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REPORT NO.: 214-MGA-2000-06
SAFETY COMPLIANCE TESTING FOR FMVSS NO. 214
"SIDE IMPACT PROTECTION"
"INDICANT"

Nissan Motor Company, Ltd.
2000 Nissan Xterra SUV
NHTSA NO: CY5203

MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: October 26, 1999

Report Date: November 1, 1999

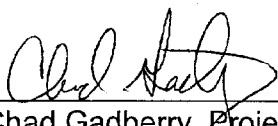
FINAL REPORT

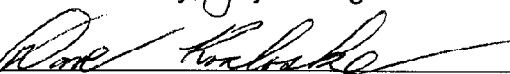
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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ASSURANCE
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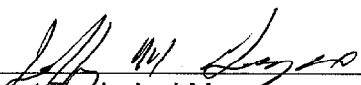
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15. Supplementary Notes																					
16. Abstract A 56/28 kph 90° Impact (Moving Deformable Barrier) INDICANT Compliance Test was conducted on the subject 2000 Nissan Xterra SUV in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP- 214D-05 Side Impact Protection (except the test was conducted 8 kph (5 mph) faster than the standard specifies) for the determination of compliance with FMVSS No. 214 Side Impact Protection. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on October 26, 1999. The impact velocity of the Moving Deformable Barrier (MDB) was 61.8 kph, and the ambient temperature at the struck side of the target vehicle at the time of impact was 73°F. The target vehicle post test maximum crush was 355 mm at level 1. The test vehicle's performance follows: <table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>DRIVER.</u></th> <th style="text-align: center;"><u>LEFT REAR PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td style="text-align: center;">57</td> <td style="text-align: center;">16</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">61</td> <td style="text-align: center;">26</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">54</td> <td style="text-align: center;">23</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">57</td> <td style="text-align: center;">24</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">96</td> <td style="text-align: center;">41</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. The vehicle rolled onto its right side as a result of impact. NHTSA is uncertain whether the rollover was the result of cable interference.					<u>DRIVER.</u>	<u>LEFT REAR PASS.</u>	Left Upper Rib (LUR) Accel., g	57	16	Left Lower Rib (LLR) Accel., g	61	26	Lower Spine (T ₁₂) Accel., g	54	23	Thoracic Trauma Index (TTI)	57	24	Pelvis (PEV) Accel., g	96	41
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17. Key Words Compliance Testing Side Impact Protection FMVSS 214 Side Impact Dummy (SID) New Car Assessment Program (NCAP)		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 Telephone No. 202-366-4946																			
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SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY 2000 FMVSS 214 Side Impact Protection Compliance Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-97-C-11033. The purpose of this test was to evaluate side impact protection of a 2000 Nissan Xterra SUV.

This side impact test was conducted in accordance with the Office of Vehicle Safety Compliance's FMVSS 214 test procedure (TP-214D-05, dated August 2, 1999) with the exception of the test speed, which was at the NCAP High Speed Lateral Impact level. (Approximately 61.2 kph, which is 8 kph faster than the compliance speed).

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 2000 Nissan Xterra SUV was impacted on the left 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 61.8 kph (38.4 mph). 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 October 26, 1999. 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 left front and left rear designated seating positions according to instructions specified in the OVSC Side Impact Laboratory Test Procedure which is dated August 2, 1999. 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.

Nissan and agency engineers examined the high speed motion picture film of the test in an effort to determine why the vehicle rolled over. The engineers noted that the right rear tire of the target (test) vehicle interacted with and moved the cable used to tow the deformable moving barrier into the target vehicle. The engineers were unable to determine if this contact contributed to the test vehicle tipping over.

The following table summarizes the results of the FMVSS 214 Left Side Impact test:

Injury Criteria	Front SID	Rear SID
TTI (g)	57	24
Pelvis (g)	96	41

TEST NOTES

1. The following accelerometers were not used for this test:

- Left Front Door on Centerline
- Midrear of Left Front Door
- Left Front Door Upper Centerline
- Midrear of Left Rear Door
- Left Rear Door Upper Centerline
- Rear Seat Track

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: 2000/Nissan/Xterra/SUV
 Vehicle NHTSA No.: CY5203 VIN: 5N1DD28T7YC525658
 Vehicle Body Color: Dk. Green Build Date: 8/99
 Engine Data: 4 Cylinders; CID; 2.4 Liter; cc
 Placement X Longitudinal; Lateral
 Transmission: 5 speed; X Manual; Automatic; Overdrive
 Final Drive: X Rear Wheel Drive; Frt. Wheel Drive; Four Wheel Drive

 Odometer Reading: 65 miles
 Options: X A/C; X Pwr. Steering; X Pwr. Brakes; Pwr. Windows;
 Cruise Control; X Tilt Wheel; Power Door Locks;

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 26 psi Front
 26 psi Rear
 Recommended Tire Size: P235/70R15
 Tires on Test Vehicle: P235/70R15 Manufacturer: B.F. Goodrich

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_Knob_Power
 Vehicle Maximum Capacity Loading = 476.3 kg (A)
 No. of Occupants x 68.04 kg. = 340.2 kg (B)
 Cargo Capacity (A-B) = 136.1 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front =	<u>439.5</u> kg	Right Rear =	<u>401.4</u> kg
Left Front =	<u>429.1</u> kg	Left Rear =	<u>382.8</u> kg
TOTAL FRONT =	<u>868.6</u> kg	TOTAL REAR =	<u>784.2</u> kg
% of Total Weight =	<u>52.6</u> %	% of Total Weight =	<u>47.4</u> %
TOTAL WEIGHT =	<u>1652.8</u> kg		

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	= <u>1652.8</u> kg
Cargo Carrying Capacity of Test Vehicle*	= <u>136.1</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>1950.3</u> kg

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO: (FULLY LOADED)

Right Front =	<u>445.0</u> kg	Right Rear =	<u>510.8</u> kg
Left Front =	<u>473.1</u> kg	Left Rear =	<u>521.2</u> kg
TOTAL FRONT =	<u>918.1</u> kg	TOTAL REAR =	<u>1032.0</u> kg
% of Total Weight =	<u>47.1</u> %	% of Total Weight =	<u>52.9</u> %
TOTAL WEIGHT =	<u>1950.1</u> kg		

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 821 mm Left Front 829 mm Right Rear 857 mm Left Rear 852 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 815 mm Left Front 815 mm Right Rear 813 mm Left Rear 798 mm

TEST ATTITUDE:

Right Front 817 mm Left Front 817 mm Right Rear 813 mm Left Rear 799 mm

* light trucks and MPVs RCW is 136.1 kgs or manufacturer's value, whichever is less

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2655 mm

C.G. As Tested = 1421 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4002 mm

Centerline = 4535 mm

Left Side = 4002 mm

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 144 mm

Test Position: Mid-position (7th detent of 13)

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 25.0°

REAR POSITION SEAT:

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

Seat Back Adjustment Position: Non-adjustable

ADJUSTABLE STEERING COLUMN POSITION: Mid-position

WINDOW POSITIONS: Left Front Closed Left Rear Closed
Right Front Open Right Rear Removed

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 73.4 liters

Test Volume: 68.1 liters - 92.8% of capacity

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

Wheelbase: = 2655 mm

Impact Point is 388 mm rearward of front axle centerline

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 2000/Nissan/Xterra/SUV

Vehicle NHTSA No.: CY5203 Test Date: October 26, 1999

Overall Length = 4535 mm; Overall Width = 1660 mm

TEST WEIGHT:

Right Front =	<u>439.1</u> kg	Right Rear =	<u>518.5</u> kg
Left Front =	<u>464.9</u> kg	Left Rear =	<u>522.5</u> kg
TOTAL FRONT =	<u>904.0</u> kg	TOTAL REAR =	<u>1041.0</u> kg
% of Total Weight =	<u>46.5</u> %	% of Total Weight =	<u>53.5</u> %
TOTAL WEIGHT =	<u>1945.0</u> kg		

Wheelbase = 2655 mm

Longitudinal C.G. from Center of Front Axle = 1421 mm

Impact Angle with Respect to Impactor = 90 degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (440 mm above ground) = 355 mm
2. LEVEL 2 (735 mm above ground) = 321 mm
3. LEVEL 3 (762 mm above ground) = 328 mm
4. LEVEL 4 (1080 mm above ground) = 258 mm
5. LEVEL 5 (1590 mm above ground) = 58 mm

Maximum Post-Test Intrusion = 355 mm

OCCUPANTS:

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

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)INSTRUMENTATION:

Number of Vehicle Data Channels: = 20

Number of Cameras: Onboard Vehicle = 3

Offboard Vehicle = 4

Deformable Barrier = 2

TOTAL = 9

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTSYear/Make/Model/Body Style: 2000/Nissan/Xterra/SUVVehicle NHTSA No.: CY5203 Test Date: October 26, 1999POSITION OF IMPACT (MDB) ON MONORAIL:Crabbed 27° to leftMDB DETAILS:

Overall Width of Framework Carriage	= <u>1252</u> mm
Overall Length of MDB (incl. honeycomb impact face)	= <u>4115</u> mm
Wheelbase of Framework Carriage	= <u>2591</u> mm
Tread of Framework Carriage (Front & Rear)	= <u>1880</u> mm
C.G. Location Rearward of Front Axle	= <u>1100</u> mm
C.G. Location From Center Line	= <u>-10</u> mm
C.G. Location Above Ground Level	= <u>477</u> mm

MDB WEIGHT:

Left Front	= <u>458.8</u> kg	Left Rear	= <u>230.3</u> kg
Right Front	= <u>324.4</u> kg	Right Rear	= <u>350.6</u> kg
TOTAL FRONT	= <u>783.2</u> kg	TOTAL REAR	= <u>580.9</u> kg
TOTAL MDB WEIGHT = <u>1364.1</u> kg			

Impact Angle (MDB C/L to Target Vehicle C/L) = 90° degreesImpact Speed = Primary: 38.4 mph (61.8 kph) Secondary: 38.5 mph (62.0 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>163</u> | mm |
| 2. | Row B Mid Stack (686 mm) | = | <u>109</u> | mm |
| 3. | Row C Top of Bumper (533 mm) | = | <u>123</u> | mm |
| 4. | Row D Center of Bumper (432 mm) | = | <u>156</u> | mm |

INSTRUMENTATION:

Number of MDB Data Channels = 5

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 2000/Nissan/Xterra/SUV

Vehicle NHTSA No.: CY5203 Test Date: October 26, 1999

VISIBLE DUMMY CONTACT POINTS:

	<u>DRIVER</u>	<u>LEFT REAR SID</u>
Head	<u>to headrest</u>	<u>to C-post/side header</u>
Arm	<u>to rear of door above</u> <u>armrest</u>	<u>to rear of door on and</u> <u>above armrest</u>
Pelvis	<u>to rear of door on armrest</u>	<u>to rear of door below</u> <u>armrest</u>
Left Knee	<u>to mid-door below armrest</u>	<u>to mid-door below armrest</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: 20 mm forward Vertical: 10 mm up

ARM REST LOCATIONS:

Front: 200 mm from bottom of window
 Rear: 135 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)SEAT CRUSH:

Front Seat Back: 5 mm Front Seat Cushion: 12 mm

Left Rear Seat Back: 21 mm Rear Seat Cushion: 61 mm

GLAZING DAMAGE:

Windshield cracked

PILLAR PERFORMANCE:

No failure noted

SILL SEPARATION:

None noted

FRONTAL AIRBAGS:

Driver Deployed: No Passenger Deployed: No

OTHER NOTABLE IMPACT EFFECTS:

Vehicle rolled onto its right side

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

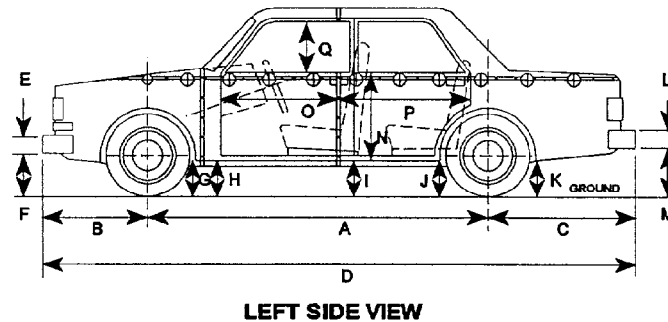
DATA SHEET NO. 5
SIDE IMPACT DUMMY (SID) INSTRUMENTATION DATA

Year/Make/Model/Body Style: 2000/Nissan/Xterra/SUV
Vehicle NHTSA No.: CY5203 Test Date: October 26, 1999

	Front SID ID #049				Rear SID ID #048			
	Pos. Direct.		Neg. Direct		Pos. Direct.		Neg. Direct	
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
HEAD ACCELERATIONS								
Longitudinal	6.0	33	-12.8	92	16.1	70	-26.5	92
Lateral	14.4	96	-6.3	176	68.7	67	-11.1	54
Vertical	41.0	67	-10.6	43	12.3	64	-19.0	82
Resultant	42.4	67	---	---	69.1	67	---	---
HIC	126				244			
RIB ACCELERATIONS								
Left Upper Rib (LUR) Y	56.6	54	-10.3	44	16.2	116	-2.0	183
Left Lower Rib (LLR) Y	60.7	52	-7.3	104	25.5	51	-5.3	88
SPINE ACCELERATIONS								
Lower Lateral Y	54.2	42	-7.1	113	22.6	54	-9.7	93
PELVIS ACCELERATIONS								
Lateral Y	96.4	37	-12.8	62	40.6	40	-14.0	88

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
 J1 = To Pinch Weld
 J2 = To Sill

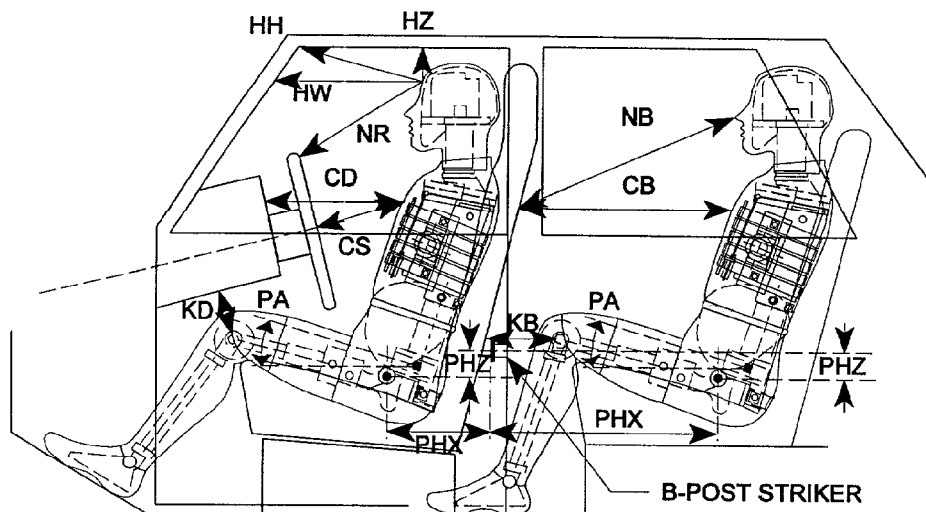
E & L = Bumper Thickness

ALL MEASUREMENTS IN (mm)

	PRE-TEST	POST-TEST*	Δ CHANGE
A	2655	2636	-19
B	894	898	4
C	986	924	-62
D	4535	4458	-77
E	90	90	0
F	655	654	-1
G	362	372	10
H	363	372	9
I	363	394	31
J1/J2	365/364	437/407	72/43
K	325	333	8
L	220	220	0
M	433	399	-34
N	670	672	2
O	780	722	-58
P	1192	1192	0
Q	465	455	-10
R	4002	4041	39
S	4002	3900	-102
T	1660	1428	-232

* - Measurement taken after vehicle was righted.

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONSYear/Make/Model/Body Style: 2000/Nissan/Xterra/SUVNHTSA NO.: CY5203 Test Date: October 26, 1999NOTE: All dimensions are in mm with tolerance of ± 3 mm

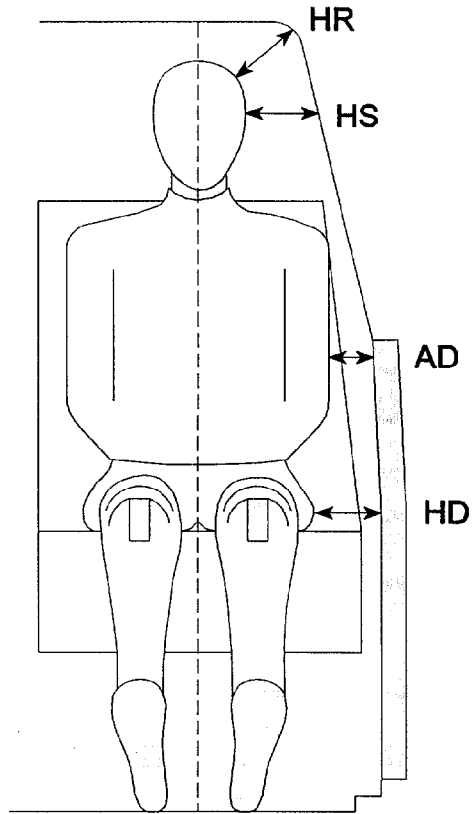
	DRIVER ID #048		REAR PASSENGER SID ID #049
HH	486	HZ	170
HW	669	NB	658
HZ	178	CB	588
NR	463	KBL (KBA)	225 (0.0°)
CD	602	KBR (KBA)	228 (0.0°)
CS	342	PA°	24.6°
KDL (KDA°)	205 (13.5°)	PHX	211
KDR (KDA°)	204 (27.6°)	PHZ	218
PA°	24.7°		
PHX	257		
PHZ	84		

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: 2000/Nissan/Xterra/SUV

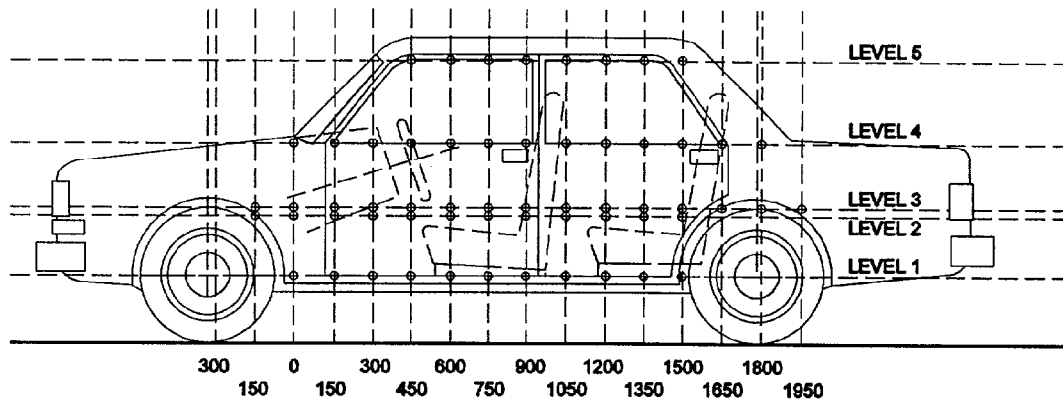
NHTSA NO.: CY5203 Test Date: October 26, 1999



NOTE: All dimensions are in mm

	DRIVER ID #048	REAR PASSENGER ID #049
HR	218	202
HS	313	316
AD	78	90
HD	137	140

DATA SHEET NO. 9

VEHICLE SIDE MEASUREMENTSYear/Make/Model/Body Style: 2000/Nissan/Xterra/SUVNHTSA NO.: CY5203 Test Date: October 26, 1999**LEFT SIDE VIEW**

NOTE: All measurements are in millimeters (mm)

LEVEL 5 - WINDOW TOP
 LEVEL 4 - WINDOW SILL
 LEVEL 3 - MID-DOOR
 LEVEL 2 - OCCUPANT H-POINT
 LEVEL 1 - AXLE CENTERLINE HEIGHT OR SILL TOP HEIGHT

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) = 440 mm

Level 2 @ Occupant H-Point = 735 mm

Level 3 @ Mid Door = 762 mm

Level 4 @ Window Sill = 1080 mm

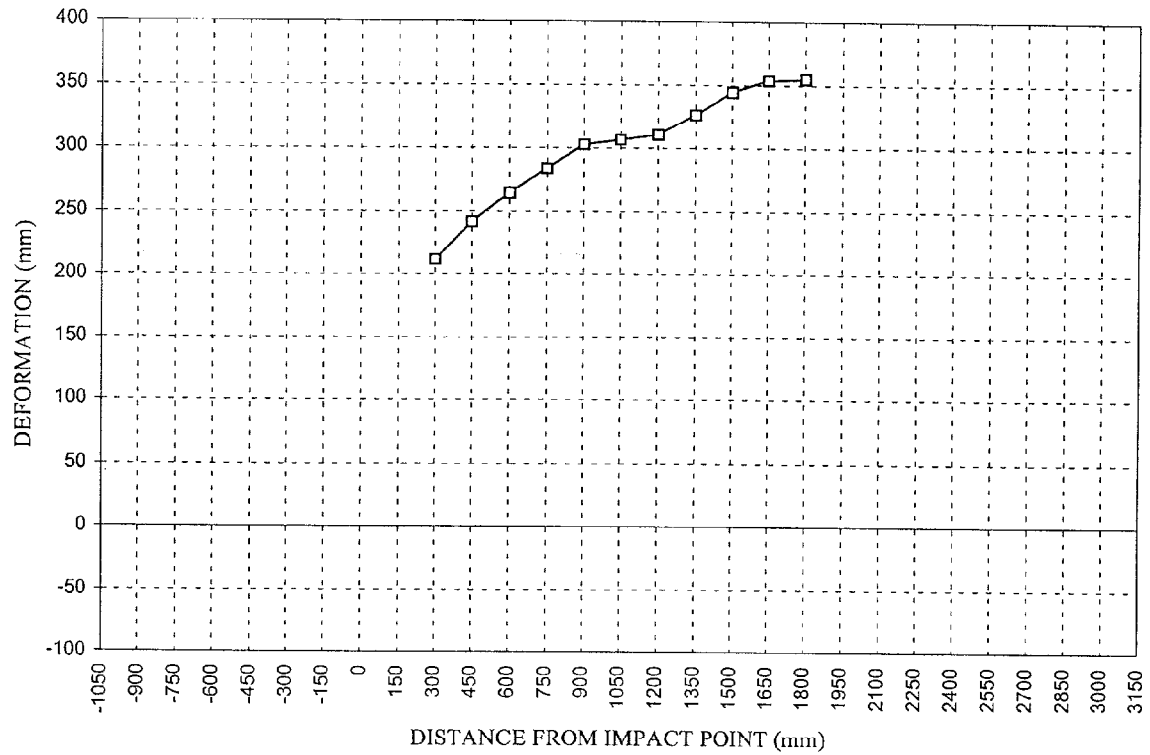
Level 5 @ Window Top = 1590 mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 1 - Axle Centerline		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300	685	897	212
450	685	927	242
600	686	951	265
750	685	969	284
900	685	988	303
1050	682	989	307
1200	682	993	311
1350	680	1007	327
1500	681	1026	345
1650	681	1035	354
1800	678	1033	355
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 (Cont'd)

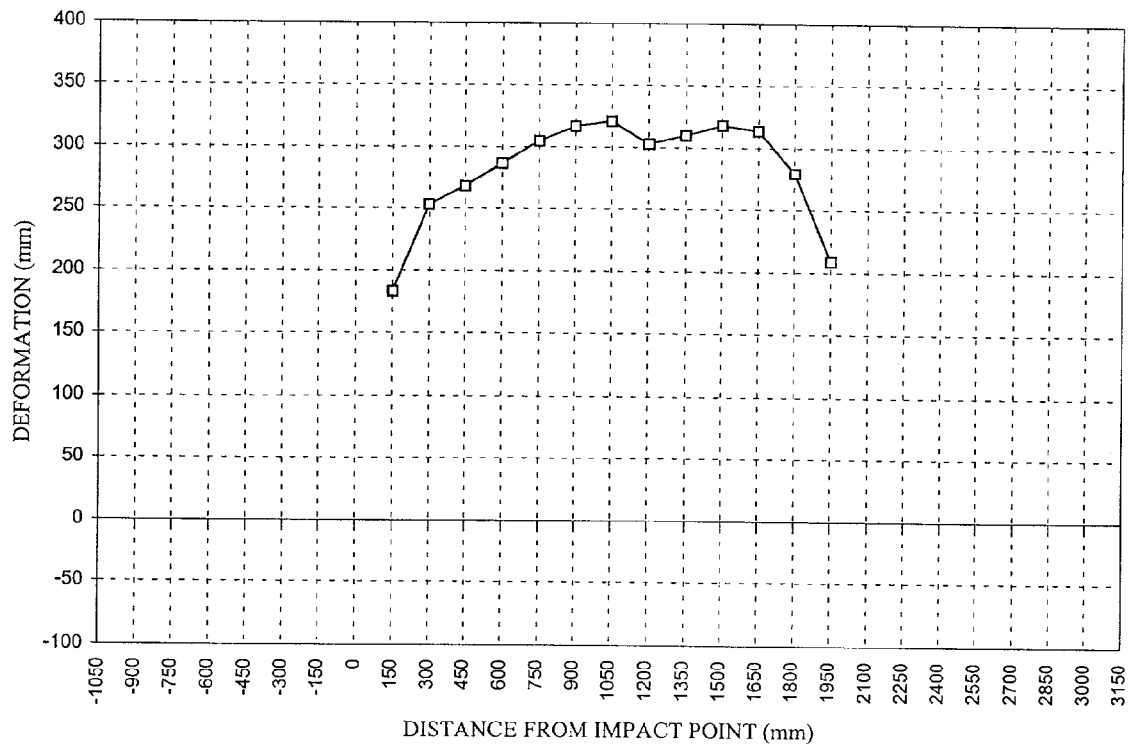


LEVEL 1 - AXLE CENTERLINE

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

	Level 2 - Occupant H Point		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150	612	796	184
300	614	867	253
450	615	883	268
600	617	904	287
750	618	923	305
900	618	935	317
1050	618	939	321
1200	617	920	303
1350	617	927	310
1500	615	933	318
1650	613	927	314
1800	600	880	280
1950	578	787	209
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 (Cont'd)

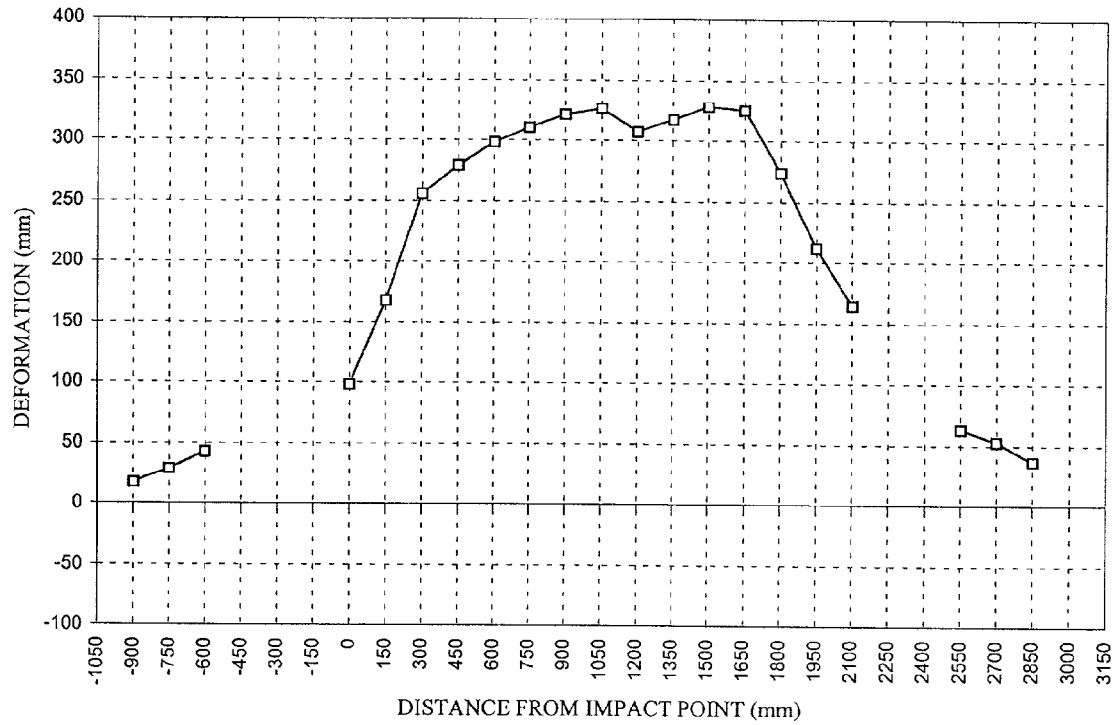
LEVEL 2 - OCCUPANT H-POINT

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

	Level 3 - Mid Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900	632	649	17
-750	582	611	29
-600	557	600	43
-450			
-300			
-150			
0 (impact point)	582	680	98
150	610	778	168
300	612	868	256
450	612	891	279
600	612	910	298
750	612	922	310
900	612	933	321
1050	612	938	326
1200	612	919	307
1350	611	928	317
1500	609	937	328
1650	605	930	325
1800	600	874	274
1950	573	785	212
2100	570	735	165
2250			
2400			
2550	568	631	63
2700	598	651	53
2850	640	677	37
3000			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



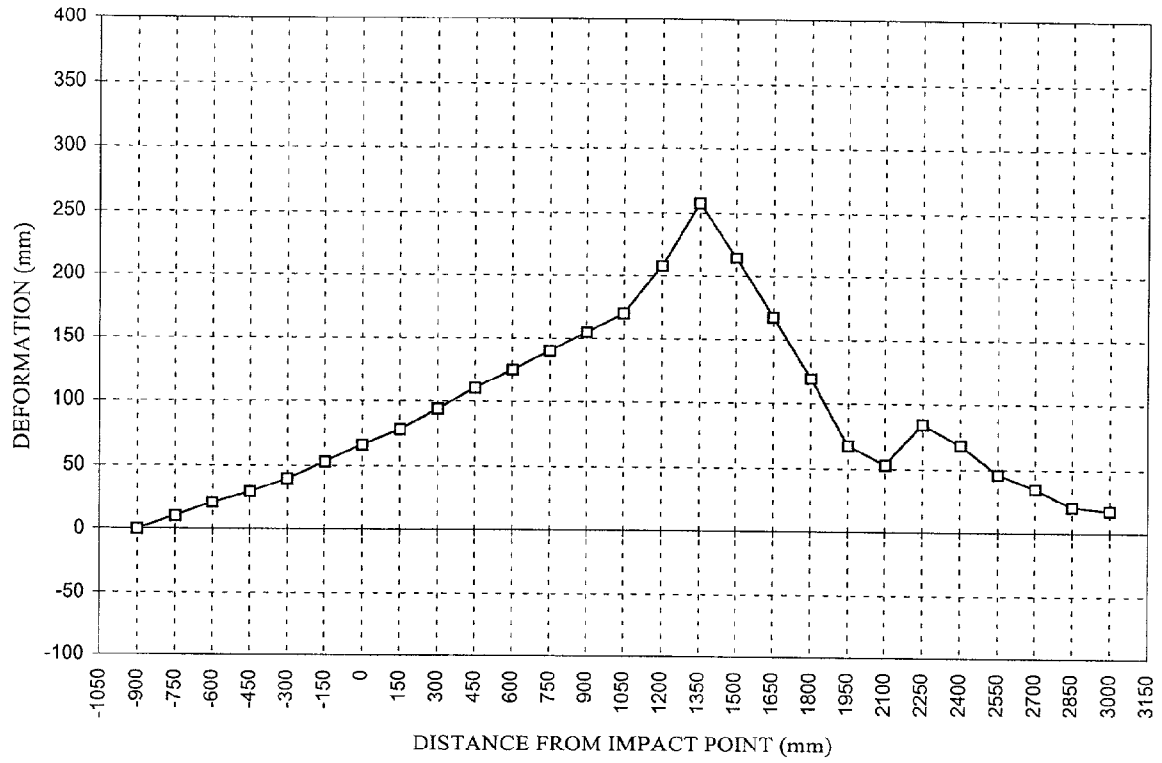
LEVEL 3 - MID DOOR

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900	694	694	0
-750	674	684	10
-600	664	685	21
-450	658	688	30
-300	652	692	40
-150	647	700	53
0 (impact point)	643	709	66
150	643	721	78
300	643	737	94
450	643	753	110
600	643	768	125
750	643	783	140
900	643	798	155
1050	643	813	170
1200	643	851	208
1350	644	902	258
1500	645	860	215
1650	647	815	168
1800	646	765	119
1950	646	713	67
2100	647	700	53
2250	653	737	84
2400	657	725	68
2550	661	707	46
2700	666	701	35
2850	678	698	20
3000	687	704	17

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)

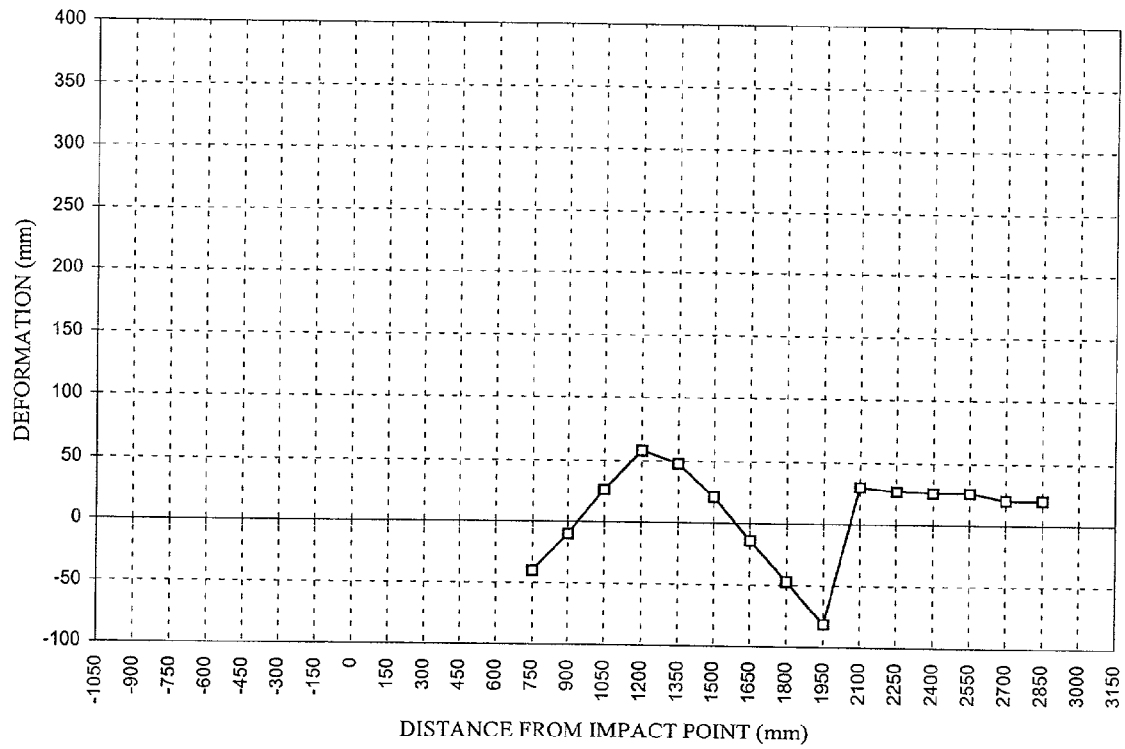


LEVEL 4 - WINDOW SILL

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

	Level 5 - Window Top		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600			
750	832	792	-40
900	834	824	-10
1050	832	858	26
1200	833	891	58
1350	827	875	48
1500	825	846	21
1650	826	812	-14
1800	827	780	-47
1950	827	745	-82
2100	830	860	30
2250	833	860	27
2400	836	862	26
2550	836	862	26
2700	843	863	20
2850	844	864	20
3000			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)

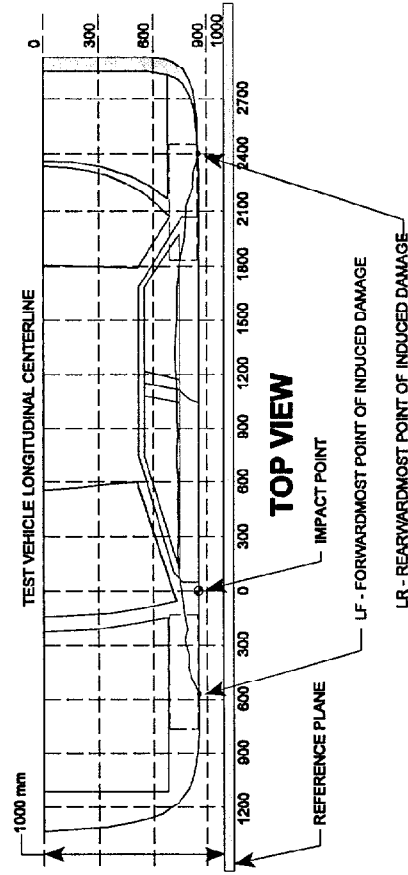
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 2000/Nissan/Xterra/SUV

NHTSA NO.: CY5203 Test Date: October 26, 1999



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. (LR = 3000 mm)	704	687	17
2. 2205 mm	714	650	64
3. 1386 mm	1014	680	334
4. 602 mm	951	686	265
5. -154 mm	700	647	53
6. (LF = -900 mm)	694	694	0

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

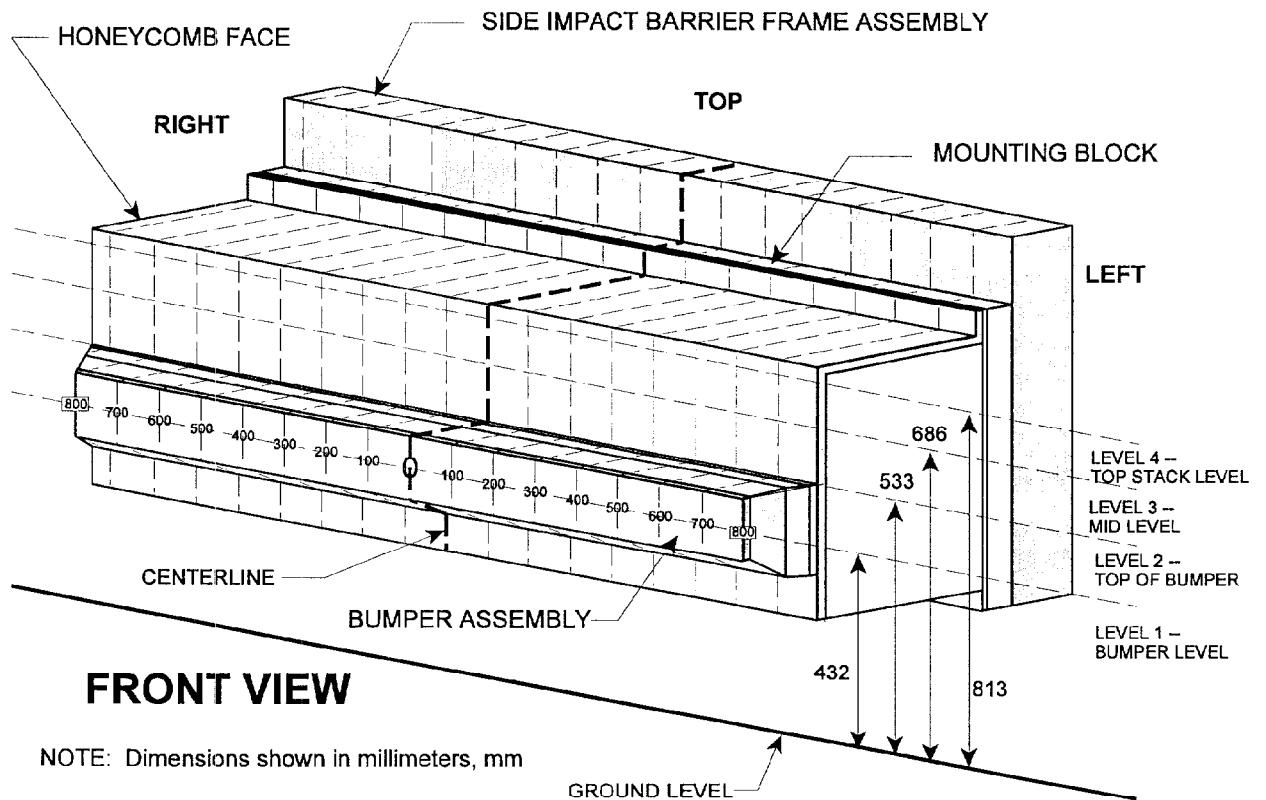
Year/Make/Model/Body Style: 2000/Nissan/Xterra/SUV

Vehicle NHTSA No.: CY5203 Test Date: October 26, 1999

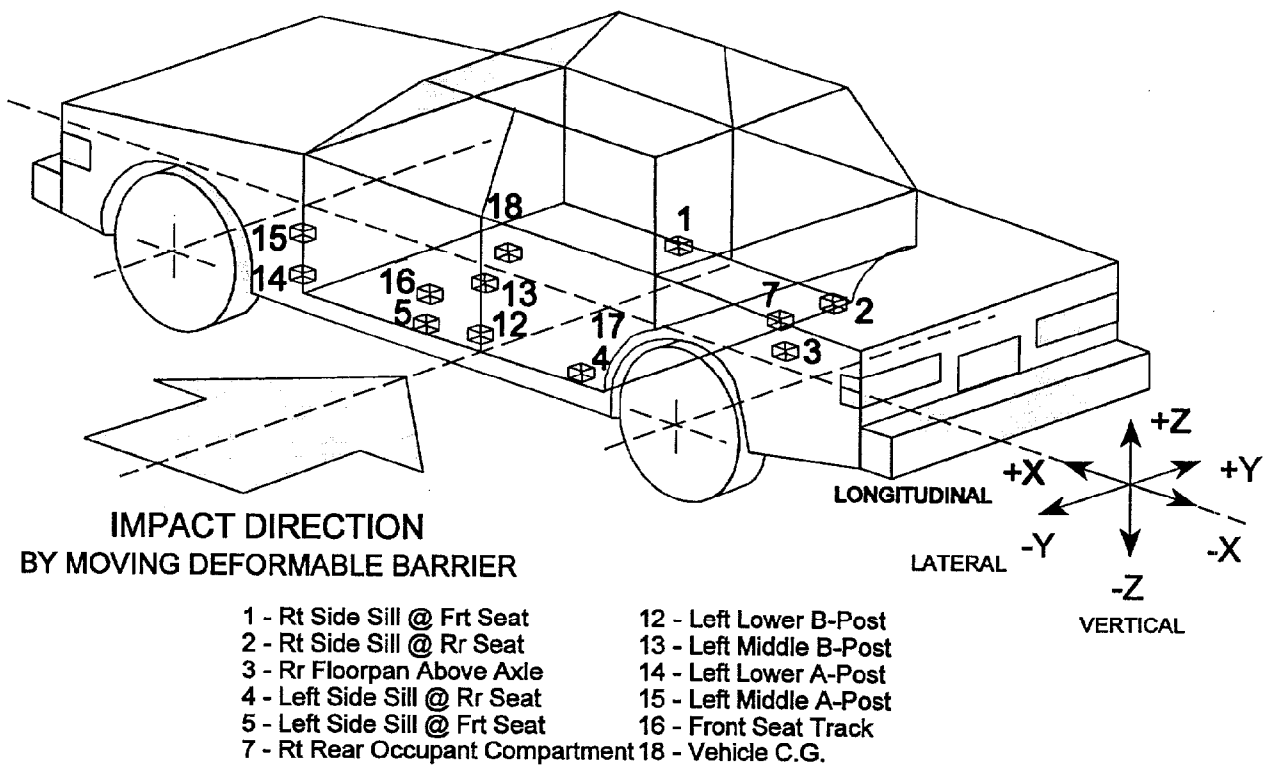
Location	Height at CL*	Distance Right of Center (mm)									Distance Left of Center (mm)							
		800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
Top Stack Level 4	813 mm	163	98	62	56	47	58	59	37	26	27	30	38	44	55	69	78	131
Mid Level Level 3	686 mm	109	69	38	12	13	24	33	26	23	18	15	14	16	23	37	58	91
Top Bumper Level 2	533 mm	32	30	35	37	46	49	51	46	45	49	56	64	74	81	94	120	123
Mid Bumper Level 1	432 mm	23	27	29	35	43	53	56	58	59	65	66	74	85	99	121	143	156

* See next page for Barrier Face Graphic

DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARYYear/Make/Model/Body Style: 2000/Nissan/Xterra/SUVVehicle NHTSA No.: CY5203 Test Date: October 26, 1999

DATA SHEET NO. 13 (Cont'd)

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 2000/Nissan/Xterra/SUV

Vehicle NHTSA No.: CY5203 Test Date: October 26, 1999

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	Right Side Sill @ Front Seat	2587	569	410	5.3	-6.1	45.7	-9.5	6.1	-14.2	47.7
2	Right Side Sill @ Rear Seat	1746	570	415	6.6	-6.7	56.1	-4.2	20.0	-10.7	63.9
3	Rear Floorpan Above Axle	1000	0	766	9.3	-8.2	36.6	-1.5	14.7	-20.3	38.3
4	Left Side Sill @ Rear Seat	1744	-570	445	---	---	**	**	---	---	---
5	Left Side Sill @ Front Seat	2539	-569	417	---	---	211.7	-83.9	---	---	---
7	Right Rear Occupant Compartment	1714	282	606	---	---	64.2	-4.6	---	---	---
12	Left Lower B-Post	1968	-668	566	---	---	187.6	-59.5	---	---	---
13	Left Mid B-Post	1975	-670	1078	---	---	119.0	-48.5	---	---	---
14	Left Lower A-Post	3100	-715	534	---	---	115.8	-65.7	---	---	---
15	Left Mid A-Post	3156	-720	1075	---	---	28.5***	-0.5***	---	---	---
16	Driver Seat Track	2197	-602	540	---	---	164.3	-55.5	---	---	---
18	Vehicle CG	2205	0	638	11.1	-26.6	47.7	-8.8	31.9	-46.3	70.7

*Reference: X - Rear Bumper (+ Forward)

Y - Vehicle Centerline (+ To right)

Z - Ground Level (+ Up)

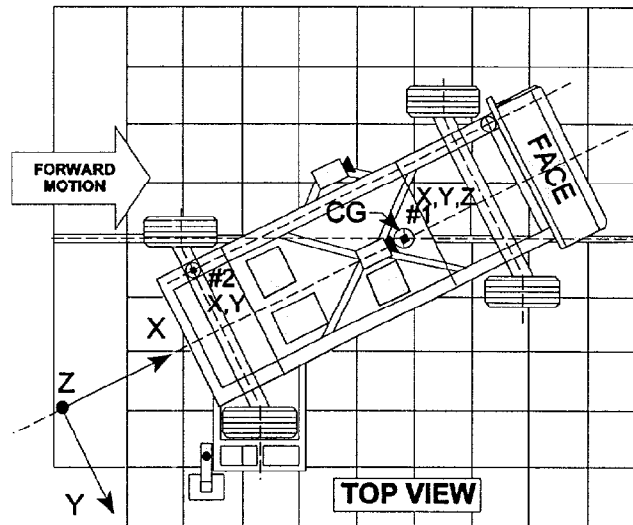
** - No valid data collected

*** - Data not valid after approximately 36 msec.

DATA SHEET NO. 14
MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA
SUMMARY

Year/Make/Model/Body Style: 2000/Nissan/Xterra/SUV

Vehicle NHTSA No.: CY5203 Test Date: October 26, 1999

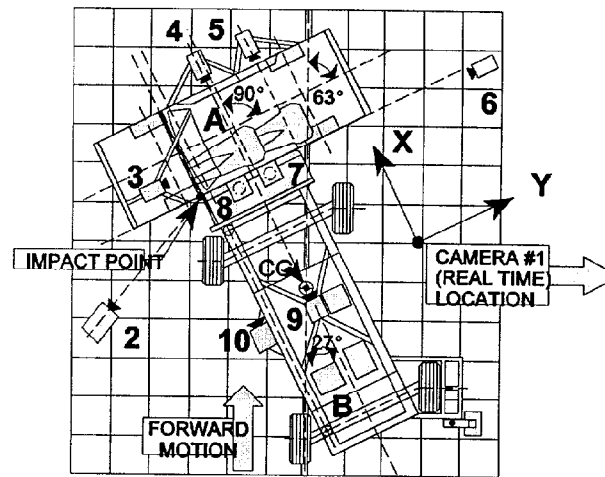


Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	1.1	162	-21.1	39
	Lateral (Y)	---	---	---	0.0	115	-7.4	39
	Vertical (Z)	---	---	---	22.7	41	-19.3	48
	Resultant (R)	---	---	---	31.1	41	---	---
2	Rear Frame Member	-2591	-625	622				
	Longitudinal (X)	---	---	---	1.7	186	-24.5	41
	Lateral (Y)	---	---	---	1.8	78	-3.2	20

*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: 2000/Nissan/Xterra/SUV
 Vehicle NHTSA No.: CY5203 Test Date: October 26, 1999



Camera No.	View	Coordinates (mm)*			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Real Time				10	24
2	Left Impact	-1480	-2500	1770	13	1000
3	Onboard Hood				13	1026
4	Onboard Front Occupant				8	990
5	Onboard Rear Occupant				8	1005
6	Right Impact	-430	10120	2020	25	1000
7	Top Overall	300	1160	5000	8	943
8	Top Impact	-180	60	5000	13	1000
9	Cart Overall				13	1005
10	Cart Impact				35	1005

* Reference: (from impact point)
 +X = Forward
 +Y = To Right
 +Z = Upward from floor level

DATA SHEET 16

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATAVehicle Year/Make/Model/Body Style: 2000/Nissan/Xterra/SUVVehicle NHTSA No.: CY5203 Test Date: October 26, 1999TEST REQUIREMENTS:

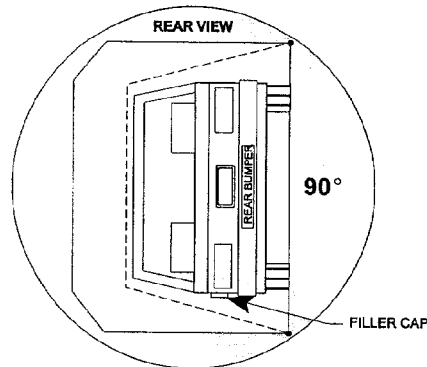
Drain the test vehicle's fuel system and operate the engine until the fuel system is dry. Add Stoddard solvent, which has been dyed purple, until 92-94% of the stated usable capacity is reached. Operate the engine to assure the Stoddard solvent is present throughout the entire fuel system.

TEST VEHICLE IMPACT TYPE: X Left Side Impact MDB 38.4 mph (61.8 kph)FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATION(S): None

DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATAVehicle Year/Make/Model/Body Style: 2000/Nissan/Xterra/SUVVehicle NHTSA No.: CY5203 Test Date: October 26, 1999TEST PHASE: 0° - 90°DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90° Rotation Time = 2 minutes 48 seconds

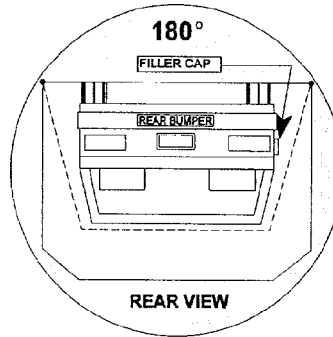
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 secondsTOTAL TIME = 7 minutes 48 secondsNext Whole Minute Interval = 8 minutesFUEL 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: 2000/Nissan/Xterra/SUVVehicle NHTSA No.: CY5203 Test Date: October 26, 1999TEST PHASE: 90° - 180°DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90° Rotation Time = 2 minutes 31 seconds

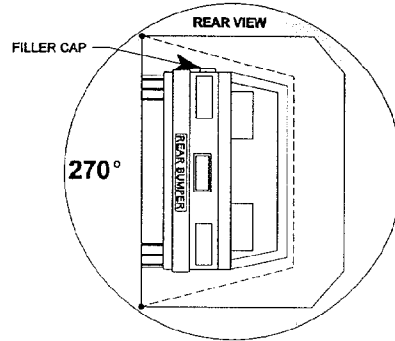
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 secondsTOTAL TIME = 7 minutes 31 secondsNext Whole Minute Interval = 8 minutesFUEL 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: 2000/Nissan/Xterra/SUVVehicle NHTSA No.: CY5203 Test Date: October 26, 1999TEST PHASE: 180° - 270°DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90° Rotation Time = 2 minutes 14 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 secondsTOTAL TIME = 7 minutes 14 secondsNext Whole Minute Interval = 8 minutesFUEL 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

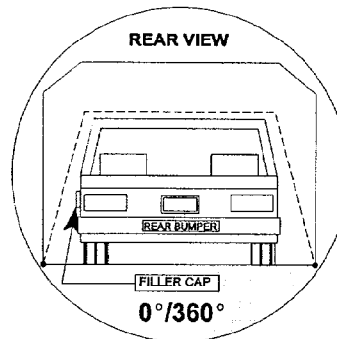
FUEL SPILLAGE LOCATIONS(S): None

DATA SHEET 16
FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 2000 Nissan Xterra SUV

Vehicle NHTSA No.: CY5203 Test Date: October 26, 1999

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 46 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 46 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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* Vehicle in rolled orientation

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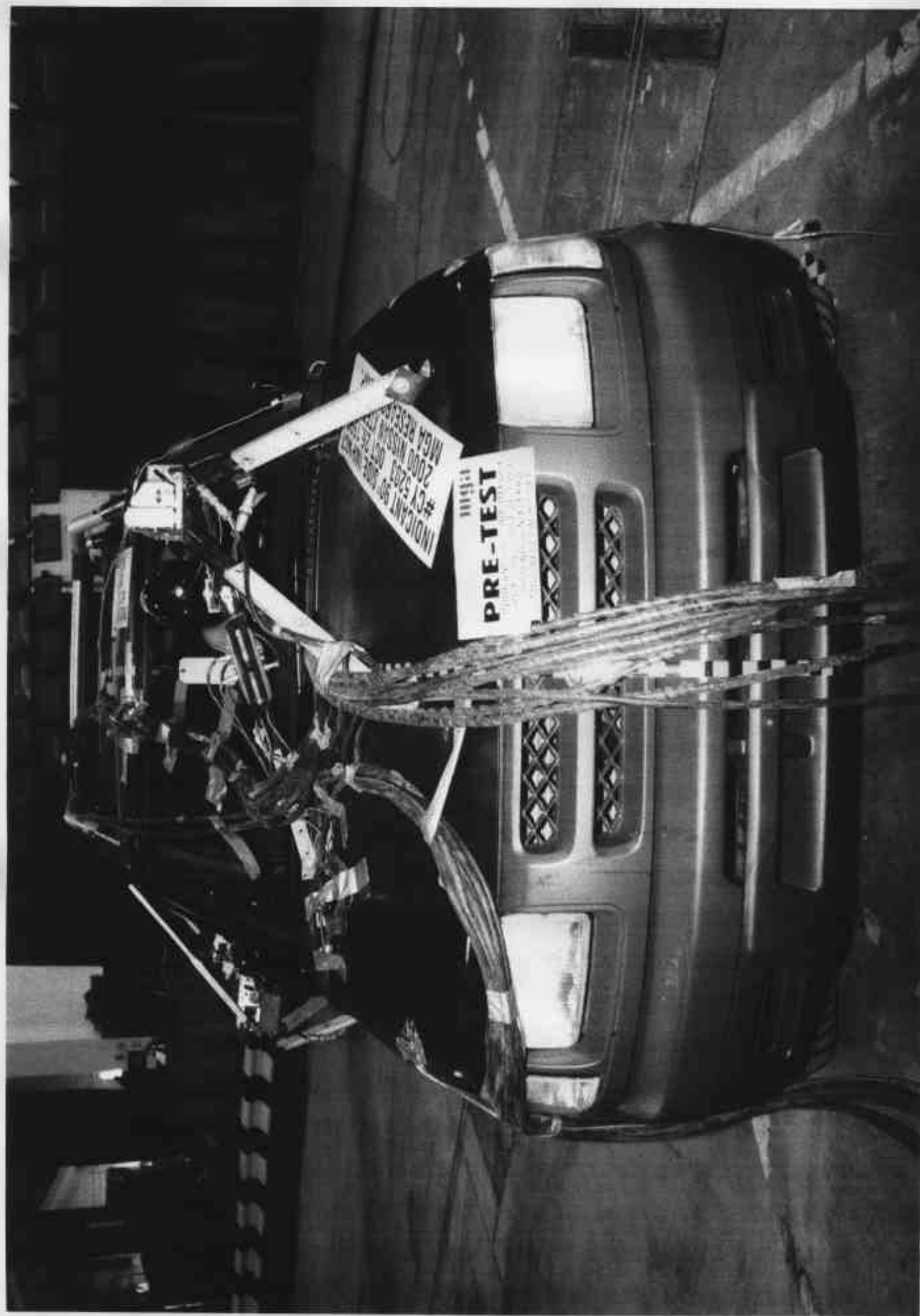


Photo No. A-1 - Pre-Test Front View of Test Vehicle



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



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



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

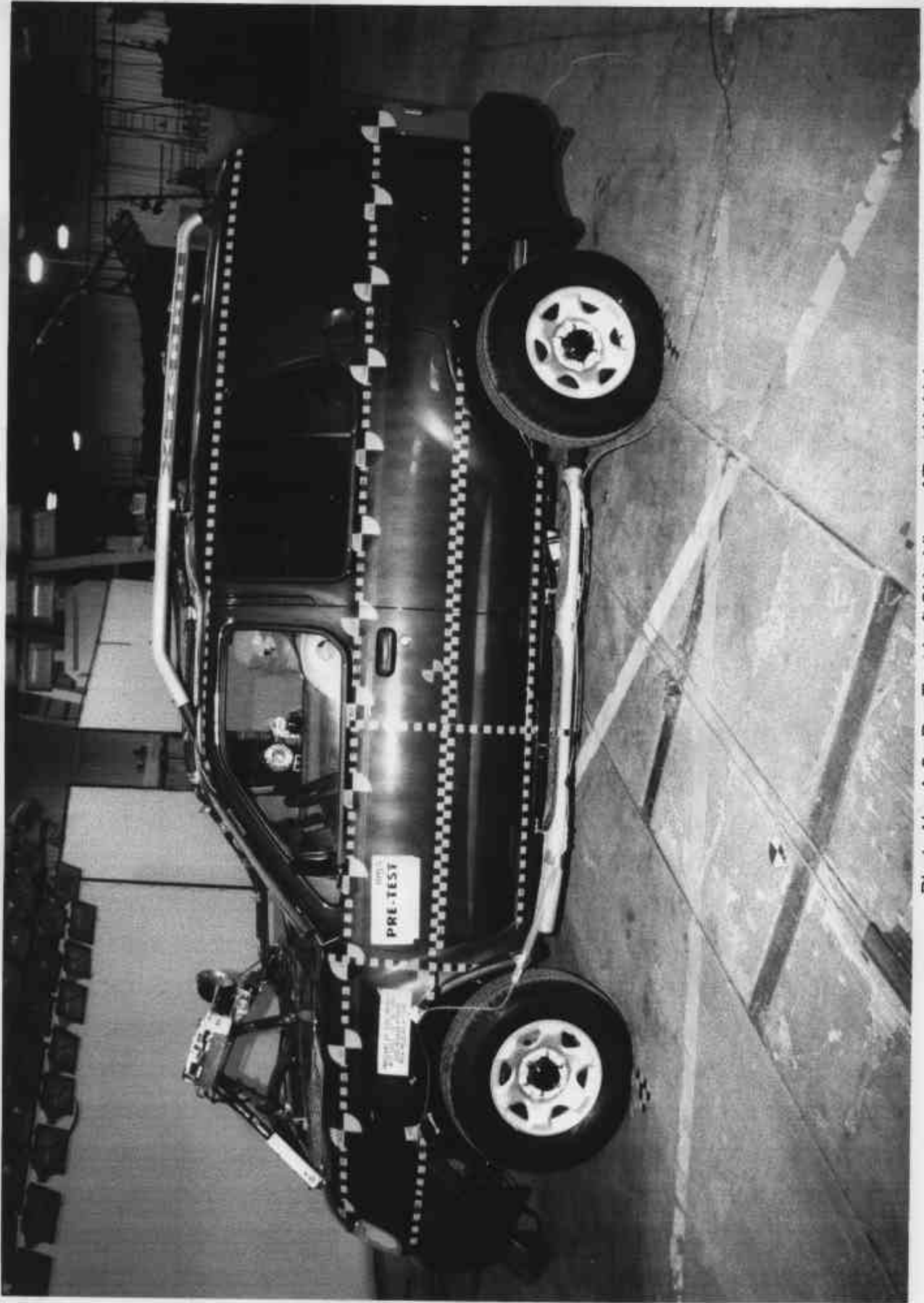


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

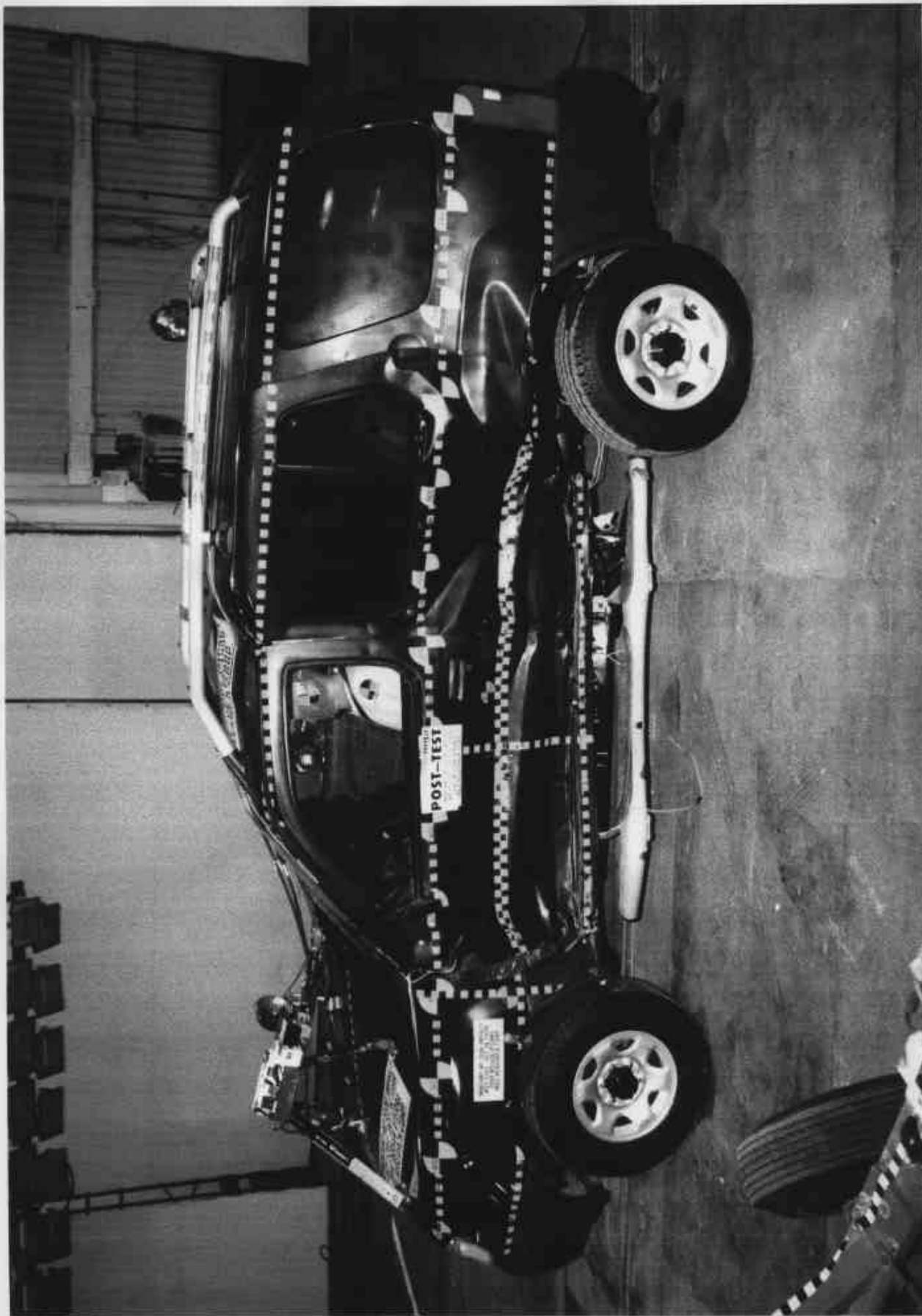


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

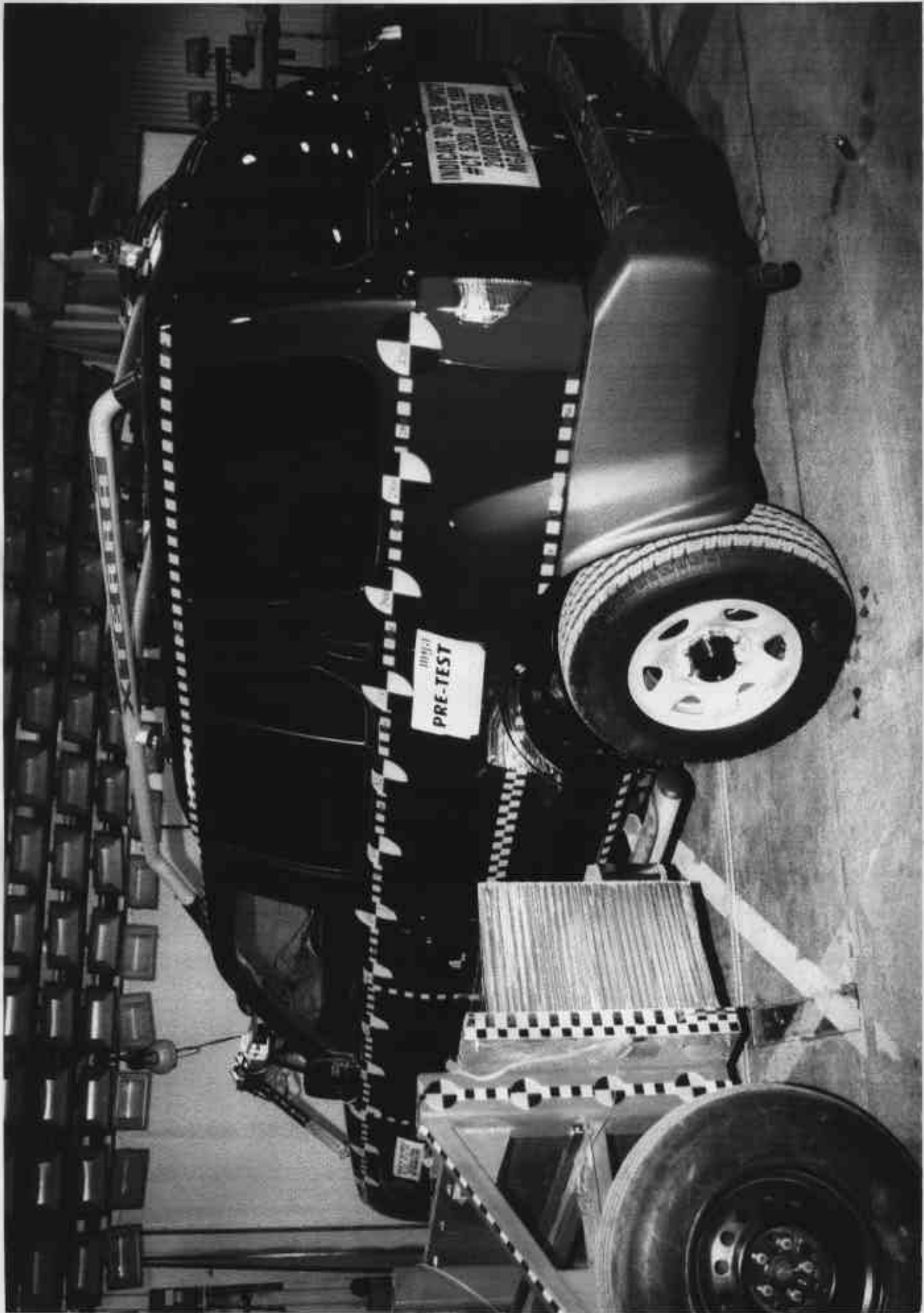


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

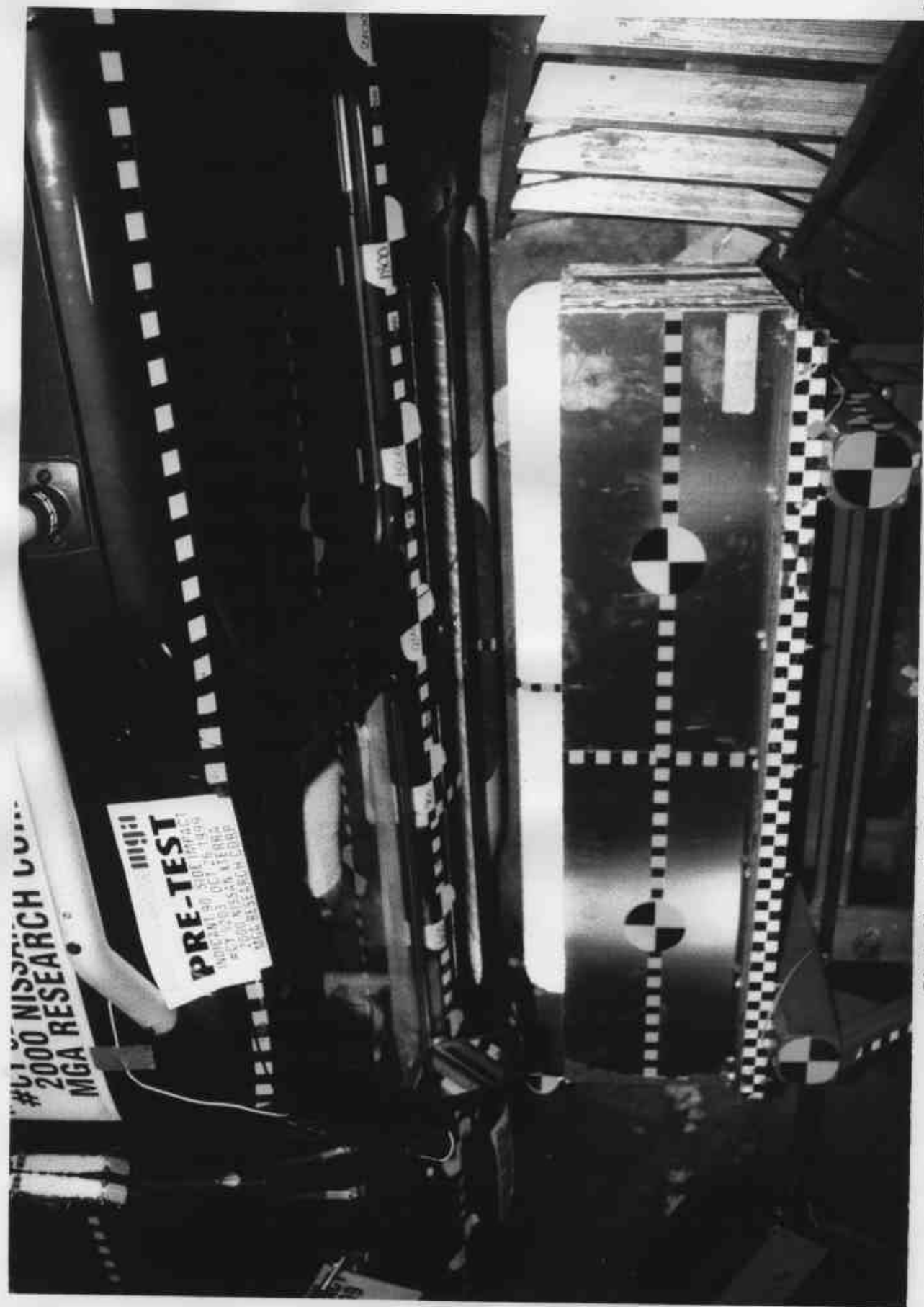


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

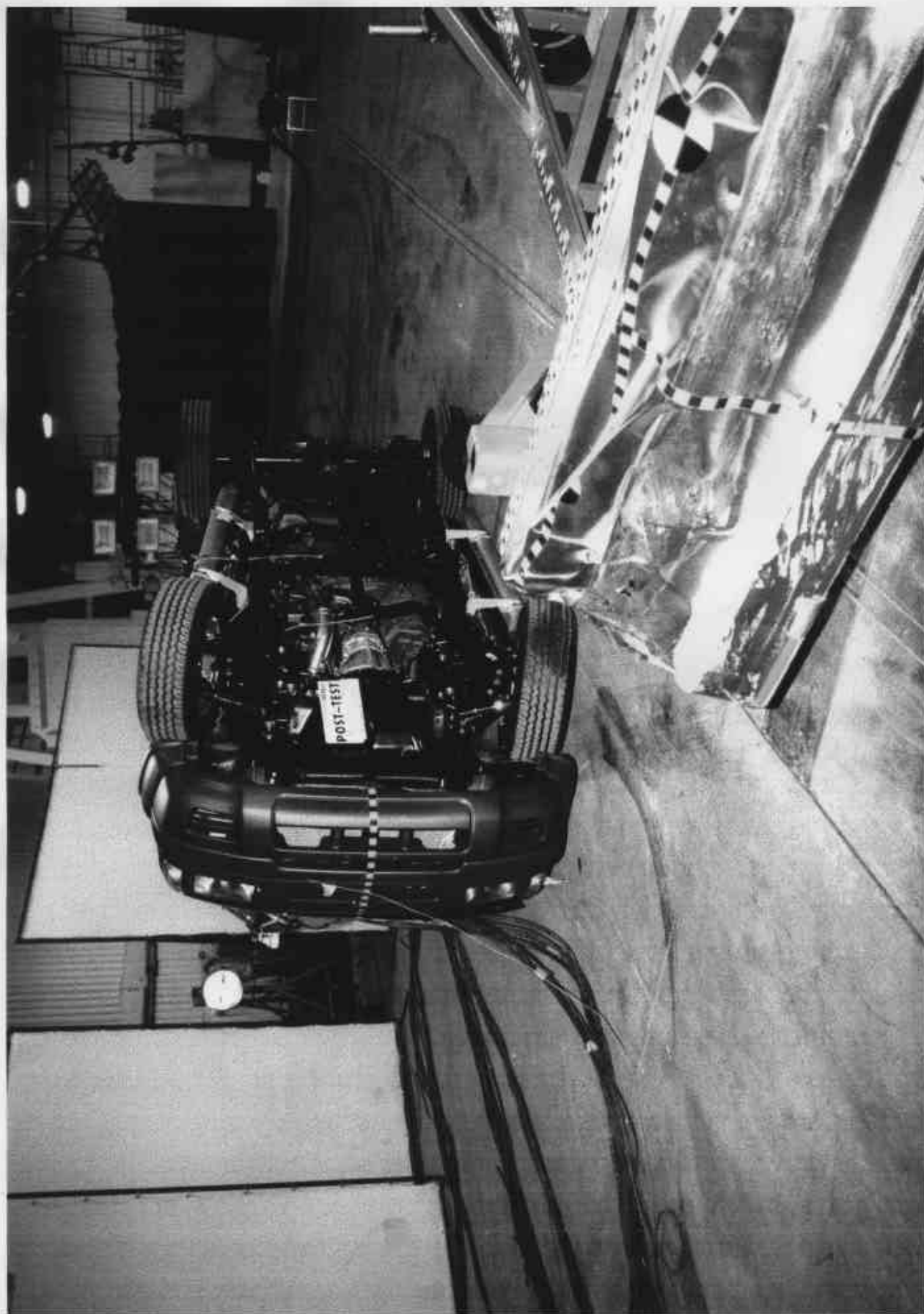


Photo No. A-10 - Post-Test MDB Immediately After Test (left side)



