

**SAFETY COMPLIANCE TESTING FOR FMVSS 201U
Occupant Protection In Interior Impact
Upper Interior Head Impact Protection**

**SUZUKI MOTOR CORPORATION (JAPAN)
2003 Suzuki Grand Vitara XL
NHTSA No. C30509**

**MGA RESEARCH CORPORATION
446 Executive Drive
Troy, Michigan 48083**



**Test Dates: April 2-3, 2003
Report Date: April 4, 2003**

FINAL REPORT

PREPARED FOR:

**U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ASSURANCE
OFFICE OF VEHICLE SAFETY COMPLIANCE
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16. Abstract A compliance test was conducted on the subject 2003 Suzuki Grand Vitara XL, NHTSA No. C30509, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-201U-01 for the determination of FMVSS 201U compliance. The test was conducted at the MGA Research Corporation in Troy, Michigan on April 2-3, 2003. Test failures identified were as follows: NONE The data recorded seems to indicate that the 2003 Suzuki Grand Vitara XL tested appears to comply with the requirements for FMVSS 201U which were set forth by the National Highway Traffic Safety Administration.			
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1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this head impact compliance test was to determine whether the subject vehicle, a 2003 Suzuki Grand Vitara XL, meets the performance requirements of FMVSS 201U, Occupant Protection in Interior Impact - Upper Interior Head Impact Protection.

Tests were conducted during April 2-3, 2003 on a 2003 Suzuki Grand Vitara XL, manufactured by Suzuki Motor Corporation (Japan).

All tests were conducted in accordance with the U. S. Department of Transportation, National Highway Traffic Safety Administration's Laboratory Test Procedure TP-201U-01 dated April 3, 1998 and the corresponding MGA Research Corporation's FMVSS 201U procedure number MGATP201U_FRAME#2 dated March 20, 2003.

All tests were conducted at MGA Research Corporation in Troy, Michigan and were performed by MGA engineers and technicians. The FMVSS 201U impactor test machine was used to conduct the testing. Target locations were determined by using a Coordinate Measurement Machine in conjunction with the MGA EZ-Target[®] program and MGA procedure MGATP201U_Test Series dated September 20, 2002.

2.0 COMPLIANCE TEST DATA SUMMARY

The 2003 Suzuki Grand Vitara XL was equipped with A, B, C, and D-Pillars, a grab handle above each door, an adjustable seat belt anchorage on each B and C-Pillar, and three overhead lighting consoles. Upon completion of targeting the test vehicle, ten (10) targets were chosen to be impacted based upon engineering judgement and certification test data provided by American Suzuki Motor Corporation. Targets were chosen which appeared most likely to give high HIC(d) values. The ten (10) targets chosen were:

AP1	BP1	SR3A	UR6
AP2	BP4	UR1	
AP3	OP2	UR5	

The 2003 Suzuki Grand Vitara XL tested appears to comply with the performance criteria for FMVSS 201U. The HIC(d) measured using the Part 572L (Free Motion Headform) was below 1000 for each tested component.

TABLE 2-1
SUMMARY TABLE OF TEST RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Suzuki Grand Vitara XL

VEH. NHTSA NO.: C30509 VIN: JS3TX92V034103214 COLOR: Pearl White

VEH. BUILD DATE: September, 2002 TEST DATES: April 2-3, 2003

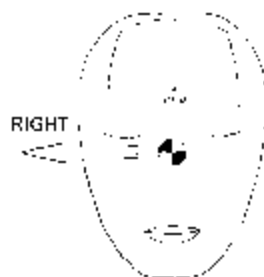
TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Scott Kreiger, Nicholas Brzuch, Louis Campbell

TARGET	VEHICLE SIDE	HORIZONTAL ANGLE (deg)	VERTICAL ANGLE (deg)	VELOCITY (kph)	HIC(d)	FMH HIC	IMPACT ON FMH (mm)	
							Above	Left/Right
AP1	Right	135	35	23.8	692	696	13	35 Right
AP2	Left	198	40	23.8	744	765	10	5 Left
AP3	Right	162	34	23.8	631	616	9	2 Right
BP1	Left	270	2	23.7	467	399	N/A	N/A
BP4	Right	134	-9	23.6	423	340	13	23 Right
OP2	Right	90	-4	23.8	323	207	27	19 Left
SR3A	Right	90	35	24.0	416	331	10	15 Right
UR1	Left	270	33	24.1	489	428	45	3 Left
UR5	Right	90	35	23.7	621	603	44	7 Left
UR6	Right	90	40	23.9	537	491	40	10 Left

*N/A indicates that the chalk did not transfer to the FMH during the impact.

Above and left/right refers to the position relative to reference pt. 0 where the target made contact with the Free Motion Headform. See the diagram below for details.



POST TEST COMMENTS:

The following description lists any post-test damage or other test observations for each target.

BP1 Left: B-Pillar trim was cracked.

BP4 Right: B-Pillar trim was cracked.

SR3A Right: Grab handle was compressed.

UR1 Left: Grab handle was compressed.

No damage was observed for any other targets.

REMARKS:

The targets listed were impacted in the following order:

Right: AP3, AP1, BP4, SR3A, UR6, OP2, UR5

Left: AP2, UR1, BP1

The 150 mm rule was observed for targets horizontal to each other and the 200 mm rule was observed for vertical components.

RECORDED BY: David G. Gotwals

DATE: April 2, 2003

APPROVED BY: Helen A. Kalet

TABLE 2-2
GENERAL TEST AND VEHICLE PARAMETER DATA

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Suzuki Grand Vitara XL

VEH. NHTSA NO.: C30509 VIN: JS3TX92V034103214 COLOR: Pearl White

VEH. BUILD DATE: September, 2002 TEST DATES: April 2-3, 3003

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Scott Kreiger, Nicholas Brzuch, Louis Campbell

INTERIOR TRIM INFORMATION: A, B, C, and D-Pillars, a grab handle above each door, an adjustable seat belt anchorage on each B and C-Pillar, and three overhead lighting consoles.

SUNROOF INFORMATION:

Installed: Yes X No
Operation: Electric Manual

ROLL-BAR INFORMATION:

Installed: Yes X No
Padded: Yes X No
Braces: Yes X No

GENERAL INFORMATION:

Date Received: 3/19/03; Odometer Reading: 52.6 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Suzuki Motor Corporation (Japan)

Date of Manufacture: September, 2002 VIN: JS3TX92V034103214

GVWR: 2230 kg; GAWR FRONT: 1000 kg
GAWR REAR: 1300 kg

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 180 kpa REAR: 250 kpaRecommended Tire Size: P235/60R16

Recommended Cold Tire Pressure:

FRONT: 180 kpa REAR: 250 kpaSize of Tire on Test Vehicle: P235/60R16Type of Spare Tire: P235/60R16 Space Saver: ____; Standard: X

VEHICLE CAPACITY DATA:

Type of Front Seats: Bench ____; Bucket X; Split Bench ____Number of Occupants: Front 2; Rear 3; TOTAL 5VEHICLE CAPACITY WEIGHT (VCW) = 530 kgNo. of Occupants x 68 kg = 340 kgRated Cargo/Luggage Weight (RCLW) = 190 kg (difference)

WEIGHT OF TEST VEHICLE AS DELIVERED AT LABORATORY: (with maximum fluids)

Right Front = 433.0 kg Right Rear = 399.0 kgLeft Front = 415.5 kg Left Rear = 398.0 kgTOTAL FRONT = 848.5 kg TOTAL REAR = 797.0 kg% Total Weight = 51.6 % % Total Weight = 48.4 %TOTAL DELIVERED WEIGHT = 1645.5 kg

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 1645.5 kgMaximum Rated Cargo/Luggage Wt. = 136.0 kgTARGET TEST WEIGHT 1781.5 kg

WEIGHT OF TEST VEHICLE:

Right Front =	<u>430.0</u> kg	Right Rear =	<u>475.0</u> kg
Left Front =	<u>403.0</u> kg	Left Rear =	<u>472.0</u> kg
TOTAL FRONT =	- <u>833.0</u> kg	TOTAL REAR =	<u>947.0</u> kg
% Total Weight =	<u>46.8</u> %	% Total Weight =	<u>53.2</u> %
TOTAL TEST WEIGHT = <u>1780.0</u> kg			
Weight of ballast secured in vehicle's cargo area = <u>134.5</u> kg			

TEST VEHICLE ATTITUDE:

AS DELIVERED: Right Front 780 mm; Left Front 800 mm;
 Right Rear 815 mm; Left Rear 823 mm;
 Pitch Angle at Right Door Sill = 1.2° rear higher
 Pitch Angle at Left Door Sill = 1.1° rear higher
 Roll Angle at Front Bumper = 0.4° left higher
 Roll Angle at Rear Bumper = 0.9° left higher

FULLY LOADED: Right Front 784 mm; Left Front 798 mm;
 Right Rear 790 mm; Left Rear 798 mm;
 Pitch Angle at Right Door Sill = 0.5° rear higher
 Pitch Angle at Left Door Sill = 0.6° rear higher
 Roll Angle at Front Bumper = 0.4° left higher
 Roll Angle at Rear Bumper = 0.9° left higher

AS TARGETED:

Pitch Angle at Right Door Sill = 0.8° rear higher
 Pitch Angle at Left Door Sill = 0.7° rear higher
 Roll Angle at Front Bumper = 0.4° left higher
 Roll Angle at Rear Bumper = 0.9° left higher

AS TESTED (Targets Impacted on Right Side):

Pitch Angle at Right Door Sill = 0.8° rear higherPitch Angle at Left Door Sill = 0.7° rear higherRoll Angle at Front Bumper = 0.4° left higherRoll Angle at Rear Bumper = 0.9° left higher

AS TESTED (Targets Impacted on Left Side):

Pitch Angle at Right Door Sill = 1.0° rear higherPitch Angle at Left Door Sill = 1.1° rear higherRoll Angle at Front Bumper = 0.4° left higherRoll Angle at Rear Bumper = 0.9° left higherVEHICLE WHEELBASE = 2820 mm

REMARKS: The seat travel distance was measured to be 195 mm for the driver front seat and 195 mm for the passenger front seat.

RECORDED BY: David G. GotwalsDATE: April 2, 2003APPROVED BY: Helen A. Kaleto

TABLE 2-3
HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Suzuki Grand Vitara XL

VEH. NHTSA NO.: C30509 VIN: JS3TX92V034103214 COLOR: Pearl White

VEH. BUILD DATE: September, 2002 TEST DATES: April 2-3, 2003

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Scott Kreiger, Nicholas Brzuch, Louis Campbell

HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

	HORIZONTAL ANGLE SPECIFIED RANGE	MINIMUM HORIZONTAL ANGLE	MAXIMUM HORIZONTAL ANGLE
A-PILLAR	L 195°-255°	L 197.4°	L 242.9°
	R 105°-165°	R 117.5°	R 162.1°
B-PILLAR	L 195°-345°	L 195.5°	L 277.3°
	R 15°-165°	R 83.0°	R 164.1°

AS DETERMINED USING THE PROCEDURES SPECIFIED IN S8.13.4.1

REMARKS:

RECORDED BY: David G. Gotwals

DATE: April 2, 2003

APPROVED BY: Helen A. Kaleto

TABLE 2-4

VERTICAL IMPACT ANGLE RANGES

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Suzuki Grand Vitara XLVEH. NHTSA NO.: C30509 VIN: JS3TX92V034103214 COLOR: Pearl WhiteVEH. BUILD DATE: September, 2002 TEST DATES: April 2-3, 2003TEST LABORATORY: MGA Research CorporationOBSERVERS: David Gotwals, Scott Kreiger, Nicholas Brzuch, Louis Campbell

VERTICAL IMPACT ANGLE RANGES

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
FRONT HEADER	FH1	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
	FH2	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
SIDE RAIL	SR1	L 0°-50°	L 0°	L 35°
		R 0°-50°	R 0°	R 38°
	SR2A	L 0°-50°	L 0°	L 42°
		R 0°-50°	R 0°	R 40°
	SR2B	L 0°-50°	L 0°	L 41°
		R 0°-50°	R 0°	R 40°
	SR3A	L 0°-50°	L 0°	L 35°
		R 0°-50°	R 0°	R 35°
	SR3B	L 0°-50°	L 0°	L 35°
		R 0°-50°	R 0°	R 35°
	SR3C	L 0°-50°	L 0°	L 30°
		R 0°-50°	R 0°	R 19°
A-PILLAR	AP1	L -5°-50°	L -5°	L 34°
		R -5°-50°	R -5°	R 35°
	AP2	L -5°-50°	L -5°	L 40°
		R -5°-50°	R -5°	R 40°

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
B-PILLAR	AP3	L -5°-50°	L -5°	L 35°
		R -5°-50°	R -5°	R 34°
	BP1	L -10°-50°	L -10°	L 2°
		R -10°-50°	R -10°	R 2°
	BP2*	L 0°-50°	L 0°	L 7°
		R 0°-50°	R 0°	R 7°
	BP3	L -10°-50°	L -10°	L -5°
		R -10°-50°	R -10°	R -5°
	BP4	L -10°-50°	L -10°	L -9°
		R -10°-50°	R -10°	R -9°
OTHER PILLAR	OP1*	L 0°-50°	L 0°	L 8°
		R 0°-50°	R 0°	R 6°
	OP2	L -10°-50°	L -10°	L -1°
		R -10°-50°	R -10°	R -4°
UPPER ROOF 1		0°-50°	0°	33°
UPPER ROOF 2		0°-50°	0°	34°
UPPER ROOF 3		0°-50°	0°	40°
UPPER ROOF 4		0°-50°	0°	34°
UPPER ROOF 5		0°-50°	0°	35°
UPPER ROOF 6		0°-50°	0°	40°

As determined using the Procedures specified in S8.13.4.2. Targets BP2* and OP1* are seat belt anchor points.

RECORDED BY: David G. Gotwals

DATE: April 2, 2003

APPROVED BY: Helen A. Kalet

TABLE 2-5
TARGET MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Suzuki Grand Vitara XL

VEH. NHTSA NO.: C30509 VIN: JS3TX92V034103214 COLOR: Pearl White

VEH. BUILD DATE: September, 2002 TEST DATES: April 2-3, 2003

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Scott Kreiger, Nicholas Brzuch, Louis Campbell

Measurement	Description	Left Side	Right Side
M	Seat Fore/Aft Travel (Front seats)	195.0 mm	195.0 mm
T°	Horizontal ∠ {CG-F1 (Left Seat) to (Right A-Pillar)}	117.1°	—
A1°	360° - T°	242.9°	--
W°	Horizontal ∠ {CG-2 (Left Seat) to (Left A-Pillar)}	197.4°	—
A2°	A2° = W°	197.4°	--
U°	Horizontal ∠ {CG-2 (Left Seat) to (Left B-Pillar)}	277.3°	--
B1°	B1° = U°	277.3°	--
V°	Horizontal ∠ {CG-R (Left Seat) to (Left B-Pillar)}	195.5°	--
B2°	B2° = V°	195.5°	--
W° (right)	Horizontal ∠ {CG-F2 (Right Seat) to (Right A-Pillar)}	--	162.1°
A1° (right)	A1° (right) = W° (right)	--	162.1°
T° (right)	Horizontal ∠ {CG-F1 (Right Seat) to (Left A-Pillar)}	--	242.5°
A2° (right)	360° - T° (right)	--	117.5°
V° (right)	Horizontal ∠ {CG-R (Right Seat) to (Right B-Pillar)}	--	164.1°
B1° (right)	B1° (right) = V° (right)	--	164.1°
U° (right)	Horizontal ∠ {CG-F2 (Right Seat) to (Right B-Pillar)}	--	83.0°
B2° (right)	B2° (right) = U° (right)	--	83.0°
J	A-Pillar {(Plane 3) - (Plane 5)}	406.5 mm	407.0 mm
J/2	J ÷ 2	203.3 mm	203.5 mm
D1	Upper Roof {(Plane A) - (Plane B)}	2450.0 mm	
D1/2	D1 ÷ 2	1225.0 mm	
D2	Upper Roof {(Plane C) - (Plane D)}	1103.9 mm	

Measurement	Description	Left Side	Right Side
D2/2	$D2 \div 2$	552.0 mm	
.35D1	.35 x D1	857.5 mm	
.35D2	.35 x D2	386.4 mm	
N	B-Pillar {(BPR) - (lowest point on daylight opening forward of B-Pillar)}	552.3 mm	545.8 mm
N/2	B-Pillar {(BP3) - (lowest point on daylight opening forward of B-Pillar)}	276.2 mm	272.9 mm
N/4	B-Pillar {(BP4) - (lowest point on daylight opening forward of B-Pillar)}	138.1 mm	136.5 mm
Q	O-Pillar {(OPR) - (lowest point on daylight opening)}	437.0 mm	465.2 mm
Q/2	$Q \div 2$	218.5 mm	232.6 mm
D	R-Pillar (Point 7 - Point M)	970.0 mm	970.0 mm
3D/7	$3D \div 7$	415.7 mm	415.7 mm

As determined using the Procedures specified in S10.1-10.13.

SgRP Locations (vehicle coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front Row	2070.0	-360.0	425.0	2070.0	360.0	425.0
Rear Row	2845.0	-360.0	465.0	2845.0	360.0	465.0

SgRP Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front Row	2112.2	-364.4	758.5	2112.1	355.7	755.0
Rear Row	2887.1	-364.1	806.5	2886.9	356.1	803.0

CG Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
CGF1	2077.2	-364.4	1418.5	2077.1	355.7	1415.0
CGF2	2272.2	-364.4	1418.5	2272.1	355.7	1415.0
CGR	3047.1	-364.1	1466.5	3046.9	356.1	1463.0

REFERENCE FOR VEHICLE COORDINATE SYSTEM:

Left door striker bolt hole (x, y, z) = (1109.9, -763.6, 611.8)

REMARKS:

RECORDED BY: David G. GotwalsDATE: April 2, 2003APPROVED BY: Helen A. Kaleto

TABLE 2-6
SUMMARY OF TARGETING RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Suzuki Grand Vitara XL

VEH. NHTSA NO.: C30509 VIN: JS3TX92V034103214 COLOR: Pearl White

VEH. BUILD DATE: September, 2002 TEST DATES: April 2-3, 2003

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Scott Kreiger, Nicholas Brzuch, Louis Campbell

SUMMARY OF TARGETING RESULTS								
Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
A-Pillar Left Side								
AP1	1696.9	-496.5	1231.8			Yes		
REL	1749.1	-503.6	1215.1	225	34		2	No
AP2	1647.2	-549.2	1144.5	198	40	No		Yes
AP3	1500.2	-591.5	1030.7	198	35	No		No
A-Pillar Right Side								
AP1	1695.5	494.5	1233.7			Yes		
REL	1741.4	502.4	1217.6	135	35		2	Yes
AP2	1647.5	548.0	1147.4	162	40	No		No
AP3	1498.8	590.7	1034.1	162	34	No		Yes
B-Pillar Left Side								
BP1	2237.7	-449.2	1293.0	270	2	No		Yes
BP2	2228.3	-561.0	1037.0	270	7	No		No
BP3	2205.6	-597.0	1016.6			Yes		
REL	2193.4	-604.2	994.2	275	-5		1	No
BP4	2264.5	-642.4	878.5	226	-9	No		No
B-Pillar Right Side								
BP1	2242.7	446.7	1294.7	90	2	No		No
BP2	2227.2	559.9	1040.8	90	7	No		No
BP3	2200.2	595.5	1022.9			Yes		
REL	2188.5	604.0	1000.4	85	-5		1	No

SUMMARY OF TARGETING RESULTS								
Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
BP4	2261.6	639.8	885.1	134	-9	No		Yes
Other Pillar Left Side								
OPR	3211.6	-416.5	1272.2					
OP1	3206.9	-557.4	1059.5	270	8	No		No
OP2	3291.3	-577.4	1052.6	270	-1	No		No
Other Pillar Right Side								
OPR	3168.4	452.5	1302.4					
OP1	3205.2	560.3	1057.4	90	6	No		No
OP2	3230.2	591.7	1070.6			Yes		
REL	3242.5	591.5	1058.7	90	-4		1	Yes
Rear Pillar Right Side								
RP1	3829.1	-464.0	1255.3			No		Exempt
RP2	3829.9	-615.7	1104.8			No		Exempt
Rear Pillar Left Side								
RP1	3833.4	464.3	1259.7			No		Exempt
RP2	3831.6	615.4	1110.8			No		Exempt
Front Header Left Side								
FH1	1634.0	-374.5	1238.0	180	50	No		No
FH2	1617.4	-225.6	1243.4			Yes		
REL	1608.4	-248.3	1237.8	180	50		1	No
Front Header Right Side								
FH1	1629.9	370.5	1238.2	180	50	No		No
FH2	1615.2	219.1	1243.9			Yes		
REL	1599.9	239.5	1239.8	180	50		1	No
Side Rail Left Side								
SR1	1848.0	-478.9	1280.0			Yes		
REL	1877.0	-485.7	1238.1	270	35		2	No
SR2(A)	1998.2	-475.7	1294.5			Yes		
REL	1989.6	-479.6	1246.5	270	42		2	No
SR2(B)	1938.8	-474.0	1288.7			Yes		

SUMMARY OF TARGETING RESULTS								
Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
REL	1939.5	-473.4	1241.4	270	41		2	No
SR3A	2762.4	-481.3	1258.8	270	35	No		No
SR3B	2877.3	-479.5	1259.8	270	35	No		No
SR3C	3361.9	-451.9	1302.5	270	30	No		No
Side Rail Right Side								
SR1	1845.1	478.5	1280.4			Yes		
REL	1879.1	477.8	1246.1	90	38		2	No
SR2(A)	1996.2	478.7	1296.2			Yes		
REL	1987.7	476.5	1250.9	90	40		2	No
SR2(B)	1942.4	472.9	1292.3			Yes		
REL	1954.8	474.4	1244.7	90	40		2	No
SR3A	2762.2	479.5	1264.5	90	35	No		Yes
SR3B	2880.0	480.6	1262.2	90	35	No		No
SR3C	3318.9	464.4	1293.2	90	19	No		No
Rear Header Left Side								
RH	3827.8	-361.5	1316.9			No		Exempt
Rear Header Right Side								
RH	3831.4	357.6	1318.6			No		Exempt
Upper Roof Left Side								
UR1	1937.5	-384.8	1318.6	270	33	No		Yes
UR2	2239.7	-387.3	1314.1	270	34	No		No
UR3	2933.2	-385.8	1379.6	270	40	No		No
Upper Roof Right Side								
UR4	1932.7	387.4	1316.5	90	34	No		No
UR5	2251.6	384.7	1319.0	90	35	No		Yes
UR6	2961.8	383.3	1378.0	90	40	No		Yes

As determined using the Procedures specified in S10.1-10.13.

REMARKS: Left and right side RP1, RP2, and RH targets were located more than 600 mm rearward of the rear row seating reference point, and therefore are exempt from testing.

RECORDED BY: David G. Gotwals

DATE: April 2, 2003

APPROVED BY: Helen A. Kaleto

C30509
FM3047
R/S AP1
135/35

ALFA RESEARCH CORP
EXCESS 2010 TESTING
2003 SUZUKI GRAND
MOTORCYCLE 4-DR SVA

C30509 4.2.03
TEST #2 RIGHT AP1
(FM3047) SVA 135/35
PRE TEST

C30509
FM3047
R/S AP1
135/35

MIGARESEARCH CORP
EMISS 201C TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

C30509

4/2/03

TEST #2

RIGHT AP1

(FM3047)

HA - 135/35

POST-TEST

MGA RESEARCH CORP
FMVSS 201E TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

C30509 42.03
TEST #2 RIGHT API
(FM3047) H/A 135.35

POST-TEST



MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO. 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30509 VEHICLE YR/MAKE/MODEL: 2003 SUZUKI GARNET VITARA

GENERAL TEST PARAMETERS:

Test Number: 2

Target (Vehicle Side): Left (Right) API

Temperature: 21 °F/°C

MGA Test Reference No.: Fm3047

Humidity: 42 %

Approach Angles: Horizontal 135 °

Time of Test: 2:10 am/pm

Vertical 35 °

FMH Serial No: 36

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
692	696	5.4	23.8	13	35

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35923	-100.9	1.21	1.21
Y	6	J35916	100.7	1.23	1.23
Z	7	J35910	100.8	1.51	1.51

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

No Visible Damage

Recorded By: [Signature] Approved By: Deen K. Kaleb Date: 3/2/03

*Only necessary for NHTSA (Government) Compliance testing.

RESULTS OF HIC36 PROGRAM

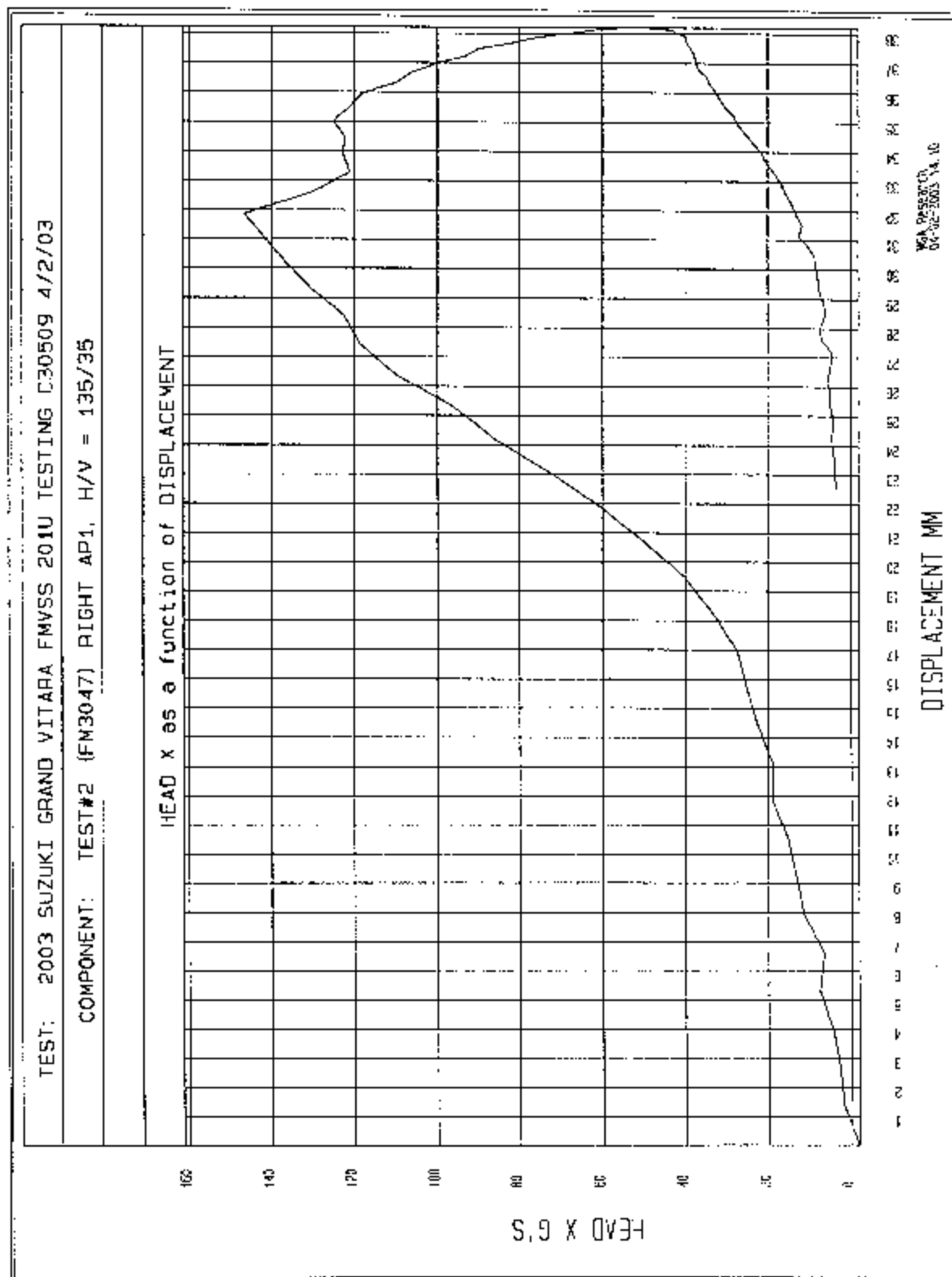
input file is \NHTSA\FM3047AV.A05

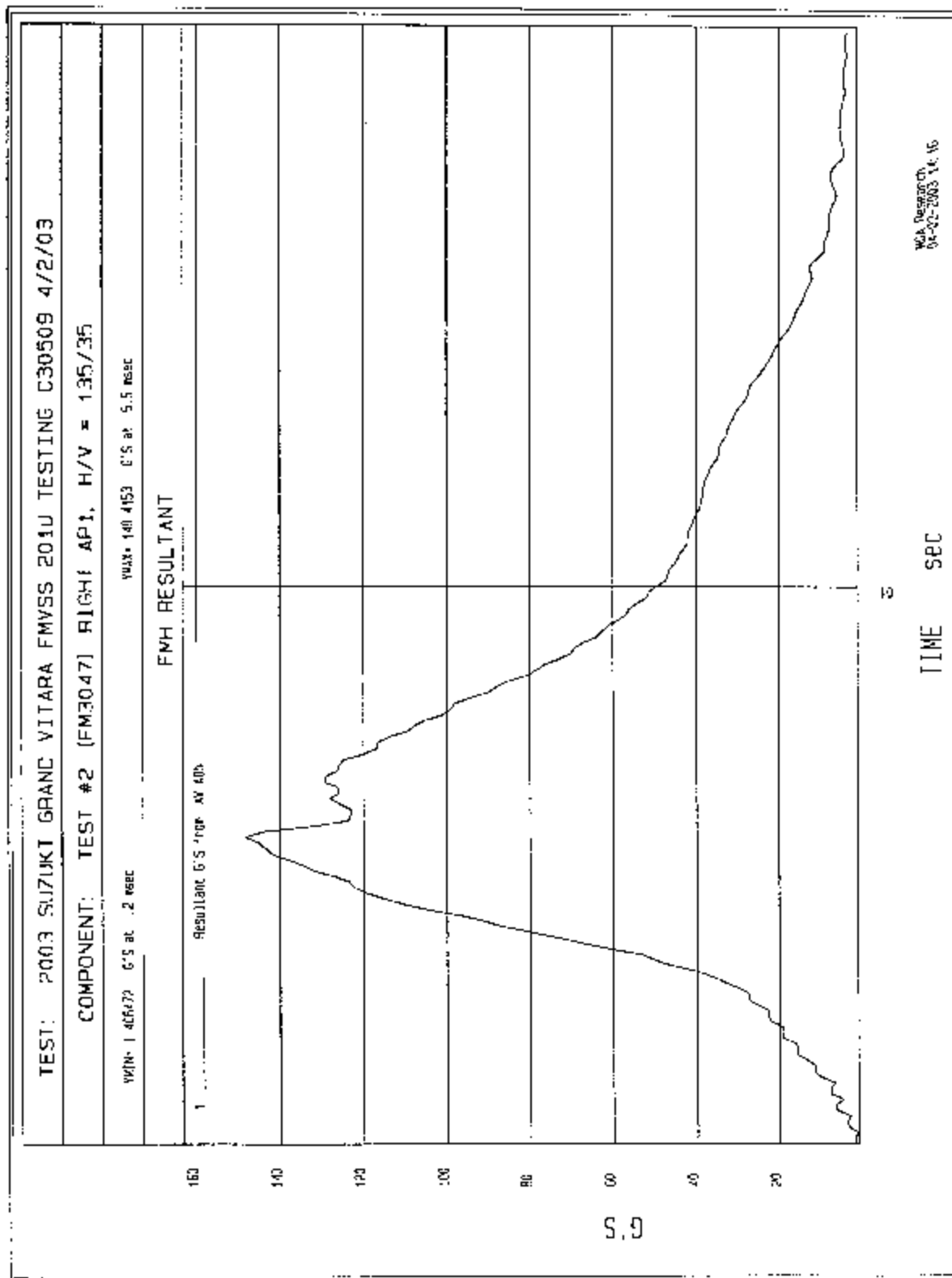
HIC = 696.14 calculated over 5.4 msec

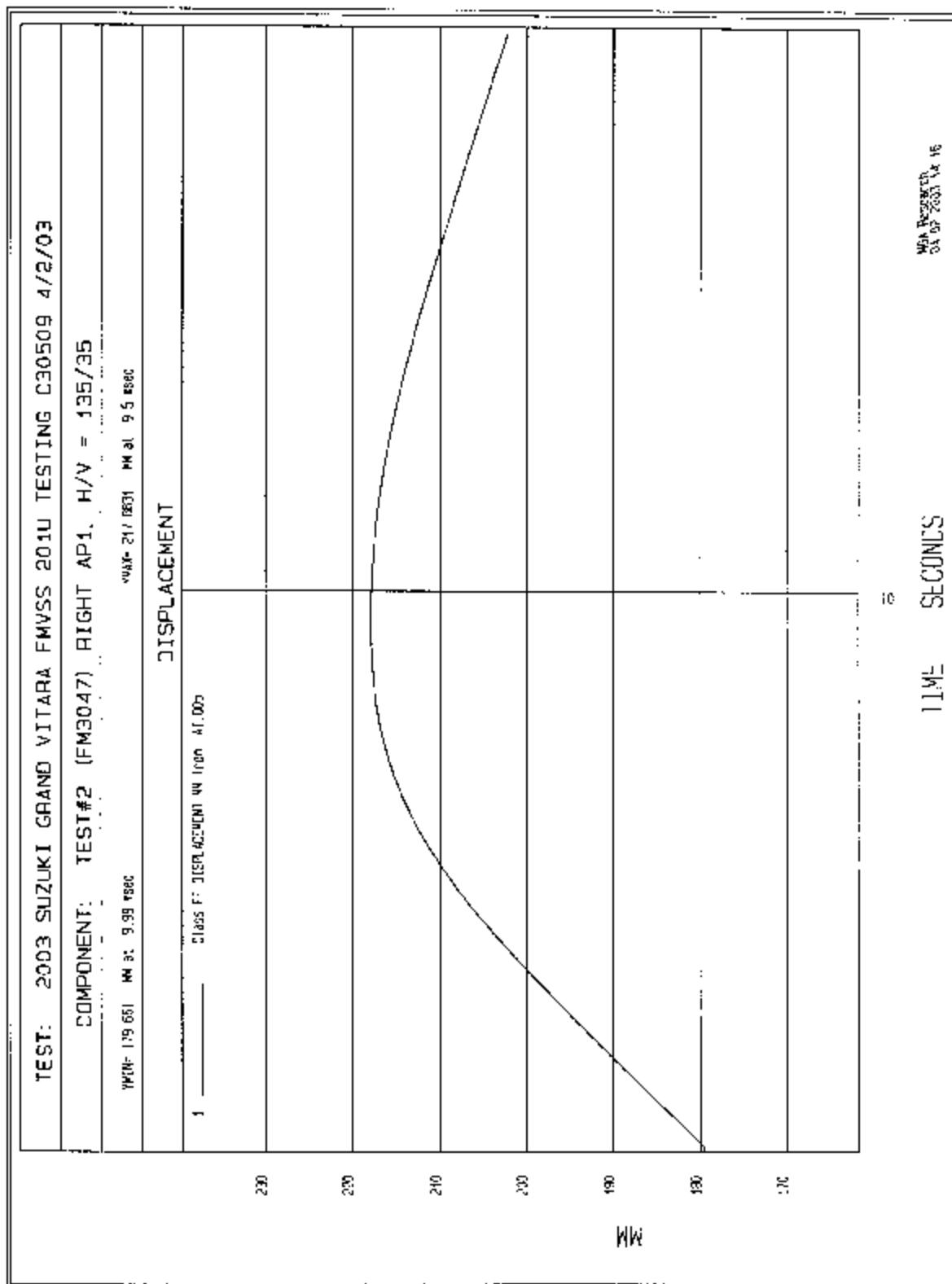
T1 = 3.50 msec T2 = 8.90 msec

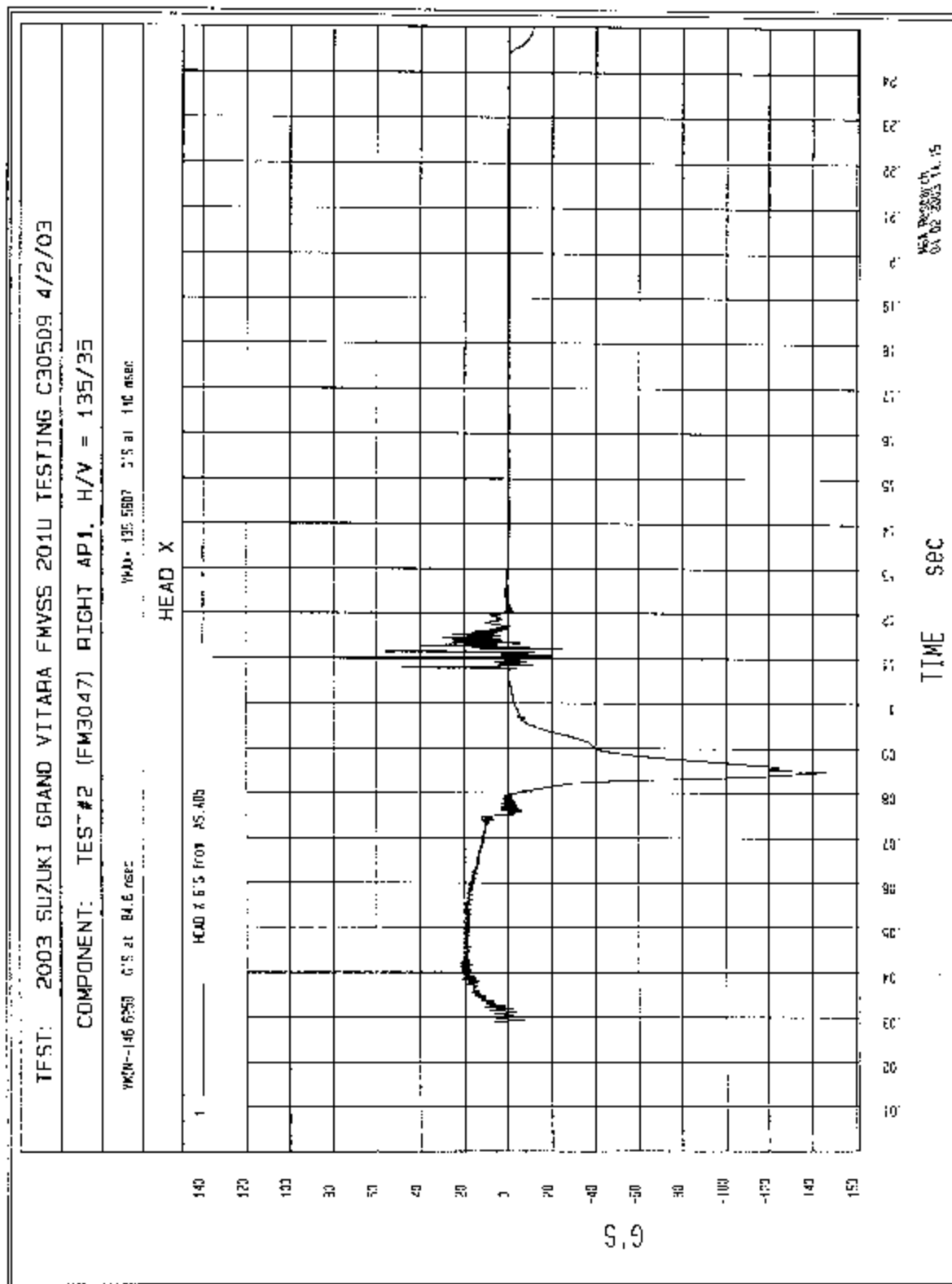
HIC(d) = 692

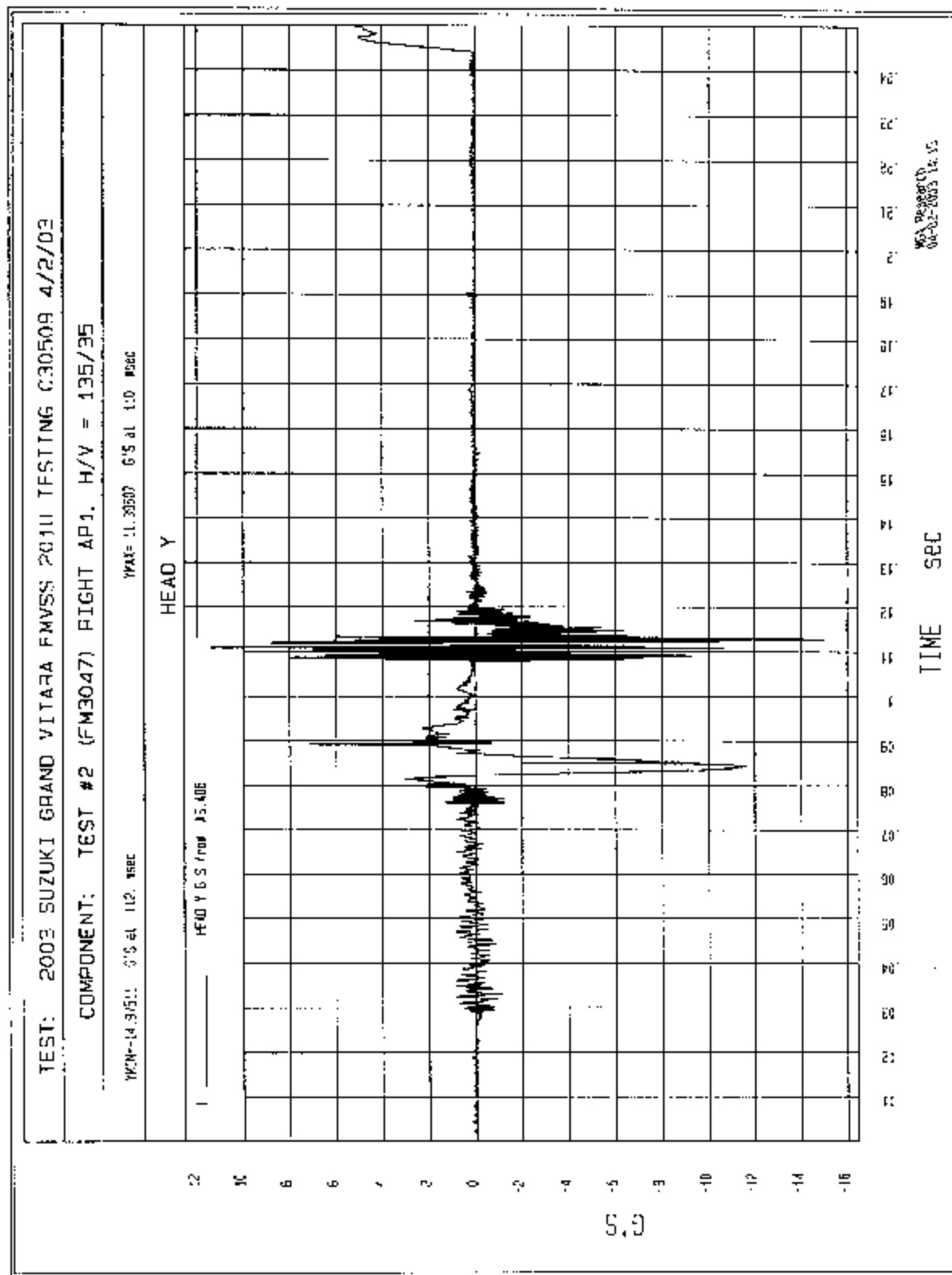
Impact Velocity = 23.8 (km/h)

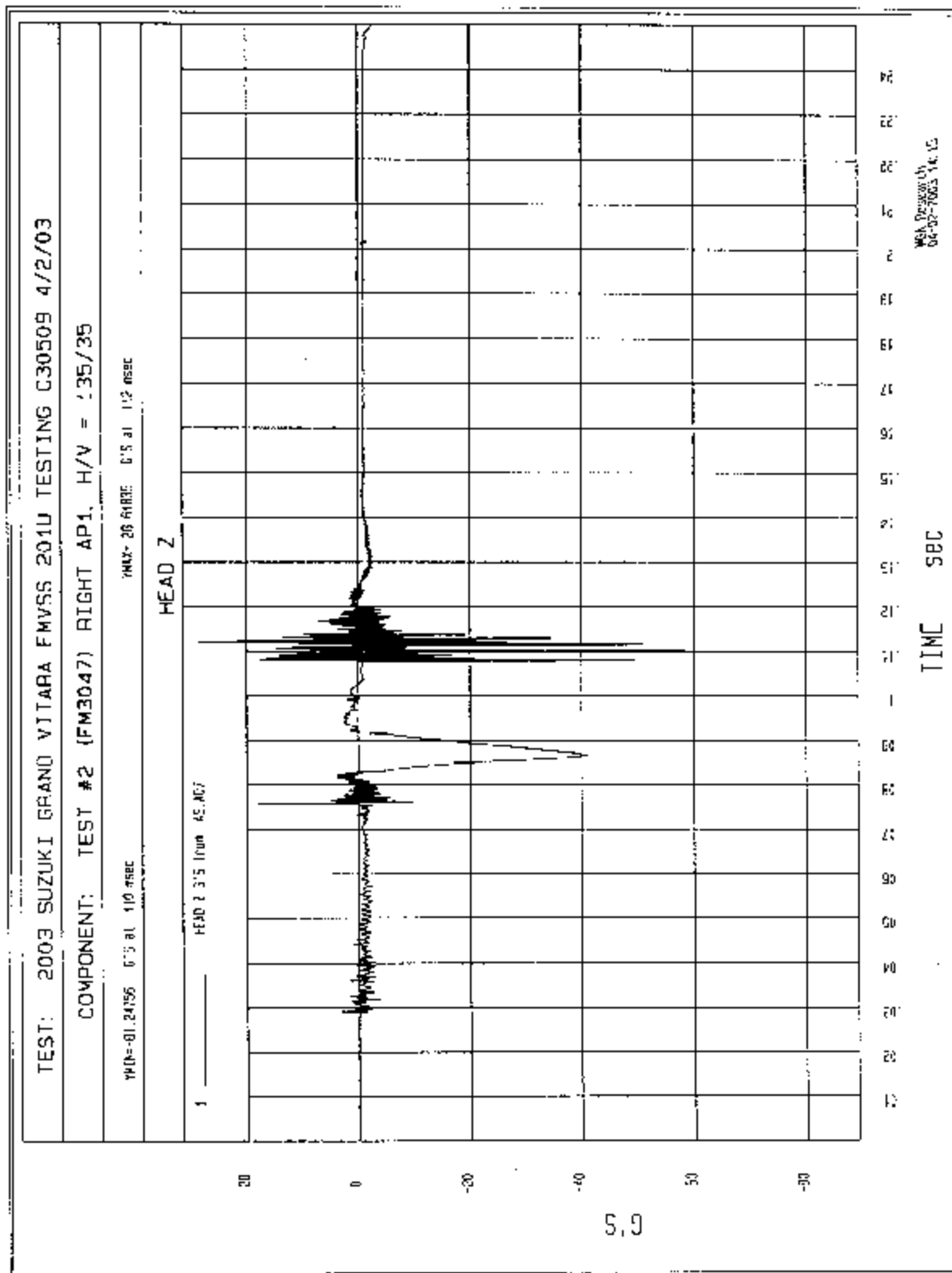


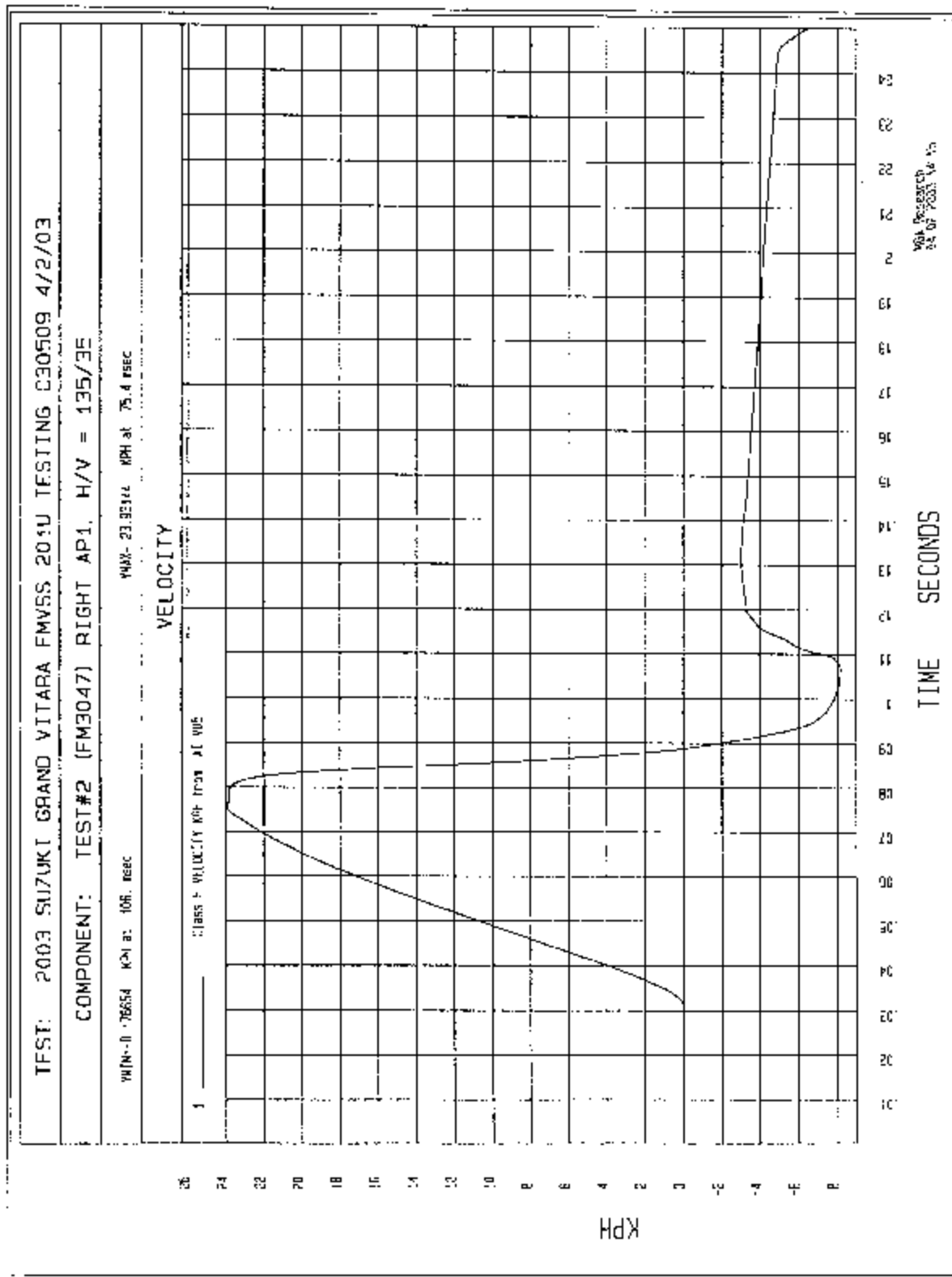












MGA RESEARCH CORP
E-MYNS 201U TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

