

~~214D-MGA-97-24~~
V2524

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING
PASSENGER CARS

1997 TOYOTA TERCEL
2-DOOR SEDAN
NHTSA NO: MV5108

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: March 7, 1997

Report Date: March 24, 1997

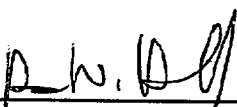
FINAL REPORT

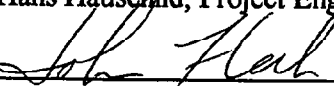
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Accepted By: _____
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12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards 400 Seventh St., S.W. Washington, D.C. 20590				13. Type of Report and Period Covered Final Test Report March 7, 1997 to March 24, 1997																			
				14. Sponsoring Agency Code NPS-10																			
15. Supplementary Notes																							
16. Abstract A 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 1997 Toyota Tercel 2-Door to obtain new car assessment and research data indicant of FMVSS No. 214D performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on March 7, 1997. The impact velocity of the Moving Deformable Barrier (MDB) was 61.2 kph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 22°C. The target vehicle post test maximum crush was 288 mm at level 2. The test vehicle's performance follows: <table border="1"> <thead> <tr> <th></th> <th><u>DRIVER</u></th> <th><u>PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td>86.7</td> <td>51.6</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td>91.6</td> <td>54.9</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td>74.9</td> <td>77.0</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td>83.3</td> <td>66.0</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td>79.2</td> <td>77.4</td> </tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.							<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	86.7	51.6	Left Lower Rib (LLR) Accel., g	91.6	54.9	Lower Spine (T ₁₂) Accel., g	74.9	77.0	Thoracic Trauma Index (TTI)	83.3	66.0	Pelvis (PEV) Accel., g	79.2	77.4
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17. Key Words New Car Assessment Program (NCAP) FMVSS No. 214D Side Impact Dummy (SID) Occupant Side Impact Protection				18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, Room 5108 (NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590																			
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SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY97 NCAP Side Impact 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 of a 1997 Toyota Tercel 2-Door.

This side impact test was conducted in accordance with the New Car Assessment Program Side Impact Testing Procedure dated October 1996.

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 1997 Toyota Tercel 2-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 tow road guidance system at a velocity of 38.0 mph (61.2 kph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on March 7, 1997. Pre- and post-test photographs of the test vehicle, the MDB and the side impact dummies (SIDs) are included in Appendix A.

Two Side Impact Dummies (SIDs) were placed in the driver and left rear designated seating positions according to instructions specified in the New Car Assessment Program Side Impact Laboratory Test Procedure which is dated October 1996. The side impact event was documented by nine 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. Pelvic (PEV) section uniaxial accelerometer (Y-direction)

Appendix B contains the vehicle and dummy response data traces. A summary of the side impact dummy (SID) configuration and performance verification test data is shown in Appendix C. Dummy and vehicle calibration data can be found in Appendix D of this report.

The following table summarizes the results of the test:

Injury Criteria	Front SID	Rear SID
TTI (g)	83.3	66.0
Pelvis (g)	79.2	77.4

SECTION 3
SIDE IMPACT DUMMY (SID) AND
VEHICLE TEST DATA

DATA SHEET NO. 1

GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 VIN: JT2AC52L4V0231614

Vehicle Body Color: Coral Rose Build Date: 11/96

Engine Data: 4 Cylinders; CID; 1.5 Liter; cc

Placement Longitudinal; X Lateral

Transmission: 3 Speed; Manual; X Automatic; Overdrive

Final Drive: Rear Wheel Drive; X Frt. Wheel Drive; Four Wheel Drive

Odometer Reading 70 miles

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

 Cruise Control; Tilt Wheel; Power Door Locks;

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 28 Psi FRONT

28 Psi REAR

Recommended Tire Size: 175/65/R14

Tires on Test Vehicle: 175/65/R14 Manufacturer: Michelin

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 X Lever

Vehicle Maximum Capacity Loading = 351.4 kg (A)

No. of Occupants x 68.04 kg. = 340.2 kg (B)

Cargo Capacity (A-B) = 11.2 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>301.1</u> kg	Right Rear	=	<u>183.2</u> kg
Left Front	=	<u>310.6</u> kg	Left Rear	=	<u>185.9</u> kg
TOTAL FRONT	=	<u>611.7</u> kg	TOTAL REAR	=	<u>369.1</u> kg
% of Total Vehicle Weight	=	<u>62.4</u> %;	% of Total Weight	=	<u>37.6</u> %
TOTAL WEIGHT	=	<u>980.8</u> kg			

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	=	<u>980.8</u> kg
Cargo Carrying Capacity of Test Vehicle	=	<u>11.2</u> kg
Weight of 2 Side Impact Dummies (2 x <u>80.7</u> kg.)	=	<u>161.4</u> kg
TEST VEHICLE TARGET WEIGHT	=	<u>1153.4</u> kg

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO (Fully Loaded):

Right Front	=	<u>306.5</u> kg	Right Rear	=	<u>224.9</u> kg
Left Front	=	<u>362.3</u> kg	Left Rear	=	<u>260.3</u> kg
TOTAL FRONT	=	<u>668.8</u> kg	TOTAL REAR	=	<u>485.2</u> kg
% of Total Weight	=	<u>58.0</u> %	% of Total Weight	=	<u>42.0</u> %
TOTAL TEST WEIGHT	=	<u>1154.0</u> kg			

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 646 mm Left Front 639 mm Right Rear 649 mm Left Rear 640 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 639 mm Left Front 616 mm Right Rear 638 mm Left Rear 598 mm

TEST ATTITUDE:

Right Front 636 mm Left Front 623 mm Right Rear 629 mm Left Rear 600 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2376 mm

C.G. (as tested) = 1002 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 3575 mm

Centerline = 3926 mm

Left Side = 3575 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

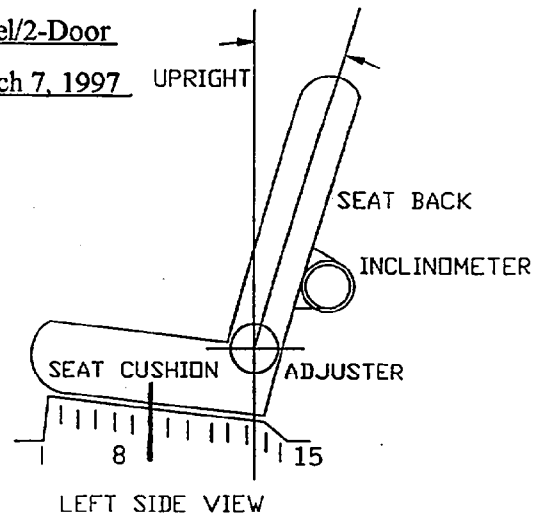
FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 210 mm

Test Position: 8th notch out of 15 total

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 5th locking position



SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: Non-adjustable

Seat Back Adjustment Position: Non-adjustable

ADJUSTABLE STEERING COLUMN POSITION:

WINDOW POSITIONS: Left Front Closed Left Rear Closed

Right Front Open Right Rear Open

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 11.9 gallons

Test Volume: 11.1 gallons 93 % of capacity

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

Wheelbase: = 2376 mm

Impact Point is 248 mm rearward of front axle centerline

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

Overall Length = 3926 mm; Overall Width = 1628 mm

TEST WEIGHT:

Right Front = 314.7 kg Right Rear = 231.7 kg
Left Front = 349.6 kg Left Rear = 252.6 kg
TOTAL FRONT = 664.3 kg TOTAL REAR = 484.3 kg
% of Total Weight = 57.8 % % of Total Weight = 42.2 %
TOTAL VEHICLE WEIGHT = 1148.6 kg
Wheelbase = 2376 mm
Longitudinal C.G. from Center of Front Axle = 1002 mm
Impact Angle with Respect to Impactor = 90° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (248 mm above ground) = 138 mm
2. LEVEL 2 (460 mm above ground) = 288 mm
3. LEVEL 3 (591 mm above ground) = 246 mm
4. LEVEL 4 (860 mm above ground) = 191 mm
5. LEVEL 5 (1268 mm above ground) = 38 mm

Maximum Post-Test Intrusion = 288 mm

OCCUPANTS:

	<u>Left Front Passenger</u>	<u>Left Rear Passenger</u>
Type of Dummy	<u>SID</u>	<u>SID</u>
Restraints Used	<u>type II belt</u> <u>and frontal airbag</u>	<u>type II belt</u>

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)

INSTRUMENTATION:

Number of Vehicle Data Channels:	=	<u>22</u>
Number of Cameras: Onboard Vehicle	=	<u>3</u>
Offboard Vehicle	=	<u>4</u>
Deformable Barrier	=	<u>2</u>
TOTAL	=	<u>9</u>

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

Overall Width of Framework Carriage	=	<u>1252 mm</u>
Overall Length of MDB (incl. honeycomb impact face)	=	<u>4115 mm</u>
Wheelbase of Framework Carriage	=	<u>2591 mm</u>
Tread of Framework Carriage (Front & Rear)	=	<u>1880 mm</u>
C.G. Location Rearward of Front Axle	=	<u>1102 mm</u>
C.G. Location From Center Line	=	<u>-23 mm</u>
C.G. Location Above Ground Level	=	<u>508 mm</u>

MDB WEIGHT:

Left Front	=	<u>396.1 kg</u>	Left Rear	=	<u>284.4 kg</u>
Right Front	=	<u>383.4 kg</u>	Right Rear	=	<u>293.8 kg</u>
TOTAL FRONT	=	<u>779.5 kg</u>	TOTAL REAR	=	<u>578.2 kg</u>
TOTAL MDB WEIGHT	=	<u>1357.7 kg</u>			

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

Impact Speed = Primary: 38.0 mph (61.2 kph) Secondary: 38.0 mph (61.2 kph)

CRASH TEST SUMMARY FOR SIDE IMPACTOR (Cont'd)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

- | | | |
|----|---------------------------------|-----------------|
| 1. | Row A Top of Stack (813 mm) | = <u>173</u> mm |
| 2. | Row B Mid Stack (686 mm) | = <u>129</u> mm |
| 3. | Row C Top of Bumper (533 mm) | = <u>125</u> mm |
| 4. | Row D Center of Bumper (432 mm) | = <u>194</u> mm |

INSTRUMENTATION:

Number of MDB Data Channels = 5

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>to headrest</u>	<u>to C-pillar</u>
Arm	<u>to door trim panel</u>	<u>to side trim panel</u>
Pelvis	<u>to door trim panel</u>	<u>to side trim panel</u>
Left Knee	<u>to door trim panel</u>	<u>to side trim panel</u>
Right Knee	<u>to left knee</u>	<u>to left knee</u>

DOOR OPENING:

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

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 4 mm forward Vertical: 16 mm high

ARM REST LOCATIONS:

Front: 240 mm from bottom of window
Rear: 280 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 64 mm Front Seat Cushion: 44 mm

Left Rear Seat Back: 22 mm Rear Seat Cushion: 24 mm

GLAZING DAMAGE:

Left front door glass, left rear side glass, and windshield

PILLAR PERFORMANCE:

None noted

SILL SEPARATION:

None noted

OTHER NOTABLE IMPACT EFFECTS:

Driver and passenger airbags did not deploy

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 5

SIDE IMPACT DUMMY (SID) INSTRUMENTATION DATA

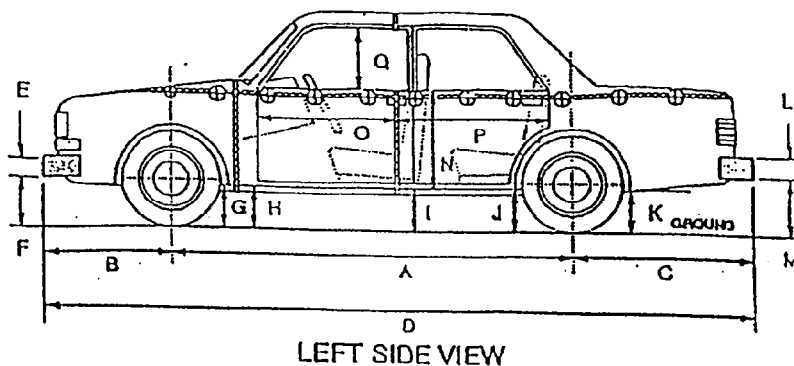
Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

NHTSA No.: MV5108 Test Date: March 7, 1997

		Front Dummy ID # 271			Rear Dummy ID # 270		
		Pos. Direct.		Neg. Direct		Pos. Direct.	
		Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS							
Left Upper Rib (LUR) Y		86.7	35	-12.2	82	51.6	52
Left Lower Rib (LLR) Y		91.6	35	-15.1	66	54.9	45
SPINE ACCELERATIONS							
Lower Lateral Y		74.9	30	-24.7	59	77.0	44
PELVIS ACCELERATIONS							
Lateral Y		79.2	26	-16.1	44	77.4	34
						-7	198

REFERENCE: Positive Direction- Longitudinal (X) = forward
 Lateral (Y) = to right
 Vertical (Z) = down

DATA SHEET NO. 6
VEHICLE PRE AND POST-TEST MEASUREMENTS



D = Length at Centerline

R = Right Side Length

S = Left Side Length

T = Width at B Post

E & L = Bumper Thickness

J1 = To Pinch Weld

J2 = To Sill

ALL MEASUREMENTS IN (mm)

	PRE-TEST	POST-TEST	Δ CHANGE
A	2376	2376	0
B*	716	700	16
C*	834	816	18
D*	3926	3892	34
E*	N/A	N/A	N/A
F*	N/A	N/A	N/A
G	180	222	-42
H	182	224	-42
I	176	180	-4
J1/J2	126/176	173/176	-3/0
K	325	335	-10
L*	N/A	N/A	N/A
M	294	300	-6
N	635	593	42
O	675	670	5
P	595	585	10
Q	397	385	12
R	3575	3602	-27
S	3575	3532	43
T	1628	1460	168

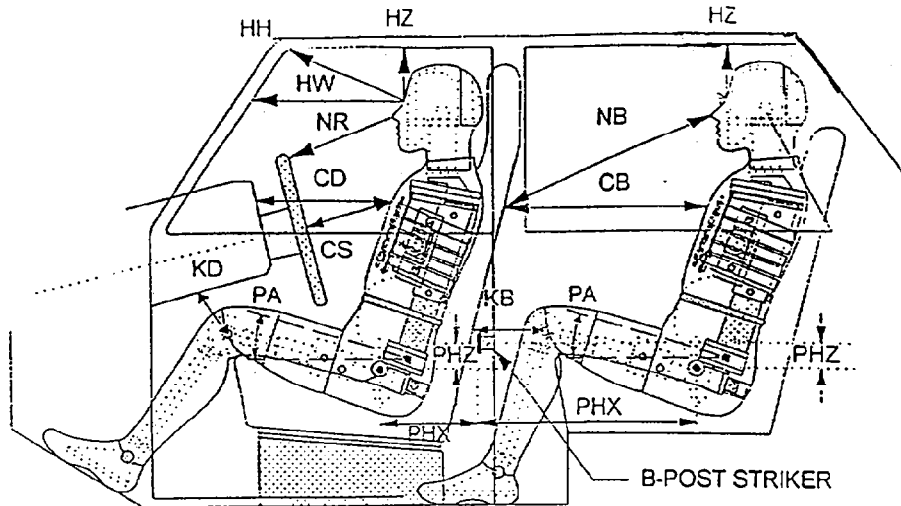
* Front and rear bumpers removed for testing.

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

NHTSA NO.: MV5108 Test Date: March 7, 1997



NOTE: All dimensions are in mm with tolerance of ± 3 mm

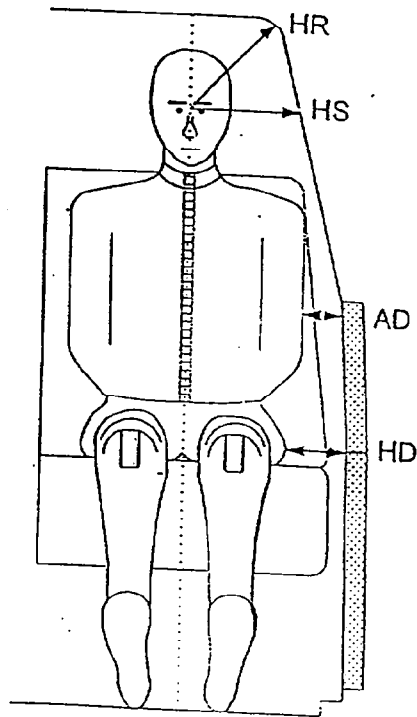
	DRIVER SID ID # 271		LEFT REAR PASSENGER SID ID # 270
HH	352	HZ	129
HW	553	NB	607
HZ	155	CB	490
NR	435	KBL (KBA)	N/A
CD	507	KBR (KBA)	139 (2.6°)
CS	312	PA°	24.8
KDL(KDA°)	159 (20.8°)	PHX	397
KDR(KDA°)	171 (29.8°)	PHZ	197
PA°	24.5°		
PHX	419		
PHZ	195		

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

DATA SHEET NO. 8
SIDE IMPACT DUMMY (SID) LATERAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

NHTSA NO.: MV5108 Test Date: March 7, 1997



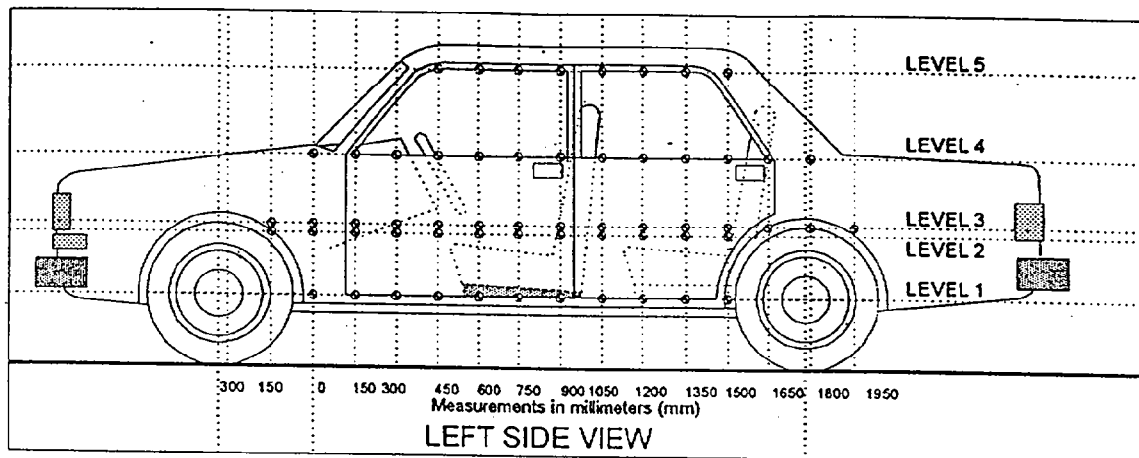
NOTE: All dimensions are in mm

	DRIVER SID ID # 271	LEFT REAR PASSENGER SID ID # 270
HR	186	155
HS	288	274
AD	95	81
HD	105	122

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

NHTSA NO.: MV5108 Test Date: March 7, 1997



MEASUREMENTS ARE TAKEN WHEN THE VEHICLE IS IN THE "AS TESTED"
CONFIGURATION

MEASUREMENTS ALONG THE VERTICAL 750 mm. LINE SHOWN ABOVE

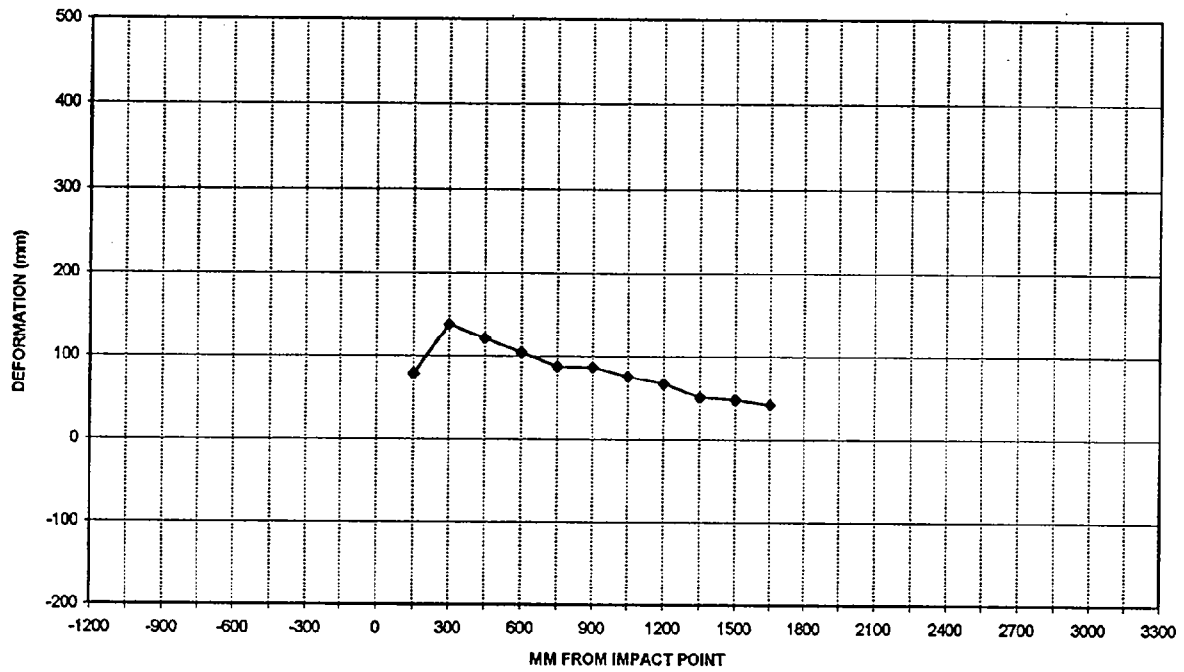
Level 1 @ Axle Centerline Height (or Sill Top Height)	= <u>248</u> mm
Level 2 @ Occupant H-Point	= <u>460</u> mm
Level 3 @ Mid Door	= <u>591</u> mm
Level 4 @ Window Sill	= <u>860</u> mm
Level 5 @ Window Top	= <u>1268</u> mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 1 - Axle Centerline		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150	696	775	79
300	704	842	138
450	704	825	121
600	702	806	104
750	706	794	88
900	706	793	87
1050	707	783	76
1200	708	775	67
1350	711	762	51
1500	711	759	48
1650	708	750	42
1800			
1950			
2100			
2250			
2400			
2550			
2700			
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH



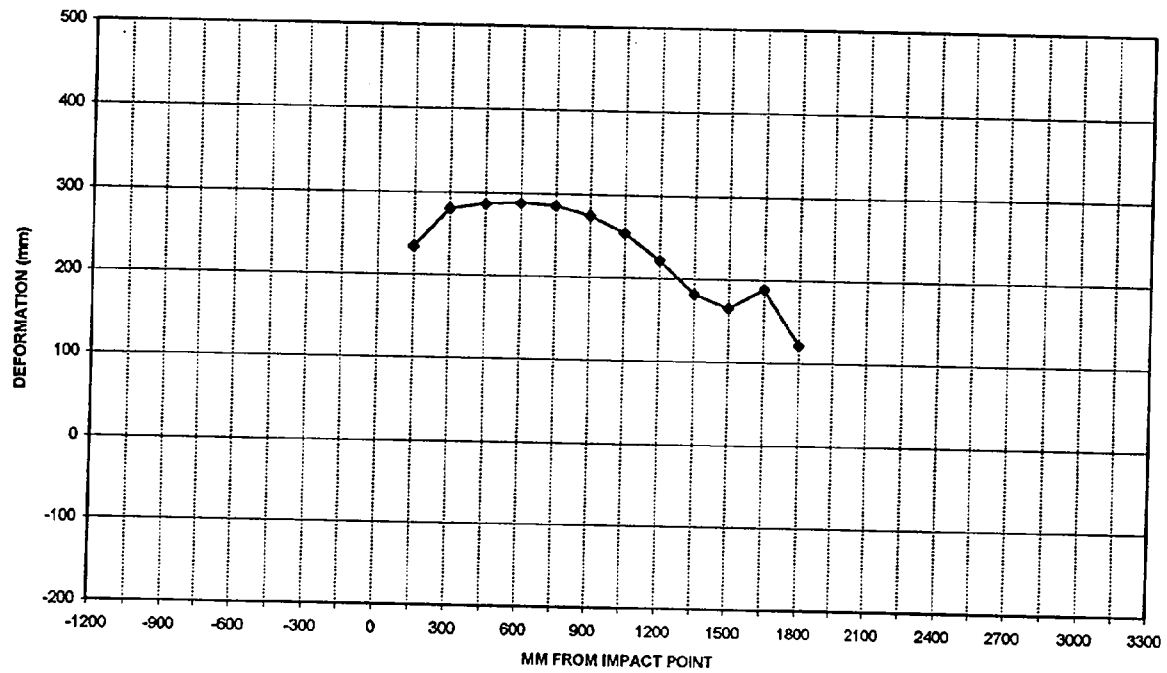
LEVEL 1 - AXLE CENTERLINE

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 2 - Occupant H Point		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150	638	872	234
300	637	917	280
450	636	922	286
600	635	923	288
750	635	920	285
900	635	909	274
1050	635	889	254
1200	635	857	222
1350	636	818	182
1500	638	804	166
1650	640	829	189
1800	643	764	121
1950			
2100			
2250			
2400			
2550			
2700			
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH



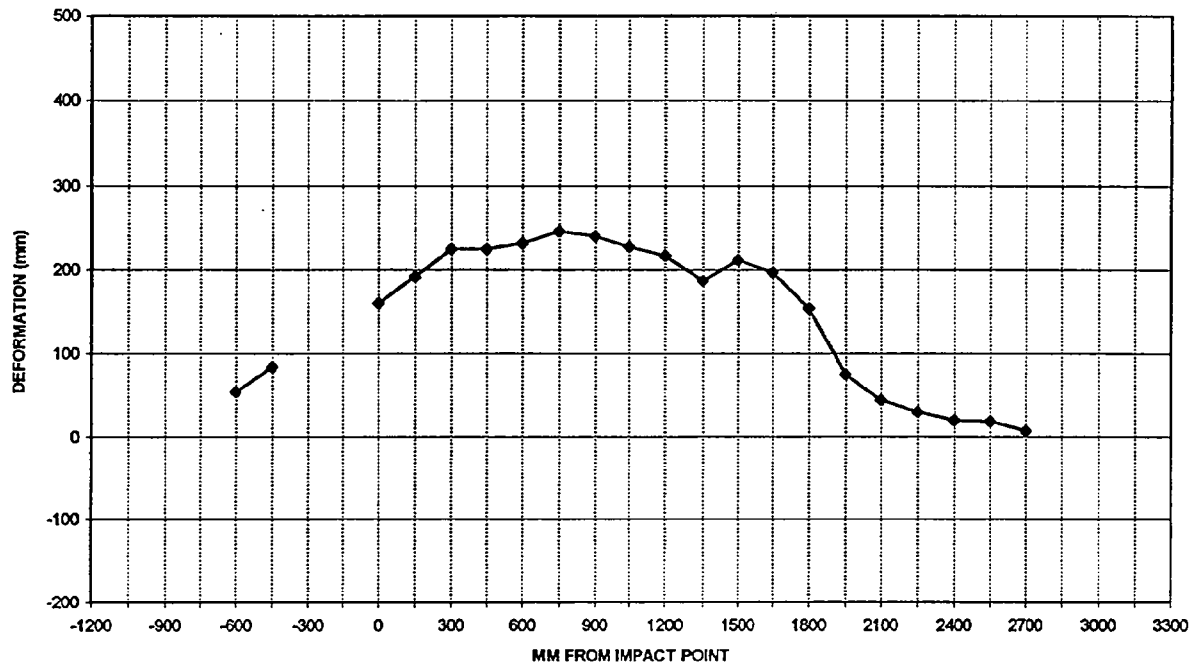
LEVEL 2 - OCCUPANT H-POINT

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 3 - Mid Door		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1050			
-900			
-750			
-600	701	755	54
-450	656	740	84
-300			
-150			
0 (impact point)	640	801	161
150	643	835	192
300	642	867	225
450	640	865	225
600	639	871	232
750	637	883	246
900	637	877	240
1050	637	865	228
1200	638	855	217
1350	639	826	187
1500	642	854	212
1650	644	841	197
1800	648	803	155
1950	638	713	75
2100	633	677	44
2250	637	667	30
2400	670	690	20
2550	682	701	19
2700	705	713	8
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH



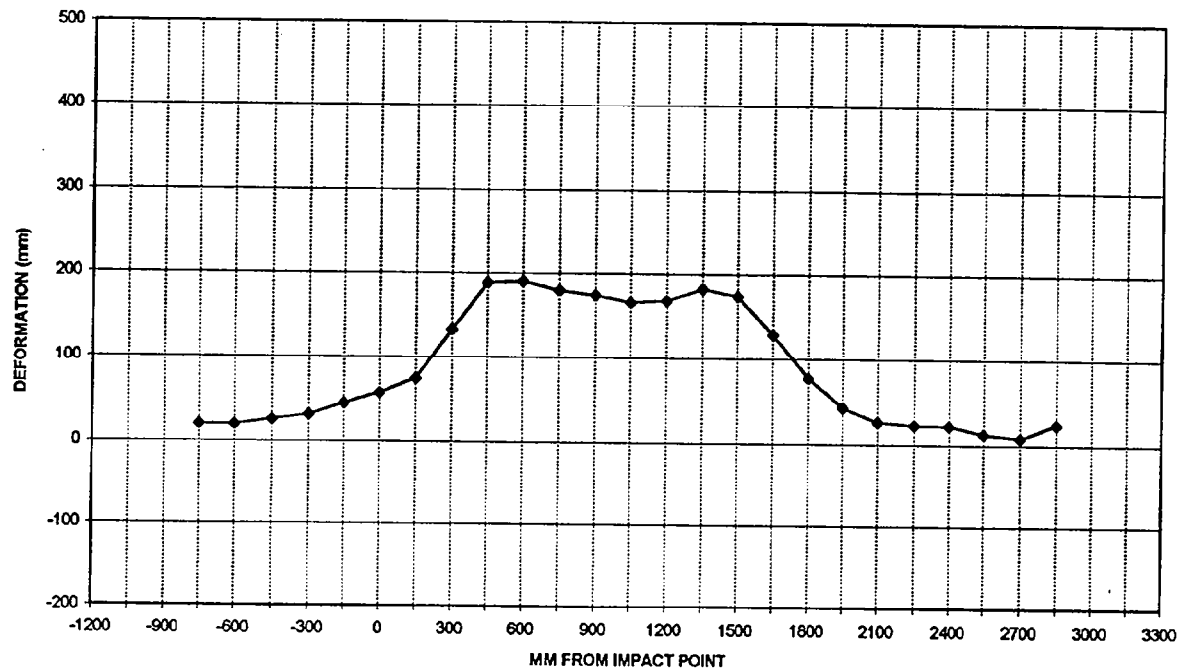
LEVEL 3 - MID DOOR

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 4 - Window Sill		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1050			
-900			
-750	763	783	20
-600	743	762	19
-450	730	755	25
-300	722	753	31
-150	709	753	44
0 (impact point)	702	758	56
150	696	770	74
300	699	832	133
450	697	886	189
600	698	889	191
750	700	880	180
900	699	874	175
1050	700	867	167
1200	700	869	169
1350	702	885	183
1500	706	881	175
1650	707	837	130
1800	714	791	77
1950	717	760	43
2100	719	745	26
2250	727	750	23
2400	734	756	22
2550	751	764	13
2700	768	776	8
2850	768	792	24
3000			

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

VEHICLE EXTERIOR STATIC CRUSH



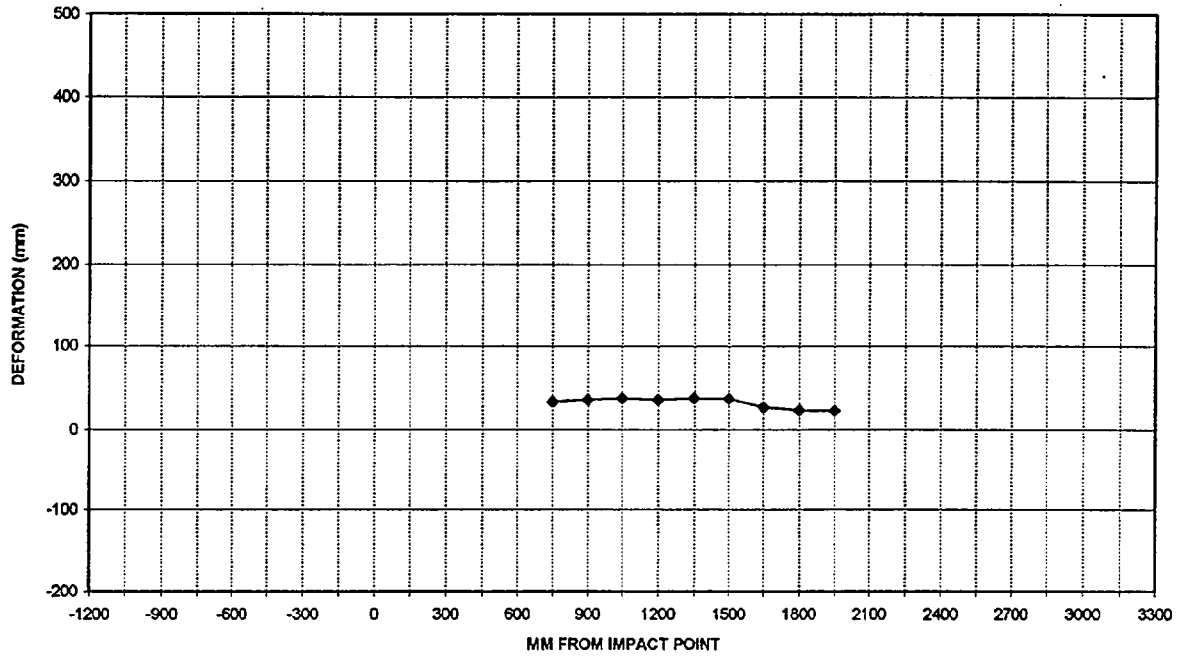
LEVEL 4 - WINDOW SILL

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 5 - Window Top		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600			
750	936	970	34
900	940	976	36
1050	949	987	38
1200	958	994	36
1350	959	997	38
1500	961	998	37
1650	961	988	27
1800	958	982	24
1950	957	980	23
2100			
2250			
2400			
2550			
2700			
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH



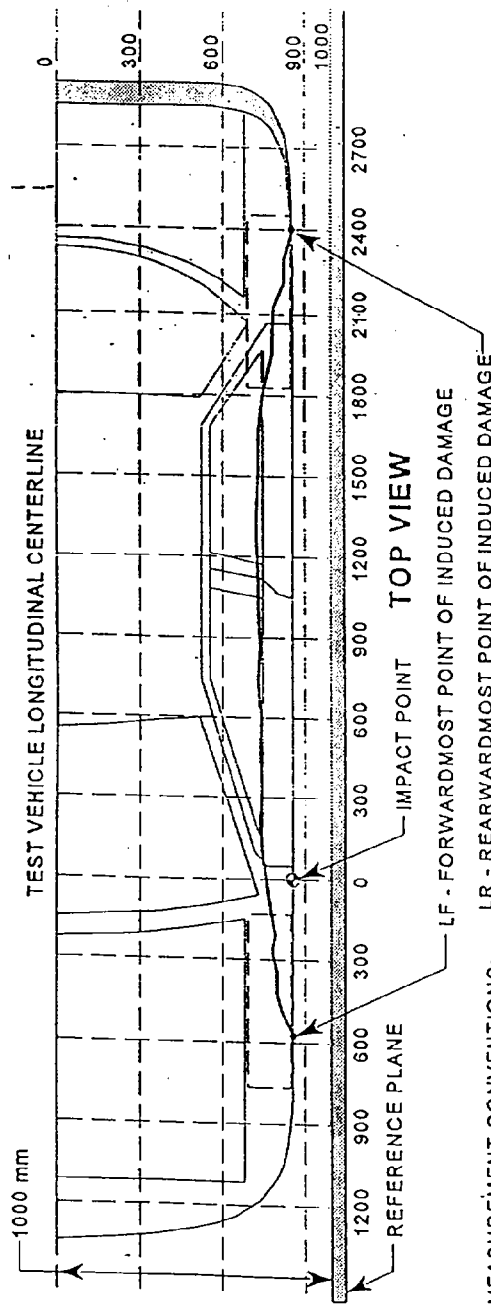
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

NHTSA NO.: MV5108 Test Date: March 7, 1997



MEASUREMENT CONVENTIONS:
 Forward of the impact point (towards front of vehicle) is considered negative (-).
 Rearward of the impact point (toward rear of vehicle) is considered positive (+).

DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (LF = -600 mm)	762	743	19
2. 65 mm	868	638	230
3. 725 mm	919	635	284
4. 1360 mm	890	702	188
5. 2060 mm	635	713	78
6. (LR = 2700 mm)	776	768	8

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

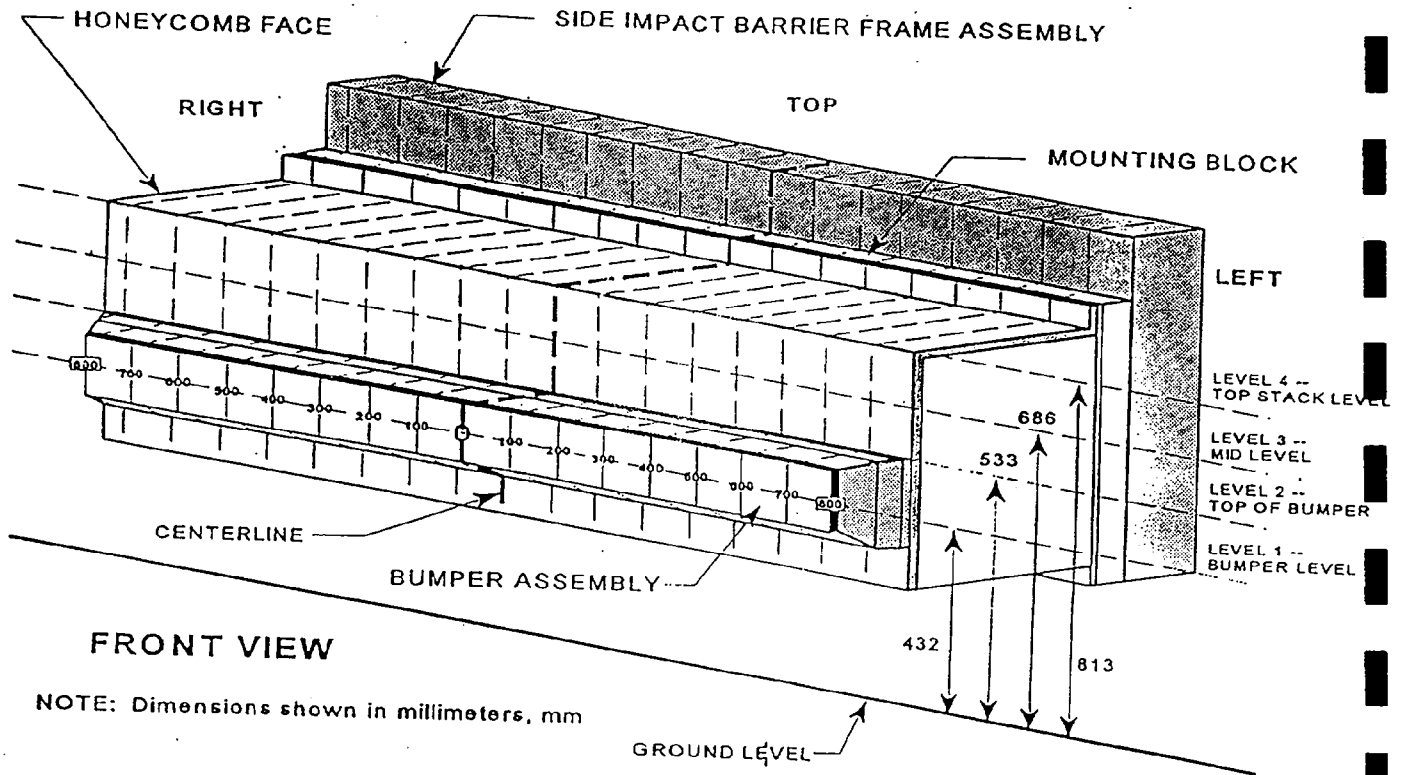
Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

Location	Height at CL	Distance Right of Center (mm)									Distance Left of Center (mm)							
		800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
Top Stack Level 4	813 mm	88	42	14	9	7	10	13	16	20	21	23	24	27	43	78	132	173
Mid Level Level 3	686 mm	53	30	36	41	22	13	9	7	4	8	9	11	15	18	36	100	129
Top Bumper Level 2	533 mm	101	108	119	125	113	81	52	22	15	13	18	26	35	40	50	58	77
Mid Bumper Level 1	432 mm	105	102	83	68	64	59	56	55	61	79	107	140	172	194	192	177	169

See next page for Barrier Face Graphic

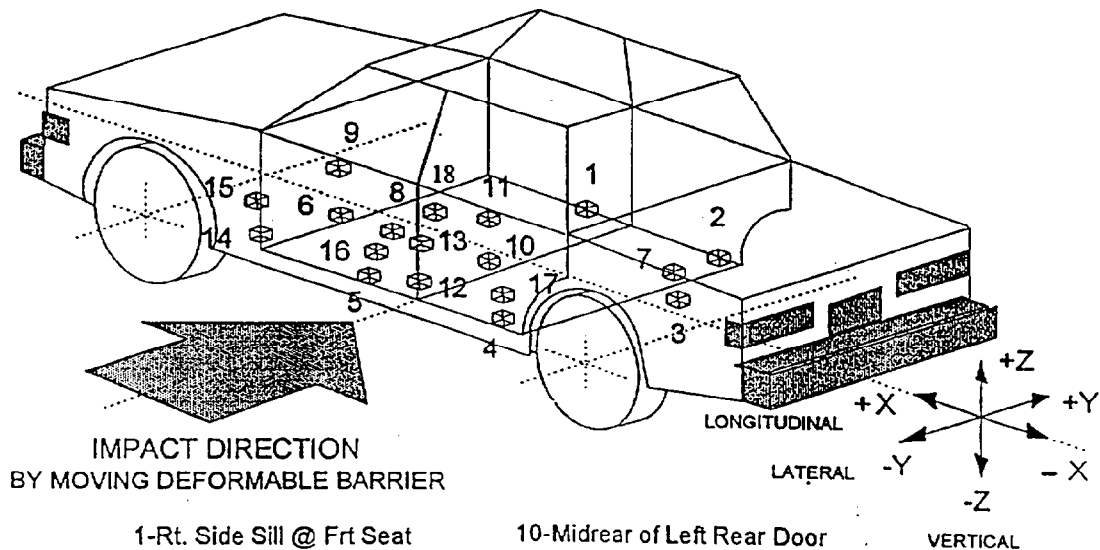
DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997



- | | |
|--------------------------------|---------------------------------|
| 1-Rt. Side Sill @ Frt Seat | 10-Midrear of Left Rear Door |
| 2-Rt. Side Sill @ Rr. Seat | 11-Left Rear Door Upper Ctrline |
| 3-Rr. Floorpan Above Axle | 12-Left Lower B-Post |
| 4-Left Side Sill @ Rr. Seat | 13-Left Middle B-Post |
| 5-Left Side Sill @ Frt. Seat | 14-Left Lower A-Post |
| 6-Left Frt. Door On Centerline | 15-Left Middle A-Post |
| 7-Rt. Rr. Occ Compartment | 16-Front Seat Track |
| 8-Midrear of Left Frt. Door | 17-Rear Seat Track |
| 9-Left Frt. Door Upper Ctrline | 18-Vehicle C.G. |

DATA SHEET NO. 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

Accel. No.	Description	Coordinates (mm)*			Long. (X) Maximums (g's)		Lat. (Y) Maximums (g's)		Vert. (Z) Maximums (g's)		Resultant (g's)
		X	Y	Z	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	
1	Rt. Side Sill @ Front Seat	2206	643	208	5.7	-6.1	38.8	-1.9	3.6	-8.3	39.4
2	Rt. Side Sill @ Rear Seat	1376	623	244	13.2	-6.4	52.0	-2.7	12.8	-6.7	52.8
3	Rr. Floorpan Above Axle	730	0	532	12.0	-20.7	43.9	-3.6	41.3	-100.7	106.4
4	Left Side Sill @ Rr. Seat	1381	-623	233	---	---	39.5	-1.2	---	---	---
5	Left Side Sill @ Frt. Seat	2210	-643	214	---	---	39.5	-5.5	---	---	---
6	Left Front Door Centerline	2263	-734	485	---	---	221.0	-126.9	---	---	---
7	Right Rear Occupant Compartment	1440	287	372	---	---	49.0	-2.6	---	---	---
9	Left Front Door Upper Centerline	2207	-710	795	---	---	270.7	-88.1	---	---	---
12	Left Lower B-Post	1503	-672	535	---	---	44.4	-72.3	---	---	---
13	Left Mid B-Post	1497	-660	835	---	---	148.1	-122.1	---	---	---
14	Left Lower A-Post	2659	-678	386	---	---	68.0	-37.4	---	---	---
15	Left Mid A-Post**	2692	-704	828	---	---	48.1**	-8**	---	---	---
16	Driver Left Seat Track	1750	-572	290	---	---	41.0	-10.0	---	---	---
18	Vehicle CG	2170	-25	447	7.36	-18.3	32.9	-4.4	21.1	-8.7	37.0

*Reference: X - Rear Bumper (+ Forward) ** Data valid until 14 msec.

Y - Vehicle Centerline (+ To right)

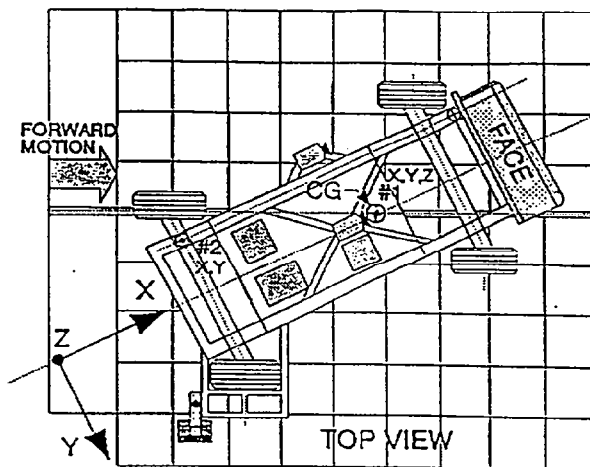
Z - Ground Level (+ Up)

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997



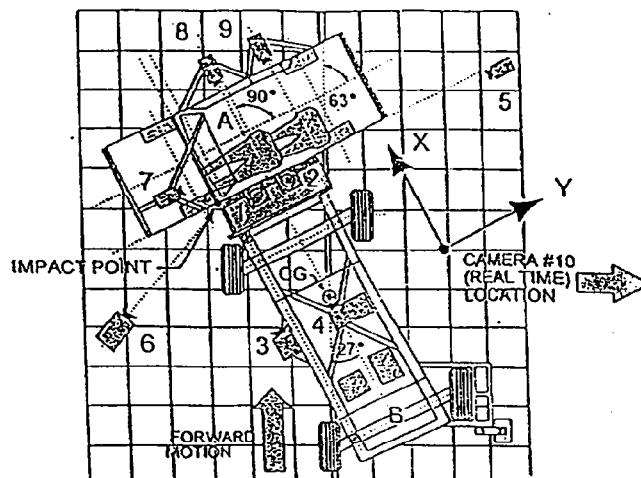
Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	4.0	191	-19.1	32
	Lateral (Y)	---	---	---	3.7	53	-5.5	46
	Vertical (Z)	---	---	---	17.1	52	-9.8	196
	Resultant (R)	---	---	---	21.3	32	---	---
2	Rear Frame Member	-2591	-625	622				
	Longitudinal (X)	---	---	---	2.9	128	-22.9	30
	Lateral (Y)	---	---	---	5.7	30	-.8	173

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

DATA SHEET NO. 15
HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time						
6	Left Impact	-116	-2310	1720		13	1015
8	Onboard Driver					8	966
9	Onboard Passenger					8	943
7	Onboard Hood					13	1005
5	Right Impact	44	10625	1620		25	1026
1	Top Overall	-240	1200	5040		8	1075
2	Top Impact	-290	-50	4980		13	917
4	Cart Overall					13	1015
3	Cart Pointer					35	1015

* Reference: (from point of impact)

+X = Forward

+Y = To Right

+Z = Upward

DATA SHEET 16
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

TEST REQUIREMENTS:

Drain the test vehicle's fuel system and operate the engine until the fuel system is dry. Add Stoddard solvent, which has been dyed purple, until 92-94% of the stated usable capacity is reached. Operate the engine to assure the Stoddard solvent is present throughout the entire fuel system.

TEST VEHICLE IMPACT TYPE: X Side Impact MDB 38.0 mph (61.2 kph)

FUEL SPILLAGE MEASUREMENT:

POST IMPACT TEST	TEST RESULTS	MAXIMUM ALLOWABLE
1. From impact until vehicle motion ceases	0	1 oz
2. For 5 minute period after vehicle motion ceases	0	5 oz
3. For next 25 minutes	0	1 oz./1 min

FUEL SPILLAGE LOCATION(S): None

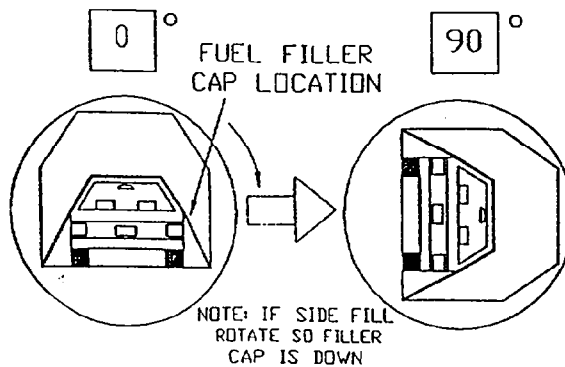
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

TEST PHASE: 0° - 90°



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 TIME = 7 minutes 54 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION (FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

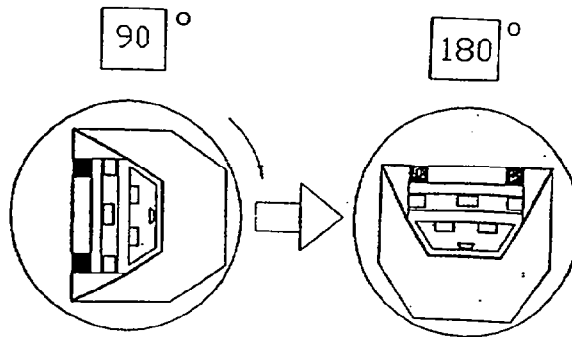
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 33 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 33 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

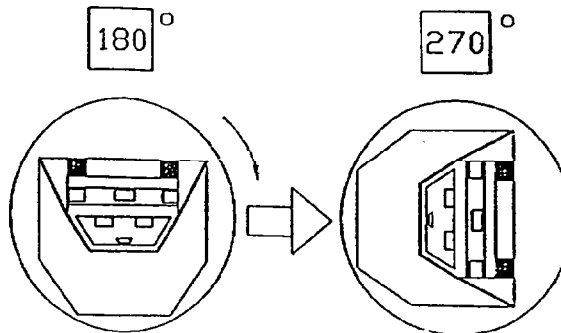
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

TEST PHASE: 180° - 270°



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 TIME = 7 minutes 16 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

180° TO 270° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

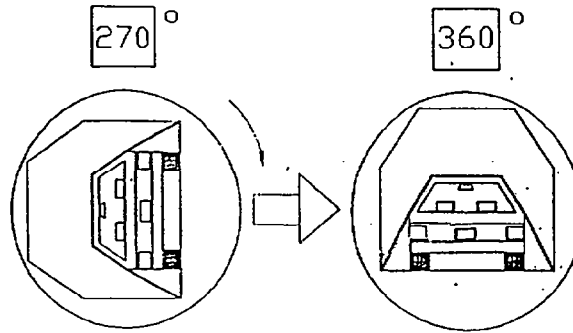
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Toyota/Tercel/2-Door

Vehicle NHTSA No.: MV5108 Test Date: March 7, 1997

TEST PHASE: 270° - 360°



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 TIME = 7 minutes 38 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

270° TO 360° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

APPENDIX A - PHOTOGRAPHS

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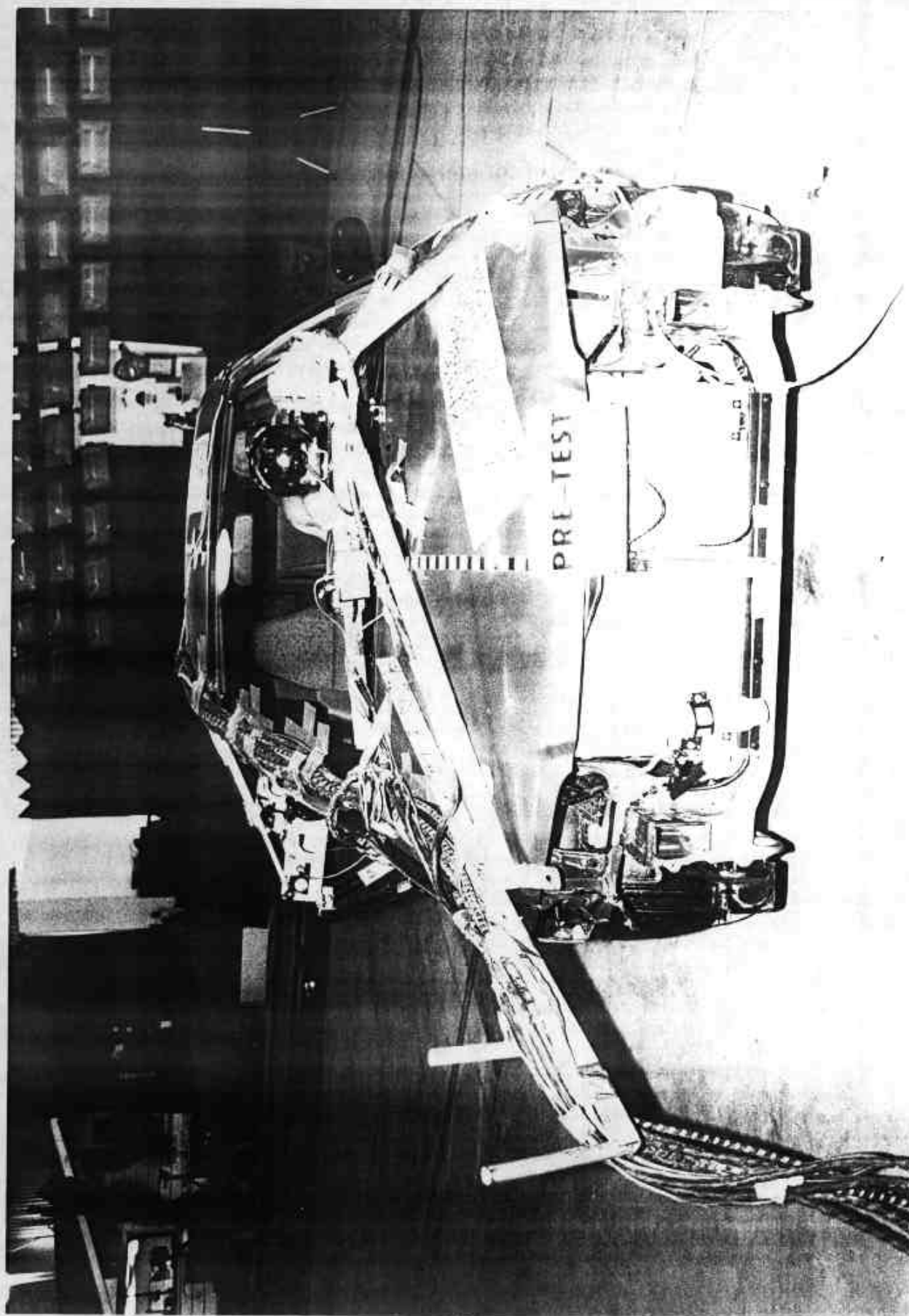


Photo No. A-1 - Pre-Test Front View of Test Vehicle

A-1

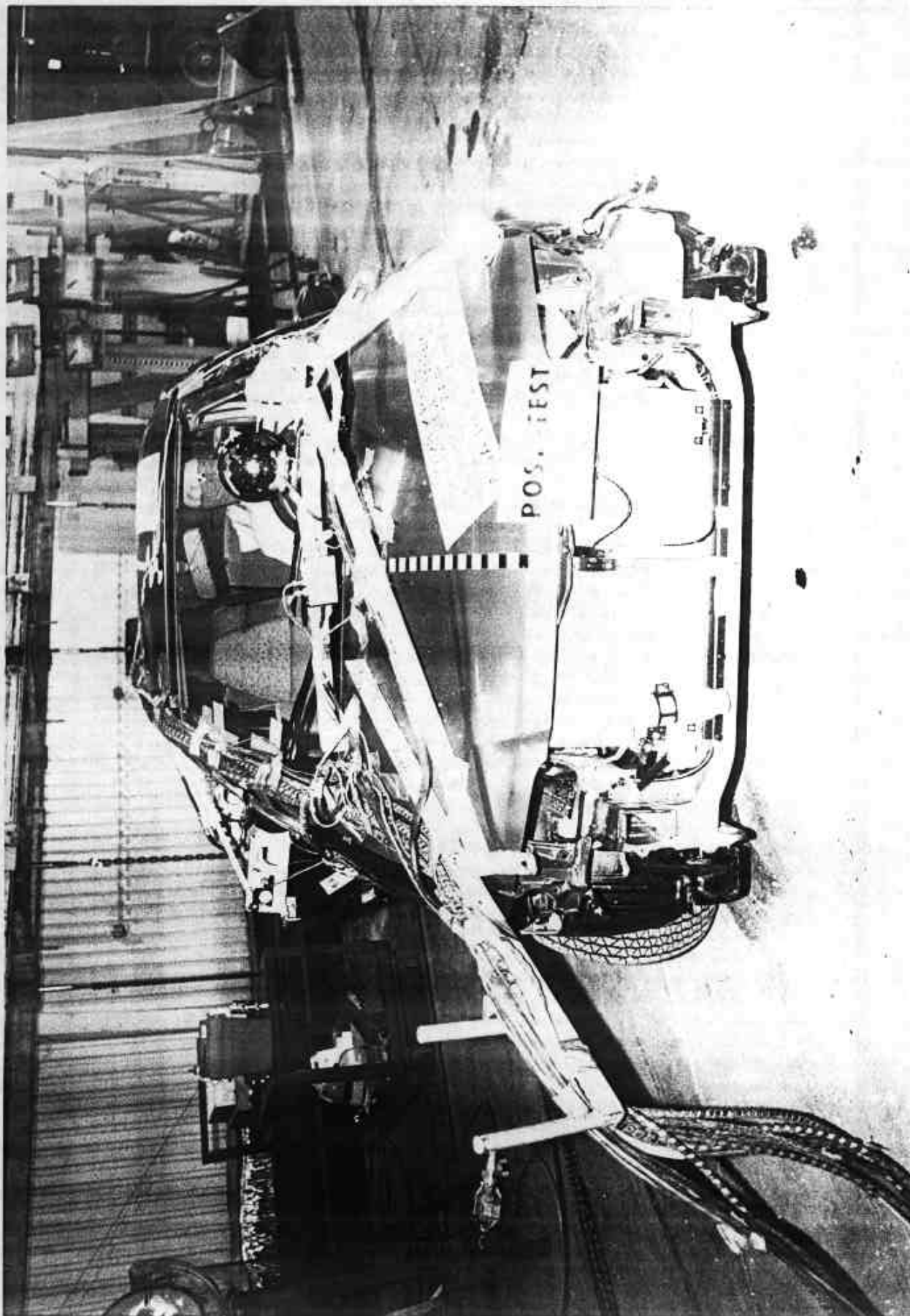


Photo No. A-2 - Post-Test Front View of Test Vehicle

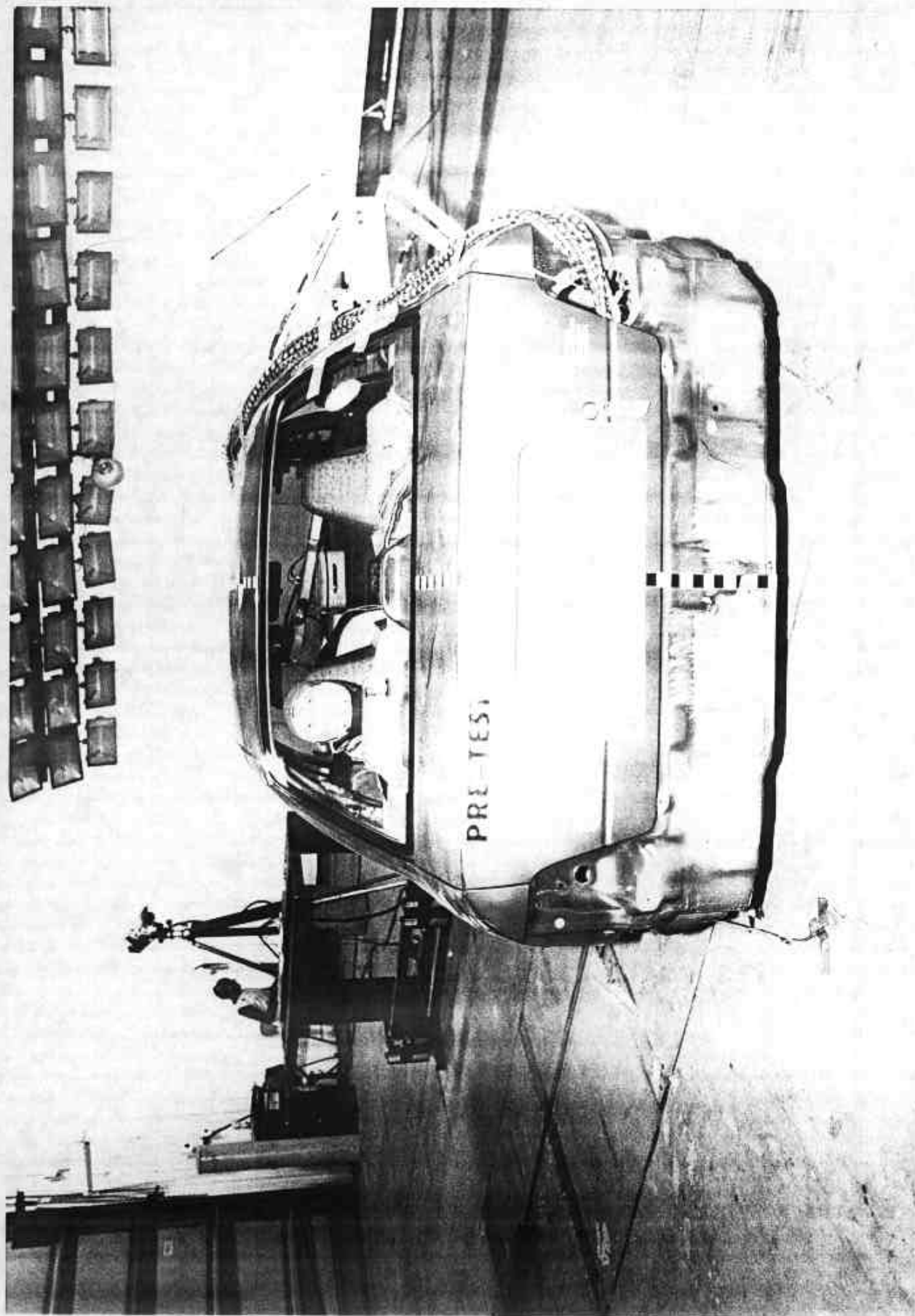


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

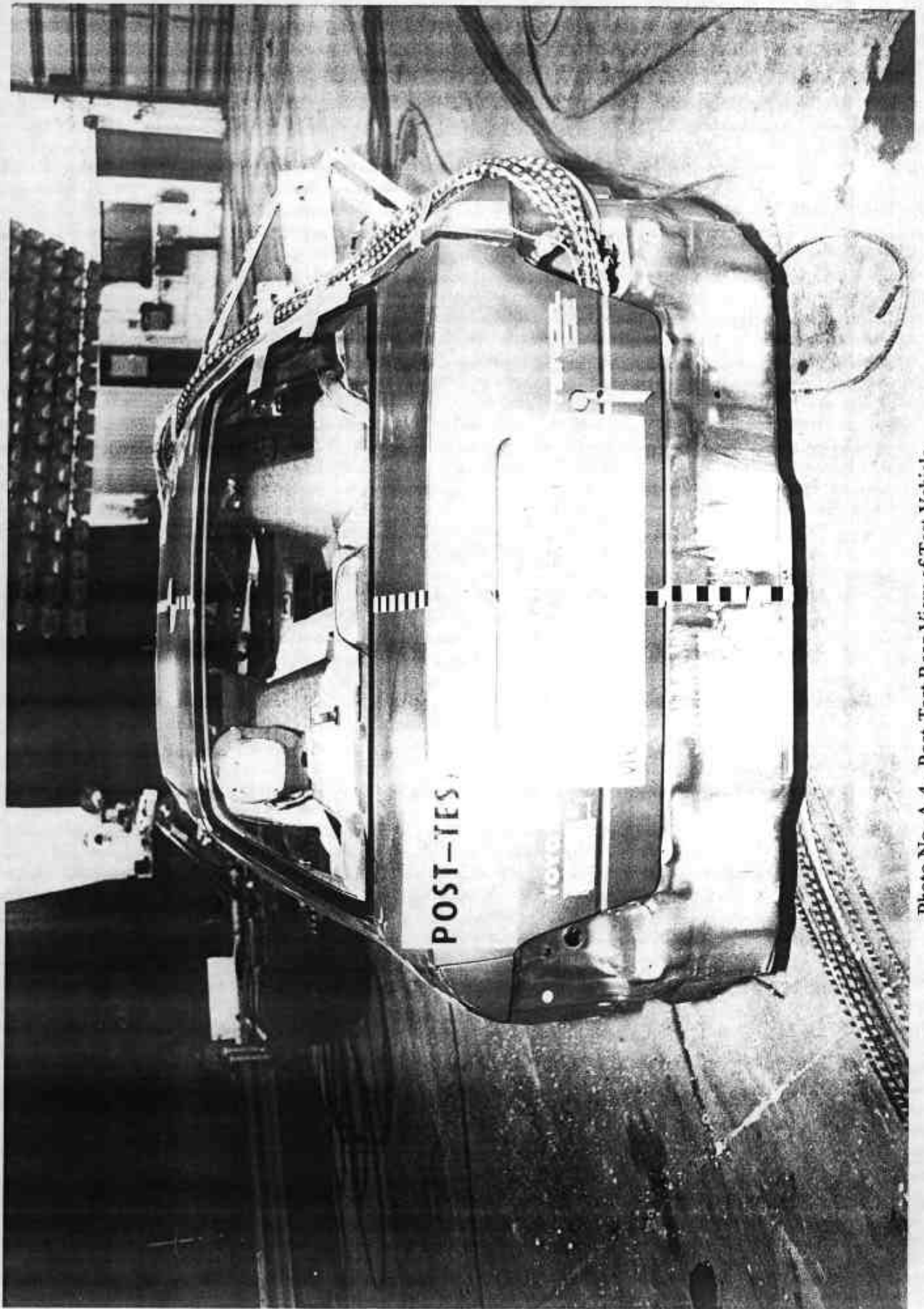
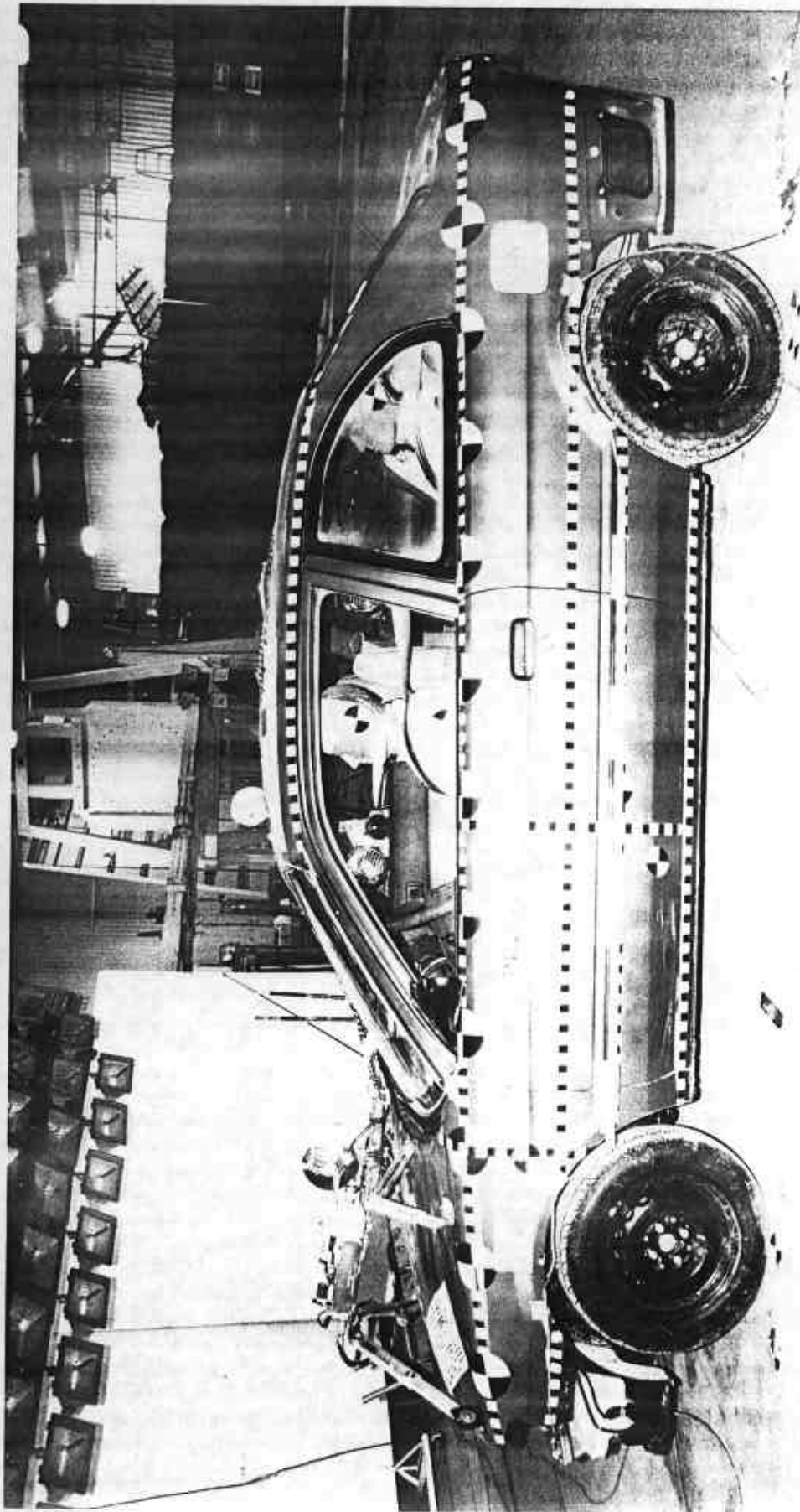


Photo No. A-4 - Post-Test Rear View of Test Vehicle



A-5

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

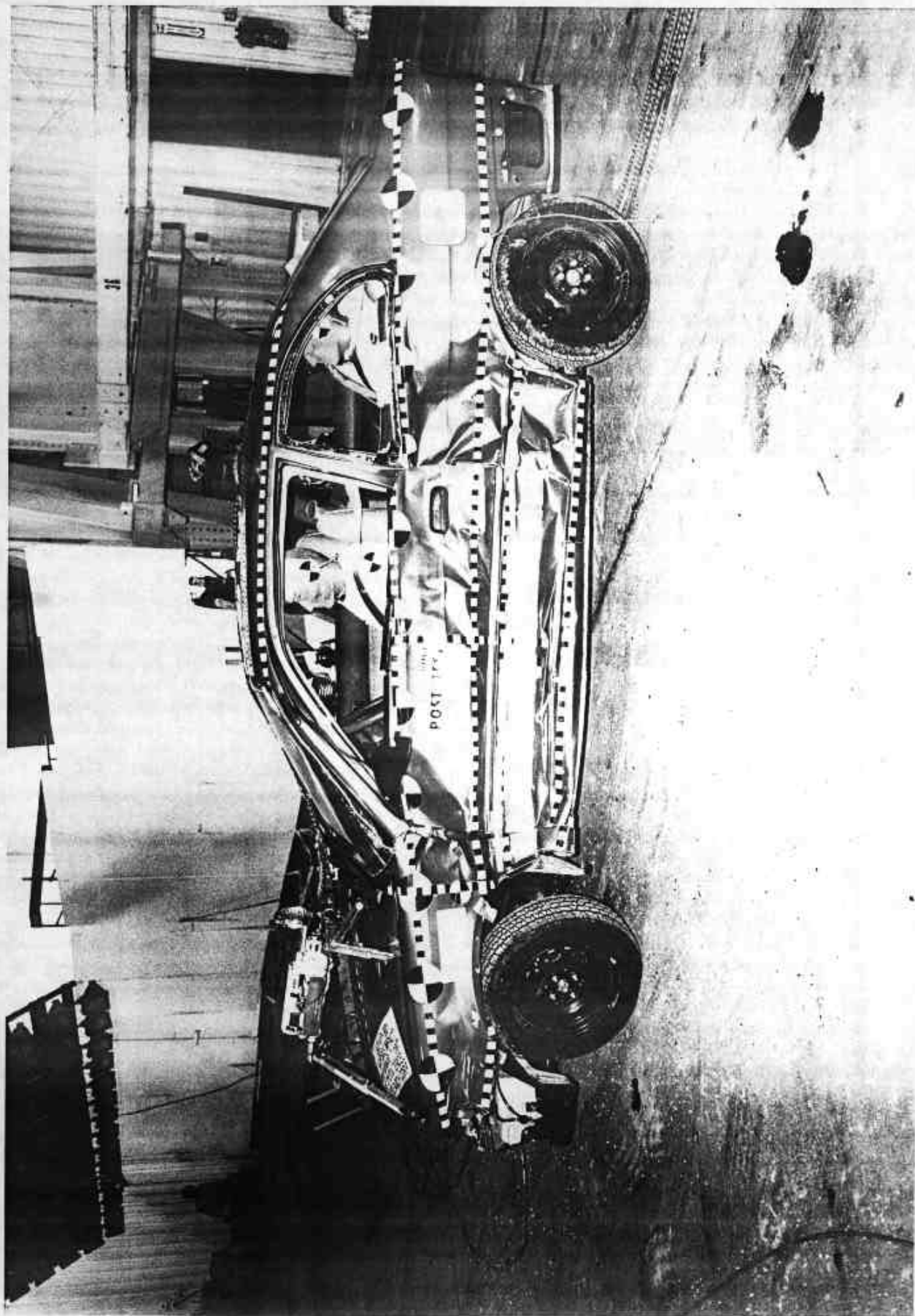


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

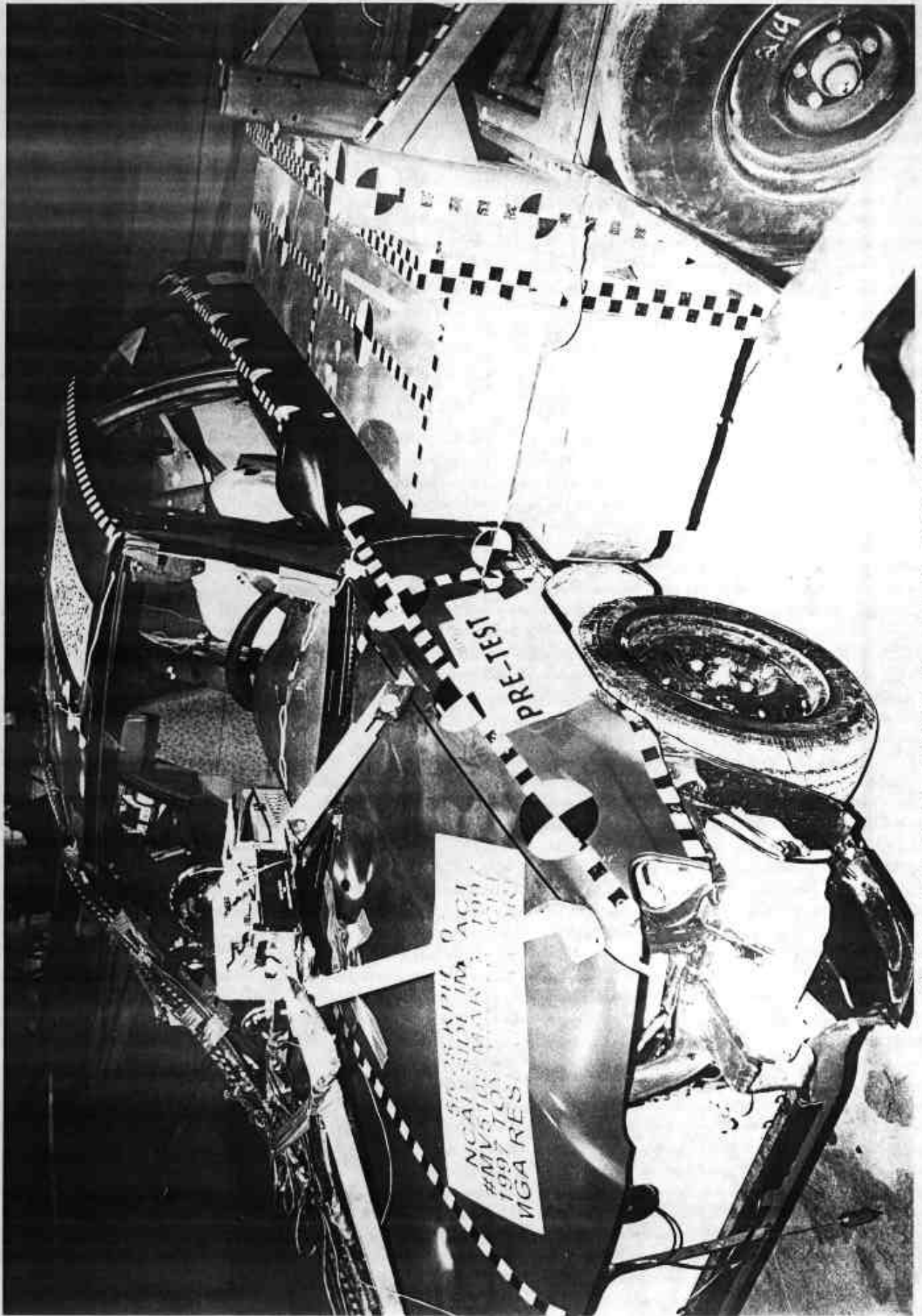


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)

