

V3133

REPORT NUMBER: NCAP-TRC-98-005

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING**

**1999 MAZDA PROTÉGÉ
4-DOOR SEDAN**

NHTSA NUMBER: MX5402

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**May 12, 1999
FINAL REPORT**

**U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Compliance
400 Seventh Street, S. W.
Room No. 6115 (NSA-30)
Washington, DC 20590**

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16. Abstract This 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 1999 Mazda Protégé 4-Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure Side NCAP for the generation of consumer information on vehicle side crash protection. This test was conducted at Transportation Research Center Inc. in East Liberty, Ohio, on May 12, 1999. The impact velocity of the Moving Deformable Barrier (MDB) was 61.9 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 22 °C. The target vehicle's post-test maximum crush was 369 mm at Level 3. The test or target vehicle's performance is given below: <table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>Front SID</u></th> <th></th> <th style="text-align: center;"><u>Rear SID</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration:</td> <td style="text-align: center;">64</td> <td>g's</td> <td style="text-align: center;">49</td> <td>g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td style="text-align: center;">73</td> <td>g's</td> <td style="text-align: center;">66</td> <td>g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td style="text-align: center;">79</td> <td>g's</td> <td style="text-align: center;">59</td> <td>g's</td> </tr> <tr> <td>Thoracic Trauma Index, (TTI):</td> <td style="text-align: center;">76</td> <td>g's</td> <td style="text-align: center;">63</td> <td>g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td style="text-align: center;">71</td> <td>g's</td> <td style="text-align: center;">95</td> <td>g's</td> </tr> </tbody> </table> The two 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 side impact event.				<u>Front SID</u>		<u>Rear SID</u>		Left Upper Rib Acceleration:	64	g's	49	g's	Left Lower Rib Acceleration:	73	g's	66	g's	Lower Spine Acceleration:	79	g's	59	g's	Thoracic Trauma Index, (TTI):	76	g's	63	g's	Pelvis Acceleration (PEV):	71	g's	95	g's
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17. Key Words New Car Assessment Program (NCAP) Side Impact MDB Side Impact Dummy (SID)	18. Distribution Statement <u>Copies of this report are available from:</u> NHTSA Technical Reference Division Room 5108 (NAD-52), 400 Seventh Street, S.W. Washington, DC 20590 Telephone No. (202) 366-4946 Attn: Robert Hornicle																															
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
fl oz	fluid ounces	15	milliliters	ml
c	cups	30	milliliters	ml
pt	pints	0.24	liters	l
qt	quarts	0.47	liters	l
gal	gallons	0.96	liters	l
ft ³	cubic feet	3.8	liters	l
yd ³	cubic yards	0.03	cubic meters	m ³
		0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 exactly. For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.75, SO Catalog No. C13.10/286.

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	ac
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F

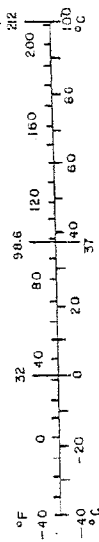


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SECTION 1

PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY 99 New Car Assessment Program Side Impact Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-98-C-12001. The purpose of this test was to generate comparative side impact performance in a 1999 Mazda Protégé 4-door Sedan. The test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated July 1997.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 1999 Mazda Protégé 4-Door Sedan was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 61.9 km/h (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 Transportation Research Center Inc. in East Liberty, Ohio on May 12, 1999. Pre- and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SIDs) are included in appendix A.

Two restrained Side Impact Dummies (SIDs) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to the instructions specified in the OVSC Side Impact Laboratory Test Procedure (TP-214D-04, dated September 1, 1995). Both SIDs were certified prior to this test. The side impact test was documented by one real-time camera and 9 high-speed cameras. Camera locations and other pertinent camera information are included in this report.

The SIDs were instrumented with the following accelerometers:

1. Left Upper Rib (LUR) uniaxial and redundant accelerometer (Y-direction)
2. Left Lower Rib (LLR) uniaxial and redundant accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) uniaxial and redundant accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial and redundant accelerometer (Y-direction)

A summary of the side impact dummy (SID) configuration and verification test data can be found in Appendix C. A total of 51 channels of data were recorded. Appendix B contains the vehicle, MDB, and dummy response data traces.

The following table summarizes the results of the test.

Injury Criteria	Front SID	Rear SID
TTI (g)	76	63
PEV (g)	71	95

DATA ACQUISITION EXPLANATIONS

The vehicle's left rear door upper centerline Y-axis acceleration data channel, LRUYG1, lost data after approximately 15 milliseconds. This affected the velocity and displacement calculations for this data channel.

The vehicle's left front door on centerline Y-axis acceleration data channel, LFCYG1, exceeded its data channel's full scale input at approximately 9 ms. This affected the velocity and displacement calculations for this data channel.

The vehicle's left lower A-post Y-axis acceleration data channel, LLAYG1, exceeded its data channel's full scale input at approximately 5 ms. This affected the velocity calculation for this data channel.

SECTION 3

VEHICLE TEST DATA

DATA SHEET 1

GENERAL VEHICLE TEST PARAMETER DATA

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1999 Mazda Protégé 4-Door Sedan
 Vehicle Body Color: White VIN: JM1BJ2221X0108489
 Vehicle NHTSA No.: MX5402 Month & Year of Manufacture: 08/98
 Engine Data: 4 Cylinders; - CID; 1.6 Liters; - cc
 Engine Placement: - Longitudinal; or X Lateral
 Transmission: 4 Speed; - Manual; X Automatic; - Overdrive
 Final Drive: - Rear Wheel Drive; X Front Wheel Drive; - Four-Wheel
 Odometer Reading: 53 km
 Options: X A/C; X Power steering; X Pwr. brakes; - Pwr. windows

DATA FROM TIRE PLACARD

Tire Pressure* (at capacity); 220 kPa FRONT
220 kPa REAR
 Recommended Tire Size: P185/65R14
 Tires on Test Vehicle: P185/65R14 Manufacturer: Firestone
 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 or - Knob
 Vehicle Max Capacity Loading = 385.6 kg (A)
 No. of Occupants x 68.0 kg. = 340.0 kg (B)
 Vehicle Cargo Capacity = 45.6 kg (A-B)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front	=	<u>355.6</u>	kg	Left Rear	=	<u>223.6</u>	kg
Right Front	=	<u>350.6</u>	kg	Right Rear	=	<u>216.4</u>	kg
TOTAL FRONT	=	<u>706.2</u>	kg	TOTAL REAR	=	<u>440.0</u>	kg
% of Total Weight	=	<u>61.6</u>	%	% of Total Weight	=	<u>38.4</u>	%
TOTAL WEIGHT	=	<u>1146.2</u>	kg				

* Tire pressure used in test.

DATA SHEET 1 (continued)

GENERAL VEHICLE TEST PARAMETER DATA

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight With Max. Fluids	=	<u>1146.2</u>	kg (A)
Maximum Cargo Carrying Capacity Of Test Vehicle	=	<u>45.6</u>	kg (B)
Weight Of Instrumented Side Impact Dummies (1 Or 2 X <u>79.4</u> kg)	=	<u>158.8</u>	kg (C)
TEST VEHICLE TARGET WEIGHT:	=	<u>1350.6</u>	kg (A+B+C)

FULLY LOADED TEST VEHICLE (UDW + 1 OR 2 SID(s) + CARGO):

Left Front	=	<u>412.3</u>	kg	Left Rear	=	<u>321.1</u>	kg
Right Front	=	<u>349.7</u>	kg	Right Rear	=	<u>282.1</u>	kg
TOTAL FRONT	=	<u>762.0</u>	kg	TOTAL REAR	=	<u>603.2</u>	kg
% of Total Weight	=	<u>55.8</u>	%	% of Total Weight	=	<u>44.2</u>	%
TOTAL WEIGHT	=	<u>1365.2</u>	kg				

AS TESTED WEIGHT OF TEST VEHICLE (1 OR 2 SID(s) + CARGO + EQUIPMENT & INSTRUMENTATION)

Left Front	=	<u>389.0</u>	kg	Left Rear	=	<u>324.0</u>	kg
Right Front	=	<u>340.5</u>	kg	Right Rear	=	<u>292.5</u>	kg
TOTAL FRONT	=	<u>729.5</u>	kg	TOTAL REAR	=	<u>616.5</u>	kg
% of Total Weight	=	<u>54.2</u>	%	% of Total Weight	=	<u>45.8</u>	%
TOTAL WEIGHT	=	<u>1346.0</u>	kg				

TEST VEHICLE ATTITUDE (ALL DIMENSIONS IN MILLIMETERS):

AS DELIVERED:

Left Front 648 Right Front 648 Left Rear 661 Right Rear 662

FULLY LOADED:

Left Front 624 Right Front 641 Left Rear 595 Right Rear 613

READY FOR TEST:

Left Front 634 Right Front 642 Left Rear 601 Right Rear 615

TEST VEHICLE WHEELBASE: 2608 millimeters

C.G. = 1194 millimeters rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side	=	<u>4170</u>	millimeters
Left Side	=	<u>4217</u>	millimeters
Centerline	=	<u>4440</u>	millimeters

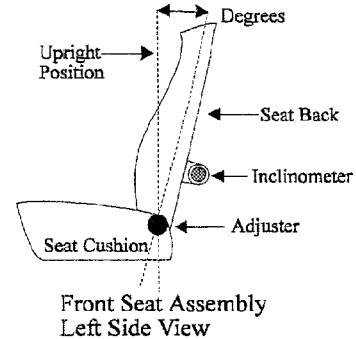
DATA SHEET 1 (continued)

GENERAL VEHICLE TEST PARAMETER DATA

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



FRONT SEAT CUSHION PLACEMENT: Mid position

Total Length of Adjustment Travel: 240 millimeters

Total Number of Adjustment Positions or Detents: 17

FRONT SEAT BACK ADJUSTMENT POSITION: Align witness hole in seat back adjuster
With sight hole for 14° seat back angle

Seat Back Torso Angle: 14 degrees

SECOND POSITION SEAT:

Total Length Of Fore/Aft Adjustment Travel: N/A millimeters

Seat Back Adjustment Position: N/A

ADJUSTABLE STEERING COLUMN POSITION: Mid-position

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

Note: Windows will be in closed position on struck side of test vehicle and in open position on opposite side.

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

50.0 liters (fuel tank usable capacity)

46.6 liters used in test (92% - 94% of fuel tank usable capacity)

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

Wheelbase = 2608 millimeters

Impact point is 364 millimeters rearward of front axle centerline
 (which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 364 millimeters rearward of front axle centerline

DATA SHEET 2

TEST VEHICLE SUMMARY OF RESULTS

VEHICLE IDENTIFICATION:

Vehicle Year/Make/Model: 1999 Mazda Protégé
 Body Style: 4-Door Sedan VIN: JM1BJ2221X0108489
 NHTSA No.: MX5402 Test Date: May 12, 1999
 Overall Length = 4440 millimeters; Overall Width = 1695 millimeters

VEHICLE TEST WEIGHT (Pre-Test):

Left Front = 389.0 kg Left Rear = 324.0 kg
 Right Front = 340.5 kg Right Rear = 292.5 kg
 TOTAL FRONT = 729.5 kg TOTAL REAR = 616.5 kg
 TOTAL VEHICLE WEIGHT 1346.0 kg
 Wheelbase = 2608 millimeters
 Longitudinal C.G. From Center Of Front Axle = 1194 millimeters
 Impact Angle With Respect To Impactor = 90 degrees

ACTUAL IMPACT POINT:

Actual Impact Point is 0 mm forward of nominal impact ref. line (Lateral)
 Actual Impact Point is 5 mm above nominal impact point (Vertical)

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (255 mm above ground) = 154 millimeters
 2. LEVEL 2 (476 mm above ground) = 350 millimeters
 3. LEVEL 3 (580 mm above ground) = 369 millimeters
 4. LEVEL 4 (840 mm above ground) = 333 millimeters
 5. LEVEL 5 (1380 mm above ground) = 127 millimeters
 Maximum Post-Test Intrusion = 369 millimeters

OCCUPANTS:

<u>Driver:</u>	<u>Left Rear Passenger:</u>
Dummy Identification <u>052</u>	<u>051</u>
Restraints Used <u>3-point active seat belt</u>	<u>3-point active seat belt</u>

INSTRUMENTATION:

Number of Vehicle Data Channels: = 51
 Number Of Cameras: Onboard = 3
 Offboard = 7
 TOTAL = 10

DATA SHEET 3

MOVING DEFORMABLE BARRIER(MDB) SUMMARY

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

MDB FACE MANUFACTURER AND SERIAL NUMBER:

Plascore, Inc.: 012C1098, 013C1098, 027A1098, 029C1098

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to the left

MDB DETAILS:

Overall Width of Framework Carriage	=	<u>1,251</u>	millimeters
Overall Length of MDB (Incl. honeycomb impact face)	=	<u>4,115</u>	millimeters
Wheelbase of Framework Carriage	=	<u>2,591</u>	millimeters
Tread of Framework Carriage (Front & Rear)	=	<u>1,880</u>	millimeters
C.G. Location Rearward of Front Axle	=	<u>1,099</u>	millimeters

MDB WEIGHT:

Left Front	=	<u>461.5</u>	kg	Left Rear	=	<u>213.5</u>	kg
Right Front	=	<u>325.0</u>	kg	Right Rear	=	<u>365.5</u>	kg
TOTAL FRONT	=	<u>786.5</u>	kg	TOTAL REAR	=	<u>579.0</u>	kg
TOTAL MDB WEIGHT	=	<u>1,365.5</u>	kg				

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

Impact Speed = 61.9 km/h

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A at Center of Bumper Level	=	<u>175</u>	millimeters
2. Row B at Top of Bumper Level	=	<u>134</u>	millimeters
3. Row C at Mid Level	=	<u>102</u>	millimeters
4. Row D at Top of Stack Level	=	<u>104</u>	millimeters

INSTRUMENTATION:

Number of MDB Data Channels = 51

DATA SHEET 4

POST-TEST OBSERVATIONS

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head:	<u>Side glass</u>	<u>C-pillar</u>
Upper Torso:	<u>Door panel</u>	<u>Door panel</u>
Lower Torso:	<u>Door panel</u>	<u>Door panel</u>
Left Knee:	<u>Instrument panel/Door panel</u>	<u>Door panel</u>
Right Knee:	<u>Instrument panel</u>	<u>Left knee</u>

DOOR OPENING:

	<u>LEFT DOOR</u>	<u>RIGHT DOOR</u>
Front:	<u>Needed tools</u>	<u>Easy</u>
Rear:	<u>Needed tools</u>	<u>Easy</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

Vertical: 5 mm above target

Horizontal: 0 mm forward of target

ARM REST LOCATIONS:

Front: 105 mm below the bottom of the window

Rear: 75 mm below the bottom of the window

SEAT MOVEMENT:

Front: None

Rear: None

GLAZING DAMAGE:

Windshield: There was damage to the left side of the windshield.

Window: Side glass shattered

PILLAR PERFORMANCE:

None

SILL SEPARATION:

None

OTHER NOTABLE IMPACT EFFECTS:

None

DATA SHEET 4 (continued)

POST-TEST OBSERVATIONS

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

AIRBAG DEPLOYMENT STATUS:

	<u>DRIVER</u>	<u>LEFT REAR PASSENGER</u>
Frontal:	<u>Did not deploy</u>	<u>N/A</u>
Side:	<u>N/A</u>	<u>N/A</u>

SECTION 4

OCCUPANT AND VEHICLE INFORMATION

DATA SHEET 5

SID INSTRUMENTATION DATA

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

TEST NUMBER: 990512-1

DRIVER DUMMY SERIAL NUMBER: 051

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

HEAD ACCELERATION

LONGITUDINAL	62.6 g	@ 73.7 ms	4.5 g	@ 57.5 ms
LATERAL	59.1 g	@ 73.8 ms	7.3 g	@ 161.8 ms
VERTICAL	13.3 g	@ 72.6 ms	64.9 g	@ 51.5 ms
RESULTANT	86.2 g	@ 73.8 ms		
HIC	758 from 42.640 to 78.640 ms			

LEFT UPPER RIB ACCELERATION

LATERAL (P)	64.0 g	@ 26.9 ms	31.1 g	@ 71.9 ms
LATERAL (R)	65.7 g	@ 26.9 ms	31.0 g	@ 71.9 ms

LEFT LOWER RIB ACCELERATION

LATERAL (P)	72.9 g	@ 26.9 ms	20.9 g	@ 81.9 ms
LATERAL (R)	72.0 g	@ 26.9 ms	22.5 g	@ 81.3 ms
TTI d (P)	76.0			
TTI d (R)	76.0			

LOWER SPINE ACCELERATION

LATERAL (P)	79.0 g	@ 31.3 ms	27.3 g	@ 61.2 ms
LATERAL (R)	80.0 g	@ 31.3 ms	27.0 g	@ 61.2 ms

PELVIS ACCELERATION

LATERAL (P)	71.2 g	@ 31.3 ms	10.9 g	@ 76.9 ms
LATERAL (R)	69.7 g	@ 31.3 ms	11.3 g	@ 76.9 ms

POSITIVE DIRECTION

LONGITUDINAL: REARWARD
LATERAL: RIGHTWARD
VERTICAL: UPWARD

NEGATIVE DIRECTION

LONGITUDINAL: FORWARD
LATERAL: LEFTWARD
VERTICAL: DOWNWARD

DATA SHEET 5 (continued)

SID INSTRUMENTATION DATA

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

TEST NUMBER: 990512-1

LEFT REAR PASSENGER DUMMY SERIAL NUMBER: 052
POSITIVE DIRECTION NEGATIVE DIRECTION

HEAD ACCELERATION

LONGITUDINAL	20.5 g	@ 49.8 ms	8.6 g	@ 112.4 ms
LATERAL	91.5 g	@ 49.6 ms	17.2 g	@ 152.5 ms
VERTICAL	54.5 g	@ 55.5 ms	37.8 g	@ 48.6 ms
RESULTANT	97.7 g	@ 49.7 ms		
HIC	652 from 44.720 to 59.200 ms			

LEFT UPPER RIB ACCELERATION

LATERAL (P)	49.2 g	@ 33.7 ms	7.5 g	@ 130.0 ms
LATERAL (R)	49.5 g	@ 54.4 ms	7.4 g	@ 129.4 ms

LEFT LOWER RIB ACCELERATION

LATERAL (P)	66.4 g	@ 45.6 ms	6.7 g	@ 70.6 ms
LATERAL (R)	66.6 g	@ 45.6 ms	7.2 g	@ 70.6 ms
TTI d (P)	62.8			
TTI d (R)	63.0			

LOWER SPINE ACCELERATION

LATERAL (P)	59.3 g	@ 48.1 ms	9.3 g	@ 75.6 ms
LATERAL (R)	59.4 g	@ 48.1 ms	8.9 g	@ 76.3 ms

PELVIS ACCELERATION

LATERAL (P)	95.0 g	@ 39.4 ms	9.8 g	@ 65.6 ms
LATERAL (R)	94.2 g	@ 39.4 ms	10.1 g	@ 65.6 ms

POSITIVE DIRECTION

LONGITUDINAL: REARWARD
LATERAL: RIGHTWARD
VERTICAL: UPWARD

NEGATIVE DIRECTION

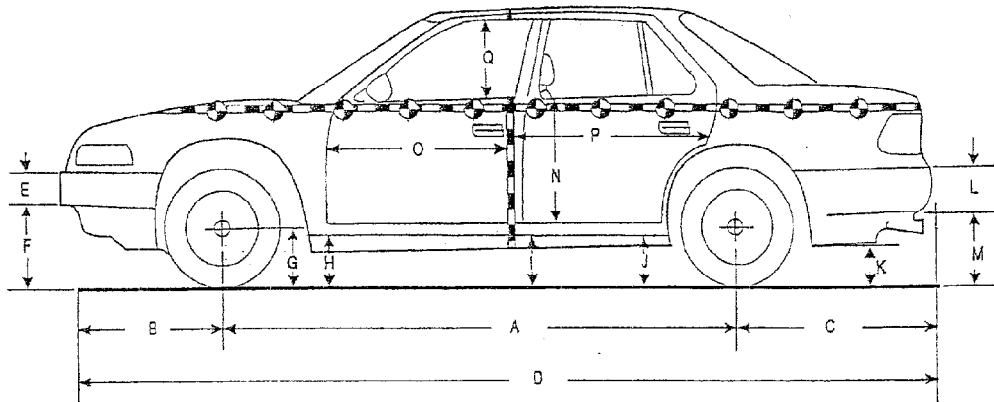
LONGITUDINAL: FORWARD
LATERAL: LEFTWARD
VERTICAL: DOWNWARD

DATA SHEET 6

VEHICLE PRE- AND POST-TEST MEASUREMENTS

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402



LEFT SIDE VIEW

Note: All dimensions are in millimeters with tolerance of ± 3 mm

	Pre-Test (as delivered)	Pre-Test (as tested)	Post-Test (as tested)	Change
A	2608	2608	2565	43
B	877	877	875	2
C	955	955	1057	-102
D	4440	4440	4390	50
E	290	290	290	0
F	260	396	263	133
G	280	276	277	-1
H	224	240	285	-45
I	248	195	262	-67
J1	206	144	159	-15
J2	257	237	228	9
K	325	240	267	-27
L	265	265	265	0
M	376	294	326	-32
N	685	685	500	185
O	655	655	631	24
P	1353	1353	1275	78
Q	415	415	400	15
R	4120	4170	4155	15
S	4217	4217	4180	37
T	1320	1320	1093	227

D = Length at centerline
T = Width at B-pillar

E&L = Bumper Thickness
J1 = To Pinch Weld

R = Right Side Length
J2 = To Sill

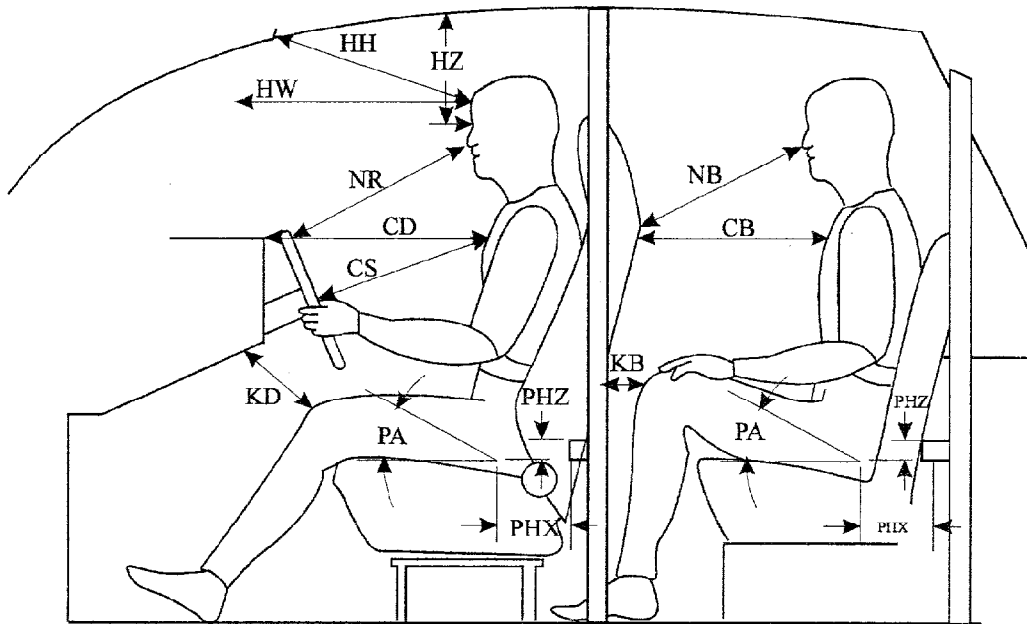
S = Left Side Length

DATA SHEET 7

SID LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402



LEFT SIDE VIEW

Note: All dimensions are in millimeters with tolerance of ± 3 mm

	DRIVER ID #051	LEFT REAR PASS. ID#052
HH	363	N/A
HW	500	N/A
HZ	169	N/A
NR/NB	373	624
CD/CB	502	532
CS	294	N/A
KDL(KDA°)/KBL(KDA°)	100/28°	169/25°
KDR(KBA°)/KBR(KBA°)	102/33°	166/26°
PA°	23.5°	23.0°
PHX	190	269
PHZ	123	331

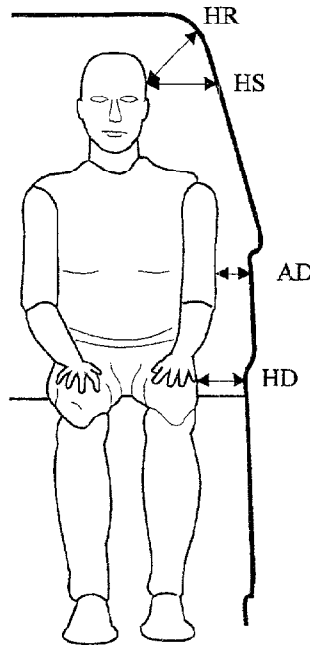
Note: 2-door vehicle shown. Rear dummy PHX and PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

DATA SHEET 8

SID LATERAL CLEARANCE DIMENSIONS

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402



Note: All dimensions are in millimeters with tolerance of ± 3 mm

	DRIVER ID #051	LEFT REAR PASS. ID #052
HR	155	143
HS	300	154
AD*	LOWER: 55 UPPER: 99	LOWER: 119 UPPER: 80
HD	147	171

* Lower measurement is taken laterally at center of the lower rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

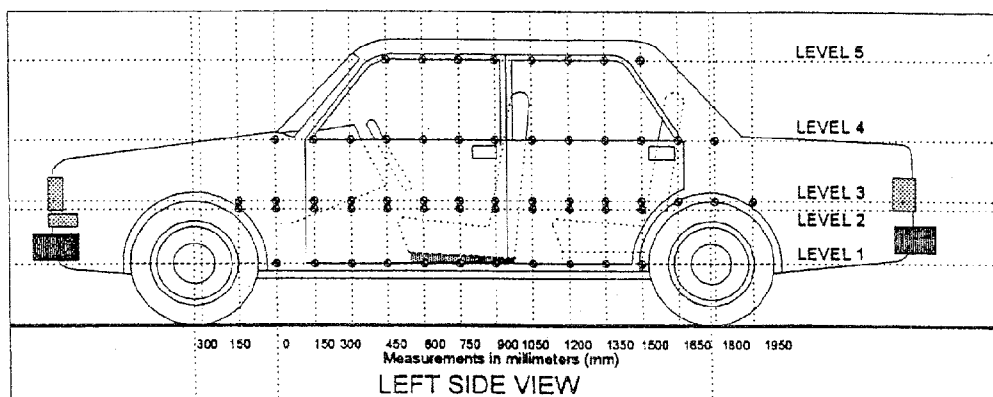
Upper measurement is taken laterally at center of the upper rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402



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 5 @ Window Top	=	<u>1,380</u>	millimeters
Level 4 @ Window Sill	=	<u>840</u>	millimeters
Level 3 @ Mid Door	=	<u>580</u>	millimeters
Level 2 @ Occupant H-Point	=	<u>476</u>	millimeters
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>255</u>	millimeters

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 1999 Mazda Protégé 4-Door Sedan NIHTSA No.: MX5402

		(mm) From Impact Point														
Location	Height	-1200	-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750	
Level 1 Side Sill	255	Pre	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	430	428	428	428	422	
		Post	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	523	544	556	564	573	
		Crush	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	93	116	128	136	151	
Level 2 H-Point	476	Pre	N/A	485	446	416	N/A	N/A	N/A	385	376	373	378	384	377	
		Post	N/A	497	458	429	N/A	N/A	N/A	N/A	550	641	677	698	709	713
		Crush	N/A	12	12	13	N/A	N/A	N/A	N/A	165	265	304	320	325	336
Level 3 Mid-Door	580	Pre	N/A	N/A	462	432	380	N/A	N/A	375	388	380	382	382	376	
		Post	N/A	N/A	465	449	415	N/A	N/A	502	570	626	660	665	697	706
		Crush	N/A	N/A	3	17	35	N/A	N/A	127	182	241	280	283	315	330
Level 4 Window Sill	840	Pre	N/A	N/A	N/A	N/A	498	484	460	448	439	428	425	419	402	
		Post	N/A	N/A	N/A	N/A	N/A	509	502	503	500	533	588	658	668	662
		Crush	N/A	N/A	N/A	N/A	N/A	11	18	43	52	94	160	233	249	260
Level 5 Window Top	1380	Pre	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	659	
		Post	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	713
		Crush	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	54

DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

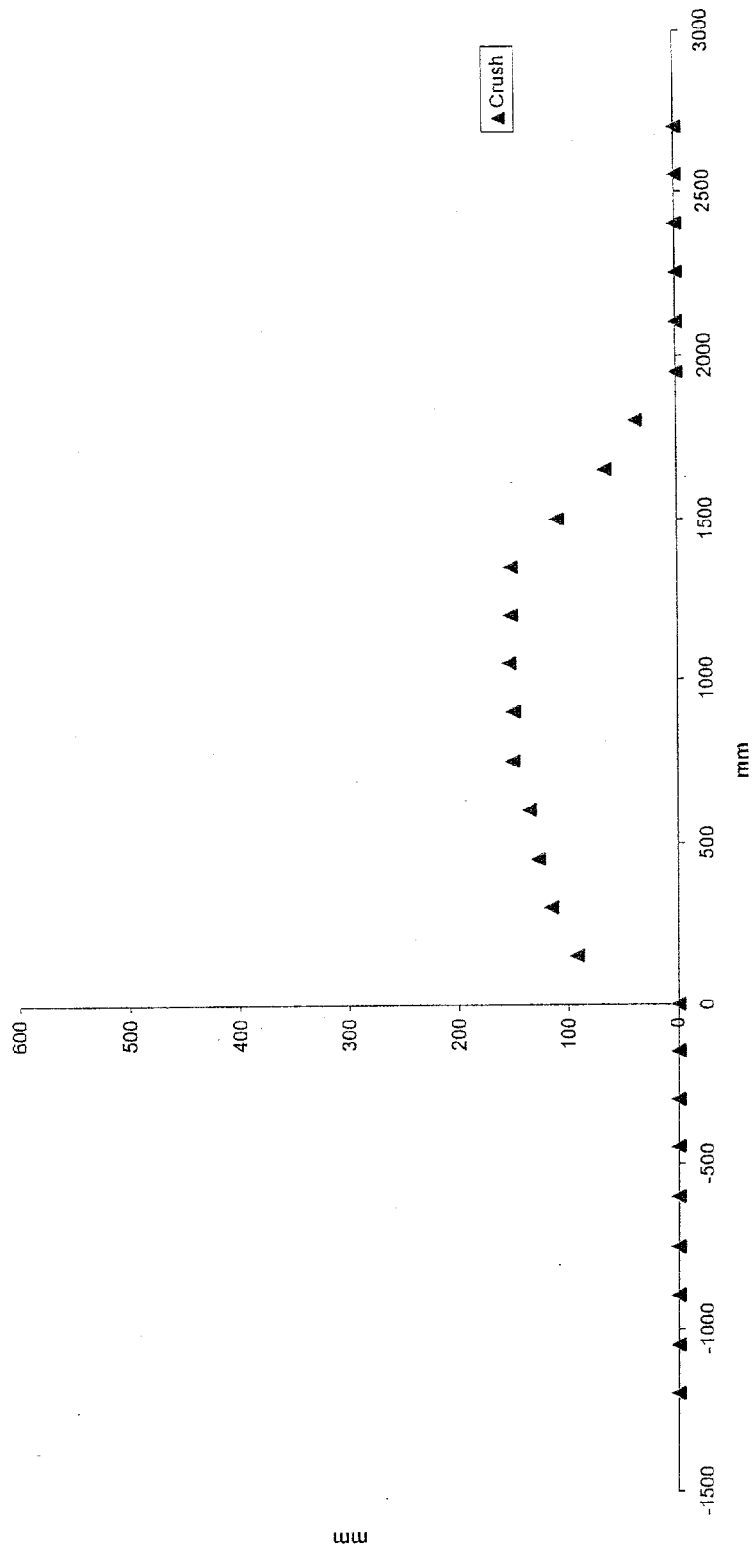
Vehicle: 1999 Mazda Protégé 4-Door Sedan NIHTSA No.: MX5402

Location	Height	(mm) From Impact Point														
		900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700		
Level 1 Side Sill	Pre	428	429	429	425	427	428	432	N/A	N/A	N/A	N/A	N/A	N/A		
	Post	578	583	581	577	537	494	470	N/A	N/A	N/A	N/A	N/A	N/A		
	Crush	150	154	152	152	110	66	38	N/A	N/A	N/A	N/A	N/A	N/A		
Level 2 H-Point	Pre	388	384	383	380	385	391	391	N/A	N/A	N/A	N/A	N/A	N/A	420	
	Post	716	716	707	730	712	666	587	N/A	N/A	N/A	N/A	N/A	N/A	425	
	Crush	328	332	324	350	327	275	196	N/A	N/A	N/A	N/A	N/A	N/A	75	
Level 3 Mid-Door	Pre	386	382	380	379	382	390	389	382	N/A	N/A	N/A	392	463		
	Post	714	711	705	748	715	686	618	534	N/A	N/A	N/A	418	431		
	Crush	328	329	325	369	333	296	229	152	N/A	N/A	N/A	76	-32		
Level 4 Window Sill	Pre	407	400	394	392	390	402	395	395	396	413	413	430	445		
	Post	674	687	695	719	723	711	632	522	455	454	444	453	442		
	Crush	267	287	301	327	333	309	237	127	59	41	31	23	-3		
Level 5 Window Top	Pre	657	654	645	655	652	674	664	689	N/A	N/A	N/A	N/A	N/A		
	Post	727	745	772	773	752	723	721	735	N/A	N/A	N/A	N/A	N/A		
	Crush	70	91	127	118	100	49	57	46	N/A	N/A	N/A	N/A	N/A		

DATA SHEET 10 (continued)
 VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHTSA No.: MX5402

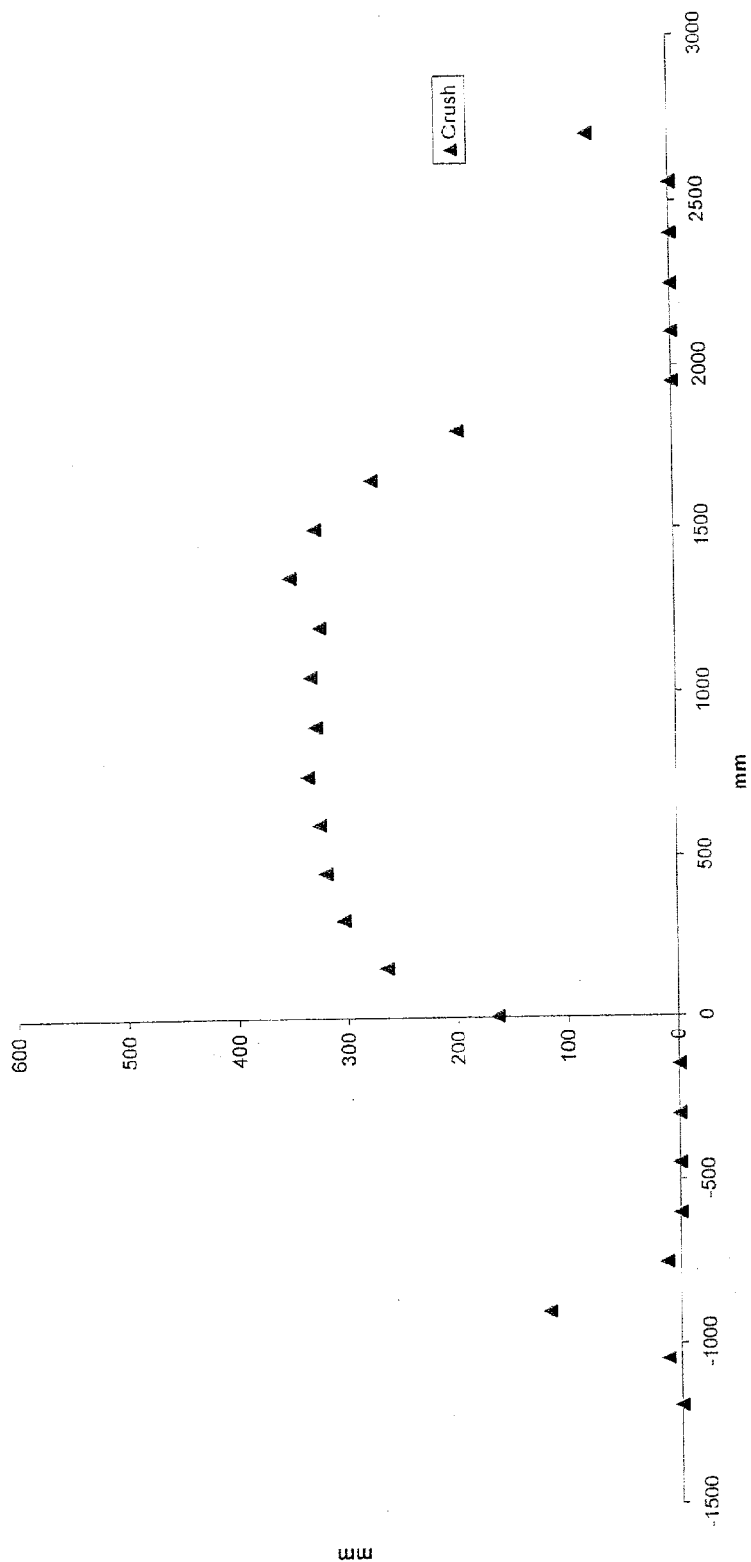
Side Profile Level 1 255 mm Above Ground



DATA SHEET 10 (continued)
 VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHTSA No.: MX5402

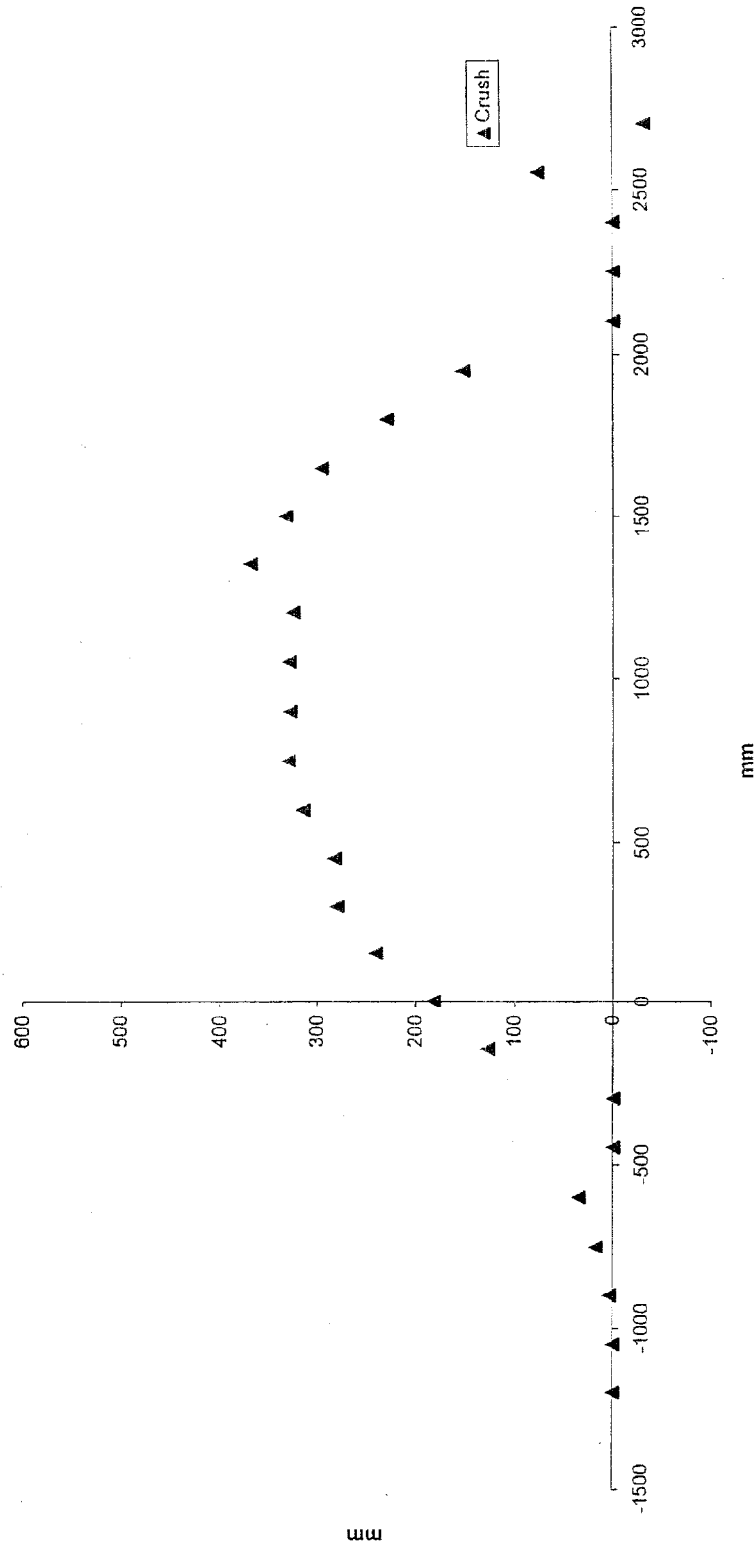
Side Profile Level 2 476 mm Above Ground



DATA SHEET 10 (continued)
 VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHTSA No.: MX5402

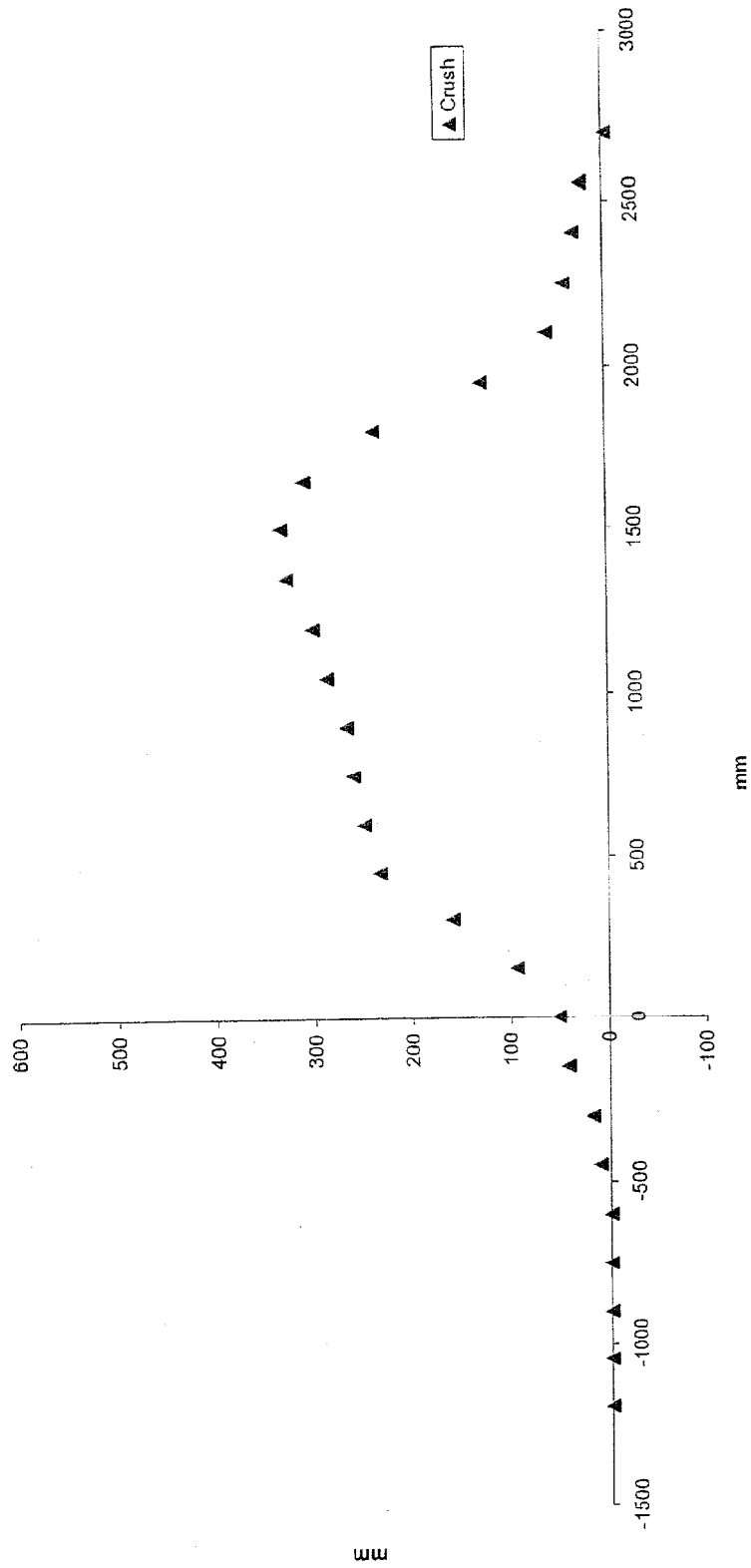
Side Profile Level 3 580 mm Above Ground



DATA SHEET 10 (continued)
 VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHTSA No.: MX5402

Side Profile Level 4 840 mm Above Ground



DATA SHEET 12

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

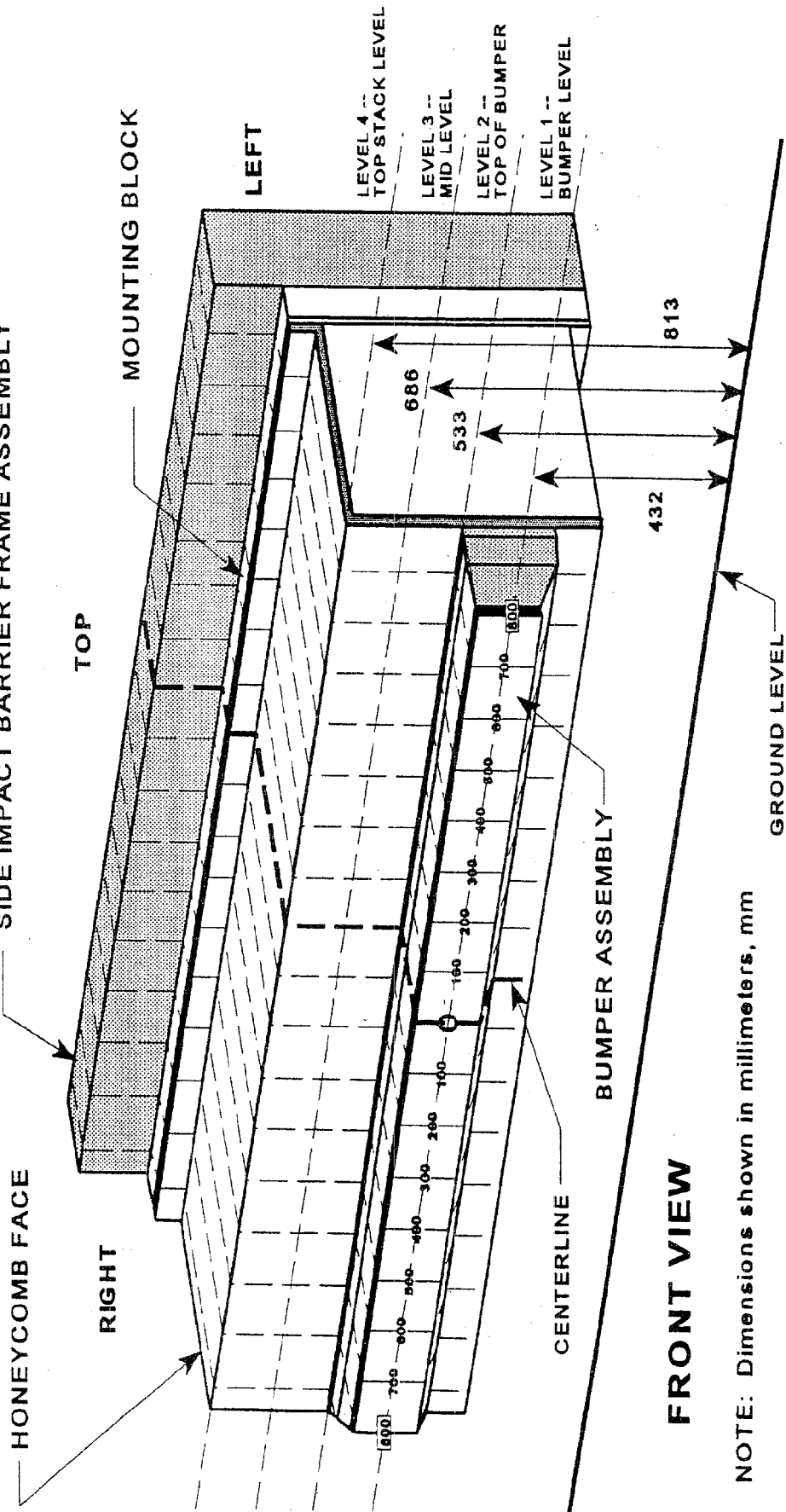
(Grid as looking at MDB from front)

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.:

MX5402

SIDE IMPACT BARRIER FRAME ASSEMBLY



FRONT VIEW

NOTE: Dimensions shown in millimeters, mm

DATA SHEET 12 (continued)
EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHITSA No.: MX5402

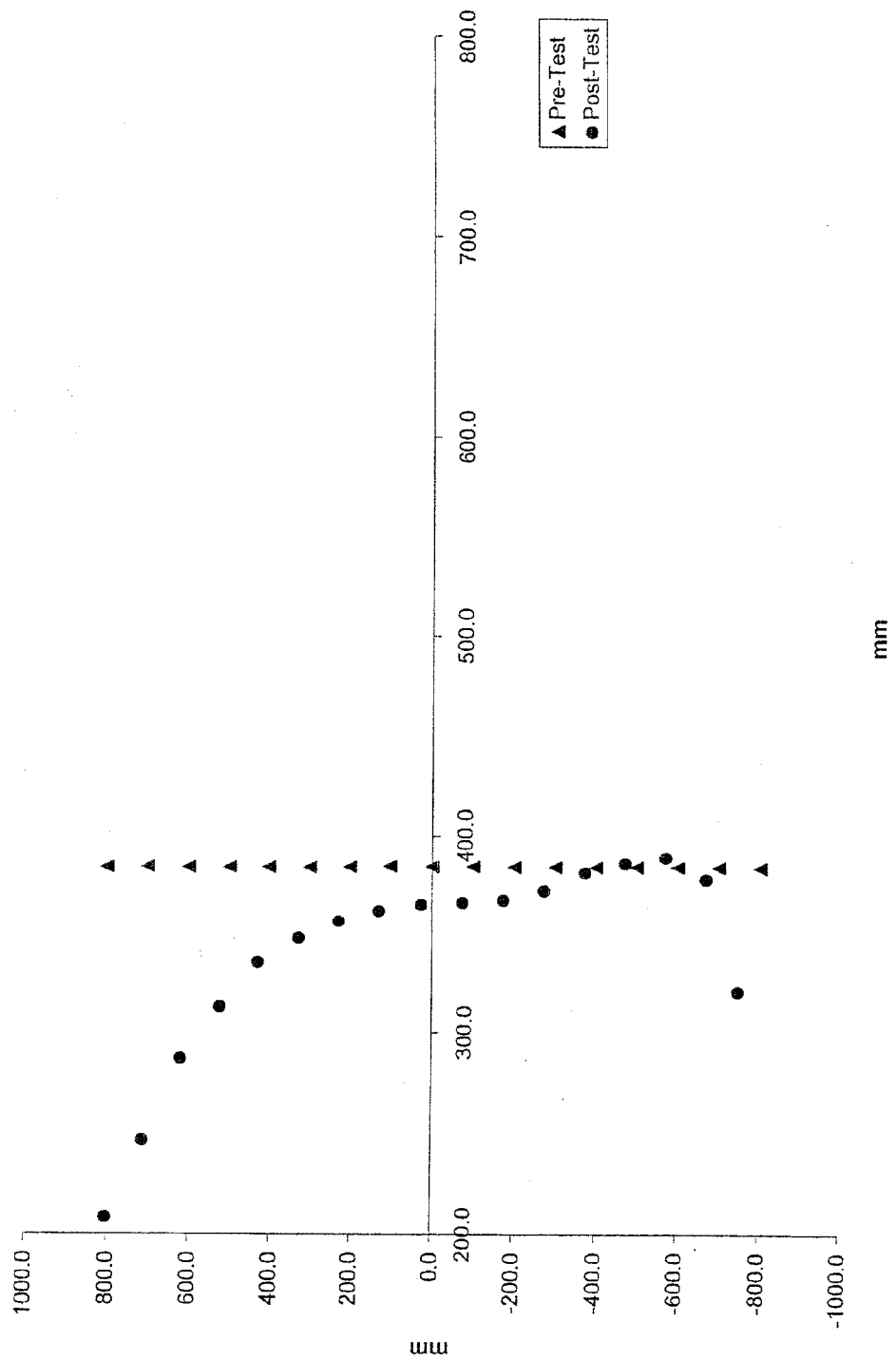
		Distance Right of Center (mm)										Distance Left of Center (mm)								
Location	Height At CL	800	700	600	500	400	300	200	100		0	100	200	300	400	500	600	700	800	
Top Stack Level Level 4	810	62.4	5.7	-5.4	-2.1	2.6	11.4	16.5	17.9	18.9	22.4	27.5	35.9	48.0	70.7	96.5	136.6	174.8		
Mid Level Level 3	685	55.1	17.8	3.8	3.2	9.4	21.8	16.4	16.9	15.0	9.8	9.0	10.6	14.1	22.2	55.5	106.7	134.4		
Top Bumper Level Level 2	560	101.5	72.8	43.3	36.1	35.0	29.5	31.0	28.6	29.6	30.7	33.1	35.6	41.4	49.0	57.3	69.4	84.7		
Mid Bumper Level Level 1	432	104.4	78.3	50.7	35.8	40.8	35.9	25.1	24.9	42.5	56.1	58.5	56.9	55.1	53.6	61.5	74.7	71.0		

All measurements are in millimeters and have a tolerance of ± 3 mm.

DATA SHEET 12 (continued)
 EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHTSA No.: MX5402

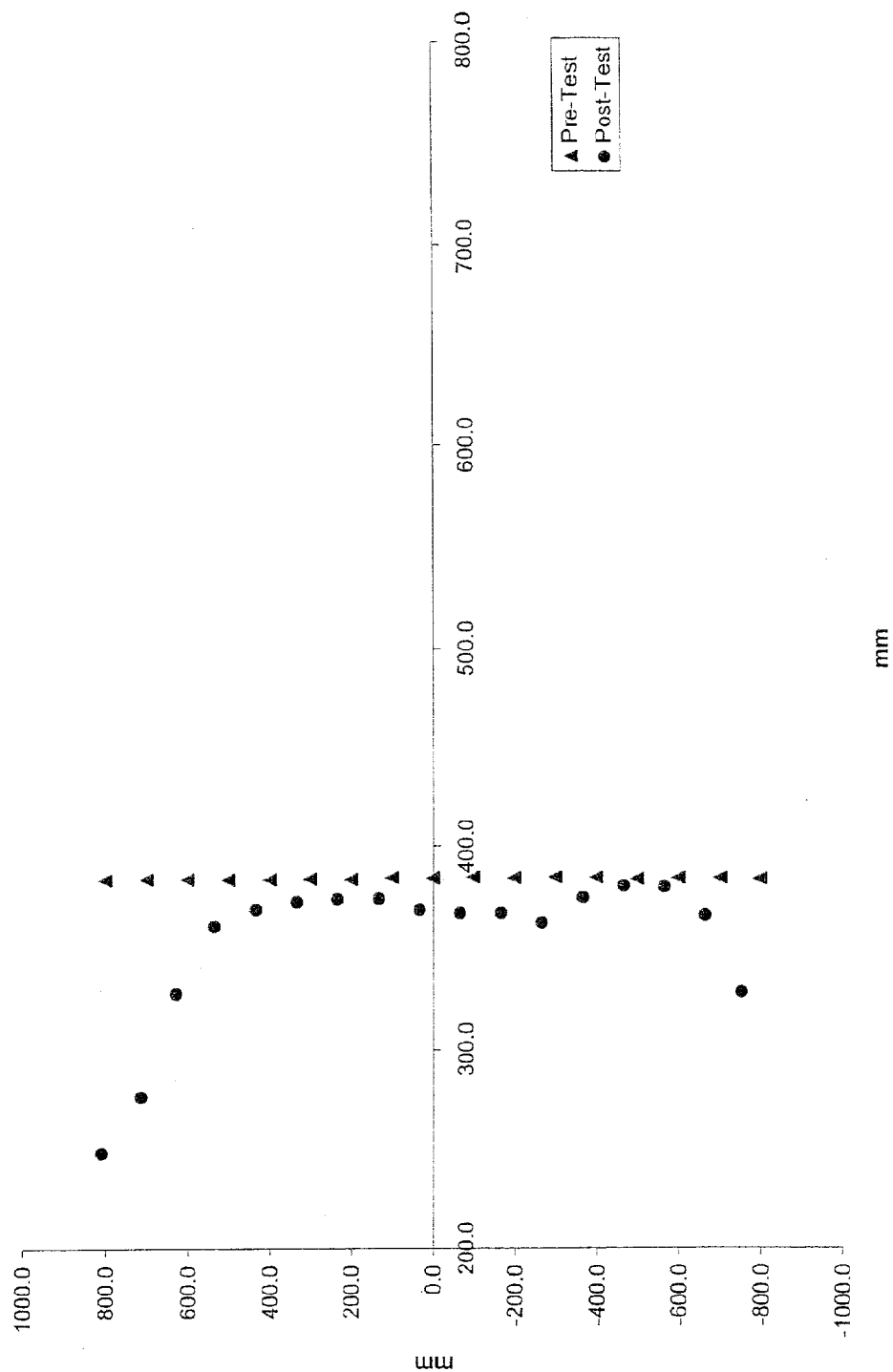
Deformable Barrier Face Profile 1-17



DATA SHEET 12 (continued)
 EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHTSA No.: MX5402

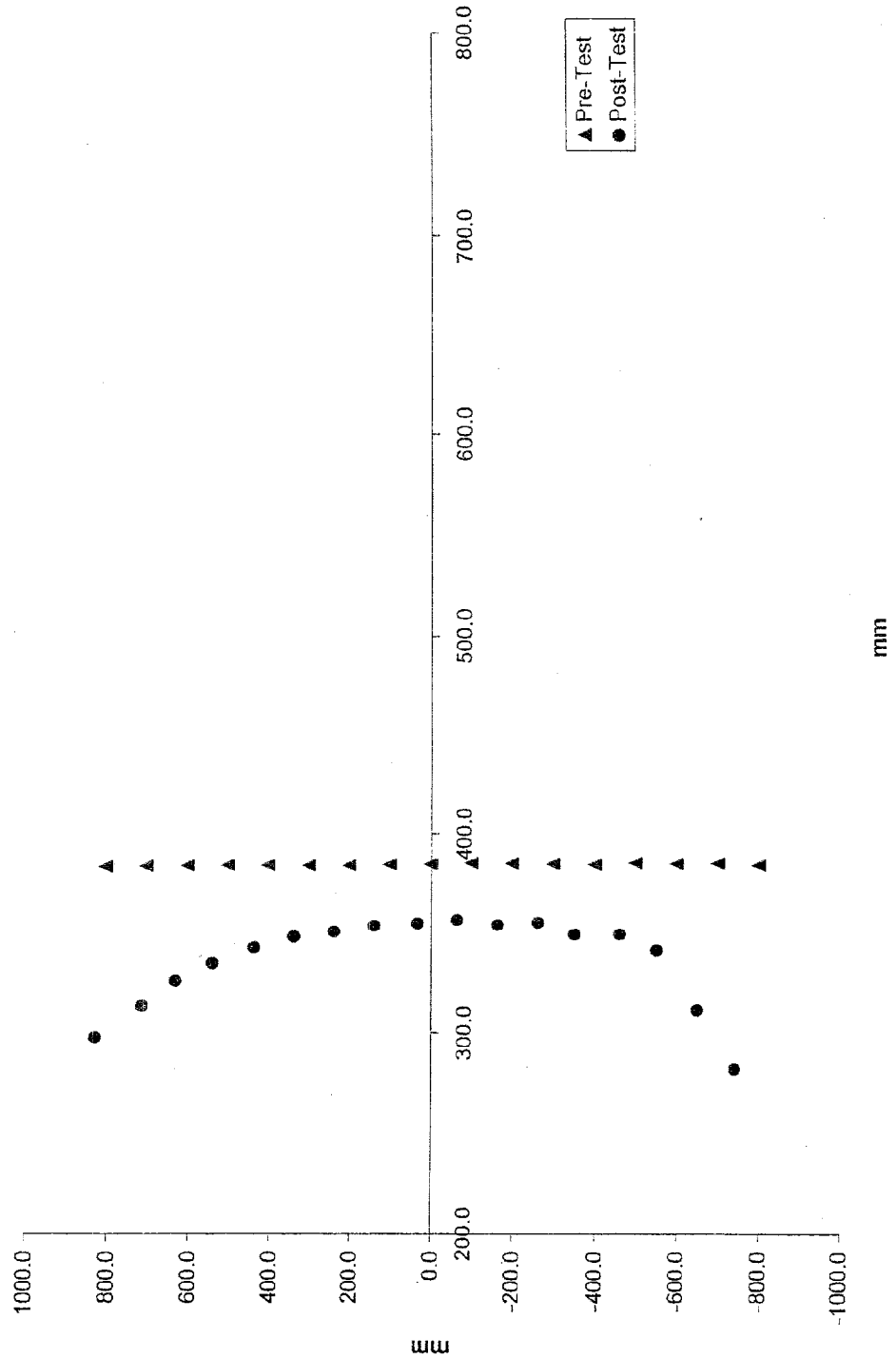
Deformable Barrier Face Profile 18-34



DATA SHEET 12 (continued)
 EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHTSA No.: MX5402

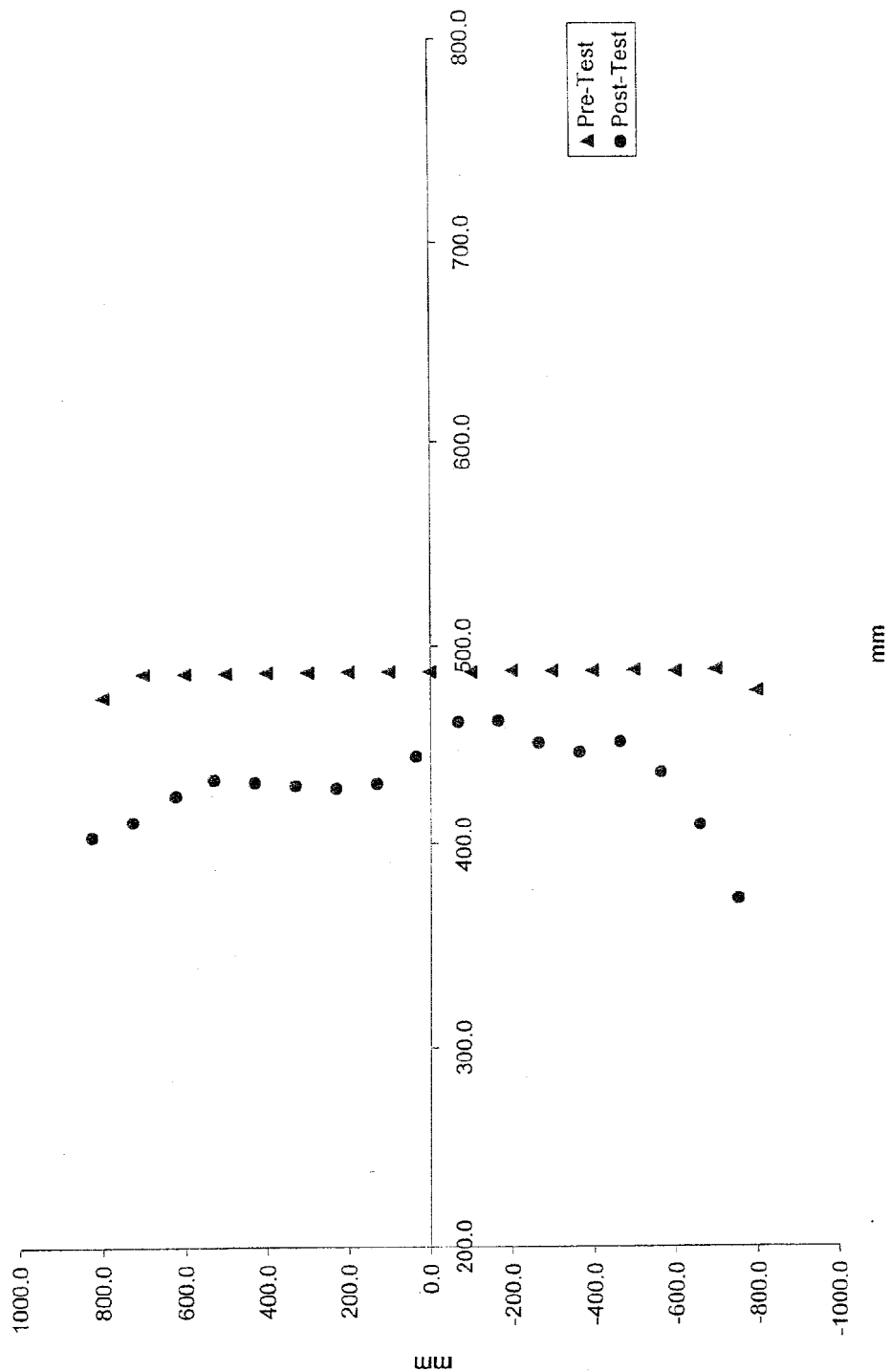
Deformable Barrier Face Profile 35-51



DATA SHEET 12 (continued)
 EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHTSA No.: MX5402

Deformable Barrier Face Profile 52-68



DATA SHEET 12 (continued)

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

Deformable Barrier Face Profile

Pre-Test				Post-Test				Difference			
Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm
1	383.0	-801.4	244.3	1	320.6	-750.2	218.3	1	62.4	-51.2	26.0
2	383.2	-700.5	245.1	2	377.5	-670.0	218.0	2	5.7	-30.5	27.1
3	383.3	-600.5	245.5	3	388.7	-572.3	220.8	3	-5.4	-28.2	24.7
4	383.5	-499.9	247.0	4	385.6	-470.8	225.3	4	-2.1	-29.1	21.7
5	383.4	-400.3	246.4	5	380.8	-372.2	228.0	5	2.6	-28.1	18.4
6	383.3	-299.3	248.5	6	371.9	-271.8	233.8	6	11.4	-27.5	14.7
7	383.5	-201.2	247.5	7	367.0	-173.4	235.8	7	16.5	-27.8	11.7
8	383.6	-100.1	248.0	8	365.7	-73.0	239.6	8	17.9	-27.1	8.4
9	383.6	0.8	248.6	9	364.7	27.5	244.1	9	18.9	-26.7	4.5
10	383.8	105.1	248.4	10	361.4	132.6	246.7	10	22.4	-27.5	1.7
11	383.5	204.6	248.9	11	356.0	231.9	248.0	11	27.5	-27.3	0.9
12	383.2	304.5	249.3	12	347.3	331.8	247.1	12	35.9	-27.3	2.2
13	383.4	405.6	250.1	13	335.4	432.2	250.2	13	48.0	-26.6	-0.1
14	383.5	502.6	250.4	14	312.8	525.8	249.2	14	70.7	-23.2	1.2
15	383.5	602.6	251.2	15	287.0	621.9	248.5	15	96.5	-19.3	2.7
16	383.6	703.1	251.4	16	247.0	713.9	240.2	16	136.6	-10.8	11.2
17	383.5	803.2	253.3	17	208.7	803.9	233.6	17	174.8	-0.7	19.7
18	383.5	-796.5	118.9	18	328.4	-752.6	92.6	18	55.1	-43.9	26.3
19	383.9	-699.4	117.9	19	366.1	-664.5	91.4	19	17.8	-34.9	26.5
20	383.8	-597.9	119.2	20	380.0	-564.3	93.8	20	3.8	-33.6	25.4
21	383.5	-496.7	120.2	21	380.3	-464.6	100.7	21	3.2	-32.1	19.5
22	384.1	-397.3	120.3	22	374.7	-364.6	102.1	22	9.4	-32.7	18.2
23	384.3	-297.2	121.4	23	362.5	-264.3	105.9	23	21.8	-32.9	15.5
24	383.8	-197.7	121.2	24	367.4	-165.3	110.4	24	16.4	-32.4	10.8
25	384.3	-97.1	120.2	25	367.4	-63.8	113.4	25	16.9	-33.3	6.8
26	383.9	1.1	121.4	26	368.9	34.5	119.0	26	15.0	-33.4	2.4
27	384.0	101.7	121.4	27	374.2	133.5	120.6	27	9.8	-31.8	0.8
28	383.1	202.3	121.9	28	374.1	235.3	124.5	28	9.0	-33.0	-2.6
29	383.4	302.2	120.2	29	372.8	335.2	125.9	29	10.6	-33.0	-5.7

DATA SHEET 12 (continued)

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHTSA No.: MX5402

Deformable Barrier Face Profile Cont'd.

Pre-Test				Post-Test				Difference			
Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm
30	383.2	401.3	121.6	30	369.1	435.0	129.2	30	14.1	-33.7	-7.6
31	383.2	502.4	121.6	31	361.0	536.3	130.4	31	22.2	-33.9	-8.8
32	383.4	602.1	123.6	32	327.9	630.1	127.8	32	55.5	-28.0	-4.2
33	383.3	701.4	122.7	33	276.6	715.0	115.3	33	106.7	-13.6	7.4
34	383.2	802.1	123.0	34	248.8	811.9	114.9	34	134.4	-9.8	8.1
35	383.7	-797.3	-24.4	35	282.2	-741.0	-32.1	35	101.5	-56.3	7.7
36	384.5	-698.4	-21.2	36	311.7	-649.6	-27.4	36	72.8	-48.8	6.2
37	384.3	-597.1	-23.0	37	341.0	-549.4	-35.1	37	43.3	-47.7	12.1
38	384.8	-496.8	-20.3	38	348.7	-457.7	-36.7	38	36.1	-39.1	16.4
39	383.9	-397.5	-24.2	39	348.9	-347.9	-33.3	39	35.0	-49.6	9.1
40	384.3	-296.9	-23.7	40	354.8	-259.3	-25.8	40	29.5	-37.6	2.1
41	384.5	-197.3	-27.5	41	353.5	-160.3	-25.1	41	31.0	-37.0	-2.4
42	384.8	-97.2	-26.5	42	356.2	-61.3	-24.0	42	28.6	-35.9	-2.5
43	384.0	2.4	-24.2	43	354.4	35.1	-20.4	43	29.6	-32.7	-3.8
44	383.9	103.8	-23.6	44	353.2	141.4	-12.8	44	30.7	-37.6	-10.8
45	383.5	203.9	-23.3	45	350.4	240.5	-9.2	45	33.1	-36.6	-14.1
46	383.4	304.6	-21.4	46	347.8	340.7	-3.9	46	35.6	-36.1	-17.5
47	383.6	404.3	-22.3	47	342.2	439.5	-1.6	47	41.4	-35.2	-20.7
48	383.7	504.5	-22.0	48	334.7	542.1	-0.6	48	49.0	-37.6	-21.4
49	383.3	604.2	-21.1	49	326.0	634.2	-0.2	49	57.3	-30.0	-20.9
50	383.1	705.1	-17.5	50	313.7	715.7	-5.6	50	69.4	-10.6	-11.9
51	382.9	805.2	-19.0	51	298.2	831.3	16.7	51	84.7	-26.1	-35.7
52	477.3	-795.7	-133.4	52	372.9	-752.0	-206.0	52	104.4	-43.7	72.6
53	487.9	-696.9	-136.1	53	409.6	-659.5	-210.7	53	78.3	-37.4	74.6
54	487.0	-597.0	-133.9	54	436.3	-563.2	-205.3	54	50.7	-33.8	71.4
55	487.5	-496.6	-132.8	55	451.7	-463.5	-200.8	55	35.8	-33.1	68.0
56	487.2	-395.3	-132.1	56	446.4	-363.6	-193.9	56	40.8	-31.7	61.8
57	487.1	-295.9	-133.4	57	451.2	-264.7	-191.2	57	35.9	-31.2	57.8
58	487.4	-196.5	-133.3	58	462.3	-164.4	-186.9	58	25.1	-32.1	53.6

DATA SHEET 12 (continued)

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Mazda Protégé 4-Door Sedan NHTSA No.: MX5402

Deformable Barrier Face Profile Cont'd.

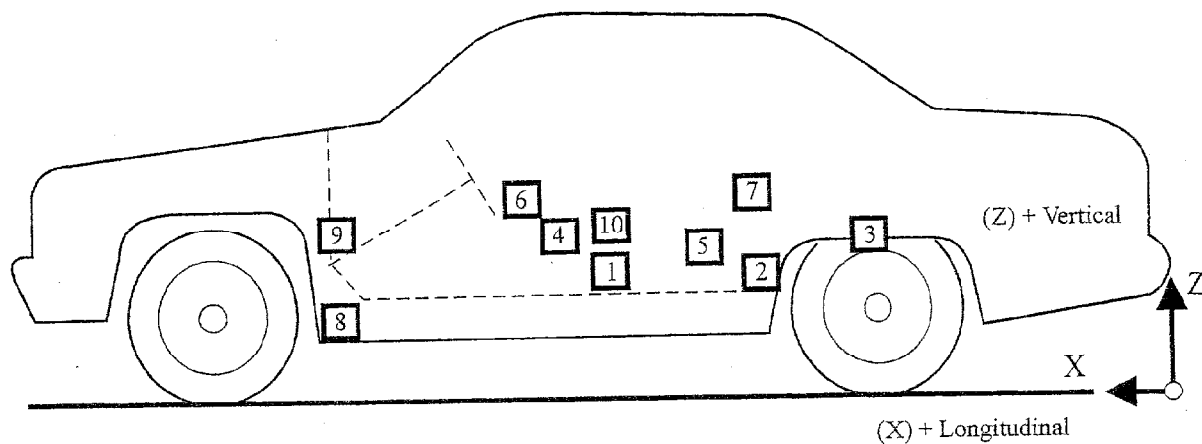
Pre-Test				Post-Test				Difference			
Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm
59	486.8	-97.9	-131.8	59	461.9	-66.7	-180.4	59	24.9	-31.2	48.6
60	486.9	1.8	-132.8	60	444.4	36.9	-176.3	60	42.5	-35.1	43.5
61	487.0	102.6	-131.8	61	430.9	131.7	-165.5	61	56.1	-29.1	33.7
62	487.0	202.5	-131.7	62	428.5	231.2	-159.3	62	58.5	-28.7	27.6
63	486.8	302.0	-130.9	63	429.9	331.0	-153.4	63	56.9	-29.0	22.5
64	486.7	402.6	-130.5	64	431.6	430.4	-148.6	64	55.1	-27.8	18.1
65	486.5	502.2	-128.8	65	432.9	529.7	-142.7	65	53.6	-27.5	13.9
66	486.2	602.8	-129.3	66	424.7	624.3	-136.7	66	61.5	-21.5	7.4
67	486.3	703.5	-129.5	67	411.6	727.8	-129.7	67	74.7	-24.3	0.2
68	474.8	800.9	-128.8	68	403.8	826.7	-119.7	68	71.0	-25.8	-9.1

DATA SHEET 13

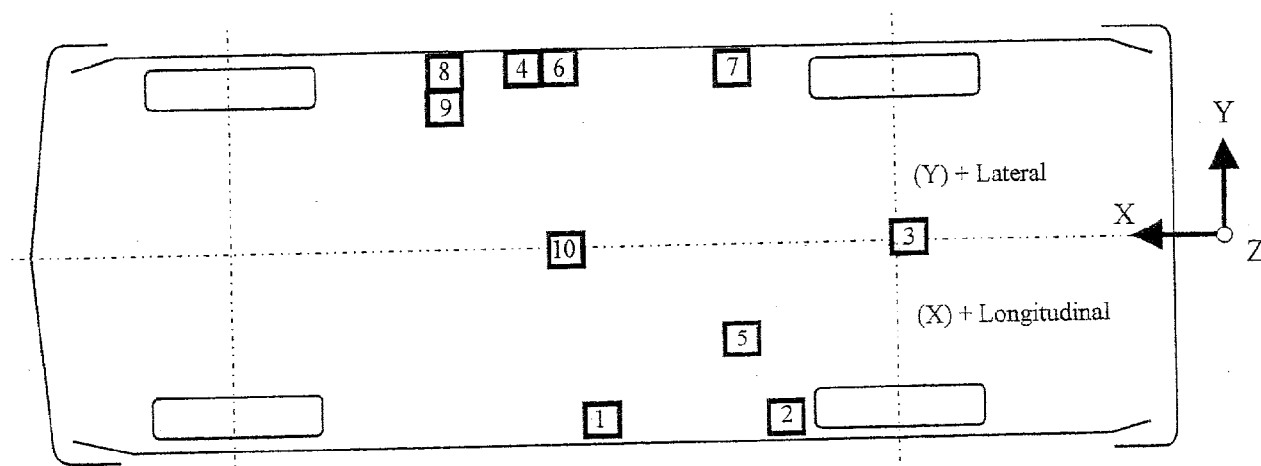
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402



Side View



Bottom View

- 1-Right Side Sill at Front Seat
- 2-Right Side Sill at Rear Seat
- 3-Rear Floorpan above Axle
- 4-Left Front Door on Centerline
- 5-Right Rear Occupant Compartment

- 6-Left Front Door Upper Centerline
- 7-Left Rear Door Upper Centerline
- 8-Lower A-Post
- 9-Middle A-Post
- 10-Vehicle Center of Gravity

DATA SHEET 13 (continued)

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle:	1999 Mazda Protégé 4-Door Sedan			NHTSA No.:	MX5402	
TEST NUMBER:	990512-1					
No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION	
10 VEHICLE CENTER OF GRAVITY	PRE 2385 mm	0 mm	335 mm			
LONGITUDINAL	POST 2365 mm	0 mm	327 mm			
LATERAL			13.3 g	@ 16.2 ms	5.1 g	@ 30.1 ms
VERTICAL			28.1 g	@ 18.6 ms	5.5 g	@ 24.8 ms
RESULTANT			11.2 g	@ 17.3 ms	11.7 g	@ 41.7 ms
			32.7 g	@ 17.0 ms		

REFERENCE: X: + FORWARD FROM REAR BUMPER
 Y: + LEFTWARD FROM VEHICLE CENTERLINE
 Z: + UPWARD FROM GROUND LEVEL

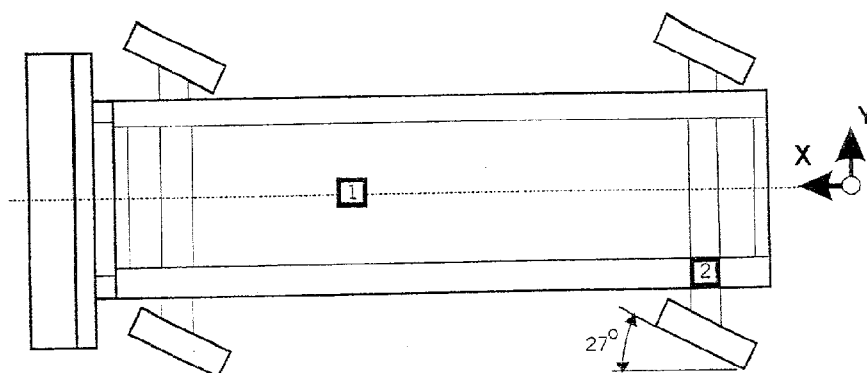
¹ See DATA ACQUISITION EXPLANATIONS

DATA SHEET 14

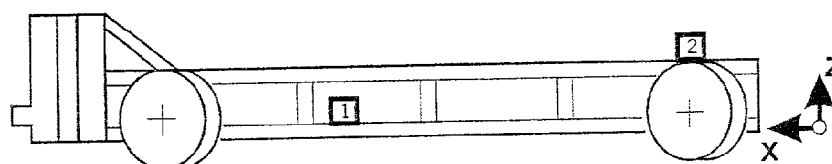
MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402



TOP VIEW



SIDE VIEW

Accel. No.	Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
		X*	Y*	Z*	Max (g)	Time (msec)	Max (g)	Time (msec)
1	MDB Center of Gravity	1840	-5	495				
	Longitudinal X				21.2	35.5	3.1	128.8
	Lateral Y				2.5	60.8	9.1	26.6
	Vertical Z				4.5	38.5	5.4	28.6
	Resultant R				21.4	35.5		
2	Rear Frame Member	386	641	619				
	Longitudinal X				20.7	43.9	4.0	97.1
	Lateral Y				5.5	22.8	2.7	93.8

*Reference: X=Rear Bumper (+ Forward)

Y=Vehicle Centerline (+ To Right)

Z=Ground Level (+ Up)

All measurements accurate to within ± 3 mm.

DATA SHEET 16

FMVSS 301 FUEL SYSTEM INTEGRITY DATA

NHTSA NO.: MX5402

TEST DATE: May 12, 1999

Vehicle Mfgr./Make/Model : 1999 Mazda Protégé 4-Door Sedan

TEST VEHICLE IMPACT TYPE : Frontal (48.28 km/h)
 Oblique (48.28 km/h) with ° barrier
face first contacting the (driver/passenger) side
 Rear Moving Barrier (48.28 km/h)
 Lateral Moving Barrier (32.19 km/h)
 X Side Impact Moving Deformable Barrier
(61.9 km/h) contacting the driver side

FUEL SPILLAGE MEASUREMENT:

1. From impact until vehicle motion ceases
2. For five-minute period after vehicle motion ceases
3. For next 25 minutes.

ACTUAL	MAXIMUM ALLOWED
0 g	28 g
0 g	142 g
0 g	28 g/1 min.