030509

4/3/03

TEST #8

LEFT AP2

(F-M3053)

H/V = 198/40

PRE - TEST

WILLYS RESEARCH CORP
EXCISE & 2010 TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

C30509

4/3/03

TEST #8

LEFT AP2

(FM3053)

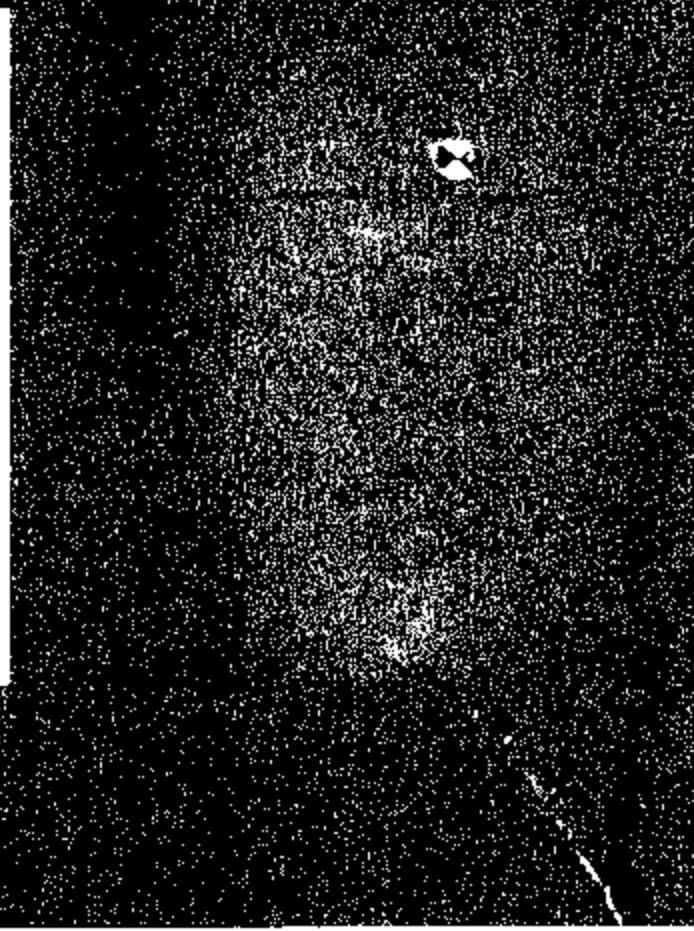
H/V = 198/40

POST-TEST

MGA RESEARCH CORP
FMVSS 201C TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

30509 4/3/03
TEST #8 LEFT AP2
(FMV3053) H/V = 198/40

POST-TEST



MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGA1F201U_FRAME #2 4

DOC. NO.: MGA1F201U_FRAME #2
REVISION NO.: 5
PAGE: 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30509 VEHICLE YR/MAKE/MODEL: 2000's Suzuki Grand Vitara

GENERAL TEST PARAMETERS:

Test Number: 8

Target (Vehicle Side): Left AP2

Temperature: 21 °F (C)

MGA Test Reference No.: FMS053

Humidity: 42 %

Approach Angles: Horizontal: 198 °

Time of Test: 3:30 am pm

Vertical: 40 °

FMH Serial No: 36

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>744</u>	<u>76.5</u>	<u>5.9</u>	<u>23.8</u>	<u>10</u>	<u>5</u>

INSTRUMENTATION INFORMATION. (all accelerometers are Endevco 7264-2000,

Axis	Channel	Serial No	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35573</u>	<u>-100.9</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35516</u>	<u>100.7</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J35518</u>	<u>100.0</u>	<u>1.51</u>	<u>1.51</u>

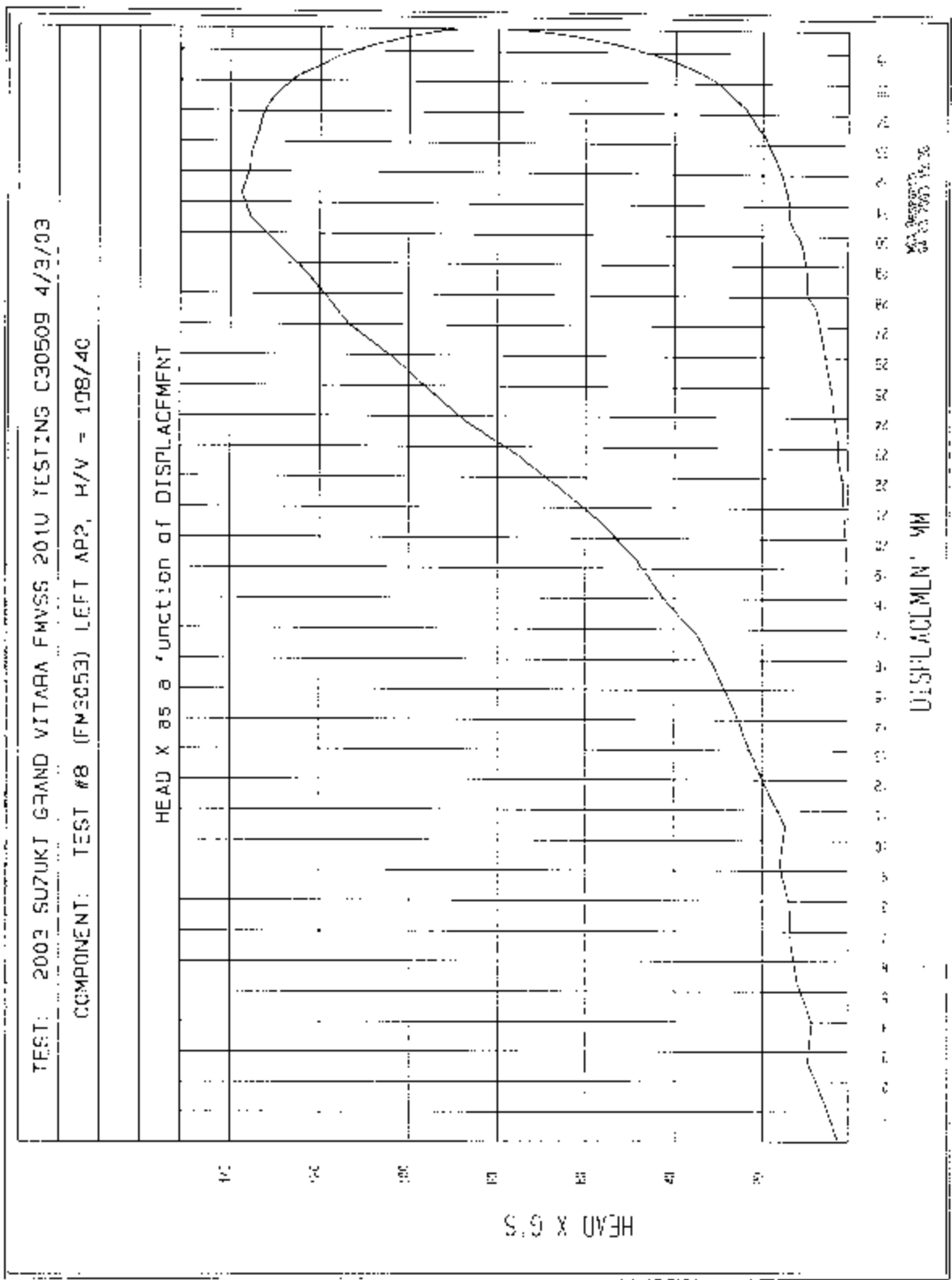
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.) _____

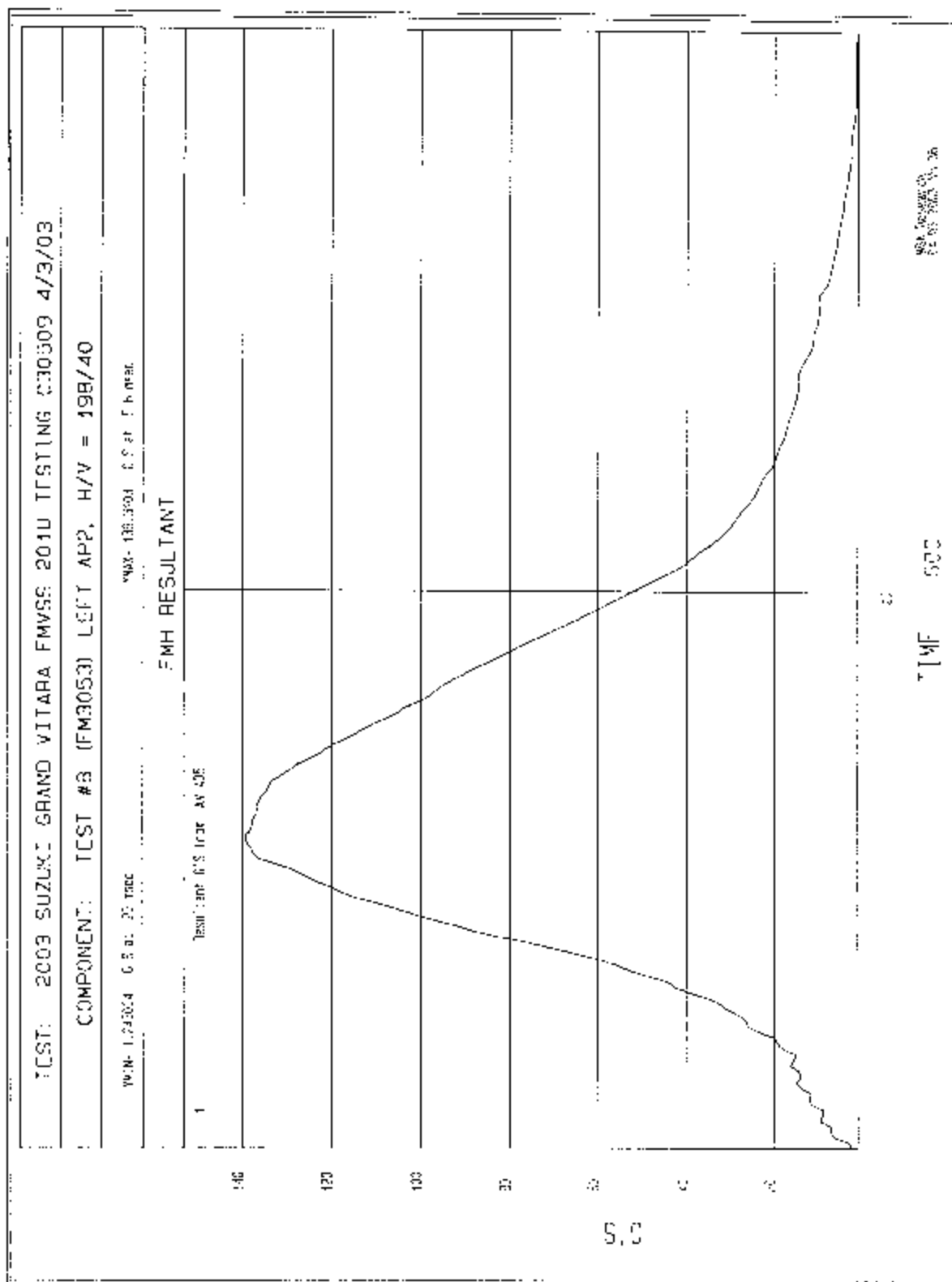
NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: [Signature] Date: 4/3/02

*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM3053AV.A05
?   HIC =   764.59   calculated over   5.9 msec
T1 =    3.40 msec  T2 =    9.30 msec
*****
      HIC(d) = 744
      Impact Velocity = 23.8 (km/h)
```





TEST: 2003 SUZUKI GRAND VITARA FMVSS 2010 TESTING C30505 4/3/03

COMPONENT: TEST #8 (FM3053) LEFT AP2, H/V - 19R/40

IN 4- 10/ 1450 MM 02 19 30 1582

QMS- 214 2823 MW 34 5 7 0520

DISPLACEMENT

CLASS 37 DISPLACEMENT IN INCH AT 003

240

230

200

210

200

190

180

170

MM

TIME SECONDS

MA 30505 4/3/03

TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

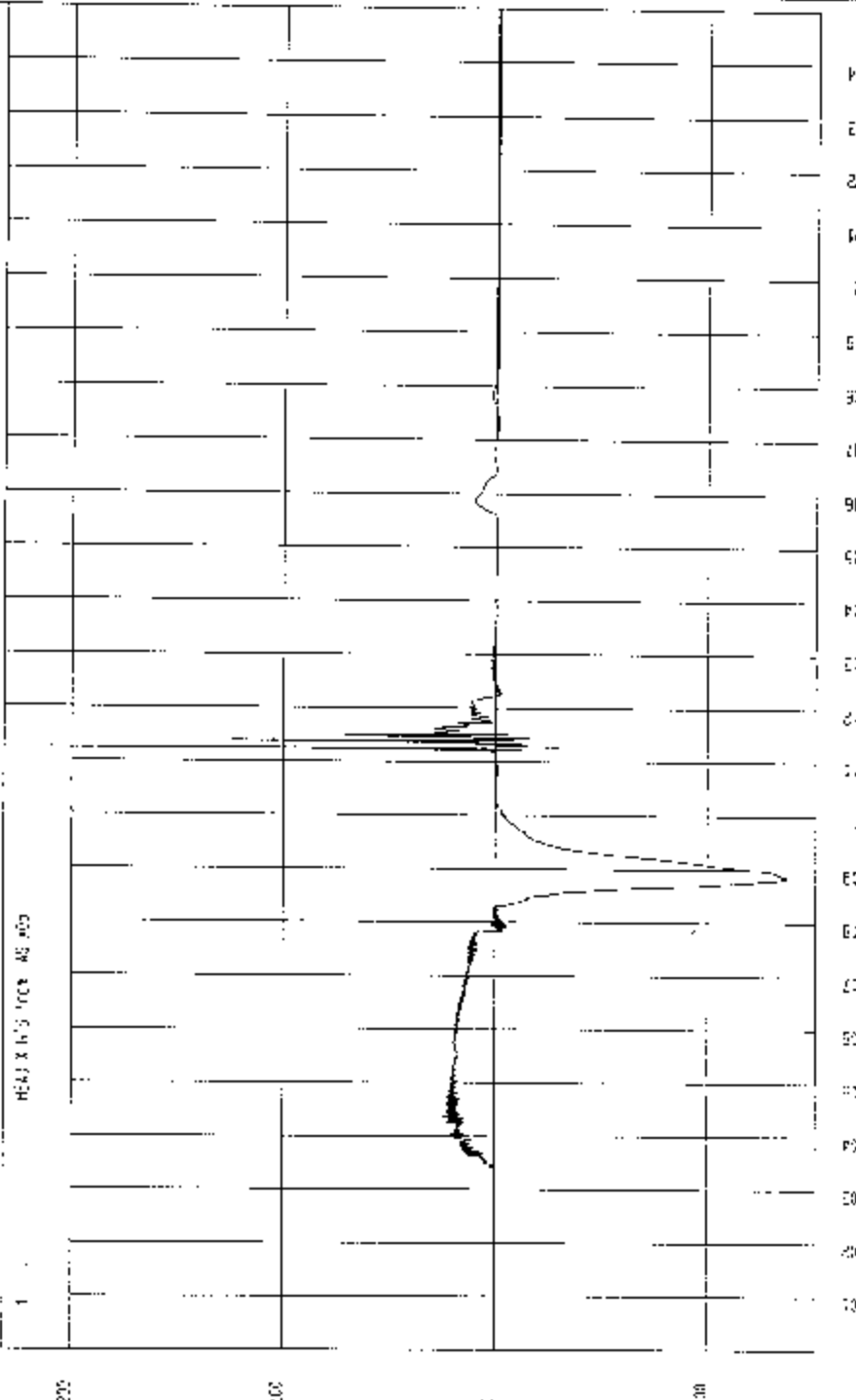
COMPONENT: TEST #8 (FM3053) LEFT AP2, H/V = +98/40

WAVE: 117.540 G 1.5 at 33.4 msec

WAVE: 210.0563 G 1.5 at 1.2 msec

HEAD X

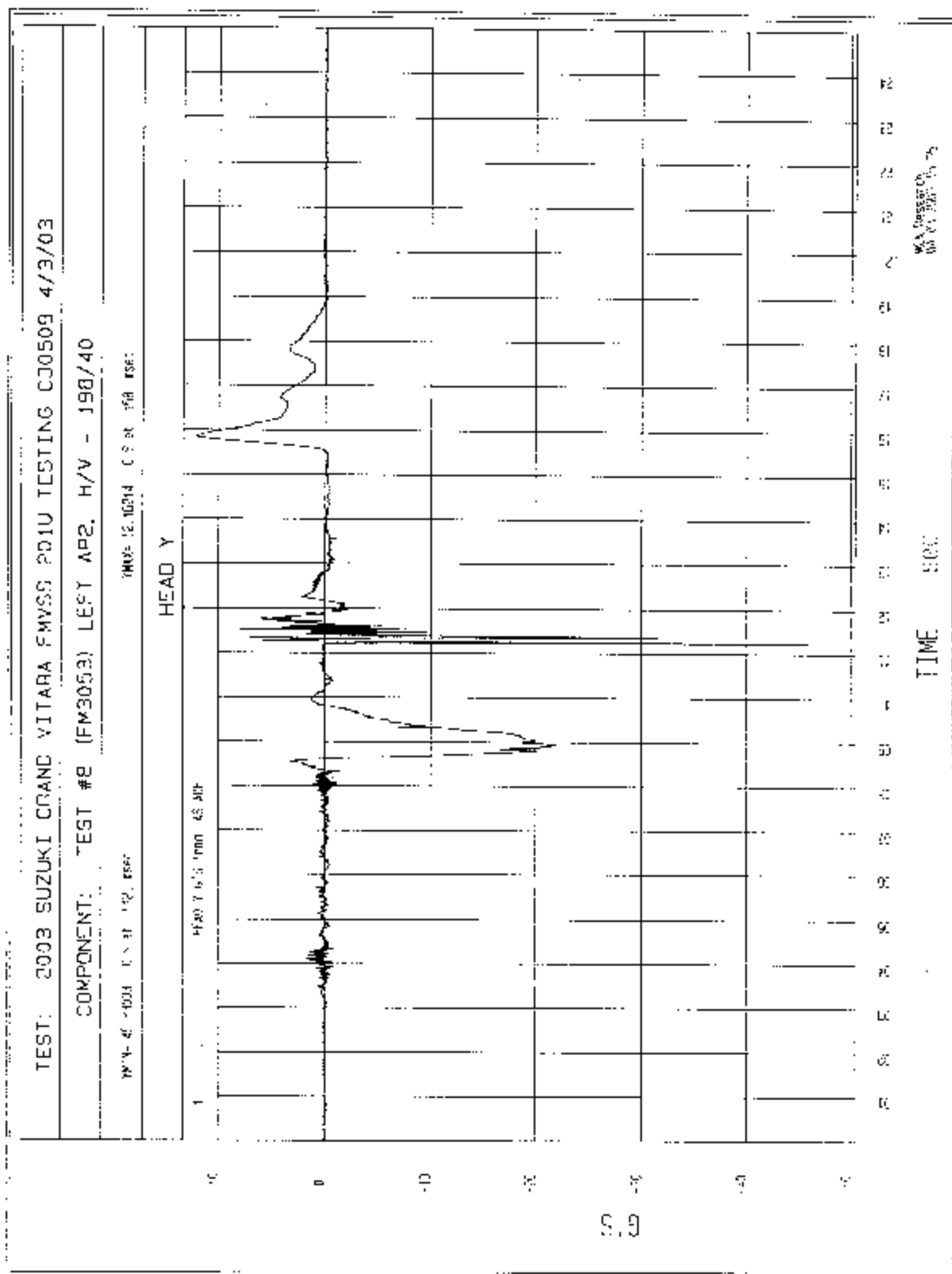
HEAD X 16.5 inch AS 405

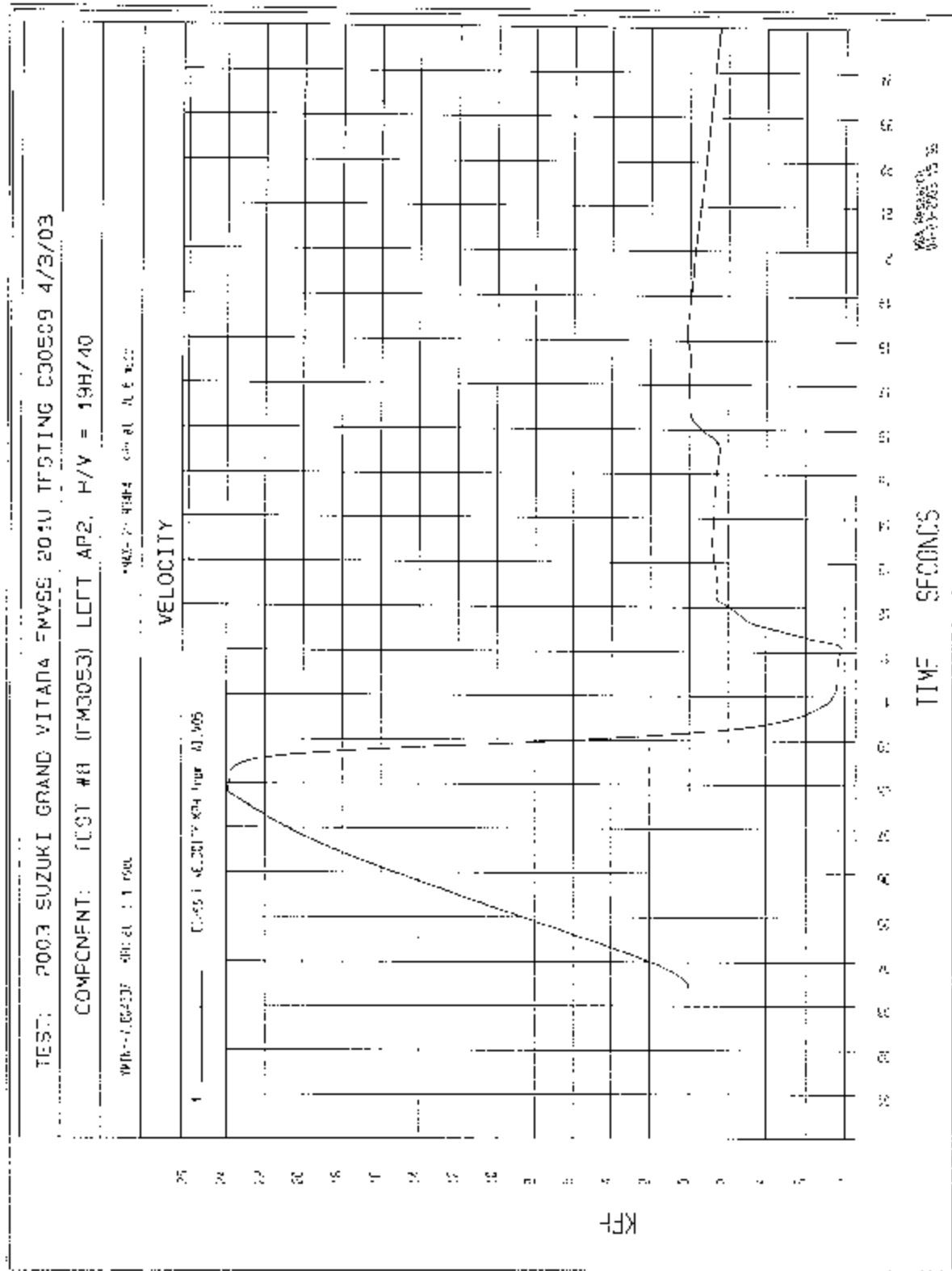


WAVE: 210.0563 G 1.5 at 1.2 msec

TIME sec

G.S

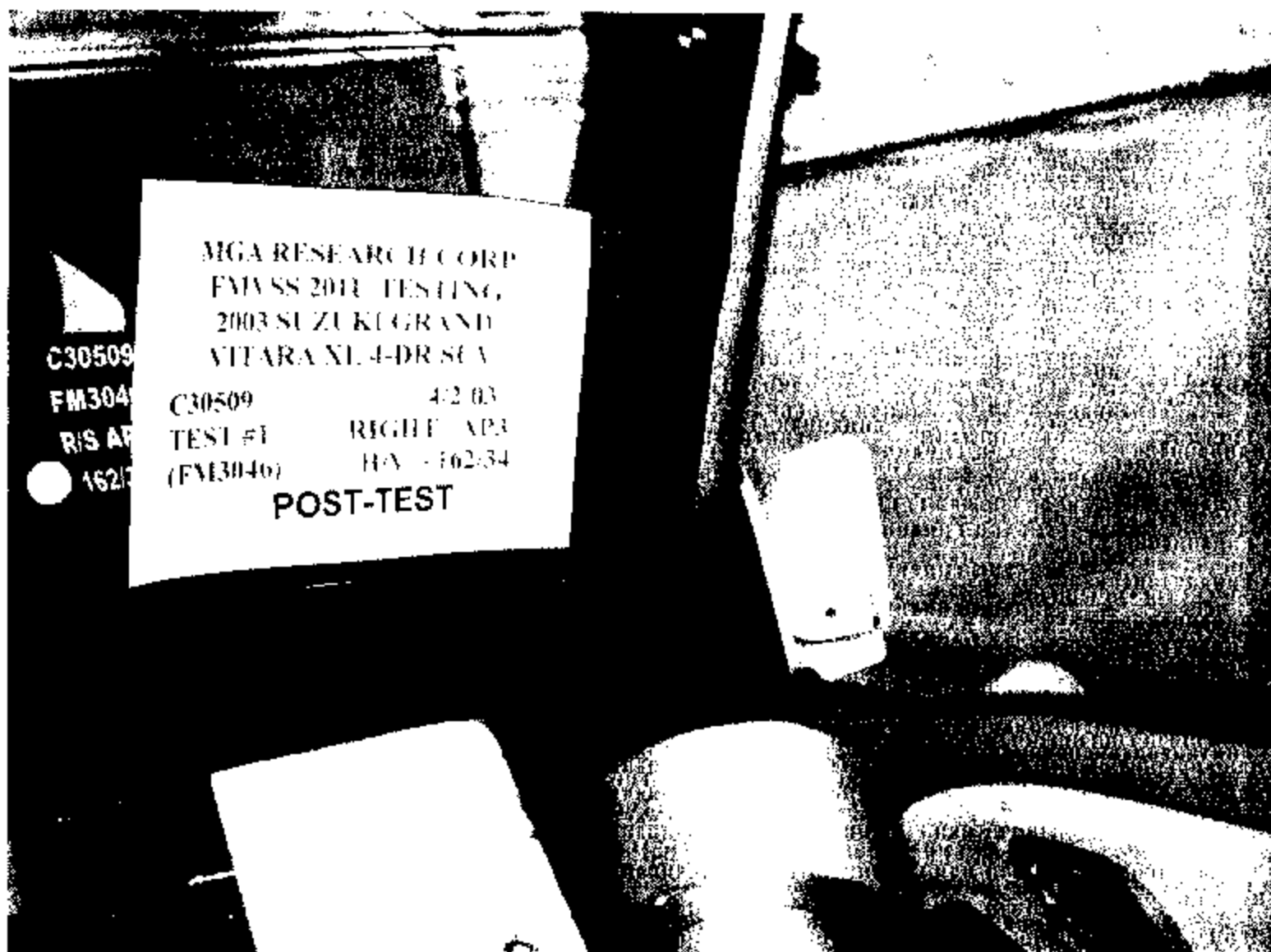




MGA RESEARCH CORP
FMVSS 201C TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

C30509 4.2.03
TEST #1 RIGHT AP3
(FM3046) HA : 162/34
PRE - TEST

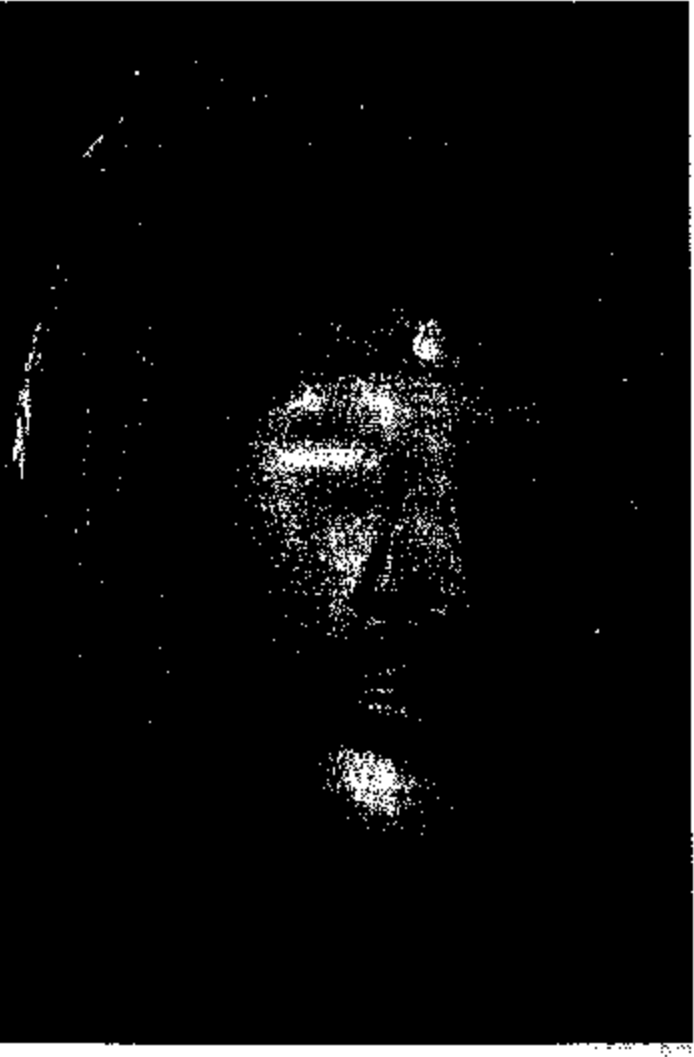




MGA RESEARCH CORP
FMVSS 2010 TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

C30509 4 2 03
TEST #1 RIGHT AP3
(FM3046) H/A = 162.34

POST-TEST



MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES-NGATP201U_FRAME #2.4

DOC. NO: MGATP20 U_FRAME #2
REVISION NO.: 5
PAGE: 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30807 VEHICLE YR/MAKE/MODEL: 2003 SUBARU GRAND VITARA

GENERAL TEST PARAMETERS:

Test Number: 1

Target (Vehicle Side): left (right) AP3

Temperature: 20 °F/°C

MGA Test Reference No.: FM3046

Humidity: 42 %

Approach Angles: Horizontal 162 °

Time of Test: 12:20 am/pm (pm)

Vertical 34 °

FMH Serial No: 35

TEST RESULTS:

HIC(c)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>631</u>	<u>616</u>	<u>6.6</u>	<u>23.8</u>	<u>9</u>	<u>2</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35921</u>	<u>-93.1</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35919</u>	<u>95.3</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J31051</u>	<u>95.1</u>	<u>1.51</u>	<u>1.81</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.): _____

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Heleen Kalita Date: 4/2/03

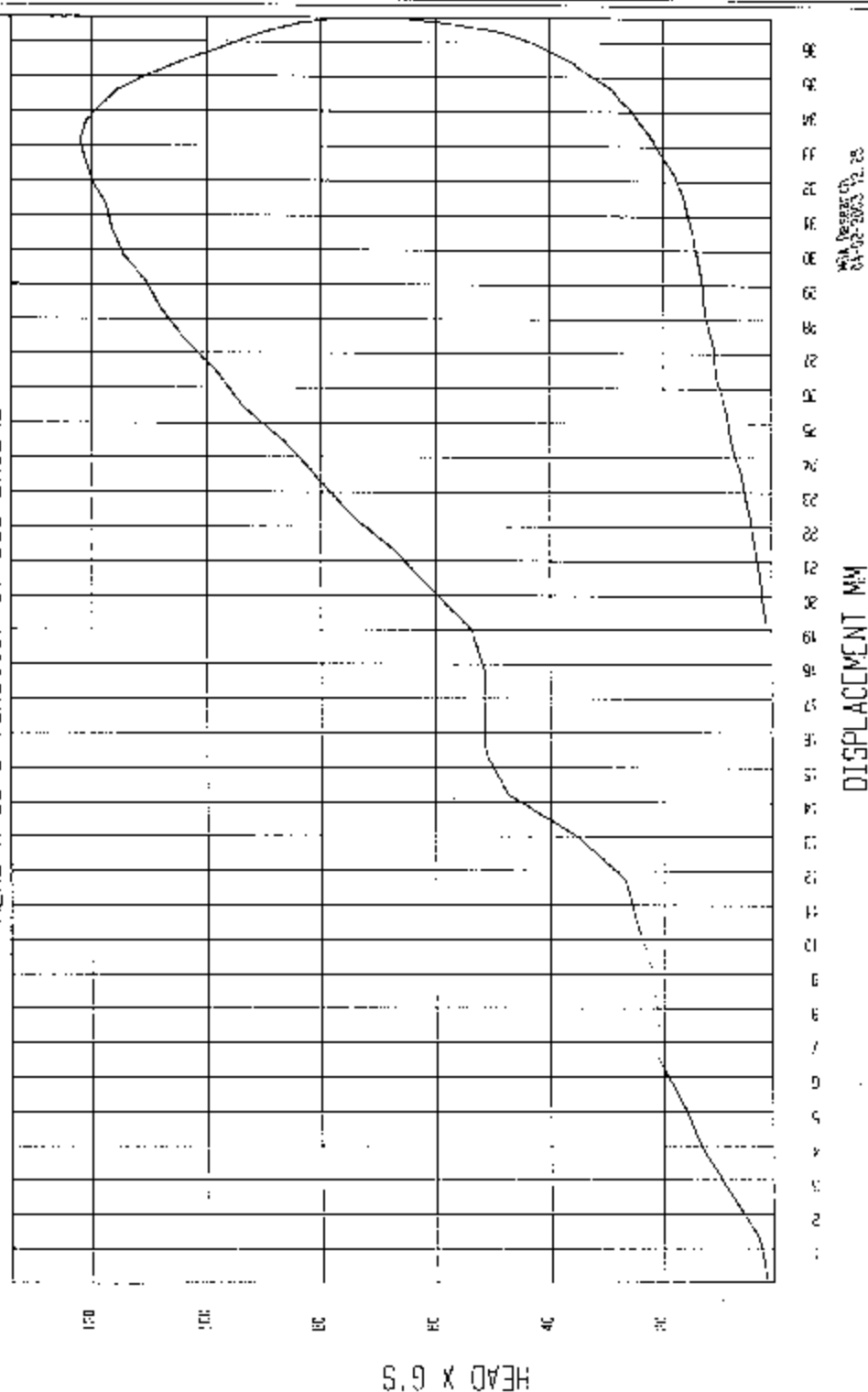
*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM3046AV.A05
HIC = 616.20 calculated over 6.6 msec
T1 = 3.20 msec T2 = 9.80 msec
*****
HIC(d) = 631
Impact Velocity = 23.8 (km/h)
```

TEST: 2003 SUZUKI GRAND VITARA FMYSS 201U TESTING C30509 4/2/03

COMPONENT: TEST #1 (FM3046) RIGHT AP3, H/V - 162/34

HEAD X as a function of DISPLACEMENT



TEST: 2003 SUZUKI GRAND VITARA FMVSS 201J TESTING C30509 4/2/03

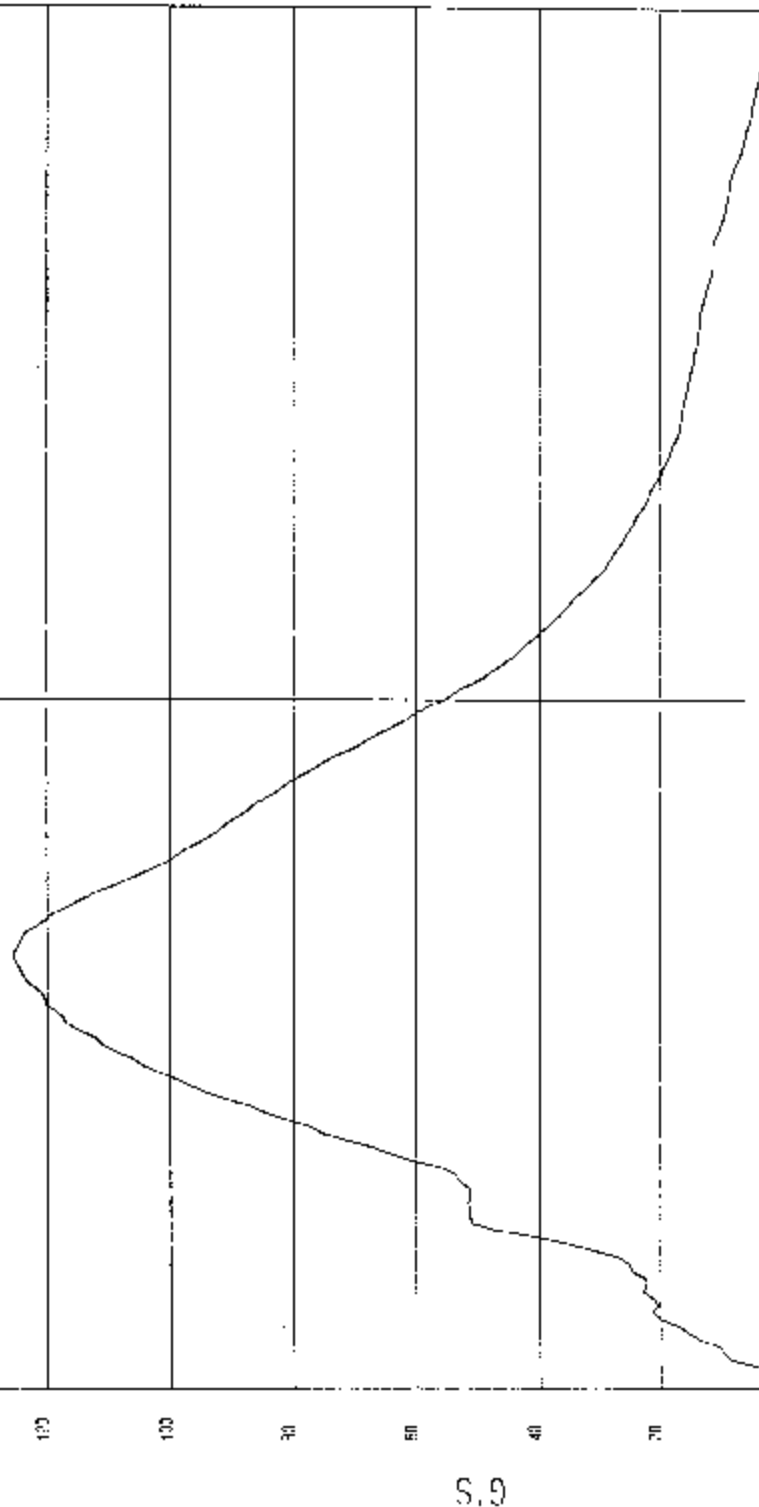
COMPONENT: TEST #1 (FM3046) RIGHT AP3, P/V = 162/34

WIN= 2.250142 G'S AT 30 YSEC

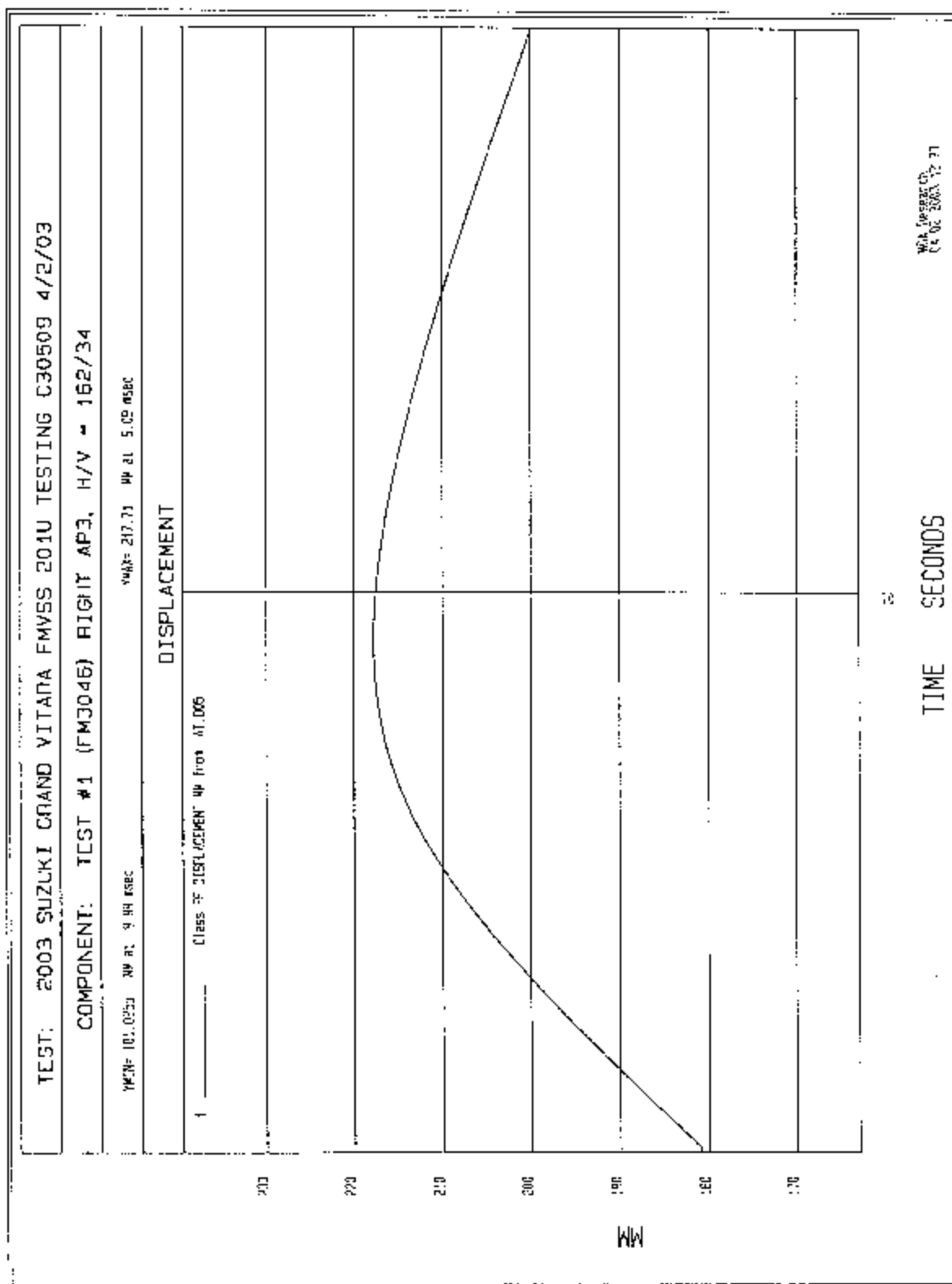
WAX= 125.648 G'S at 5.3 msec

FMH RESULTANT

1 ——— Resultant G'S from all AHS



WGA, D:\Reports\03-02-2003 12:21



TEST: 2003 SUZUKI GRAND VITARA FMVSS 2010 TESTING C30509 4/2/03

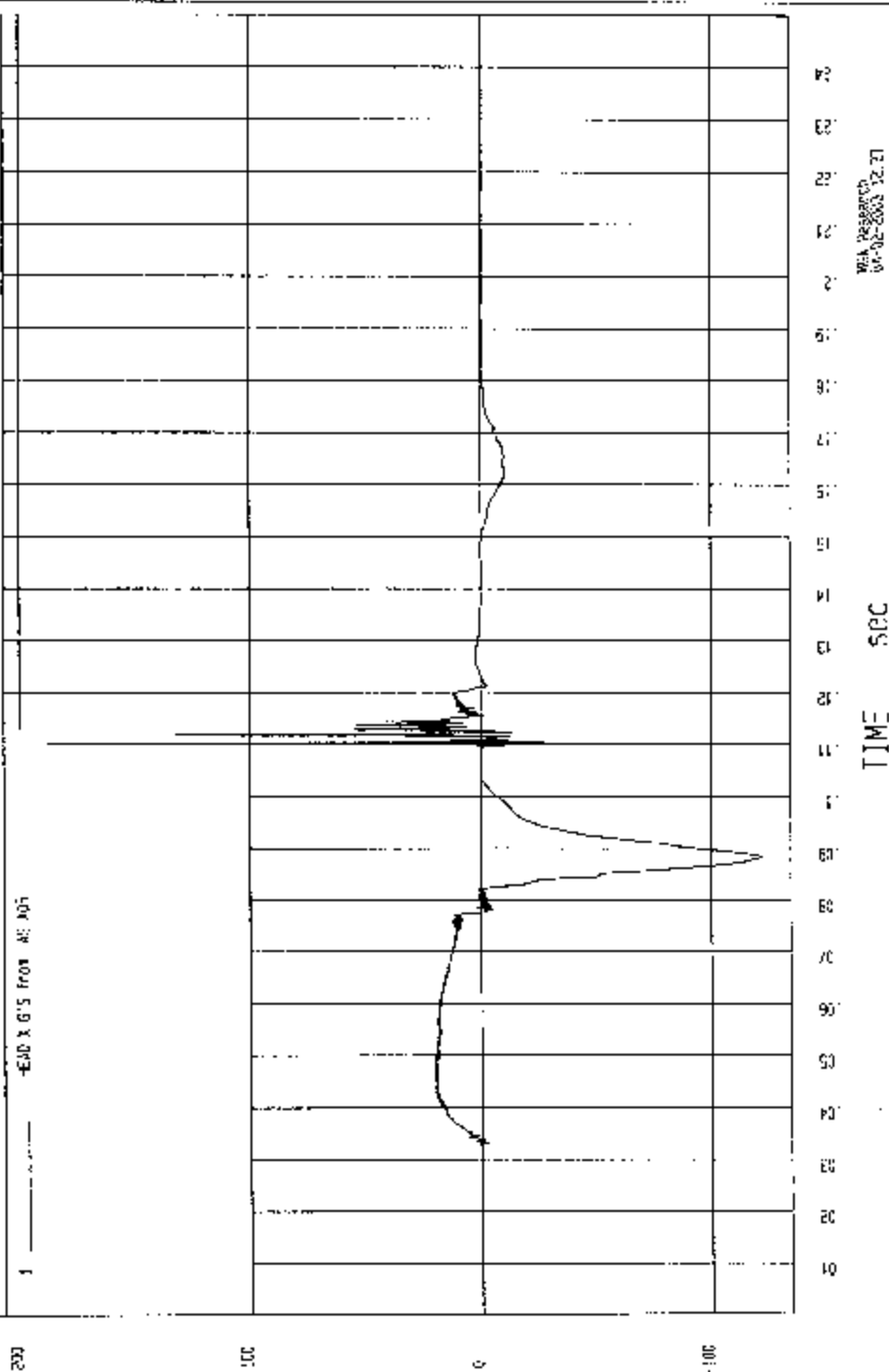
COMPONENT: TEST #1 (FM3046) RIGHT AP3, H/V = 162/34