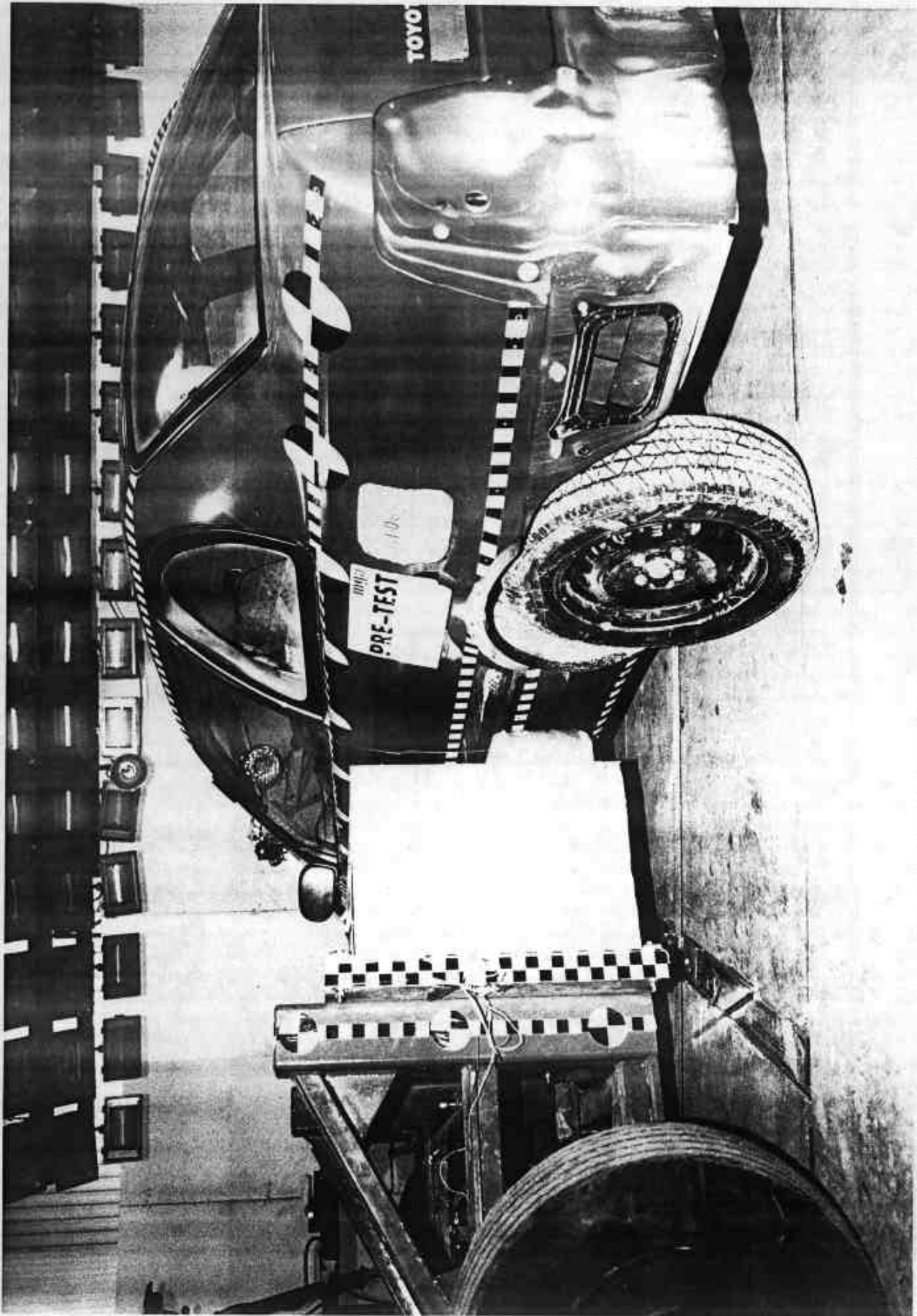


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

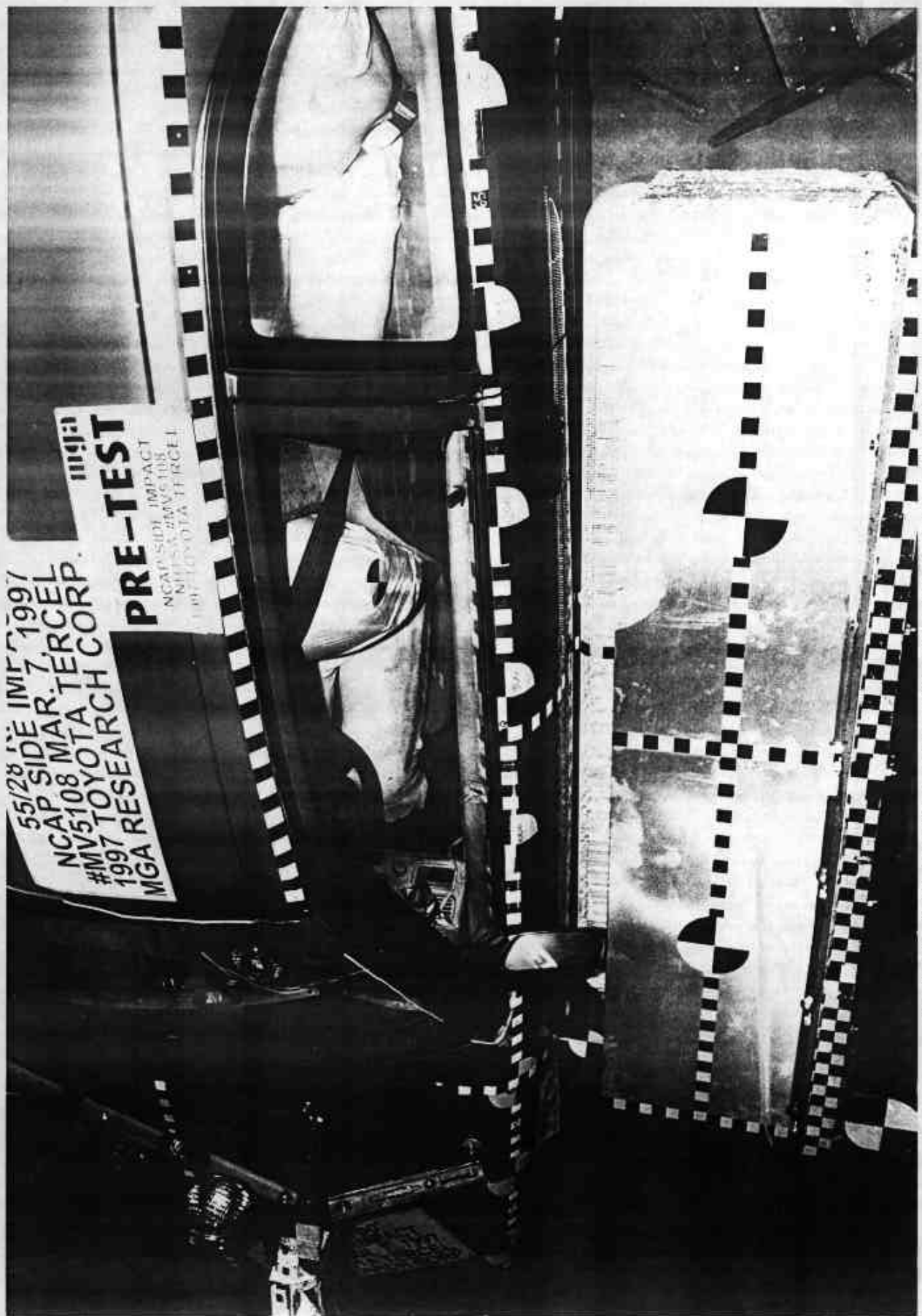


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

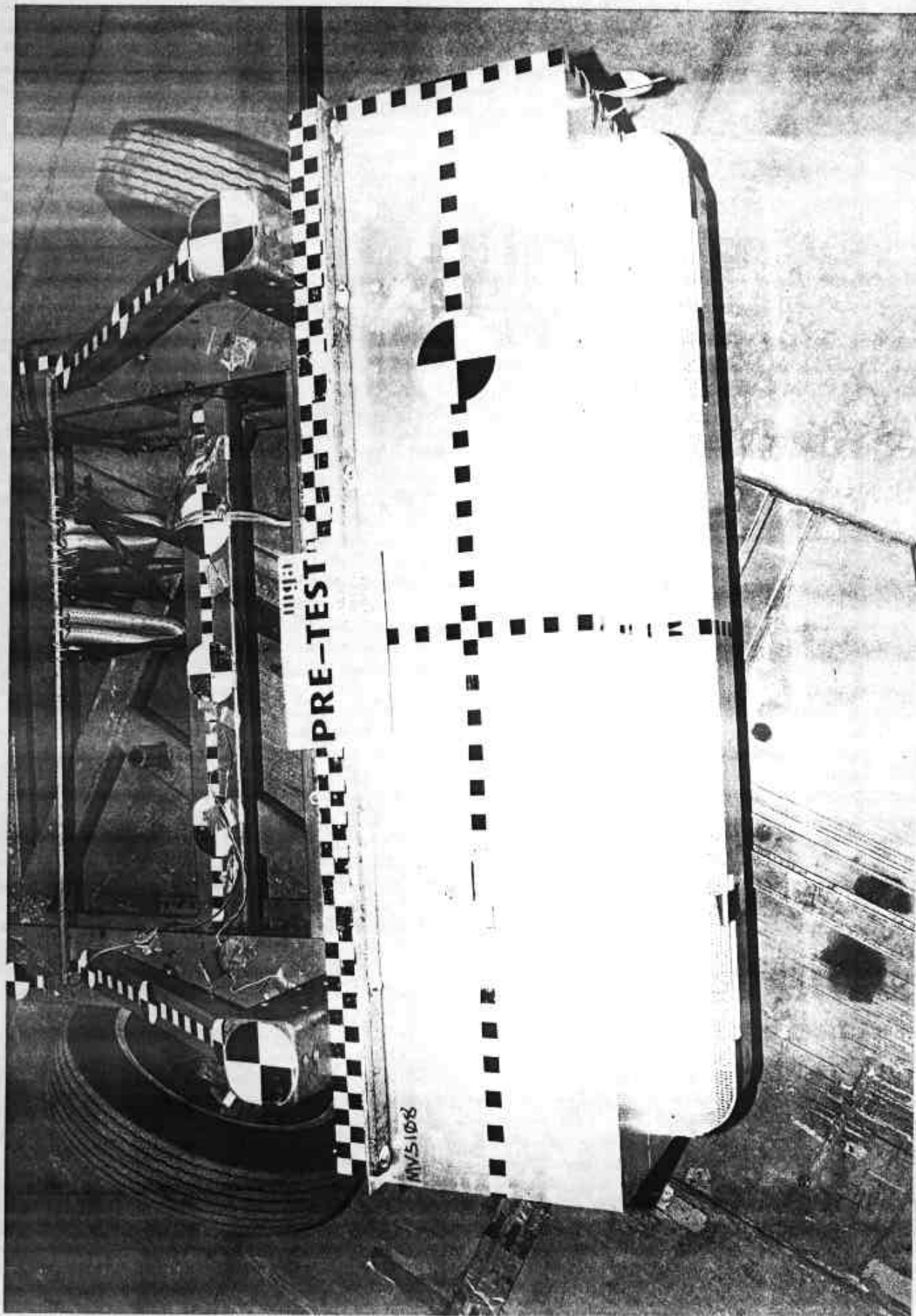


Photo No. A-10 - Pre-Test MDB Top View

A-10

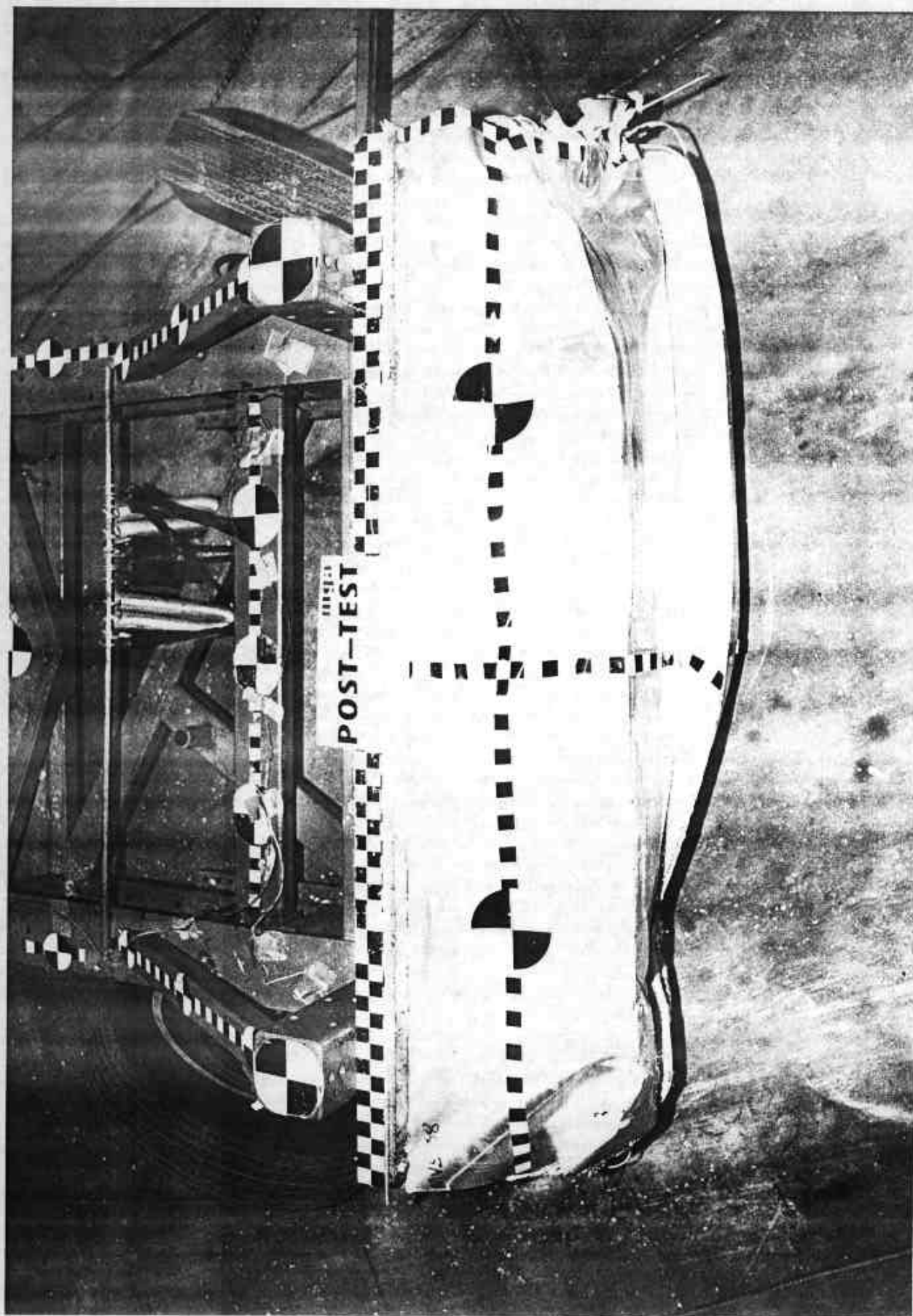


Photo No. A-11 - Post-Test MDB Top View

A-11

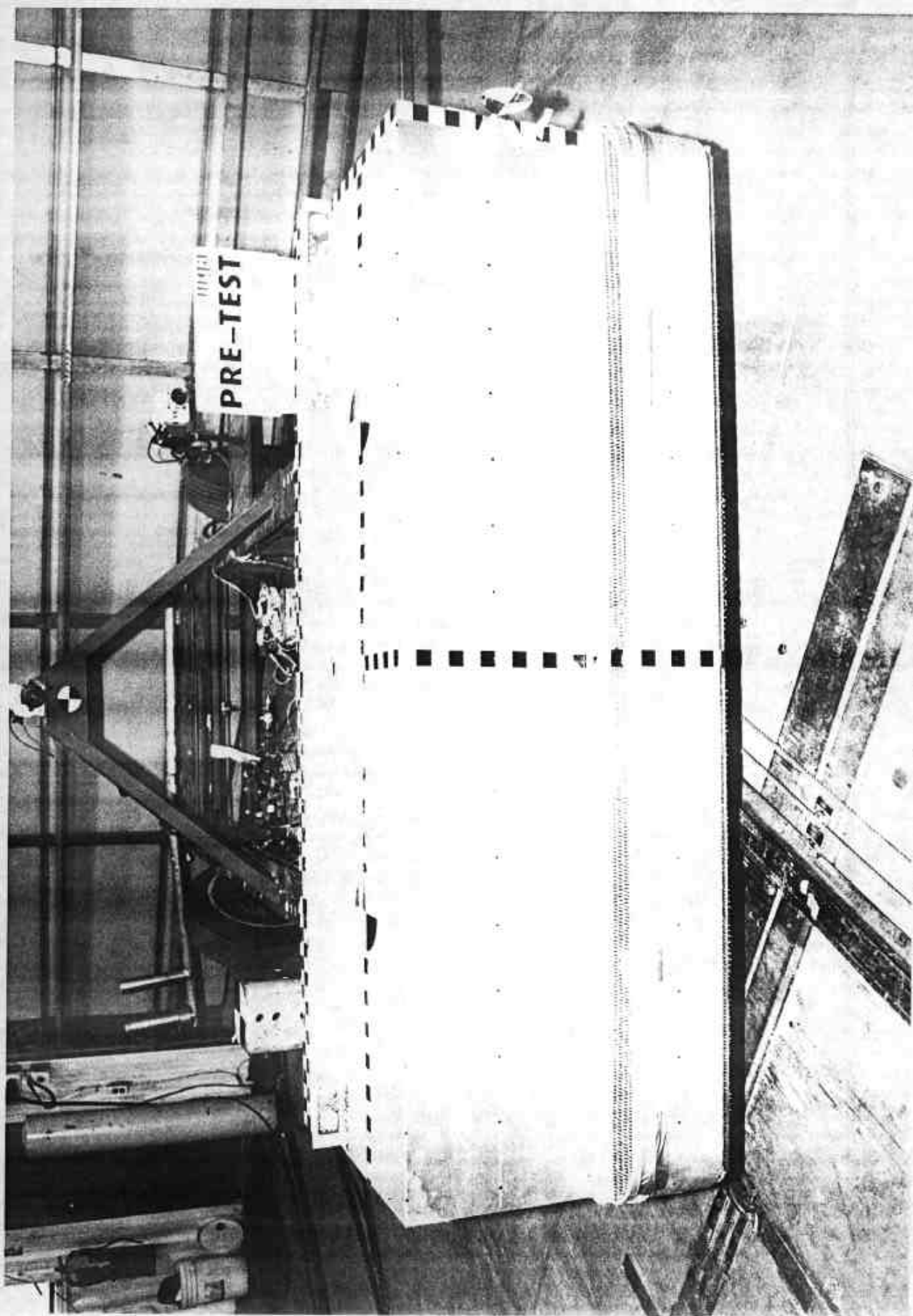


Photo No. A-12 - Pre-Test MDB Front View

A-12

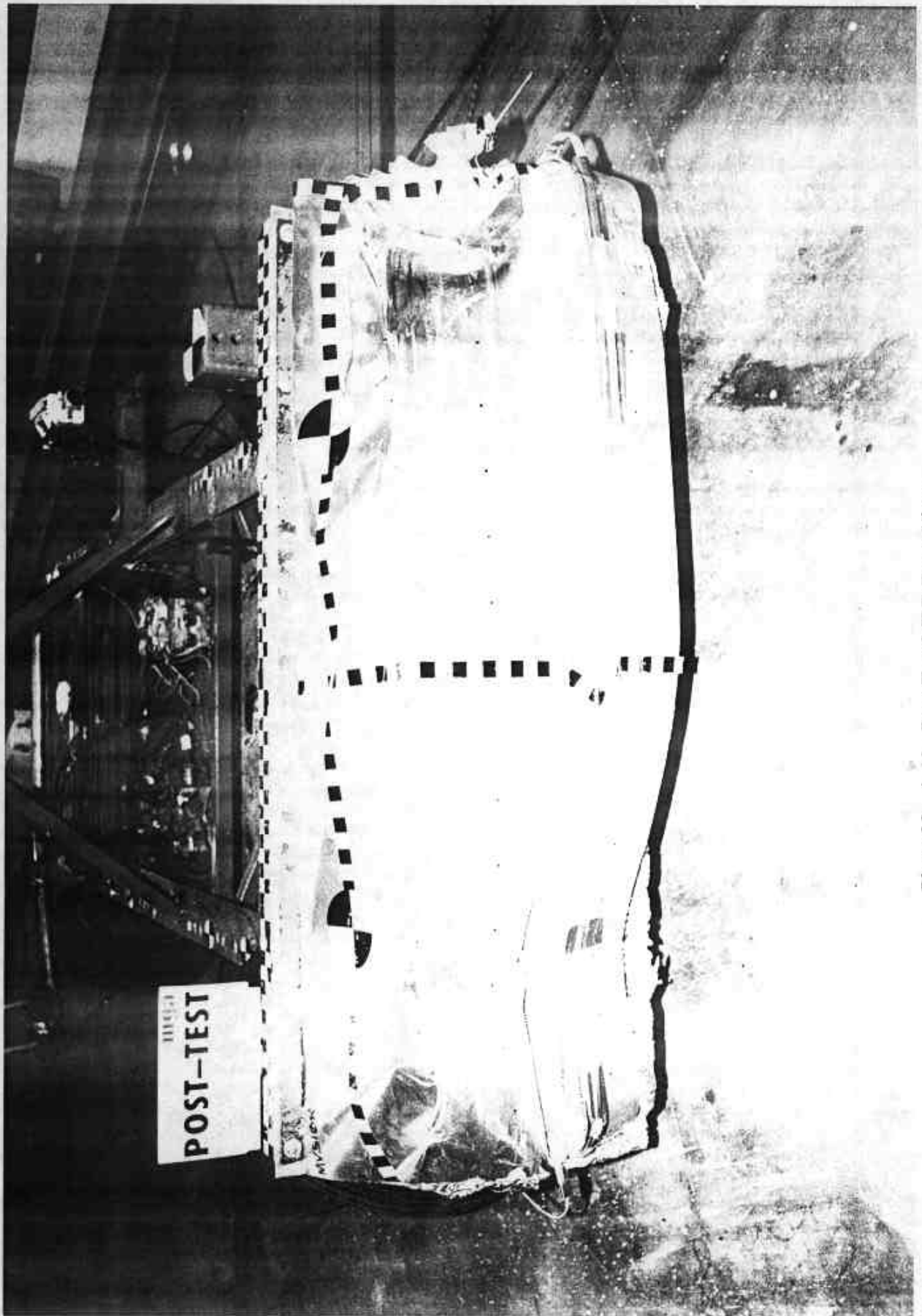


Photo No. A-13 - Post-Test MDB Front View

A-13

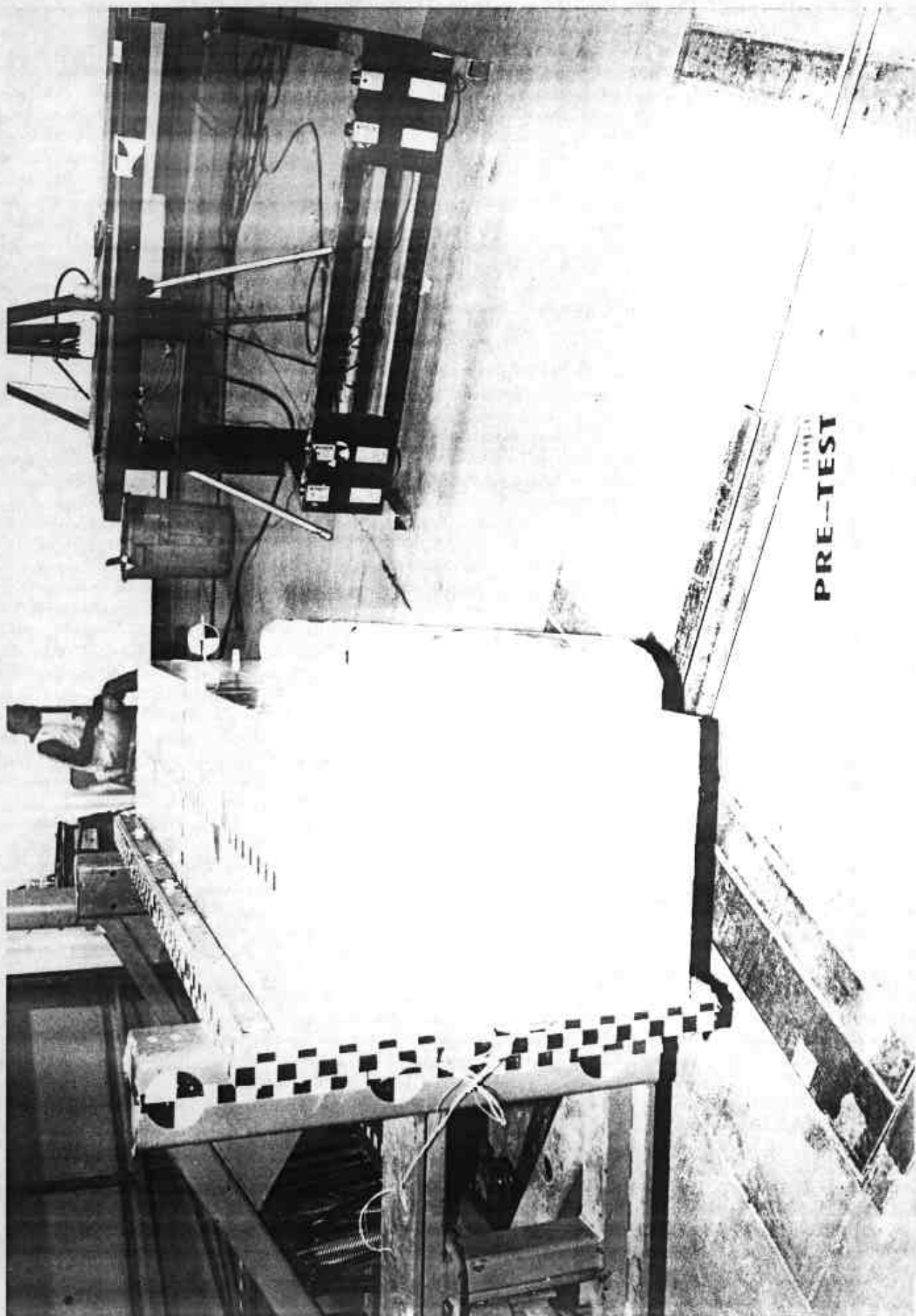


Photo No. A-14 - Pre-Test MDB Right Side View

A-14

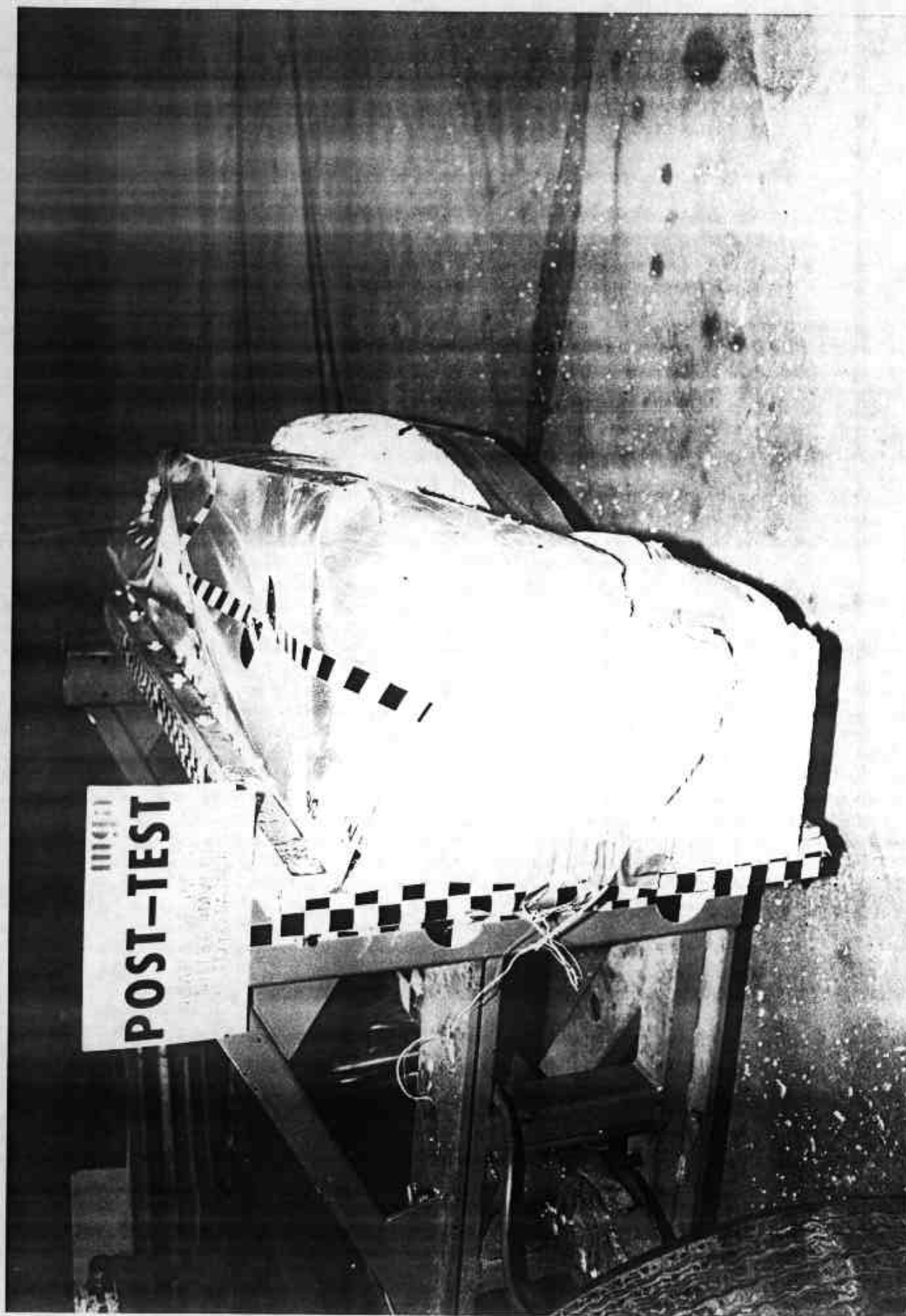


Photo No. A-15 - Post-Test MDB Right Side View

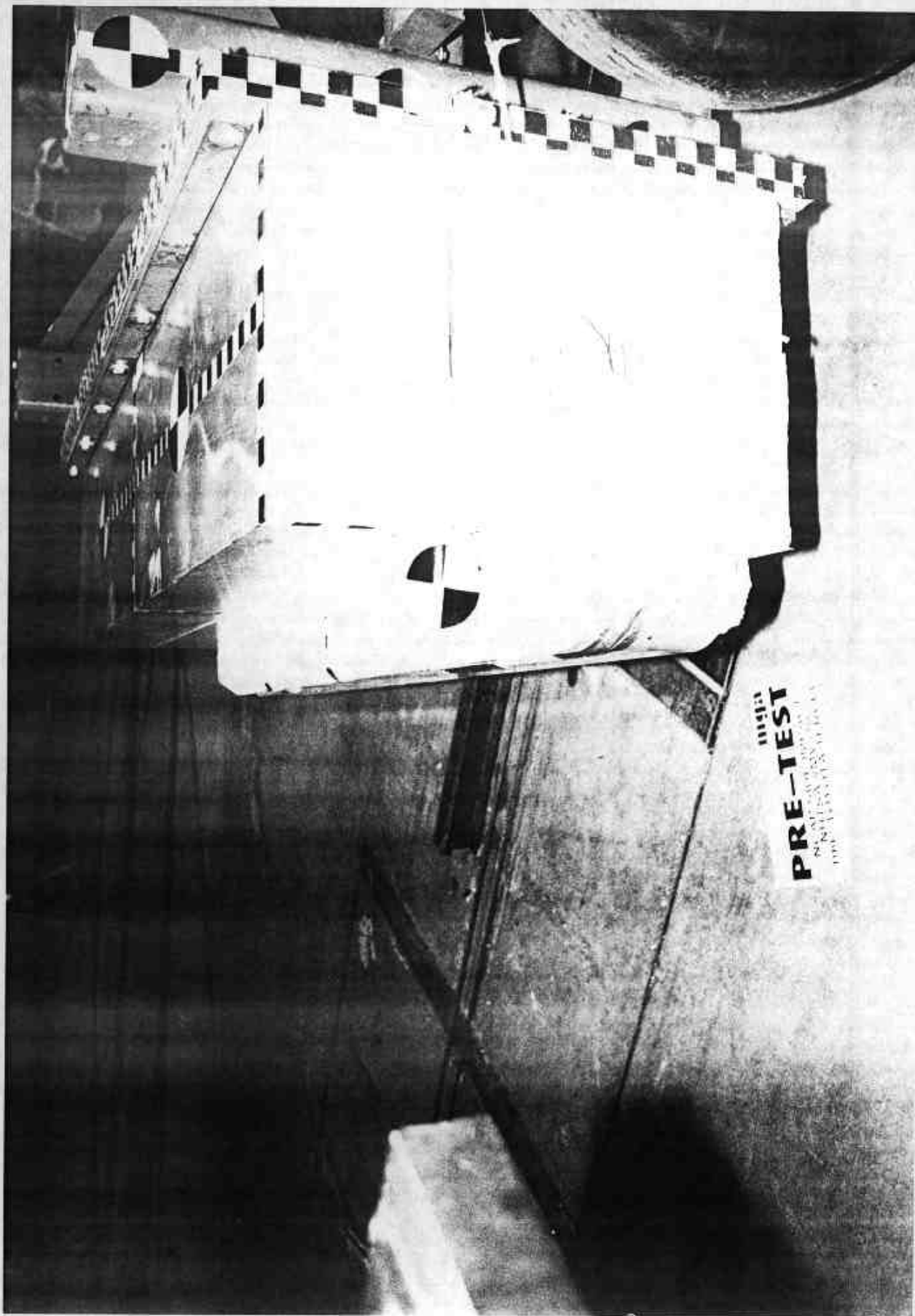


Photo No. A-16 - Pre-Test MDB Left Side View

A-16

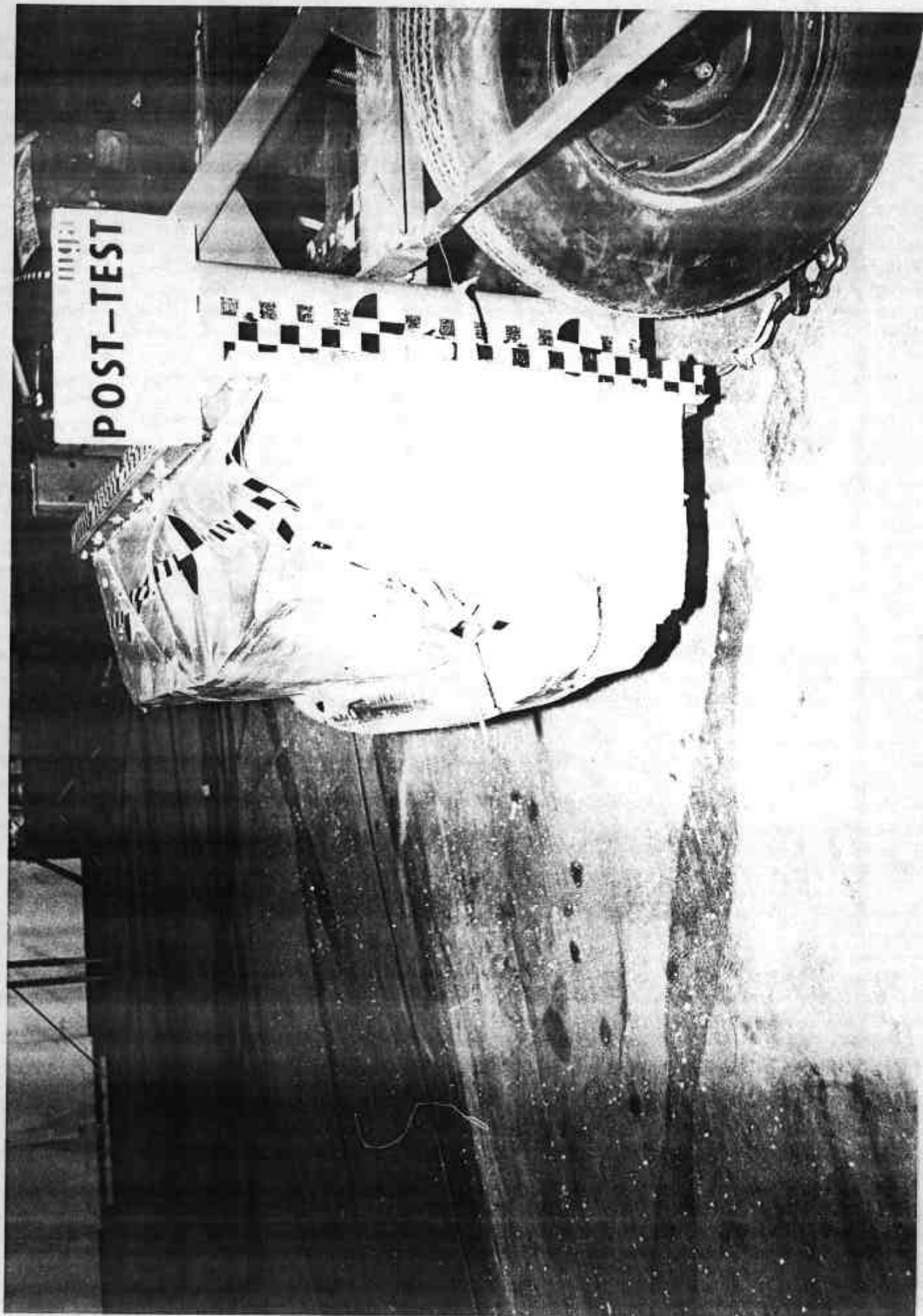


Photo No. A-17 - Post-Test MDB Left Side View

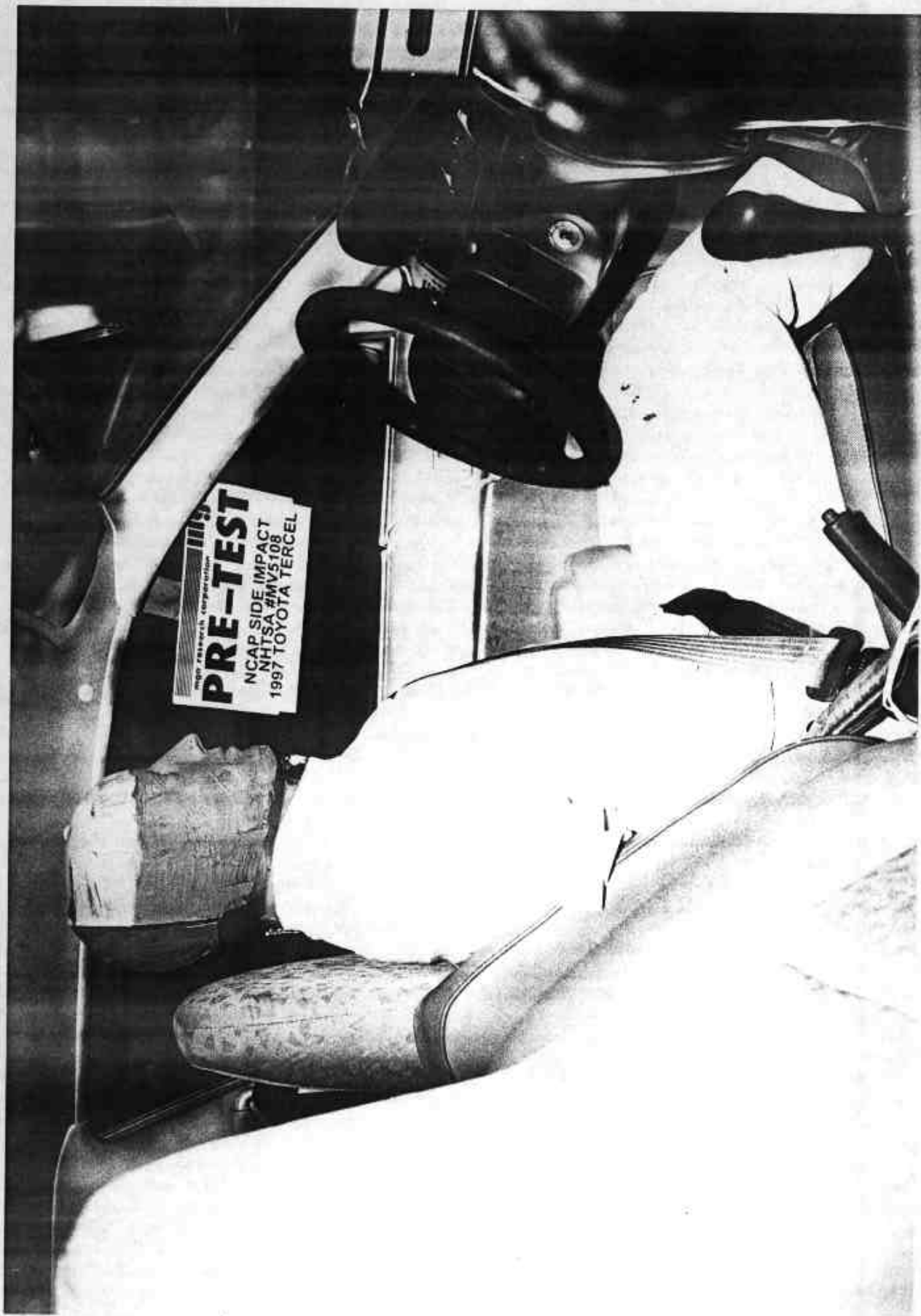


Photo No. A-18 - Pre-Test Driver Dummy Right Side View



Photo No. A-19 - Post-Test Driver Dummy Right Side View

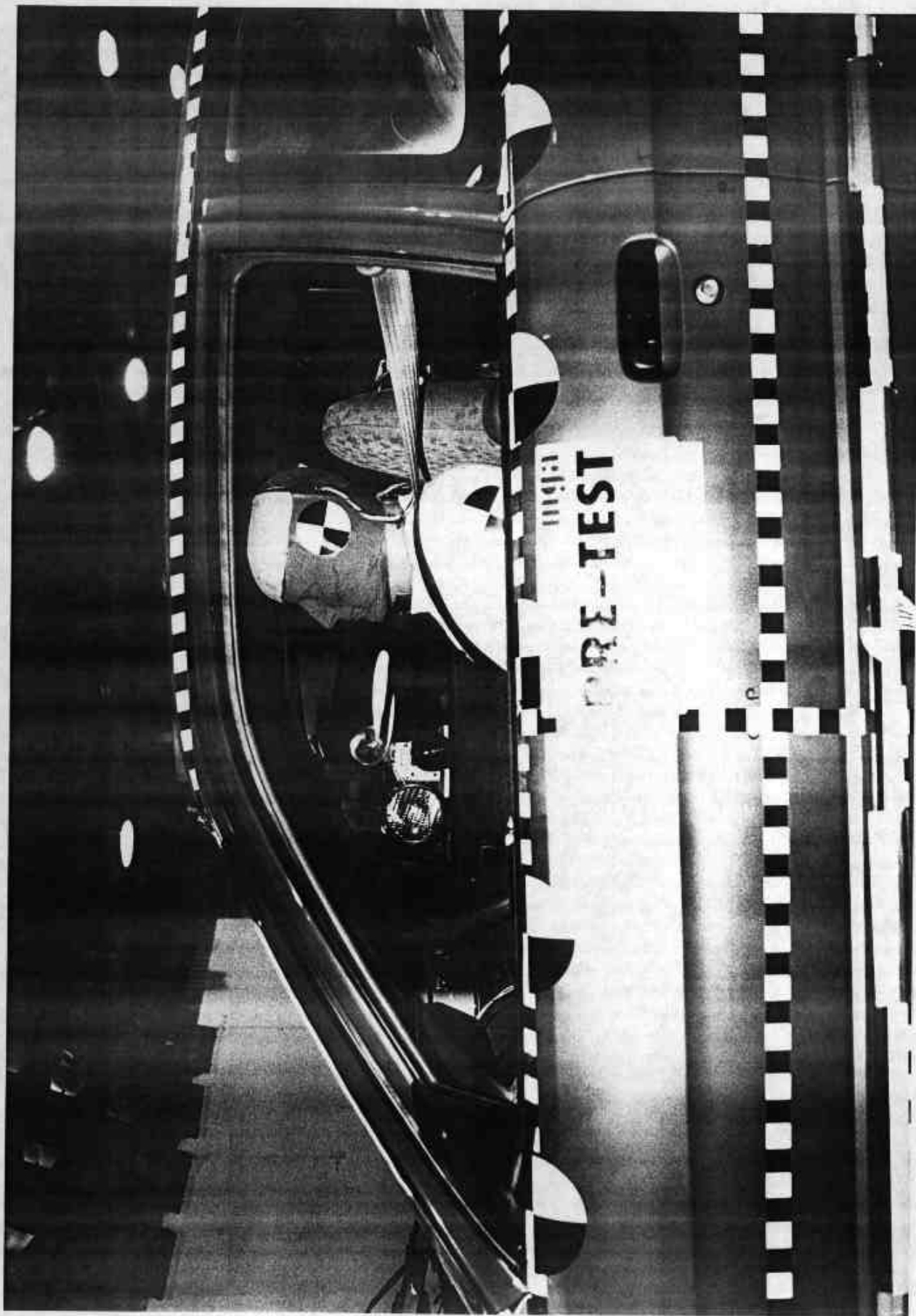


Photo No. A-20 - Pre-Test Driver Dummy Left Side View

A-20

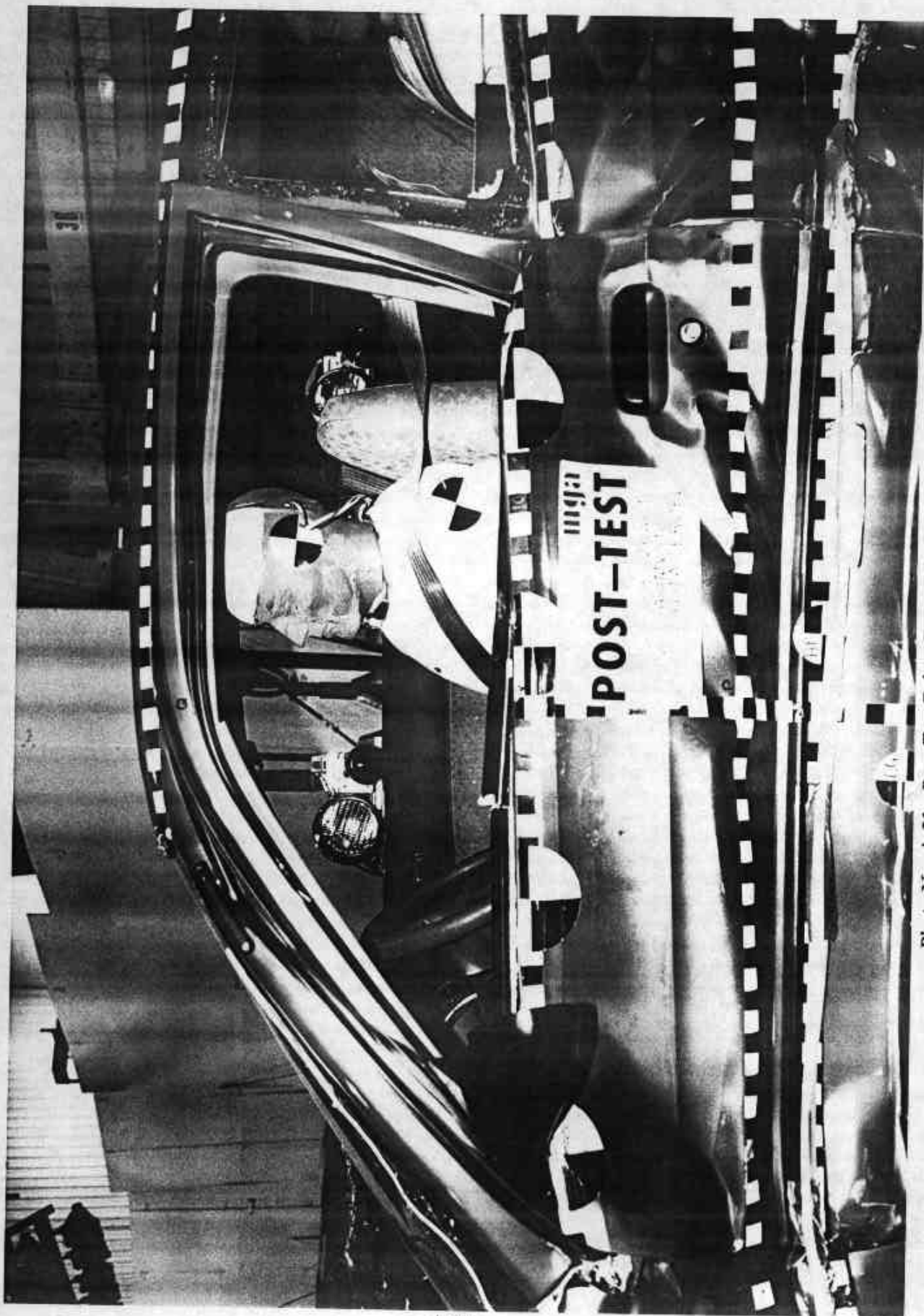
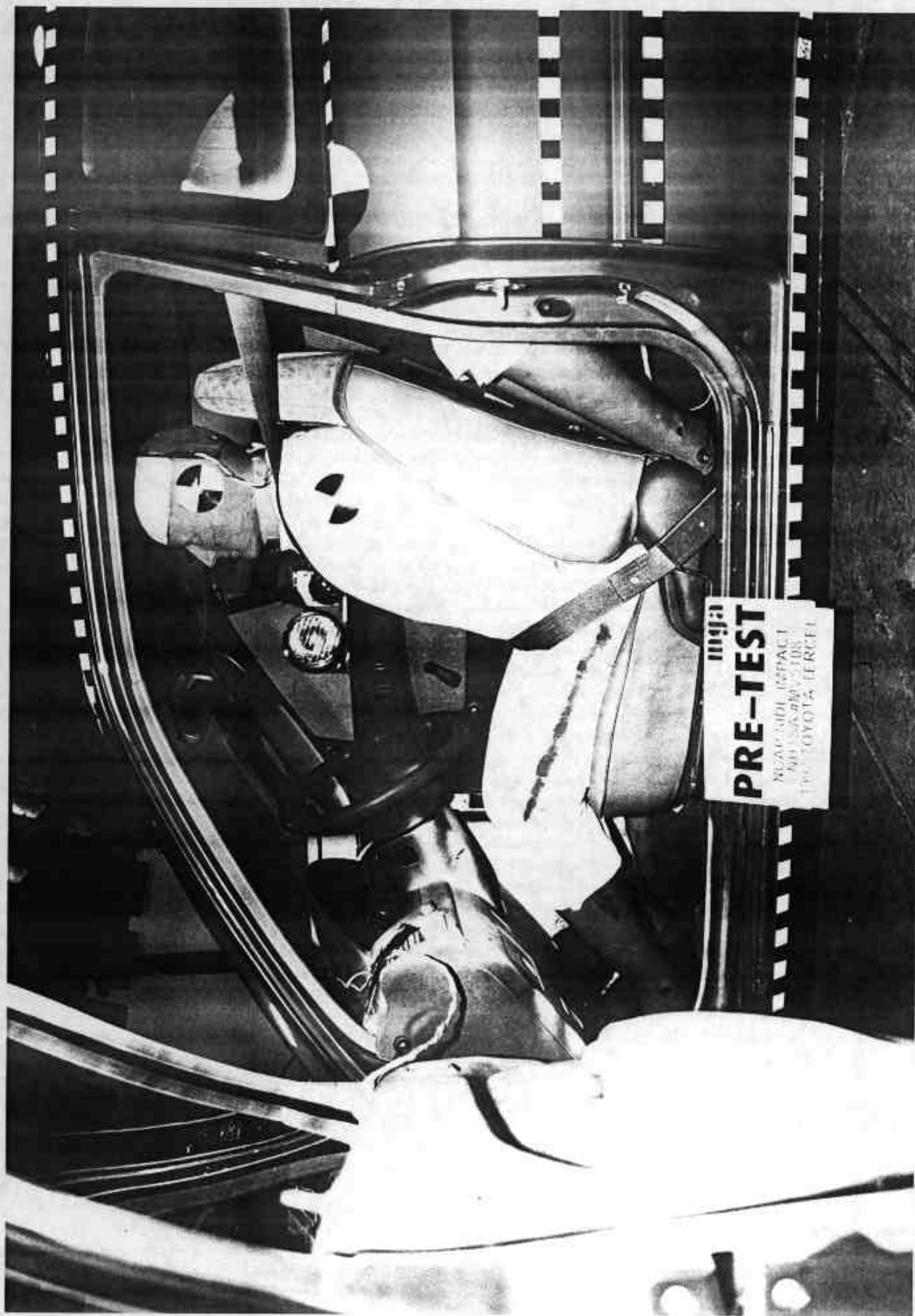


Photo No. A-21 - Post-Test Driver Dummy Left Side View

A-21



A-22

Photo No. A-22 - Pre-Test Driver Dummy Left Side View (Door Open)

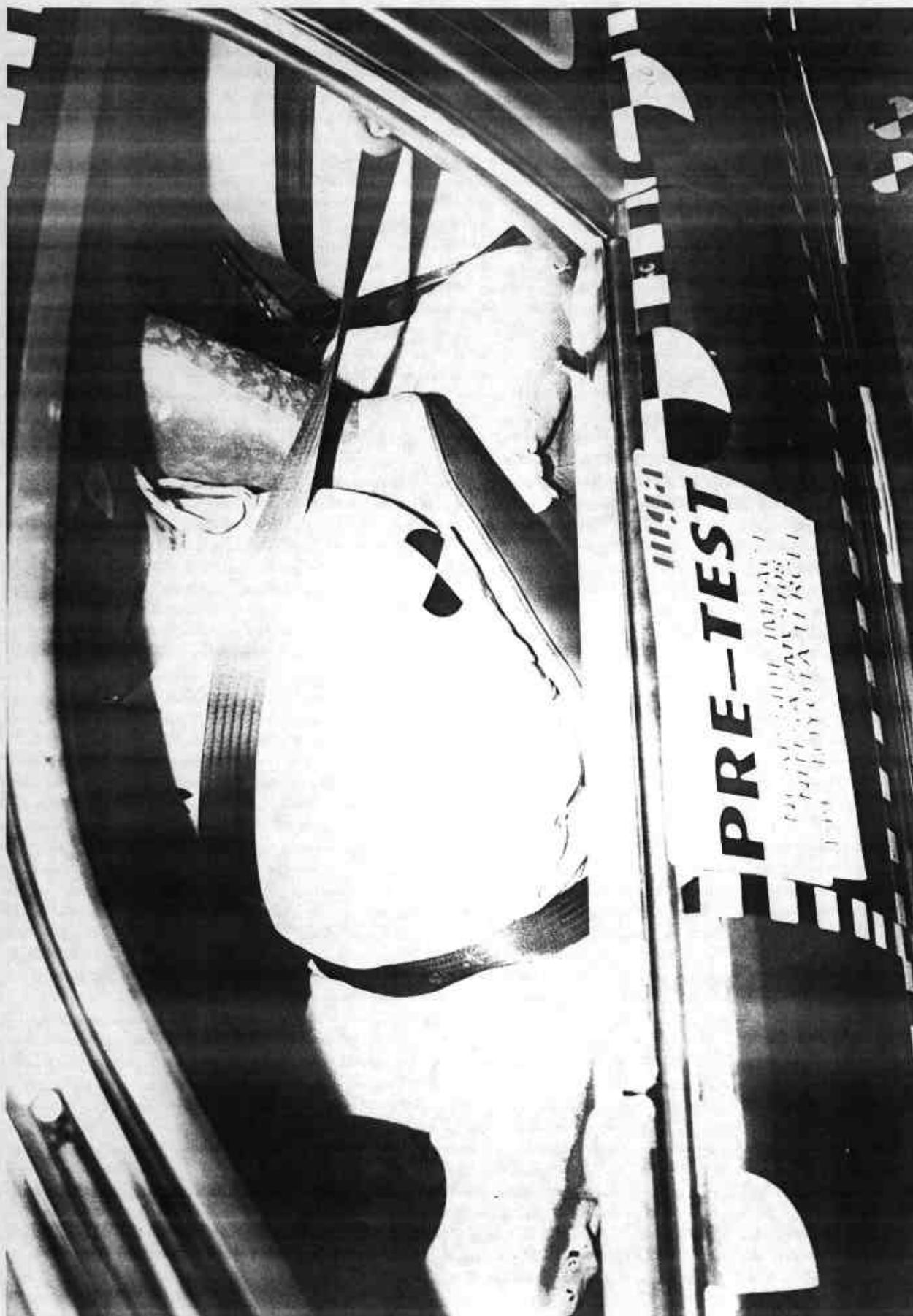
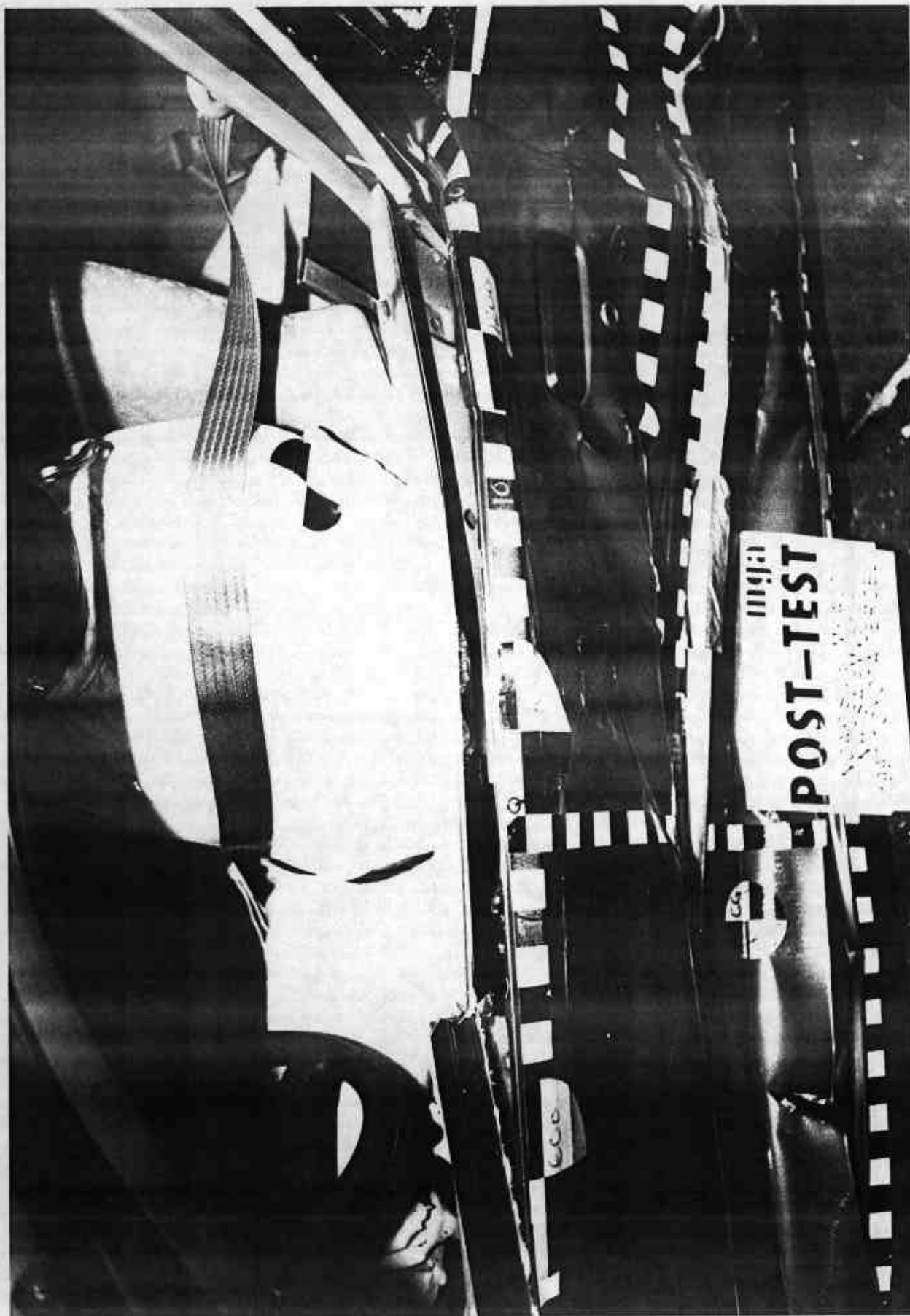


Photo No. A-23 - Pre-Test Driver Dummy Shoulder and Door Top View

A-23



A-24

Photo No. A-24 - Post-Test Driver Dummy Shoulder and Door Top View

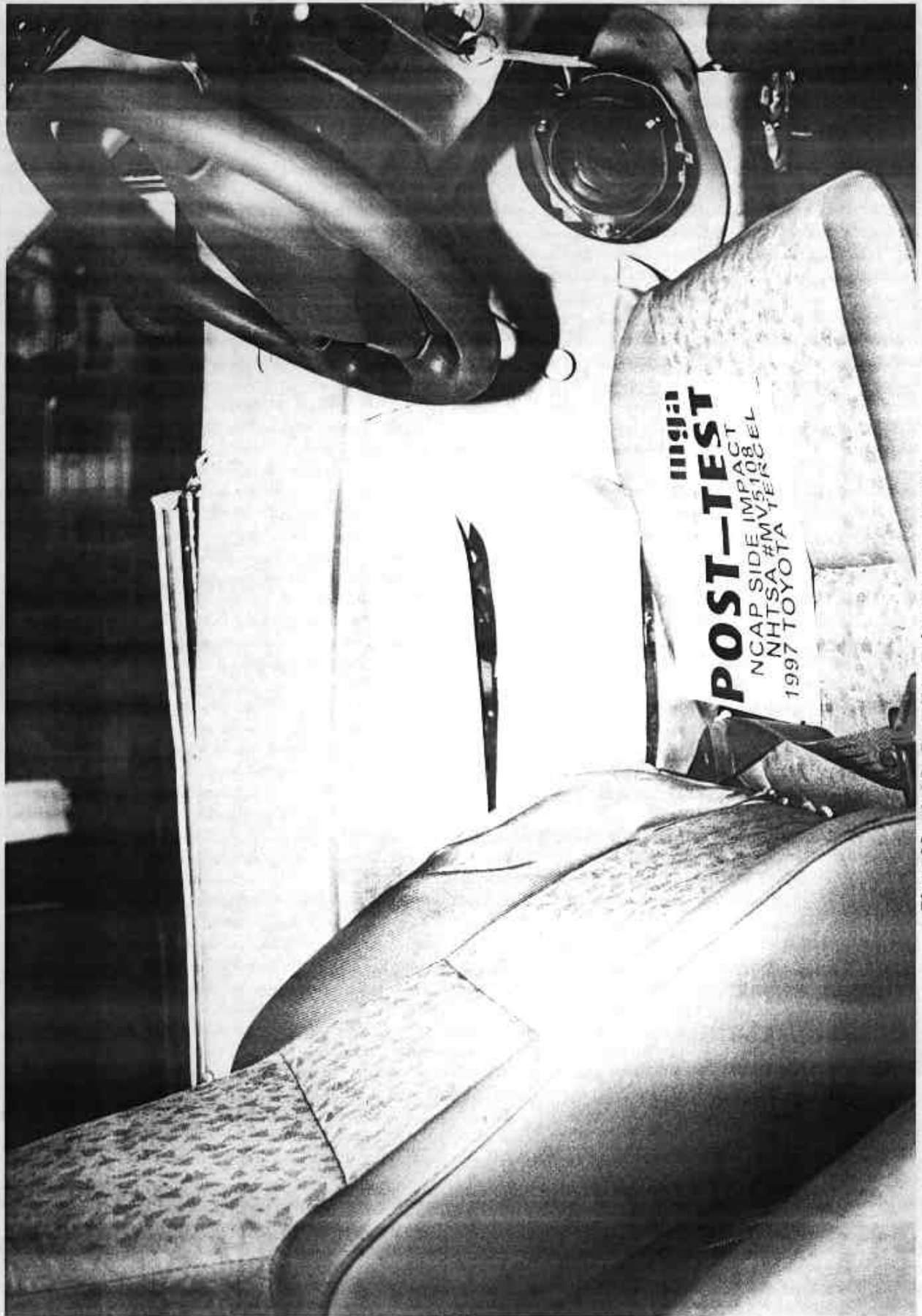


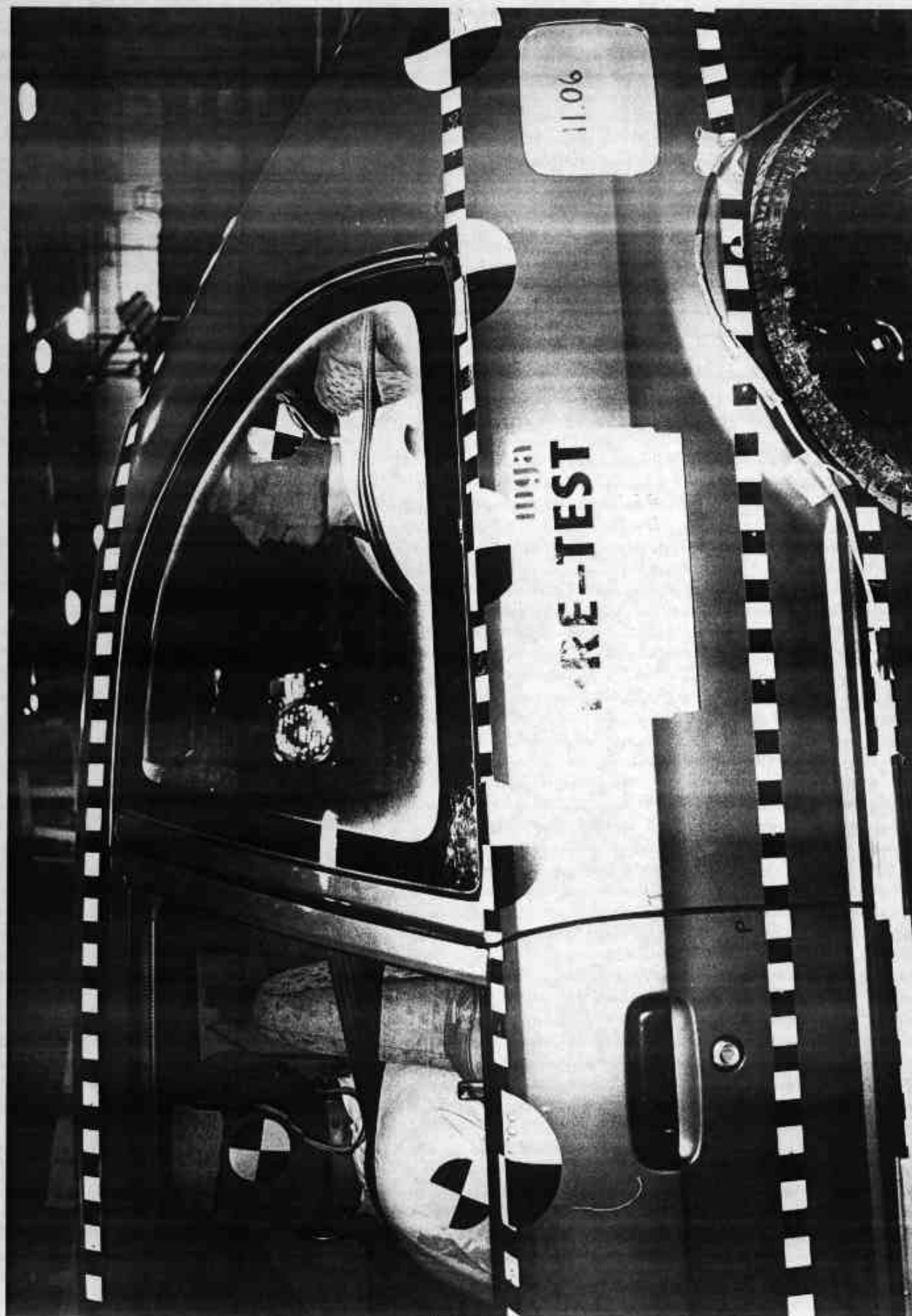
Photo No. A-25 - Post-Test Driver Dummy Contact



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



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



A-28

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

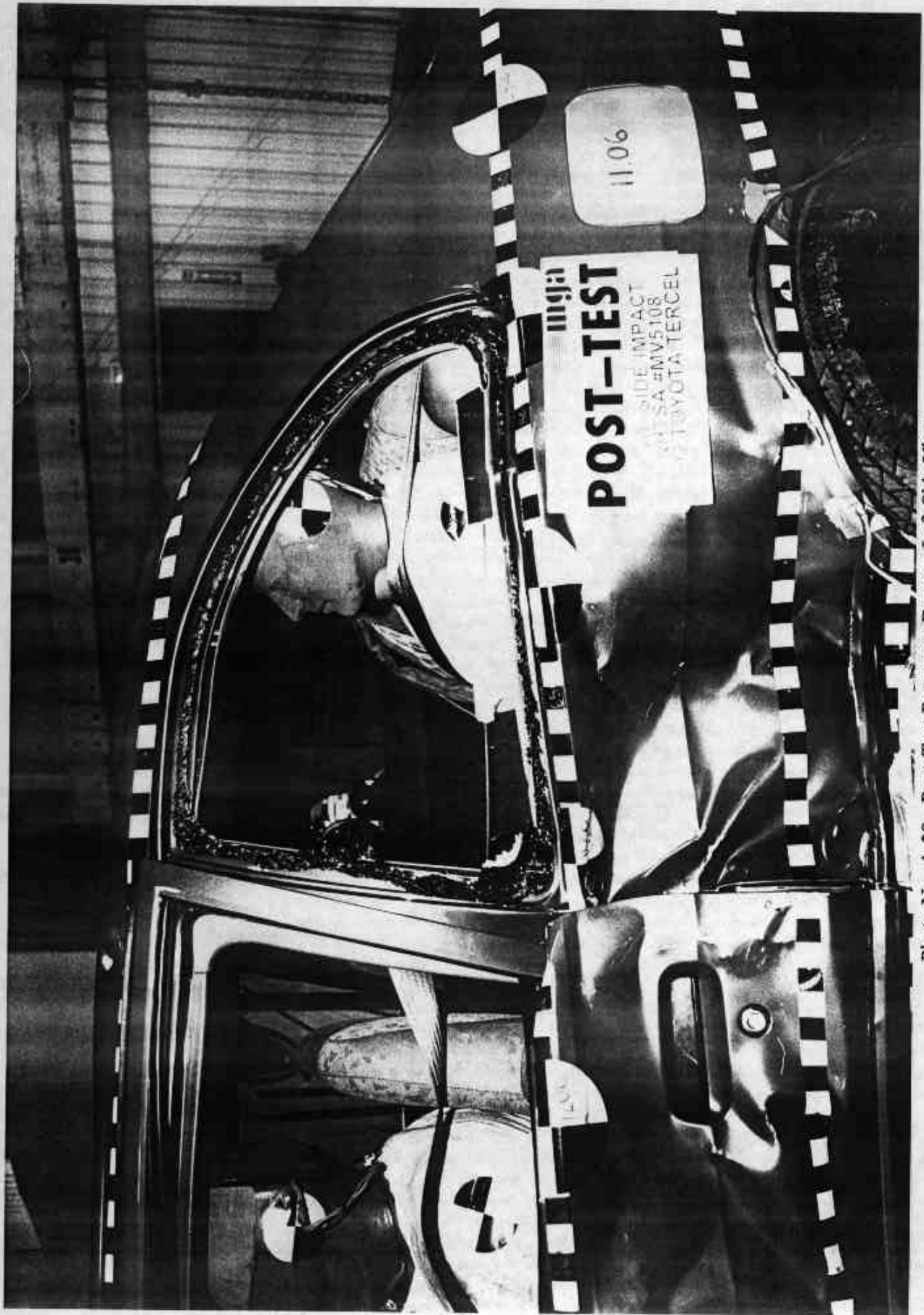


Photo No. A-29 - Post-Test Passenger Dummy Left Side View



Photo No. A-30 - Pre-Test Passenger Dummy Shoulder and Door Top View

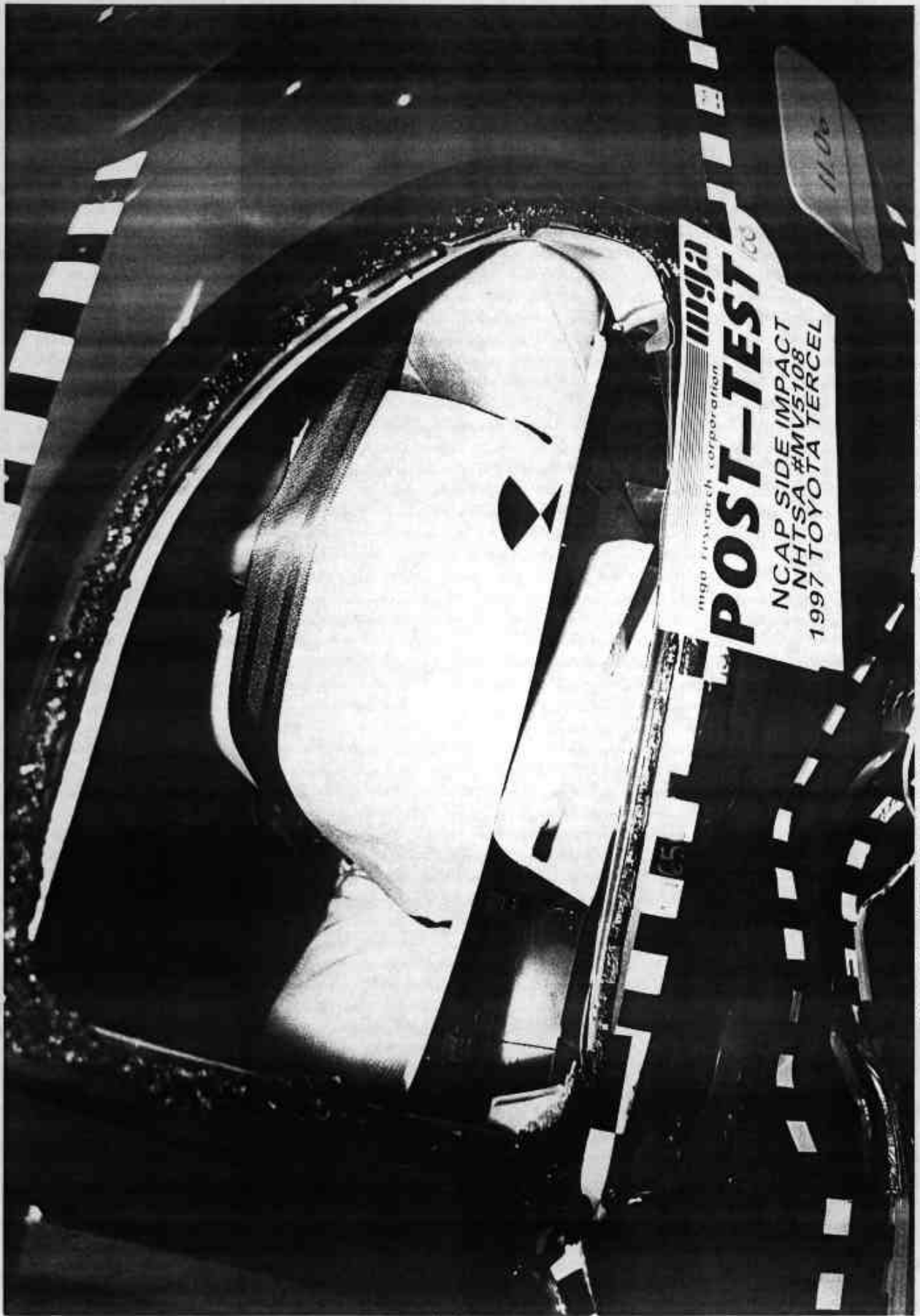


Photo No. A-31 - Post-Test Passenger Dummy Shoulder and Door Top View



Photo No. A-32 - Post-Test Passenger Dummy Contact

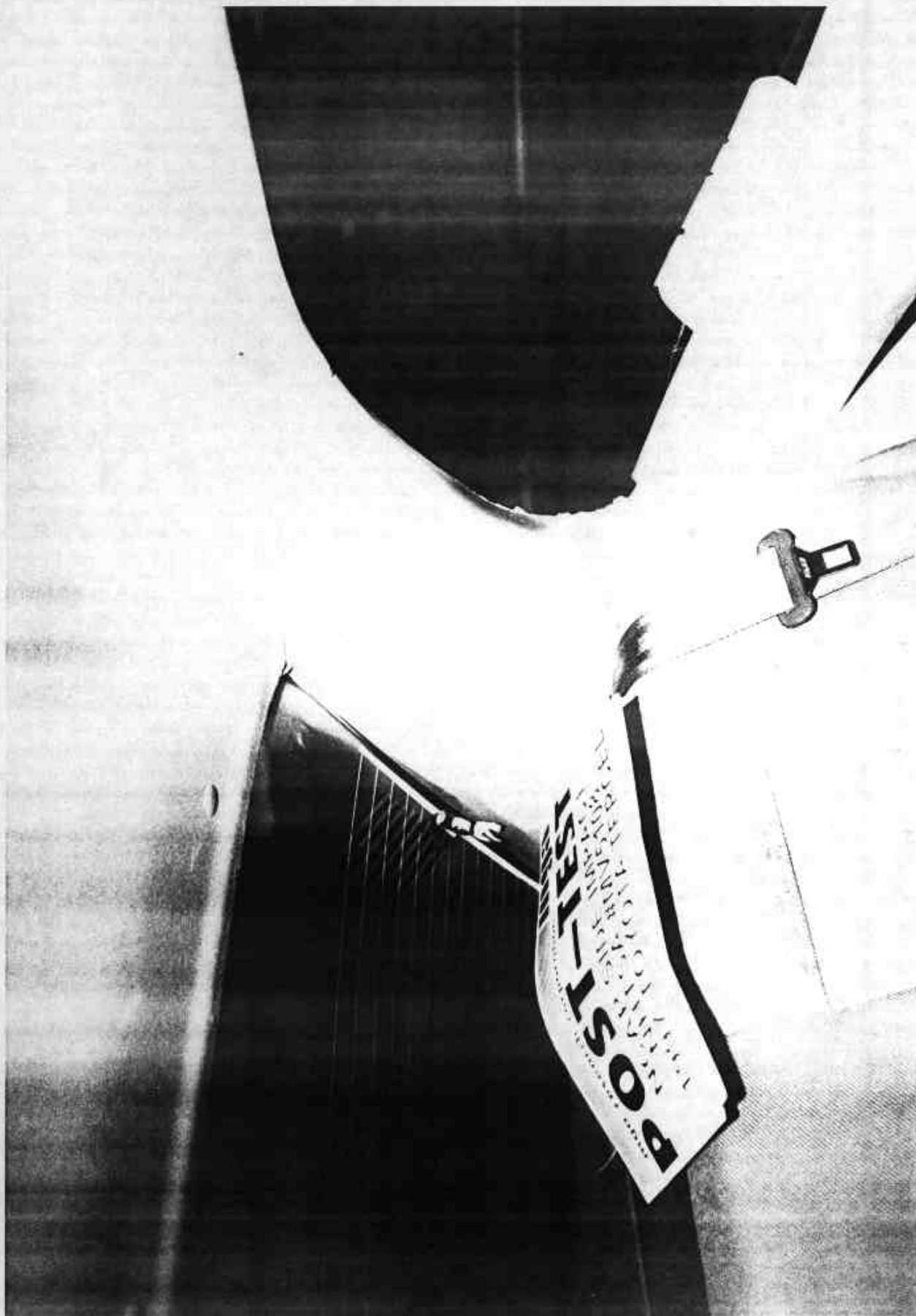


Photo No. A-33 - Post-Test Passenger Dummy Head Contact

A-33

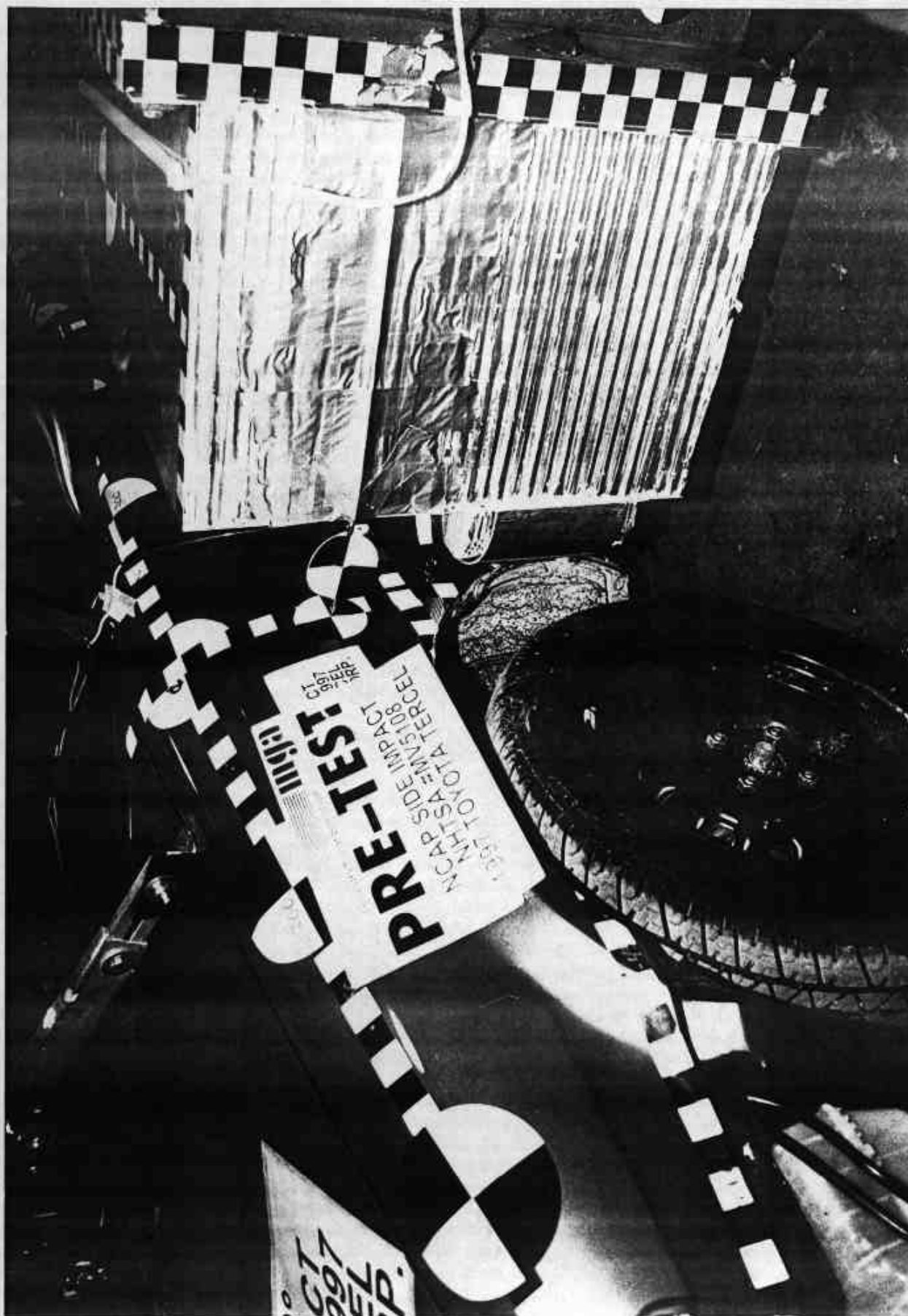
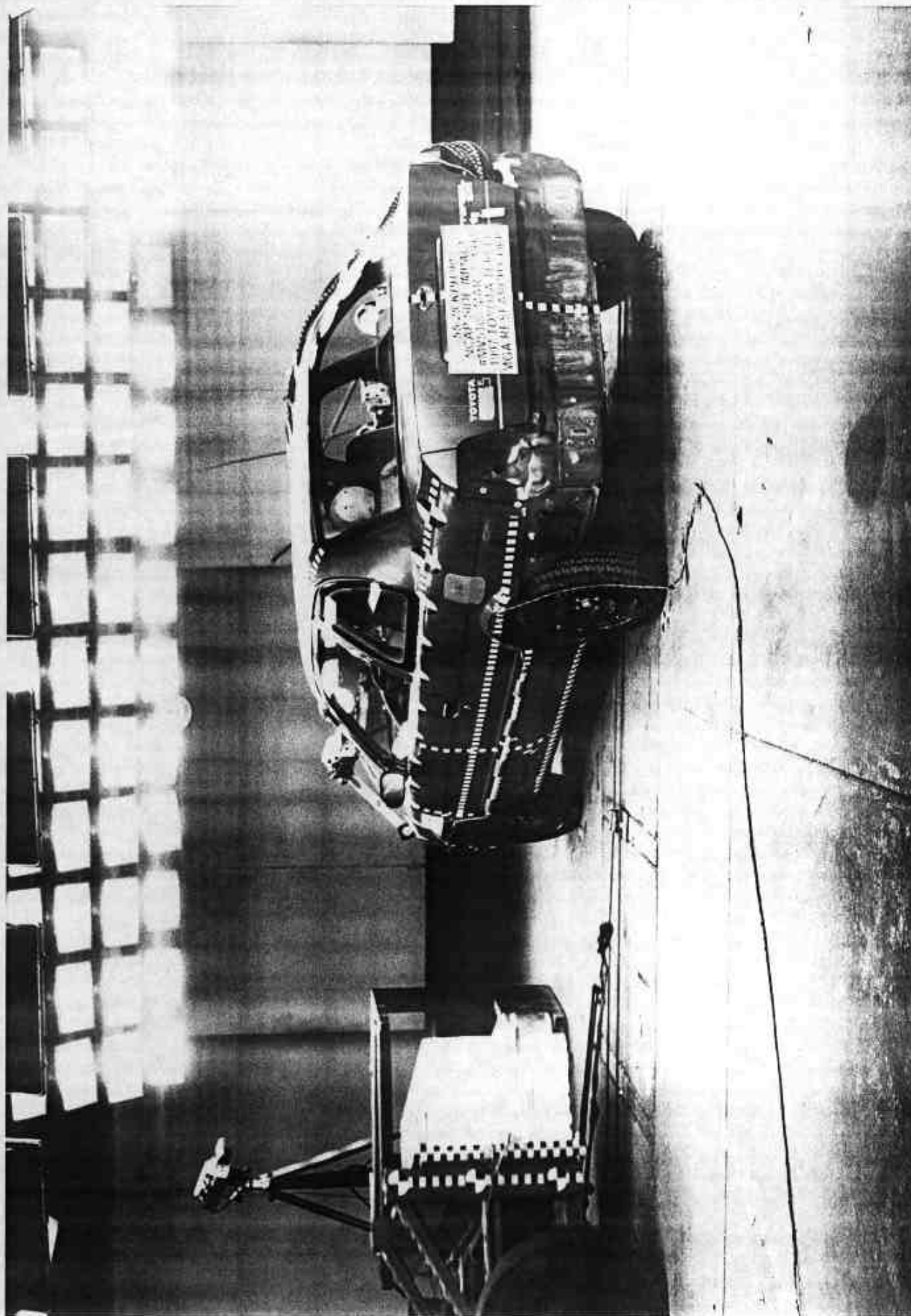


Photo No. A-34 - Pre-Test Left Front Impact Point on Vehicle

A-34



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



A-36

Photo No. A-36 - Pre Impact Photo

12

TOYOTA

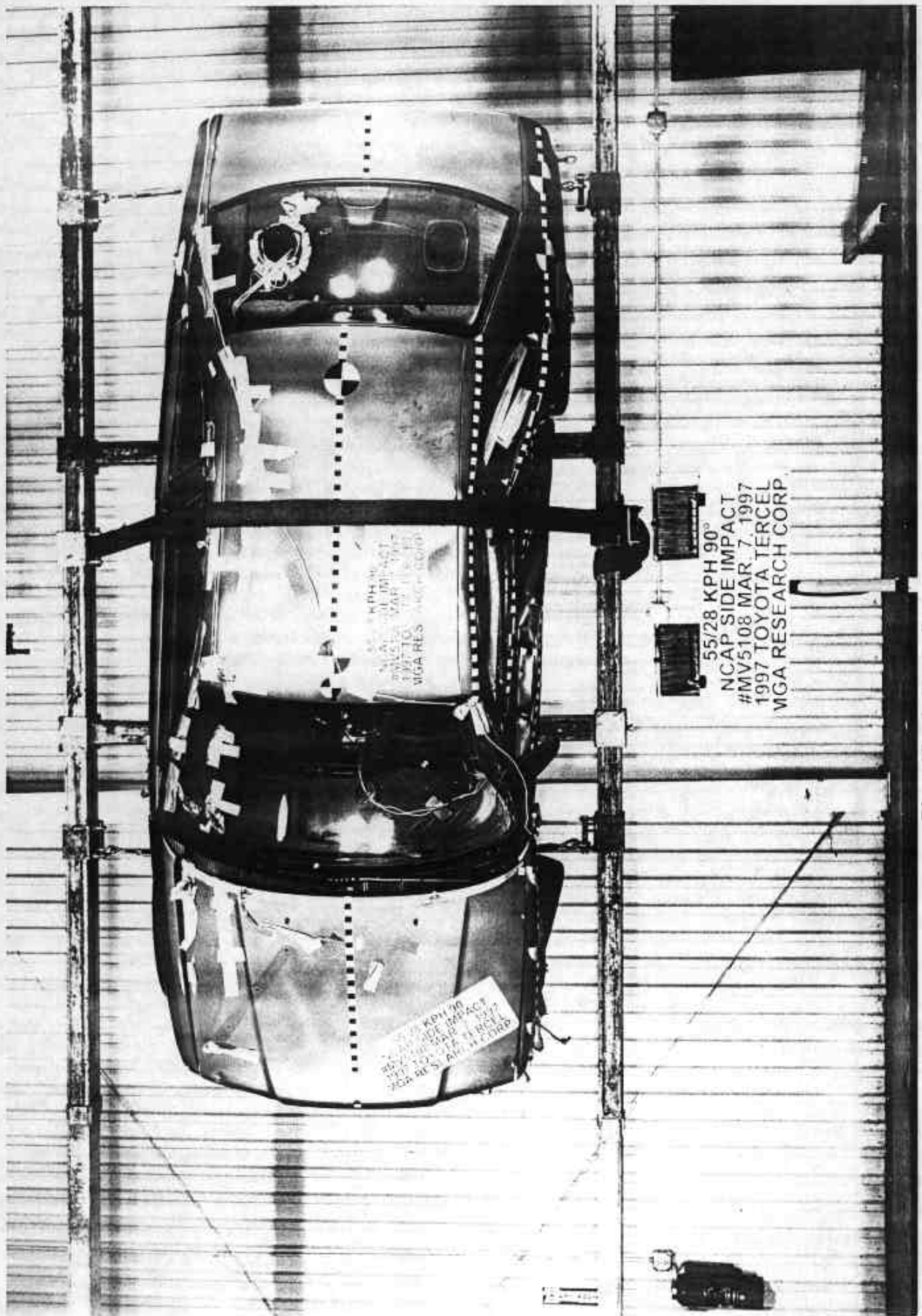
* MET BY TOYOTA MOTOR CORPORATION 11/96
GWR 3010LB GAWR FR 1630LB RR 1425LB
THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY BUMPER AND
THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE
JT2AC52L4V0231614 PASS CAR



C/IR 3L9/FB42 MODEL EL53L-ACHRX4
A/TM -06A/A132L MADE IN JAPAN
NO 808

TIRE - LOADING INFORMATION									
VEHICLE CAPACITY WEIGHT :	350kg (775lbs)								
OCCUPANTS :	FRT. 2 RR. 3 TOTAL 5								
TIRE SIZE :	P175/65R14 81S, P185/60R14 82H								
SPARE TIRE :	T115/70D14								
COLD TIRE PRESSURES :	kpa (psi)								
P175/65R14 81S :	FRT. 200(28) RR. 200(28)								
P185/60R14 82H :	FRT. 180(26) RR. 180(26)								
SPARE TIRE :	420 (60)								
SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION									
<table border="0"> <tr> <td>VEHICLE WEIGHT :</td> <td>350kg (775lbs)</td> </tr> <tr> <td>OCCUPANTS :</td> <td>FRT. 2 RR. 3 TOTAL 5</td> </tr> <tr> <td>TIRE SIZE :</td> <td>P175/65R14 81S, P185/60R14 82H</td> </tr> <tr> <td>SPARE TIRE :</td> <td>T115/70D14</td> </tr> </table>		VEHICLE WEIGHT :	350kg (775lbs)	OCCUPANTS :	FRT. 2 RR. 3 TOTAL 5	TIRE SIZE :	P175/65R14 81S, P185/60R14 82H	SPARE TIRE :	T115/70D14
VEHICLE WEIGHT :	350kg (775lbs)								
OCCUPANTS :	FRT. 2 RR. 3 TOTAL 5								
TIRE SIZE :	P175/65R14 81S, P185/60R14 82H								
SPARE TIRE :	T115/70D14								

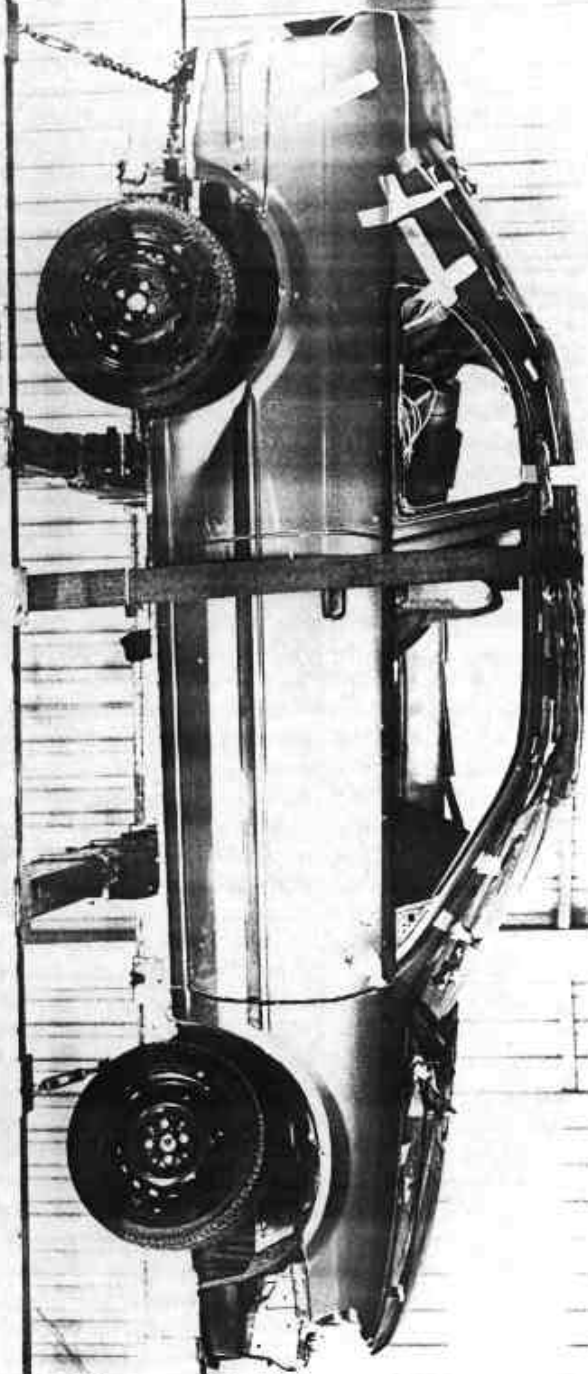
Photo No. A-38 - Tire Placard



55/28 KPH 90°
NCAP SIDE IMPACT
#MV5108 MAR 7, 1997
1997 TOYOTA TERCEL
MGA RESEARCH CORP.

