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FILE

REPORT NO.: MGA-93-21403
NHTSA NO: MP0307
OFFICE OF MARKET INCENTIVES

SIDE IMPACT PROTECTION STUDY

PASSENGER CARS

1993 DODGE INTREPID
4-DOOR SEDAN

Film # F-003650

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105

MGA Ref. No.: G93A-02

Test Date: May 7, 1993

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF MARKET INCENTIVES
400 SEVENTH STREET, S.W.
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16. Abstract

A 48/24 kph (30/15 mph) 90° Impact (Moving Deformable Barrier) Test was conducted on he subject 1993 Dodge Intrepid 4-Door in accordance with the specifications of the Office f Market Incentives Test Procedure. The test was conducted at the MGA Proving Grounds and rash Test Facility in Burlington, WI on May 7, 1993.

The impact velocity of the Moving Deformable Barrier (MDB) was 53.4 kph (33.2 mph), nd the ambient temperature at the struck side (driver's) of the target vehicle at the ime 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:

	Driver's SID	Left Rear SID
eft Upper Rib Acceleration	79.1 g's	100.5 g's
eft Lower Rib Acceleration	68.2 g's *	99.3 g's
ower Spine Acceleration	76.6 g's	115.3 g's
horacic Trauma Index (TTI)	77.85 g's	107.9 g's
elvis Acceleration	73.6 g's	120.0 g's

* Redundant Channel

17. Key Words
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FINAL REPORT ACCEPTED BY:

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-Ø2Ø47. The purpose of this test was to evaluate side impact protection in a 1993 Dodge Intrepid.

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.

The driver's Thoracic Trauma Index (TTI) was 77.85 g's. Maximum pelvic Y acceleration was 73.6 g's.

The left rear passenger's TTI was 107.9 g's. Maximum pelvic Y acceleration was 120.0 g's.

Section 2
SUMMARY OF SIDE IMPACT TEST

A stationary 1993 Dodge Intrepid 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 53.4 kph (33.2 mph) on May 7, 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 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-axis)
2. Left Lower Rib (LLR) uniaxial accelerometer (Y-axis)
3. Lower Thoracic Spine (T_{12}) uniaxial accelerometer (Y-axis)
4. Upper thoracic spine (T_{34}) uniaxial accelerometer (Y-axis)
5. Pelvic (PEV) section uniaxial accelerometer (Y-axis)

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.

SECTION 3
SUMMARY OF TEST DATA

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1993 Dodge Intrepid

Vehicle NHTSA No.: MP0307 VIN: 2B3ED56T4PH565643

Vehicle Body Color: Green Month & Year of Manufacture: 1-93

Engine Data: 6 cylinders; ____ CID; 3.3 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 Driv

Odometer Reading 326 miles

Options: X A/C; X Pwr. Steering.; X Pwr. Brakes; X Pwr. Windo

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 35 psi FRONT

35 psi REAR

Recommended Tire Size: P225 60 R16

Tires on Test Vehicle: P225 60 R16 Manufacturer: Goodyear

Vehicle Capacity Data:

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

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

Type of Front Seat Back: ____ Fixed; X Adjustable with X Kn

Vehicle Maximum Capacity Loading = 392.4 kg. (A)

No. of Occupants x 68 kgs. = 340.0 kg. (B)

Cargo Capacity (A-B) = 52.4 kg.

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front =	480.4 kg.	Right Rear =	279.0 kg.
Left Front =	480.8 kg.	Left Rear =	263.5 kg.
TOTAL FRONT =	961.2 kg.	TOTAL REAR =	542.5 kg.

% of Total Vehicle Weight = 64 ; % of Total Weight = 36

TOTAL WEIGHT = 1503.7 kg.

Table 2

TEST VEHICLE DATA

ALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids = 1503.7 kg.
Maximum Cargo Carrying Capacity of Test Vehicle = 52.4 kg.
Weight of 2 Side Impact Dummies (2 x 76.2 kgs.) = 152.4 kg.
TEST VEHICLE TARGET WEIGHT: = 1708.5 kg.

CTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front = 461.3 kg. Right Rear = 336.1 kg.
Left Front = 522.5 kg. Left Rear = 383.7 kg.
TOTAL FRONT = 983.8 kg. TOTAL REAR = 719.8 kg.
% of Total Weight = 57.7 % of Total Weight = 42.3
Total Test Vehicle Weight = 1703.6 kg.

EST VEHICLE ATTITUDE (all dimensions in mm):

AS DELIVERED:

Right Front 735 Left Front 736 Right Rear 738 Left Rear 733

READY FOR TEST:

Right Front 719 Left Front 714 Right Rear 687 Left Rear 677

Test Vehicle Wheelbase: 2883 mm
C.G. = 1218 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4670 mm
Left Side = 4680 mm
Centerline = 5150 mm

021

Figure 1

PRE-TEST CONDITIONS

VEHICLE IDENTIFICATION:

Vehicle: 1993 Dodge Intrepid 4-Door

NHTSA No. MP0307

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 225 mm

Total Number of Adjustment Positions or Detents: Mid-position (electr seat) there are no detents

FRONT SEAT BACK ADJUSTMENT POSITION: *

Seat Back Torso Angle = 15.5 degrees*

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: Fixed

Seat Back Adjustment Position: Fixed

ADJUSTABLE STEERING COLUMN POSITION:

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 si of test vehicle and in open position on opposite side.

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

16.75 gallons 63.4 liters

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

Wheelbase: = 2883 mm

Impact Point is 502 mm rearward of front axle centerline (which i 37 inches forward of the wheelbase midpoint)

* See Appendix D (information supplied by Chyrsler)

Table 3

CRASH TEST SUMMARY FOR TEST VEHICLE

EHICLE IDENTIFICATION:

ehicle Year/Make/Model: 1993 Dodge Intrepid

ody Style: 4-Door VIN: 2B3ED56T4PH565643

HTSA No.: MP0307 Test Date: May 7, 1993

Overall Length = 5150 mm; Overall Width = 1745 mm

EST WEIGHT:

Left Front =	522.5 kg.	Left Rear =	383.7 kg.
Right Front =	461.3 kg.	Right Rear =	336.1 kg.
TOTAL FRONT =	983.8 kg.	TOTAL REAR =	719.8 kg.

TOTAL VEHICLE WEIGHT 1703.6 kg.

Wheelbase = 2883 mm

Longitudinal C.G. front Center of Front Axle = 1218 mm

Impact Angle with Respect to Impactor = 90 degrees

AXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (326 mm above ground) =	N/A*	mm
2. LEVEL 2 (550 mm above ground) =	402	mm
3. LEVEL 3 (613 mm above ground) =	364	mm
4. LEVEL 4 (890 mm above ground) =	248	mm
5. LEVEL 5 (1316 mm above ground) =	-91	mm

Maximum Post-Test Intrusion = 402 mm

OCCUPANTS:	Front Passenger	Rear Passenger
Type of Dummy	SID	SID
Restraints Used	3 pt. lap & shoulder belt	3 pt. lap & shoulder belt

NSTRUMENTATION:

Number of Vehicle Data Channels: = 18

Number of Cameras: Onboard = 5

Offboard = 5

TOTAL = 10

Sill trim separated from vehicle during impact

023

Table 4

CRASH TEST SUMMARY FOR SIDE IMPACTOR

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

Overall Width of Framework Carriage	= 1251	mm
Overall Length of MDB (incl. honeycomb impact face)	= 4115	mm
Wheelbase of Framework Carriage	= 2591	mm
Tread of Framework Carriage (Front & Rear)	= 1879	mm
C.G. Location Rearward of Front Axle	= 1122	mm

MDB WEIGHT:

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

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

Impact Speed = 33.2 mph (53.4 kph)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1.	Row A at Bumper Level (432)	= 87	mm*
2.	Row B at Mid-Stack Level (559)	= 51	mm
3.	Row C at Top of Stack Level (813)	= 148	mm

INSTRUMENTATION:

Number of MDB Data Channels = 5

* The bumper level aluminum cover was partially separated during impact.

Table 5

POST-TEST OBSERVATIONS

TEST VEHICLE: 1993 Dodge Intrepid NHTSA No. MP0307

VISIBLE DUMMY CONTACT POINTS:

	LEFT FRONT SID	LEFT REAR SID
Head	No contact	C-Pillar
Shoulder	Door	Door
Hip	Door	Door
Left Knee	Door	Door
Right Knee	N/A	N/A

DOOR OPENING:

	LEFT SIDE	RIGHT SIDE
Front	Closed	Open
Rear	Closed	Open

MDB DISTANCE FROM TARGET IMPACT POINT: 22 mm to rear of impact line

ARM REST LOCATIONS:

Front:

Rear:

SEAT MOVEMENT:

Seat cushion crushed 13 mm

Seat back crushed 19 mm

GLAZING DAMAGE:

Both left door windows broken, windshield cracked

PILLAR PERFORMANCE:

None

SILL SEPARATION:

None

OTHER NOTABLE IMPACT EFFECTS:

025

Section 4
OCCUPANT AND VEHICLE INFORMATION

Table 6
SIDE IMPACT DUMMY (SID) TEST DATA SUMMARY

Vehicle: 1993 Dodge Intrepid 4-Door Test Date: 5-7-93

	Front Dummy ID # 136				Rear Dummy ID # 137			
	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	79.1	39.3	10.1	124.0	100.5	42.5	7.5	113.0
Lateral....Y(R)	81.2	39.3	9.6	124.0	100.5	42.5	7.3	113.0
Lower Rib								
Lateral.....Y	*	*	*	*	99.3	41.8	17.1	68.7
Lateral.....Y(R)	68.2	39.3	18.6	105.0	96.7	41.8	17.7	68.7
SPINE ACCELERATIONS:								
Upper								
Lateral.....Y	72.2	45	11.7	126.9	90.6	49.3	29.9	75.6
Lateral.....Y(R)	74.3	45	12.6	127.0	91.0	50.0	31.3	75.6
Lower								
Lateral.....Y	76.6	42.5	17.9	105	115.3	45.6	21.6	75.0
Lateral.....Y(R)	75.2	42.5	17.5	105	114.8	45.0	21.1	75.0
PELVIC ACCELERATIONS:								
Lateral.....Y	73.6	39.3	26.1	95.6	120.0	40.0	17.3	85.6
Lateral.....Y(R)	73.4	39.4	26.0	95.0	120.0	40.0	17.6	86.8

REFERENCE:

Positive Direction - Longitudinal (X) = forward
Lateral (Y) = to right
Vertical (Z) = up

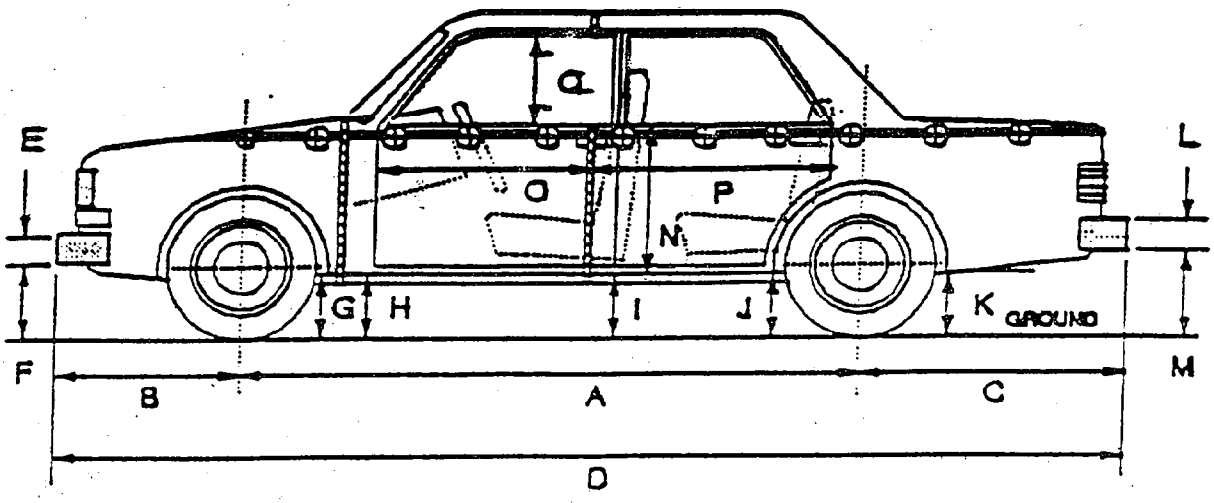
Negative Direction - Longitudinal (X) = rearward
Lateral (Y) = to left
Vertical (Z) = down

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

* Data Loss at Approximately 30 msec.

Figure 2

PRE- AND POST-TEST MEASUREMENTS



LEFT SIDE VIEW

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

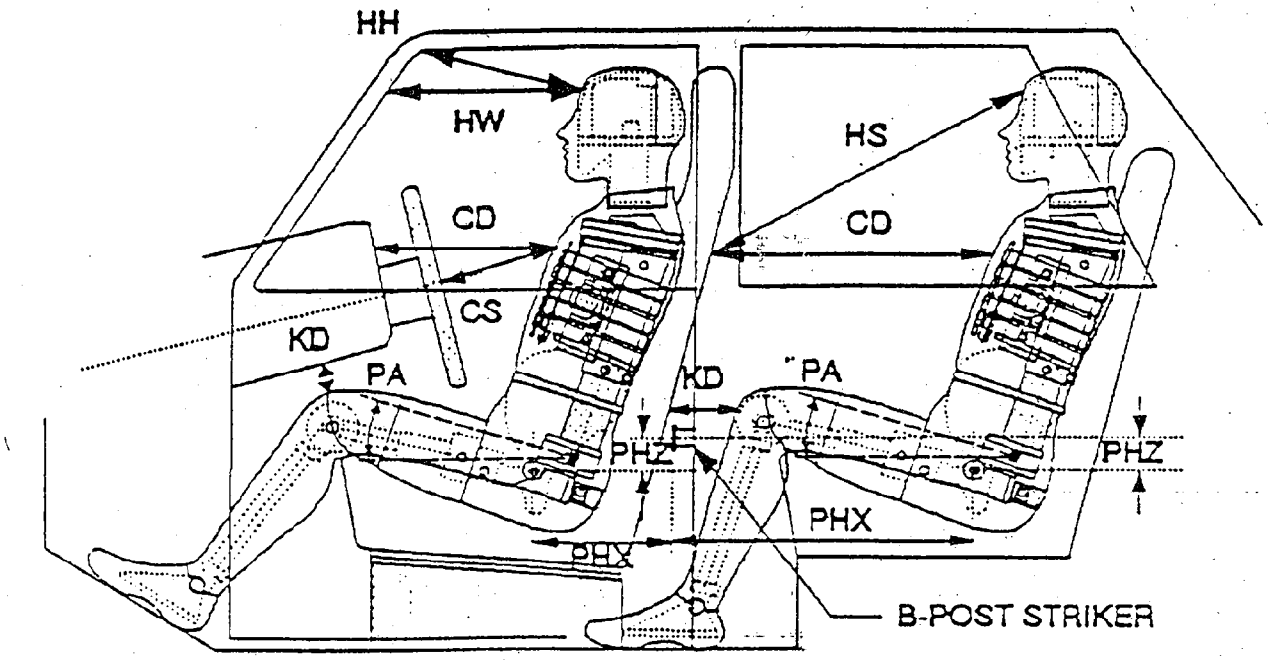
Units: mm

	PRE-TEST	POST-TEST	Δ CHANGE
A	2868	2782	86
B	1160	1116	44
C	1130	1138	-8
D	5150	5036	114
E	250	250	0
F	312	248	64
G	260	223	37
H	260	237	23
I	280	245	35
J	288	245	43
K	325	320	5
L	245	330	15
M	380	356	24
N	640	636	4
O	895	775	120
P	1295	1195	100
Q	430	370	60
R	4670	4730	40
S	4680	4610	70
T	1745	1517	228

029

Figure 3

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS



LEFT SIDE VIEW

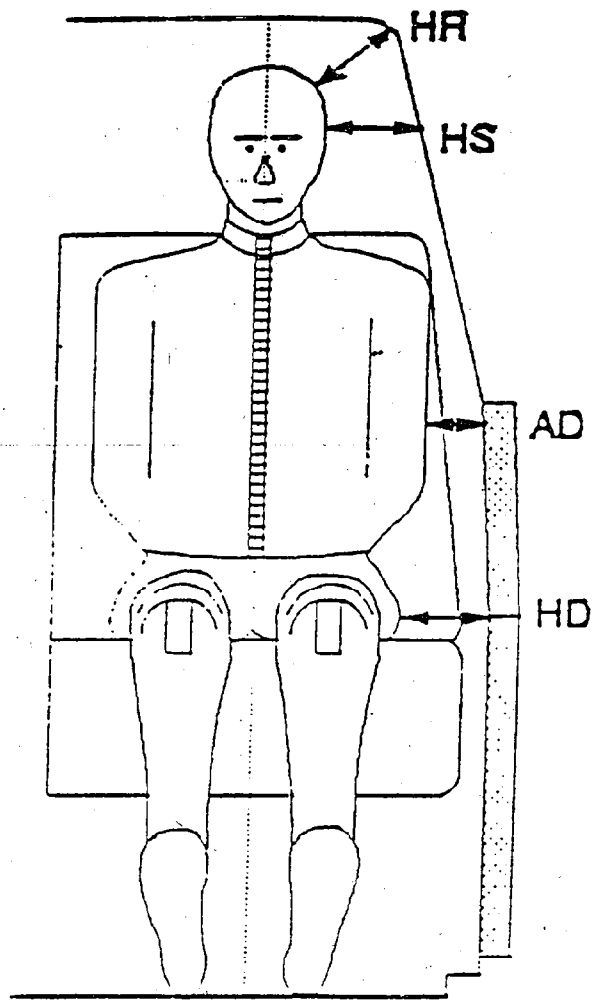
NOTE: All dimensions are in mm

	DRIVER ID #136	LEFT REAR PASSENGER ID #137
HH	387	N/A
HW	673	N/A
HS	N/A	724
CD	537	613
CS	327	N/A
KDL	149	273
KDR	133	276
PA°	23.7	23.2
PHX	190	257
PHZ	127	321

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



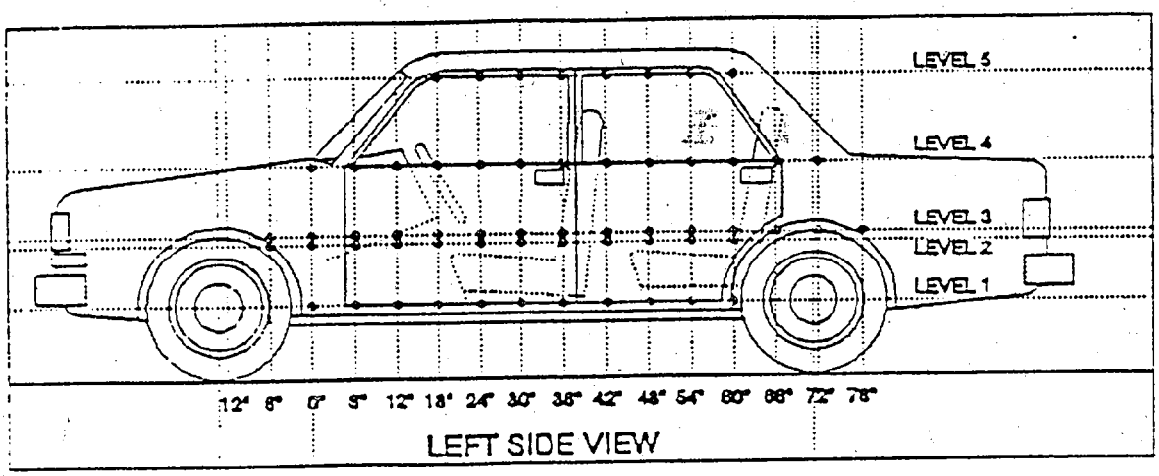
NOTE: All dimensions are in mm

	DRIVER ID #	LEFT REAR PASSENGER ID #
HR	111	143
HS	273	133
AD	130	95
HD	194	175

031

Figure 5

VEHICLE SIDE MEASUREMENTS



Measurements Along the Vertical 30" Line Shown Above:

30" Side Profile

Level 5 @ Window Top	= 1316	mm
Level 4 @ Window Sill	= 890	mm
Level 3 @ Mid Door	= 613	mm
Level 2 @ Occupant H-Point	= 550	mm
Level 1 @ Axle Centerline Height (or Sill Top Height	= 326	mm

Table 7

TEST VEHICLE EXTERIOR PROFILES FROM REFERENCE PLANE AND STATIC CRUSH

Test Date: 5-7-93 Vehicle: 1993 Dodge Intrepid

	Location	Level 1 Side Sill	Level 2 H-Point	Level 3 Mid-Door	Level 4 Window Sill	Level 5 Window Top
	Height (mm)	326	550	613	890	1316
		PRE/POST/CRUSH (mm)	PRE/POST/CRUSH (mm)	PRE/POST/CRUSH (mm)	PRE/POST/CRUSH (mm)	PRE/POST/CRUSH (mm)
INCHES FROM IMPACT POINT	-6	N/A	N/A	N/A	780/780/0	N/A
	0	731/ /*	720/880/160	703/851/148	775/780/5	N/A
	6	733/ /*	716/1014/298	702/1009/307	779/874/95	N/A
	12	733/ /*	716/1061/345	703/1037/334	785/940/155	N/A
	18	733/ /*	716/1066/350	703/1030/327	786/998/212	N/A
	24	733/ /*	716/1082/366	703/1032/329	786/1013/227	1063/1102/39
	30	735/ /*	715/1094/379	704/1030/326	786/1017/231	1075/1105/30
	36	741/ /*	717/1107/390	704/1031/337	793/1022/229	1075/1124/49
	42	748/ /*	716/1108/392	704/1036/332	795/1034/239	1075/1145/70
	48	752/ /*	722/1124/402	705/1069/364	799/1047/248	1080/1171/91
	54	764/ /*	725/1116/391	707/1062/355	800/1042/242	1083/1165/82
	60	767/ /*	728/1118/390	710/1059/349	803/1038/235	1087/1139/52
	66	767/ /*	729/1110/381	710/1056/346	803/1040/237	1092/1122/30
	72	768/ /*	730/1080/350	711/1050/339	805/972/167	1108/1117/9
	78	N/A	732/902/170	713/954/241	805/882/77	N/A

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

* Pre-test measurements were taken to sill trim. It separated from the vehicle during the impact
N/A = Not Applicable

Figure 6

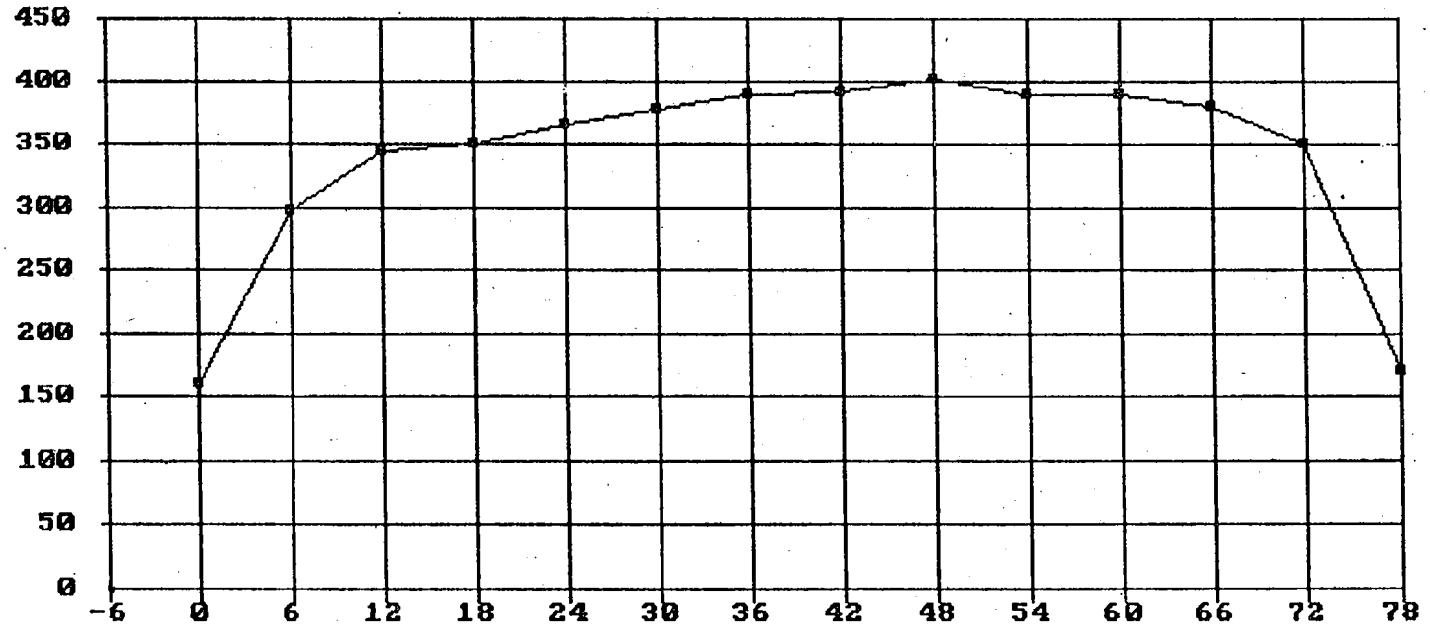
VEHICLE EXTERIOR STATIC CRUSH

NOT AVAILABLE DUE TO SILL TRIM SEPARATING

FROM VEHICLE DURING IMPACT

Figure 6 (Continued)

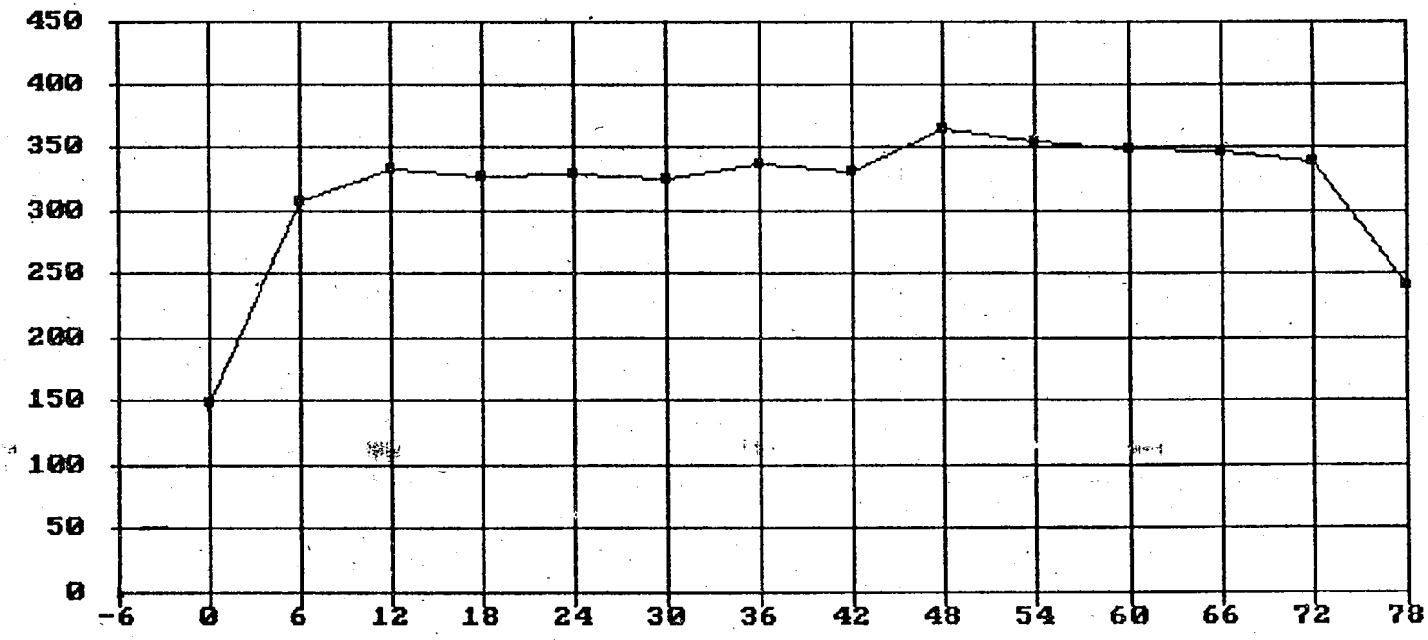
VEHICLE EXTERIOR STATIC CRUSH



LEVEL 2 - H-POINT

Figure 6 (Continued)

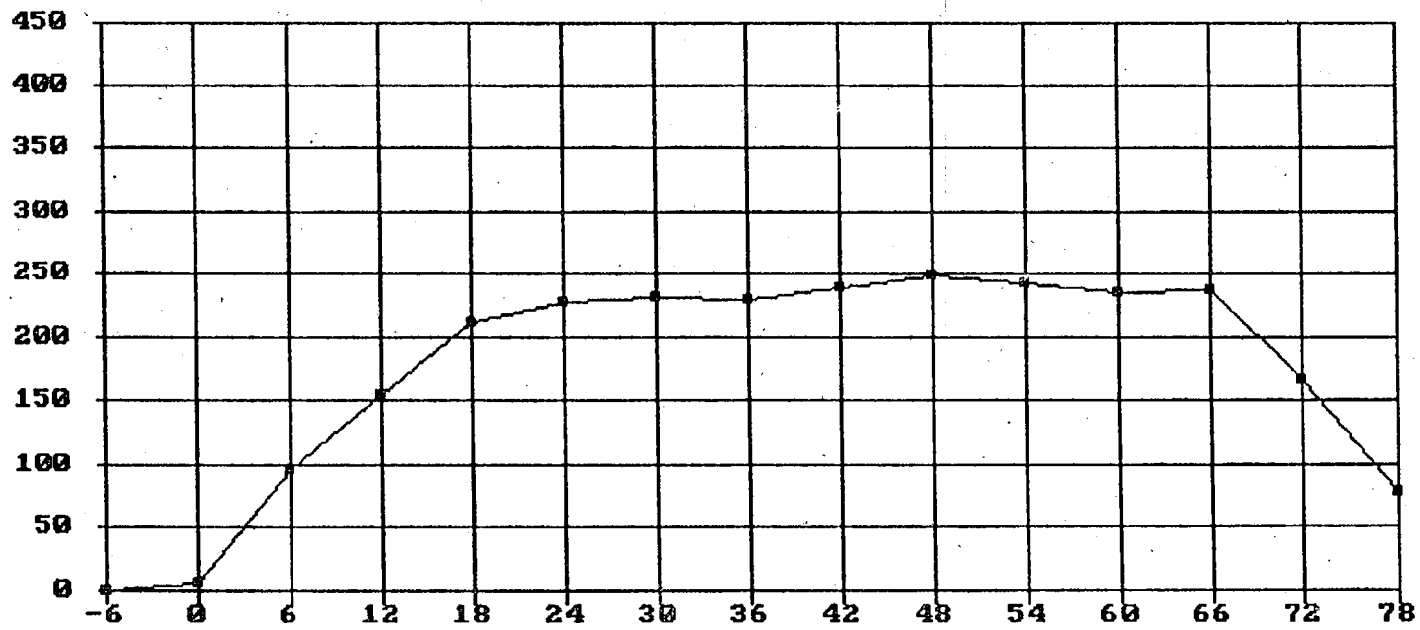
VEHICLE EXTERIOR STATIC CRUSH



LEVEL 3 - Mid Door

Figure 6 (Continued)

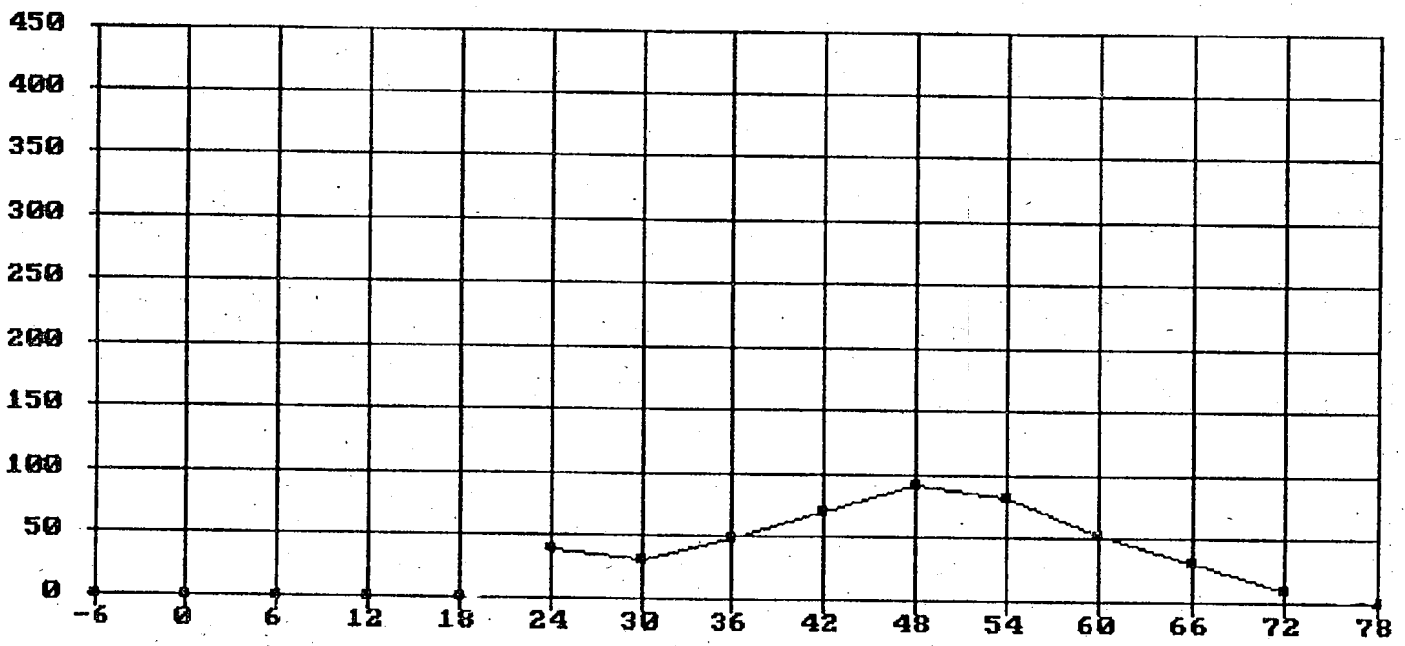
VEHICLE EXTERIOR STATIC CRUSH



LEVEL 4 - WINDOW SILL

Figure 6 (Continued)

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 5 - WINDOW TOP

Figure 7

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 1993 Dodge Intrepid 4-Door NHTSA No.: MP0307

Test Date: 5-7-93

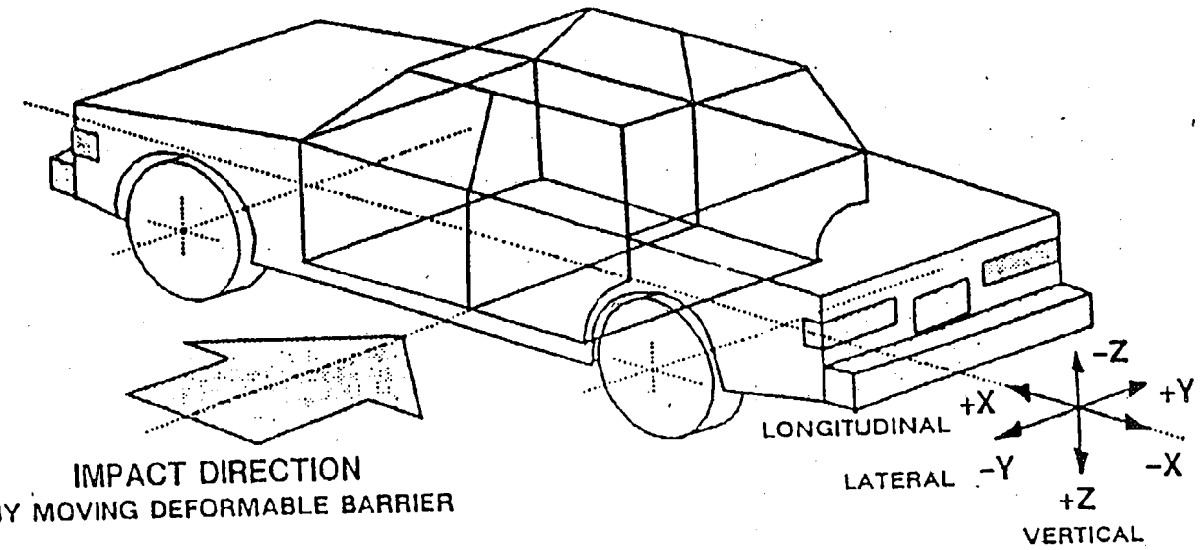


Table 8
EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

Test Date: 5-7-93 Vehicle: 1993 Dodge Intrepid

Location	Top of Stack Level	Mid-Stack Level	Bumper Level	
Height at C_L*	813	559	432	Left Side as viewed from front
32"	67	51	87	
28"	18	26	67	
24"	8	14	50	
20"	5	11	37	
16"	6	11	33	
12"	7	11	33	
8"	7	8	34	
4"	7	8	25	
0"	6	10	24	
4"	8	9	22	Right Side as viewed from front
8"	8	9	*	
12"	8	8	*	
16"	8	7	*	
20"	14	7	*	
24"	33	7	*	
28"	81	11	*	
32"	148	25	*	

Crush measured in mm.
* Heights measured above ground level in mm.
Deformable barrier bumper level metal face separated during the test, Post-test measurements not possible.

Table 9

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

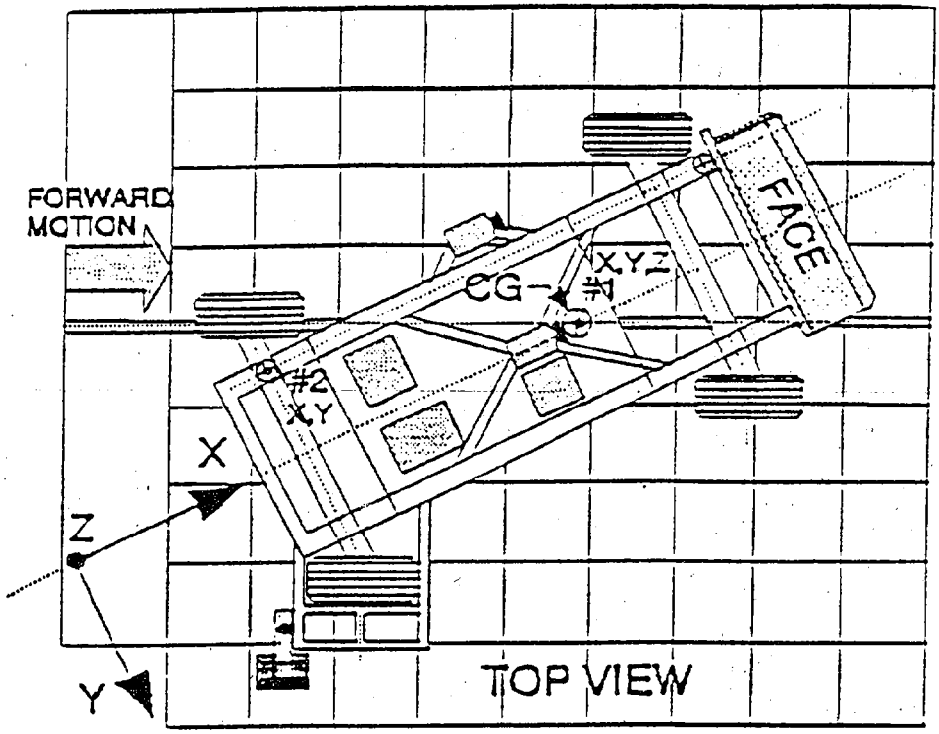
Accel. Time No.	Location	Coordinates (mm)			Long. (X) Pos./Neg.		Lat. (Y) Pos./Neg.		Vert. (Z) Pos./Neg.		Resultant
		X	Y	Z							
1	Rt. Side Sill @ Front Seat	2910	650	340	3.4	3.6	14.9	2.9	3.9	5.9	15.0
2	Rt. Side Sill @ Rear Seat	2030	670	375	3.7	4.0	14.2	2.0	12.6	7.2	18.8
3	Rr. Floorpan Above Axle	1145	3	533	6.1	4.4	15.0	2.4	8.0	10.5	16.9
4	Left Side Sill @ Rr. Seat	2135	-710	310	---	---	93.5	34.6	---	---	---
5	Left Side Sill @ Frt. Seat	3074	-710	320	---	---	61.5	27.0	---	---	---
6	Left Frt. Door On Centerline	3065	-850	702	---	---	132.8	55.7	---	---	---
7	Right Rear Occupant Compartment	2045	270	370	---	---	19.8	7.7	---	---	---
8	Midrear of Left Frt. Door	2464	-835	656	---	---	113.9	60.7	---	---	---
9	Left Frt. Door Upper Centerline	3001	-815	842	---	---	118.9	38.9	---	---	---
10	Midrear of Left Rear Door	1604	-790	627	---	---	83.0	16.4	---	---	---
11	Left Rear Door Upper Centerline	1902	-810	897	---	---	94.3	70.0	---	---	---

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

Figure 8

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS

Test Vehicle: 1993 Dodge Intrepid 4-Door Test Date: 5-7-93



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				1.1	199	14.2	44.4
	Lateral ..... Y				2.0	63.7	6.9	32.3
	Vertical ..... Z	1854	0	352	10.7	20.7	9.5	27.8
	Resultant ..... R				16.2	44.0	--	--
2	Rear Frame Member							
	Longitudinal ... X	400	-629	622	1.9	189.9	17.4	42.4
	Lateral ..... Y				3.4	15.4	1.36	131.

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

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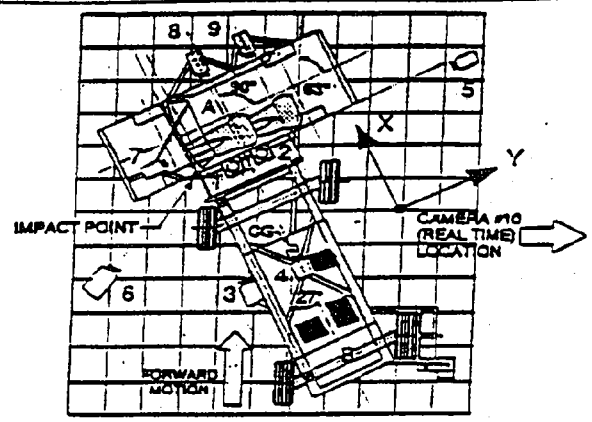
Figure 9
HIGH SPEED CAMERA LOCATIONS AND DATA



Camera No.	View	Coordinates (mm)			Angle	Film Plane To Head Target	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*				
10	Real Time							
1	Overhead Overall View	0	0	5060			13	893
2	Overhead Closeup View of Impact	250	1450	4210			25	1099
3	MDB Onboard Closeup of Impact						35	1015
4	MDB Onboard View of Dummy						13	1015
5	Right Side Ground Overall View	3870	7810	1305			25	1005
6	Left Side Ground Overall View	4800	3820	2100			13	1081
7	Test Vehicle Onboard Driver Front View						13	1010
8	Test Vehicle Onboard Driver Side View						7.5	1020
9	Test Vehicle Onboard Passenger Side View						7.5	680
	Right Overall	2480	7180	1200	90°	6825	13	1650

* 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.: MP0307 Test Date: 5-7-93

Vehicle Mfgr./Make/Model: 1993 Dodge Intrepid 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)

__X__ Side Impact MDB (33.3 mph)

FUEL SPILLAGE MEASUREMENT:

1. From impact until vehicle motion ceases

2. For 5 minute period after vehicle motion ceases

3. For next 25 minutes

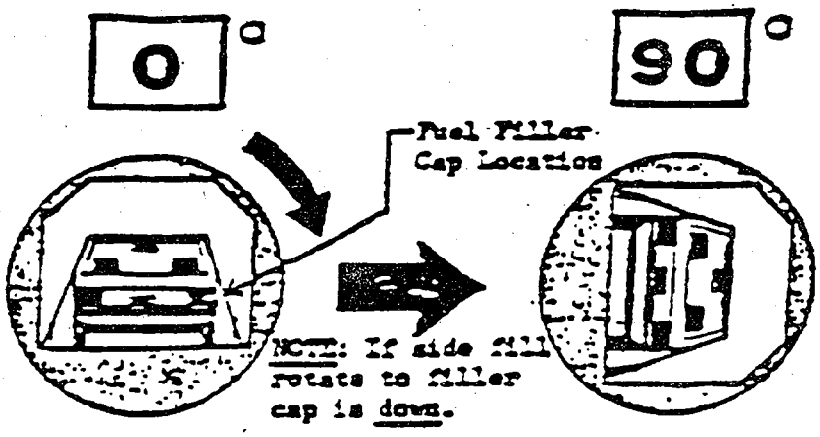
	ACTUAL	MAX ALLOWED
1)	0	1 oz.
2)	0	5 oz.
3)	0	1 oz./min

SOLVENT SPILLAGE DETAILS:

Table 11

FMVSS NO. 301 STATIC ROLLOVER DATA SHEET

TEST PHASE: Vehicle NHTSA ID No.: MP0307



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

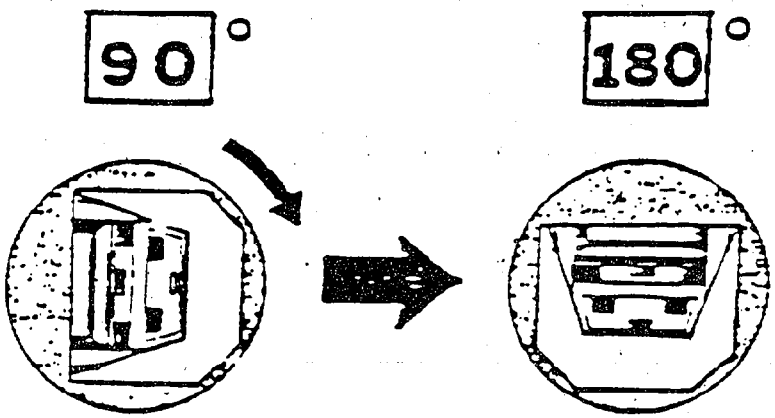
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S):

Table 11

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

TEST PHASE: Vehicle NHTSA ID No.: MP0307



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 42 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 42 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.

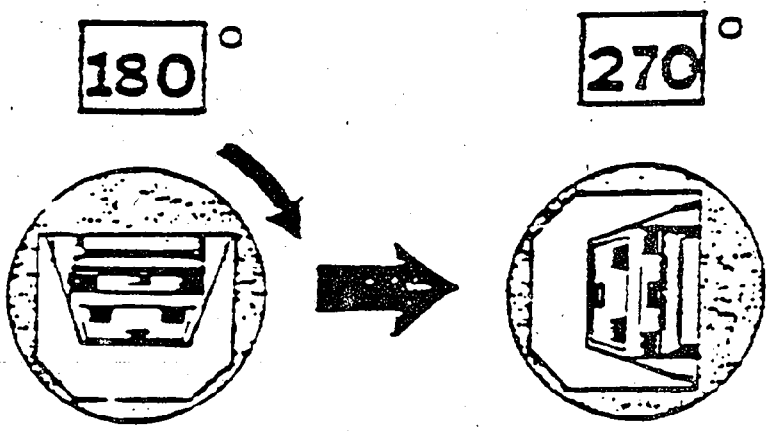
IV. SOLVENT SPILLAGE LOCATIONS(S):

046

Table 11

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

TEST PHASE: Vehicle NHTSA ID No.: MP0307



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time 2 minutes 18 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 18 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

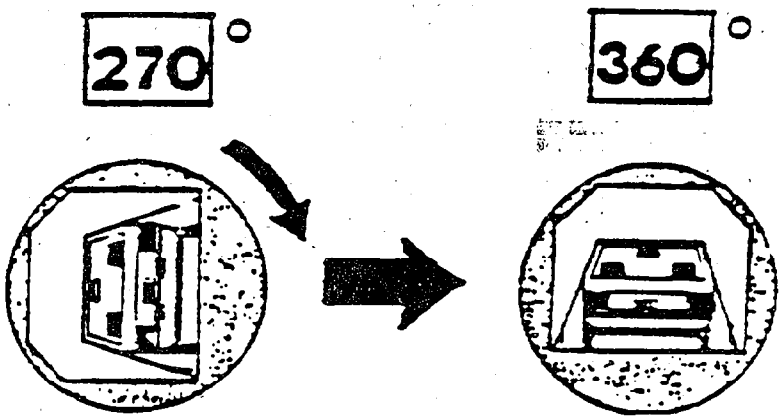
Note: Record Spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATIONS(S):

Table 11

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

TEST PHASE: Vehicle NHTSA ID No.: MP0307



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

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

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 7 minutes 50 seconds

Next whole minute interval 8 minutes

II. FMVSS 301 REQUIREMENTS:

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

5 ounces	1 ounce	1 ounce	1 ounce

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):

APPENDIX A - PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

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

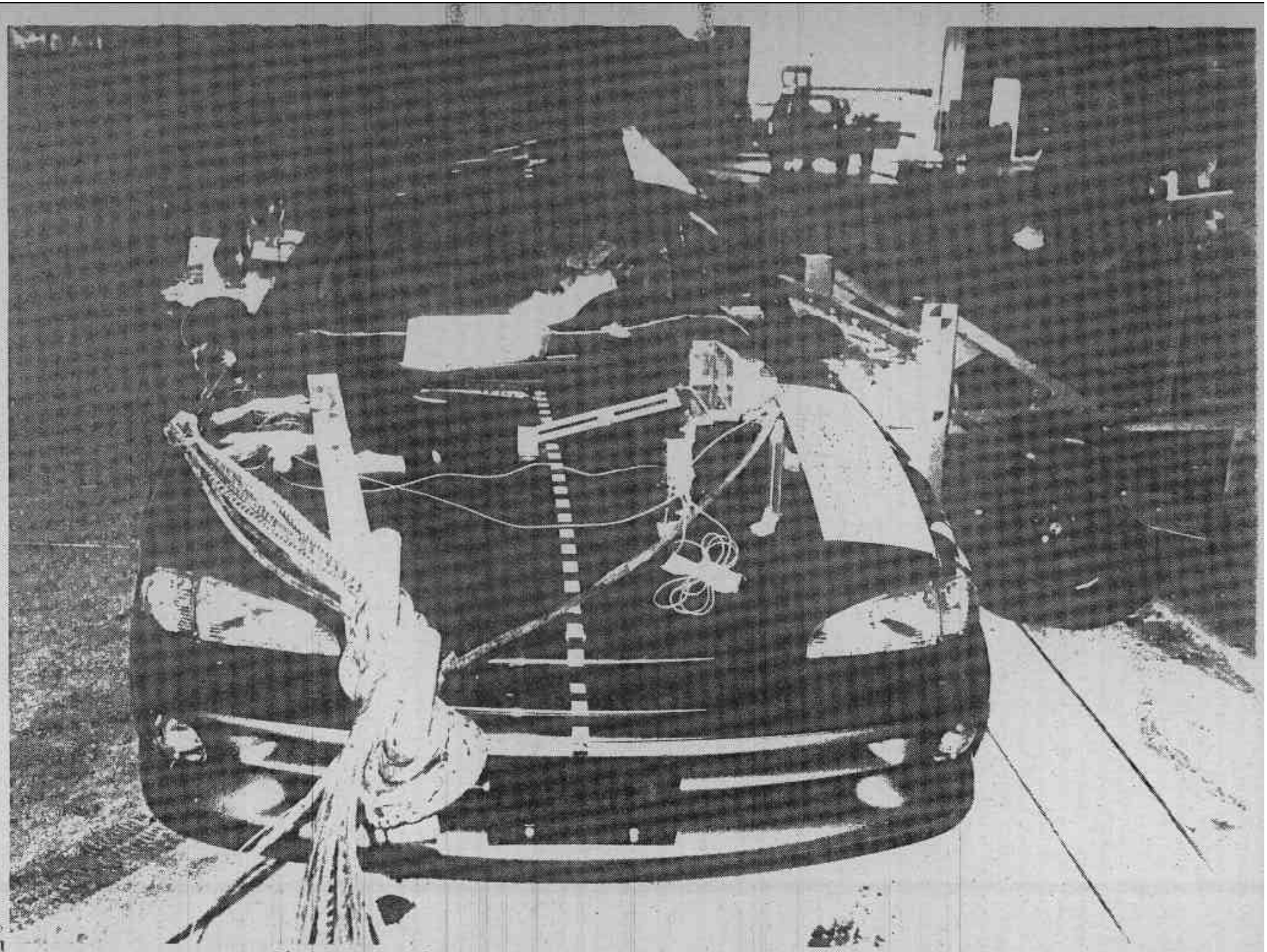


Photo No. A-2 - Post-Test Front View of Test Vehicle

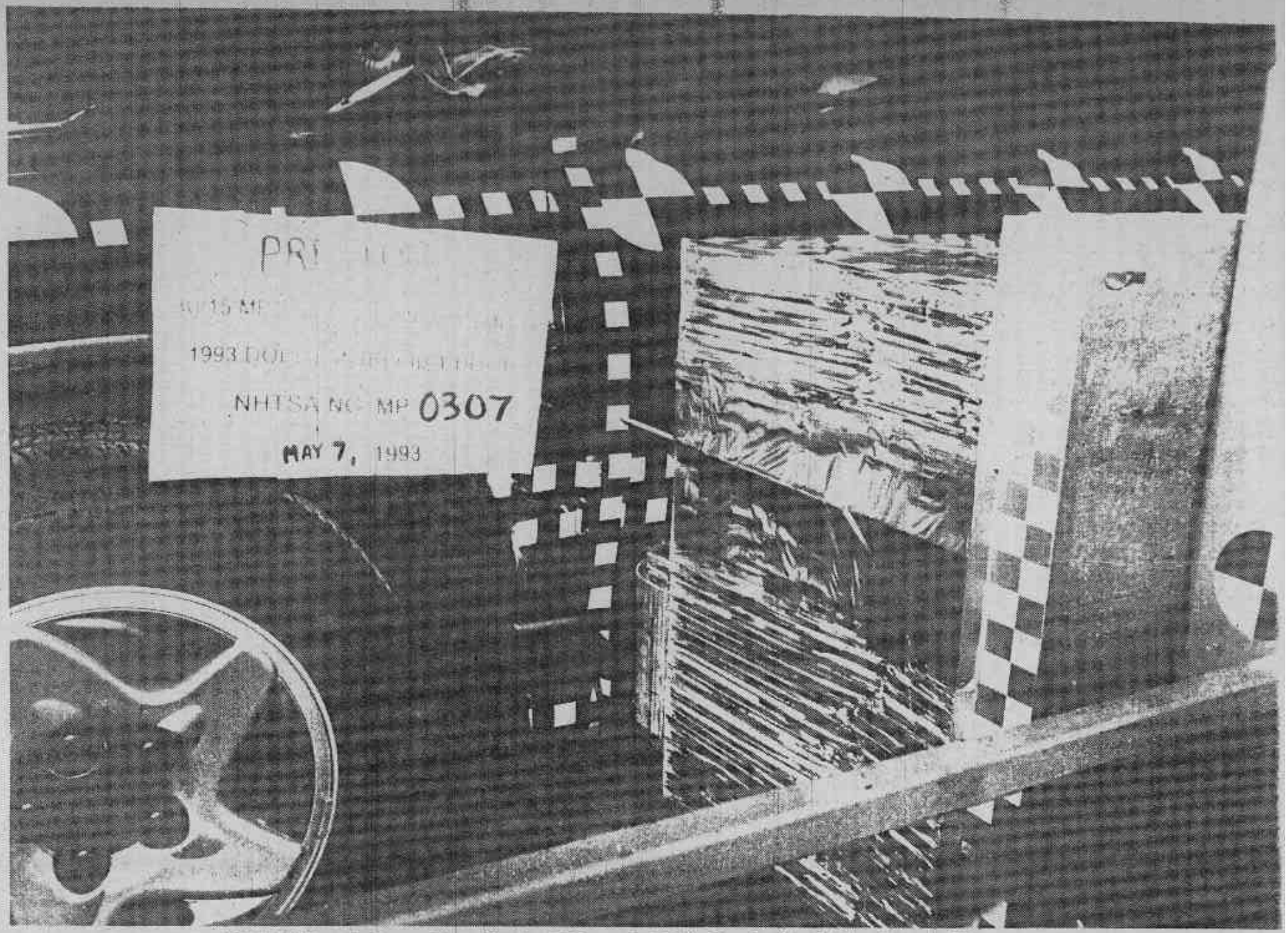
Photo No. A-3 - Pre-Test Rear View of Test Vehicle

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

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

A-6

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



A-7

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

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

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

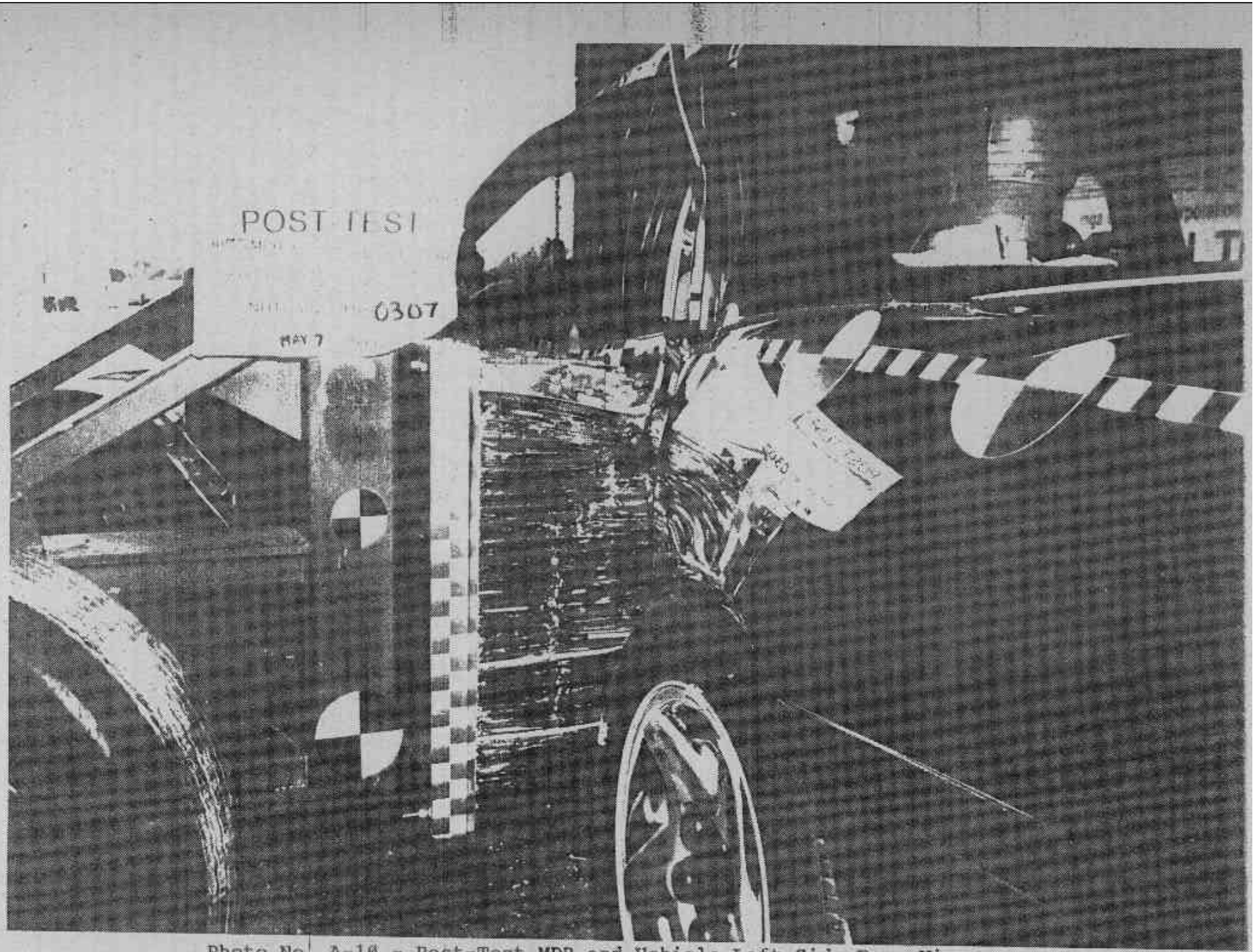


Photo No. A-10 - Post-Test MDB and Vehicle Left Side Rear View

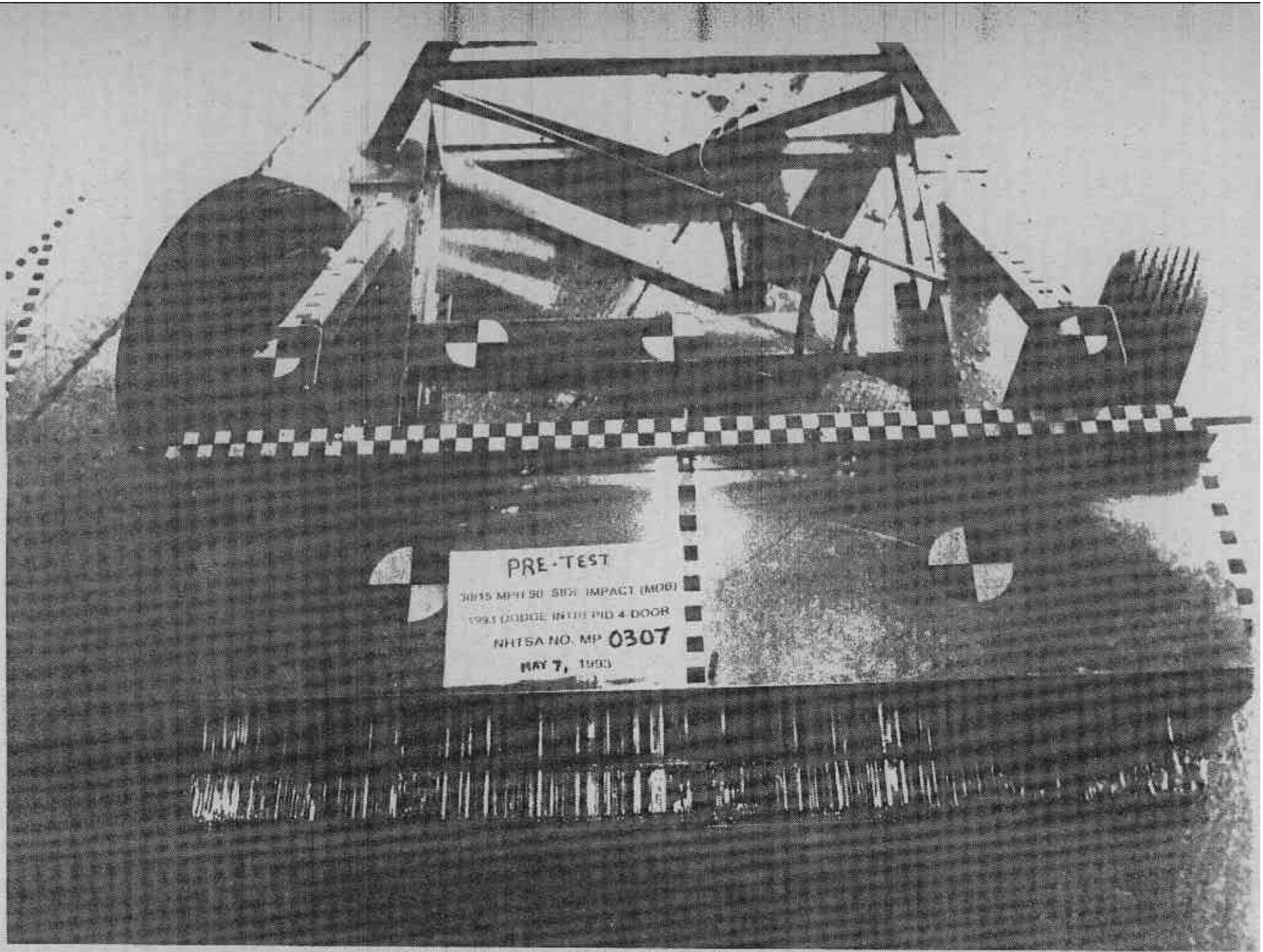
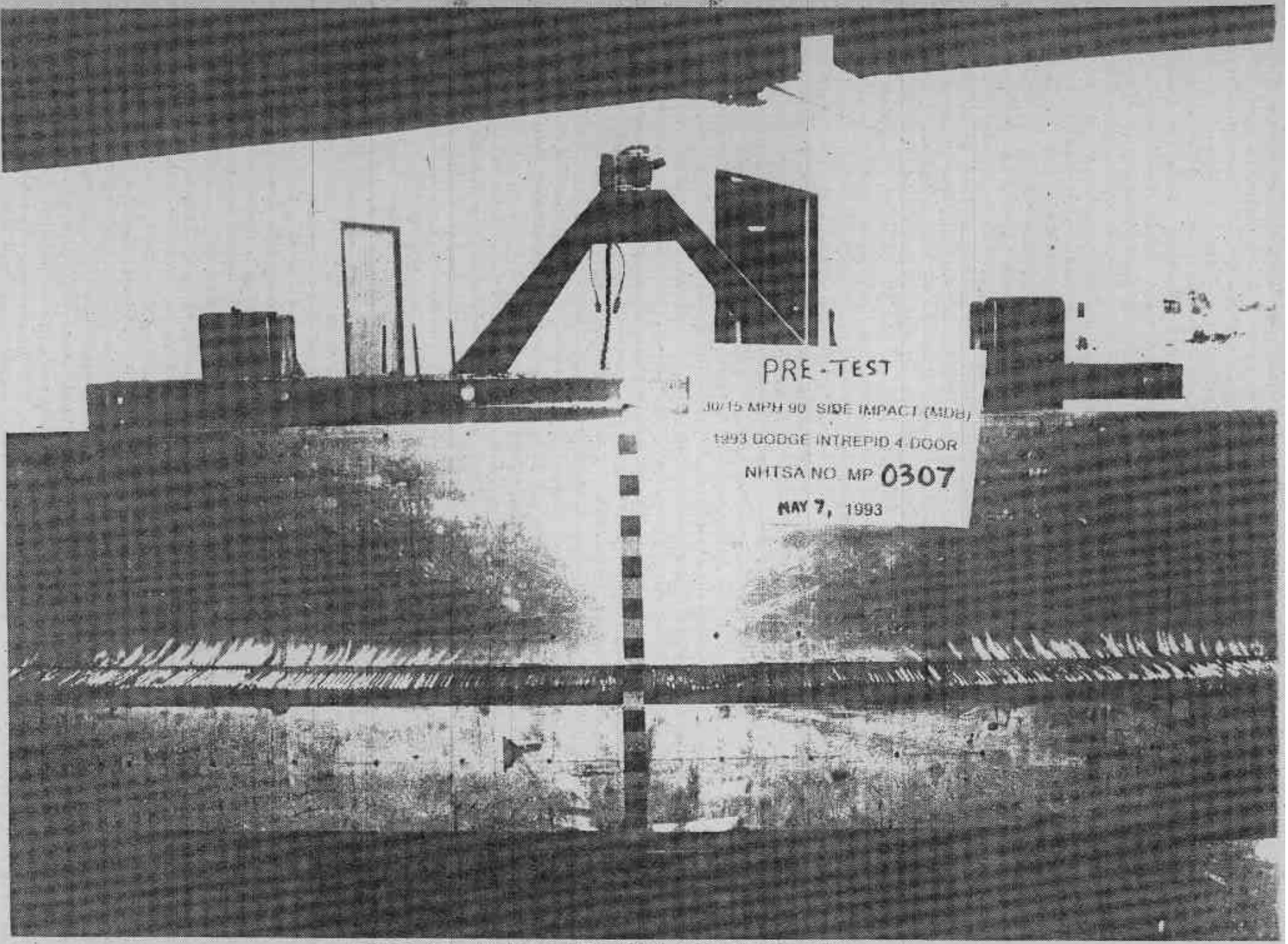


