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REPORT NO.: MGA-93-21407

NHTSA NO: MP5305

OFFICE OF MARKET INCENTIVES
SIDE IMPACT PROTECTION STUDY

FILE

PASSENGER CARS

1993 Acura Legend 4-Door

Film #
F-003651

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105

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Test Date: June 3, 1993

FINAL REPORT

Prepared For:

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OFFICE OF MARKET INCENTIVES
400 SEVENTH STREET, S.W.

Room No. 5313 (NRM-22)
400 Seventh Street, S.W.
Washington, D.C. 20590

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Abstract

A 48/24 kph (30/15 mph) 90° Impact (Moving Deformable Barrier) Test was conducted on the subject 1993 Acura Legend 4-Door in accordance with the specifications of the Office of Market Incentives Test Procedure. The test was conducted at the MGA Proving Grounds and Crash Test Facility in Burlington, WI on June 3, 1993.

The impact velocity of the Moving Deformable Barrier (MDB) was 53.9 kph (33.47 mph), and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 68°F. The target vehicle post-test maximum crush was 402 mm.

The test or target vehicle's performance is given below:

	<u>Driver's SID</u>	<u>Left Rear SID</u>
Left Upper Rib Acceleration	68.3 g's	51.8 g's
Left Lower Rib Acceleration	52.8 g's	65.7 g's
Lower Spine Acceleration	74.1 g's	48.1 g's
Thoracic Trauma Index (TTI)	71.2 g's	56.9 g's
Pelvis Acceleration	75.8 g's	97.6 g's

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Prepared by:

John Fleck
John Fleck, Project Engineer

Approved by:

P. Michael Miller II
P. Michael Miller II, Program Manager

FINAL REPORT ACCEPTED BY:

Hans C. Chen
Contract Technical Manager

09/28/93
Date of Report Acceptance

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Section 1

PURPOSE AND TEST PROCEDURE

This side impact test is part of the Composite FY93 Side Impact Protection Study 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 1993 Acura Legend 4-Door.

The side impact test was conducted in accordance with the Office of Market Incentive (OMI) Laboratory Indicant Test Procedure.

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 1993 Acura Legend 4-Door 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 53.9 kph (33.47 mph) on June 3, 1993. The orientation angle of the striking vehicle was 90° counterclockwise with respect to the longitudinal axis of the struck vehicle. Pre- and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SIDs) are shown in Appendix A.

Two restrained Side Impact Dummies (SIDs) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to instructions specified in the OMI Side Impact Protection Laboratory Test Procedure which is dated March 1992. The side impact event was documented by ten high speed cameras. Camera locations and other pertinent camera information can be found in this report.

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. Upper Thoracic spine (T_{3,4}) uniaxial accelerometer (Y-direction)
5. Pelvic (PEV) section uniaxial accelerometer (Y-direction)

A summary of the side impact dummy (SID) configuration and performance verification test data can be found in Appendix C.

A total of 46 channels of data were recorded. Appendix B contains the vehicle and dummy response data traces.

The driver's Thoracic Trauma Index (TTI) was 71.2 g's. Maximum pelvic Y acceleration was 75.8 g's.

The left rear passenger's TTI was 56.9 g's. Maximum pelvic Y acceleration was 97.6 g's.

SECTION 3
SUMMARY OF TEST DATA

GENERAL TEST AND VEHICLE PARAMETER DATA

Year/Make/Model/Body Style: 1993 Acura Legend 4-Door
Vehicle NHTSA No.: MP5305 VIN: JH4KA7637PC008734
Vehicle Body Color: Gray Month & Year of Manufacture: 11-92
Engine Data: 6 cylinders; CID; 3.2 Liter; cc
Placement X Longitudinal; or Lateral
Transmission: 4 speed; Manual; X Automatic; Overdrive
Final Drive: Rear Wheel Drive; X Frt. Wheel Drive; Four
Wheel Drive
Odometer Reading 180.8 miles
Options: X A/C; X Pwr. Steering.; X Pwr. Brakes; X Pwr. Window

Tire Pressure (at capacity): 32 psi FRONT
30 psi REAR

Recommended Tire Size: 205 60 R15

Tires on Test Vehicle: 205 60 R15 Manufacturer: Bridgeston

Vehicle Capacity Data:

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

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

Type of Front Seat Back: Fixed; X Adjustable with Leve

Vehicle Maximum Capacity Loading = 385.6 kg. (A) X kno

No. of Occupants x 150 lbs. 340.2 kg. (B)

(68.04 kg.)

Cargo Capacity (A-B) = 45.4 kg.

Right Front = 480.4 kg. Right Rear = 286.7 kg.
Left Front = 453.6 kg. Left Rear = 321.6 kg.
TOTAL FRONT = 934.0 kg. TOTAL REAR = 608.3 kg.
% of Total Vehicle Weight = 60.6 ; % of Total Weight = 39.4
TOTAL WEIGHT = 1542.3 kg.

Table 2
TEST VEHICLE DATA

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids = 1542.3 kg.
Maximum Cargo Carrying Capacity of Test Vehicle = 45.4 kg.
Weight of 2 Side Impact Dummies (2 x 168 lbs.) = 152.4 kg.
(76.2 kg.)
TEST VEHICLE TARGET WEIGHT: = 1740.1 kg.

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front = 469.9 kg. Right Rear = 342.9 kg.
Left Front = 510.8 kg. Left Rear = 416.4 kg.
TOTAL FRONT = 980.7 kg. TOTAL REAR = 759.3 kg.
% of Total Weight = 56.4 kg. % of Total Weight = 43.6 kg.
Total Weight = 1740.0 kg.

TEST VEHICLE ATTITUDE (all dimensions in mm):

AS DELIVERED:

Right Front 696 Left Front 693 Right Rear 688 Left Rear 676

READY FOR TEST:

Right Front 675 Left Front 665 Right Rear 637 Left Rear 620

Test Vehicle Wheelbase: 2905 mm

C.G. = 1268 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4635 mm

Left Side = 4660 mm

Centerline = 4954 mm

Figure 1
PRE-TEST CONDITIONS

VEHICLE IDENTIFICATION:

Vehicle: 1993 Acura Legend 4-Door

NHTSA No. MP5305

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 240 mm

Total Number of Adjustment Positions or Detents: N/A

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Torso Angle = 20 degrees

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: Fixed

Seat Back Adjustment Position: Fixed

ADJUSTABLE STEERING COLUMN POSITION:

Mid

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:

16.5 gallons

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

Wheelbase: = 2905 mm

Impact Point is 508 mm rearward of front axle centerline.

Table 3

CRASH TEST SUMMARY FOR TEST VEHICLEVEHICLE IDENTIFICATION:Vehicle Year/Make/Model: 1993 Acura LegendBody Style: 4-Door VIN: JH4KA7637PC008734NHTSA No.: MP5305 Test Date: June 3, 1993Overall Length = 4954 mm; Overall Width = 1640 mmTEST WEIGHT:Left Front = 510.8 kg. Left Rear = 416.4 kg.Right Front = 469.9 kg. Right Rear = 342.9 kg.TOTAL FRONT = 980.7 kg. TOTAL REAR = 759.3 kg.TOTAL VEHICLE WEIGHT 1740.0 kg.Wheelbase = 2905 mmLongitudinal C.G. front Center of Front Axle = 1268 mmImpact Angle with Respect to Impactor = 90 degreesMAXIMUM EXTERIOR STATIC CRUSH:1. LEVEL 1 (278 mm above ground) = 201 mm2. LEVEL 2 (460 mm above ground) = 402 mm3. LEVEL 3 (595 mm above ground) = 379 mm4. LEVEL 4 (858 mm above ground) = 318 mm5. LEVEL 5 (1375 mm above ground) = 78 mmMaximum Post-Test Intrusion = 402 mmOCCUPANTS:Front PassengerRear PassengerType of Dummy SIDSIDRestraints Used 3 pt. lap &
shoulder belt with airbag3 pt. lap &
shoulder beltINSTRUMENTATION:Number of Vehicle Data Channels: = 17Number of Cameras: Onboard = 3Offboard = 7TOTAL = 10

Table 4

CRASH TEST SUMMARY FOR SIDE IMPACTORPOSITION OF IMPACT (MDB) ON MONORAIL:Crabbed 27° to leftMDB DETAILS:

Overall Width of Framework Carriage	=	<u>1251</u>	mm
Overall Length of MDB (incl. honeycomb impact face)	=	<u>4115</u>	mm
Wheelbase of Framework Carriage	=	<u>2591</u>	mm
Tread of Framework Carriage (Front & Rear)	=	<u>1880</u>	mm
C.G. Location Rearward of Front Axle	=	<u>1100</u>	mm

MDB WEIGHT:

Left Front	=	<u>516.2</u>	kg.	Left Rear	=	<u>175.1</u>	kg.
Right Front	=	<u>256.3</u>	kg.	Right Rear	=	<u>415.0</u>	kg.
TOTAL FRONT	=	<u>772.5</u>	kg.	TOTAL REAR	=	<u>590.1</u>	kg.
TOTAL MDB WEIGHT	=	<u>1362.6</u>	kg.				

Impact Angle (MDB C/L to Target Vehicle C/L) = 90 degreesImpact Speed = 33.47 mph (53.88 kph)MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A at Bumper Level	=	<u>123</u>	mm
2. Row B at Mid-Stack Level	=	<u>84</u>	mm
3. Row C at Top of Stack Level	=	<u>166</u>	mm

INSTRUMENTATION:Number of MDB Data Channels = 5

Table 5

TEST VEHICLE: 1993 Acura Legend 4-Door NHTSA No. MP5305

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>to side window</u>	<u>to side window</u>
Shoulder	<u>driver door</u>	<u>passenger Door</u>
Hip	<u>driver door</u>	<u>passenger Door</u>
Left Knee	<u>driver door</u>	<u>passenger Door</u>
Right Knee	<u>N/A</u>	<u>N/A</u>

DOOR OPENING:

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

MDB DISTANCE FROM TARGET IMPACT POINT: 0 mm

ARM REST LOCATIONS:

Front: 248 mm below window opening

Rear: 262 mm below window opening

SEAT MOVEMENT:

Driver seat cushion - 107 mm of crush

Driver seat back - 107 mm of crush

GLAZING DAMAGE:

Front and rear left side door windows shattered and
windshield was cracked

PILLAR PERFORMANCE:

None

SILL SEPARATION:

1397 back from front hub

305 mm in length

OTHER NOTABLE IMPACT EFFECTS:

None

Section 4
OCCUPANT AND VEHICLE INFORMATION

Table 6
SIDE IMPACT DUMMY (SID) TEST DATA SUMMARY

Vehicle: 1993 Acura Legend 2-Door		Test Date: 6-3-93	
Front Dummy ID # 136		Rear Dummy ID # 137	
Pos. Direct.		Neg. Direct	
Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS:			
Upper Rib			
Lateral.....Y	68.3 30.6	27.4 76.2	51.8 50.6 3.9 150.0
Lateral.....Y(R)	69.8 30.6	25.7 76.2	53.6 50.6 3.9 149.0
Lower Rib	52.8 32.5	16.2 78.7	65.7 50.0 4.8 108.0
Lateral.....Y	52.0 30.6	15.6 77.5	66.3 50.0 4.9 108.0
SPINE ACCELERATIONS:			
Upper			
Lateral.....Y	75.9 36.8	20.2 65	54.4 56.2 8.7 45.0
Lateral.....Y(R)	77.9 36.8	20.0 65.6	56.3 56.2 9.0 45.0
Lower	74.1 32.5	19.9 86.2	48.1 48.1 5.2 106
Lateral.....Y	73.1 32.5	19.8 86.8	49.4 48.1 5.0 106
PELVIC ACCELERATIONS:			
Lateral.....Y	75.8 28.7	14.2 68.7	97.6 41.8 8.9 75.0
Lateral.....Y(R)	* *	* *	100.5 41.8 9.7 74.3

REFERENCE:

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

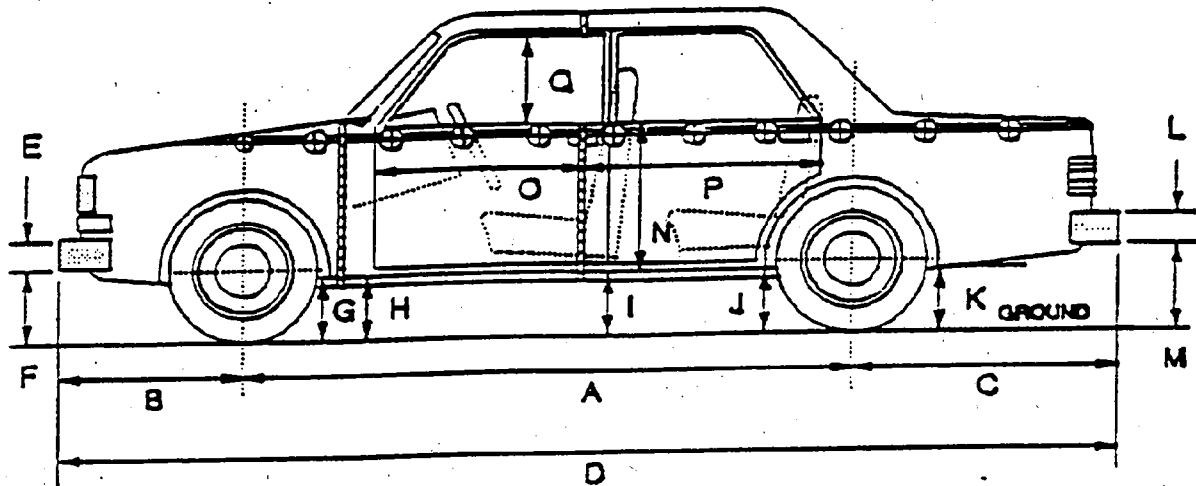
Lateral (Y) = to right Lateral (Y) = to left

Vertical (Z) = up Vertical (Z) = down

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

* Data is not valid

Figure 2
PRE- AND POST-TEST MEASUREMENTS



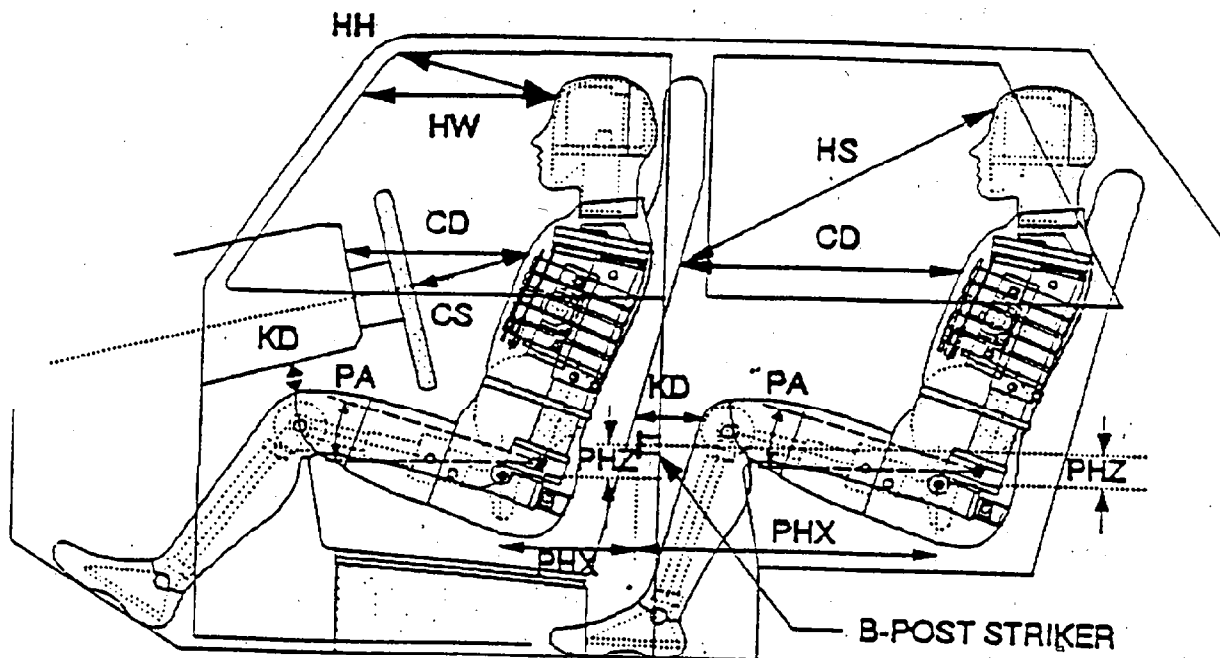
LEFT SIDE VIEW

R = Length Right Side
S = Length Left Side
T = Width at B-Post

Units: mm

	PRE-TEST	POST-TEST	Δ CHANGE
A	2905	2850	55
B	905	850	55
C	1030	1152	-122
D	4954	4942	12
E	260	260	0
F	315	335	-20
G	225	194	31
H	230	291	-61
I	240	284	-44
J	238	274	-36
K	315	308	7
L	230	230	0
M	380	371	9
N	640	570	70
O	733	700	33
P	1370	1272	98
Q	468	457	11
R	4635	4607	28
S	4660	4578	82
T	1640	1448	192

Figure 3
SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS



LEFT SIDE VIEW

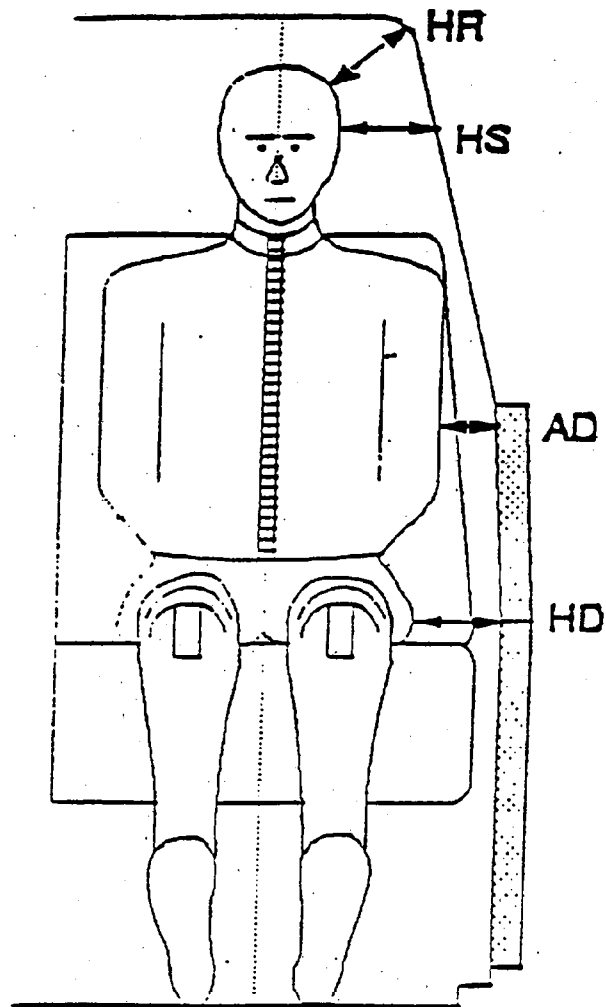
NOTE: All dimensions are in mm

	DRIVER ID #136	LEFT REAR PASSENGER ID #137
HH	351	N/A
HW	580	N/A
HS	N/A	653
CD	503	548
CS	295	N/A
KDL	235	222
KDR	205	235
PA'	24.8°	12.8°
PHX	130	243
PHZ	280	272

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

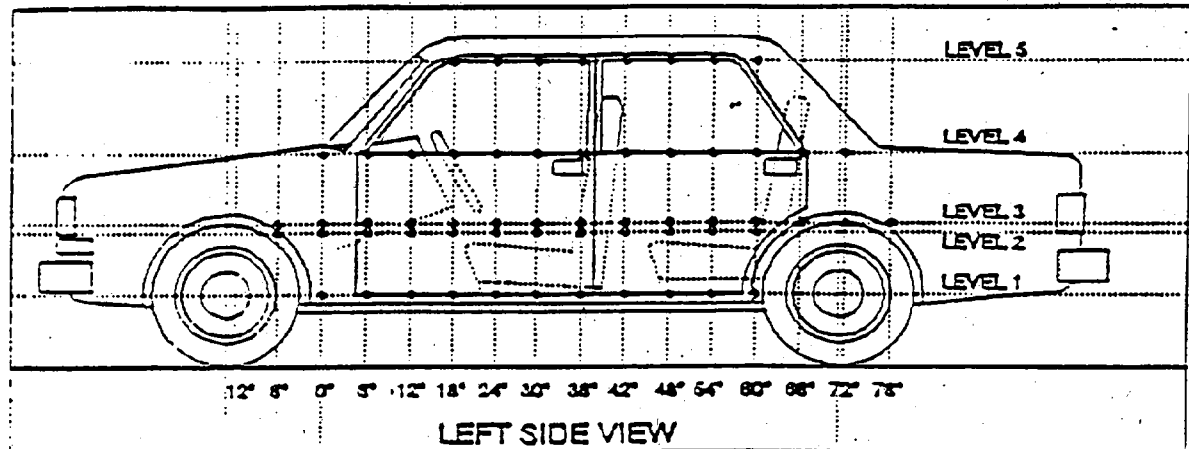
SIDE IMPACT DUMMY (SID) LATERAL CLEARANCE DIMENSIONS



NOTE: All dimensions are in mm

	DRIVER ID #136	LEFT REAR PASSENGER ID #137
HR	117	94
HS	240	130
AD	103	72
HD	132	141

Figure 5
VEHICLE SIDE MEASUREMENTS



Measurements Along the Vertical 30" Line Shown Above:

30" Side Profile

Level 5 @ Window Top	=	<u>1375</u>	mm
Level 4 @ Window Sill	=	<u>858</u>	mm
Level 3 @ Mid Door	=	<u>595</u>	mm
Level 2 @ Occupant H-Point	=	<u>460</u>	mm
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>278</u>	mm

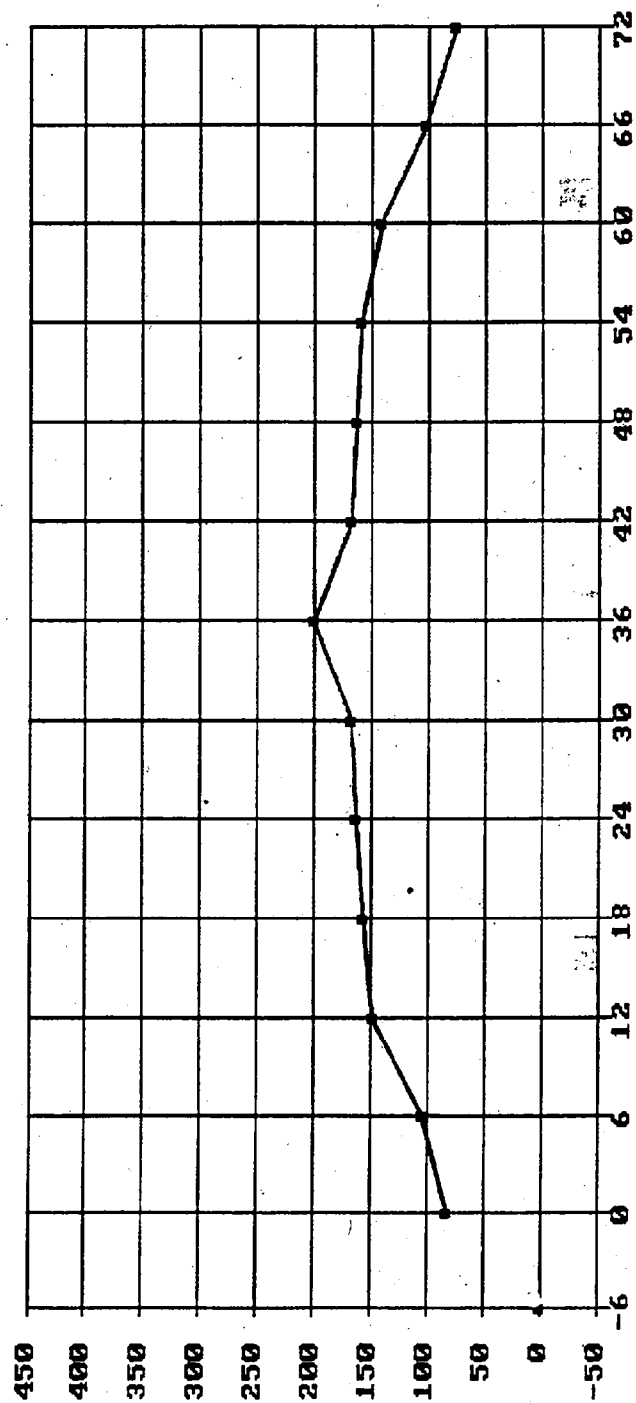
Table 7

Test Date: 6-3-93 TEST VEHICLE EXTERIOR PROFILES FROM REFERENCE PLANE AND STATIC CRUSH
Vehicle: 1993 Acura Legend

Location	Level 1 Side Sill	Level 2 H-Point	Level 3 Mid-Door	Level 4 Window Sill	Level 5 Window Top
Height (mm)	278	460	595	858	1375
	PRE/POST/CRUSH (mm)	PRE/POST/CRUSH (mm)	PRE/POST/CRUSH (mm)	PRE/POST/CRUSH (mm)	PRE/POST/CRUSH (mm)
-6	N/A	N/A	794/872/78	863/905/42	N/A
0	862/940/78	799/926/127	799/910/111	857/911/54	N/A
6	862/976/114	799/1075/276	795/1046/251	855/924/69	N/A
12	863/1010/147	795/1134/339	792/1110/318	854/1020/166	N/A
18	863/1020/157	790/1169/379	790/1125/335	854/1055/201	N/A
24	863/1026/163	789/1186/397	790/1151/361	850/1057/207	N/A
30	863/1031/168	788/1190/402	788/1155/367	850/1052/202	1109/1155/46
36	863/1064/201	787/1182/395	787/1156/369	850/1060/210	1105/1161/56
42	863/1030/167	787/1174/387	786/1165/379	848/1066/218	1105/1183/78
48	863/1026/163	785/1170/385	785/1155/370	847/1165/318	1103/1111/8
54	863/1022/159	786/1173/387	785/1130/345	847/1145/298	1103/1126/23
60	863/1004/141	786/1165/379	785/1105/320	847/1135/288	1103/1108/5
66	863/965/102	787/1141/354	788/1040/252	847/1108/261	1105/1090/-15
72	863/939/76	790/1072/282	791/1001/210	850/1055/205	1111/1073/-38

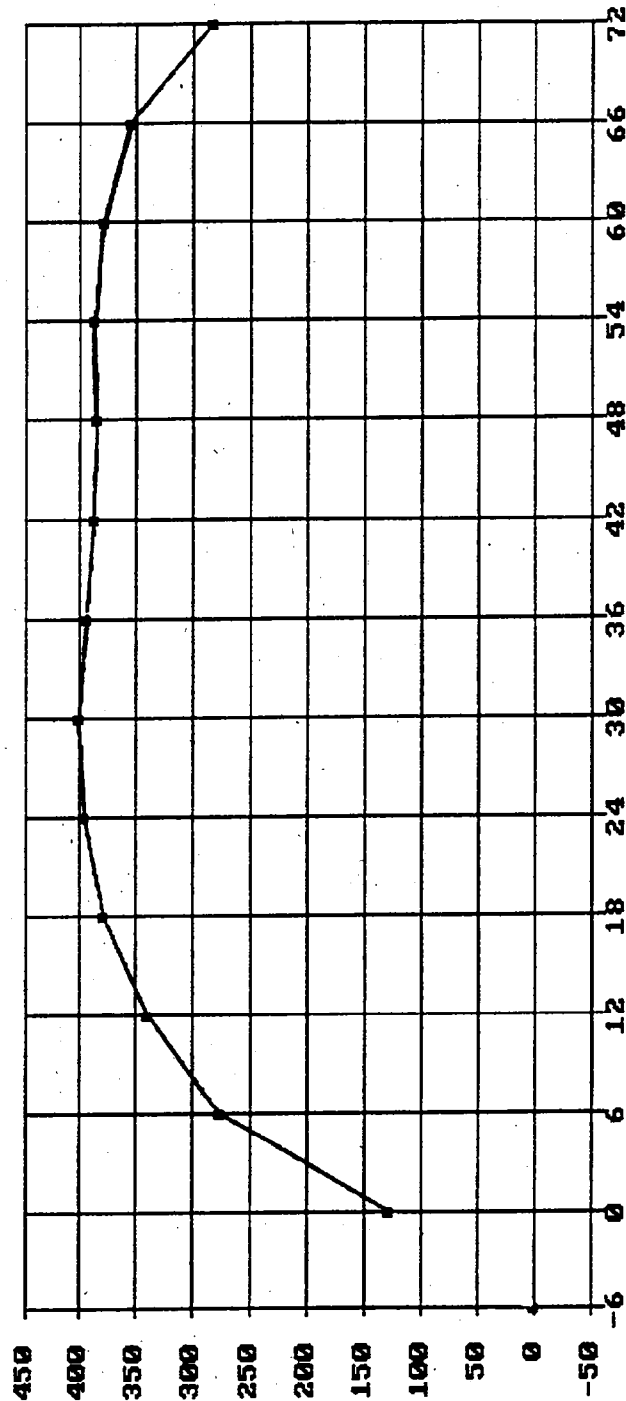
reference plane is parallel to and 48 inches from test vehicle longitudinal centerline
even dimensions = reference plane to car body

Figure 6
VEHICLE EXTERIOR STATIC CRUSH



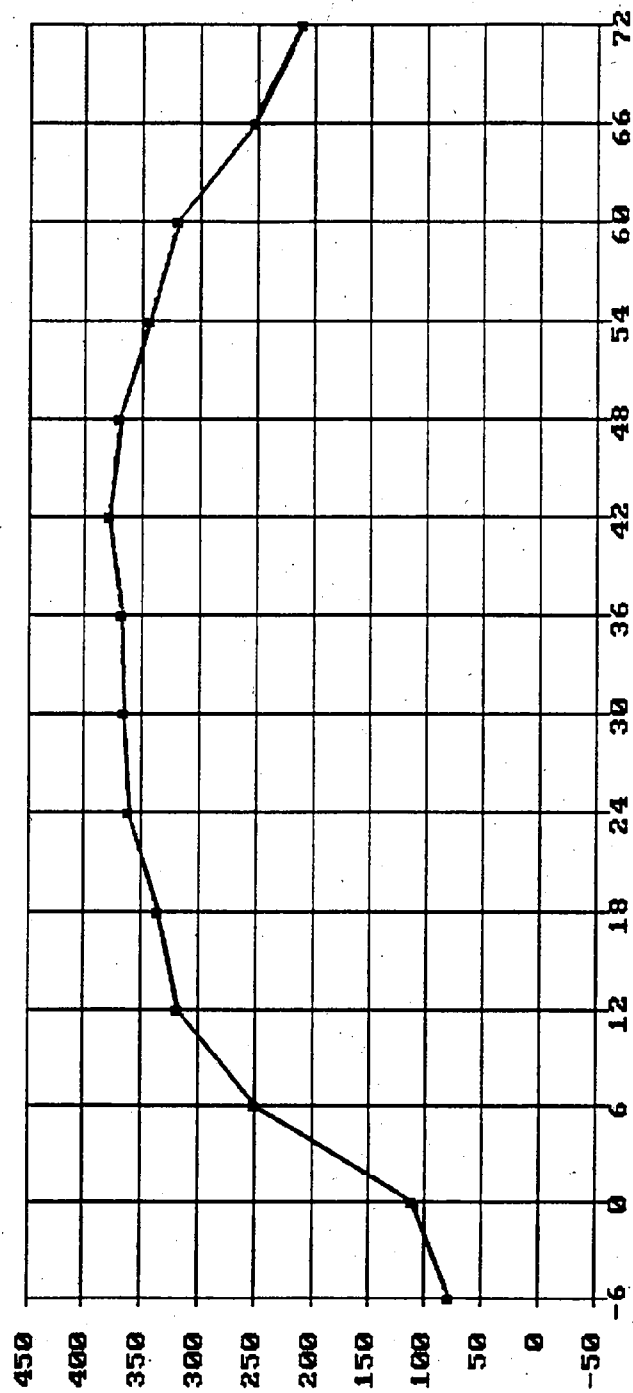
LEVEL 1 - SIDE SILL

Figure 6
VEHICLE EXTERIOR STATIC CRUSH - Continued



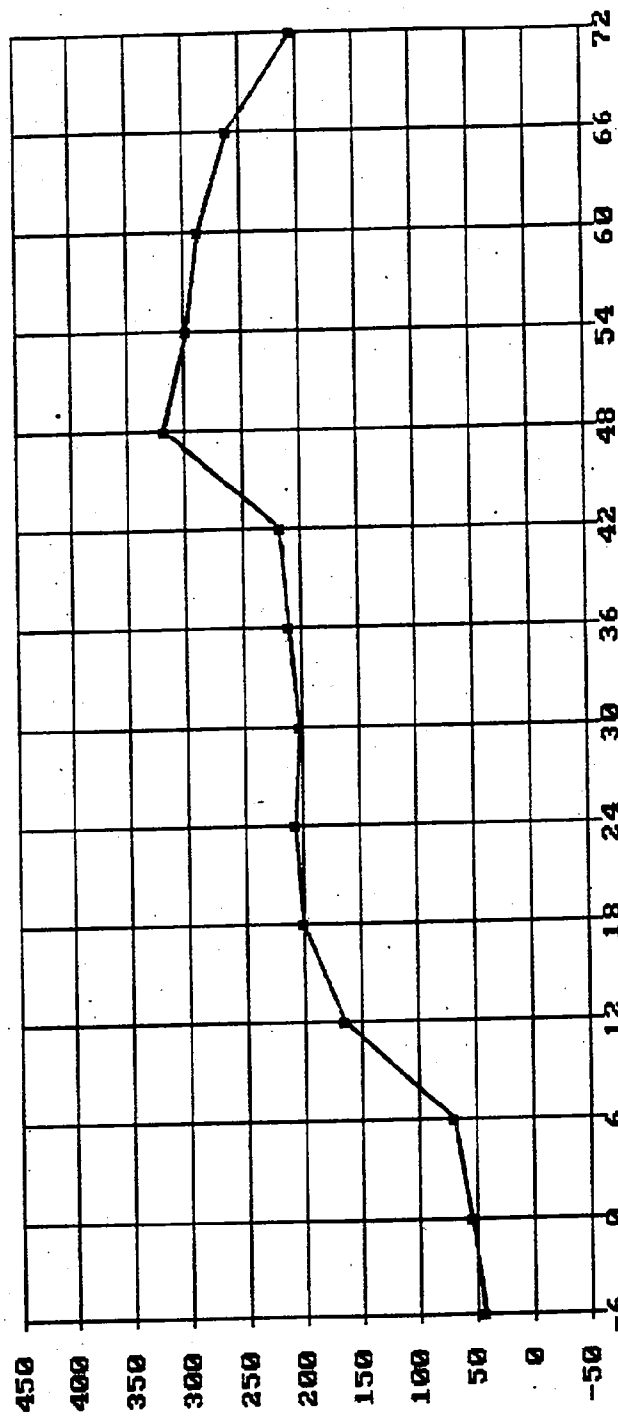
LEVEL 2 - K-POINT

Figure 6
VEHICLE EXTERIOR STATIC CRUSH - Continued



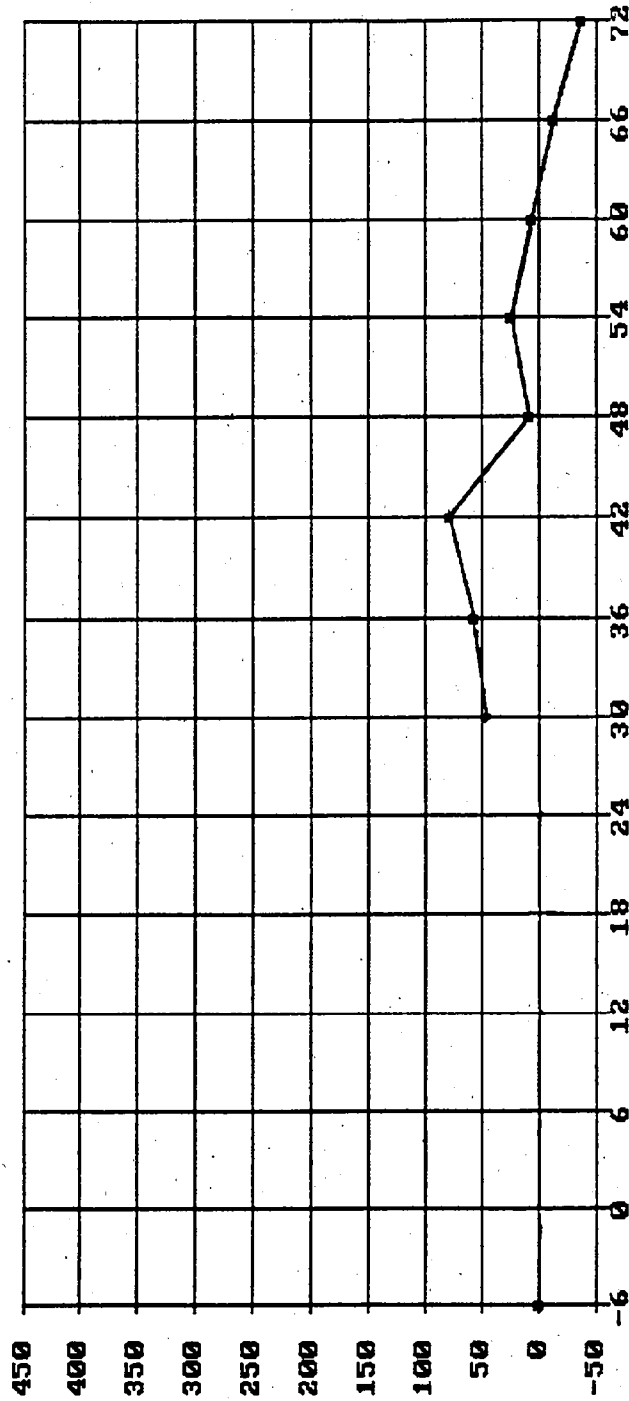
LEVEL 3 - MID-DOOR

Figure 6
VEHICLE EXTERIOR STATIC CRUSH - Continued



LEVEL 4 - WINDOW SILL

Figure 6
VEHICLE EXTERIOR STATIC CRUSH - Continued



LEVEL 5 - WINDOW TOP

Figure 7

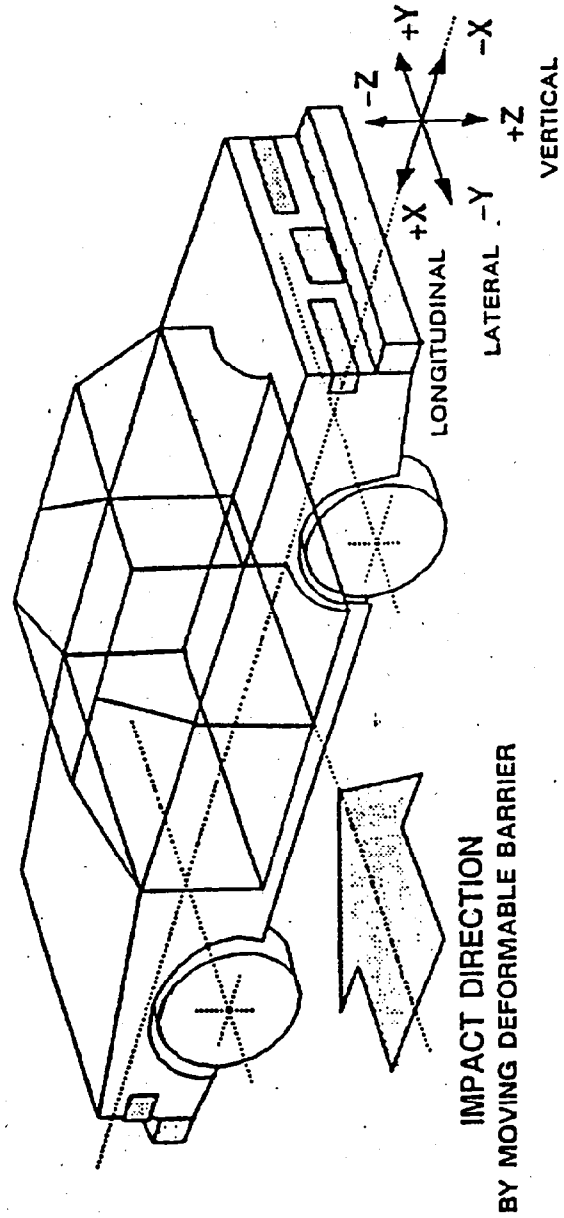
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 1993 Acura Legend 4-Door

NHTSA No.: MP5305

Test Date: June 3, 1993

4-13



041

Table 8

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

Test Date: June 3, 1993 Vehicle: 1993 Acura Legend 4-Door

Location	Top of Stack Level (32")*	Mid-Stack Level (22")*	Bumper Level (17")*	
Horizontal Distance From Center	Crush (mm)	Crush (mm)	Crush (mm)	
32"	49	51	75	Left Side as viewed from front
28"	5	26	32	
24"	0	13	31	
20"	1	9	28	
16"	3	11	31	
12"	2	17	51	
8"	3	17	50	
4"	7	18	45	
0"	9	13	41	
4"	9	16	36	Right Side as viewed from front
8"	11	16	25	
12"	11	18	26	
16"	17	20	28	
20"	32	30	37	
24"	65	47	53	
28"	106	70	86	
32"	166	84	123	

* Heights measured above ground level.

Table 9
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Accel. Time No.	Location	Coordinates (mm)			Long. (X) Pos./Neg.	Lat. (Y) Pos./Neg.	Vert. (Z) Pos./Neg.	Resultant Pos.	
		X	Y	Z					
1	Rt. Side Sill @ Front Seat	2960	680	385	3.8	16.2	2.6	2.2	17.7
2	Rt. Side Sill @ Rear Seat	1980	680	385	3.6	17.6	1.6	2.9	17.8
3	Rr. Floorpan Above Axle	1005	0	333	2.9	17.6	2.2	3.9	19.0
4	Left Side Sill @ Rr. Seat	1980	-680	385	-	32.9	27.7	-	-
5	Left Side Sill @ Fr. Seat	2980	-710	385	-	134.9	41.3	-	-
6	Left Frt. Door On Centerline	2959	-795	720	-	116.0	80.9	-	-
7	Right Rear Occupant Compartment	2075	400	385	-	17.8	1.5	-	-
8	Midrear of Left Frt. Door	2627	-790	695	-	124.2	59.6	-	-
9	Left Frt. Door Upper Centerline	2952	-795	890	-	134.9*	*	-	-
10	Midrear of Left Rear Door	1589	-740	768	-	133.2	40.8	-	-
11	Left Rear Door Upper Centerline	2014	-755	894	-	123.4	87.5	-	-

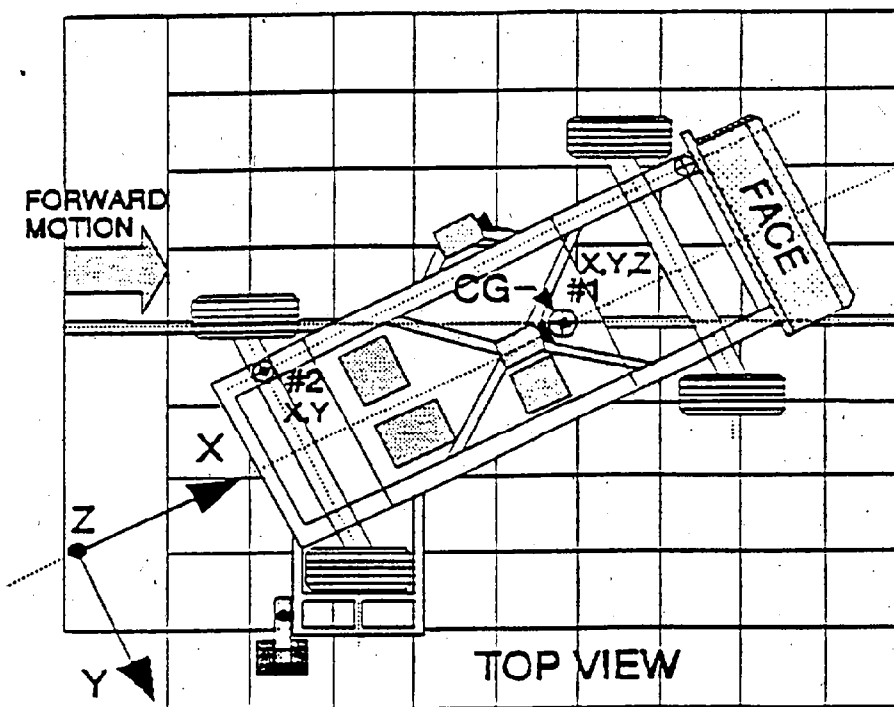
Reference: X - Rear Bumper (+ Forward)
Y - Vehicle Centerline (+ To right)
Z - Ground Level (+ Up)

Data filtered at SAE filter class 60

*Data lost at 36 msec.

Figure 8
MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS

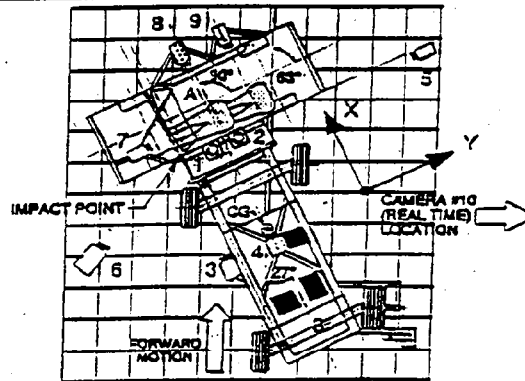
Test Vehicle: 1993 Acura Legend 4-Door Test Date: 6-3-93



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	1854	0	353	2.2	144	16.5	34.5
	Lateral Y				1.6	138	7.2	36.1
	Vertical Z				3.1	180	1.5	57.3
	Resultant R				17.9	34.8		
2	Rear Frame Member	400	-629	622				
	Longitudinal ... X				4.1	138	19.6	34.9
	Lateral Y				3.1	25	1.5	196

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

Figure 9

HIGH SPEED CAMERA LOCATIONS AND DATA

Camera No.	View	Coordinates (mm)			Angle	Film Plane To Head Target	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*				
10	Real Time				---	---	10	24
1	Overhead Overall View	380	0	5086	---	---	13	760
2	Overhead Closeup View of Impact	180	670	4100	---	---	25	865
3	MDB Onboard Closeup of Impact	---	---	---	---	---	35	1005
4	MDB Onboard View of Dummy	---	---	---	---	---	13	1058
5	Right Side Ground Overall View	415	8715	1075	---	---	25	985
6	Left Side Ground Overall View	415	2790	2050	---	---	13	1000
7	Test Vehicle Onboard Driver Front View	---	---	---	---	---	13	1010
8	Test Vehicle Onboard Driver Side View	---	---	---	---	---	7.5	1000
9	Test Vehicle Onboard Passenger Side View	---	---	---	---	---	25	571
	Right Overall	420	8900	1220	90°	---	13	1204

* Reference: (from point of impact)

+X = Forward

+Y = To Right

+Z = Upward

Table 10

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

FMVSS NO. 301

TEST VEHICLE NHTSA NO.: MP5305

Test Date: 6-3-93

Vehicle Mfr./Make/Model: Acura Legend 4-Door

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: Frontal (35 mph)

Oblique (30 mph) with barrier face first
contacting

(driver/passenger) side

Rear Moving Barrier (30 mph)

☒ Side Impact MDB (33.3 mph)FUEL SPILLAGE MEASUREMENT:

1. From impact until
vehicle motion ceases

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

2. For 5 minute period
after vehicle motion
ceases

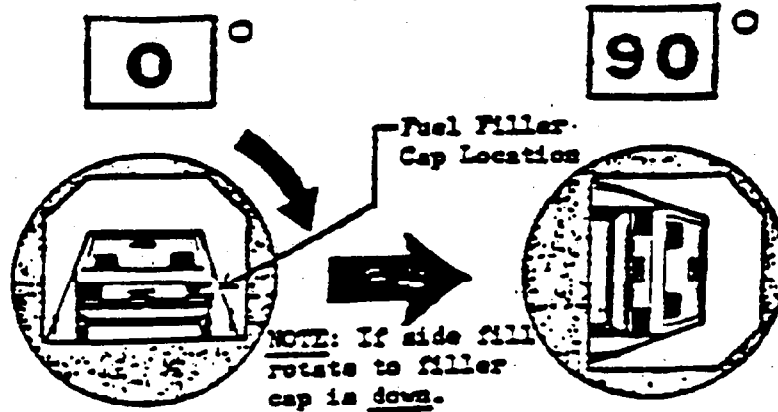
3. For next 25 minutes

SOLVENT SPILLAGE DETAILS:

Table 11
FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE:

Vehicle NHTSA ID No.: MP5305



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 54 seconds
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 54 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

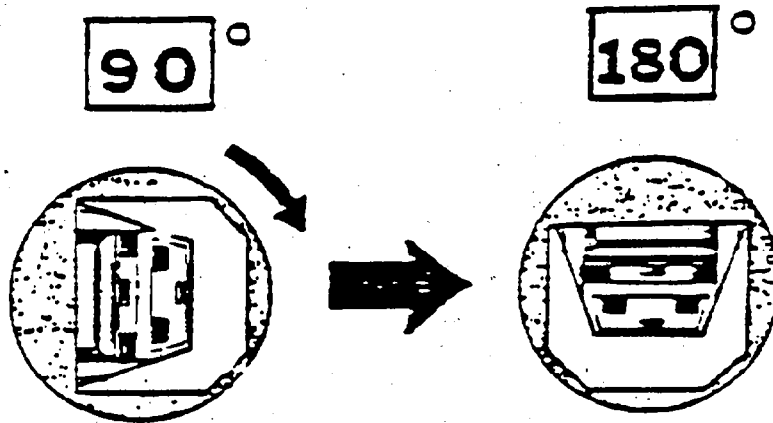
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S):

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

TEST PHASE:

Vehicle NHTSA ID No.: MP5305



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 41 seconds
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 41 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

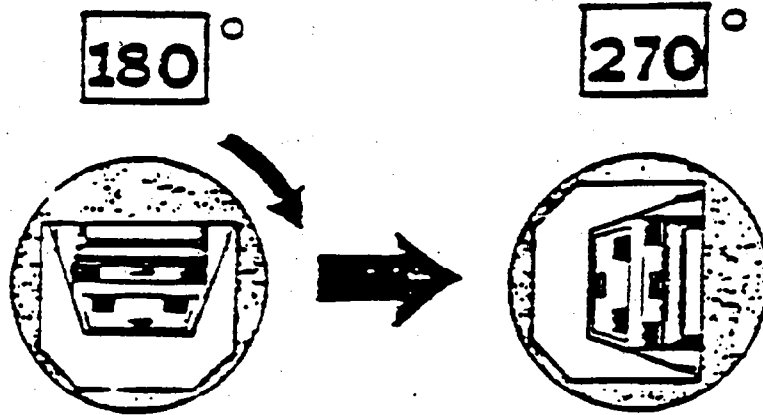
III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

IV. SOLVENT SPILLAGE LOCATIONS(S):

Table 11

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET (cont.)TEST PHASE:Vehicle NHTSA ID No.: MP5305I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 16 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 16 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

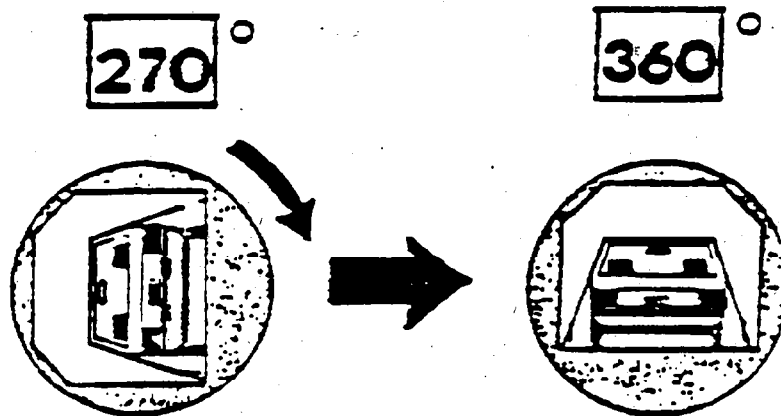
0	0	0	0

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

IV. SOLVENT SPILLAGE LOCATIONS(S):

Table 11

Vehicle NHTSA ID No.: MP5305



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 38 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 38 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(I) 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:

Ø	Ø	Ø	Ø
---	---	---	---

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

IV. SOLVENT SPILLAGE LOCATIONS(S):

APPENDIX A - PHOTOGRAPHS

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Photo No. A-35 - Rollover 90°	A-35
Photo No. A-36 - Rollover 180°	A-36
Photo No. A-37 - Rollover 270°	A-37

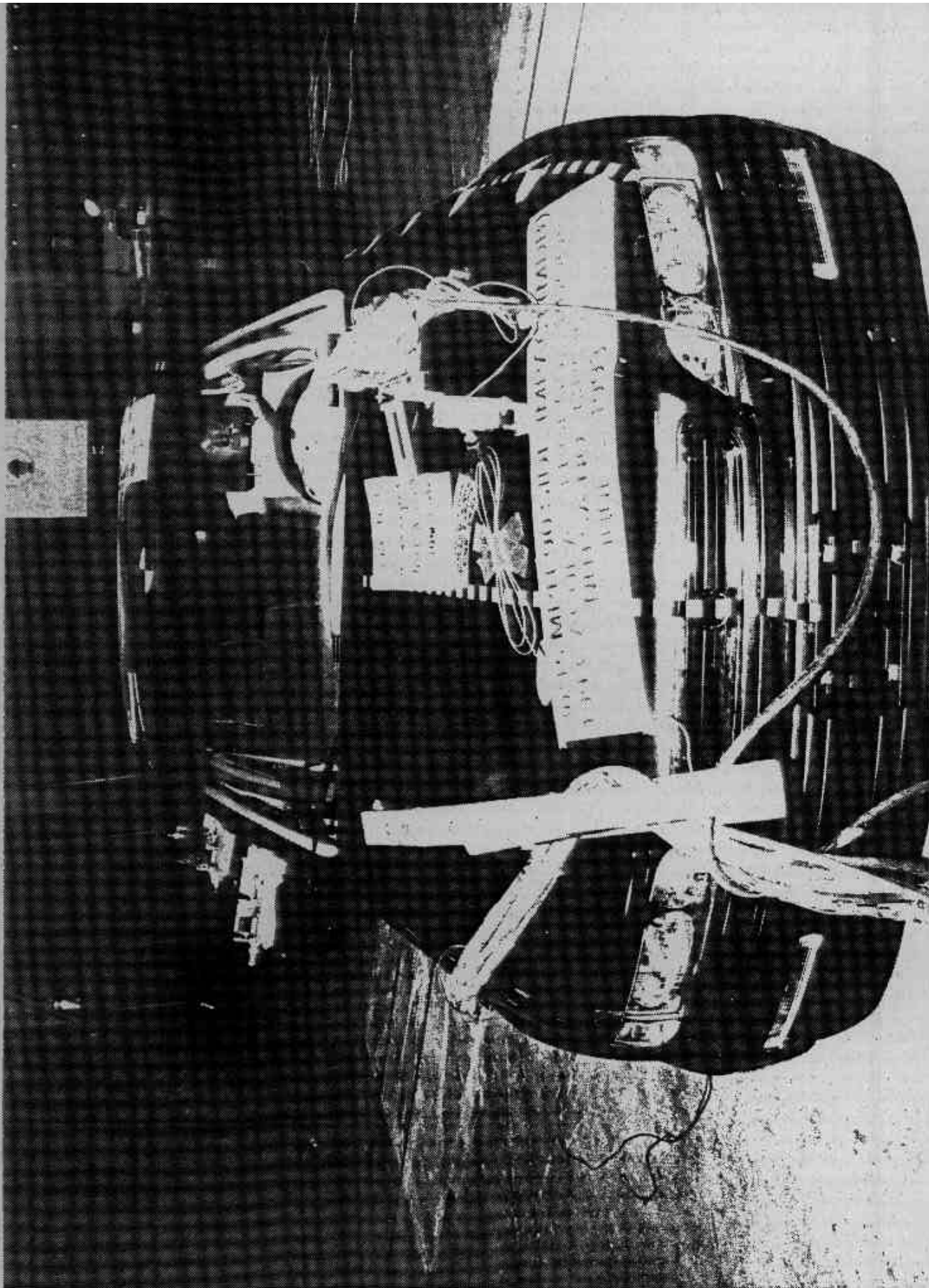


Photo No. A-1 - Pre-Test Front View of Test Vehicle

A-1

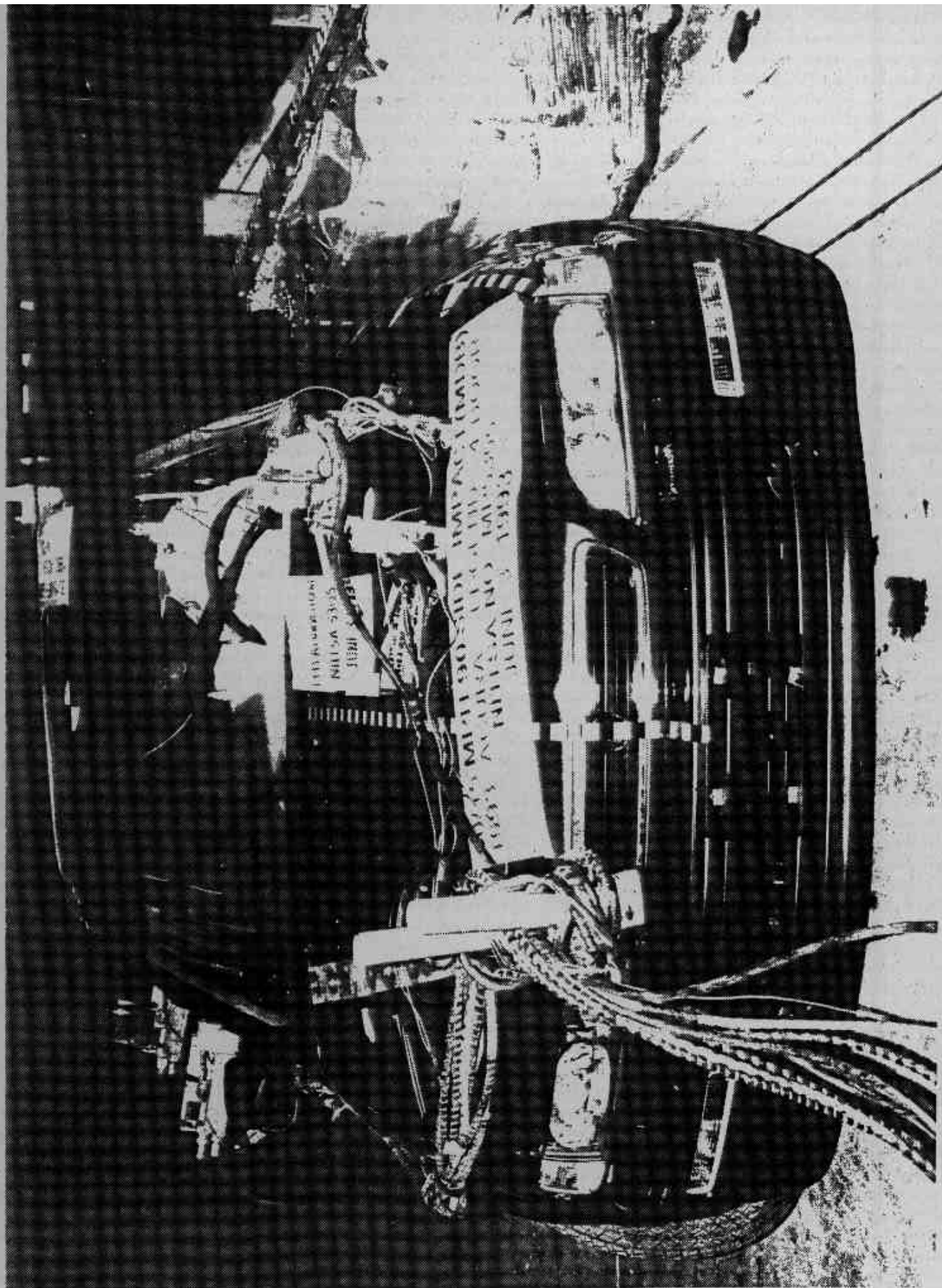


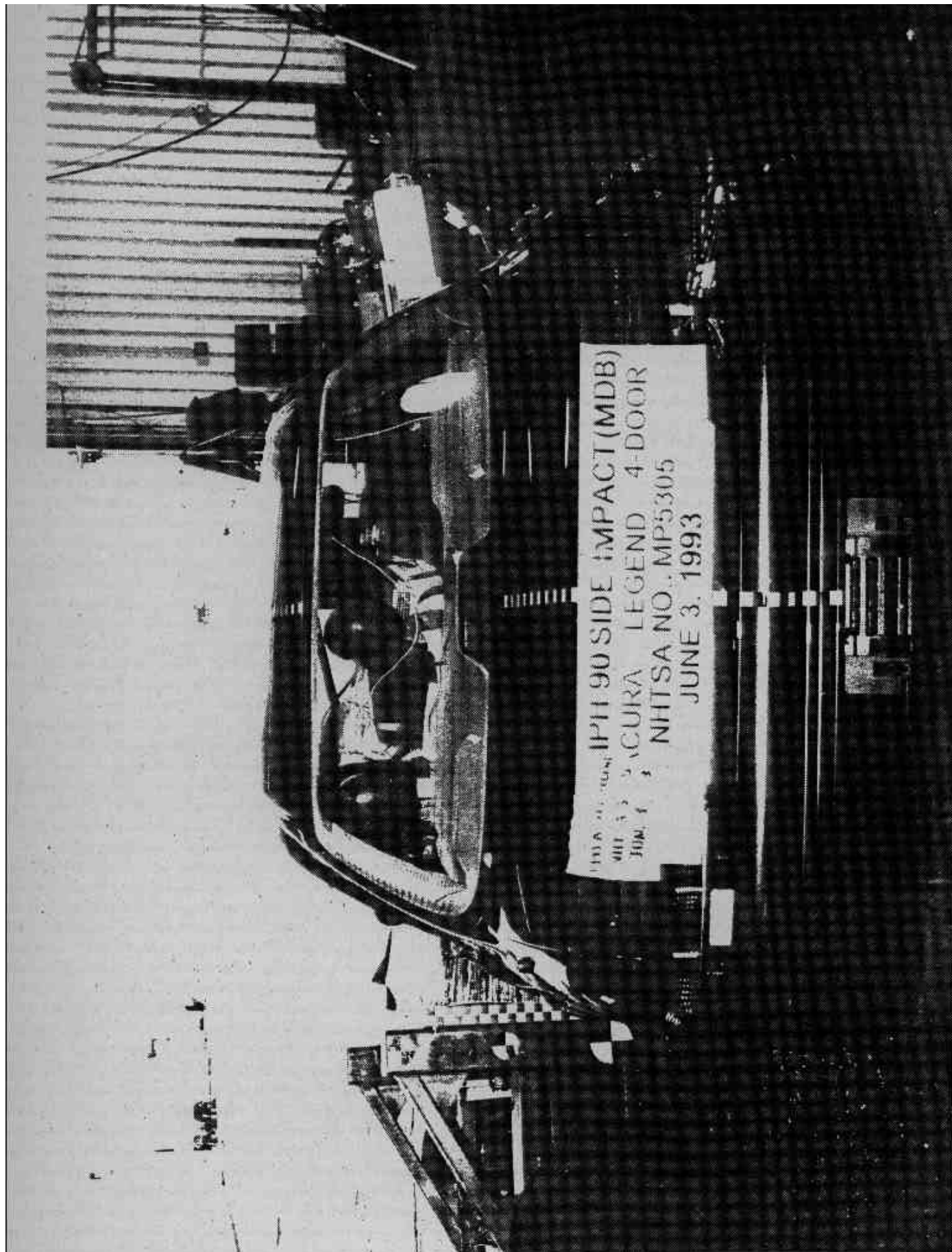
Photo No. A-2 - Post-Test Front View of Test Vehicle