55/28 KPH 90°
NCAP SIDE IMPACT
#MV5108 MAR 7, 1997
1997 TOYOTA TERCEL
MGA RESEARCH CORP.

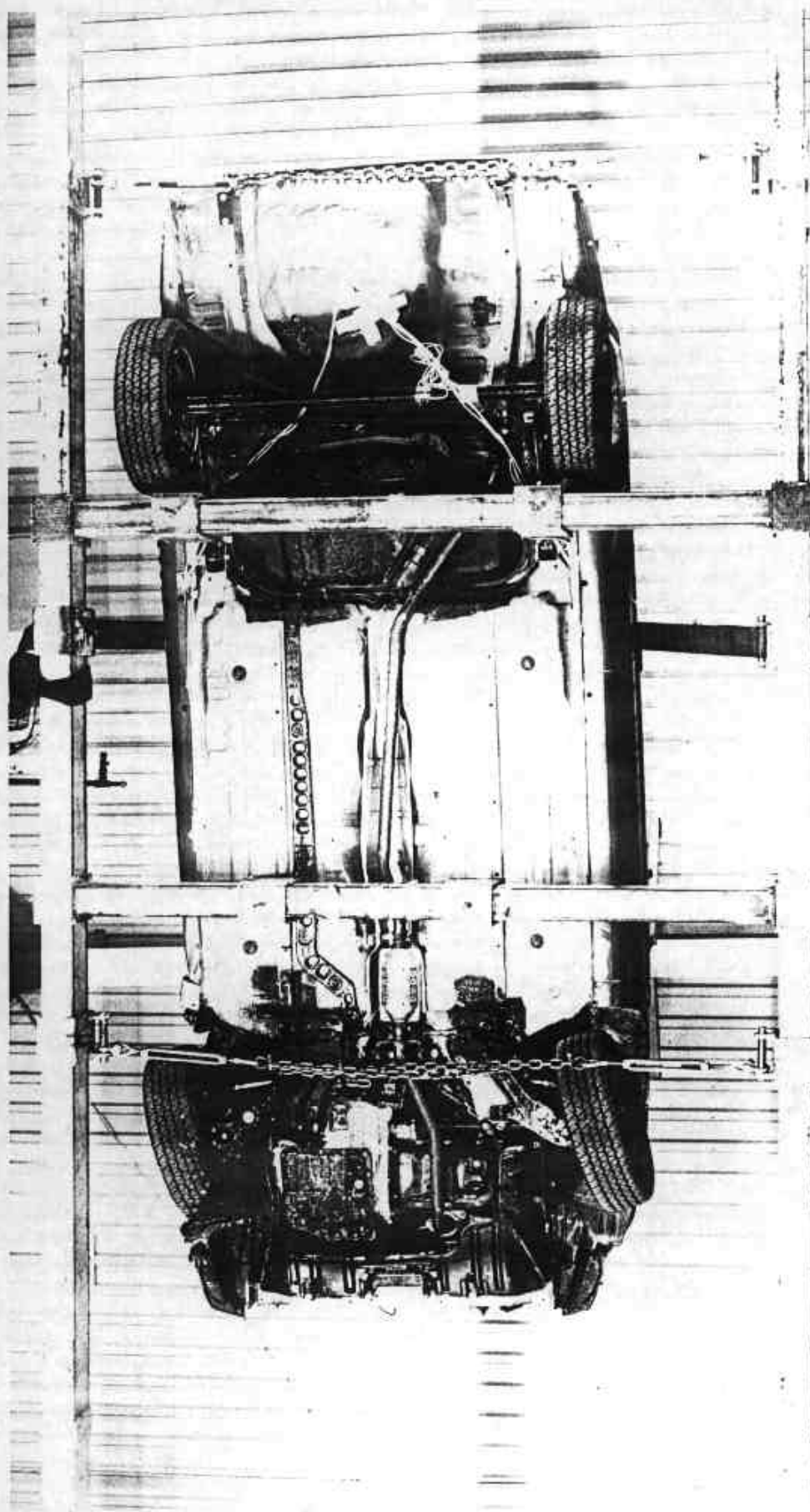
Photo No. A-39 - Rollover 90°



55/28 KPH 90°
NCAP SIDE IMPACT
#MV5108 MAR 7, 1997
1997 TOYOTA TERCEL
MGA RESEARCH CORP

A-40

Photo No. A-40 - Rollover 180°



55/28 KPH 90
NO AD SIDE IMPACT
#MV100 MAR 7 1997
1997 TOYOTA TERCEL
AGA RELEASE RECORD

Photo No. A-41 - Rollover 270°

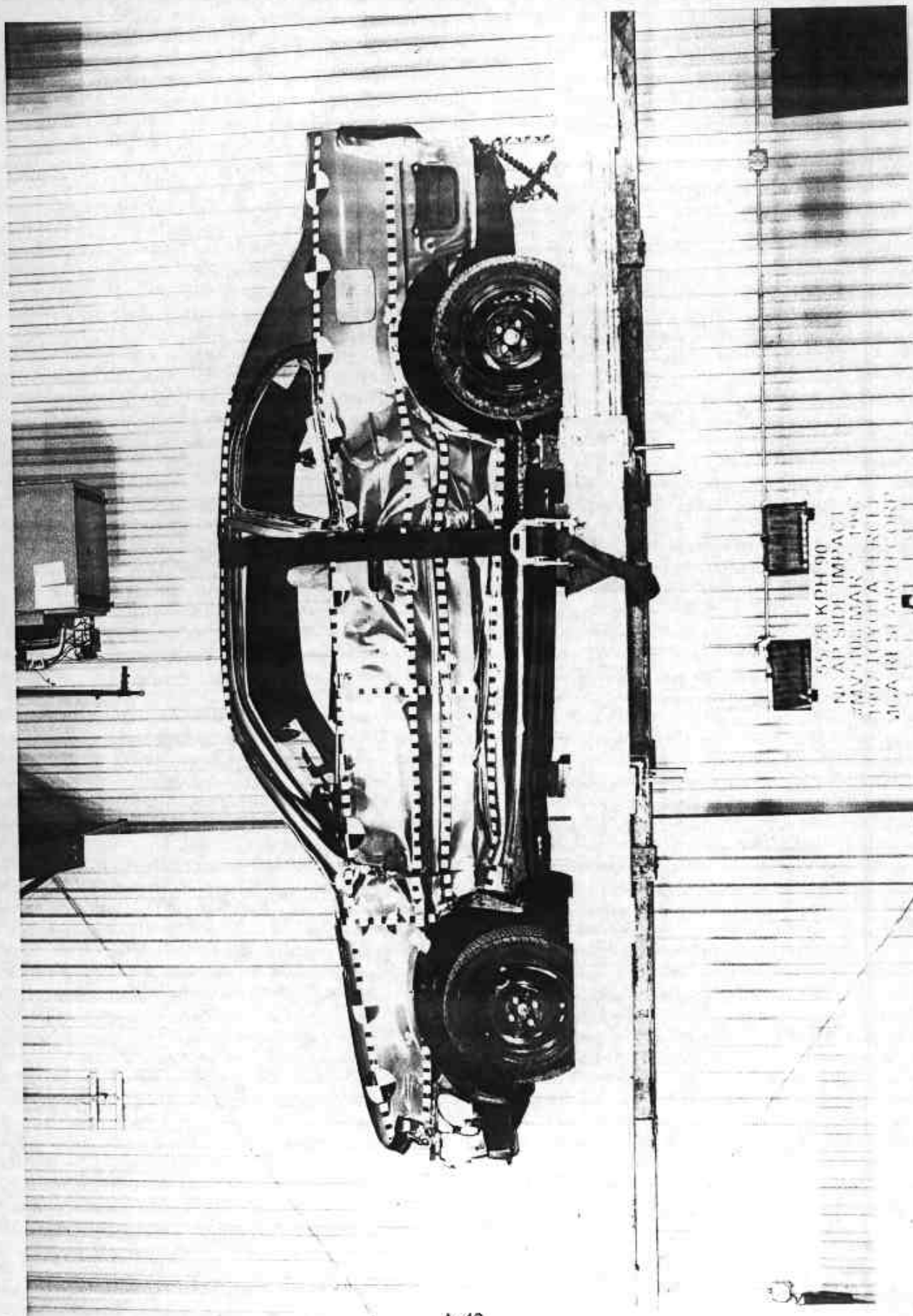


Photo No. A-42 - Rollover 360°

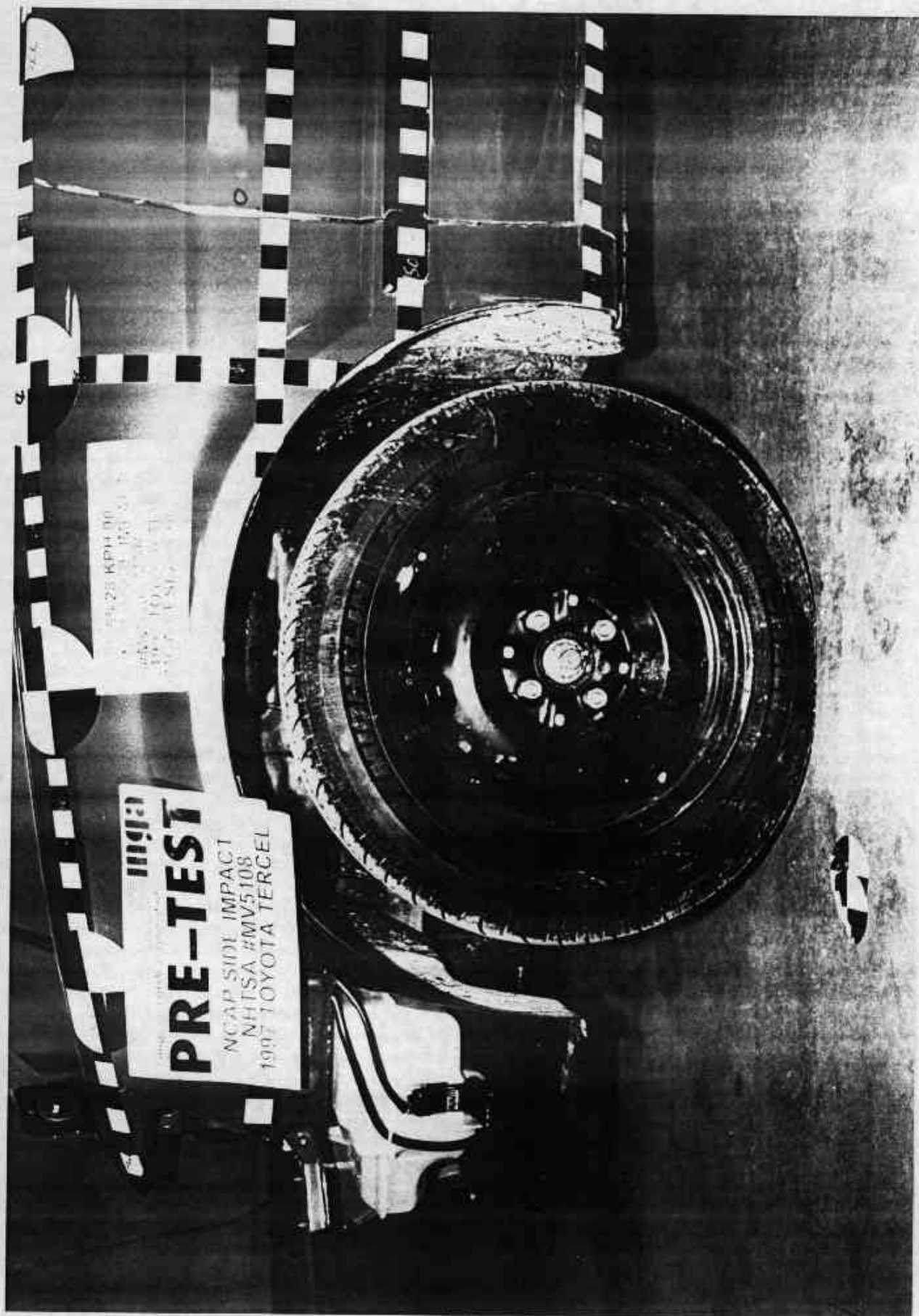
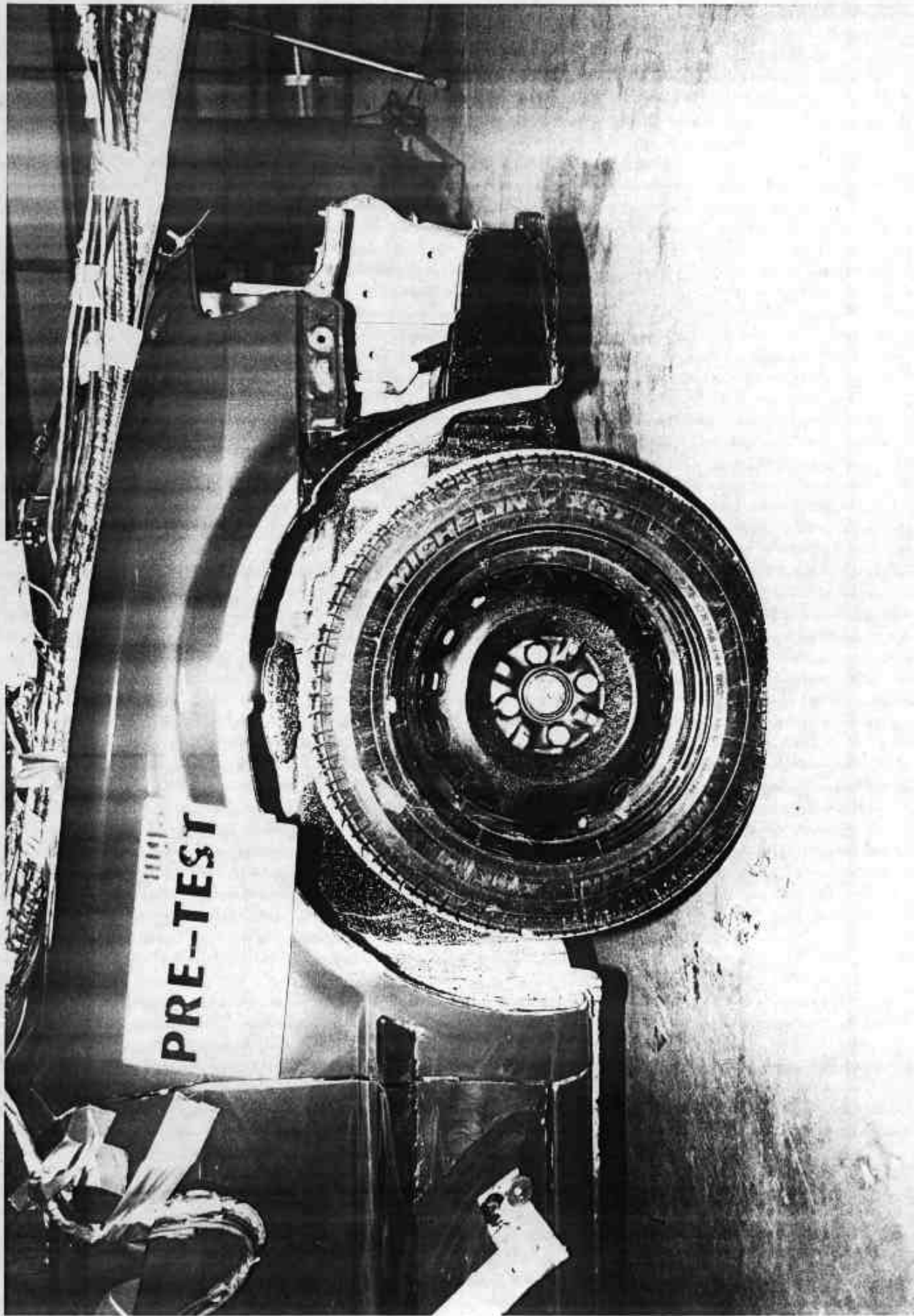


Photo No. A-43 - Left Front Attitude Point



A-44

Photo No. A-44 - Right Front Attitude Point

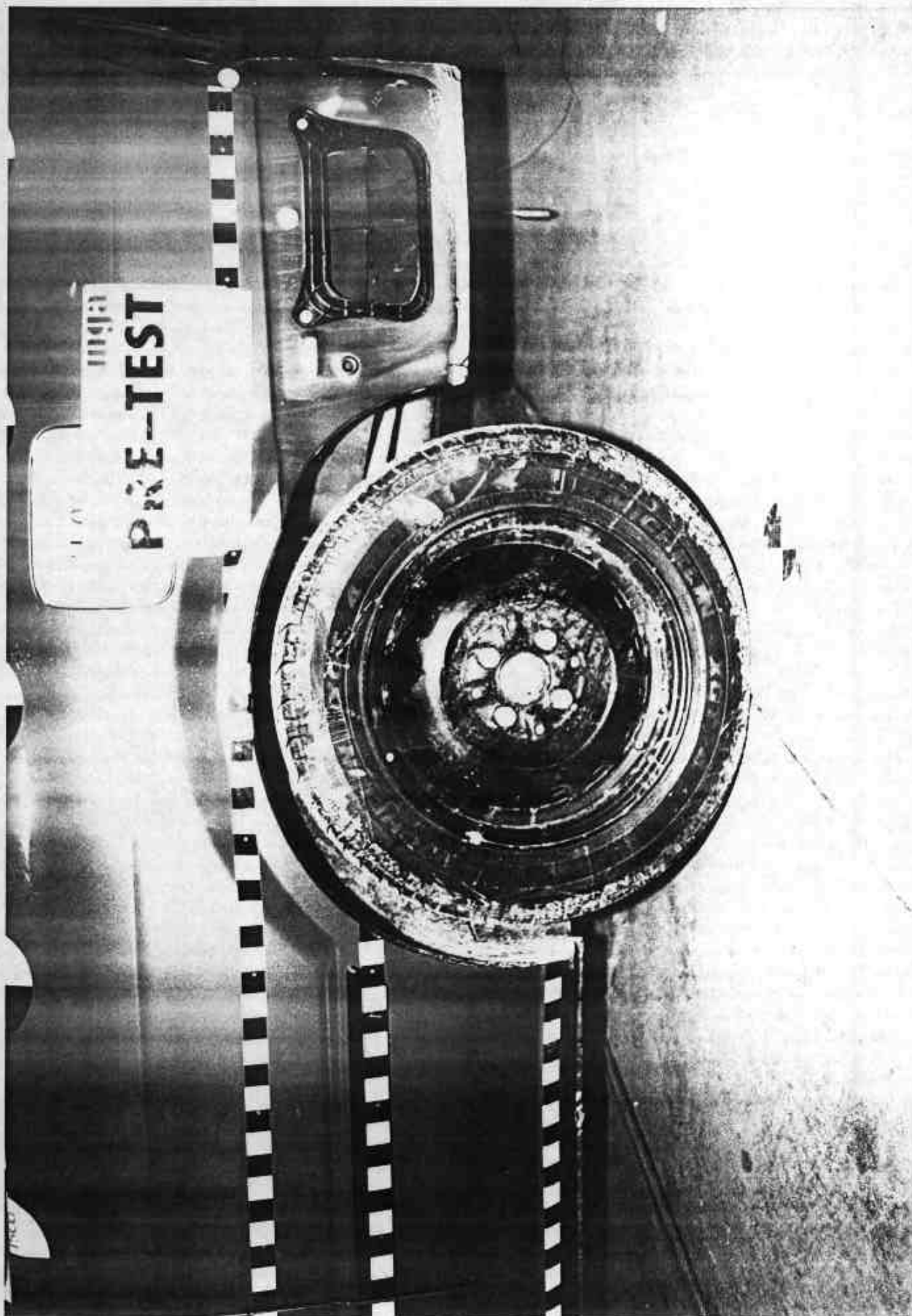


Photo No. A-45 - Left Rear Attitude Point

A-45

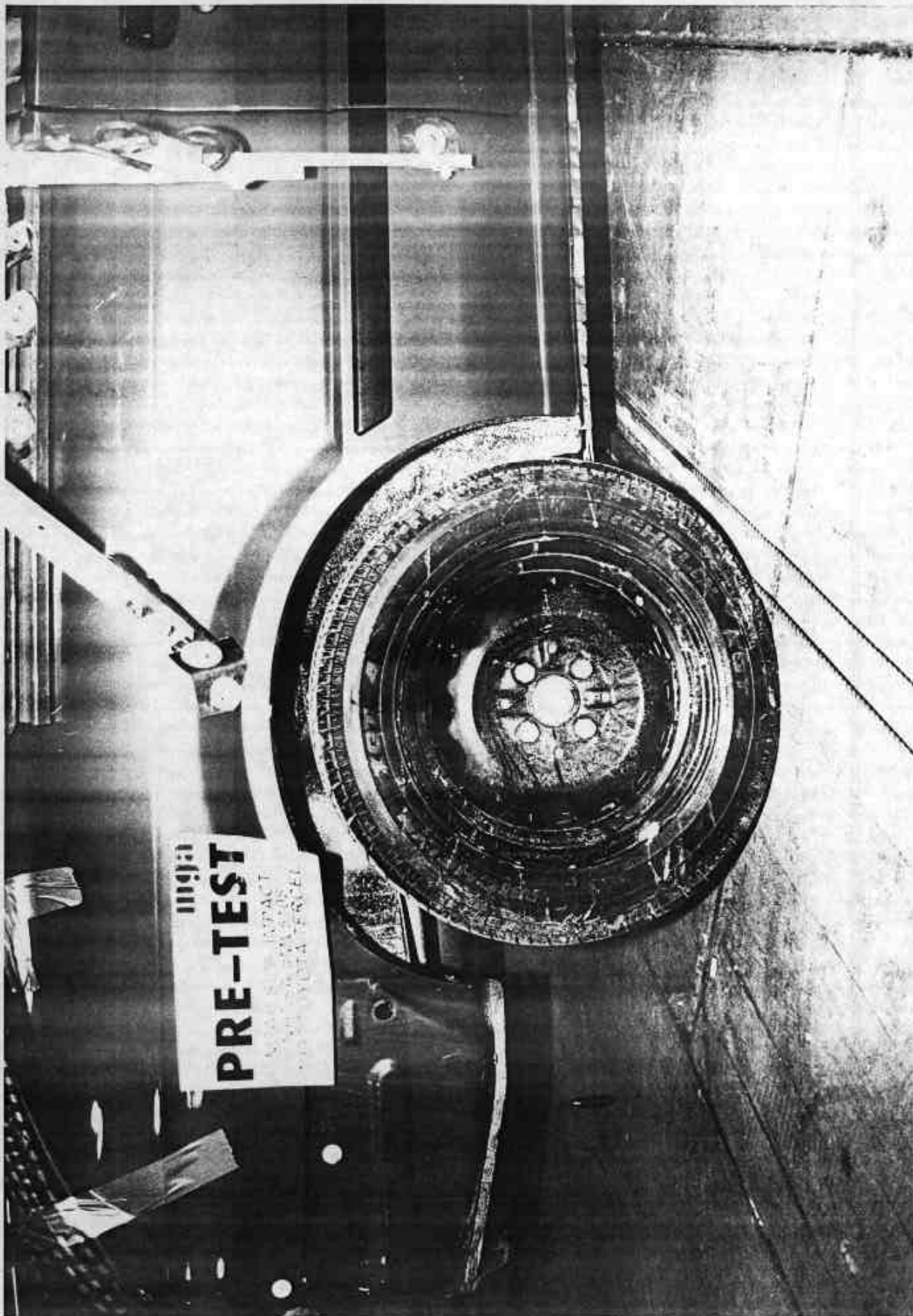


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FIR Filtered

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* No Valid Data Collected

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* No Valid Data Collected

TEST: NCAP HIGH SPEED LATERAL IMPACT

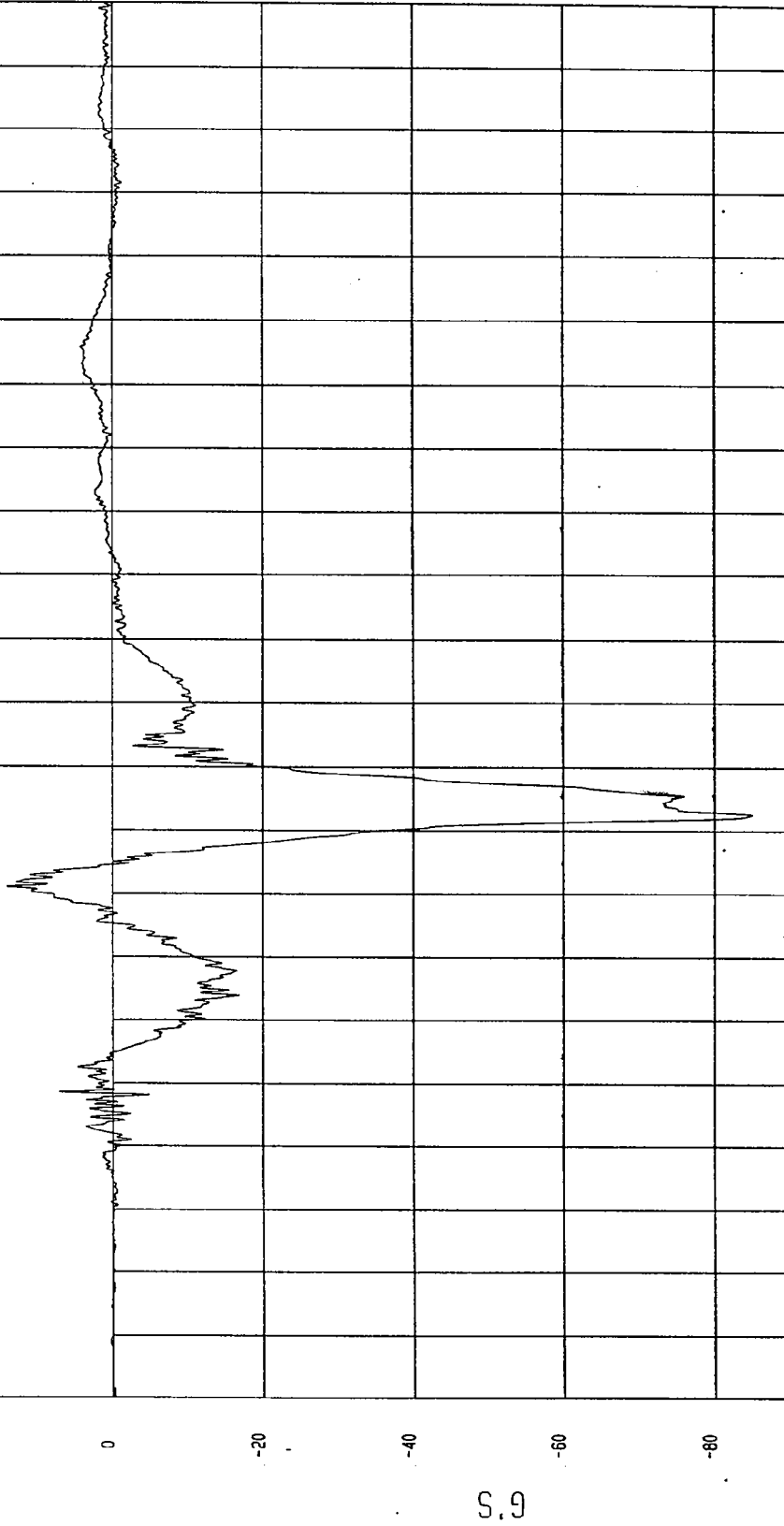
TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -84.90 G'S at 72 msec Maximum = 14.09 G'S at 61 msec

DRIVER HEAD X ACCELERATION

1 897035AF.A12 Filterclass (1000)



TIME (SECONDS)

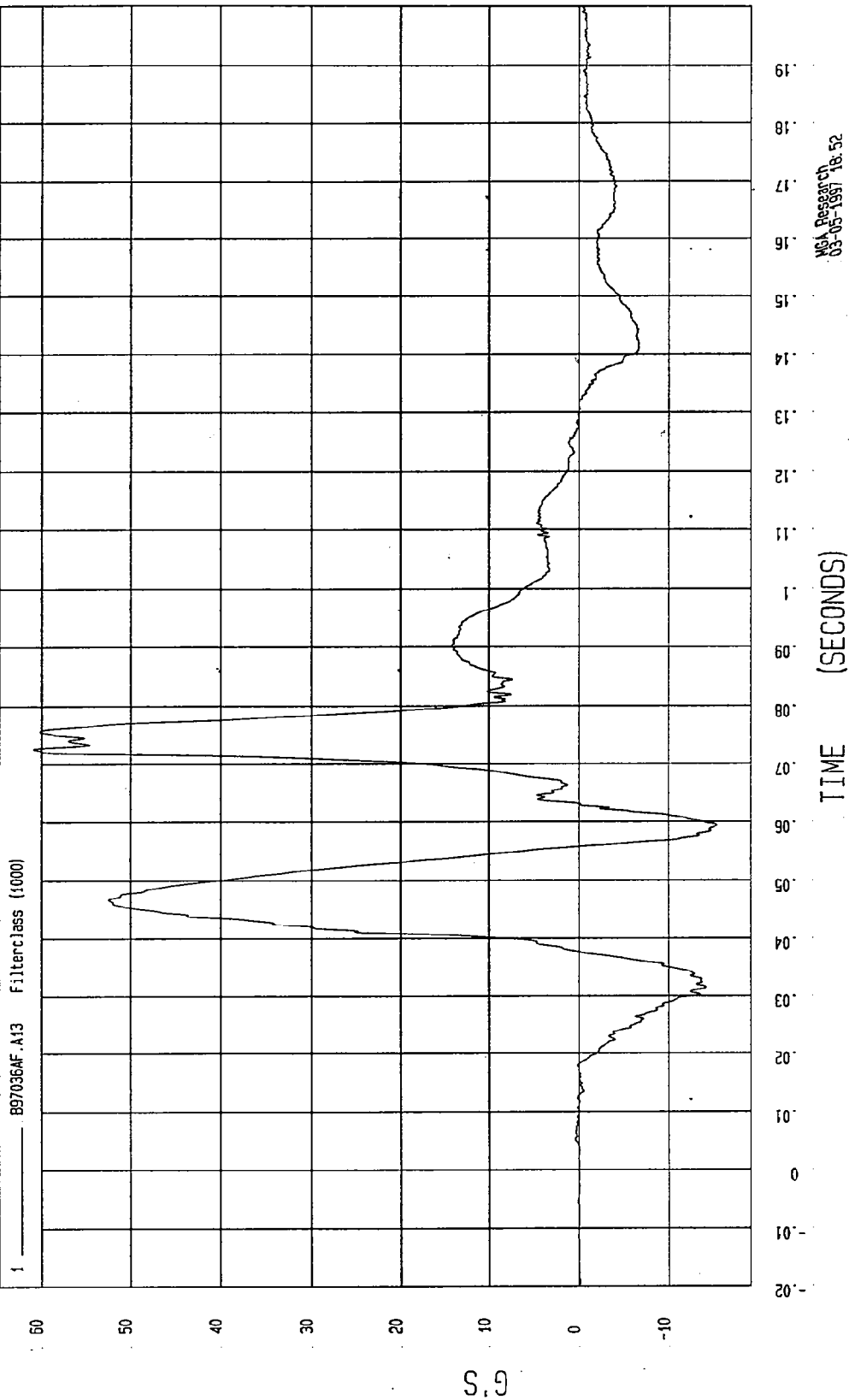
MPA Research
03-05-1997 18:32

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

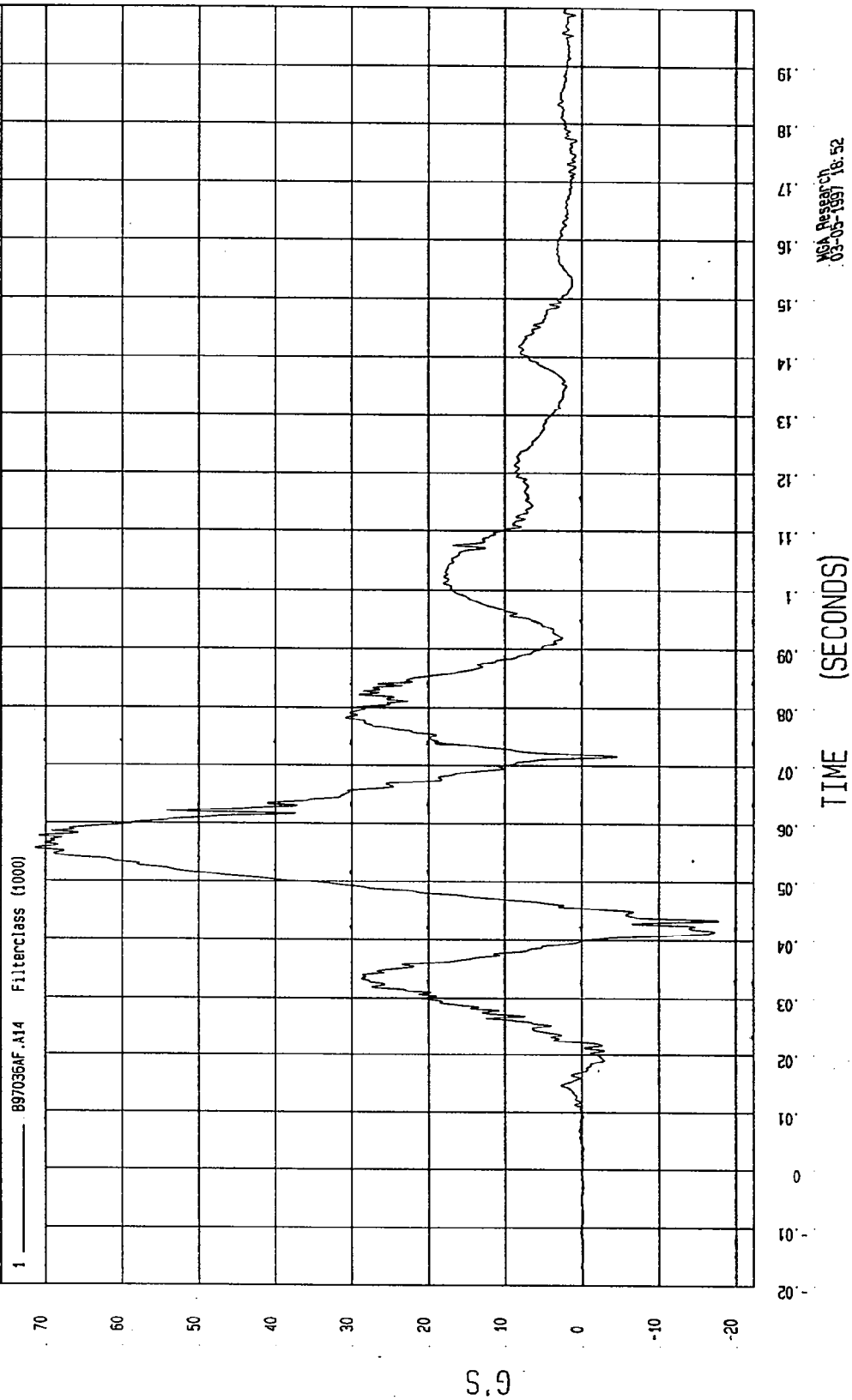
Minimum = -15.24 G'S at 59 msec Maximum = 60.90 G'S at 73 msec

DRIVER HEAD Y ACCELERATION



TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH
Minimum = -17.78 G'S at 43 msec Maximum = 71.36 G'S at 56 msec

DRIVER HEAD Z ACCELERATION

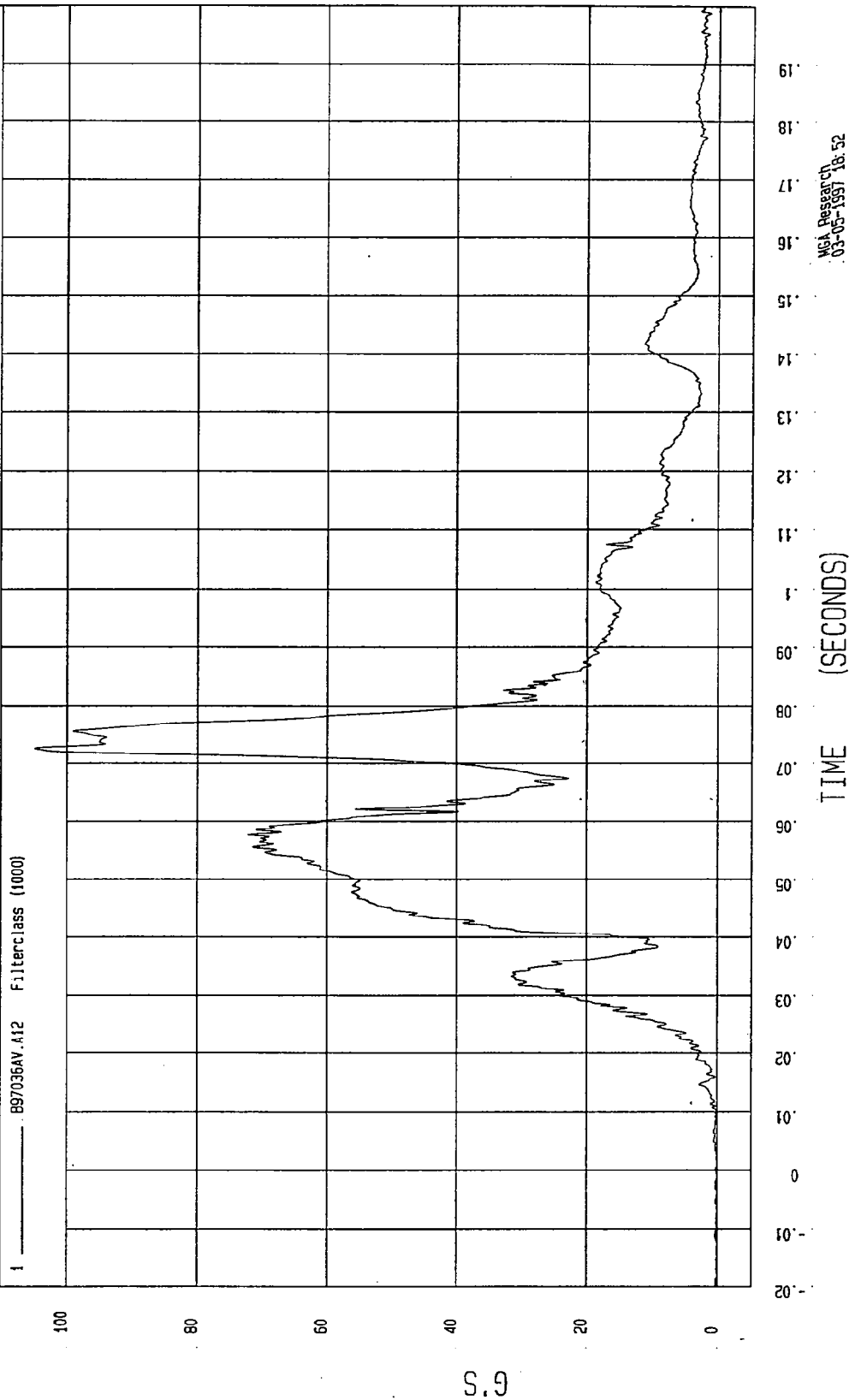


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = 3.23E-02 G'S at -1 msec Maximum = 104.83 G'S at 72 msec

DRIVER HEAD RESULTANT

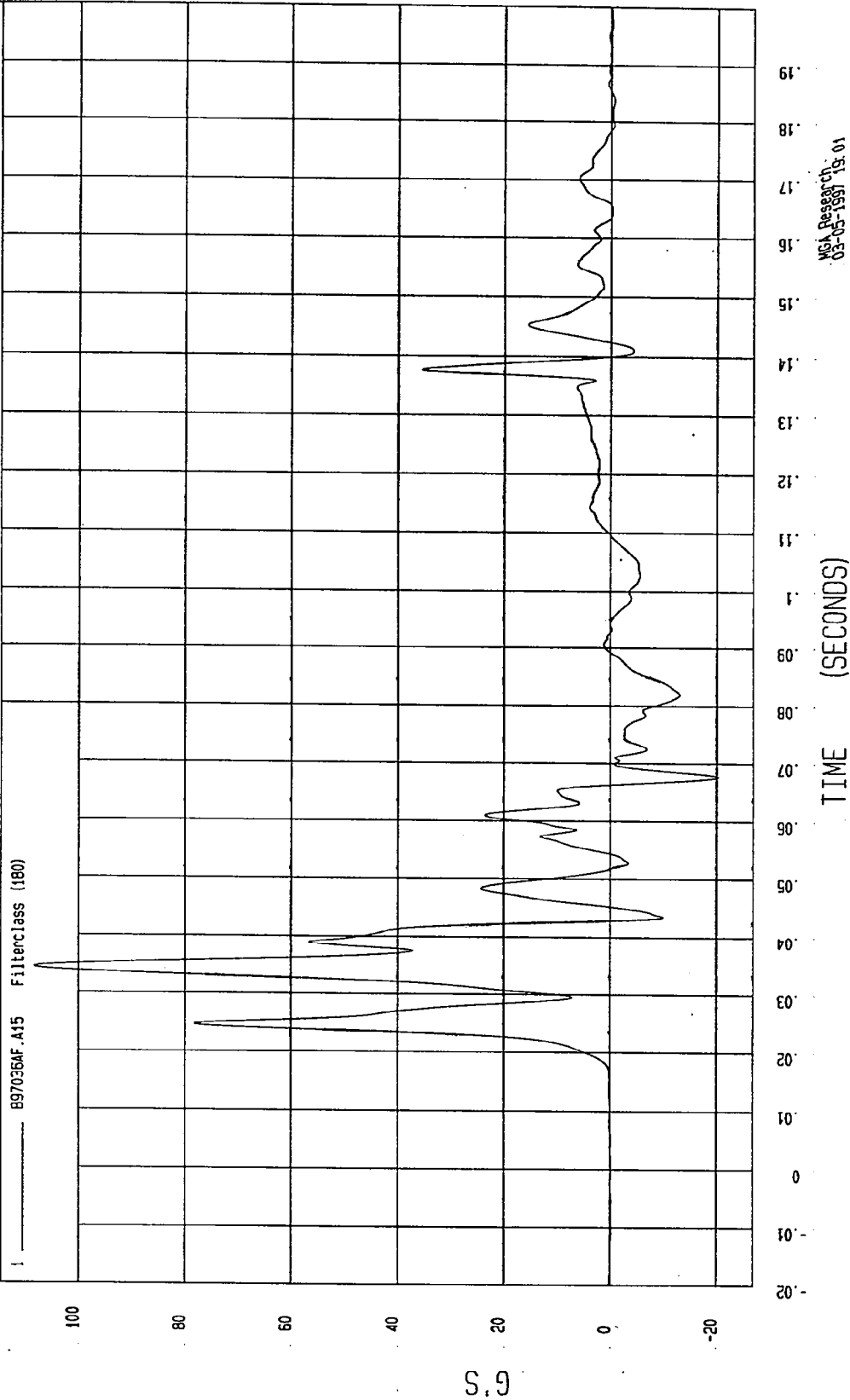


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -20.35 G'S at 68 msec Maximum = 108.10 G'S at 34 msec

DRIVER UPPER RIB Y ACCELERATION



MGA Research
03-05-1997 19:01

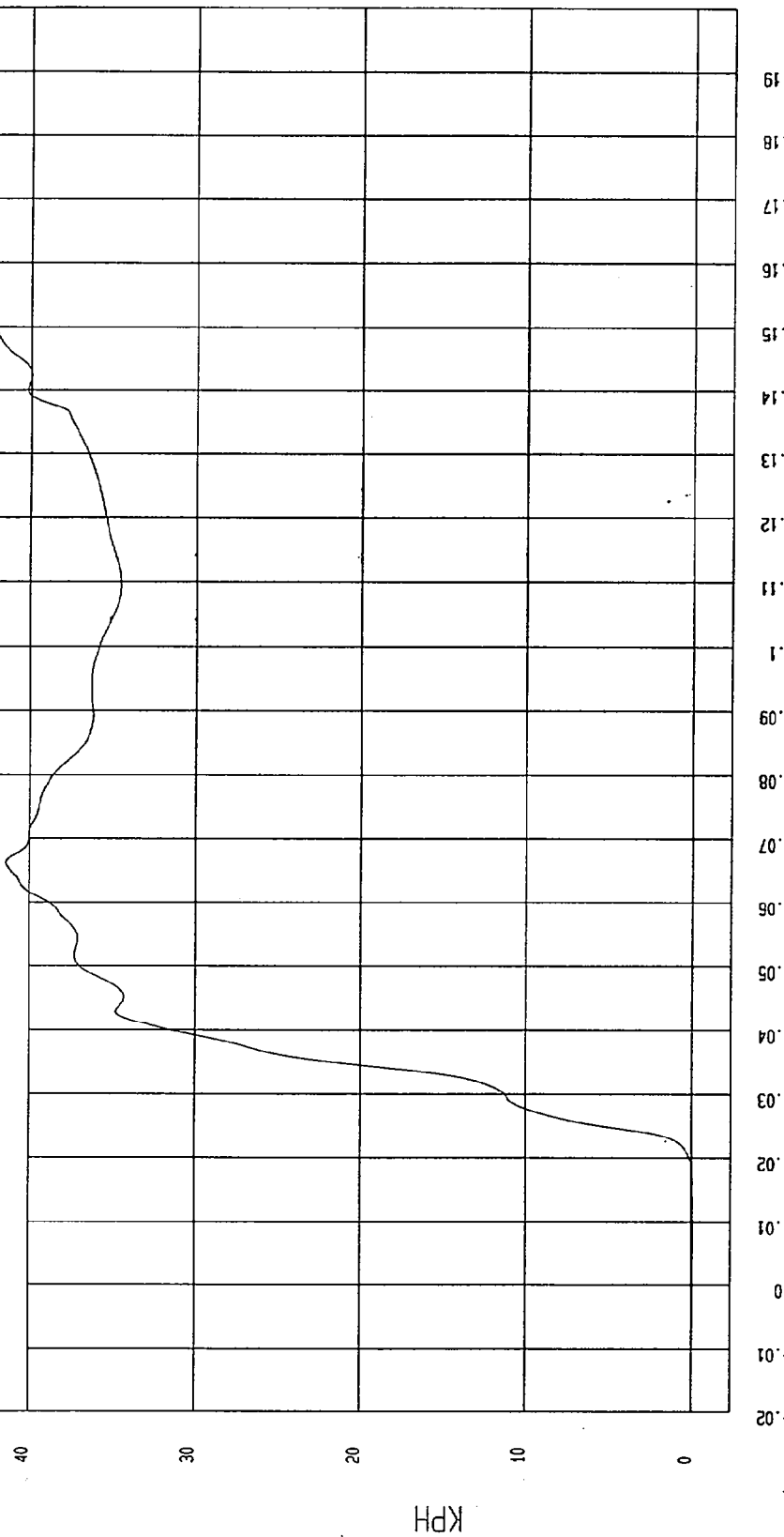
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -8.35E-02 KPH at 6 msec Maximum = 45.00 KPH at 196 msec

DRIVER UPPER RIB Y VELOCITY

1 ——— B97036A1.V15 Filterclass (180)



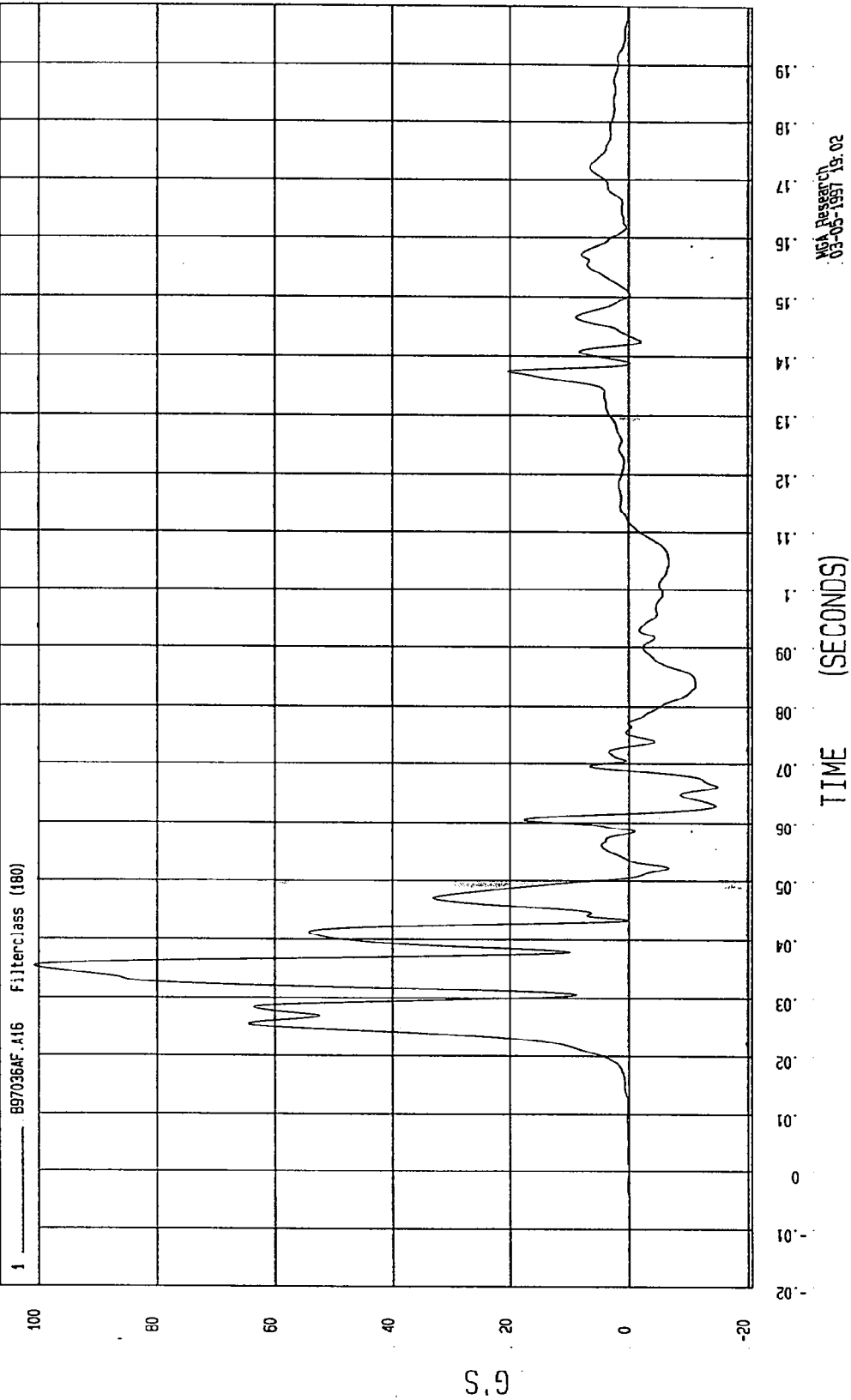
MSA Research
03-05-1997 18:53

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -14.86 G'S at 66 msec Maximum = 100.81 G'S at 35 msec

DRIVER LOWER RIB Y ACCELERATION



TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -4.11E-03 KPH at -10 msec Maximum = 44.03 KPH at 200 msec

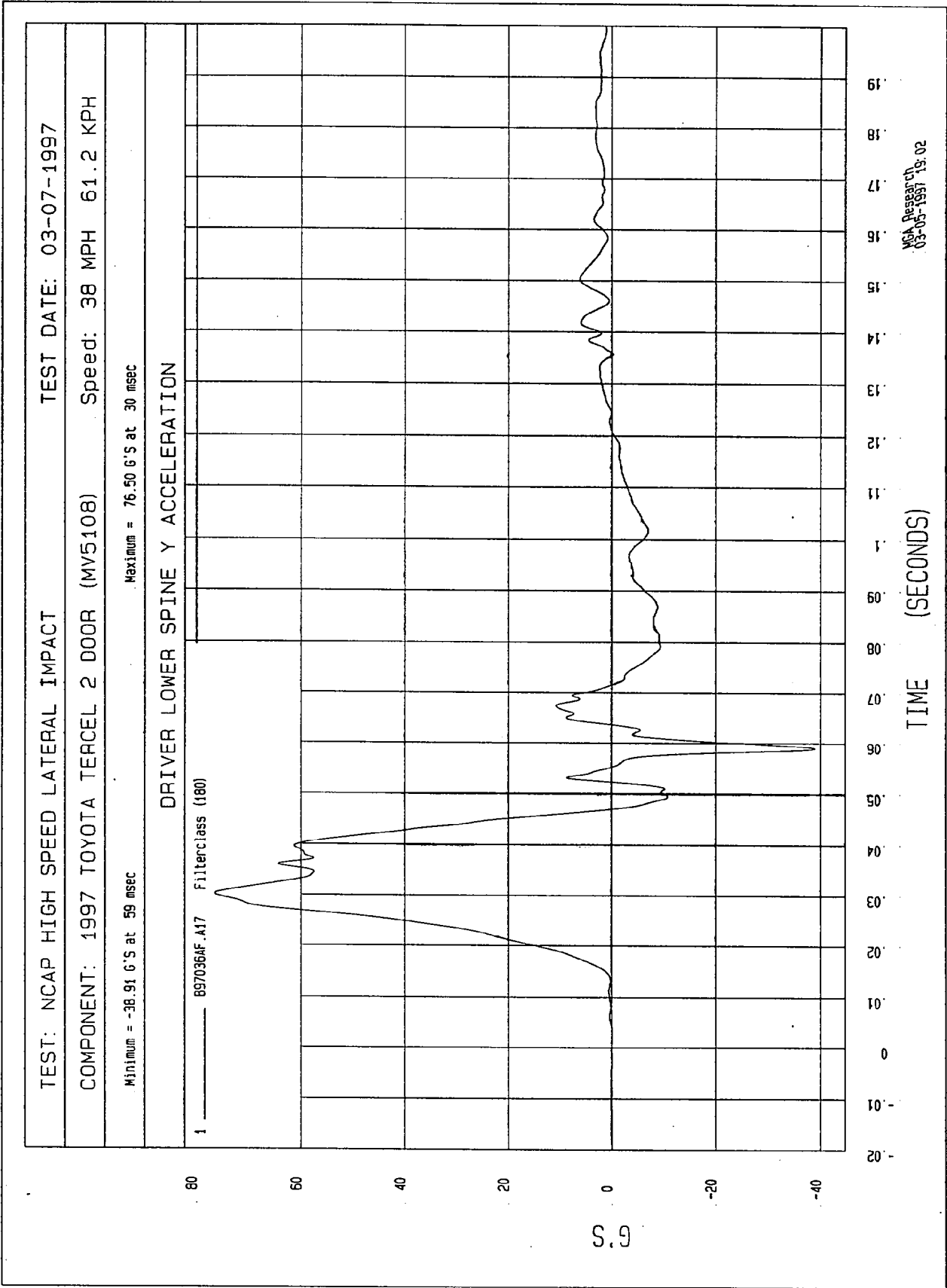
DRIVER LOWER RIB Y VELOCITY

1 ——— 897036A1.V16 Filterclass (180)



TIME Seconds

MCA Research
03-05-1997 16:53

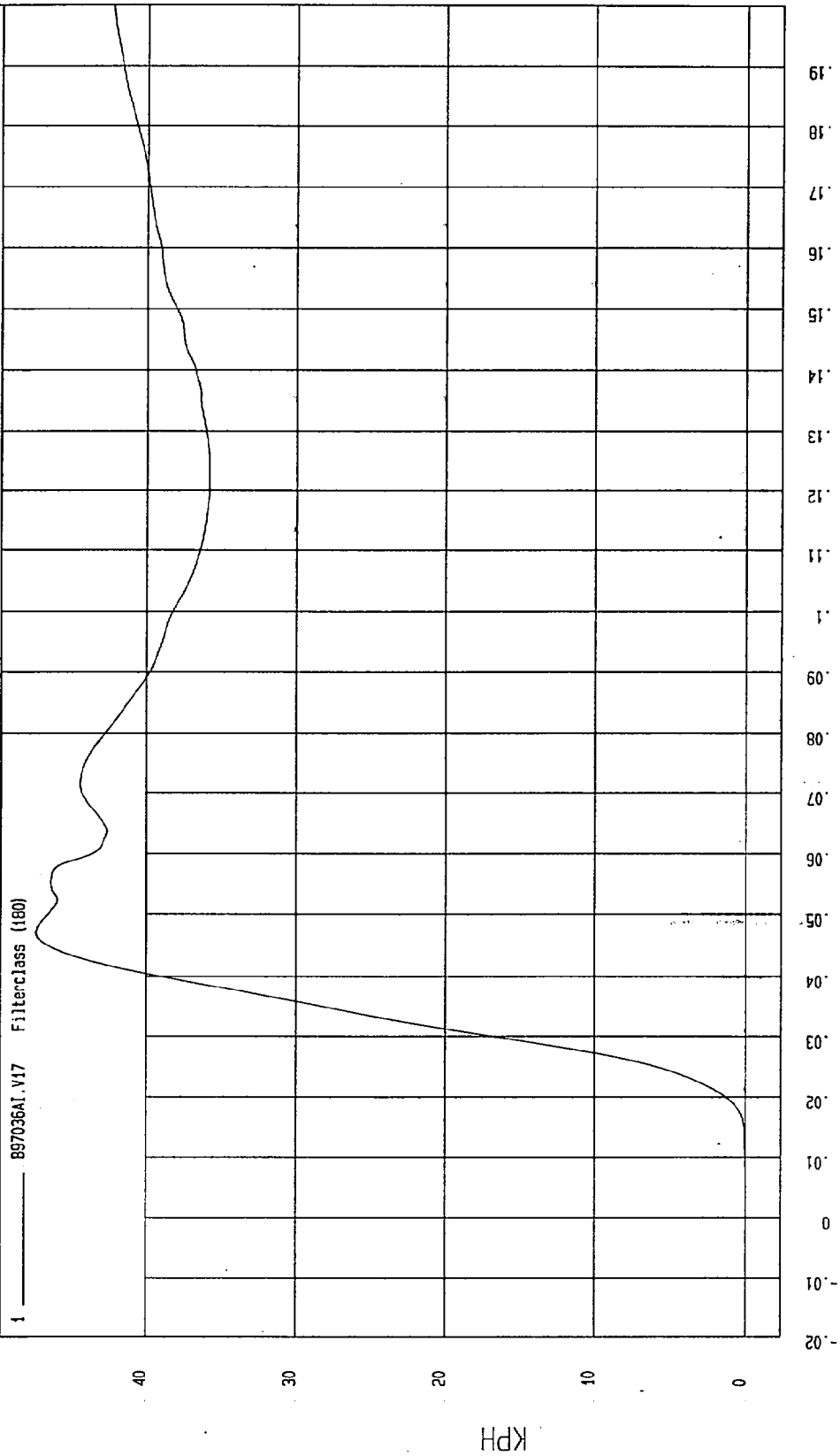


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -2.24E-02 KPH at 4 msec Maximum = 47.34 KPH at 47 msec

DRIVER LOWER SPINE Y VELOCITY



MCA Research
03-05-1997 18:53

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH
Minimum = -17.12 G'S at 45 msec Maximum = 80.89 G'S at 25 msec

DRIVER PELVIS Y ACCELERATION

1 — 897036AF.A18 Filterclass (180)

80

60

40

20

0

-20

G.S

TIME (SECONDS)

WCA Research
03-03-1997 19:02

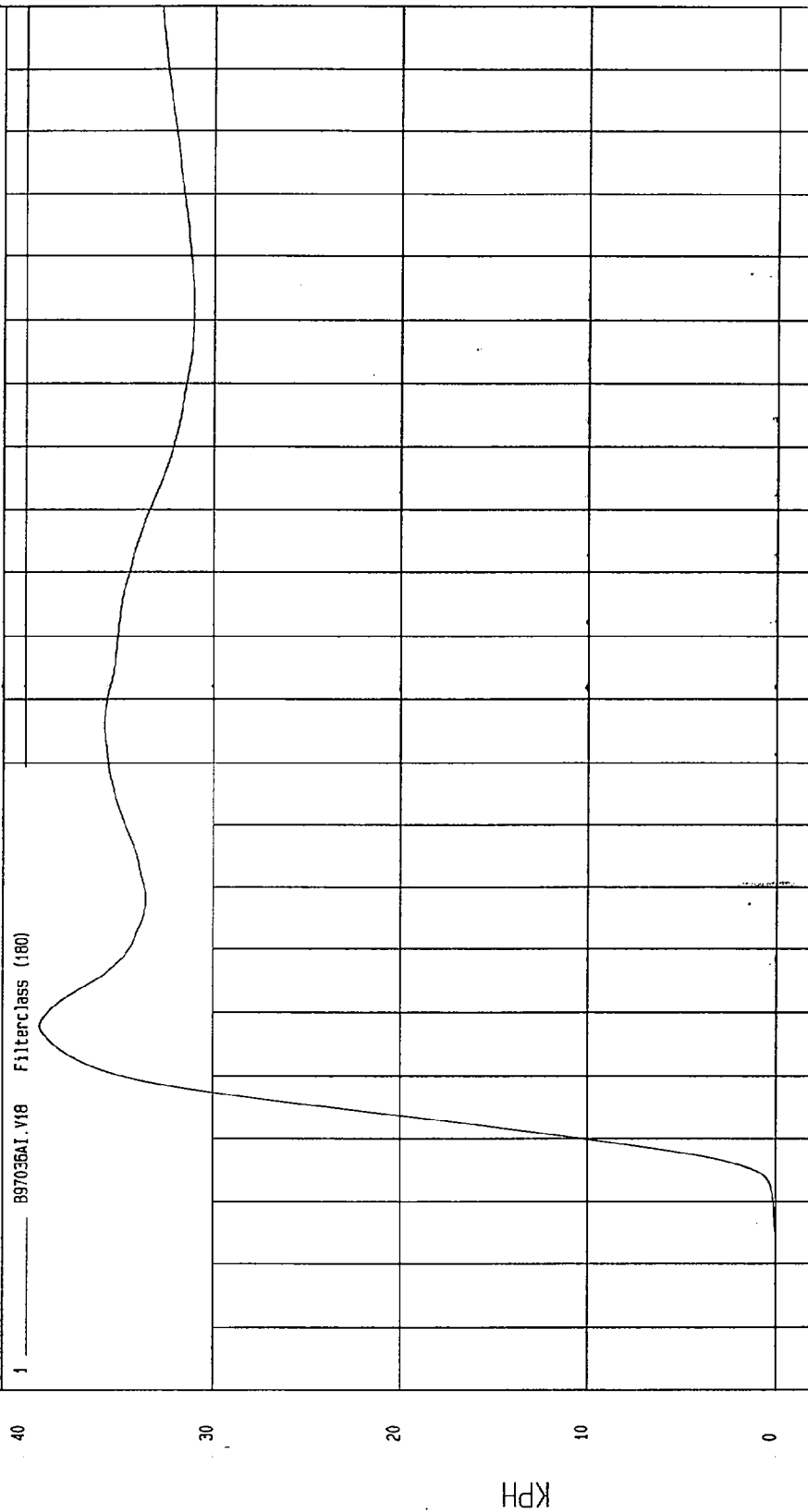
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -1.31E+02 KPH at -13 msec Maximum = 39.22 KPH at 38 msec

DRIVER PELVIS Y VELOCITY

1 ——— B97036A1.V18 Filterclass (180)



TIME Seconds

MSA Research
03-05-1997 18:54

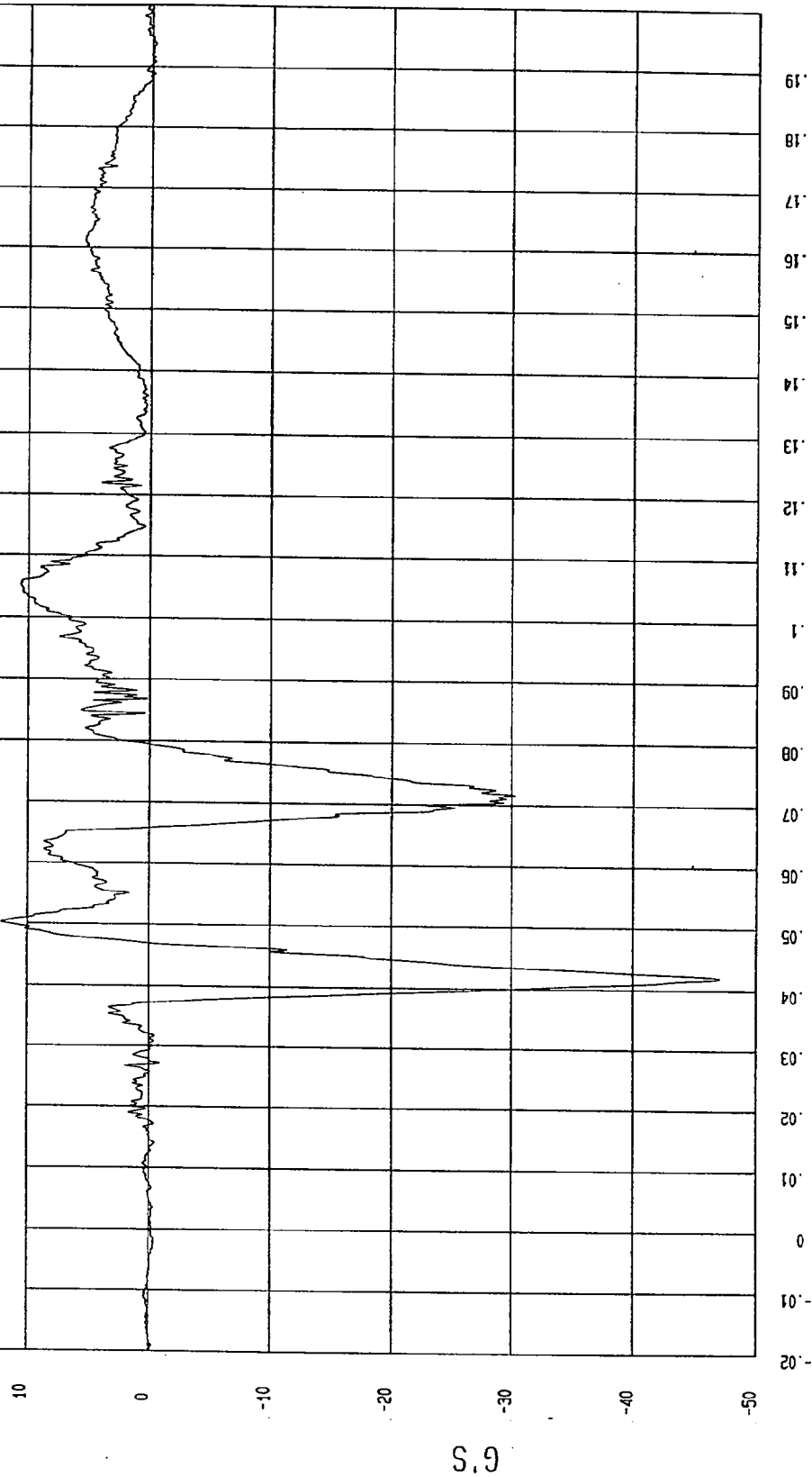
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -47.05 G'S at 42 msec Maximum = 12.01 G'S at 50 msec

REAR PASSENGER HEAD X ACCELERATION

1 ——— B97036AF.A22 Filterclass (1000)



NSA Research
03-05-1997 18:52

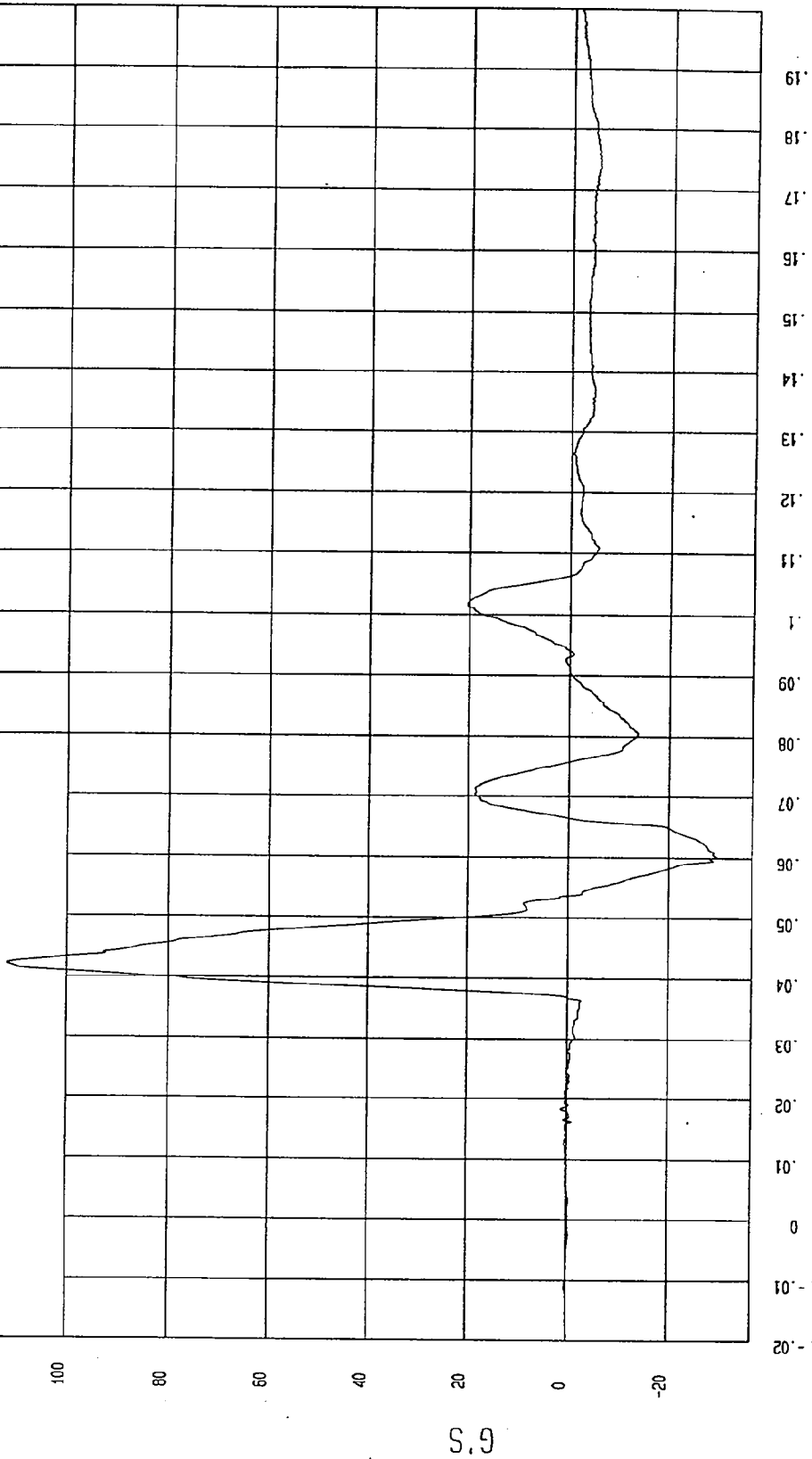
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -29.29 G'S at 60 msec Maximum = 111.89 G'S at 42 msec

REAR PASSENGER HEAD Y ACCELERATION

1 897036AF.A23 Filterclass (1000)

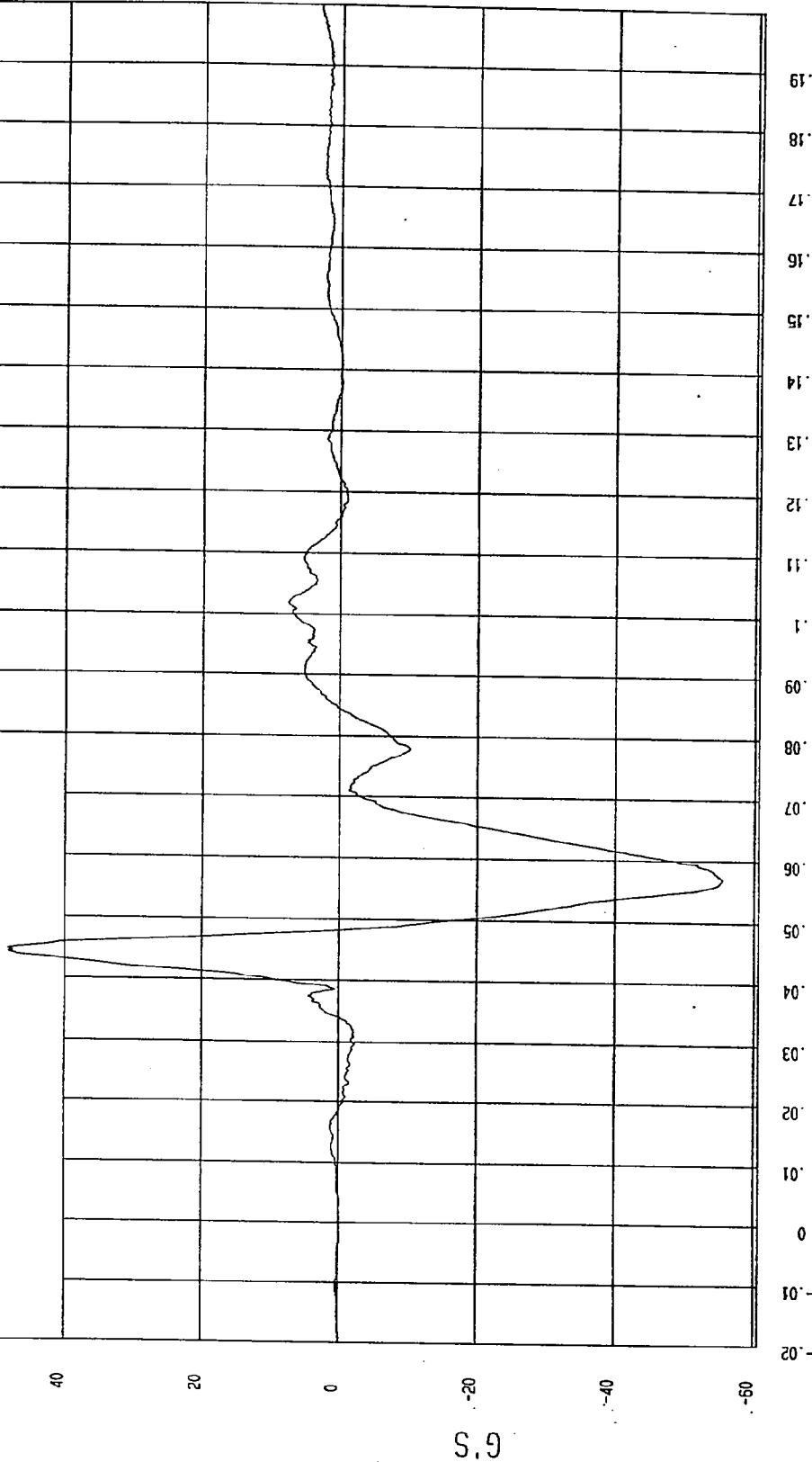


NGA Research
03-05-1997 18:52

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH
Minimum = -55.45 G'S at 57 msec Maximum = 48.14 G'S at 45 msec

REAR PASSENGER HEAD Z ACCELERATION

1 ——— B97035AF.A24 Filterclass (1000)



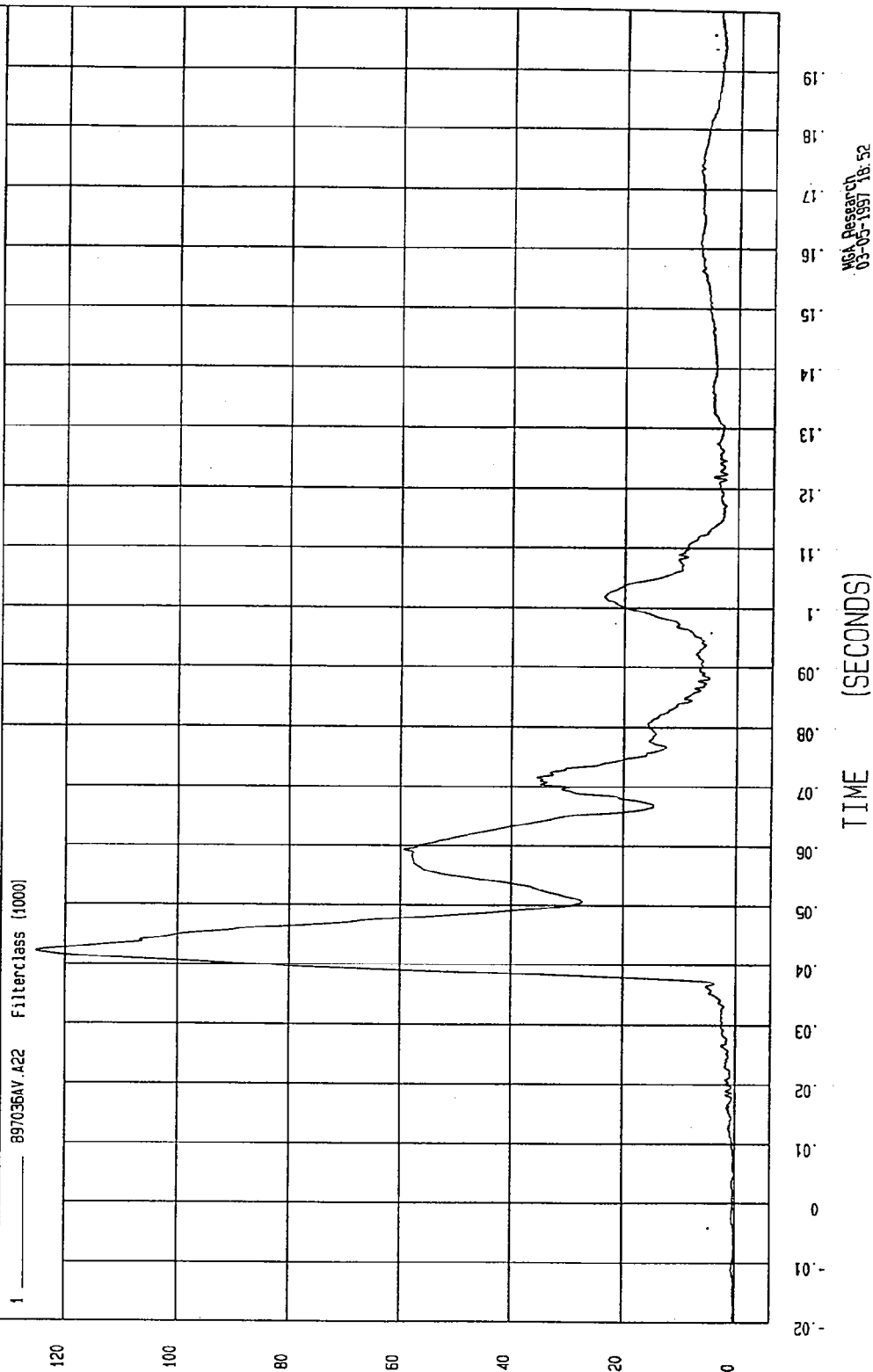
MGA Research
03-05-1997 18:52

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = 6.78E-02 G'S at -7 msec Maximum = 125.08 G'S at 42 msec

REAR PASSENGER HEAD RESULTANT

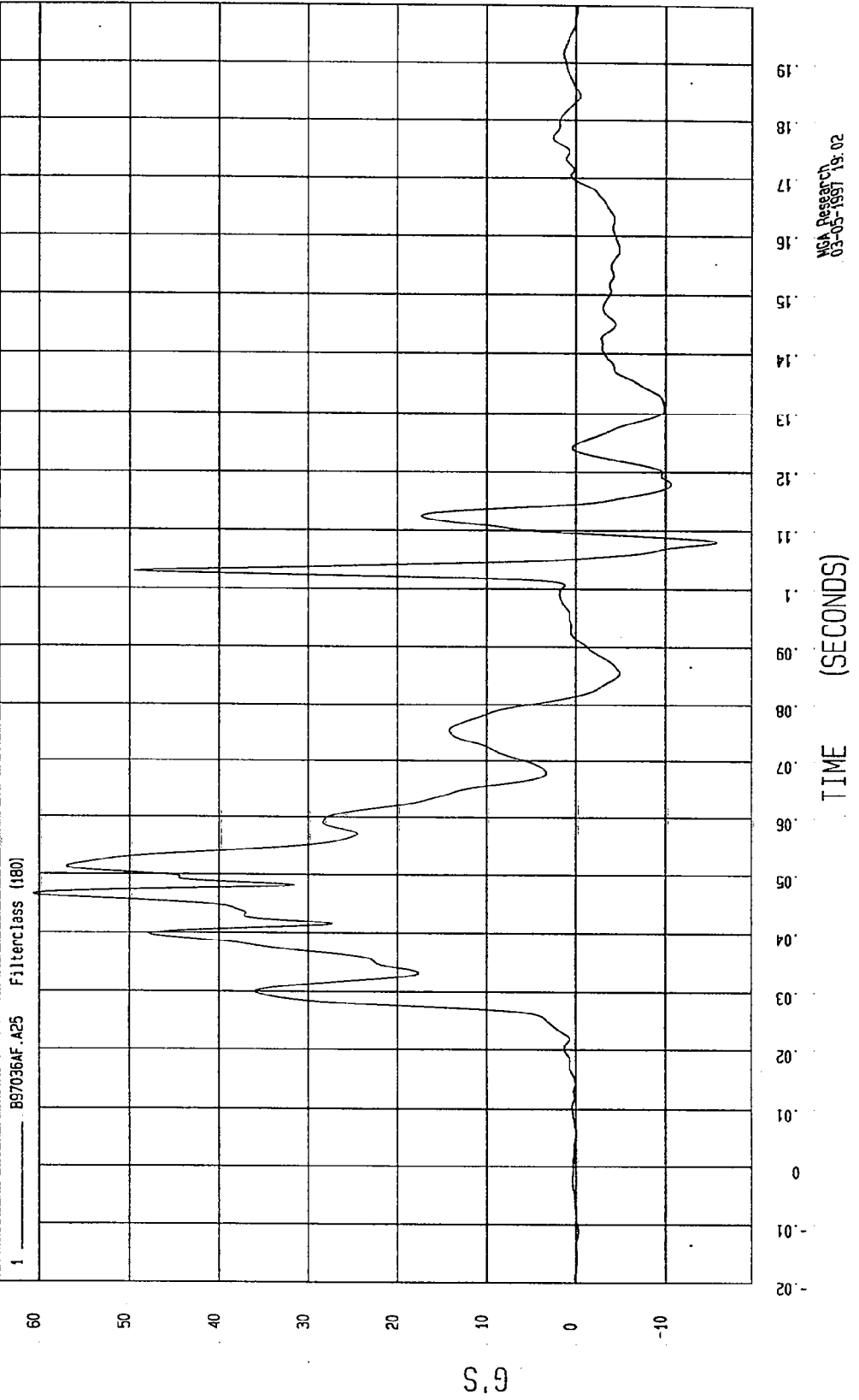


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -15.62 G'S at 108 msec Maximum = 60.65 G'S at 47 msec

REAR PASSENGER UPPER RIB Y ACCELERATION



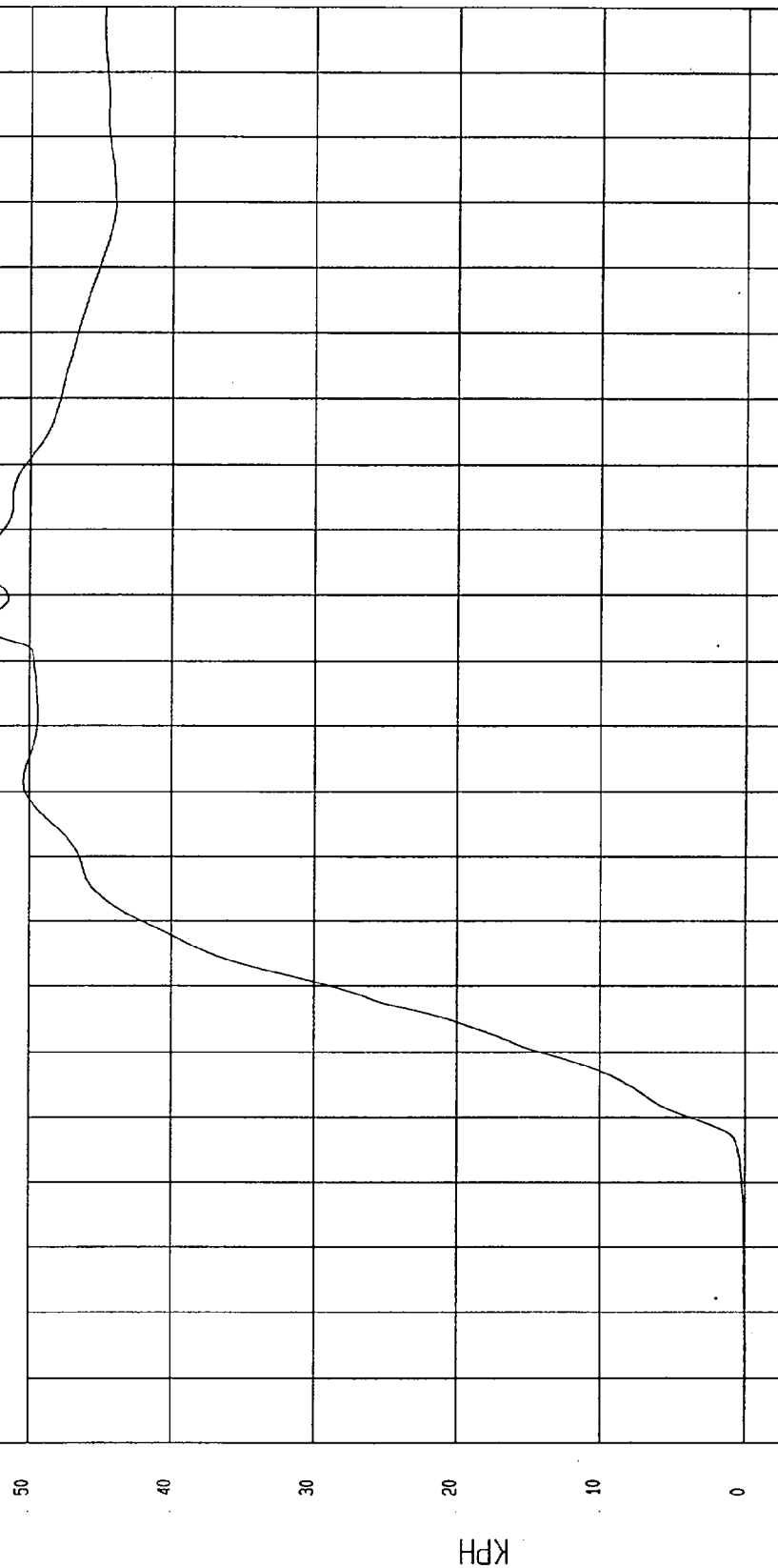
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -3.91E-02 KPH at -8 msec Maximum = 53.40 KPH at 115 msec