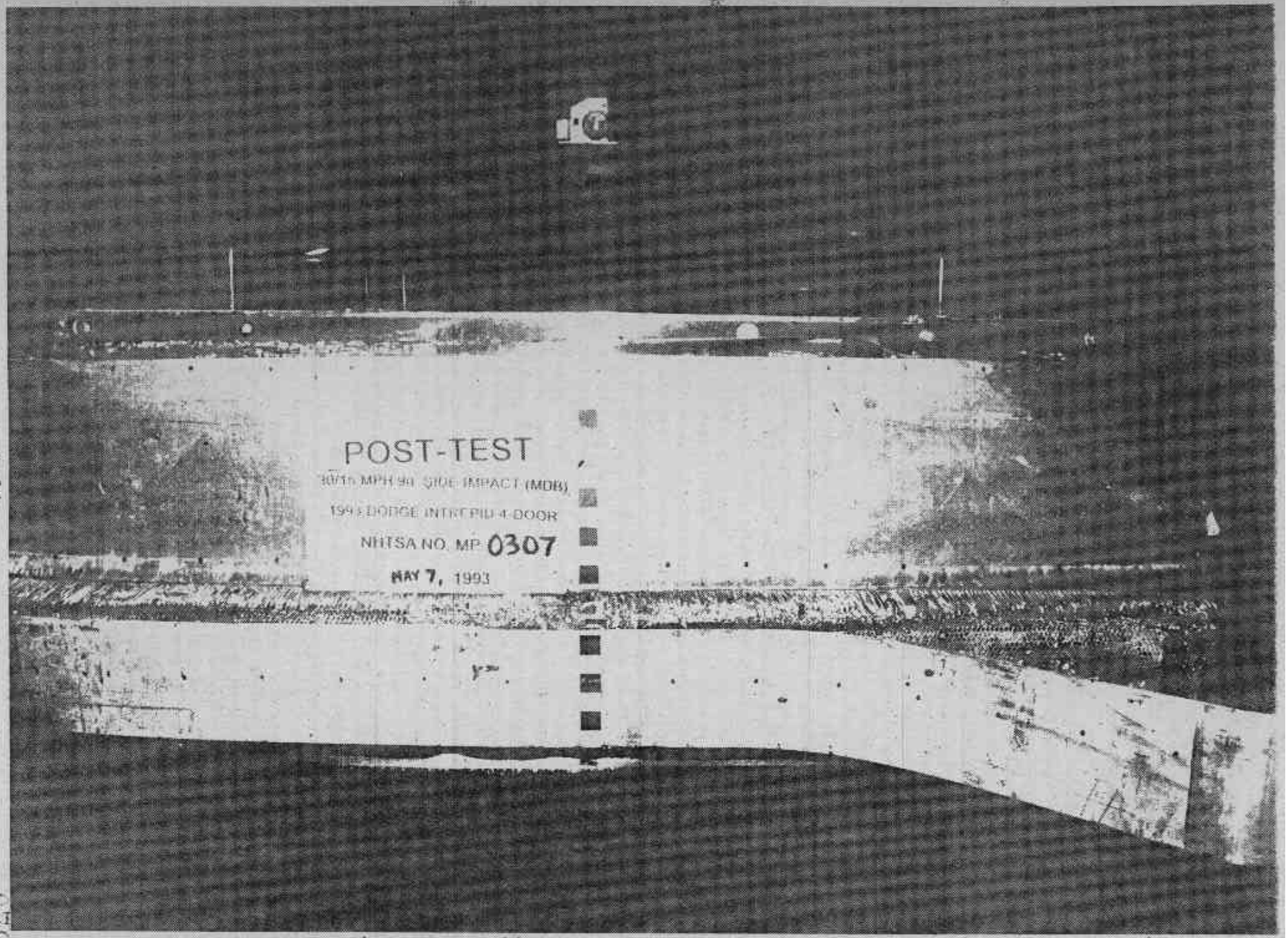
Photo No. A-11 - Pre-Test MDB Top View

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



A-13

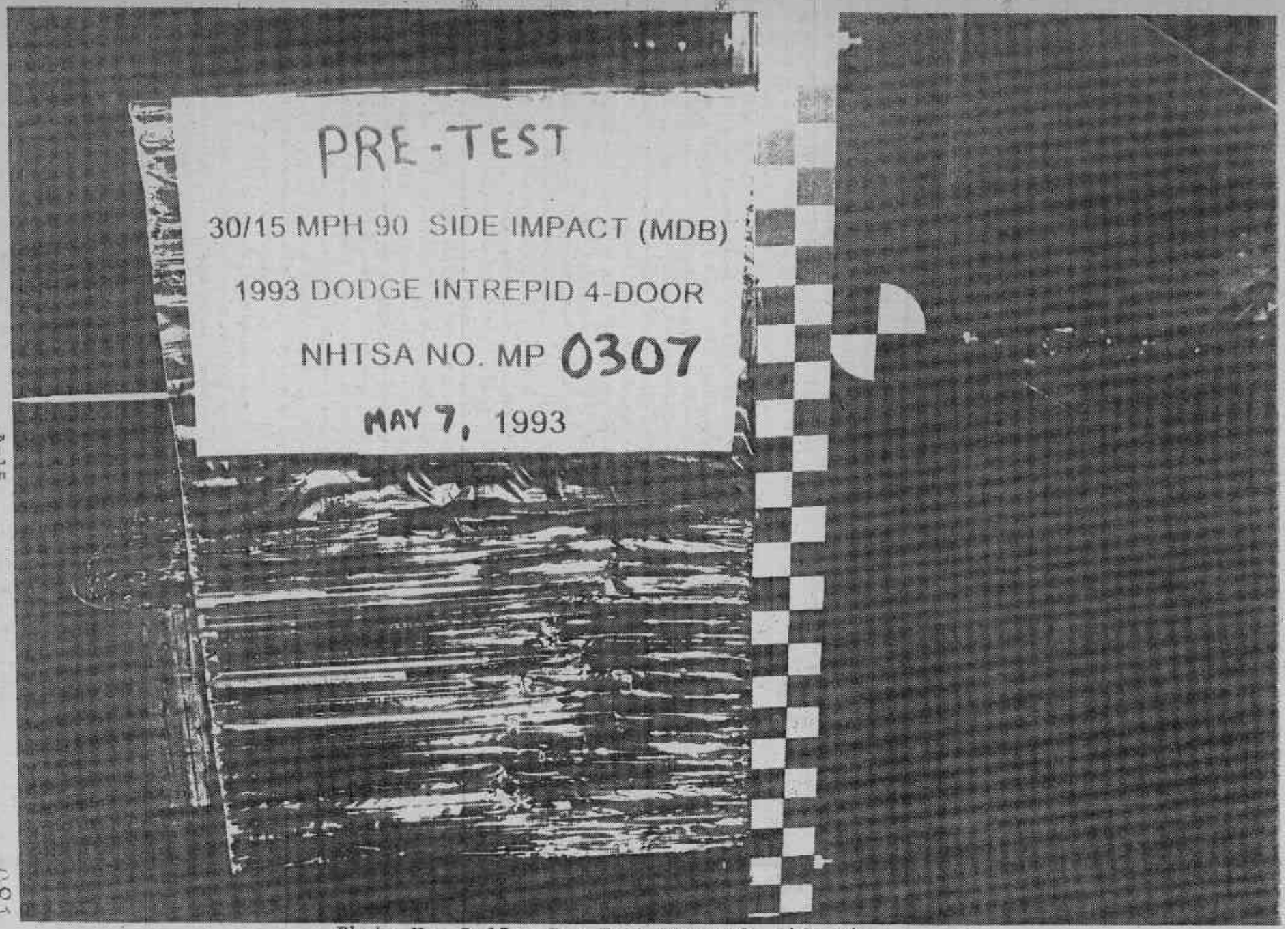
Photo No. A-13 - Pre-Test MDB Front View



A-14

079

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



A-15

081

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

A-16

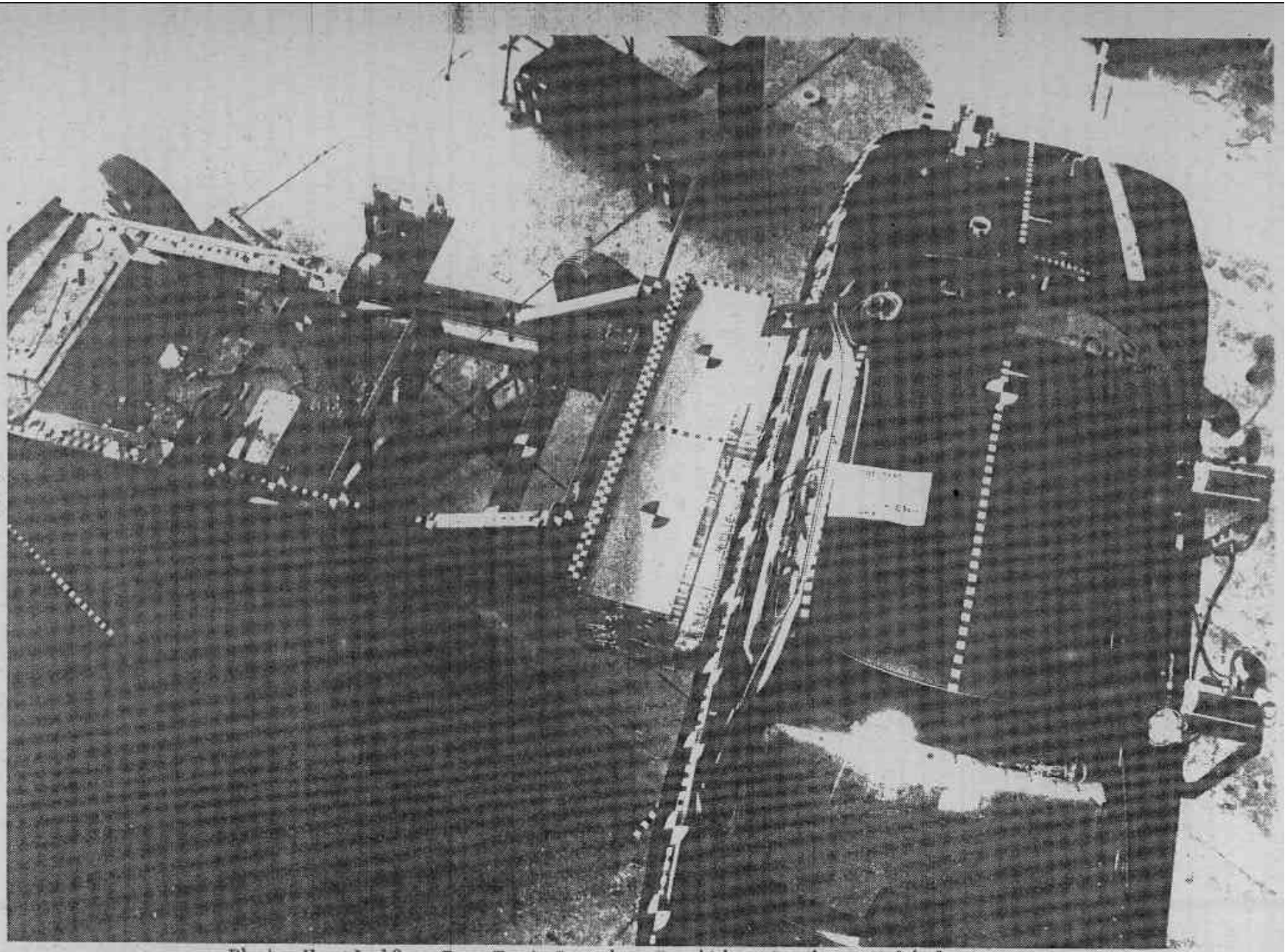
Photo No. A-16 - Post-Test MDB Left Side View

A-17

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

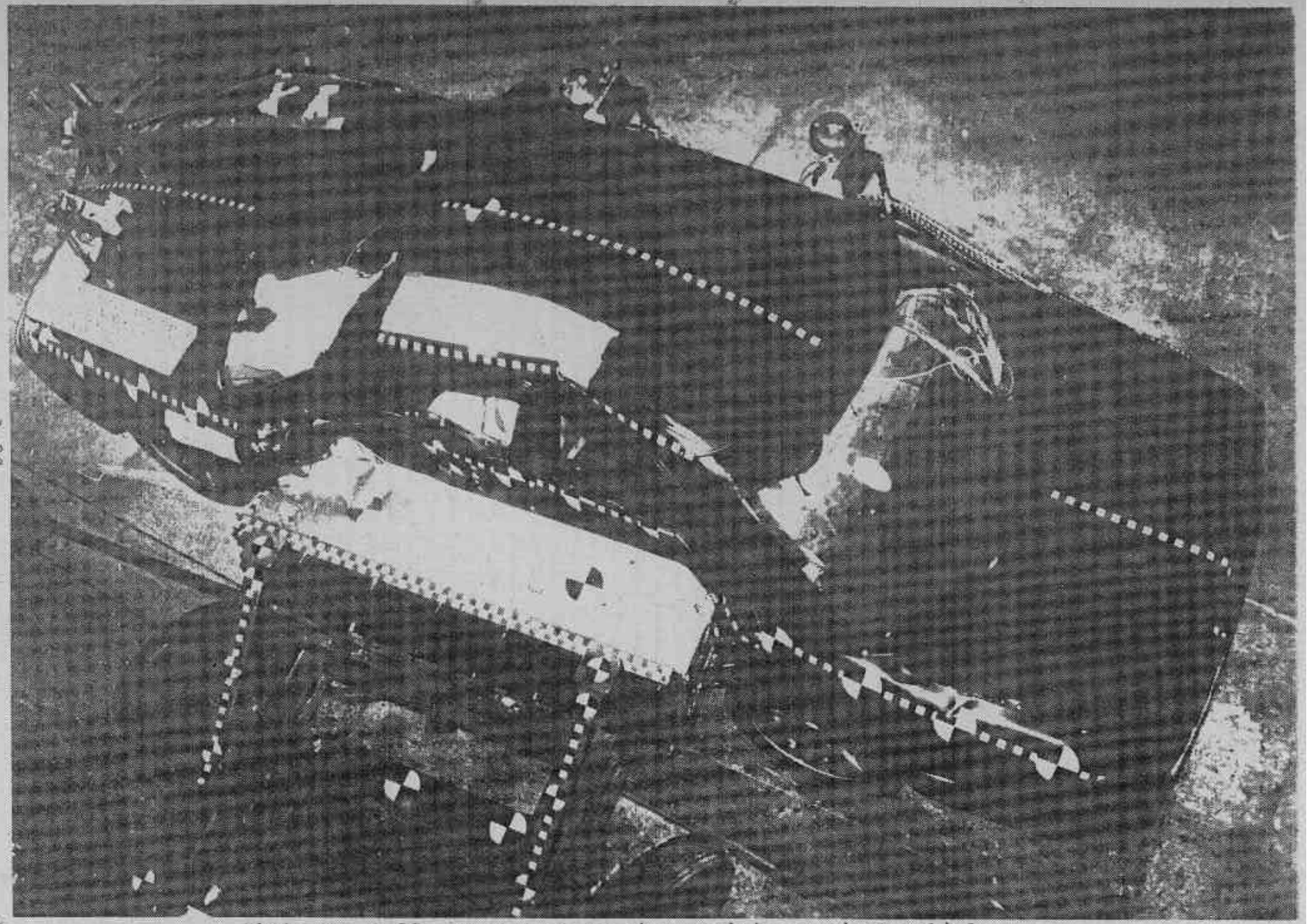
A-18

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



A-19

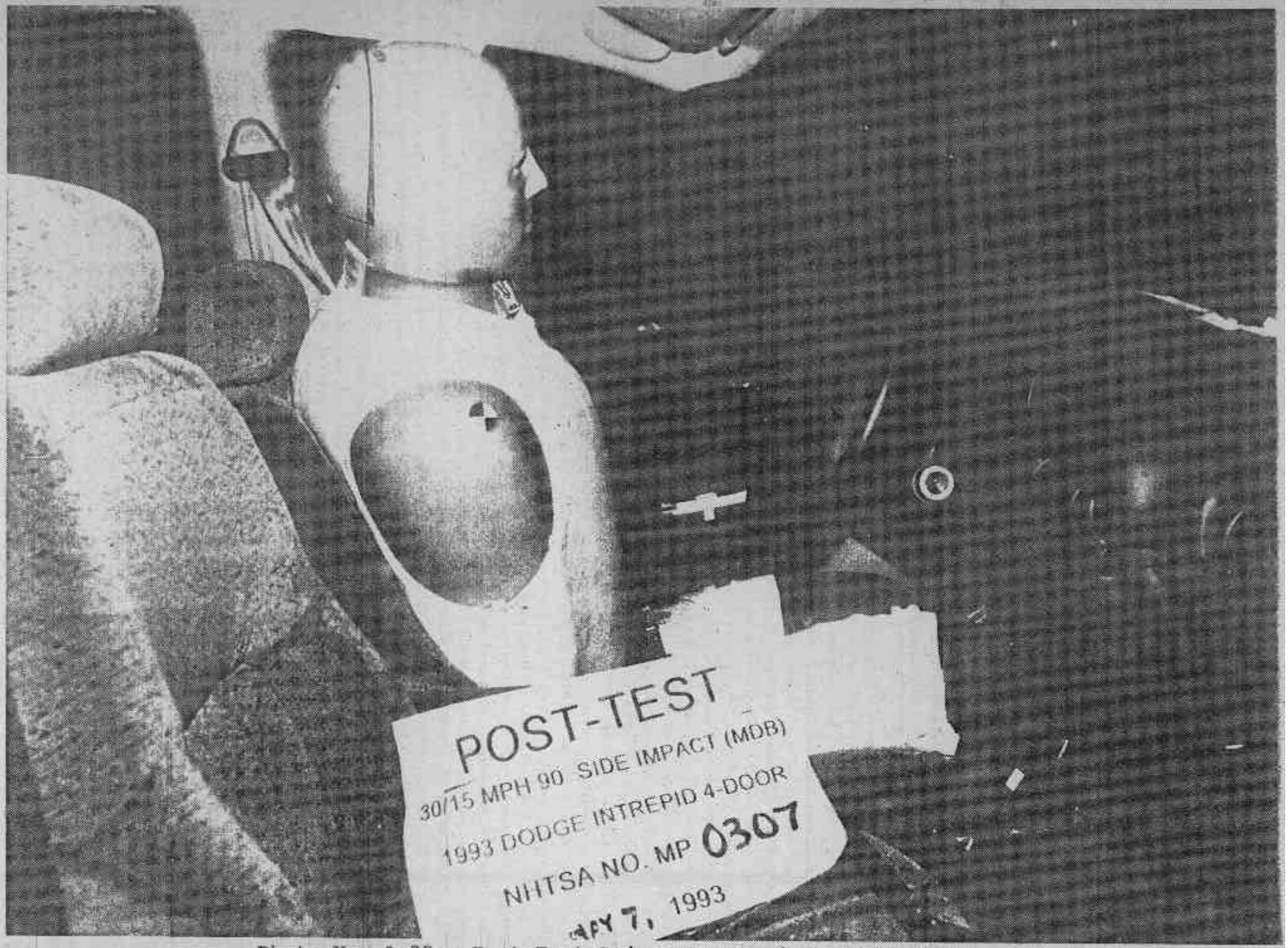
Photo No. A-19 - Pre-Test Barrier Position Against Vehicle
Overhead View



A-20

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

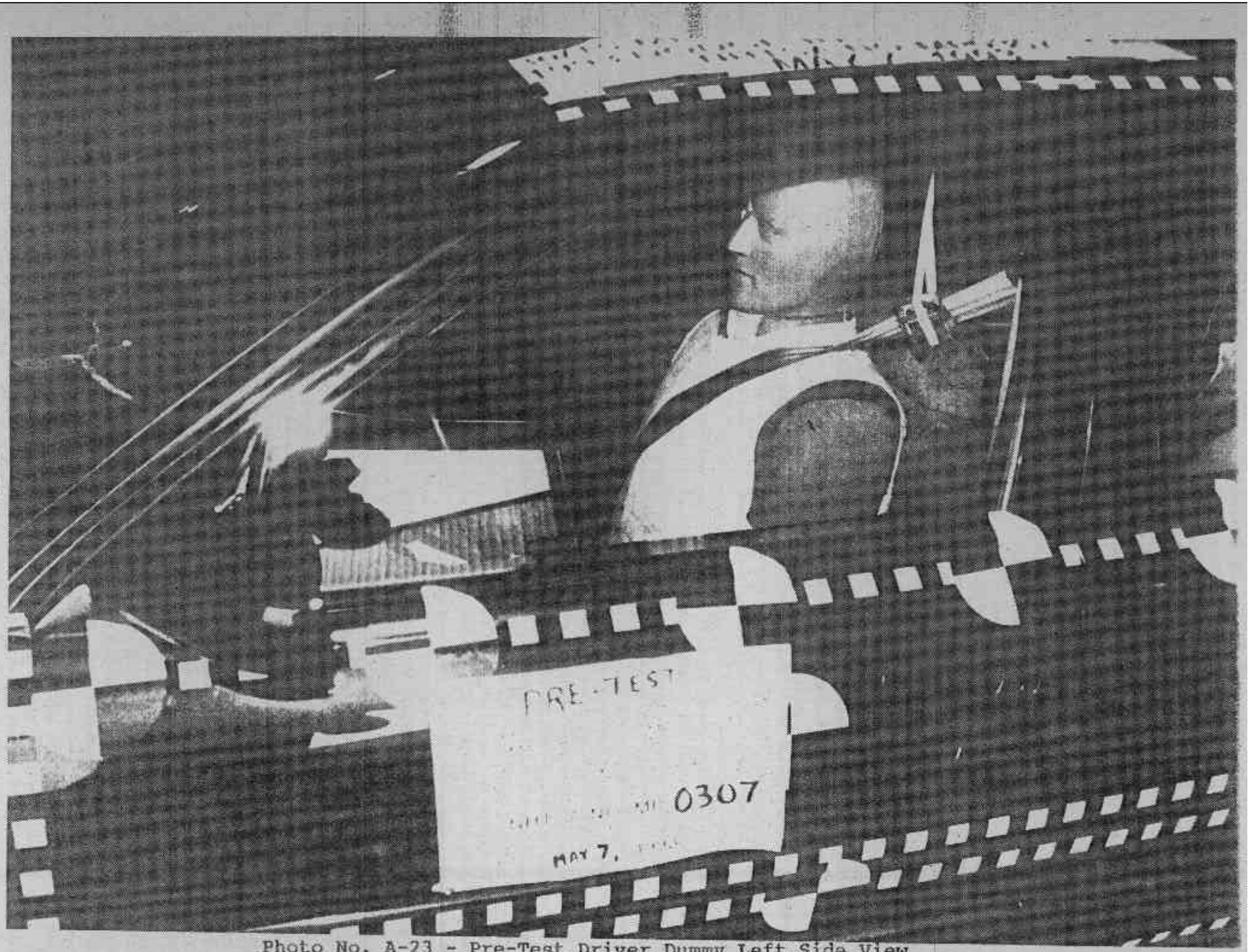
Photo No. A-21 - Pre-Test Driver Dummy Right Side View



A-22

095

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



A-23

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

A-24

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

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

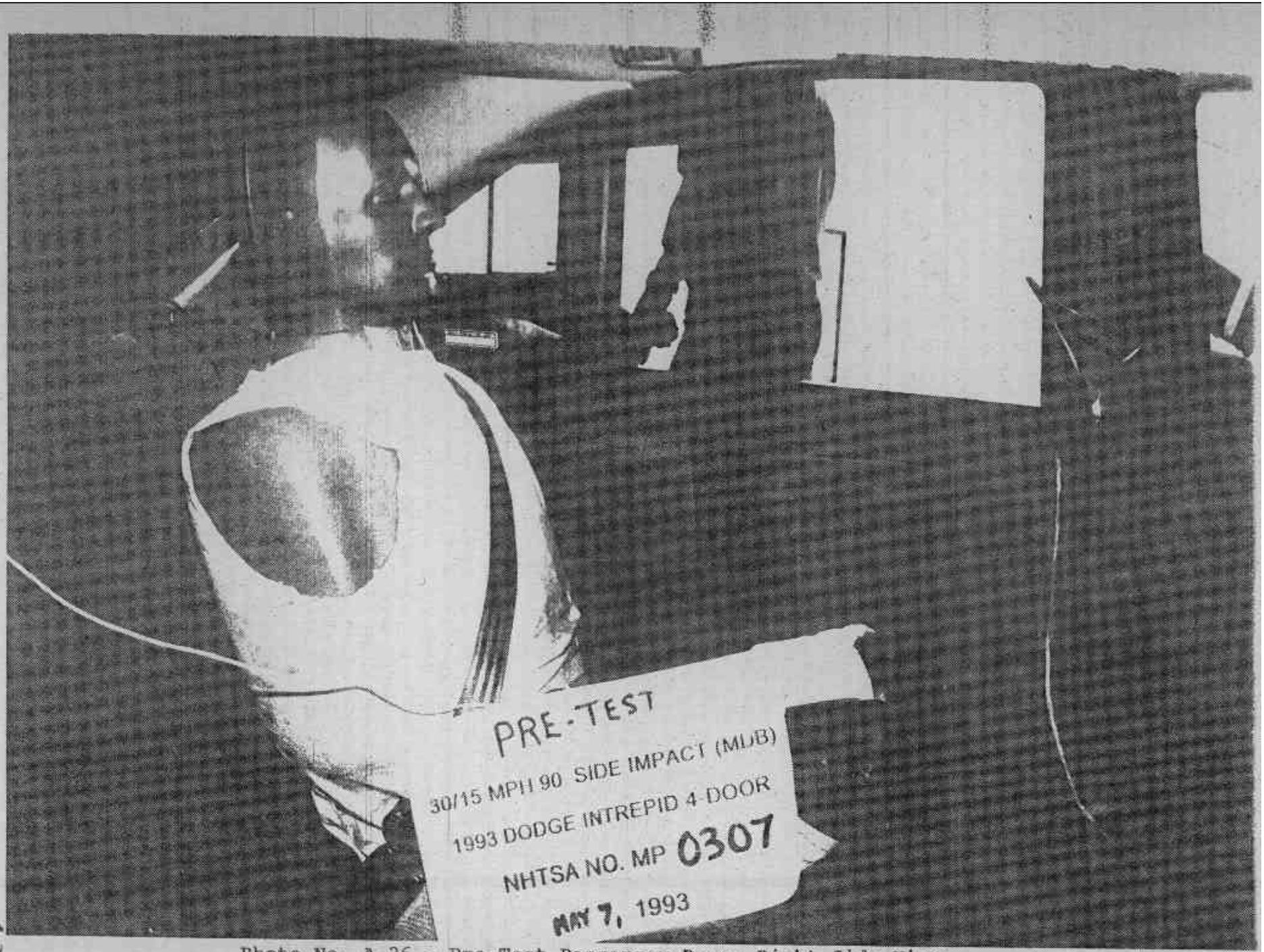
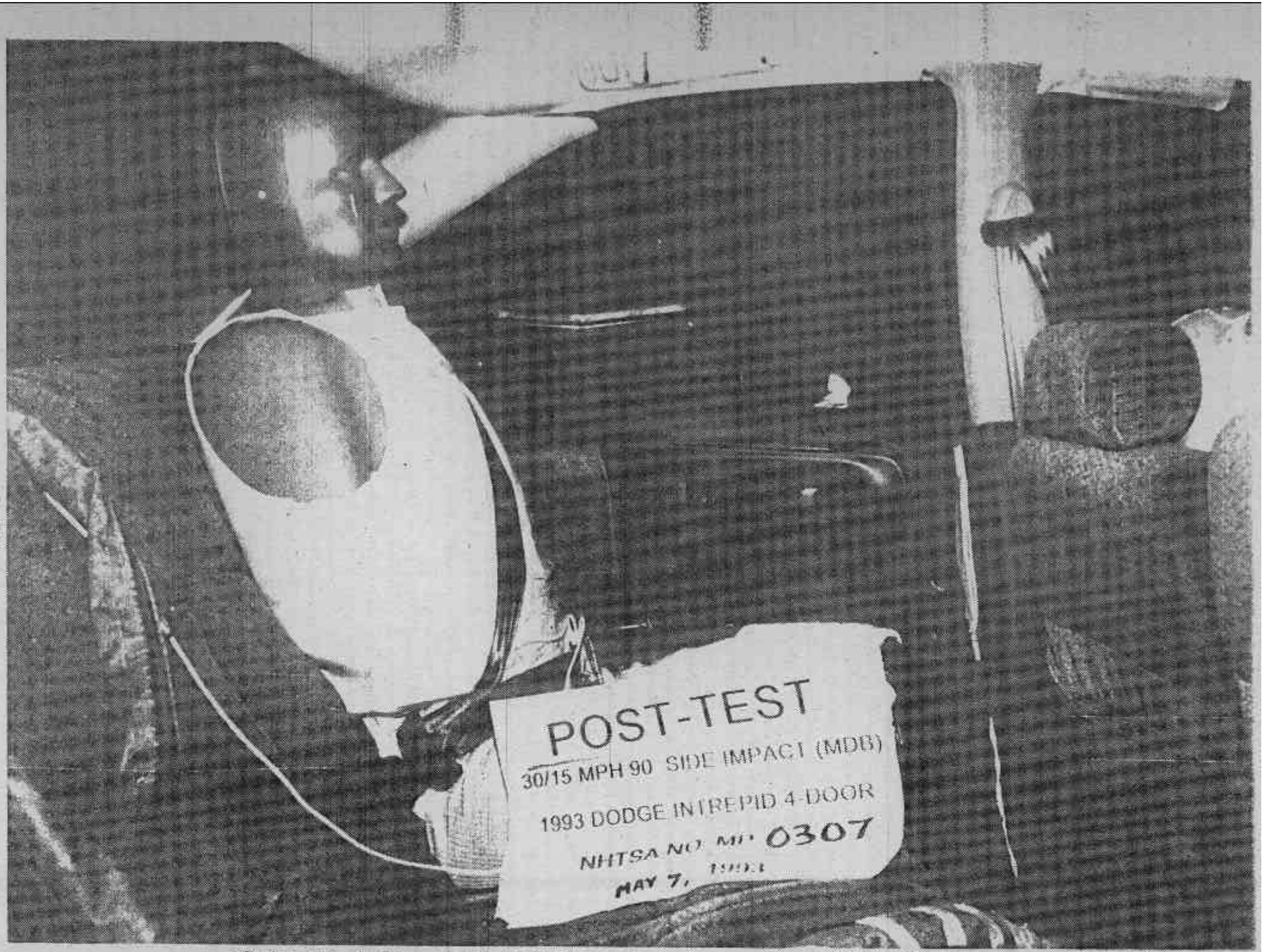
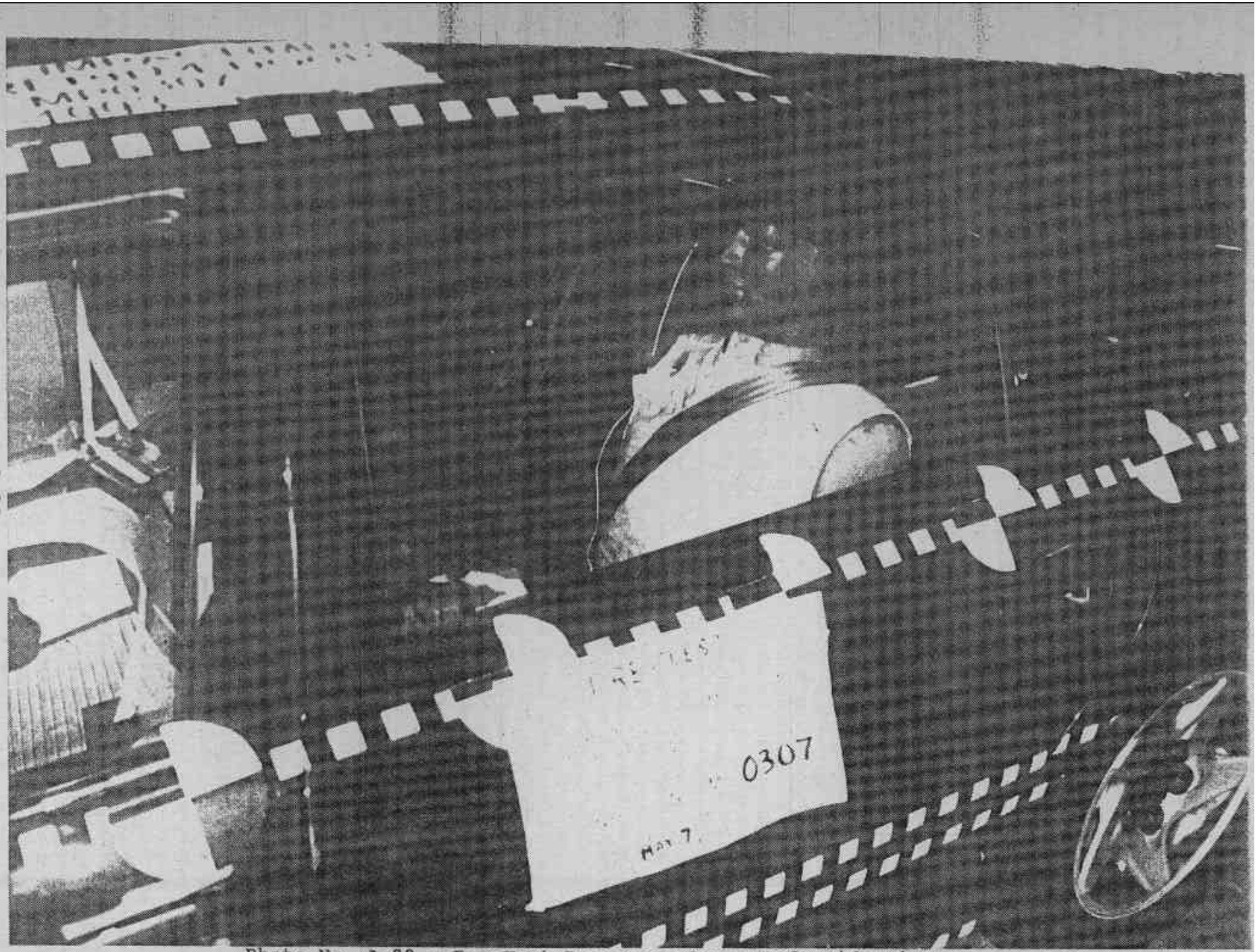


Photo No. A-26 - Pre-Test Passenger Dummy Right Side View



A-27

Photo No. A-27 - Post-Test Passenger Dummy Right Side View



A-28

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

A-29

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

Photo No. A-30 - Pre-Test Passenger Dummy Left Side View
(Door Open)

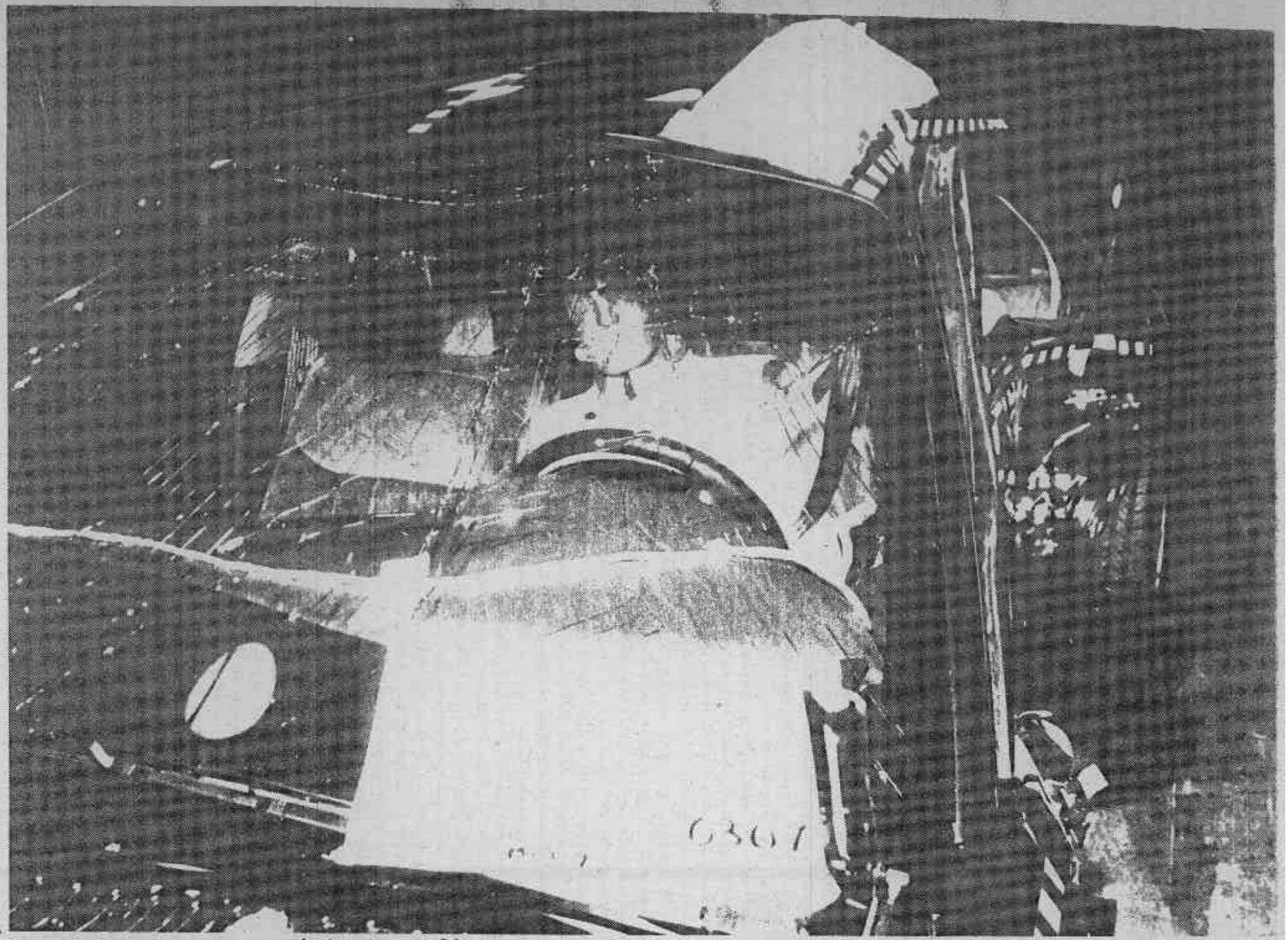


Photo No. A-31 - Post-Test Driver Dummy Front View

Photo No. A-32 - Post-Test Passenger Dummy Front View

Photo No. A-33 - Driver Impact

Photo No. A-34 - Passenger Impact

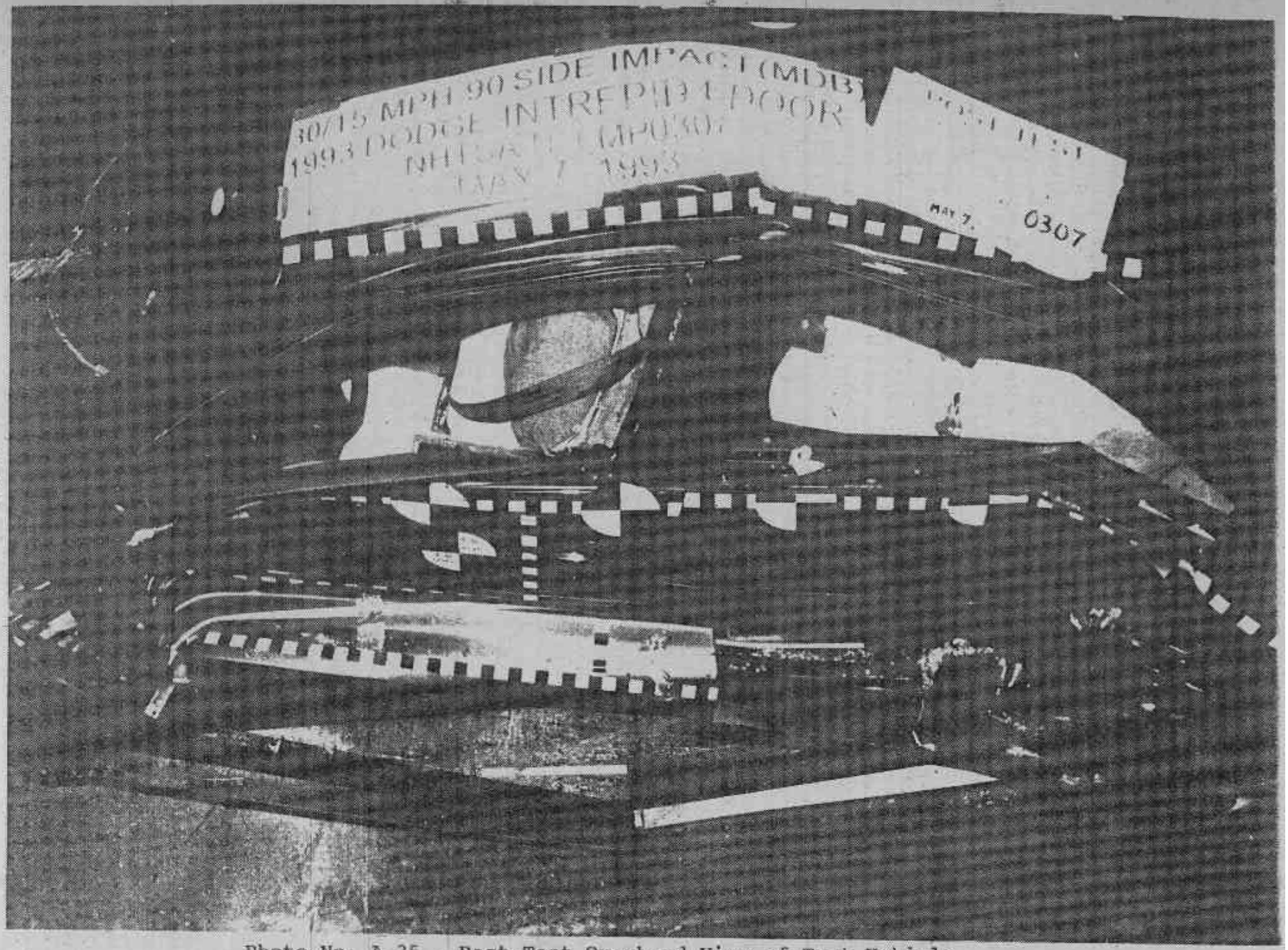
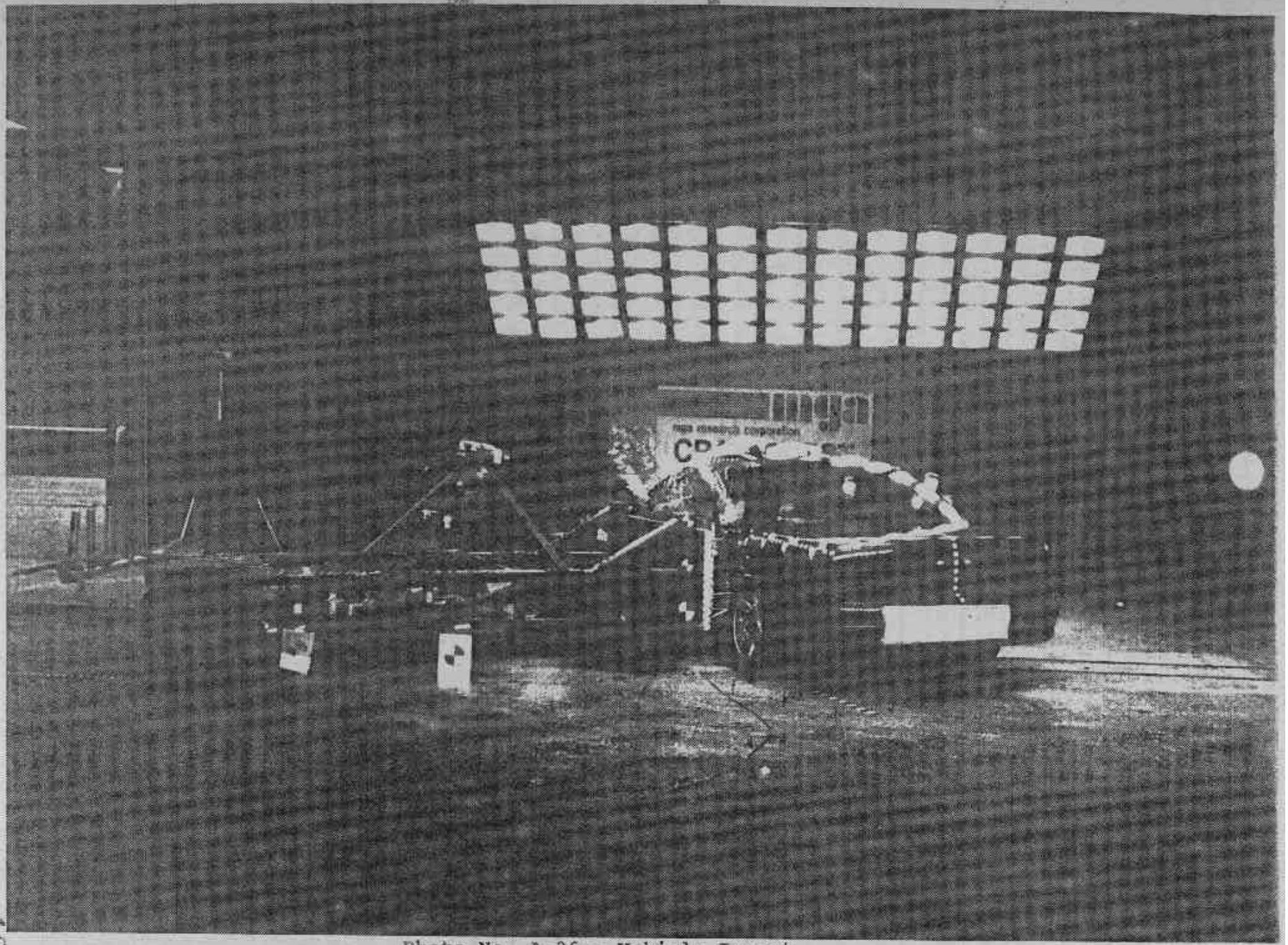
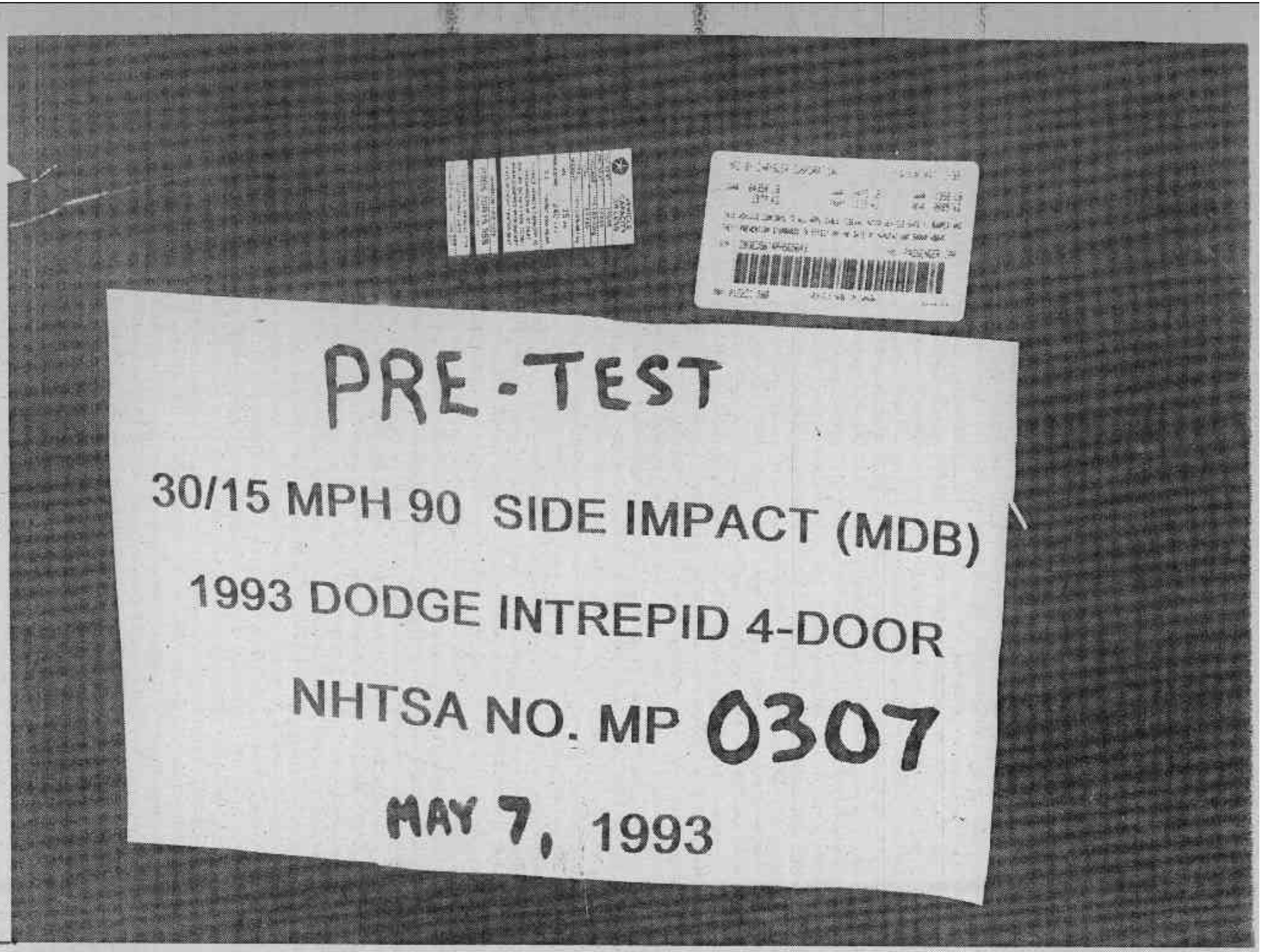


Photo No. A-35 - Post-Test Overhead View of Test Vehicle



A-36

Photo No. A-36 - Vehicle Impact

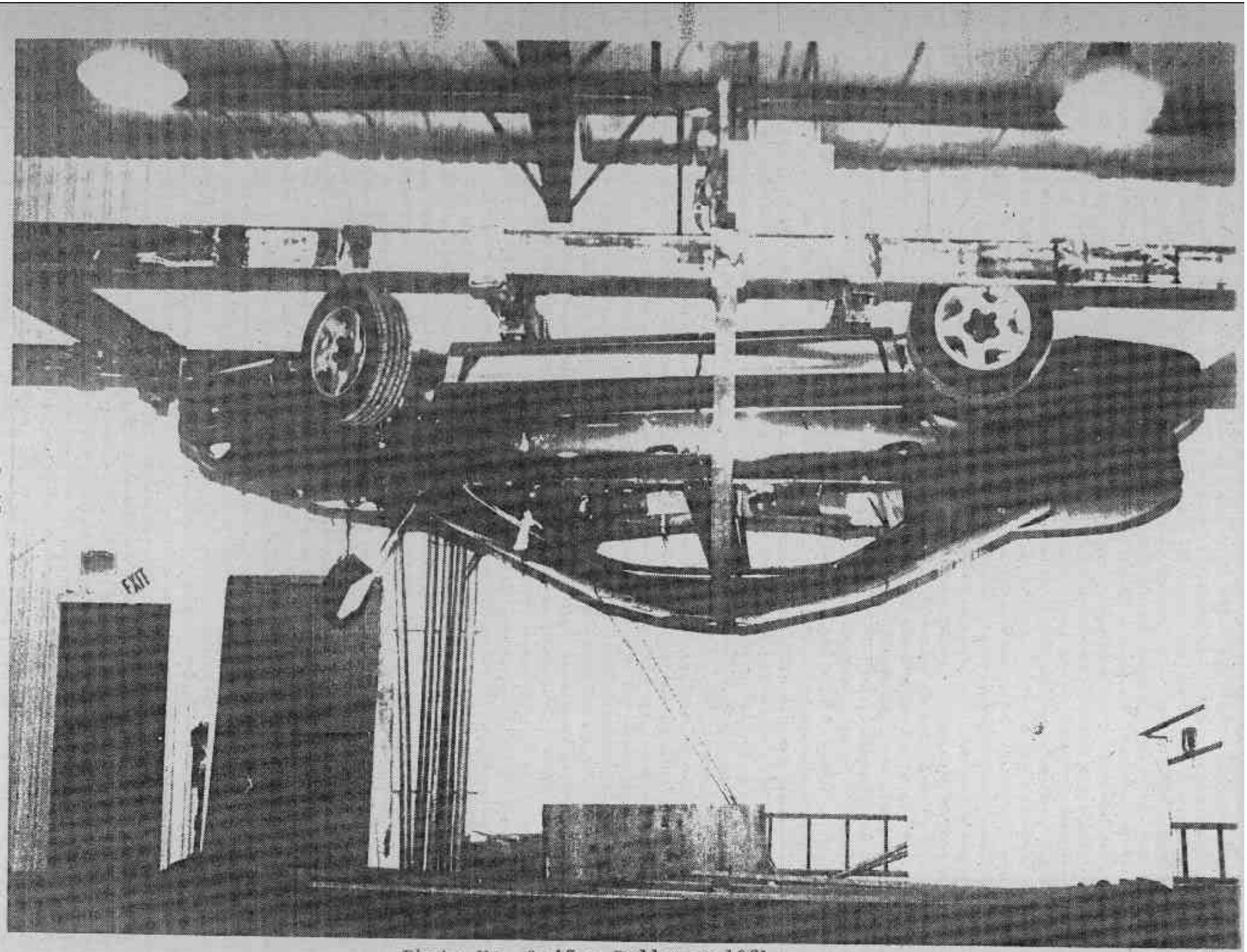


A-37

Photo No. A-37 - Vehicle Certification Label

Photo No. A-38 - Rollover 0°

Photo No. A-39 - Rollover 90°



A-40

Photo No. A-40 - Rollover 180°

Photo No. A-41 - Rollover 270°

APPENDIX B - DATA PLOTS

Table of Data Plots

* Not valid data collected

Table of Data Plots (continued)

Table of Data Plots (continued)