YH11-121.5684 0'S at 89.4 msec

YH11-187.8812 8'S at 110. msec

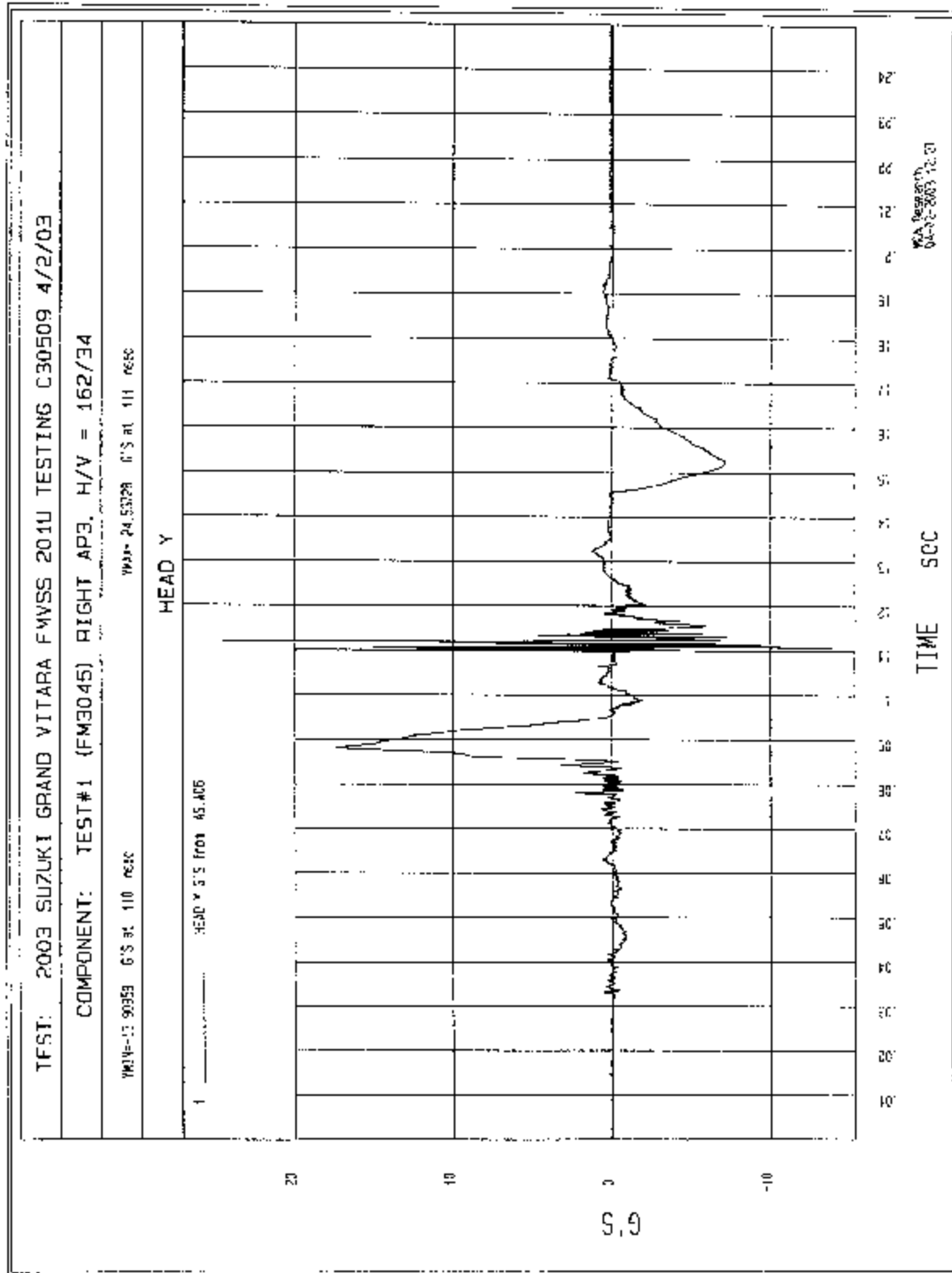
HEAD X

1 HEAD X G'S FROM AC 105



12-21-2003-20-00
C:\DATA\2003-20-00

5.9

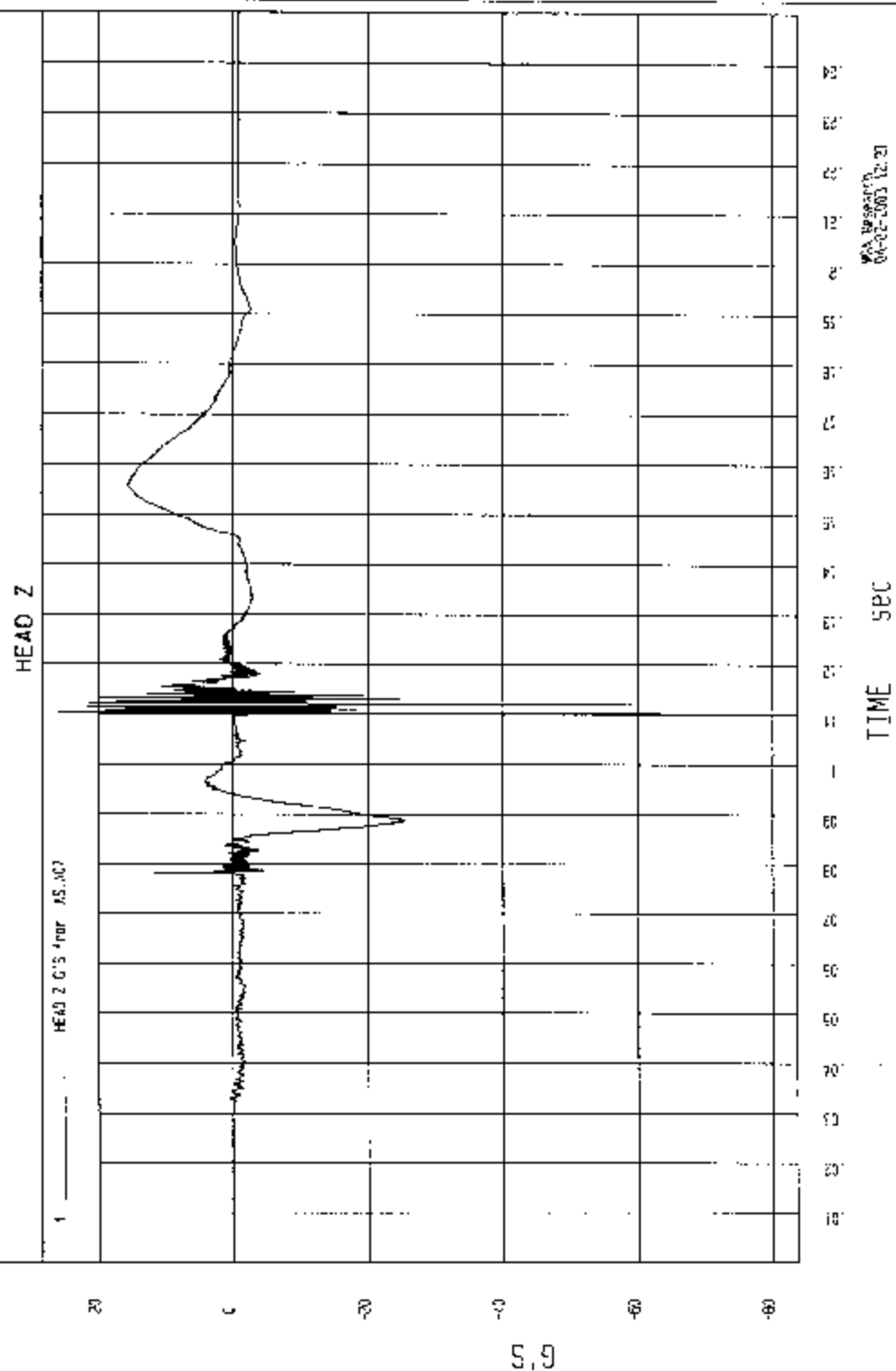


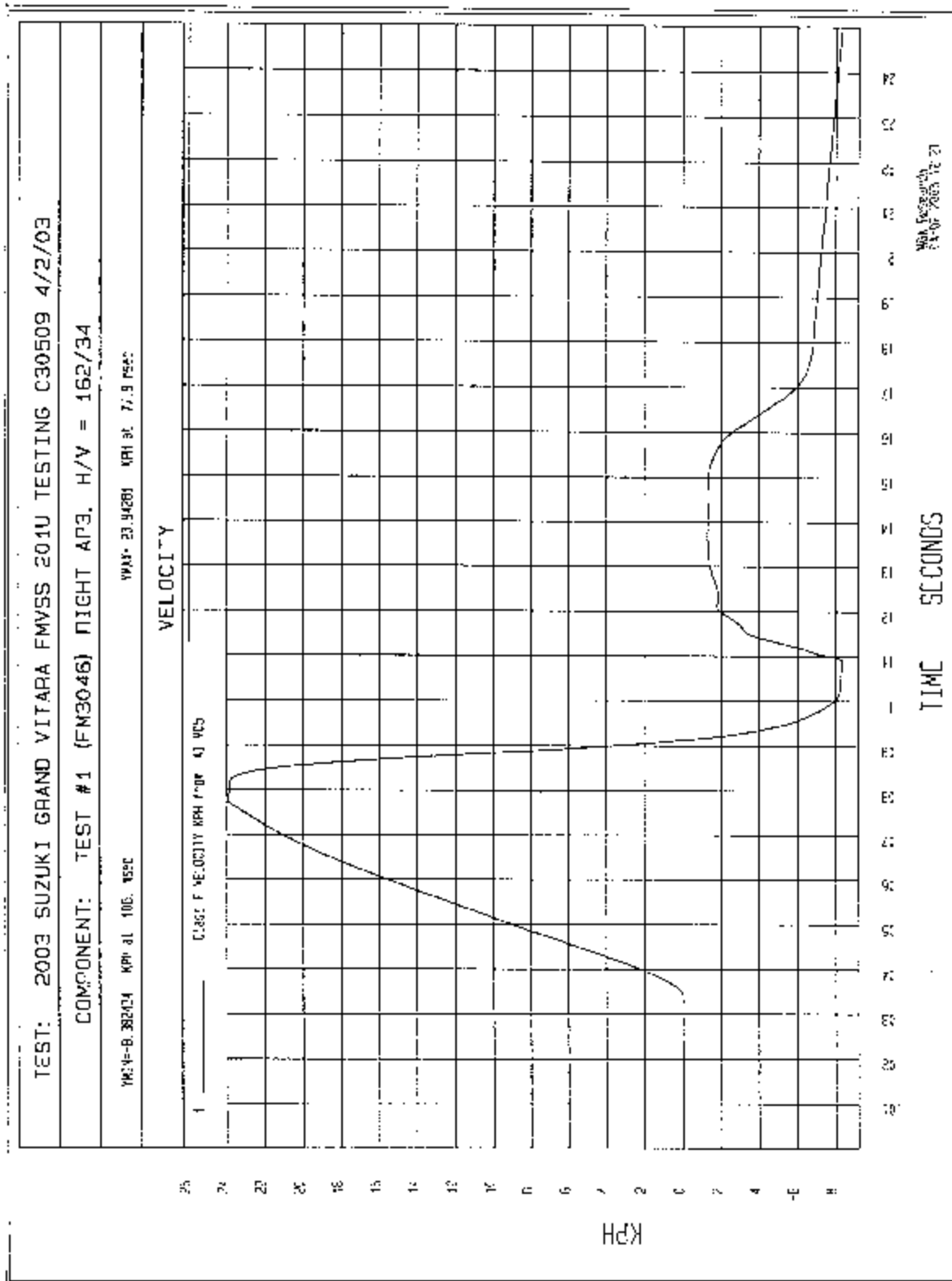
TEST: 2003 SUZUKI GRAND VITARA -MVS\$ 2014 TESTING C30509 4/2/03

COMPONENT: TEST #1 (FM304G) RIGHT AP3. H/V = 162/34

YWMH=-75.02040 U'S at 111.750C

YMAJ- 25.05209 6'3 at 110. msec





MGA RESEARCH CORP
FMVSS 201C TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

CAB509

4-3-03

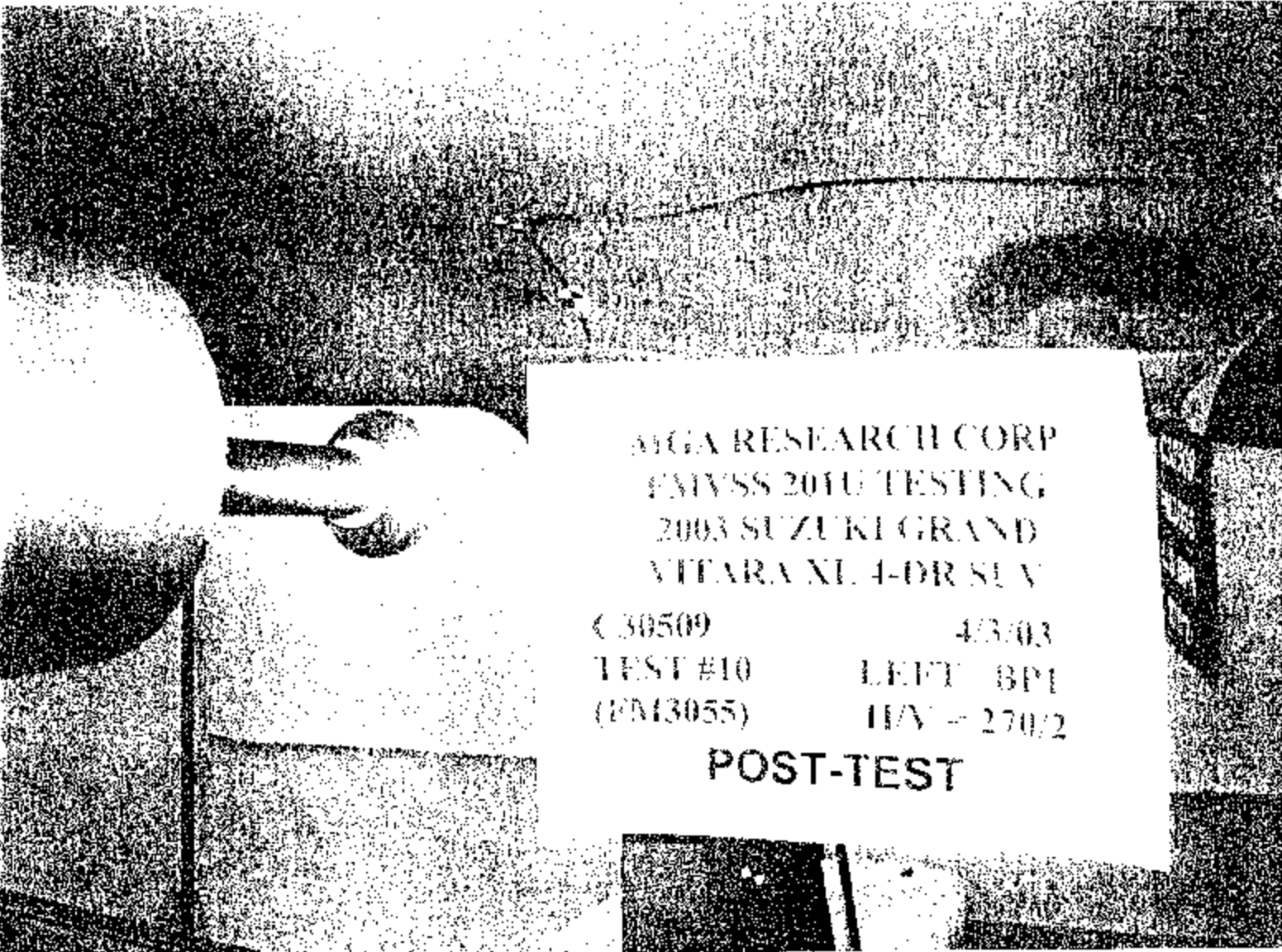
TEST #10

LEFT BP1

(FMVSS55)

HA - 276-2

PRE - TEST



ALGA RESEARCH CORP
FALVSS 201U TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

€ 30509

4/3/03

TEST #10

LEFT BP1

(PM3055)

H/V = 270/2

POST-TEST

MOORE RESEARCH CORP
EMISS 2011 TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

10509	13.113
10510	11.113
10551	10.113

POST-TEST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCHIDES: MGATP201U_FRAME #2 4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30559 VEHICLE YR/MAKE/MODEL: 2003 Suzuki Grand Vitara

GENERAL TEST PARAMETERS:

Test Number: 10

Target (Vehicle Side): Left BPI

Temperature: 21 °F/°C

MGA Test Reference No.: Fm3055

Humidity: 40 %

Approach Angles: Horizontal 270 °

Time of Test: 5:45 am/pm

Vertical 2 °

FMH Serial No: 3.5

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>467</u>	<u>399</u>	<u>11.1</u>	<u>23.7</u>	<u>N/A</u>	

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35924</u>	<u>-93.1</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35919</u>	<u>95.3</u>	<u>1.23</u>	<u>1.21</u>
<u>Z</u>	<u>7</u>	<u>J31031</u>	<u>95.1</u>	<u>1.57</u>	<u>1.57</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

B-Pillar trim WAS CRACKED

Recorded By: [Signature] Approved By: [Signature] Date: 4/3/03

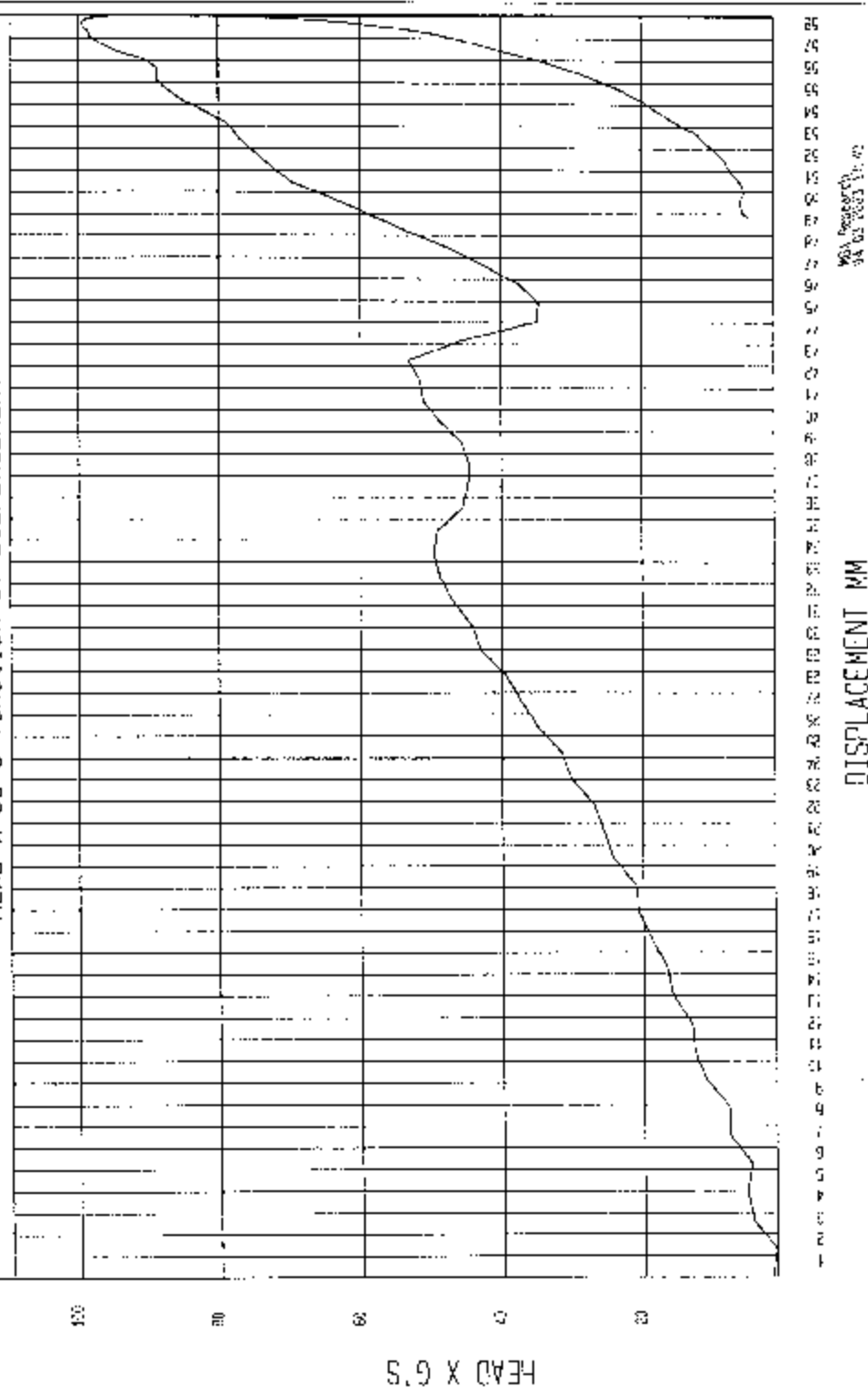
*Only necessary for NHTSA (Government) Compliance testing.

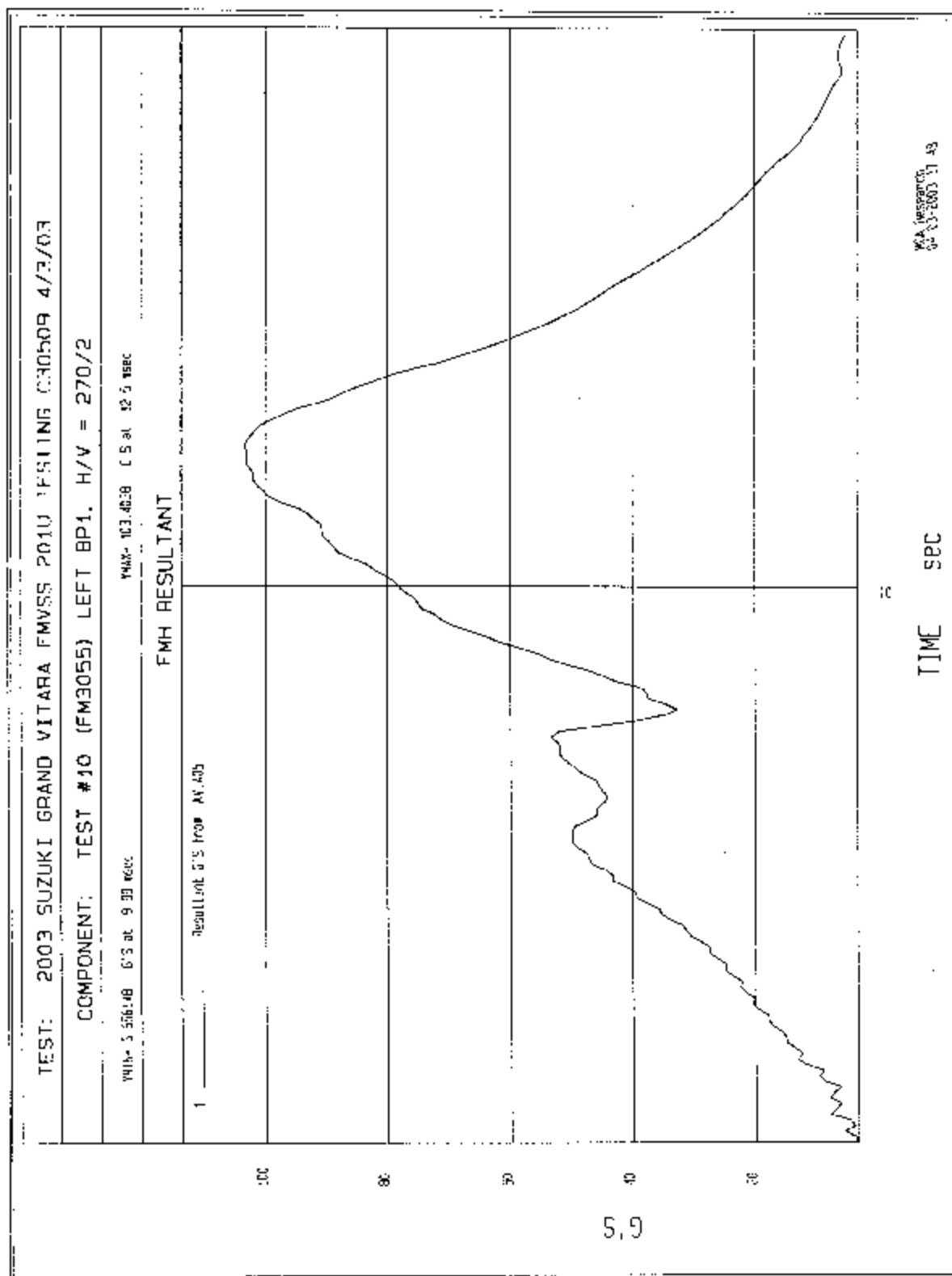
```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM3055AV.A05
1 - HIC = 398.73 calculated over 11.1 msec
T1 = 4.40 msec T2 = 15.50 msec
*****
HIC(d) = 46'
Impact Velocity = 23.7 (km/h)
```

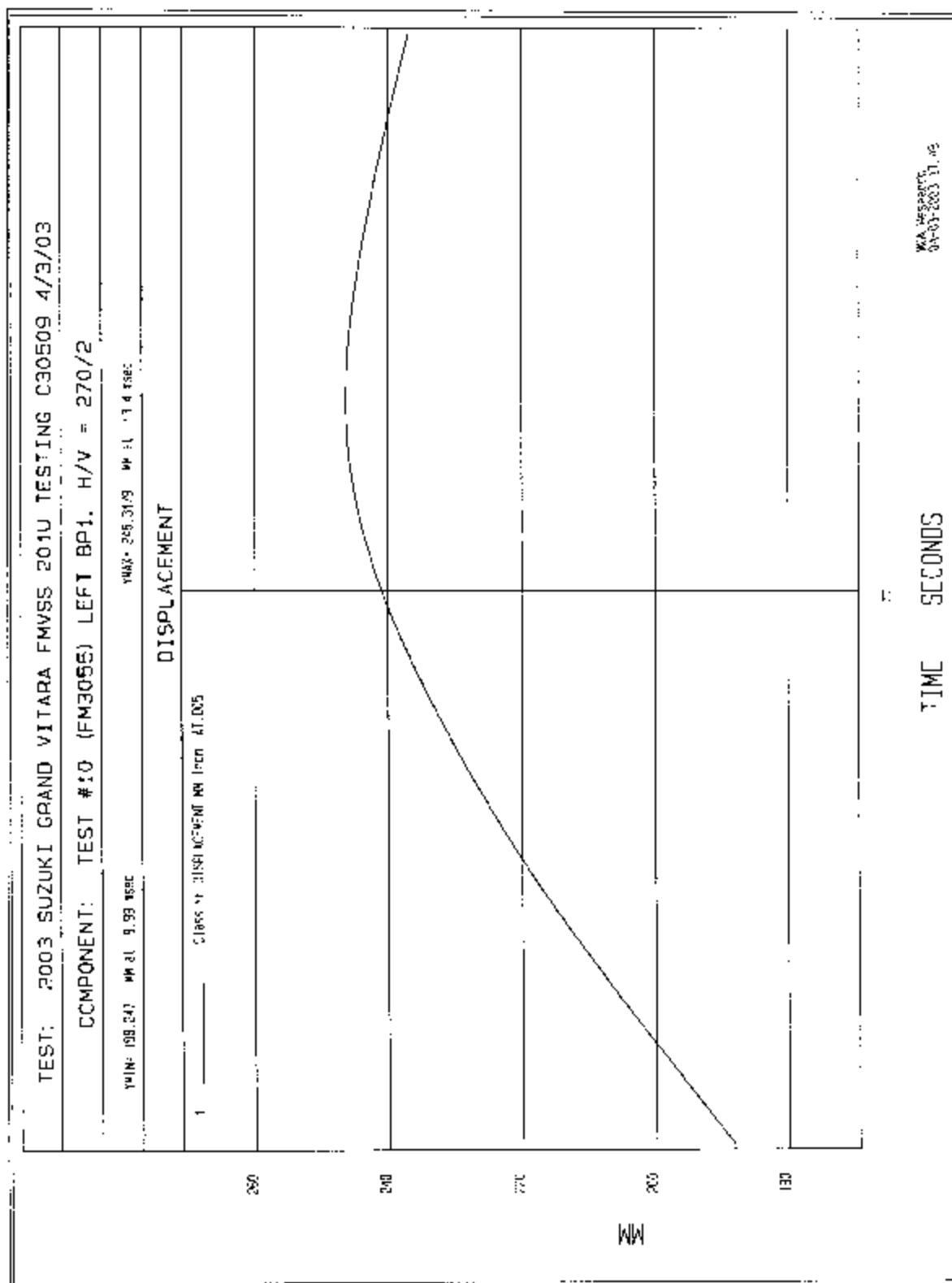
TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

COMPONENT: TEST #10 (FM3055) LEFT BP1, H/V = 270/2

HEAD X as a function of DISPLACEMENT







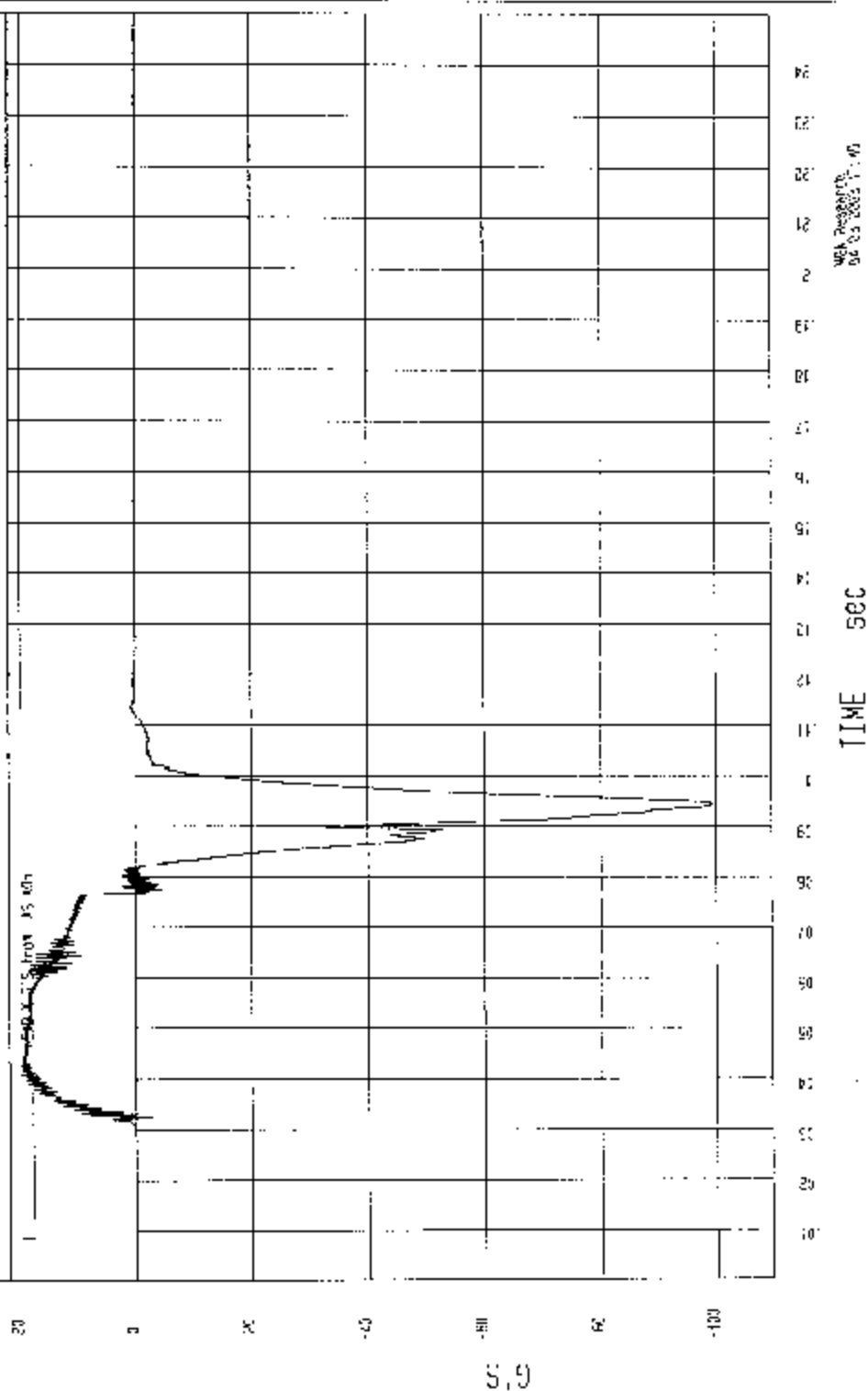
TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

COMPONENT: TEST #10 (FM3055) LEFT BP1, H/V = 270/2

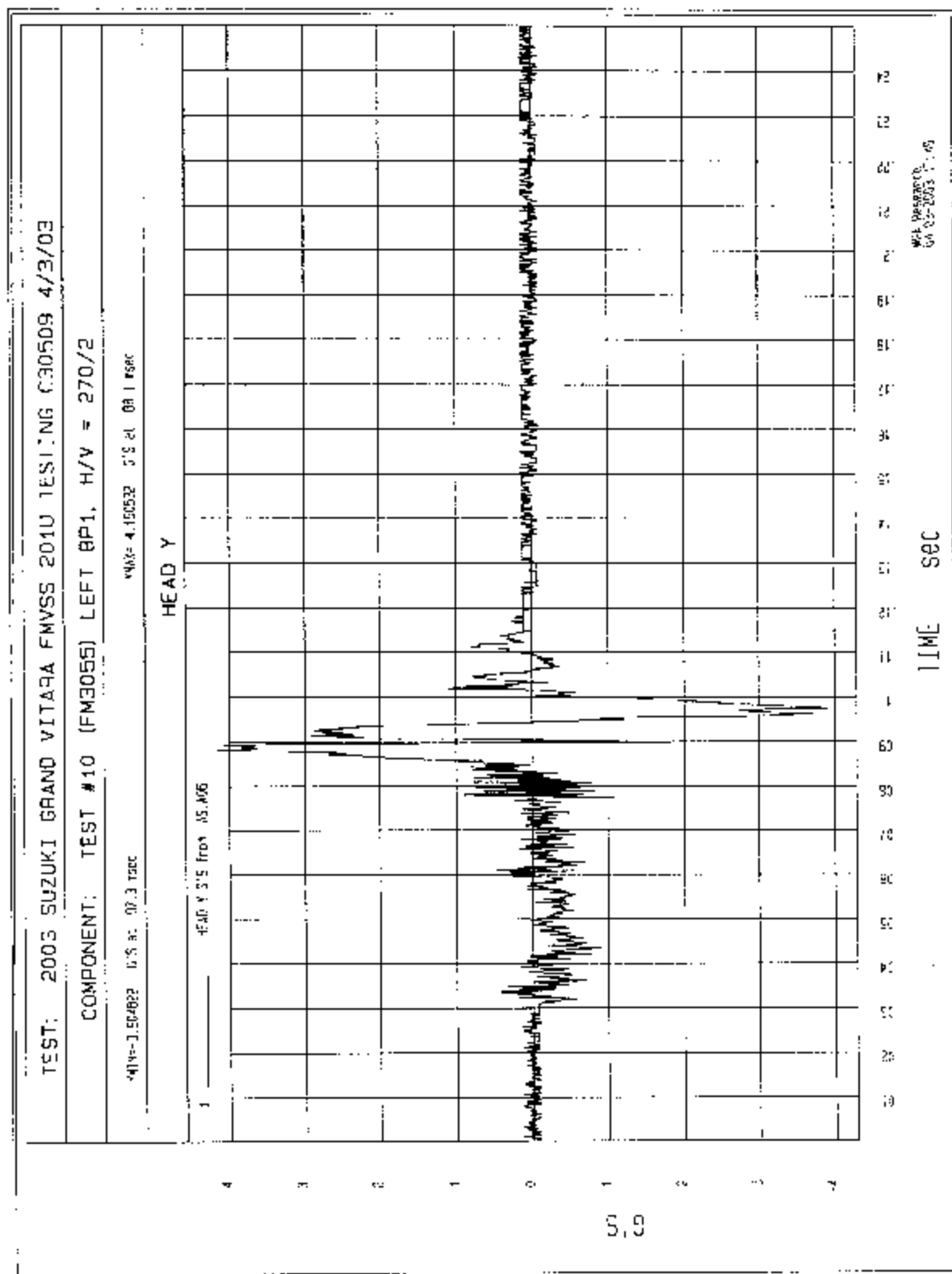
W001-33.6325 0'S at 40.5 msec

W001-10.9723 0'S at 41 msec

HEAD X



W001-33.6325 0'S at 40.5 msec



TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

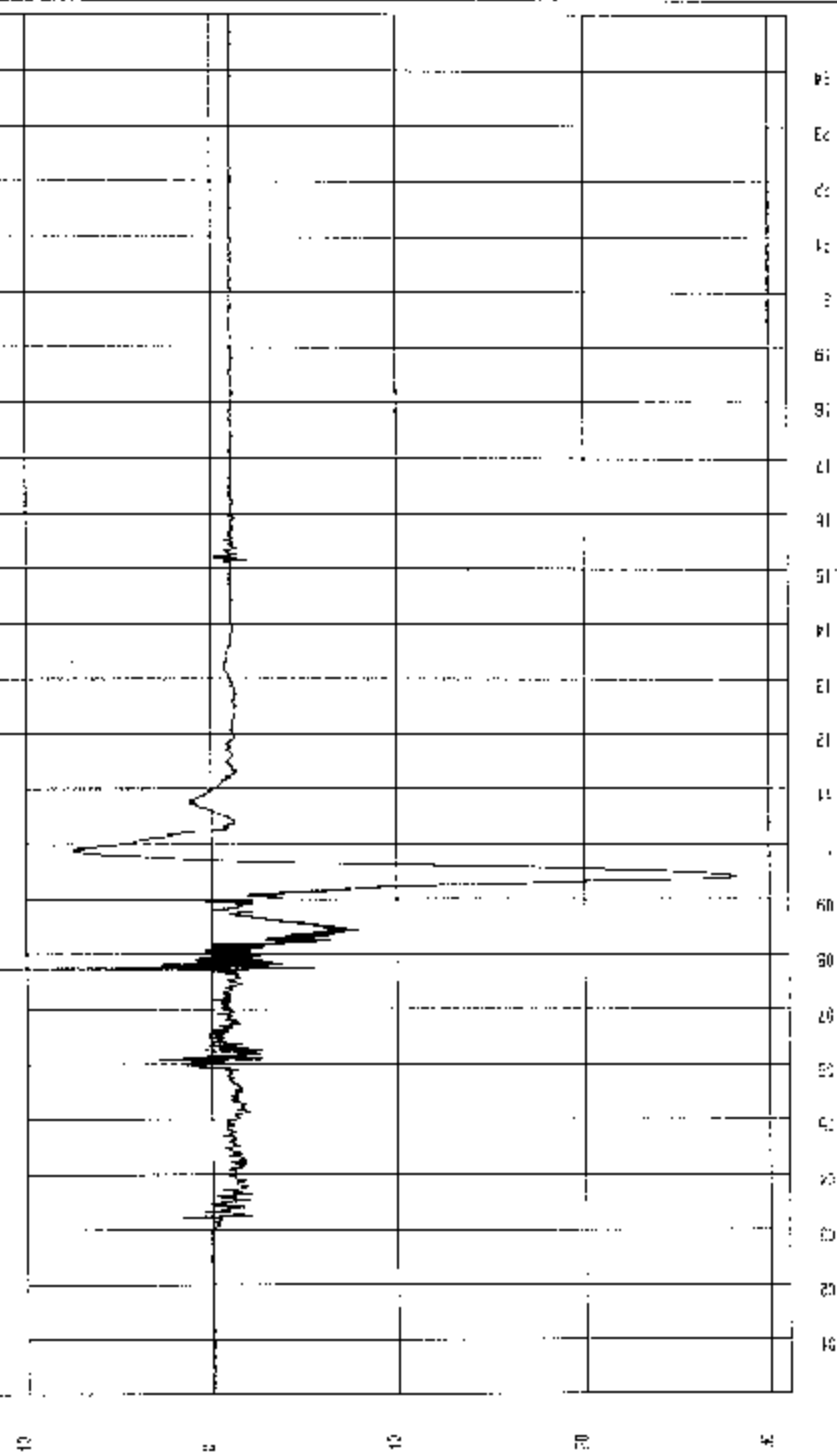
COMPONENT: TEST #10 (FM3055) LEFT BP1, H/V = 270/2

MIN. 20 2000 2'S AT 94.1 MBEC

MAX= 12 50555 6'S AT 77.4 MBEC

HEAD Z

1 --- END 2 6'S FROM AS 407



SEA Research
P.O. Box 1000
Vt. 054

TIME SEC

S,9

TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

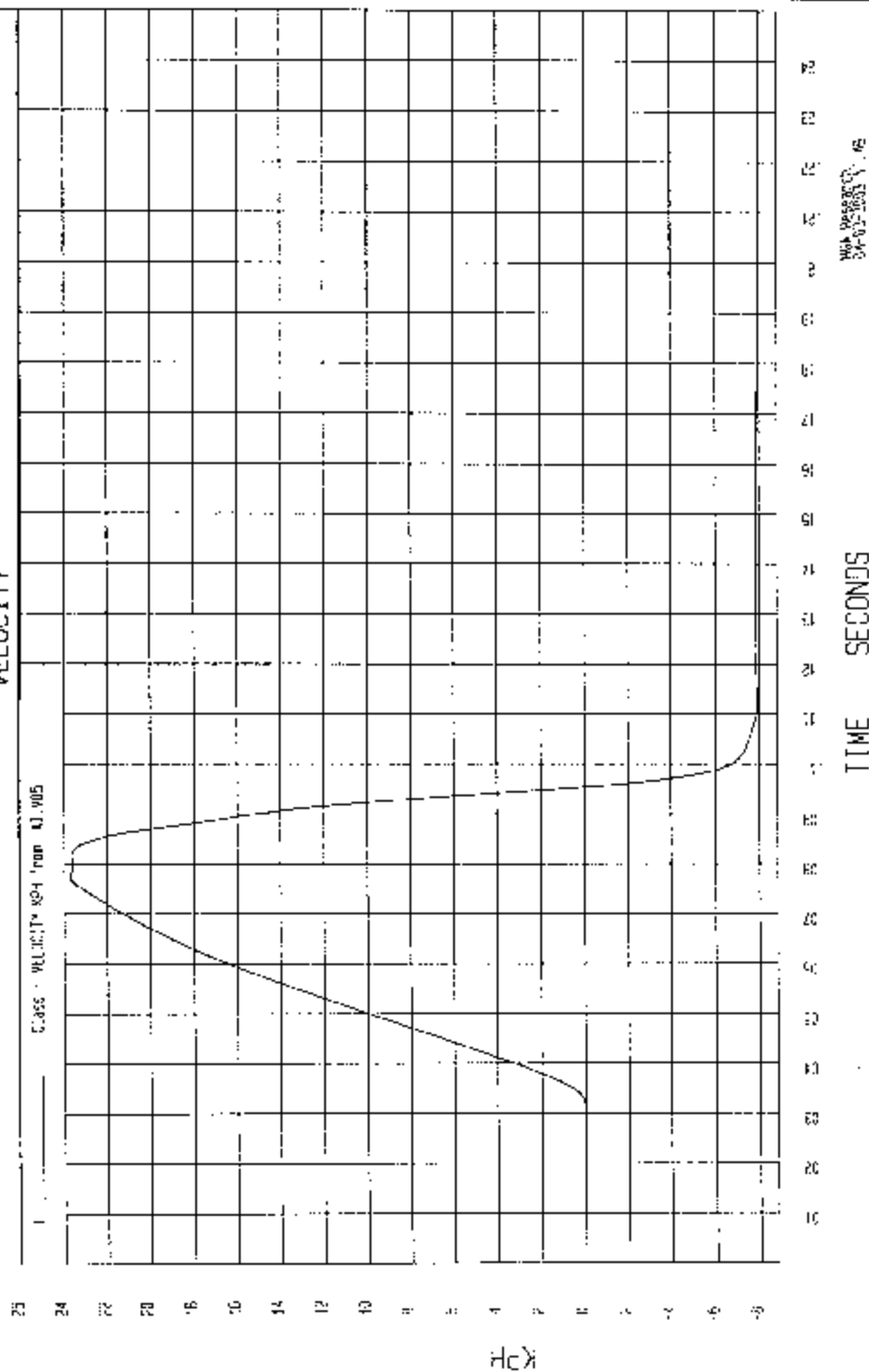
COMPONENT: TEST #10 (FM3055) LEFT BP1, H/V = 270/2

YMDH=03/03/03 QIN=01 PMU CSR=

YMDH=23/03/09 RPM at 77.2 REBC

VELOCITY

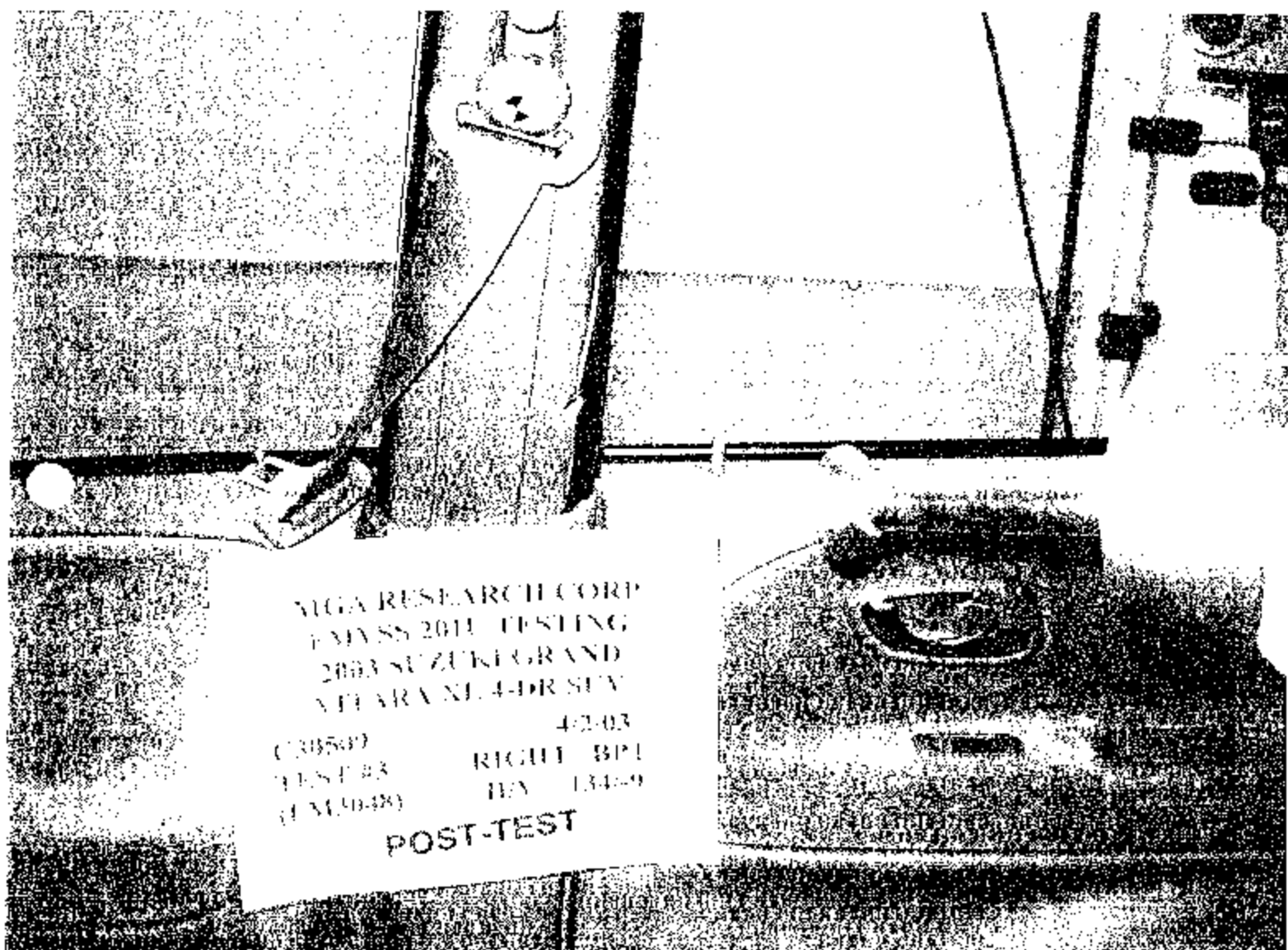
CLASS: VELOCITY RPM 01.005



WMA 00000000
04-01-2003 1.00

MGA RESEARCH CORP
FMVSS 2011 TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

C30509 4/2/03
TEST #3 RIGHT BP4
(FM3048) II/V - 134/-9
PRE - TEST



MIGA RESEARCH COLLECT
 EMMASS 2011 TESTING
 2007-01 ZUBERKANA
 ALEKRA NE 400000

036509 42.03
 TEST-43 RIGHT-EP1
 (HVR048) 11.5 11.5-9

POST-TEST



MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30505 VEHICLE YR/MAKE/MODEL: 2003 Suzuki Grand Vitara

GENERAL TEST PARAMETERS:

Test Number: 3

Target (Vehicle Side): left/right BPY

Temperature: 21 °C

MGA Test Reference No.: FM3048

Humidity: 42 %

Approach Angles: Horizontal 134 °

Time of Test: 3:10 am/pm (pm)