REAR PASSENGER UPPER RIB Y VELOCITY

1 ——— B97036A1.V25 Filterclass (180)



TIME Seconds

MCA Research
03-05-1997 18:54

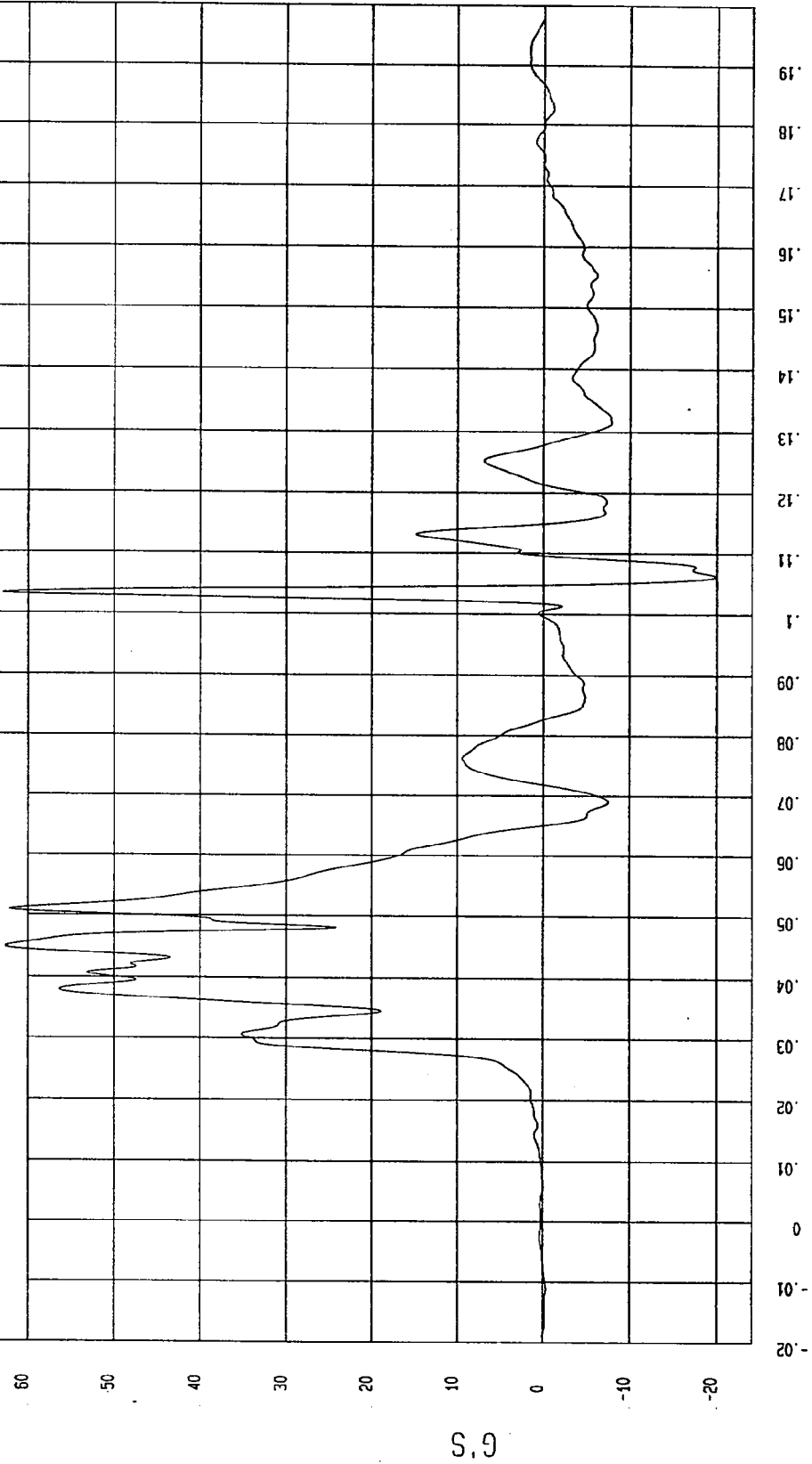
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -19.91 G's at 106 msec Maximum = 62.90 G's at 103 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 B97036AF.A26 Filterclass (180)



MGA Research
03-05-1997 19:02

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

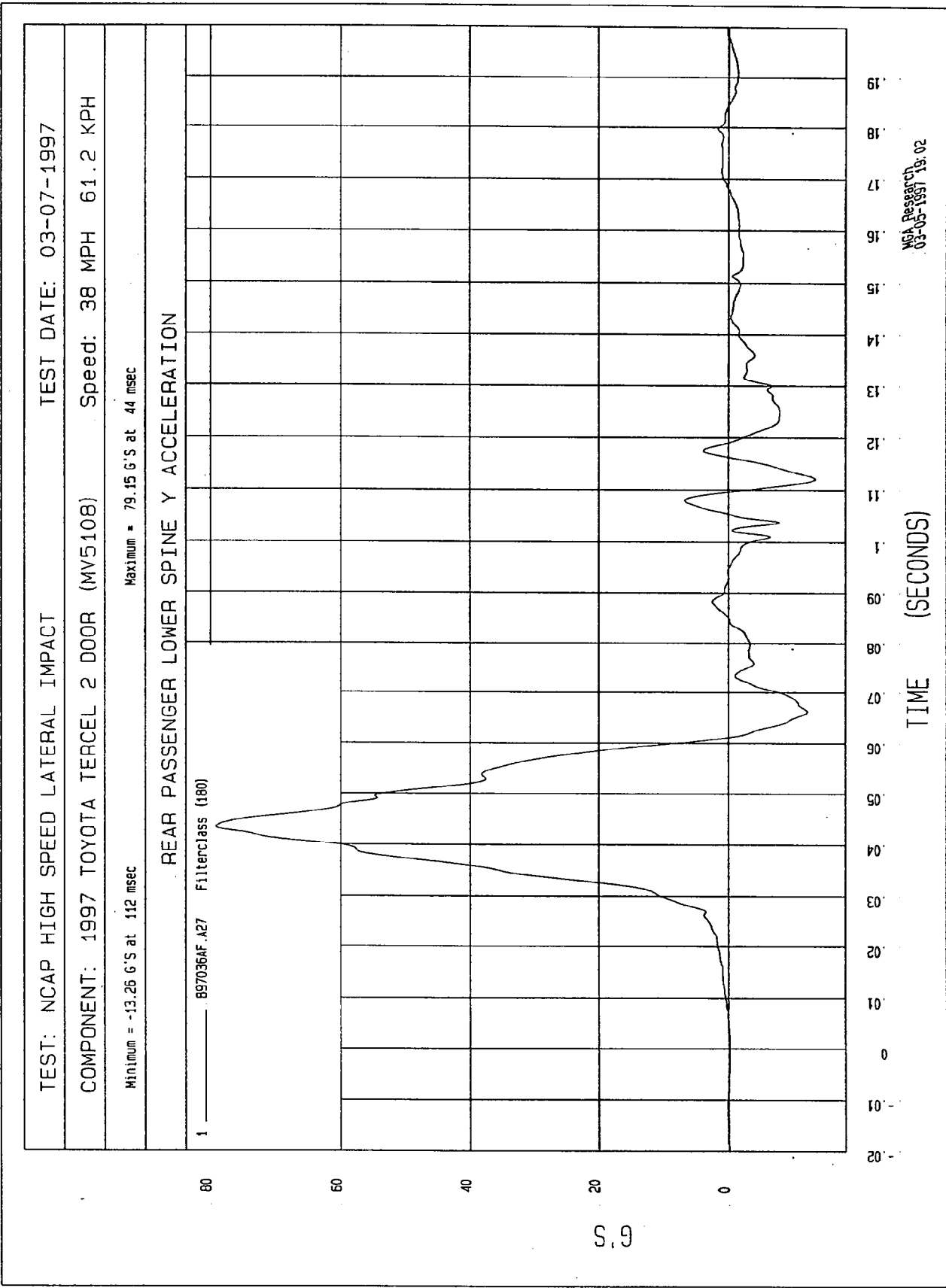
Minimum = -5.15E-02 KPH at -8 msec
Maximum = 51.25 KPH at 105 msec

REAR PASSENGER LOWER RIB Y VELOCITY

1 ——— B97036A1.V26 Filter: class (180)



MGA Research
03-05-1997 18:54



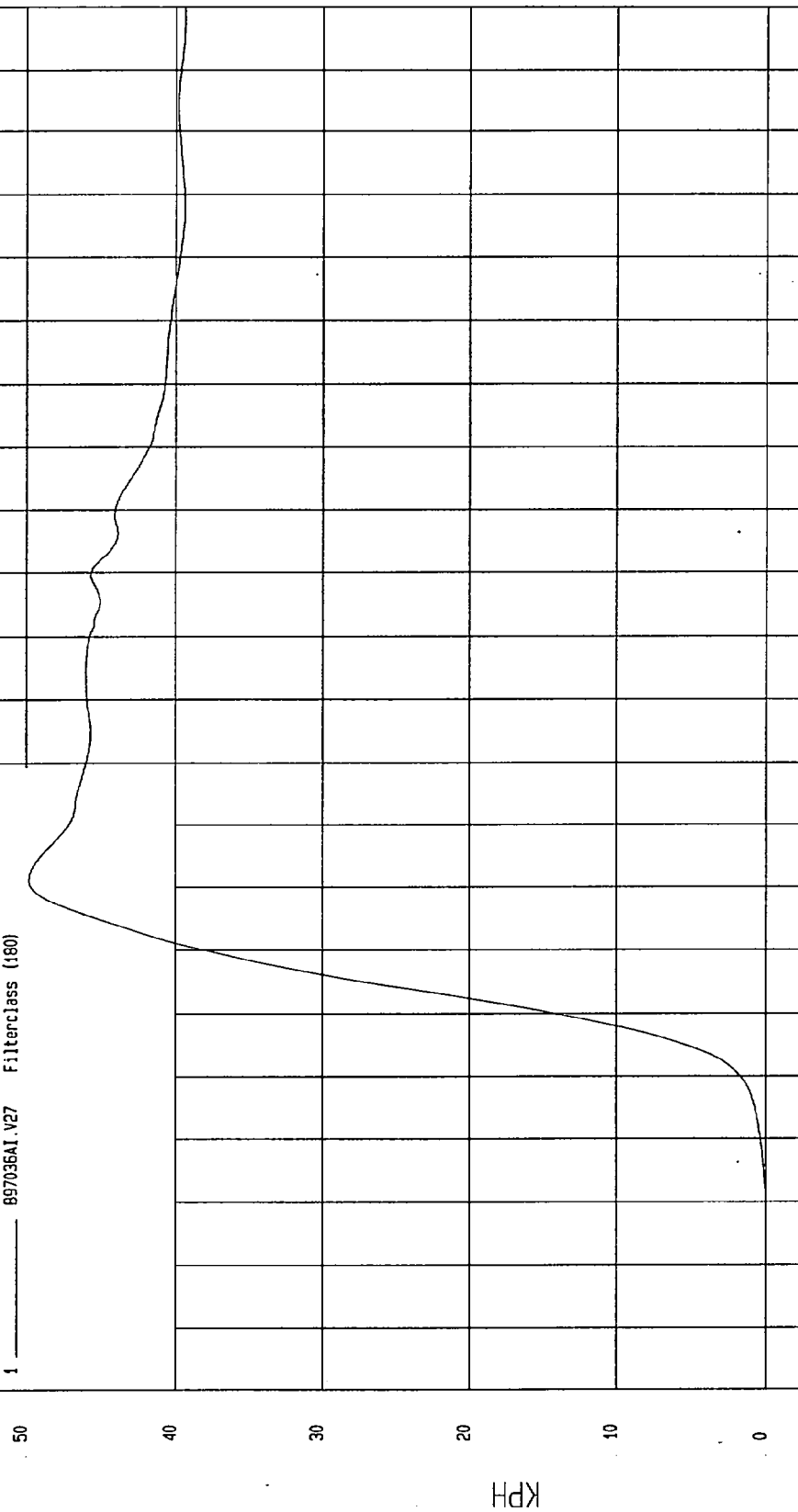
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -1.71E-02 KPH at 5 msec
Maximum = 49.83 KPH at 61 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 ——— B97036A1.V27 Filterclass (180)



MECA Research
03-05-1997 18:54

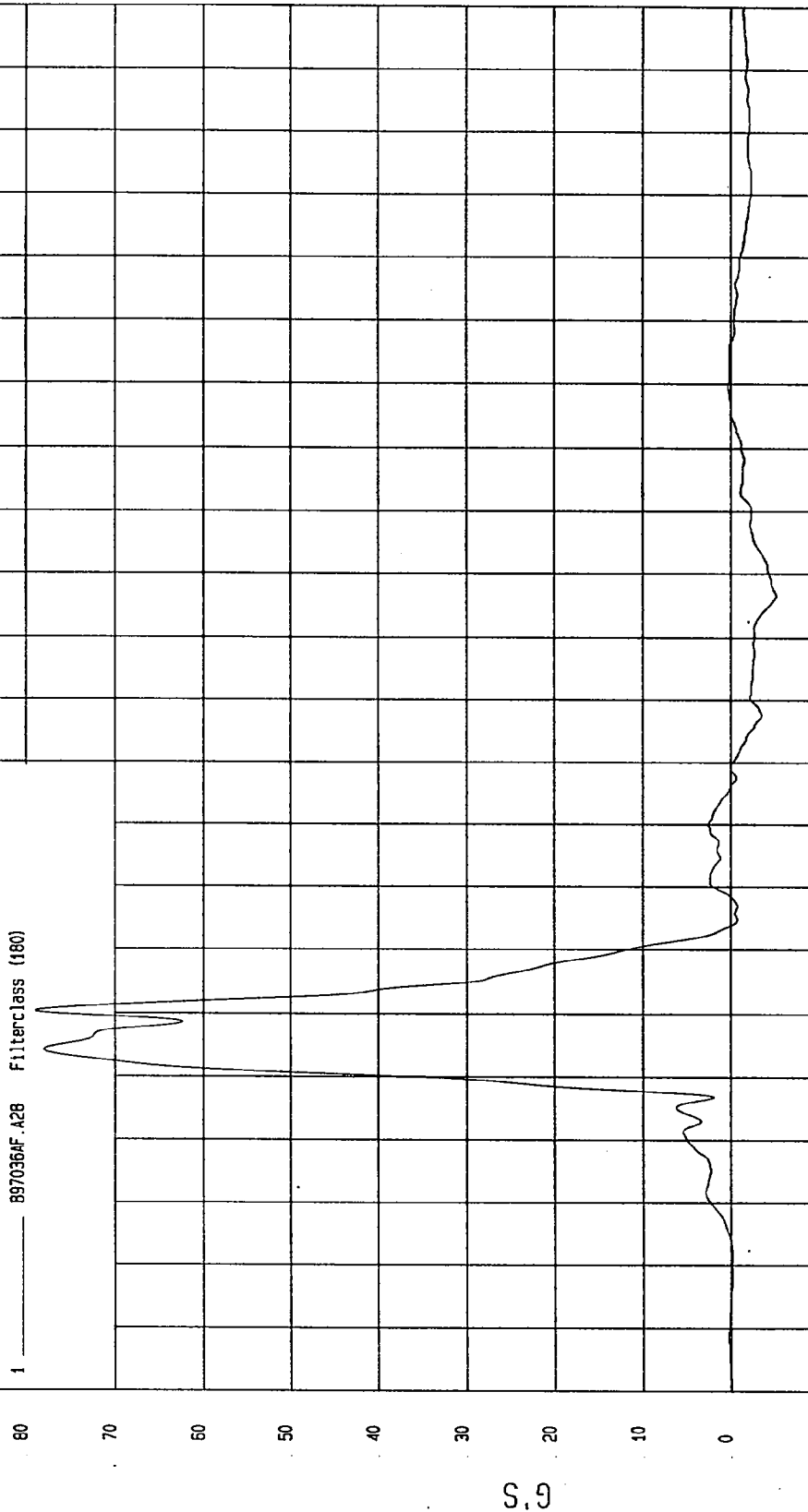
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -5.07 G'S at 107 msec Maximum = 78.95 G'S at 40 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 ——— 897036AF.A28 Filterclass (180)



TIME (SECONDS)

0.19 0.18 0.17 0.16 0.15 0.14 0.13 0.12 0.11 0.10 0.09 0.08 0.07 0.06 0.05 0.04 0.03 0.02 0.01 0 -0.01 -0.02

NSI Research
03-05-1997 19:02

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 03-07-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108)

Maximum = 43.22 KPH at 76 msec

Minimum = -2.30E-03 KPH at -18 msec

REAR PASSENGER PELVIS Y VELOCITY

1 ——— B97036A1.V28 Filterclass (180)

40

30

20

10

0

KPH

TIME Seconds

MCA Research
03-05-1997 18:54

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -5.49 G'S at 121 msec Maximum = 39.53 G'S at 16 msec

LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 ——— B97036AF.A38 Filterclass (60)

40

30

20

10

0

G.S

TIME (SECONDS)

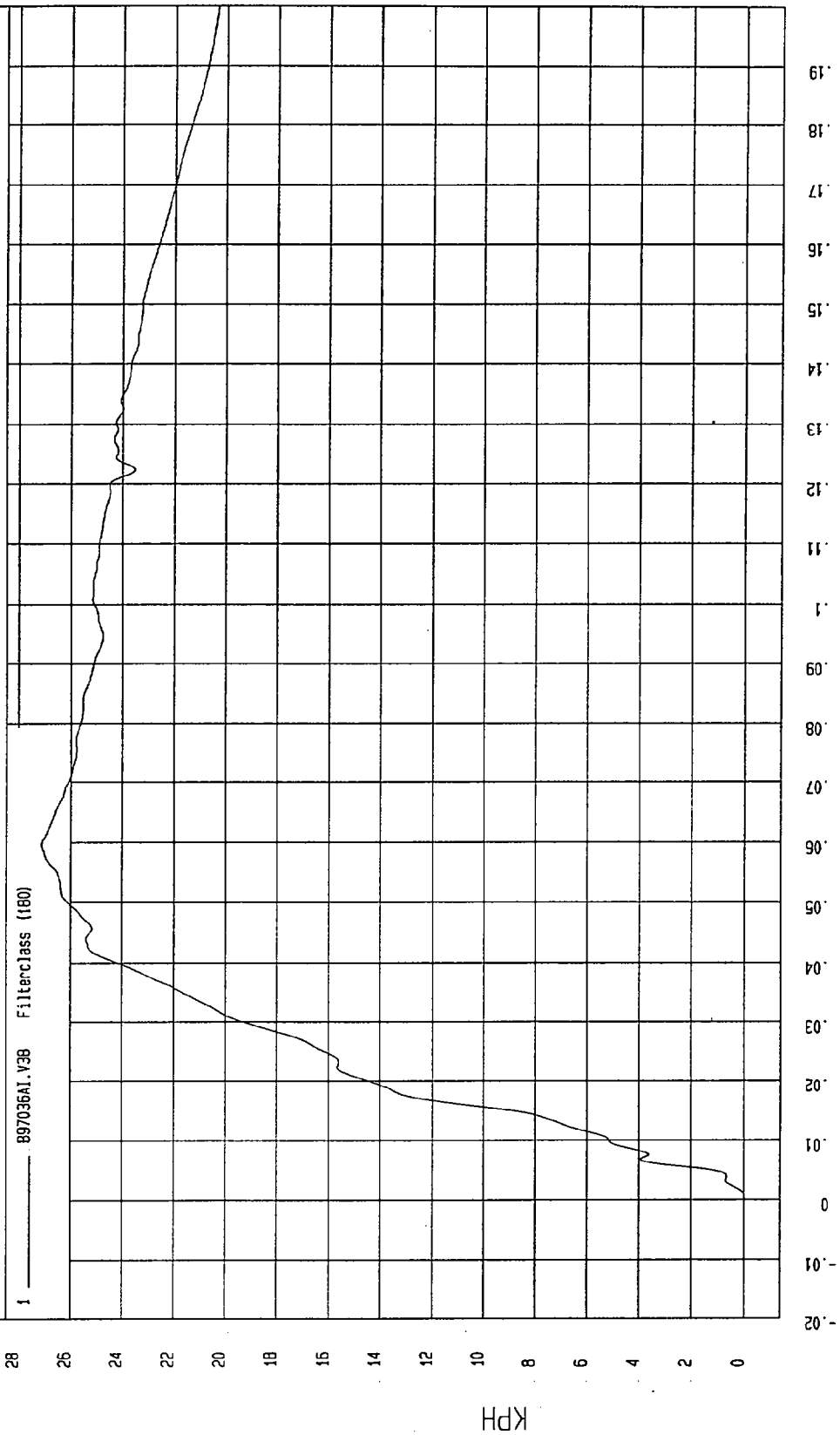
MSA Research
03-14-1997 08:28

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -1.44E-02 KPH at 1 msec Maximum = 27.12 KPH at 60 msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY



NGA Research
03-14-1997 08:28

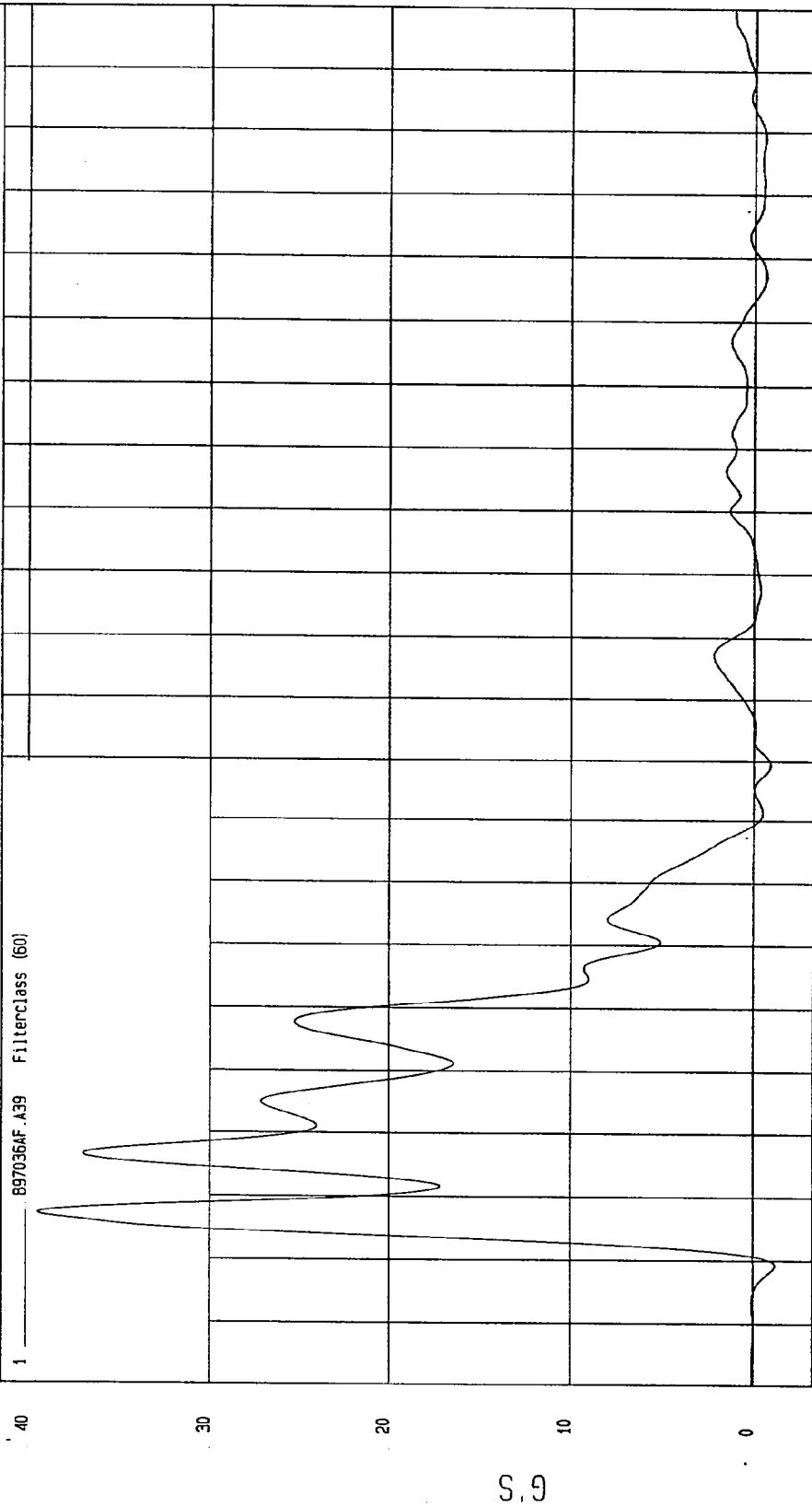
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -1.15 G'S at -1 msec Maximum = 39.47 G'S at 7 msec

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION

1 897036AF.A39 Filterclass (60)



NSA Research
03-05-1997 18:55

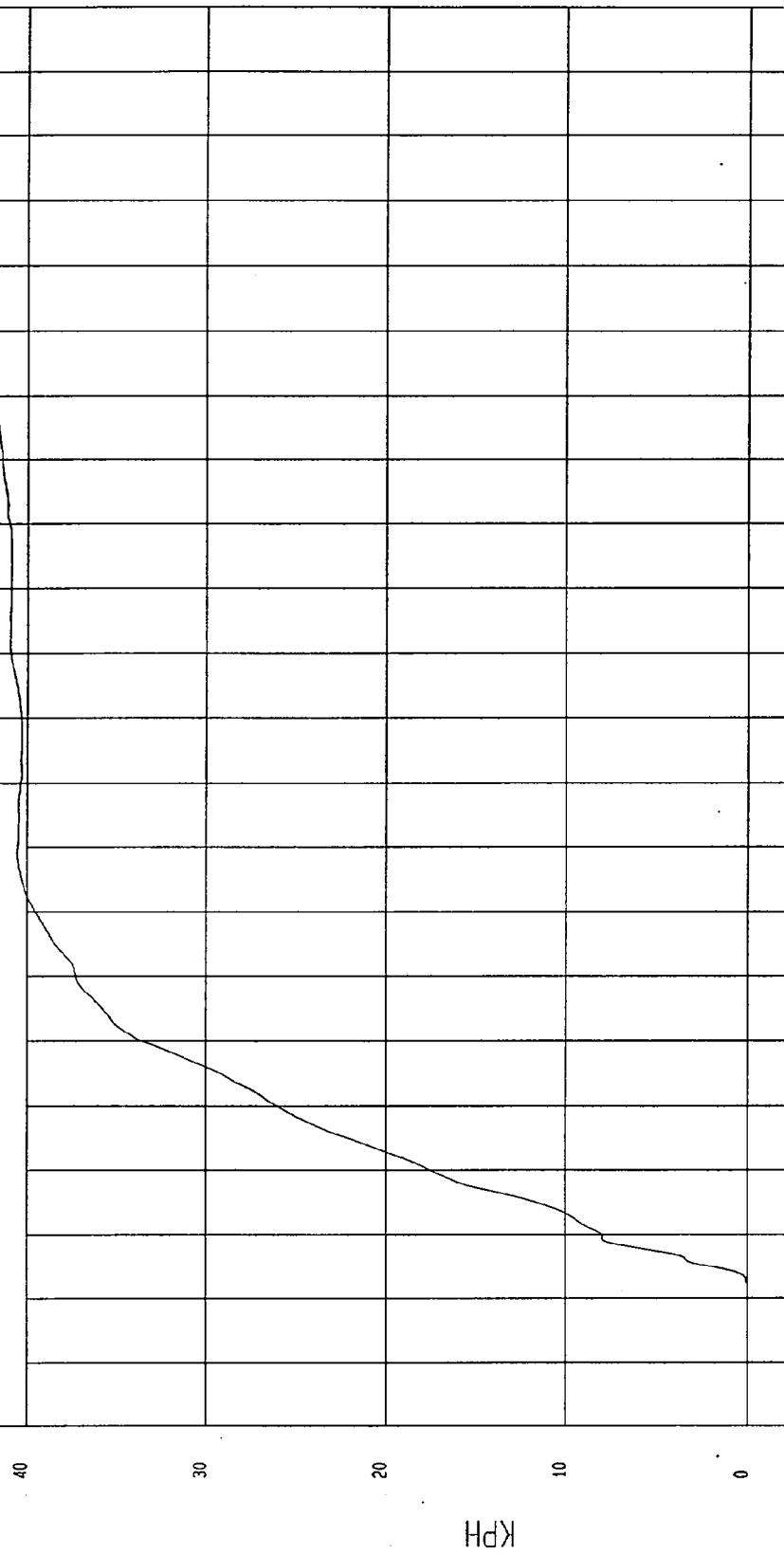
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = 0 KPH at -20 msec Maximum = 42.00 KPH at 153 msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY

1 — B97036A1.V39 Filterclass (180)



TIME Seconds
0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

NCAP Research
03-05-1997 18:55

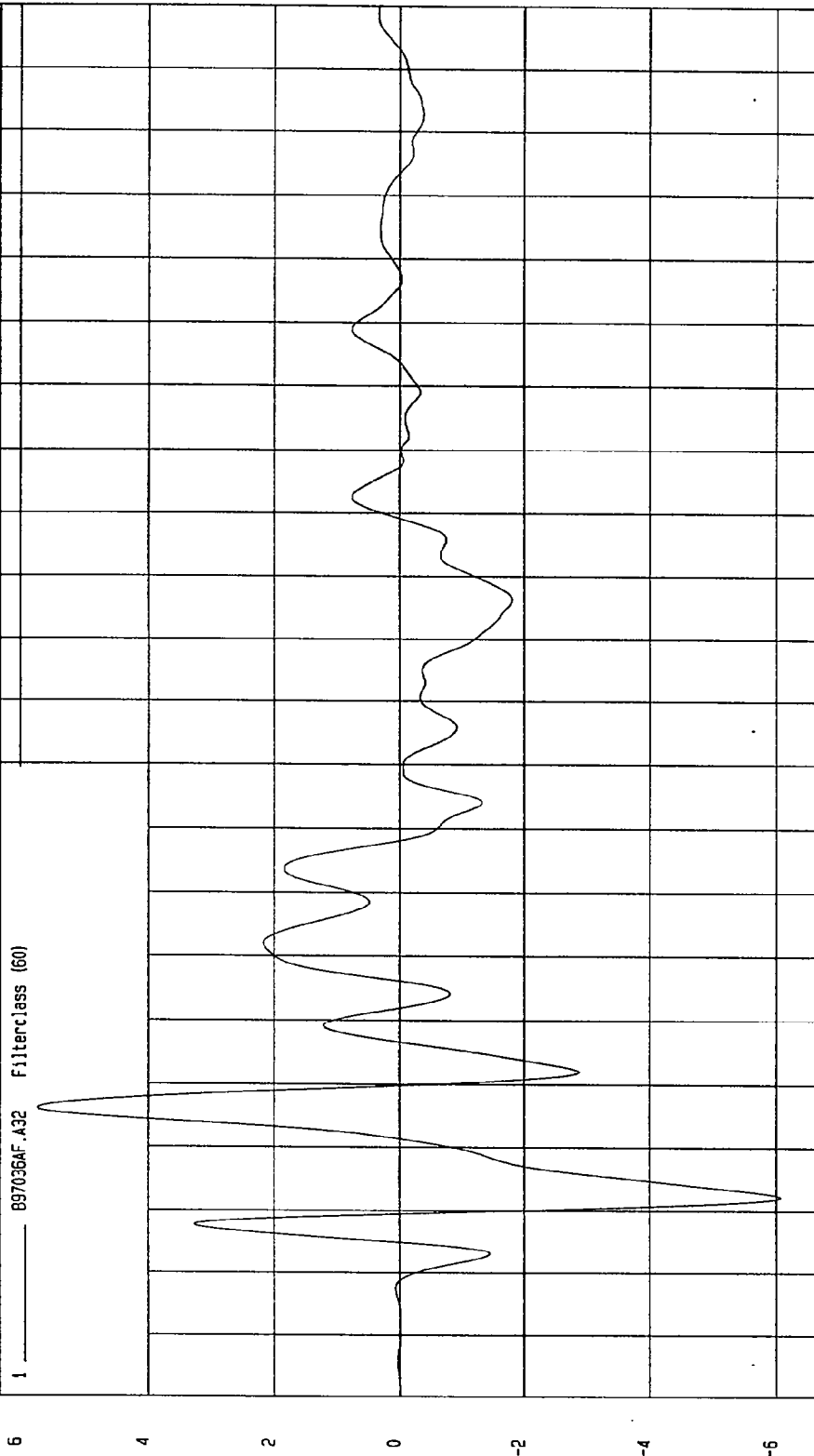
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -6.07 G'S at 12 msec Maximum = 5.73 G'S at 26 msec

RIGHT SIDE SILL AT FRONT SEAT X ACCELERATION

1 ——— 897036AF.A32 Filterclass (60)



NCA Research
03-05-1997 18:55

TIME (SECONDS)

G's

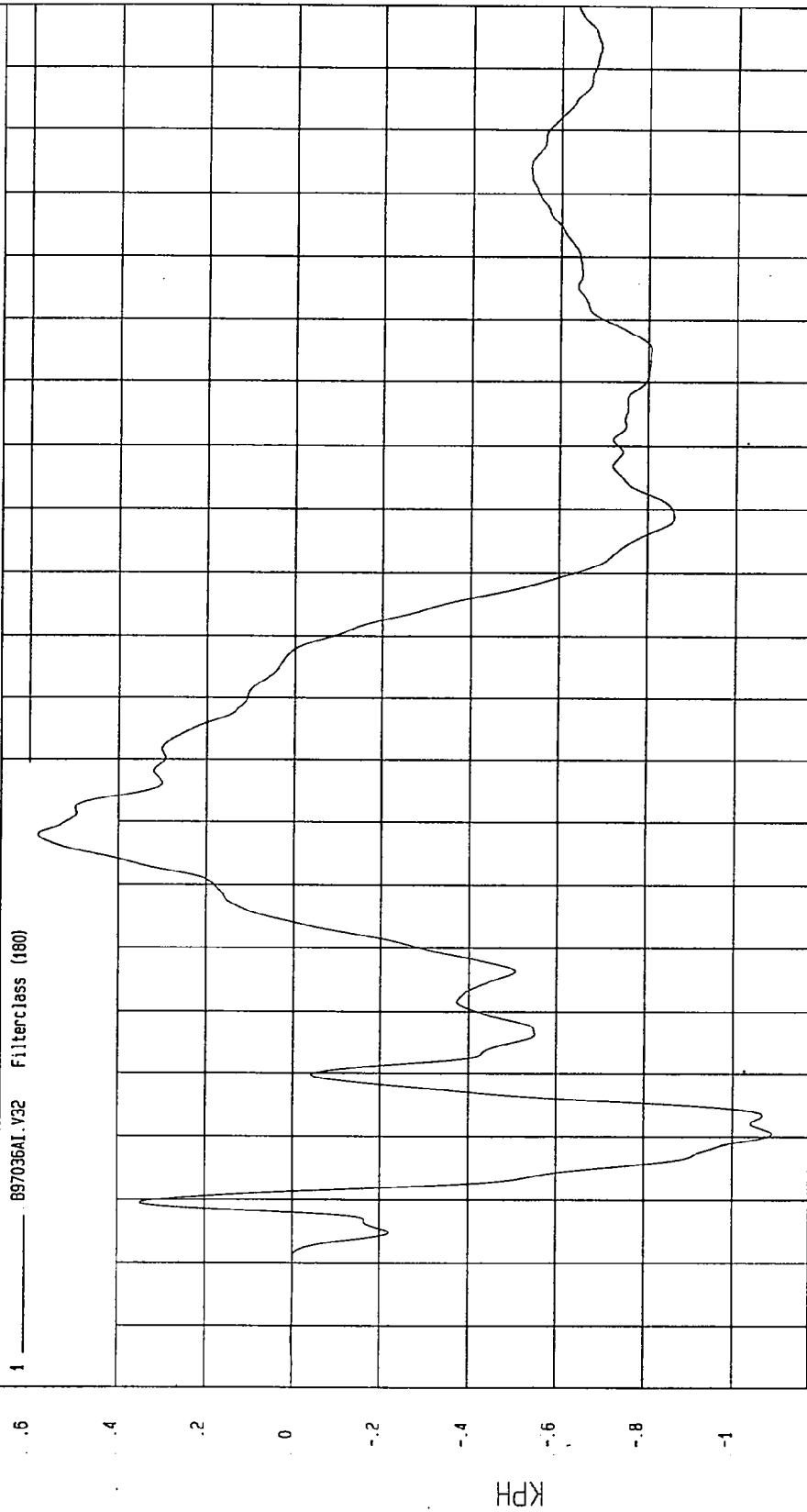
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -1.08 KPH at 20 msec Maximum = .58 KPH at 68 msec

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY

1 ——— 897036AI.V32 Filterclass (180)



MSA Research
03-05-1997 16:55

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -1.94 G'S at 177 msec Maximum = 38.76 G'S at 8 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 897035AF.A33 Filterclass (60)

40

30

20

10

0

G.S

-02

-01

0

01

02

03

04

05

06

07

08

09

10

11

12

13

14

15

16

17

18

19

TIME (SECONDS)

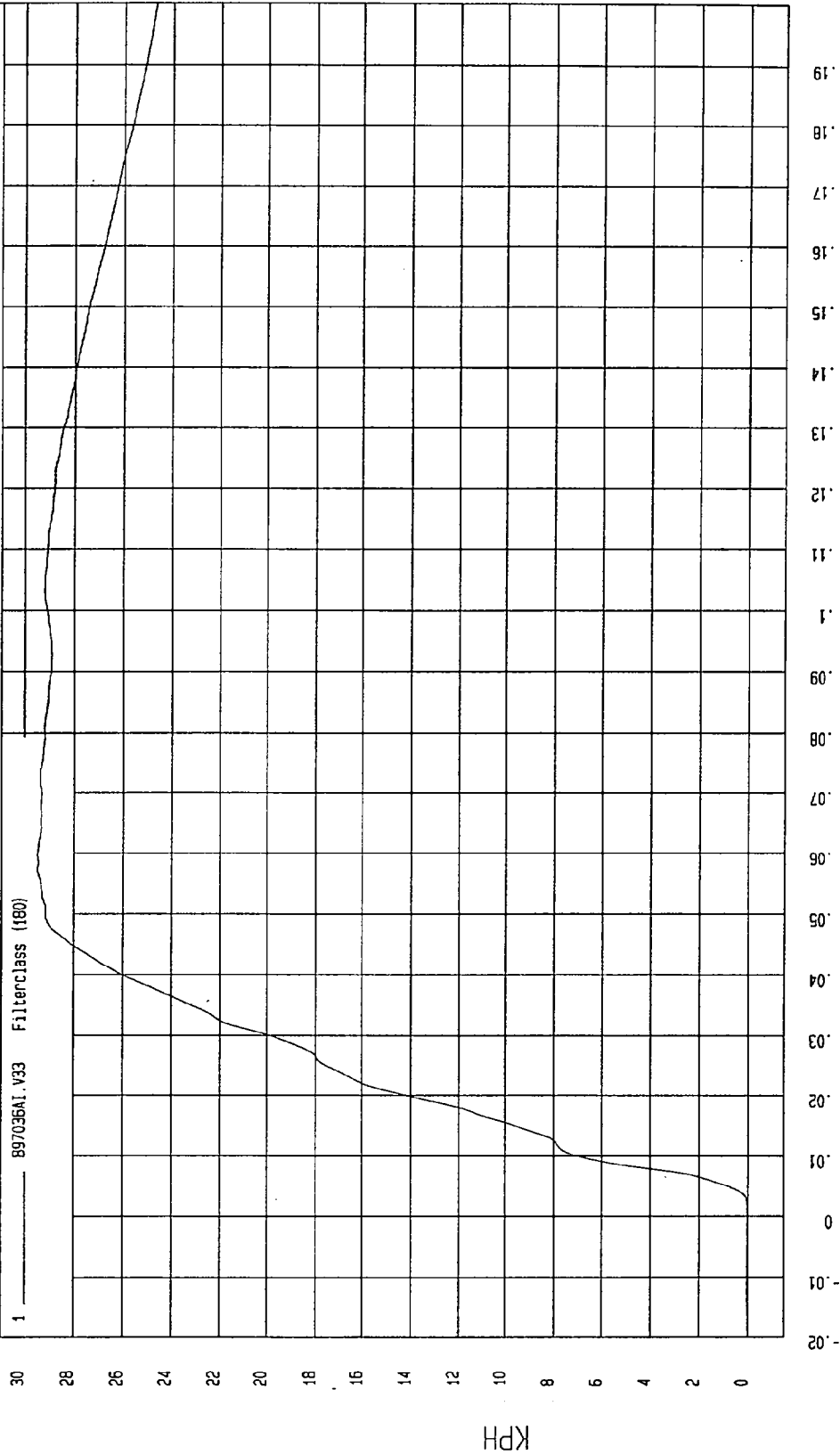
MSA Research
03-05-1997 16:56

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

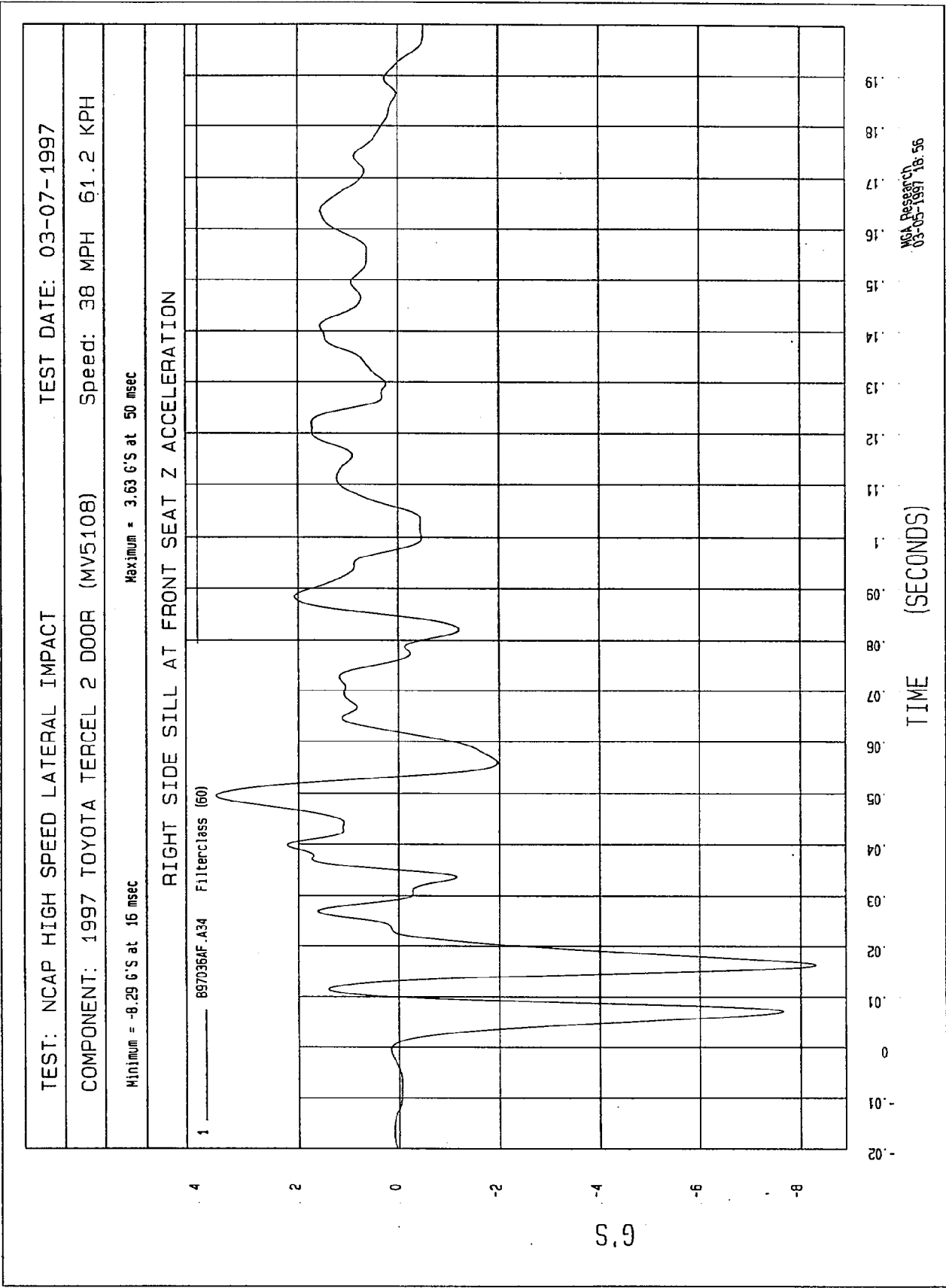
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -6.83E-04 KPH at -18 msec Maximum = 29.47 KPH at 57 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY



MCA Research
03-05-1997 18:56



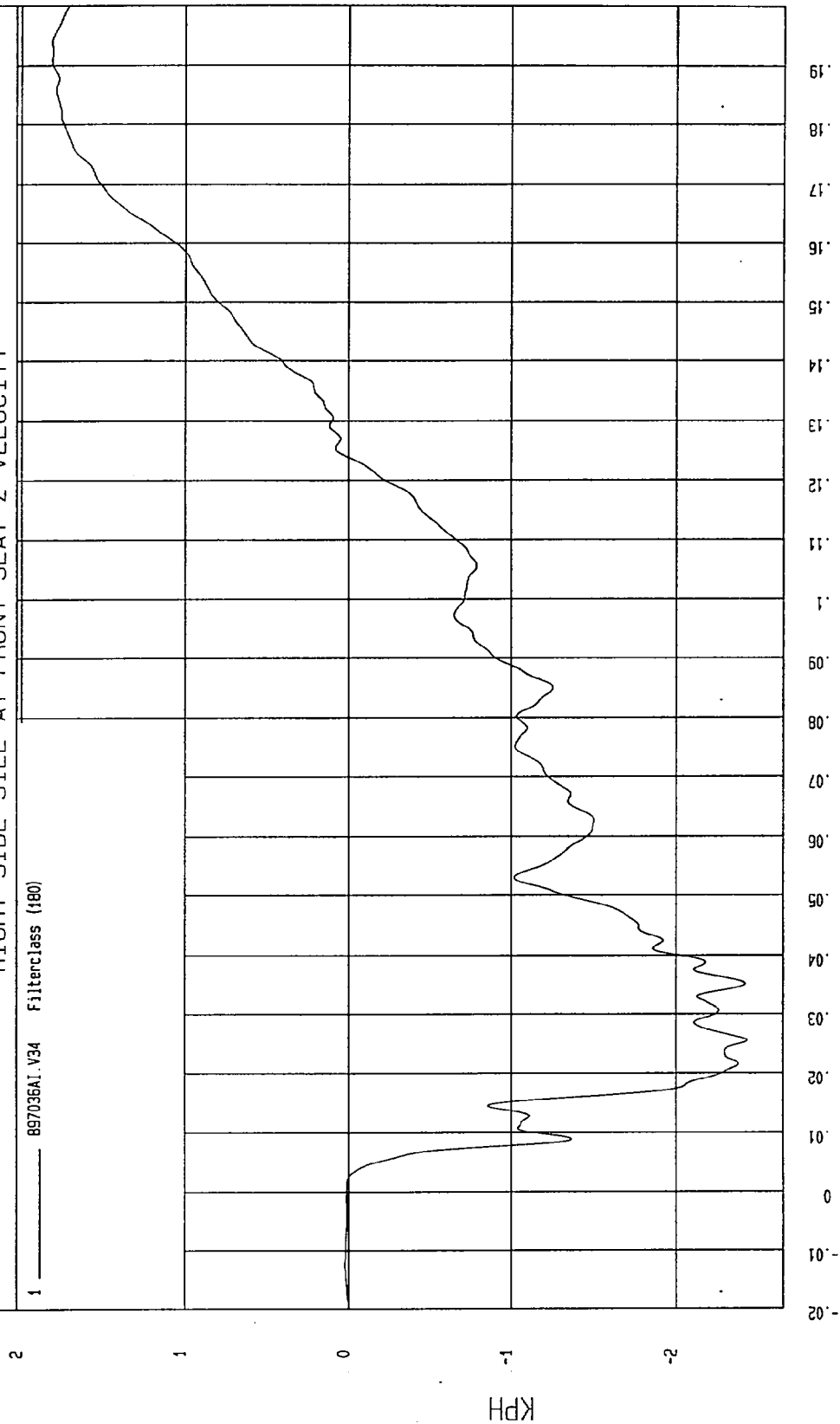
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -2.43 KPH at 26 msec Maximum = 1.81 KPH at 194 msec

RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY

1 ——— 897036A1.V34 Filterclass (480)



MGA Research
03-05-1997 18:56

TIME Seconds

KPH

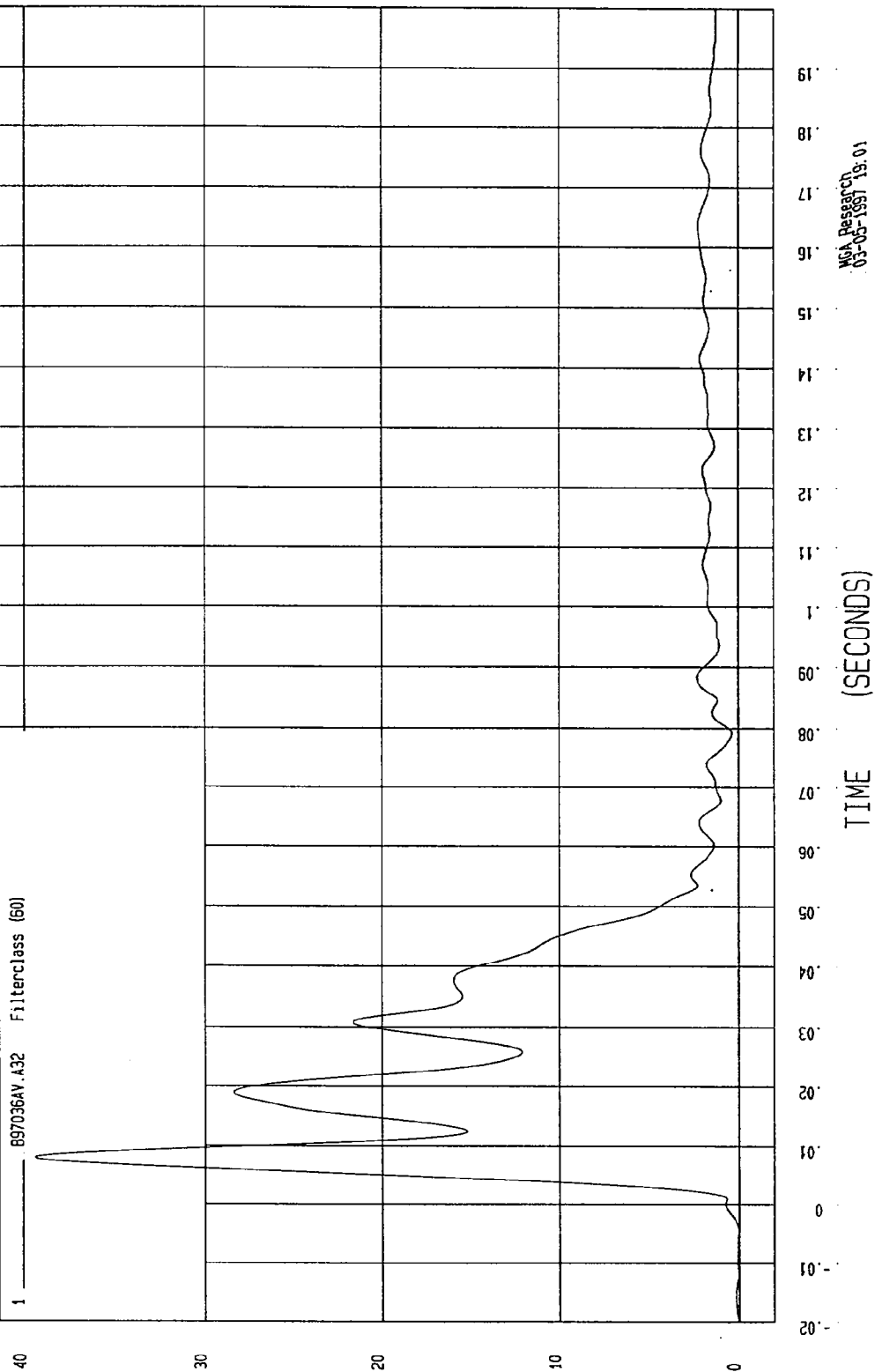
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = .01 G'S at -12 msec Maximum = 39.44 G'S at 8 msec

RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION

1 897036AV.A32 Filterclass (60)



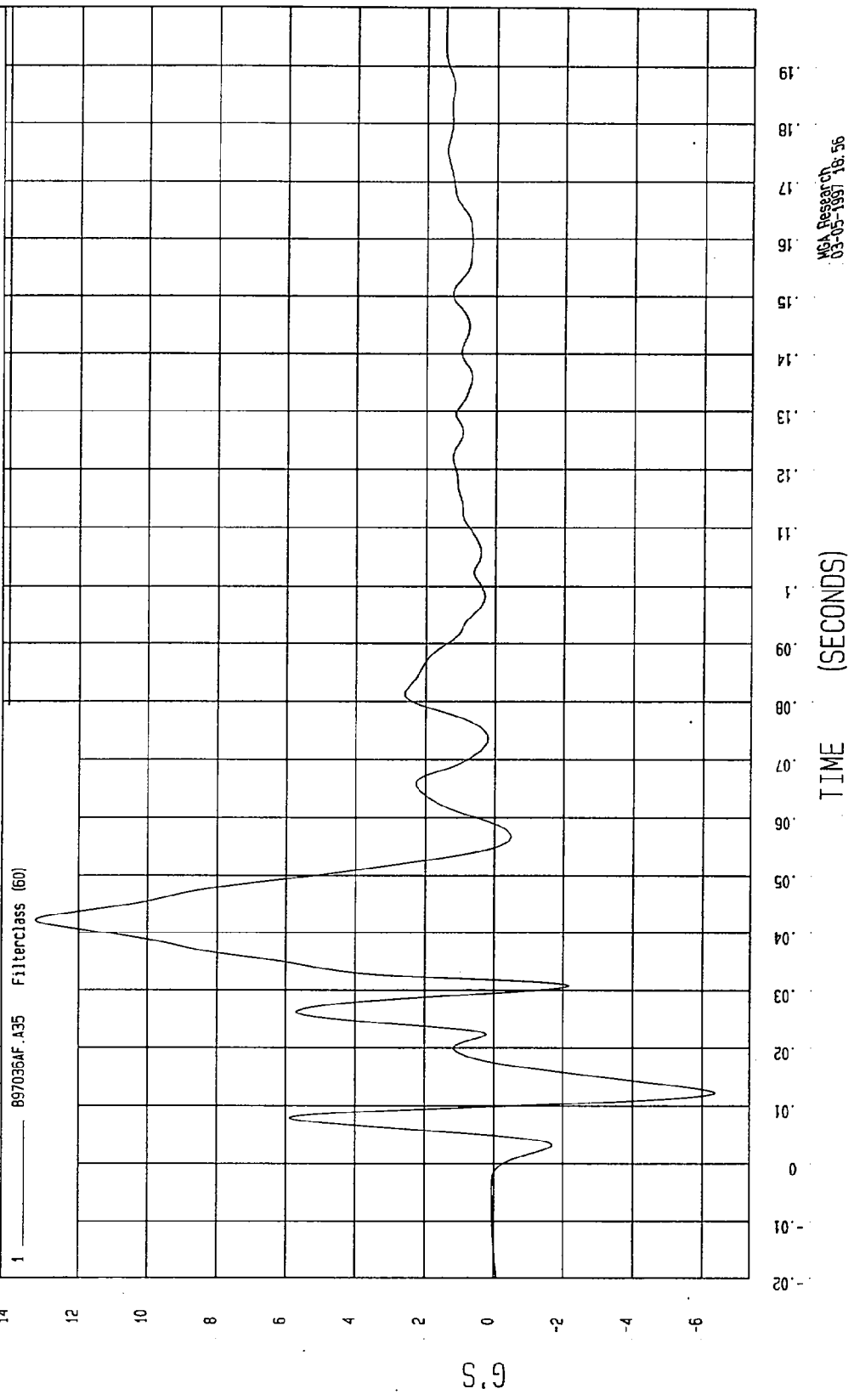
MCA Research
03-05-1997 19.01

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -6.35 G'S at 12 msec Maximum = 13.22 G'S at 42 msec

RIGHT SIDE SILL AT REAR SEAT X ACCELERATION



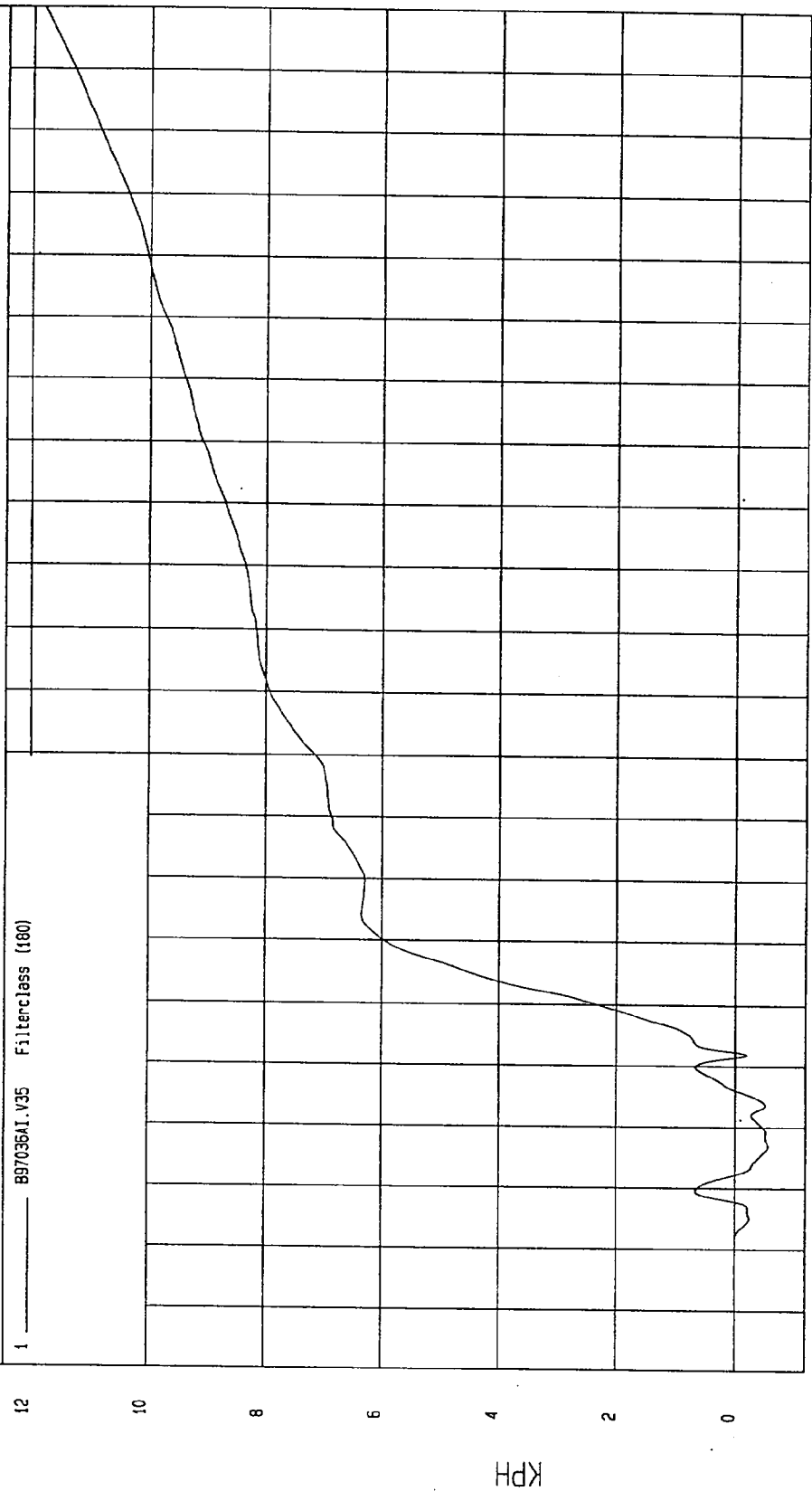
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -.55 KPH at 17 msec Maximum = 11.80 KPH at 200 msec

RIGHT SIDE SILL AT REAR SEAT X VELOCITY

1 _____ BS7035A1.V35 Filterclass (100)



TIME Seconds
MGA Research
03-05-1997 18:56

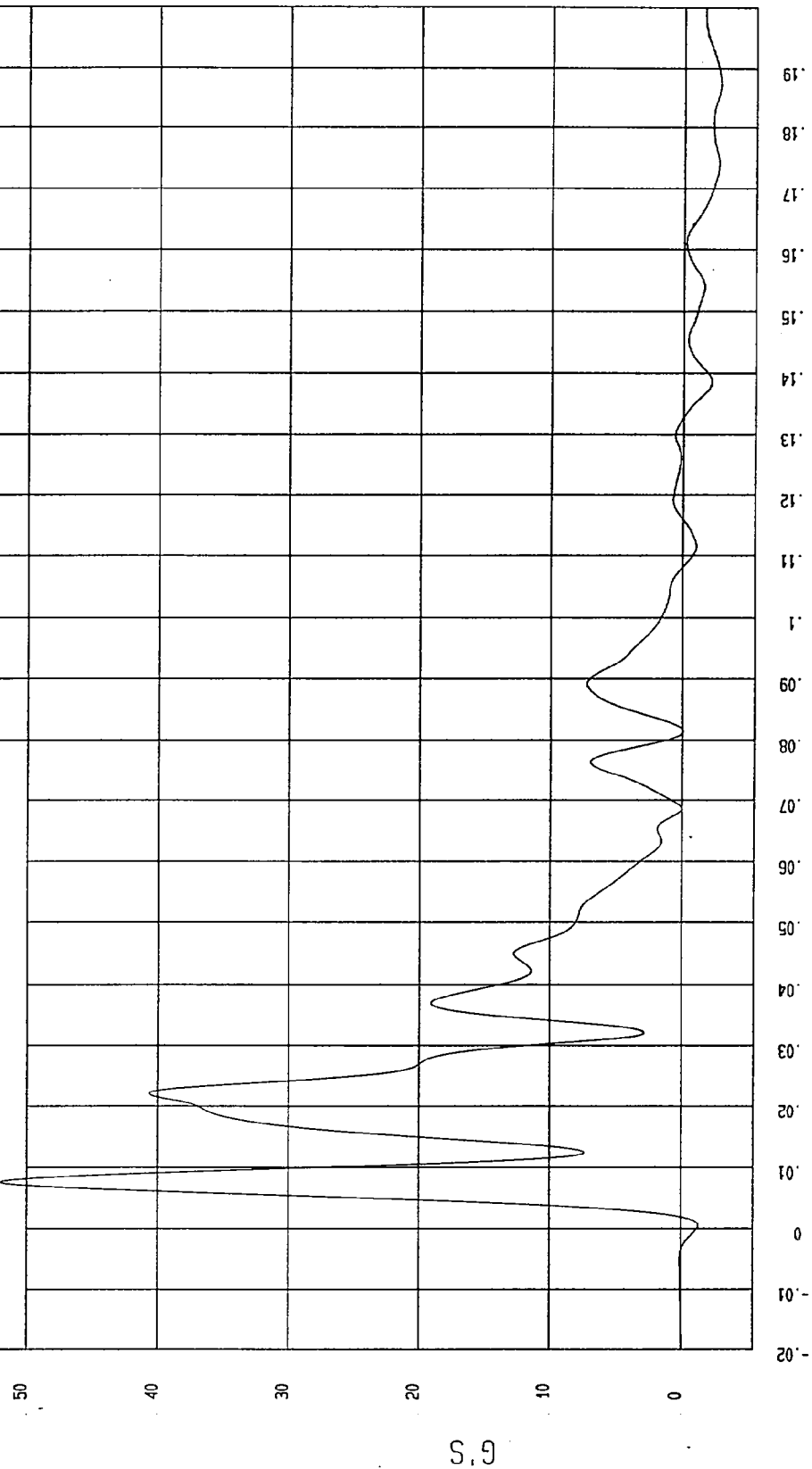
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -2.67 G'S at 187 msec Maximum = 51.98 G'S at 8 msec

RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION

1 897036AF.A36 Filterclass (60)



MCA Research
03-05-1997 18:56

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 03-07-1997

Speed: 38 MPH 61.2 KPH

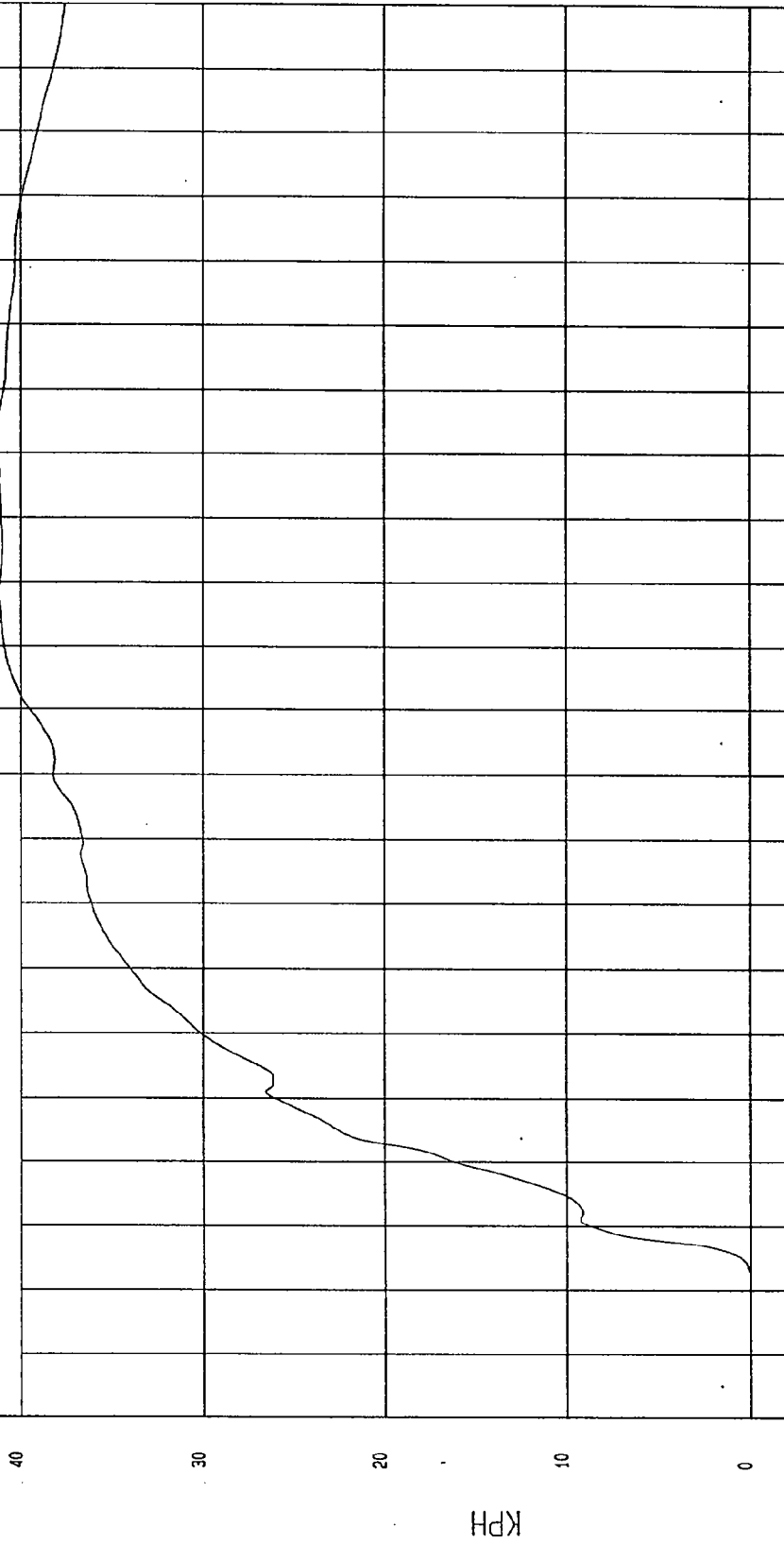
COMPONENT: 1997 TOYOTA TERCEL 2 D00R (MV5108)

Minimum = -9.93E-03 KPH at -12 msec

Maximum = 41.26 KPH at 132 msec

RIGHT SIDE SILL AT REAR SEAT Y VELOCITY

1 — 897036A1.V36 Filterclass (180)



WCA Research
03-06-1997 18:56

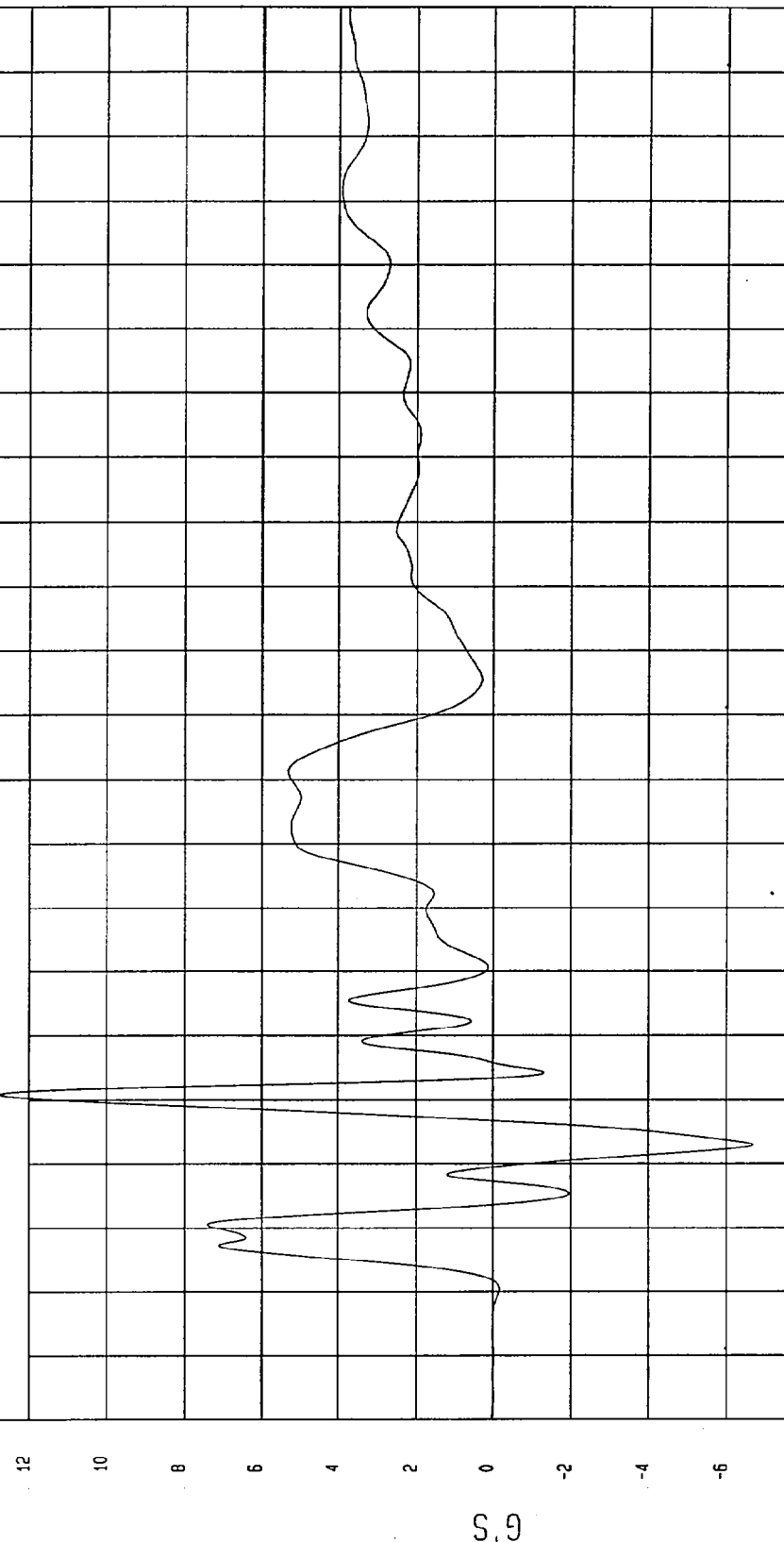
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -6.67 G'S at 23 msec
Maximum = 12.75 G'S at 31 msec

RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION

1 ——— 897036AF.A37 Filterclass (60)



MSA Research
03-05-1997 18:57

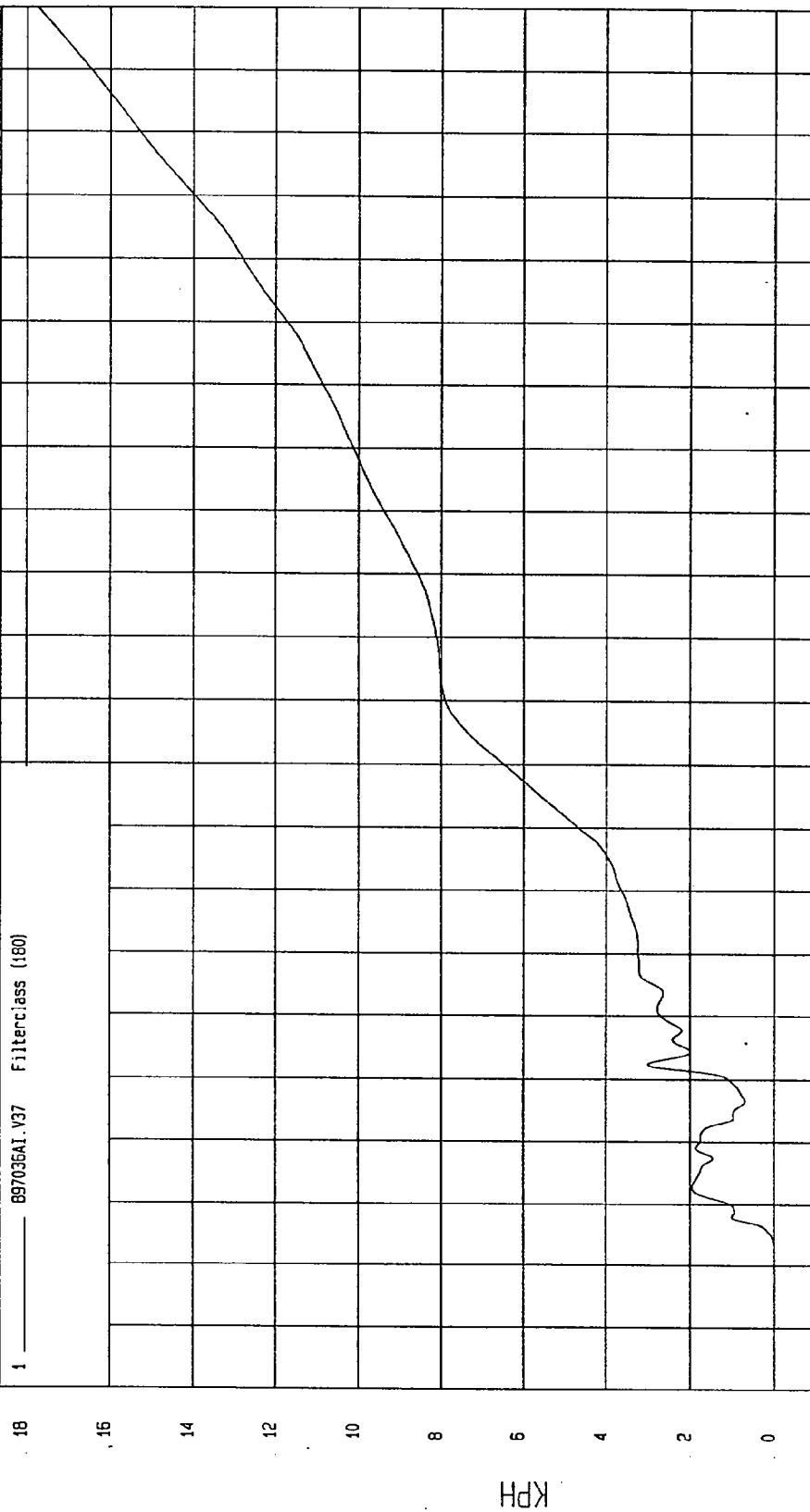
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -5.05E-03 KPH at -4 msec Maximum = 17.74 KPH at 200 msec

FIGHT SIDE SILL AT REAR SEAT Z VELOCITY

1 — 897035A1.V37 Filterclass (180)



TIME Seconds

0.19 0.18 0.17 0.16 0.15 0.14 0.13 0.12 0.11 0.10 0.09 0.08 0.07 0.06 0.05 0.04 0.03 0.02 0.01 0 -0.01 -0.02

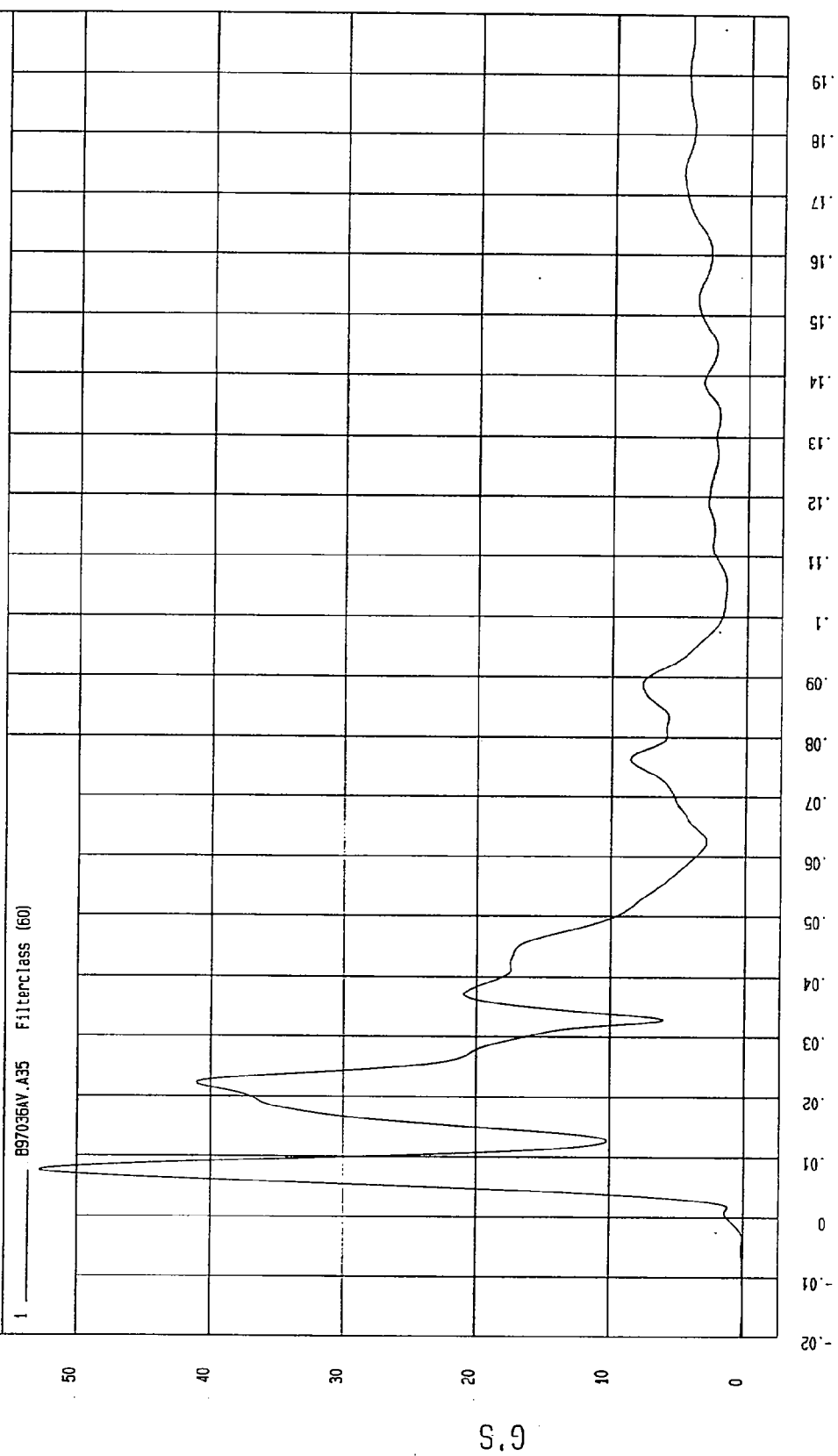
MSA Research
03-05-1997 18:57

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

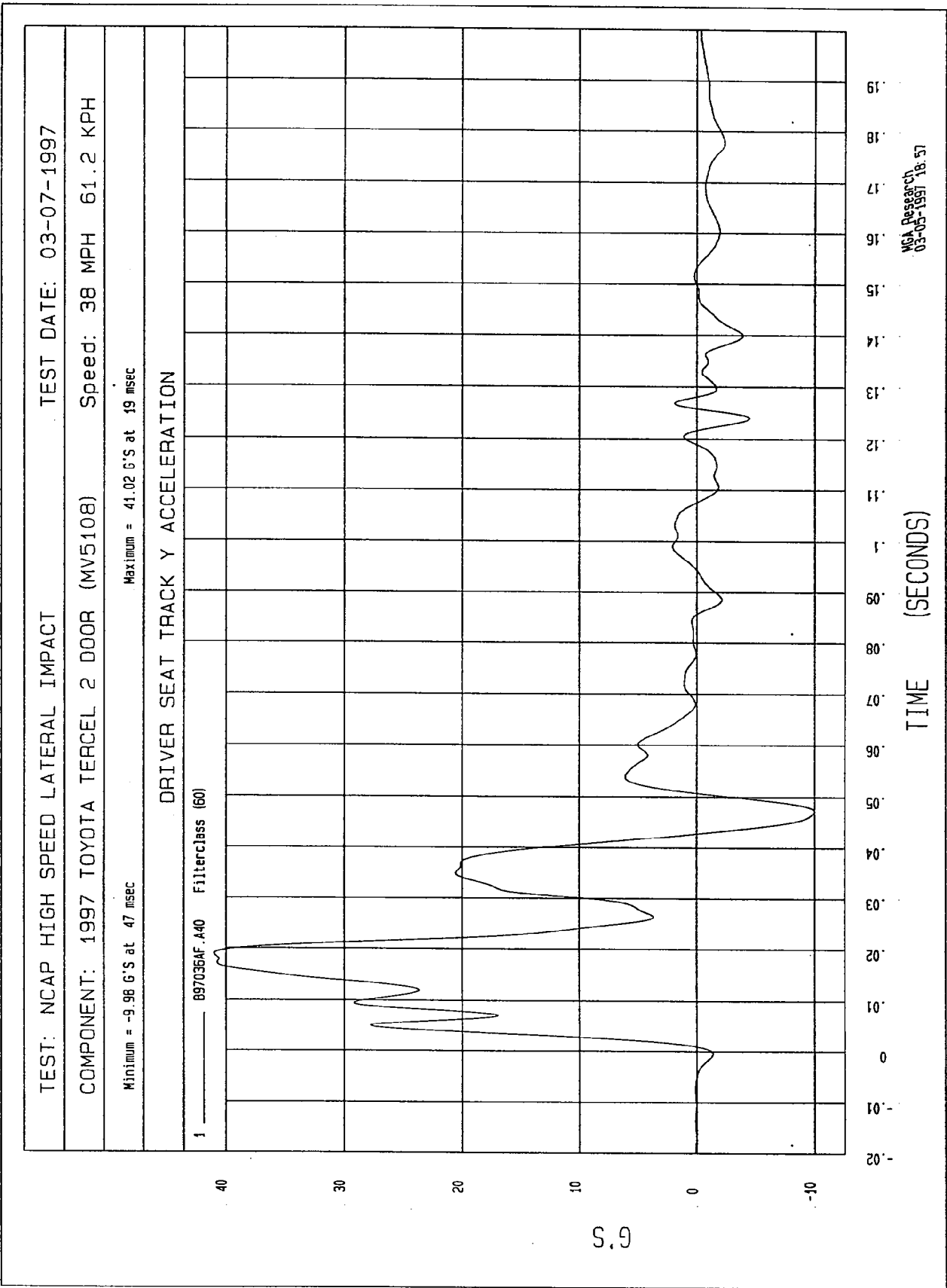
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = 1.11E-02 G'S at -13 msec Maximum = 52.75 G'S at 0 msec