A-2

CRASH I CENTER

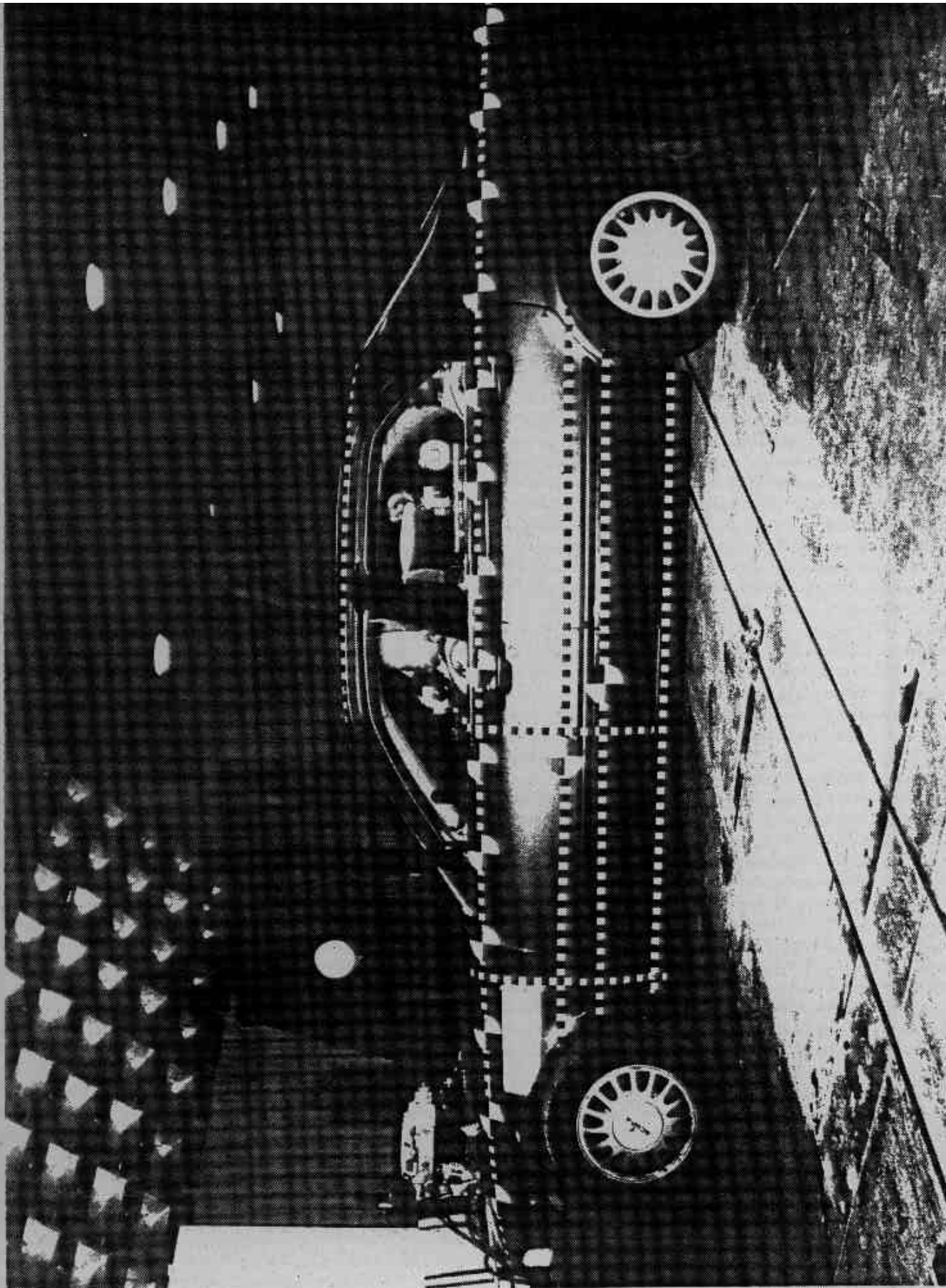
30/15 MPH 90 SIDE II (VEHICLE MDB)
1993 ACURA LEGAL EJECTOR DOOR
NHTSA NO. N
JUNE 3, 1993

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



A-4

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



A-5

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

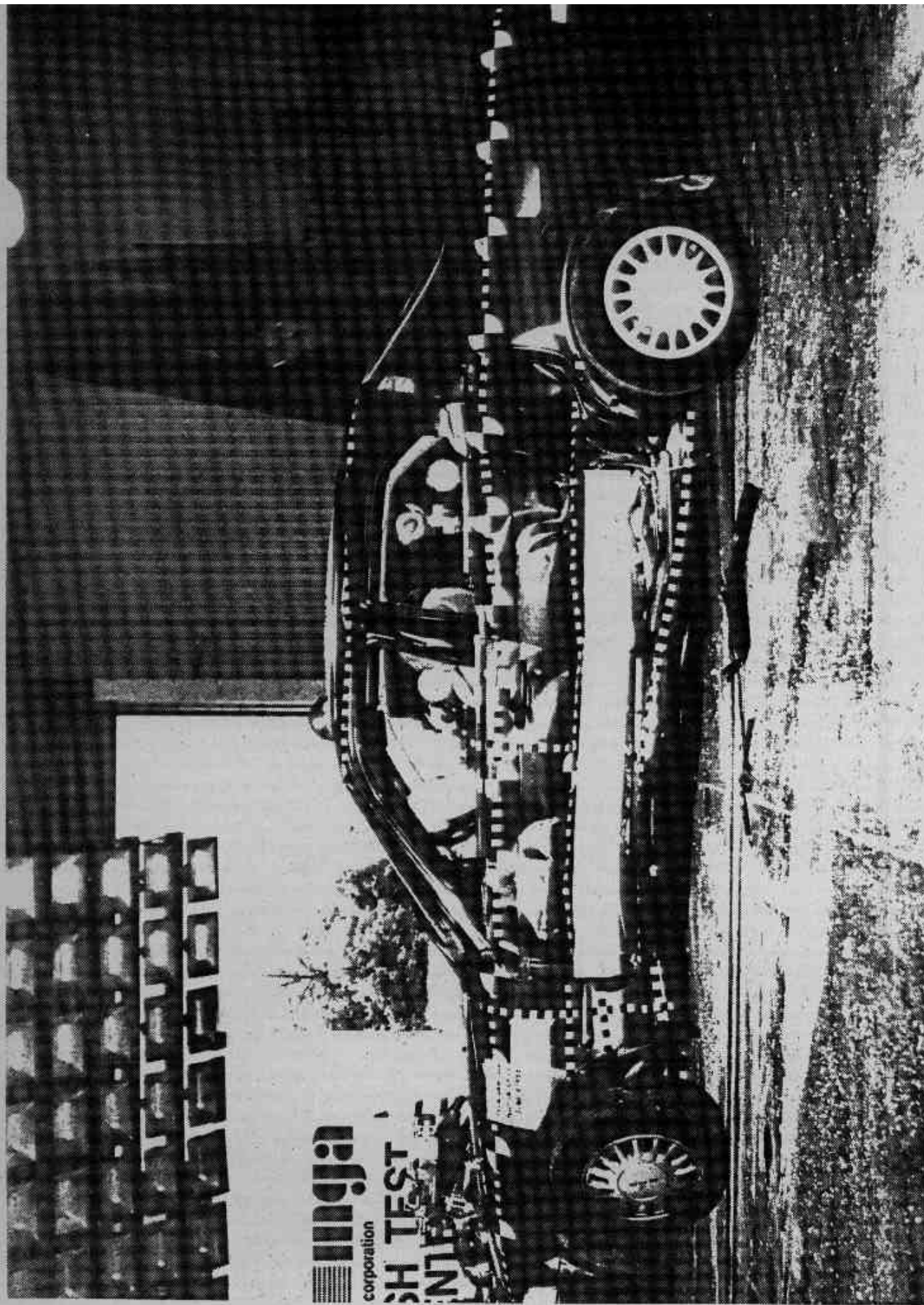


Photo No. A-6 - Post-Test Left Side View of Test Vehicle



Photo No. A-7 - Pre-Test MDB and Vehicle Left Side View

A-7

067

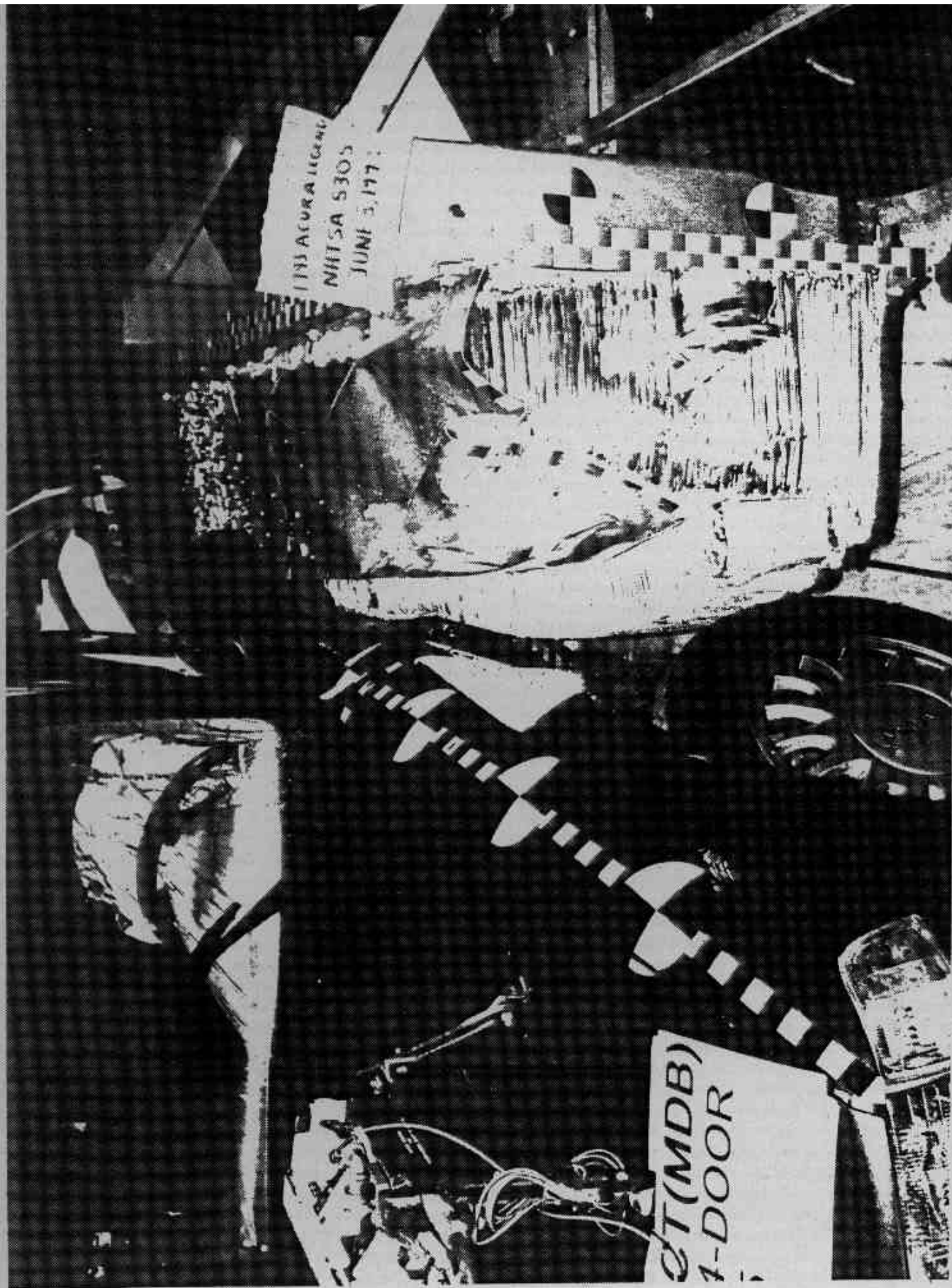


Photo No. A-8 - Post-Test MDB and Vehicle Left Side View

A-8



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

A-9

071

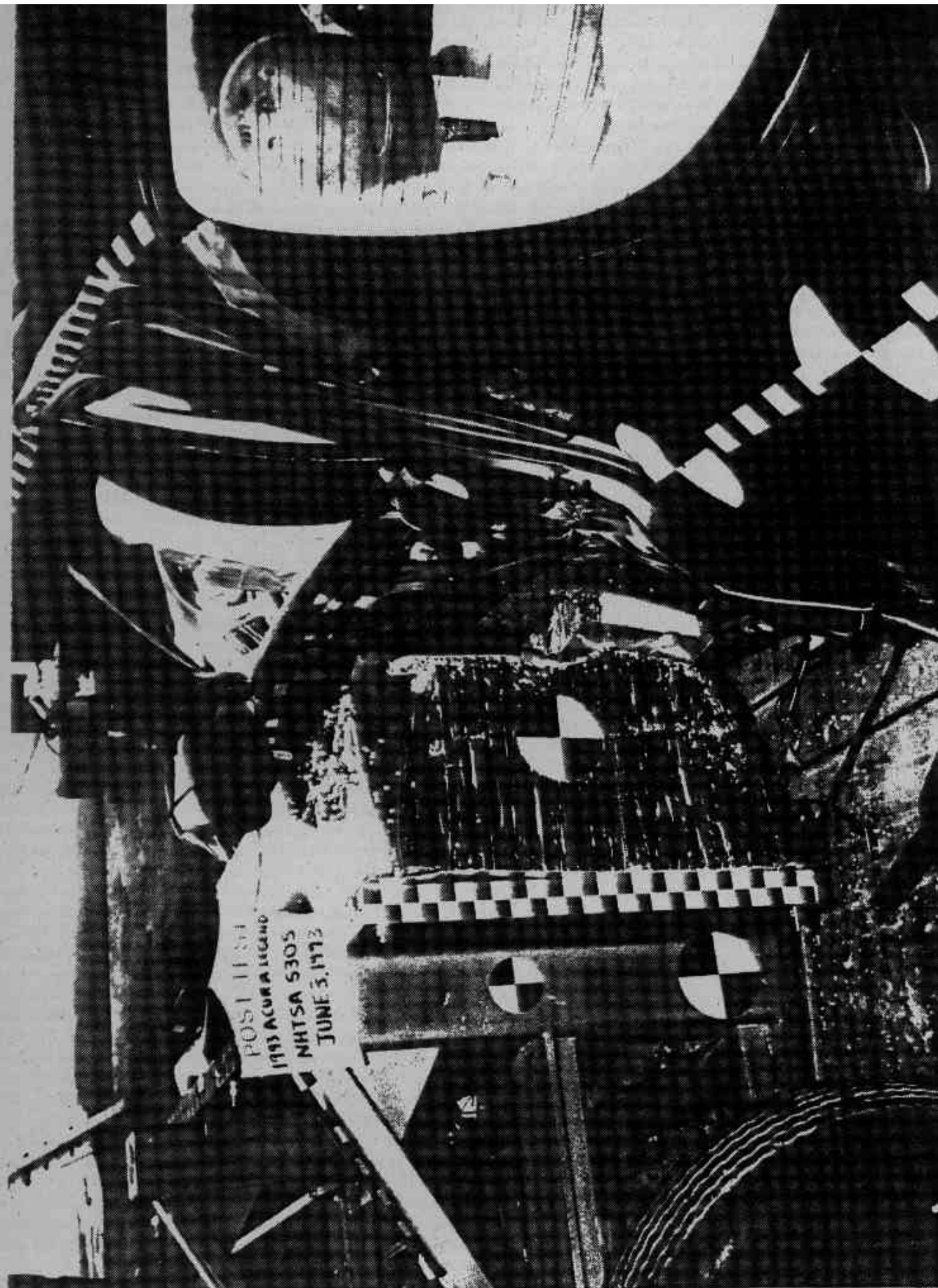


Photo No. A-10 - Post-Test MDB and Vehicle Right Side View

A-10

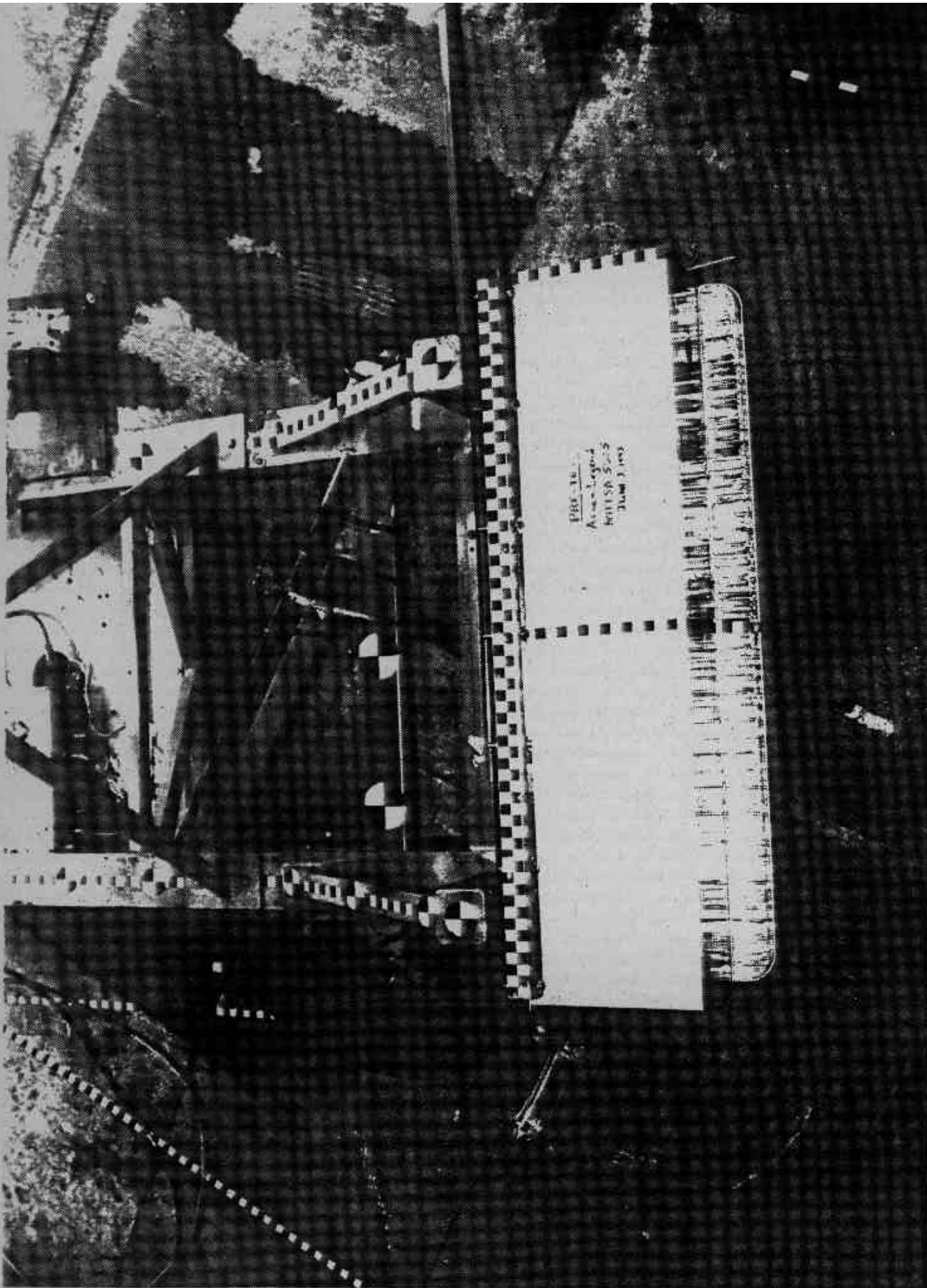


Photo No. A-11 - Pre-Test MDB Top View

A-11

075

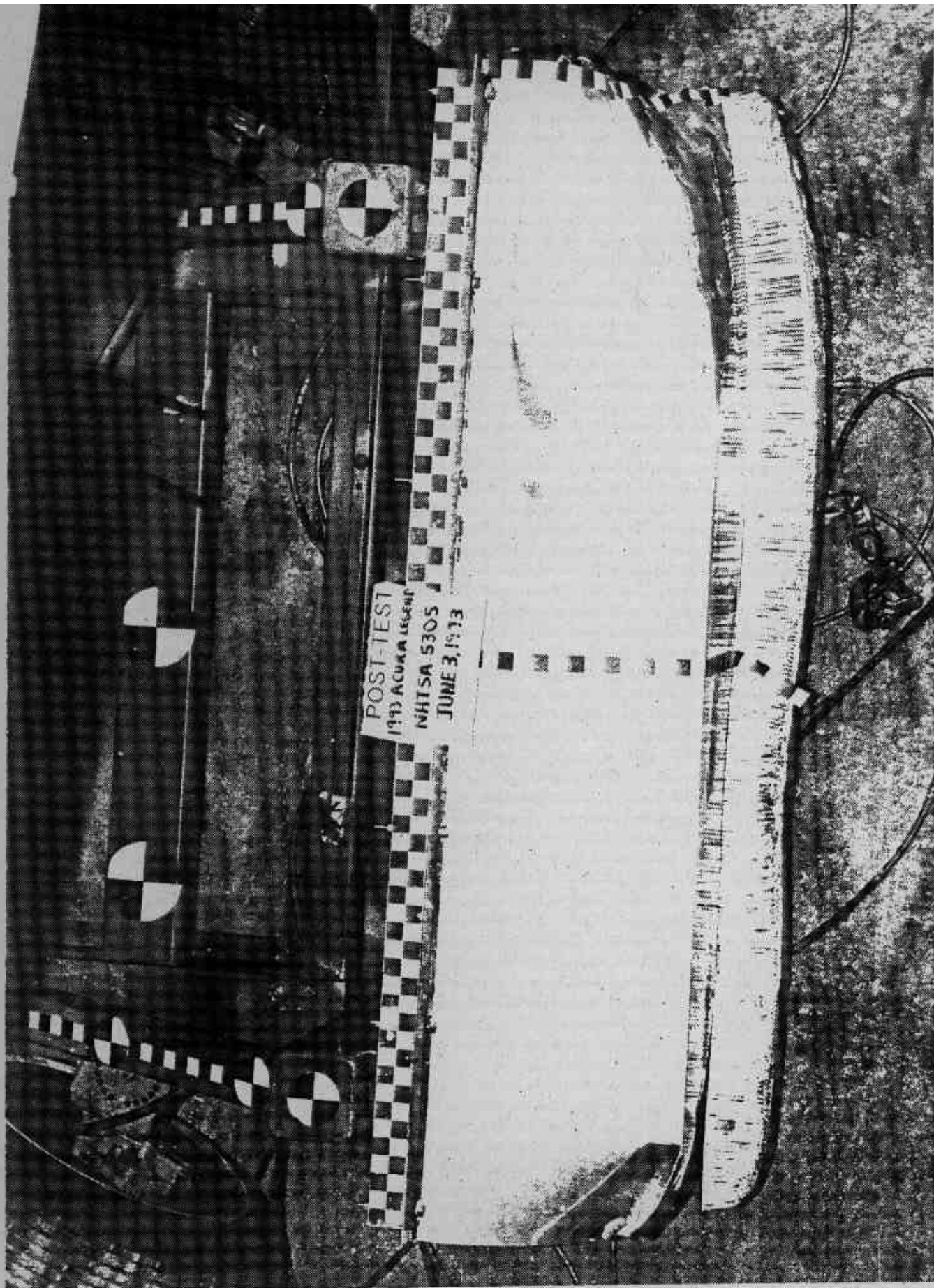


Photo No. A-12 - Post-Test MDB Top View

A-12

077



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

A-13

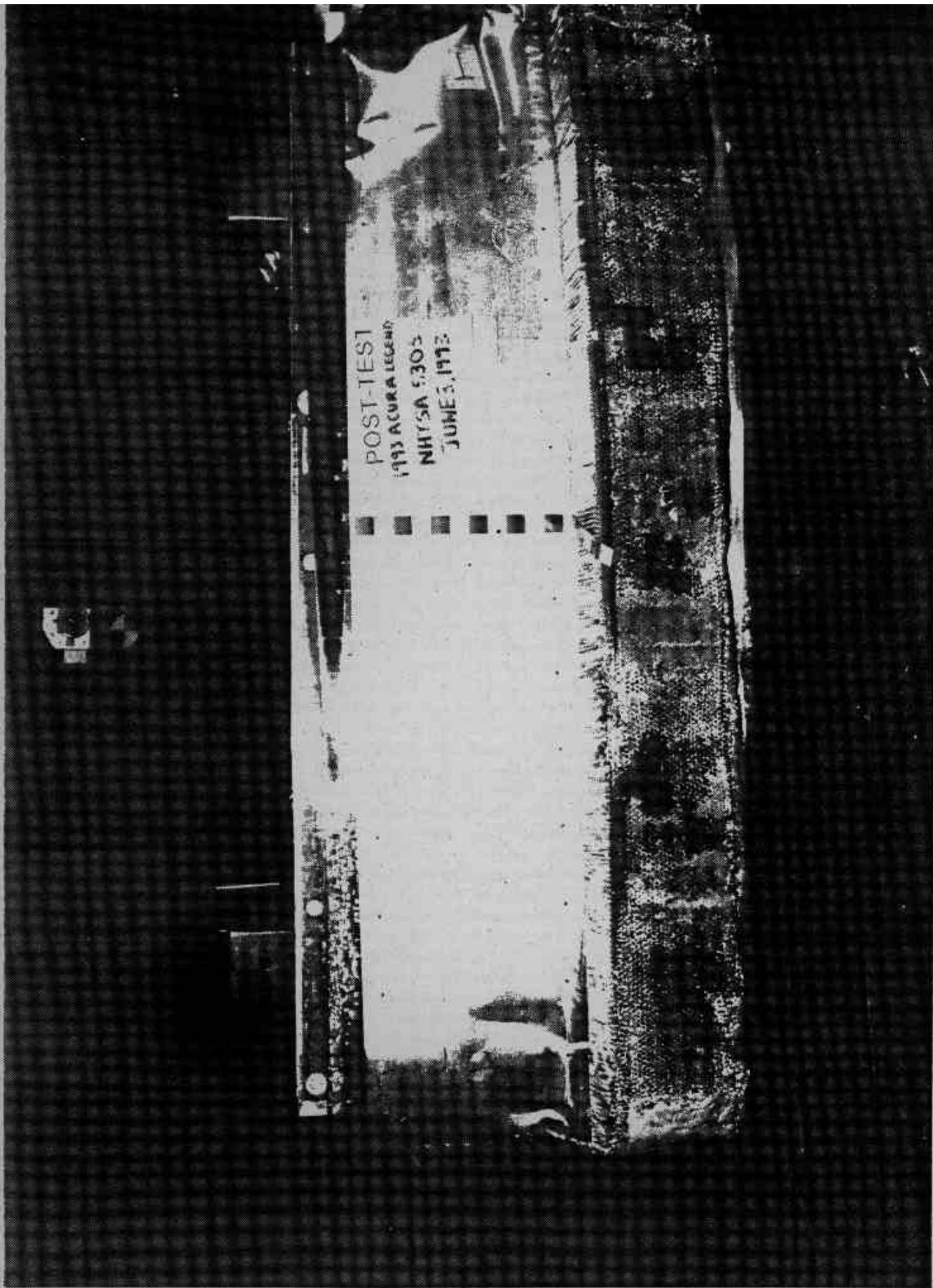


Photo No. A-14 - Post-Test MDB Front View

A-14

Pre-Test
Active Legend
NM 15A 5305
JUNE 1993

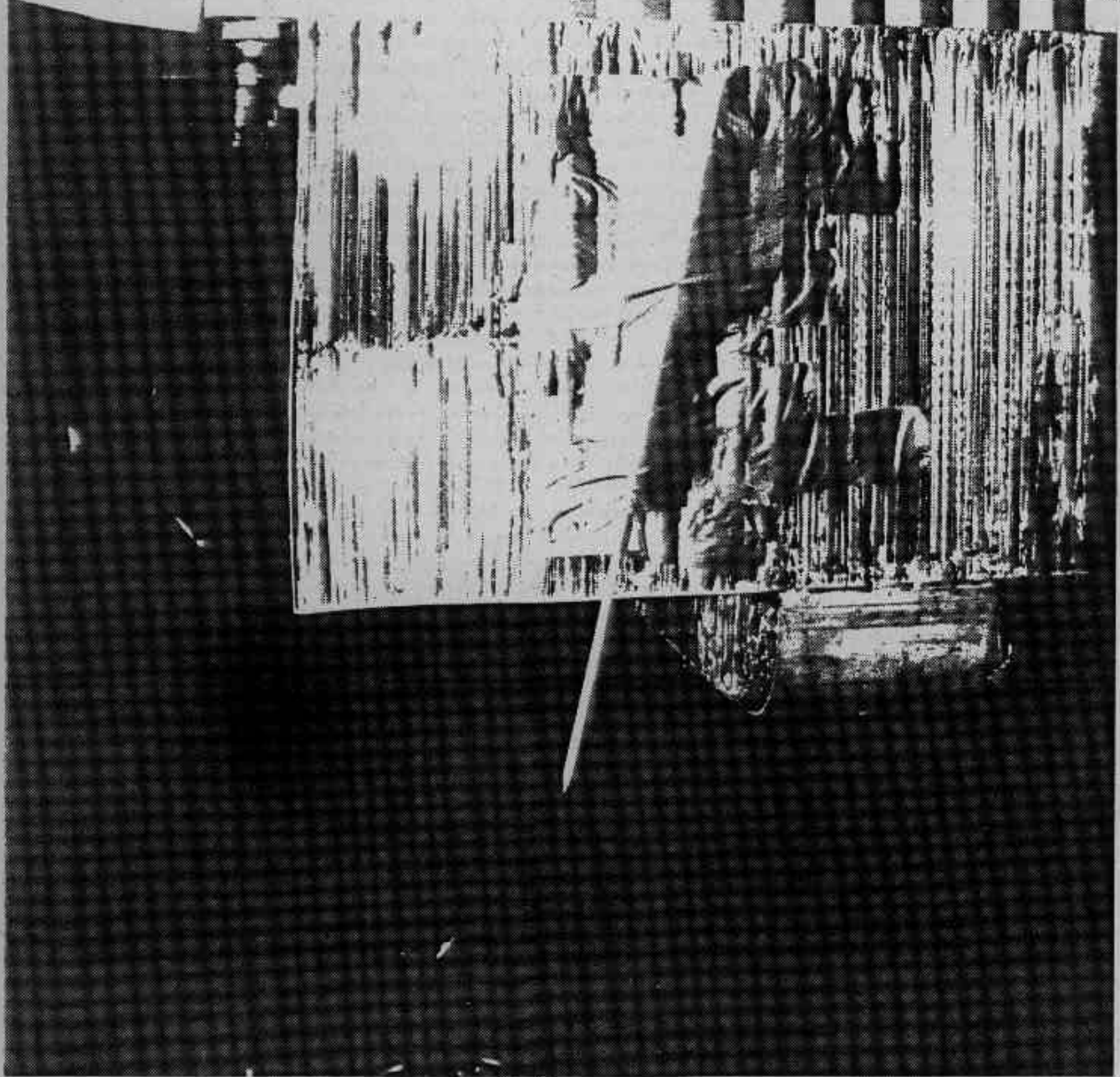


Photo No. A-15 - Pre-Test MDB Left Side View

A-15

083

...A LEGEND
NHTSA 53015
JUNE 3, 1973

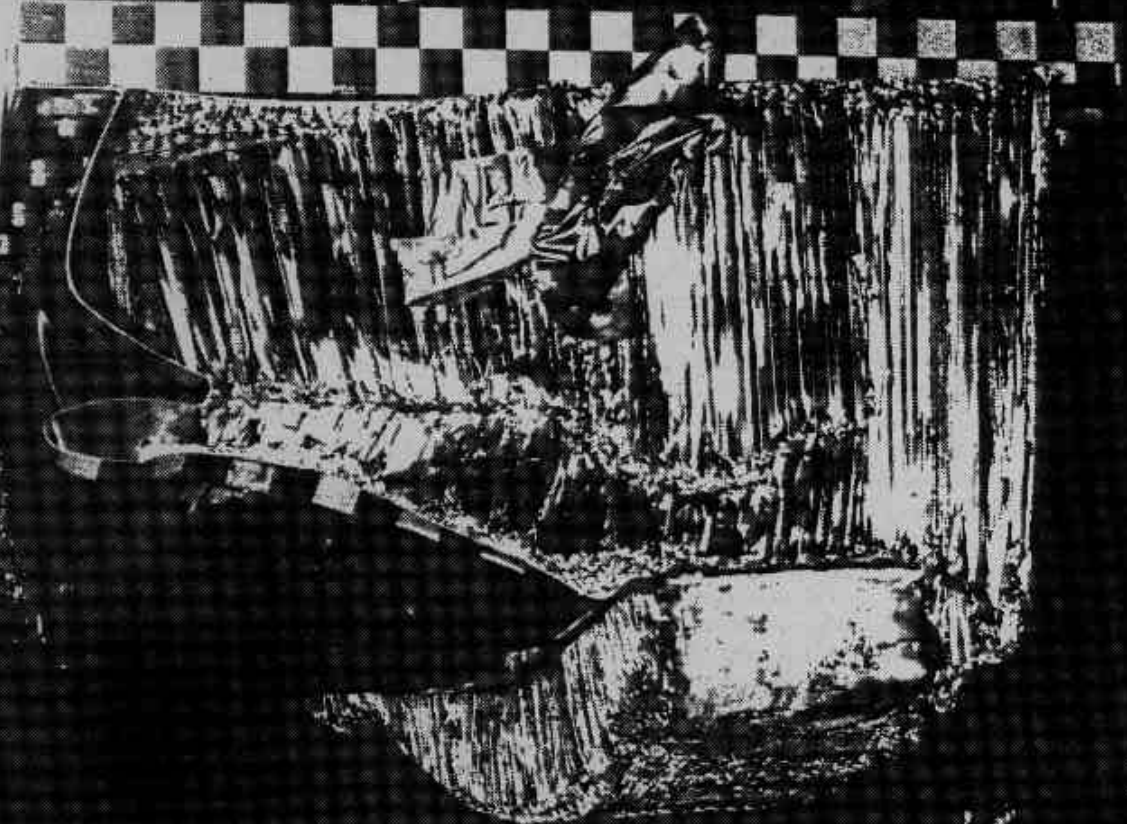
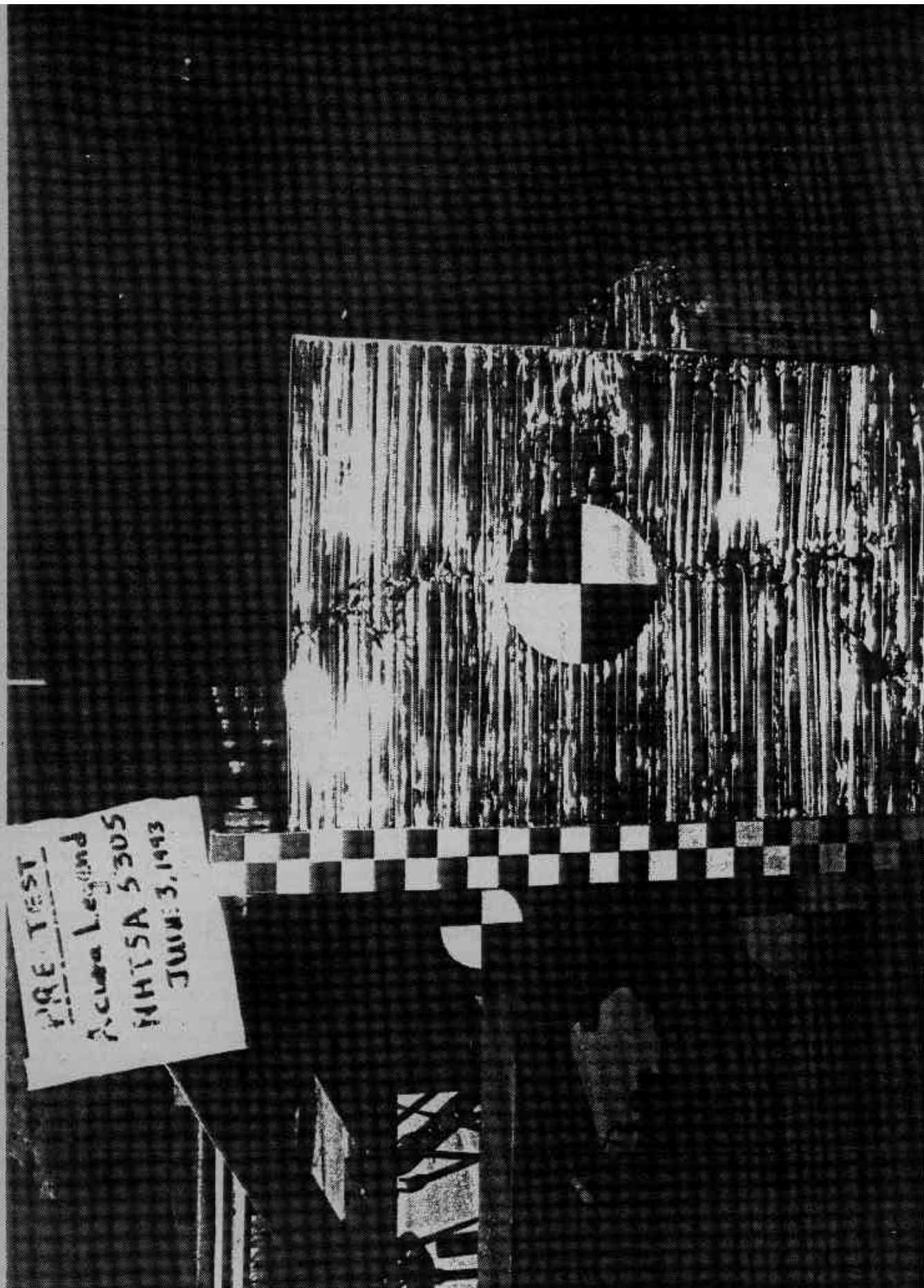


Photo No. A-16 - Post-Test MDB Left Side View

A-16

085

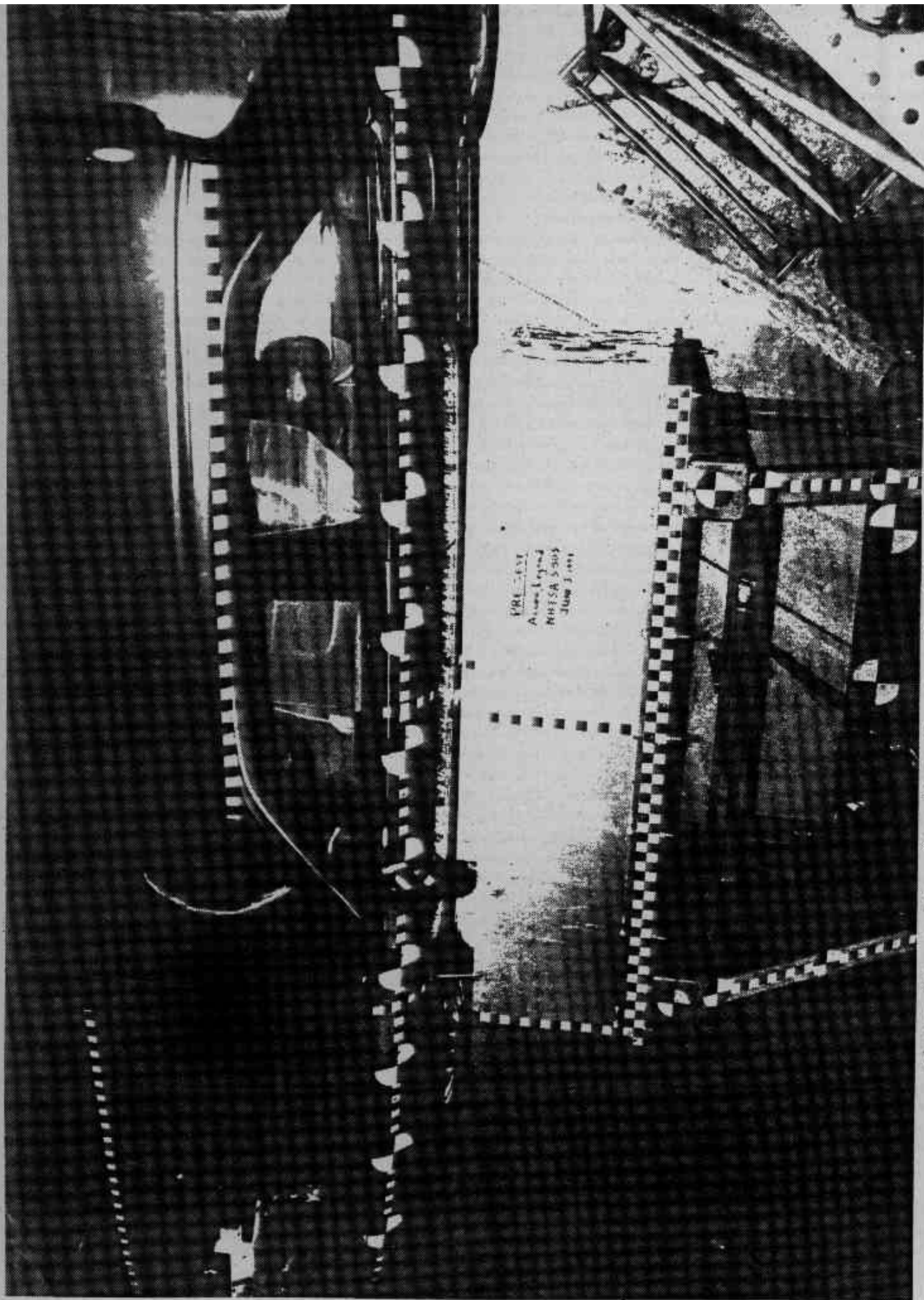


A-17

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



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



PRE-TEST
Action Required
NHSA 5505
June 3, 1991

Photo No. A-19 - Pre-Test Barrier Position Against Vehicle
Overhead View

A-19

991

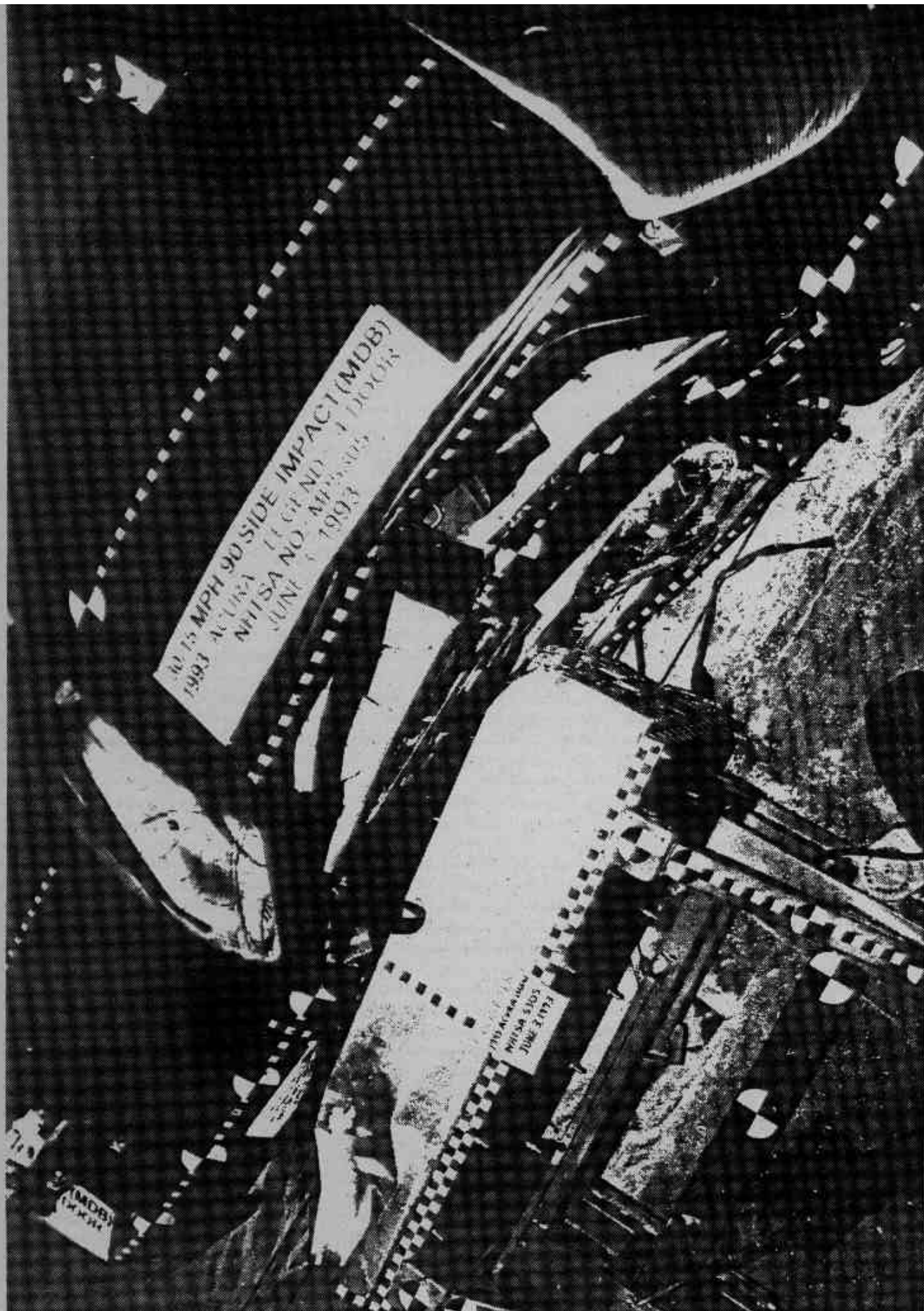


Photo No. A-20 - Post-Test Barrier Position Against Vehicle
Overhead View

A-20

093

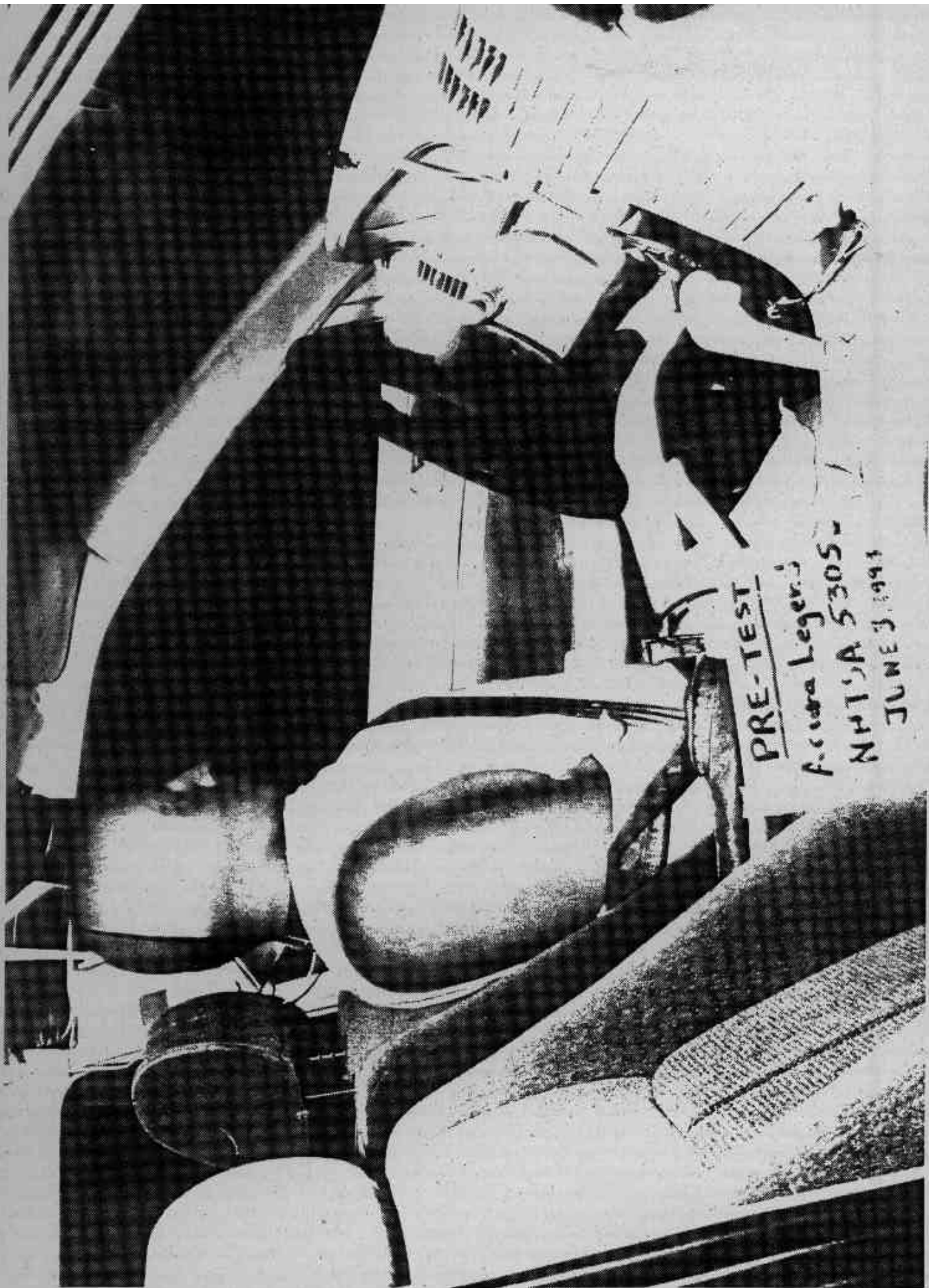


Photo No. A-21 - Pre-Test Driver Dummy Right Side View

A-21

095

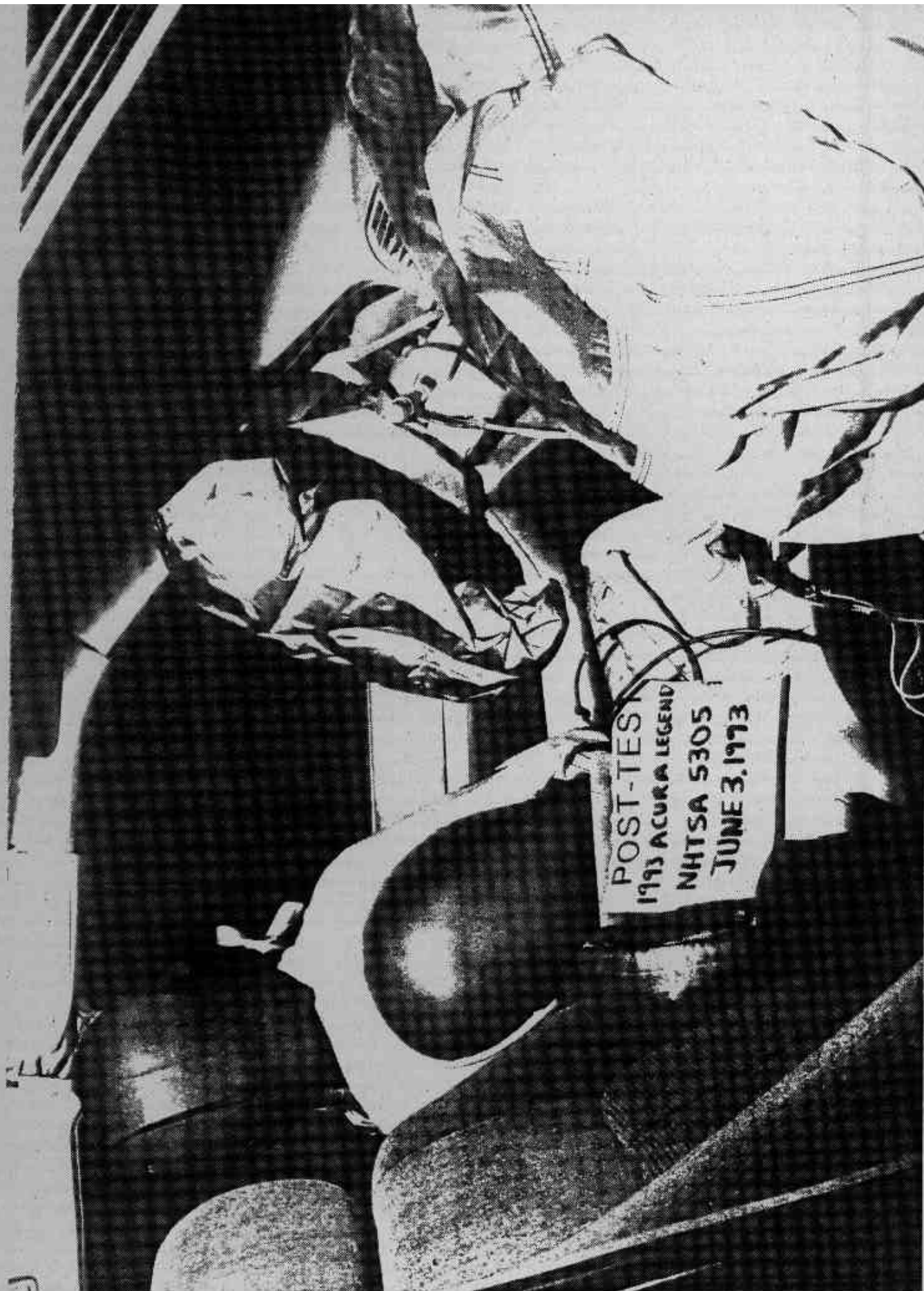
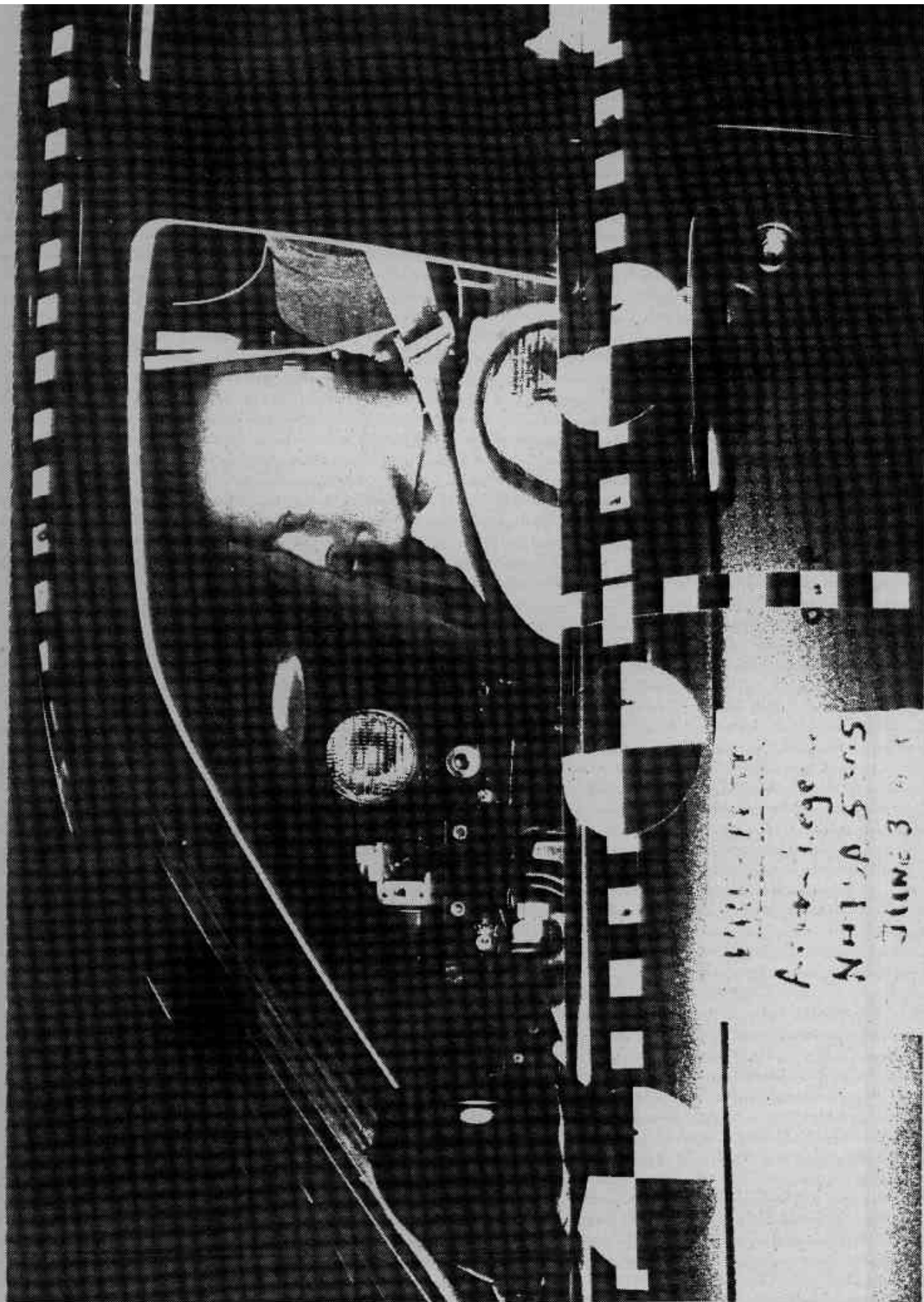


Photo No. A-22 - Post-Test Driver Dummy Right Side View

A-22

097



A-23

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

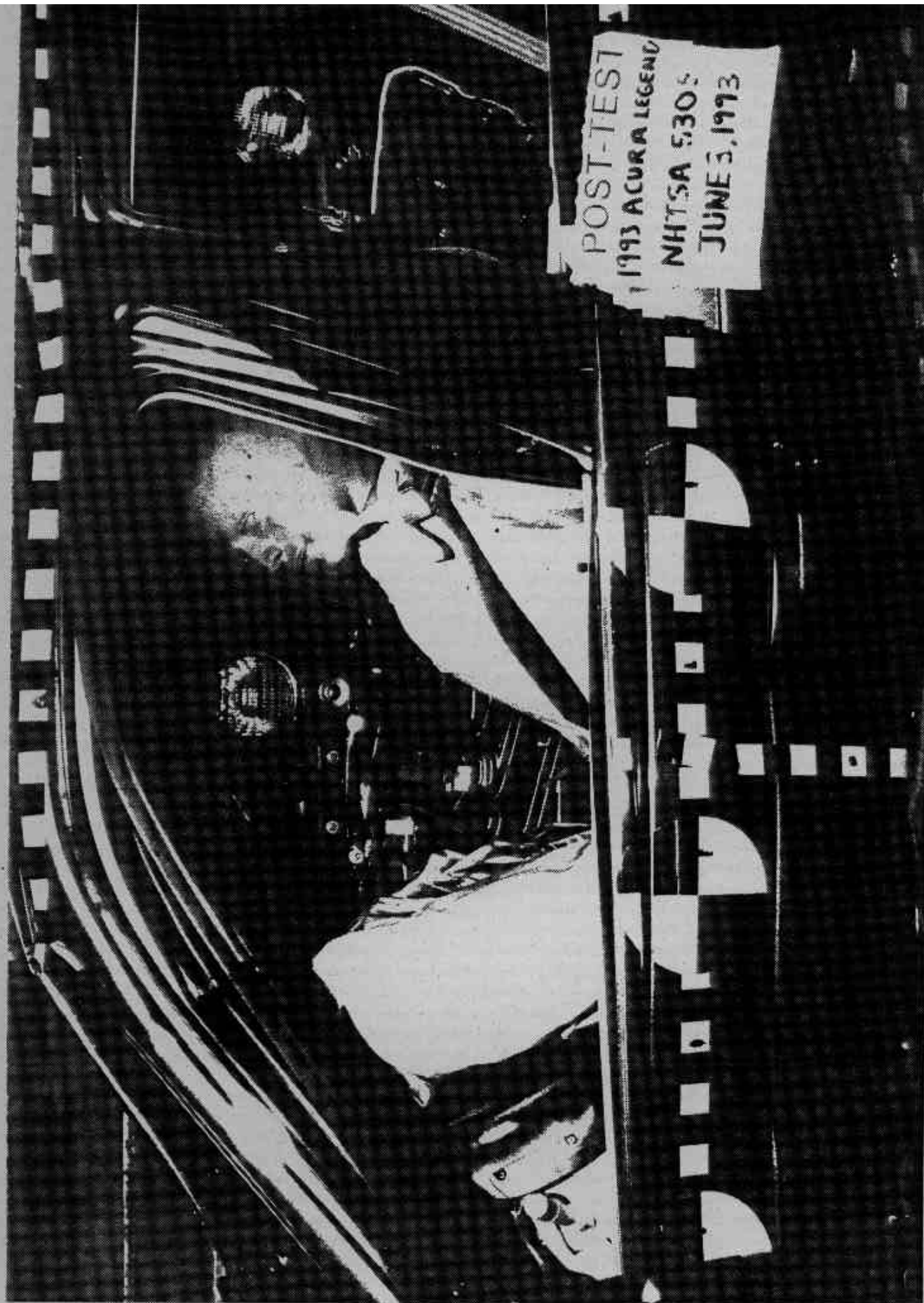


Photo No. A-24 - Post-Test Driver Dummy Left Side View

A-24



Photo No. A-25 - Pre-Test Passenger Dummy Right Side View



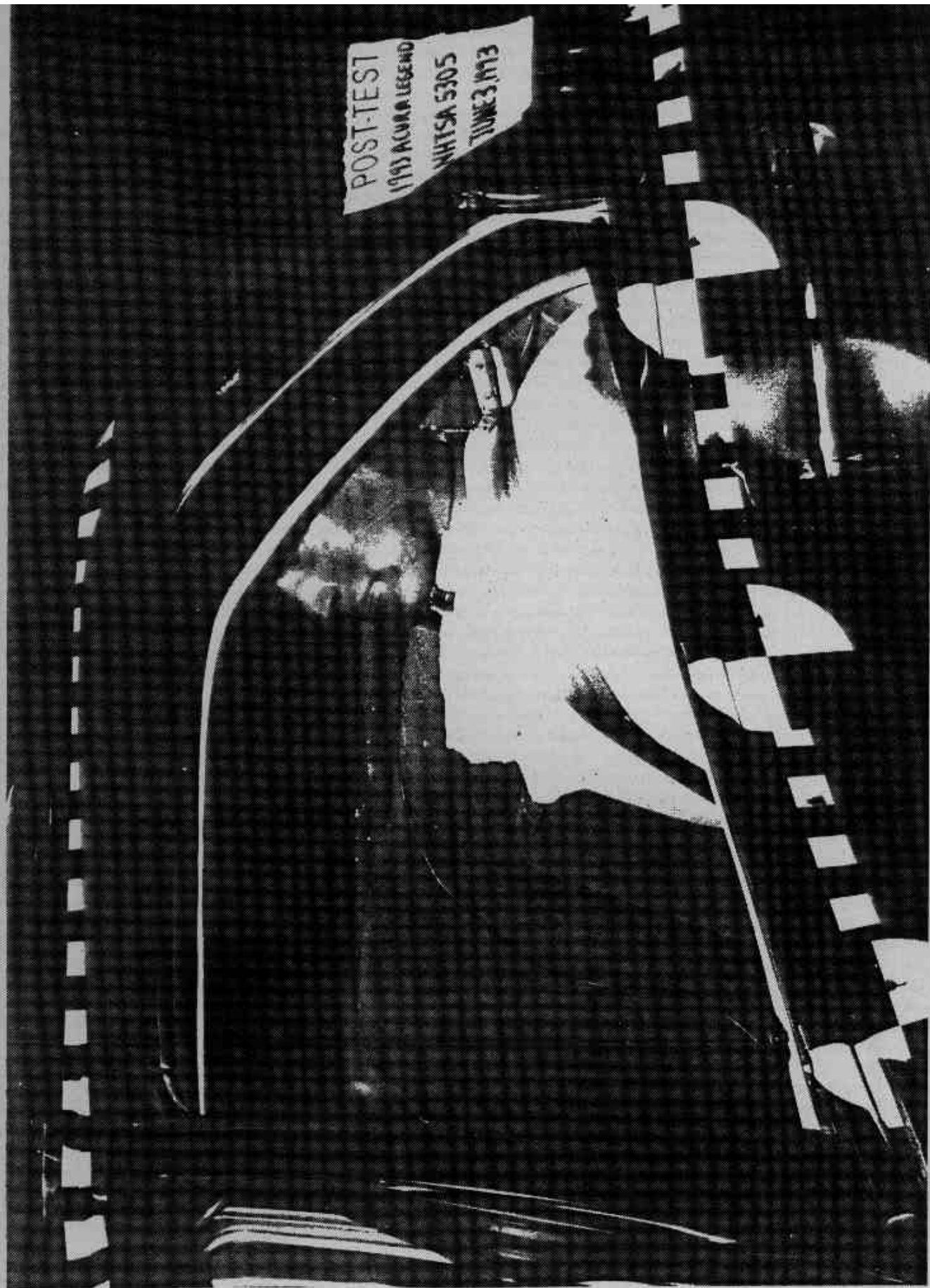
A-26

Photo No. A-26 - Post-Test Passenger Dummy Right Side View



A-27

Photo No. A-27 - Pre-Test Passenger Dummy Left Side View



A-28

Photo No. A-28 - Post-Test Passenger Dummy Left Side View

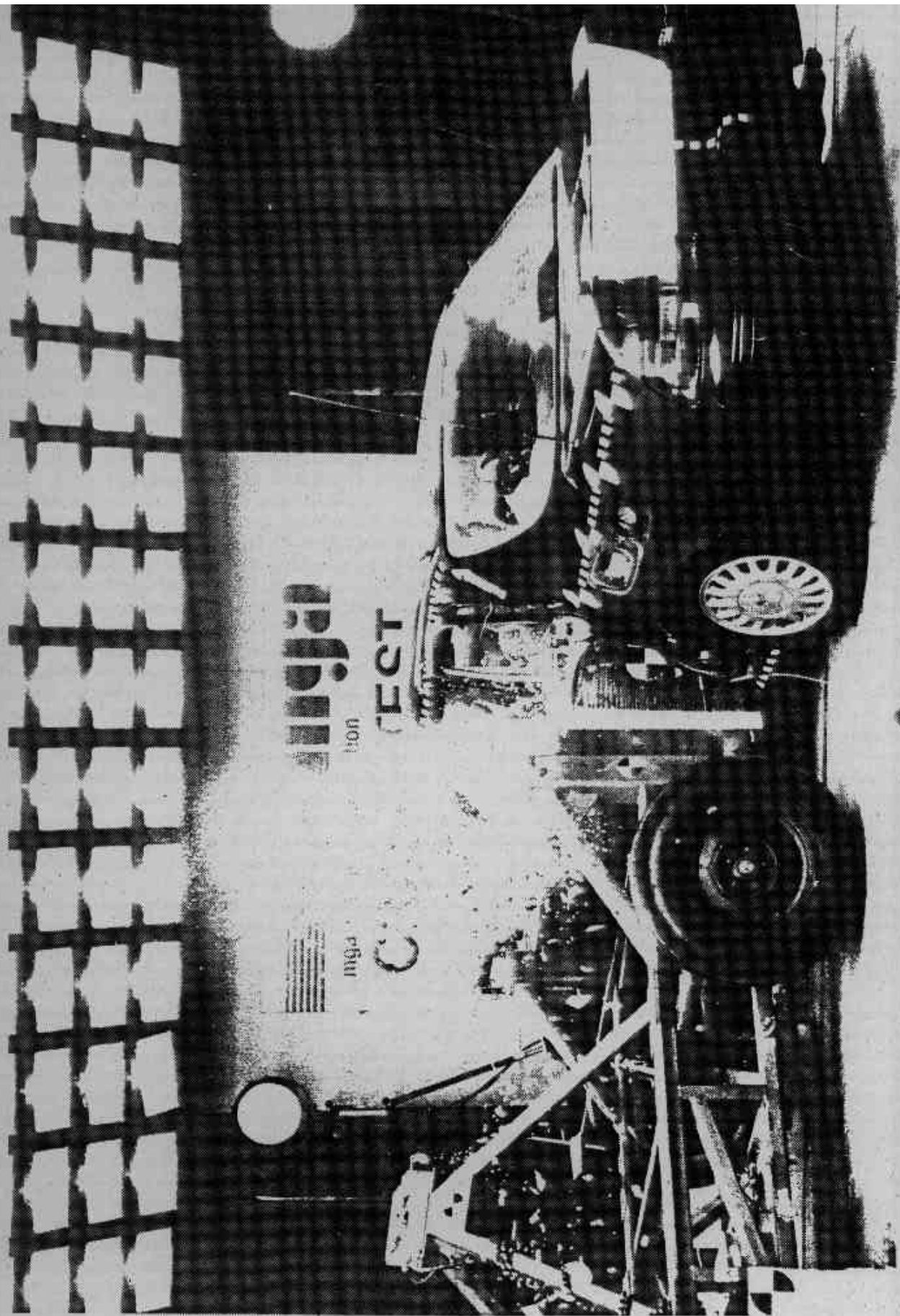


Photo No. A-29 - Vehicle Impact

A-29

111

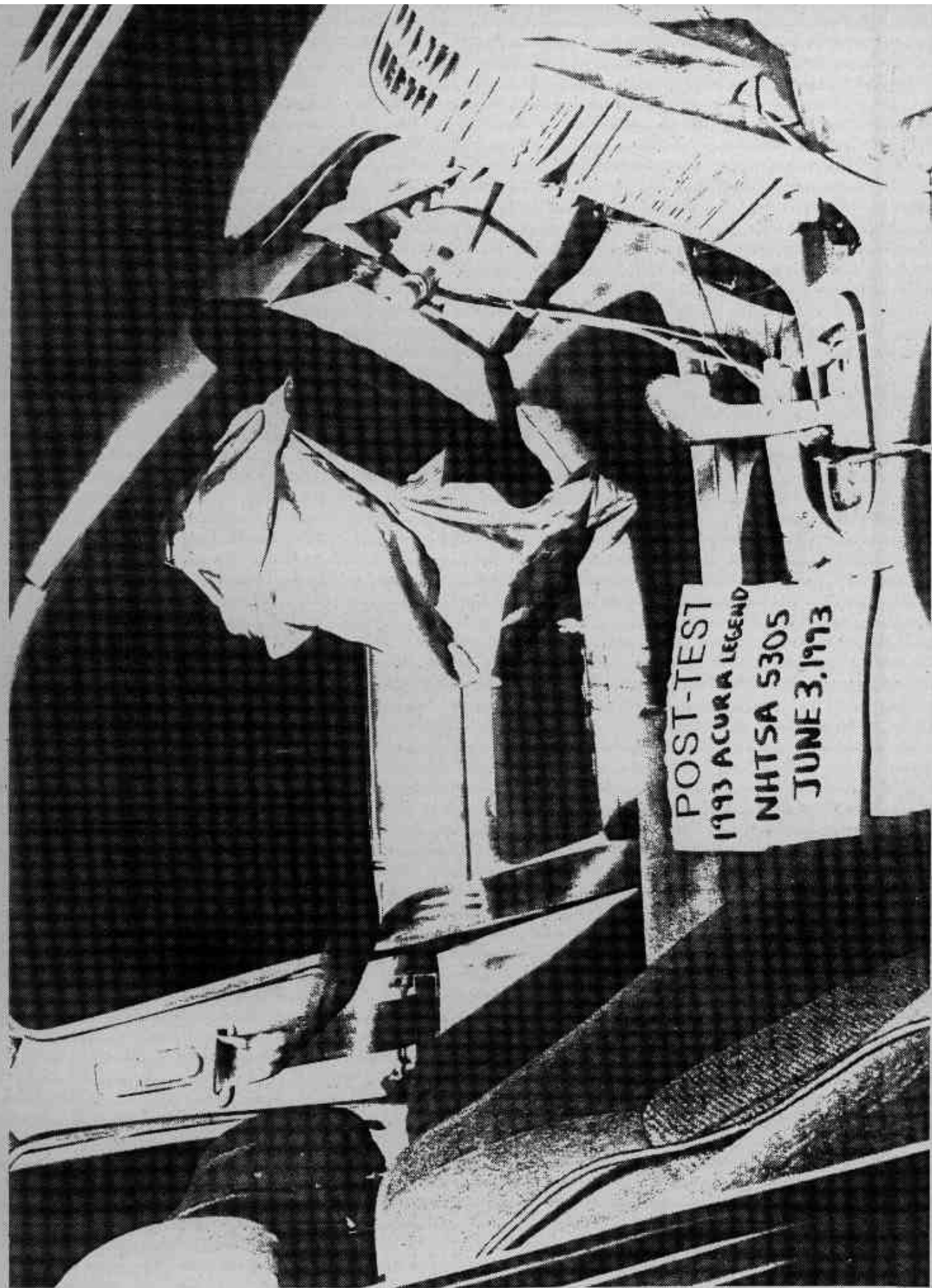


Photo No. A-30 - Driver Impact

A-30

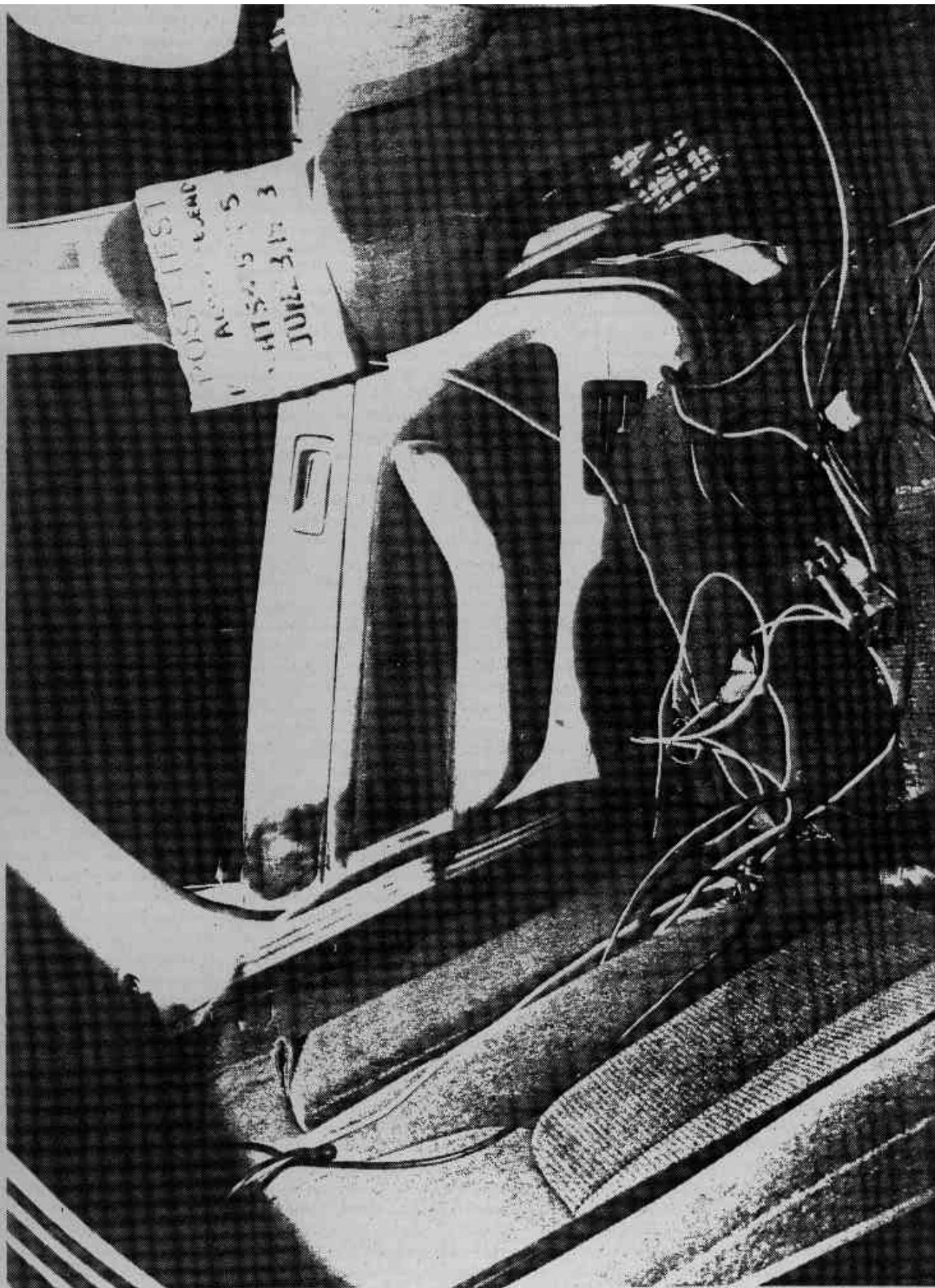


Photo No. A-31 - Passenger Impact

A-31

INT. COLOR
TYPE E



PRE-TEST
Acura Legend
NHTSA 5305
JUNE 3, 1993

Photo No. A-32 - Vehicle Certification Label

PRE-TEST

Acura Legend
NHTSA 530S
JUNE 3, 1993

TIRE INFORMATION			
VEHICLE CAPACITY WEIGHT	8500lb		
SEATING CAPACITY	TOTAL 5 FRONT 2 REAR 3		
RECOMMENDED TIRE SIZE	COLD TIRE INFLATION PRESSURE		
295/60R15 RIV	FRONT	REAR	UP TO VEHICLE
	220PSI, 32PSI	210PSI, 30PSI	CAPACITY WEIGHT
COMPACT SPARE TIRE	INFLATION PRESSURE		DO NOT INSTALL
P135/80D16	41PSI, 50PSI		ON OTHER VEHICLES
SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION			SPOT 40