SOLVENT SPILLAGE DETAILS :

None

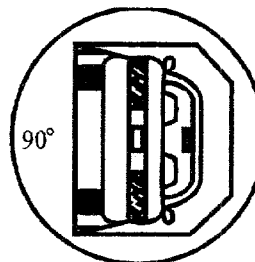
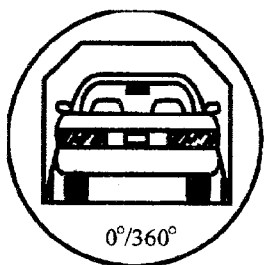
DATA SHEET 17

FMVSS 301 ROLLOVER DATA

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

0 - 90 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time 1 minutes 2 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 6 minutes 2 seconds

Next whole minute interval 7 minutes

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0 g	0 g	0 g	N/A
-----	-----	-----	-----

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

IV. SOLVENT SPILLAGE LOCATION(S):

None

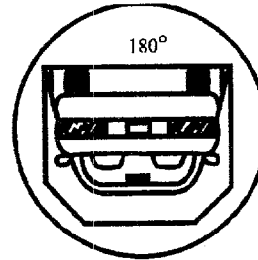
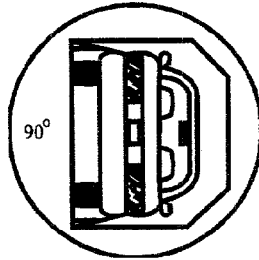
DATA SHEET 17 (continued)

FMVSS 301 ROLLOVER DATA

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

90 - 180 Degrees



1. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time 1 minutes 2 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 6 minutes 2 seconds

Next whole minute interval 7 minutes

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0 g	0 g	0 g	N/A
-----	-----	-----	-----

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

IV. SOLVENT SPILLAGE LOCATION(S):

None

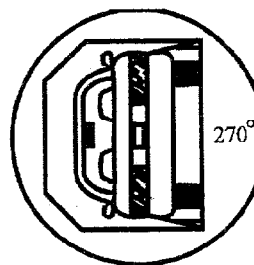
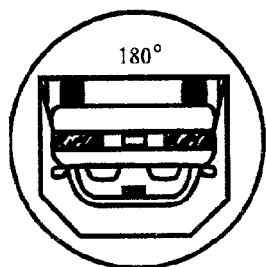
DATA SHEET 17 (continued)

FMVSS 301 ROLLOVER DATA

Vehicle: 1999 Mazda Protégé 4-Door Sedan

NHTSA No.: MX5402

180 - 270 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time 1 minutes 2 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

TOTAL 6 minutes 2 seconds

Next whole minute interval 7 minutes

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE :

0 g	0 g	0 g	N/A
-----	-----	-----	-----

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

IV. SOLVENT SPILLAGE LOCATION(S):

None

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Figure A-1 Pre-Test Front View of Test Vehicle
A-3

990512

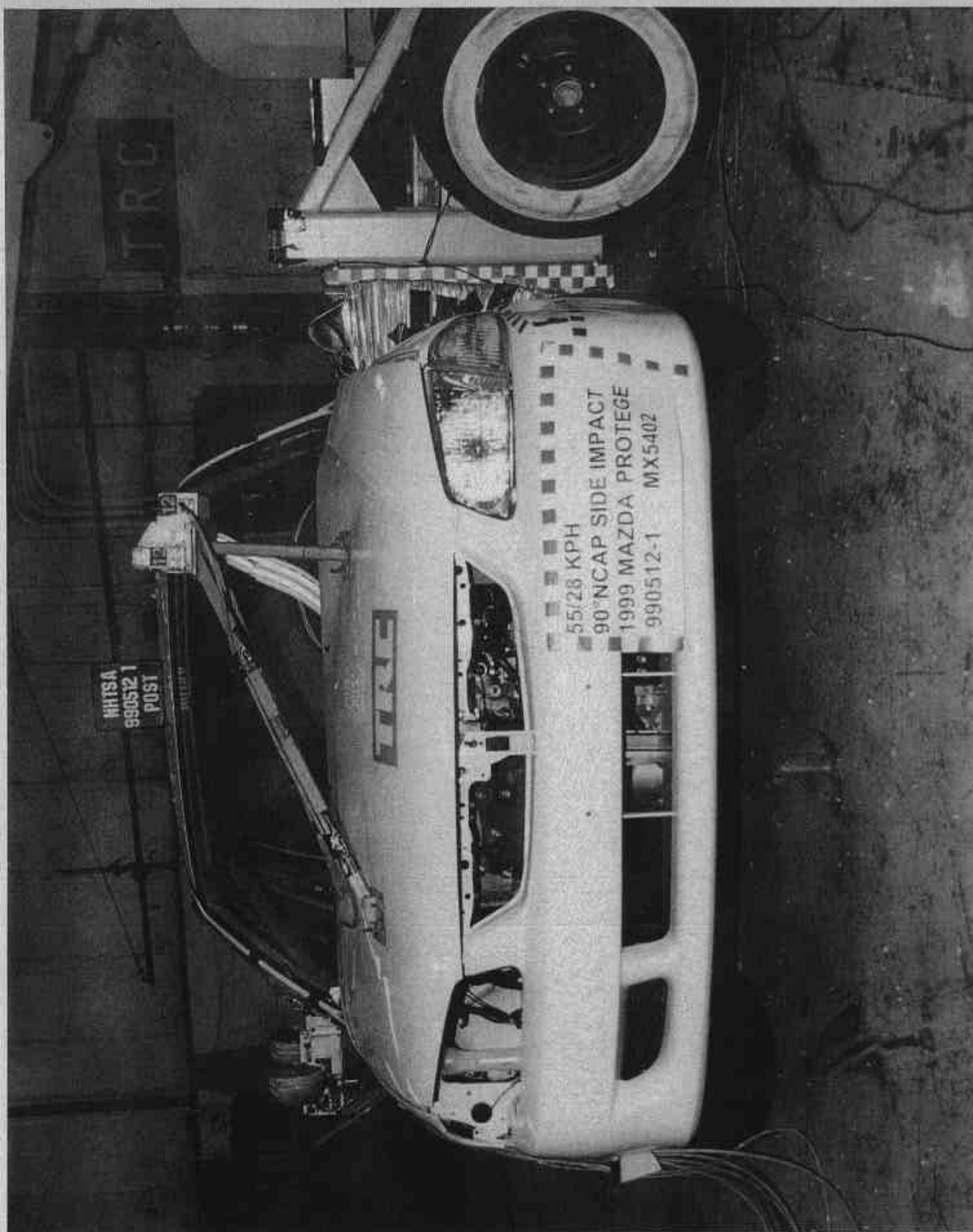


Figure A-2 Post-Test Front View of Test Vehicle
A-4

990512

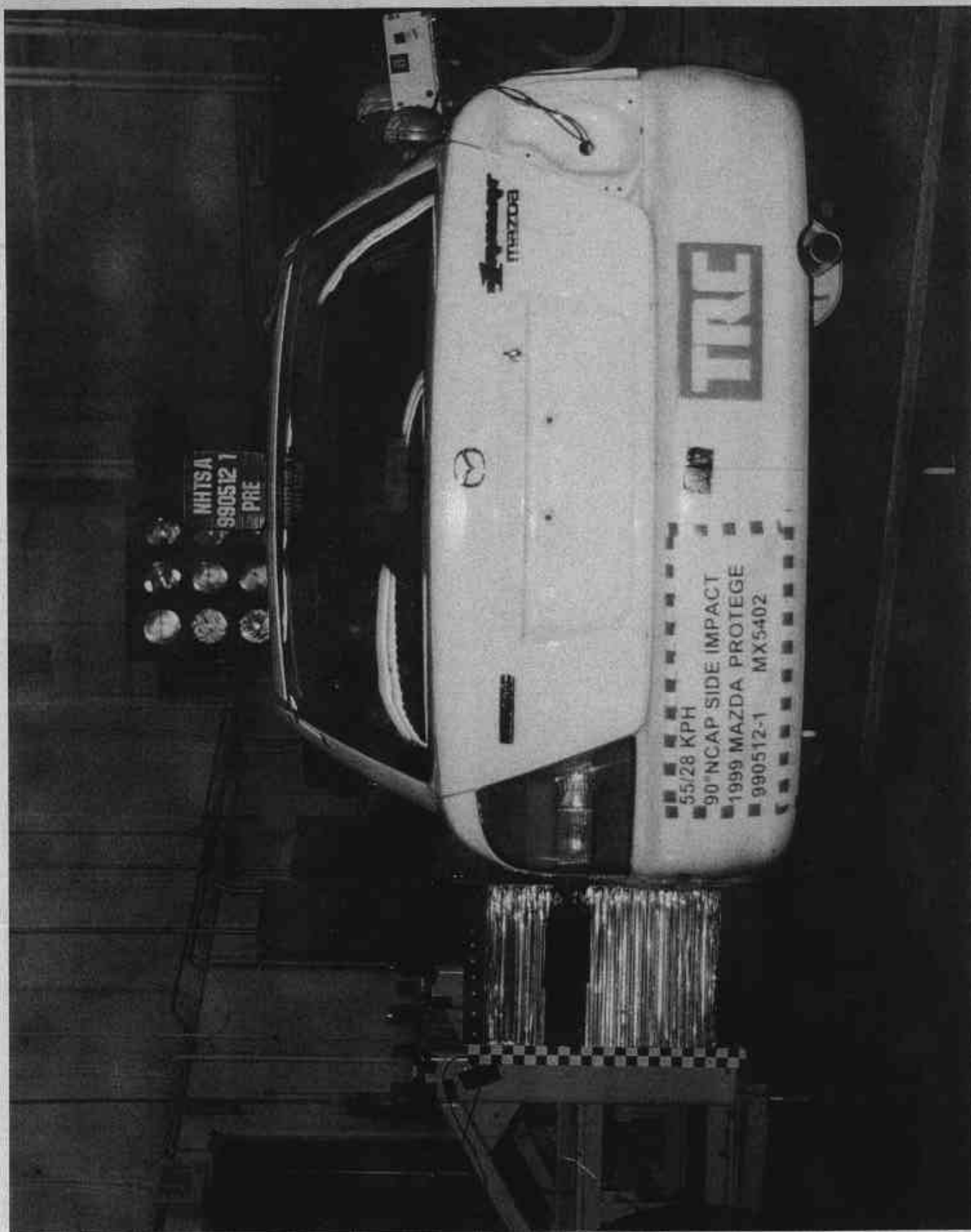


Figure A-3 Pre-Test Rear View of Test Vehicle
A-5

990512

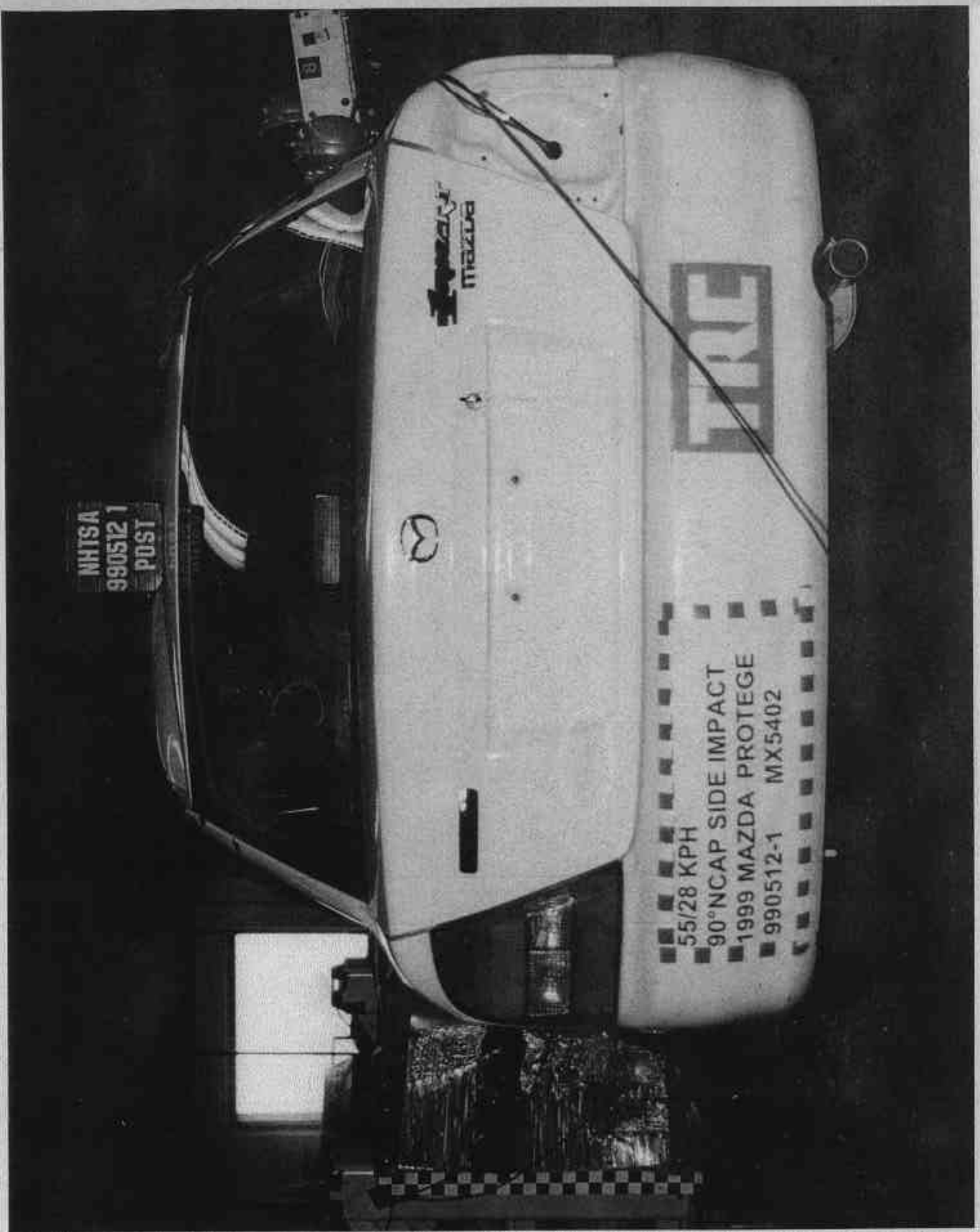


Figure A-4 Post-Test Rear View of Test Vehicle
A-6

990512

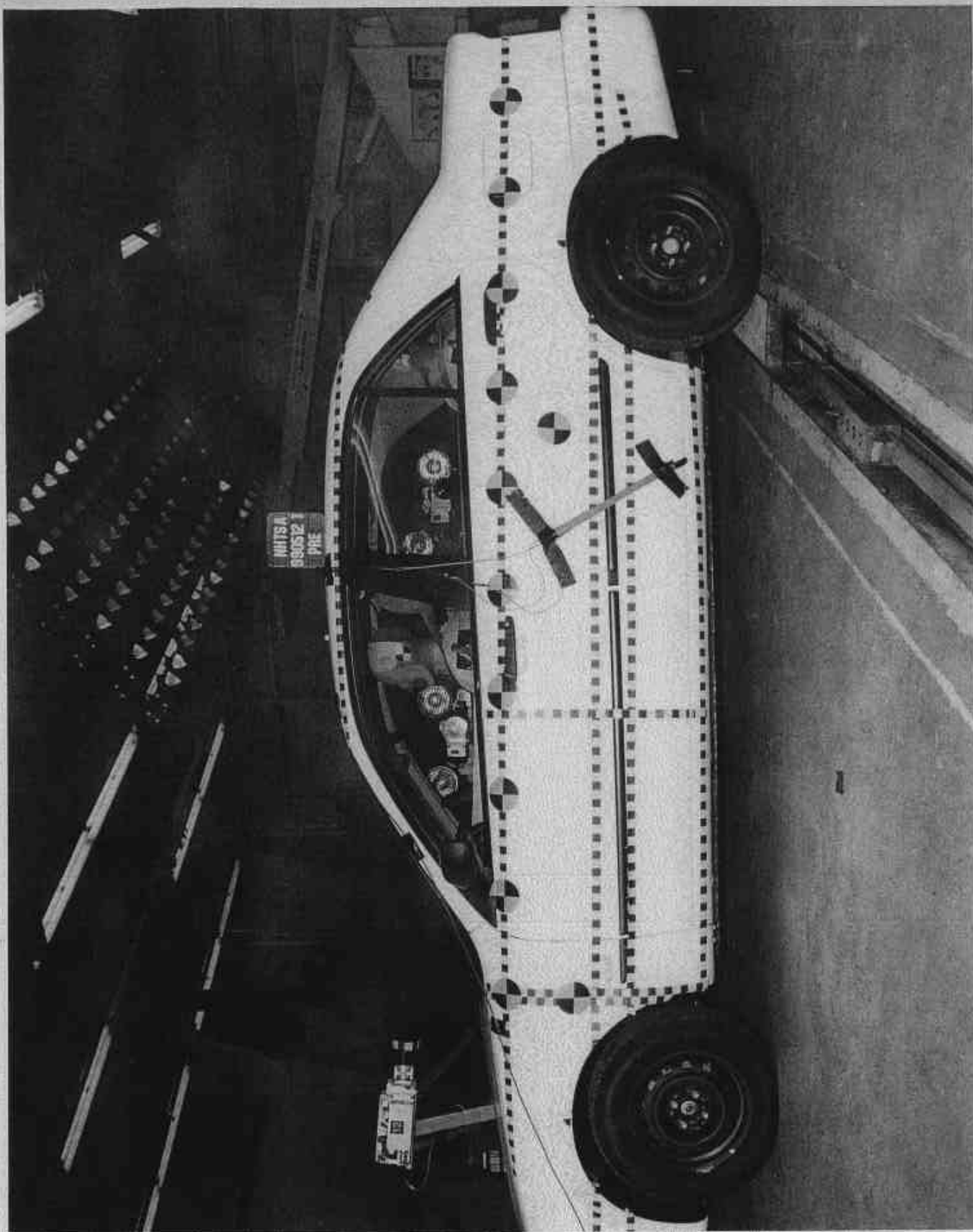


Figure A-5 Pre-Test Impacted Side View of Test Vehicle
A-7

990512

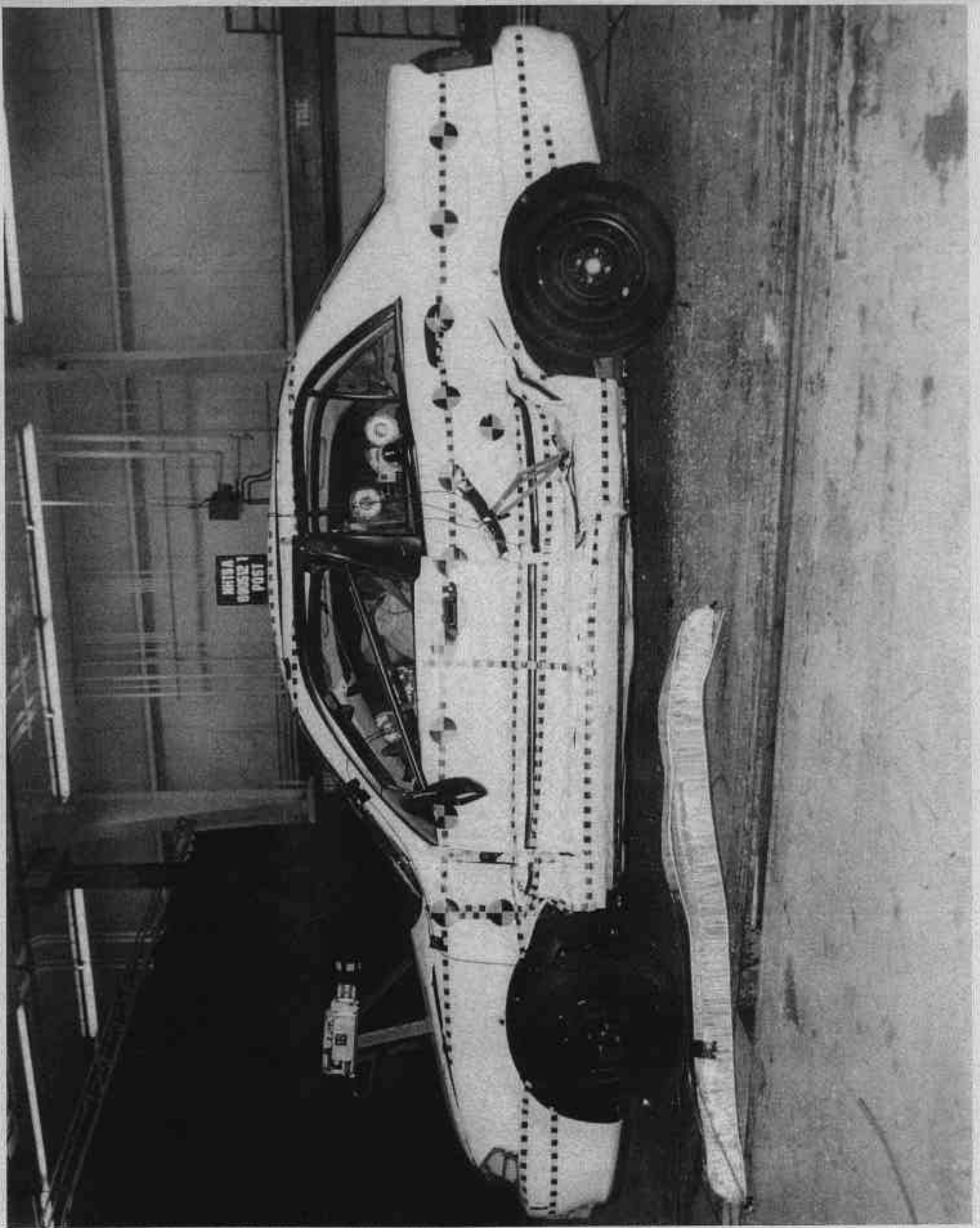


Figure A-6 Post-Test Impacted Side View of Test Vehicle
A-8

990512

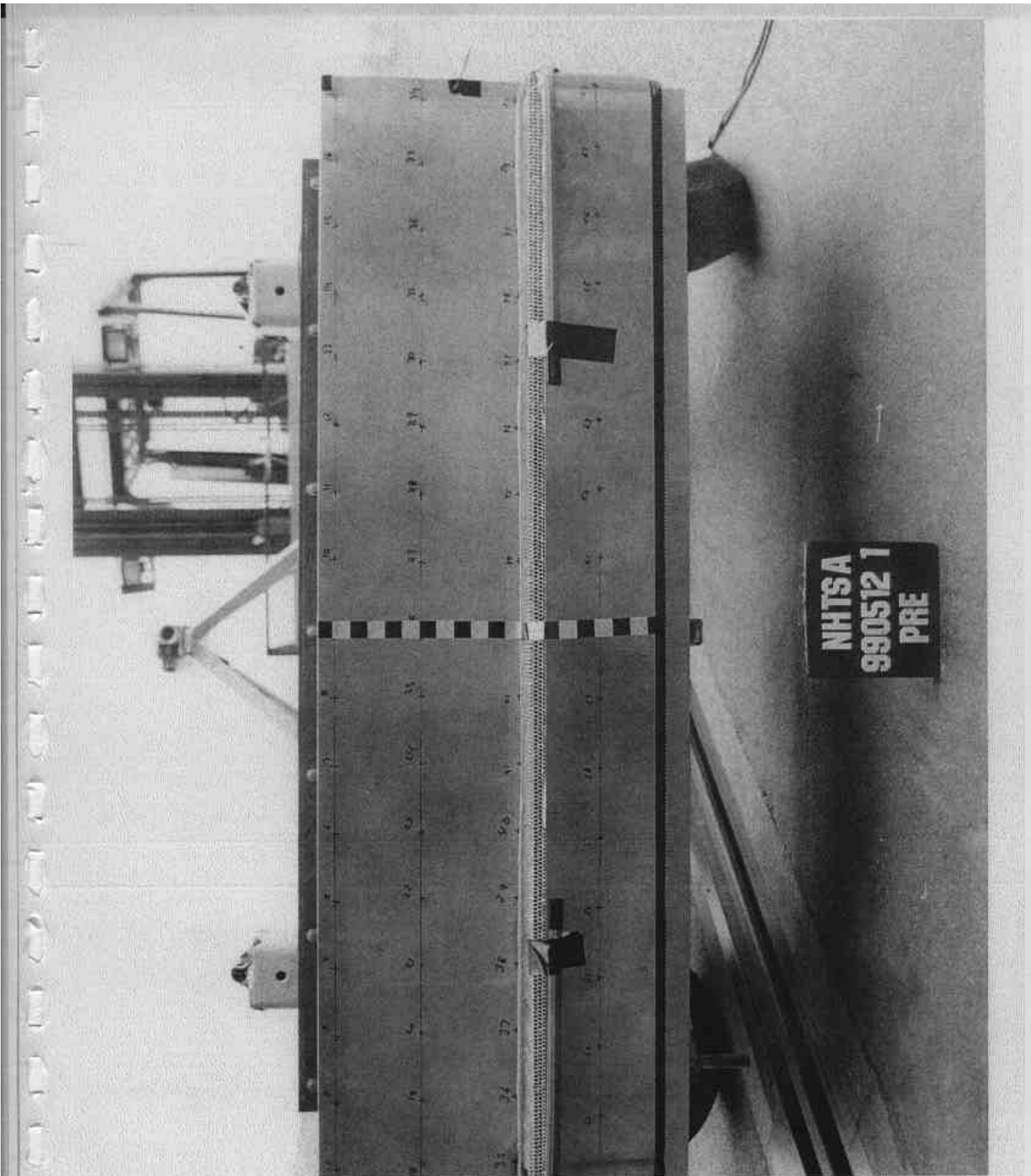


Figure A-7 Pre-Test Frontal View of Impactor Face
A-9

990512

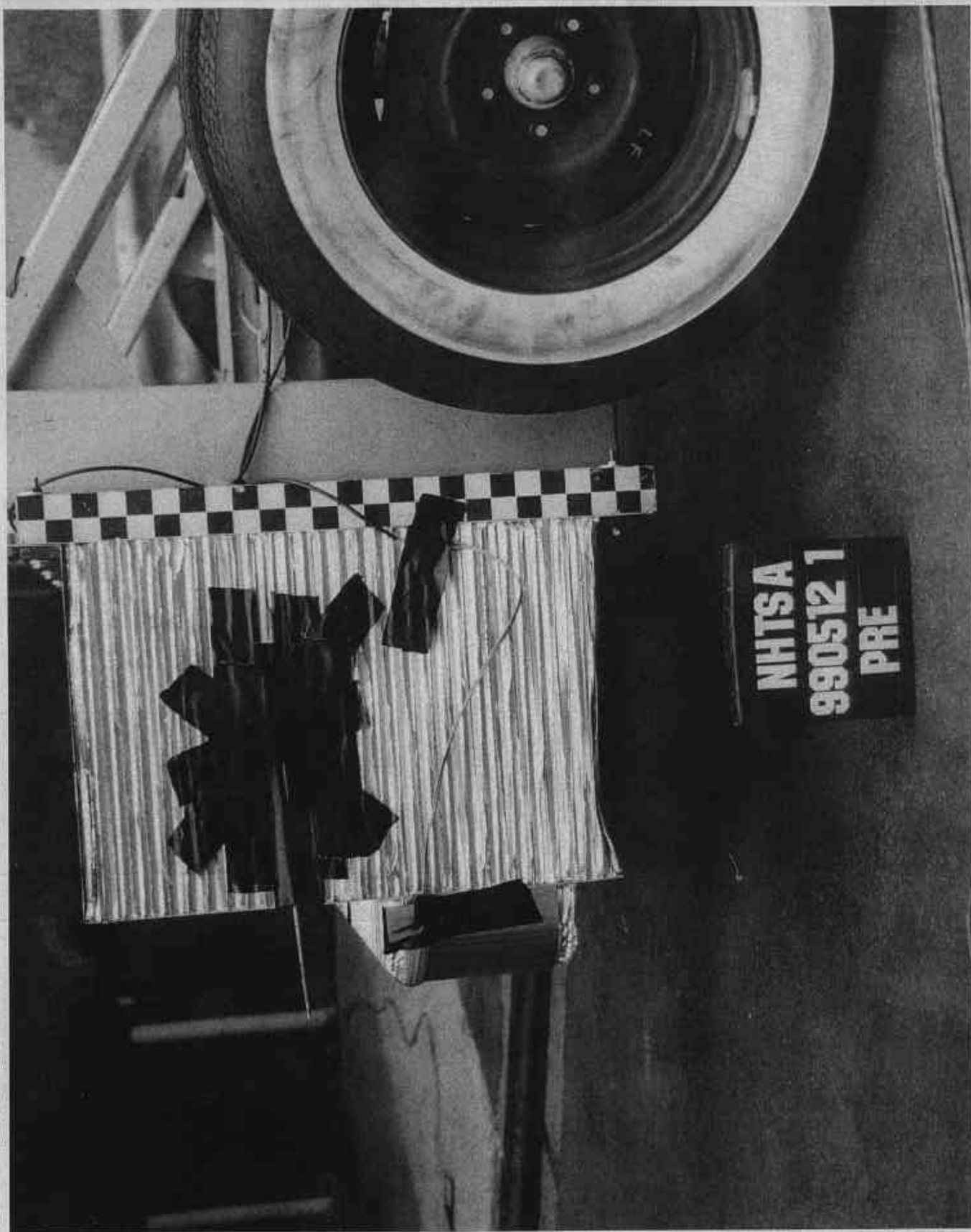


Figure A-9 Pre-Test Left Side View of Impactor Face
A-11

990512



Figure A-10 Post-Test Left Side View of Impactor Face
A-12

990512

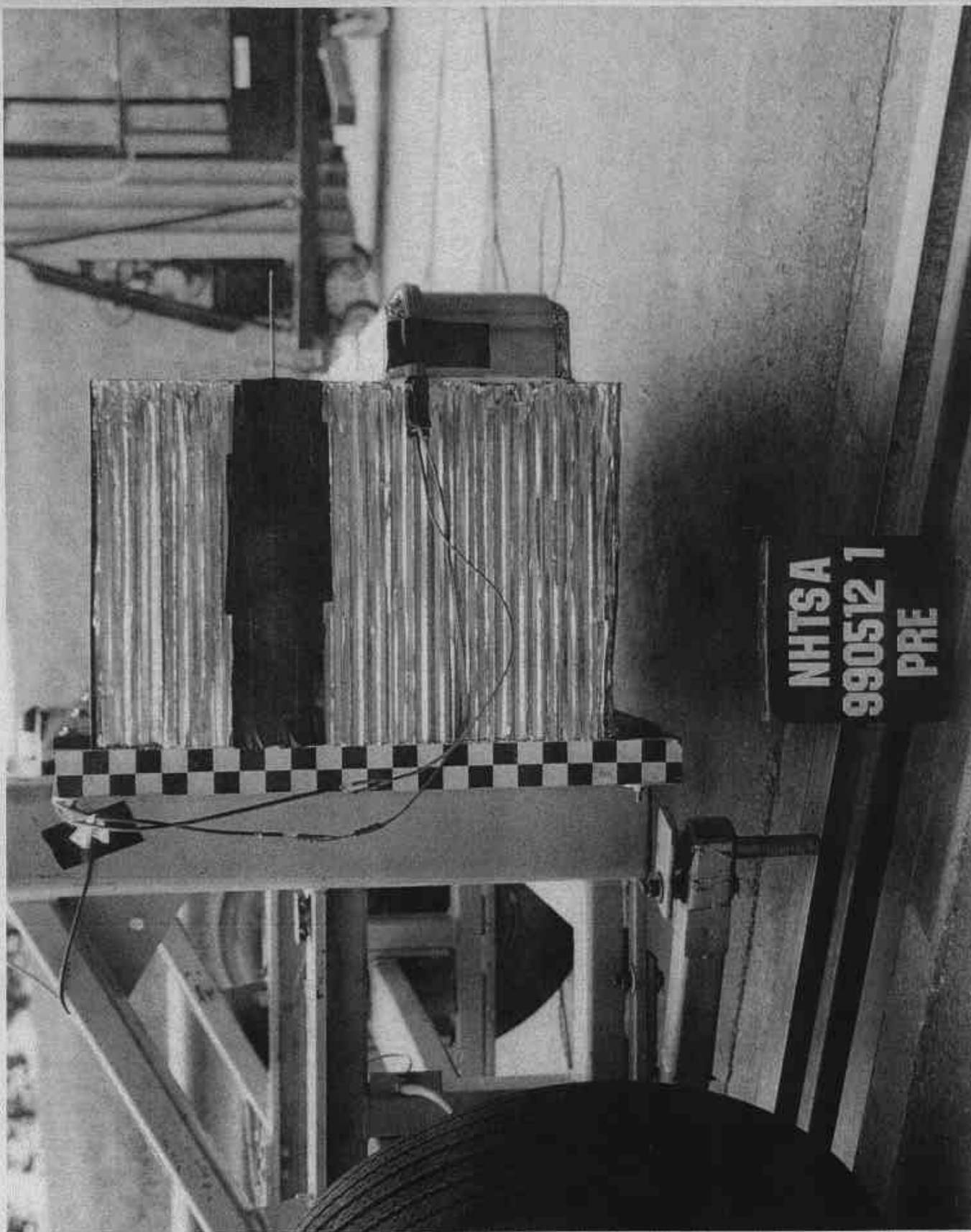


Figure A-11 Pre-Test Right Side View of Impactor Face
A-13

990512

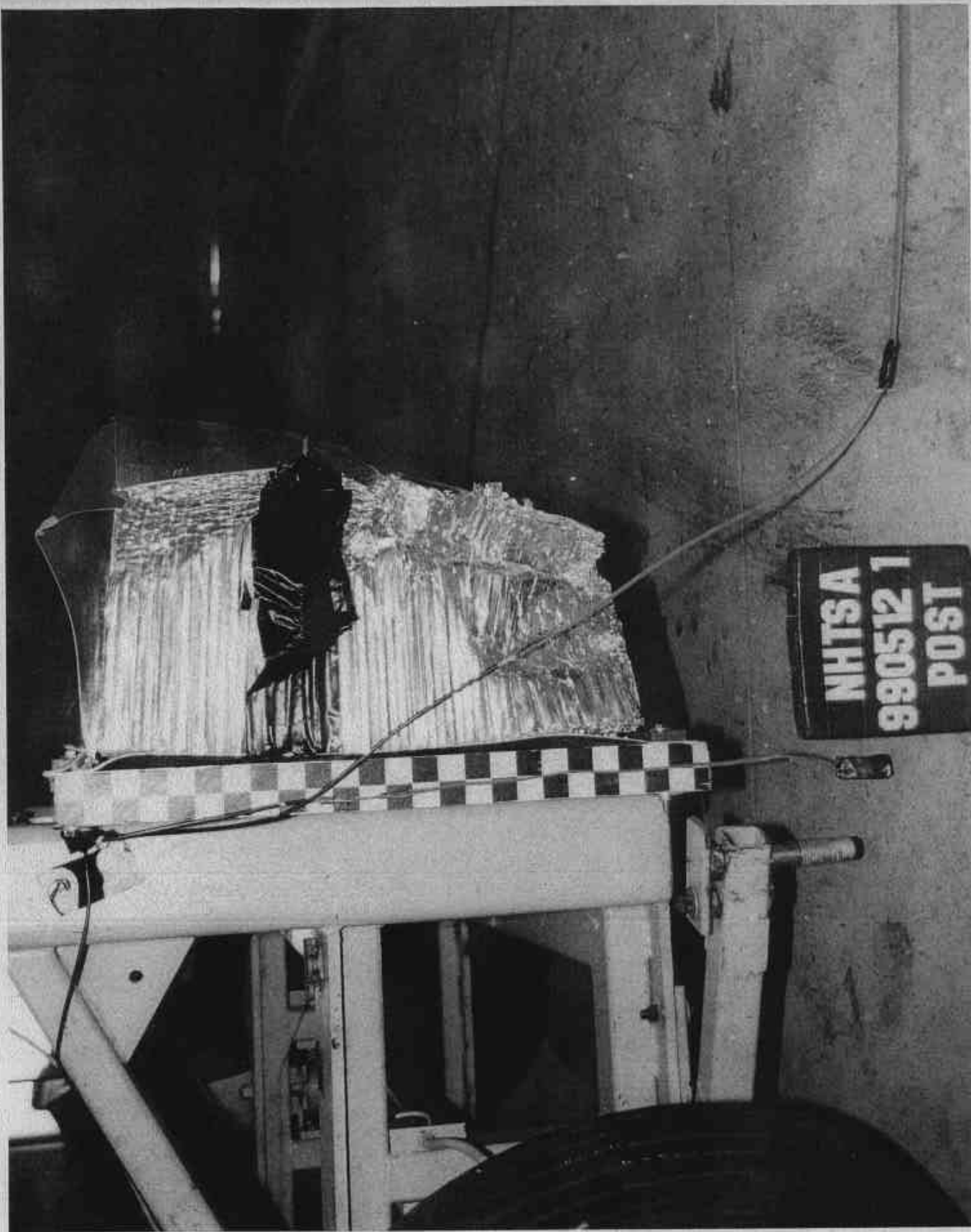


Figure A-12 Post-Test Right Side View of Impactor Face
A-14

990512

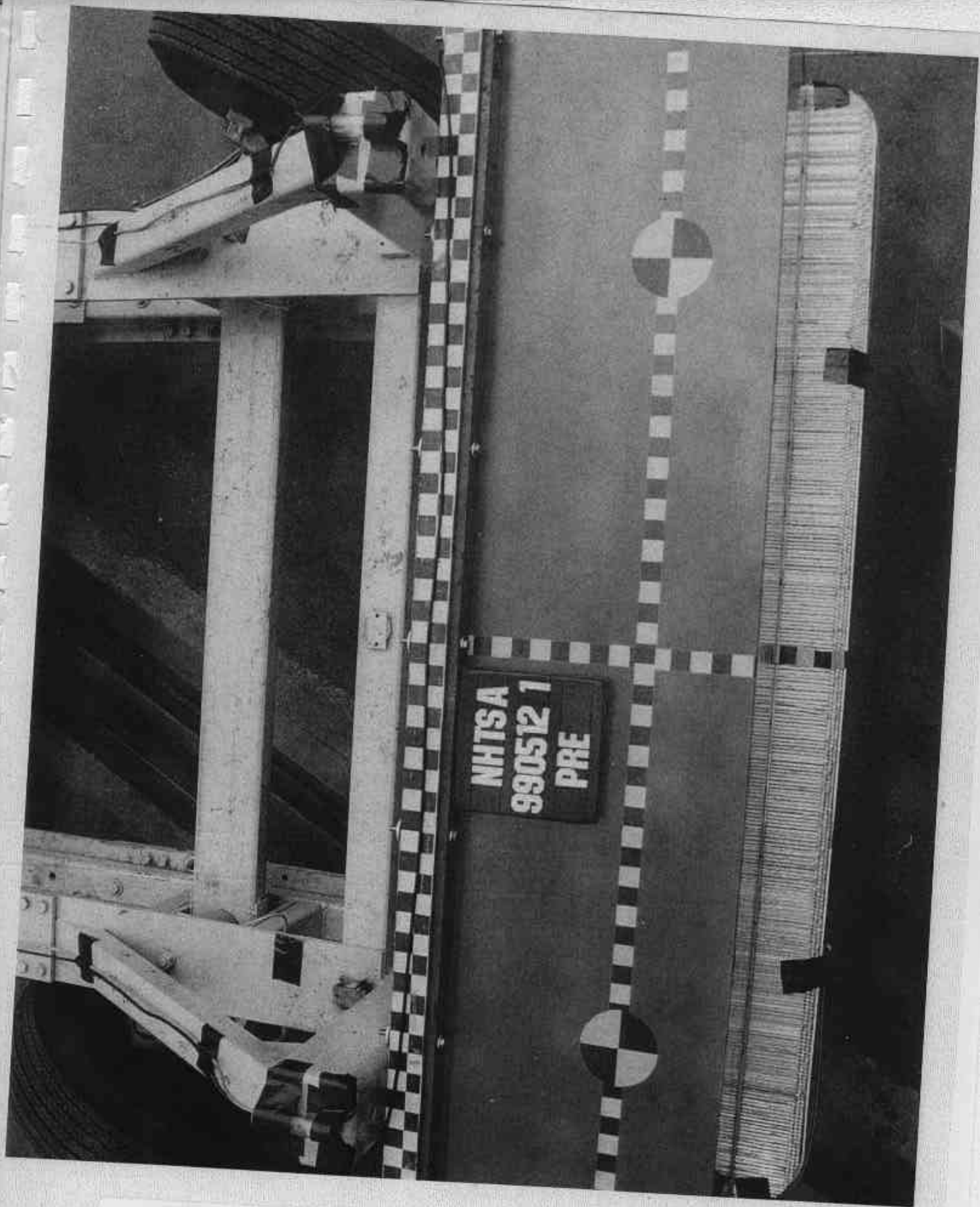


Figure A-13 Pre-Test Top View of Impactor Face
A-15

990512

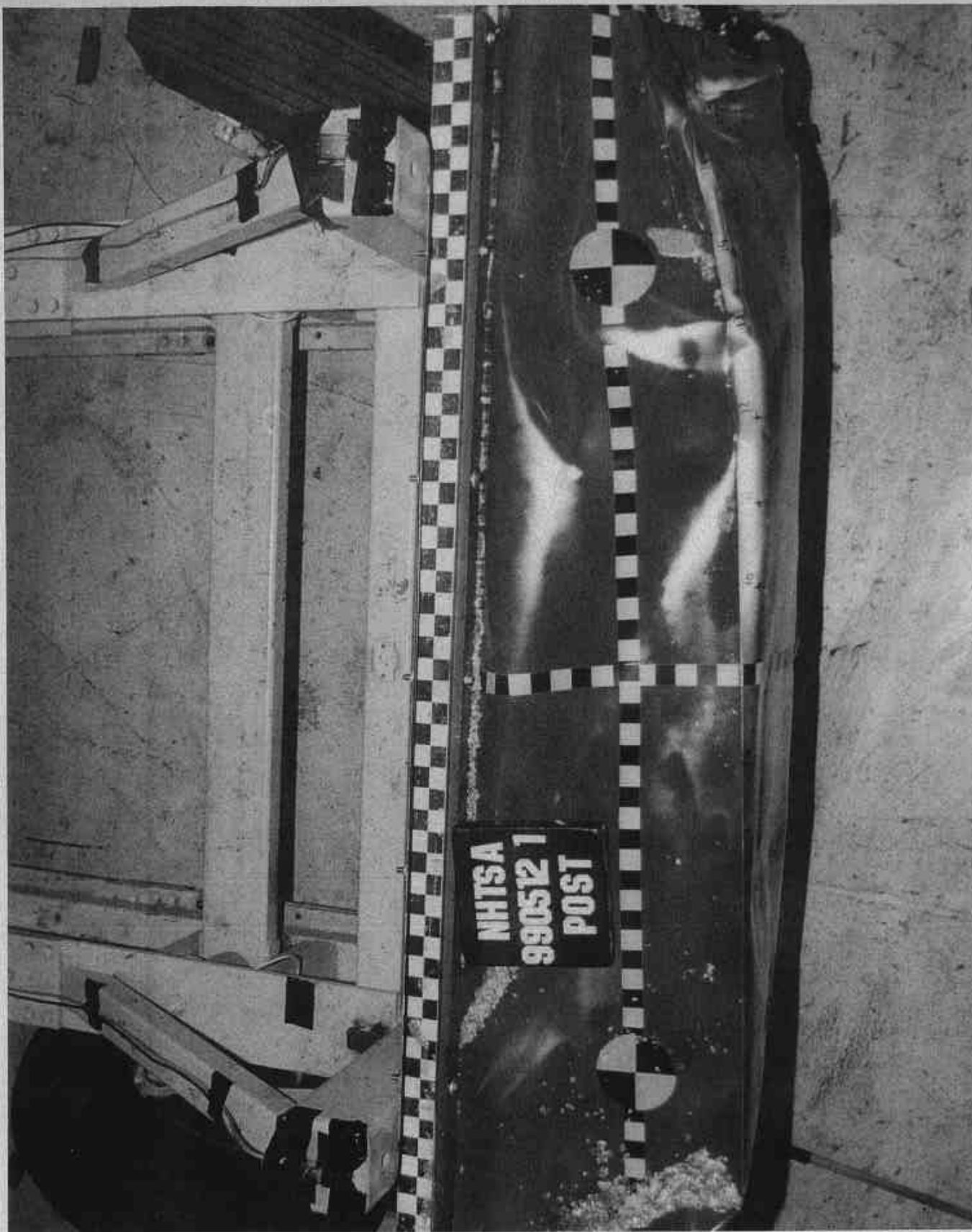


Figure A-14 Post-Test Top View of Impactor Face
A-16

990512

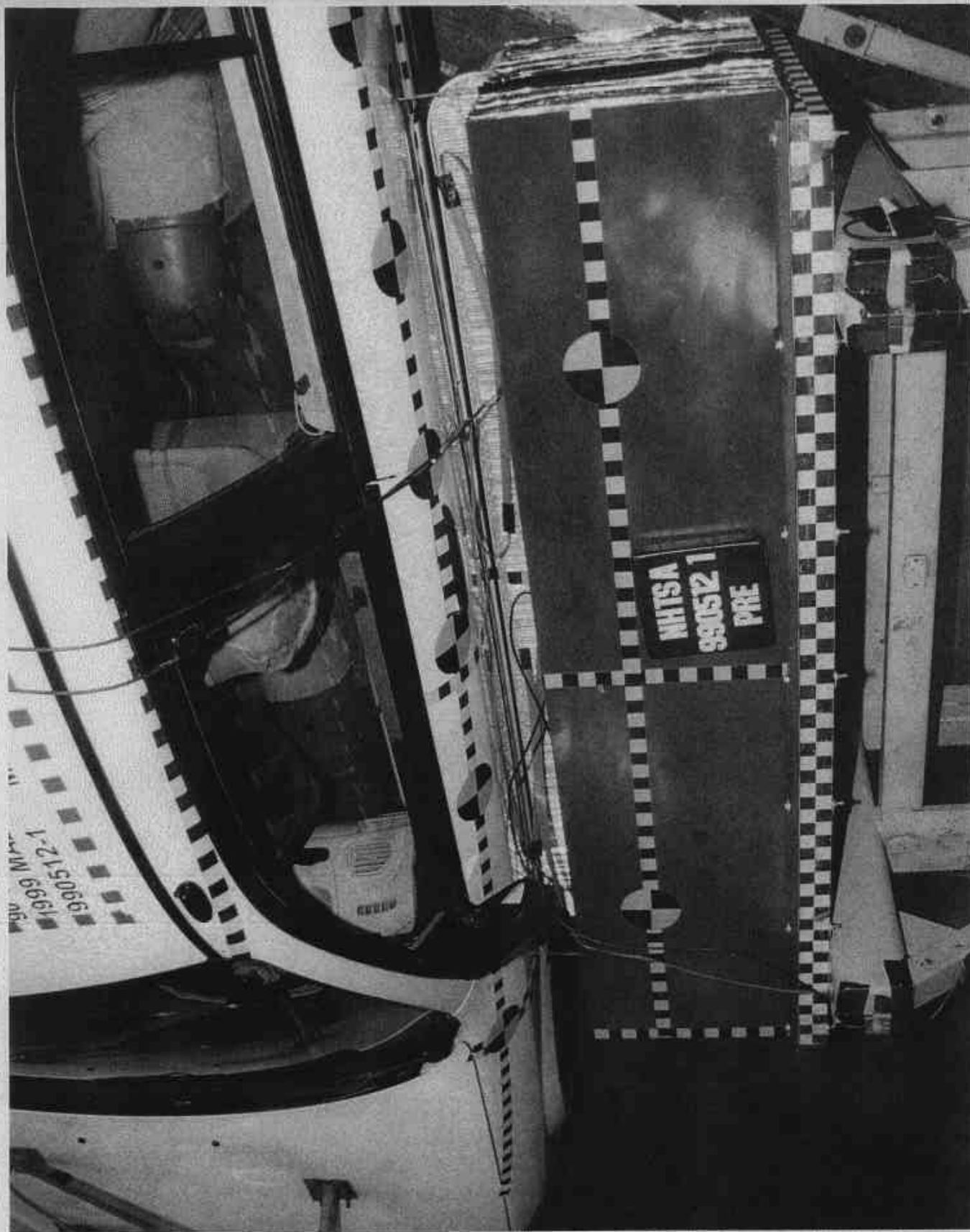


Figure A-15 Pre-Test Overhead View of MDB Aligned with Vehicle
A-17

990512

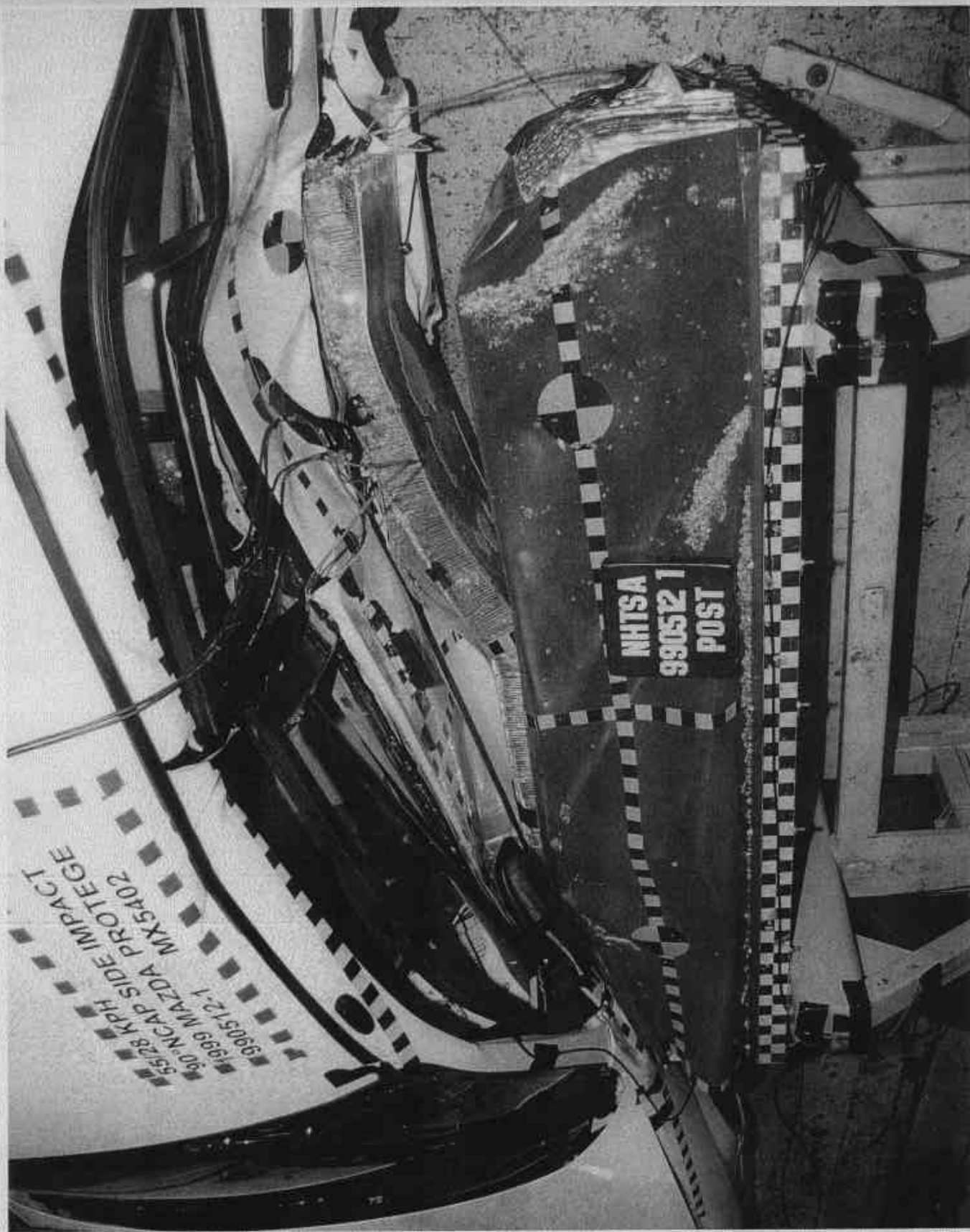


Figure A-16 Post-Test Overhead View of MDB Aligned with Vehicle

A-18

990512



Figure A-17 Pre-Test Right Occupant Compartment View of Front SID

A-19

990512

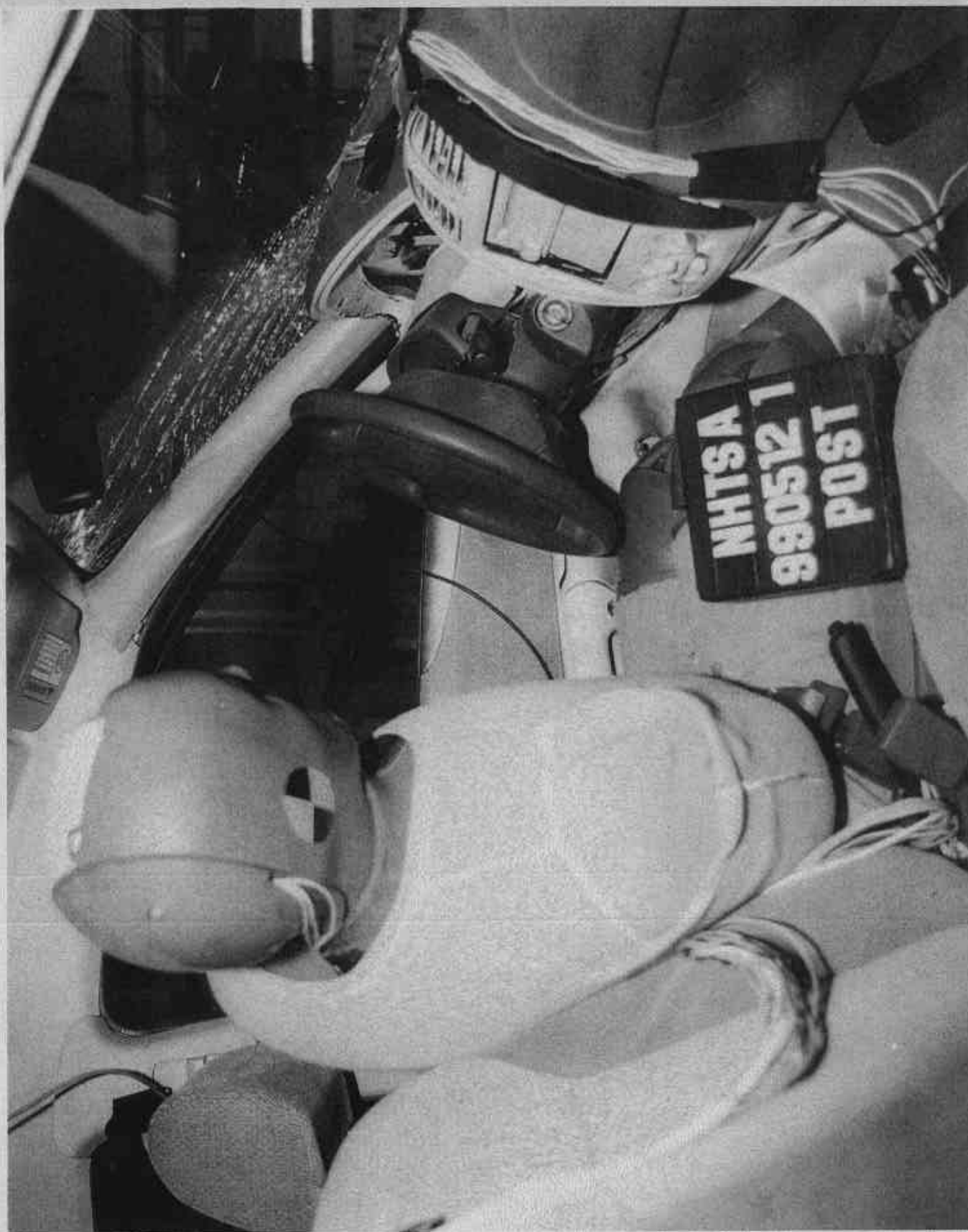


Figure A-18 Post-Test Right Occupant Compartment View of Front SID
A-20 990512

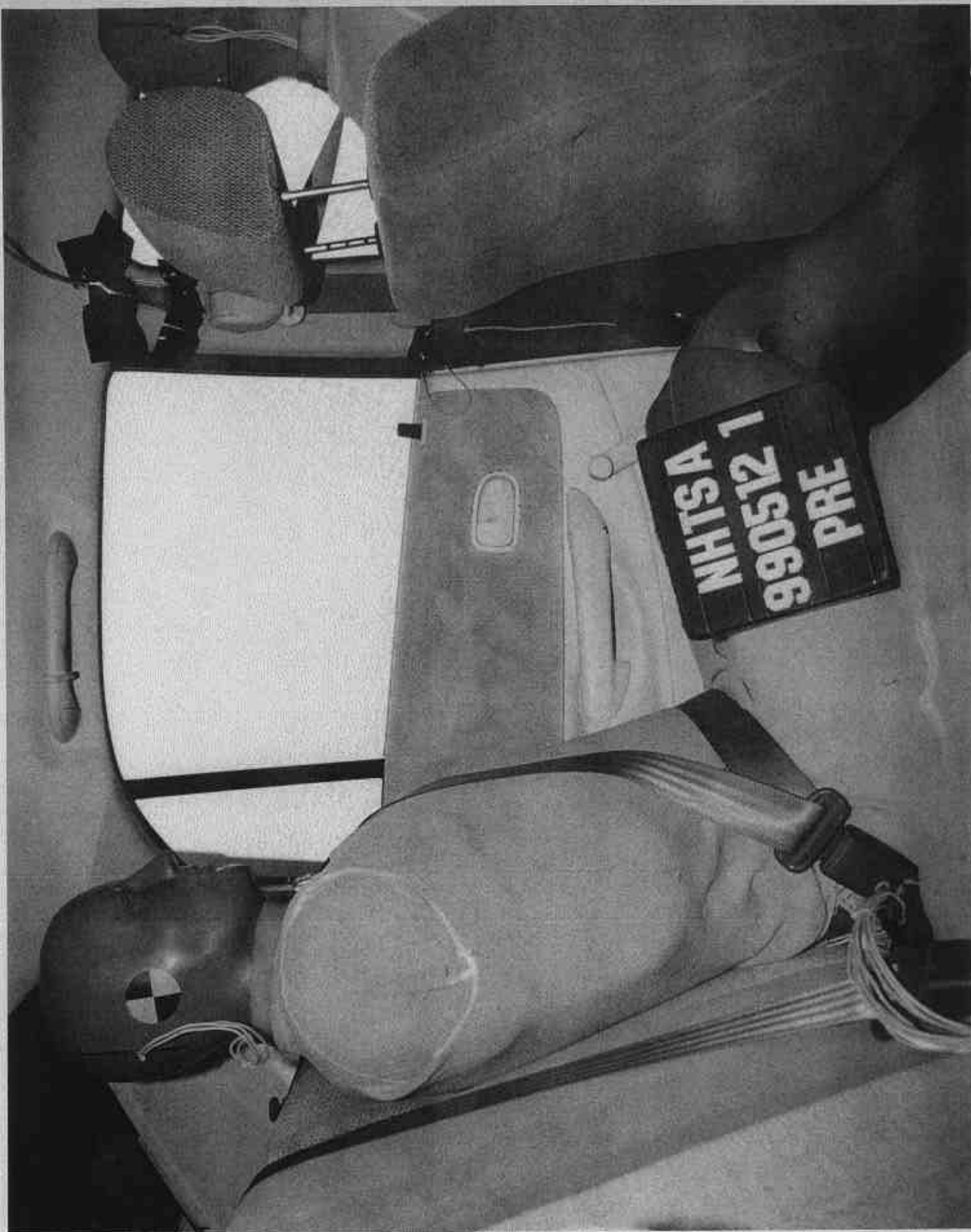


Figure A-19 Pre-Test Right Occupant Compartment View of Rear SID
A-21 990512

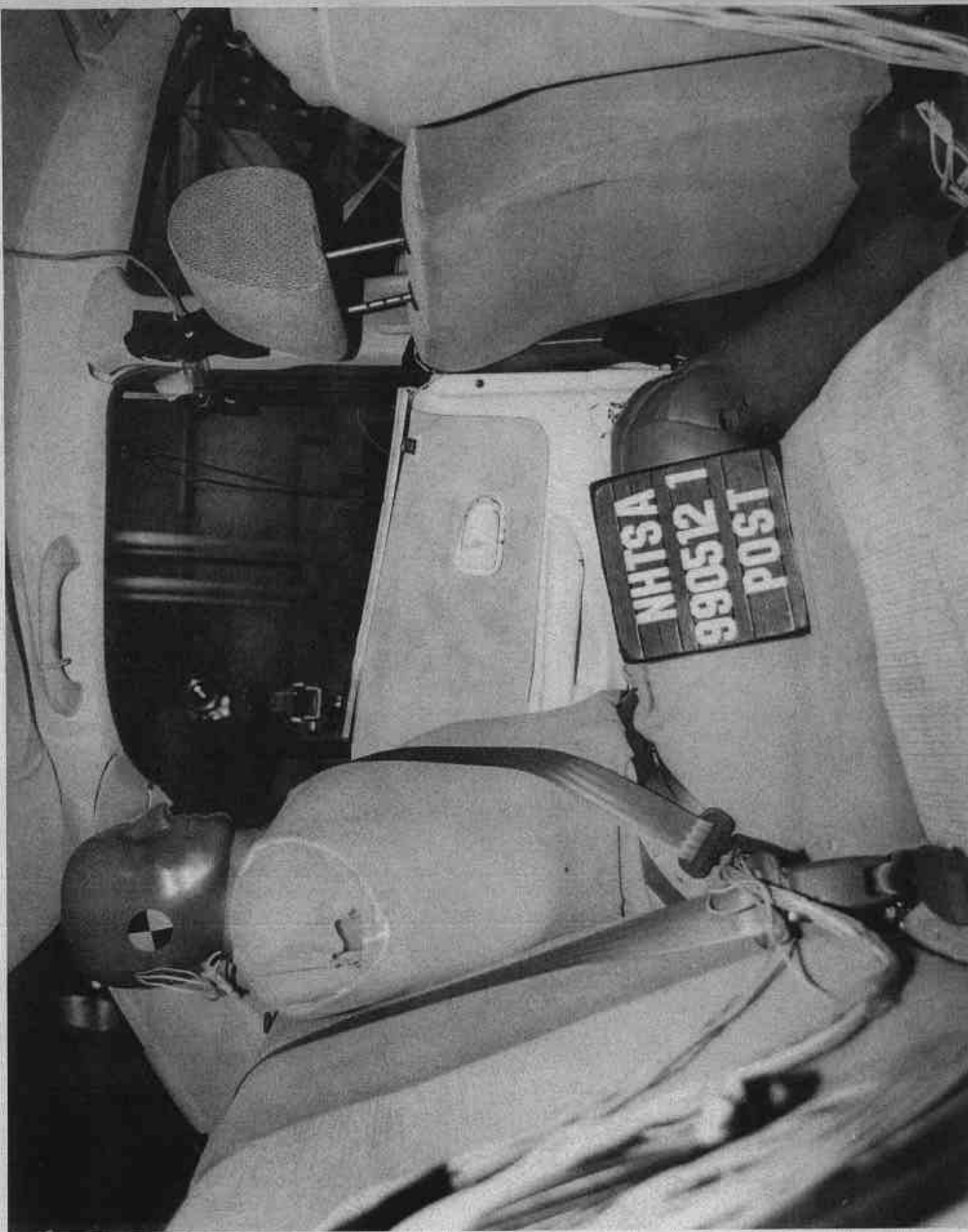


Figure A-20 Post-Test Right Occupant Compartment View of Rear SID

A-22

990512



Figure A-21 Pre-Test Left Occupant Compartment View of Front SID

A-23

990512

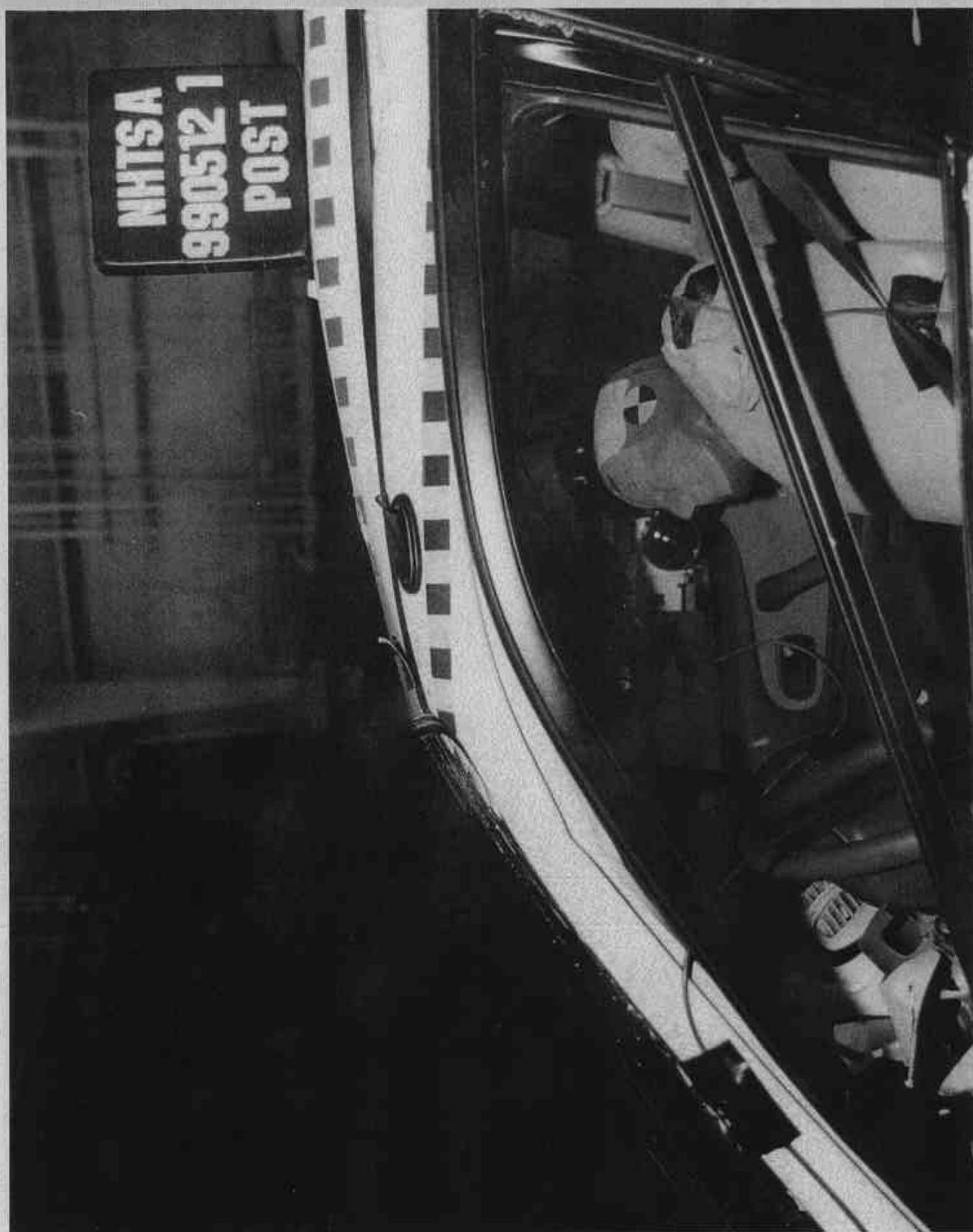


Figure A-22 Post-Test Left Occupant Compartment View of Front SID

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990512



Figure A-23 Pre-Test Left Occupant Compartment View of Rear SID

A-25

990512

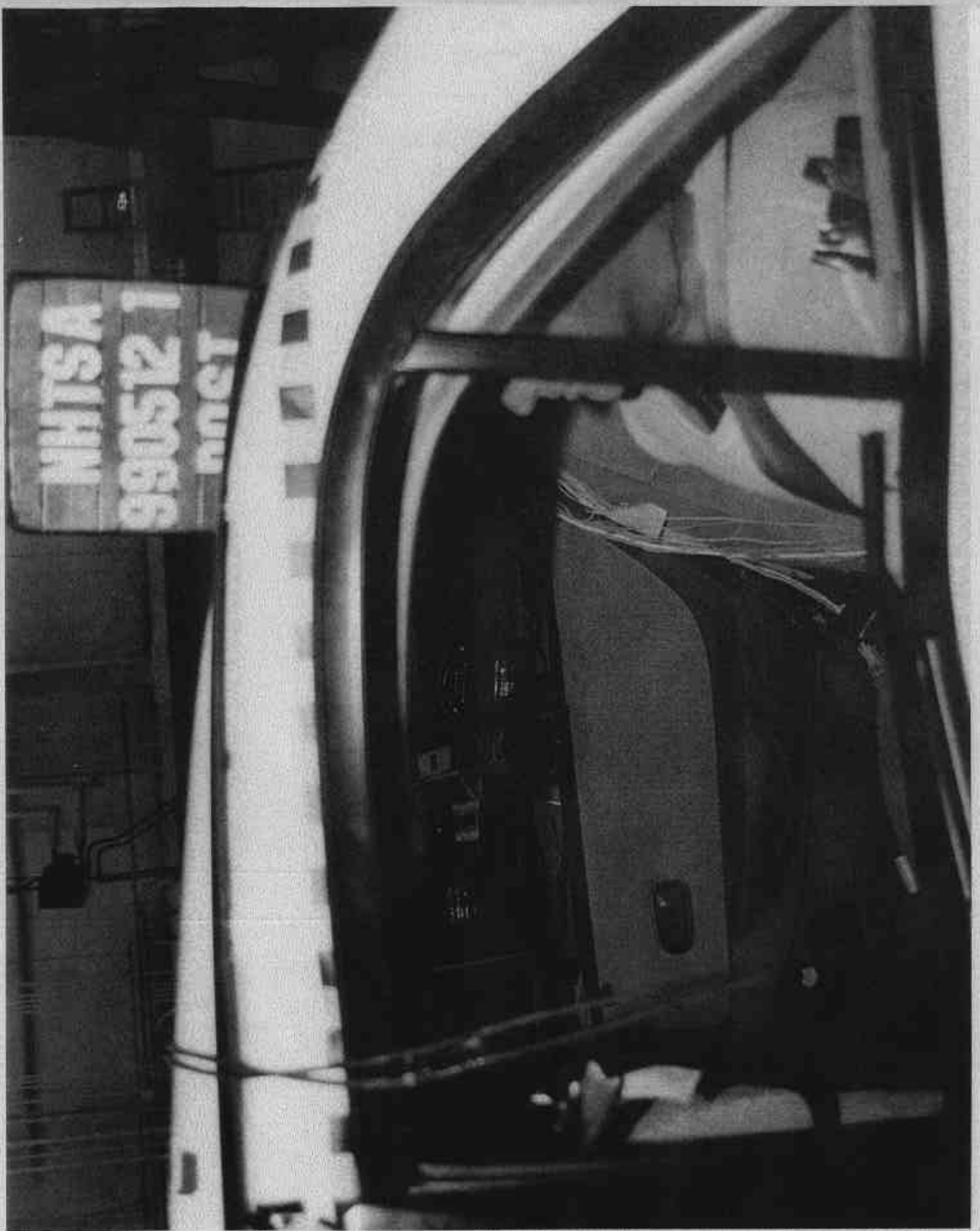


Figure A-24 Post-Test Left Occupant Compartment View of Rear SID

A-26

990512

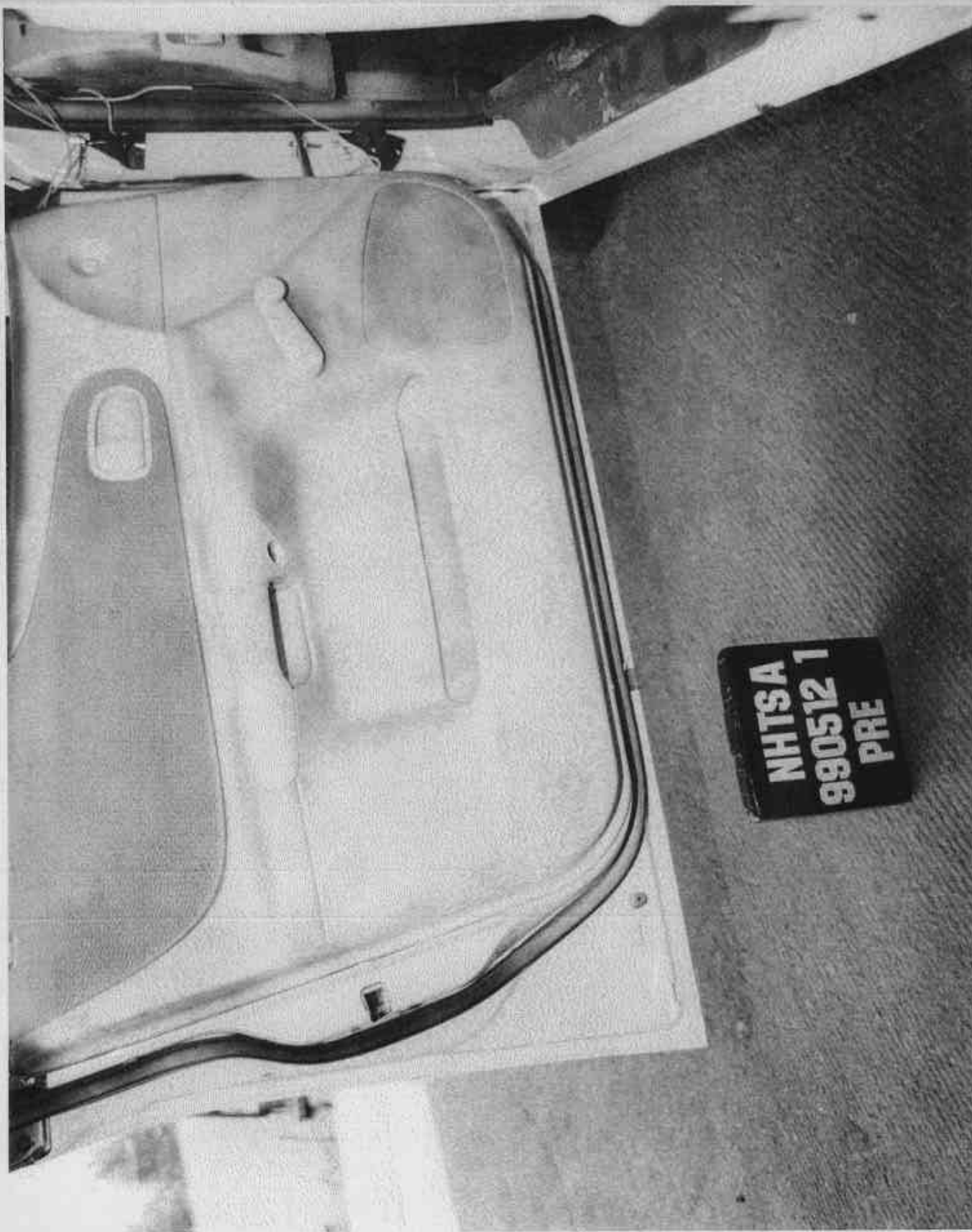


Figure A-25 Pre-Test Interior of Front Door
A-27

990512

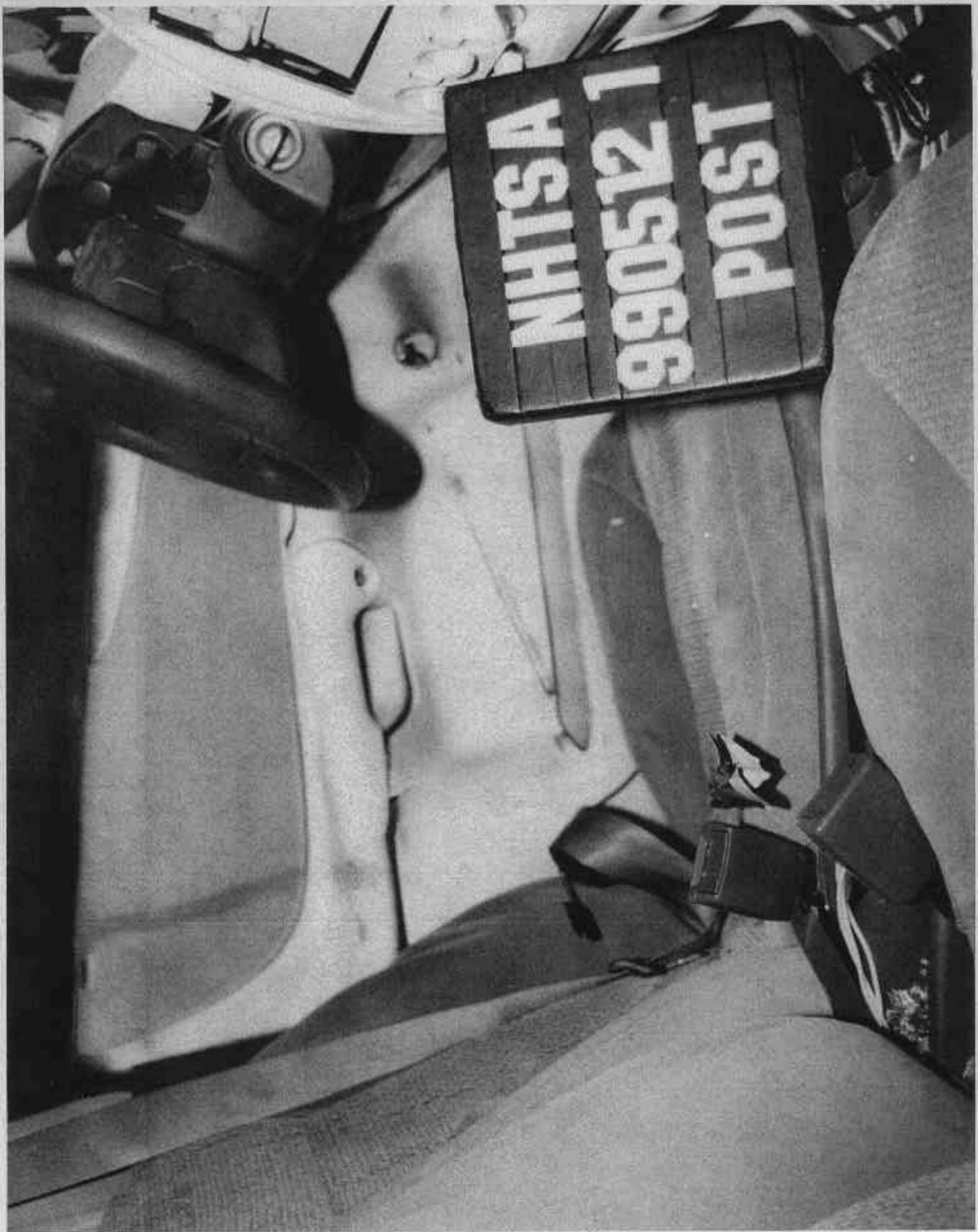


Figure A-26 Post-Test Interior of Front Door Showing SID Impact Locations

A-28

990512

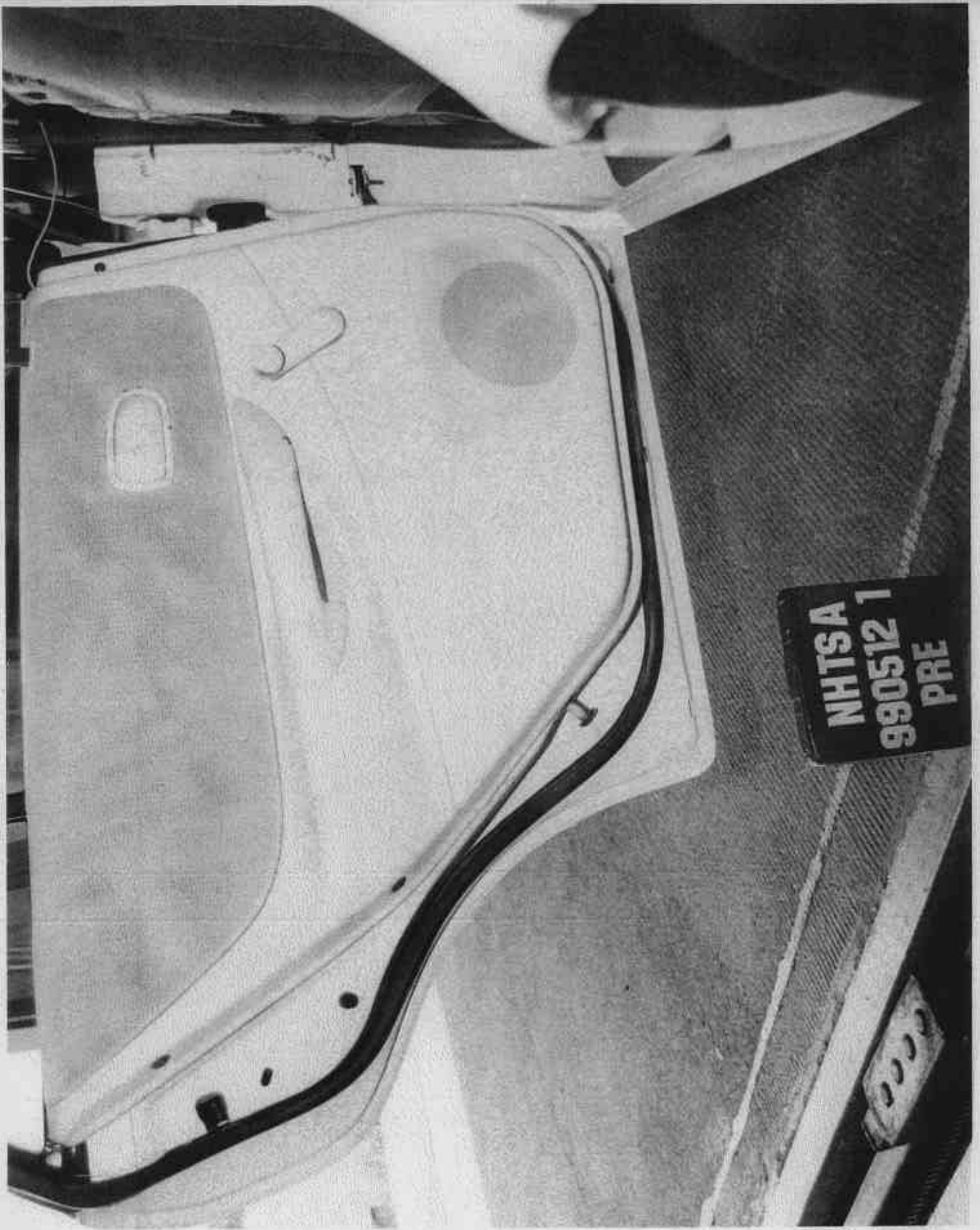


Figure A-27 Pre-Test Interior of Rear Door
A-29

990512



Figure A-28 Post-Test Interior of Rear Panel Showing SID Impact Locations
A-30 990512



Figure A-29 Post-Test Interior of Rear C-Pillar Showing SID Impact Locations
A-31 990512

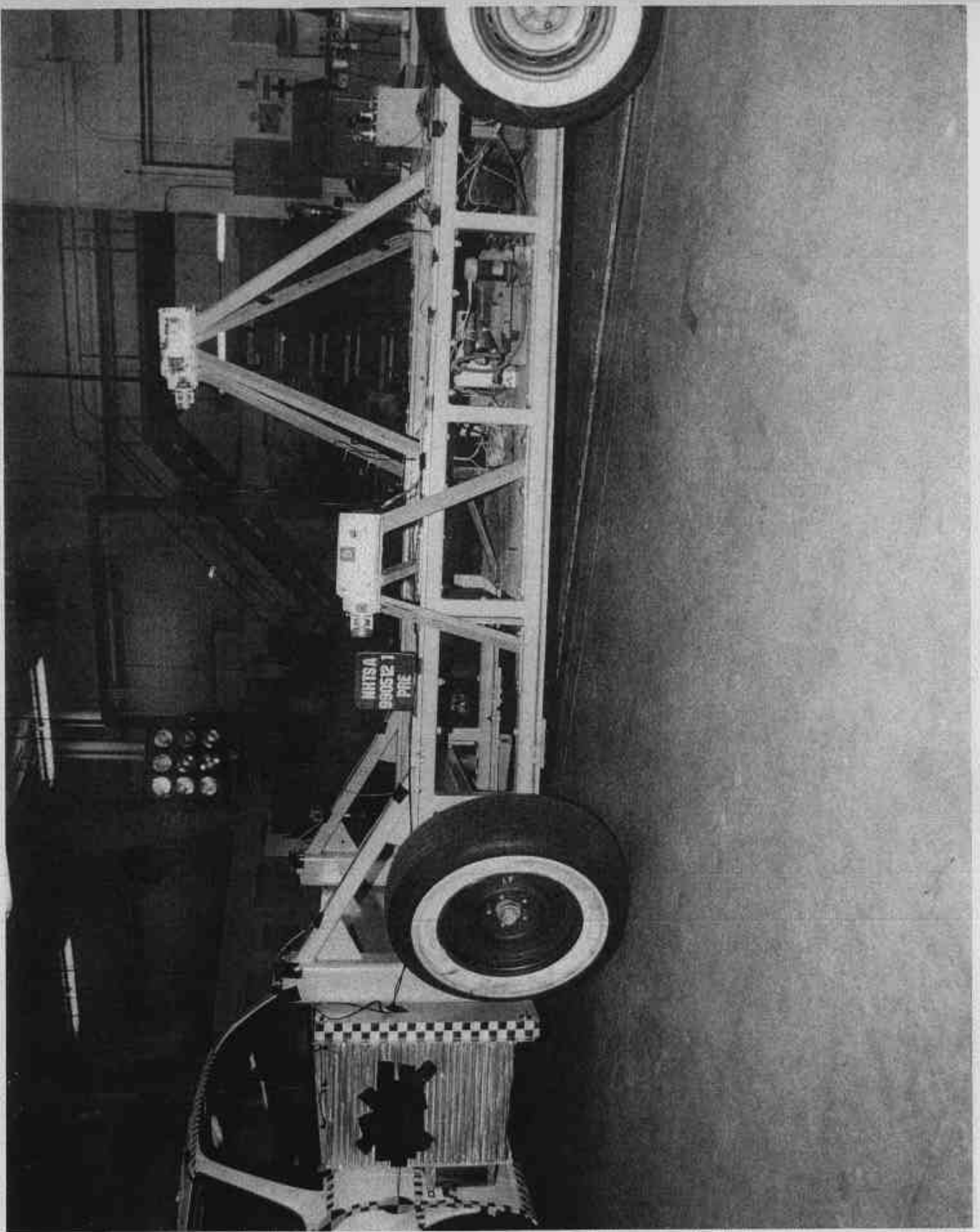


Figure A-30 Pre-Test Left Side View of MDB With Impactor Face in Position
A-32 990512

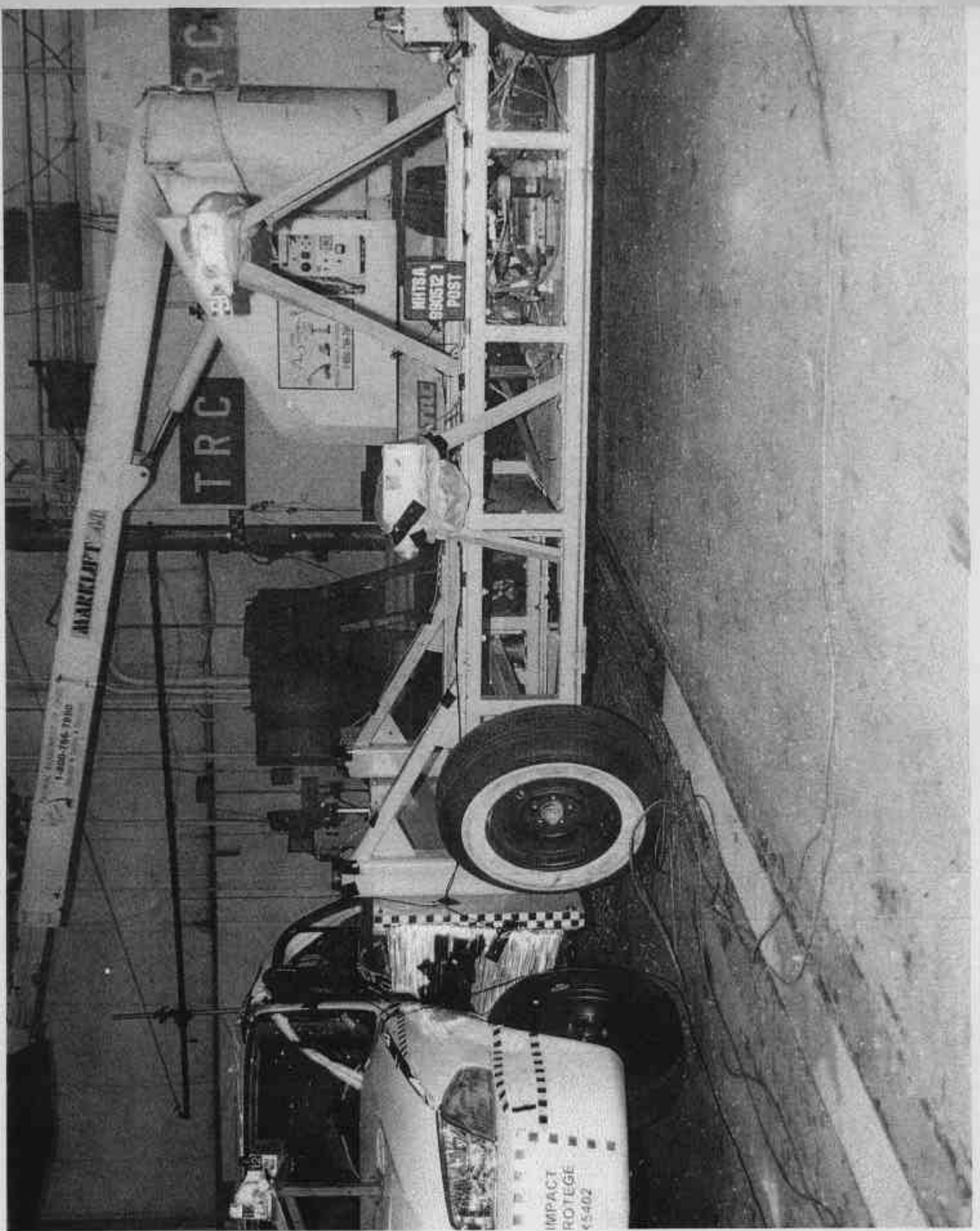


Figure A-31 Post-Test Left Side View of MDB With Impactor Face in Position
A-33 990512

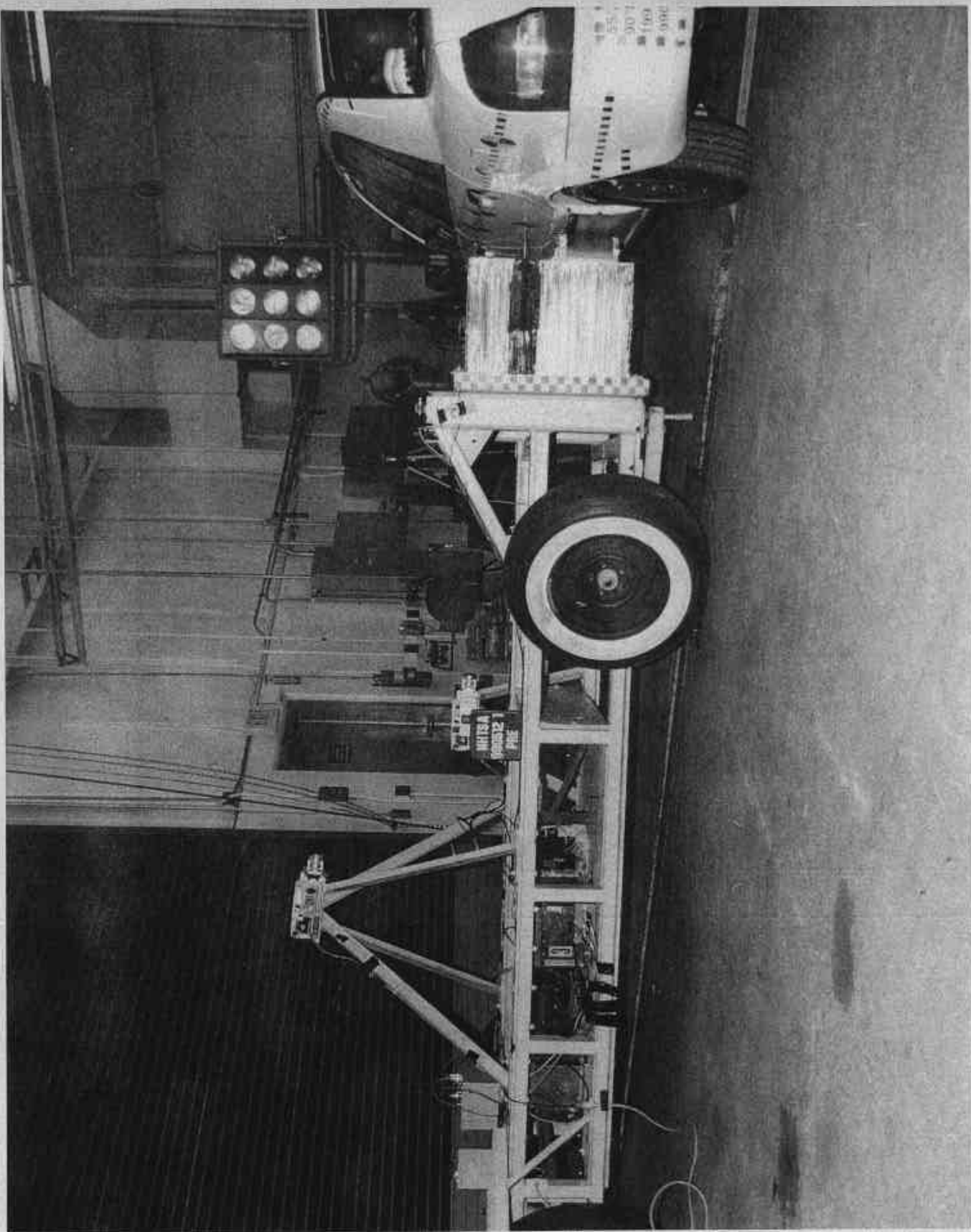


Figure A-32 Pre-Test Right Side View of MDB With Impactor Face in Position
A-34 990512

