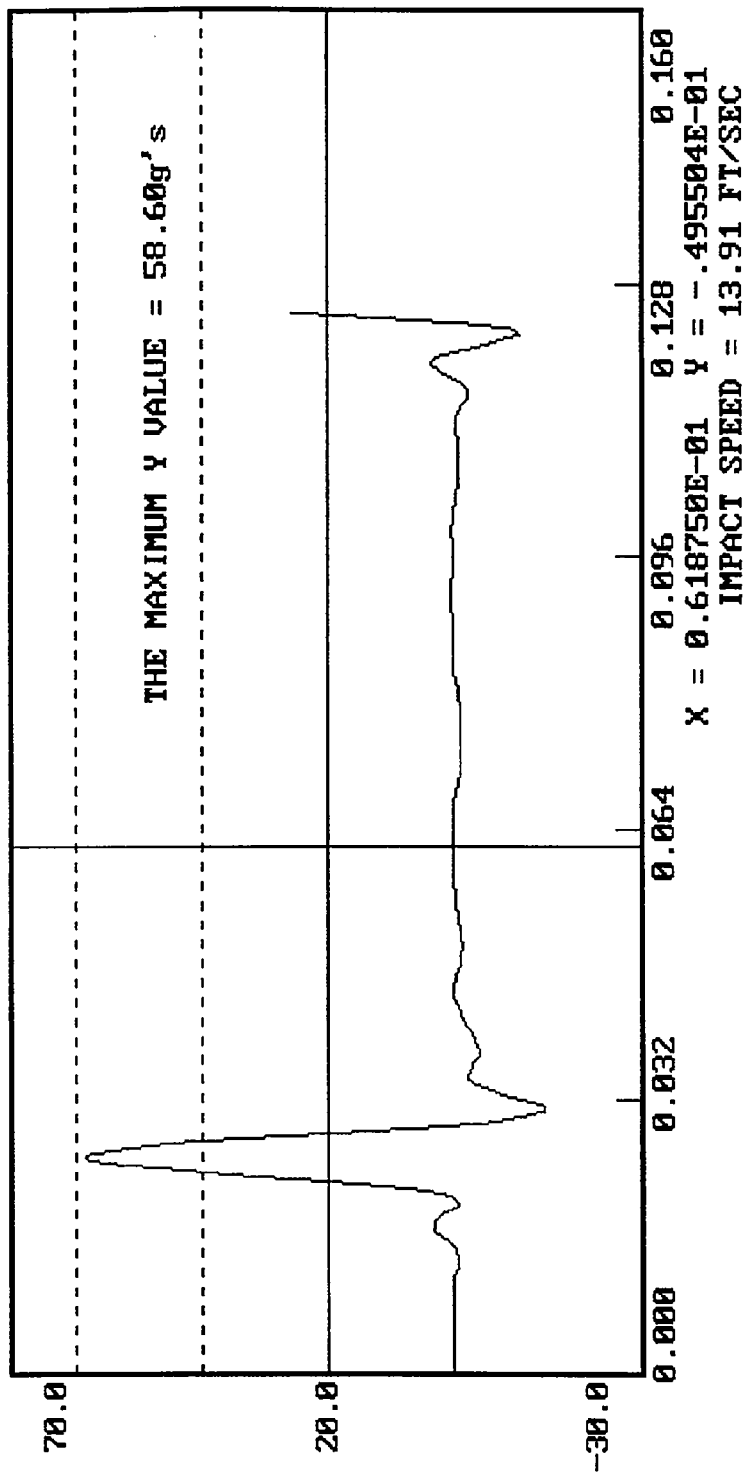
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

03-23-1995 10:15

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: March 24, 1995

DUMMY NUMBER: 272

TEST NUMBER: D95474

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	18%
FORCE @ 0.5 in	23.3 - 36.5 lbs	31.0
FORCE @ 0.75 in	36.7 - 49.8 lbs	45.0
FORCE @ 1.0 in	50 - 63 lbs	61
FORCE @ 1.3 in	73 - 88 lbs	84