Photo No. A-33 - Tire Placard

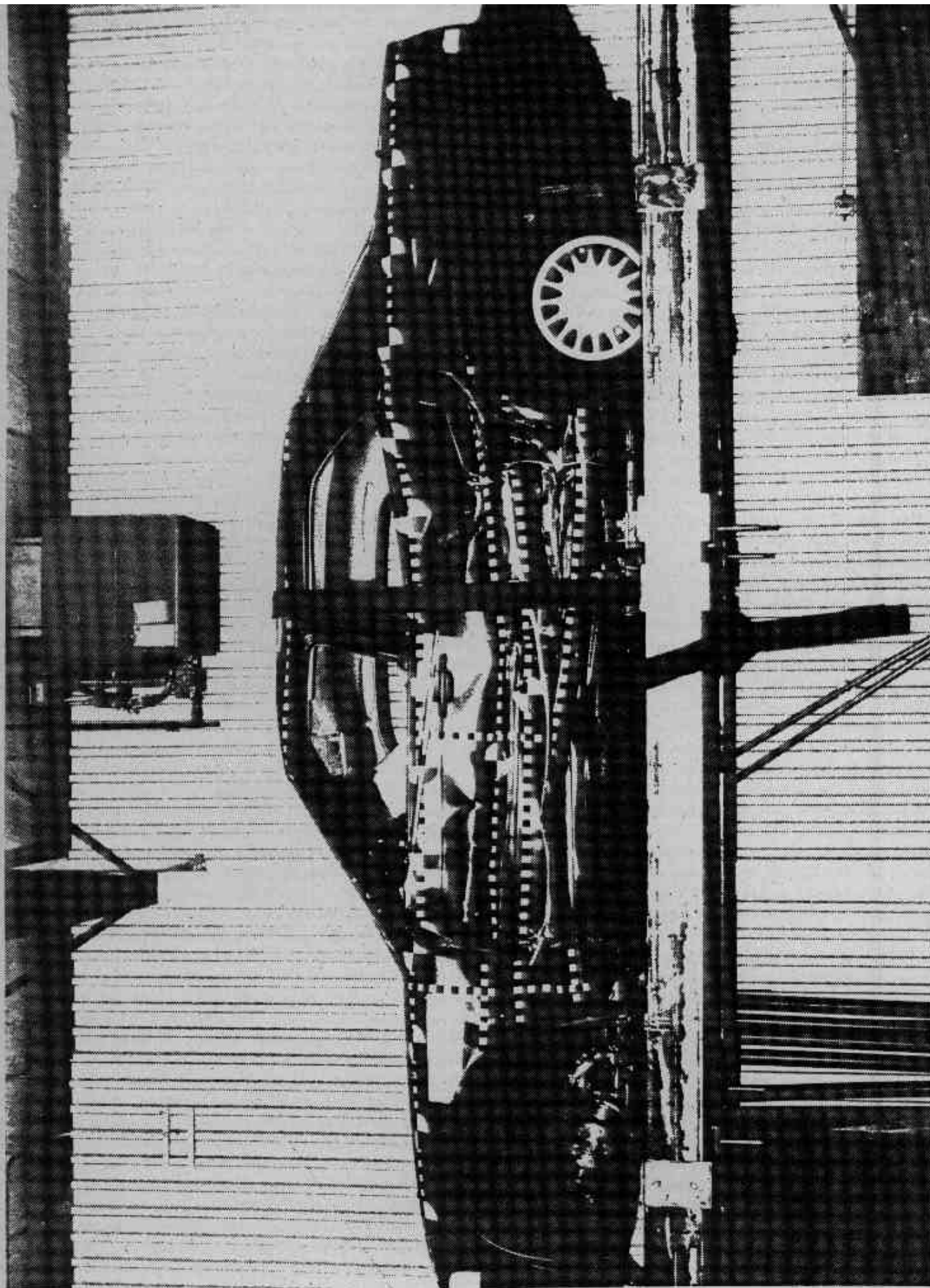


Photo No. A-34 - Rollover Ø

A-34

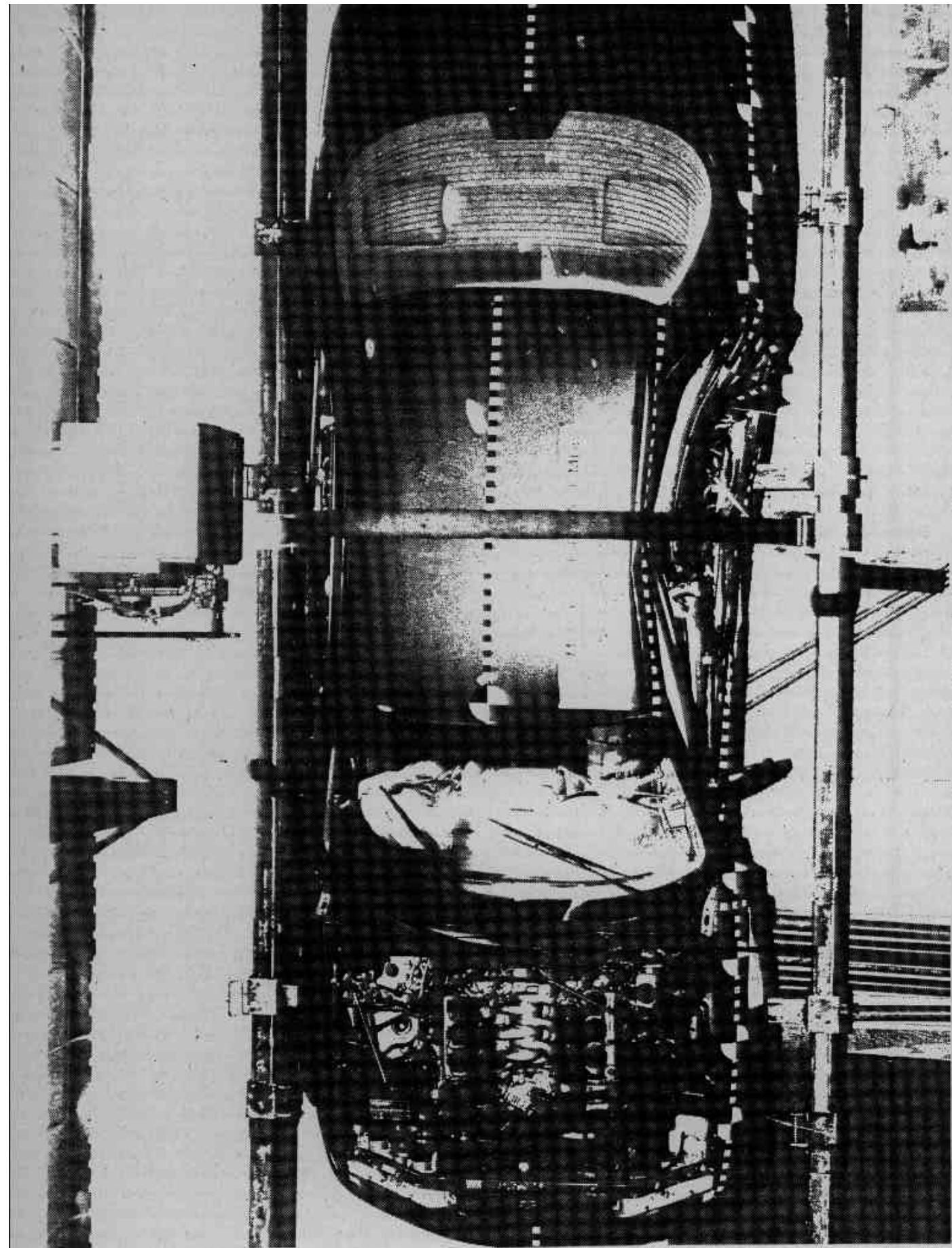
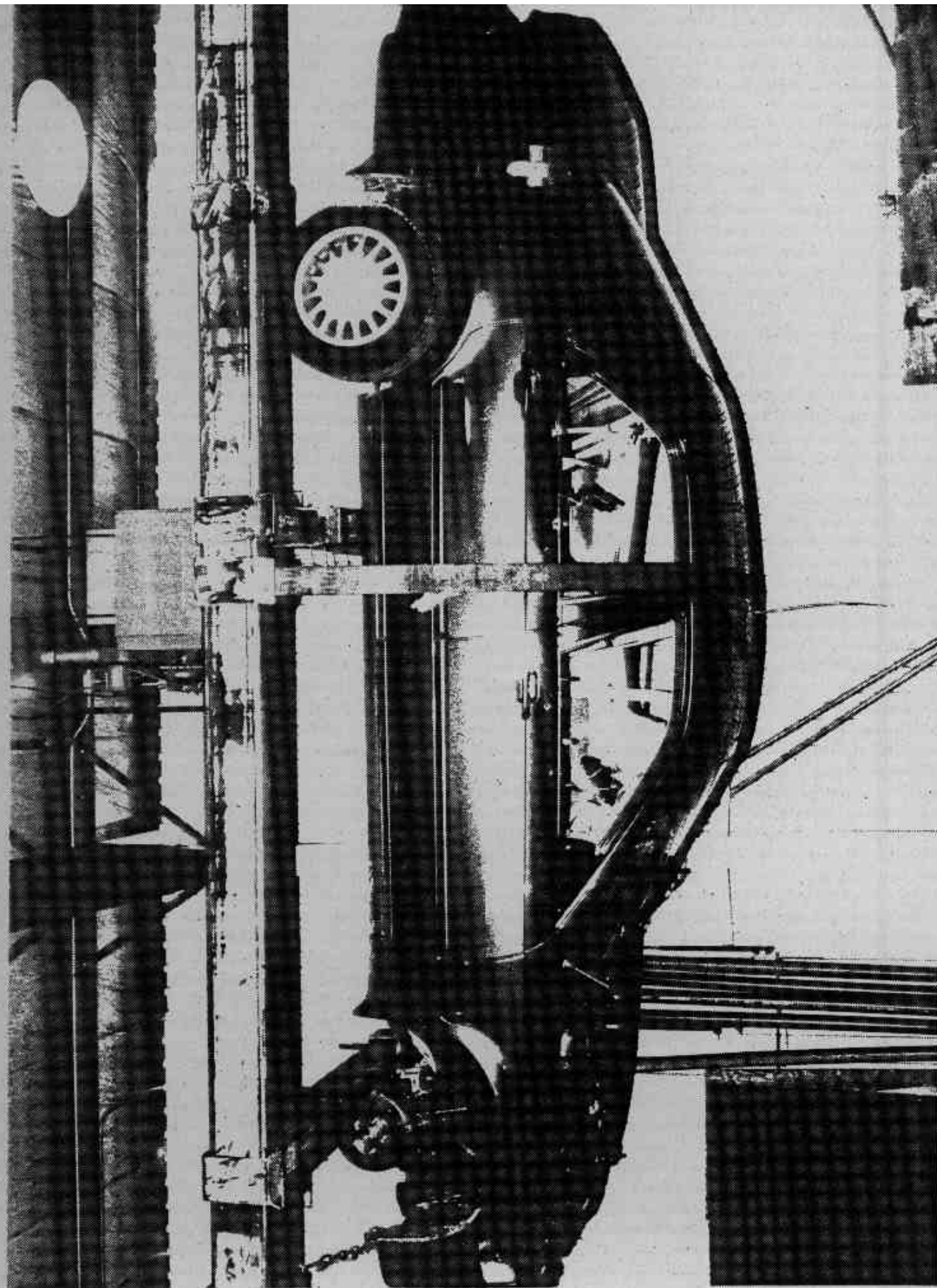


Photo No. A-35 - Rollover 90°

A-35



A-36

Photo No. A-36 - Rollover 180°

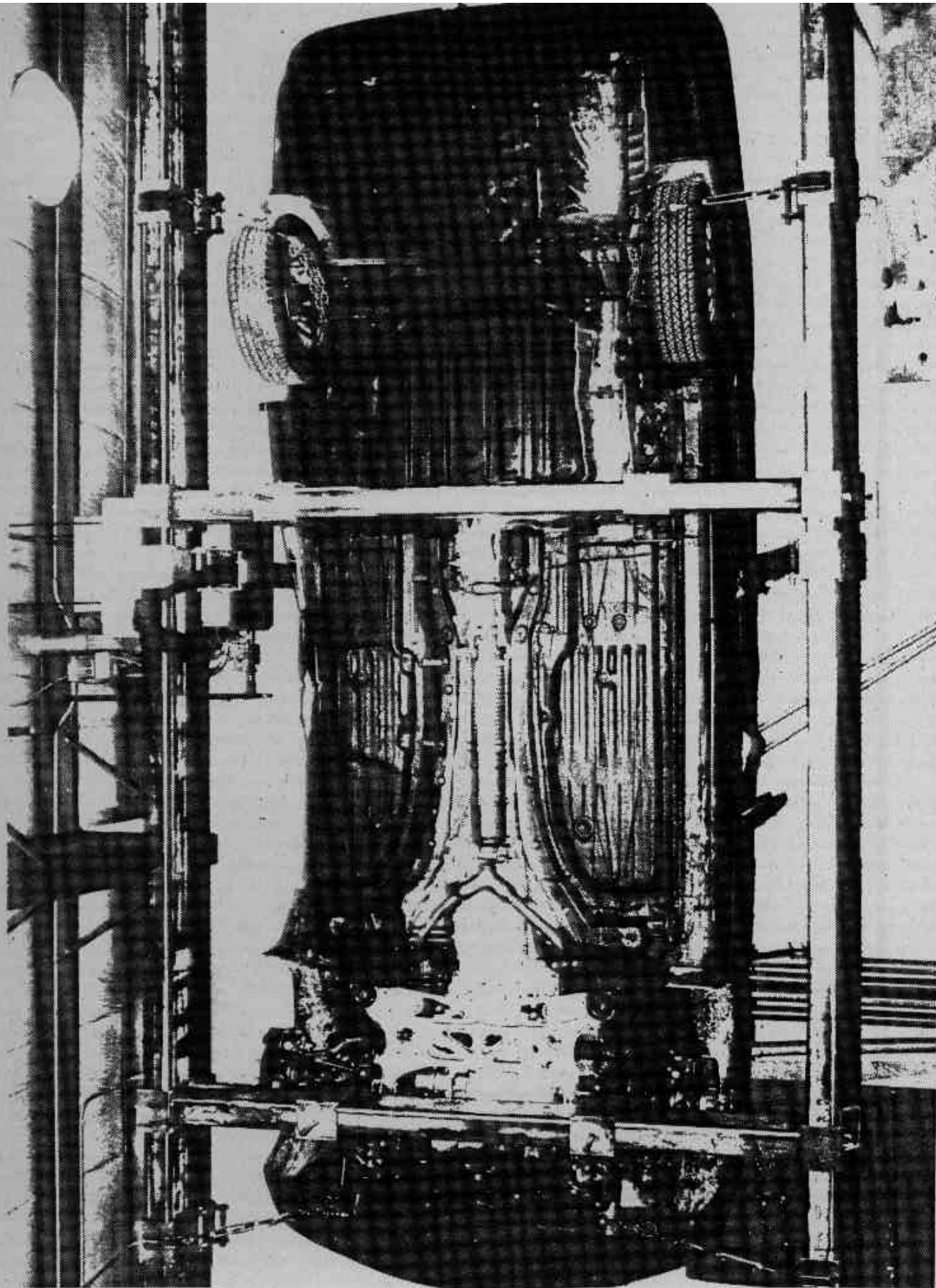


Photo No. A-37 - Rollover 270

A-37

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* No valid data collected

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* Data is not valid after 36 msec.

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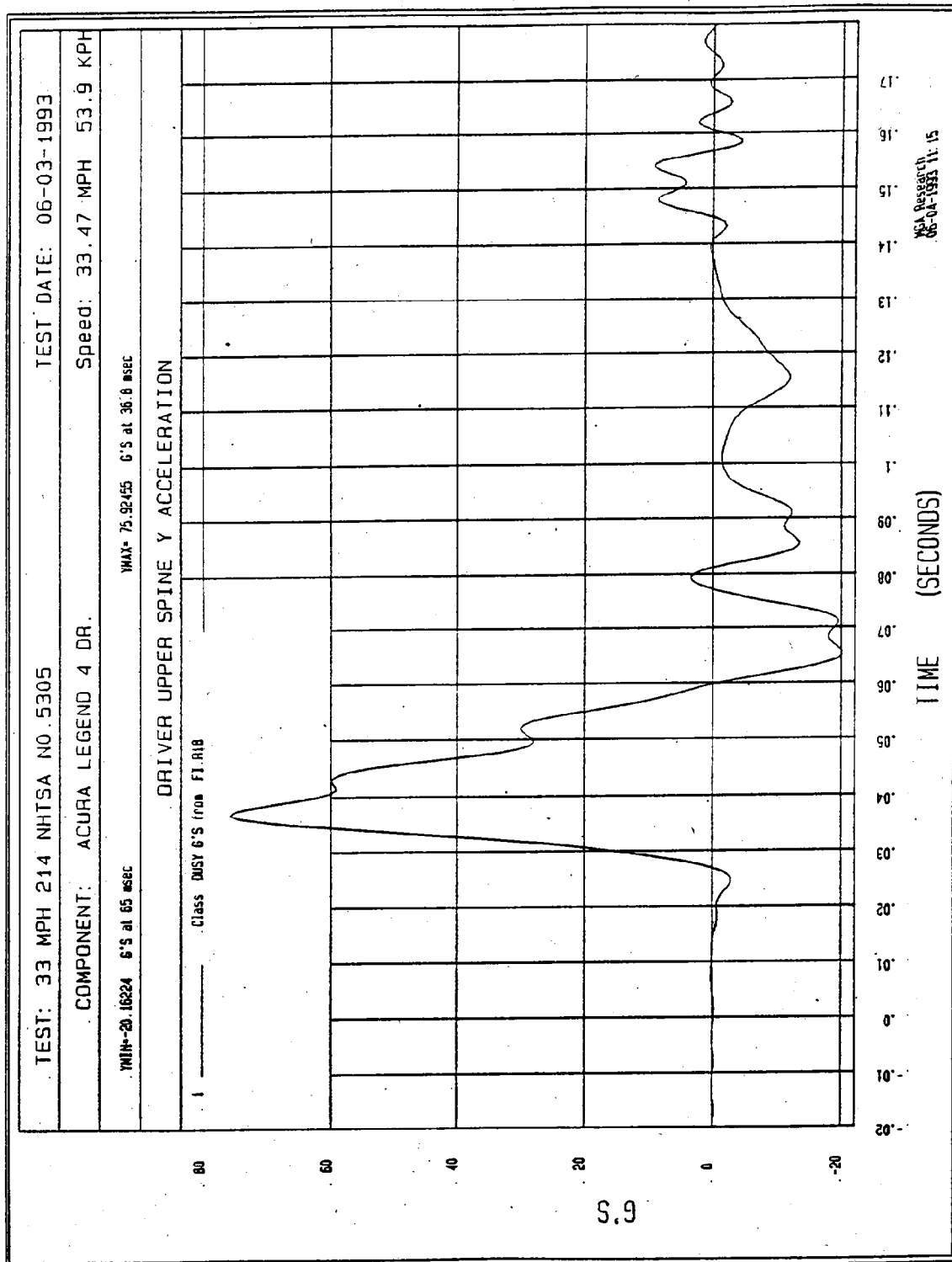


Figure B-1 - Driver Upper Spine Y Acceleration vs. Time

TEST: 33 MPH 214 NHTSA NO. 5305

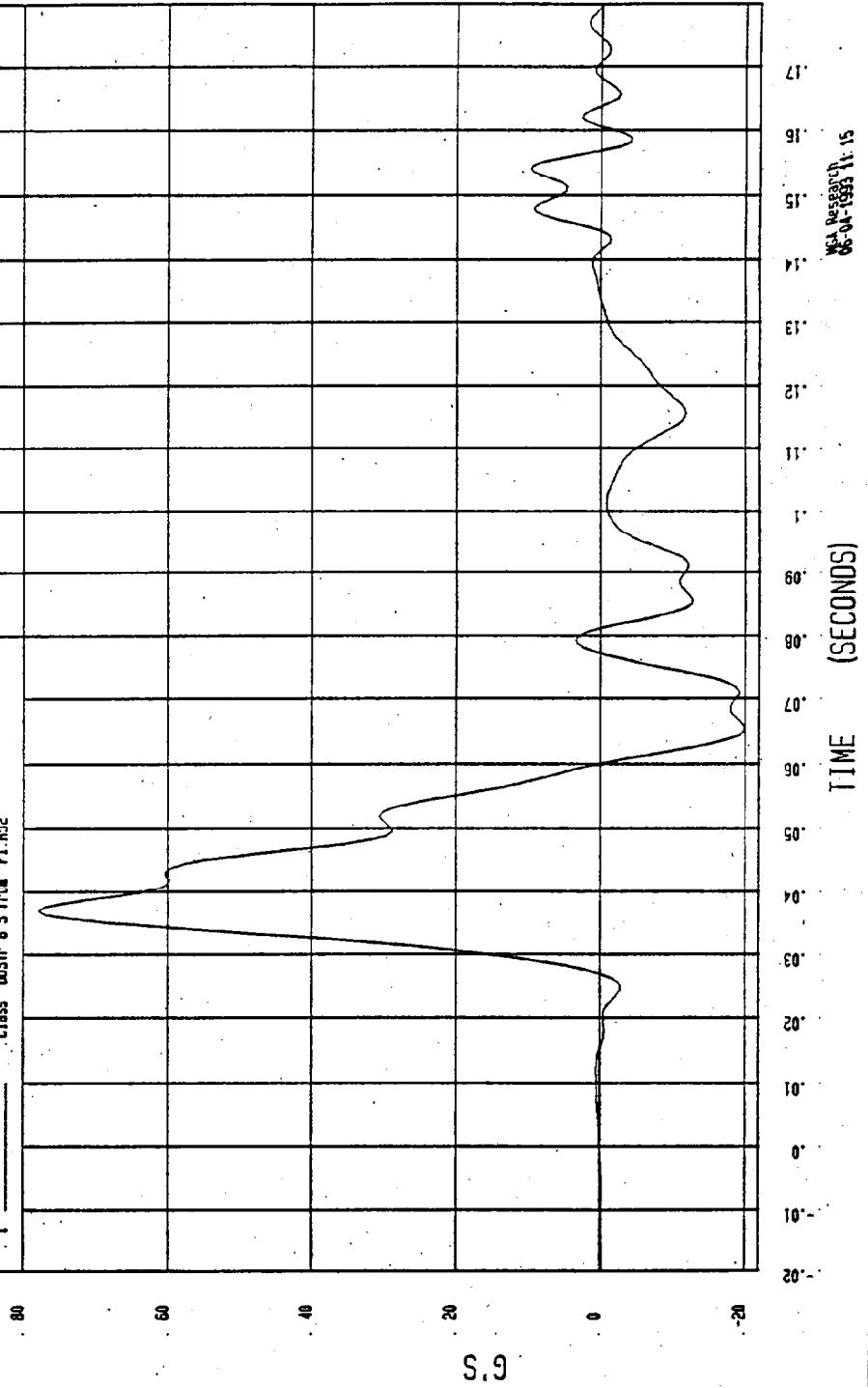
TEST DATE: 06-03-1993

COMPONENT: ACURA LEGEND 4 DR. Speed: 33.47 MPH 53.9 KPH

WIN-19 90165 6'S at 65.6 msec MAX= 77.94055 6'S at 36.8 msec

DRIVER UPPER SPINE Y REDUNDANT ACCELERATION

Class DUSr 6'S from F1.R52



WCA Research
06-04-1993 11:15

DRIVER UPPER SPINE Y REDUNDANT ACCELERATION VS. TIME

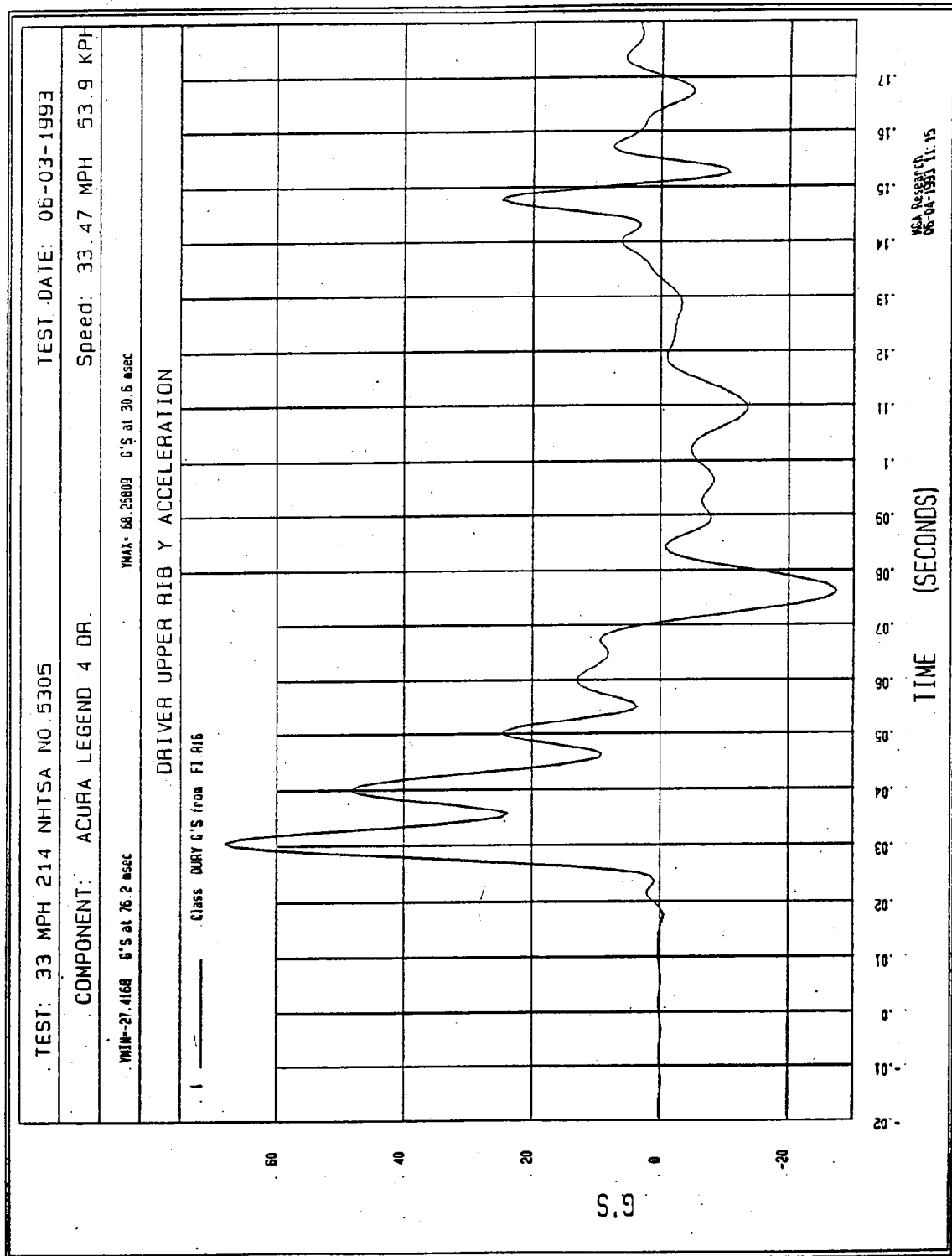
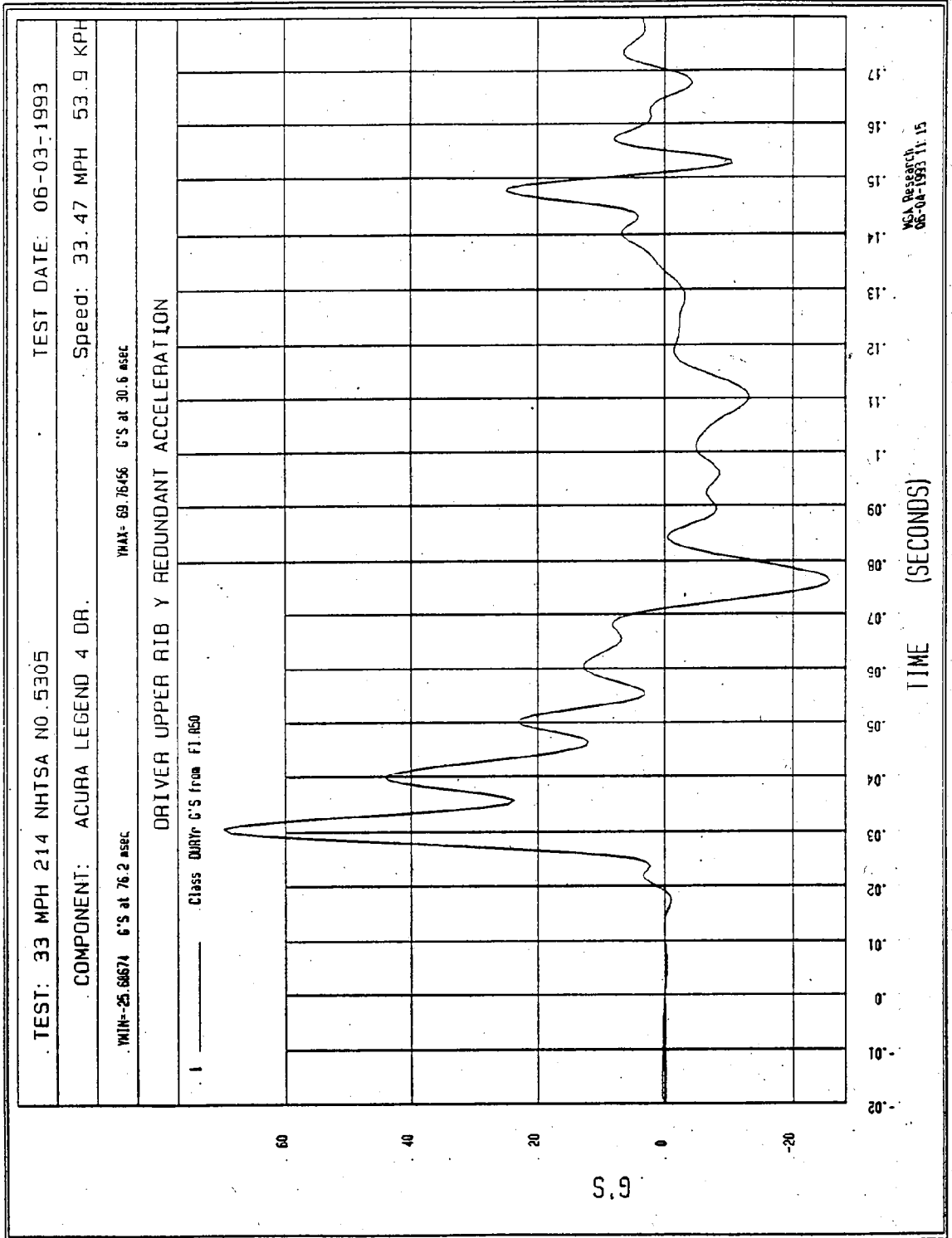


Figure B-3 - Driver Upper Rib Y Acceleration vs. Time



B-4

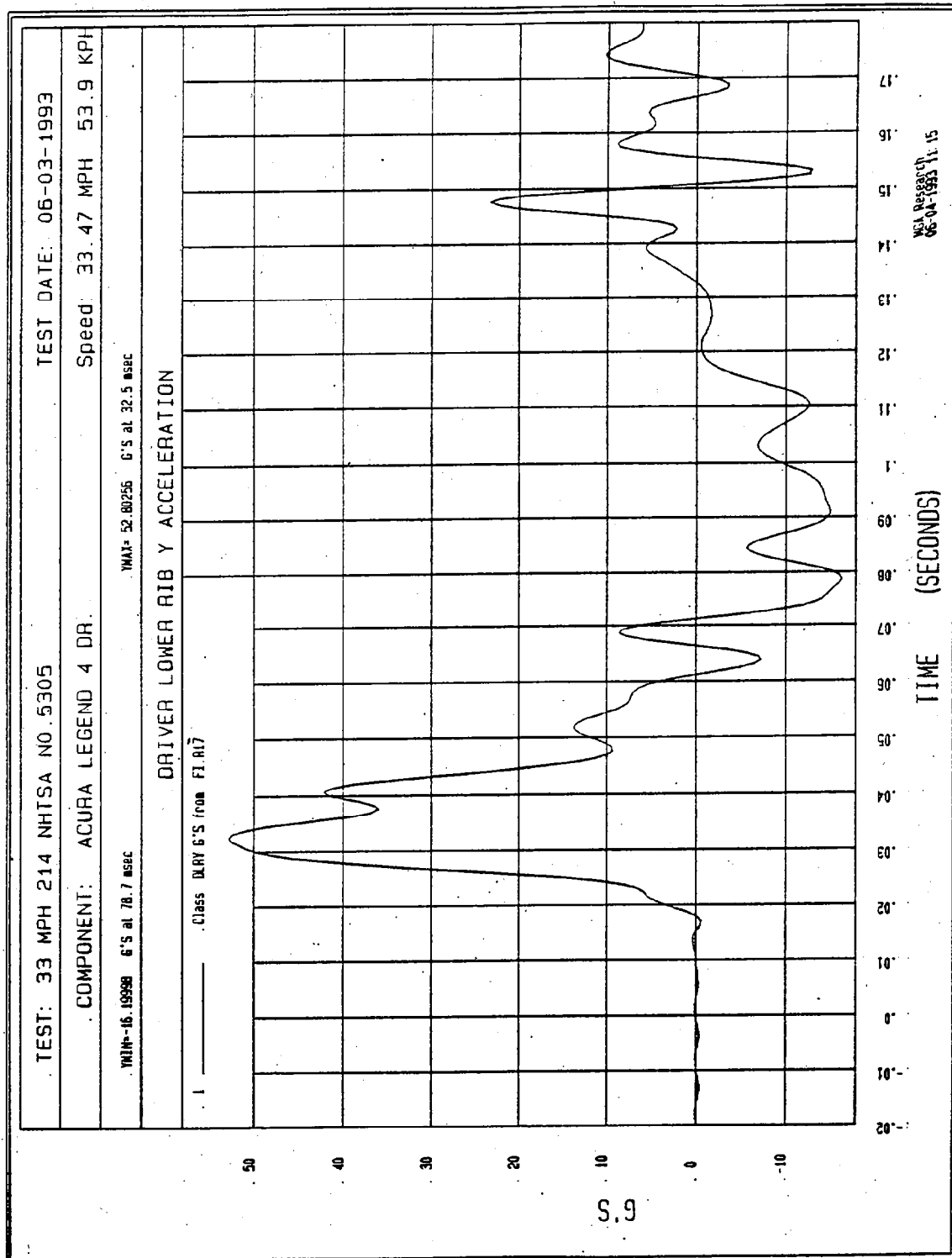
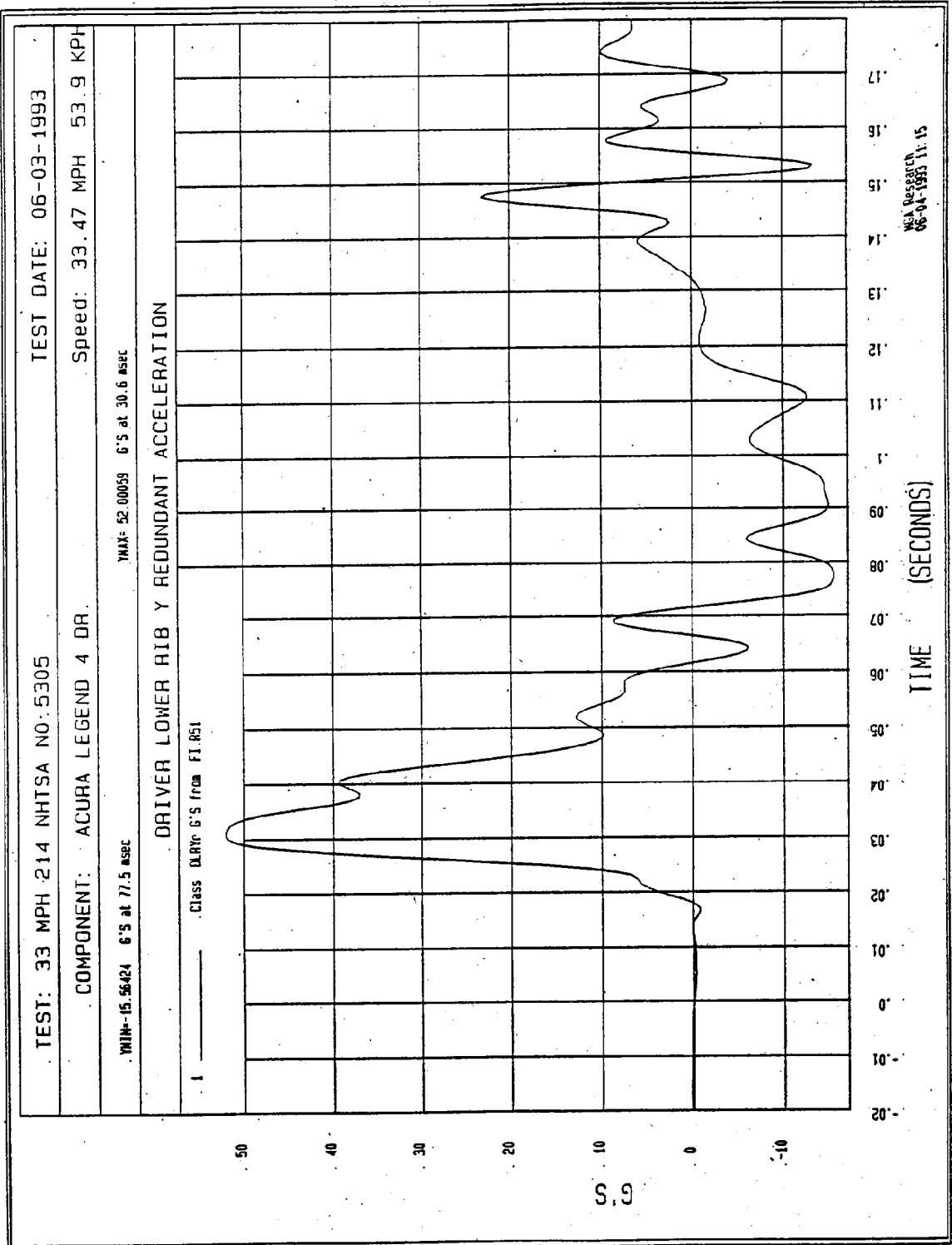


Figure B-5 - Driver Lower Rib Y Acceleration vs. Time



B-6

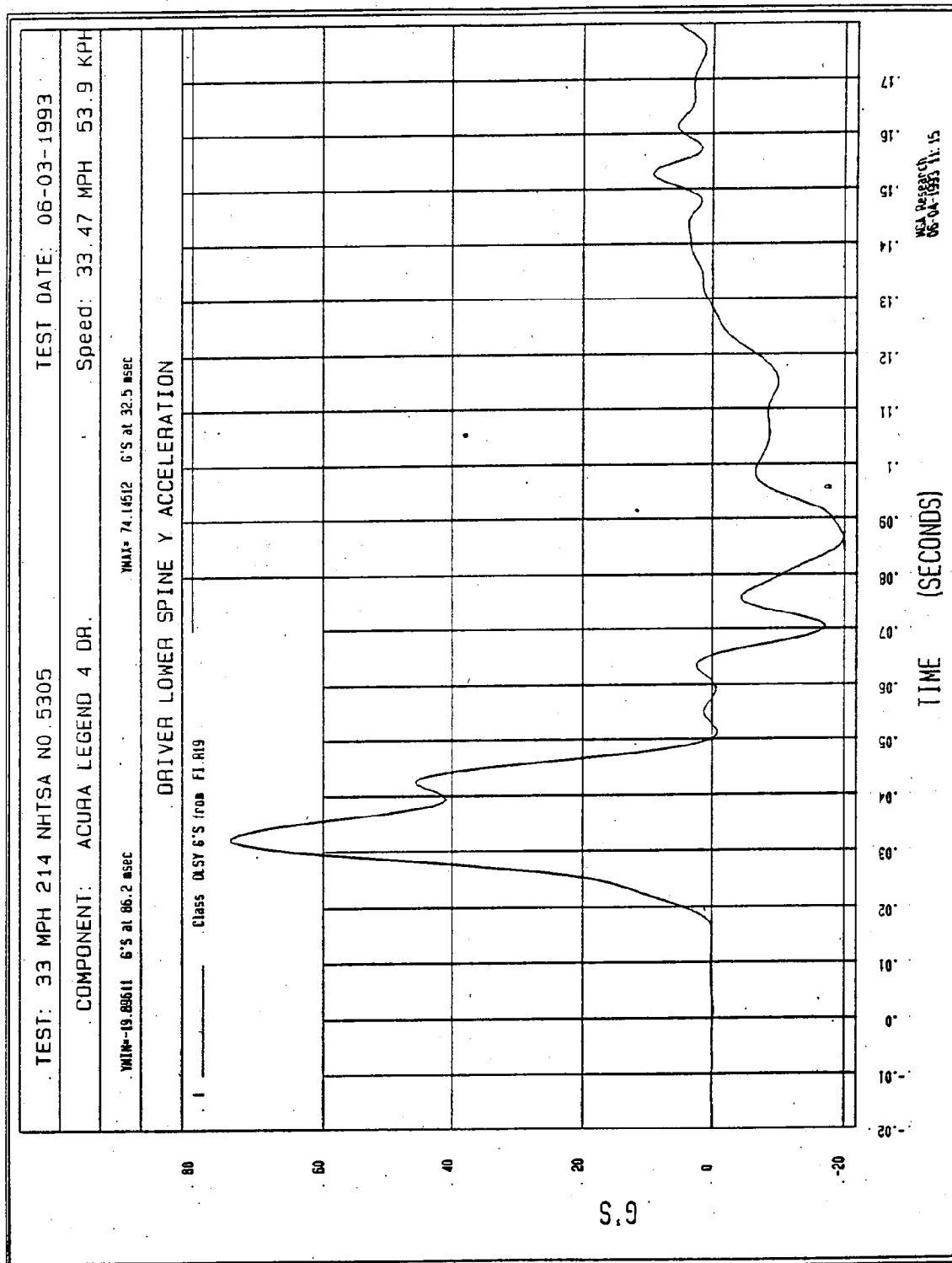


Figure B-7 - Driver Lower Spine Y Acceleration vs. Time

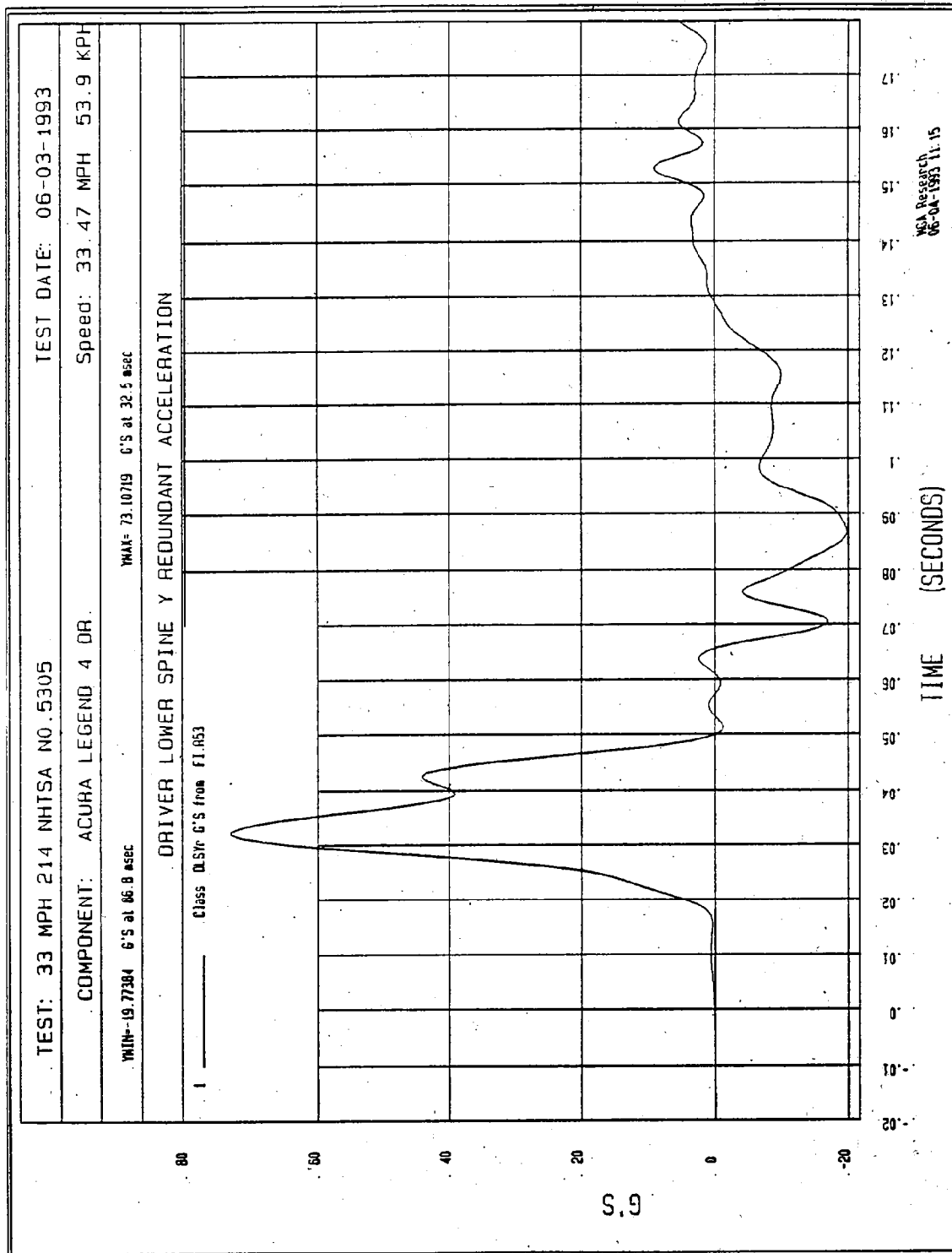


Figure B-8 - Driver Lower Spine Y Redundant Acceleration vs. Time

Figure B-10 - Driver Pelvis Y Redundant Acceleration vs. Time
No valid data collected

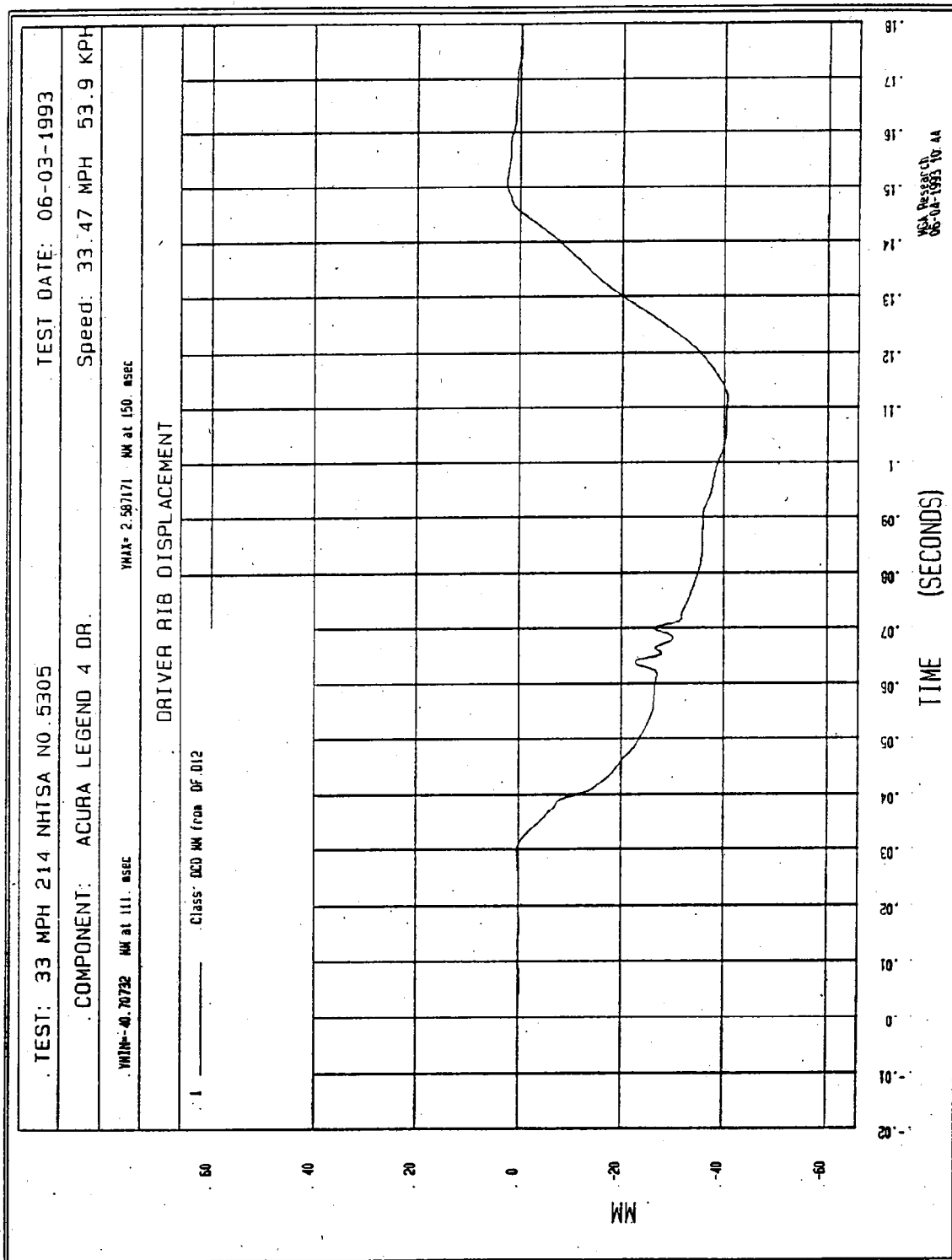
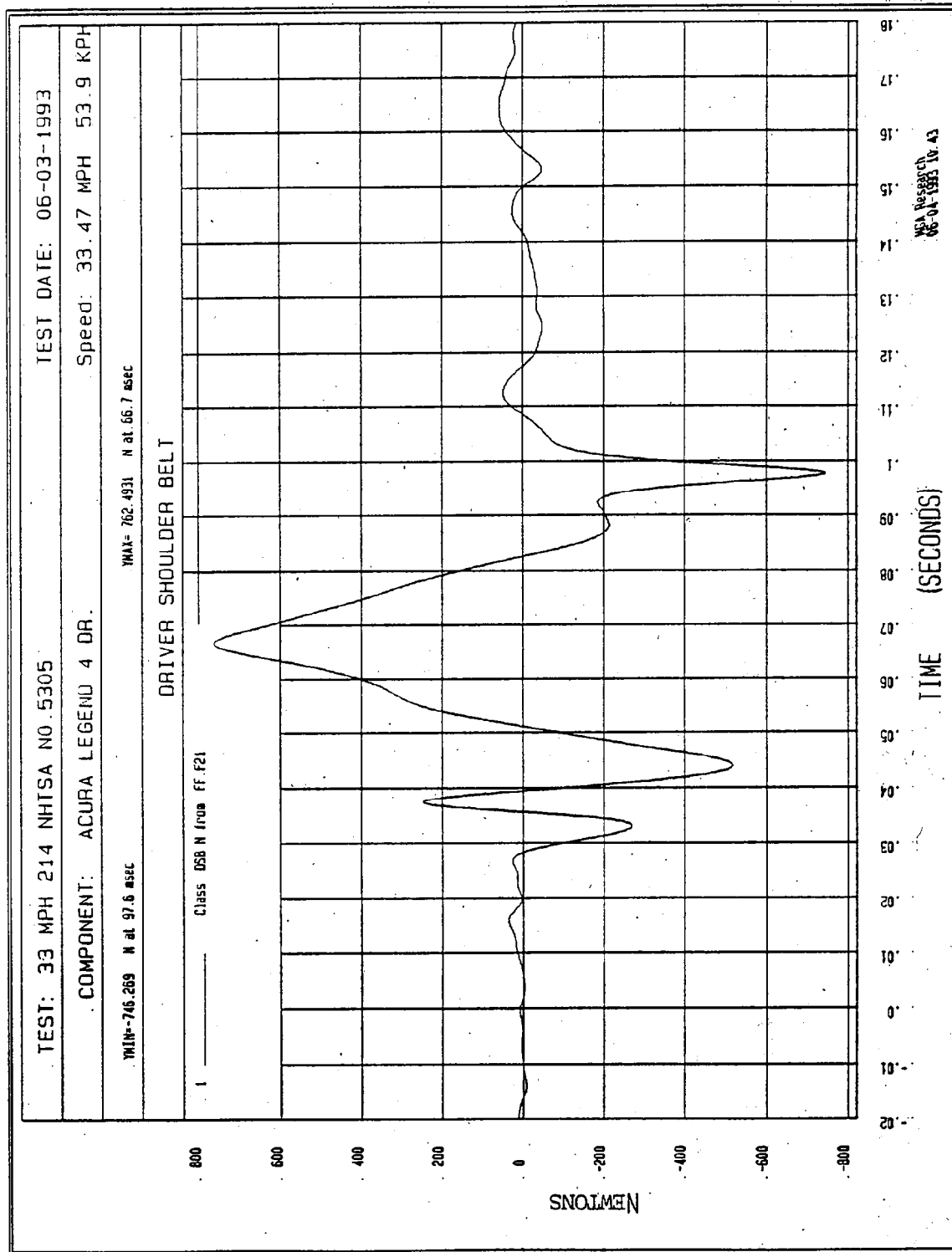