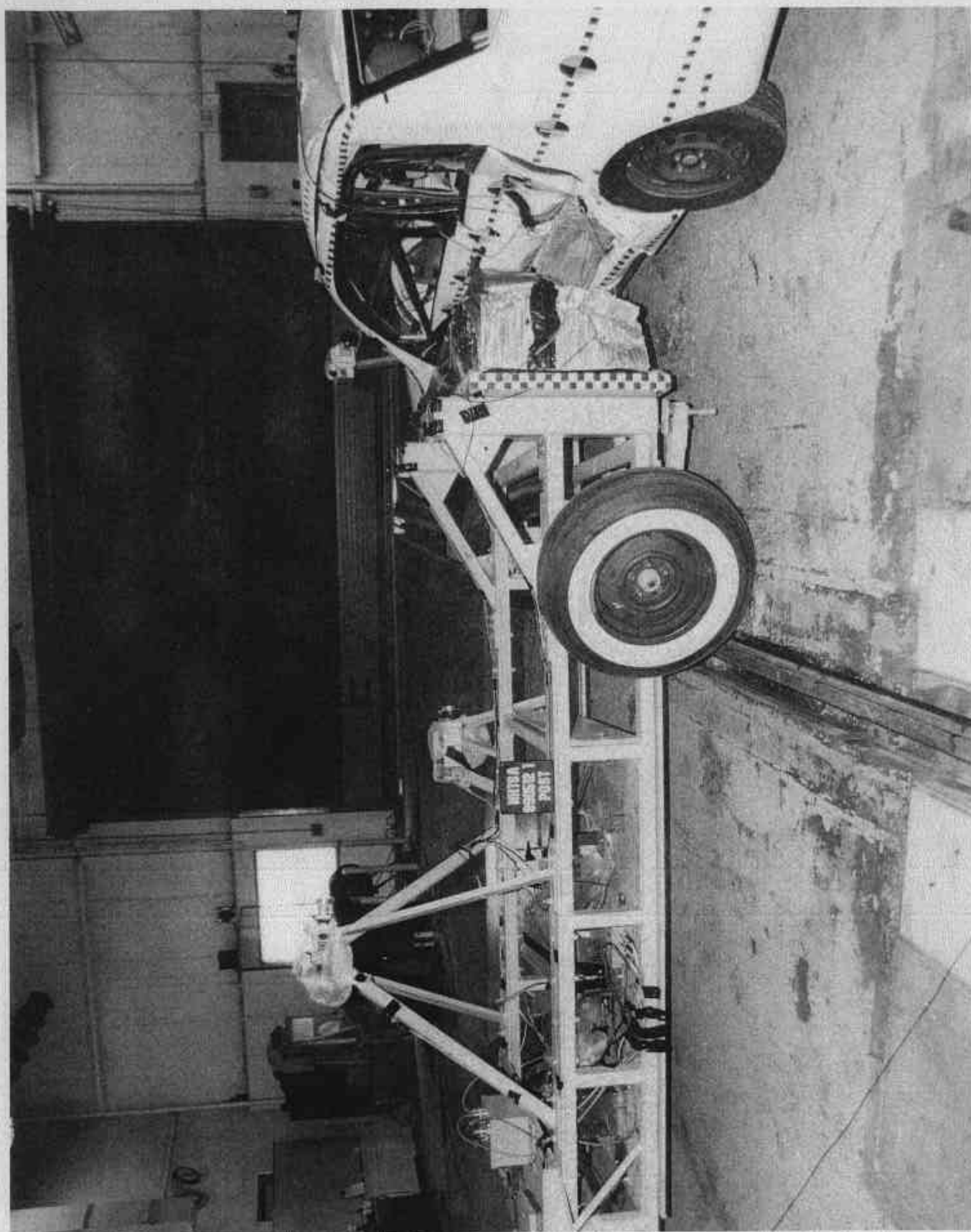


Figure A-33 Post-Test Right Side View of MDB With Impactor Face in Position
A-35 990512

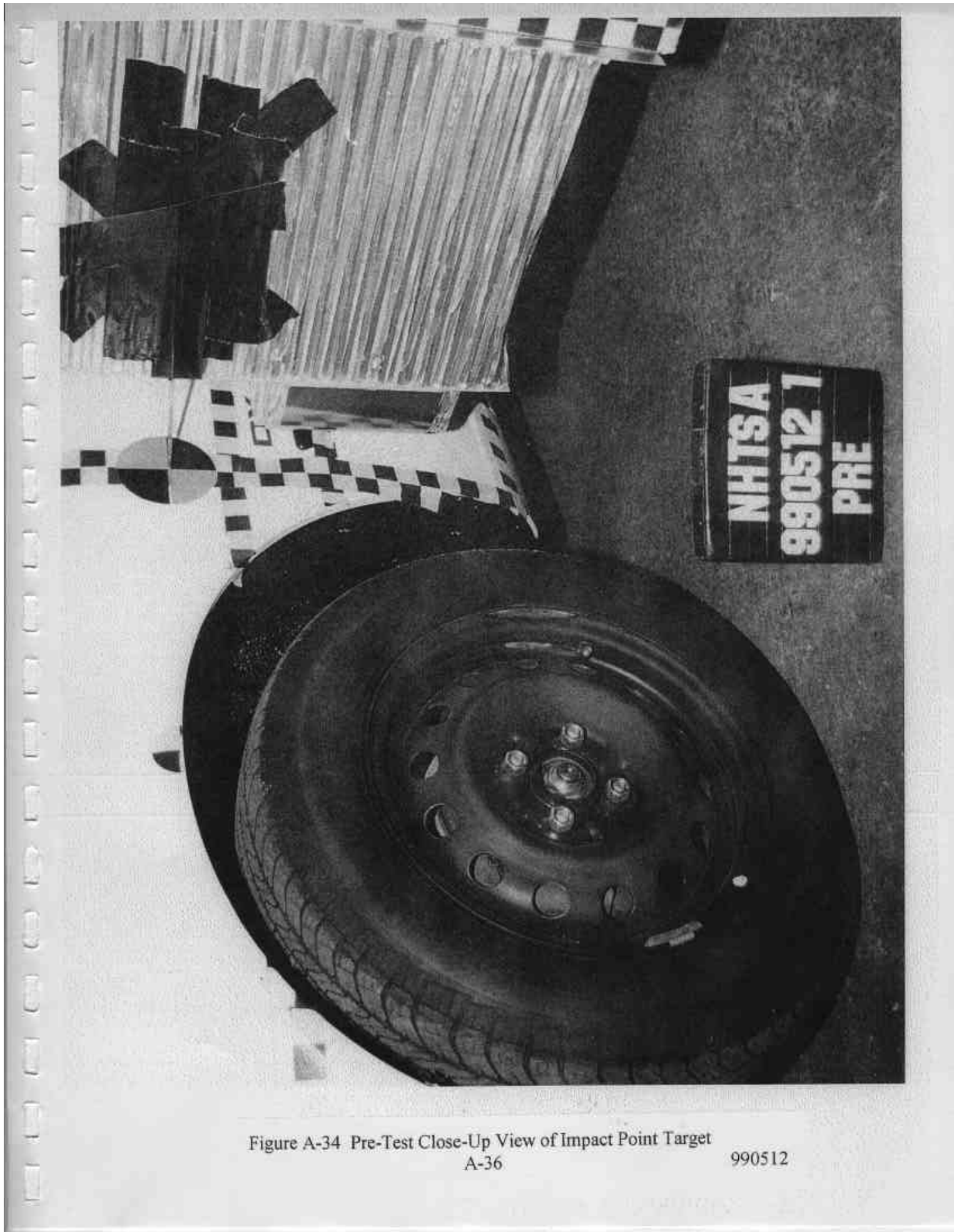


Figure A-34 Pre-Test Close-Up View of Impact Point Target
A-36

990512



Figure A-35 Post-Test Close-Up View of Redundant Impact Point Target
A-37 990512

VEHICLE CAPACITY WEIGHT (BJOE) 385kg (850lbs)
 CAPACITÉ PORTEUSE DU VÉHICULE

SEATING CAPACITY NOMBRE DE PLACES

FRONT SEAT	2
SIÈGE AVANT	
REAR SEAT	3
SIÈGE ARRIÈRE	
TOTAL	5

TIRE INFLATION PRESSURE	FRONT/AV.	REAR/AR.
PRESSION DE GONFLAGE DES PNEUS	220	220
KPa (kgf/cm ²) (p.s.i./lb/po ²)	(2.2)(32)	(2.2)(32)

TIRE SIZE P185/65R14 85S
 TAILLE DES PNEUS

Figure A-36 Pre-Test Vehicle Recommended Tire Pressure Label View

MFD. BY MAZDA MOTOR CORPORATION

DATE	GVWR/PNBV	GAWR/PNBE FRT	GAWR/PNBE RR
08/98	3472 LB	1830 LB	1653 LB
	1575 KG	830 KG	750 KG

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY
 : BUMPER AND THEFT PREVENTION
 STANDARD IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

JM1BJ2221X0108489 TYPE: PASSENGER



BODY COLOR CODE: PT

MADE IN JAPAN

Figure A-37. Pre-Test Vehicle Certification Label View
 A-39

990512

Appendix B

Data Plots

Table of Data Plots

Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 1000

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
1	DRIVER HEAD X-AXIS ACCELERATION	B-7
2	DRIVER HEAD X-AXIS VELOCITY	B-8
3	DRIVER HEAD Y-AXIS ACCELERATION	B-9
4	DRIVER HEAD Y-AXIS VELOCITY	B-10
5	DRIVER HEAD Z-AXIS ACCELERATION	B-11
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7	DRIVER HEAD RESULTANT	B-13
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15	DRIVER UPPER RIB Y-AXIS VELOCITY	B-21
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Test Vehicle Instrumentation Plots

Acceleration Data - Filter Class 60

Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
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49	RIGHT SIDE SILL AT FRONT SEAT Y-AXIS ACCELERATION	B-56

50	RIGHT SIDE SILL AT FRONT SEAT Y-AXIS VELOCITY	B-57
51	RIGHT SIDE SILL AT FRONT SEAT Z-AXIS ACCELERATION	B-58
52	RIGHT SIDE SILL AT FRONT SEAT Z-AXIS VELOCITY	B-59
53	RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION	B-60
54	RIGHT SIDE SILL AT REAR SEAT X-AXIS ACCELERATION	B-61
55	RIGHT SIDE SILL AT REAR SEAT X-AXIS VELOCITY	B-62
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93	LOWER A-POST Y-AXIS VELOCITY	B-100
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108	VEHICLE CENTER OF GRAVITY Z-AXIS ACCELERATION	B-115
109	VEHICLE CENTER OF GRAVITY Z-AXIS VELOCITY	B-116
110	VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION	B-117

MDB Instrumentation Plots
Acceleration Data - Filter Class 60
Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
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113	MDB CENTER OF GRAVITY Y-AXIS ACCELERATION	B-121

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Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - FIR Filtered

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
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127	DRIVER LOWER RIB Y-AXIS VELOCITY	B-136
128	DRIVER LOWER SPINE Y-AXIS ACCELERATION	B-137
129	DRIVER LOWER SPINE Y-AXIS VELOCITY	B-138
130	DRIVER PELVIS Y-AXIS ACCELERATION	B-139
131	DRIVER PELVIS Y-AXIS VELOCITY	B-140
132	PASSENGER UPPER RIB Y-AXIS ACCELERATION	B-141
133	PASSENGER UPPER RIB Y-AXIS VELOCITY	B-142
134	PASSENGER LOWER RIB Y-AXIS ACCELERATION	B-143
135	PASSENGER LOWER RIB Y-AXIS VELOCITY	B-144
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Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - FIR Filtered - Redundant

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
140	DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION	B-150
141	DRIVER UPPER RIB Y-AXIS REDUNDANT VELOCITY	B-151
142	DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION	B-152
143	DRIVER LOWER RIB Y-AXIS REDUNDANT VELOCITY	B-153
144	DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION	B-154
145	DRIVER LOWER SPINE Y-AXIS REDUNDANT VELOCITY	B-155
146	DRIVER PELVIS Y-AXIS REDUNDANT ACCELERATION	B-156
147	DRIVER PELVIS Y-AXIS REDUNDANT VELOCITY	B-157
148	PASSENGER UPPER RIB Y-AXIS REDUNDANT ACCELERATION	B-158
149	PASSENGER UPPER RIB Y-AXIS REDUNDANT VELOCITY	B-159
150	PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION	B-160
151	PASSENGER LOWER RIB Y-AXIS REDUNDANT VELOCITY	B-161
152	PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION	B-162
153	PASSENGER LOWER SPINE Y-AXIS REDUNDANT VELOCITY	B-163

154	PASSENGER PELVIS Y-AXIS REDUNDANT ACCELERATION	B-164
155	PASSENGER PELVIS Y-AXIS REDUNDANT VELOCITY	B-165

Driver and Passenger Dummy Contact Switches

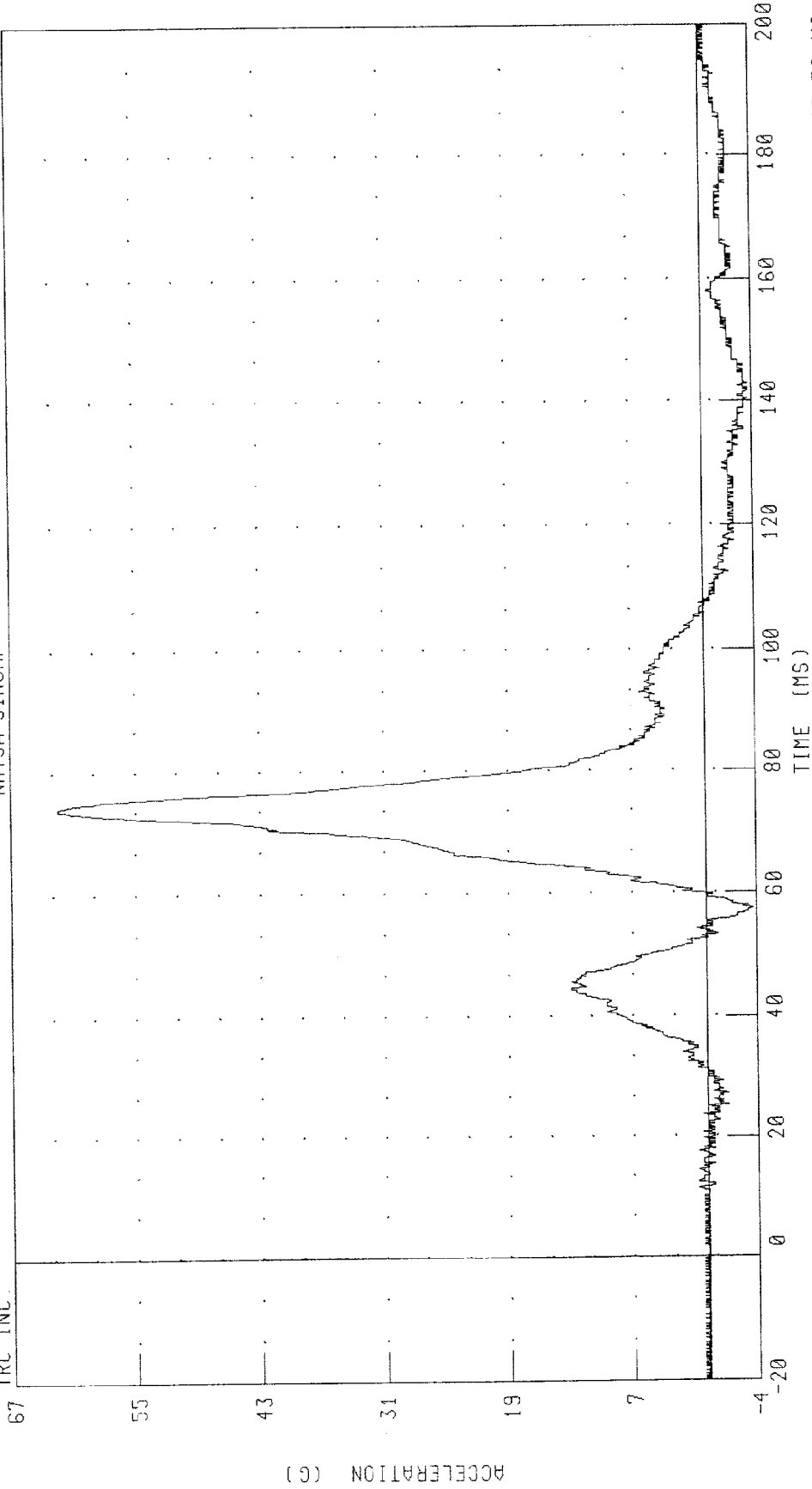
<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
156	DRIVER SHOULDER CONTACT SWITCH	B-167
157	DRIVER PELVIS CONTACT SWITCH	B-168
158	PASSENGER SHOULDER CONTACT SWITCH	B-169
159	PASSENGER PELVIS CONTACT SWITCH	B-170

Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - Filter Class 1000
Integration Data - Filter Class 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER HEAD X-AXIS ACCELERATION
 NHTSA SINCAP

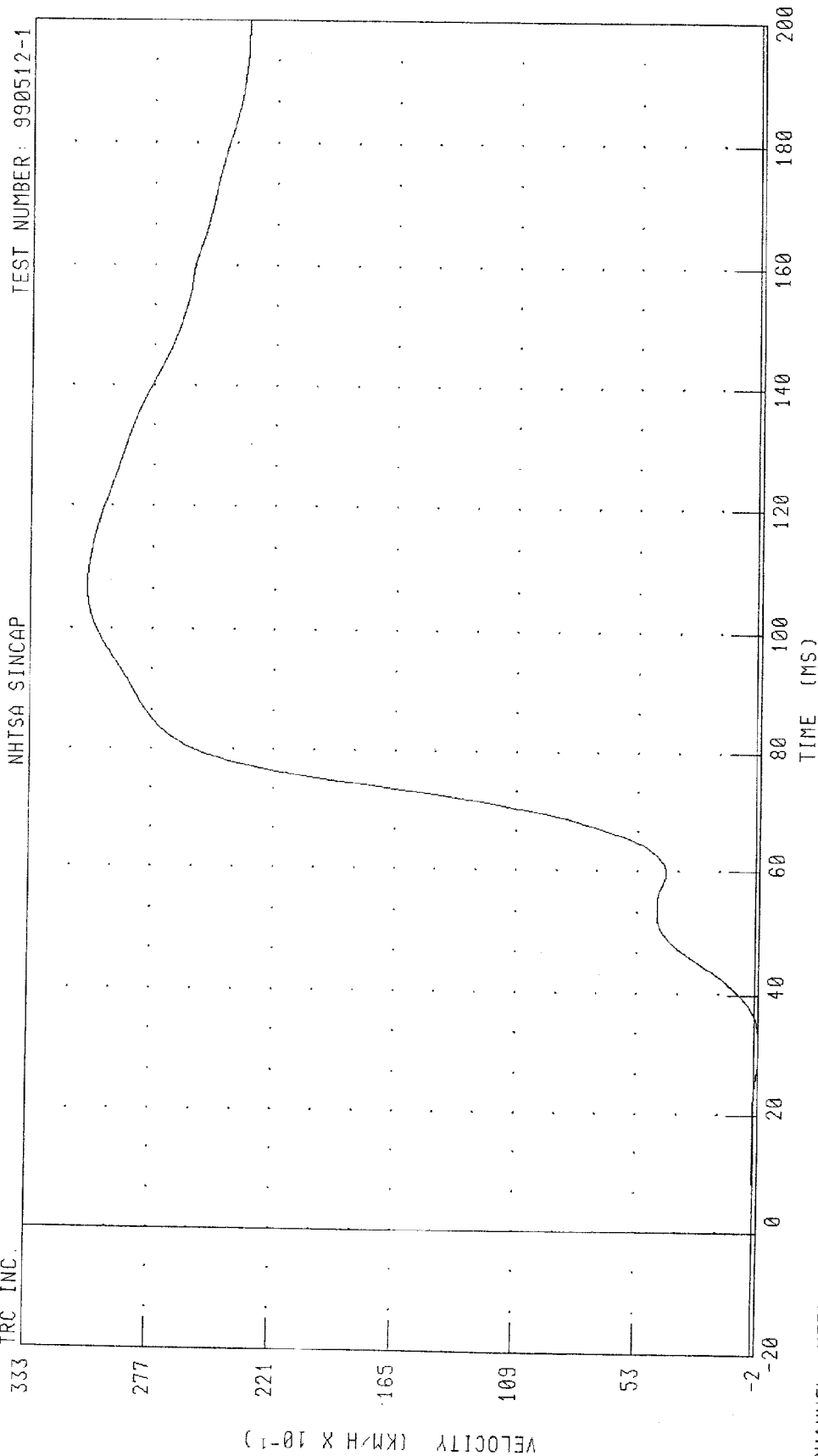
TEST NUMBER: 990512-1

TRC INC.



CHANNEL: HEDXC1 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER HEAD X-AXIS VELOCITY

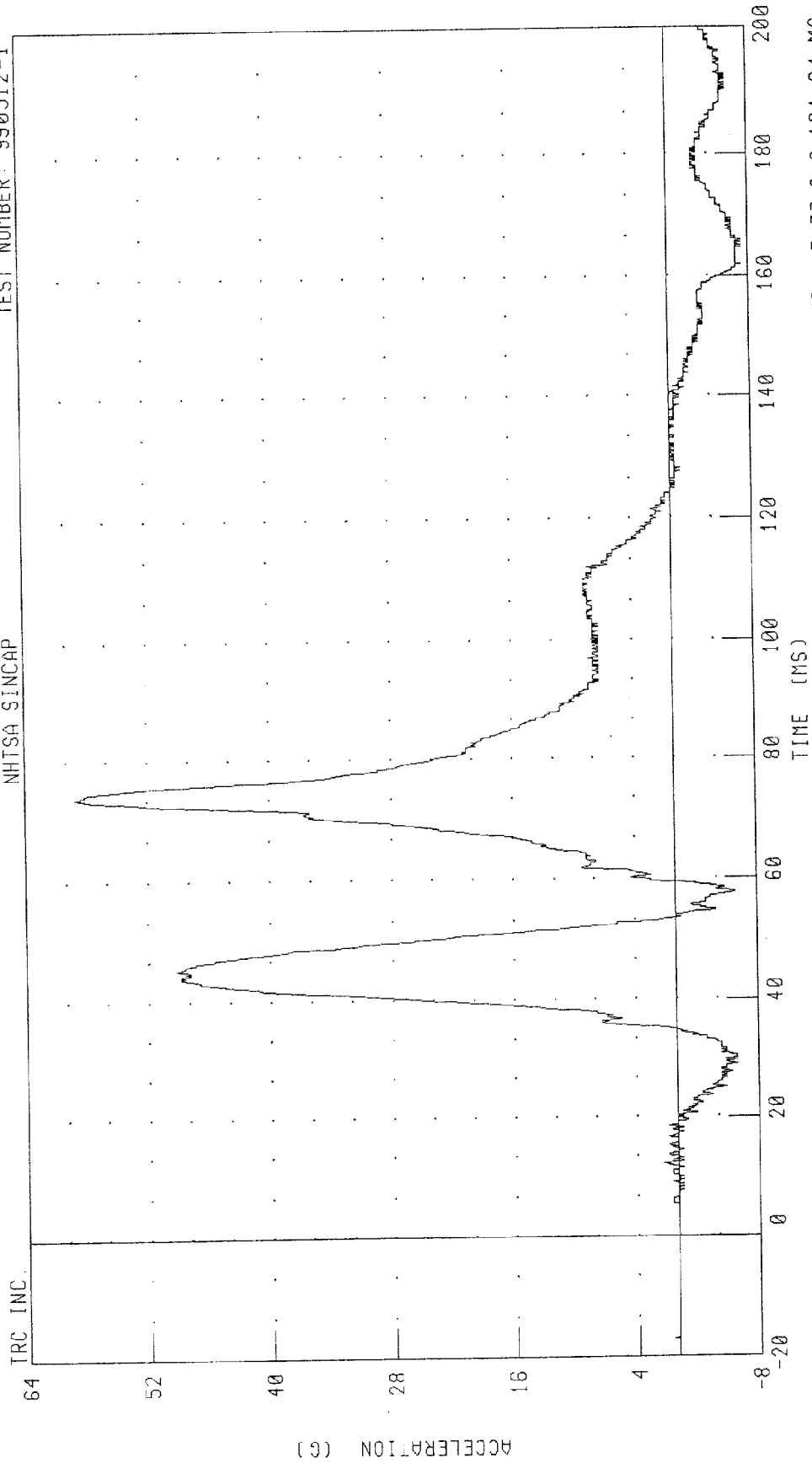


CHANNEL: HEDXVI FILTER: CH. CLASS 180

PEAK DATA: 30.80 KM/H @ 107.28 MS; -0.27 KM/H @ 31.04 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
DRIVER HEAD Y-AXIS ACCELERATION
NHTSA SINCAP

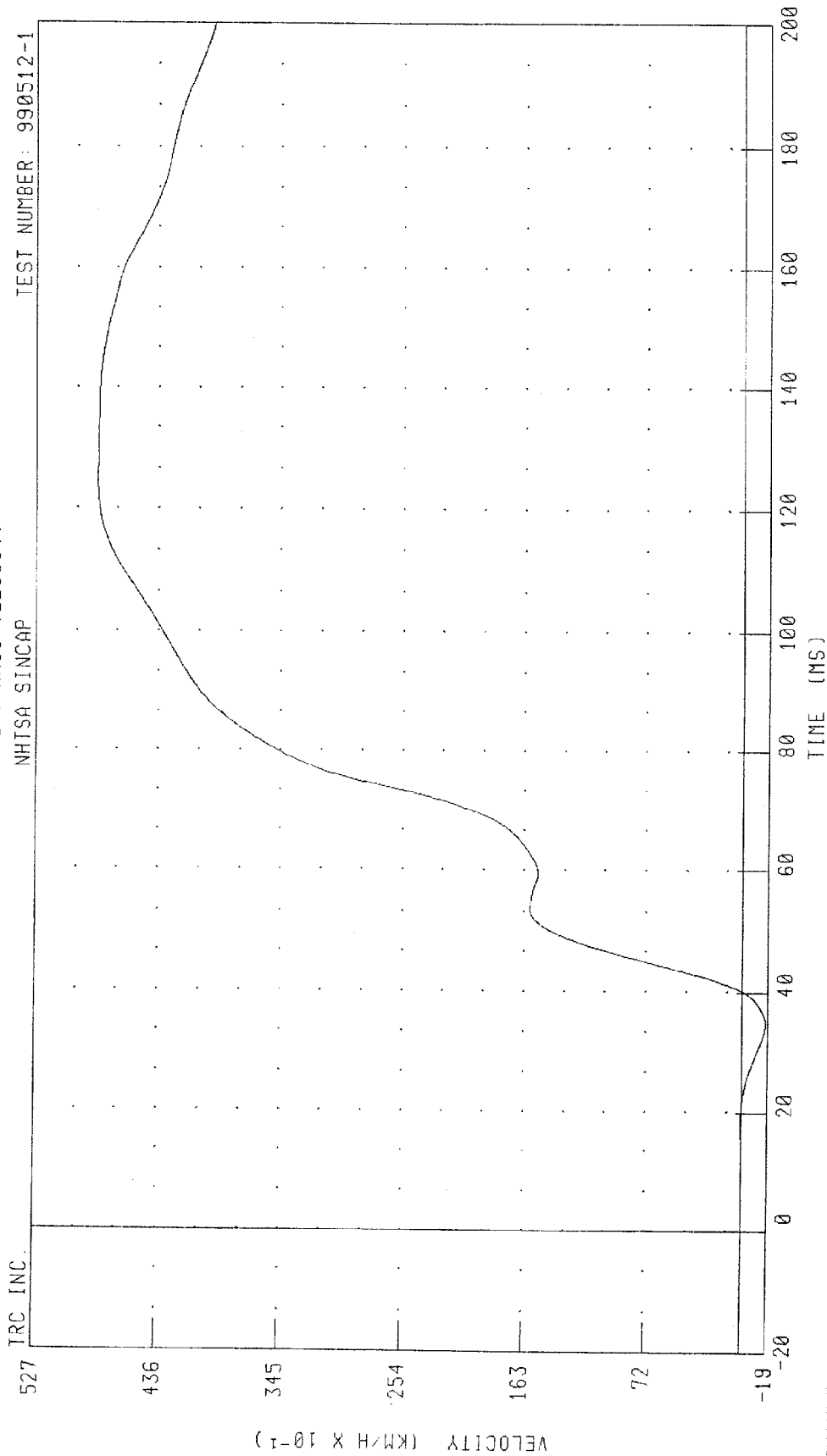
TEST NUMBER: 990512-1



PEAK DATA: 59.07 G @ 73.76 MS, -7.33 G @ 161.84 MS

CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER HEAD Y-AXIS VELOCITY

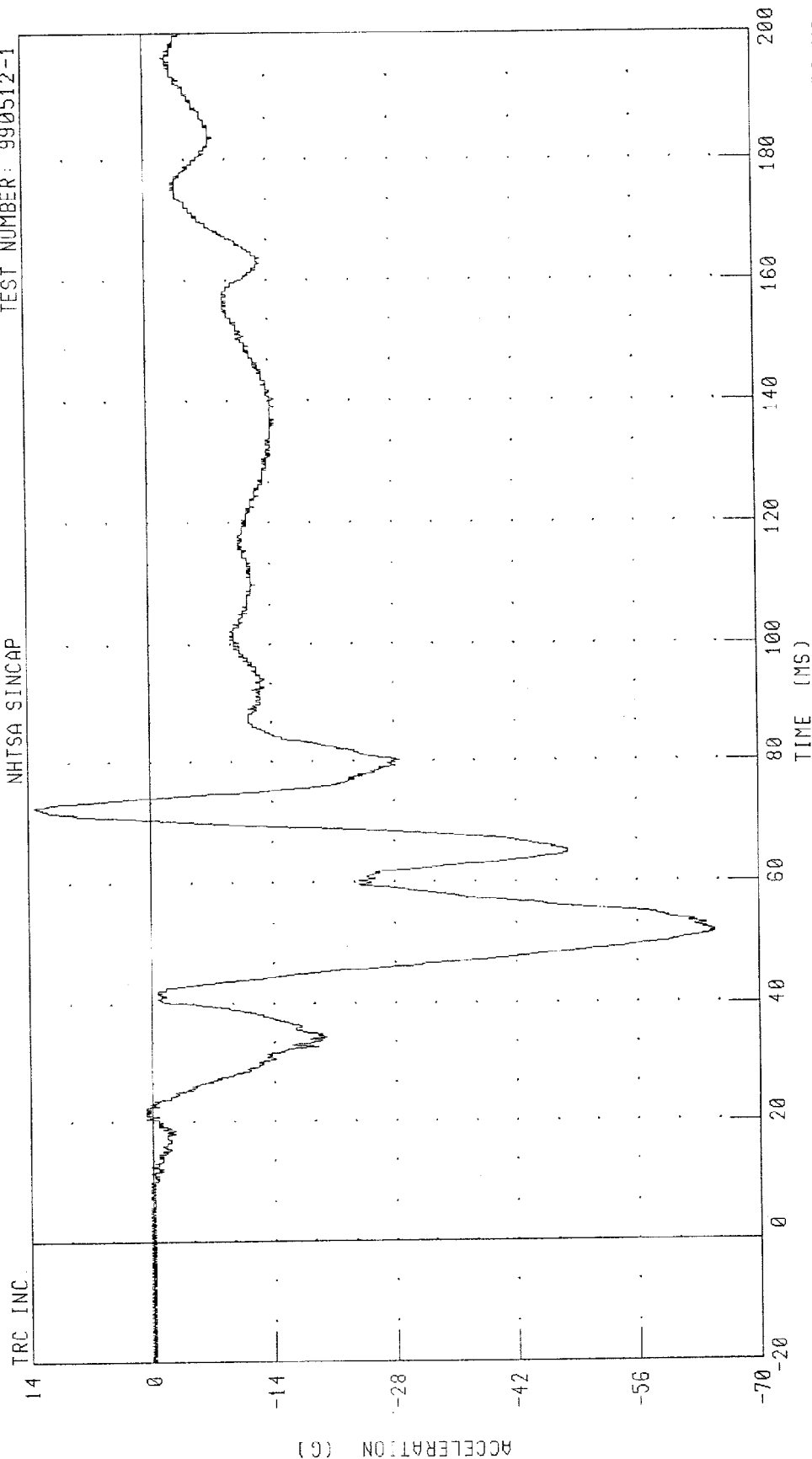


CHANNEL: HEDYVI FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER HEAD Z-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

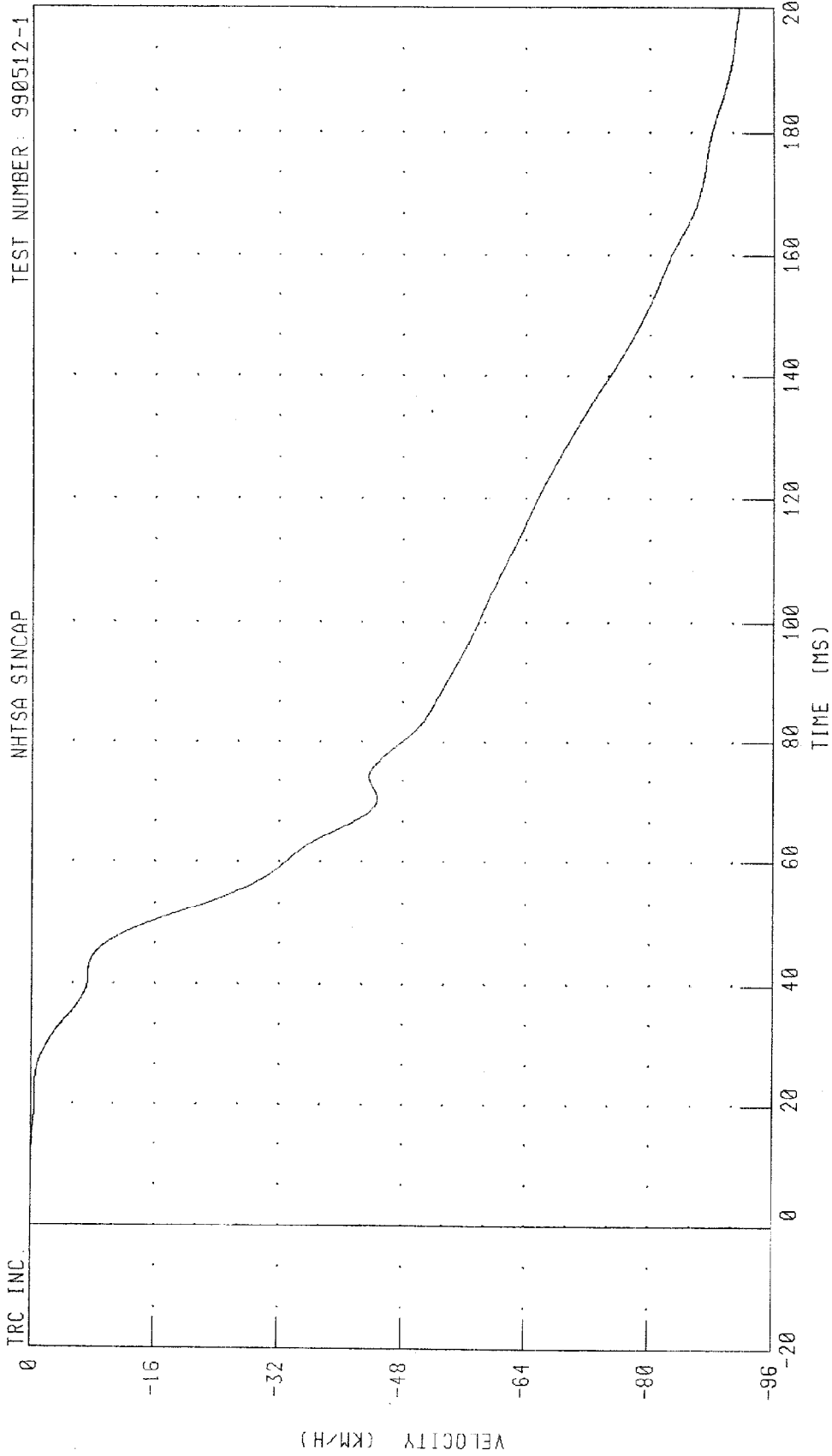


PEAK DATA: 13.33 G @ 72.56 MS; -64.91 G @ 51.52 MS

CHANNEL: HEDZG1 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

DRIVER HEAD Z-AXIS VELOCITY



PEAK DATA: 0.01 KM/H @ 5.52 MS; -91.62 KM/H @ 200.00 MS

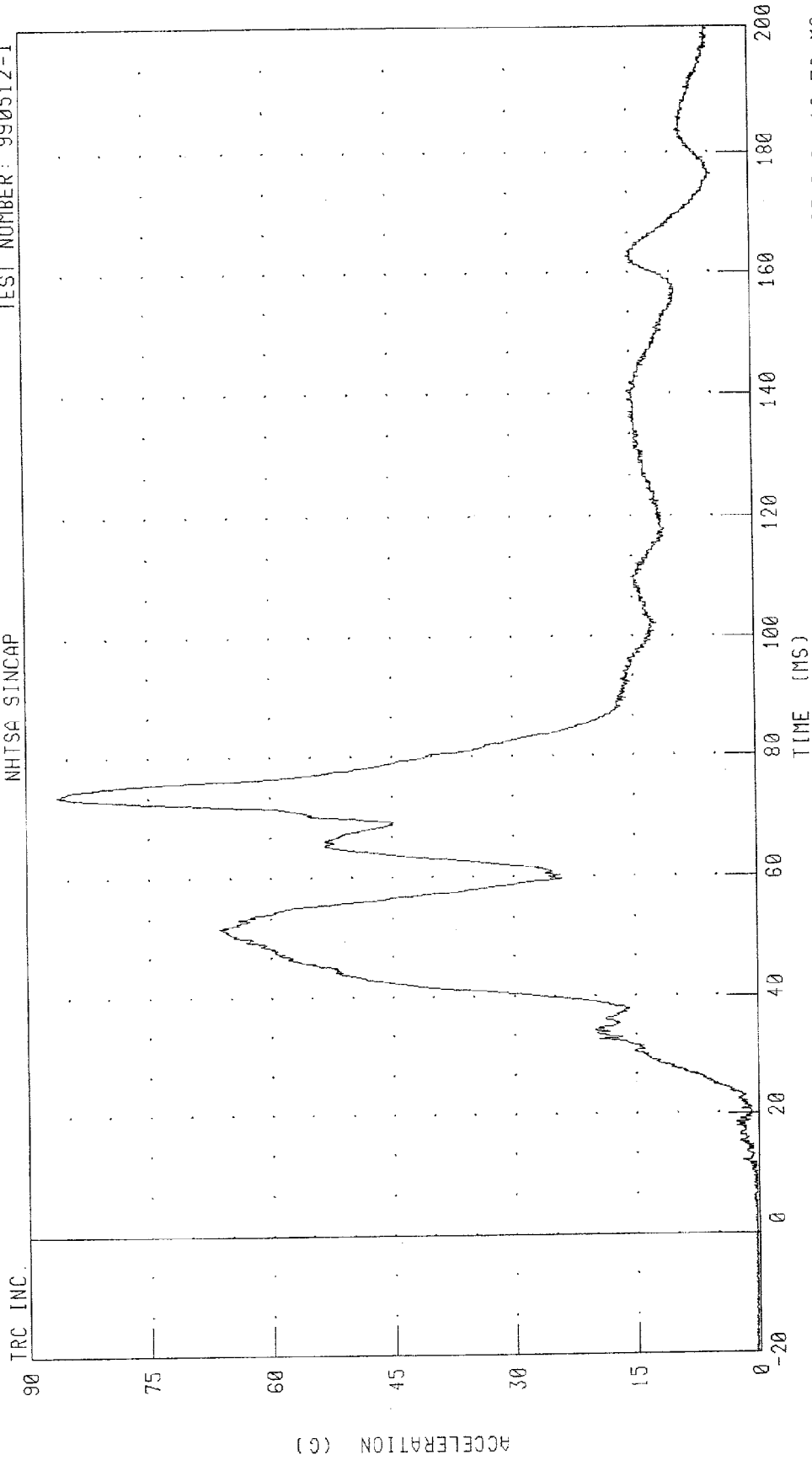
CHANNEL: HEDZVI FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

DRIVER HEAD RESULTANT

NHTSA SINCAP

TEST NUMBER: 990512-1



CHANNEL: HEDRC1 FILTER: CH. CLASS 1000

PEAK DATA: 86.16 G @ 73.76 MS; 0.23 G @ -19.76 MS

Driver's Neck X-Axis Force, NEKXF1, Was Not Recorded
(neck axis load cells were not used)

Driver's Neck Y-Axis Force, NEKYF1, Was Not Recorded
(neck axis load cells were not used)

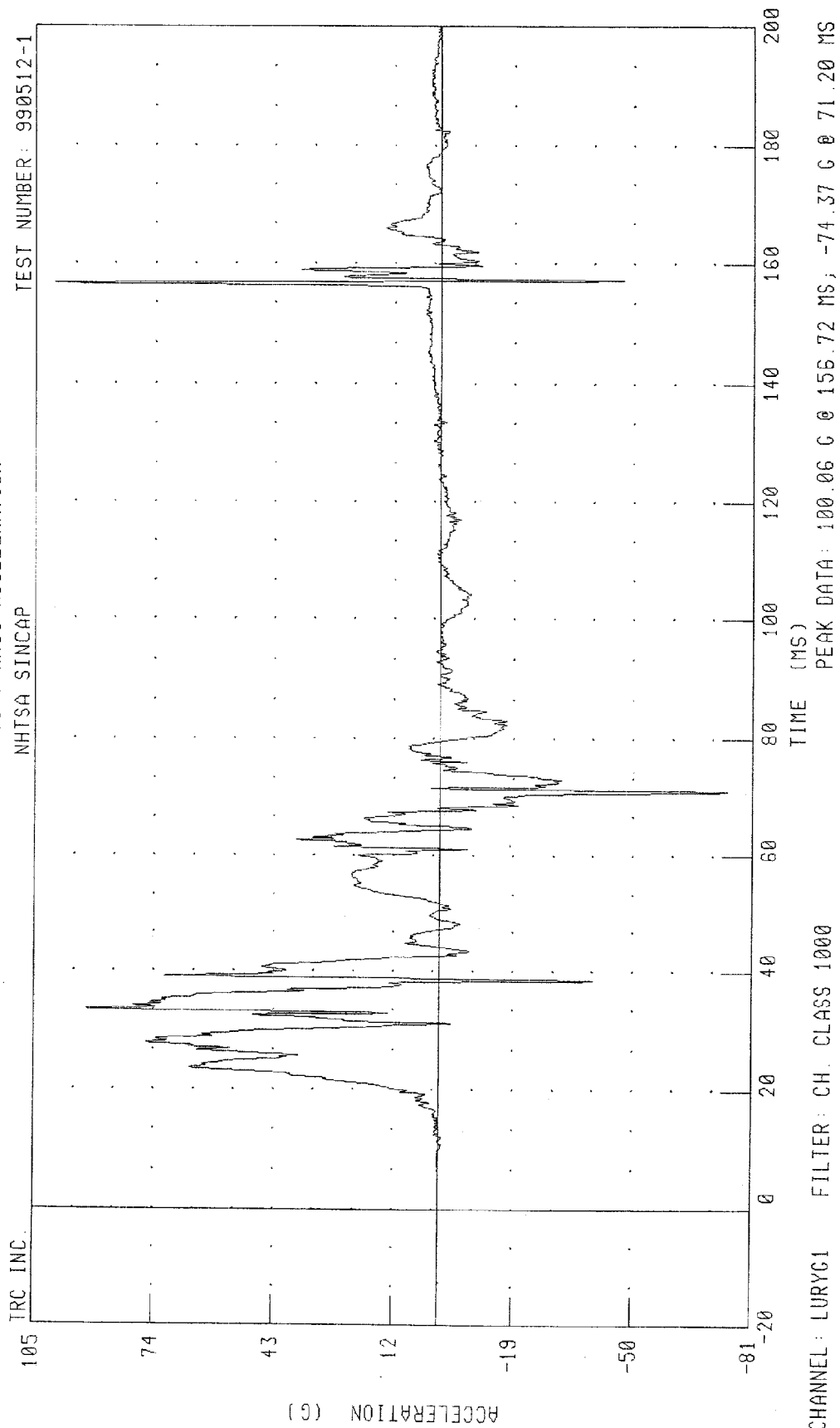
Driver's Neck Z-Axis Force, NEKZF1, Was Not Recorded
(neck axis load cells were not used)

Driver's Neck X-Axis Moment, NEKXM1, Was Not Recorded
(6 axis neck load cells were not used)

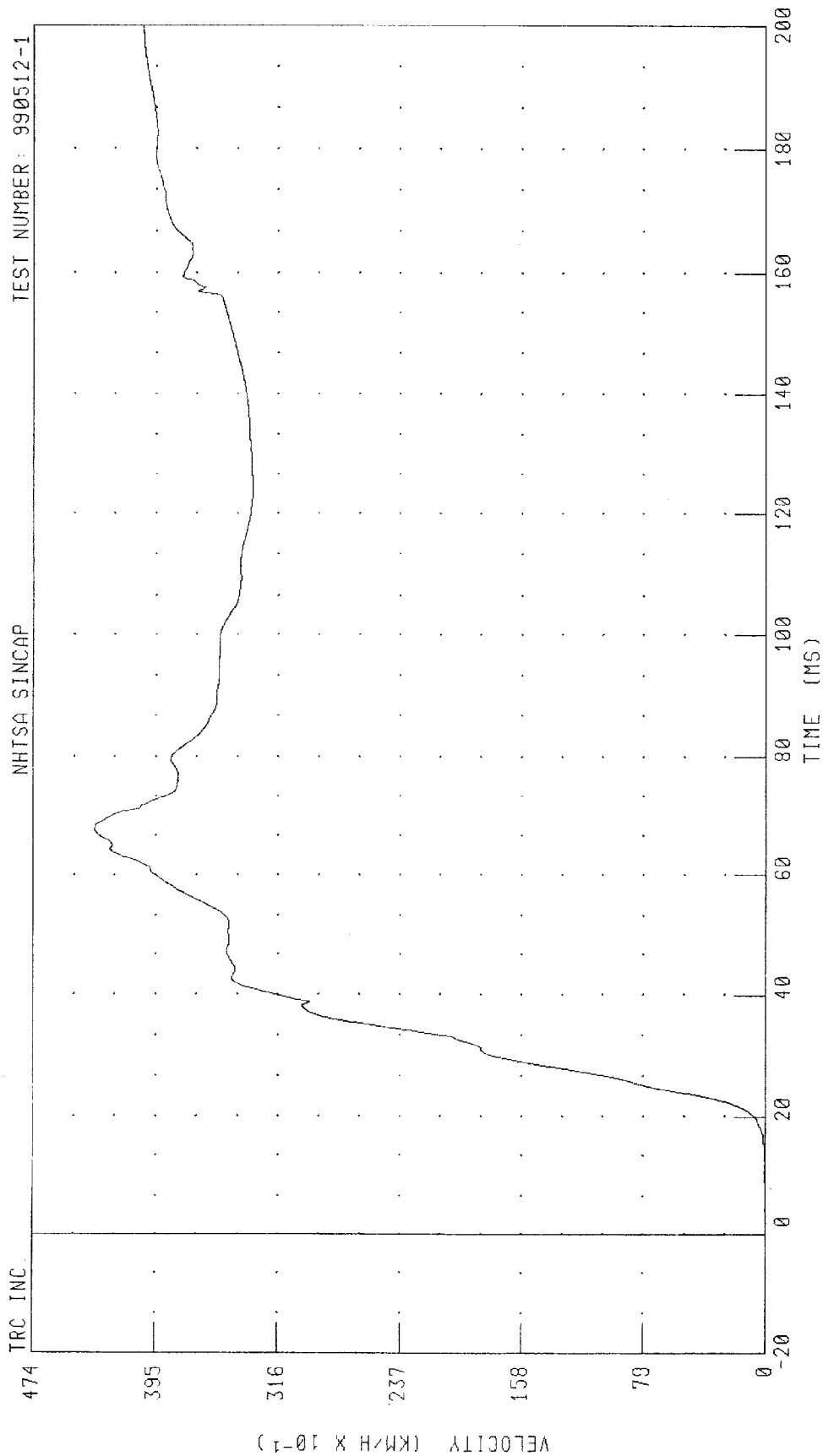
Driver's Neck Y-Axis Moment, NEKYM1, Was Not Recorded
(6 axis neck load cells were not used)

Driver's Neck Z-Axis Moment, NEKZM1, Was Not Recorded
(6 axis neck load cells were not used)

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER UPPER RIB Y-AXIS ACCELERATION



MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
DRIVER UPPER RIB Y-AXIS VELOCITY



PEAK DATA: 43.50 KM/H @ 67.68 MS; 0.00 KM/H @ 0.00 MS

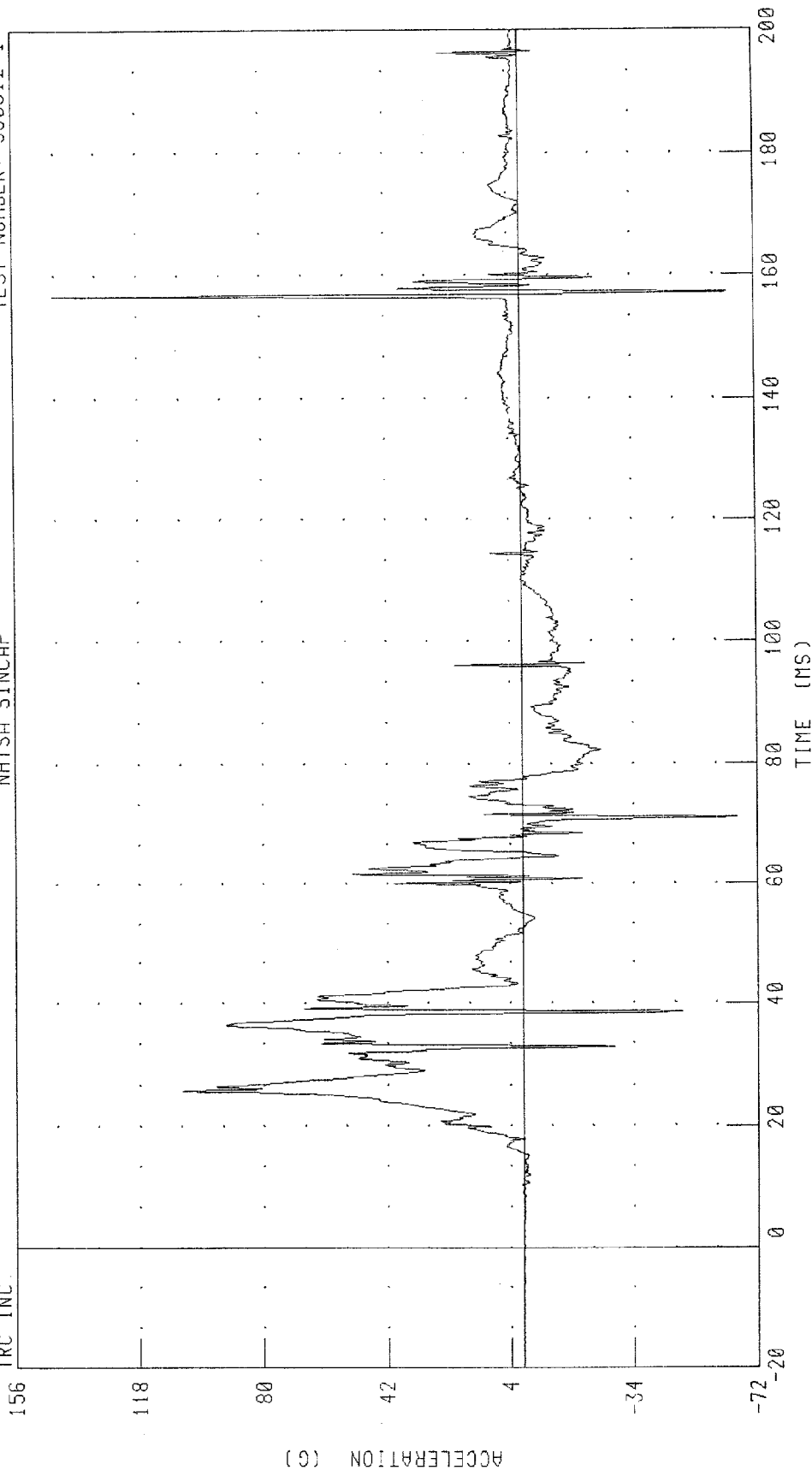
CHANNEL: LURYU1 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
DRIVER LOWER RIB Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

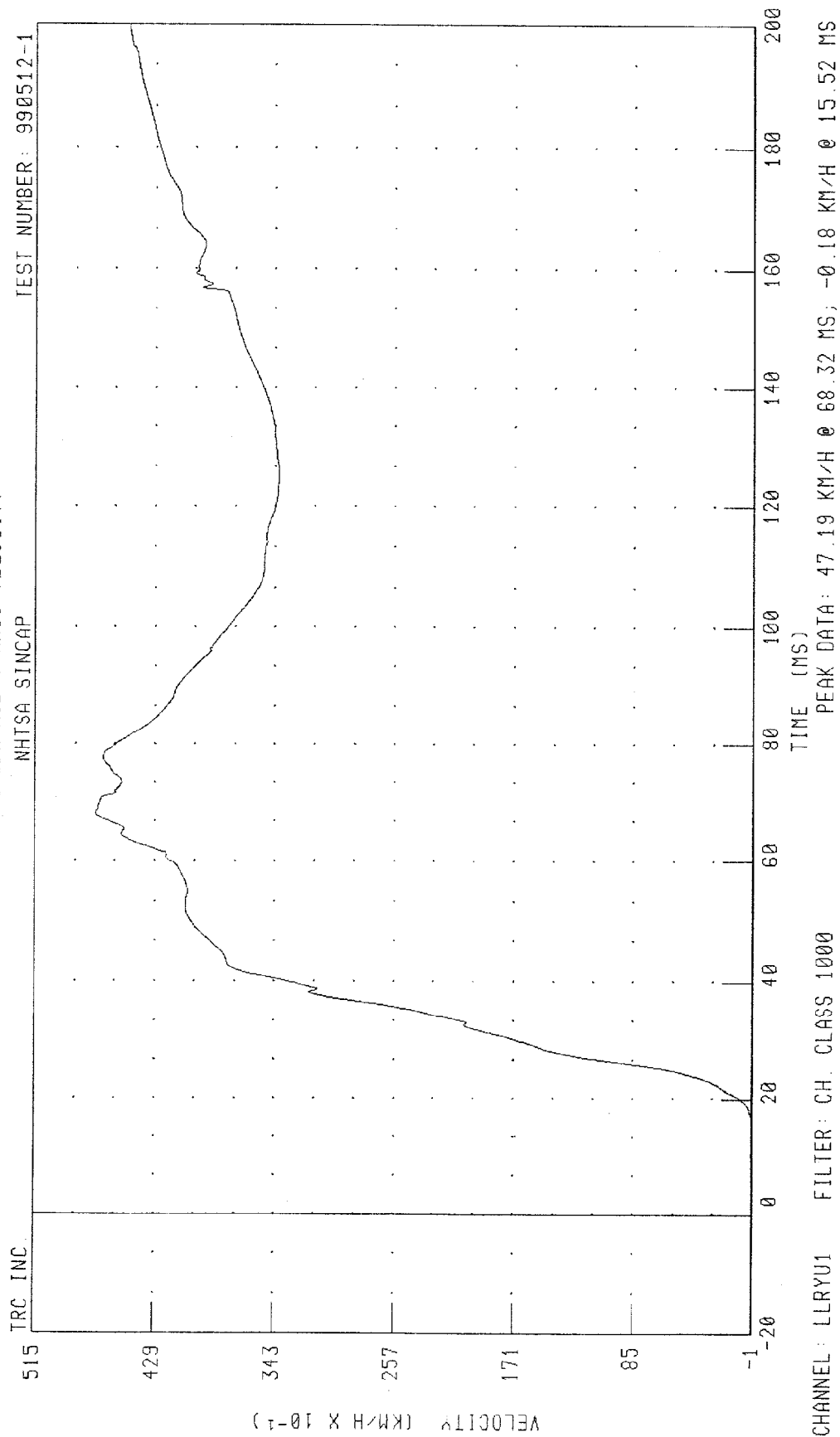
TRC INC.



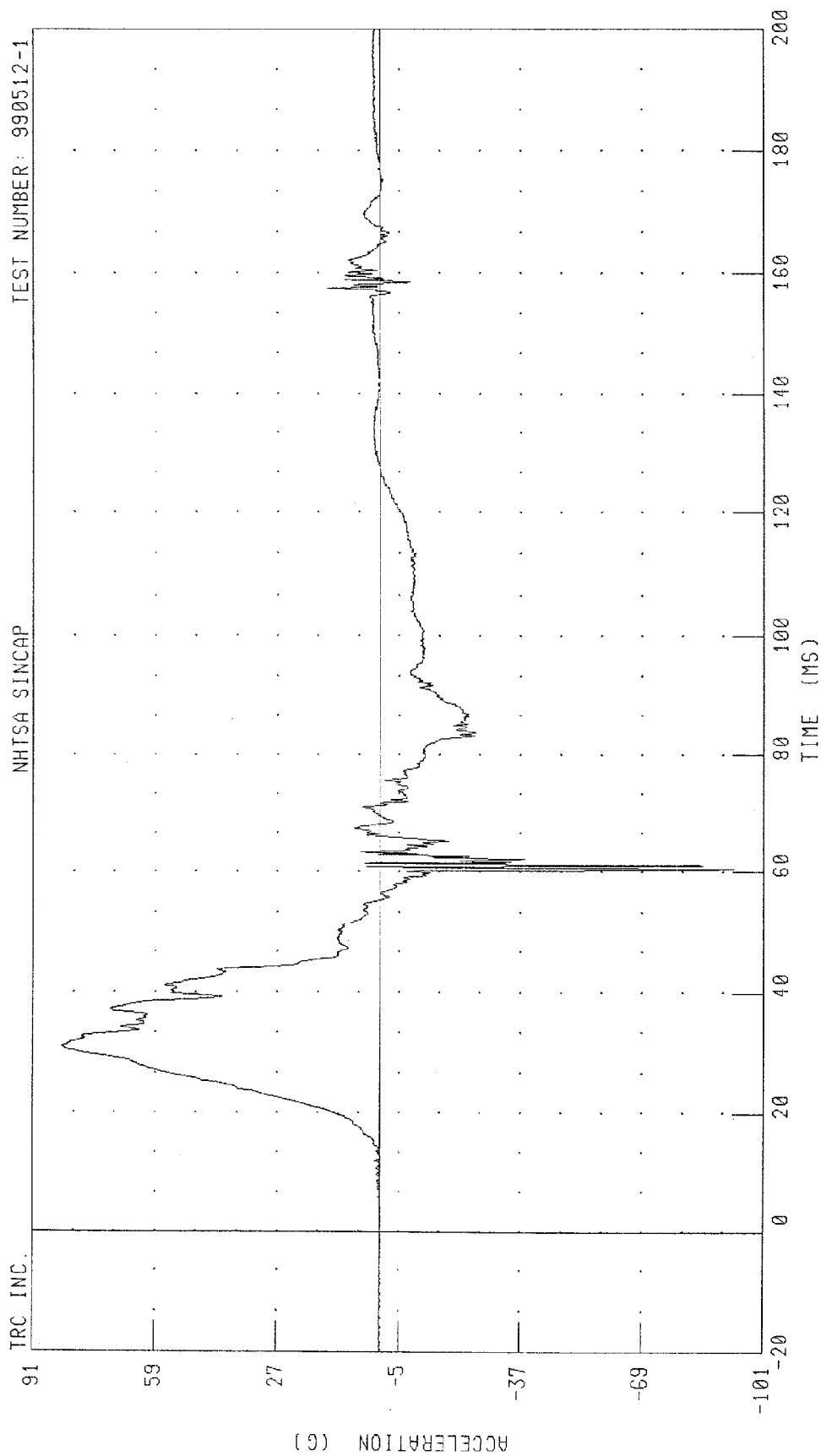
PEAK DATA: 144.01 G @ 156.72 MS; -65.92 G @ 71.20 MS

CHANNEL: LLRYG1 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER LOWER RIB Y-AXIS VELOCITY

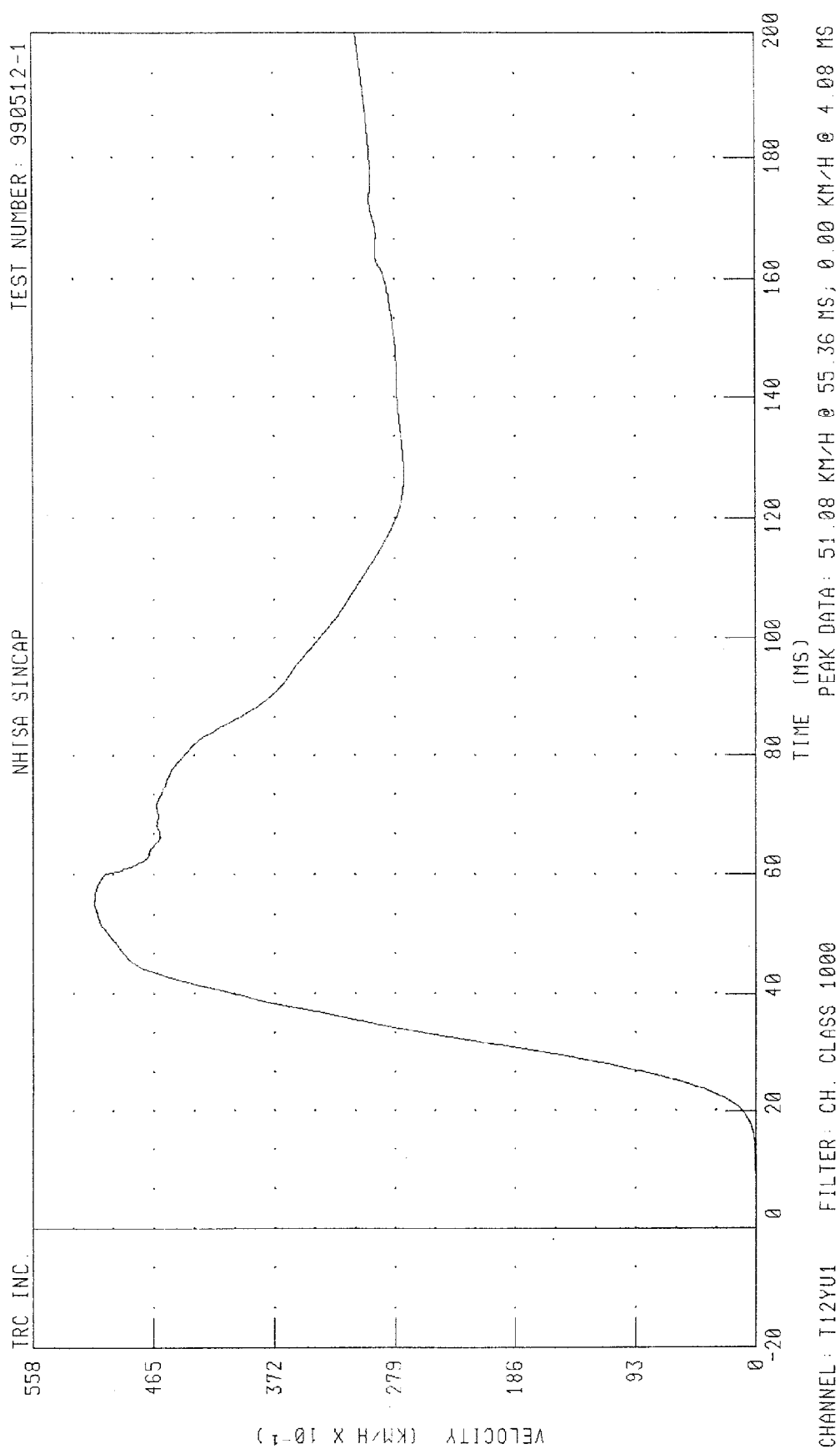


MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
DRIVER LOWER SPINE Y-AXIS ACCELERATION



CHANNEL: T12YC1 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER LOWER SPINE Y-AXIS VELOCITY

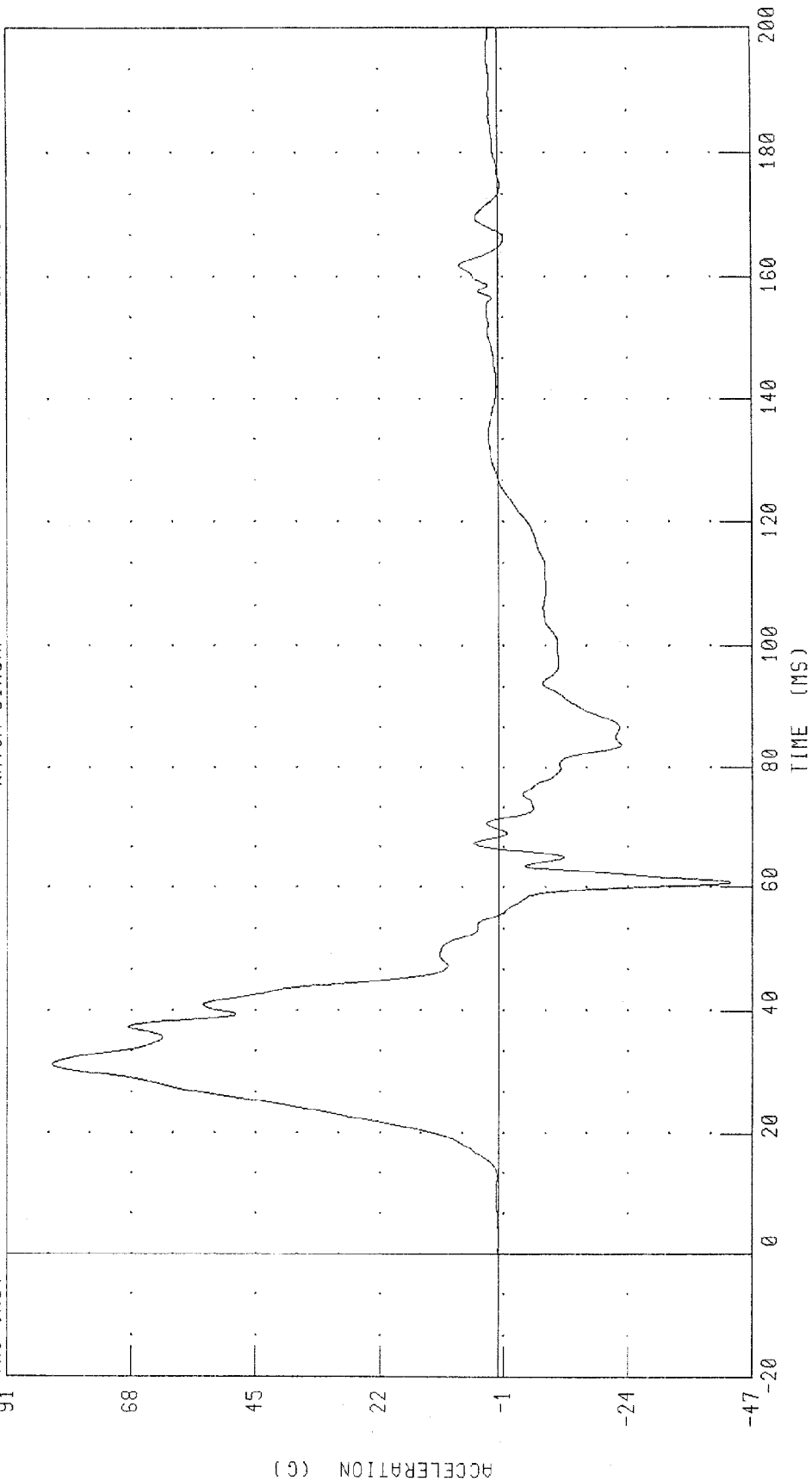


MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
DRIVER LOWER SPINE Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

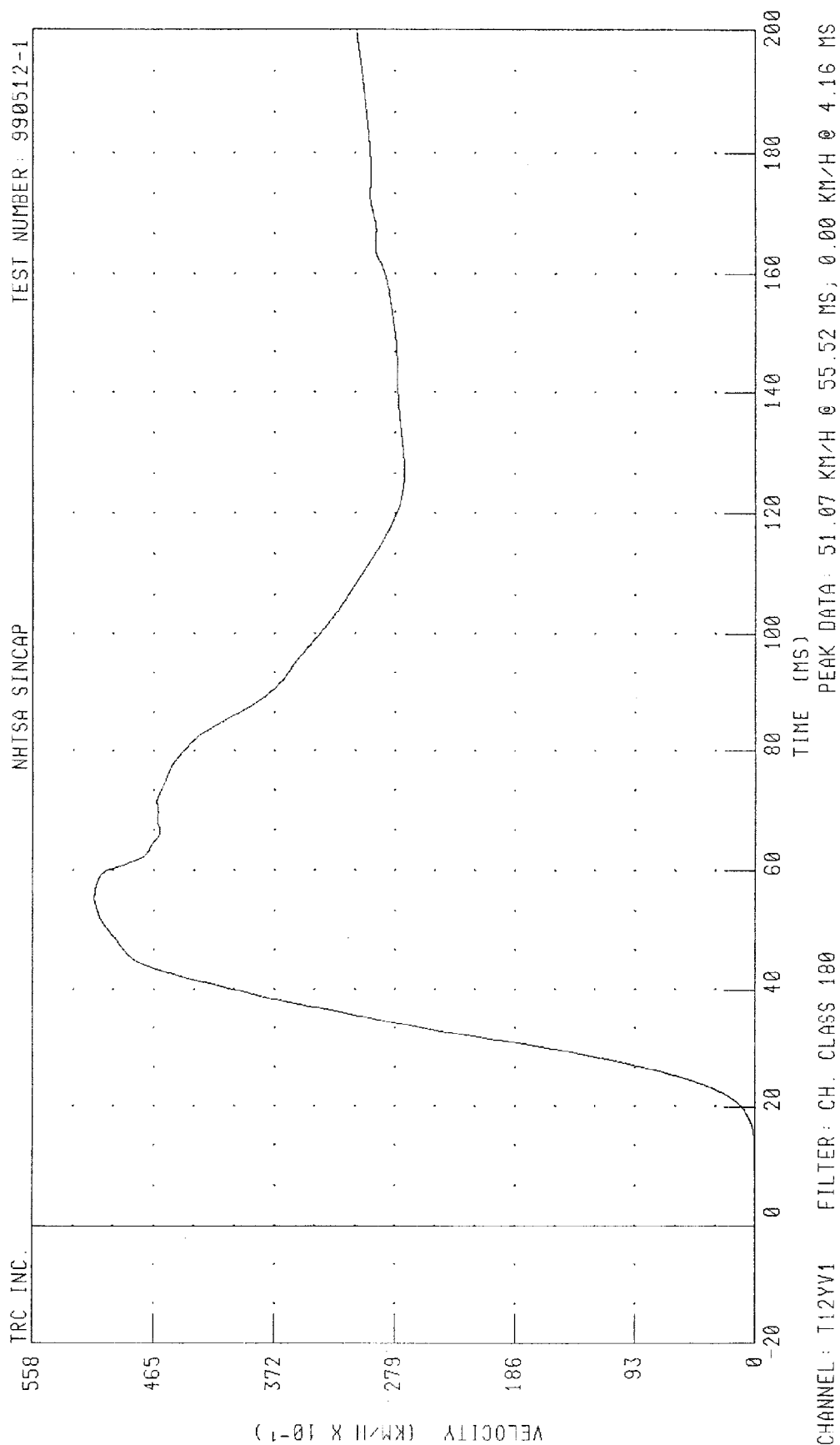
TRC INC.



PEAK DATA: 82.70 G @ 31.12 MS; -42.92 G @ 60.80 MS

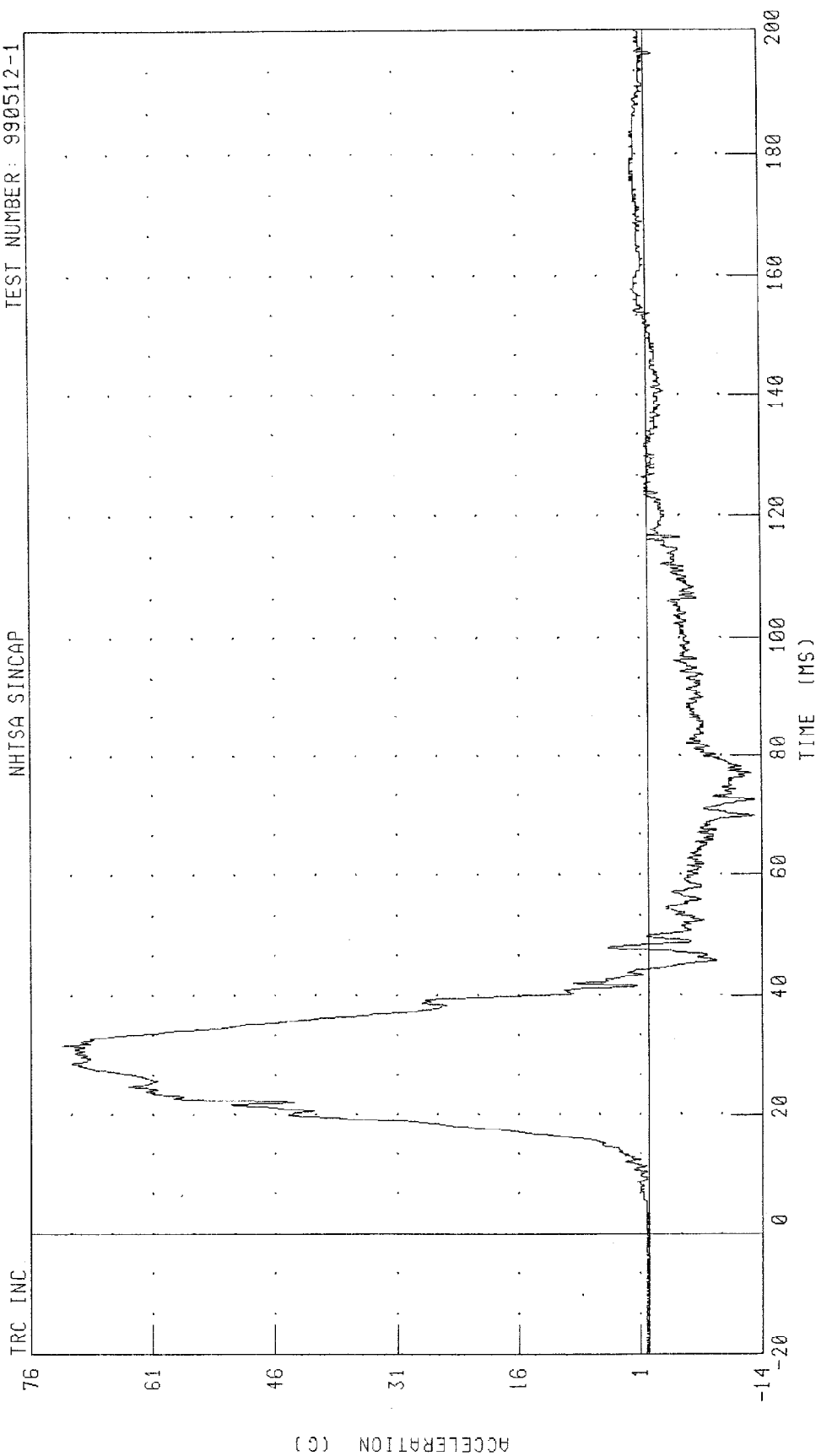
CHANNEL: T12YC1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER LOWER SPINE Y-AXIS VELOCITY



MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER PELVIS Y-AXIS ACCELERATION
 NHTSA SINCAP

TEST NUMBER: 990512-1



CHANNEL: PEVYC1 FILTER: CH. CLASS 1000

PEAK DATA: 72.15 G @ 31.68 MS, -13.13 G @ 69.84 MS

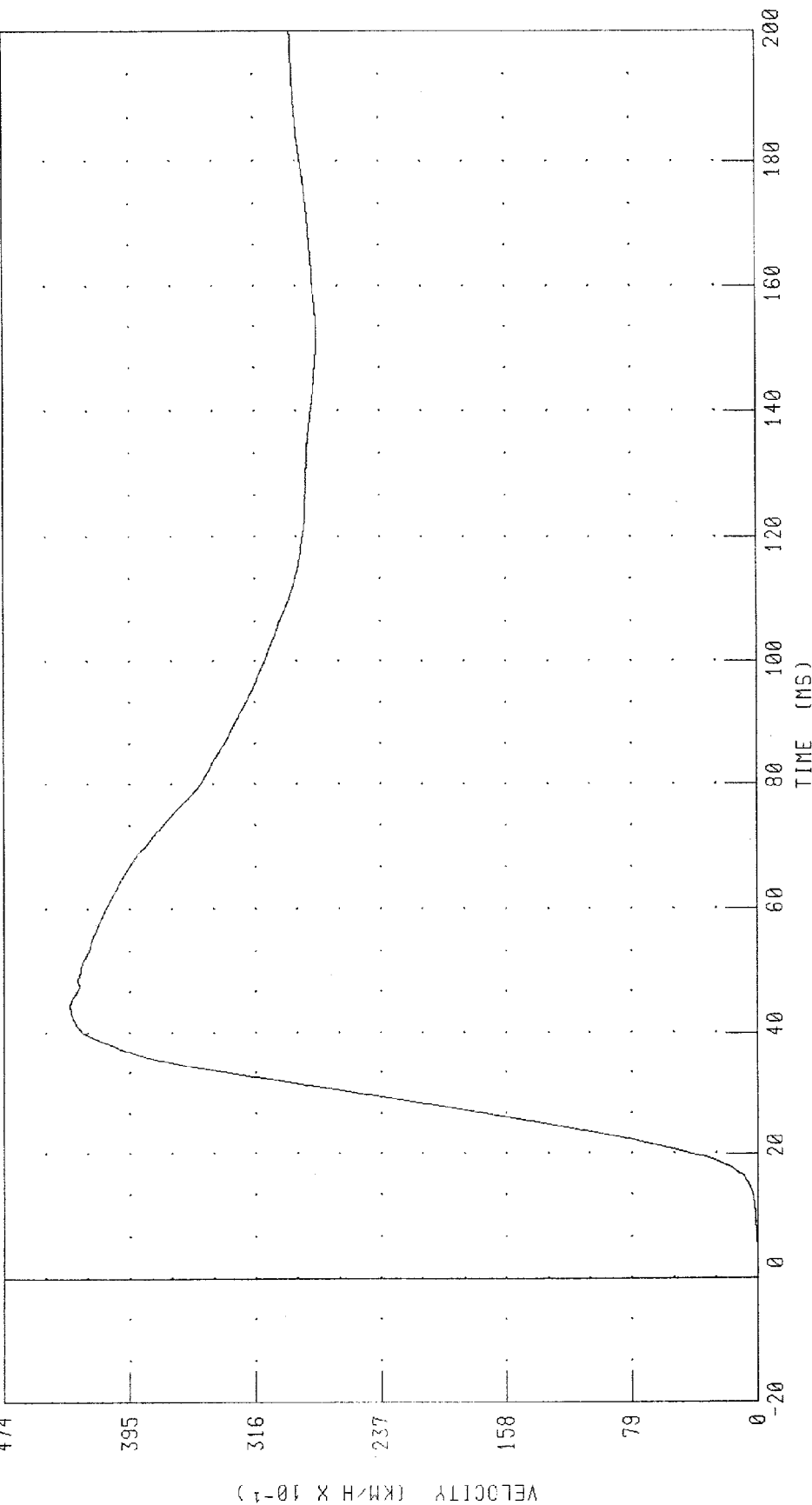
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

DRIVER PELVIS Y-AXIS VELOCITY

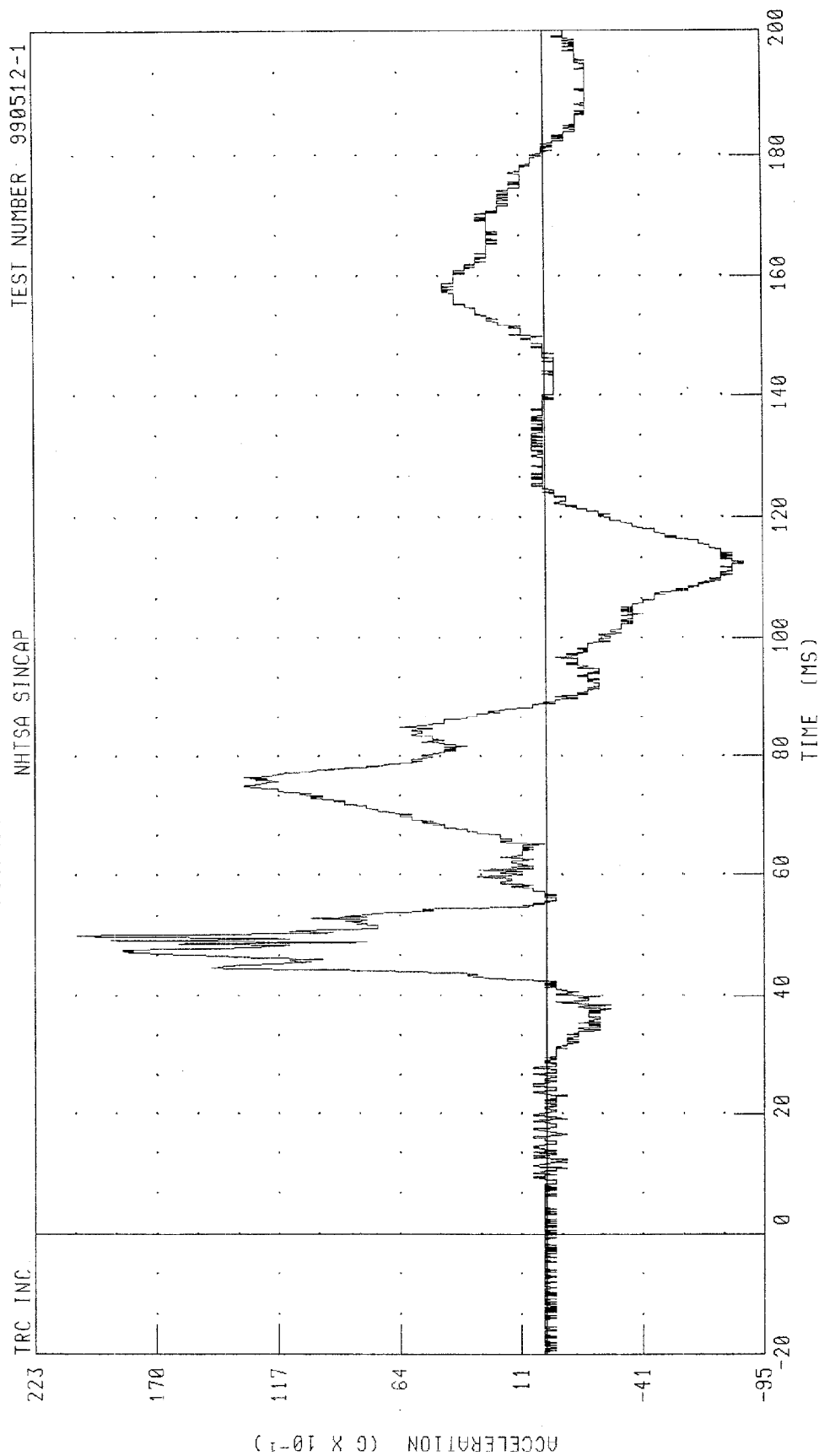
NHTSA SINCAP

TEST NUMBER: 990512-1

TRC INC.