Photo No. A-11 - Post-Test Rear of Vehicle Immediately After Test

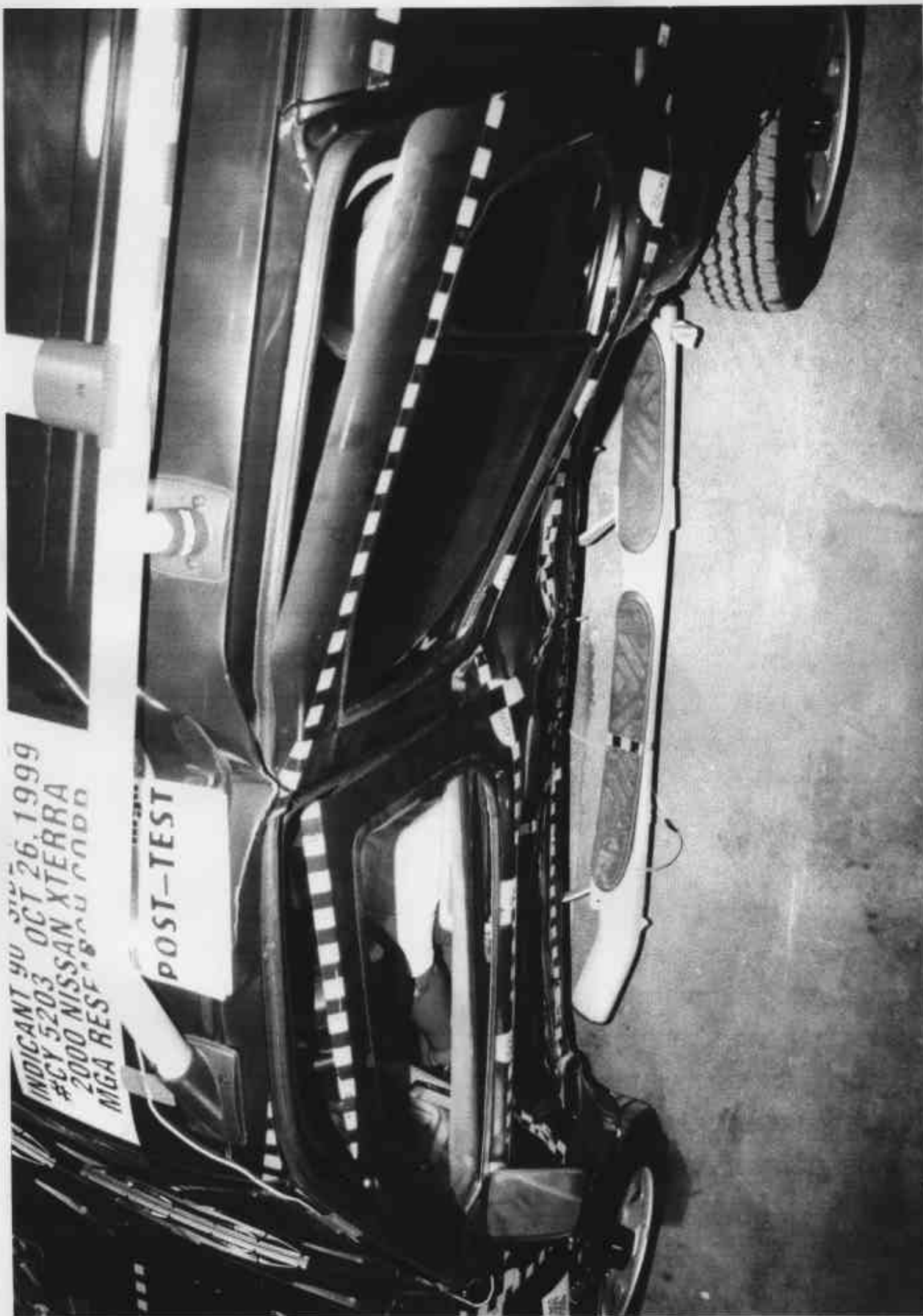


Photo No. A-12 - Post-Test Overhead View of Vehicle After Test

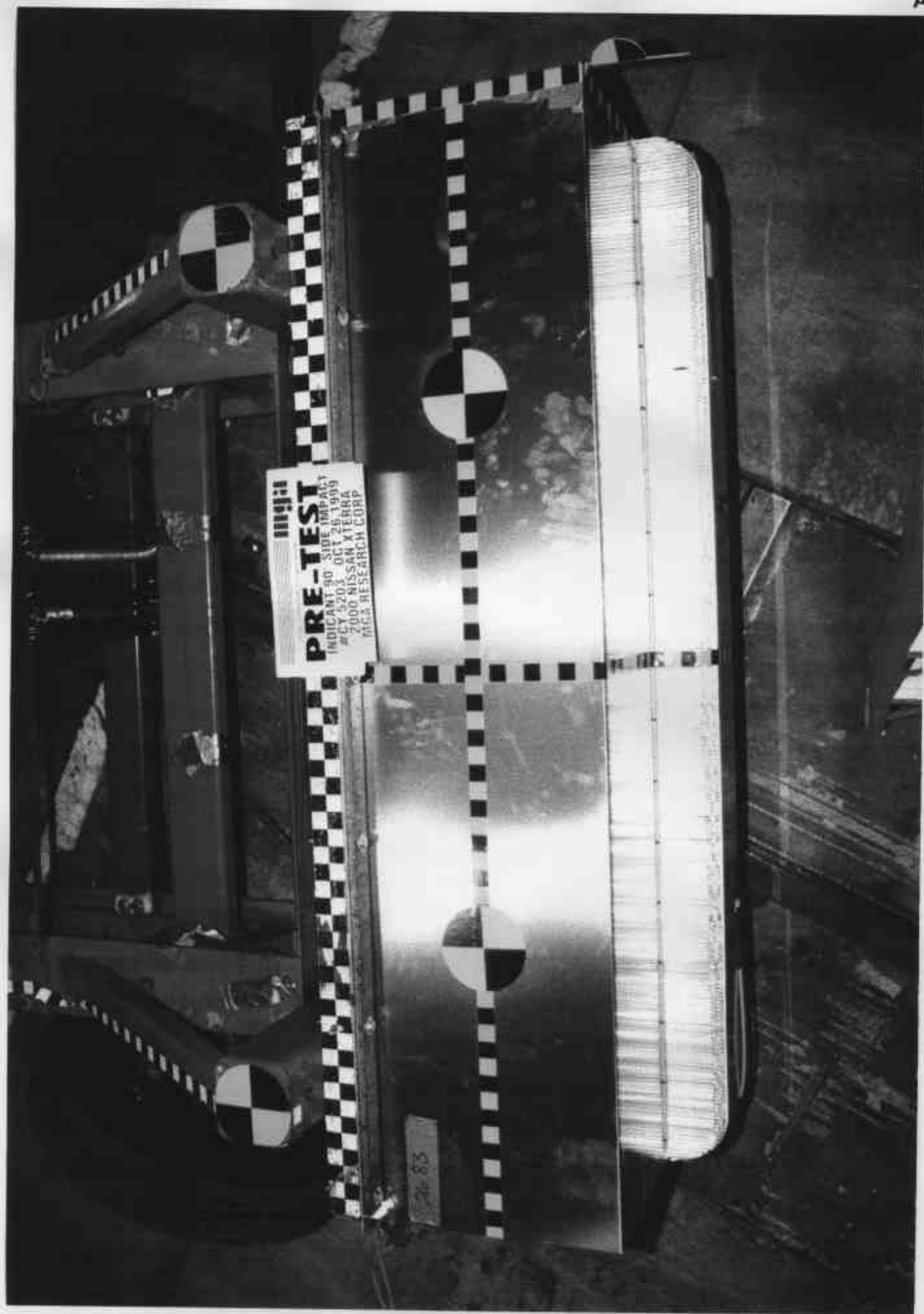


Photo No. A-13 - Pre-Test MDB Top View

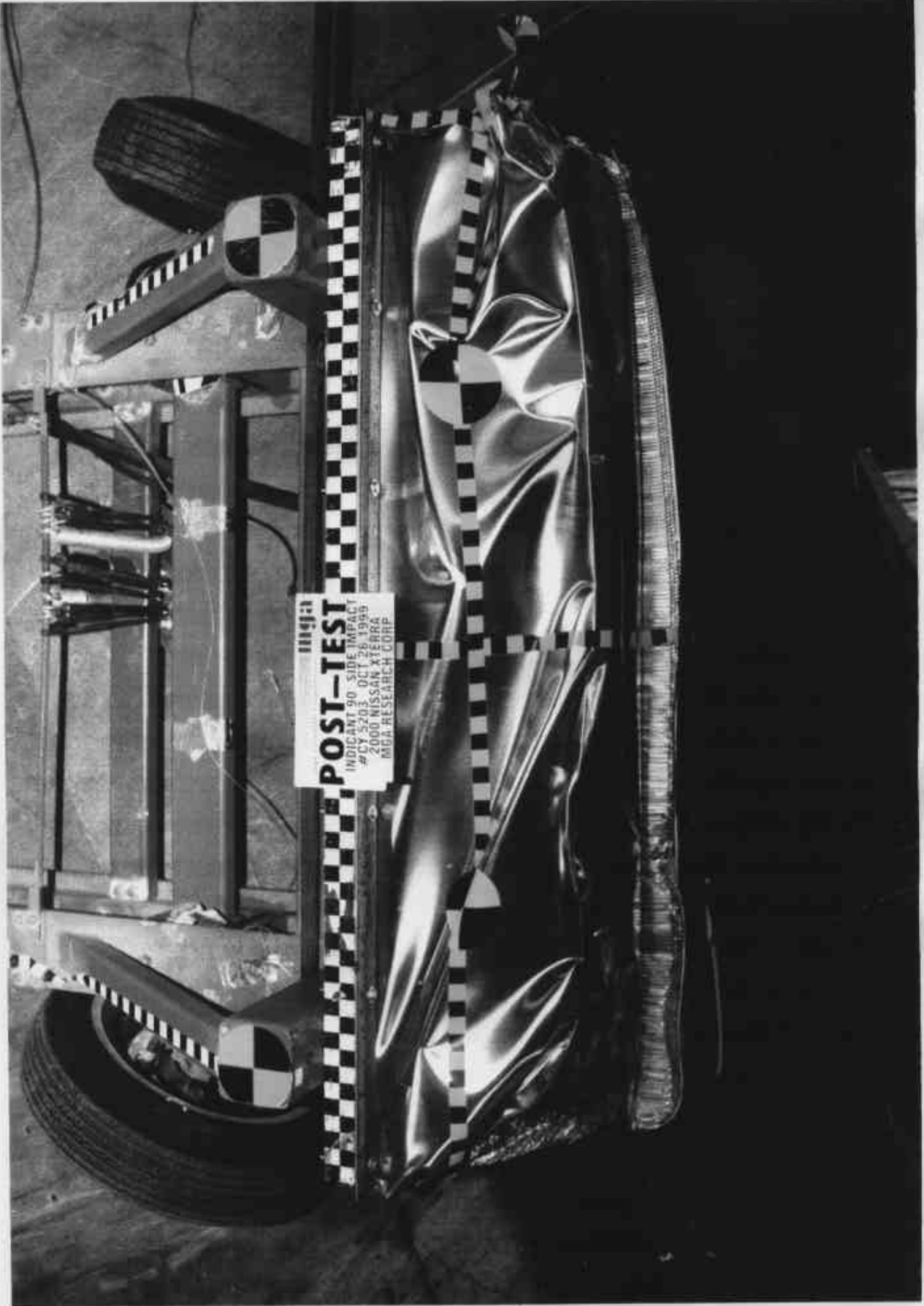


Photo No. A-14 - Post-Test MDB Top View

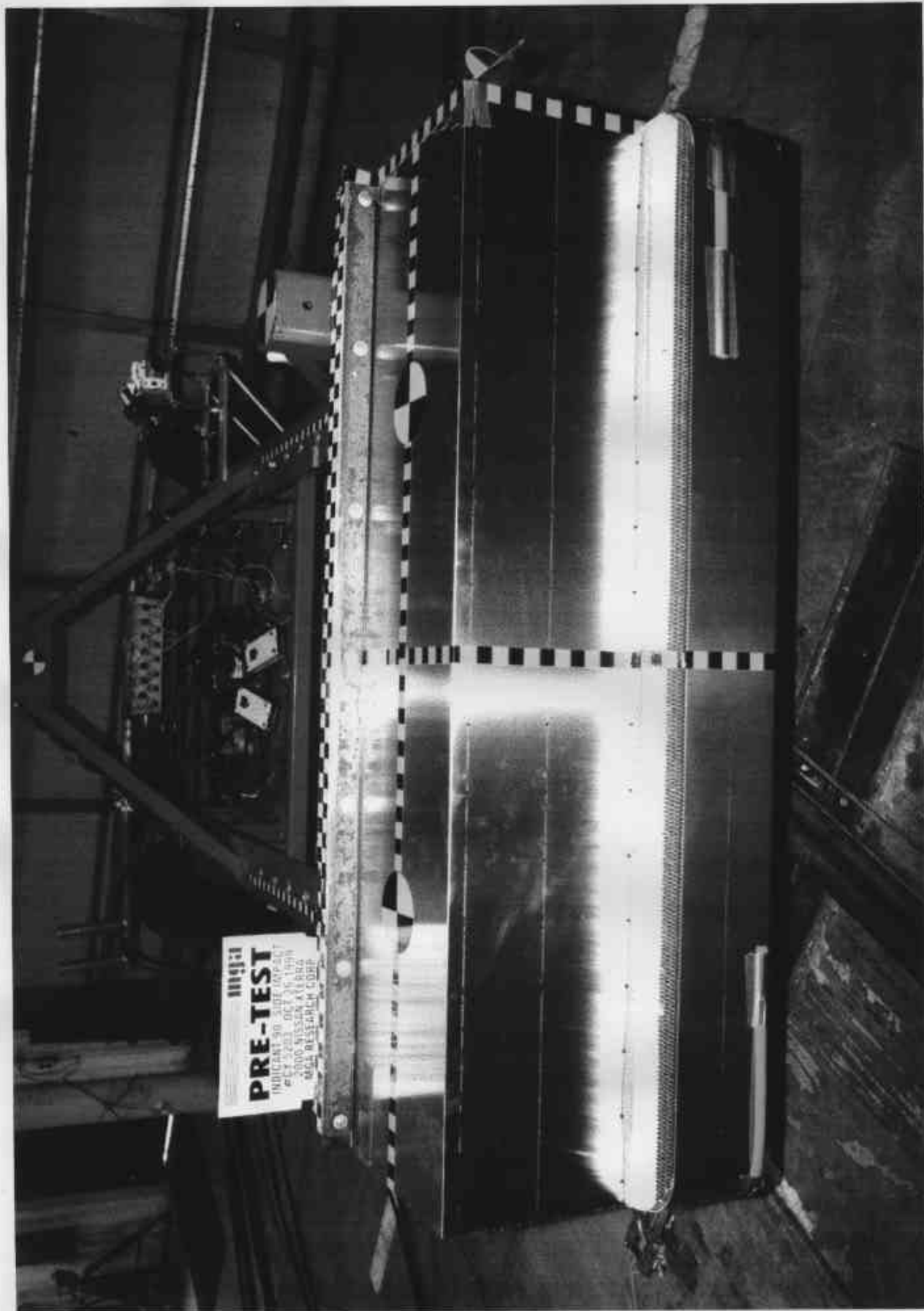


Photo No. A-15 - Pre-Test MDB Front View



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



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

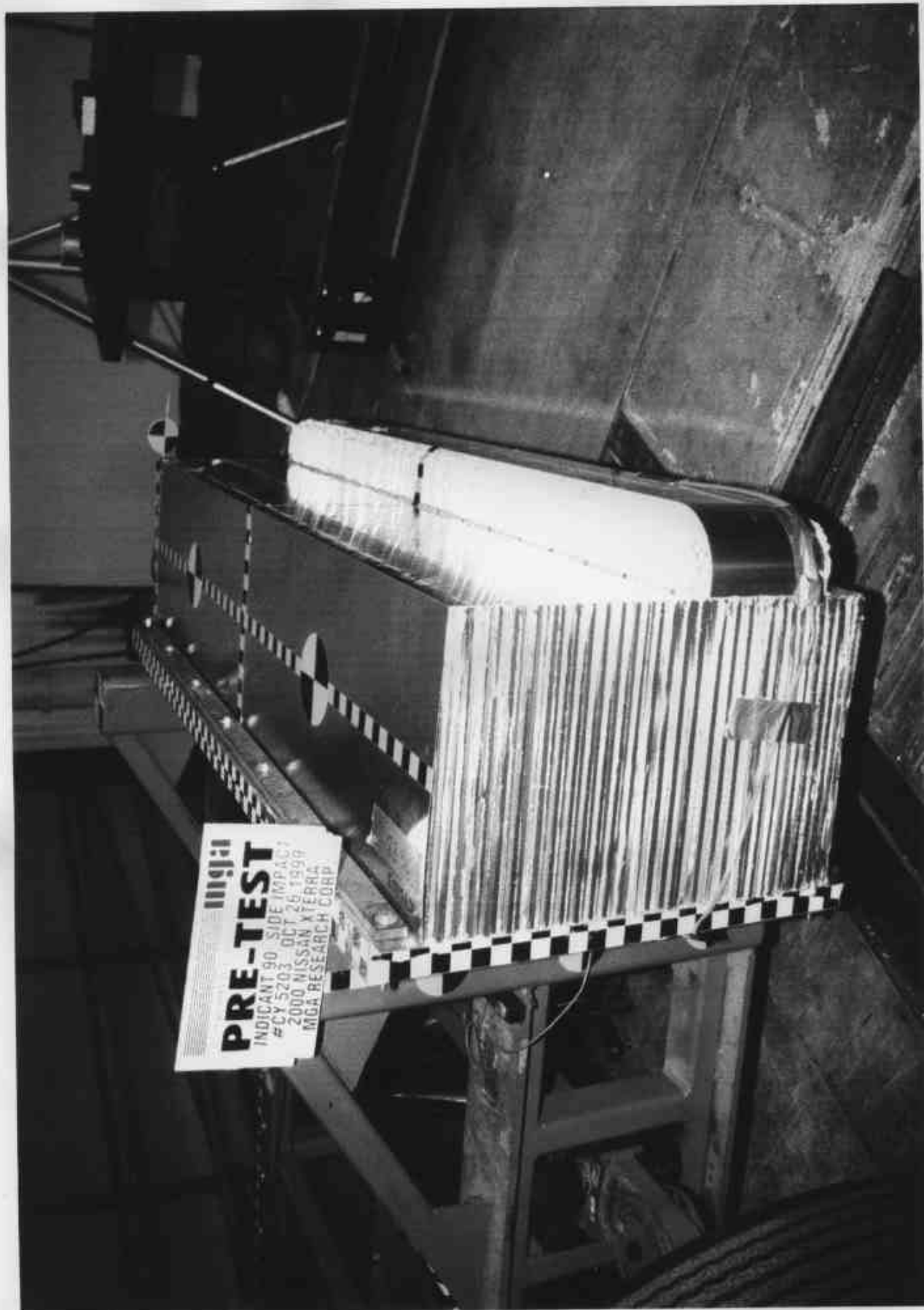


Photo No. A-19 - Pre-Test MDB Right Side View

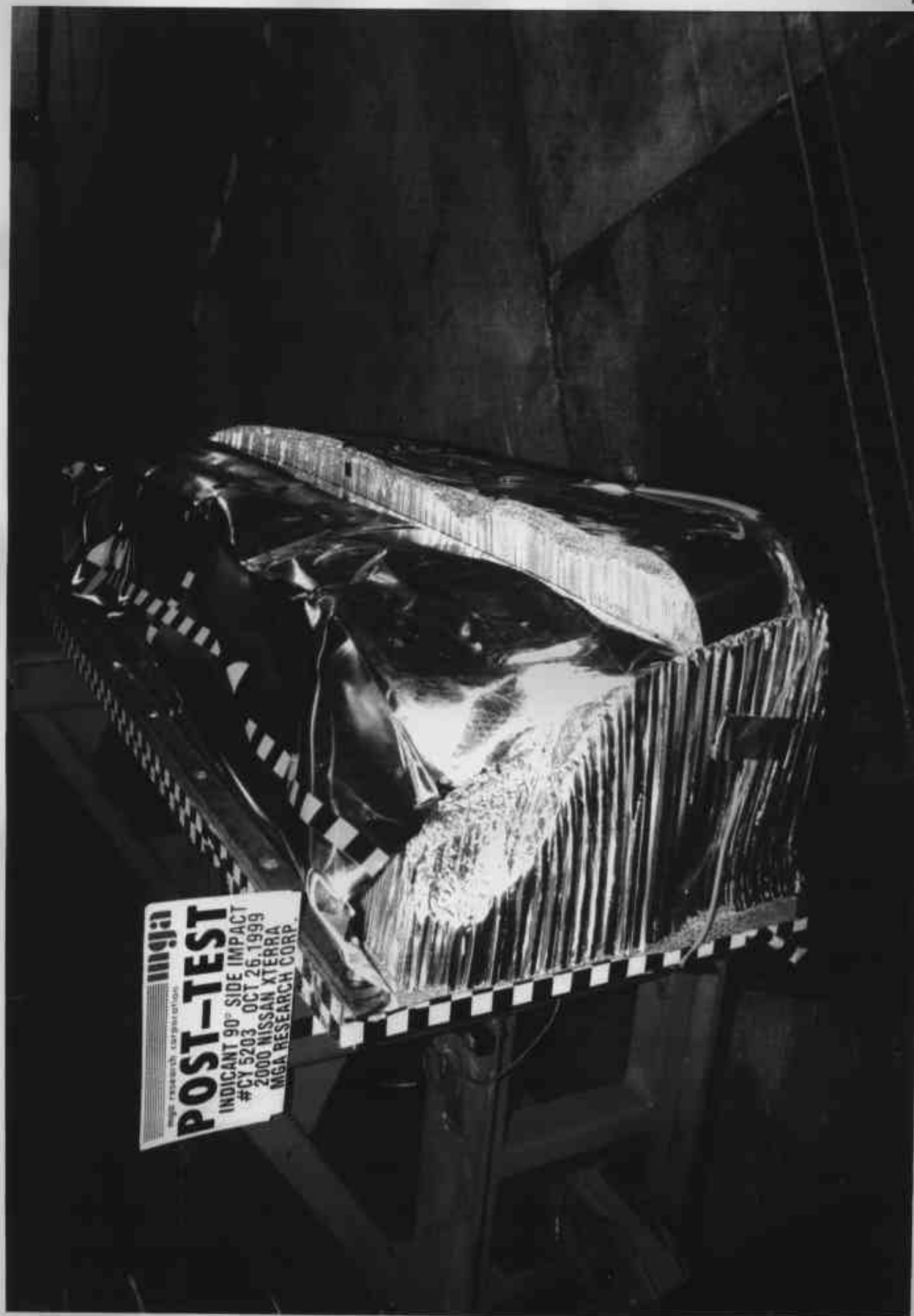


Photo No. A-20 - Post-Test MDB Right Side View



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



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

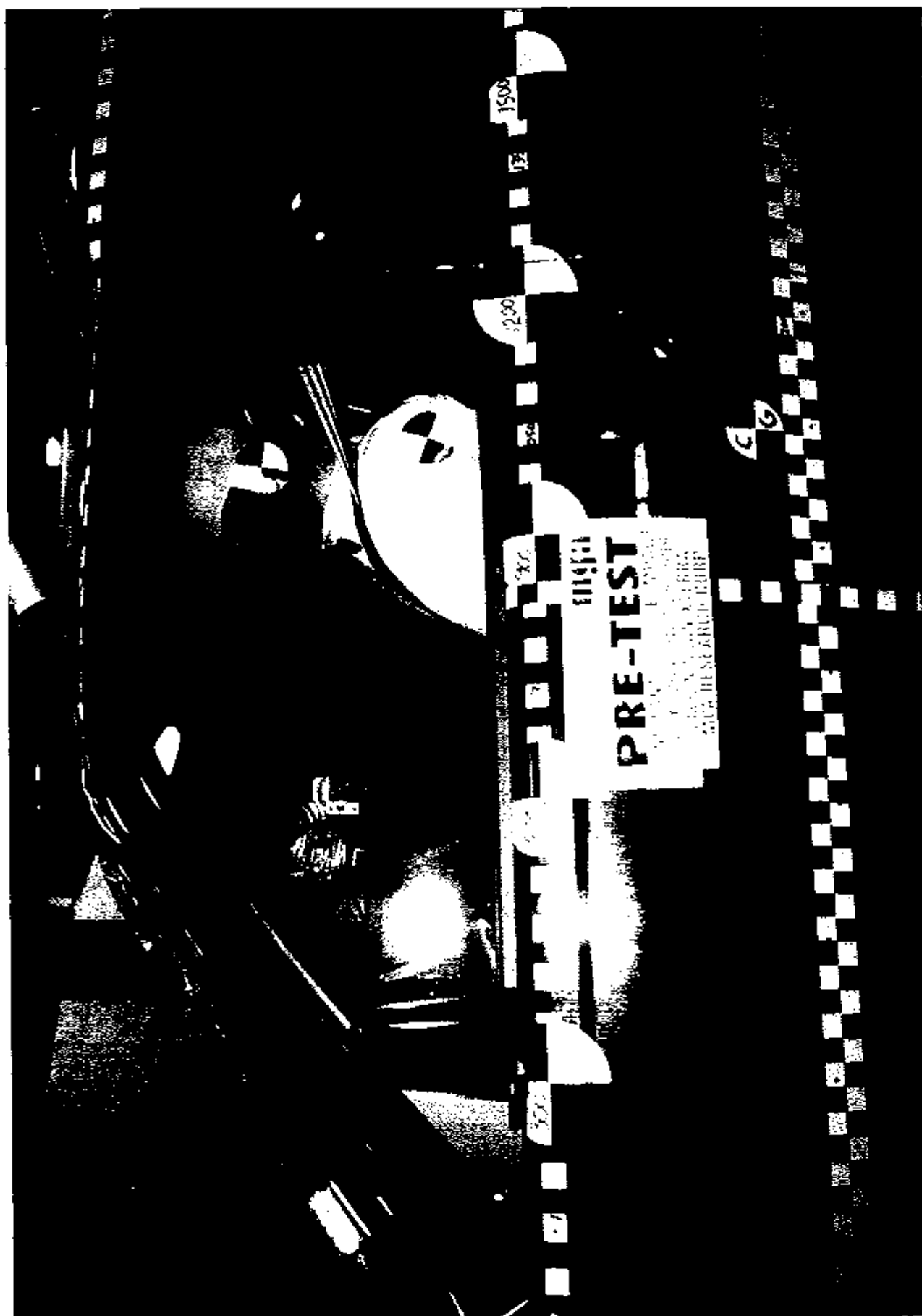


Photo No. A-23 - Pre-Test Driver Dummy Left Side View



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



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



Photo No. A-26 - Post-Test Driver Dummy Contact



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



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



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

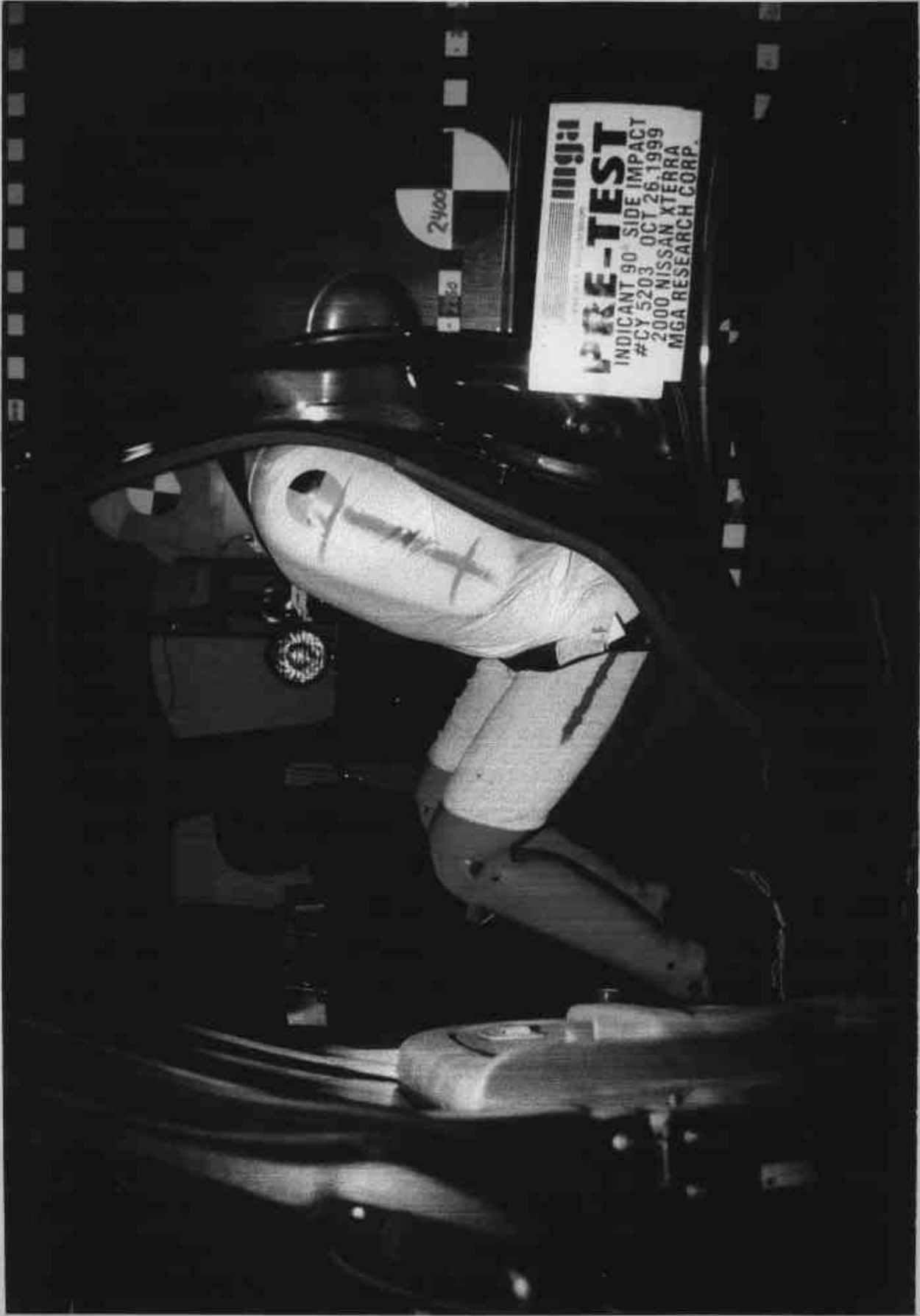


Photo No. A-30 - Pre-Test Rear Passenger Dummy Left Side View (Door Open)



Photo No. A-31 - Pre-Test Rear Passenger Dummy Shoulder View



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



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



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



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



Photo No. A-36 - Impact

NISSAN MOTOR CO., LTD.
08/99
5000 LB
2740 LB
SALE FR.
WITH P235/70R15 Tires
15x7.0 RIMS AT 26 PSI
COLD SINGLE
SALE RR.
WITH P235/70R15 Tires
15x7.0 RIMS AT 26 PSI
COLD SINGLE

THIS VEHICLE CONFORMS TO
ALL APPLICABLE FEDERAL
MOTOR VEHICLE SAFETY
AND THEFT PREVENTION
STANDARDS IN EFFECT
ON THE DATE OF
MANUFACTURE SHOWN ABOVE.
SEE OWNER'S MANUAL FOR
ADDITIONAL INFORMATION.

VIN: 5N1002B7YC525558
TYPE: RPU 461
MODEL: T80LEF-EUR 02008
COLOR: TRIM
D46
ENGINE
CR46 K240E 2389CC

5N1002B7YC525558

Photo No. A-37 - Vehicle Certification Label and Tire Placard



Photo No. A-38 - Rollover 90°

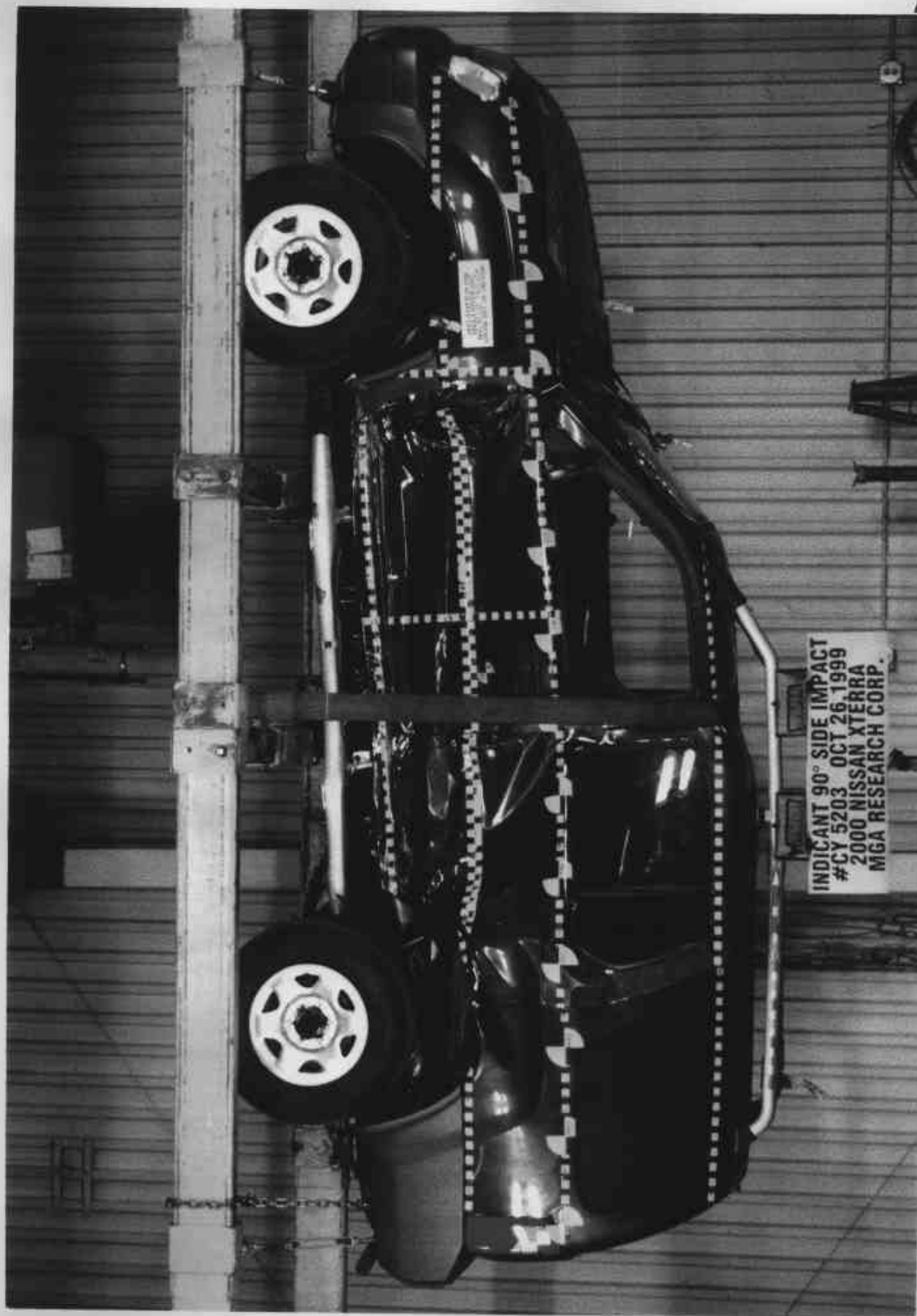
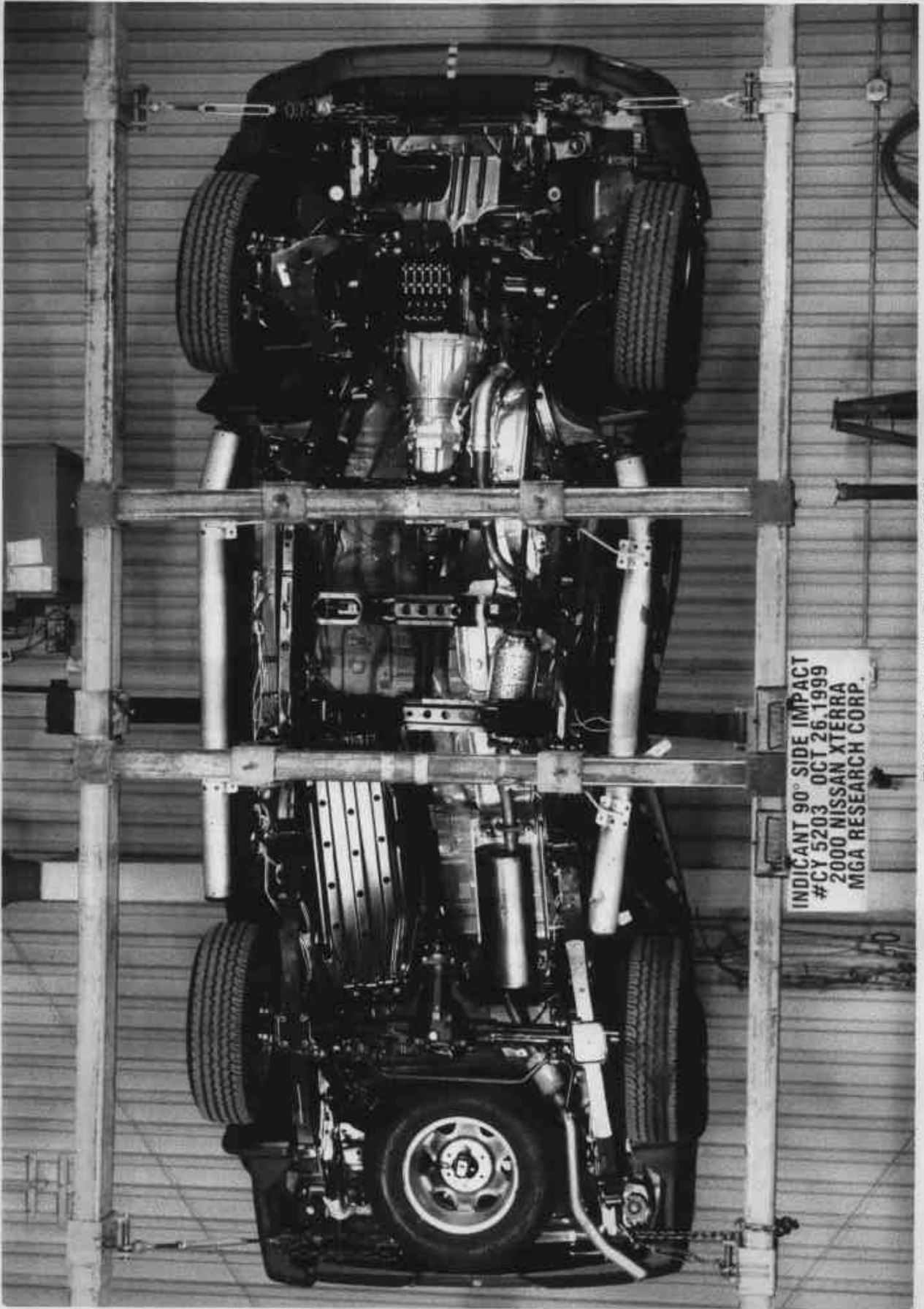


Photo No. A-39 - Rollover 180°



INDICANT 90° SIDE IMPACT
#CY 5203 OCT 26, 1999
2000 NISSAN XTERRA
MGA RESEARCH CORP.

Photo No. A-40 - Rollover 270°

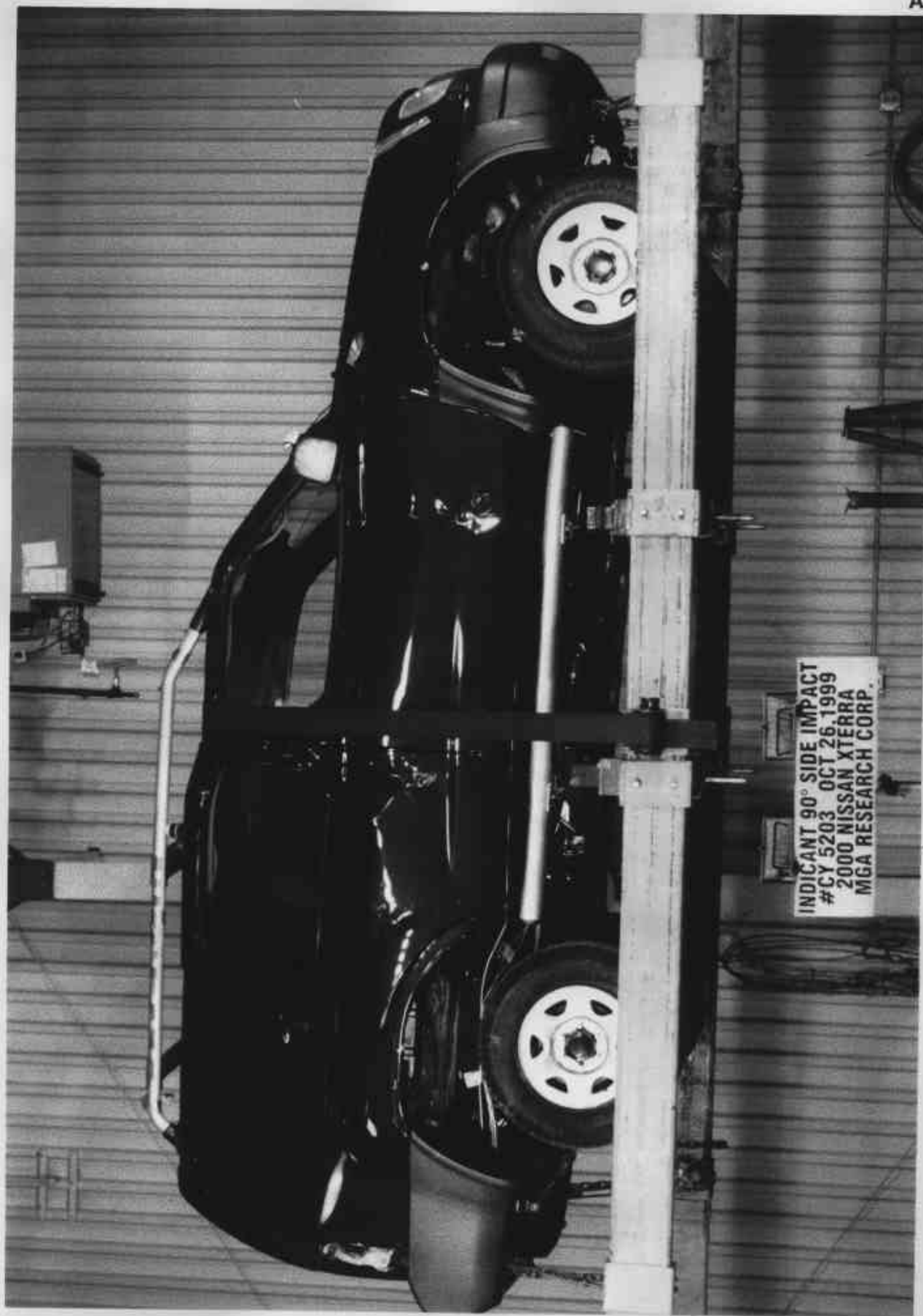


Photo No. A-41 - Rollover 360°

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* No valid data collected

** Data not valid after approximately 36 msec.

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TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

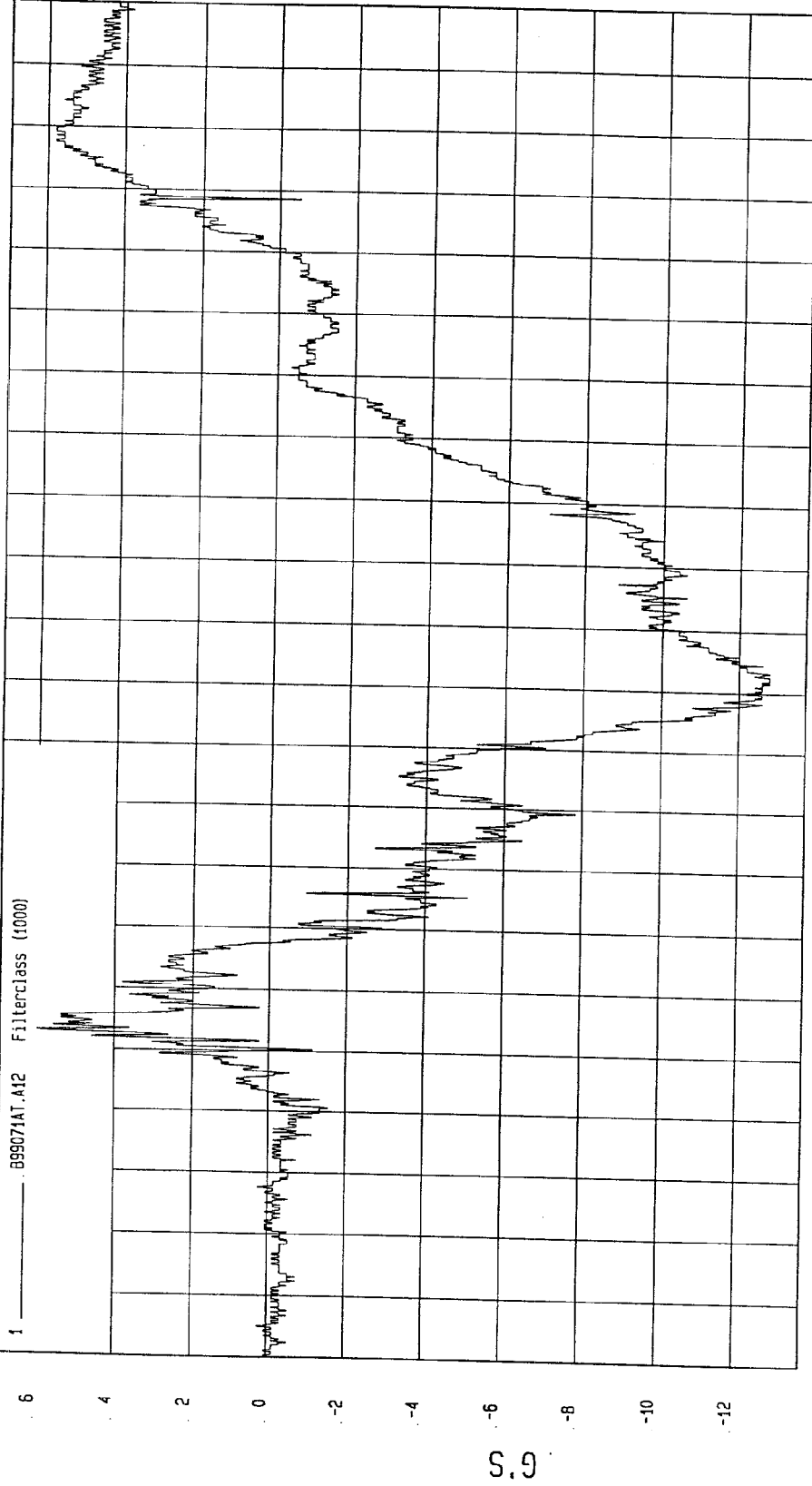
Speed: 38.4 MPH 61.8 KPH

Minimum = -12.78 G'S at 92 msec

Maximum = 5.99 G'S at 33 msec

DRIVER HEAD X ACCELERATION

1 ——— 899071AT.A12 Filterclass (1000)



MCA Research
08-09-2000 08.19

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -21.17 KPH at 160 msec
Maximum = 1.29 KPH at 48 msec

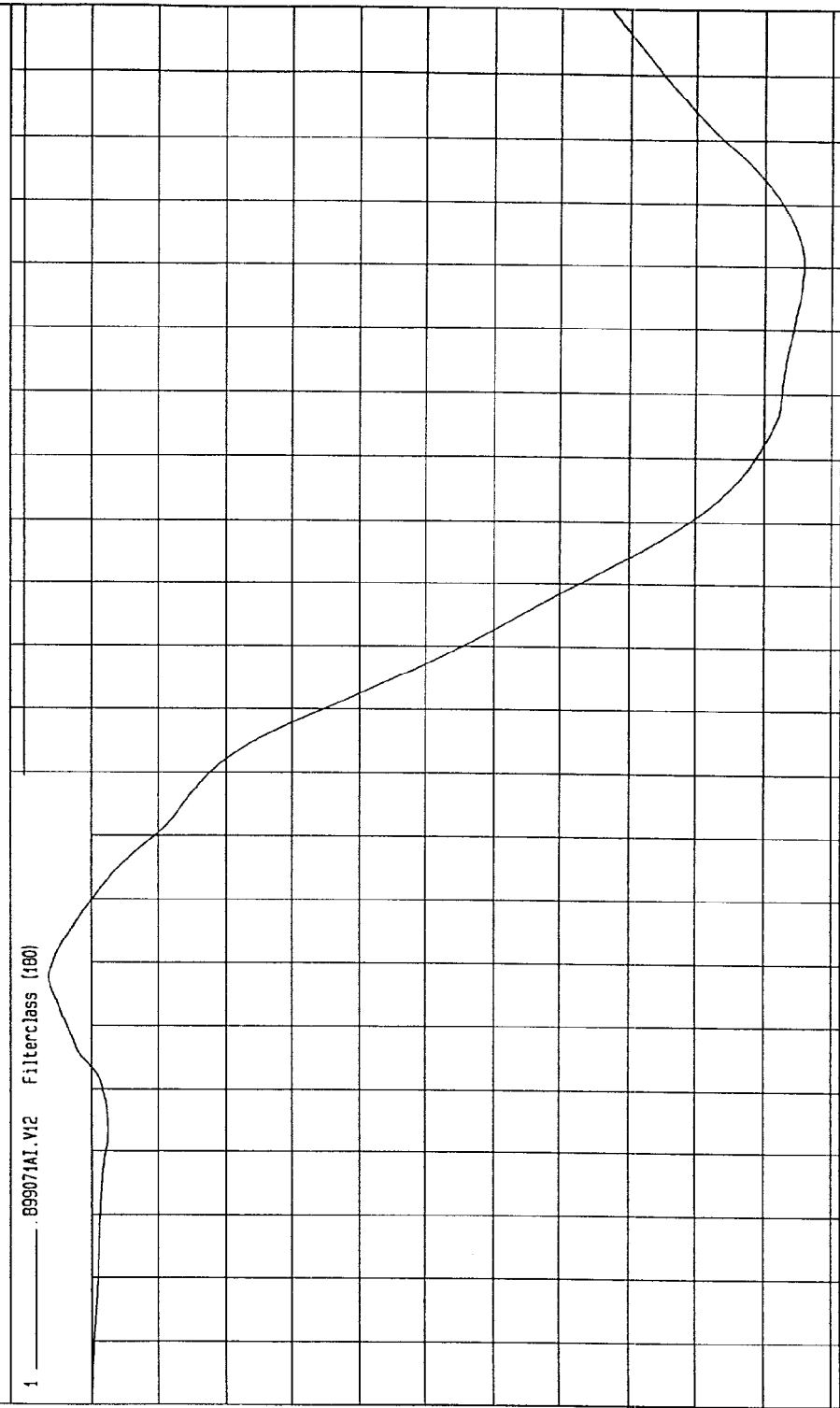
DRIVER HEAD X VELOCITY

1 _____ B99071A1.V12 Filterclass (100)

KPH

TIME Seconds

NSA Research
08-09-2000 08:24

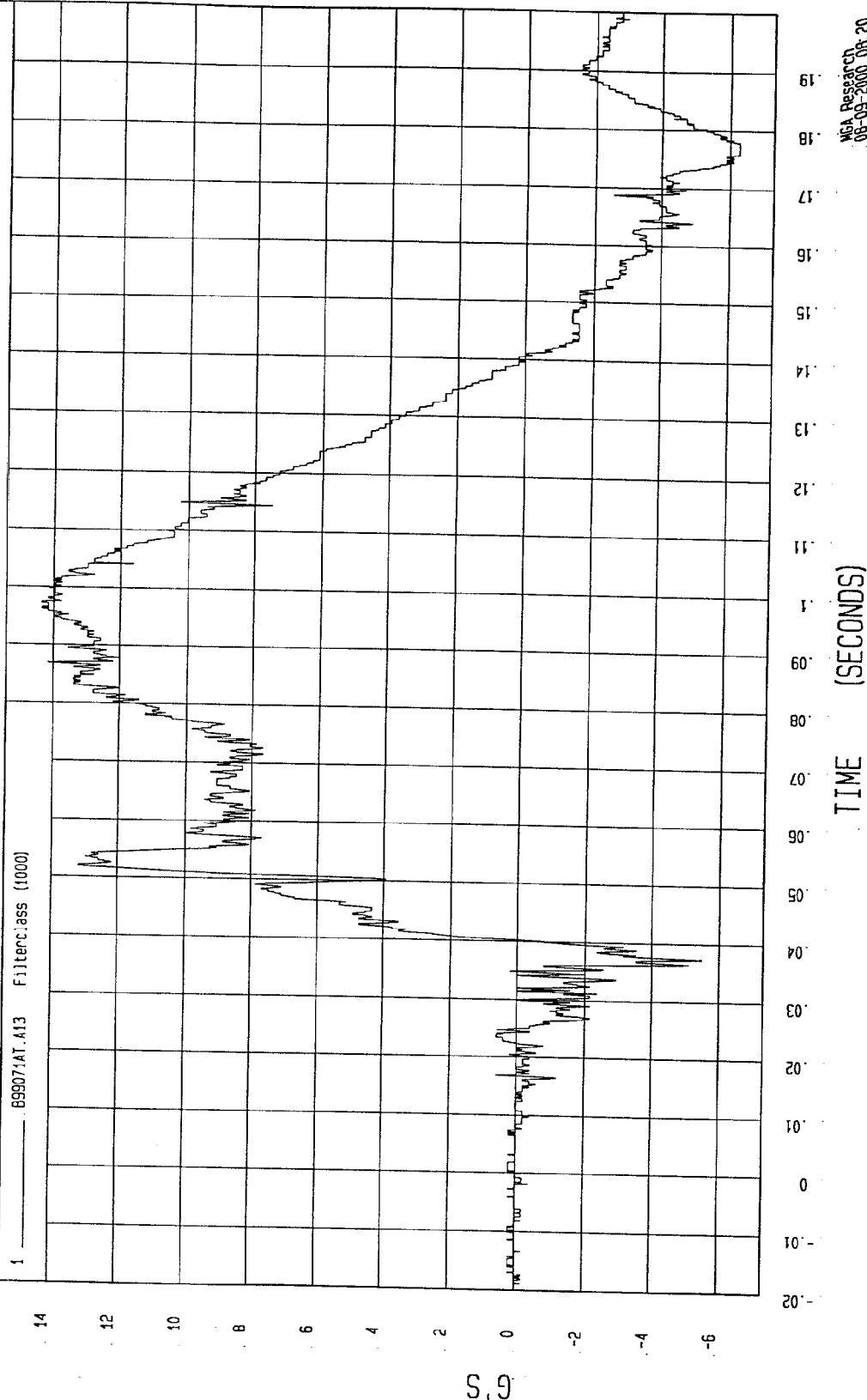


TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -6.28 G'S at 176 msec Maximum = 14.36 G'S at 96 msec

DRIVER HEAD Y ACCELERATION



TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

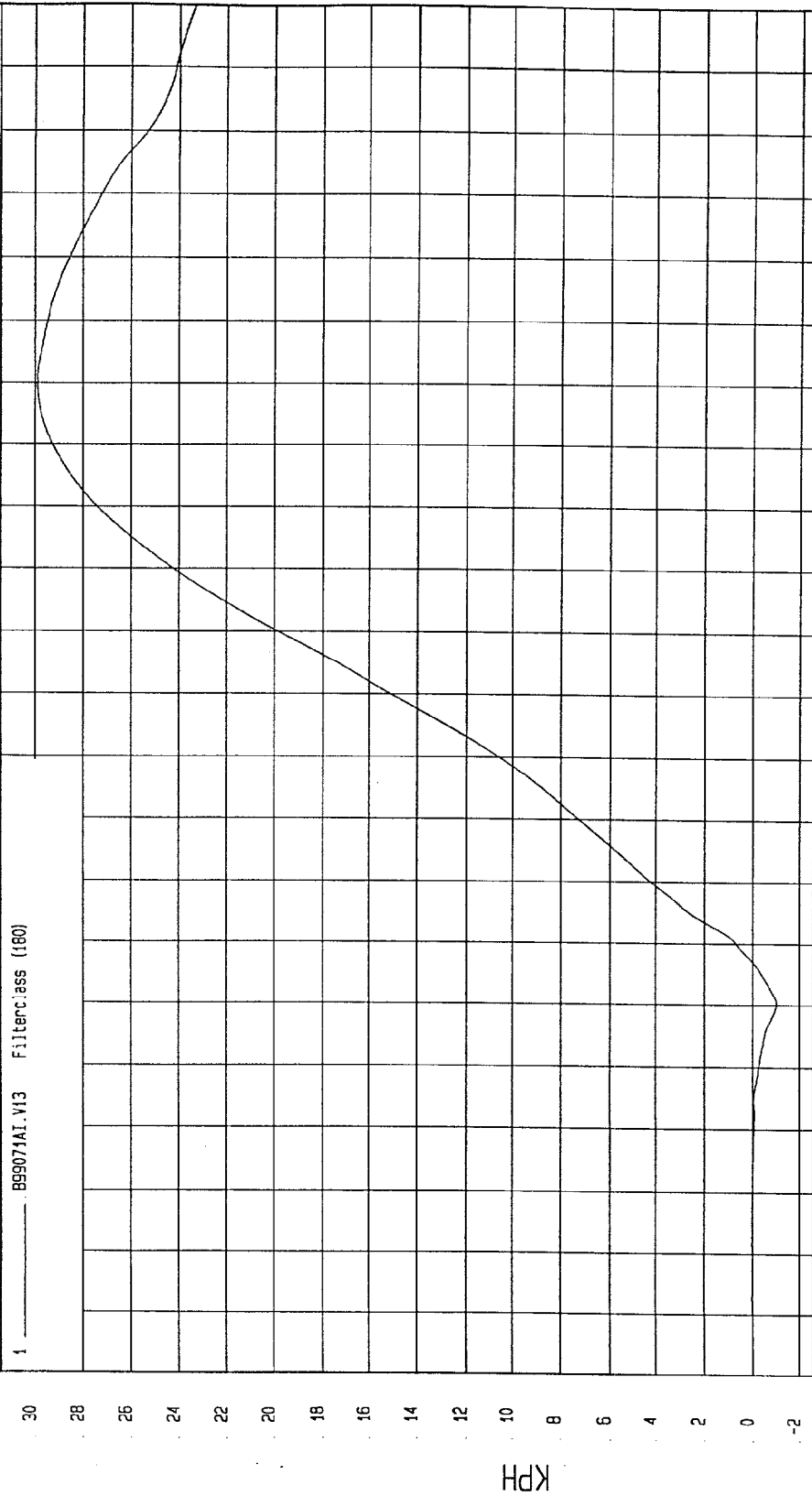
Speed: 38.4 MPH 61.8 KPH

Minimum = -1.01 KPH at 40 msec

Maximum = 29.91 KPH at 140 msec

DRIVER HEAD Y VELOCITY

1 ——— B99071A1.V13 Filter: class (180)



WCA Research
08-09-2000 08:24

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

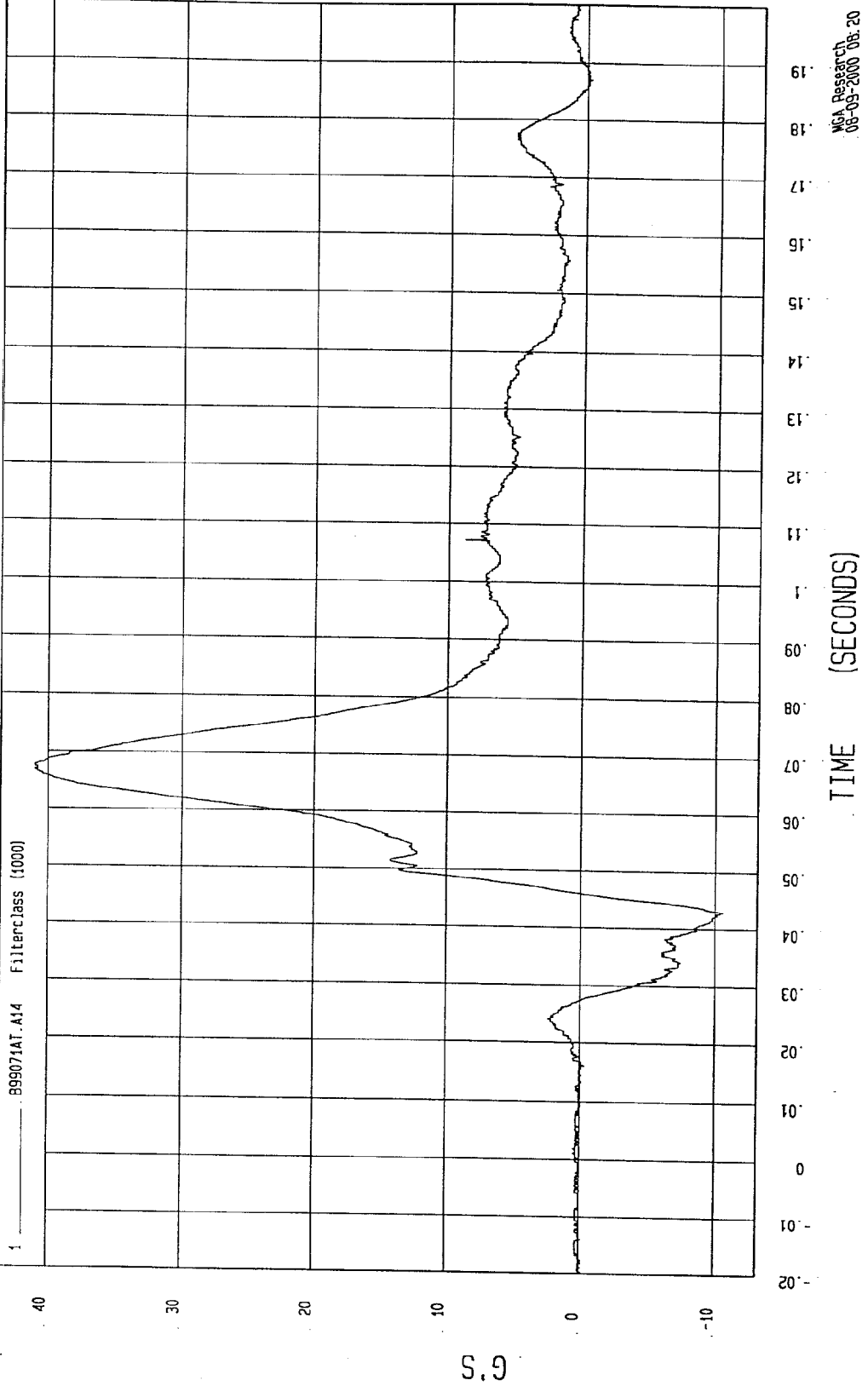
Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 41.01 G'S at 67 msec

Minimum = -10.57 G'S at 43 msec

DRIVER HEAD Z ACCELERATION



TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

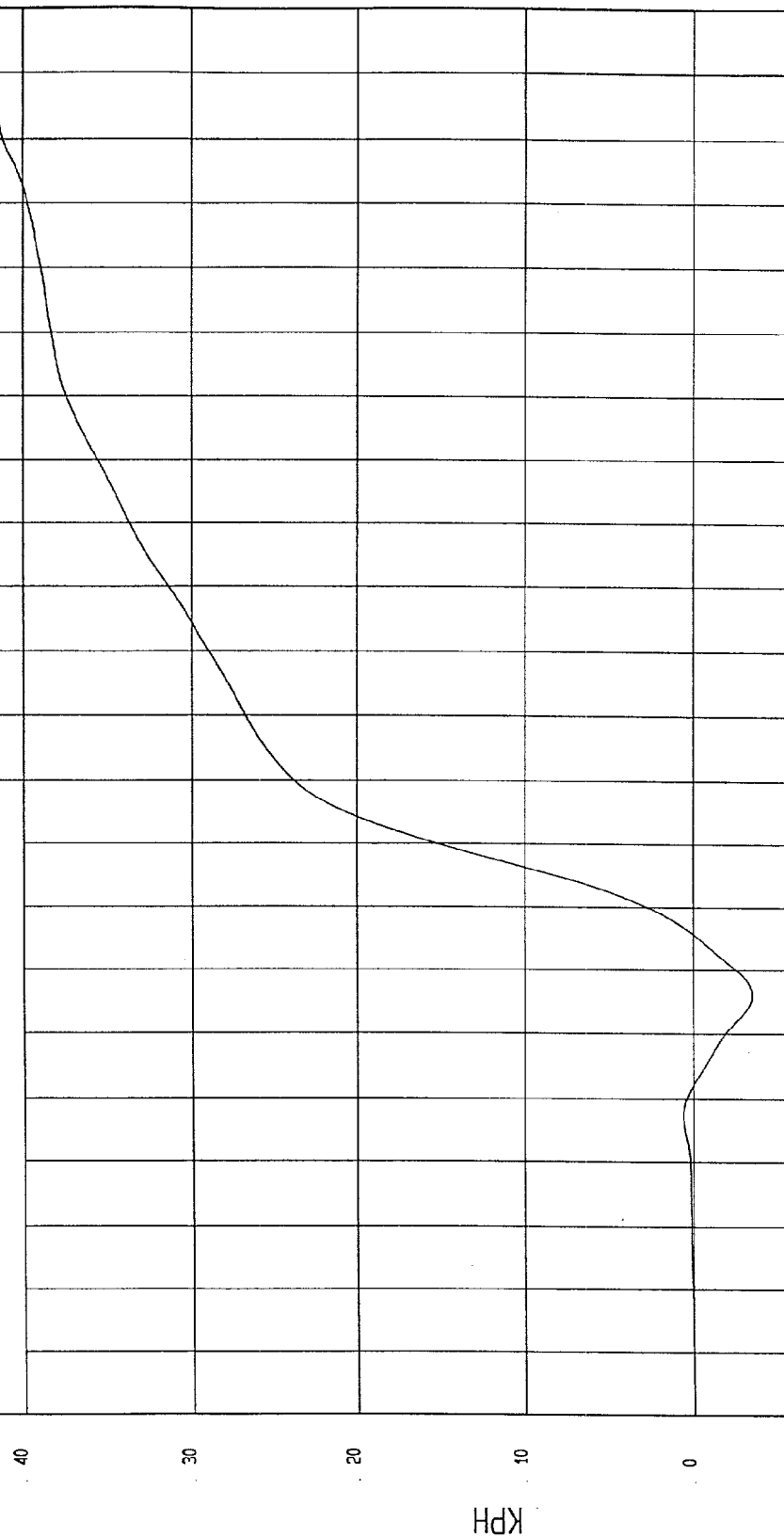
Speed: 38.4 MPH 61.8 KPH

Minimum = -3.54 KPH at 46 msec

Maximum = 41.79 KPH at 200 msec

DRIVER HEAD Z VELOCITY

1 ——— B99074I.V14 Filterclass (180)



TIME Seconds

WGA Research
08-09-2000 08:24

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

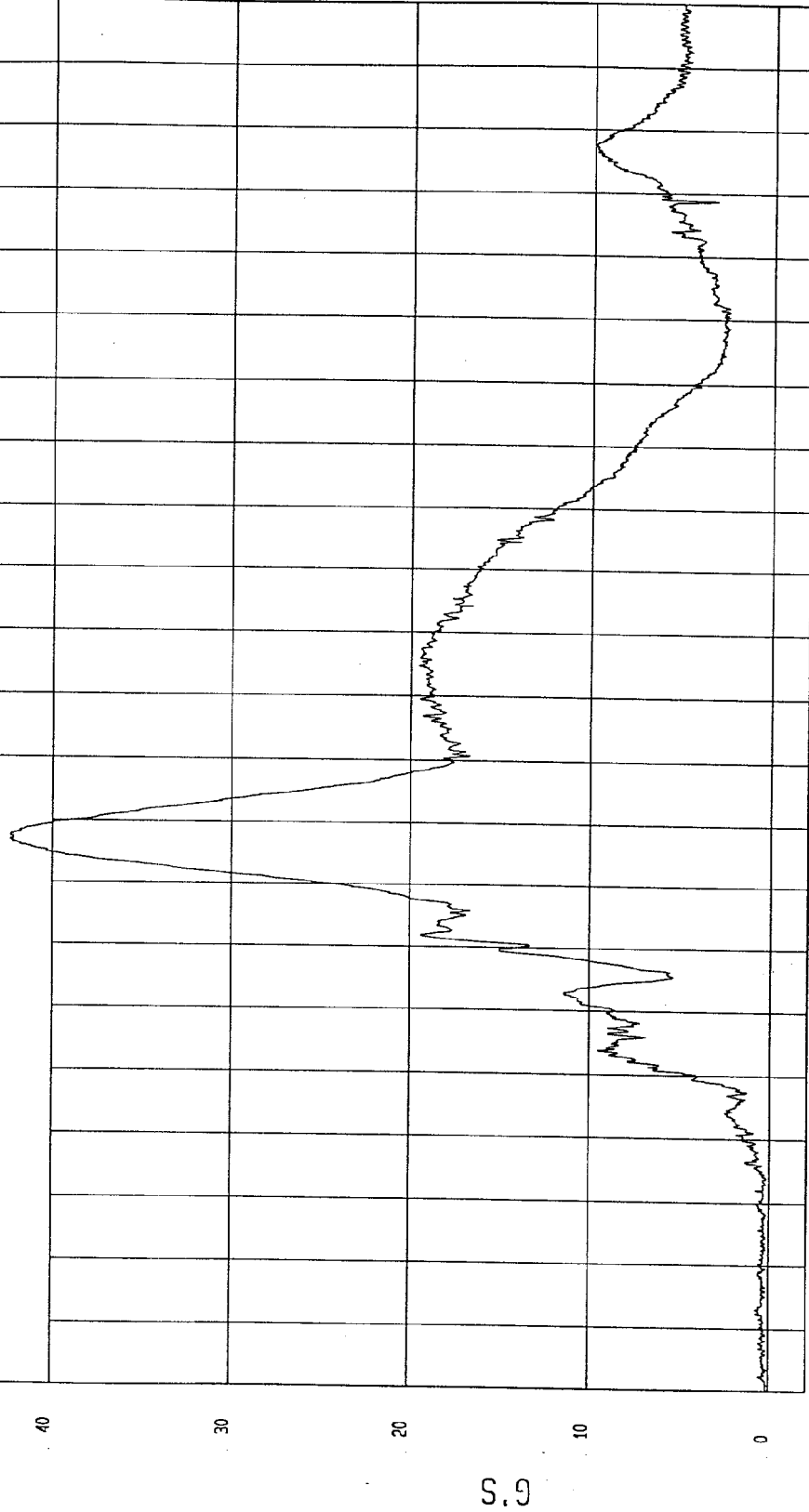
Speed: 38.4 MPH 61.8 KPH

Minimum = 8.75E-02 G'S at -20 msec

Maximum = 42.35 G'S at 67 msec

DRIVER HEAD RESULTANT ACCELERATION

1 _____ B99071AV.A12 Filterclass (1000)



MGA Research
08-09-2000 08:20

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

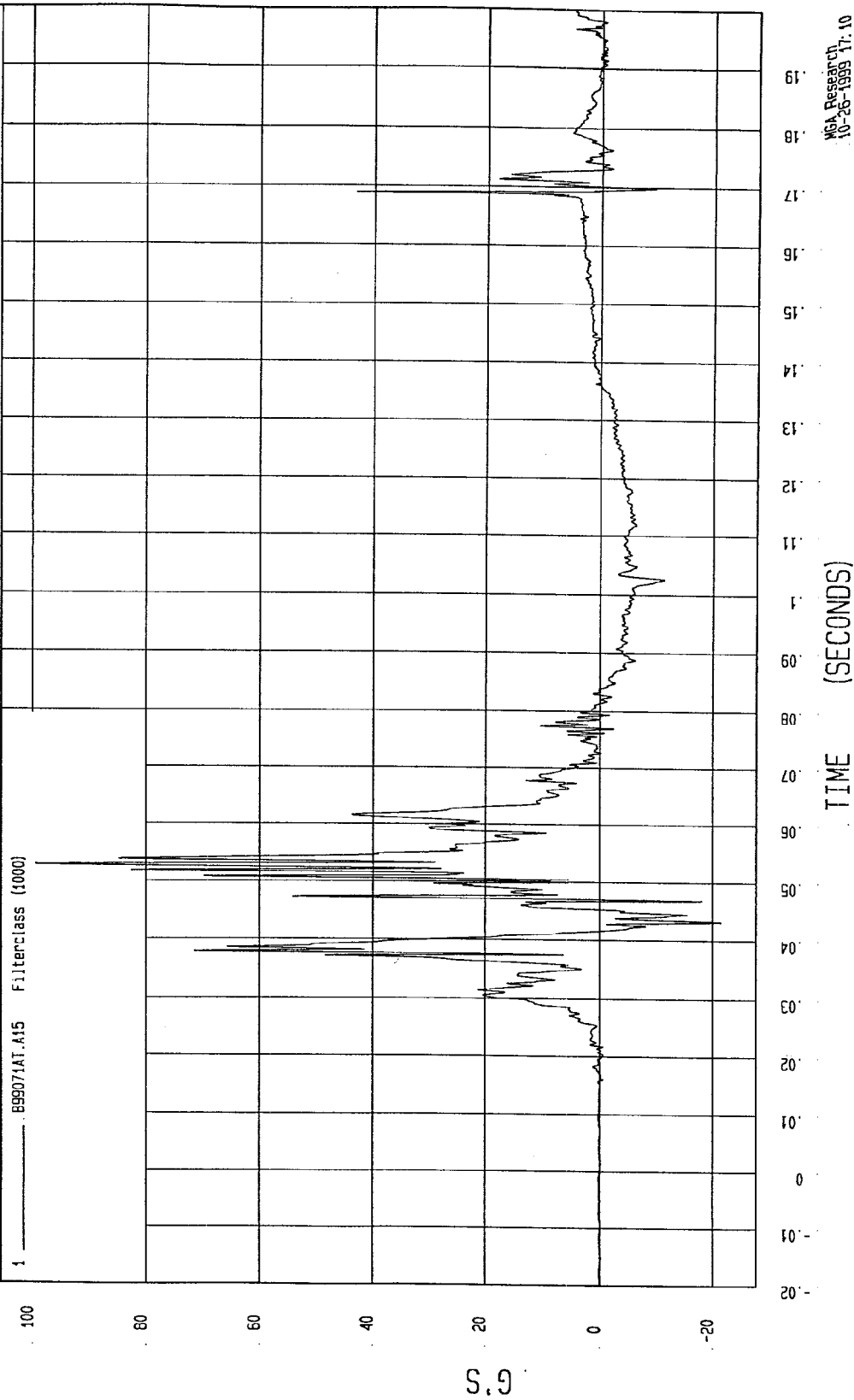
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 99.5 G'S at 53 msec

Minimum = -21.58 G'S at 43 msec

DRIVER UPPER RIB Y ACCELERATION



TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

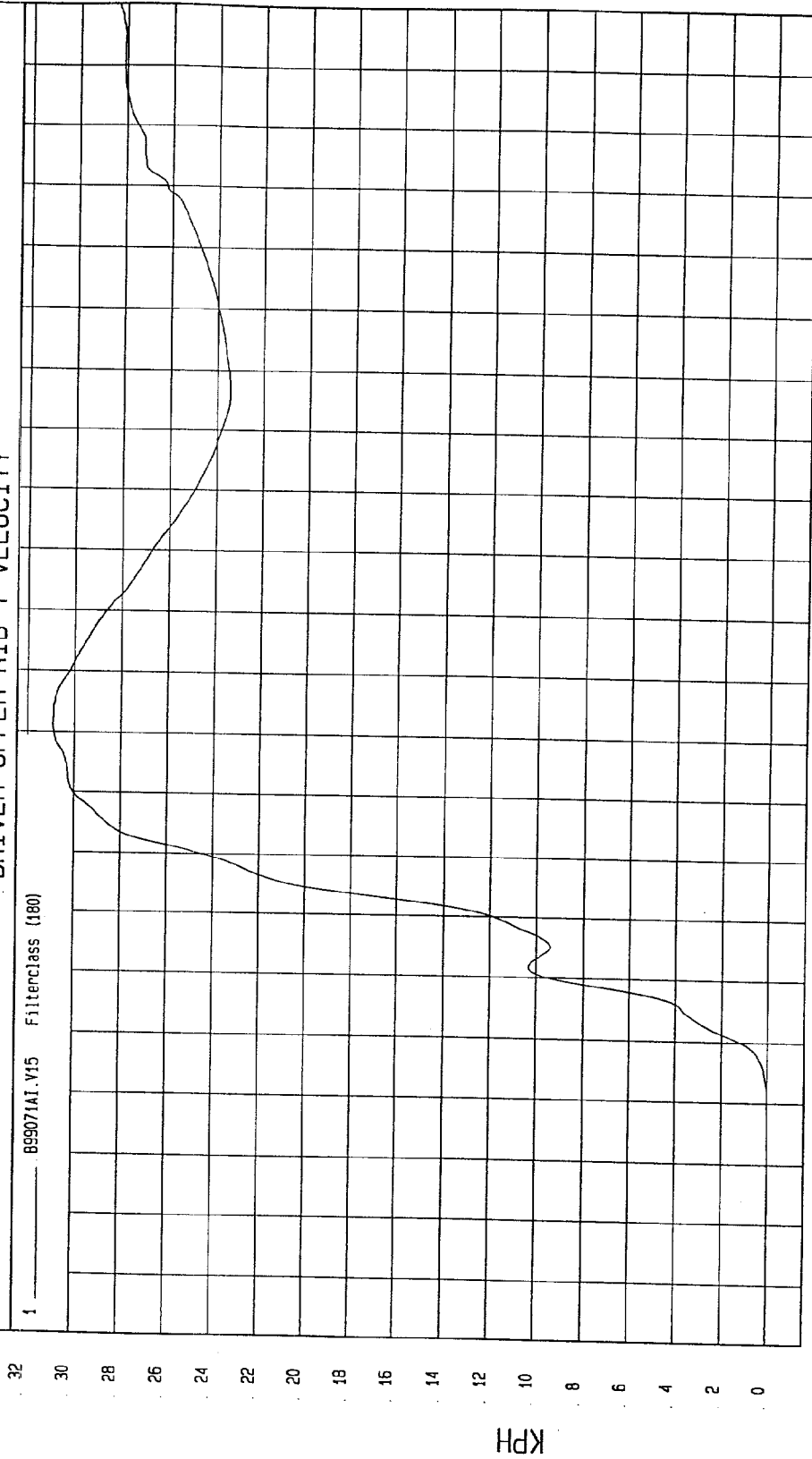
Speed: 38.4 MPH 61.8 KPH

Minimum = -.01 KPH at -8 msec

Maximum = 30.92 KPH at 81 msec

DRIVER UPPER RIB Y VELOCITY

1 899071A1.V15 Filterclass (180)



TIME Seconds

NGA Research
10-26-1999 17:15

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

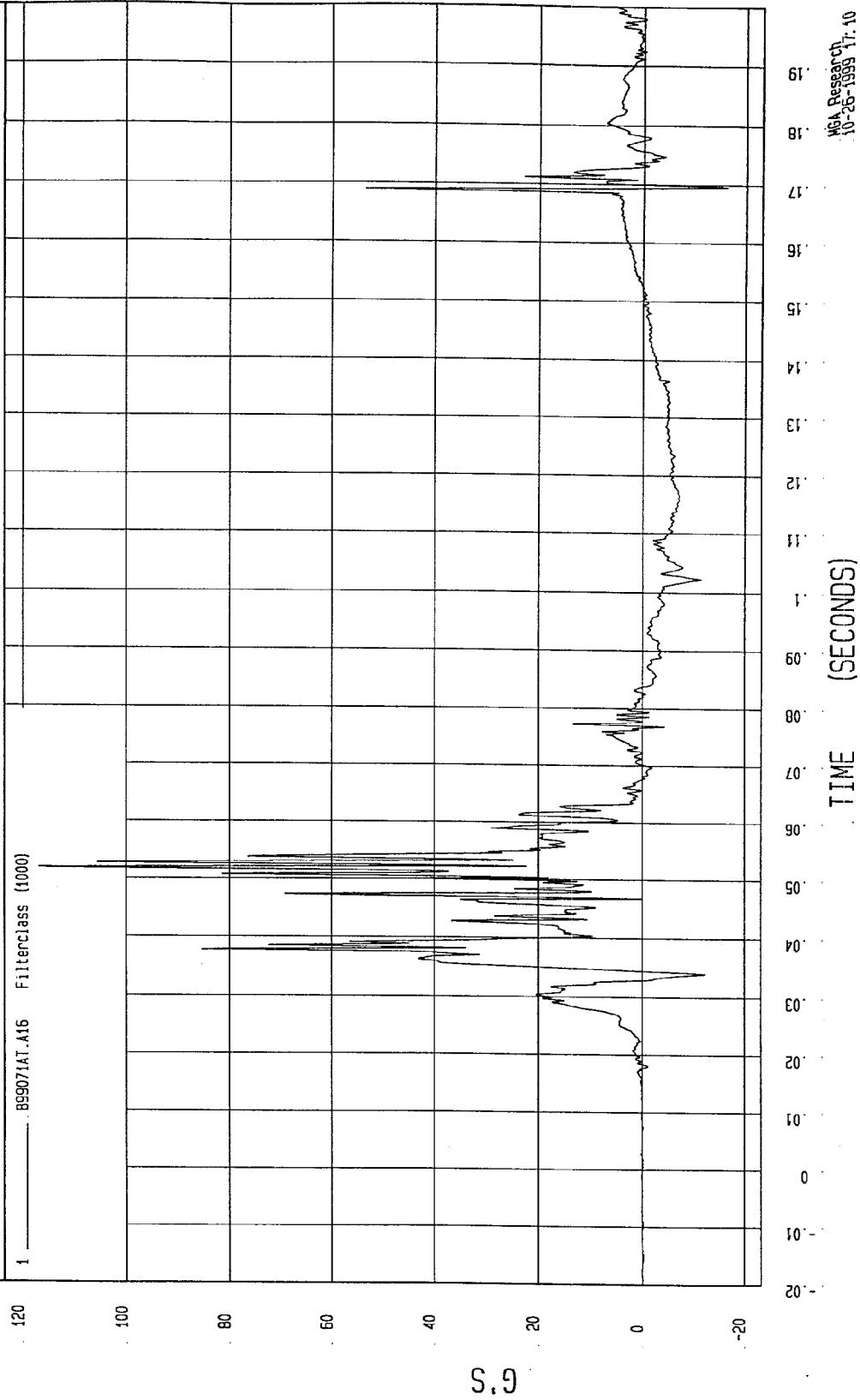
Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 115.89 G'S at 52 msec

Minimum = -16.47 G'S at 170 msec

DRIVER LOWER RIB Y ACCELERATION



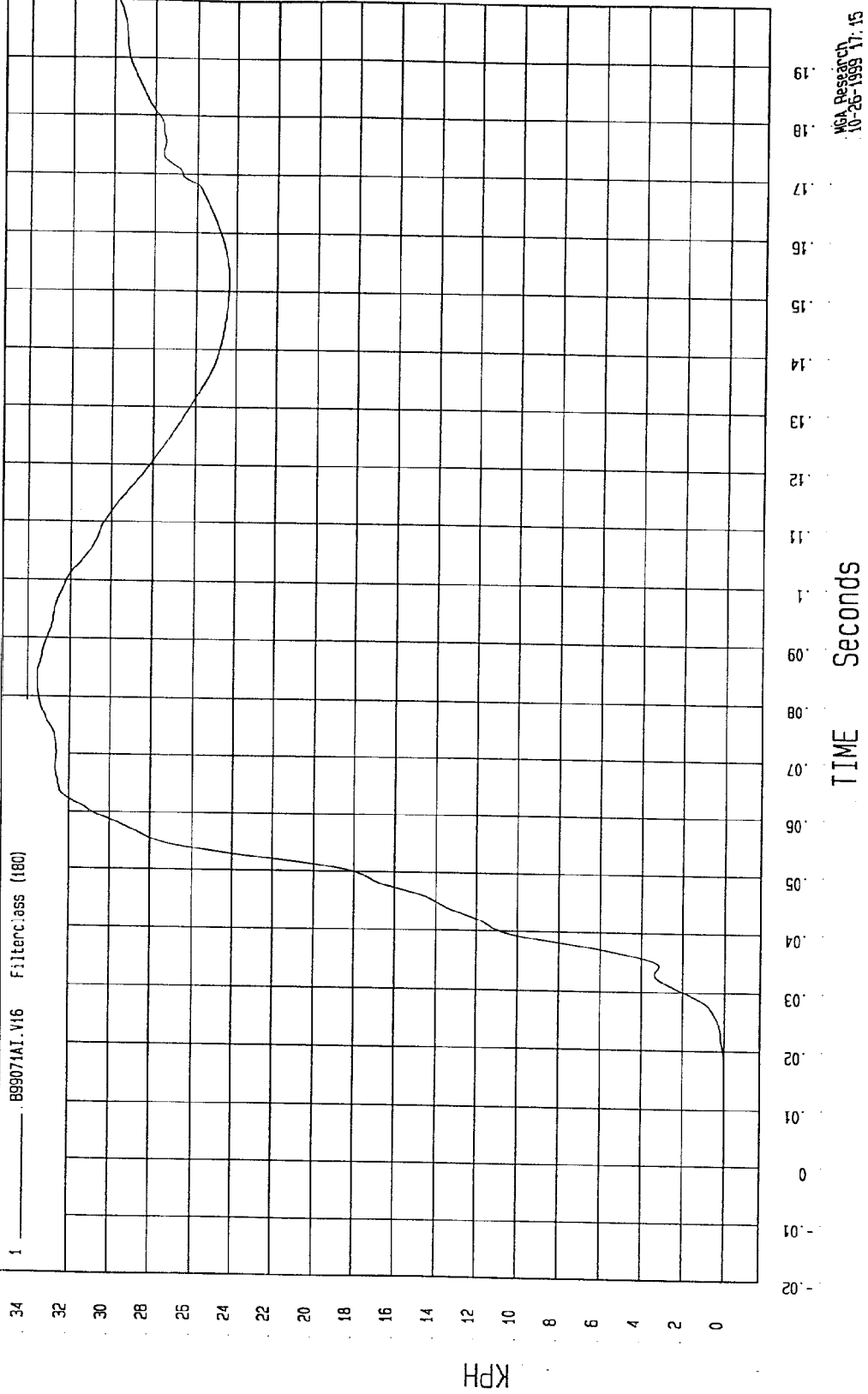
WCA Research
10-26-1999 17:10

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -.01 KPH at -8 msec Maximum = 33.55 KPH at 84 msec

DRIVER LOWER RIB Y VELOCITY



MSA Research
10-26-1999 17:15

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 53.06 G'S at 44 msec

Minimum = -7.07 G'S at 112 msec

DRIVER LOWER SPINE Y ACCELERATION

1 B99071AF.A17 Filterclass (180)



WCA Research
10-26-1999 11:10

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

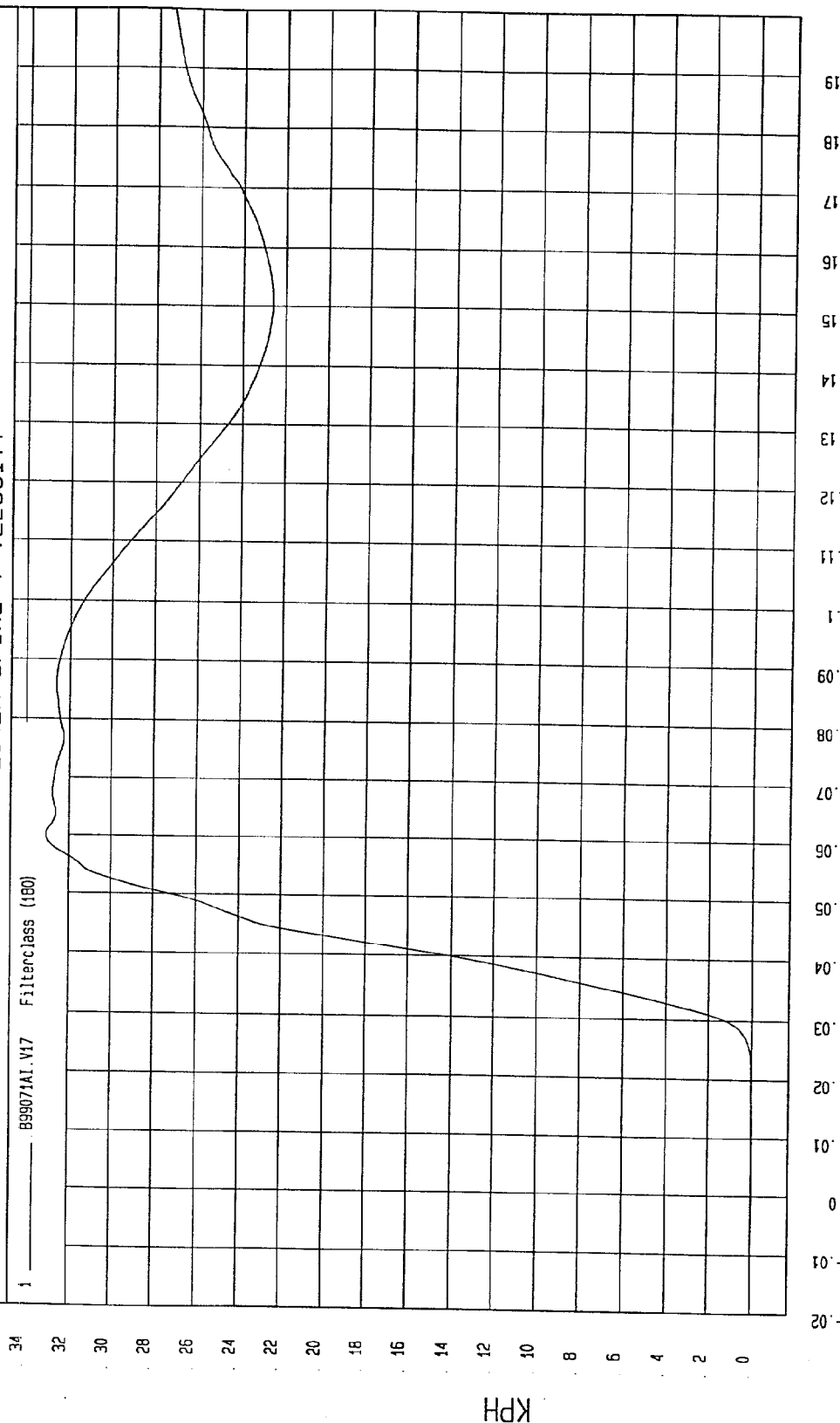
Speed: 38.4 MPH 61.8 KPH

Minimum = -2.88E-02 KPH at 11 msec

Maximum = 33.07 KPH at 60 msec

DRIVER LOWER SPINE Y VELOCITY

1 B99071A1.V17 FilterClass (100)



WCA Research
10-26-1999 17:15

TIME Seconds

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -12.9 G'S at 61 msec
Maximum = 101.89 G'S at 36 msec

DRIVER PELVIS Y ACCELERATION

1 ——— 899071AT.A18 Filterclass (1000)

100

80

60

40

20

0

G.S

WCA Research
10-26-1999 17:10

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

TIME (SECONDS)

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = -5.2(E-03 KPH at -17 msec

Maximum = 37.1 KPH at 47 msec

DRIVER PELVIS Y VELOCITY

1 899071A1.V18 FilterClass (180)



NSA Research
10-26-1999 17:15

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

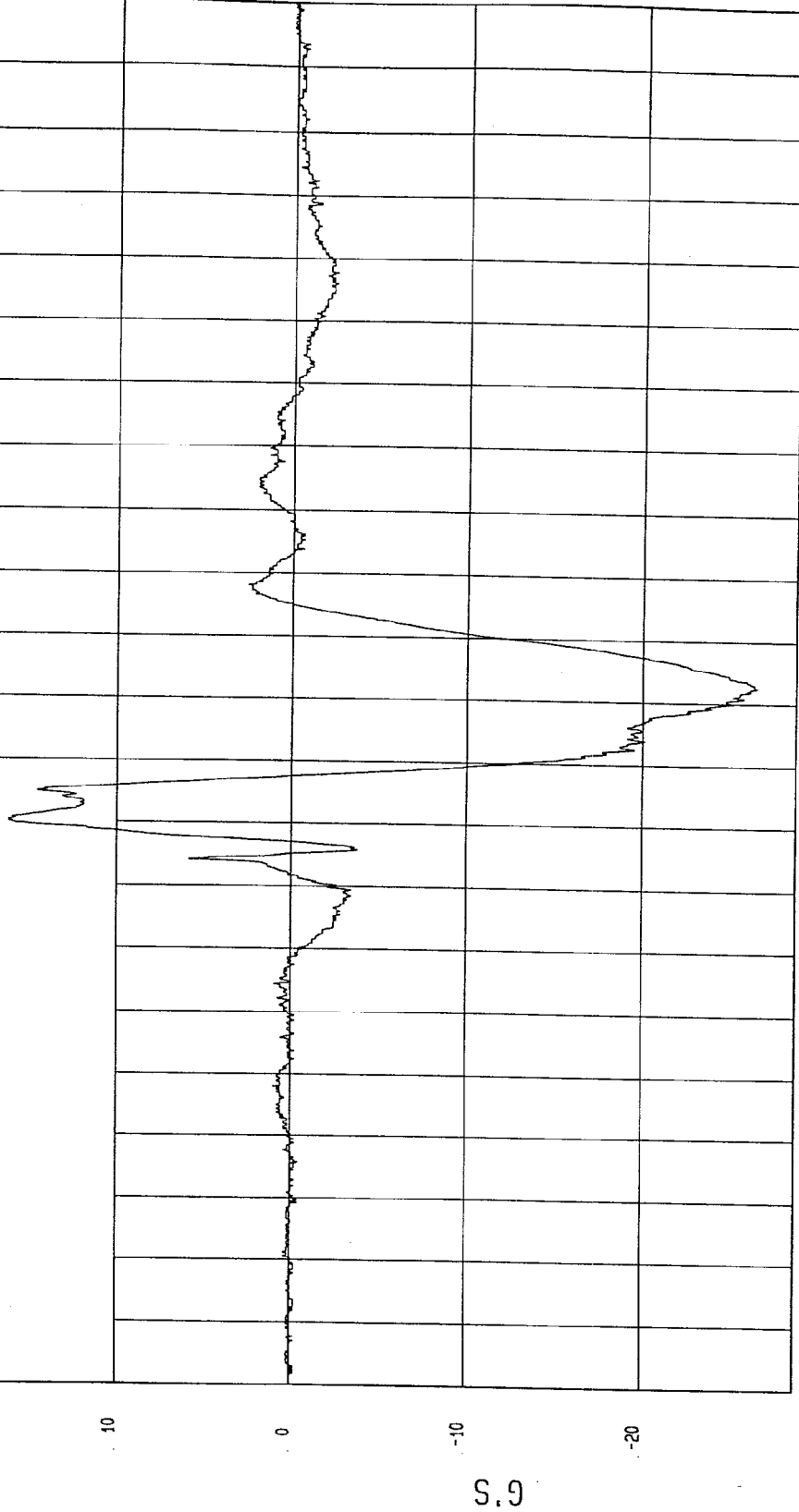
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Minimum = -26.47 G'S at 92 msec

Maximum = 16.08 G'S at 70 msec

REAR PASSENGER HEAD X ACCELERATION

1 899071AT.A22 Filterclass (1000)



WGA Research
08-09-2000 08:20

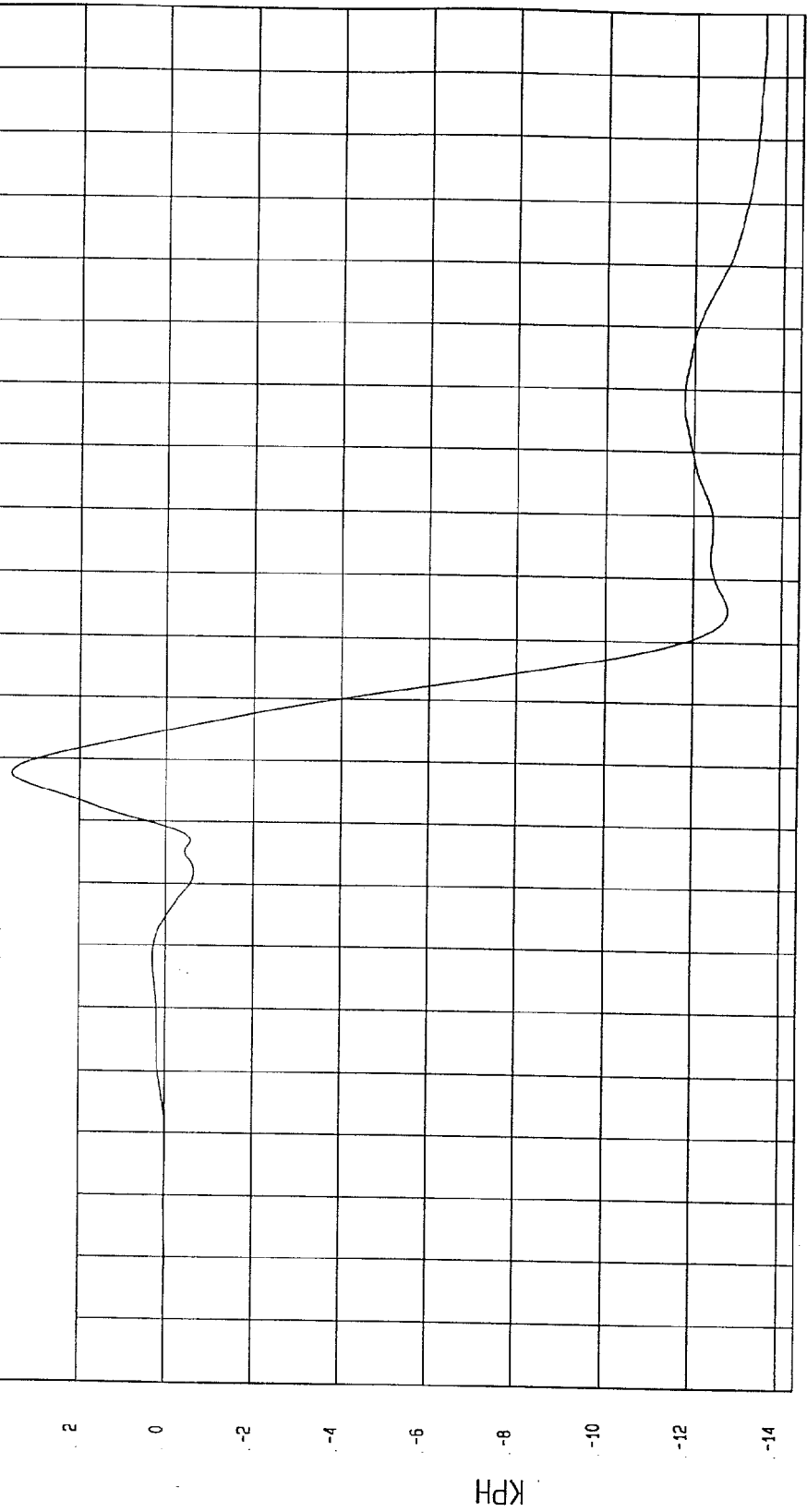
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -13.54 KPH at 195 msec Maximum = 3.52 KPH at 78 msec

REAR PASSENGER HEAD X VELOCITY

1 _____ B99071A1.Y22 Filterclass (180)



NSA Research
08-09-2000 08:24

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -11.1 G'S at 54 msec
Maximum = 68.7 G'S at 67 msec

REAR PASSENGER HEAD Y ACCELERATION

1 B99071AT.A23 Filter: class (1000)

70

60

50

40

30

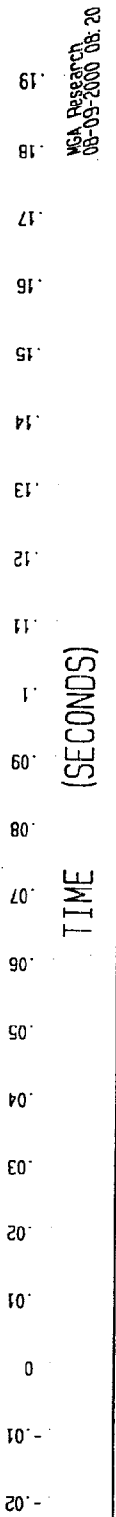
20

10

0

-10

G.S.