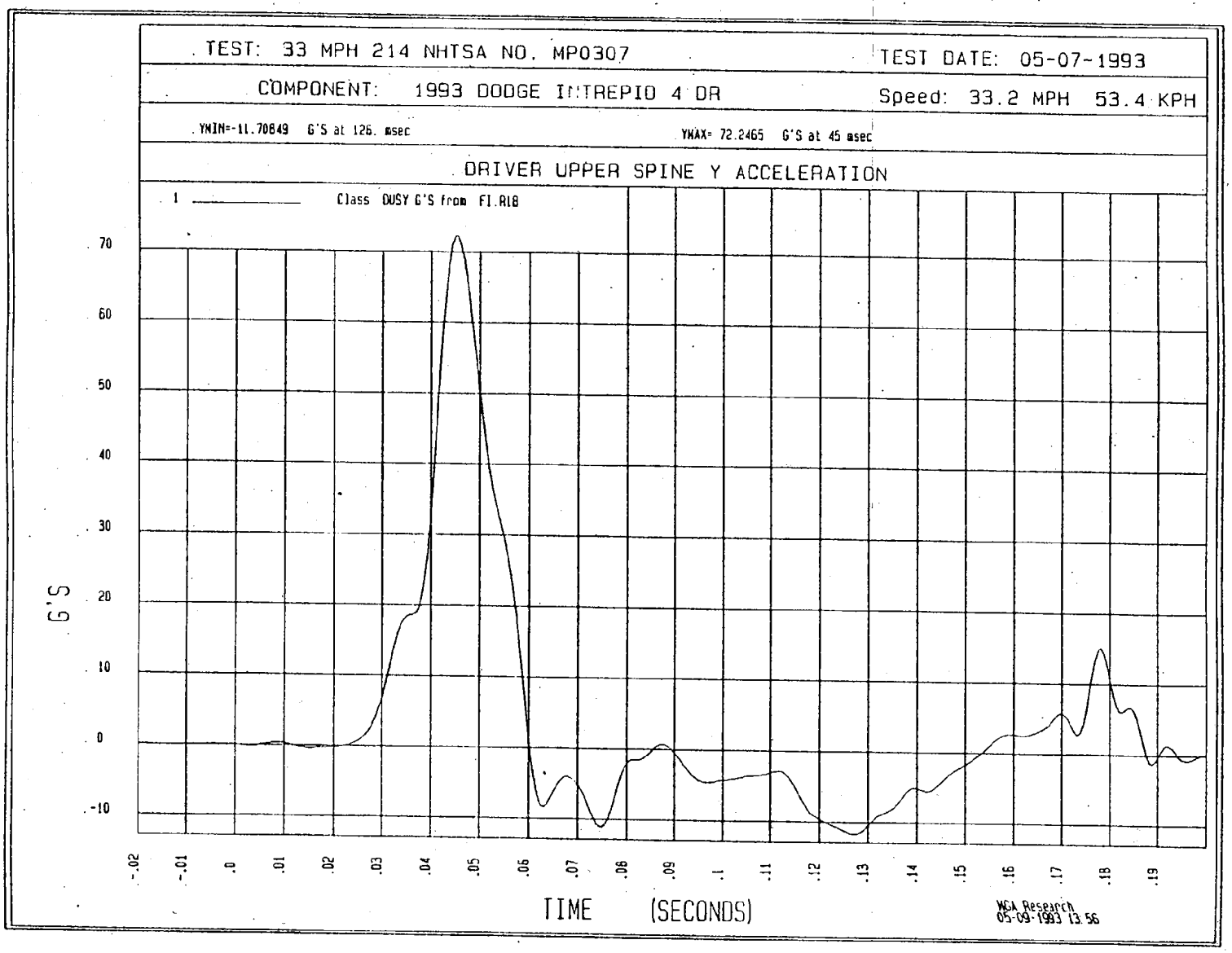


Figure B-1 - Driver Upper Spine Y Acceleration vs. Time

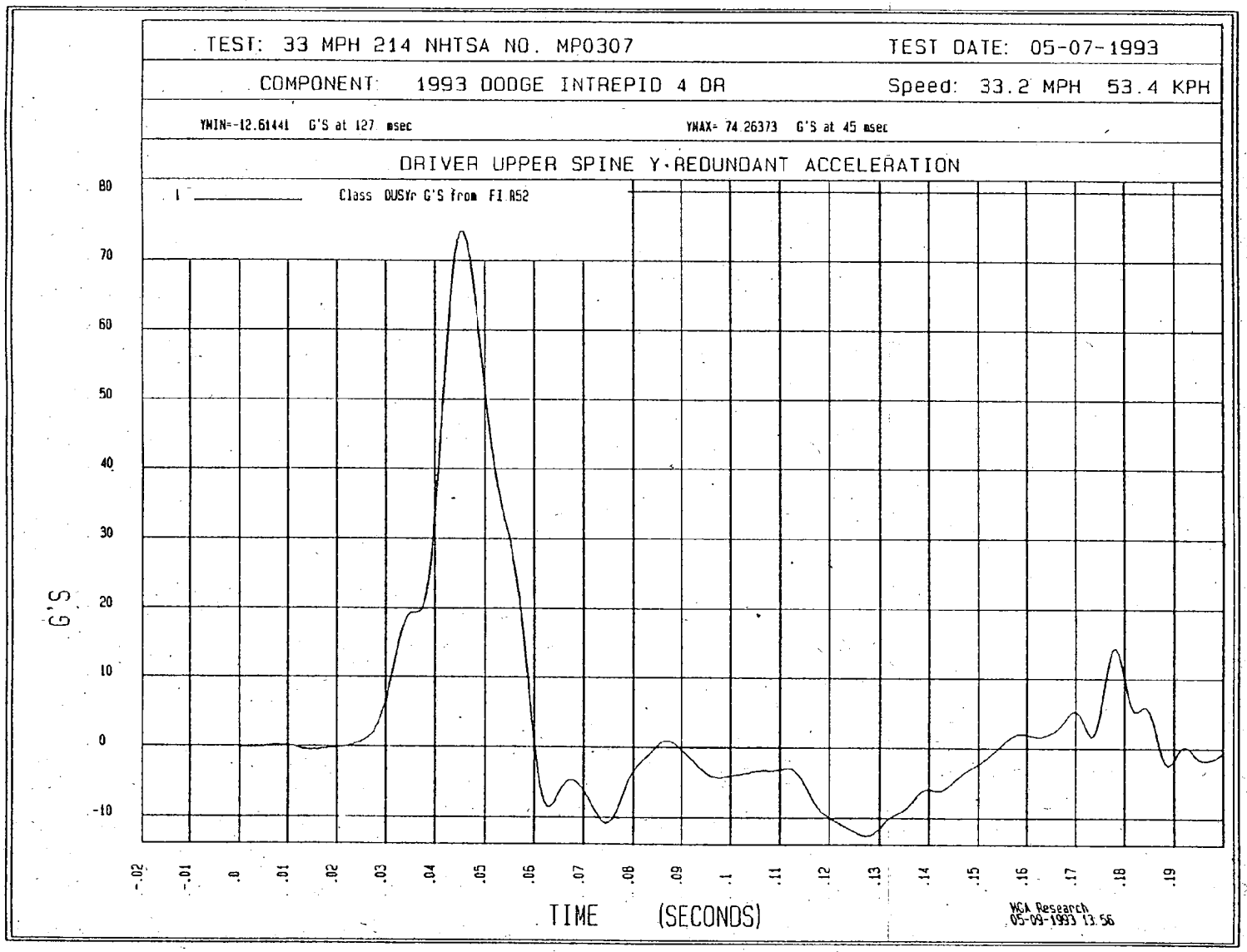


Figure B-2 - Driver Upper Spine Y Redundant Acceleration vs. Time

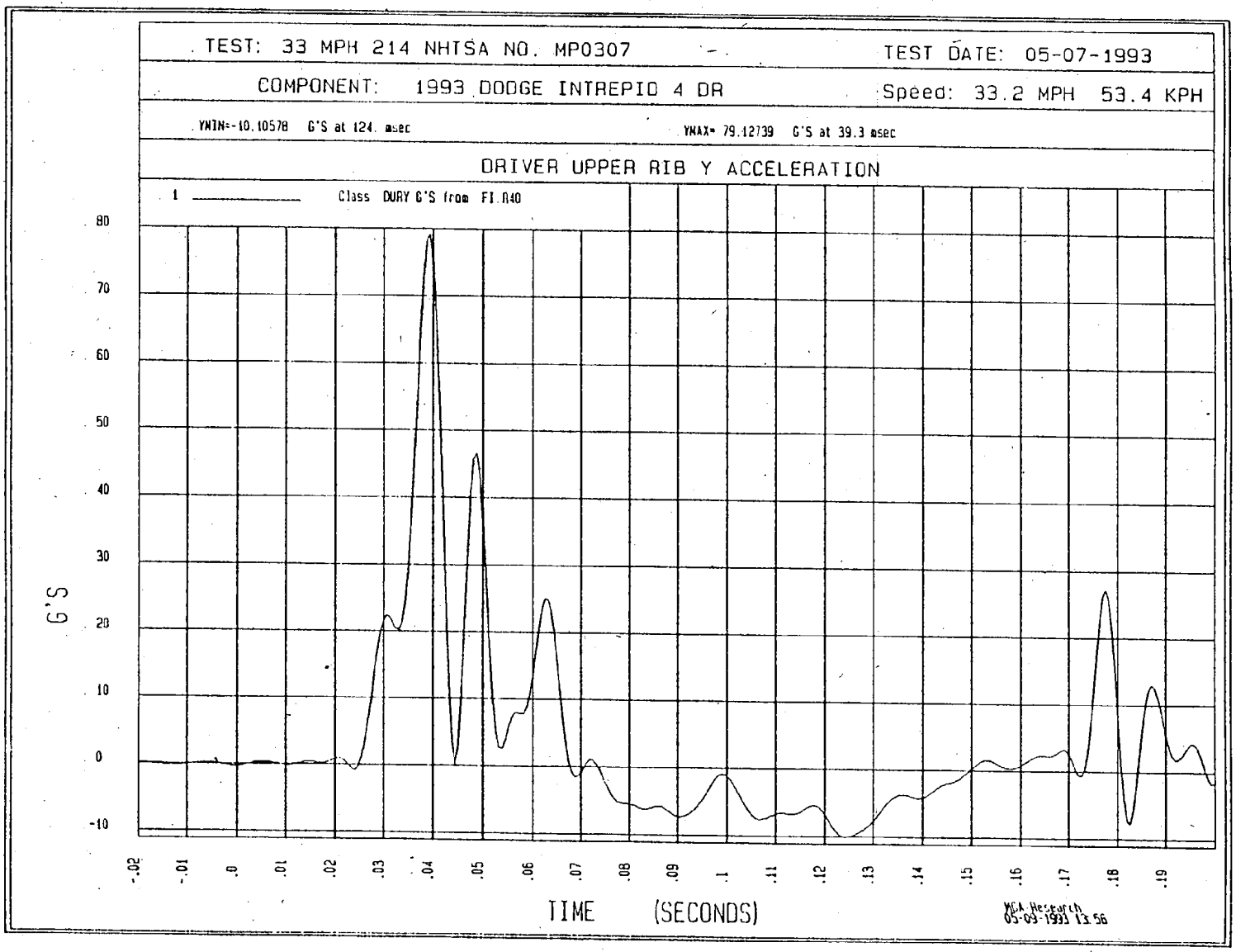


Figure B-3 - Driver Upper Rib Y Acceleration vs. Time

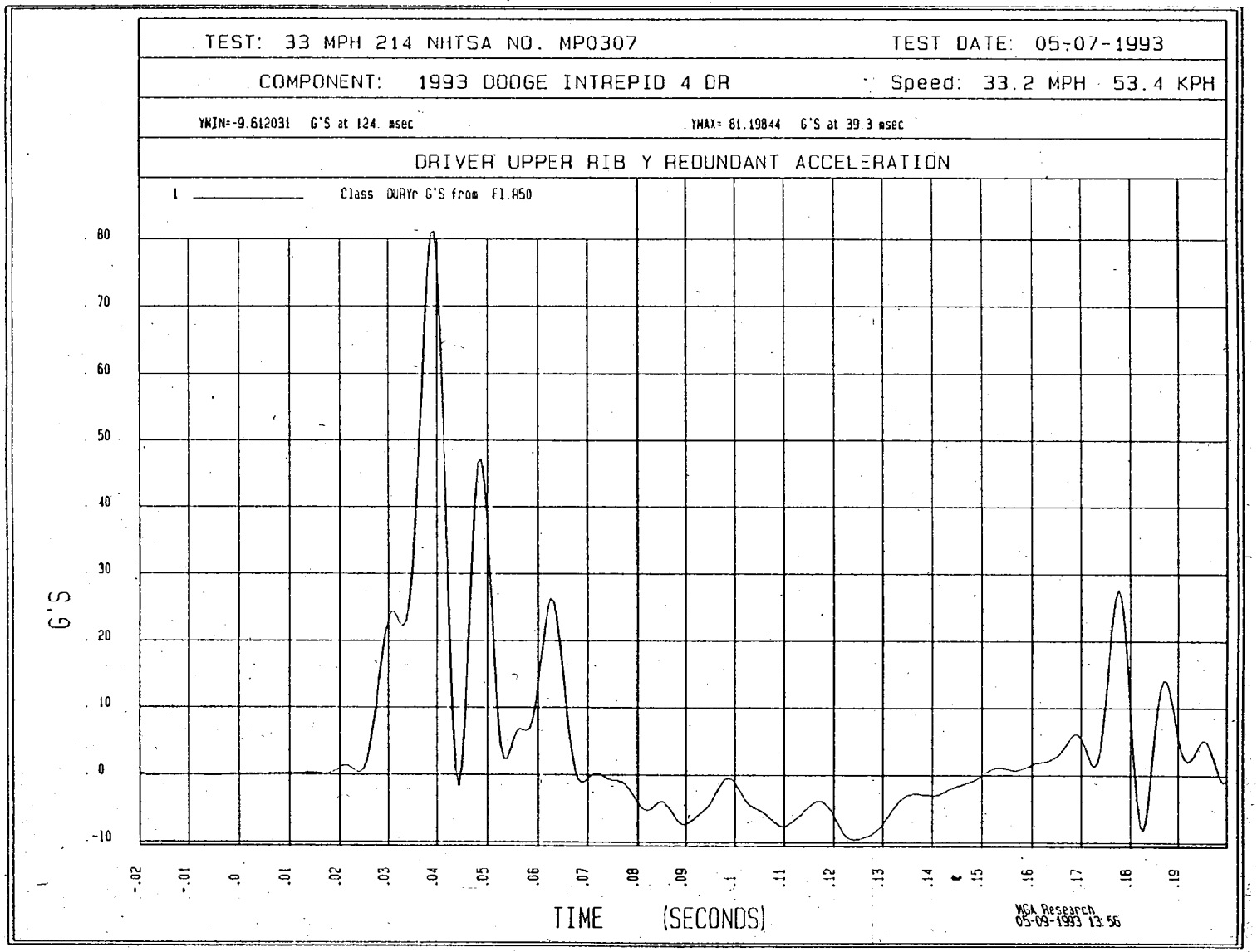
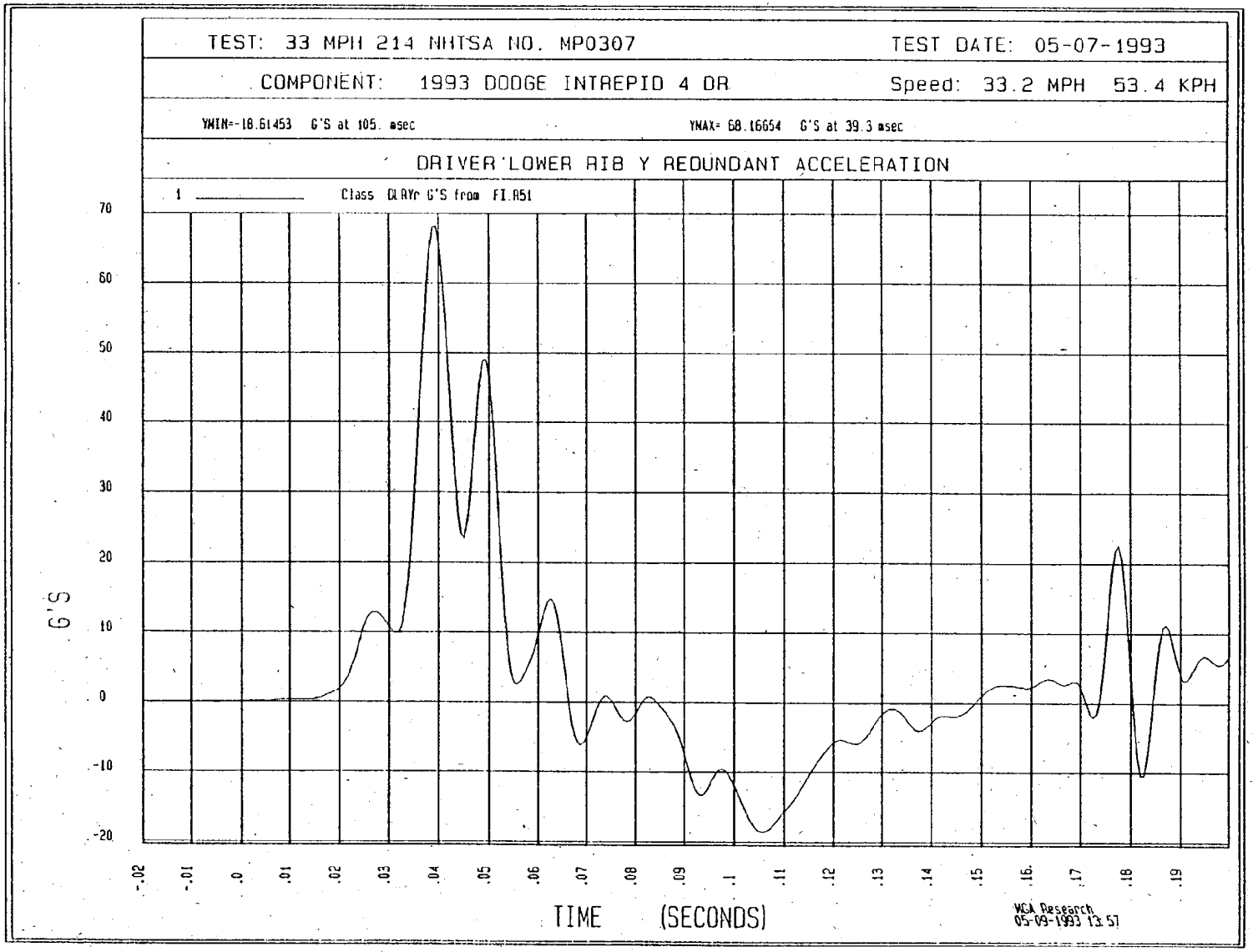