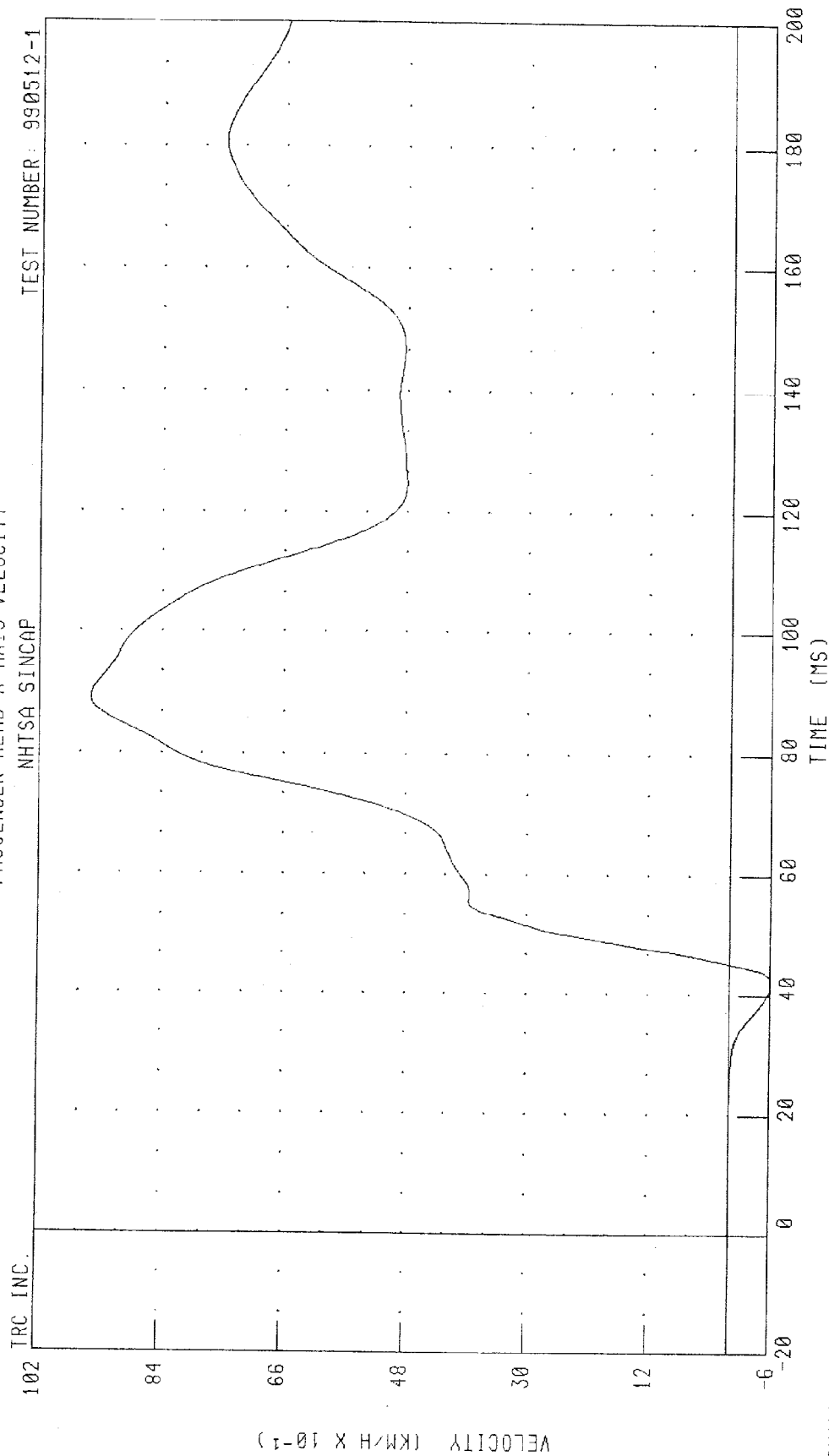
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
PASSENGER HEAD X-AXIS ACCELERATION



PEAK DATA: 20.46 G @ 49.84 MS, -8.64 G @ 112.40 MS

CHANNEL: HEDXC4 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
PASSENGER HEAD X-AXIS VELOCITY



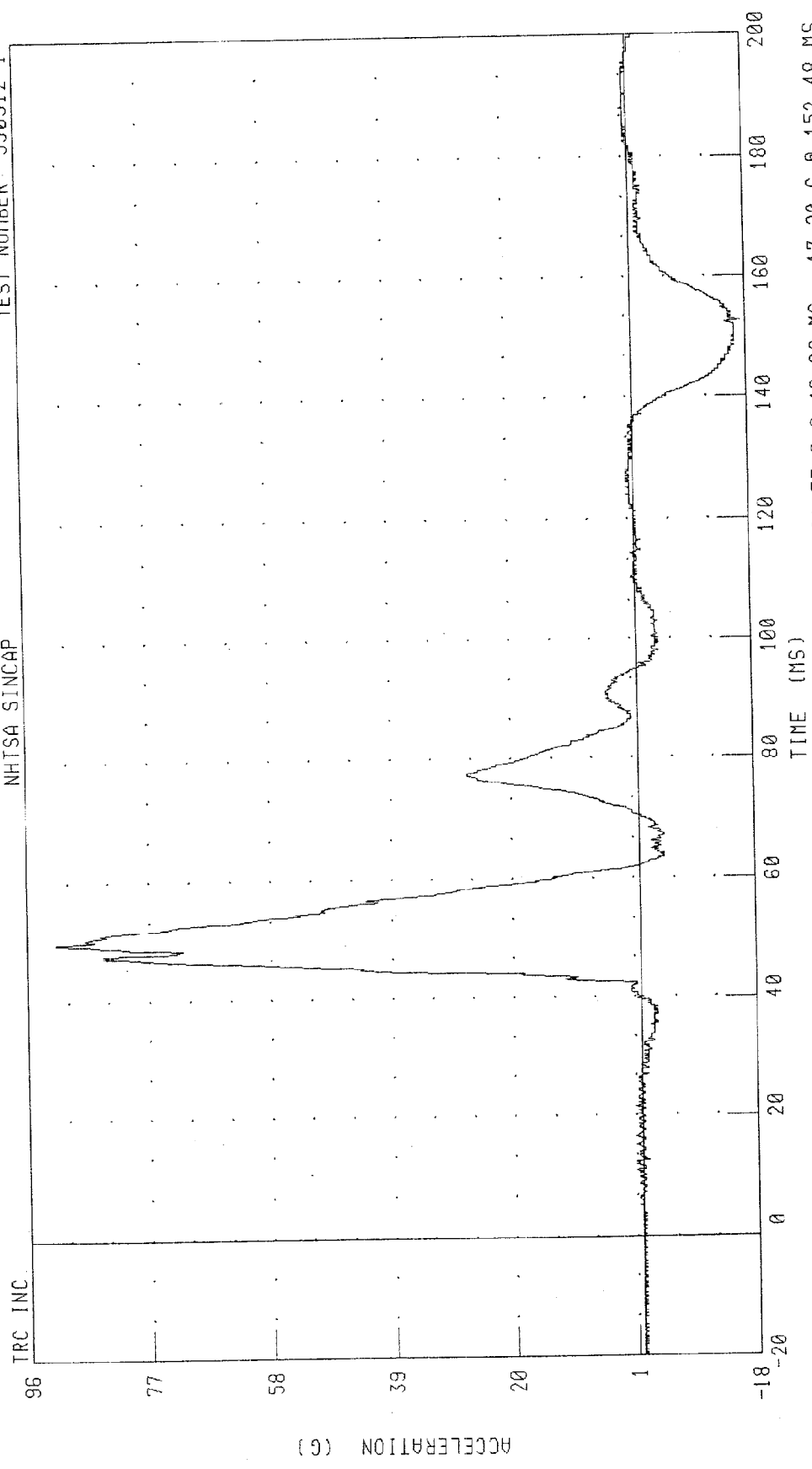
CHANNEL: HEDXVJ FILTER: CH. CLASS 180 PEAK DATA: 9.44 KM/H @ 89.20 MS, -0.62 KM/H @ 42.08 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

PASSENGER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP



PEAK DATA: 91.53 G @ 49.60 MS; -17.20 G @ 152.48 MS

CHANNEL: HEDYC4 FILTER: CH. CLASS 1000

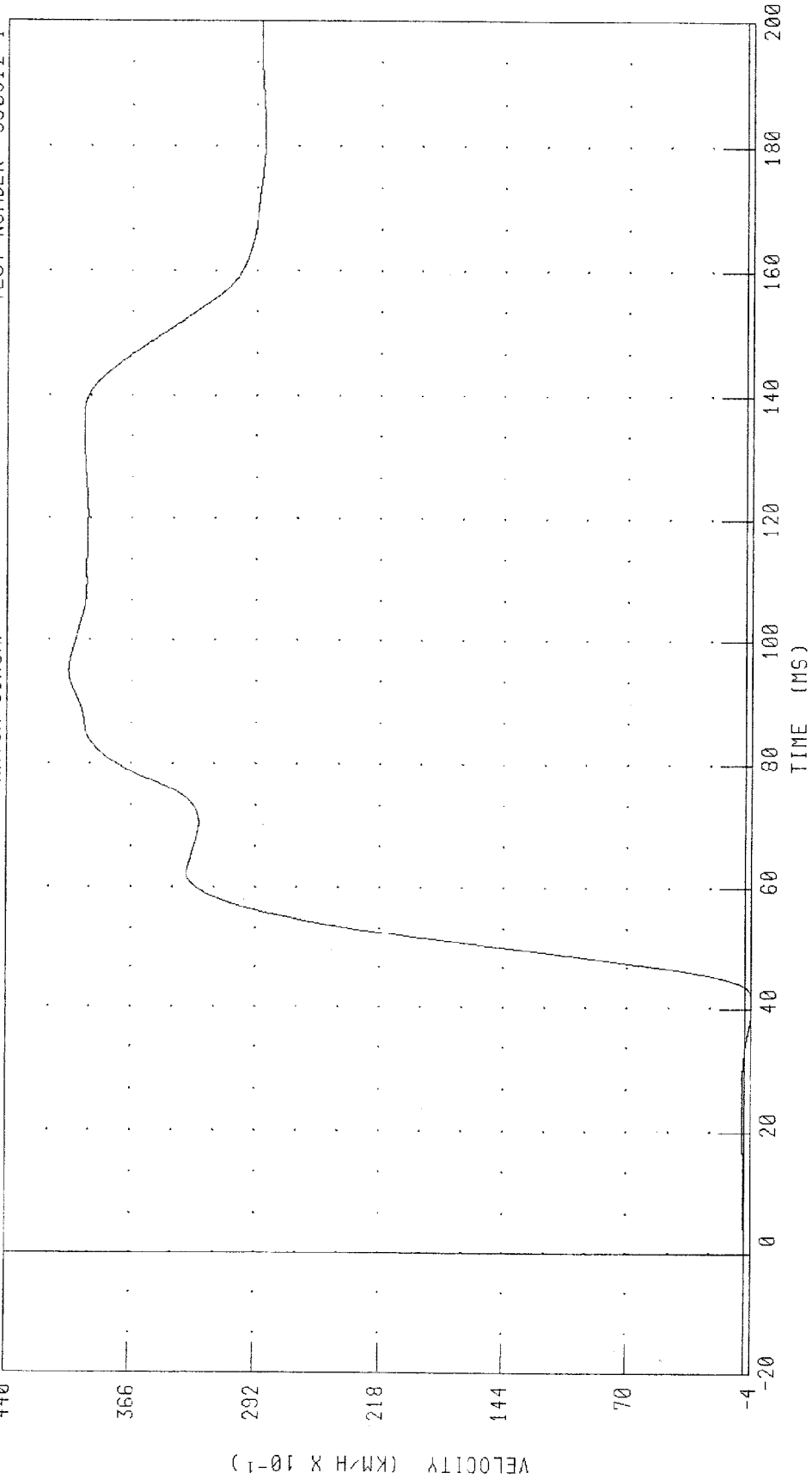
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

PASSENGER HEAD Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 40.35 KM/H @ 95.12 MS; -0.45 KM/H @ 39.92 MS

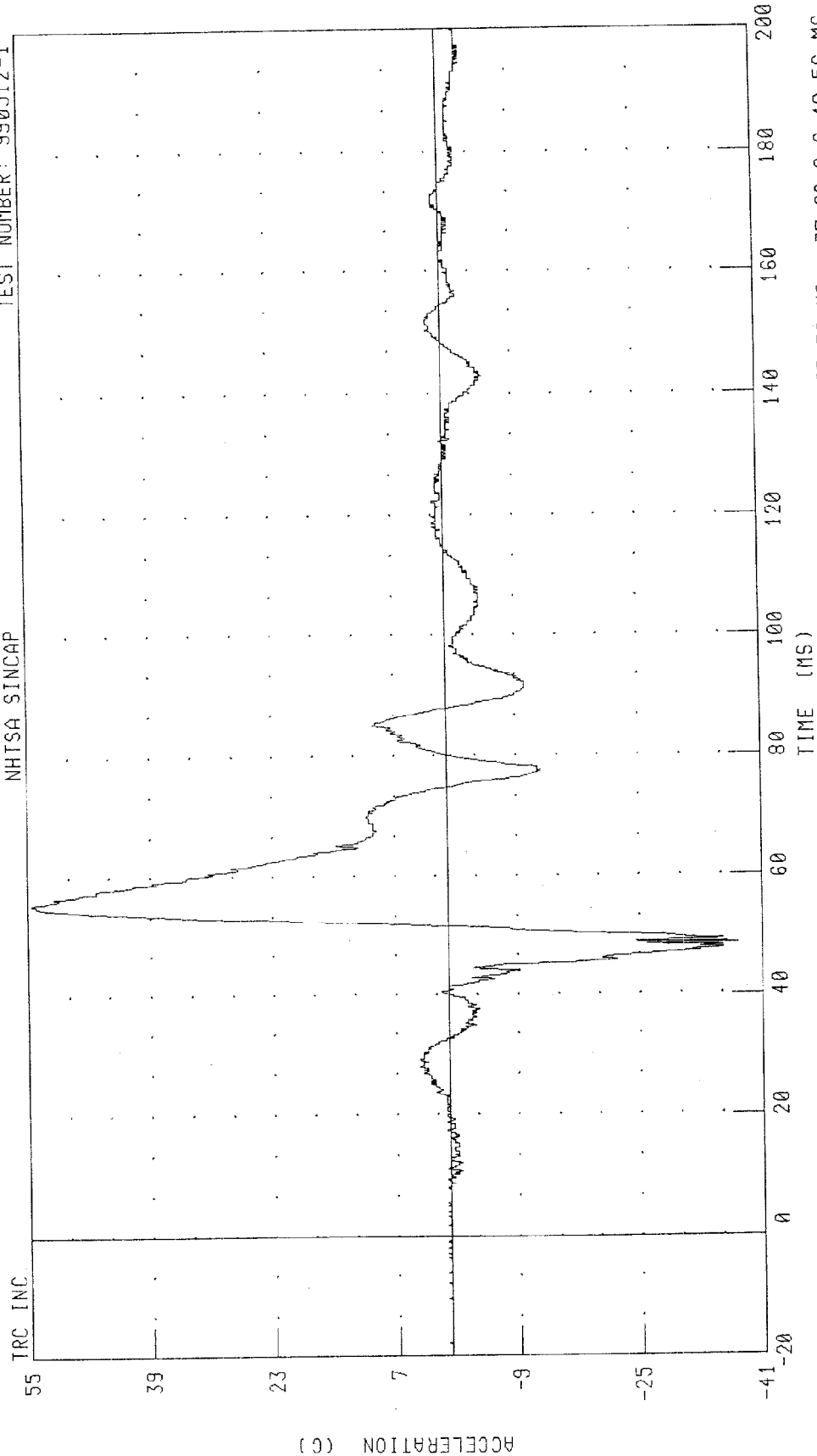
FILTER: CH. CLASS 180

CHANNEL: HEDYVJ

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
PASSENGER HEAD Z-AXIS ACCELERATION

TEST NUMBER: 990512-1

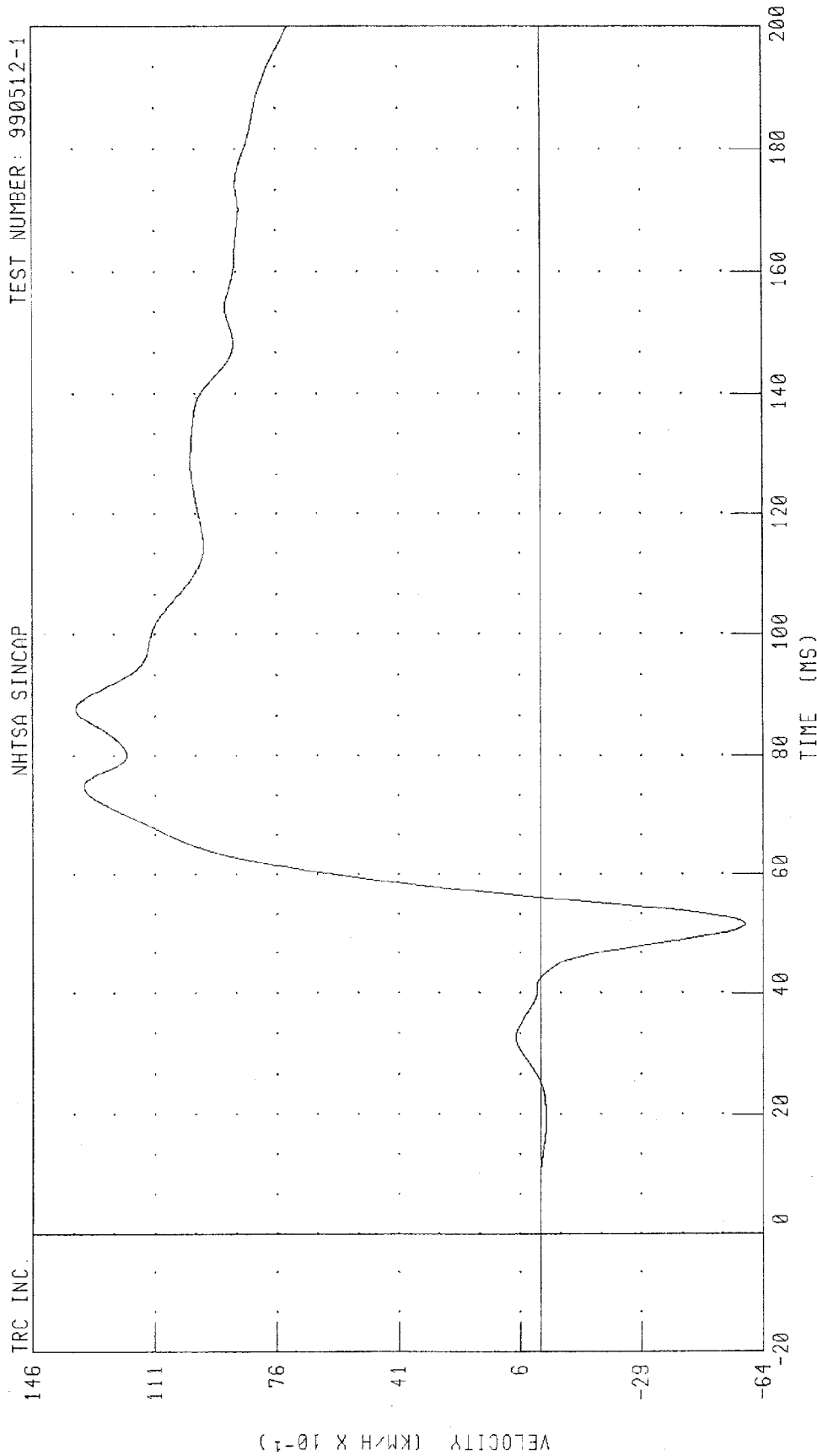
NHTSA SINCAP



PEAK DATA: 54.47 G @ 55.52 MS; -37.80 G @ 48.56 MS

CHANNEL: HEDZC4 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
PASSENGER HEAD Z-AXIS VELOCITY



PEAK DATA: 13.36 KM/H @ 87.92 MS; -5.89 KM/H @ 51.60 MS

CHANNEL: HEDZVJ FILTER: CH. CLASS 180

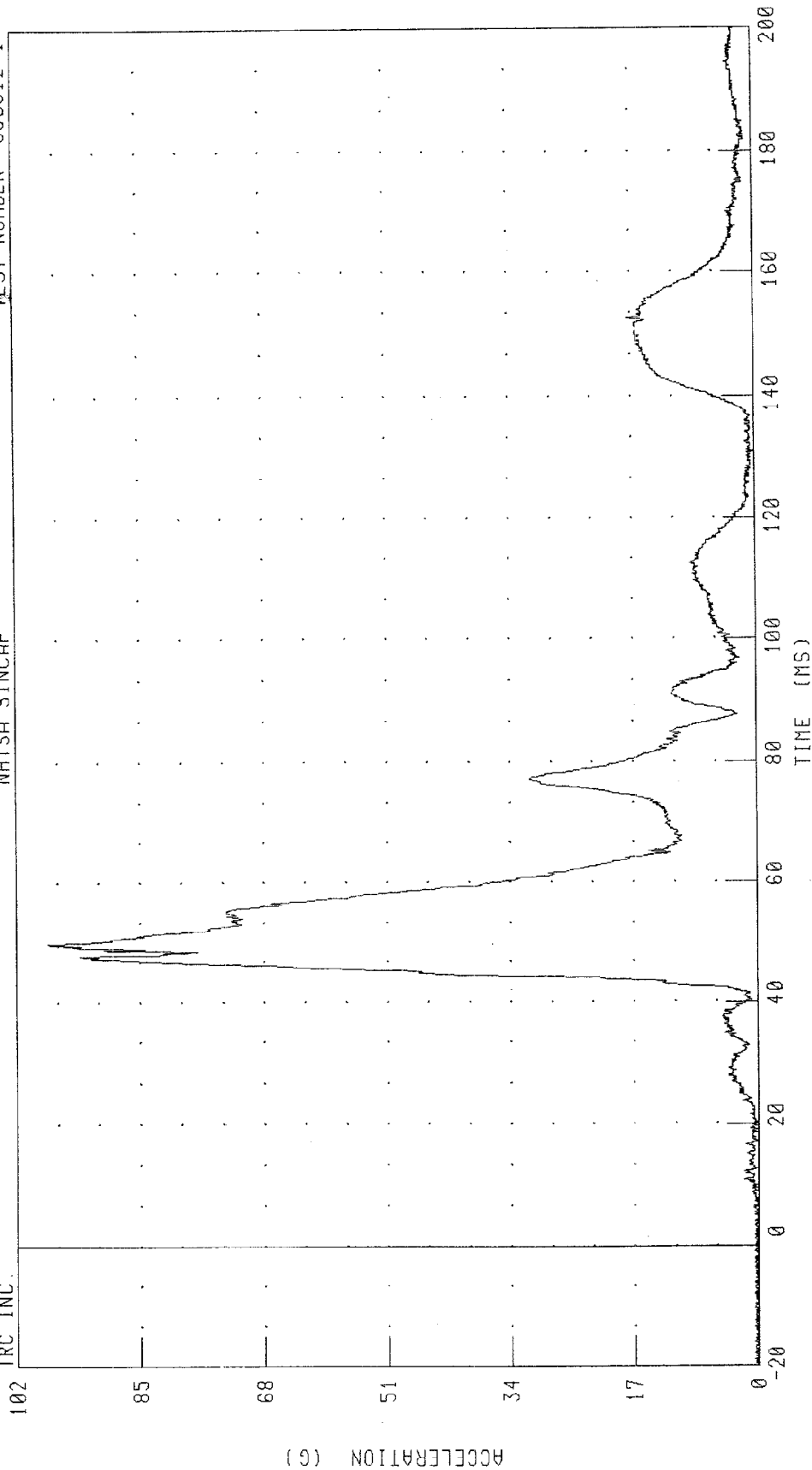
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

PASSENGER HEAD RESULTANT

NHTSA SINCAP

TEST NUMBER: 990512-1

TRC INC.



CHANNEL: HEDRC4 FILTER: CH. CLASS 1000

PEAK DATA: 97.66 G @ 49.68 MS, 0.14 G @ -20.00 MS

Left Rear Passenger's Neck X-Axis Force, NEKXF4, Was Not Recorded
(neck axis load cells were not used)

Left Rear Passenger's Neck Y-Axis Force, NEKYF4, Was Not Recorded
(neck axis load cells were not used)

Left Rear Passenger's Neck Z-Axis Force, NEKZF4, Was Not Recorded
(neck axis load cells were not used)

Left Rear Passenger's Neck X-Axis Moment, NEKXM4, Was Not Recorded
(6 axis neck load cells were not used)

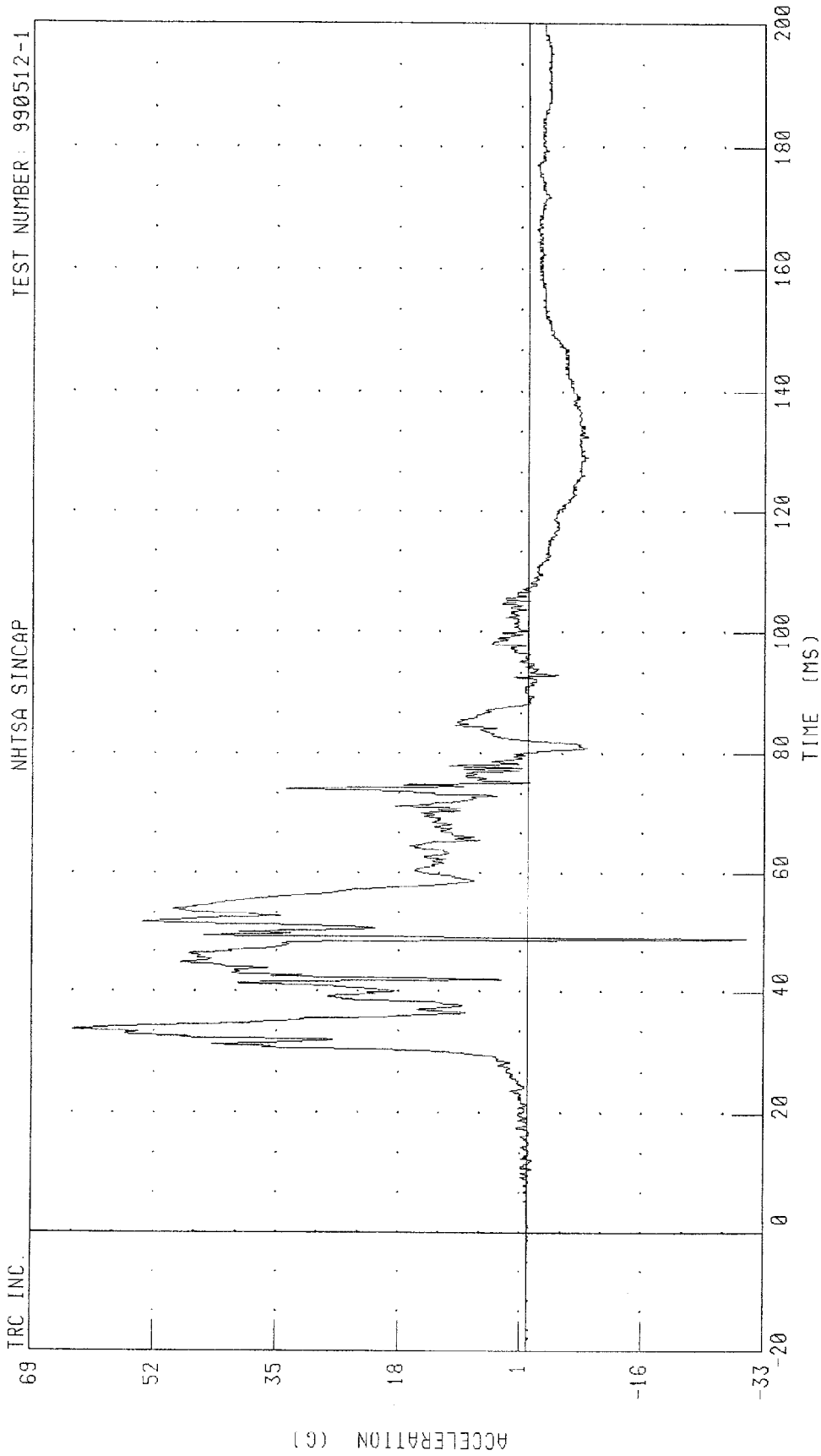
Left Rear Passenger's Neck Y-Axis Moment, NEKYM4, Was Not Recorded
(6 axis neck load cells were not used)

Left Rear Passenger's Neck Z-Axis Moment, NEKZM4, Was Not Recorded
(6 axis neck load cells were not used)

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

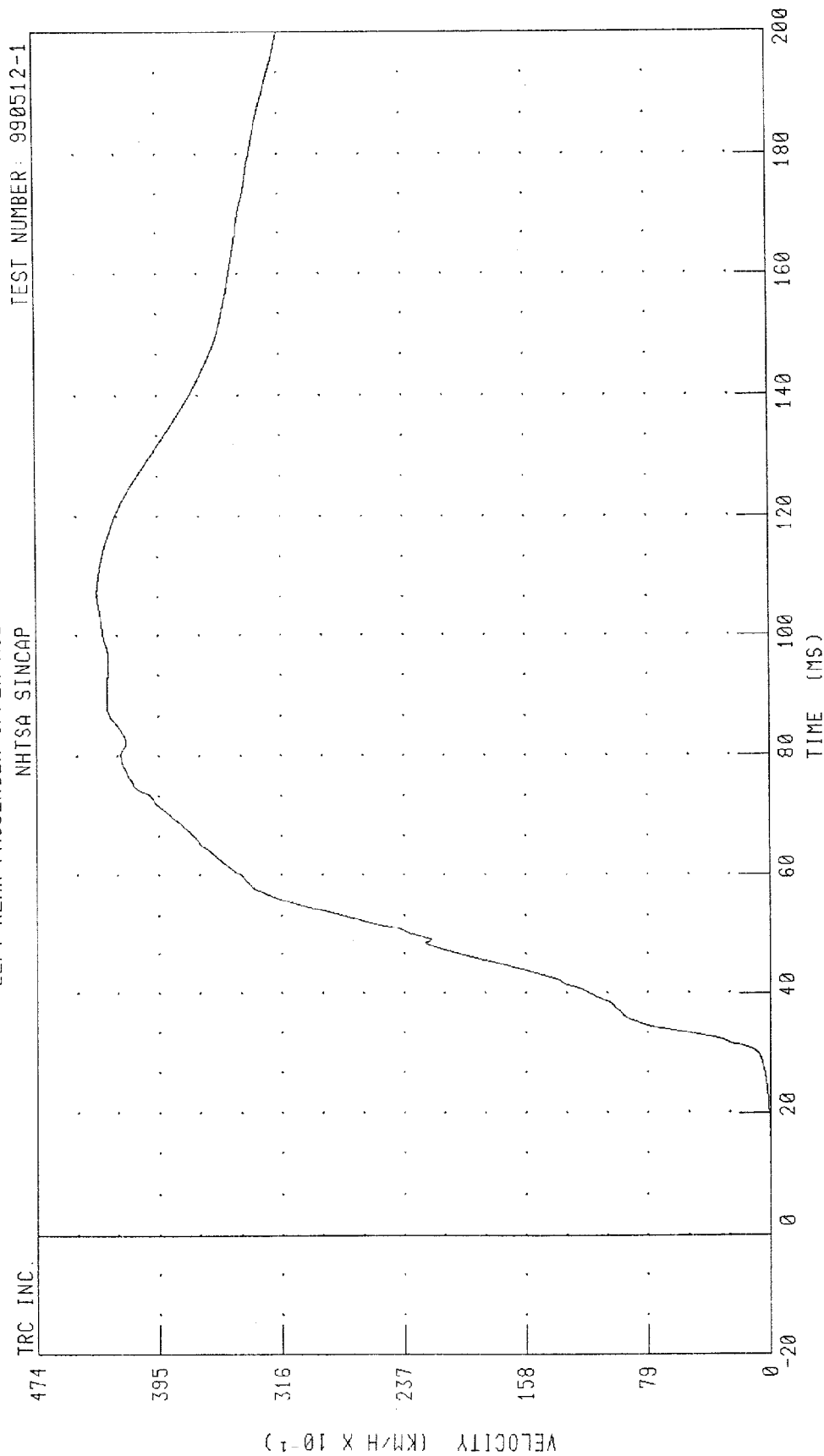
NHTSA SINCAP



PEAK DATA: 63.21 G @ 33.68 MS, -30.59 G @ 48.88 MS

CHANNEL: LURY64 FILTER: CH. CLASS 1000

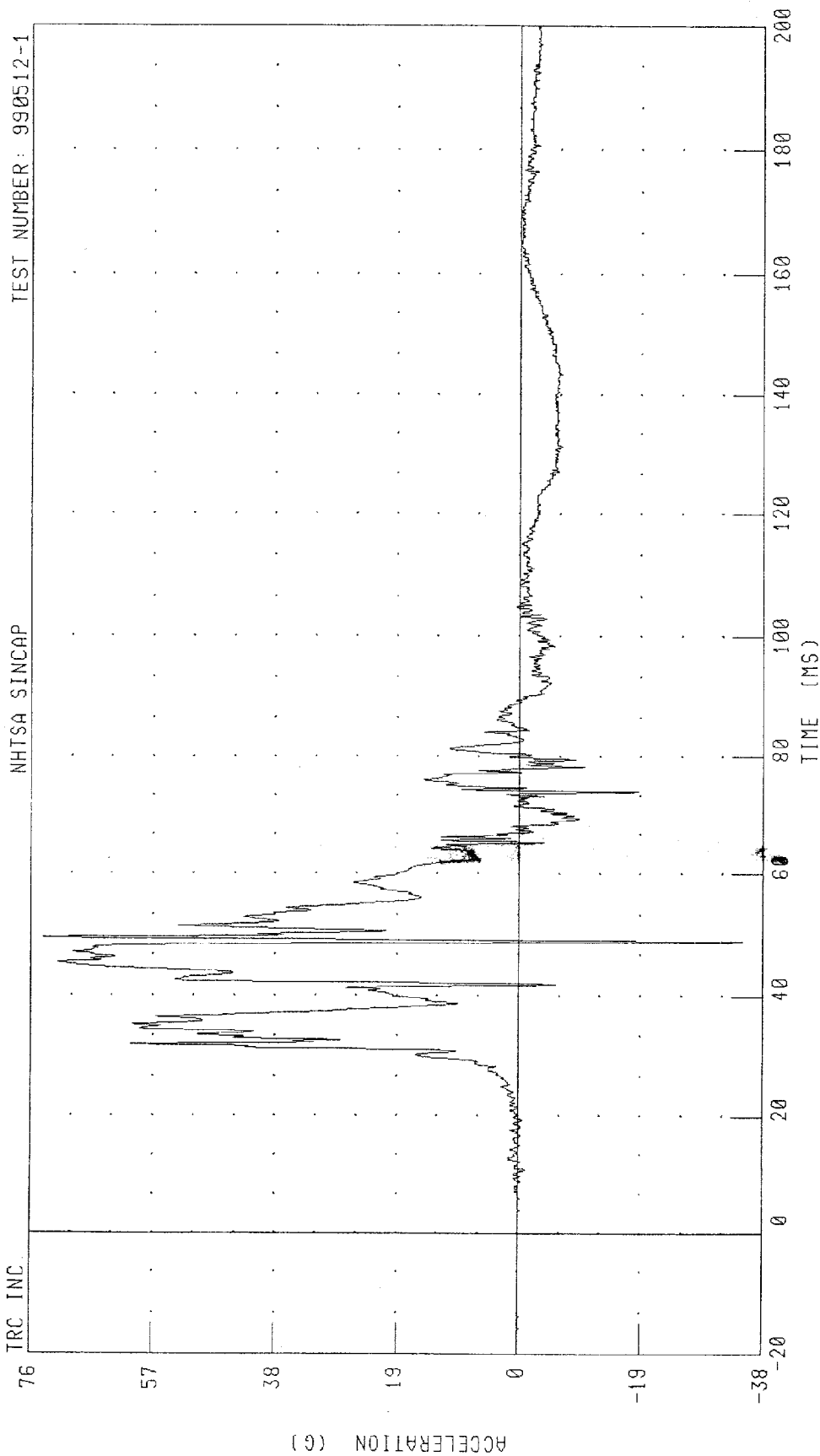
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER UPPER RIB Y-AXIS VELOCITY



PEAK DATA: 43.44 KM/H @ 107.52 MS; 0.00 KM/H @ 1.28 MS

CHANNEL: LURYU4 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION



PEAK DATA: 74.14 G @ 49.44 MS, -34.72 G @ 48.88 MS

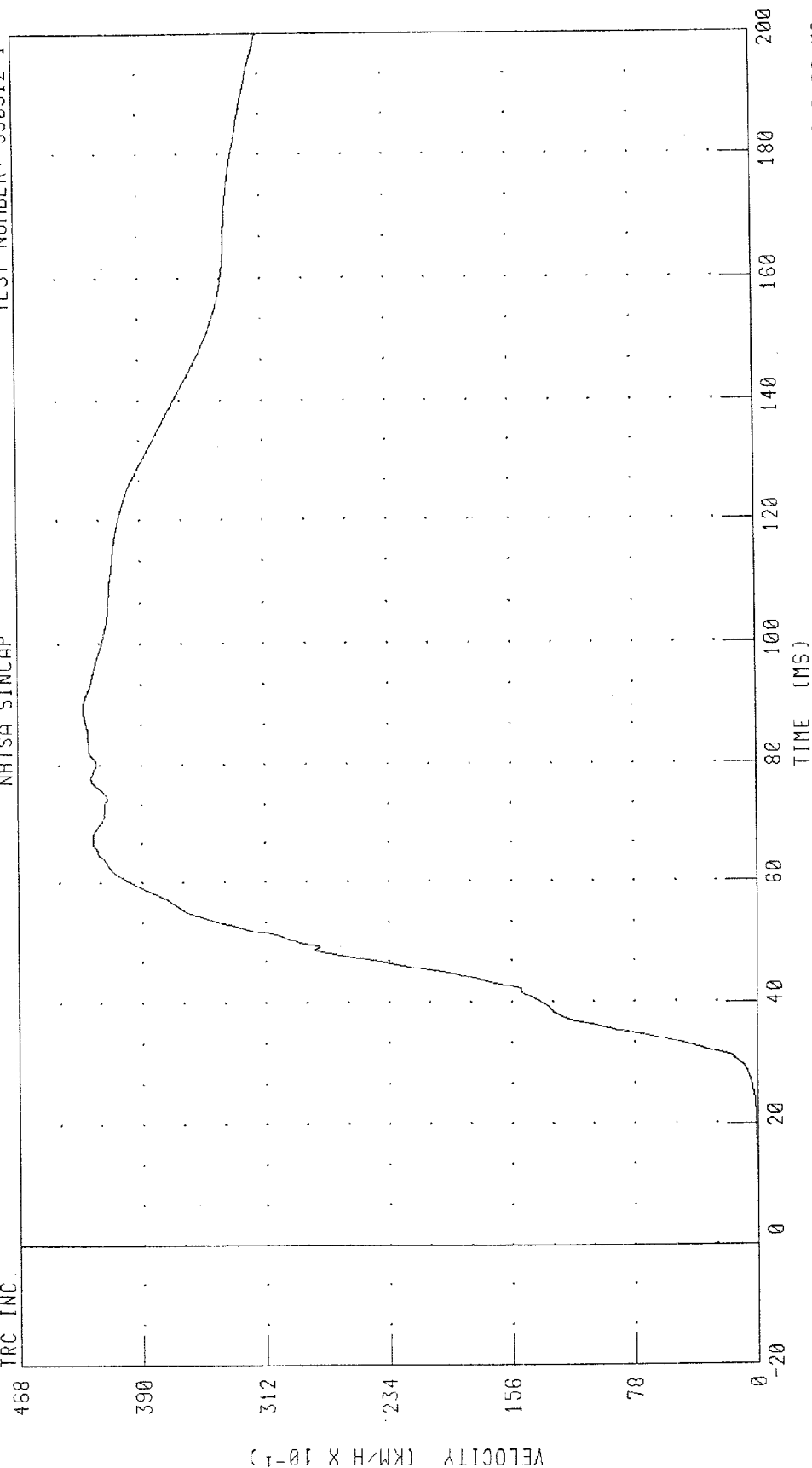
CHANNEL: LLRYC4 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER LOWER RIB Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

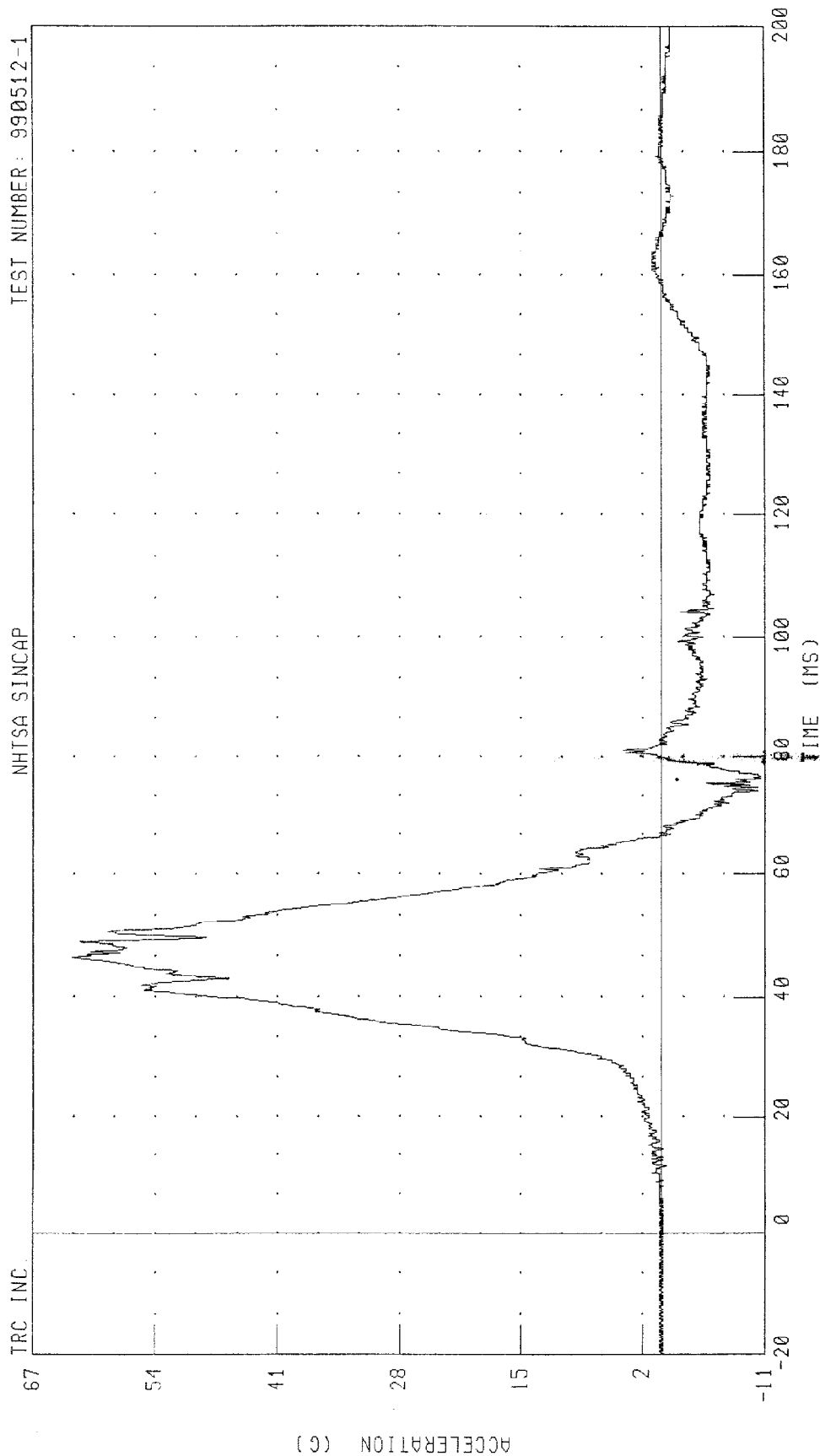
TRC INC.



PEAK DATA: 42.65 KM/H @ 89.76 MS, 0.00 KM/H @ 6.00 MS

CHANNEL: LLRYU4 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION



PEAK DATA: 62.83 G @ 46.48 MS; -10.62 G @ 76.32 MS

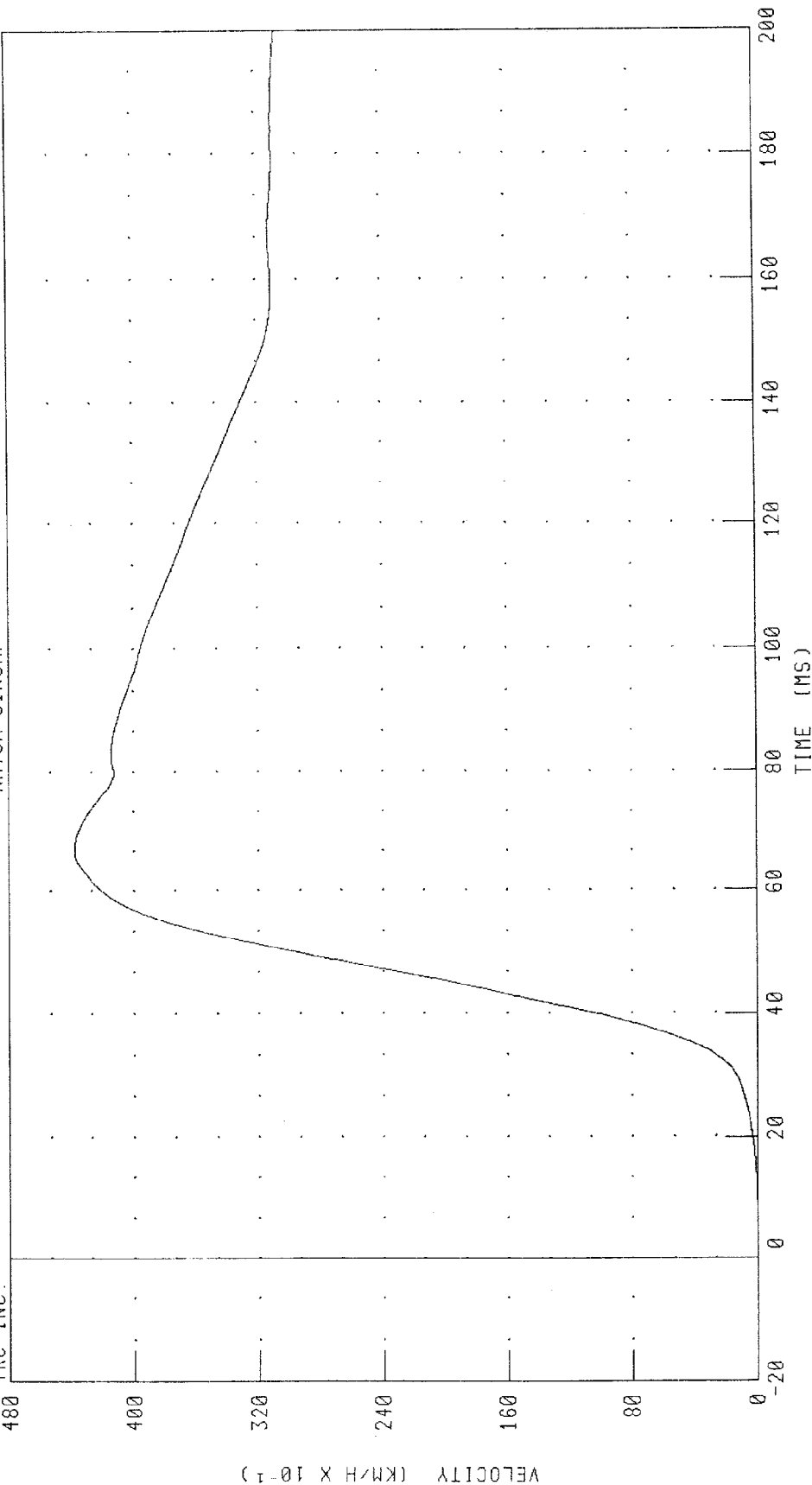
CHANNEL: T12YC4 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER LOWER SPINE Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

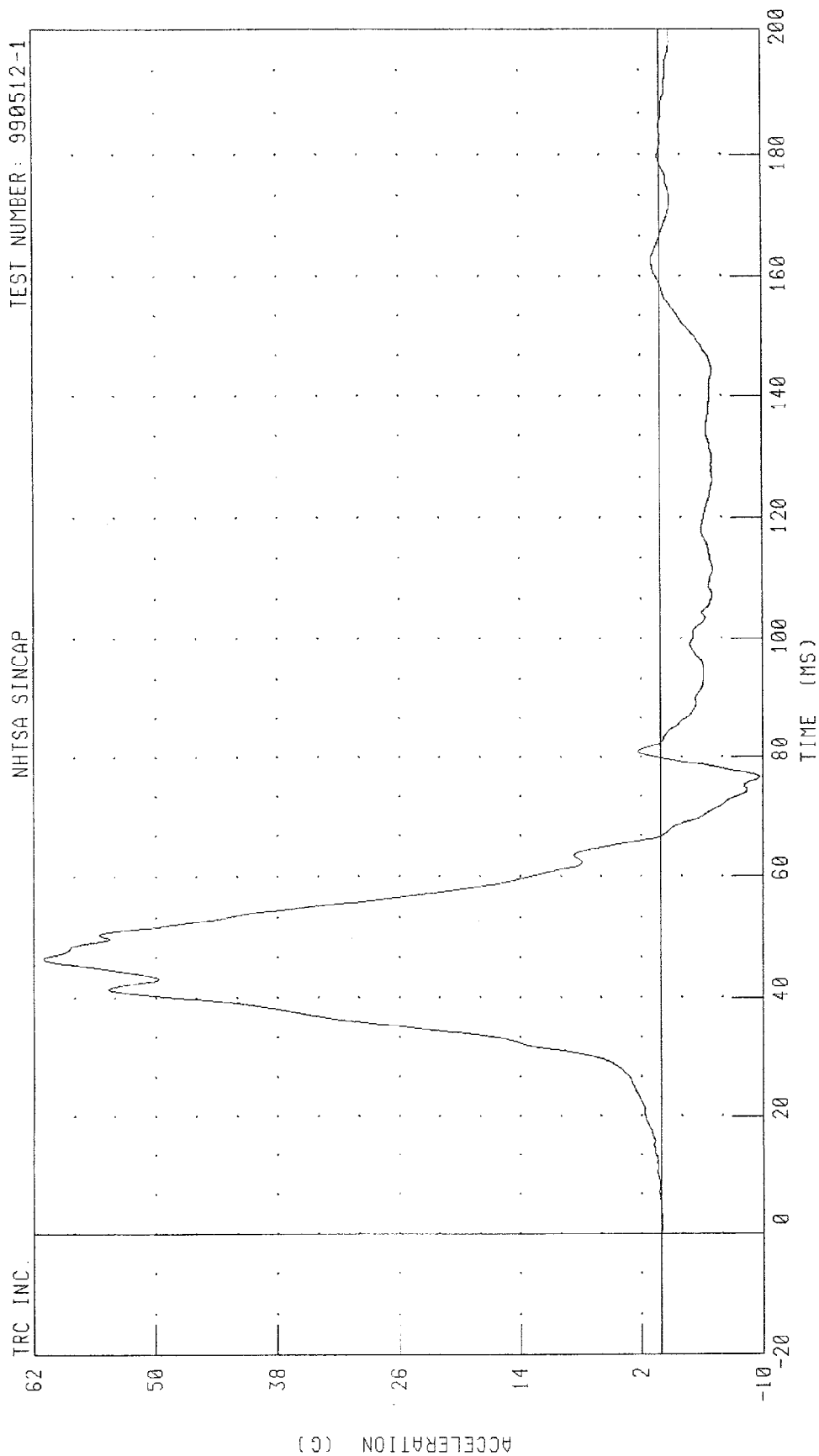
TRC INC.



PEAK DATA: 43.75 KM/H @ 68.56 MS; 0.00 KM/H @ 2.96 MS

CHANNEL: T12YU4 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
PASSENGER LOWER SPINE Y-AXIS ACCELERATION



PEAK DATA: 61.02 G @ 46.56 MS; -9.65 G @ 76.64 MS

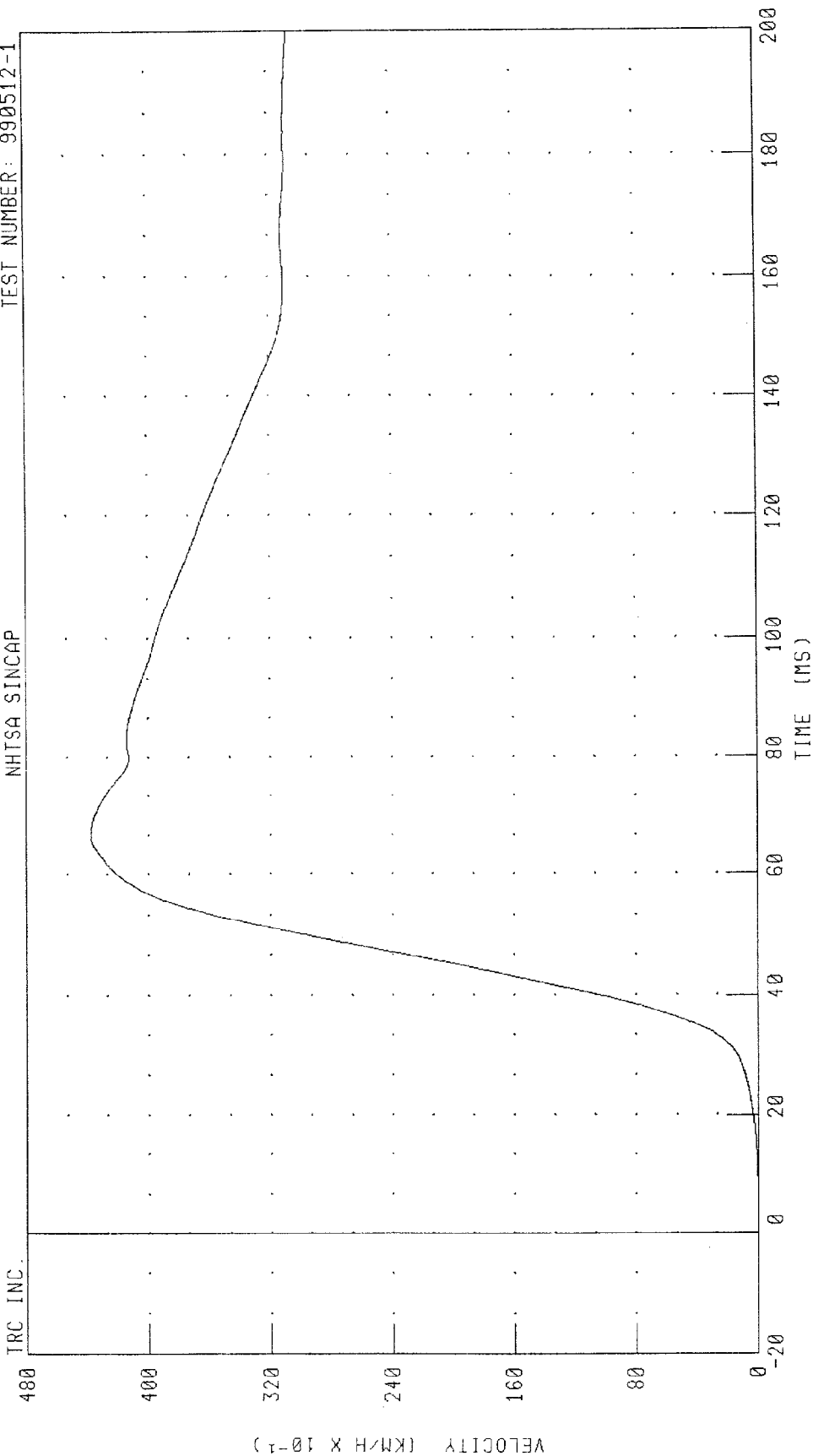
CHANNEL: T12YC4 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
PASSENGER LOWER SPINE Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 43.75 KM/H @ 66.72 MS; 0.00 KM/H @ 3.20 MS

CHANNEL: T12YV4 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 LEFT REAR PASSENGER PELVIS Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

112

91

70

49

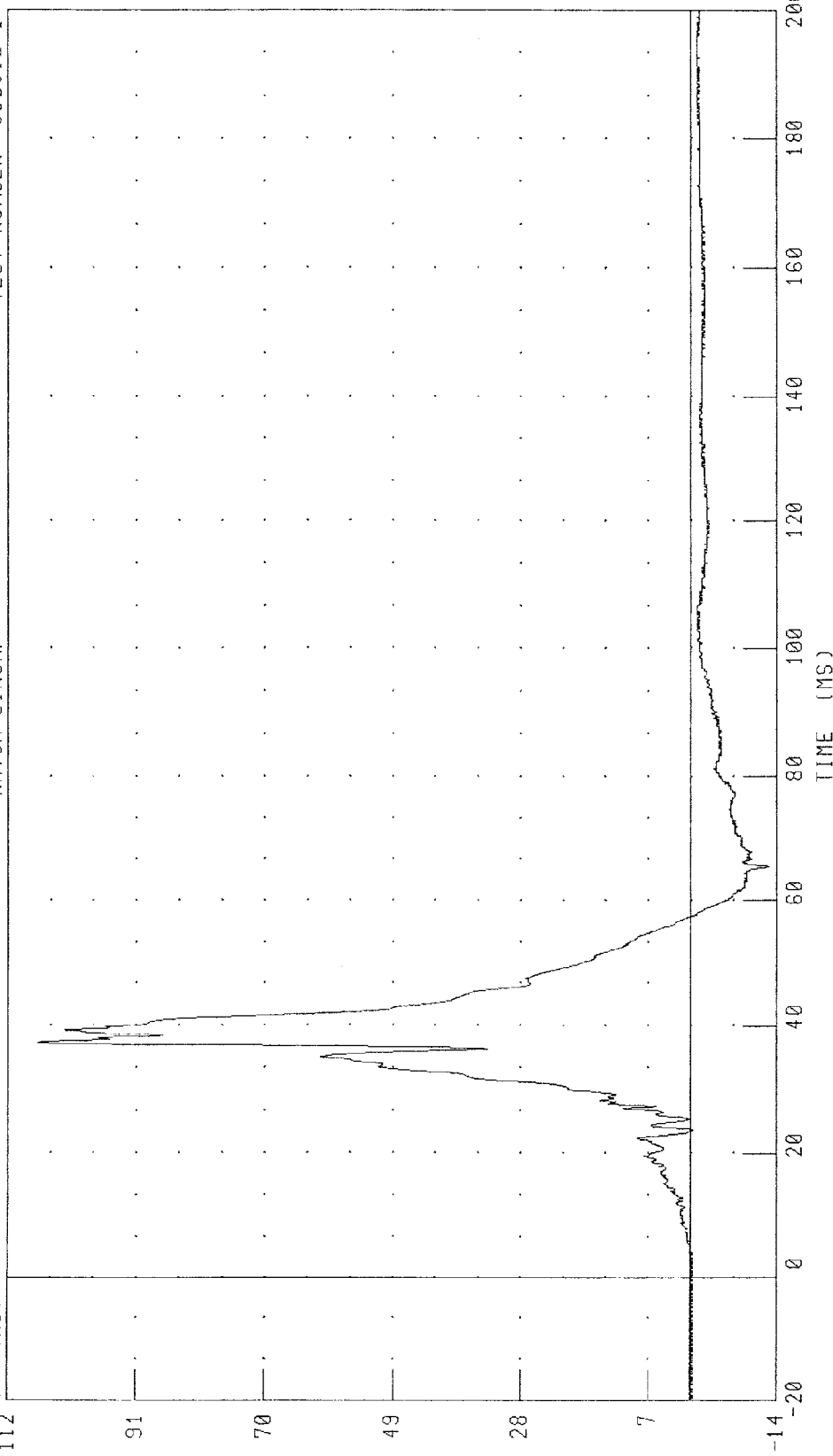
28

7

-14

-20

ACCELERATION (G)



CHANNEL: PEVYC4 FILTER: CH. CLASS 1000

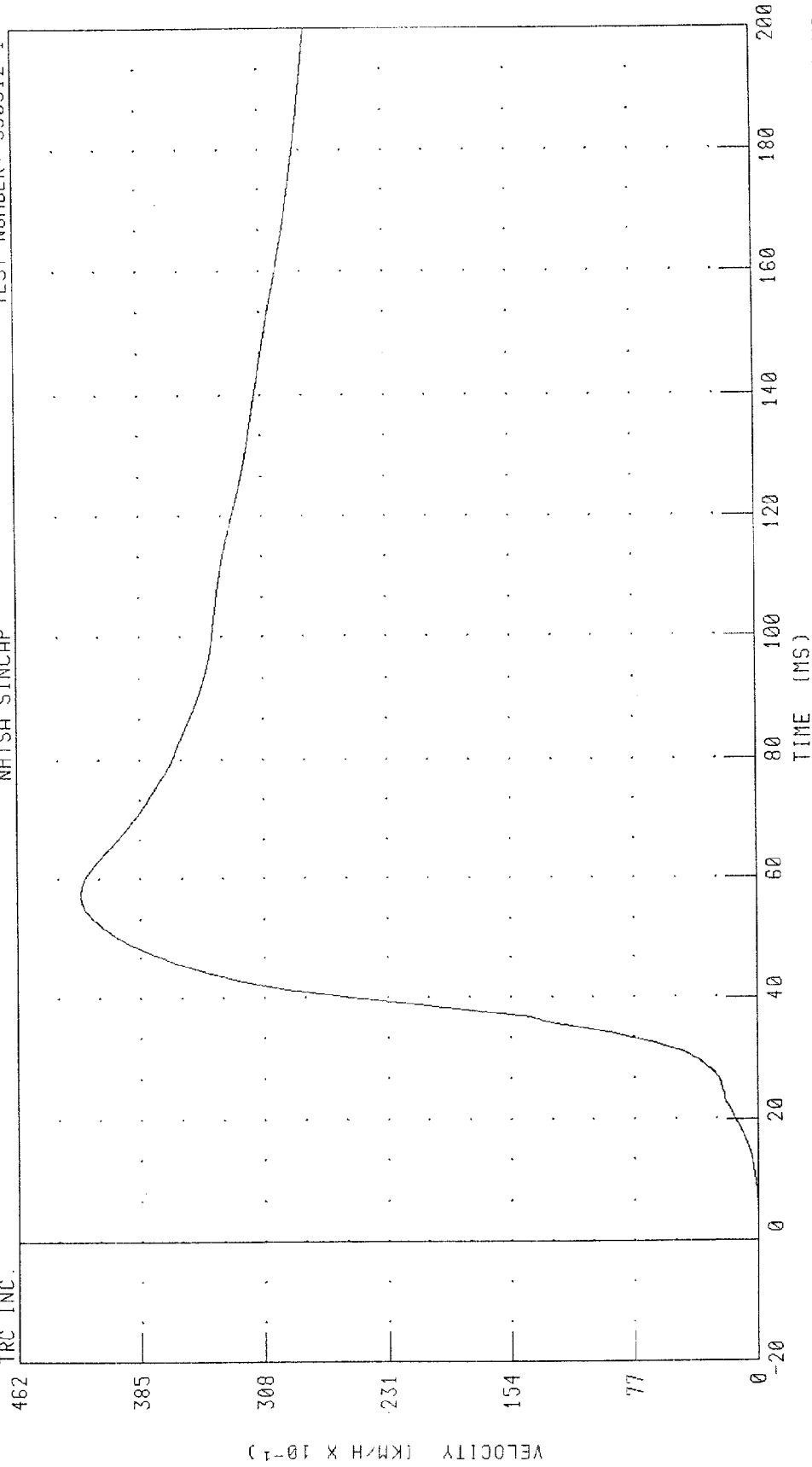
PEAK DATA: 107.07 G @ 37.44 MS; -12.77 G @ 65.52 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER PELVIS Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



CHANNEL: PEVYU4 FILTER: CH. CLASS 1000

PEAK DATA: 42.23 KM/H @ 57.44 MS, -0.01 KM/H @ 3.20 MS

Test Vehicle Instrumentation Plots

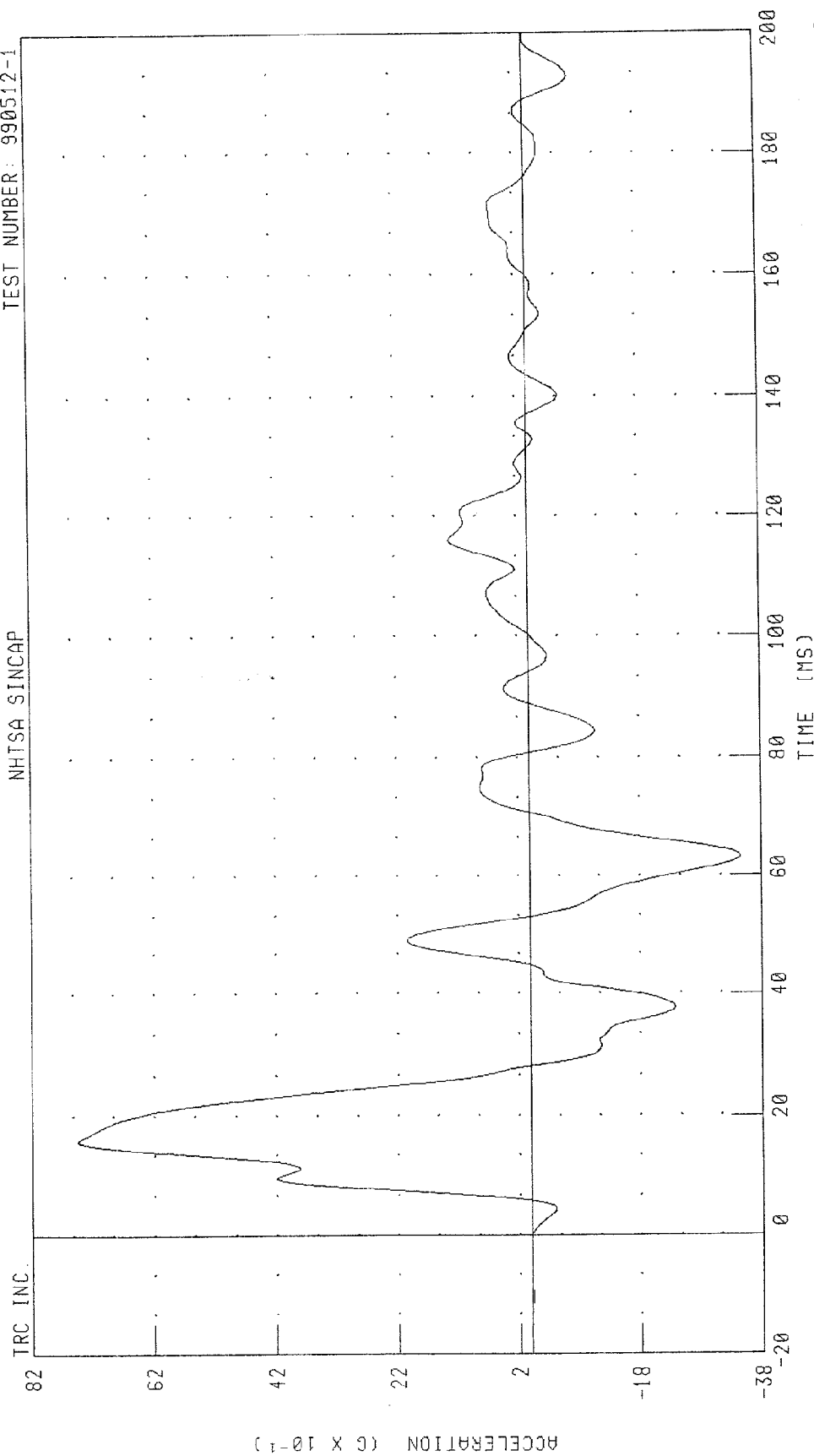
Acceleration Data - Filter Class 60

Integration Data - Filter Class 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 RIGHT SIDE SILL AT FRONT SEAT X-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP



PEAK DATA: 7.45 G @ 15.76 MS; -3.46 G @ 63.36 MS

CHANNEL: RFSXG1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 RIGHT SIDE SILL AT FRONT SEAT X-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

360

300

VELOCITY (KM/H X 10⁻²)

240

180

120

60

0

-20

TIME (MS)

80

100

120

140

160

180

200

CHANNEL: RFSXV1

FILTER: CH. CLASS 180

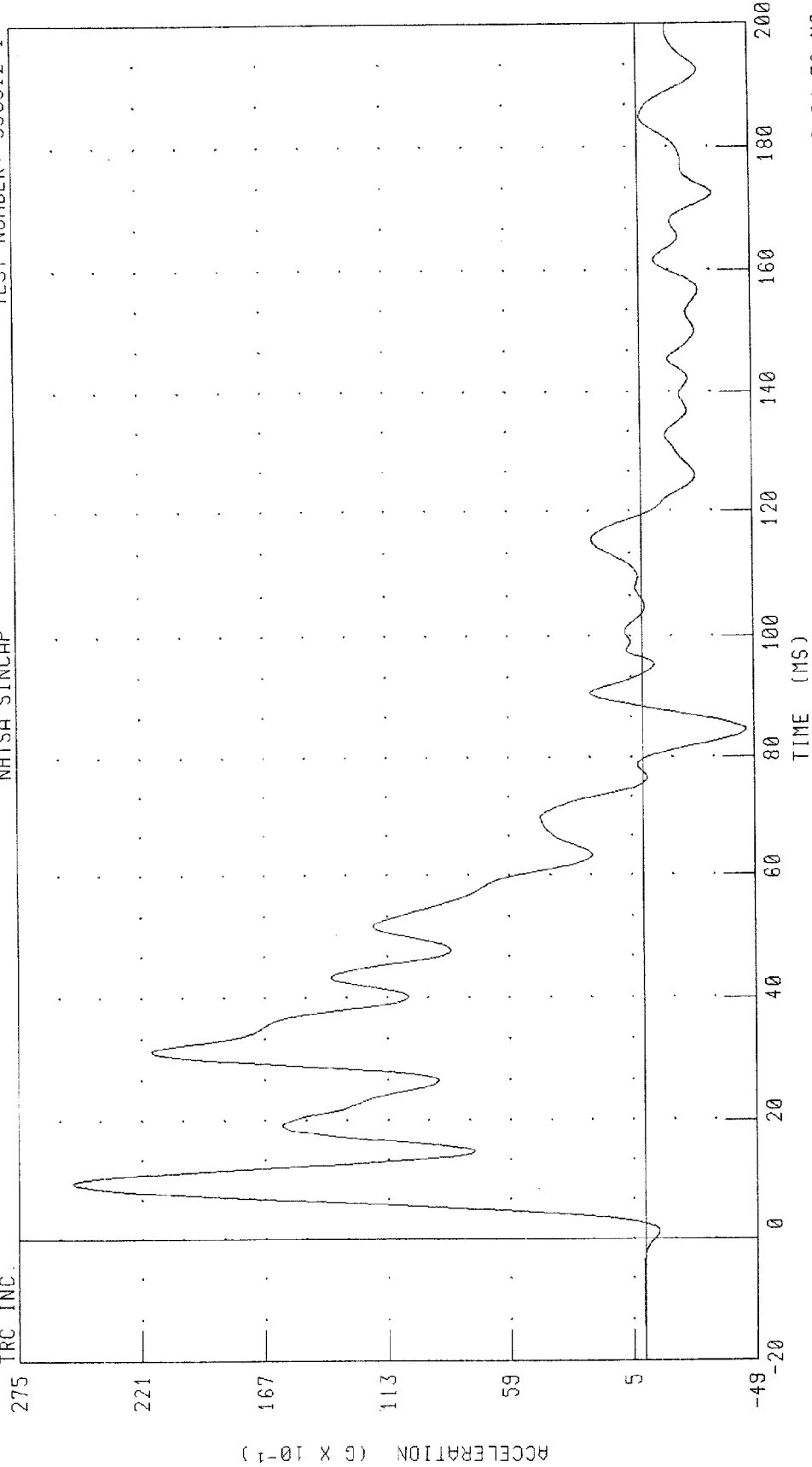
PEAK DATA: 3.44 KM/H @ 28.24 MS, -0.07 KM/H @ 6.88 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
RIGHT SIDE SILL AT FRONT SEAT Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

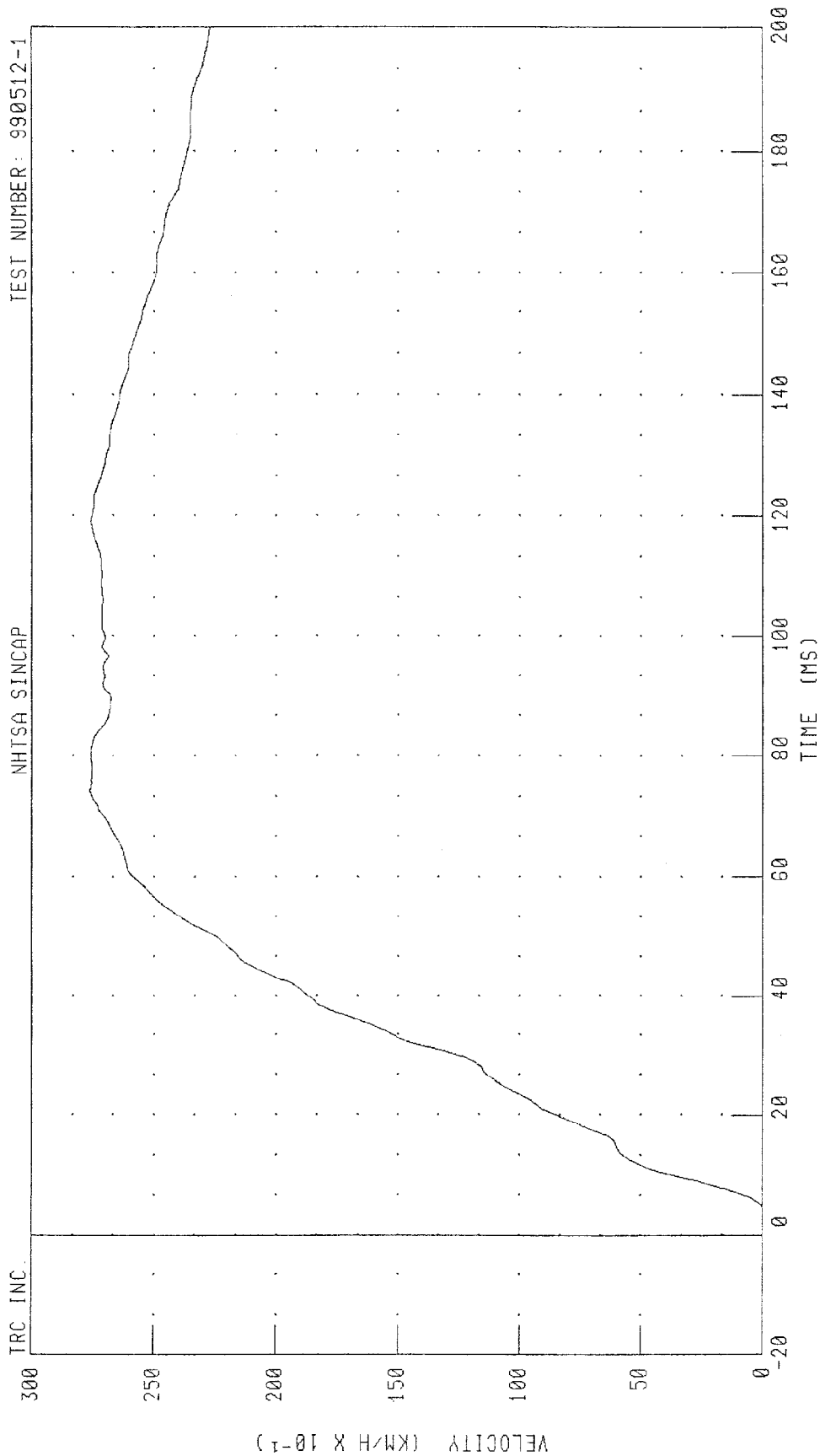
TRC INC.



PEAK DATA: 25.16 G @ 9.52 MS; -4.54 G @ 84.56 MS

CHANNEL: RFSYG1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 RIGHT SIDE SILL AT FRONT SEAT Y-AXIS VELOCITY



PEAK DATA: 27.63 KM/H @ 74.40 MS; -0.01 KM/H @ 4.00 MS

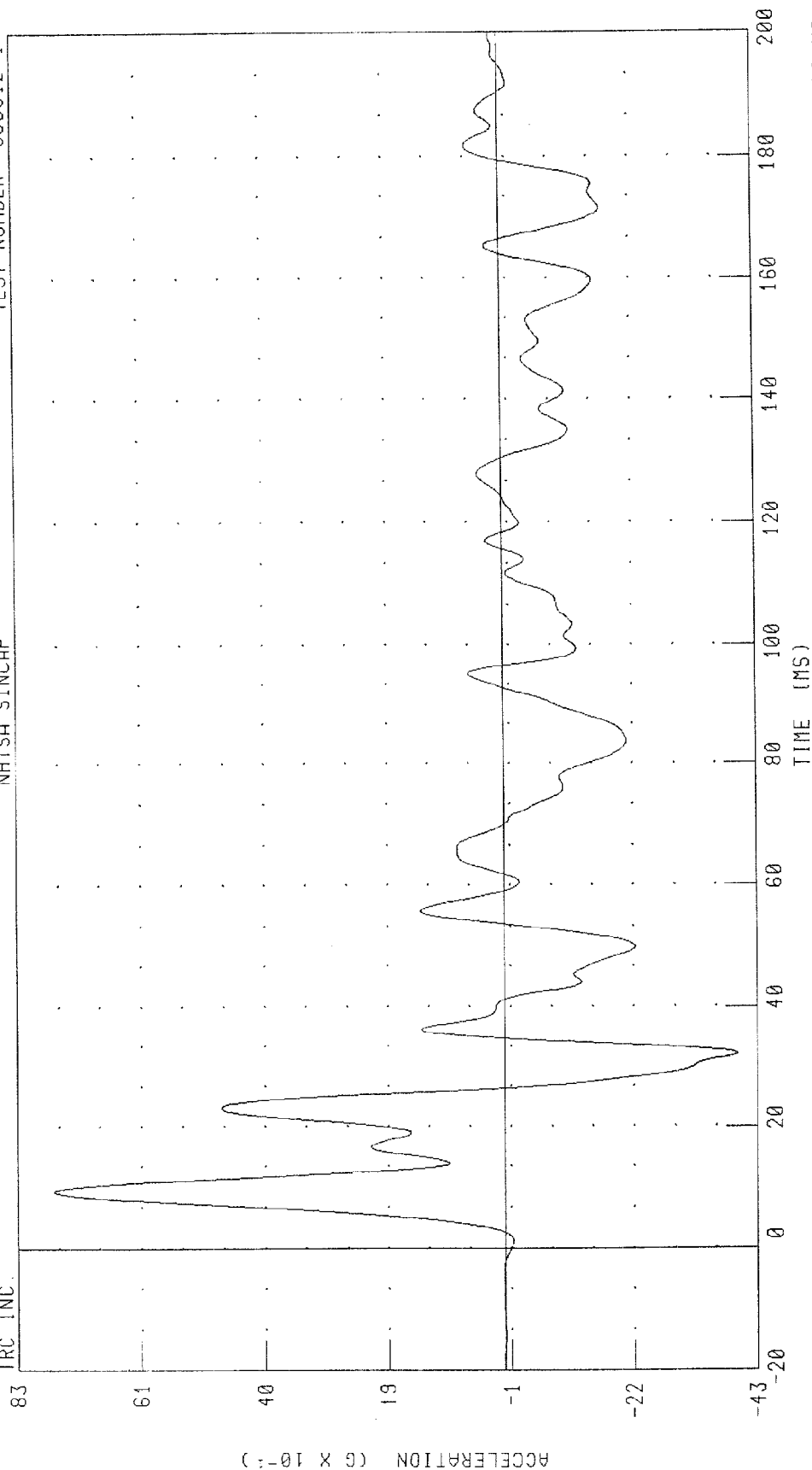
CHANNEL: RFSYV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
RIGHT SIDE SILL AT FRONT SEAT Z-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 7.69 G @ 9.36 MS, -3.96 G @ 32.00 MS

CHANNEL: RFSZG1 FILTER: CH. CLASS 60

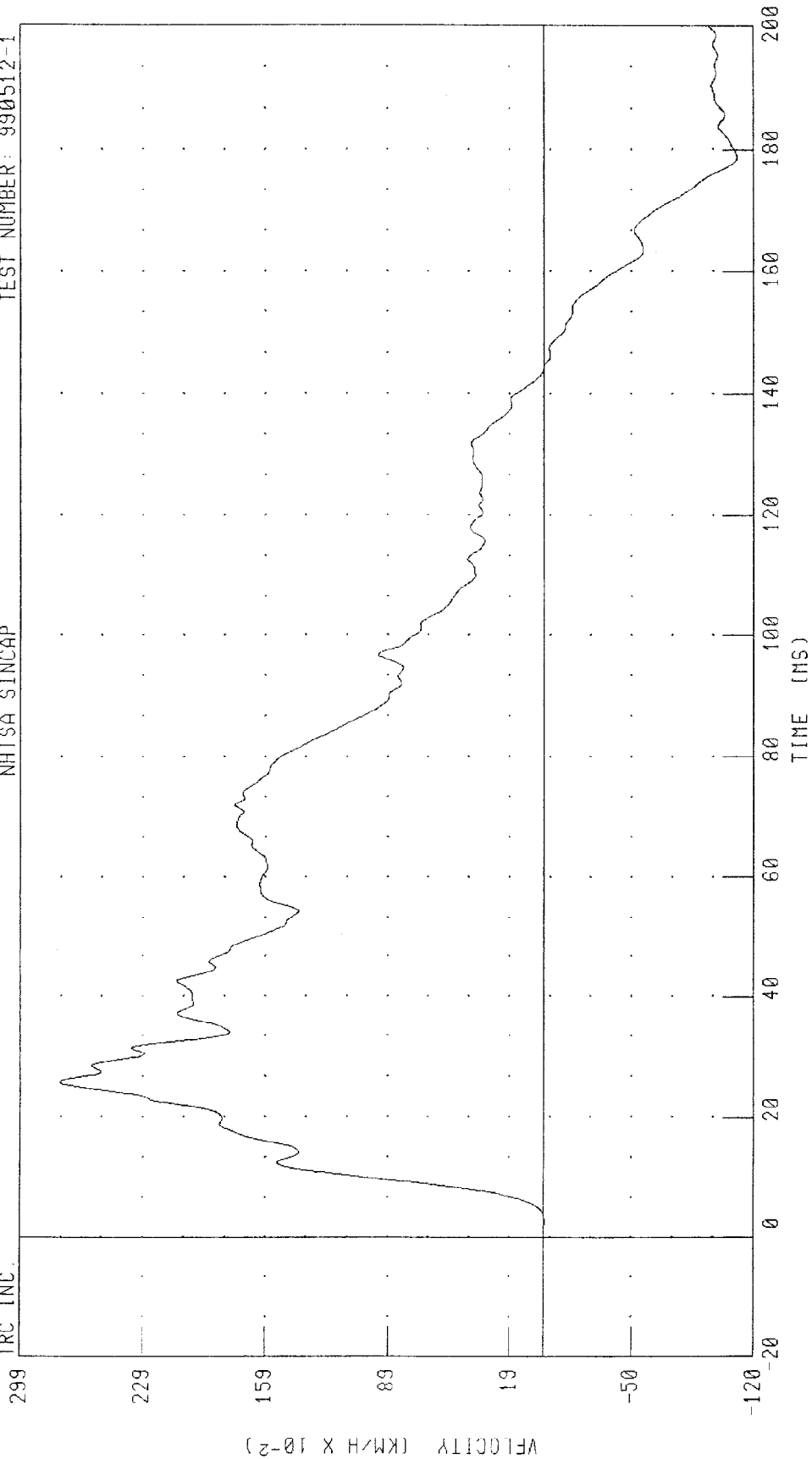
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

RIGHT SIDE SILL AT FRONT SEAT Z-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 2.77 KM/H @ 25.76 MS, -1.11 KM/H @ 178.80 MS

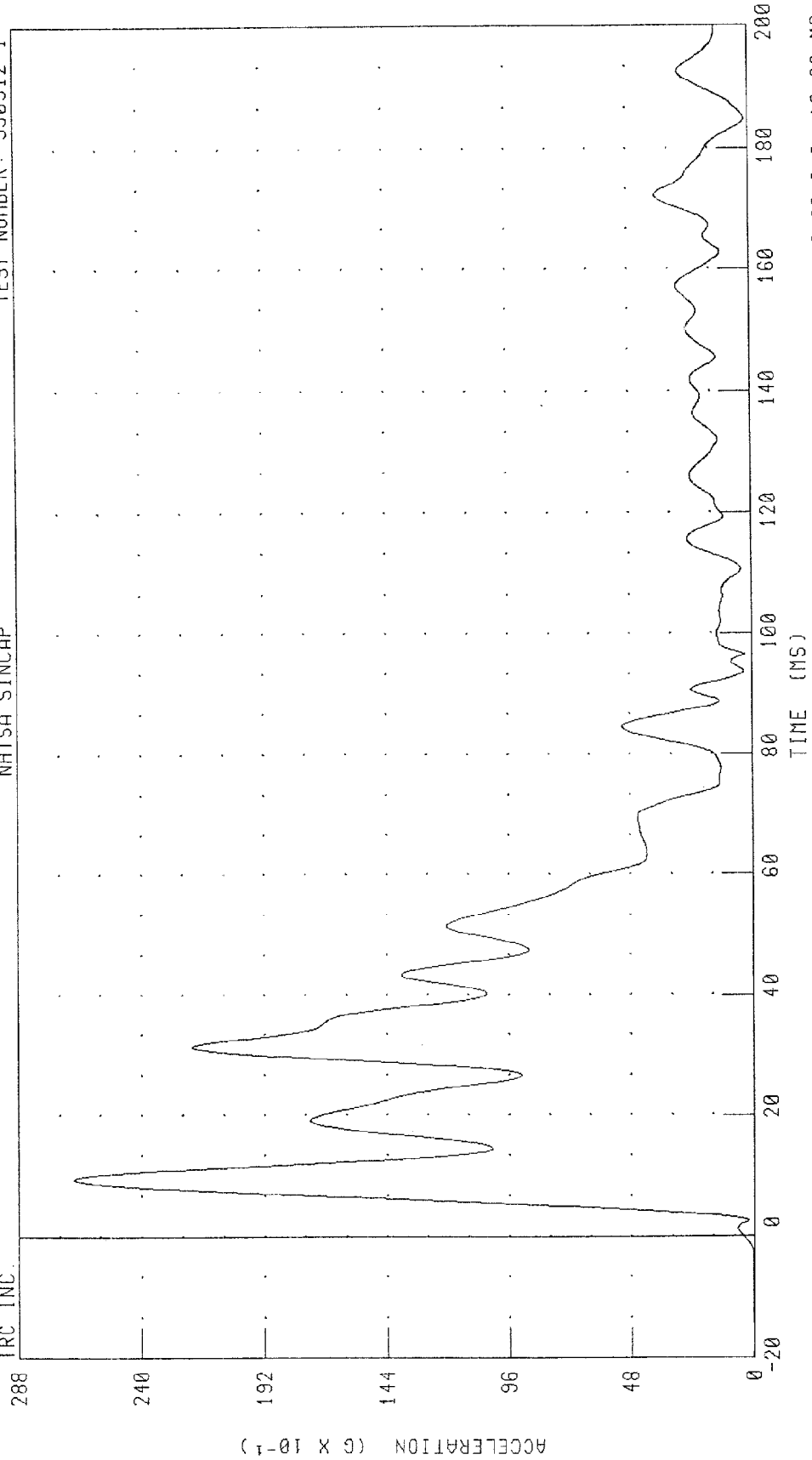
CHANNEL: RFSZV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

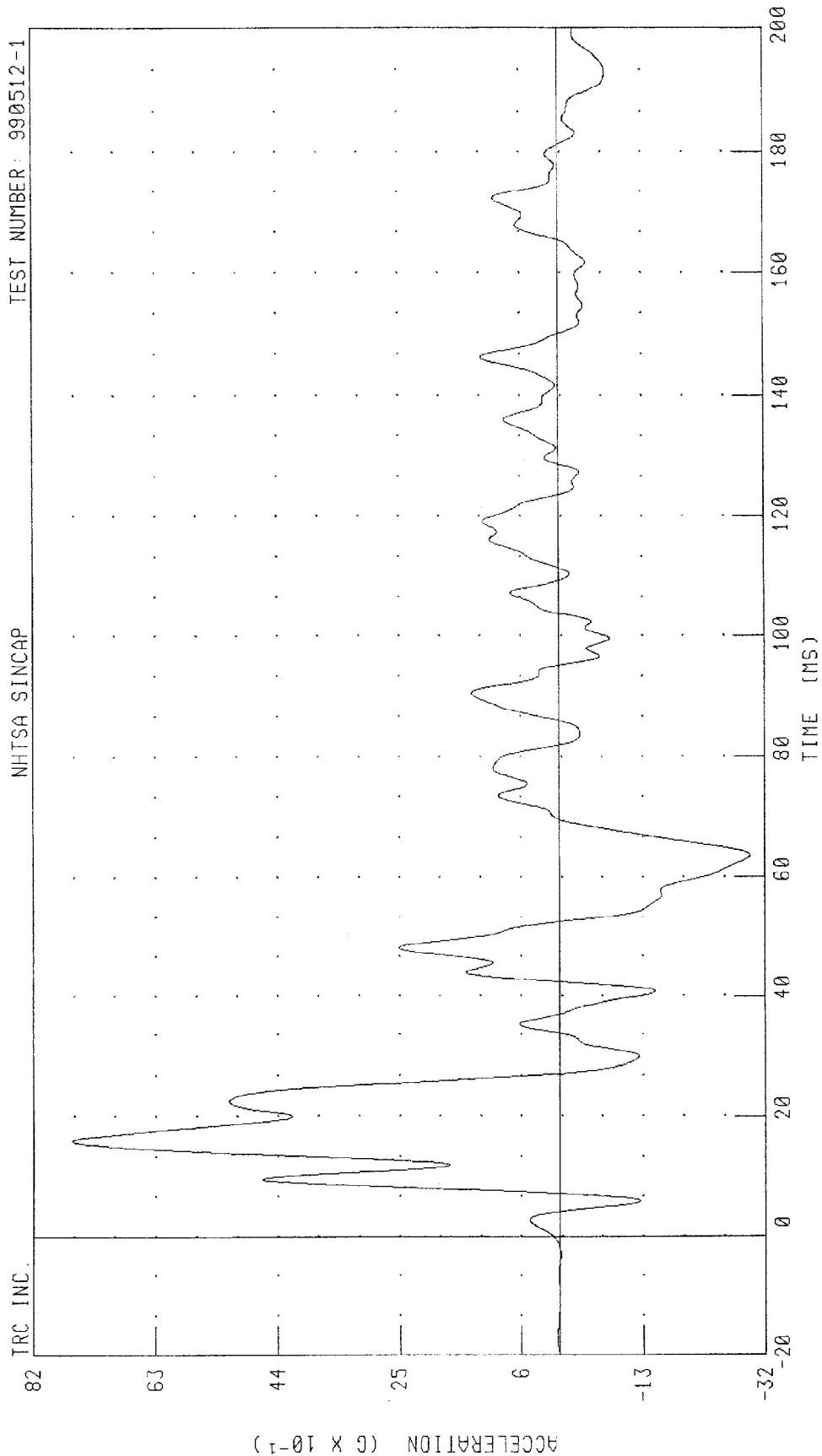
TRC INC.