MCA Research
08-09-2000 08:20

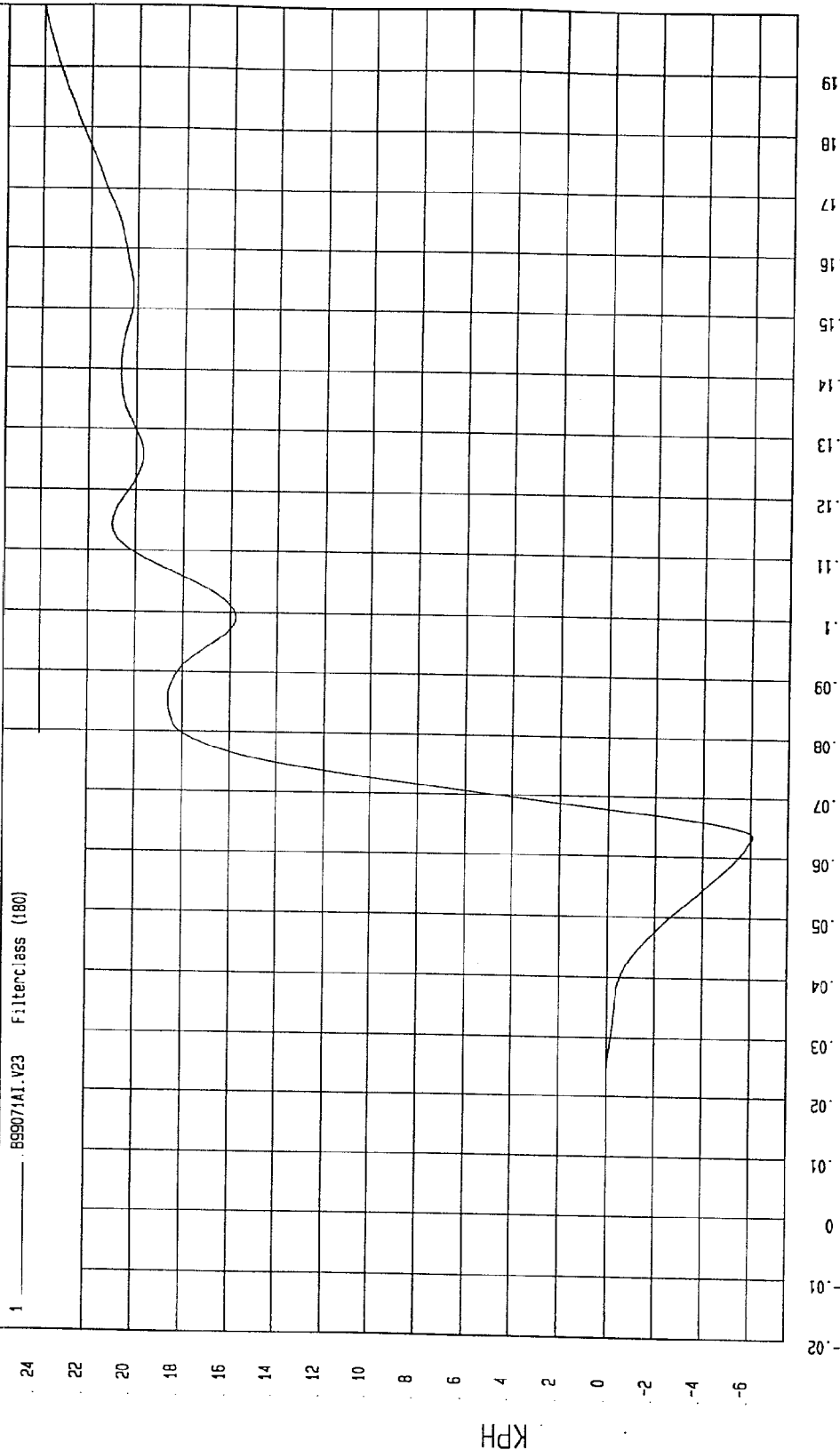
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -6.08 KPH at 64 msec Maximum = 24 KPH at 200 msec

REAR PASSENGER HEAD Y VELOCITY

1 B99071A1.V23 Filterclass (180)



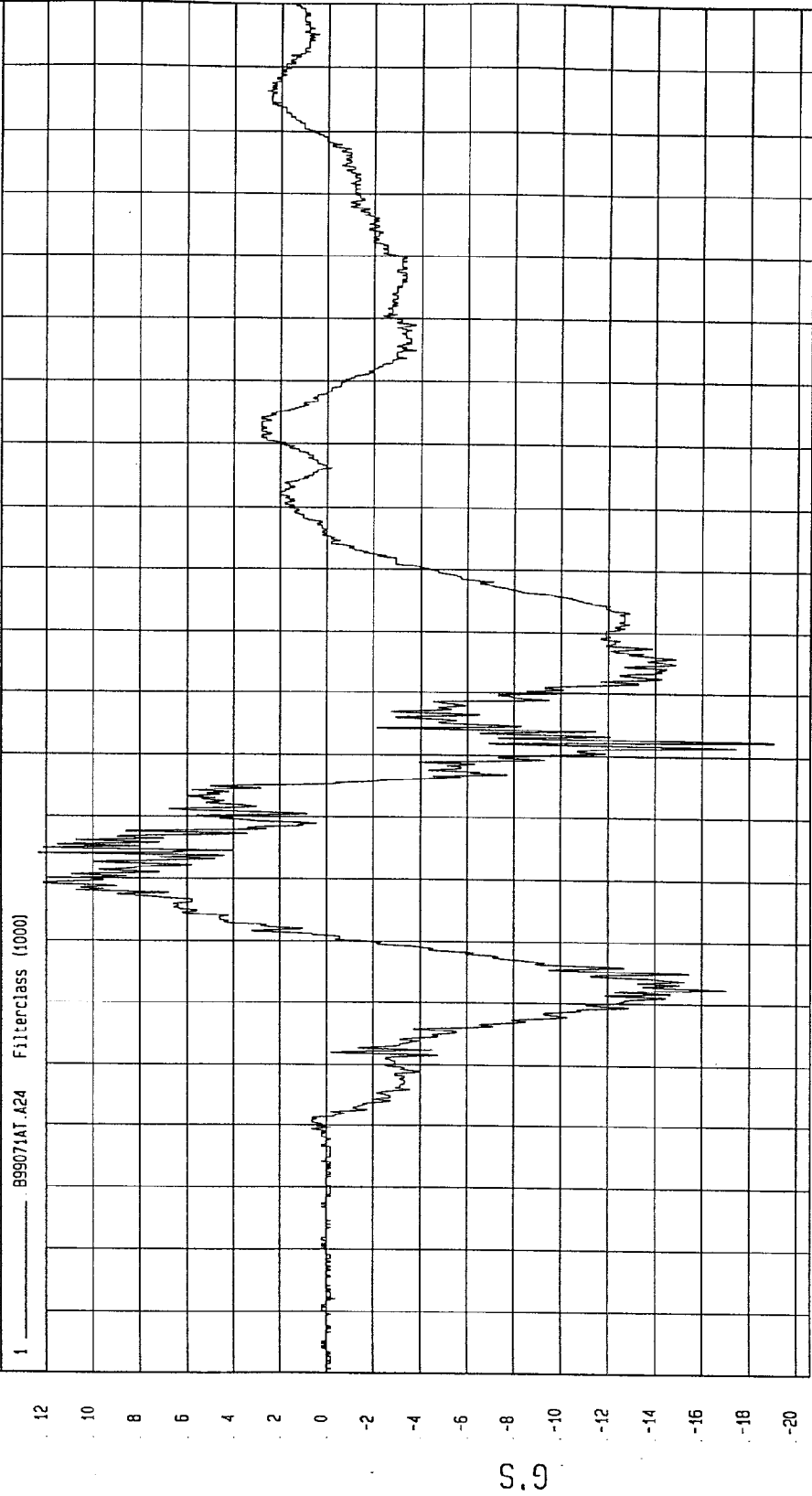
WGA Research
08-09-2000 08:25

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -19.03 G's at 82 msec
Maximum = 12.33 G's at 64 msec

REAR PASSENGER HEAD Z ACCELERATION



MECA Research
08-09-2000 08:20

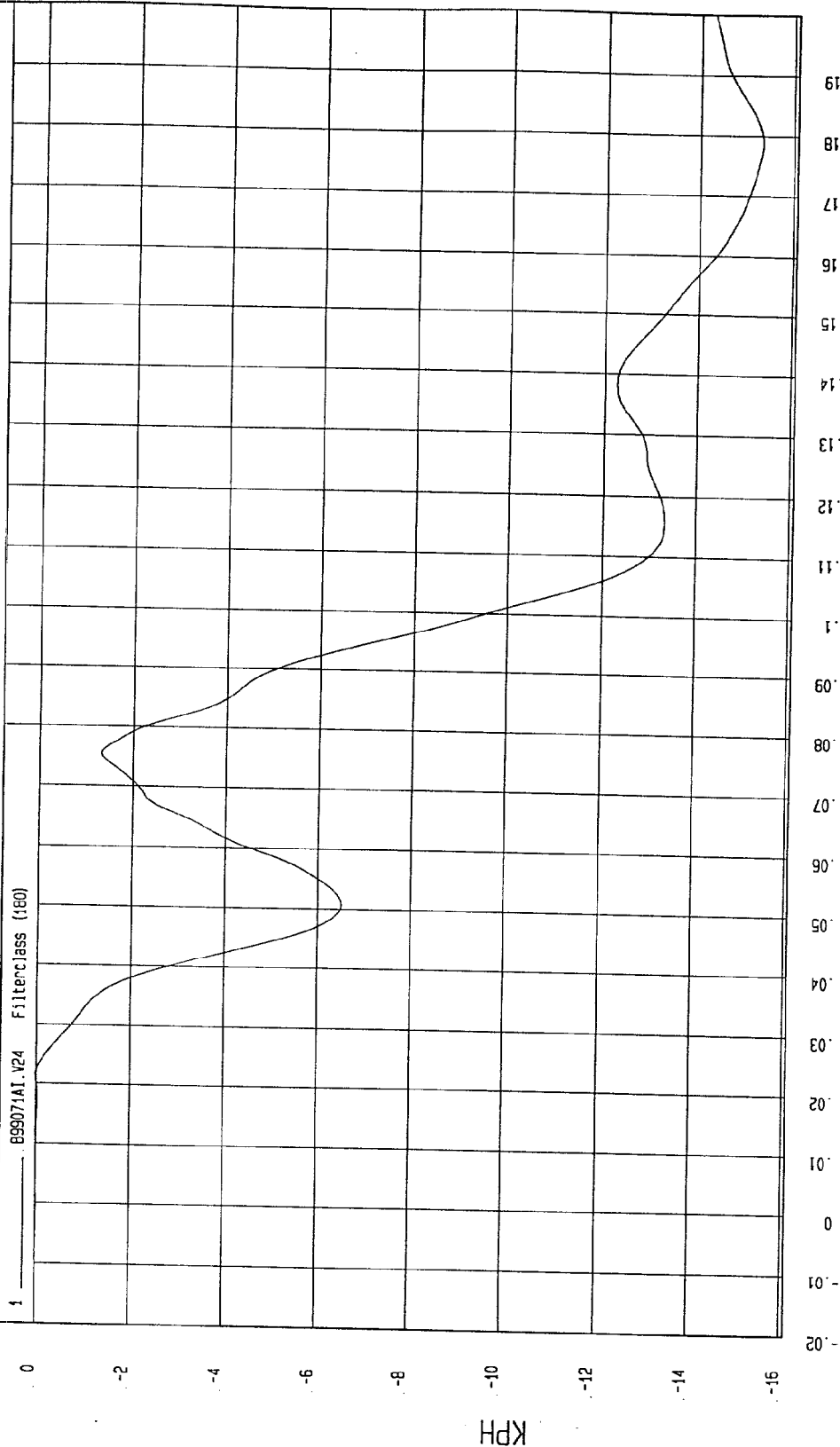
TIME (SECONDS)

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -15.32 KPH at 179 msec
Maximum = 1.32E-02 KPH at 21 msec

REAR PASSENGER HEAD Z VELOCITY



MSA Research
08-09-2000 08:25

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

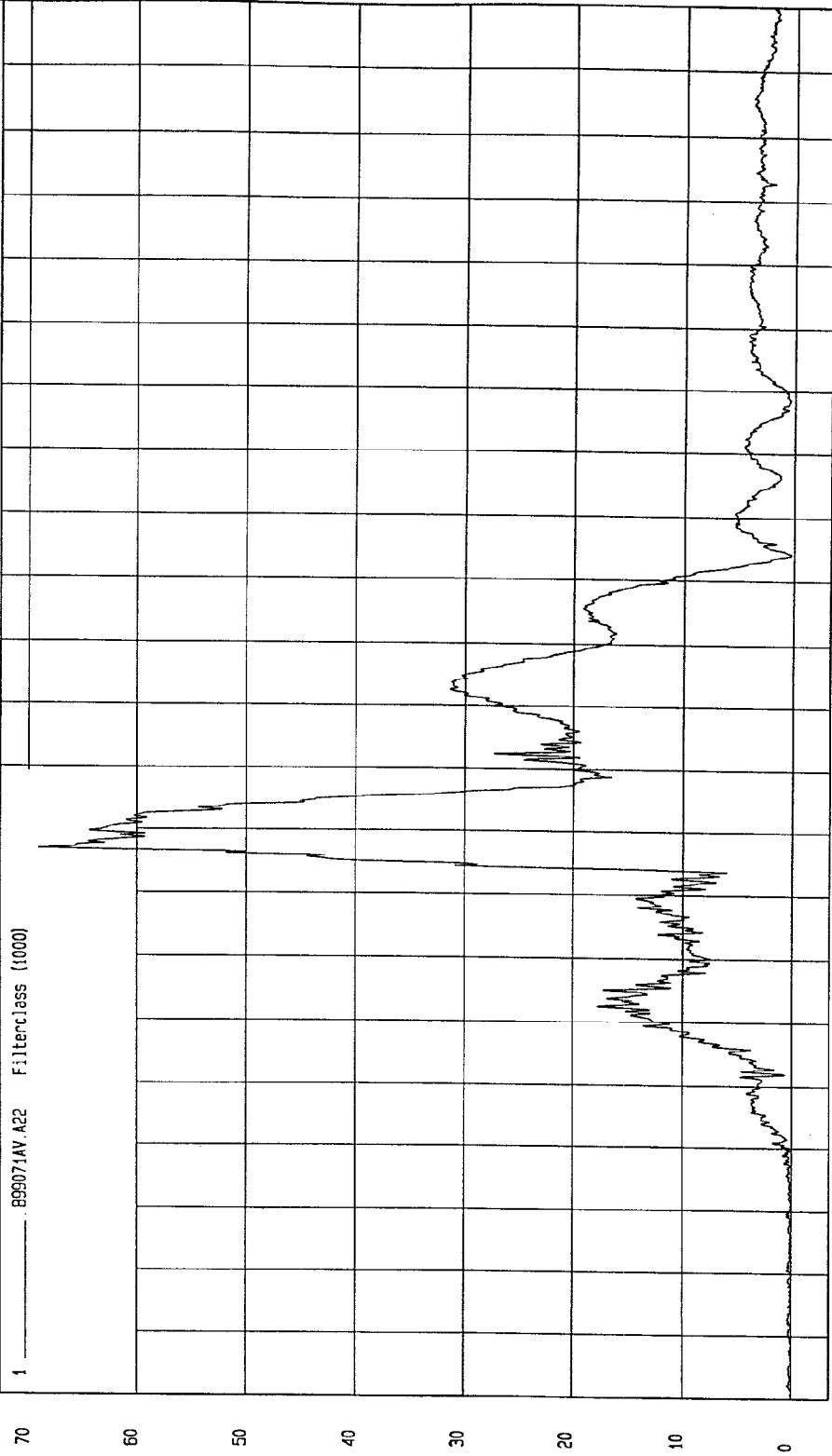
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 69.14 G'S at 67 msec

Minimum = 5.10E-02 G'S at -20 msec

REAR PASSENGER HEAD RESULTANT ACCELERATION



WCA Research
08-09-2000 08:20

TIME (SECONDS)

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = -12.05 G'S at 115 msec

Maximum = 47.17 G'S at 115 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

1 ——— B59071AT.A25 Filterclass (1000)

50

40

30

20

10

0

-10

G'S

-102

0

101

102

103

104

105

106

107

108

109

TIME (SECONDS)

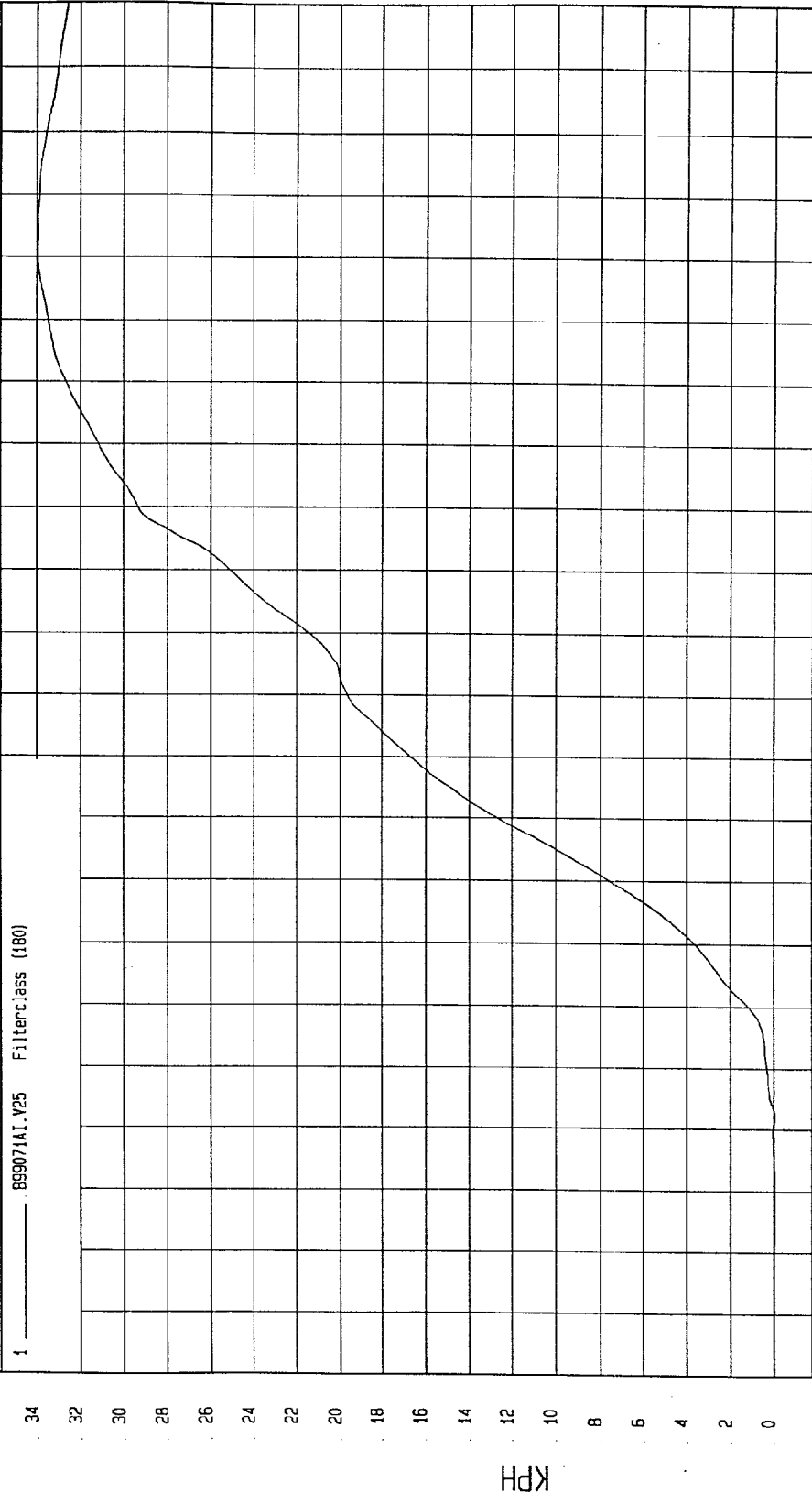
NSA Research
10-26-1999 11.10

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -4.64E-02 KPH at 22 msec Maximum = 33.98 KPH at 161 msec

REAR PASSENGER UPPER RIB Y VELOCITY



TIME Seconds 0.00 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.10 0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19

WCA Research
10-26-1999 17:16

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

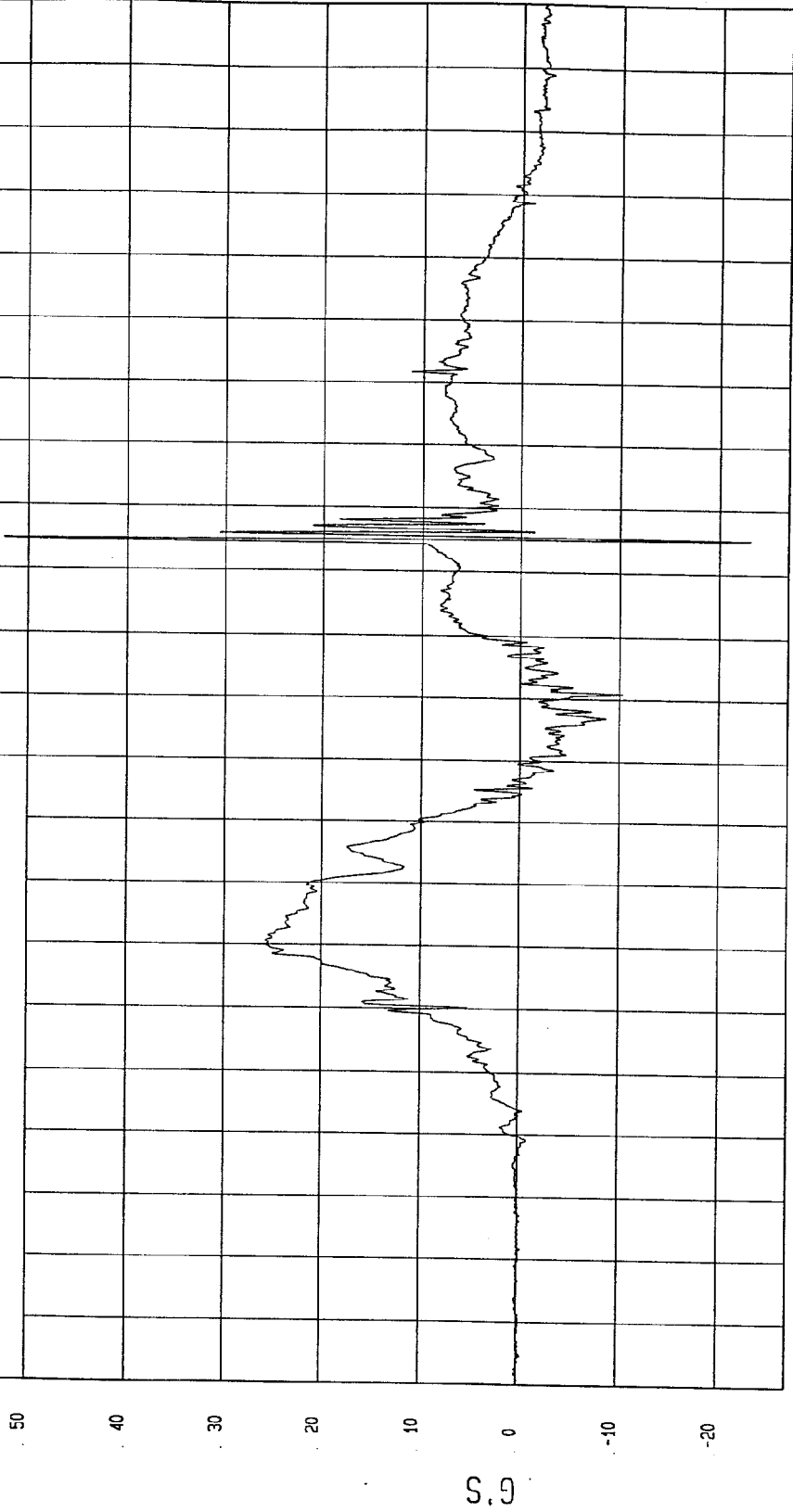
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 52.4 G'S at 115 msec

Minimum = -23.09 G'S at 115 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 899071AT.426 Filterclass (1000)



NSA Research
10-26-1999 17:10

TIME (SECONDS)

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

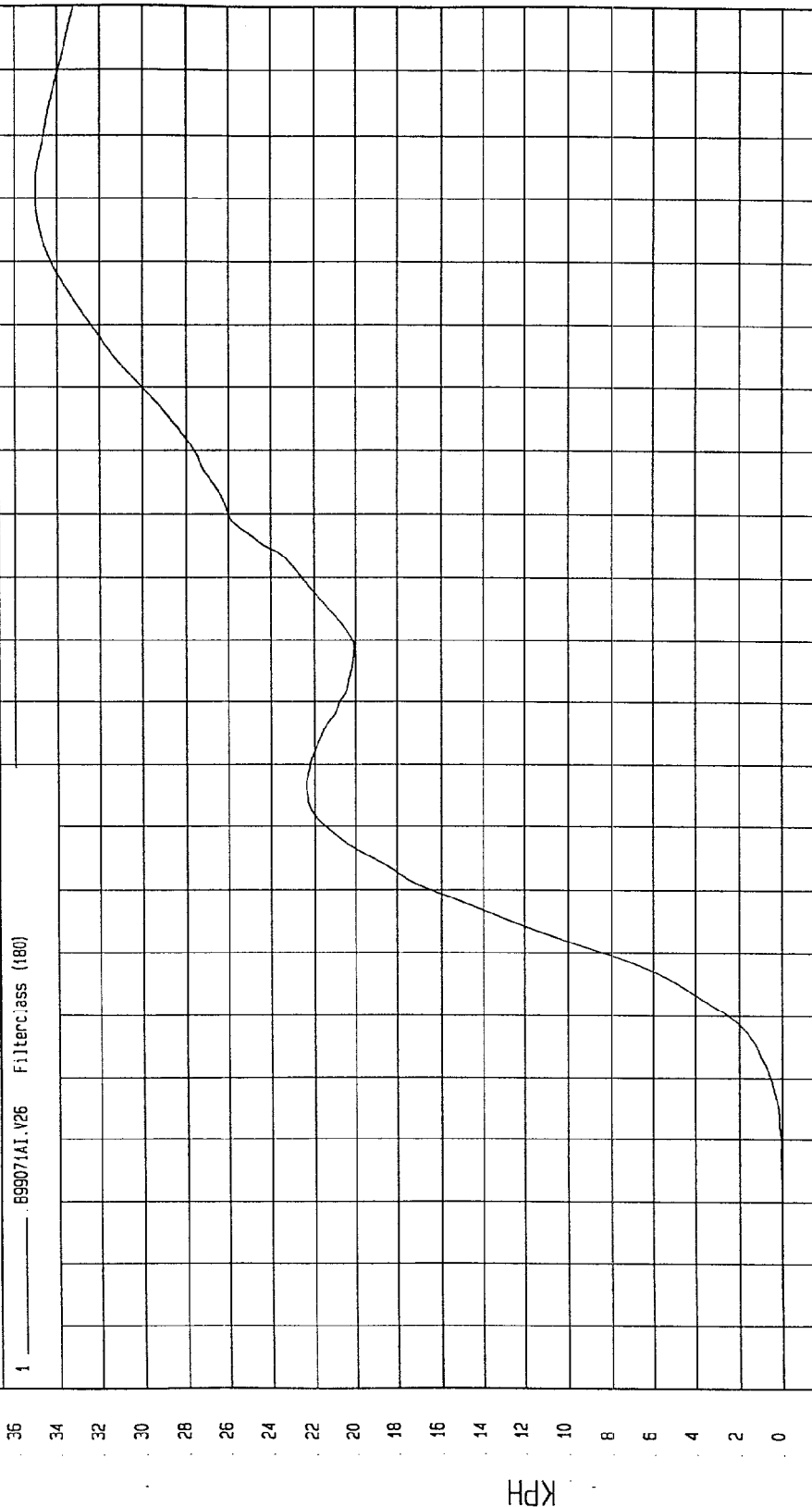
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 35.02 KPH at 172 msec

Minimum = -8.03E-03 KPH at -9 msec

REAR PASSENGER LOWER RIB Y VELOCITY

1 B99071A1.V26 Filter:ass (180)



MCA Research
10-26-1999 17:16

TIME Seconds

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

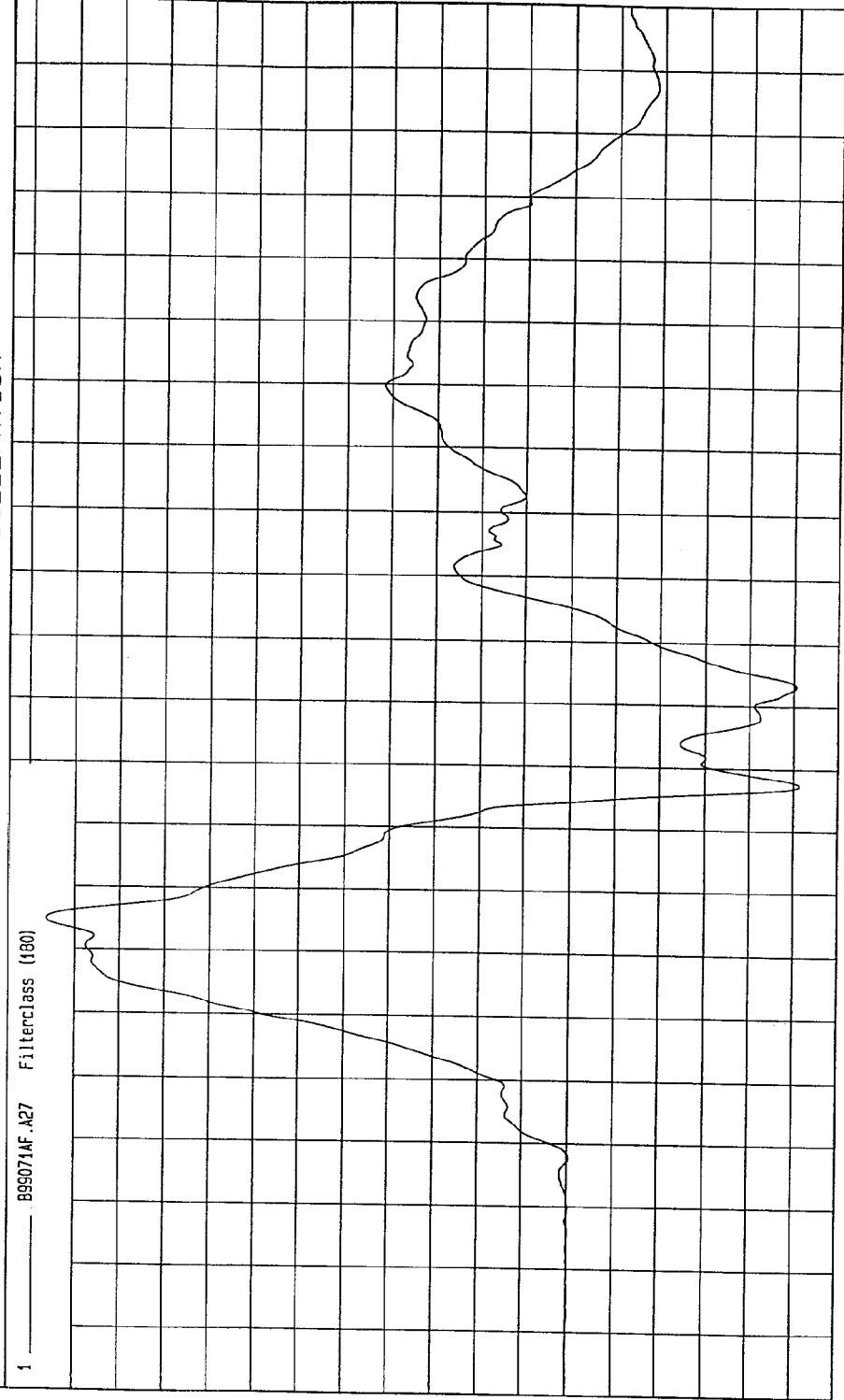
COMPONENT: 2000 NISSAN XTERRA (CYS203) Speed: 38.4 MPH 61.8 KPH

Minimum = -10.27 G'S at 77 msec Maximum = 23.24 G'S at 55 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 B99071AF.A27 Filterclass (180)

G'S



MCA Research
10-26-1999 17:10

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

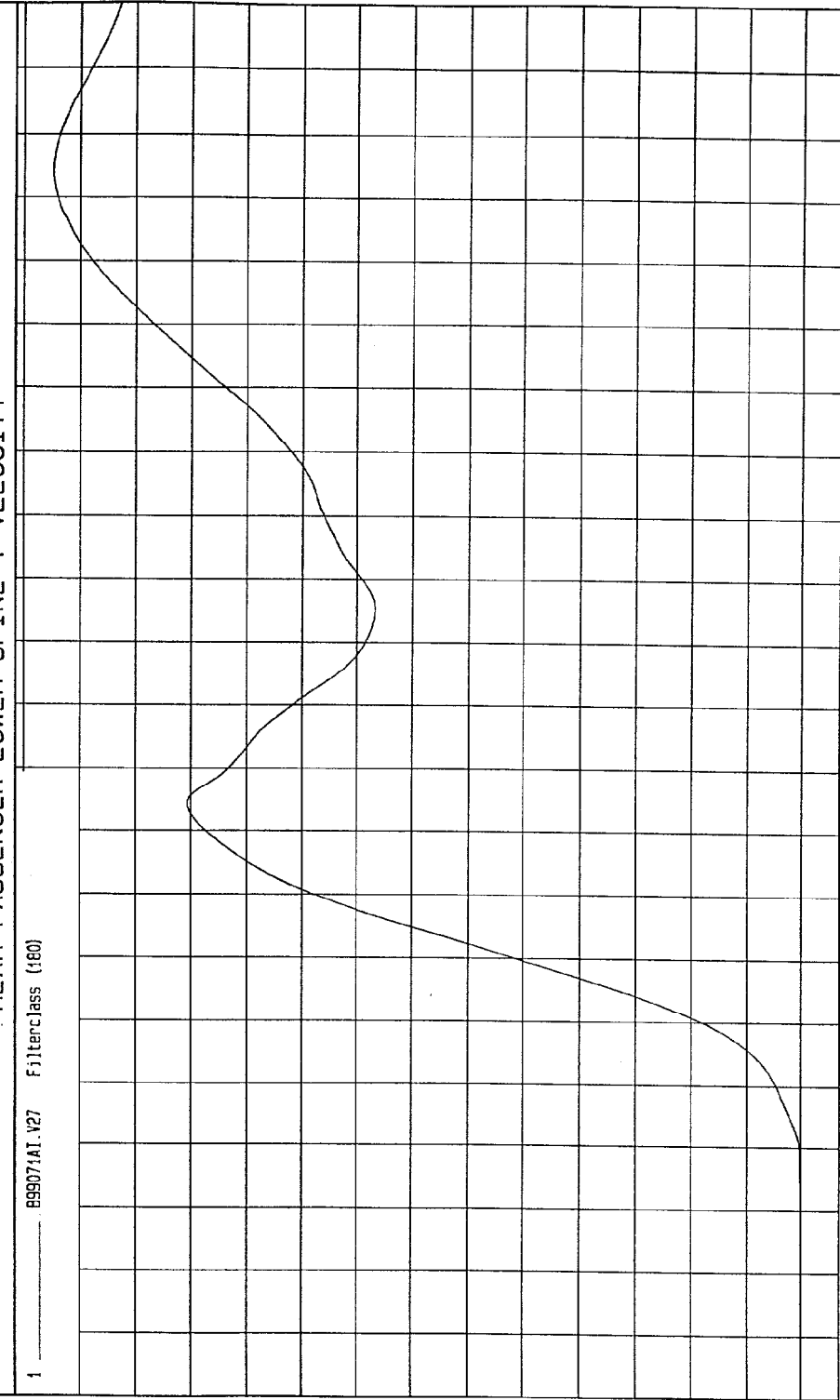
Minimum = -1.14E-03 KPH at 7 msec

Maximum = 26.96 KPH at 174 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 B99071A1.V27 Filtenclass (160)

KPH



TIME Seconds

MSA Research
10-26-1999 17:15

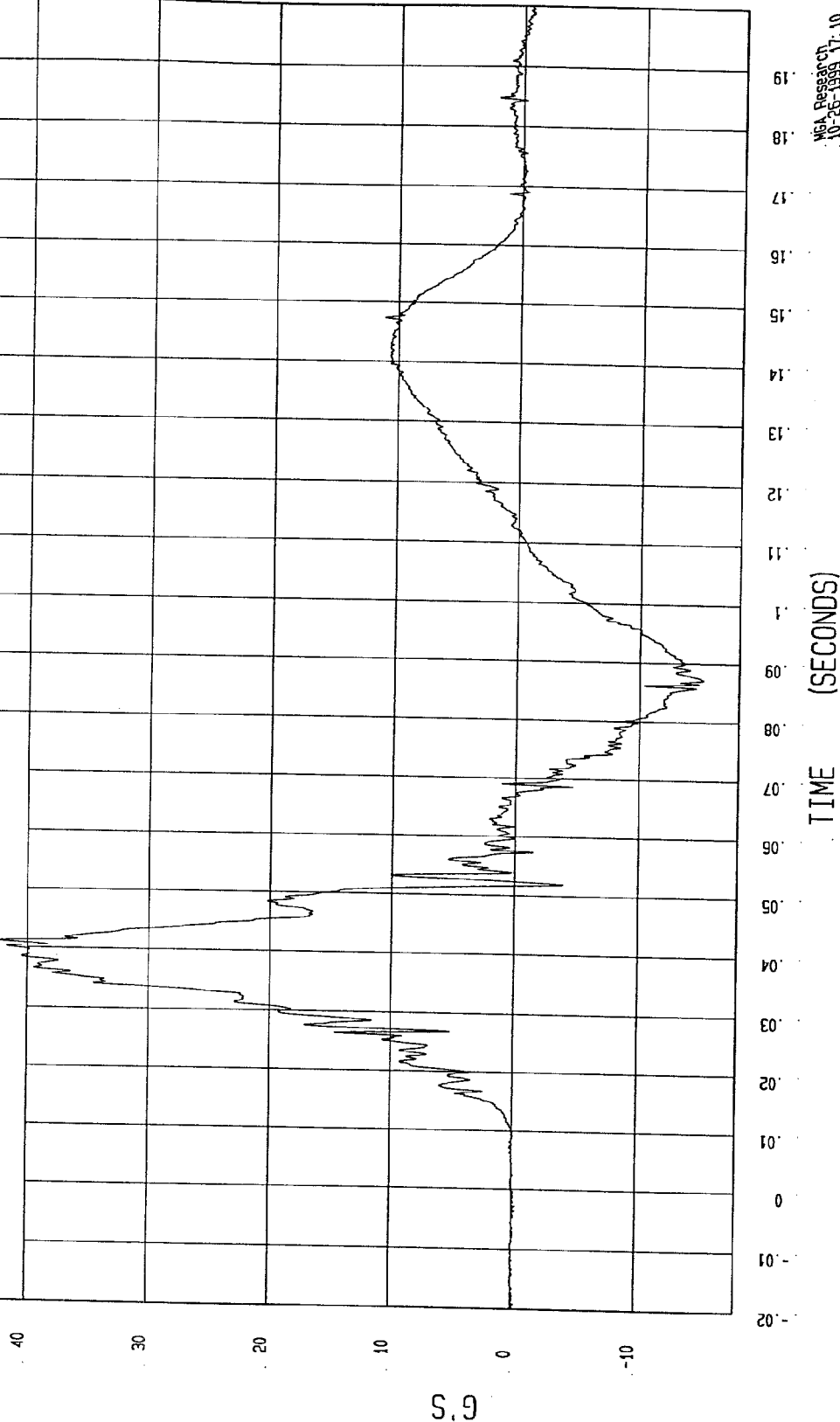
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -15.26 G'S at 87 msec
Maximum = 42.62 G'S at 41 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 — B99071AT.A28 Filterclass (1000)



NIA Research
10-26-1999 17:10

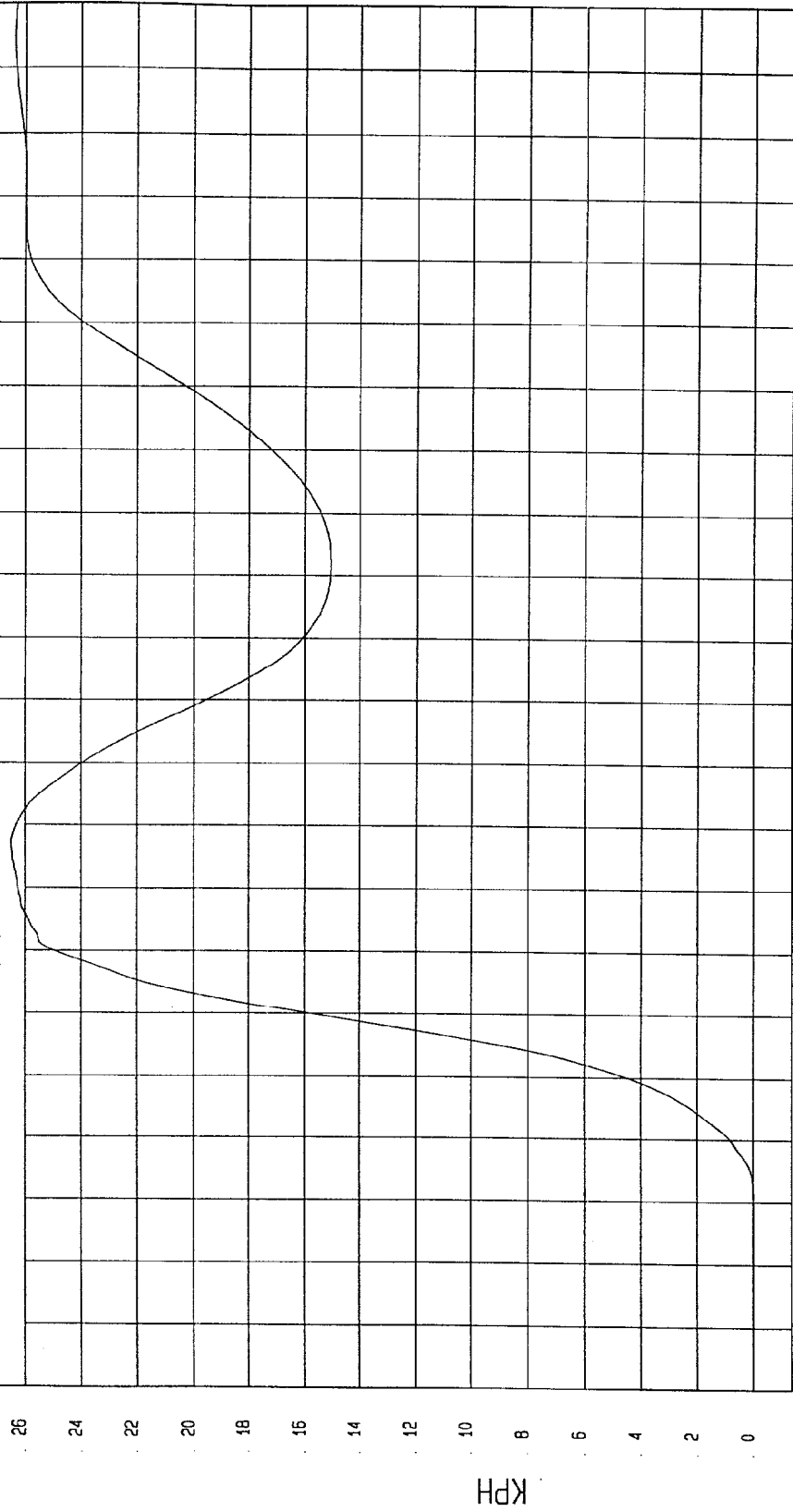
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -.03 KPH at 0 msec Maximum = 26.48 KPH at 67 msec

REAR PASSENGER PELVIS Y VELOCITY

1 B99071A1.V28 Filterclass (160)



WCA Research
10-26-1999 17:15

TIME Seconds

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

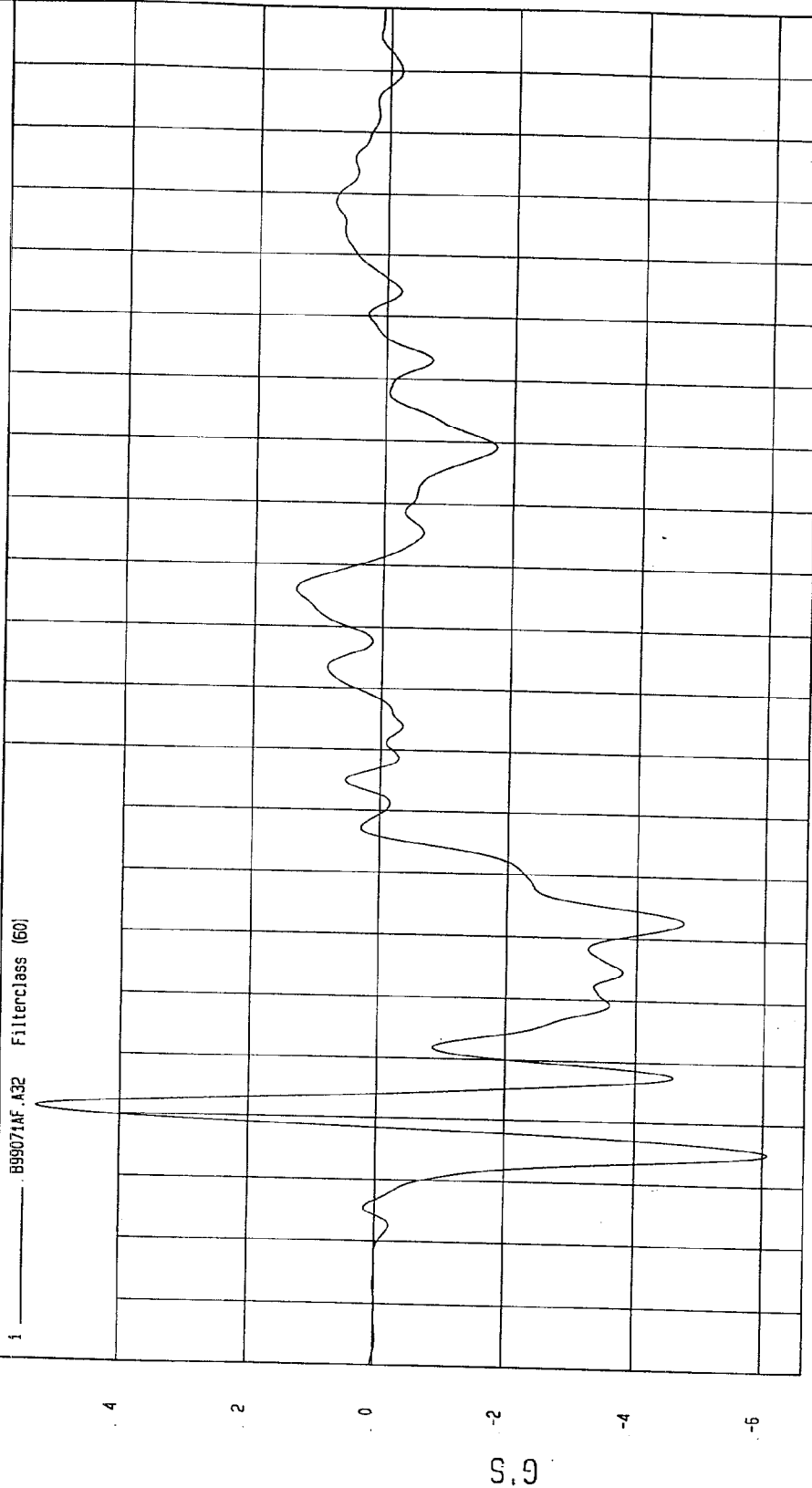
Speed: 38.4 MPH 61.8 KPH

Minimum = -6.08 G'S at 15 msec

Maximum = 5.31 G'S at 21 msec

RIGHT SIDE SILL AT FRONT SEAT X ACCELERATION

1 ——— B99071AF.A32 Filterclass (60)



TIME (SECONDS)

MCA Research
10-26-1999 17.08

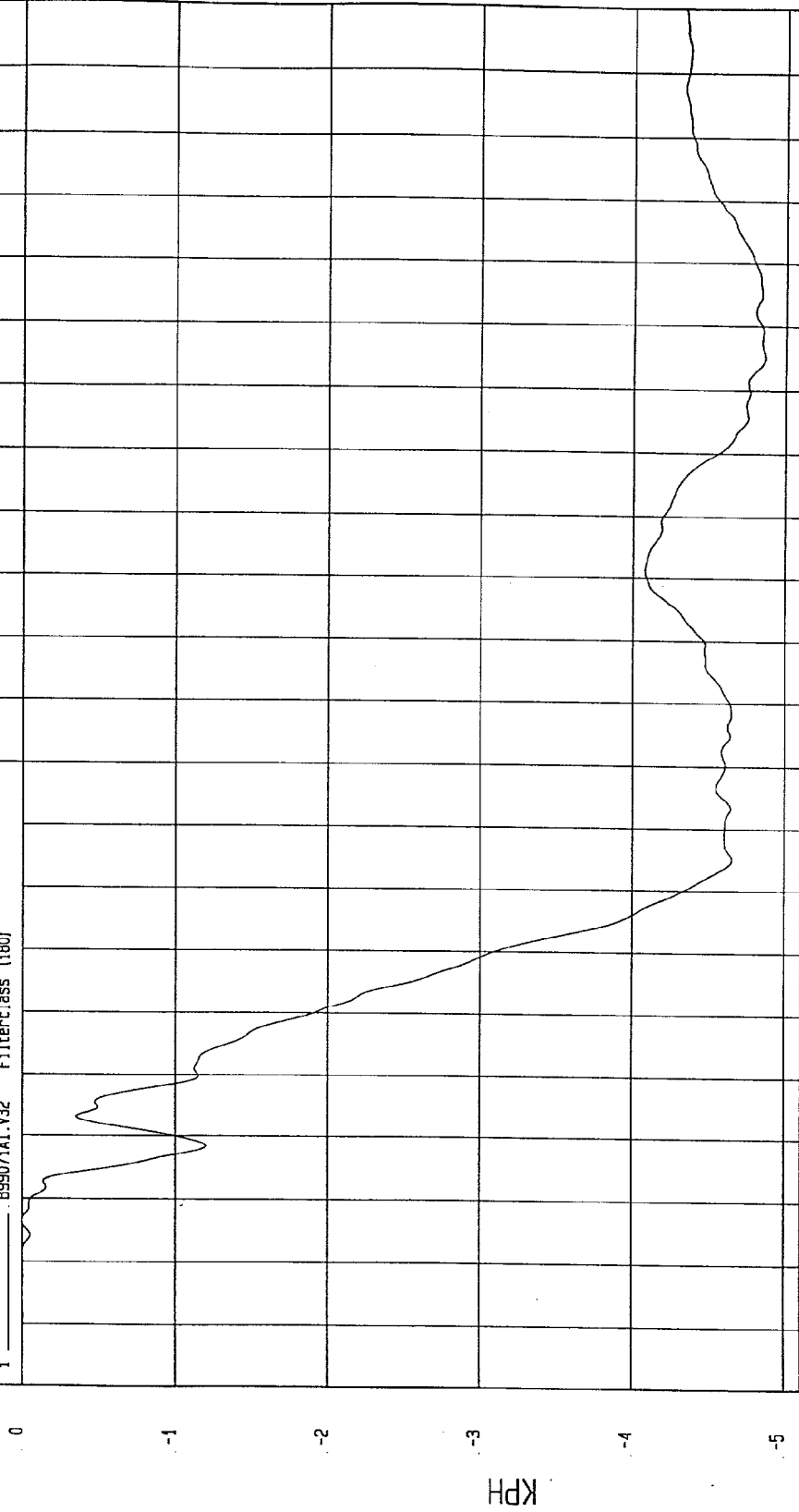
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -4.87 KPH at 145 msec Maximum = 7.69E-03 KPH at 6 msec

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY

1 899071A1.V32 Filter: class (180)



MCA Research
10-26-1999 17:15

TIME Seconds

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

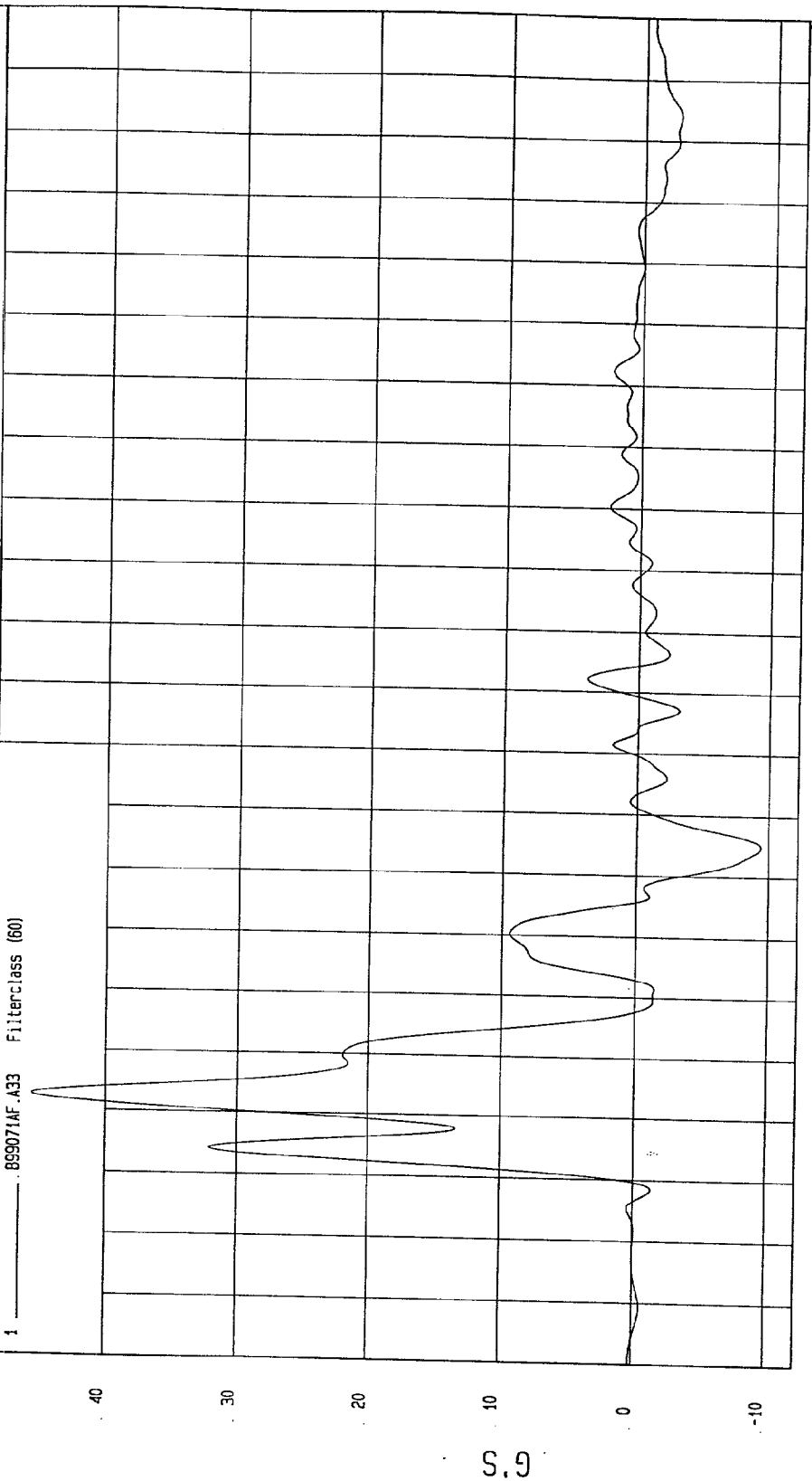
Speed: 38.4 MPH 61.8 KPH

Minimum = -9.46 G'S at 65 msec

Maximum = 45.65 G'S at 23 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 _____ 899071AF.A33 Filterclass (60)



MSA Research
10-26-1999 17:08

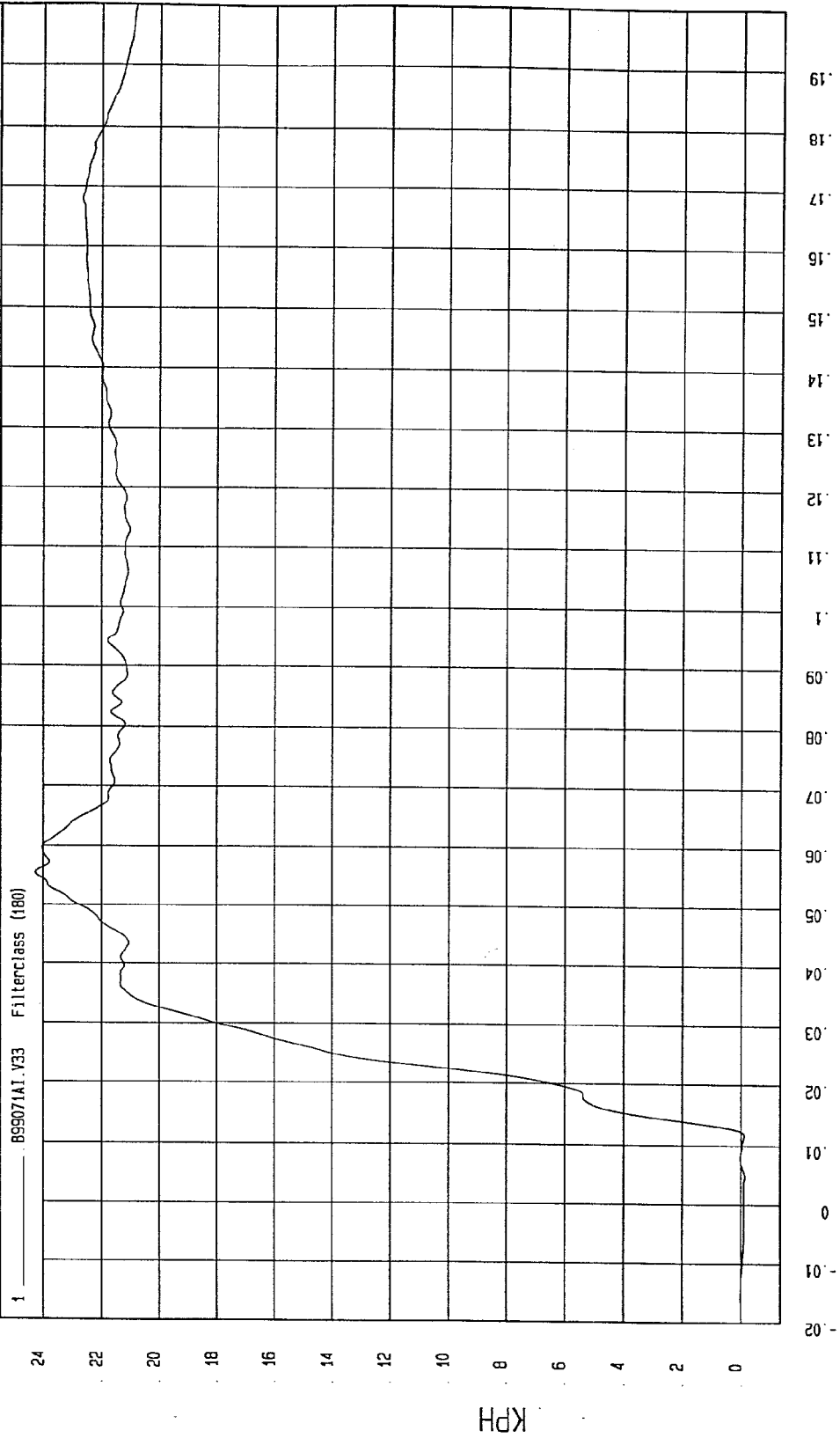
TIME (SECONDS)

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -13 KPH at 5 msec Maximum = 24.27 KPH at 55 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY



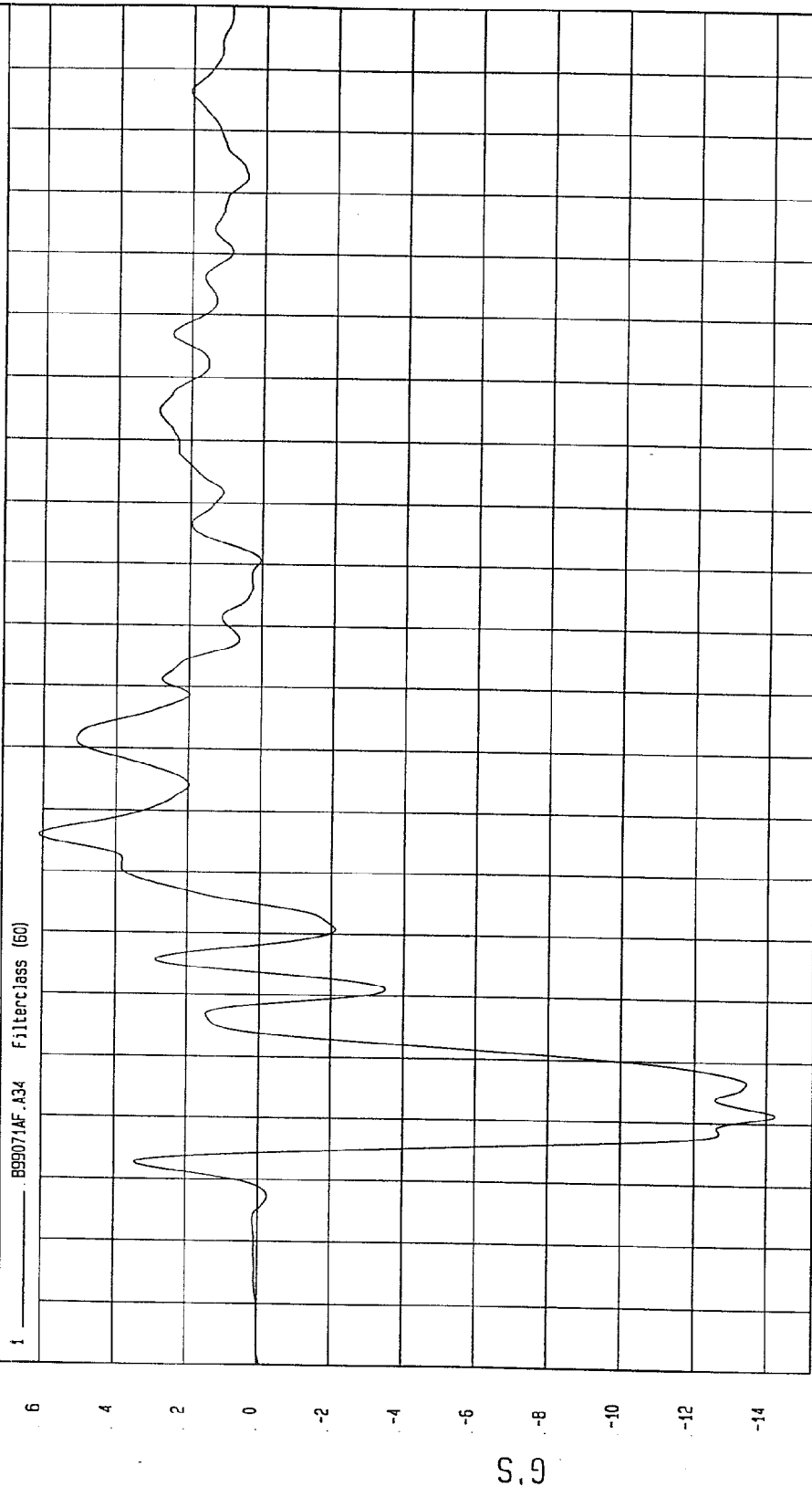
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -14.24 G'S at 21 msec
Maximum = 6.1 G'S at 66 msec

RIGHT SIDE SILL AT FRONT SEAT Z ACCELERATION

1 _____ B99071AF.A34 FilterClass (50)



NSI Research
10-26-1999 17:08

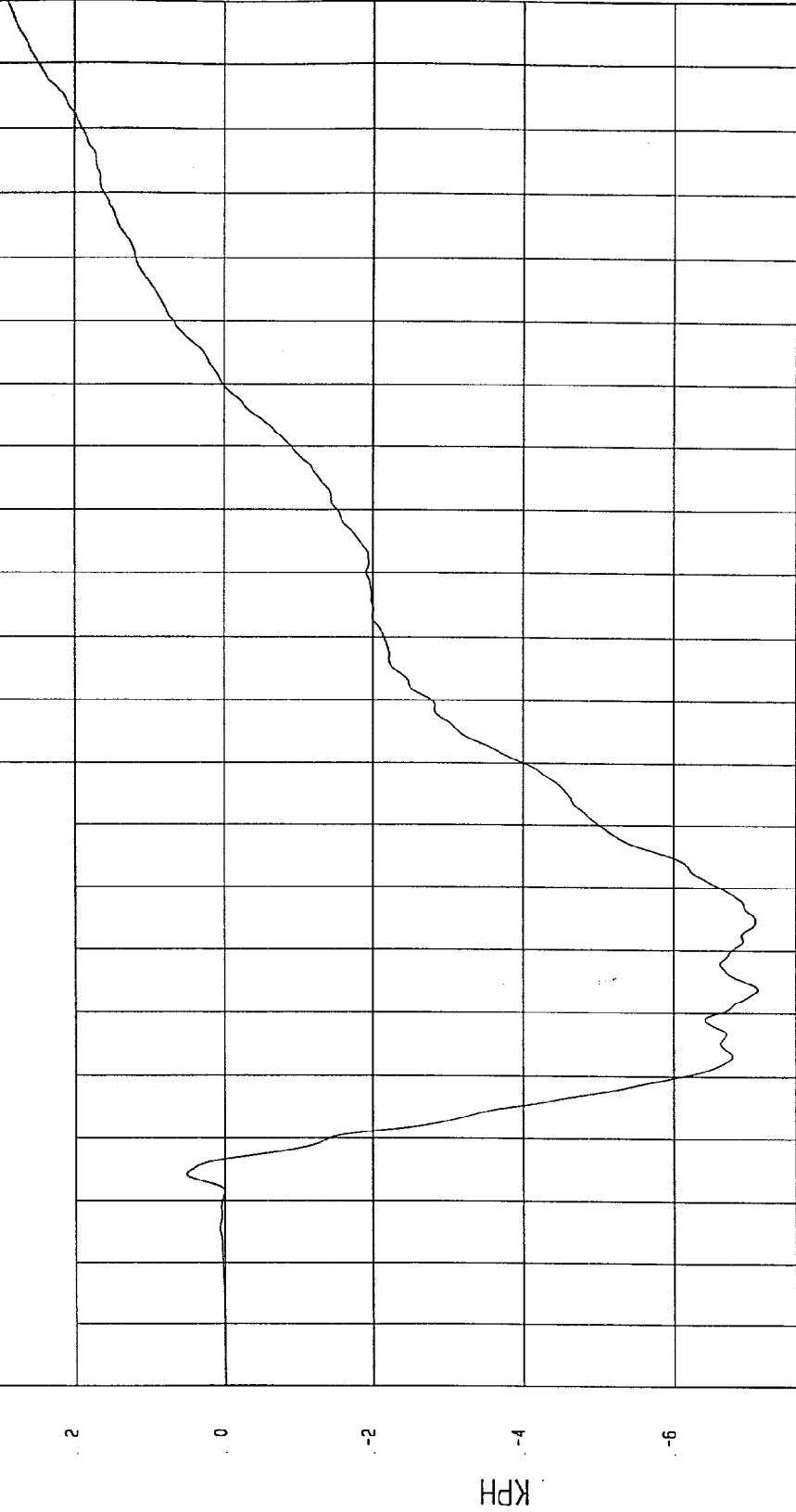
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -7.11 KPH at 44 msec Maximum = 2.9 KPH at 200 msec

RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY

1 _____ 899071A1.V34 Filterclass (100)



TIME Seconds
HSA Research
10-26-1999 17:15

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = 3.11E-02 G'S at -16 msec

Maximum = 47.67 G'S at 22 msec

RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION

1 899071AV.A32 FilterClass (60)

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

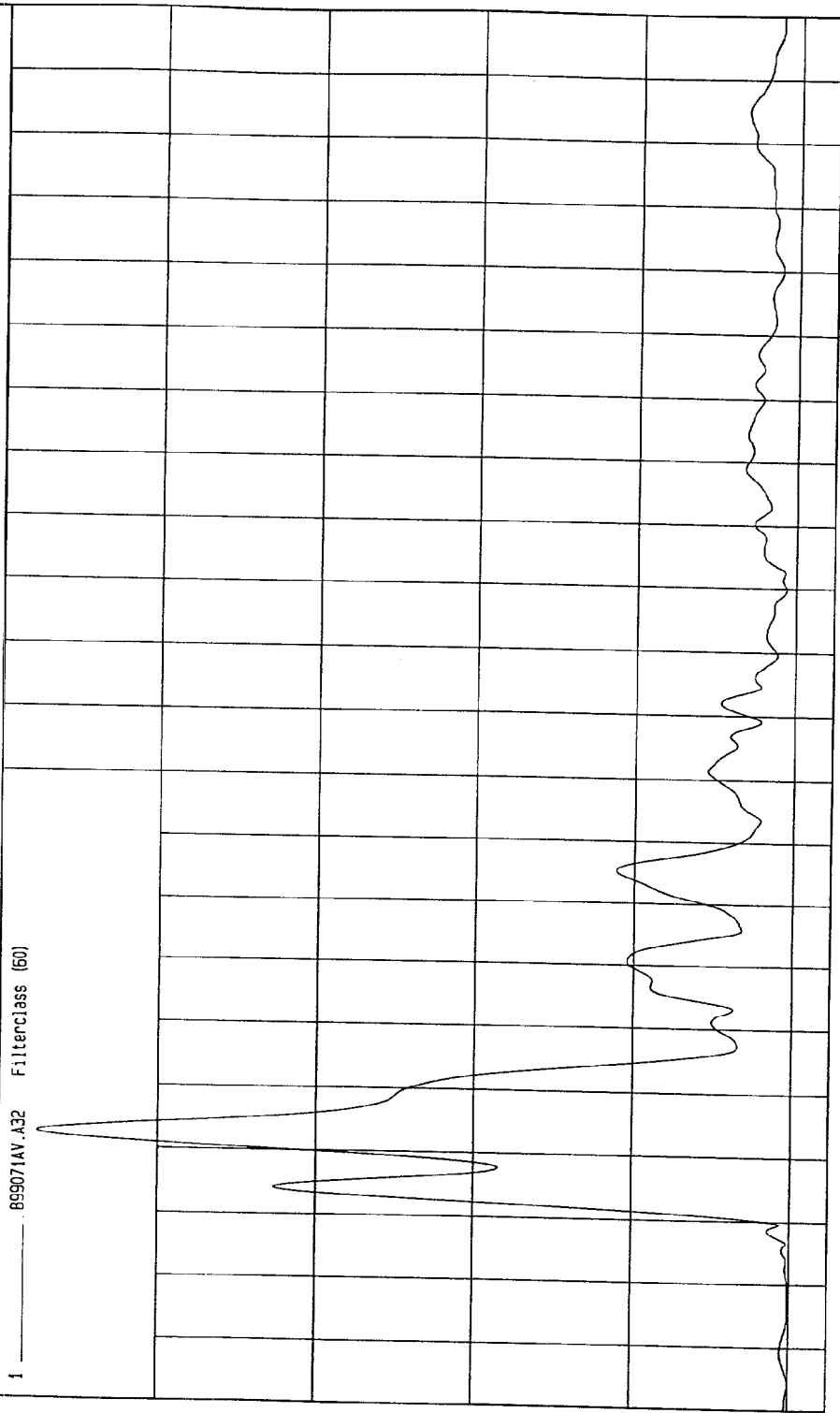
17

18

19

TIME (SECONDS)

WGA Research
10-26-1999 17:08



TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 6.55 G's at 21 msec

Minimum = -6.68 G's at 14 msec

RIGHT SIDE SILL AT REAR SEAT X ACCELERATION

1 899071AF.A36 Filterclass (60)

6

4

2

0

-2

-4

-6

G.S

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

TIME (SECONDS)

NSA Research
10-30-1999 12:17

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

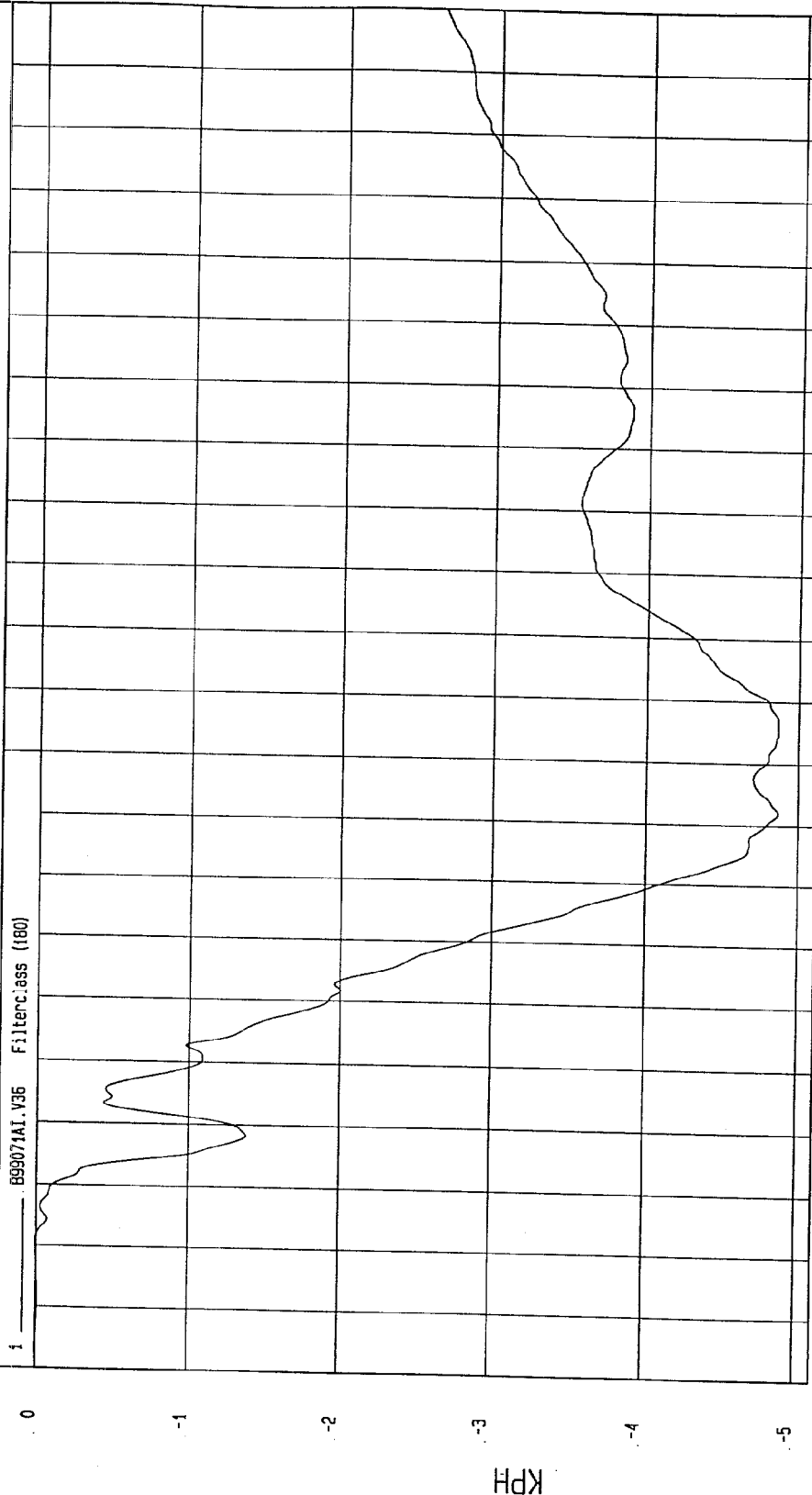
Speed: 38.4 MPH 61.8 KPH

Minimum = -4.87 KPH at 85 msec

Maximum = 4.43E-03 KPH at -17 msec

RIGHT SIDE SILL AT REAR SEAT X VELOCITY

1 ——— B99071A1.V36 Filter: class (180)



TIME Seconds

NCA Research
10-30-1999 12:19

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

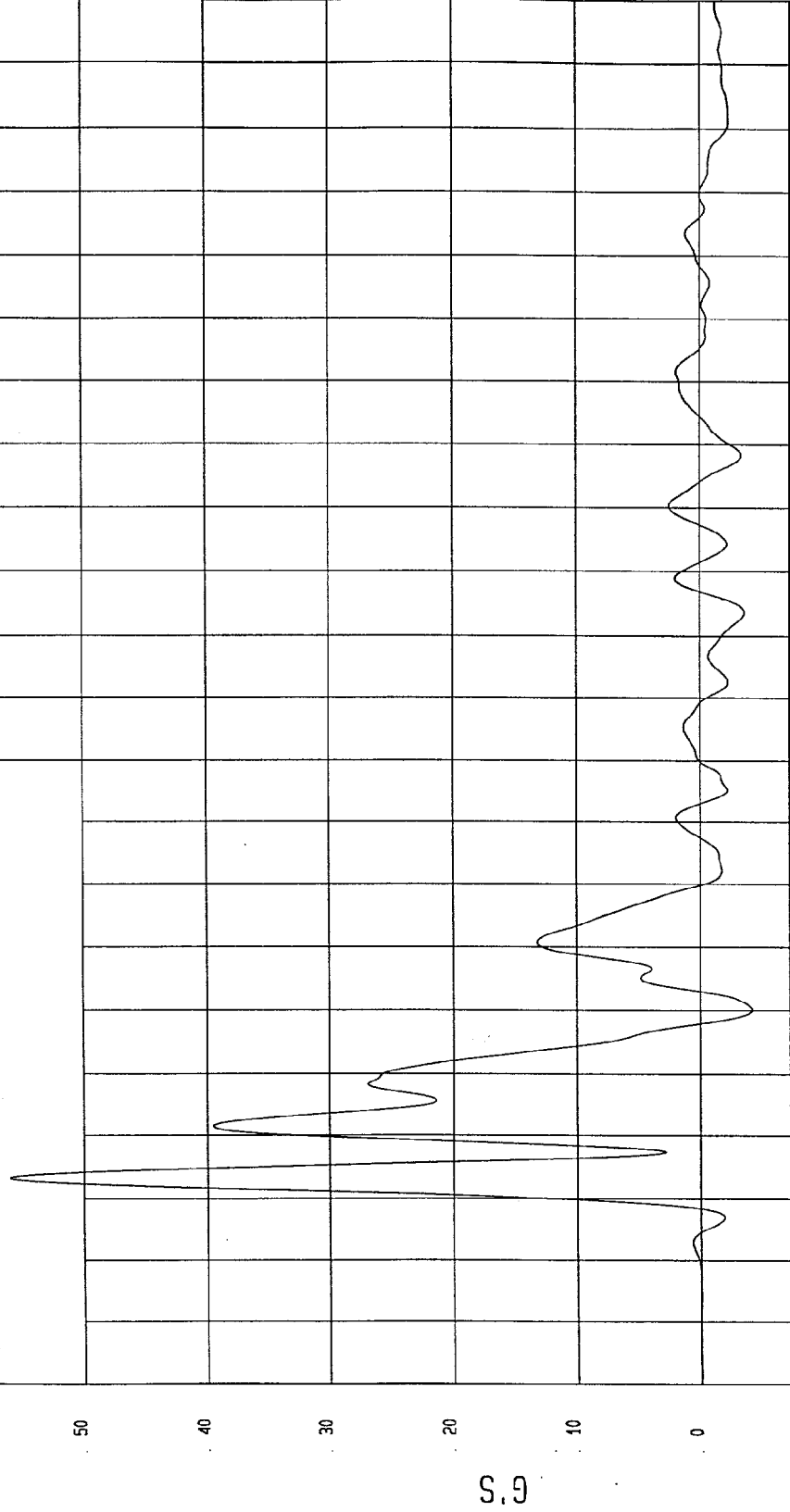
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 56.09 G'S at 13 msec

Minimum = -4.19 G'S at 40 msec

RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION

1 B99071AF.A35 Filterclass (60)



MCA Research
10-30-1999 12:18

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

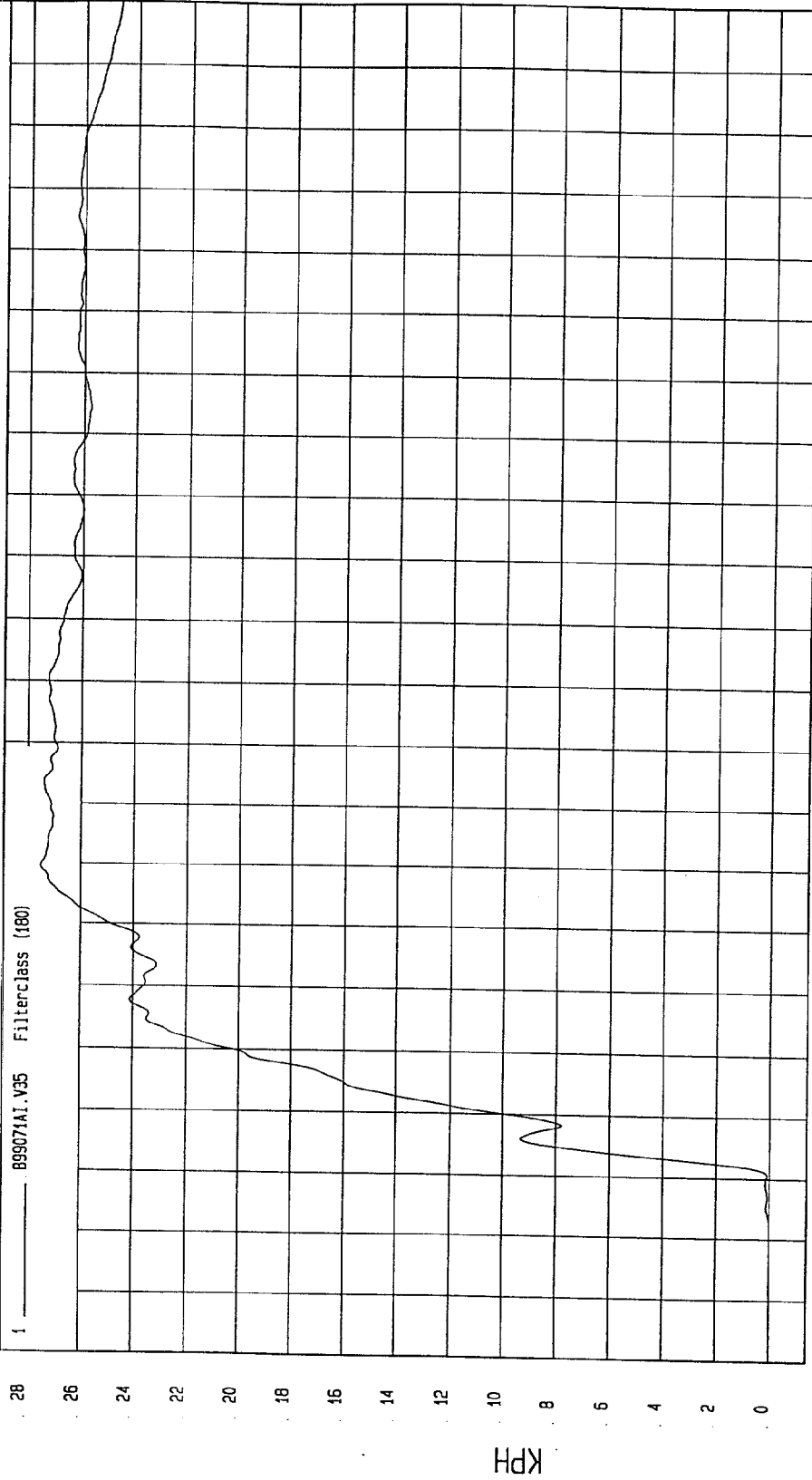
Speed: 38.4 MPH 61.8 KPH

Minimum = -6.01E-03 KPH at -17 msec

Maximum = 27.52 KPH at 60 msec

RIGHT SIDE SILL AT REAR SEAT Y VELOCITY

1 ——— B99071A1.V35 Filterclass (160)



TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

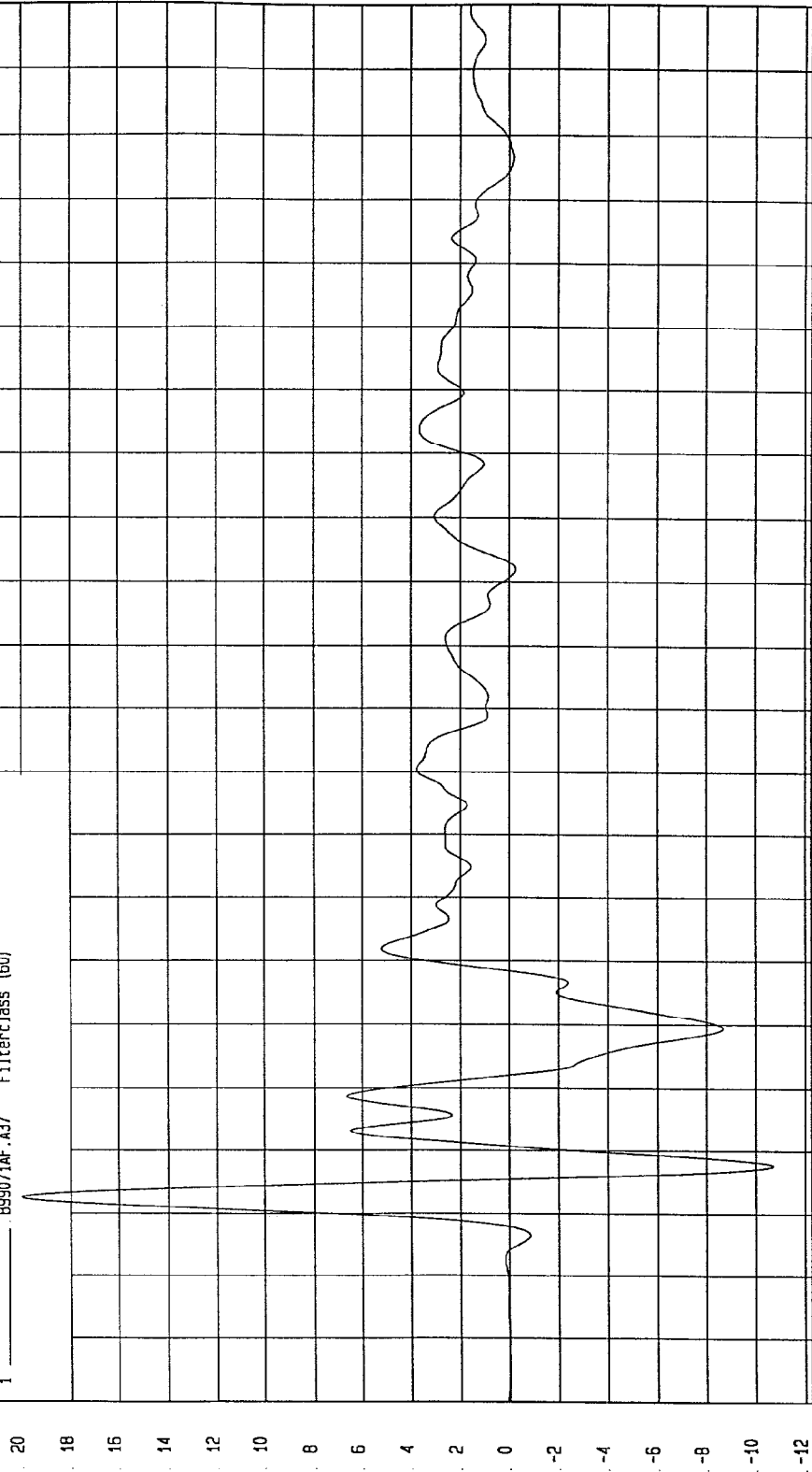
COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -10.72 G'S at 18 msec Maximum = 20 G'S at 13 msec

RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION

1 _____ B99071AF.A37 Filterclass (60)

G.S



WCA Research
10-26-1999 17:08

TIME (SECONDS)

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

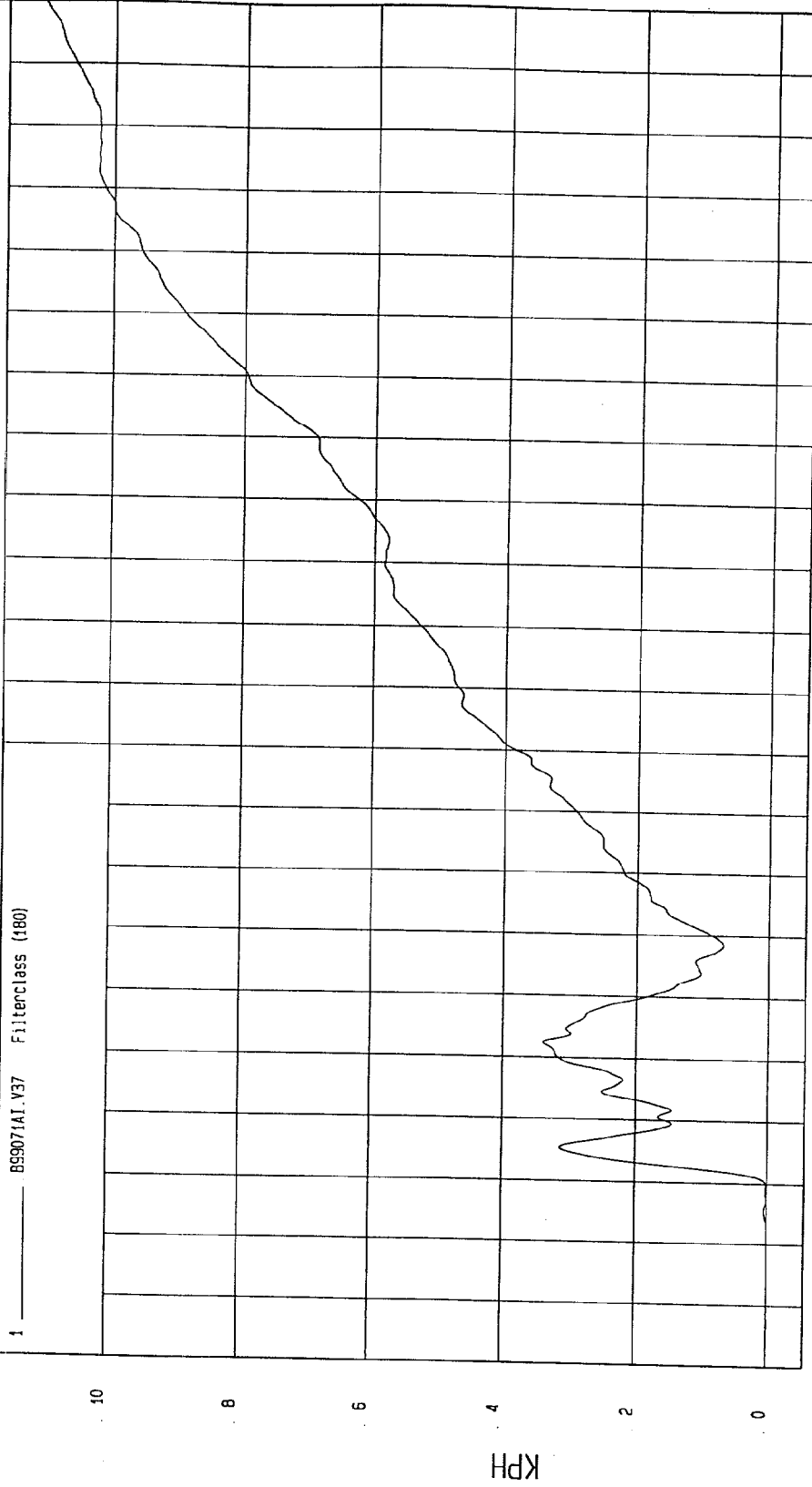
Speed: 38.4 MPH 61.8 KPH

Minimum = -5.74E-03 KPH at -8 msec

Maximum = 11.06 KPH at 200 msec

RIGHT SIDE SILL AT REAR SEAT Z VELOCITY

1 ——— 859071A1.V37 Filterclass (180)



NSA Research
10-26-1999 11:16

TIME Seconds

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

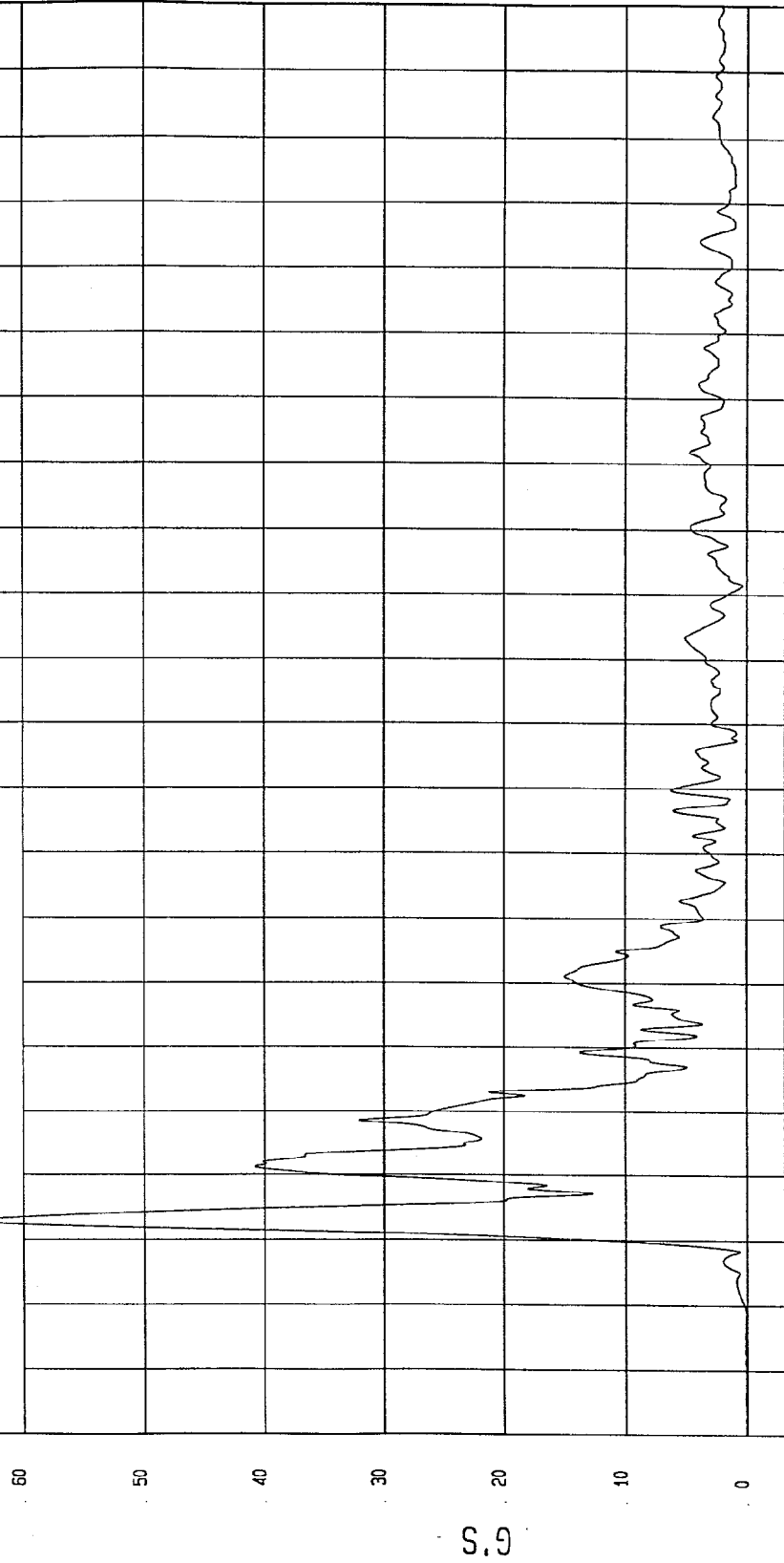
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 63.85 G'S at 13 msec

Minimum = 1.29E-02 G'S at -17 msec

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

1 B99071AV.A35 Filterclass (180)



WCA Research
10-30-1999 12.18

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 9.33 G'S at 13 msec

Minimum = -8.16 G'S at 64 msec

REAR FLOORPAN ABOVE AXLE X ACCELERATION

1 _____ B99071AF.A08 Filterclass (60)

10

8

6

4

2

0

-2

-4

-6

-8

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)

NSA Research
10-26-1999 11:09

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

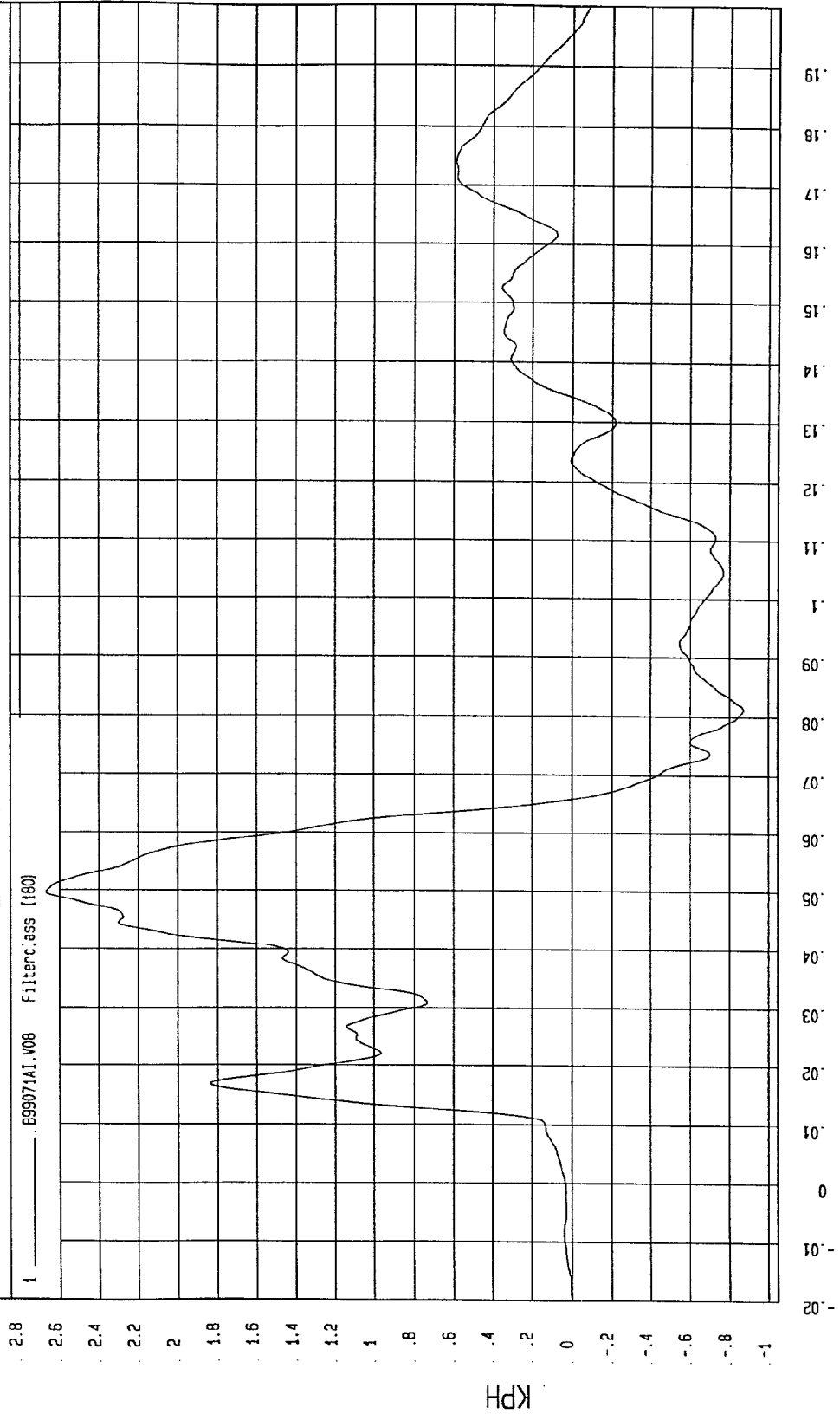
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 2.67 KPH at 50 msec

Minimum = -.87 KPH at 81 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY



WGA Research
10-26-1999 17:16

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

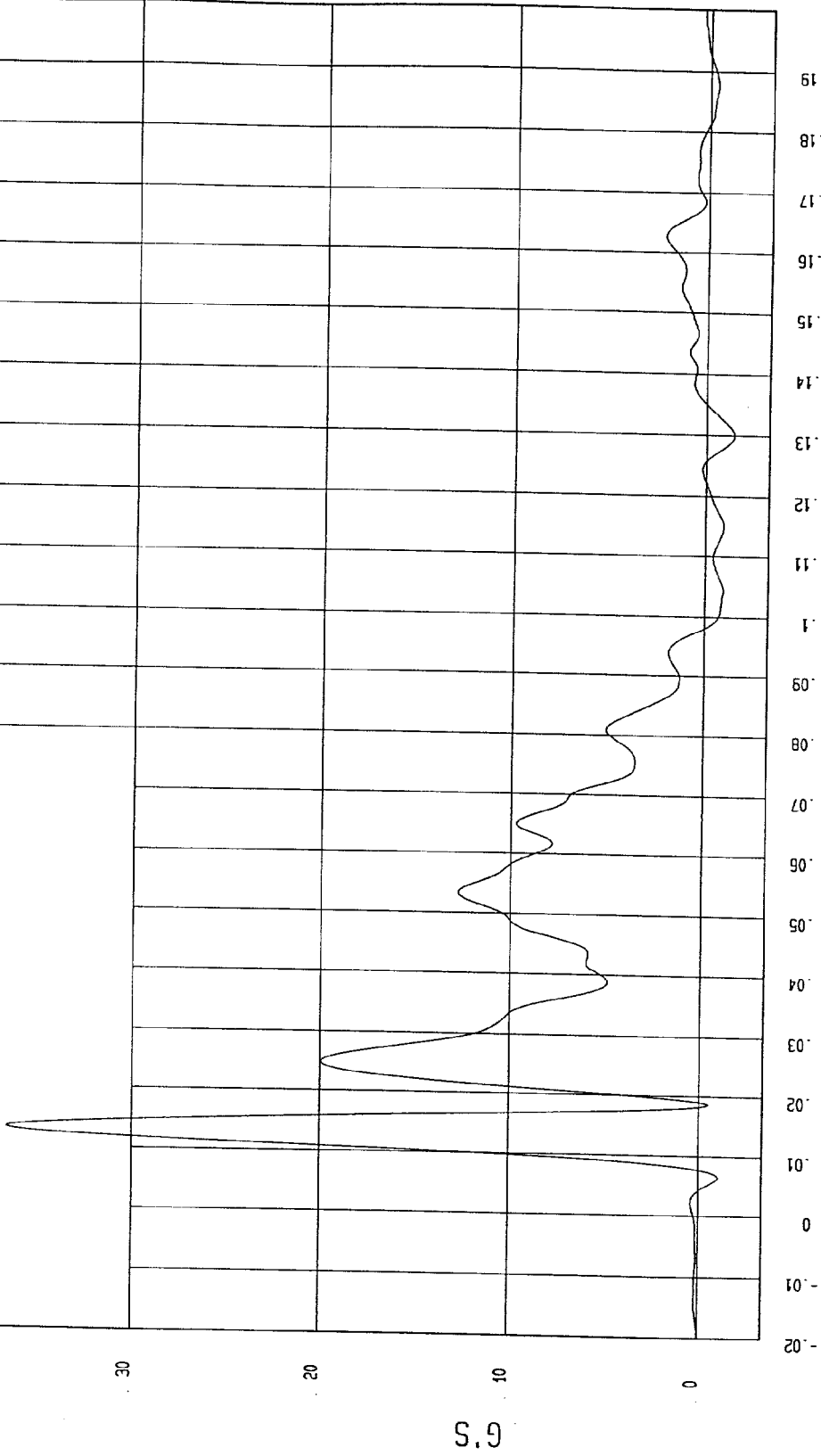
Speed: 38.4 MPH 61.8 KPH

Minimum = -1.46 G'S at 130 msec

Maximum = 36.62 G'S at 13 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION

1 899071AF.A09 FilterClass (50)



TIME (SECONDS)

NSA Research
10-26-1999 11:09

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

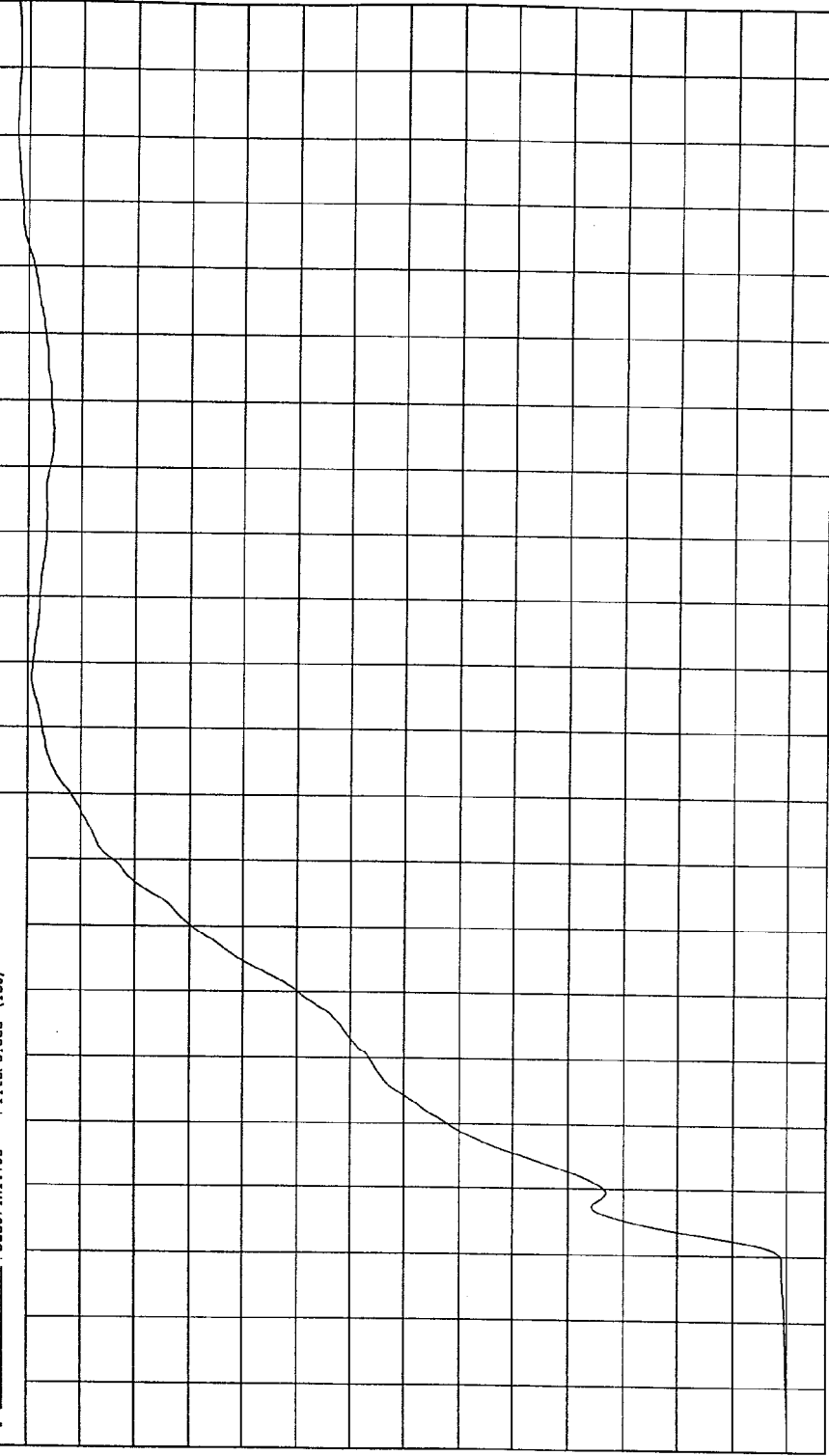
Maximum = 28.42 KPH at 182 msec

Minimum = 0 KPH at -20 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY

1 899071A1.V09 Filterclass (180)

KPH



MSA Research
10-26-1999 17:17

TIME Seconds

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

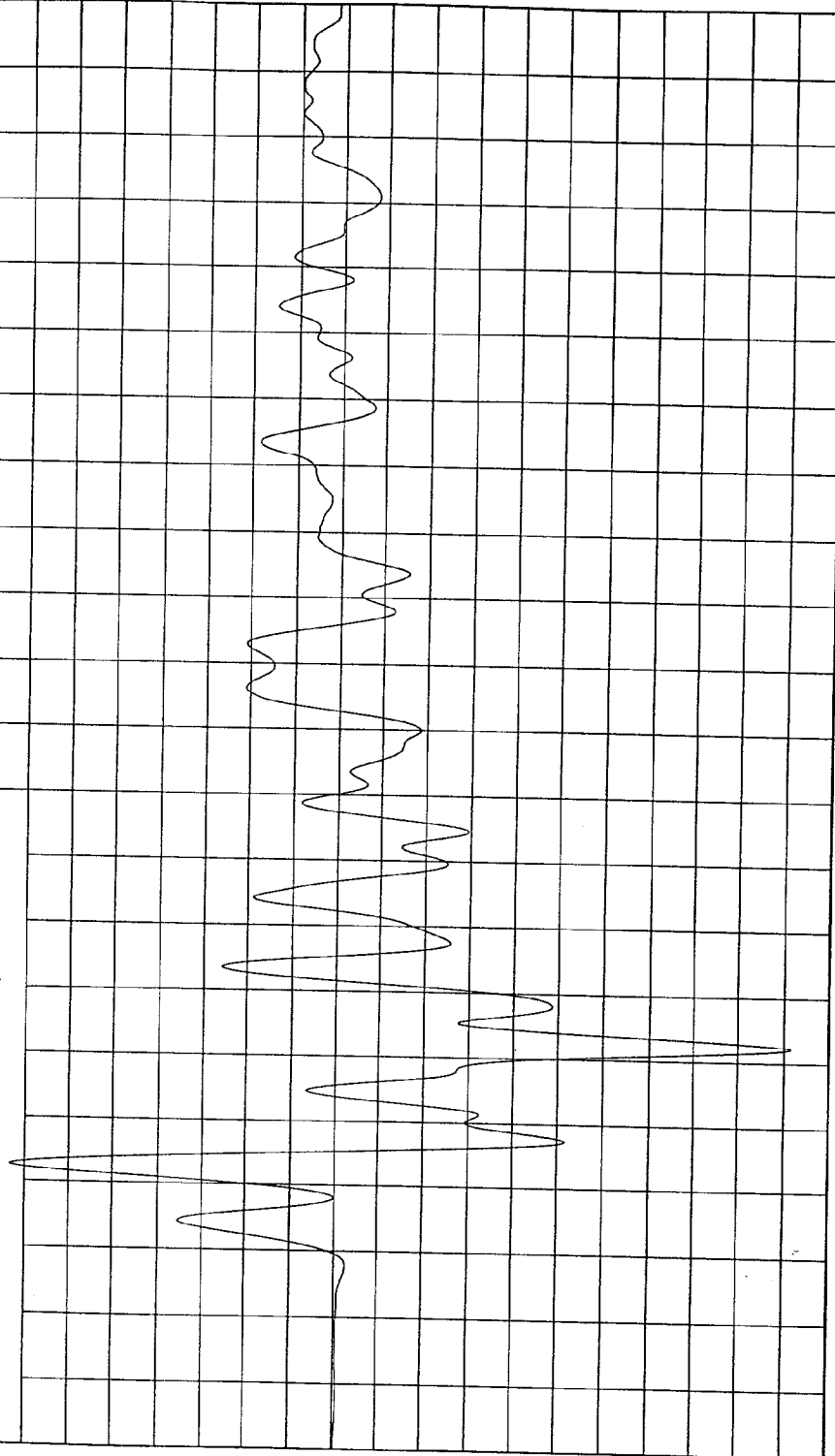
COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -20.3 G'S at 42 msec Maximum = 14.65 G'S at 23 msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION

16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22

1 B99071AF.A10 Filterclass (60)



TIME (SECONDS)

M&A Research
10-26-1999 17:09

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

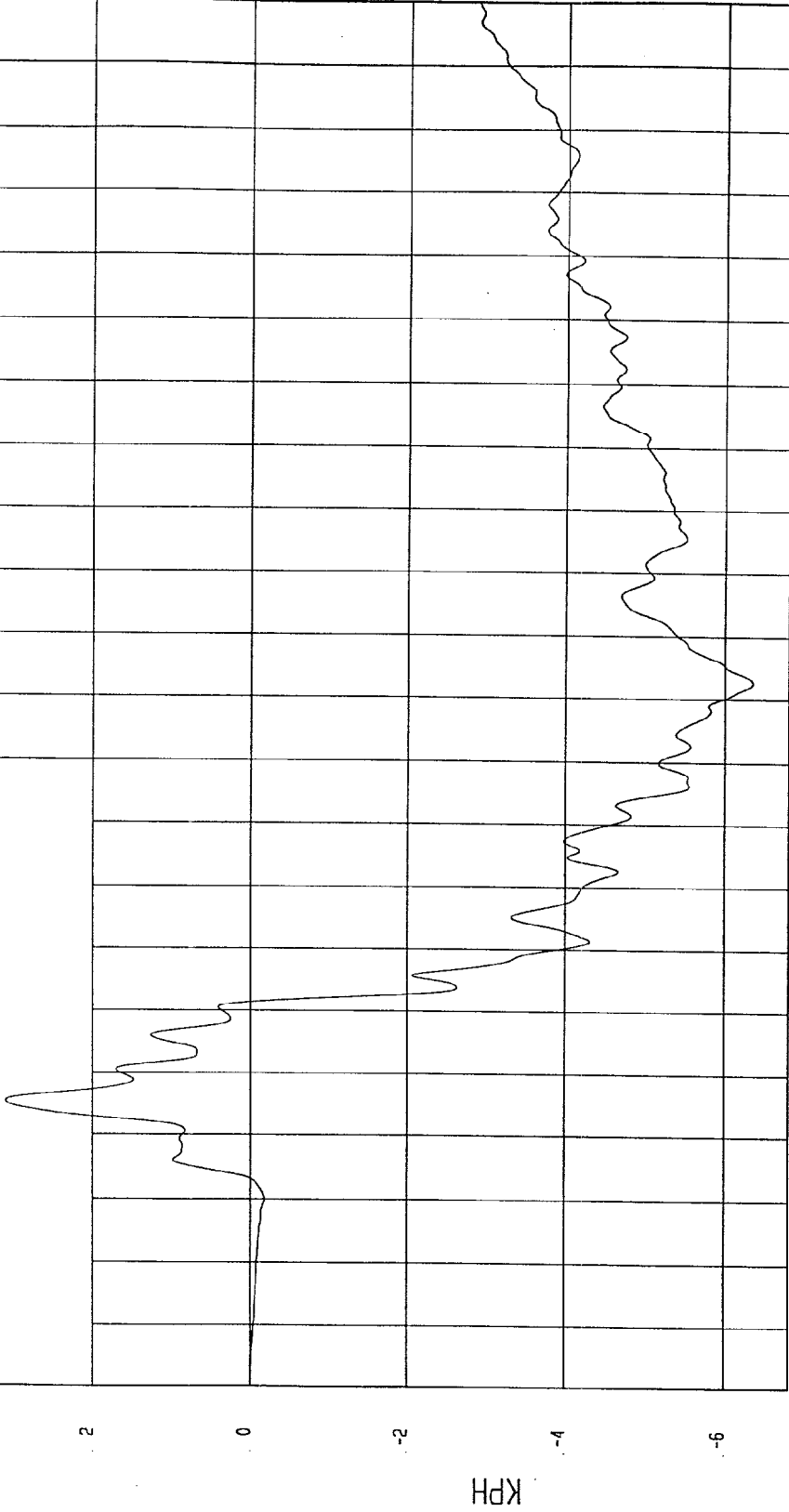
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 3.11 KPH at 25 msec

Minimum = -6.35 KPH at 93 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY

1 _____ B99071A1.V10 Filter: class (180)



TIME Seconds

MCA Research
10-26-1999 17:17

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Minimum = .11 G'S at -.18 msec

Maximum = 38.27 G'S at 13 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

1 899071AV.A08 Filterclass (50)

40

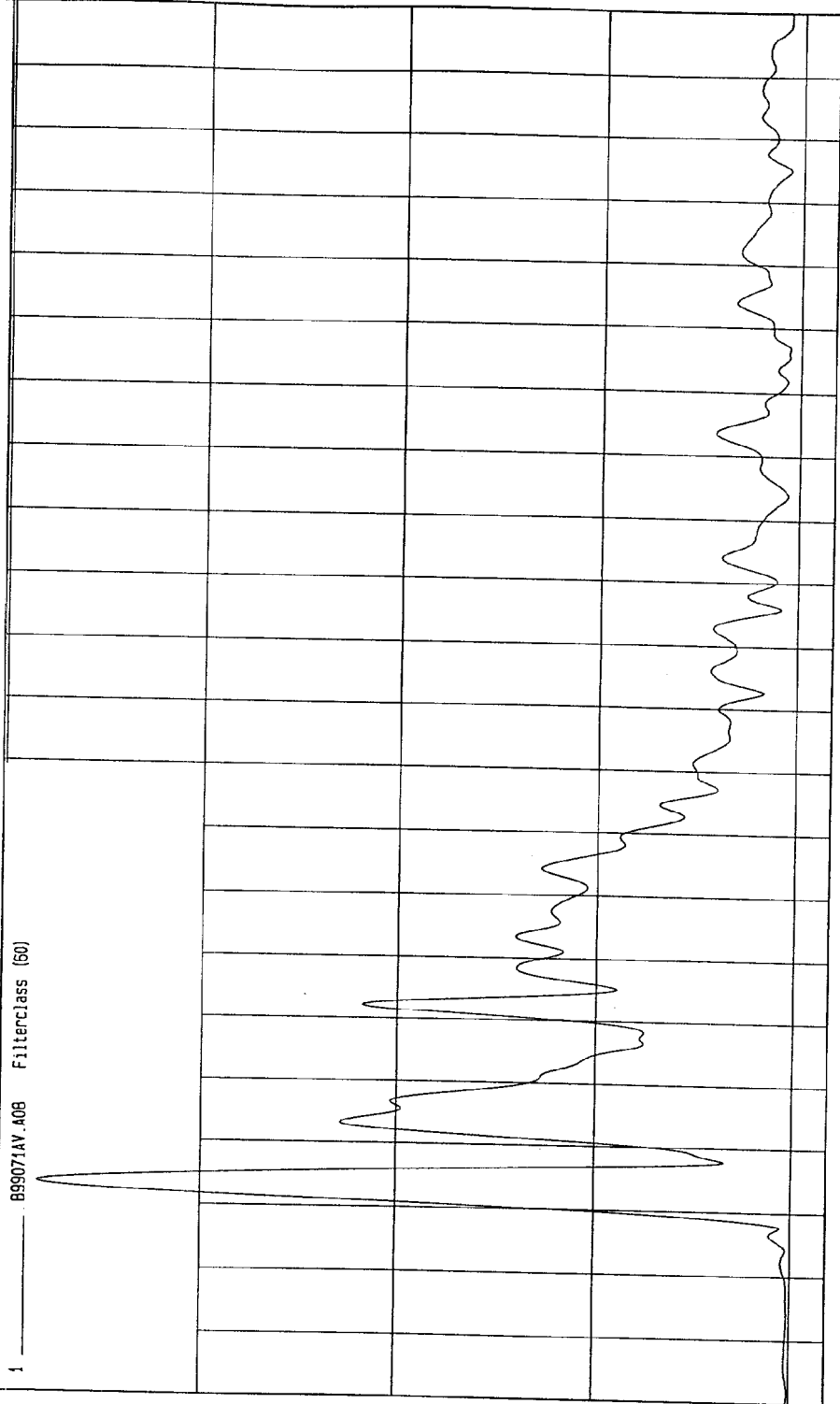
30

20

10

0

G.S



MSA Research
10-26-1999 17:09

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

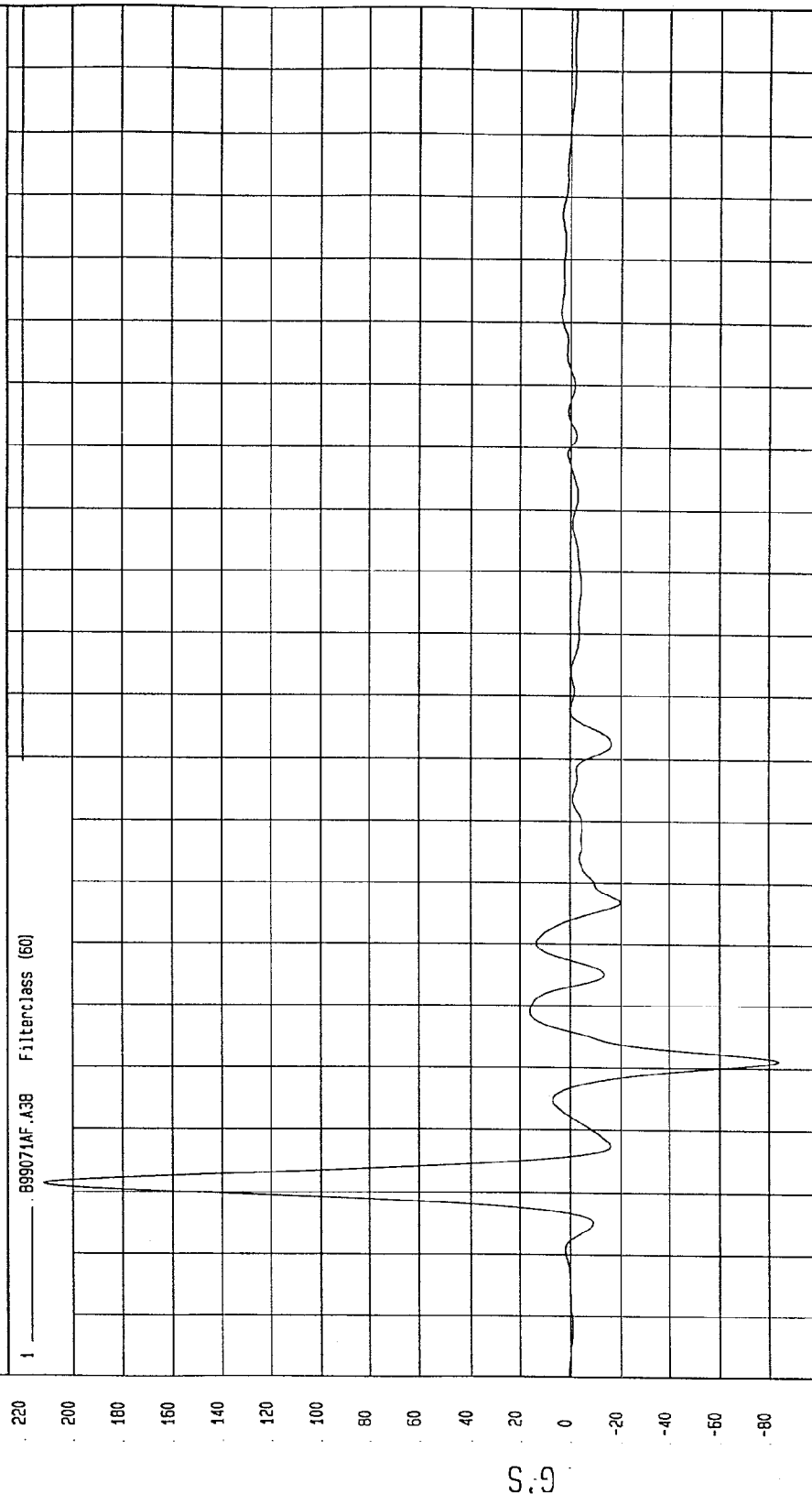
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 211.7 G'S at 11 msec

Minimum = -83.93 G'S at 31 msec

LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION



MCA Research
10-26-1999 17:08

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Minimum = -2 KPH at -7 msec

Maximum = 30.5 KPH at 16 msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY

1 B99071A1.V3B Filterclass (180)

32

30

28

26

24

22

20

18

16

14

12

10

8

6

4

2

0

KPH

-02

-01

0

01

02

03

04

05

06

07

08

09

1

11

12

13

14

15

16

17

18

19

TIME Seconds

MOA Research
10-26-1999 17:15

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION VS. TIME
NO VALID DATA COLLECTED

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

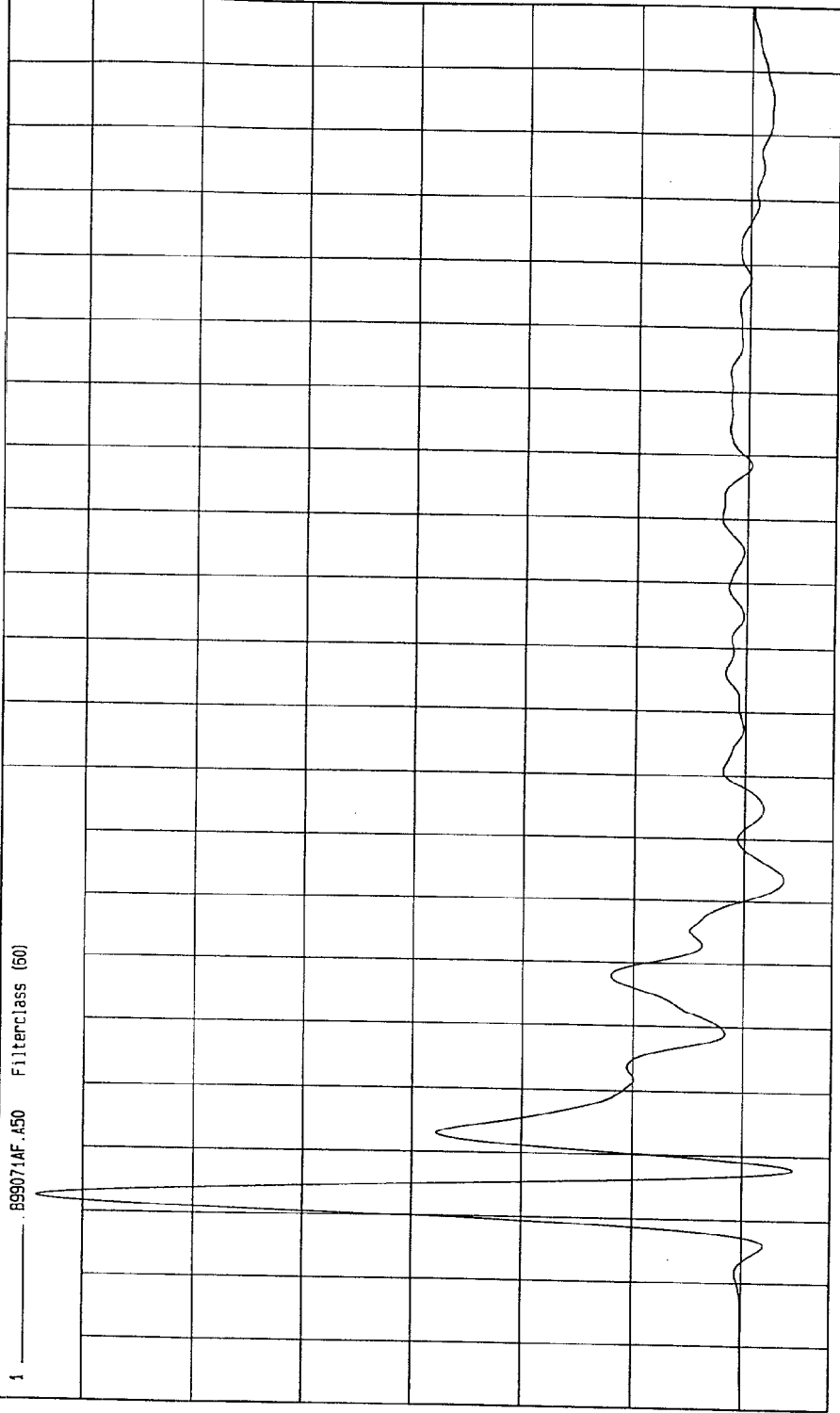
Speed: 38.4 MPH 61.8 KPH

Minimum = -4.63 G'S at 18 msec

Maximum = 64.21 G'S at 12 msec

RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION

1 ——— B99071AF.A50 Filterclass (60)



NCA Research
10-26-1999 17.09

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

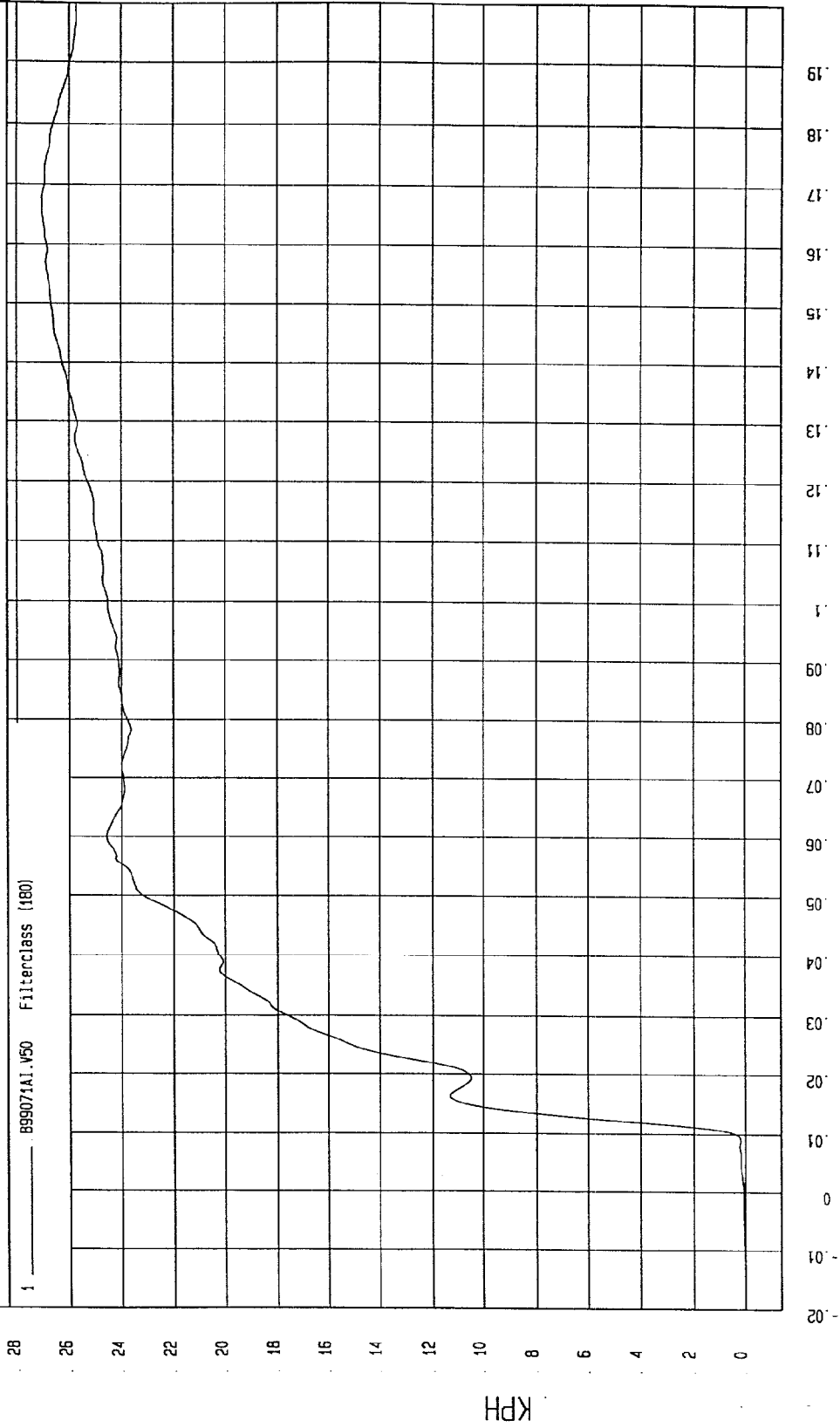
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

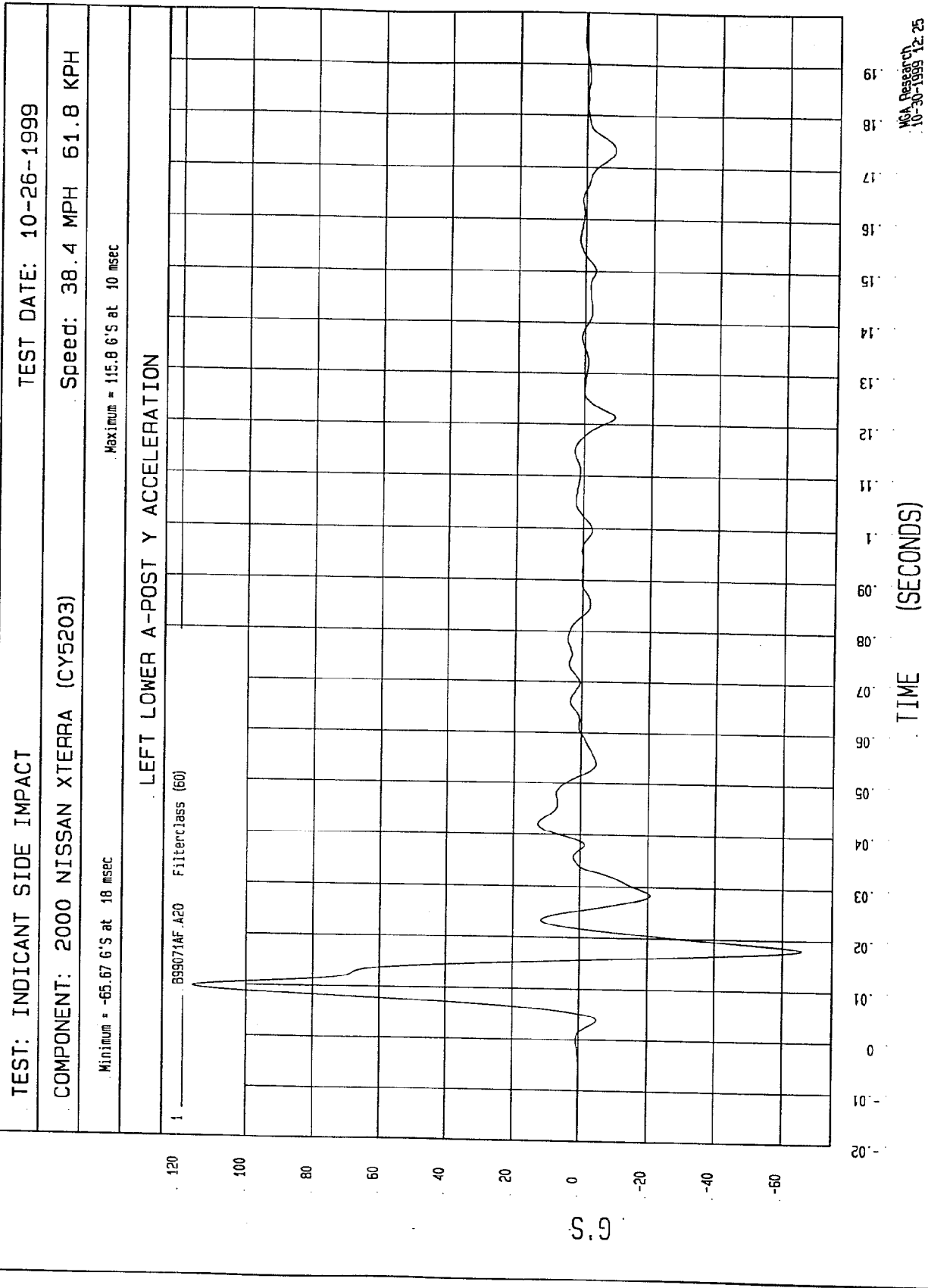
Minimum = -3.24E-05 KPH at -17 msec

Maximum = 27.03 KPH at 166 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY



MOA Research
10-26-1999 17:17

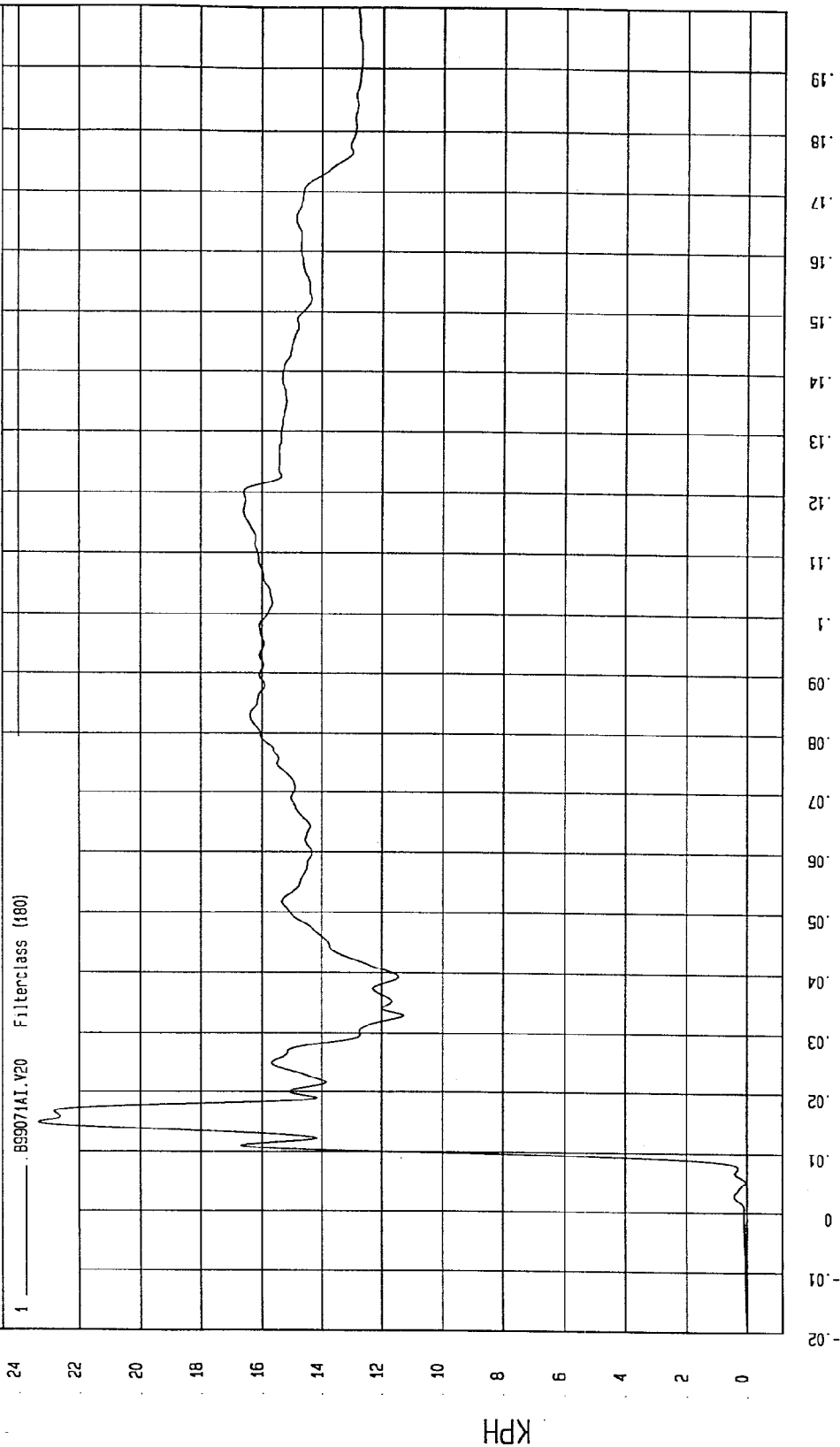


TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = 0 KPH at -20 msec Maximum = 23.36 KPH at 15 msec

LEFT LOWER A-POST Y VELOCITY



NSA Research
10-30-1999 12:27

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

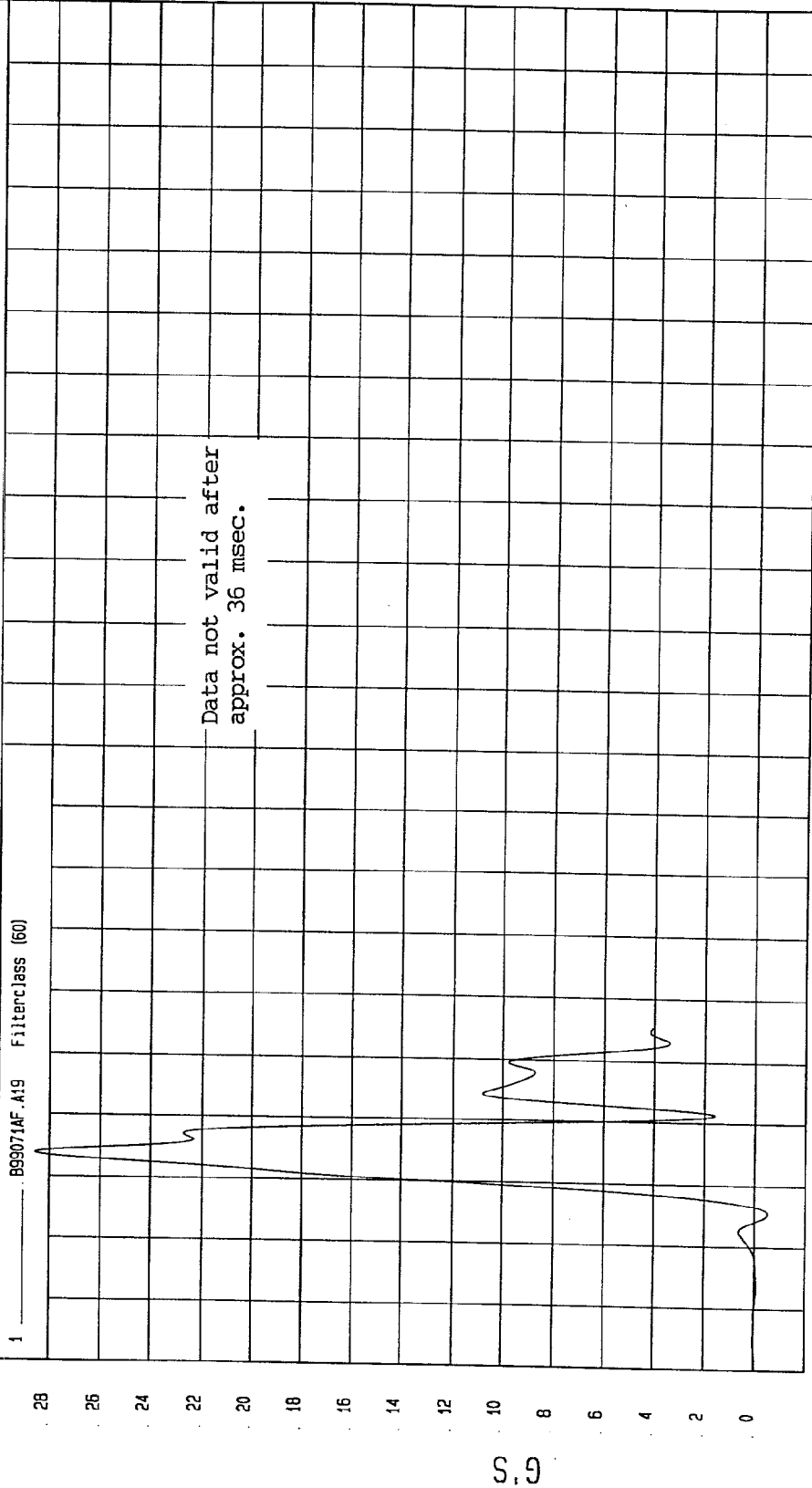
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = -.52 G'S at 5 msec

Maximum = 28.54 G'S at 14 msec

LEFT MID A-POST Y ACCELERATION



NSA Research
10-30-1999 12:33

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 12.18 KPH at 35 msec

Minimum = -1.75E-02 KPH at 2 msec

LEFT MID A-POST Y VELOCITY

1 899071A1.V19 Filterclass (180)

12

10

8

6

4

2

0

KPH

Data not valid after
approx. 36 msec.

TIME Seconds

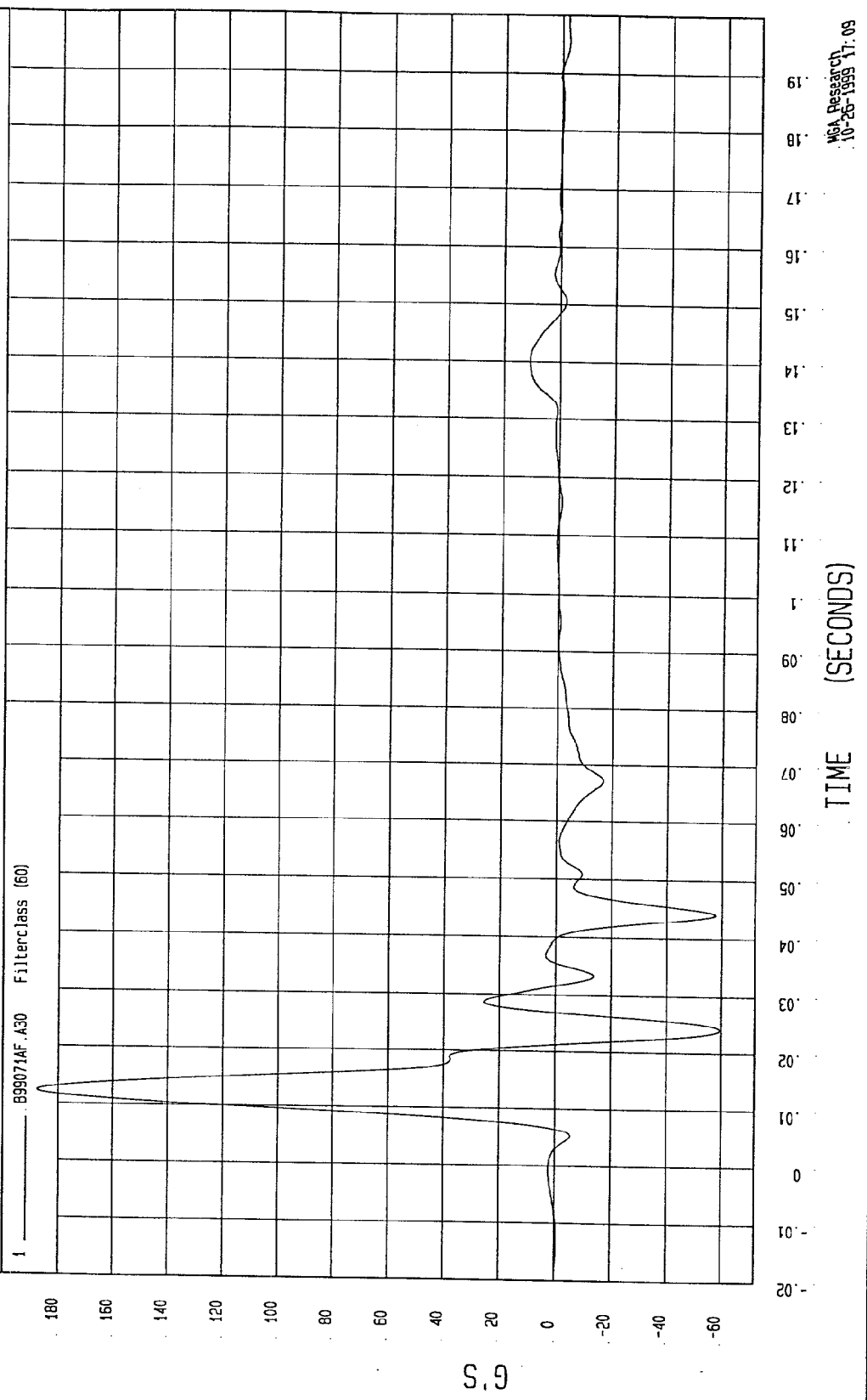
MCA Research
10-30-1999 12:34

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -59.54 G'S at 24 msec Maximum = 187.55 G'S at 12 msec

LEFT LOWER B-POST Y ACCELERATION



TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

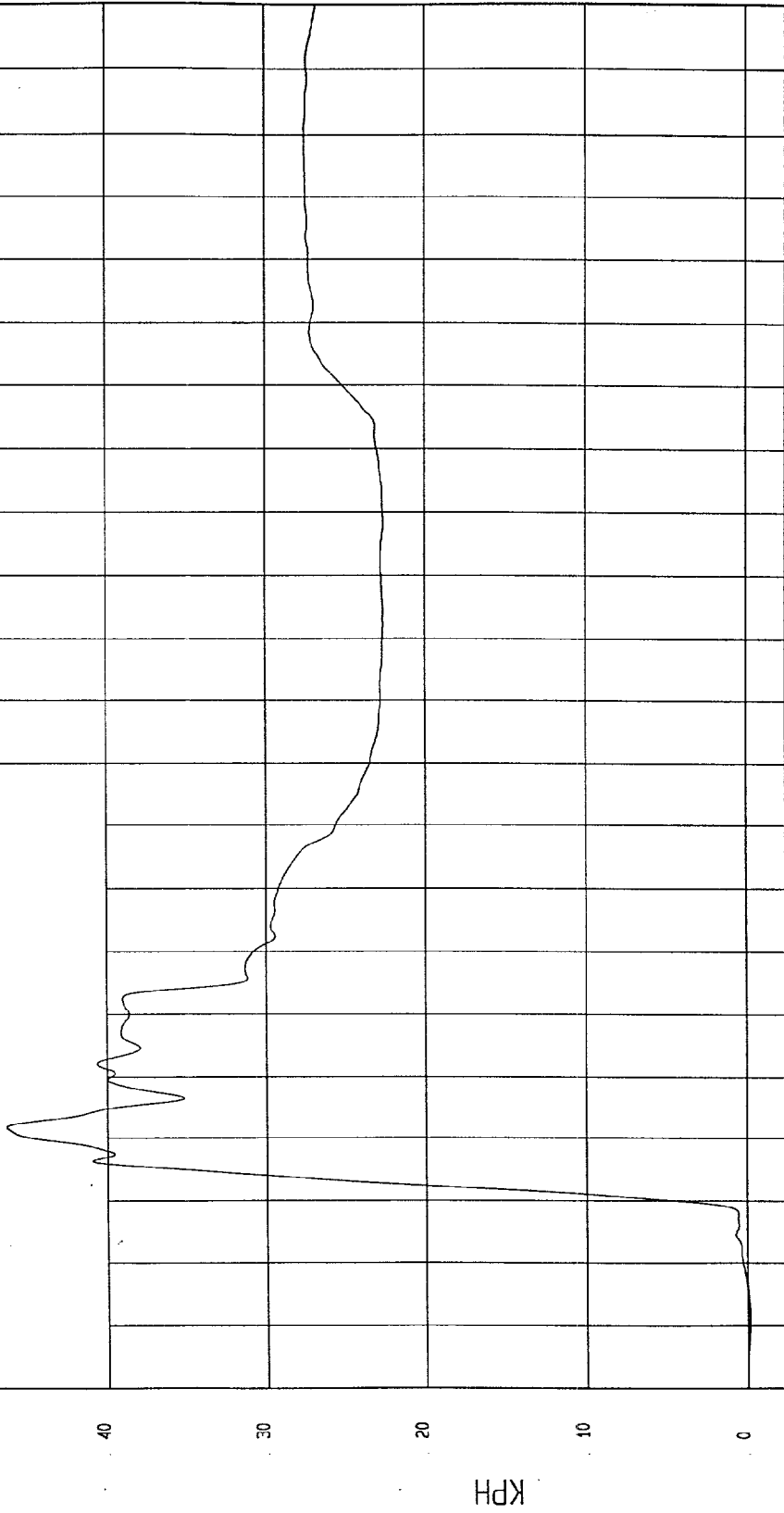
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 46.31 KPH at 22 msec

Minimum = -.14 KPH at -9 msec

LEFT LOWER B-POST Y VELOCITY

1 899071A1.V30 Filter:ass (180)



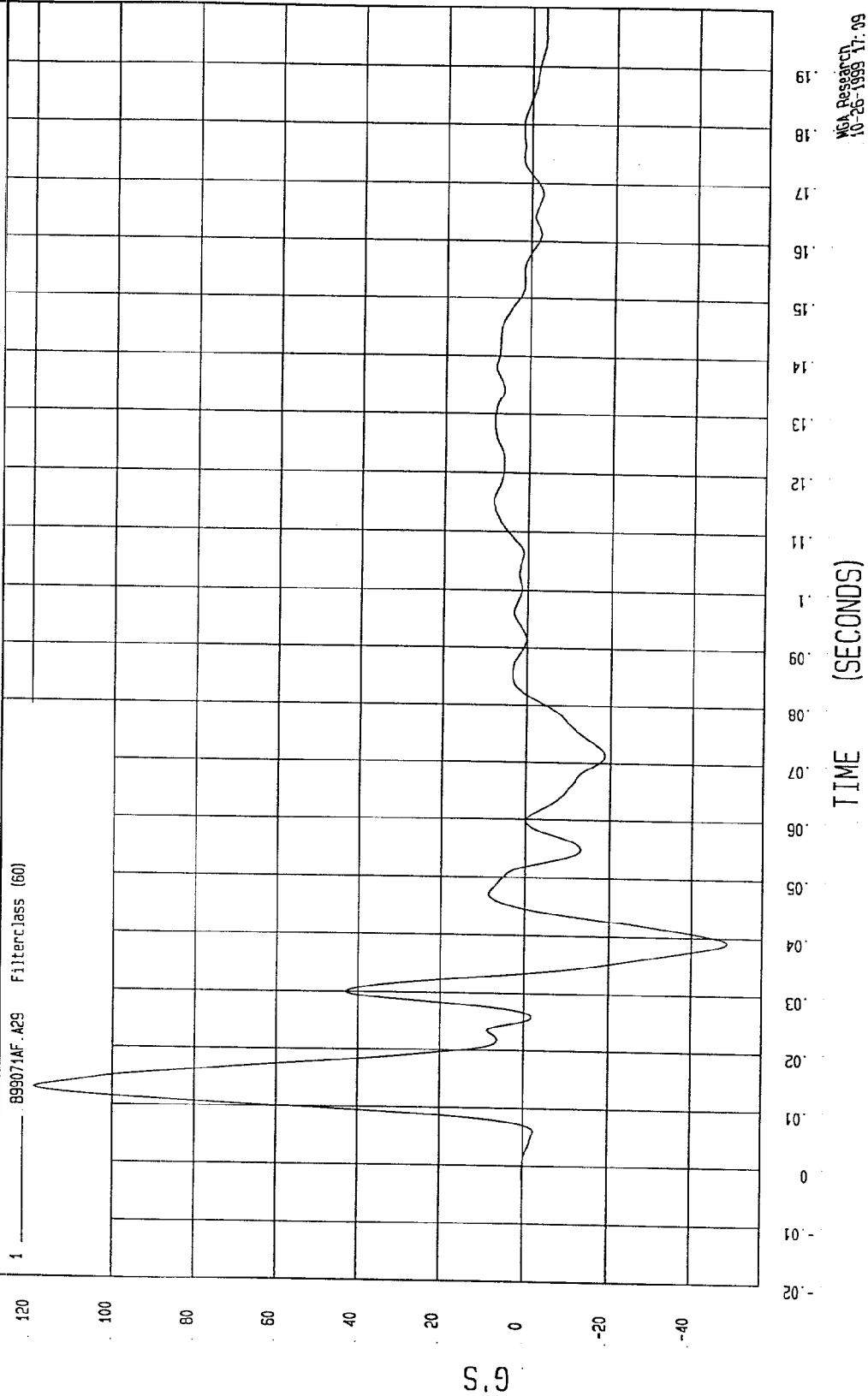
TIME Seconds
MCA Research
10-26-1999 11:17

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -48.5 G'S at 39 msec
Maximum = 118.99 G'S at 13 msec

LEFT MID B-POST Y ACCELERATION



TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

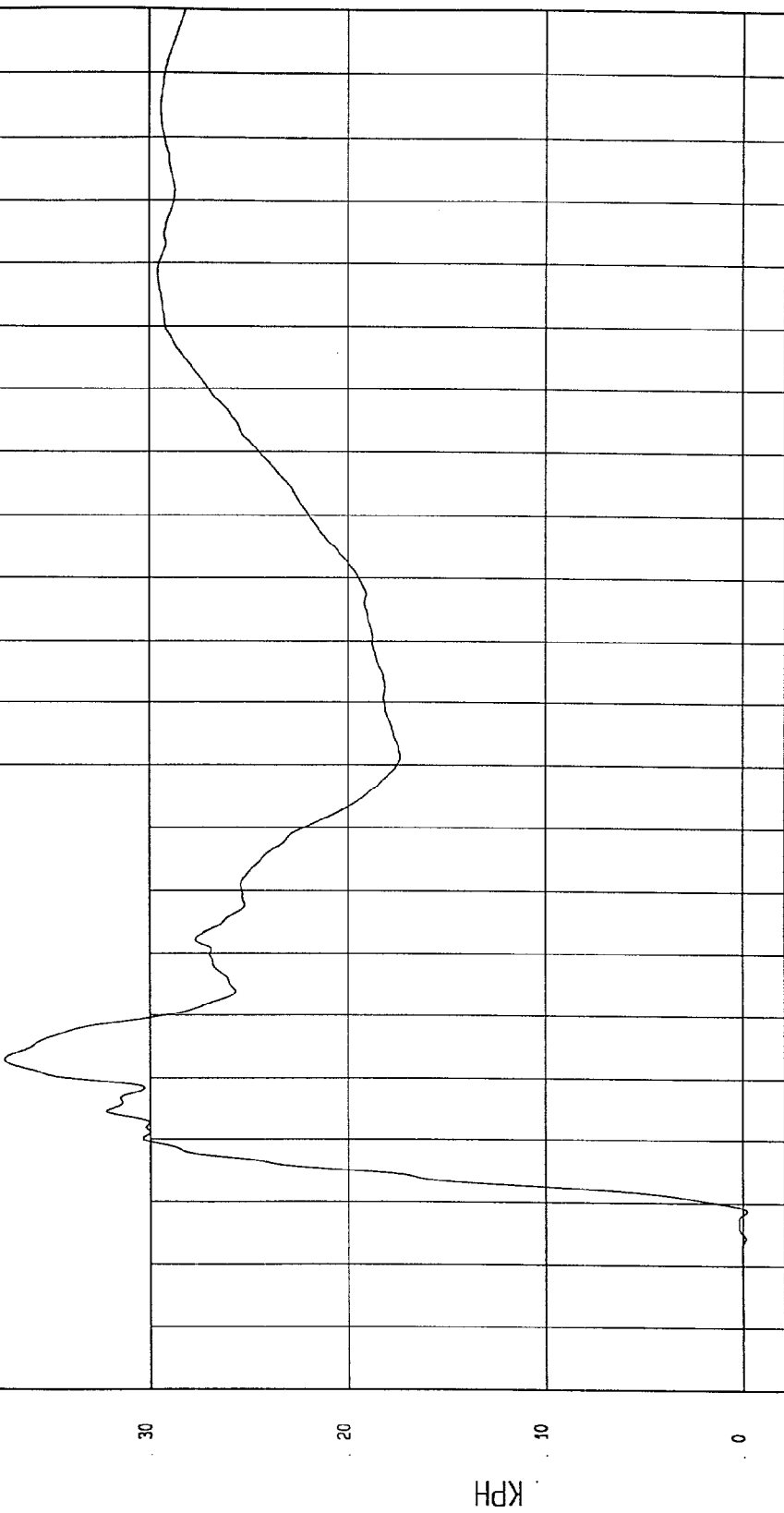
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 37.28 KPH at 33 msec

Minimum = -.2 KPH at 9 msec

LEFT MID B-POST Y VELOCITY

1 ——— B99071A1.V29 Filterclass (180)



TIME Seconds

61.8
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2

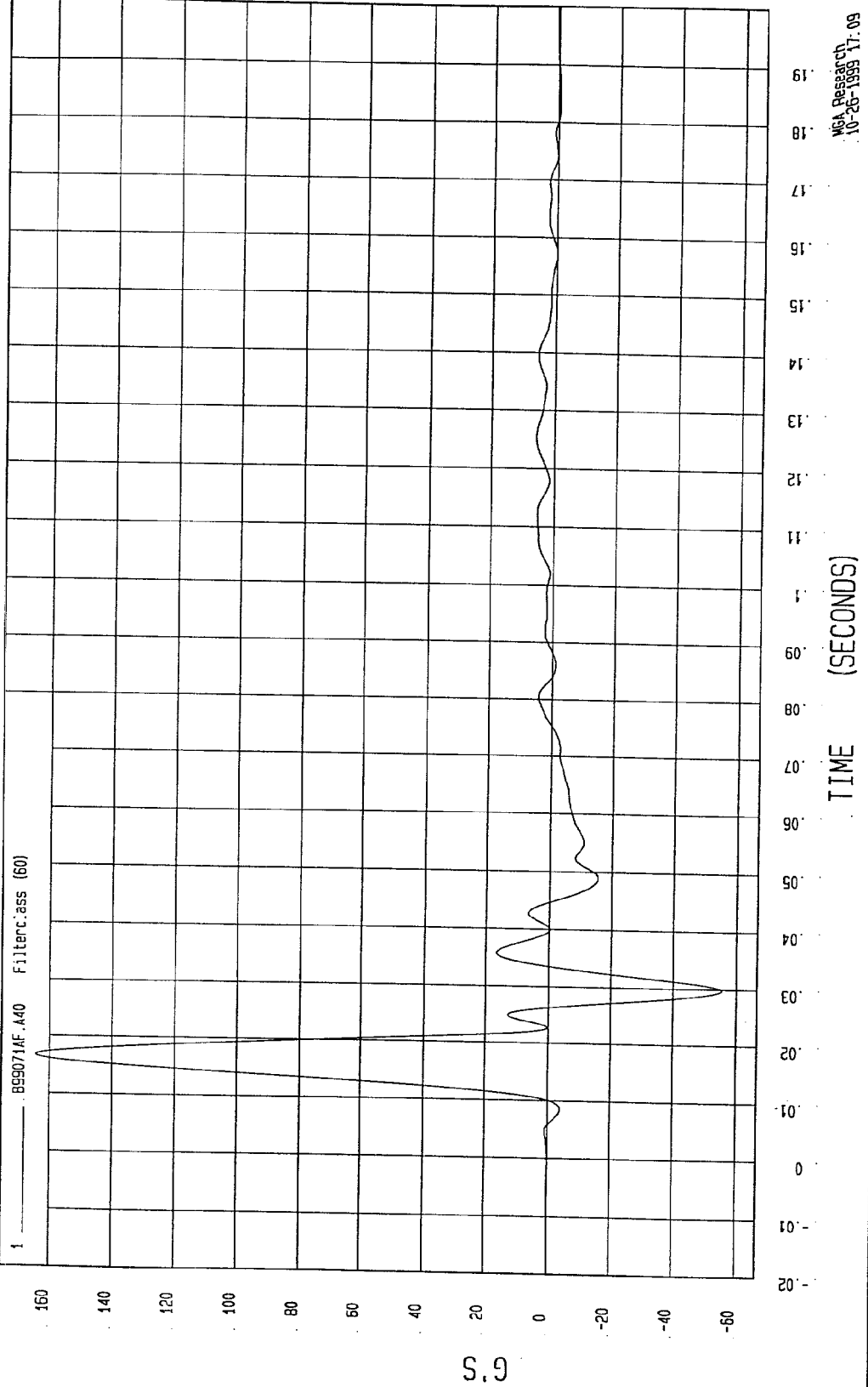
MOA Research
10-26-1999 11:17

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -55.47 G'S at 30 msec Maximum = 164.32 G'S at 17 msec

DRIVER SEAT TRACK Y ACCELERATION



TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

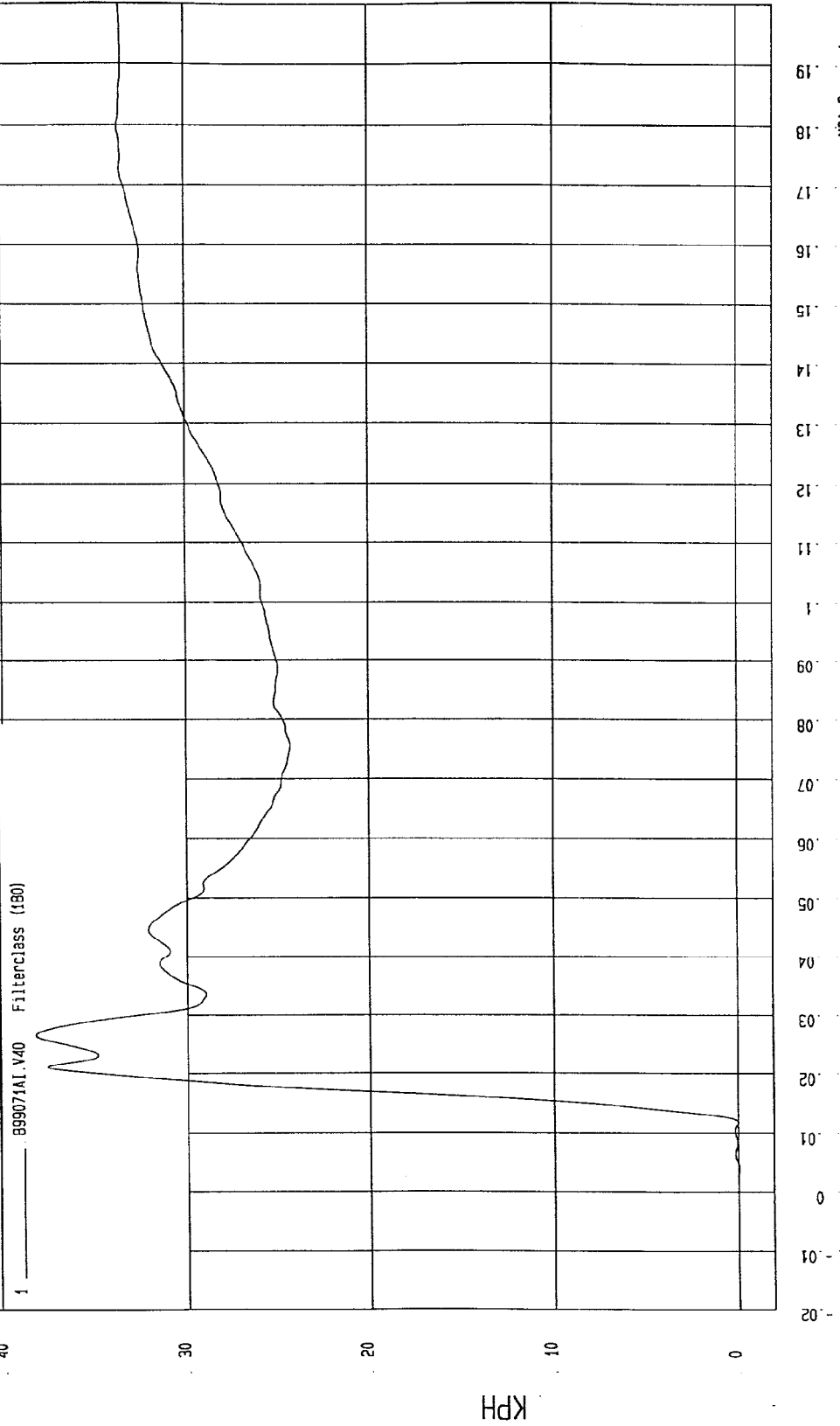
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 38.29 KPH at 27 msec

Minimum = -3.93E-02 KPH at 4 msec

DRIVER SEAT TRACK Y VELOCITY



MSA Research
10-26-1999 17:16

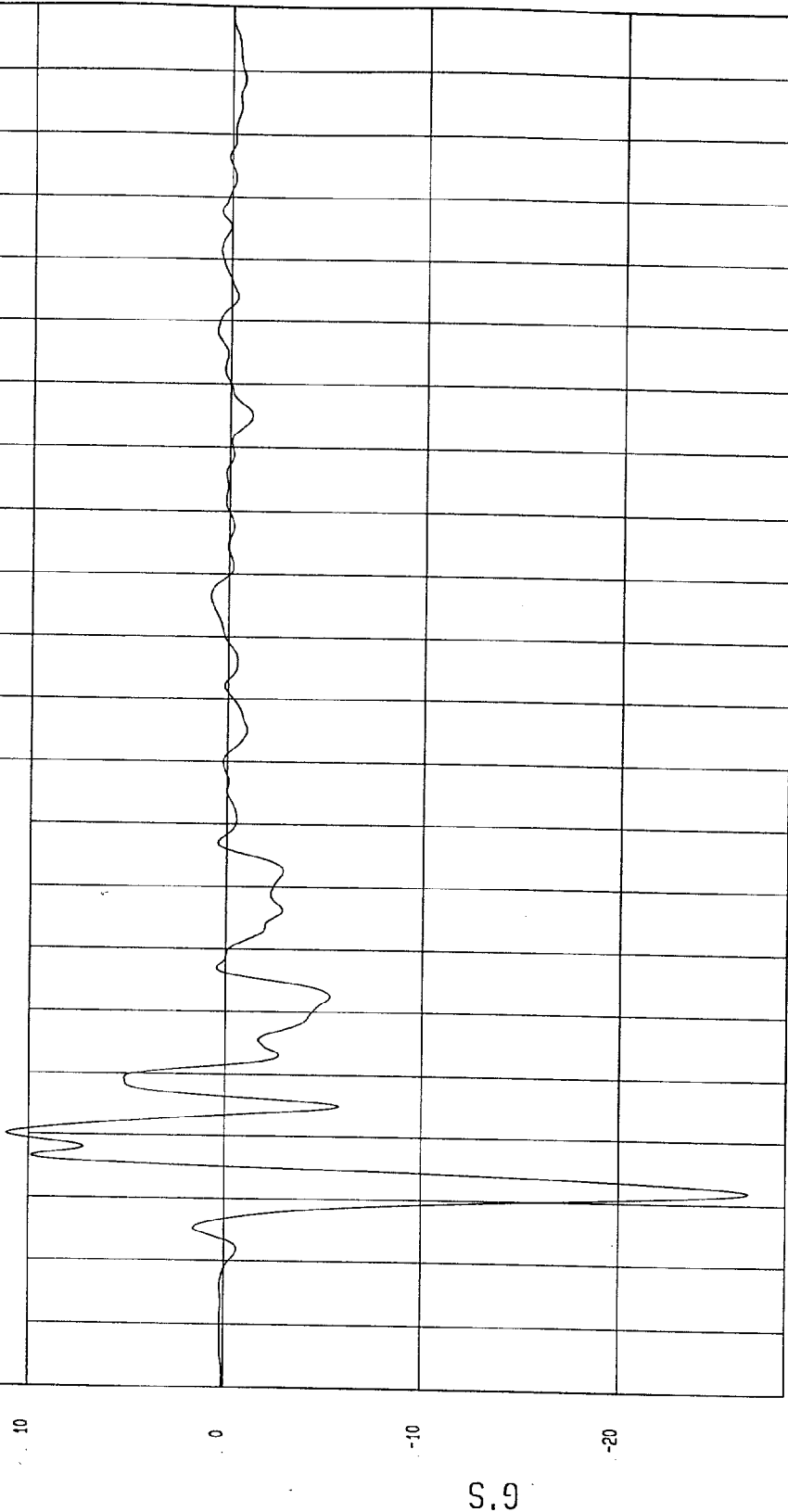
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -26.61 G'S at 12 msec Maximum = 11.13 G'S at 20 msec

VEHICLE CG X ACCELERATION

1 899071AF.A05 Filterclass (60)