Vertical -9 °

FMH Serial No: 38

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pl. O	Left/Right Pl. O
423	340	9.7	23.6	13	23

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J36197	-108.2	1.21	1.21
Y	6	J36193	102.0	1.23	1.23
Z	7	J36353	97.8	1.51	1.51

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.): _____

B-PILLAR TRIM WAS CRACKED

Recorded By: [Signature] Approved By: Heena K. Kuleto Date: 4/2/03

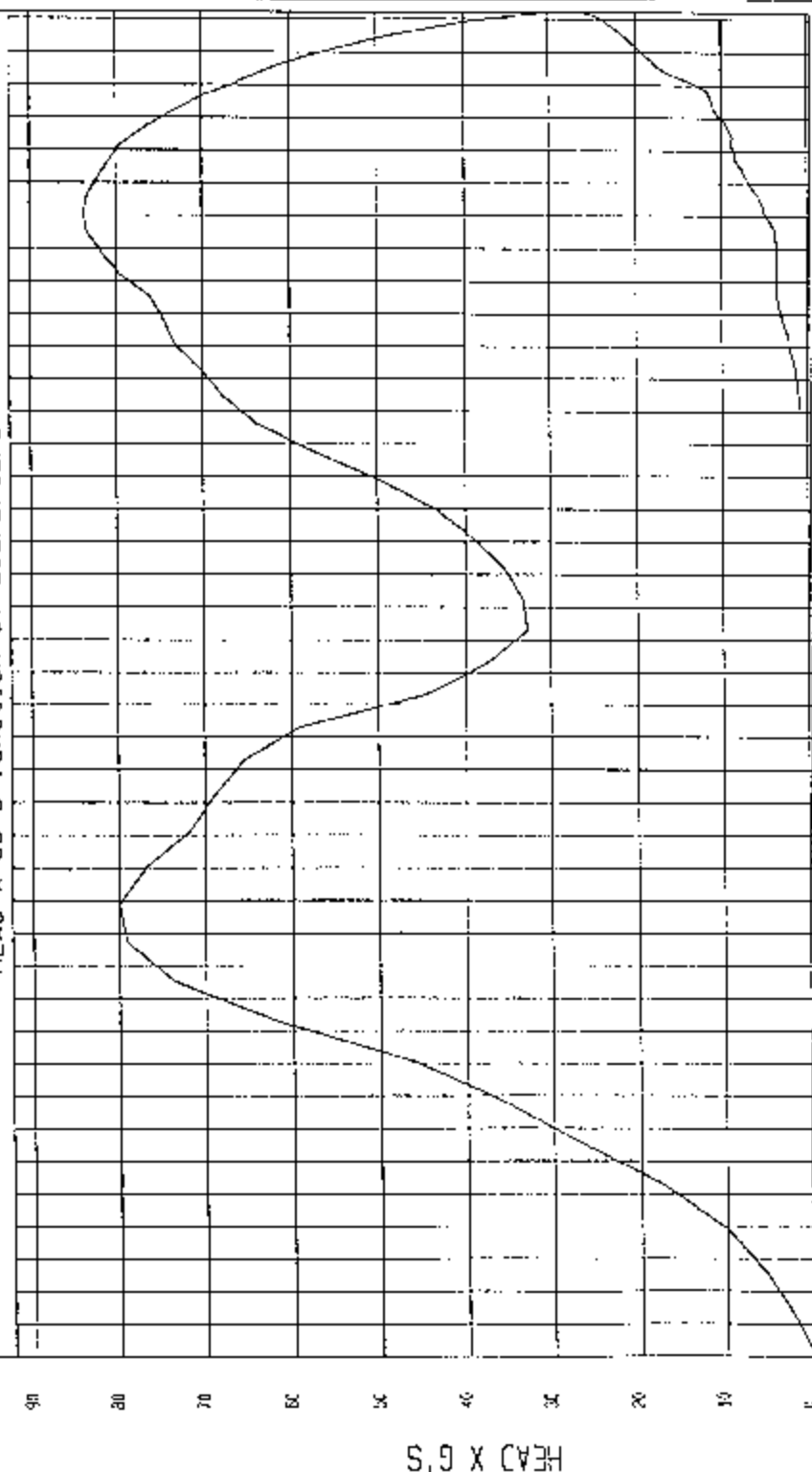
*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
T \ input file is \NHTSA\FM3048AV.A05
1 - HIC = 339.72 calculated over 9.7 msec
T = 1.30 msec T2 = 11.00 msec
*****
HIC(d) = 423
Impact Velocity = 23.6 (km/h)
```

TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/2/03

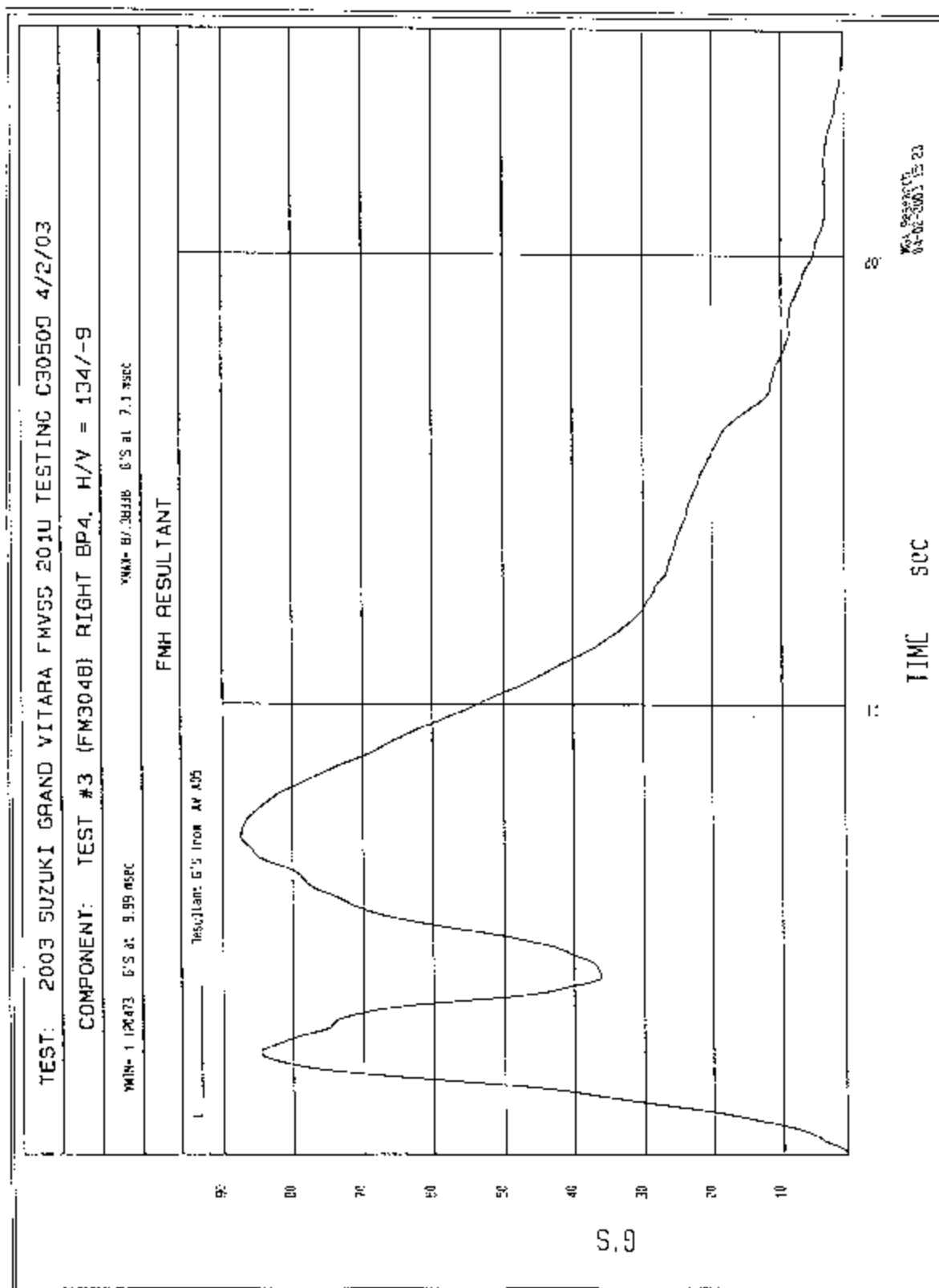
COMPONENT: TEST #3 (FM3048) RIGHT BP4. H/V = 134/-9

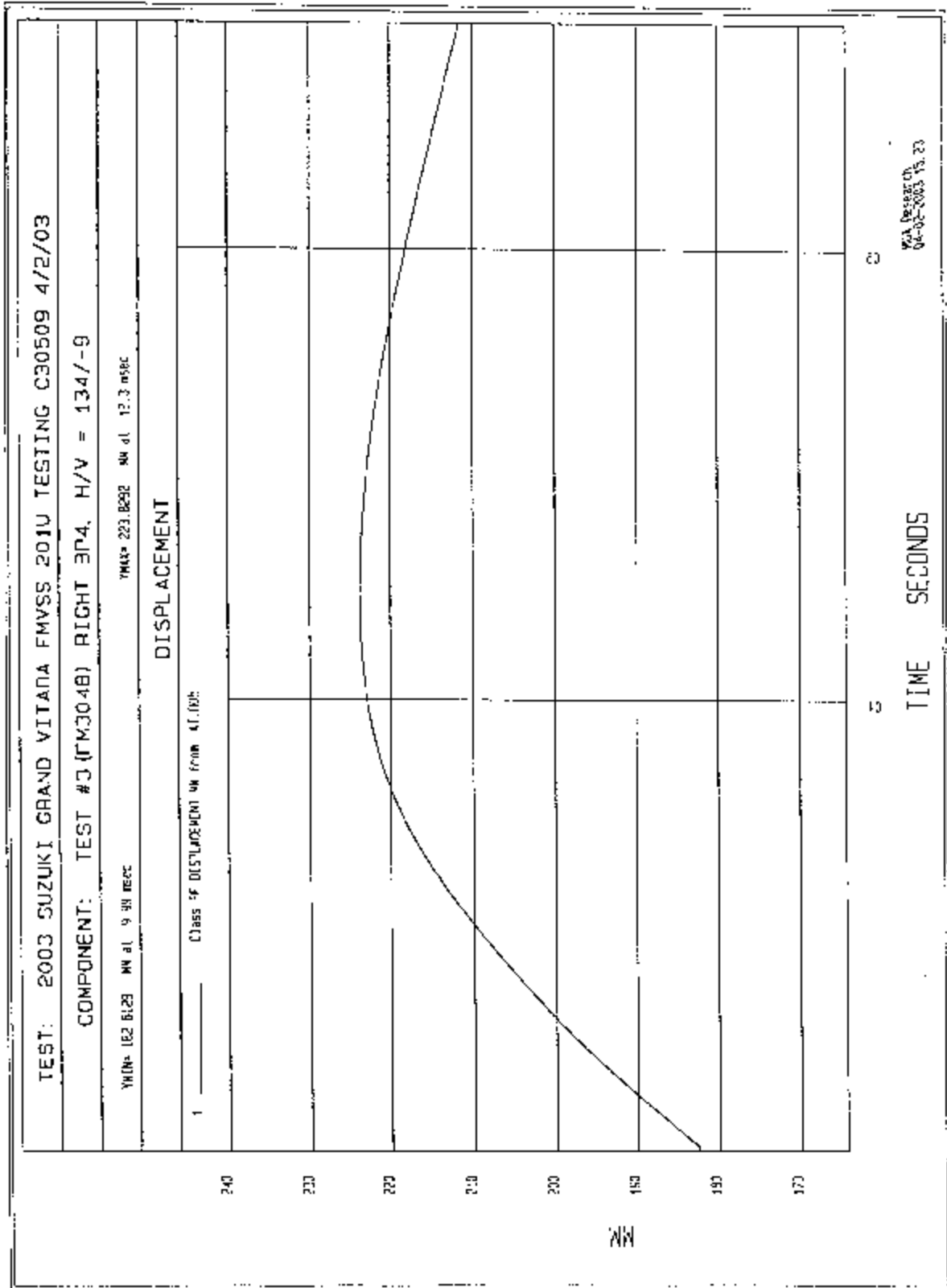
HEAD X as a function of DISPLACEMENT

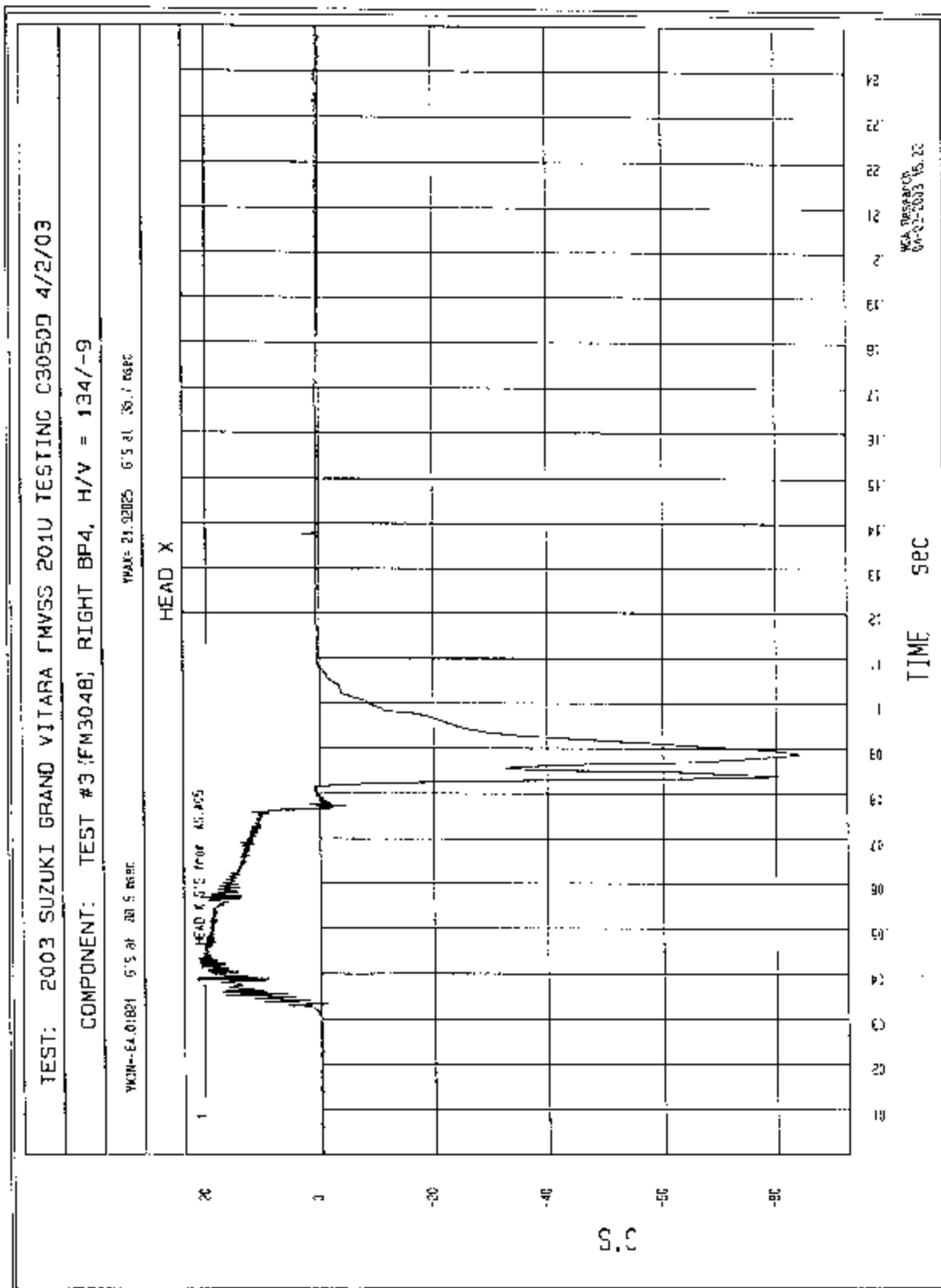


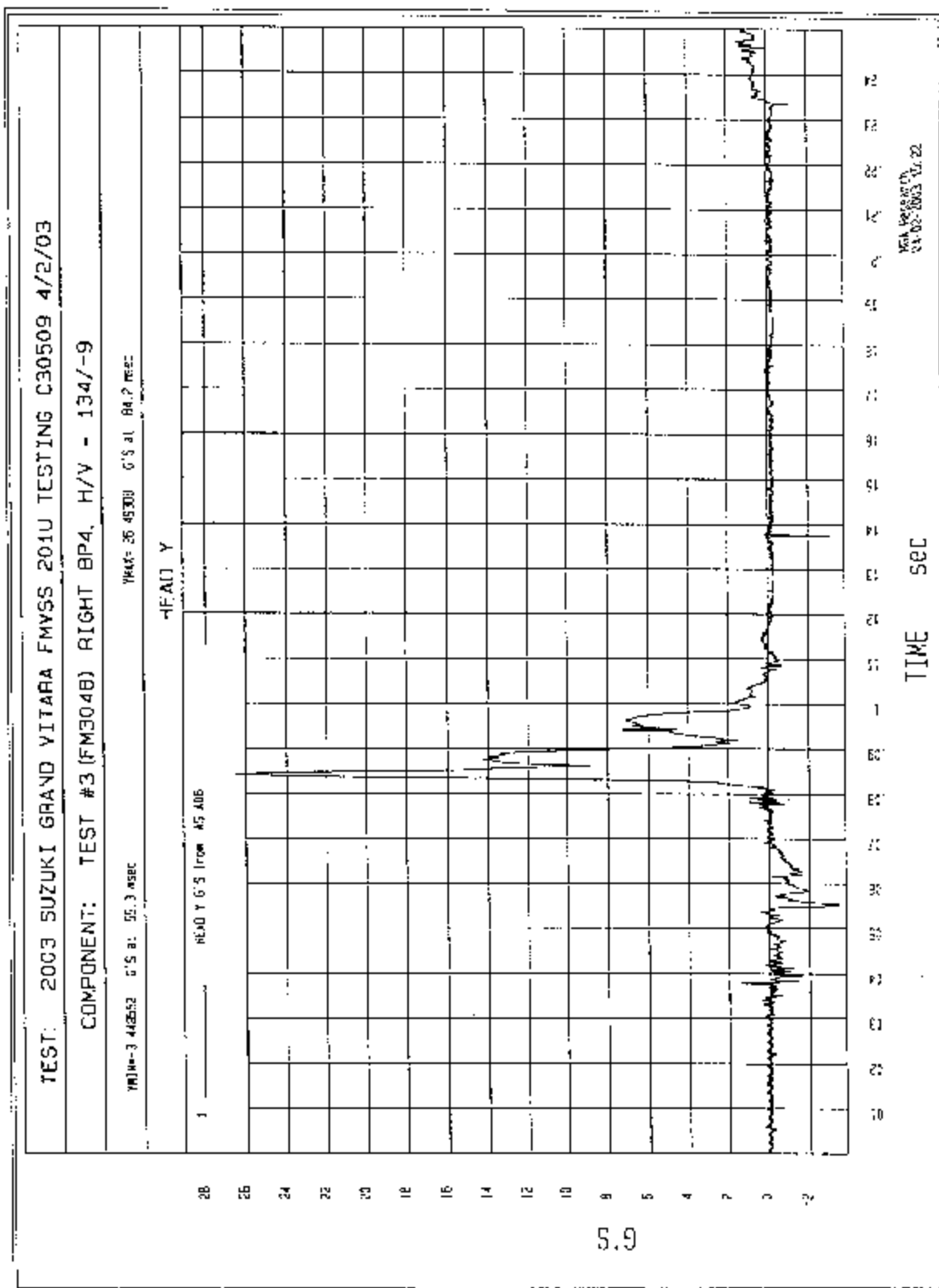
WJA Test #3048
04-02-0003 V2.23

DISPLACEMENT MM









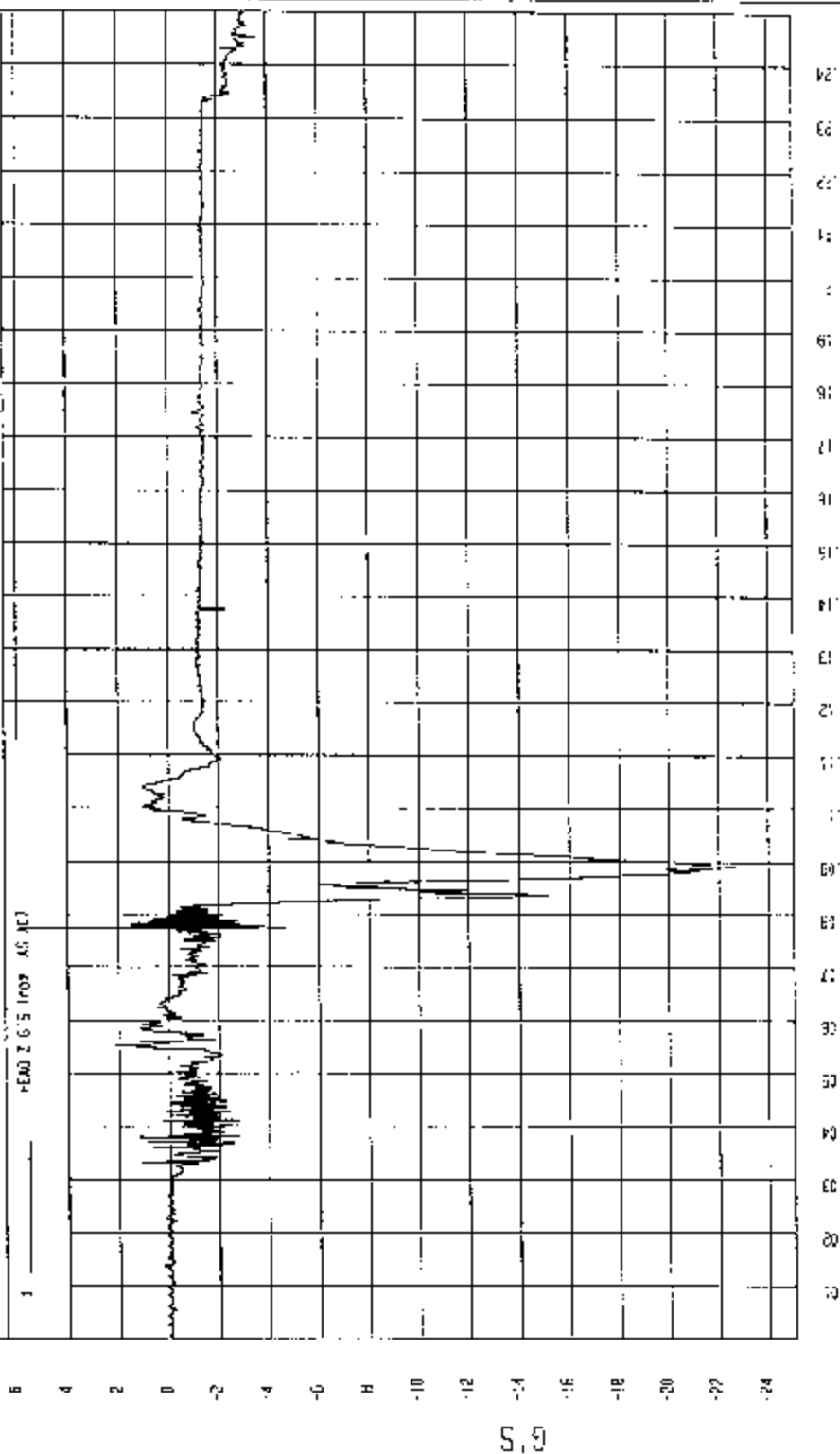
TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/2/03

COMPONENT: TEST #3 (FM3048) RIGHT BP4, H/V = 134/-9

WIN-22/5245 C'S at 86.9 KSEC

YMAX= 5.56813 C'S at 77.3 KSEC

HEAD Z



WIN-22/5245
04-02-2003 15:22

TEST: 2003 SUZUKI GRAND VITARA FMVSS 2010 TESTING C30509 4/2/03

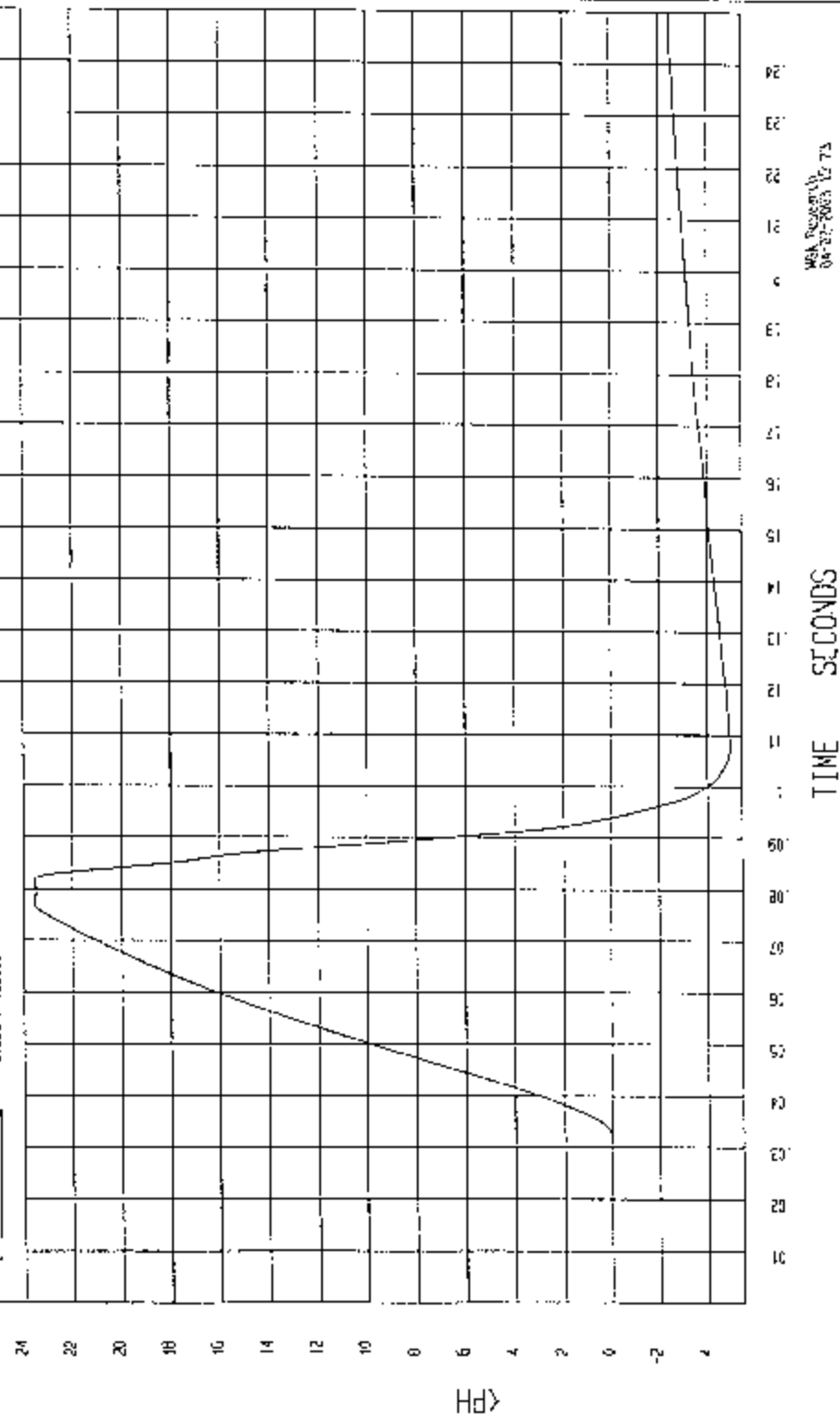
COMPONENT: TEST #3 (FM3048) RIGHT BP4, H/V = 134/-9

TIME = 4.504629 KPI at 100 msec

WAX-23 59131 KP-21 01.5 m/s

VELOCITY

Class F VELOCITY KPH from 41 W5

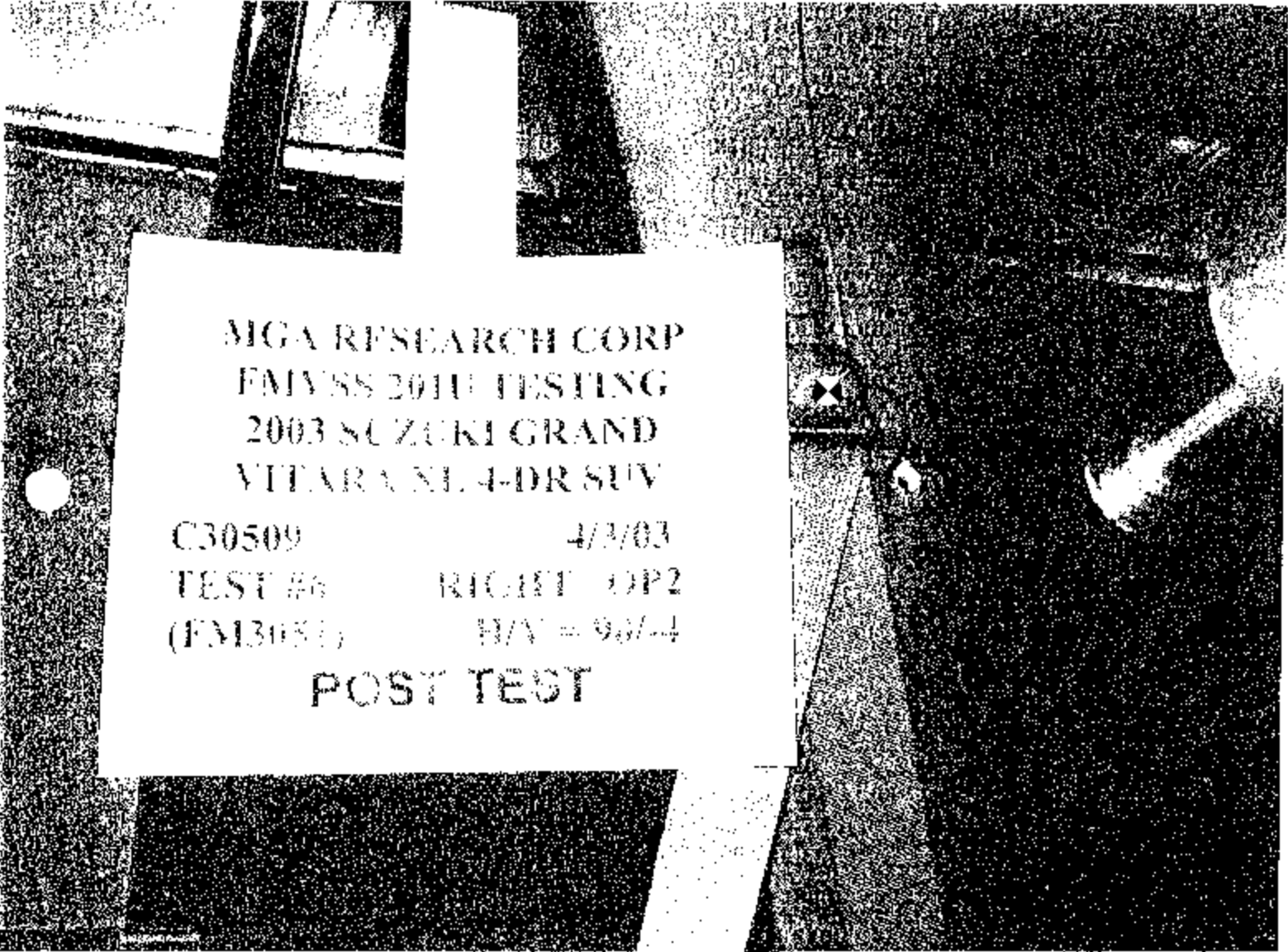


WAX-23 59131
04/02/2003 12:73

C305
FM
R

MGA RESEARCH CORP
FMVSS 201U TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

C30509 4-1-03
TEST #6 RIGHT OP2
(FM3051) H/V - 90/-4
PRE - TEST



MGA RESEARCH CORP
FMVSS 2010 TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

C30509 4/3/03
TEST #6 RIGHT DP2
(FM3051) H/V = 96/-4

POST TEST

MICART RESEARCH CORP
 ENVIRONMENTAL TESTING
 2005 SE 71st AVE GRAND
 AVENUE SE, FORT SUY

C30509 4300
 TEST 46 12 311 00
 (FMS051) 10/1/86-2

POST-TEST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30505 VEHICLE YR/MAKE/MODEL: 2003 Silverado Grand Vitara

GENERAL TEST PARAMETERS:

Test Number: 6

Target (Vehicle Side): left/right OPZ

Temperature: 21 °F RC

MGA Test Reference No.: FM3051

Humidity: 40 %

Approach Angles: Horizontal 90 °

Time of Test: 9:40 am pm

Vertical -4 °

FMH Serial No: 38

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
323	207	21.7	23.8	27	19

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J36197	-108.2	1.21	1.21
Y	6	J36193	102.0	1.23	1.23
Z	7	J36353	97.6	1.51	1.51

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: [Signature] Date: 4/5/03

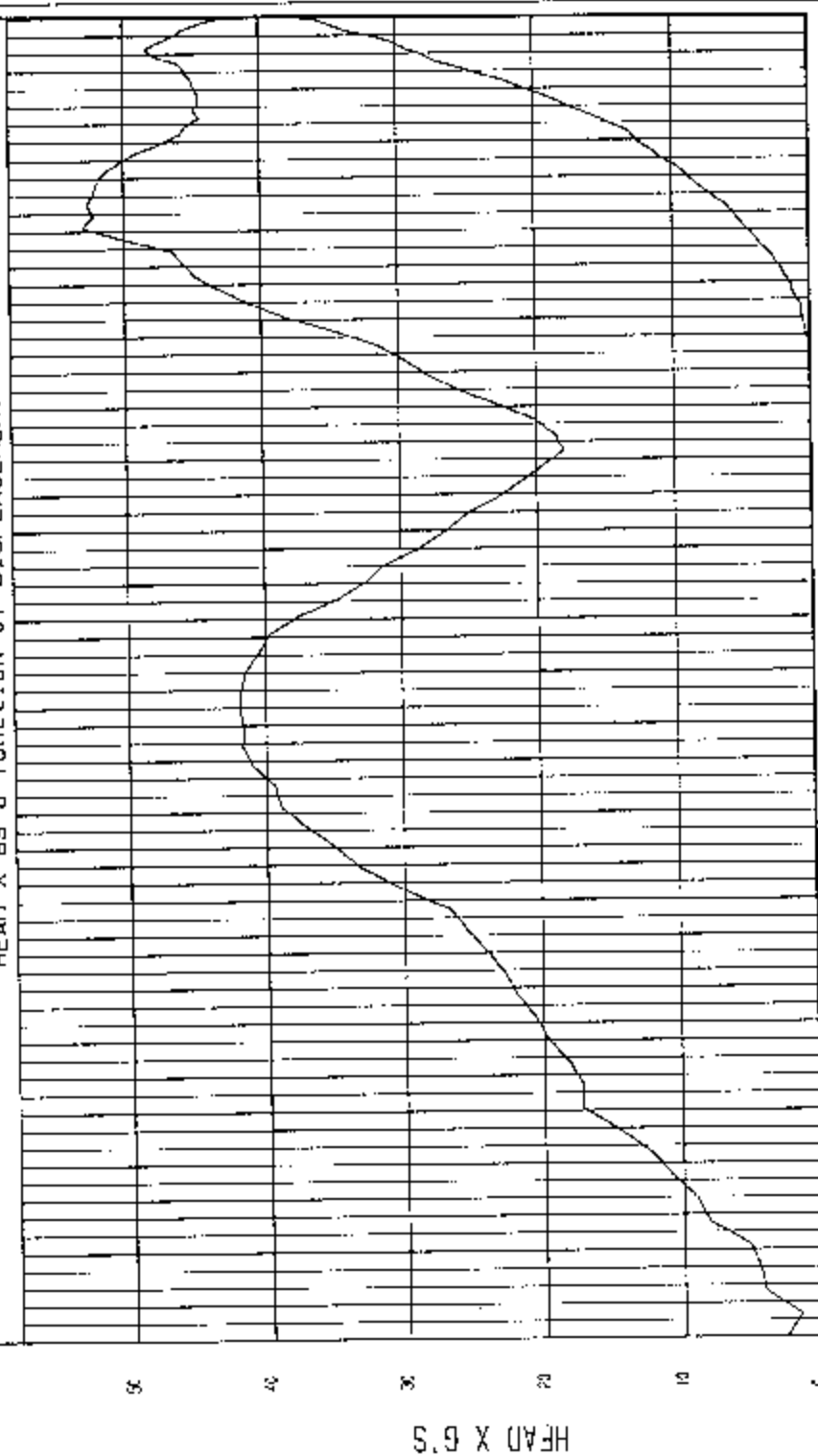
*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
T input file is \NHTSA\FM3051AV.A05
T HIC = 206.95 calculated over 21.7 msec
T1 = 2.70 msec T2 = 24.40 msec
*****
HIC(d) = 323
Impact Velocity = 23.8 (km/h)
```

TEST: 2003 SUZUKI GRAND VITARA FNVSS 201U TESTING C30509 4/3/03

COMPONENT: TEST #6 (FM3051) RIGHT OP2, H/V - 90/-4

HEAD X AS A FUNCTION OF DISPLACEMENT



SEA 00000000
04-03-2003 09:59

DISPLACEMENT MM

HEAD X G'S

TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

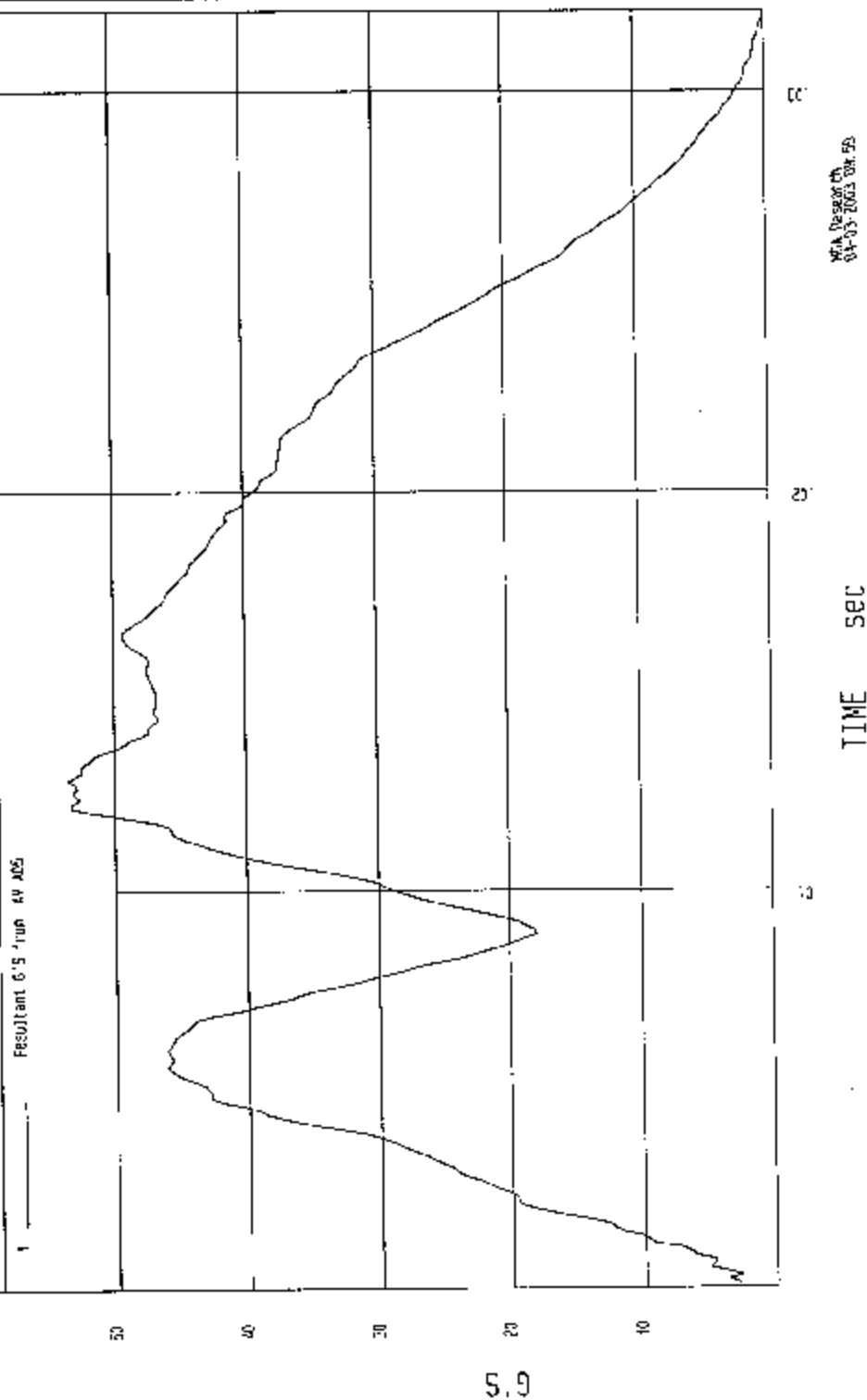
COMPONENT: TEST #6 (FM3051) RIGHT QP2, H/V - 90/-4

YMD= 5.753246E-02 3'5 AL 31.9 MS2C

YMAX= 53.52495 3'5 AL 12.8 MS2C

FMH RESULTANT

Resultant 6'5 1'run 4V MS2



YMD= 5.753246E-02 3'5 AL 31.9 MS2C

TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

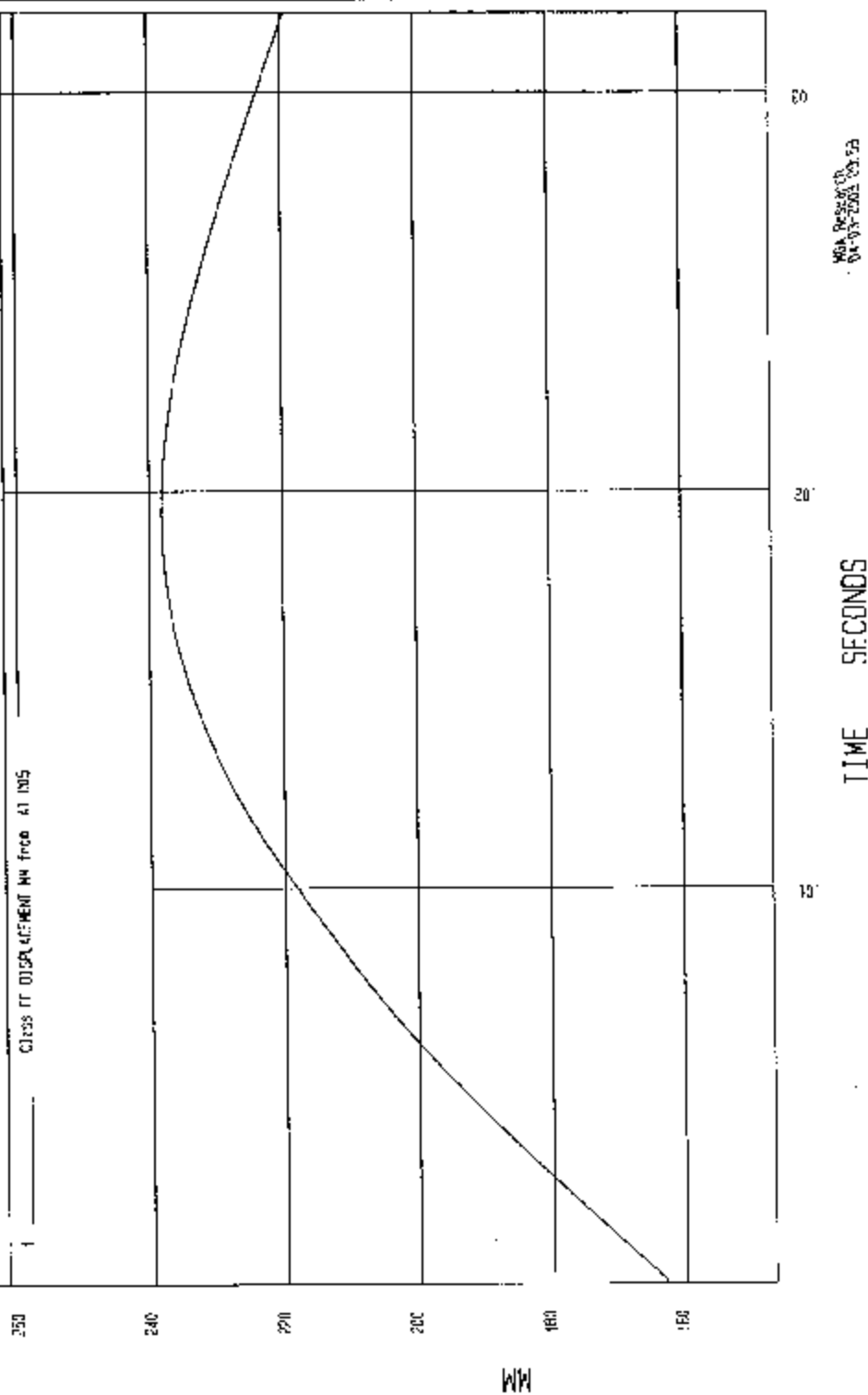
COMPONENT: TEST #6 (FM3051) RIGHT OP2, H/V = 90/-4

YIN= 167 D2/3 MM at 9.00 msec

YMAX= 238 142/ MM at 19.5 msec

DISPLACEMENT

1 _____ Cross IT DISPLACEMENT MM from 41 INOS



SEA Research
04-05-2003 09:53

TEST: 2003 SUZUKI GHAND VITARA FMVSS 201U TESTING C30509 4/3/03

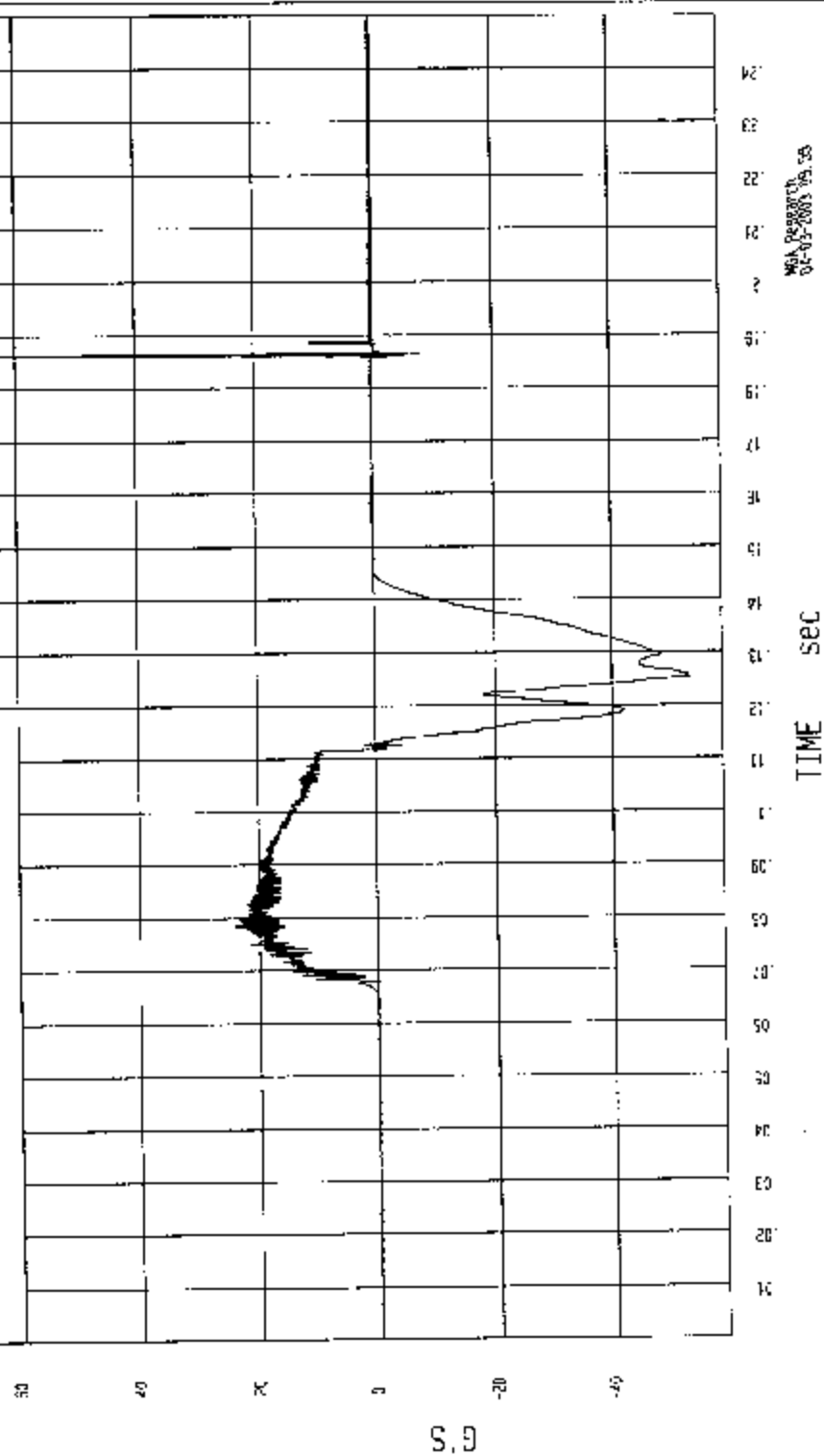
COMPONENT: TEST #6 (FM3051) RIGHT OP2, H/V = 90/-4