Figure B-11 - Driver Rib Displacement vs. Time



B-12

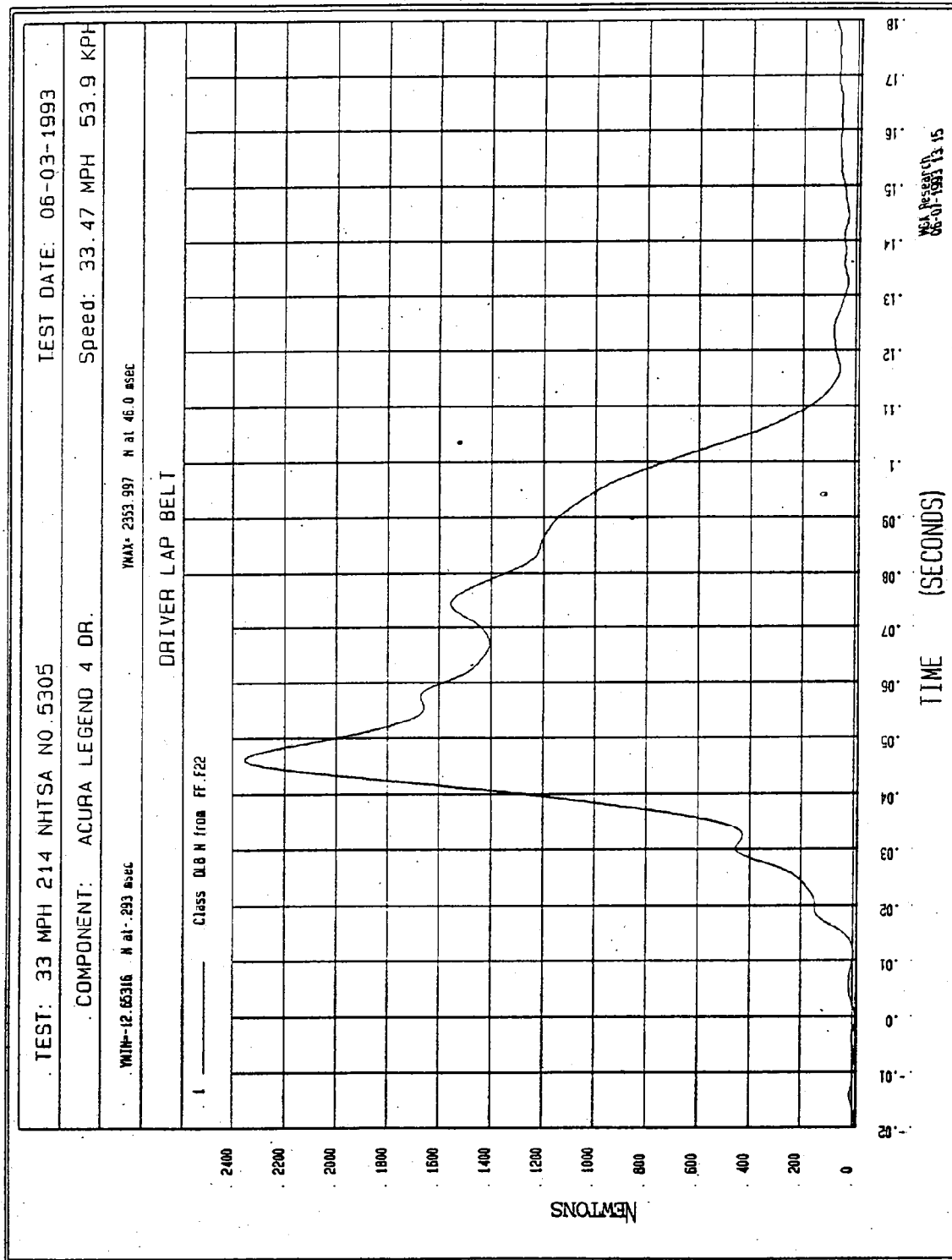
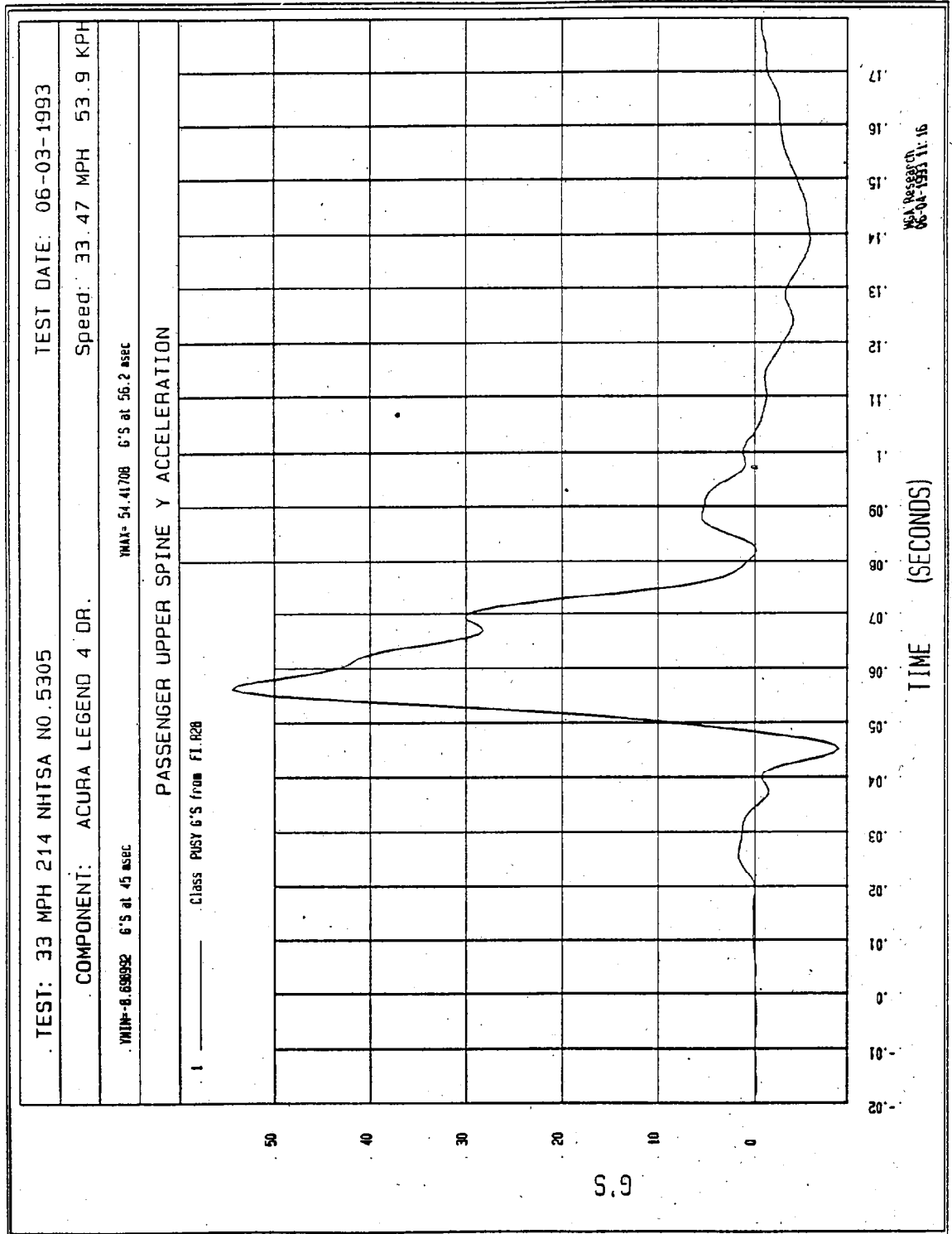


Figure B-13 - Driver Lap Belt



B-14

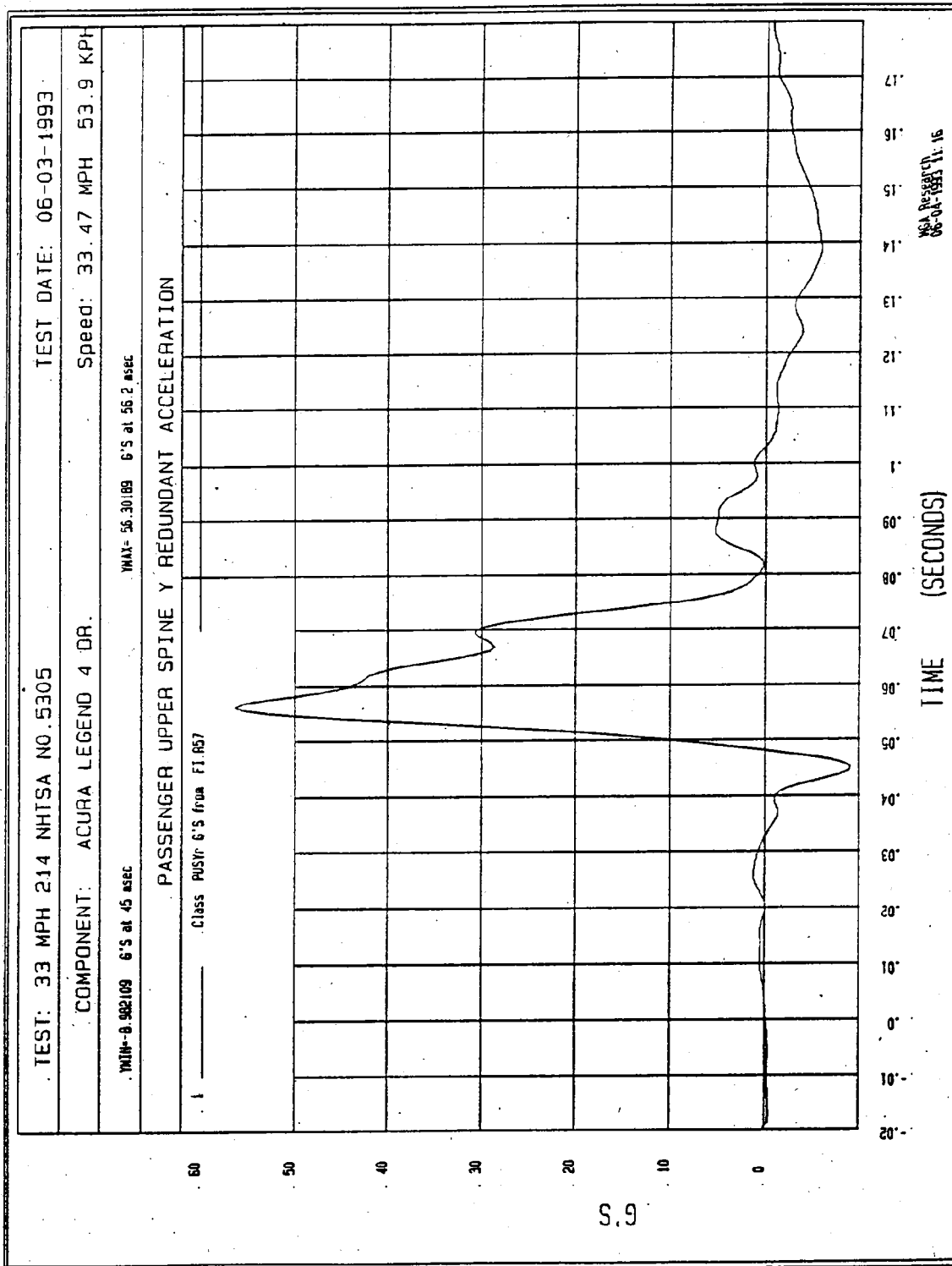
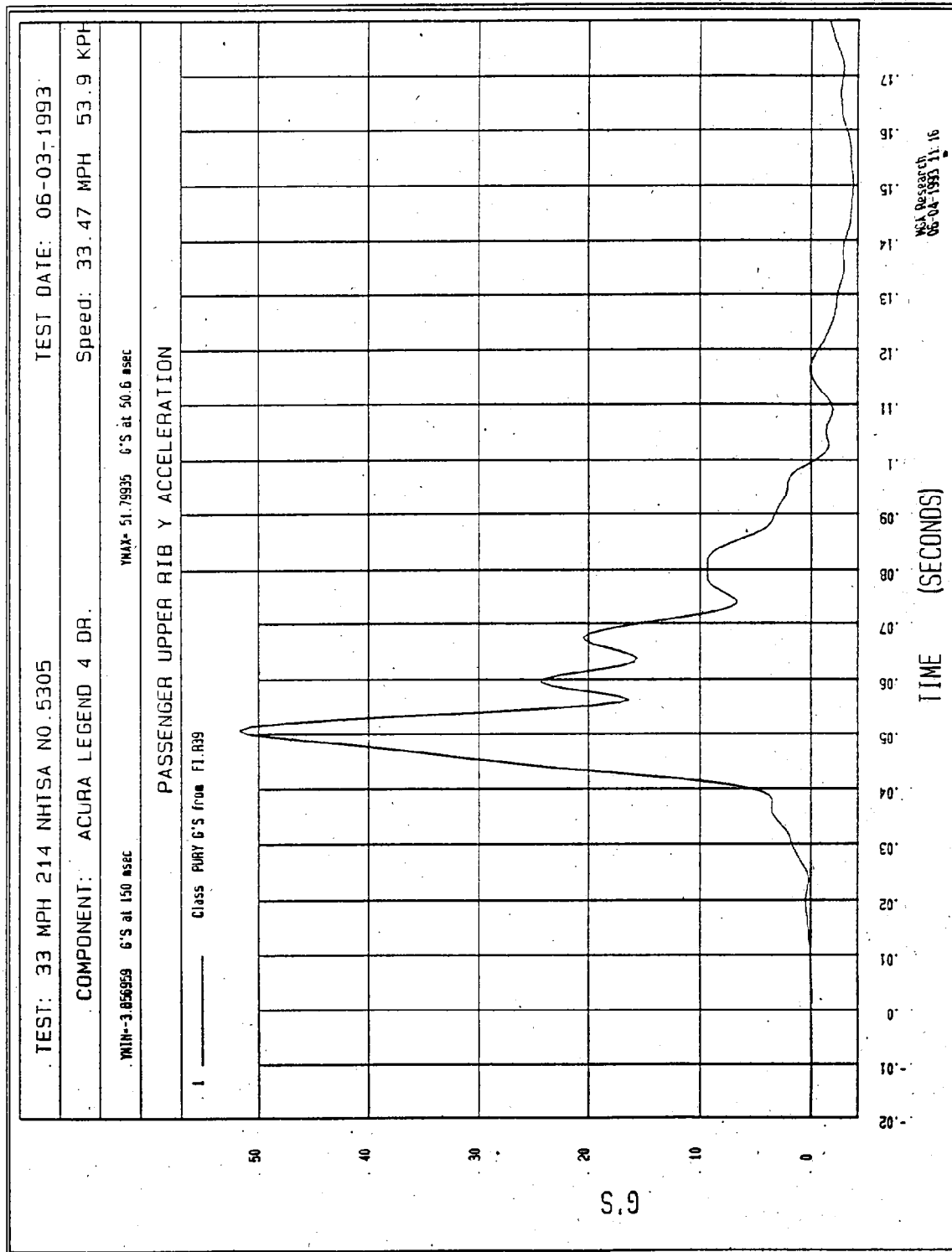


Figure B-15 - Passenger Upper Spine Y Redundant Acceleration vs. Time



B-16

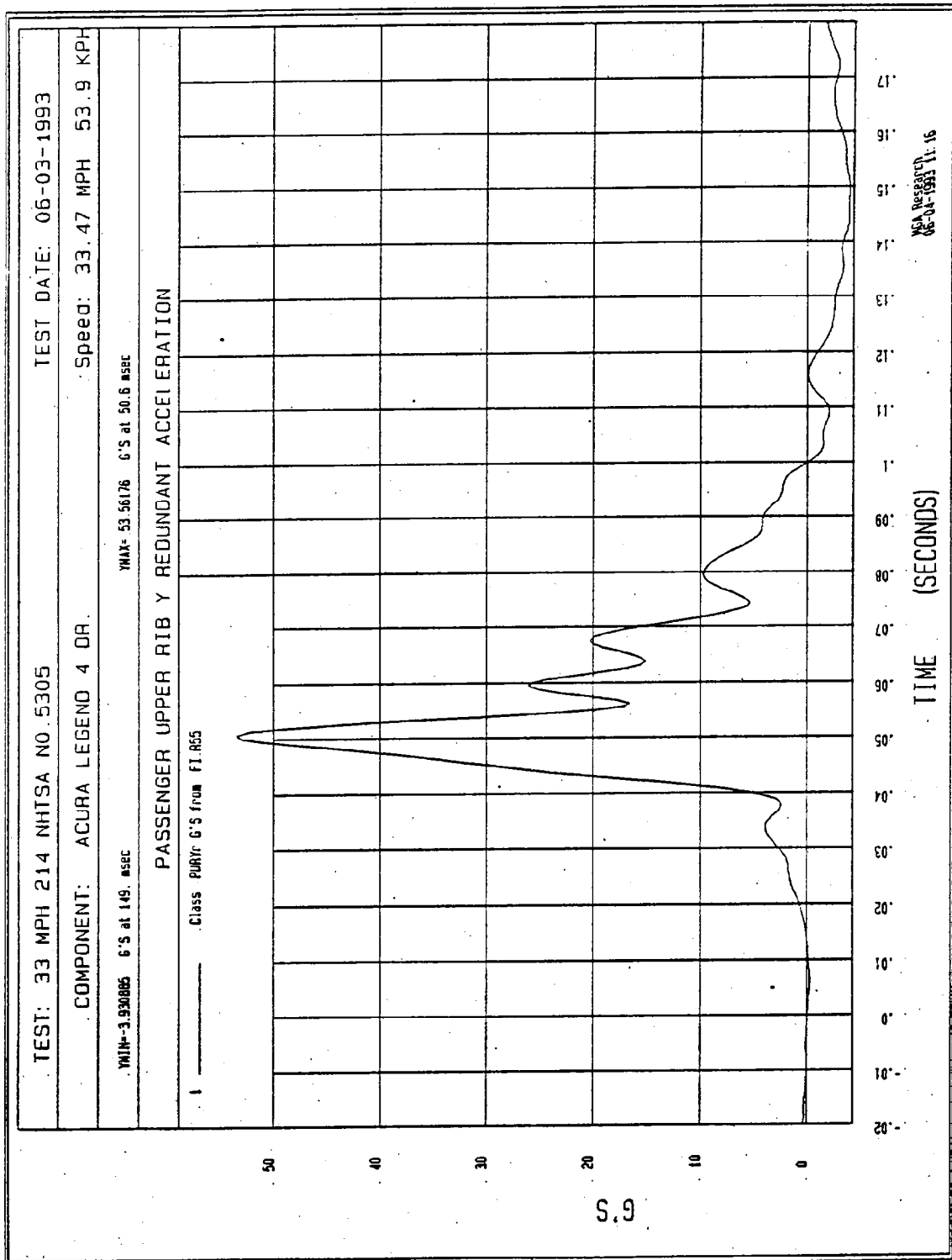
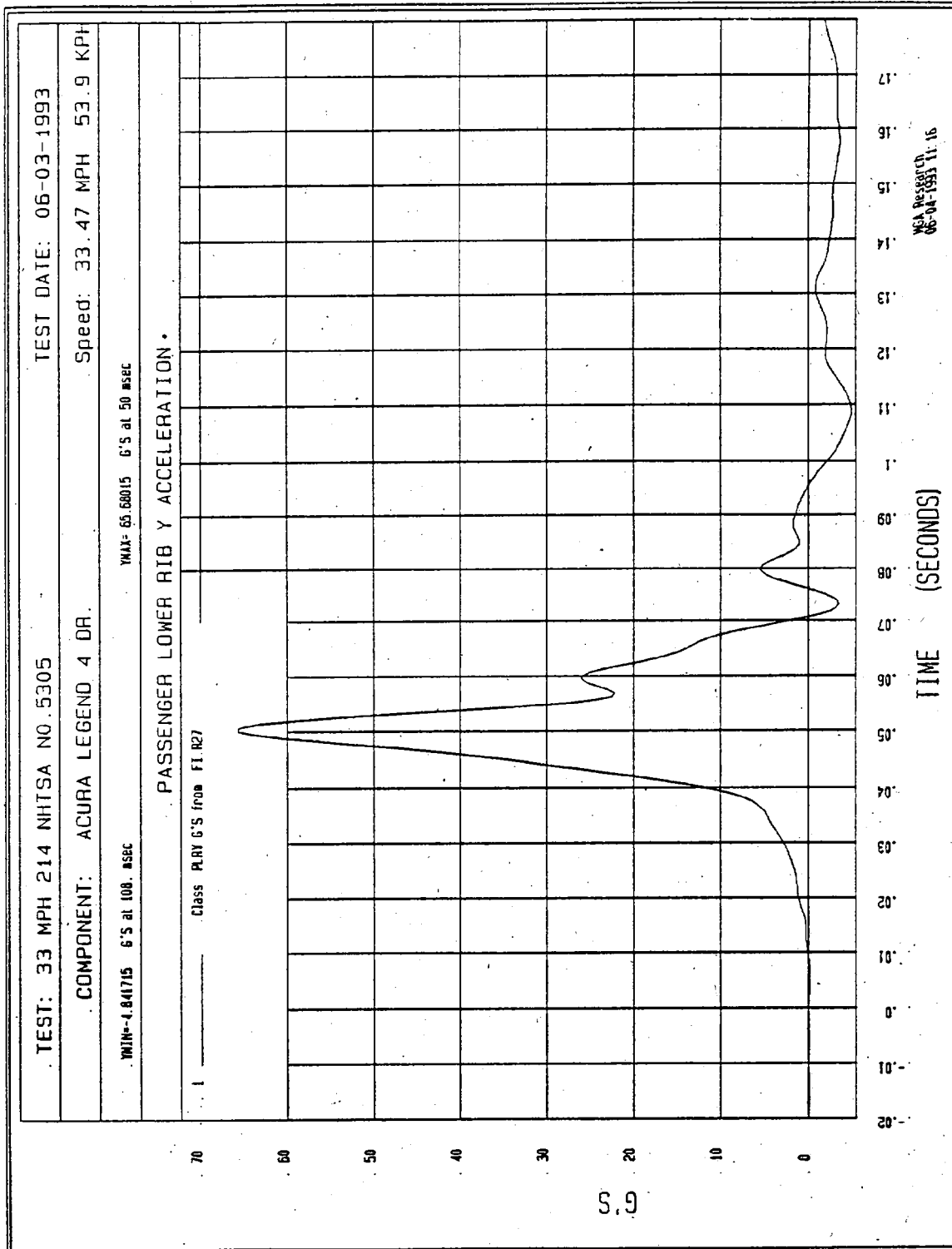


Figure B-17 - Passenger Upper Rib Y Redundant Acceleration vs. Time



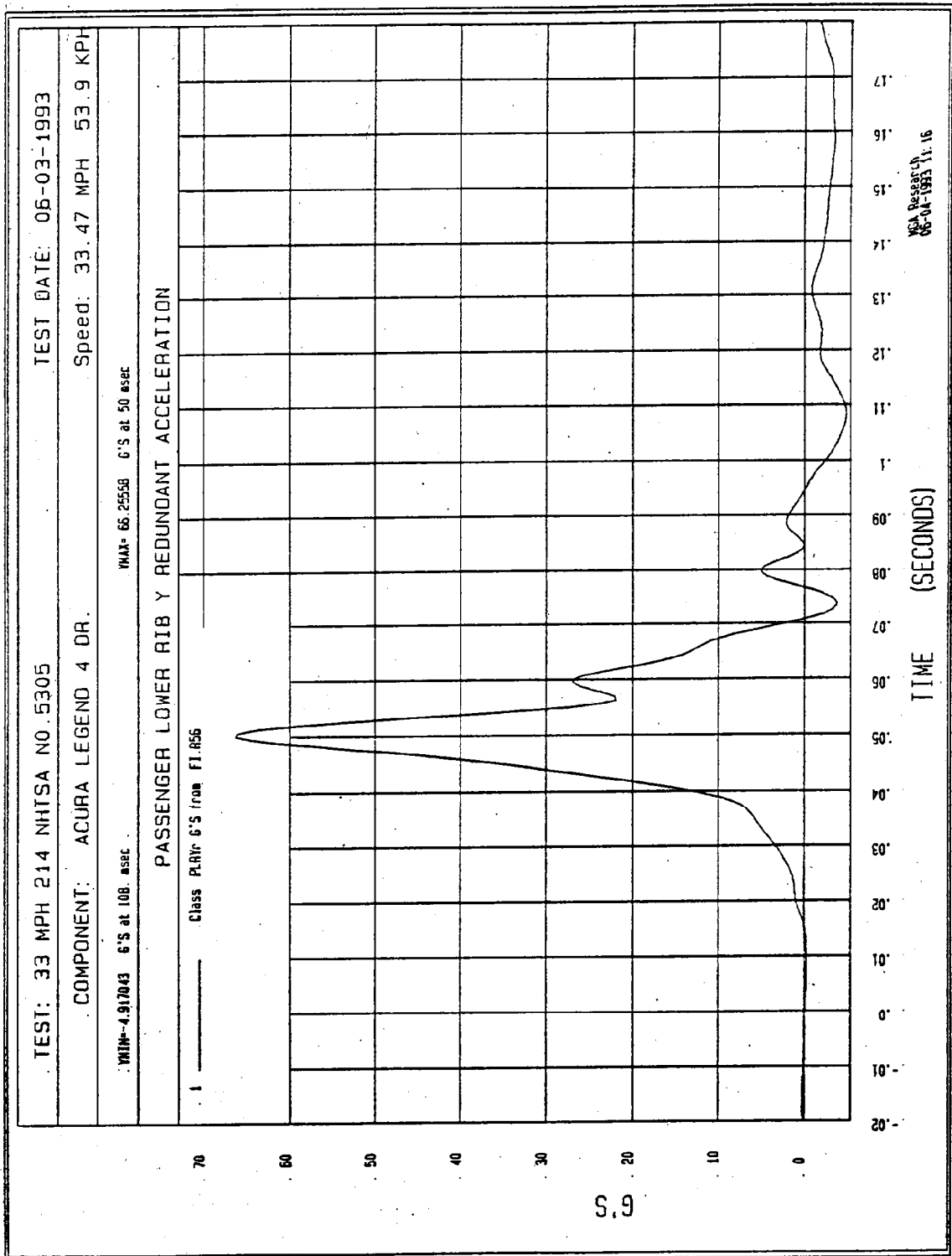
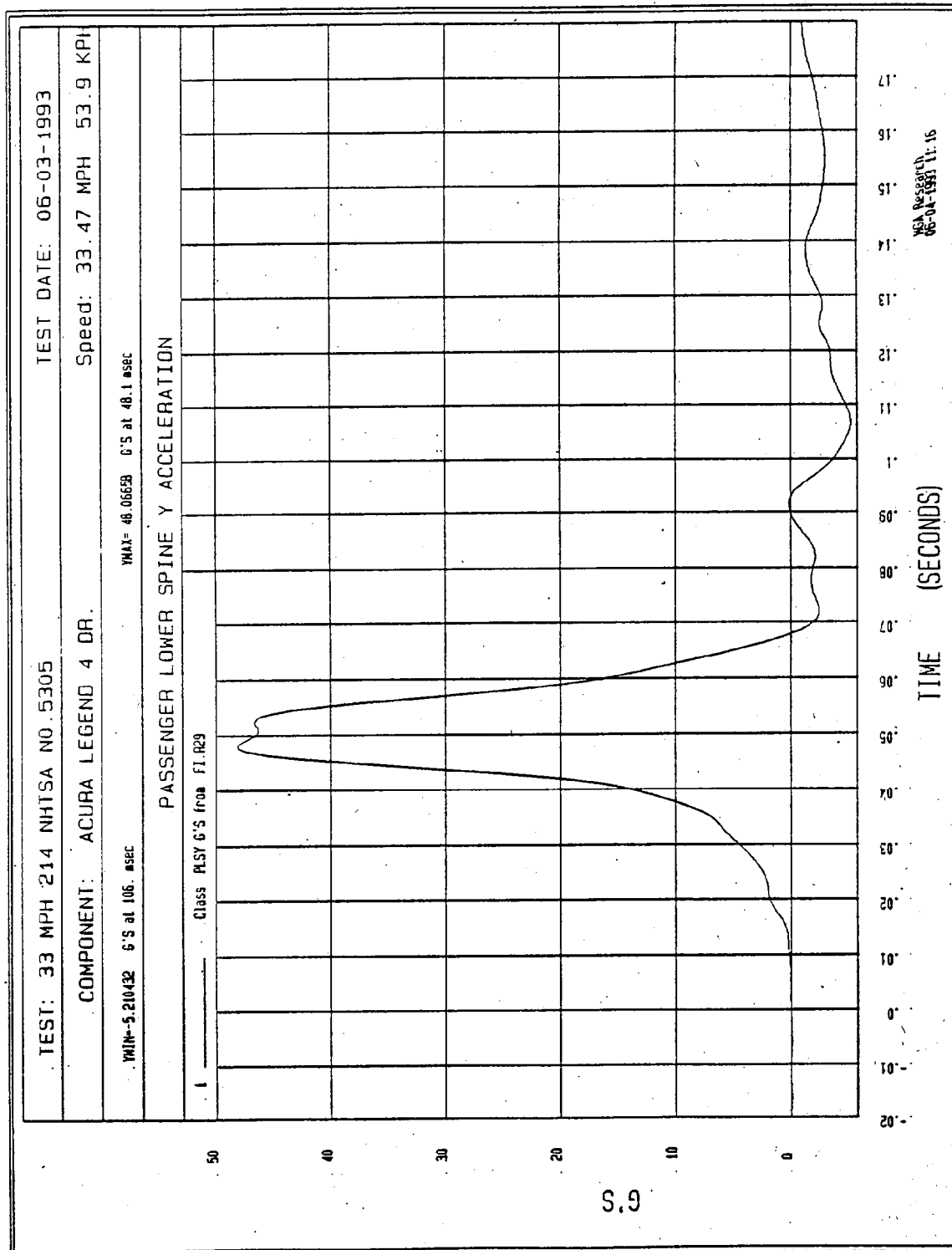


Figure B-19 - Passenger Lower Rib Y Redundant Acceleration



B-20

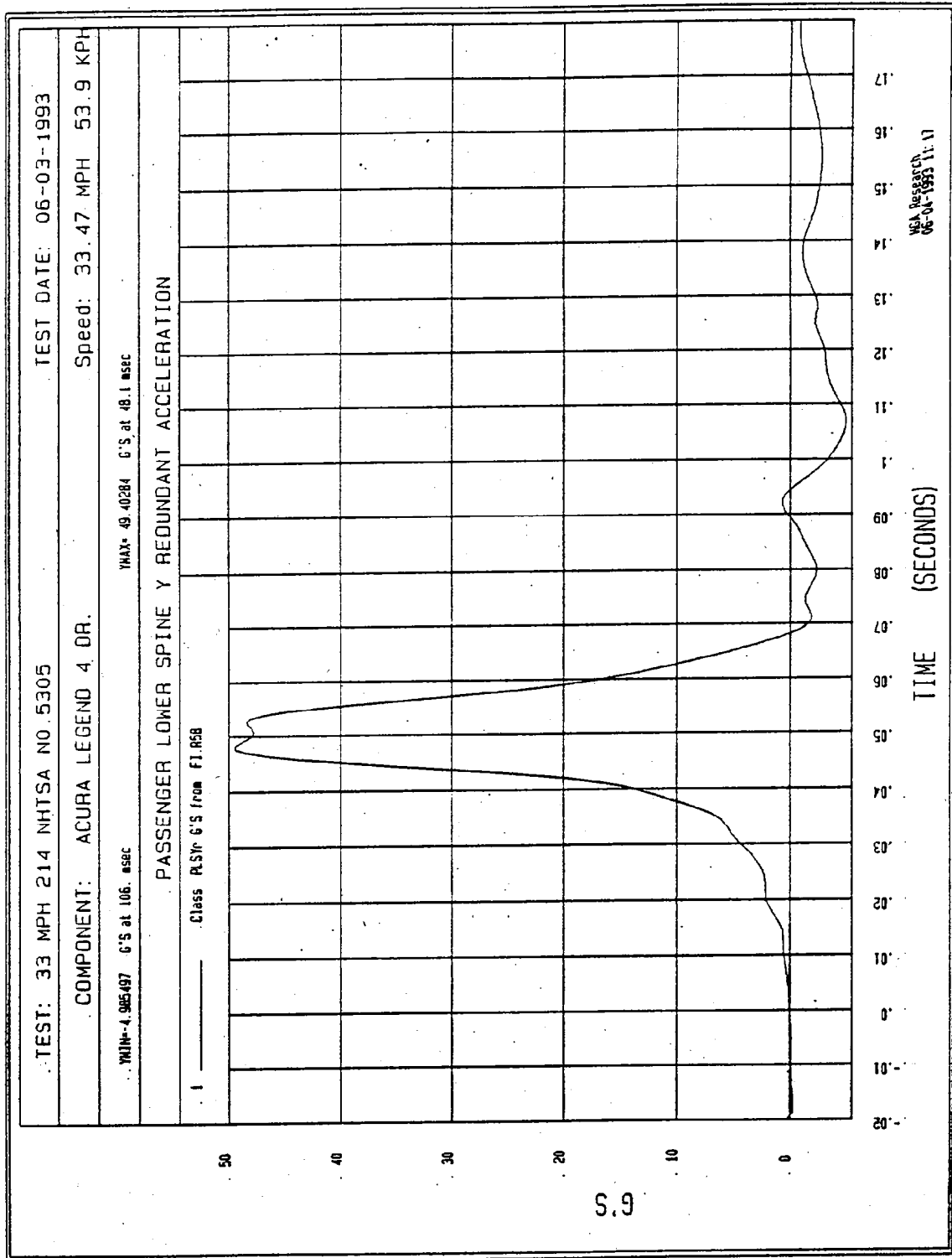
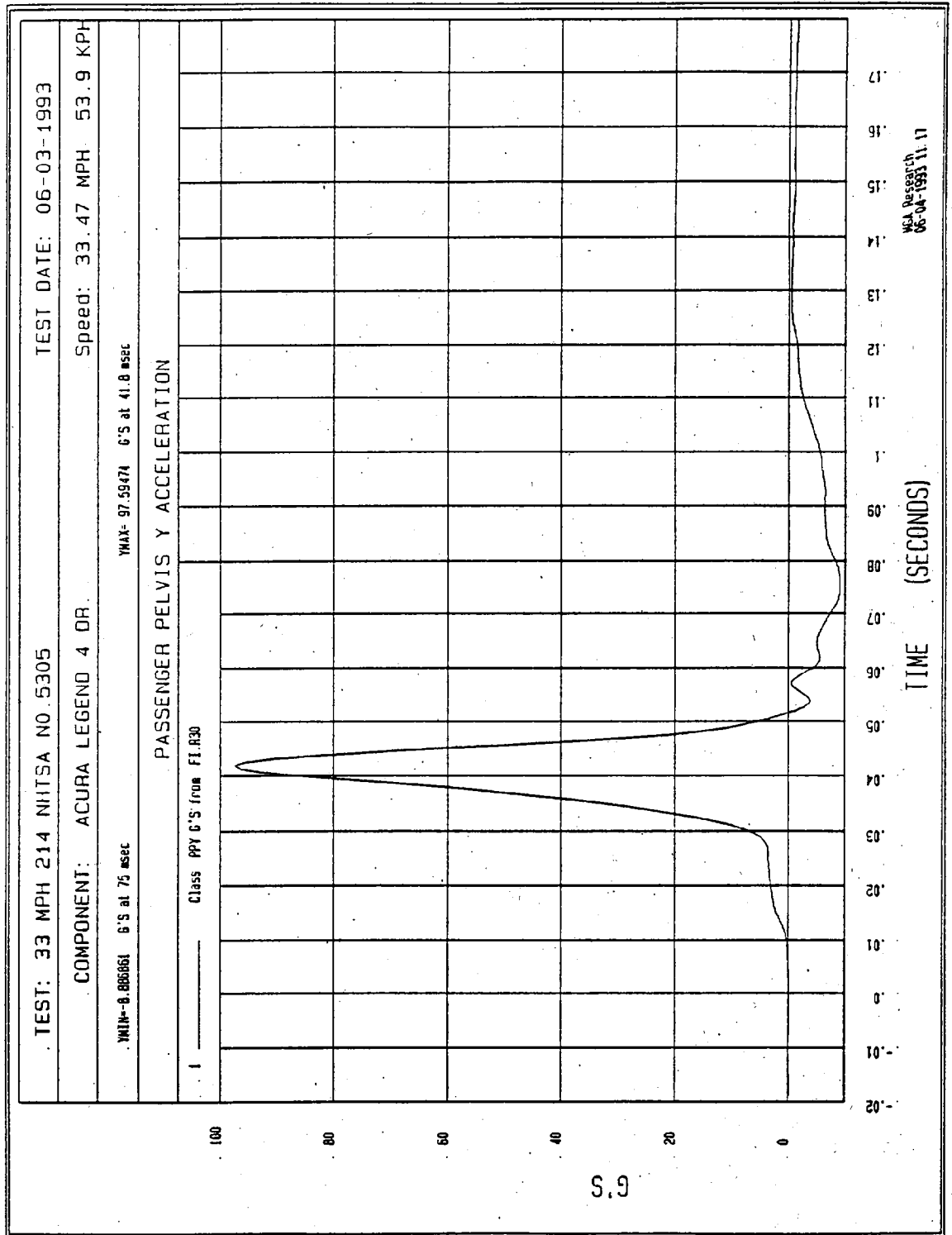


Figure B-21 - Passenger Lower Spine Y Redundant Acceleration vs. Time



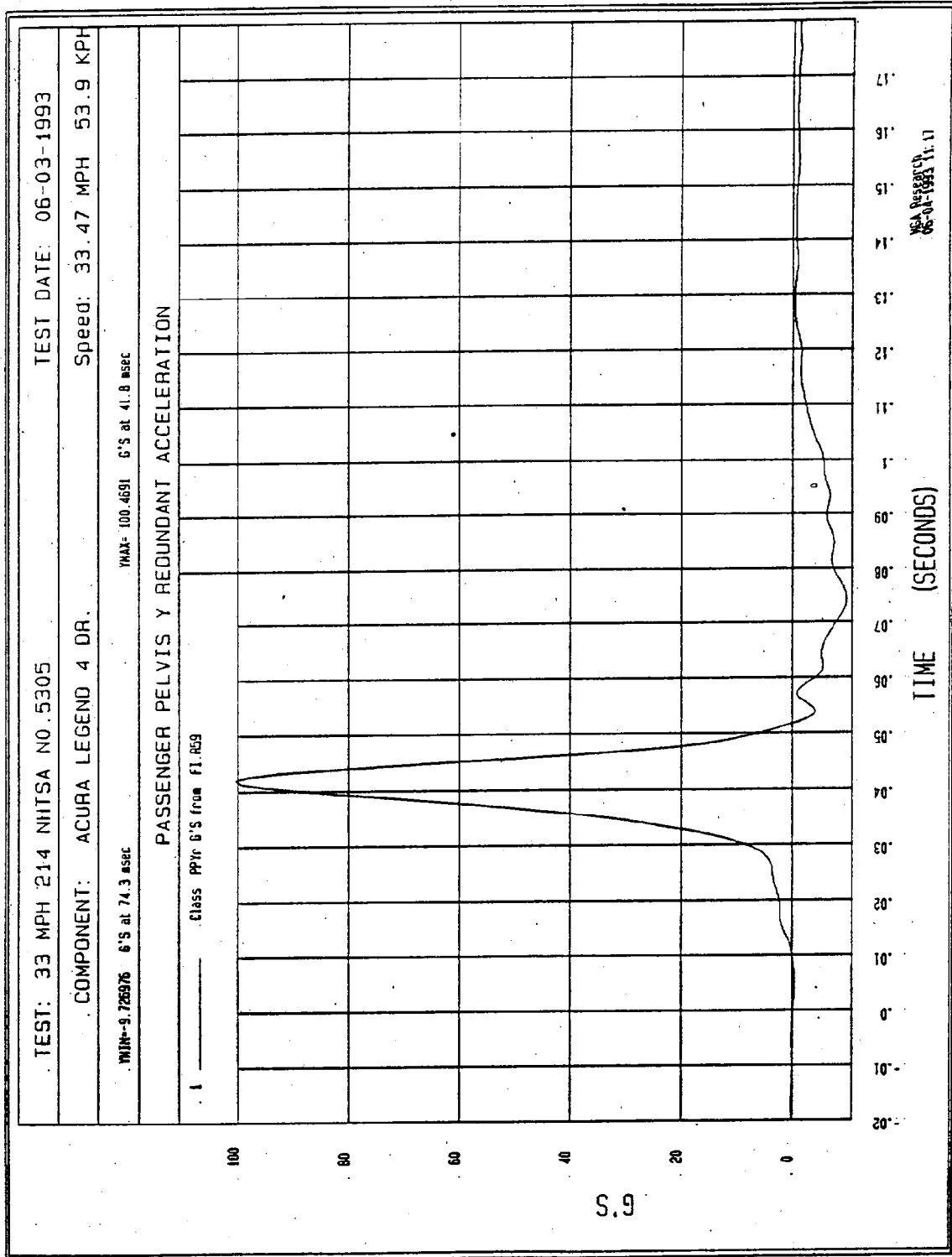
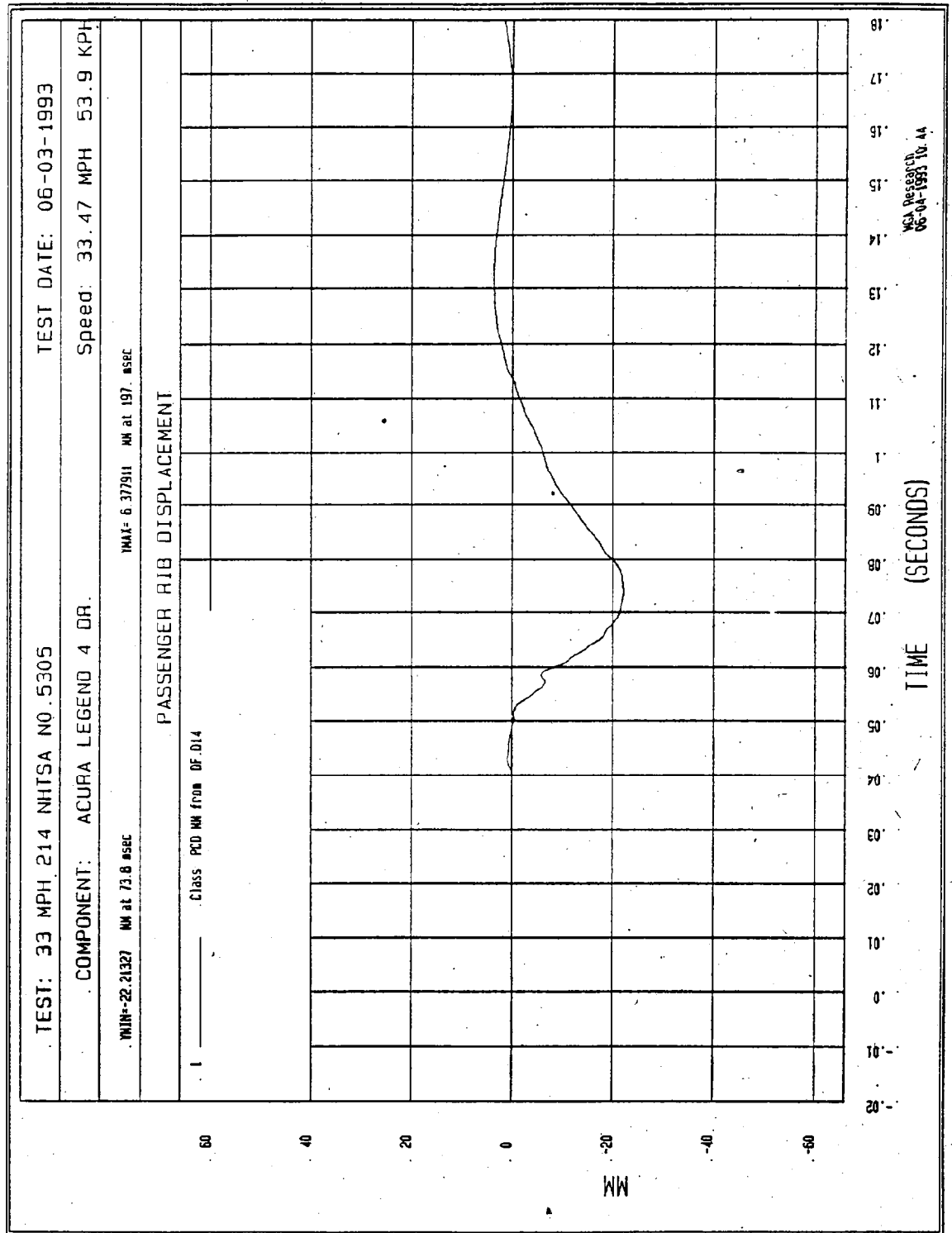


Figure B-23 - Passenger Pelvis Y Redundant Acceleration vs. Time



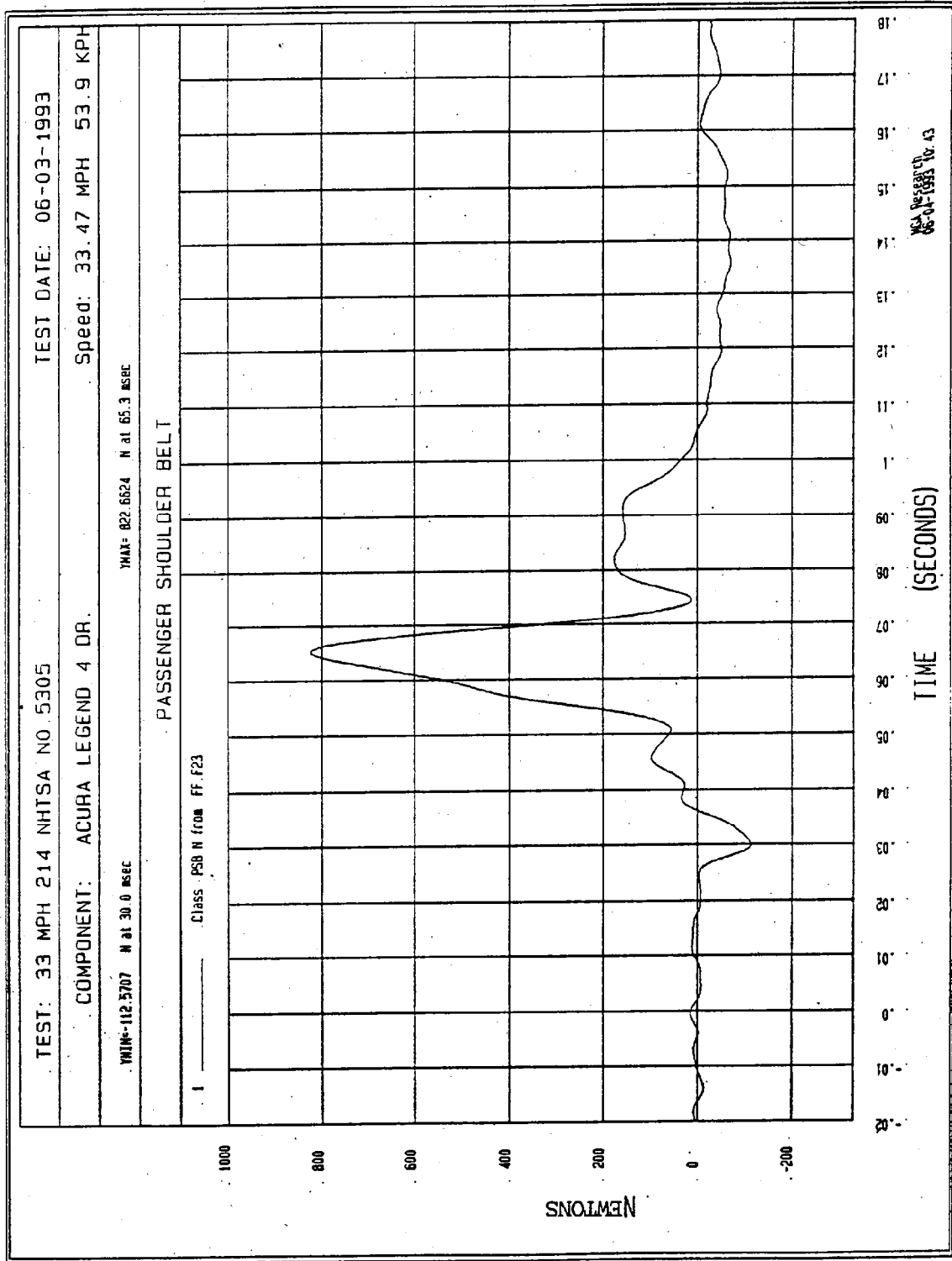
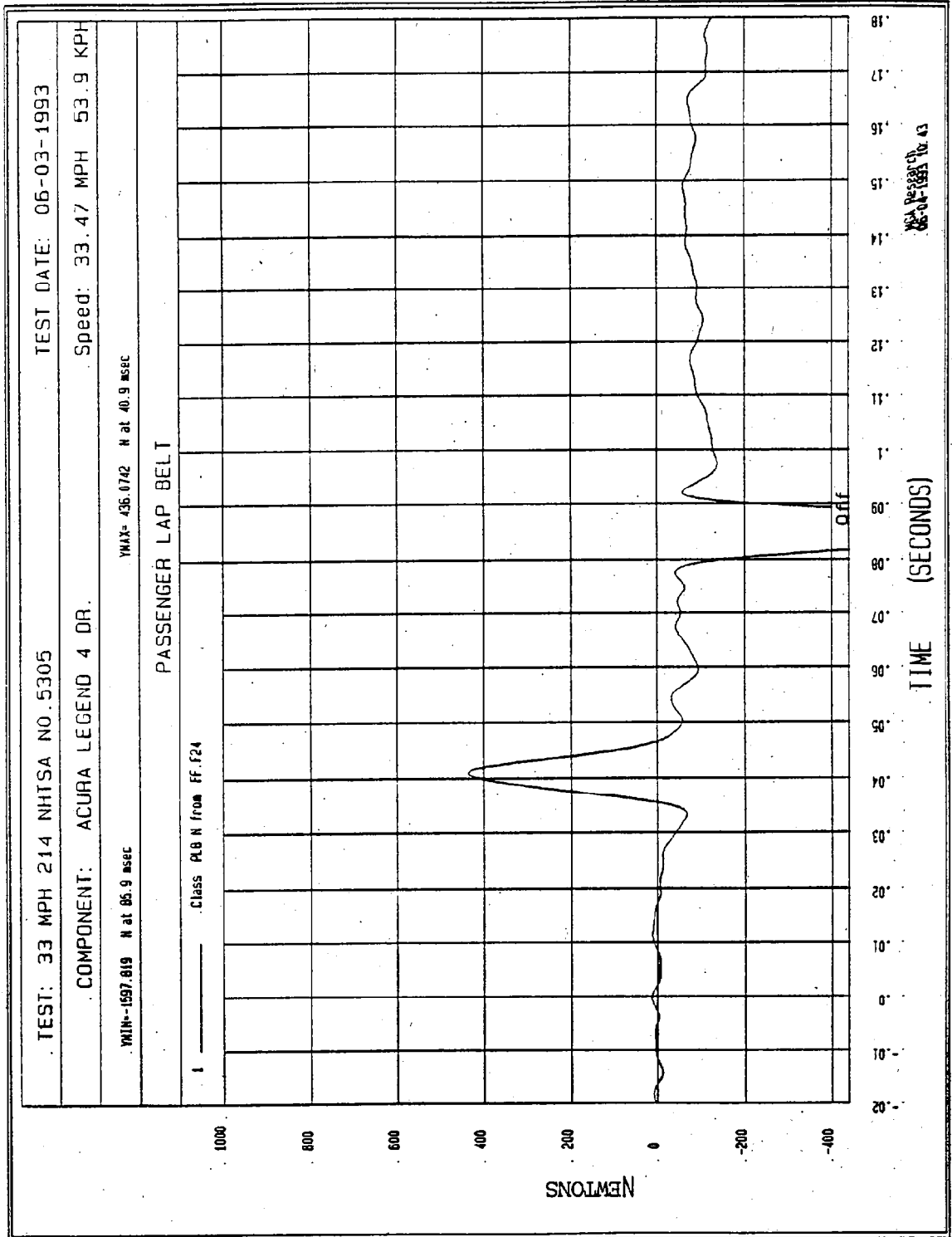


Figure B-25 - Passenger Shoulder Belt



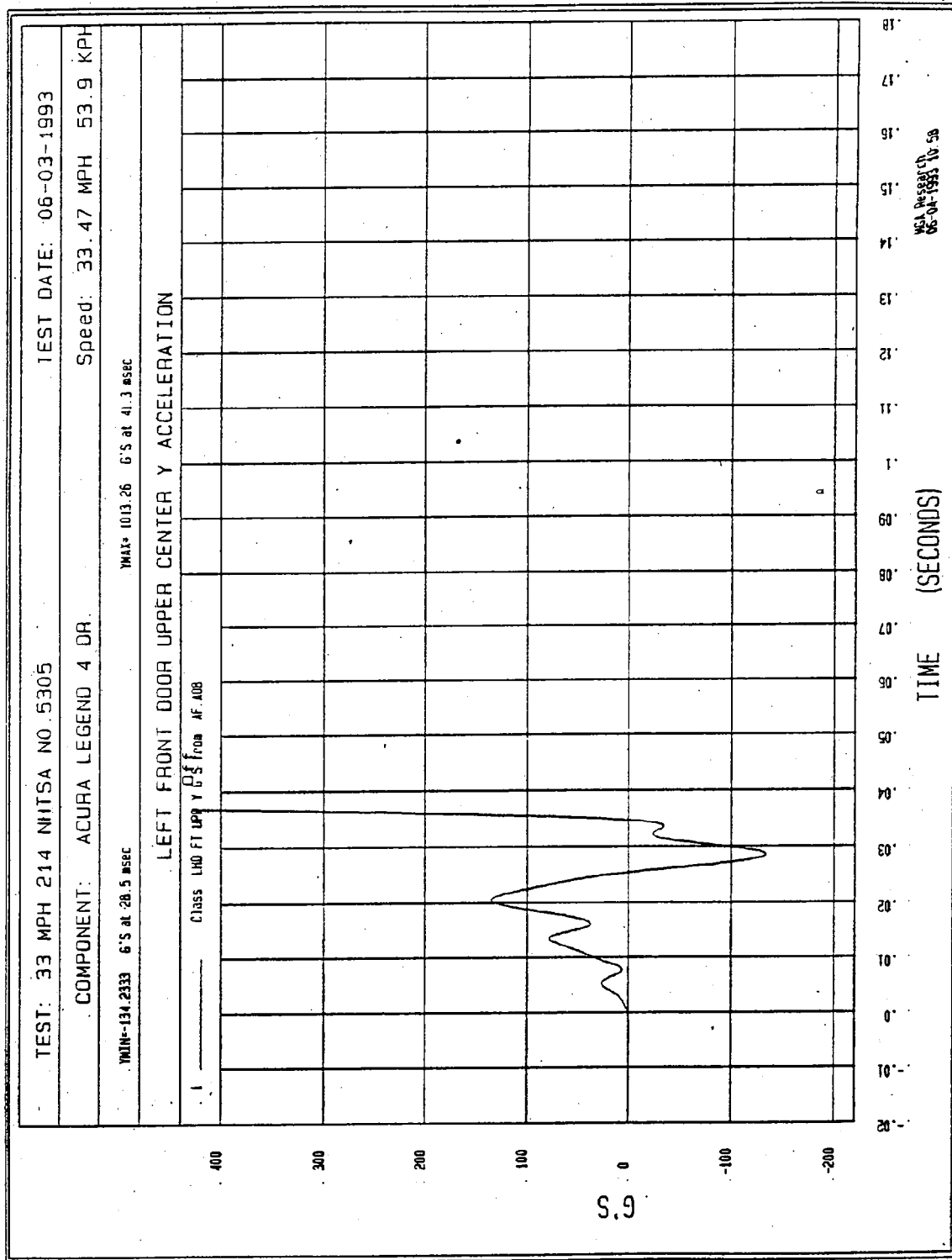


Figure B-27 - Front Door Upper Center Y Acceleration vs. Time
Data is not valid after 35 msec.

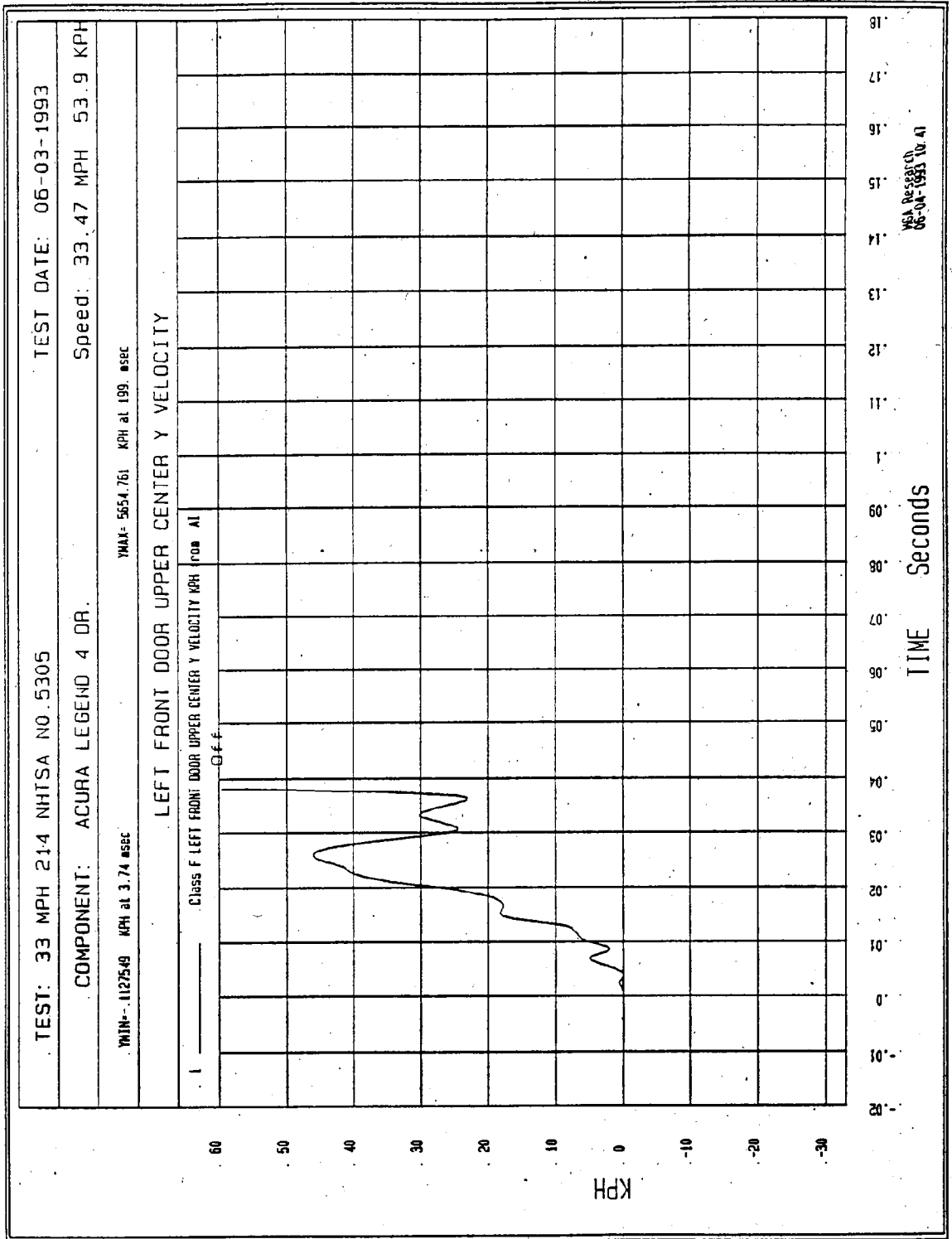


Figure B-28 - Front Door Upper Center Y Velocity vs. Time

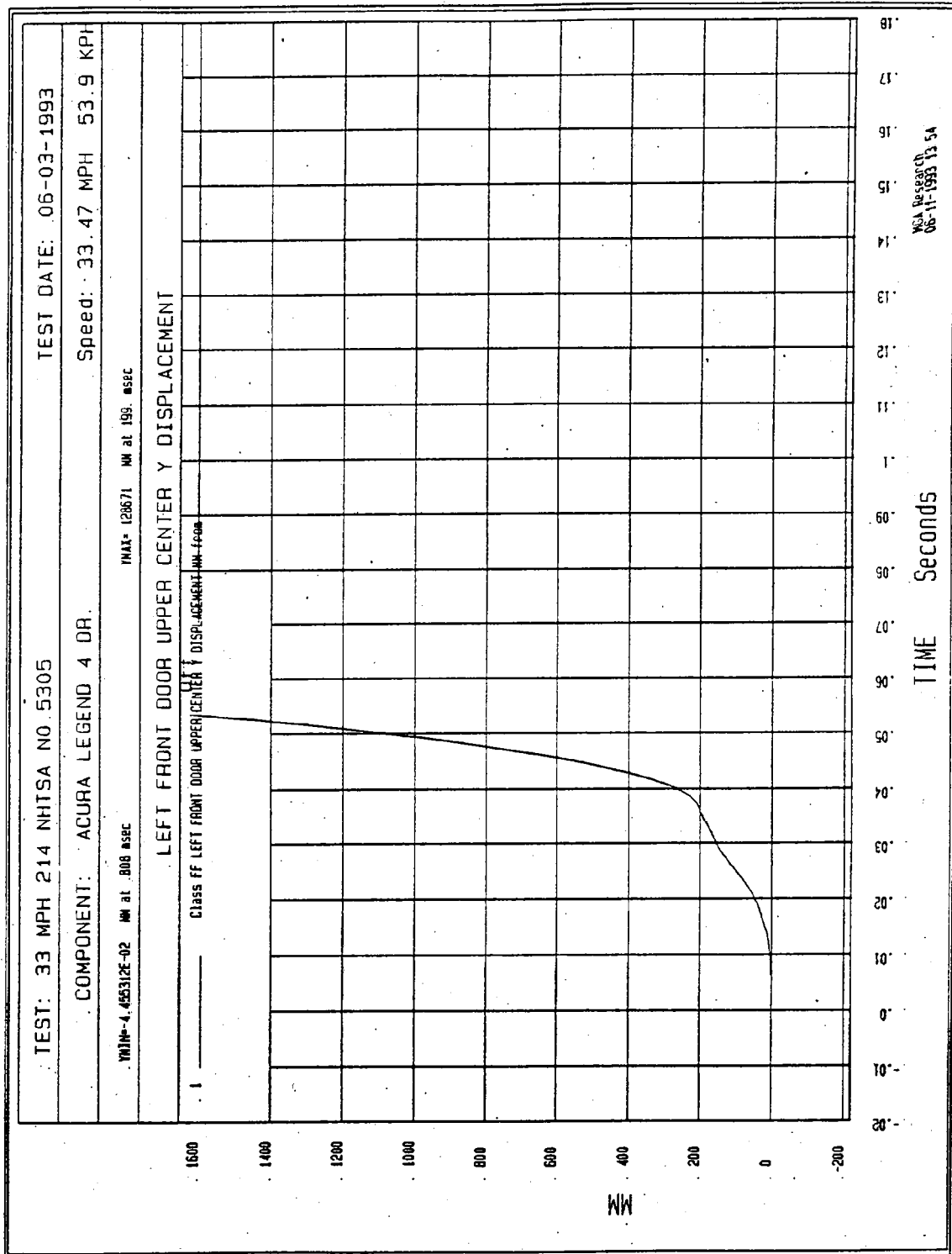
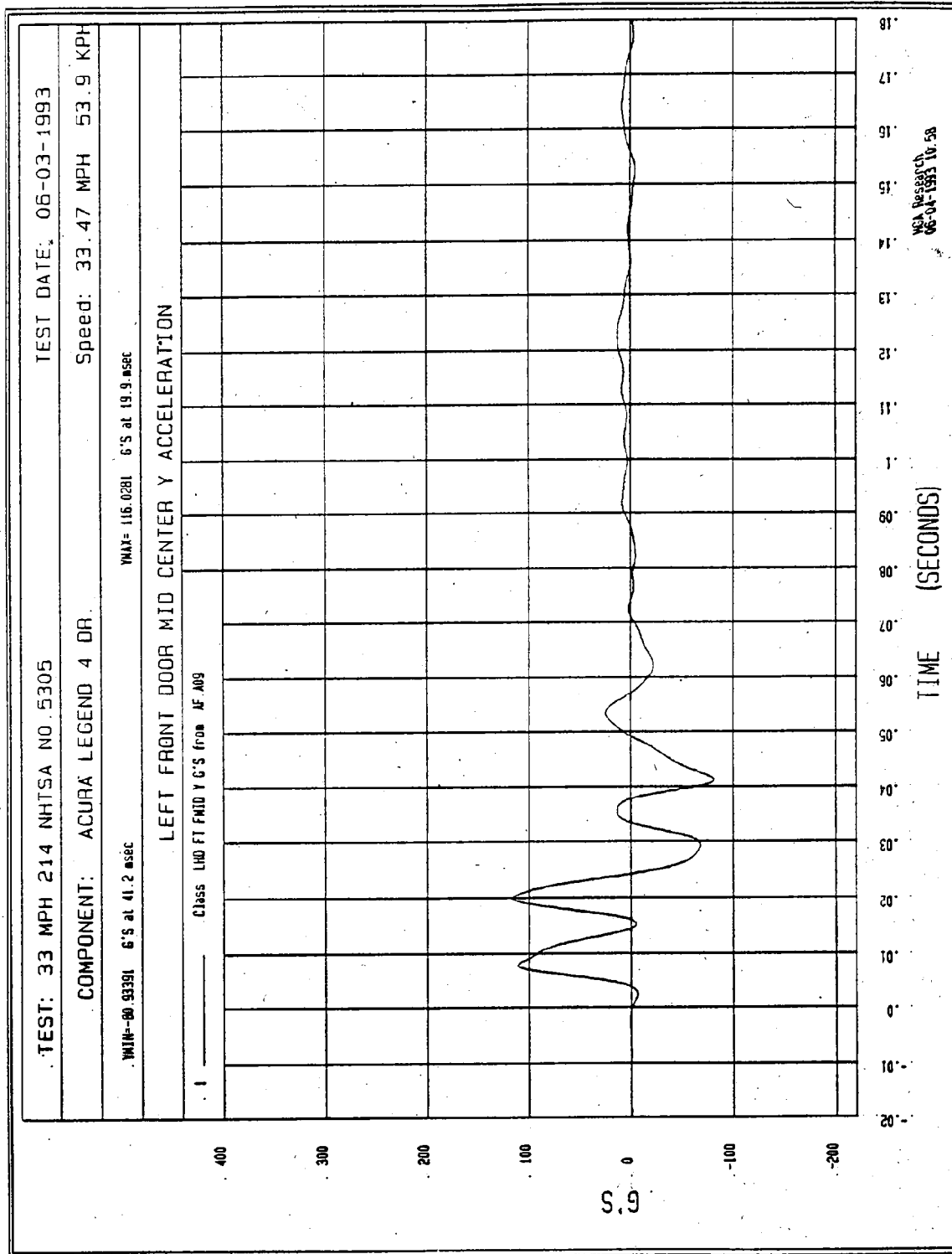


Figure B-29 - Front Door Upper Center Y Displacement vs. Time
Data is not valid after 36 msec.