MCA Research
10-26-1999 17.09

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

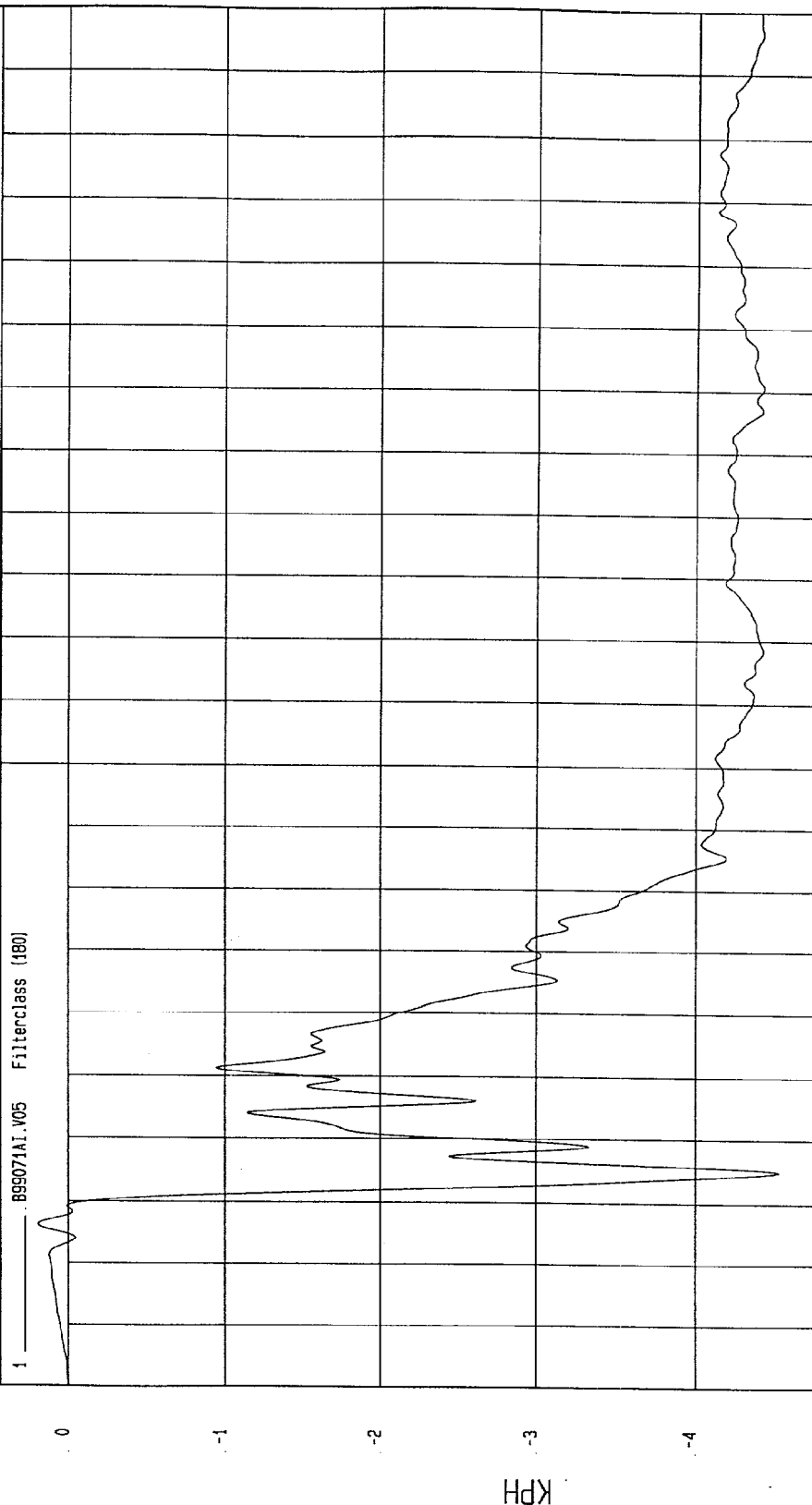
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = .19 KPH at 6 msec

Minimum = -4.54 KPH at 15 msec

VEHICLE CG X VELOCITY

1 .B99071A1.V05 Filterclass (180)

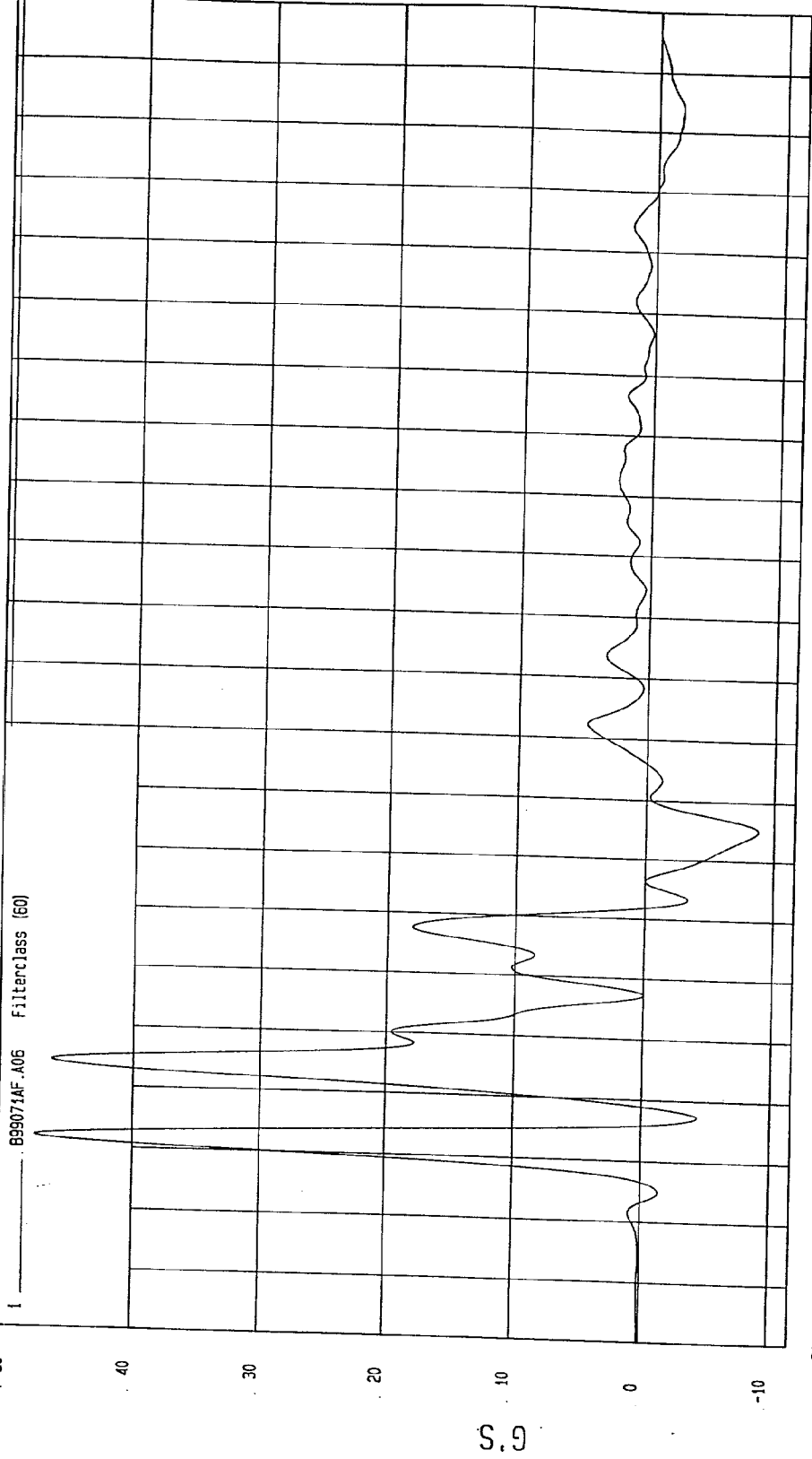


MSA Research
10-26-1999 17:17

TIME Seconds

TEST: INDICANT SIDE IMPACT
TEST DATE: 10-26-1999
COMPONENT: 2000 NISSAN XTERRA (CY5203)
Speed: 38.4 MPH 61.8 KPH
Minimum = -8.78 G'S at 65 msec
Maximum = 47.57 G'S at 12 msec

VEHICLE CG Y ACCELERATION



WCA Research
10-26-1999 17:09

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = 0 KPH at -20 msec

Maximum = 26.92 KPH at 171 msec

VEHICLE CG Y VELOCITY

28

1 _____ BS9071A1.V06 Filterclass (180)

26

24

22

20

18

16

14

12

10

8

6

4

2

0

KPH

-02

-01

0

01

02

03

04

05

06

07

08

09

1

11

12

13

14

15

16

17

18

19

TIME Seconds

NSA Research
10-26-1999 17:17

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

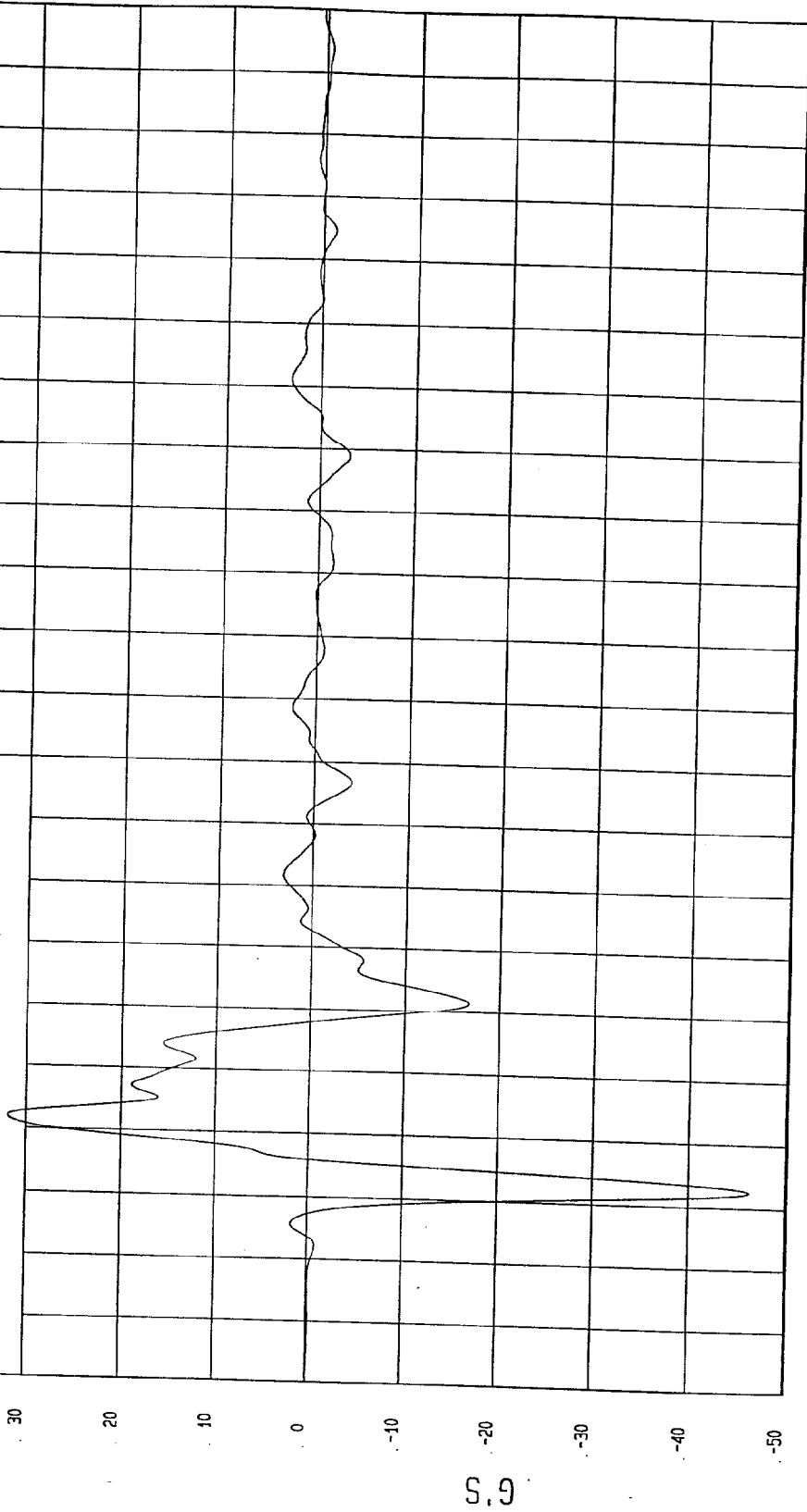
Speed: 38.4 MPH 61.8 KPH

Minimum = -45.29 G'S at 12 msec

Maximum = 31.88 G'S at 22 msec

VEHICLE CG Z ACCELERATION

1 B99071AF.A07 Filterclass (50)



MGA Research
10-26-1999 17:09

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

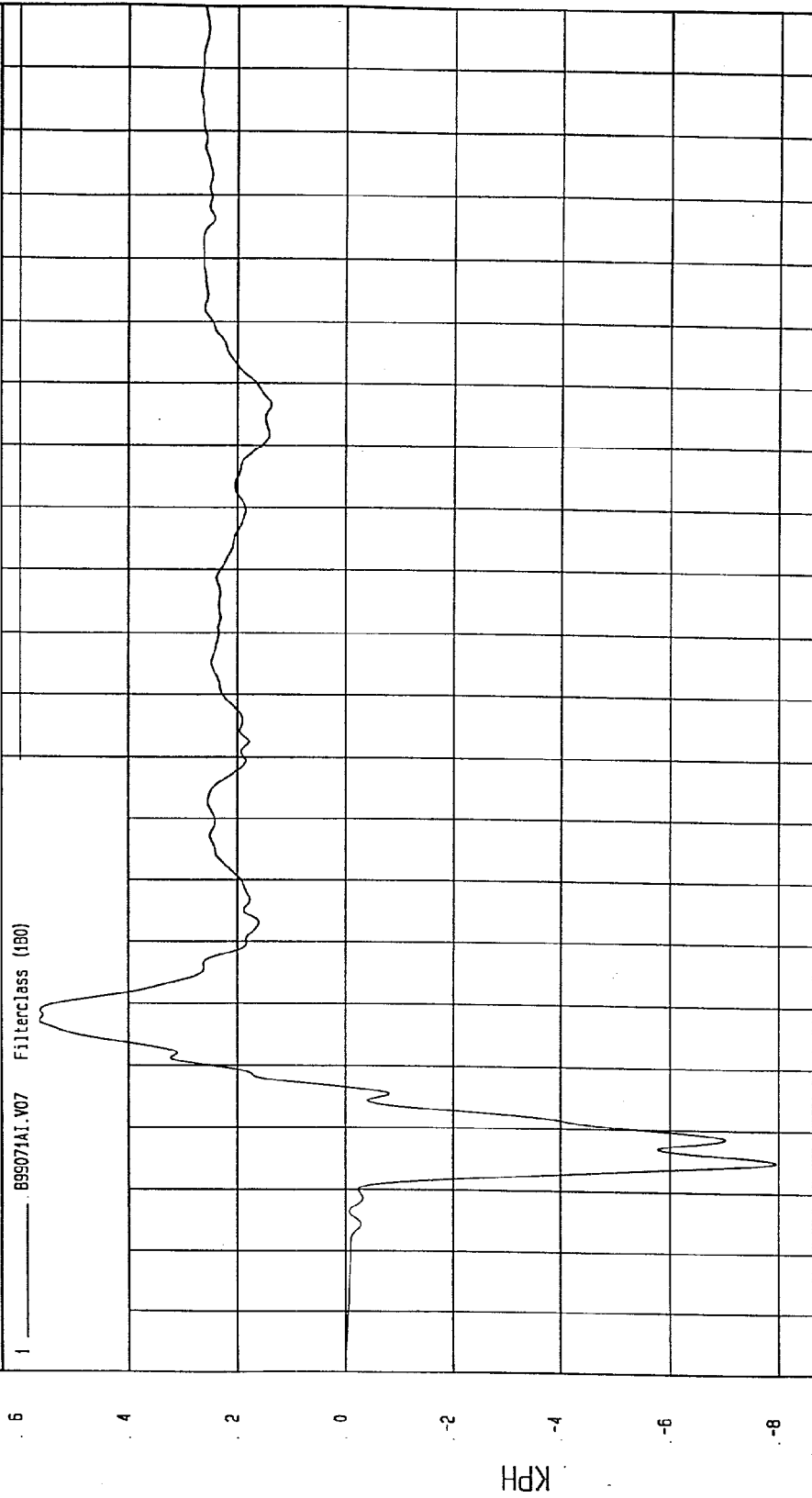
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 5.56 KPH at 37 msec

Minimum = -7.96 KPH at 15 msec

VEHICLE CG Z VELOCITY

1 899071A1.V07 Filterclass (180)



TIME Seconds

WCA Research
10-26-1999 17:17

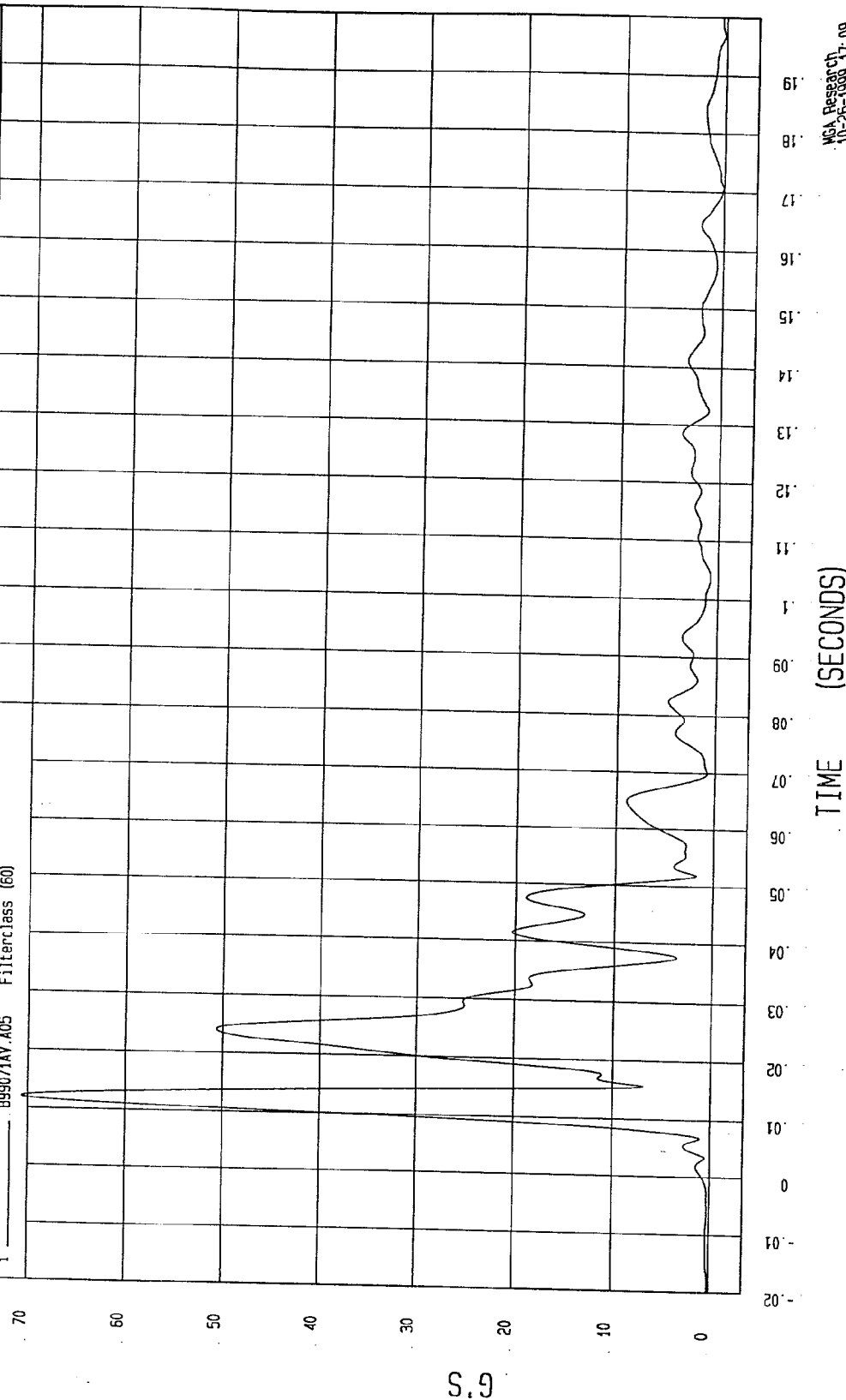
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = 8.98E-02 G'S at 171 msec
Maximum = 70.58 G'S at 12 msec

VEHICLE CG RESULTANT ACCELERATION

1 — 899071AV.A05 Filterclass (60)



NSA Research
10-26-1999 11.09

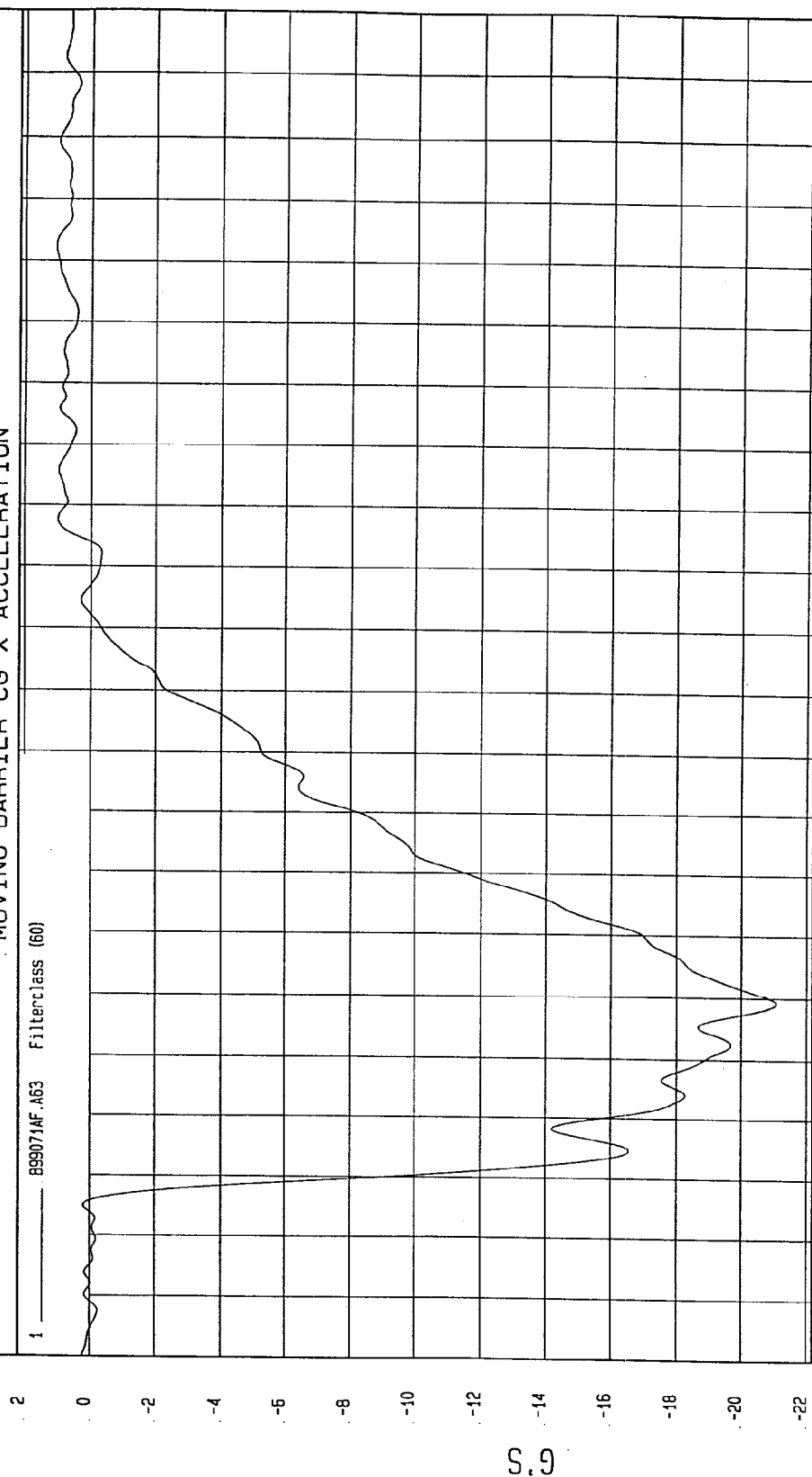
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -21.07 G'S at 39 msec Maximum = 1.07 G'S at 152 msec

MOVING BARRIER CG X ACCELERATION

1 899071AF.A63 Filterclass (60)



MOA Research
10-26-1999 17:09

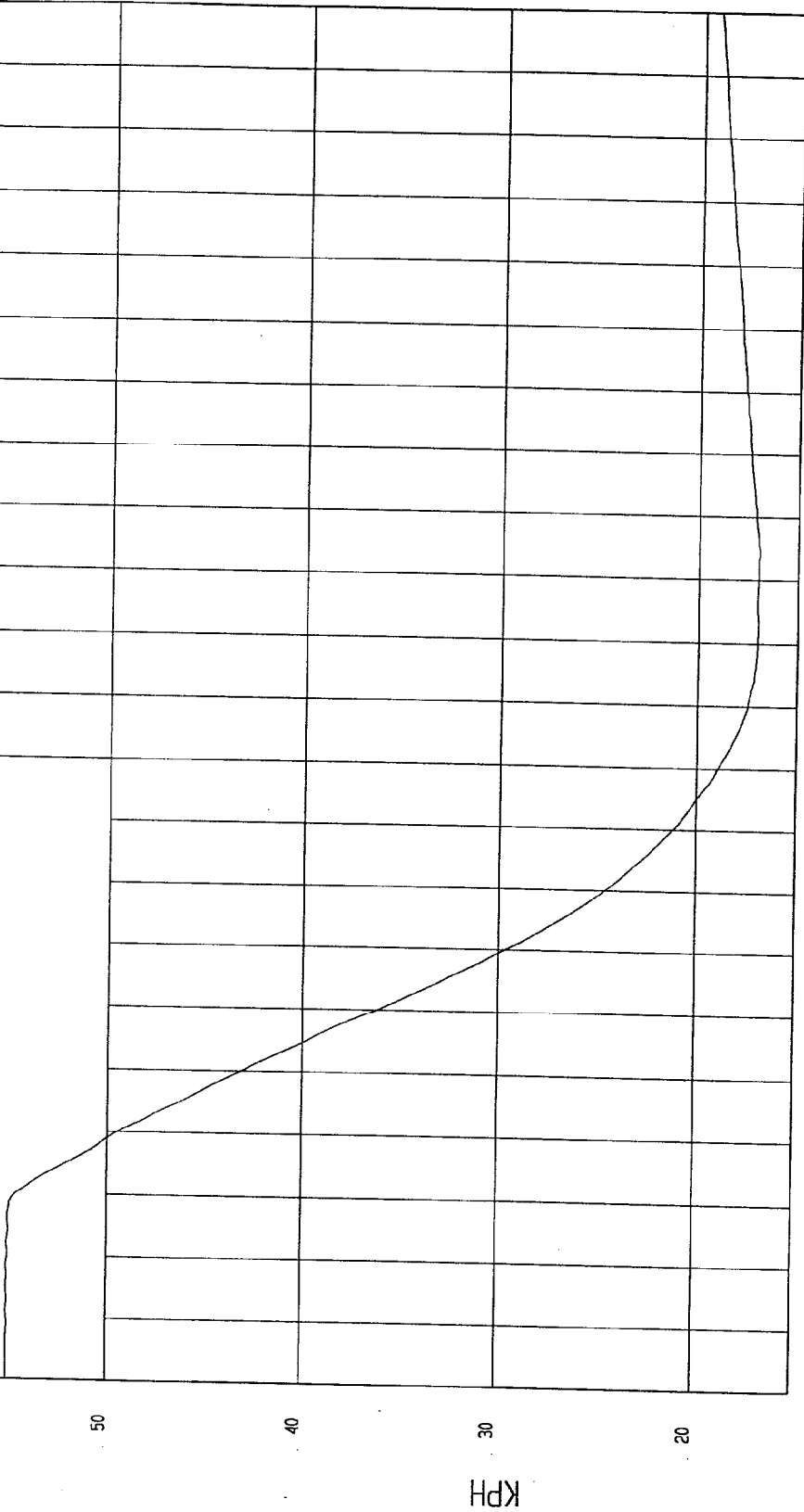
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = 16.91 KPH at 114 msec Maximum = 55.14 KPH at -5 msec

MOVING BARRIER CG X VELOCITY

1 B990741.V63 Filterclass (180)



MSA Research
10-26-1999 17:17

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

Speed: 38.4 MPH 61.8 KPH

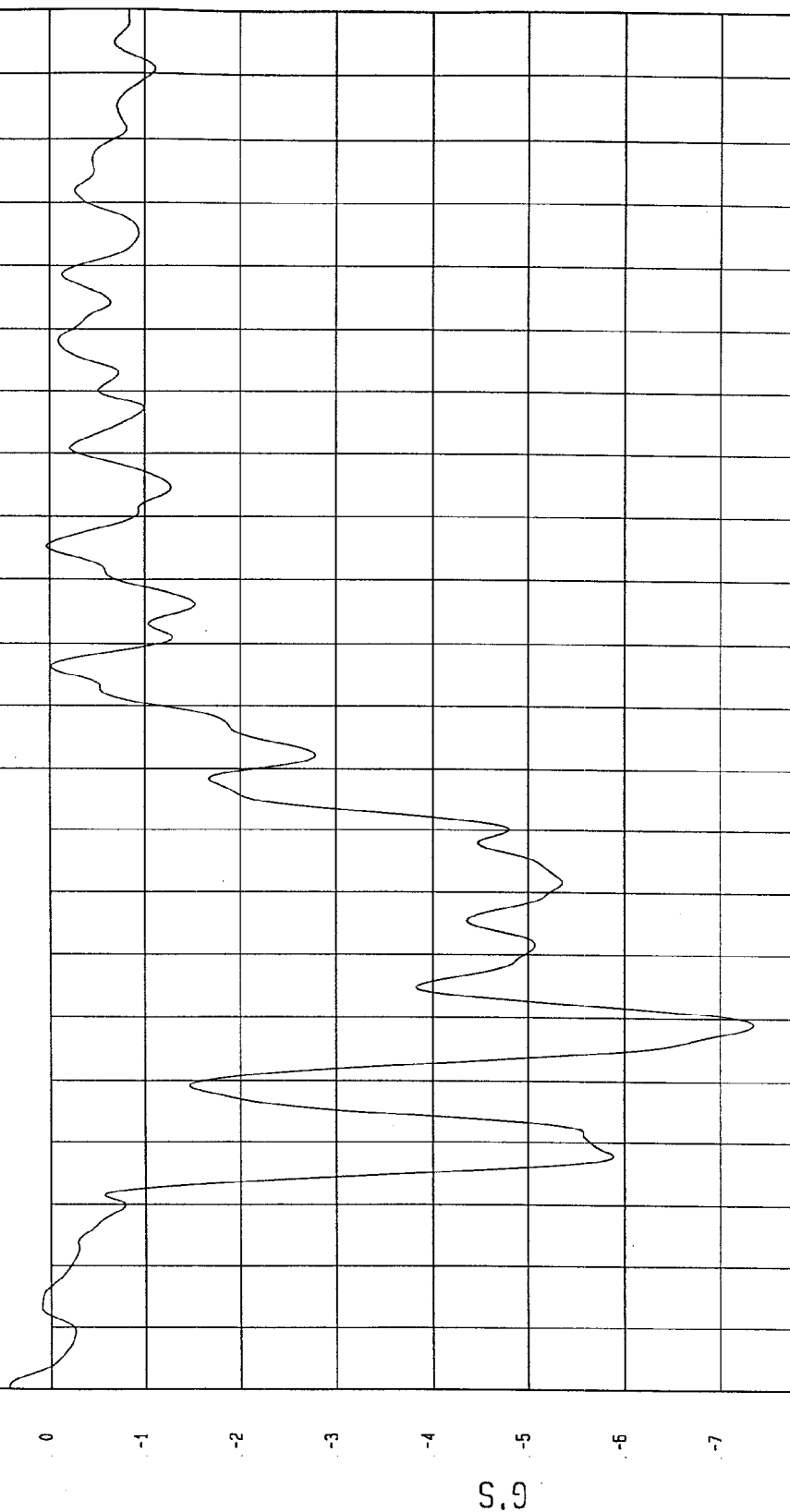
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = .44 G'S at -20 msec

Minimum = -7.35 G'S at 39 msec

MOVING BARRIER CG Y ACCELERATION

1 _____ B99071AF.A64 Filterclass (60)

MCA Research
10-26-1999 11:09

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

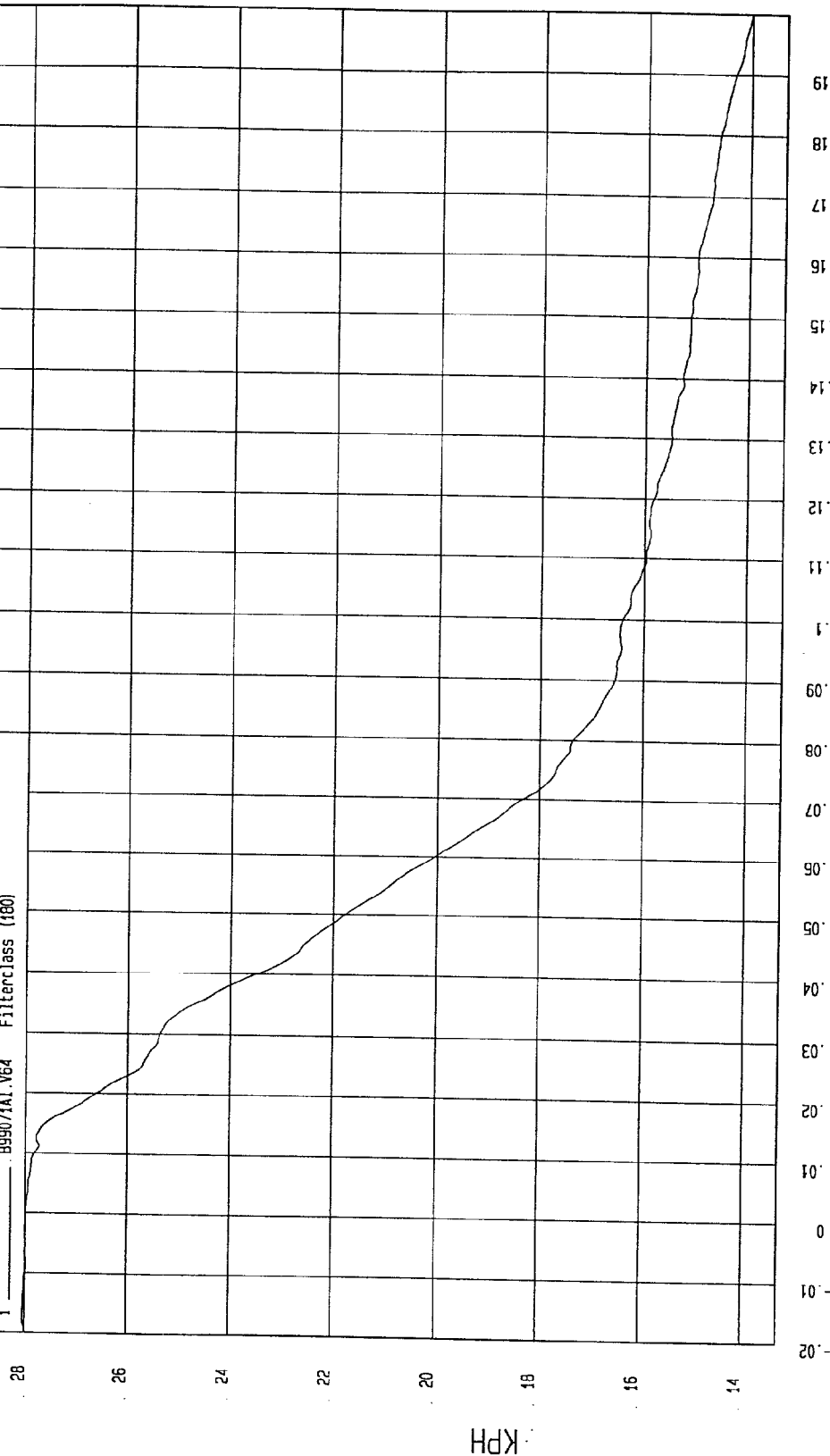
Speed: 38.4 MPH 61.8 KPH

Minimum = 14 KPH at 200 msec

Maximum = 28.05 KPH at -17 msec

MOVING BARRIER CG Y VELOCITY

1 B99071A1.V64 Filterclass (180)



NSA Research
10-26-1999 17:17

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

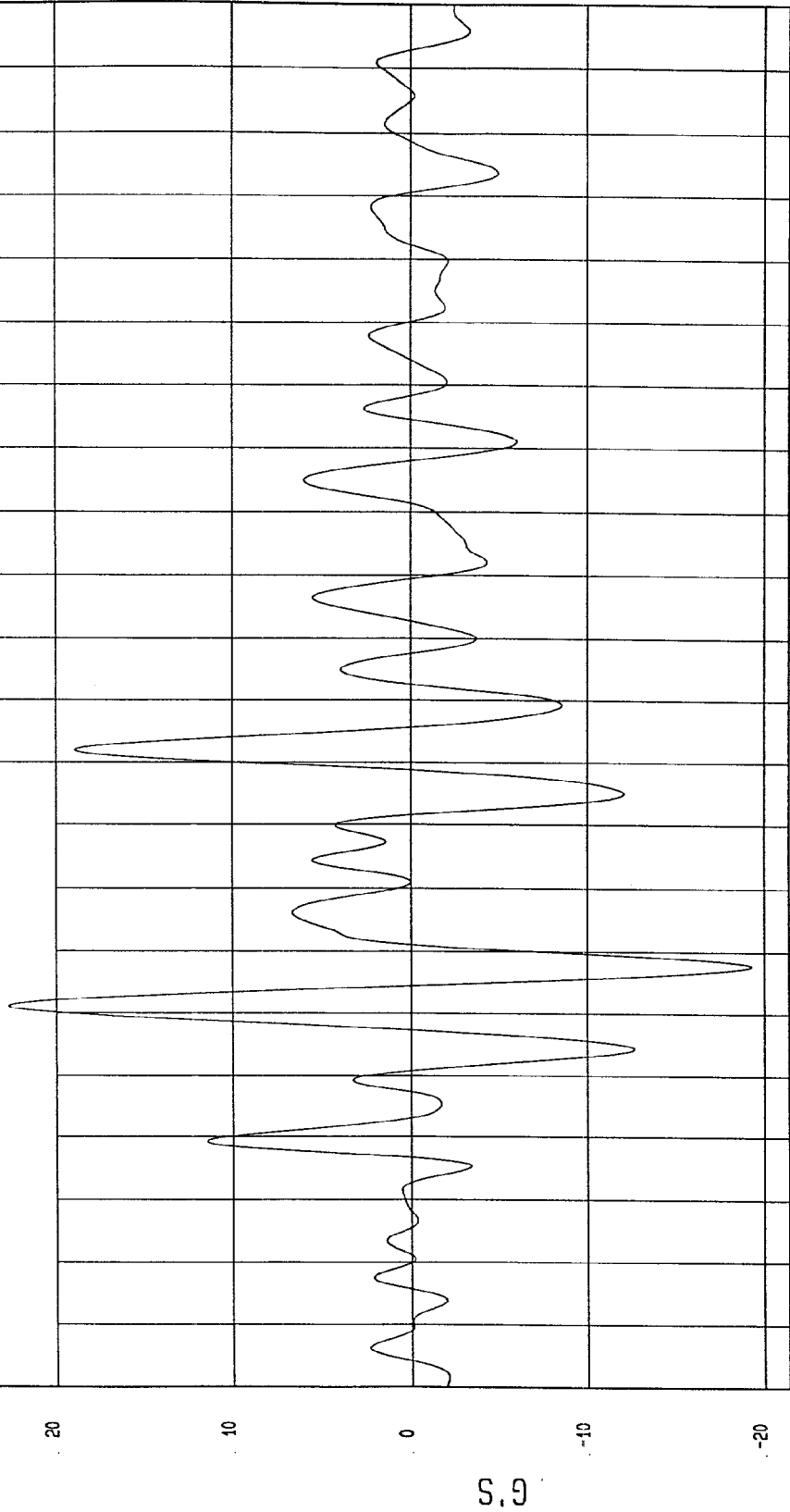
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 22.69 G'S at 41 msec

Minimum = -19.3 G'S at 48 msec

MOVING BARRIER CG Z ACCELERATION

1 B99071AF.A65 Filterclass (60)



NSA Research
10-26-1999 T: 10

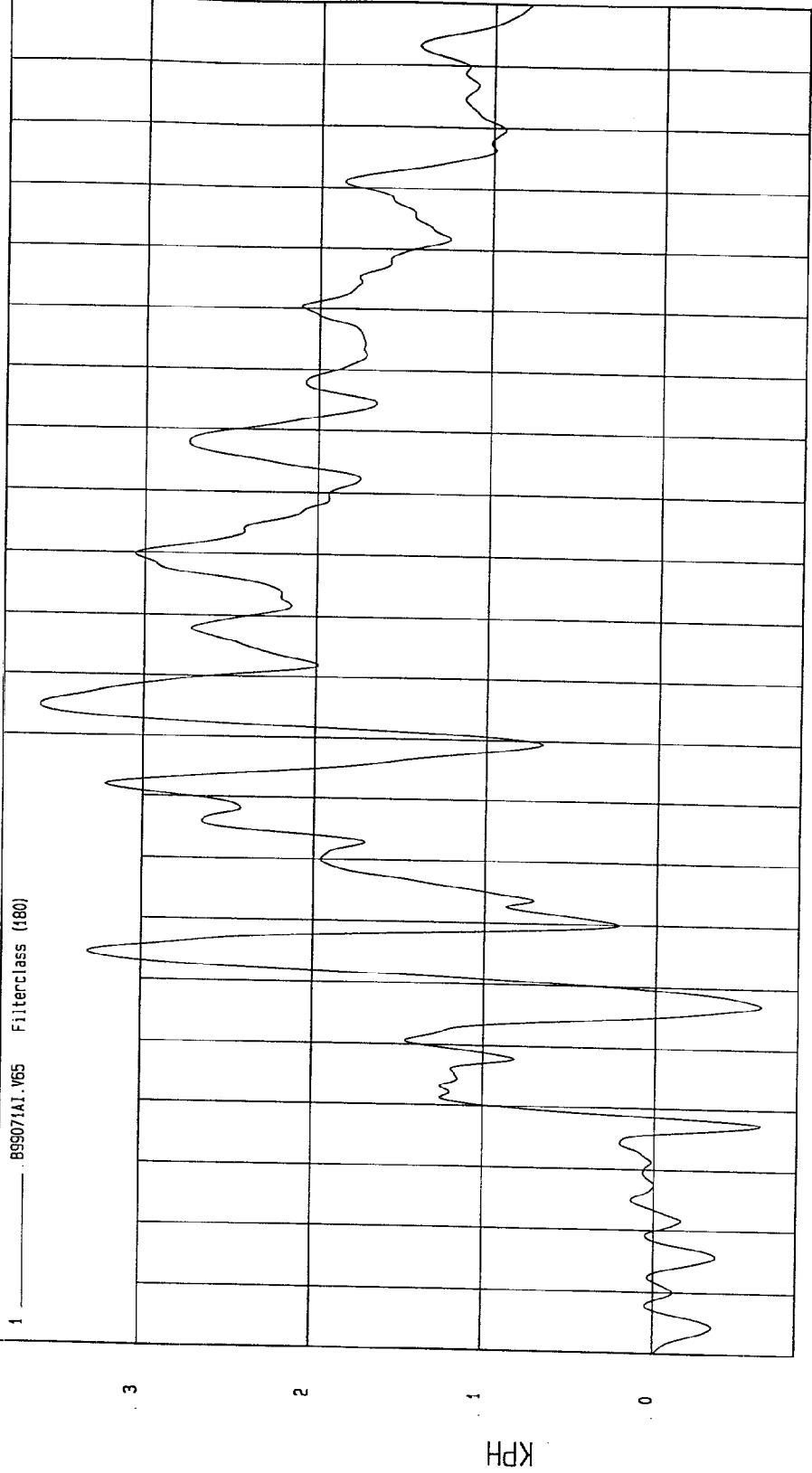
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -.61 KPH at 17 msec Maximum = 3.6 KPH at 85 msec

MOVING BARRIER CG Z VELOCITY

1 ——— B9S071A1 V65 Filterclass (180)



MSA Research
10-26-1999 11:17

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

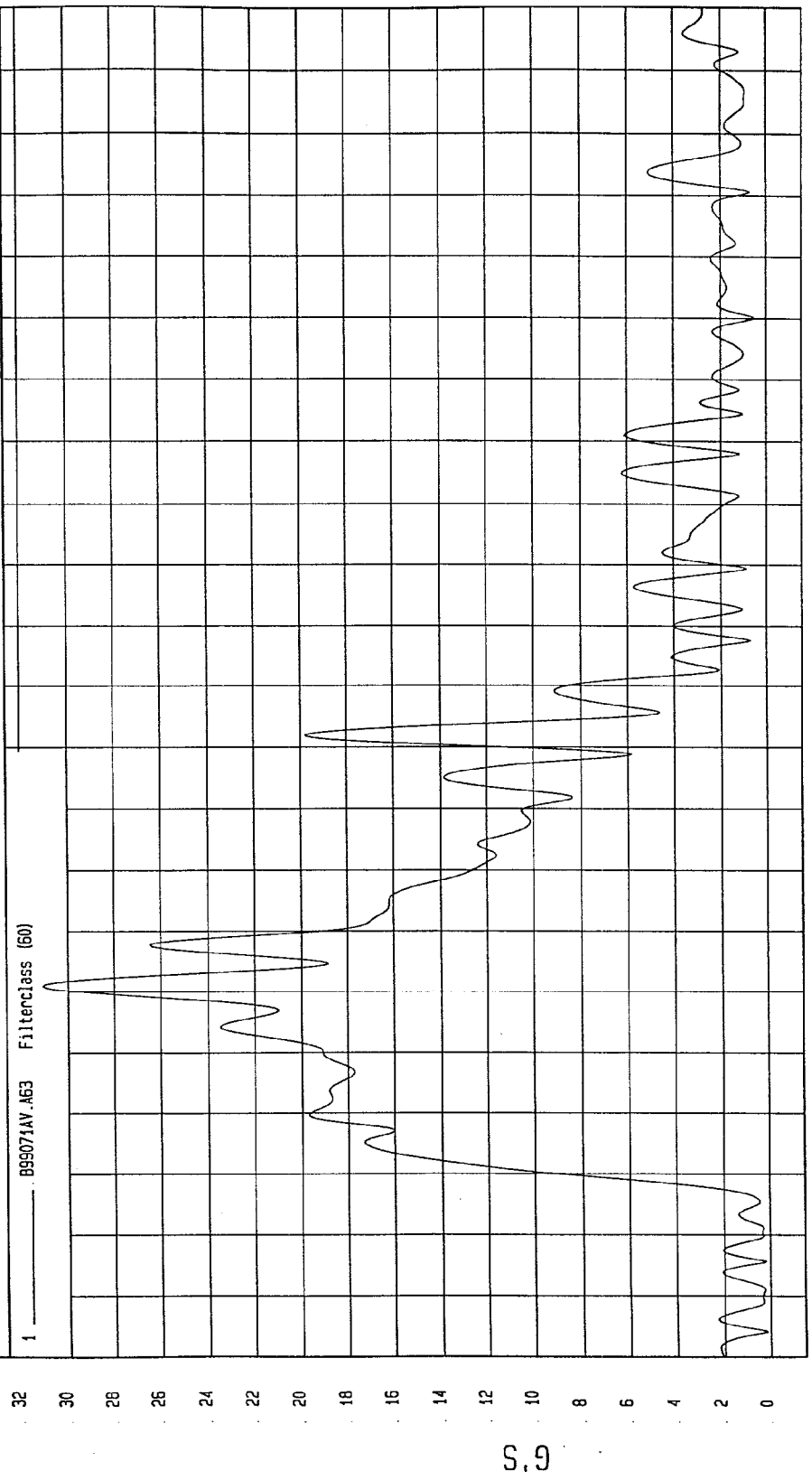
Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 31.06 G'S at 41 msec

Minimum = 5.90E-02 G'S at -16 msec

MOVING BARRIER CG RESULTANT ACCELERATION



MGA Research
10-26-1999 17:10

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

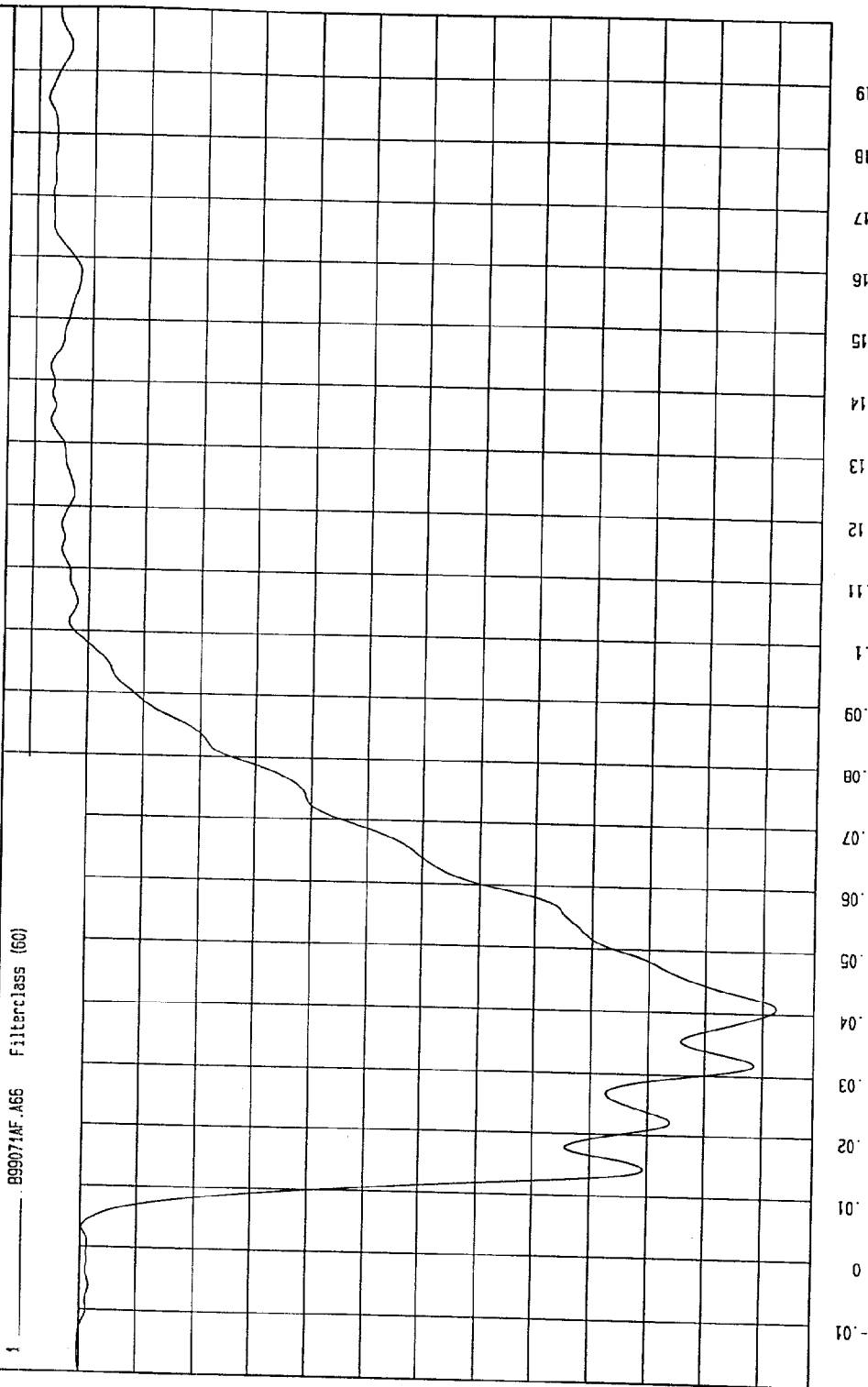
Minimum = -24.47 G'S at 41 msec

Maximum = 1.65 G'S at 186 msec

MOVING BARRIER REAR AXLE X ACCELERATION

1 899071AF.A66 Filterclass (60)

2



TIME (SECONDS)

MCA Research
10-26-1999 17.10

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

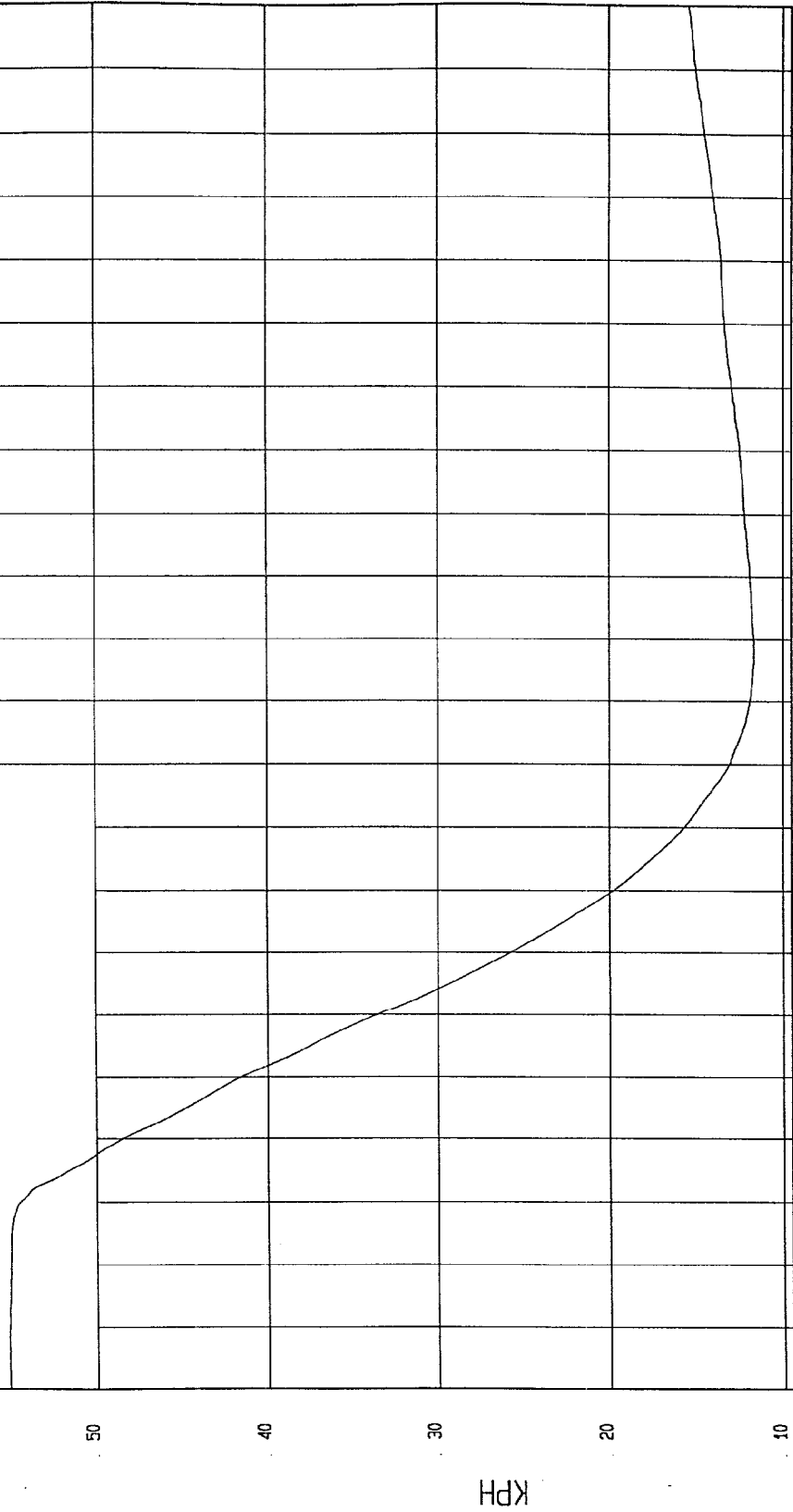
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Minimum = 11.56 KPH at 99 msec

Maximum = 55.12 KPH at -12 msec

MOVING BARRIER REAR AXLE X VELOCITY

1 ——— B99071A1.V66 Filterclass (180)



MGA Research
10-26-1999 17:17

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

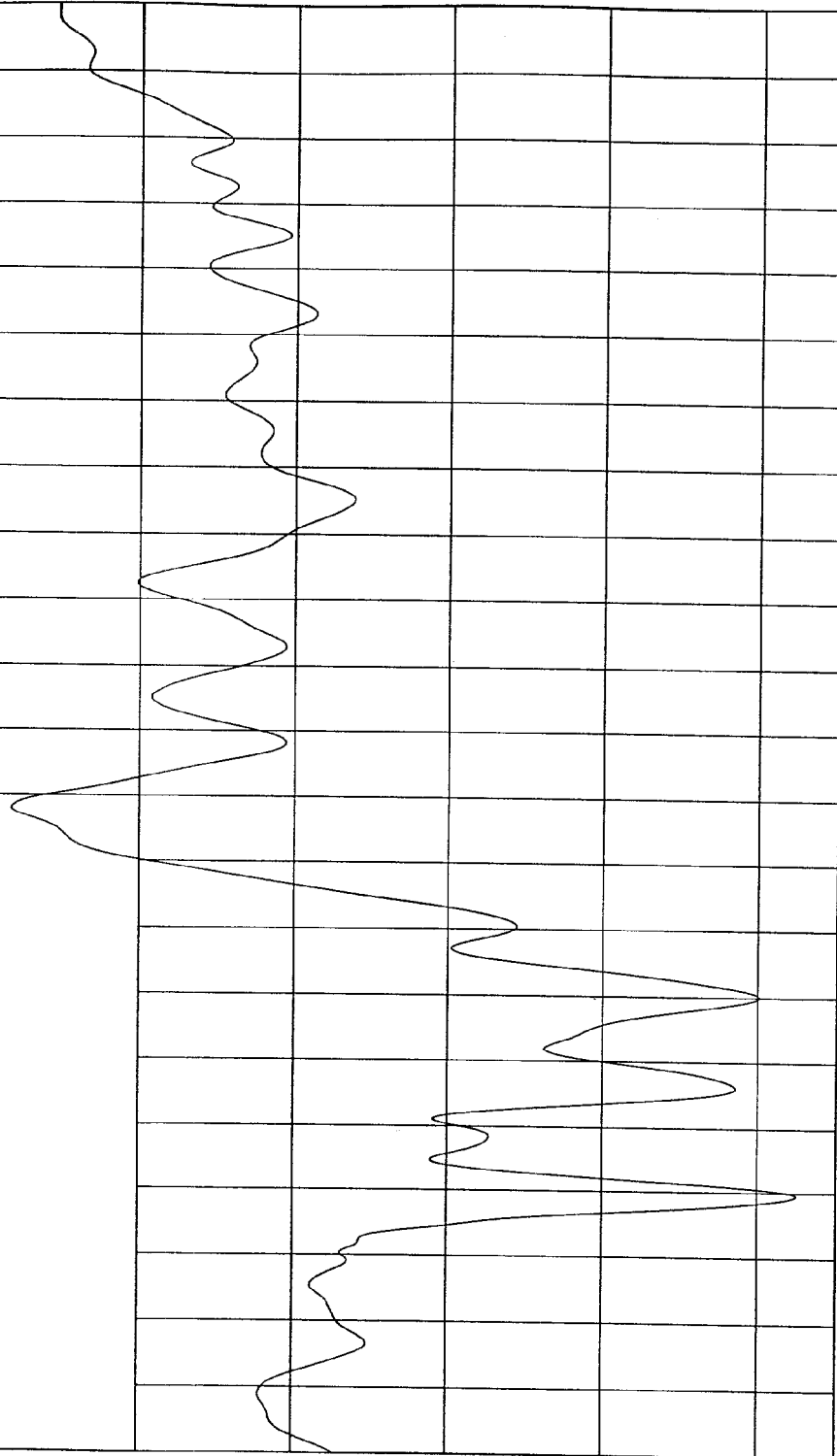
Minimum = -3.24 G'S at 20 msec

Maximum = 1.83 G'S at 78 msec

MOVING BARRIER REAR AXLE Y ACCELERATION

1 _____ B99071AF.A67 Filterclass (60)

2



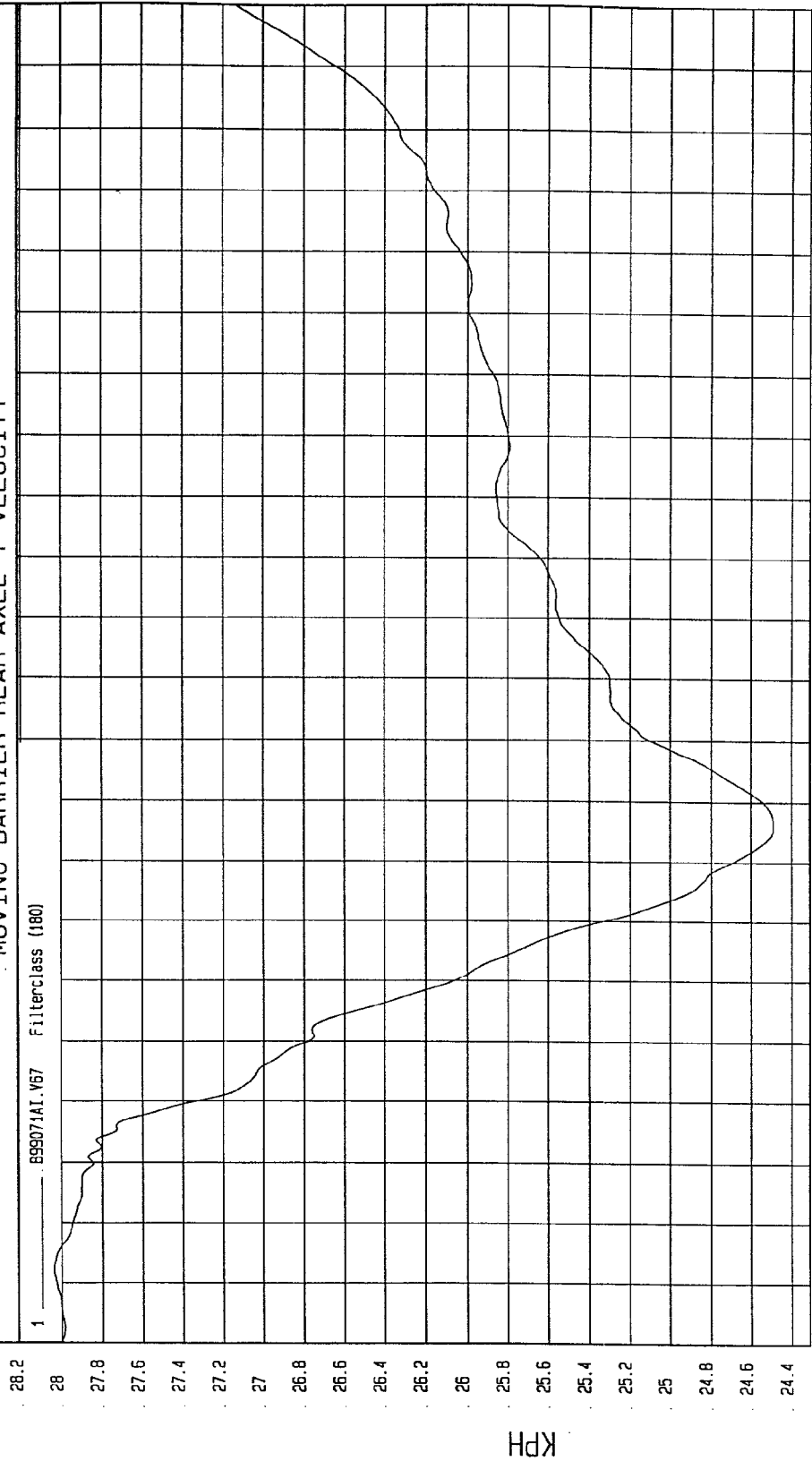
NSA Research
10-26-1999 17:10

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = 24.49 KPH at 66 msec Maximum = 28.04 KPH at -8 msec

MOVING BARRIER REAR AXLE Y VELOCITY



MSA Research
10-26-1999 17:17

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

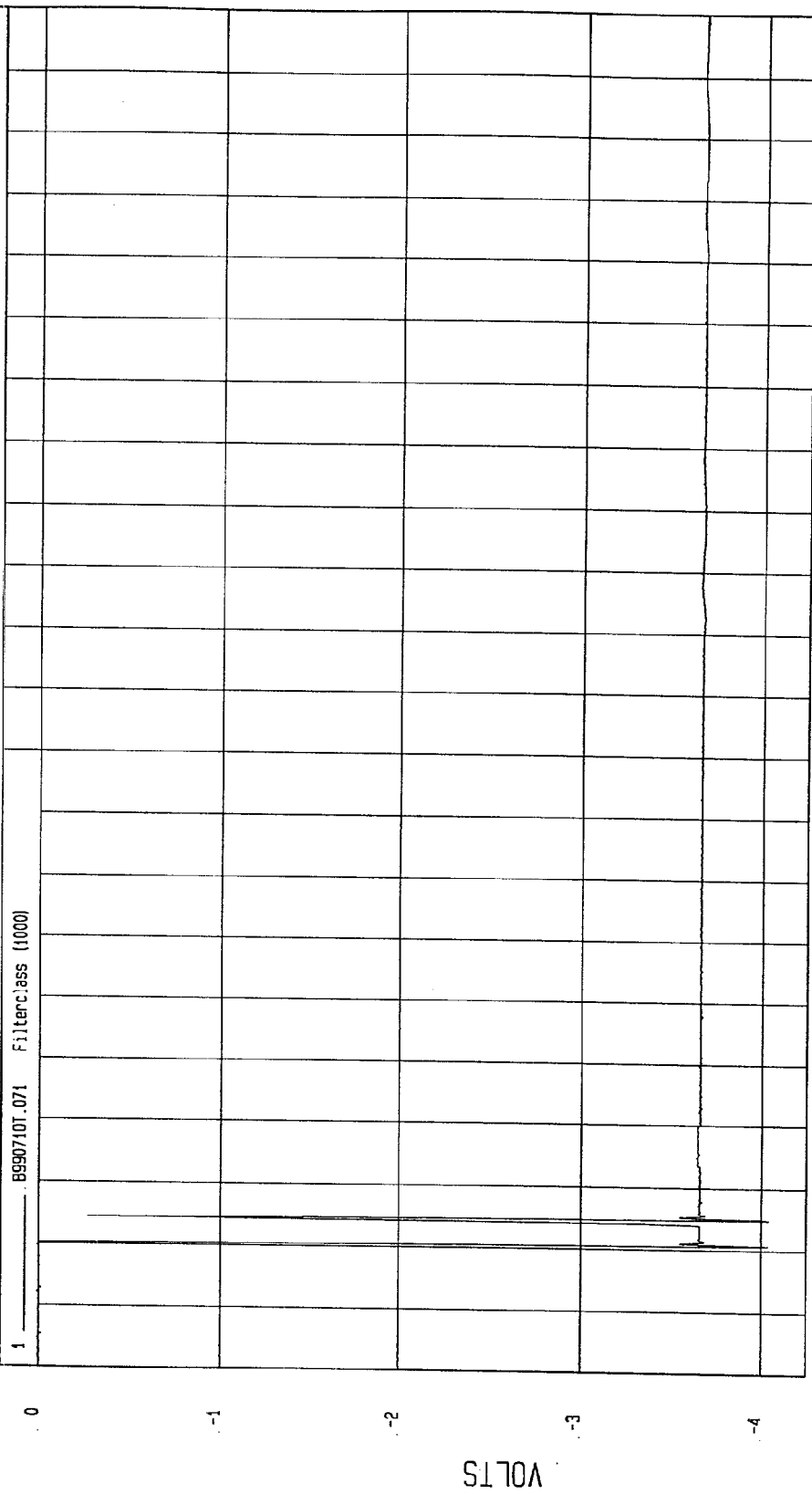
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = -4.04 VOLTS at 5 msec

Maximum = 8.78E-03 VOLTS at -8 msec

LEFT BARRIER CONTACT



NCA Research
10-26-1999 T.T. 10

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 4.28E-02 VOLTS at 20 msec

Minimum = -4.02 VOLTS at 14 msec

RIGHT BARRIER CONTACT

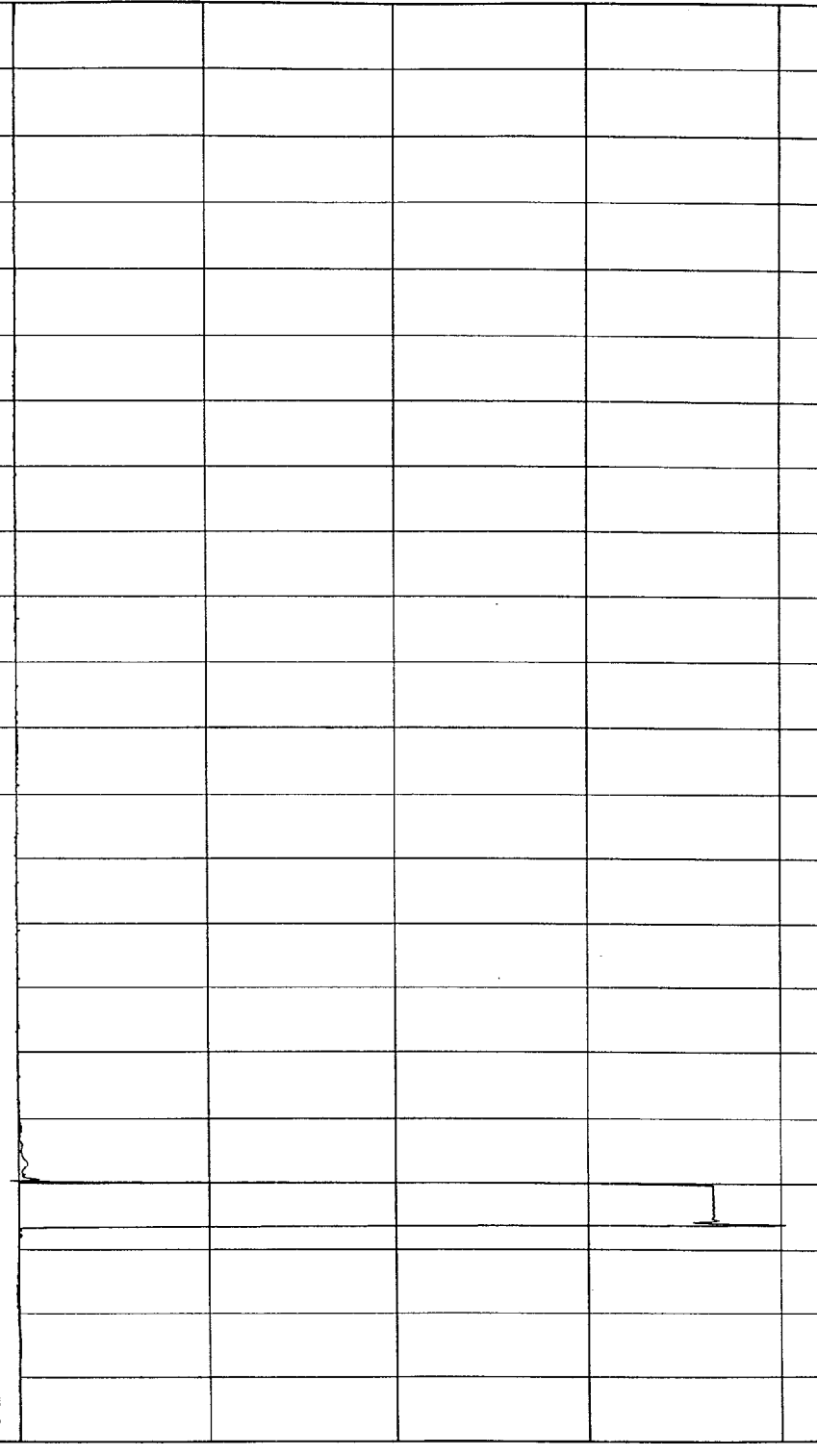
1 _____ B990710T.072 Filter: class (1000)

VOLTS

0 -1 -2 -3 -4

TIME (SECONDS)

MGA Research
10-26-1999 17:10



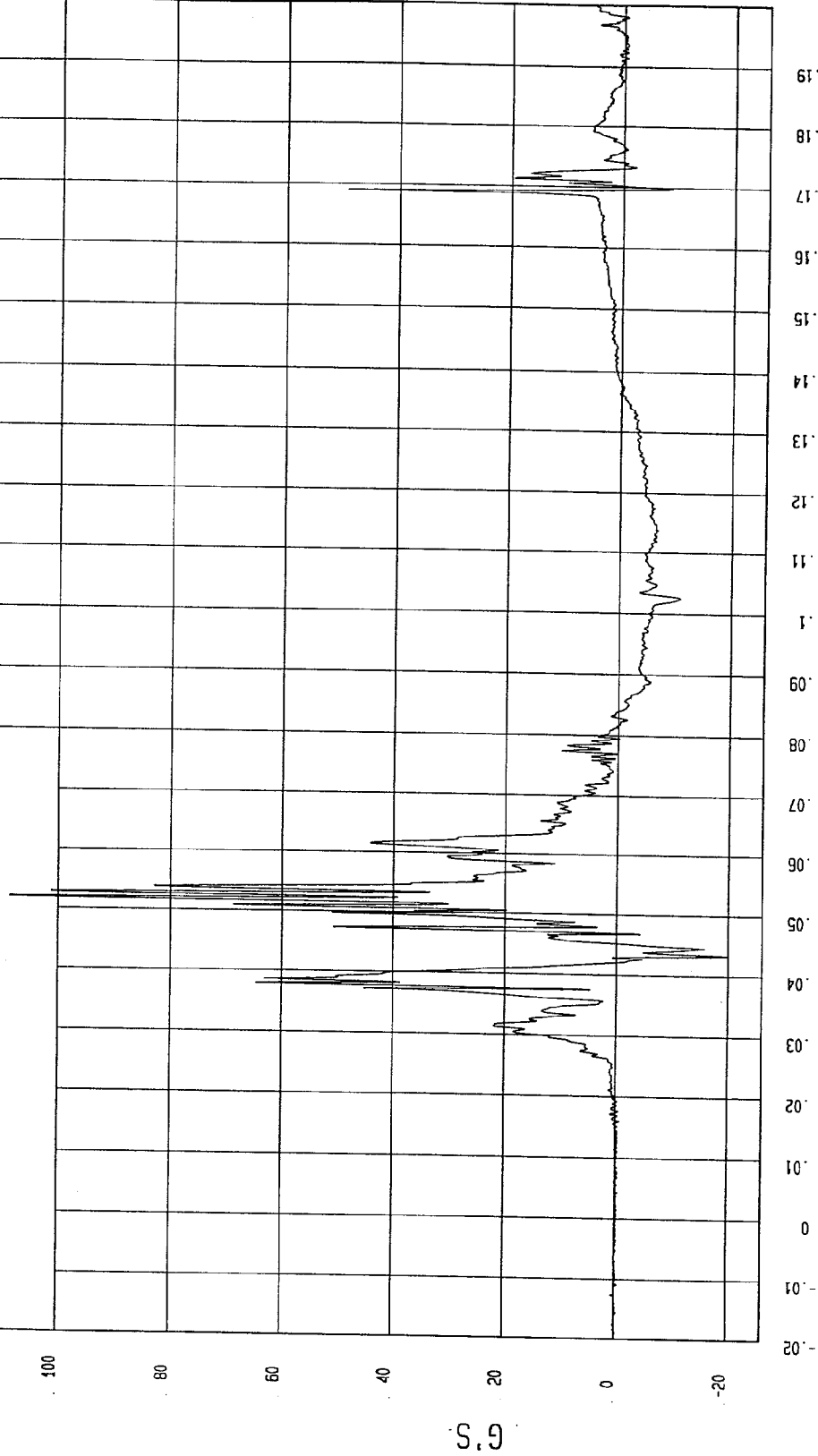
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -19.7 G'S at 43 msec Maximum = 108.58 G'S at 52 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 ——— B99071AT.M42 Filterclass (1000)



WCA Research
10-26-1999 17.10

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

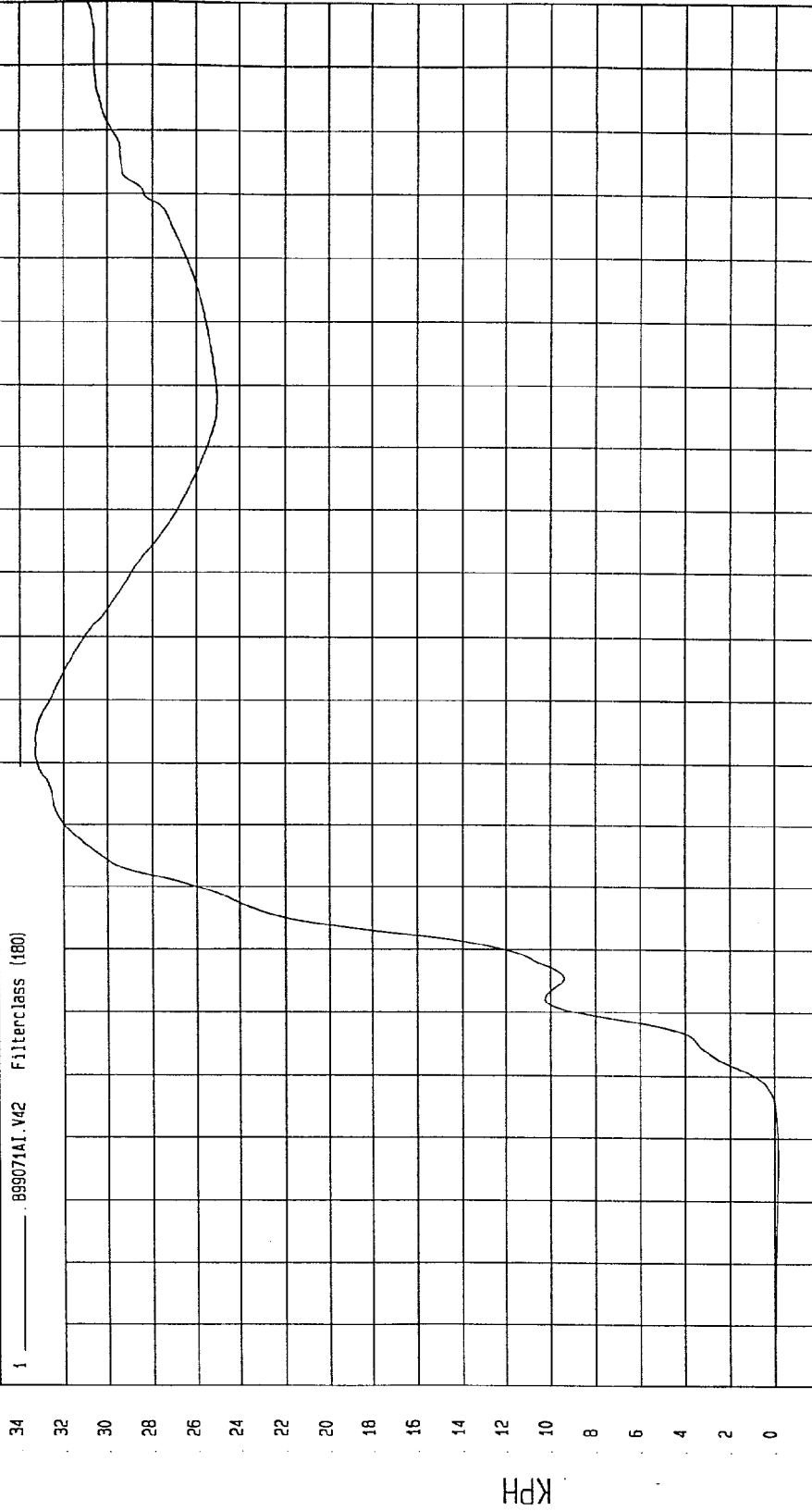
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 33.3 KPH at 82 msec

Minimum = -1.7 KPH at 16 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 899071A1.V42 Filterclass (180)



MCA Research
10-26-1999 17:16

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

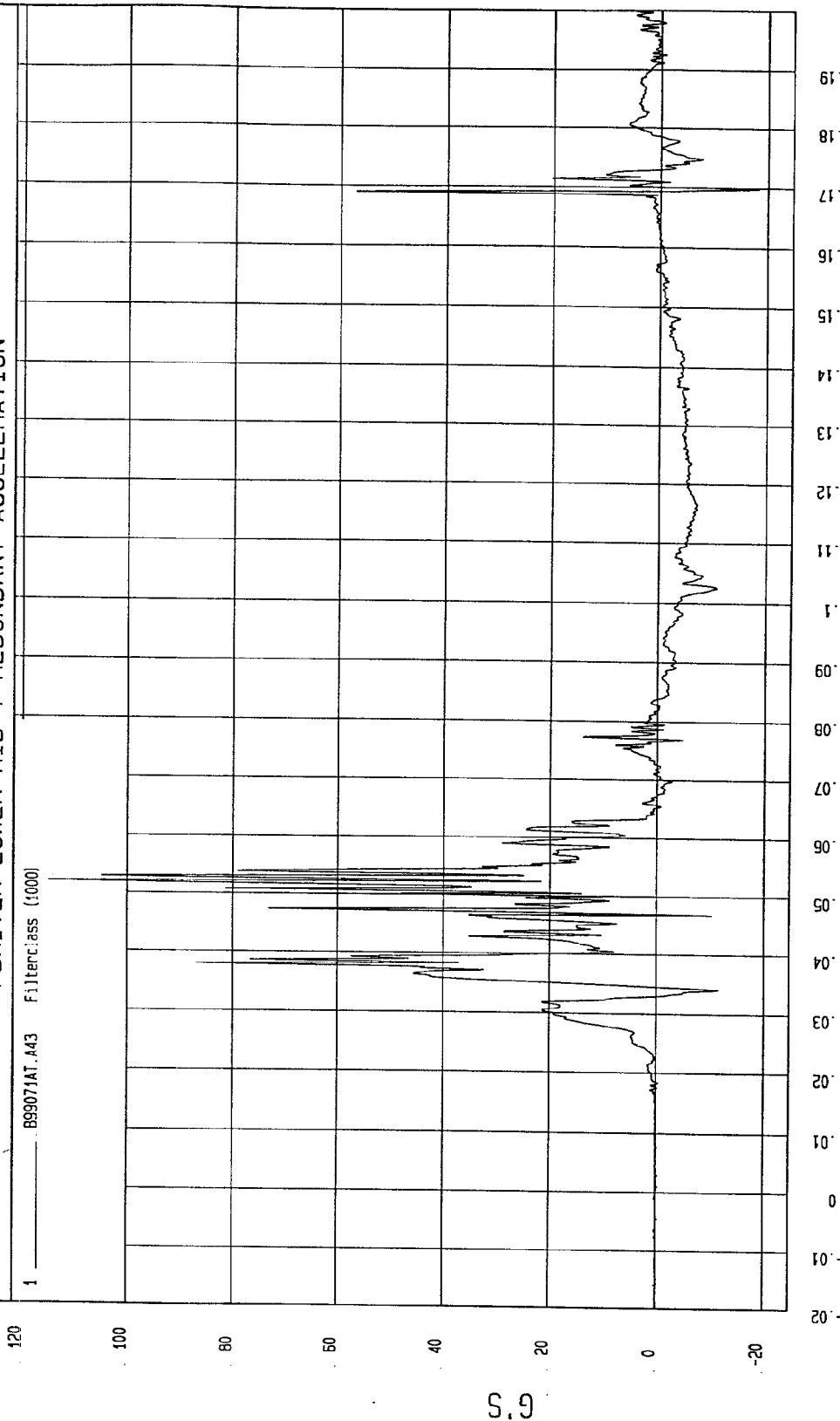
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 114.99 G'S at 52 msec

Minimum = -18.2 G'S at 170 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION



MCA Research
10-26-1999 17.10

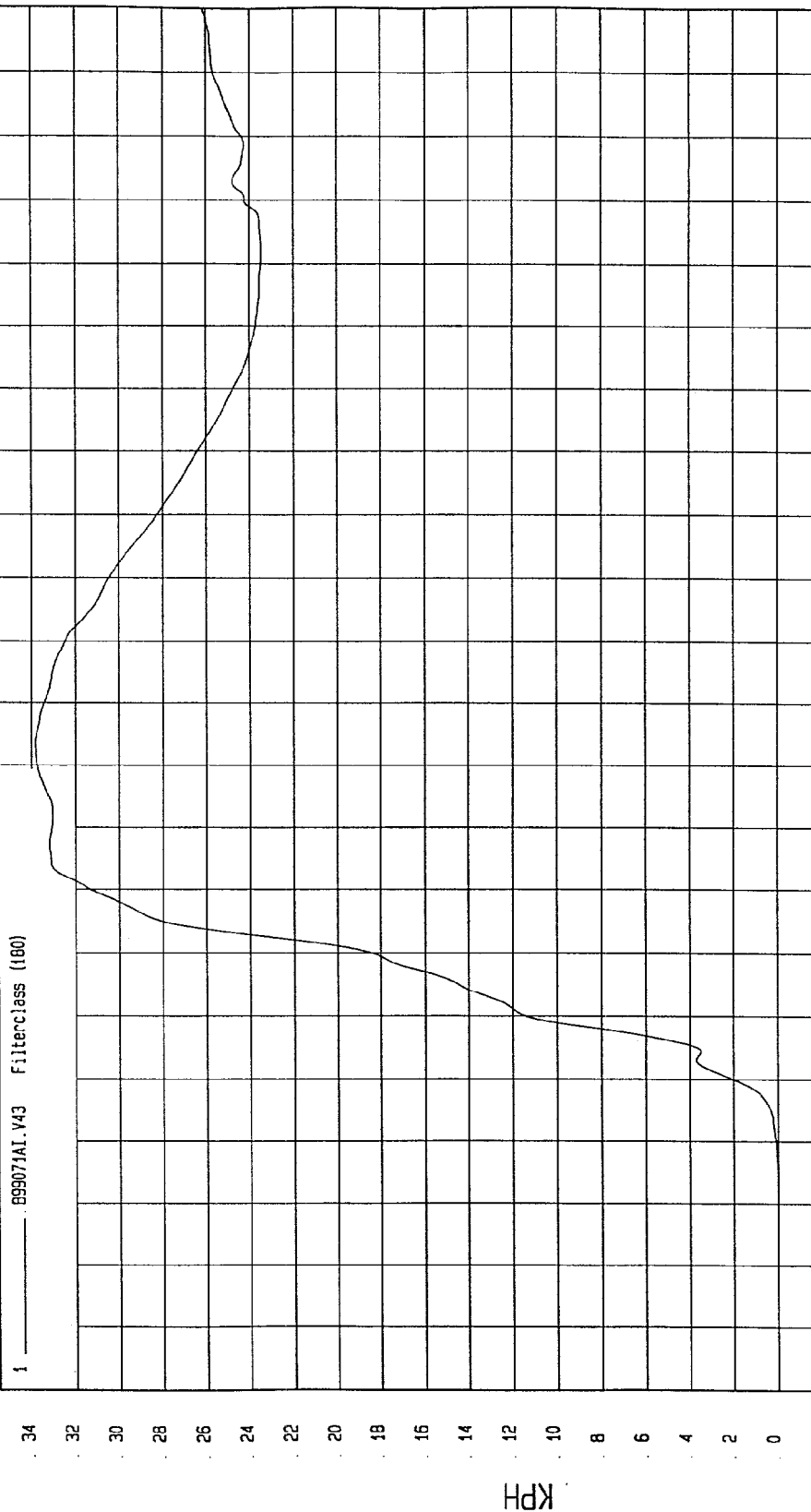
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -5.26E-03 KPH at -9 msec Maximum = 33.84 KPH at 84 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY

1 B99071A1.V43 FilterClass (160)



NSA Research
10-26-1999 17.16

TIME Seconds

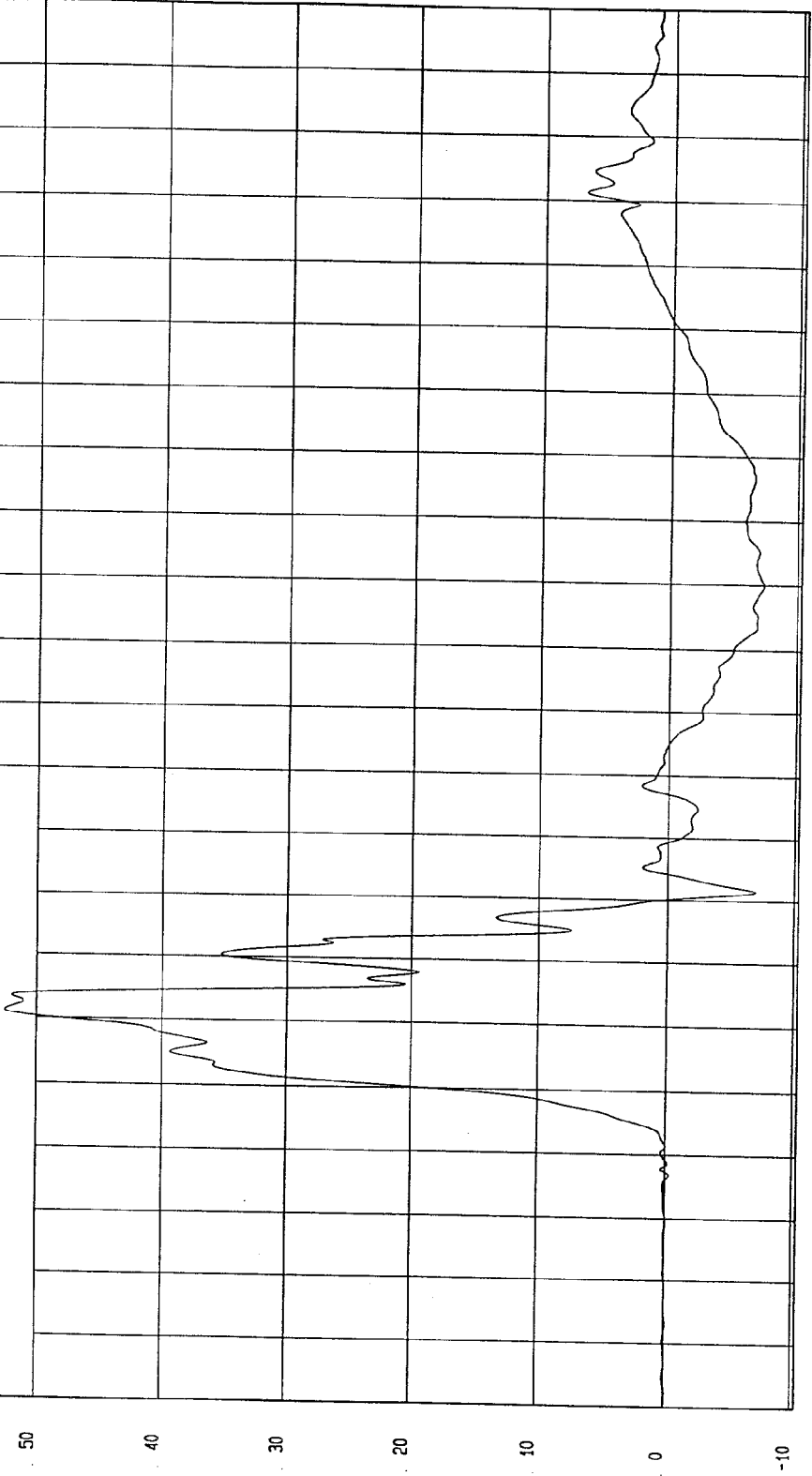
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -7.35 G'S at 110 msec
Maximum = 52.48 G'S at 41 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 _____ B99071AF.A44 Filterclass (180)



NSA Research
10-26-1999 17.10

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

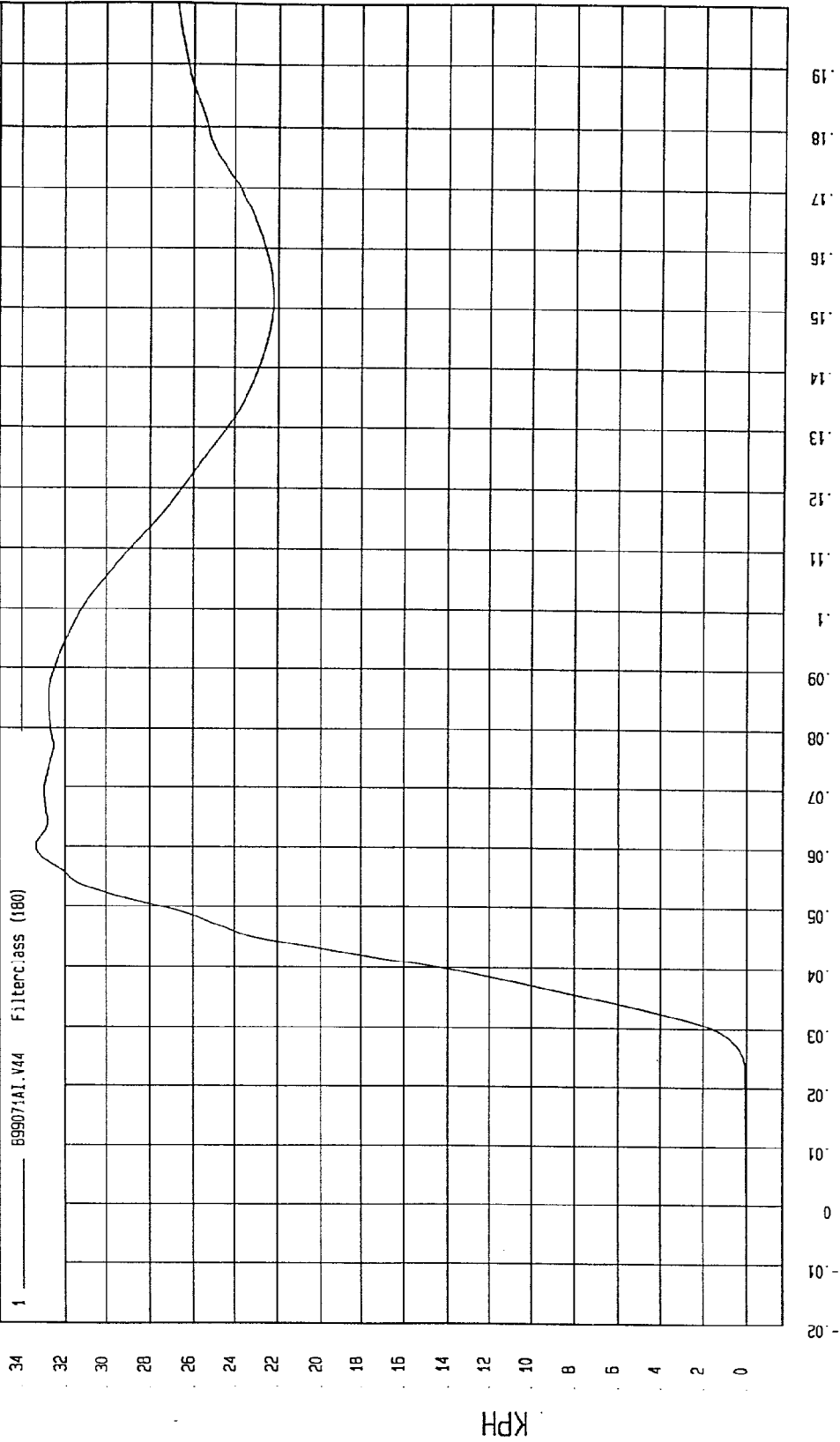
Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Minimum = -6.50E-03 KPH at -17 msec

Maximum = 33.35 KPH at 60 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY



WCA Research
10-26-1999 17.16

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

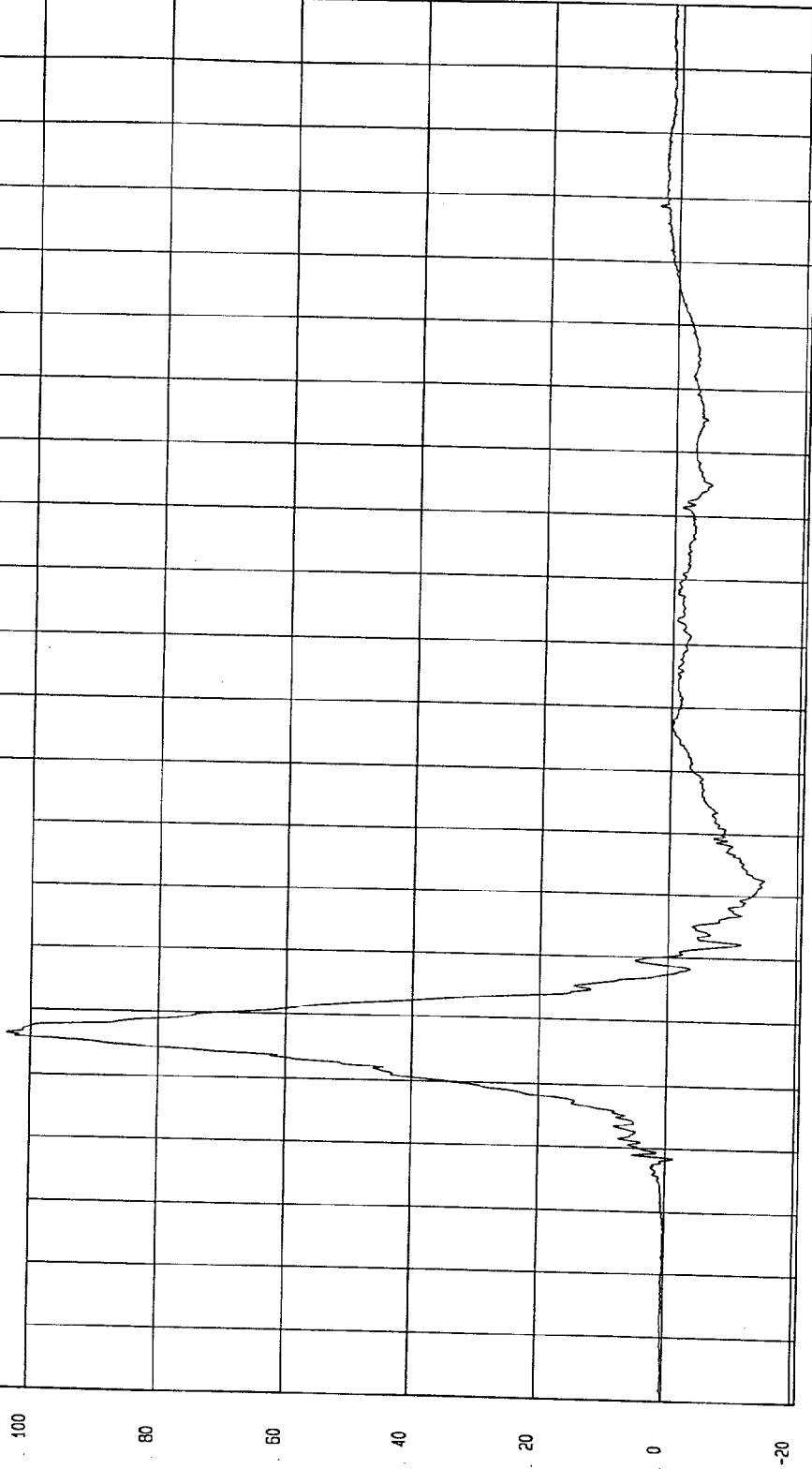
Speed: 38.4 MPH 61.8 KPH

Minimum = -14.82 G'S at 63 msec

Maximum = 103.71 G'S at 36 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 ——— .B99071AT.445 Filterclass (1000)



MCA Research
10-26-1999 17.11

TIME (SECONDS)

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

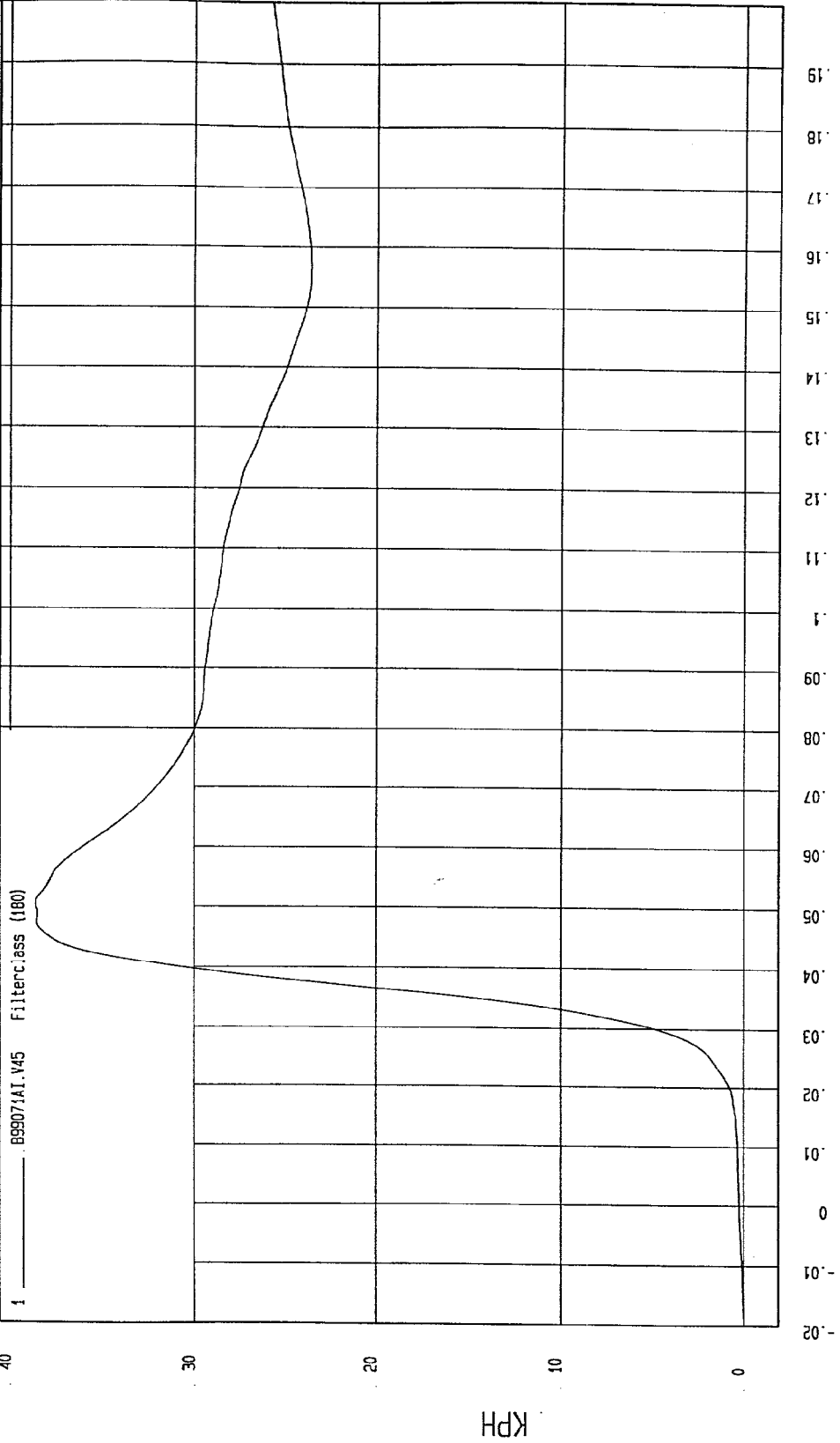
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = 0 KPH at -20 msec

Maximum = 38.65 KPH at 50 msec

DRIVER PELVIS Y REDUNDANT VELOCITY



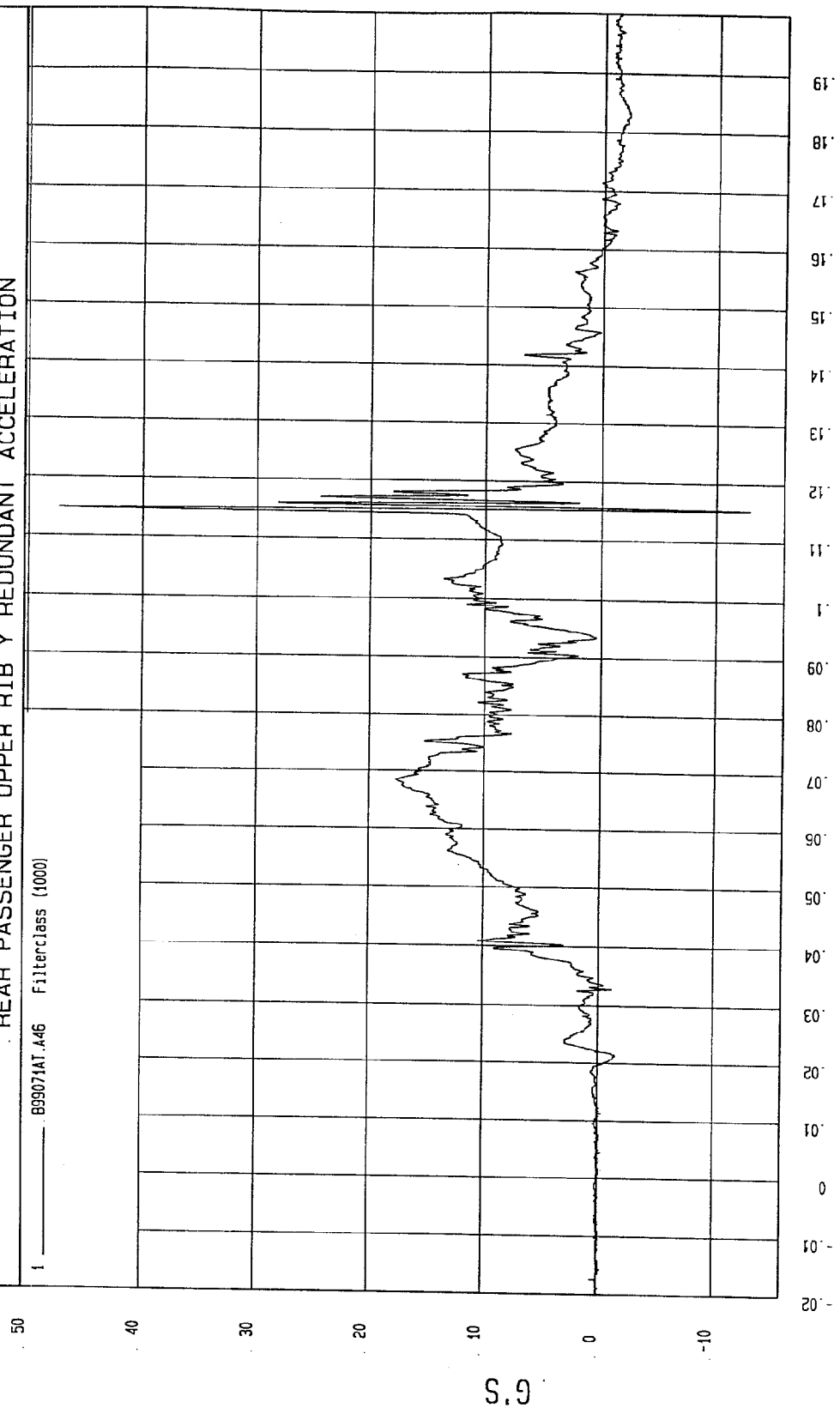
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -12.89 G'S at 115 msec Maximum = 47.34 G'S at 115 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 B99071AT.A46 Filter(class (1000)



TIME (SECONDS)

MGA Research
10-26-1999 17:11

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

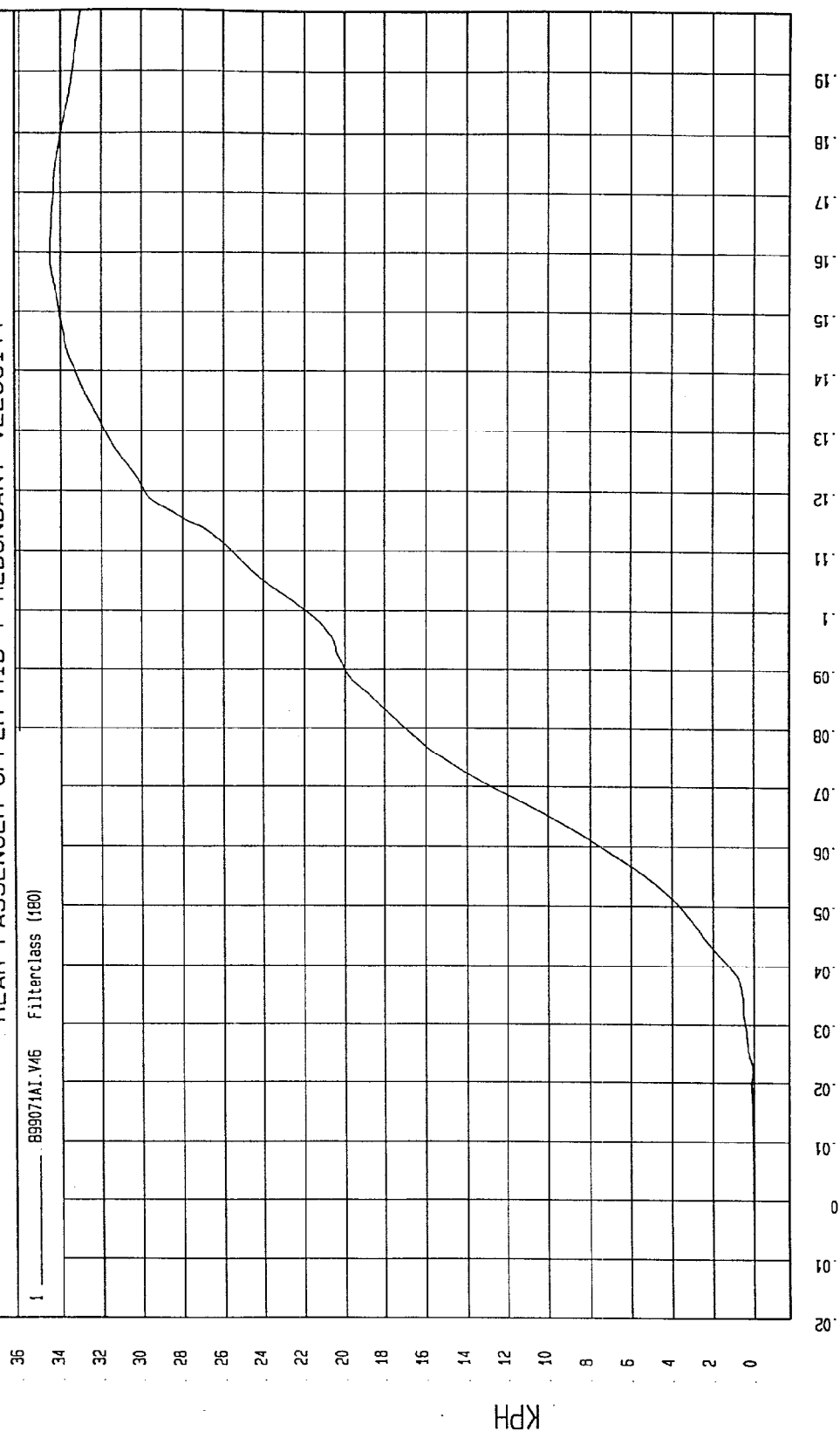
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 34.51 KPH at 160 msec

Minimum = 0 KPH at -20 msec

REAR PASSENGER UPPER RIB Y REDUNDANT VELOCITY



MOA Research
10-26-1999 17:16

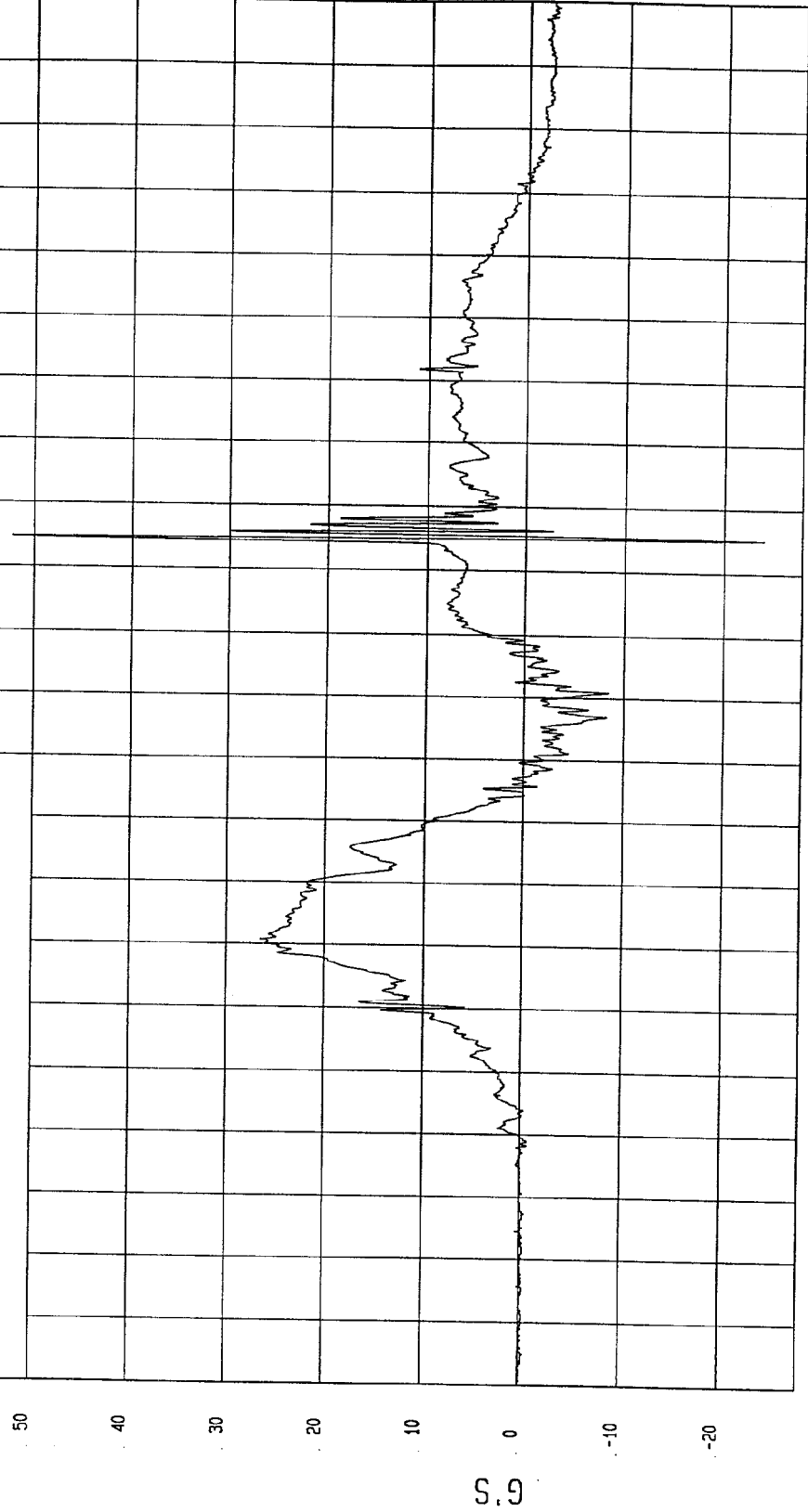
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -24.04 G'S at 115 msec
Maximum = 52.2 G'S at 115 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 899071AT.A47 Filterclass (1000)



MOA Research
10-26-1999 17:11

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

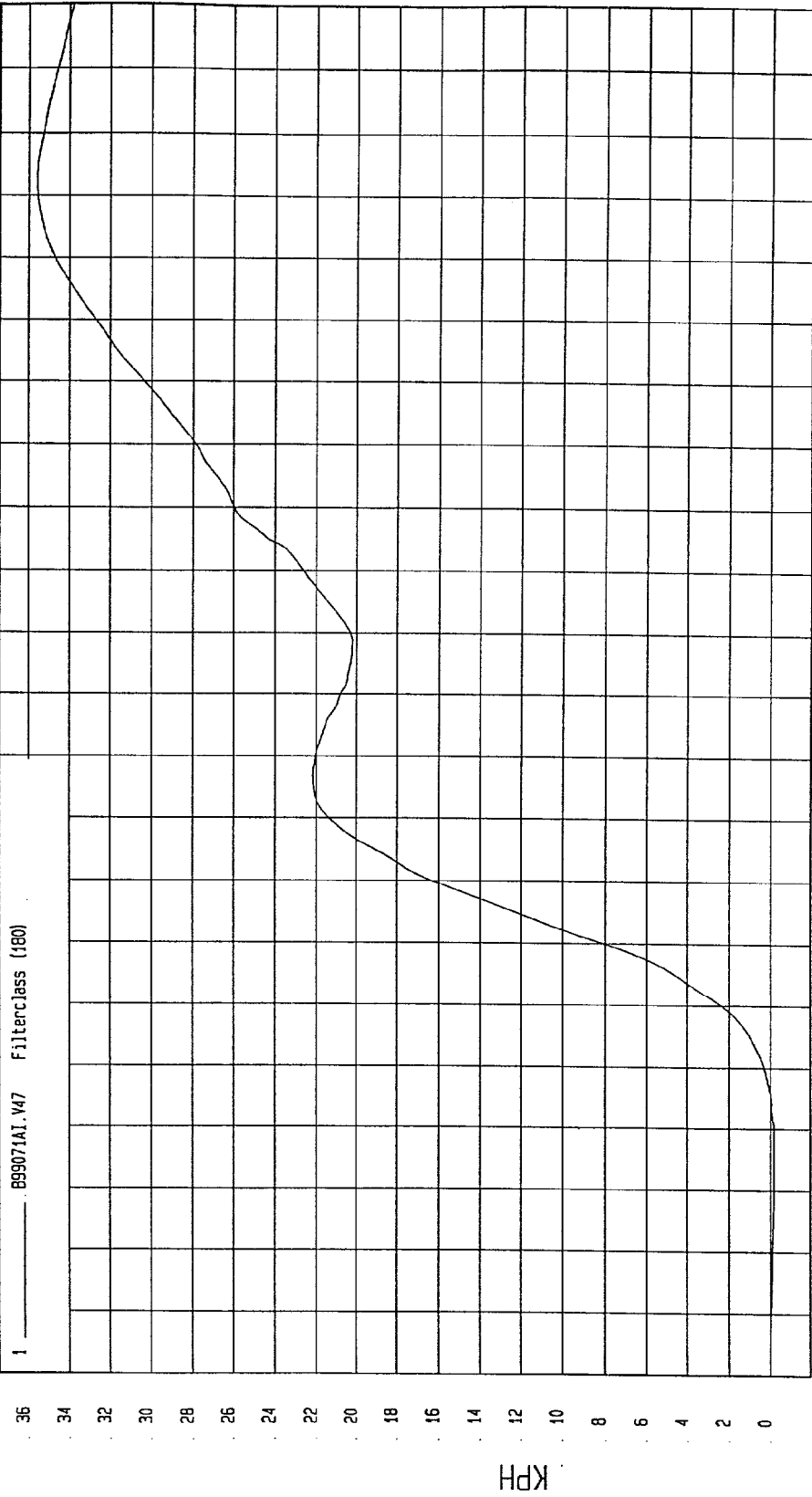
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 35.6 KPH at 172 msec

Minimum = -1.9 KPH at 20 msec

REAR PASSENGER LOWER RIB Y REDUNDANT VELOCITY

1 _____ B99071A1.V47 Filterclass (180)

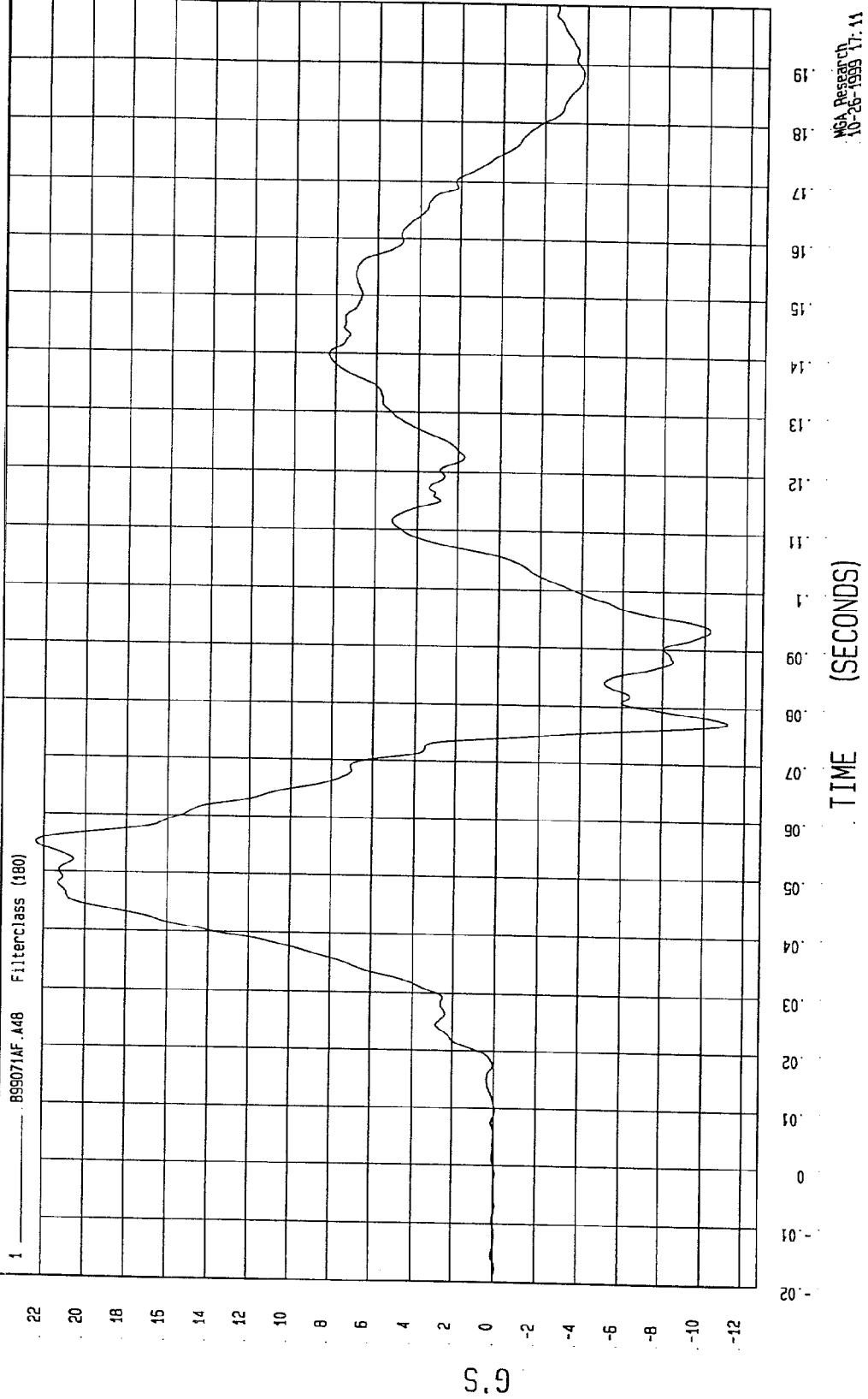


TIME Seconds
NSA Research
10-26-1999 17:16

TEST: INDICANT SIDE IMPACT
TEST DATE: 10-26-1999
COMPONENT: 2000 NISSAN XTERRA (CY5203)
Speed: 38.4 MPH 61.8 KPH

Minimum = -11.14 G'S at 77 msec
Maximum = 22.38 G'S at 55 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION



TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

Speed: 38.4 MPH 61.8 KPH

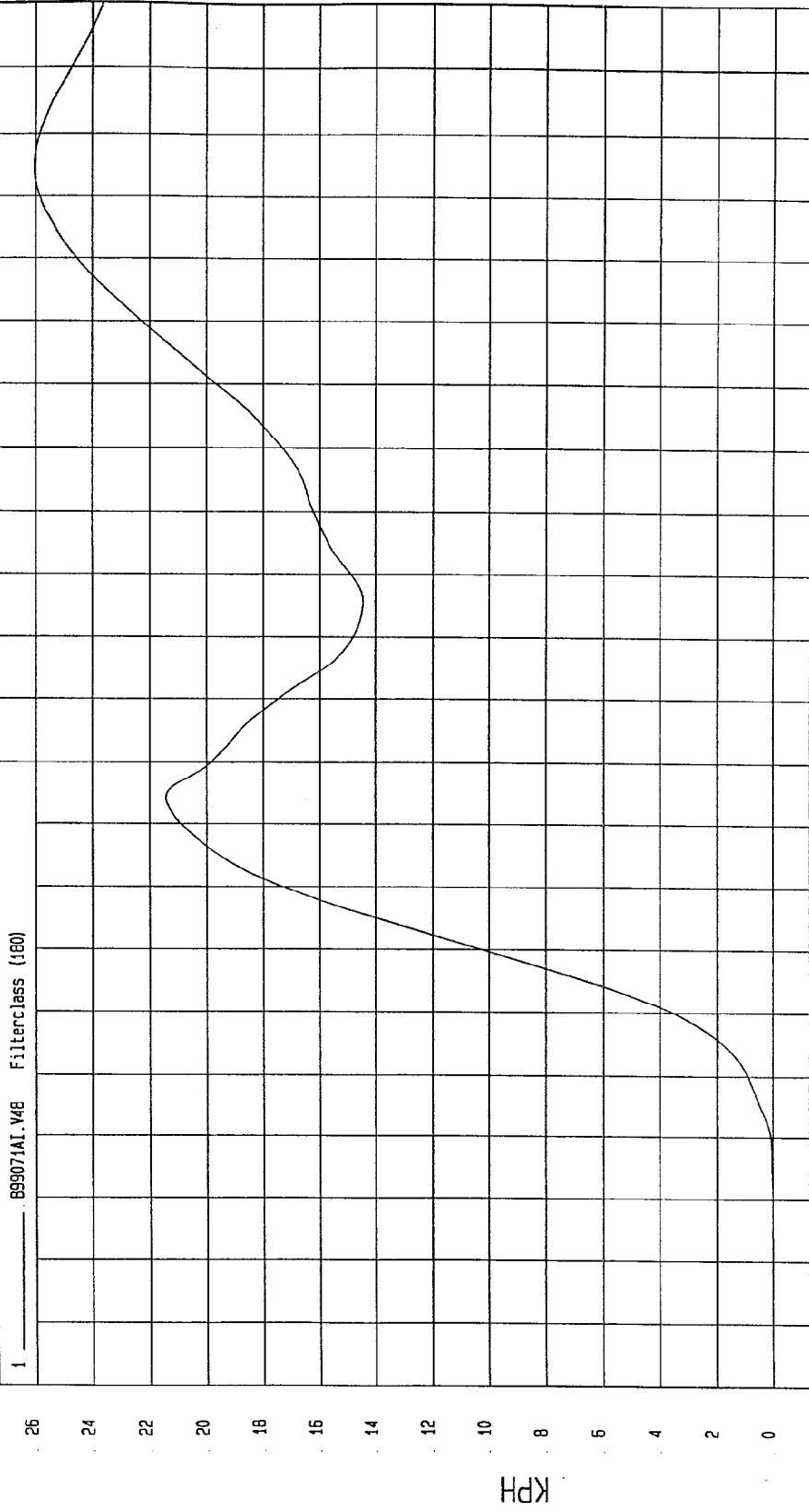
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 26.04 KPH at 175 msec

Minimum = -1.10E-02 KPH at 0 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT VELOCITY

1 899071A1.V48 Filterclass (160)



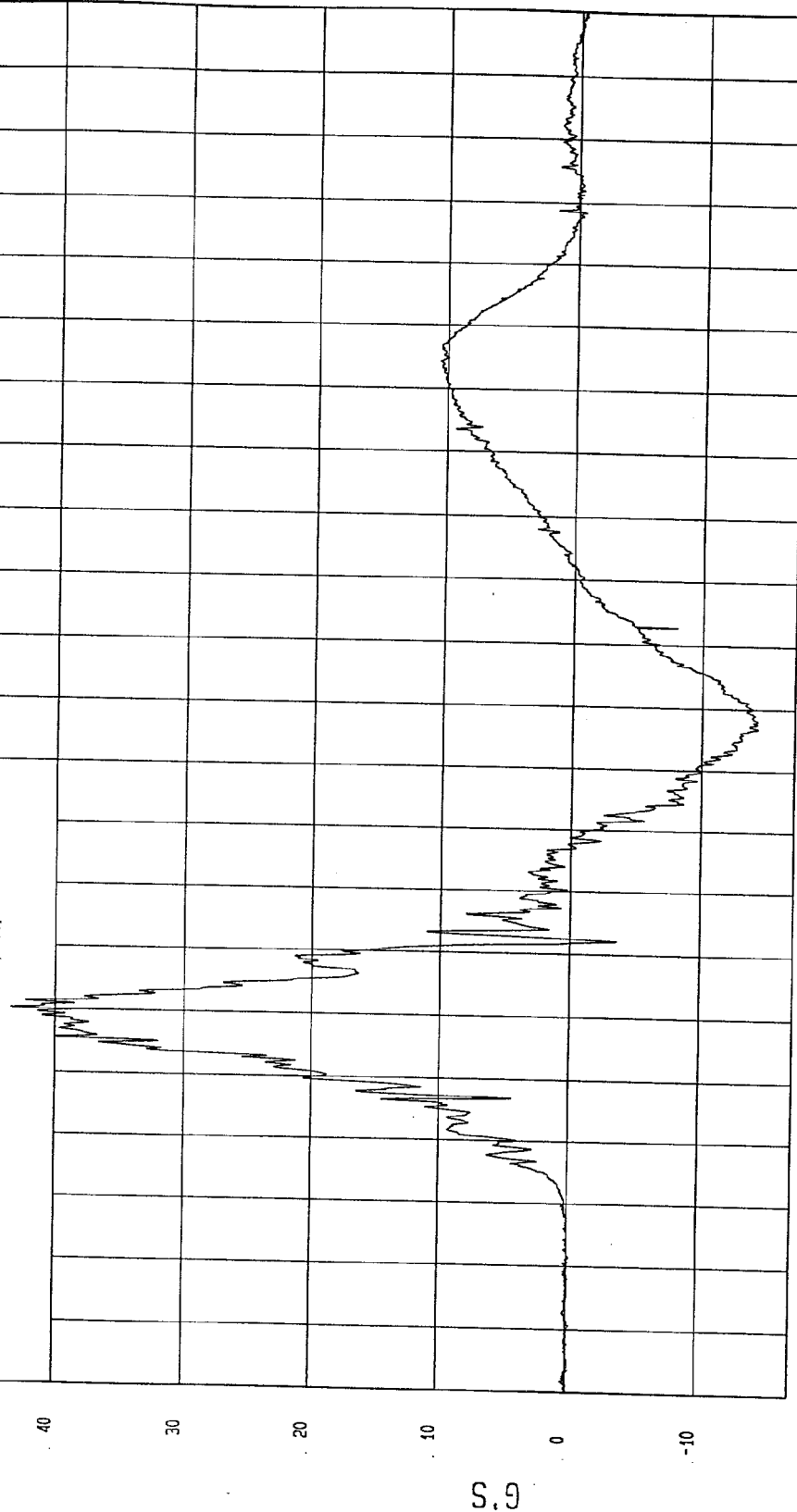
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -14.34 G'S at 87 msec
Maximum = 43.34 G'S at 40 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 ——— B99071AT.A49 FilterClass (1000)



MSA Research
10-26-1999 17:11

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

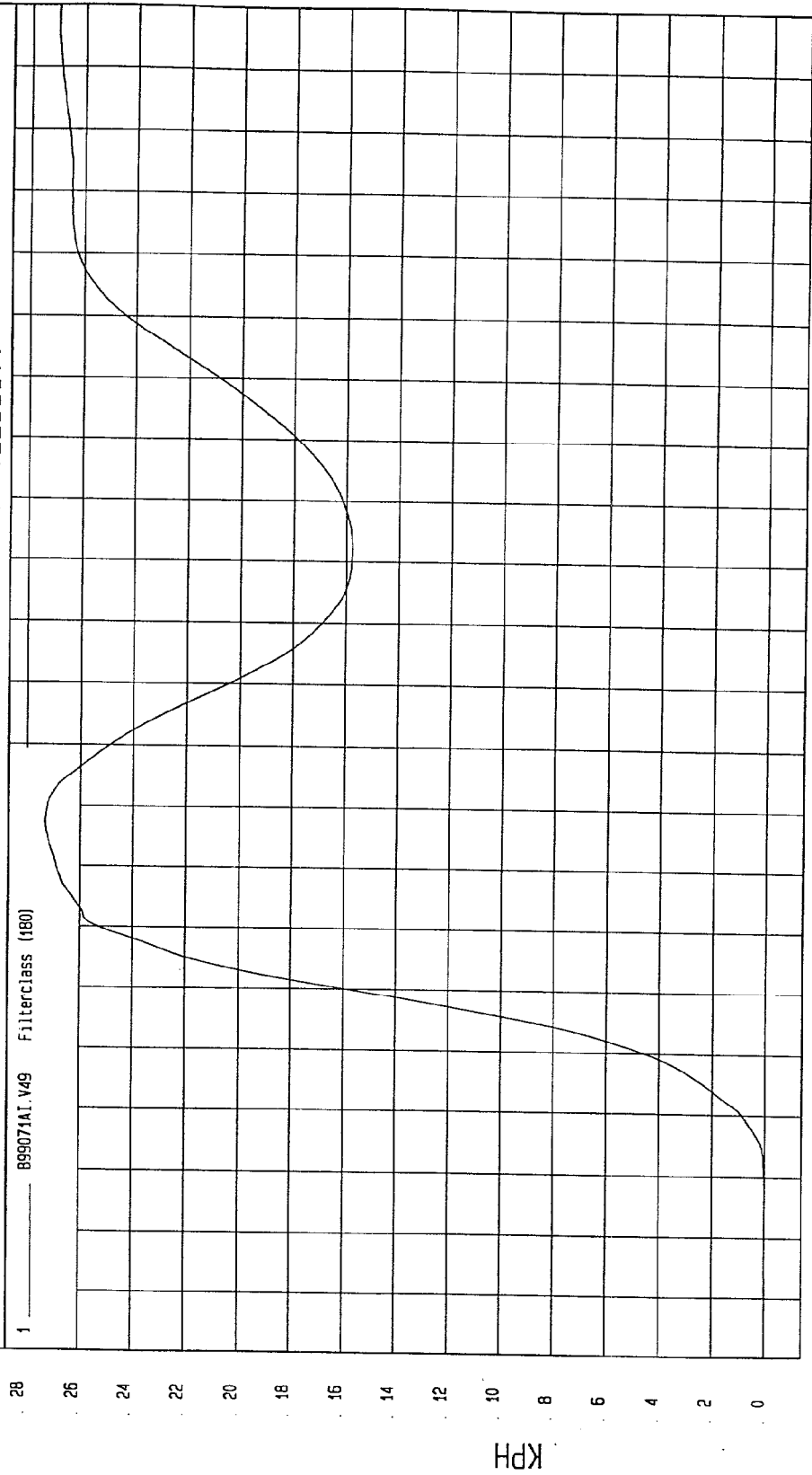
Speed: 38.4 MPH 61.8 KPH

Minimum = -8.38E-03 KPH at -8 msec

Maximum = 27.32 KPH at 67 msec

REAR PASSENGER PELVIS Y REDUNDANT VELOCITY

1 899071A1.V49 FilterClass (180)



MCA Research
10-26-1999 17:16

TIME Seconds

FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -10.31 G'S at 44 msec Maximum = 56.55 G'S at 54 msec

DRIVER UPPER RIB Y ACCELERATION

1 _____ B99071FI.R15 Filterclass (FIR Filtered)

50

40

30

20

10

0

-10

G.S

-20

-10

0

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

190

TIME (SECONDS)

MGA Research
10-26-1999 17:07

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = -7.15E-03 KPH at -8 msec

Maximum = 30.65 KPH at 82 msec

DRIVER UPPER RIB Y VELOCITY

1 ——— .B99074FI.V15 Filter:Class (FIR Filtered)

32

30

28

26

24

22

20

18

16

14

12

10

8

6

4

2

0

KPH

- .02

- .01

0

.01

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TIME Seconds

NSA Research
10-27-1999 16:33

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

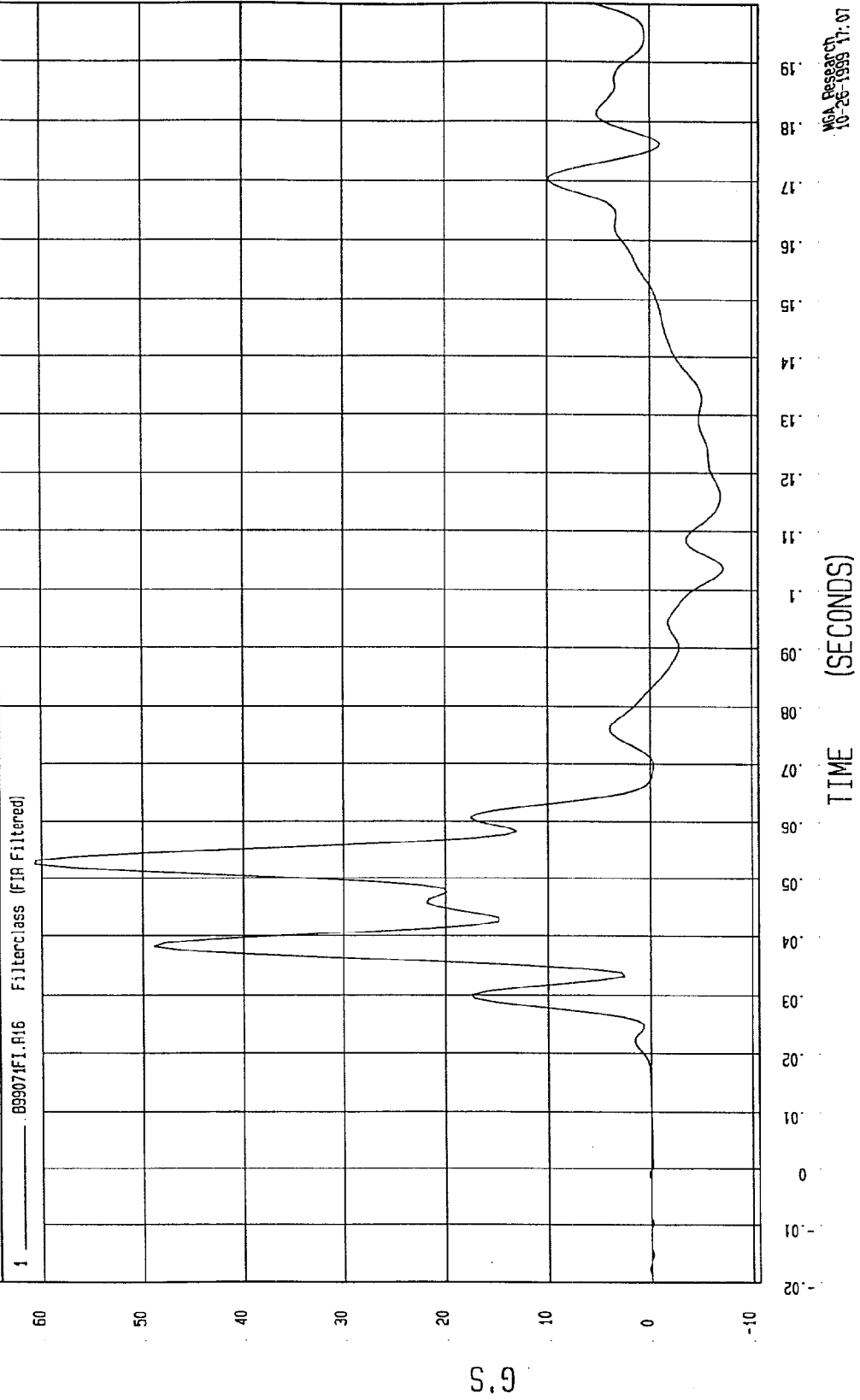
Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 60.68 G'S at 52 msec

Minimum = -7.25 G'S at 104 msec

DRIVER LOWER RIB Y ACCELERATION

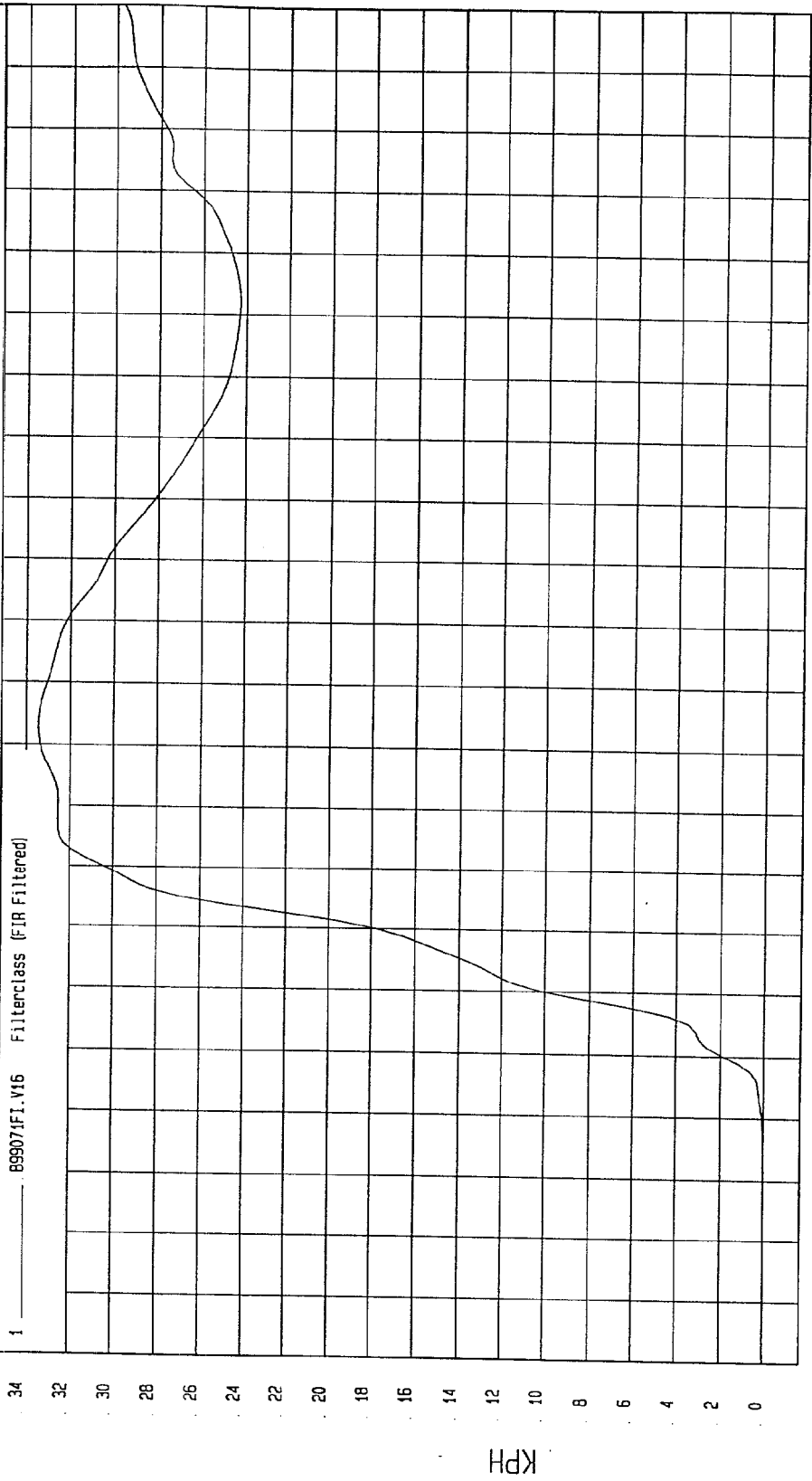


TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -8.74E-03 KPH at -9 msec Maximum = 33.46 KPH at 83 msec

DRIVER LOWER RIB Y VELOCITY



MOA Research
10-27-1999 16:34

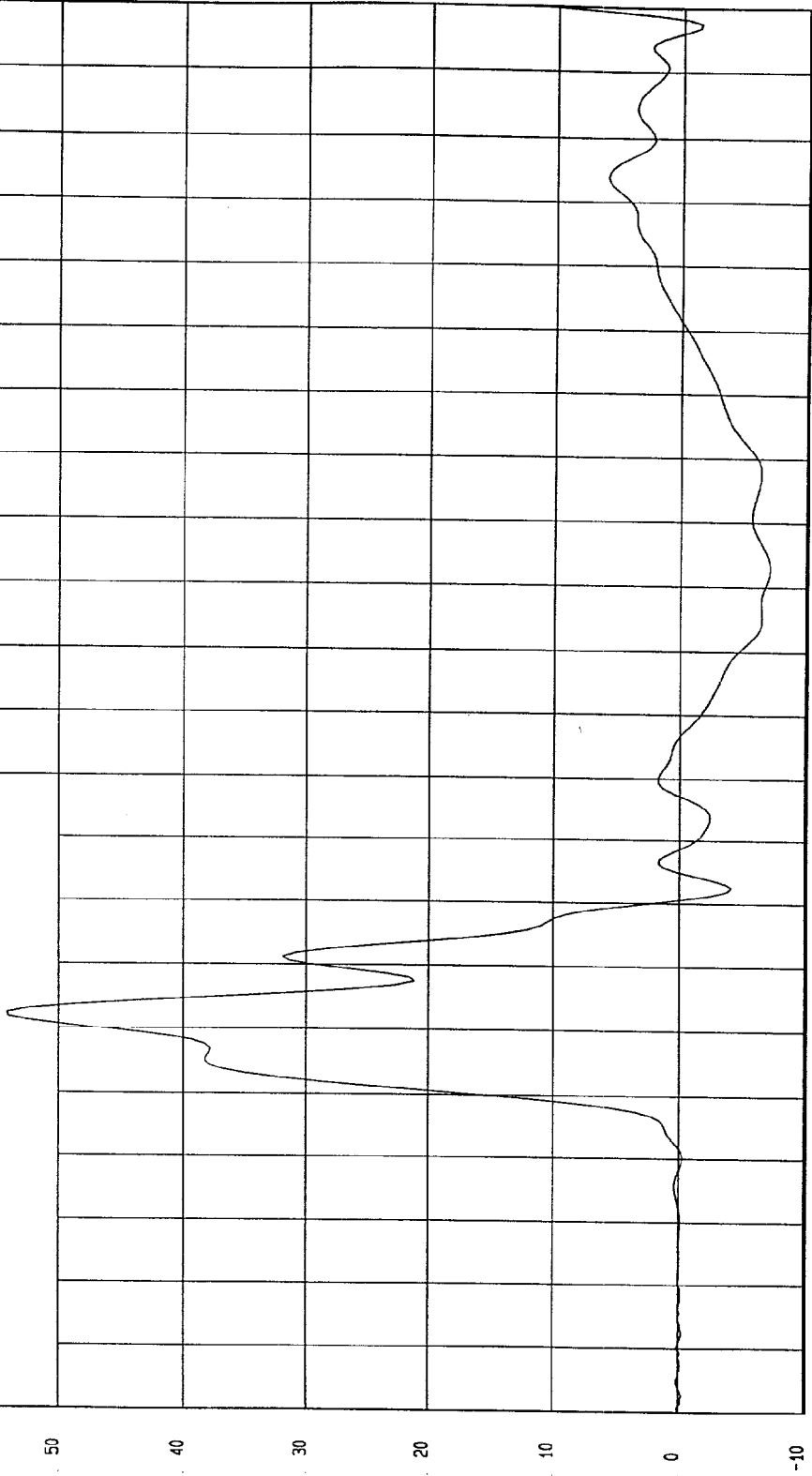
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -7.11 G'S at 113 msec Maximum = 54.16 G'S at 42 msec

DRIVER LOWER SPINE Y ACCELERATION

1 89907FI.R17 FilterClass (FIR Filtered)



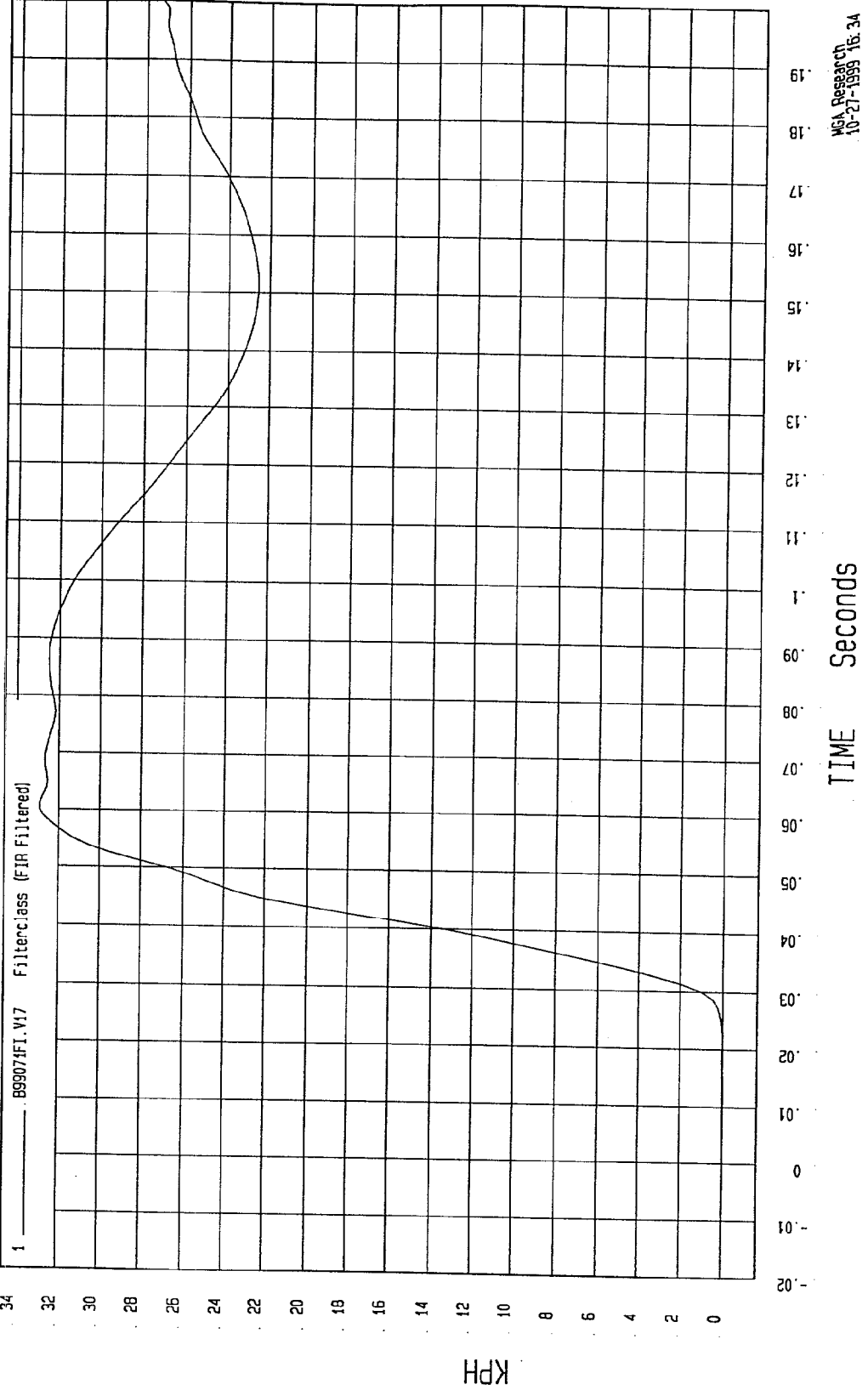
MCA Research
10-26-1999 11:07

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -3.45E-02 KPH at 12 msec Maximum = 32.94 KPH at 61 msec

DRIVER LOWER SPINE Y VELOCITY



TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

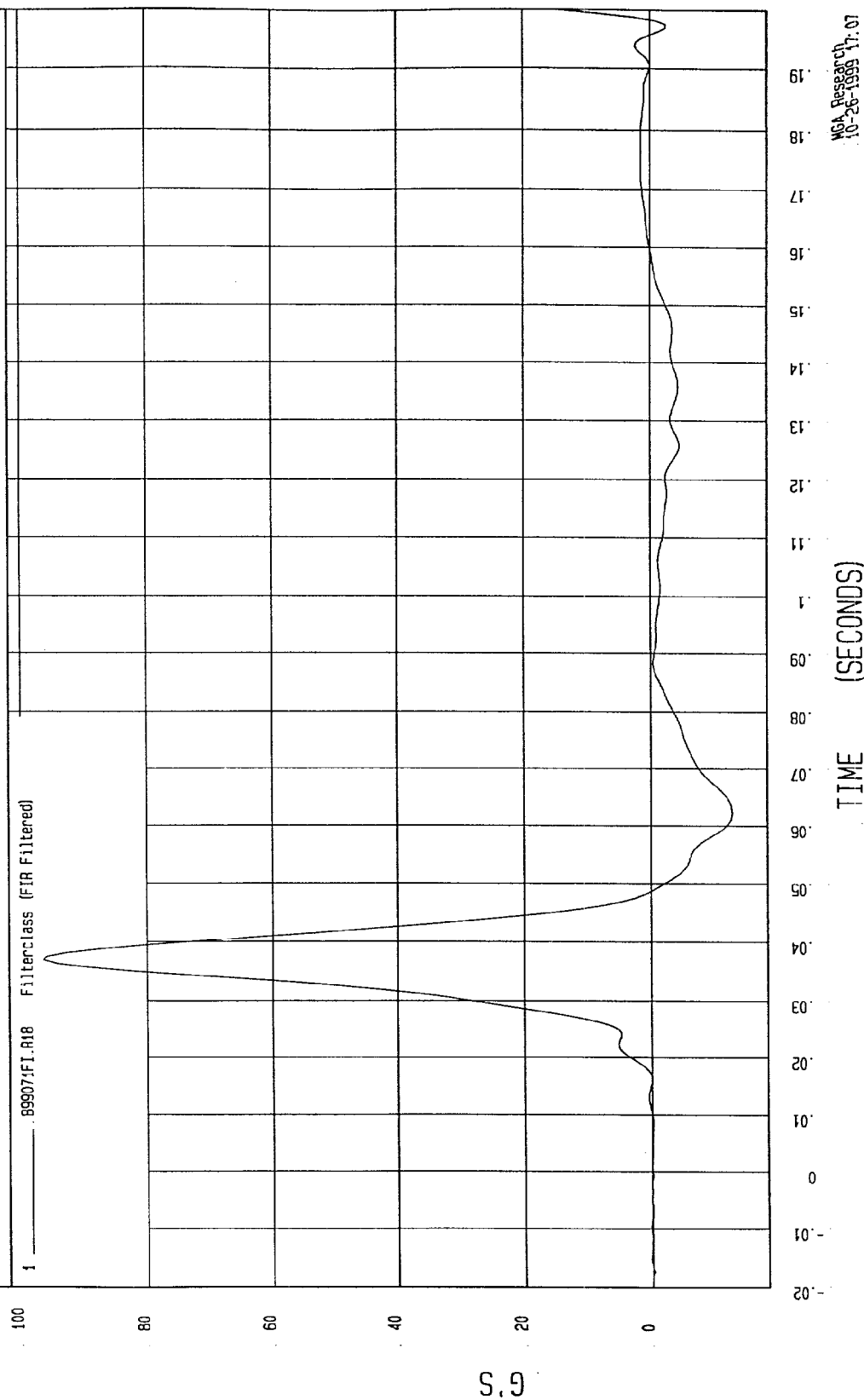
Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 95.4 G'S at 37 msec

Minimum = -12.8 G'S at 62 msec

DRIVER PELVIS Y ACCELERATION



MOA Research
10-26-1999 17:07

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

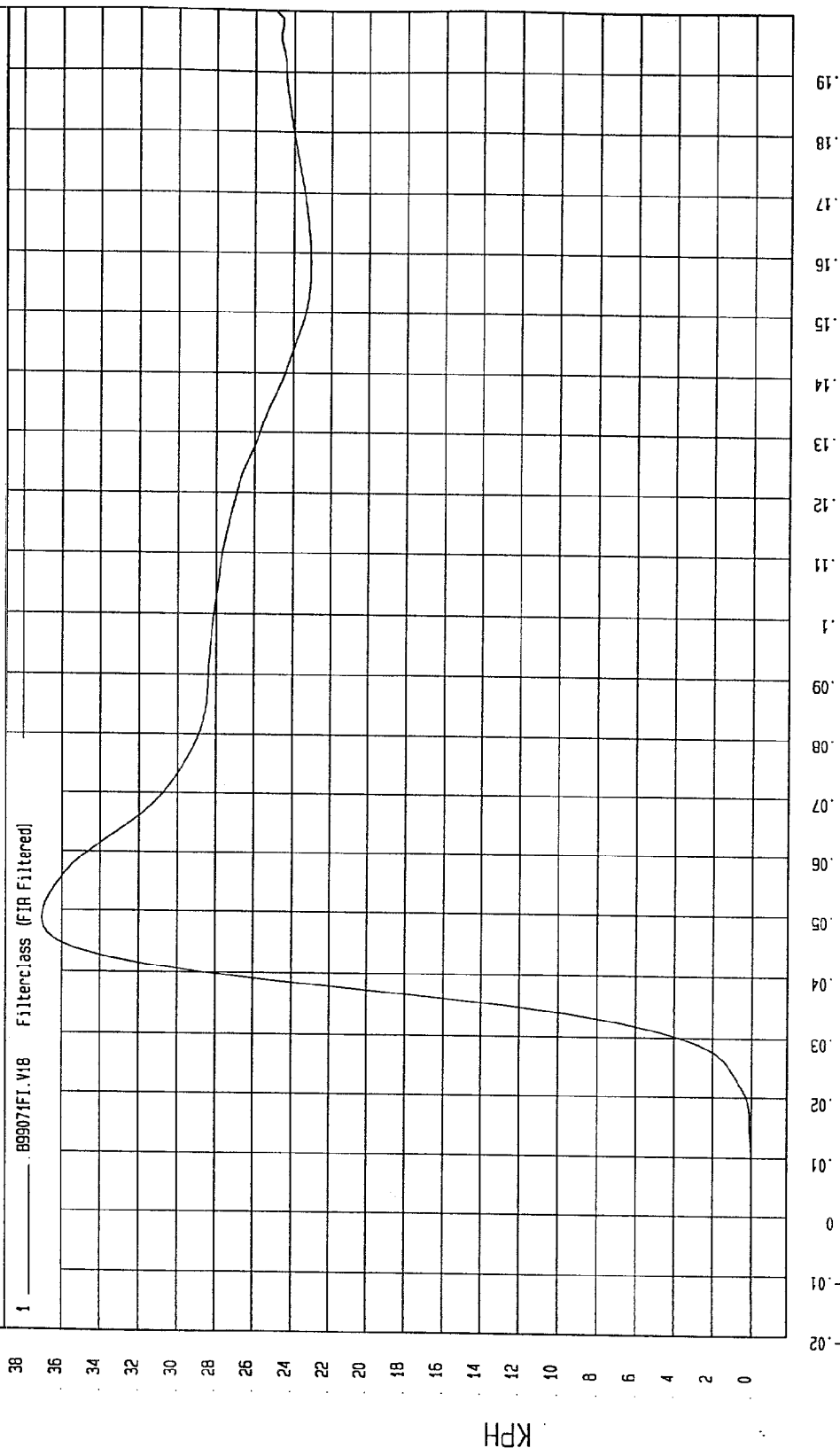
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Minimum = -9.32E-03 KPH at -16 msec

Maximum = 37.03 KPH at 49 msec

DRIVER PELVIS Y VELOCITY



TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

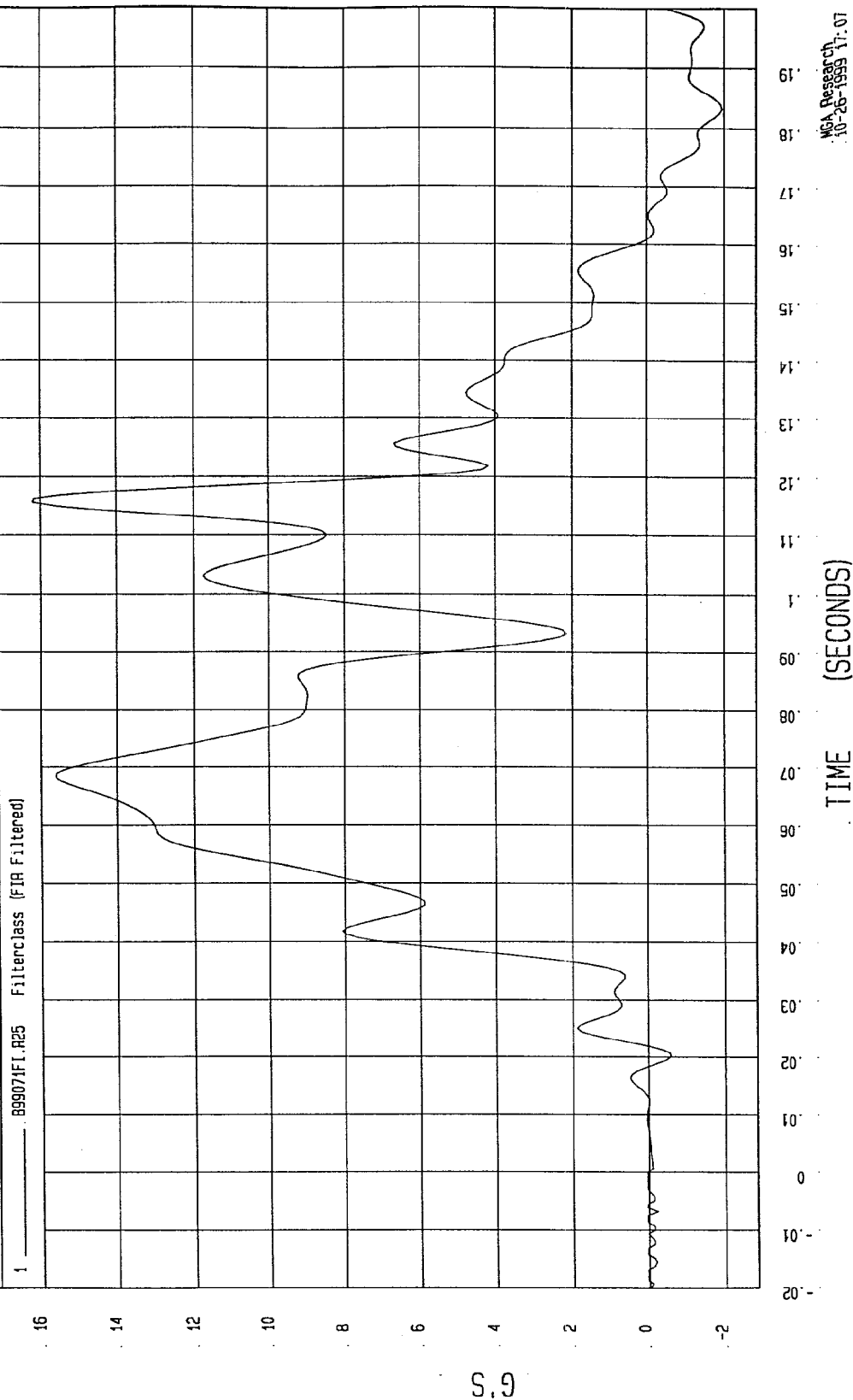
Speed: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 16.2 G'S at 116 msec

Minimum = -1.95 G'S at 183 msec

REAR PASSENGER UPPER RIB Y ACCELERATION



TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

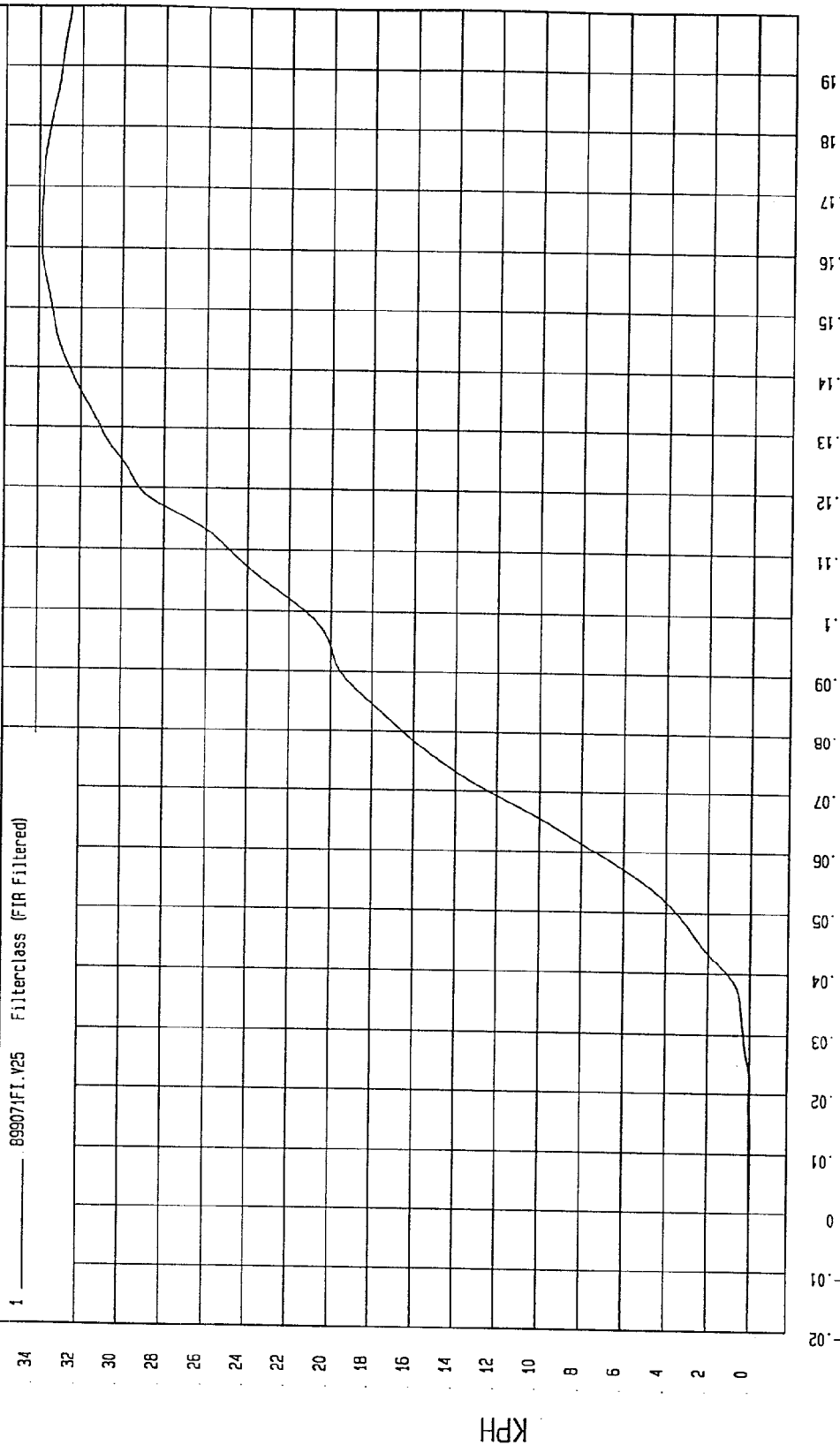
Speed: 38.4 MPH 61.8 KPH

Minimum = -3.76E-02 KPH at 7 msec

Maximum = 33.88 KPH at 161 msec

REAR PASSENGER UPPER RIB Y VELOCITY

1 899071FI.Y25 Filterclass (FIR Filtered)



NCA Research
10-27-1999 16:34

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

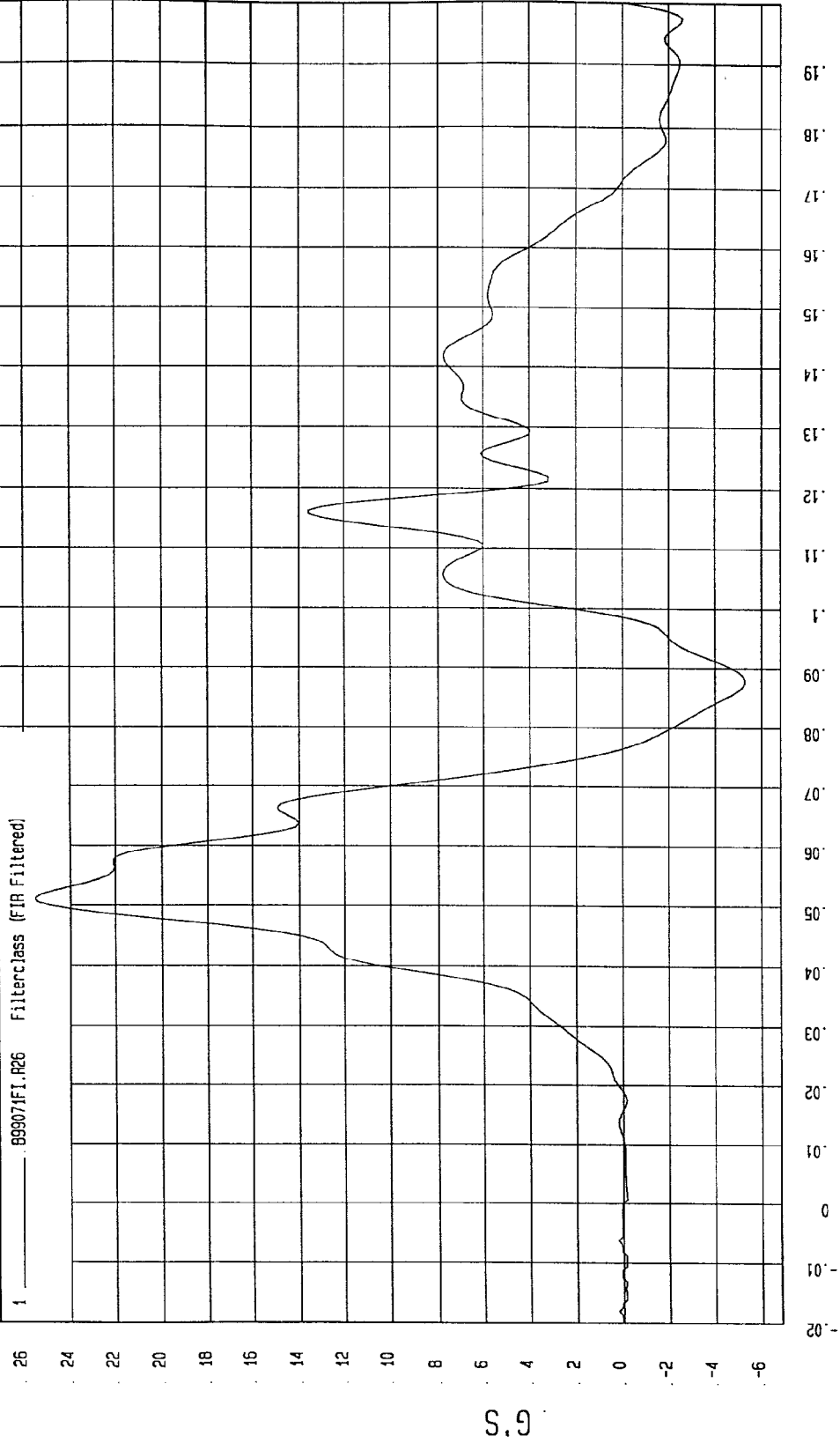
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 25.52 G'S at 51 msec

Minimum = -5.29 G'S at 88 msec

REAR PASSENGER LOWER RIB Y ACCELERATION



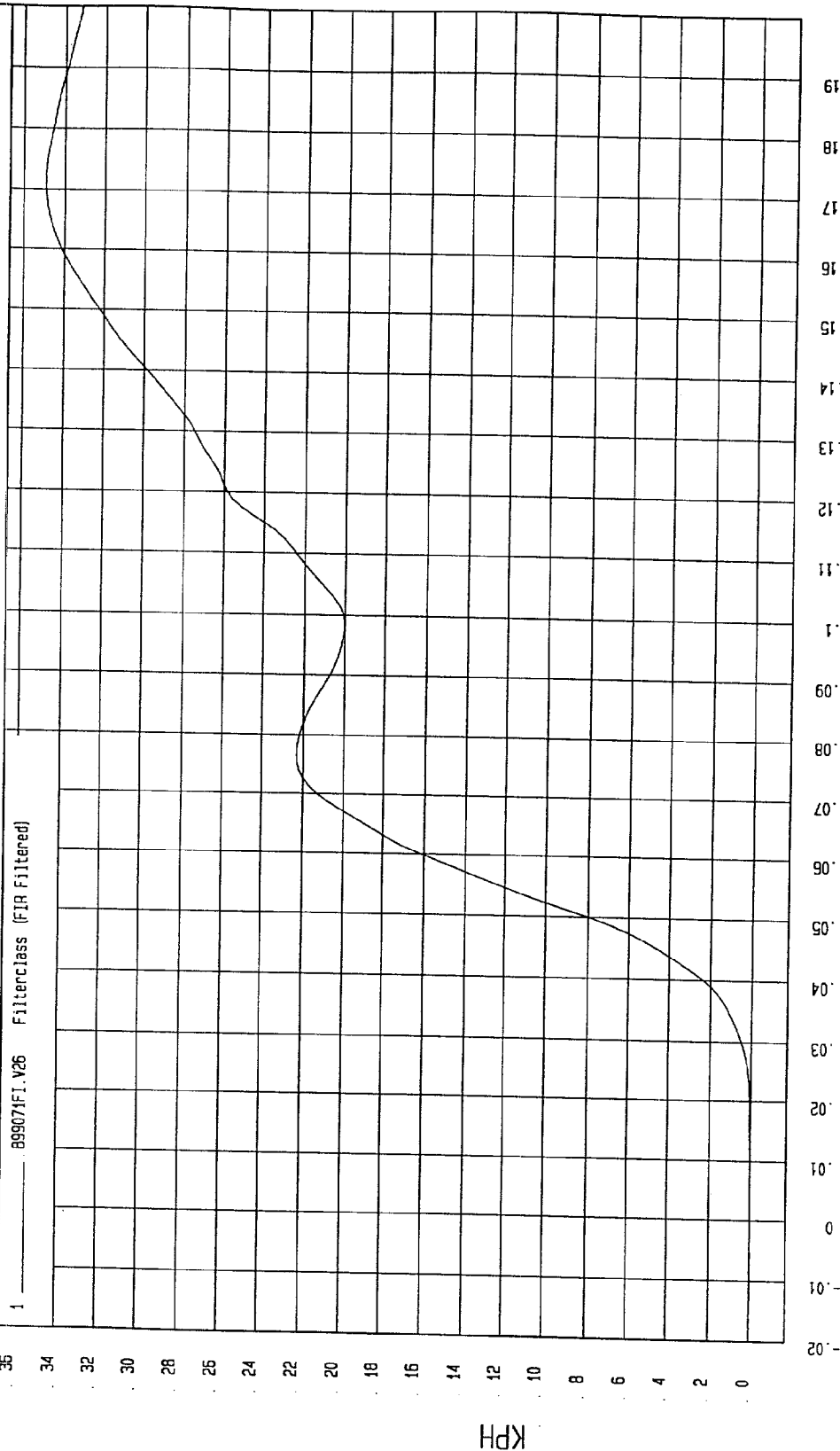
MSA Research
10-26-1999 17:07

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -1.00E-02 KPH at -8 msec Maximum = 34.93 KPH at 172 msec