FMVSS 201.01208 0° S at 125. KSCC

FMVSS 201.01204 0° S at 105 KSCC

HEAD X

1 ——— HEAD X 0° S (104 KSCC)



TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

COMPONENT: TEST #6 (FM3051) RIGHT CP2, H/V = 90/-4

YMAH-07.13078 G'S at 186. msec

YMAH-7.256761 G'S at 385 msec

HEAD Y

1 HEAD Y G'S from AS 105

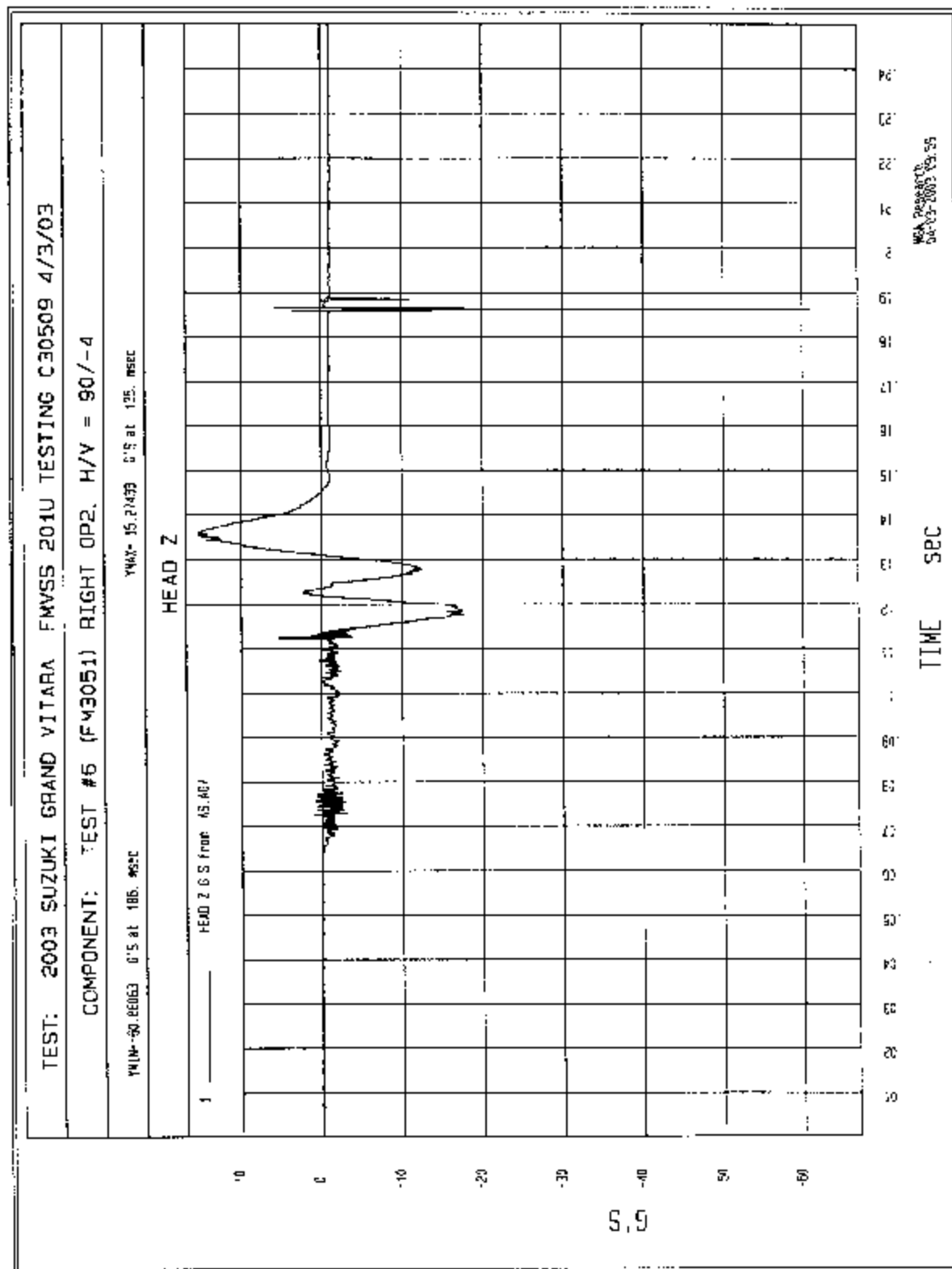
0 -10 -20 -30 -40 -50

G'S

MAH-07.13078
04/03/2003 09:56

TIME SEC

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000



TEST: 2003 SUZUKI GRAND VITARA FMVSS 2010 TESTING C30509 4/3/03

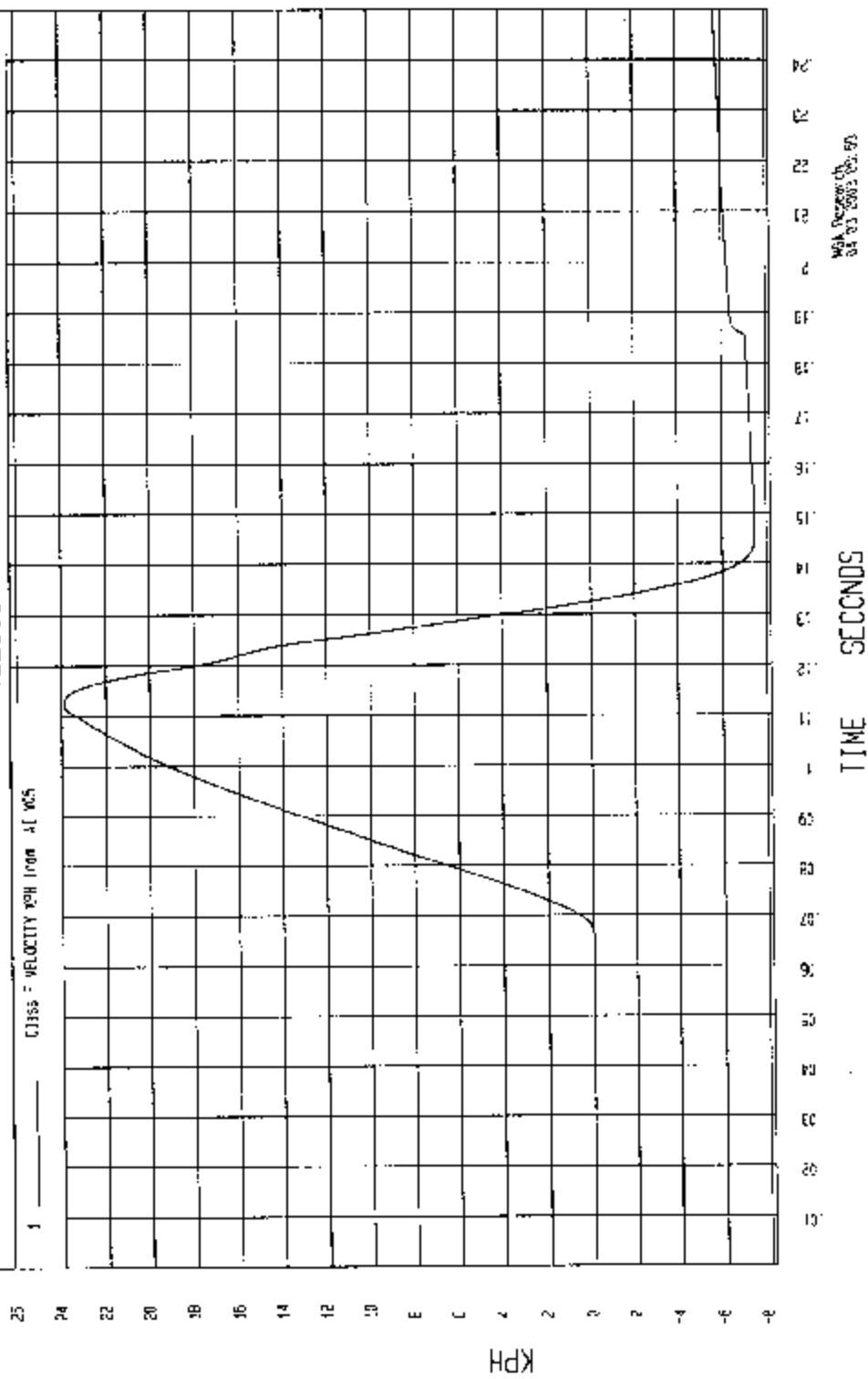
COMPONENT: TEST #6 (FM3051) RIGHT DP2. H/V = 90/-4

WIND-7.440455 mph at 145. msec

PMAX-23.25413 mph at 11.2 msec

VELOCITY

1 _____ CLASS 2 VELOCITY KPH from 1 to 25



WGA-030509-03
04/03/2003 09:50:50

C305
FM30
2003
MGA RESTAURANT CORP
FMVSS 2011 - TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

C30509 4/2/03
TEST #4 RIGHT SR3A
(FM3049) E/V - 90/35

PRE - TEST

MGA RESEARCH CORP
FAVSS 2011 TESTING
2003 SUZUKI GRAND
VITARA VL 4-DR SUV

C30500 4/2/03
TEST #4 RIGHT SIDE
(FM3049) H/A - 90.38

POST-TEST

MCAREN RESEARCH CORP
FMS 852010 T-NT10
3003 ST ZUCKERMAN
VIHARA VI 4DR S73

C 30509 1/2 B3
TEST 54 RIGHT SIDE
(FMS 3049) 11/1 90/36

POST-TEST



MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U, FRAME #2.4

DOC. NO: MGATP201U_FRAME #2
REVISION NO.: 3
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30809 VEHICLE YR/MAKE/MODEL: 2003 SUZUKI

GENERAL TEST PARAMETERS:

Test Number: 4

Target (Vehicle Side): left/right SR3A

Temperature: 21 °F 0

MGA Test Reference No.: FM3049

Humidity: 42 %

Approach Angles: Horizontal 90 °

Time of Test: 4:15 am pm

Vertical 35 °

FMH Serial No: 35

TEST RESULTS:

HIC(c)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>416</u>	<u>331</u>	<u>11.7</u>	<u>24.0</u>	<u>10</u>	<u>15</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35524</u>	<u>-93.1</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35519</u>	<u>95.3</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J35051</u>	<u>95.1</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

GRAP HANDLE WAS COMPRESSED.

Recorded By: [Signature] Approved By: Helena Kalato Date: 4/2/03

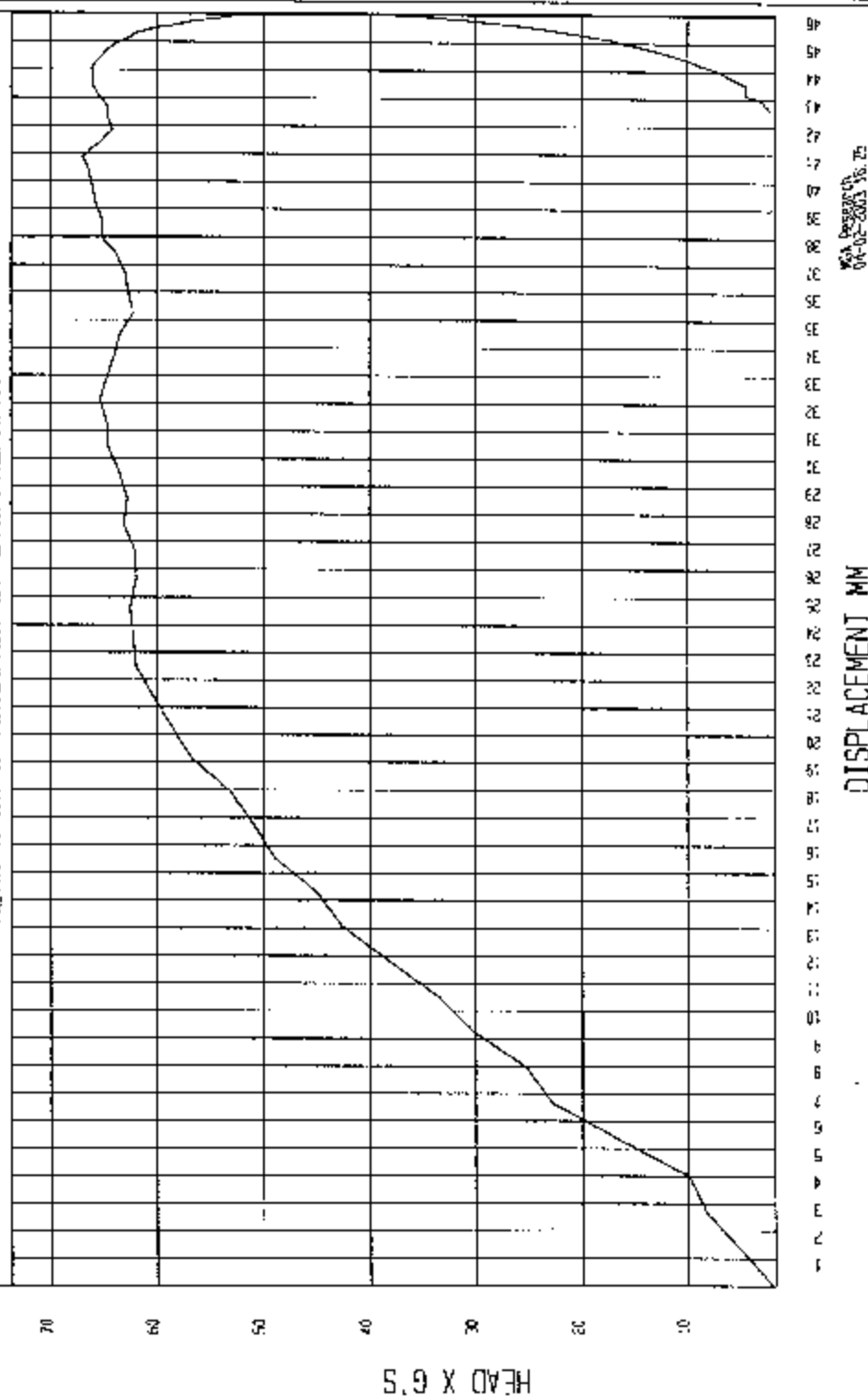
*Only necessary for NHTSA (Government) Compliance testing.

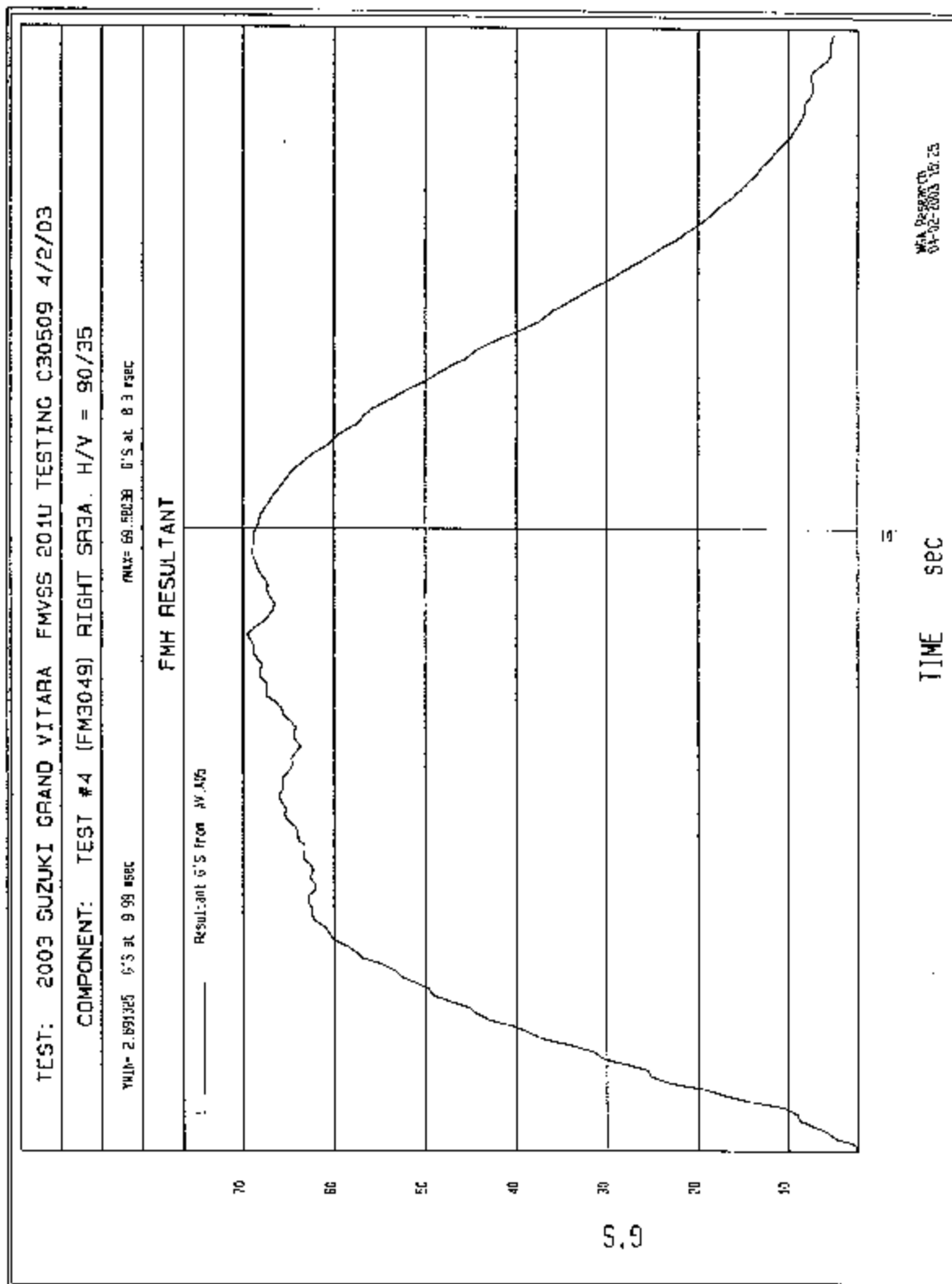
```
*****
RESULTS OF HIC36 PROGRAM
*****
input file is \NHTSA\PM3049AV.A05
HIC = 331.28 calculated over 11.7 msec
T1 = 1.70 msec T2 = 13.40 msec
*****
HIC(d) = 416
Impact Velocity = 24.0 (km/h)
```

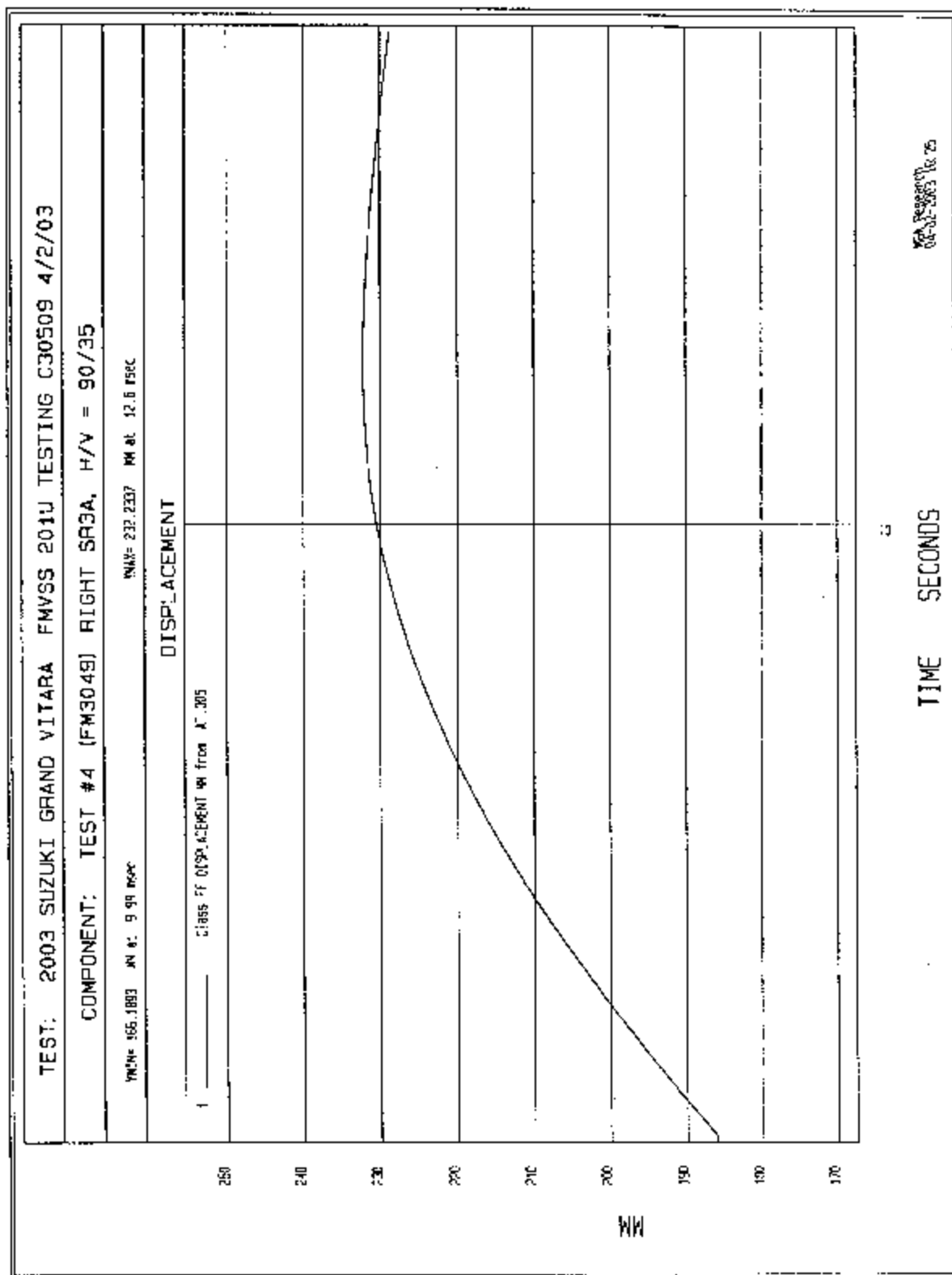
TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/2/03

COMPONENT: TEST #4 (FM3049) RIGHT SR3A, H/V = 90/35

HEAD X as a function of DISPLACEMENT







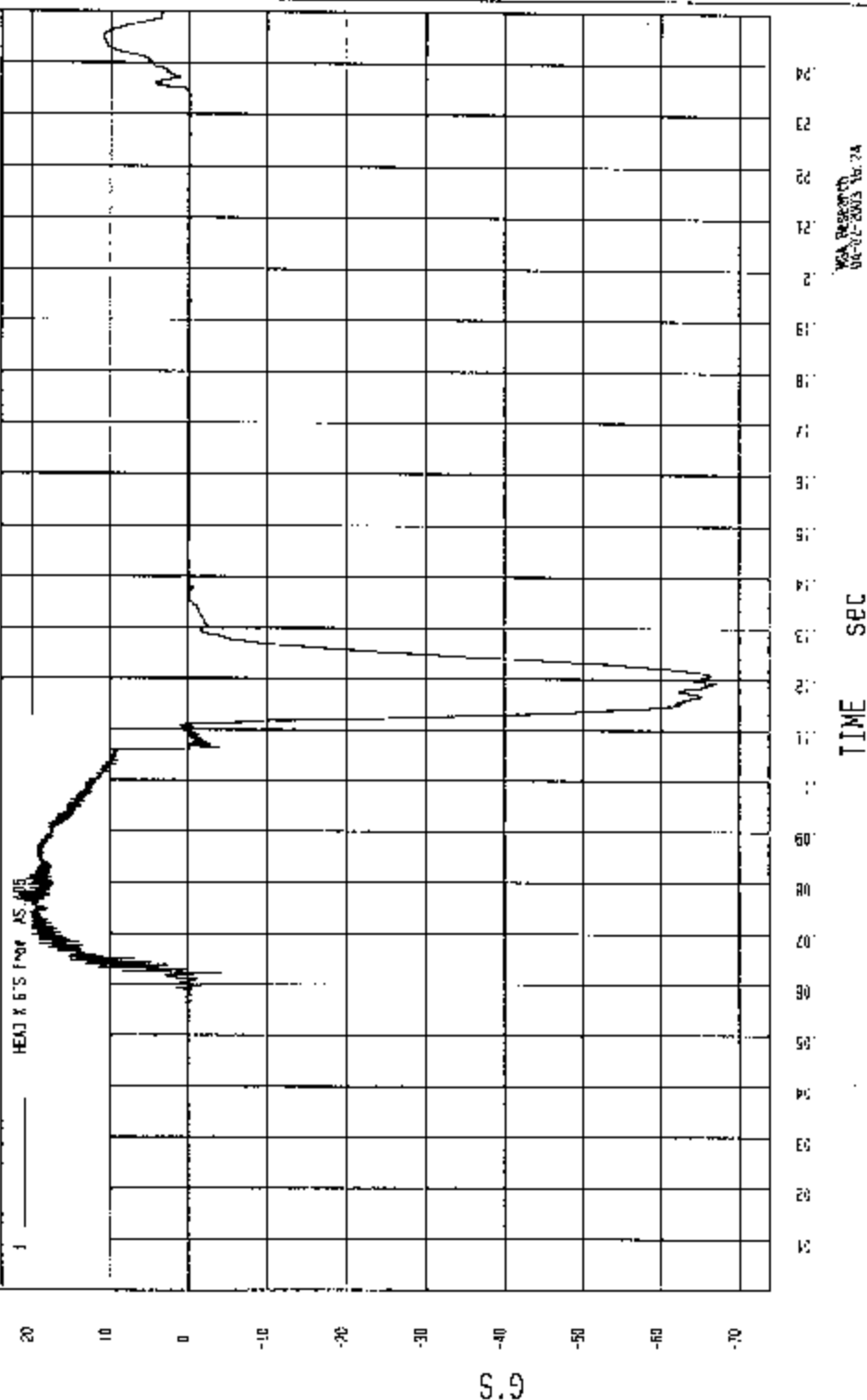
TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/2/03

COMPONENT: TEST #4 (FM3049) RIGHT SR3A, I/V = 90/35

YMIN=-67.06103 0'S at 1.19 msec

YMAX= 21.70523 8'S at 77.6 msec

HEAD X



WCA Research
06-12-2003 16:24

TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/2/03

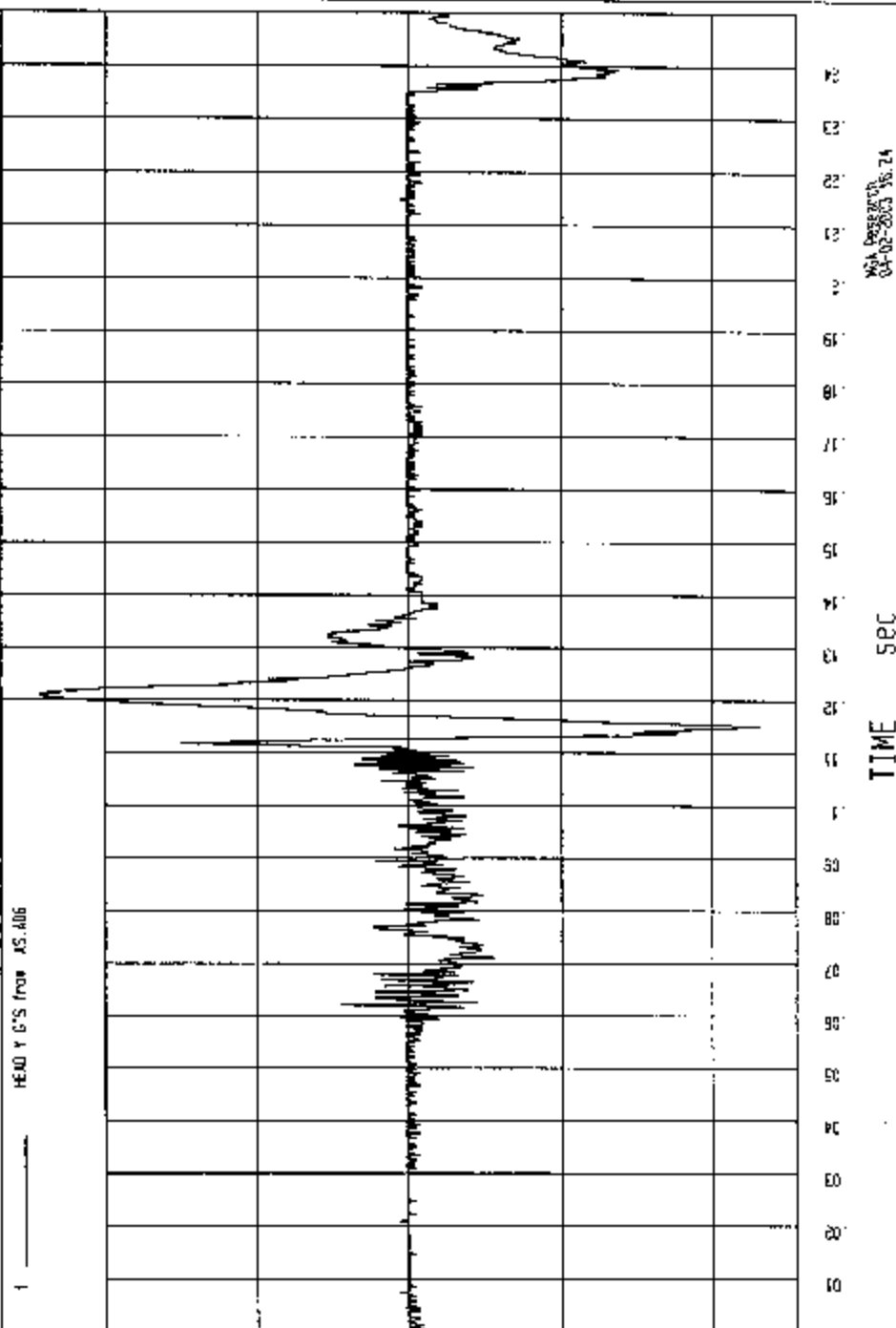
COMPONENT: TEST #4 (FM3049) RIGHT SR3A, H/V = 90/35

WJLN--4 548/33 G'S at 115 msec

WJLN--4 548/33 G'S at 121 msec

HEAD Y

1 HEAD Y G'S from 15.406



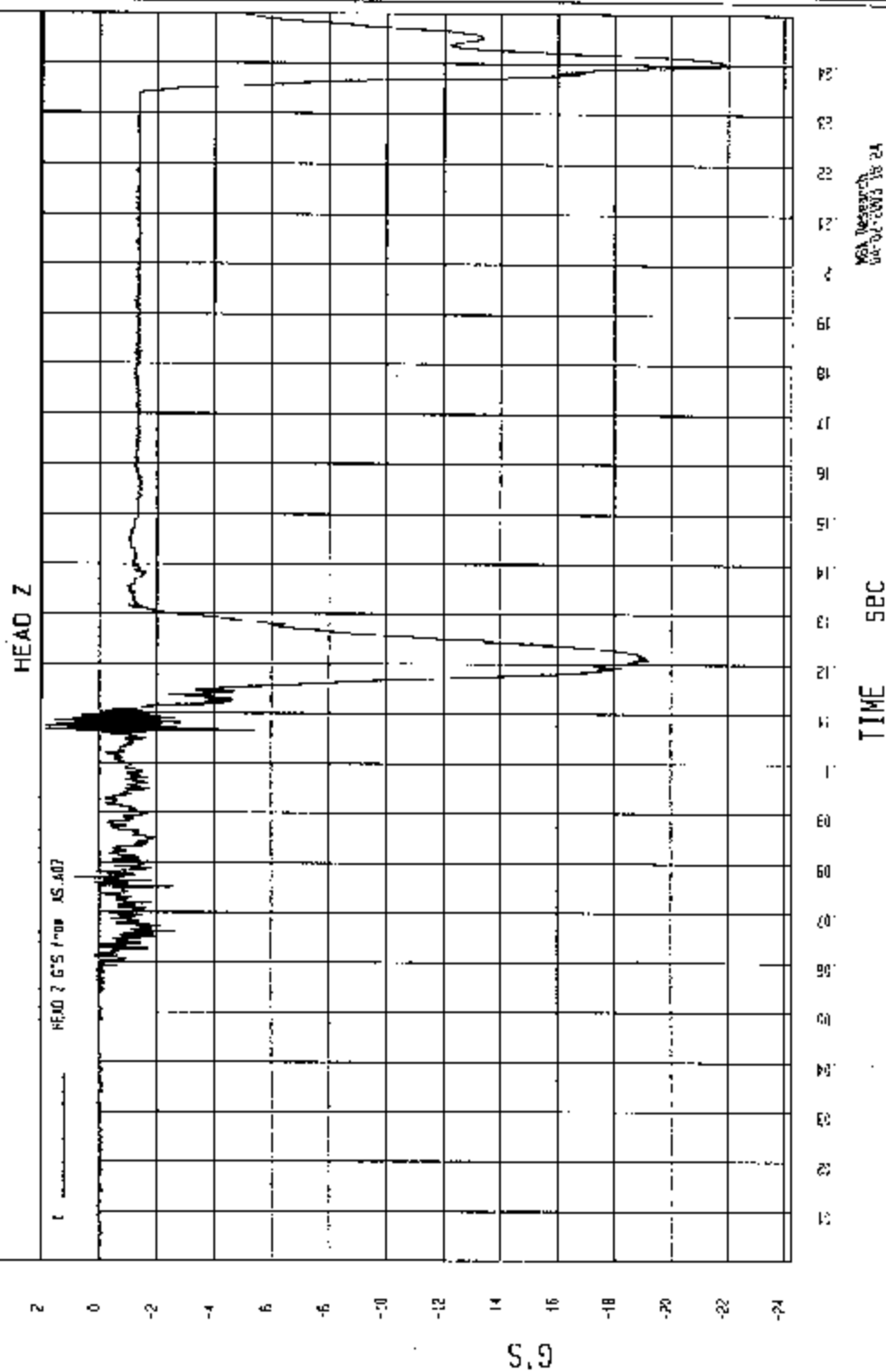
G'S

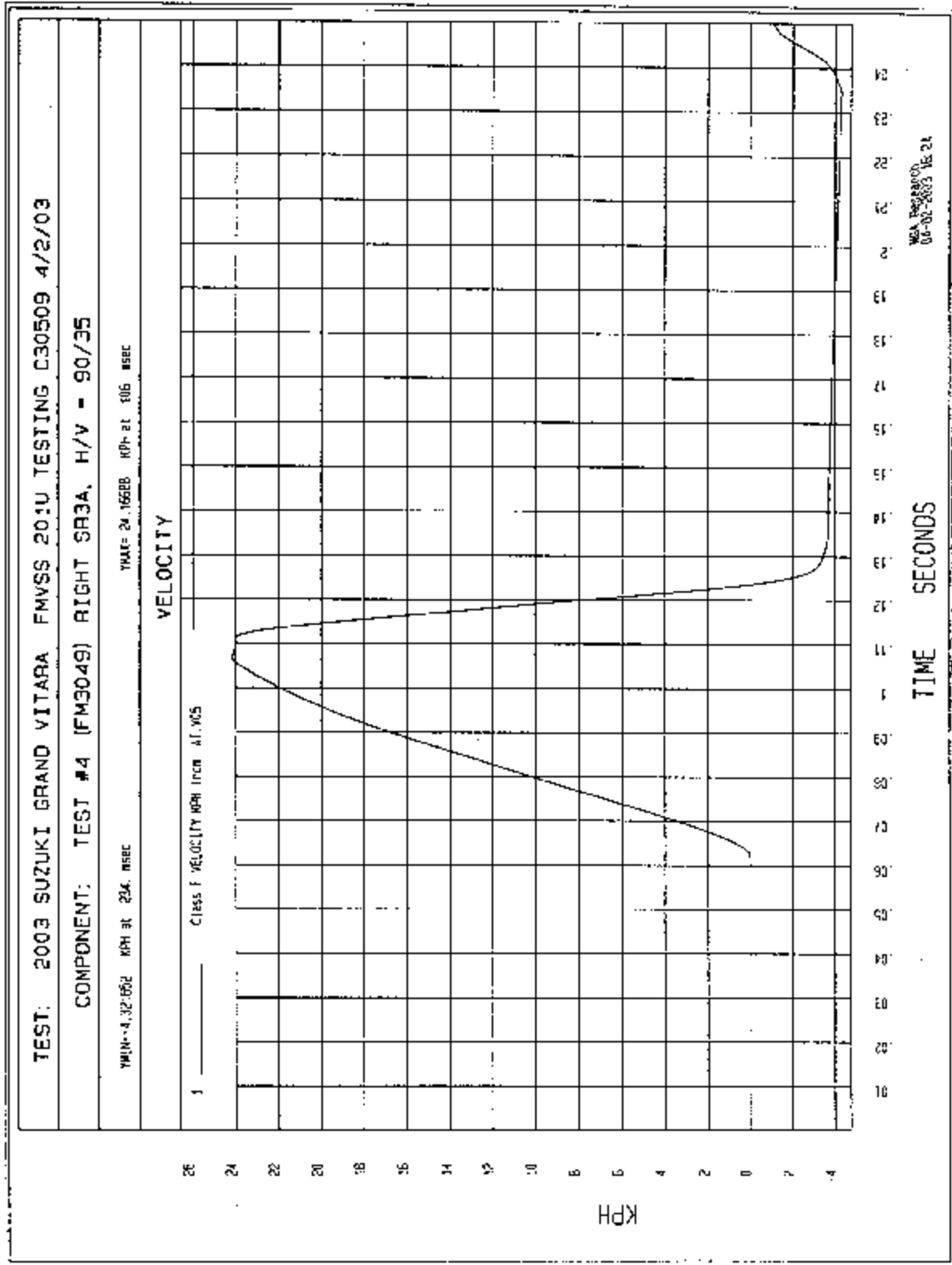
TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/2/03

COMPONENT: TEST #4 (FM3049) RIGHT SR3A, H/V = 90/35

YMD=22.07319 G'S at 240.45sec

YMD=1.876874 G'S at 107.45sec





MGA RESEARCH CORP
FMVSS 201C TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SUV

C30509 4/3/03
TEST #9 LEFT UR1
(FM3054) H/V = 270/33

PRE - TEST

VICA RESEARCH CORP
FAT/SS 201U TESTING
2003 SUZUKI GRAND
VITARA NL 4-DR SUV
C30509 4/3/03
TEST 09 LEFT UR1
H/NL30541 H/V 270/33

POST-TEST

MGA RESEARCH CORP
FMVSS 201U TESTING
2003 SUZUKI GRAND
VITARA M1 4DR SUV

C30509 4/5/03
TEST #9 LEFT TURN
(FMV3054) 400 1/10/03

POST-TEST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO. 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO.: C30609 VEHICLE YR/MAKE/MODEL: 2003 SUZUKI GRAND VITARA

GENERAL TEST PARAMETERS:

Test Number: 9

Target (Vehicle Side): Left/Right URL

Temperature: 21 °F (C)

MGA Test Reference No.: FM3054

Humidity: 42 %

Approach Angles: Horizontal 270 °

Time of Test: 4:45 am/pm

Vertical 33 °

FMH Serial No.: 38

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	<u>Left/Right</u> Pt. O
<u>489</u> <u>490</u>	<u>428</u>	<u>8.5</u>	<u>24.1</u>	<u>45</u>	<u>3</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>FM #35 J36197</u>	<u>-108.2</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J36193</u>	<u>102.0</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J36353</u>	<u>97.8</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