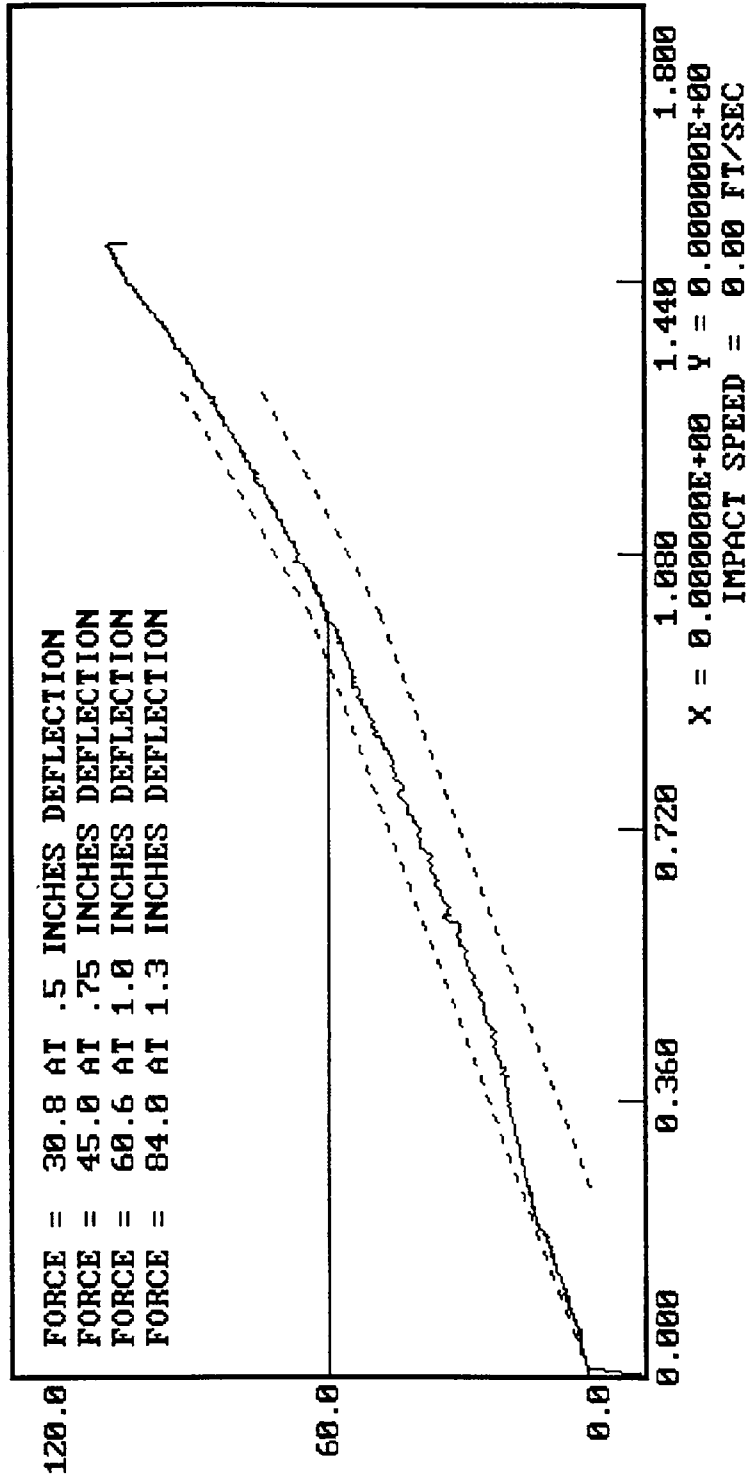
TEST MEETS SPECIFICATIONS

TECHNICIAN *Tim Wood*

APPROVED BY *Steve Kaskela*

DUMMY CALIBRATION - ABDOMEN COMPRESSION
DUMMY # 272
03-24-1995 16:22

ABDOMEN FORCE () VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: March 24, 1995

DUMMY NUMBER: 272

TEST NUMBER: D95475

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78°F	70°
RELATIVE HUMIDITY	10 - 70%	16%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	28
FORCE @ 30°	34 - 46 lbs	34
FORCE @ 40°	46 - 58 lbs	50
RETURN ANGLE	12° maximum	5°