REAR PASSENGER LOWER RIB Y VELOCITY



TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

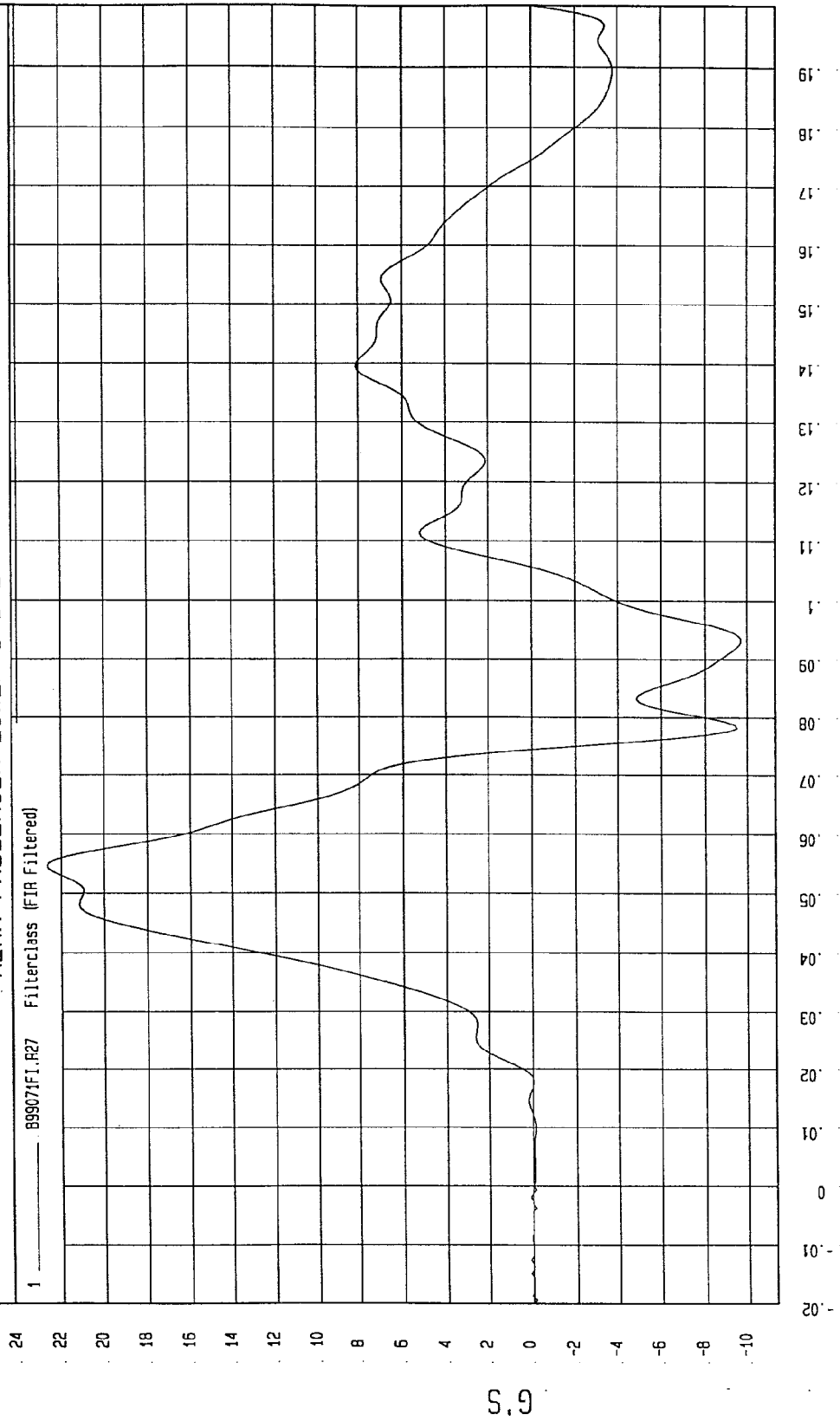
SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 22.63 G'S at 54 msec

Minimum = -9.71 G'S at 93 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION



WCA Research
10-26-1999 17:07

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Minimum = -2.16E-03 KPH at -19 msec

Maximum = 26.89 KPH at 174 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 89907.FI.V27 Filterclass (FIR Filtered)

28

26

24

22

20

18

16

14

12

10

8

6

4

2

0

KPH

-02

-01

0

01

02

03

04

05

06

07

08

09

1

11

12

13

14

15

16

17

18

19

TIME Seconds

MSA Research
10-27-1999 16:34

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

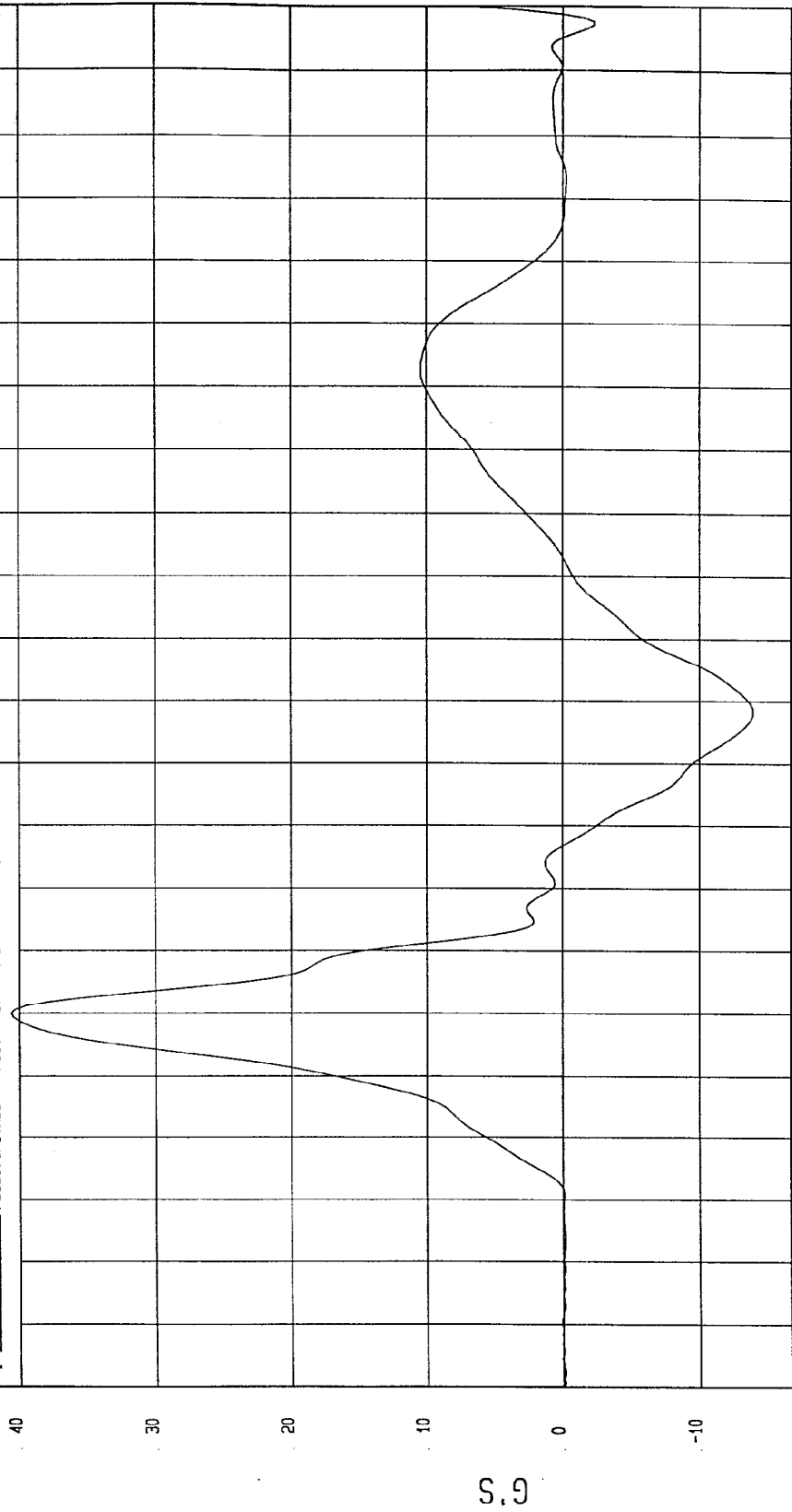
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 40.61 G'S at 40 msec

Minimum = -14.01 G'S at 88 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 899071FI.R28 Filterclass (FIR Filtered)

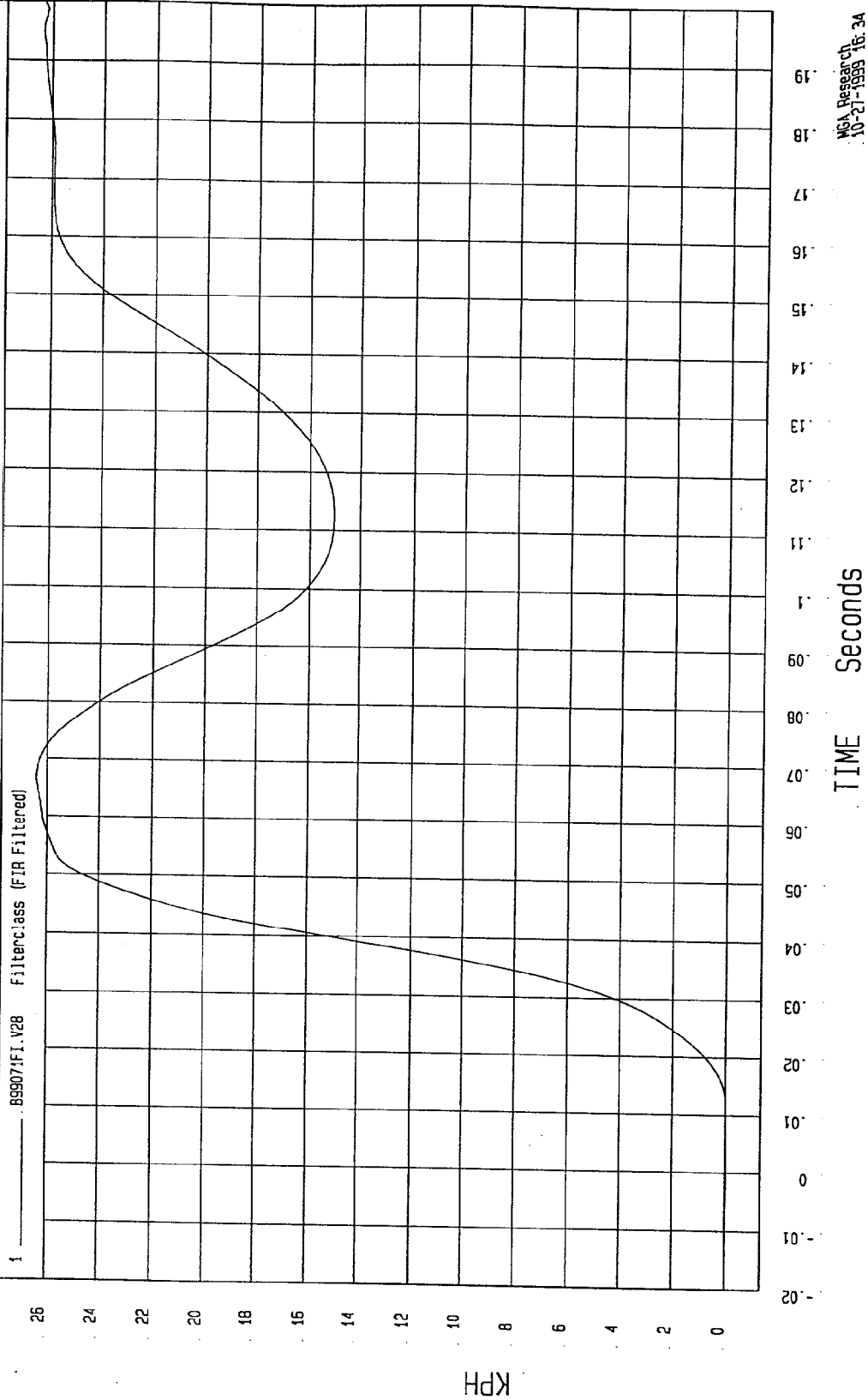


TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -.03 KPH at 0 msec Maximum = 26.41 KPH at 67 msec

REAR PASSENGER PELVIS Y VELOCITY



TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

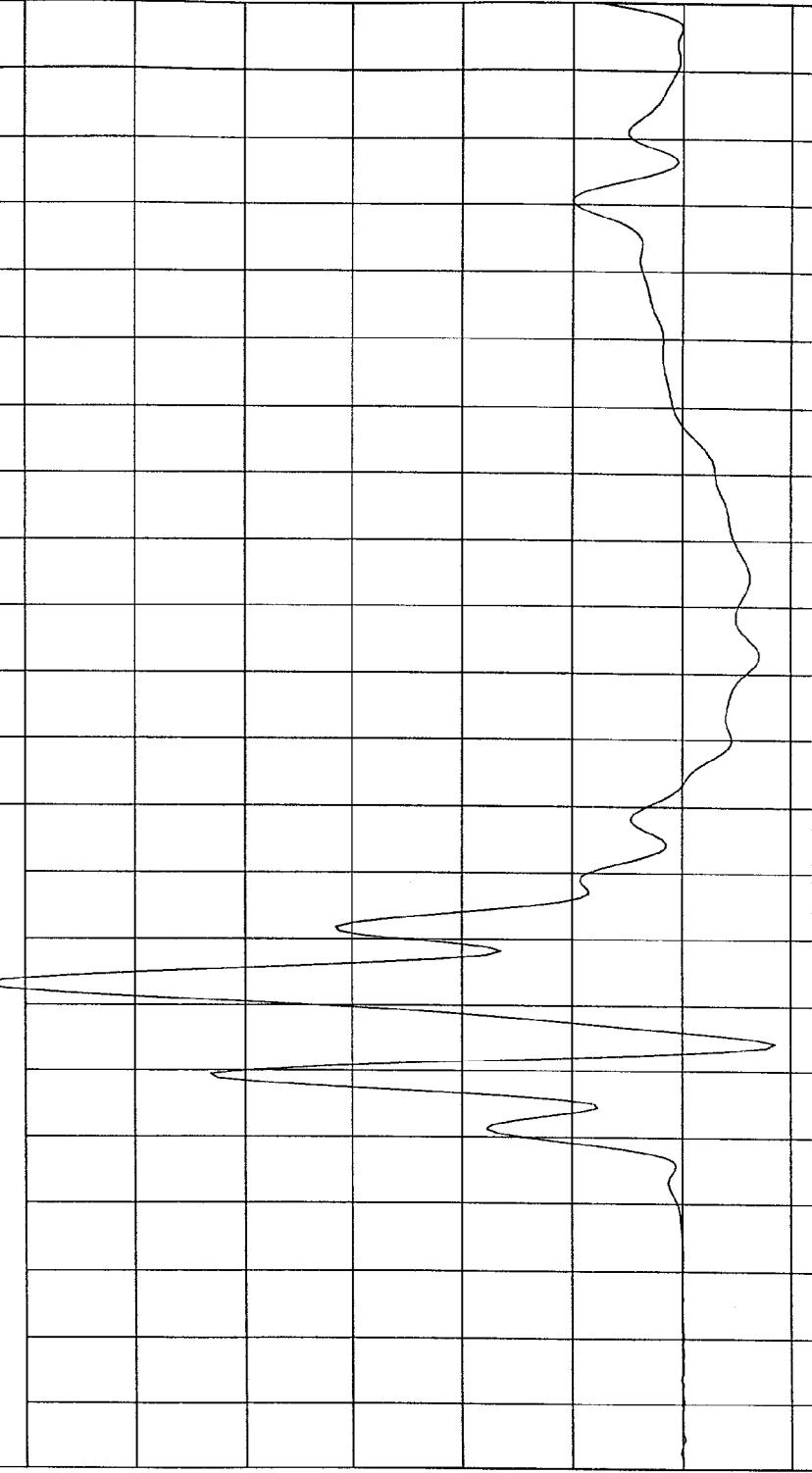
Maximum = 63.71 G'S at 53 msec

Minimum = -8.5 G'S at 44 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 899074FI.R42 Filterclass (FIR Filtered)

G.S



MSA Research
10-26-1999 17:07

TIME (SECONDS)

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

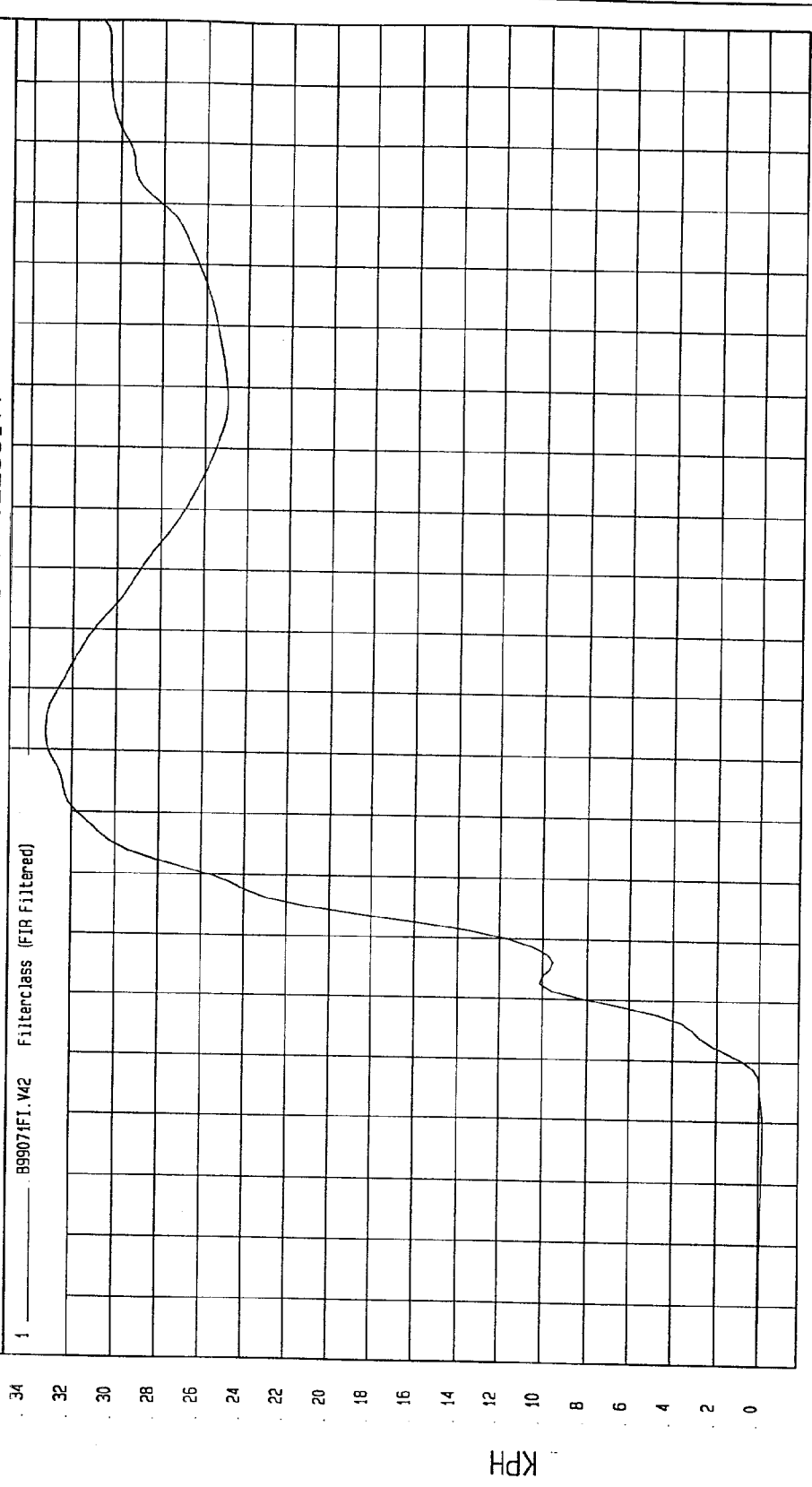
Speed: 38.4 MPH 61.8 KPH

Minimum = -17 KPH at 18 msec

Maximum = 33.23 KPH at 83 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 B99074FI.V42 Filterclass (FIR Filtered)



NSA Research
10-27-1999 16:34

TIME Seconds

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

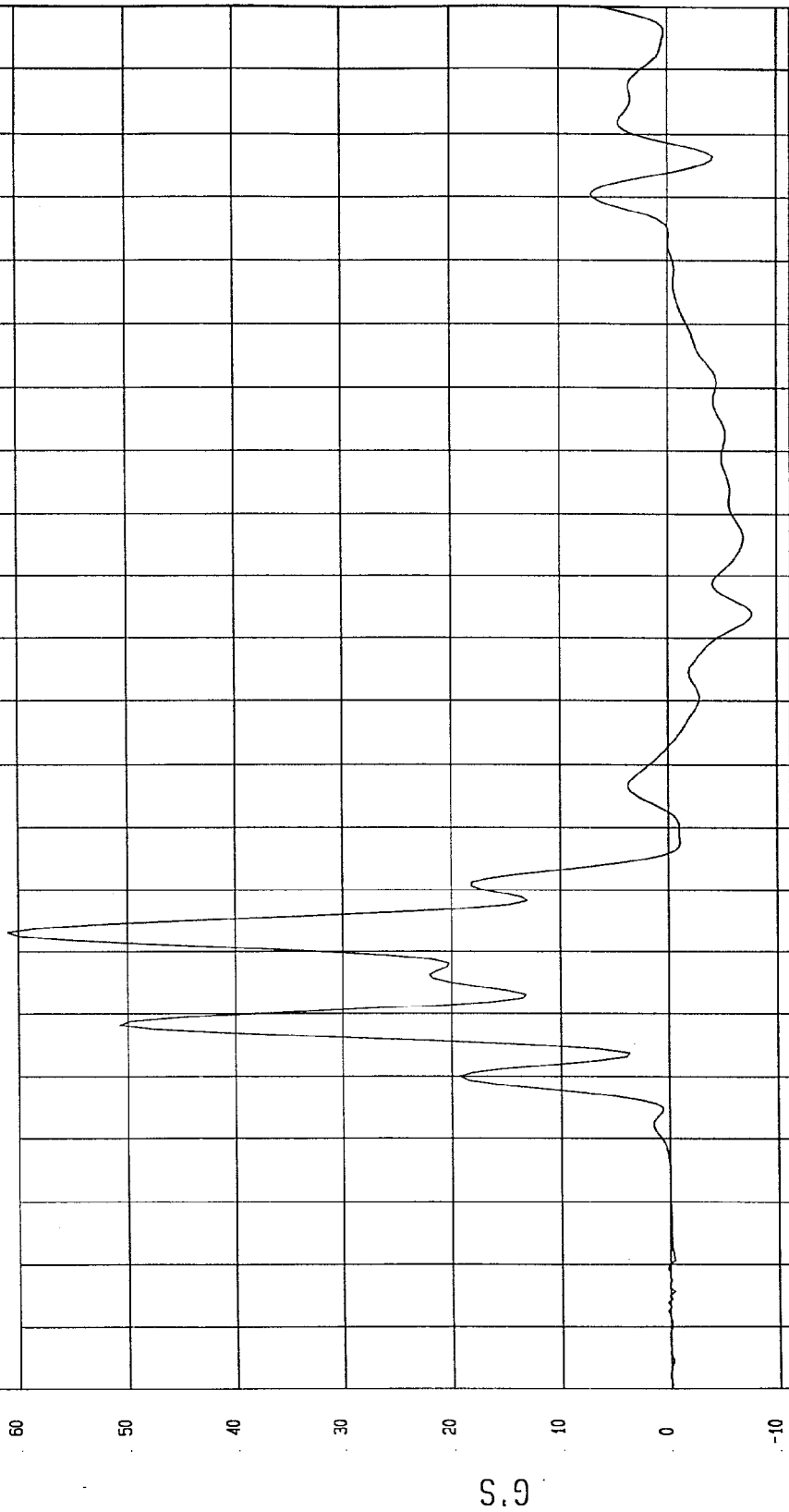
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 61 G'S at 53 msec

Minimum = -7.76 G'S at 104 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 899074FI.R43 Filterclass (FIR Filtered)



MSA Research
10-26-1999 17:07

TIME (SECONDS)

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

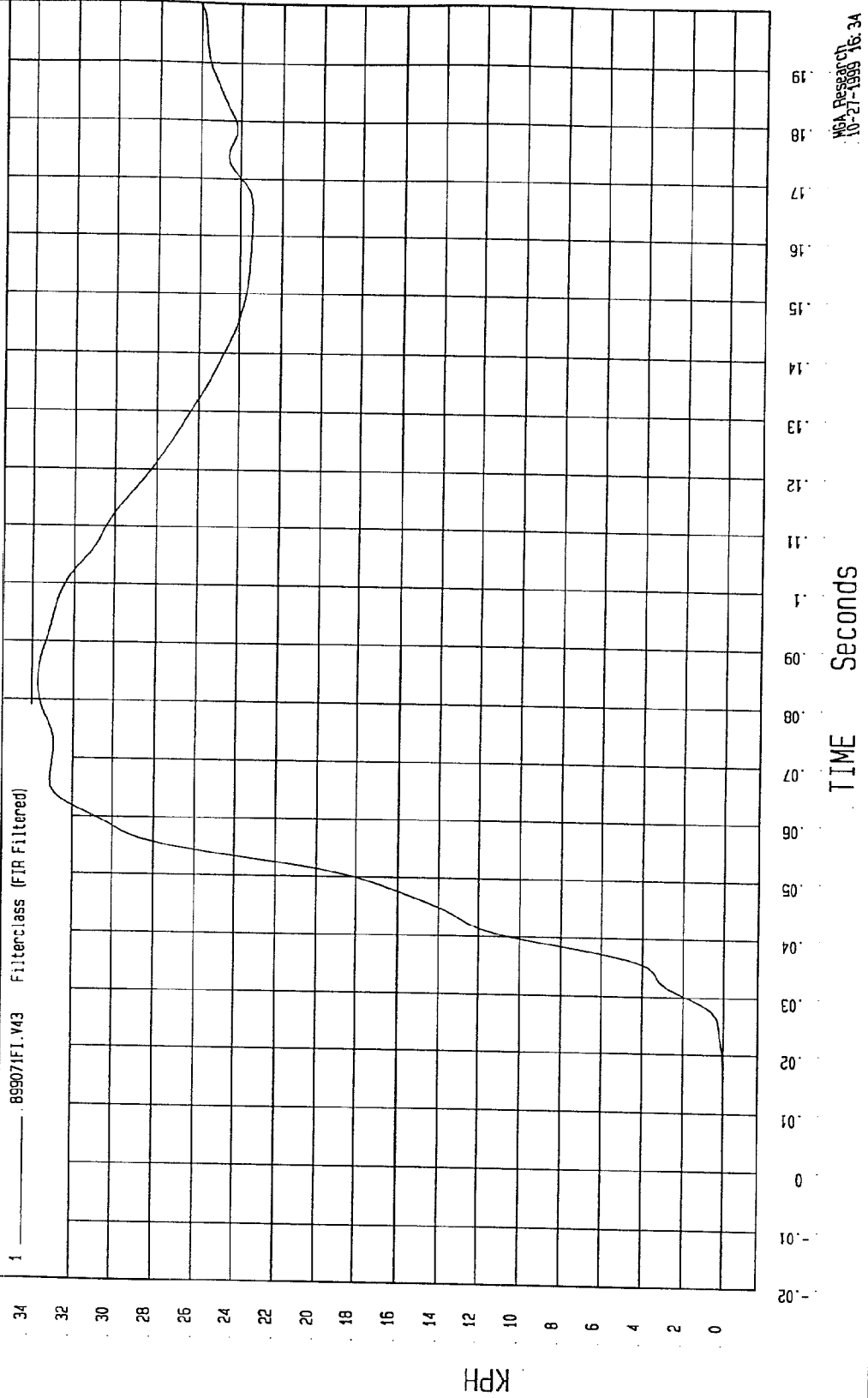
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = -1.53E-02 KPH at 8 msec

Maximum = 33.73 KPH at 83 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY



MSA Research
10-27-1999 16:34

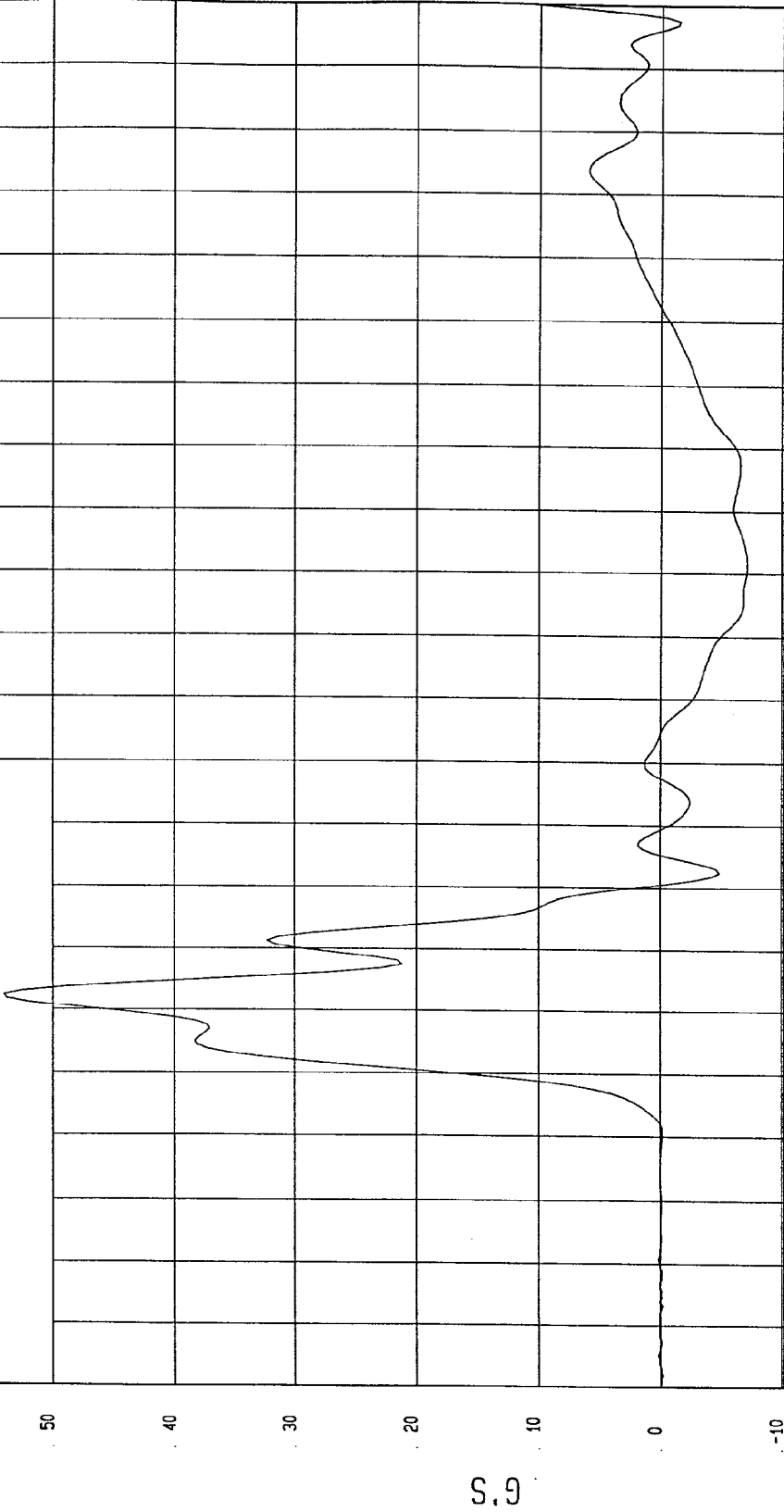
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -7.14 G'S at 111 msec
Maximum = 54.01 G'S at 42 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 899074FI.R44 Filterc.ass (FIR Filtered)



WCA Research
10-26-1999 17:07

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

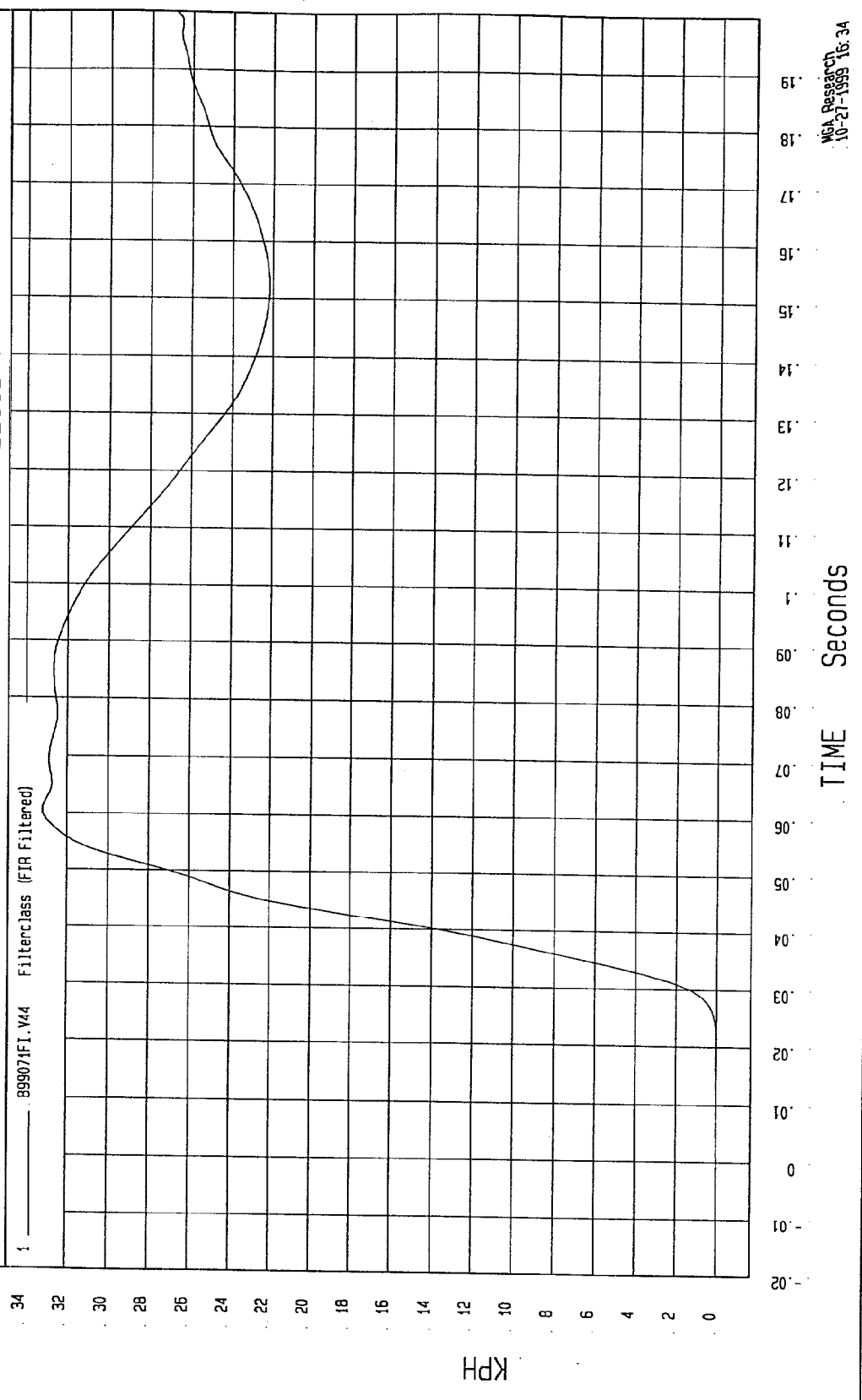
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = -8.72E-03 KPH at -17 msec

Maximum = 33.22 KPH at 61 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY



MCA Research
10-27-1999 16:34

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 97.88 G'S at 38 msec

Minimum = -14.37 G'S at 62 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 899071FI.R45 FilterClass (FIR Filtered)

100

80

60

40

20

0

G.S

TIME (SECONDS)

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

NCA Research
10-26-1999 17.07

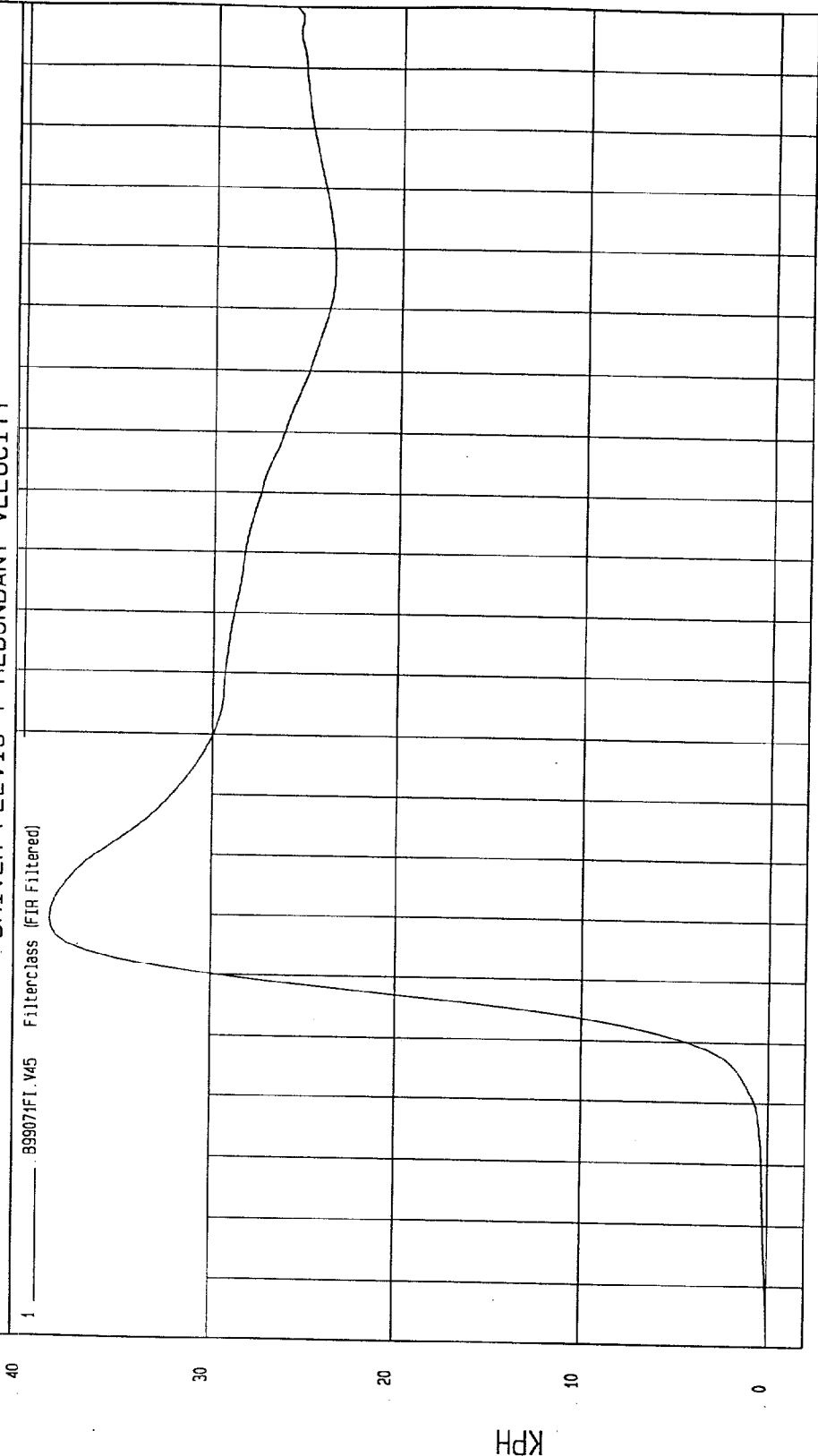
TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = 0 KPH at -20 msec Maximum = 38.56 KPH at 49 msec

DRIVER PELVIS Y REDUNDANT VELOCITY

1 899071FI.V45 Filterclass (FIR Filtered)



MSA Research
10-27-1999 16:34

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

Speed: 38.4 MPH 61.8 KPH

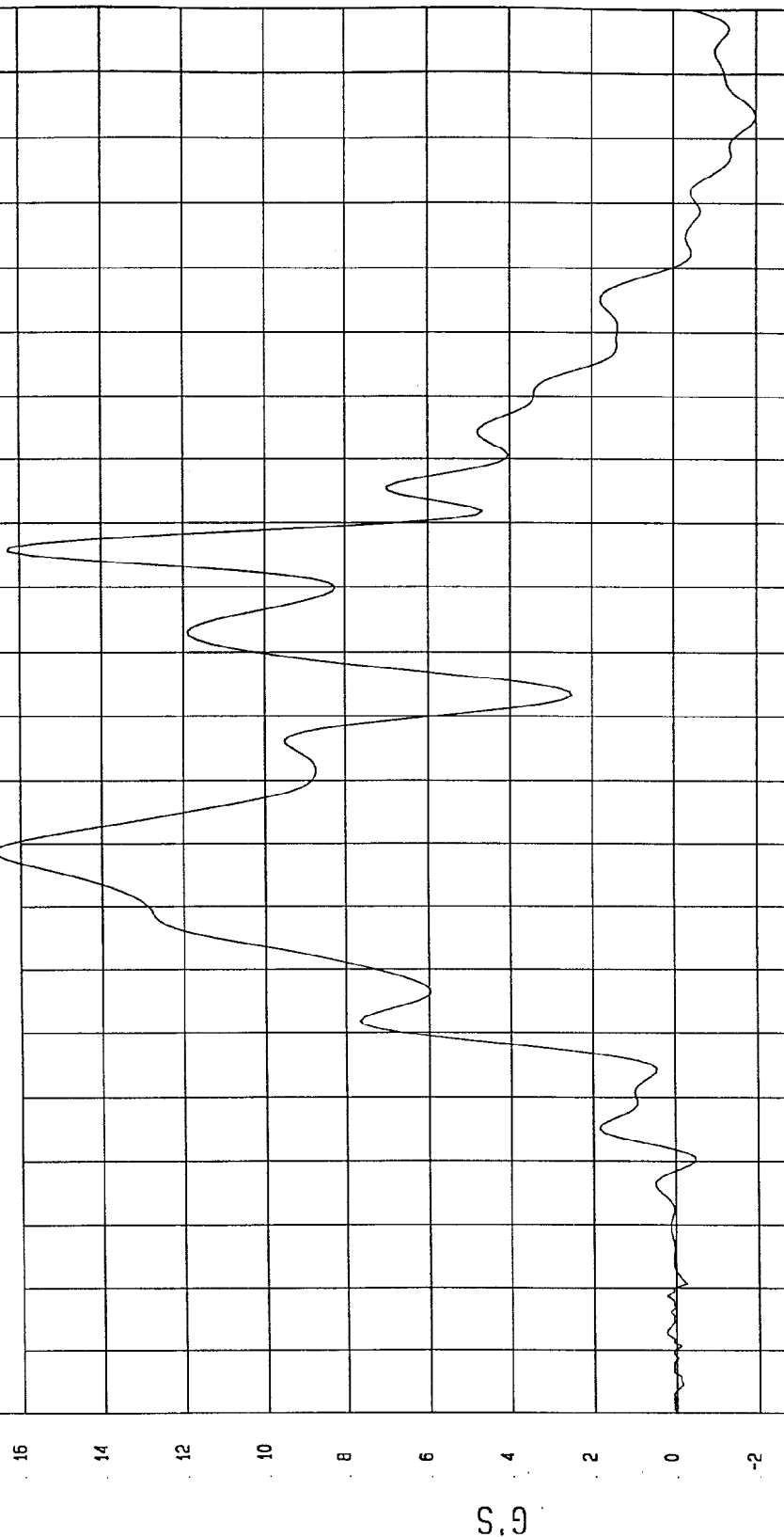
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 16.66 G'S at 69 msec

Minimum = -2 G'S at 184 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 899071F1.R46 Filterclass (FIR Filtered)



H&A Research
10-26-1999 17:07

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = -2.65E-03 KPH at -14 msec

Maximum = 34.41 KPH at 160 msec

REAR PASSENGER UPPER RIB Y REDUNDANT VELOCITY

1 B99074F1.V46 Filterclass (FIR Filtered)

36

34

32

30

28

26

24

22

20

18

16

14

12

10

8

6

4

2

0

KPH

-02

-01

0

.01

.02

.03

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TIME Seconds

NCA Research
10-27-1999 16:34

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

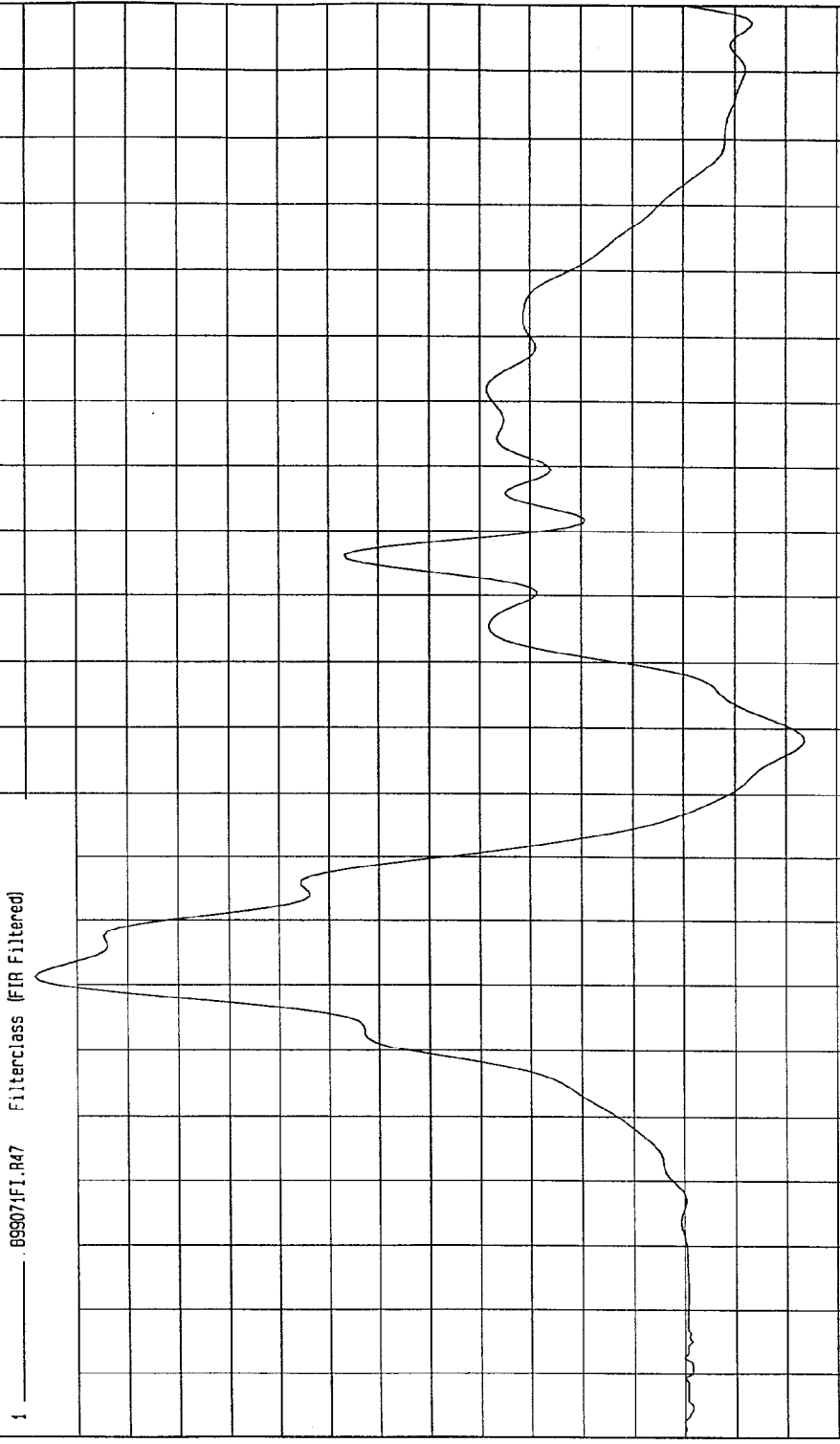
COMPONENT: 2000 NISSAN XTERRA (CY5203) Speed: 38.4 MPH 61.8 KPH

Minimum = -4.74 G'S at 88 msec Maximum = 25.67 G'S at 51 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 899071FI.R47 Filterclass (FIR Filtered)

G.S



NCA Research
10-26-1999 17:07

TIME (SECONDS)

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CYS203)

Speed: 38.4 MPH 61.8 KPH

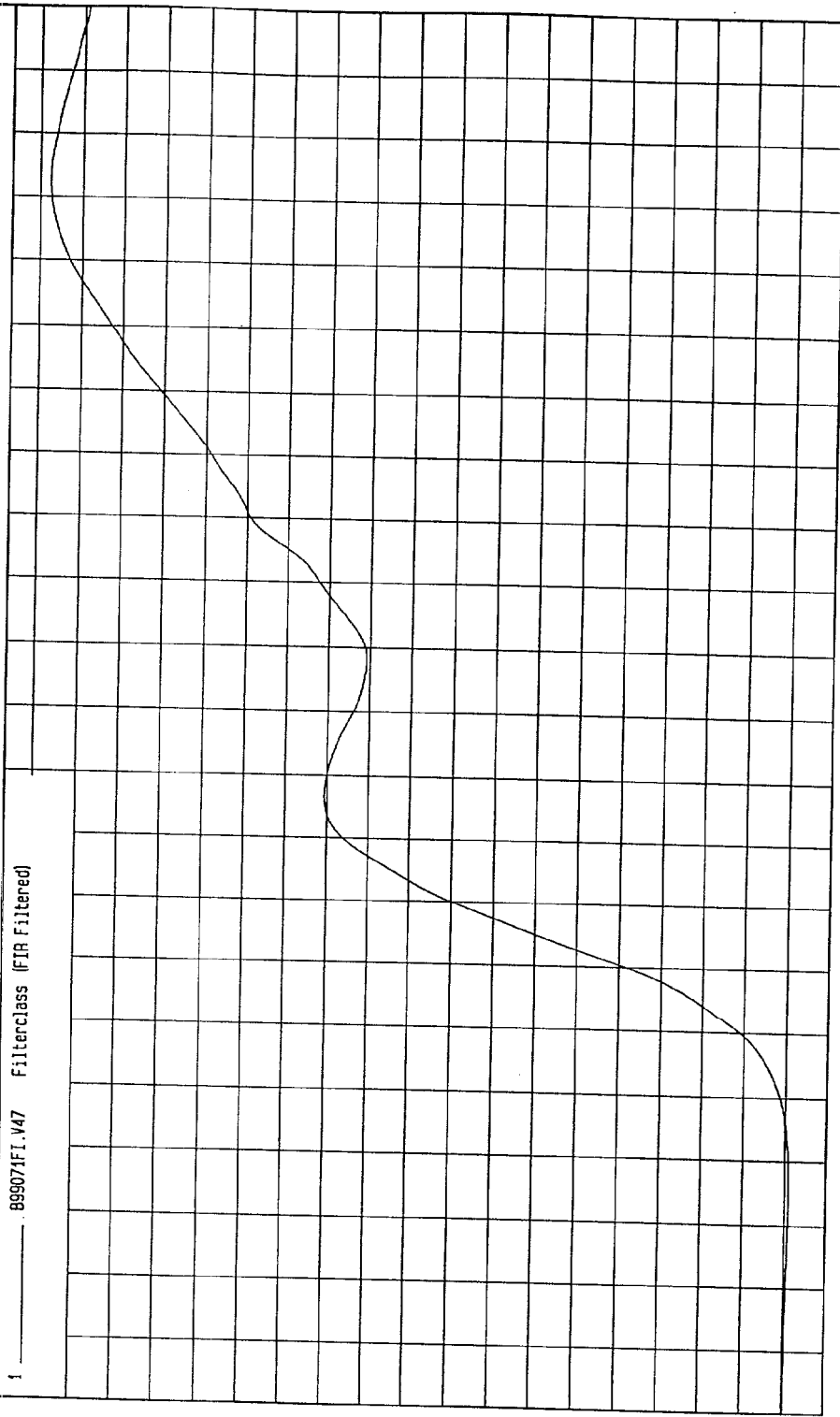
Minimum = -.18 KPH at 18 msec

Maximum = 35.52 KPH at 173 msec

REAR PASSENGER LOWER RIB Y REDUNDANT VELOCITY

1 89907FI.V47 Filterclass (FIR Filtered)

KPH



TIME Seconds

MGA Research
10-27-1999 16:34

TEST: INDICANT SIDE IMPACT

TEST DATE: 10-26-1999

Speed: 38.4 MPH 61.8 KPH

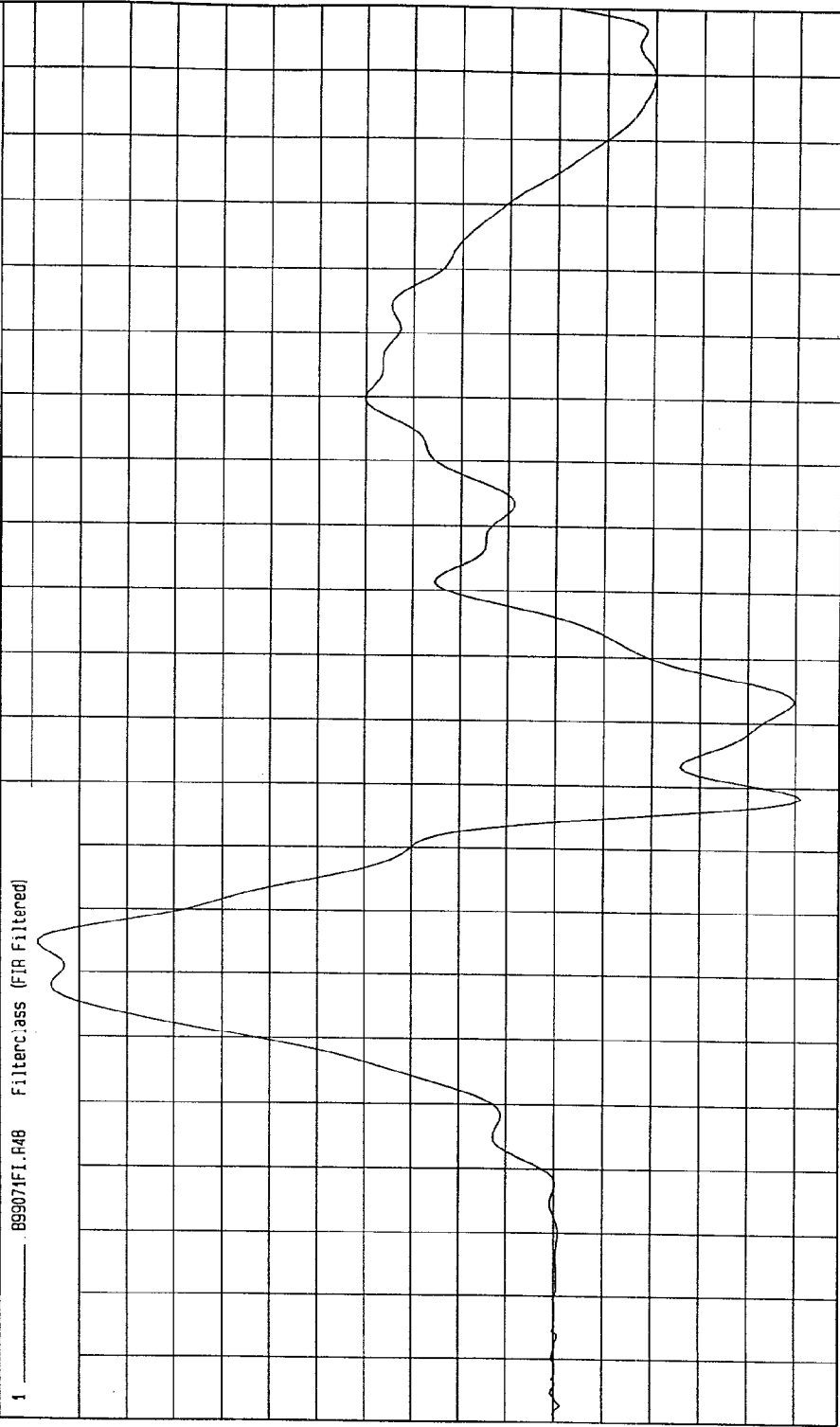
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Minimum = -10.23 G'S at 78 msec

Maximum = 21.73 G'S at 54 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 899074FI.R48 FilterClass (FIR Filtered)



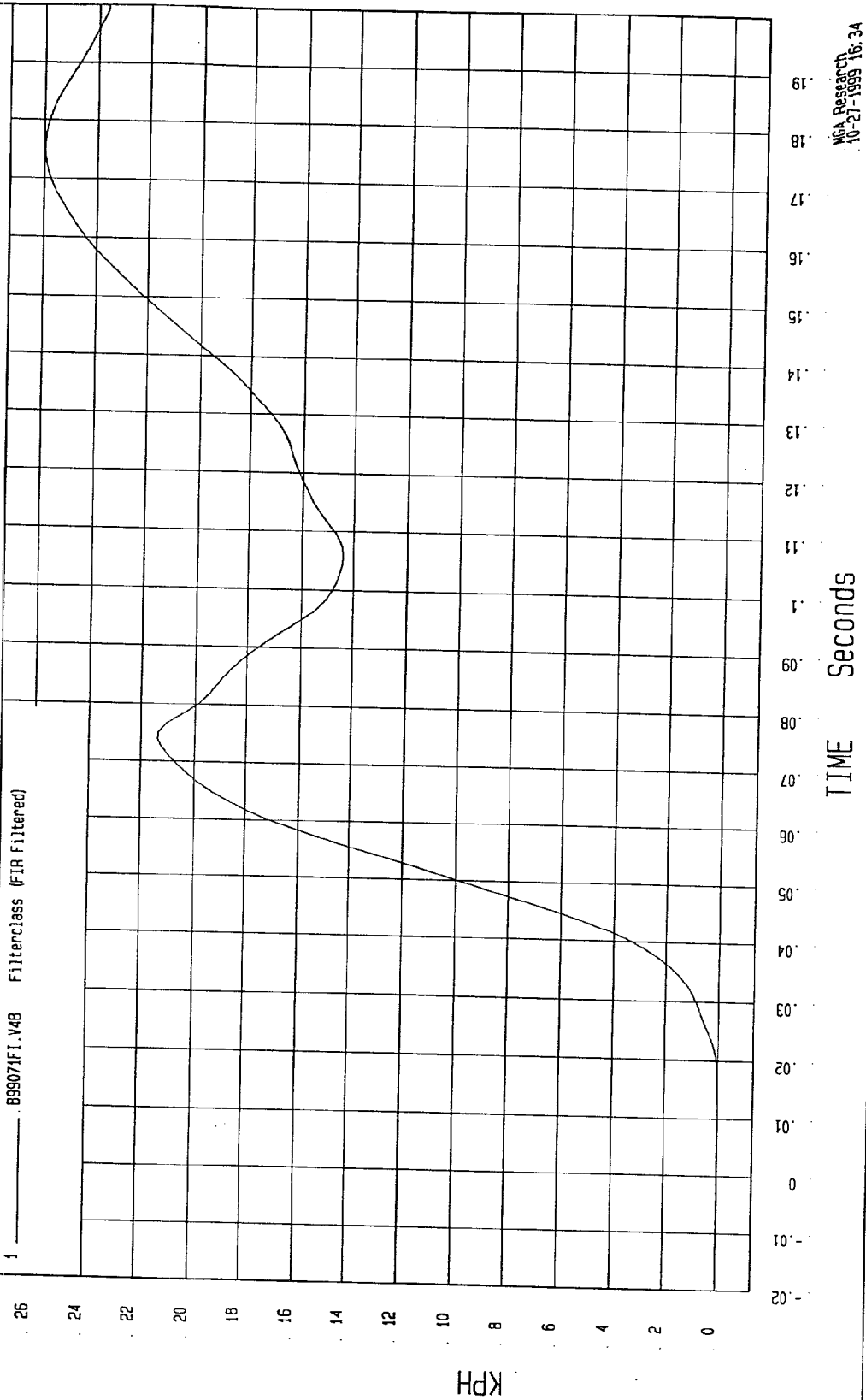
TIME (SECONDS)

NGA Research
10-26-1999 17:07

TEST: INDICANT SIDE IMPACT
TEST DATE: 10-26-1999
COMPONENT: 2000 NISSAN XTERRA (CY5203)
Speed: 38.4 MPH 61.8 KPH

Minimum = -1.22E-02 KPH at -1 msec
Maximum = 25.98 KPH at 175 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT VELOCITY



M&A Research
10-27-1999 16:34

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

SPEED: 38.4 MPH 61.8 KPH

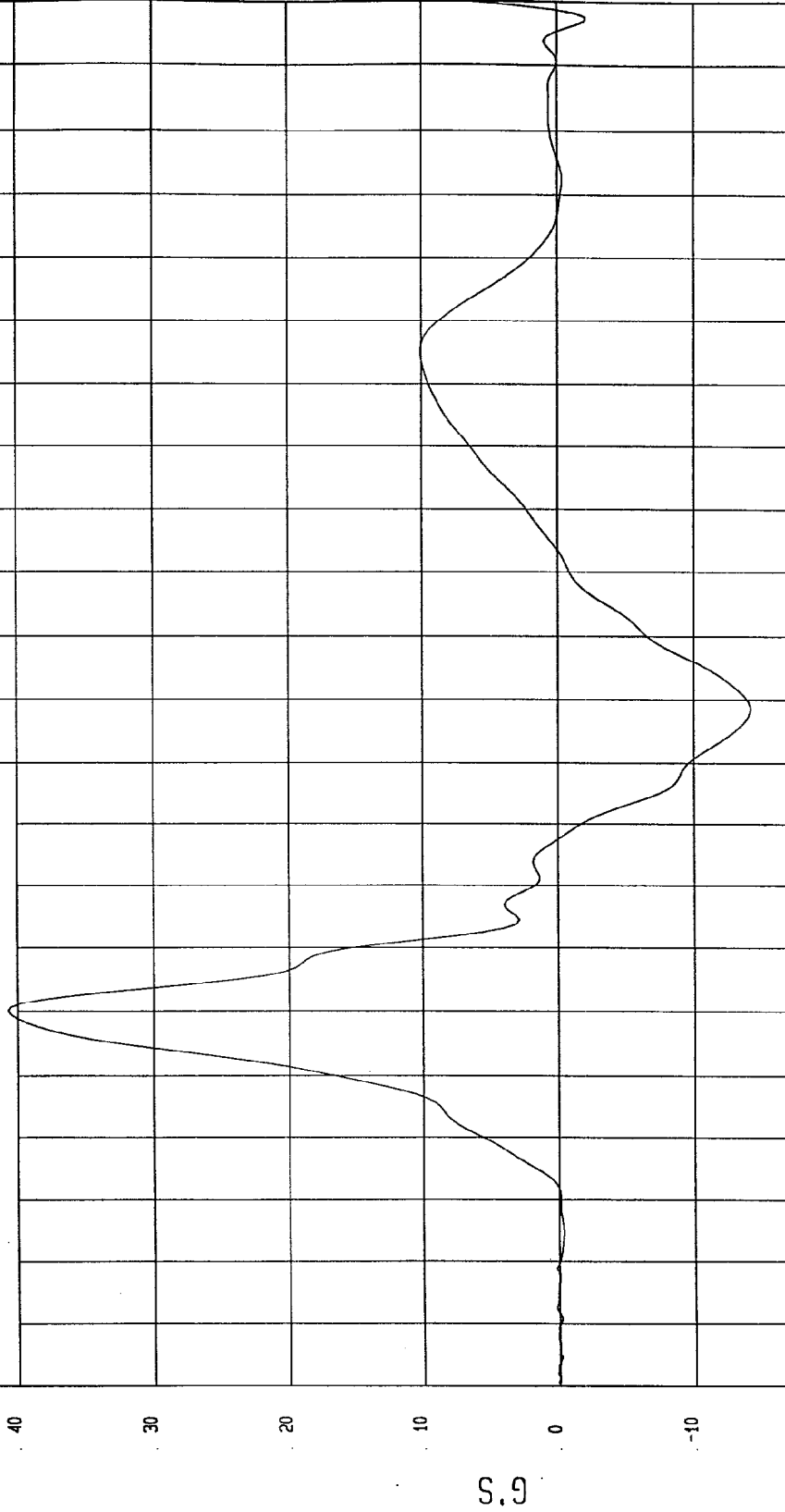
COMPONENT: 2000 NISSAN XTERRA (CY5203)

Maximum = 40.7 G'S at 40 msec

Minimum = -14.25 G'S at 89 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 899071F1.R49 Filterclass (FIR Filtered)



TIME (SECONDS)

MSA Research
10-26-1999 17:07

TEST: INDICANT SIDE IMPACT TEST DATE: 10-26-1999

COMPONENT: 2000 NISSAN XTERRA (CY5203)

Speed: 38.4 MPH 61.8 KPH

Minimum = -3.25E-03 KPH at -8 msec

Maximum = 27.26 KPH at 68 msec

REAR PASSENGER PELVIS Y REDUNDANT VELOCITY

1 — 89907FI.V49 Filterclass (FIR Filtered)

28

26

24

22

20

18

16

14

12

10

8

6

4

2

0

KPH

-02

0

.01

.02

.03

.04

.05

.06

.07

.08

.09

.1

.11

.12

.13

.14

.15

.16

.17

.18

.19

TIME Seconds

NSA Research
10-27-1999 16:34

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

SUMMARY
SIDE PRE & POST-TEST CALIBRATION
CONFIGURED TO LEFT SIDE IMPACT

Report Date: November 1, 1999Technician: Tim MichnayTest Date: October 26, 1999

Test Parameter	Specification	Dummy Serial No: 048		Dummy Serial No: 049	
		Pre-Test	Post-Test	Pre-Test	Post-Test
SH-Seated Height (mm)	889 - 909	905	905	902	902
RH-Rib Height (mm)	501 - 521	518	518	516	516
HP-Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD-Rib from Back Line (mm)	229 - 241	236	236	233	233
KV-Knee Pivot from Back Line (mm)	511 - 526	521	521	523	523
SW-Knee Pivot to Floor (mm)	490 - 505	493	493	493	493
HW-Hip Width (mm)	356 - 391	368	368	371	371
Thorax Impacts					
Temperature (°C)	18.9 - 25.5	21.0	21.0	21.0	21.0
Relative Humidity (%)	10 - 70	35	38	27	41
Probe Speed (m/s)	4.27 - 4.33	4.30	4.28	4.27	4.28
Upper Rib (g's)	37 - 46	38	39	38	38
Lower Rib (g's)	37 - 46	37	40	39	37
Lower Spine (g's)	15 - 22	22	22	21	21
Pelvis Impact					
Temperature (°C)	18.9 - 25.5	21.0	21.0	21.0	21.0
Relative Humidity (%)	10 - 70	34	40	27	41
Probe Speed (m/s)	4.27 - 4.33	4.30	4.27	4.27	4.29
Pelvis ('gs)	40 - 60	57	46	49	48

REMARKS:

PRE-TEST CERTIFICATION DATA

Dummy Serial Number: 048

Calibration Test Results Summary

Dummy Serial Number: 048

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

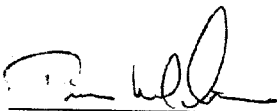
C-4

DUMMY SERIAL NO.: 048

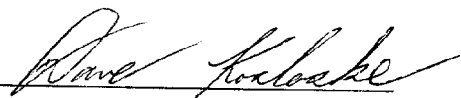
DATE OF VERIFICATION: October 22, 1999

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height (mm)	889 - 909	905
RH - Rib Height (mm)	501 - 521	518
HP - Hip Pivot Height (mm)	99 ref.	99
RD - Rib From Back Line (mm)	229 - 241	236
KV - Knee Pivot From Back Line (mm)	511 - 526	521
SW - Knee Pivot to Floor (mm)	490 - 505	493
HW - Hip Width (mm)	356 - 391	368

TECHNICIAN:



APPROVED BY:



MGA RESEARCH CORPORATION
THORAX IMPACT TEST
SIDE IMPACT DUMMY (SID)

DATE: October 22, 1999

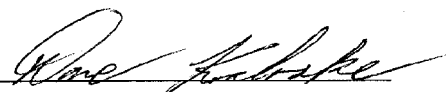
DUMMY SERIAL NUMBER: 048

TEST NUMBER: D991162

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	35
PROBE SPEED (m/s)	4.27 - 4.33	4.30
UPPER RIB (g's)	37 - 46 g's	38
LOWER RIB (g's)	37 - 46 g's	37
LOWER SPINE (g's)	15 - 22 g's	22

TEST MEETS SPECIFICATIONS

TECHNICIAN: 

APPROVED BY: 

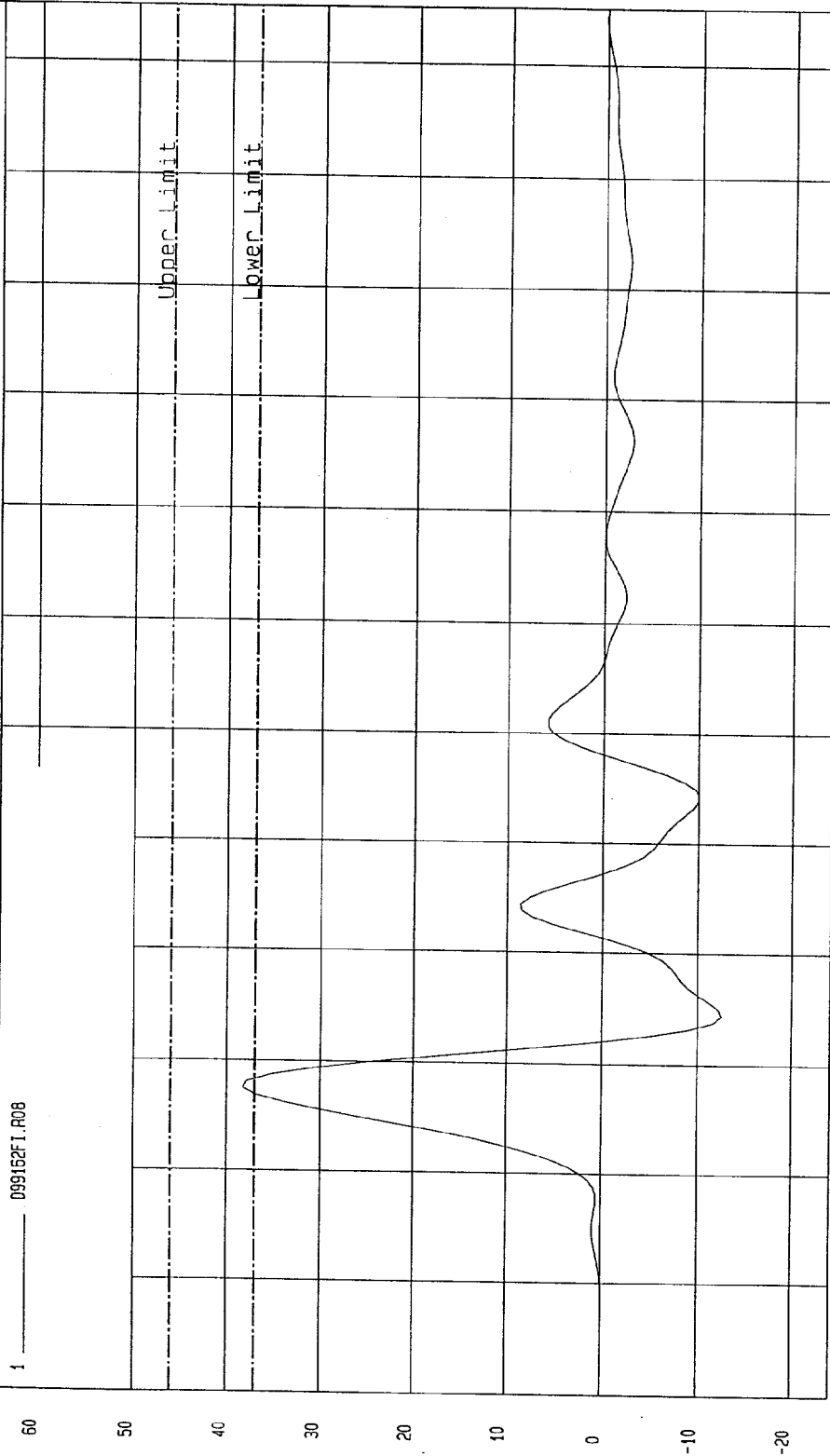
TEST: Dummy Calibration - Thorax Impact TEST DATE: 10-22-1999 - 15:06:10

COMPONENT: Dummy #048 Velocity: 14.1 FT/SEC 4.3 M/SEC

Minimum = -12.52 G's at 34.3 msec

Maximum = 38.29 G's at 27.5 msec

UPPER RIB ACCELERATION



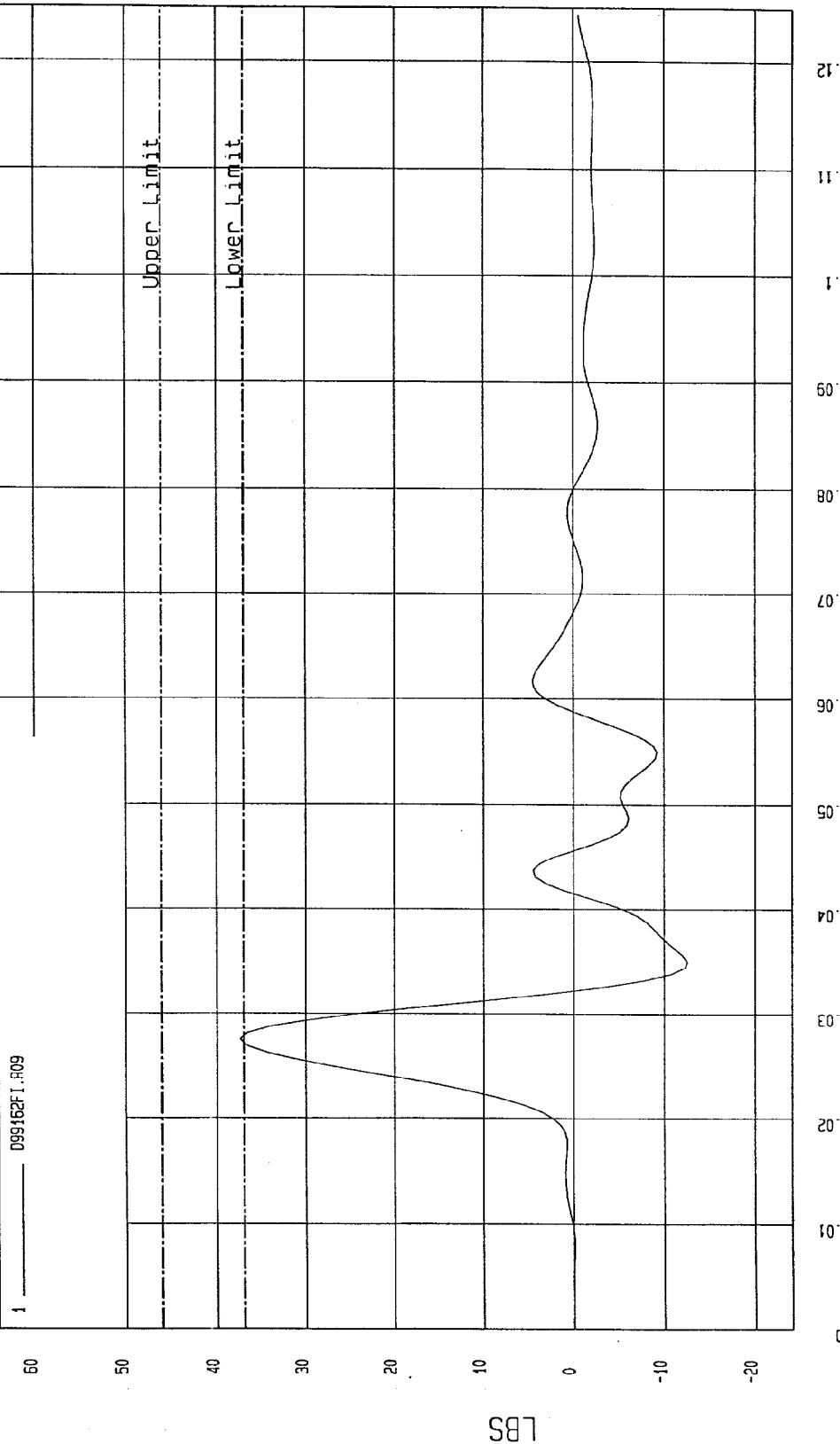
MCA Research
10-26-1999 09:55

TEST: Dummy Calibration - Thorax Impact TEST DATE: 10-22-1999 - 15:06:10

COMPONENT: Dummy #048 Velocity: 14.1 FT/SEC 4.3 M/SEC

Minimum = -12.48 LBS at 35 msec Maximum = 37.45 LBS at 27.5 msec

LOWER RIB ACCELERATION



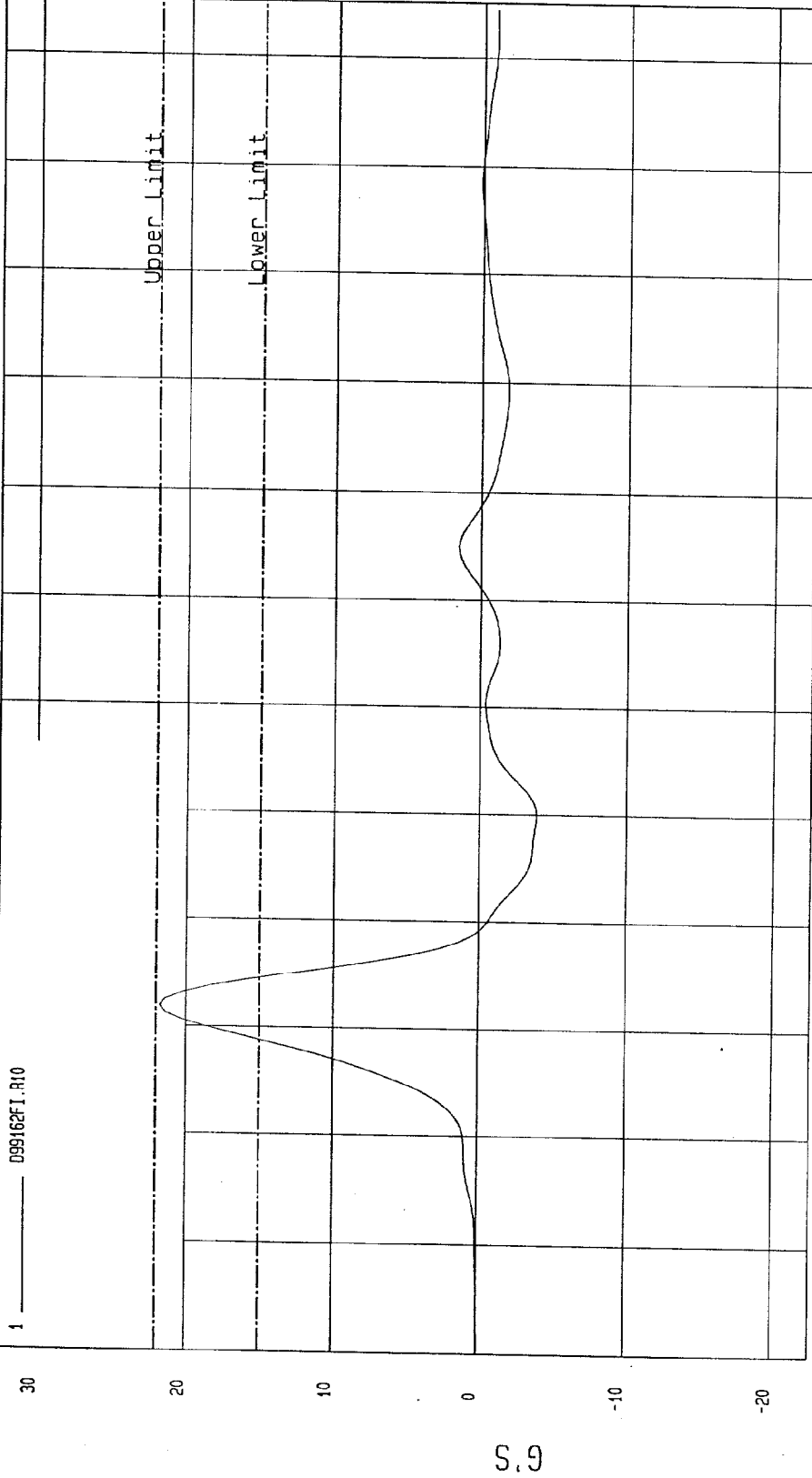
MCA Research
10-26-1999 10:12

TEST: Dummy Calibration - Thorax Impact TEST DATE: 10-22-1999 - 15:06:10

COMPONENT: Dummy #048 Velocity: 14.1 FT/SEC 4.3 M/SEC

Minimum = -3.91 G'S at 50 msec Maximum = 21.77 G'S at 31.8 msec

LOWER SPINE ACCELERATION



TIME (sec.)