GRAB HANDLE WAS COMPRESSED

Recorded By: [Signature] Approved By: Heleen G. Kales Date: 4/5/03

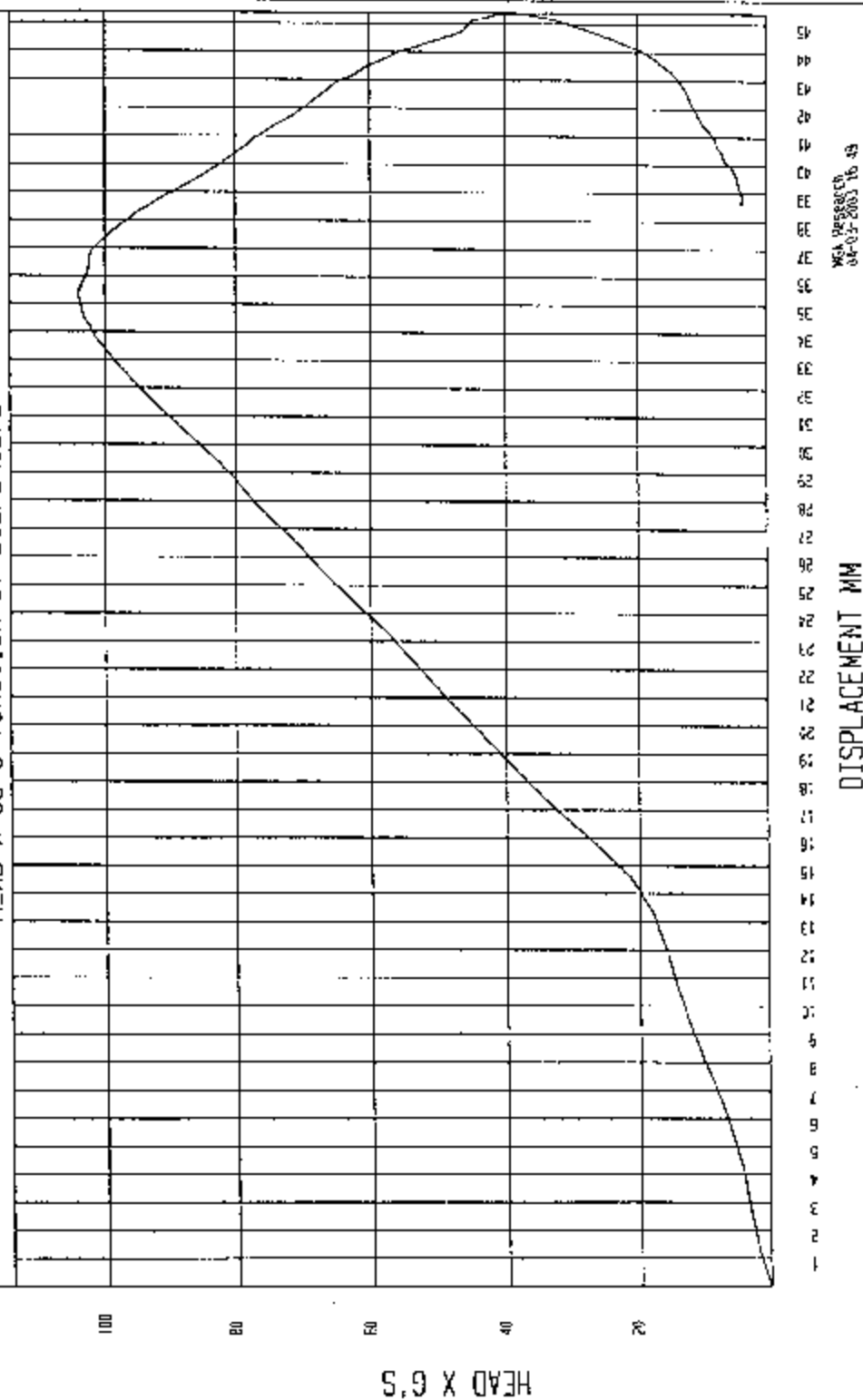
*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is PM3054AV.A05
HIC = 428.22 calculated over 8.5 msec
T1 = 3.10 msec T2 = 11.60 msec
*****
HIC(d) = 489
Impact Velocity = 24.1 (km/h)
```

TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

COMPONENT: TEST #9 (FM3054) LEFT UR1, H/V = 270/33

HEAD X AS A FUNCTION OF DISPLACEMENT



TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

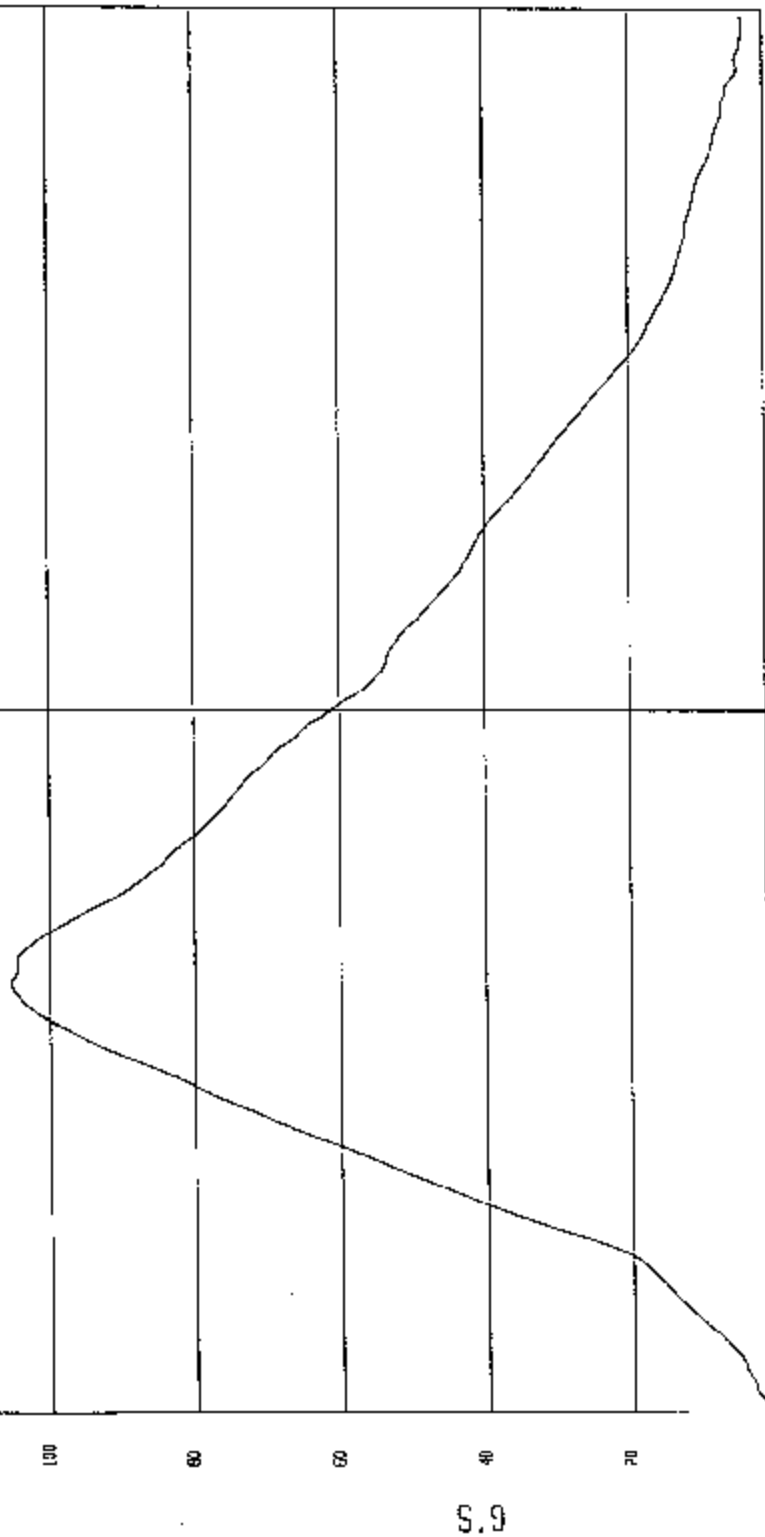
COMPONENT: TEST #9 (FM3054) LEFT UR1, H/V = 270/33

WIN= 1.563883 G'S at 9.99 msec

YMAX= 185.3437 G'S at 6.1 msec

FMH RESULTANT

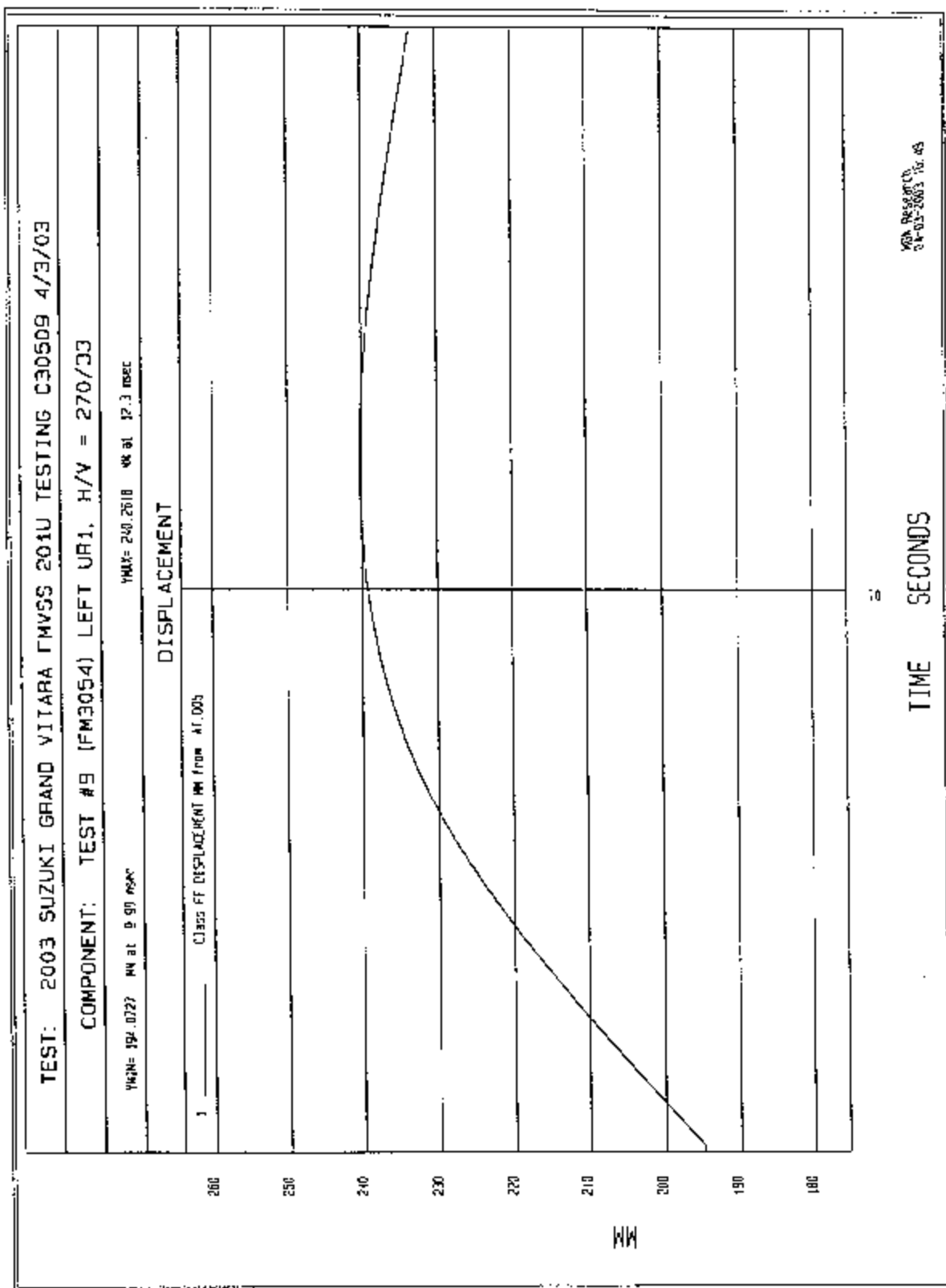
Resultant G'S from AV, A05

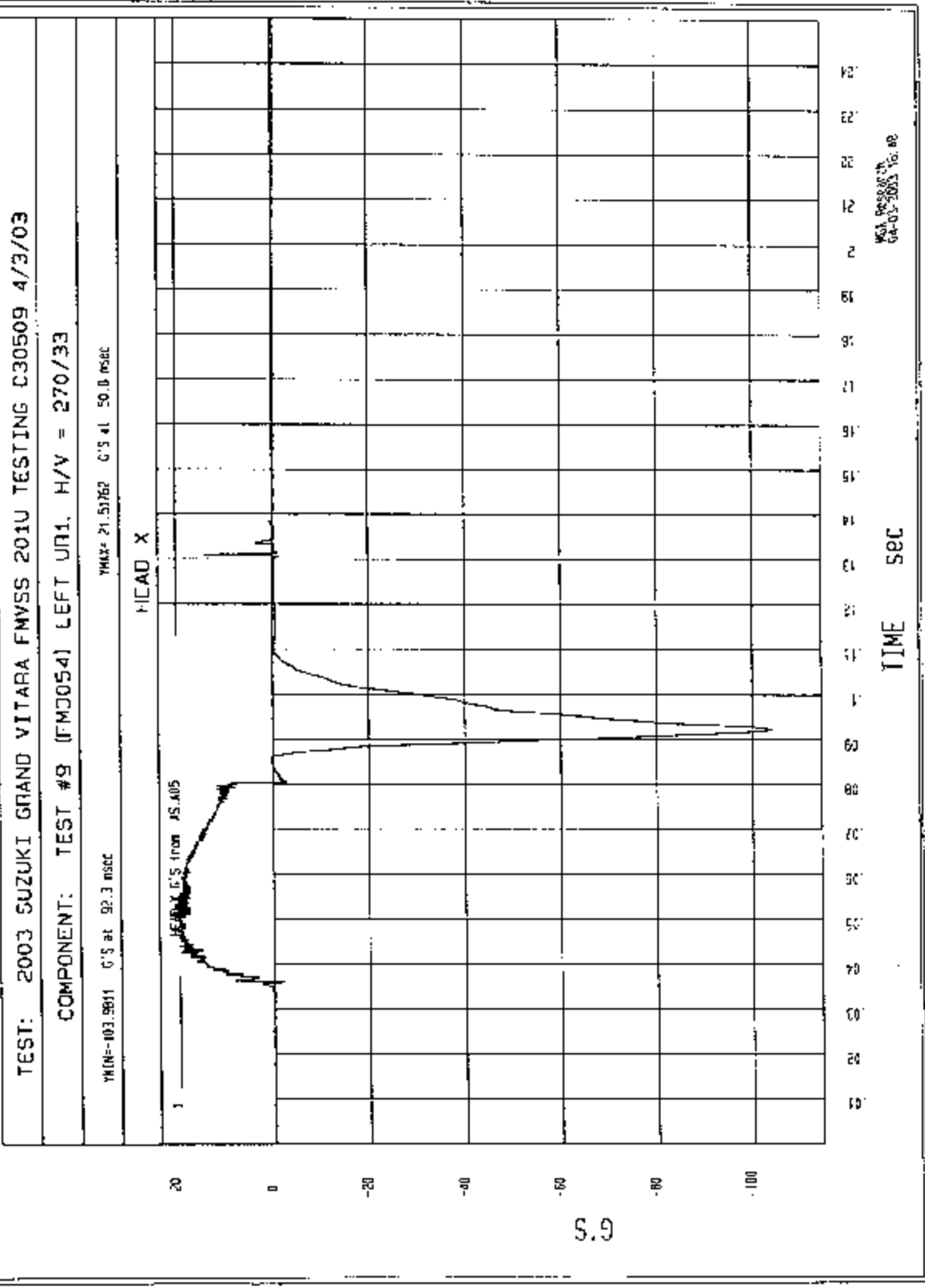


S

TIME SEC

WMA Research
04-03-2003 15:43





TEST: 2003 SUZUKI GRAND VITA PA FMVSS 201U TESTING C30509 4/3/03

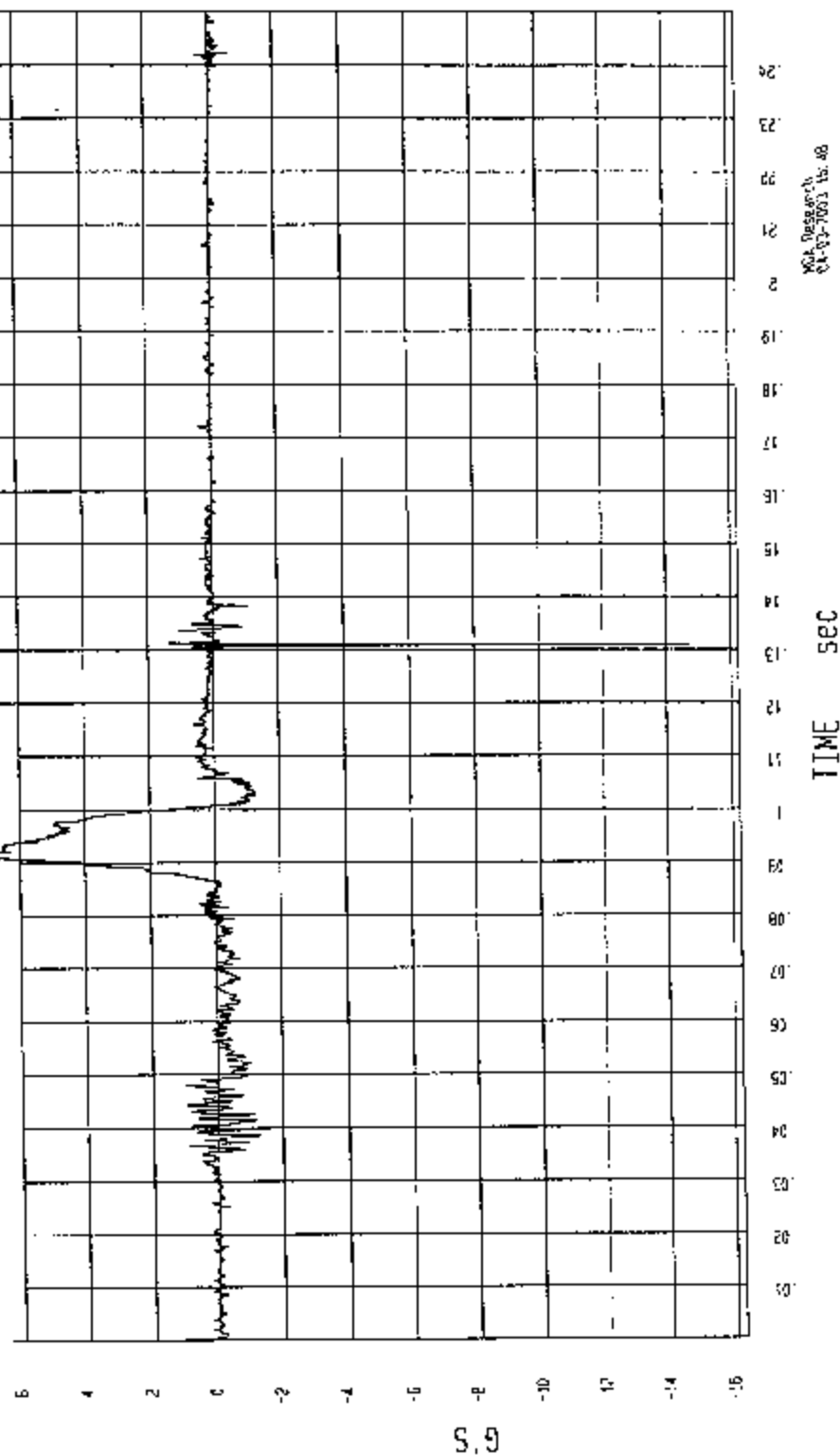
COMPONENT: TEST #9 (FM3054) LEFT URI. H/V = 270/33

WHL#-14.76431 0.5 at 130. msec

YMAX= 7.247888 0.5 at 91.2 msec

HEAD Y

HEAD r 3'S from AS.406



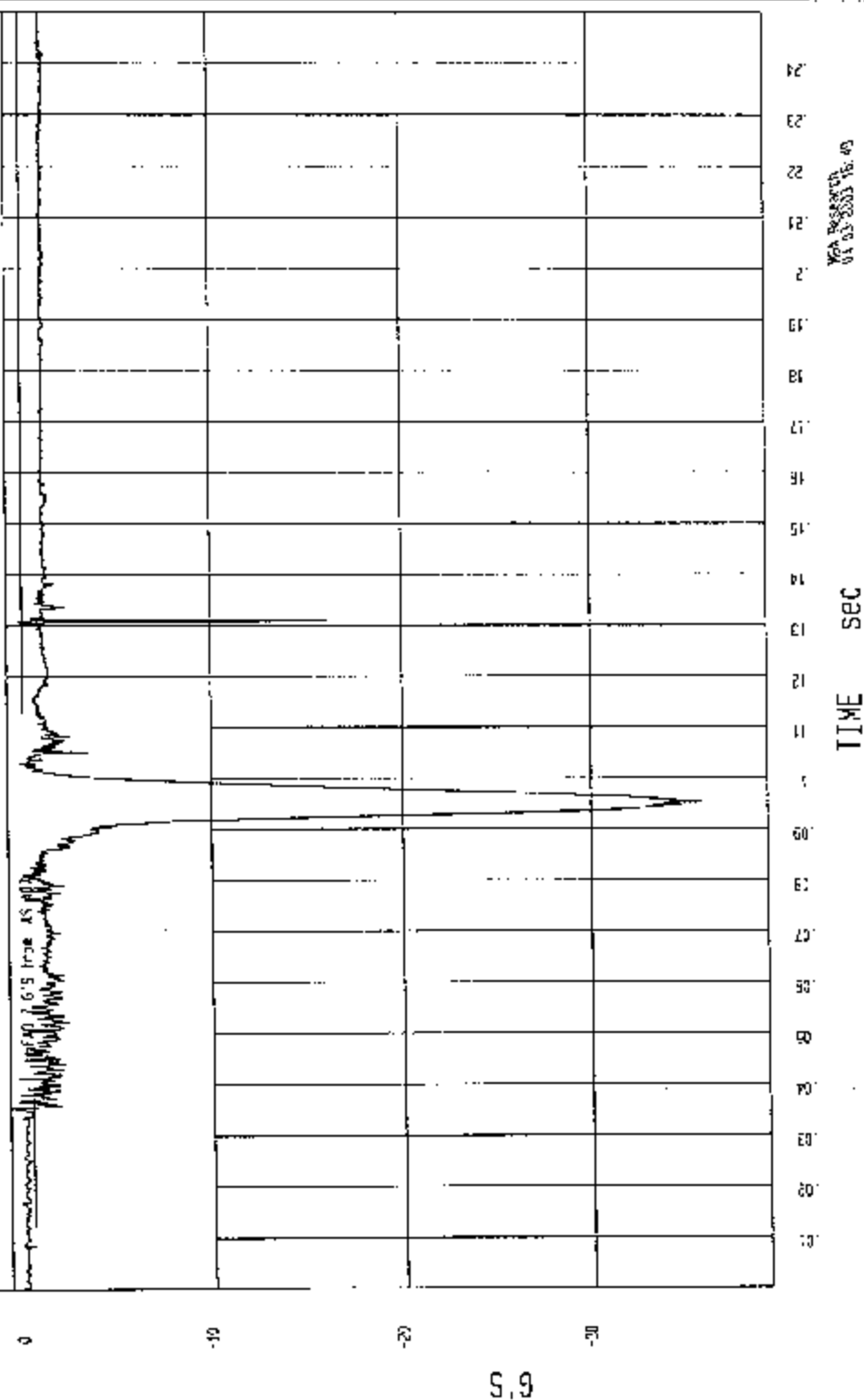
TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

COMPONENT: TEST #9 (FM3054) LEFT UR1, H/V = 270/33

YMIN=-35.86284 G'S at 95.3 msec

YMAX= 7436721 G'S at 35.6 msec

HEAD Z



TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

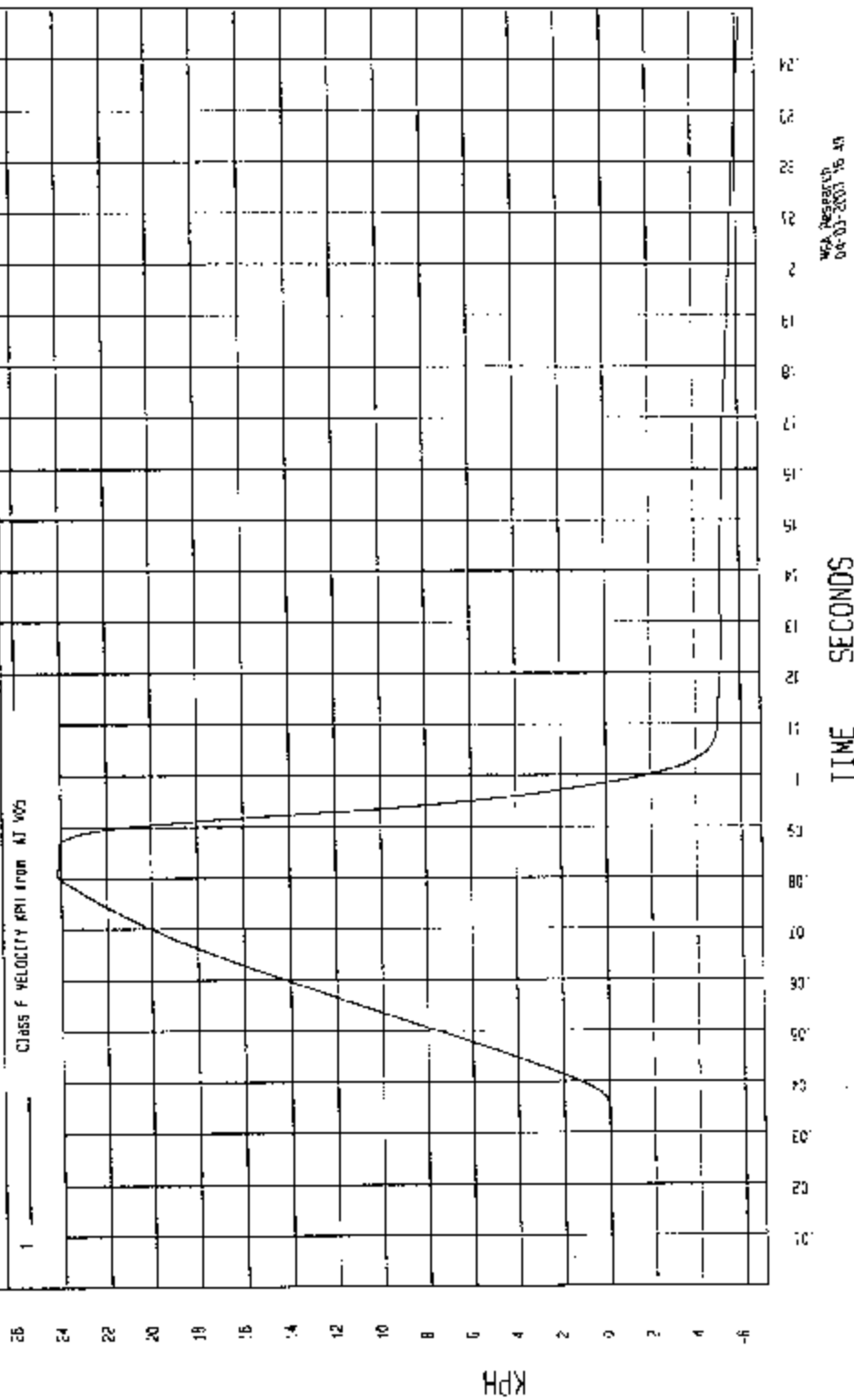
COMPONENT: TEST #9 (FM3054) LEFT UR1, H/V = 270/33

WHLN-6, 257055 MPH at 250 msec

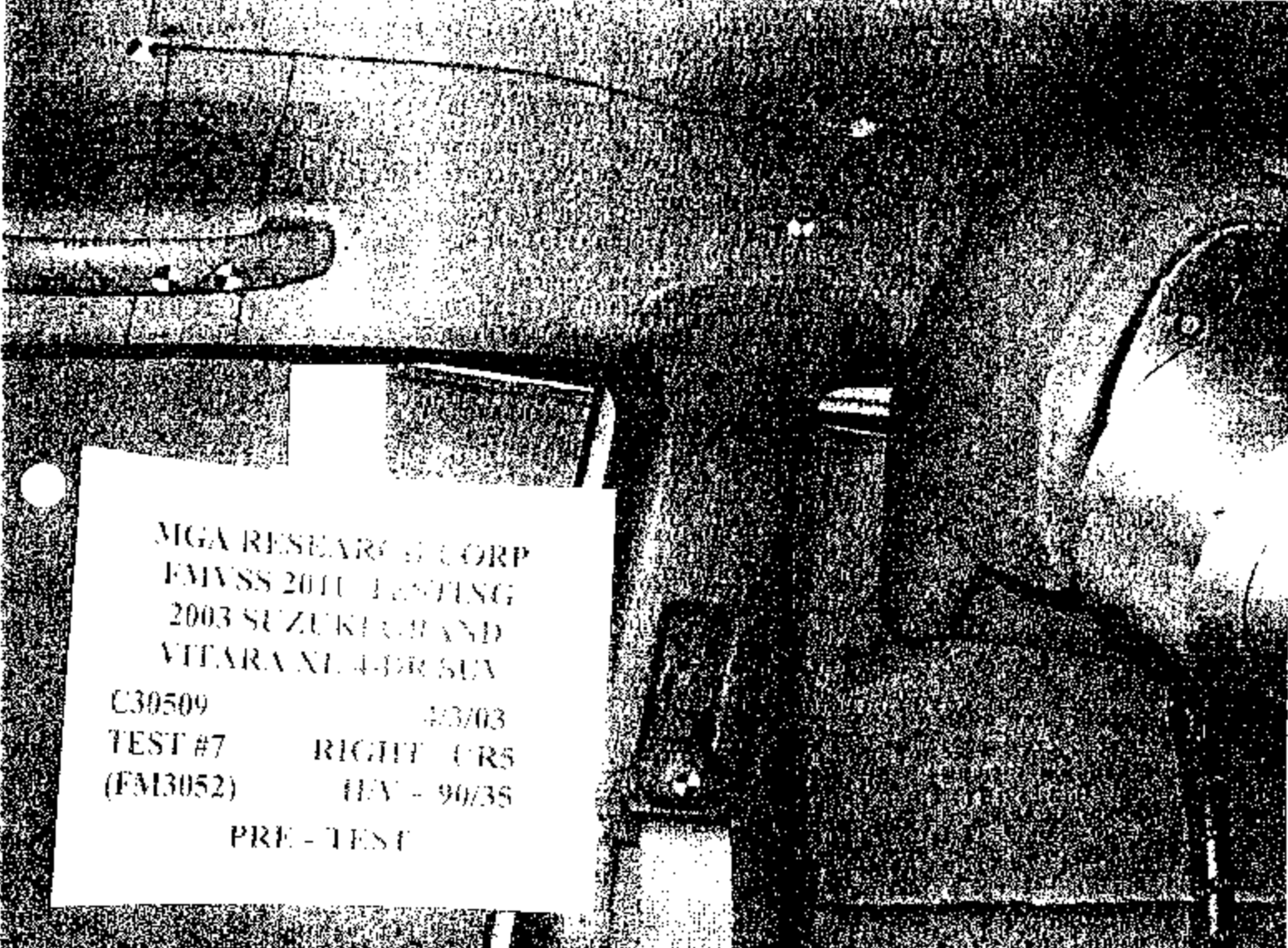
WHLN-6, 257055 MPH at 80.7 msec

VELOCITY

1 Class F VELOCITY MPH from AT V05



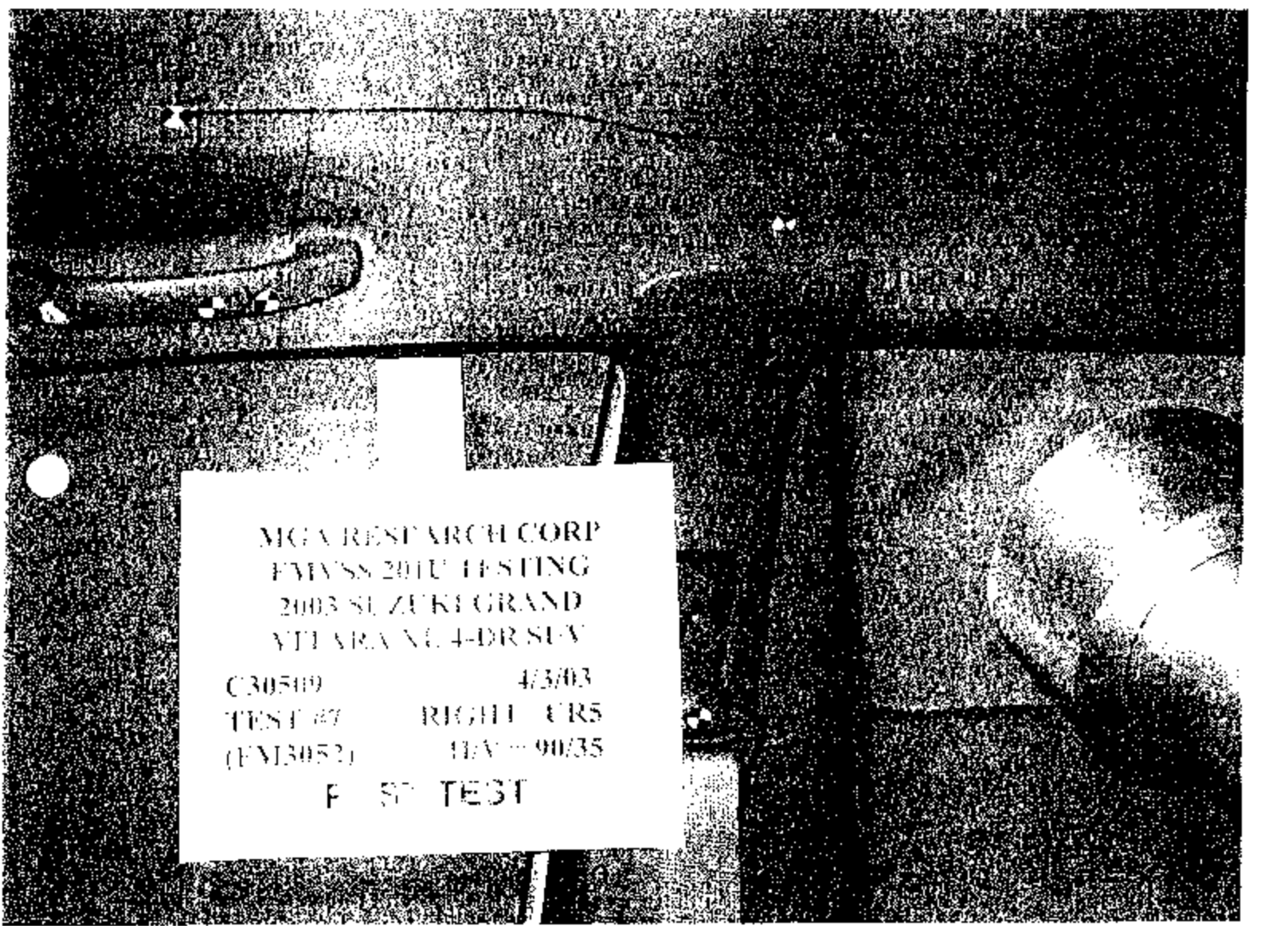
WCA REPORT
04-03-2003 15:40



MGA RESEARCH CORP
FMVSS 2010 TESTING
2003 SUZUKI XL AND
VITARA XL 4-DR SUV

C30509 4/3/03
TEST #7 RIGHT CR5
(FM3052) H/V - 90/35

PRE-TEST



MGA RESEARCH CORP
FMVSS 201U TESTING
2003 SUZUKI GRAND
VITARA NL 4-DR SUV

C30509 4/3/03
TEST #7 RIGHT CR5
(FV13052) H/V -- 90/35

F 57 TEST

VICA RESEARCH CORP
EMVSS 2011 TESTING
2003 SUZUKI GRAND
VITARA M 4-DR SUV

C30509 4/3/03
TEST #7 RIGHT UR5
(EM3052) H/V - 90/35

POST-TEST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C50504 VEHICLE YR/MAKE/MODEL: 2003 SUZUKI GRAND VITARA

GENERAL TEST PARAMETERS:

Test Number: 7

Target (Vehicle Side): let (Right) URS

Temperature: 20 °F/°C

MGA Test Reference No.: Fm3052

Humidity: 40 %

Approach Angles: Horizontal 90 °

Time of Test: 10:45 am/pm

Vertical 35 °

FMH Serial No: 35

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pl. O	Left/Right Pt. O
621	603	7.1	23.7	44	7

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-93.1	1.21	1.21
Y	6	J35919	95.3	1.23	1.23
Z	7	J31051	95.1	1.51	1.51

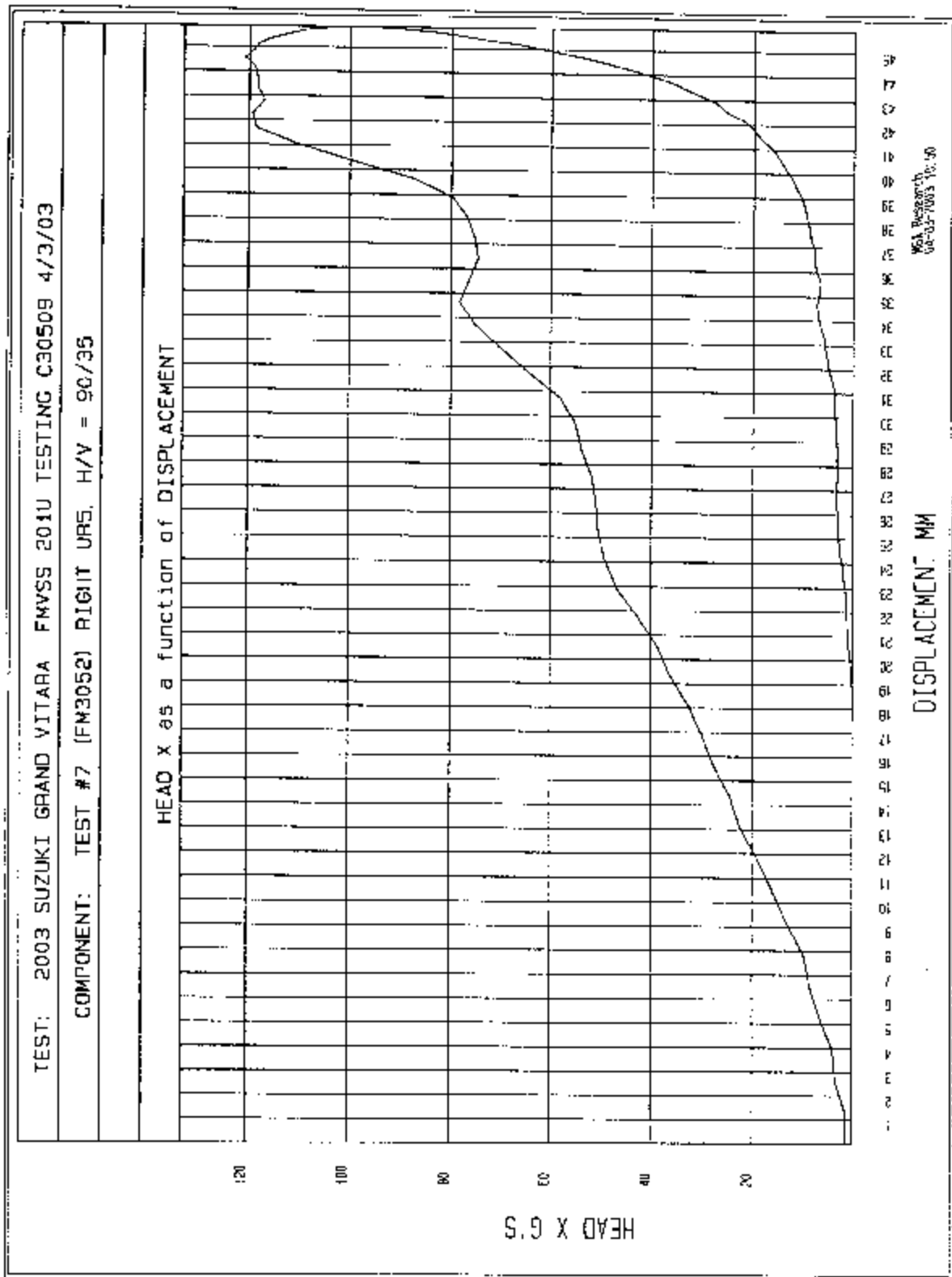
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

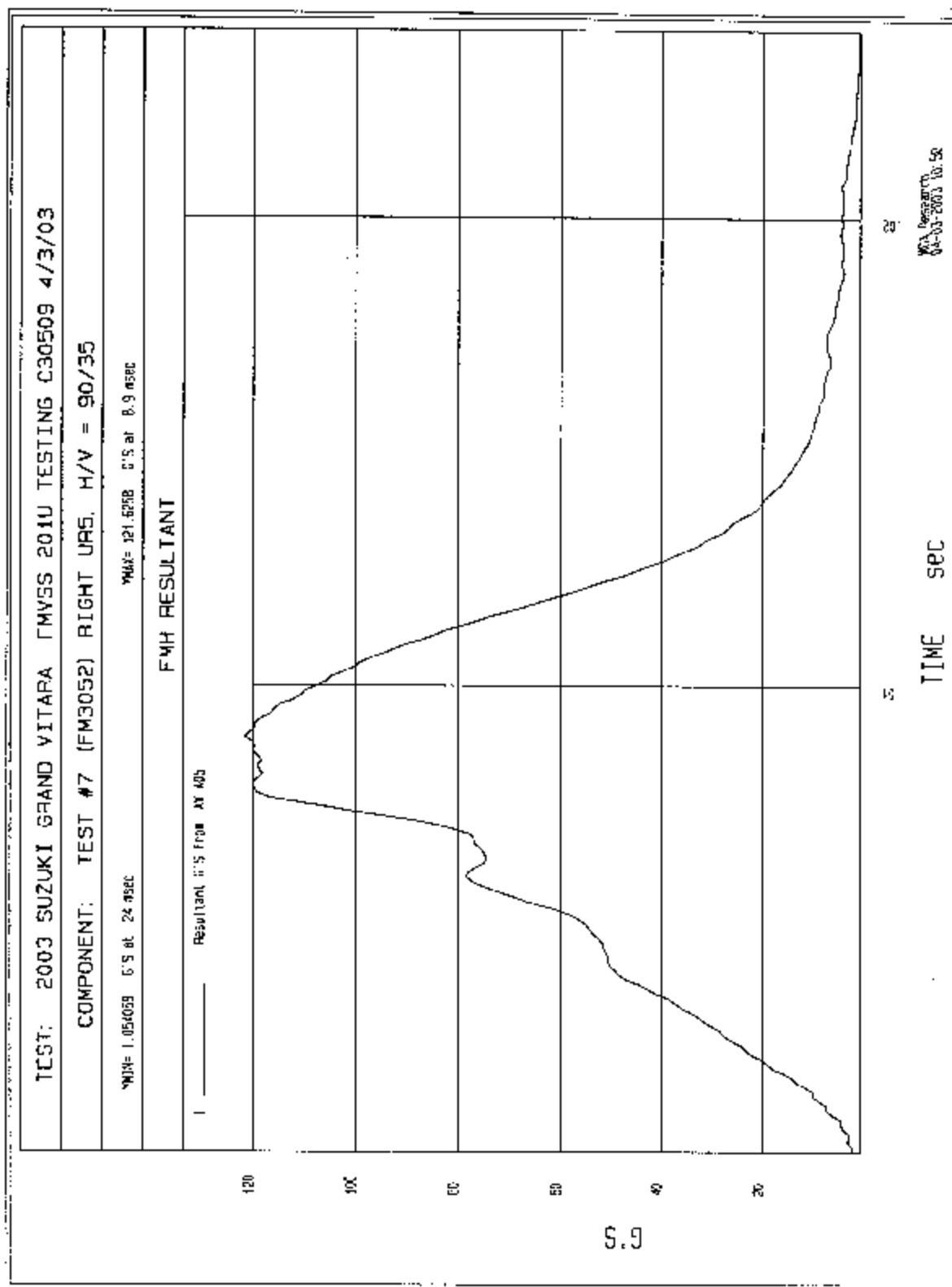
NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Helen A. Kales Date: 4/2/03

*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM3052AV.A05
HIC = 602.66 calculated over 7.1 msec
T1 = 4.90 msec T2 = 12.00 msec
*****
HIC(d) = 621
Impact Velocity = 23.7 (km/h)
```





TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

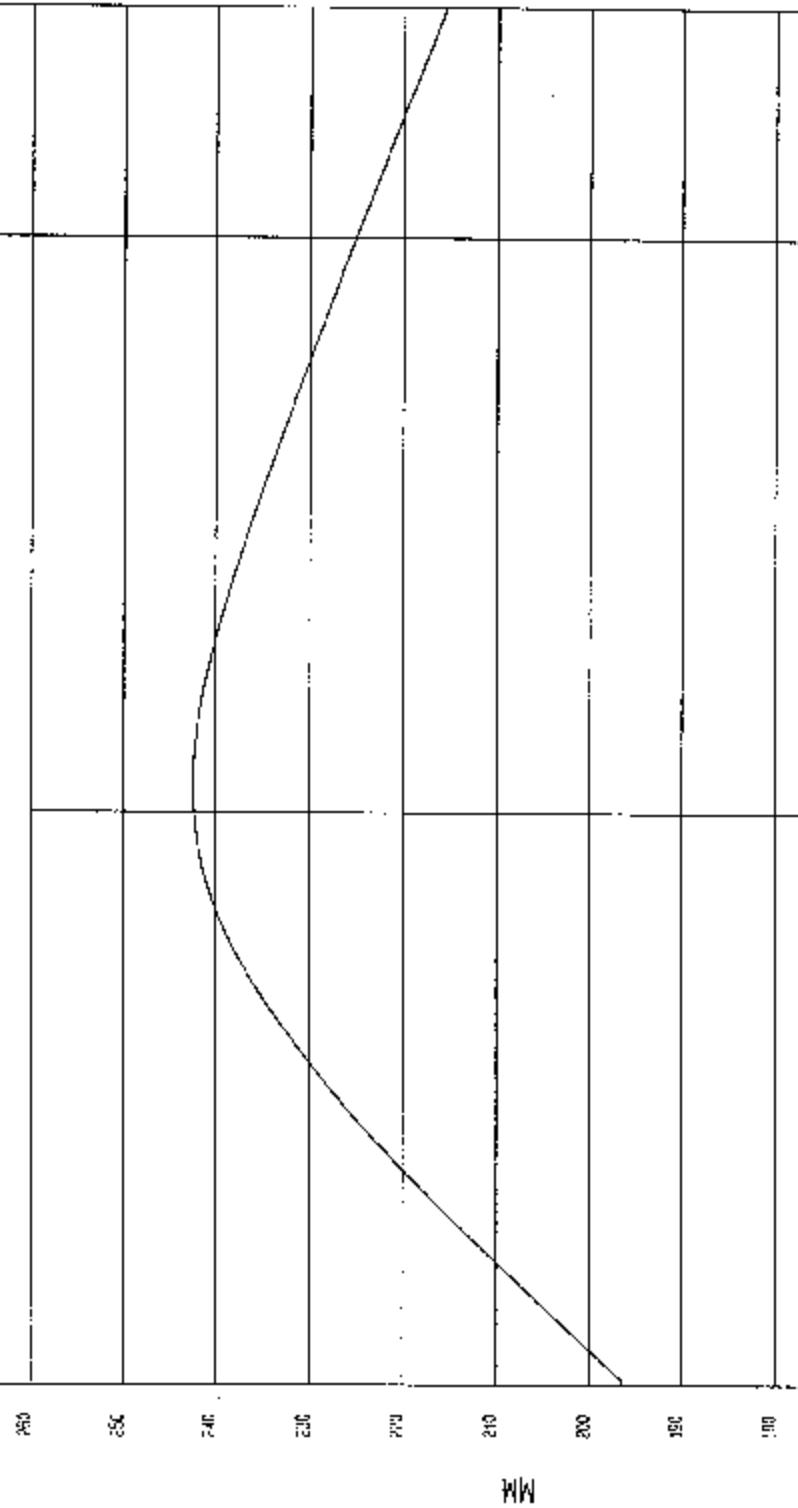
COMPONENT: TEST #7 (FM3052) RIGHT URS, H/V = 90/35

YMD= 195 6617 MM at 9.98 m/sec

YMD= 242 5057 MM at 10.5 m/sec

DISPLACEMENT

1 _____ CROSS FF DISPLACEMENT MM FROM AT.005



TIME SECONDS

20

10

MM

SEA Research
04-03-2003 10:50

TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

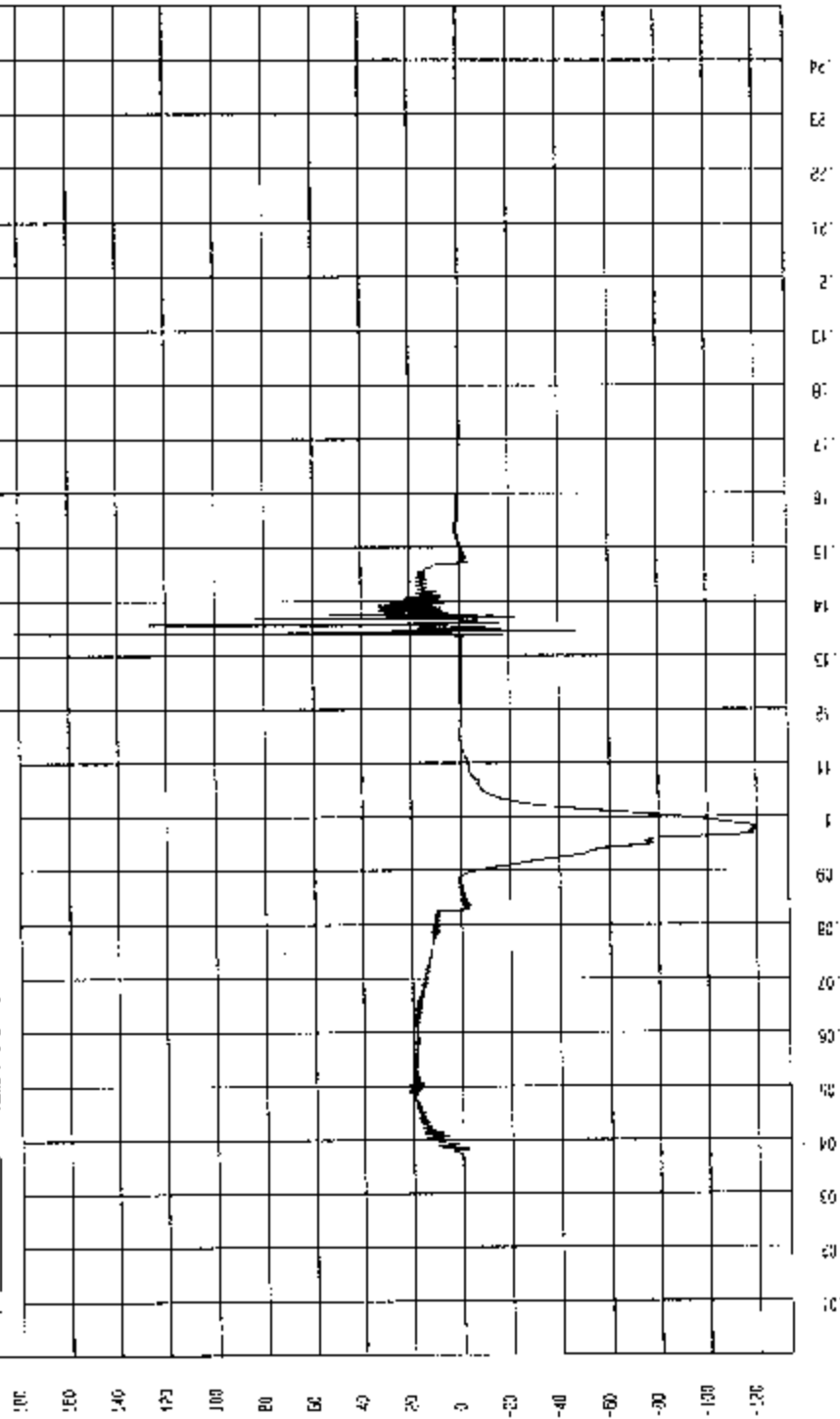
COMPONENT: TEST #7 (FM3052) RIGHT UFS, H/V = 90/35

YMIN=-120.6487 0'S at 98 msec

YMAX= 181.6335 0'S at 134 msec

HEAD X

1 HEAD X 0'S FROM 45.405



SEALED
03-03-2003 10.49

TIME SEC

5.9

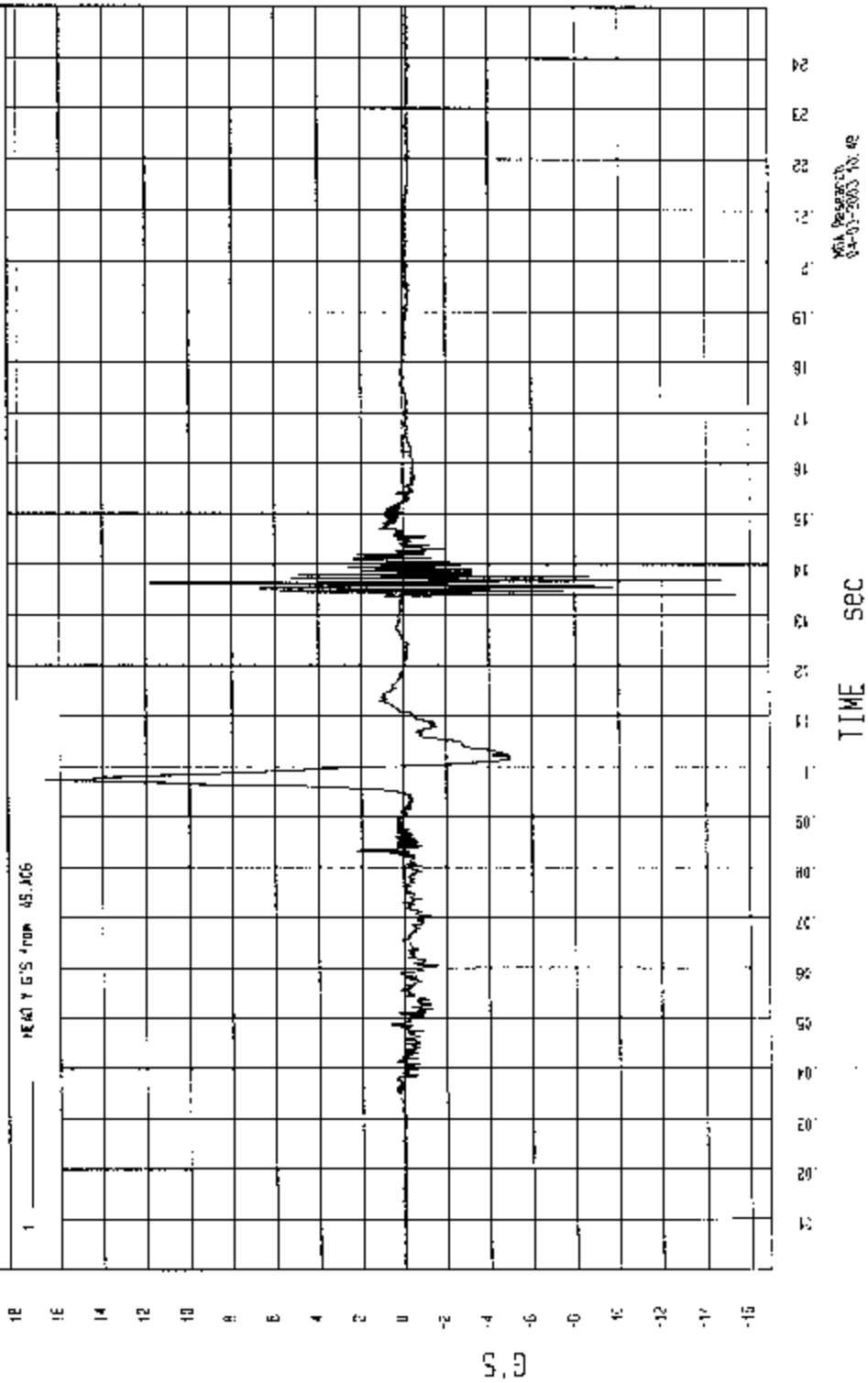
TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

COMPONENT: TEST #7 (FM3052) RIGHT UR5, H/V - 90/35

WAVE=15.3RUS/ G'S at 134 msec

WAVE=15.7B216 G'S at 57.2 msec

HEAD Y



TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/3/03

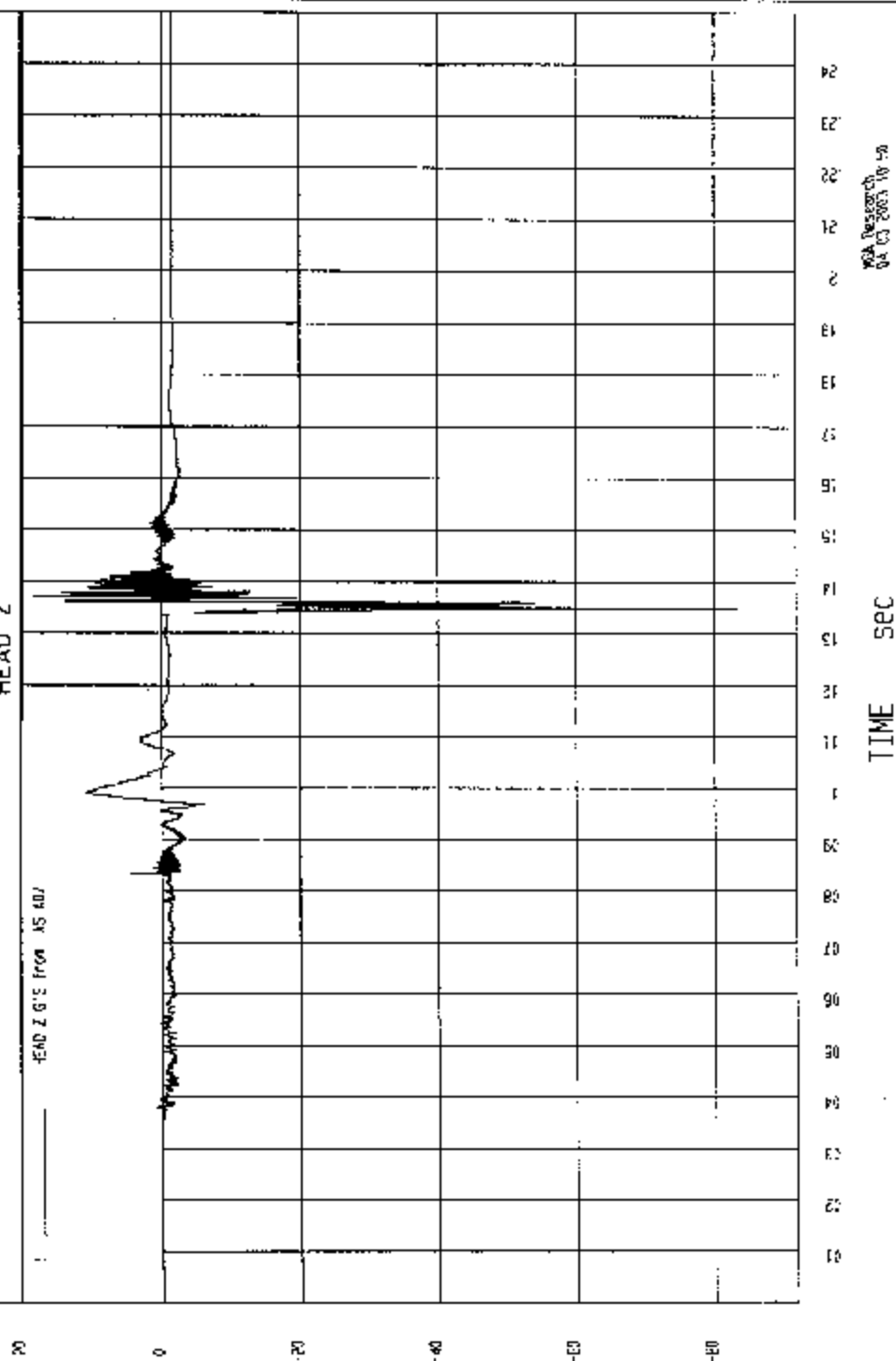
COMPONENT: TEST #7 (FM3052) RIGHT URS, H/V = 90/35