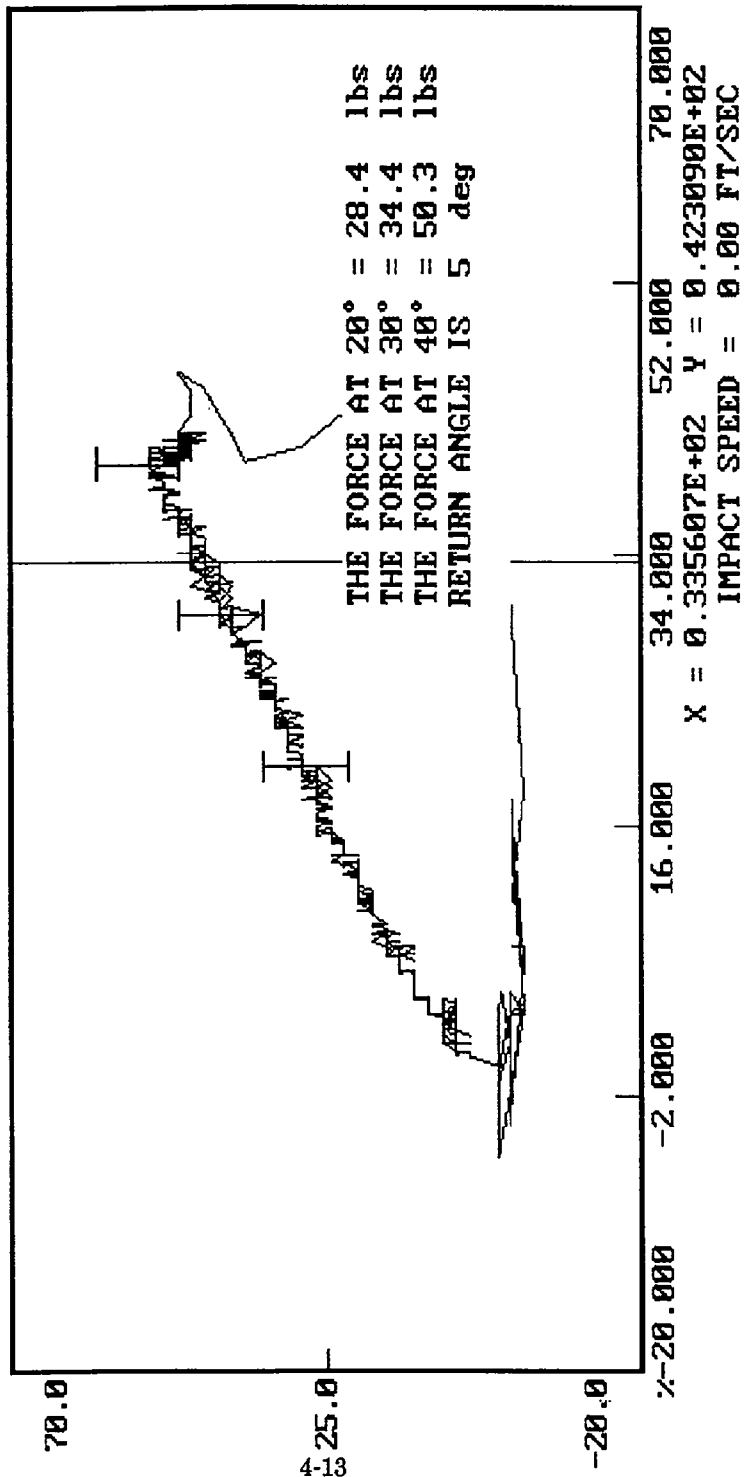
TEST MEETS SPECIFICATIONS

TECHNICIAN *Tom White*

APPROVED BY *Steve Kachuba*

03-24-1995 08:58

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



POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 269

Inspected By: Al Chalmers

Date: March 24, 1995

<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: 271

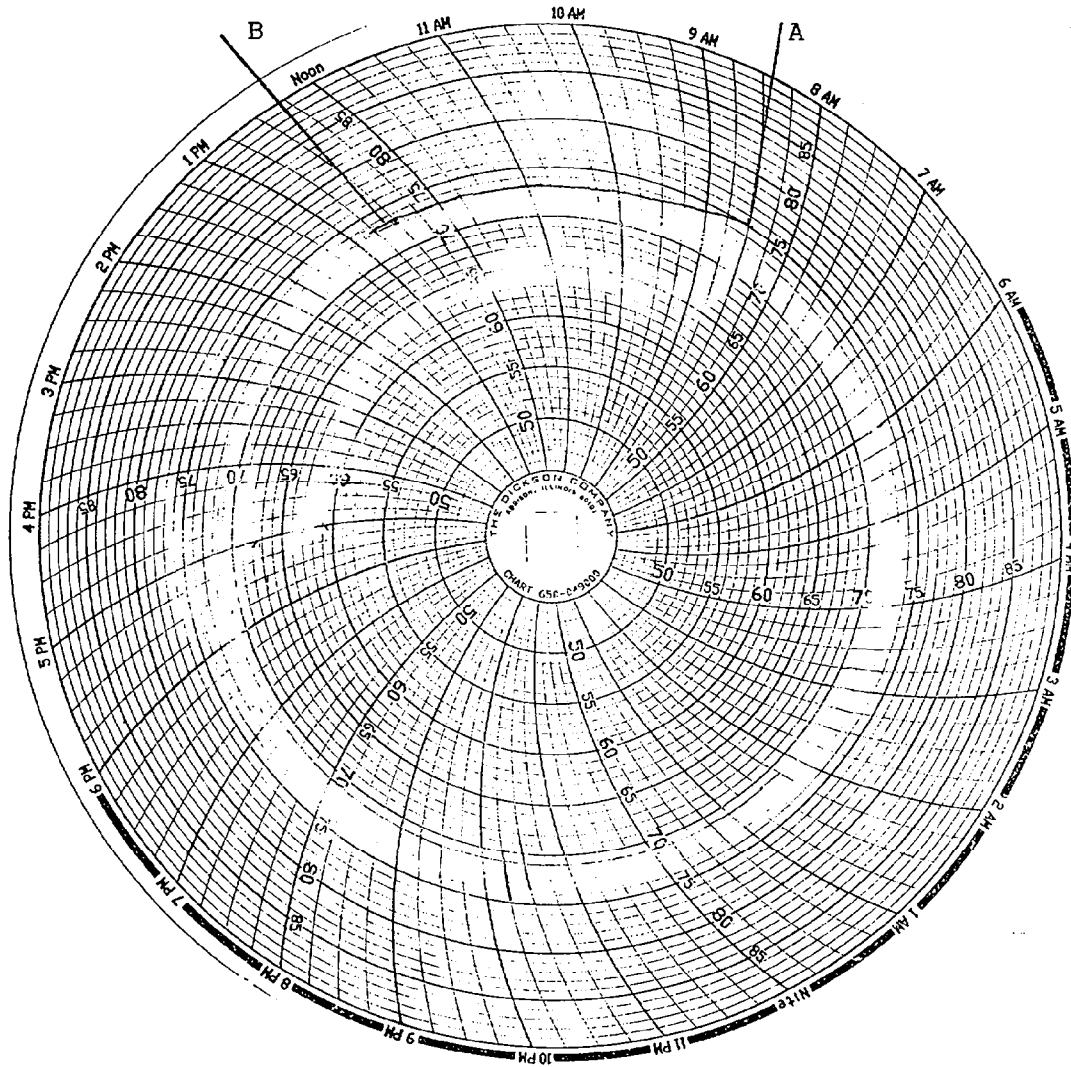
Inspected By: Tim Michnay

Date: March 24, 1995

<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



Temperature (degree F)

A = Dummies installed in vehicle
B = Test conducted

APPENDIX D
DUMMY AND VEHICLE CALIBRATION DATA

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION
INSTRUMENTS FOR DRIVER DUMMY NO. 269

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib	AC913	Endevco	March 13, 1995
Lower Rib	AJ436	Endevco	January 16, 1995
Lower Spine	AHØD1	Endevco	March 13, 1995
Pelvis	AHWK8	Endevco	March 13, 1995
Upper Rib Redundant	AHØMØ	Endevco	March 13, 1995
Lower Rib Redundant	AGT81	Endevco	January 16, 1995
Lower Spine Redundant	AH1G2	Endevco	March 13, 1995
Pelvis Redundant	AJ6Ø6	Endevco	November Ø7, 1994

INSTRUMENTS FOR PASSENGER DUMMY NO. 272

	LEFT REAR PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib	AHW95	Endevco	January 16, 1995
Lower Rib	AHY99	Endevco	March 13, 1995
Lower Spine	AJ7C2	Endevco	March 13, 1995
Pelvis	AGPØ7	Endevco	March 13, 1995