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION



MCA Research
03-05-1997 19:01

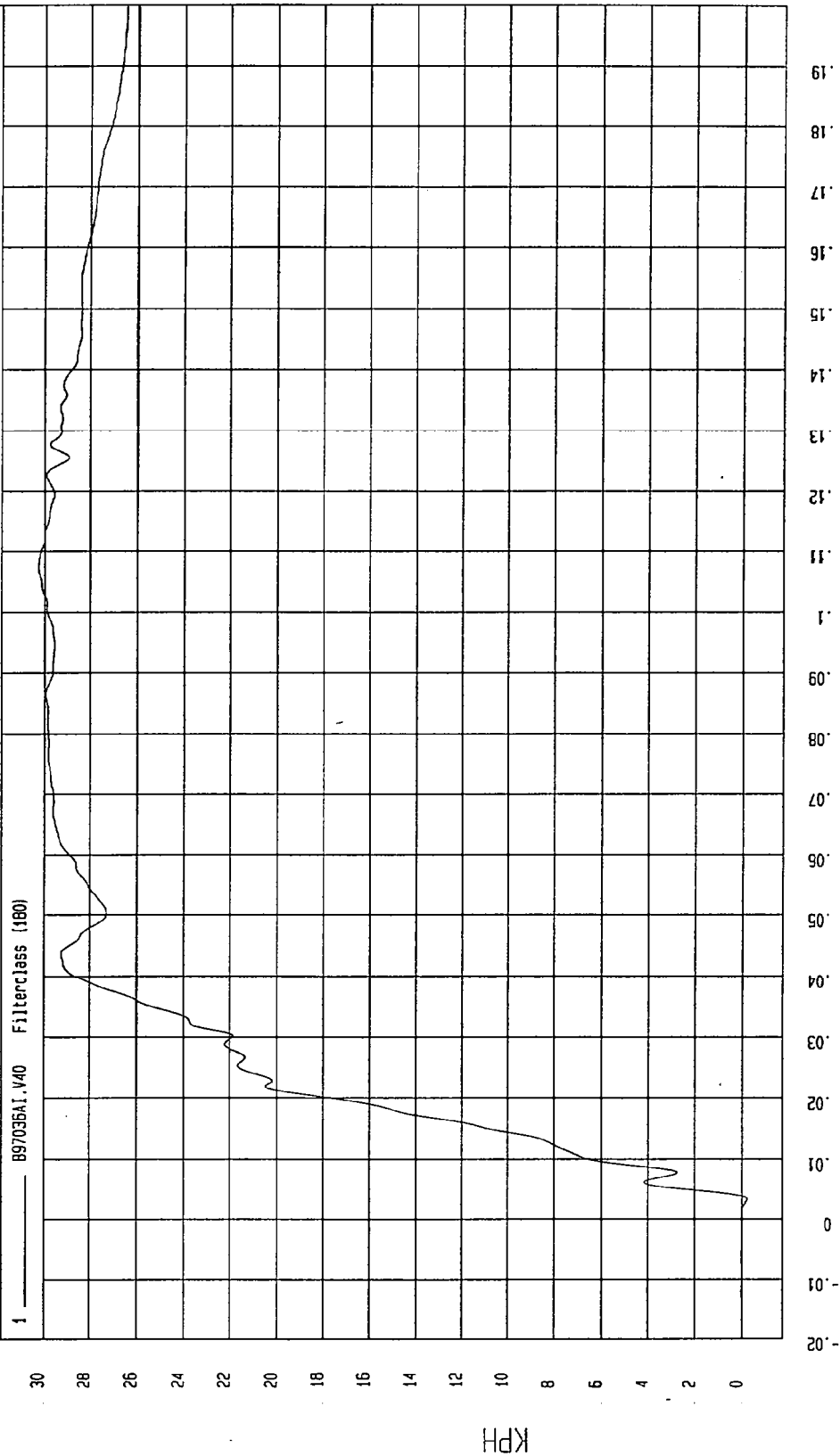


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

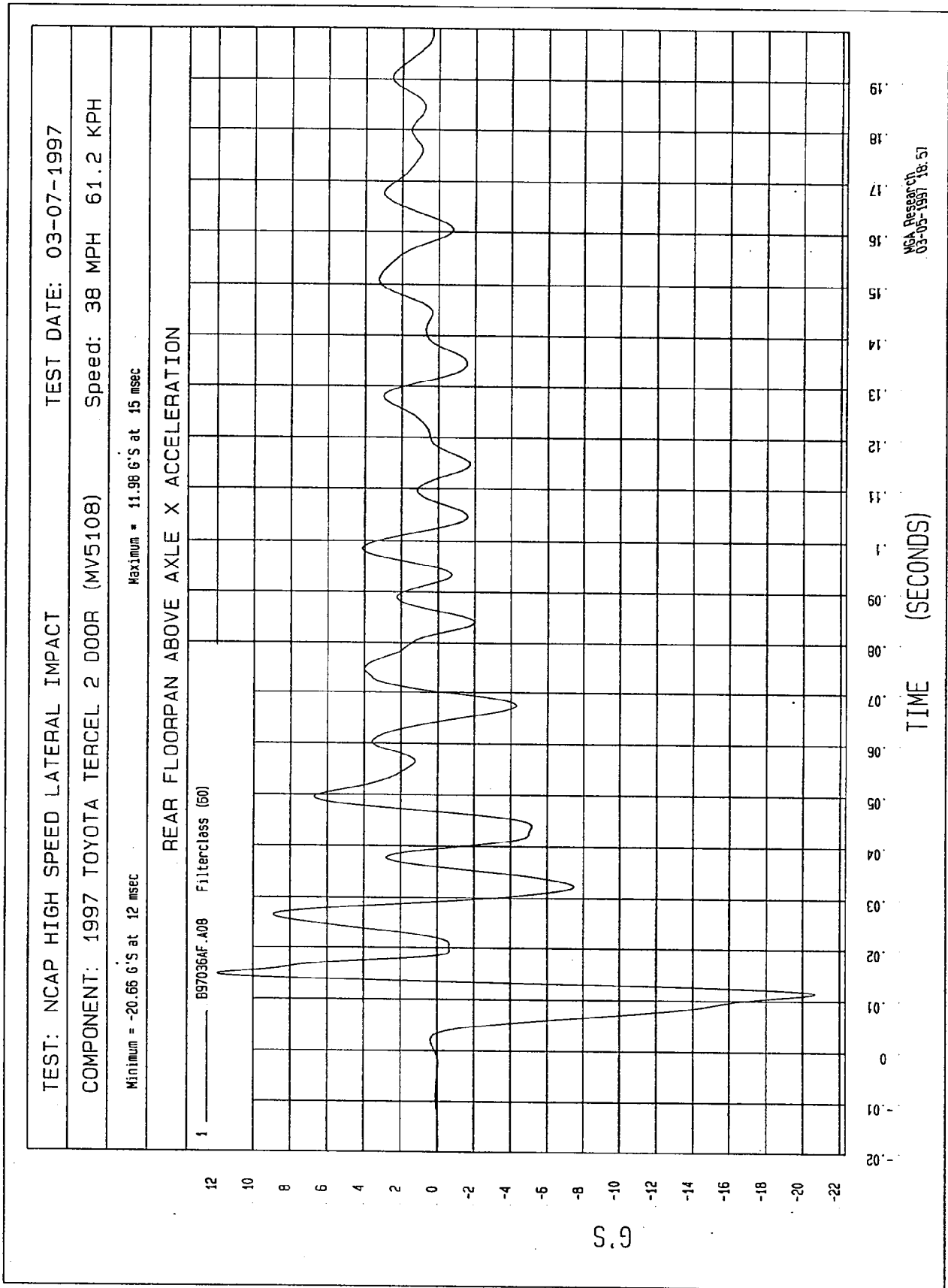
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -20 KPH at 3 msec Maximum = 30.25 KPH at 107 msec

DRIVER SEAT TRACK Y VELOCITY



NSA Research
03-05-1997 16:57



TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

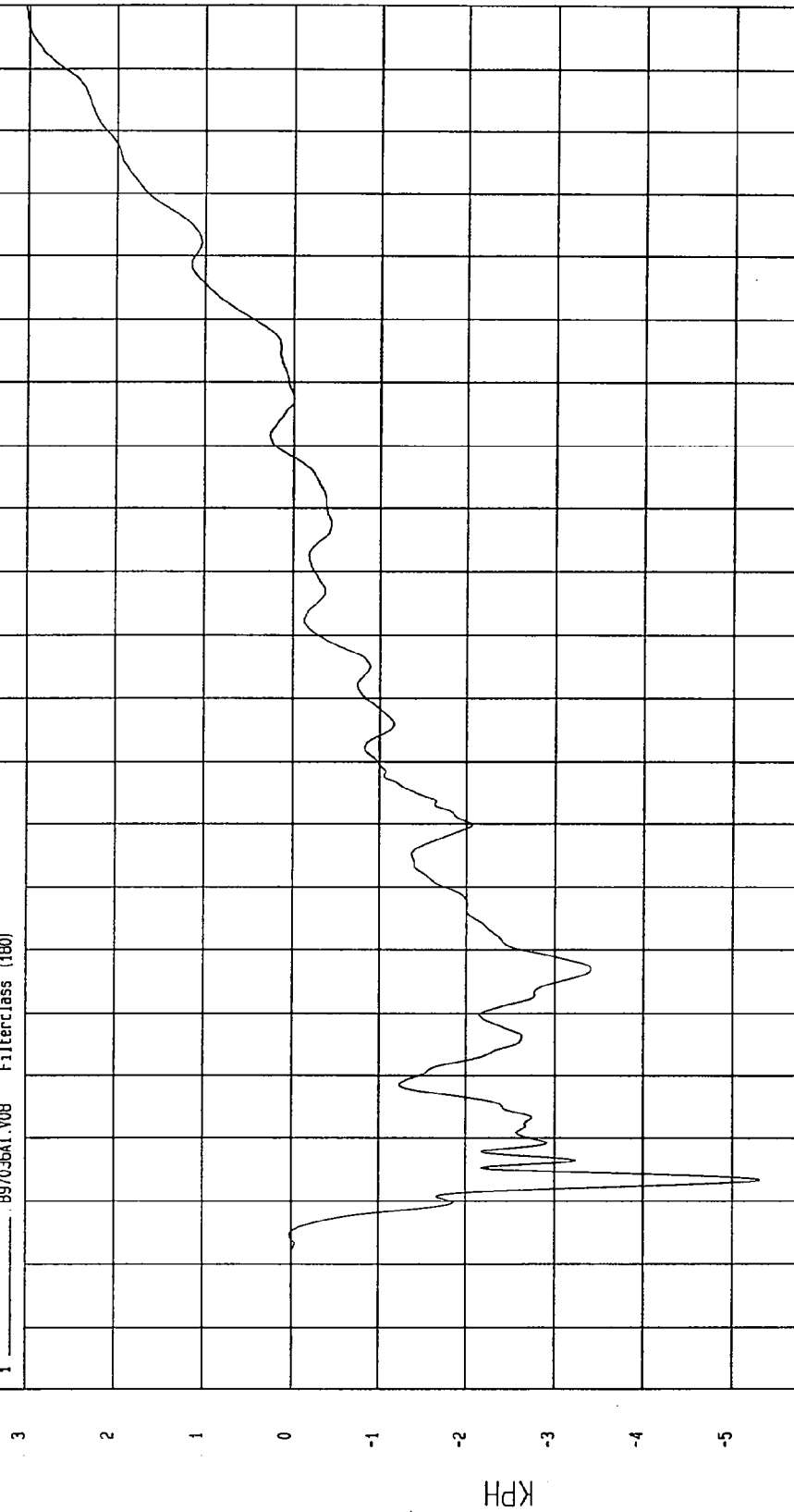
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -5.31 KPH at 13 msec

Maximum = 3.03 KPH at 200 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY

1 897036A1.V08 Filterclass (180)



NGA Research
03-05-1997 18:57

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -3.56 G'S at 74 msec Maximum = 43.94 G'S at 8 msec

PEAR FLOORPAN ABOVE AXLE Y ACCELERATION

1 ——— B97036AF .A09 Filterclass (60)

40

30

20

10

0

G

-20

-10

0

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

190

TIME (SECONDS)

NCA Research
03-05-1997 16:57

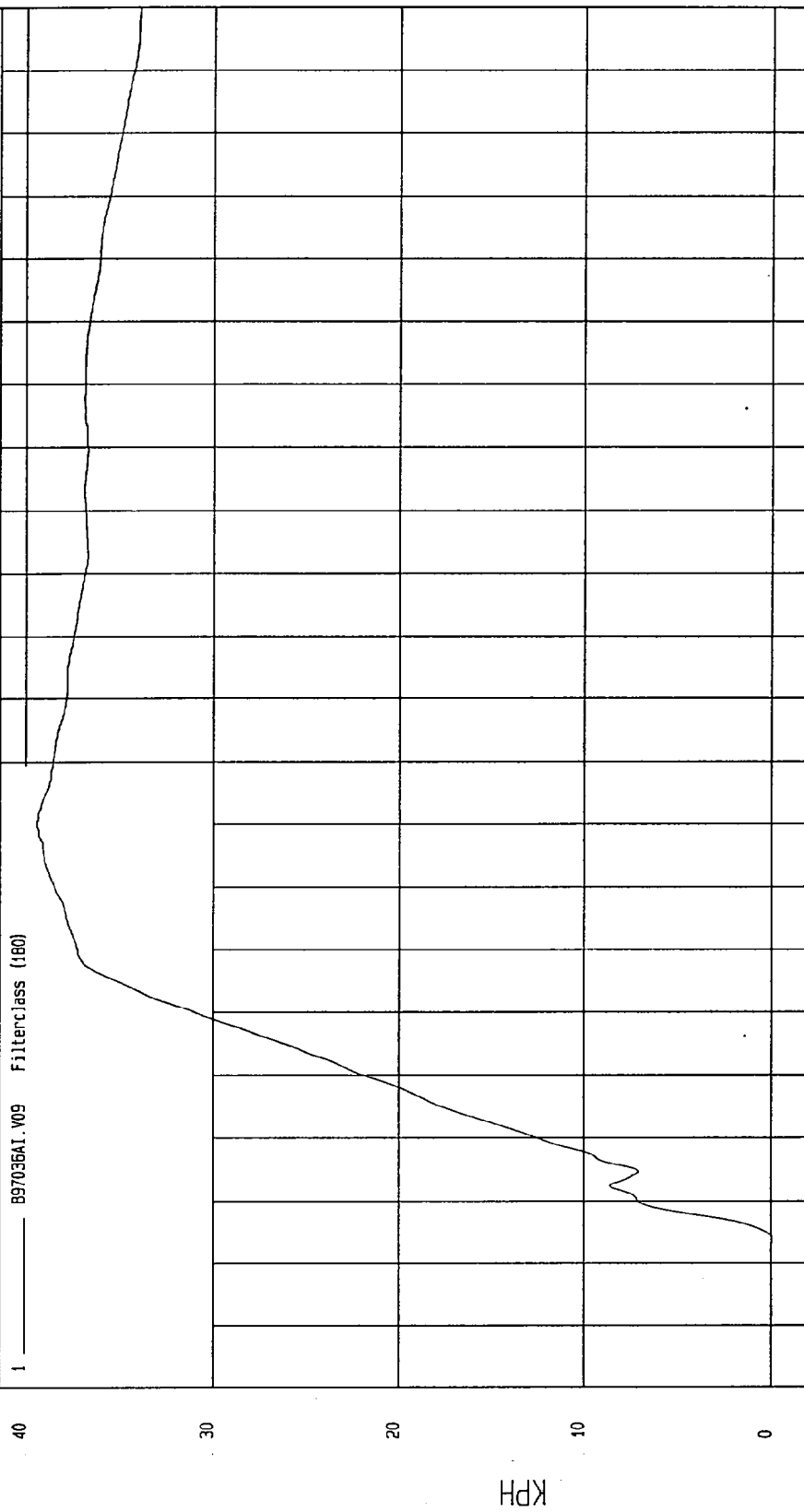
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

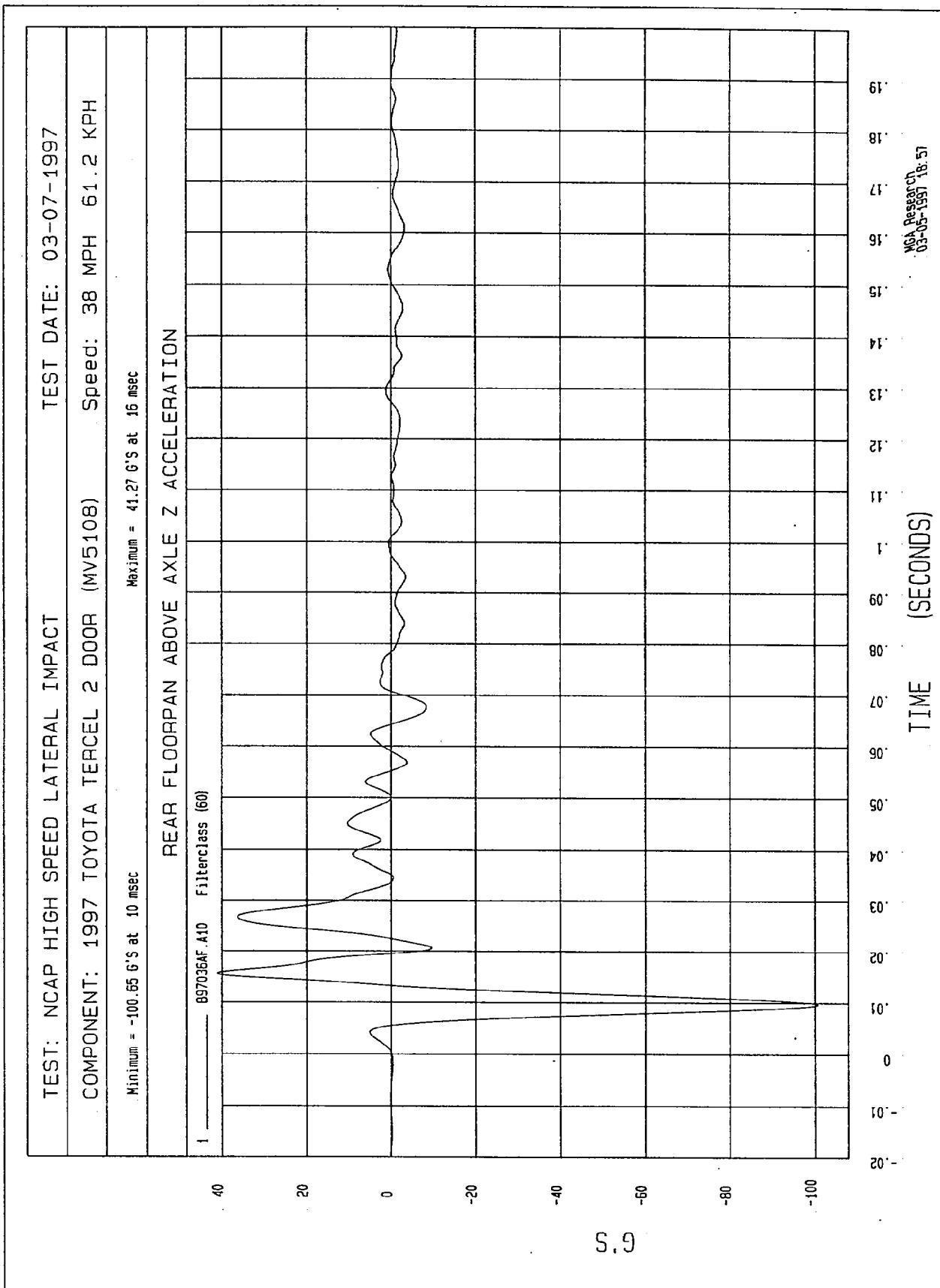
Minimum = -6.08E-02 KPH at 4 msec
Maximum = 39.42 KPH at 70 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY

1 ——— B97036A1.V09 Filterclass (160)



TIME Seconds
NGA Research
03-05-1997 18:57

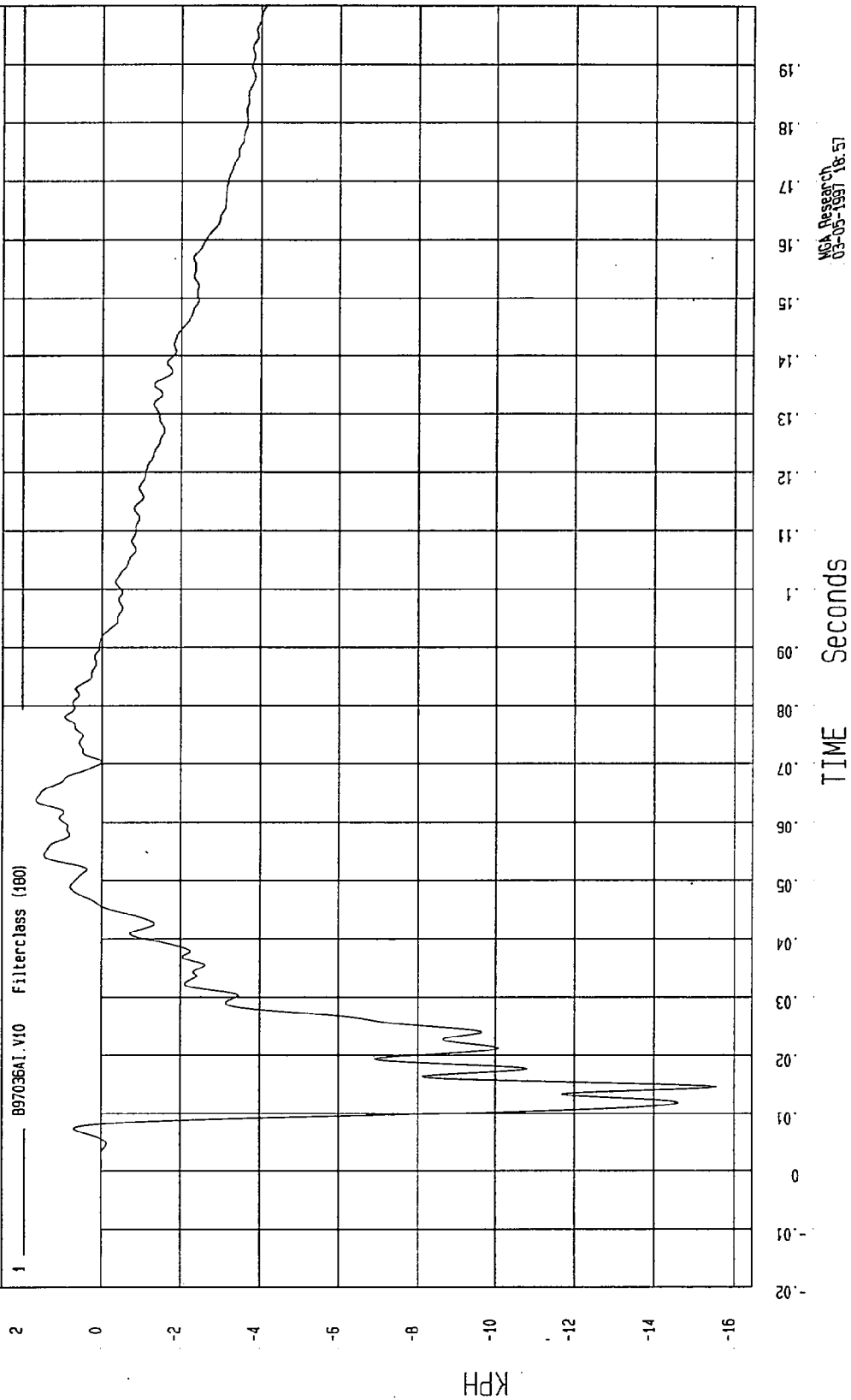


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

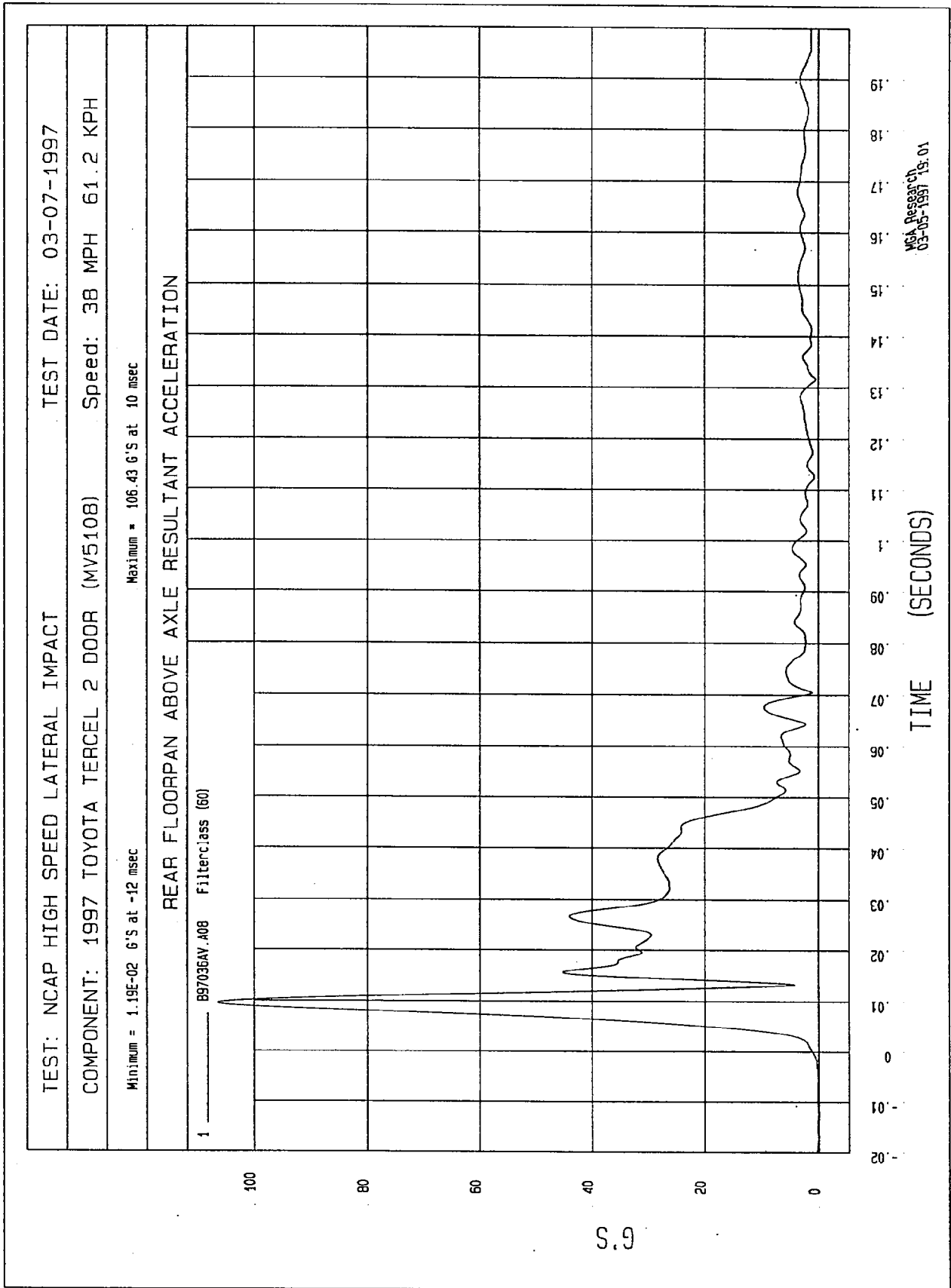
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -15.58 KPH at 15 msec Maximum = 1.64 KPH at 64 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY



NSA Research
03-05-1997 18:57



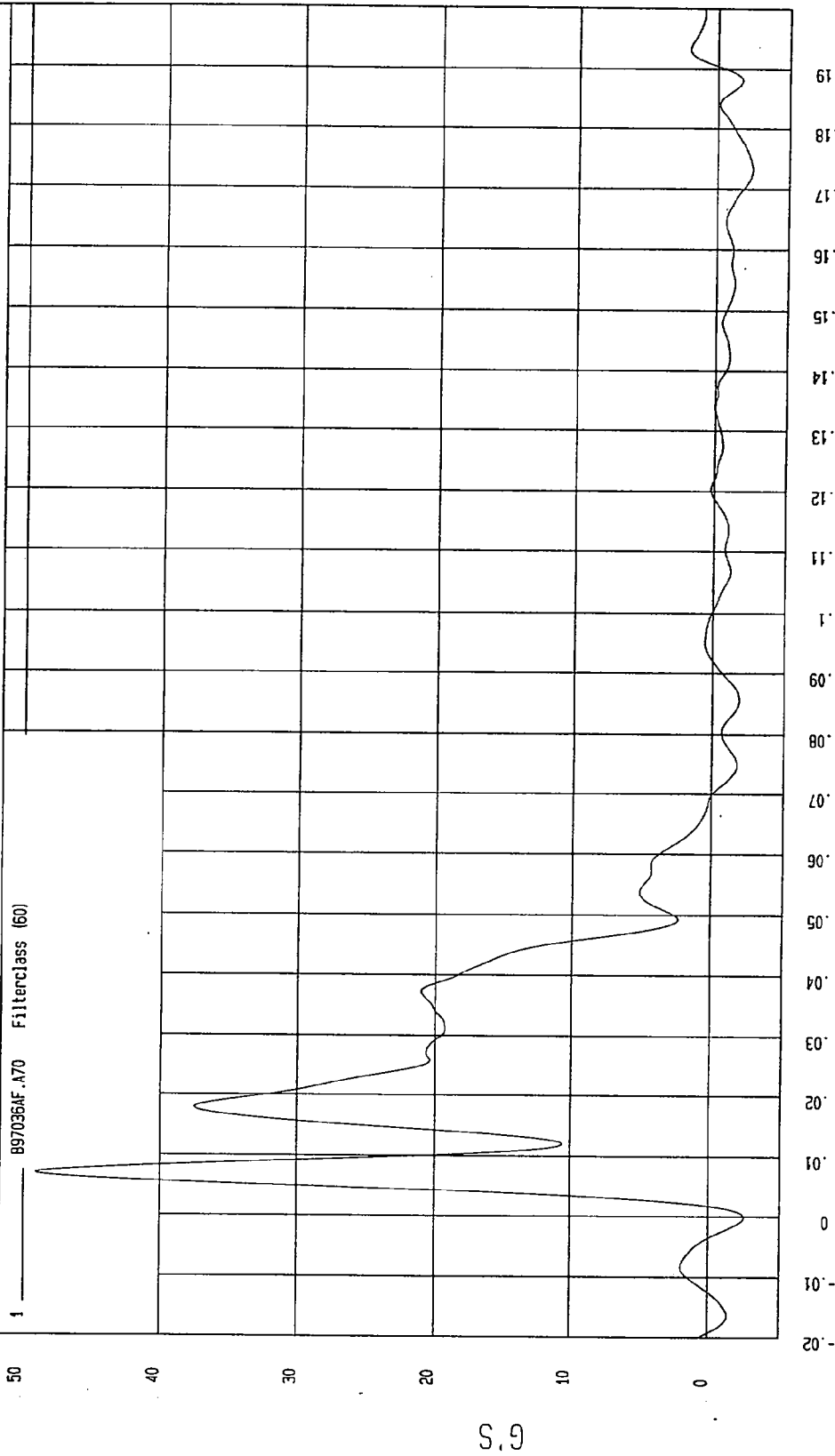
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -2.61 G'S at 0 msec Maximum = 49.03 G'S at 7 msec

RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION

1 B97036AF.A70 Filterclass (60)



NGA Research
03-05-1997 18:58

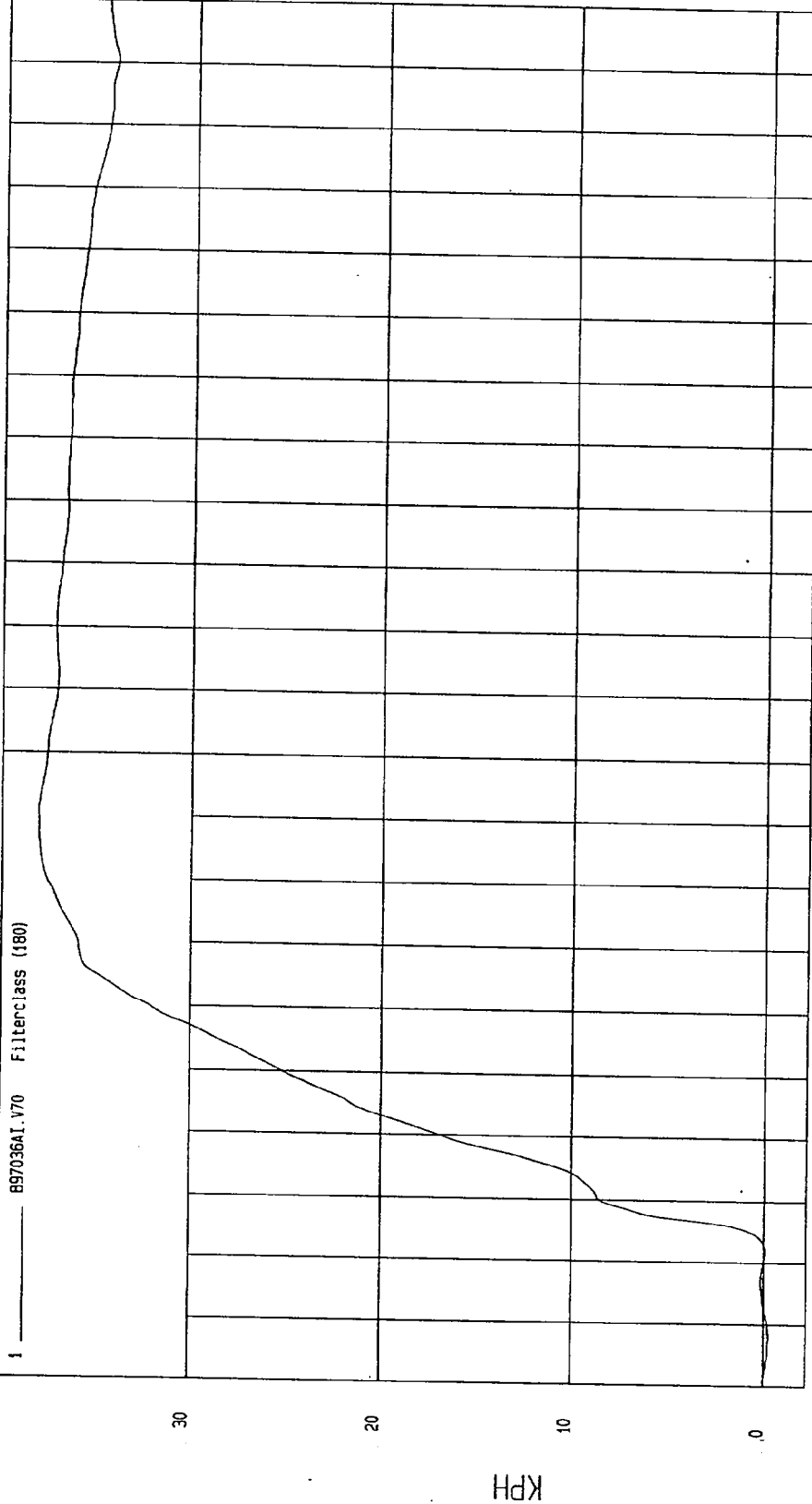
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -25 KPH at -12 msec Maximum = 37.94 KPH at 71 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY

1 ——— B97036A1.V70 Filterclass (180)



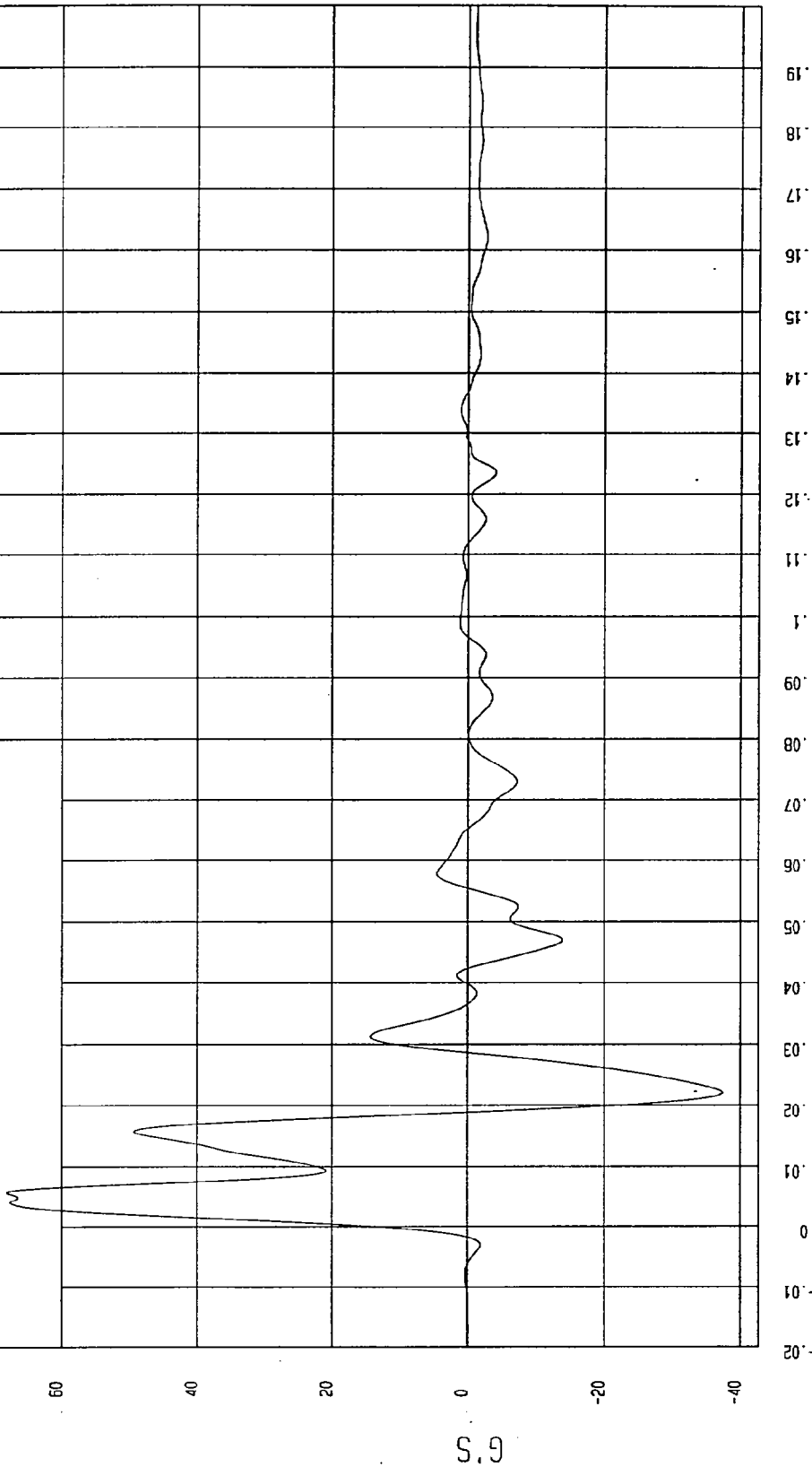
TIME Seconds

NCA Research
03-05-1997 16:58

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH
Minimum = -37.41 G'S at 22 msec Maximum = 67.95 G'S at 6 msec

LEFT LOWER A-POST Y ACCELERATION

1 ——— B97036AF.A20 Filterclass (60)



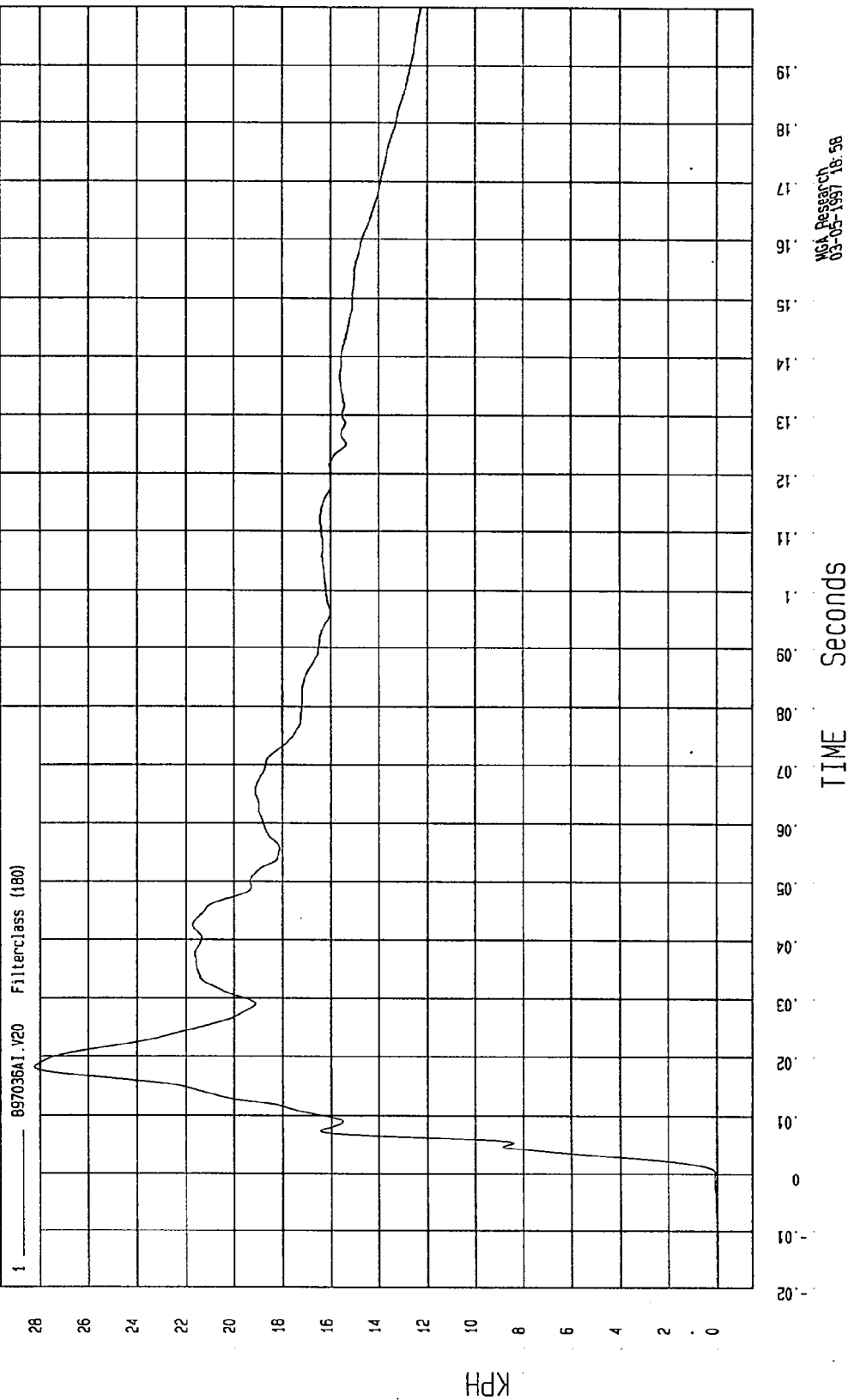
NGA Research
03-05-1997 18:58

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -1.28E-02 KPH at -15 msec Maximum = 28.22 KPH at 19 msec

LEFT LOWER A-POST Y VELOCITY



TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = - .77 G'S at -3 msec

Maximum = 48.06 G'S at 7 msec

LEFT MID A-POST Y ACCELERATION

1 — B97036AF.A19 FilterClass (60)

Data valid until
14 msec.

50

40

30

20

10

0

G.S

-02

-01

0

01

02

03

04

05

06

07

08

09

1

11

12

13

14

15

16

17

18

19

TIME (SECONDS)

MCA Research
03-14-1997 08:28

TEST: NCAP HIGH SPEED LATERAL IMPACT

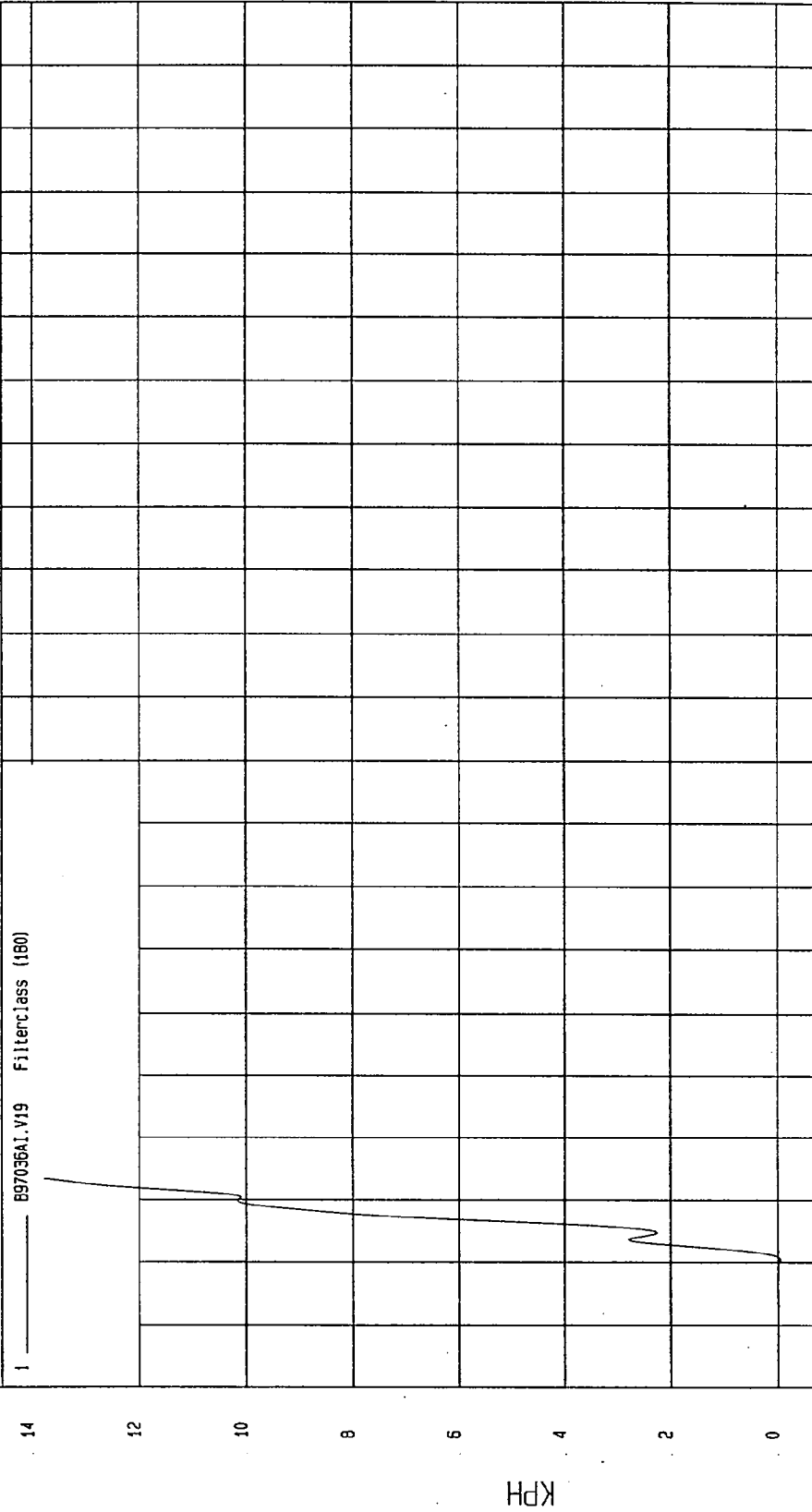
TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -4.42E-02 KPH at 0 msec Maximum = 13.87 KPH at 14 msec

LEFT MID A-POST Y VELOCITY

1 — B97036A1.V19 Filterclass (180)



TIME Seconds

NCAP Research
03-14-1997 08:28

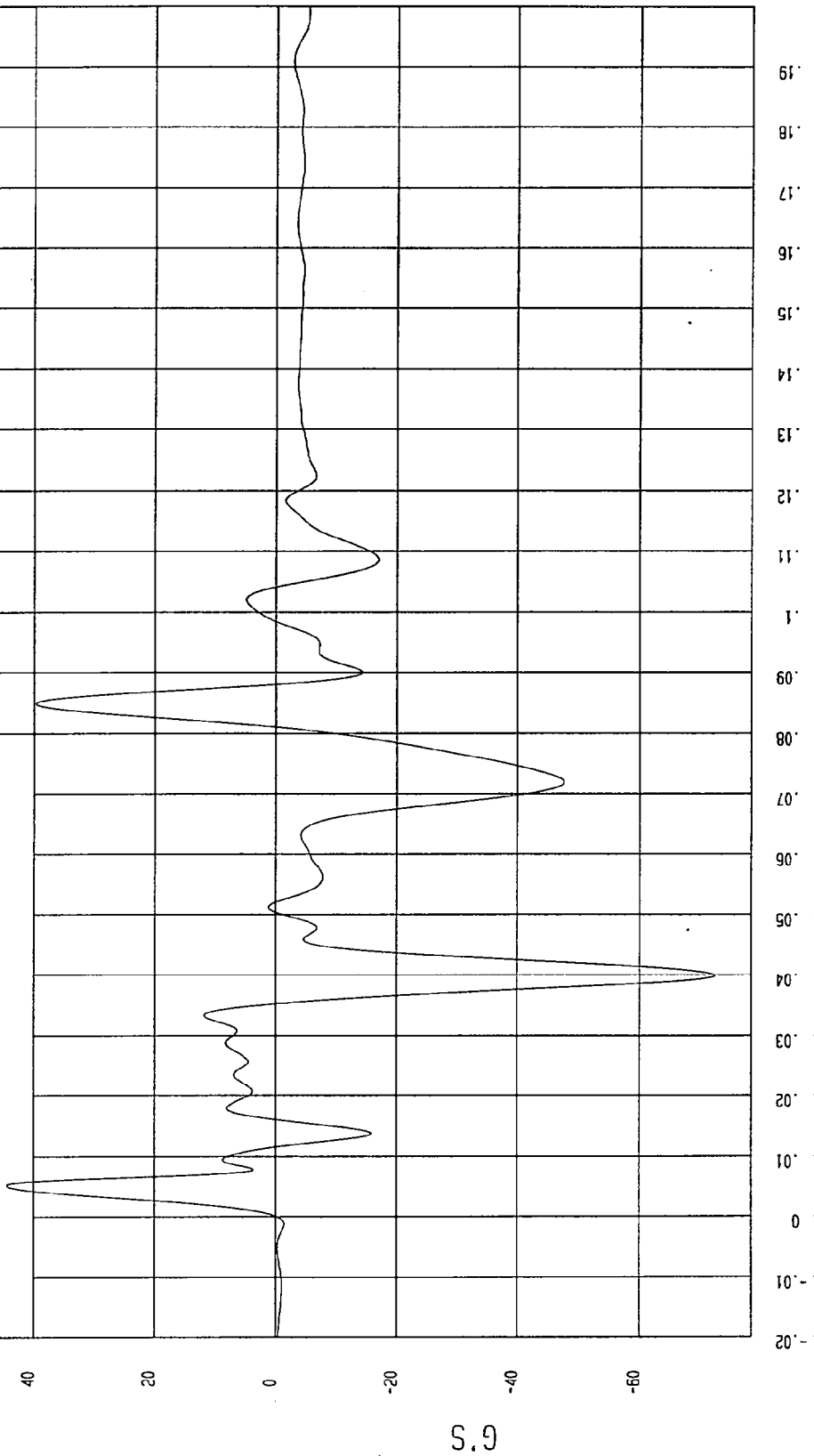
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -72.31 G'S at 40 msec Maximum = 44.38 G'S at 5 msec

LEFT LOWER B-POST Y ACCELERATION

1 ——— B97036AF.A30 Filterclass (60)



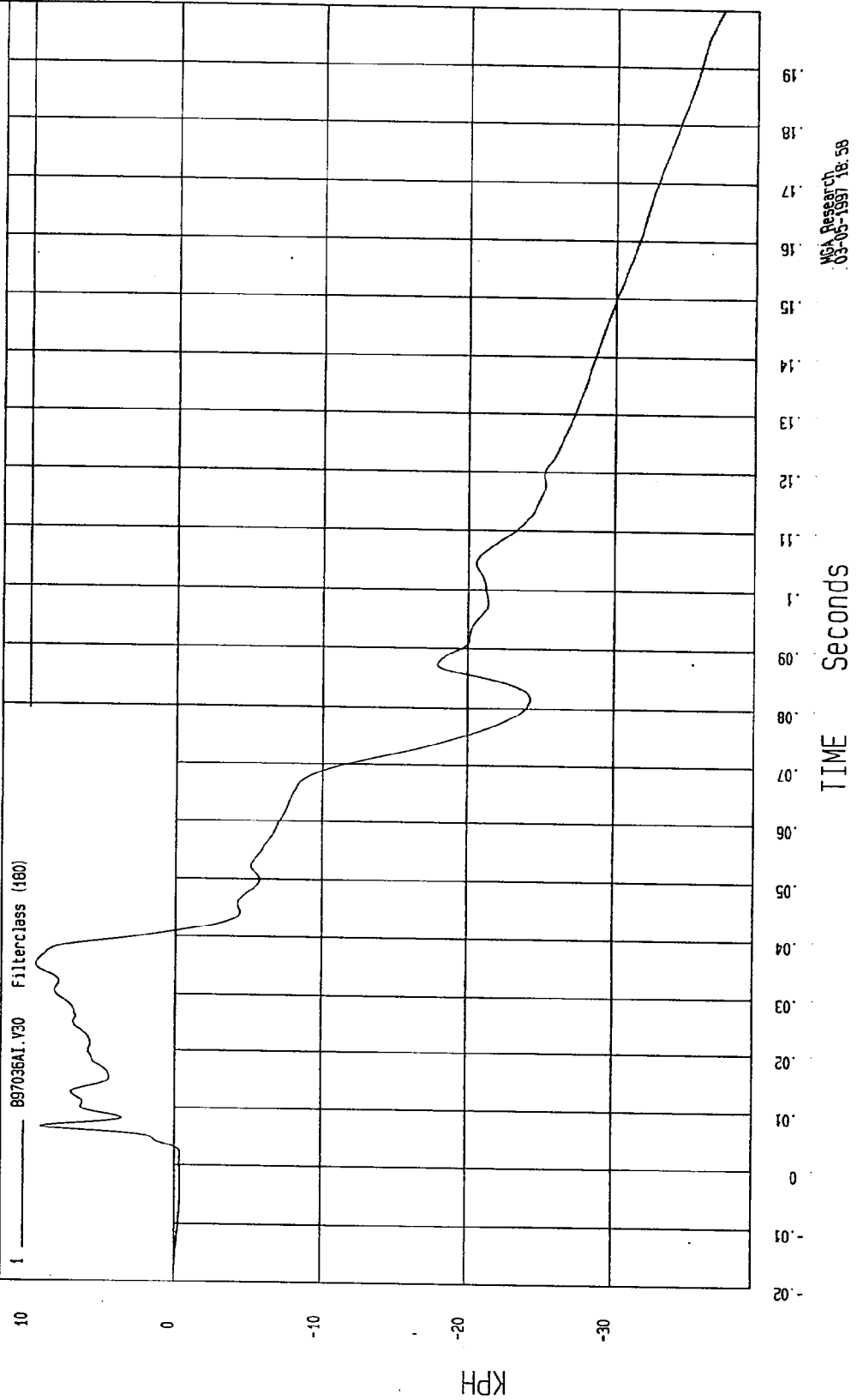
NCA Research
03-05-1997 16:58

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -37.20 KPH at 200 msec Maximum = 9.55 KPH at 35 msec

LEFT LOWER B-POST Y VELOCITY



TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -122.05 G'S at 27 msec Maximum = 148.09 G'S at 6 msec

LEFT MID B-POST Y ACCELERATION

1 — B97036AF.A29 Filterclass (60)

160

140

120

100

80

60

40

20

0

-20

-40

-60

-80

-100

-120

G.S

19. 18. 17. 16. 15. 14. 13. 12. 11. 10. 09. 08. 07. 06. 05. 04. 03. 02. 01. 0 -01 -02

NGA Research
03-05-1997 18:58

TIME (SECONDS)

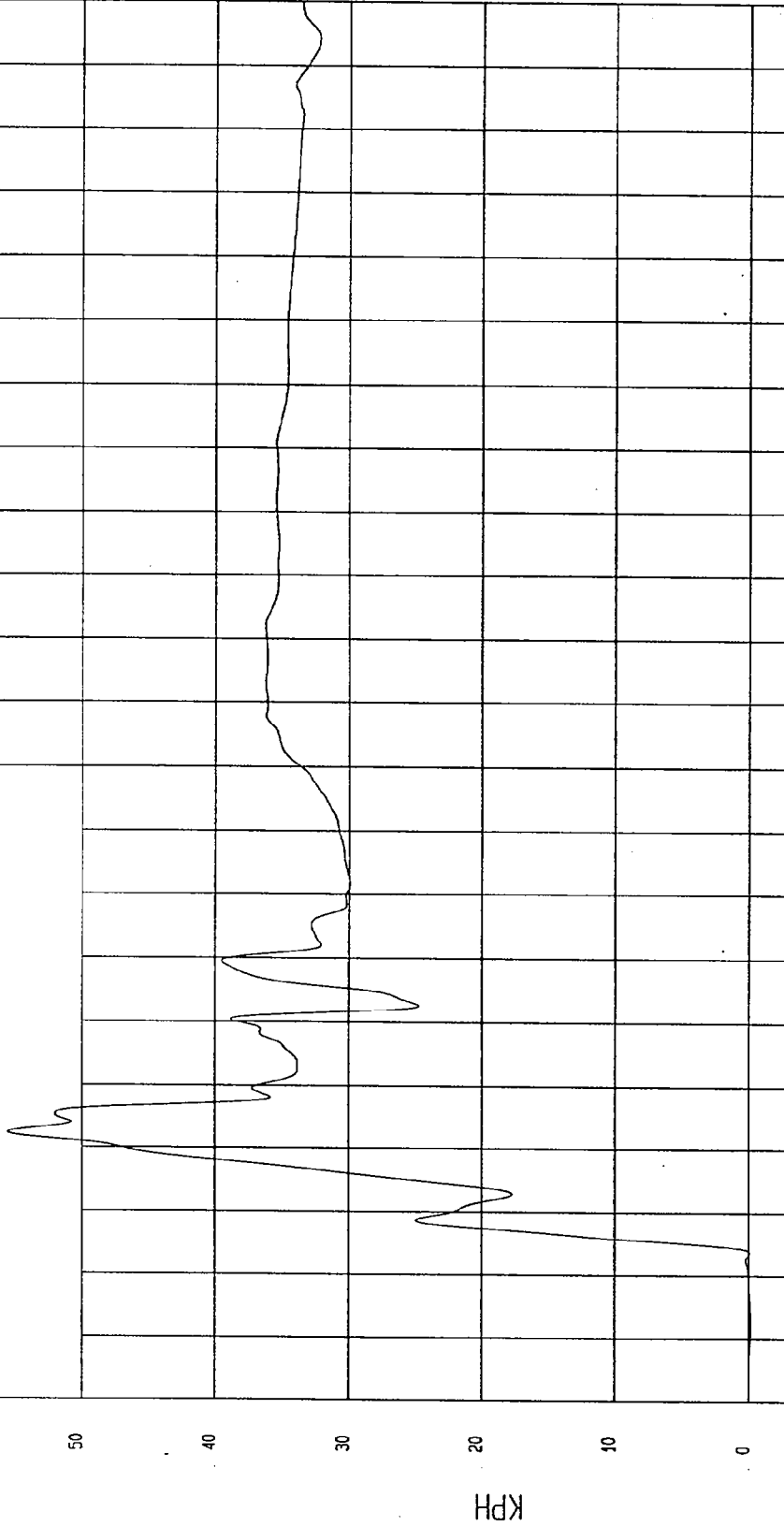
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -12 KPH at -8 msec Maximum = 55.59 KPH at 22 msec

LEFT MID B-POST Y VELOCITY

1 ——— 897035A1.V29 Filterclass (180)



TIME Seconds

0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

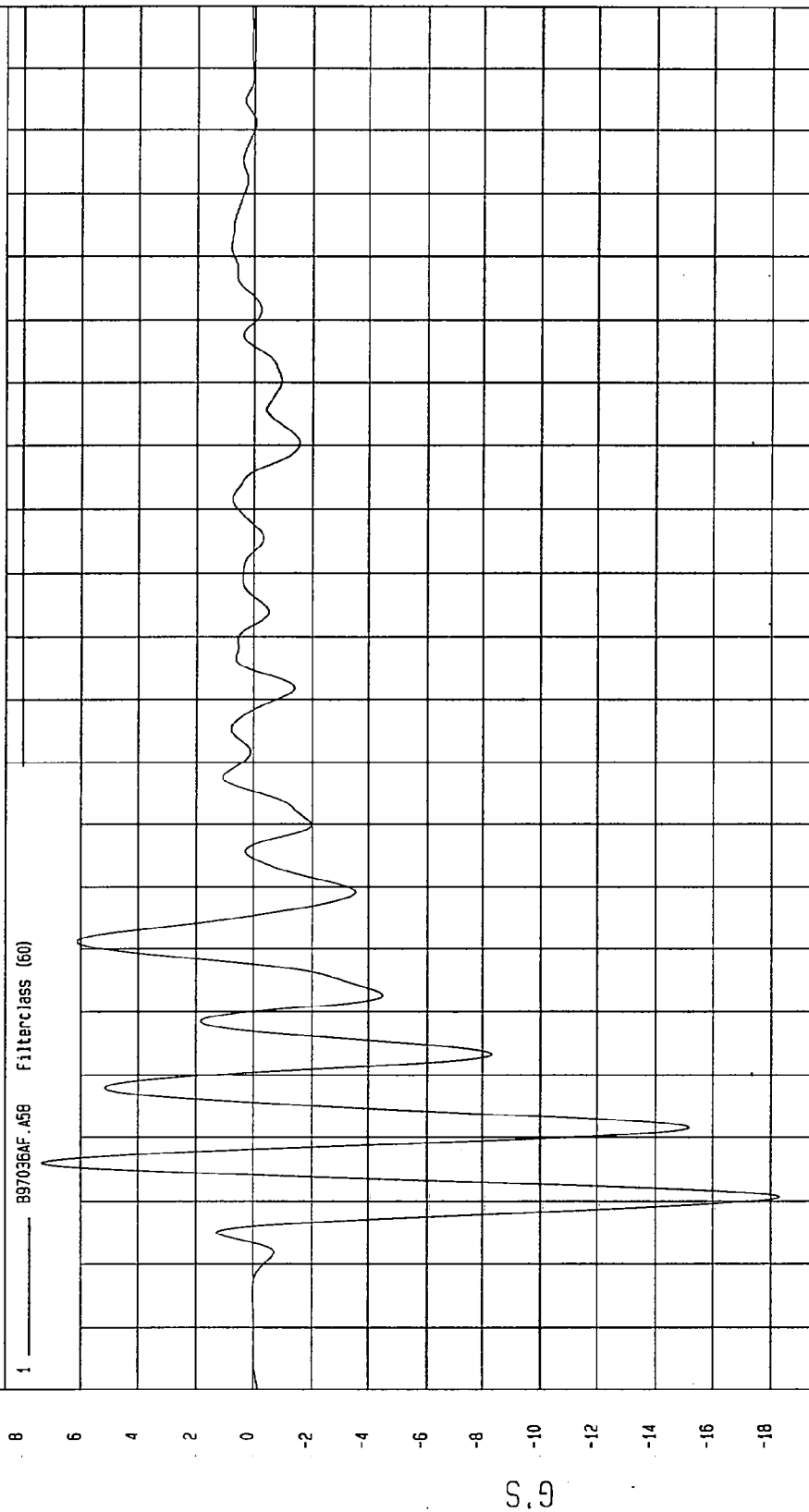
NGA Research
03-05-1997 18:59

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -18.29 G'S at 11 msec Maximum = 7.32 G'S at 16 msec

VEHICLE CG X ACCELERATION



TIME (SECONDS)

WGA Research
03-05-1997 18:59

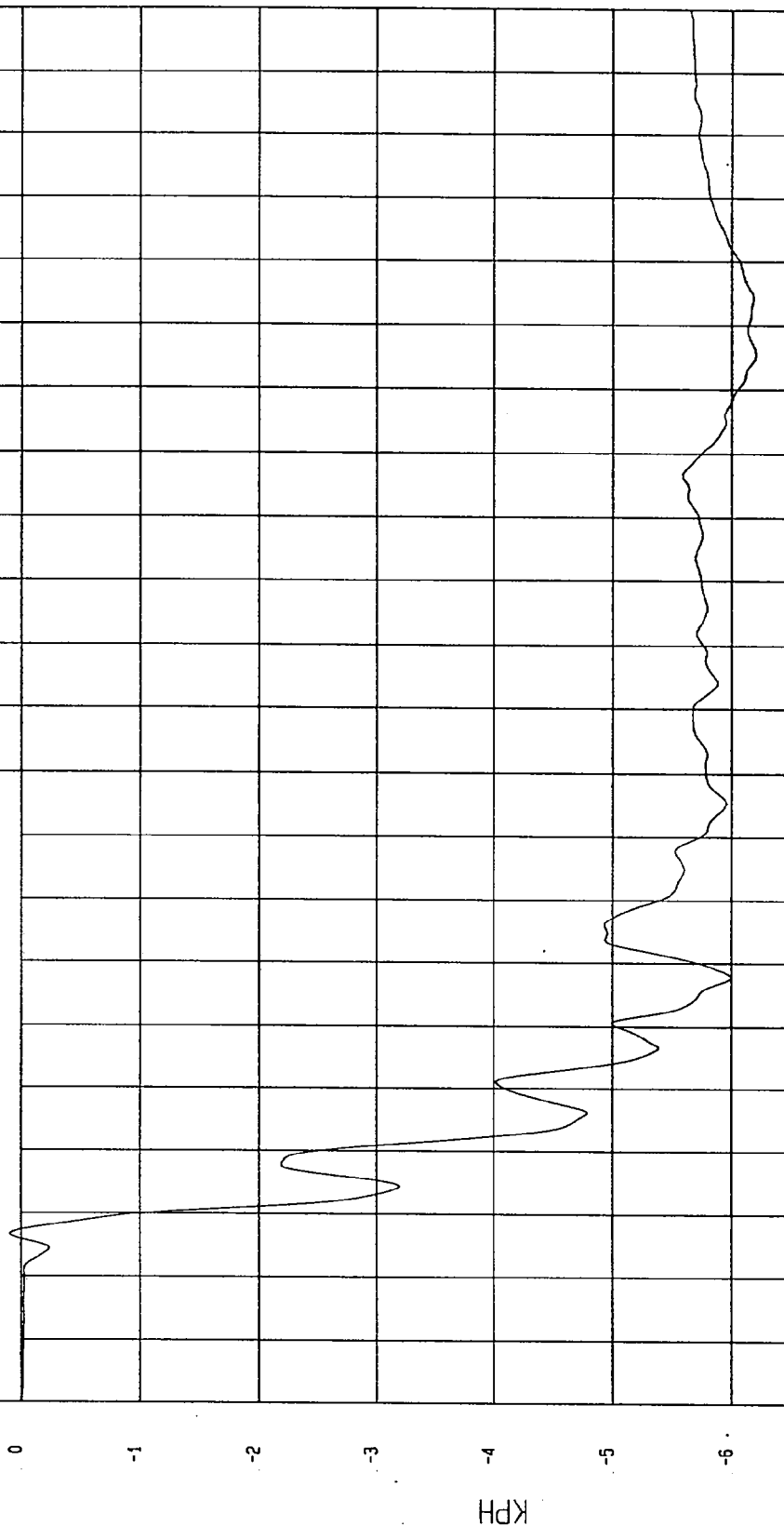
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -6.19 KPH at 145 msec Maximum = 9.87E-02 KPH at 7 msec

VEHICLE CG X VELOCITY

1 ——— B97036A1.V58 Filterclass (180)

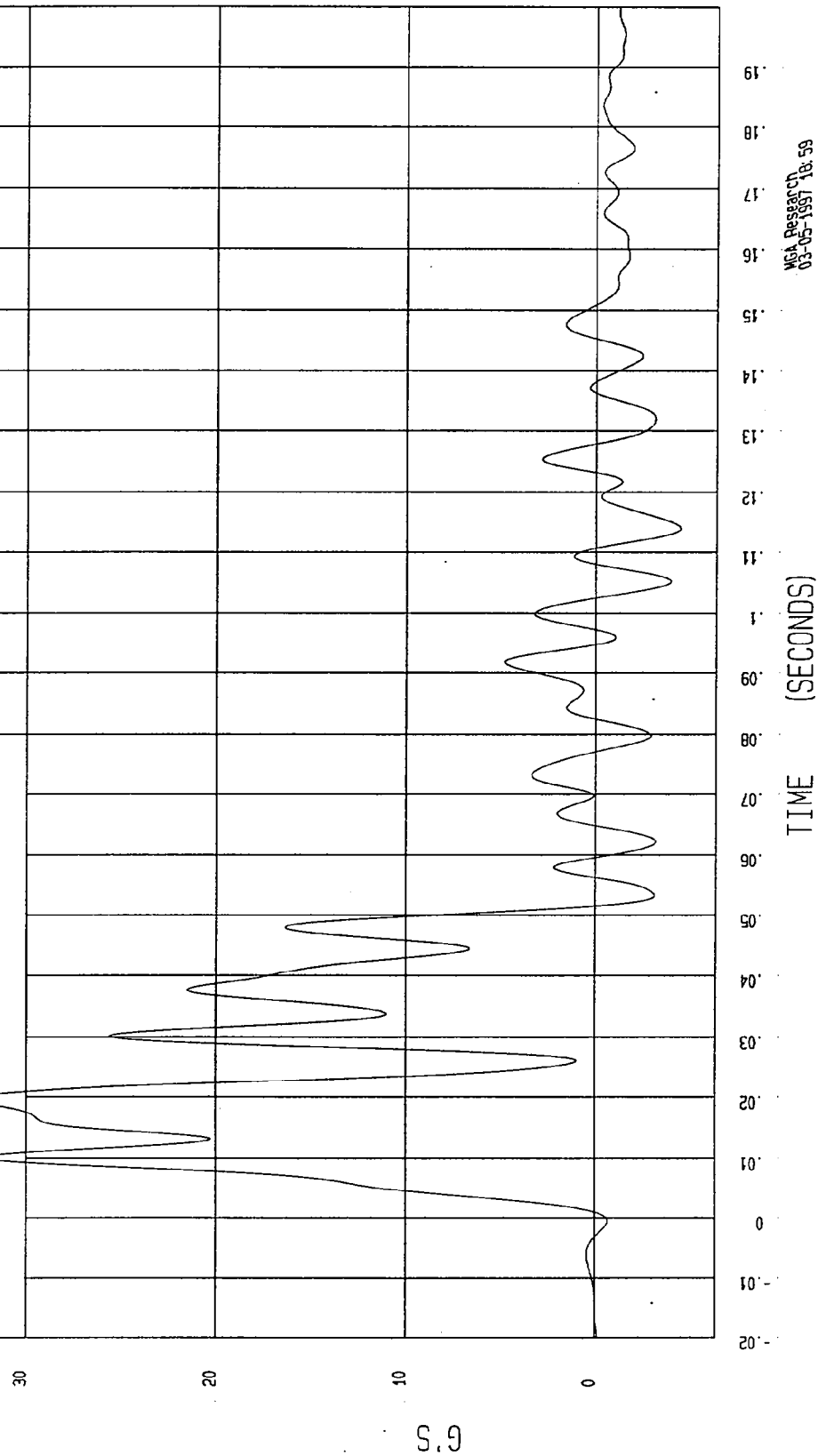


MGA Research
03-05-1997 18:59

| | |
|---|--------------------------------|
| TEST: NCAP HIGH SPEED LATERAL IMPACT | TEST DATE: 03-07-1997 |
| COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) | Speed: 38 MPH 61.2 KPH |
| Minimum = -4.42 G'S at 114 msec | Maximum = 32.87 G'S at 20 msec |

VEHICLE CG Y ACCELERATION

1 _____ 897036AF.459 Filter: class (60)



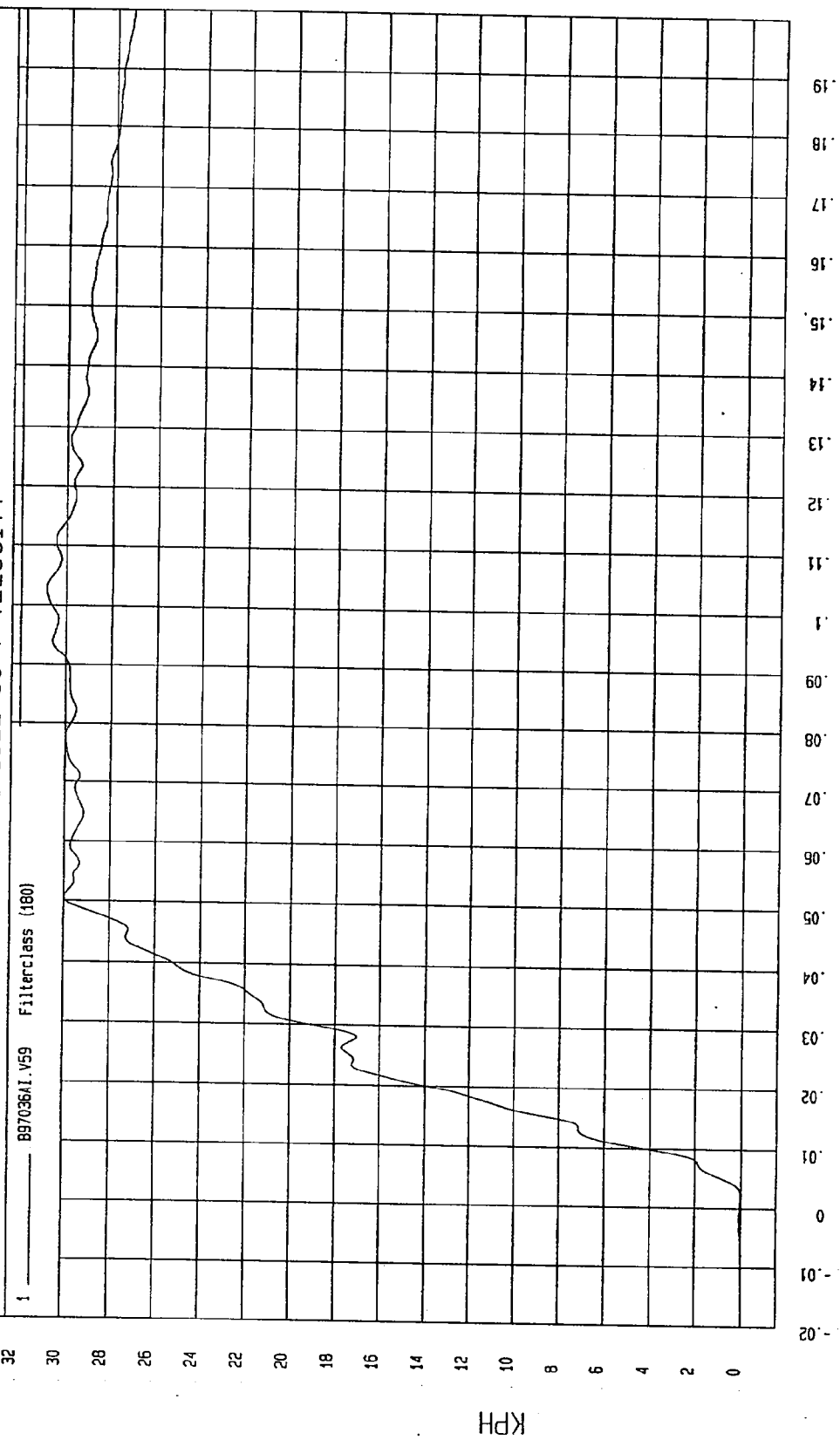
MGA Research
03-05-1997 18:59

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -1.05E-02 KPH at -14 msec Maximum = 30.85 KPH at 103 msec

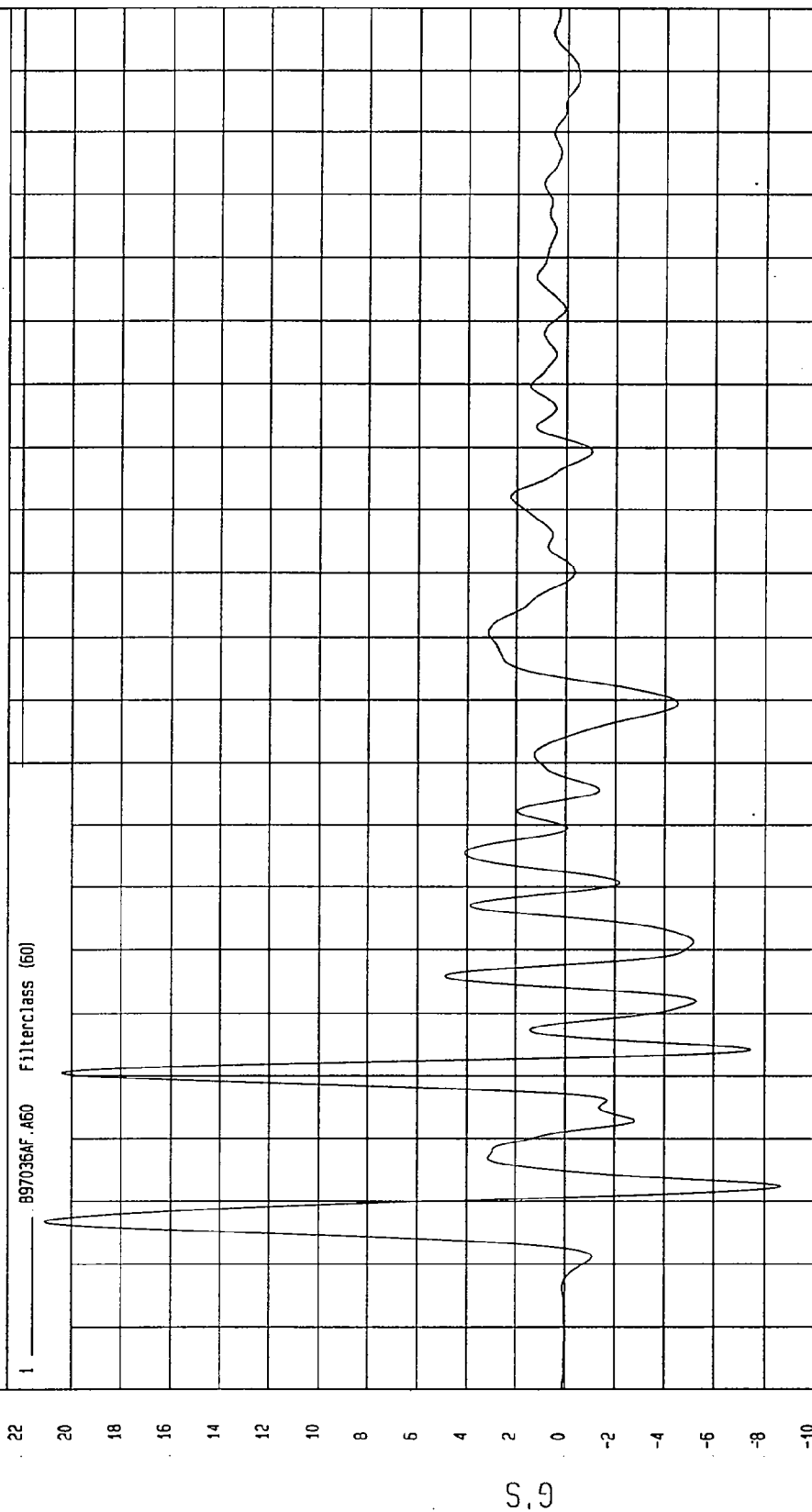
VEHICLE CG Y VELOCITY



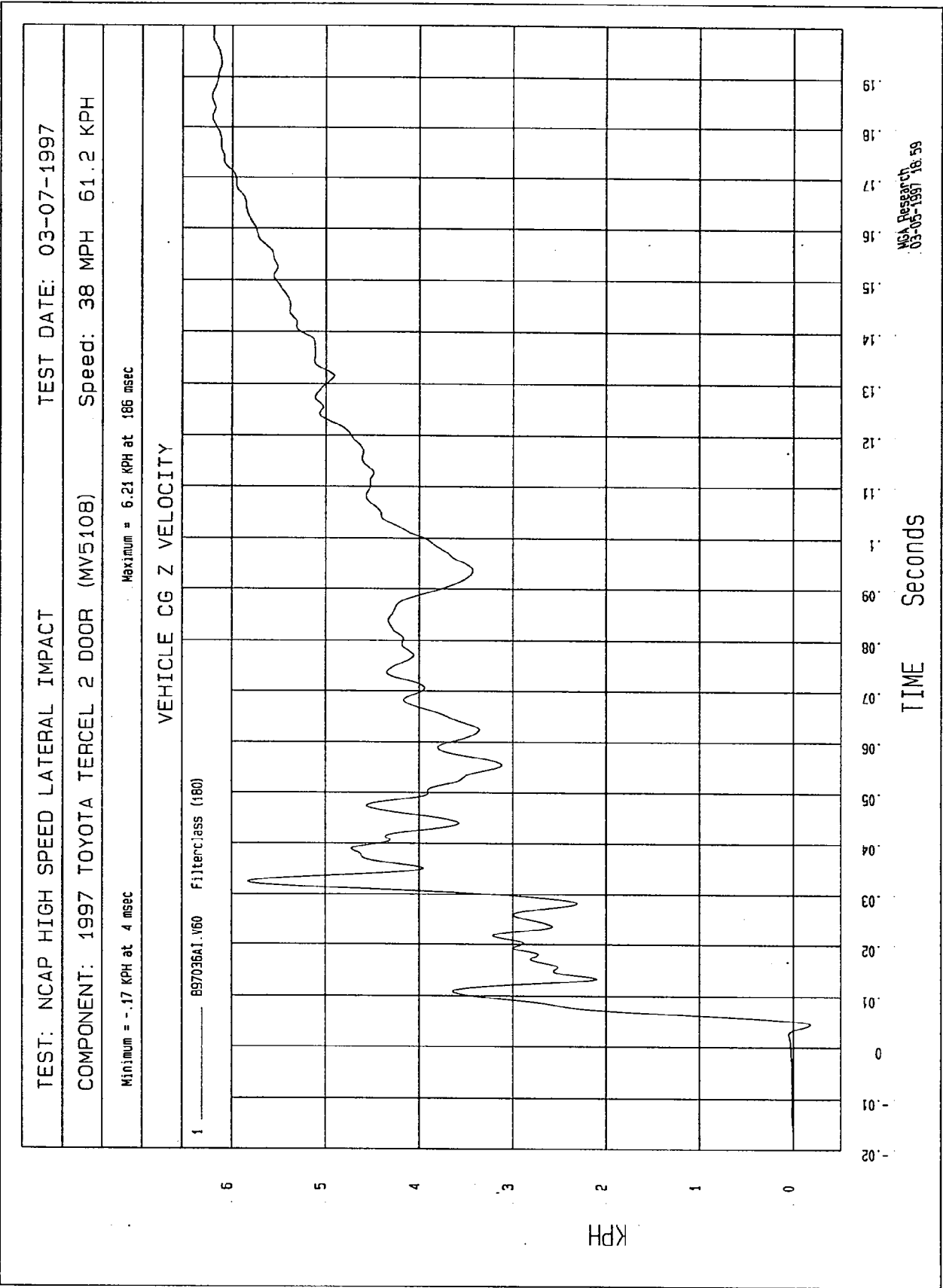
MCA Research
03-05-1997 18:59

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH
Minimum = -8.65 G'S at 12 msec Maximum = 21.08 G'S at 7 msec

VEHICLE CG Z ACCELERATION



MGA Research
03-05-1997 18:59



TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 03-07-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108)

Maximum = 36.95 G'S at 10 msec

Minimum = 3.12E-02 G'S at -12 msec

VEHICLE CG RESULTANT ACCELERATION

1 B97036AV.A58 Filterclass (50)

38

36

34

32

30

28

26

24

22

20

18

16

14

12

10

8

6

4

2

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G

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18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

TIME (SECONDS)

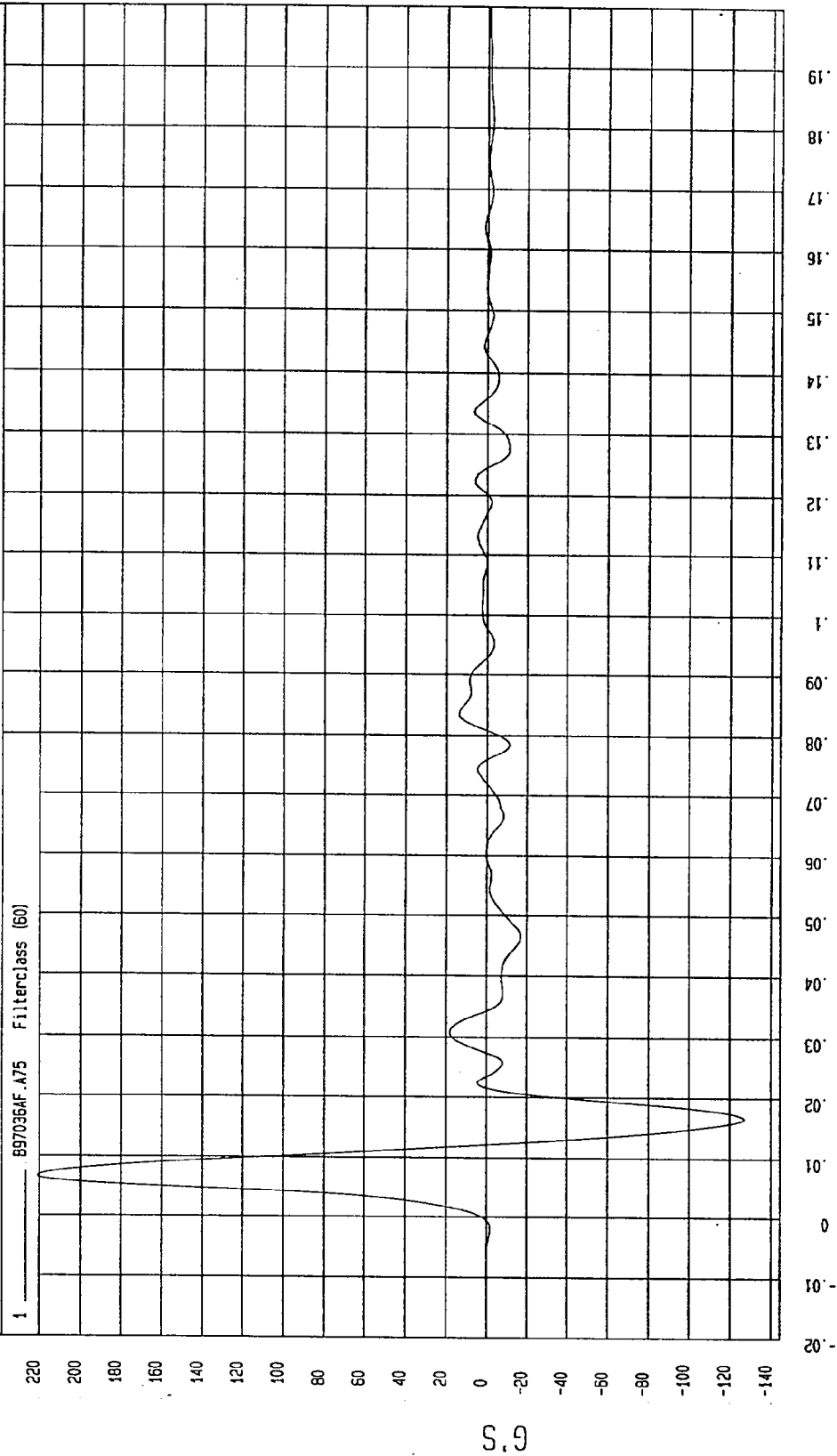
W&A Research
03-03-1997 19:01

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -126.89 G'S at 17 msec Maximum = 220.98 G'S at 7 msec