Figure B-4 - Driver Upper Rib Y Redundant Acceleration vs. Time

NO VALID DATA COLLECTED

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



B-6

Figure B-6 - Driver Lower Rib Y Redundant Acceleration vs. Time

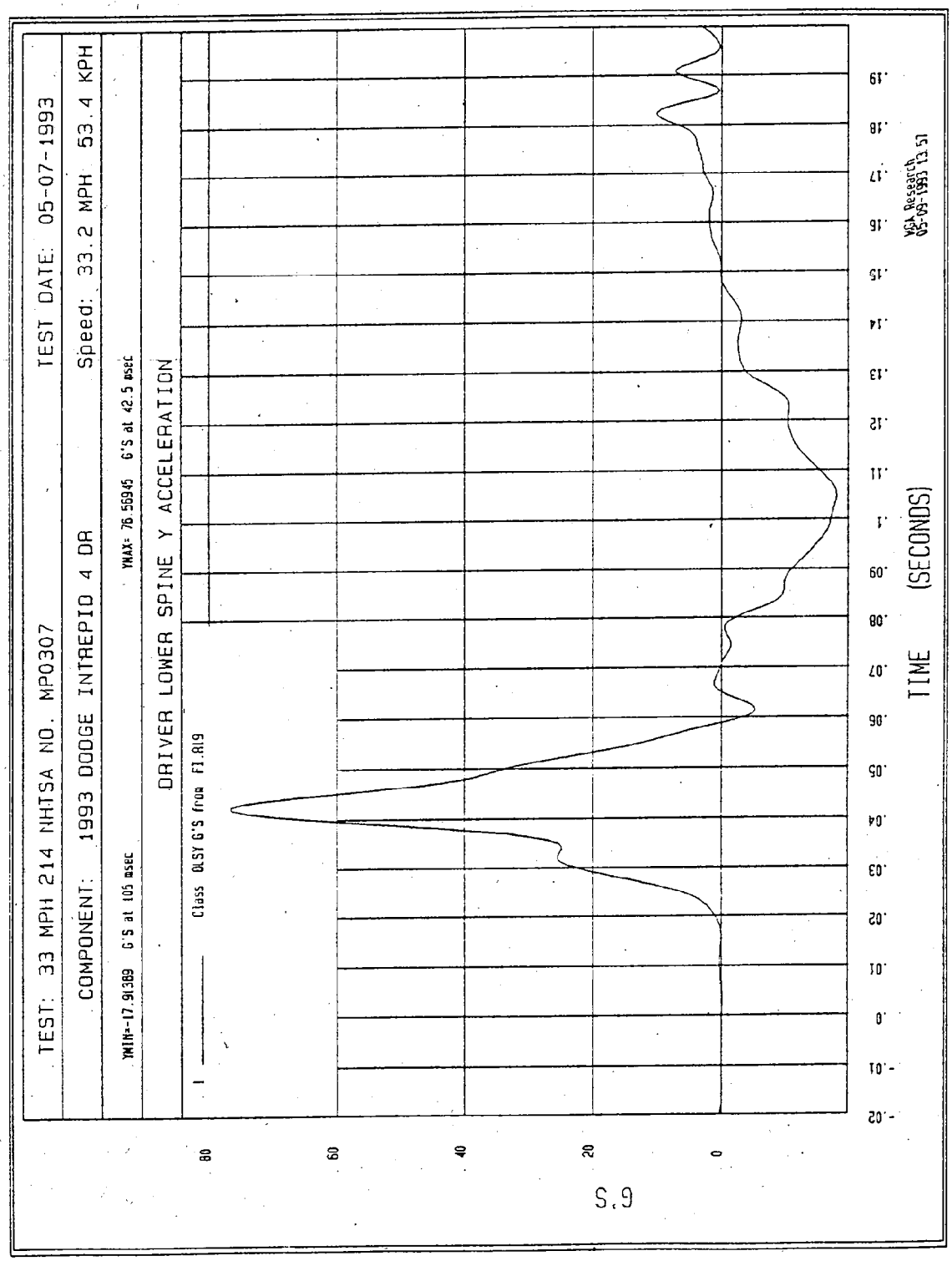


Figure B-7 - Driver Lower Spine Y Acceleration vs. Time

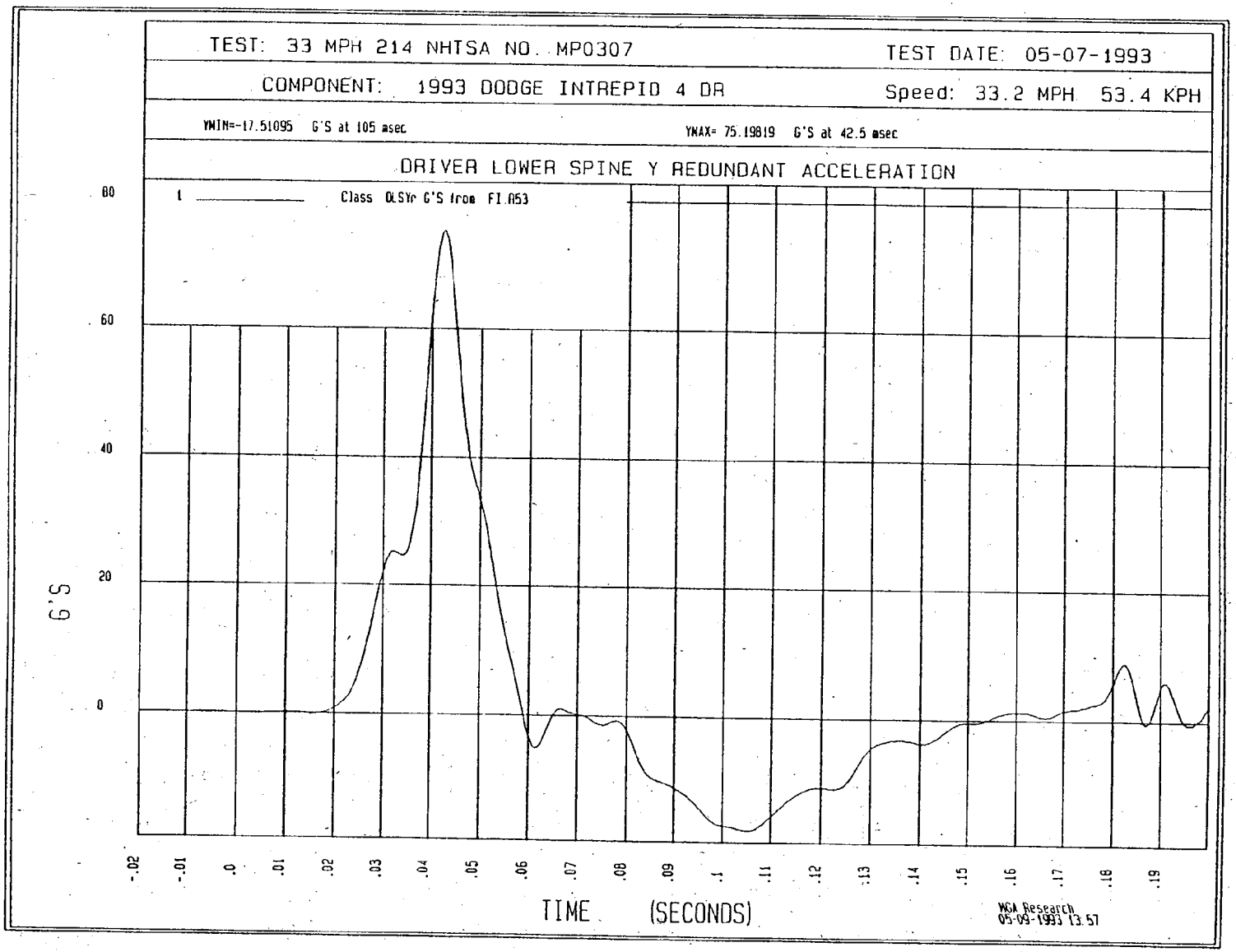


Figure B-8 - Driver Lower Spine Y Redundant Acceleration vs. Time

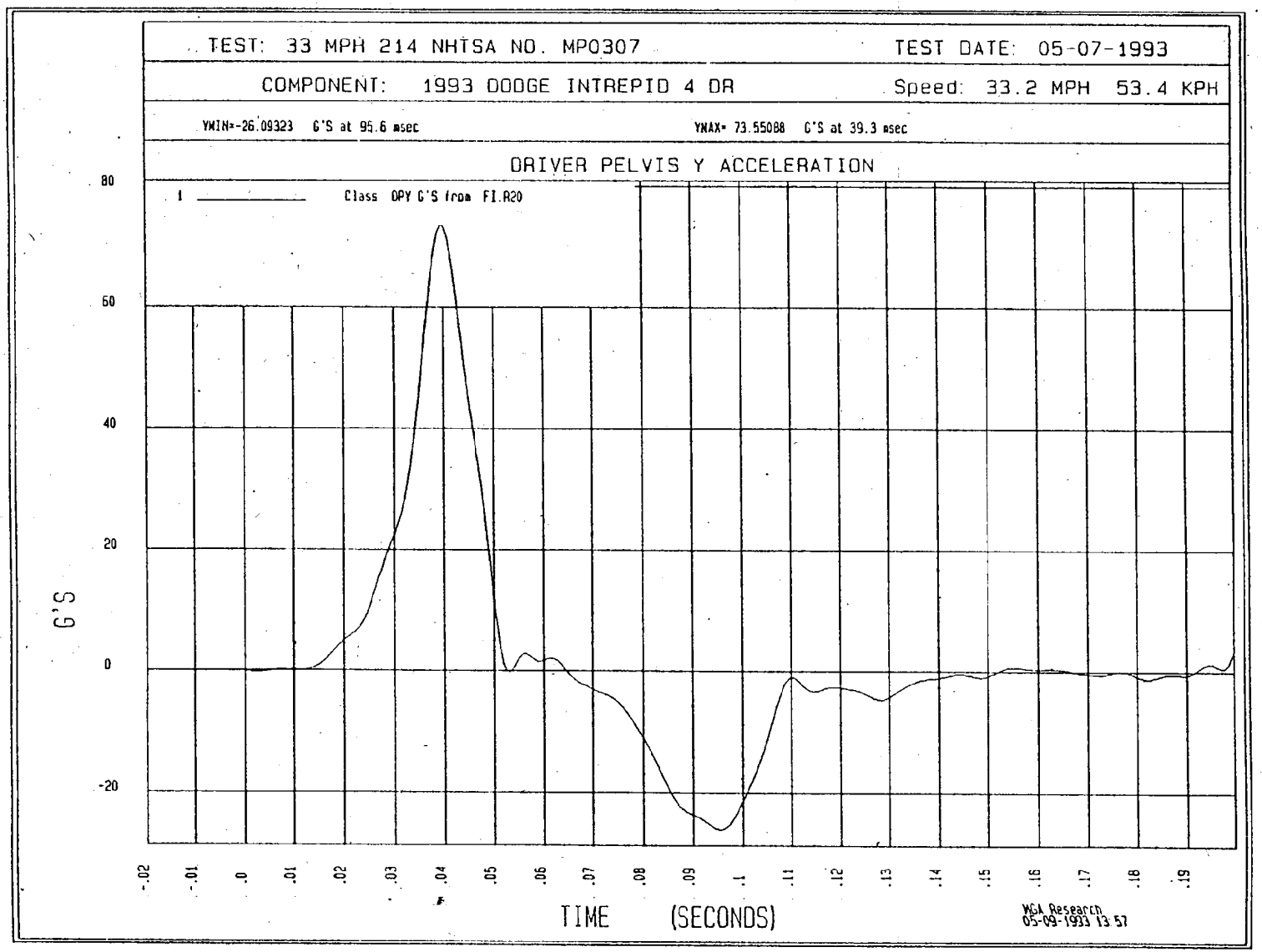


Figure B-9 - Driver Pelvis Y Acceleration vs. Time

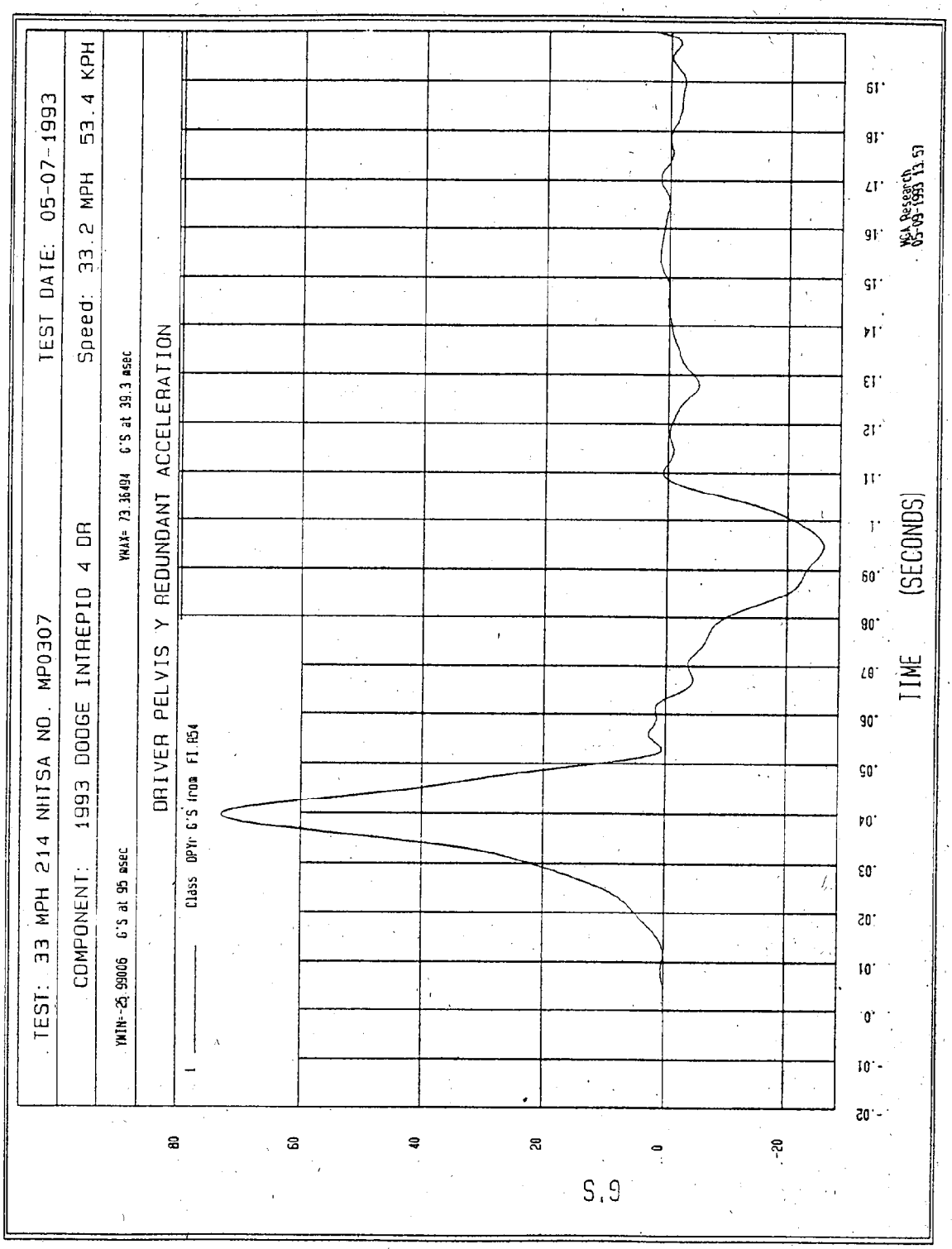


Figure B-10 - Driver Pelvis Y Redundant Acceleration vs. Time

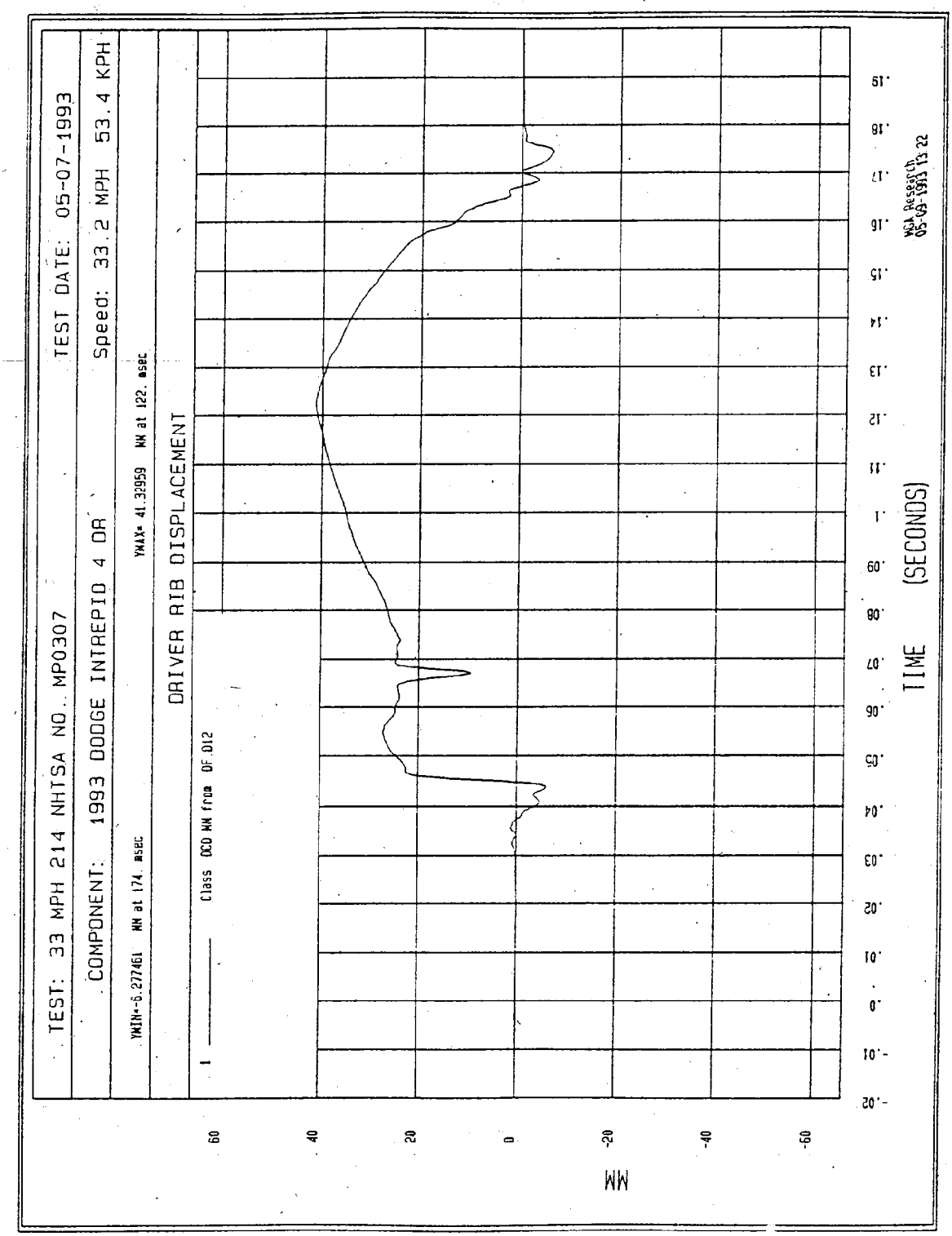


Figure B-11 - Driver Rib Displacement vs. Time

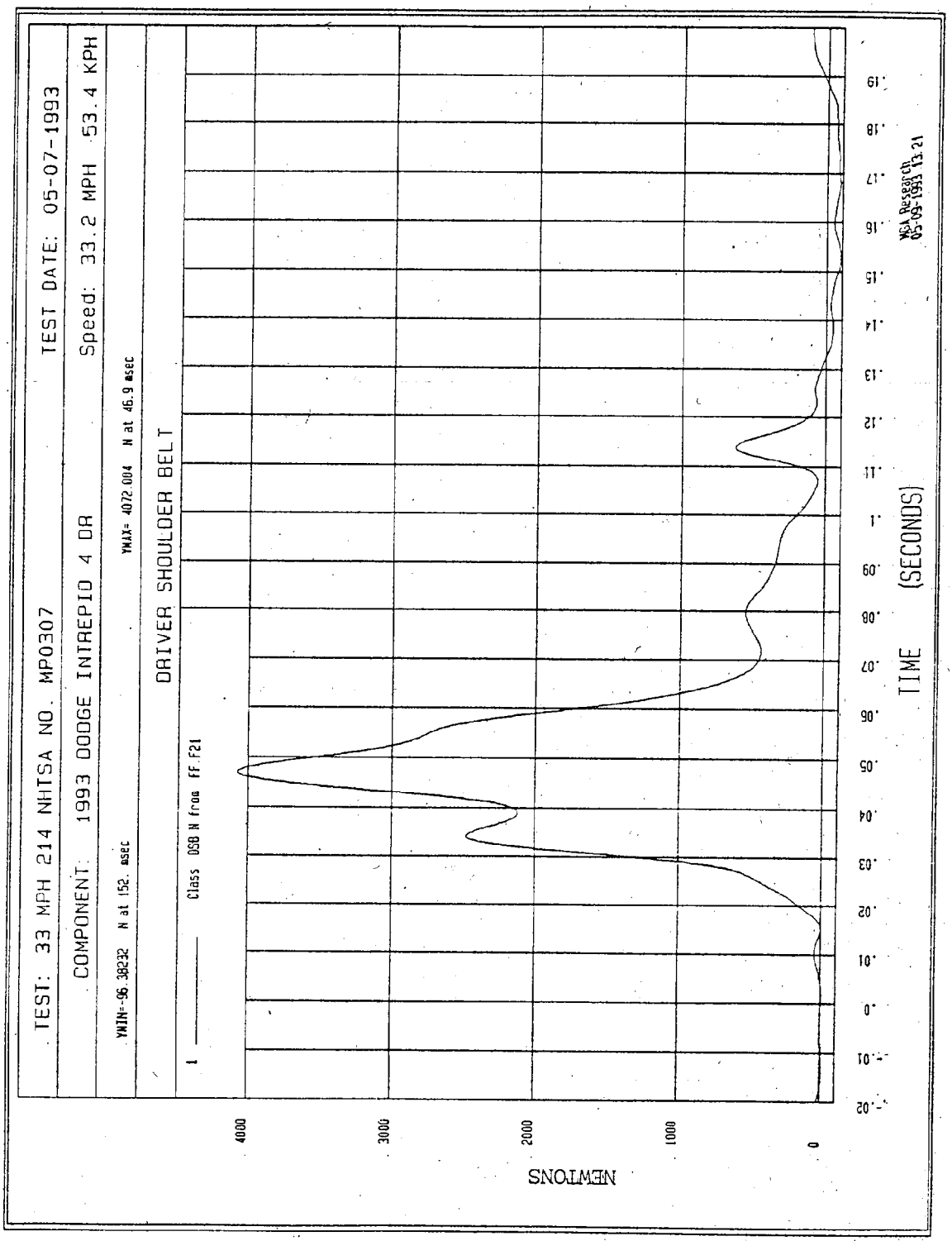


Figure B-12 - Driver Shoulder Belt

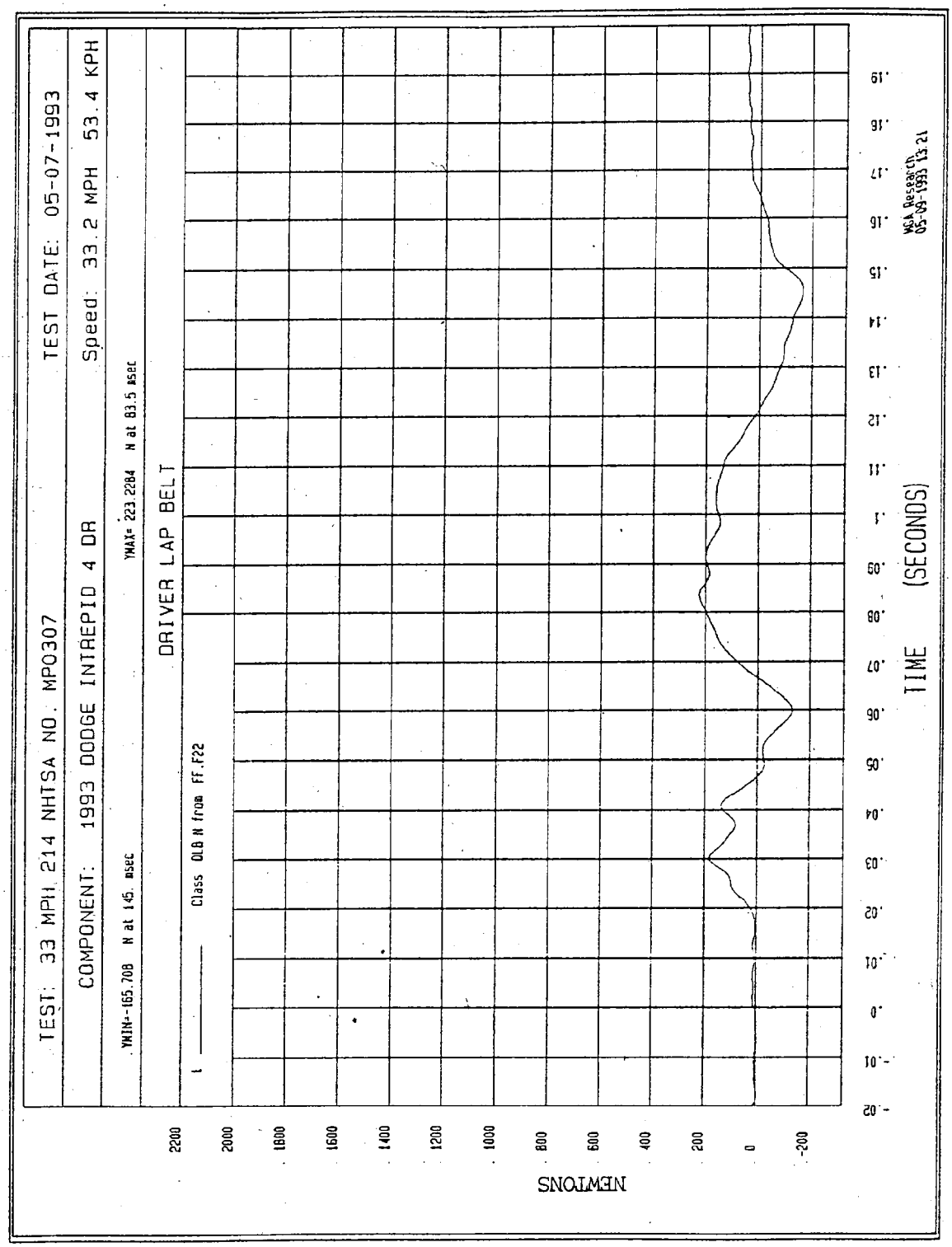


Figure B-13 - Driver Lap Belt

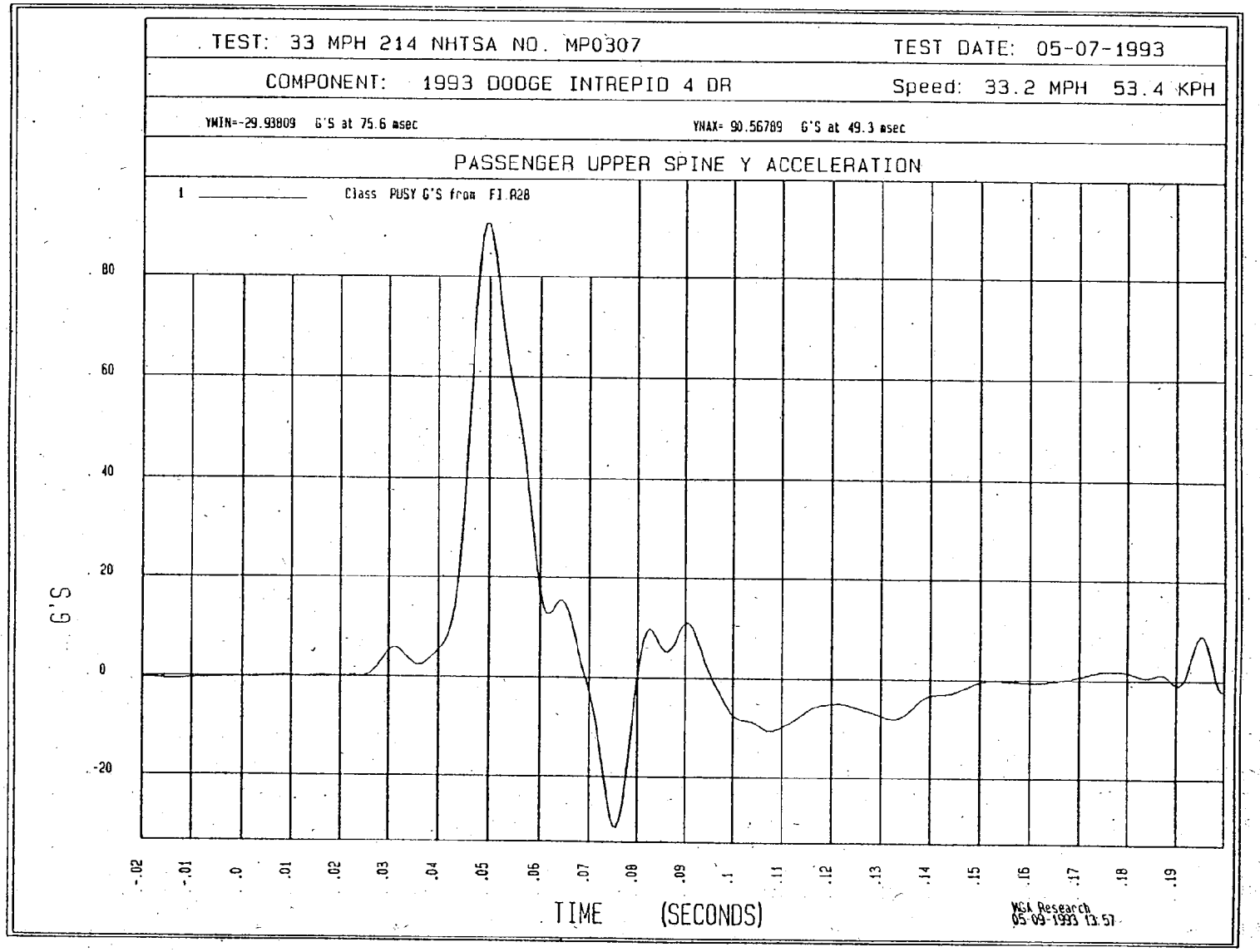


Figure B-14 - Passenger Upper Spine Y Acceleration vs. Time

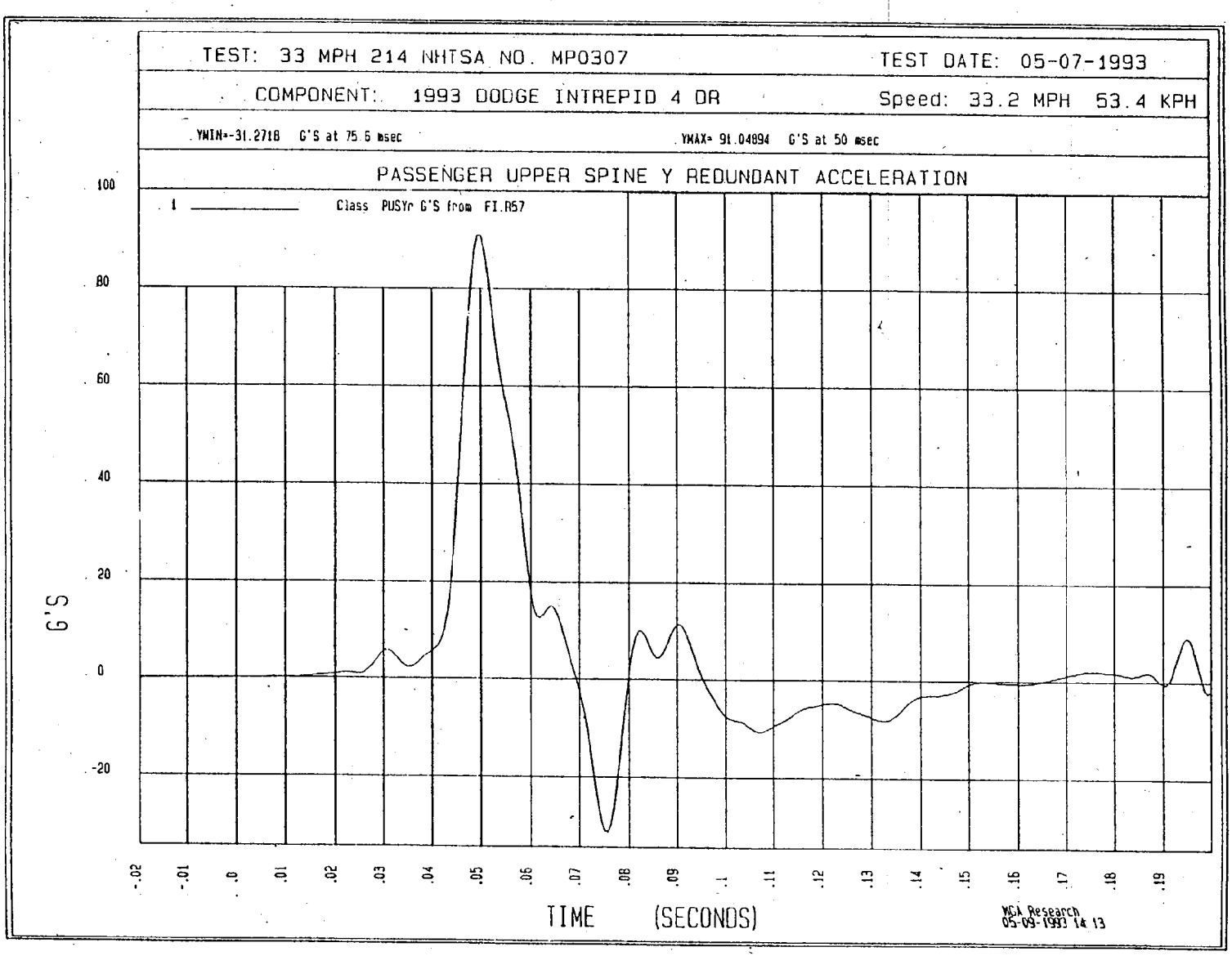


Figure B-15 - Passenger Upper Spine Y Redundant Acceleration vs. Time

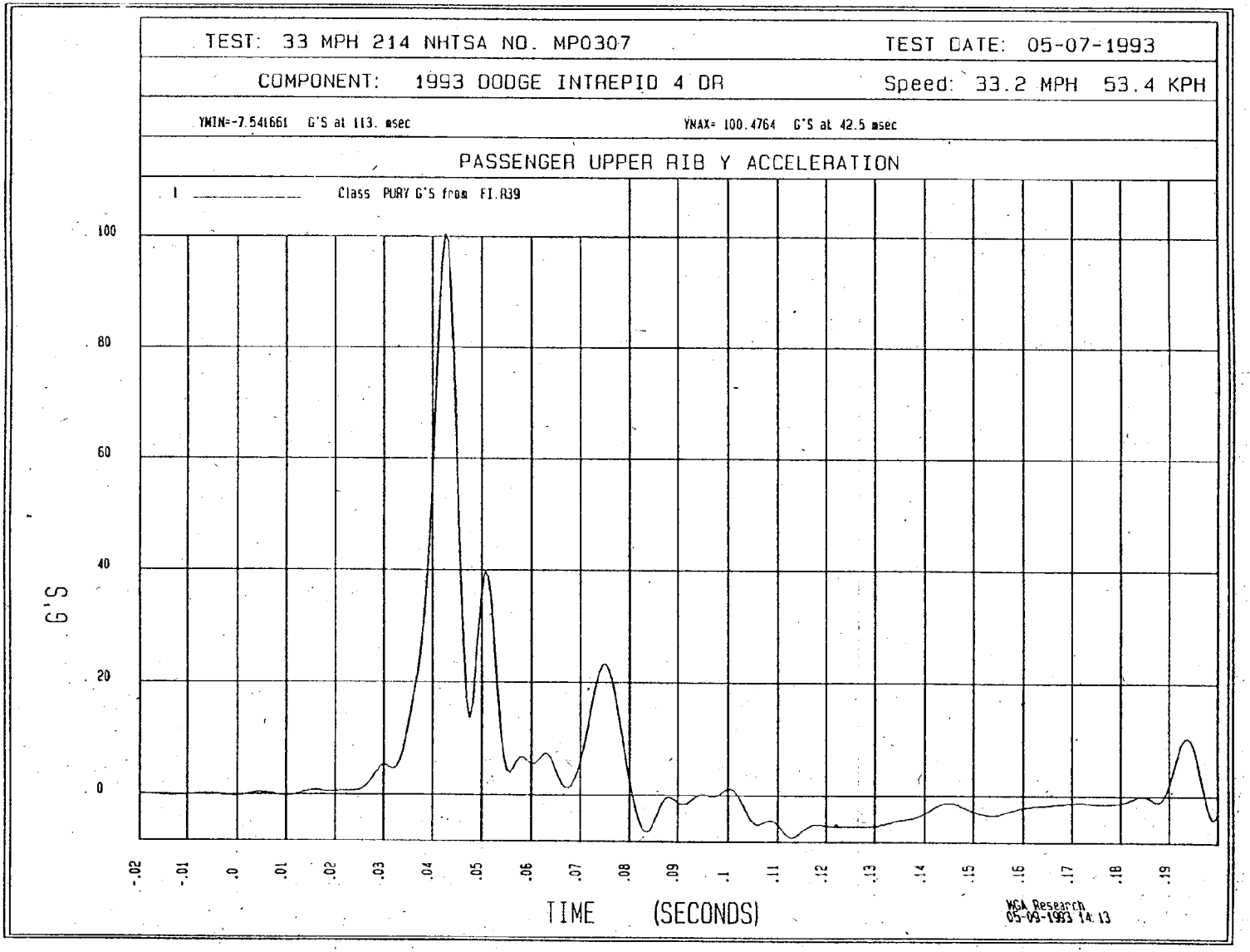


Figure B-16 - Passenger Upper Rib Y Acceleration vs. Time

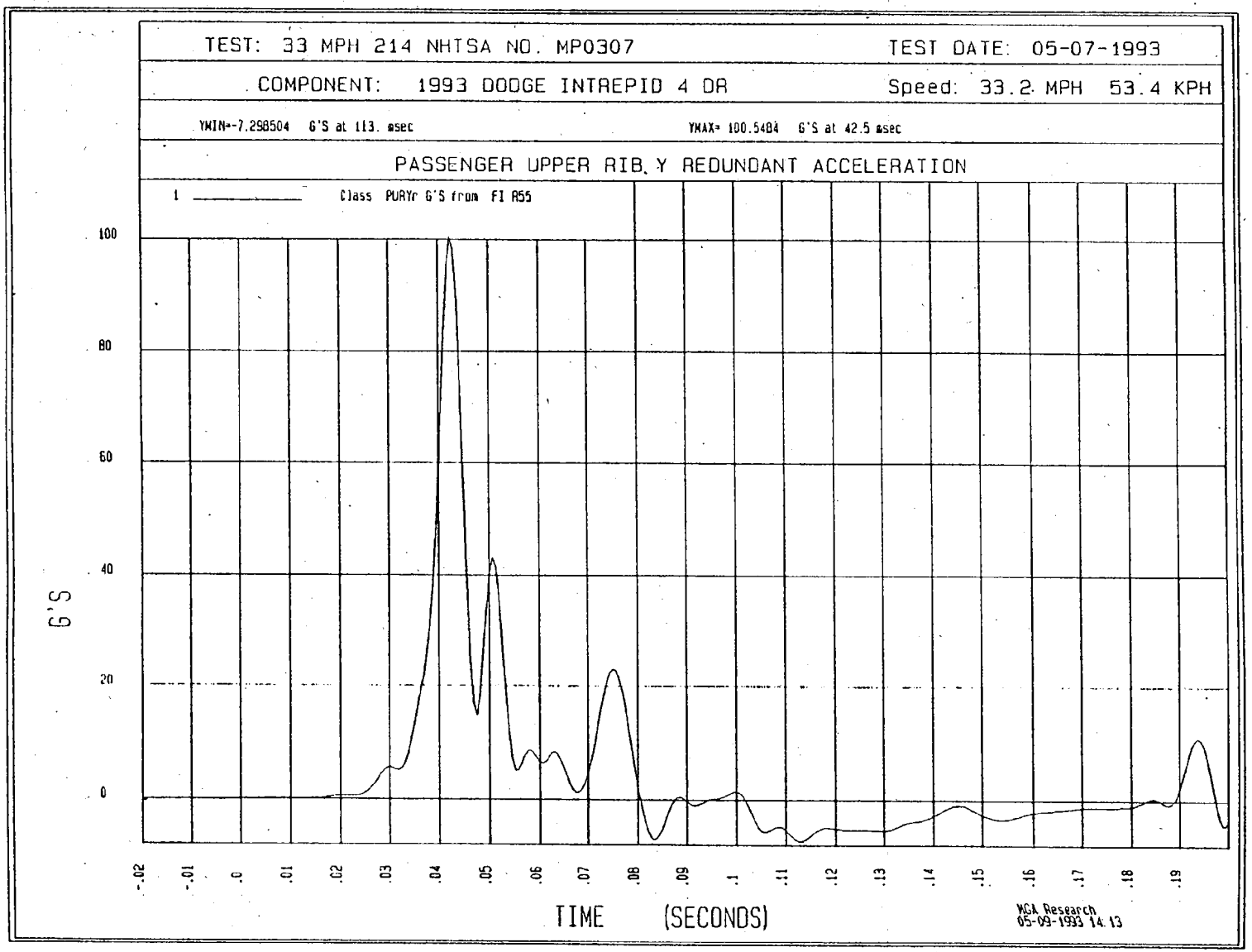


Figure B-17 - Passenger Upper Rib Y Redundant Acceleration vs. Time

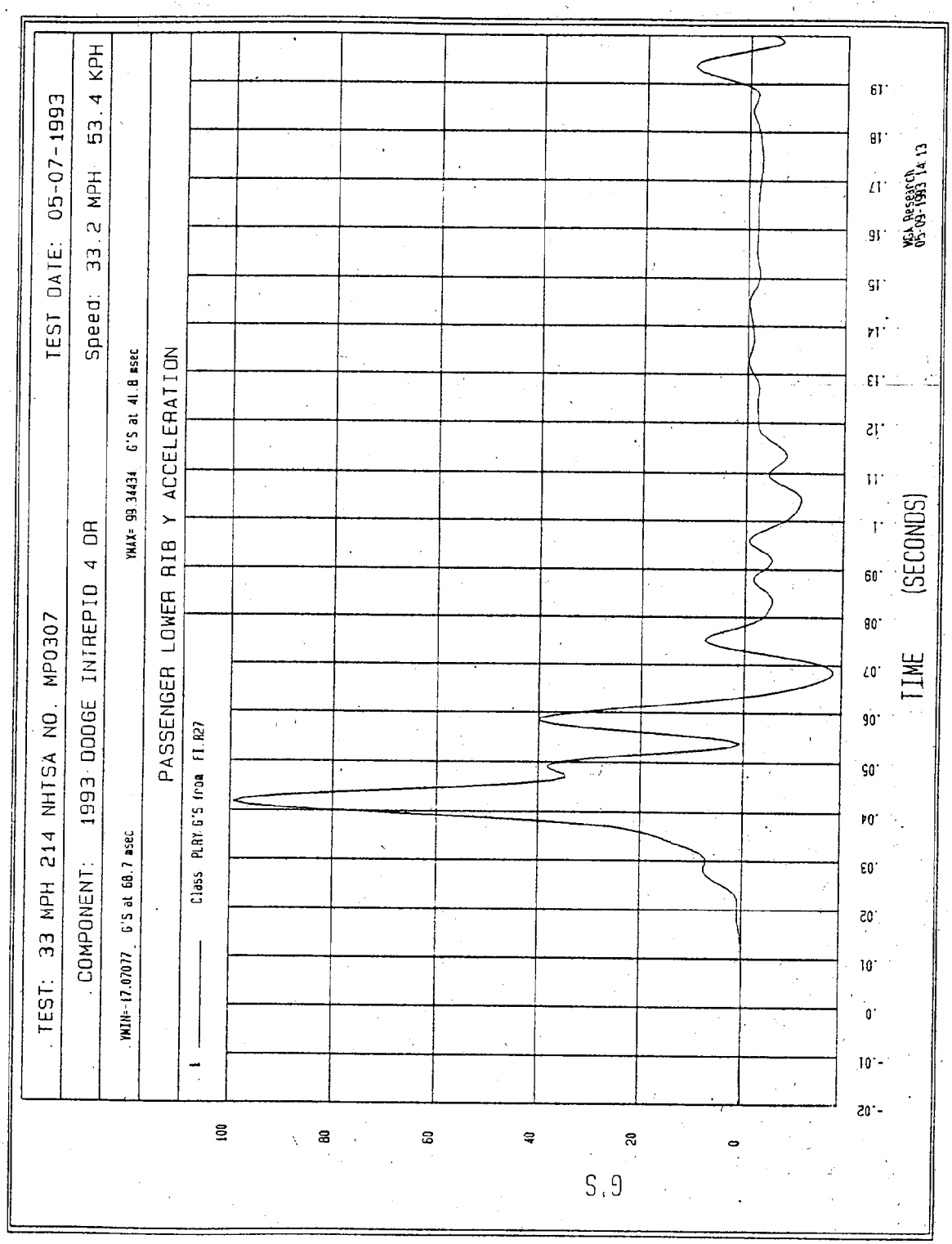


Figure B-18 - Passenger Lower Rib Y Acceleration vs. Time

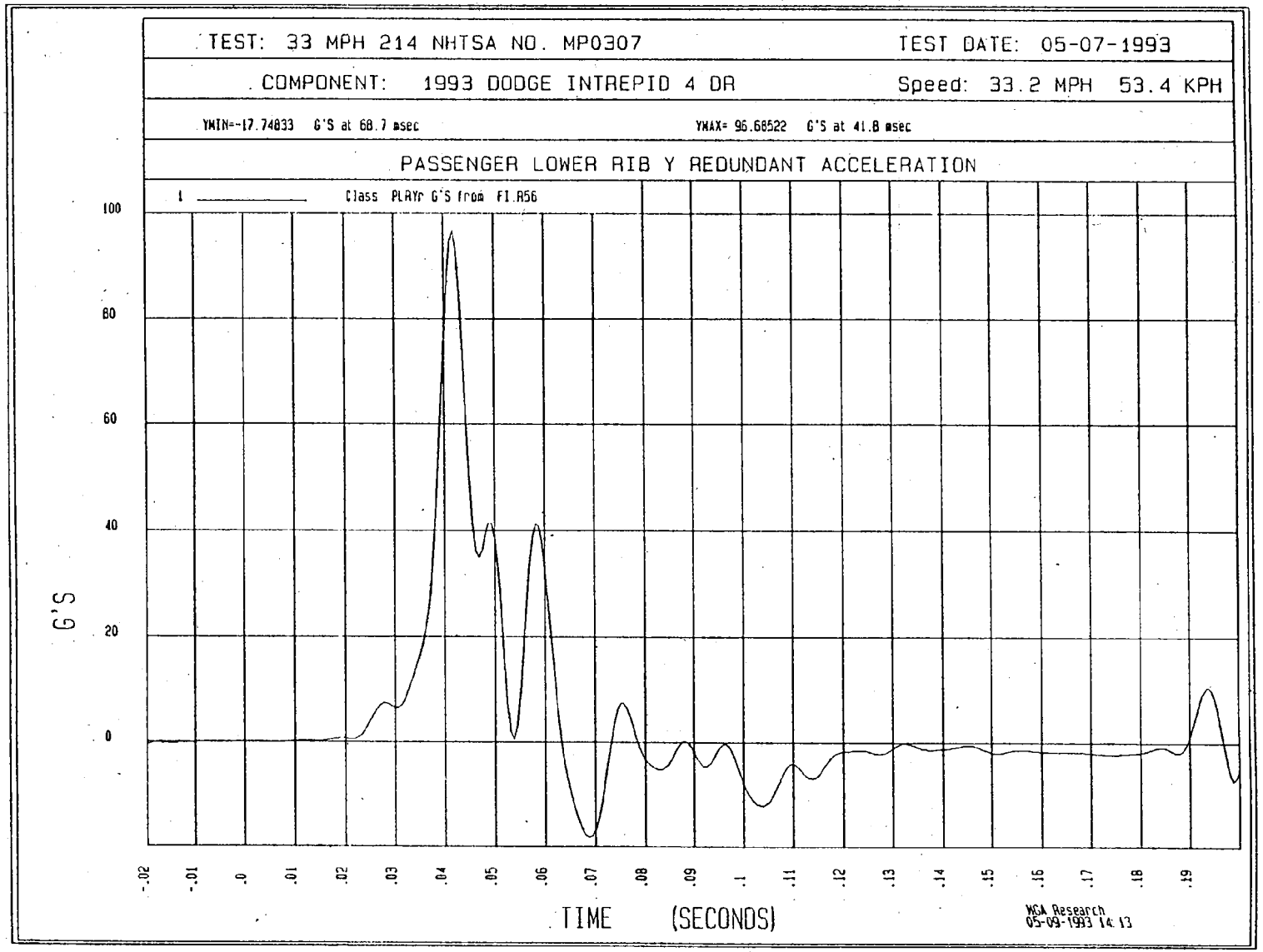


Figure B-19 - Passenger Lower Rib Y Redundant Acceleration

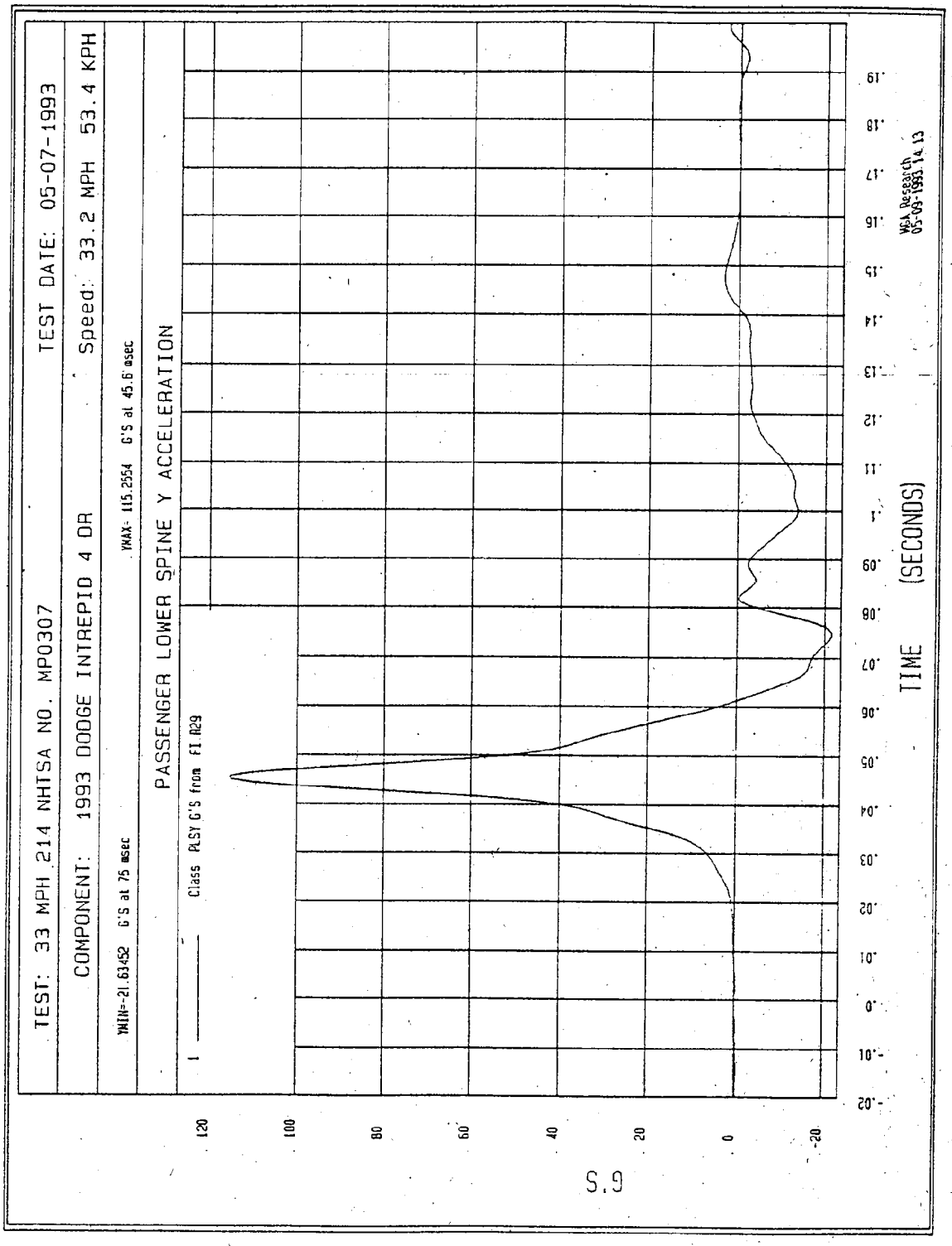


Figure B-20 - Passenger Lower Spine Y Acceleration vs. Time

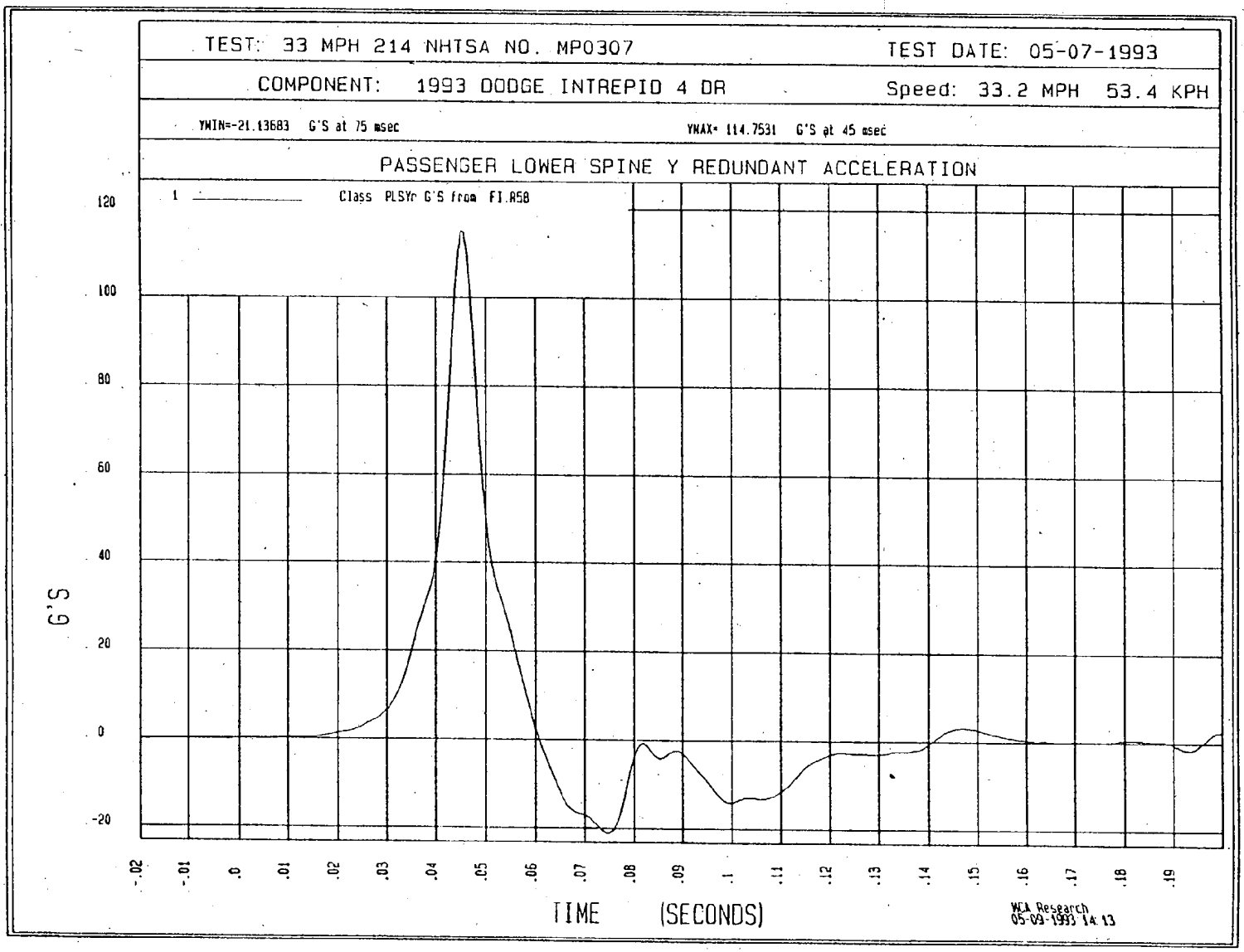


Figure B-21 - Passenger Lower Spine Y Redundant Acceleration vs.Time

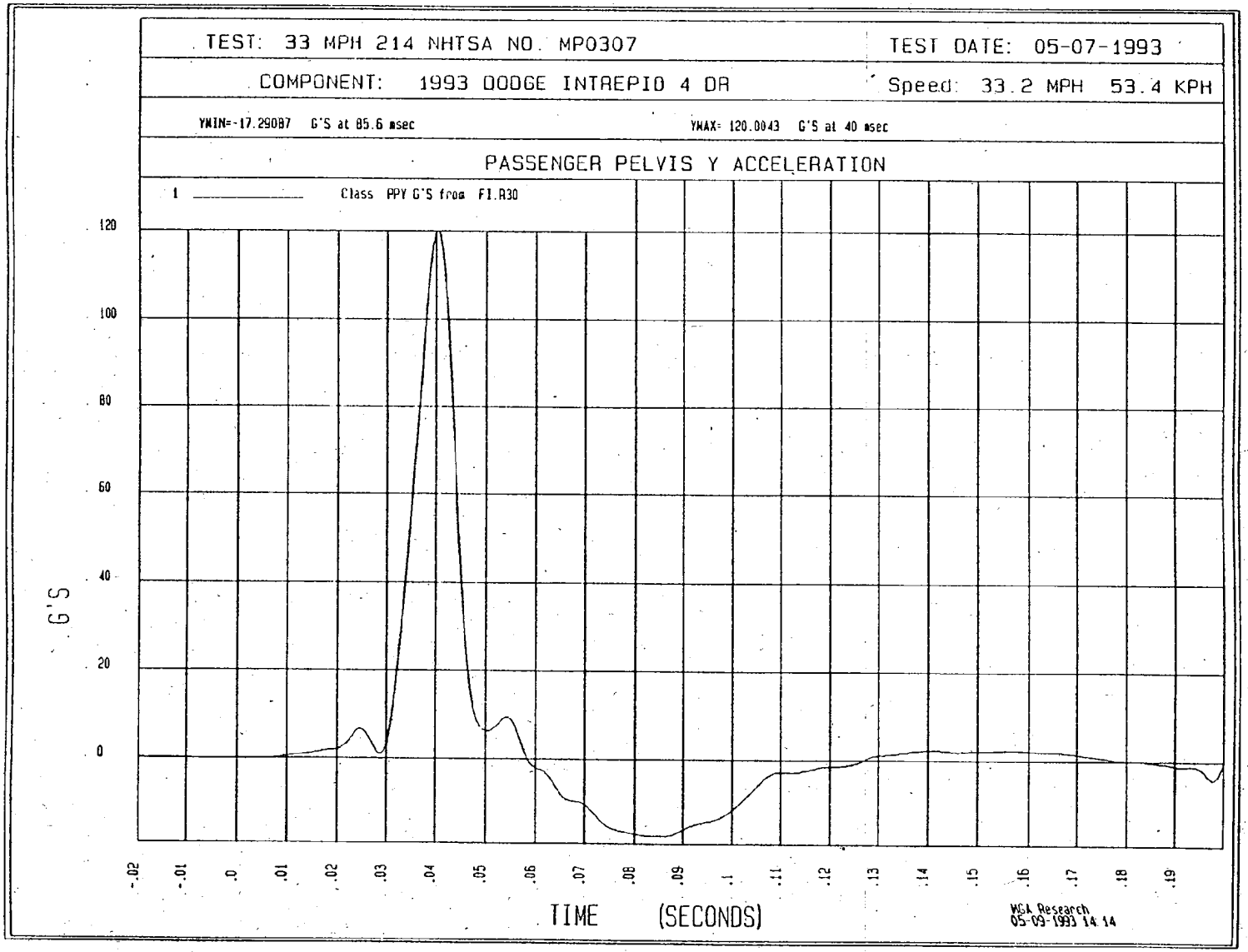


Figure B-22 - Passenger Pelvis Y Acceleration vs. Time

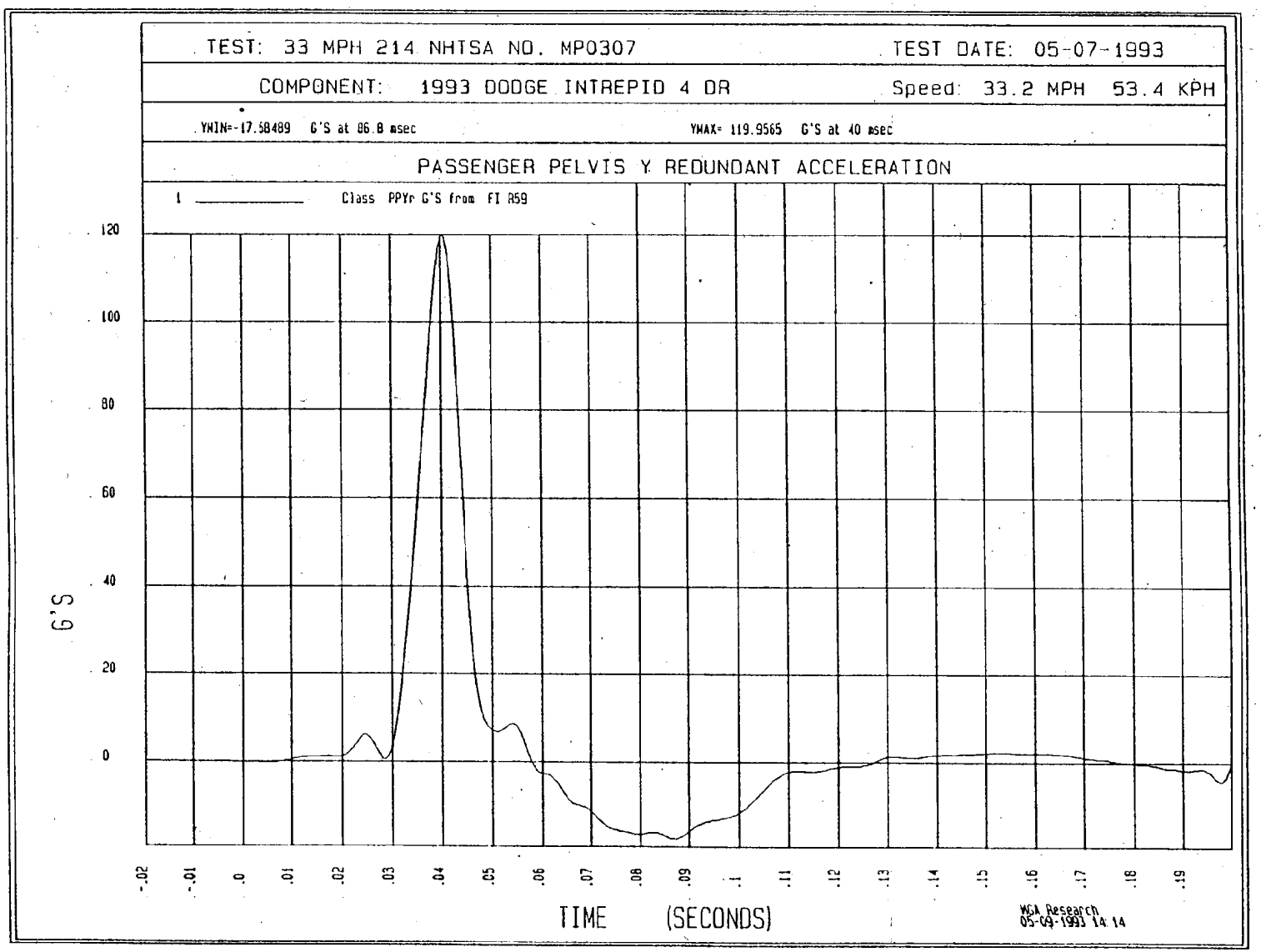


Figure B-23 - Passenger Pelvis Y Redundant Acceleration vs. Time

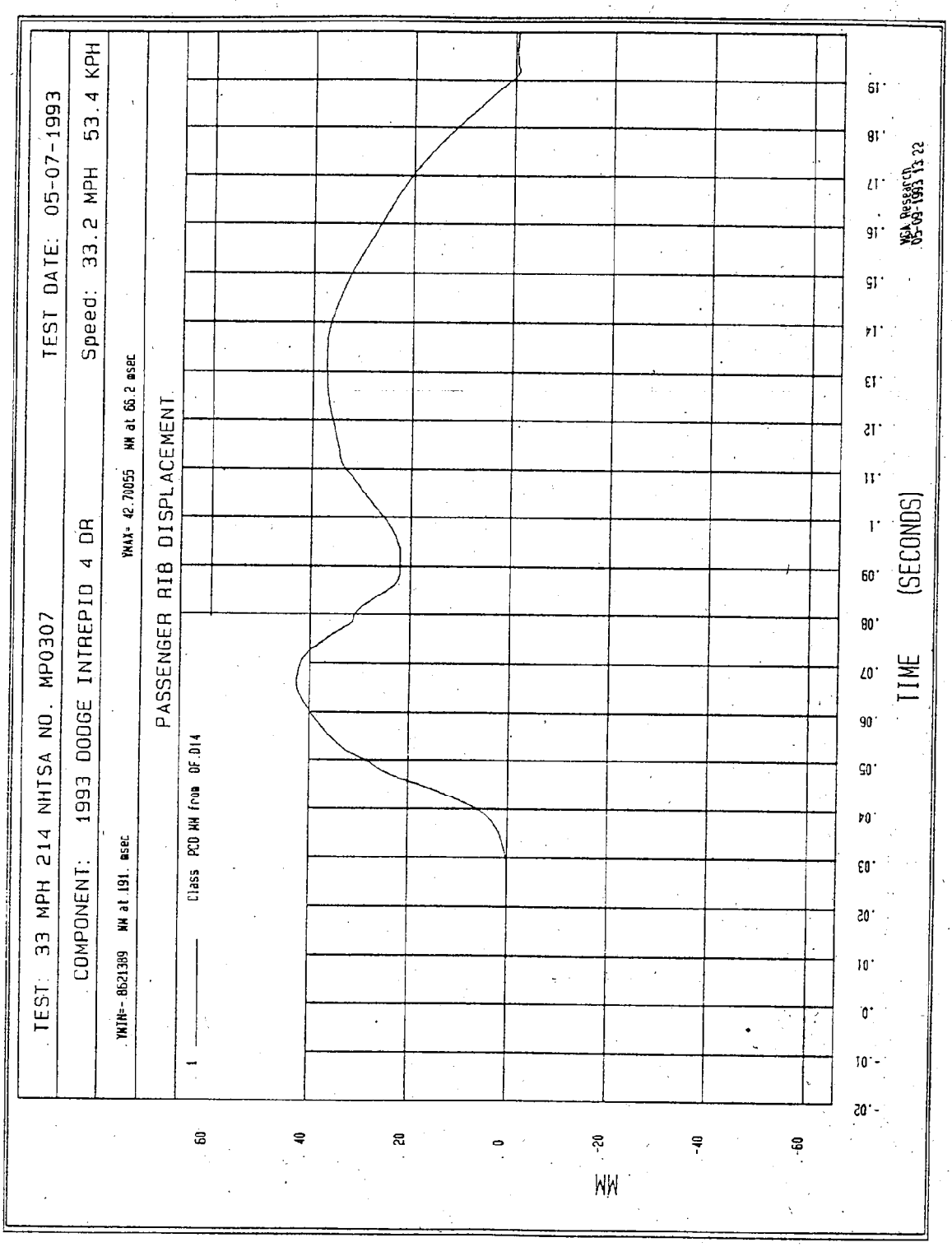


Figure B-24 - Passenger Rib Displacement vs. Time

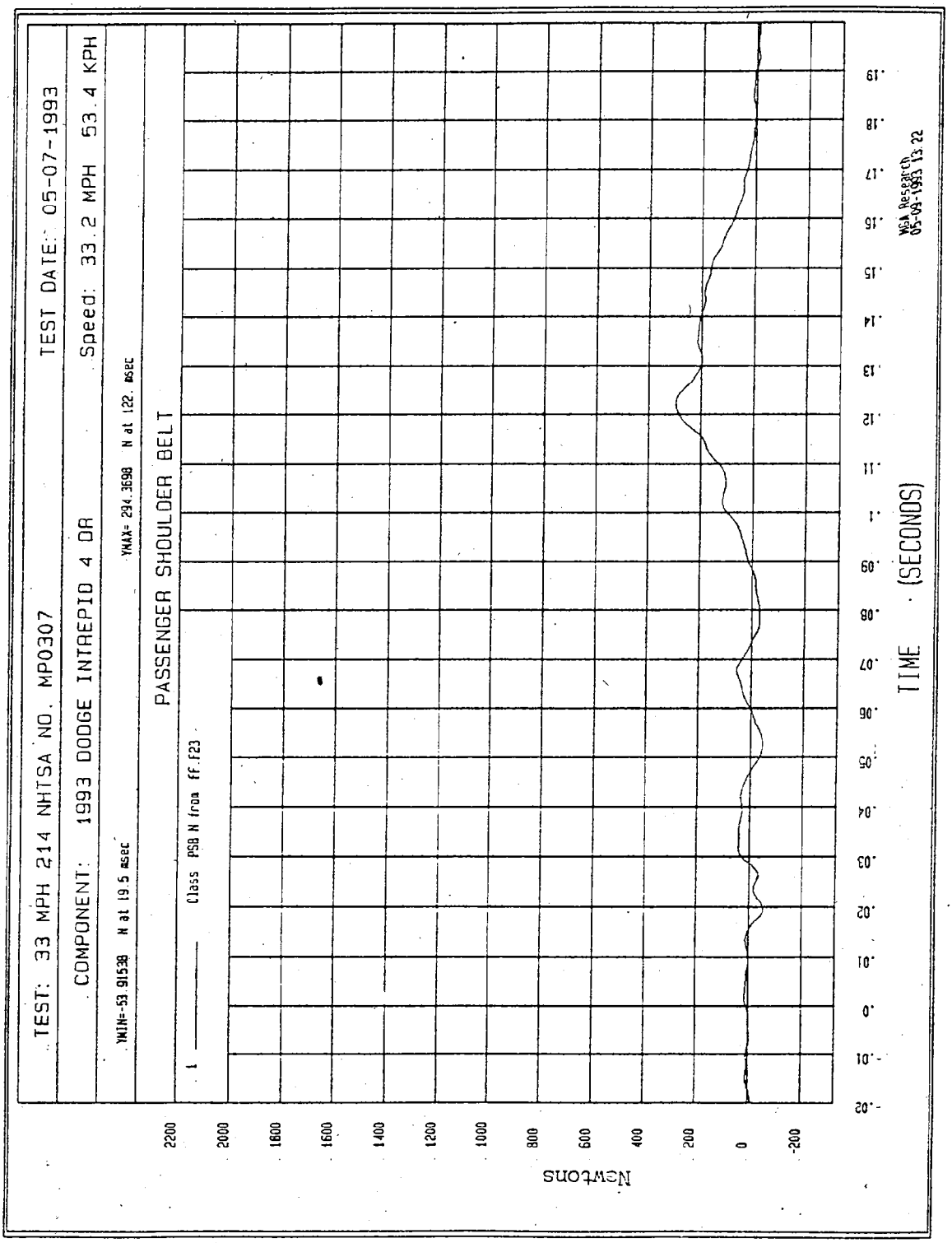


Figure B-25 - Passenger Shoulder Belt

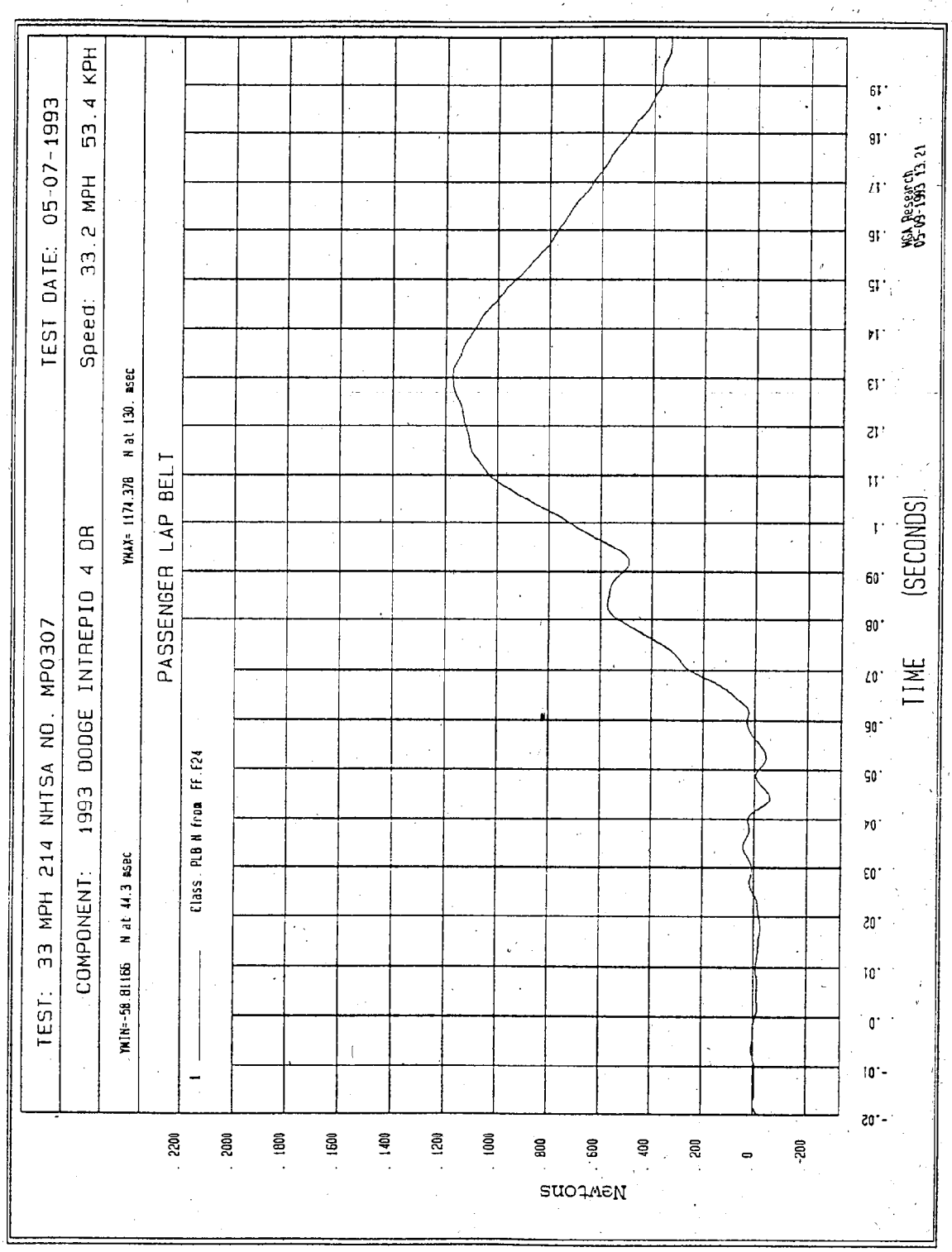


Figure B-26 - Passenger Lap Belt

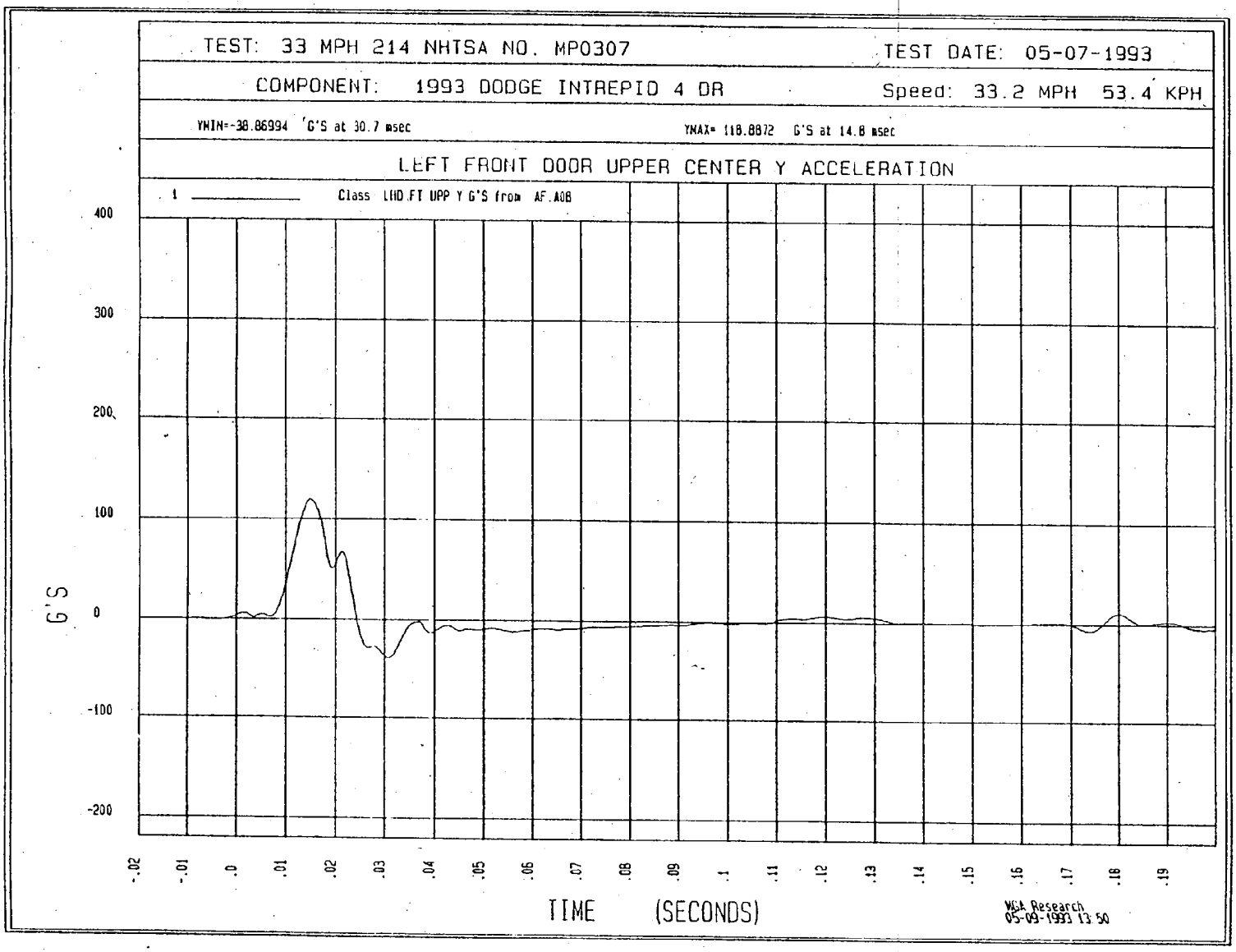


Figure B-27 - Front Door Upper Center Y Acceleration vs. Time

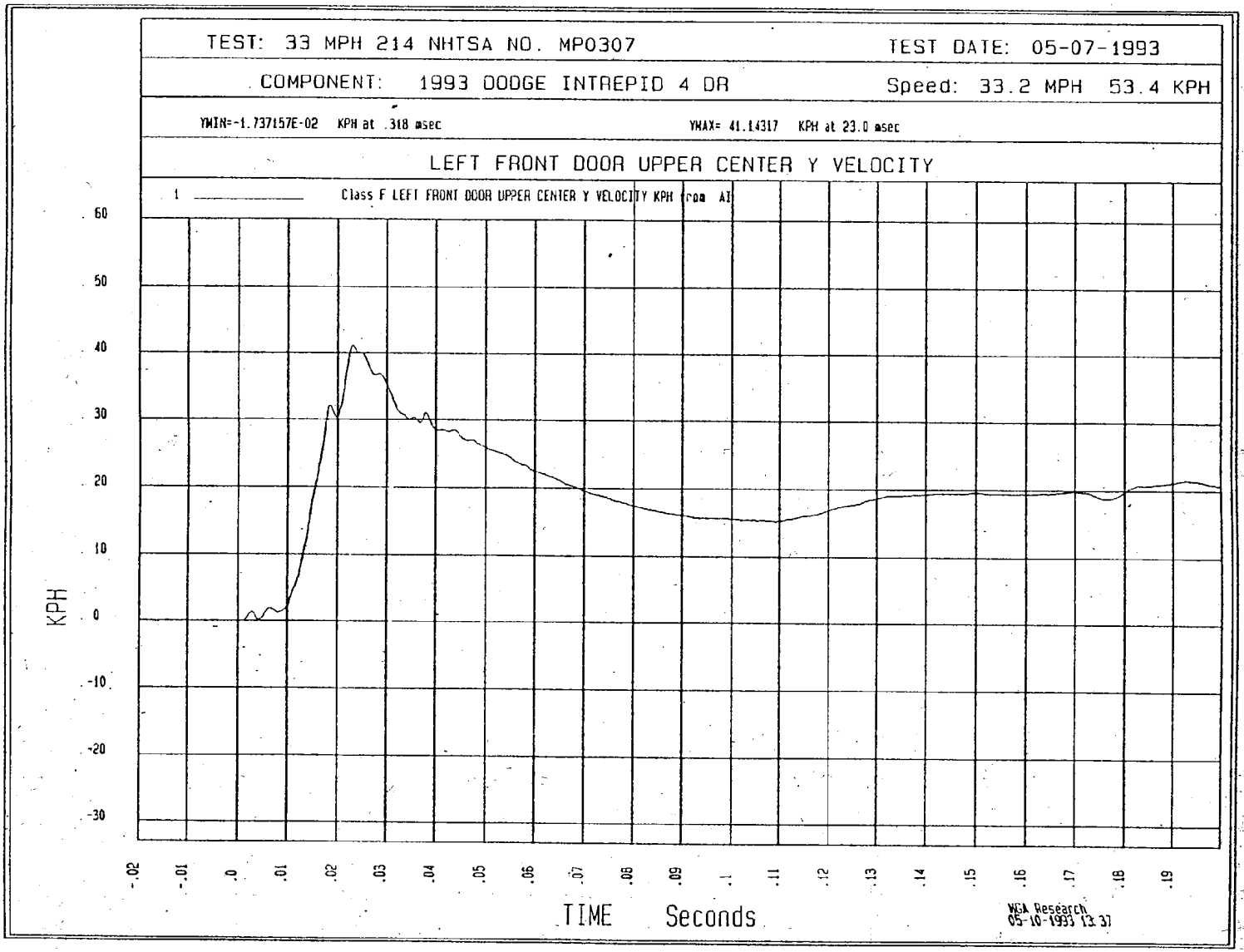


Figure B-28 - Front Door Upper Center Y Velocity vs. Time

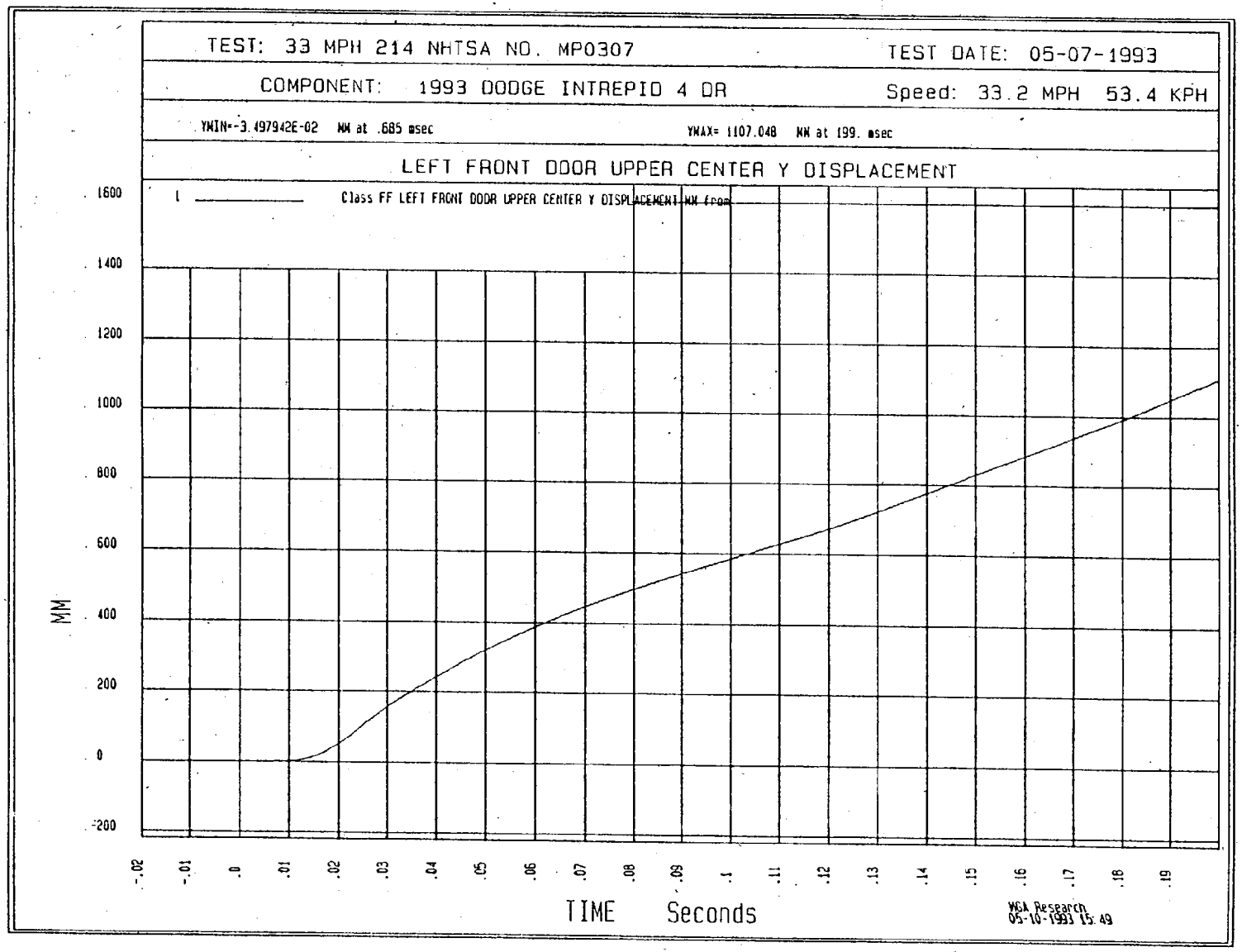


Figure B-29 - Front Door Upper Center Y Displacement vs. Time

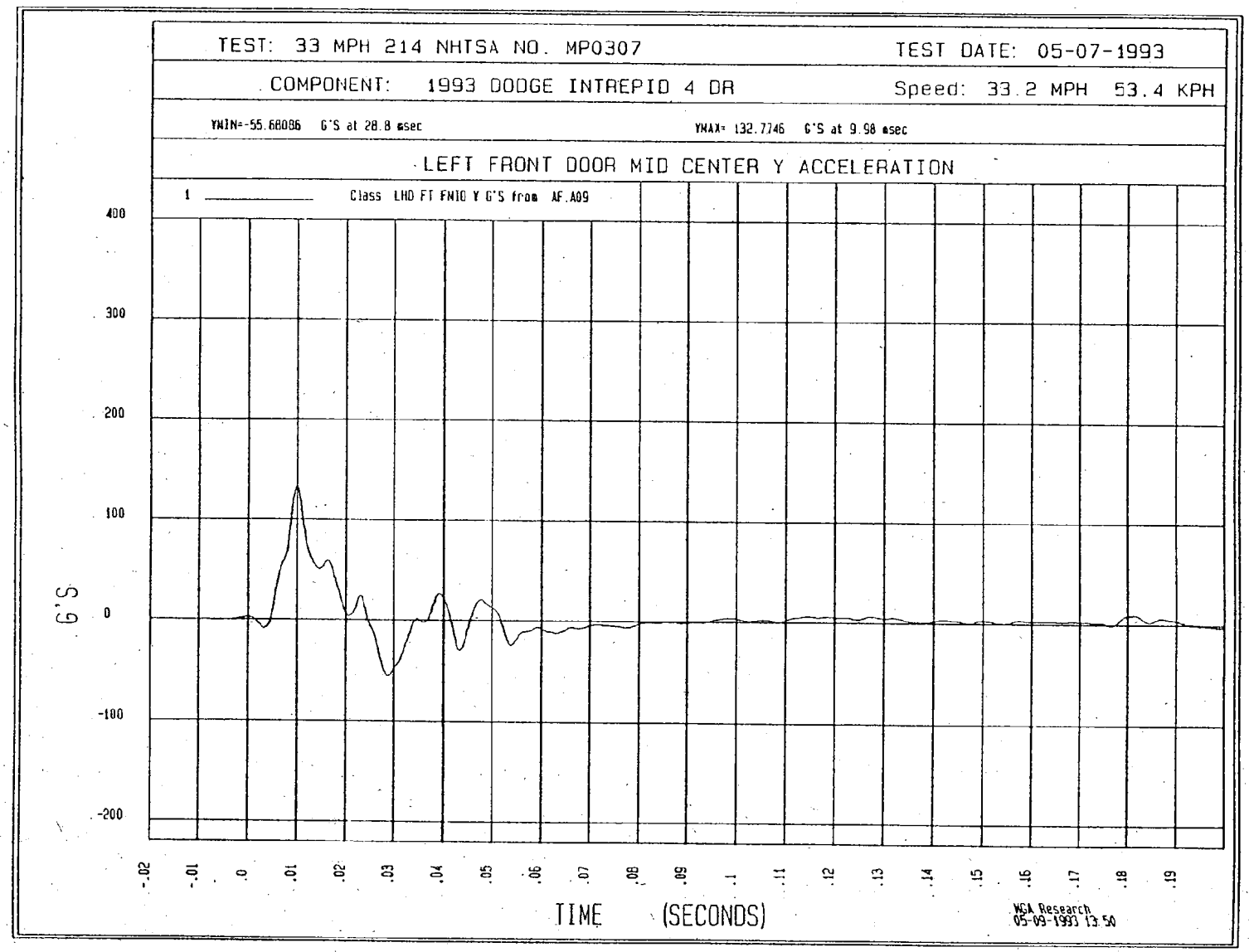


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Figure B-30 - Front Door Center Y Acceleration vs. Time

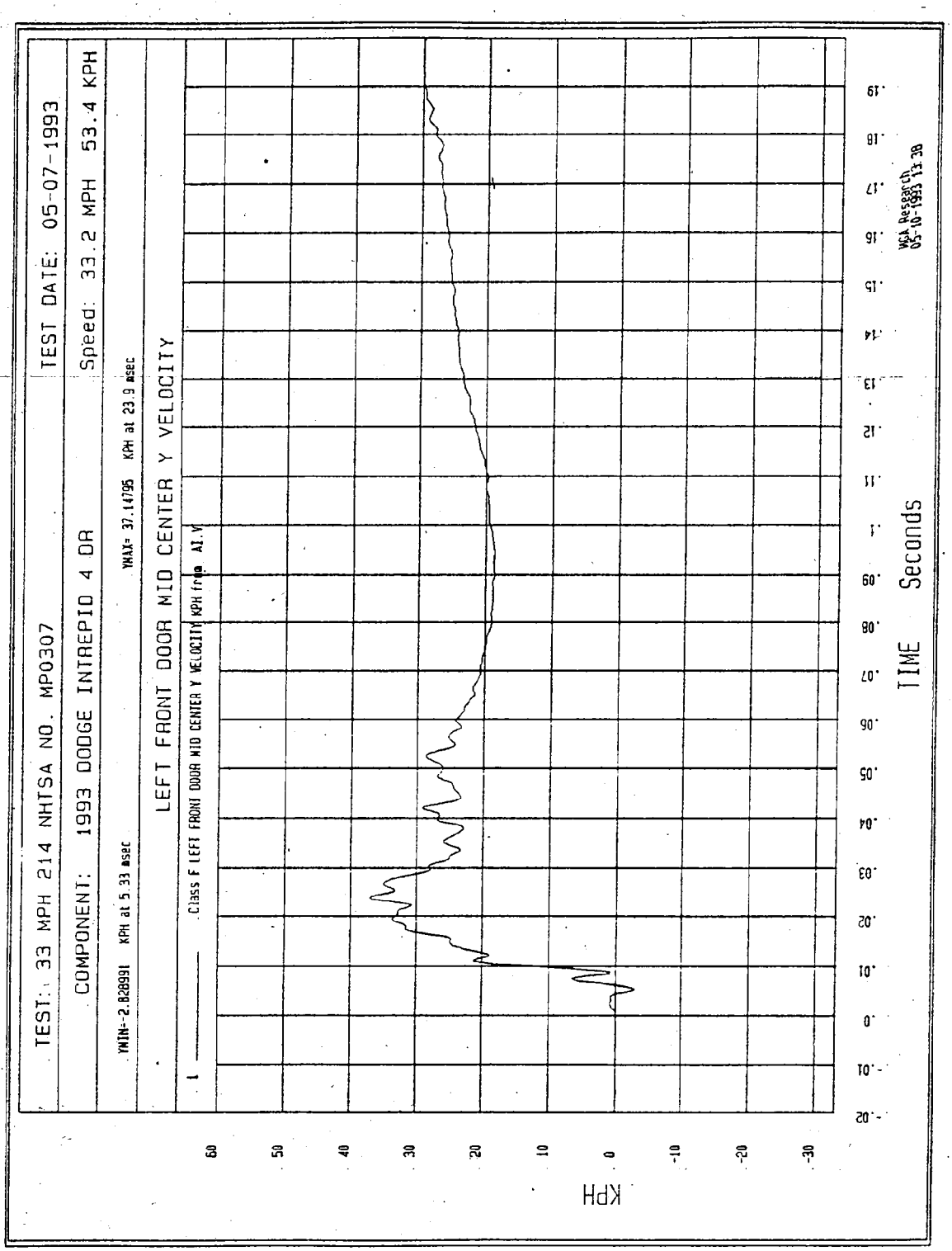

Figure B-31 - Front Door Mid Center Y Velocity vs. Time

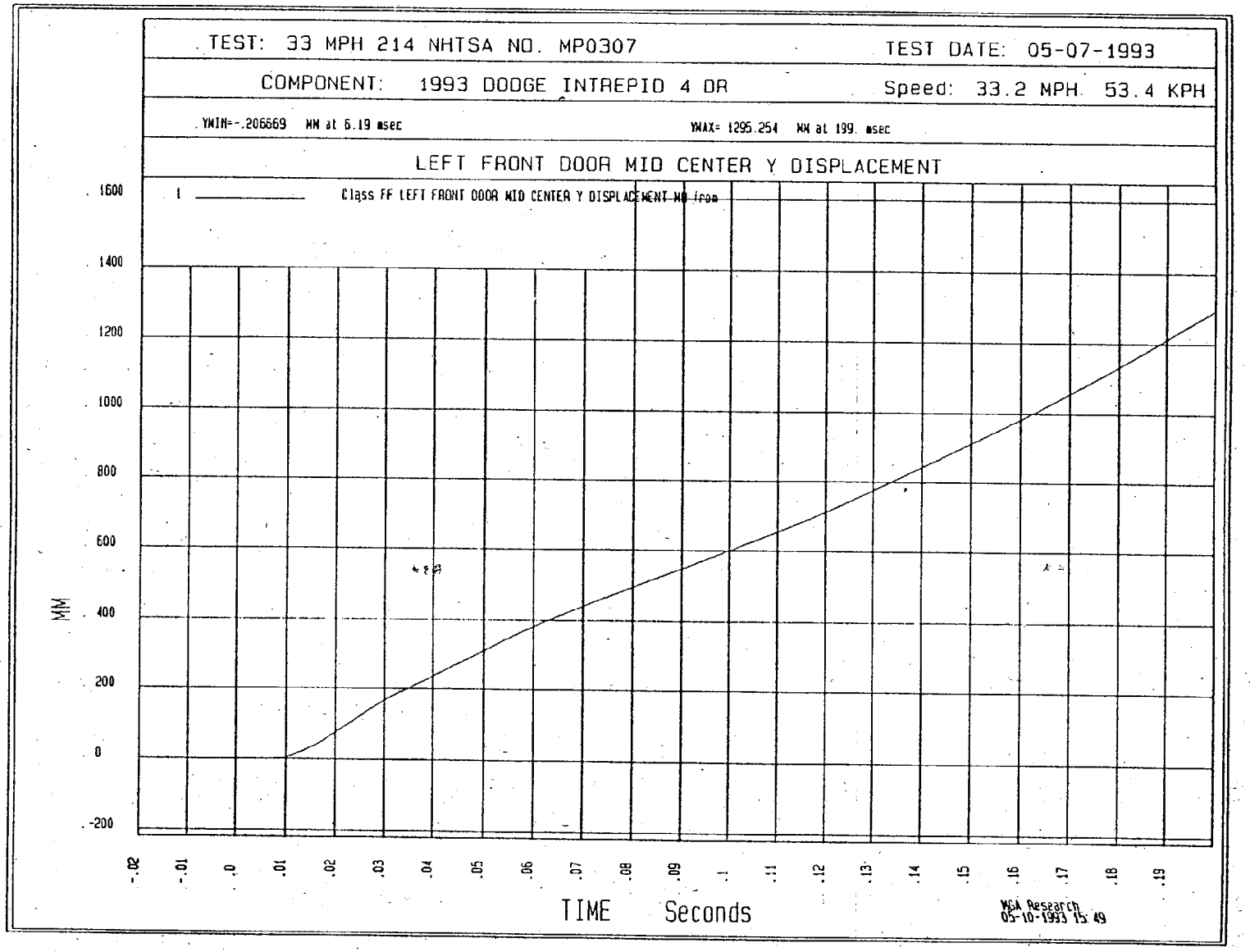

Figure B-32 - Front Door Mid Center Y Displacement vs. Time

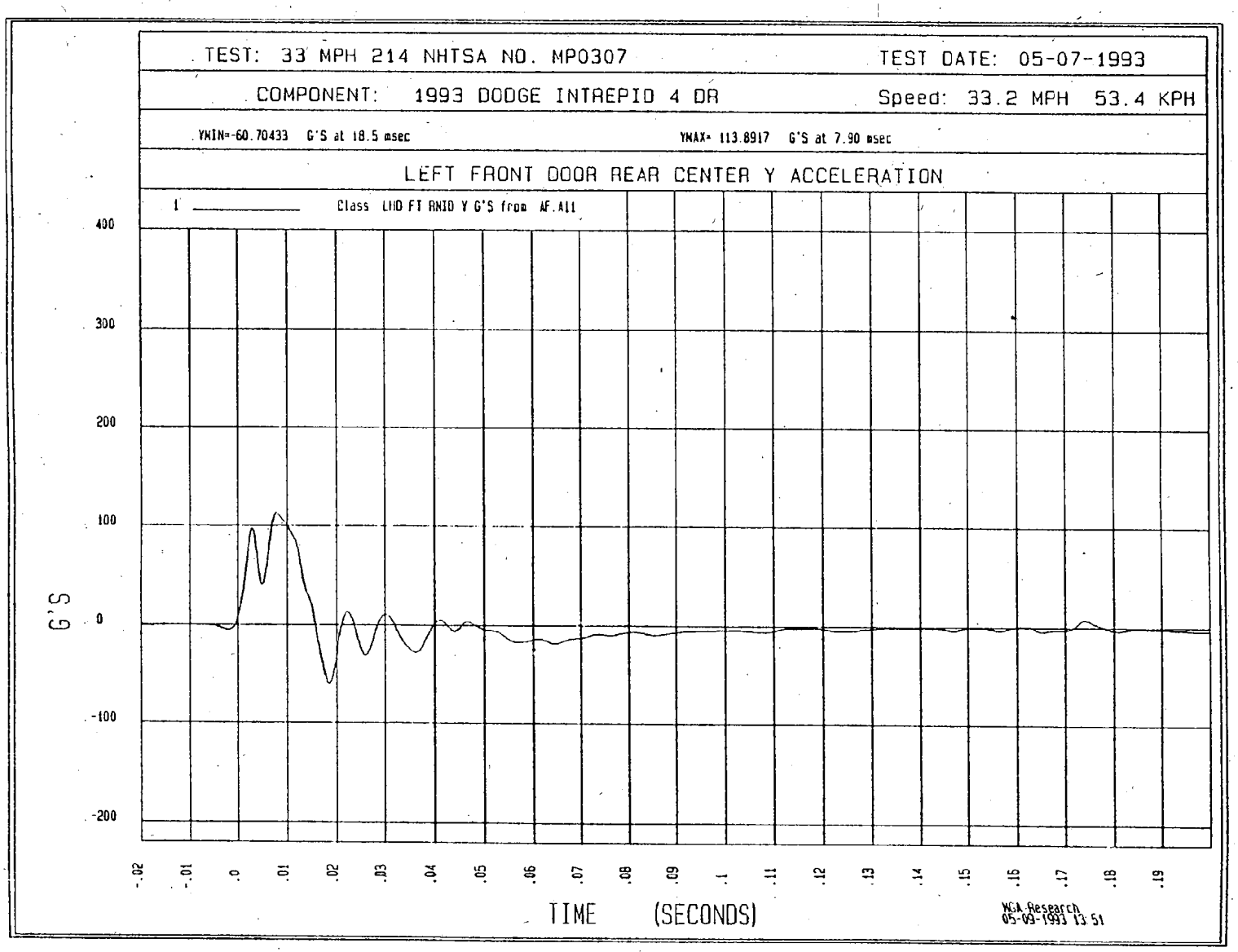

Figure B-33 - Front Door Rear Center Y Acceleration vs. Time

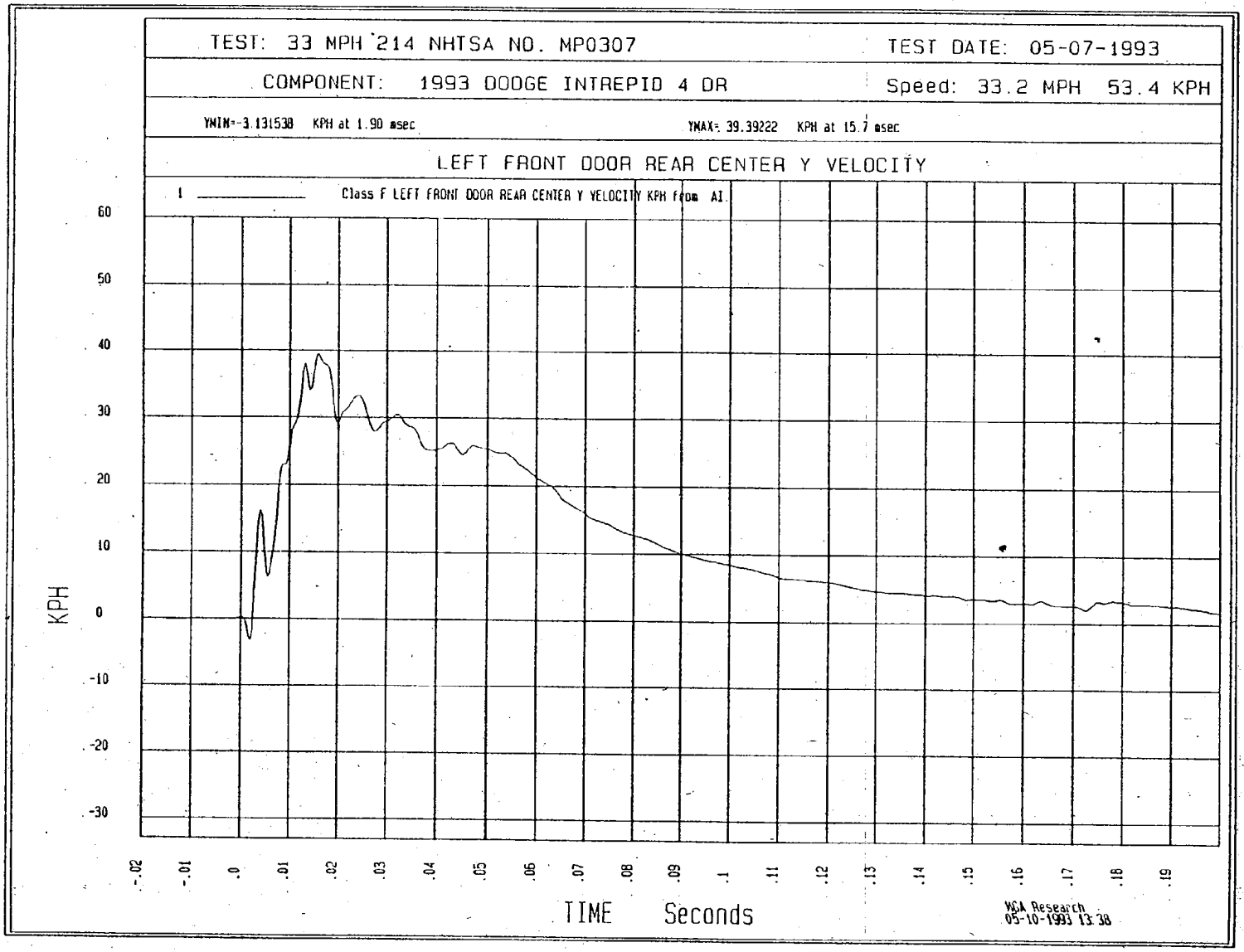

Figure B-34 - Front Door Rear Center Y Velocity vs. Time

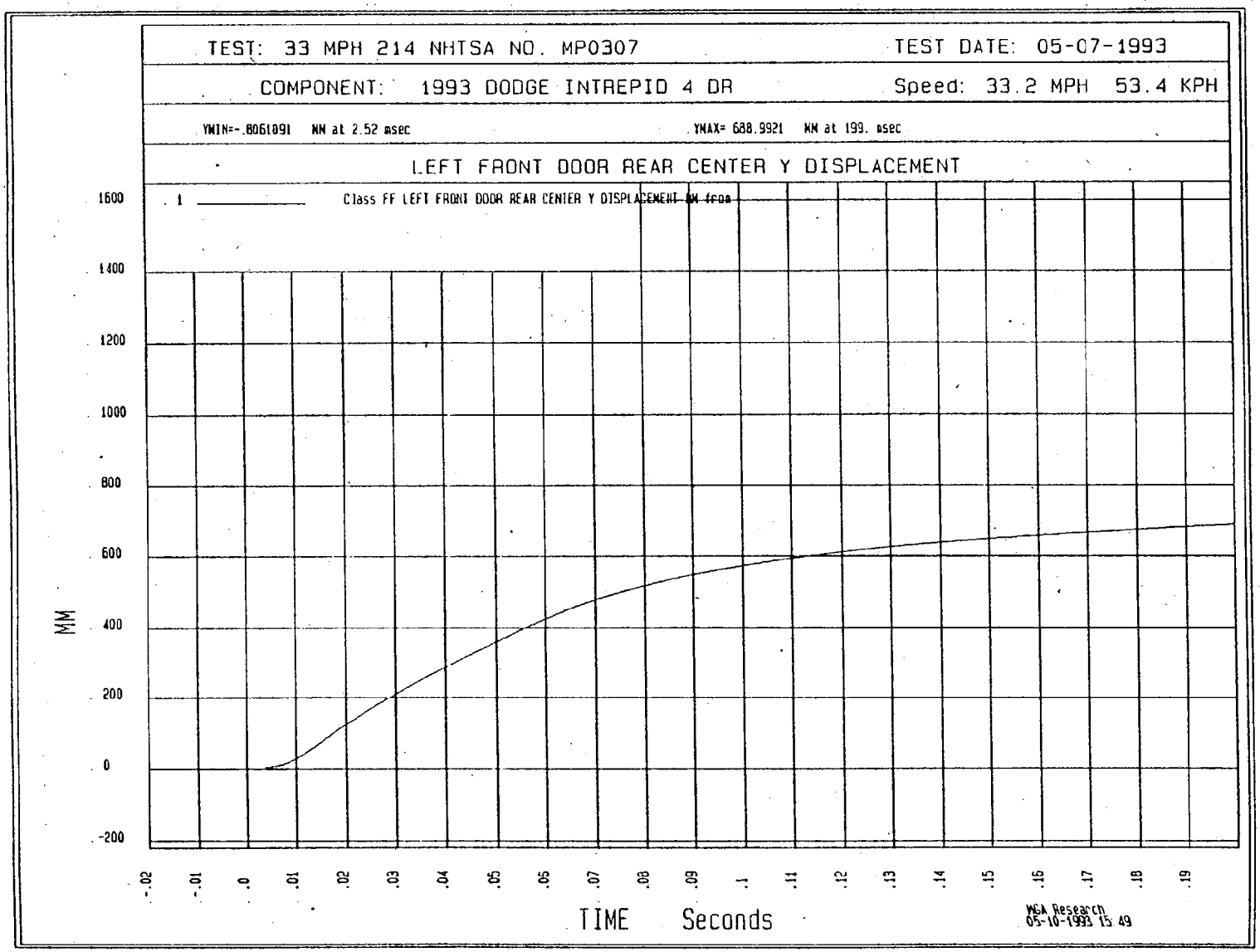

Figure B-35 - Front Door Rear Center Y Displacement vs. Time

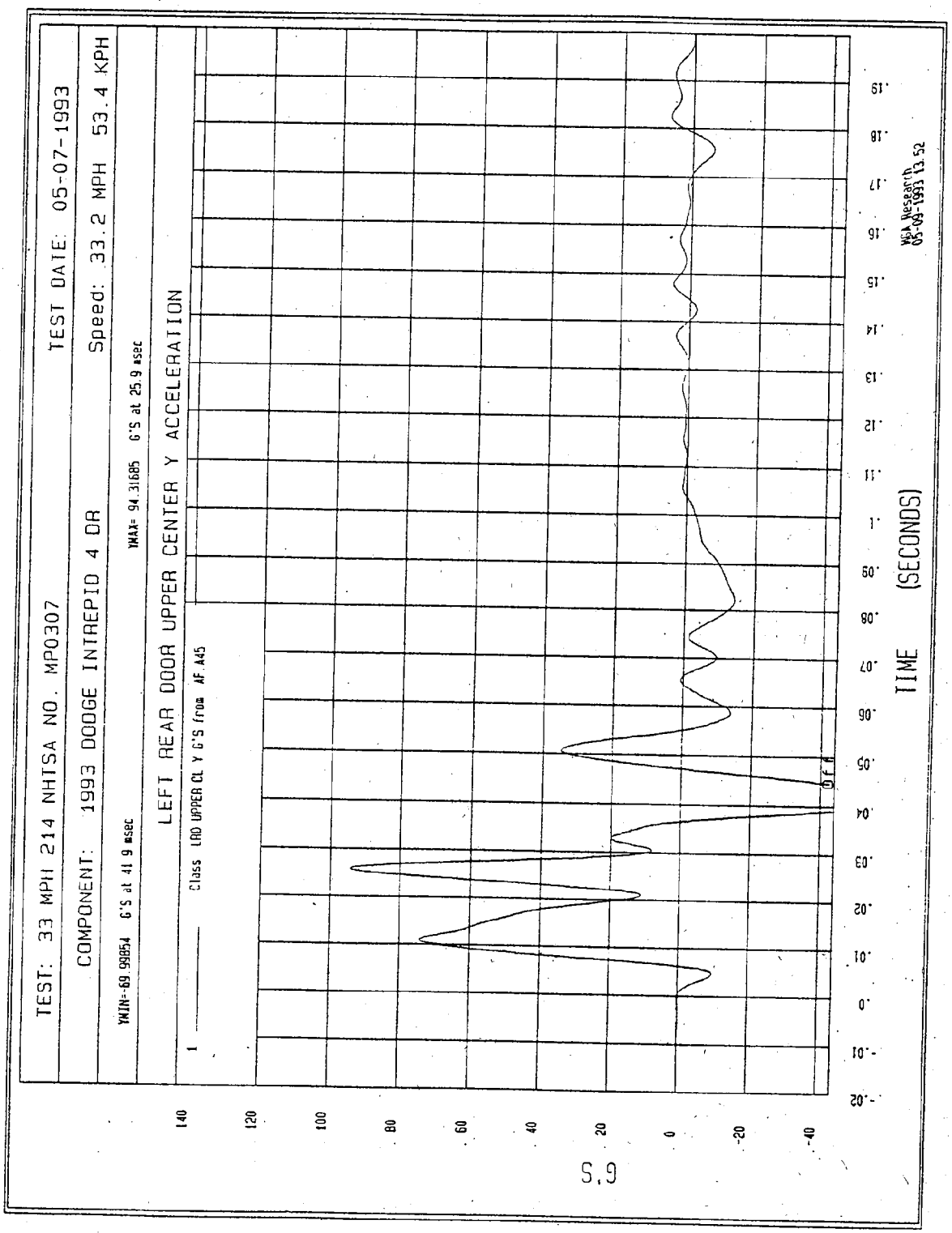

Figure B-36 - Rear Door Upper Center Y Acceleration vs. Time

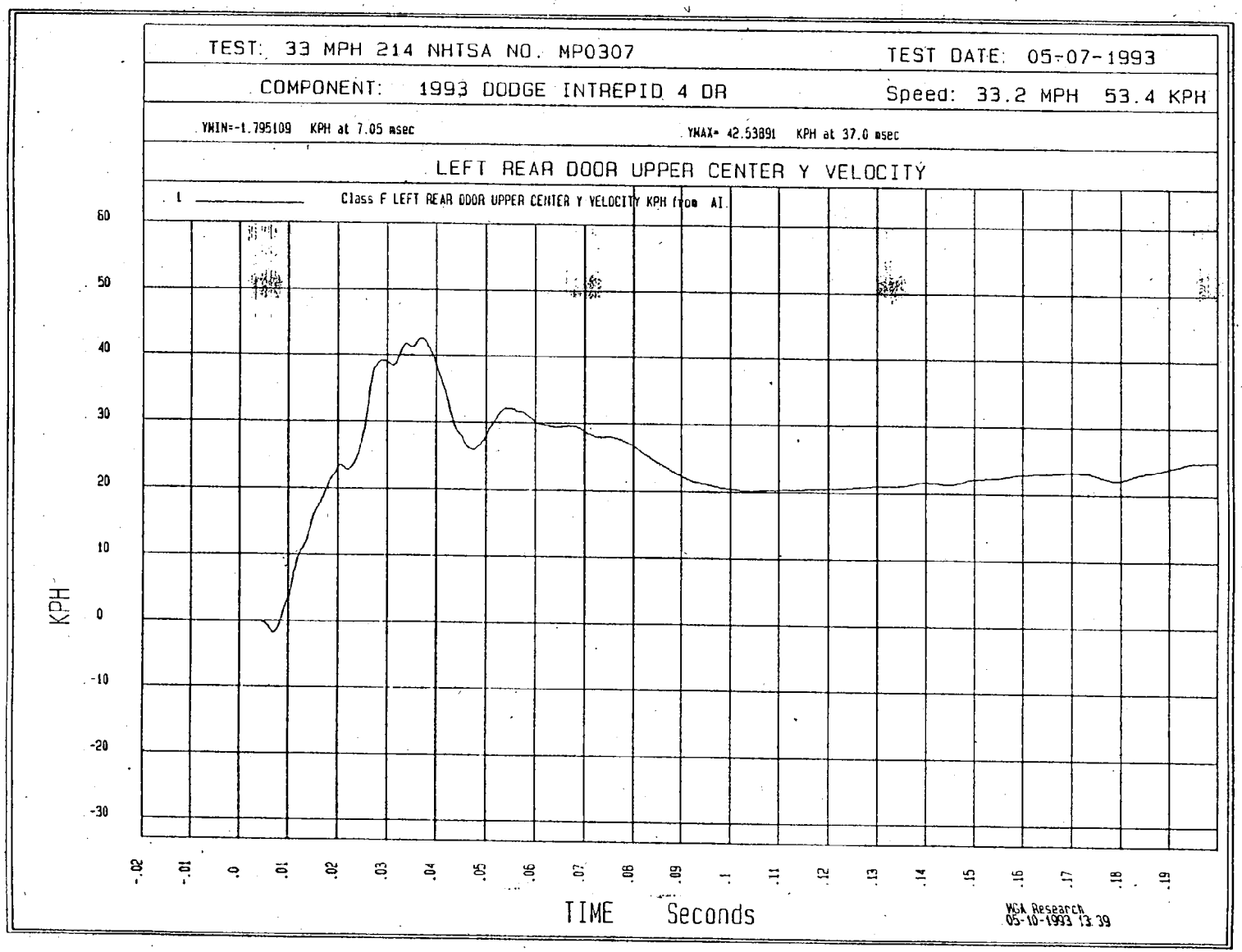

Figure B-37 - Rear Door Upper Center Y Velocity vs. Time

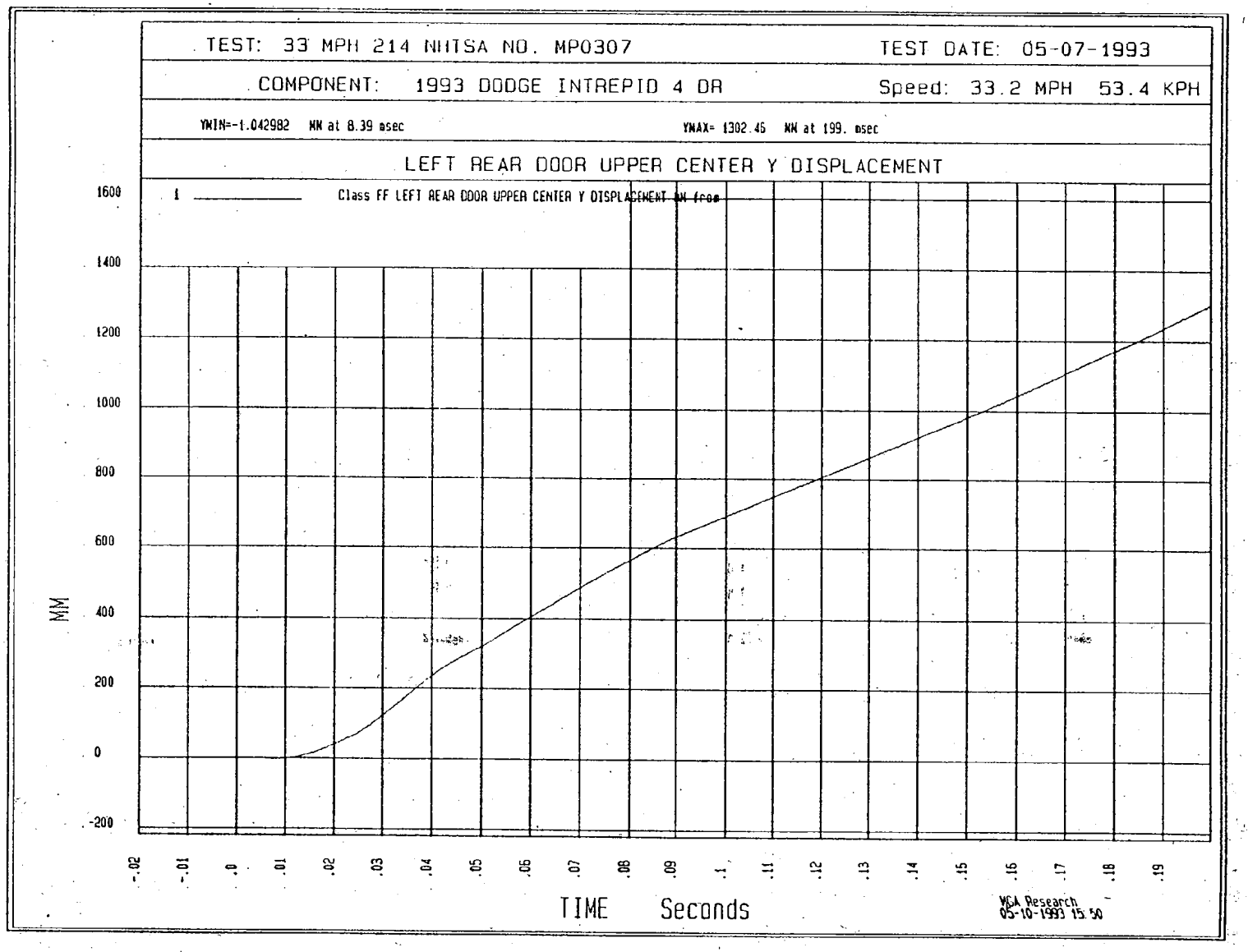

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Figure B-38 - Rear Door Upper Center Y Displacement vs. Time