B-30

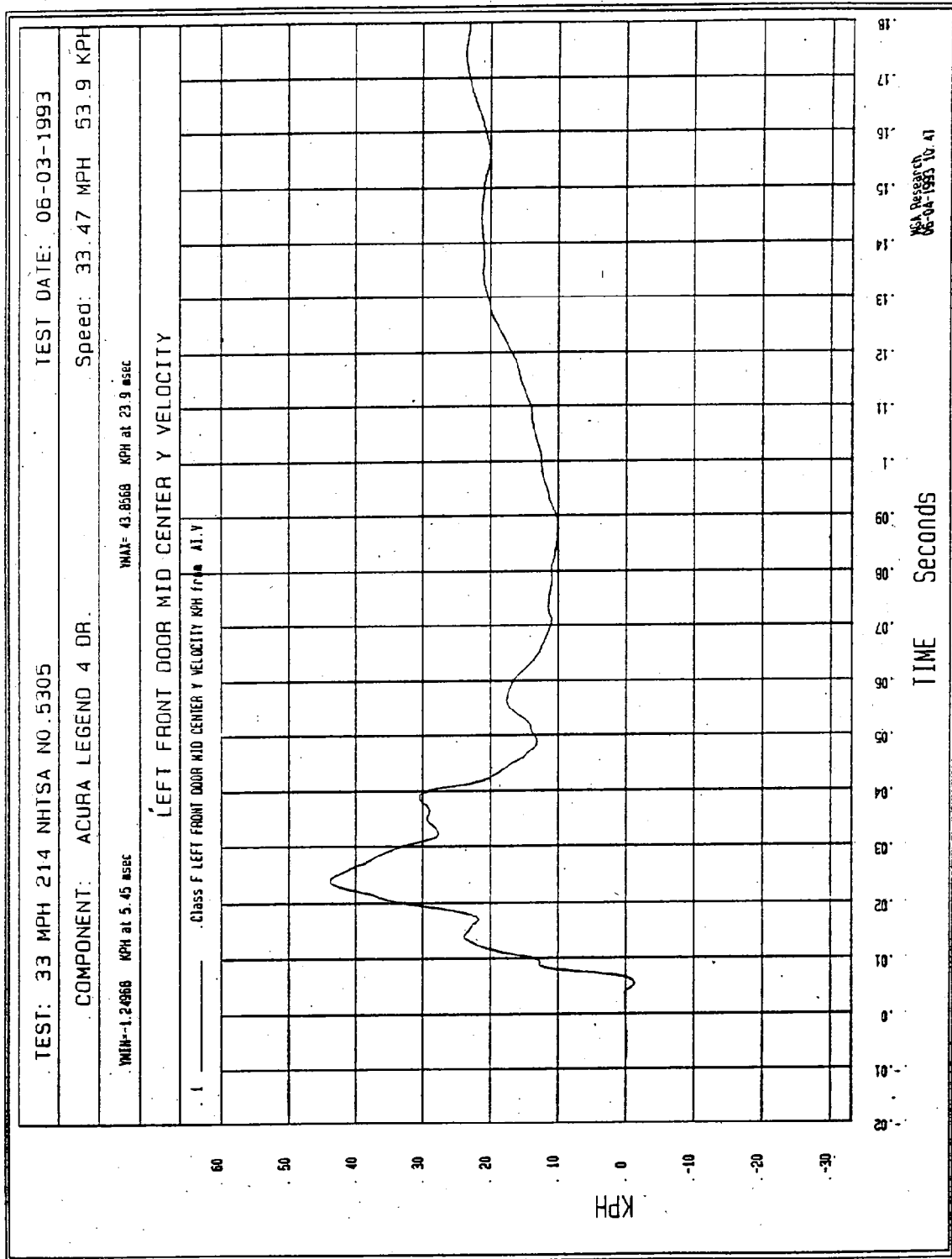
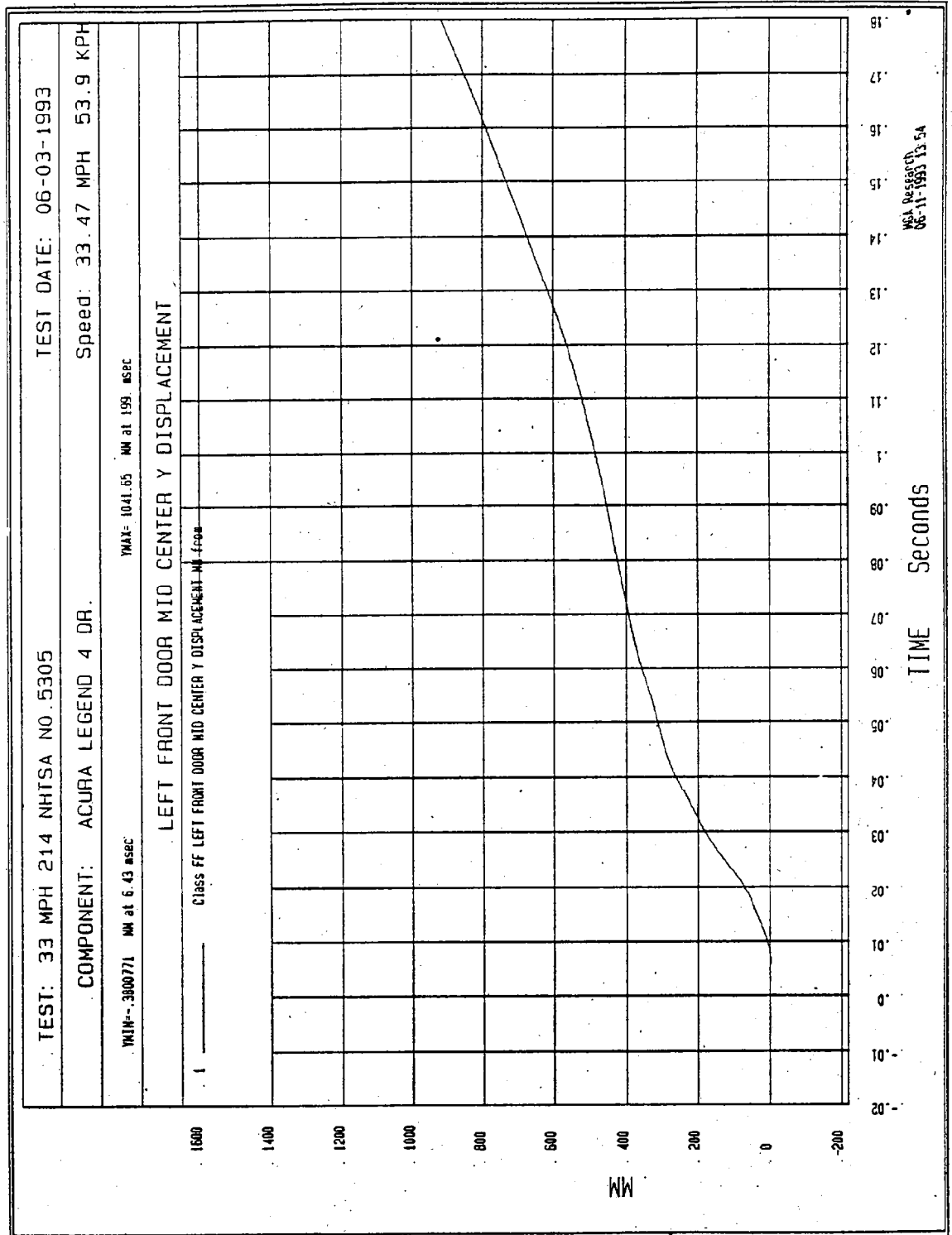


Figure B-31 - Front Door Mid Center Y Velocity vs. Time



B-32

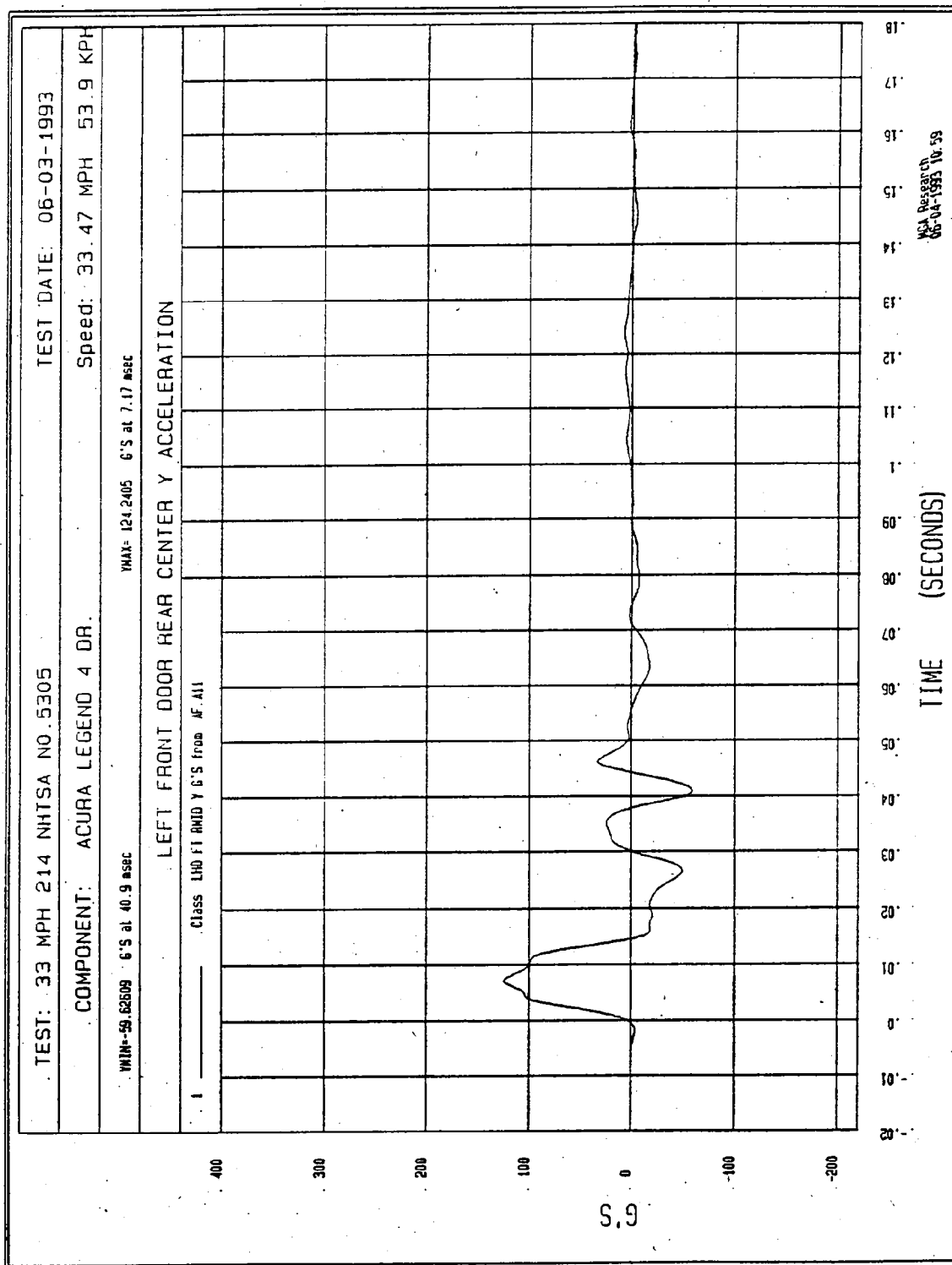
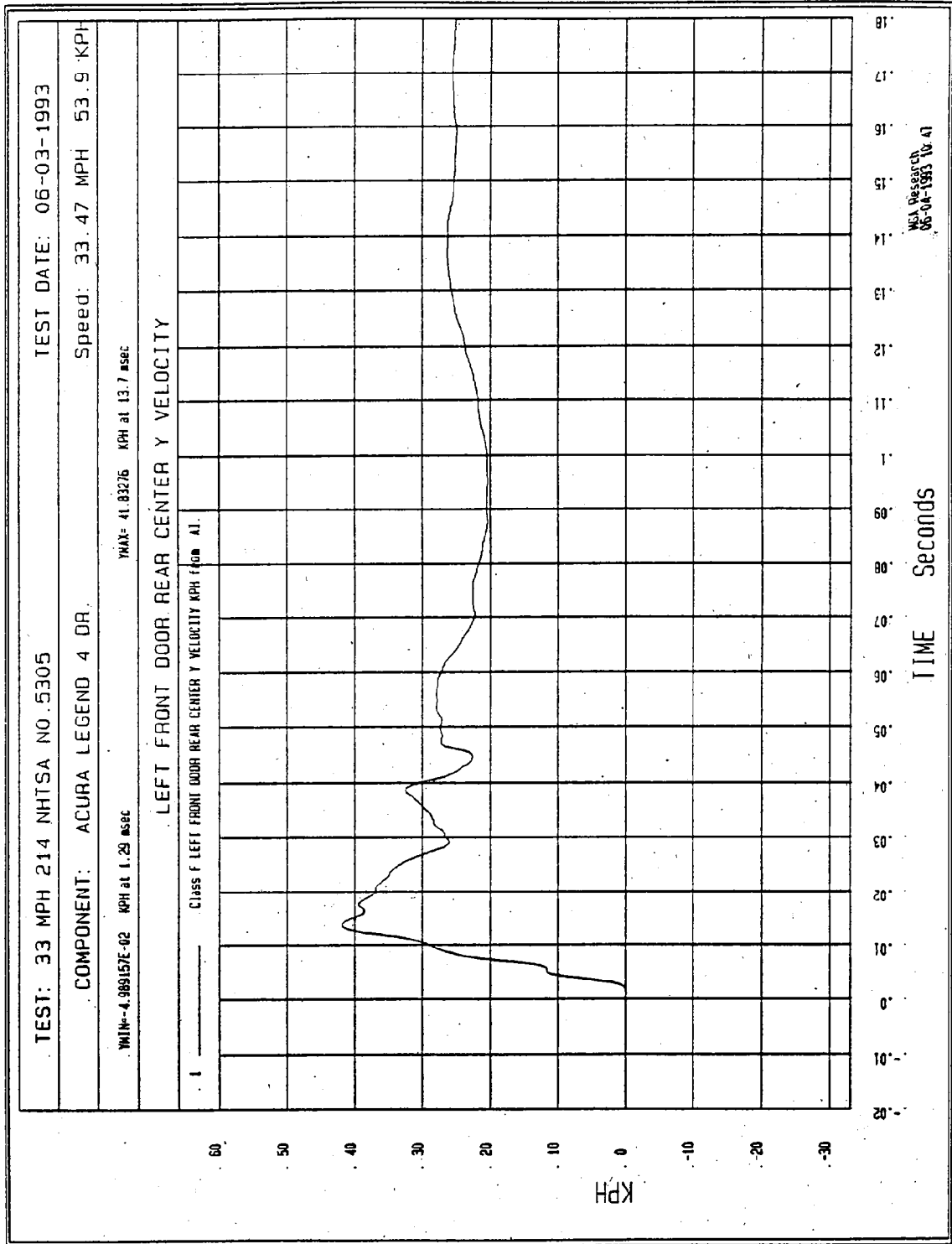
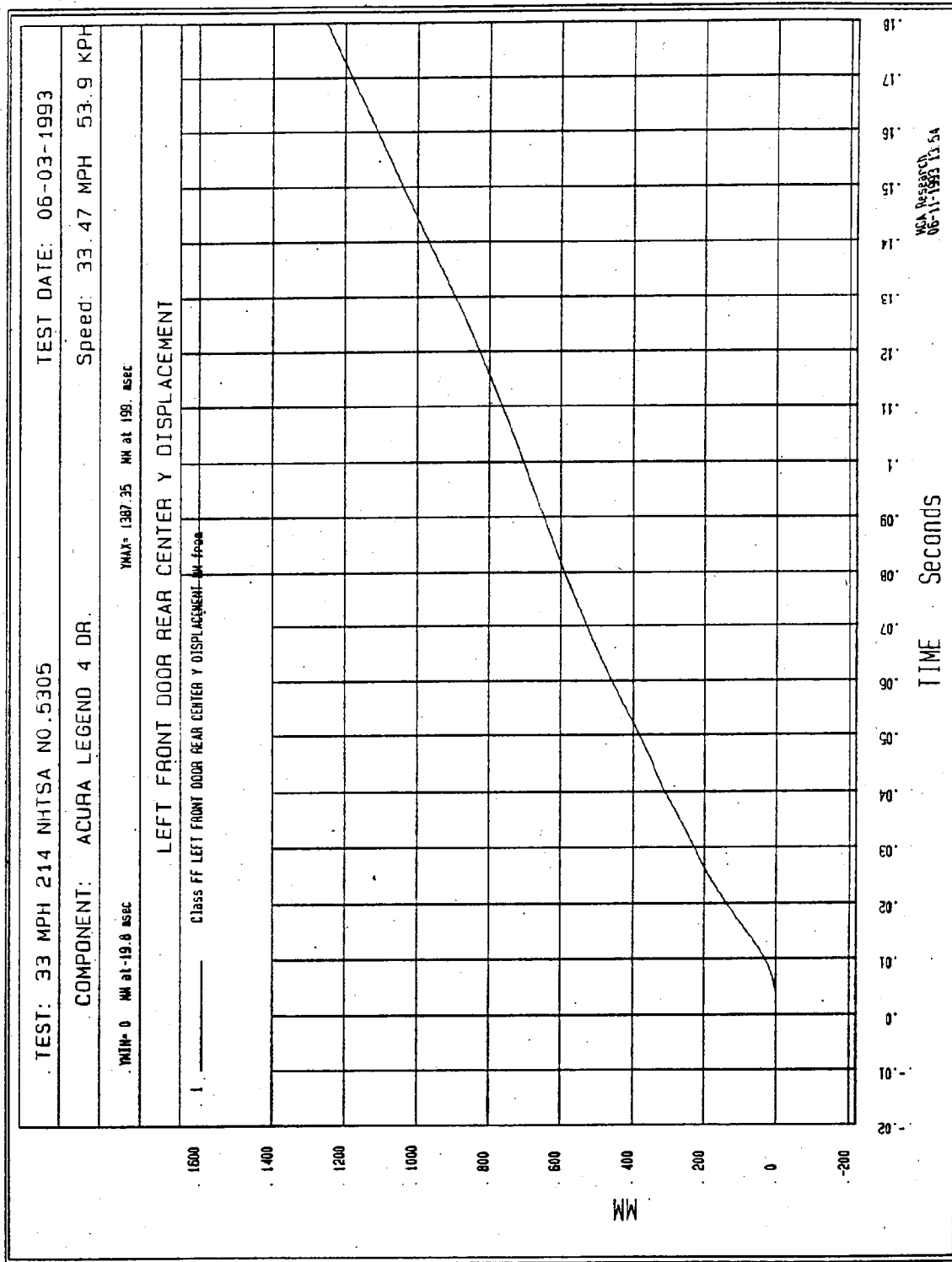


Figure B-33 - Front Door Rear Center Y Acceleration vs. Time



B-34



B-35

Figure B-35 - Front Door Rear Center Y Displacement vs. Time

TEST: 33 MPH 214 NHTSA NO. 5305

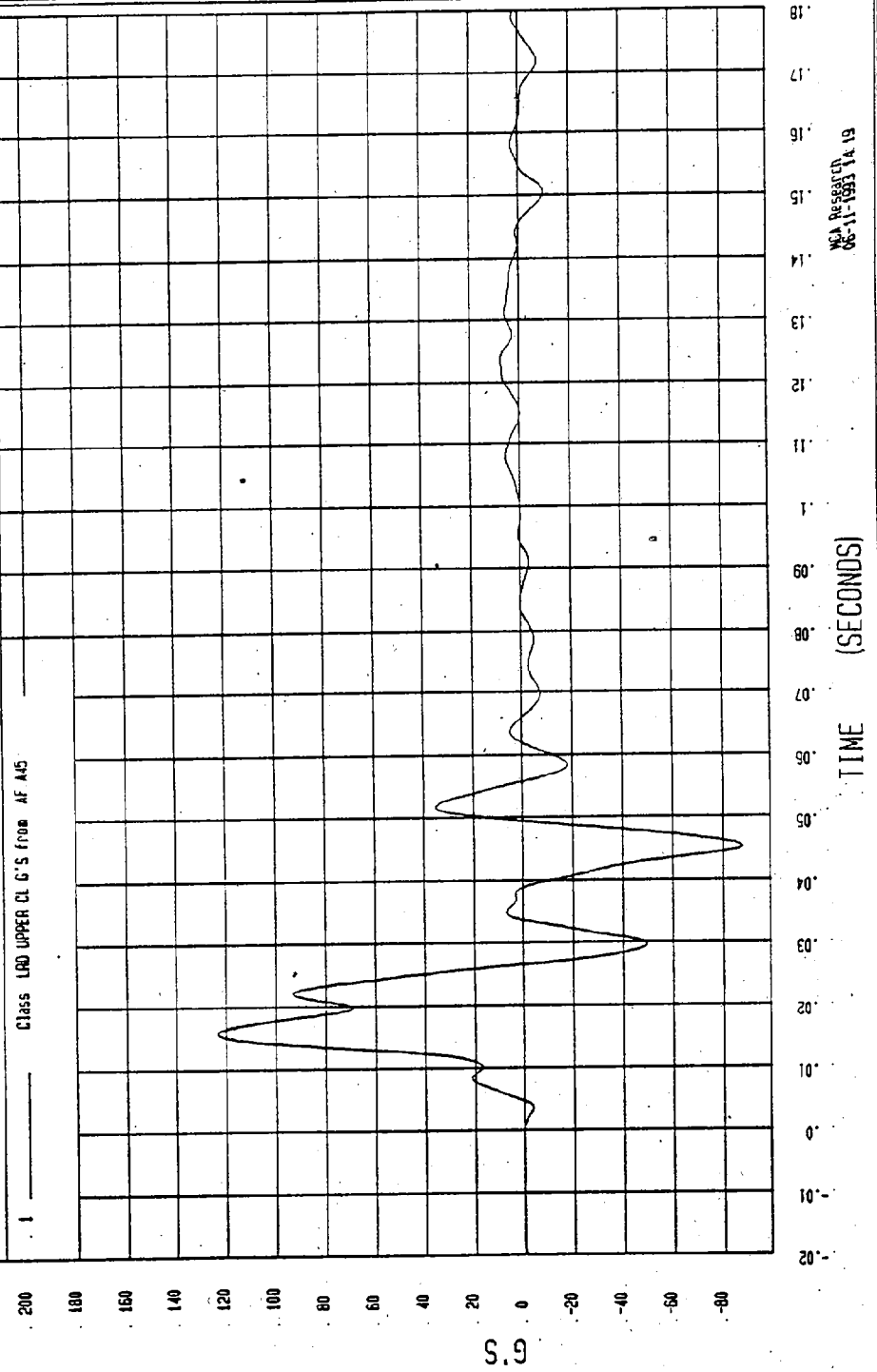
Speed: 33.47 MPH 53.9 KPH

COMPONENT: ACURA LEGEND 4 DR.

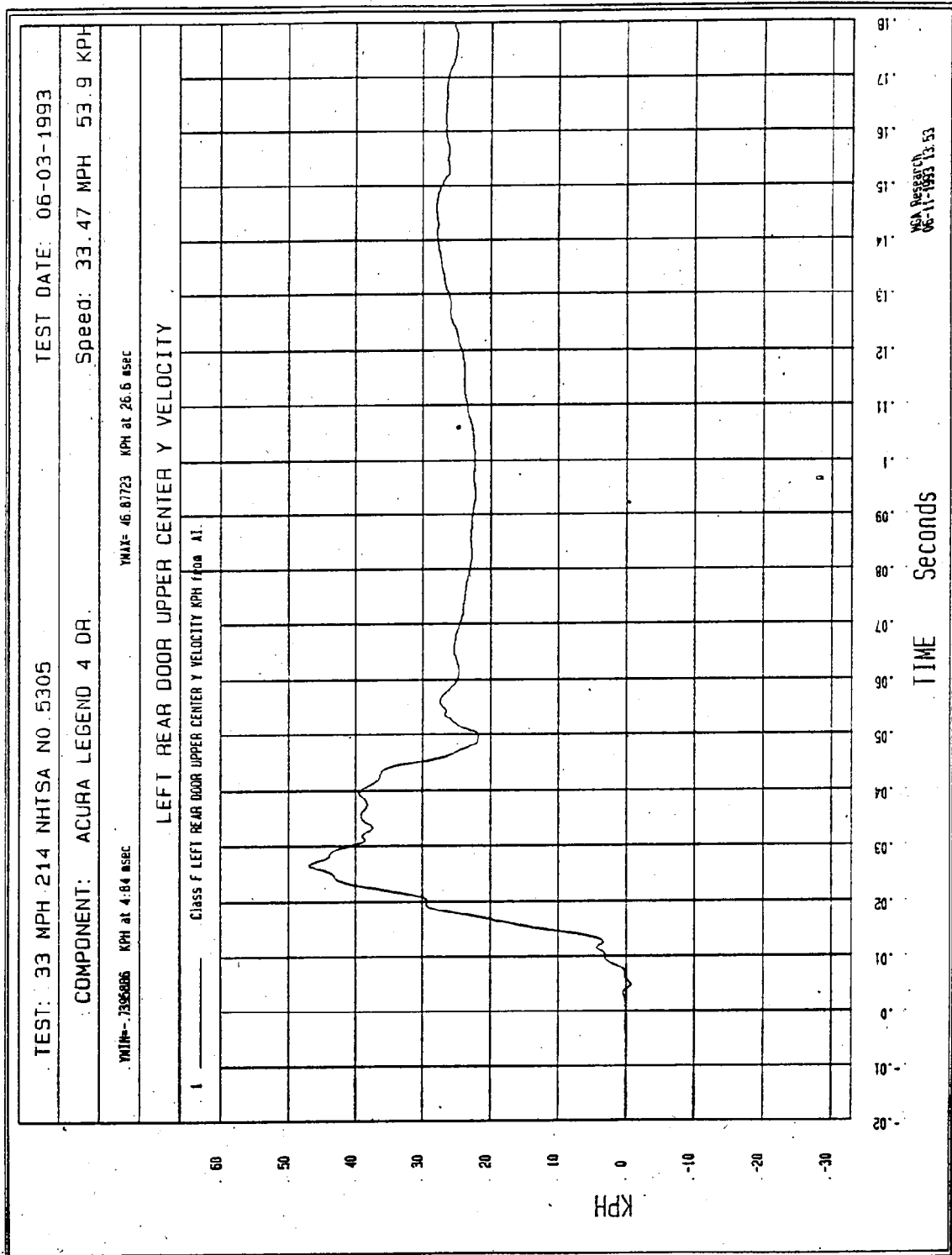
YNAX= 123.3637 G'S at 15.7 msec

YMIN=-87.48962 6'S at 45.2 msec

LEFT REAR DOOR UPPER CENTER Y ACCELERATION



WCA Research
06-11-1993 14:19



B-37

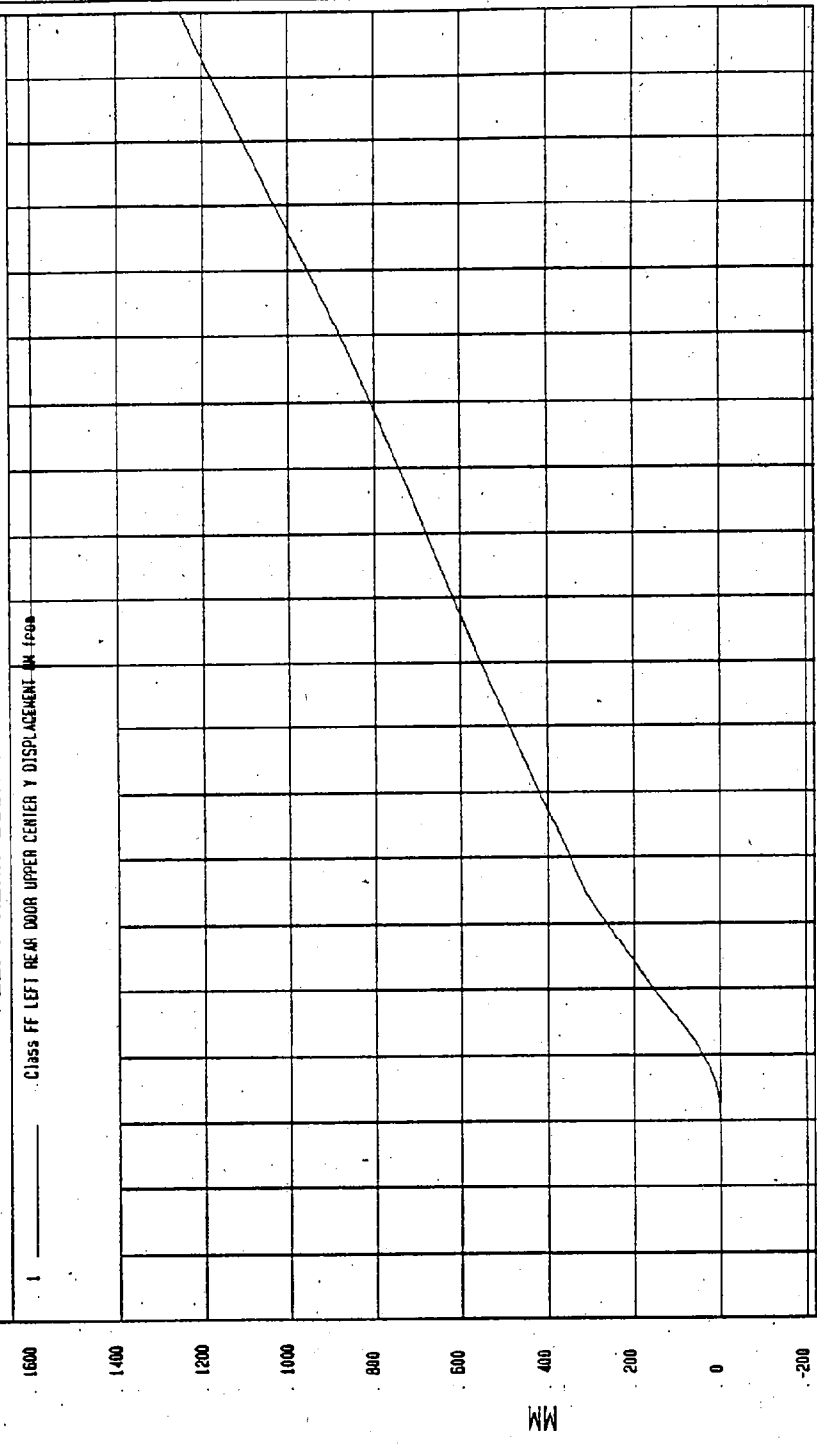
Figure B-37 - Left Rear Door Upper Center Y Velocity vs. Time

TEST: 33 MPH 214 NHTSA NO.5305 TEST DATE: 06-03-1993

COMPONENT: ACURA LEGEND 4 DR. Speed: 33.47 MPH 53.9 KPH

YMIN=-1.584716E-03 MM at -18.2 msec YMAX= 1389.363 MM at 199. msec

LEFT REAR DOOR UPPER CENTER Y DISPLACEMENT



1 ——— Class FF LEFT REAR DOOR UPPER CENTER Y DISPLACEMENT MM fpos

TIME Seconds

MSA Research
06-11-1993 13 54

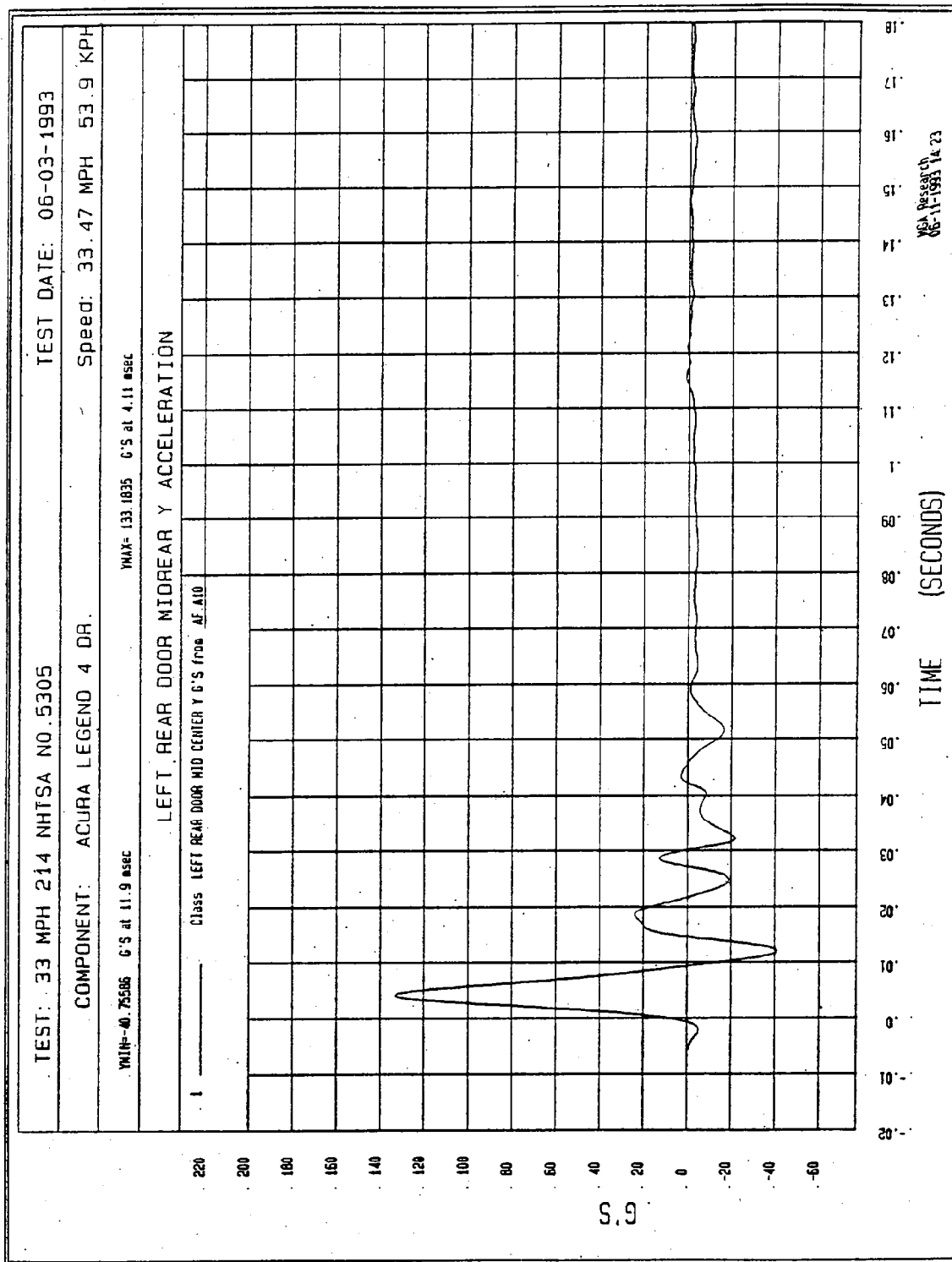


Figure B-39 - Left Rear Door Mid Center Y Acceleration vs. Time

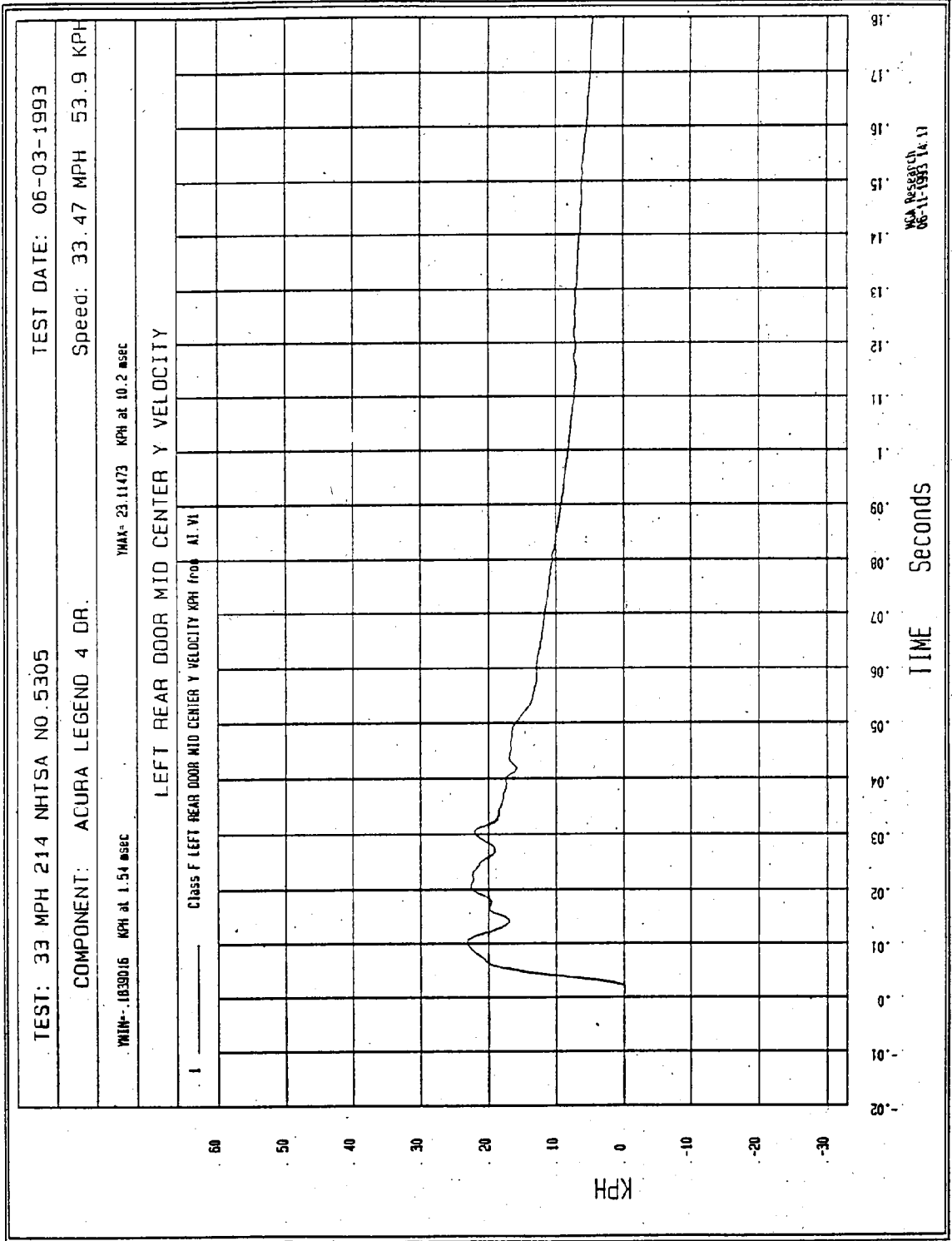
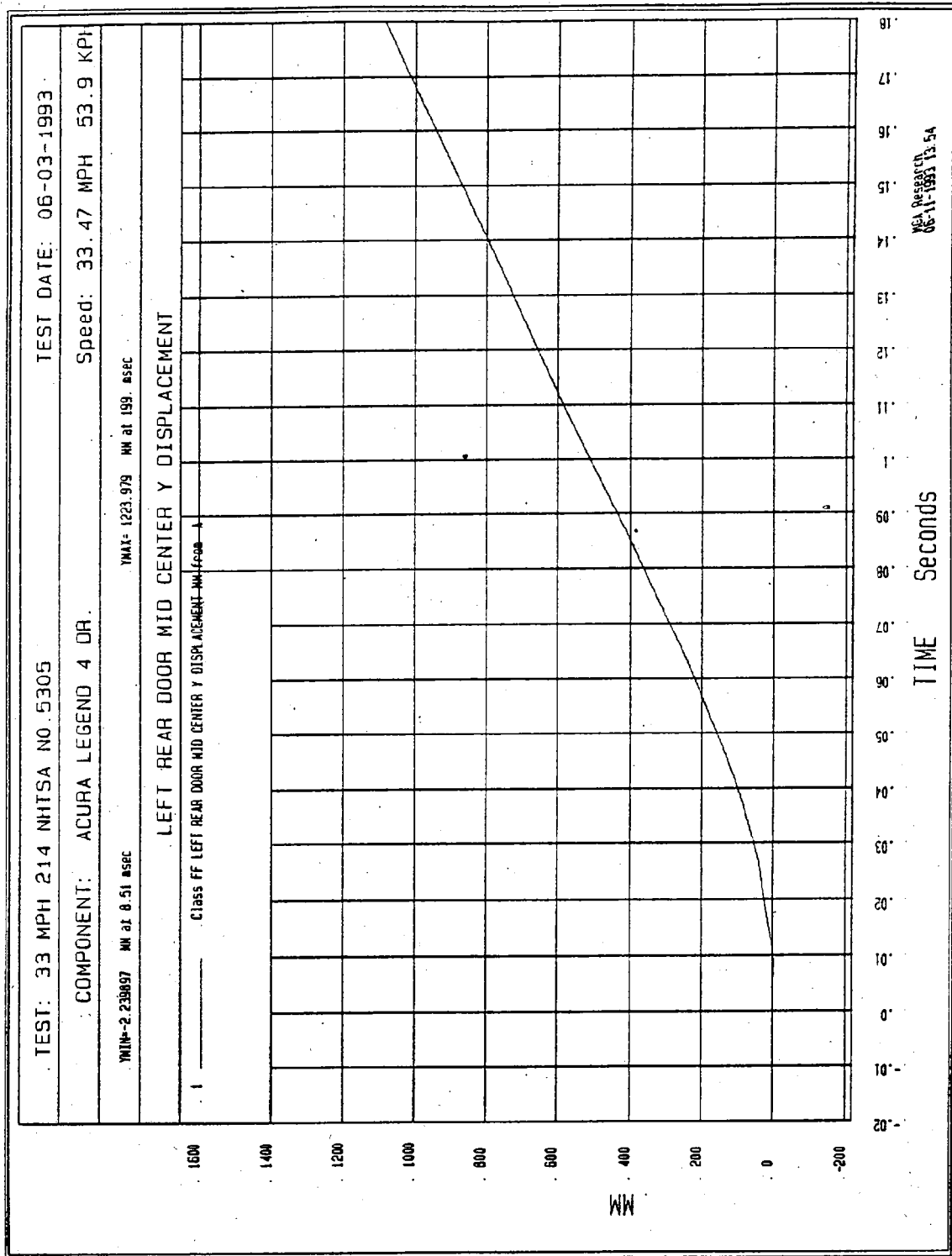
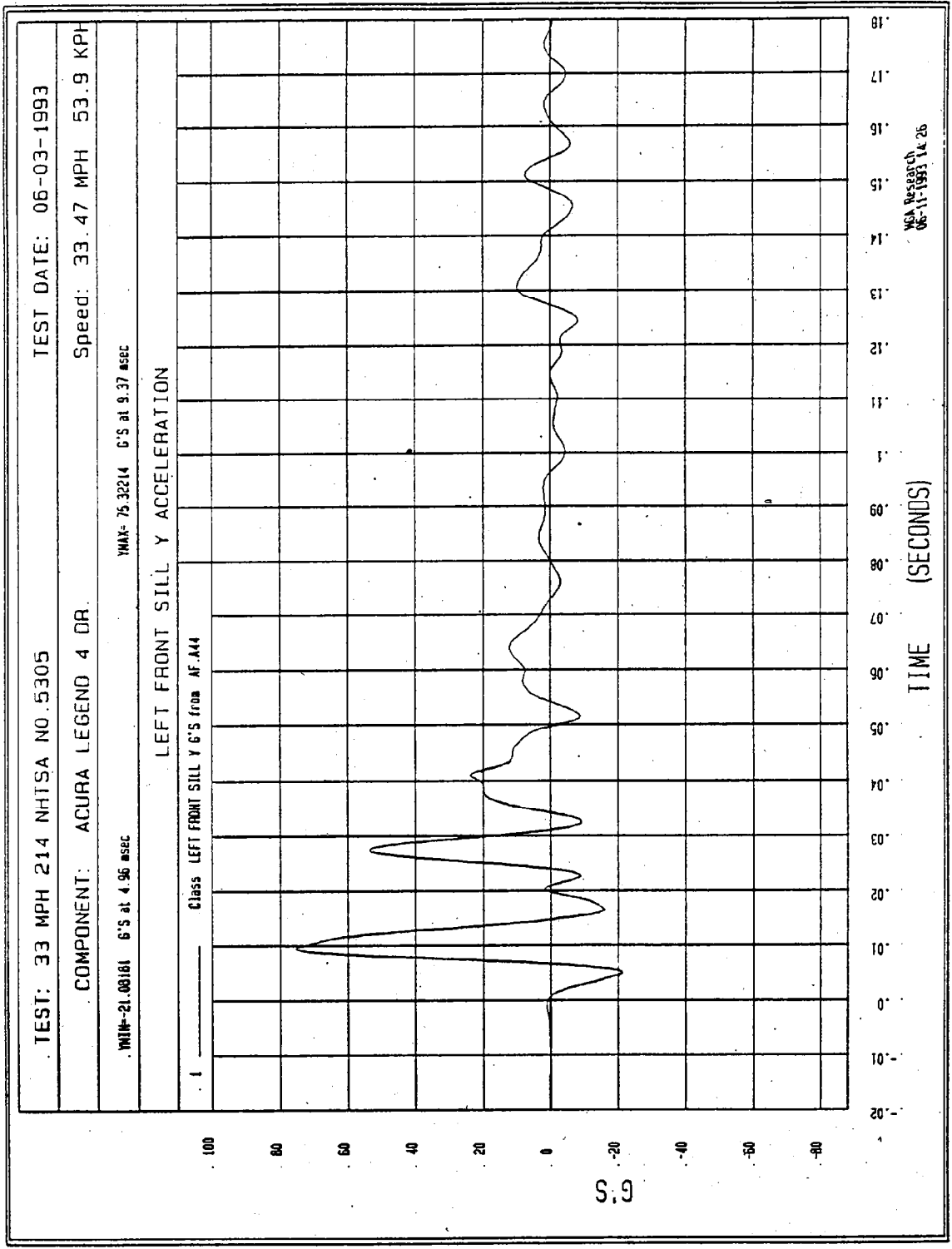


Figure B-40 - Left Rear Door Mid Center Y Velocity vs Time



B-41

Figure B-41 - Left Rear Door Mid Center Y Displacement vs. Time



B-42

Figure B-42 - Left Front Sill Y Acceleration vs Time

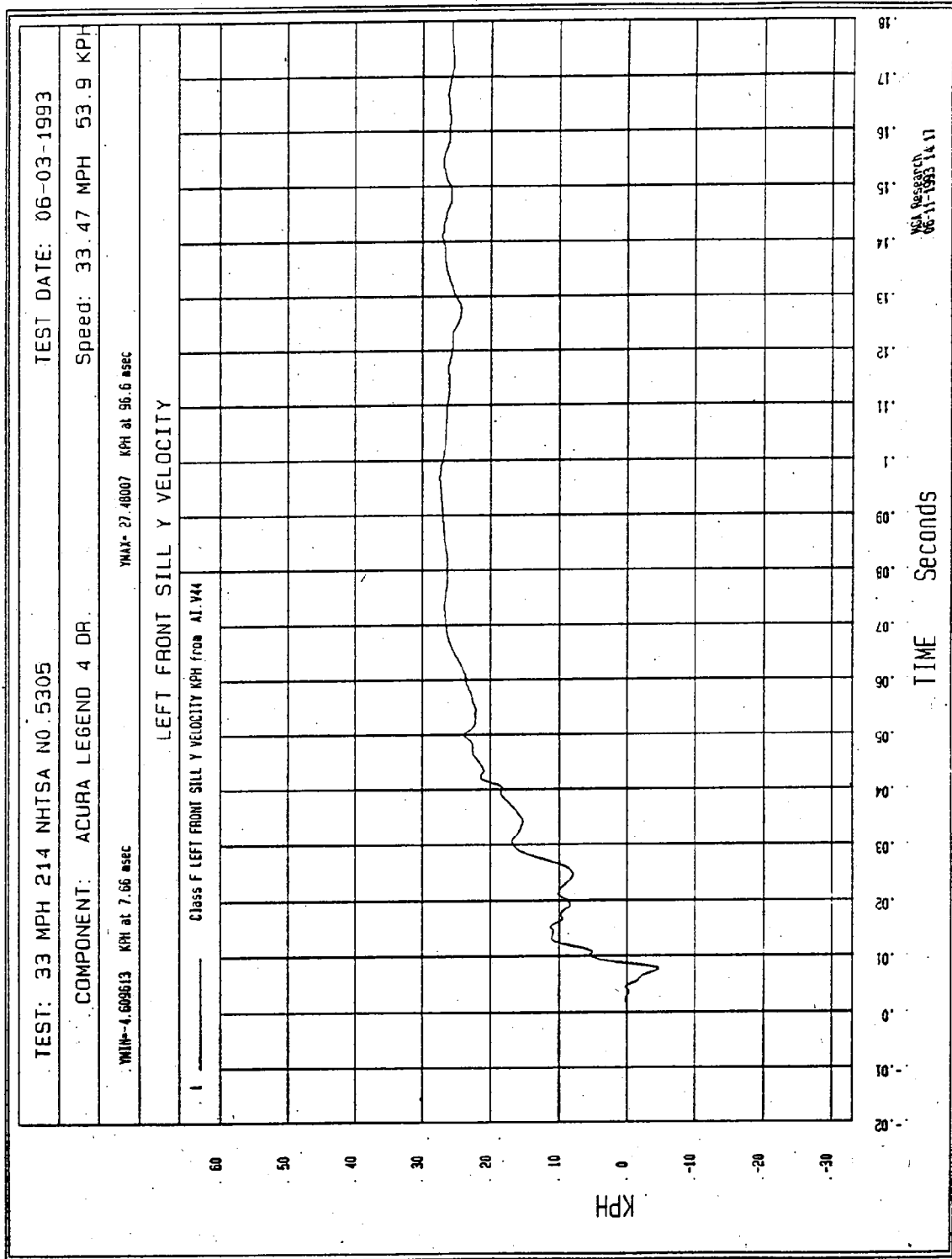
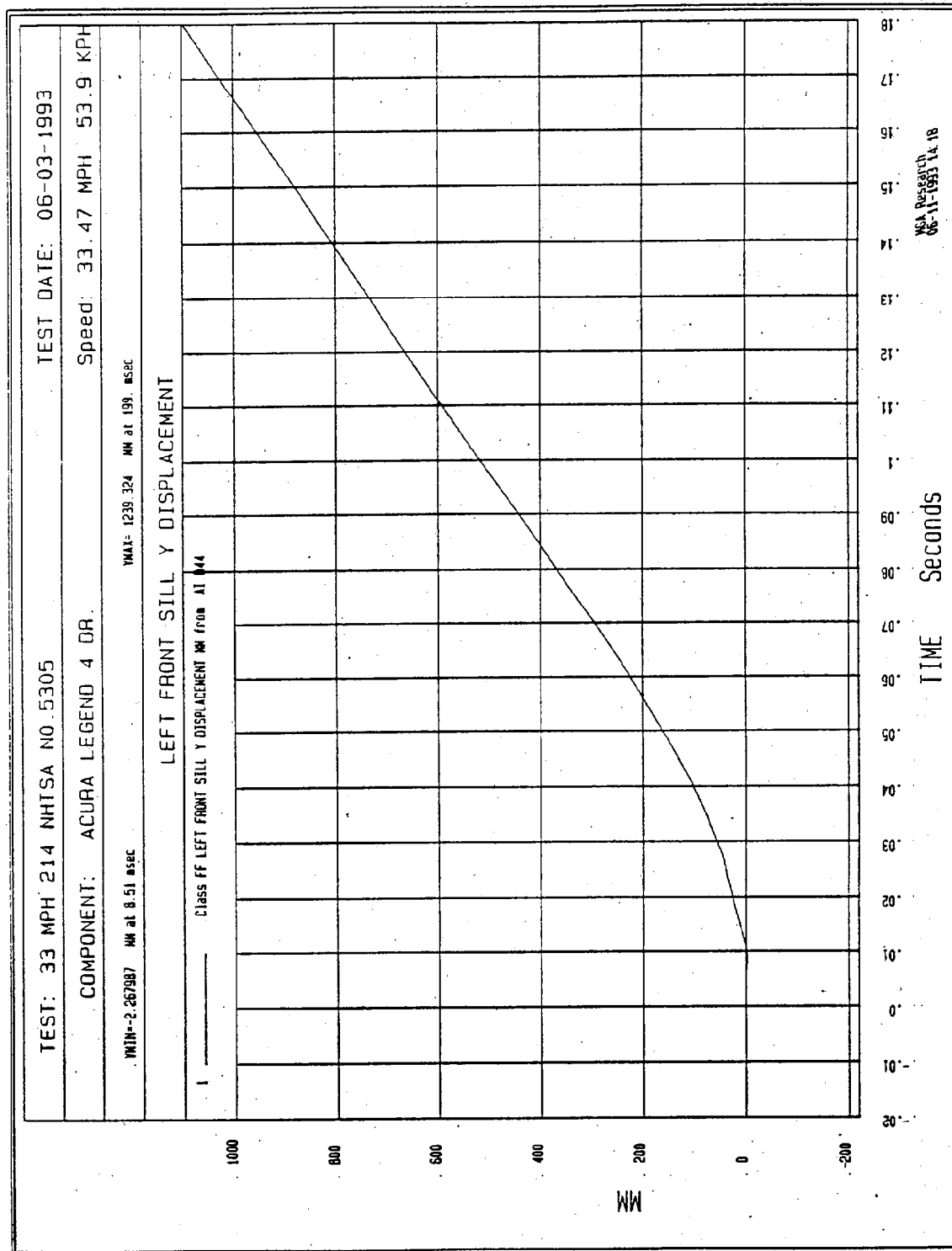


Figure B-43 - Left Front Sill Y Velocity vs. Time



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06-11-1993 14.18

Figure B-44 - Left Front Sill Y Displacement vs. Time

B-44

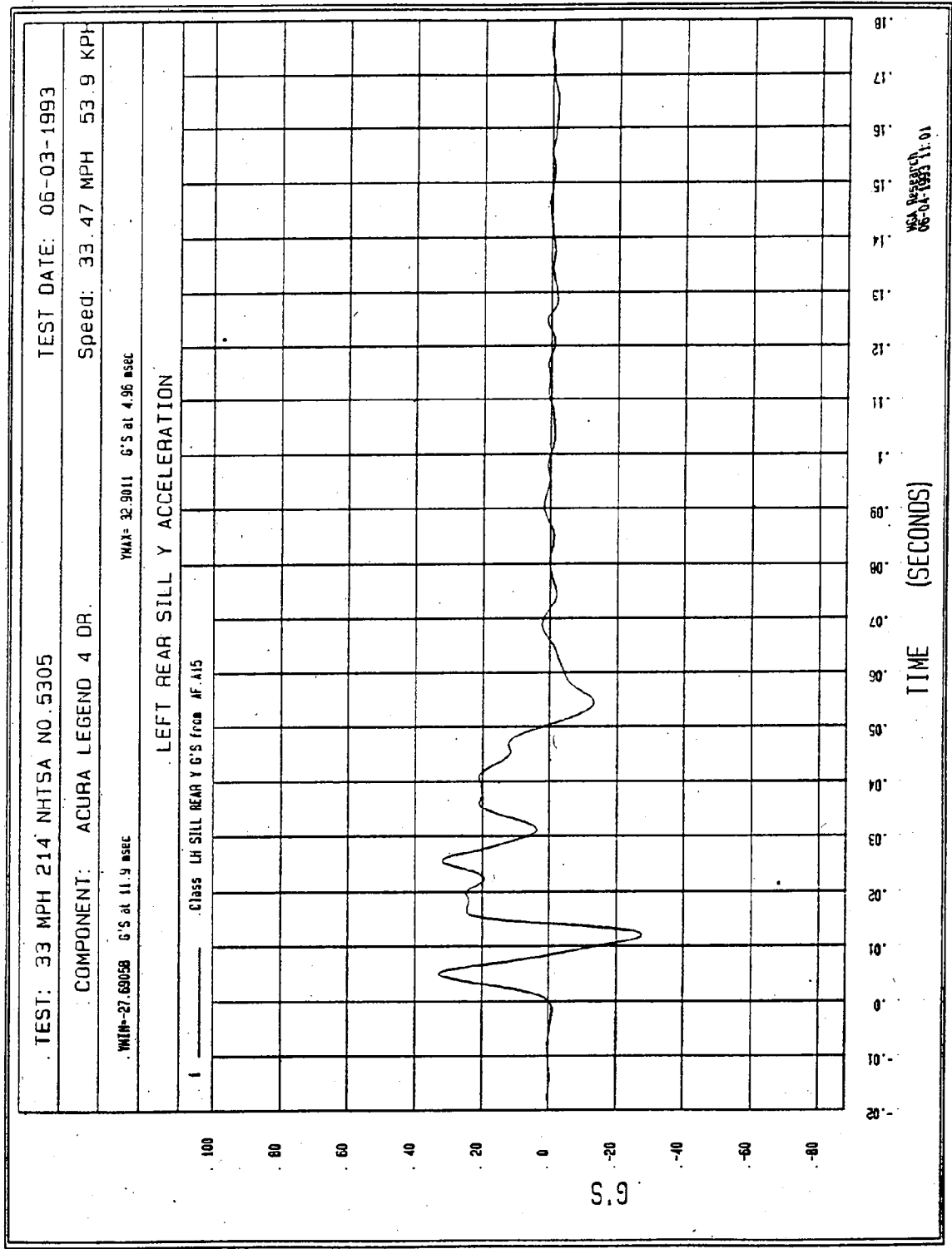
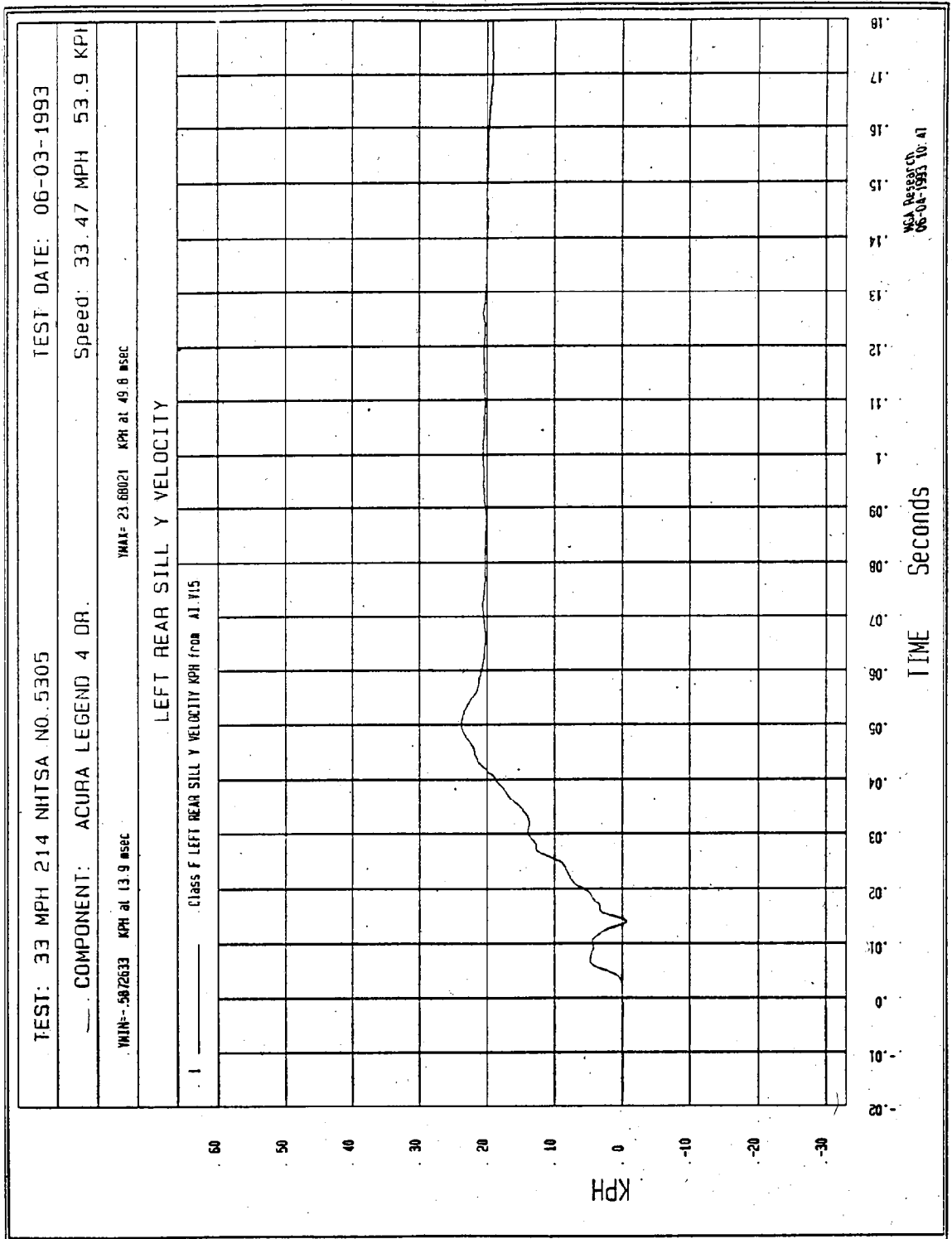


Figure B-45 - Left Rear Sill Y Acceleration vs. Time



B-46

Figure B-46 - Left Rear Sill Y Velocity vs Time

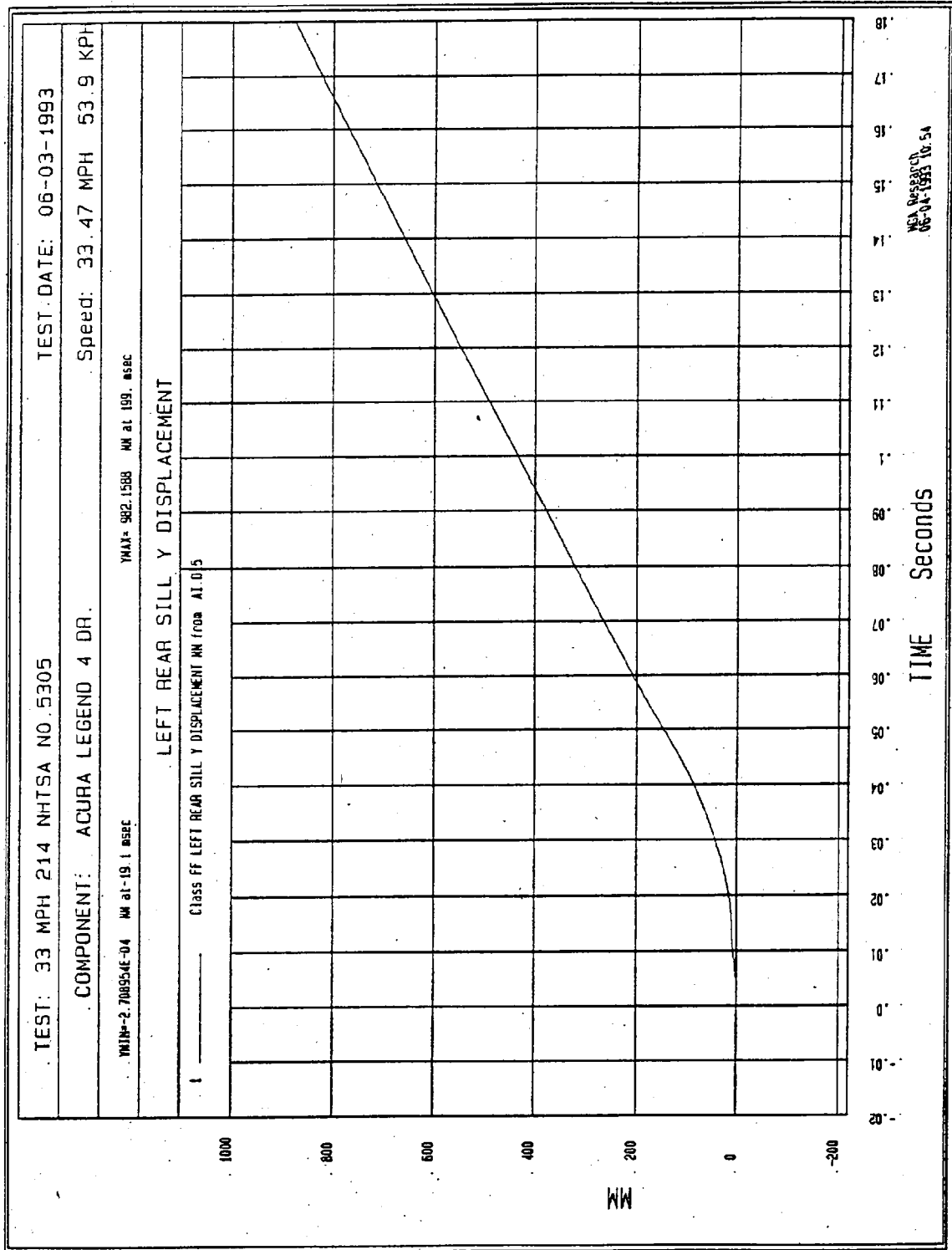
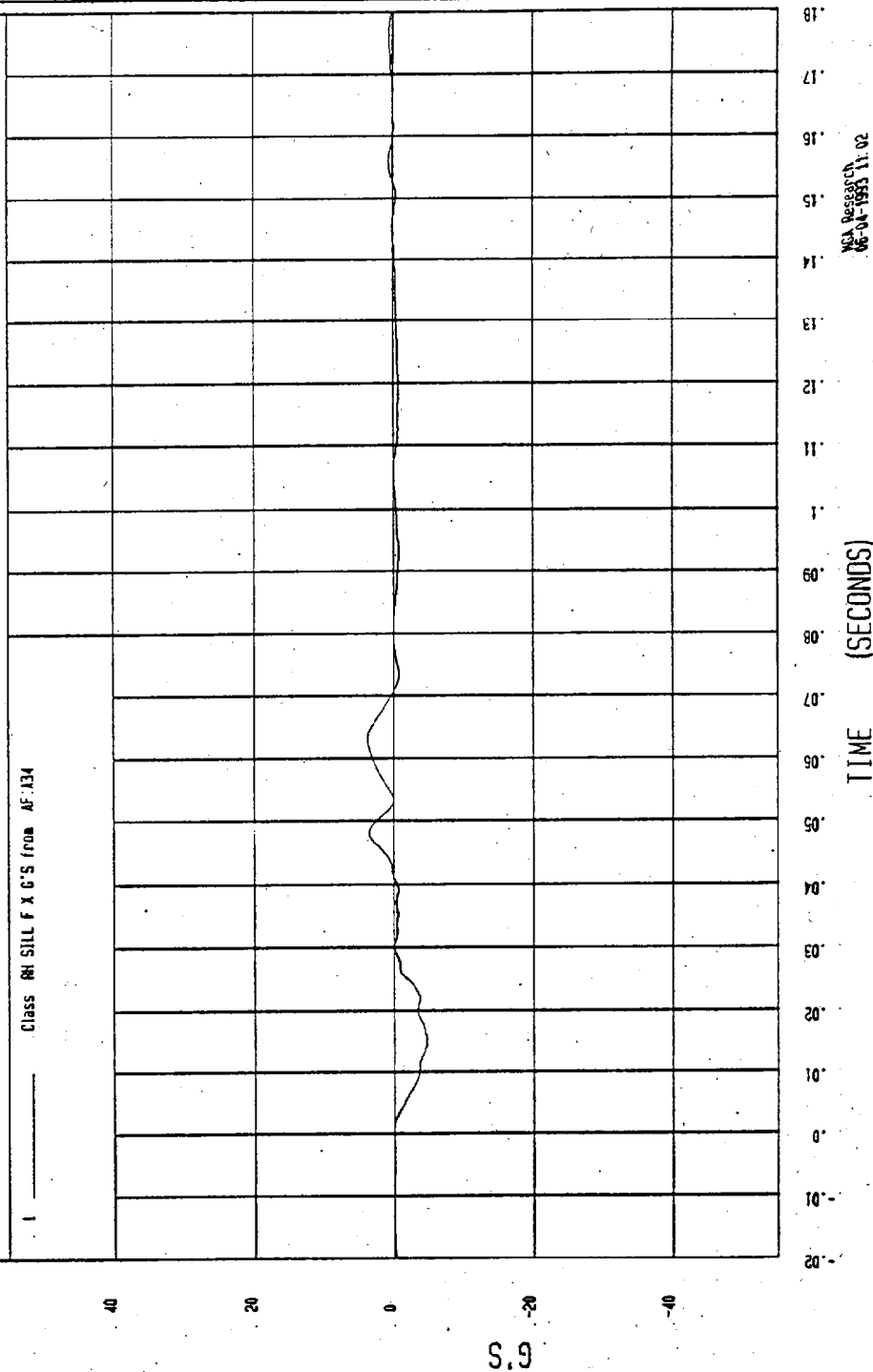