Upper Rib Redundant	AHR15	Endevco	January 16, 1995
Lower Rib Redundant	AJ614	Endevco	November Ø7, 1994
Lower Spine Redundant	AJ42Ø	Endevco	March 13, 1995
Pelvis Redundant	AHWN8	Endevco	March 13, 1995

VEHICLE INSTRUMENT CALIBRATION

VEHICLE ACCELEROMETERS			
SERIAL NO.	MANUFACTURER	CALIBRATION DATE	
B02-G08	Entran	February 23, 1995	MDB CG X
L15-G19	Entran	February 24, 1995	MDB CG Y
B02-G16	Entran	February 23, 1995	MDB CG Z
AHDR9	Endevco	February 28, 1995	MDB Rear Axle X
J03-A02	Entran	February 28, 1995	MDB Rear Axle Y
X18	Entran	November 10, 1994	Mid Left A-Post
L15-G06	Entran	February 08, 1995	Lower Left A-Post
L15-G18	Entran	February 07, 1995	Lower Left B-Post
MGA141	Entran	November 02, 1994	Trunk Centerline X
MGA122	Entran	February 24, 1995	Trunk Centerline Y
X02	Entran	November 07, 1994	Trunk Centerline Z
L15-G09	Entran	February 07, 1995	Driver Seat Track
L15-G13	Entran	February 08, 1995	Right Front Sill X
X14	Entran	February 14, 1995	Right Front Sill Y
L15-G24	Entran	February 08, 1995	Right Front Sill Z
B02-G17	Entran	February 24, 1995	Right Rear Sill X
L15-G10	Entran	February 02, 1995	Right Rear Sill Y
L15-G04	Entran	February 02, 1995	Right Rear Sill Z
L22-G08	Endevco	October 14, 1994	Left Front Sill Y
AJ9E1	Entran	February 08, 1995	Left Rear Sill Y
L15-G23	Entran	February 08, 1995	Right Rear Seat Occupant Compartment Y

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