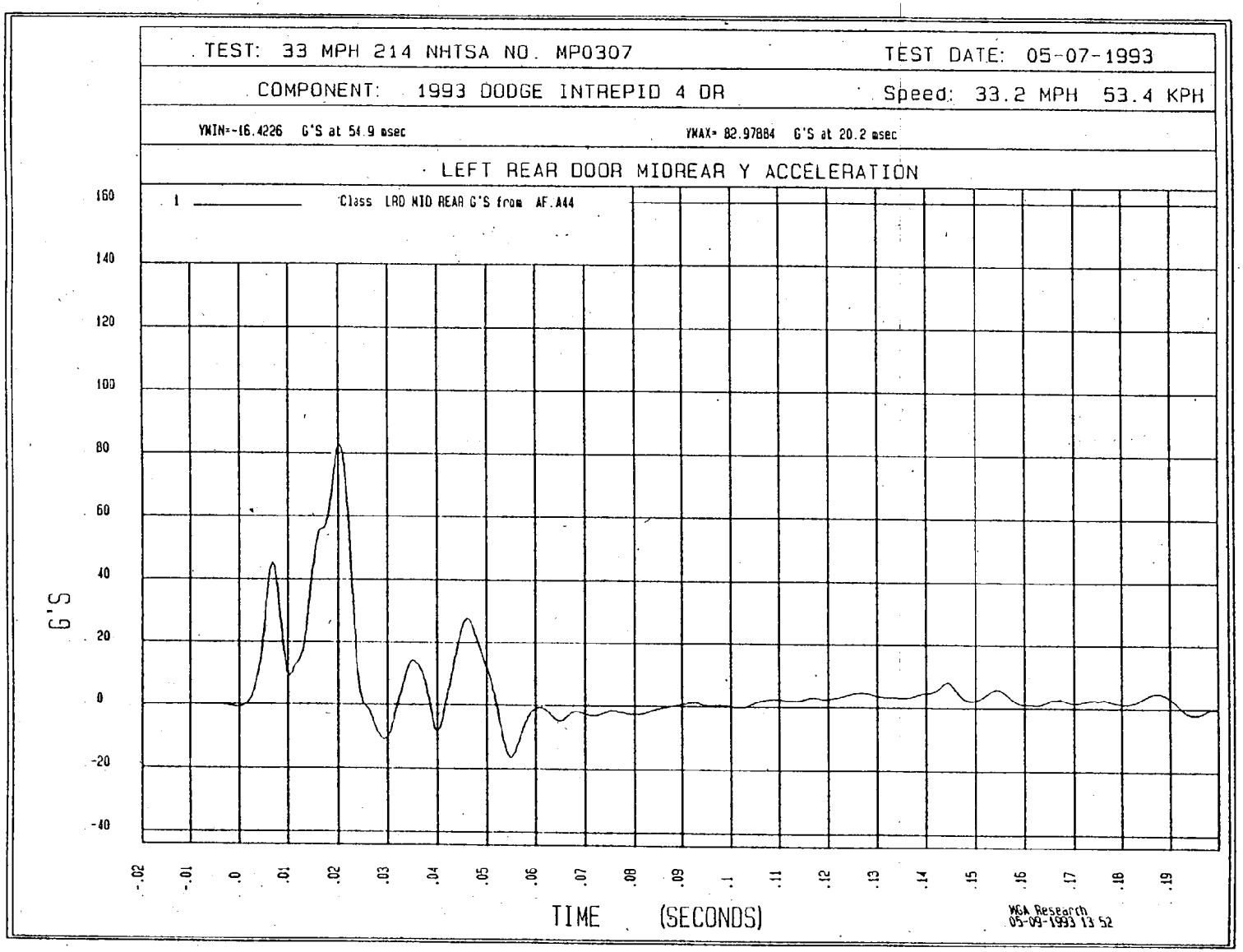

Figure B-39 - Rear Door Mid Center Y Acceleration vs. Time

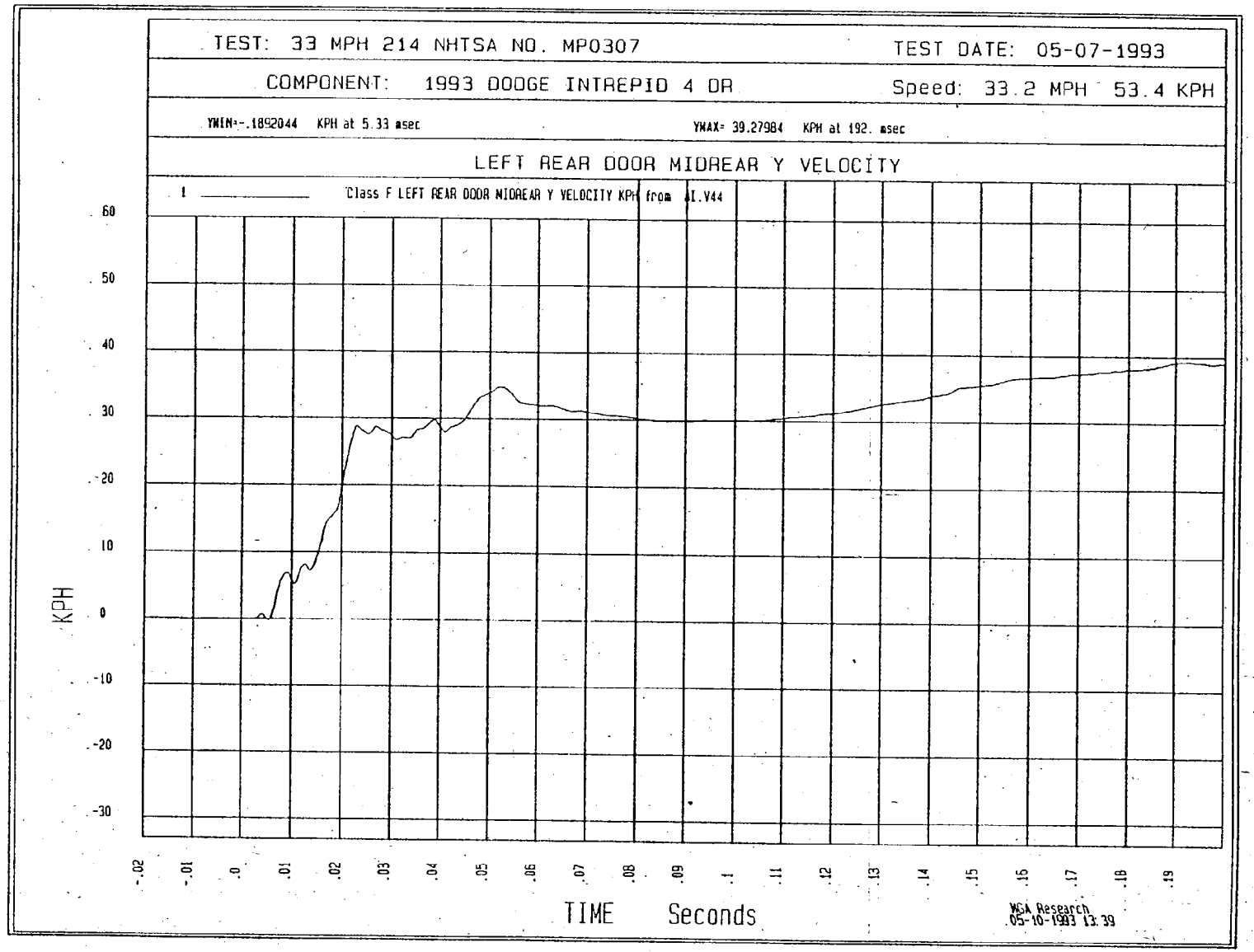

Figure B-40 - Rear Door Mid Center Y Velocity vs. Time

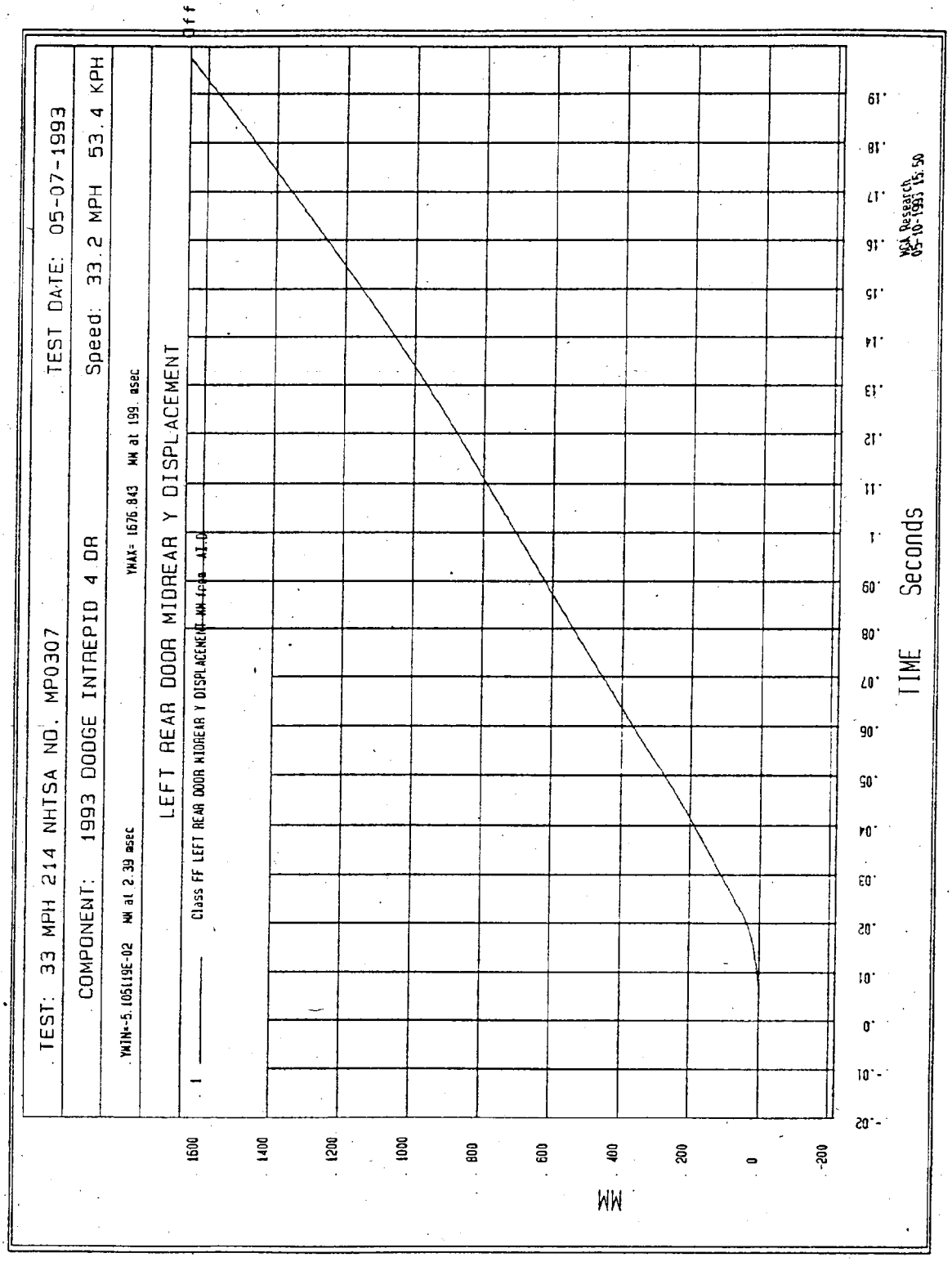

Figure B-41 - Rear Door Mid Center Y Displacement vs. Time

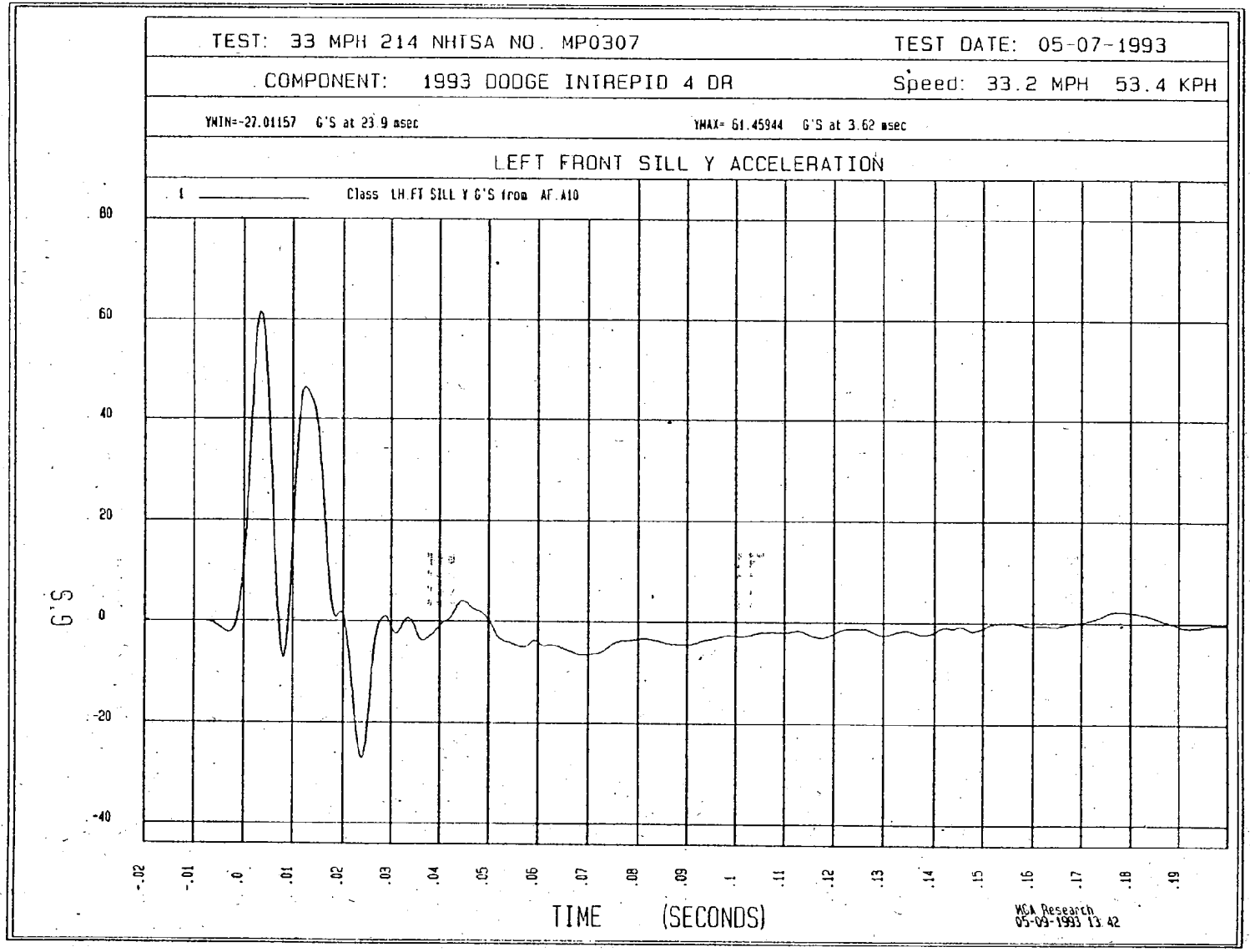

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Figure B-42 - Left Front Sill Y Acceleration vs. Time

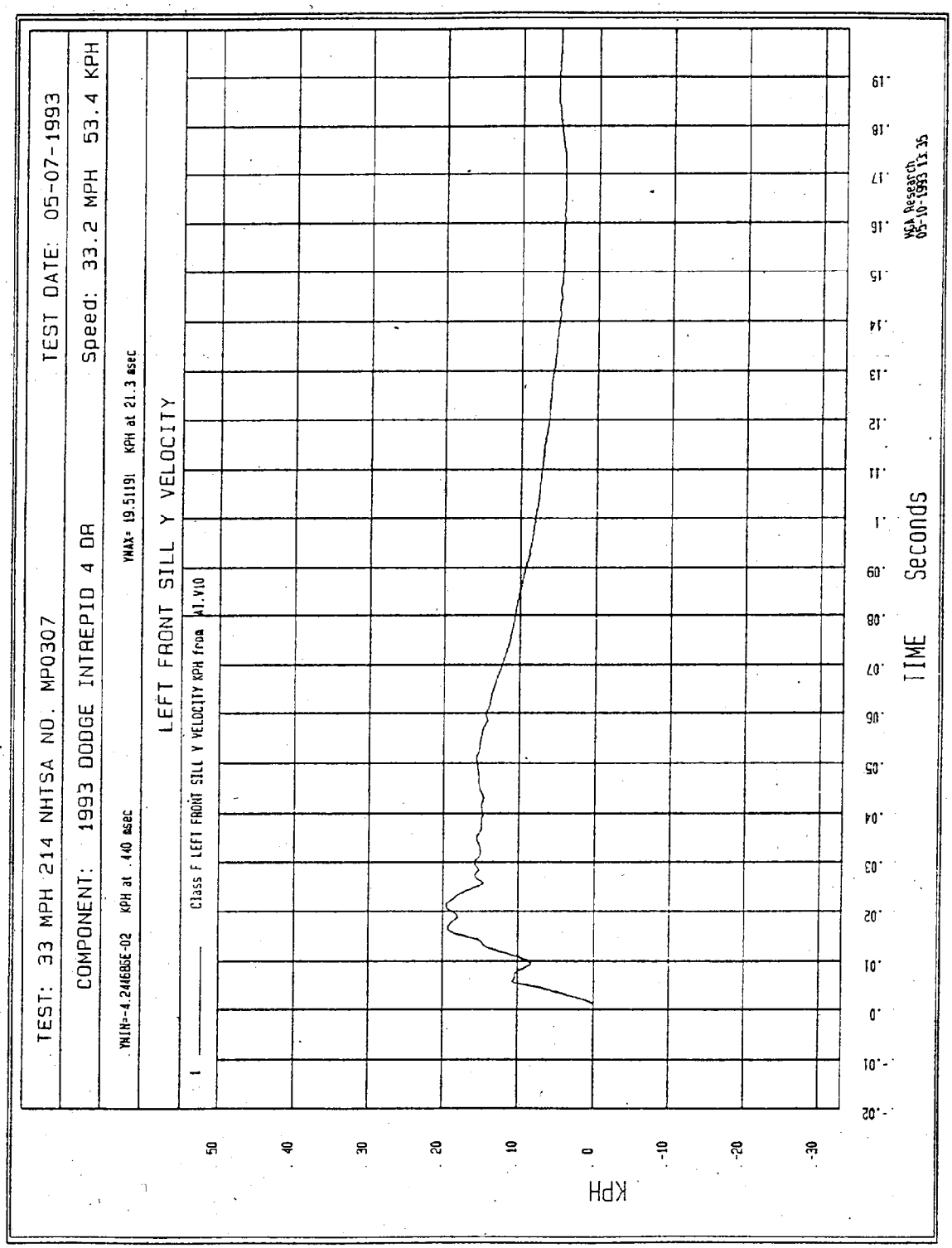

Figure B-43 - Left Front Sill Y Velocity vs. Time

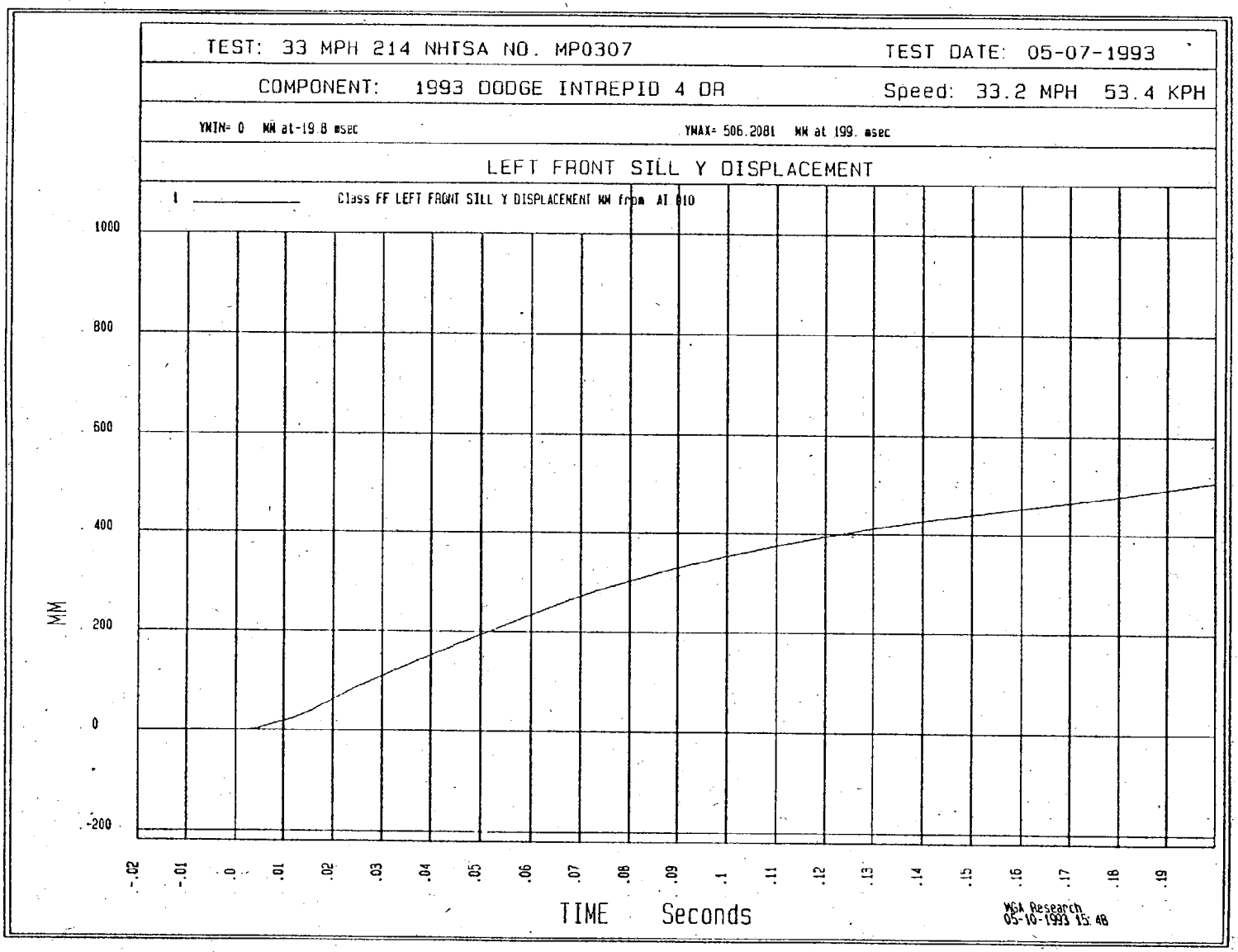

Figure B-44 - Left Front Sill Y Displacement vs. Time

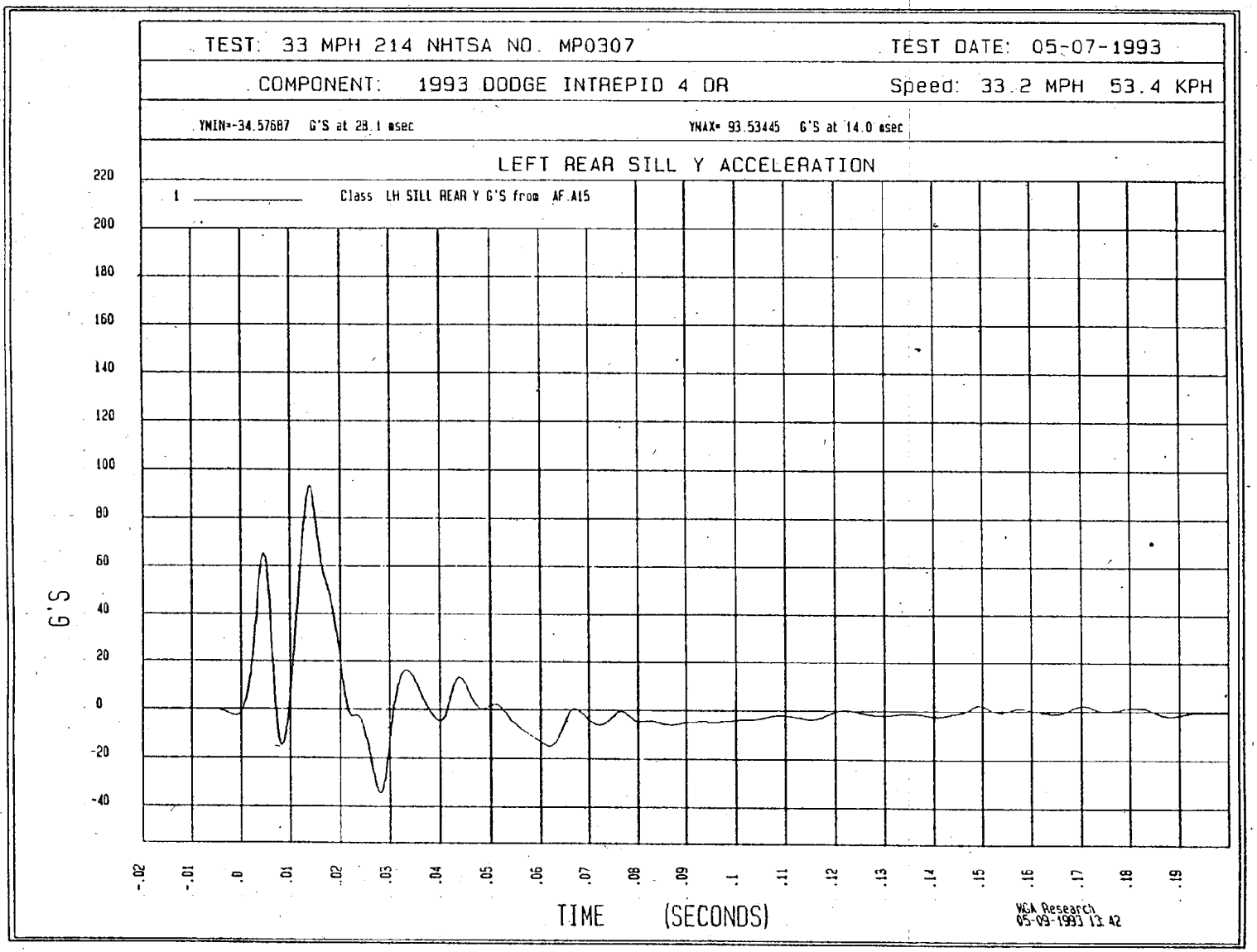

Figure B-45 - Left Rear Sill Y Acceleration vs. Time

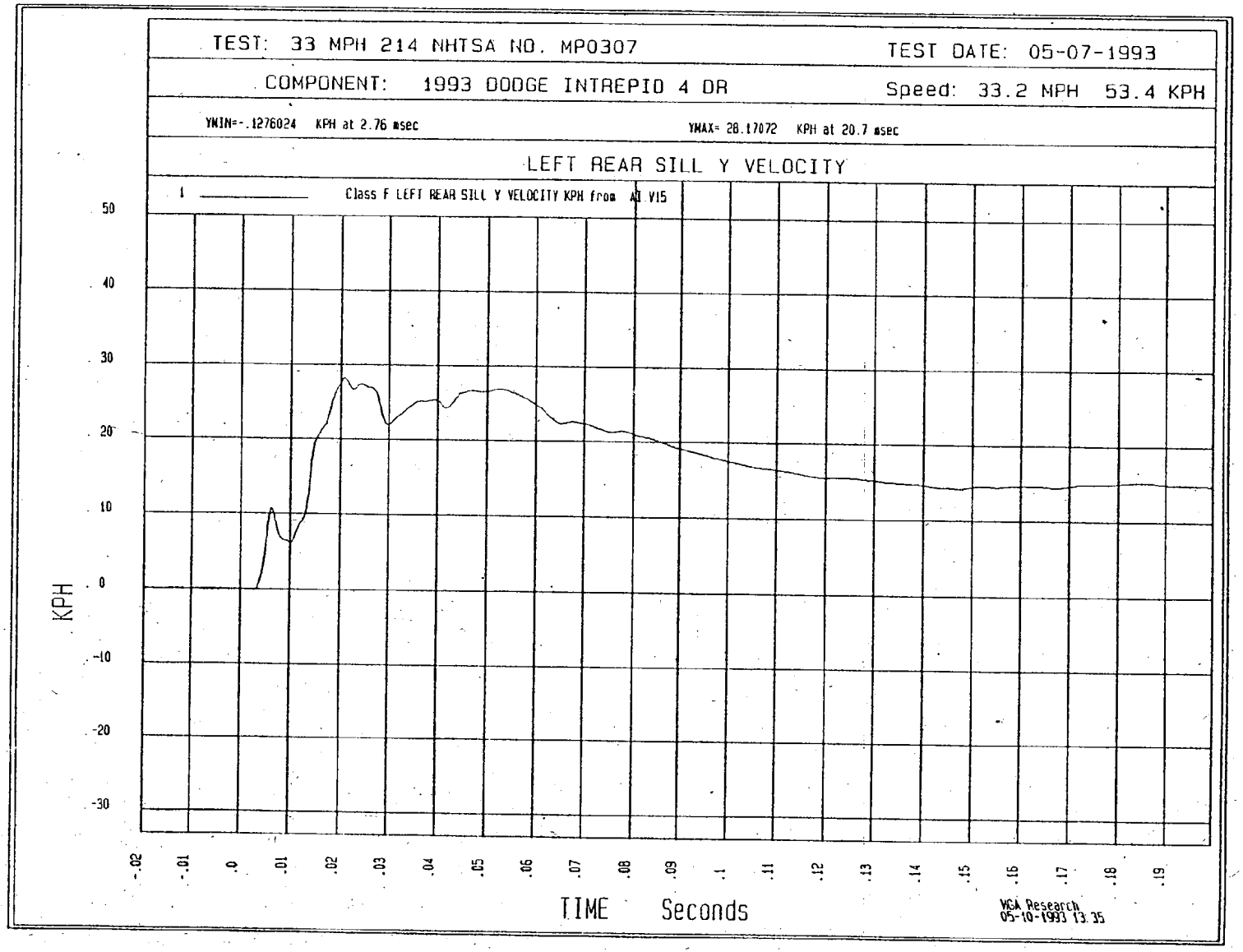

Figure B-46 - Left Rear Sill Y Velocity vs. Time

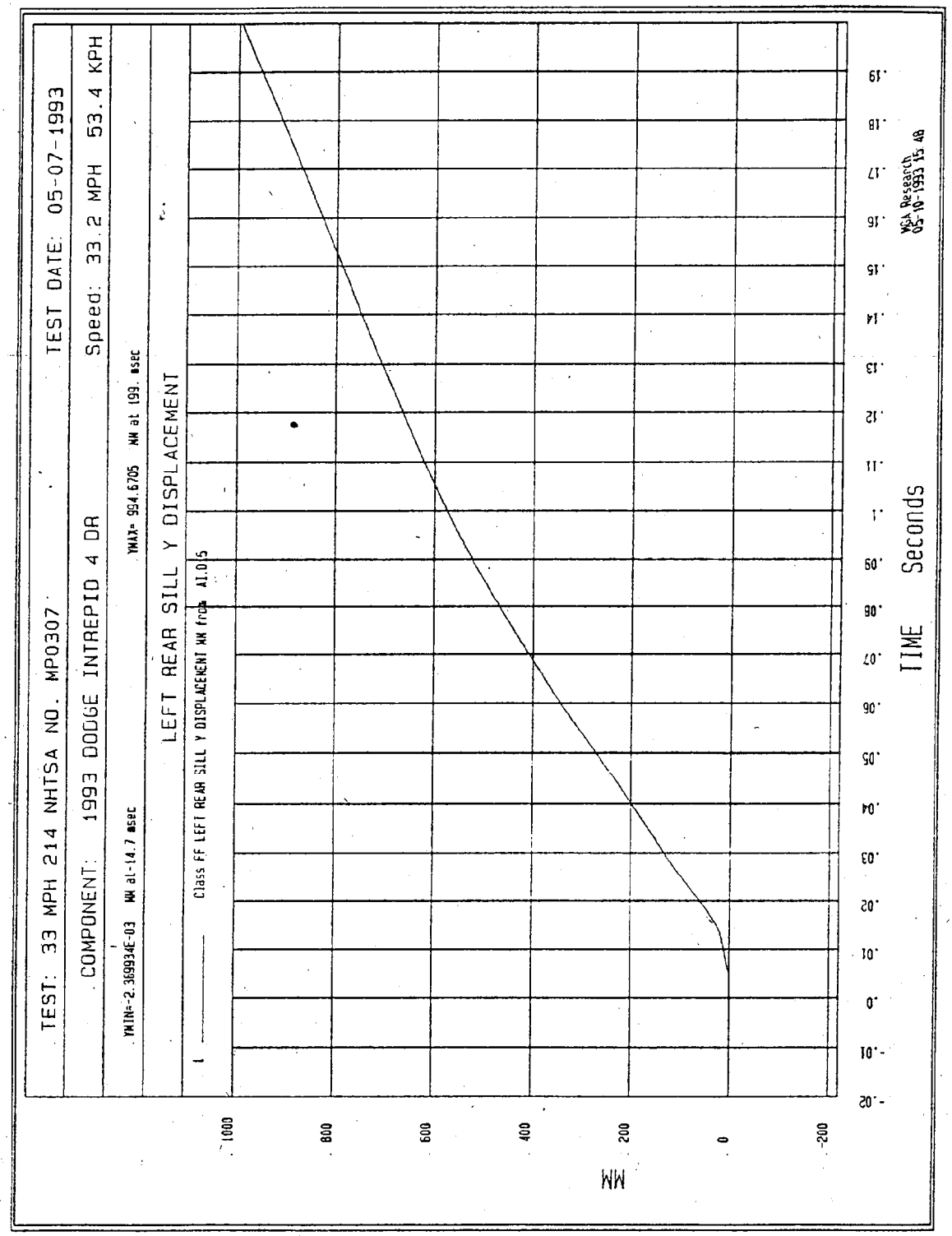

Figure B-47 - Left Rear Sill Y Displacement vs. Time

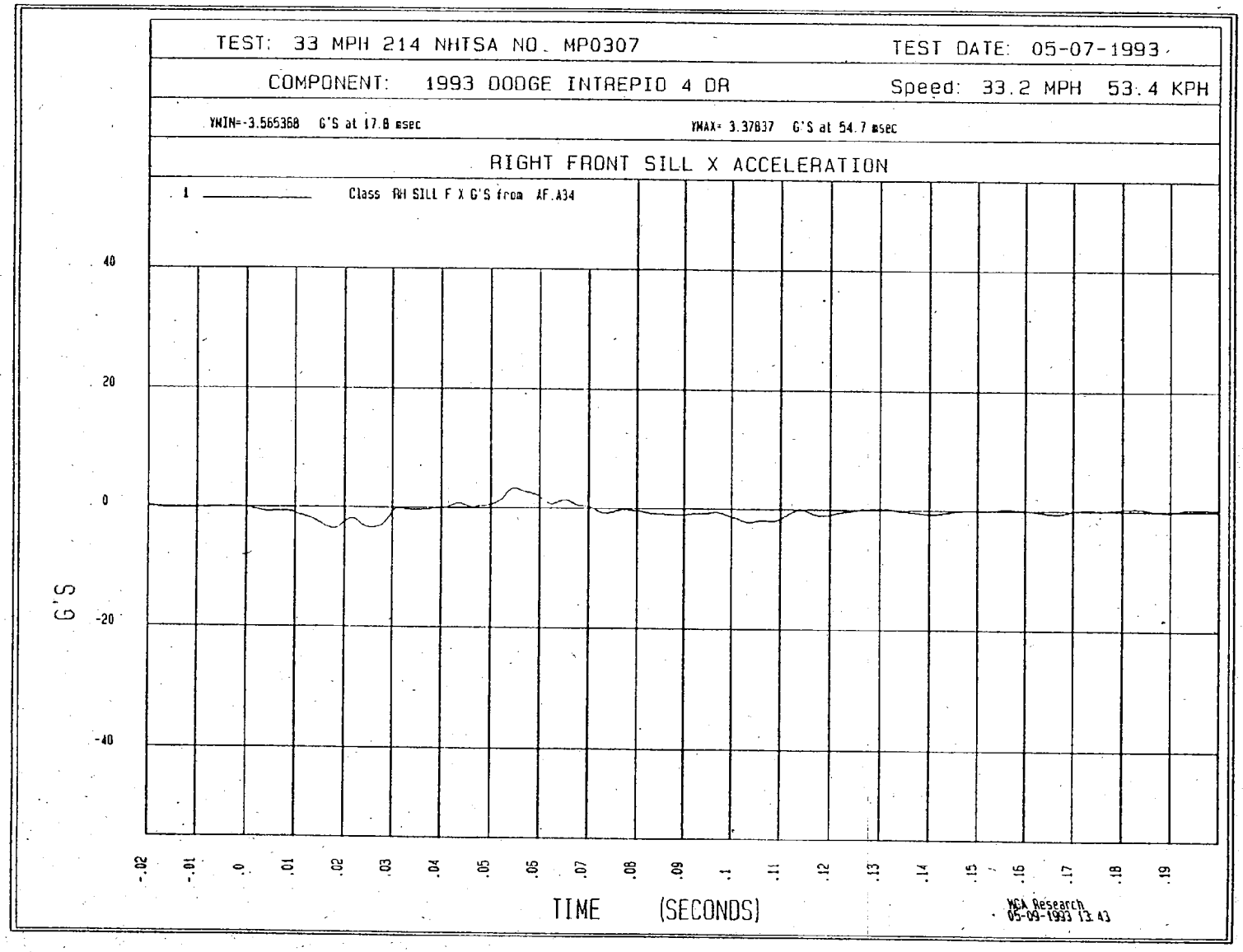

Figure B-48 - Right Front Sill X Acceleration vs. Time

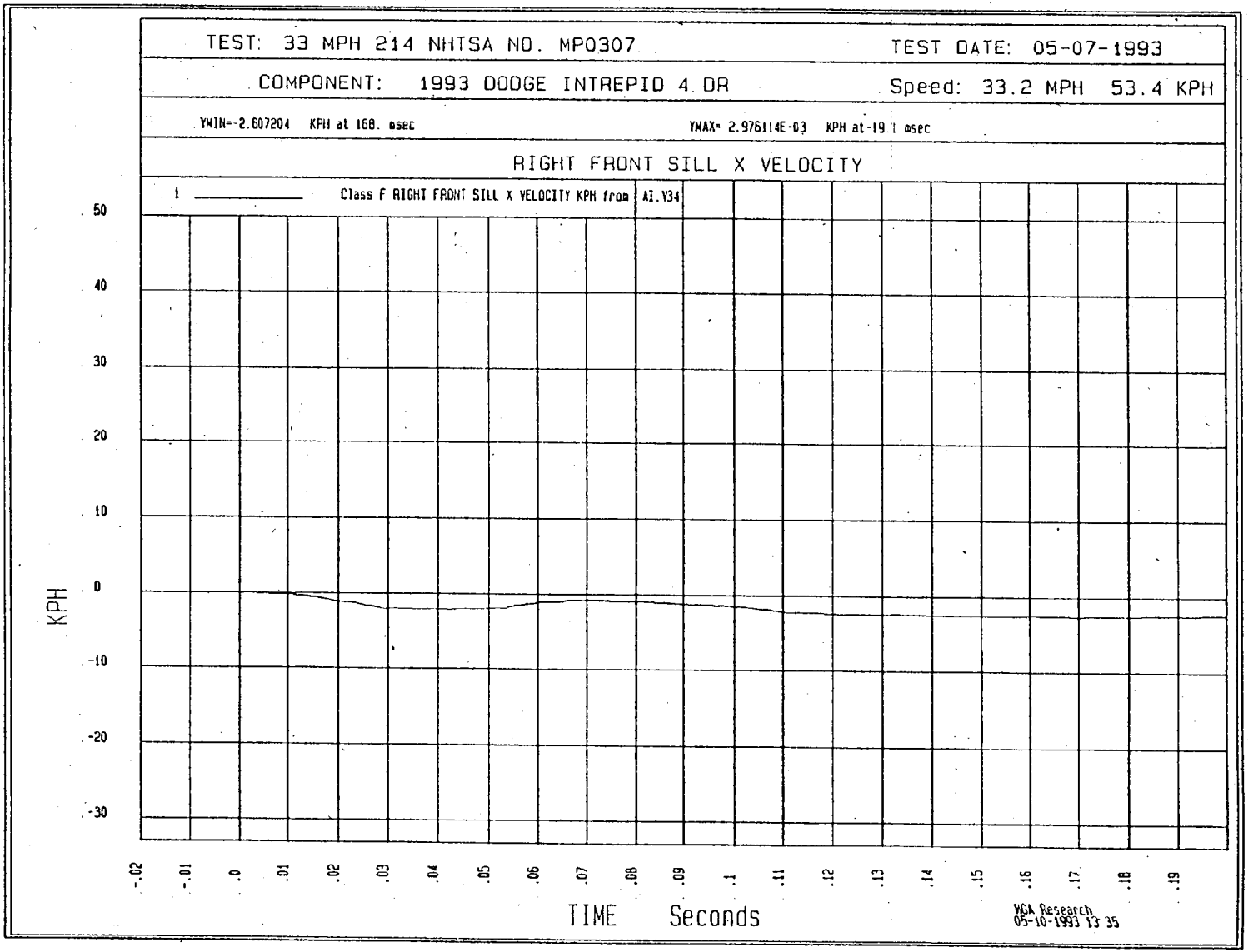

Figure B-49 - Right Front Sill X Velocity vs. Time

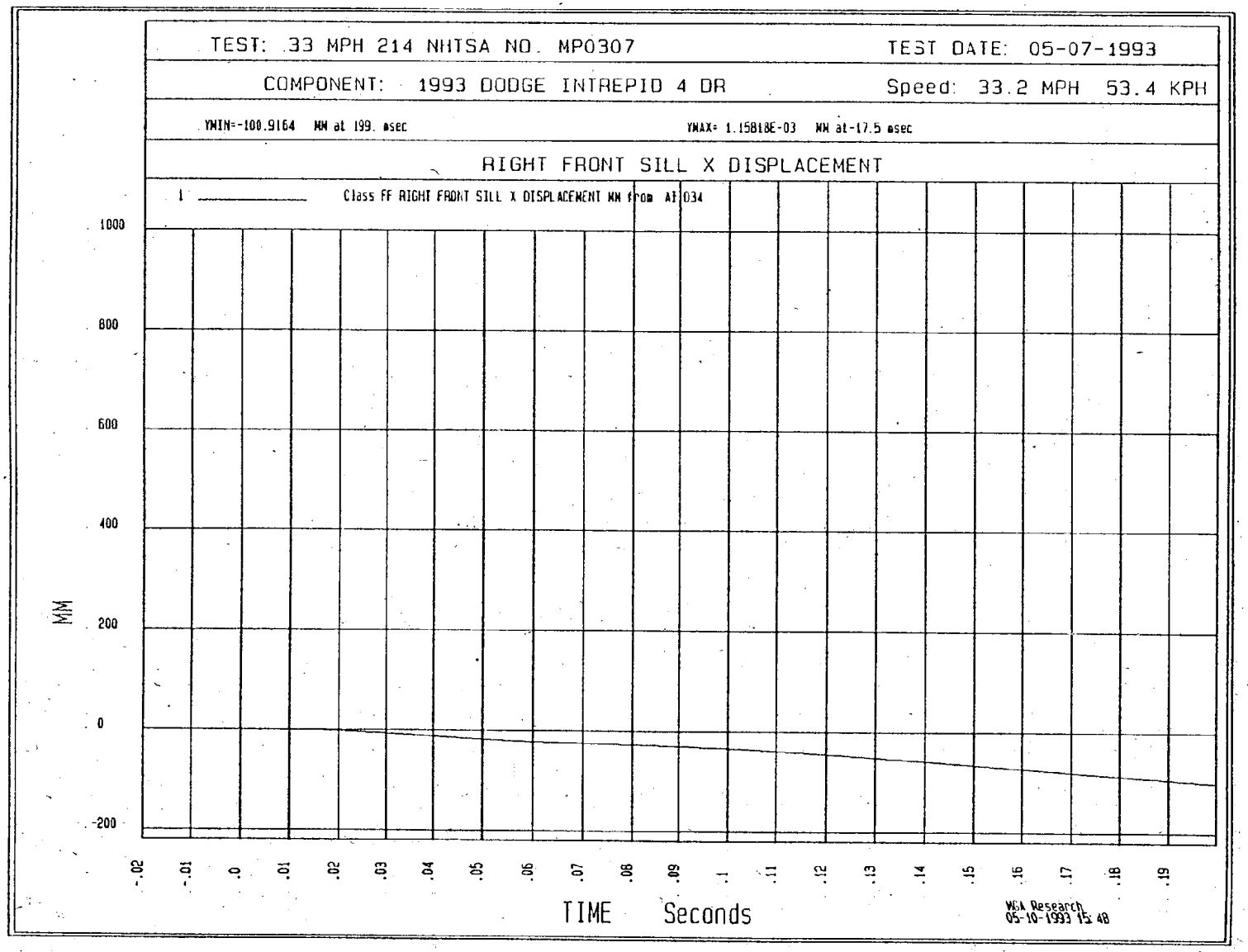

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Figure B-50 - Right Front Sill X Displacement vs. Time