Figure B-47 - Left Rear Sill Y Displacement vs. Time

TEST: 33 MPH 214 NHTSA NO. 5305	TEST DATE: 06-03-1993
COMPONENT: ACURA LEGEND 4 DR.	Speed: 33.47 MPH 53.9 KPH
YMAX=-4.68759 6'S at 14.8 msec	YMAX= 3.772392 6'S at 63.1 msec

RIGHT FRONT SILL X ACCELERATION

Class RH SILL F X G'S from AF:134



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06-01-1993 11:02

Figure R-48 - Right Front Sill X Acceleration vs. Time

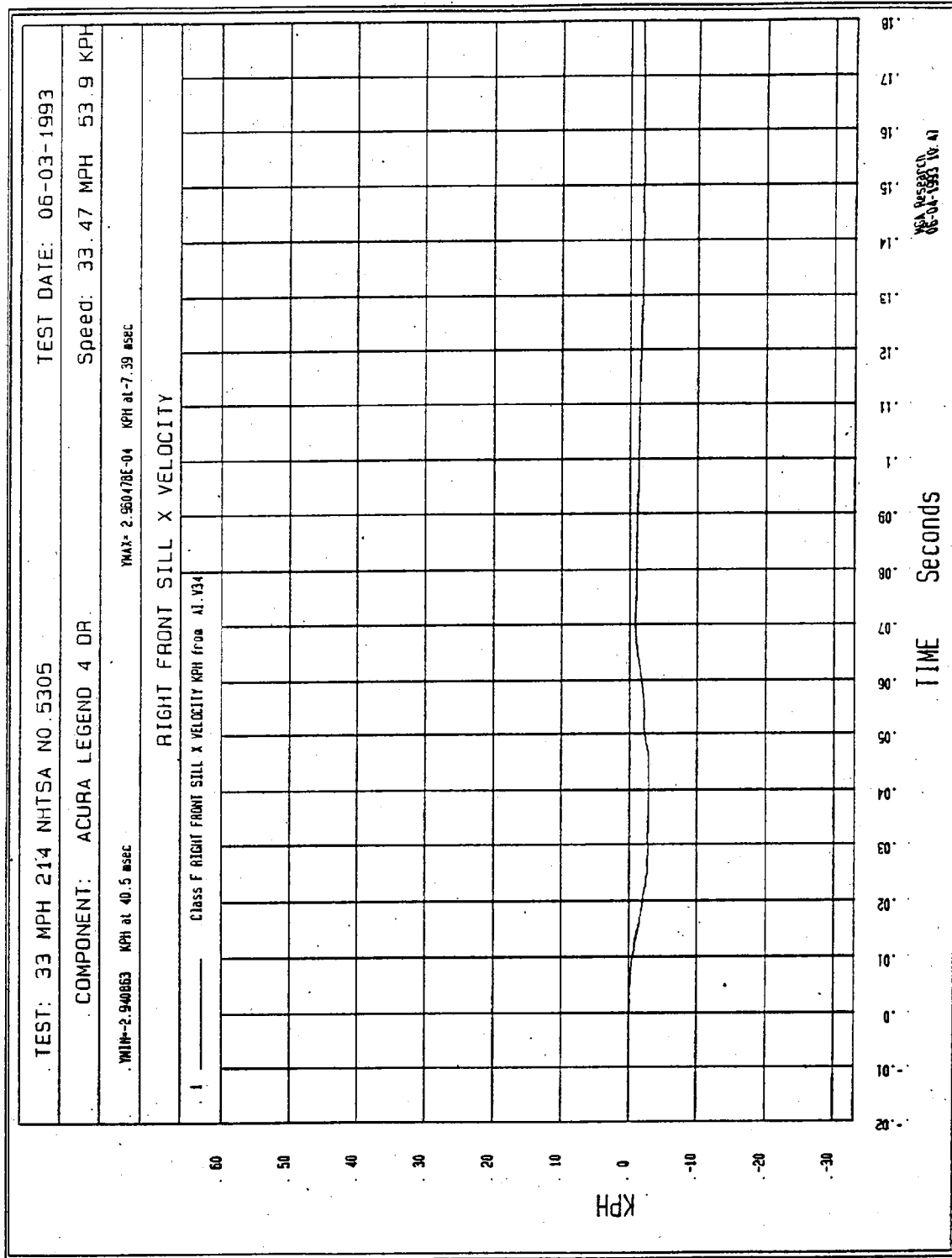
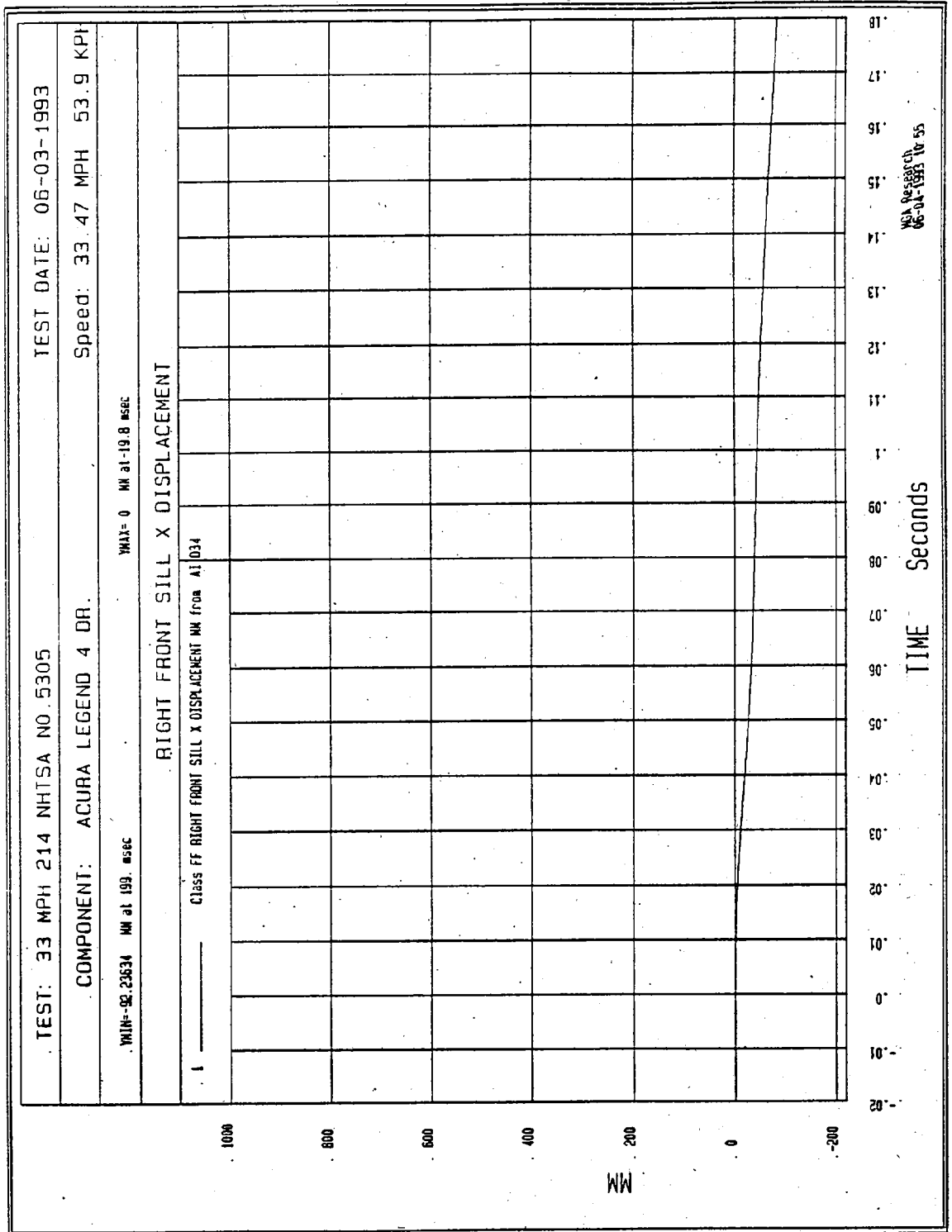
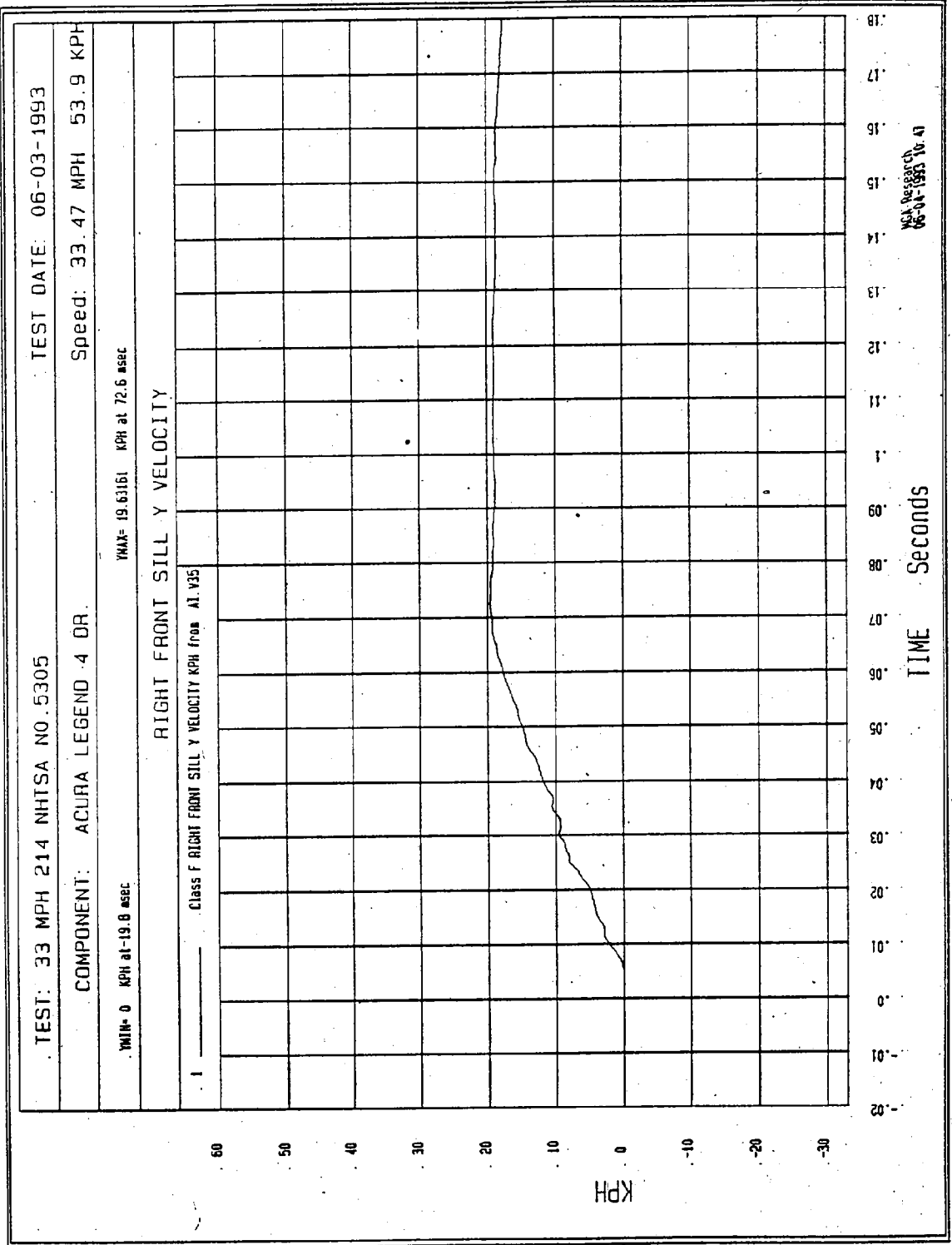


Figure B-49 - Right Front Sill X Velocity vs. Time



B-50

Figure B-50 - Right Front Sill Y Displacement vs. Time



B-52

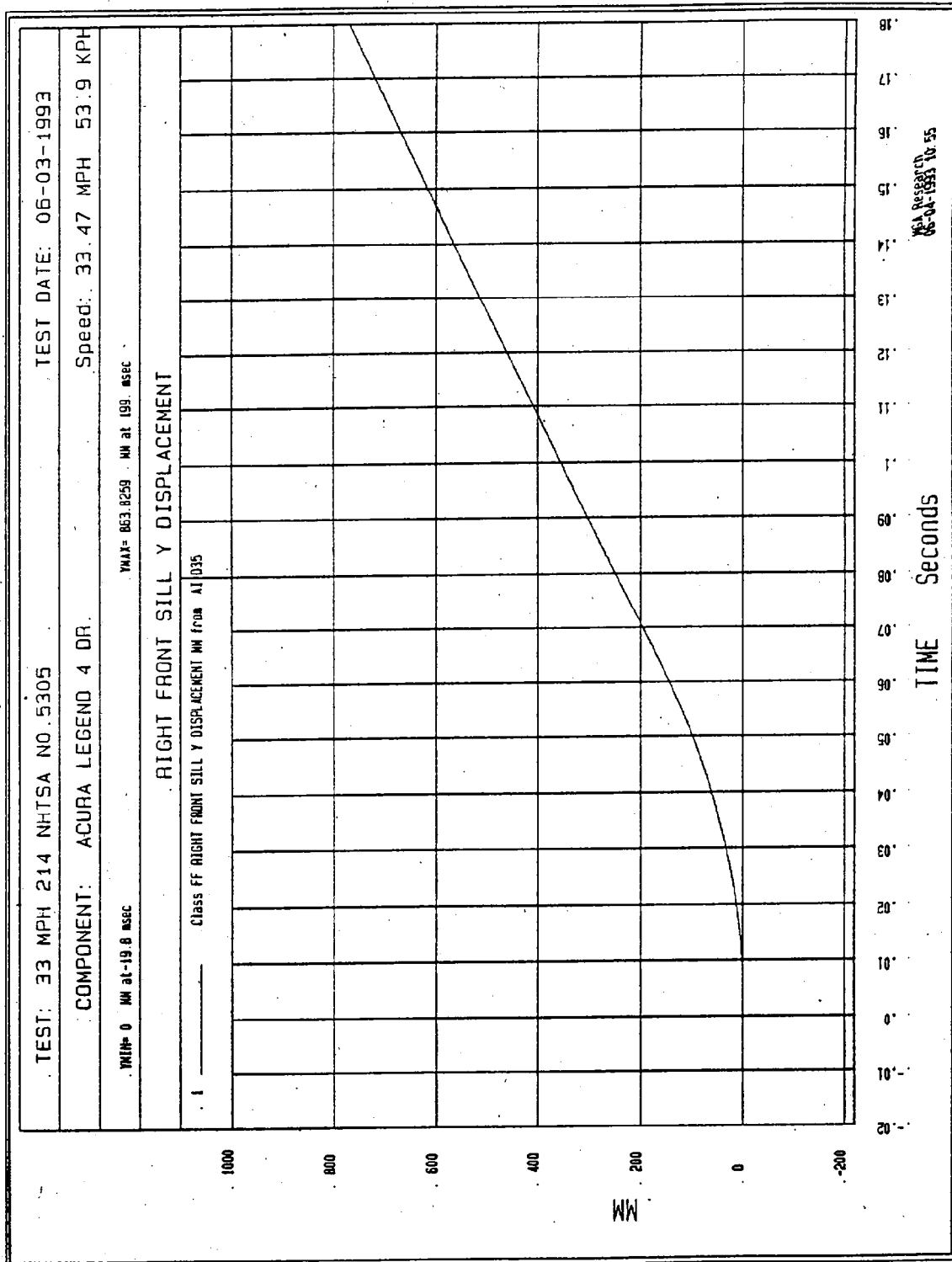
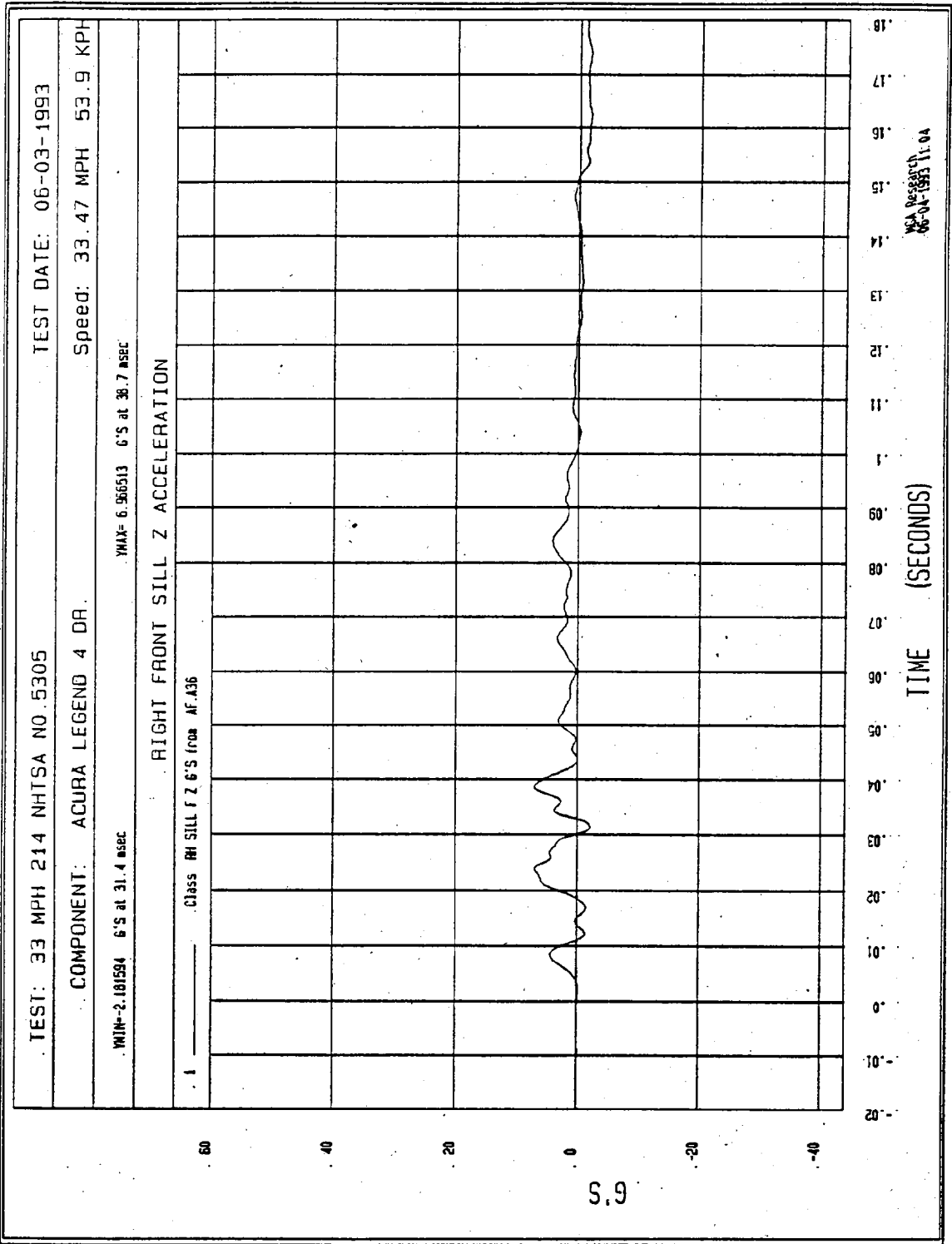


Figure B-53 - Right Front Sill Y Displacement vs. Time



B-54

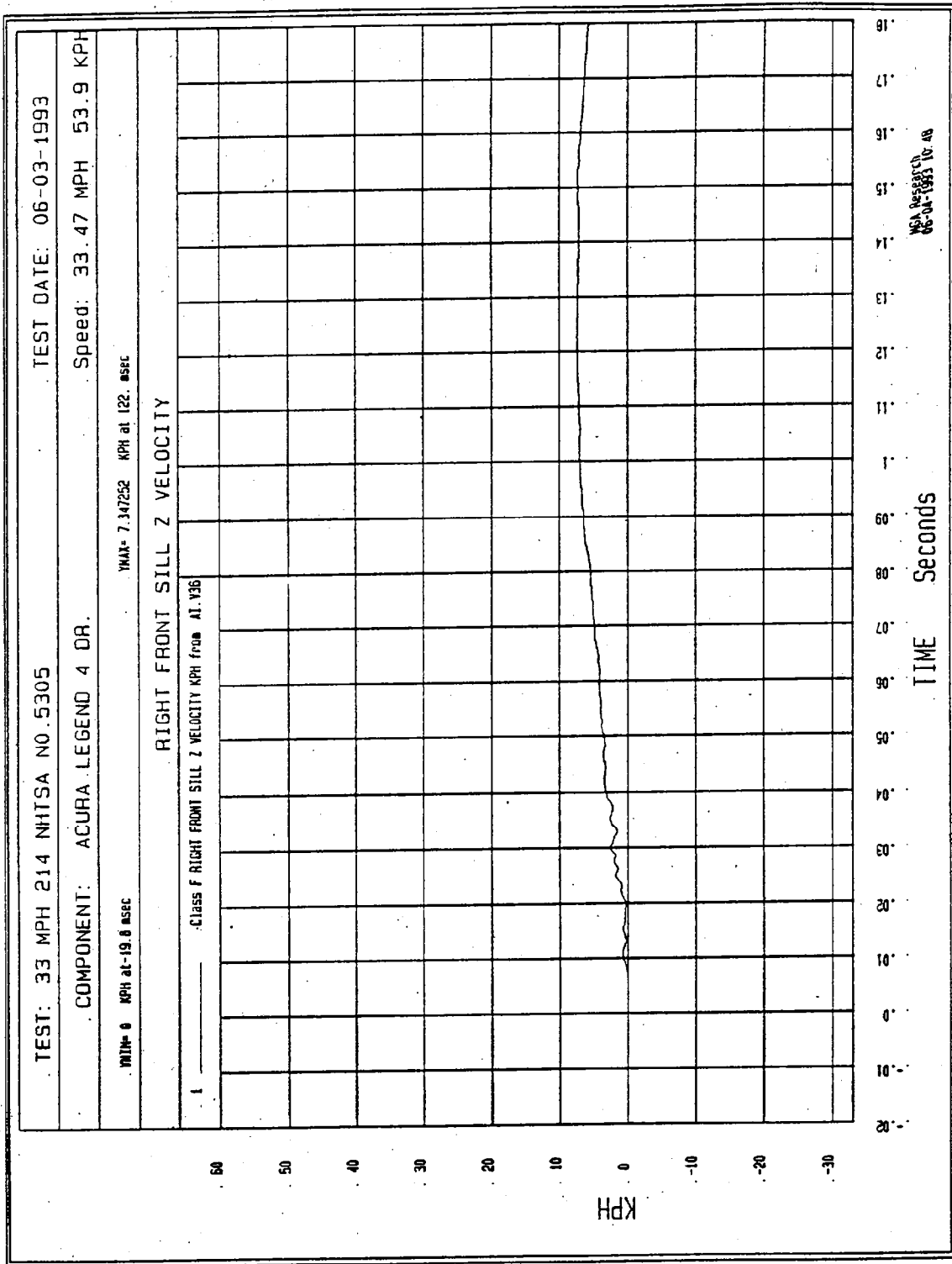


Figure B-55 - Right Front Sill Z Velocity vs. Time

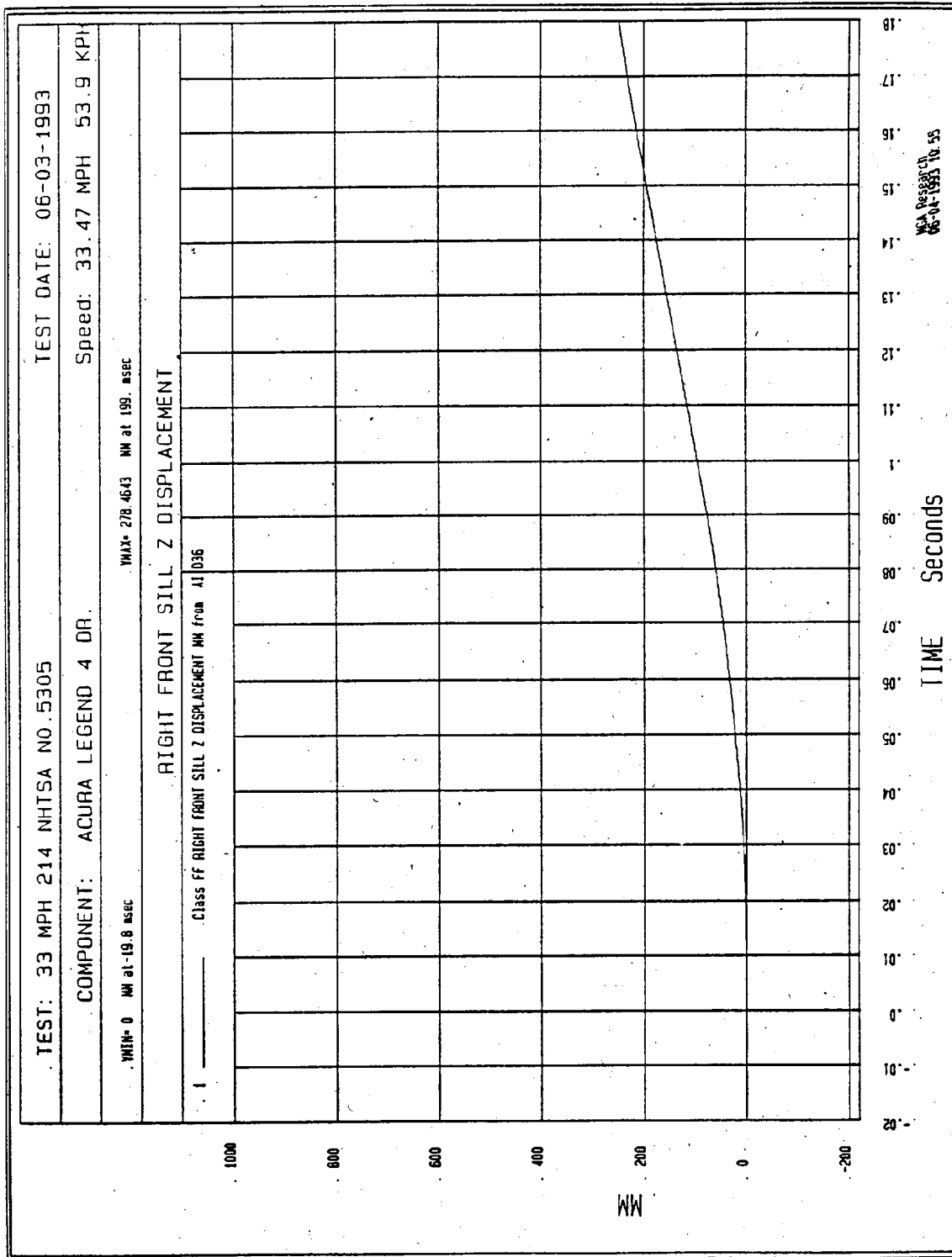


Figure B-56 - Right Front Sill Z Displacement vs Time

B-56

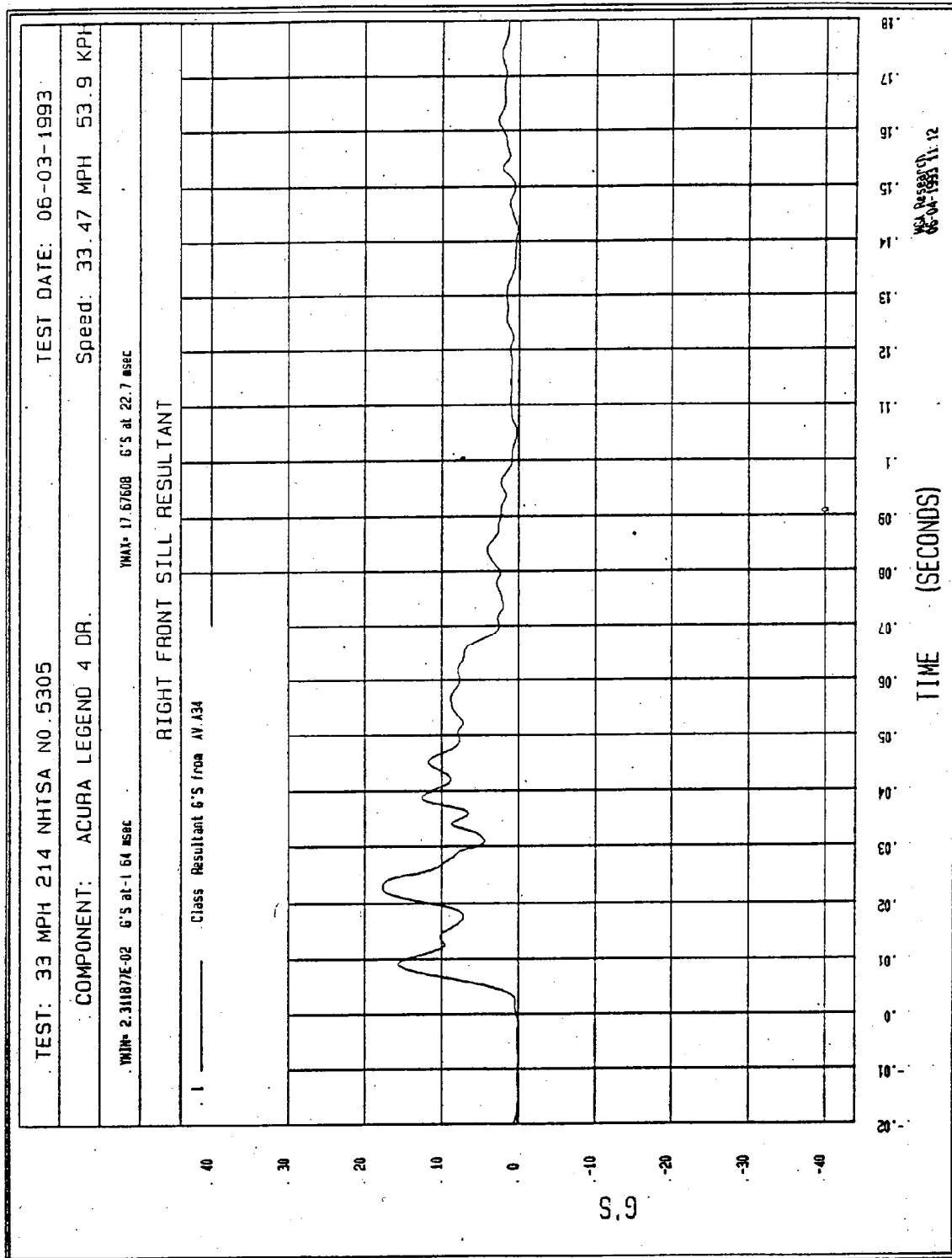
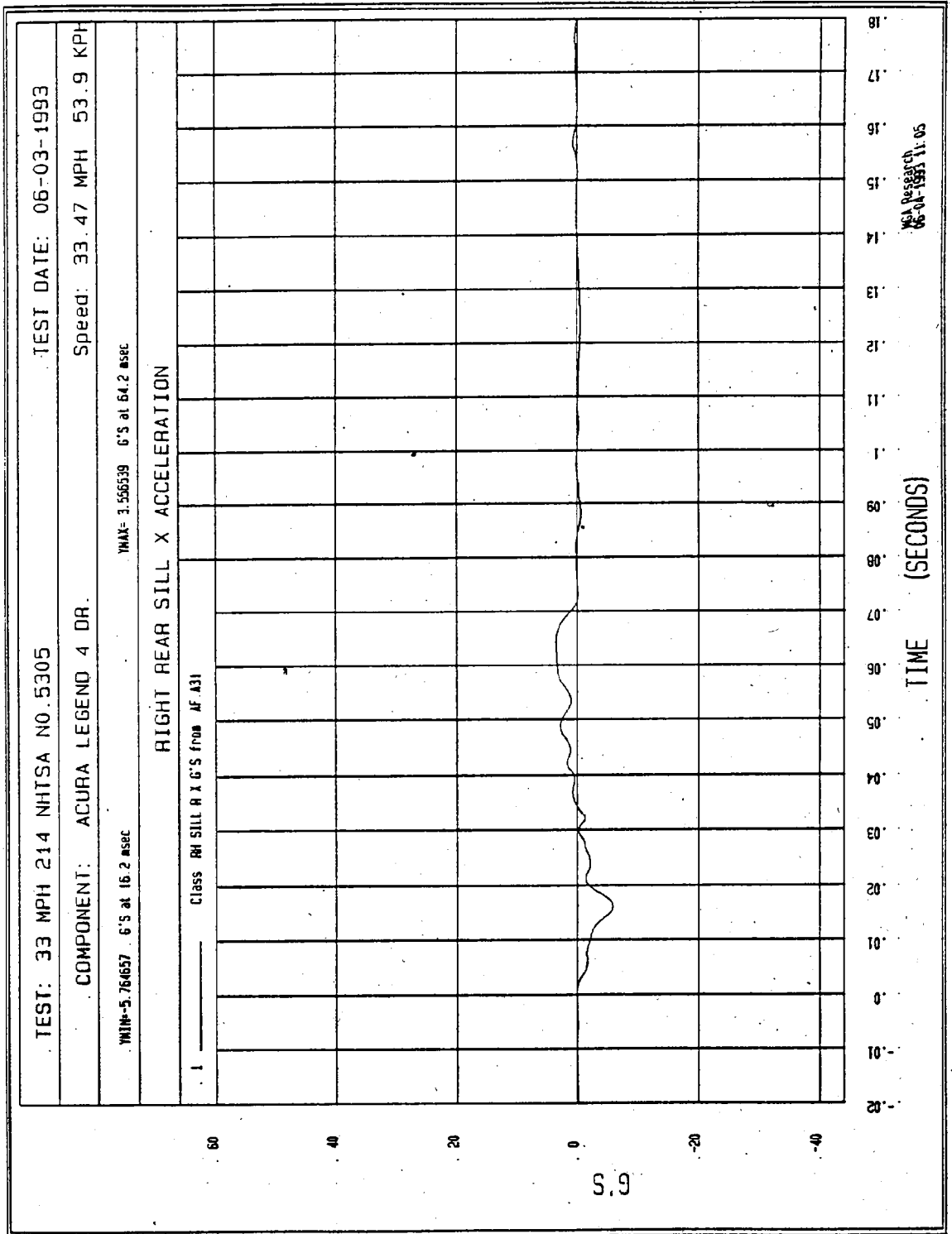
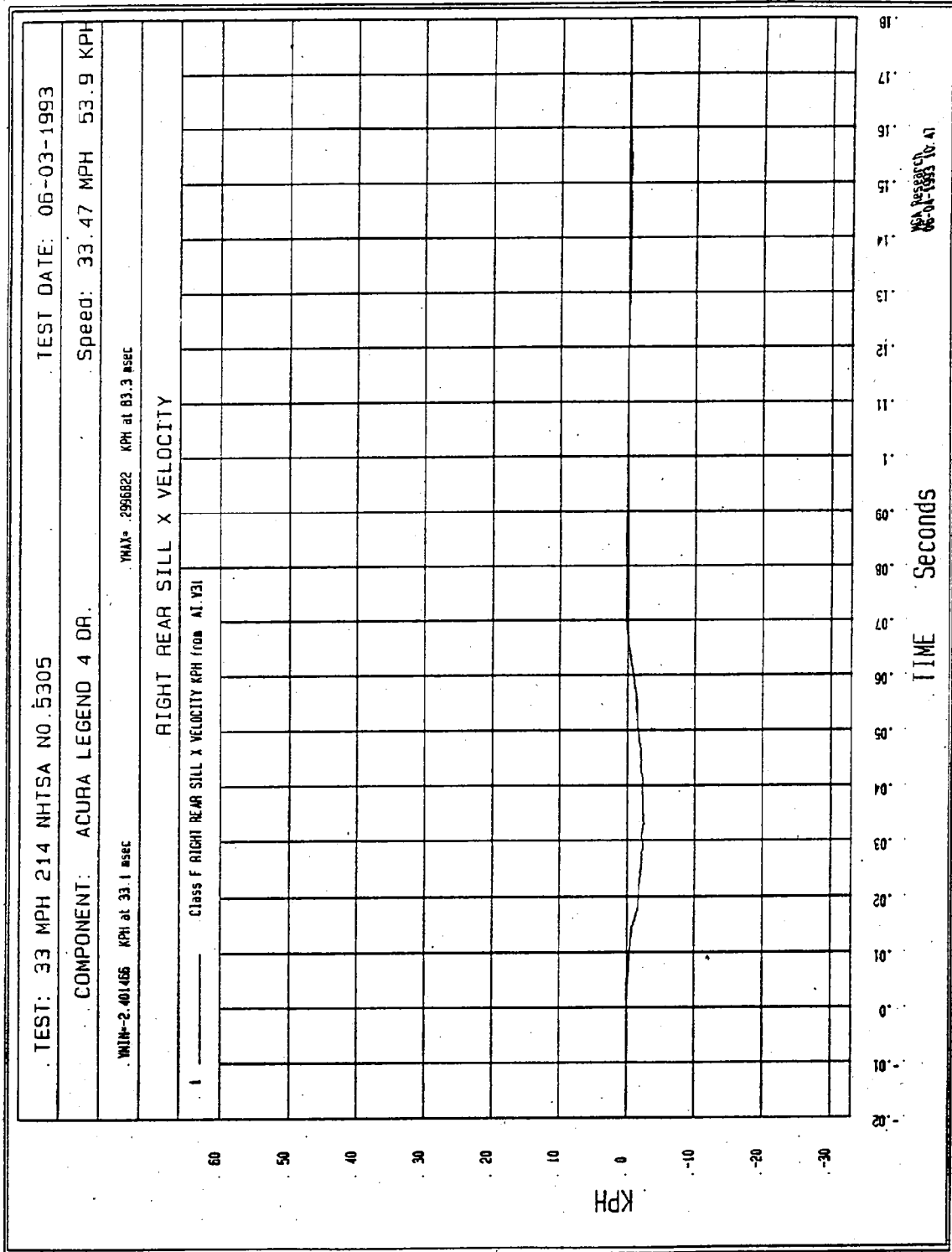


Figure B-57 - Right Front Sill at Front Seat Resultant vs. Time



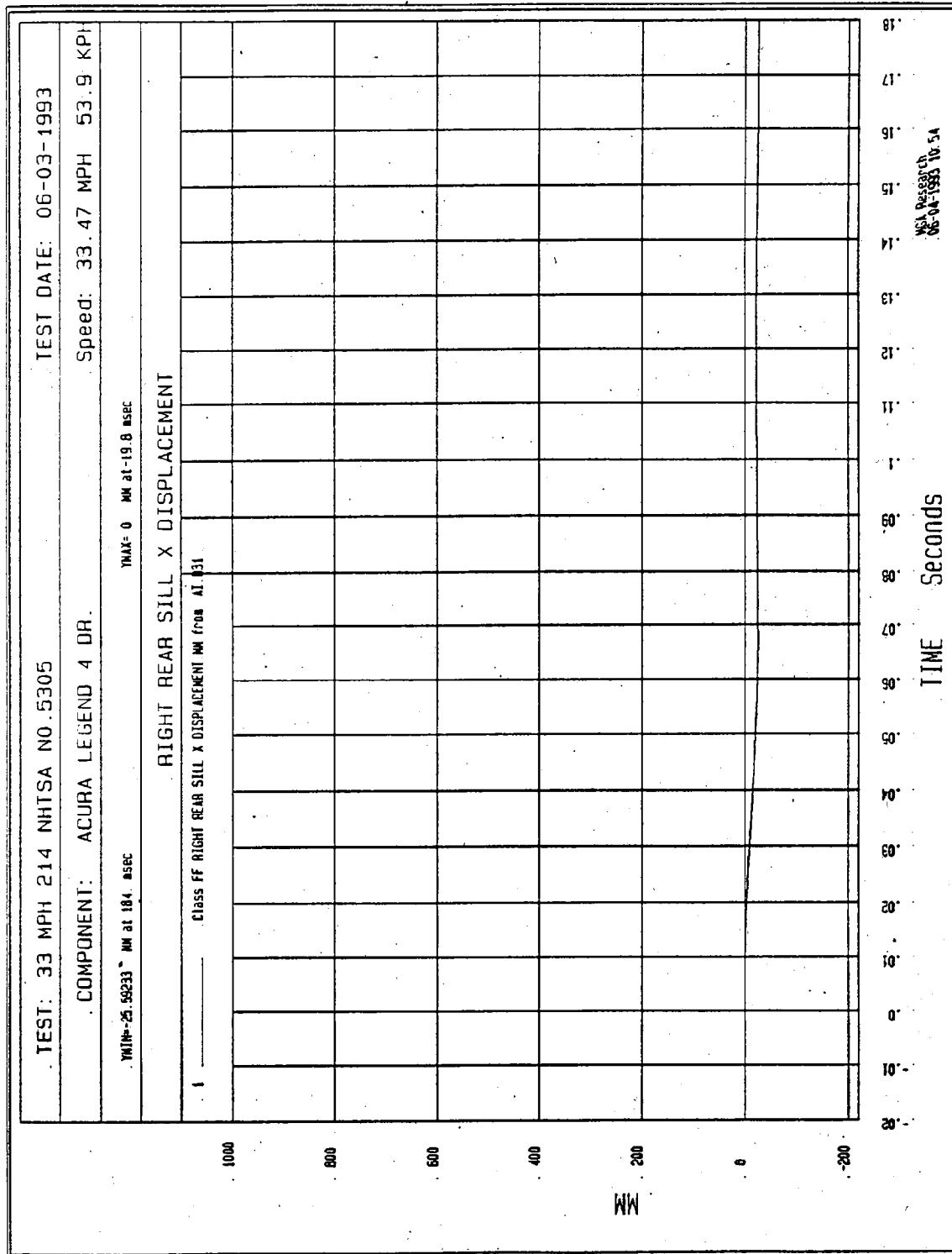
B-58

Figure B-58 - Right Rear Sill X Acceleration vs. Time



B-59

Figure B-59 - Right Rear Sill X Velocity vs. Time



B-60

Figure B-60 - Right Rear Sill X Displacement vs. Time

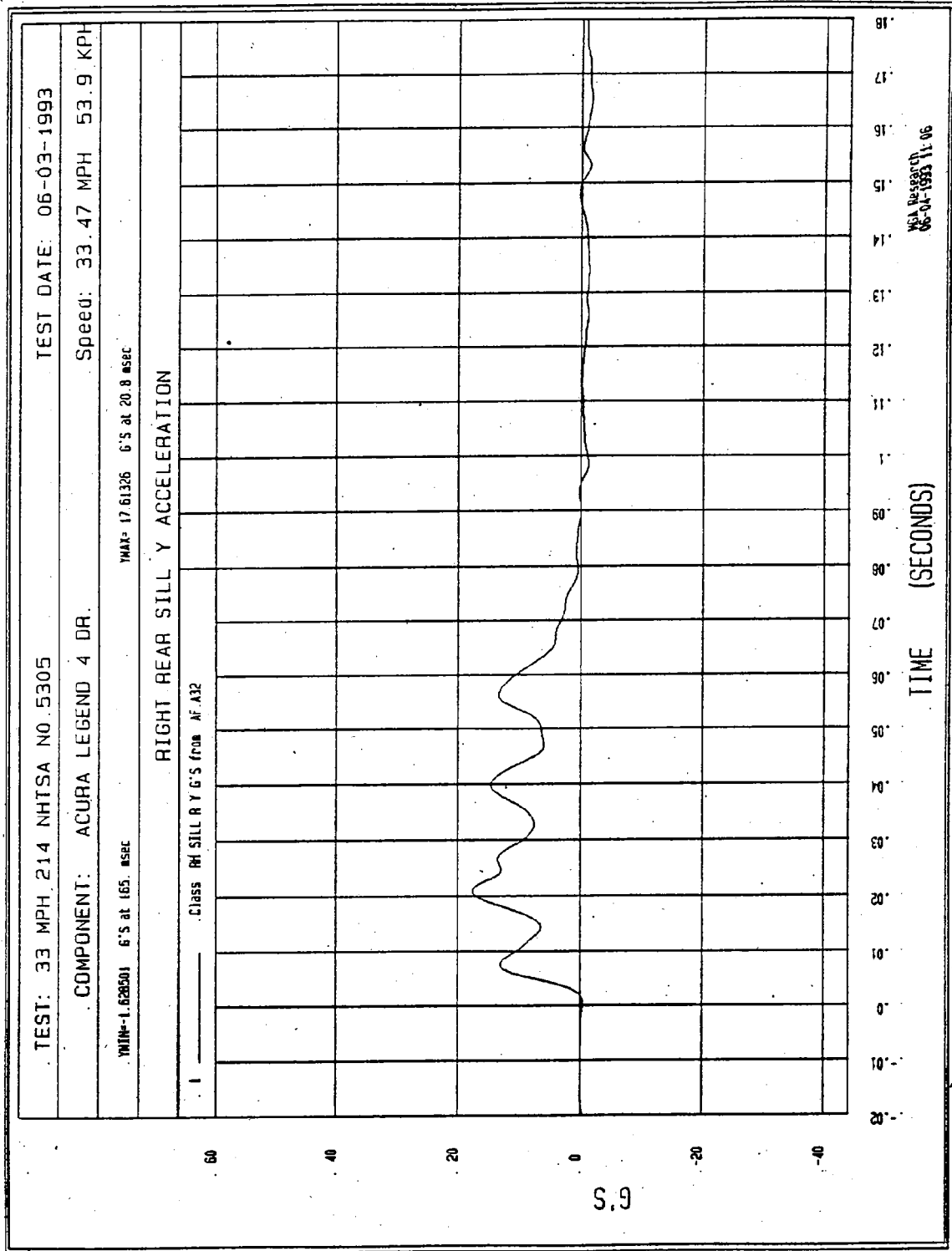
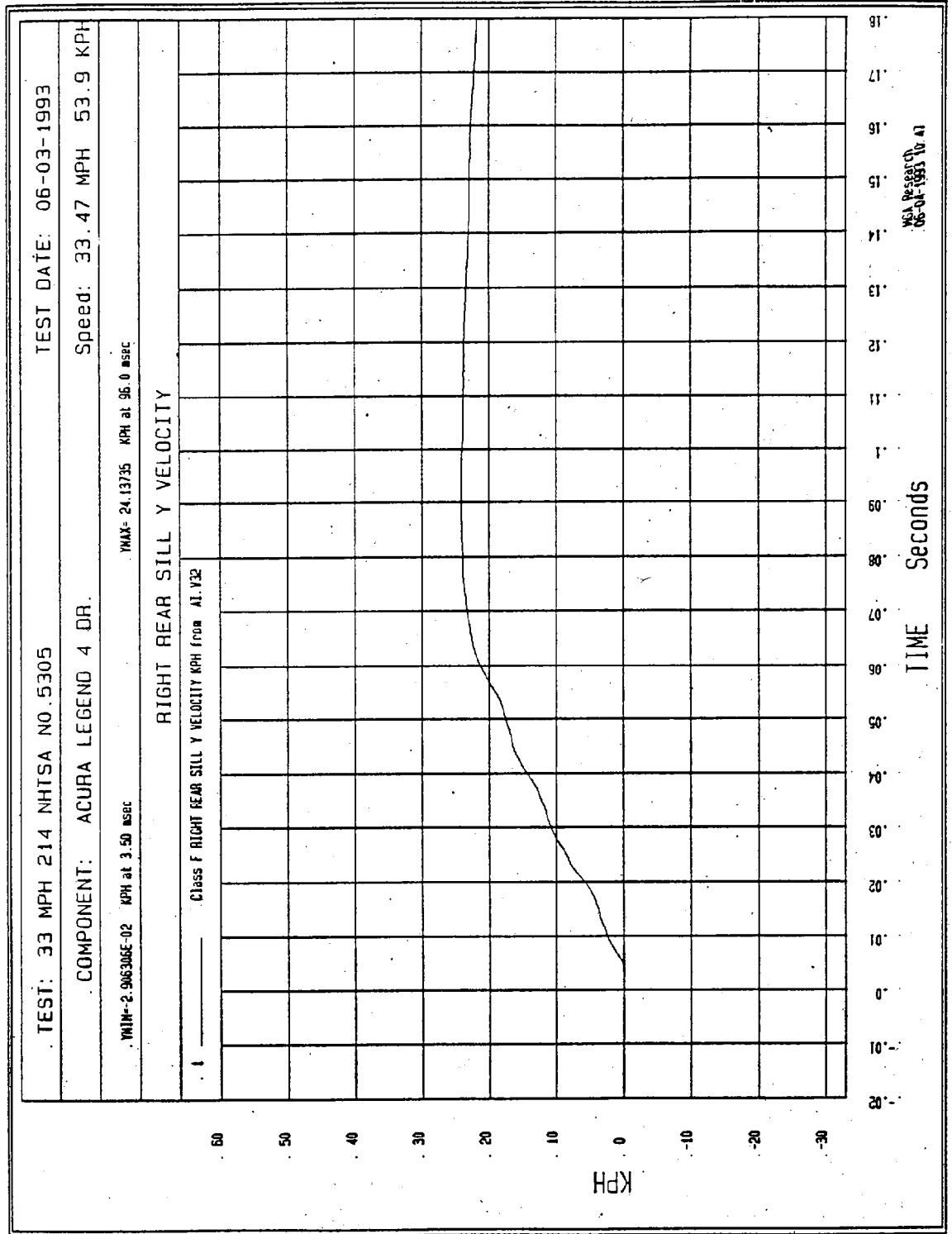