LEFT FRONT DOOR CENTERLINE Y ACCELERATION



MCA Research
03-05-1997 18:59

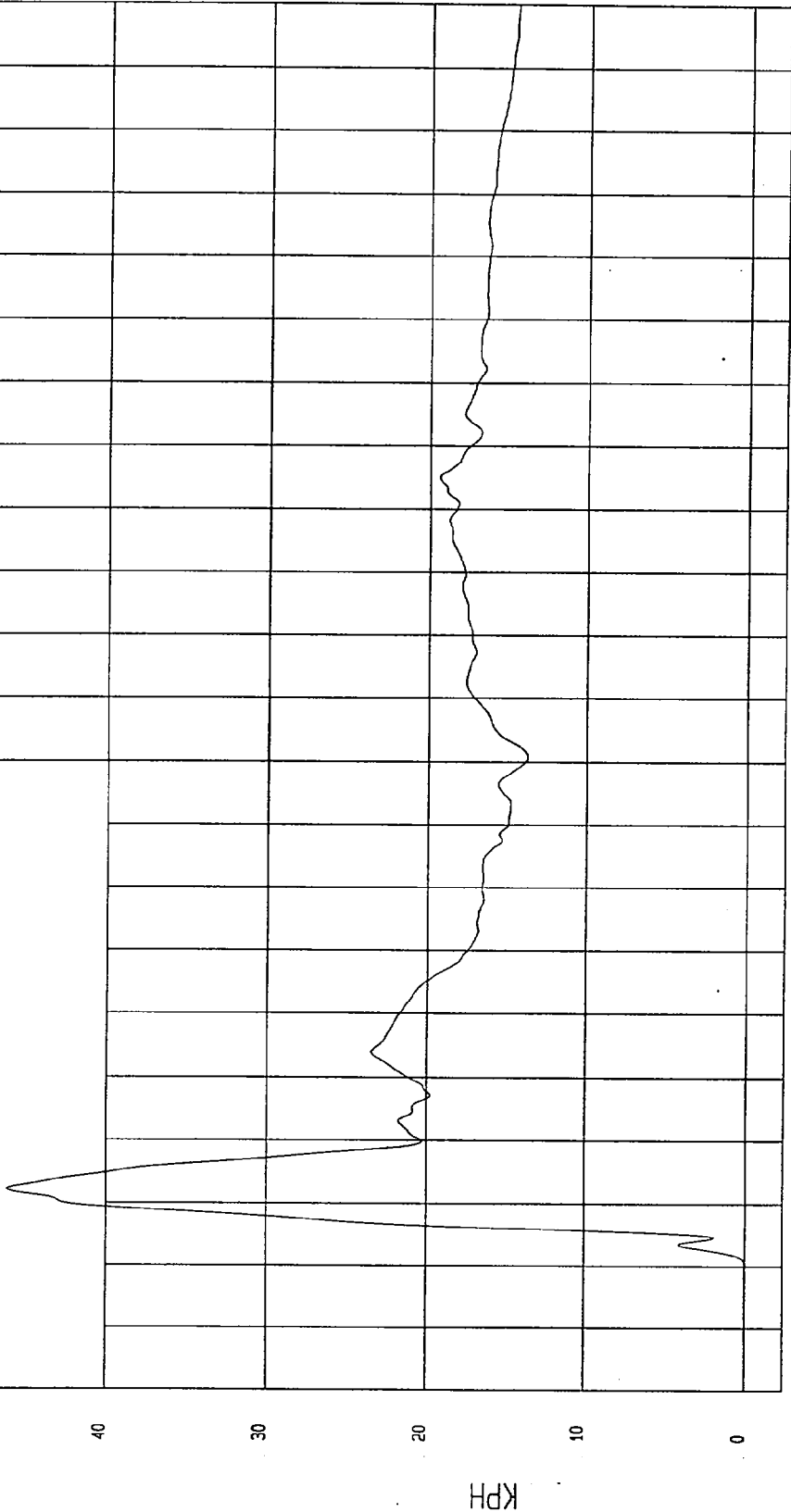
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = 0 KPH at -20 msec Maximum = 46.18 KPH at 12 msec

LEFT FRONT DOOR CENTERLINE Y VELOCITY

1 ——— B97036A1.V75 Filterclass (180)



TIME Seconds

0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

40
30
20
10
0

KPH

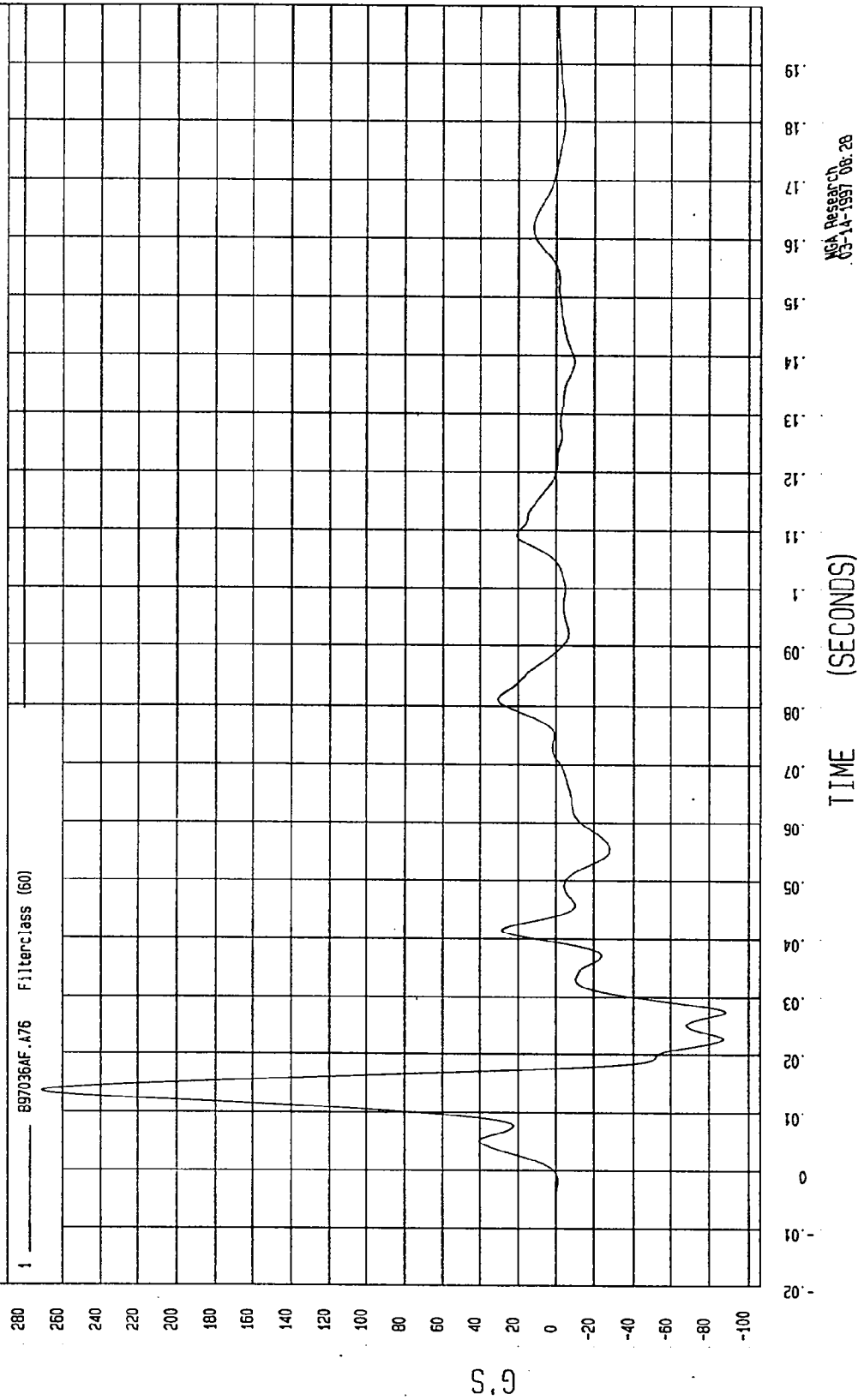
MOA Research
03-05-1997 18:59

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -88.12 G'S at 28 msec Maximum = 270.69 G'S at 14 msec

LEFT FRONT DOOR UPPER CENTERLINE Y ACCELERATION



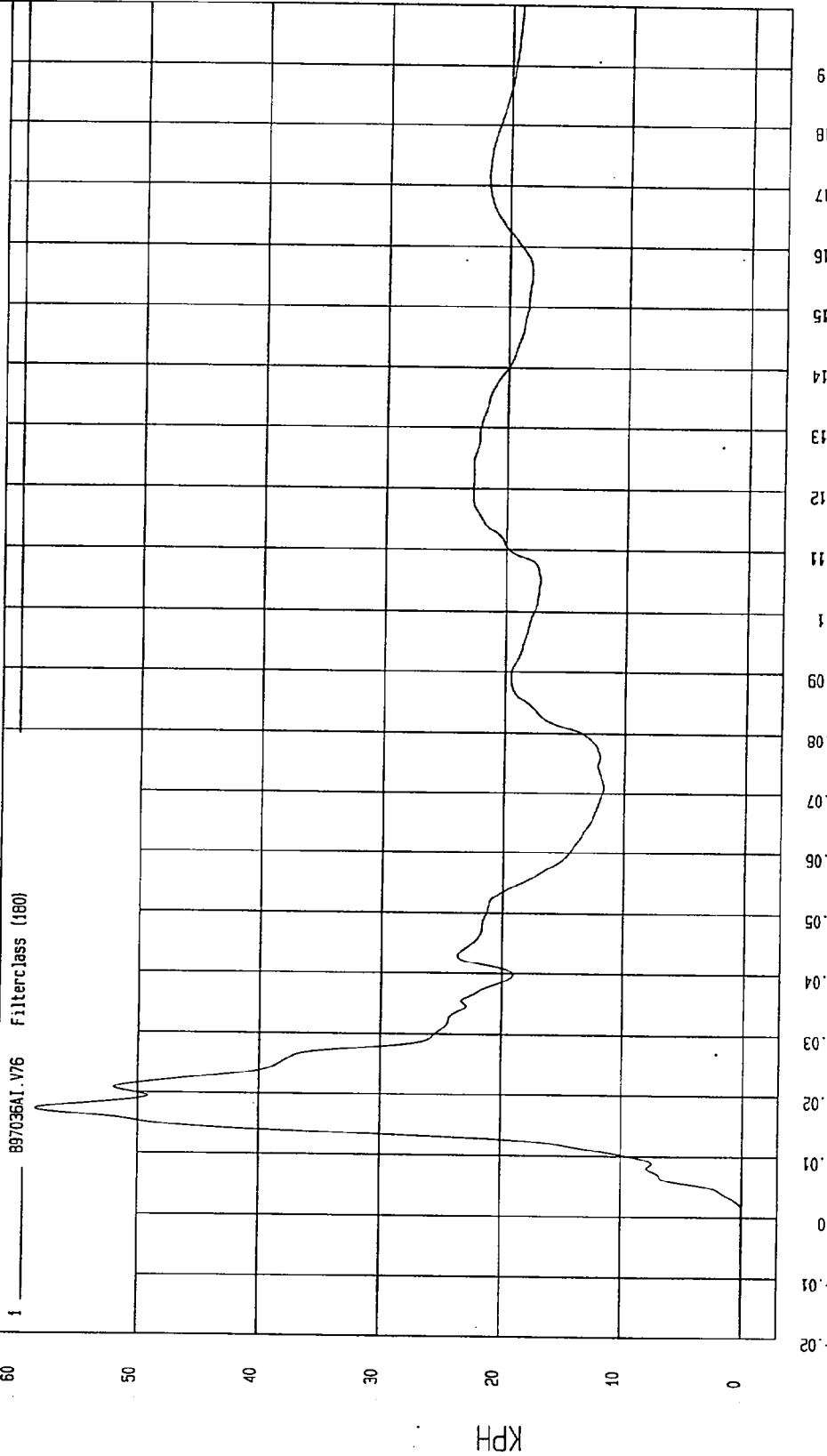
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -1.58E-03 KPH at -20 msec Maximum = 58.50 KPH at 17 msec

LEFT FRONT DOOR UPPER CENTERLINE Y VELOCITY

1 ——— 897036A1.V76 Filterclass (180)



MGA Research
03-05-1997 19:00

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

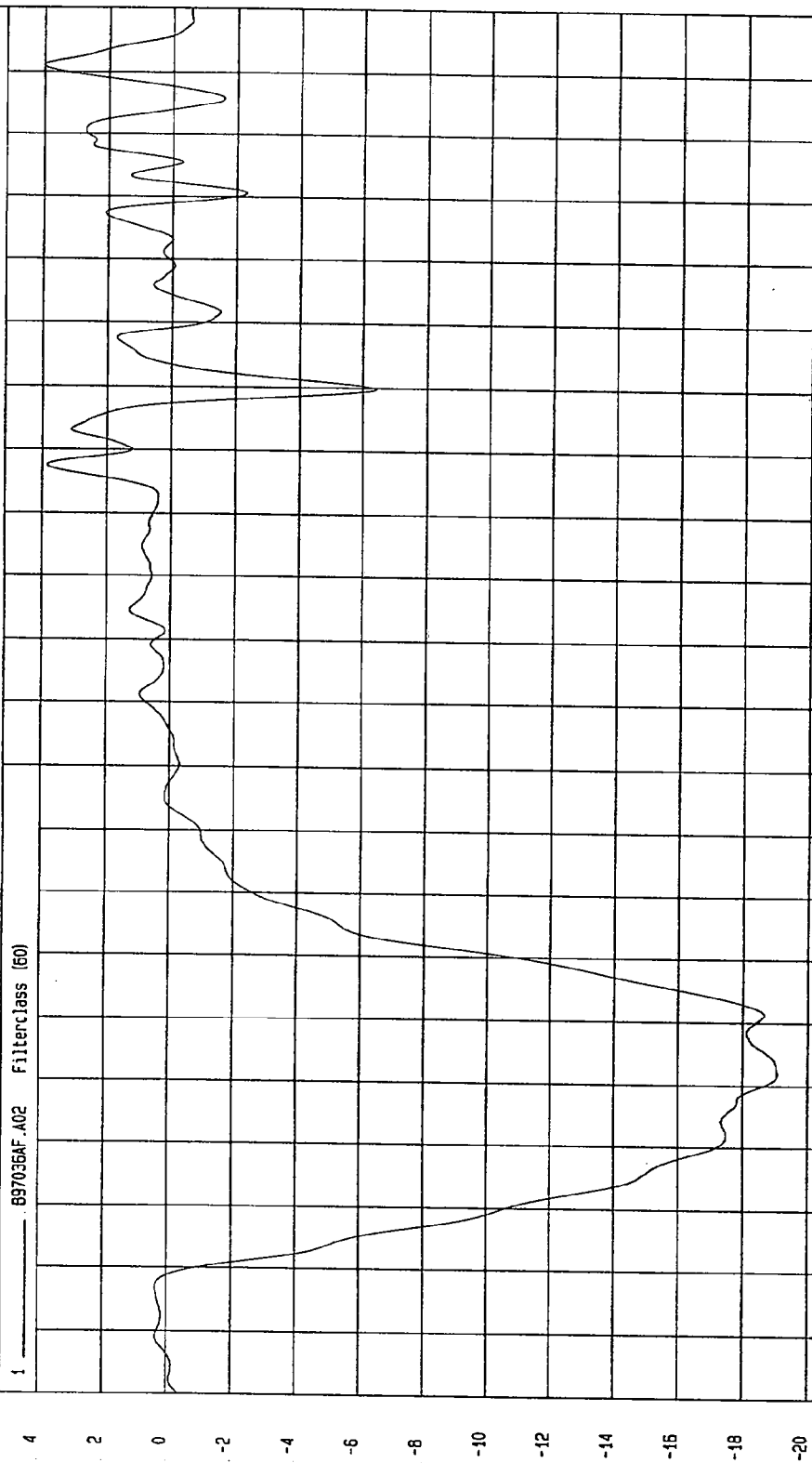
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -19.06 G'S at 32 msec

Maximum = 4.00 G'S at 191 msec

MOVING BARRIER CG X ACCELERATION

1 B97036AF.A02 Filterclass (60)



WCA Research
03-05-1997 19:00

TEST: NCAP HIGH SPEED LATERAL IMPACT

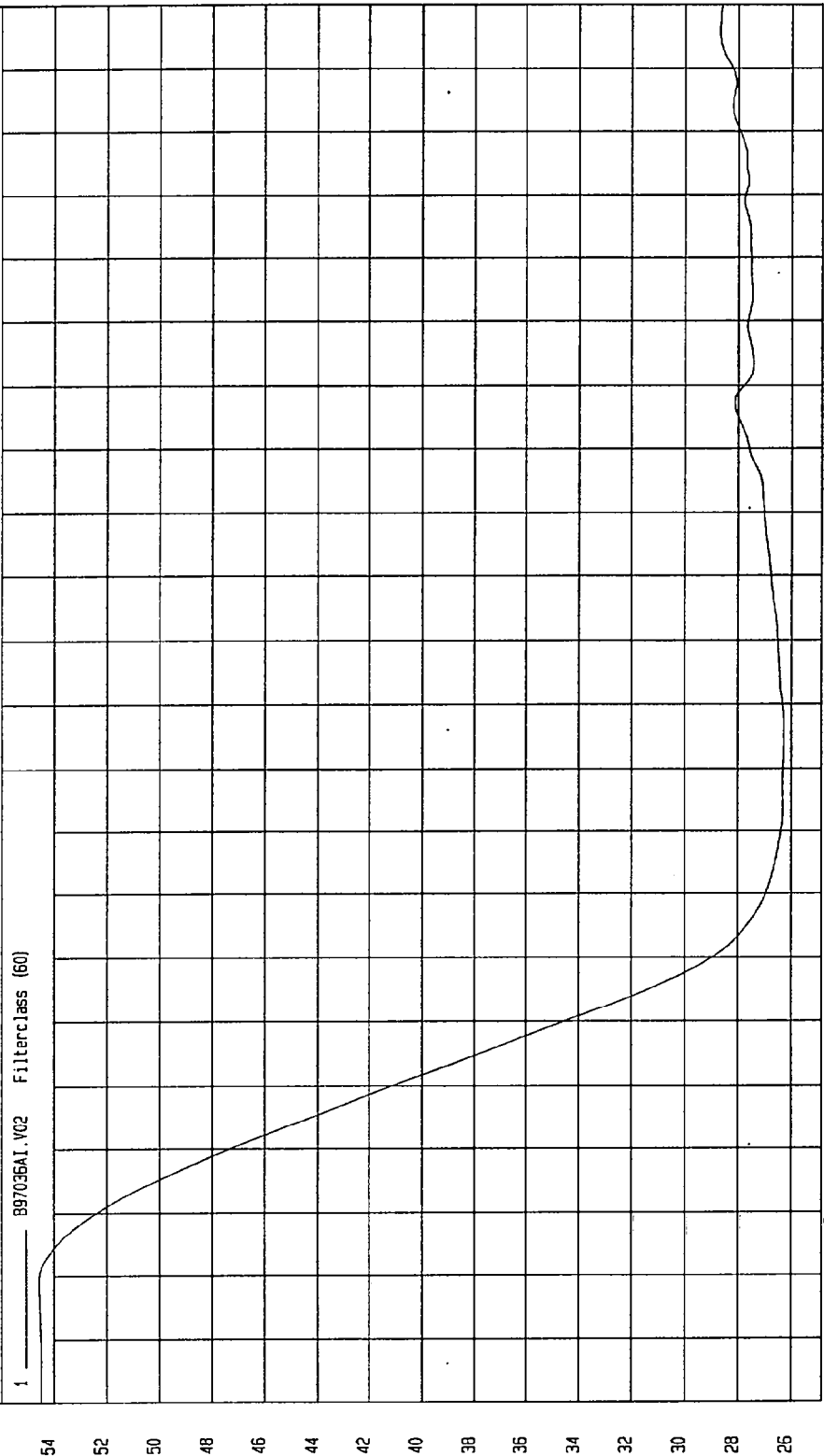
TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = 26.28 KPH at 86 msec Maximum = 54.57 KPH at -1 msec

MOVING BARRIER CG X VELOCITY

1 — 897035A1.V02 Filterclass (60)



TIME Seconds

McA Research
03-15-1997 08:21

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 03-07-1997

SPEED: 38 MPH 61.2 KPH

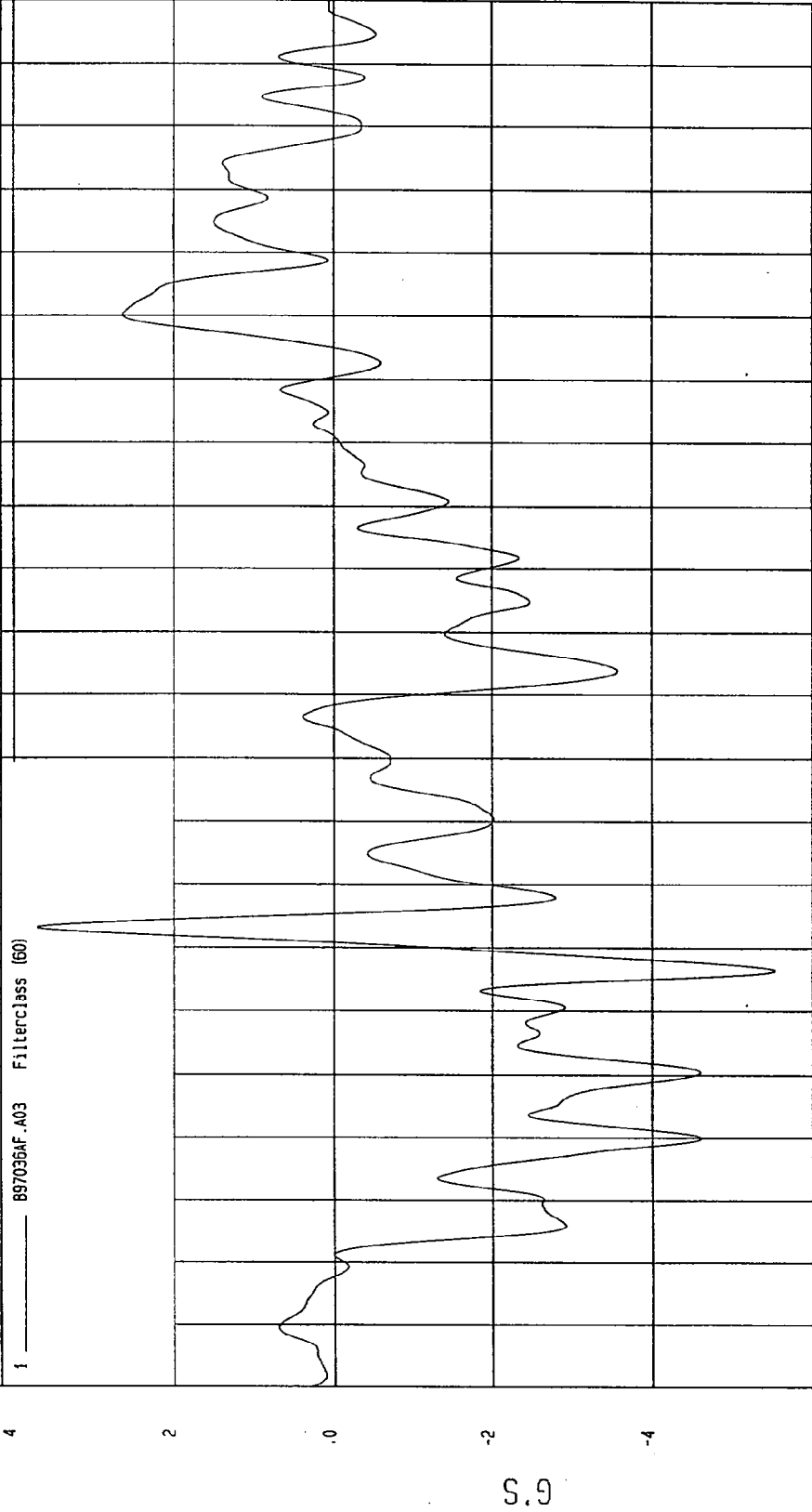
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108)

Maximum = 3.70 G'S at 53 msec

Minimum = -5.52 G'S at 46 msec

MOVING BARRIER CG Y ACCELERATION

1 — 897036AF.A03 Filterclass (60)



MCA Research
03-05-1997 19:00

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = 19.94 KPH at 131 msec
Maximum = 27.99 KPH at -2 msec

MOVING BARRIER CG Y VELOCITY

1 897036A1.V03 Filterclass (60)

28

27

26

25

24

23

22

21

20

KPH

-0.20

-0.10

0

0.10

0.20

0.30

0.40

0.50

0.60

0.70

0.80

0.90

1.00

1.10

1.20

1.30

1.40

1.50

1.60

1.70

1.80

1.90

TIME Seconds

WDA Research
03-13-1997 08:27

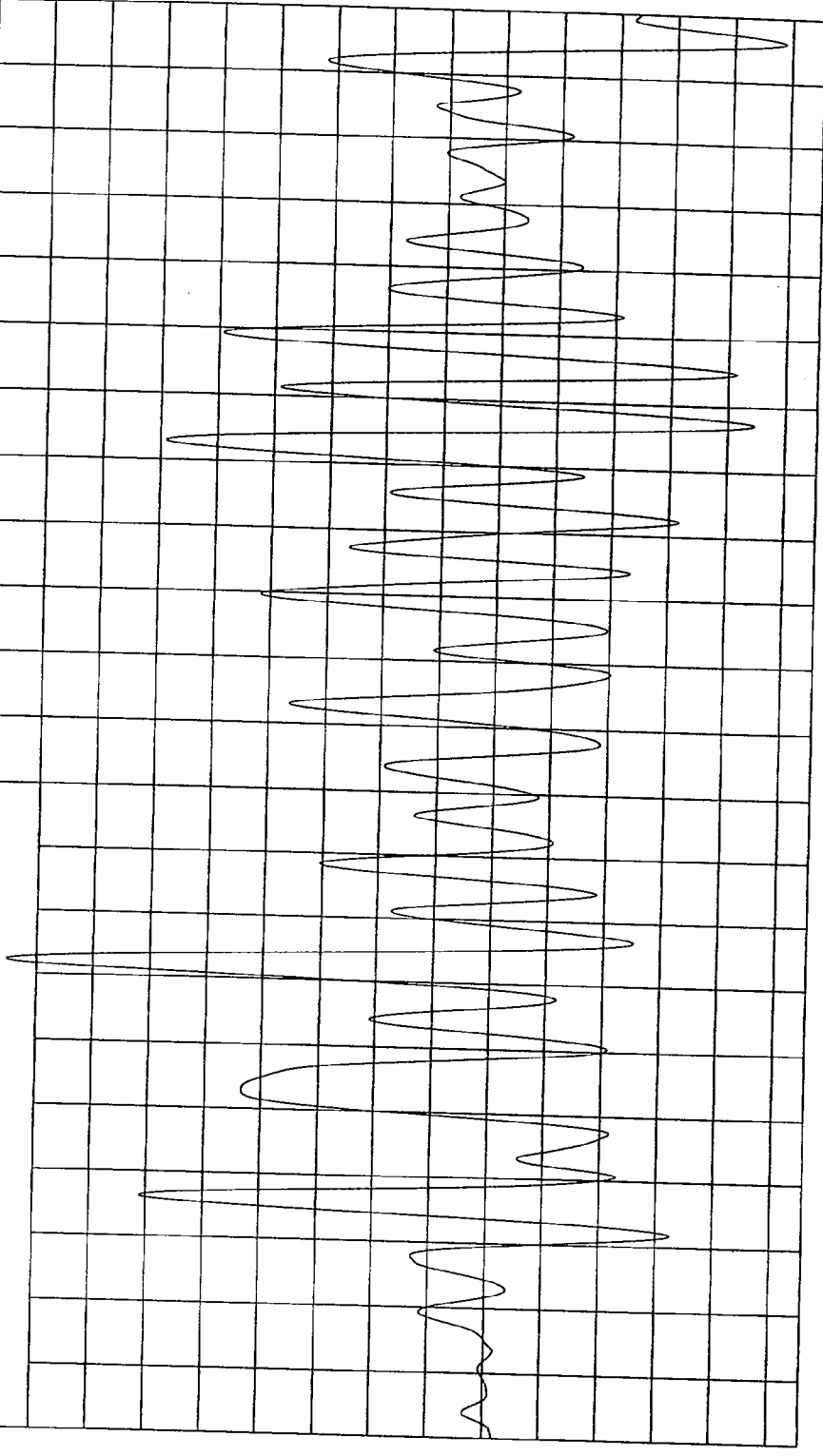
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -9.75 G'S at 196 msec Maximum = 17.05 G'S at 52 msec

MOVING BARRIER CG Z ACCELERATION

1 _____ B97035AF.A04 Filterclass (60)



NSA Research
03-05-1997 19:00

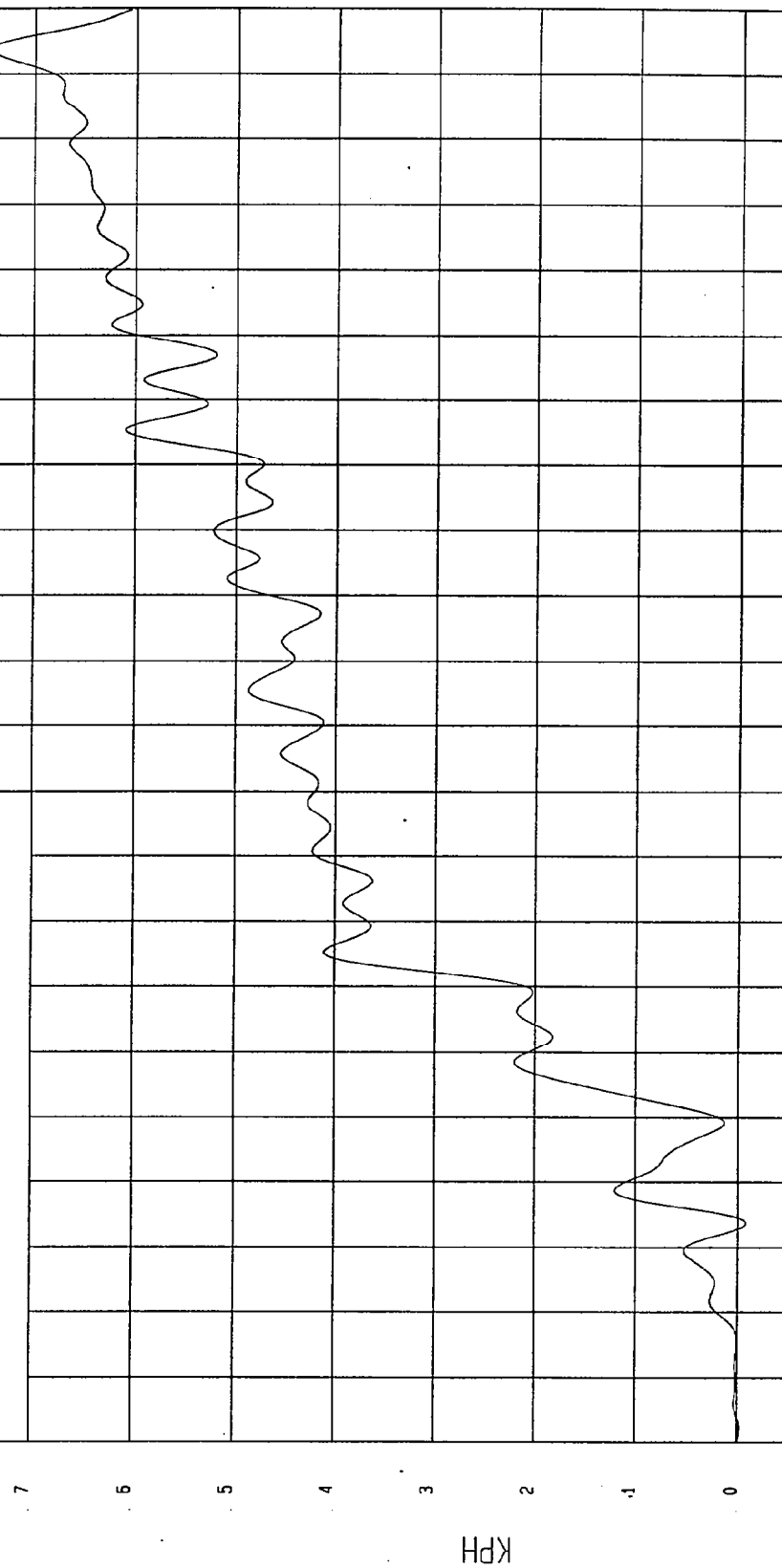
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -.08 KPH at 14 msec Maximum = 7.43 KPH at 194 msec

MOVING BARRIER CG Z VELOCITY

1 ——— B97036A1.V04 Filterclass (60)



TIME Seconds

MSA Research
03-15-1997 08:27

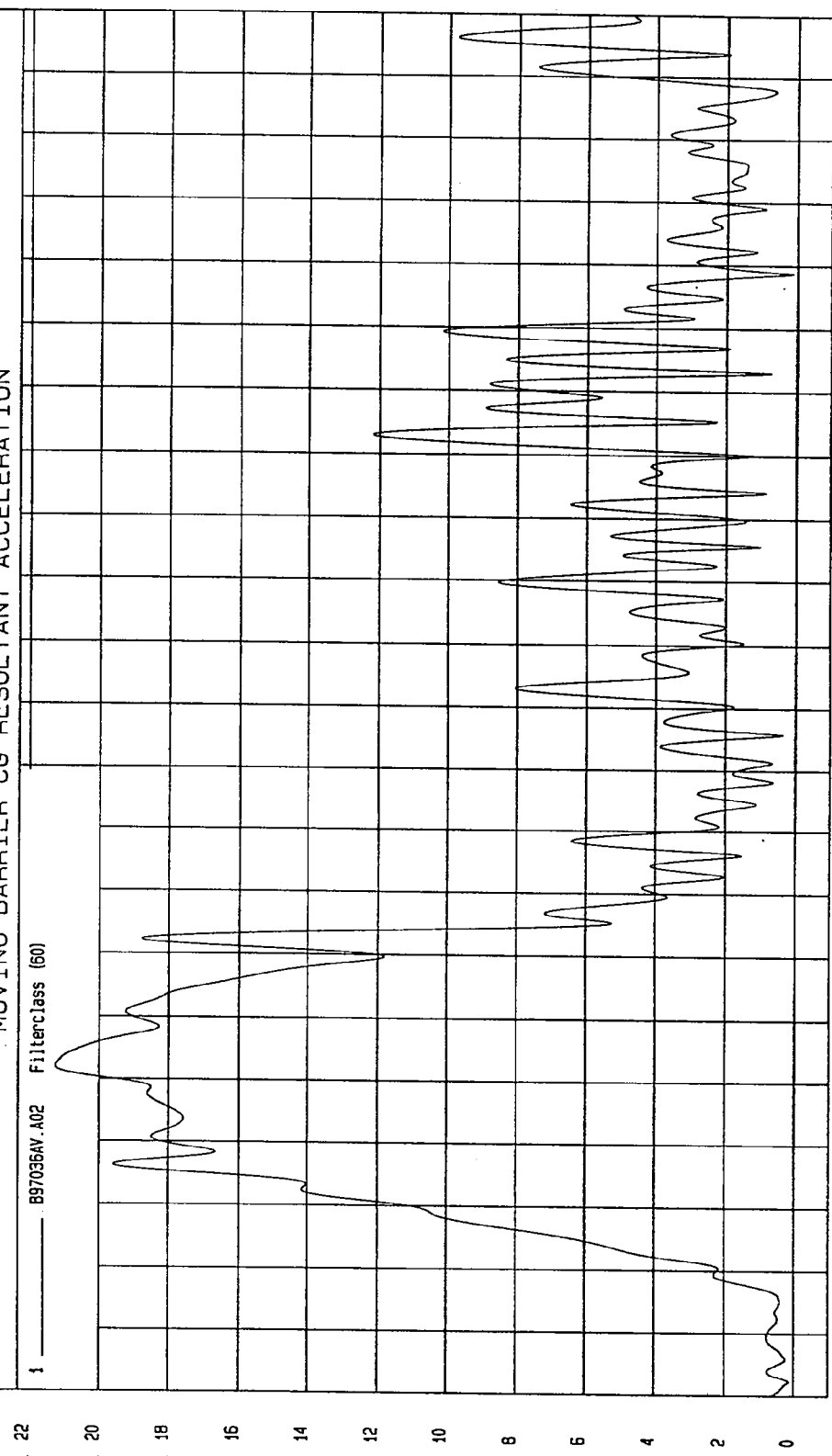
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = .10 G'S at 159 msec
Maximum = 21.25 G'S at 32 msec

MOVING BARRIER CG RESULTANT ACCELERATION

1 B97035AV.102 Filterclass (50)



19
18
17
16
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14
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12
11
10
9
8
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6
5
4
3
2
1
0
-1
-2

TIME (SECONDS)

WCA Research
03-05-1997 19:01

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

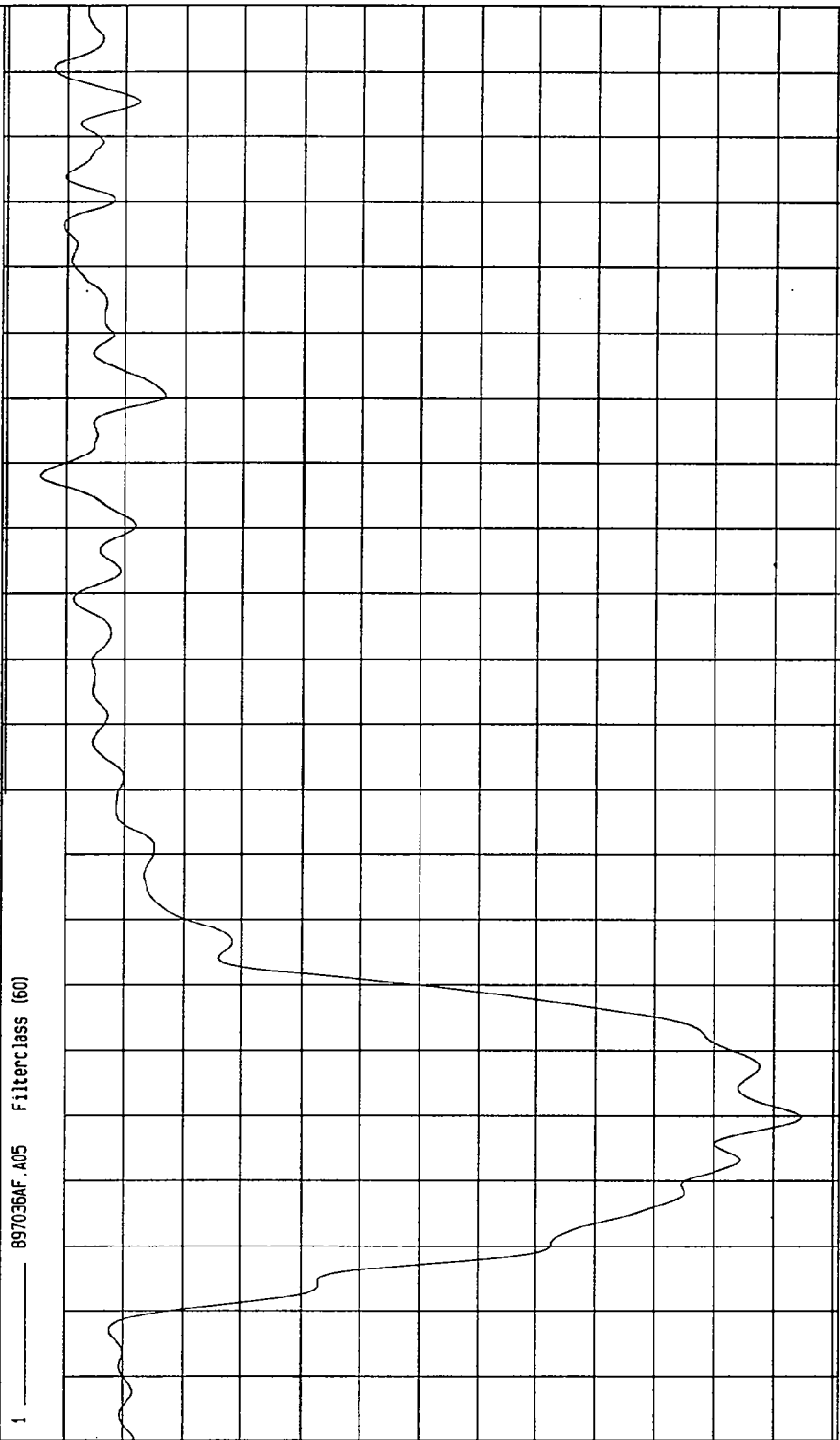
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -22.90 G'S at 30 msec Maximum = 2.86 G'S at 128 msec

MOVING BARRIER REAR AXLE X ACCELERATION

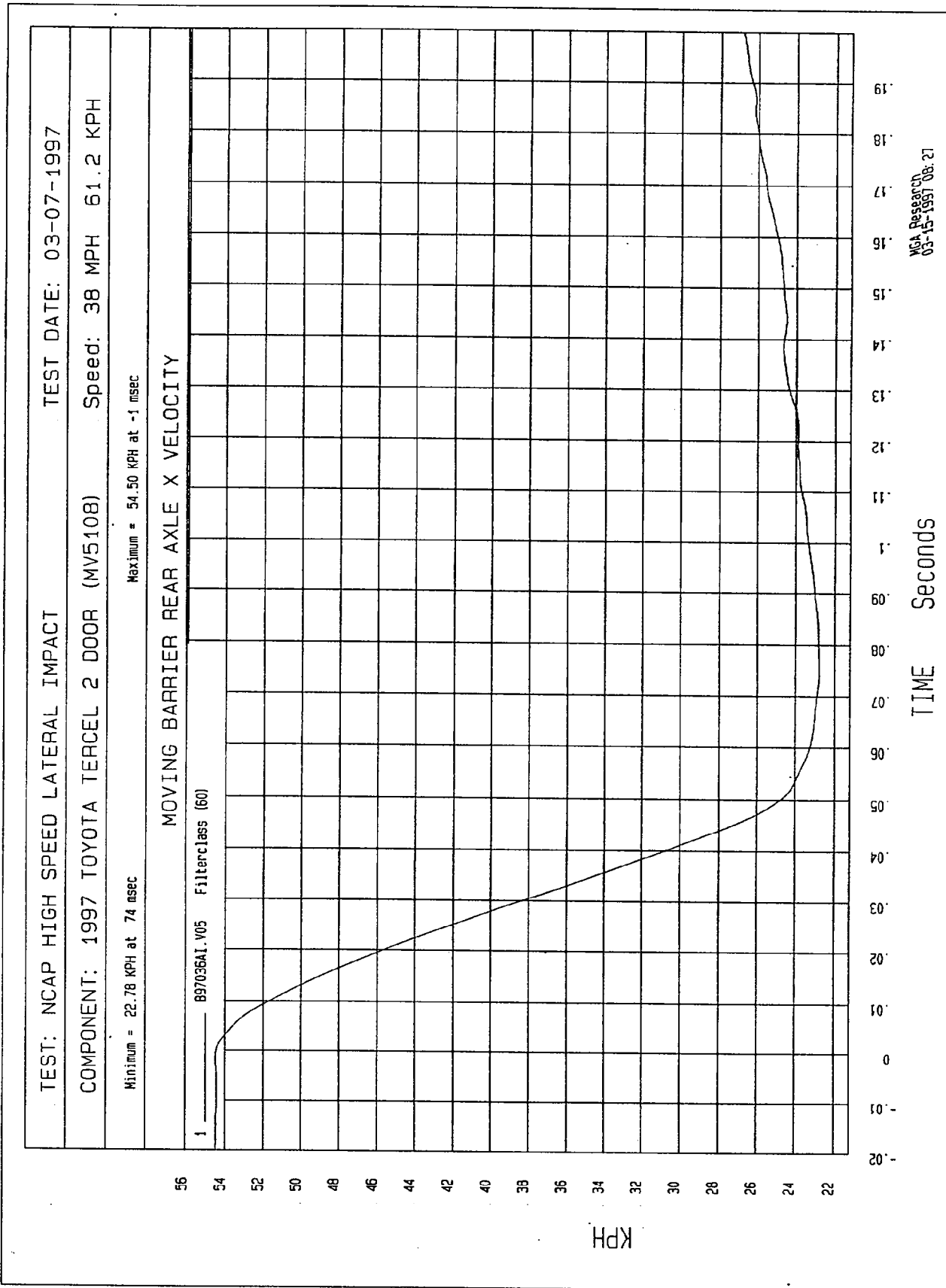
1 ——— 897035AF.A05 Filterclass (60)

G.S



TIME (SECONDS)

MSA Research
03-05-1997 13:00



TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 03-07-1997

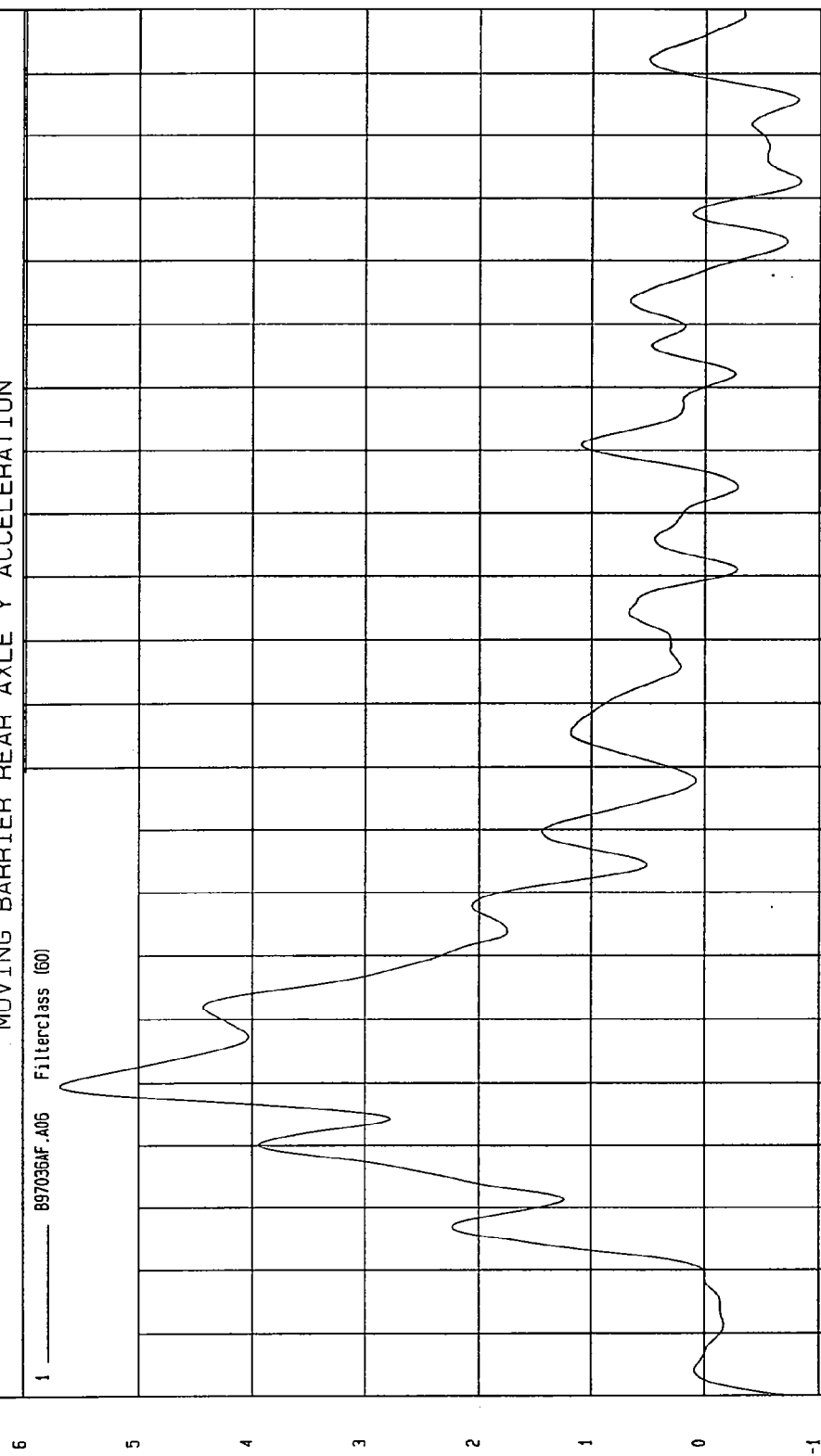
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -.02 G'S at 173 msec Maximum = 5.69 G'S at 30 msec

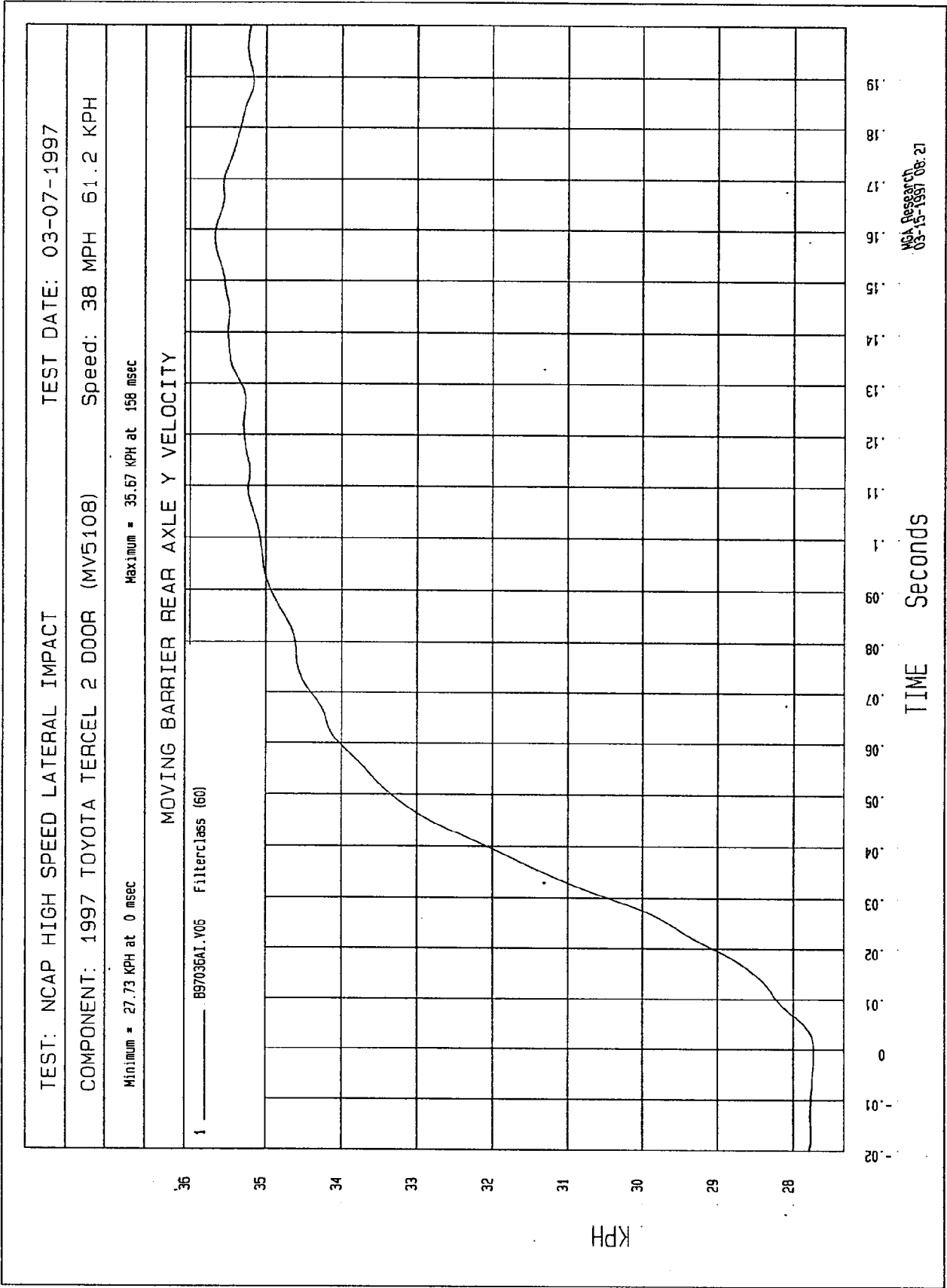
MOVING BARRIER REAR AXLE Y ACCELERATION

1 B97036AF.A06 Filterclass (60)

G.S



NCAP Research
03-05-1997 19:00



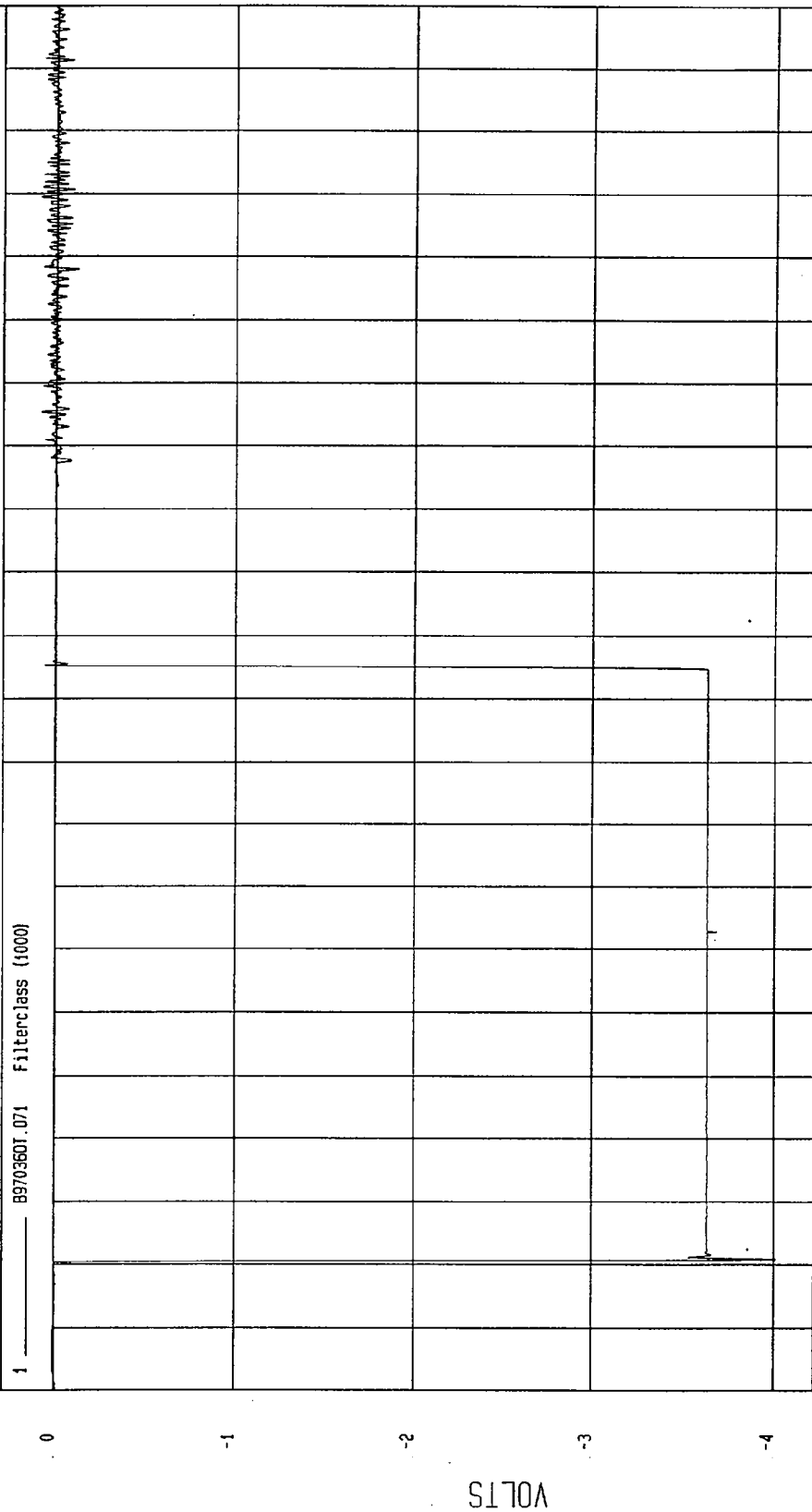
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -4.01 VOLTS at 1 msec Maximum = 8.19E-02 VOLTS at 169 msec

LEFT BARRIER CONTACT

1 ——— B9703601.071 Filterclass (1000)



TIME (SECONDS)

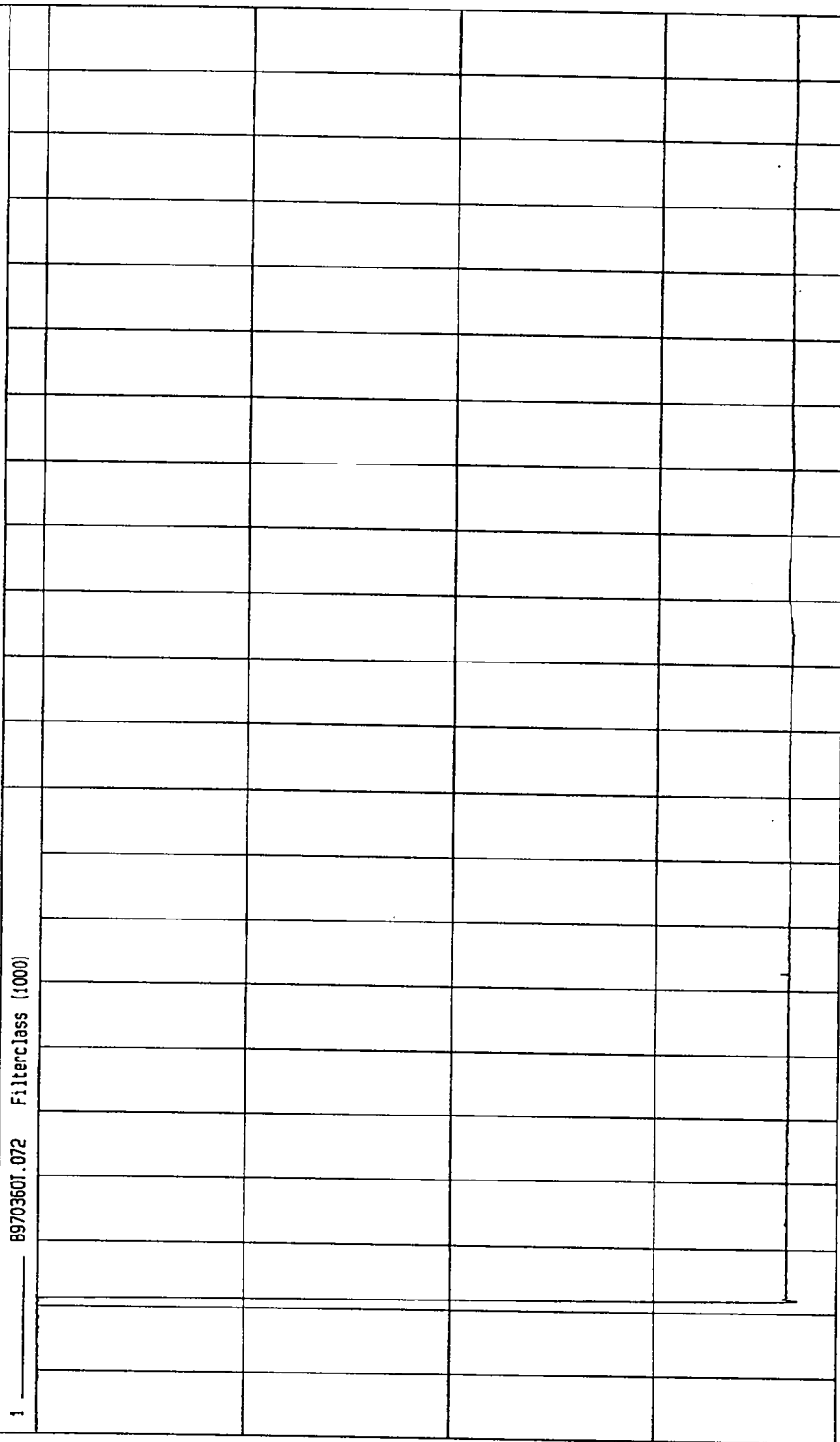
NSA Research
03-05-1997 19:00

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -3.69 VOLTS at 2 msec Maximum = 6.24E-03 VOLTS at 0 msec

RIGHT BARRIER CONTACT



TIME (SECONDS)

19. 18. 17. 16. 15. 14. 13. 12. 11. 10. 09. 08. 07. 06. 05. 04. 03. 02. 01. 0 01. 02.

NGA Research
03-05-1997 19.01

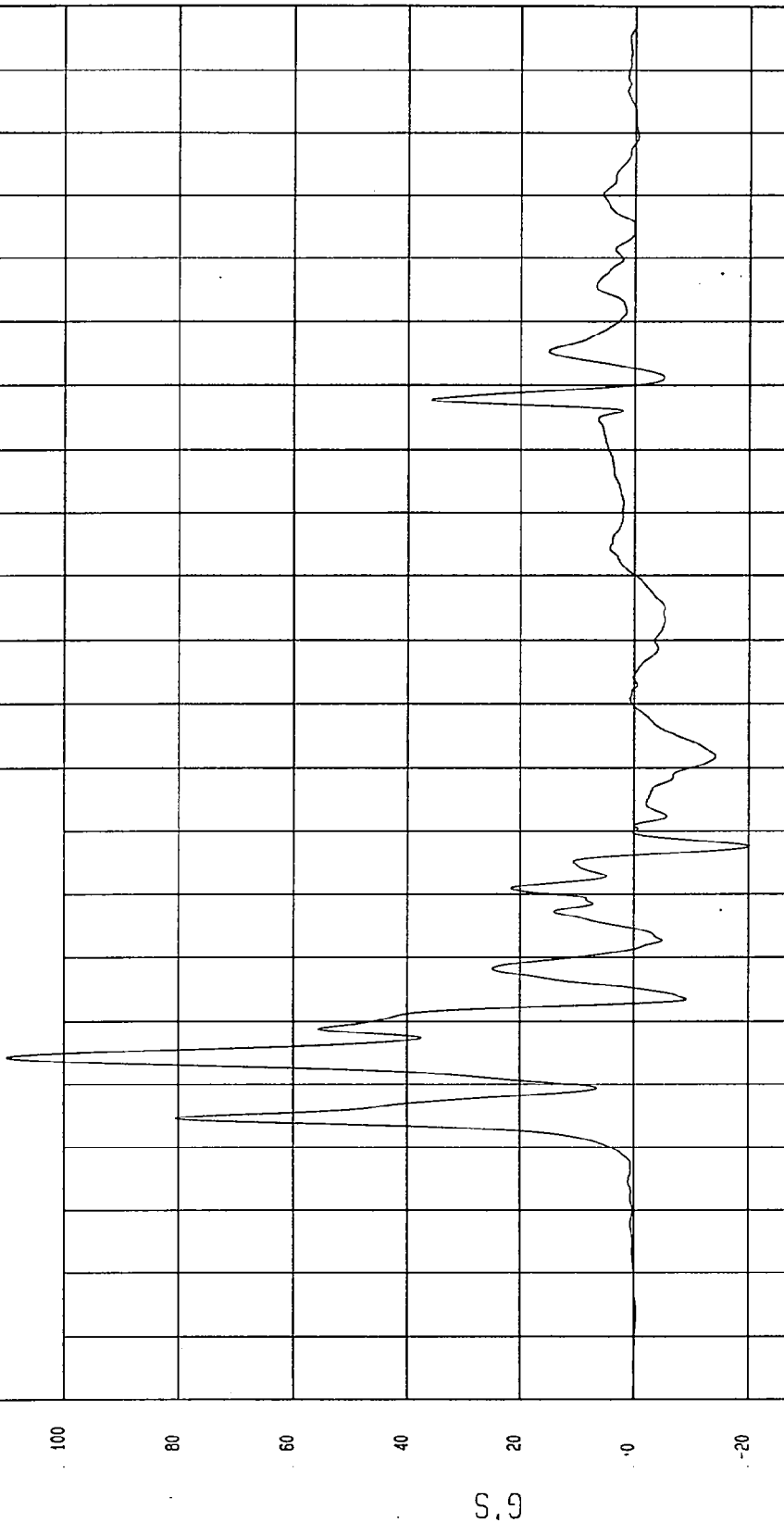
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -20.11 G'S at 68 msec Maximum = 109.74 G'S at 34 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 ——— B97036AF.A61 Filterclass (180)



TIME (SECONDS)

WGA Research
03-05-1997 19:02

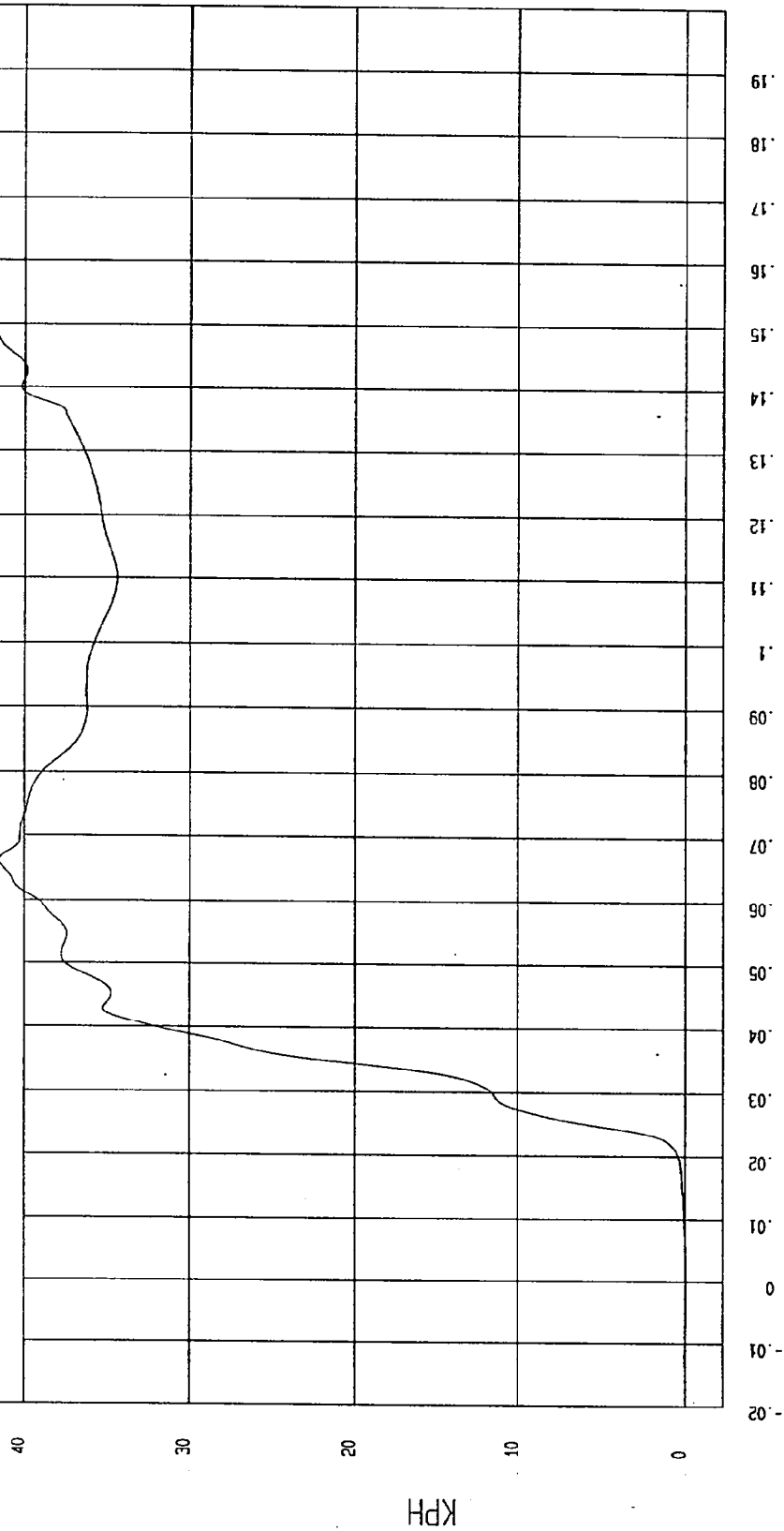
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -4.77E-02 KPH at 0 msec Maximum = 45.14 KPH at 197 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 — 897036A1.V61 FilterClass (180)



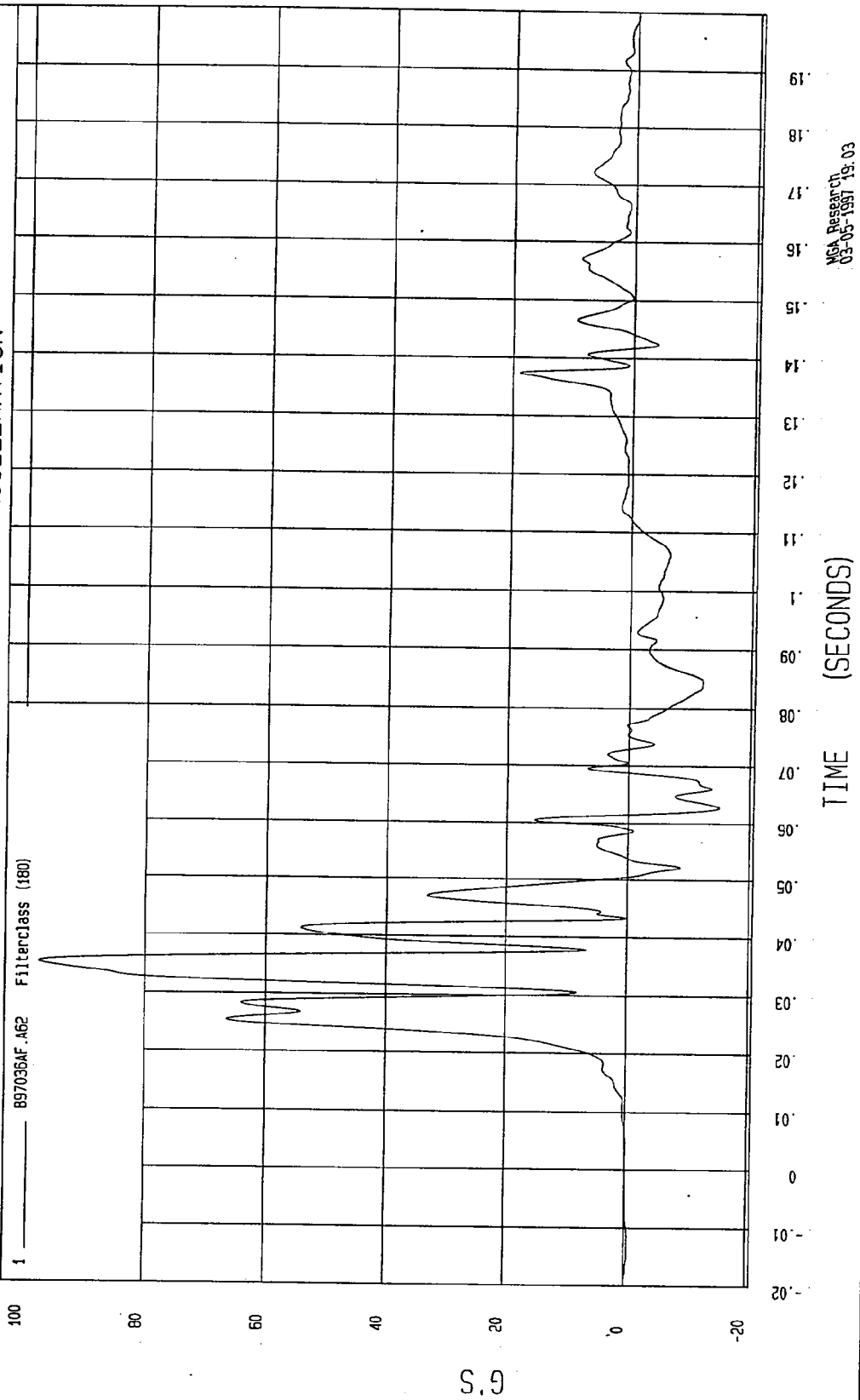
MSA Research
03-05-1997 18:54

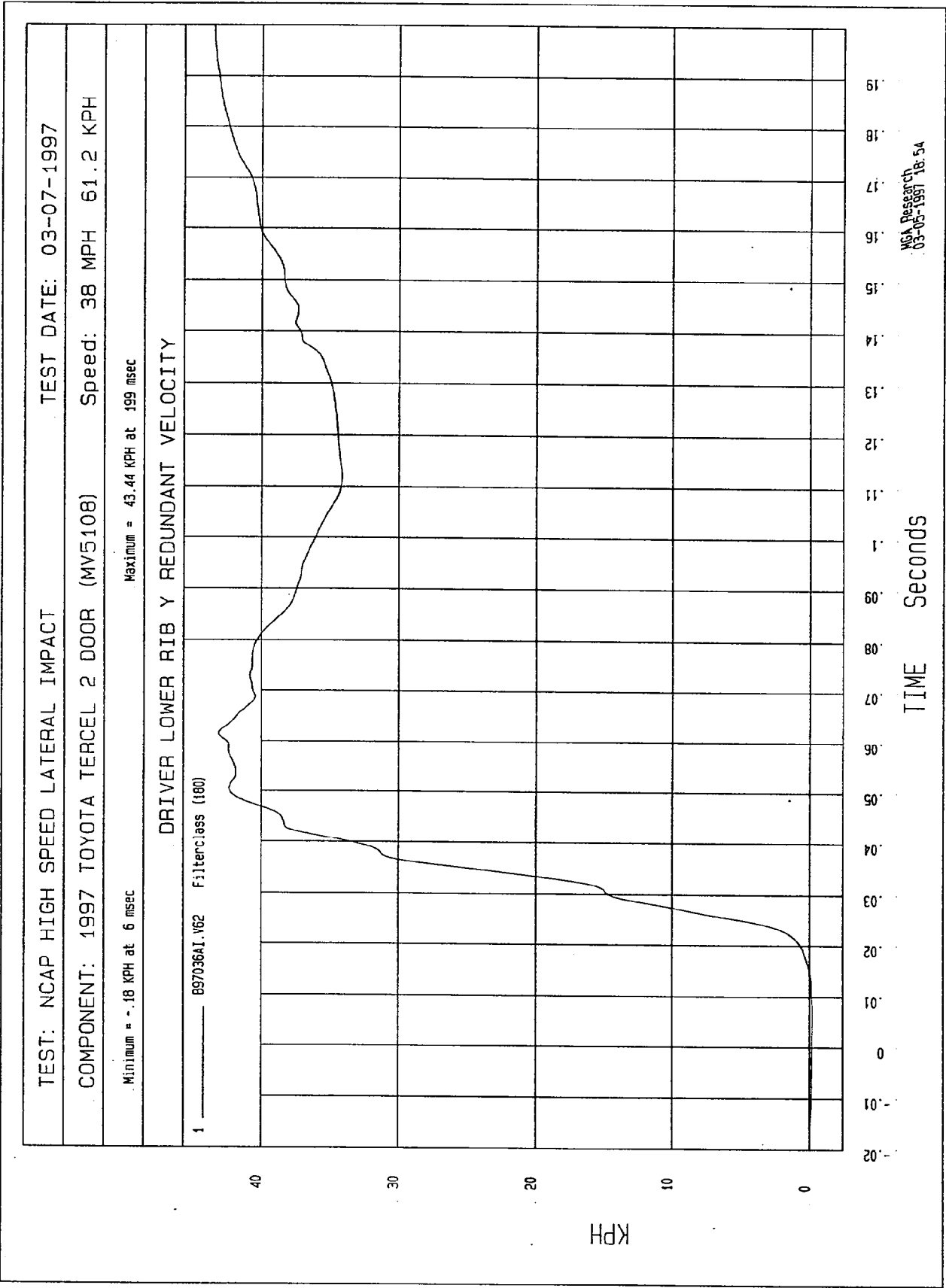
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -15.02 G's at 63 msec Maximum = 97.61 G's at 35 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION



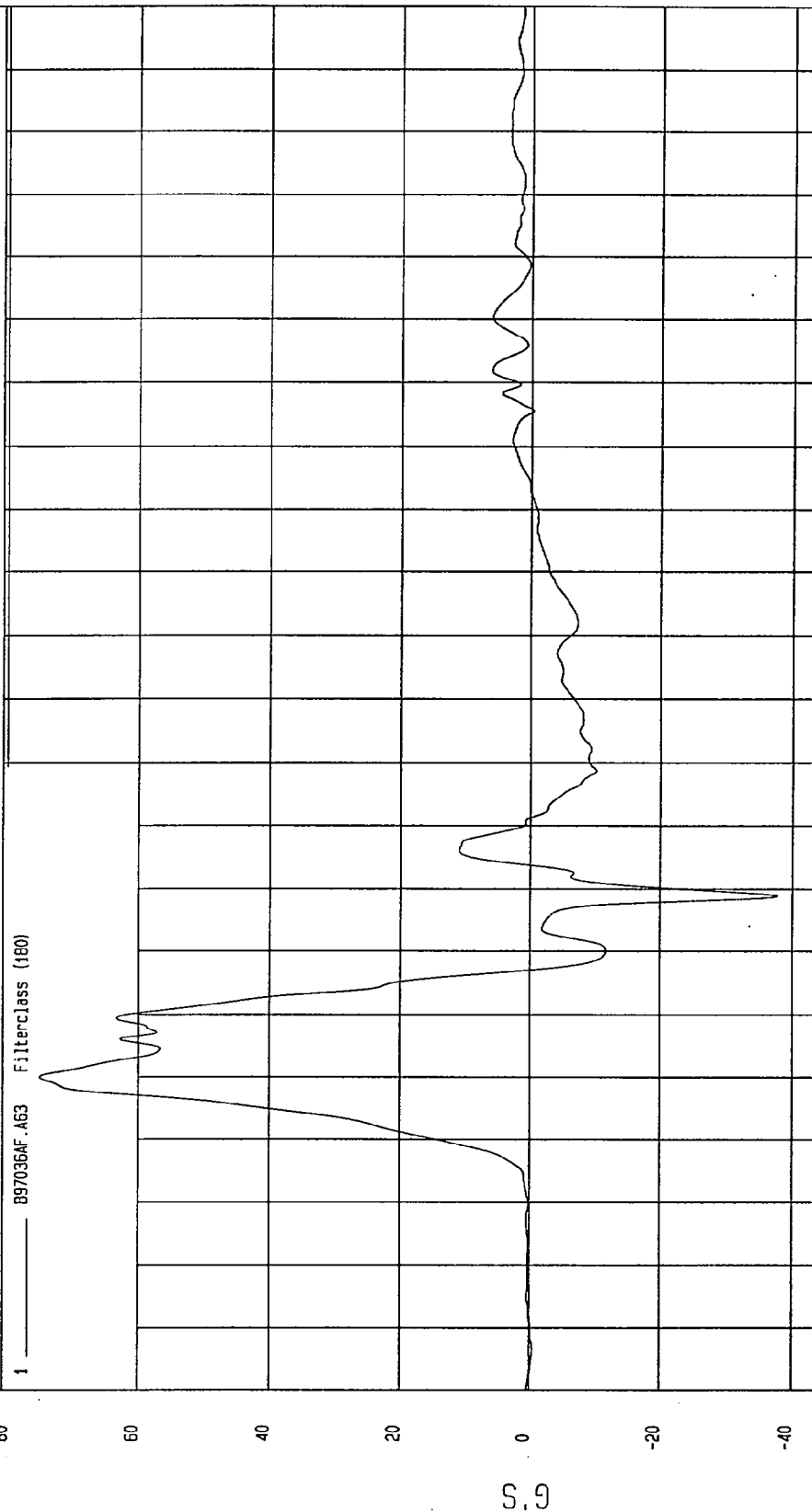


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -37.79 G'S at 59 msec Maximum = 75.10 G'S at 30 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION



TIME (SECONDS)

MCA Research
03-05-1997 15:03

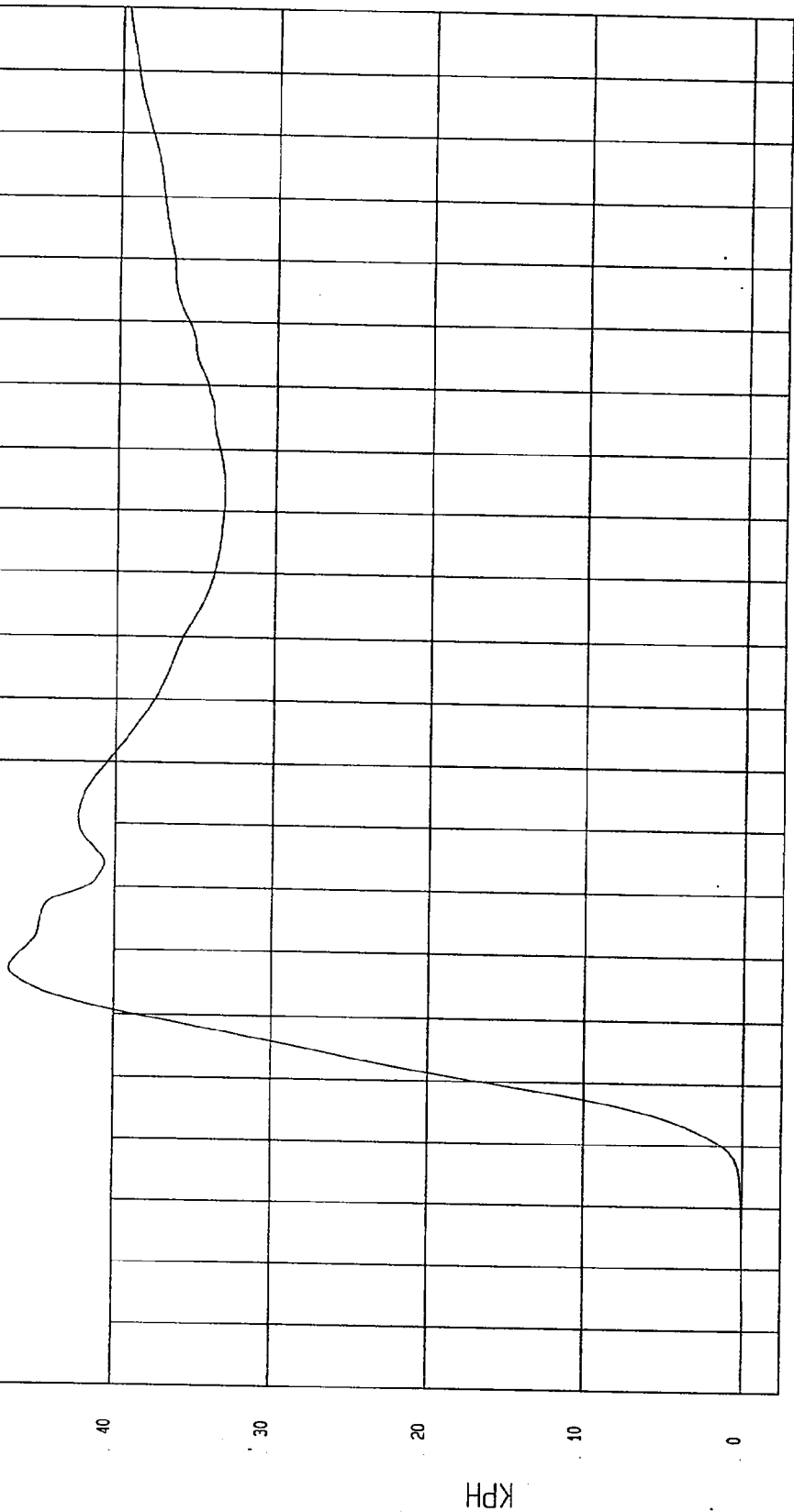
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -4.86E-02 KPH at -9 msec Maximum = 46.59 KPH at 47 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY

1 ——— B97035A1.V63 FilterClass (180)

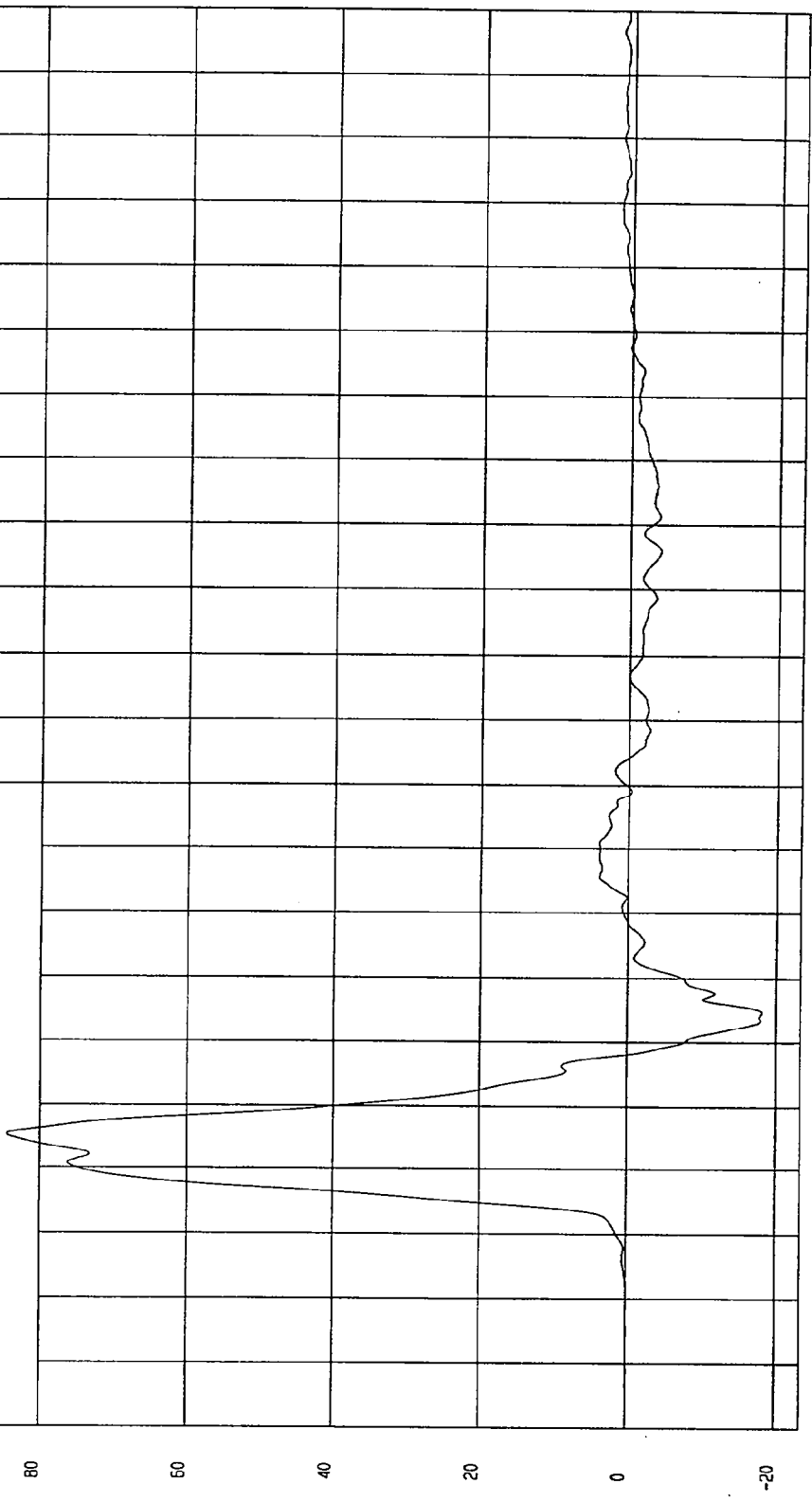


MSA Research
03-05-1997 18:54

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH
Minimum = -18.14 G'S at 45 msec Maximum = 84.49 G'S at 25 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 ——— B97036AF.A65 Filterclass (480)