MGA RESEARCH CORPORATION

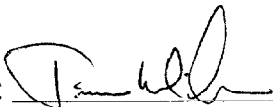
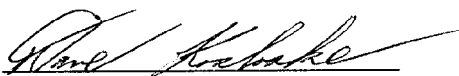
PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: October 22, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991163

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	34
PROBE SPEED (m/s)	4.27 - 4.33	4.30
PELVIS ACCELERATION (g's)	40 - 60	57

TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: 

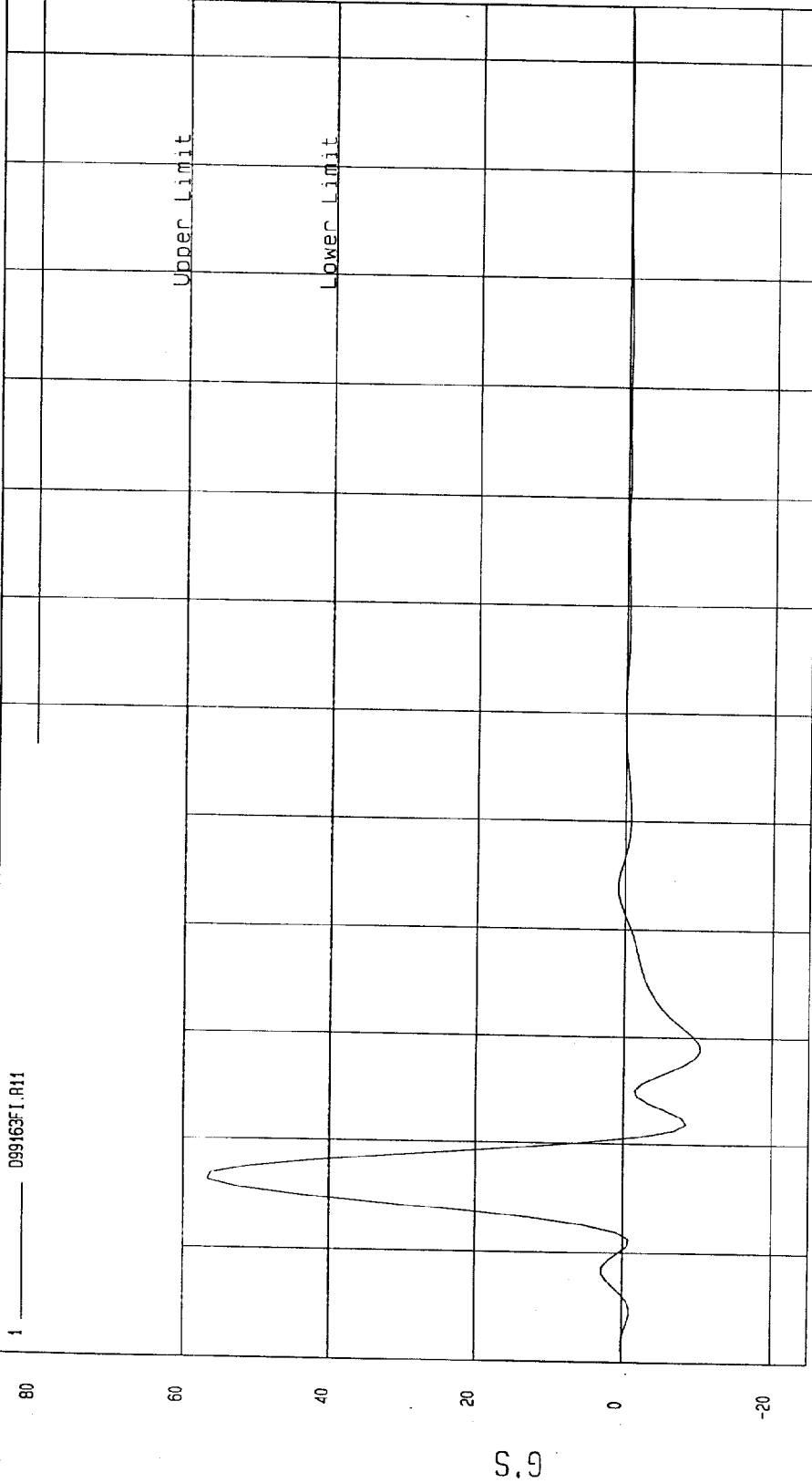
TEST: Dummy Calibration - Pelvis Impact TEST DATE: 10-22-1999 - 15:49:52

COMPONENT: Dummy #048 Velocity: 14.1 FT/SEC 4.3 M/SEC

Minimum = -10.41 G'S at 28.7 msec Maximum = 56.72 G'S at 16.2 msec

PELVIS ACCELERATION

1 ——— 099163F1.R11



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10-26-1999 09:55

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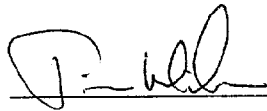
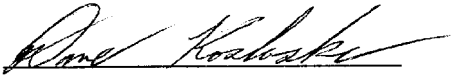
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: October 21, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991164

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	35
FORCE @ 12.7 mm	104 - 162	143
FORCE @ 19.0 mm	163 - 222	200
FORCE @ 25.4 mm	222 - 280	266
FORCE @ 33 mm	325 - 391	368

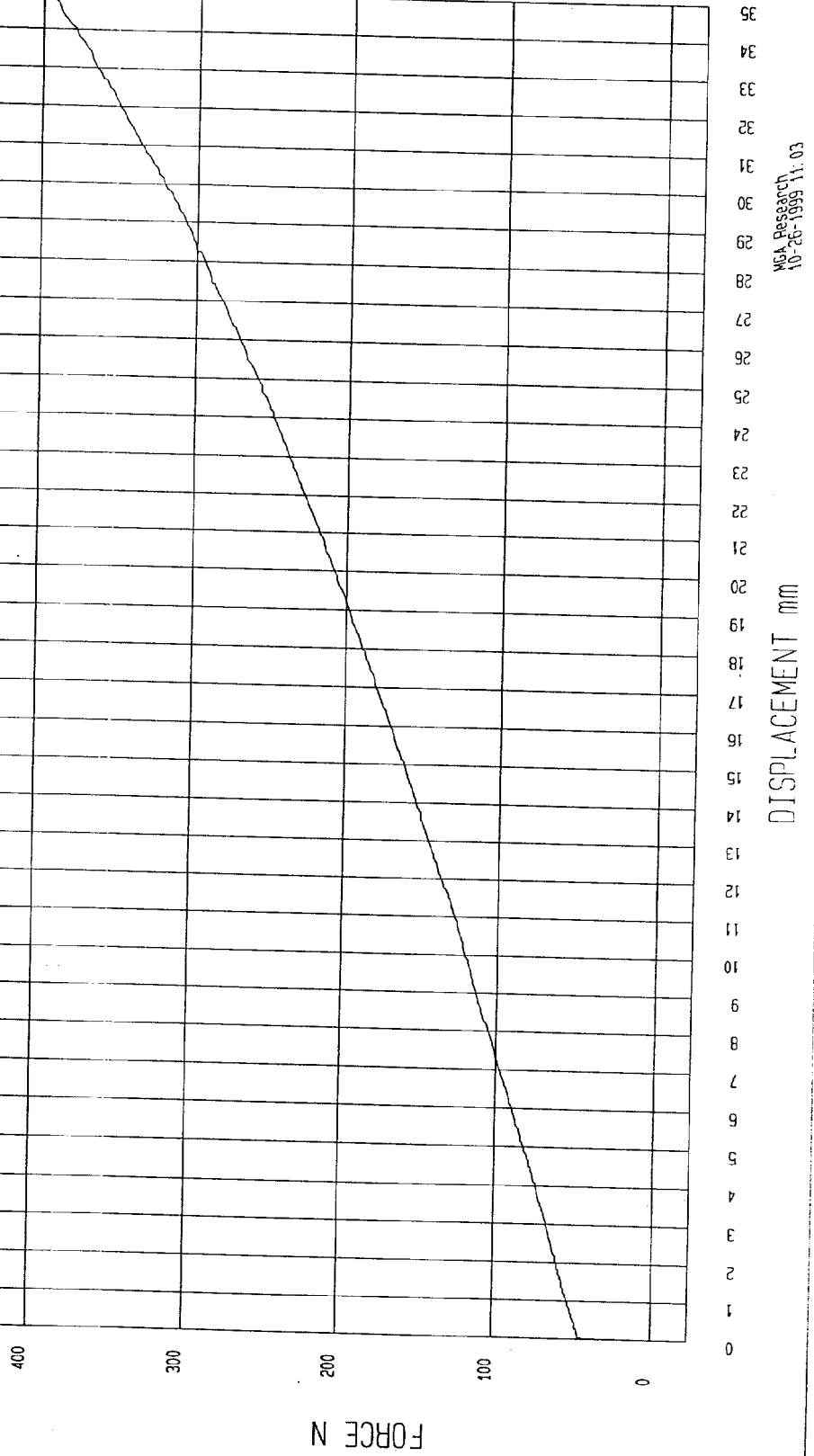
TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 10-21-1999 - 10:55:34

COMPONENT: DUMMY # 48

FORCE as a function of DISPLACEMENT



MGA RESEARCH CORPORATION

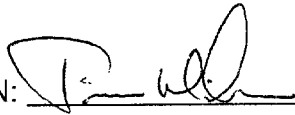
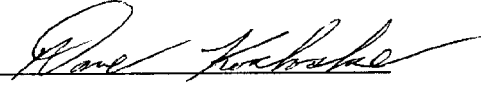
LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: October 22, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991165

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	35
FORCE @ 0°	0 - 26.7	0
FORCE @ 20°	97.9 - 151.2	123.1
FORCE @ 30°	151.2 - 204.6	190.0
FORCE @ 40°	204.6 - 258.0	253.7
RETURN ANGLE	12° maximum	7

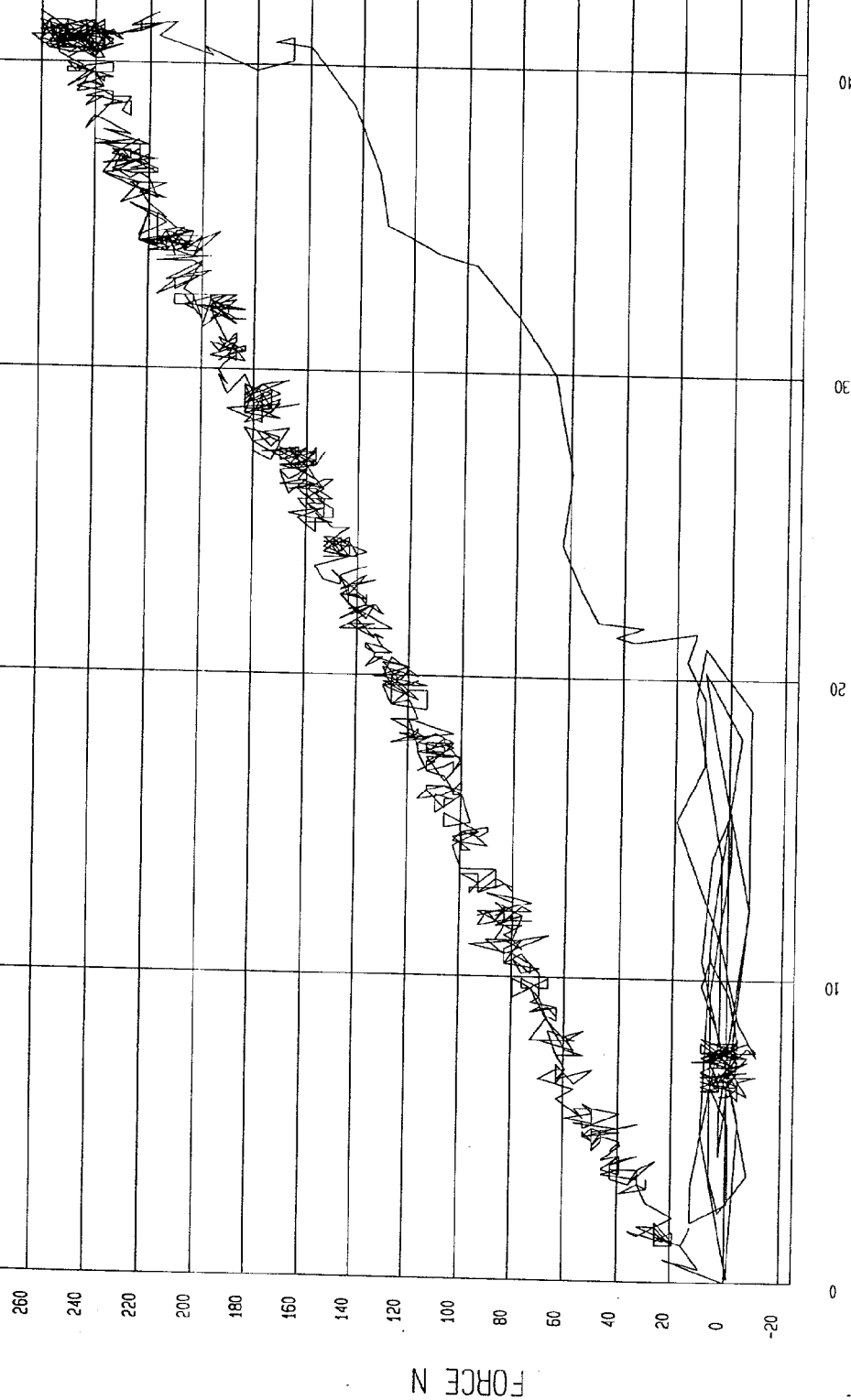
TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 10-22-1999 - 10:57:05

COMPONENT: DUMMY # 48

FORCE as a function of TORSO ROTATION



NCA Research
10-26-1999 11:18

PRE-TEST CERTIFICATION DATA

Dummy Serial Number: 049

Calibration Test Results Summary

Dummy Serial Number: 049

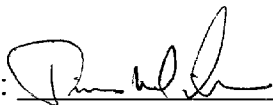
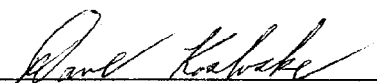
Pre-Test Calibration

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 SERIAL NO.: 049DATE OF VERIFICATION: October 25, 1999

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height (mm)	889 - 909	902
RH - Rib Height (mm)	501 - 521	516
HP - Hip Pivot Height (mm)	99 ref.	99
RD - Rib From Back Line (mm)	229 - 241	233
KV - Knee Pivot From Back Line (mm)	511 - 526	523
SW - Knee Pivot to Floor (mm)	490 - 505	493
HW - Hip Width (mm)	356 - 391	371

TECHNICIAN: APPROVED BY: 

MGA RESEARCH CORPORATION

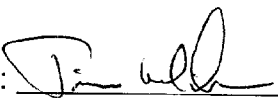
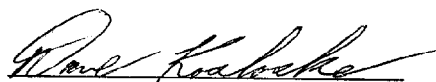
THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: October 25, 1999DUMMY SERIAL NUMBER: 049TEST NUMBER: D991172

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	27
PROBE SPEED (m/s)	4.27 - 4.33	4.27
UPPER RIB (g's)	37 - 46	38
LOWER RIB (g's)	37 - 46	39
LOWER SPINE (g's)	15 - 22	21

TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: 

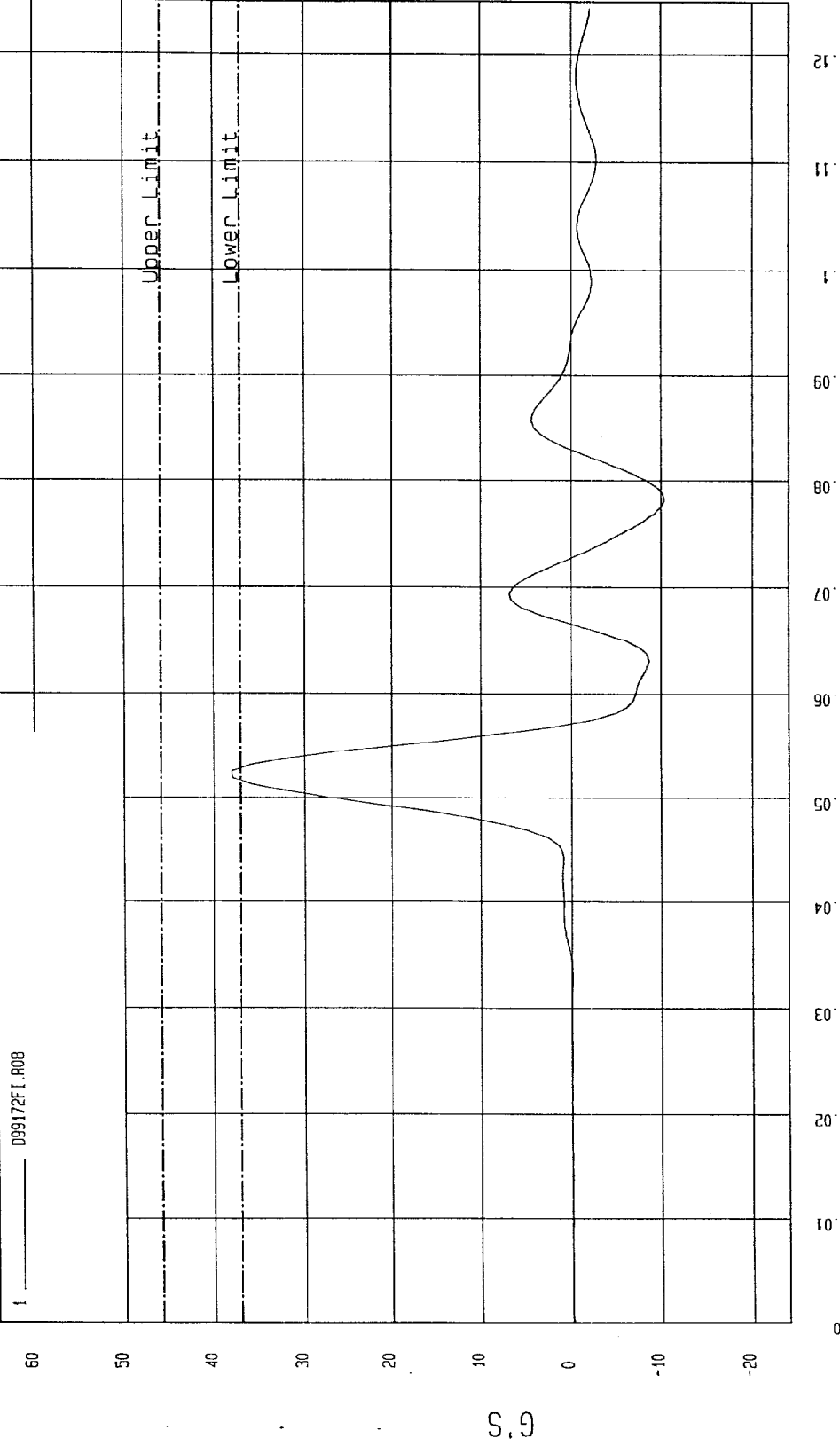
TEST: Dummy Calibration - Thorax Impact TEST DATE: 10-25-1999 - 10:38:55

COMPONENT: Dummy #049 Velocity: 14 FT/SEC 4.27 M/SEC

Minimum = -10.34 G'S at 78.1 msec

Maximum = 37.93 G'S at 52.5 msec

UPPER RIB ACCELERATION



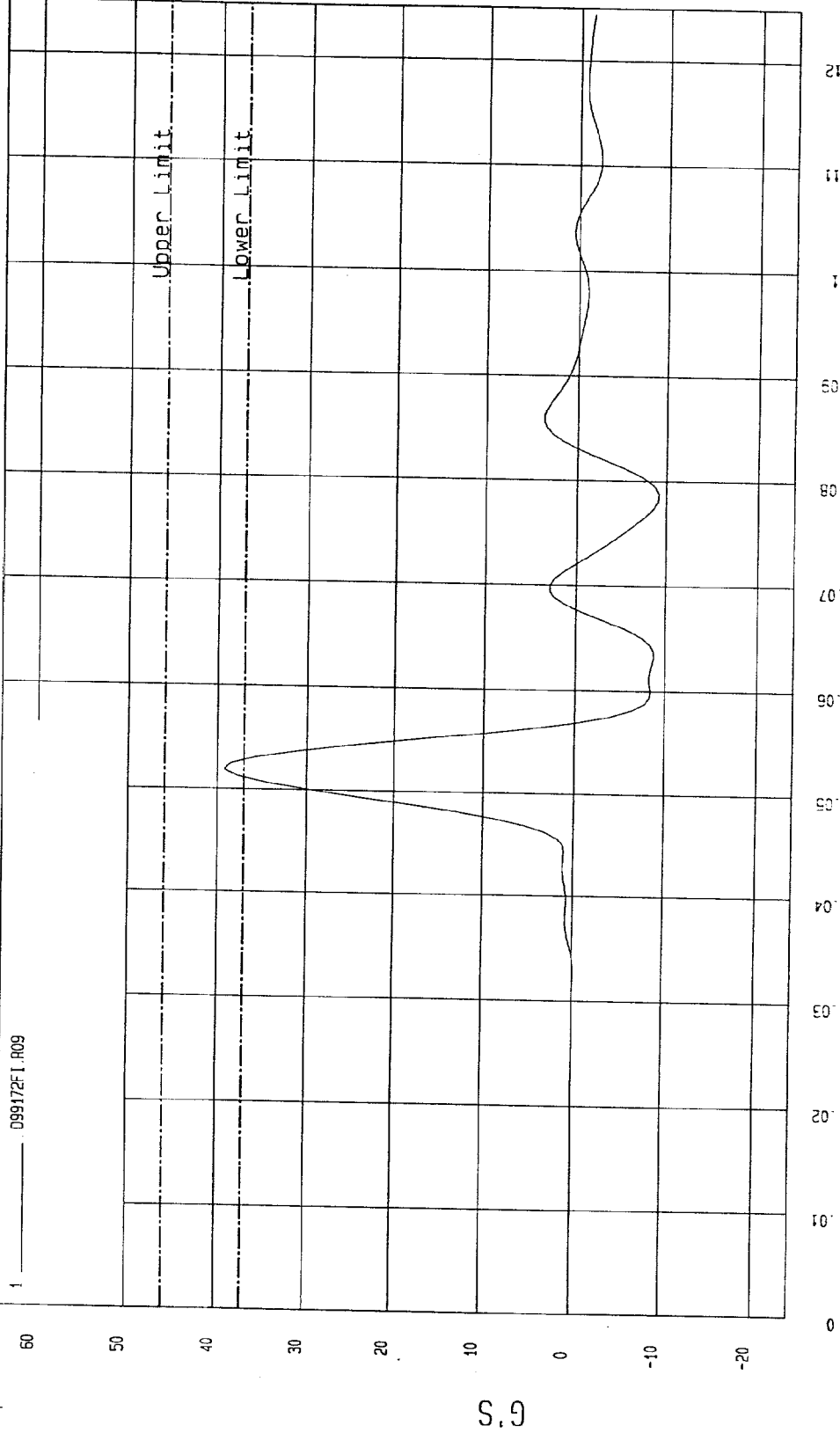
NGA Research
10-26-1999 09:55

TEST: Dummy Calibration - Thorax Impact TEST DATE: 10-25-1999 - 10:38:55

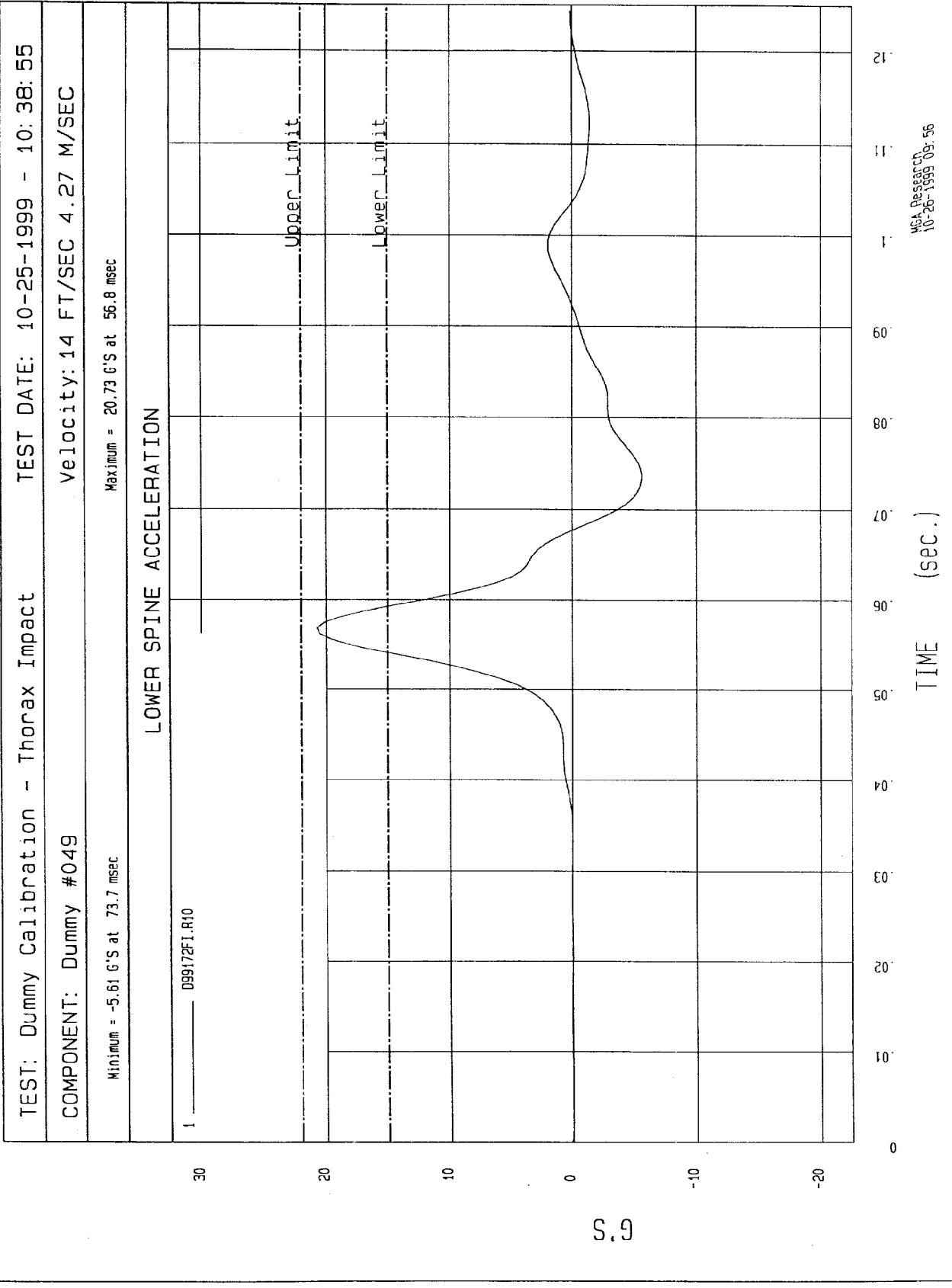
COMPONENT: Dummy #049 Velocity: 14 FT/SEC 4.27 M/SEC

Minimum = -9.17 G'S at 78.7 msec Maximum = 39.20 G'S at 51.8 msec

LOWER RIB ACCELERATION



NSA Research
10-26-1999 09:55



MGA RESEARCH CORPORATION

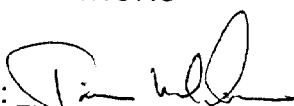
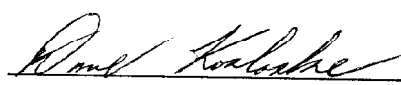
PELVIS IMPACT TEST

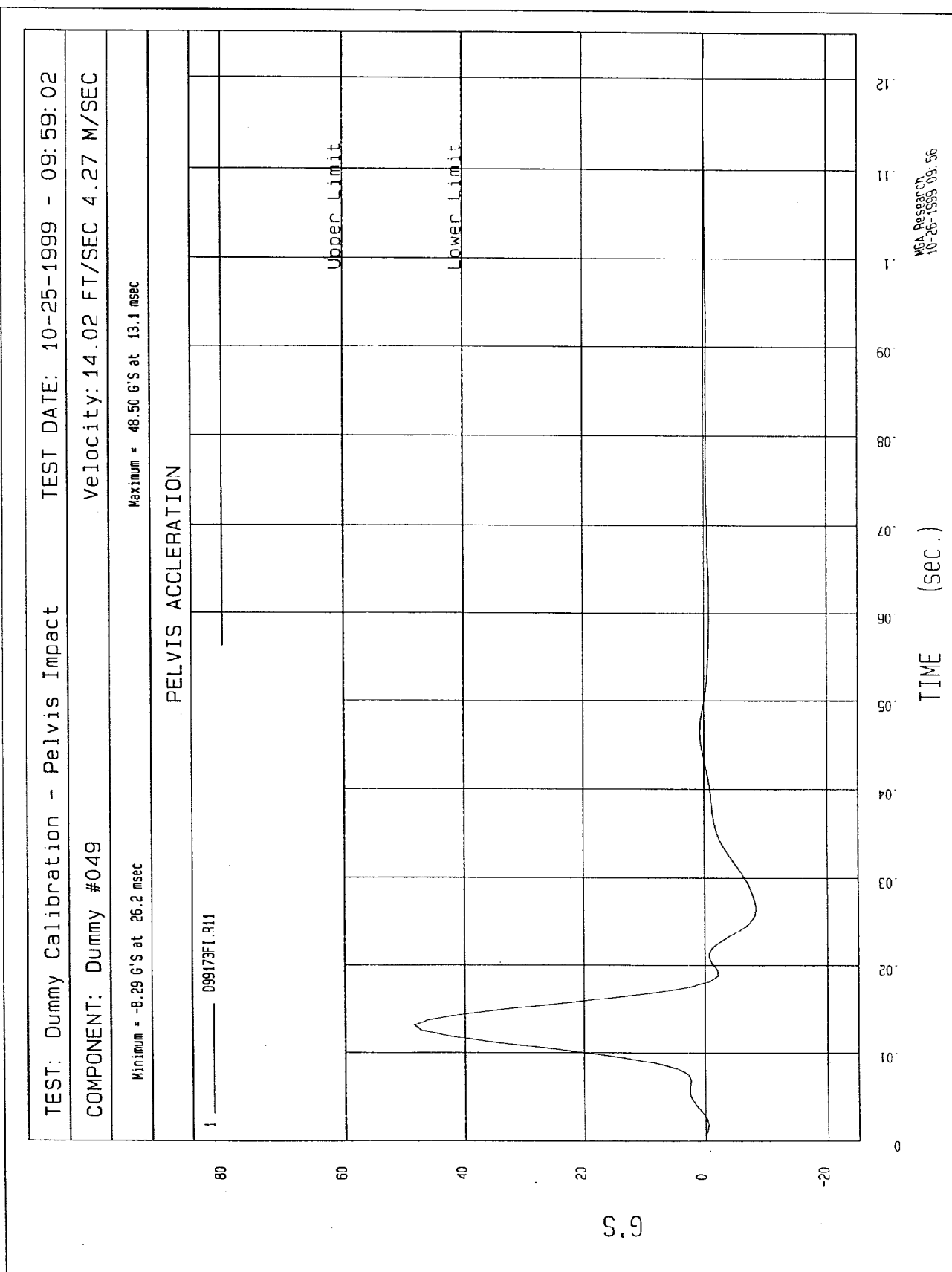
SIDE IMPACT DUMMY (SID)

DATE: October 25, 1999DUMMY SERIAL NUMBER: 049TEST NUMBER: D991173

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	27
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	49

TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: 



MGA RESEARCH CORPORATION

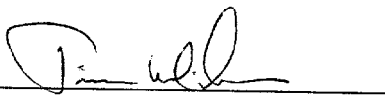
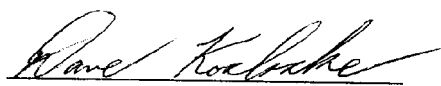
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: October 21, 1999DUMMY SERIAL NUMBER: 049TEST NUMBER: D991174

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	34
FORCE @ 12.7 mm	104 - 162	142
FORCE @ 19.0 mm	163 - 222	199
FORCE @ 25.4 mm	222 - 280	264
FORCE @ 33 mm	325 - 391	362

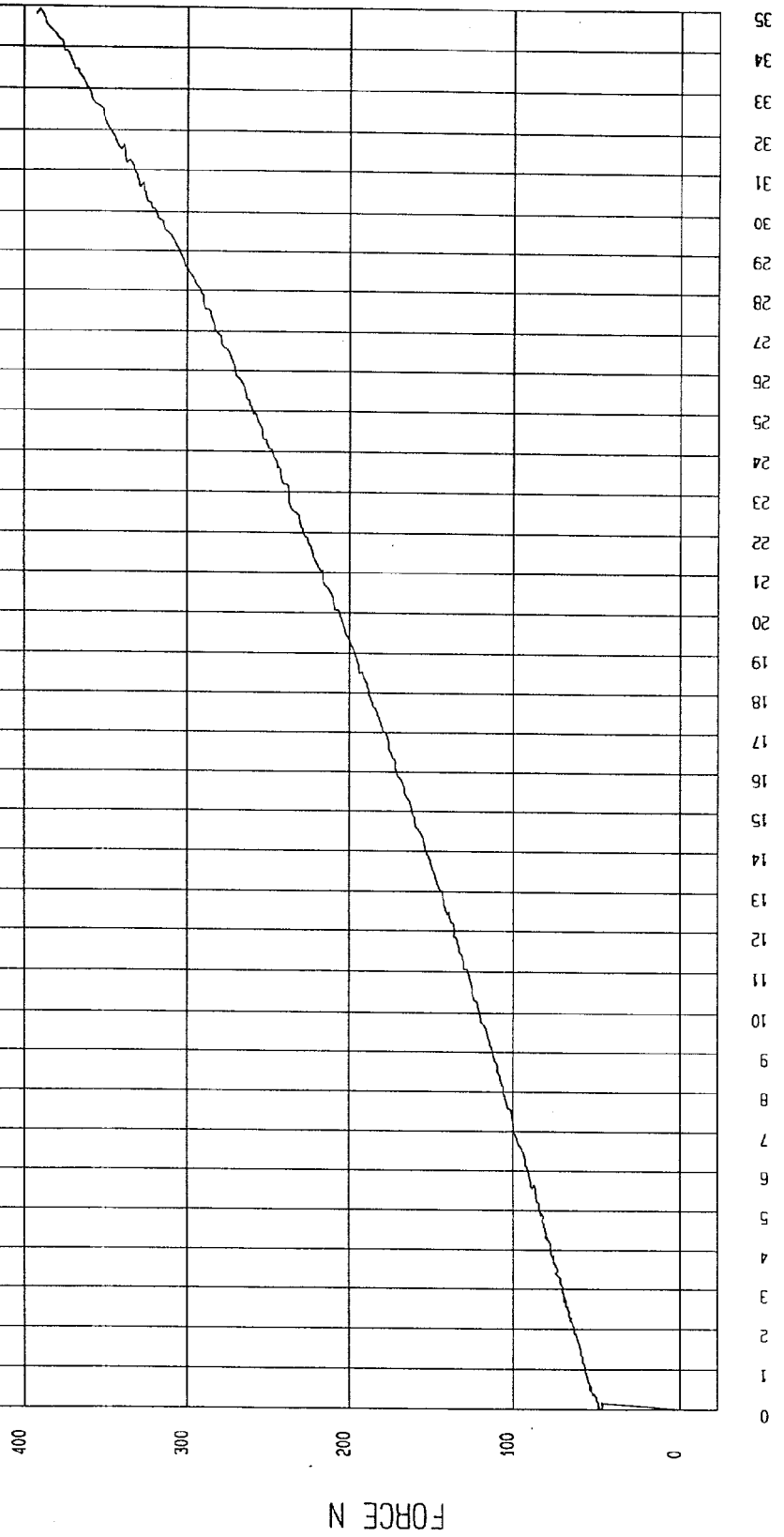
TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 10-21-1999 - 10:59:12

COMPONENT: DUMMY # 49

FORCE as a function of DISPLACEMENT



MCA Research
10-26-1999 11:17

DISPLACEMENT mm

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

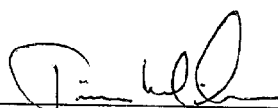
SIDE IMPACT DUMMY (SID)

DATE: October 22, 1999DUMMY SERIAL NUMBER: 049TEST NUMBER: D991175

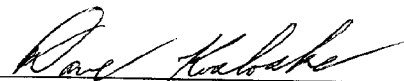
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	35
FORCE @ 0°	0 - 26.7	0
FORCE @ 20°	97.9 - 151.2	117.2
FORCE @ 30°	151.2 - 204.6	177.5
FORCE @ 40°	204.6 - 258.0	244.4
RETURN ANGLE	12° maximum	4

TEST MEETS SPECIFICATIONS

TECHNICIAN:



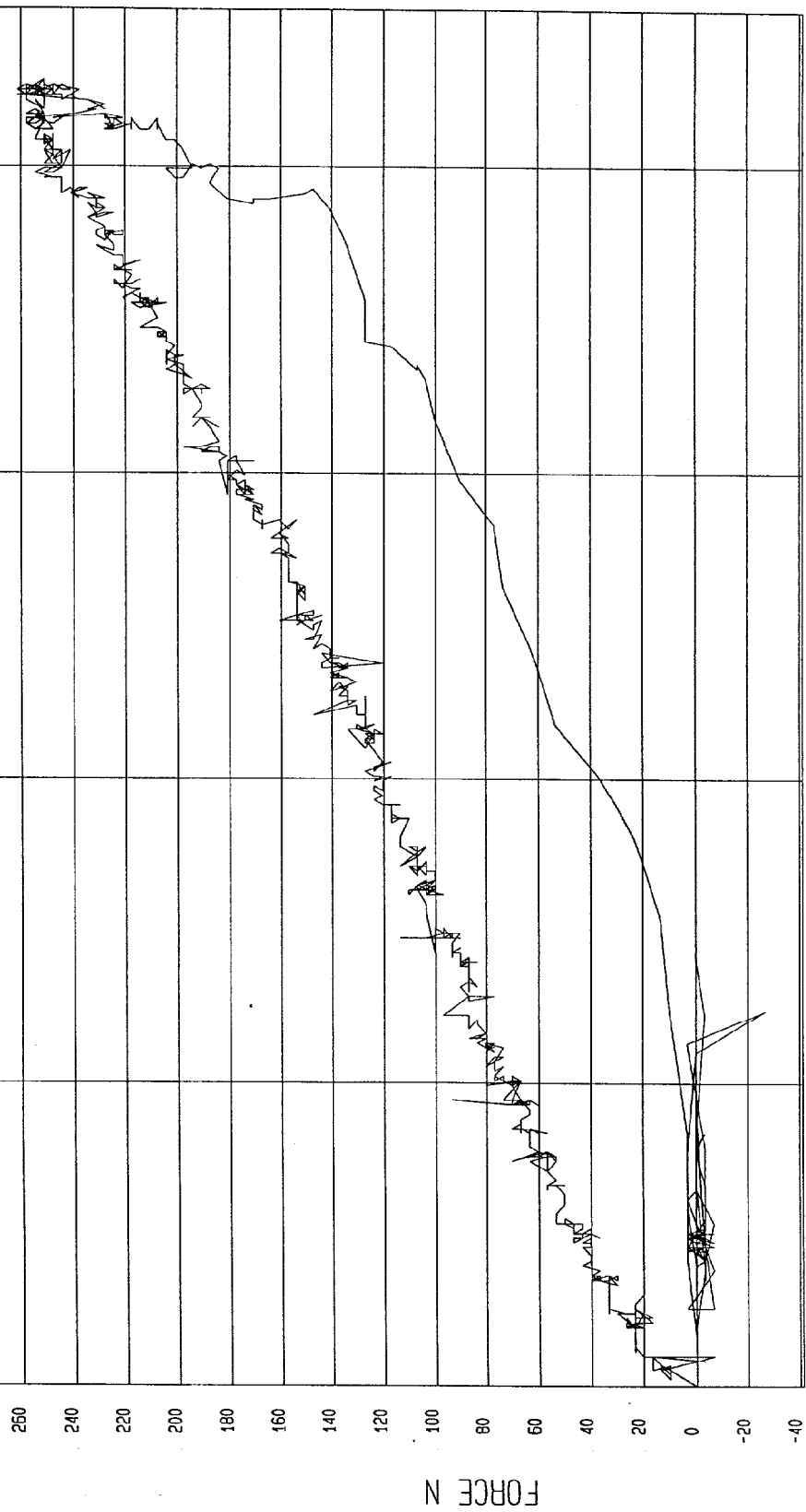
APPROVED BY:



TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 10-22-1999 - 11:00:45

COMPONENT: DUMMY # 49

FORCE as a function of TORSO ROTATION



WCA Research
10-26-1999 11:18

POST-TEST CERTIFICATION DATA

Dummy Serial Number: 048

Calibration Test Results Summary

Dummy Serial Number: 048

Post-Test Calibration

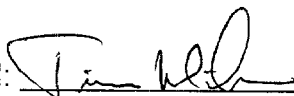
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

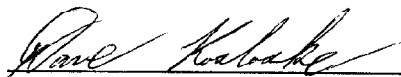
DUMMY SERIAL NO.: 048DATE OF VERIFICATION: November 1, 1999

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height (mm)	889 - 909	905
RH - Rib Height (mm)	501 - 521	518
HP - Hip Pivot Height (mm)	99 ref.	99
RD - Rib From Back Line (mm)	229 - 241	236
KV - Knee Pivot From Back Line (mm)	511 - 526	521
SW - Knee Pivot to Floor (mm)	490 - 505	493
HW - Hip Width (mm)	356 - 391	368

TECHNICIAN:



APPROVED BY:



MGA RESEARCH CORPORATION

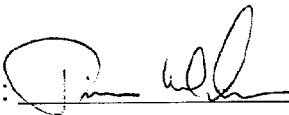
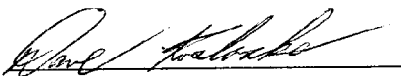
THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 1, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991222

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	38
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46	39
LOWER RIB (g's)	37 - 46	40
LOWER SPINE (g's)	15 - 22	22

TEST MEETS SPECIFICATIONS

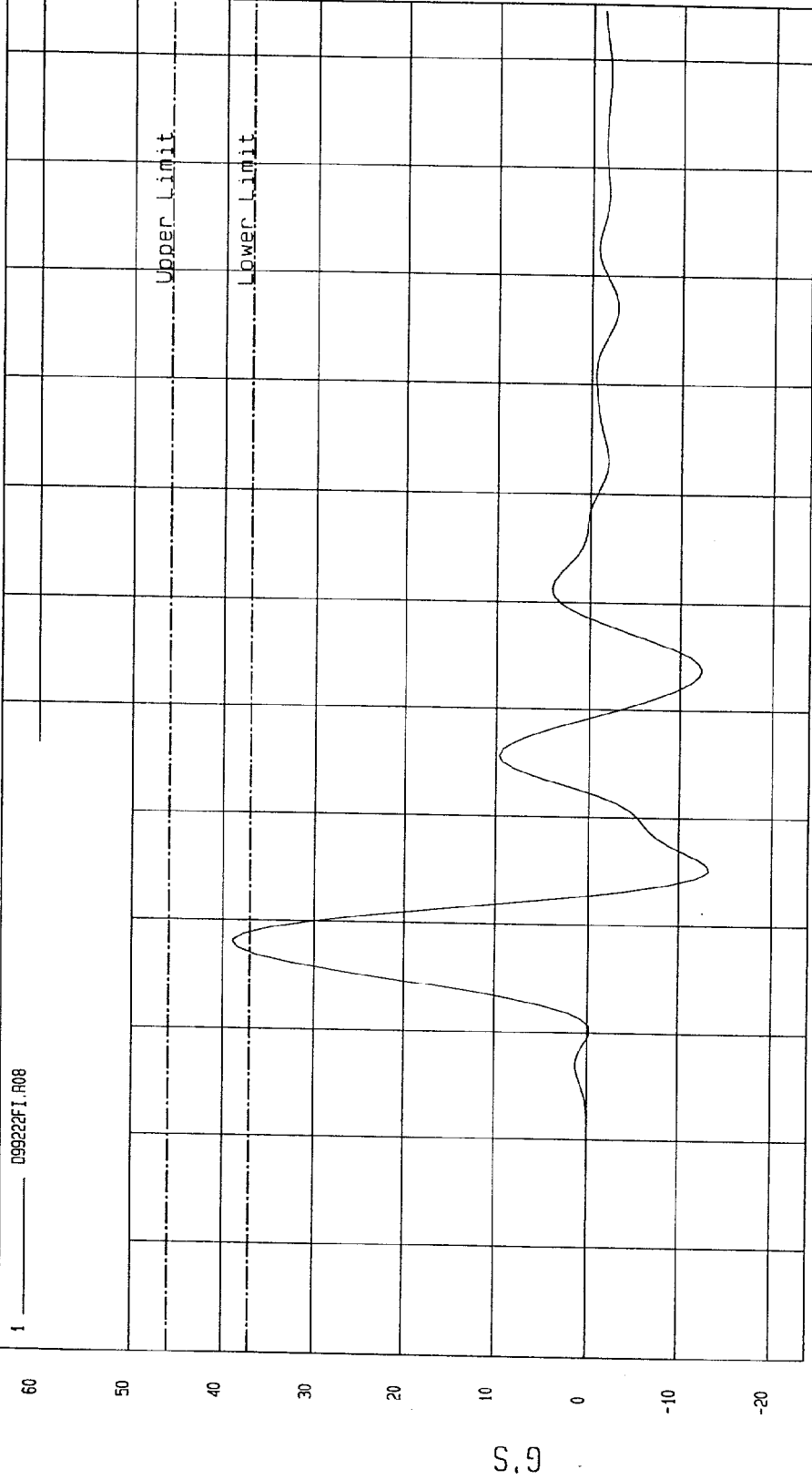
TECHNICIAN: APPROVED BY: 

TEST: Dummy Calibration - Thorax Impact TEST DATE: 11-01-1999 - 14:50:53

COMPONENT: Dummy #048 Velocity: 14.036 FT/SEC 4.28 M/SEC

Minimum = -13.11 G'S at 45 msec Maximum = 38.92 G'S at 38.1 msec

UPPER RIB ACCELERATION



TIME (sec.)

MGA Research
11-01-1999 15:03

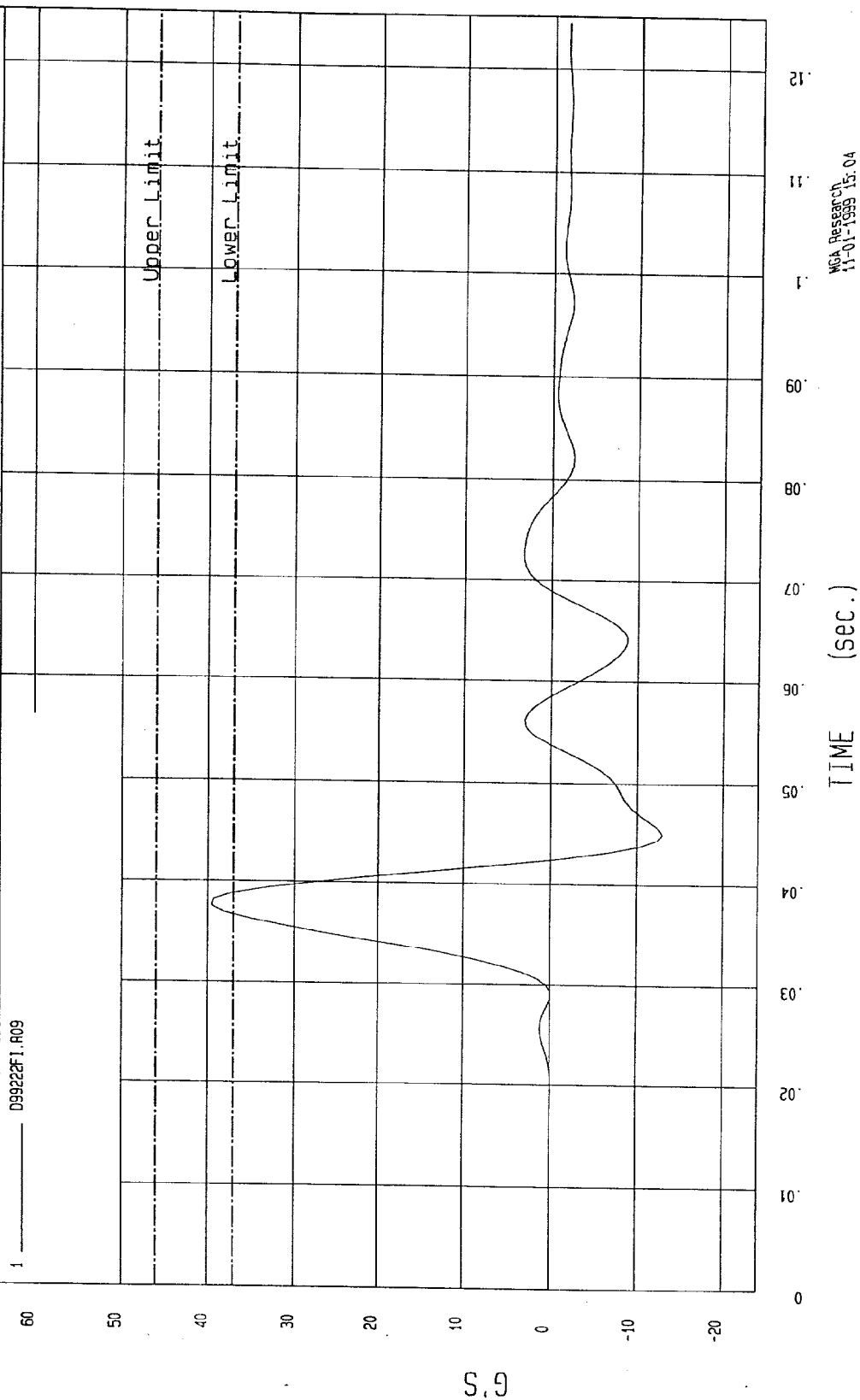
TEST: Dummy Calibration - Thorax Impact TEST DATE: 11-01-1999 - 14:50:53

COMPONENT: Dummy #048 Velocity: 14.036 FT/SEC 4.28 M/SEC

Minimum = -12.83 G'S at 45 msec

Maximum = 39.58 G'S at 37.5 msec

LOWER RIB ACCELERATION



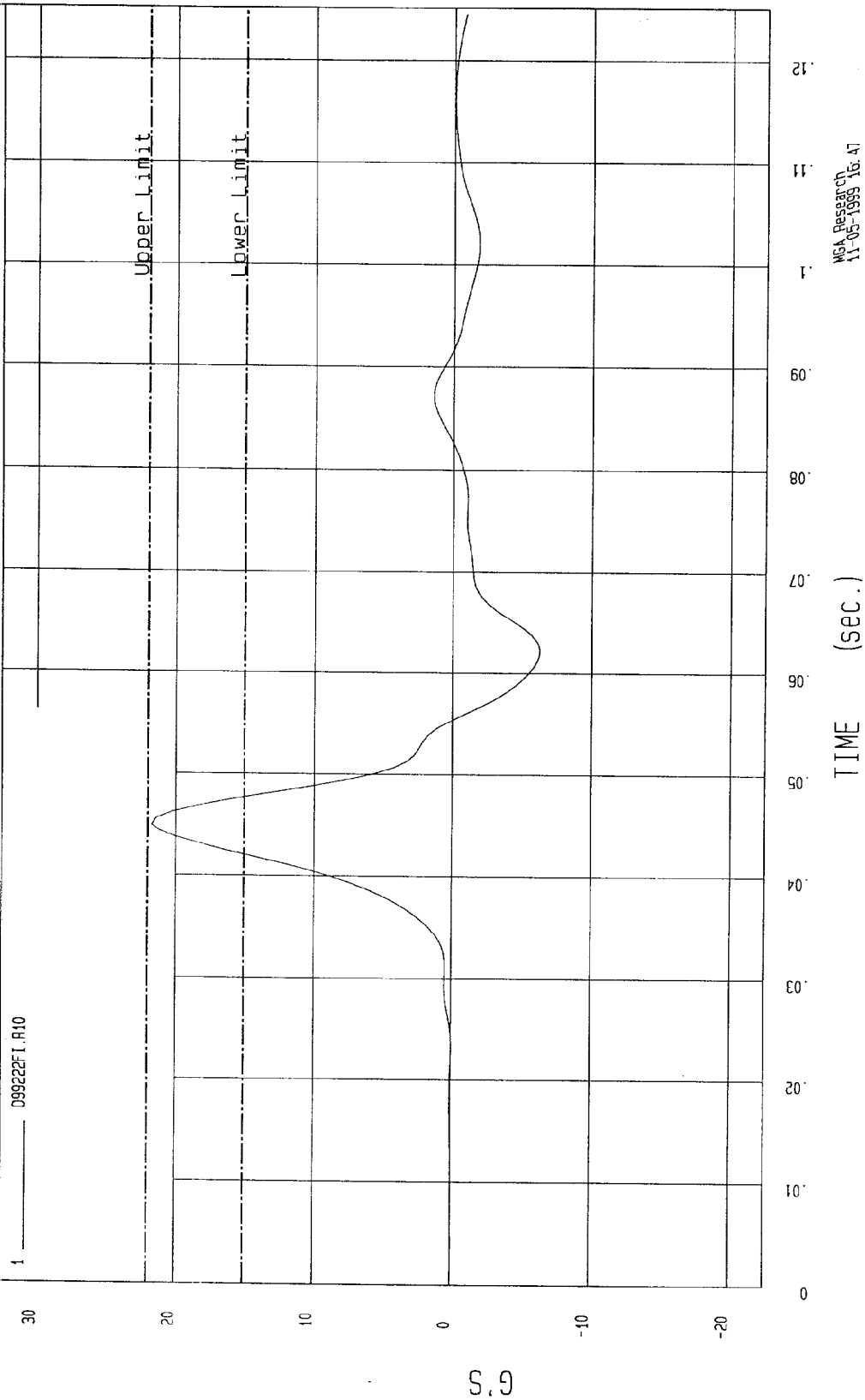
TEST: Dummy Calibration - Thorax Impact TEST DATE: 11-01-1999 - 14:50:53

COMPONENT: Dummy #048 Velocity: 14.014 FT/SEC 4.27 M/SEC

Minimum = -6.28 G'S at 61.8 msec

Maximum = 21.73 G'S at 45 msec

LOWER SPINE ACCELERATION

MCA Research
11-05-1999 16:47

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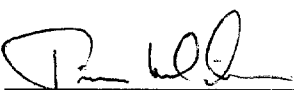
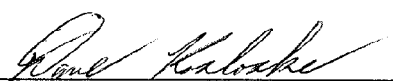
PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 1, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991223

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70%	40
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	46

TEST MEETS SPECIFICATIONS

TECHNICIAN APPROVED BY 

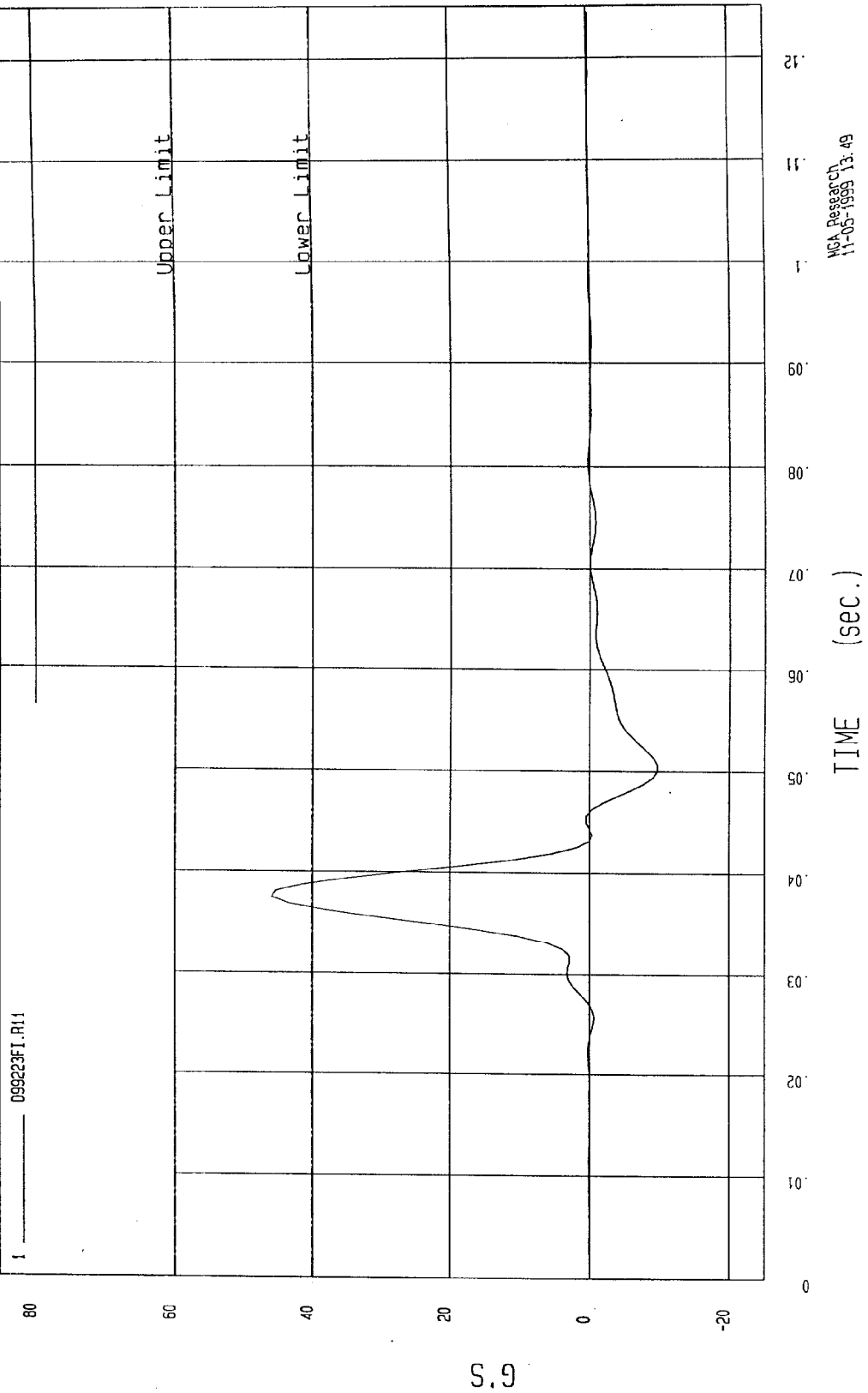
TEST: Dummy Calibration - Pelvis Impact TEST DATE: 11-01-1999 - 15:03:17

COMPONENT: Dummy #048 Velocity: 14.024 FT/SEC 4.27 M/SEC

Minimum = -9.78 G'S at 50.5 msec

Maximum = 45.94 G'S at 37.5 msec

PELVIS ACCELERATION



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

DATE: November 1, 1999

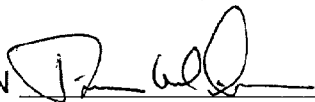
DUMMY SERIAL NUMBER: 048

TEST NUMBER: D991224

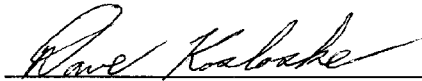
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	40
FORCE @ 12.7 mm	104 - 162	144
FORCE @ 19.0 mm	163 - 222	191
FORCE @ 25.4 mm	222 - 280	249
FORCE @ 33 mm	325 - 391	340

TEST MEETS SPECIFICATIONS

TECHNICIAN



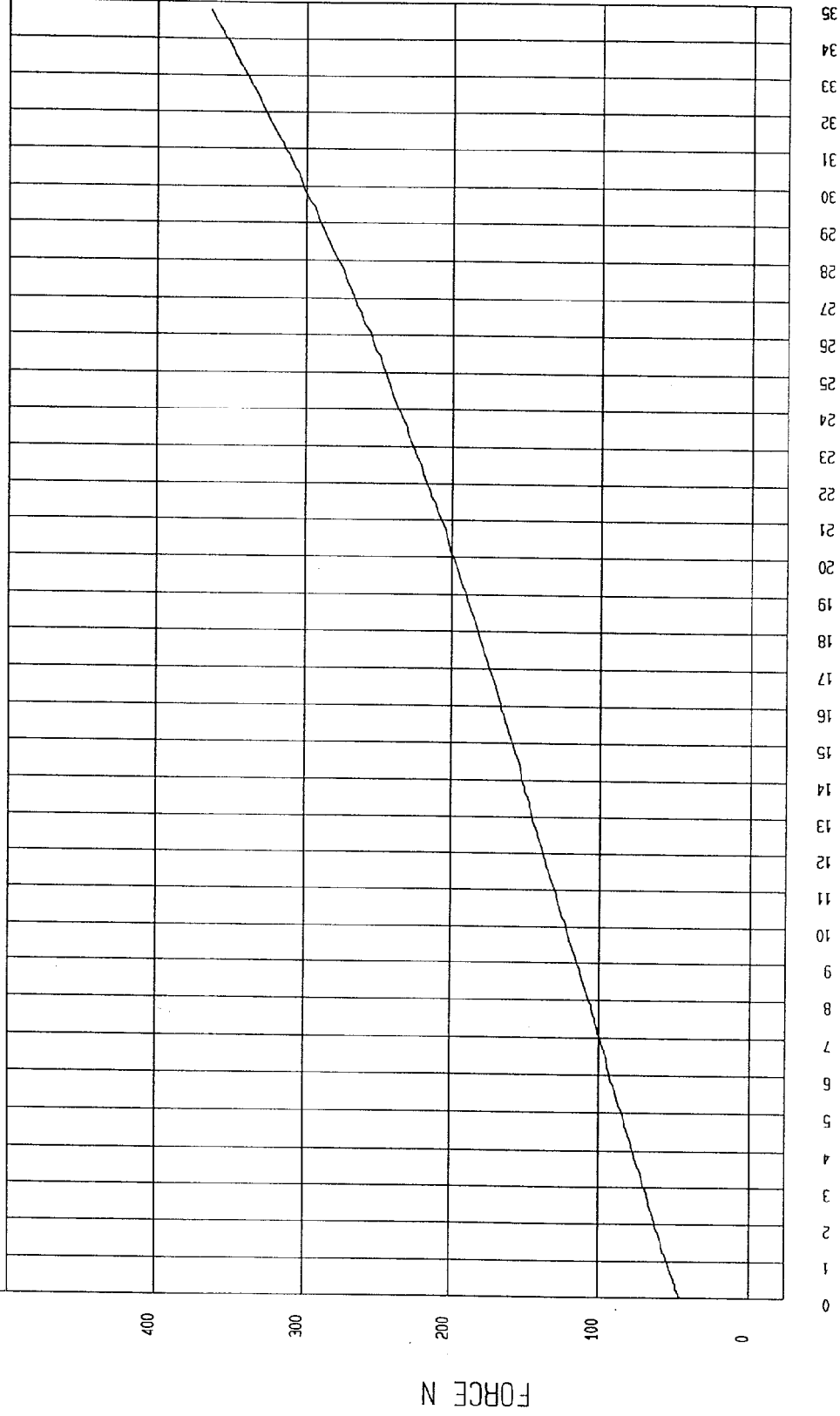
APPROVED BY



TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 11-01-1999 - 08:34:33

COMPONENT: DUMMY # 048

FORCE as a function of DISPLACEMENT



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11-01-1999 15:12

DISPLACEMENT mm

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

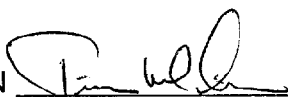
SIDE IMPACT DUMMY (SID)

DATE: November 1, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991225

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	41
FORCE @ 0°	0 - 26.7	0
FORCE @ 20°	97.9 - 151.2	101.1
FORCE @ 30°	151.2 - 204.6	157.3
FORCE @ 40°	204.6 - 258.0	213.6
RETURN ANGLE	12° maximum	3

TEST MEETS SPECIFICATIONS

TECHNICIAN



APPROVED BY



TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 11-01-1999 - 10:11:43

COMPONENT: DUMMY # 048

FORCE as a function of TORSO ROTATION

FORCE N

220
200
180
160
140
120
100
80
60
40
20
0
-20
-40

TORSO ROTATION DEGREES

40
30
20
10
0

MGA Research
11-01-1999 16:11



POST-TEST CERTIFICATION DATA

Dummy Serial Number: 049

Calibration Test Results Summary

Dummy Serial Number: 049

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 SERIAL NO.: 049DATE OF VERIFICATION: November 1, 1999

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height (mm)	889 - 909	902
RH - Rib Height (mm)	501 - 521	516
HP - Hip Pivot Height (mm)	99 ref.	99
RD - Rib From Back Line (mm)	229 - 241	233
KV - Knee Pivot From Back Line (mm)	511 - 526	523
SW - Knee Pivot to Floor (mm)	490 - 505	493
HW - Hip Width (mm)	356 - 391	371

MEASUREMENTS BY: Jim WalshAPPROVED BY: Steve Korbake

MGA RESEARCH CORPORATION

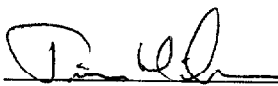
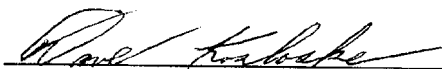
THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 1, 1999DUMMY SERIAL NUMBER: 049TEST NUMBER: D991232

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	41
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46	38
LOWER RIB (g's)	37 - 46	37
LOWER SPINE (g's)	15 - 22	21

TEST MEETS SPECIFICATIONS

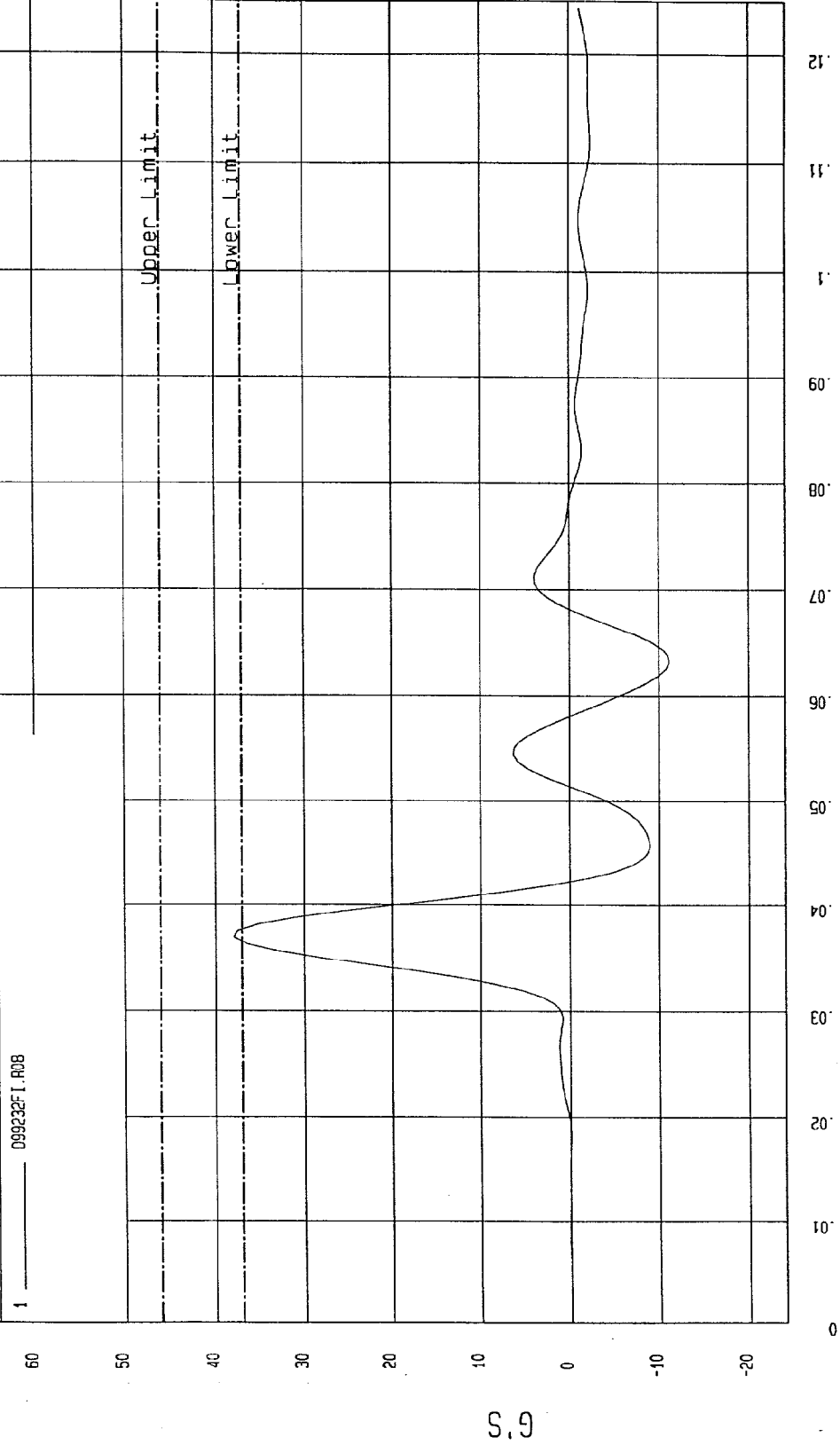
TECHNICIAN APPROVED BY 

TEST: Dummy Calibration - Thorax Impact TEST DATE: 11-01-1999 - 16:44:37

COMPONENT: Dummy #049 Velocity: 14.033 FT/SEC 4.28 M/SEC

Minimum = -11.13 G'S at 63.1 msec Maximum = 37.93 G'S at 36.8 msec

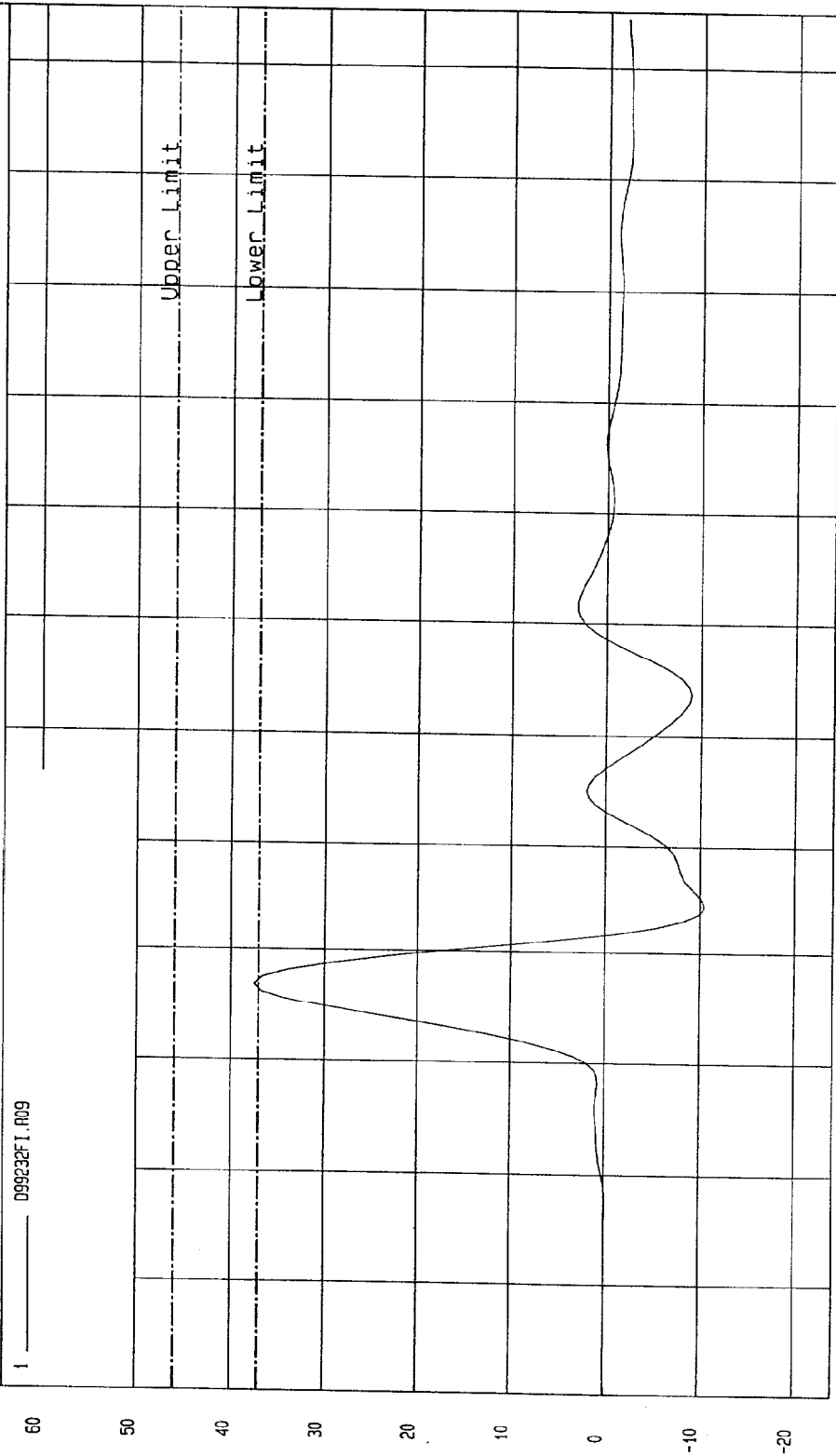
UPPER RIB ACCELERATION



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11-01-1999 16:53

TEST: Dummy Calibration - Thorax Impact TEST DATE: 11-01-1999 - 16:44:37
 COMPONENT: Dummy #049 Velocity: 14.033 FT/SEC 4.28 M/SEC
 Minimum = -10.45 G'S at 44.3 msec Maximum = 37.49 G'S at 36.8 msec

LOWER RIB ACCELERATION



TIME (sec.)

MCA Research
 11-01-1999 16:53

G.S.

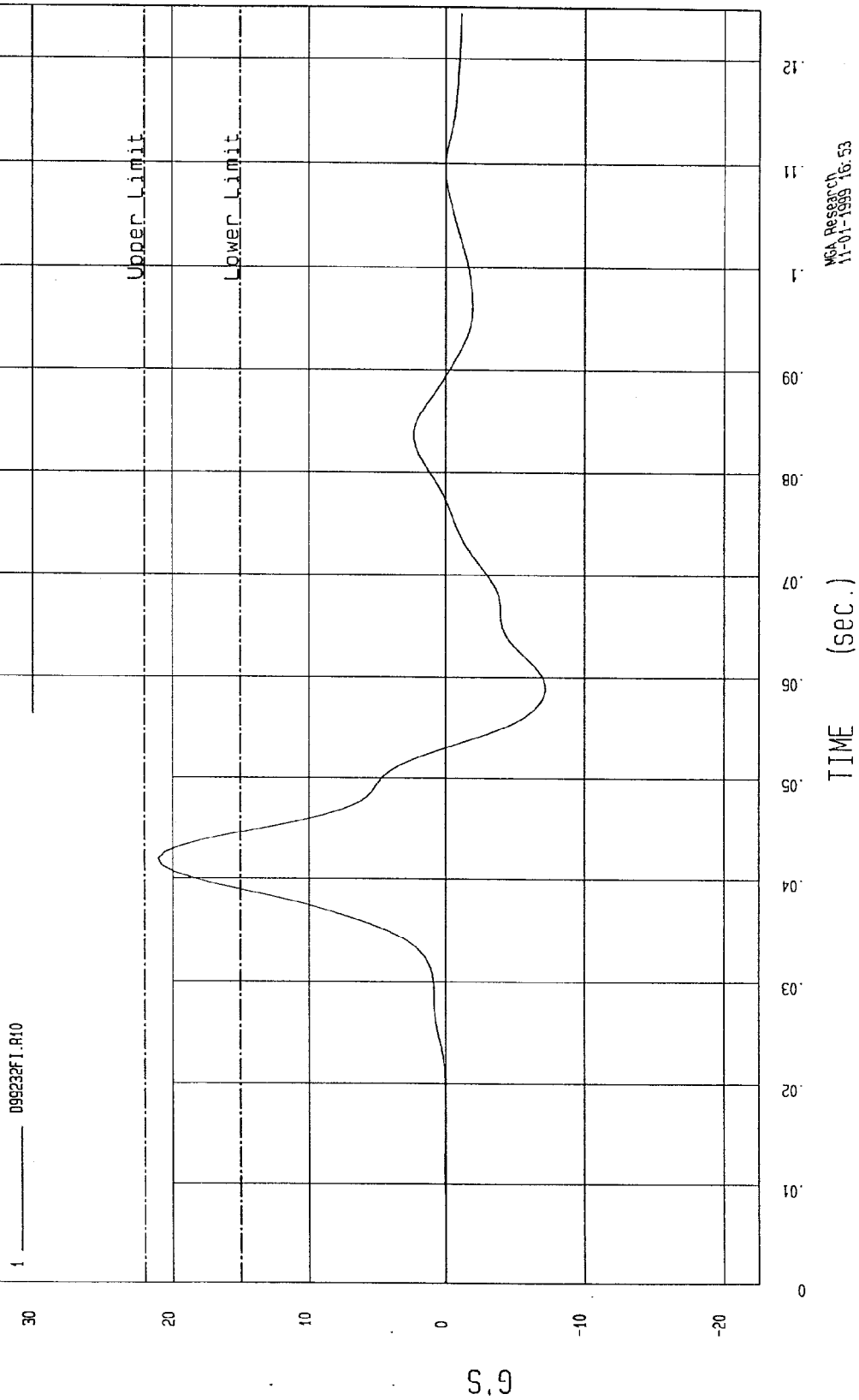
TEST: Dummy Calibration - Thorax Impact TEST DATE: 11-01-1999 - 16:44:37

COMPONENT: Dummy #049 Velocity: 14.033 FT/SEC 4.28 M/SEC

Minimum = -7.19 G'S at 58.7 msec

Maximum = 21.04 G'S at 41.8 msec

LOWER SPINE ACCELERATION



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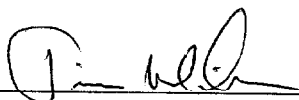
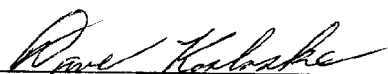
PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 1, 1999DUMMY SERIAL NUMBER: 049TEST NUMBER: D991233

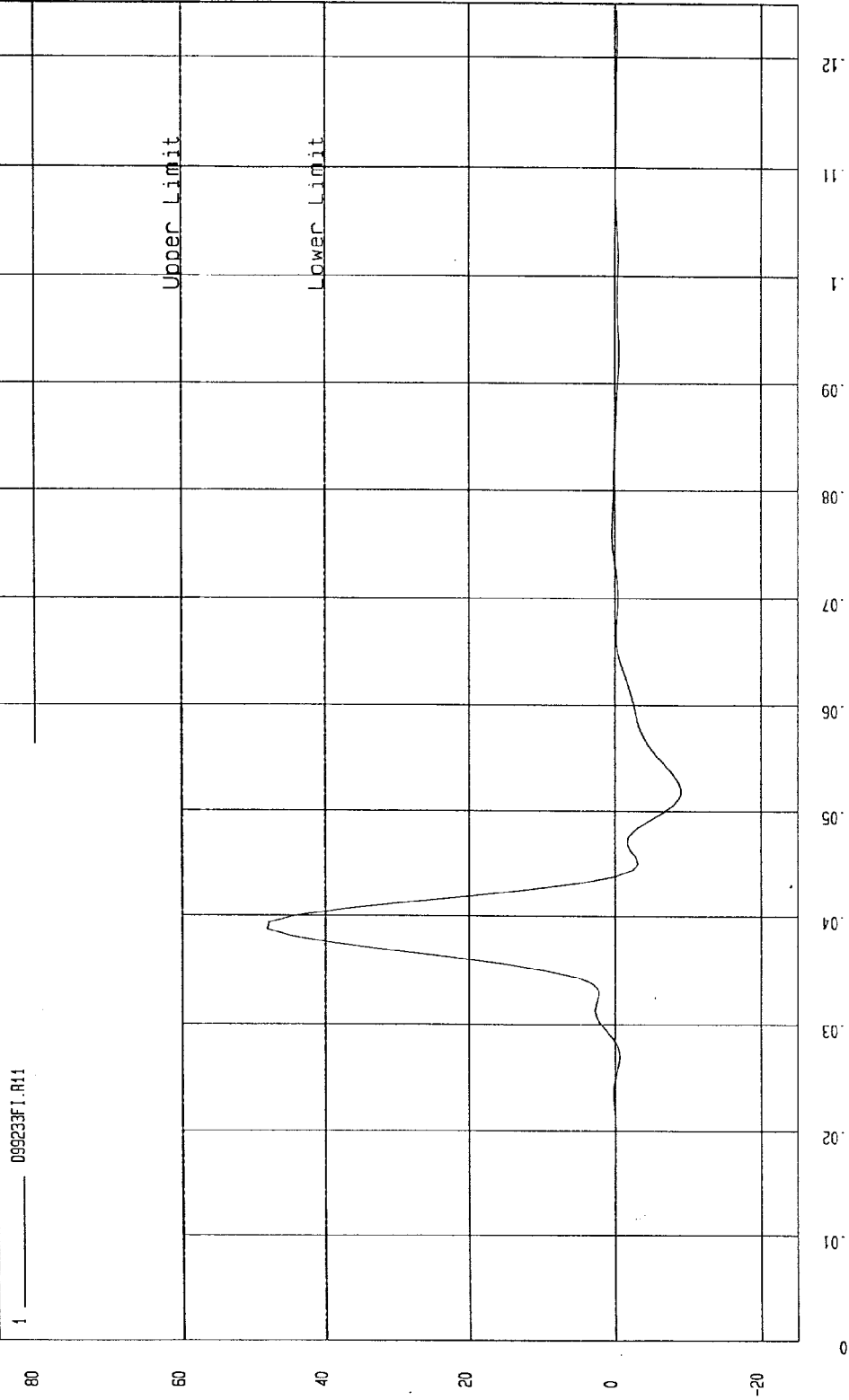
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	41
PROBE SPEED (m/s)	4.27 - 4.33	4.29
PELVIS ACCELERATION (g's)	40 - 60	48

TEST MEETS SPECIFICATIONS

TECHNICIAN APPROVED BY 

TEST: Dummy Calibration - Pelvis Impact TEST DATE: 11-01-1999 - 16:52:29
COMPONENT: Dummy #049 Velocity: 14.061 FT/SEC 4.29 M/SEC
Minimum = -9.11 G'S at 51.8 msec Maximum = 48.08 G'S at 38.7 msec

PELVIS ACCELERATION



MCA Research
11-01-1999 16:53

MGA RESEARCH CORPORATION

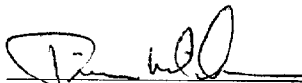
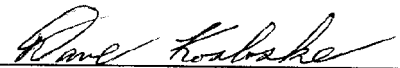
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: November 1, 1999DUMMY SERIAL NUMBER: 049TEST NUMBER: D991234

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	40
FORCE @ 12.7 mm	104 - 162	142
FORCE @ 19.0 mm	163 - 222	193
FORCE @ 25.4 mm	222 - 280	254
FORCE @ 33 mm	325 - 391	348

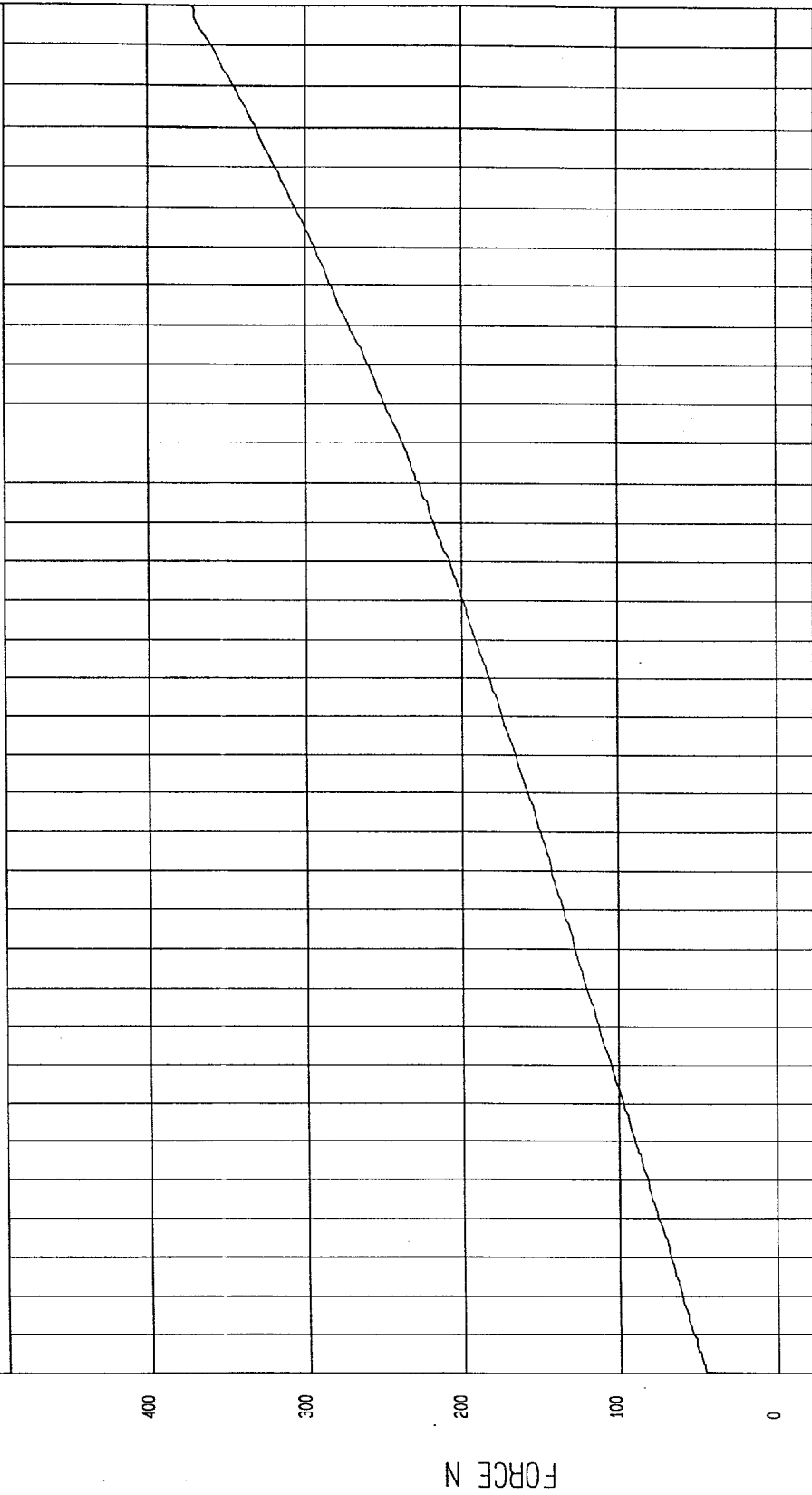
TEST MEETS SPECIFICATIONS

TECHNICIAN APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 11-01-1999 - 08:42:57

COMPONENT: DUMMY # 049

FORCE as a function of DISPLACEMENT



WGA Research
11-01-1999 16.12

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Dummy Serial Number: 048

Inspected By: Tim Michnay

Date: November 1, 1999

<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):

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Dummy Serial Number: 049

Inspected By: Tim Michnay

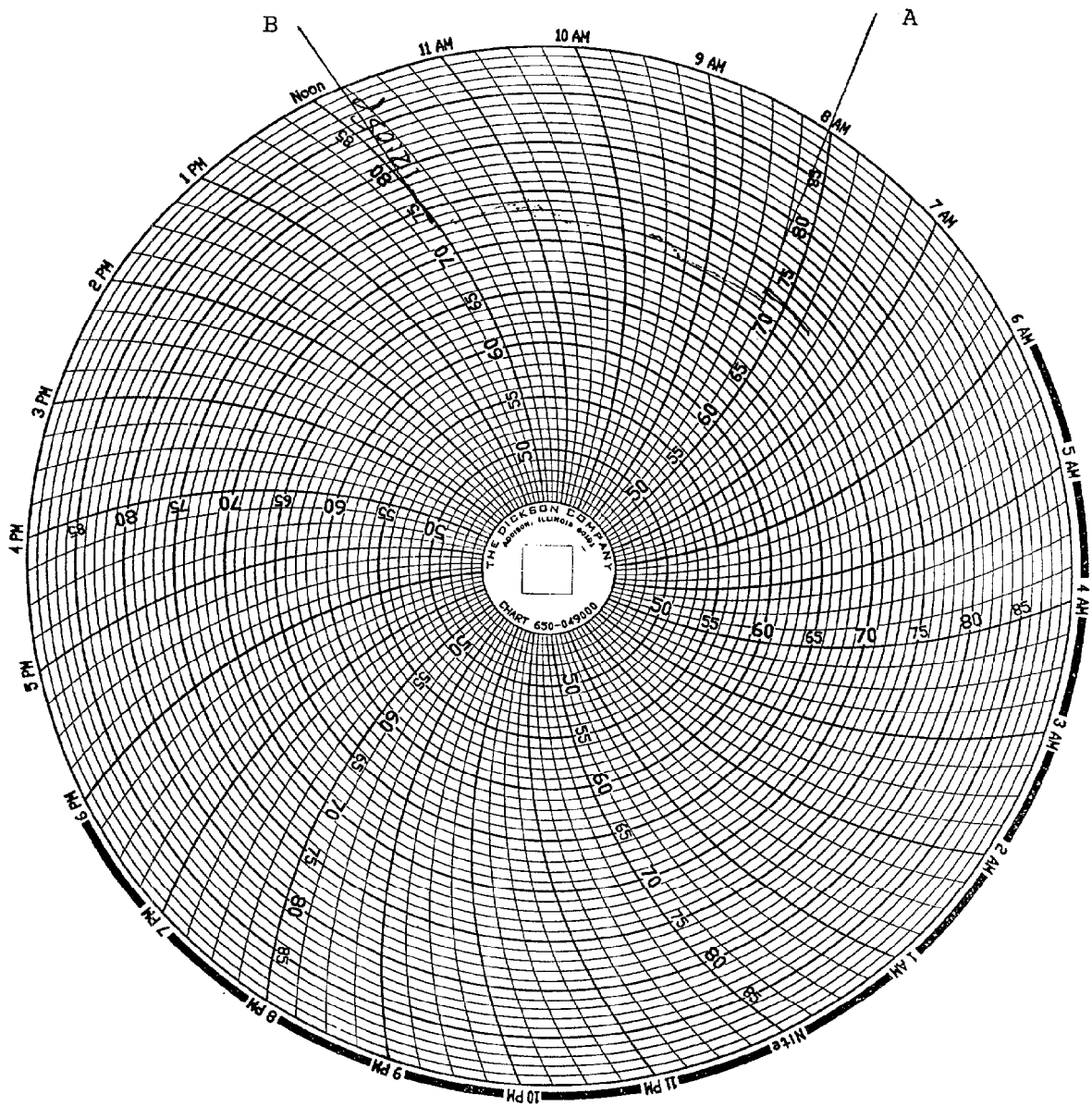
Date: November 1, 1999

<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

C-56



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. 048

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AMP12	Endevco	August 3, 1999
Lower Rib Y	J14120	Endevco	August 2, 1999
Lower Spine Y	J10431	Endevco	August 2, 1999
Pelvis Y	AJ417	Endevco	July 30, 1999
Upper Rib Redundant Y	AP1C6	Endevco	August 3, 1999
Lower Rib Redundant Y	APY16	Endevco	August 2, 1999
Lower Spine Redundant Y	AN9E3	Endevco	August 2, 1999
Pelvis Redundant Y	AGP20	Endevco	July 30, 1999

INSTRUMENTS FOR LEFT REAR PASSENGER DUMMY NO. 049

LEFT REAR PASSENGER			
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AN8L6	Endevco	August 2, 1999
Lower Rib Y	ALEC1	Endevco	August 2, 1999
Lower Spine Y	AJ9A7	Endevco	July 30, 1999
Pelvis Y	AGM32	Endevco	August 2, 1999
Upper Rib Redundant Y	APY13	Endevco	August 2, 1999
Lower Rib Redundant Y	J10411	Endevco	August 2, 1999
Lower Spine Redundant Y	AKAD6	Endevco	July 30, 1999
Pelvis Redundant Y	AKAH3	Endevco	August 2, 1999

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE AND MDB ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	J10-E05	Entran	August 17, 1999
Moving Barrier CG Y	J04-F10	Entran	August 16, 1999
Moving Barrier CG Z	I18-E18	Entran	August 17, 1999
Moving Barrier Rear Axle X	C25-A07	Entran	August 6, 1999
Moving Barrier Rear Axle Y	I25-J12	Entran	August 6, 1999
Left Mid A-Post Y	G13-B15	Entran	September 24, 1999
Left Lower A-Post Y	E23-R06	Entran	August 17, 1999
Left Mid B-Post Y	C25-A06	Entran	August 17, 1999
Left Lower B-Post Y	F07-A13	Entran	May 6, 1999
Rear Floorpan Above Axle X	I26-D15	Entran	August 17, 1999
Rear Floorpan Above Axle Y	C25-A09	Entran	August 17, 1999
Rear Floorpan Above Axle Z	E24-G07	Entran	August 17, 1999
Driver Seat Track Y	I18-G01	Entran	August 16, 1999
Right Side Sill at Front Seat X	K19-A11	Entran	May 12, 1999
Right Side Sill at Front Seat Y	K19-A15	Entran	May 12, 1999
Right Side Sill at Front Seat Z	K11-J17	Entran	May 12, 1999
Right Side Sill at Rear Seat X	G01-J05	Entran	May 5, 1999
Right Side Sill at Rear Seat Y	J13-F18	Entran	August 16, 1999
Right Side Sill at Rear Seat Z	F18-G03	Entran	August 16, 1999
Left Side Sill at Front Seat Y	J23-E07	Entran	August 16, 1999

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE AND MDB ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Side Sill at Rear Seat Y	I25-J14	Entran	August 16, 1999
Rear Occupant Compartment Y	F11-G08	Entran	August 6, 1999
Vehicle CG X	E10-F17	Entran	August 16, 1999
Vehicle CG Y	K11-J10	Entran	August 16, 1999
Vehicle CG Z	I26-D09	Entran	August 16, 1999

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



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