CHANNEL: RFSRG1 FILTER: CH. CLASS 60

PEAK DATA: 26.64 G @ 9.52 MS; 0.00 G @ -16.08 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
RIGHT SIDE SILL AT REAR SEAT X-AXIS ACCELERATION



PEAK DATA: 7.60 G @ 16.00 MS, -2.98 G @ 63.68 MS

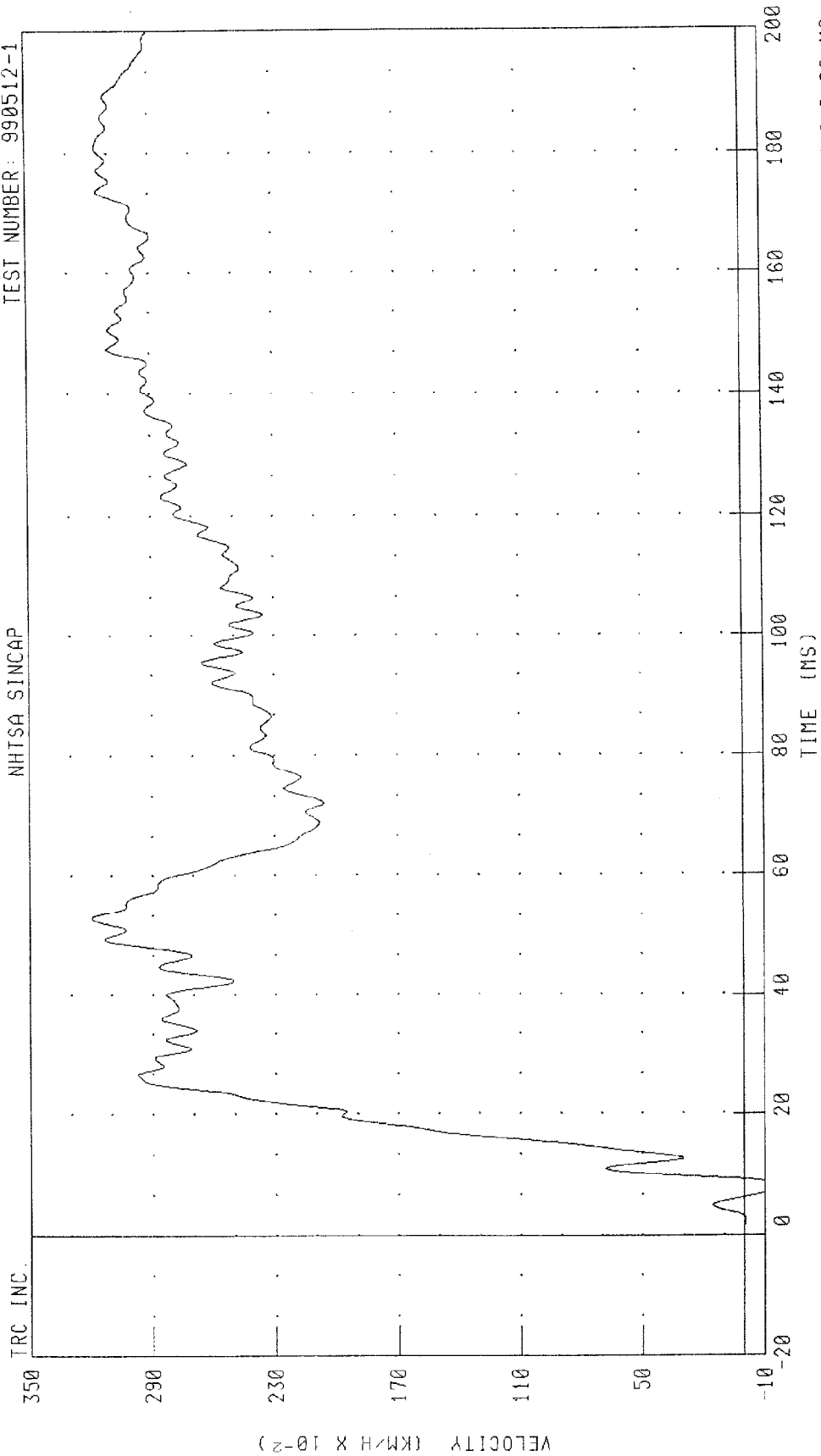
CHANNEL: RRSXC1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

RIGHT SIDE SILL AT REAR SEAT X-AXIS VELOCITY

TEST NUMBER: 990512-1

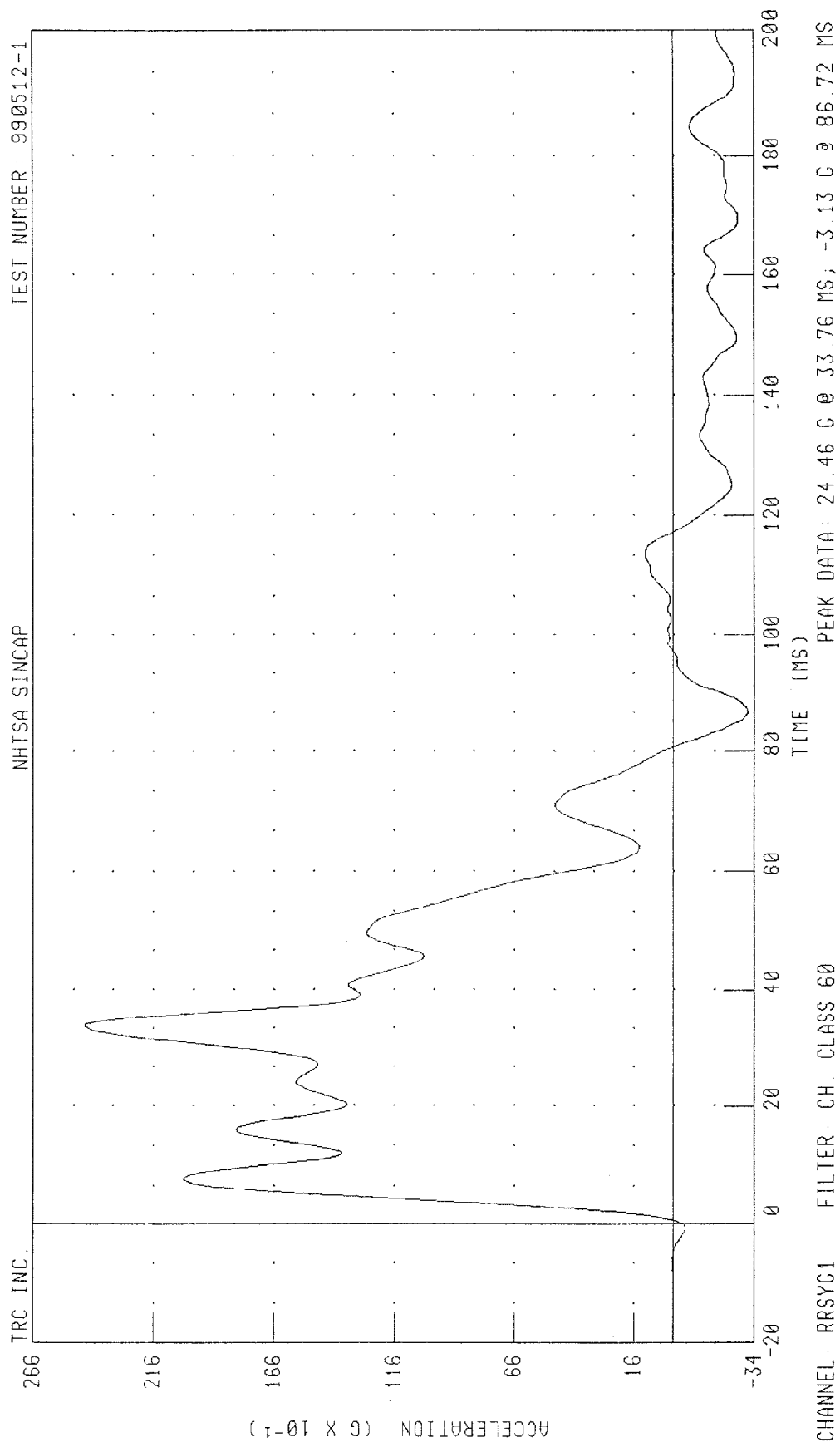
NHTSA SINCAP



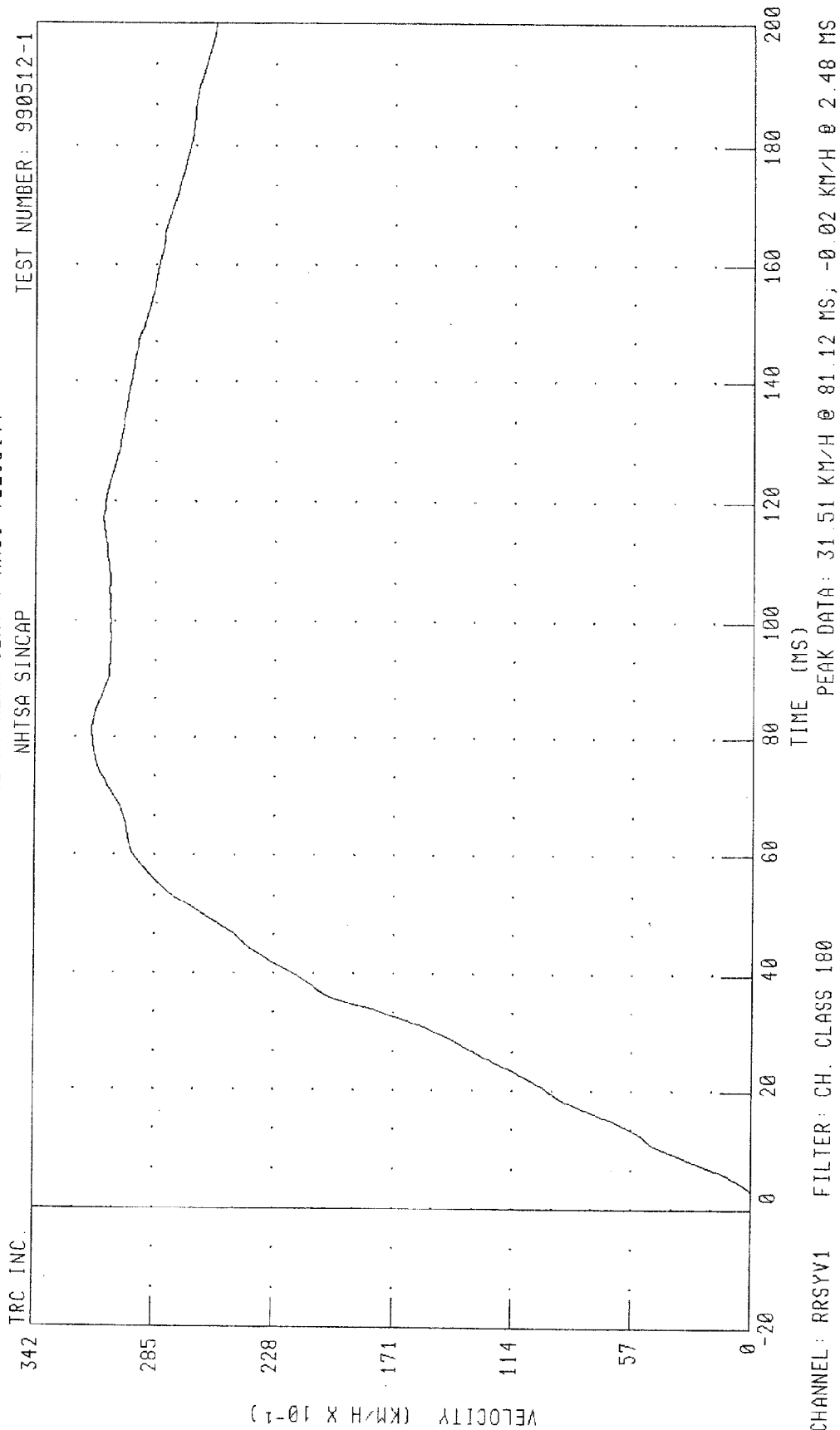
CHANNEL: RRSXV1 FILTER: CH. CLASS 100

PEAK DATA: 3.20 KM/H @ 52.96 MS; -0.17 KM/H @ 8.08 MS

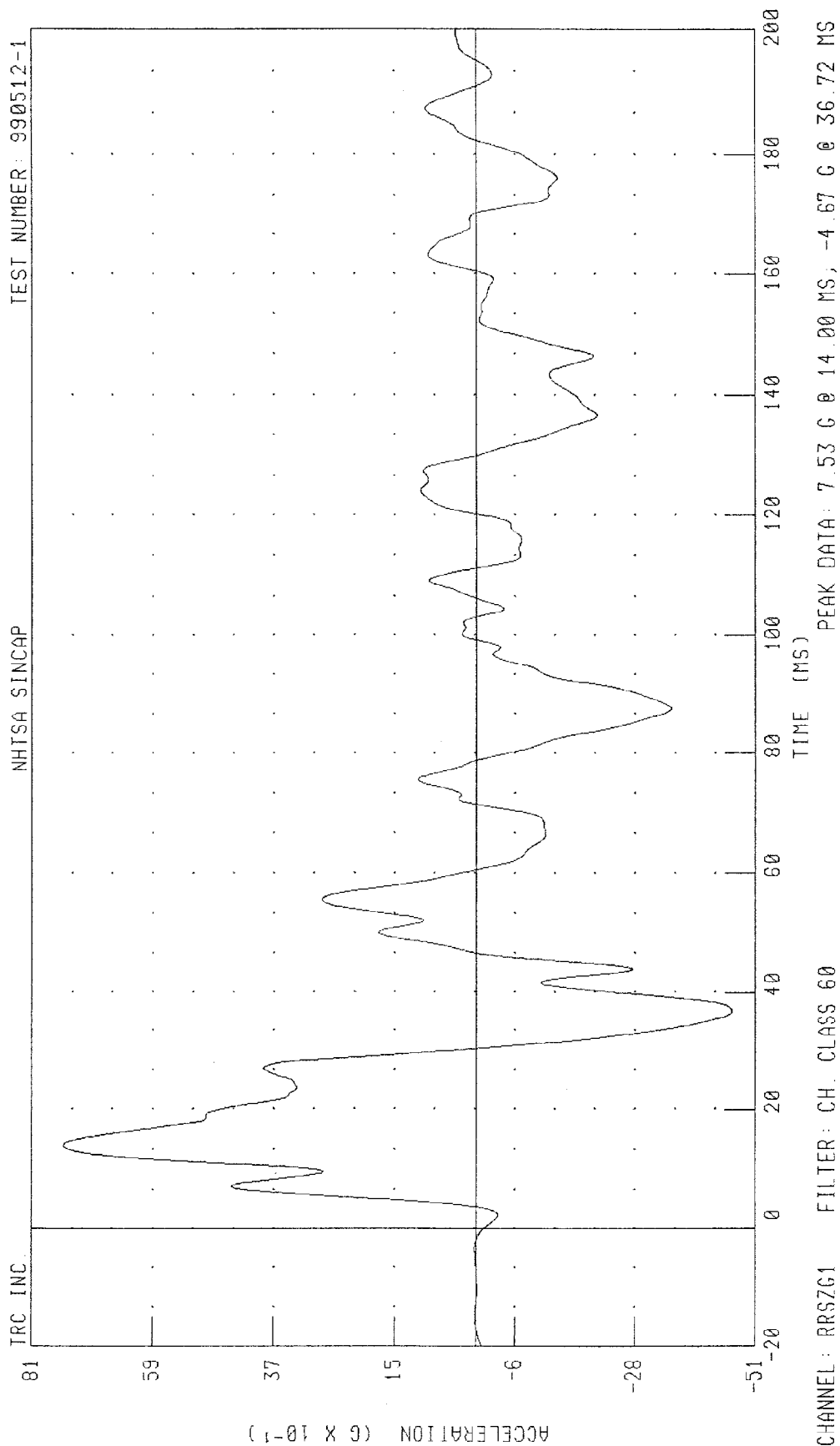
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
RIGHT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION



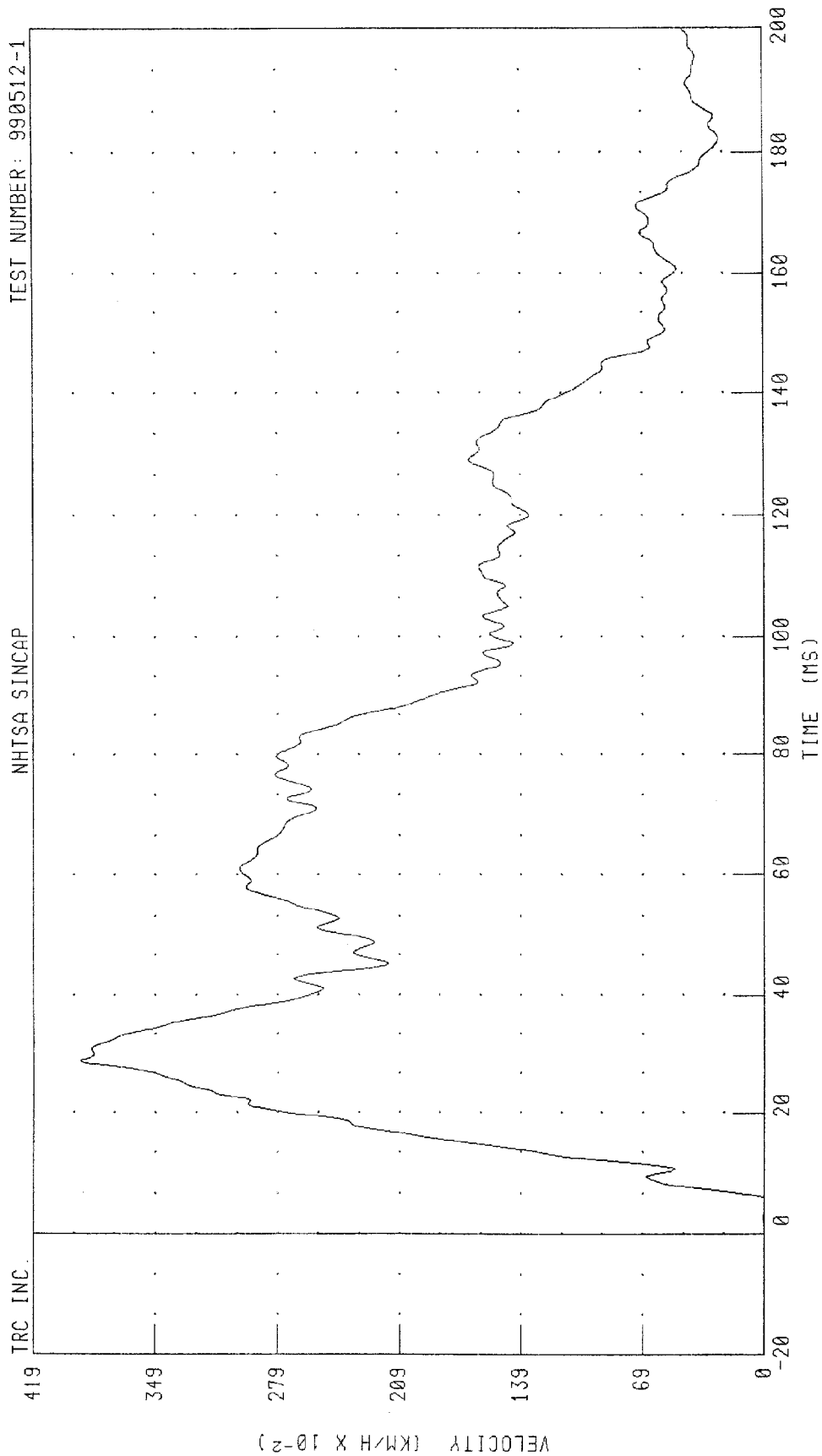
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
RIGHT SIDE SILL AT REAR SEAT Y-AXIS VELOCITY



MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 RIGHT SIDE SILL AT REAR SEAT Z-AXIS ACCELERATION



MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
RIGHT SIDE SILL AT REAR SEAT Z-AXIS VELOCITY



PEAK DATA: 3.93 KM/H @ 28.80 MS; -0.08 KM/H @ 4.80 MS

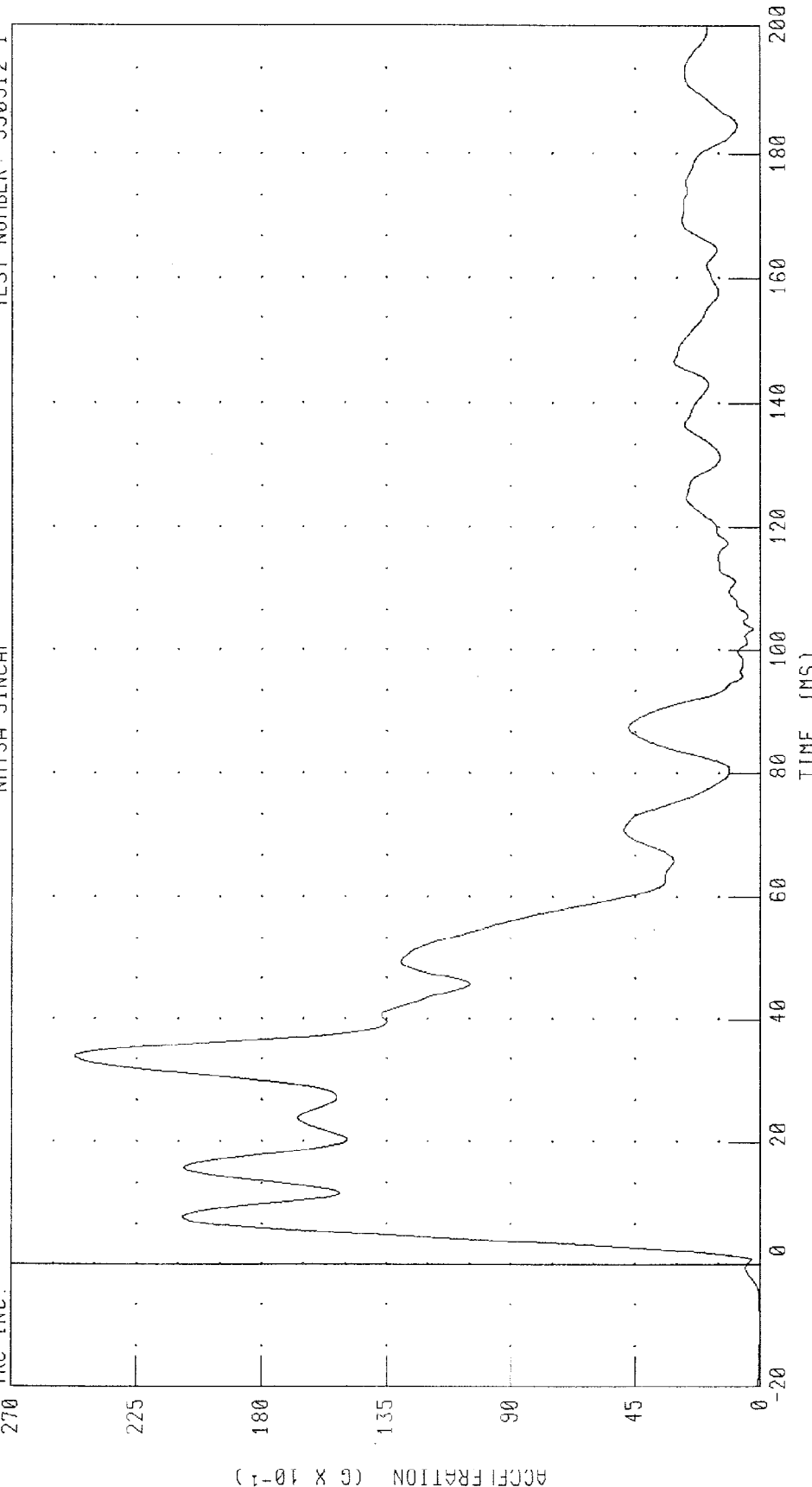
CHANNEL: RRSZV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 24.74 G @ 33.84 MS; 0.00 G @ -8.72 MS

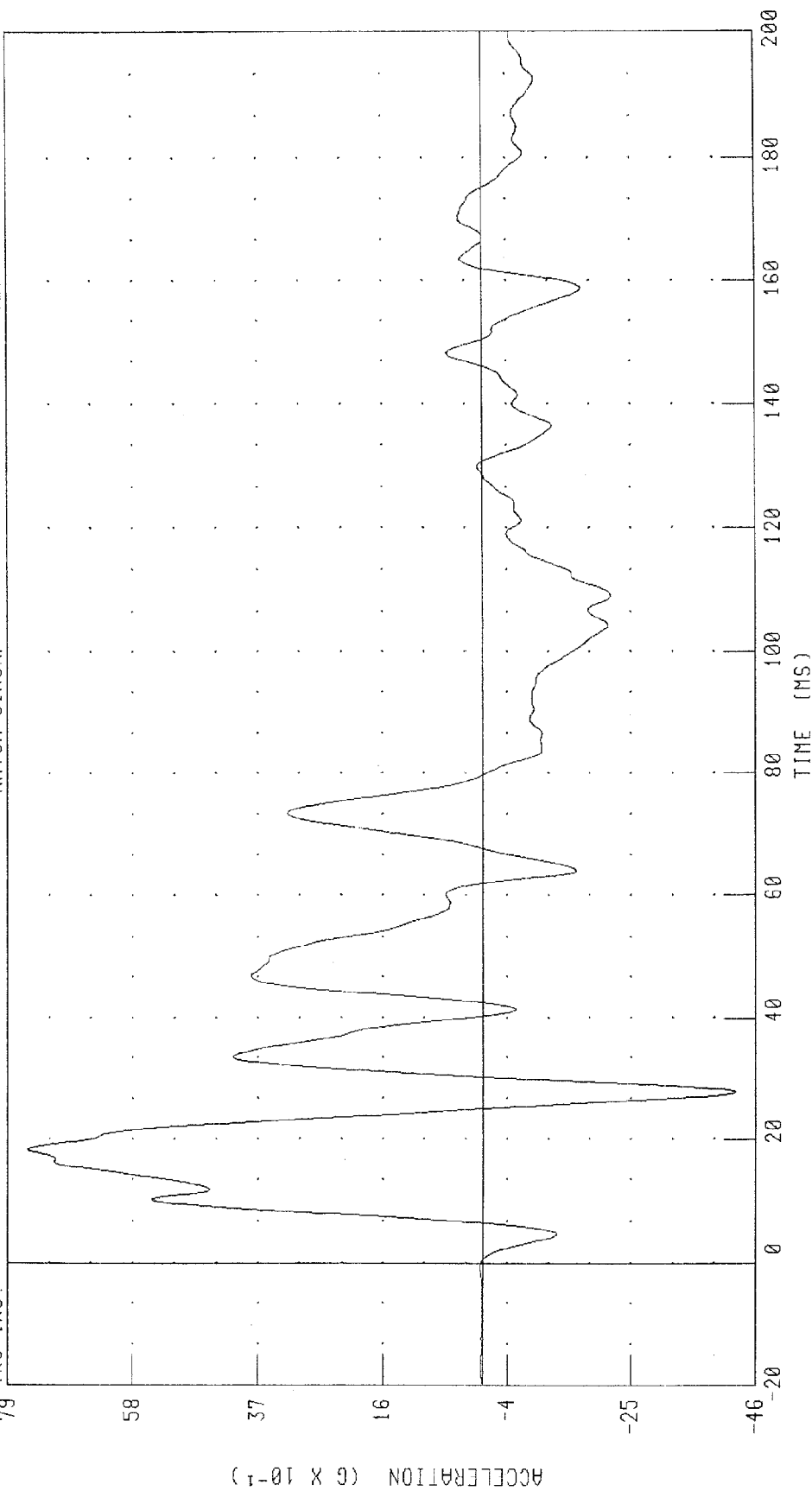
CHANNEL: RRSRG1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 REAR FLOORPAN ABOVE AXLE X-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

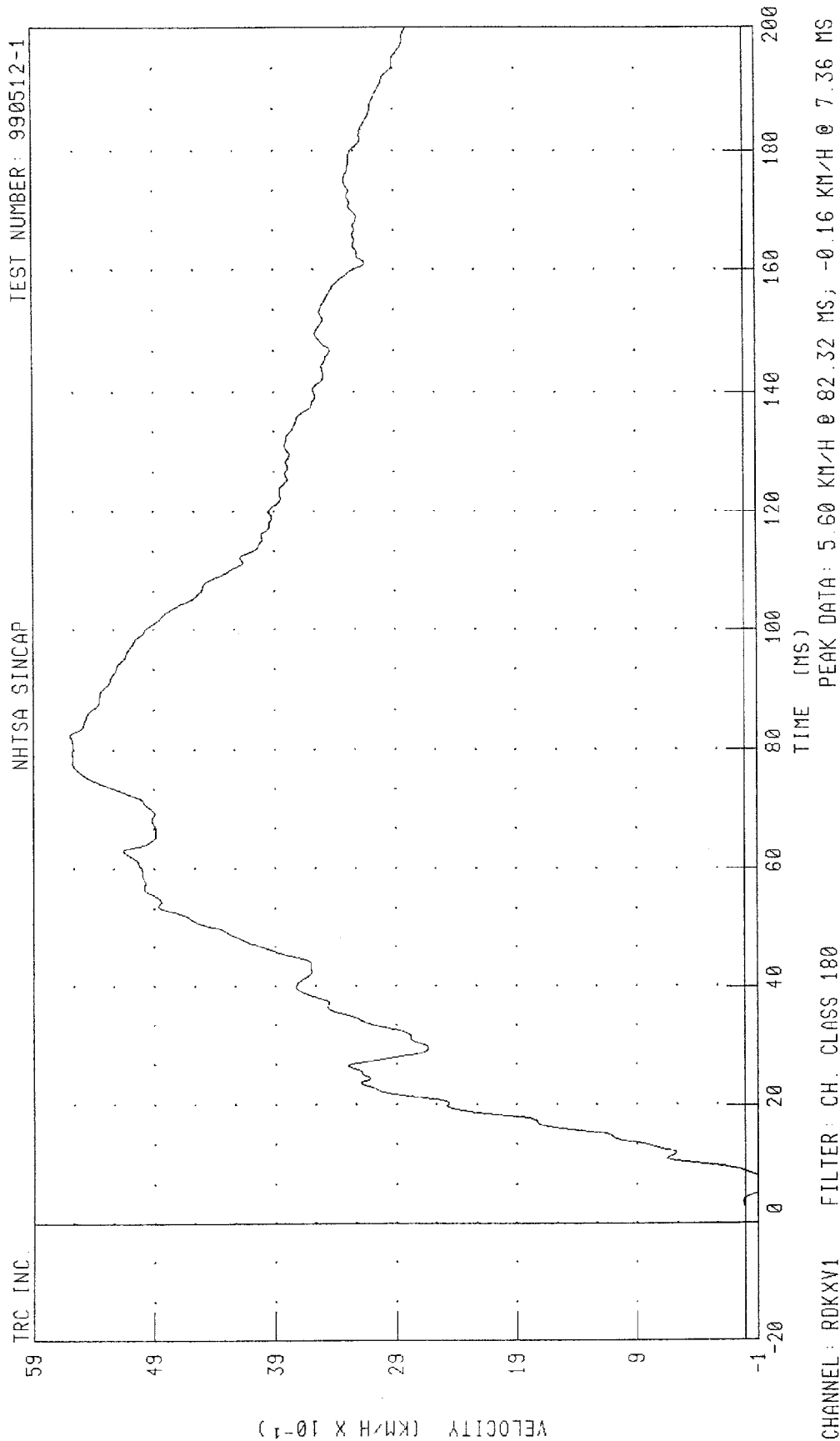


PEAK DATA: 7.66 G @ 18.32 MS, -4.26 G @ 27.68 MS

FILTER: CH. CLASS 60

CHANNEL: RDKXG1

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 REAR FLOORPAN ABOVE AXLE X-AXIS VELOCITY



MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 REAR FLOORPAN ABOVE AXLE Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

286

233

ACCELERATION (G X 10⁻¹)

180

B-70

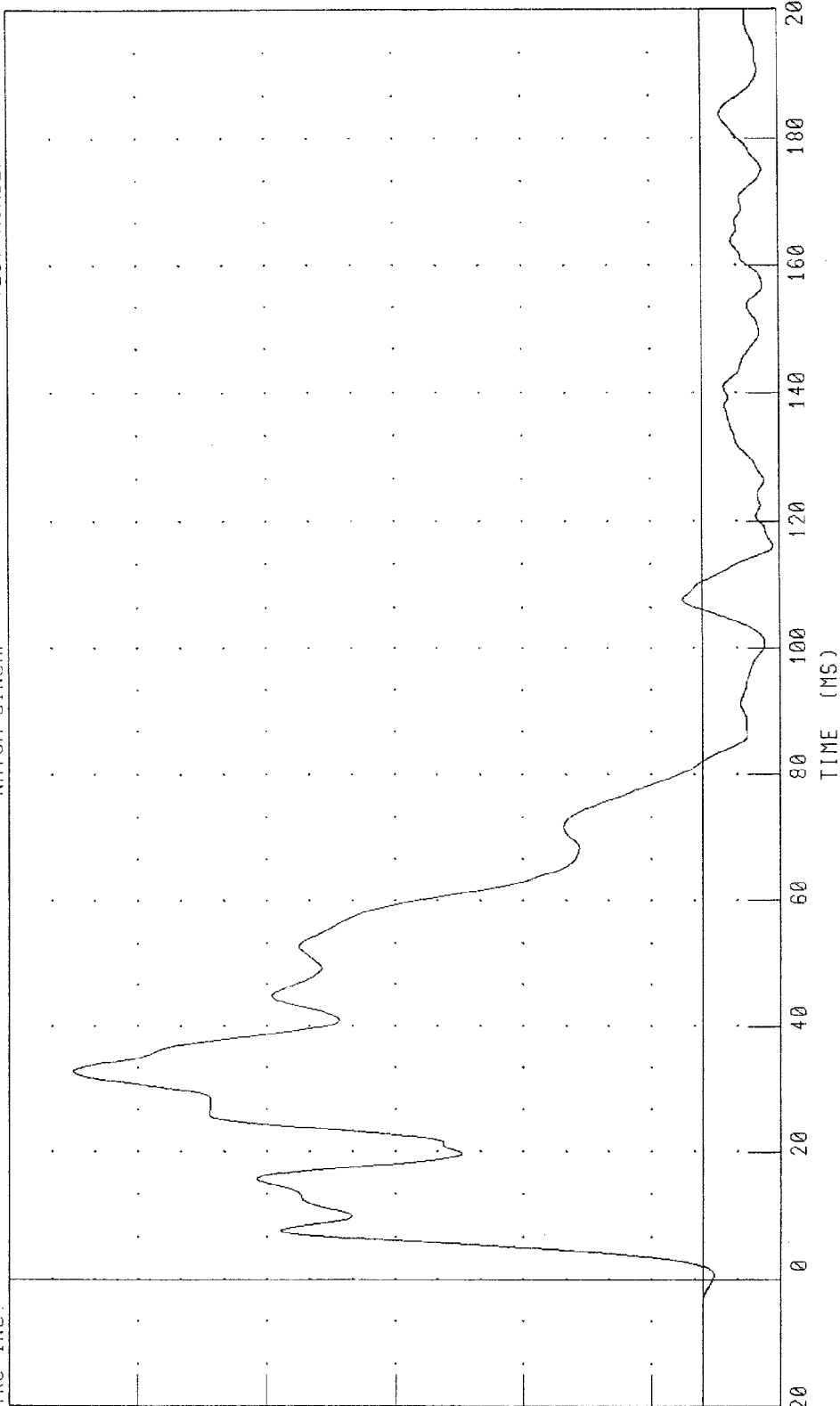
127

74

21

-32

-20



CHANNEL: RDKYC1 FILTER: CH. CLASS 60

990512

TIME (MS)

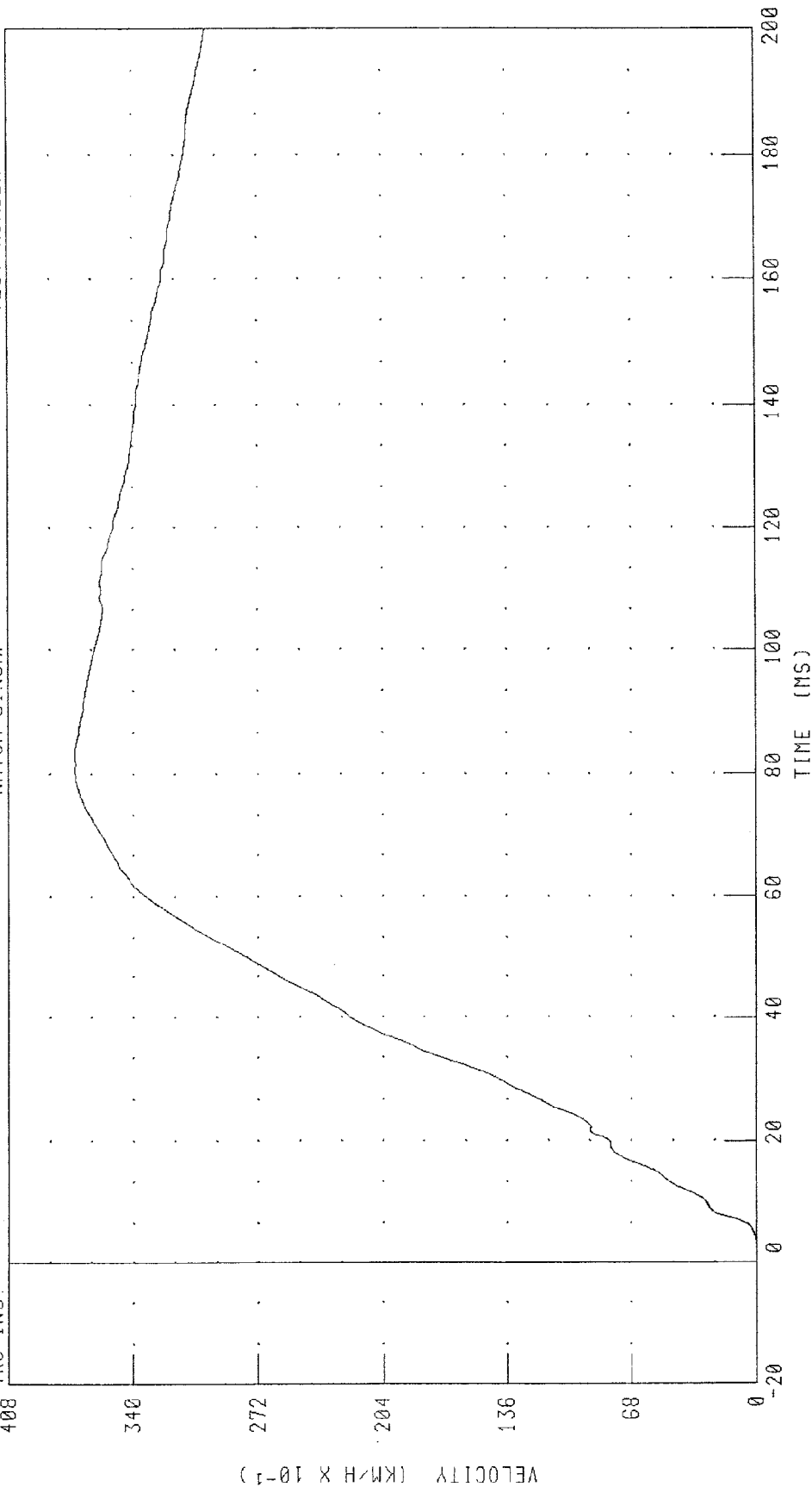
PEAK DATA: 25.98 G @ 32.80 MS; -2.94 G @ 116.16 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 REAR FLOORPAN ABOVE AXLE Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



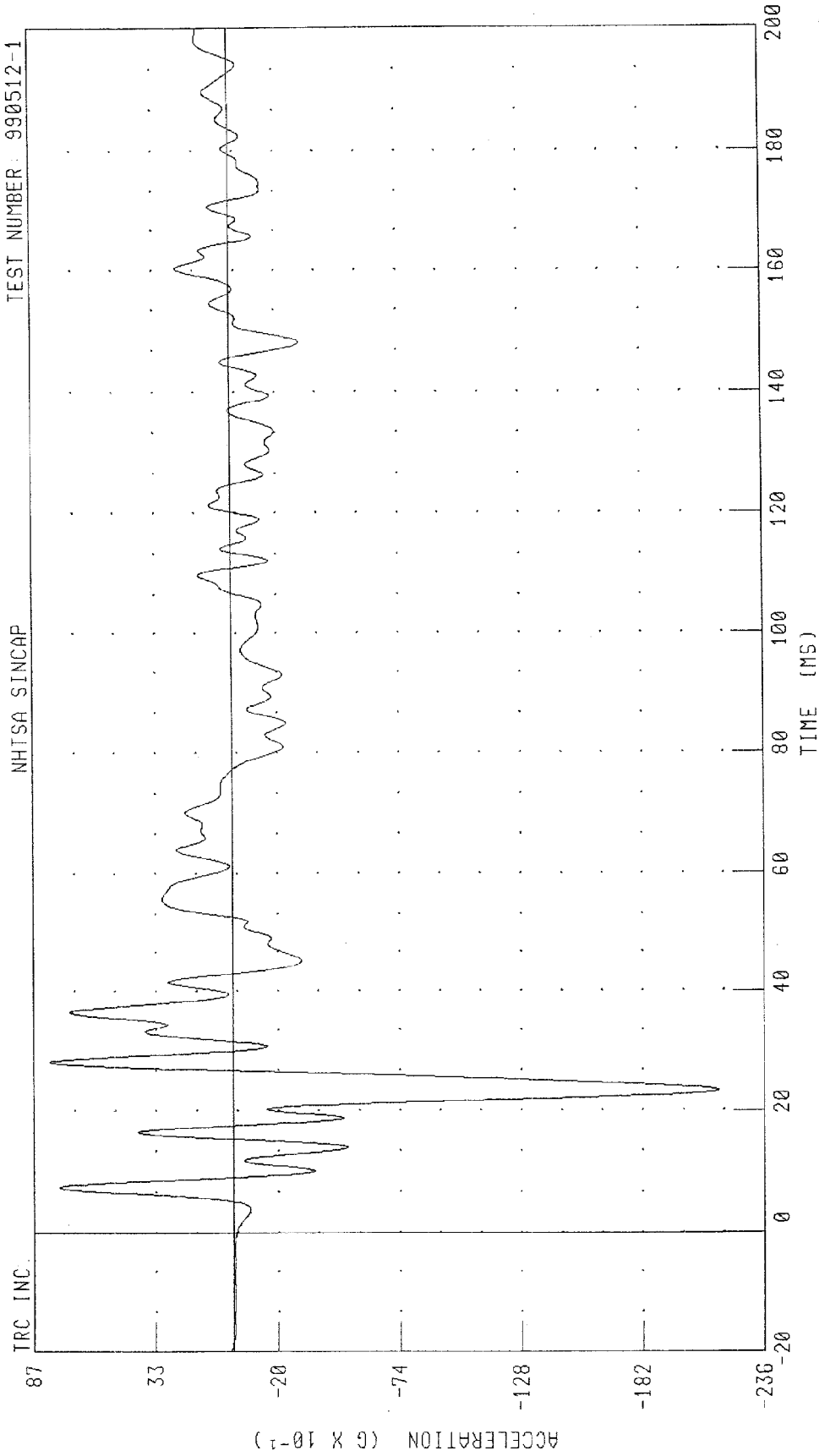
CHANNEL: RDKYV1 FILTER: CH. CLASS 180

PEAK DATA: 37.19 KM/H @ 83.60 MS, 0.00 KM/H @ 0.24 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 REAR FLOORPAN ABOVE AXLE Z-AXIS ACCELERATION

TEST NUMBER: 990512-1

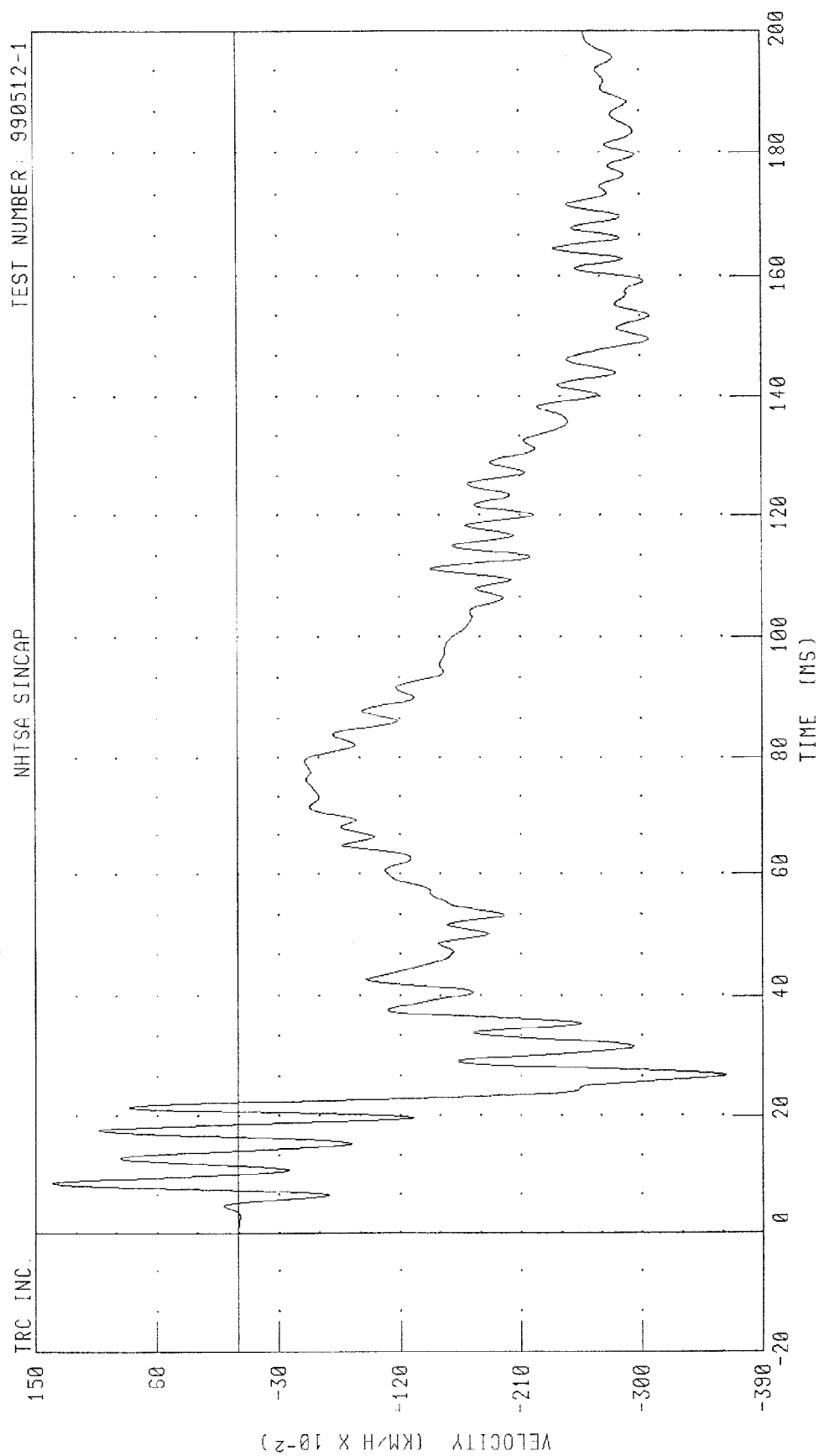
NHTSA SINCAP



CHANNEL: ROKZG1 FILTER: CH. CLASS 60

PEAK DATA: 8.08 G @ 28.00 MS, -21.58 G @ 23.28 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 REAR FLOORPAN ABOVE AXLE Z-AXIS VELOCITY



PEAK DATA: 1.38 KM/H @ 8.72 MS; -3.62 KM/H @ 26.88 MS

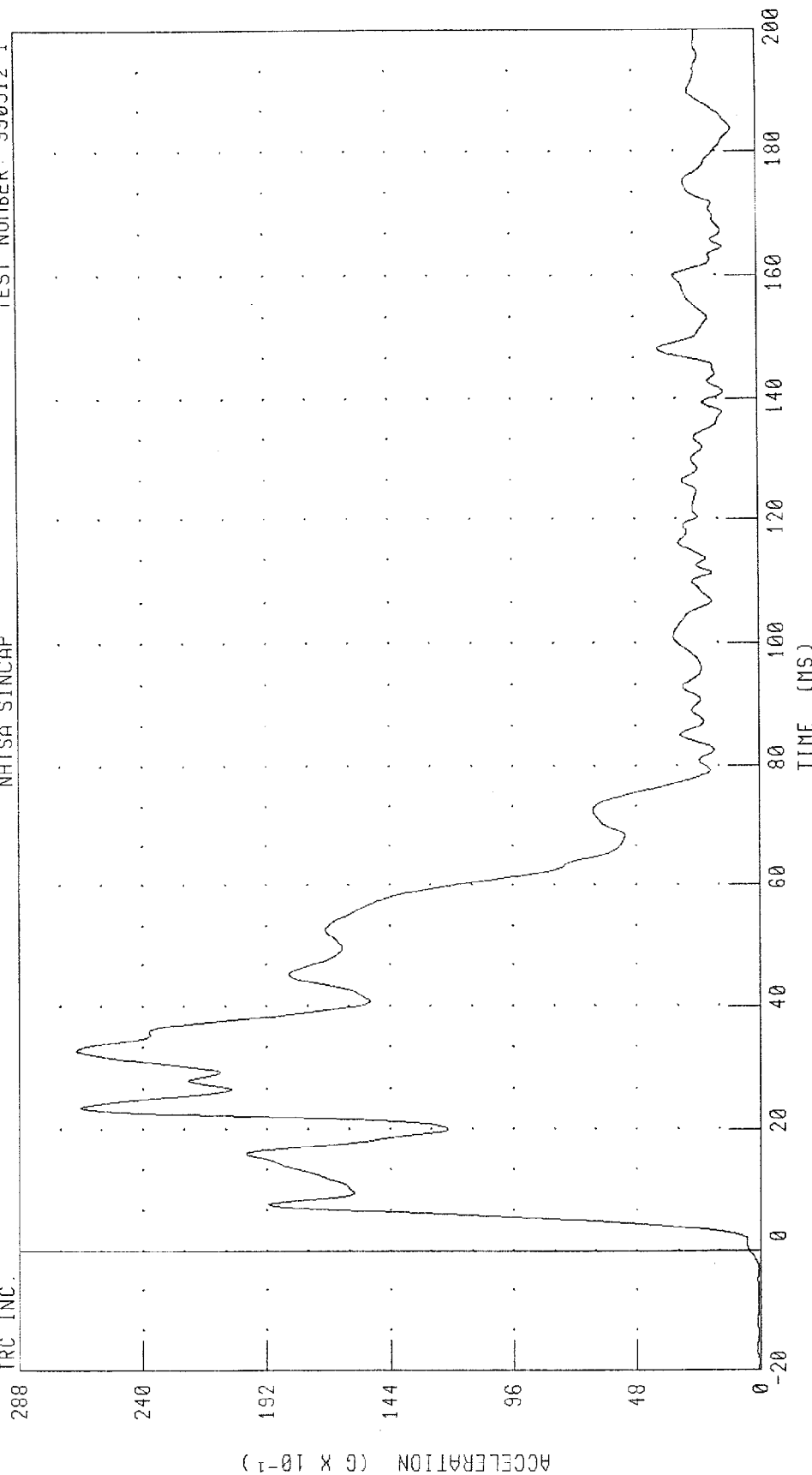
CHANNEL: RDKZV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 26.55 G @ 32.88 MS; 0.04 G @ -18.64 MS

CHANNEL: RDKRG1 FILTER: CH. CLASS 60

**Vehicle Left Side Sill at Front Seat Y-Axis Data Channel,
LFSYG1, Was Not Installed**

Vehicle Left Side Sill at Front Seat Y-Axis Velocity Channel,
LFSYV1, Was Not Calculated

**Vehicle Left Side Sill at Front Seat Y-Axis Displacement Channel,
LFSYD1, Was Not Recorded**

**Vehicle Left Side Sill at Rear Seat Y-Axis Data Channel,
LRSYG1, Was Not Installed**

**Vehicle Left Side Sill at Rear Seat Y-Axis Velocity Channel,
LRSYV1, Was Not Calculated**

**Vehicle Left Side Sill at Rear Seat Y-Axis Displacement Channel,
LRSYD1, Was Not Recorded**

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT FRONT DOOR ON CENTERLINE Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

241

See Data Acquisition Explanations
Recorded Questionable Data

192

143

94

45

-4

-53

ACCELERATION (G)

TIME (MS)

200

180

160

140

120

100

80

60

40

20

0

-20

PEAK DATA: 222.61 G @ 7.28 MS, -48.92 G @ 22.88 MS

CHANNEL: LFCYG1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT FRONT DOOR ON CENTERLINE Y-AXIS VELOCITY

TEST NUMBER: 990512-1

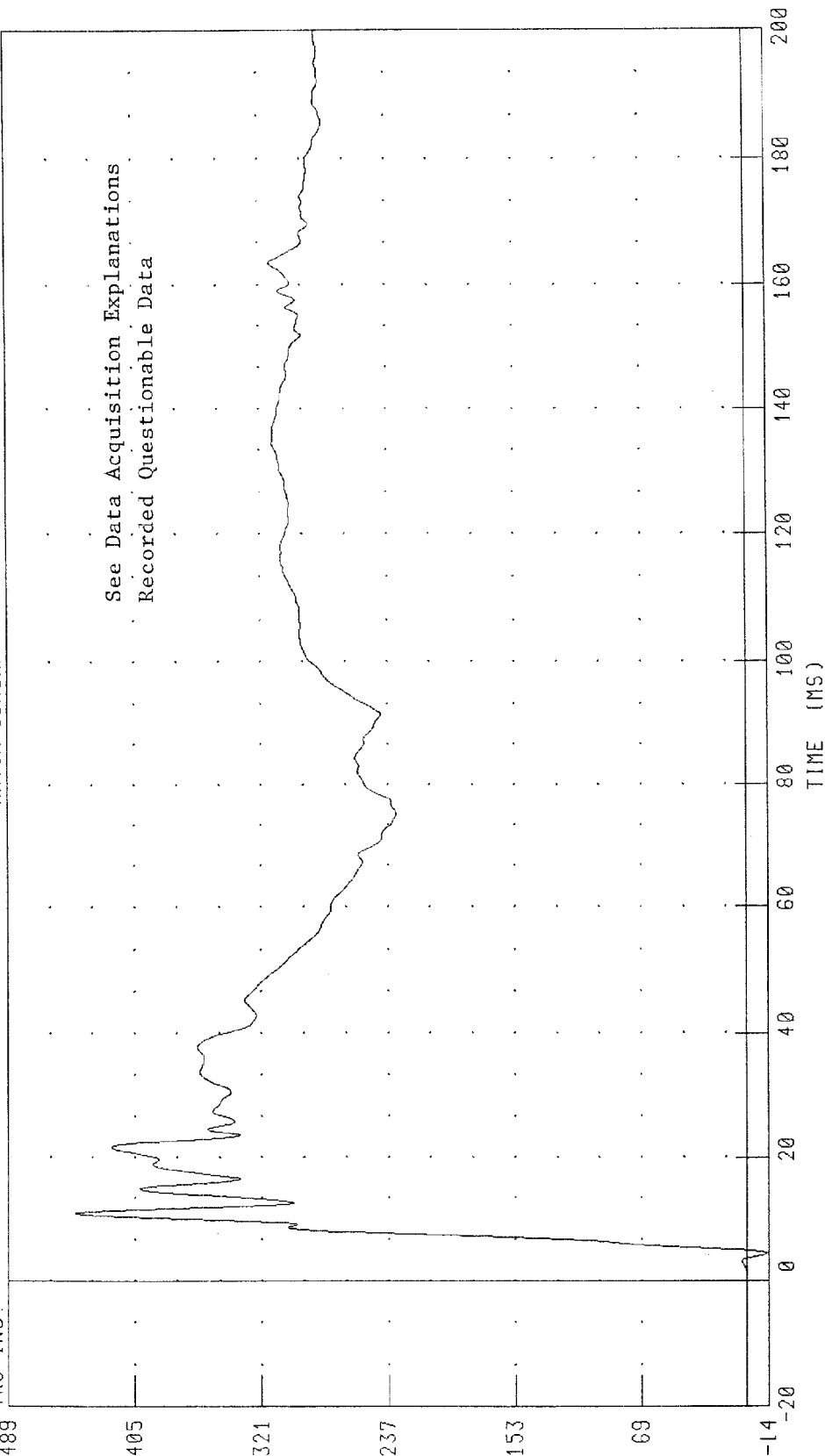
NHTSA SINCAP

TRC INC.

489

See Data Acquisition Explanations
Recorded Questionable Data

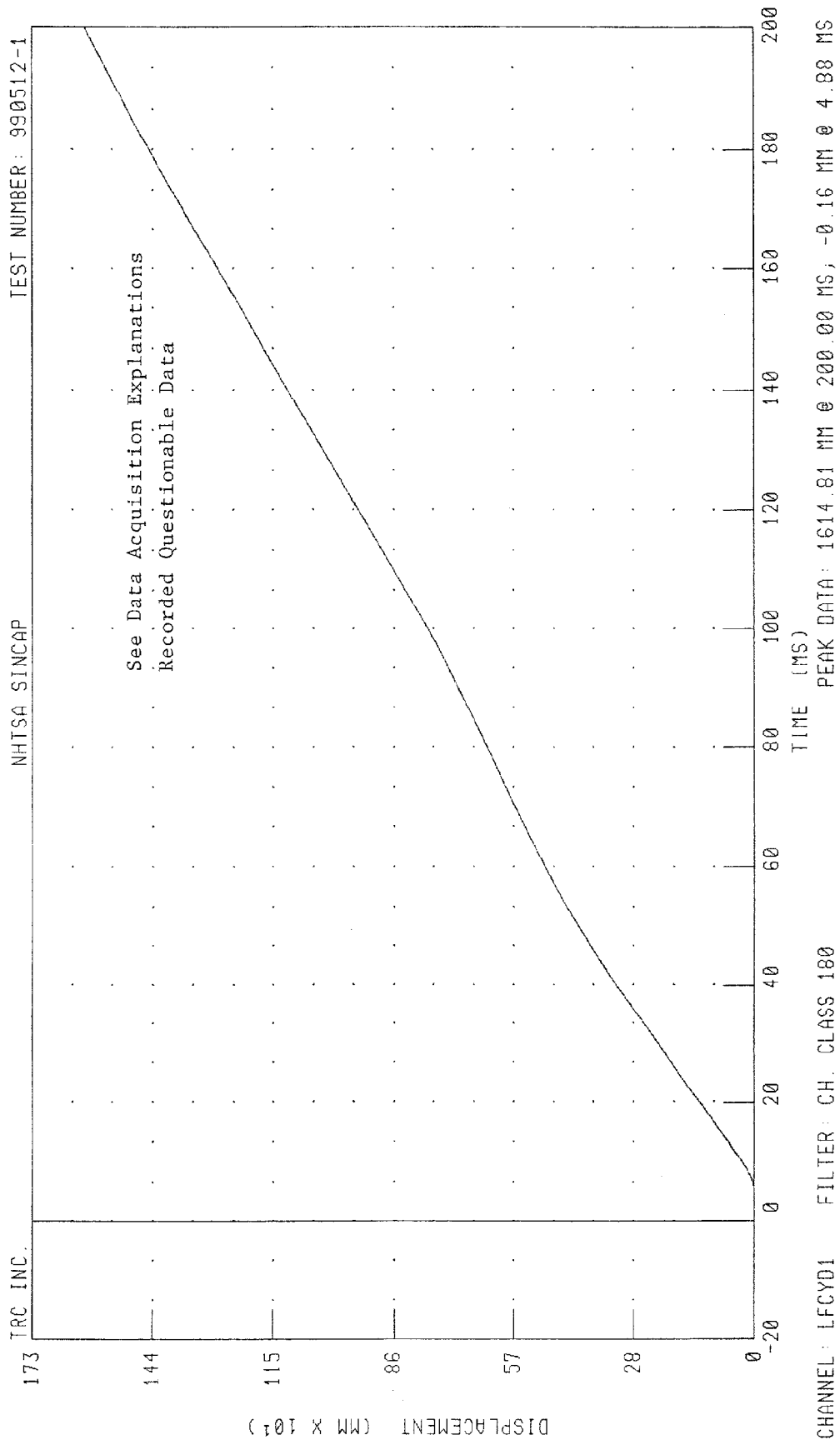
VELOCITY (KM/H X 10⁻¹)



PEAK DATA: 44.53 KM/H @ 10.88 MS; -1.30 KM/H @ 4.40 MS

CHANNEL: LFCYV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT FRONT DOOR ON CENTERLINE Y-AXIS DISPLACEMENT

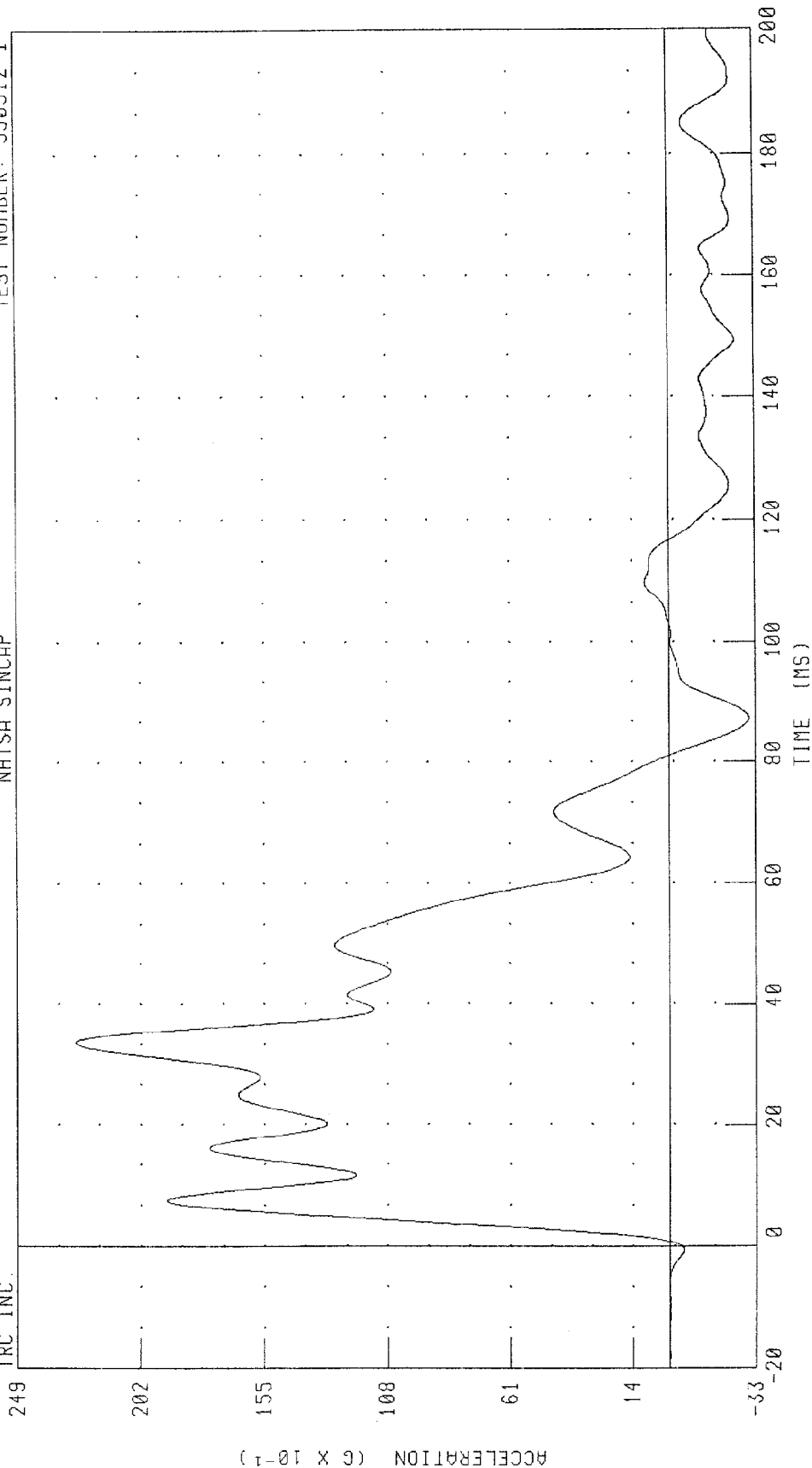


MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC, INC.



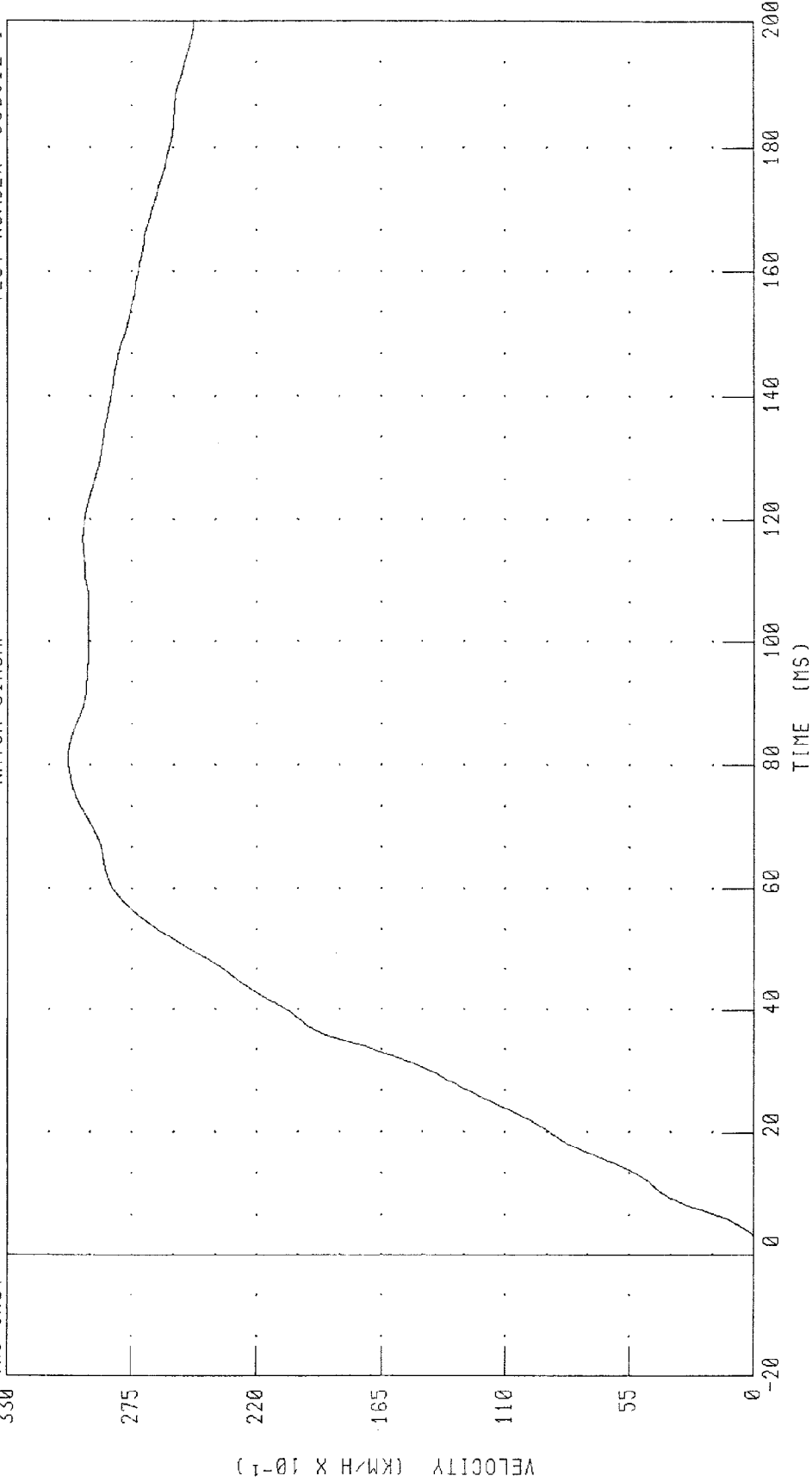
CHANNEL: RRTYC1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 30.32 KM/H @ 81.12 MS, -0.02 KM/H @ 2.48 MS

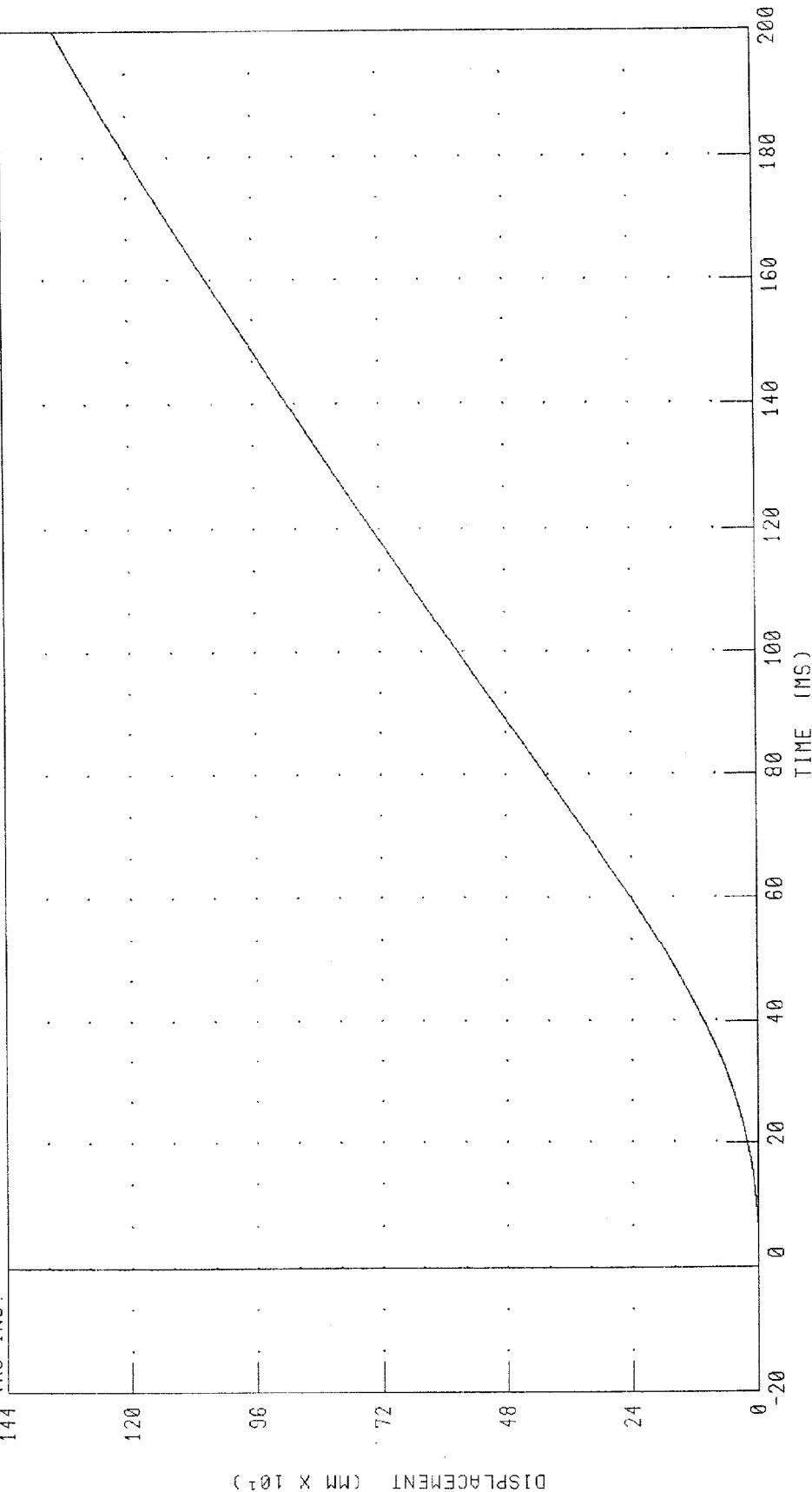
CHANNEL: RRTYV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS DISPLACEMENT

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 1337.48 MM @ 200.00 MS; -0.01 MM @ 2.96 MS

CHANNEL: RRTYD1 FILTER: CH. CLASS 180

**Vehicle Mid-Rear of Left Front Door Y-Axis Data Channel,
LFMYG1, Was Not Installed**

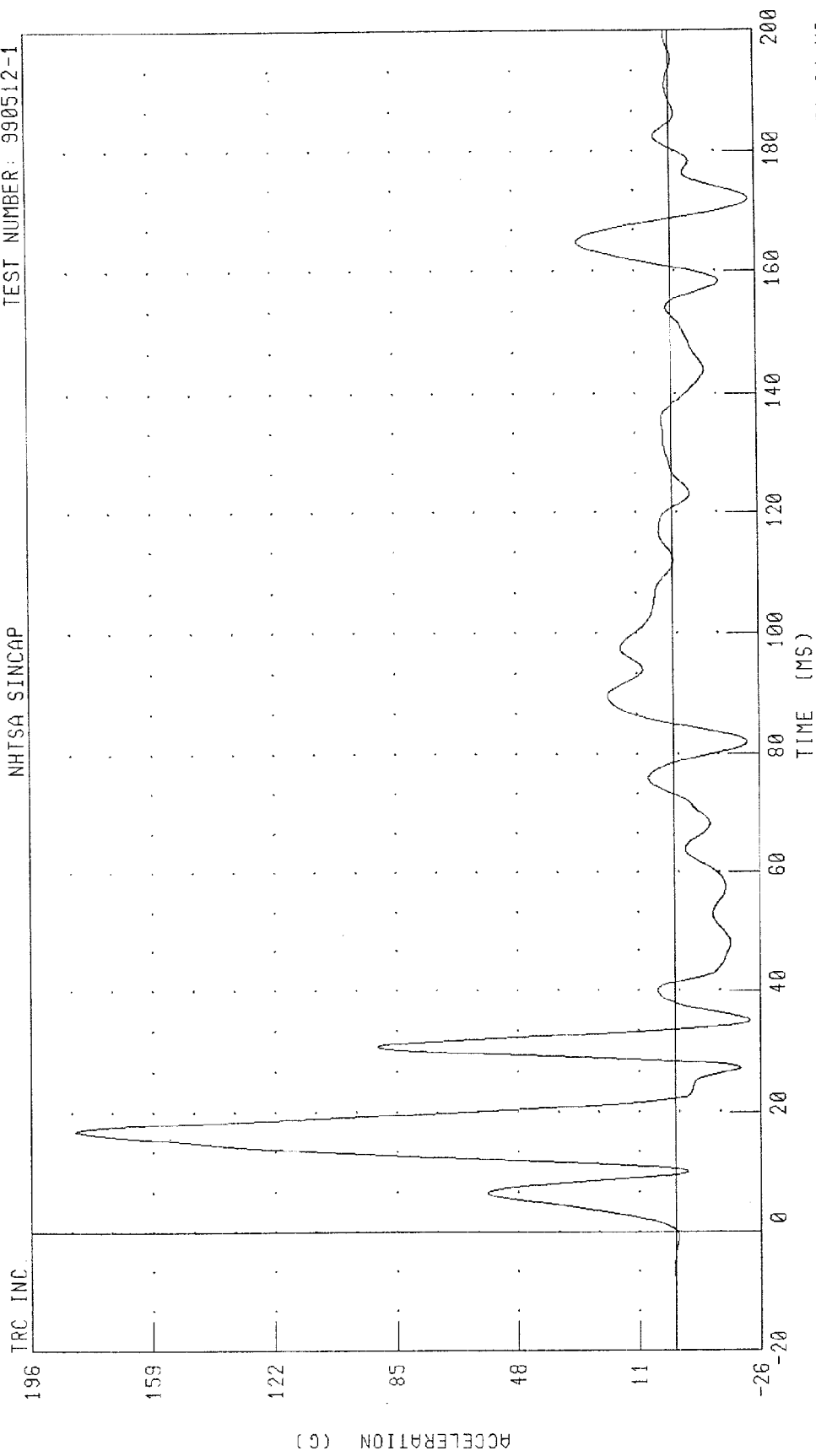
**Vehicle Mid-Rear of Left Front Door Y-Axis Velocity Channel,
LFMYV1, Was Not Calculated**

**Vehicle Mid-Rear of Left Front Door Y-Axis Displacement Channel,
LFMYD1, Was Not Recorded**

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT FRONT DOOR UPPER CENTERLINE Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

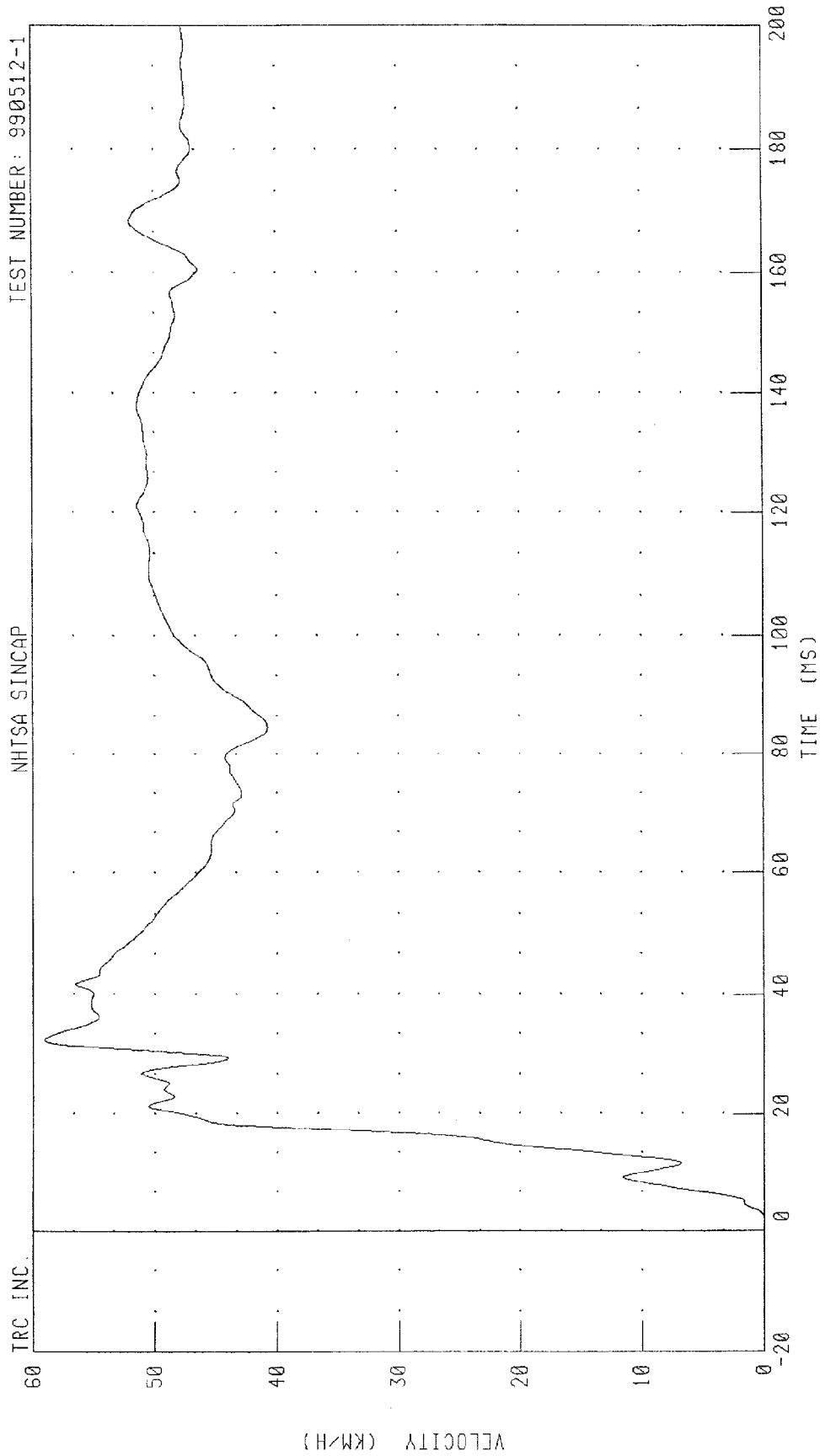
NHTSA SINCAP



PEAK DATA: 182.62 G @ 16.88 MS, -23.93 G @ 171.84 MS

CHANNEL: LFUYC1 FILTER: CH. CLASS 60

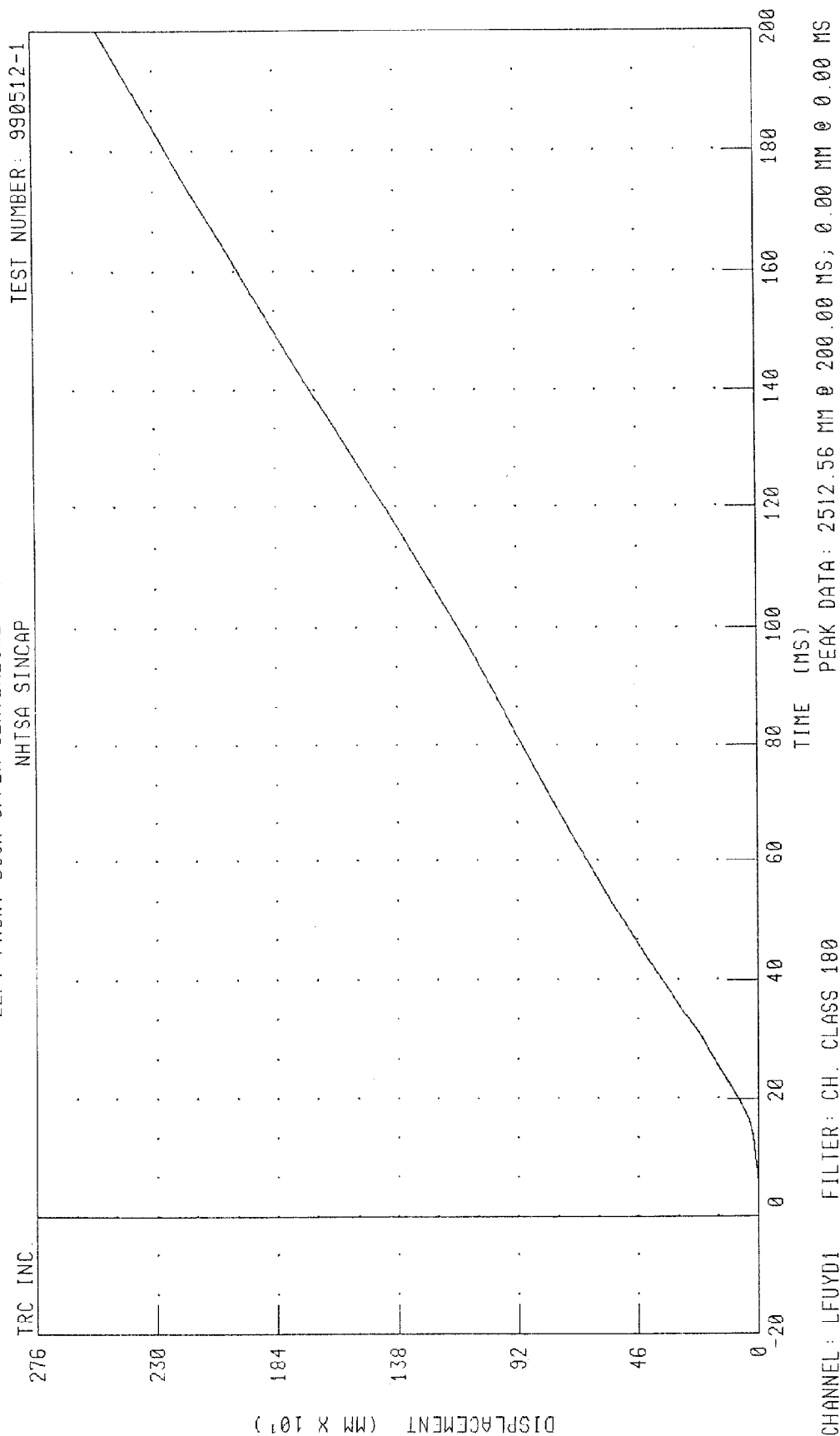
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT FRONT DOOR UPPER CENTERLINE Y-AXIS VELOCITY



CHANNEL: LFUYV1 FILTER: CH. CLASS 180

PEAK DATA: 59.11 KM/H @ 32.24 MS, -0.01 KM/H @ 1.92 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT FRONT DOOR UPPER CENTERLINE Y-AXIS DISPLACEMENT



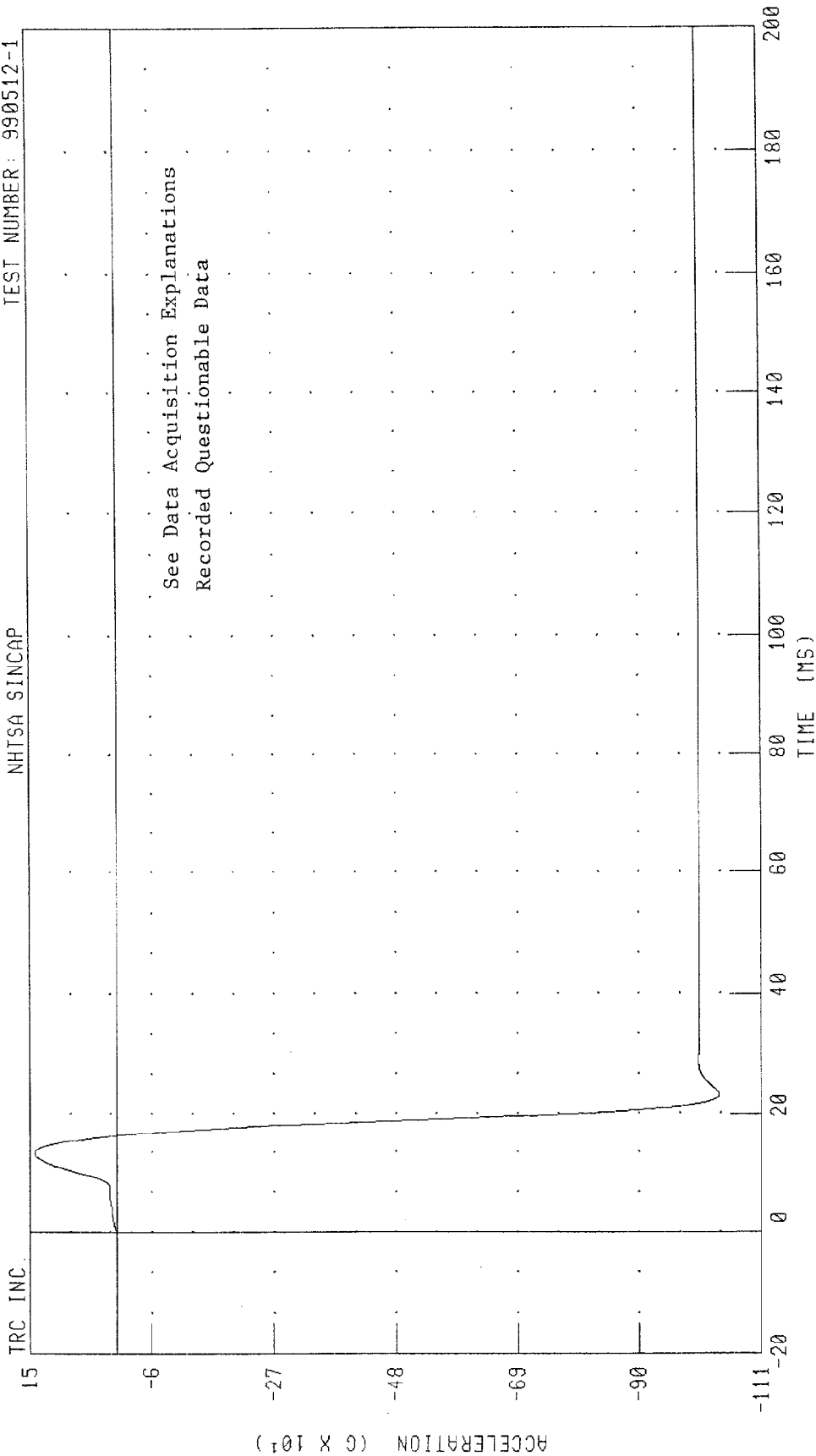
**Vehicle Left Rear Door Midrear Y-Axis Data Channel,
LRMYG1, Was Not Installed**