TIME (SECONDS)

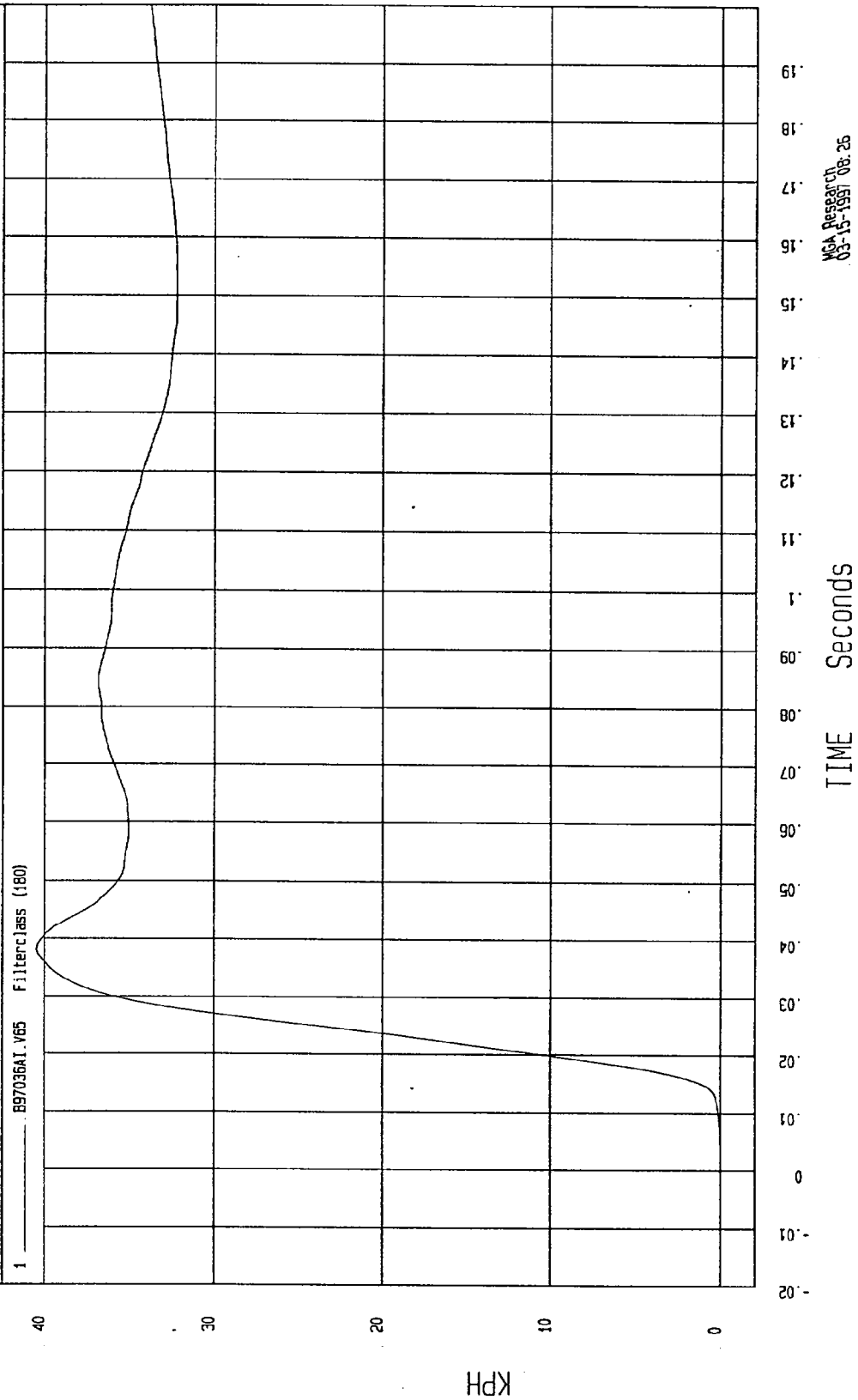
MGA Research
03-05-1997 19:03

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 D00R (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -6.43E-03 KPH at -10 msec
Maximum = 40.45 KPH at 38 msec

DRIVER PELVIS Y REDUNDANT VELOCITY



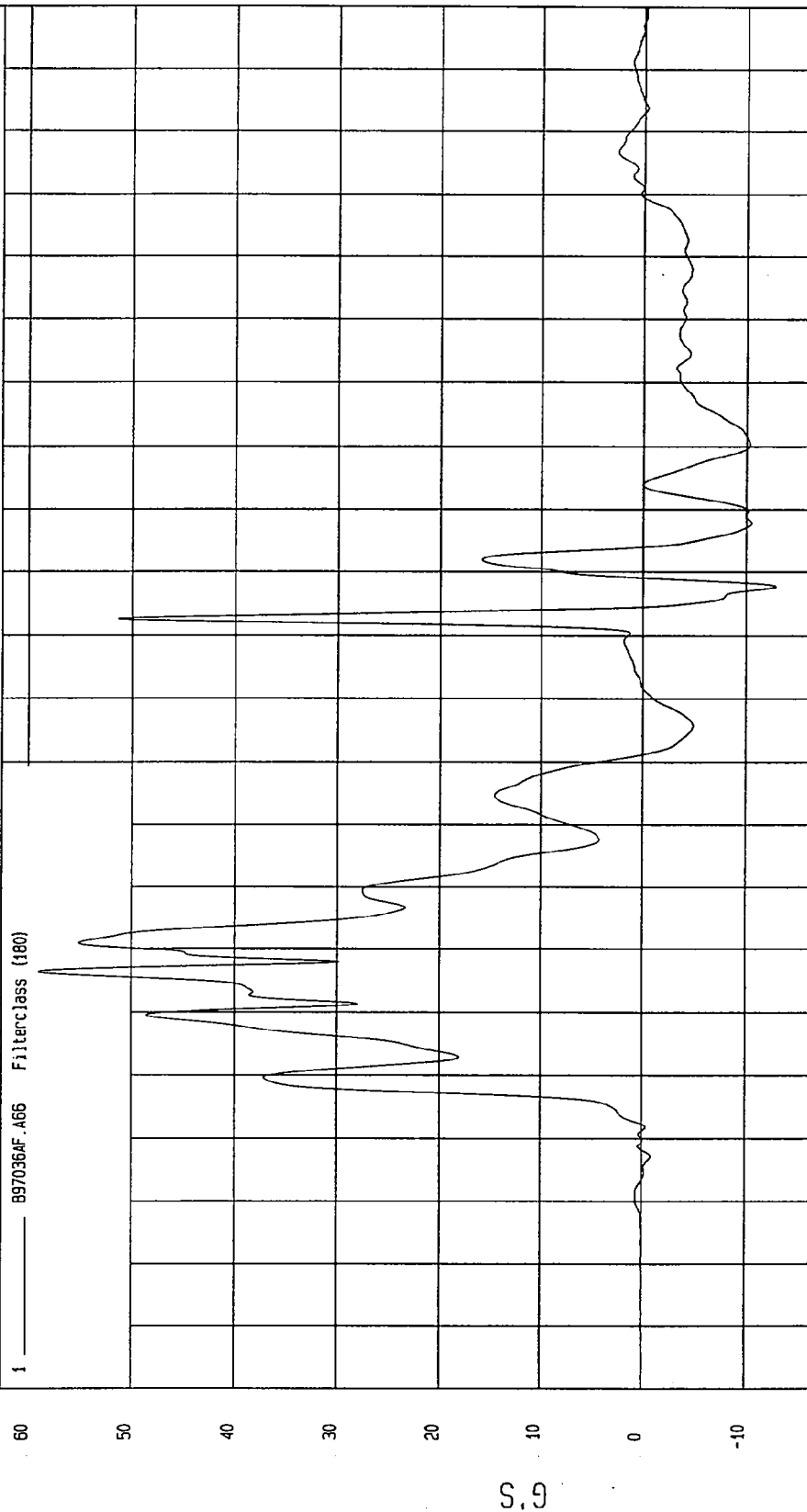
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -12.77 G'S at 100 msec Maximum = 59.05 G'S at 46 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 ——— B97036AF.A66 Filterclass (180)



MCA Research
03-05-1997 19:03

TIME (SECONDS)

TEST: NCAP HIGH SPEED LATERAL IMPACT

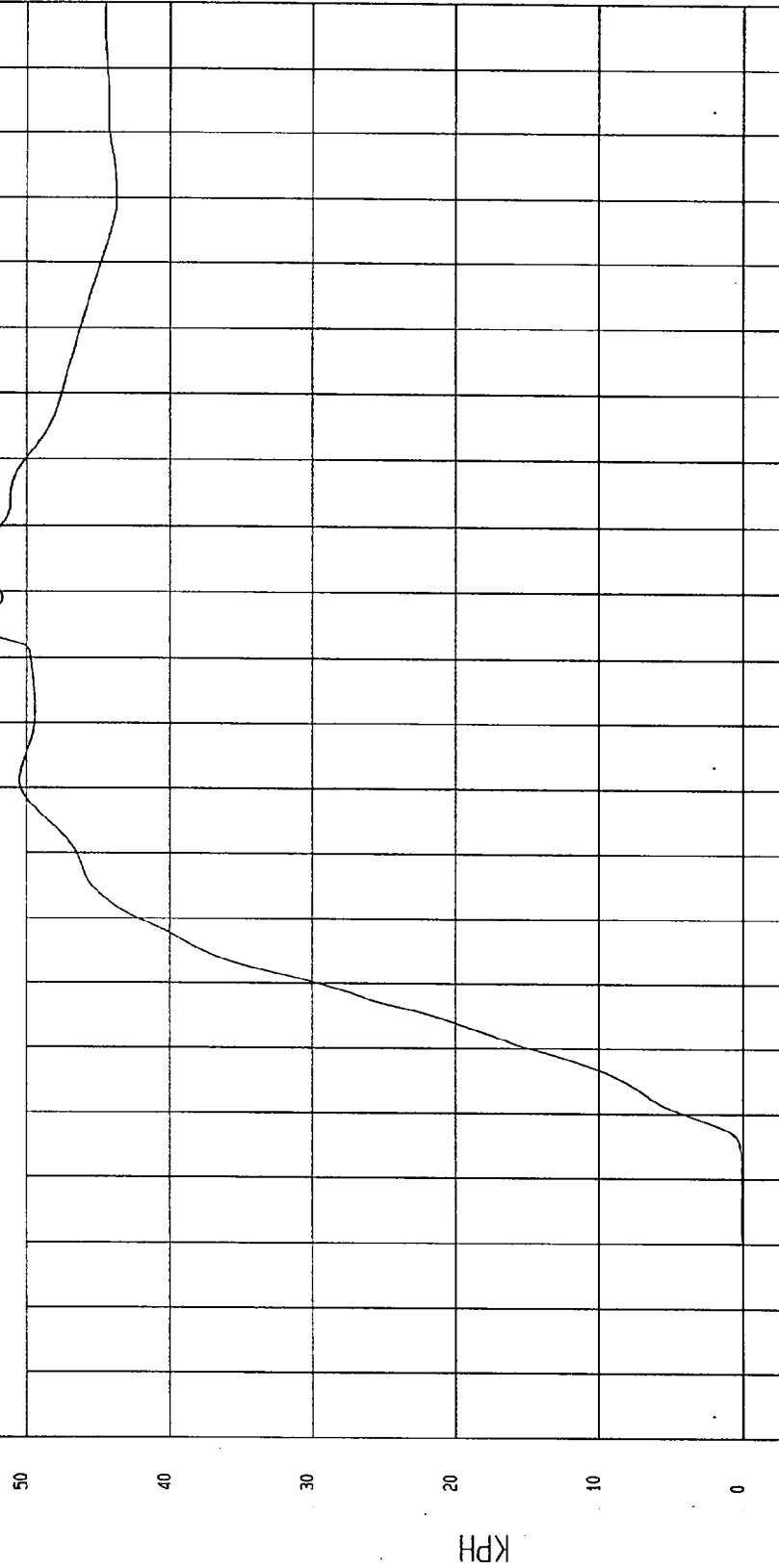
TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -8.10E-03 KPH at -11 msec Maximum = 53.50 KPH at 114 msec

REAR PASSENGER UPPER RIB Y REDUNDANT VELOCITY

1 897036A1.V66 Filterclass (180)



MSA Research
03-05-1997 18:54

TIME Seconds

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION VS. TIME

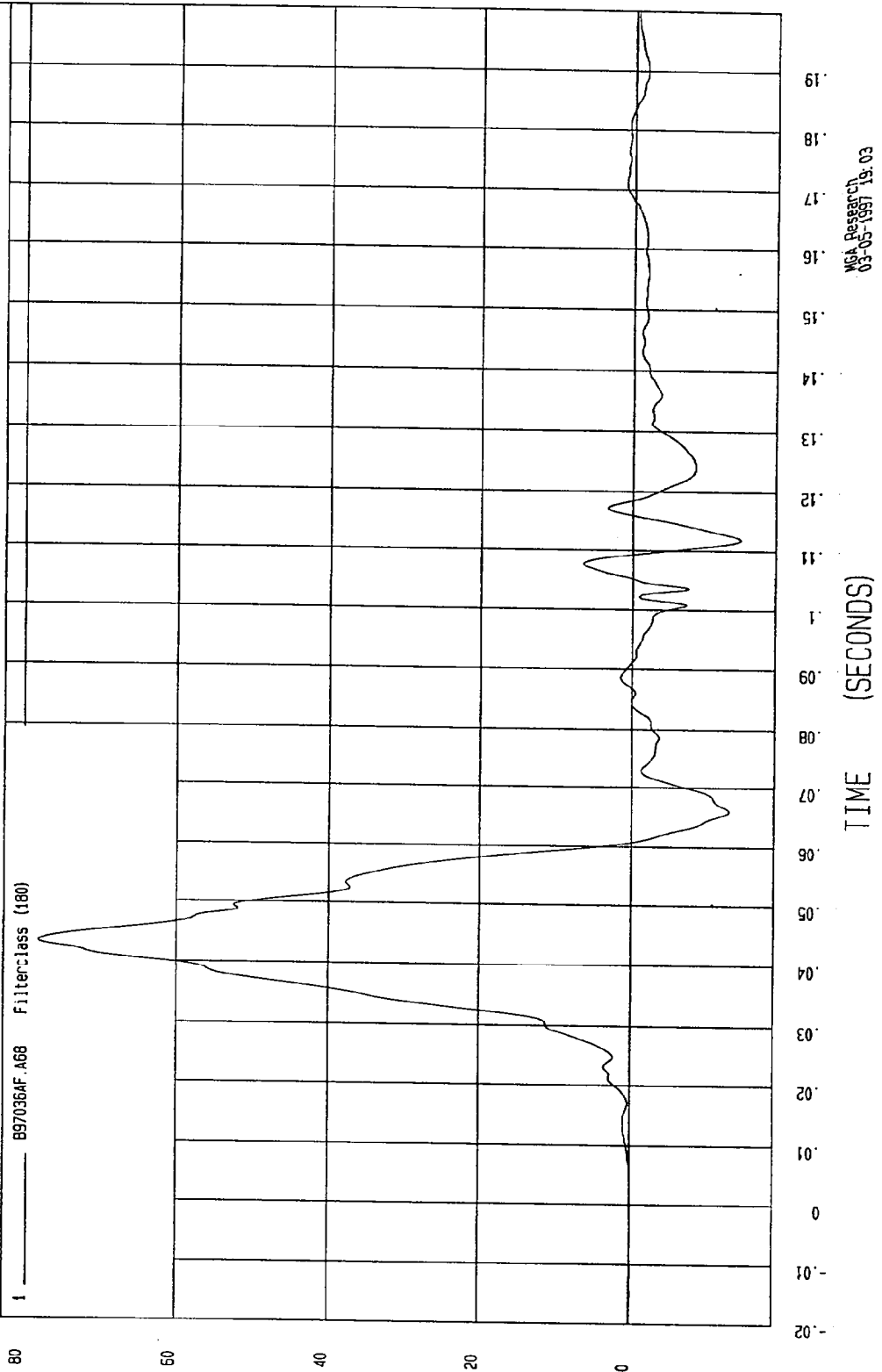
NO VALID DATA COLLECTED

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -14.03 G'S at 112 msec Maximum = 78.02 G'S at 43 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION



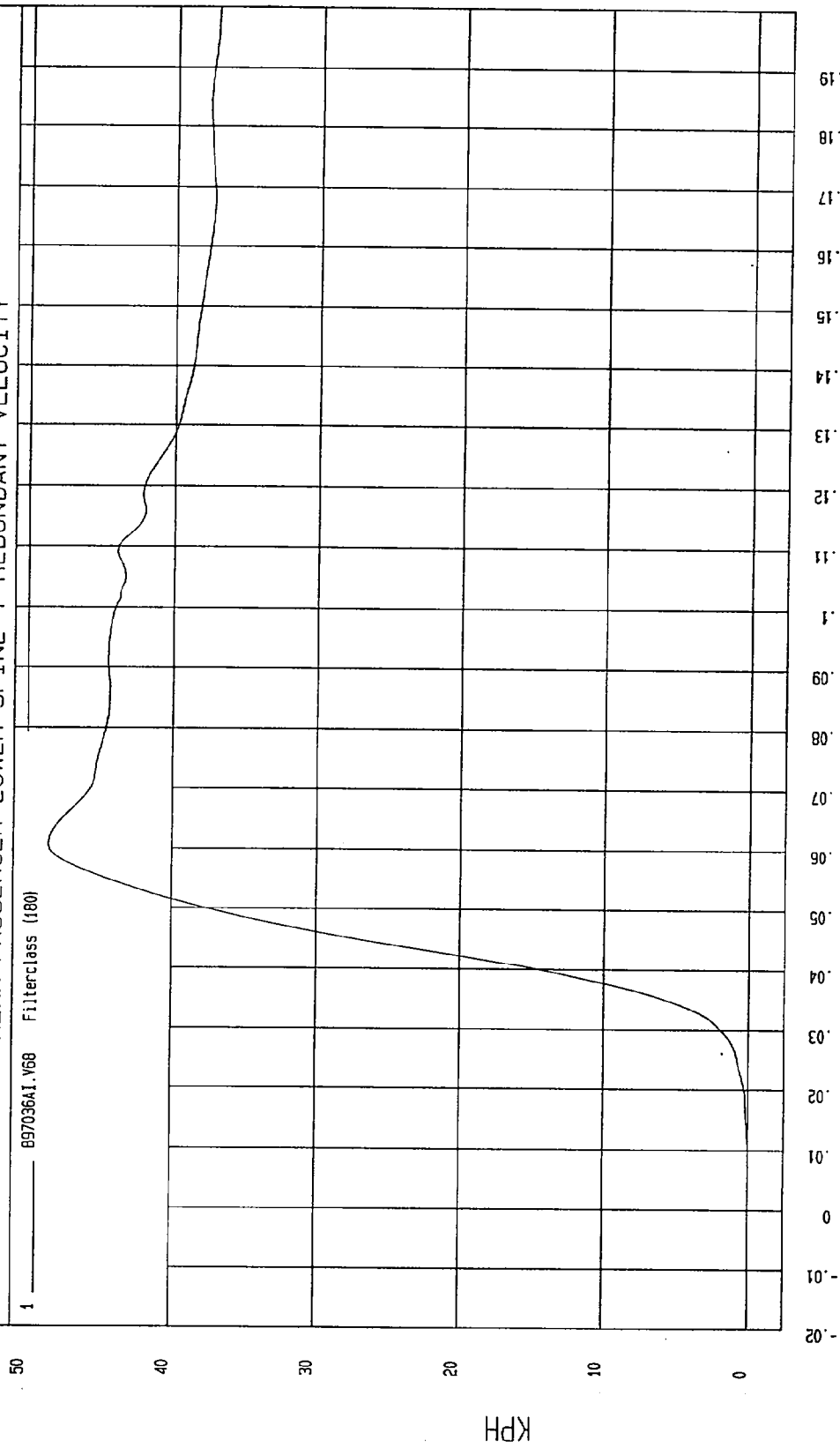
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -2.43E-02 KPH at 6 msec Maximum = 40.53 KPH at 61 msec

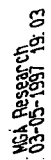
REAR PASSENGER LOWER SPINE Y REDUNDANT VELOCITY

1 ——— B97036A1.V68 Filterclass (180)



MCA Research
03-05-1997 18:55

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION



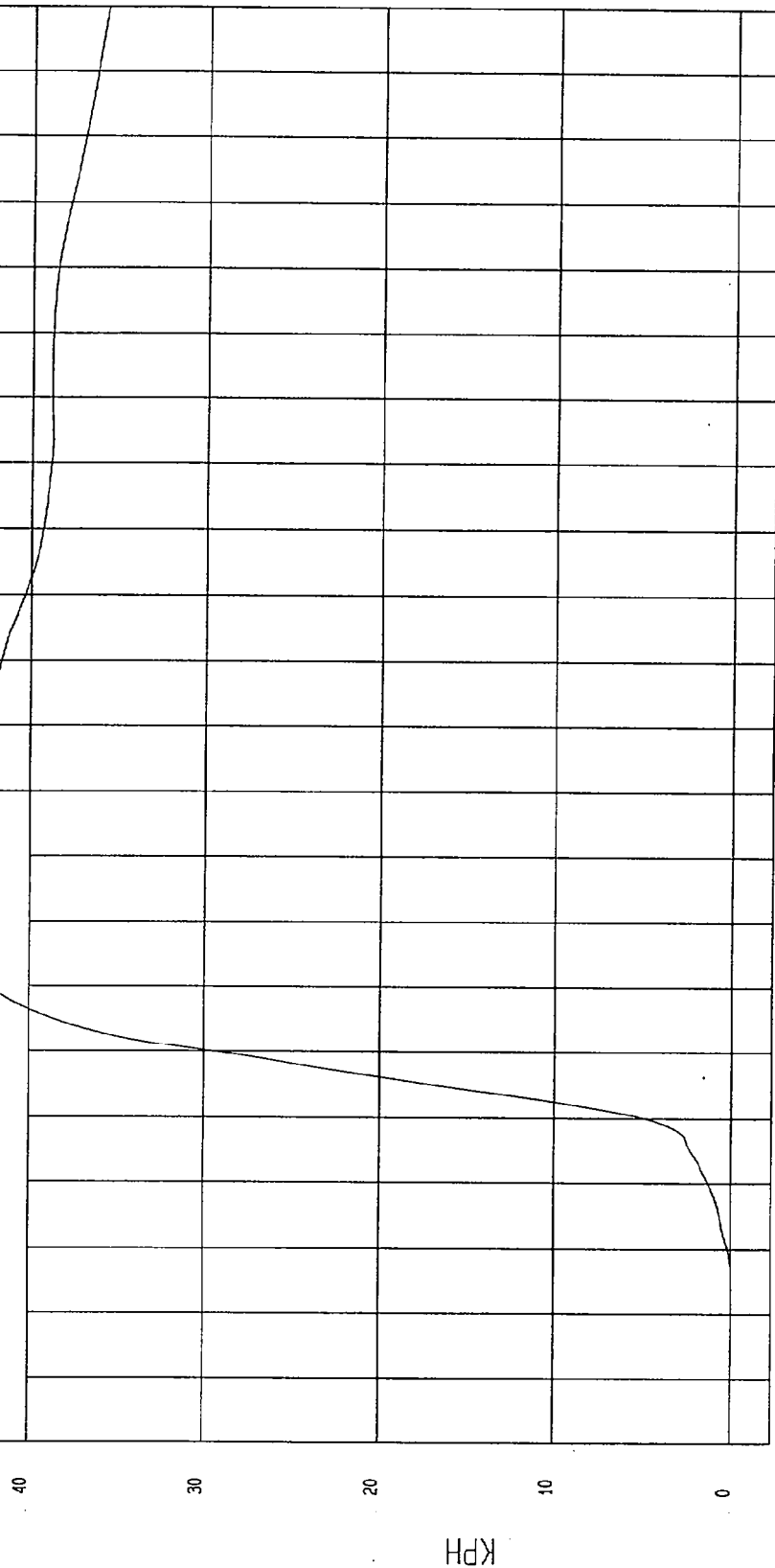
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -5.07E-02 KPH at 0 msec Maximum = 43.32 KPH at 75 msec

REAR PASSENGER PELVIS Y REDUNDANT VELOCITY

1 ——— B97036A1.V69 Filterclass (180)



TIME Seconds

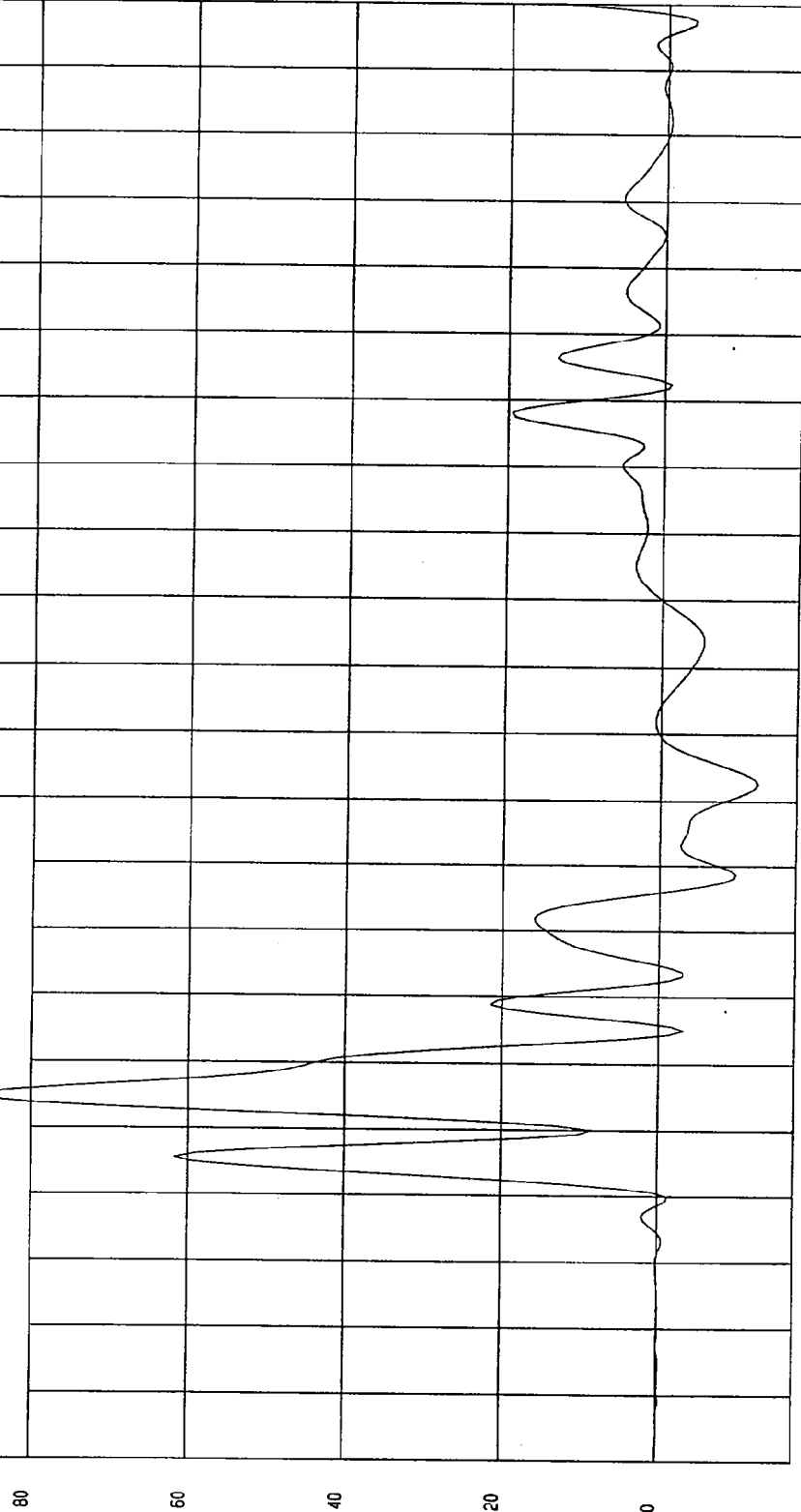
MSA Research
03-05-1997 16:55

FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV510B) Speed: 38 MPH 61.2 KPH
Minimum = -12.23 G'S at 82 msec Maximum = 86.70 G'S at 35 msec

DRIVER UPPER RIB Y ACCELERATION

1 ——— B97036F1.R15 Filterclass (FIR Filtered)



MCA Research
03-05-1997 18:50

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 03-07-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108)

Maximum = 88.22 G'S at 34 msec

Minimum = -13.46 G'S at 82 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 897036F1.R61 Filterclass (FIR Filtered)

80

60

40

20

0

G

-20

-10

0

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

190

TIME (SECONDS)

NCAP Research
03-05-1997 18:50

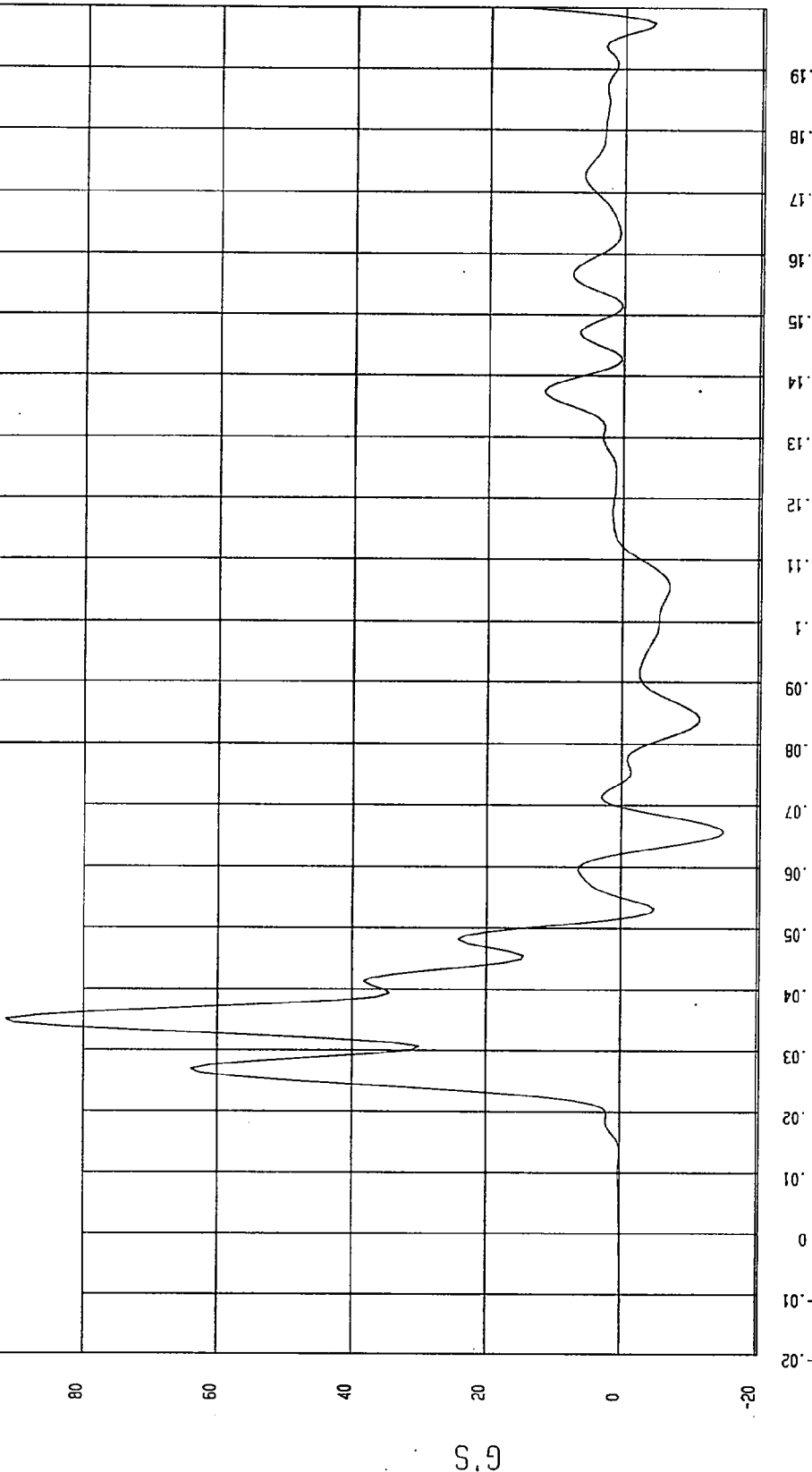
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -15.08 G'S at 66 msec
Maximum = 91.55 G'S at 35 msec

DRIVER LOWER RIB Y ACCELERATION

1 ——— 897036F1.R16 Filterclass (FIR Filtered)



NCAP Research
03-05-1997 18.50

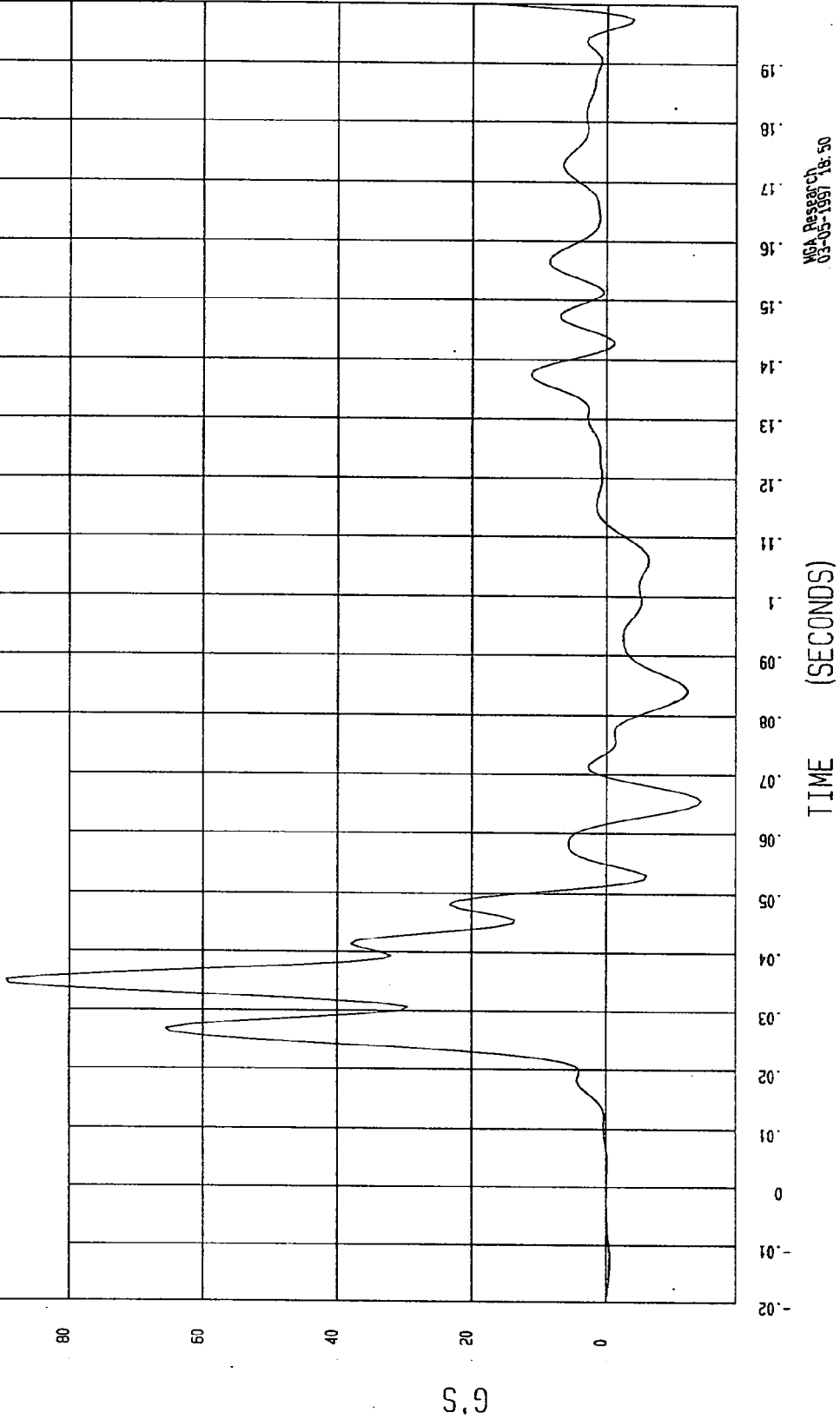
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -13.91 G's at 66 msec Maximum = 89.32 G's at 35 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 — 897036F1.D62 Filterclass (FIR Filtered)



NGA Research
03-05-1997 16:50

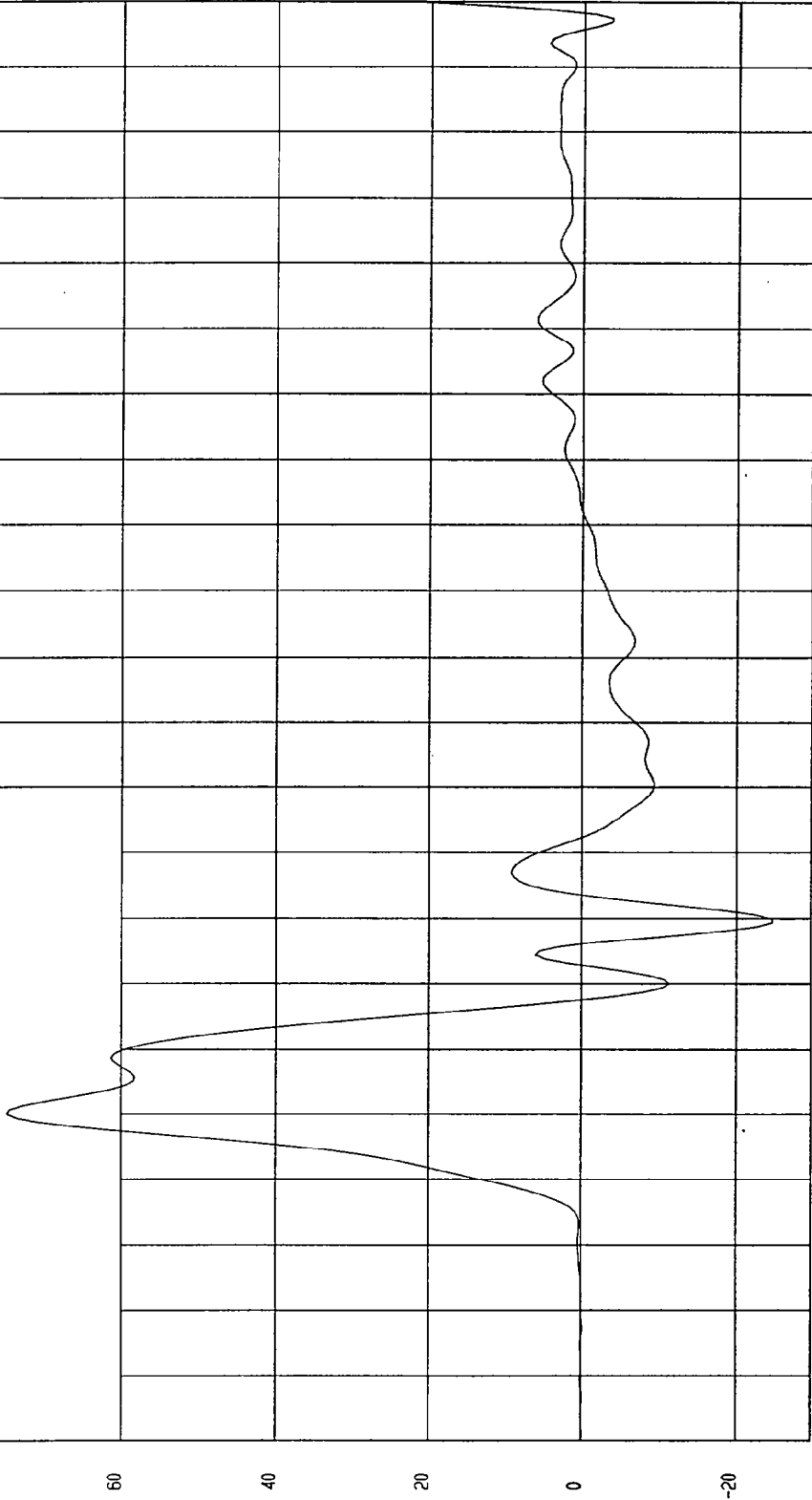
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -24.66 G'S at 59 msec
Maximum = 74.87 G'S at 30 msec

DRIVER LOWER SPINE Y ACCELERATION

1 897036F1.R17 Filterclass (FIR Filtered)



WCA Research
03-05-1997 18:50

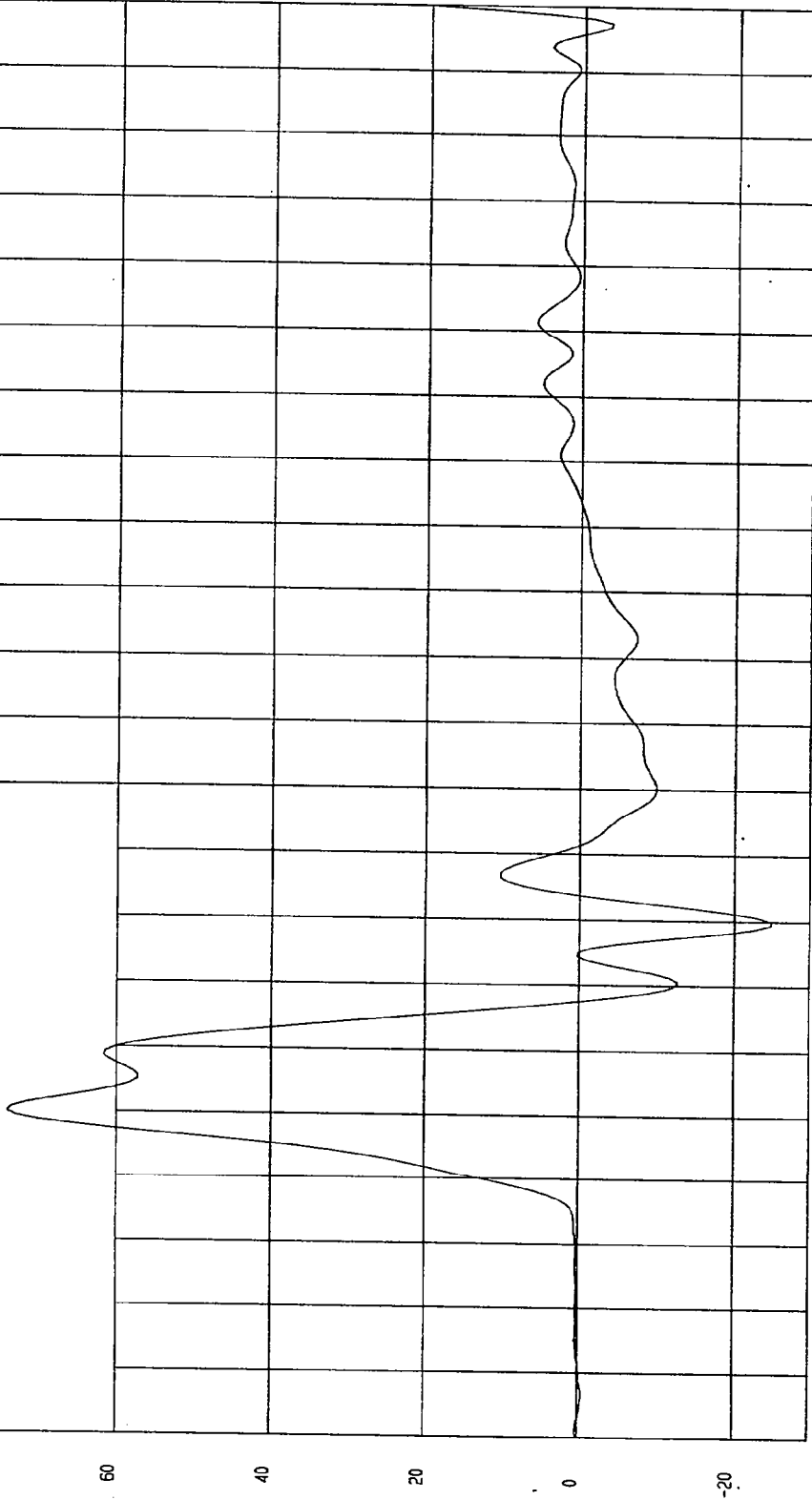
TIME (SECONDS)

G's

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH
Minimum = -24.65 G'S at 60 msec Maximum = 74.16 G'S at 30 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 — 897036F1.R63 FilterClass (FIR Filtered)



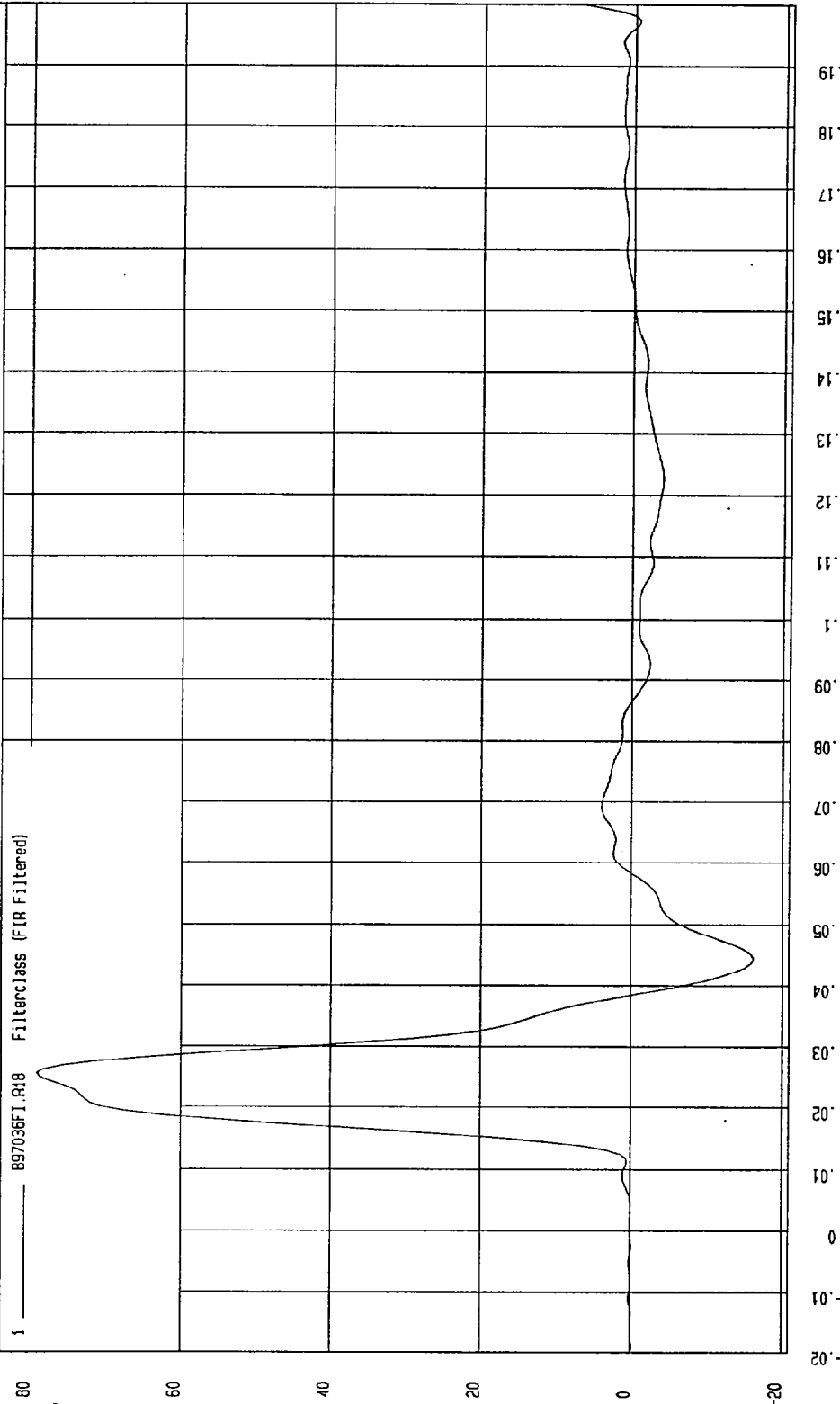
TIME (SECONDS)

MSA Research
03-05-1997 18:50

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH
Minimum = -16.12 G'S at 44 msec Maximum = 79.15 G'S at 26 msec

DRIVER PELVIS Y ACCELERATION

1 ——— B97036F1.R18 Filterclass (FIR Filtered)



MSA Research
03-05-1997 18:51

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108)

Speed: 38 MPH 61.2 KPH

Minimum = -17.14 G'S at 44 msec

Maximum = 82.16 G'S at 26 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 — 897035F1.R65 Filterclass (FIR Filtered)

80

60

40

20

0

-20

G'S

-0.02

-0.01

0

0.01

0.02

0.03

0.04

0.05

0.06

0.07

0.08

0.09

0.1

0.11

0.12

0.13

0.14

0.15

0.16

0.17

0.18

0.19

TIME (SECONDS)

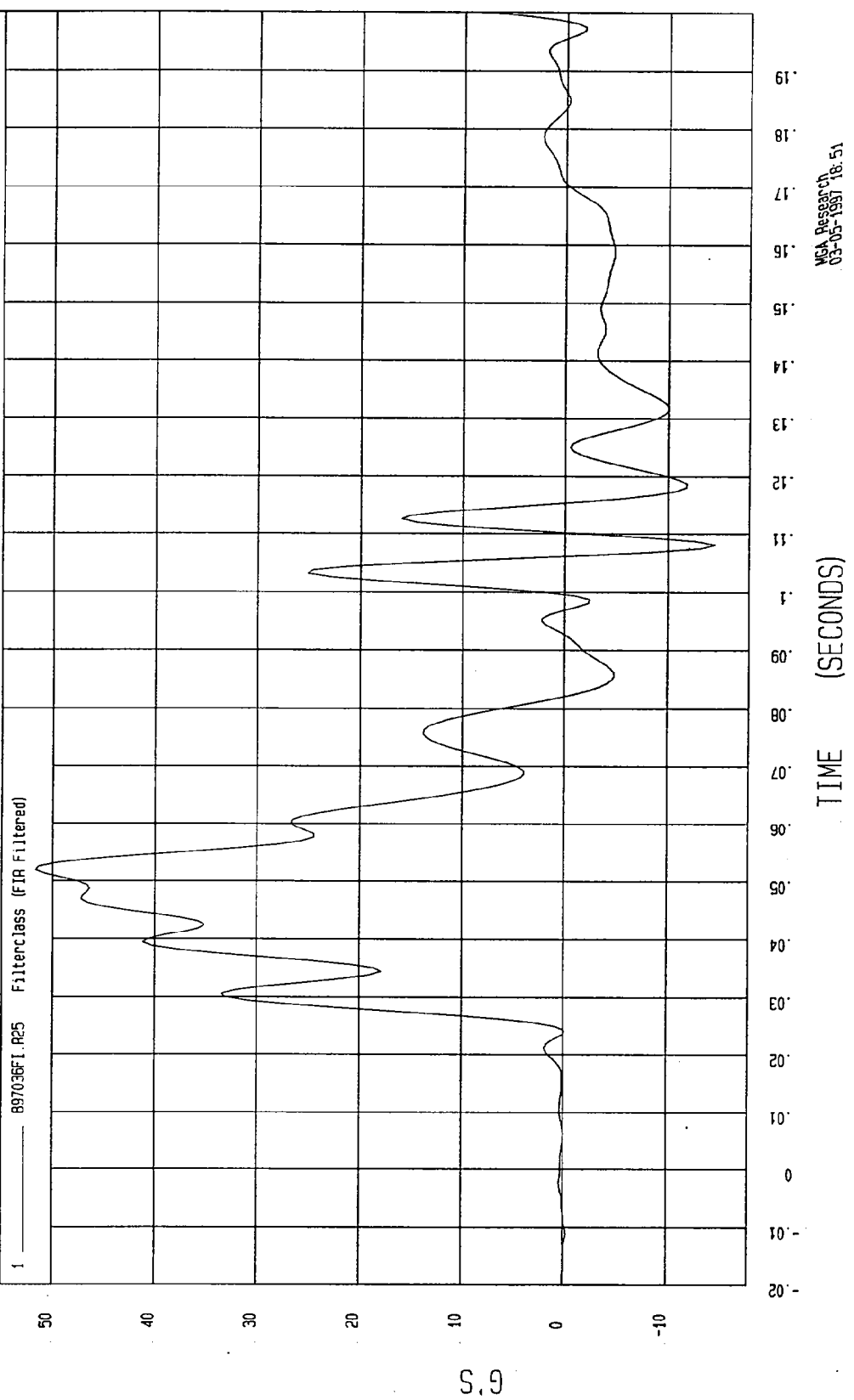
NCA Research
03-05-1997 16:51

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -14.44 G'S at 108 msec Maximum = 51.62 G'S at 52 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

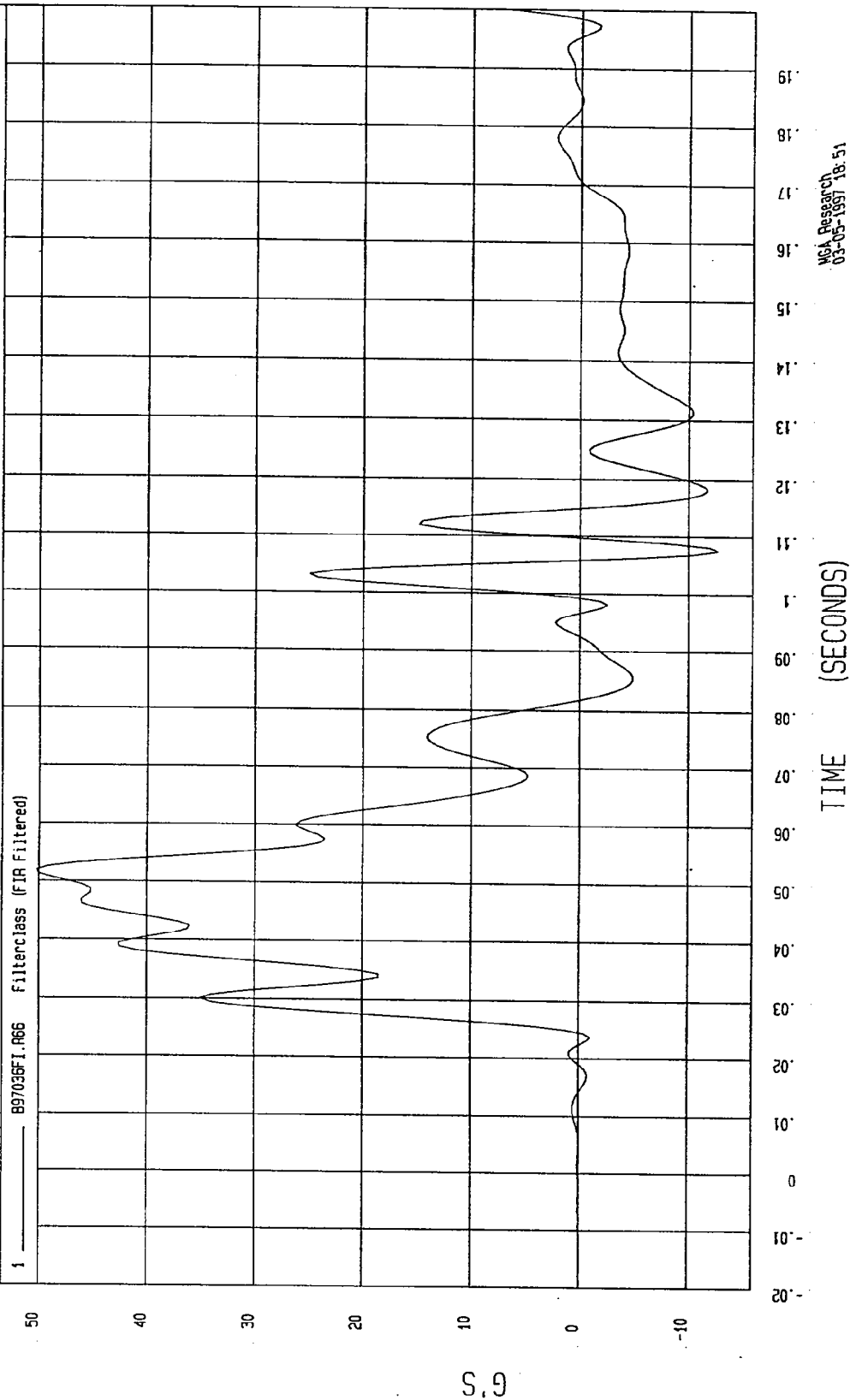


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -12.67 G'S at 108 msec Maximum = 50.29 G'S at 52 msec

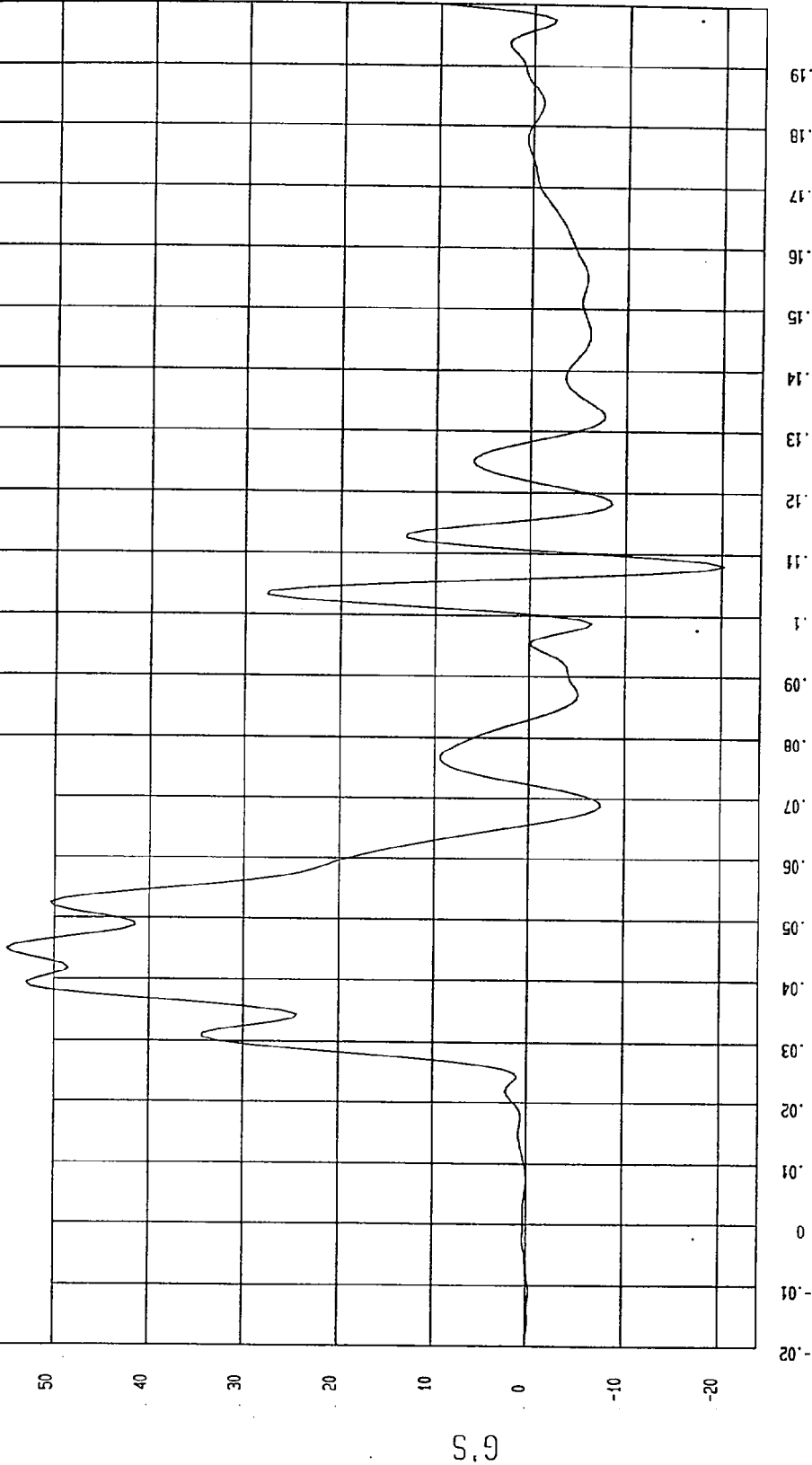
REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION



TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997
COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH
Minimum = -20.25 G'S at 108 msec Maximum = 54.94 G'S at 45 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 897036F1.R26 Filterclass (FIR Filtered)



MCA Research
03-05-1997 18:51

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION VS. TIME

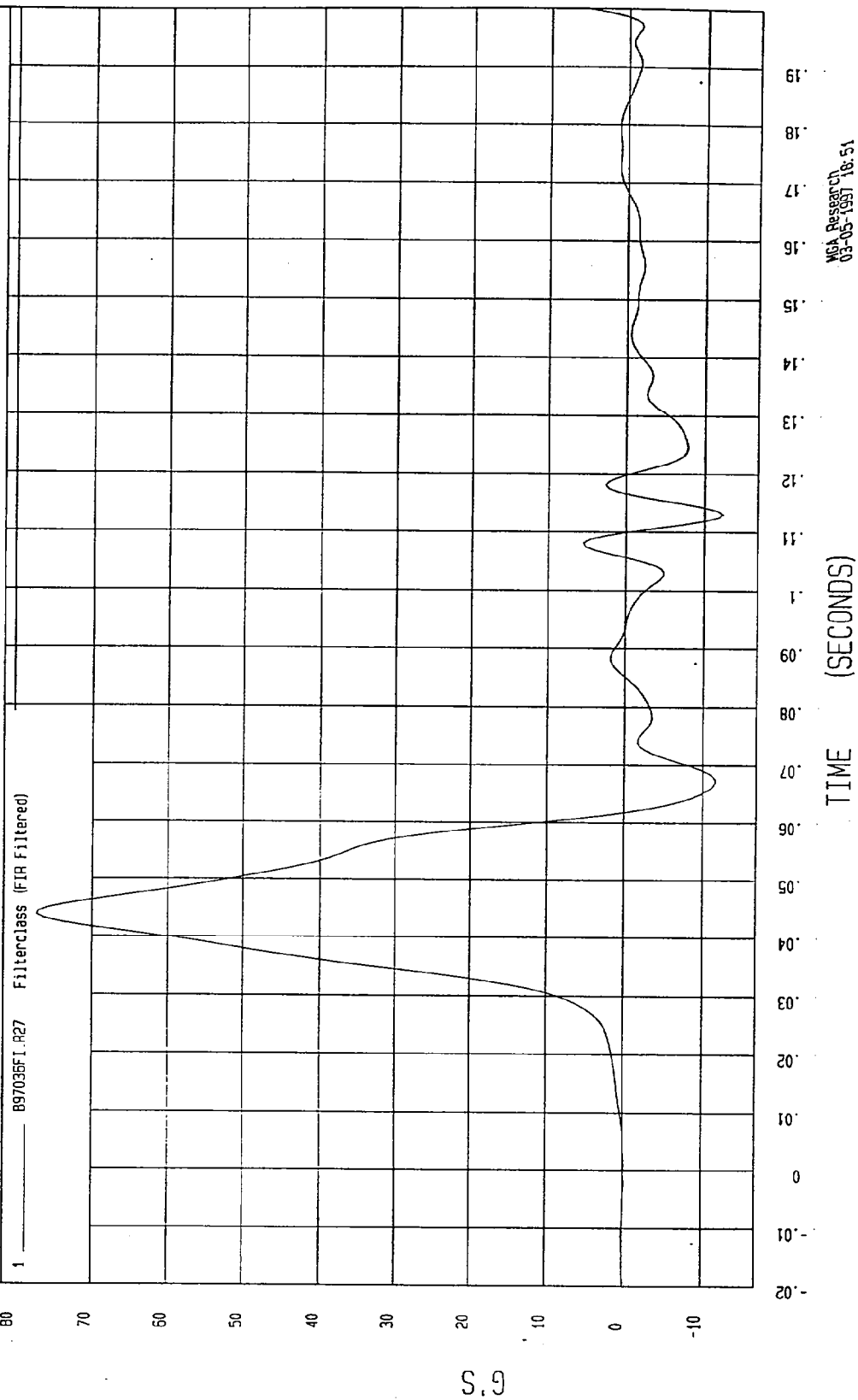
NO VALID DATA COLLECTED

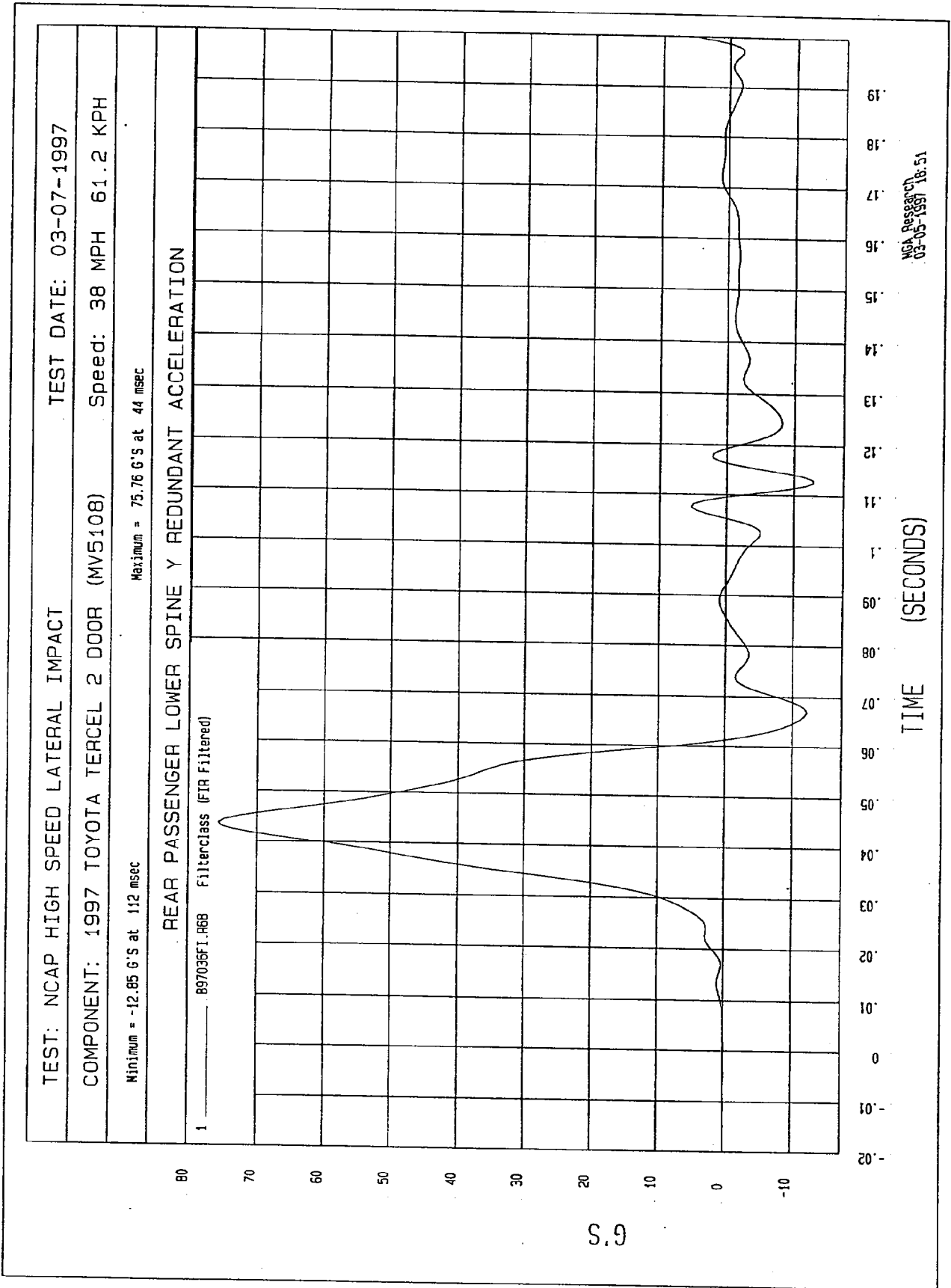
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -12.29 G'S at 113 msec Maximum = 76.99 G'S at 44 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION



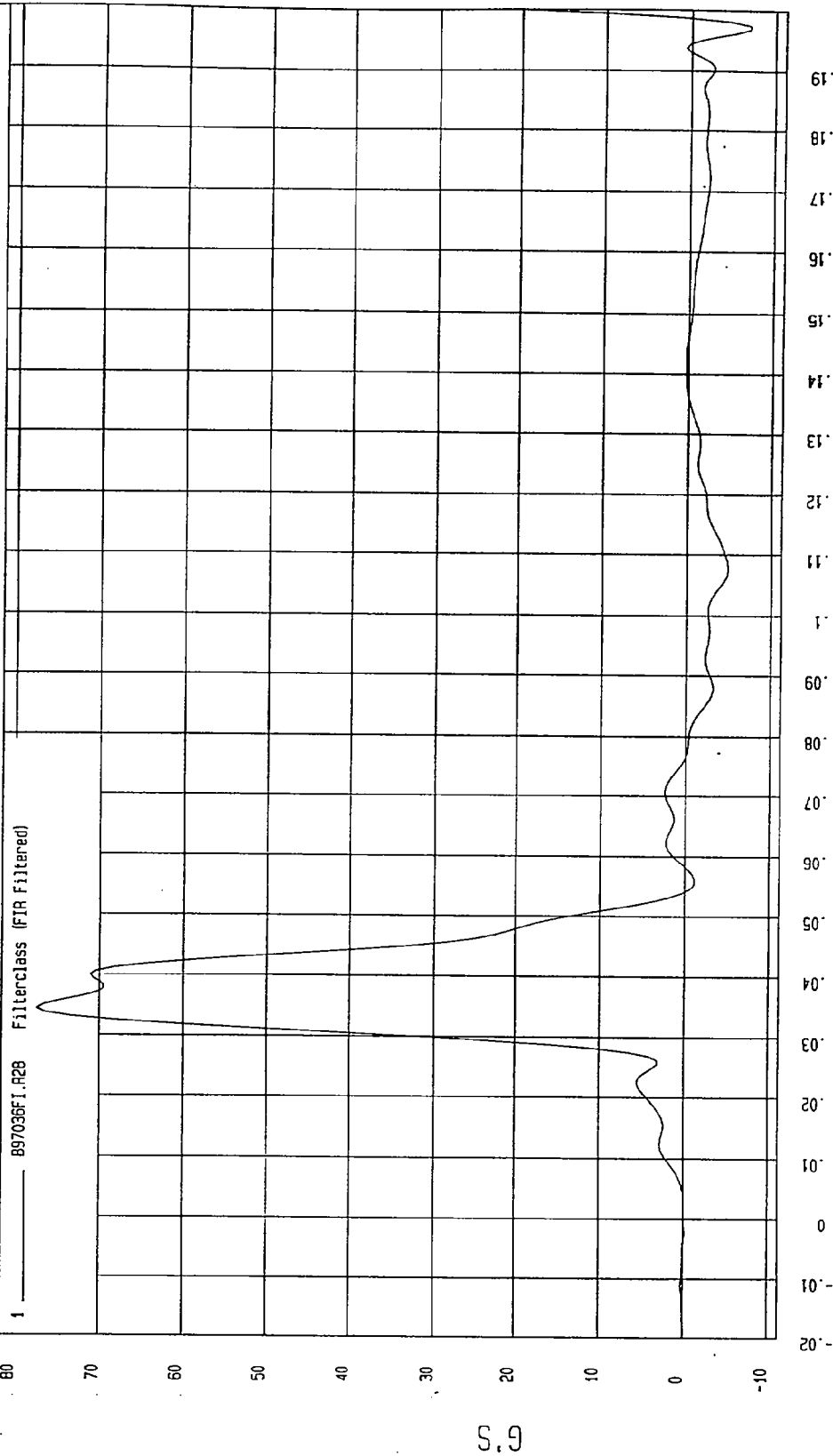


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108) Speed: 38 MPH 61.2 KPH

Minimum = -7.00 G'S at 198 msec Maximum = 77.41 G'S at 34 msec

REAR PASSENGER PELVIS Y ACCELERATION



NGA Research
03-05-1997 18.51

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 03-07-1997

COMPONENT: 1997 TOYOTA TERCEL 2 DOOR (MV5108)

Speed: 38 MPH 61.2 KPH

Minimum = -7.51 G'S at 198 msec

Maximum = 78.16 G'S at 34 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 — 897036F1.R69 Filterclass (FIR Filtered)

80

70

60

50

40

30

20

10

0

-10

G'S

TIME (SECONDS)

NGA Research
03-05-1997 18:51

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-97-DC24

DUMMY PERFORMANCE CALIBRATIONS

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

1997 TOYOTA TERCEL 4-DOOR
NHTSA NO. MV5108

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: March 7, 1997

Report Date: March 24, 1997

FINAL REPORT

Prepared For:

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
ROOM 5313, NPS-10
400 SEVENTH STREET, S.W.
Washington, D.C. 20590

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| DUMMY S/N: 270 | PRE-TEST CERTIFICATION DATA | 2-1 |
| DUMMY S/N: 271 | POST-TEST CERTIFICATION DATA | 3-1 |
| DUMMY S/N: 270 | POST-TEST CERTIFICATION DATA | 4-1 |
| DUMMY S/N: 271 | POST-TEST INSPECTION CHECKLIST | 5-1 |
| DUMMY S/N: 270 | POST-TEST INSPECTION CHECKLIST | 6-1 |
| | VEHICLE AND DUMMY TEMPERATURE | 7-1 |

PRE-TEST CERTIFICATION DATA

Front Dummy Serial Number: 271

Calibration Test Results Summary

Dummy Serial Number: 271

Pre-Test Calibration

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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 271

DATE OF VERIFICATION: March 3, 1997

| DESCRIPTION | SPECIFICATION | TEST RESULTS |
|--------------------------------|-----------------|--------------|
| SH - Seated Height | 35.0" - 35.8" | 35.6 |
| RH - Rib Height | 19.75" - 20.50" | 20.40 |
| HP - Hip Pivot Height | 3.9" ref. | 3.9 |
| RD - Rib From Back Line | 9.0" to 9.5" | 9.4 |
| KV - Knee Pivot From Back Line | 20.1" - 20.7" | 20.4 |
| SW - Knee Pivot to Floor | 19.3" - 19.9" | 19.5 |
| HW - Hip Width | 14.0" - 15.4" | 15.1 |

MEASUREMENTS BY: Jim Miller

APPROVED BY: David Habache

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 26, 1997

DUMMY NUMBER: 271

TEST NUMBER: D97532

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 18% |
| PROBE SPEED | 13.8 - 14.2 fps | 14.1 |
| UPPER RIB | 37 - 46 g's | 40 |
| LOWER RIB | 37 - 46 g's | 40 |
| LOWER SPINE | 15 - 22 g's | 21 |

TEST MEETS SPECIFICATIONS

TECHNICIAN

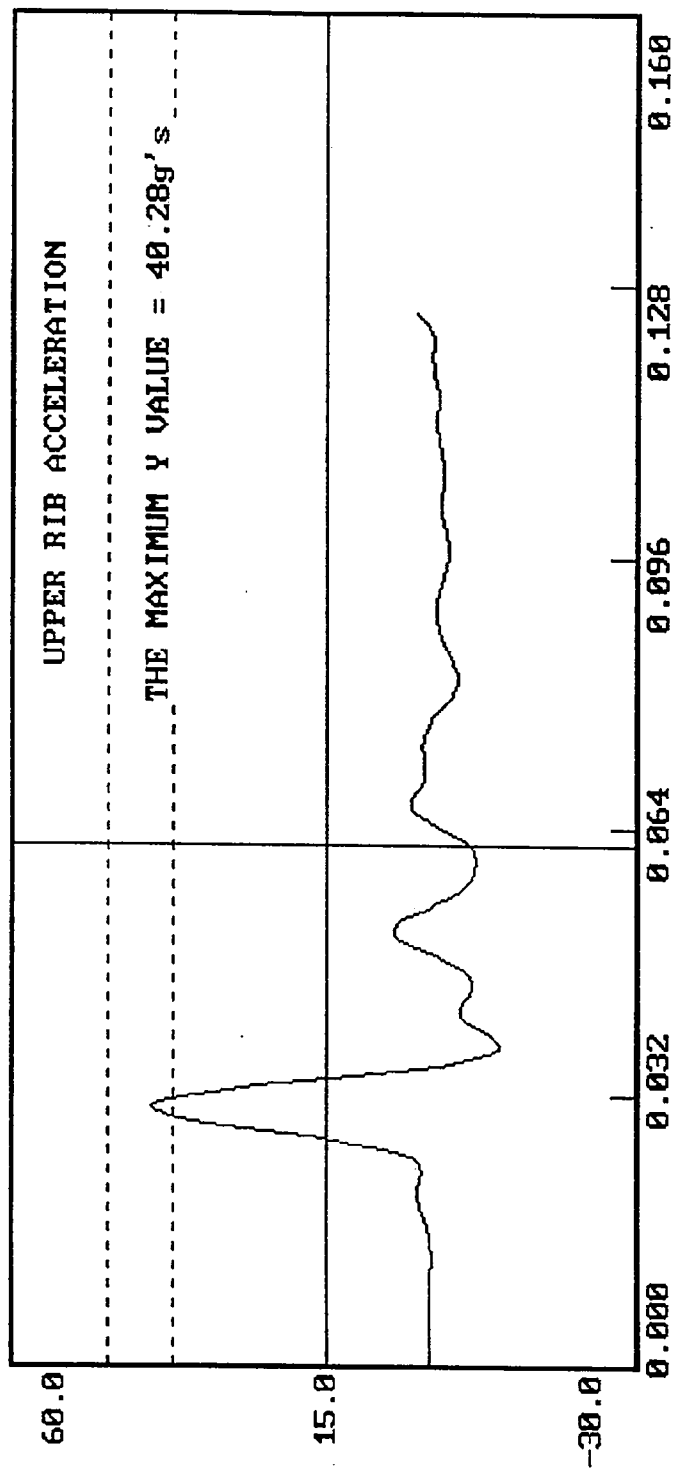
Jim Wilson

APPROVED BY

Dave Kishake

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 271
ACCELERATION (G'S) VS. TIME ((SECONDS))

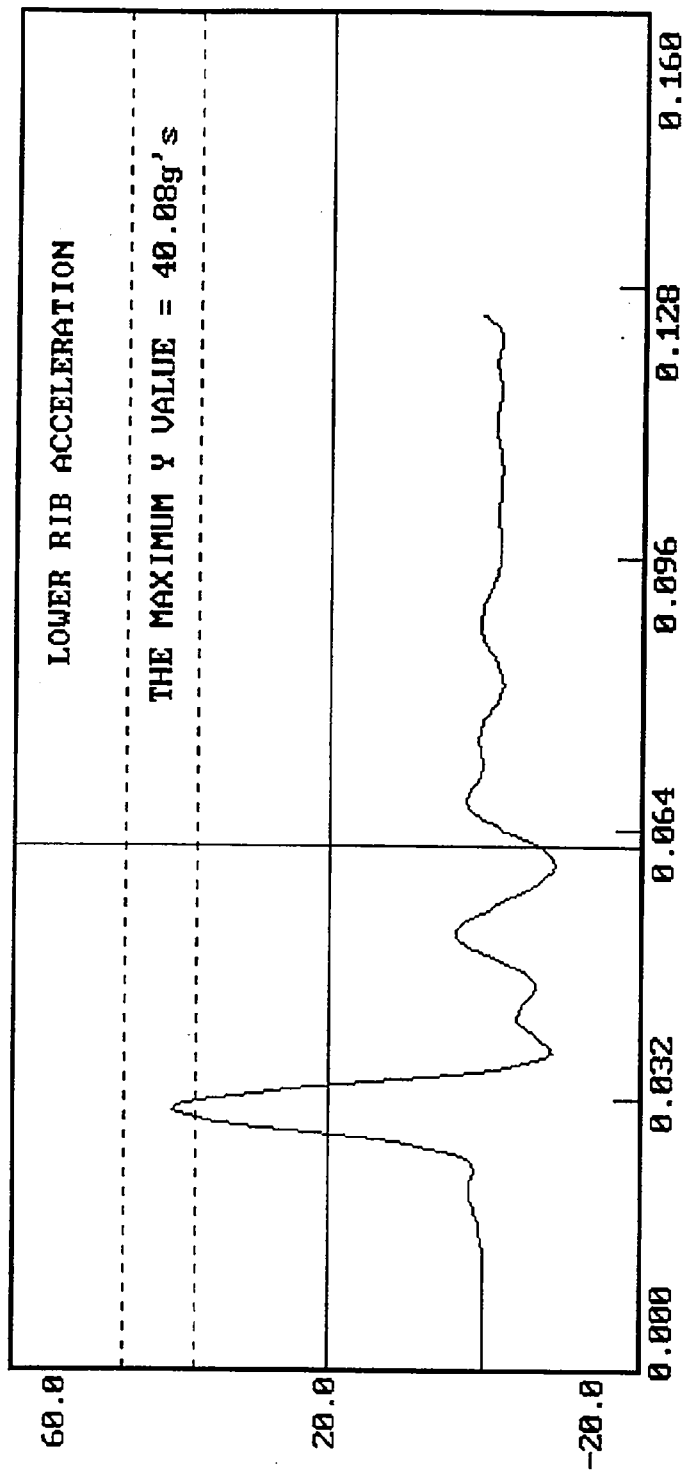
02-26-1997 09:34



IMPACT SPEED = 14.07 FT/SEC

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 271
ACCELERATION (G'S) VS. TIME ((SECONDS))

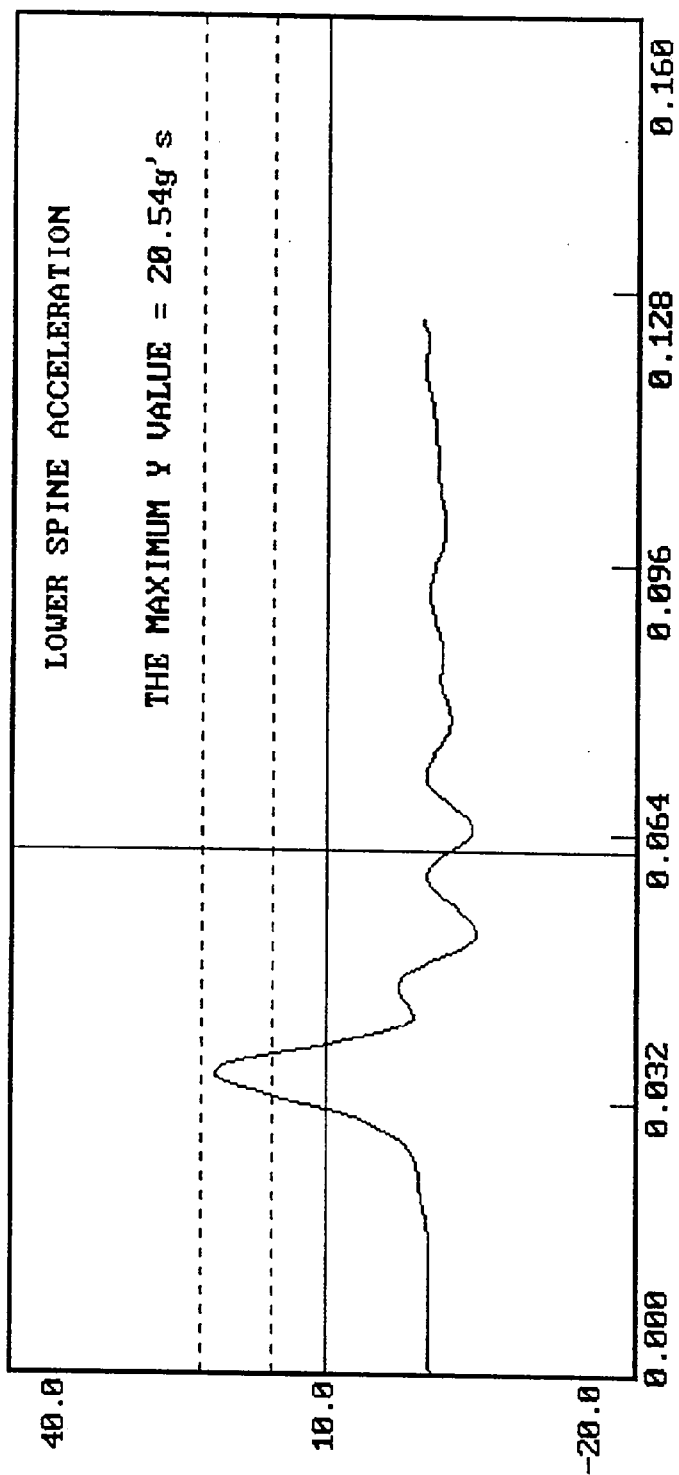
02-26-1997 09:34



IMPACT SPEED = 14.07 FT/SEC

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 271
ACCELERATION (G'S) VS. TIME ((SECONDS))

02-26-1997 09:34



IMPACT SPEED = 14.07 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 26, 1997

DUMMY NUMBER: 271

TEST NUMBER: D97533

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|---------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 18% |
| PROBE SPEED | 13.8 - 14.2 f/s | 14.1 |
| PELVIS ACCELERATION | 40 - 60 g's | 58 |

TEST MEETS SPECIFICATIONS

TECHNICIAN

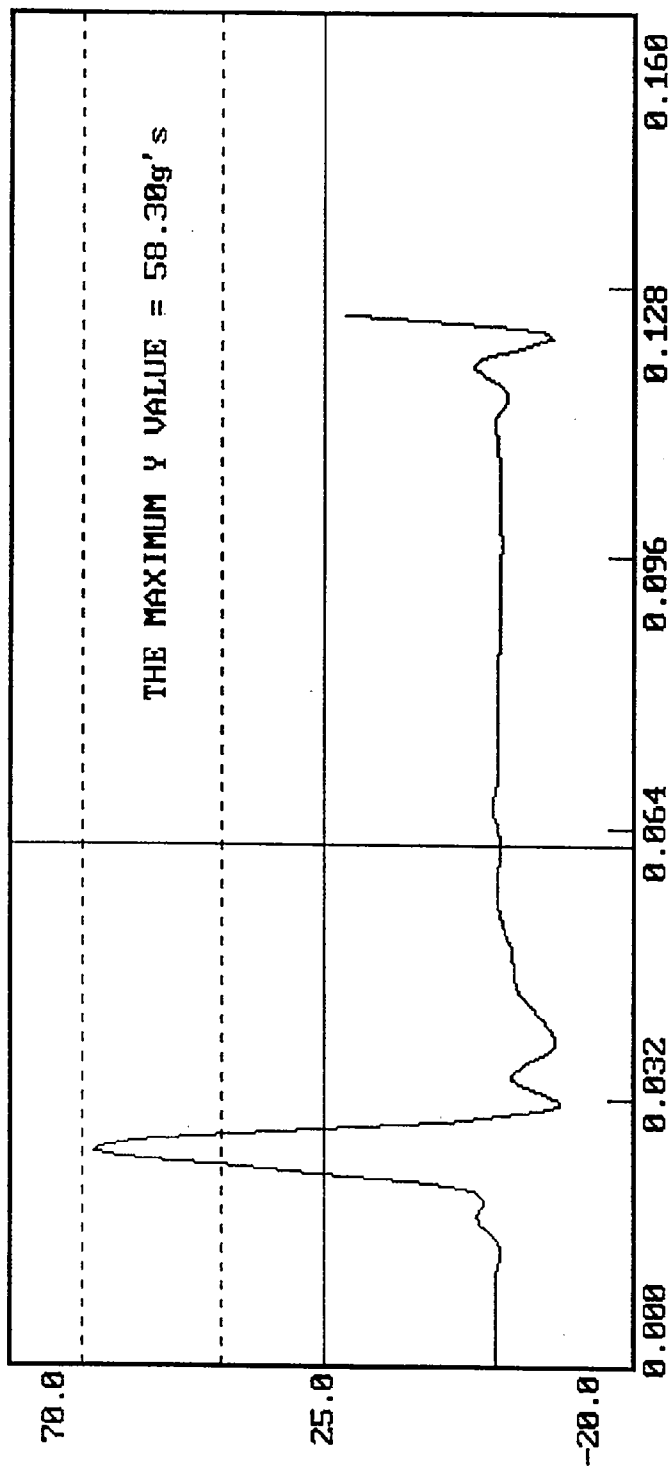
Jim White

APPROVED BY

Don Kabeaka

DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 271
ACCELERATION (G'S) VS. TIME ((SECONDS))