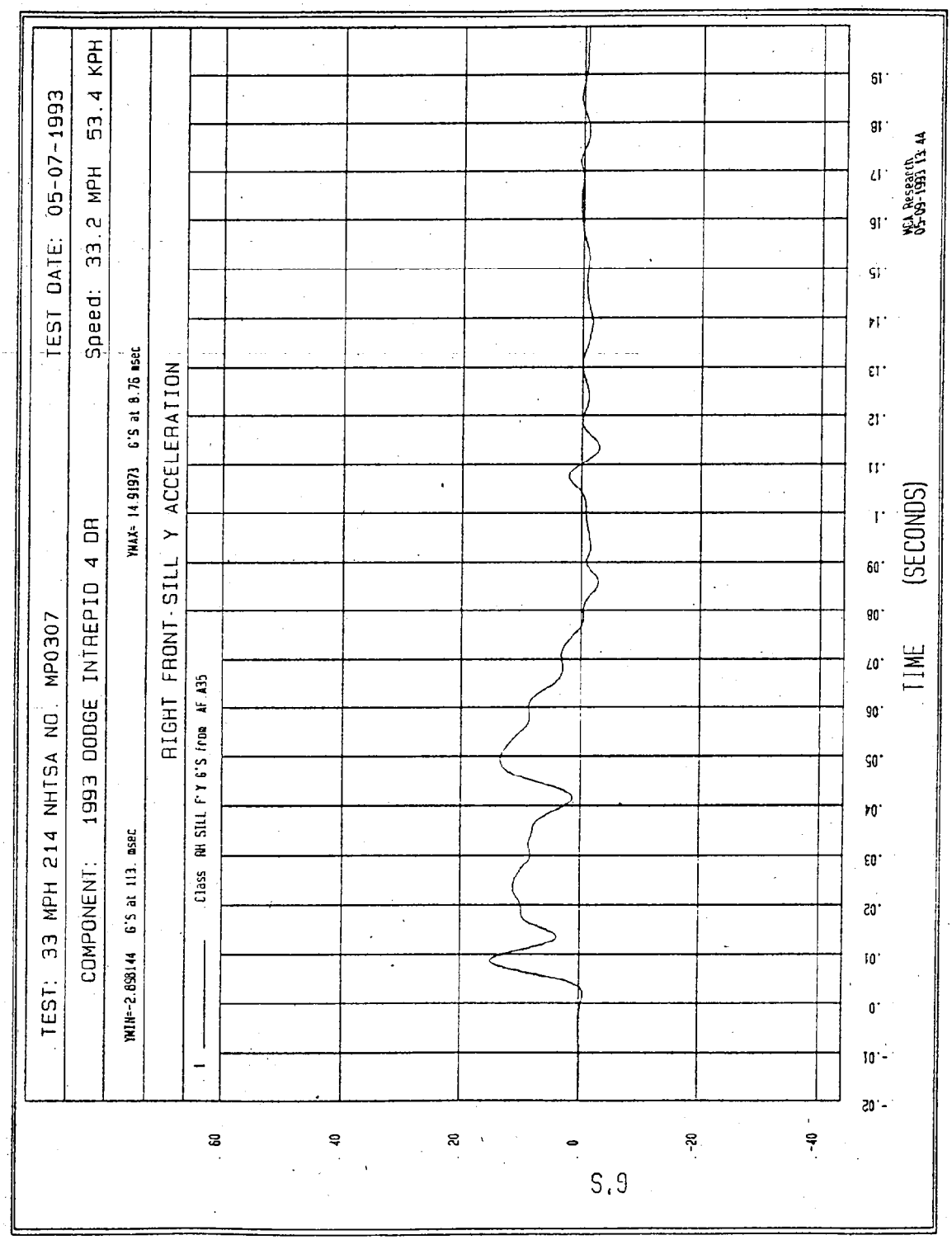

Figure B-51 - Right Front Sill Y Acceleration vs. Time

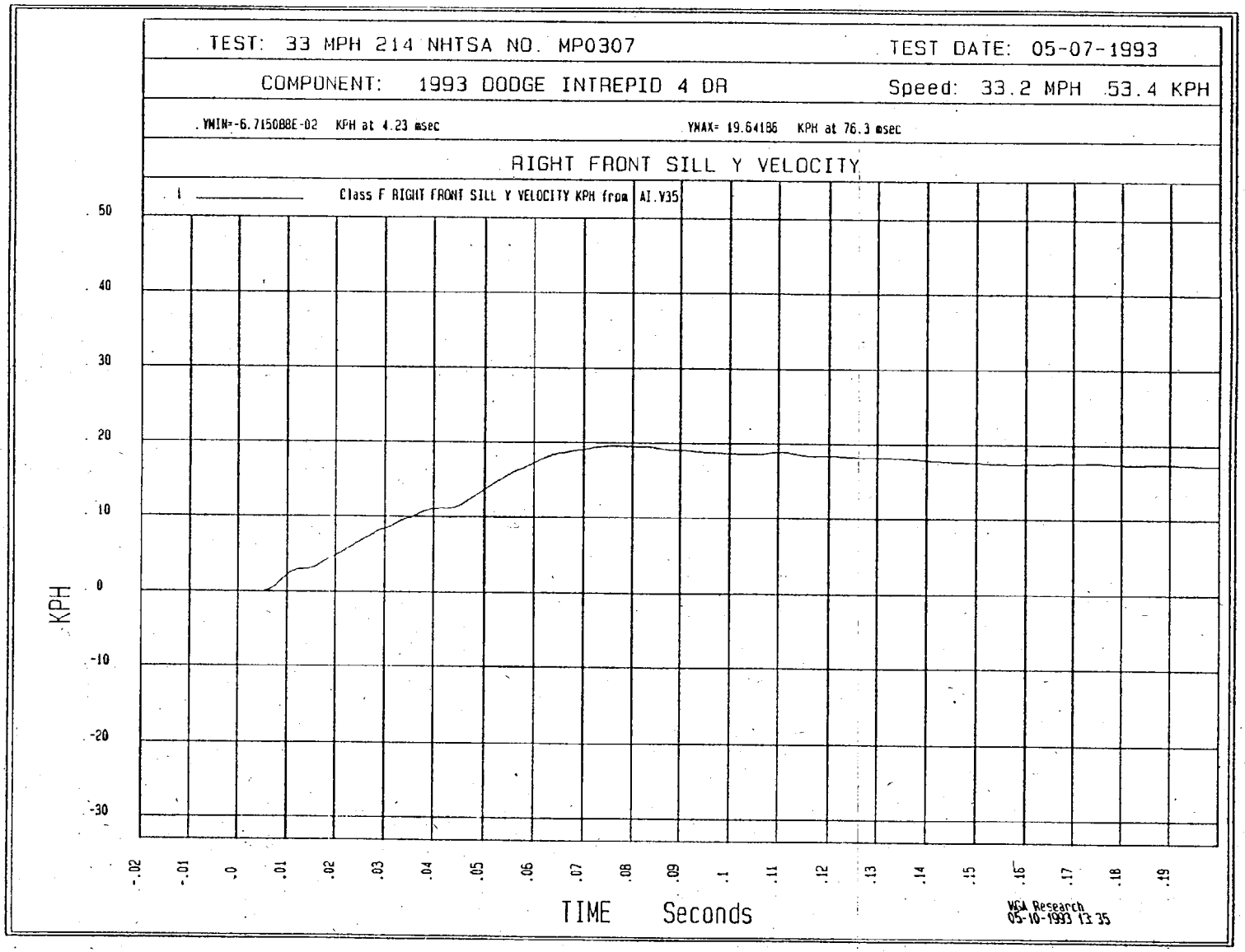

Figure B-52 - Right Front Sill Y Velocity vs. Time

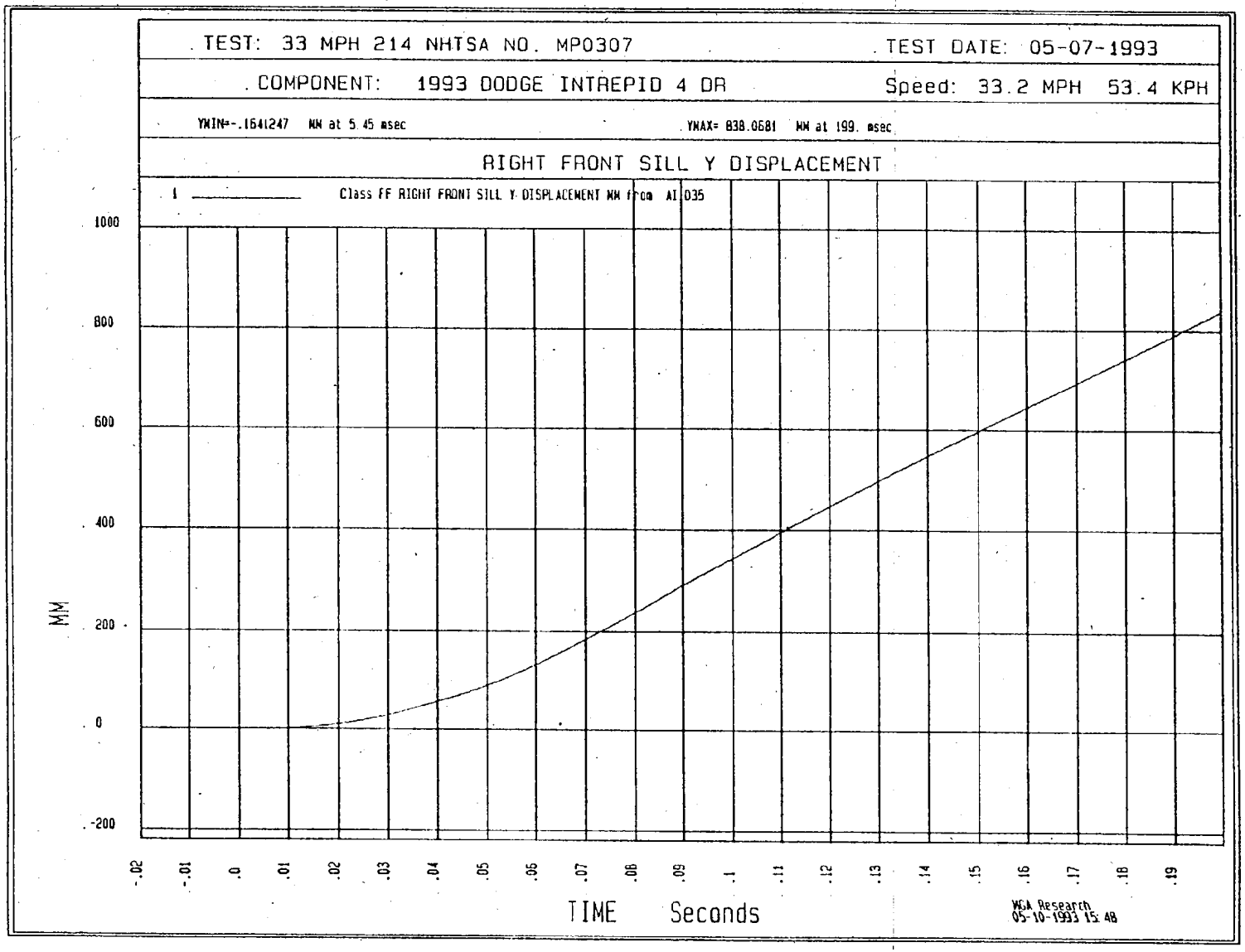

Figure B-53 - Right Front Sill Y Displacement vs. Time

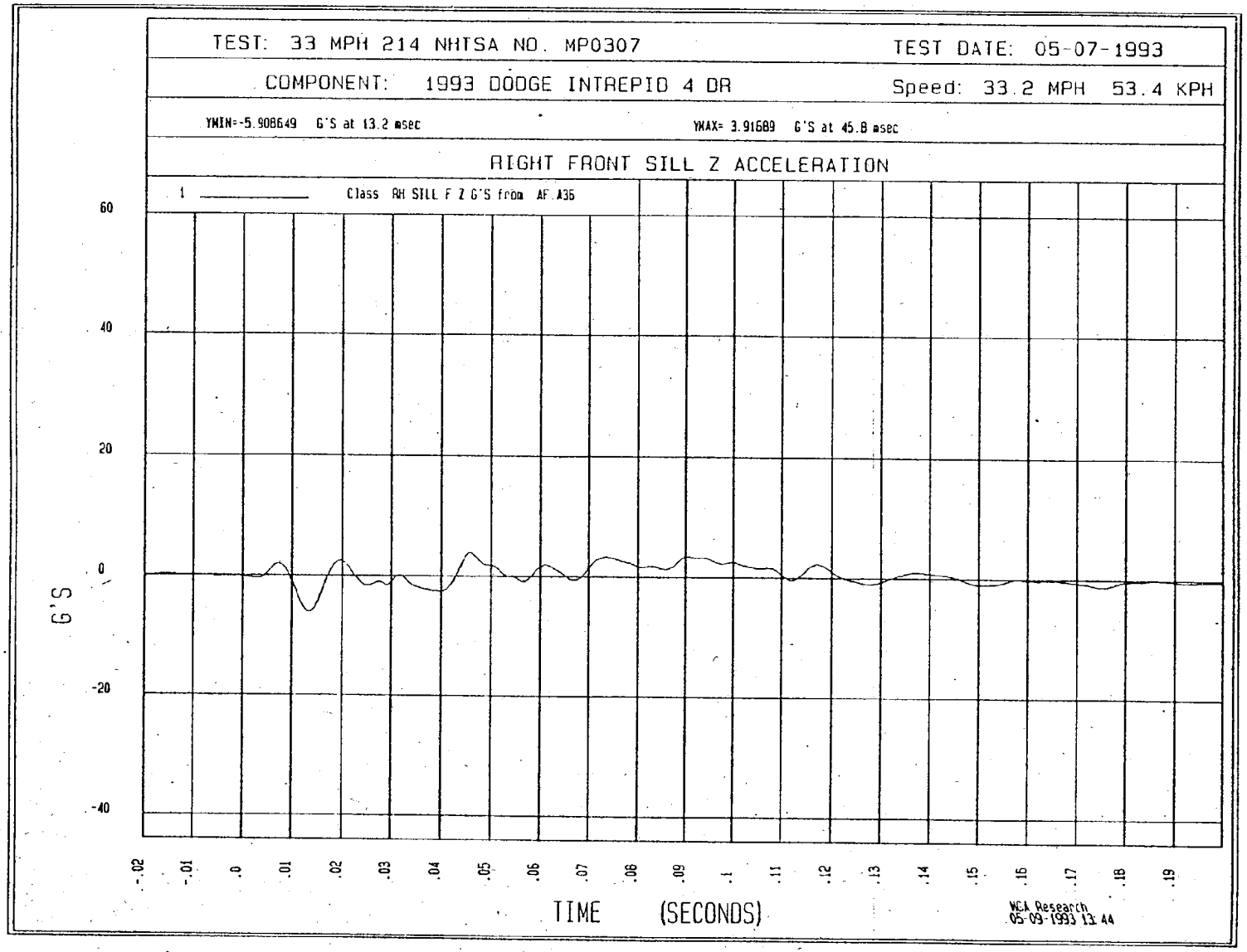

Figure B-54 - Right Front Sill Z Acceleration vs. Time

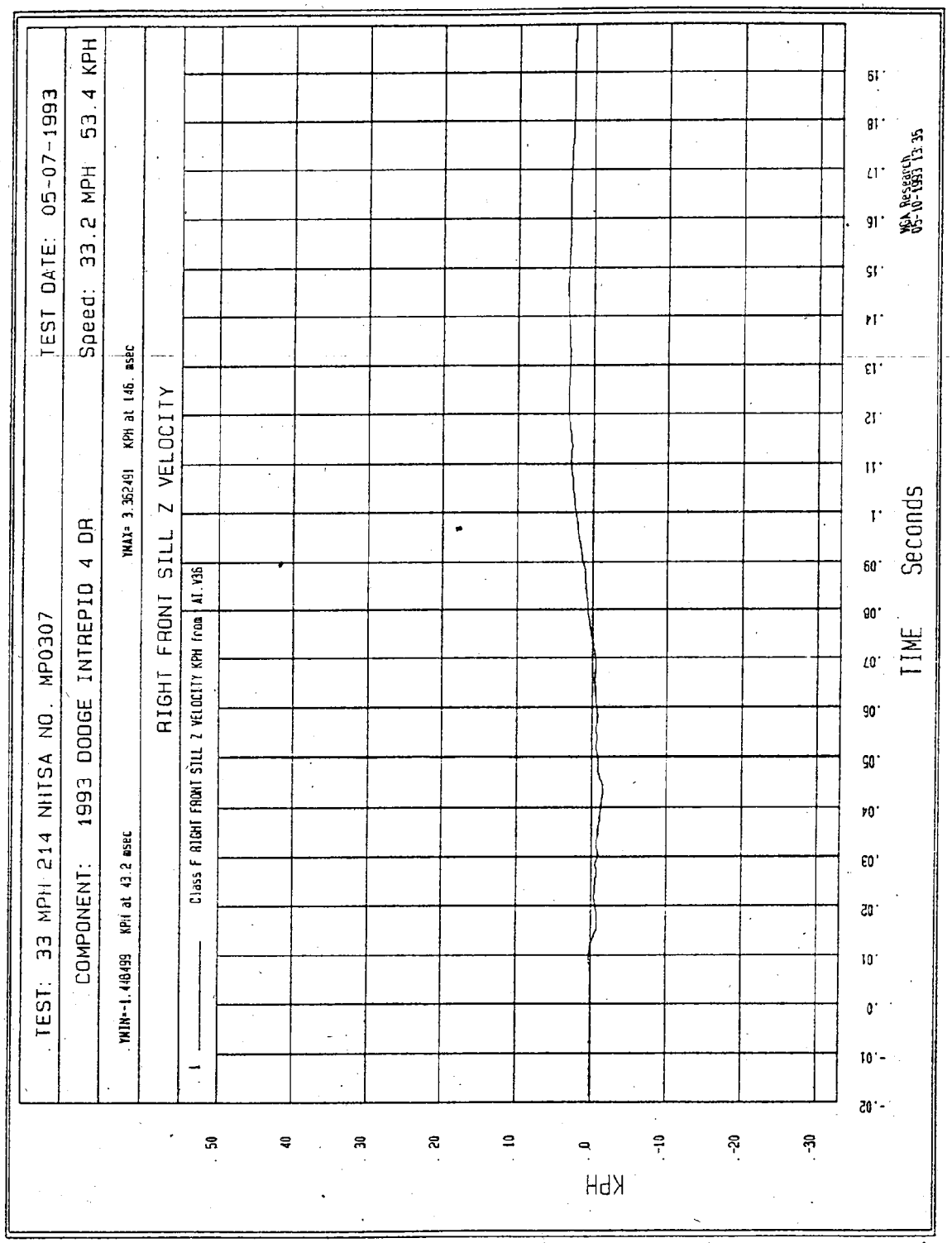

Figure B-55 - Right Front Sill Z Velocity vs. Time

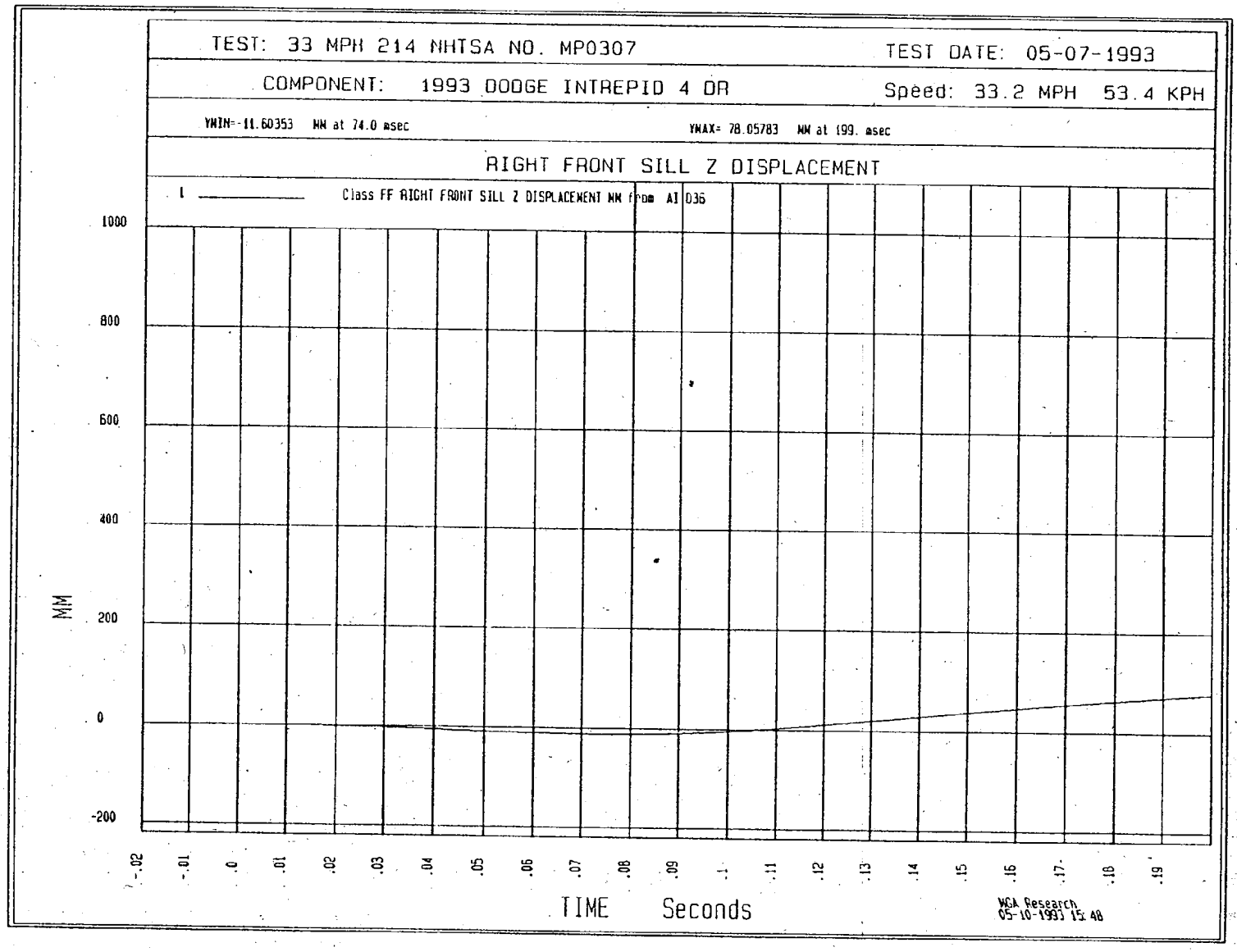

Figure B-56 - Right Front Sill Z Displacement vs. Time

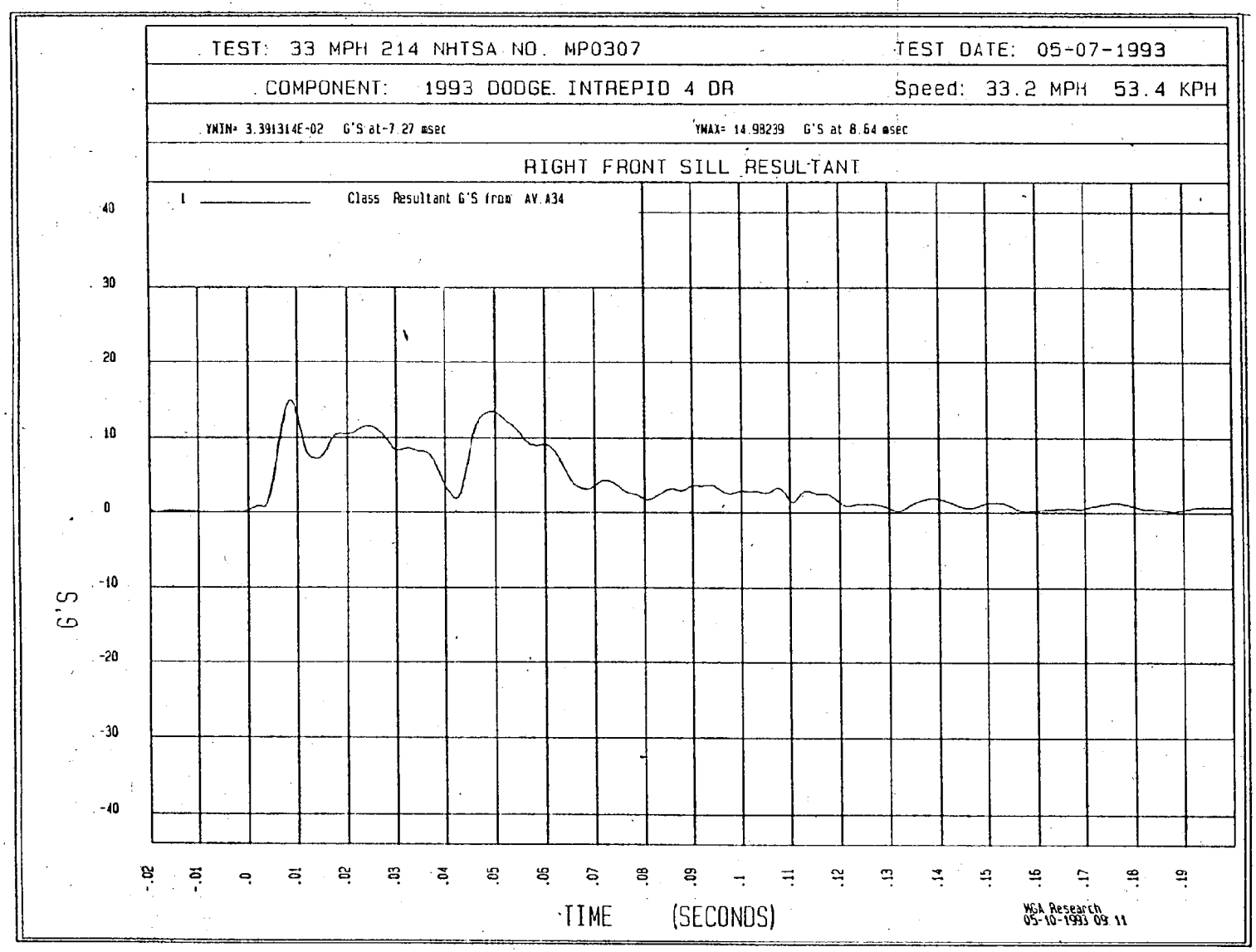

Figure B-57 - Right Front Sill at Front Seat Resultant vs. Time

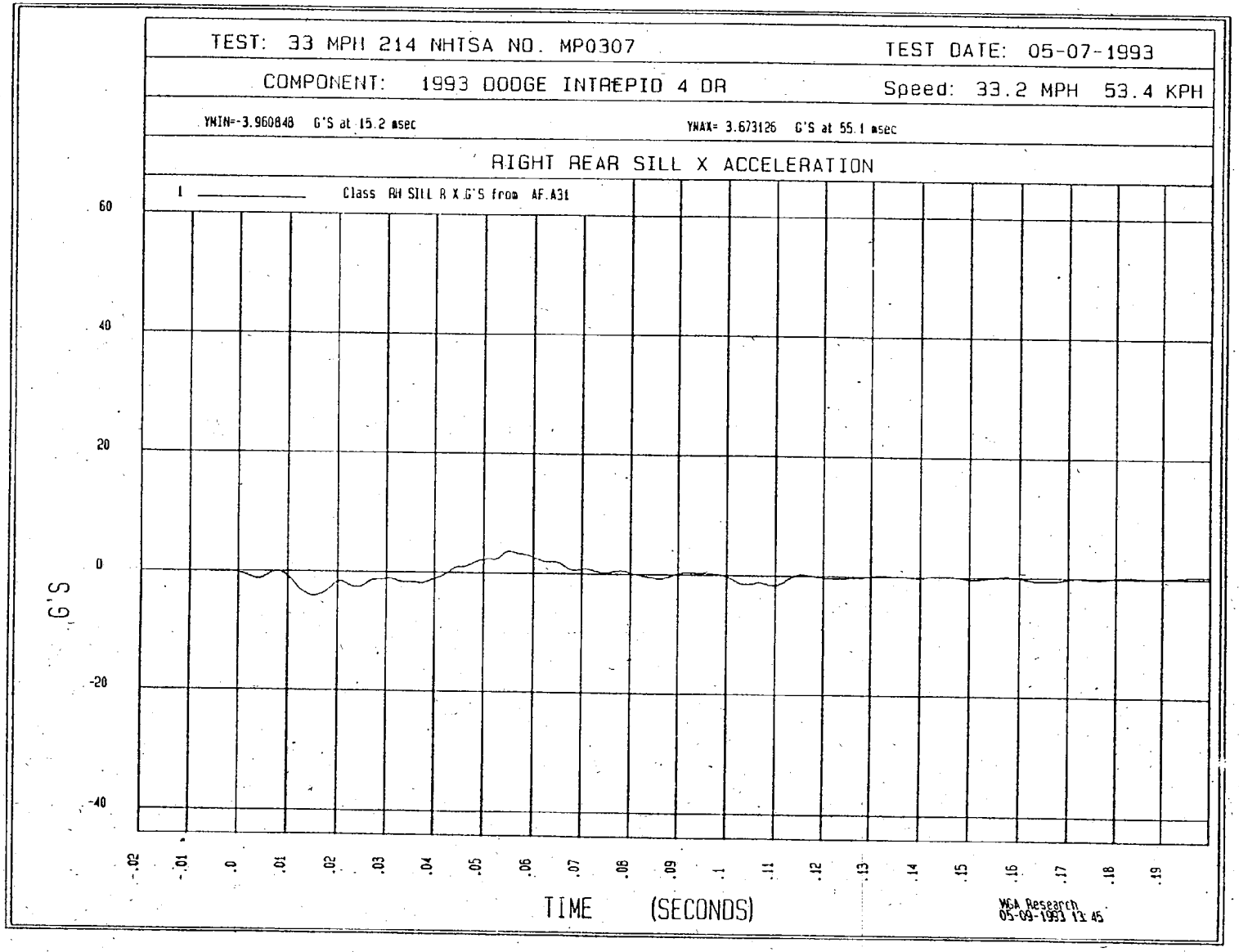

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Figure B-58 - Right Rear Sill X Acceleration vs. Time

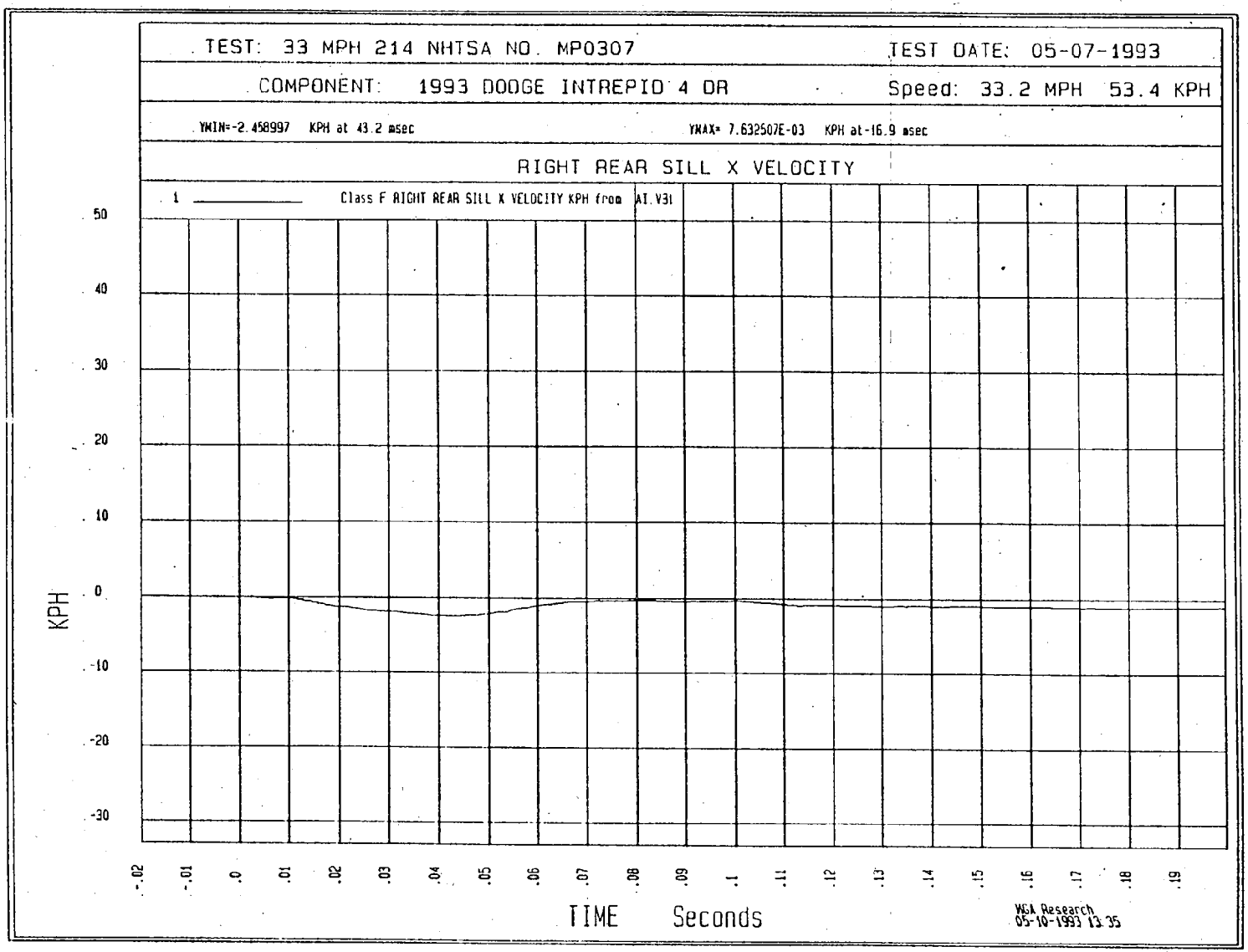

Figure B-59 - Right Rear Sill X Velocity vs. Time

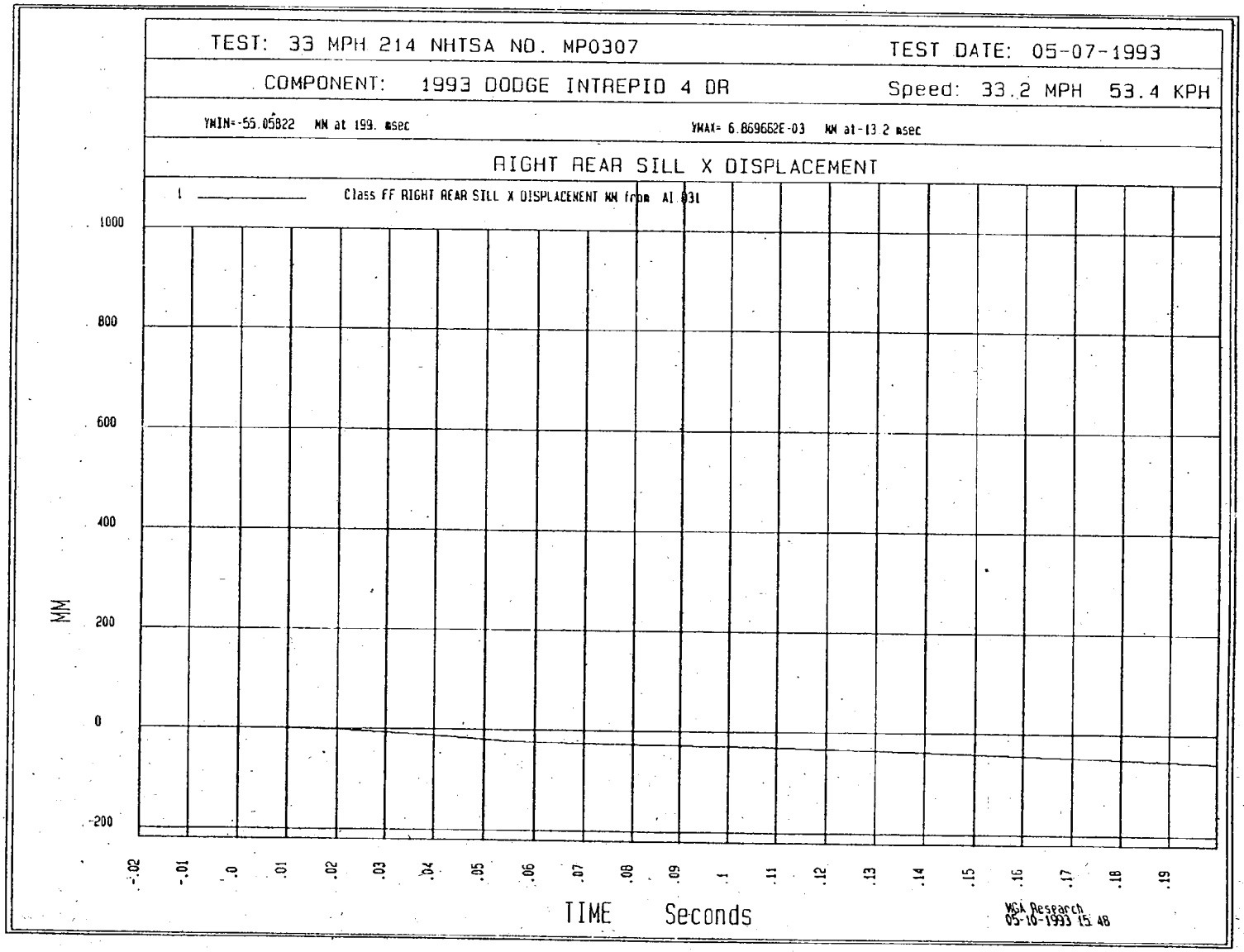

Figure B-60 - Right Rear Sill X Displacement vs. Time

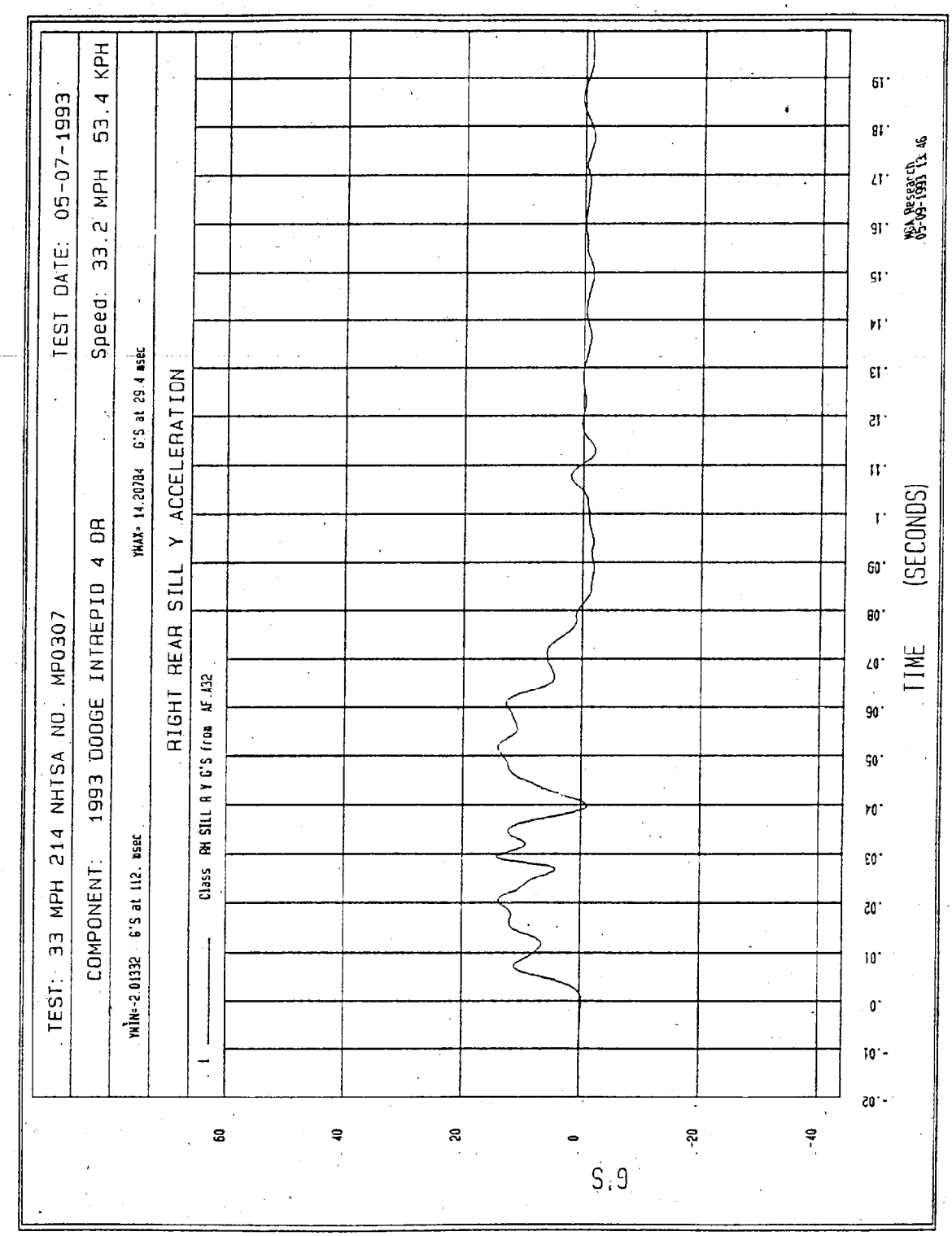

Figure B-61 - Right Rear Sill Y Acceleration vs. Time

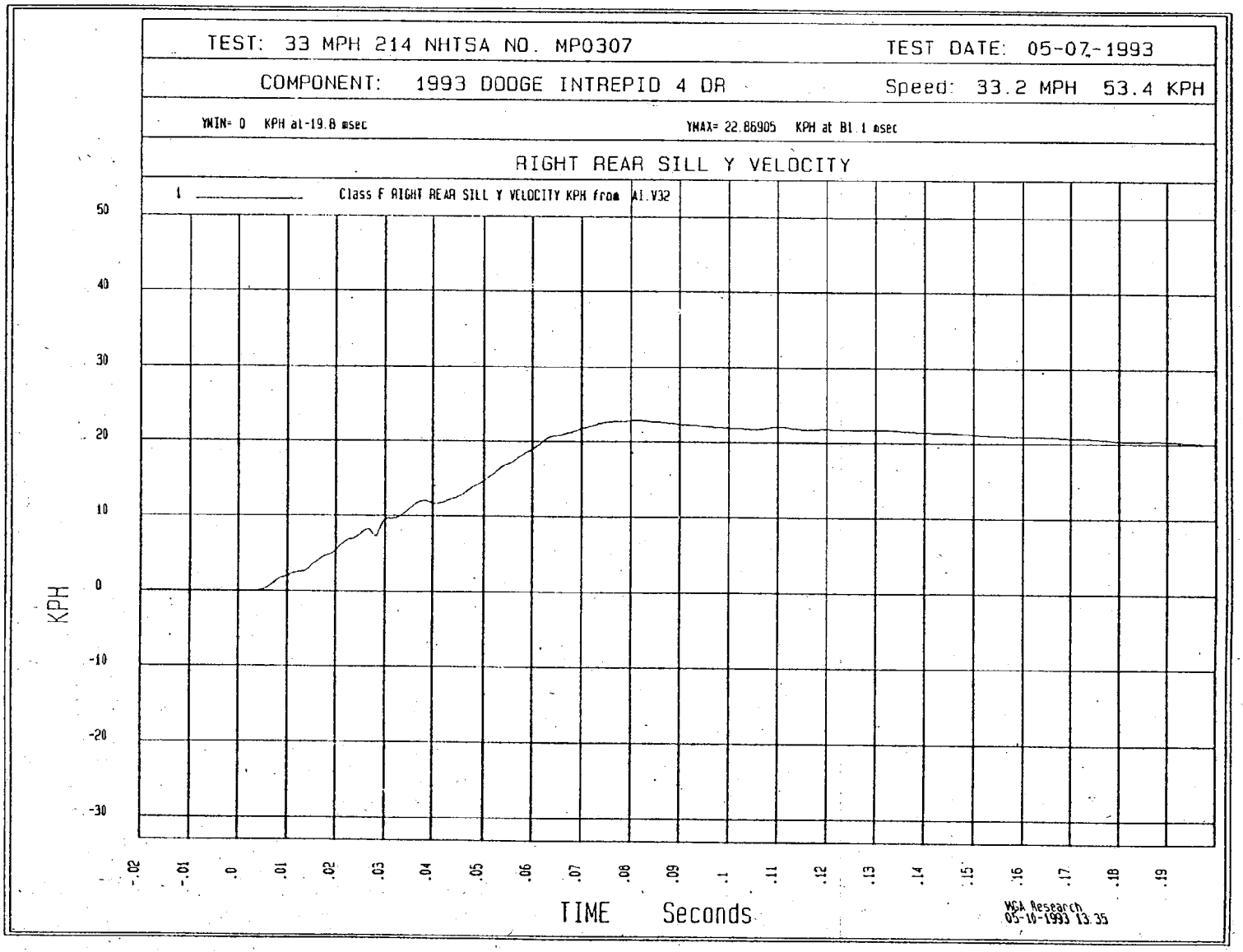

Figure B-62 - Right Rear Sill Y Velocity vs. Time

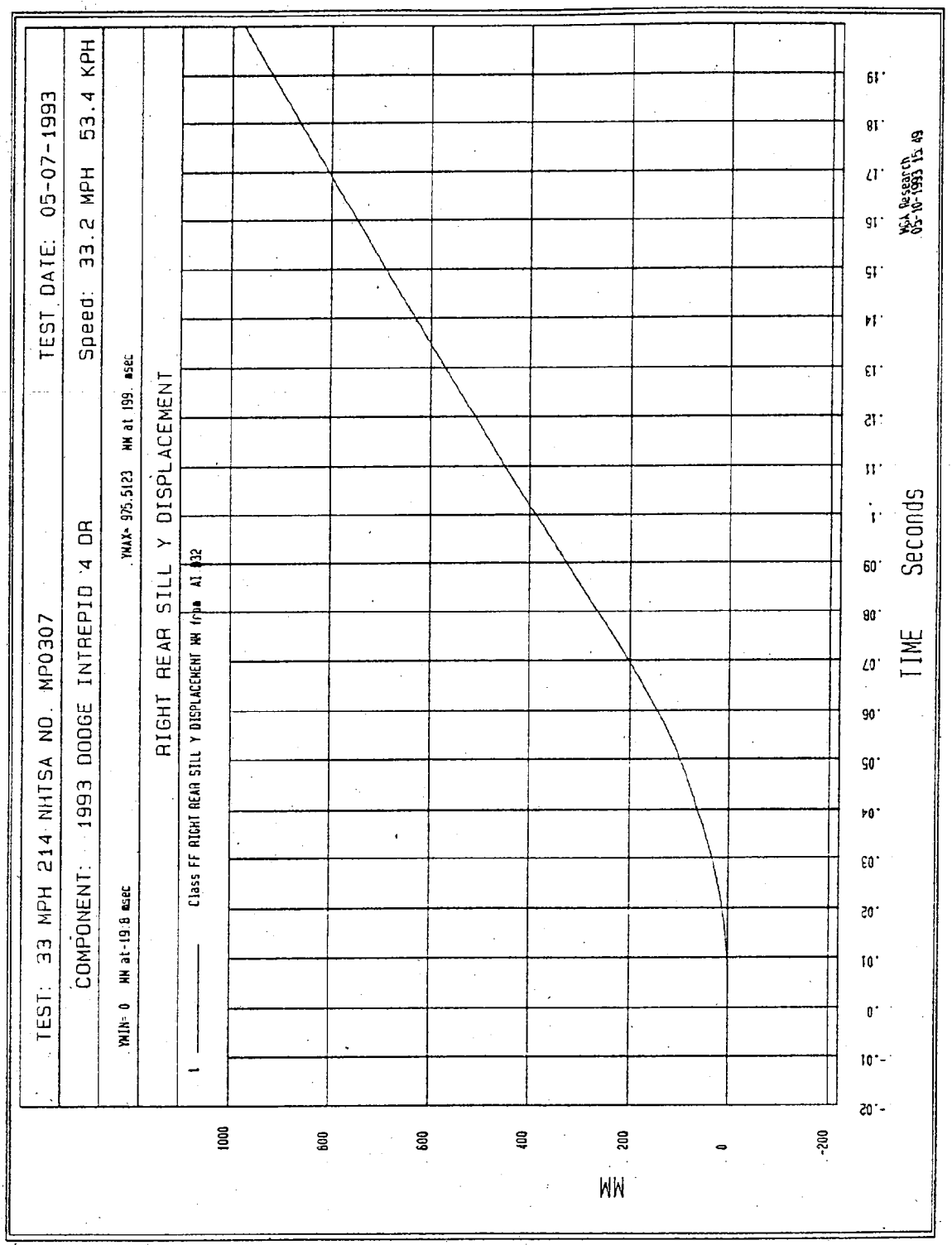

Figure B-63 - Right Rear Sill Y Displacement vs. Time

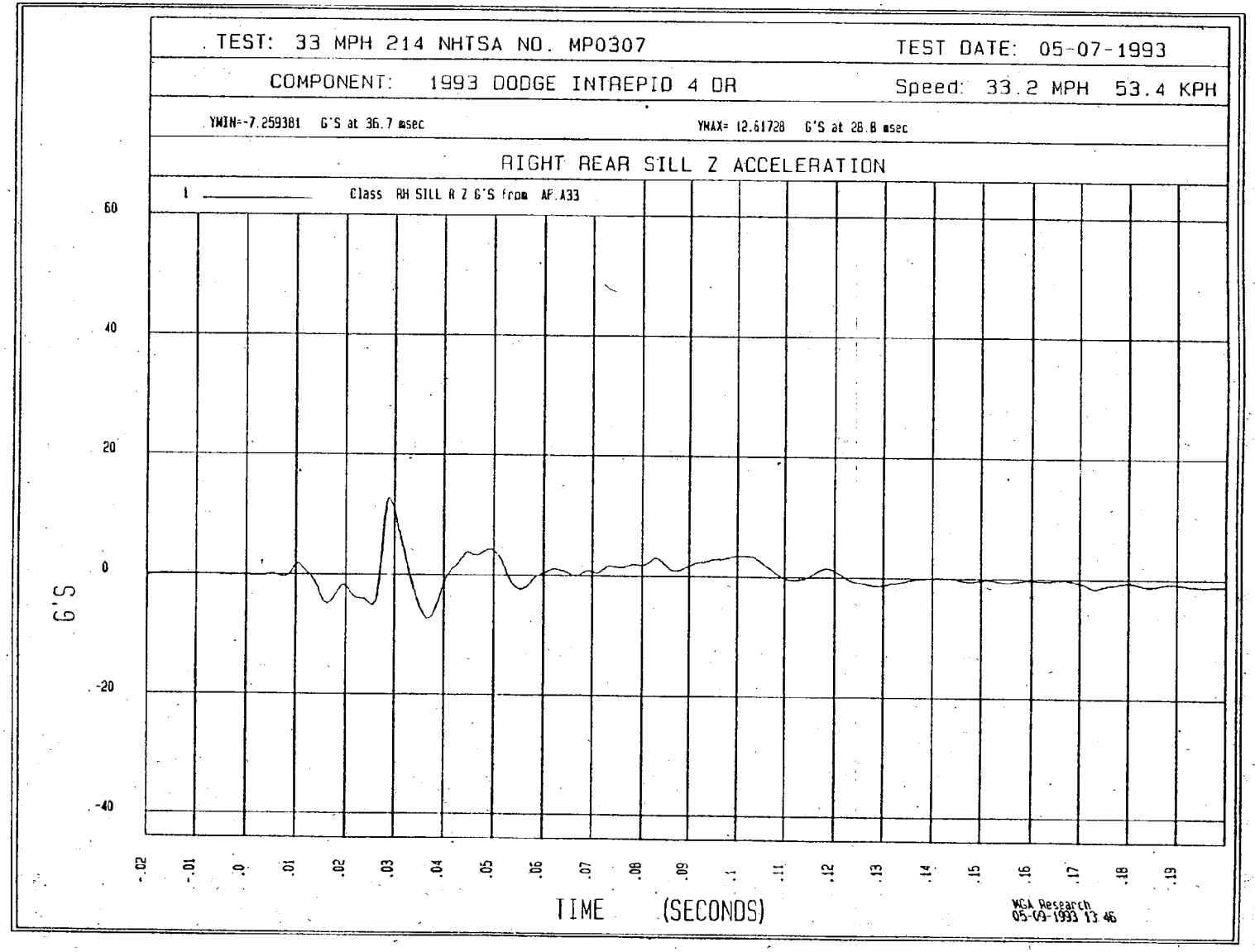

Figure B-64 - Right Rear Sill Z Acceleration vs. Time

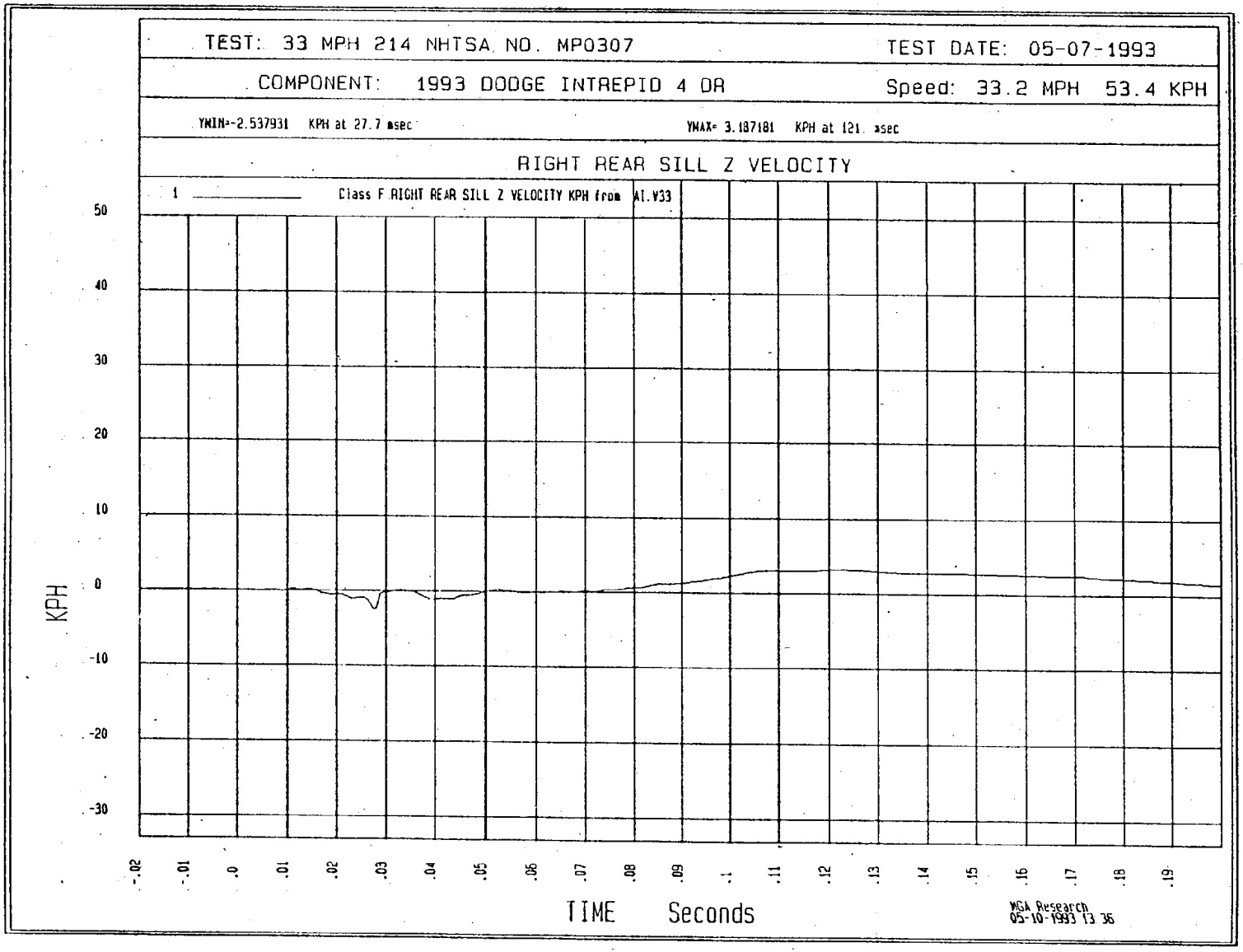

Figure B-65 - Right Rear Sill Z Velocity vs. Time

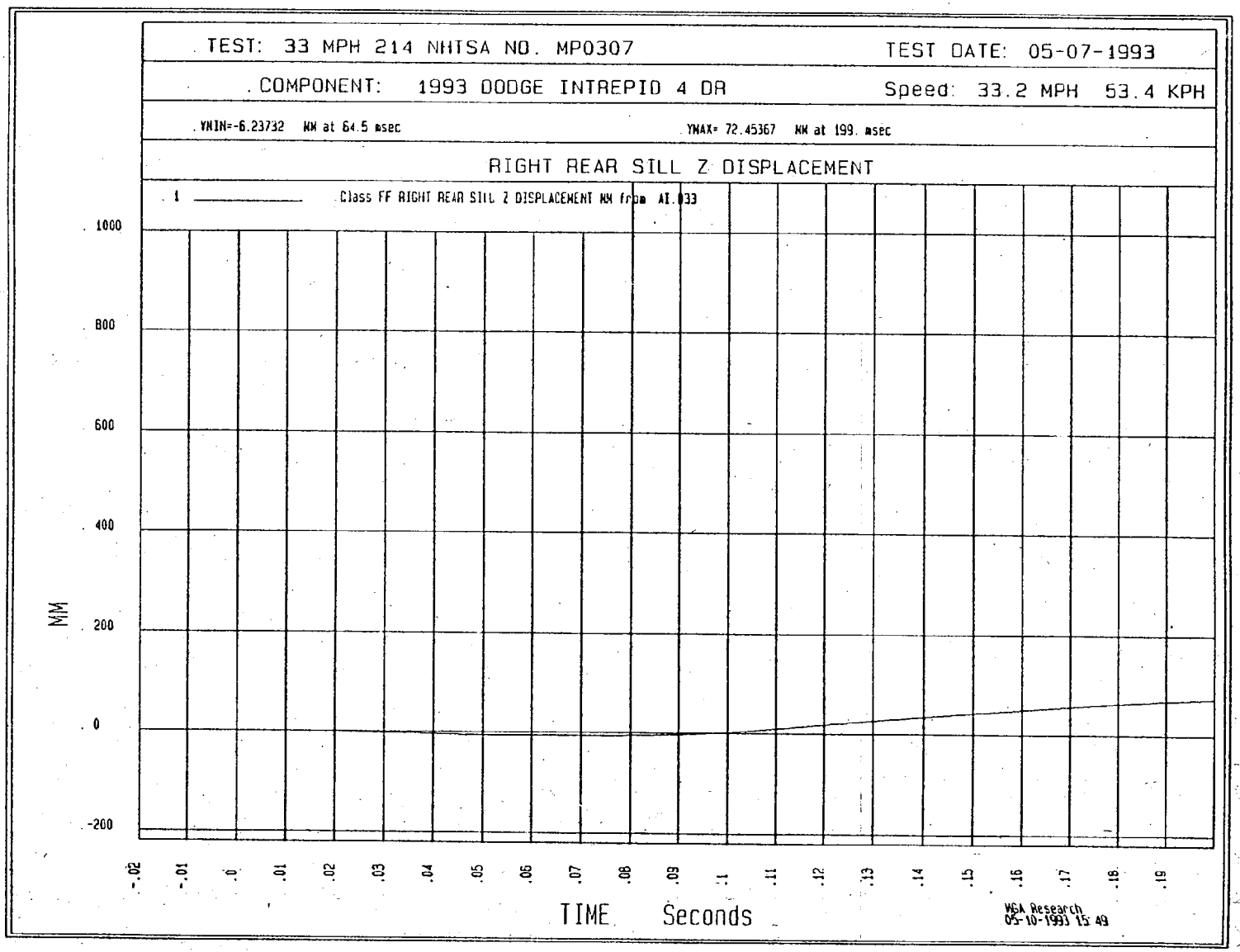

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Figure B-66 - Right Rear Sill Z Displacement vs. Time

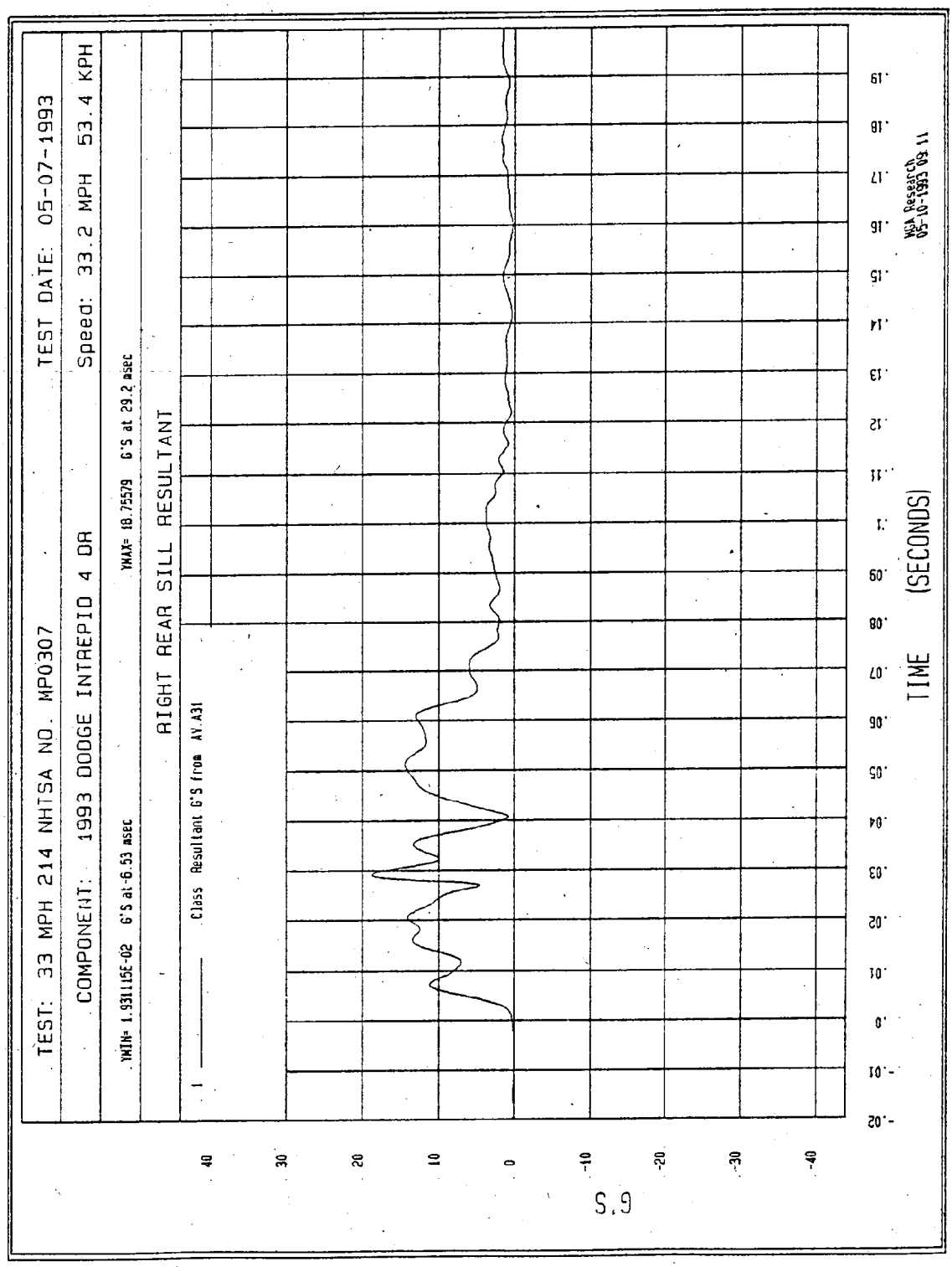

Figure B-67 - Right Rear Sill at Rear Seat Resultant vs. Time

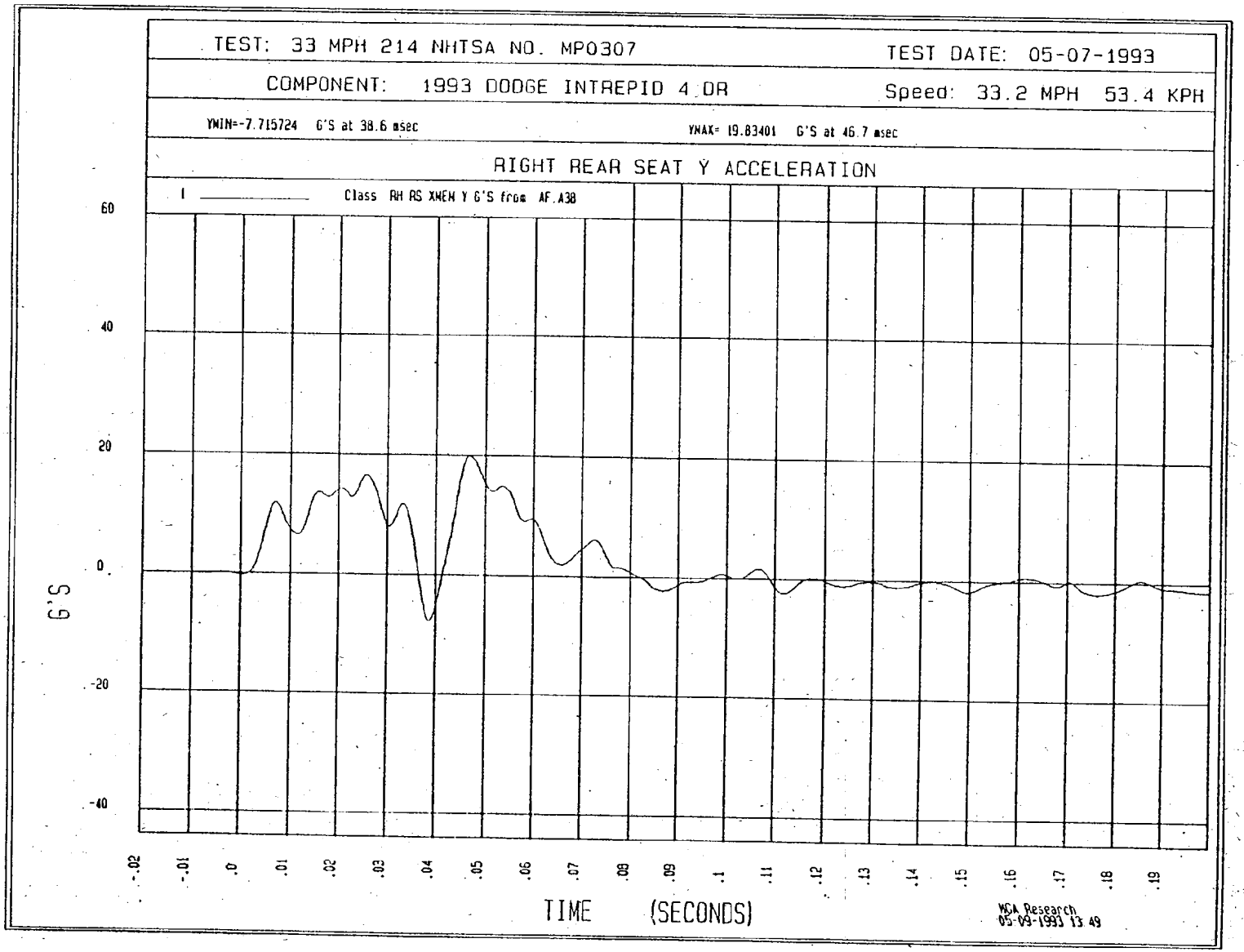

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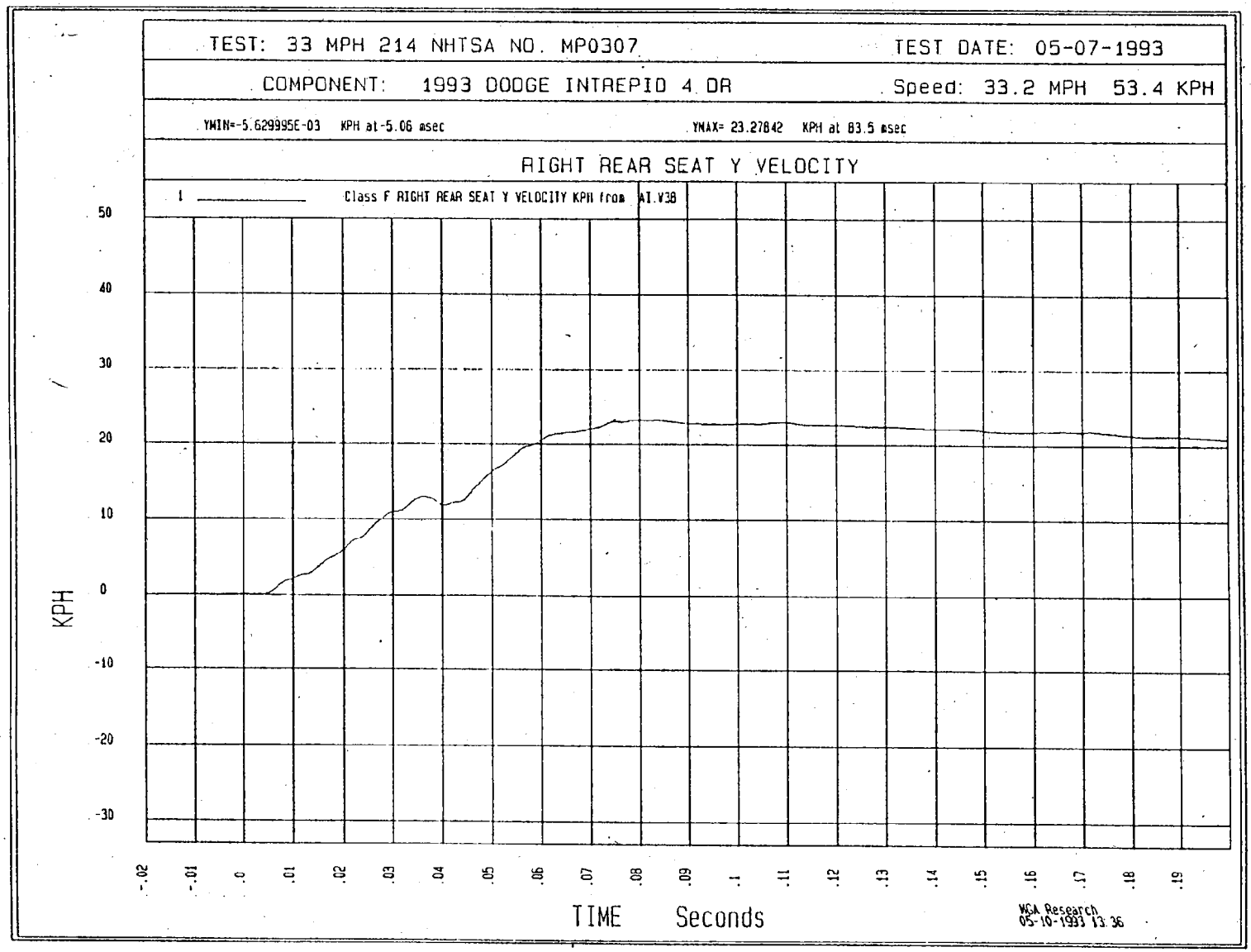
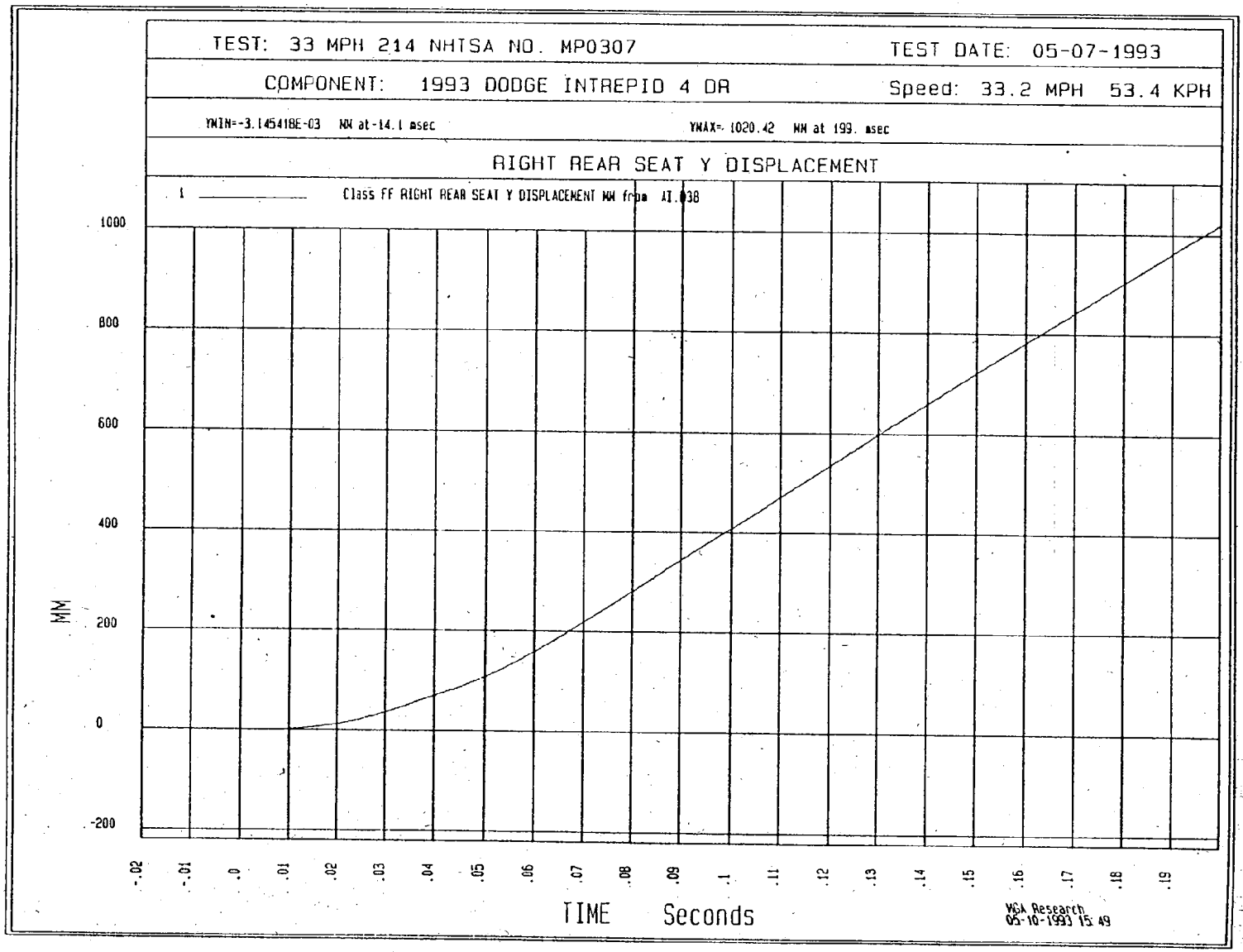
Figure B-68 - Right Rear Seat Y Acceleration vs. Time



B-69

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



E-70

Figure B-70 - Right Rear Seat Y Displacement vs. Time

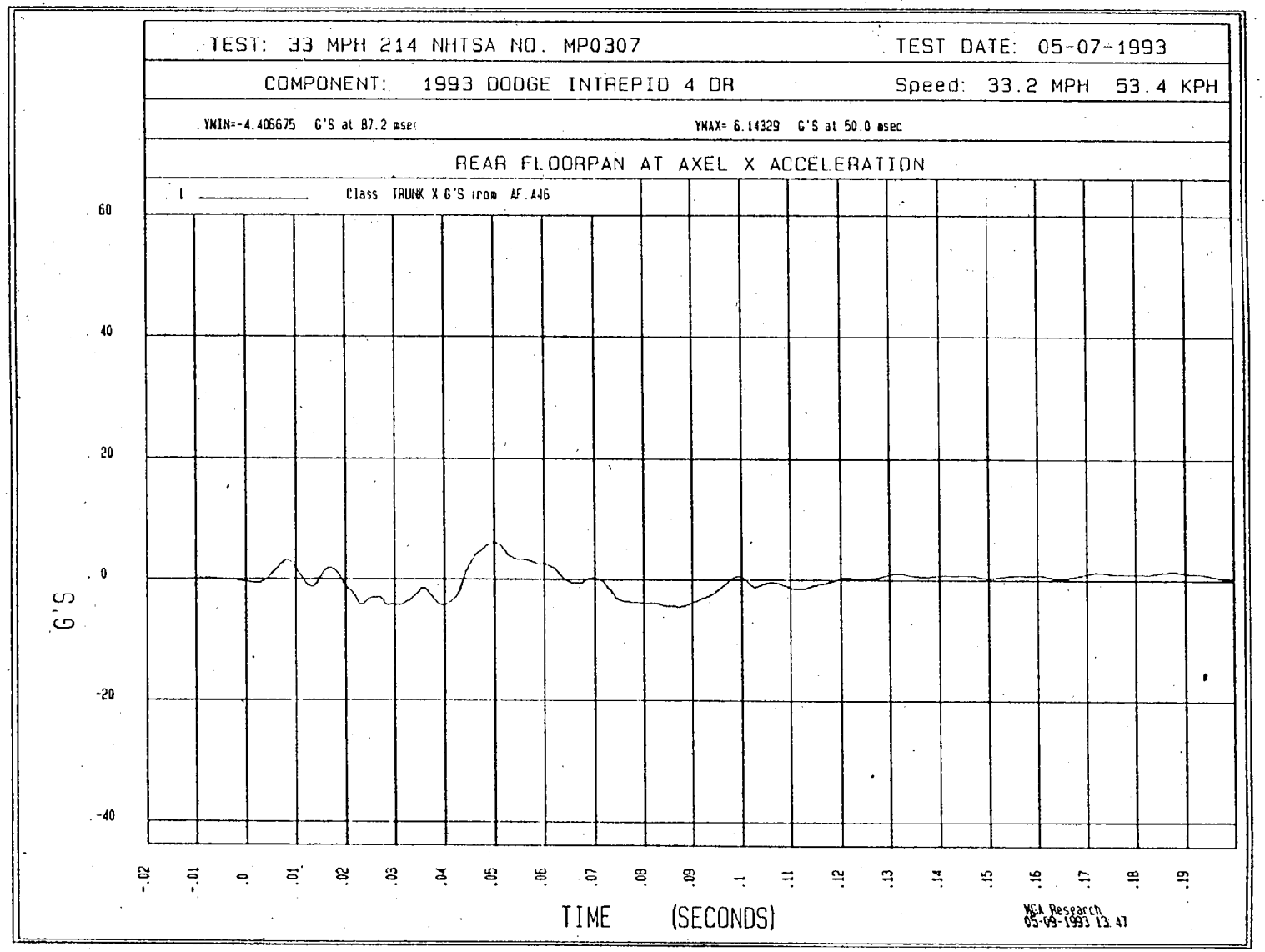
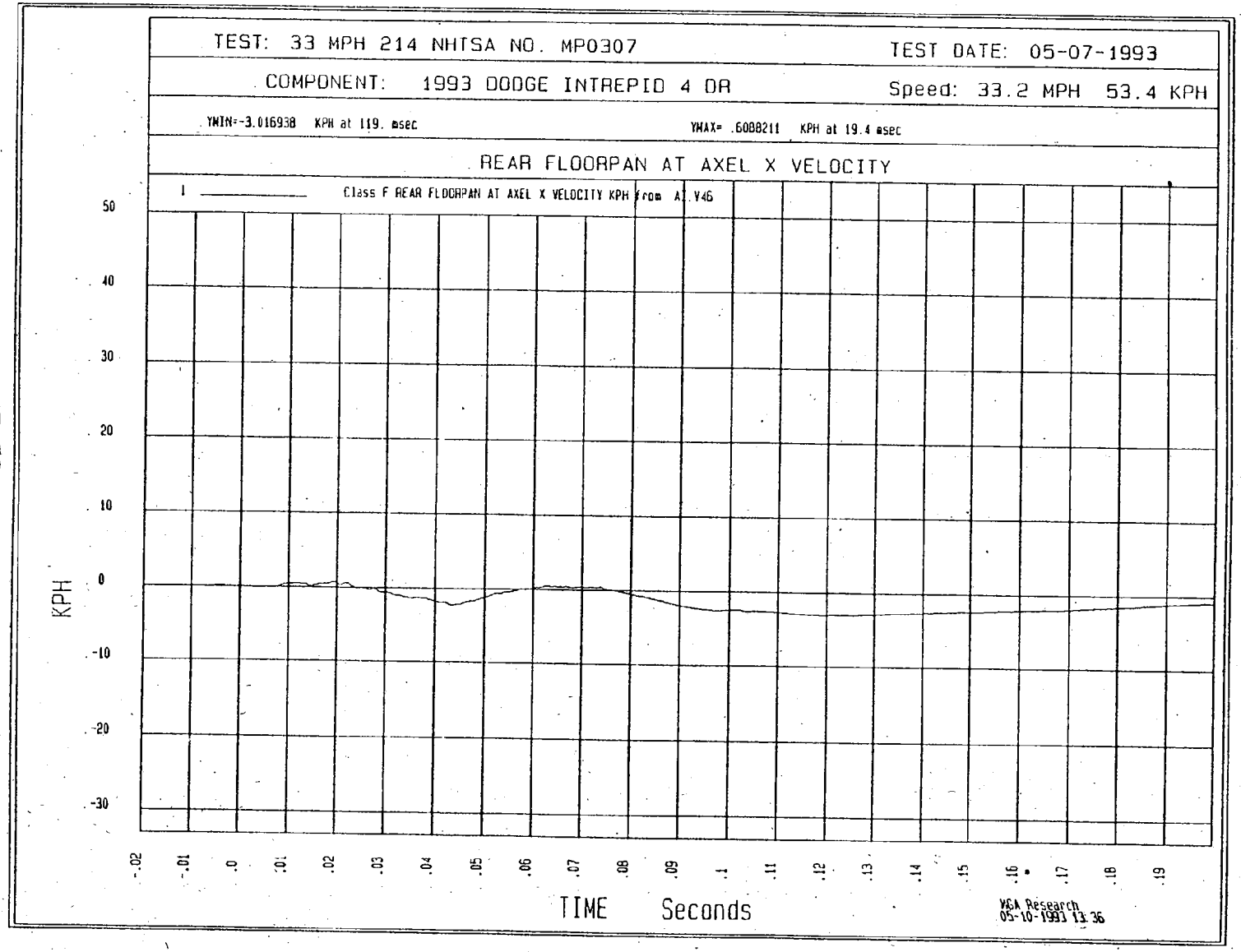