**Vehicle Left Rear Door Midrear Y-Axis Velocity Channel,
LRMYV1, Was Not Calculated**

**Vehicle Left Rear Door Midrear Y-Axis Displacement Channel,
LRMYD1, Was Not Recorded**

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 LEFT REAR DOOR UPPER CENTERLINE Y-AXIS ACCELERATION
 NHTSA SINCAP

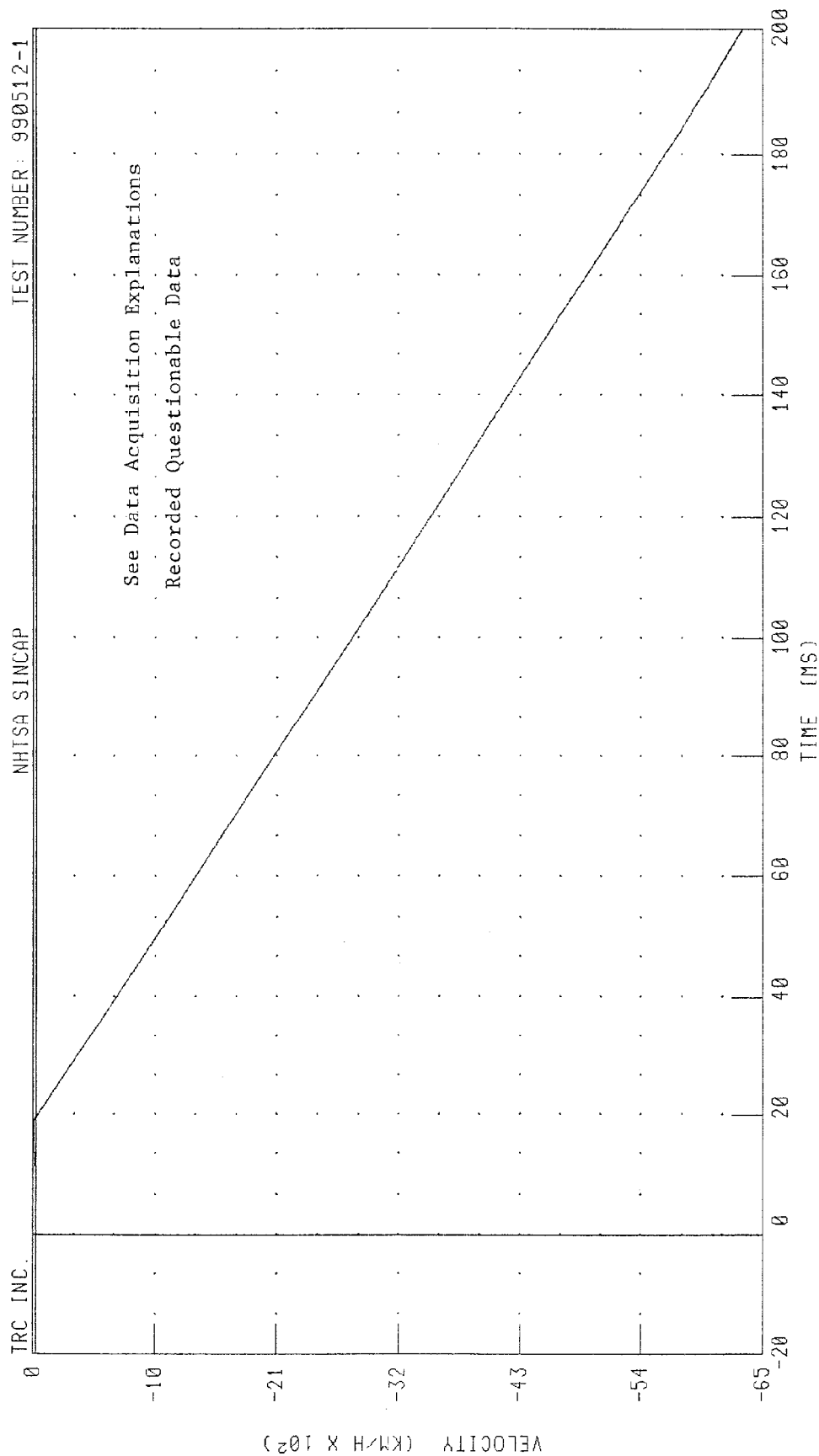
TEST NUMBER: 990512-1



PEAK DATA: 141.90 G @ 13.20 MS, -1038.09 G @ 23.12 MS

CHANNEL: LRU1G1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR DOOR UPPER CENTERLINE Y-AXIS VELOCITY



CHANNEL: LRUUV1 FILTER: CH. CLASS 180

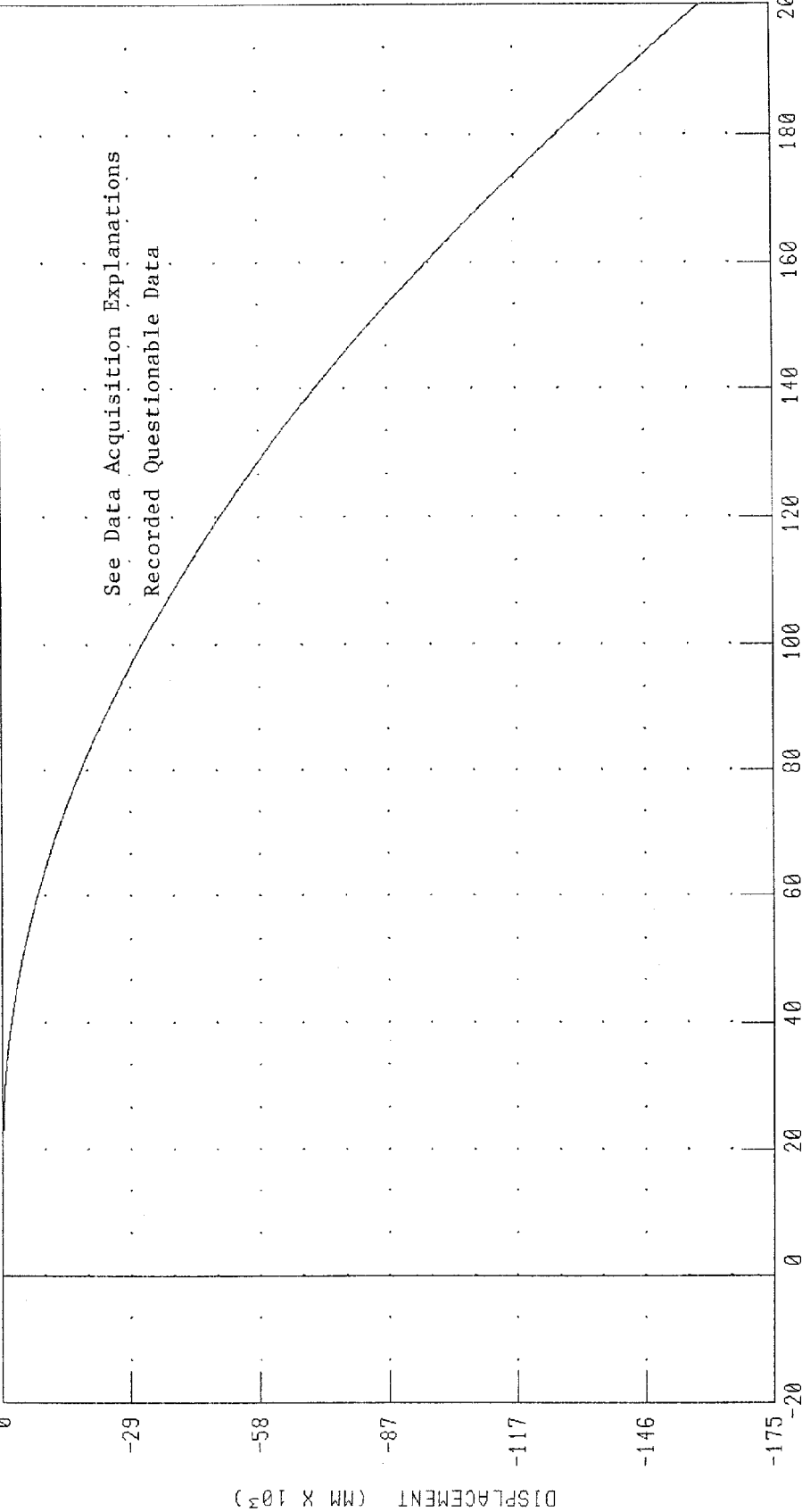
PEAK DATA: 27.54 KM/H @ 15.44 MS; -6392.72 KM/H @ 200.00 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR DOOR UPPER CENTERLINE Y-AXIS DISPLACEMENT

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

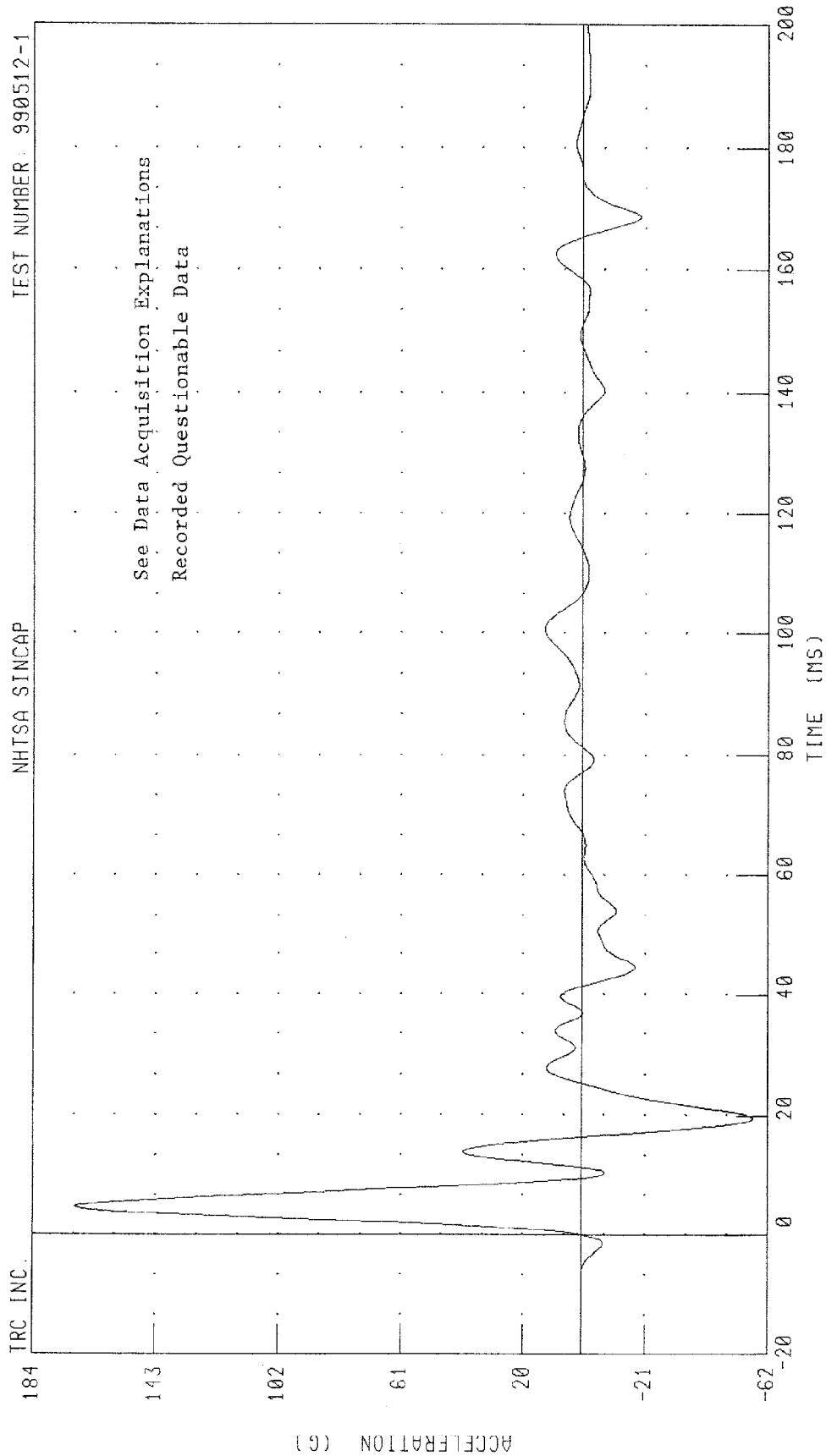


TIME (MS)

PEAK DATA: 53.98 MM @ 19.68 MS, -160111.67 MM @ 200.00 MS

CHANNEL: LRUYD1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT LOWER A-POST Y-AXIS ACCELERATION



CHANNEL: LLAYC1 FILTER: CH. CLASS 60 PEAK DATA: 170.07 G @ 4.72 MS; -57.20 G @ 19.52 MS

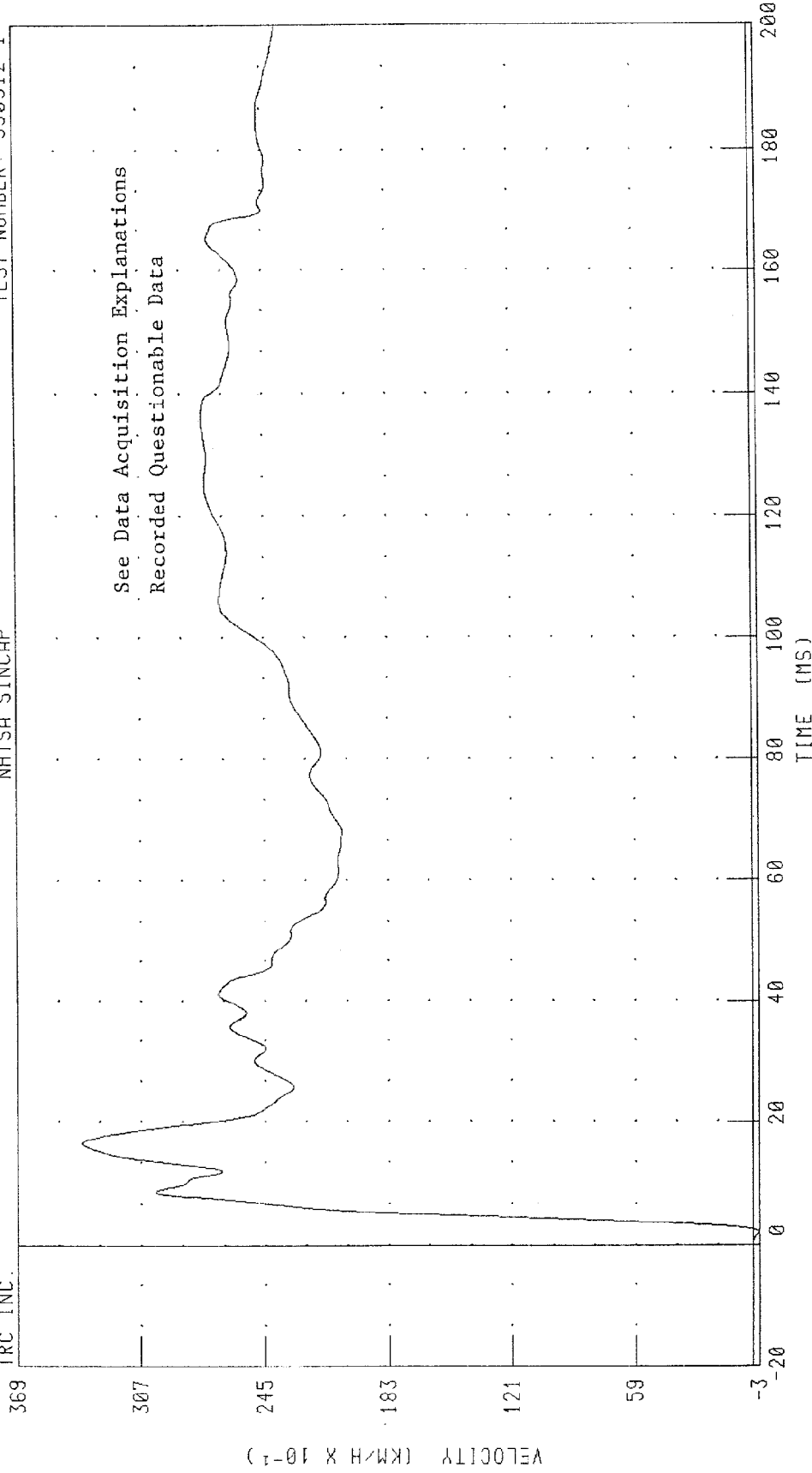
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT LOWER A-POST Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

See Data Acquisition Explanations
Recorded Questionable Data



CHANNEL: LLAYV1 FILTER: CH. CLASS 180

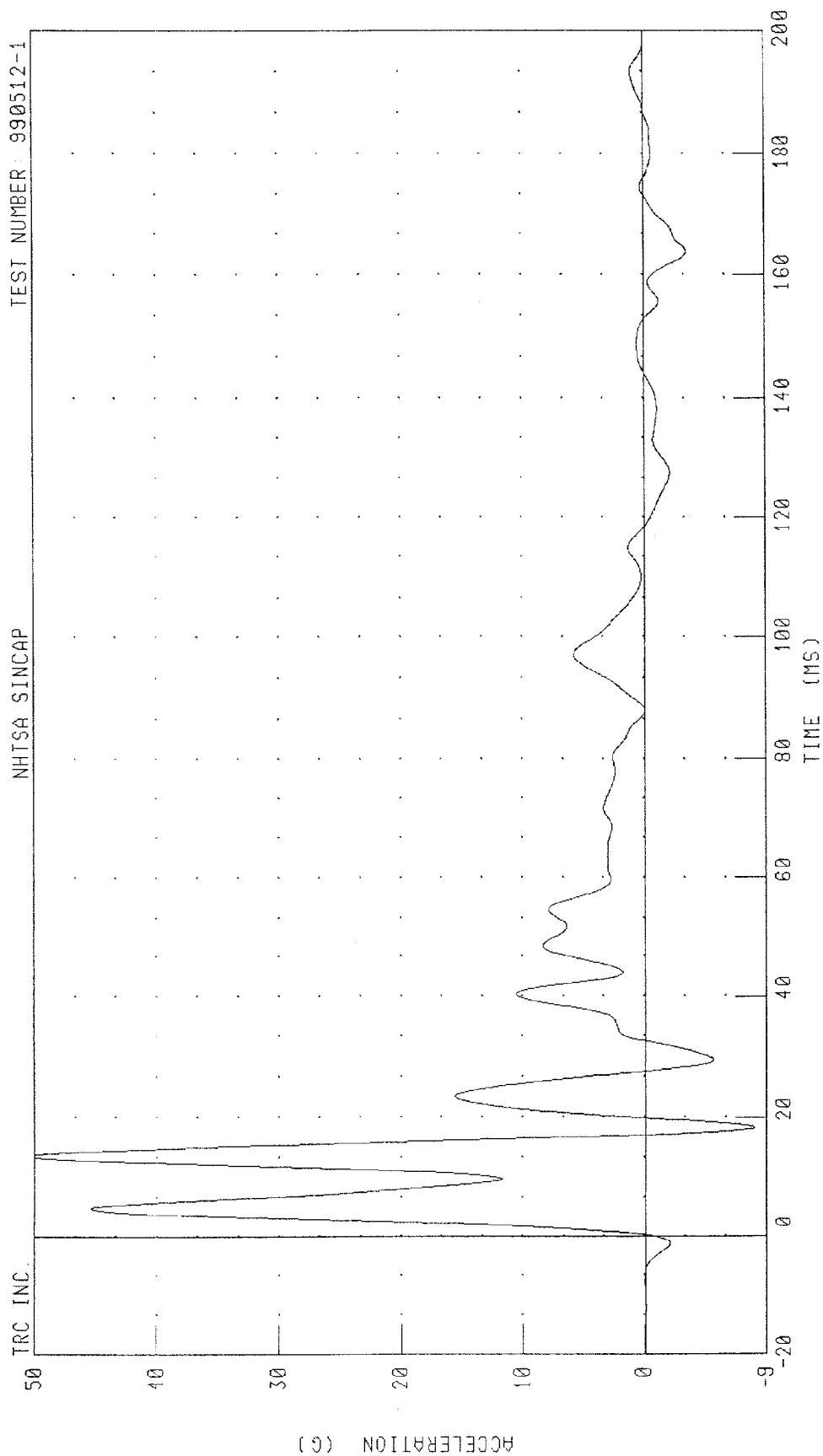
PEAK DATA: 33.68 KM/H @ 16.56 MS, -0.30 KM/H @ 2.08 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

LEFT MIDDLE A-POST Y-AXIS ACCELERATION

NHTSA SINCAP

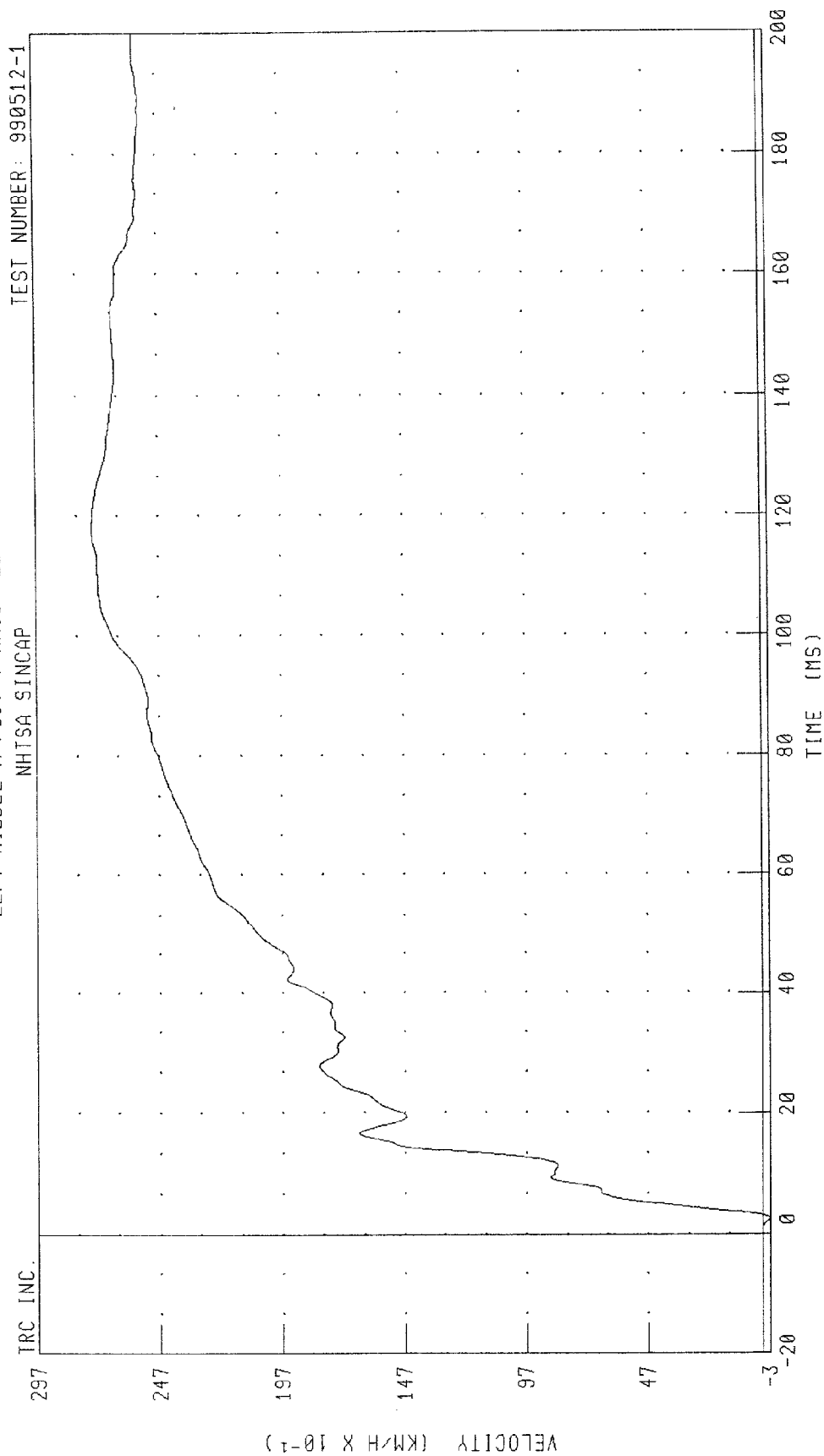
TEST NUMBER: 990512-1



CHANNEL: L MAYC1 FILTER: CH. CLASS 60

PEAK DATA: 50.68 G @ 13.60 MS; -9.00 G @ 18.40 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT MIDDLE A-POST Y-AXIS VELOCITY



PEAK DATA: 27.42 KM/H @ 117.84 MS; -0.29 KM/H @ 2.48 MS

CHANNEL: LMAYV1 FILTER: CH. CLASS 180

**Vehicle Lower B-Post Y-Axis Data Channel,
LLBYG1, Was Not Installed**

Vehicle Lower B-Post Y-Axis Velocity Channel,
LLBYV1, Was Not Calculated

**Vehicle Middle B-Post Y-Axis Data Channel,
LMBYG1, Was Not Installed**

**Vehicle Middle B-Post Y-Axis Velocity Channel,
LMBYV1, Was Not Calculated**

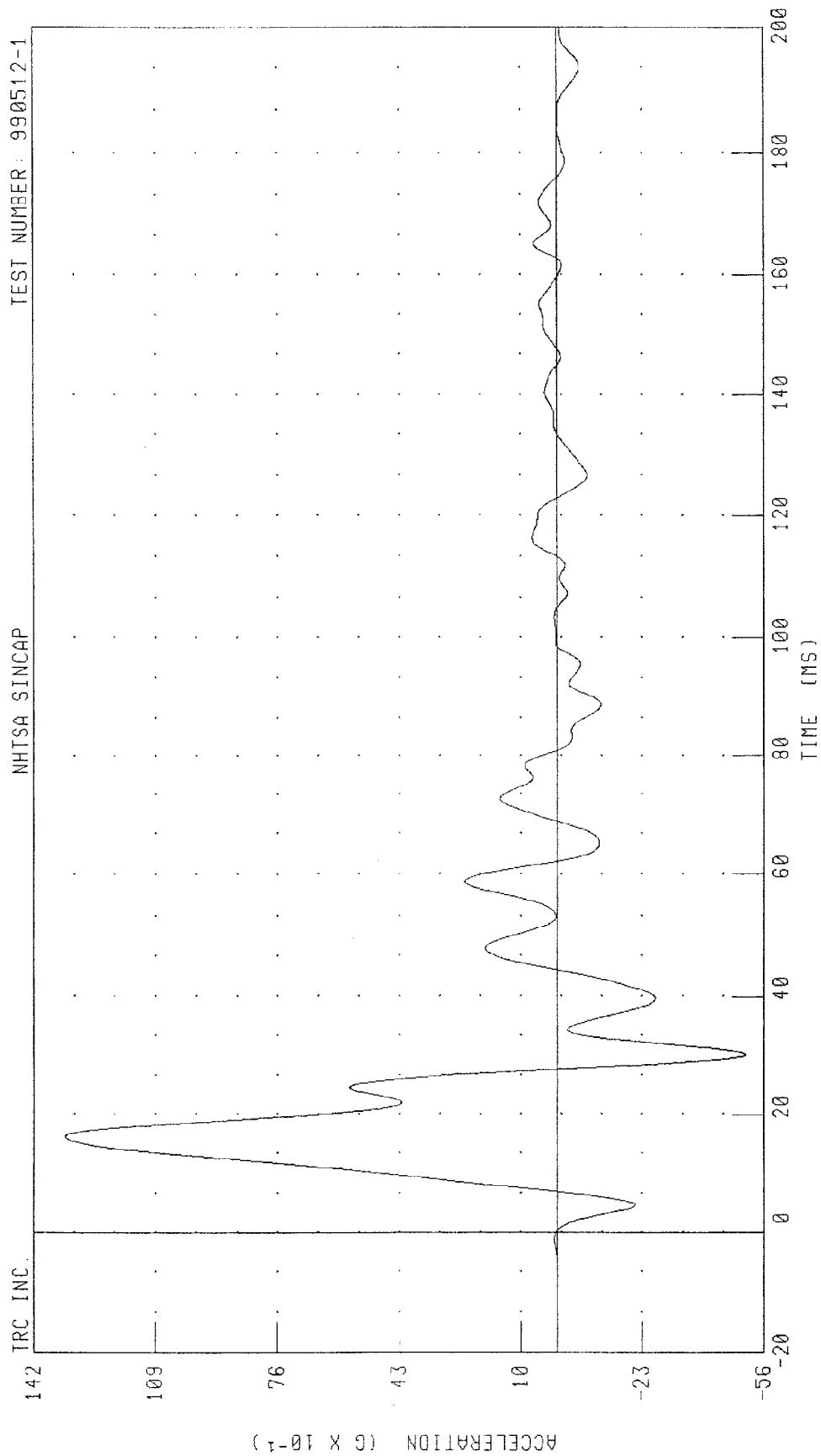
**Vehicle Front Seat Track Y-Axis Data Channel,
LFTYG1, Was Not Installed**

**Vehicle Front Seat Track Y-Axis Velocity Channel,
LFTYV1, Was Not Calculated**

**Vehicle Rear Seat Track Y-Axis Data Channel,
LRTYG1, Was Not Installed**

**Vehicle Rear Seat Track Y-Axis Velocity Channel,
LRTYV1, Was Not Calculated**

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
VEHICLE CENTER OF GRAVITY X-AXIS ACCELERATION



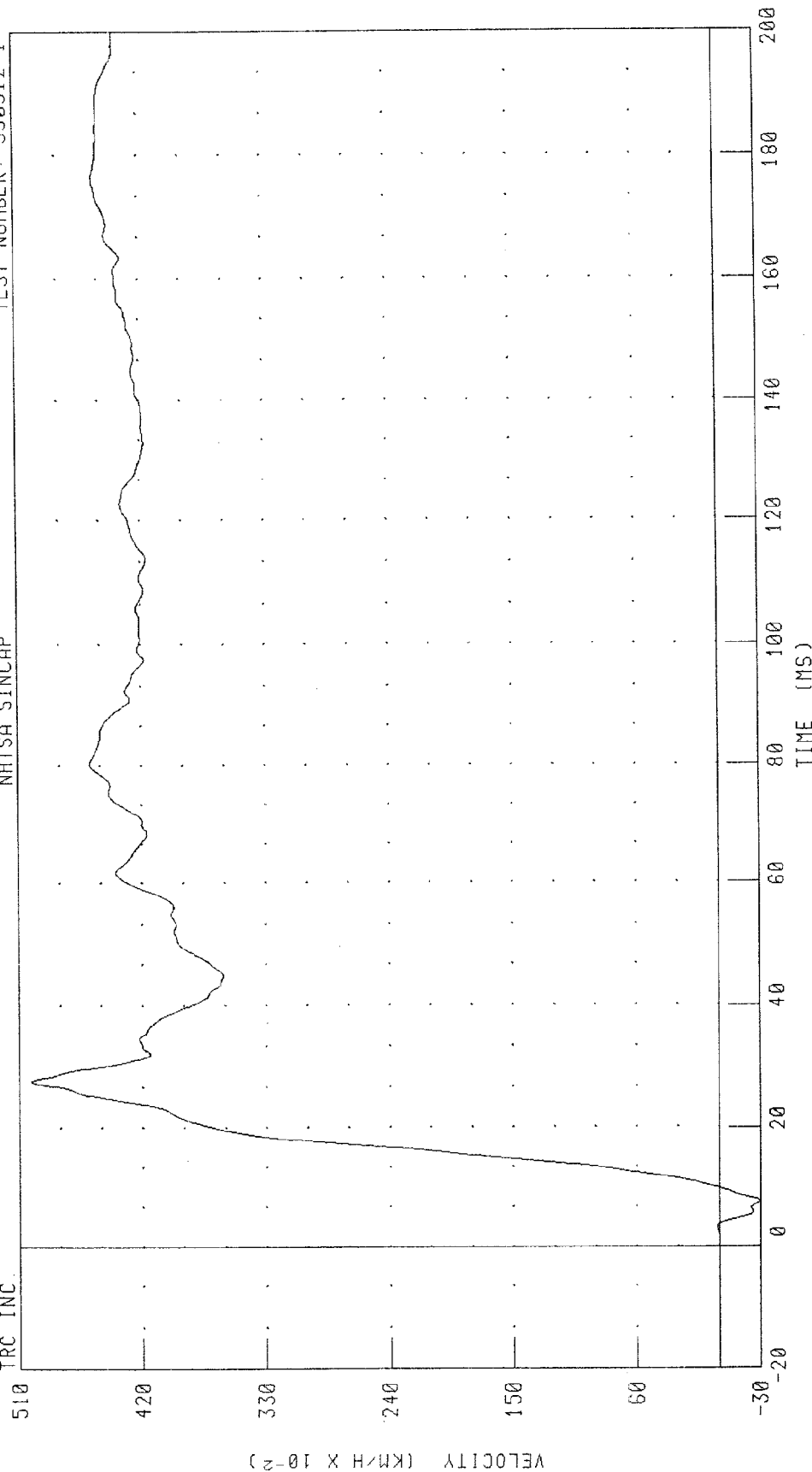
CHANNEL: VCCXG1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
VEHICLE CENTER OF GRAVITY X-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



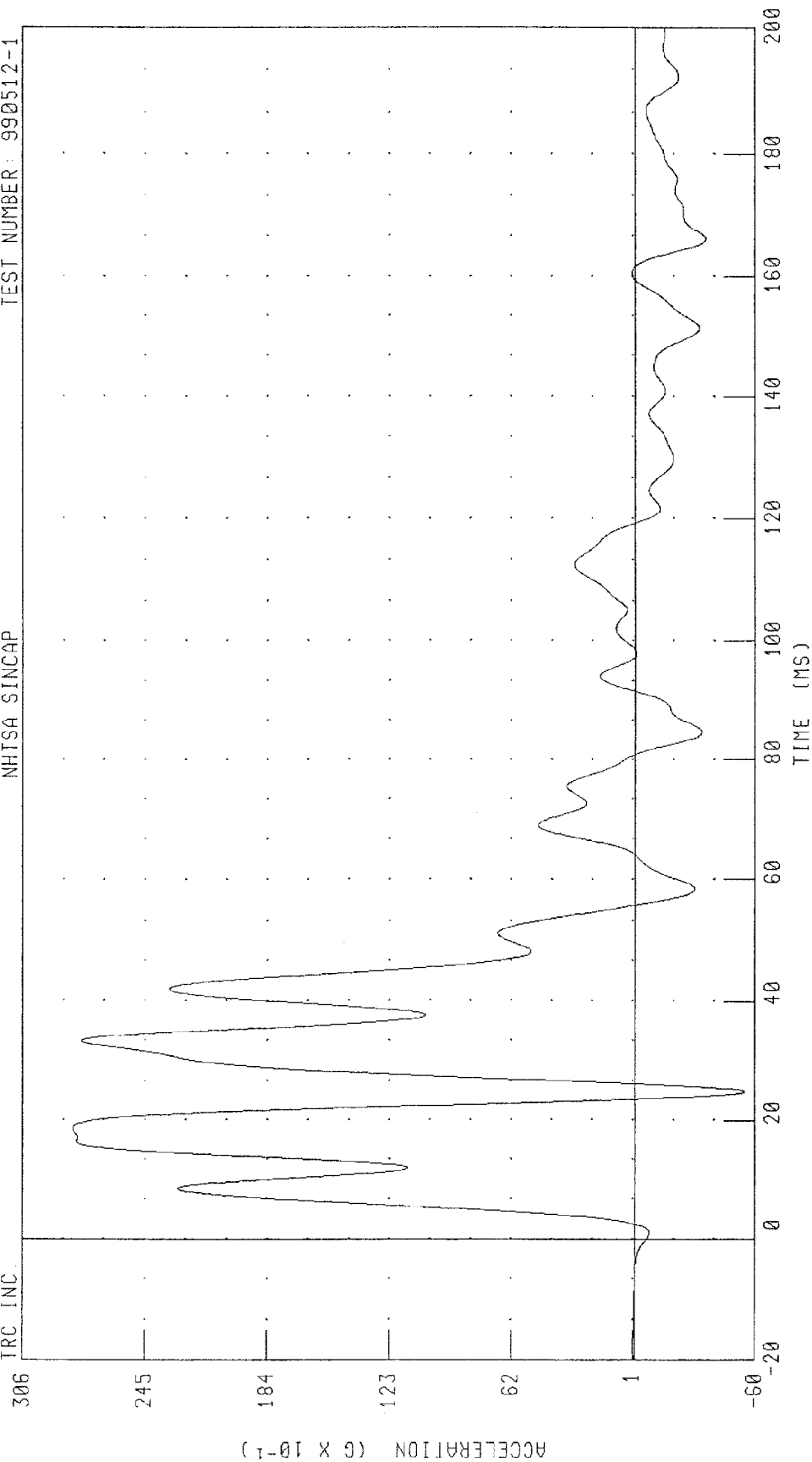
PEAK DATA: 5 01 KM/H @ 27.60 MS; -0.29 KM/H @ 7.52 MS

CHANNEL: VCGXV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 VEHICLE CENTER OF GRAVITY Y-AXIS ACCELERATION
 NHTSA SINCAP

TEST NUMBER: 990512-1

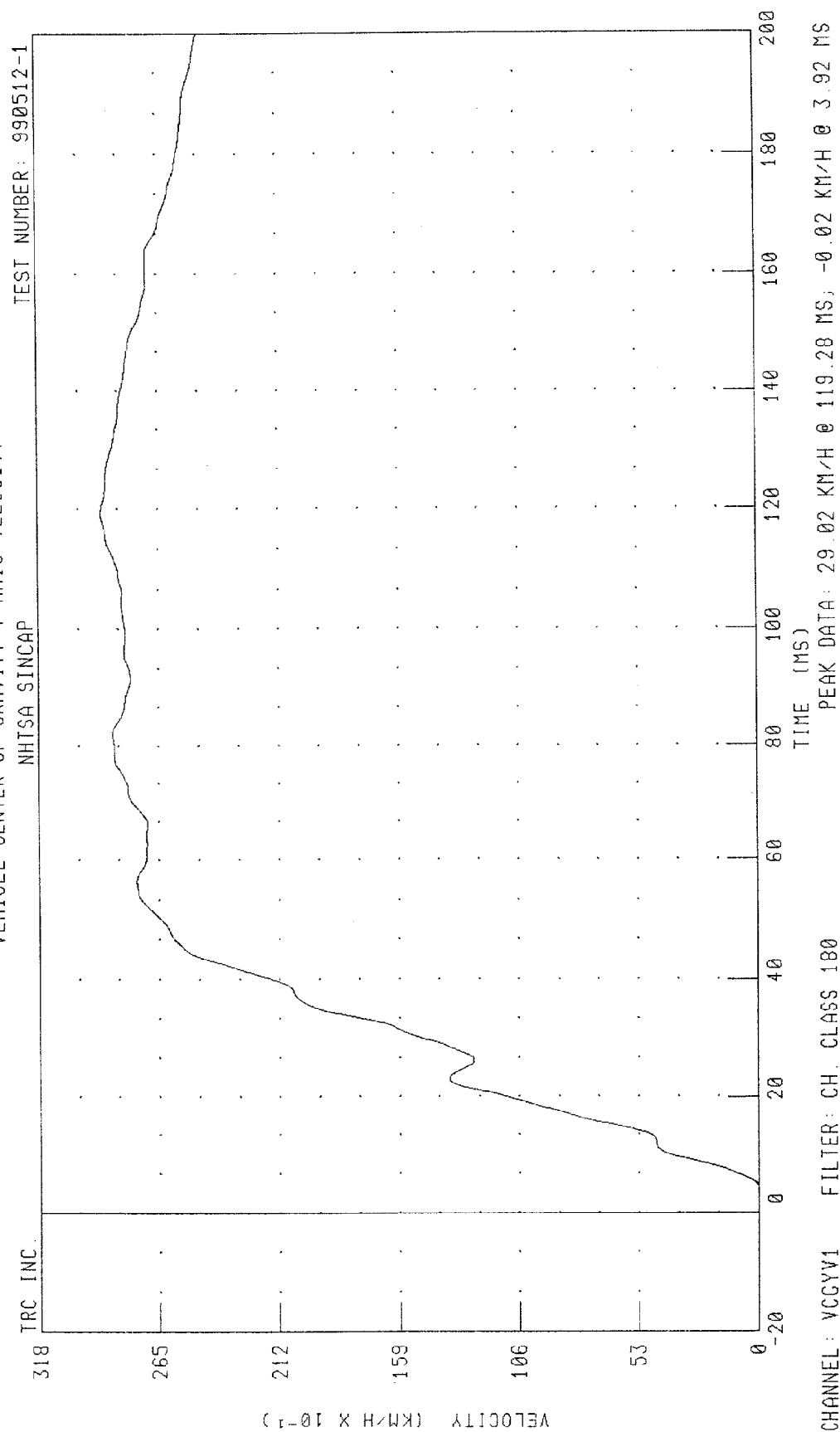
TRC INC.



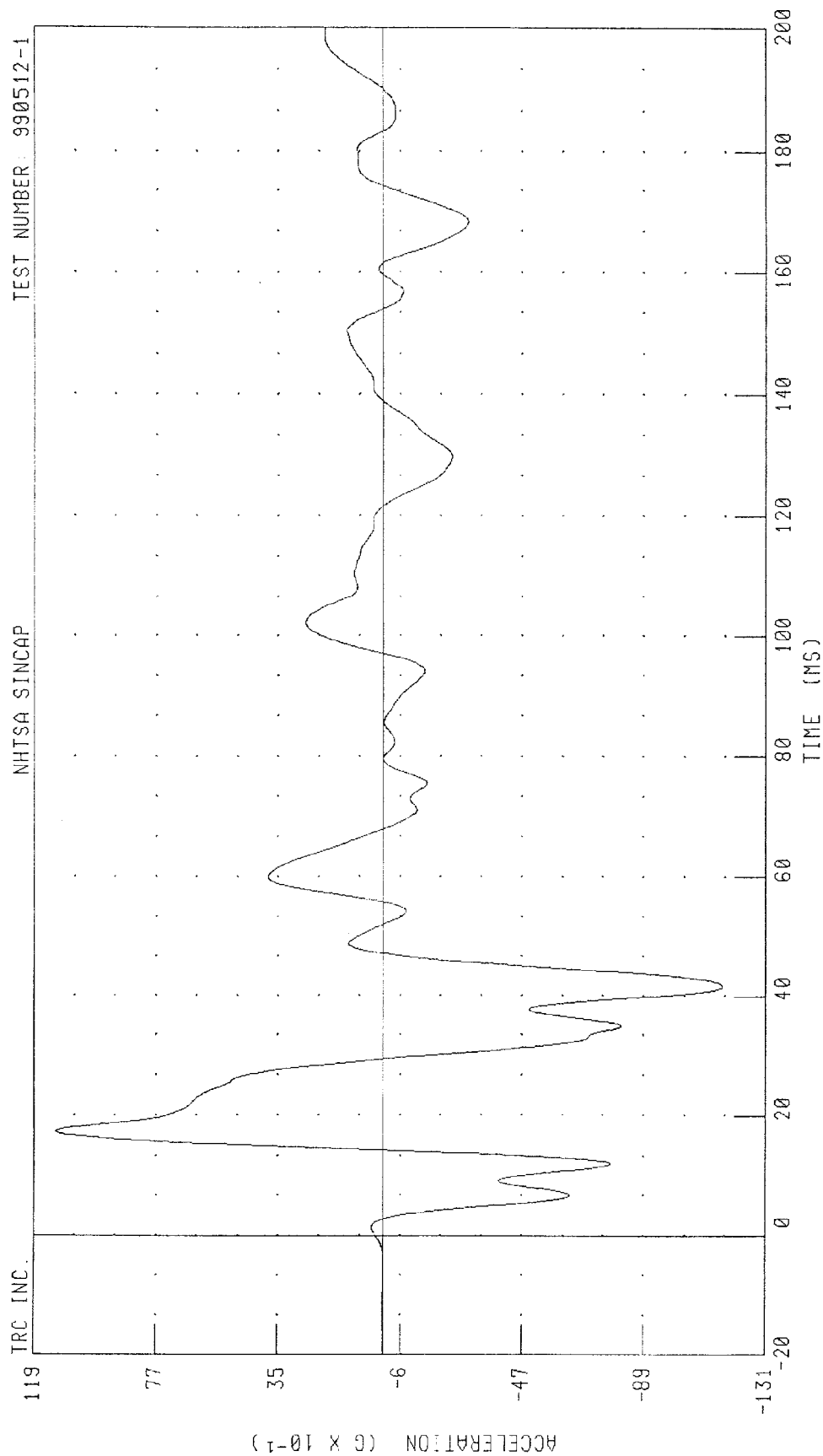
PEAK DATA: 28.11 G @ 18.64 MS; -5.51 G @ 24.80 MS

CHANNEL: VCCYG1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
VEHICLE CENTER OF GRAVITY Y-AXIS VELOCITY



MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
VEHICLE CENTER OF GRAVITY Z-AXIS ACCELERATION



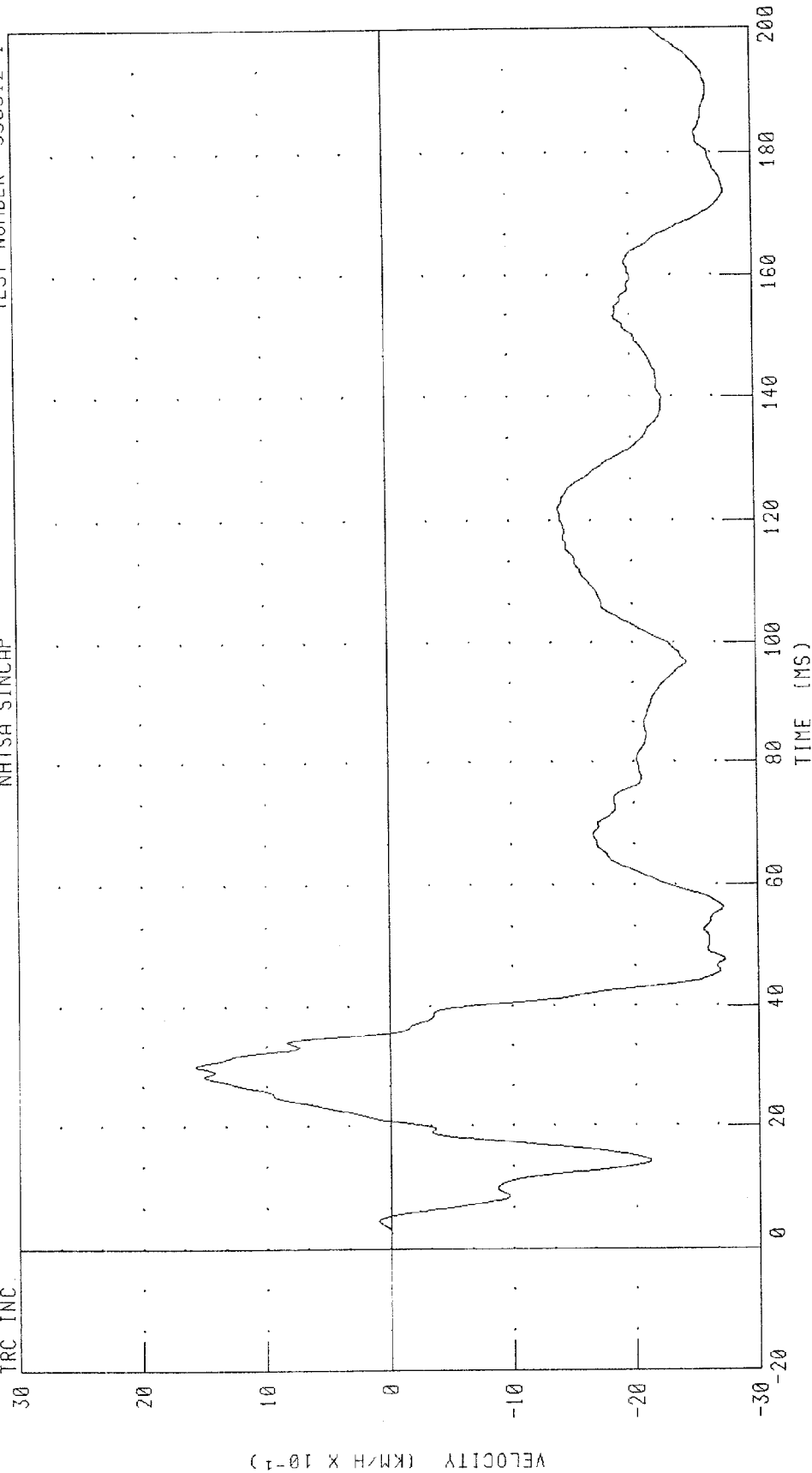
CHANNEL: VCCZ01 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
VEHICLE CENTER OF GRAVITY Z-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

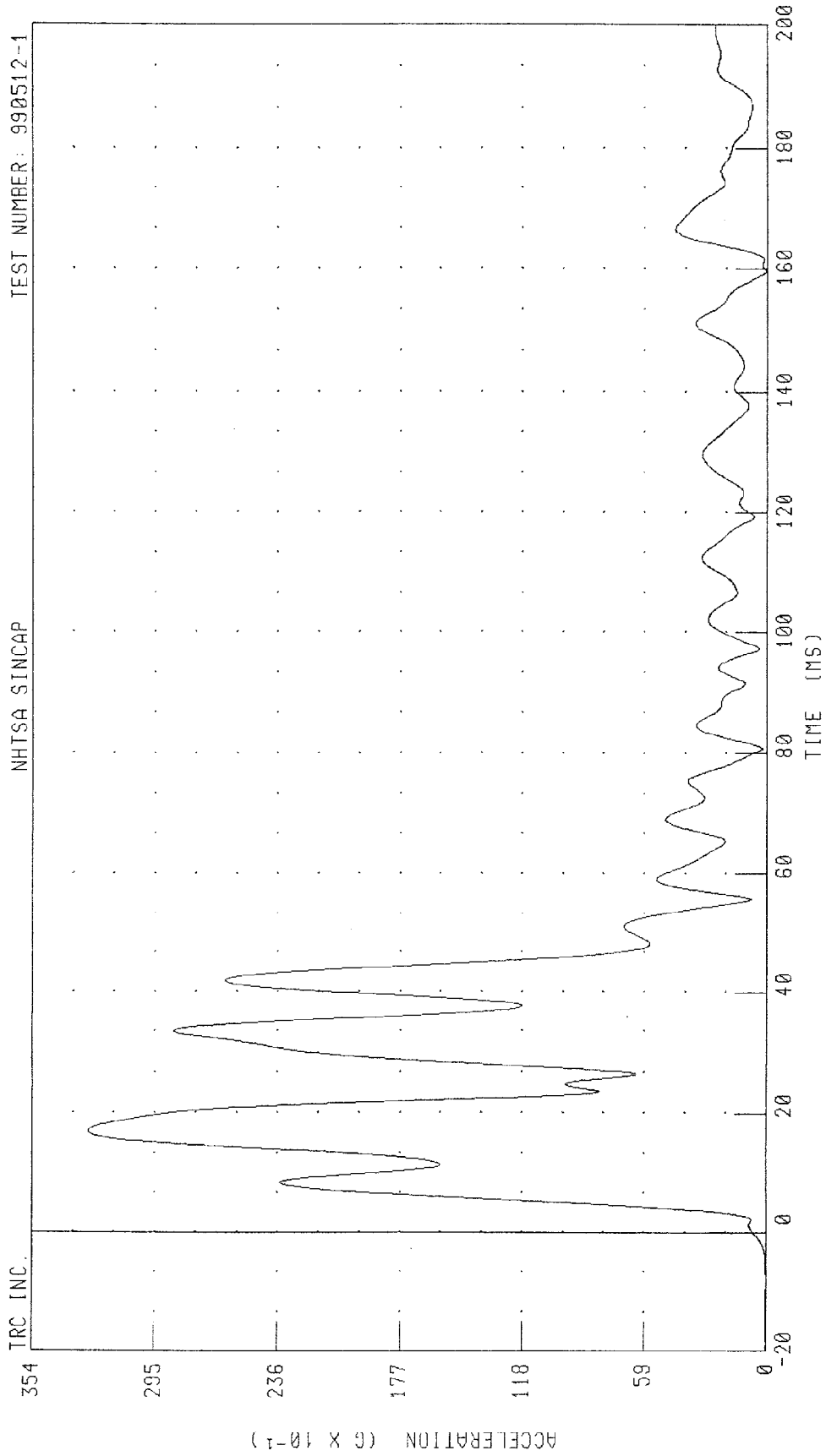
TRC INC.



PEAK DATA: 1.57 KM/H @ 30.08 MS, -2.77 KM/H @ 173.92 MS

CHANNEL: VCGZV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1993 MAZDA PROTEGE
VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION



PEAK DATA: 32.72 G @ 16.96 MS; 0.01 G @ -8.16 MS

CHANNEL: VCRCG1 FILTER: CH. CLASS 60

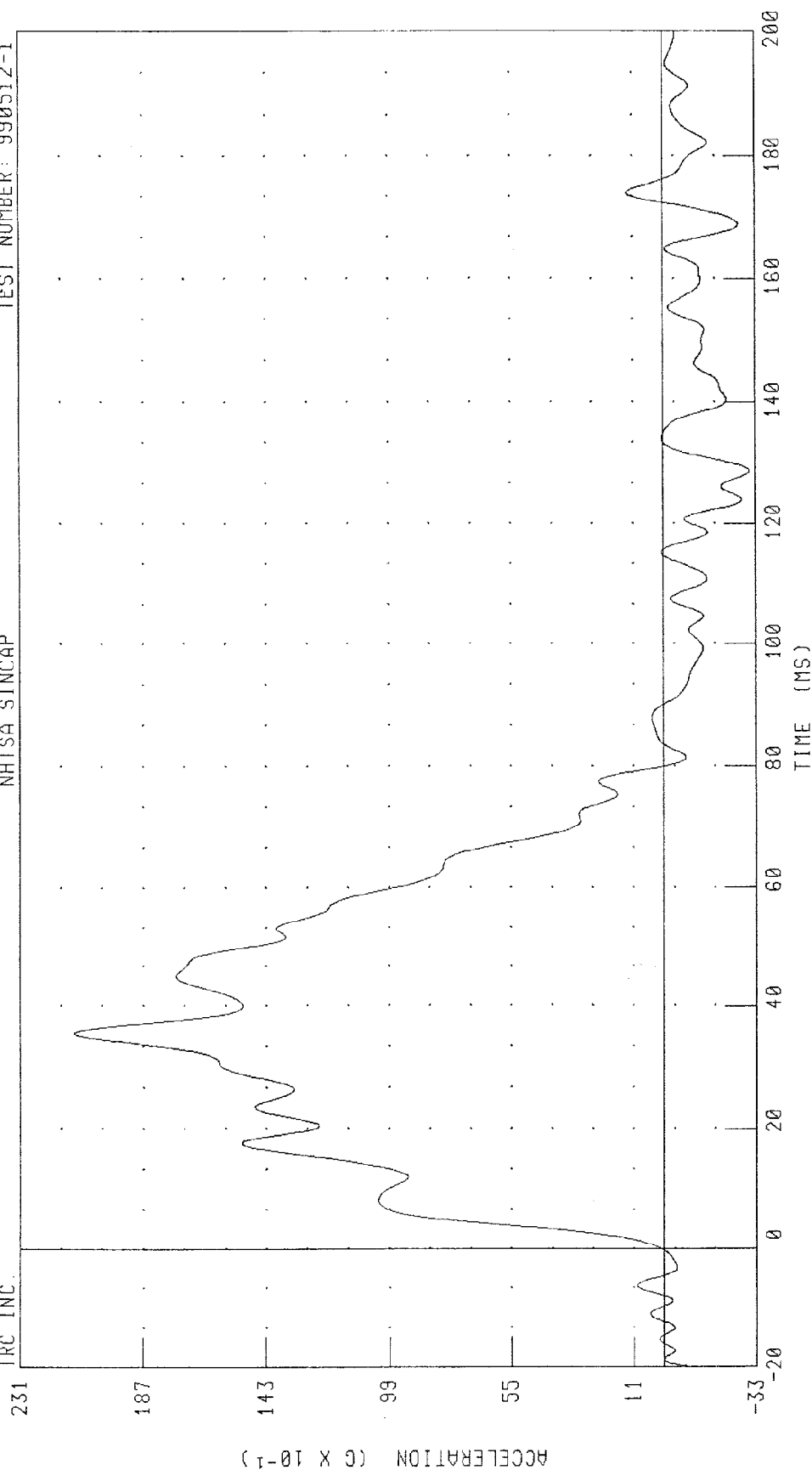
MDB Instrumentation Plots
Acceleration Data - Filter Class 60
Integration Data - Filter Class 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 MOVING DEFORMABLE BARRIER CENTER OF GRAVITY X-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



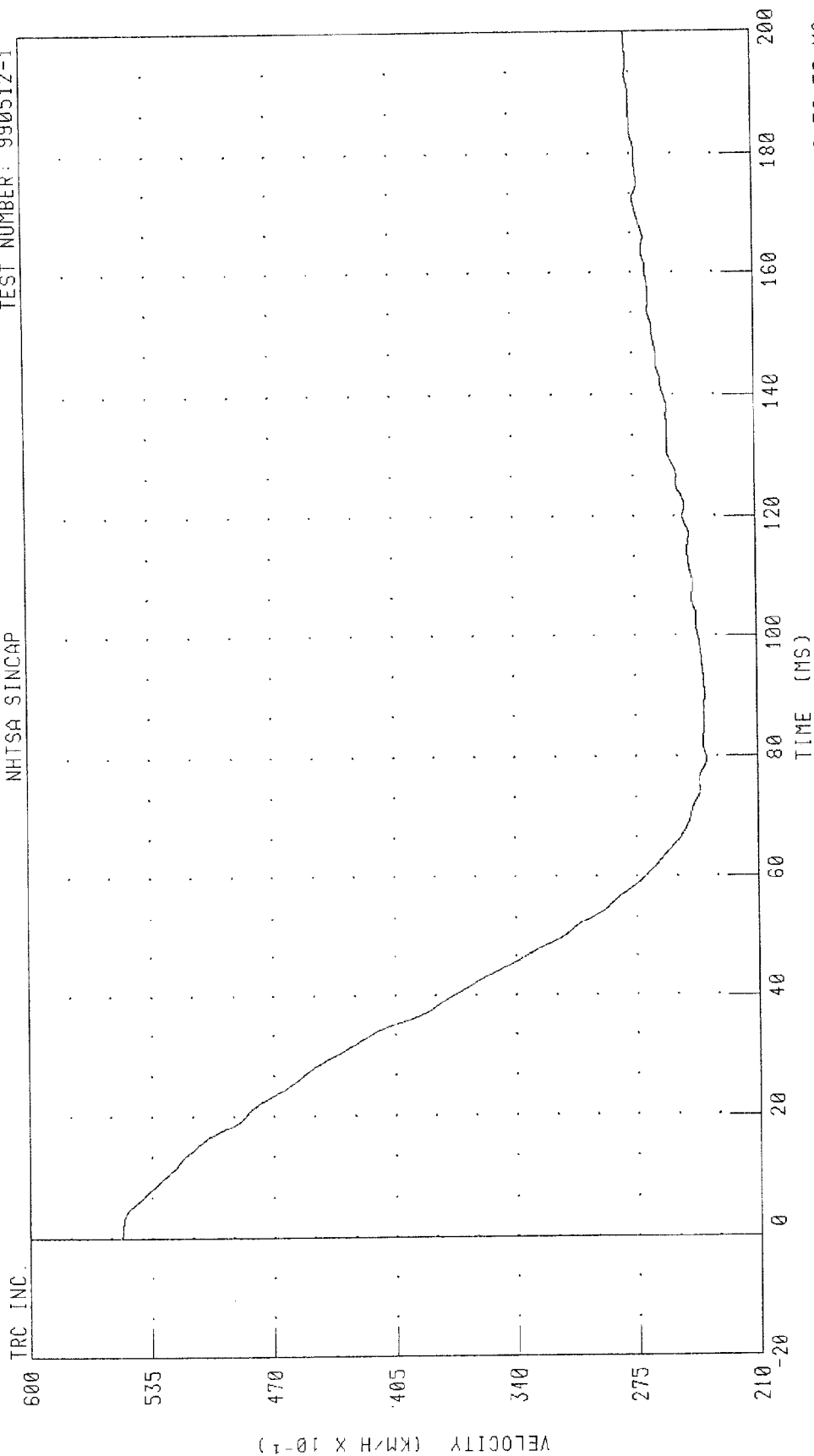
PEAK DATA: 21.19 G @ 35.52 MS; -3.09 G @ 128.80 MS

CHANNEL: BCCXC1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
MOVING DEFORMABLE BARRIER CENTER OF GRAVITY X-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP



PEAK DATA: 55.10 KM/H @ 0.00 MS; 23.75 KM/H @ 79.52 MS

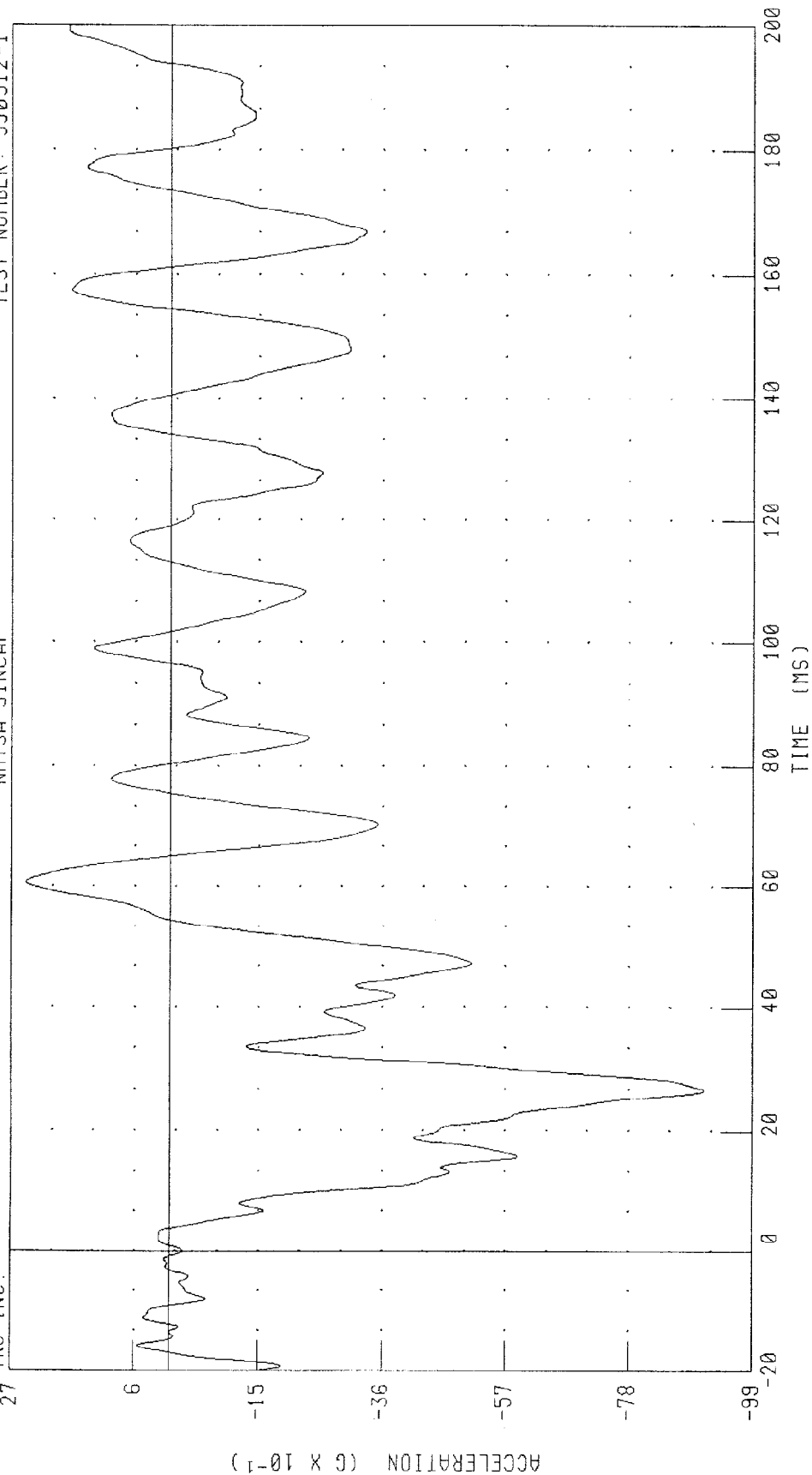
CHANNEL: BCGXV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 MOVING DEFORMABLE BARRIER CENTER OF GRAVITY Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



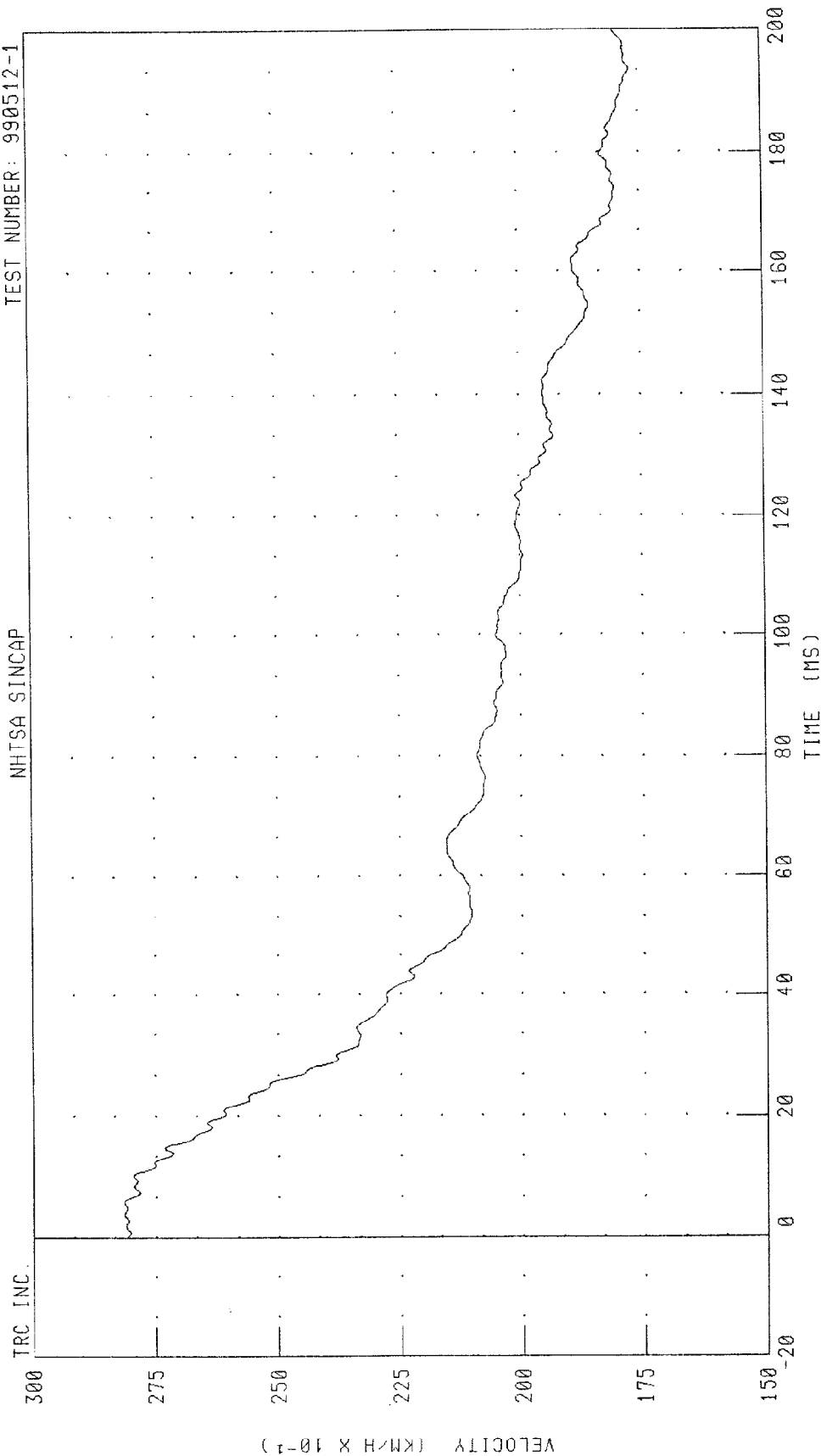
CHANNEL: BCGYG1 FILTER: CH. CLASS 60

PEAK DATA: 2.46 G @ 60.80 MS, -9.09 G @ 26.56 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
MOVING DEFORMABLE BARRIER CENTER OF GRAVITY Y-AXIS VELOCITY

TEST NUMBER: 990512-1

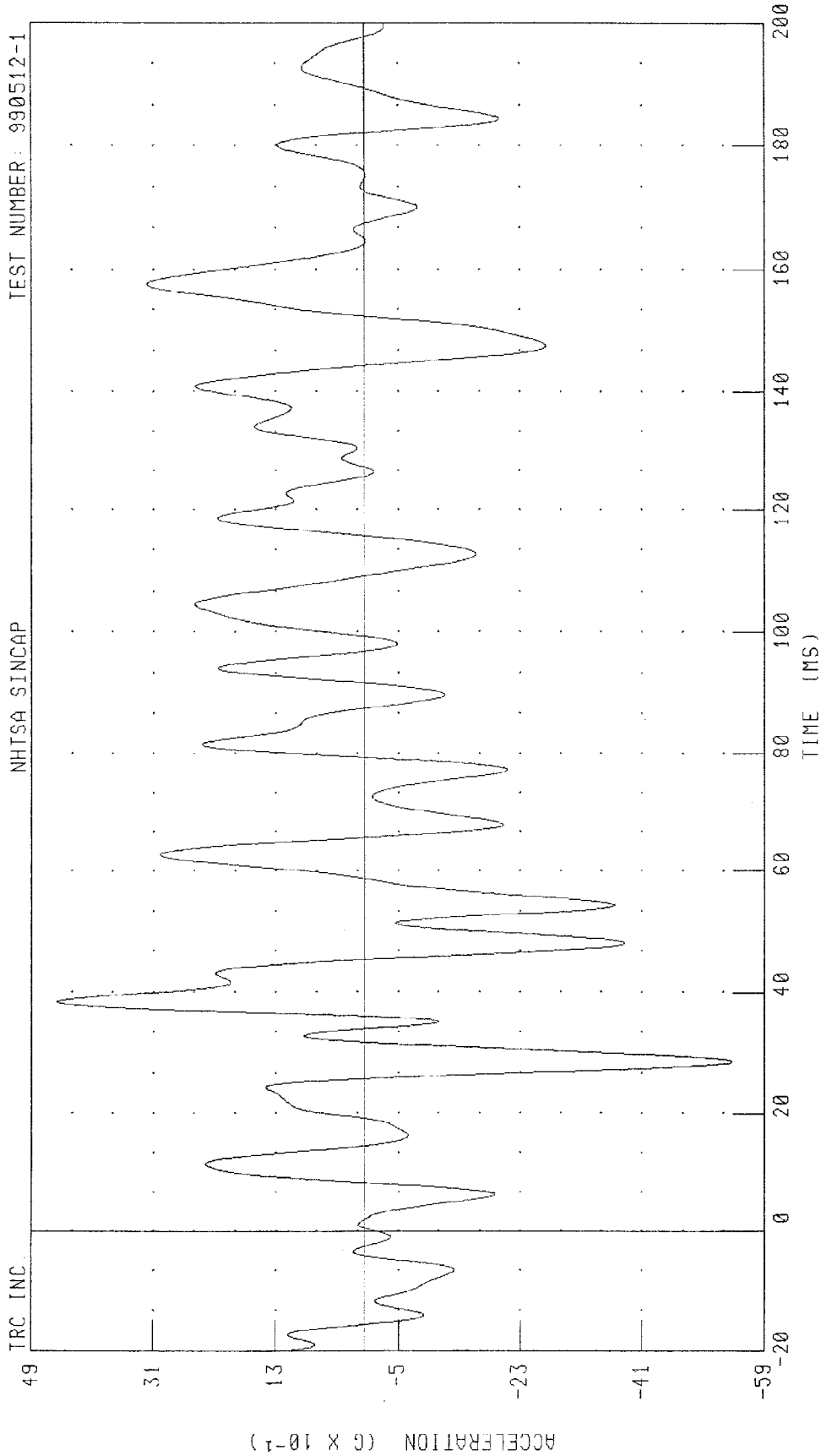
NHTSA SINCAP



PEAK DATA: 28.14 KM/H @ 3.92 MS, 17.68 KM/H @ 193.60 MS

CHANNEL: BCCVY1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 MOVING DEFORMABLE BARRIER CENTER OF GRAVITY Z-AXIS ACCELERATION



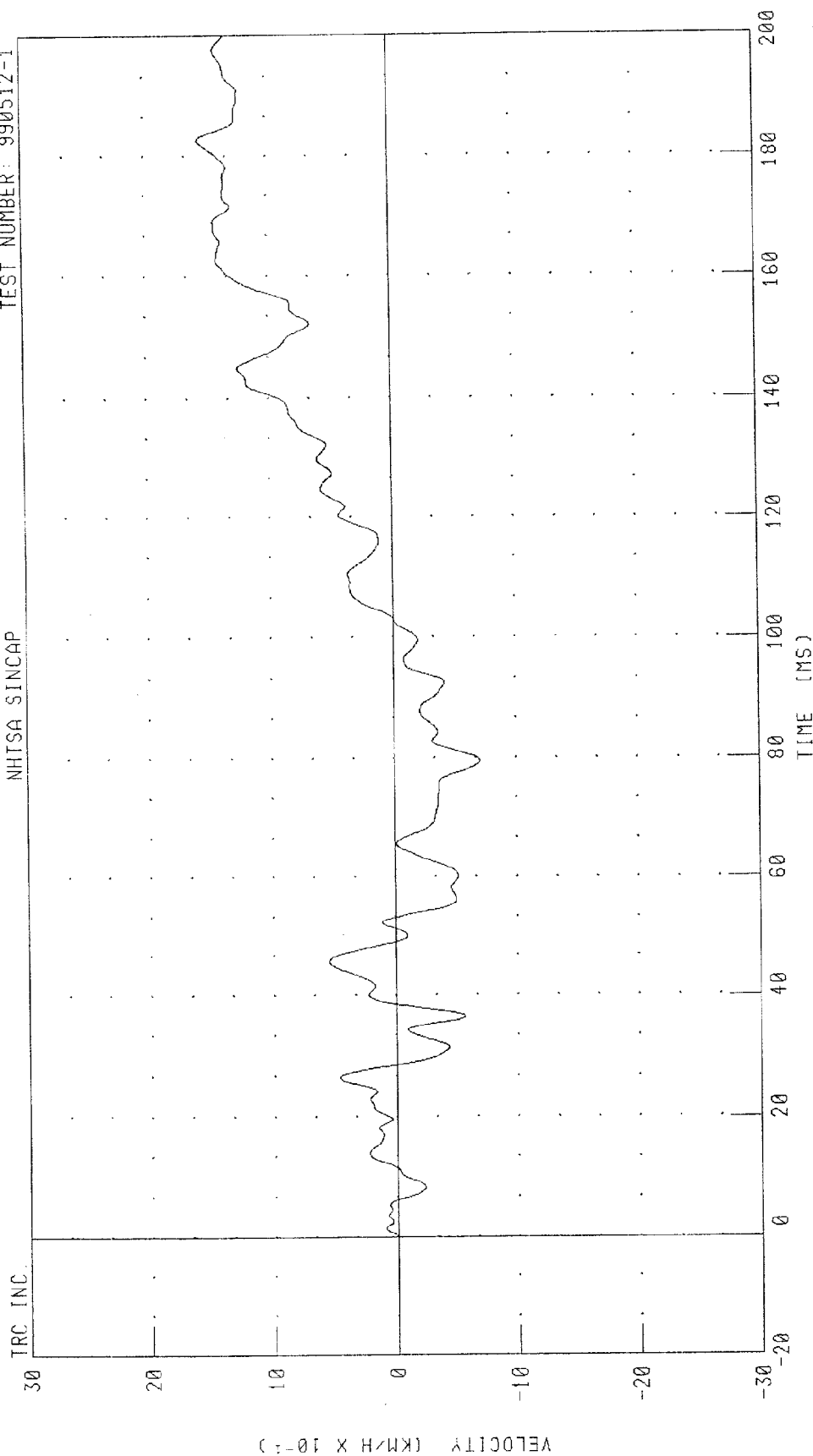
PEAK DATA: 4.53 G @ 38.48 MS; -5.43 G @ 28.56 MS

CHANNEL: BC0ZG1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 MOVING DEFORMABLE BARRIER CENTER OF GRAVITY Z-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP



PEAK DATA: 1.56 KM/H @ 182.64 MS, -0.71 KM/H @ 79.52 MS

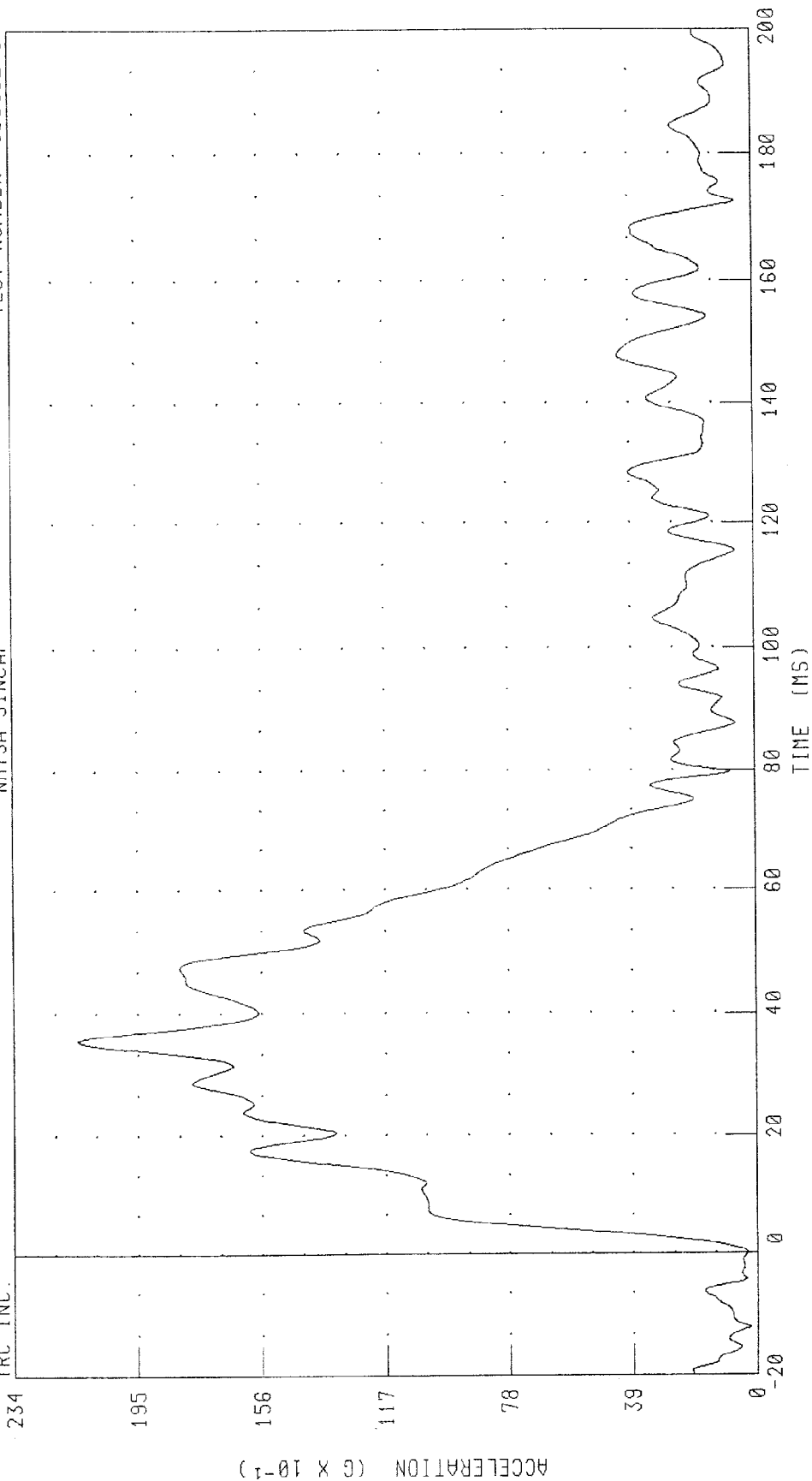
CHANNEL: BCGZV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
MOVING DEFORMABLE BARRIER CENTER OF GRAVITY RESULTANT ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

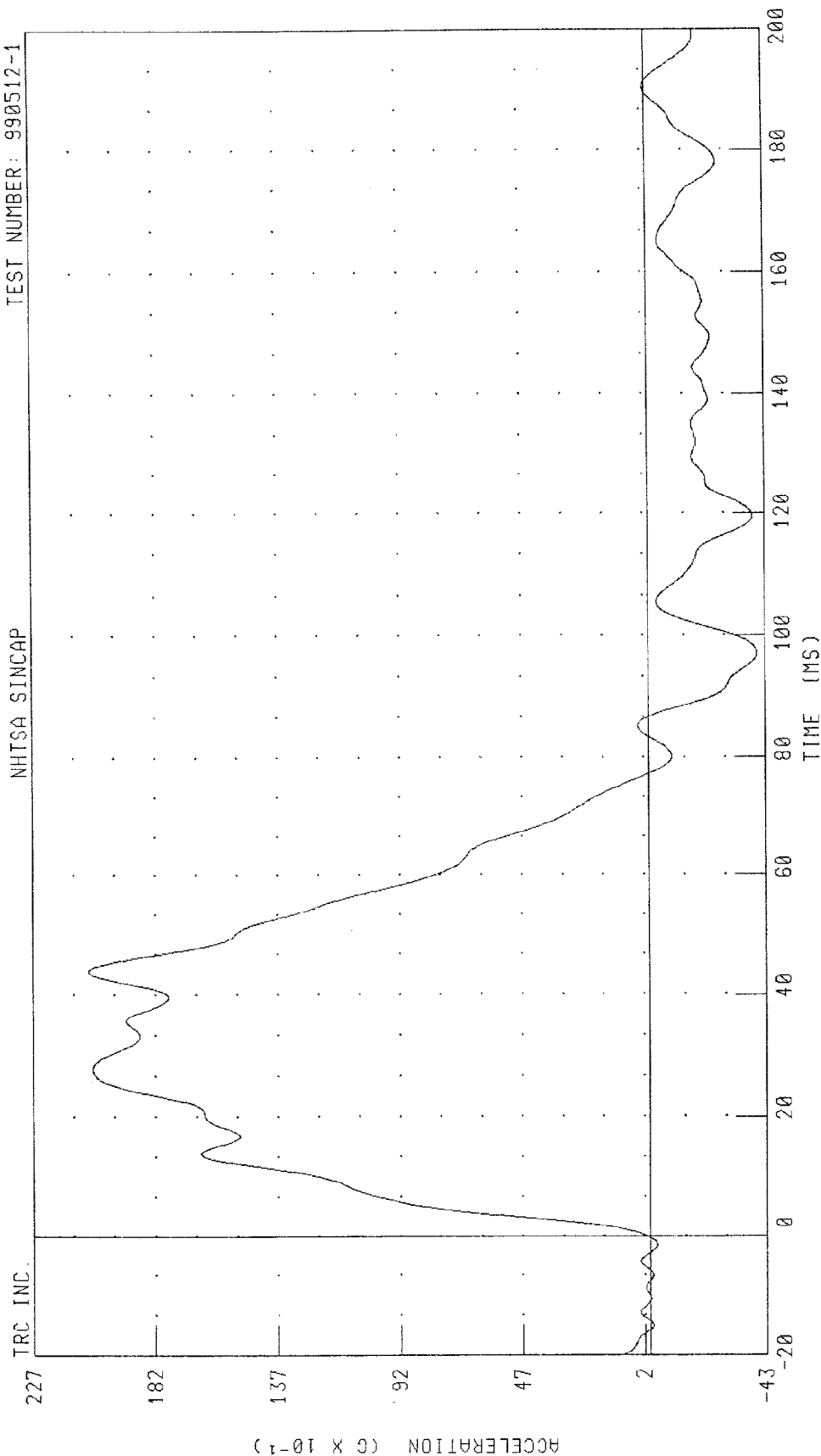


CHANNEL: BCCRC1 FILTER: CH. CLASS 60

PEAK DATA: 21.40 G @ 35.52 MS; 0.21 G @ -12.16 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
MOVING DEFORMABLE BARRIER REAR X-AXIS ACCELERATION

TEST NUMBER: 990512-1



PEAK DATA: 20.66 G @ 43.92 MS, -4.00 G @ 97.12 MS

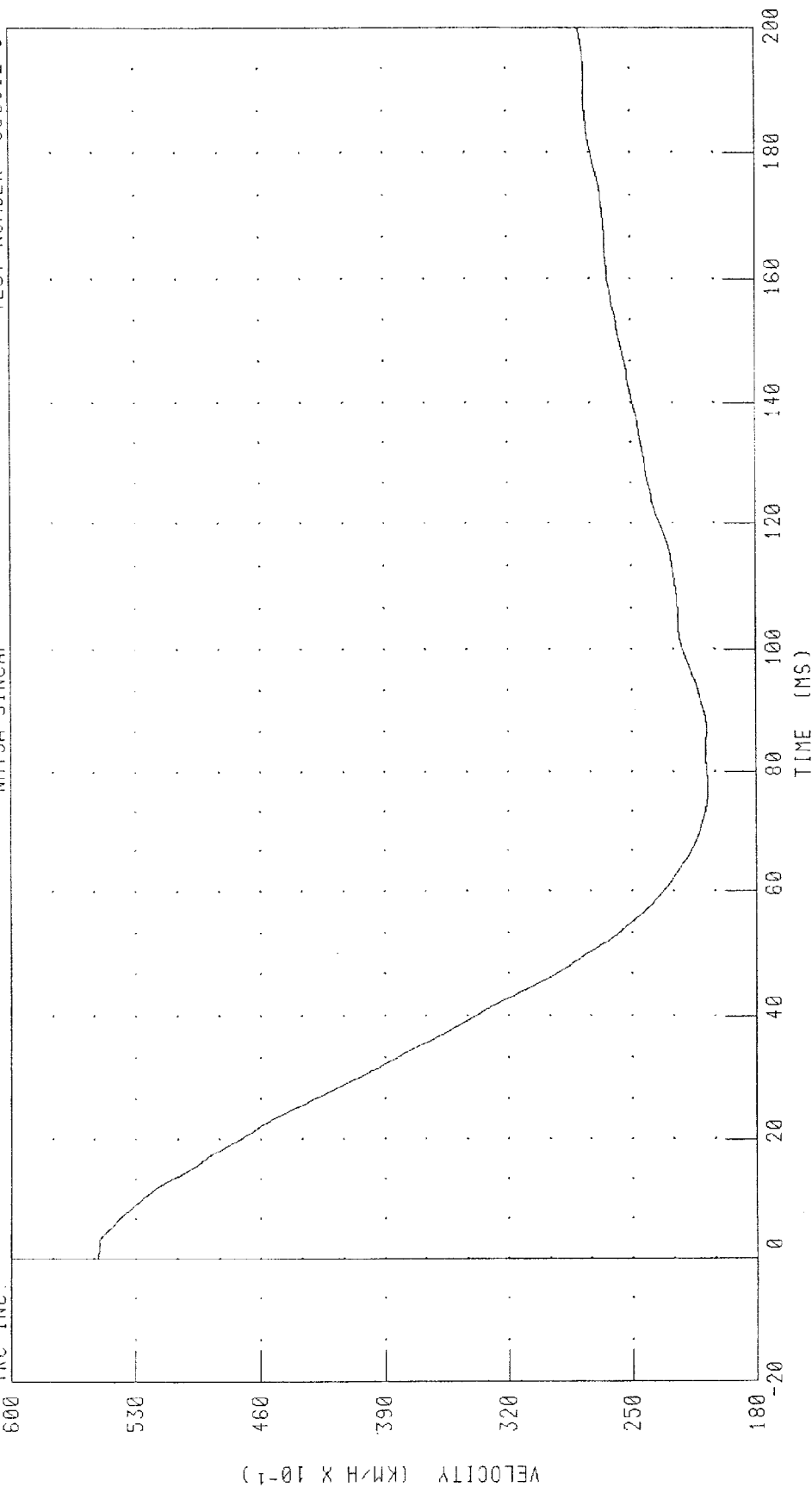
CHANNEL: LRRXG1 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
MOVING DEFORMABLE BARRIER REAR X-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 55.10 KM/H @ 0.00 MS; 20.71 KM/H @ 77.36 MS