02-26-1997 10:14



IMPACT SPEED = 14.09 FT/SEC

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

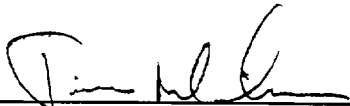
DATE: March 3, 1997

DUMMY NUMBER: 271

TEST NUMBER: D97534

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 20% |
| FORCE @ 0.5 in | 23.3 - 36.5 lbs | 32.3 |
| FORCE @ 0.75 in | 36.7 - 49.8 lbs | 43.8 |
| FORCE @ 1.0 in | 50 - 63 lbs | 57 |
| FORCE @ 1.3 in | 73 - 88 lbs | 75 |

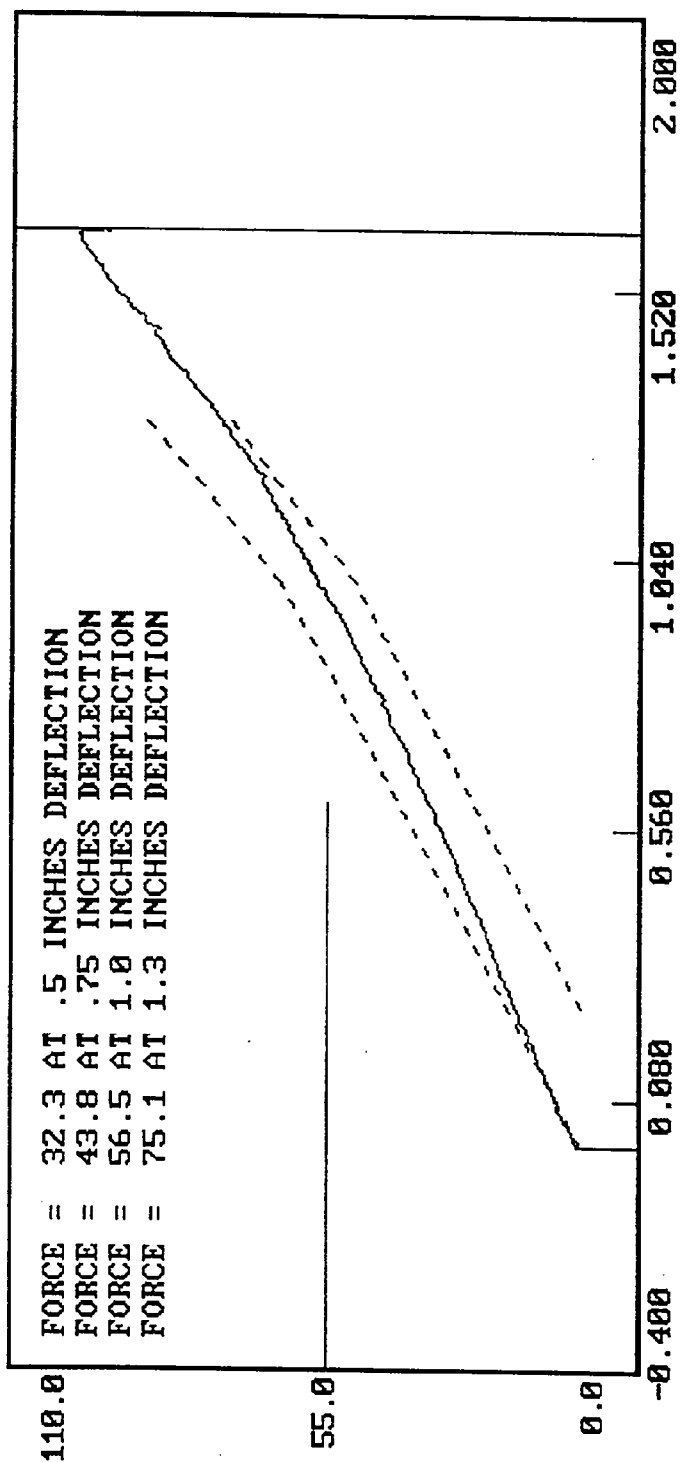
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 271
 03-03-1997 11:21

ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



IMPACT SPEED = 0.00 FT/SEC

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: February 28, 1997

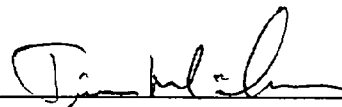
DUMMY NUMBER: 271

TEST NUMBER: D97535

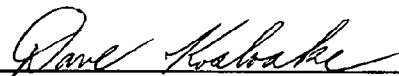
| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|---------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 20% |
| FORCE @ 0° | 0 - 6 lbs | 0 |
| FORCE @ 20° | 22 - 34 lbs | 25 |
| FORCE @ 30° | 34 - 46 lbs | 42 |
| FORCE @ 40° | 46 - 58 lbs | 52 |
| RETURN ANGLE | 12° maximum | 5° |

TEST MEETS SPECIFICATIONS

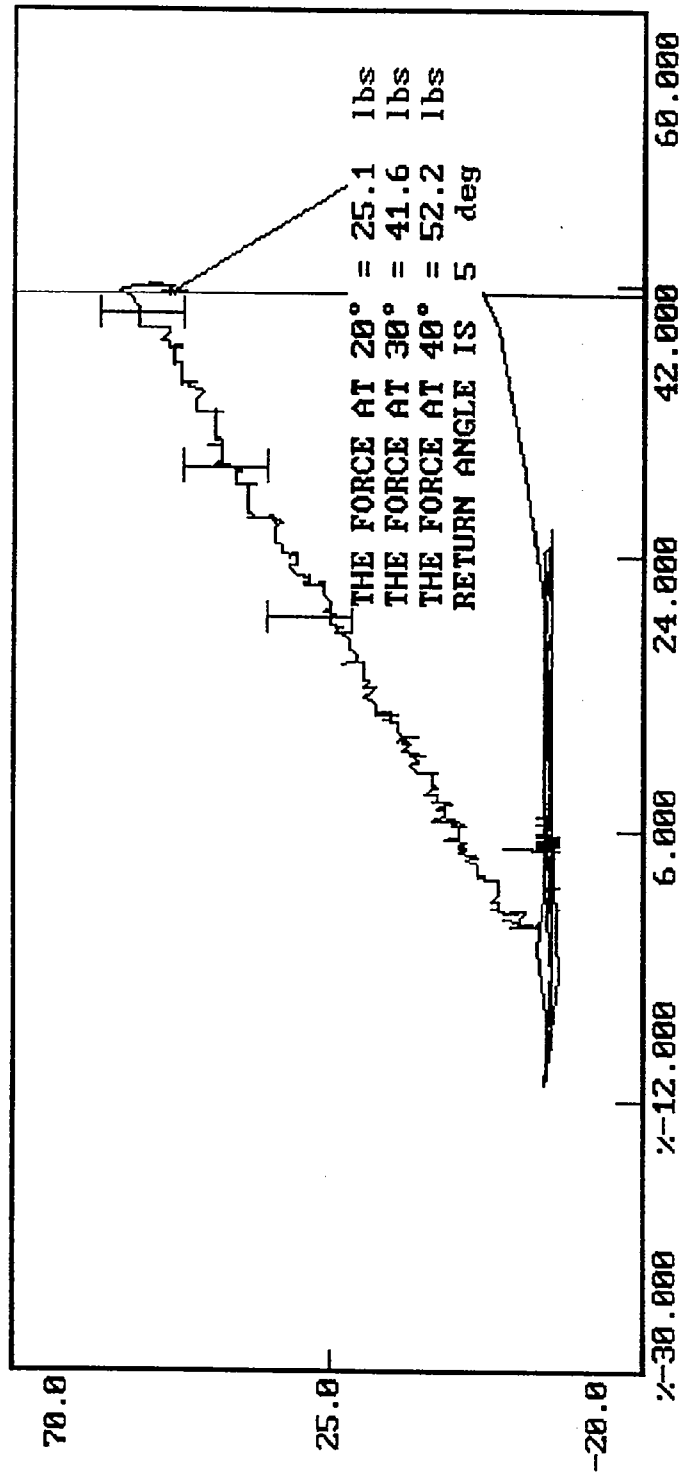
TECHNICIAN



APPROVED BY



DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 271
 02-28-1997 16:14
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



IMPACT SPEED = 0.00 FT/SEC

PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 270

Calibration Test Results Summary

Dummy Serial Number: 270

Pre-Test Calibration

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

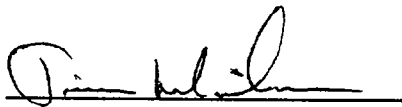
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

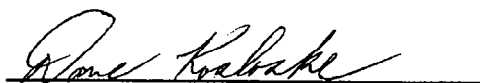
DATE OF VERIFICATION: March 6, 1997

| DESCRIPTION | SPECIFICATION | TEST RESULTS |
|--------------------------------|-----------------|--------------|
| SH - Seated Height | 35.0" - 35.8" | 35.2 |
| RH - Rib Height | 19.75" - 20.50" | 20.50 |
| HP - Hip Pivot Height | 3.9" ref. | 3.9 |
| RD - Rib From Back Line | 9.0" to 9.5" | 9.5 |
| KV - Knee Pivot From Back Line | 20.1" - 20.7" | 20.6 |
| SW - Knee Pivot to Floor | 19.3" - 19.9" | 19.5 |
| HW - Hip Width | 14.0" - 15.4" | 15.0 |

MEASUREMENTS BY:



APPROVED BY:



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

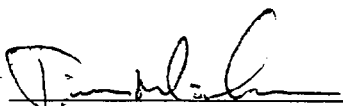
DATE: March 6, 1997

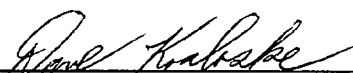
DUMMY NUMBER: 270

TEST NUMBER: D97582

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 15% |
| PROBE SPEED | 13.8 - 14.2 fps | 14.0 |
| UPPER RIB | 37 - 46 g's | 44 |
| LOWER RIB | 37 - 46 g's | 41 |
| LOWER SPINE | 15 - 22 g's | 22 |

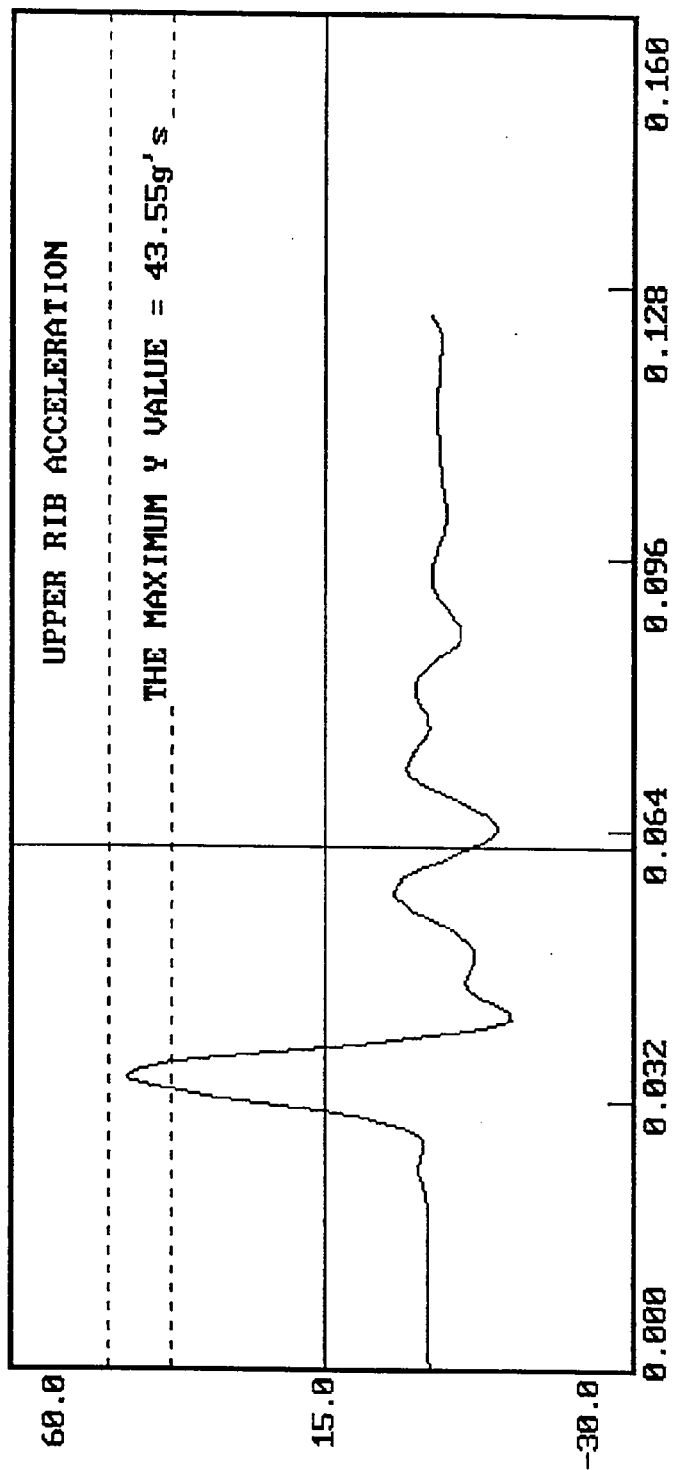
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

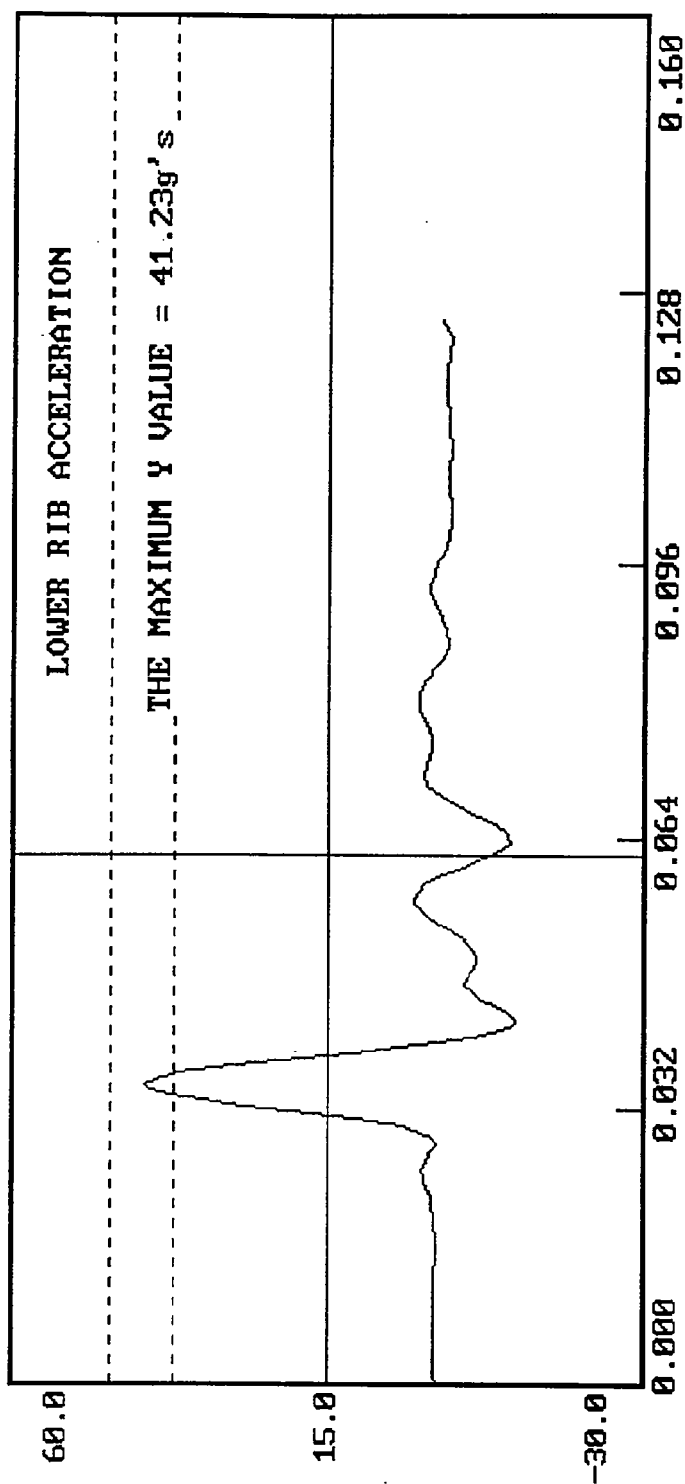
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))

03-06-1997 18:03



IMPACT SPEED = 14.02 FT/SEC

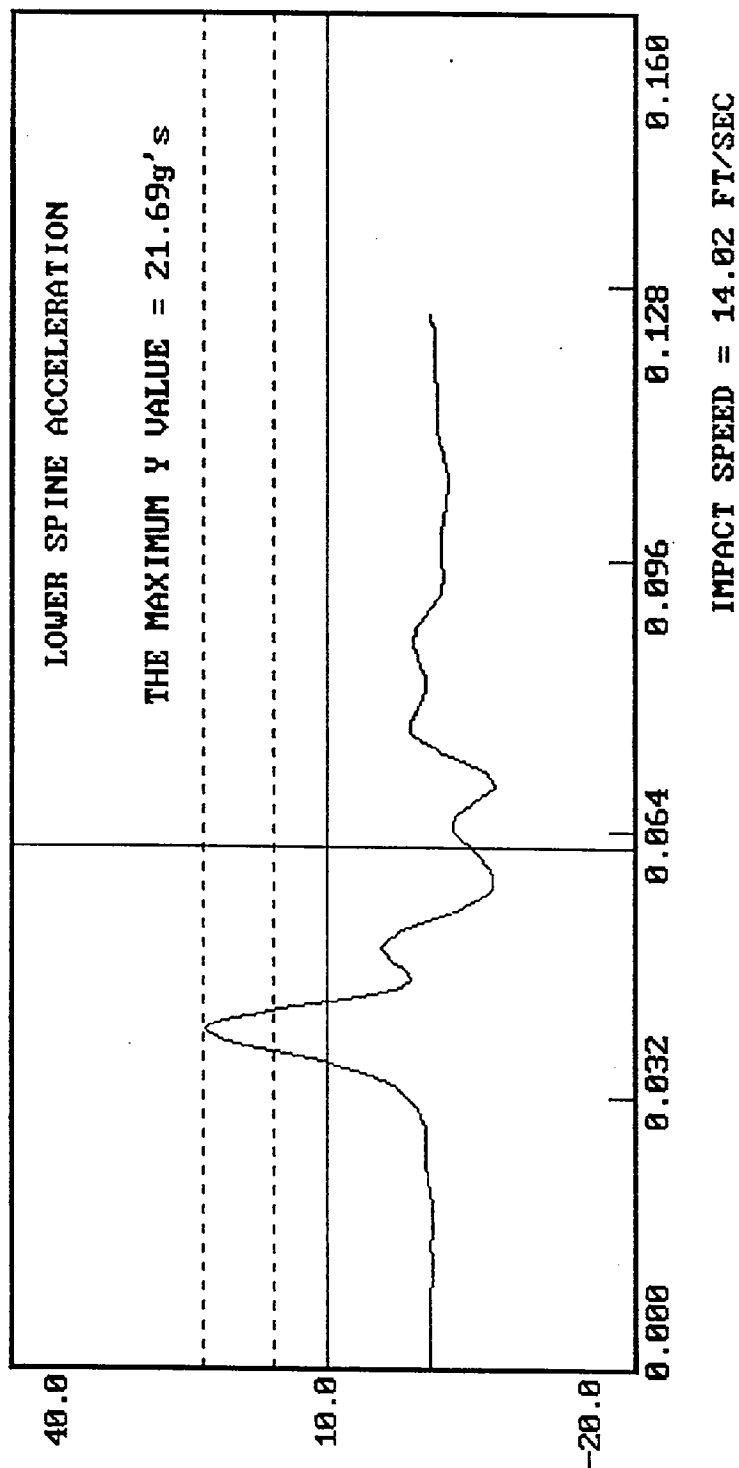
DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 270
 03-06-1997 18:04
 ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.02 FT/SEC

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

03-06-1997 18:04



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: March 6, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97583

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|---------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 15% |
| PROBE SPEED | 13.8 - 14.2 f/s | 14.0 |
| PELVIS ACCELERATION | 40 - 60 g's | 42 |

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim H. H.

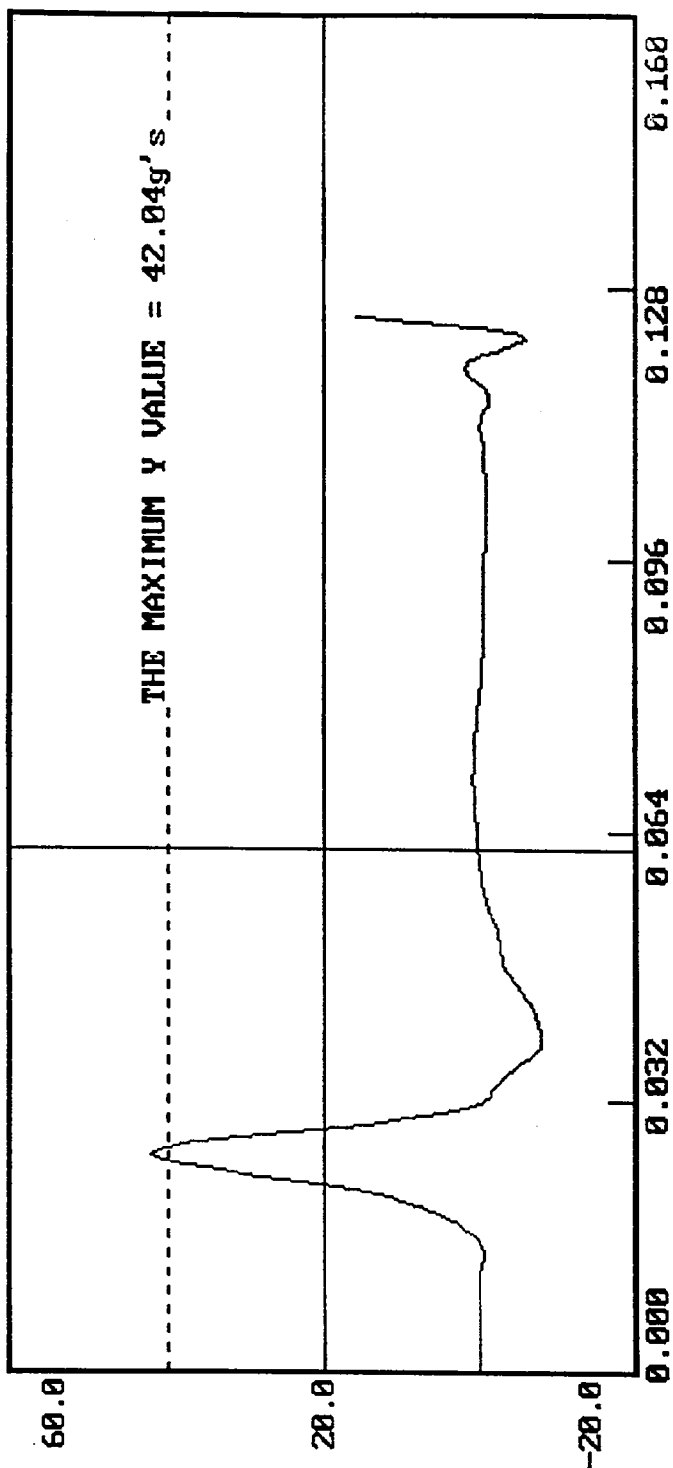
APPROVED BY Paul K. K.

03-06-1997 17:56

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 270

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



IMPACT SPEED = 13.98 FT/SEC

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

DATE: March 3, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97584

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 20% |
| FORCE @ 0.5 in | 23.3 - 36.5 lbs | 30.3 |
| FORCE @ 0.75 in | 36.7 - 49.8 lbs | 41.7 |
| FORCE @ 1.0 in | 50 - 63 lbs | 55 |
| FORCE @ 1.3 in | 73 - 88 lbs | 75 |

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim White

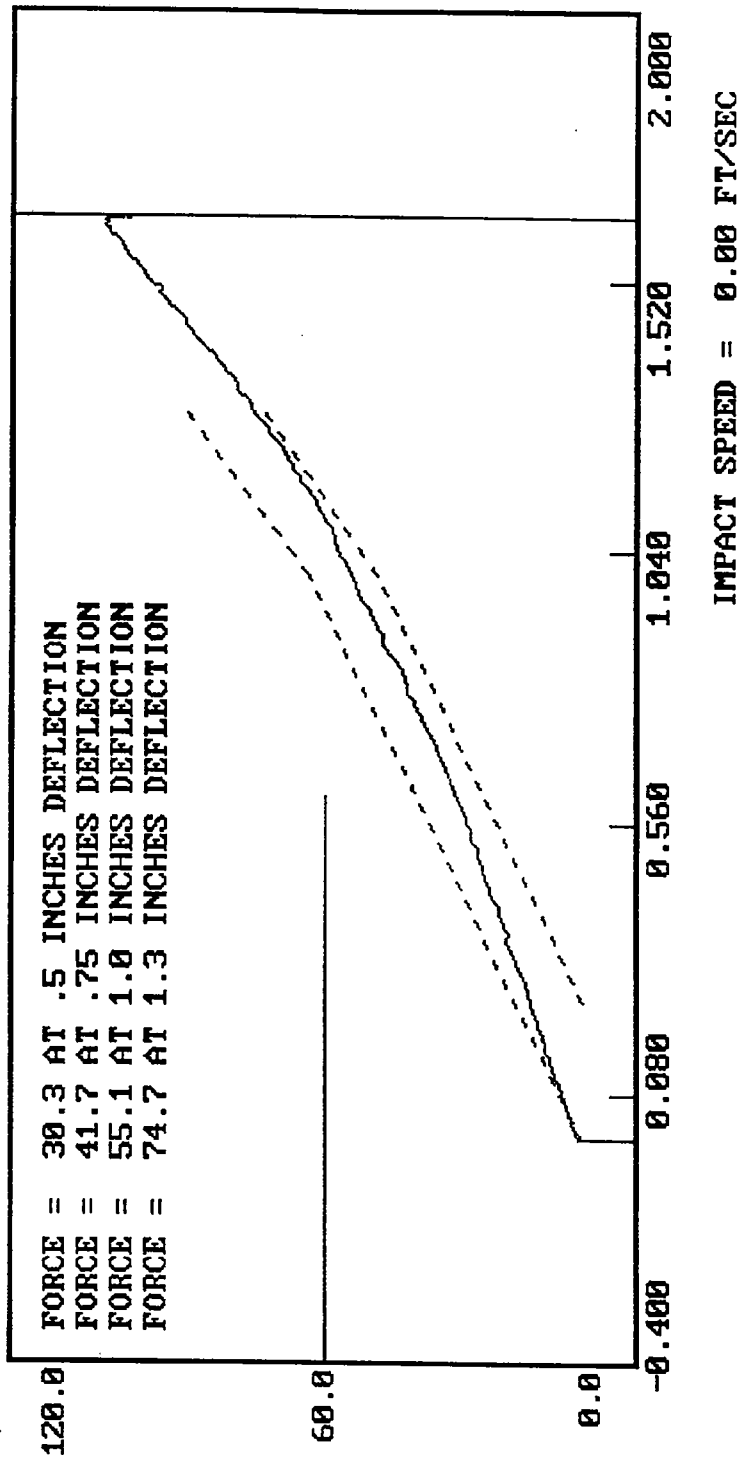
APPROVED BY Don Kobake

03-03-1997 11:25

DUMMY CALIBRATION - ABDOMEN COMPRESSION

DUMMY # 270

ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: February 28, 1997

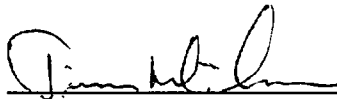
DUMMY NUMBER: 270

TEST NUMBER: D97585

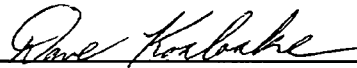
| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|---------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 20% |
| FORCE @ 0° | 0 - 6 lbs | 0 |
| FORCE @ 20° | 22 - 34 lbs | 24 |
| FORCE @ 30° | 34 - 46 lbs | 37 |
| FORCE @ 40° | 46 - 58 lbs | 52 |
| RETURN ANGLE | 12° maximum | 1° |

TEST MEETS SPECIFICATIONS

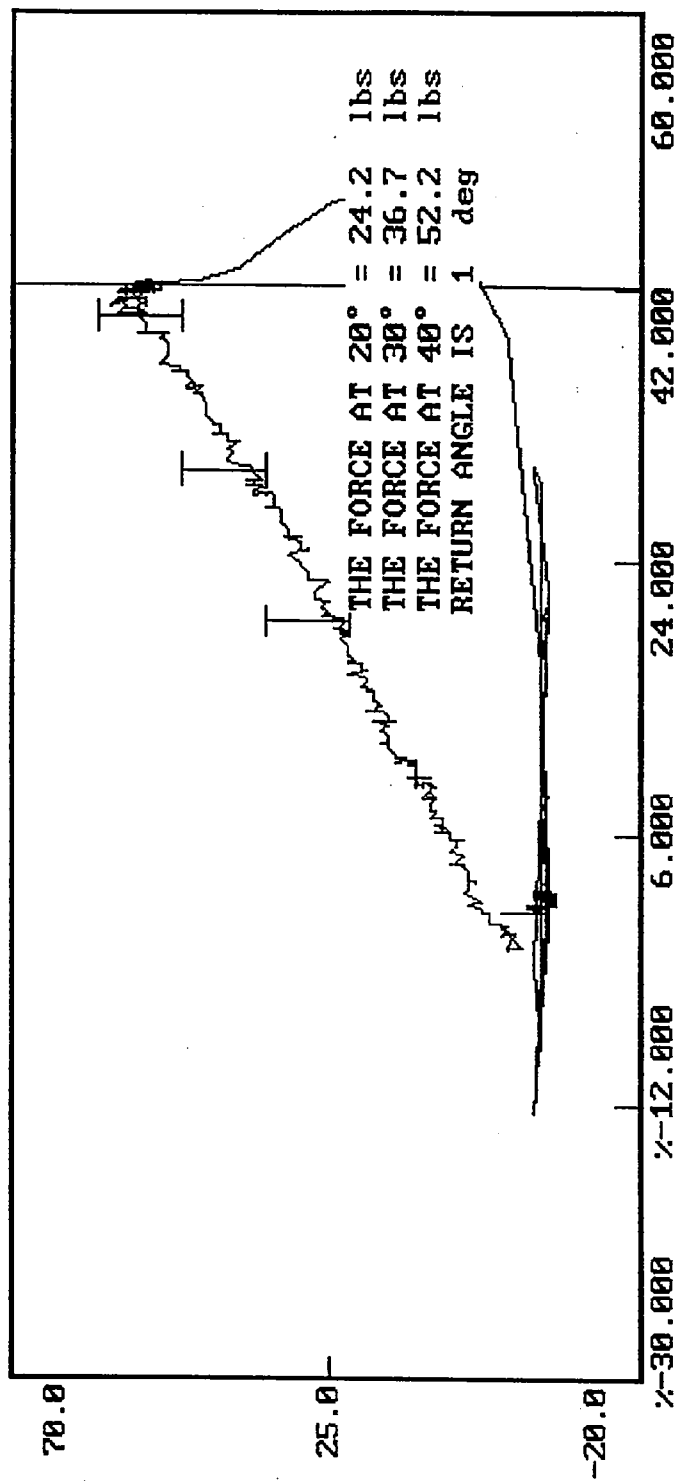
TECHNICIAN



APPROVED BY



DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 270
 02-28-1997 15:48
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



IMPACT SPEED = 0.00 FT/SEC

POST-TEST CERTIFICATION DATA

Front Dummy Serial Number: 271

Calibration Test Results Summary

Dummy Serial Number: 271

Post-Test Calibration

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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 271

DATE OF VERIFICATION: March 14, 1997

| DESCRIPTION | SPECIFICATION | TEST RESULTS |
|--------------------------------|-----------------|--------------|
| SH - Seated Height | 35.0" - 35.8" | 35.6 |
| RH - Rib Height | 19.75" - 20.50" | 20.40 |
| HP - Hip Pivot Height | 3.9" ref. | 3.9 |
| RD - Rib From Back Line | 9.0" to 9.5" | 9.4 |
| KV - Knee Pivot From Back Line | 20.1" - 20.7" | 20.4 |
| SW - Knee Pivot to Floor | 19.3" - 19.9" | 19.5 |
| HW - Hip Width | 14.0" - 15.4" | 15.1 |

MEASUREMENTS BY: Jim McLean

APPROVED BY: Steve Kralovich

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: March 14, 1997

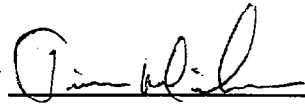
DUMMY NUMBER: 271

TEST NUMBER: D97612

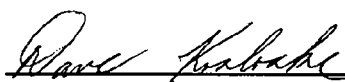
| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 18% |
| PROBE SPEED | 13.8 - 14.2 fps | 14.1 |
| UPPER RIB | 37 - 46 g's | 44 |
| LOWER RIB | 37 - 46 g's | 44 |
| LOWER SPINE | 15 - 22 g's | 21 |

TEST MEETS SPECIFICATIONS

TECHNICIAN

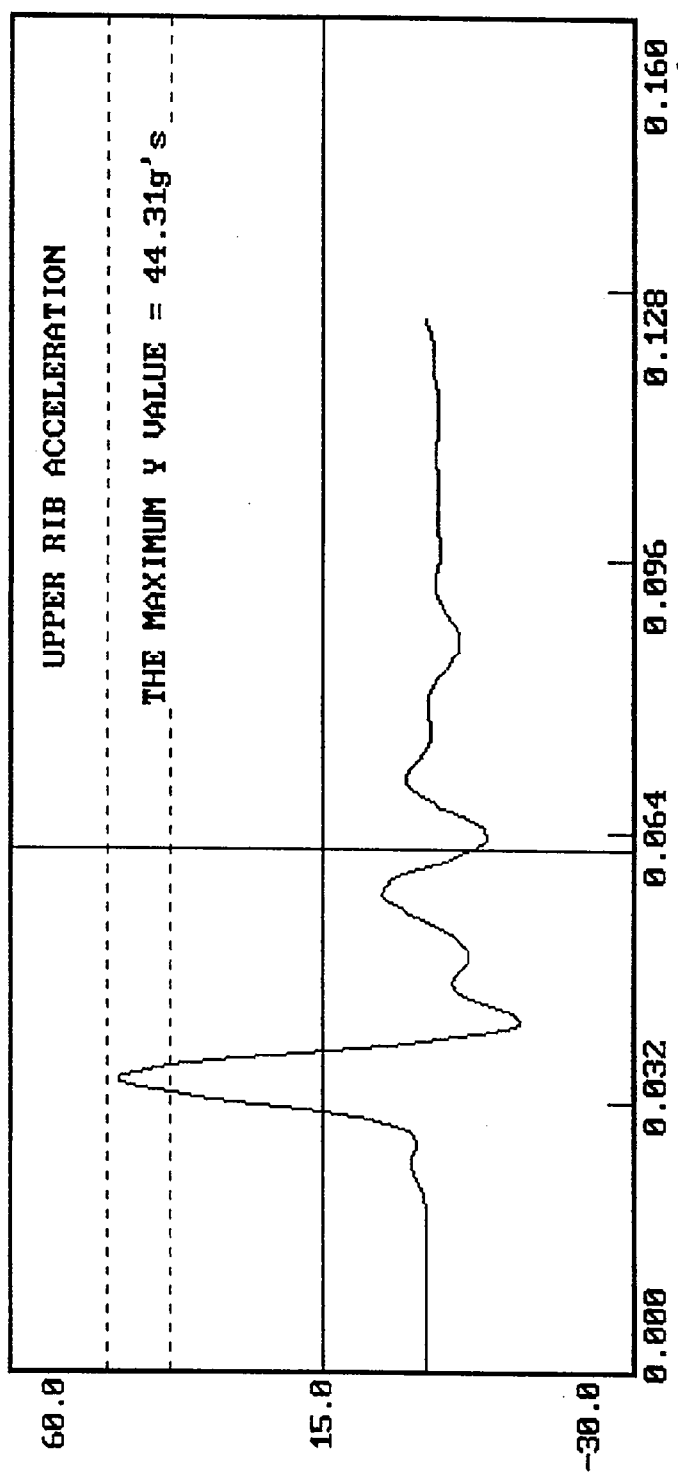


APPROVED BY



03-14-1997 11:05

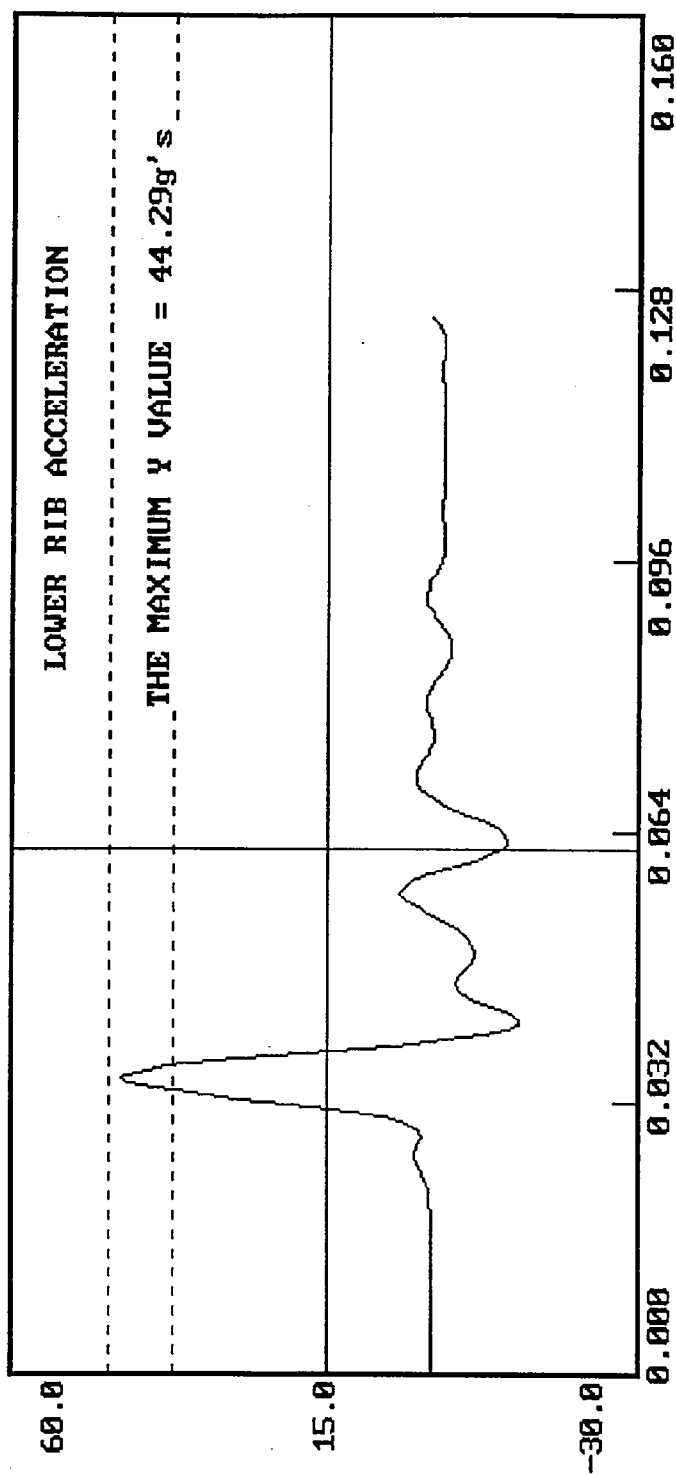
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 271
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.08 FT/SEC

03-14-1997 11:05

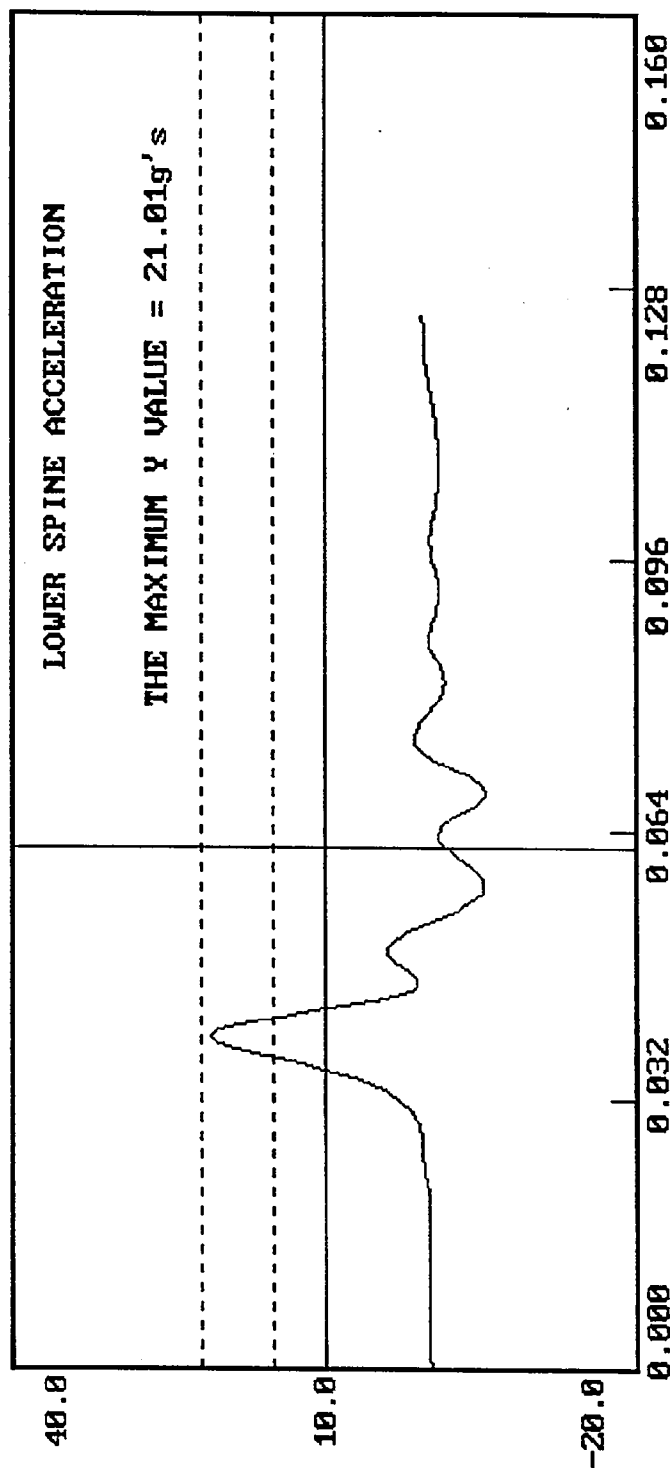
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 271
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.08 FT/SEC

03-14-1997 11:05

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 271
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.00 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: March 14, 1997

DUMMY NUMBER: 271

TEST NUMBER: D97613

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|---------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 18% |
| PROBE SPEED | 13.8 - 14.2 f/s | 14.1 |
| PELVIS ACCELERATION | 40 - 60 g's | 49 |

TEST MEETS SPECIFICATIONS

TECHNICIAN

Jim Walsh

APPROVED BY

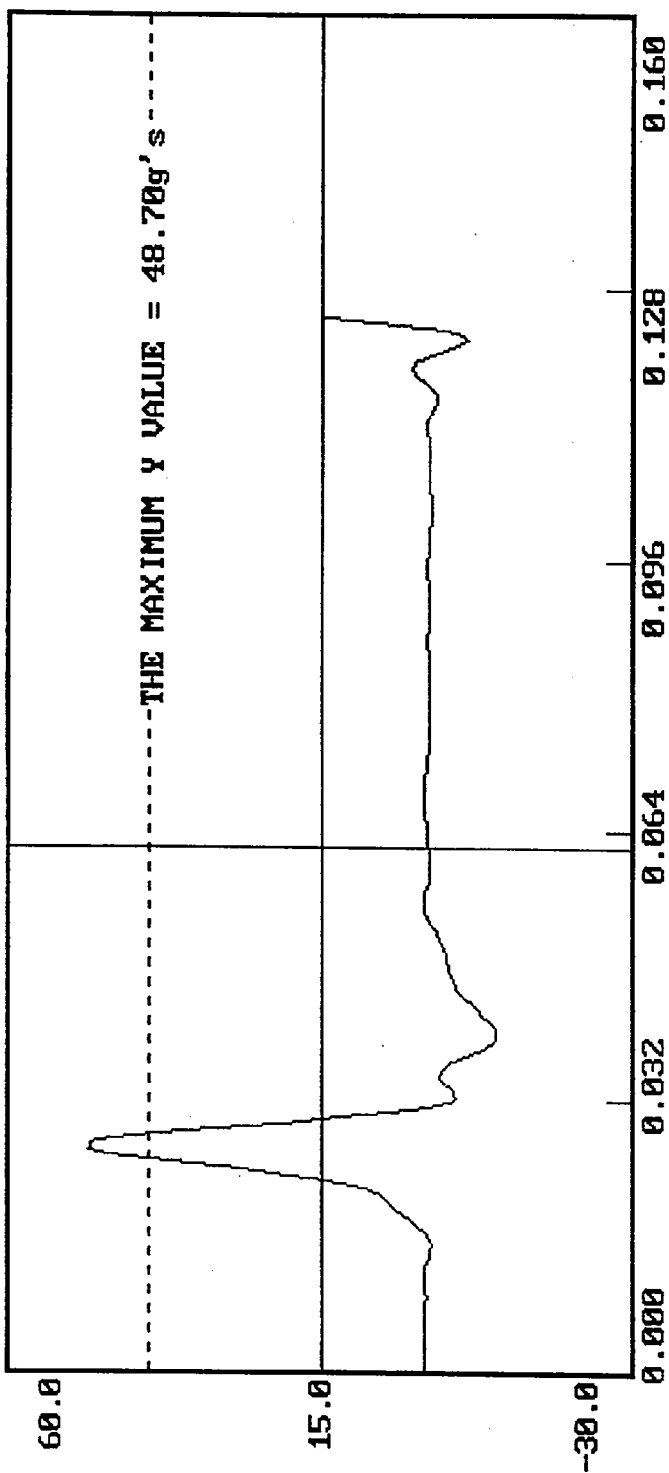
Gene Kurbashe

03-14-1997 11:11

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 271

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



IMPACT SPEED = 14.06 FT/SEC

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: March 10, 1997

DUMMY NUMBER: 271

TEST NUMBER: D97614

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 15% |
| FORCE @ 0.5 in | 23.3 - 36.5 lbs | 31.0 |
| FORCE @ 0.75 in | 36.7 - 49.8 lbs | 42.7 |
| FORCE @ 1.0 in | 50 - 63 lbs | 56 |
| FORCE @ 1.3 in | 73 - 88 lbs | 75 |

TEST MEETS SPECIFICATIONS

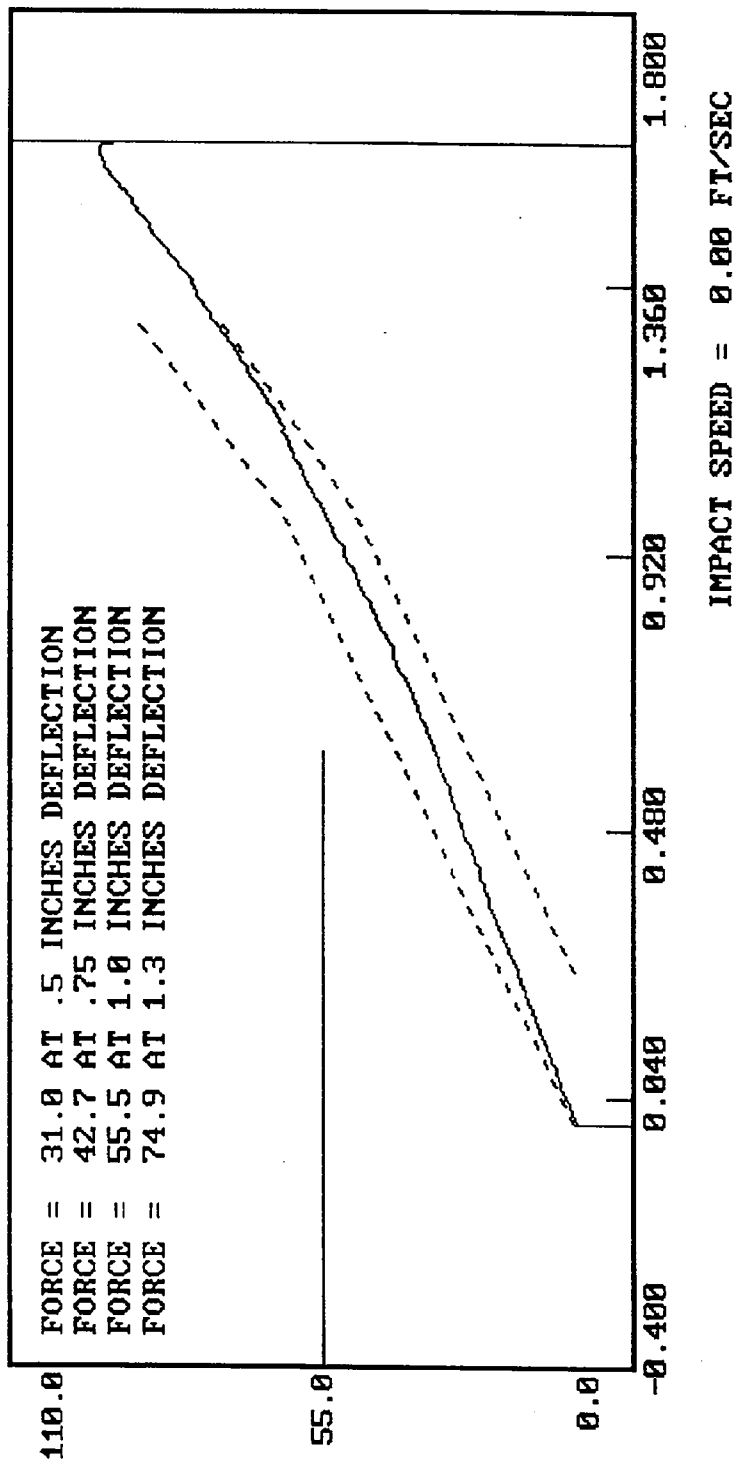
TECHNICIAN

Tim White

APPROVED BY

Gene Kosloske

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 271
 03-10-1997 10:30
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: March 10, 1997

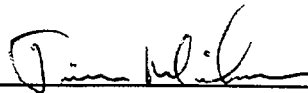
DUMMY NUMBER: 271

TEST NUMBER: D97615

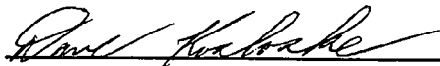
| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|---------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 15% |
| FORCE @ 0° | 0 - 6 lbs | 0 |
| FORCE @ 20° | 22 - 34 lbs | 24 |
| FORCE @ 30° | 34 - 46 lbs | 39 |
| FORCE @ 40° | 46 - 58 lbs | 53 |
| RETURN ANGLE | 12° maximum | 7° |

TEST MEETS SPECIFICATIONS

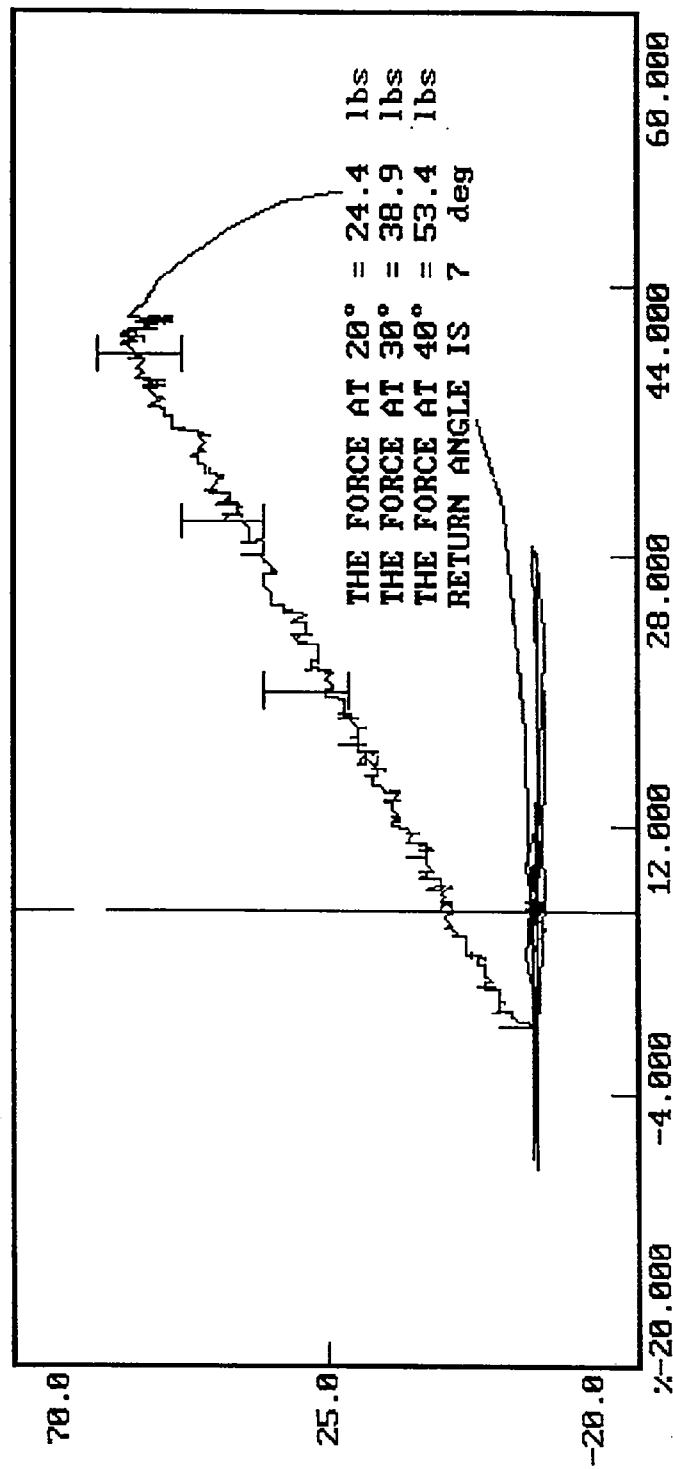
TECHNICIAN



APPROVED BY



DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 271
 03-10-1997 10:04
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



IMPACT SPEED = 0.00 FT/SEC

POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 270

Calibration Test Results Summary

Dummy Serial Number: 270

Post-Test Calibration

| | |
|-----------------------------|---|
| External Dimensions: | The dummy passed all external dimension requirements. |
| Thorax Impact Test: | The thorax did not pass all impact test requirements. |
| Pelvic Impact Test: | The pelvis passed all impact test requirements. |
| Abdominal Compression Test: | The abdomen passed all compression test requirements. |
| Lumbar Flexion Test: | The lumbar passed all flexion test requirements. |

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

DATE OF VERIFICATION: March 10, 1997

| DESCRIPTION | SPECIFICATION | TEST RESULTS |
|--------------------------------|-----------------|--------------|
| SH - Seated Height | 35.0" - 35.8" | 35.2 |
| RH - Rib Height | 19.75" - 20.50" | 20.50 |
| HP - Hip Pivot Height | 3.9" ref. | 3.9 |
| RD - Rib From Back Line | 9.0" to 9.5" | 9.5 |
| KV - Knee Pivot From Back Line | 20.1" - 20.7" | 20.6 |
| SW - Knee Pivot to Floor | 19.3" - 19.9" | 19.5 |
| HW - Hip Width | 14.0" - 15.4" | 15.0 |

MEASUREMENTS BY: Jim Wilson

APPROVED BY: Rene Kishake

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: March 10, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97602

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 20% |
| PROBE SPEED | 13.8 - 14.2 fps | 14.1 |
| UPPER RIB | 37 - 46 g's | 47* |
| LOWER RIB | 37 - 46 g's | 46 |
| LOWER SPINE | 15 - 22 g's | 24* |

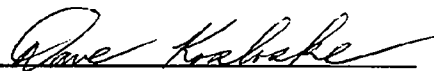
TEST MEETS SPECIFICATIONS

* Failed. Does not meet specifications.

TECHNICIAN

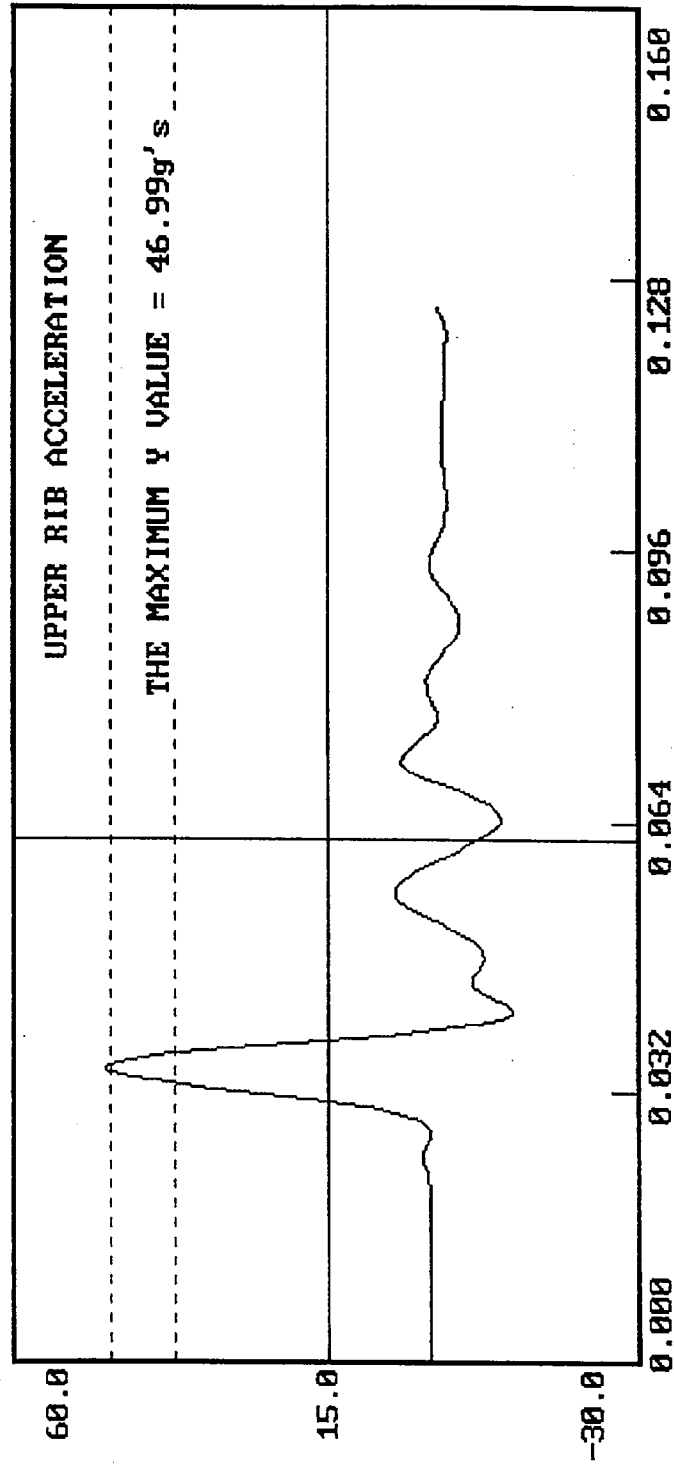


APPROVED BY



03-10-1997 11:51

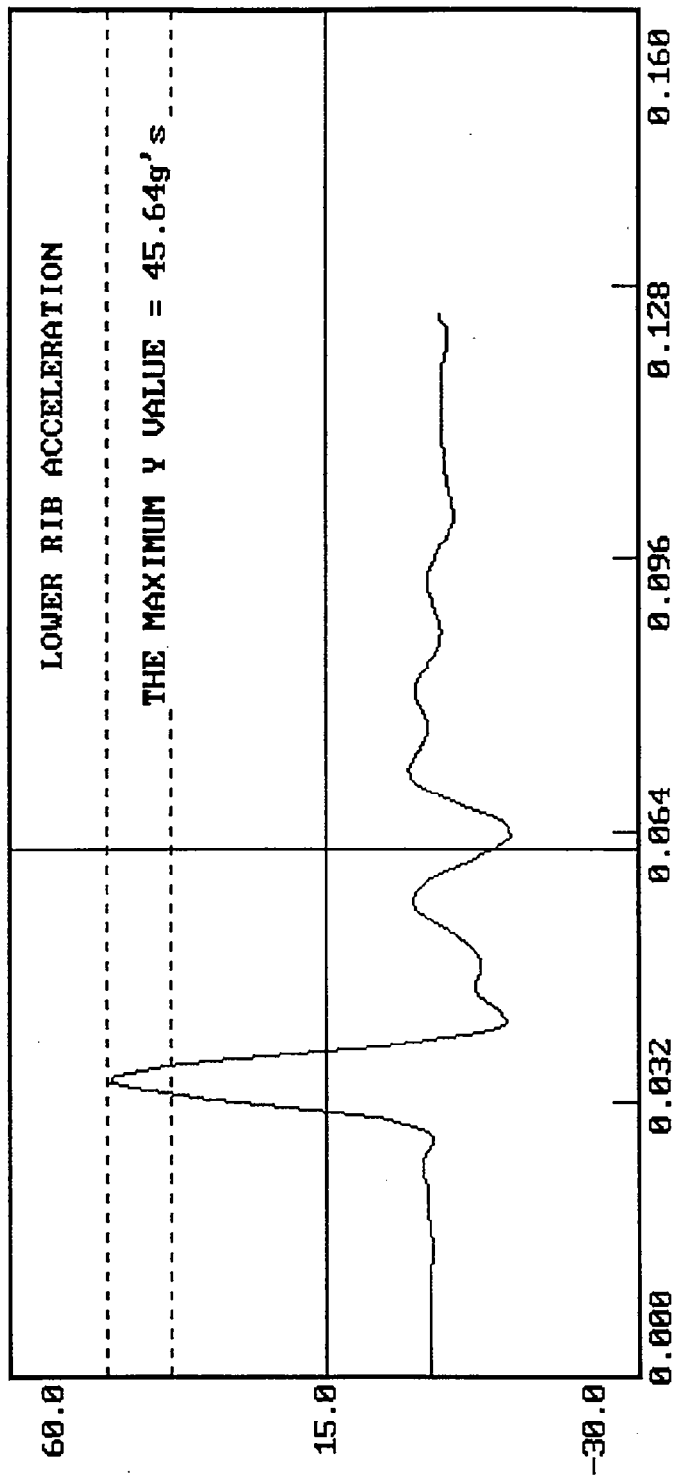
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.06 FT/SEC

03-10-1997 11:51

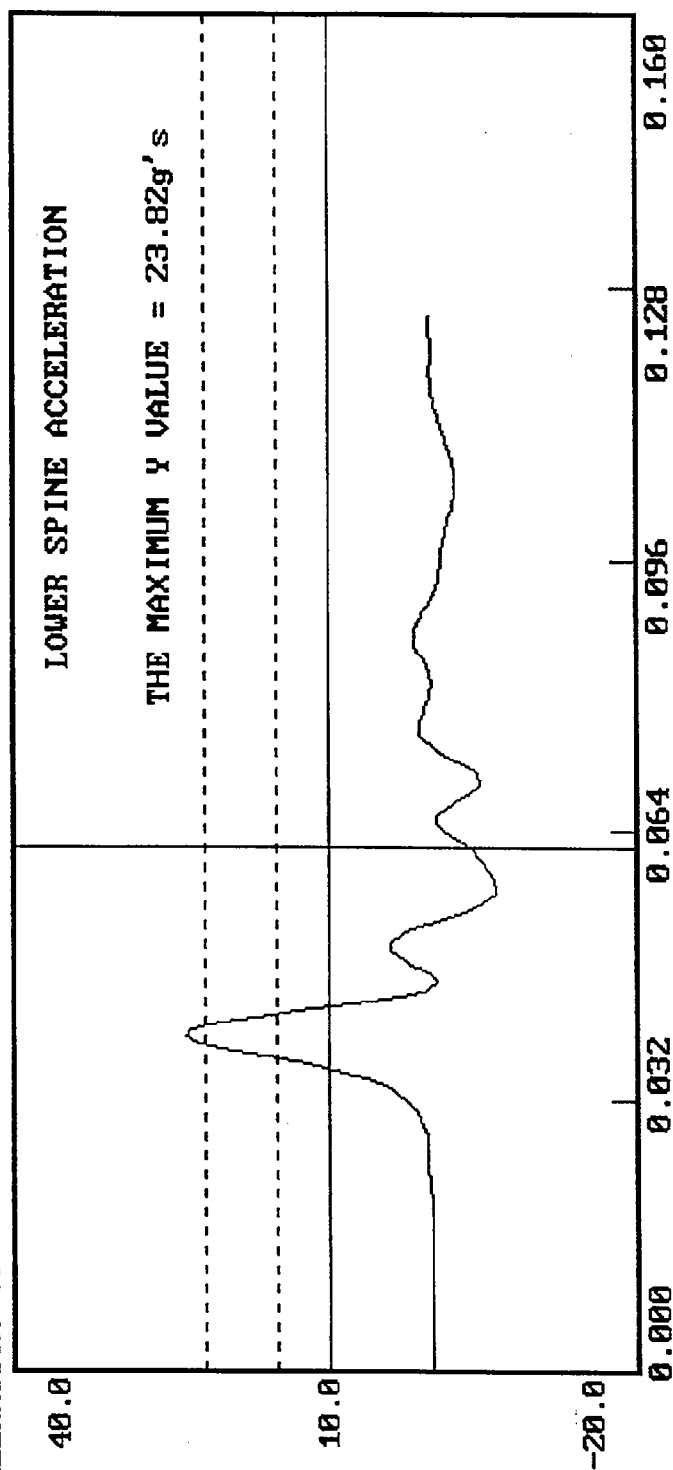
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.06 FT/SEC

03-10-1997 11:51

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



IMPACT SPEED = 14.06 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: March 10, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97603

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|---------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 22% |
| PROBE SPEED | 13.8 - 14.2 f/s | 14.1 |
| PELVIS ACCELERATION | 40 - 60 g's | 46 |

TEST MEETS SPECIFICATIONS

TECHNICIAN

Jim Welch

APPROVED BY

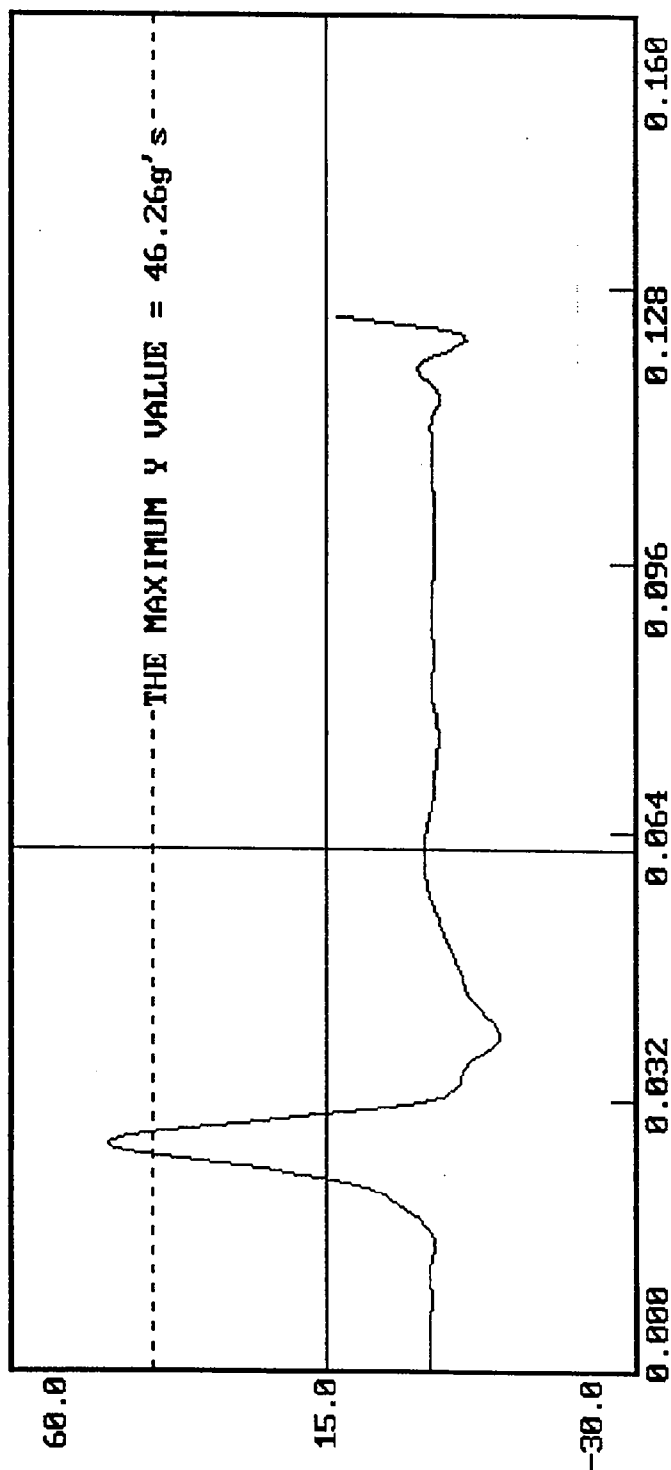
Dave Korbake

03-10-1997 12:34

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 270

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



IMPACT SPEED = 14.06 FT/SEC

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: March 10, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97604

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|-----------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 15% |
| FORCE @ 0.5 in | 23.3 - 36.5 lbs | 31.6 |
| FORCE @ 0.75 in | 36.7 - 49.8 lbs | 43.8 |
| FORCE @ 1.0 in | 50 - 63 lbs | 58 |
| FORCE @ 1.3 in | 73 - 88 lbs | 79 |

TEST MEETS SPECIFICATIONS

TECHNICIAN

Tim White

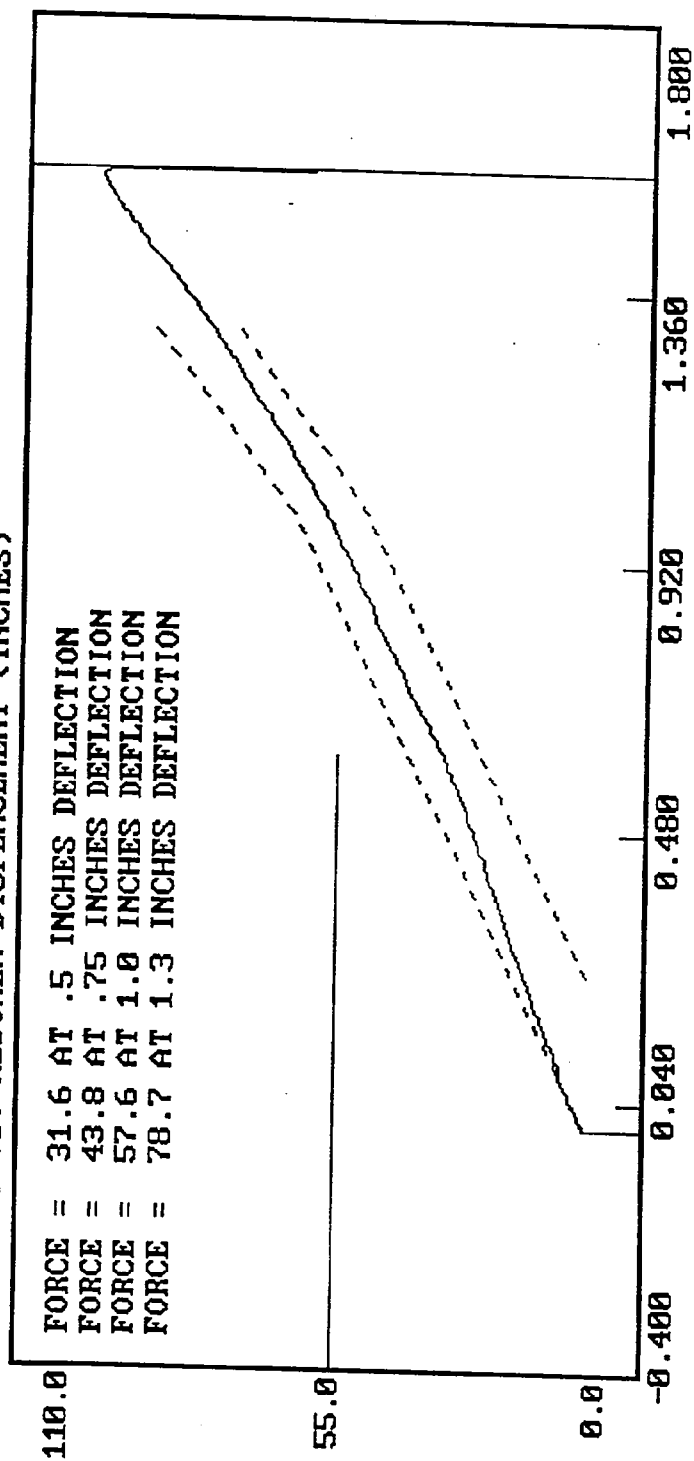
APPROVED BY

Rene Korbake

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 270

03-10-1997 10:18

ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: March 10, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97605

| TEST PARAMETER | SPECIFICATION | TEST RESULTS |
|-------------------|---------------|--------------|
| TEMPERATURE | 66 - 78° F | 70° |
| RELATIVE HUMIDITY | 10 - 70% | 15% |
| FORCE @ 0° | 0 - 6 lbs | 0 |
| FORCE @ 20° | 22 - 34 lbs | 24 |
| FORCE @ 30° | 34 - 46 lbs | 38 |
| FORCE @ 40° | 46 - 58 lbs | 49 |
| RETURN ANGLE | 12° maximum | 2° |

TEST MEETS SPECIFICATIONS

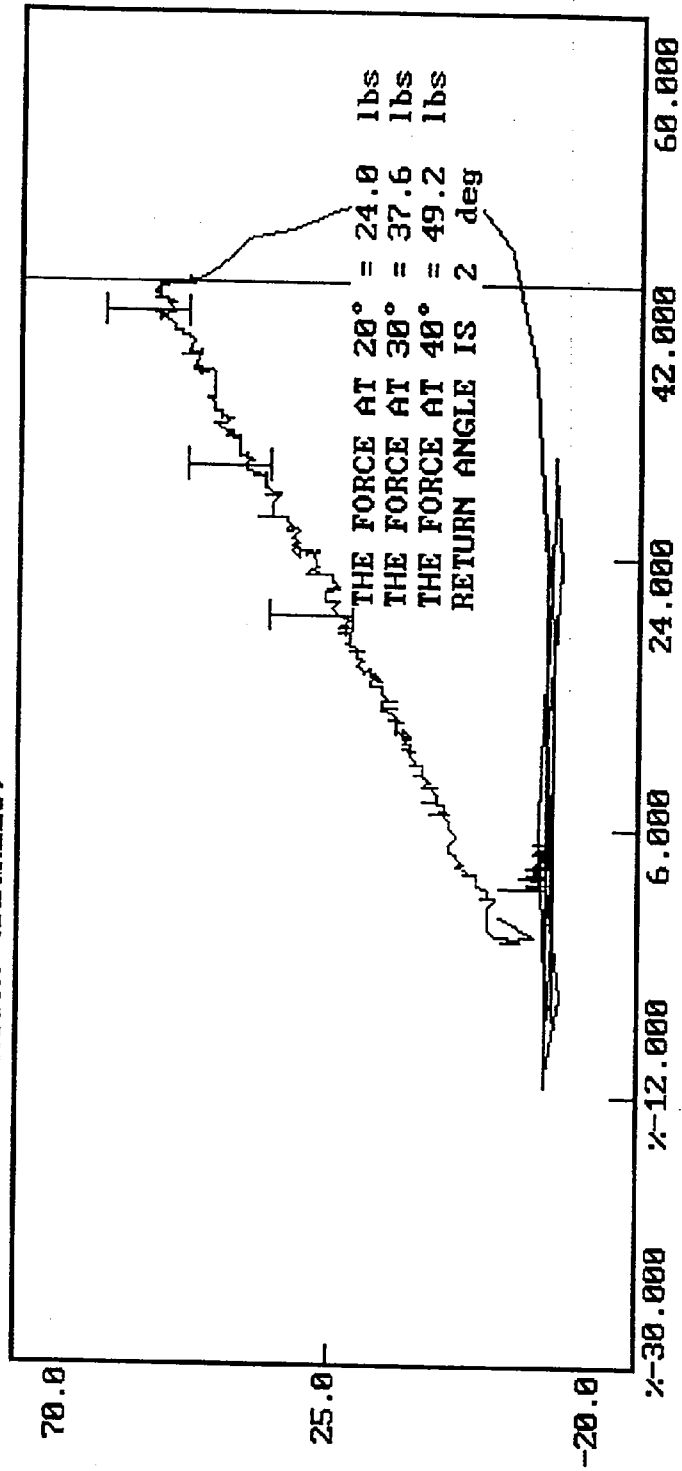
TECHNICIAN

Jim M. L.

APPROVED BY

Paul K. K.

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 270
 03-10-1997 09:44
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



IMPACT SPEED = 0.00 FT/SEC

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 271

Inspected By: Tim Michnay

Date: March 10, 1997

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

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

Failed Thorax Impact. Replaced arm foam and passed.

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 270

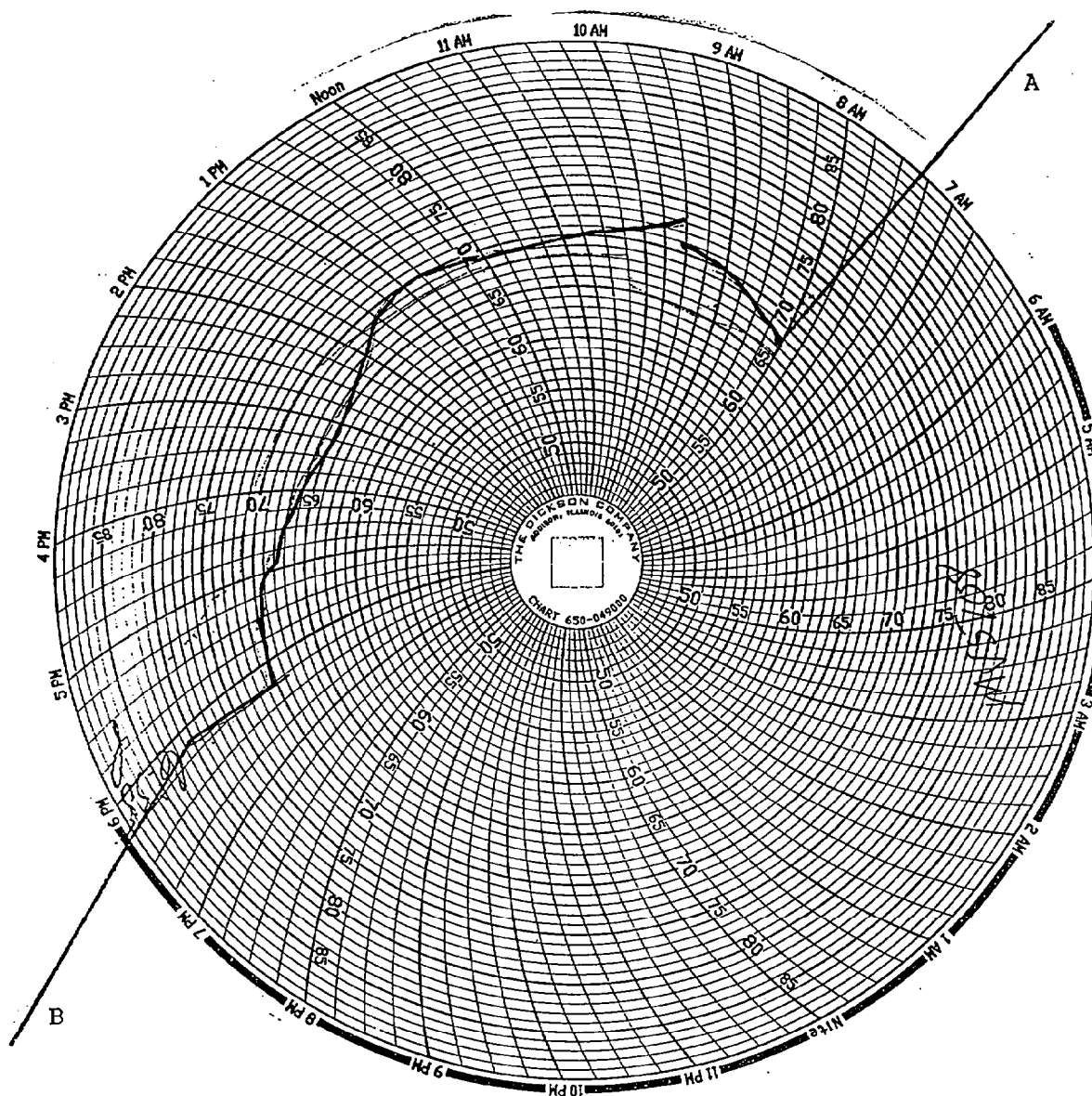
Inspected By: Tim Michnay

Date: March 10, 1997

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

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

VEHICLE AND DUMMY TEMPERATURE



A = dummies installed in vehicle
B = test conducted

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA
INSTRUMENTS FOR DRIVER DUMMY NO. 271

| | DRIVER | | |
|-------------------------|------------|--------------|------------------|
| | SERIAL NO. | MANUFACTURER | CALIBRATION DATE |
| Upper Rib Y | AP2A4 | Endevco | 2/26/97 |
| Lower Rib Y | AP1B3 | Endevco | 2/26/97 |
| Lower Spine Y | ANAP1 | Endevco | 2/26/97 |
| Pelvis Y | AHTC3 | Endevco | 2/26/97 |
| Upper Rib Redundant Y | AP2D8 | Endevco | 2/26/97 |
| Lower Rib Redundant Y | AP1C6 | Endevco | 2/26/97 |
| Lower Spine Redundant Y | ANAT6 | Endevco | 2/26/97 |
| Pelvis Redundant Y | AGP53 | Endevco | 2/26/97 |

INSTRUMENTS FOR PASSENGER DUMMY NO. 270

| | LEFT REAR PASSENGER | | |
|-------------------------|---------------------|--------------|------------------|
| | SERIAL NO. | MANUFACTURER | CALIBRATION DATE |
| Upper Rib Y | AP1H2 | Endevco | 2/26/97 |
| Lower Rib Y | AJ9C2 | Endevco | 2/26/97 |
| Lower Spine Y | AP2D7 | Endevco | 2/26/97 |
| Pelvis Y | ALCH7 | Endevco | 2/26/97 |
| Upper Rib Redundant Y | AH0B0 | Endevco | 2/26/97 |
| Lower Rib Redundant Y | AHTT2 | Endevco | 2/26/97 |
| Lower Spine Redundant Y | AP1T8 | Endevco | 2/26/97 |
| Pelvis Redundant Y | AJ420 | Endevco | 2/26/97 |

VEHICLE INSTRUMENT CALIBRATION

| VEHICLE ACCELEROMETERS | | | |
|---------------------------------|------------|--------------|------------------|
| | SERIAL NO. | MANUFACTURER | CALIBRATION DATE |
| Moving Barrier CG X | C25-A04 | Entran | 1/06/97 |
| Moving Barrier CG Y | C25-A06 | Entran | 1/07/97 |
| Moving Barrier CG Z | B13-Z02 | Entran | 7/11/96 |
| Moving Barrier Rear Axle X | D05-R19 | Entran | 1/02/97 |
| Moving Barrier Rear Axle Y | D05-R20 | Entran | 1/02/97 |
| Left Mid A-Post Y | J10-E08 | Entran | 1/03/97 |
| Left Lower A-Post Y | E24-G10 | Entran | 1/02/97 |
| Left Mid B-Post Y | L18-E13 | Entran | 1/03/97 |
| Left Lower B-Post Y | L22-G05 | Entran | 1/02/97 |
| Rear Floorpan Above Axle X | H07-A25 | Entran | 1/02/97 |
| Rear Floorpan Above Axle Y | L14-D04 | Entran | 1/06/97 |
| Rear Floorpan Above Axle Z | L14-D16 | Entran | 12/03/96 |
| Driver Seat Track Y | D05-R05 | Entran | 1/07/97 |
| Right Side Sill at Front Seat X | F11-G02 | Entran | 1/09/97 |
| Right Side Sill at Front Seat Y | B14-R15 | Entran | 1/03/97 |
| Right Side Sill at Front Seat Z | G08-B02 | Entran | 1/09/97 |
| Right Side Sill at Rear Seat X | D05-R09 | Entran | 1/02/97 |
| Right Side Sill at Rear Seat Y | E24-G06 | Entran | 1/07/97 |
| Right Side Sill at Rear Seat Z | L14-D14 | Entran | 1/06/97 |
| Left Side Sill at Front Seat Y | H16-X15 | Entran | 1/08/97 |

VEHICLE INSTRUMENT CALIBRATION

| VEHICLE ACCELEROMETERS | | | |
|-----------------------------------|-----------|--------------|------------------|
| | SERIAL NO | MANUFACTURER | CALIBRATION DATE |
| Left Side Sill at Rear Seat Y | H07-A05 | Entran | 1/03/97 |
| Right Rear Occupant Compartment Y | D05-R16 | Entran | 1/06/97 |
| Vehicle CG X | G01-J12 | Entran | 1/09/97 |
| Vehicle CG Y | F12-G02 | Entran | 1/09/97 |
| Vehicle CG Z | F11-G01 | Entran | 1/09/97 |
| Left Front Door Centerline | D05-R12 | Entran | 1/03/97 |
| Left Front Door Centerline Upper | L18-E18 | Entran | 1/08/97 |

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