Figure B-71 - Rear Floorpan at Axle X Acceleration vs. Time



B-72

Figure B-72 - Rear Floorpan at Axle X Velocity vs. Time

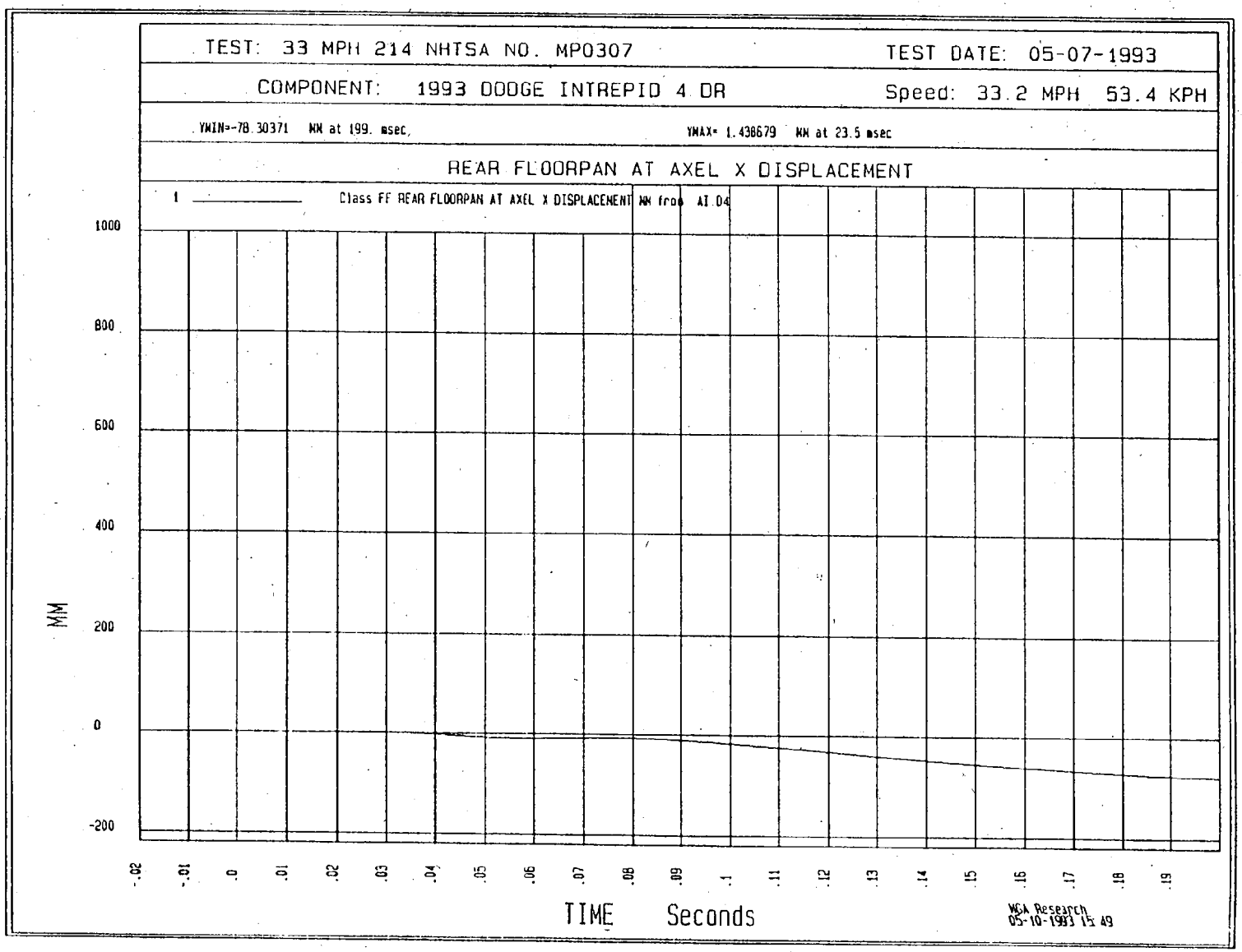


Figure B-73 - Rear Floorpan at Axle X Displacement vs. Time

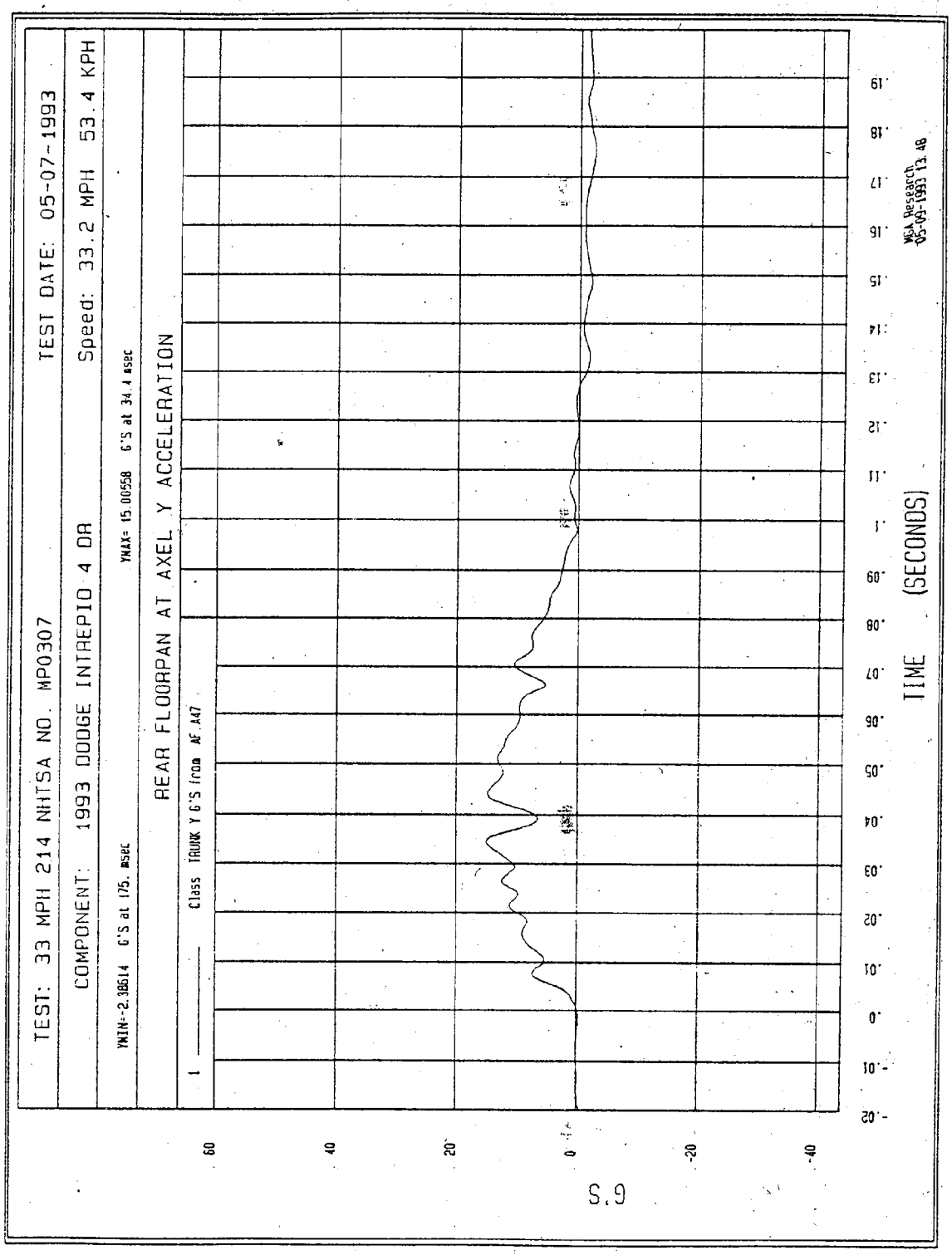


Figure B-74 - Rear Floorpan at Axle Y Acceleration vs. Time

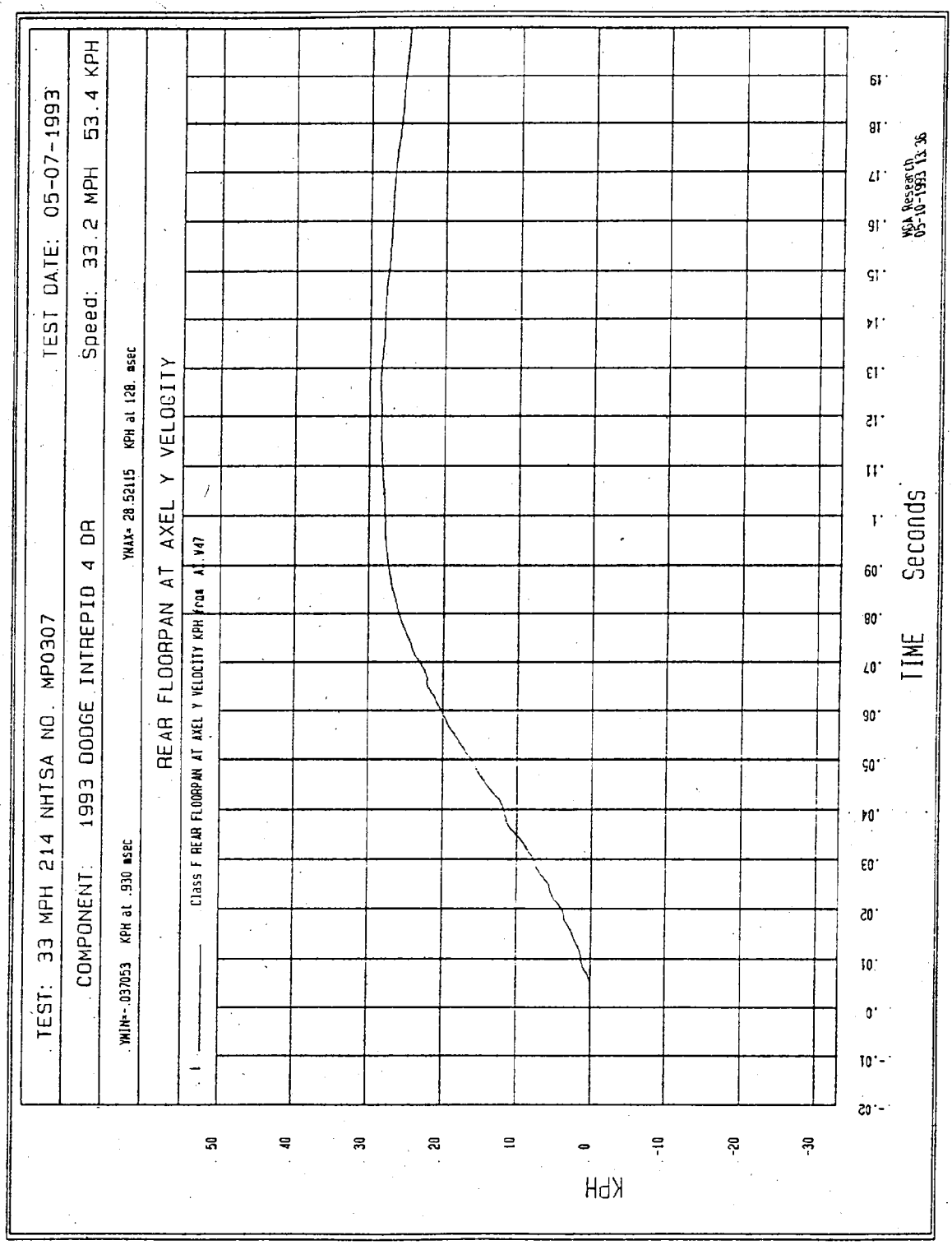


Figure B-75 - Rear Floorpan at Axle Y Velocity vs. Time

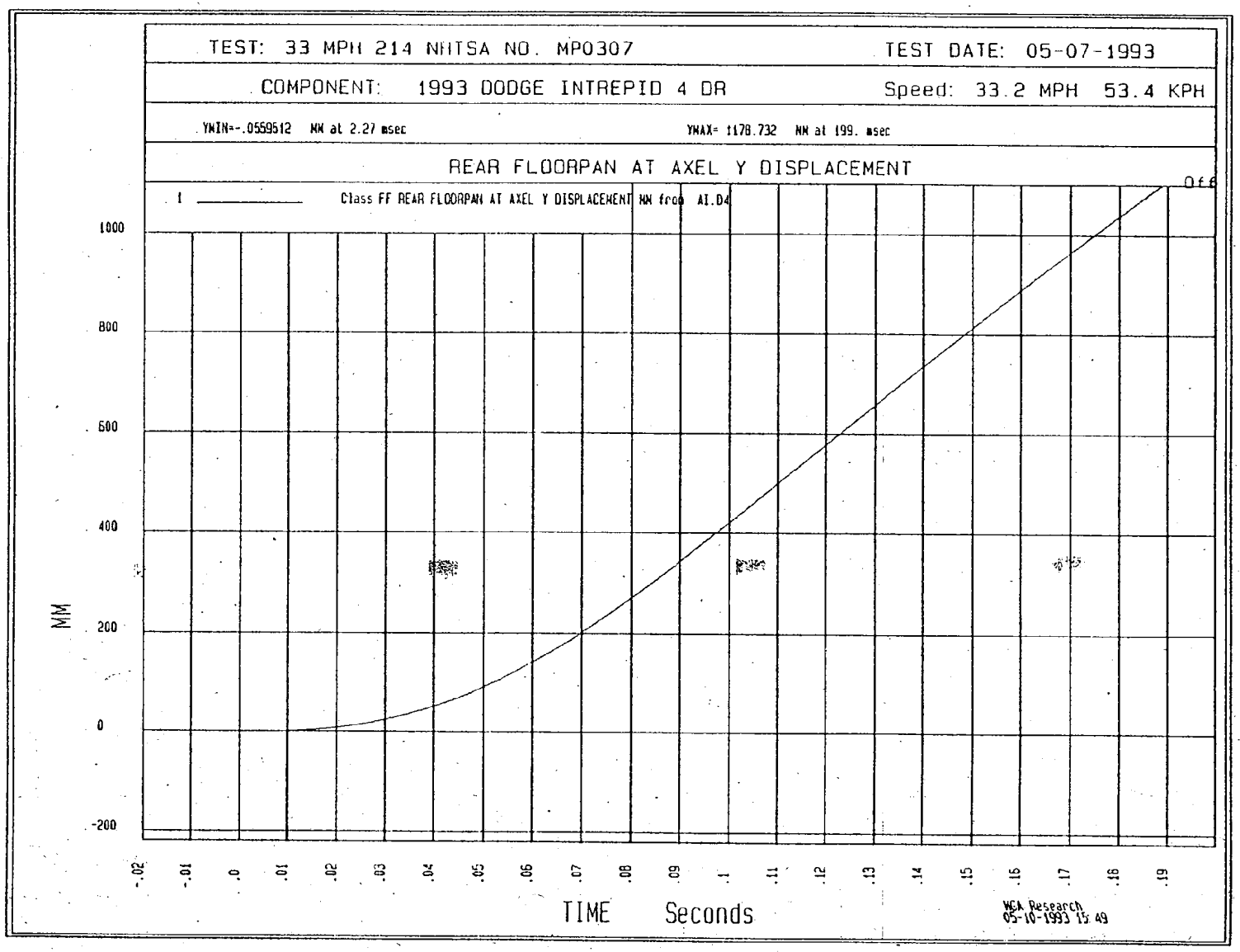


Figure B-76 - Rear Floorpan at Axle Y Displacement vs. Time

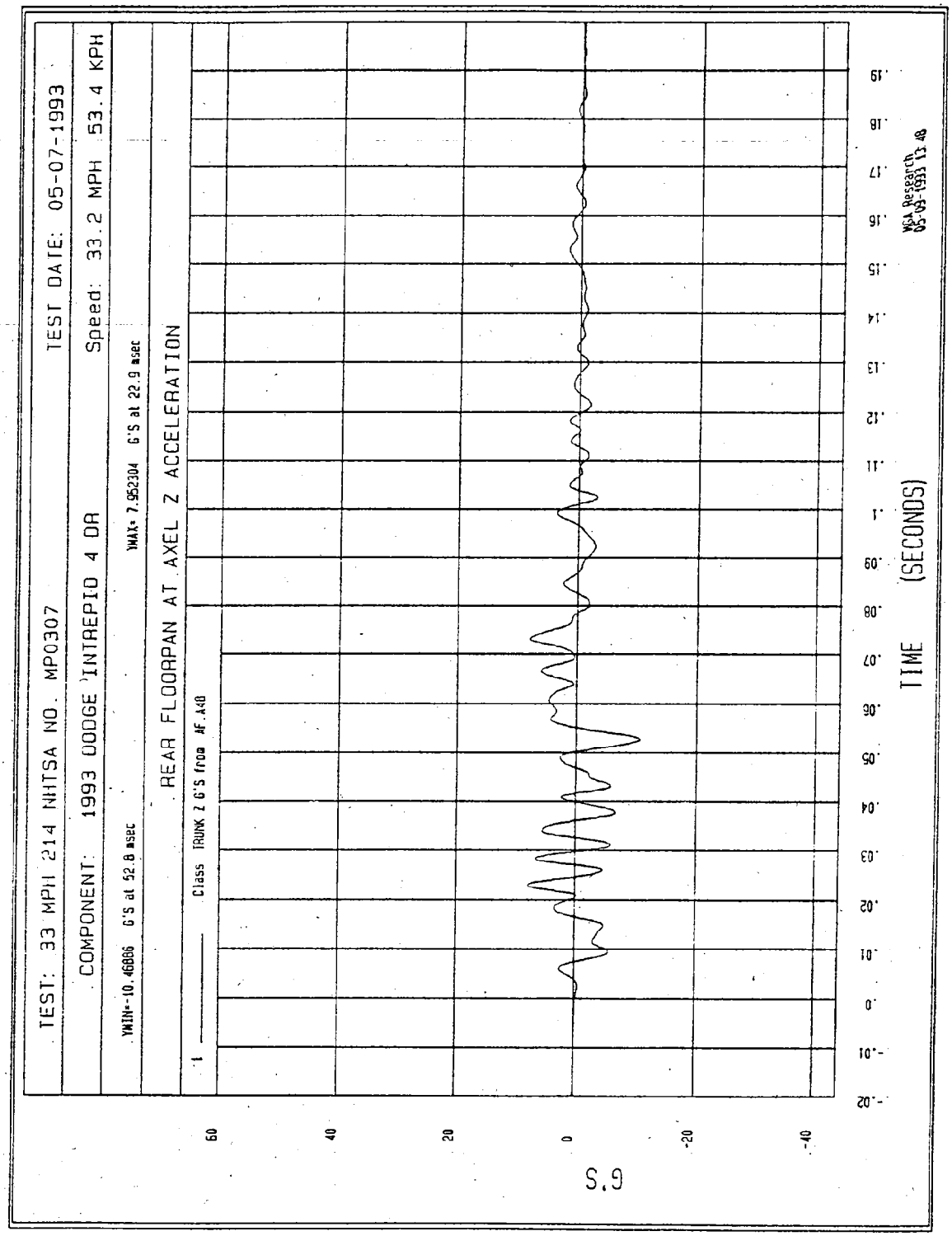


Figure B-77 - Rear Floorpan at Axle Z Acceleration vs. Time

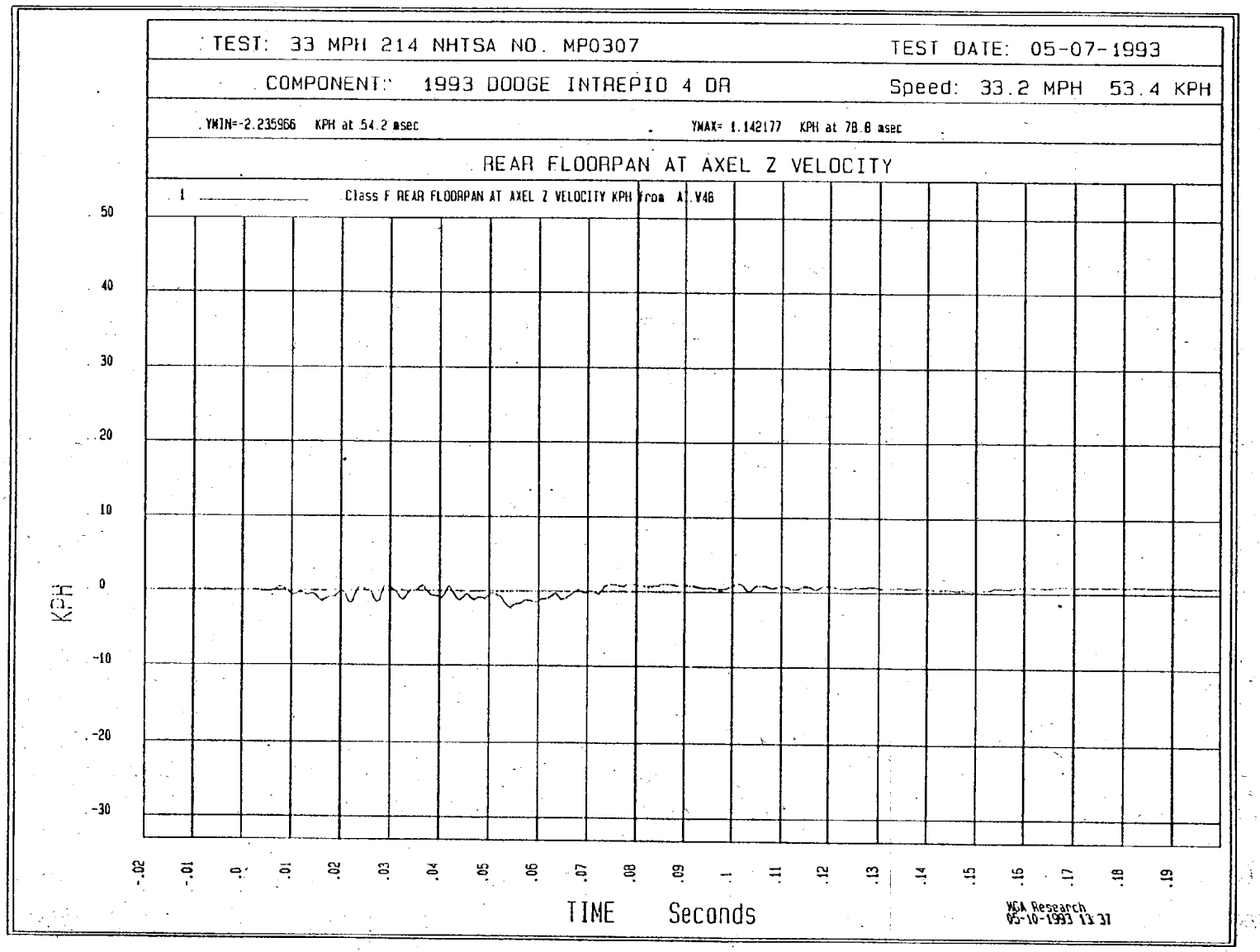


Figure B-78 - Rear Floorpan at Axle Z Velocity vs. Time

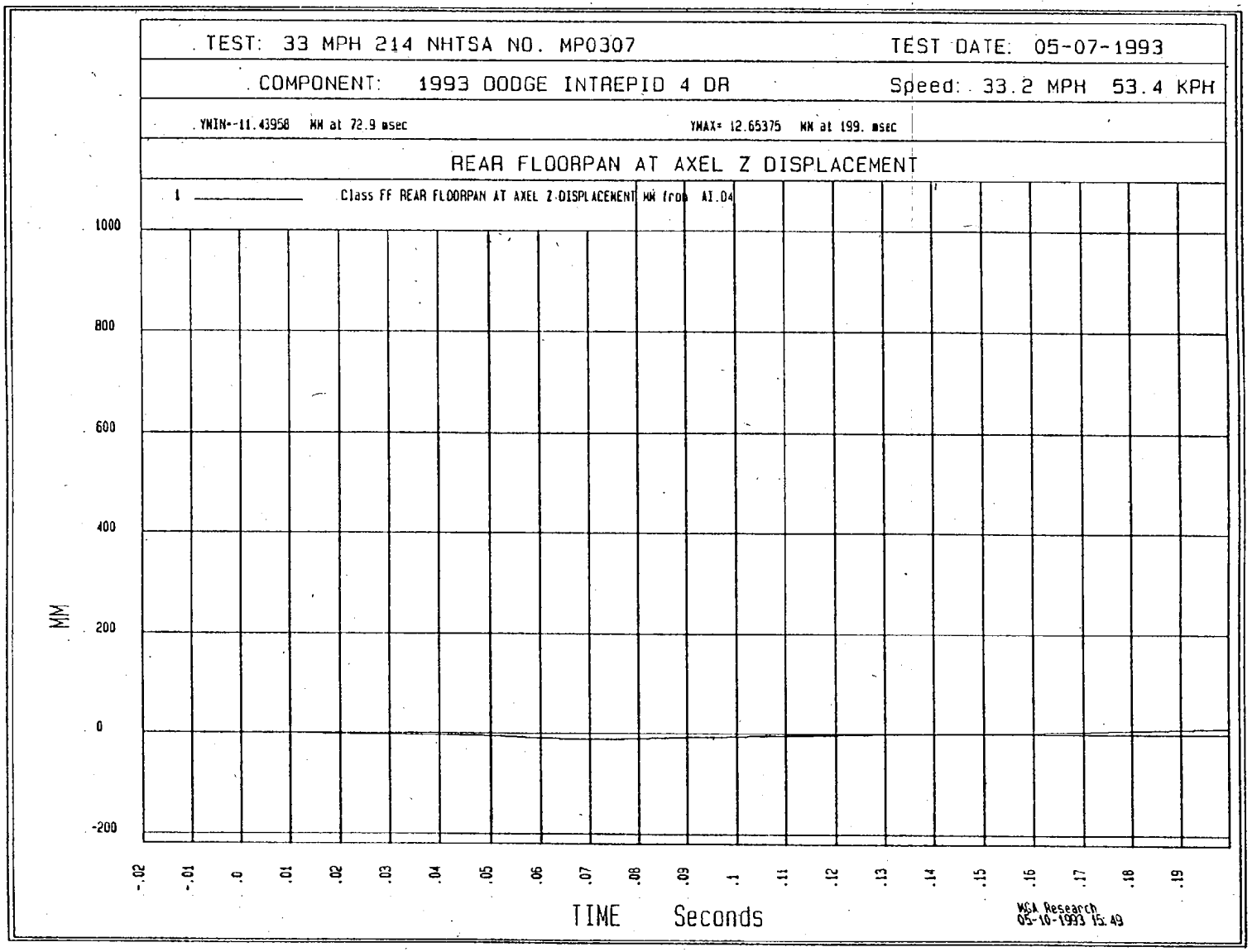
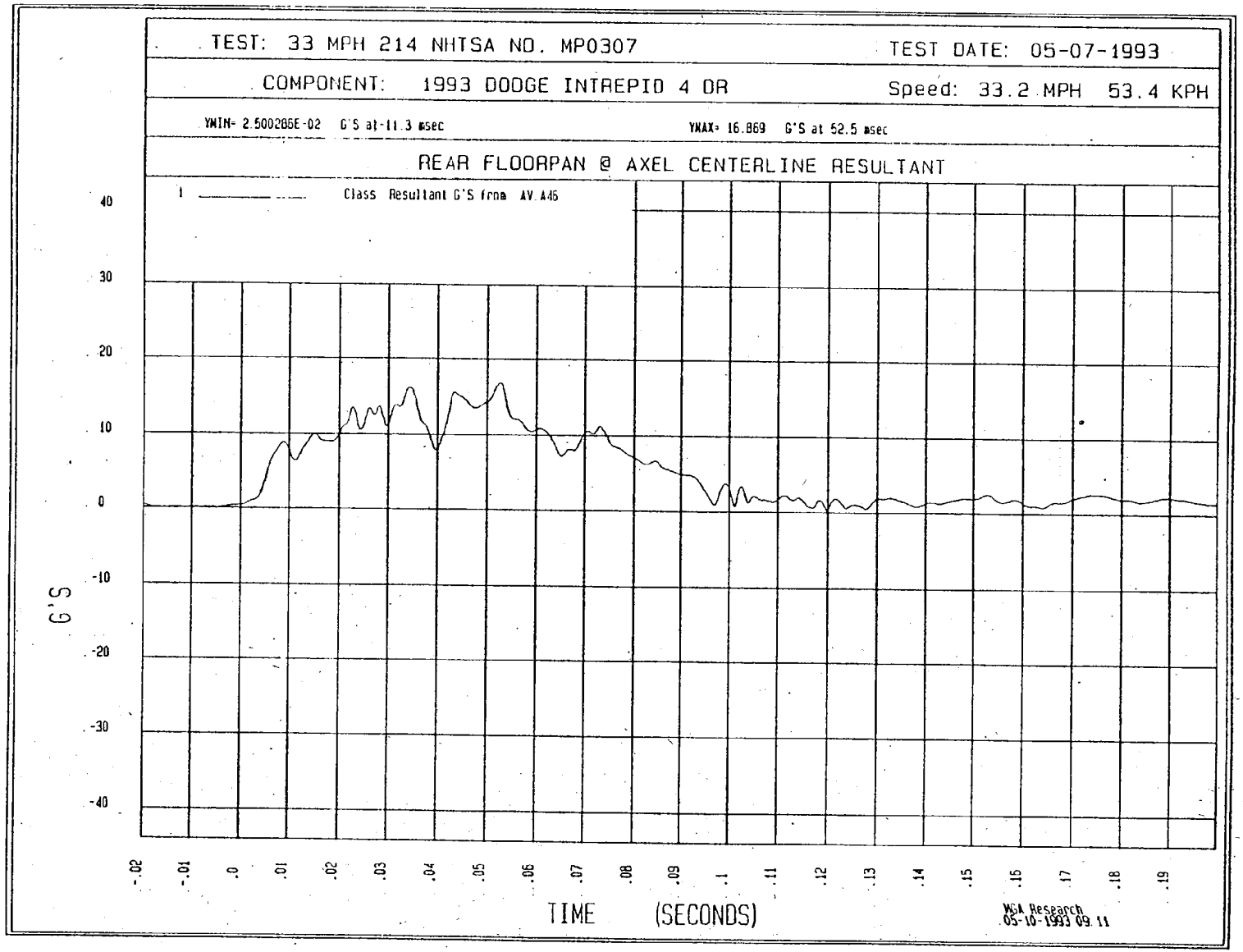


Figure B-79 - Rear Floorpan at Axle Z Displacement vs. Time



B-80

Figure B-80 - Rear Floorpan at Axle Centerline Resultant

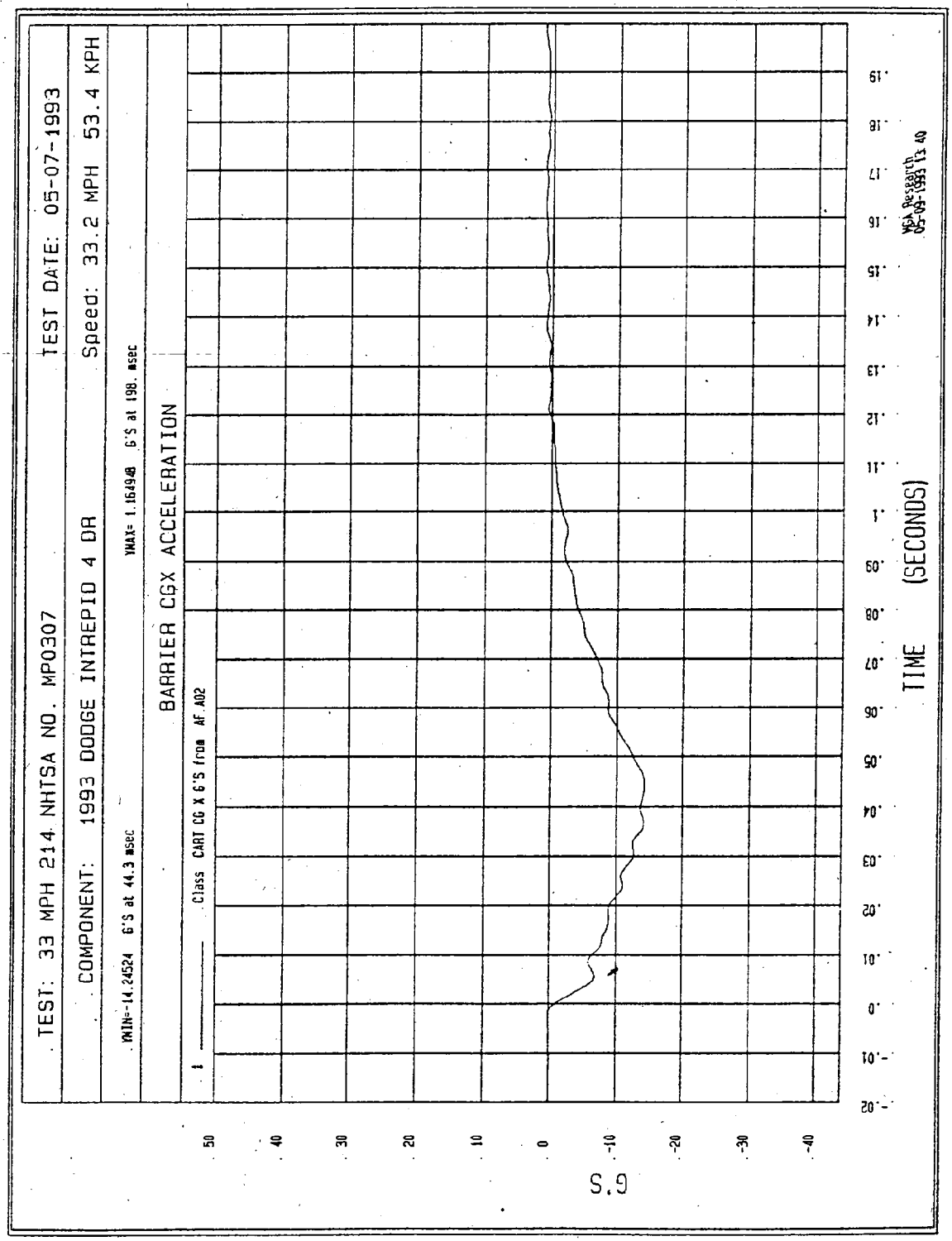


Figure B-81 - MDB Center of Gravity X Accel. vs. Time

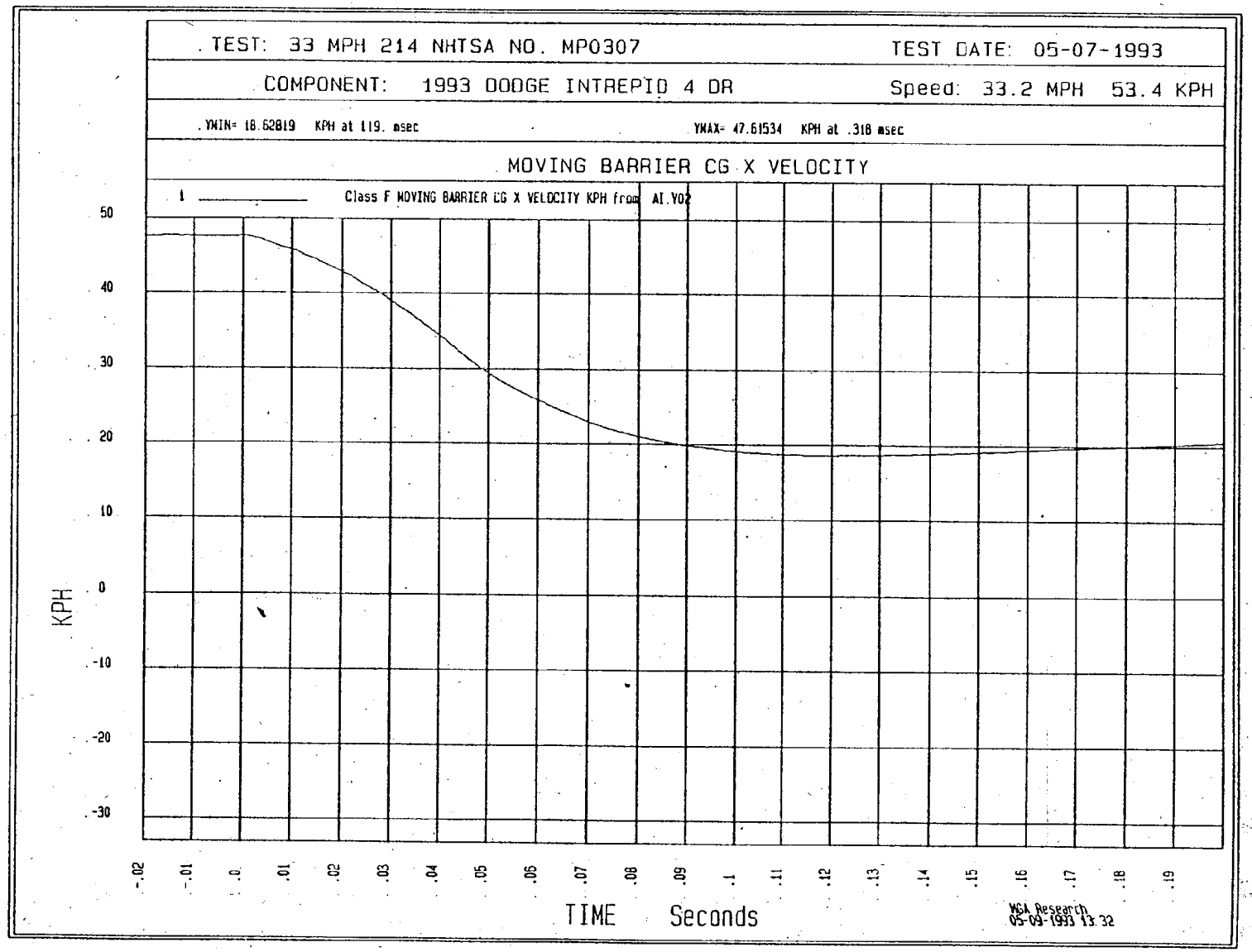


Figure B-82 - MDB Center of Gravity X Velocity vs. Time

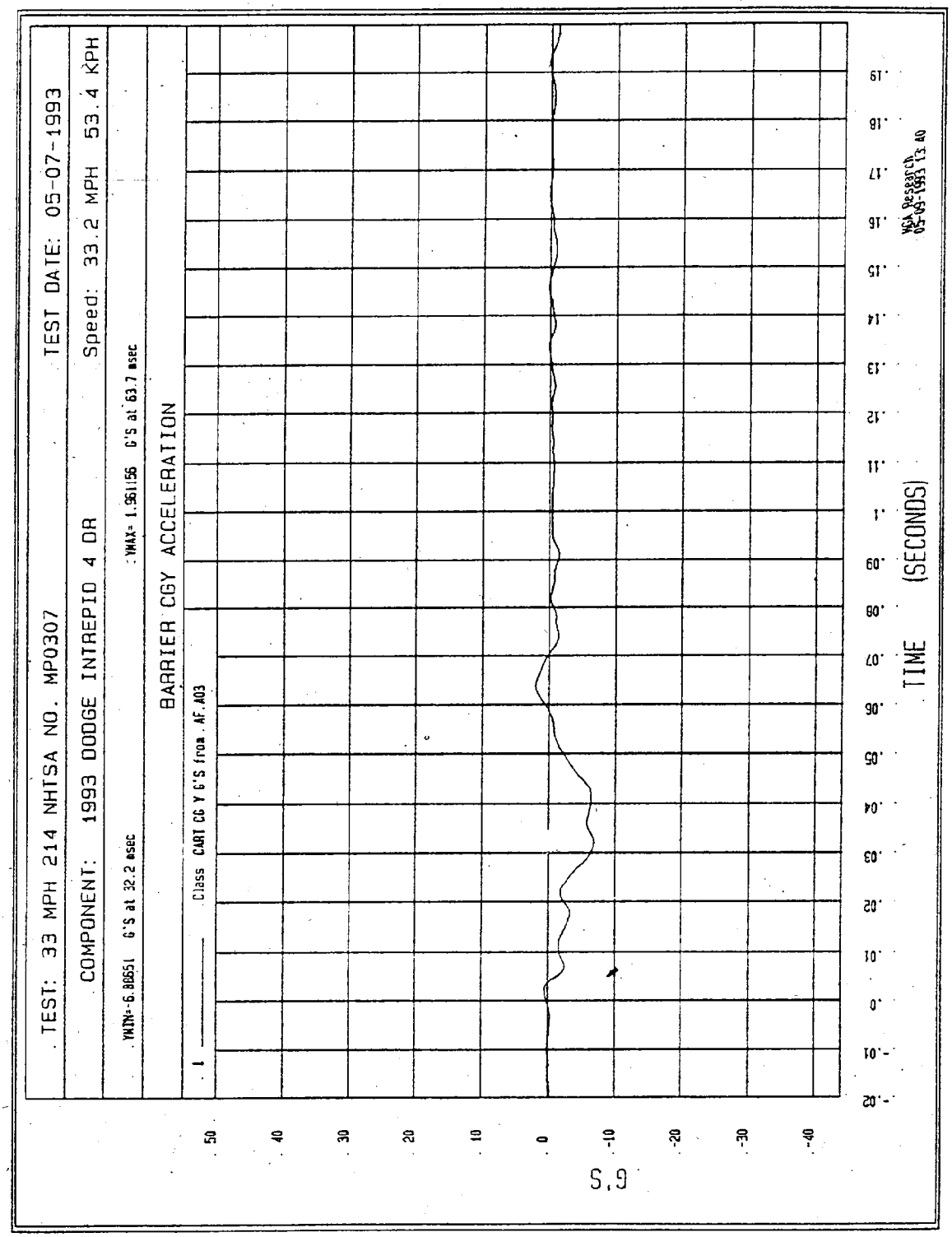


Figure B-83 - MDB Center of Gravity Y Accel. vs. Time

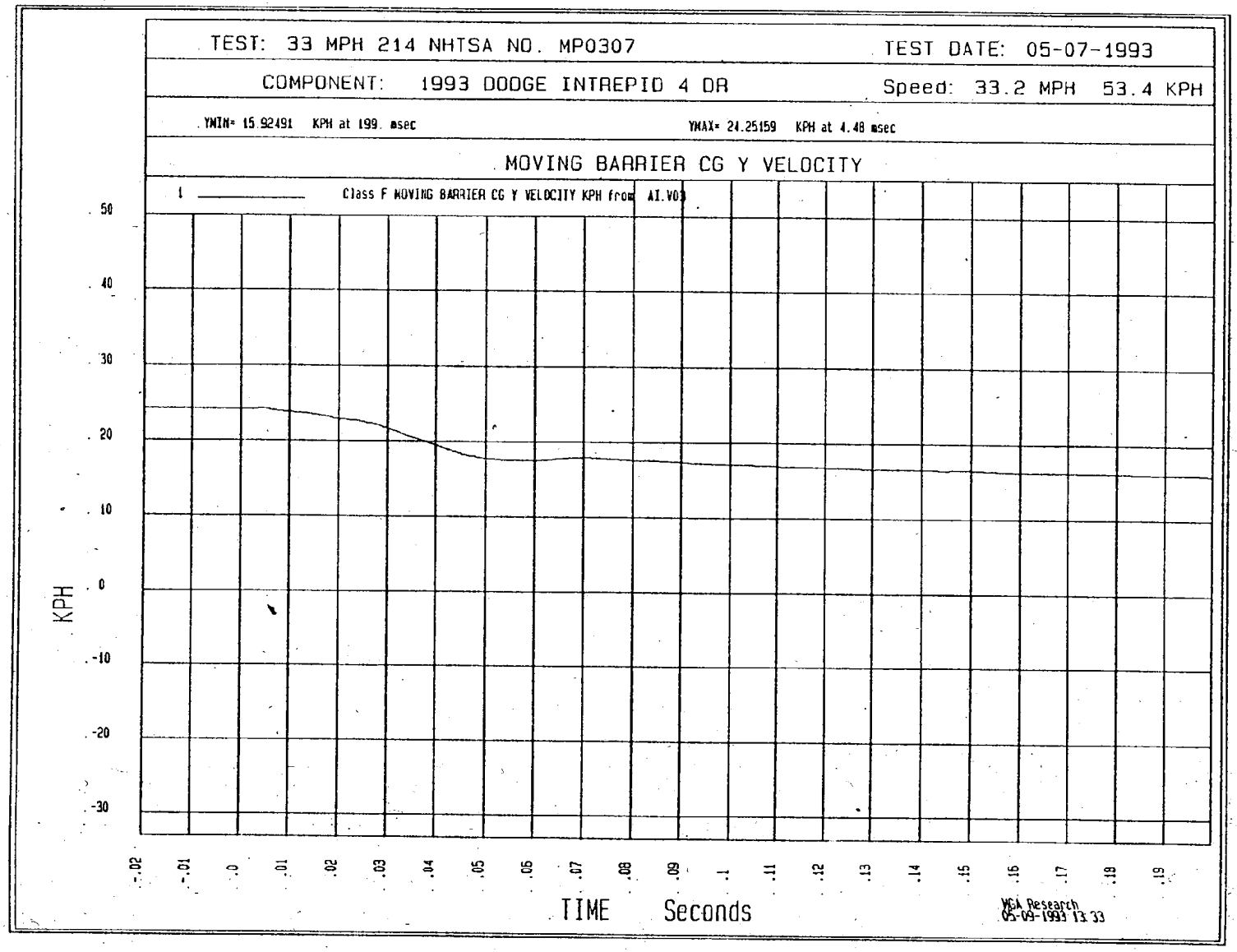


Figure B-84 - MDB Center of Gravity Y Velocity vs. Time

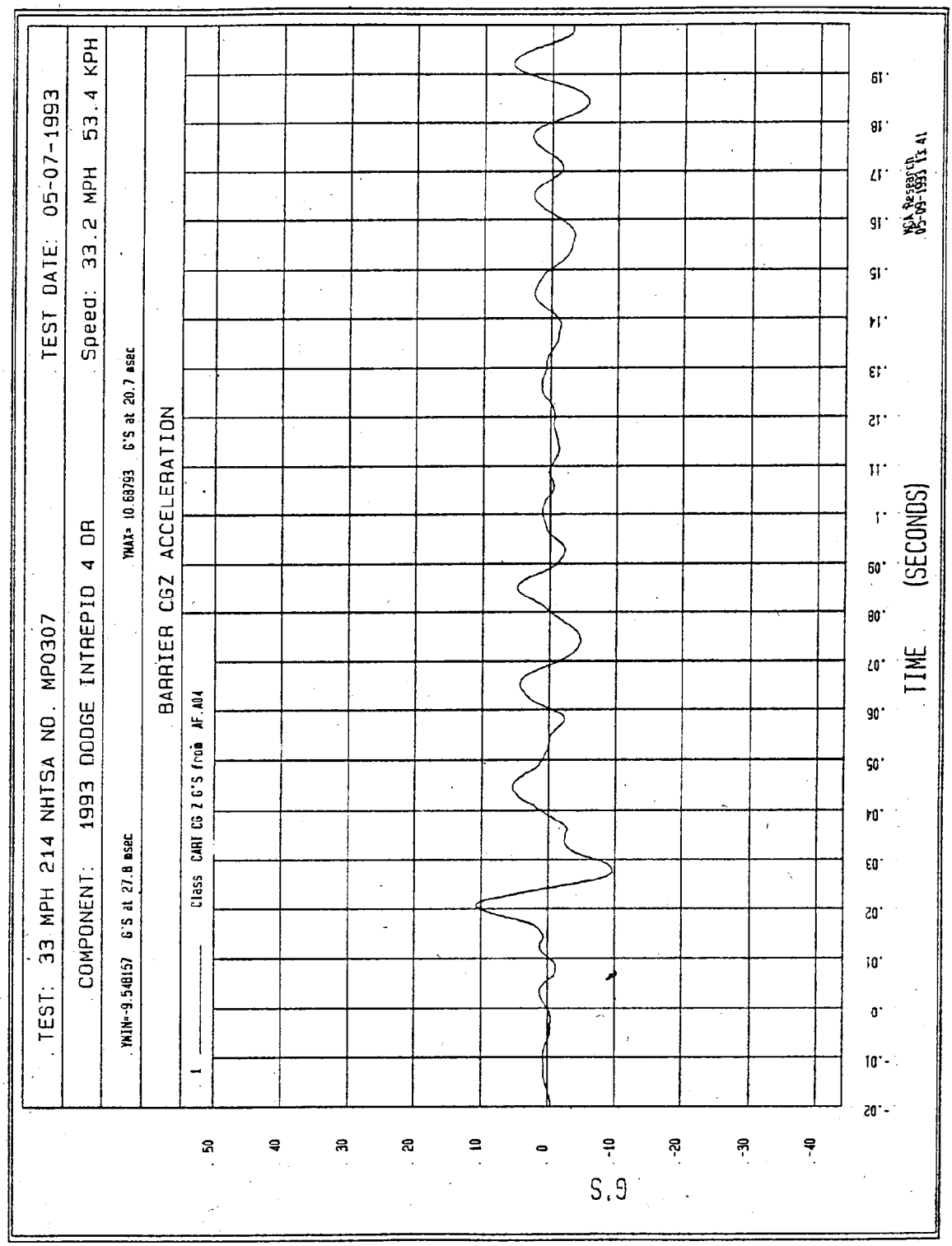


Figure B-85 - MDB Center of Gravity Z Accel. vs. Time

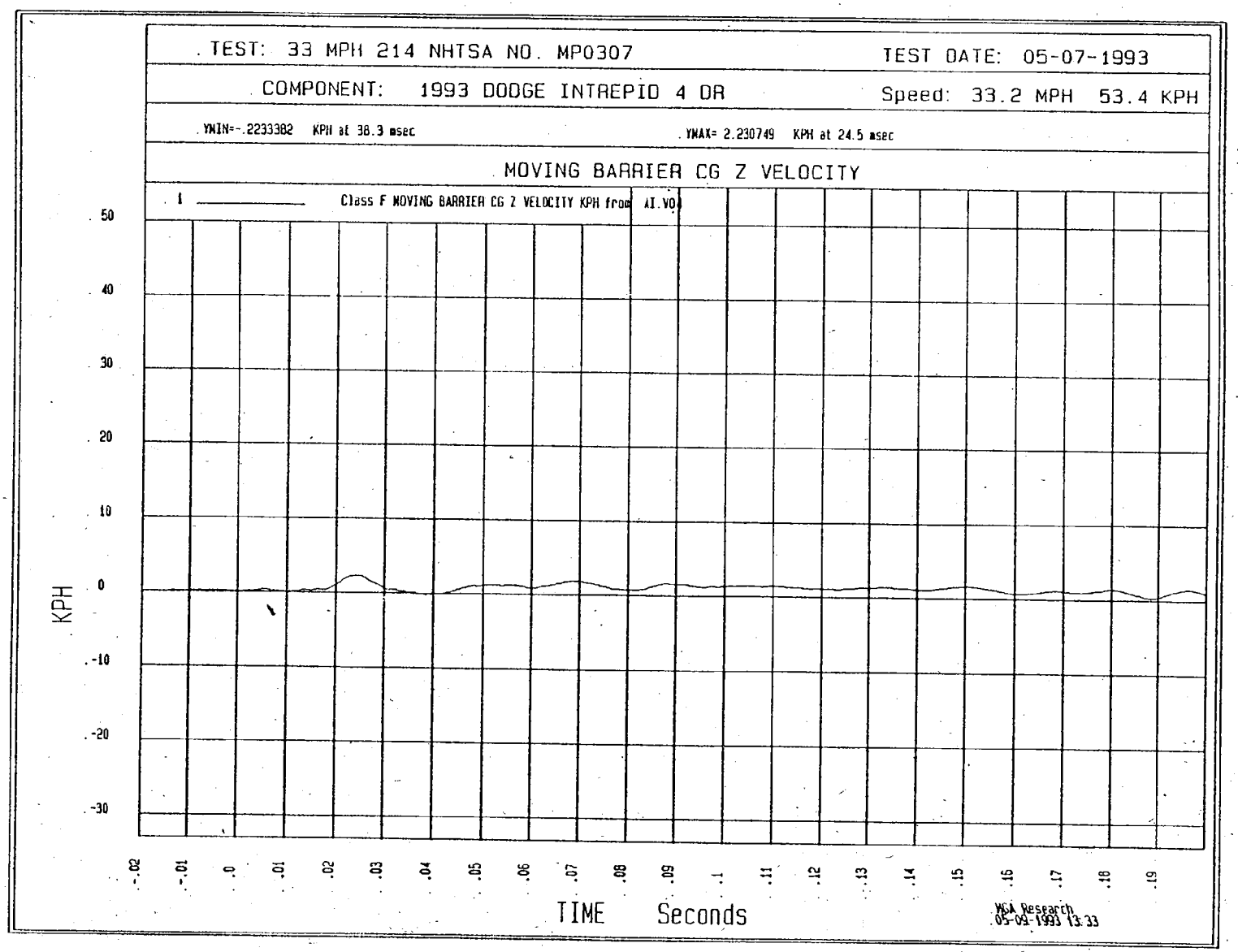


Figure B-86 - MDB Center of Gravity Z Velocity vs. Time

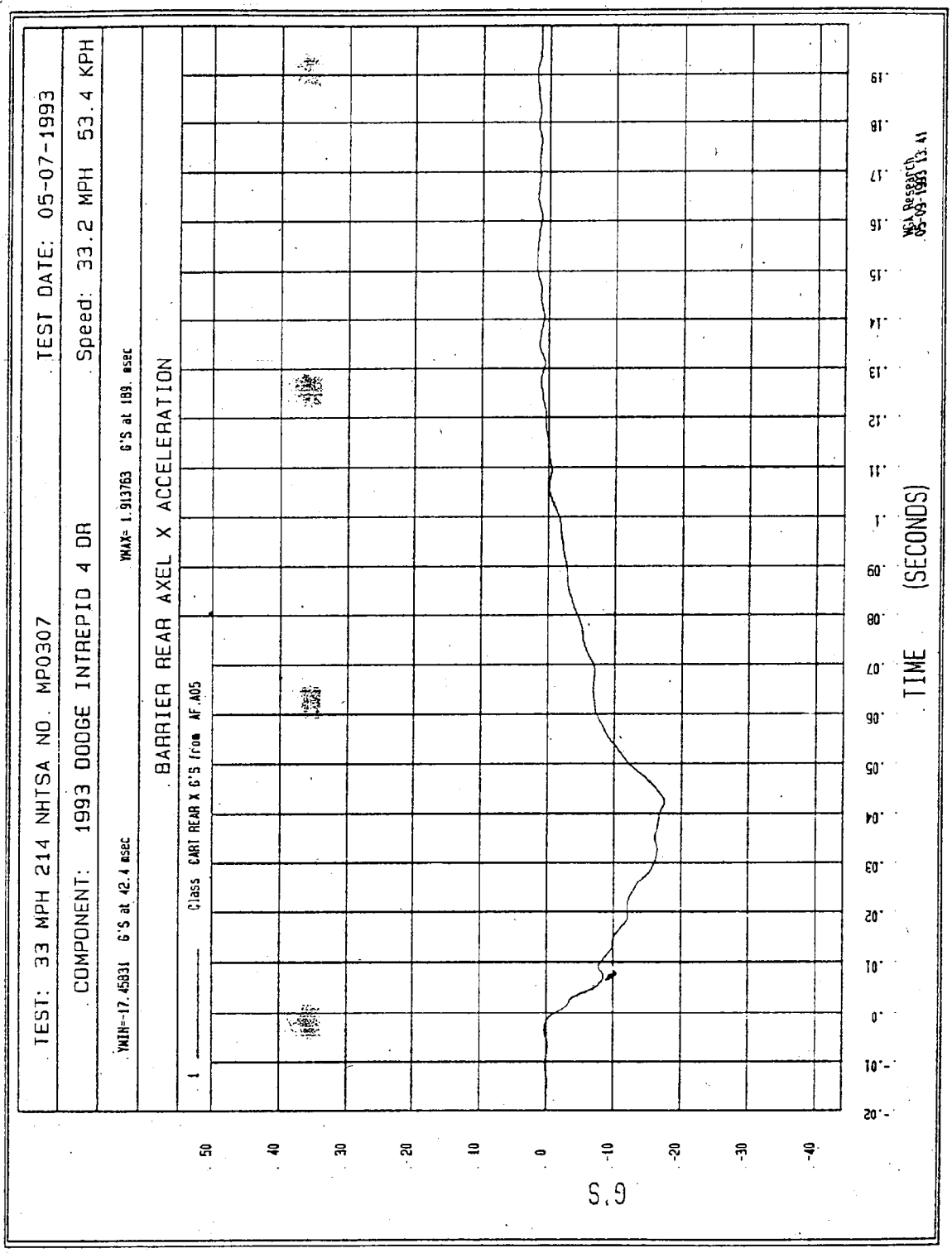
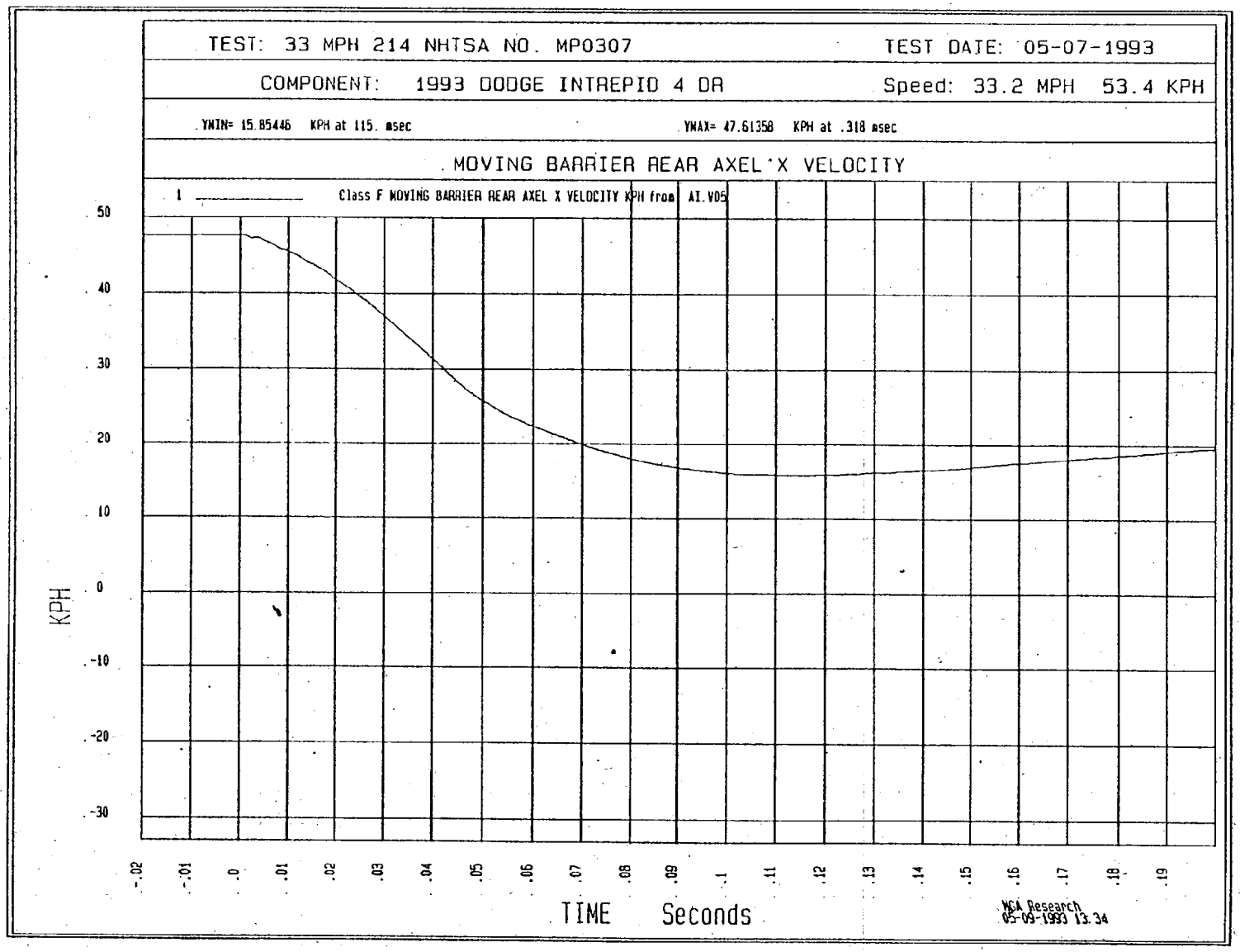


Figure B-87 - MDB Rear X Acceleration vs. Time



B-88

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

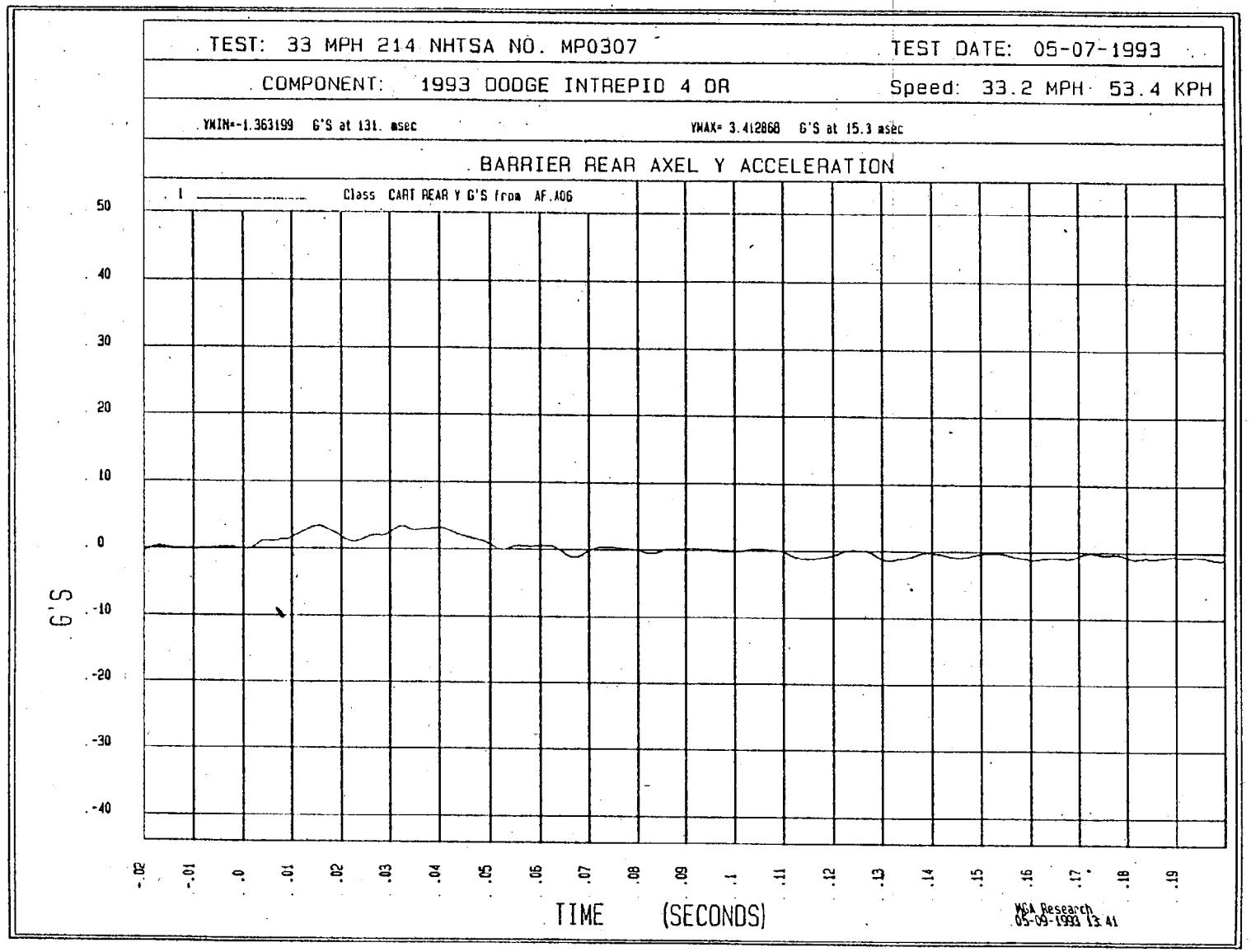
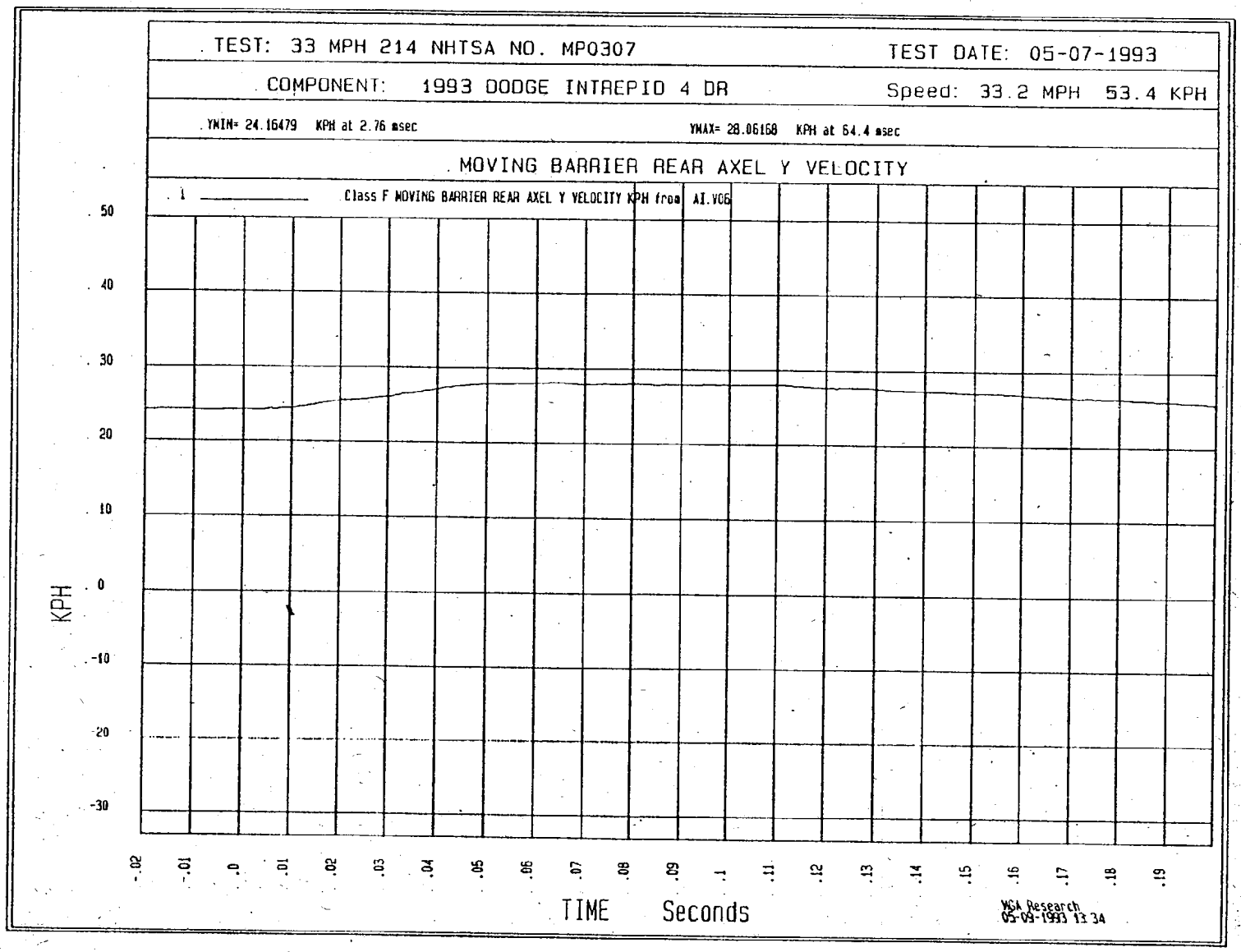


Figure B-89 - MDB Rear Y Acceleration vs. Time



B-90

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

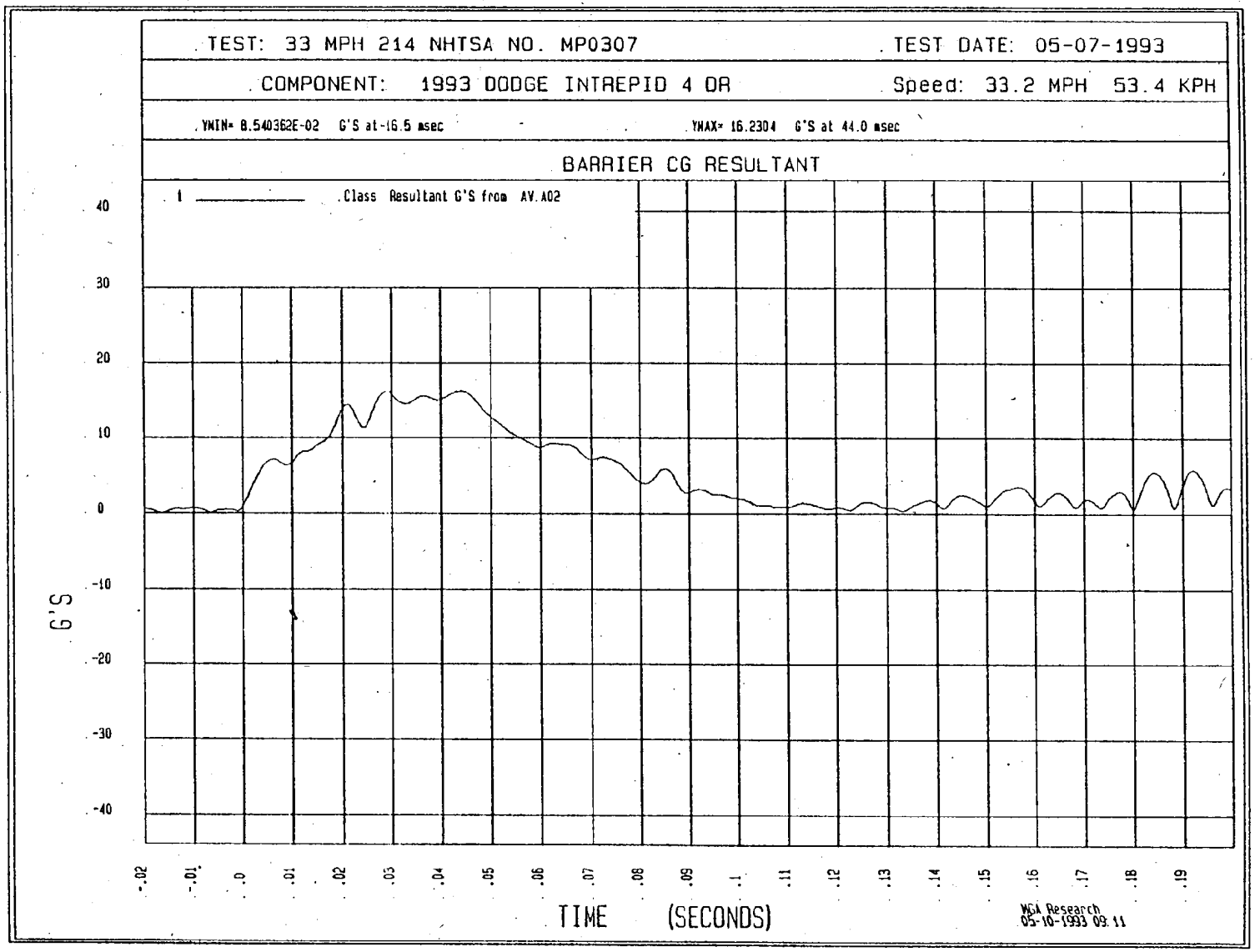


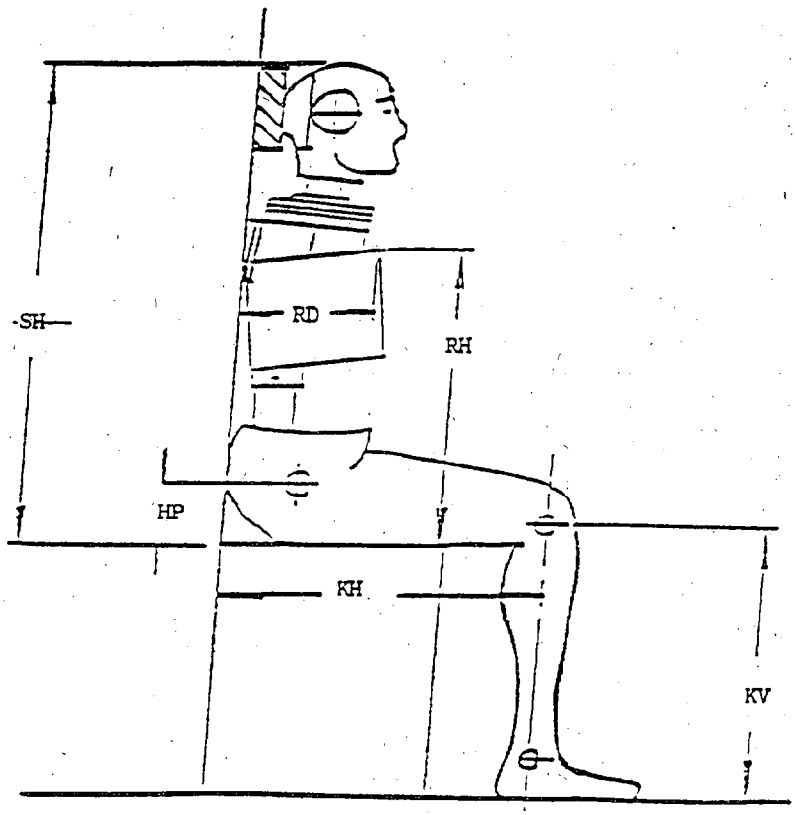
Figure B-91 - MDB Center of Gravity Resultant vs. Time

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: 5-7-93

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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE (CONT.)