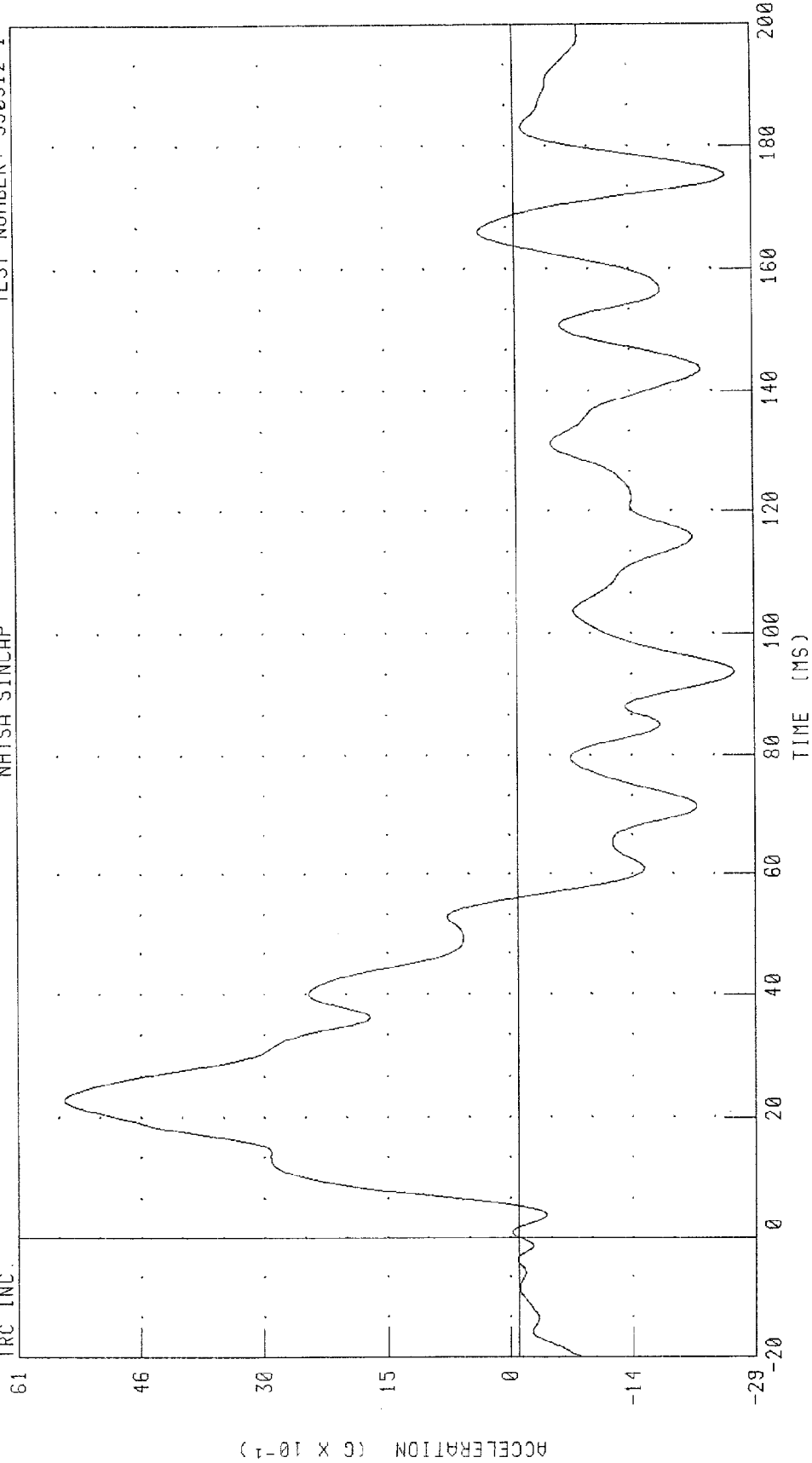
CHANNEL: LRRXV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
MOVING DEFORMABLE BARRIER REAR Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 5.53 G @ 22.80 MS, -2.66 G @ 93.84 MS

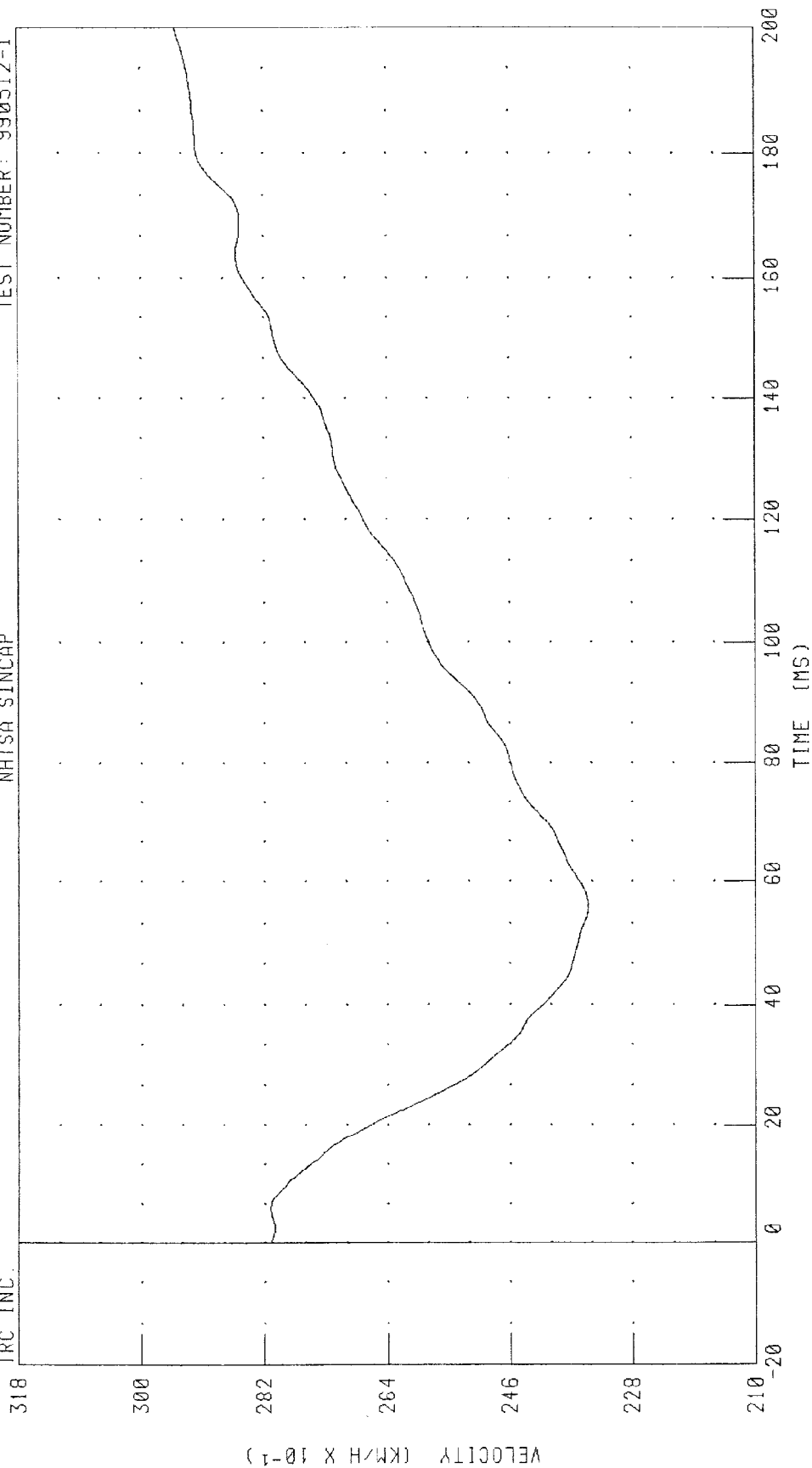
CHANNEL: LRRY01 FILTER: CH. CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
MOVING DEFORMABLE BARRIER REAR Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 29.50 KM/H @ 200.00 MS; 23.45 KM/H @ 56.00 MS

CHANNEL: LRRYV1 FILTER: CH. CLASS 180

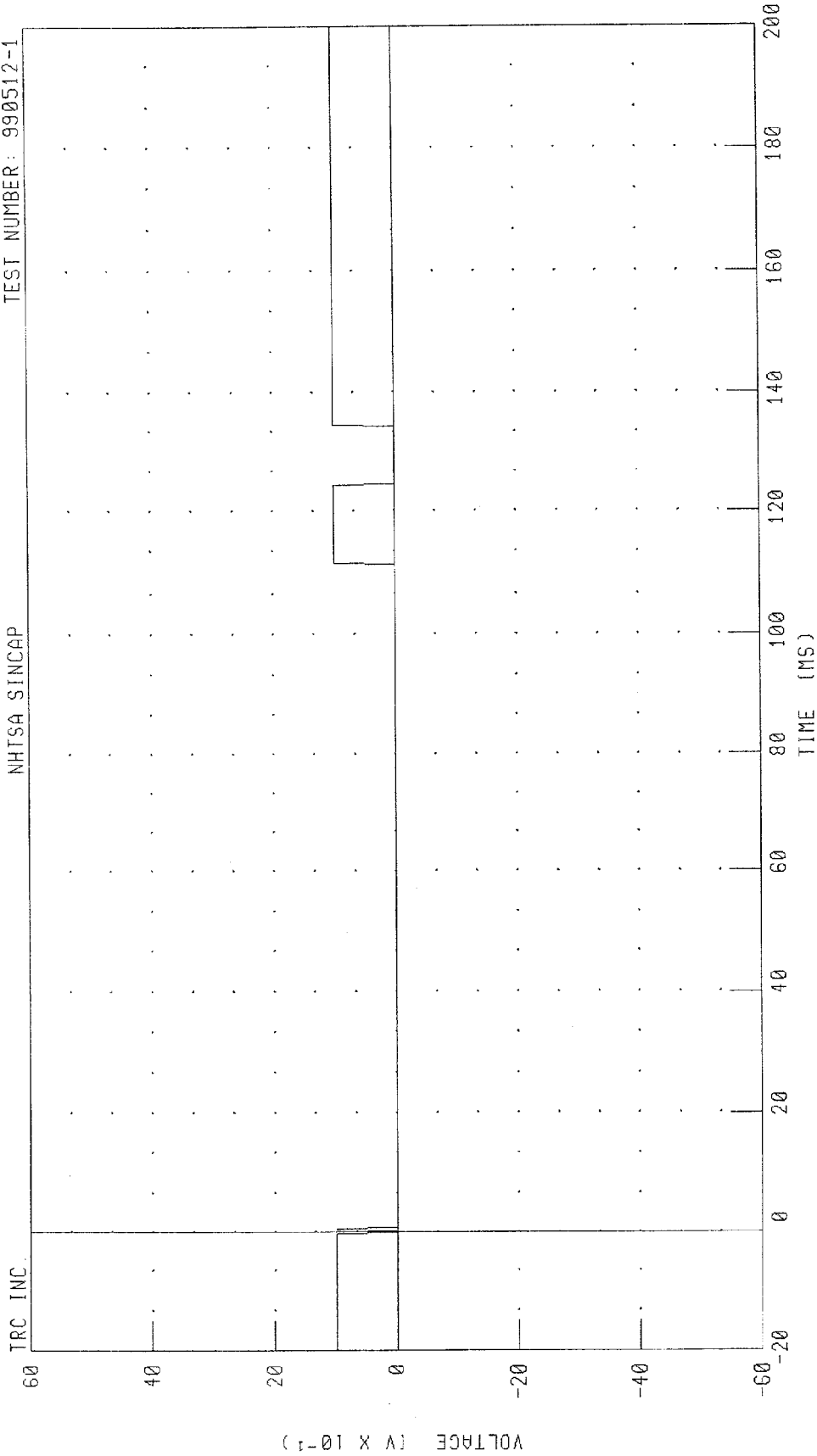
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

MDB RIGHT CONTACT SWITCH

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

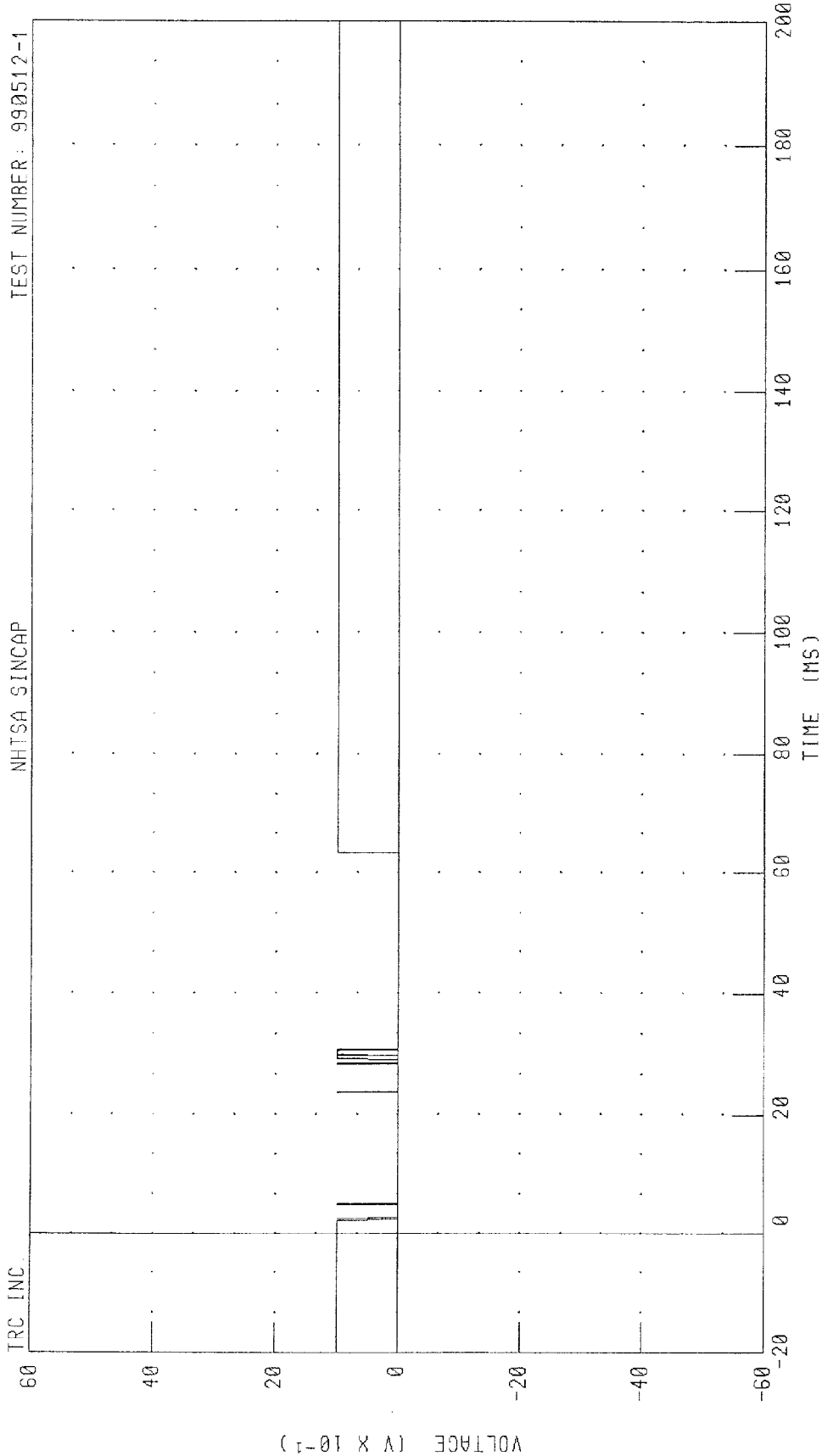


CHANNEL: MDR1 FILTER: CH. CLASS 1000

PEAK DATA: 1.00 V @ 200.00 MS; 0.00 V @ -0.24 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

108 LEFT CONTACT SWITCH

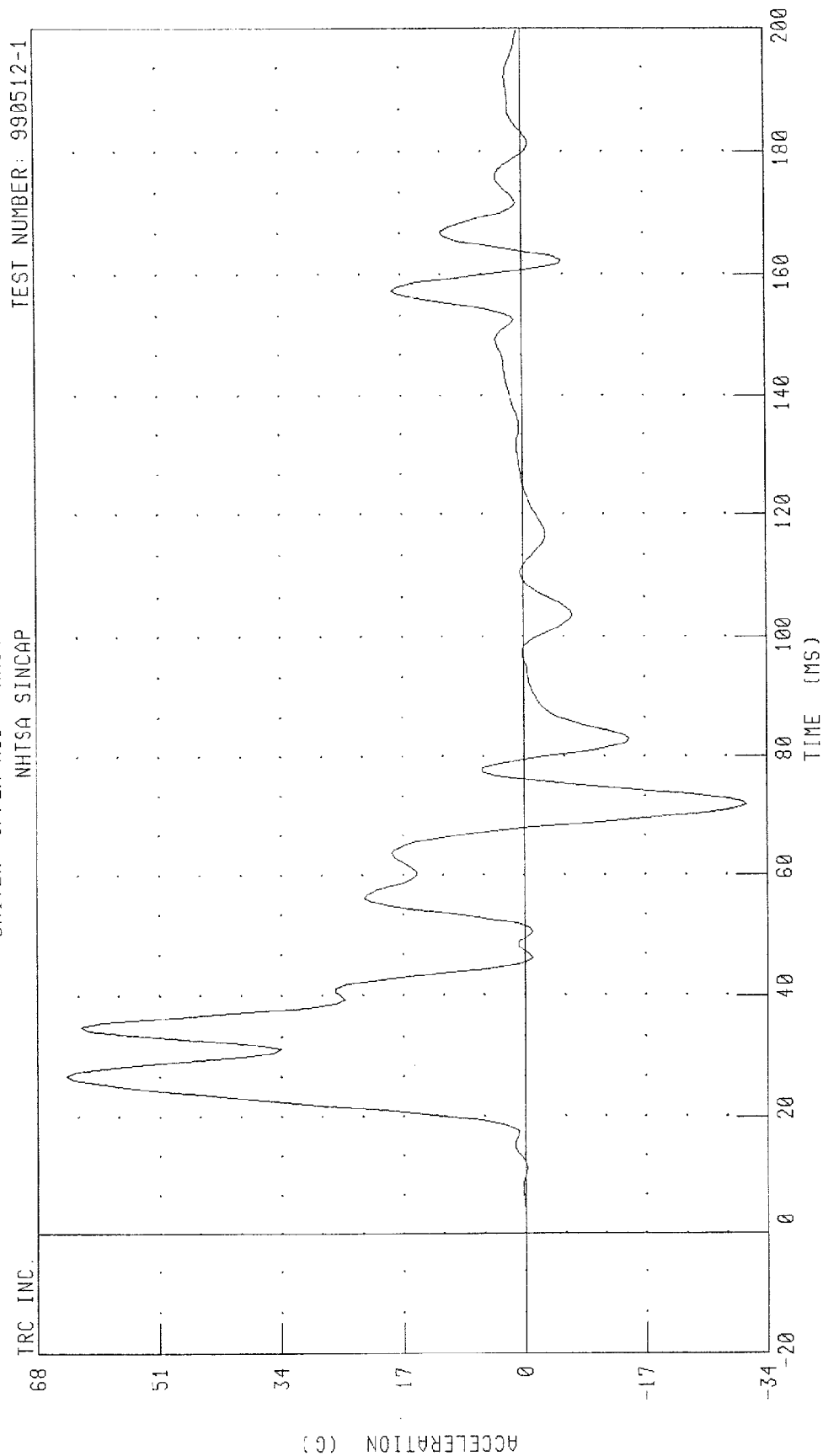


PEAK DATA: 1.00 V @ 200.00 MS; 0.00 V @ 2.32 MS

CHANNEL: M0BL1 FILTER: CH. CLASS 1000

Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - FIR Filtered

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER UPPER RIB Y-AXIS ACCELERATION



CHANNEL: LURYC1 FILTER: FIR 100

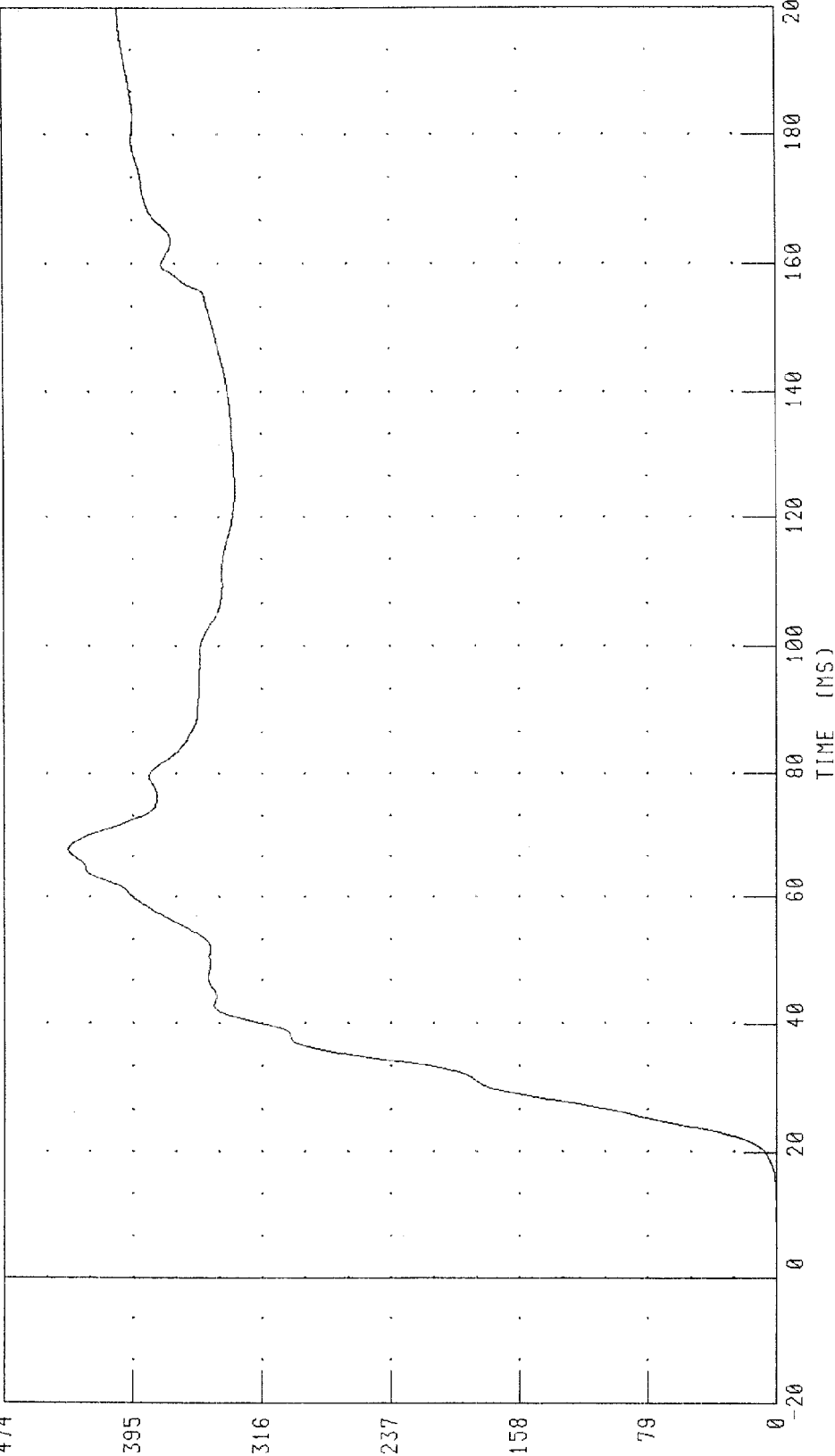
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER UPPER RIB Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

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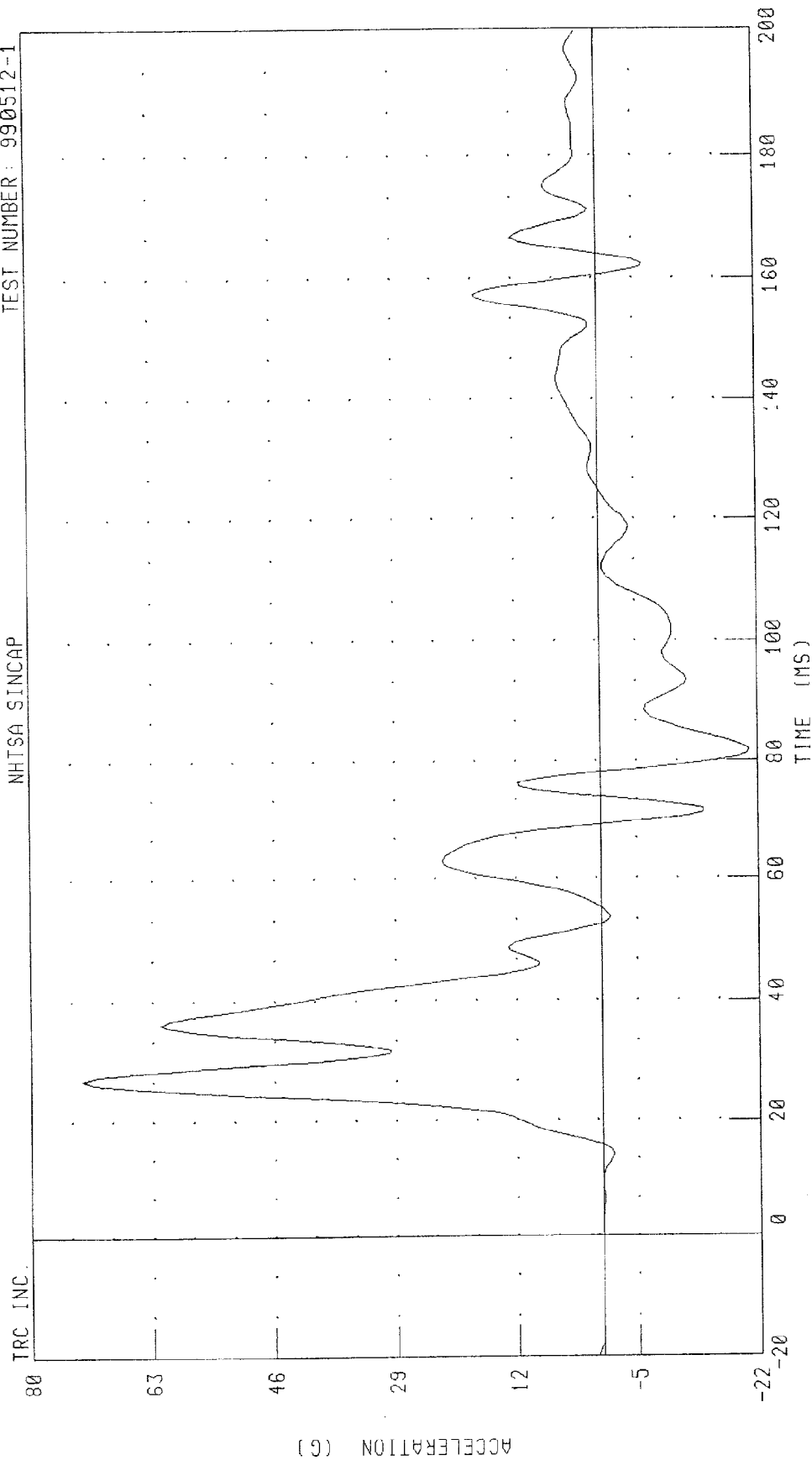
PEAK DATA: 43.45 KM/H @ 67.84 MS, 0.00 KM/H @ 5.60 MS

CHANNEL: LURYV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER LOWER RIB Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

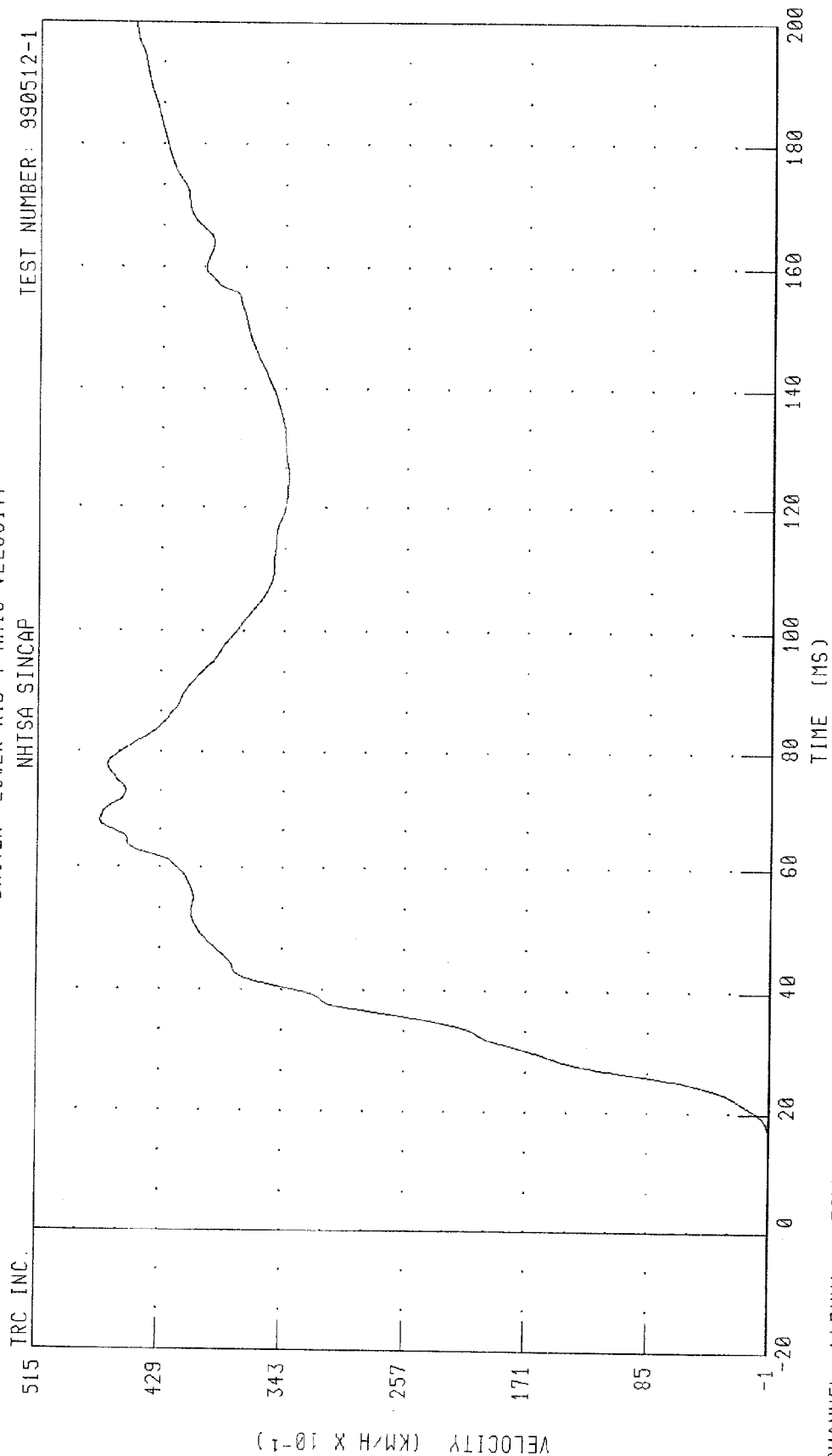
NHTSA SINCAP



PEAK DATA: 72.92 G @ 26.87 MS; -20.91 G @ 81.88 MS

CHANNEL: LLRYG1 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER LOWER RIB Y-AXIS VELOCITY



CHANNEL: LLRYV1 FILTER: CH. CLASS 180 PEAK DATA: 47.13 KM/H @ 68.24 MS; -0.17 KM/H @ 15.36 MS

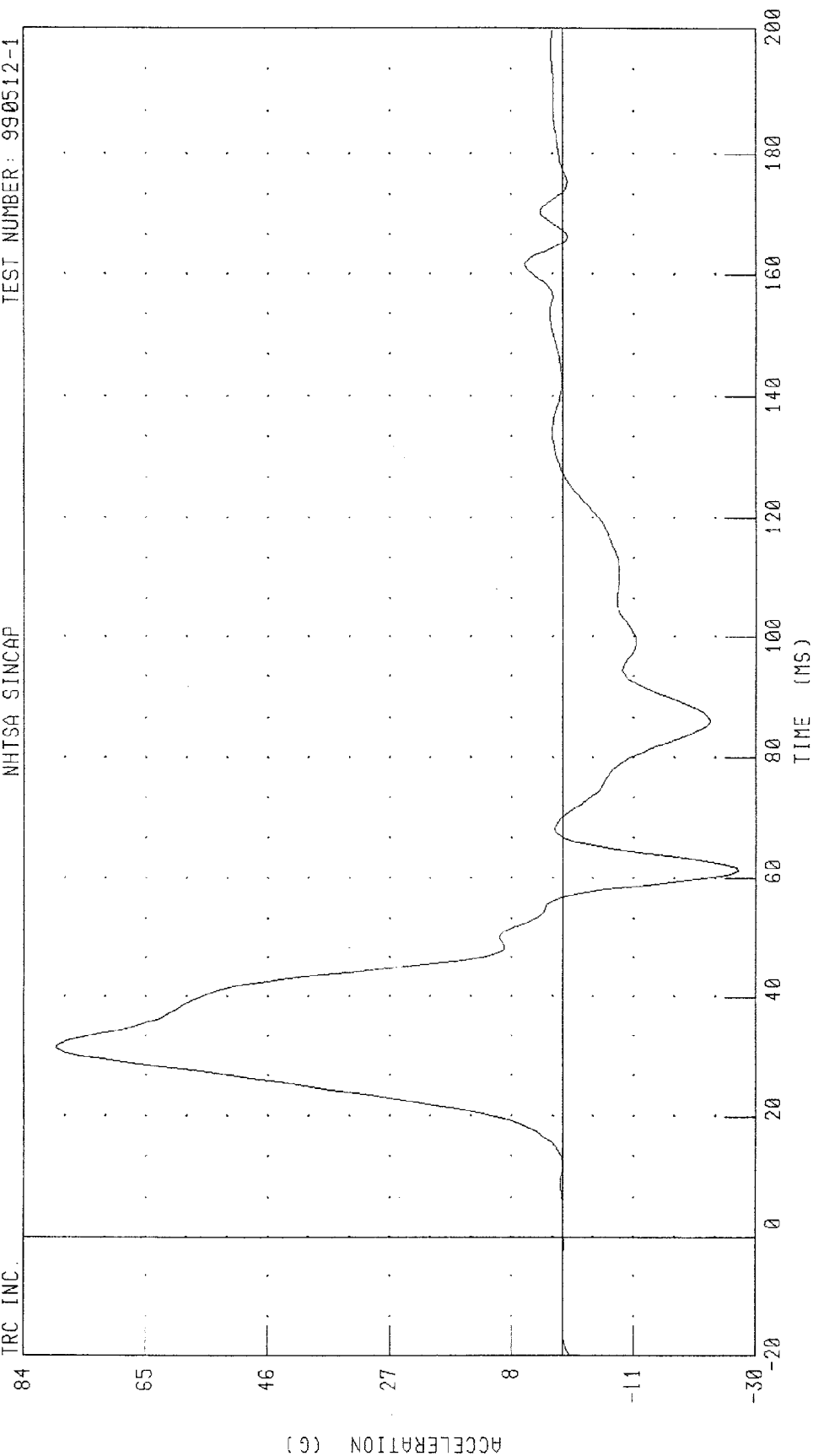
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

DRIVER LOWER SPINE Y-AXIS ACCELERATION

NHTSA SINCAP

TEST NUMBER: 990512-1

TRC INC.



CHANNEL: T12YC1 FILTER: FIR 100

PEAK DATA: 78.99 G @ 31.25 MS; -27.32 G @ 61.25 MS

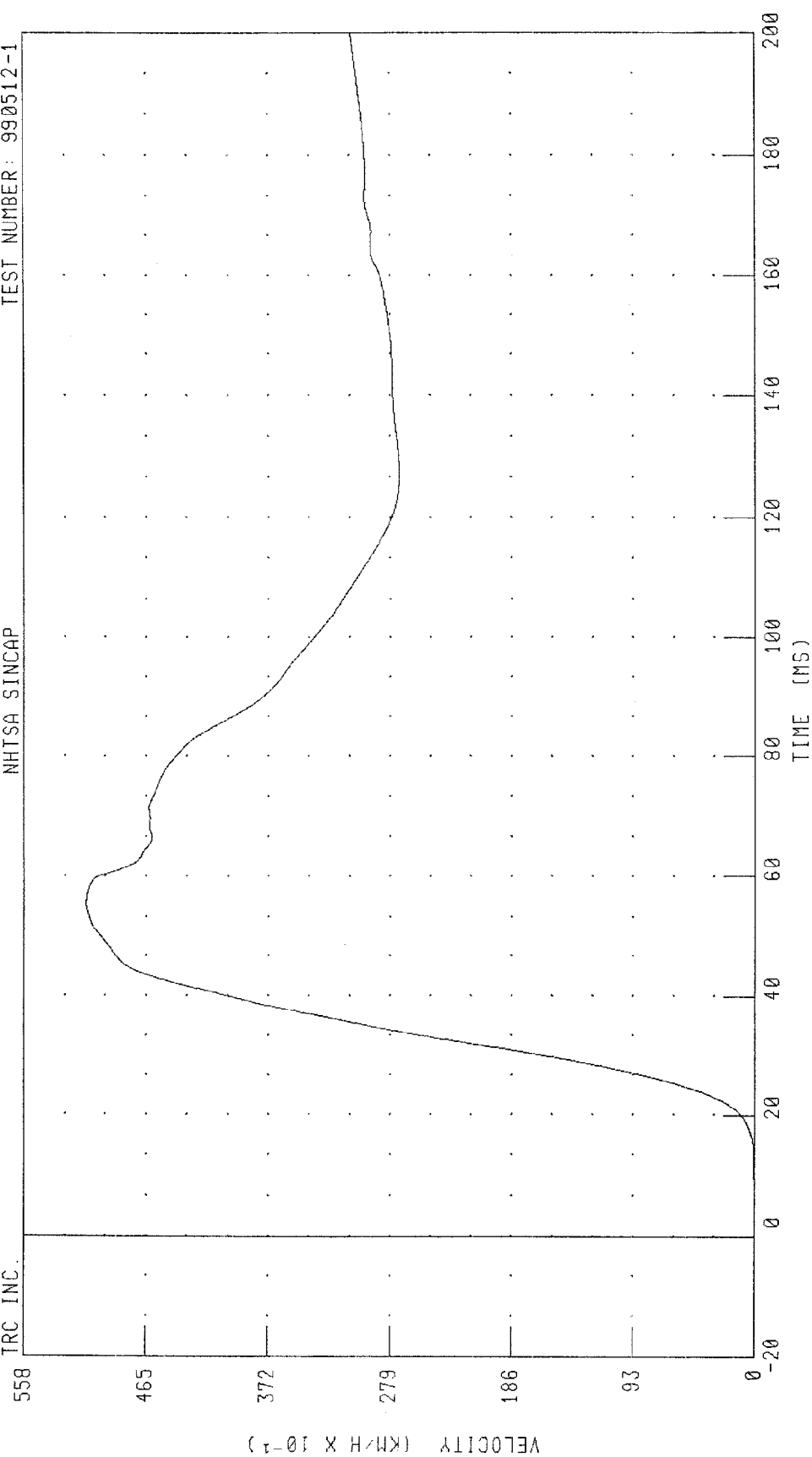
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

DRIVER LOWER SPINE Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

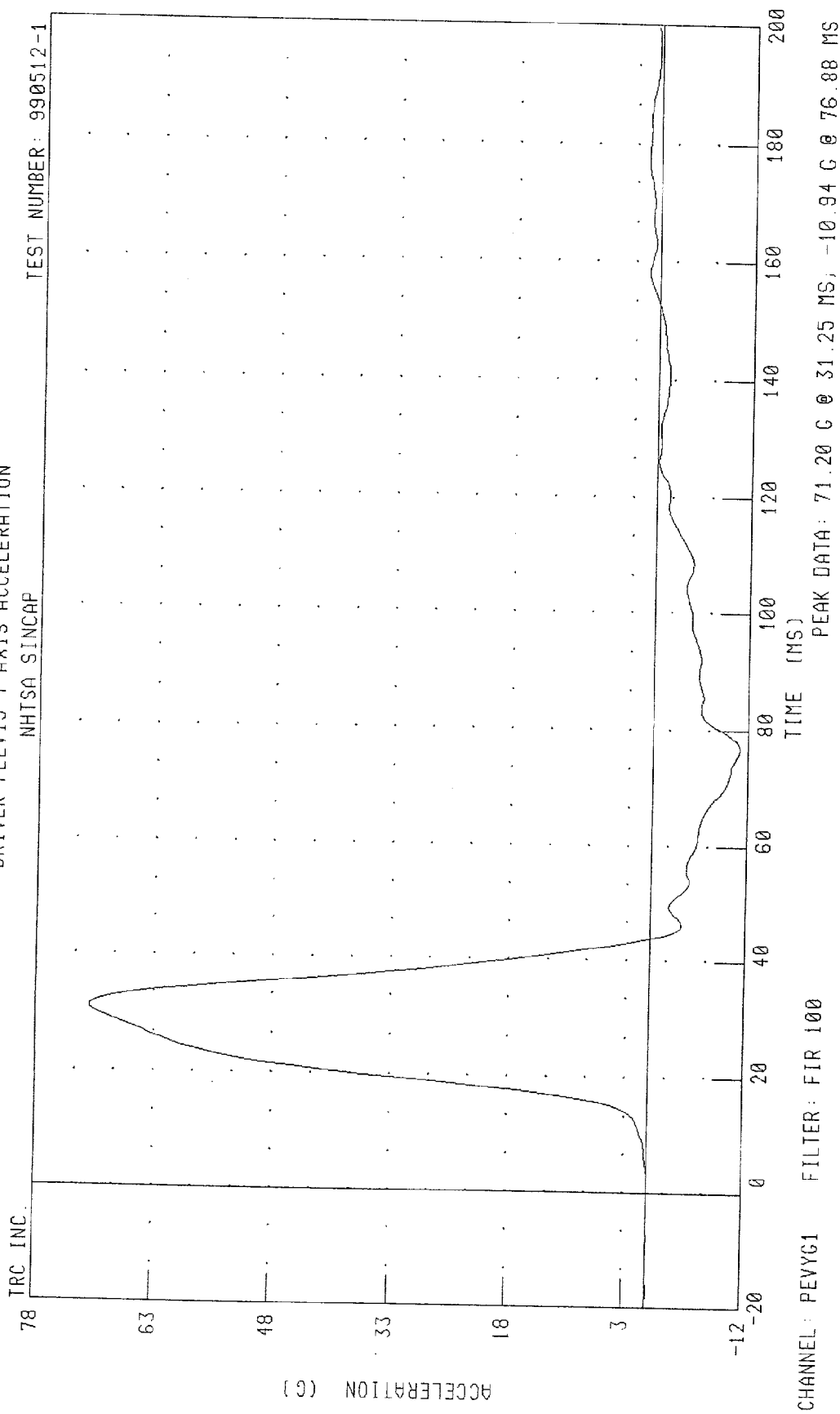
TRC INC.



PEAK DATA: 51.07 KM/H @ 55.52 MS, 0.00 KM/H @ 4.16 MS

CHANNEL: T12YV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
DRIVER PELVIS Y-AXIS ACCELERATION

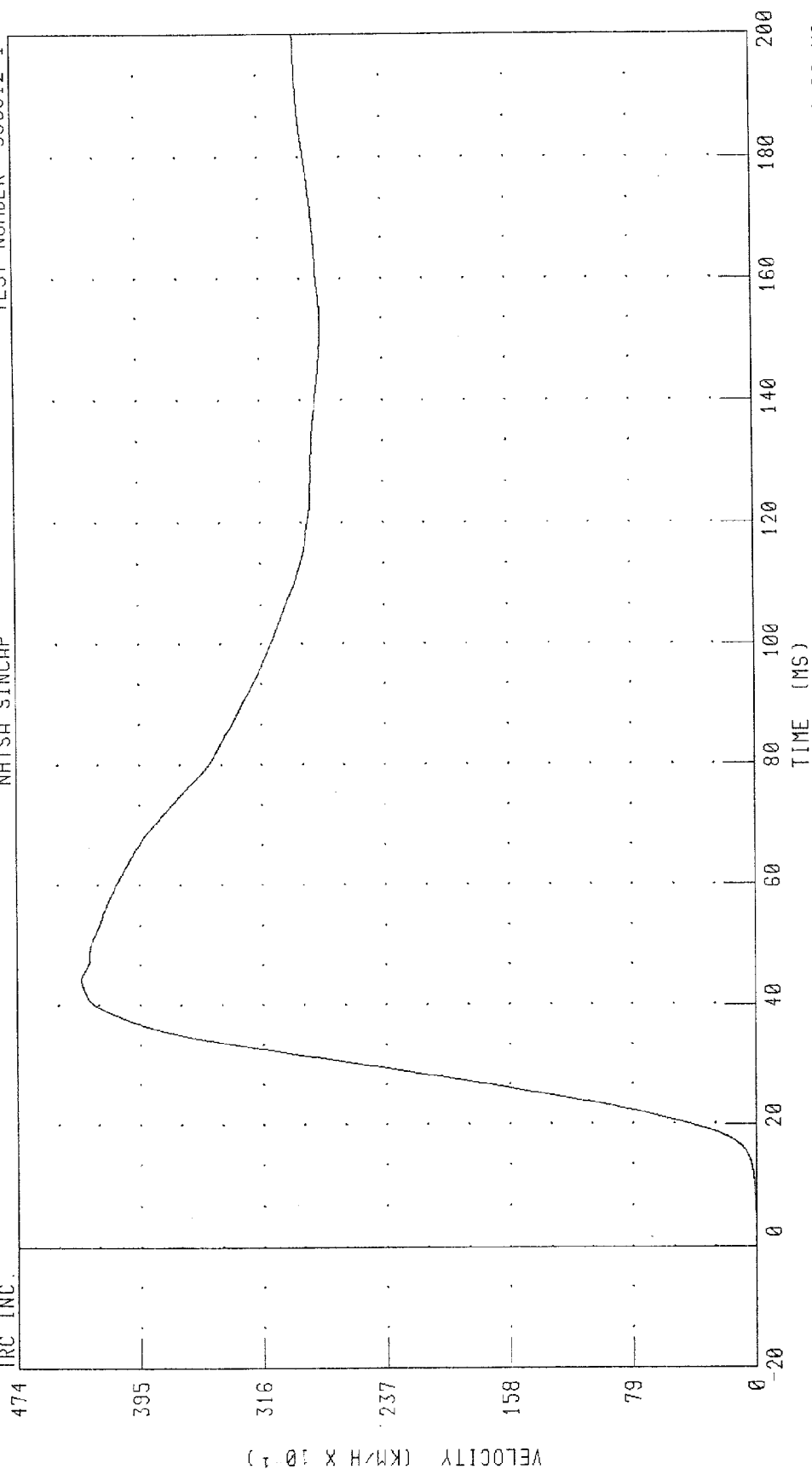


MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER PELVIS Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

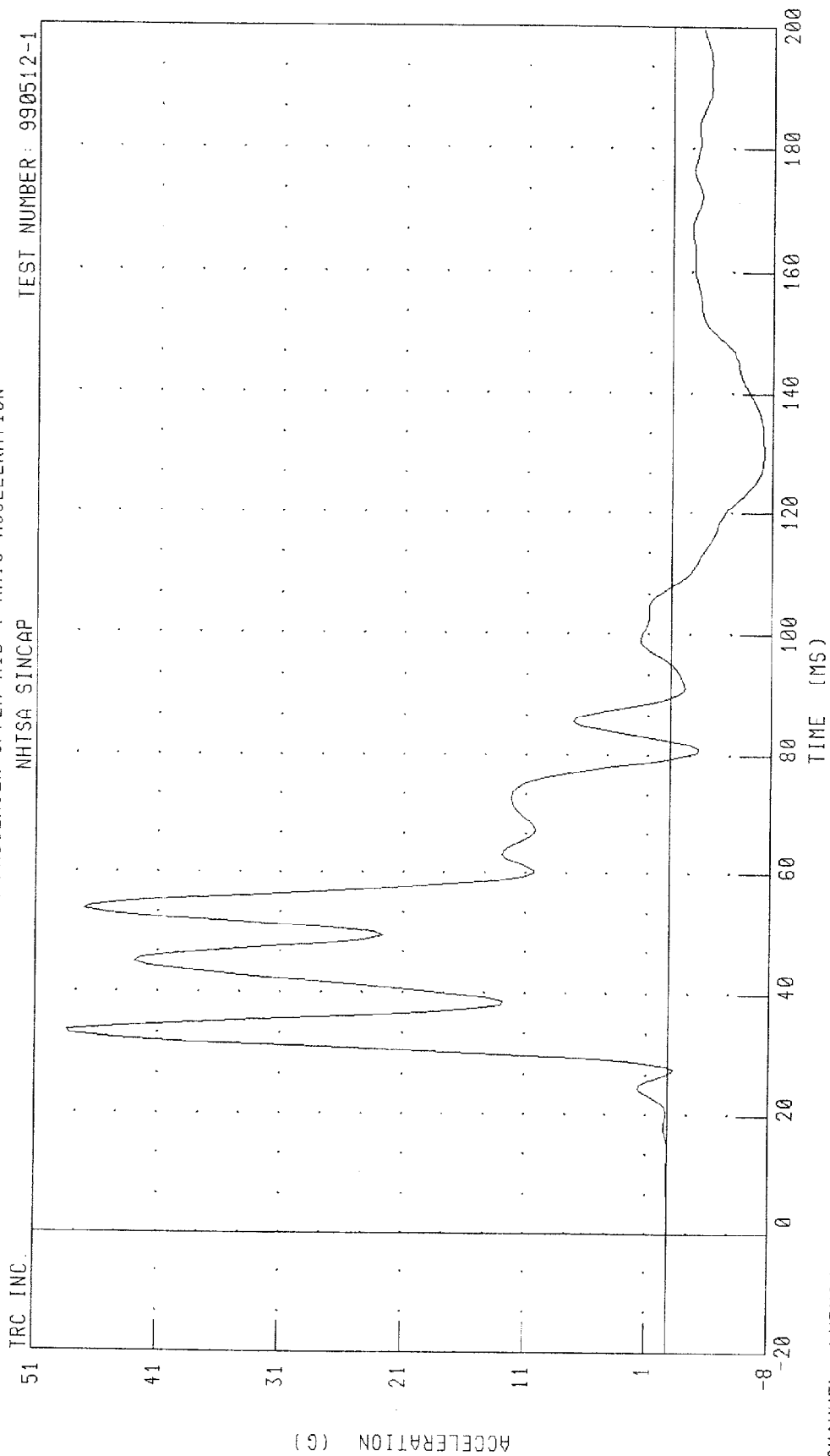
TRC INC.



PEAK DATA: 43.25 KM/H @ 44.32 MS; 0.00 KM/H @ 0.00 MS

CHANNEL: PEVYV1 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION



PEAK DATA: 49.17 G @ 33.75 MS; -7.52 G @ 130.00 MS

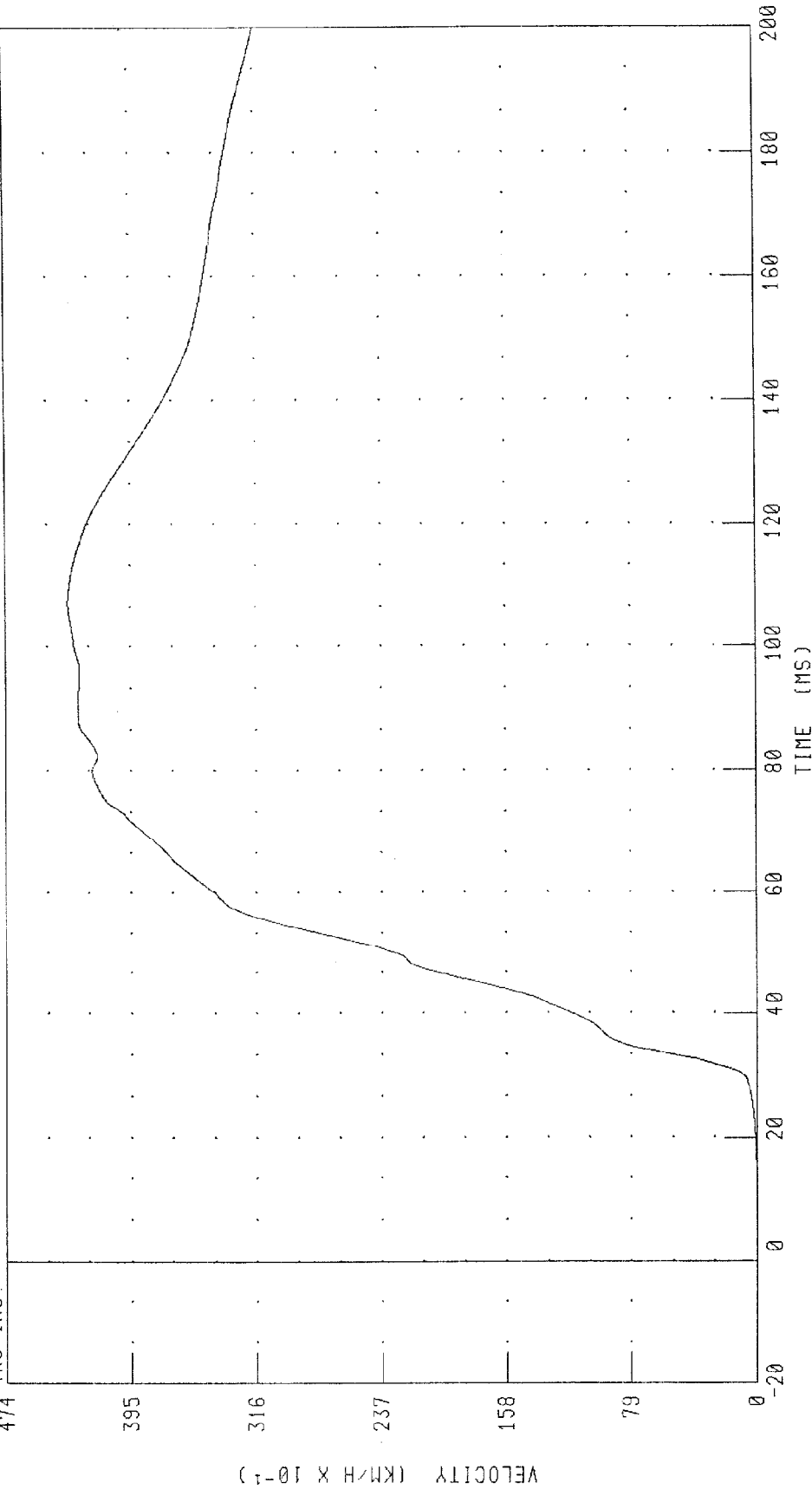
CHANNEL: LURYG4 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER UPPER RIB Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

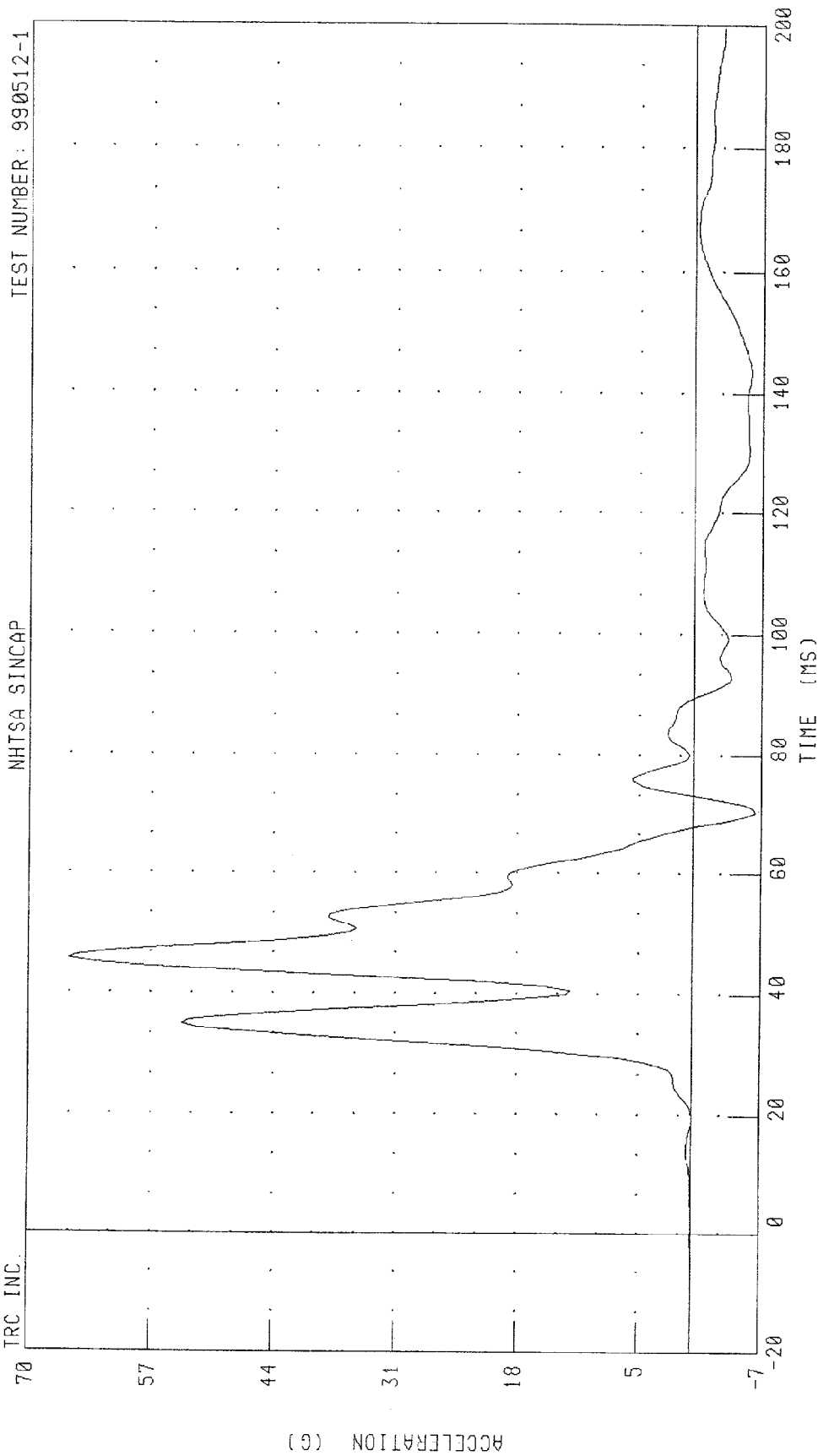
TRC INC.



PEAK DATA: 43.44 KM/H @ 107.28 MS, 0.00 KM/H @ 1.84 MS

CHANNEL: LURYV4 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION



PEAK DATA: 66.40 G @ 45.62 MS, -6.66 G @ 70.63 MS

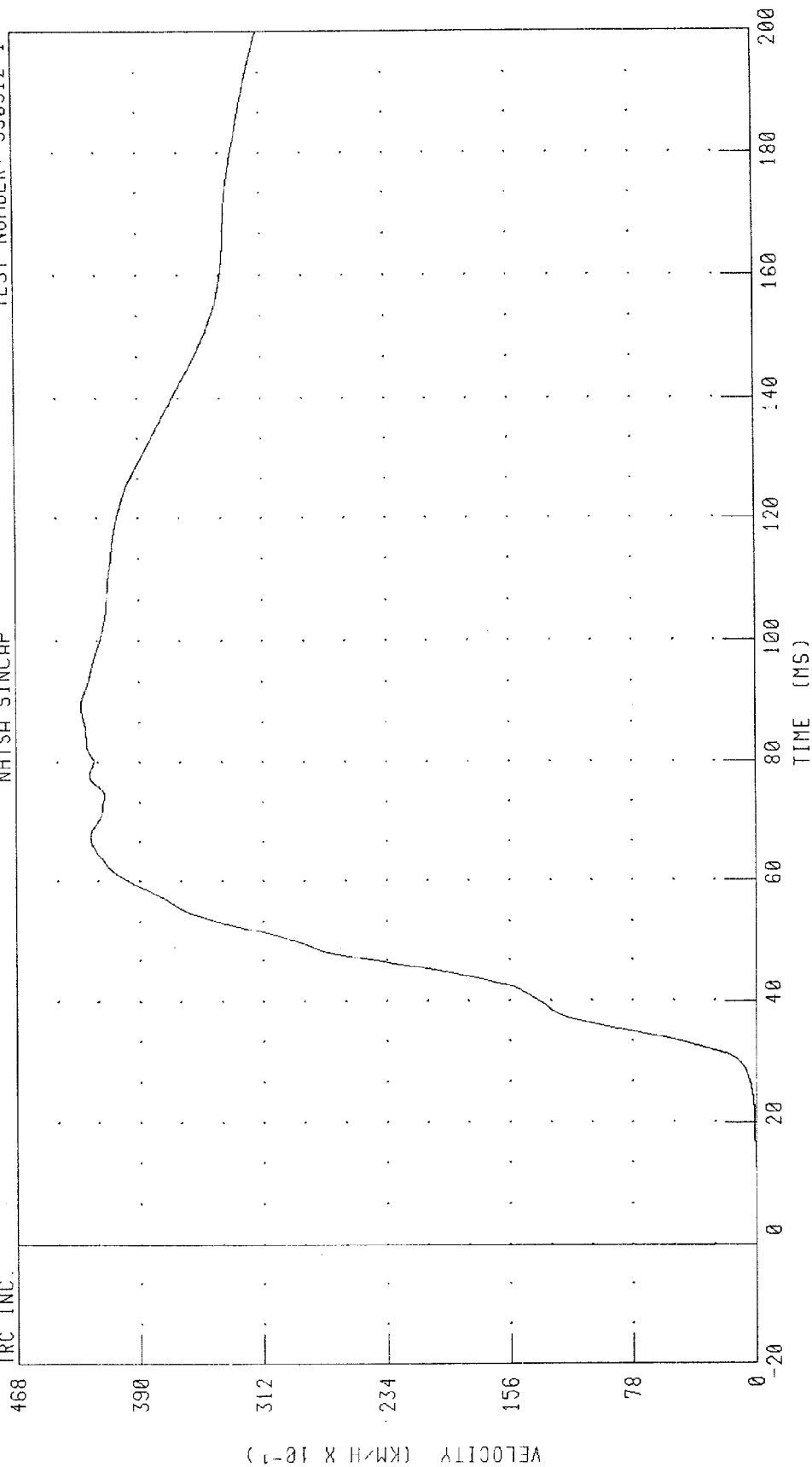
CHANNEL: LLRYC4 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 LEFT REAR PASSENGER LOWER RIB Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 42.65 KM/H @ 89.44 MS; 0.00 KM/H @ 6.32 MS

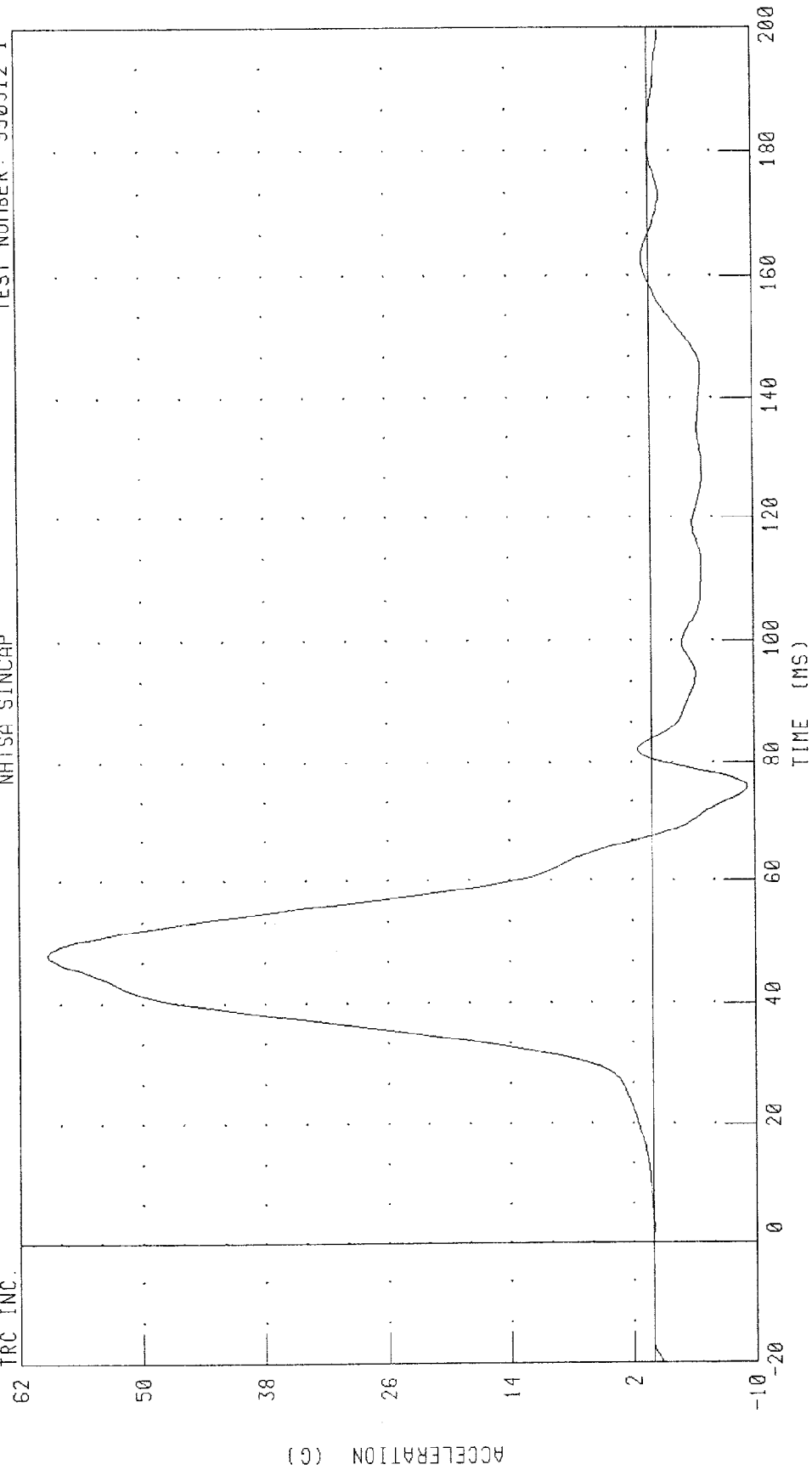
CHANNEL: LLRYV4 FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

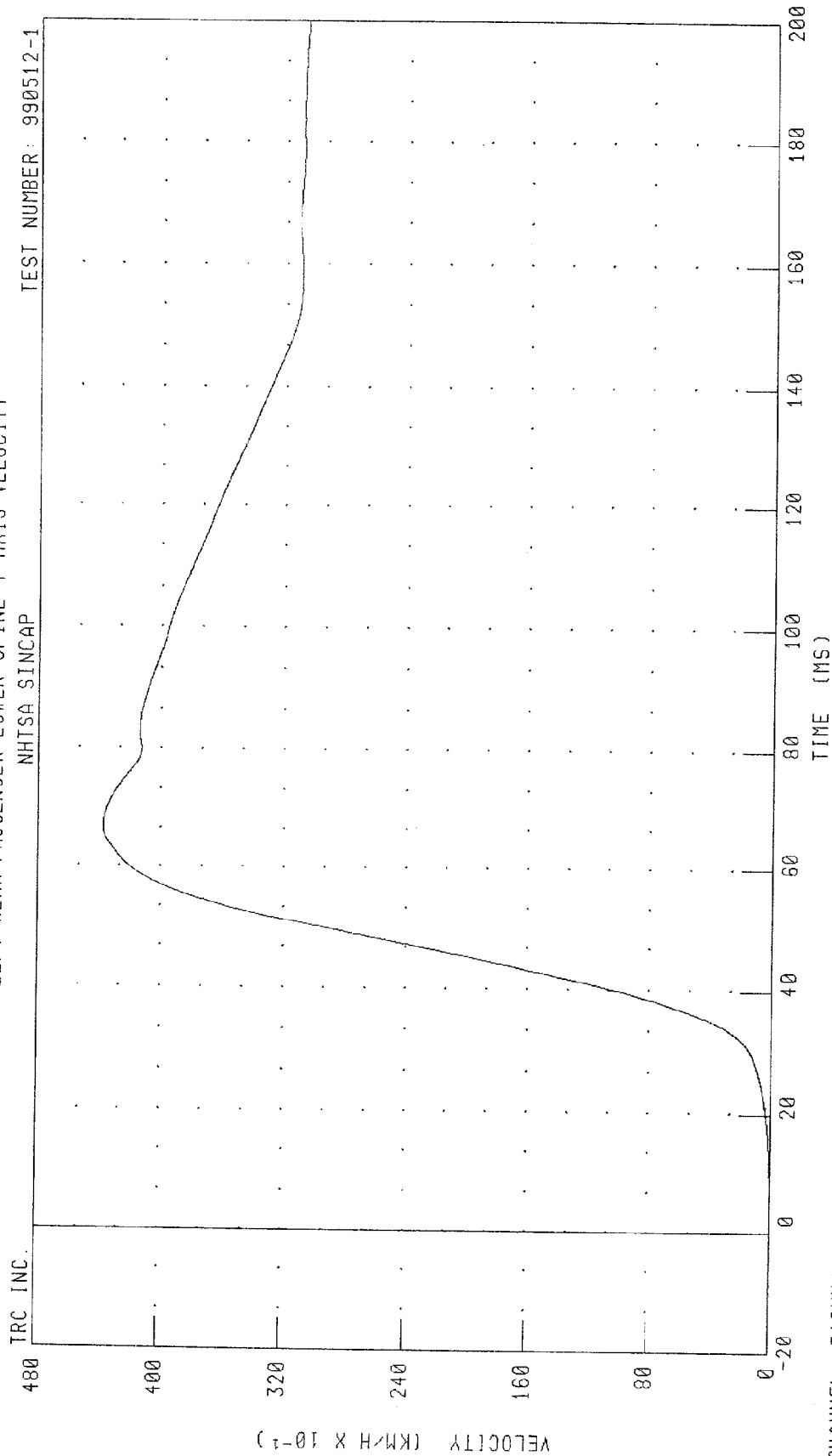
TRC INC.



PEAK DATA: 59.28 G @ 48.13 MS; -9.29 G @ 75.62 MS

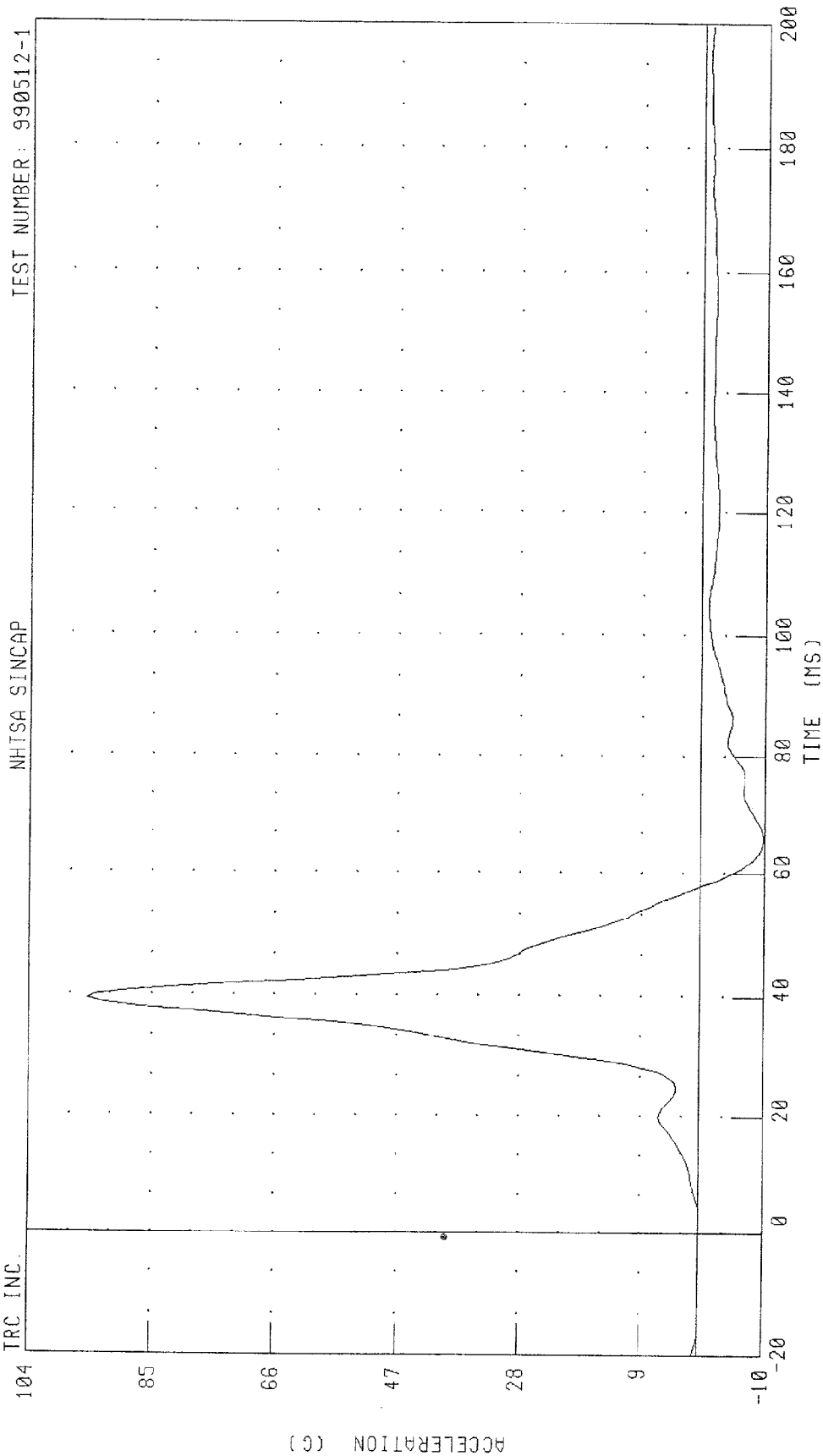
CHANNEL: 112YG4 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER LOWER SPINE Y-AXIS VELOCITY



CHANNEL: T12YV4 FILTER: CH. CLASS 180 PEAK DATA: 43.75 KM/H @ 66.72 MS; 0.00 KM/H @ 3.20 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 LEFT REAR PASSENGER PELVIS Y-AXIS ACCELERATION



PEAK DATA: 94.96 G @ 39.38 MS; -9.83 G @ 65.63 MS

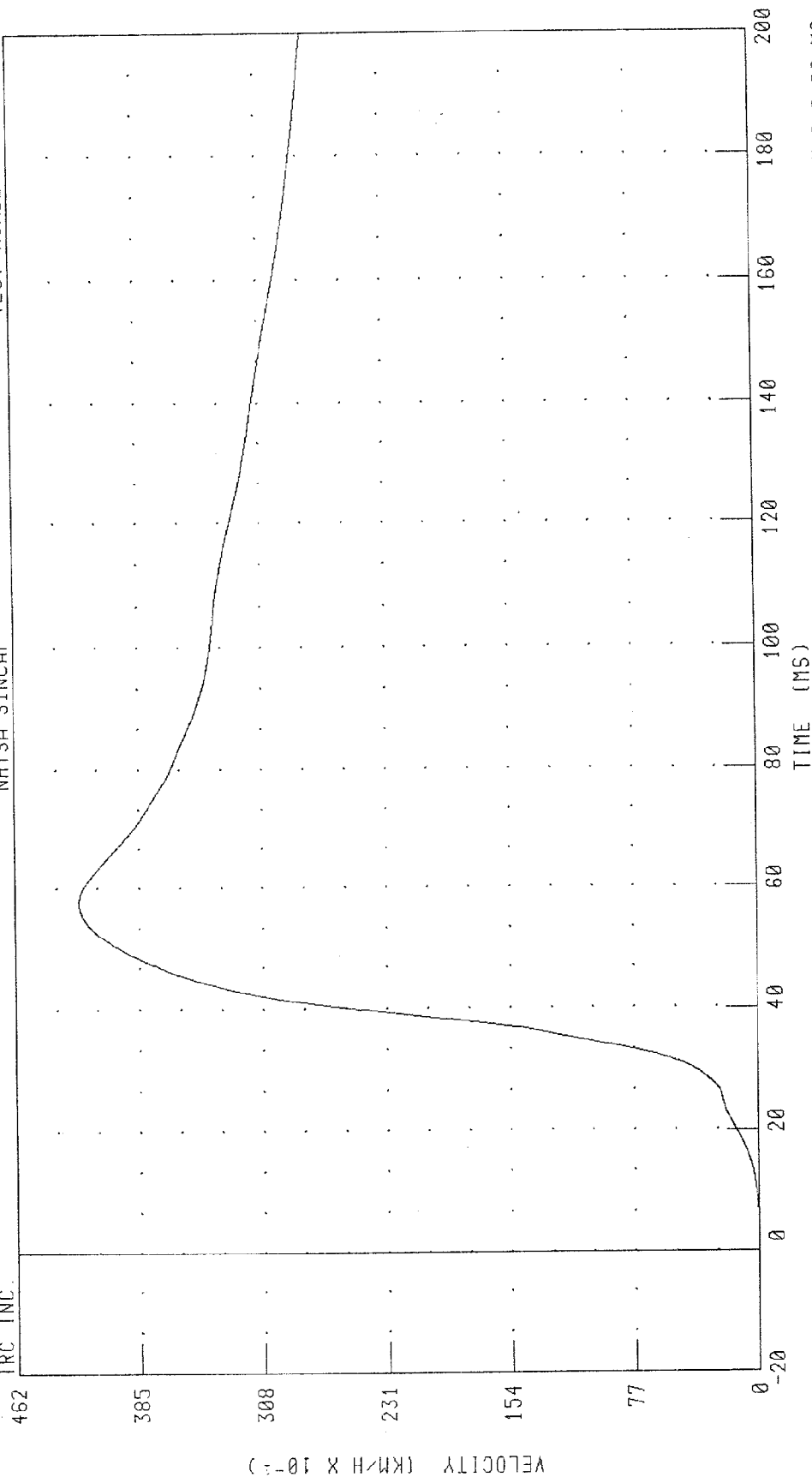
CHANNEL: PEVYC4 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER PELVIS Y-AXIS VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



PEAK DATA: 42.23 KM/H @ 57.52 MS, -0.01 KM/H @ 2.96 MS

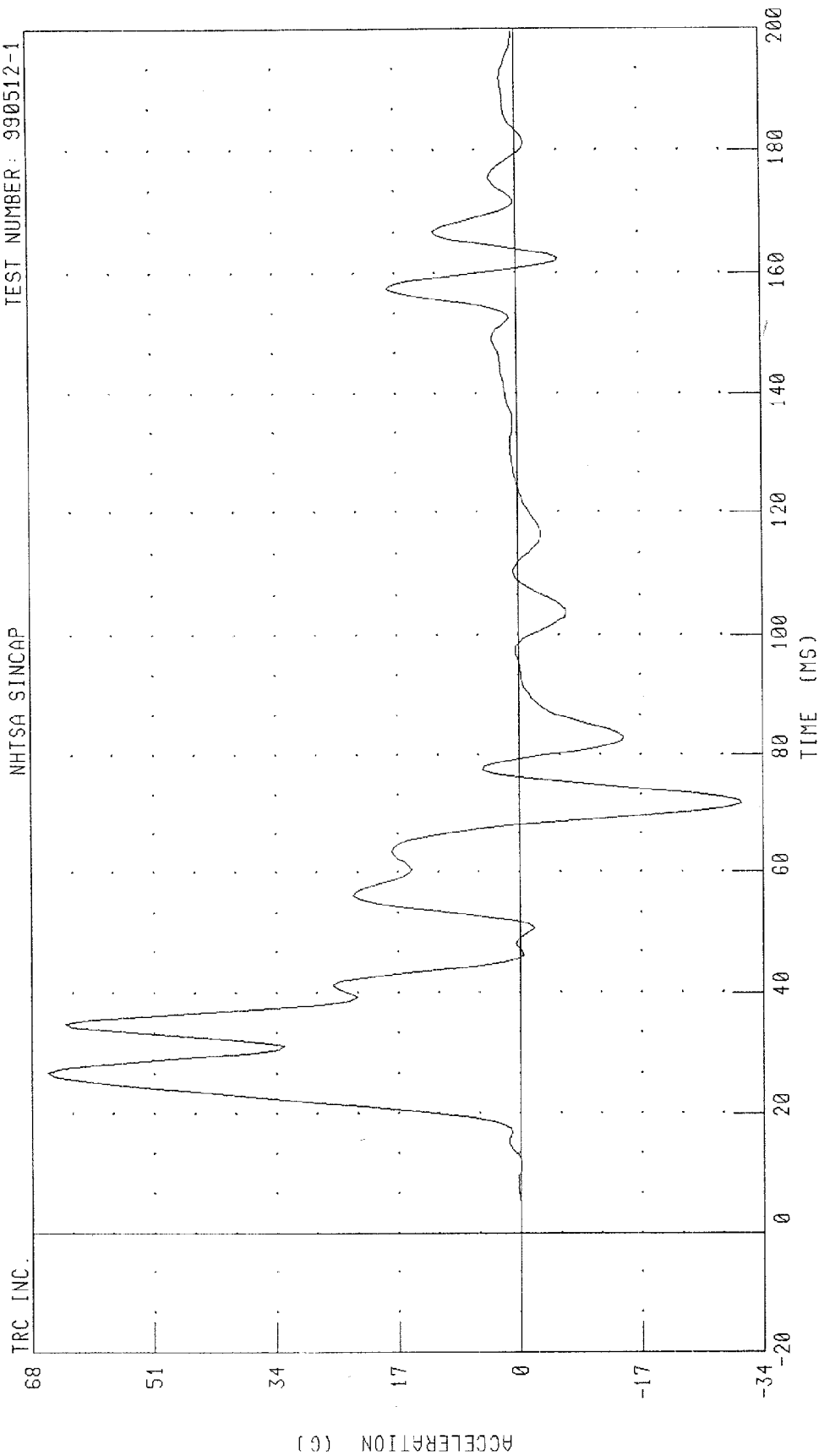
CHANNEL: PEVYV4 FILTER: CH. CLASS 180

Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - FIR Filtered - Redundant

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER: 990512-1

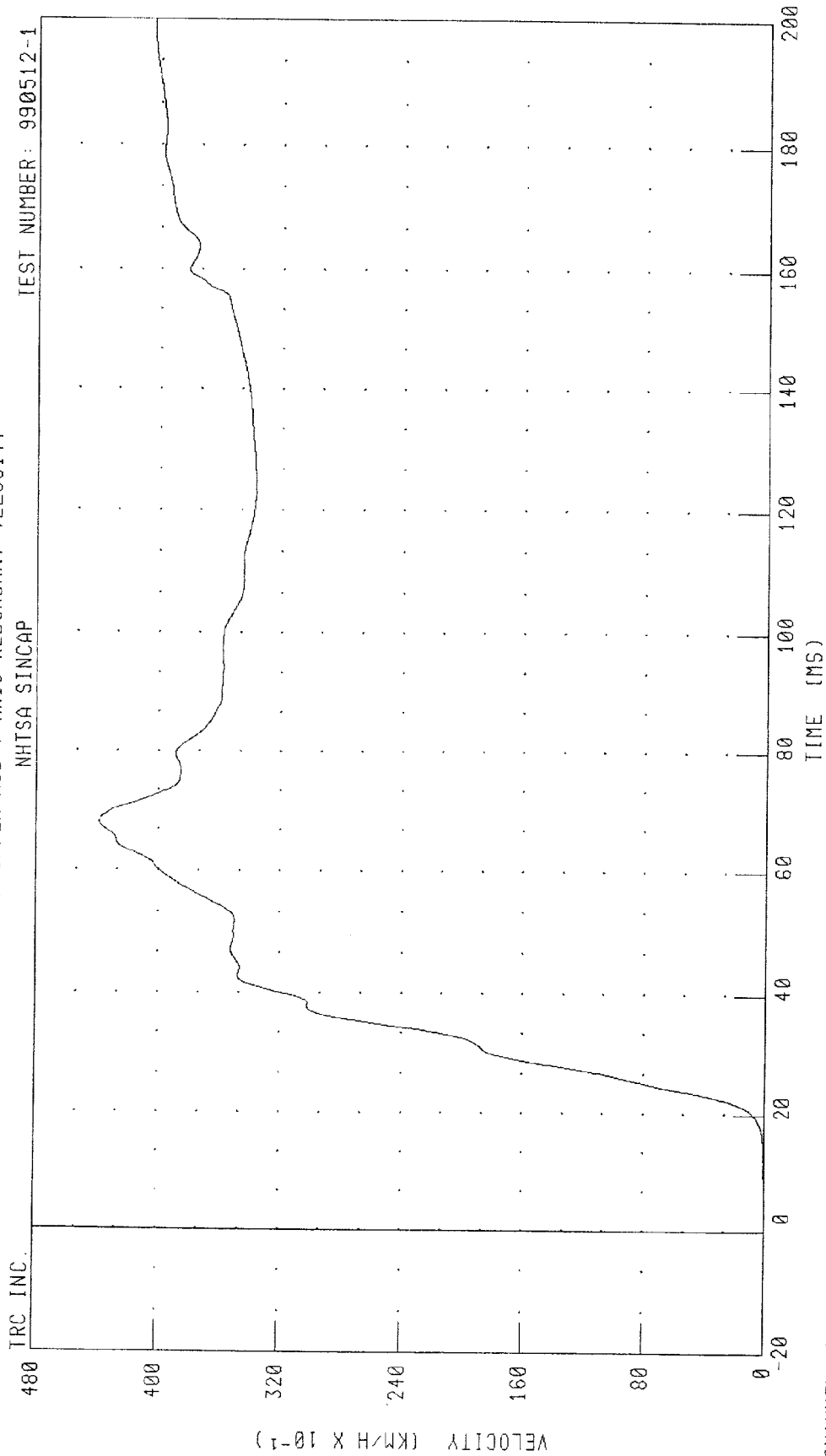
NHTSA SINCAP



CHANNEL: LURYR1 FILTER: FIR 100

PEAK DATA: 65.74 G @ 26.87 MS; -31.05 G @ 71.88 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER UPPER RIB Y-AXIS REDUNDANT VELOCITY

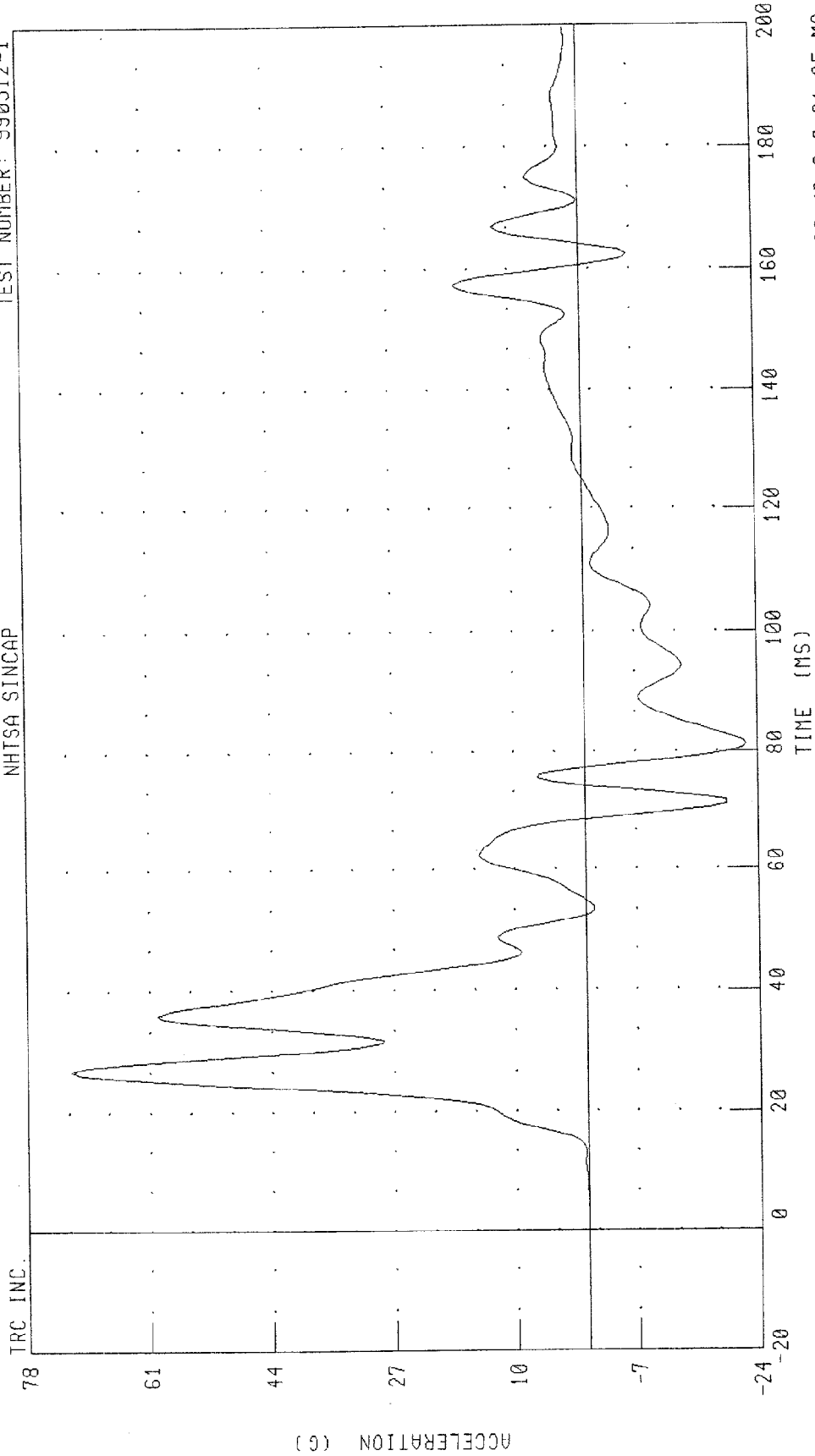


CHANNEL: LURYVI FILTER: CH. CLASS 180

PEAK DATA: 43.86 KM/H @ 67.92 MS, 0.00 KM/H @ 0.00 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION
 NHTSA SINCAP