WAVE=33.3727 G'S at 134. msec

YMAX= 16.4426 G'S at 137. msec

HEAD Z

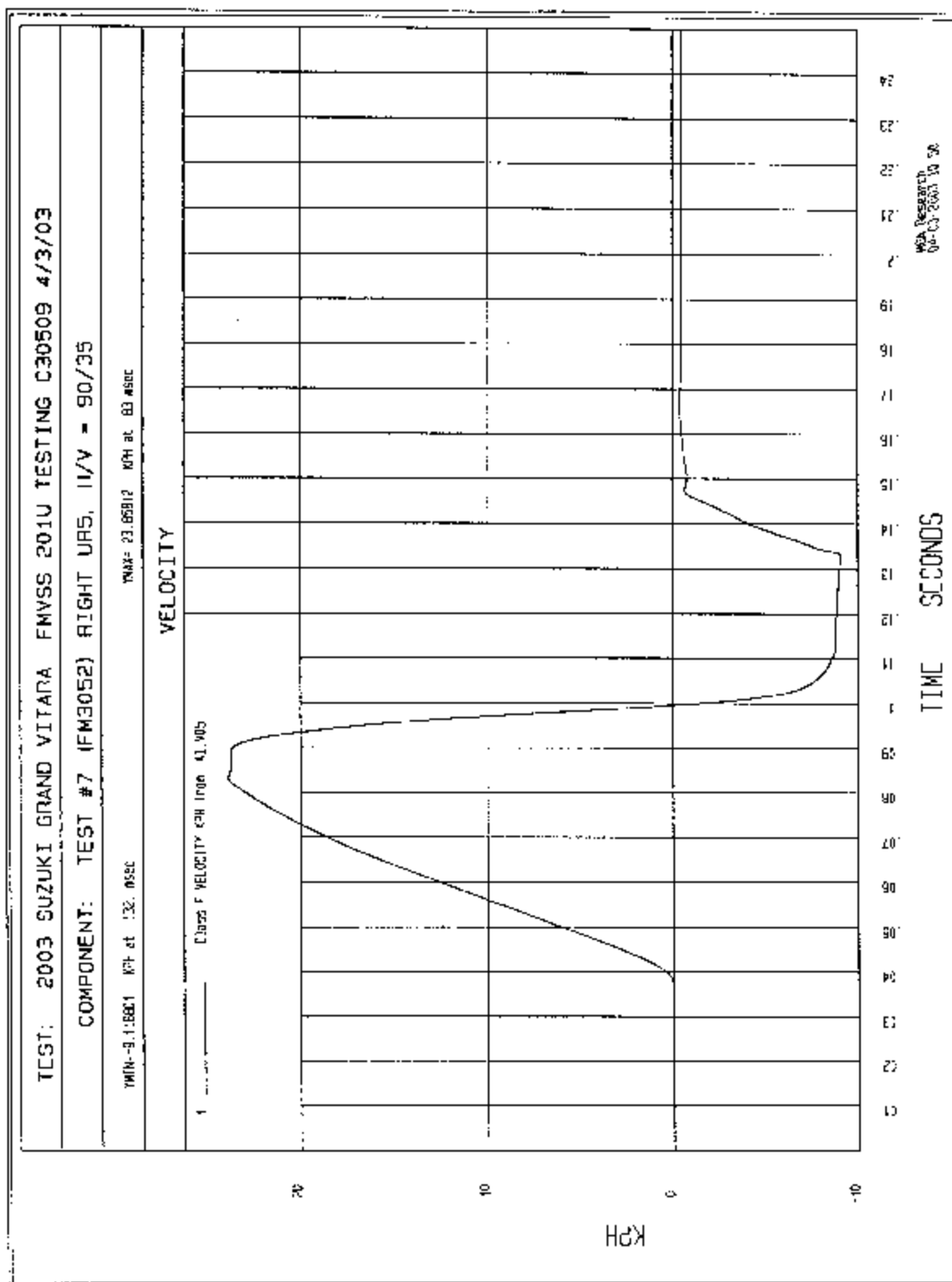
HEAD Z G'S from AS 407



WCA Research
04/03/2003 10:50

TIME SEC

5.9



MGA RESEARCH, INC.
FMVSS 201U TP 1.2 AG
2003 SUZUKI CHEROKEE
VITARA XL 4-DOOR

C30509 4/2/03
TEST #5 RIGHT TR6
(FM3050) H/V 90/10
PRE-TEST

MCA RESEARCH CORP
EMAS 2011 TESTING
2001 ST. J. K. GRANT
CLARK & DICKSON
C 30500 1203
TEST #5 RIGHT TR6
C 30500 11A 000 10

POST-TEST

NOVA RESEARCH CORP.
 UNIVERSITY TESTING
 1001 N. ZIEGLER ROAD
 ALFARANO, TEXAS

(3050)

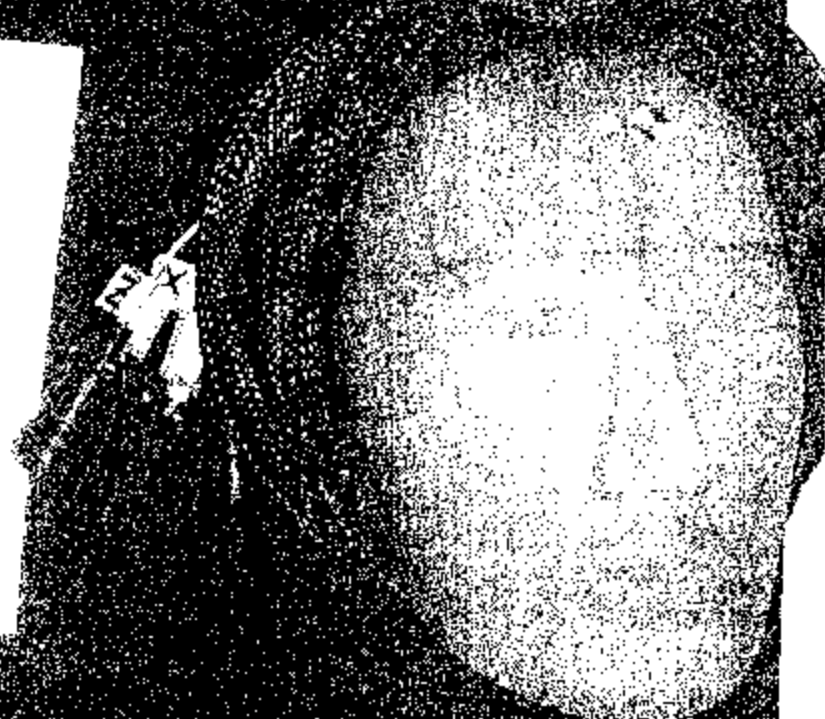
TEST 95

(EM3050)

RD 111

111 111

POST-TEST



MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #24

DOC. NO: MGATP201U_FRAME #2
REVISION NO: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C3060 VEHICLE YR/MAKE/MODEL: 2003 SUZUKI GRAND VITARA

GENERAL TEST PARAMETERS:

Test Number: 5

Target (Vehicle Side): left (right) URL

Temperature: 21 °F (C)

MGA Test Reference No.: FM3050

Humidity: 42 %

Approach Angles: Horizontal 90 °

Time of Test: 8:15 am (pm)

Vertical 40 °

FMH Serial No: 36

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	<u>Left/Right</u> Pt. O
<u>537</u>	<u>491</u>	<u>11.1</u>	<u>23.9</u>	<u>40</u>	<u>10</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35923</u>	<u>-100.9</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35516</u>	<u>100.7</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J35910</u>	<u>100.8</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.): _____

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Helen A. Kuleto Date: 4/1/03

*Only necessary for NHTSA (Government) Compliance testing.

RESULTS OF HIC36 PROGRAM*****
The input file is \NHTSA\FM3050AV.A05

HIC = 491.46 calculated over 11.1 msec

T1 = 2.80 msec T2 = 13.90 msec

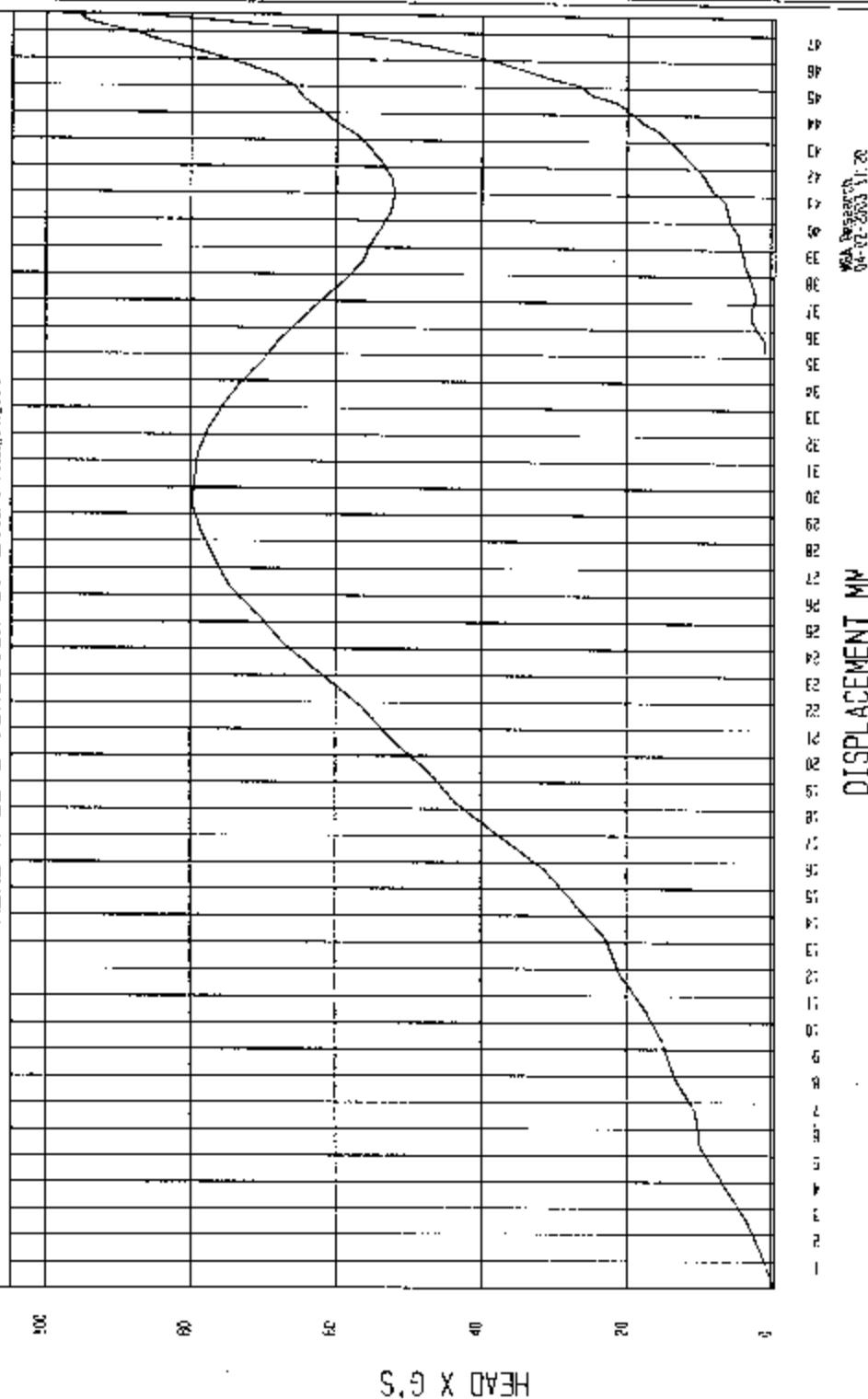
HIC(d) = 537

Impact Velocity = 23.9 (km/h)

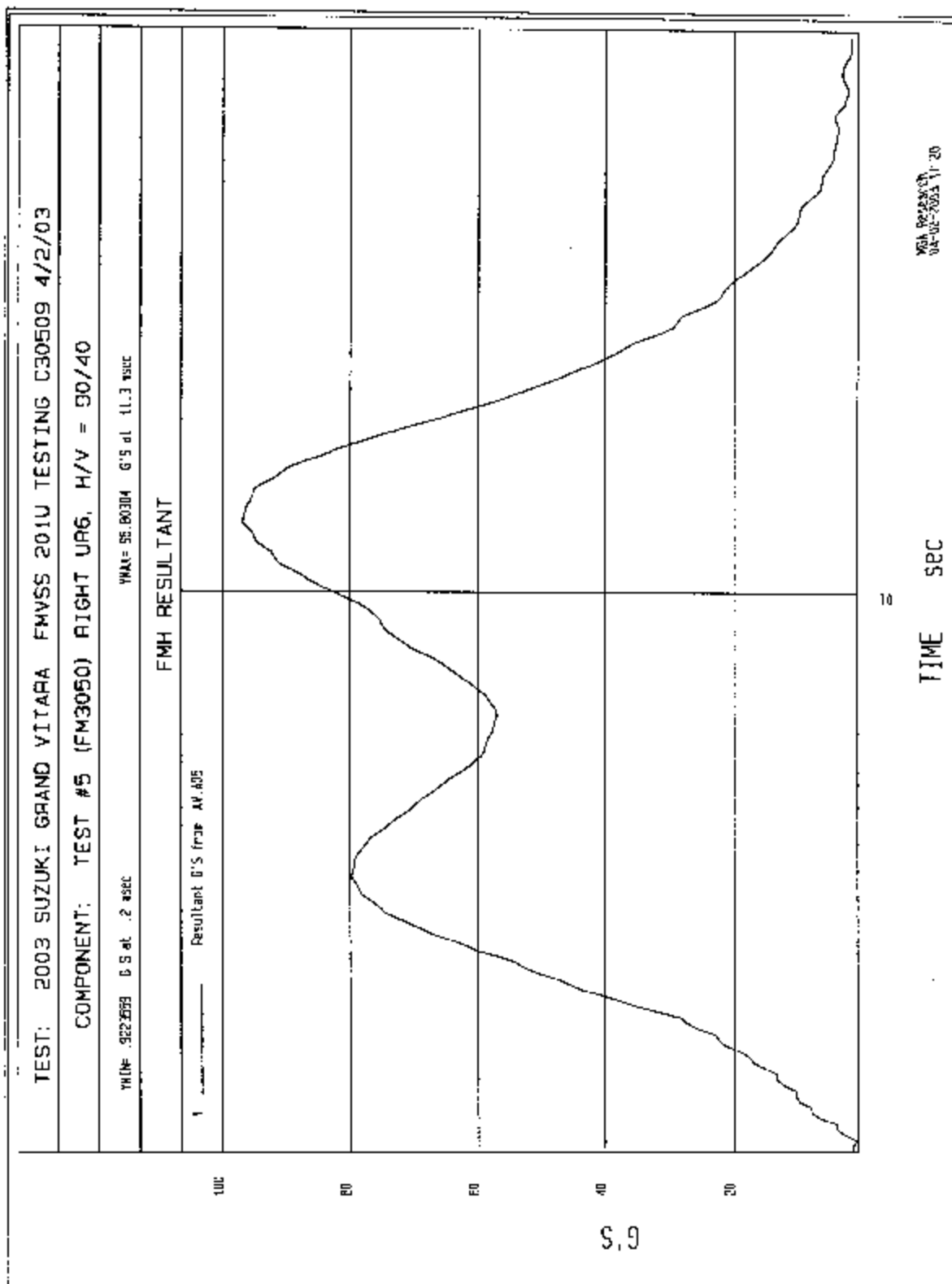
TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/2/03

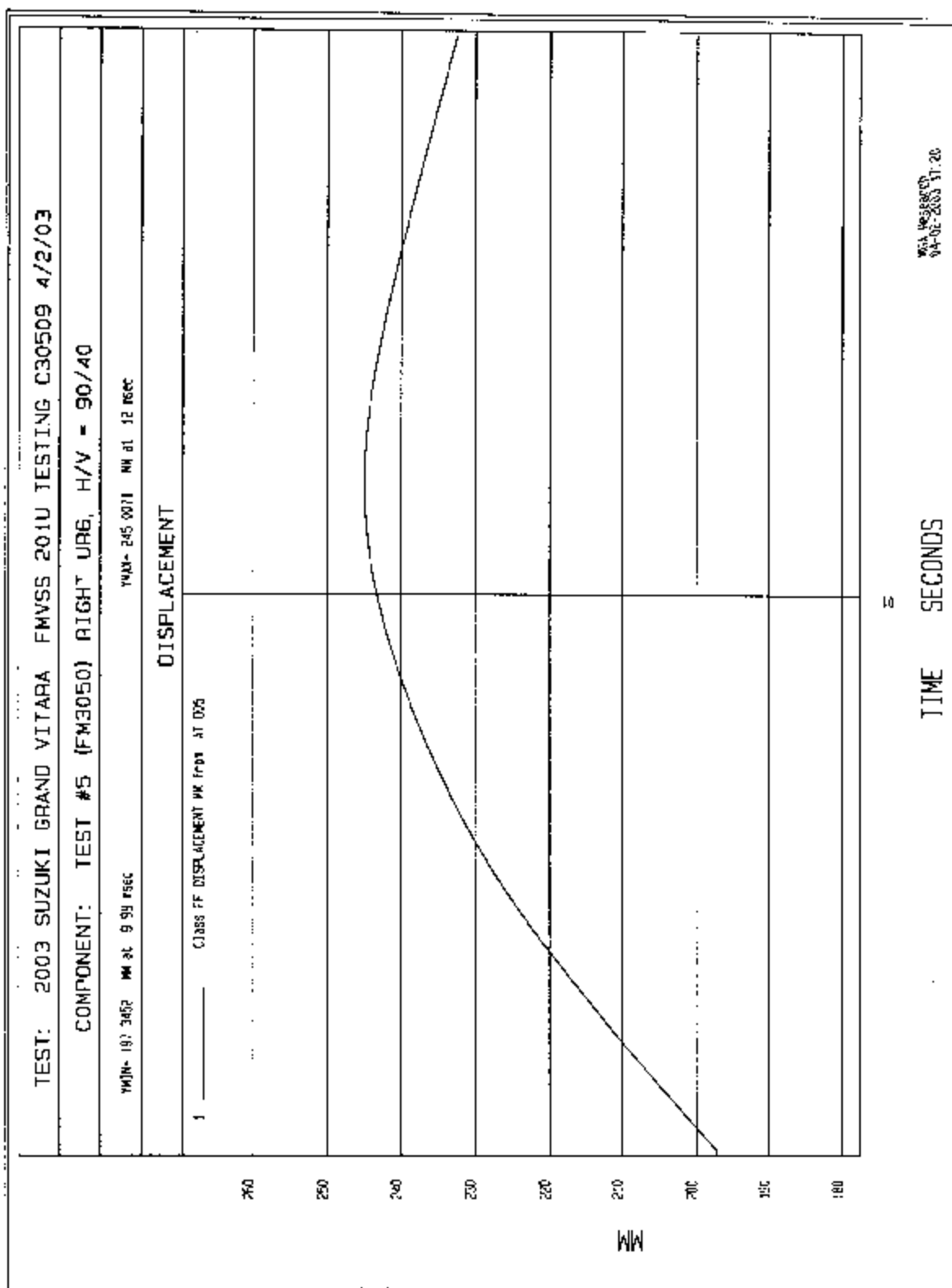
COMPONENT: TEST #5 (FM3050) RIGHT UR6, H/V = 90/40

HEAD X as a function of DISPLACEMENT



WDA Research
04-02-2003 11:20



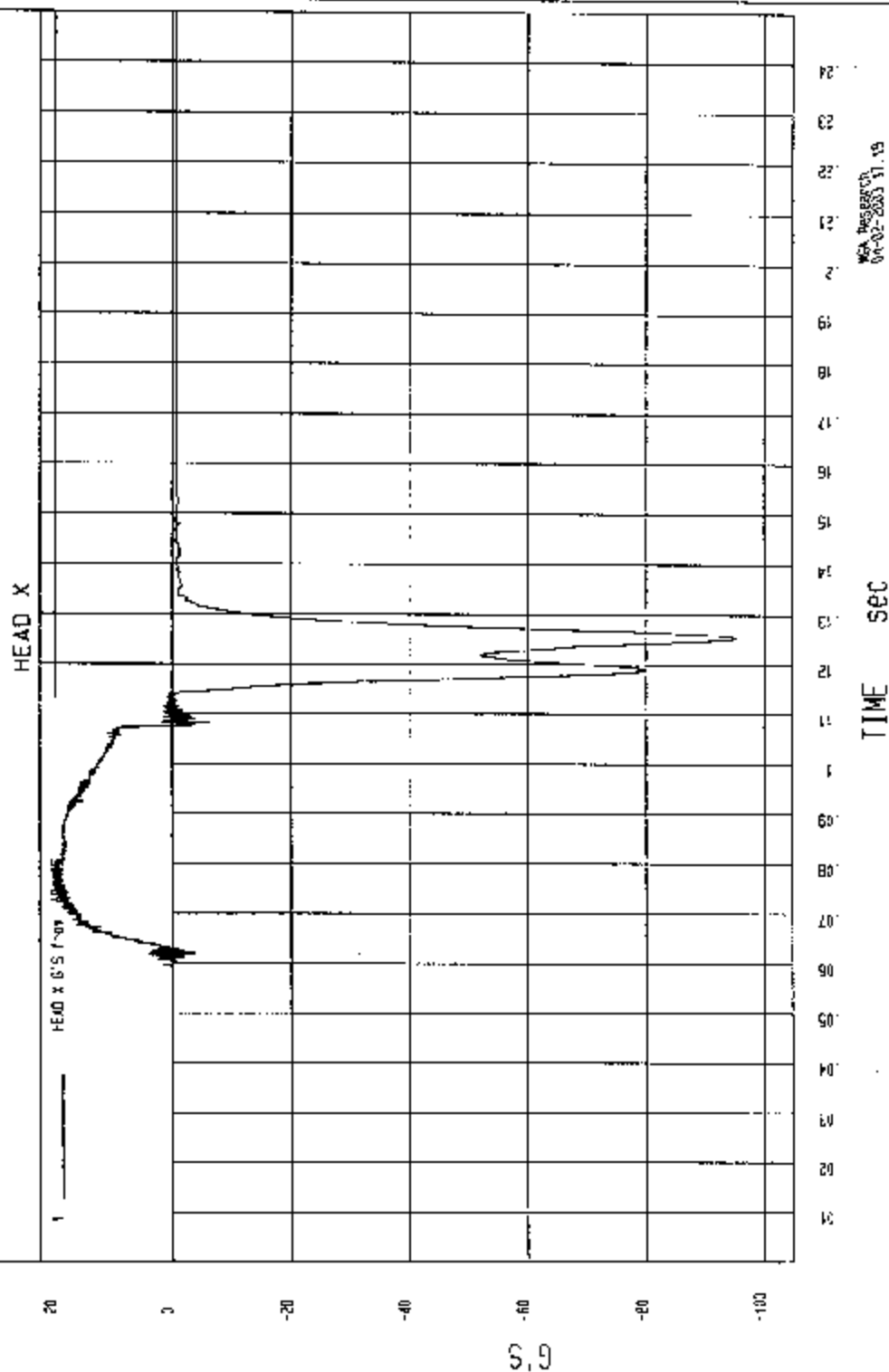


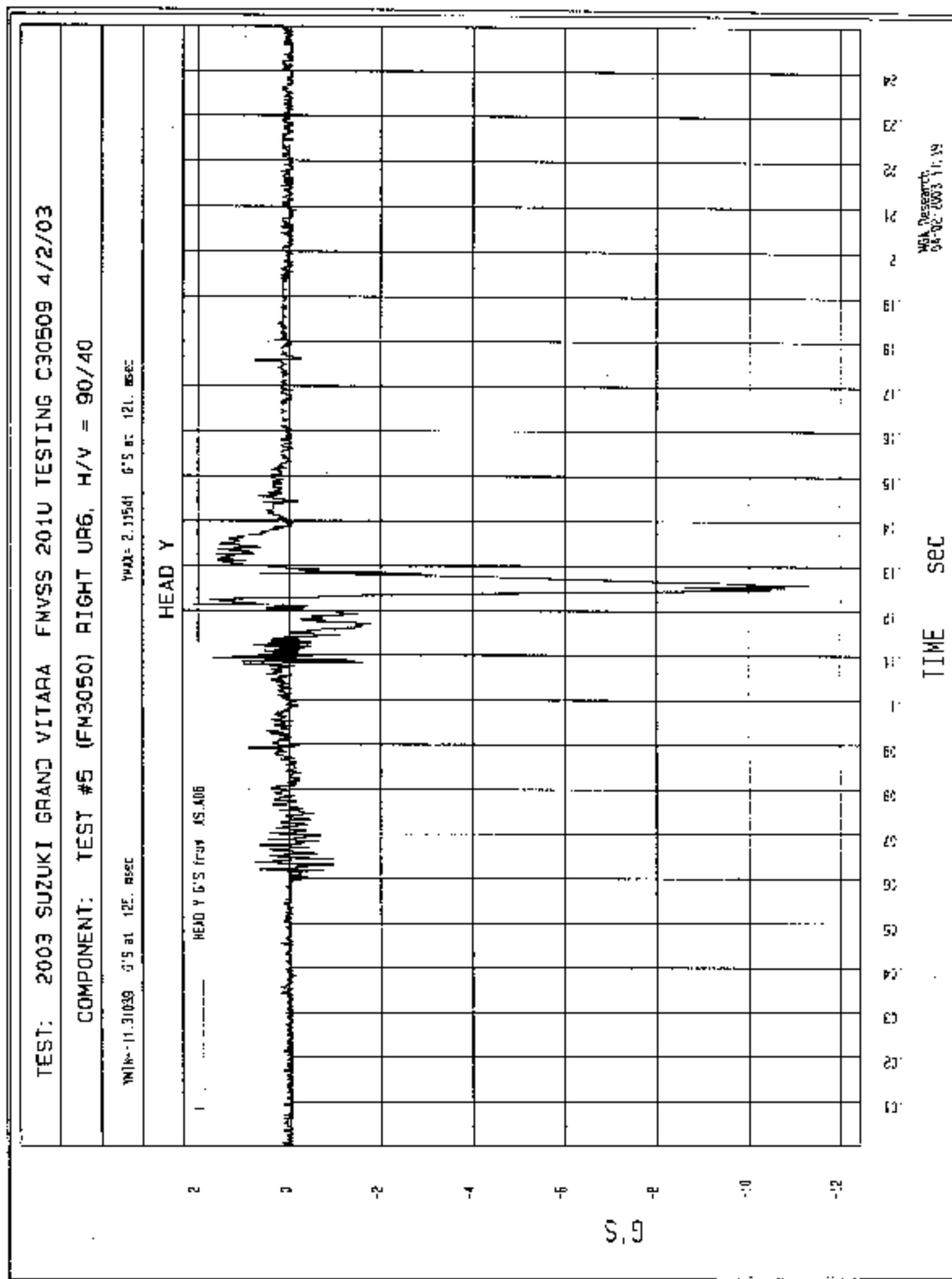
TEST: 2003 SUZUKI GRAND VITARA FMVSS 201U TESTING C30509 4/2/03

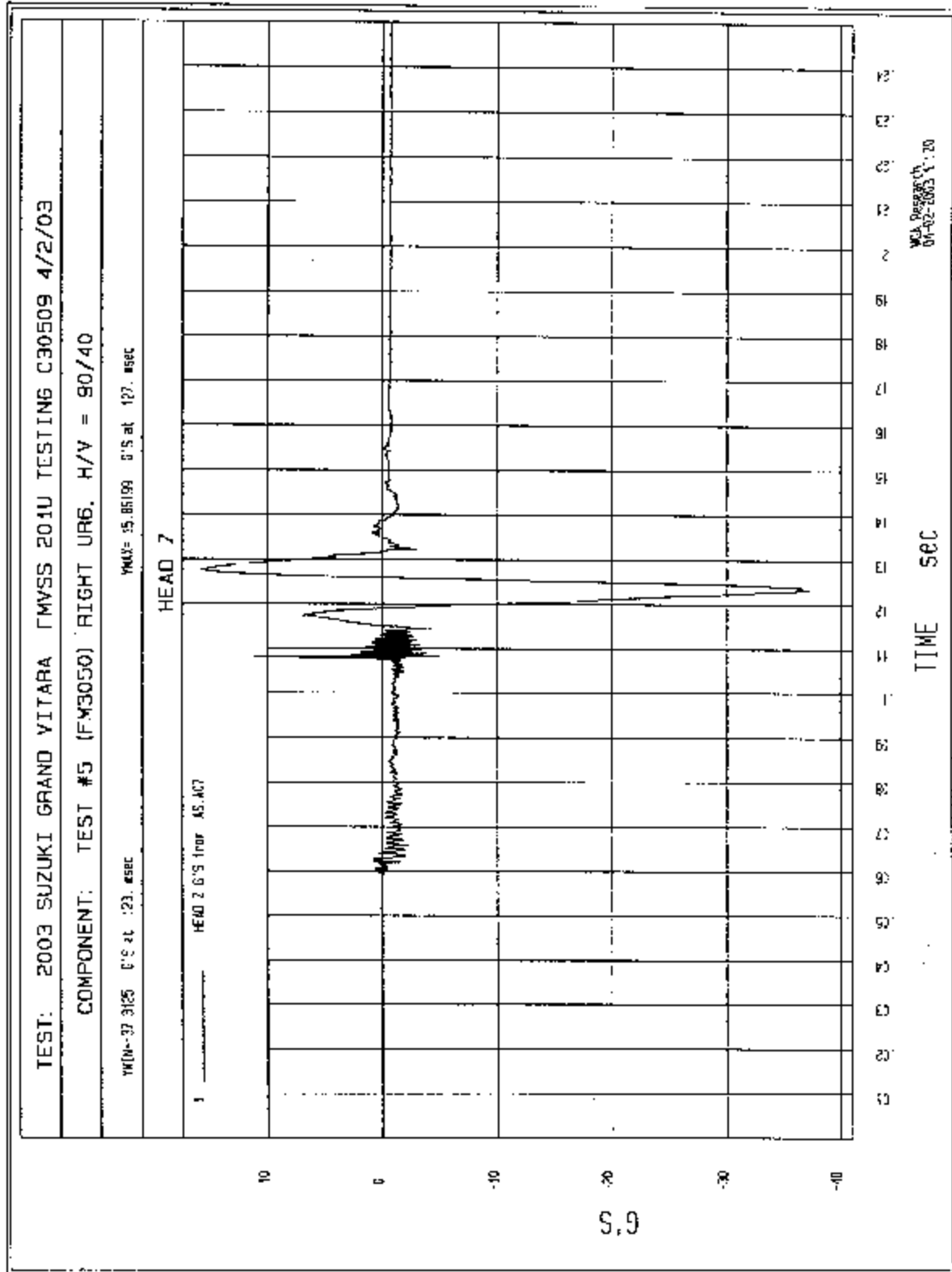
COMPONENT: TEST #5 (FM3050) RIGHT UR6. H/V = 90/40

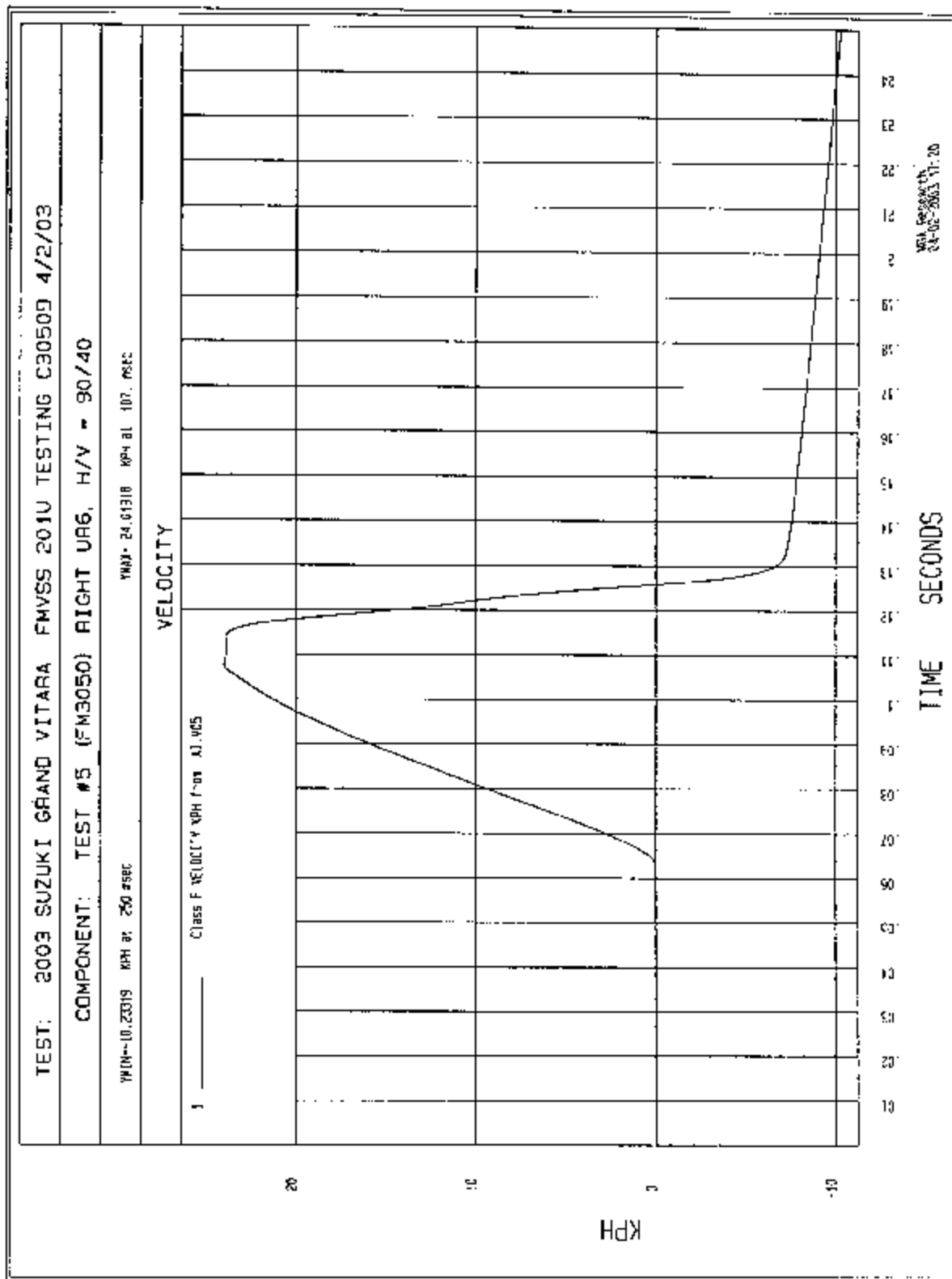
191(N)-95.26349 G'S at 125 msec

YMAX= 20.46241 G'S at 75.5 msec









4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

The following section lists the test equipment for the compliance test series. Items marked with an asterisk are calibrated by an external lab. An additional summary table is given for the pre and post-test calibration data for the Free Motion Headforms. The temperature trace to confirm testing was conducted between 66°F and 78°F (19°C - 26°C) is included in Appendix A.

TABLE 4-1 LIST OF ITEMS USED

ITEM	MANUFACTURER NAME	MODEL #	FUNCTION OF ITEM	ACCURACY	CAL. INTERNAL
Head Drop Tower (includes test frame and DAS)	MGA Research Corp.	MGA-100-DC	FMH Calibration	N/A	N/A
Accelerometers	Endevco	7264-2000	Acceleration Data	±0.5%	6 months
*Digital Inclinometer	Macklanburg-Duncan	PRO 360	Set Angle of FMH/Targeting	0.1°	Annual
FMVSS 201U Test Frame (includes the propulsion control system, actuator, test frame, and DAS)	MGA Research Corp.	MGA-100-FMH	Test System	N/A	N/A
Free Motion Headforms	UTAMA UTAMA UTAMA	035 036 038	Test Device	N/A	Pre and Post-Test Series
High Speed Video	Kodak	RO1000	Record Event	N/A	N/A
*FARO™	Faro Technologies	S08059801273	Targeting	0.1 mm	Annual
Measuring Devices: - Tape Measure - Plumb Bobs - Protractor	Stanley N/A Craftsman	33-215 -- --	Measurement Targeting FMH setup Horizontal Measurement	1 mm N/A 0.5°	Annual
*Vehicle Scale 9804-022/9805-175	Cardinal	8950F	Weighing Vehicle	± .5 kg	Annual
* Scale	Detecto	AP-20	Weigh FMH Head	± 0.01 lb	Annual
*Temperature Recorder	Dickson	TH8-24C	Record Temperature and Humidity	± 1°C ± 1% RH	Annual

TABLE 4-2 FMH CALIBRATION SUMMARY DATA SUMMARY TABLE

FMH Serial #		Weight (lbs)	Temp (°C)	% Humidity	Peak Resultant Acceleration (G's)	Peak Lateral Acceleration (G's)	Unimodal
Pre	#35	10.02	20	40	242.9	13.1	Yes
Post	#35	10.02	19	40	240.4	9.1	Yes
Pre	#36	10.03	20	40	255.1	2.0	Yes
Post	#36	10.03	19	40	259.8	11.4	Yes
Pre	#38	9.99	20	40	253.2	4.1	Yes
Post	#38	9.99	19	40	258.2	9.2	Yes

Calibration certificates and headform calibration information can be found in the P572L Performance Calibration report which accompanies this report.









XL.7
SUZUKI

**MGA RESEARCH CORP
2003 SUZUKI GRAND
VITARA XL 4-DR SUV**

**C30509 3/28/03
AS DELIVERED**

MFD BY SUZUKI MOTOR CORPORATION JAPAN

GVWR: 4916lb(2230kg)
GAWR: FRONT 2205lb(1000kg)
REAR 2866lb(1300kg)

09

/ 02

THIS VEHICLE CONFORMS TO ALL APPLICABLE
U.S. FEDERAL MOTOR VEHICLE SAFETY AND
THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE.

JS3TX92V034103214

MULTI PURPOSE PASSENGER VEHICLE Y8W 4WD

TIRE INFORMATION

GVWR: SEE CERTIFICATION LABEL

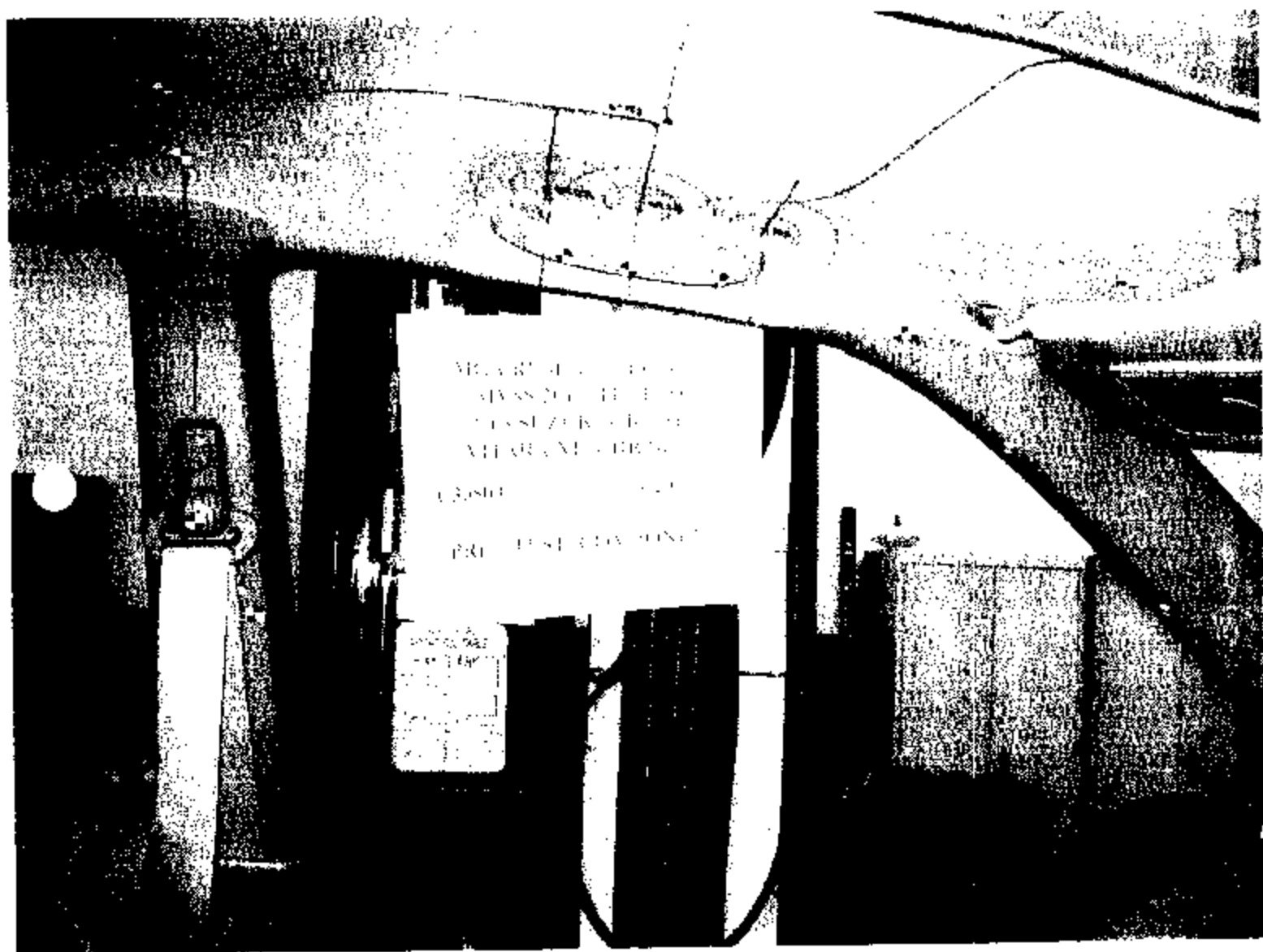
GAWR FRONT: 1,000 KG (2,205 LB) WITH
P235/60R16 TIRES,
16X7J OR 16X7JJ RIMS, AT
180 KPA (26 PSI) COLD

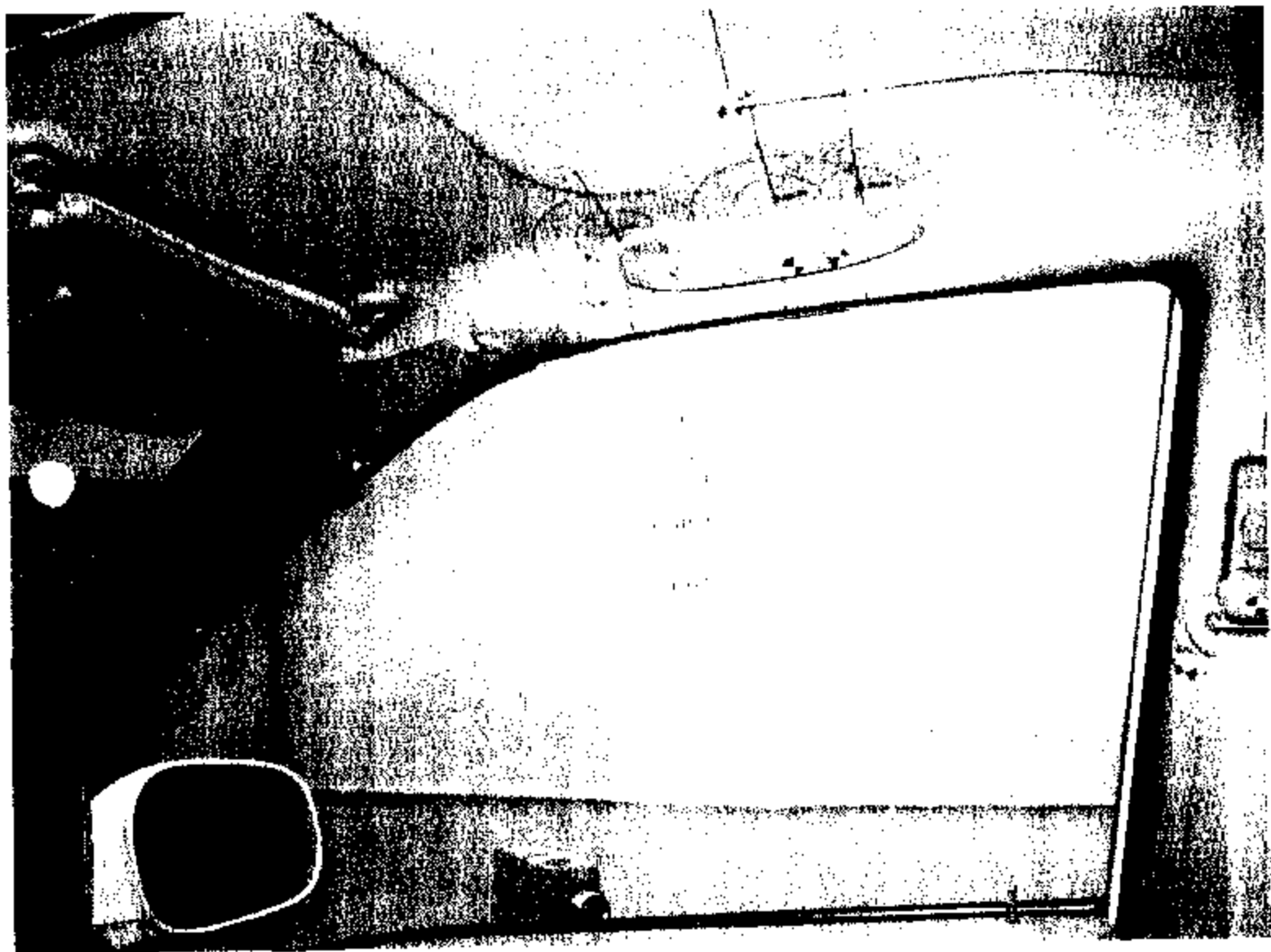
GAWR REAR : 1,300 KG (2,866 LB) WITH
P235/60R16 TIRES,
16X7J OR 16X7JJ RIMS, AT
250 KPA (36 PSI) COLD