Figure B-61 - Right Rear Sill Y Acceleration vs. Time



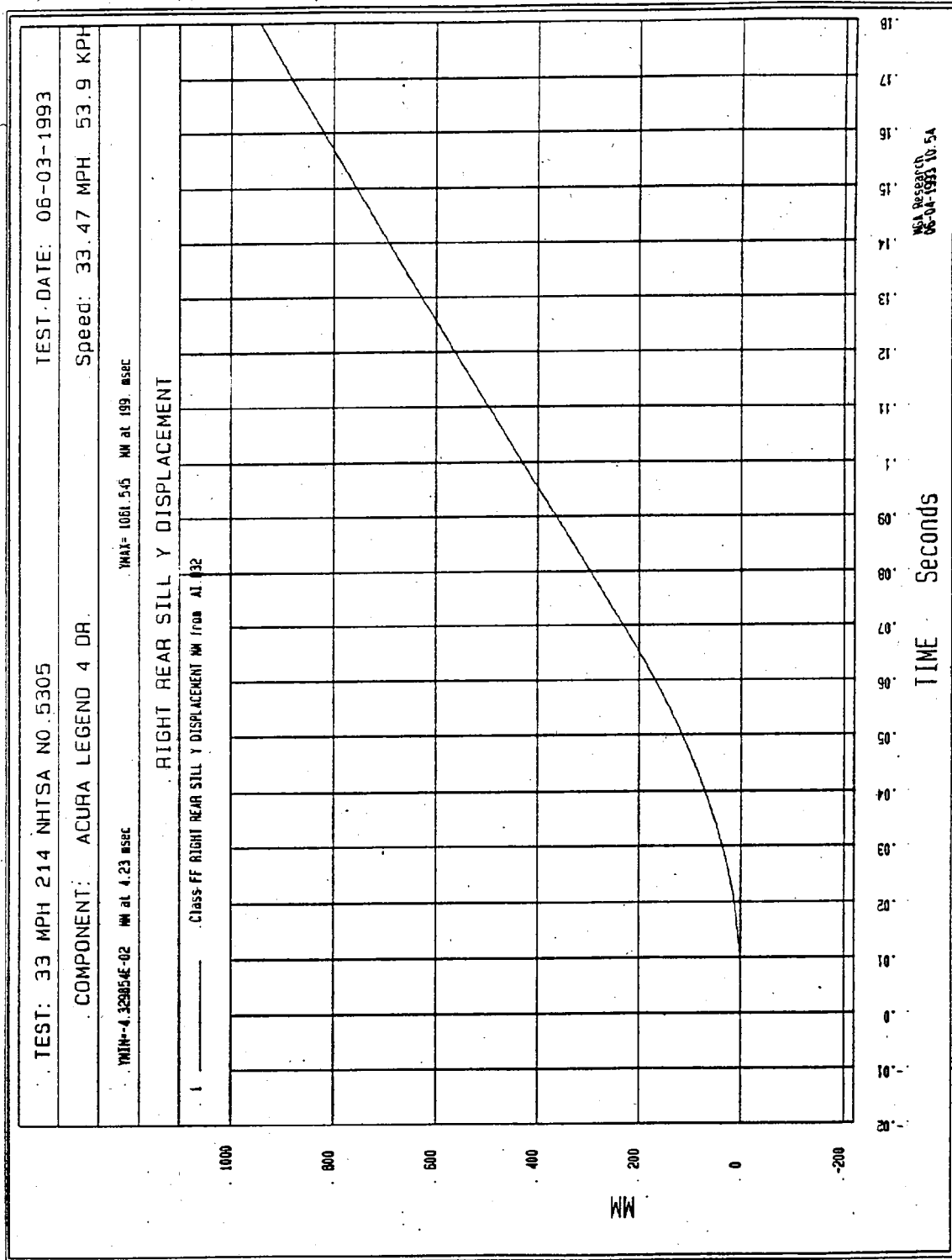


Figure B-63 - Right Rear Sill Y Displacement vs. Time

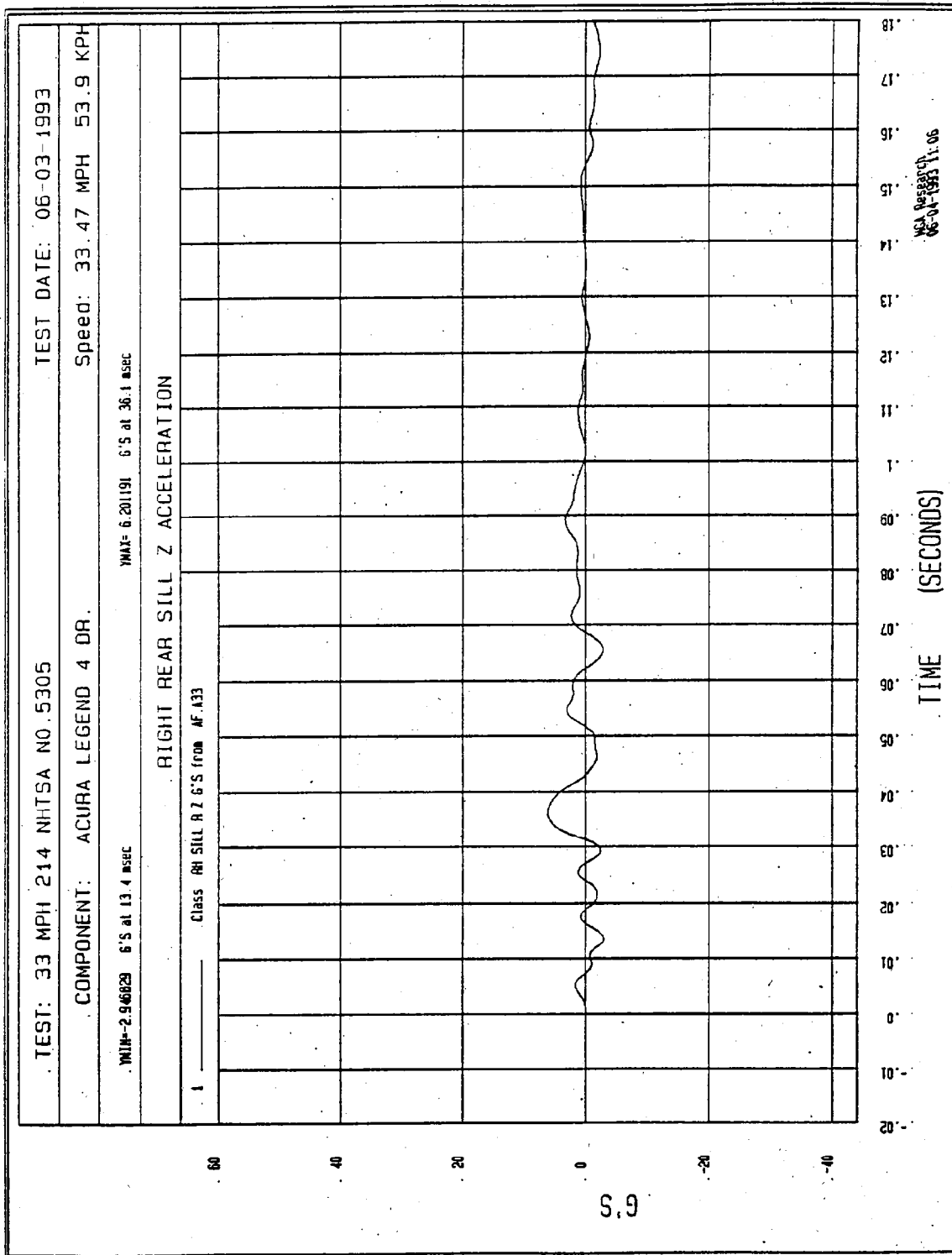


Figure B-64 - Right Rear Sill Z Acceleration vs. Time

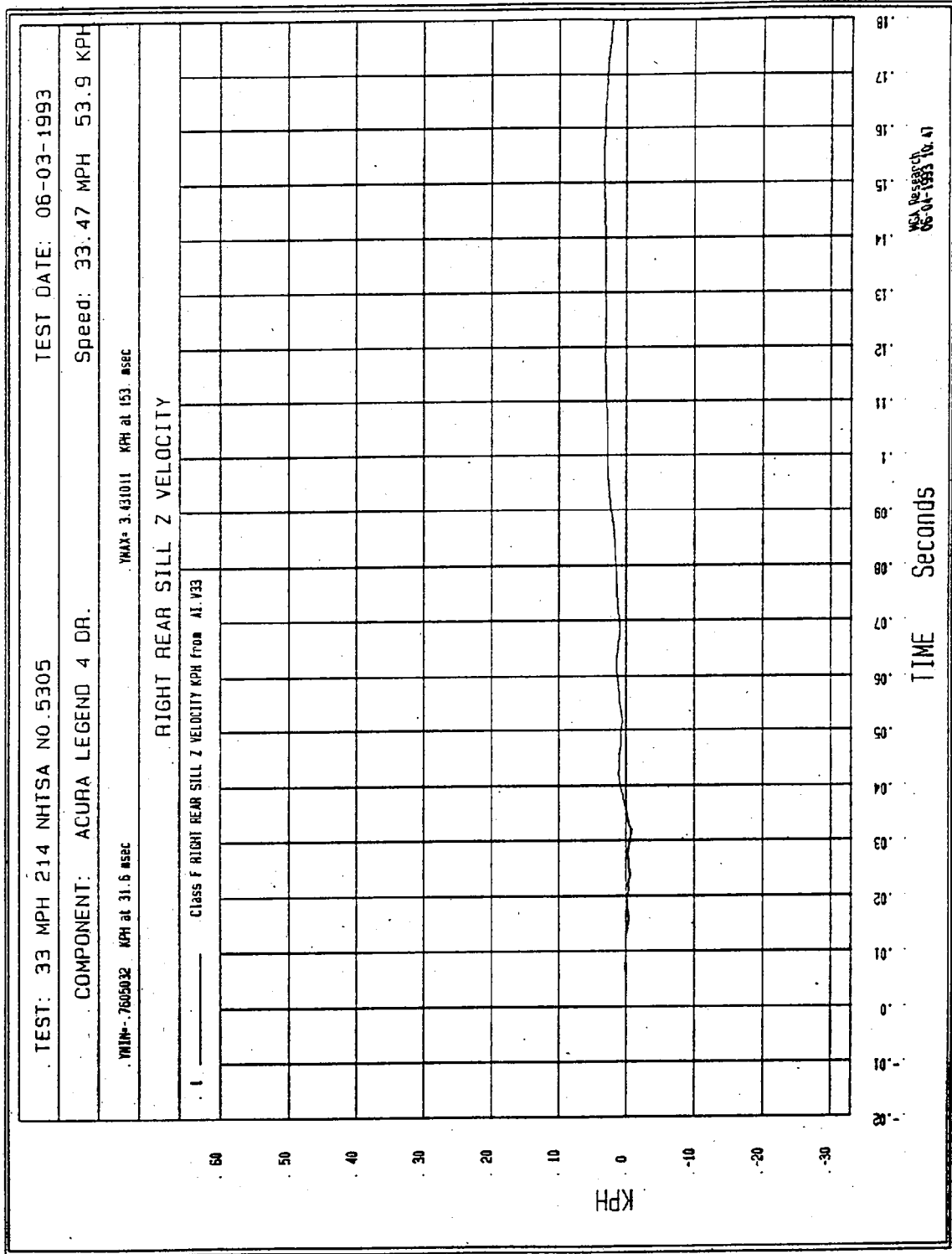


Figure B-65 - Right Rear Sill Z Velocity vs. Time

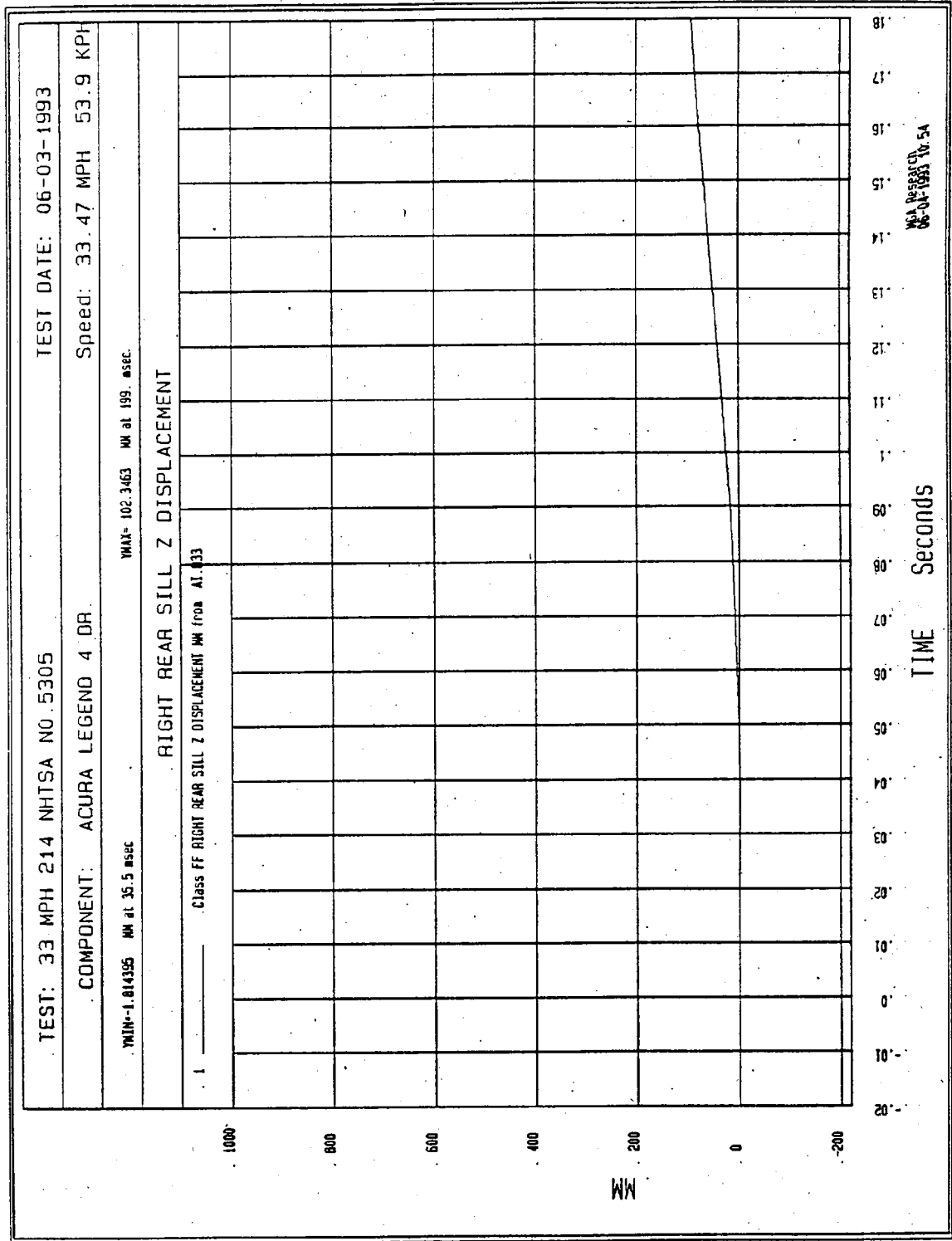


Figure B-66 - Right Rear Sill Z Displacement vs. Time

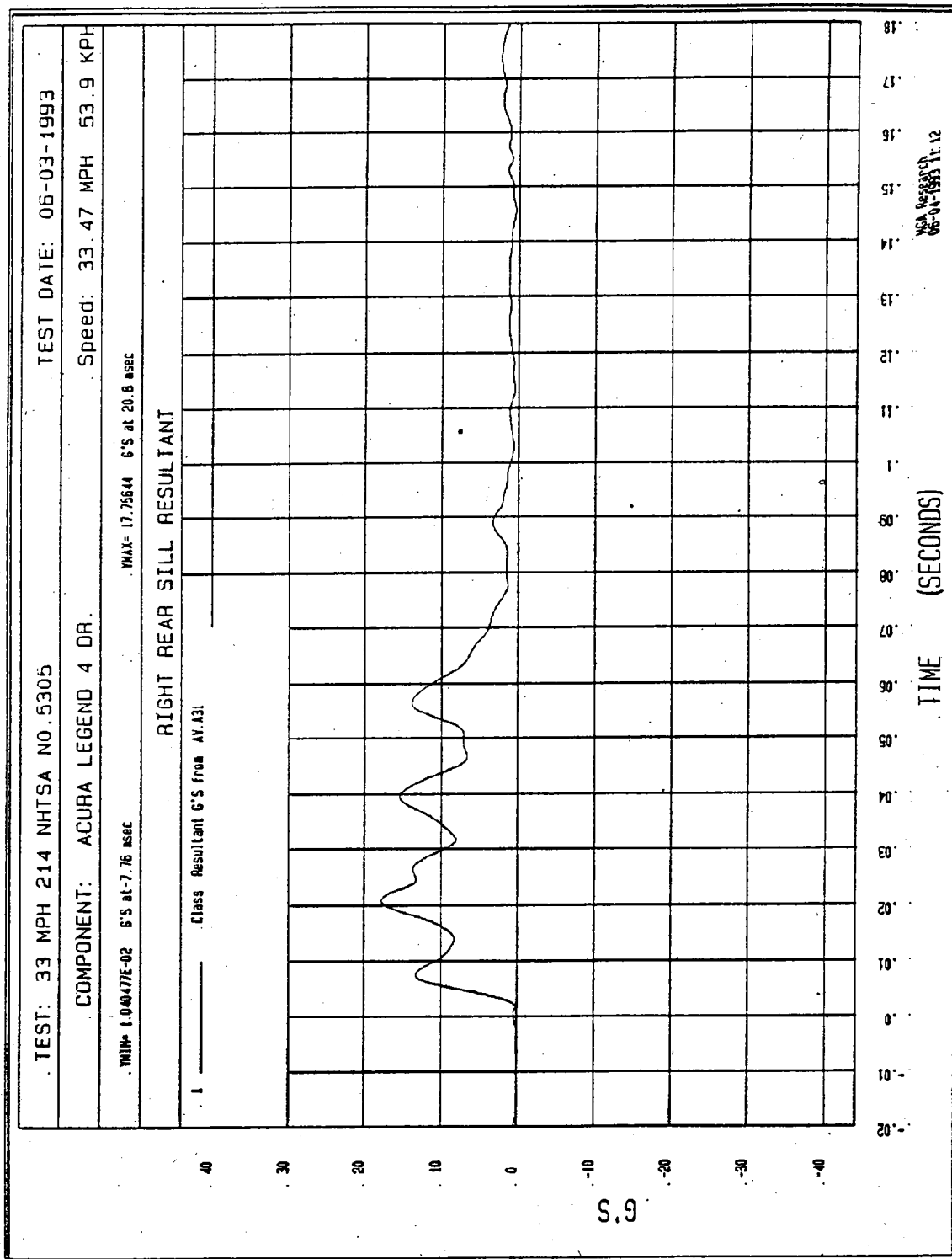


Figure B-67 - Right Rear Sill at Rear Seat Resultant vs. Time

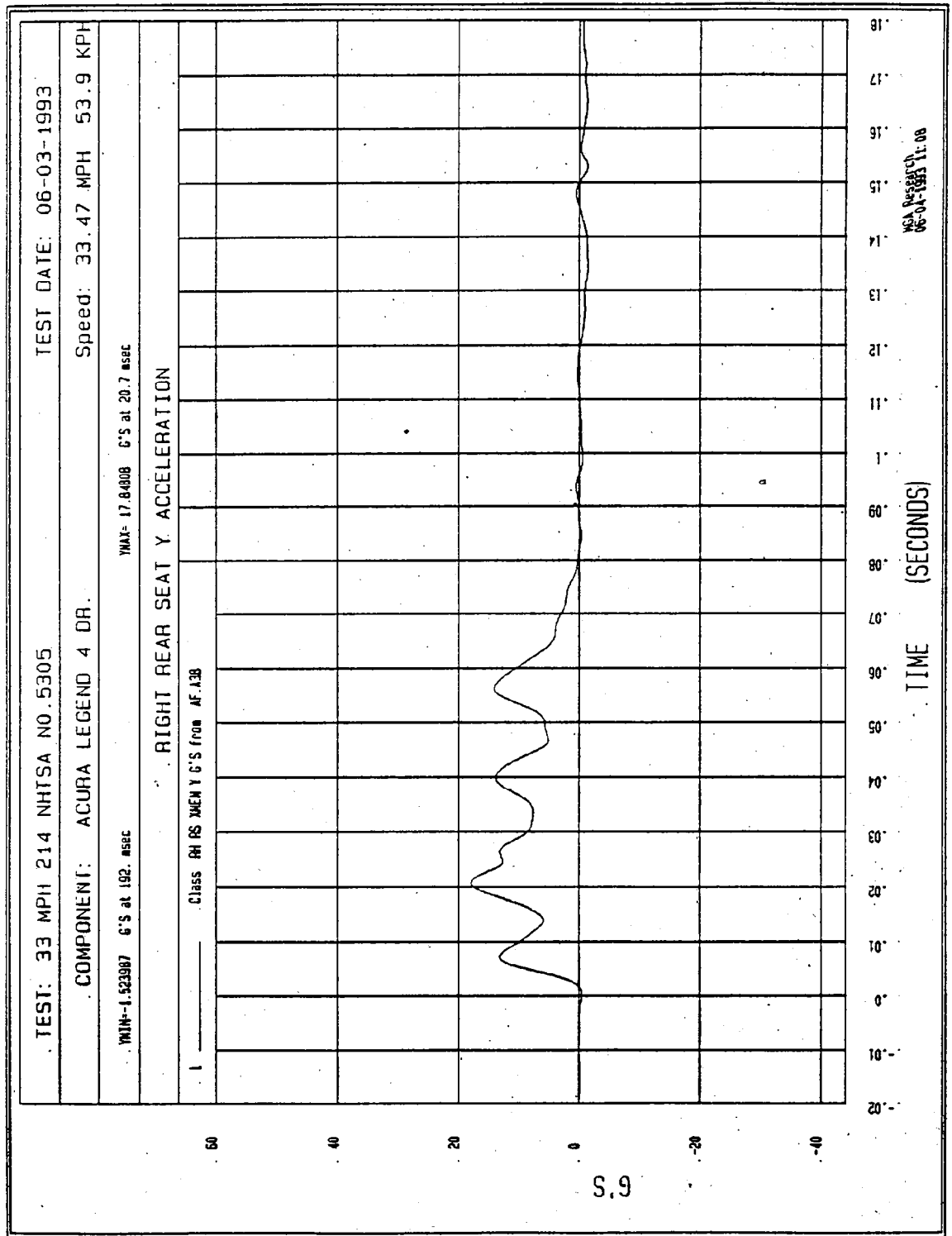


Figure B-68 - Right Rear Seat Y Acceleration vs Time

B-68

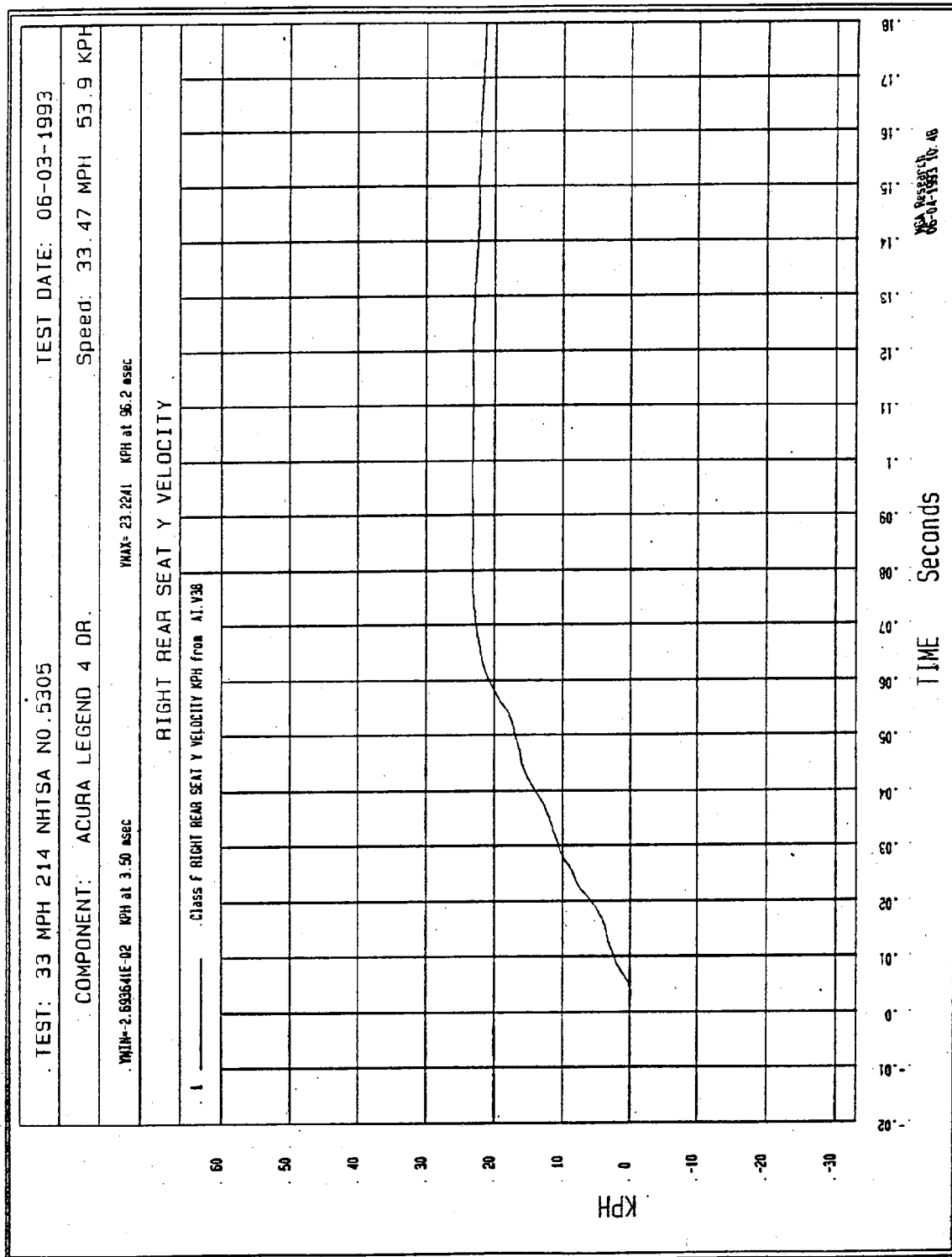
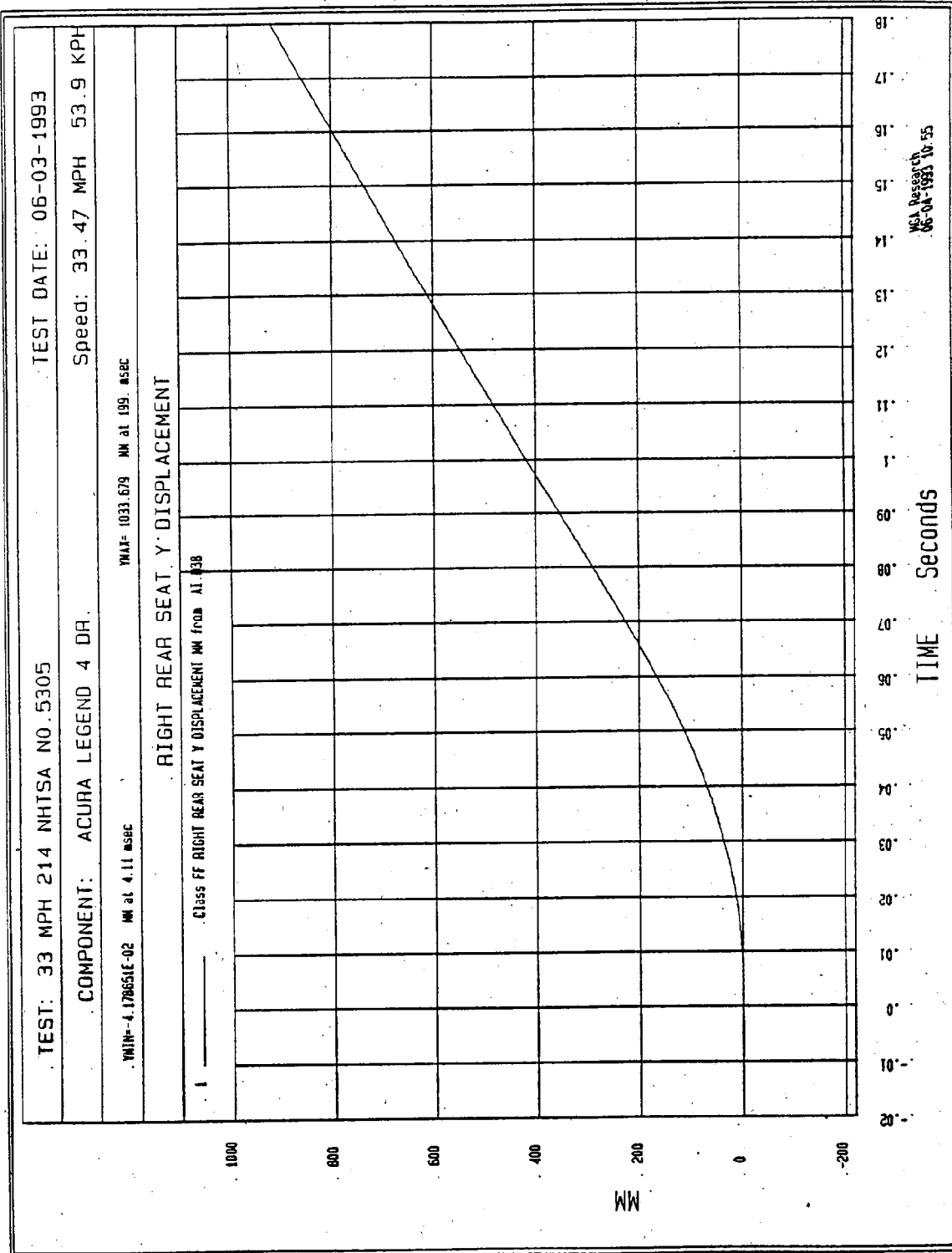


Figure B-69 - Right Rear Seat Y Velocity vs. Time



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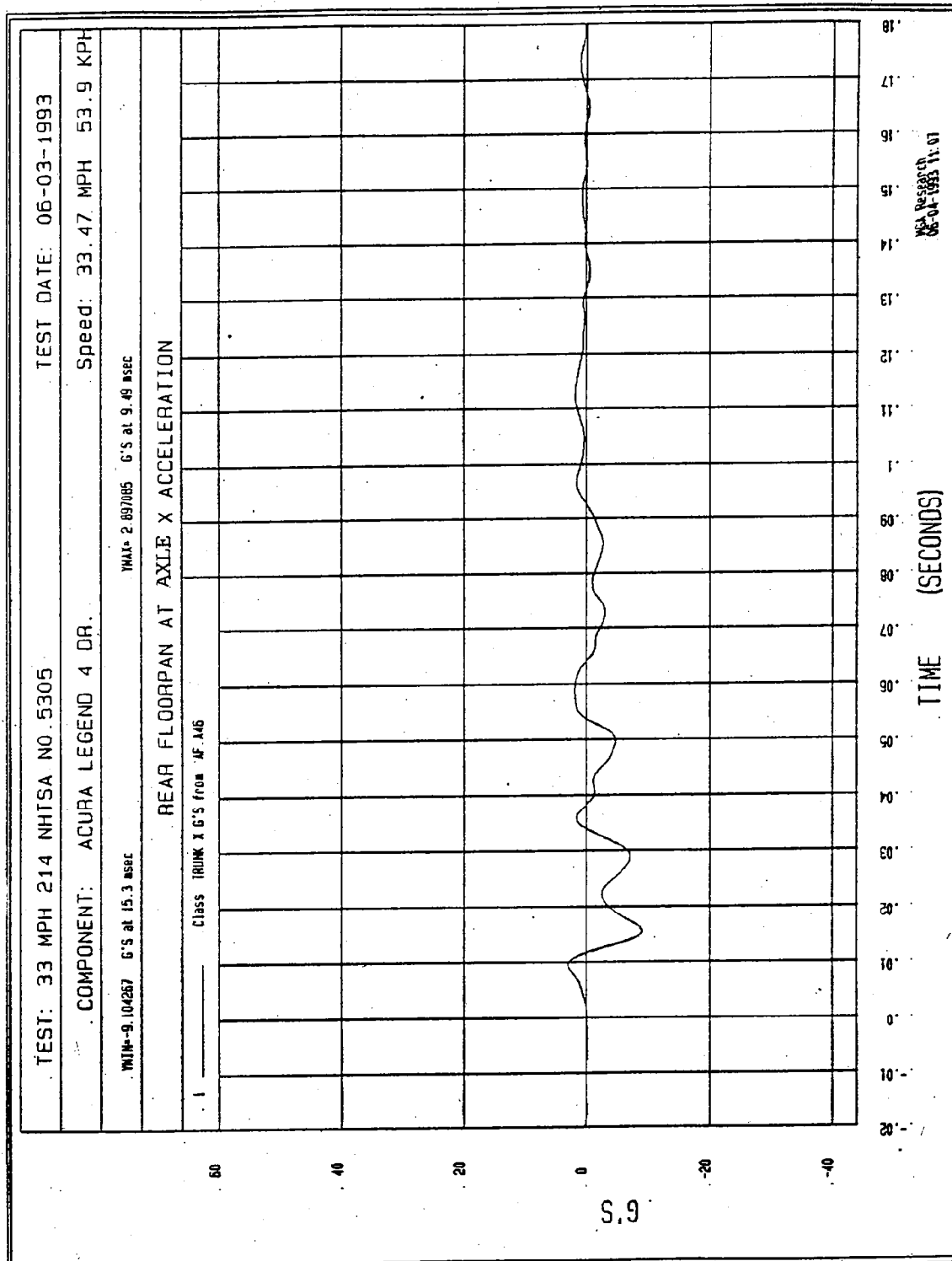


Figure B-71 - Rear Floorpan at Axle X Acceleration vs. Time

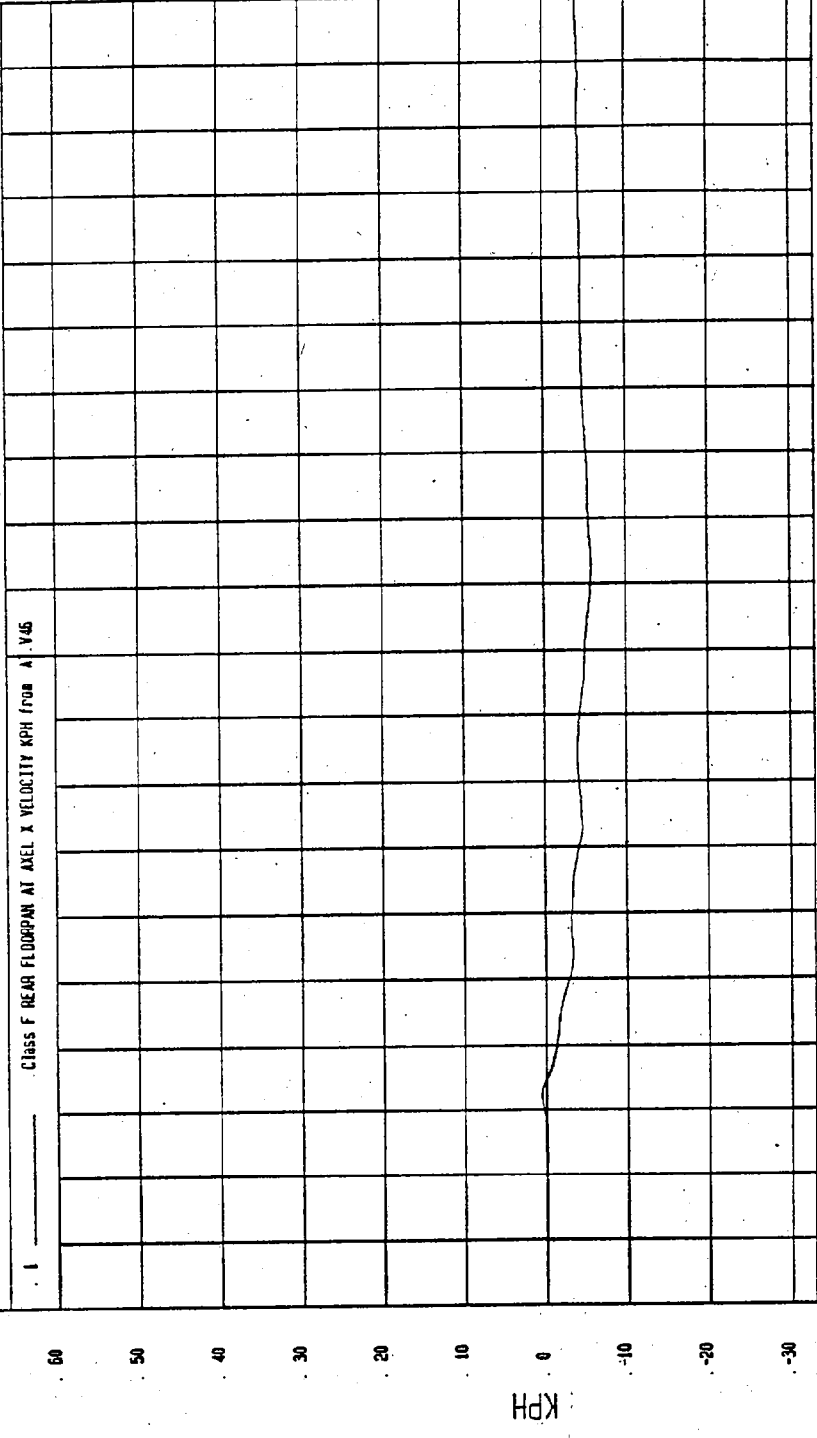
TEST: 33 MPH 214 NHTSA NO. 5305 TEST DATE: 06-03-1993

SPEED: 33.47 MPH 53.9 KPH

COMPONENT: ACURA LEGEND 4 DR.

YMIN = -5.798364 KPH at 92.6 msec YMAX = 5.088329 KPH at 12.1 msec

REAR FLOORPAN AT AXLE X VELOCITY



TIME Seconds

0 10 20 30 40 50 60 70 80

60 50 40 30 20 10 0 -10 -20 -30

KPH

06-04-1993 10:48

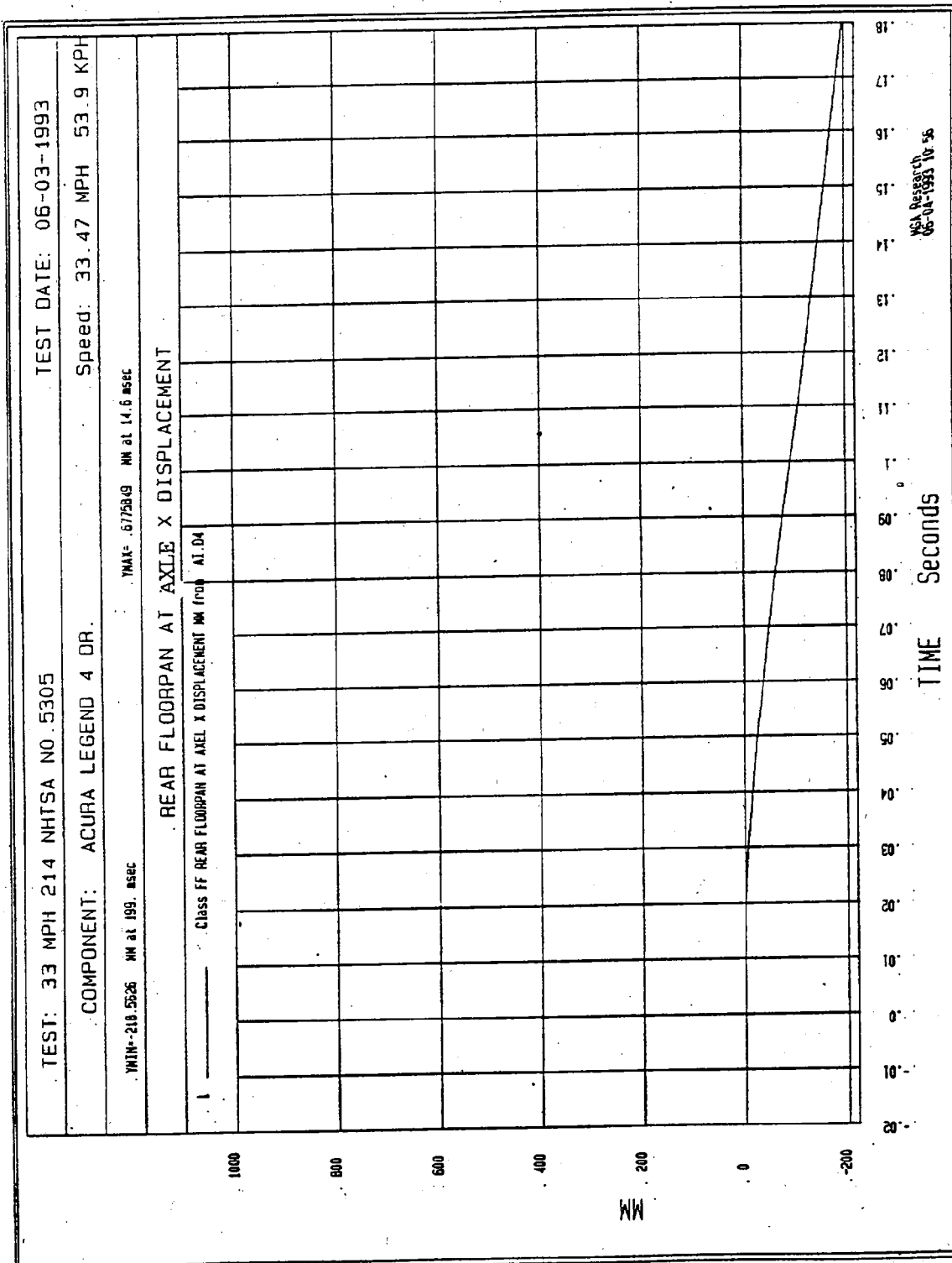
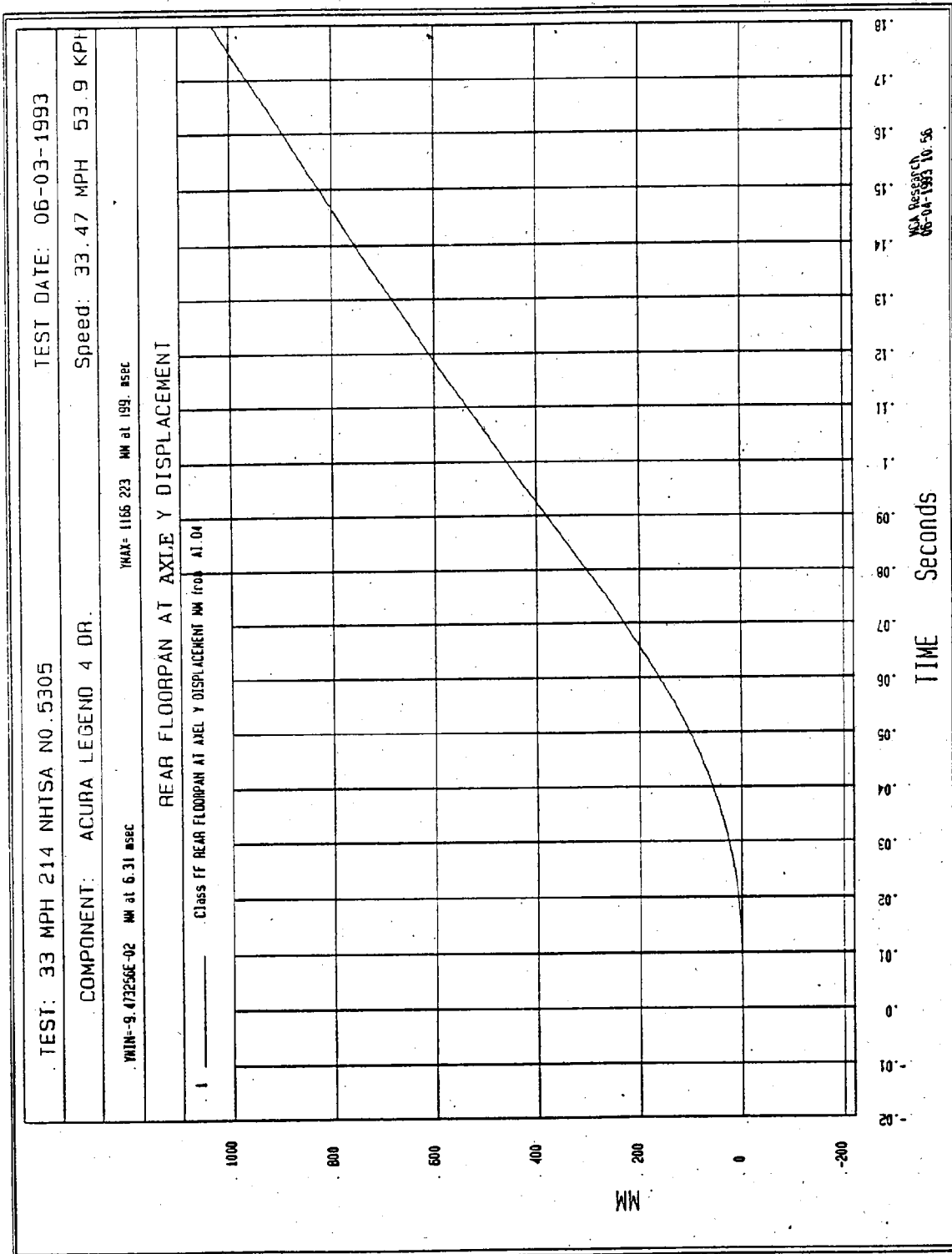


Figure B-73 - Rear Floorpan at Axle X Displacement vs. Time



B-76

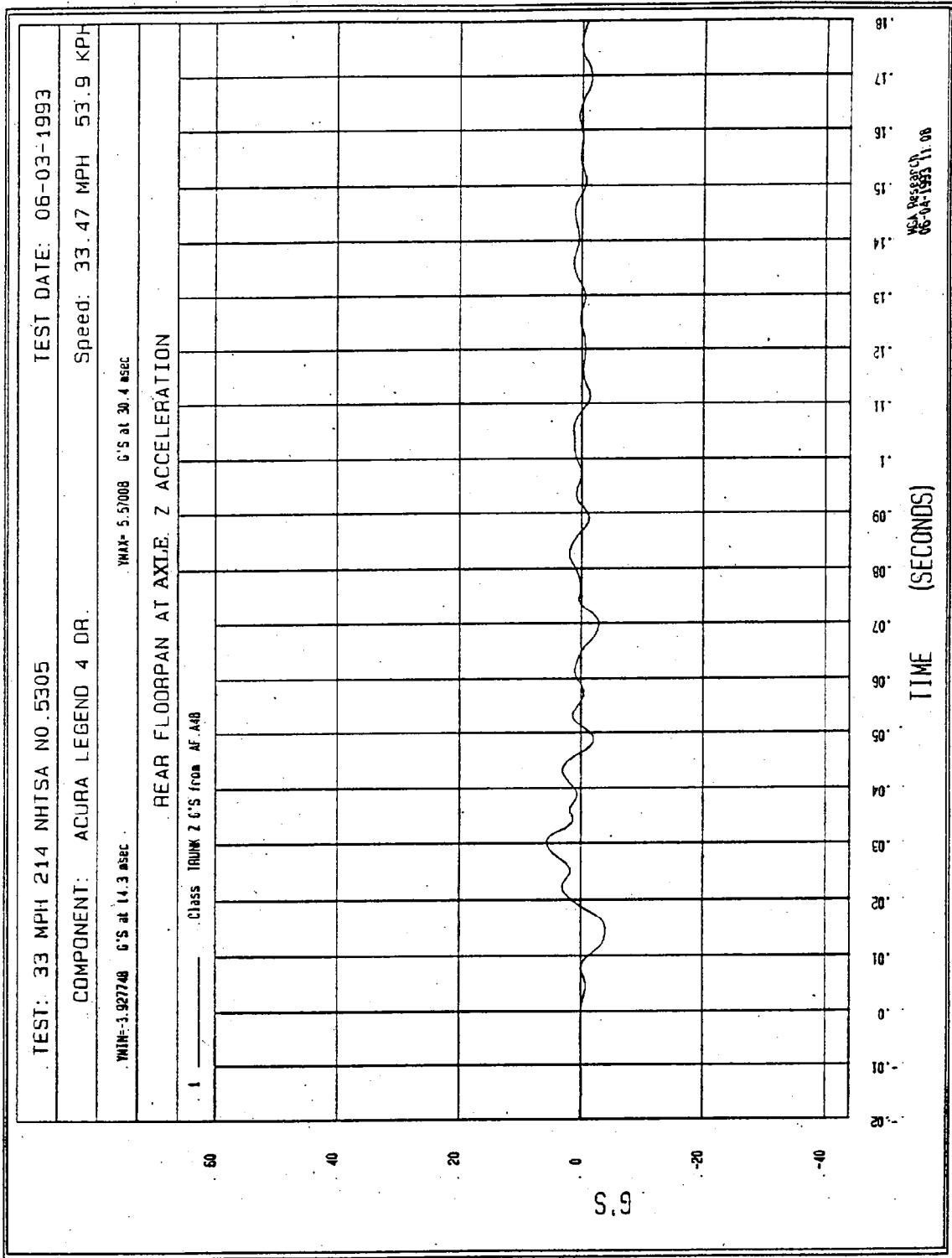


Figure B-77 - Rear Floorpan at Axle Z Acceleration vs. Time

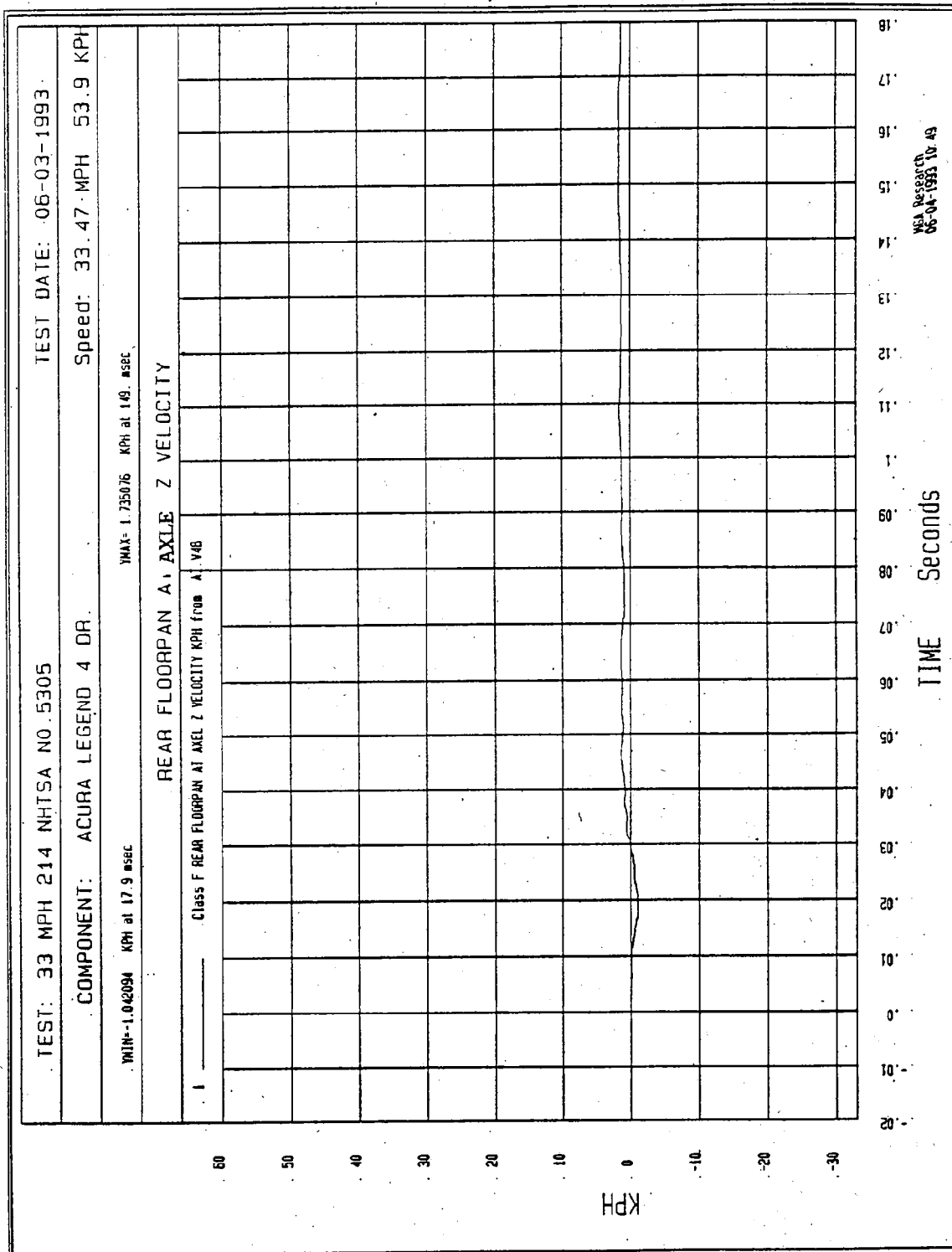


Figure B-78 - Rear Floorpan at Axle Z Velocity vs. Time

B-78

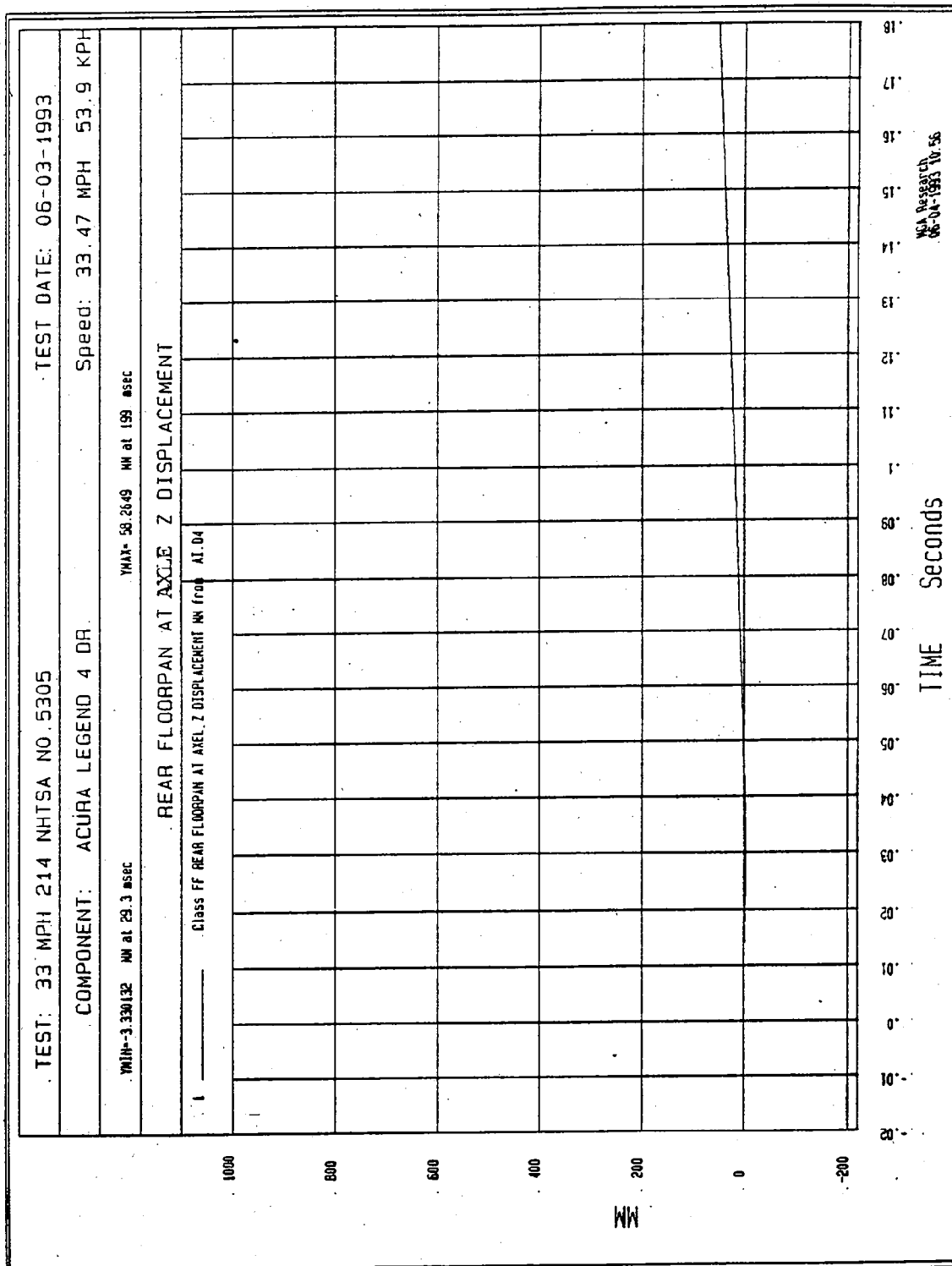


Figure B-79 - Rear Floorpan at Axle Z Displacement vs. Time

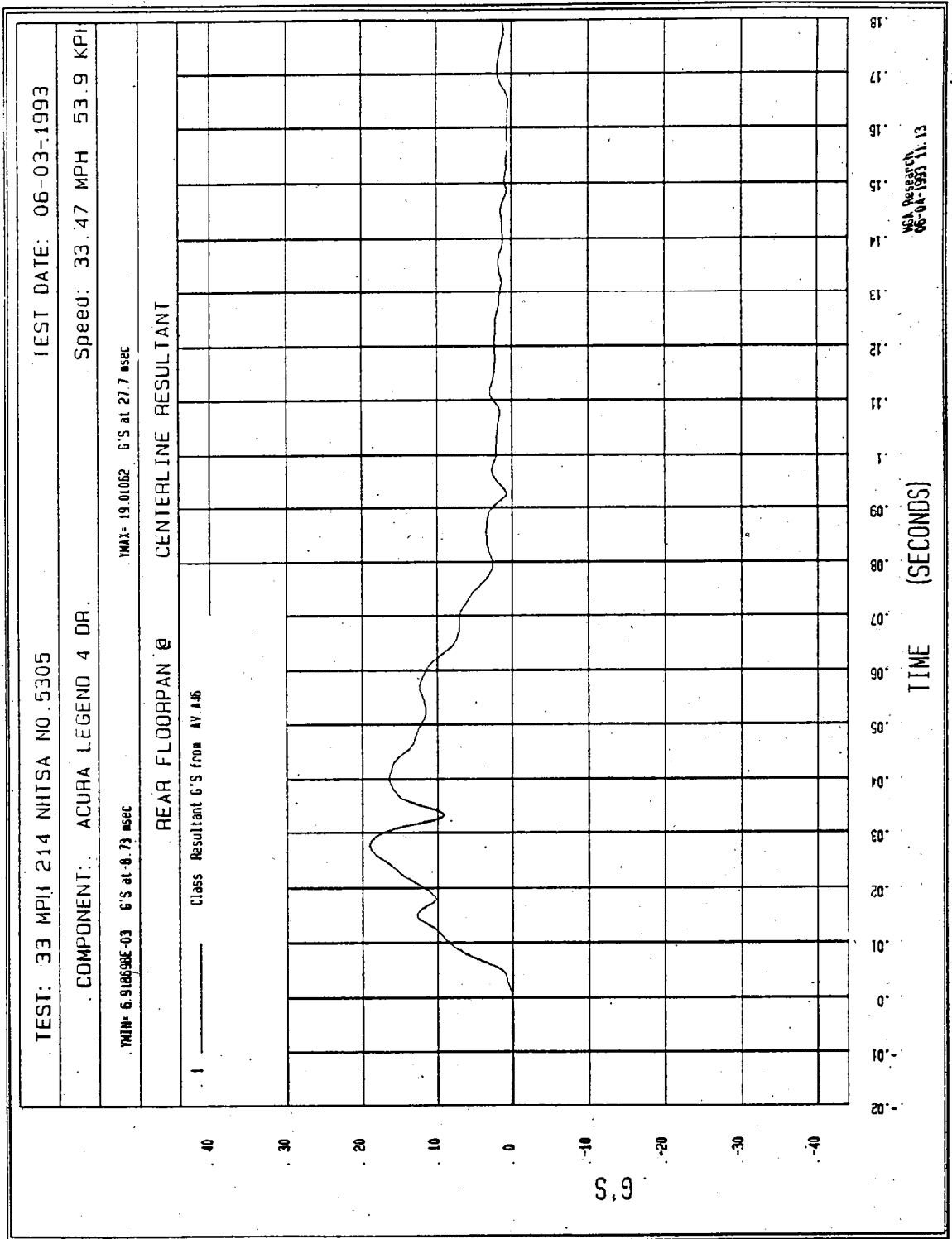


Figure B-80 - Rear Floorpan at Axel Centerline Resultant

B-80

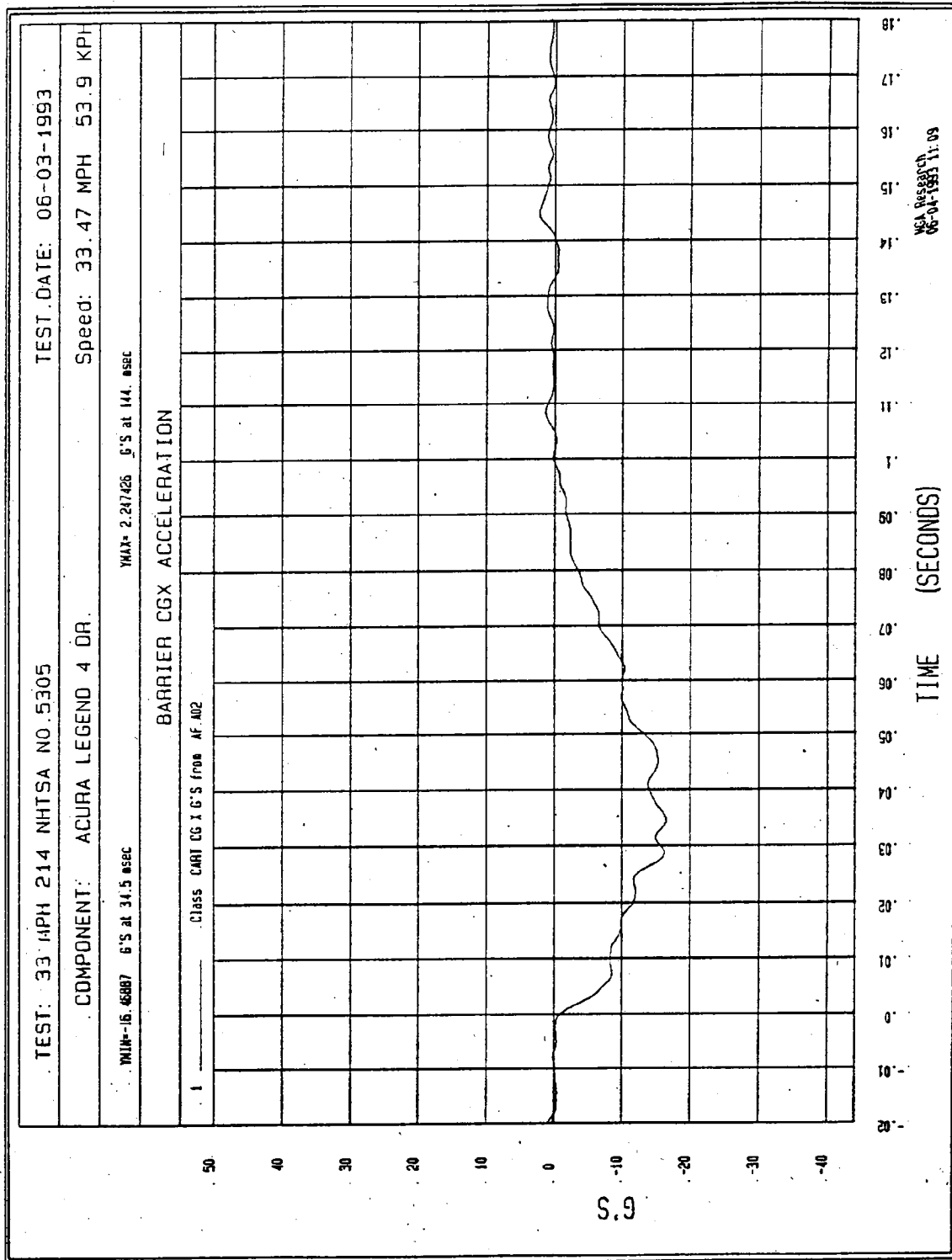


Figure B-81 - MDB Center of Gravity X Accel. vs. Time

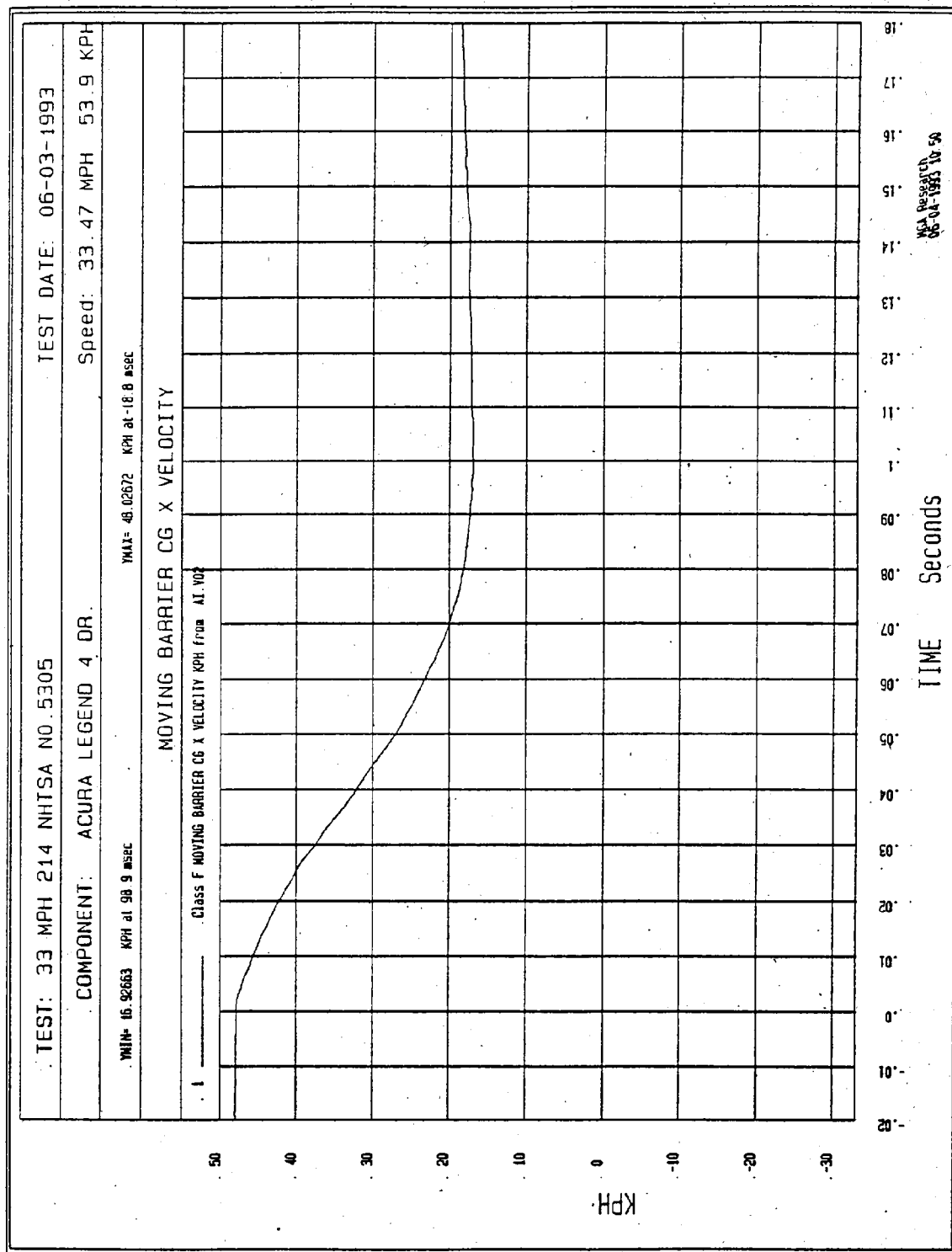


Figure B-82 - MDB Center of Gravity X Velocity vs. Time

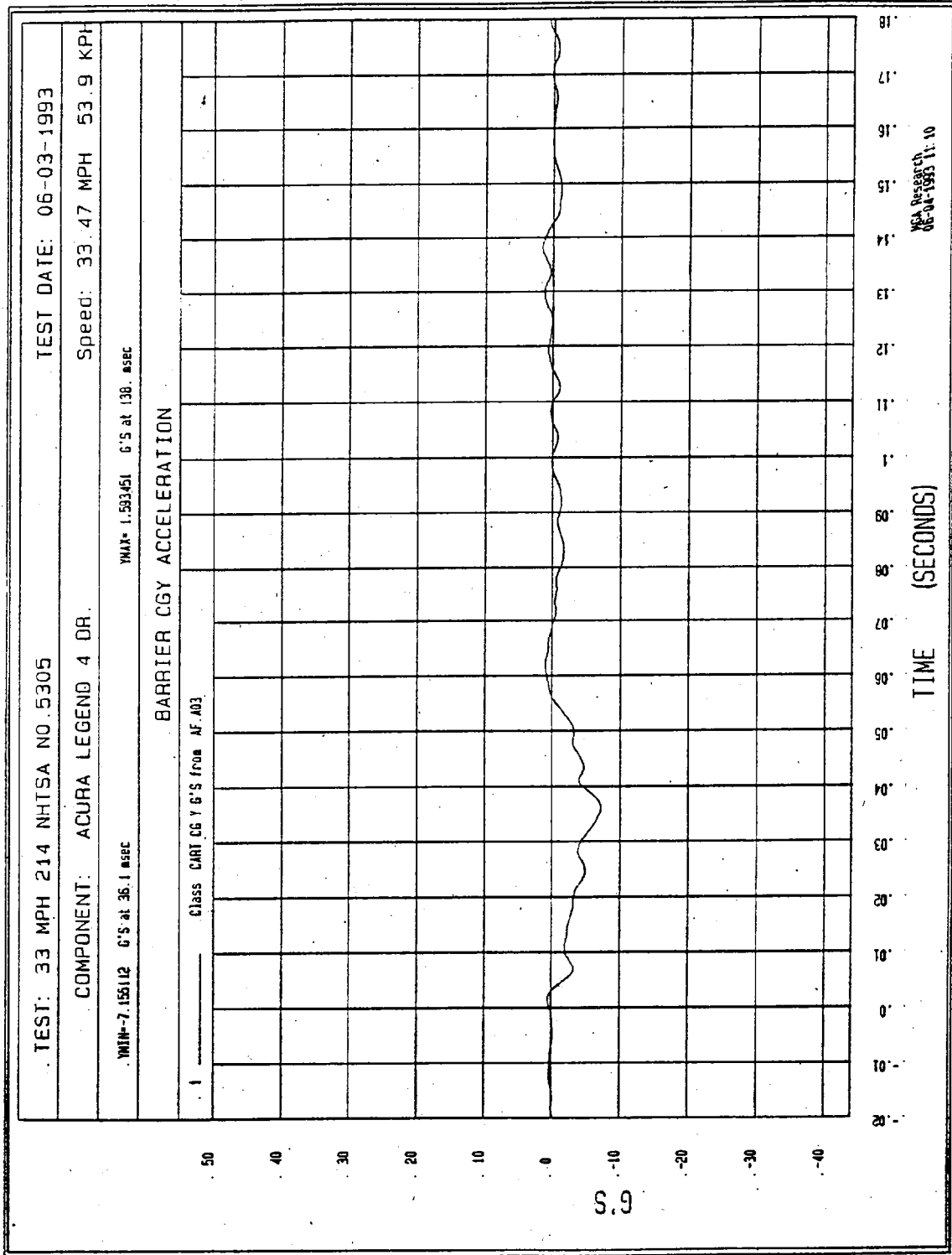


Figure B-83 - MDB Center of Gravity Y Accel. vs. Time

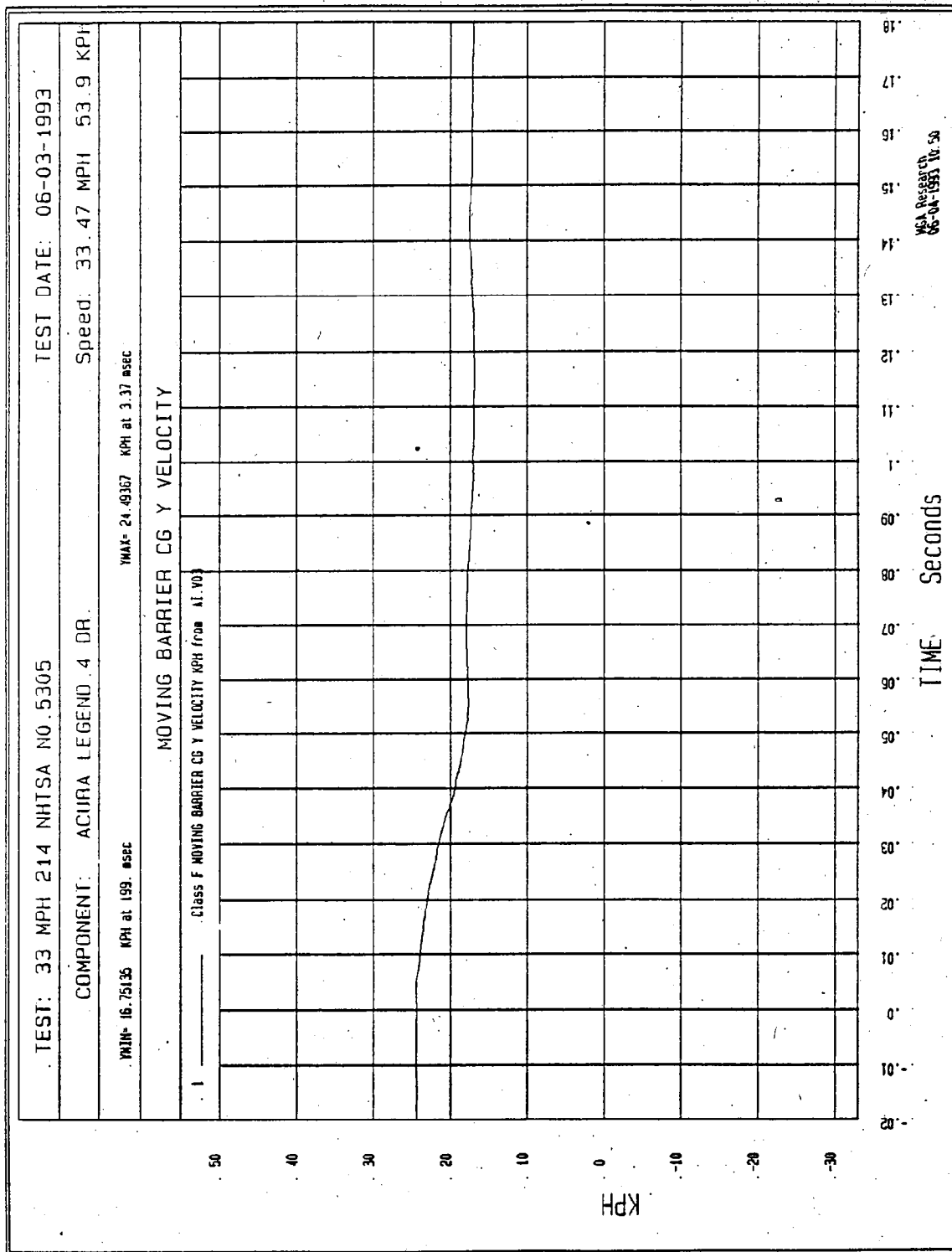


Figure B-84 - MDR Center of Gravity Y Velocity vs. Time

B-84

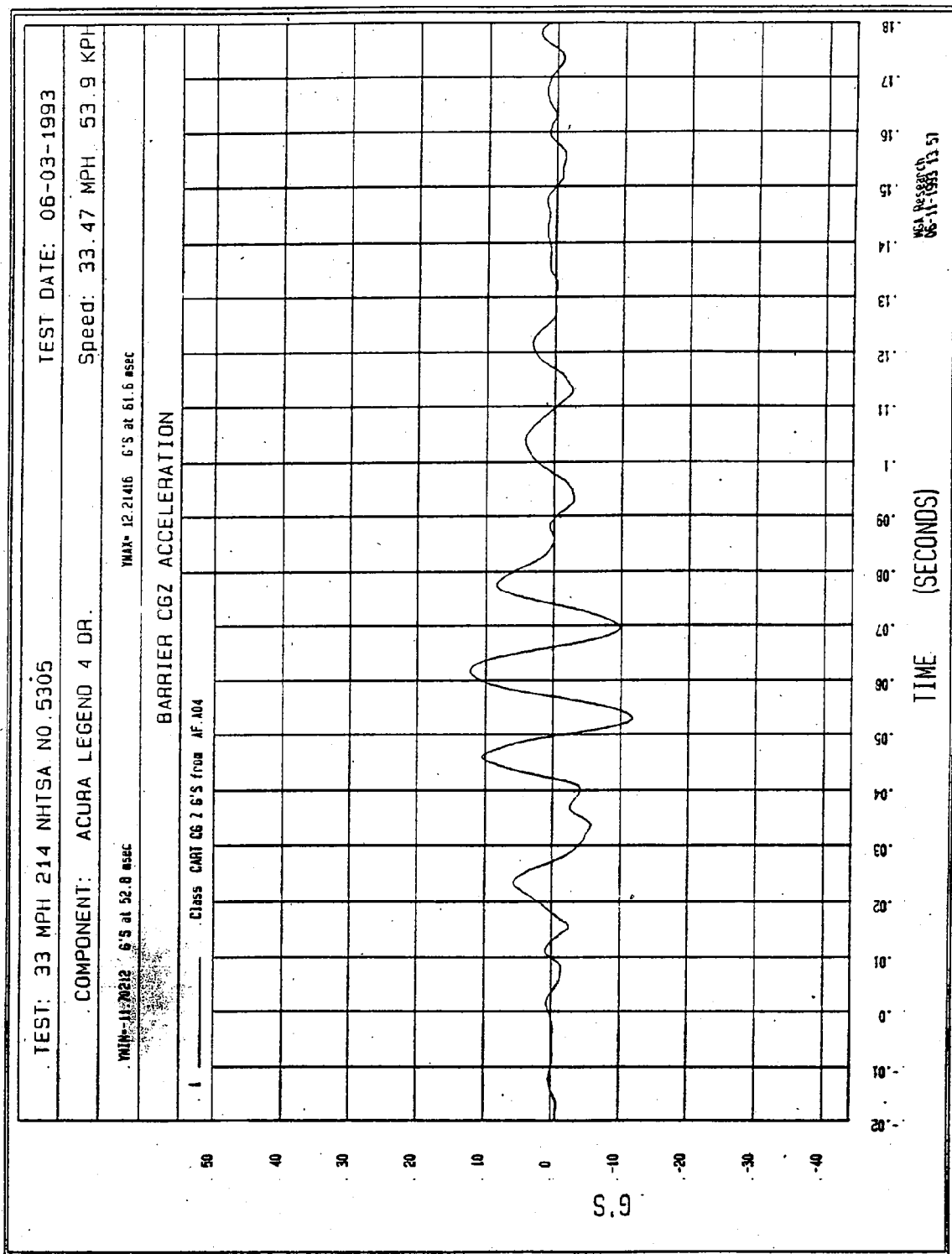
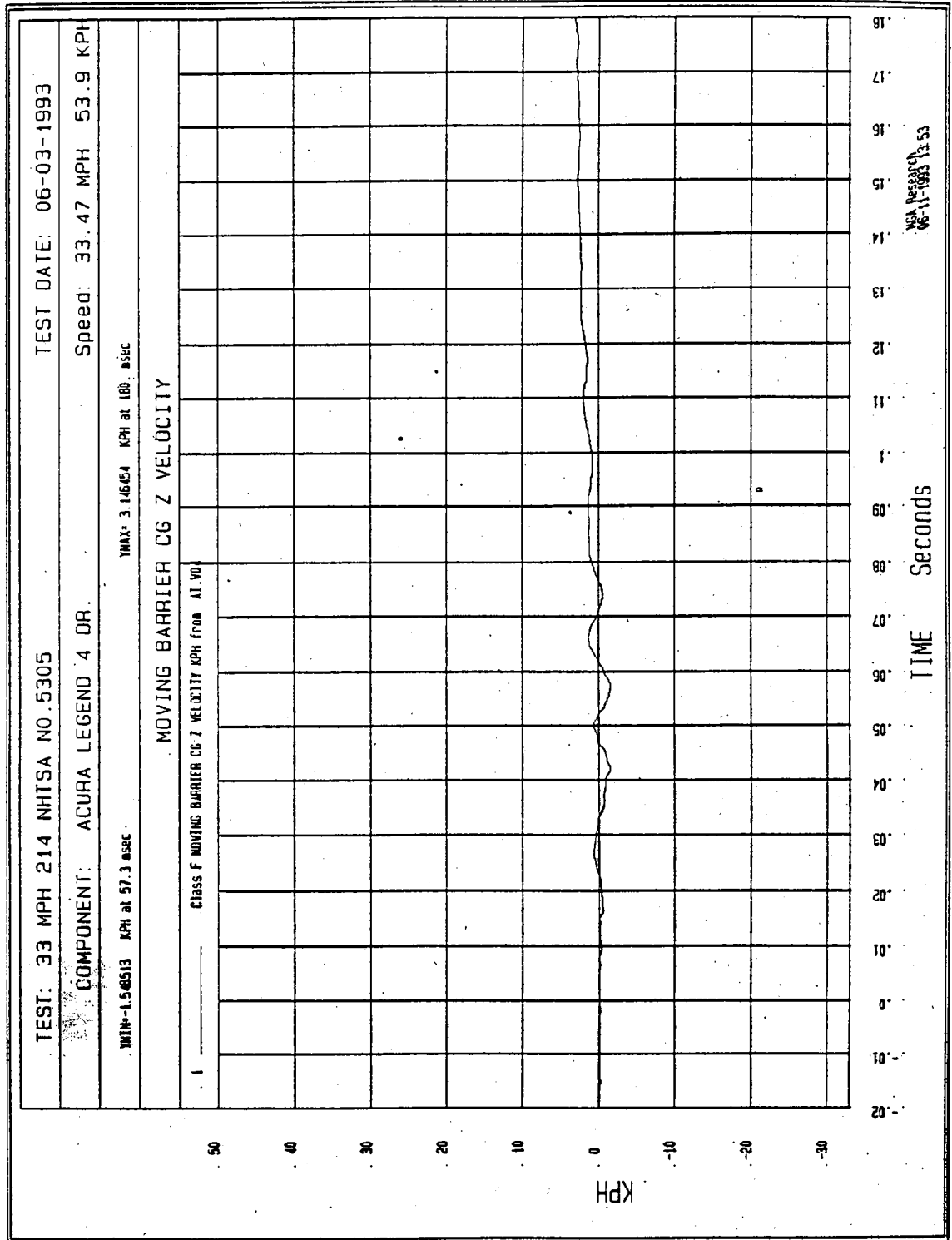
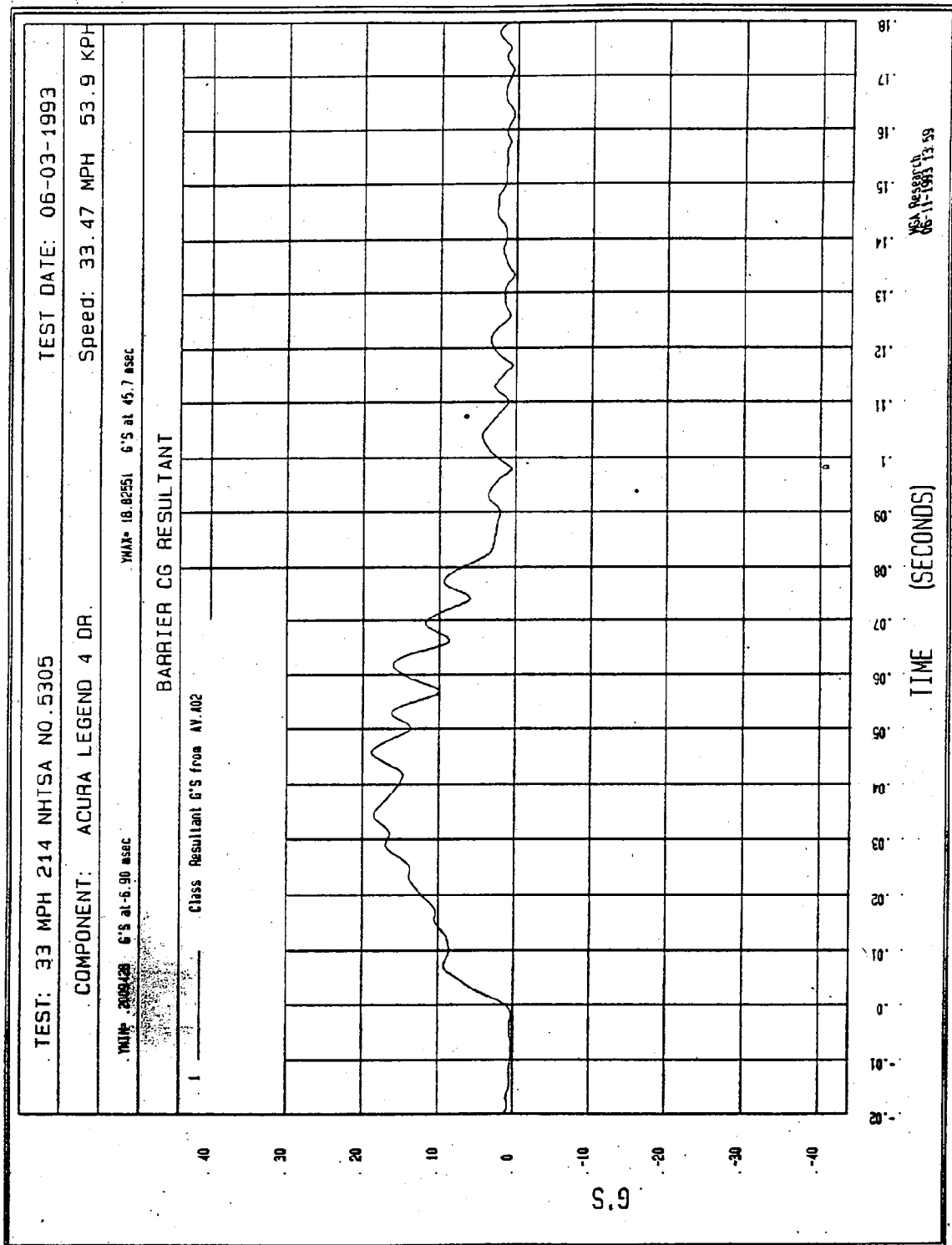