II. PERFORMANCE VERIFICATION DATA

DUMMY NO.: 136 DUMMY CALIBRATION BY: Rod McClelland

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

1.0 LUMBAR FLEXION TEST

	SPECIFICATION	MEASUREMENT
Force @ 20°	22 to 34 lbs	25
Force @ 30°	34 to 46 lbs	45
Force @ 40°	46 to 58 lbs	56
Return Angle	12° Maximum	9°

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	42.5
Force @ 1.0 in	50 to 63 lbs	57
Force @ 1.3 in	73 to 88 lbs	82

3.0 THORAX IMPACT TEST

	SPECIFICATION	MEASUREMENT
Probe Speed	13.8 TO 14.2 f/s	13.8
Upper Rib	37 to 46 g	45.65
Lower Rib	37 to 46 g	42.74
Lower Spine	15 to 22 g	20.44

4.0 PELVIC IMPACT TEST

	SPECIFICATION	MEASUREMENT
Probe Speed	13.8 to 14.2 f/s	13.8
Pelvis Acceleration	40 to 60 g	48

SIDE IMPACT DUMMY DATA SHEET

DUMMY #: 136

TEST DATE: 5-7-93

DRIVER	PASSENGER
X	

EXPOSURE	DATE	TYPE OF TEST
1st	5-7-93	NHTSA

1) RIBS ACCELEROMETERS:

	MANUFACTURER	SERIAL NO.	CAL DATE	DLR	CHECKED
UR	Endevco	ACCL3	3-29-93	106.32	X
URR	Endevco	AC764	2-23-93	108.82	X
LR	Endevco	A06MJ	3-29-93	99.41	X
LRR	Endevco	A43MJ	3-29-93	121.68	X

2) SPINE ACCELEROMETERS:

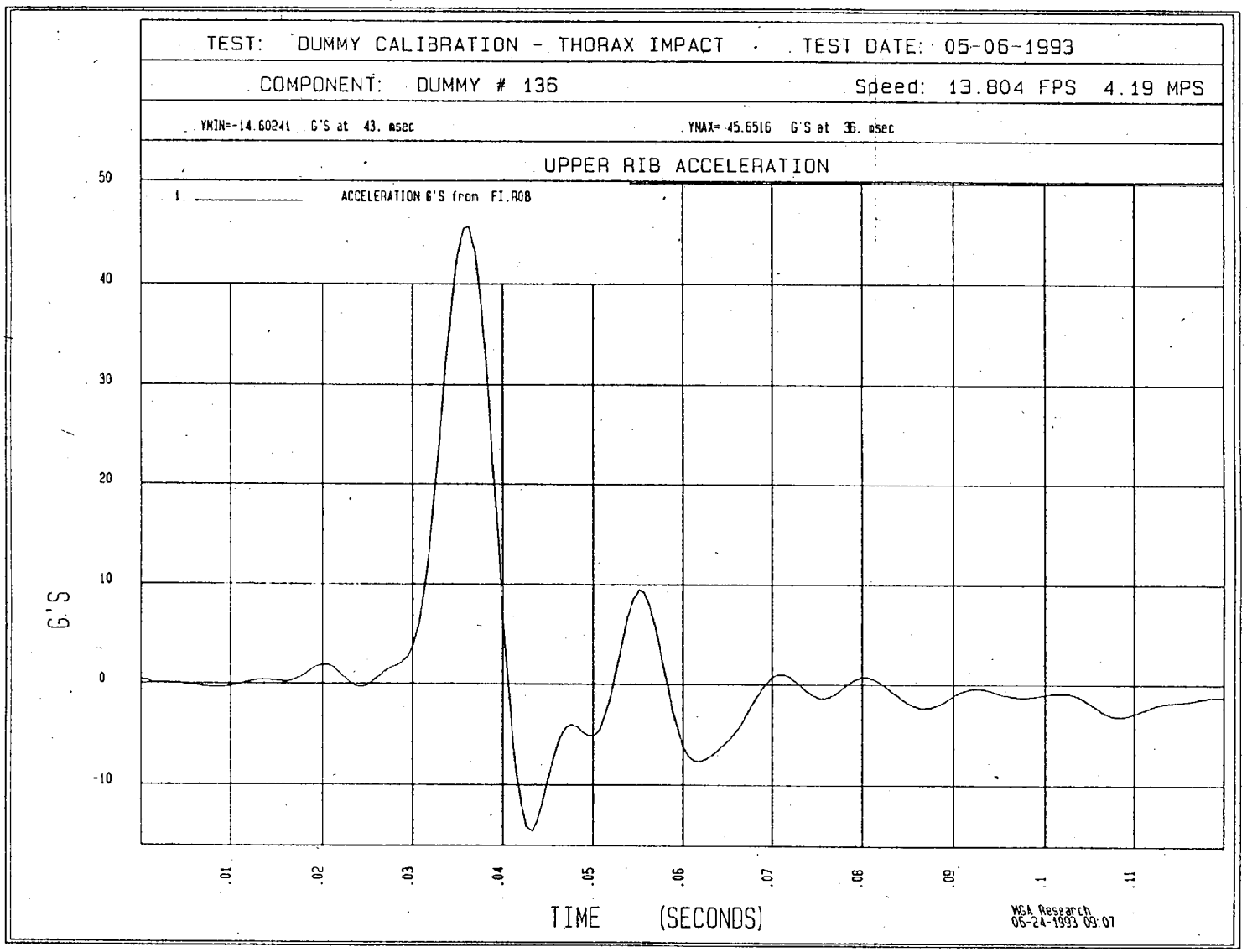
	MANUFACTURER	SERIAL NO.	CAL DATE	DLR	CHECKED
USY	Endevco	ACC00	5-4-93	119.96	X
USRY	Endevco	A82DJ	5-4-93	91.74	X
LSY	Endevco	AC8J4	3-29-93	106.20	X
LSRY	Endevco	A07M	3-29-93	88.7	X

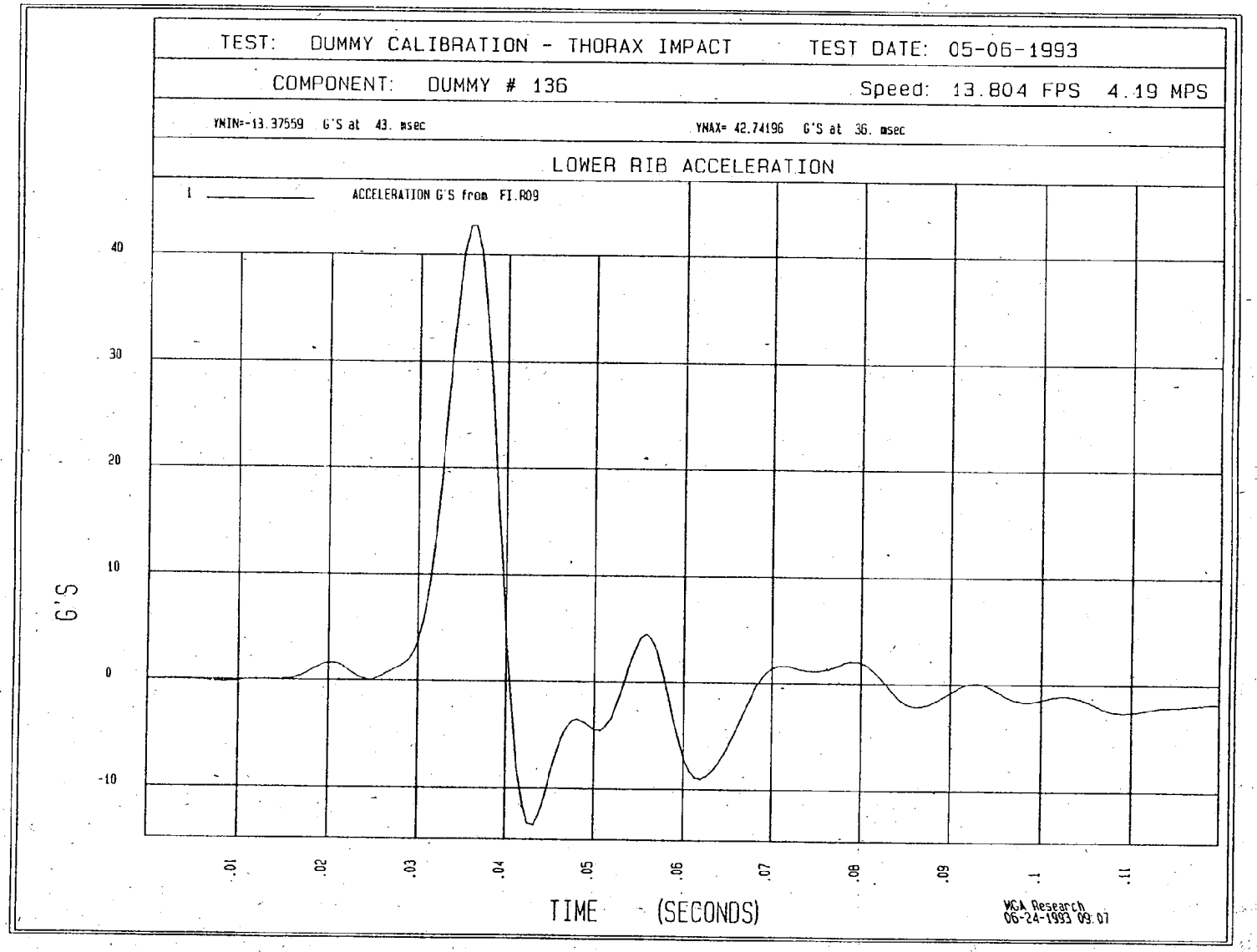
3) PELVIS ACCELEROMETERS:

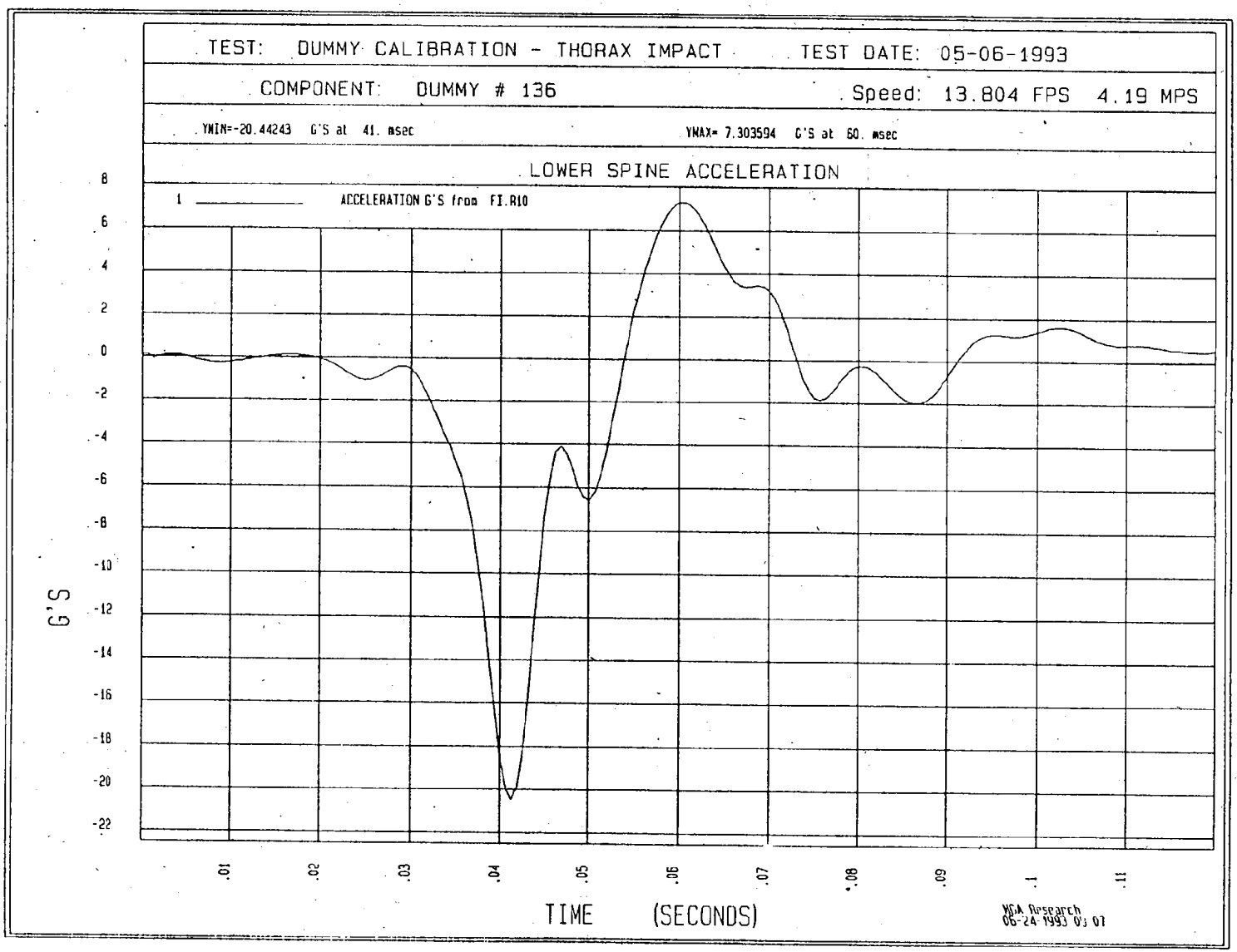
	MANUFACTURER	SERIAL NO.	CAL DATE	DLR	CHECKED
Y	Endevco	EH45	5-4-93	129.20	X
RY	Endevco	A99L	5-4-93	101.50	X

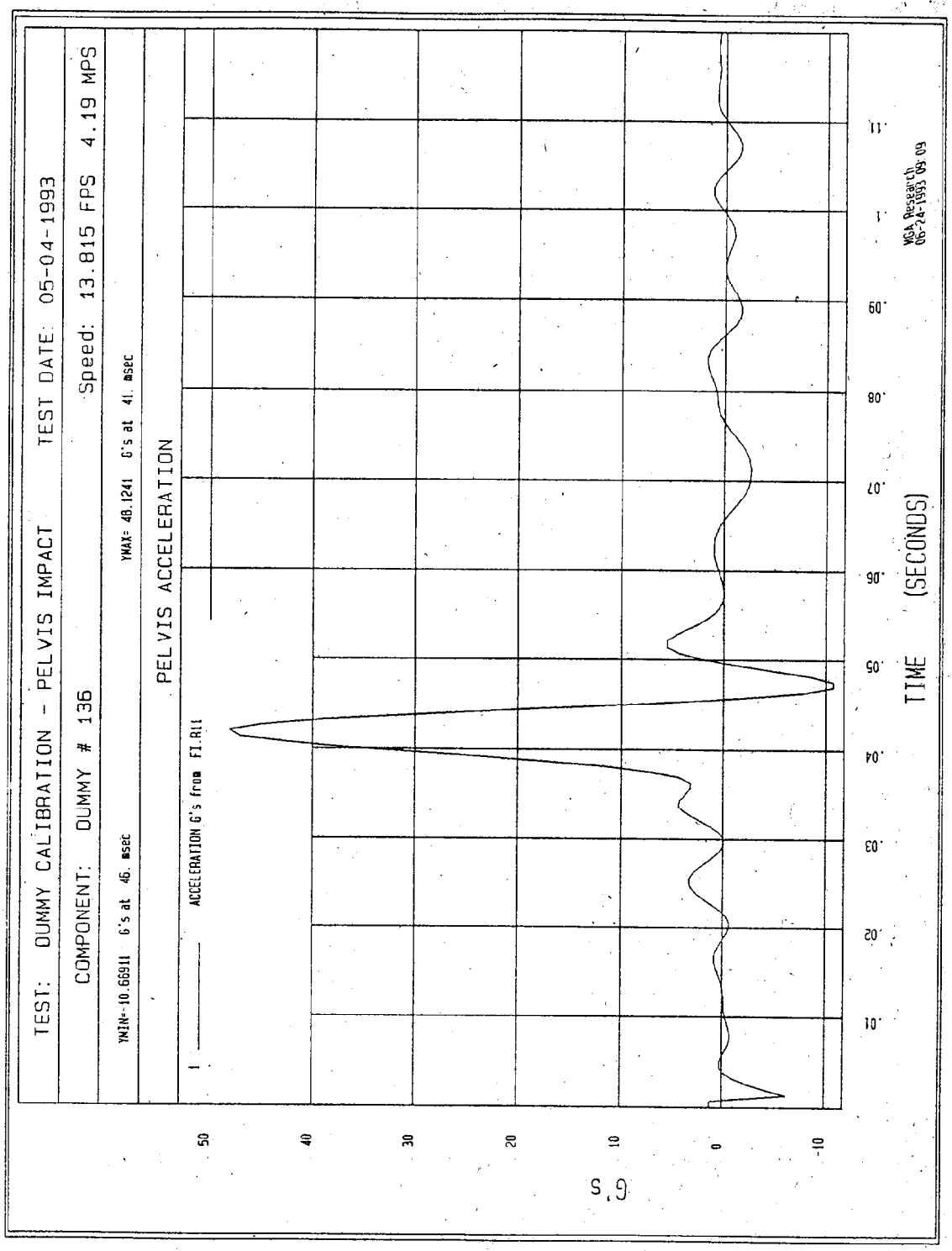
DUMMY INSTRUMENTED BY: Rod McClelland

APPROVED BY: Rod McClelland

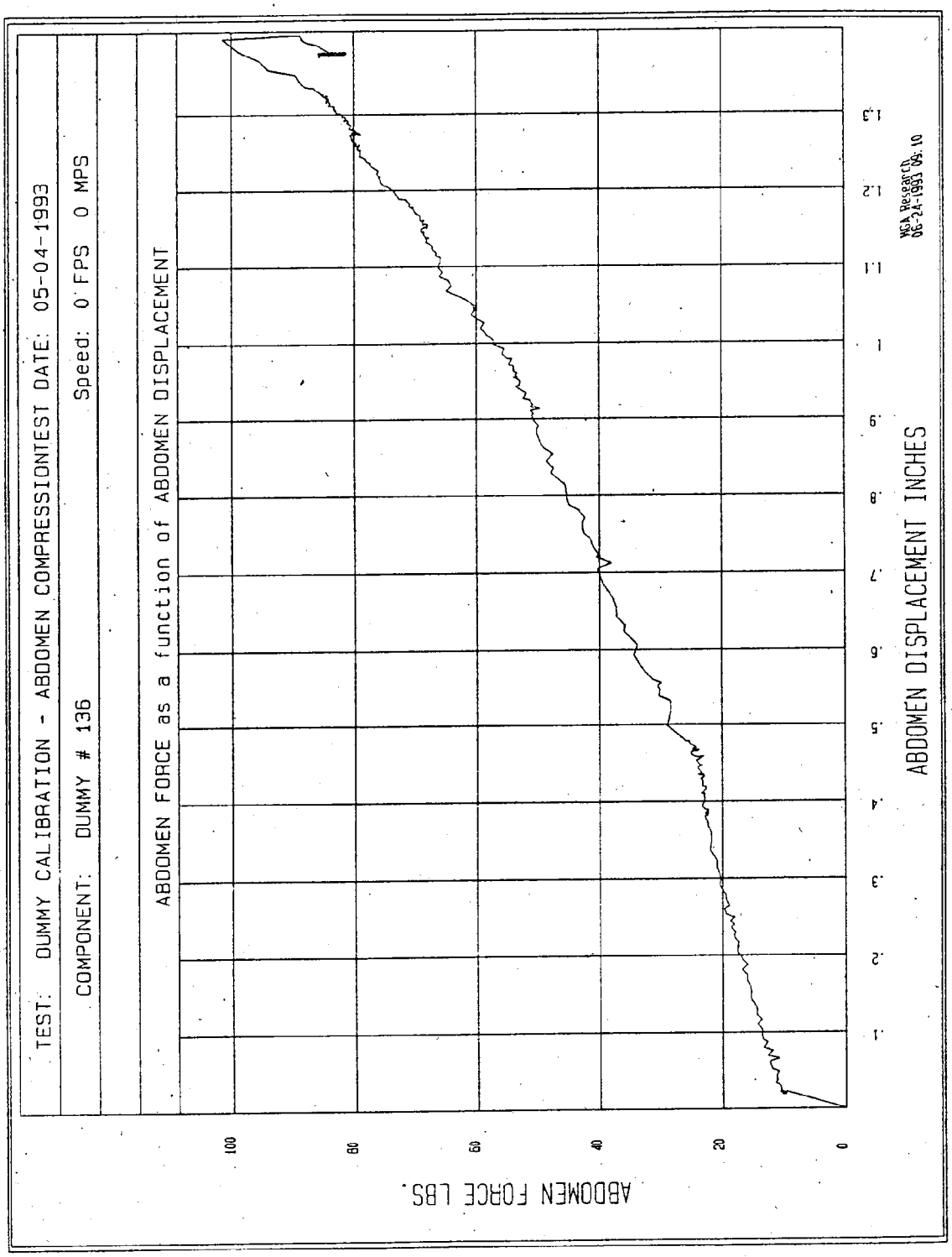

TEST: DUMMY CALIBRATION - THORAX IMPACT
TEST DATE: 05-06-1993
COMPONENT: DUMMY # 136
Speed: 13.804 FPS 4.19 MPS
YMIN=-14.60241 G'S at 43. msec
YMAX= 45.6516 G'S at 36. msec
UPPER RIB ACCELERATION
ACCELERATION G'S from FI.R08
50
40
30
20
10
0
-10
G'S
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
TIME (SECONDS)
MGA Research
06-24-1993 09:07


TEST: DUMMY CALIBRATION - THORAX IMPACT
TEST DATE: 05-06-1993
COMPONENT: DUMMY # 136
Speed: 13.804 FPS 4.19 MPS
YMIN=-13.37559 G'S at 43. msec
YMAX= 42.74196 G'S at 36. msec
LOWER RIB ACCELERATION
1 ACCELERATION G'S from FI.R09
40
30
20
10
0
-10
G'S
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
TIME (SECONDS)
MGA Research
06-24-1993 09:07

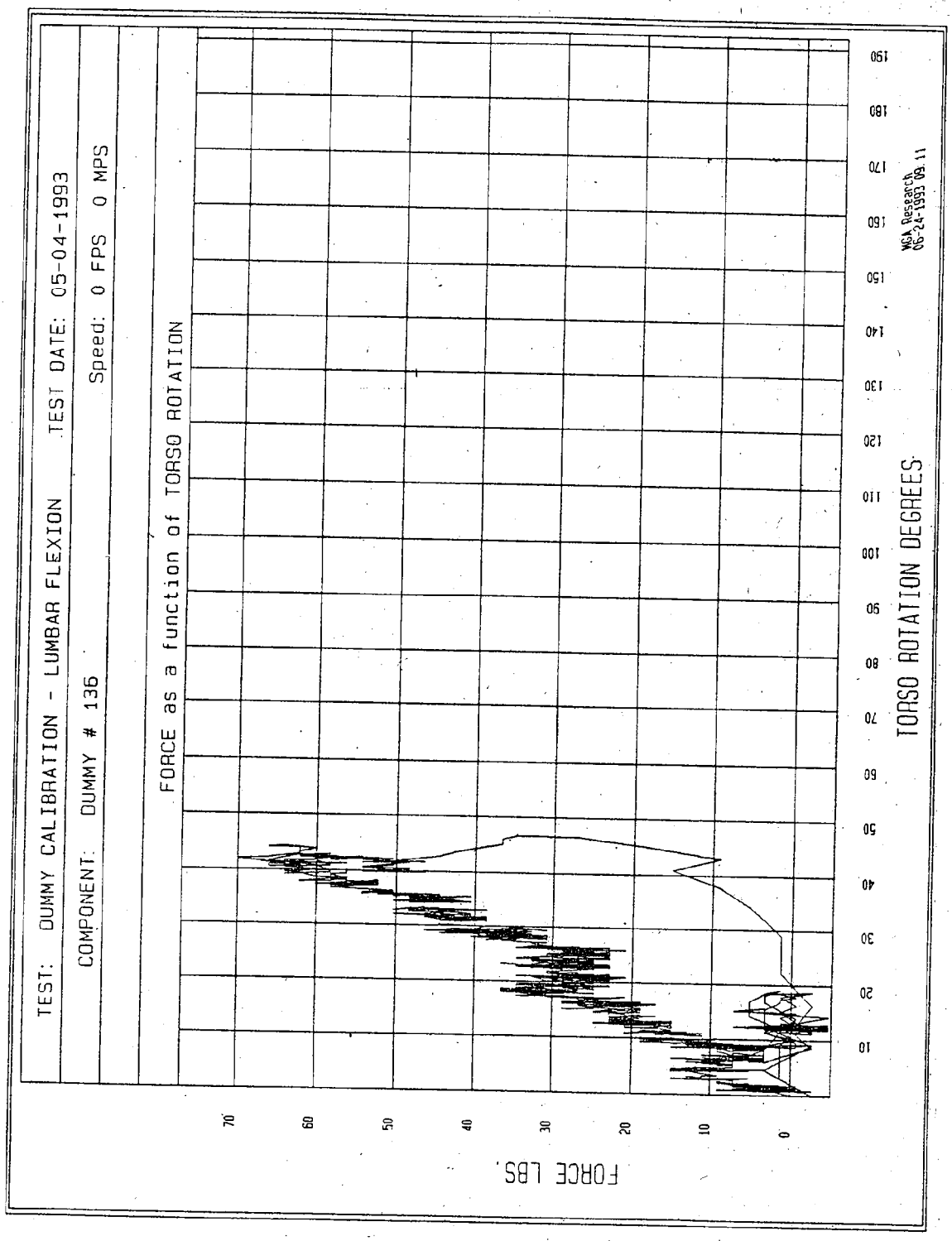

TEST: DUMMY CALIBRATION - THORAX IMPACT
TEST DATE: 05-06-1993
COMPONENT: DUMMY # 136
Speed: 13.804 FPS 4.19 MPS
YMIN=-20.44243 G'S at 41. msec
YMAX= 7.303594 G'S at 60. msec
LOWER SPINE ACCELERATION
1 ACCELERATION G'S from FI.R10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
G'S
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
TIME (SECONDS)
MGA Research
06-24-1993 09:07


TEST: DUMMY CALIBRATION - PELVIS IMPACT
TEST DATE: 05-04-1993
COMPONENT: DUMMY # 136
Speed: 13.815 FPS 4.19 MPS
YMIN=-10.66911 G's at 46. msec
YMAX= 48.1241 G's at 41. msec
PELVIS ACCELERATION
1 ACCELERATION G's from FI.R11
G's
50
40
30
20
10
0
-10
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
TIME (SECONDS)
MGA Research
06-24-1993 08:09

C-8


TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSIONTEST DATE: 05-04-1993
COMPONENT: DUMMY # 136 Speed: 0 FPS 0 MPS
ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT
ABDOMEN FORCE LBS.
100
80
60
40
20
0
1
2
3
4
5
6
7
8
9
1
1.1
1.2
1.3
ABDOMEN DISPLACEMENT INCHES
WSA Research
06-24-1993 09:10

C-9

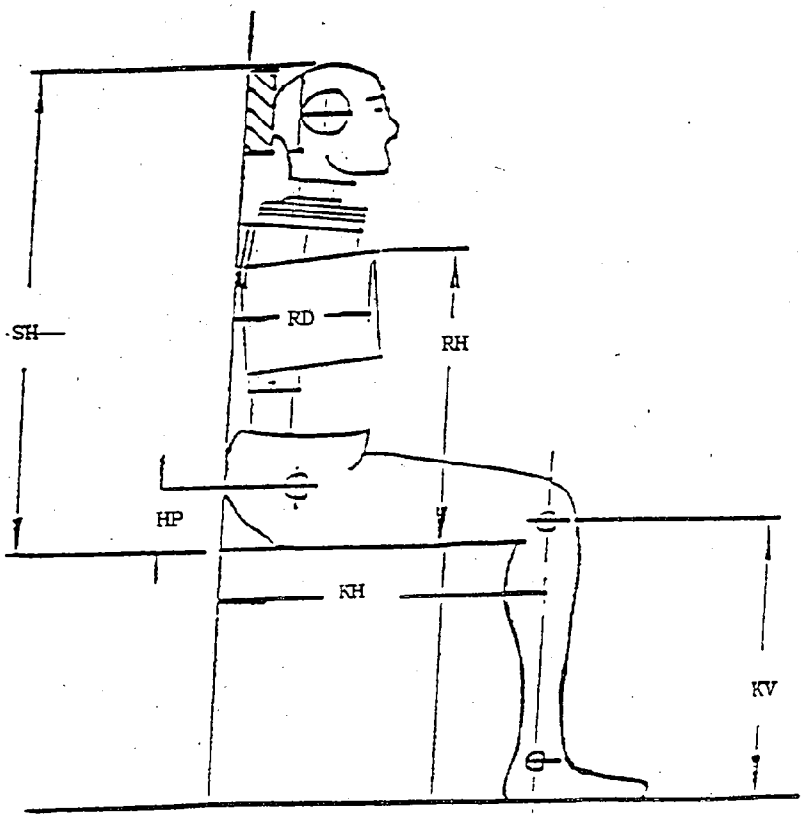

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 05-04-1993
COMPONENT: DUMMY # 136 Speed: 0 FPS 0 MPS
FORCE as a function of TORSO ROTATION
FORCE LBS.
TORSO ROTATION DEGREES
MGA Research
06-24-1993 09:11

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: 5-7-93

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

1.0 LUMBAR FLEXION TEST

	SPECIFICATION	MEASUREMENT
Force @ 20°	22 to 34 lbs	31
Force @ 30°	34 to 46 lbs	41
Force @ 40°	46 to 58 lbs	58
Return Angle	12° Maximum	6°

2.0 ABDOMINAL COMPRESSION TEST
(Preload = 10 lbs)

	SPECIFICATION	MEASUREMENT
Force @ 0.5 in	23.3 to 36.5 lbs	26.2
Force @ 0.75 in	36.7 to 49.8 lbs	39.5
Force @ 1.0 in	50 to 63 lbs	53
Force @ 1.3 in	73 to 88 lbs	84

3.0 THORAX IMPACT TEST

	SPECIFICATION	MEASUREMENT
Probe Speed	13.8 TO 14.2 f/s	13.9
Upper Rib	37 to 46 g	40
Lower Rib	37 to 46 g	37
Lower Spine	15 to 22 g	21

4.0 PELVIC IMPACT TEST

	SPECIFICATION	MEASUREMENT
Probe Speed	13.8 to 14.2 f/s	13.8
Pelvis Acceleration	40 to 60 g	54

SIDE IMPACT DUMMY DATA SHEET

DUMMY #: 137

TEST DATE: 5-7-93

DRIVER	PASSENGER
	X

EXPOSURE	DATE	TYPE OF TEST
1st	5-7-93	NHTSA

1) RIBS ACCELEROMETERS:

	MANUFACTURER	SERIAL NO.	CAL DATE	DLR	CHECKED
UR	Endevco	ACC68	3-29-93	111.85	X
URR	Endevco	AC8A4	3-29-93	92.82	X
LR	Endevco	AC8R2	3-29-93	112.24	X
LRR	Endevco	AC8J9	2-23-93	113.04	X

2) SPINE ACCELEROMETERS:

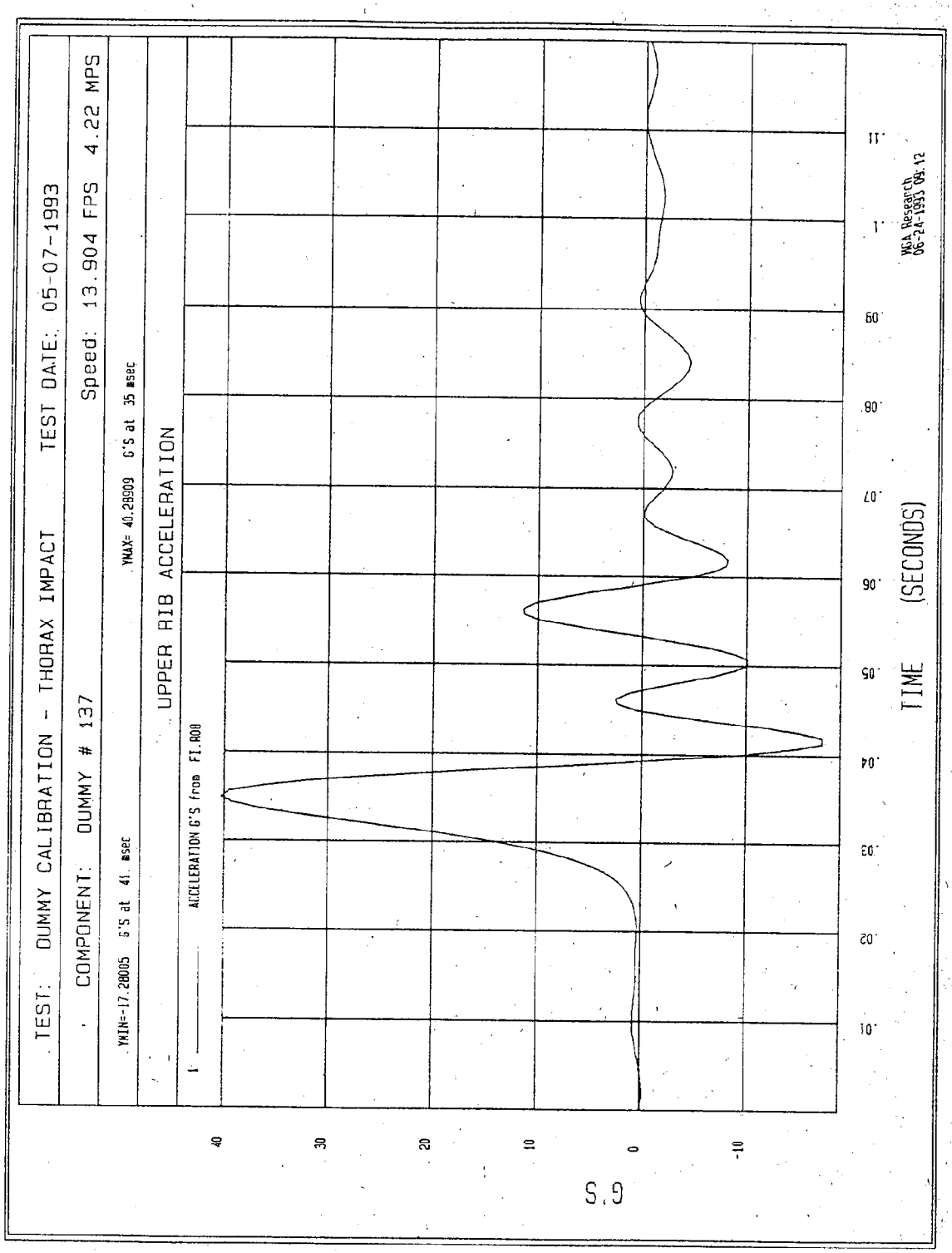
	MANUFACTURER	SERIAL NO.	CAL DATE	DLR	CHECKED
USY	Endevco	A33D	3-4-93	96.83	X
USRY	Endevco	A67M	1-20-93	89.49	X
LSY	Endevco	ACC58	12-29-92	130.61	X
LSRY	Endevco	AALL9	12-29-92	84.07	X

3) PELVIS ACCELEROMETERS:

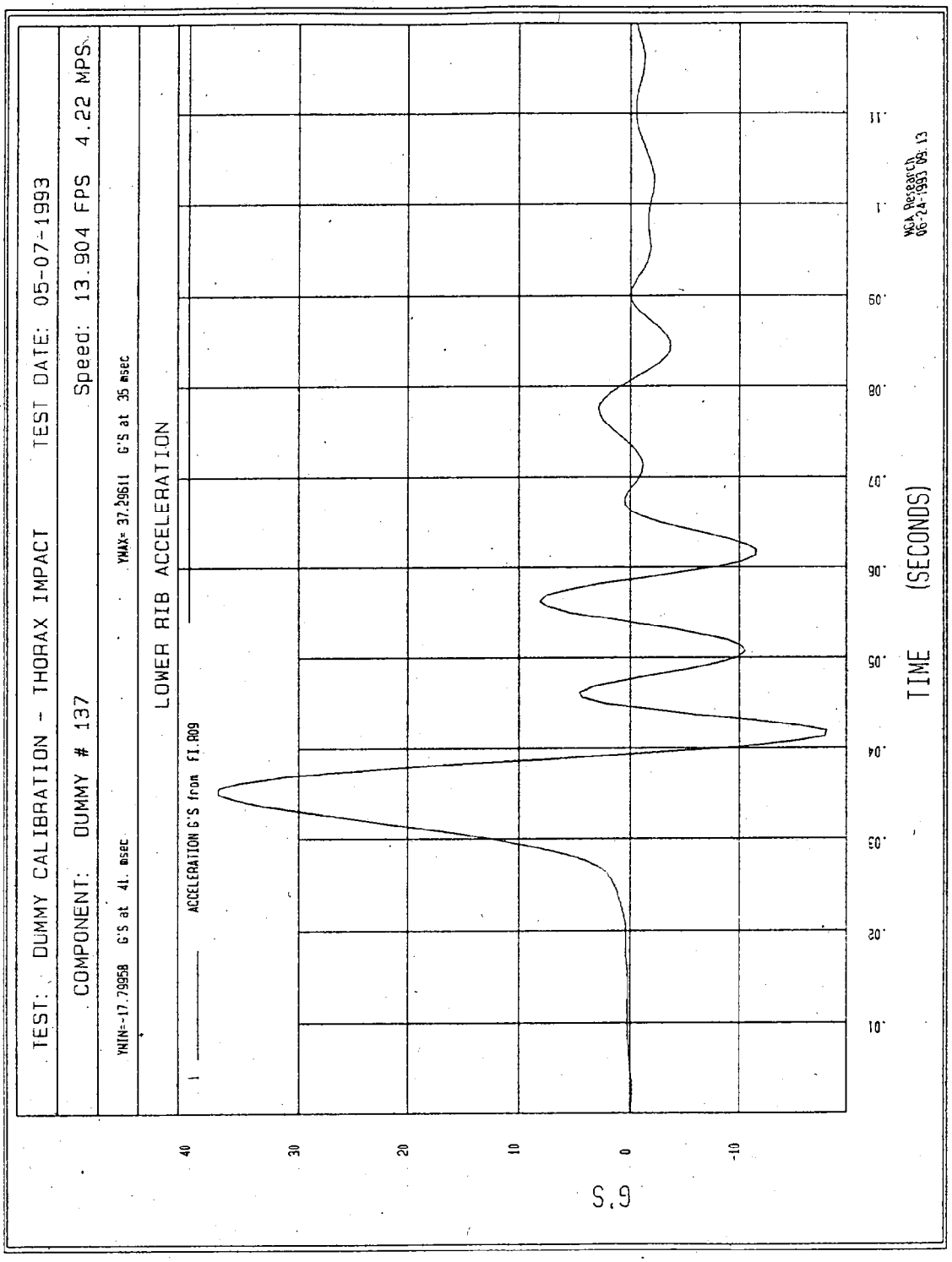
	MANUFACTURER	SERIAL NO.	CAL DATE	DLR	CHECKED
Y	Endevco	AC758	2-23-93	97.45	X
RY	Endevco	AC8R7	2-23-93	124.15	X

DUMMY INSTRUMENTED BY: Rod McClelland

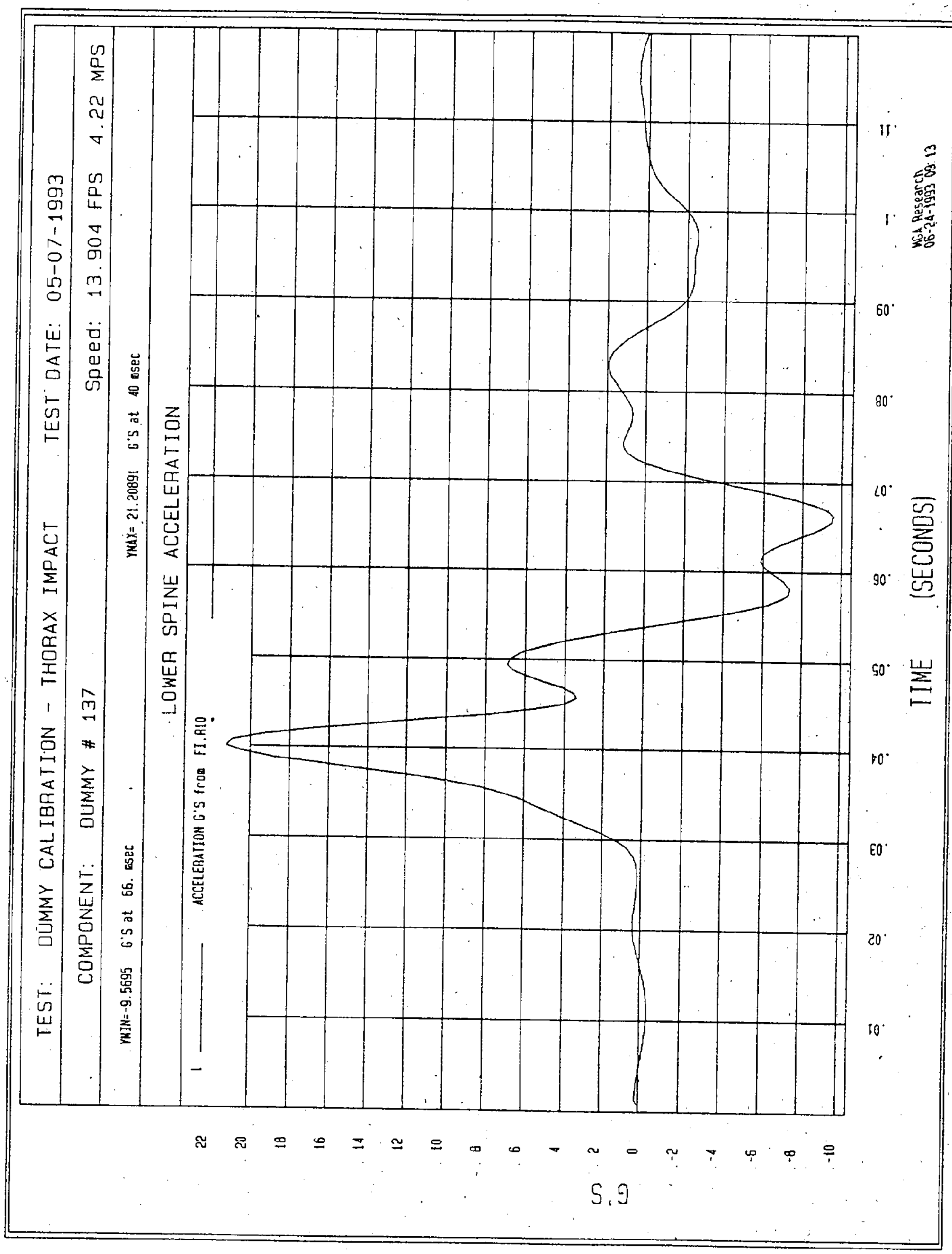
APPROVED BY: Rod McClelland


TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 05-07-1993
COMPONENT: DUMMY # 137 Speed: 13.904 FPS 4.22 MPS
YMIN=-17.28005 G'S at 41. msec YMAX= 40.28909 G'S at 35 msec
UPPER RIB ACCELERATION
ACCELERATION G'S from FI.ROO
40
30
20
10
0
-10
G'S
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
TIME (SECONDS)
WSA Research
06-24-1993 09:12

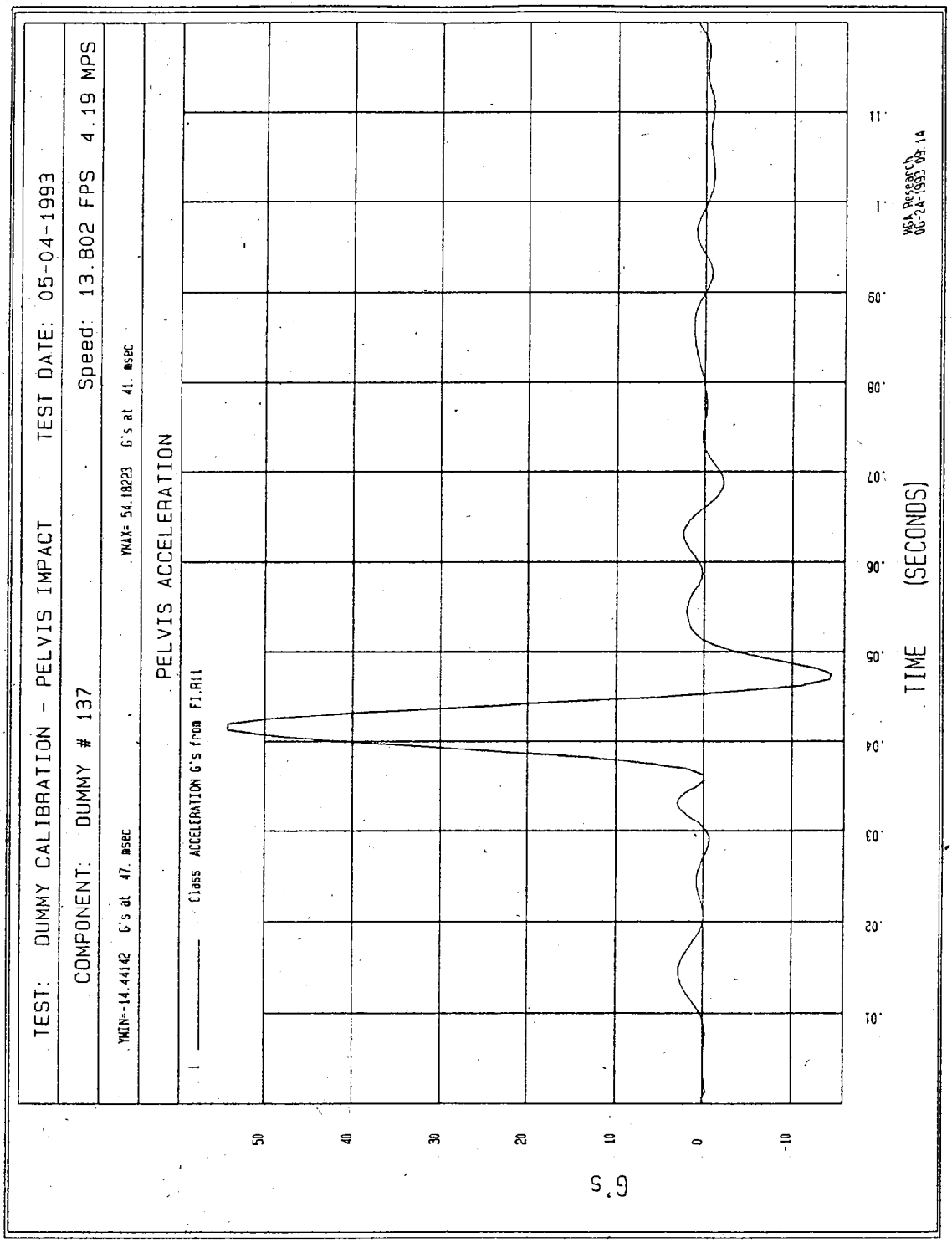
C-14


TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 05-07-1993
COMPONENT: DUMMY # 137 Speed: 13.904 FPS 4.22 MPS
YMIN=-17.79958 G'S at 41. msec YMAX= 37.29611 G'S at 35 msec
LOWER RIB ACCELERATION
1 ACCELERATION G'S from FI.809
40
30
20
10
0
-10
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
TIME (SECONDS)
MGA Research 06-24-1993 09:13

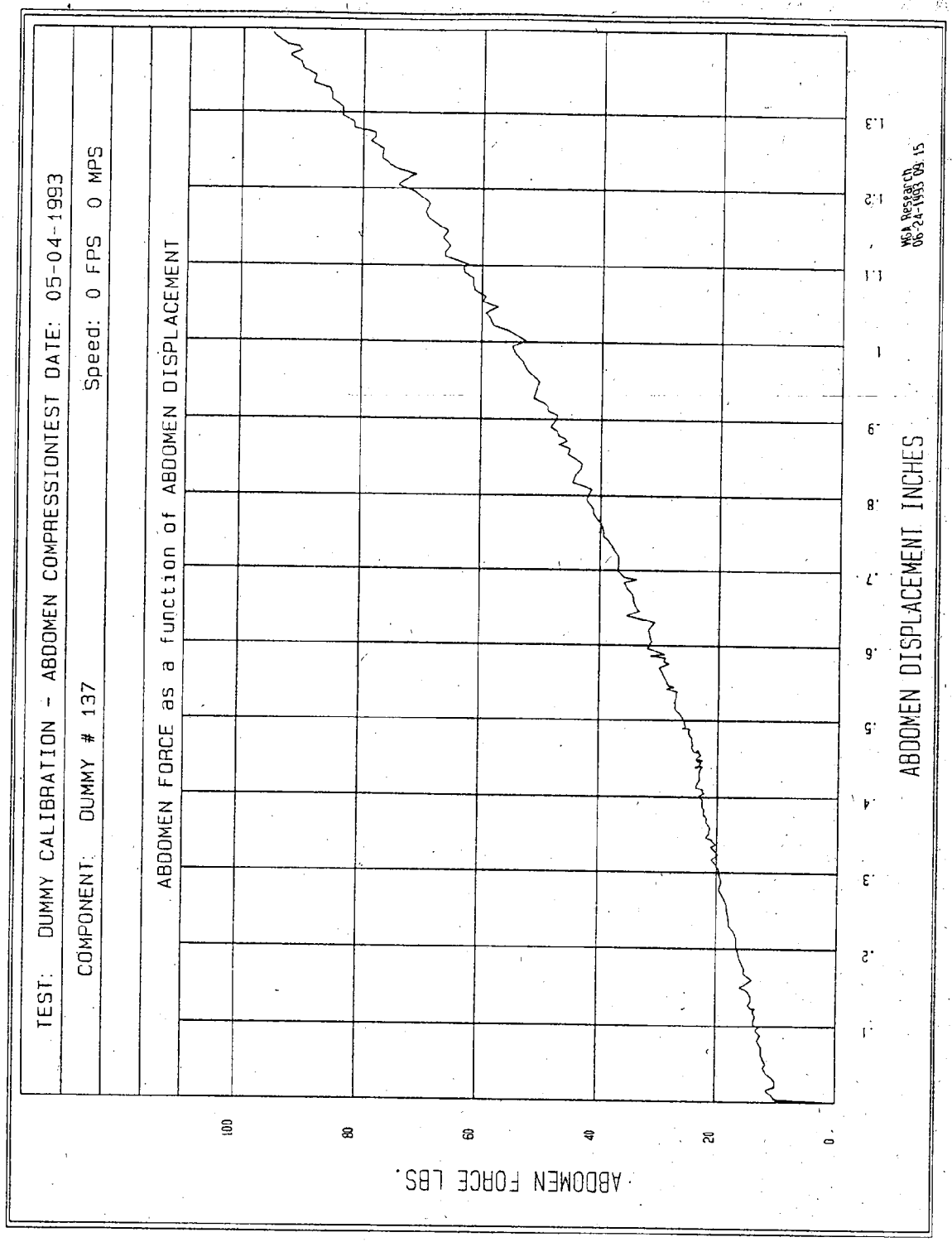
C-15


TEST: DUMMY CALIBRATION - THORAX IMPACT
TEST DATE: 05-07-1993
COMPONENT: DUMMY # 137
Speed: 13.904 FPS 4.22 MPS
YMIN=-9.5695 G'S at 66. msec
YMAX= 21.20891 G'S at 40 msec
LOWER SPINE ACCELERATION
1 ACCELERATION G'S from FI.RIO
22
20
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
G'S
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
TIME (SECONDS)
MGA Research
06-24-1993 09:13

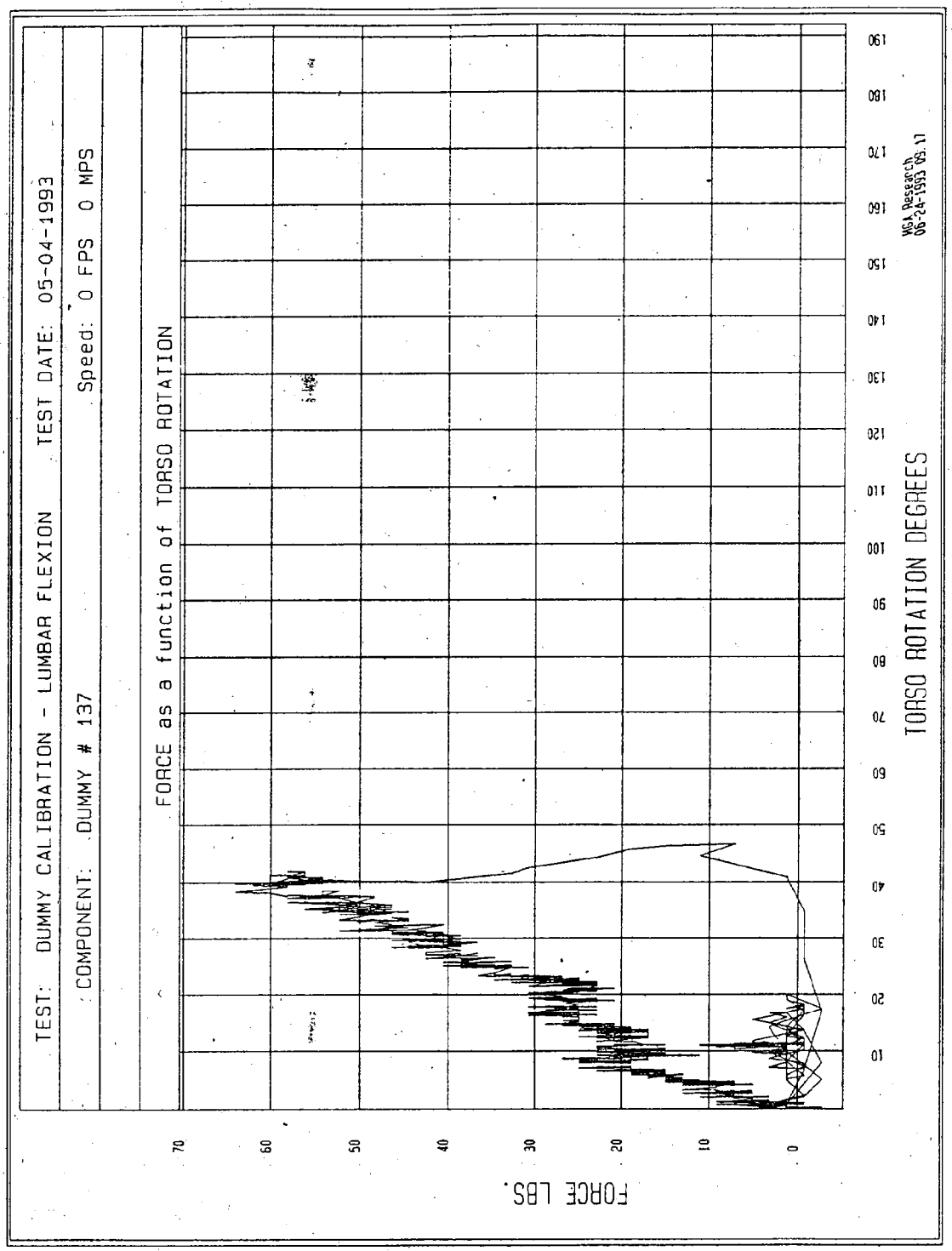
C-16


TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 05-04-1993
COMPONENT: DUMMY # 137 Speed: 13.802 FPS 4.19 MPS
YMIN=-14.44142 G's at 47. msec YMAX= 54.18223 G's at 41. msec
PELVIS ACCELERATION
1 Class ACCELERATION G's from F1.R11
G's
50
40
30
20
10
0
-10
.01
.02
.03
.04
.05
.06
.07
.08
.09
.1
.11
TIME (SECONDS)
MGA Research
06-24-1993 09:14

C-17


TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSIONTEST DATE: 05-04-1993
COMPONENT: DUMMY # 137
Speed: 0 FPS 0 MPS
ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT
ABDOMEN FORCE LBS.
100
80
60
40
20
0
.1
.2
.3
.4
.5
.6
.7
.8
.9
1
1.1
1.2
1.3
ABDOMEN DISPLACEMENT INCHES
WSA Research
06-24-1993 08:15

C-18


TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 05-04-1993
COMPONENT: DUMMY # 137 Speed: 0 FPS 0 MPS
FORCE as a function of TORSO ROTATION
FORCE LBS.
TORSO ROTATION DEGREES
MGA Research 06-24-1993 09:11

APPENDIX D
INFORMATION SUPPLIED BY CHRYSLER

1993 DODGE INTREPID

SEAT BACK ANGLE

RECLINER ADJUSTMENT PROCEDURE

(POWER AND MANUAL)

a. Adjust head rest restraint to full up position

b. Rotate seat back to the full forward position.

c. Position a spacer block and inclinometer on the head restraint posts as shown below.

d. Rotate seat back rearward 15.5^0 from vertical.