VEHICLE CAPACITY WEIGHT		530 KG (1,168 LB)		
SEATING CAPACITY	FIRST	SECOND	THIRD	TOTAL
	2	3	-/2*	5/7*

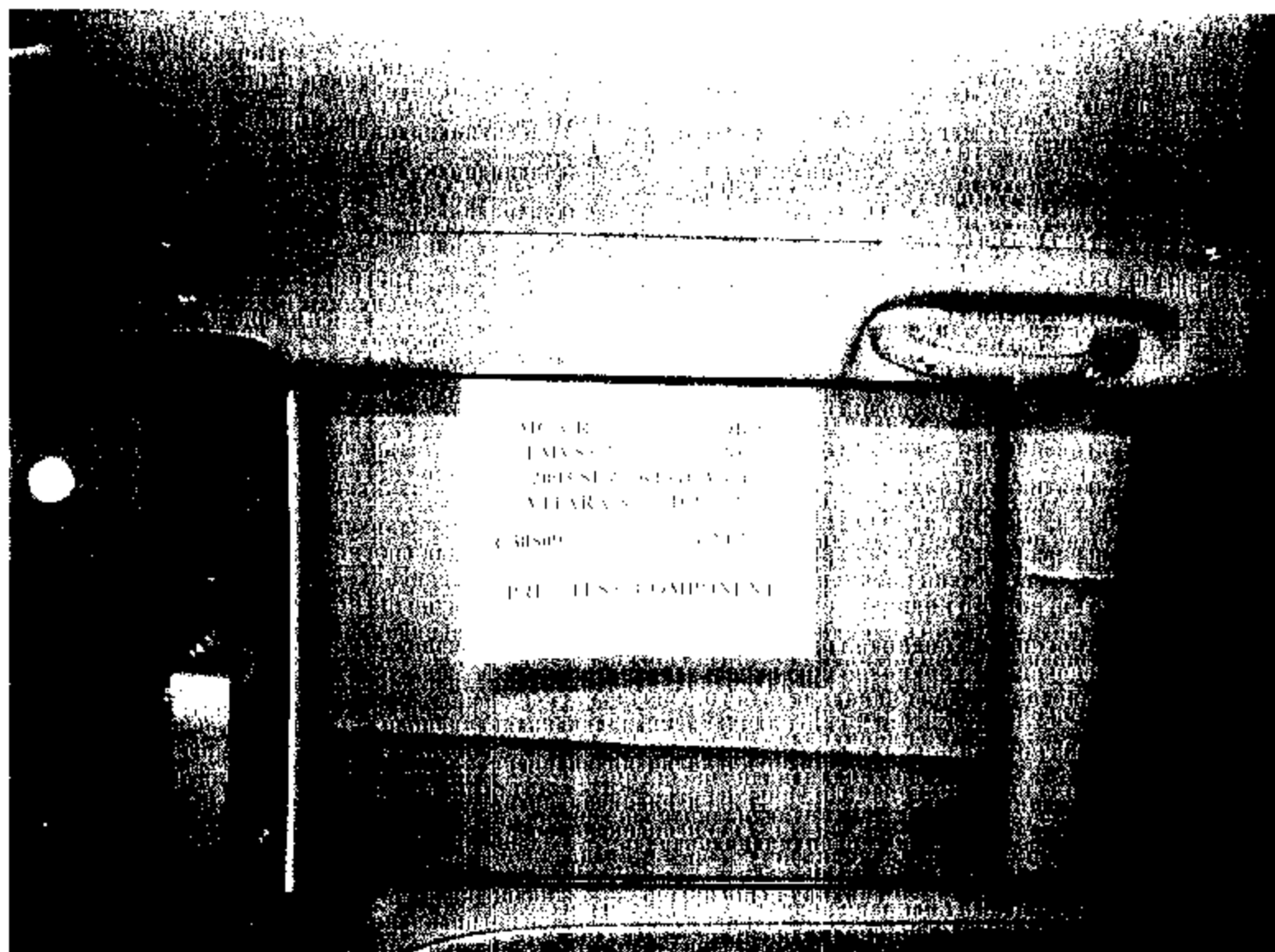
*IF THIRD SEAT IS EQUIPPED

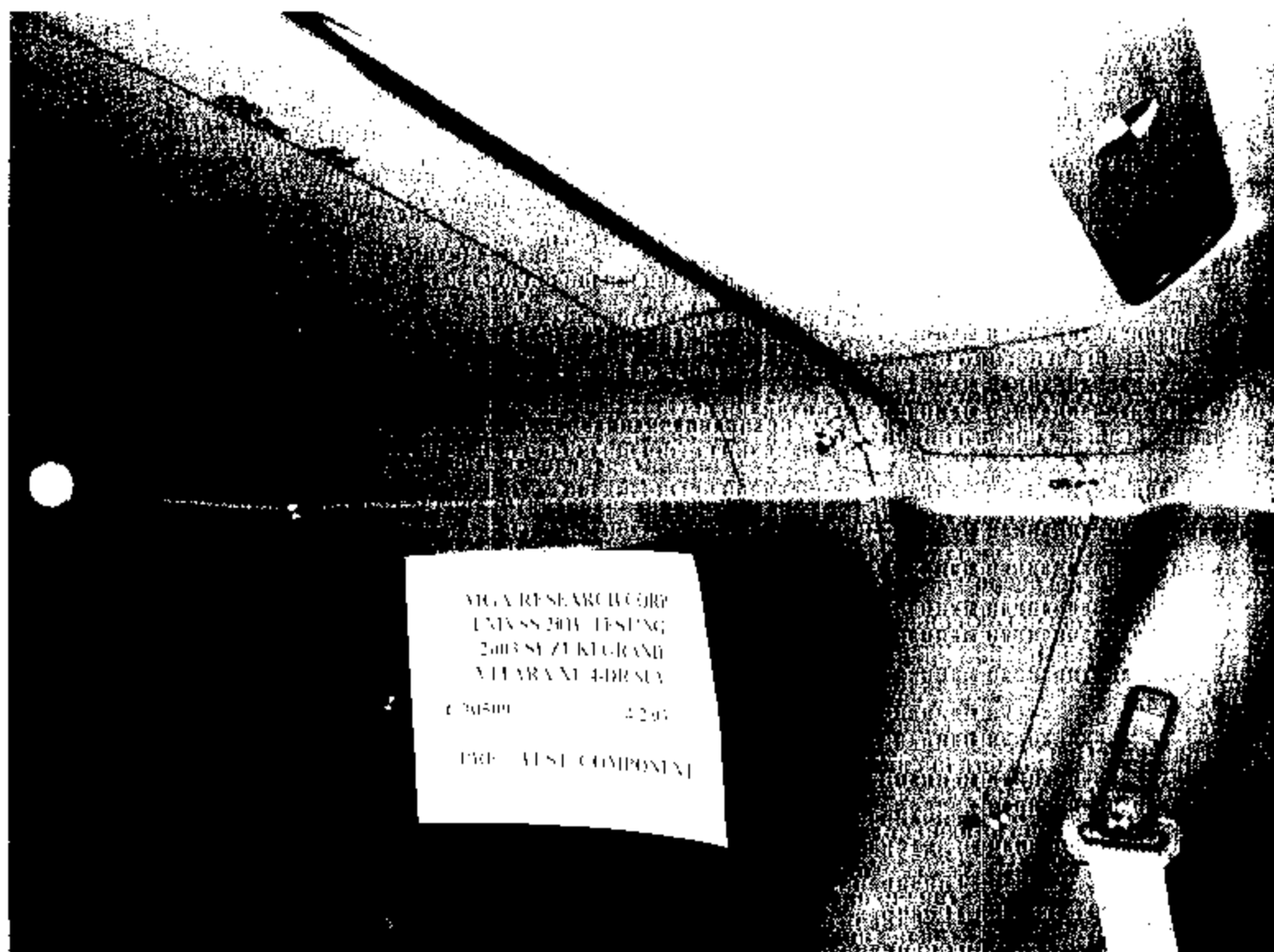
5204

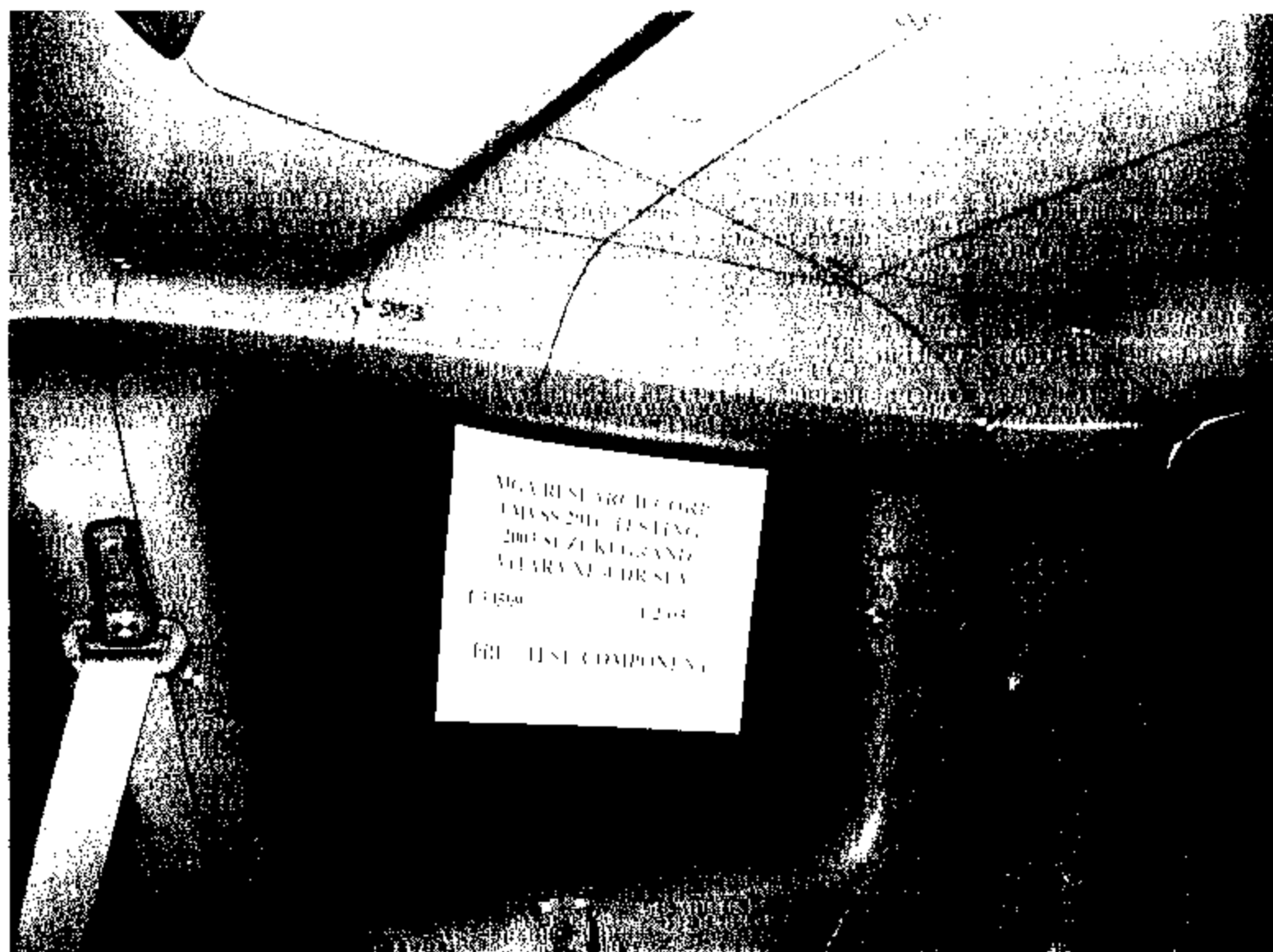


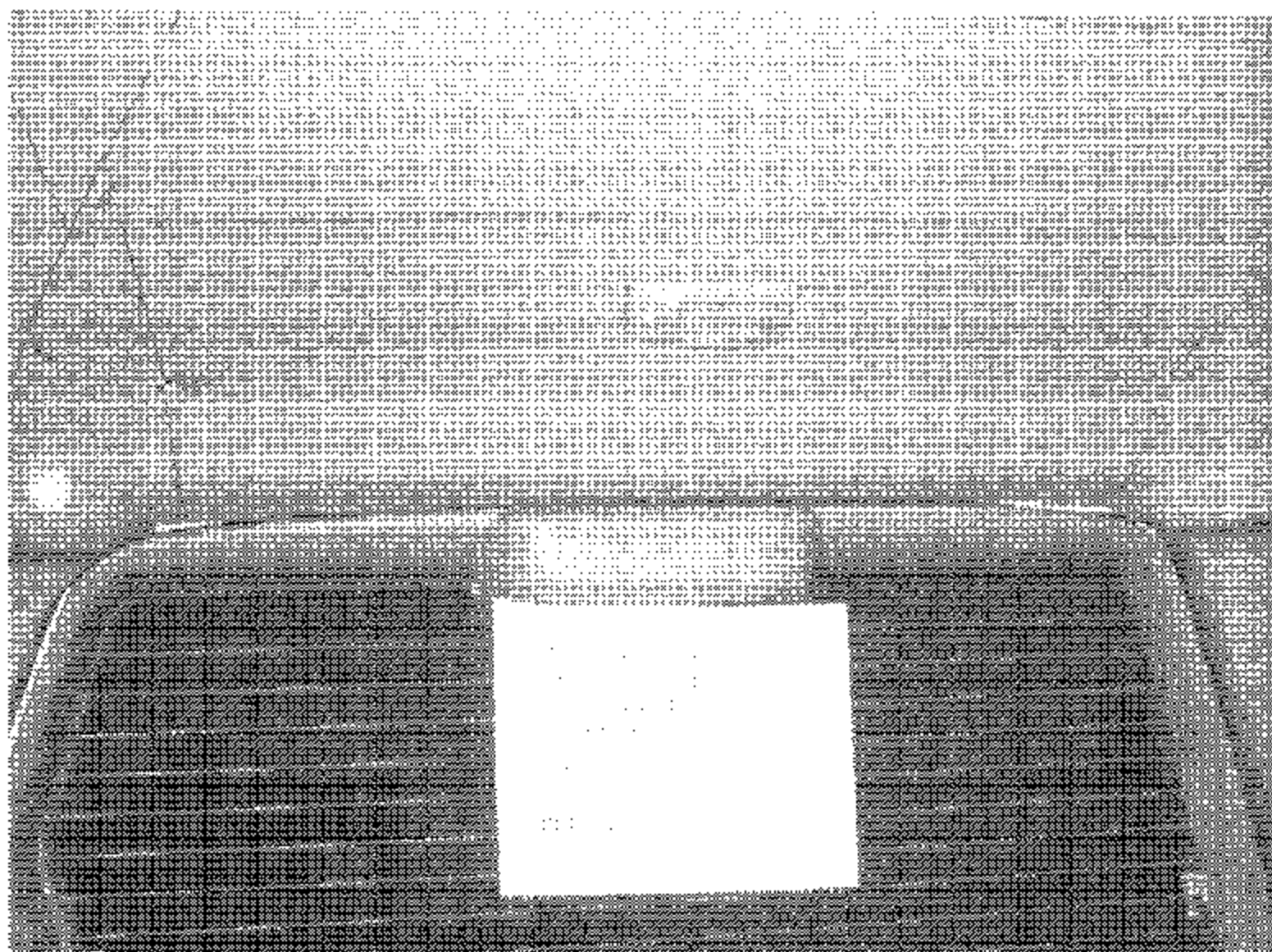


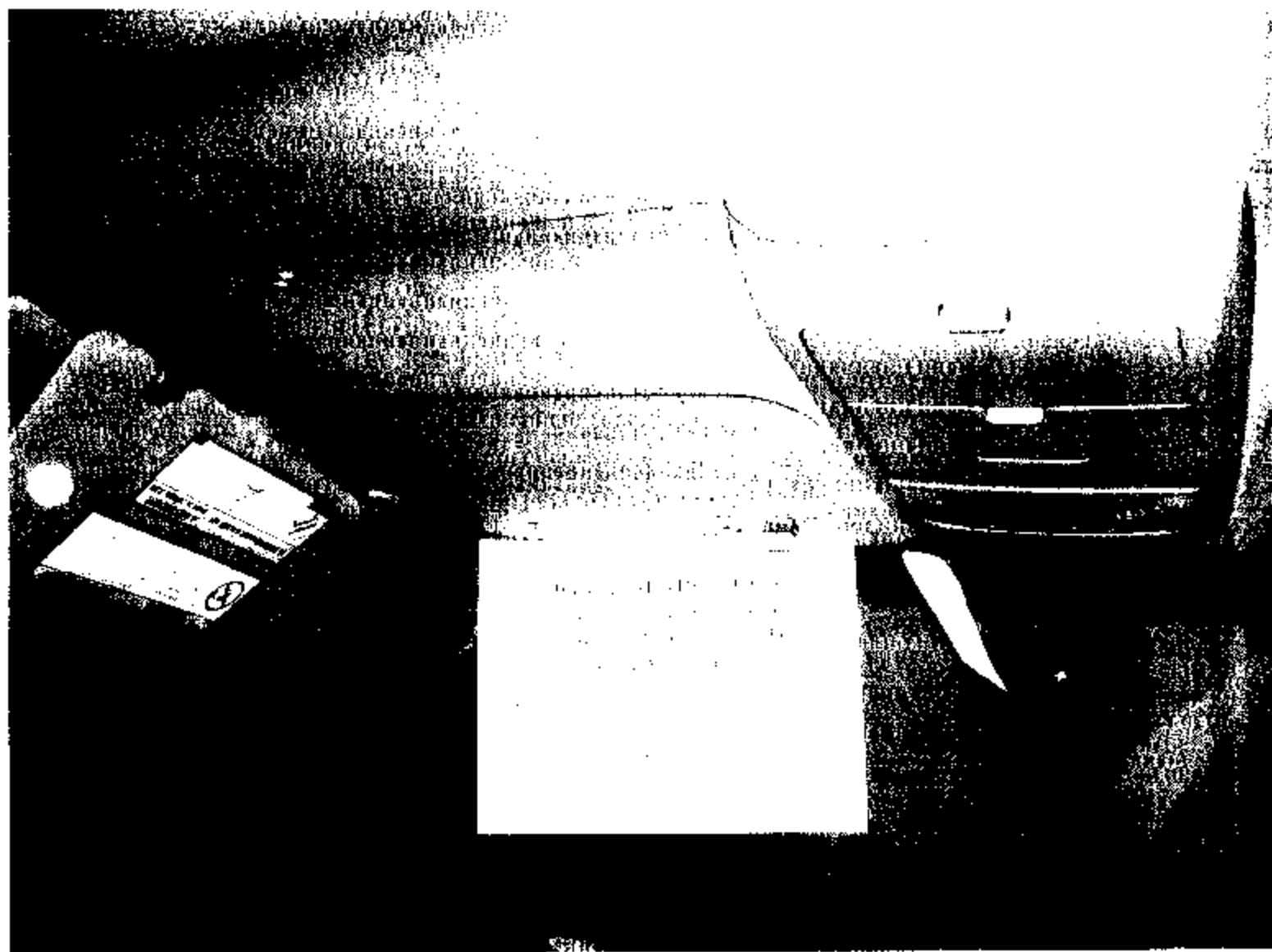


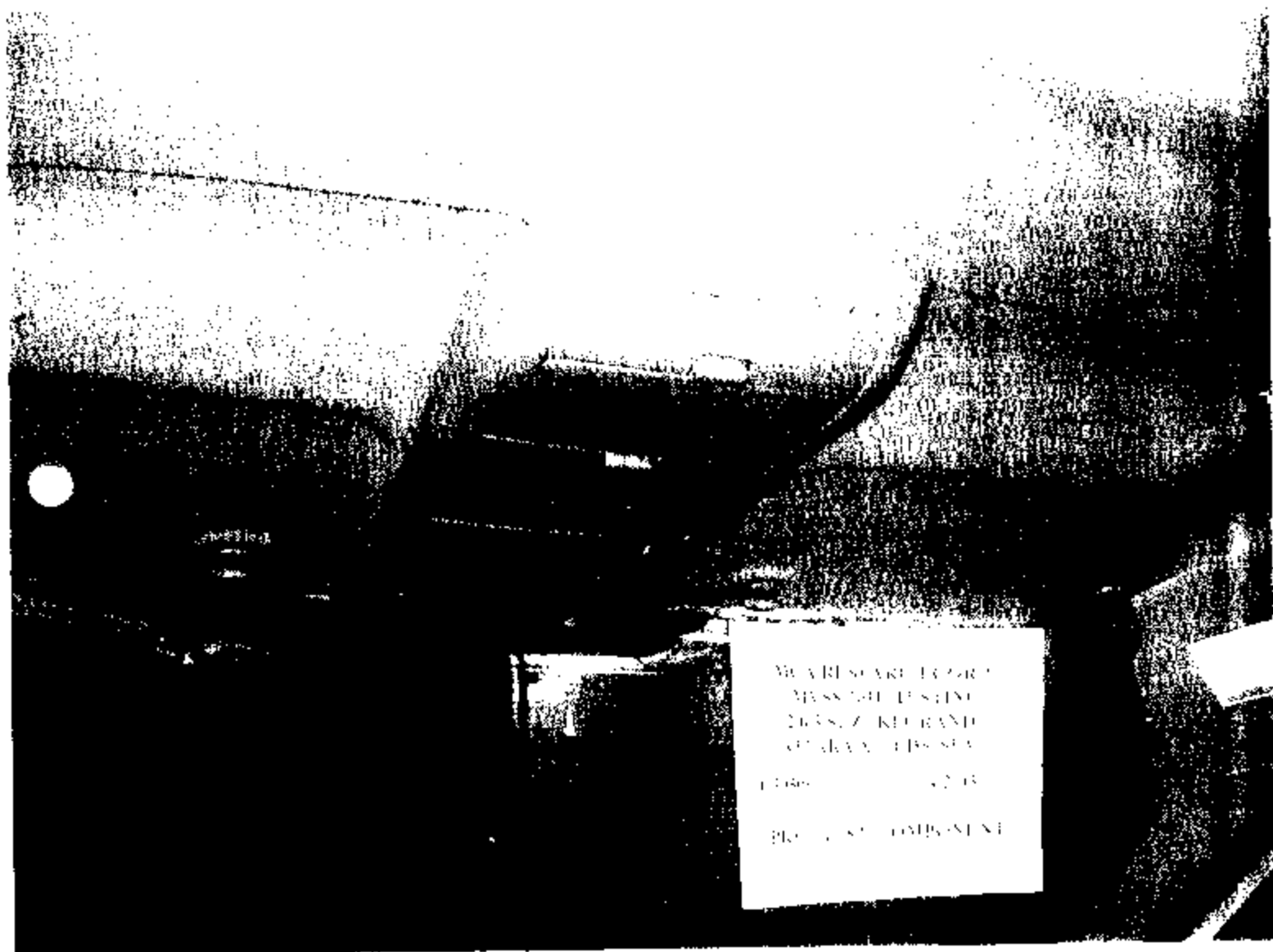








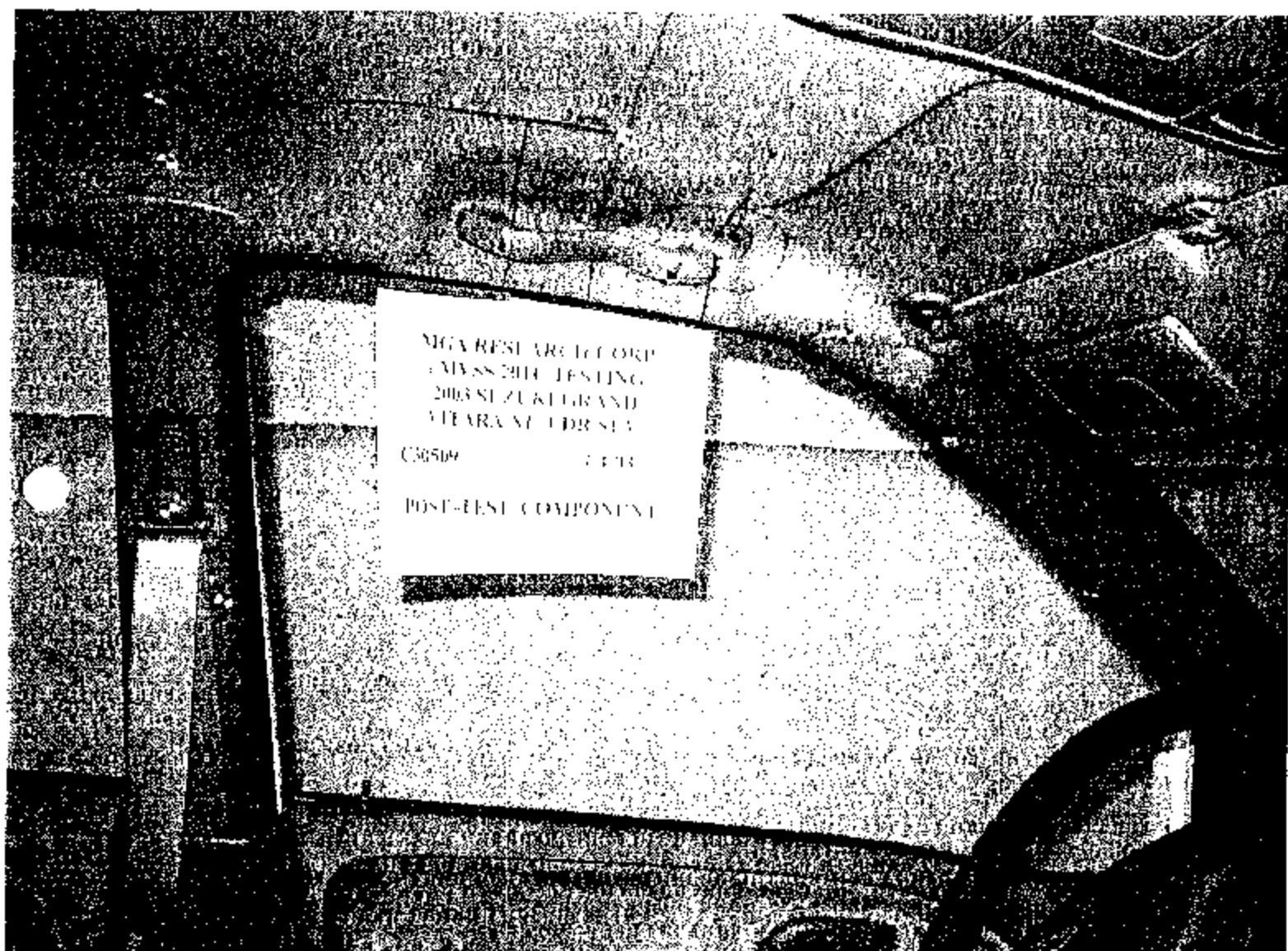


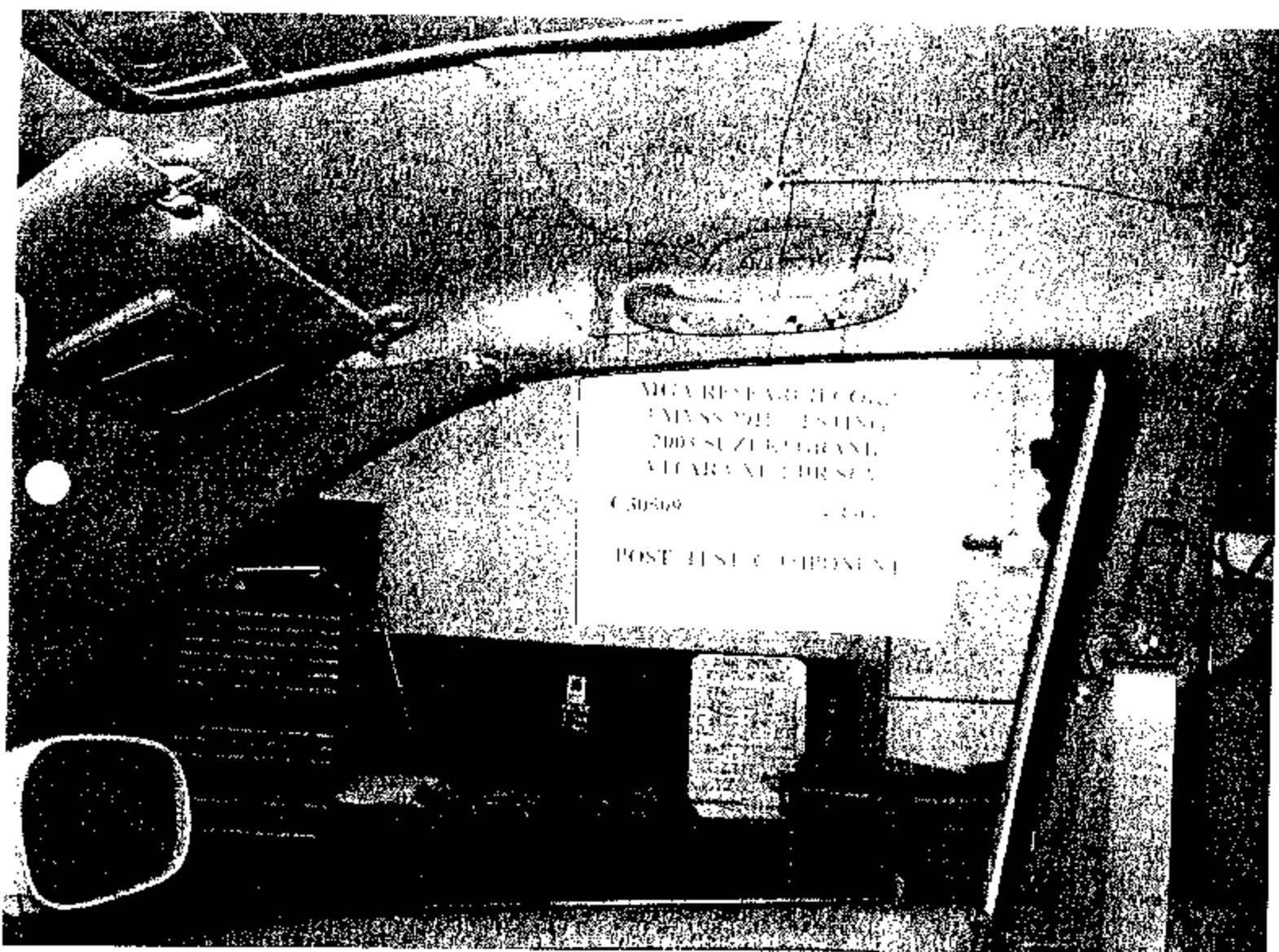


WATERBURY, CT 06705
MUSKOGEE COUNTY
2635, Z. K. GRAND
CITY, ALA. 35894

1980 1981

PRO. 1.87 COMPONENT



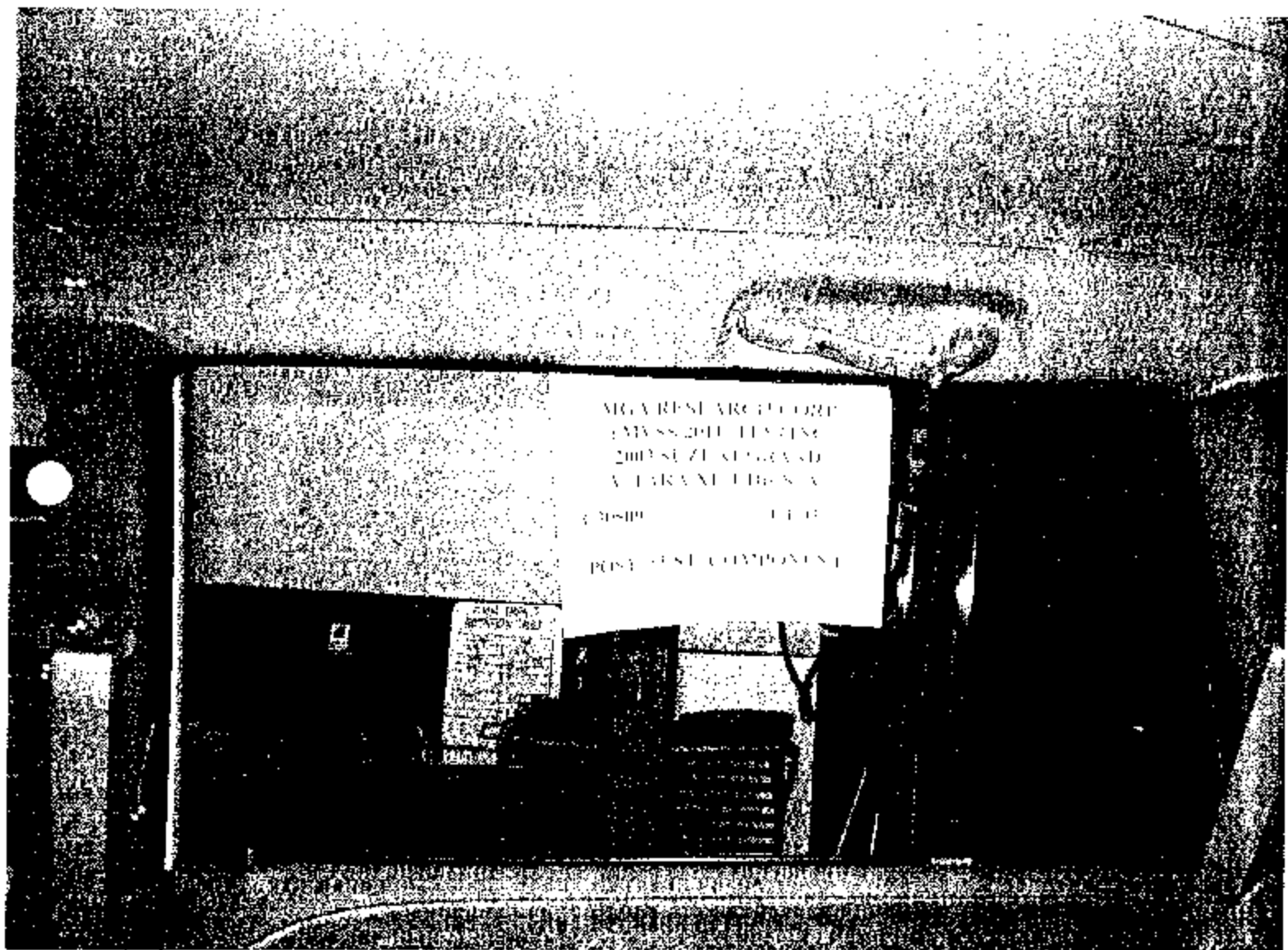


AMERICAN RESEARCH CORP
PATENT 2011 1041111
BRIEFING NOTE
ATTORNEY AT LAW

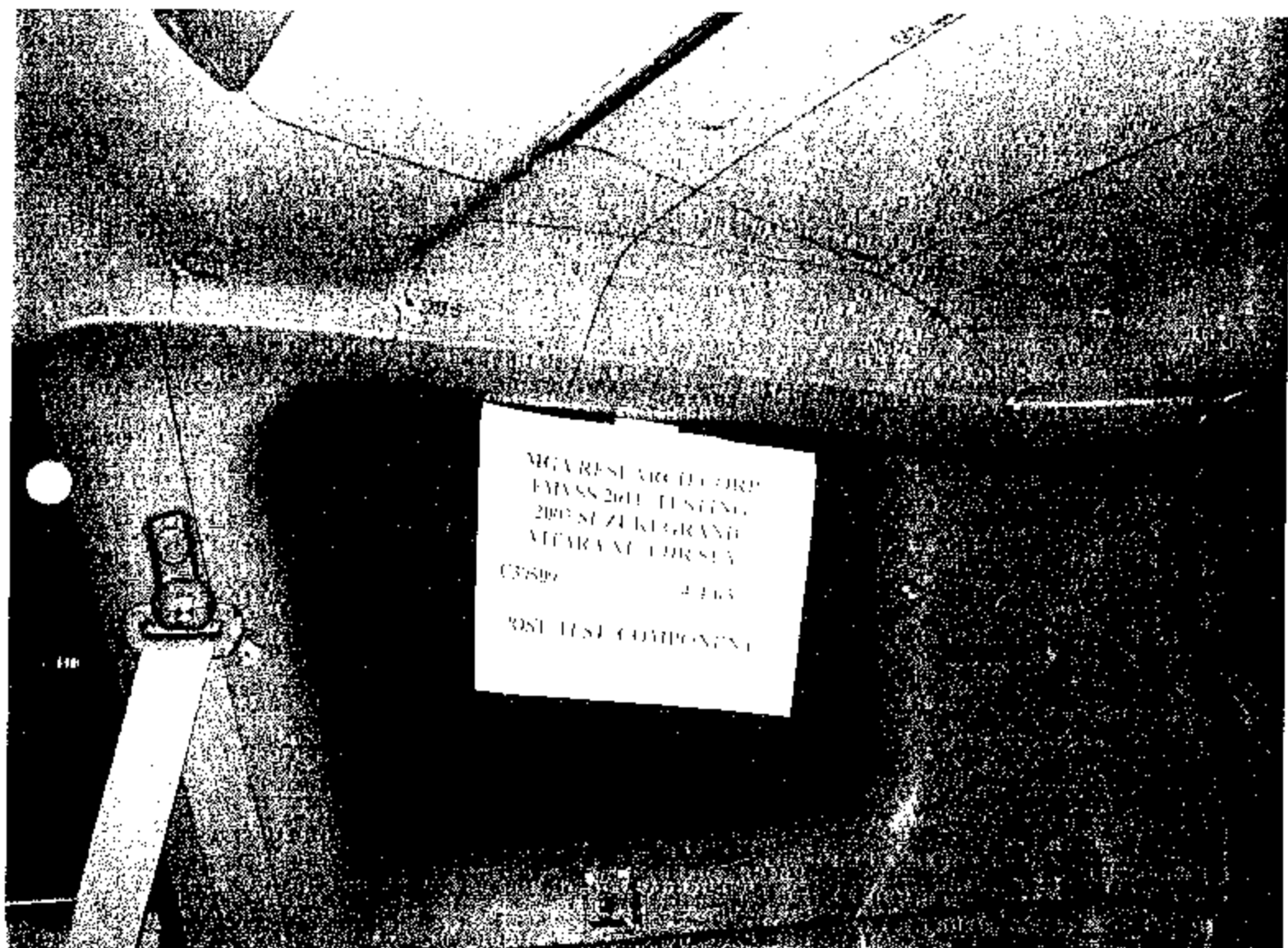
CT2011

10/15

GENERAL INVESTMENT

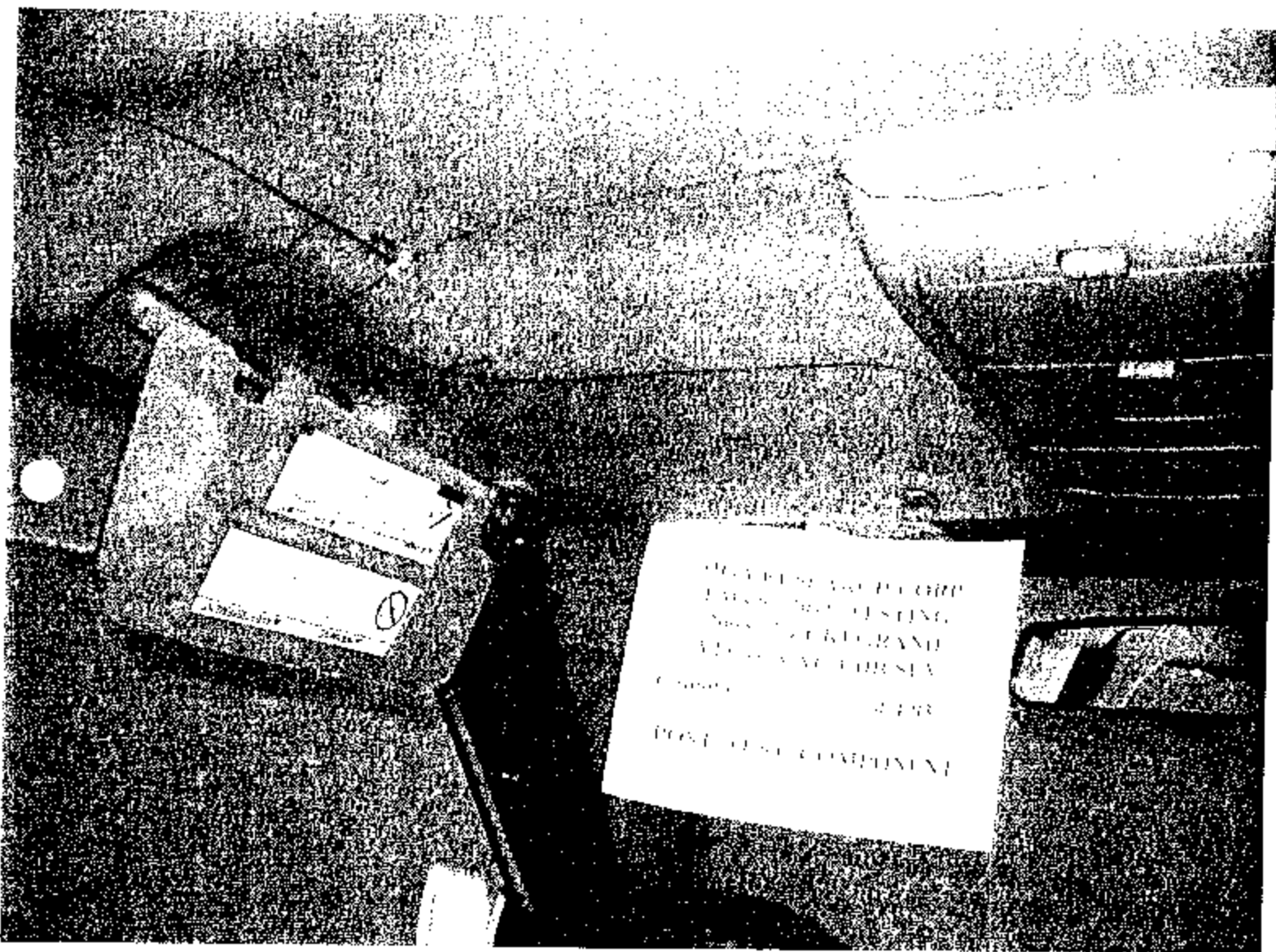


MC A RE SEARCH CHRP
6 MAY 88 2011 TESTING
2003 SUZUKI GRAND
VITARA XL 4-DR SLV
C 30590 4400
POST TEST COMPONENT

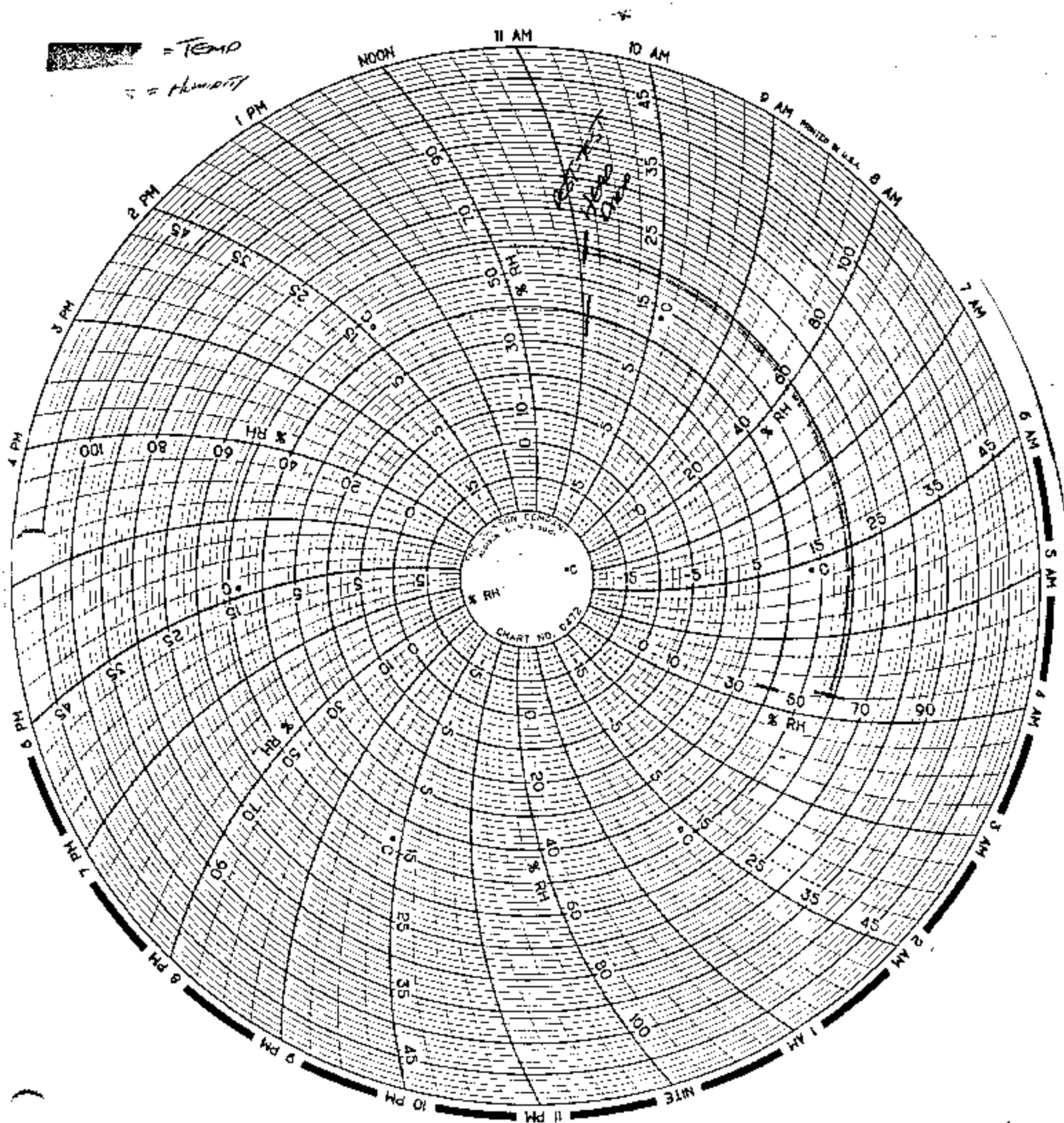


MGA RESEARCH CORP
EVALS 2011 TESTING
2603 SE ZIEGLER RD
VICTORIA BC V8N 4G8
C 2505-11 1493

POST TEST COMPONENT



MGA RESEARCH CORP
PASS 20.1 TESTING
2003 SUZUKI GRAND
VITARA ML 4 DR SUV
C30509 4.4.03
POST TEST COMPONENT



A-2

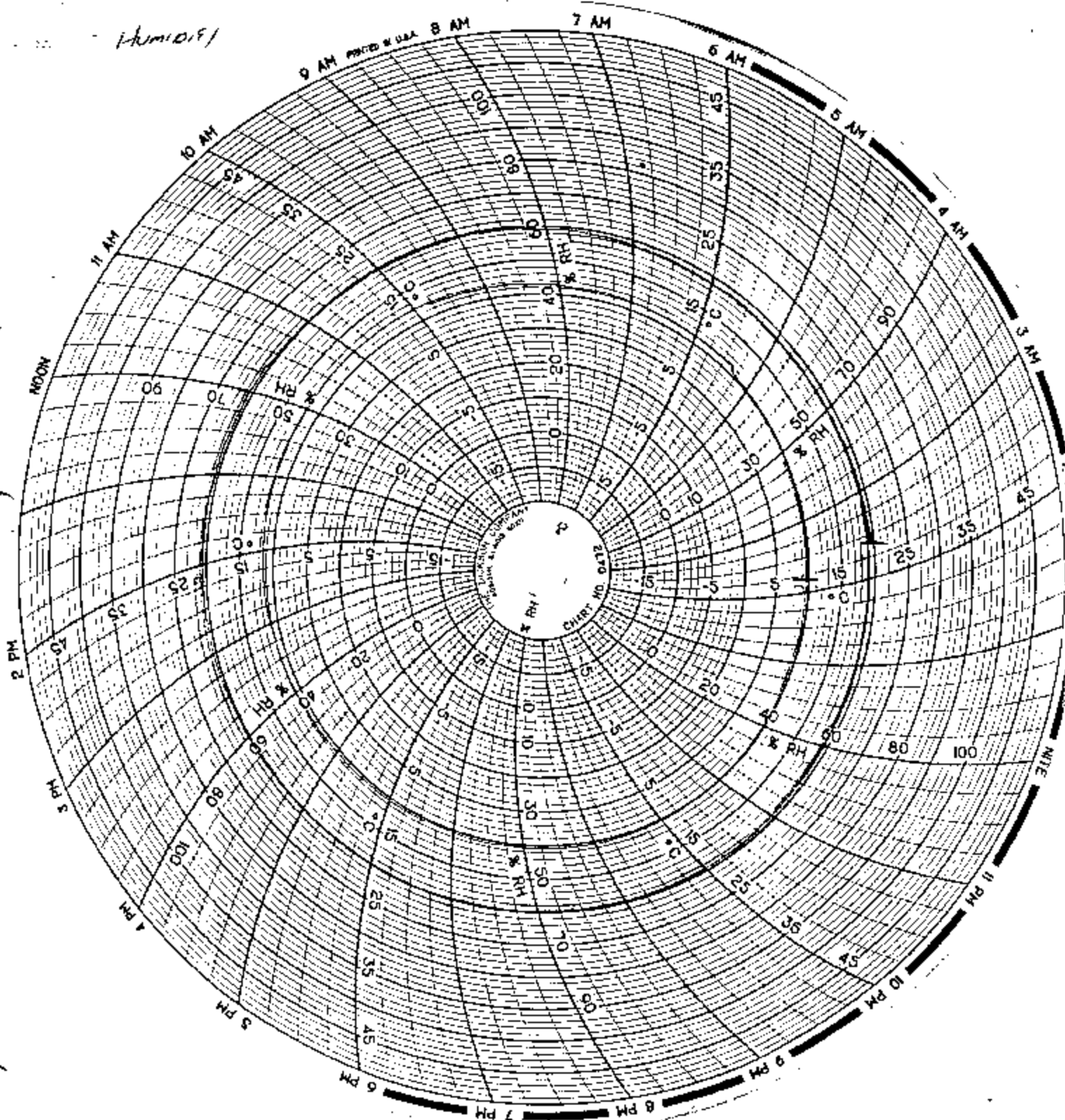
4/2-3/03

C30509

[Signature]

~~TEMPERATURE~~

Humidity



A-3

4/8-4/03

C 30509

[Handwritten signature]

Temp —
Humidity