Figure B-85 - MDB Center of Gravity Z Accel. vs. Time



B-86



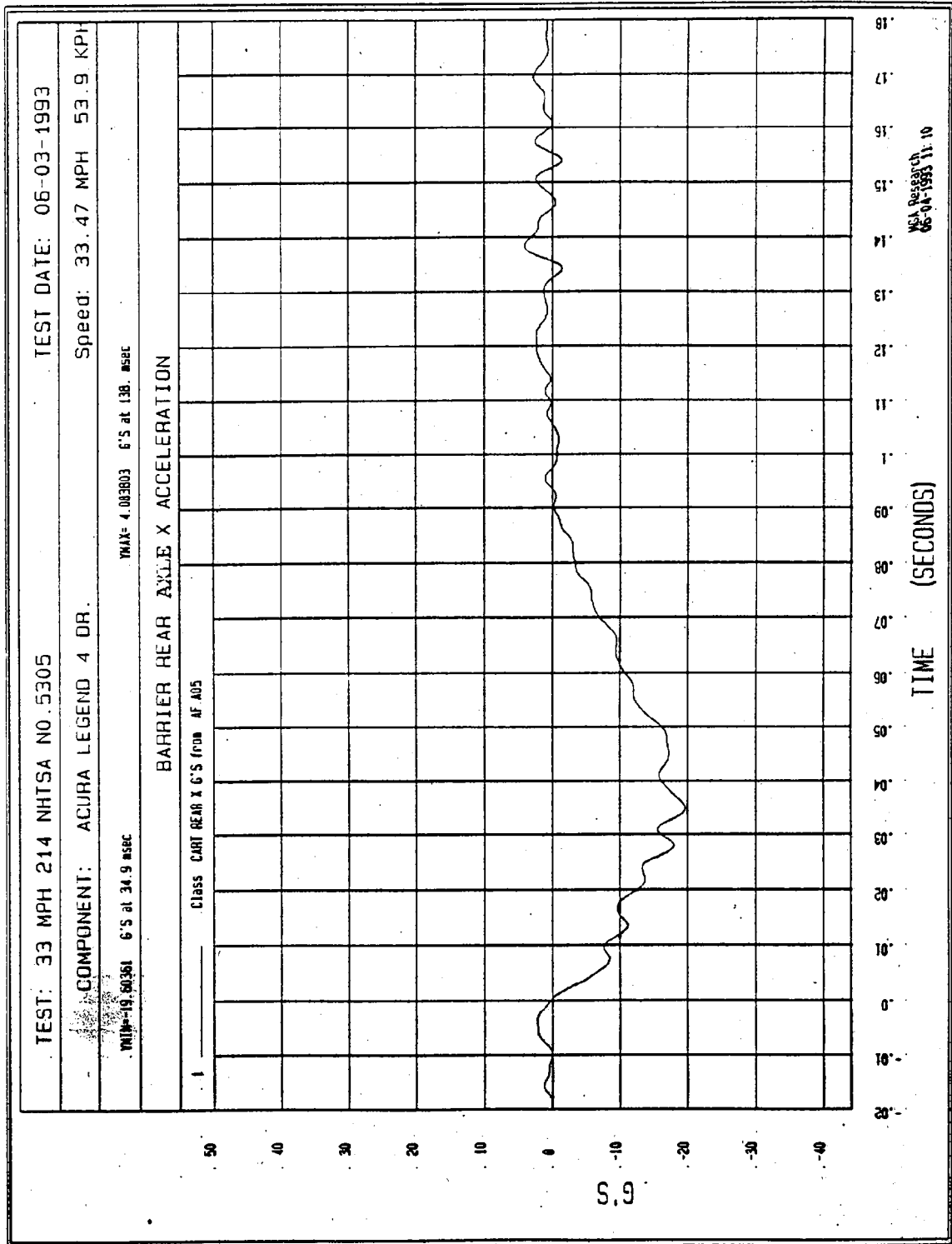


Figure B-88 - MDB Rear X Acceleration vs. Time

B-88

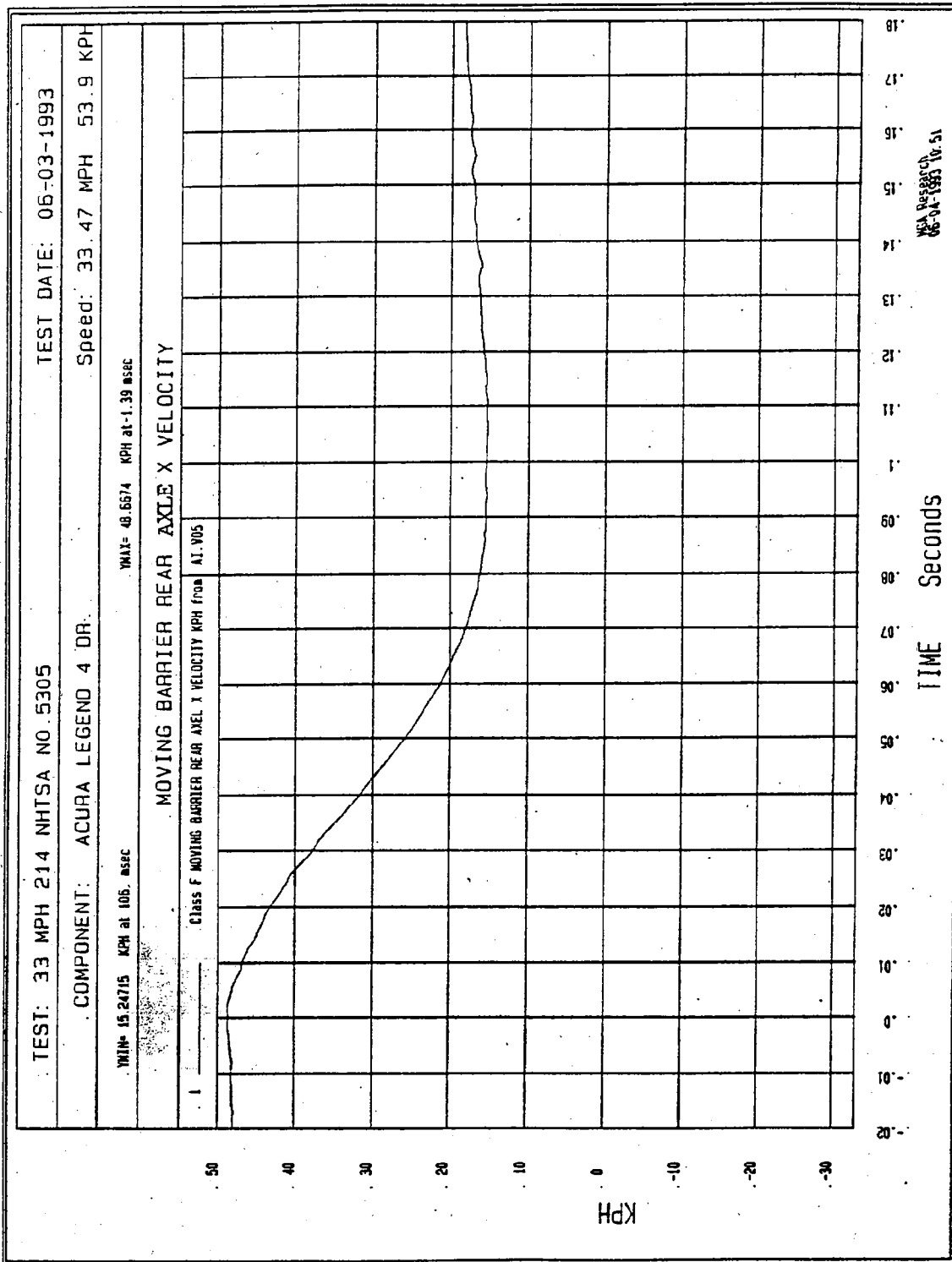


Figure B-89 : MDB Rear X Velocity vs. Time

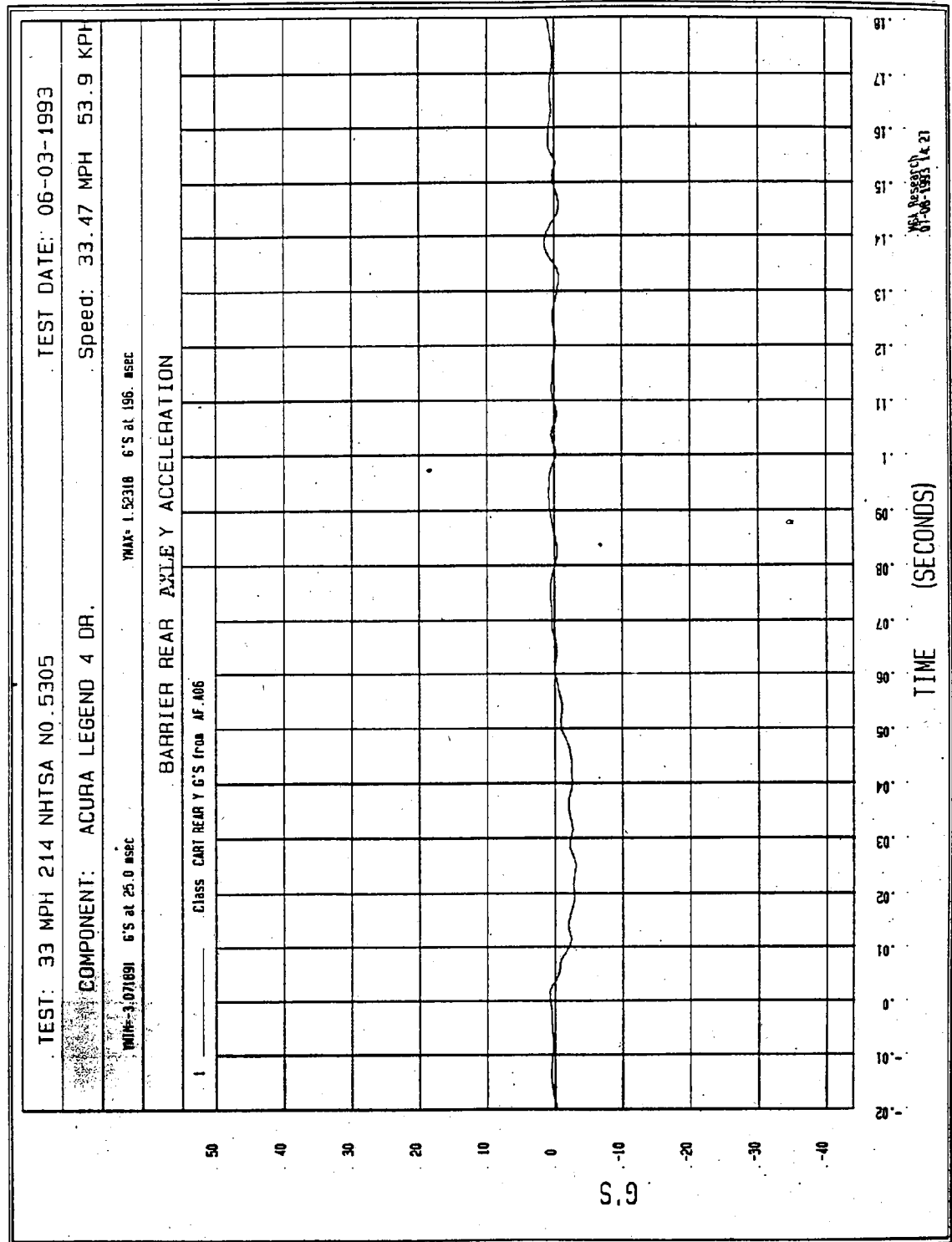


Figure B-90 - MDB Rear Y Acceleration vs. Time

B-90

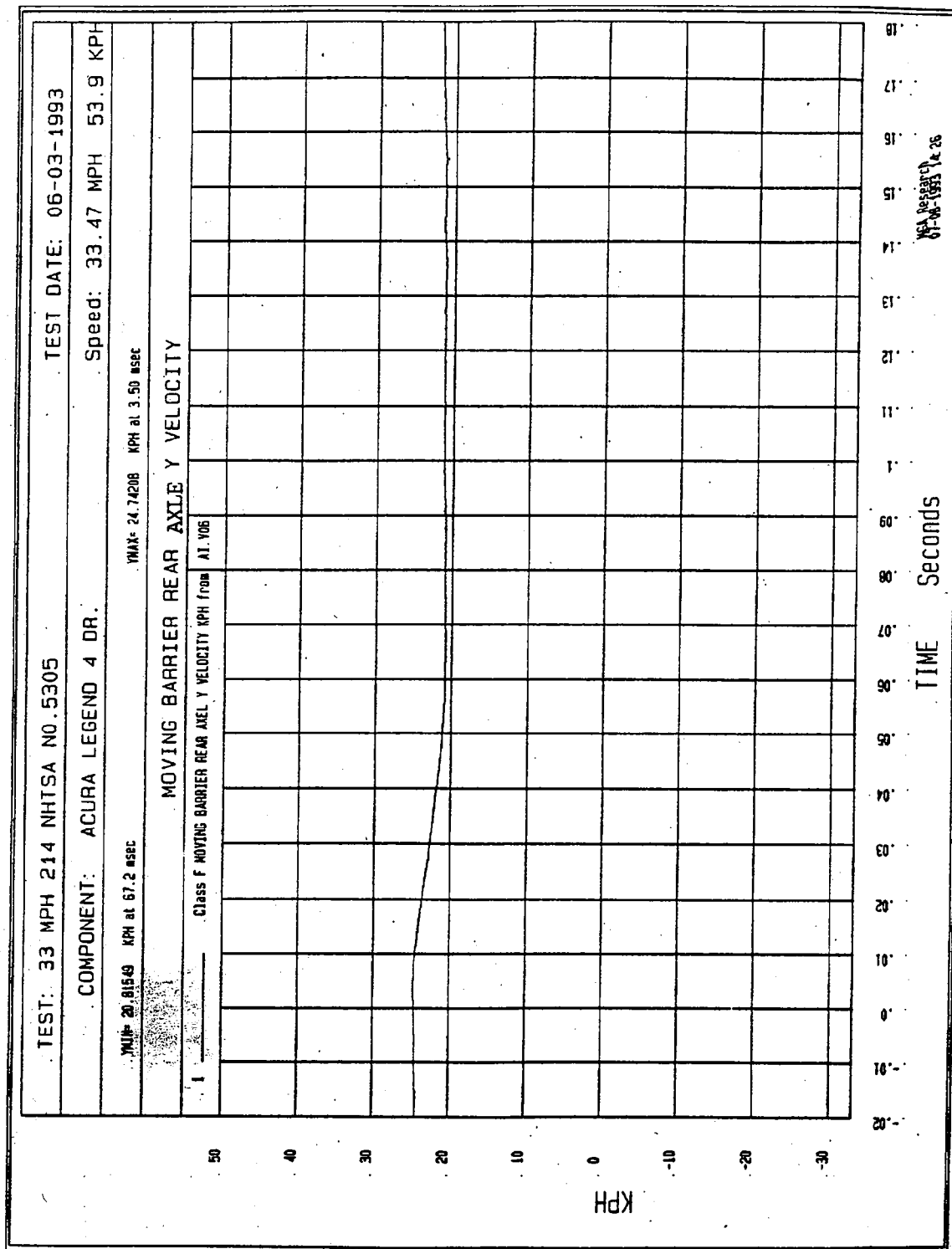
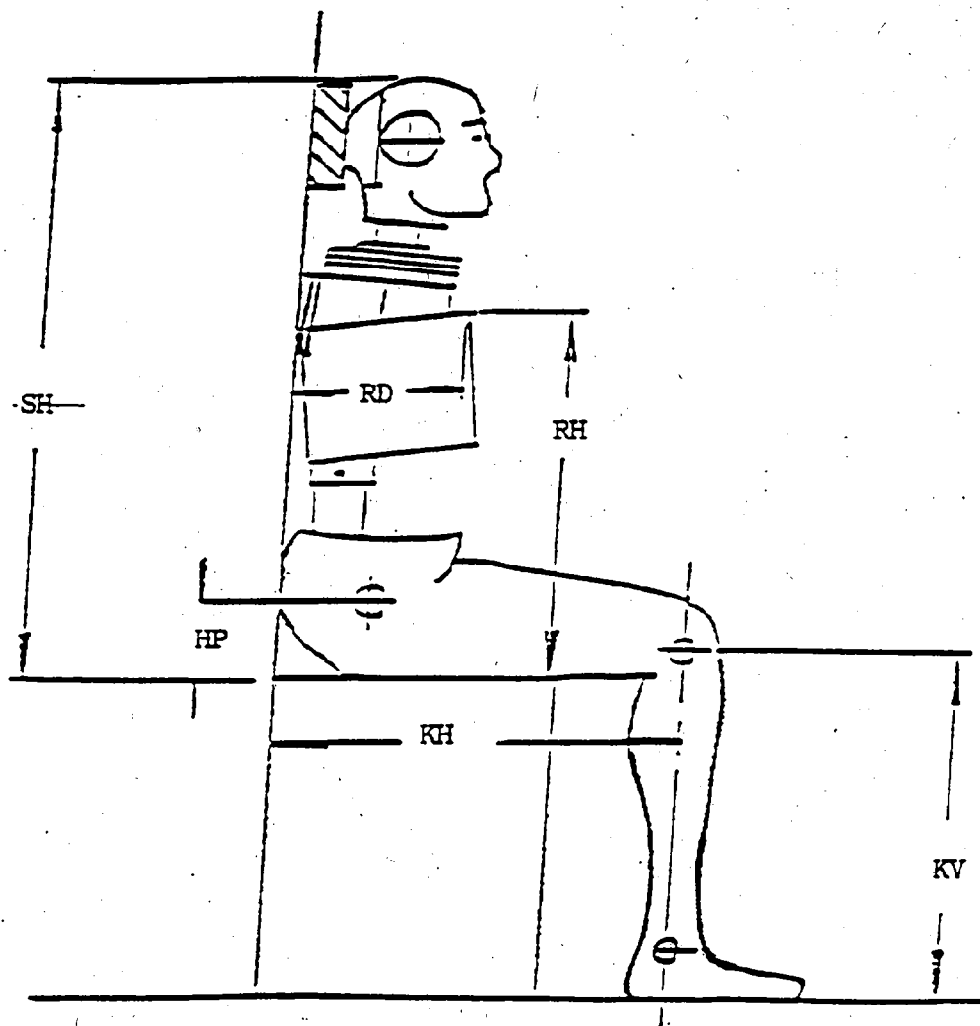


Figure B-91 - MDB Rear Y Velocity vs. Time

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA
DUMMY NO.: 136 DUMMY CALIBRATION BY: Rod McClelland

I. CONFIGURATION VERIFICATION DATA



DATE OF CONFIGURATION VERIFICATION: 6-02-93

DESCRIPTION	SPECIFICATION	ACTUAL MEASUREMENT
SH - Seated Height	35.6" to 35.8"	35.7
RH - Rib Height	19.75" to 20.5"	20.5
HP - Hip Pivot Height	3.9" ref.	3.8
RD - Rib From Backline	9.0" to 9.5"	9.0
KH - Knee Pivot From Backline	20.1" to 20.7"	20.5
KV - Knee Pivot to Floor	19.3" to 19.9"	19.5
HW - Hip Width	14.0" to 15.4"	15.4

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SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE (CONT.)

II. PERFORMANCE VERIFICATION DATA

UMMY NO.: 136 DUMMY CALIBRATION BY: Rod McClelland

ERIFICATION LABORATORY TEMPERATURE (66° - 78°F): 70

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE (CONT.)

.0 LUMBAR FLEXION TEST

	SPECIFICATION	MEASUREMENT
Force @ 20°	22 to 34 lbs	29
Force @ 30°	34 to 46 lbs	43
Force @ 40°	46 to 58 lbs	57
Return Angle	12° Maximum	8

.0 ABDOMINAL COMPRESSION TEST (Preload = 10 lbs)

	SPECIFICATION	MEASUREMENT
Force @ 0.5 in	23.3 to 36.5 lbs	29
Force @ 0.75 in	36.7 to 49.8 lbs	41
Force @ 1.0 in	50 to 63 lbs	56
Force @ 1.3 in	73 to 88 lbs	86

.0 THORAX IMPACT TEST

	SPECIFICATION	MEASUREMENT
Probe Speed	13.8 TO 14.2 f/s	13.9
Upper Rib	37 to 46 g	45
Lower Rib	37 to 46 g	43
Lower Spine	15 to 22 g	21

.0 PELVIC IMPACT TEST

	SPECIFICATION	MEASUREMENT
Probe Speed	13.8 to 14.2 f/s	14.0
Pelvis Acceleration	40 to 60 g	53

SIDE IMPACT DUMMY DATA SHEET
PAGE 2

SIDE IMPACT DUMMY DATA SHEET

DUMMY #: 136

EXPOSURE

DATE

TYPE OF TEST

TEST DATE: 6-03-93

1st

6-03-93

NHTSA

DRIVER	PASSENGER
X	

1) RIBS ACCELEROMETERS:

	MANUFACTURER	SERIAL NO.	CAL. DATE	DLR	CHECKED
UR	<u>Endevco</u>	<u>ACCL3</u>	<u>5-11-93</u>	<u>100.79</u>	<u>X</u>
URR	<u>Endevco</u>	<u>AC764</u>	<u>5-11-93</u>	<u>103.31</u>	<u>X</u>
LR	<u>Endevco</u>	<u>AC8E9</u>	<u>5-17-93</u>	<u>92.56</u>	<u>X</u>
LRR	<u>Endevco</u>	<u>A43M</u>	<u>5-11-93</u>	<u>121.71</u>	<u>X</u>

2) SPINE ACCELEROMETERS:

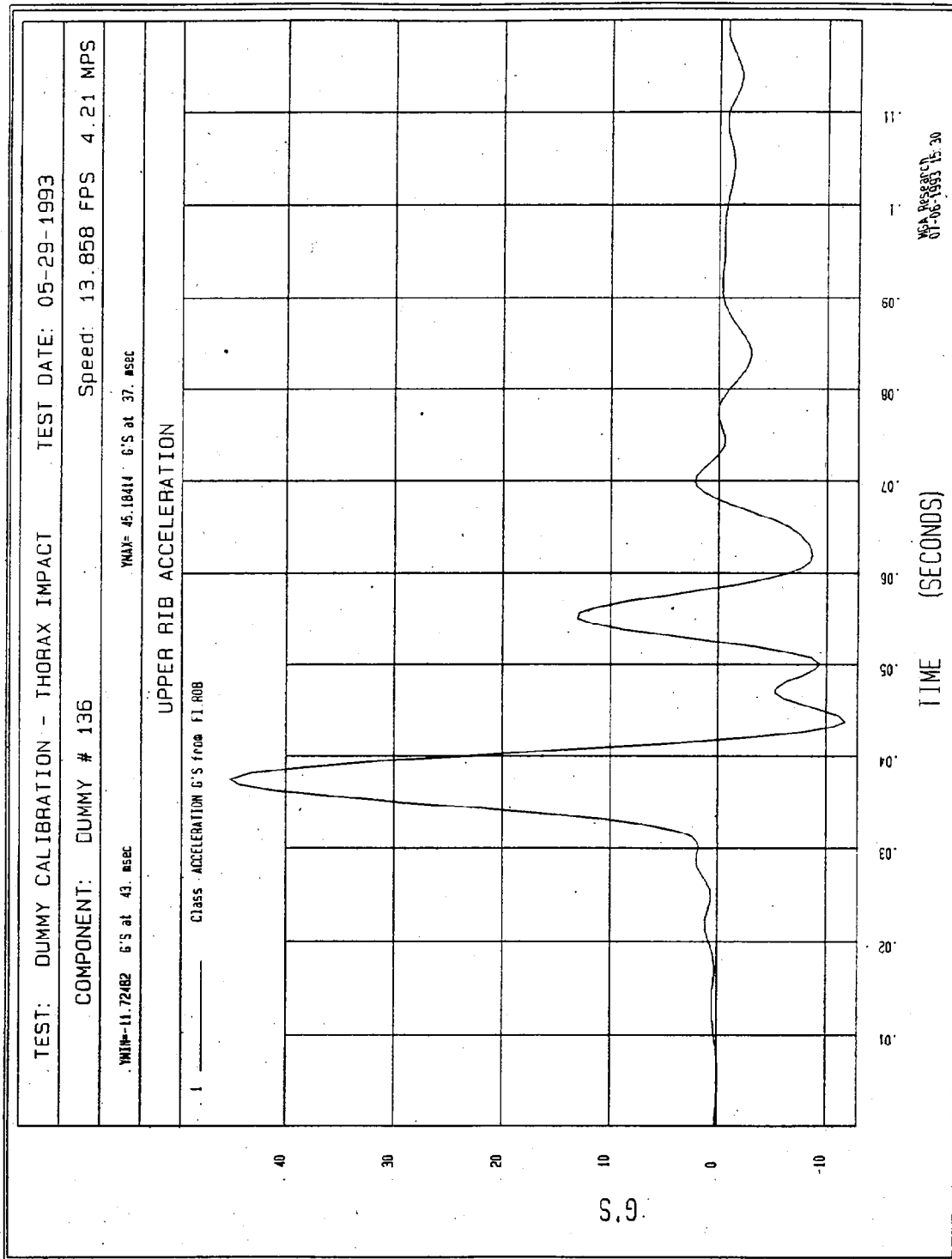
	MANUFACTURER	SERIAL NO.	CAL. DATE	DLR	CHECKED
USY	<u>Endevco</u>	<u>AC815</u>	<u>5-11-93</u>	<u>86.96</u>	<u>X</u>
USRY	<u>Endevco</u>	<u>A82D</u>	<u>5-11-93</u>	<u>87.1</u>	<u>X</u>
LSY	<u>Endevco</u>	<u>AC8J4</u>	<u>5-11-93</u>	<u>103.27</u>	<u>X</u>
LSRY	<u>Endevco</u>	<u>A07M</u>	<u>5-11-93</u>	<u>86.33</u>	<u>X</u>

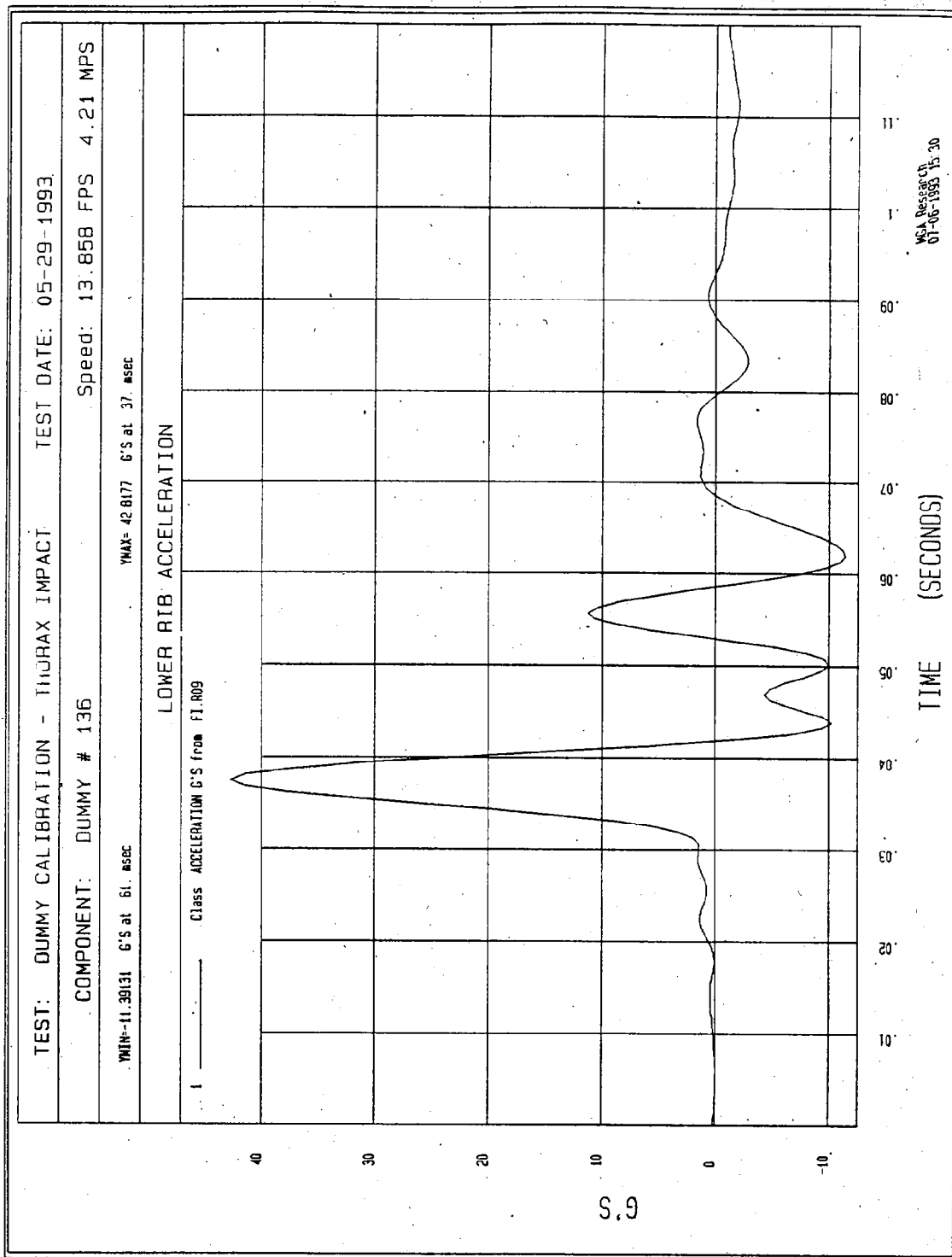
3) PELVIS ACCELEROMETERS:

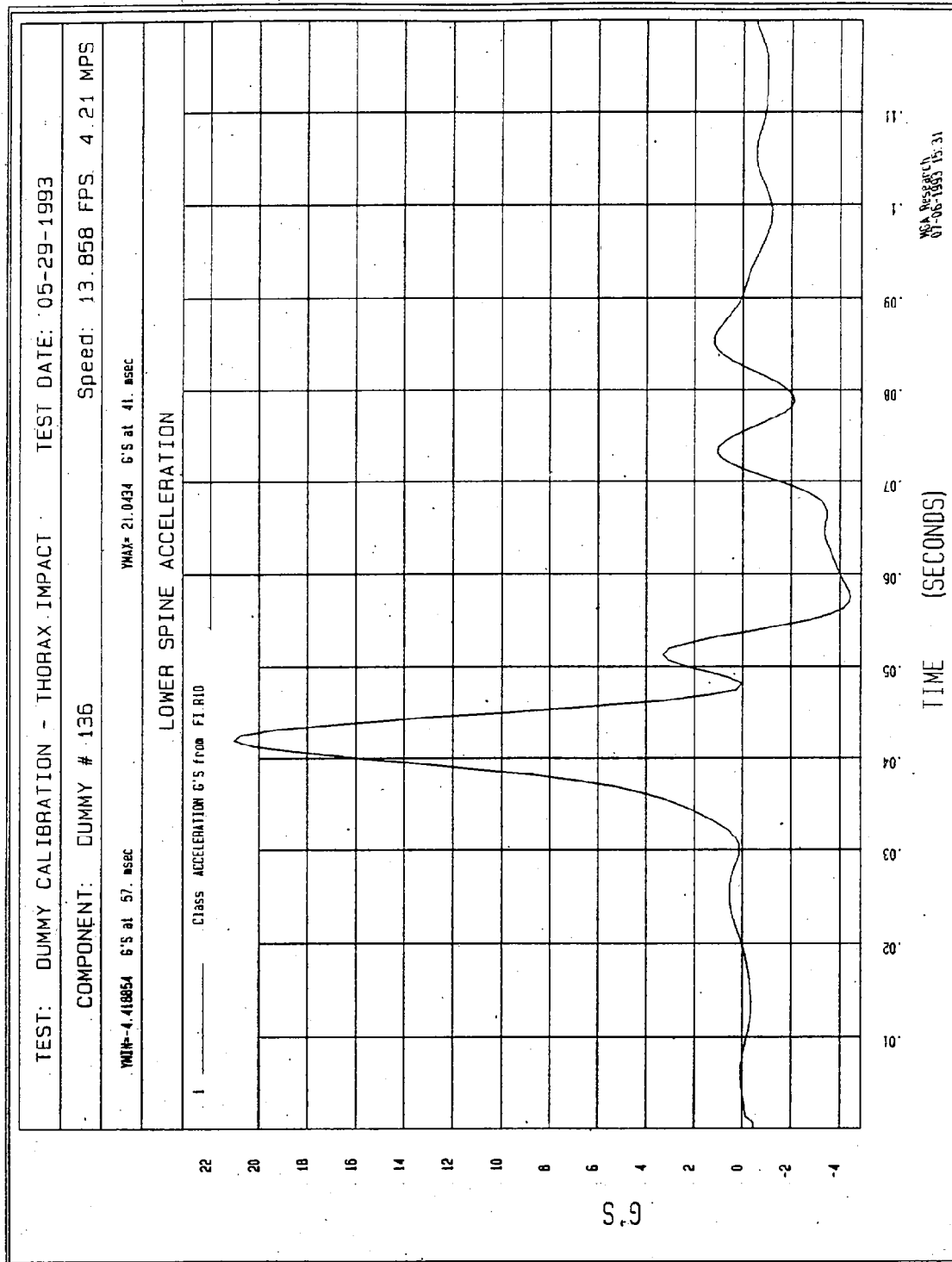
	MANUFACTURER	SERIAL NO.	CAL. DATE	DLR	CHECKED
Y	<u>Endevco</u>	<u>EH45</u>	<u>5-11-93</u>	<u>125.07</u>	<u>X</u>
RY	<u>Endevco</u>	<u>A99L</u>	<u>5-11-93</u>	<u>100.15</u>	<u>X</u>

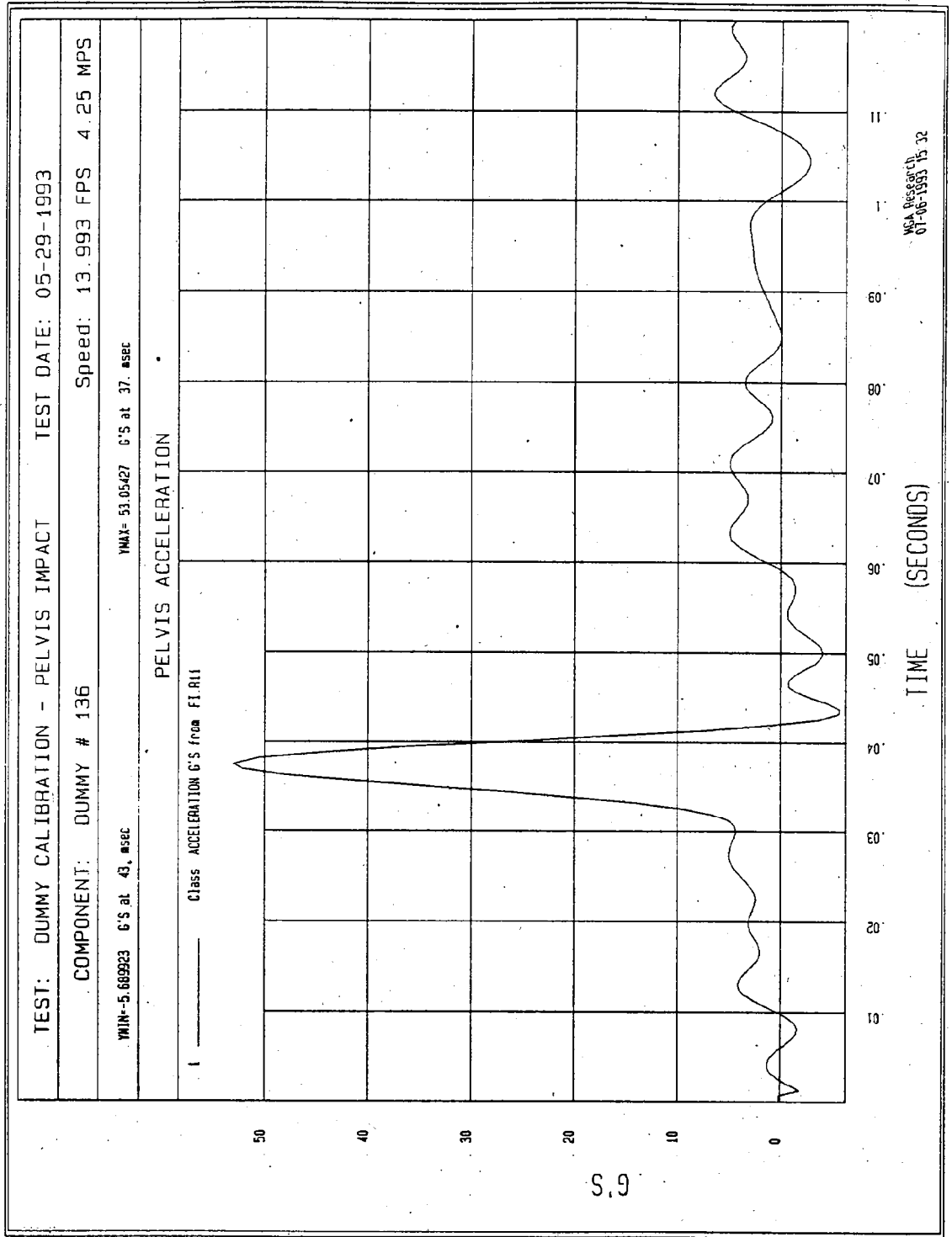
DUMMY INSTRUMENTED BY: Rod McClelland

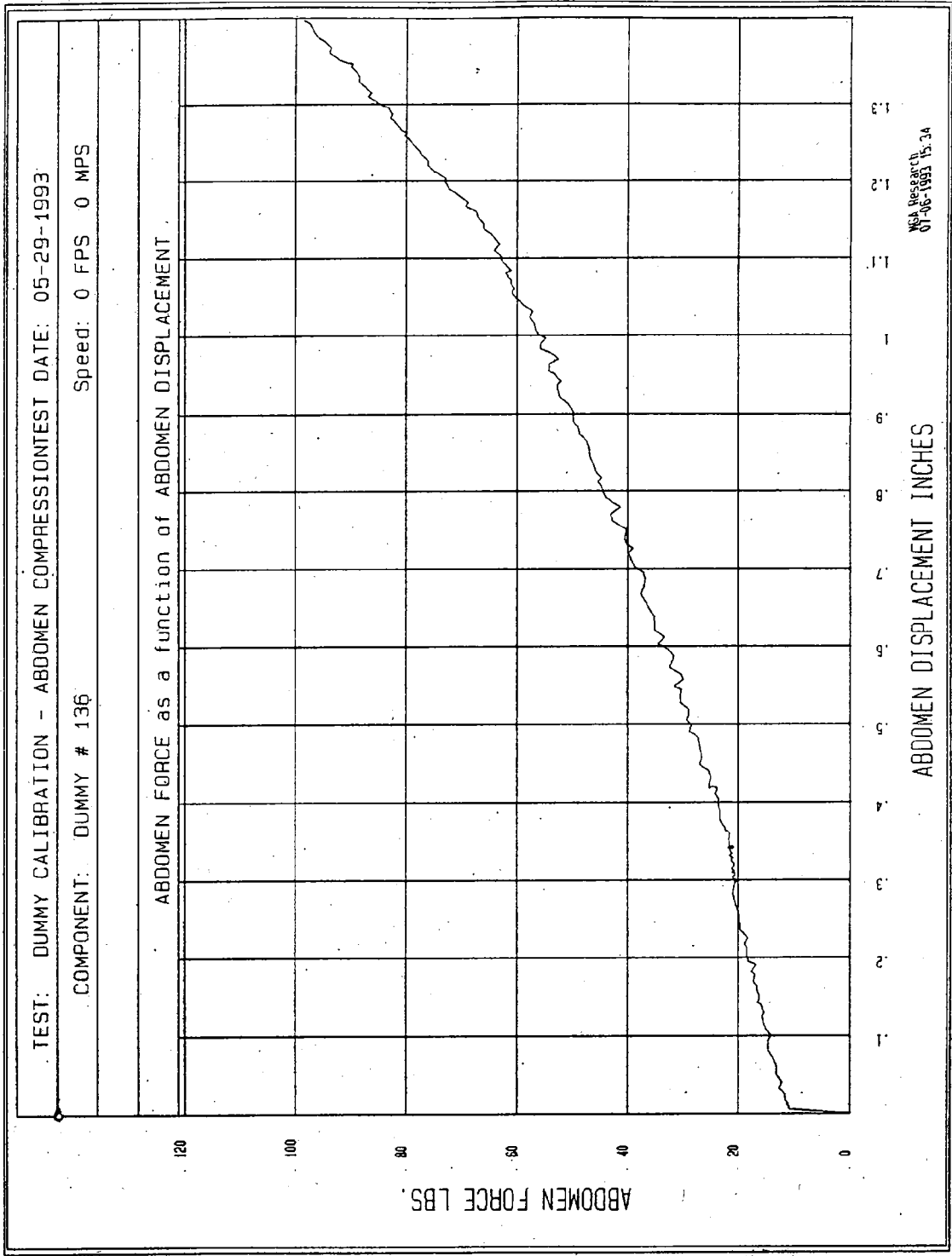
APPROVED BY: Rod McClelland

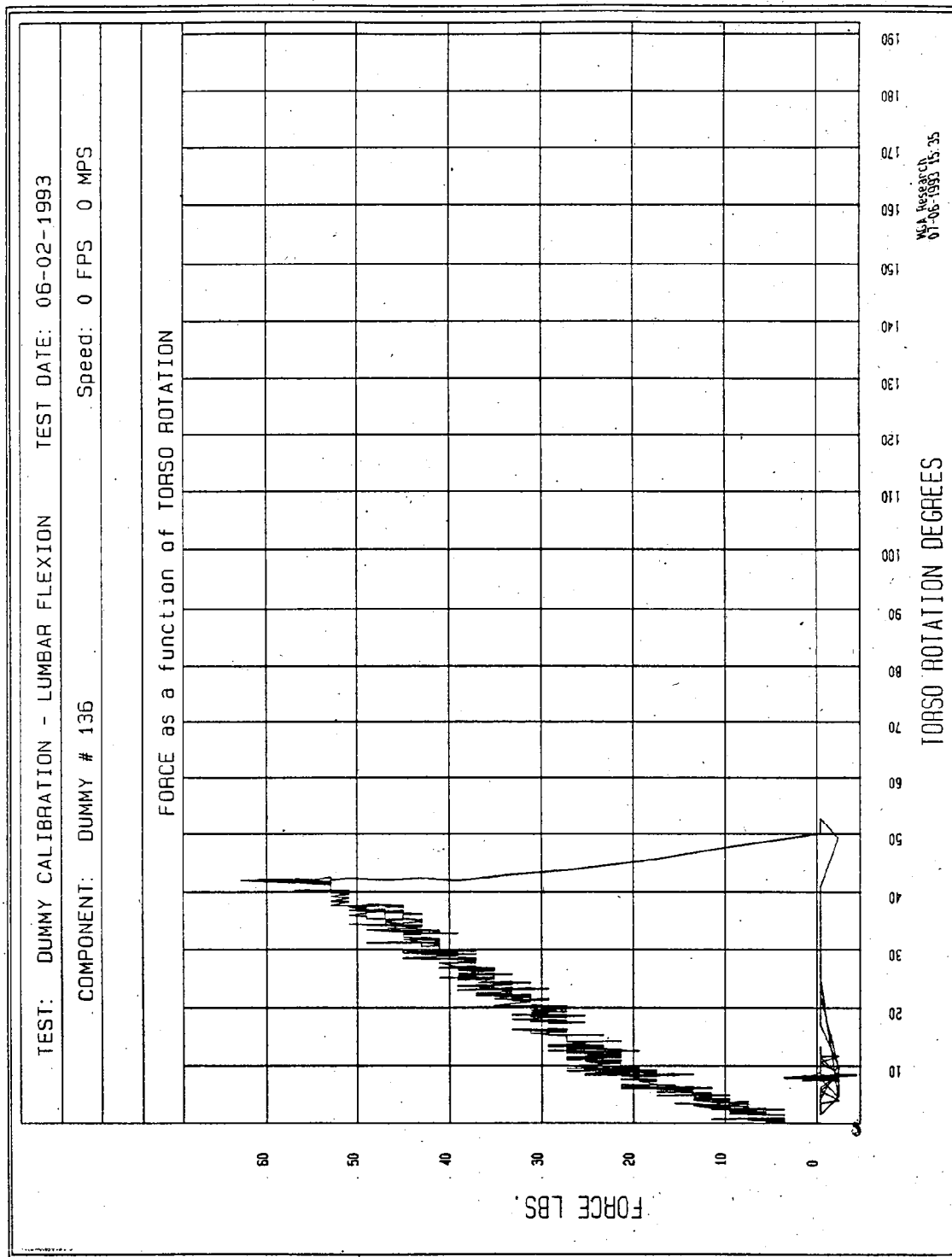












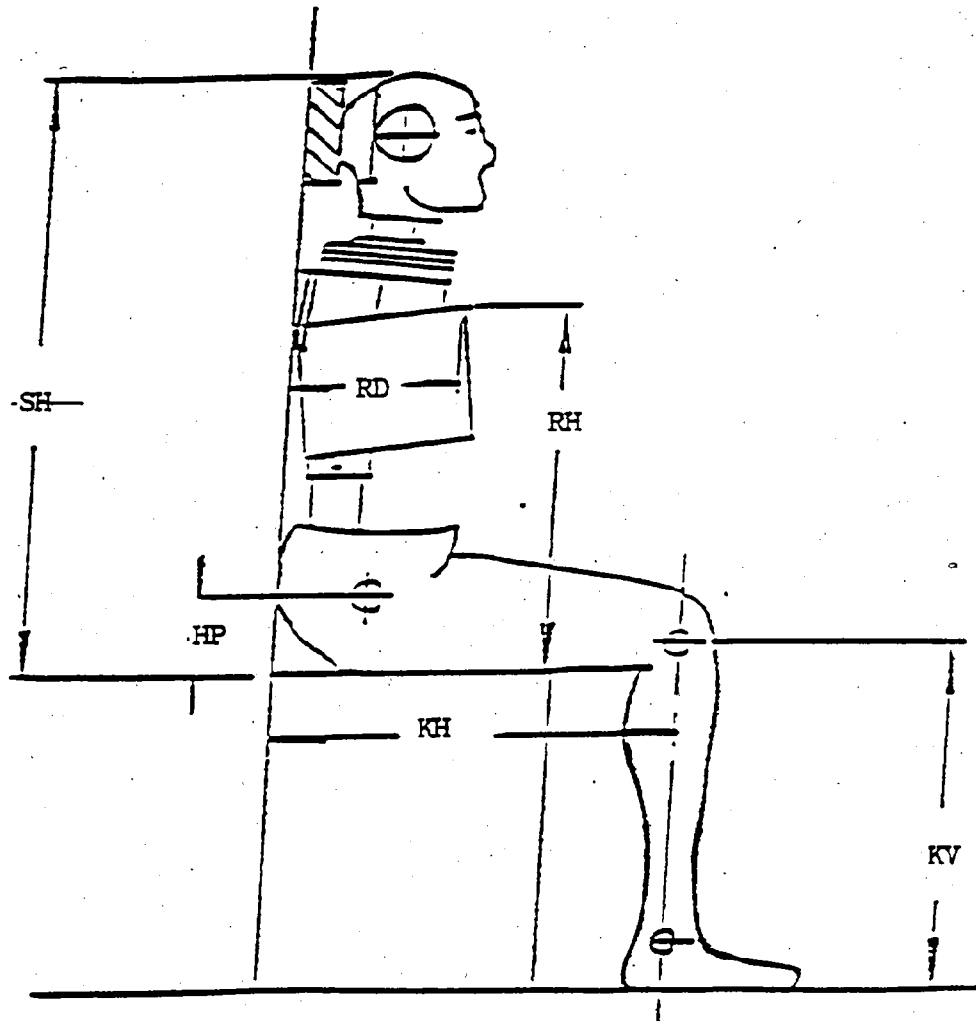
C-10

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 137

DUMMY CALIBRATION BY: Rod McClelland

I. CONFIGURATION VERIFICATION DATA



DATE OF CONFIGURATION VERIFICATION: 6-02-93

DESCRIPTION	SPECIFICATION	ACTUAL MEASUREMENT
SH - Seated Height	35.6" to 35.8"	35.7
RH - Rib Height	19.75" to 20.5"	20.5
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Backline	9.0" to 9.5"	9.2
KH - Knee Pivot From Backline	20.1" to 20.7"	20.2
KV - Knee Pivot to Floor	19.3" to 19.9"	19.5
HW - Hip Width	14.0" to 15.4"	14.5

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE (CONT.)

II. PERFORMANCE VERIFICATION DATA

DUMMY NO.: 137

DUMMY CALIBRATION BY: Rod McClelland

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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE (CONT.)

1.0 LUMBAR FLEXION TEST

	SPECIFICATION	MEASUREMENT
Force @ 20°	22 to 34 lbs	26
Force @ 30°	34 to 46 lbs	43
Force @ 40°	46 to 58 lbs	56
Return Angle	12° Maximum	10

2.0 ABDOMINAL COMPRESSION TEST
(Preload = 10 lbs)

	SPECIFICATION	MEASUREMENT
Force @ 0.5 in	23.3 to 36.5 lbs	28.5
Force @ 0.75 in	36.7 to 49.8 lbs	40.5
Force @ 1.0 in	50 to 63 lbs	56
Force @ 1.3 in	73 to 88 lbs	86

3.0 THORAX IMPACT TEST

	SPECIFICATION	MEASUREMENT
Probe Speed	13.8 TO 14.2 f/s	13.9
Upper Rib	37 to 46 g	38
Lower Rib	37 to 46 g	38
Lower Spine	15 to 22 g	19

4.0 PELVIC IMPACT TEST

	SPECIFICATION	MEASUREMENT
Probe Speed	13.8 to 14.2 f/s	13.9
Pelvis Acceleration	40 to 60 g	46

SIDE IMPACT DUMMY DATA SHEET

DUMMY #: 137

TEST DATE: 6-03-93

DRIVER	PASSENGER
	X

EXPOSURE

1st

DATE

6-03-93

TYPE OF TEST

NHTSA

1) RIBS ACCELEROMETERS:

	MANUFACTURER	SERIAL NO.	CAL. DATE	DLR	CHECKED
UR	<u>Endevco</u>	<u>ACC68</u>	<u>5-11-93</u>	<u>107.87</u>	<u>X</u>
URR	<u>Endevco</u>	<u>AC8A4</u>	<u>5-11-93</u>	<u>90.96</u>	<u>X</u>
LR	<u>Endevco</u>	<u>AC8J9</u>	<u>5-17-93</u>	<u>106.97</u>	<u>X</u>
LRR	<u>Endevco</u>	<u>A87M</u>	<u>5-11-93</u>	<u>92.88</u>	<u>X</u>

2) SPINE ACCELEROMETERS:

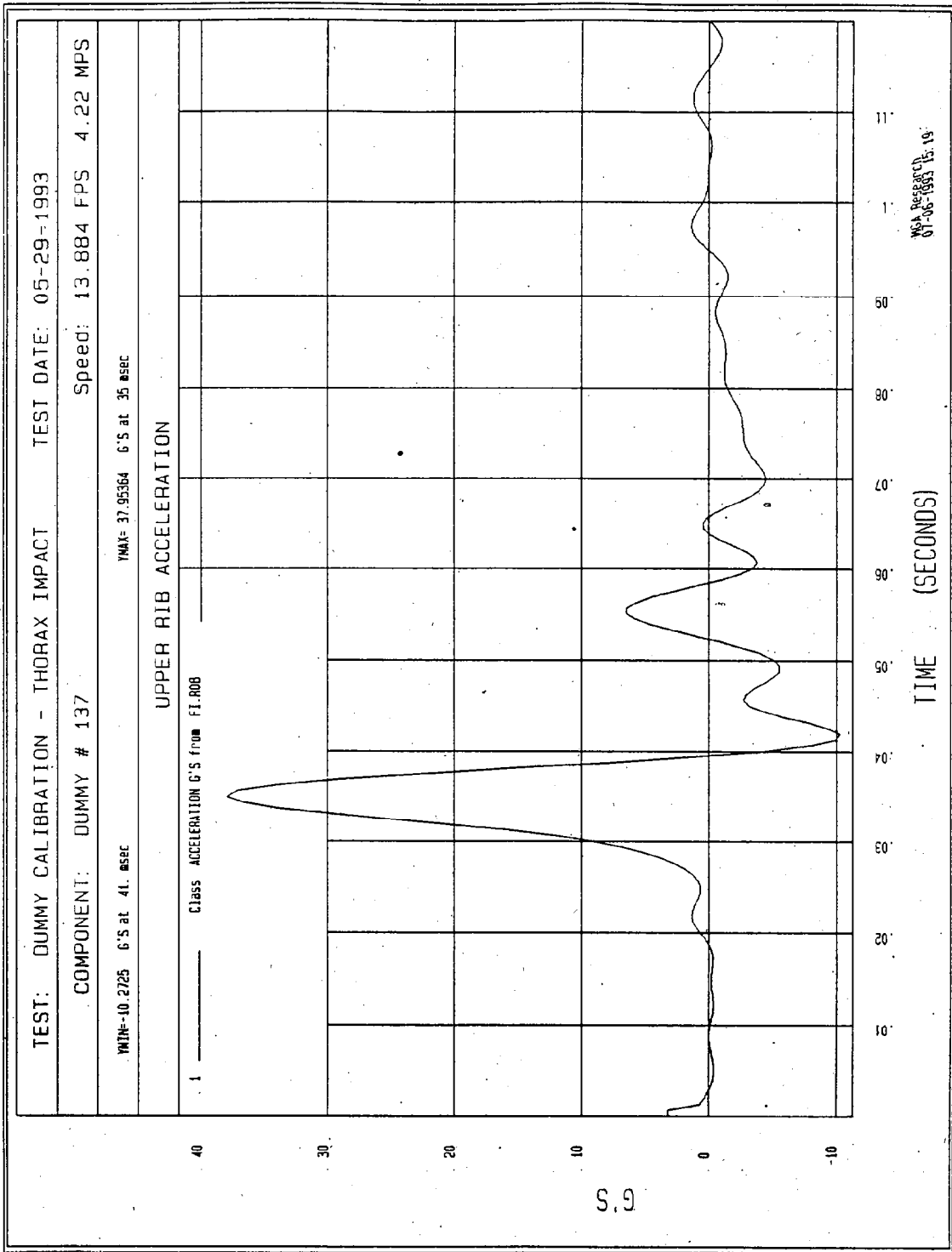
	MANUFACTURER	SERIAL NO.	CAL. DATE	DLR	CHECKED
USY	<u>Endevco</u>	<u>AAKM9</u>	<u>5-11-93</u>	<u>99.93</u>	<u>X</u>
USRY	<u>Endevco</u>	<u>A67M</u>	<u>5-11-93</u>	<u>86.92</u>	<u>X</u>
LSY	<u>Endevco</u>	<u>ACC58</u>	<u>5-11-93</u>	<u>124.55</u>	<u>X</u>
LSRY	<u>Endevco</u>	<u>AALL9</u>	<u>5-11-93</u>	<u>81.91</u>	<u>X</u>

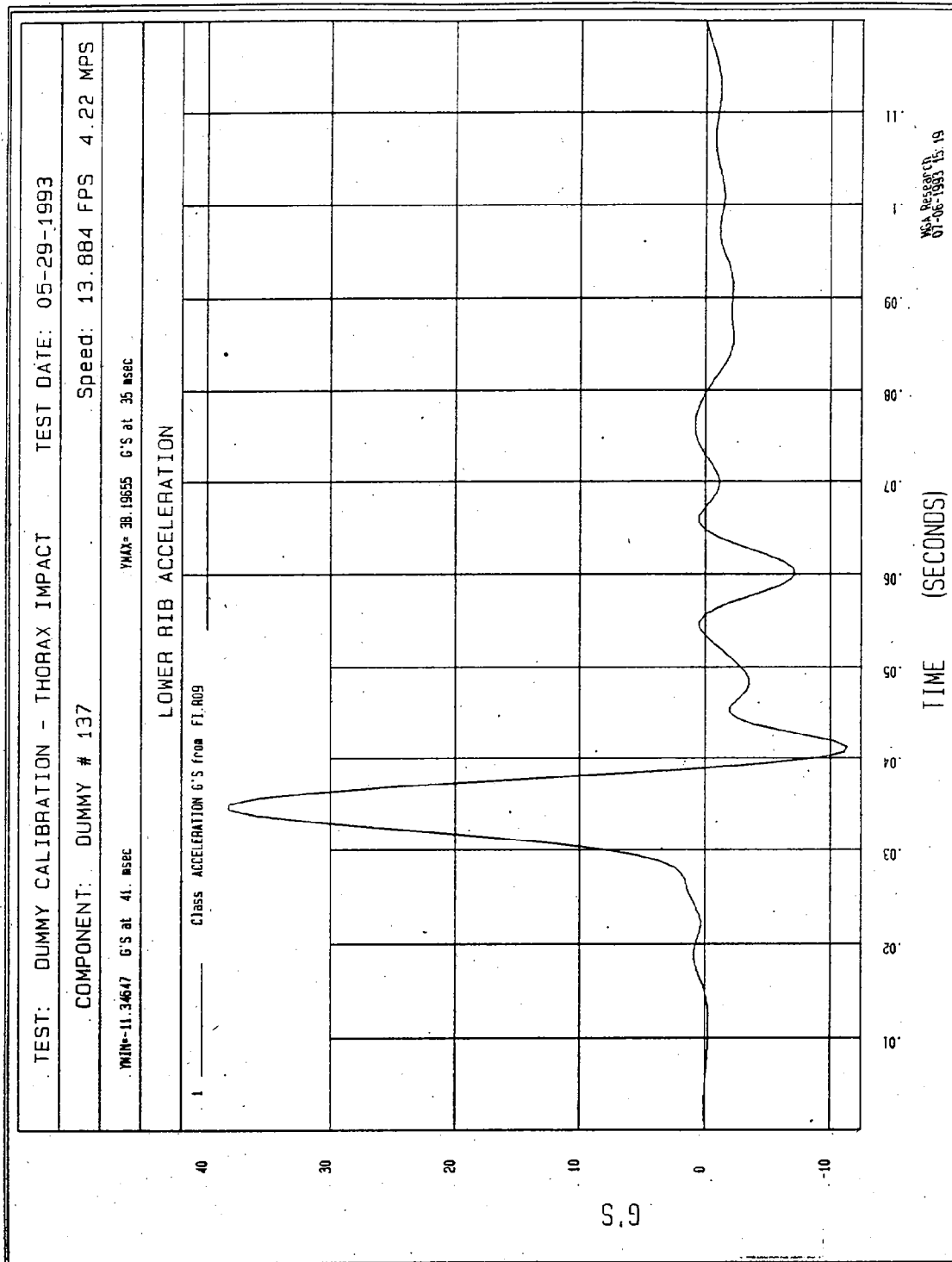
3) PELVIS ACCELEROMETERS:

	MANUFACTURER	SERIAL NO.	CAL. DATE	DLR	CHECKED
Y	<u>Endevco</u>	<u>AC758</u>	<u>5-11-93</u>	<u>95.2</u>	<u>X</u>
RY	<u>Endevco</u>	<u>AC8R7</u>	<u>5-11-93</u>	<u>120.89</u>	<u>X</u>

DUMMY INSTRUMENTED BY: Rod McClelland

APPROVED BY: Rod McClelland





MCA Research
01-06-1983 15:19