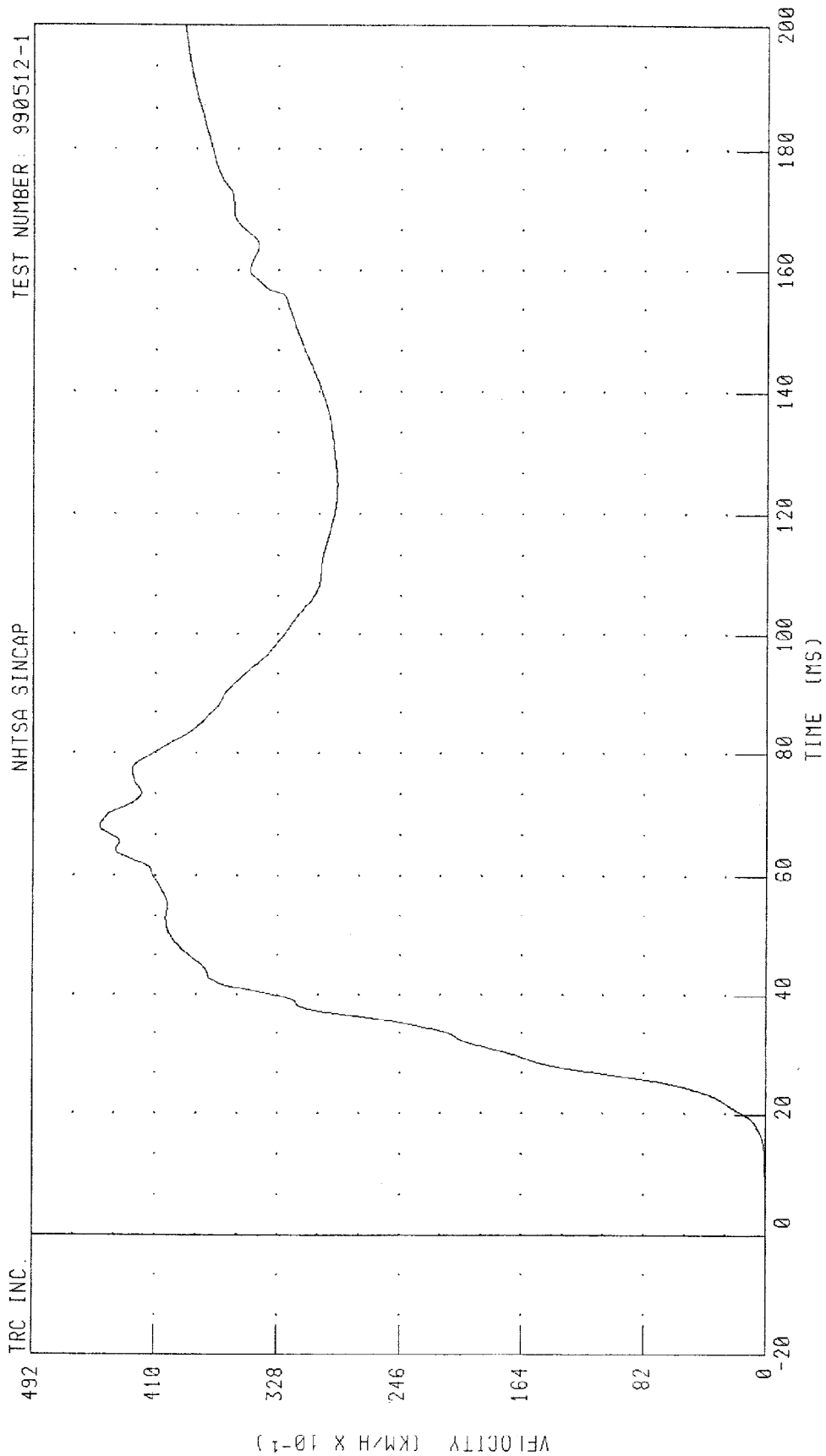
TEST NUMBER: 990512-1



PEAK DATA: 71.99 G @ 26.87 MS, -22.49 G @ 81.25 MS

CHANNEL: LLRYR1 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER LOWER RIB Y-AXIS REDUNDANT VELOCITY



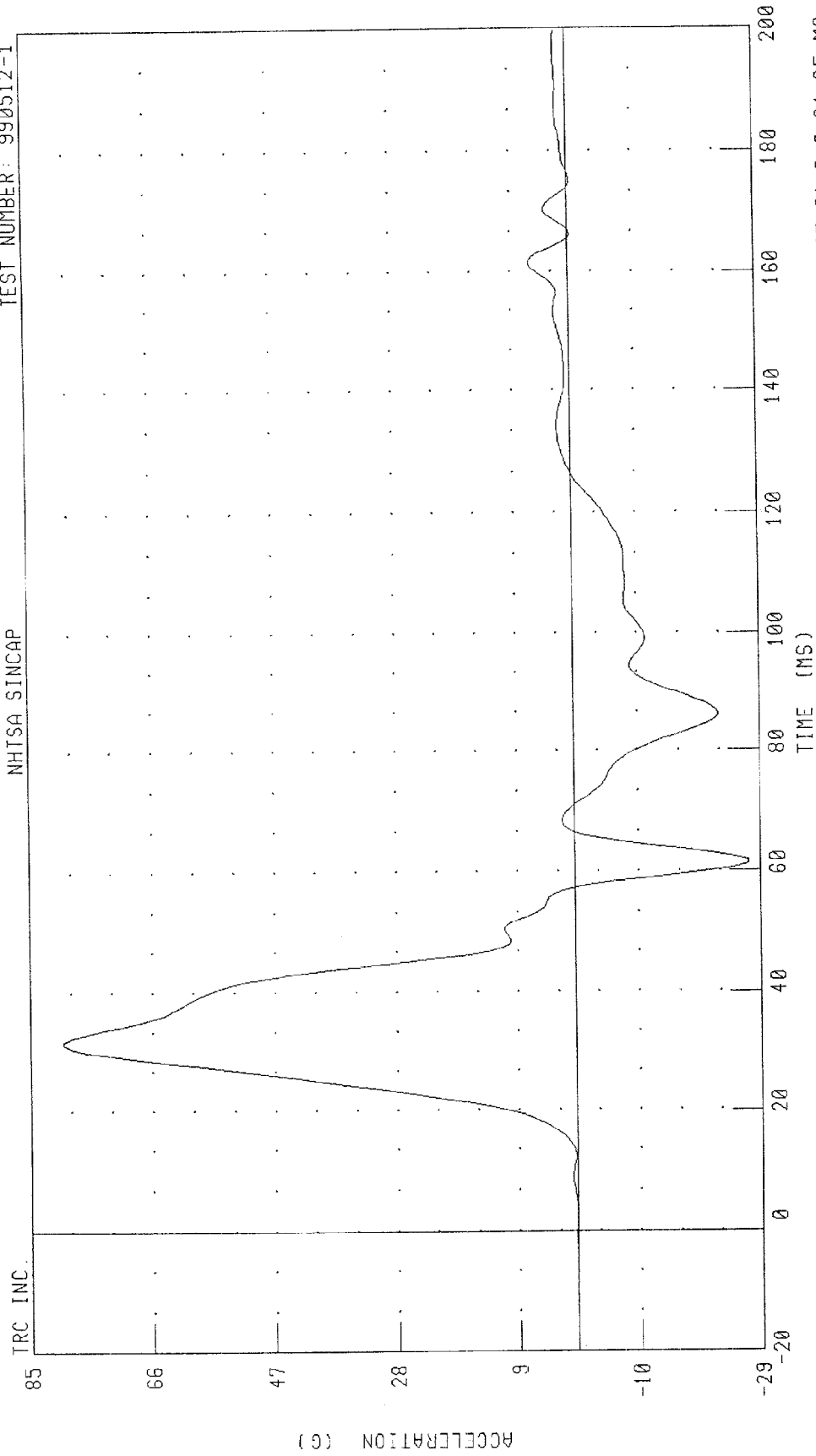
PEAK DATA: 44.73 KM/H @ 68.16 MS, 0.00 KM/H @ 3.44 MS

CHANNEL: LLRYVI FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

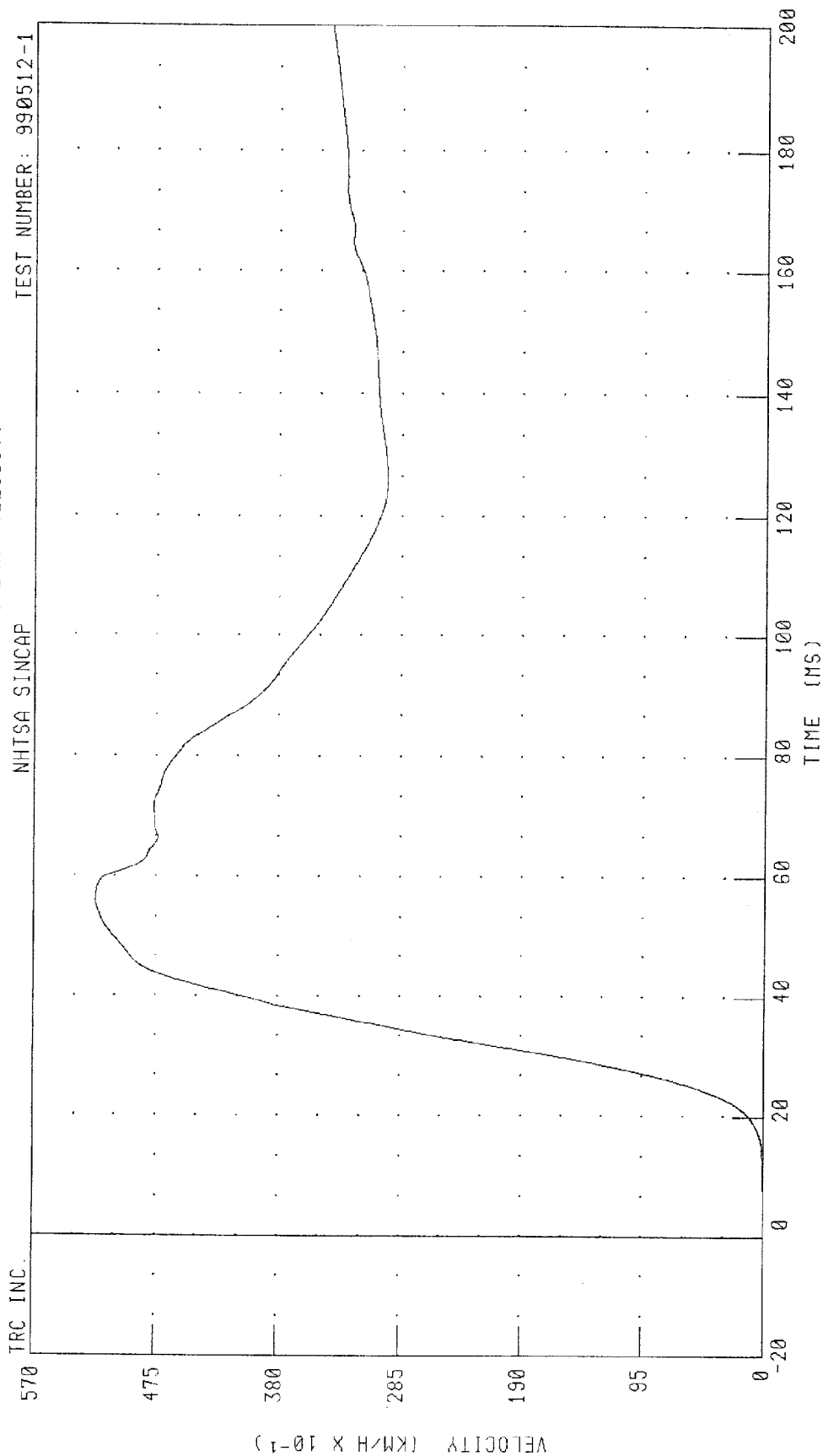
TEST NUMBER: 990512-1

NHTSA SINCAP



CHANNEL: T12YR1 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER LOWER SPINE Y-AXIS REDUNDANT VELOCITY



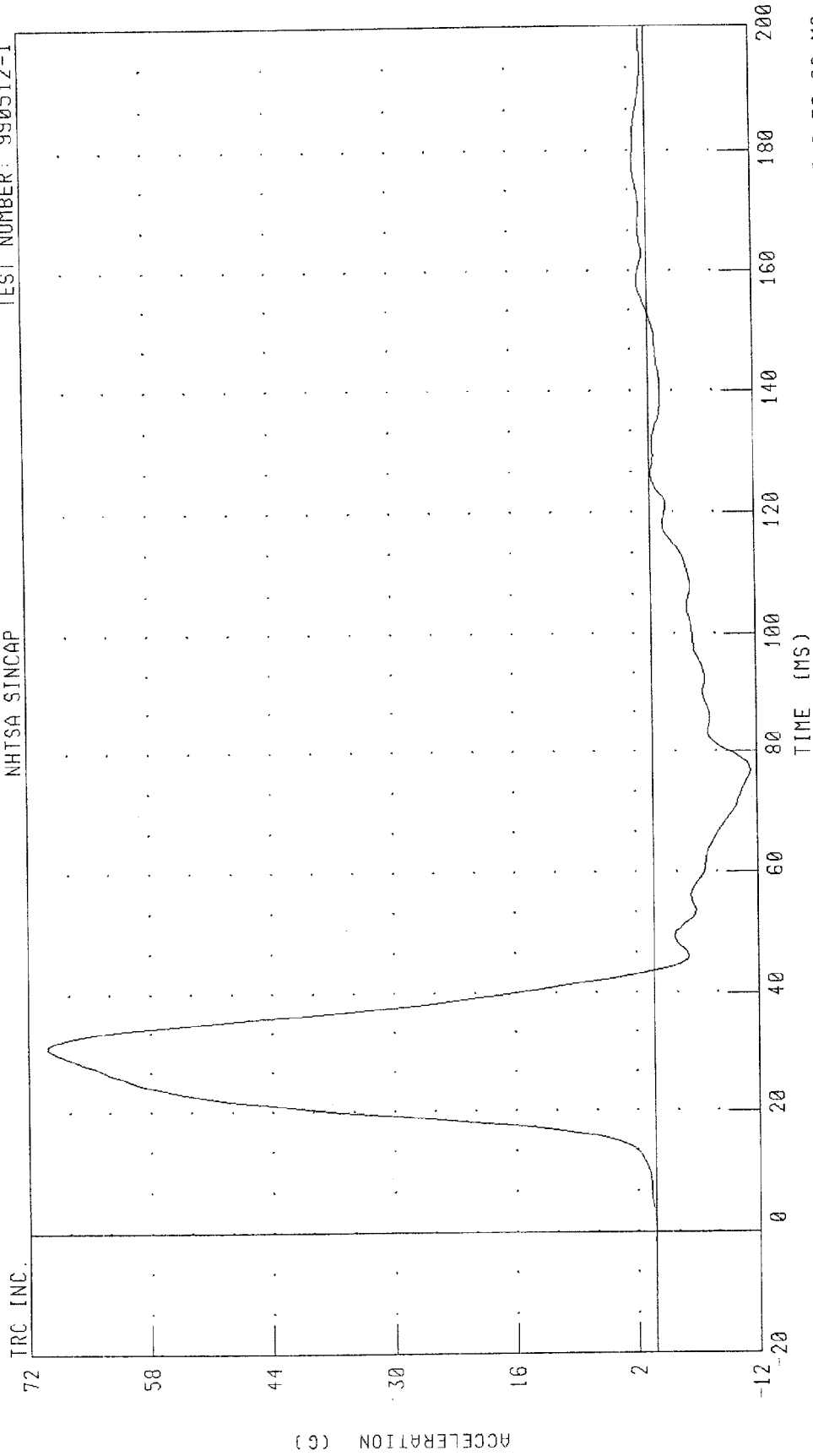
PEAK DATA: 52.19 KM/H @ 56.40 MS; 0.00 KM/H @ 4.32 MS

CHANNEL: T12YVI FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER PELVIS Y-AXIS REDUNDANT ACCELERATION

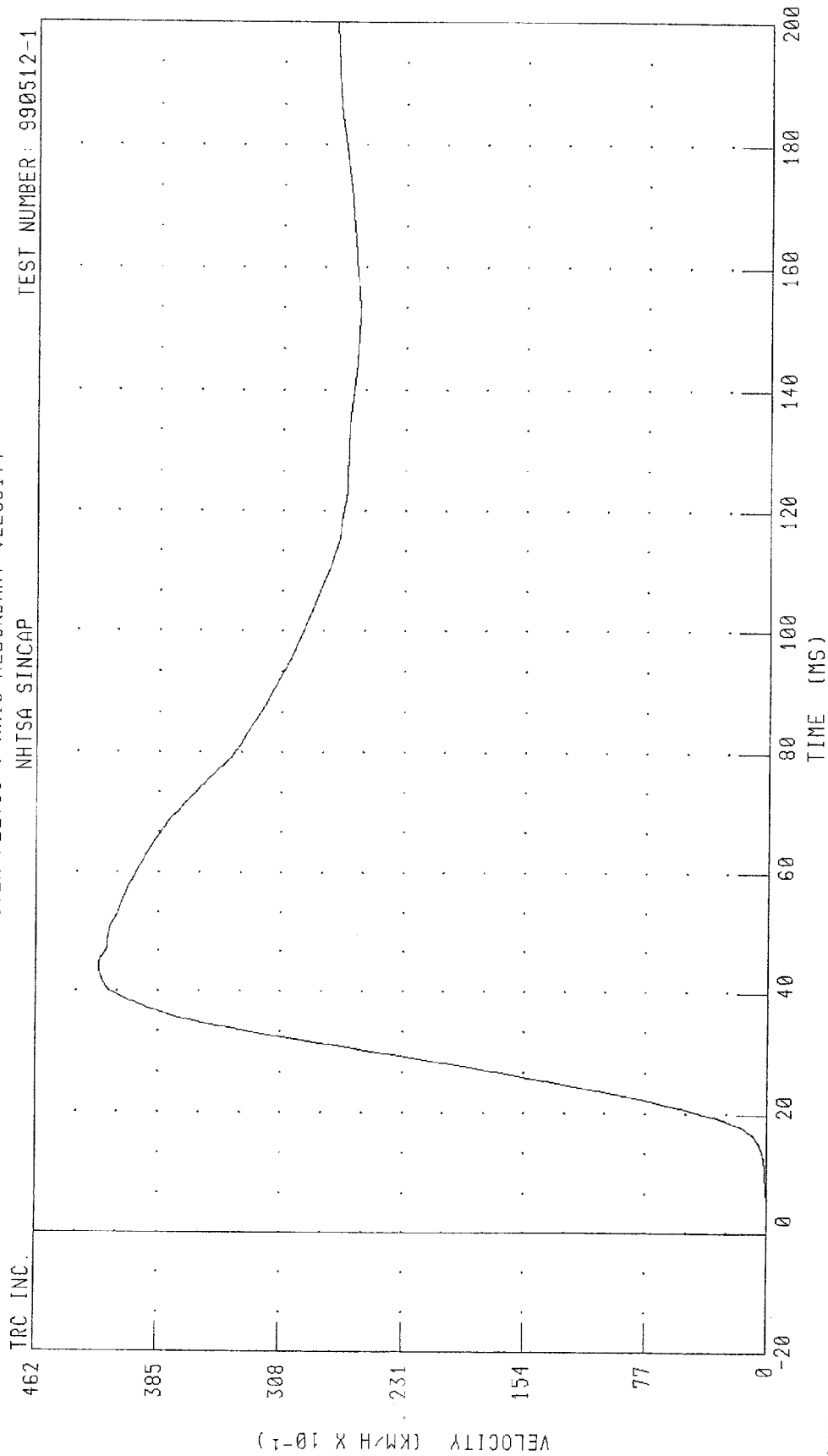
TEST NUMBER: 990512-1

NHTSA SINCAP



CHANNEL: PEVYR1 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER PELVIS Y-AXIS REDUNDANT VELOCITY



PEAK DATA: 42.26 KM/H @ 44.24 MS; 0.00 KM/H @ 3.36 MS

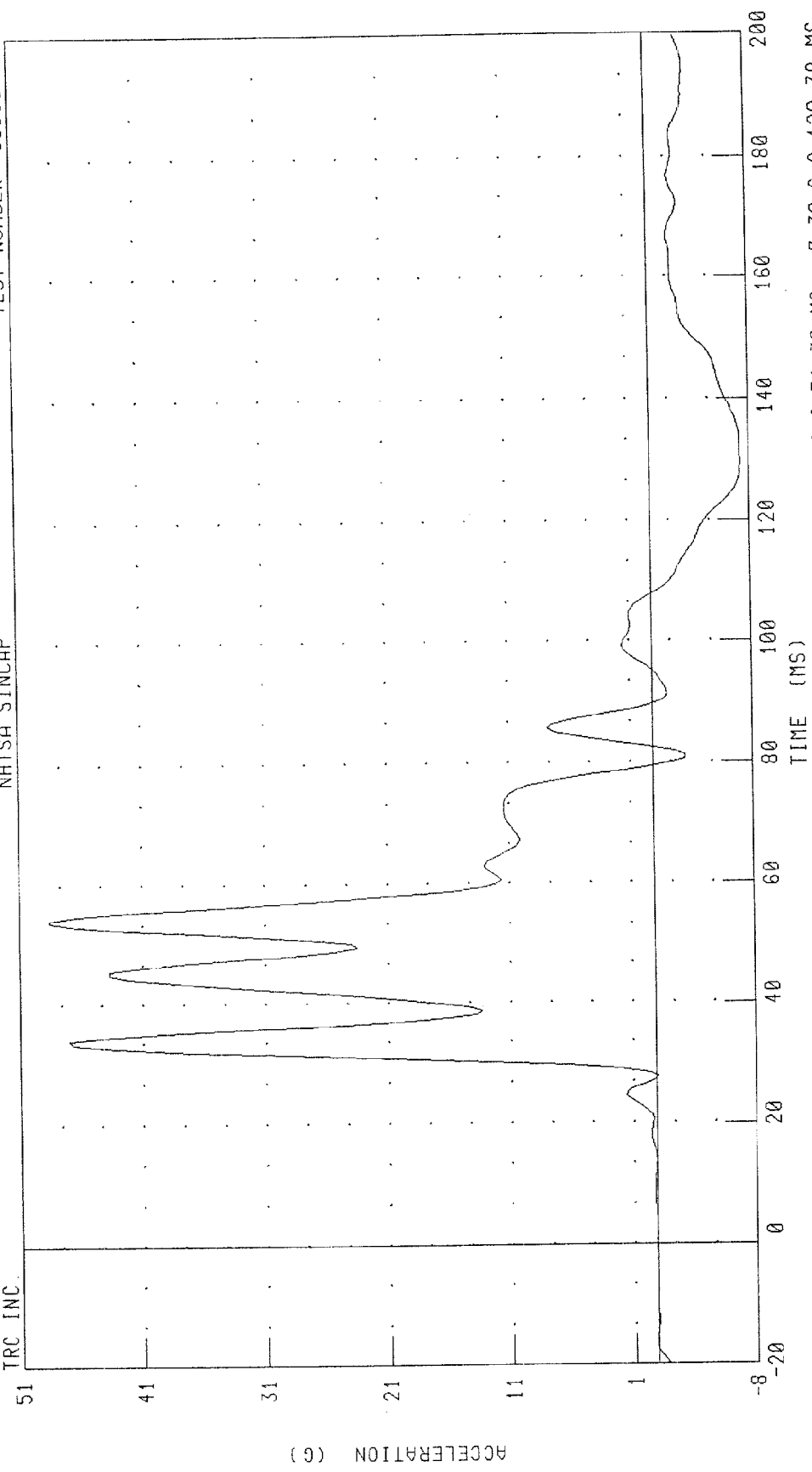
CHANNEL: PEYVVI FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

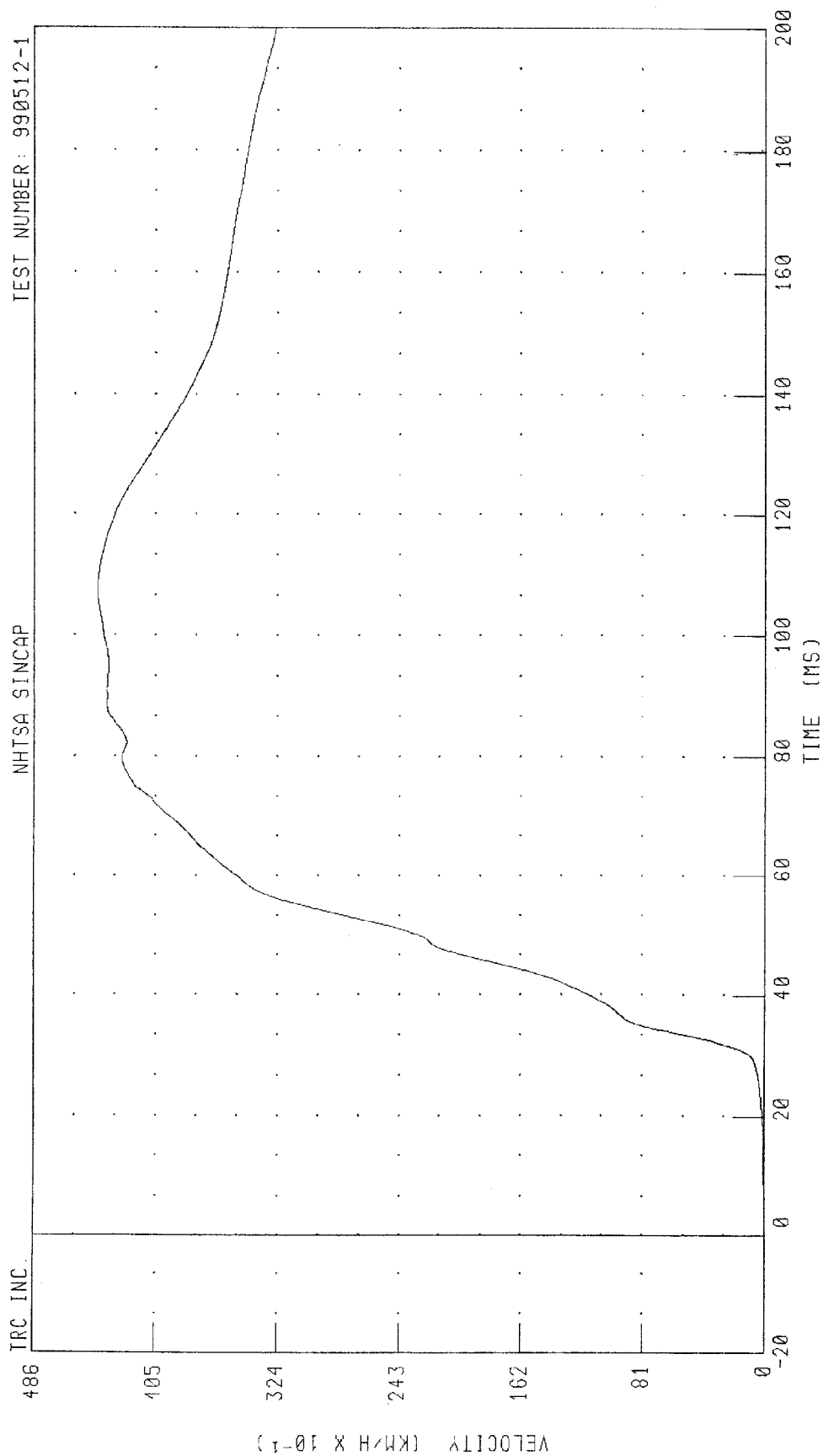
TRC INC.



PEAK DATA: 49.50 G @ 54.38 MS; -7.39 G @ 129.38 MS

CHANNEL: LURYR4 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT VELOCITY



PEAK DATA: 44.37 KM/H @ 107.52 MS; 0.00 KM/H @ 0.00 MS

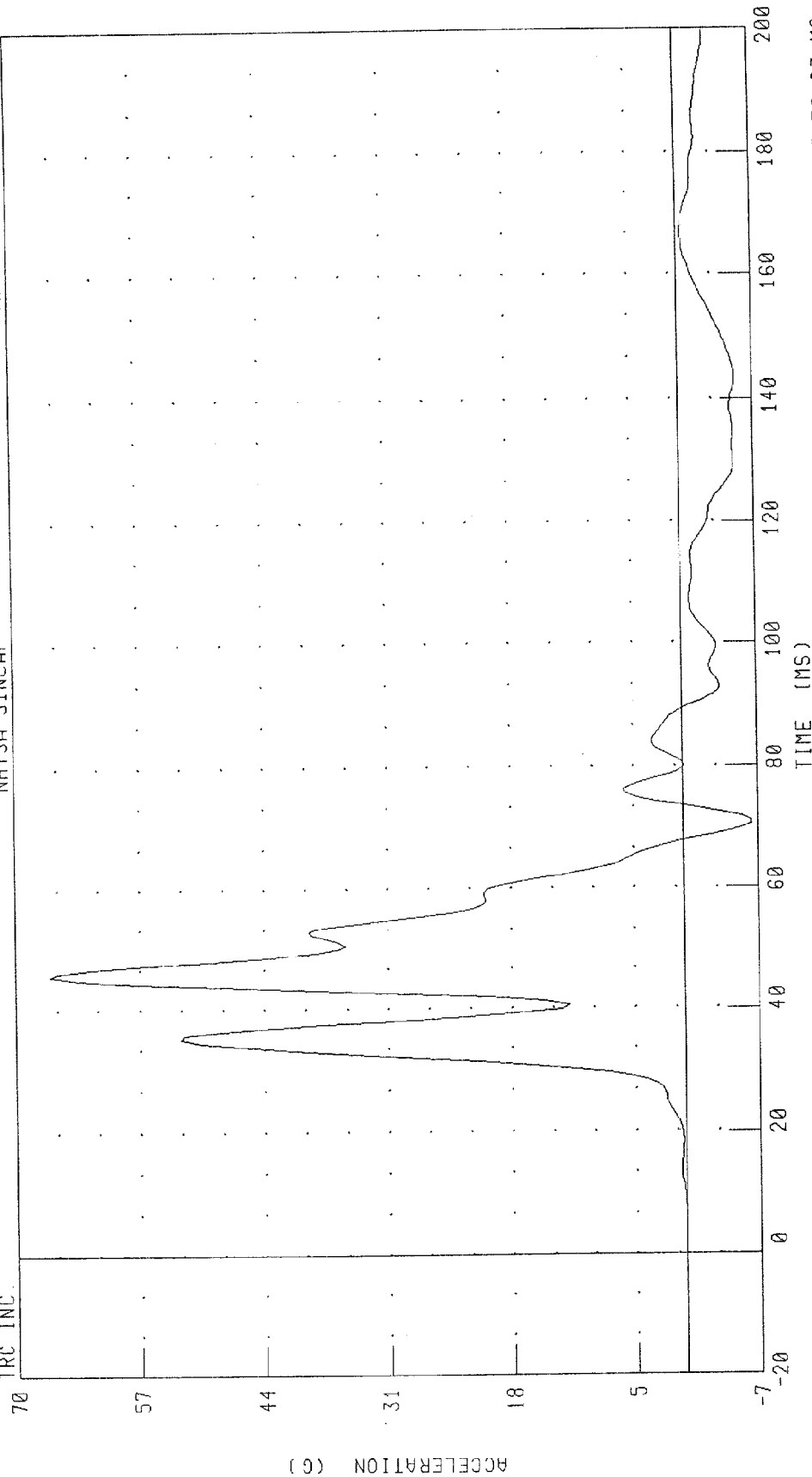
CHANNEL: LURYVJ FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP

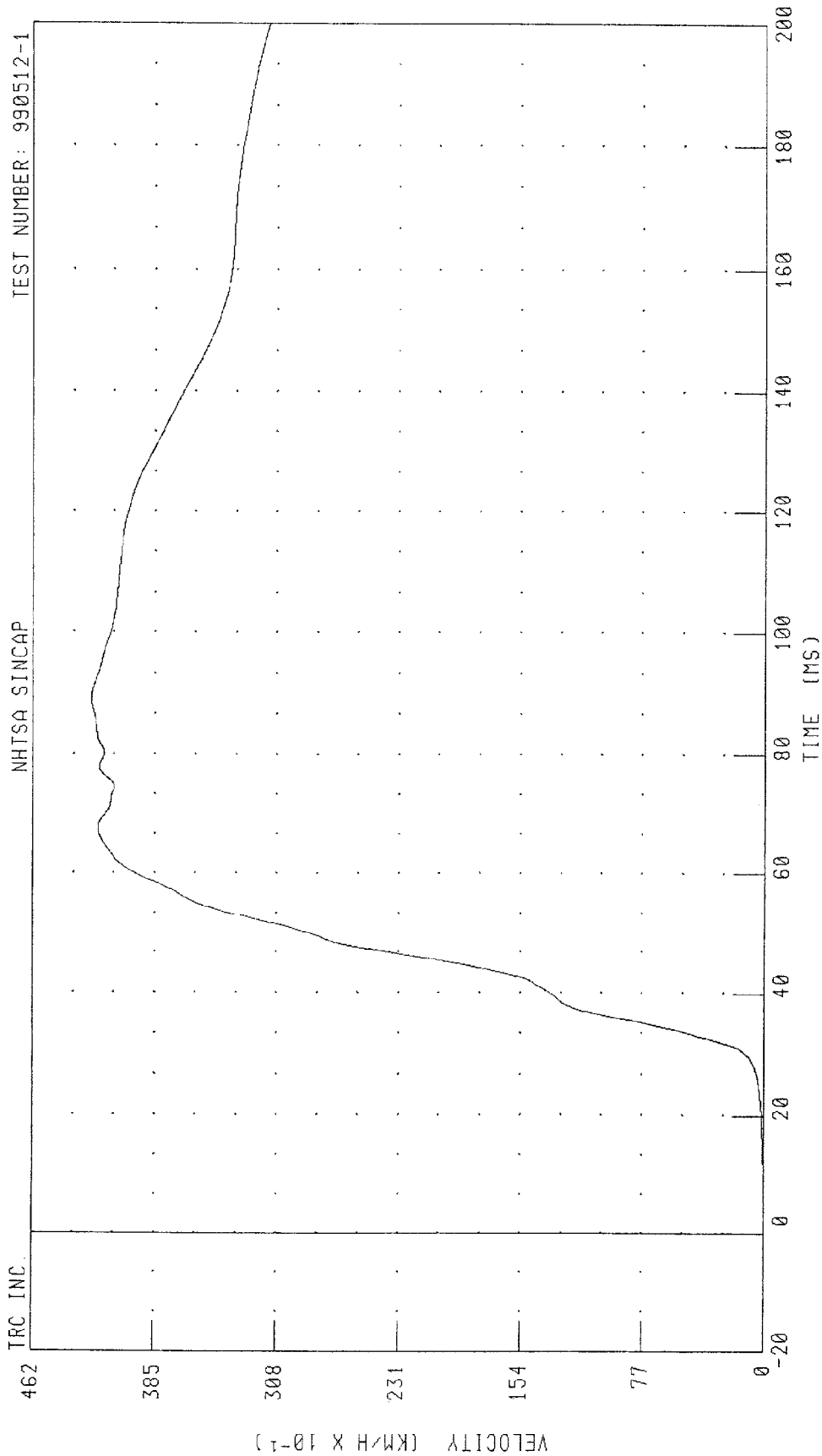
TRC INC.



PEAK DATA: 66.56 G @ 45.62 MS; -7.16 G @ 70.63 MS

CHANNEL: LLRYR4 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT VELOCITY



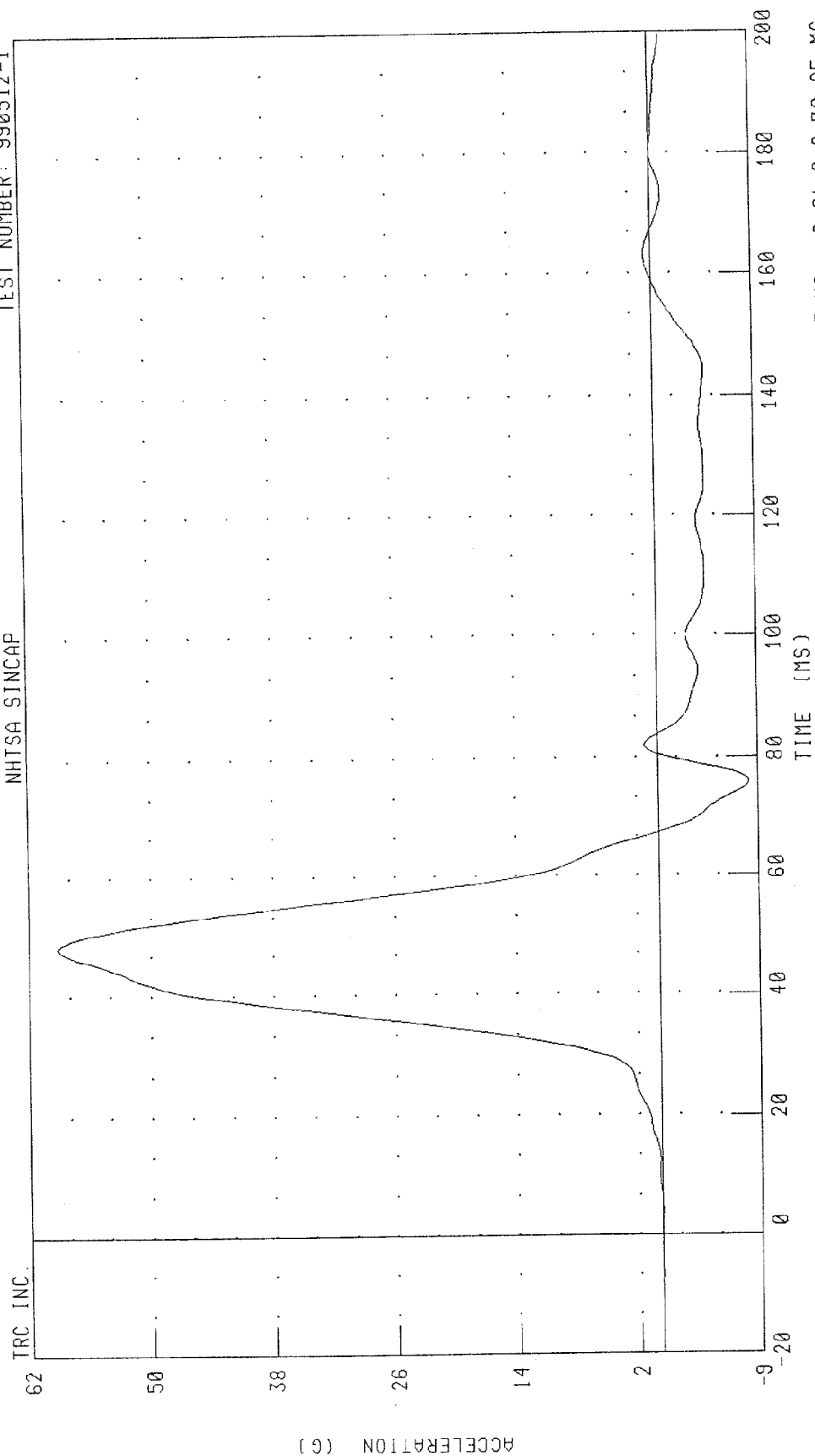
CHANNEL: LLRYVJ FILTER: CH. CLASS 180

PEAK DATA: 42.51 KM/H @ 89.28 MS; 0.00 KM/H @ 5.60 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER: 990512-1

NHTSA SINCAP



CHANNEL: T12YR4 FILTER: FIR 100

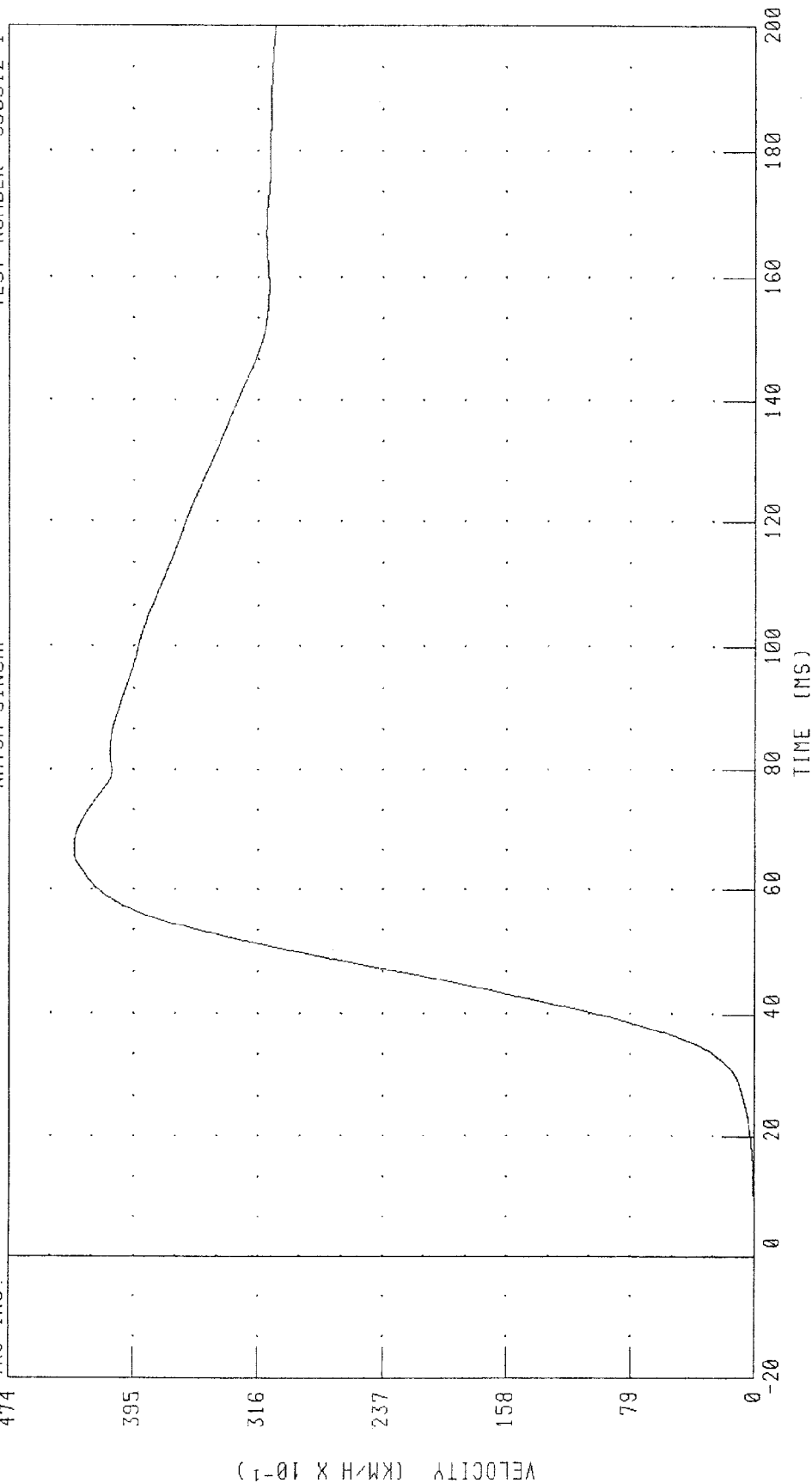
PEAK DATA: 59.35 G @ 48.13 MS; -8.91 G @ 76.25 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT VELOCITY

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



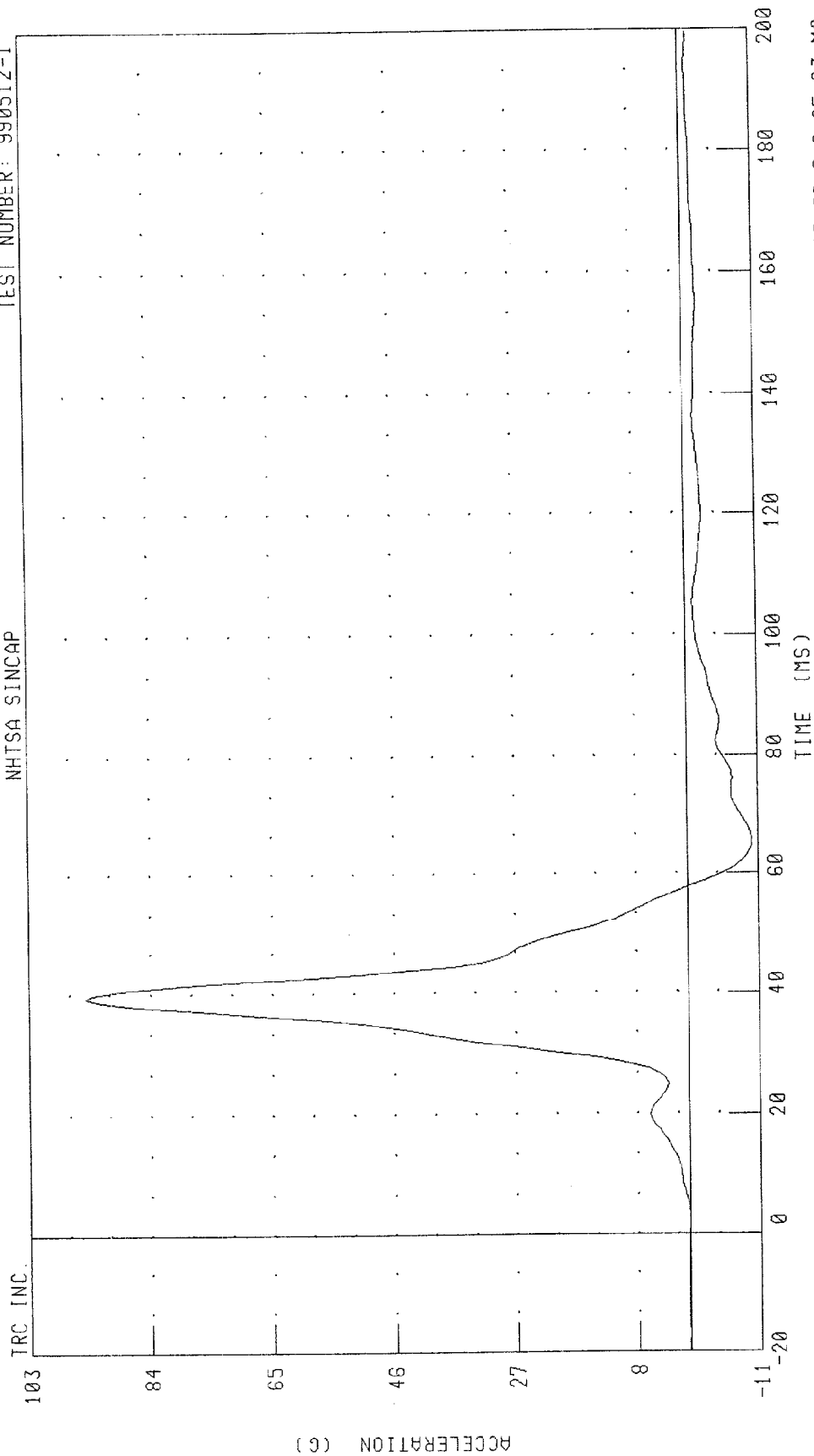
PEAK DATA: 43.30 KM/H @ 66.48 MS; 0.00 KM/H @ 3.20 MS

CHANNEL: T12YVJ FILTER: CH. CLASS 180

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER PELVIS Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER: 990512-1

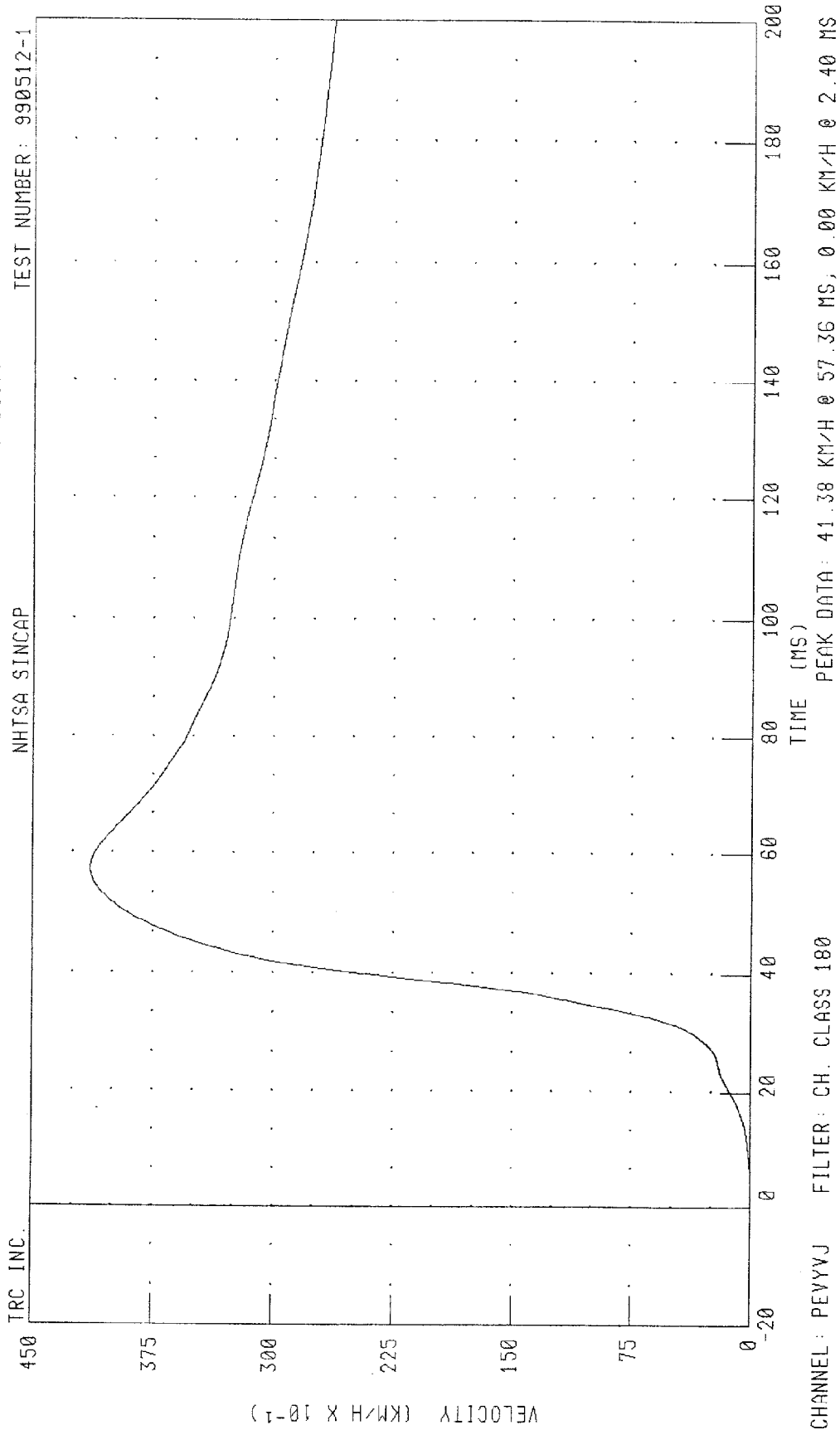
NHTSA SINCAP



CHANNEL: PEVYR4 FILTER: FIR 100

PEAK DATA: 94.20 G @ 39.38 MS, -10.08 G @ 65.63 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
LEFT REAR PASSENGER PELVIS Y-AXIS REDUNDANT VELOCITY

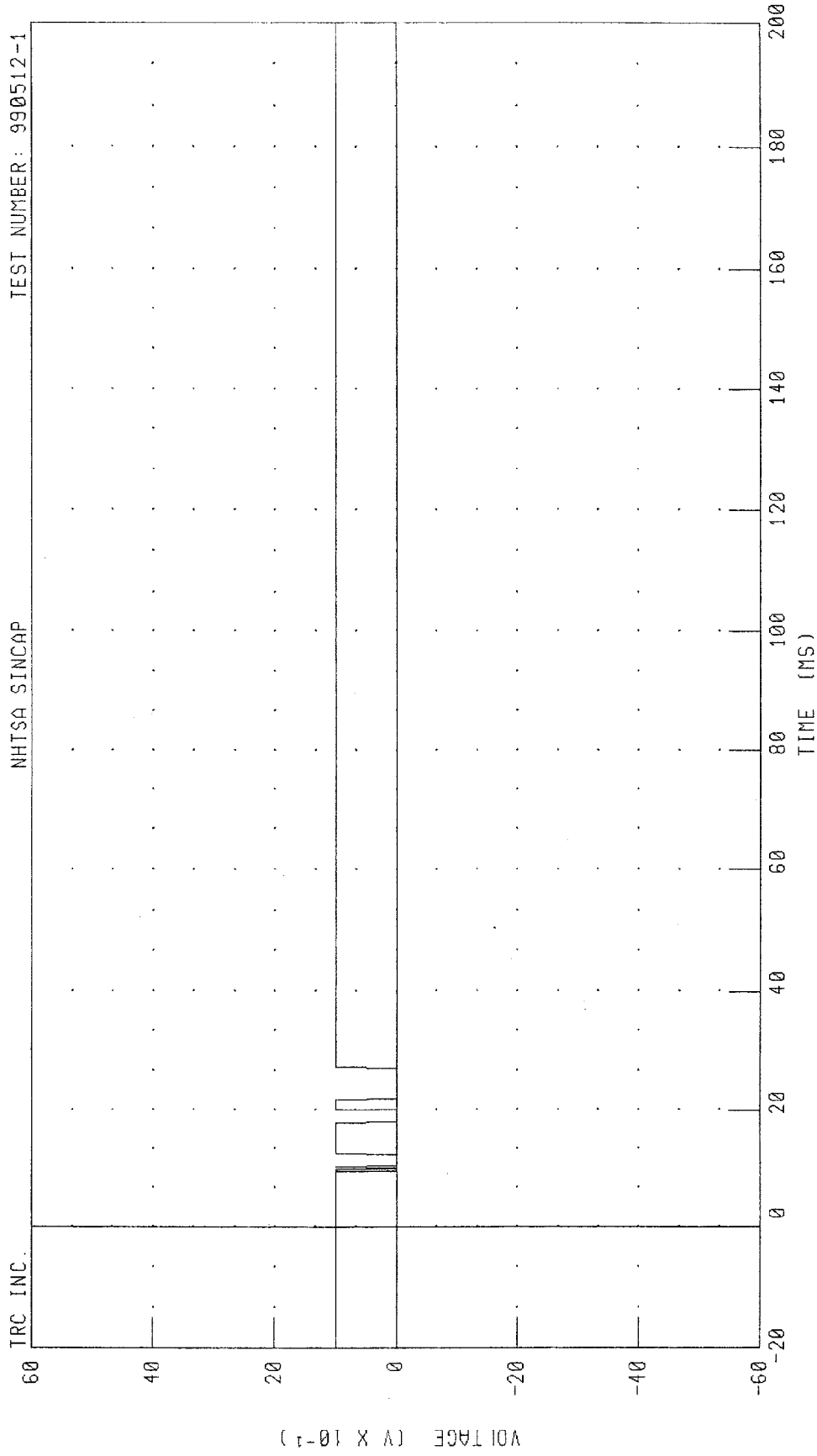


||| ||| ||| | |

Driver and Passenger Dummy Contact Switches

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE

DRIVER SHOULDER CONTACT SWITCH



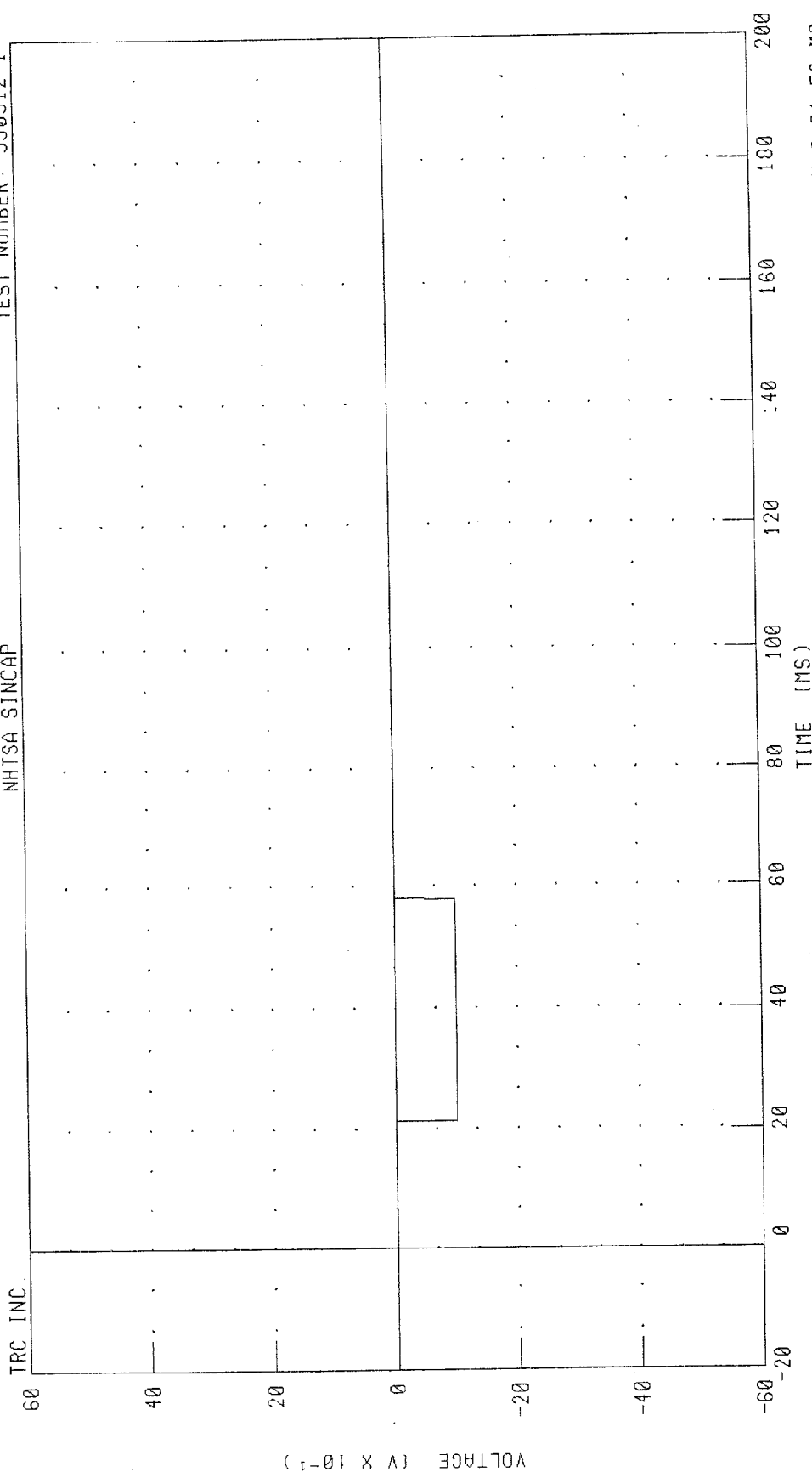
TEST NUMBER: 990512-1
 CHANNEL: SHLD1
 FILTER: CH. CLASS 1000
 PEAK DATA: 1.00 V @ 200.00 MS, 0.00 V @ 9.52 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
 DRIVER PELVIS CONTACT SWITCH

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.

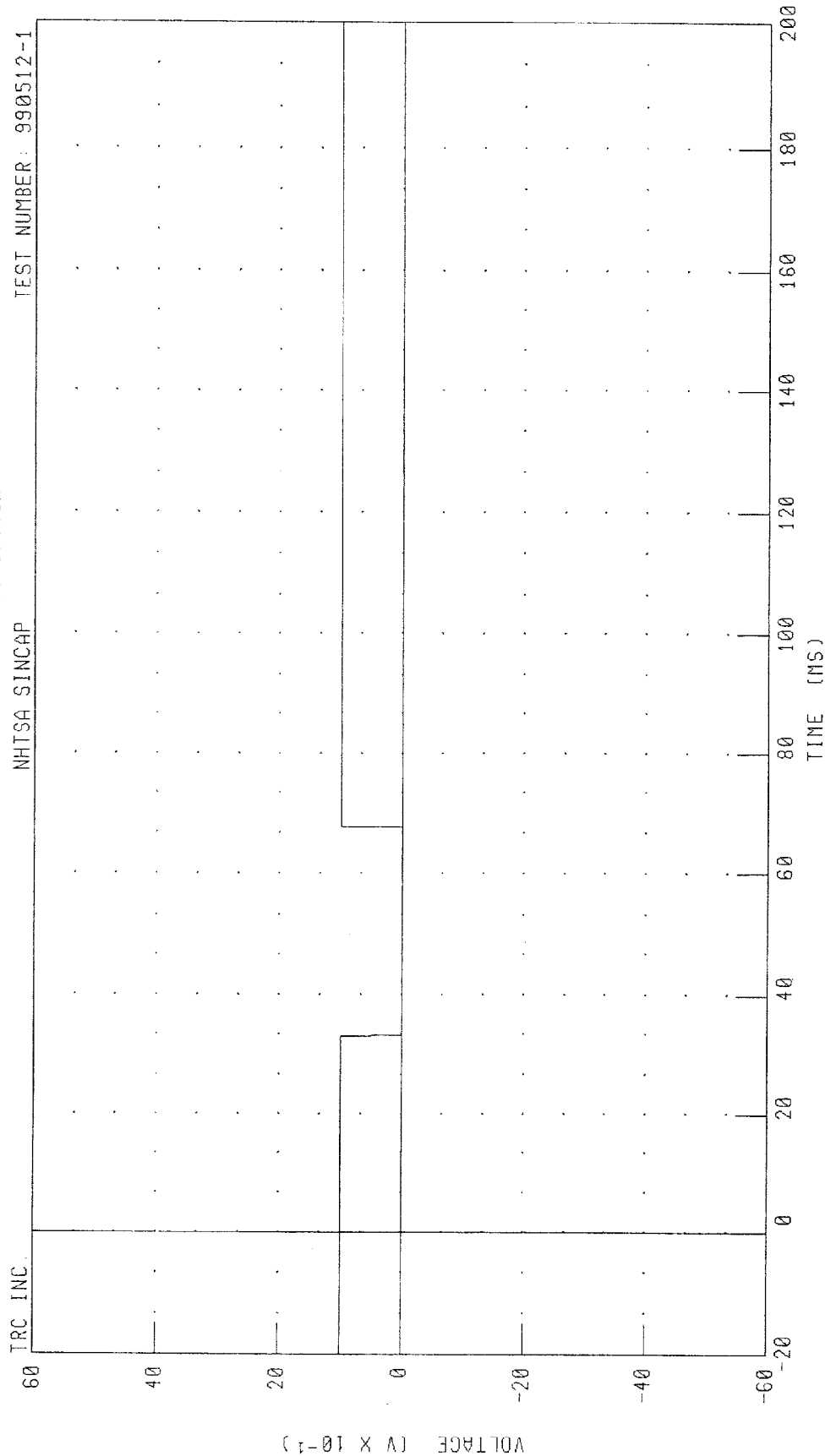


PEAK DATA: 0.00 V @ 200.00 MS; -1.00 V @ 21.52 MS

FILTER: CH. CLASS 1000

CHANNEL: PEV1

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
PASSENGER SHOULDER CONTACT SWITCH



PEAK DATA: 1.00 V @ 200.00 MS; 0.00 V @ 33.12 MS

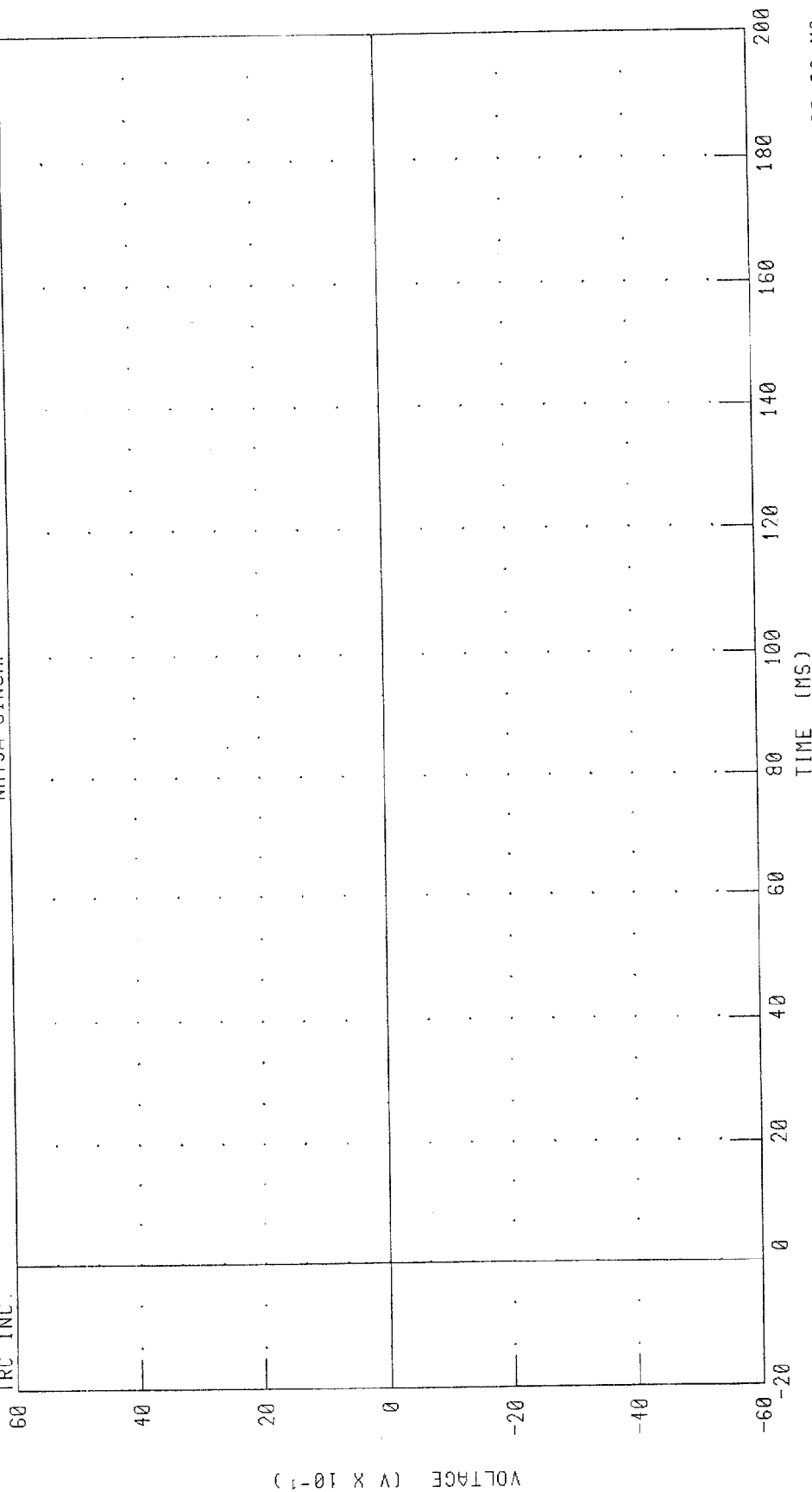
CHANNEL: SHLD2 FILTER: CH. CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1999 MAZDA PROTEGE
PASSENGER PELVIS CONTACT SWITCH

TEST NUMBER: 990512-1

NHTSA SINCAP

TRC INC.



CHANNEL: PEV2

FILTER: CH. CLASS 1000

PEAK DATA: 0.00 V @ 200.00 MS; 0.00 V @ -20.00 MS

APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SUMMARY
SID PRE-TEST AND POST-TEST CALIBRATION

CONFIGURED FOR LEFT SIDE IMPACT

Date: 01/18/99 & 01/25/99 TRC sequential test number: ED5111 & ED5210
Laboratory Technician: B. Crabtree, K. Watkins

Test Parameter	Specification	SID 051		SID 052	
		Pre-	Post-	Pre-	Post-
		Test	Test	Test	Test
SH - seated height (mm)	889-909	904.6	904.5	900.2	899.2
RH - Rib Height (mm)	502-520	512.0	511.8	514.0	513.8
HP - Hip Pivot Height (mm)	99 ref	99.0	99.1	99.0	99.1
RD - Rib from Back Line (mm)	229-241	234.8	234.7	239.4	239.3
KH - Knee Pivot from Back Line (mm)	511-526	516.4	516.4	519.6	519.4
KV - Knee Pivot to Floor (mm)	490-505	491.6	491.5	493.3	493.3
HW - Hip Width (mm)	356-391	363.2	363.0	366.5	366.3
THORAX IMPACTS					
Temperature (°C)	18.9-25.5	21.1	21.7	21.1	21.7
Relative Humidity (%)	10-70	22	44	22	20
Probe Speed (m/s)	4.27-4.33	4.31	4.32	4.31	4.33
Upper Rib (g's)	37-46	39.5	39.3	42.7	42.2
Lower Rib (g's)	37-46	41.0	42.2	42.4	40.7
Lower Spine (g's)	15-22	18.7	19.7	20.1	18.9
PELVIS IMPACTS					
Temperature (°C)	18.9-25.5	21.1	21.7	21.1	21.7
Relative Humidity (%)	10-70	22	44	22	50
Probe Speed (m/s)*	4.27-4.33	4.31	4.31	4.31	4.32
Pelvis (g's)*	40-60	54.9	53.1	50.9	49.4

Calibration Test Results

Pre-Test

SID: 051

Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Thorax Impact Test:	The lateral thorax passed all impact test requirements.
Pelvis Impact Tests:	The lateral pelvis passed all impact test requirements.
Thorax Shock Absorbers:	The thorax passed all shock absorber requirements.
Abdominal Compression Test:	The torso passed all 572-B abdominal compression test requirements.
Lumbar Flexion Test:	The torso passed all 572-B lumbar flexion test requirements.

TRANSPORTATION RESEARCH CENTER INC.
SIDE IMPACT DUMMY
EXTERNAL DIMENSIONS
LEFT SIDE CONFIGURATION
SN SN051 VECTOR

09-APR-99

TRC INC. TEST NO: ED5115 572F SN051 EXT.DIMENSION CAL15

DIMENSIONS WITH CHEST JACKET INSTALLED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
	TEMPERATURE		21.1 DEG. C
	RELATIVE HUMIDITY		22.0 %
SH	SEATED HEIGHT	889 - 909 MM	904.6 MM
HP	HIP PIVOT HEIGHT	99 MM REF.	99. MM
KH	KNEE PIVOT FROM BACKLINE	511 - 526 MM	516.4 MM
KV	KNEE PIVOT FROM FLOOR	490 - 506 MM	491.6 MM
HW	HIP WIDTH	356 - 391 MM	363.2 MM
DIMENSIONS WITH CHEST JACKET REMOVED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
RH	RIB HEIGHT	501 - 520 MM	512.0 MM
RD	RIB FROM BACKLINE	229 - 241 MM	234.8 MM
RW-1	TOP RIB WIDTH FROM C/L	165. - 180 MM	177.8 MM
RW-2	BOTTOM RIB WIDTH FROM C/L	165 - 180 MM	177.8 MM
	DIFFERENCE BETWEEN TOP & BOTTOM RIB WIDTH FROM C/L	≤ 2.5 MM	0.0 MM

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

[Signature]

RUN NUMBER: 020399.1052

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

11-APR-99

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: STL5115

572F SN51 LEFT THORAX CAL15

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PENDULUM VELOCITY	4.27 - 4.33 M/S	4.31 M/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	-39.5 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	-41.0 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	-18.7 G

TEST MEETS SPECIFICATIONS

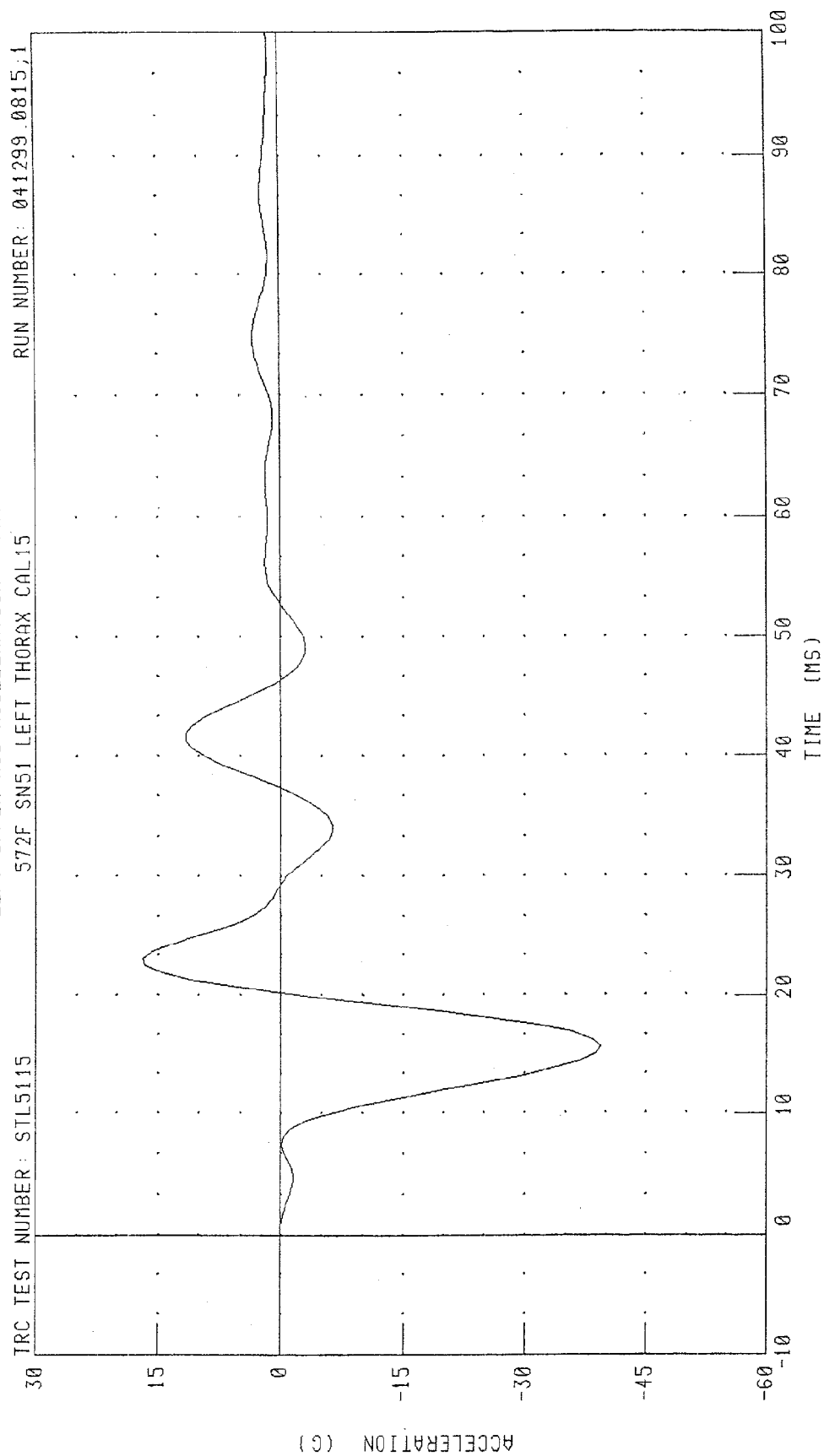
TECHNICIAN

By Calt

RUN NUMBER: 041299.0815;1

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT UPPER RIB ACCELERATION Y AXIS



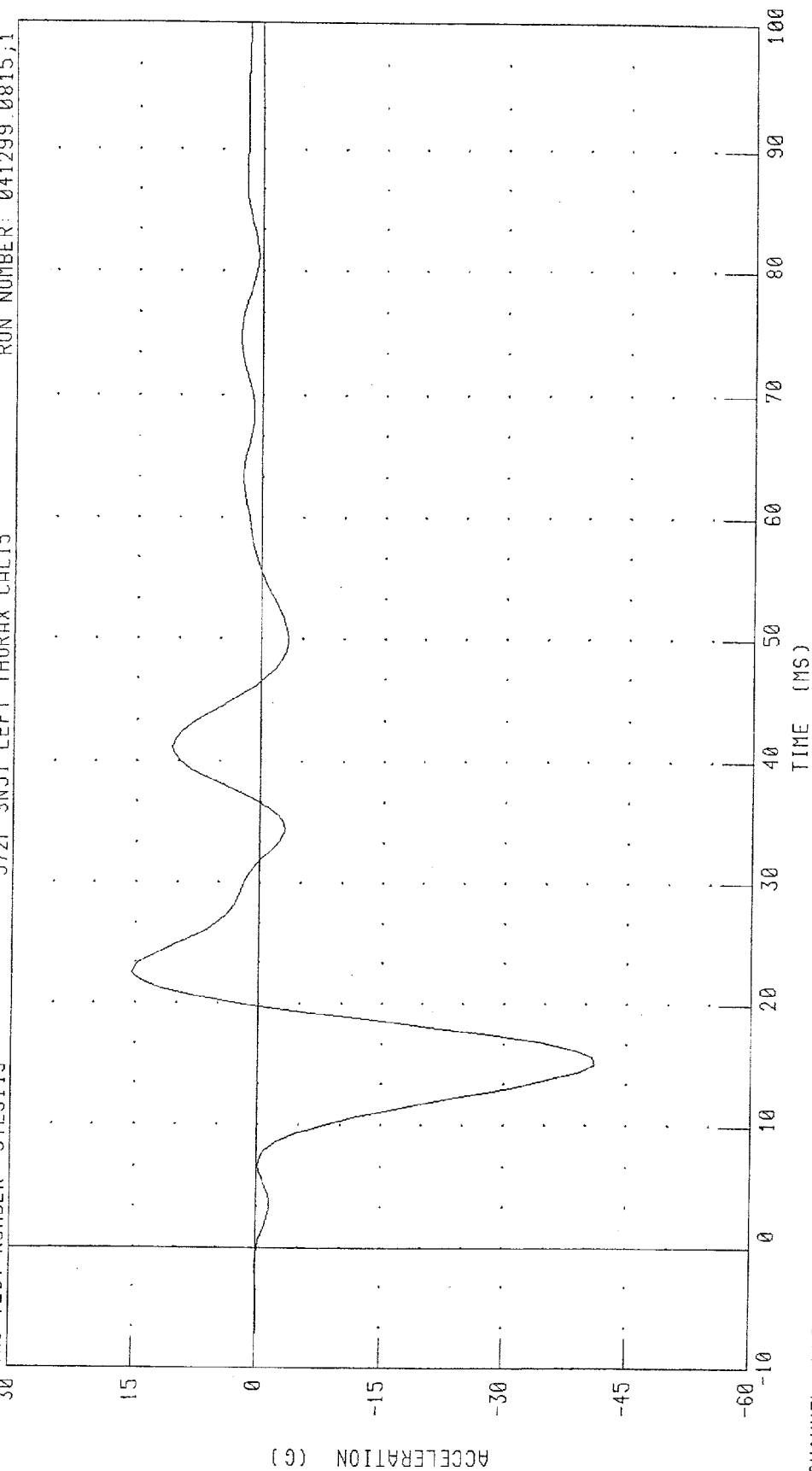
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT LOWER RIB ACCELERATION Y AXIS

TRC TEST NUMBER: STL5115

572F SN51 LEFT THORAX CAL15

RUN NUMBER: 041299.0815;1



PEAK DATA: 15.37 G @ 22.50 MS; -41.05 G @ 15.00 MS

CHANNEL: LLRYG FILTER: FIR 100

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LOWER SPINE ACCELERATION Y AXIS

572F SN51 LEFT THORAX CAL15

TRC TEST NUMBER: STL5115

20

10

0

-10

-20

-30

-40

ACCELERATION (G)

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

90

100

TIME (MS)

PEAK DATA: 5.15 G @ 37.50 MS; -18.73 G @ 20.00 MS

CHANNEL: T12YC

FILTER: FIR 100

RUN NUMBER: 041299.0815;1

0

10

20

30

40

50

60

70

80

TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

11-APR-99

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: SPL5115

572F SN 51 LEFT PELVIS CAL15

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PENDULUM VELOCITY	4.27 - 4.33 M/S	4.31 M/S
PEAK PELVIC ACCELERATION	40 - 60 G	-54.9 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	5.8 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

By [Signature]

RUN NUMBER: 041299.0823;1

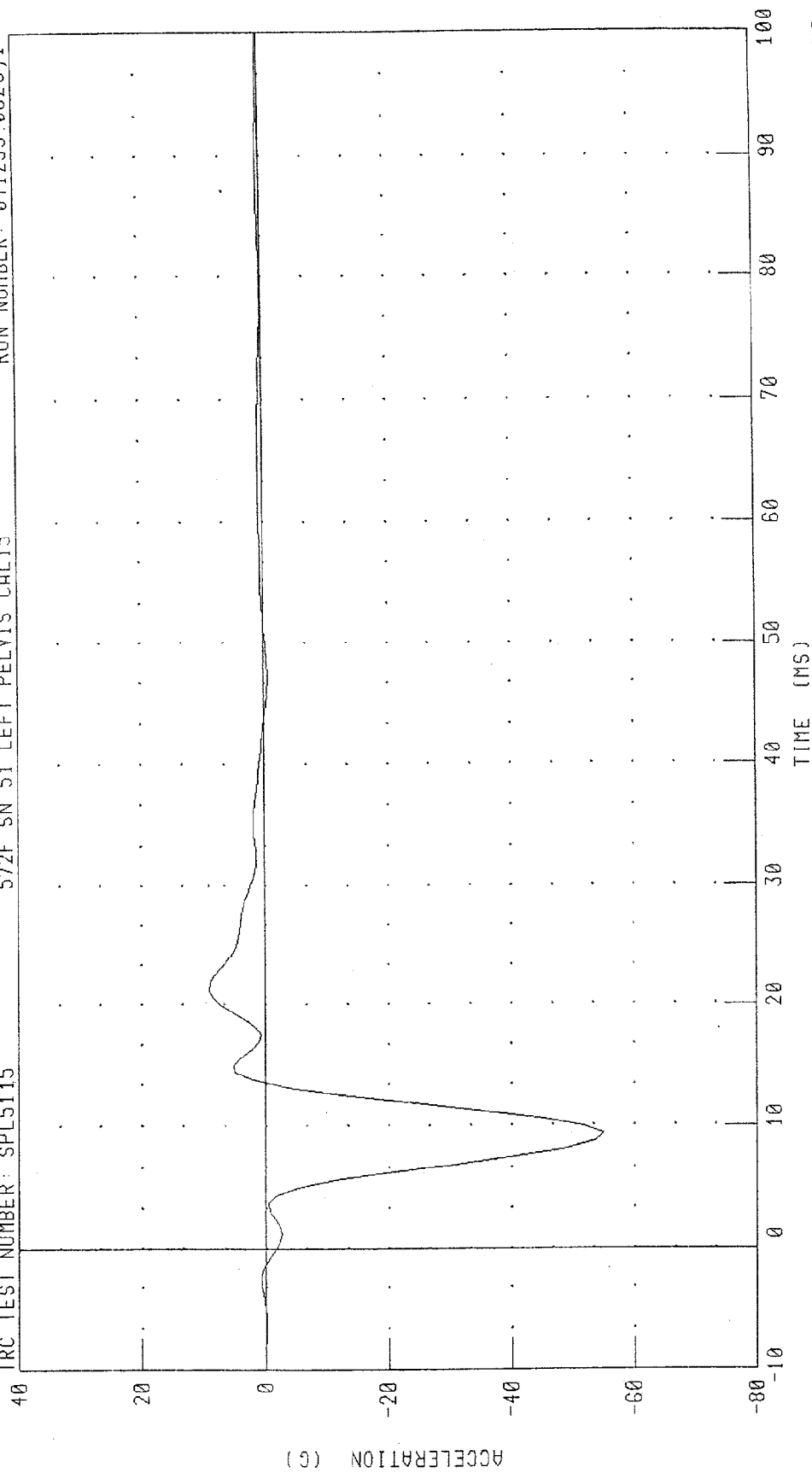
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

TRC TEST NUMBER: SPL5115

572F SN 51 LEFT PELVIS CAL15

RUN NUMBER: 041299.0823;1



CHANNEL: PEVYC

FILTER: FIR 100

PEAK DATA: 9.12 G @ 21.25 MS; -54.89 G @ 9.37 MS

TRANSPORTATION RESEARCH CENTER INC.

ABDOMEN COMPRESSION TEST

PART 572B

09-APR-99

TRC INC.

TEST NO: ABD5115

ABDOMIN COMPRESSION TEST SN51

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.0 C
RELATIVE HUMIDITY	10 - 70 %	22 %
DEFLECTION RATE	6.4 - 8.9 MM/S	7.79 MM/S
FORCE AT 0.00 MM DISP.	44.48 N	44.48 N
FORCE AT 12.7 MM DISP.	102.30 - 160.13 N	128.63 N
FORCE AT 19.1 MM DISP.	160.13 - 222.40 N	185.85 N
FORCE AT 25.4 MM DISP.	222.40 - 280.22 N	263.62 N
FORCE AT 33.0 MM DISP.	324.70 - 391.42 N	381.50 N

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Bj alt

RUN NUMBER: 040999.1112;1

PART 572-B HYBRID II ABDOMEN CALIBRATION

ABDOMEN FORCE VS DISPLACEMENT

ABDOMIN COMPRESSION TEST SN51

RUN NUMBER: 040999.1112;1

TRC TEST NUMBER: ABD5115

540

450

360

270

180

90

0

FORCE (N)

440

400

360

320

280

240

200

160

120

80

40

0

DISPLACEMENT (MM X 10⁻¹)

FILTER: CH. CLASS 1000
CH. CLASS 1000

CHANNEL: ABXD
ABXF

PEAK DATA: 34.39 MM @ 4.40 S; 0.00 MM @ 0.00 S
404.00 N @ 4.40 S; 43.03 N @ 0.01 S

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

09-APR-99

TRC INC.

572F SN51 DAMPER TEST CAL15

TEST NUMBERS: DP5115A,DP5115B,DP5115C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
VELOCITY	FORCE	838 - 1125 N	958 N
3.06 M/S	DISPLACEMENT	30.2 - 35.2 MM	32.8 MM
VELOCITY	FORCE	1733 - 2100 N	1769 N
4.27 M/S	DISPLACEMENT	31.6 - 37.2 MM	36.6 MM
VELOCITY	FORCE	3784 - 4495 N	4364 N
6.12 M/S	DISPLACEMENT	33.3 - 39.6 MM	39.6 MM

DAMPER SETTING = 6.0

TEST MEETS SPECIFICATIONS

TECHNICIAN B. C. H.

RUN NUMBER: 040999.1310;1

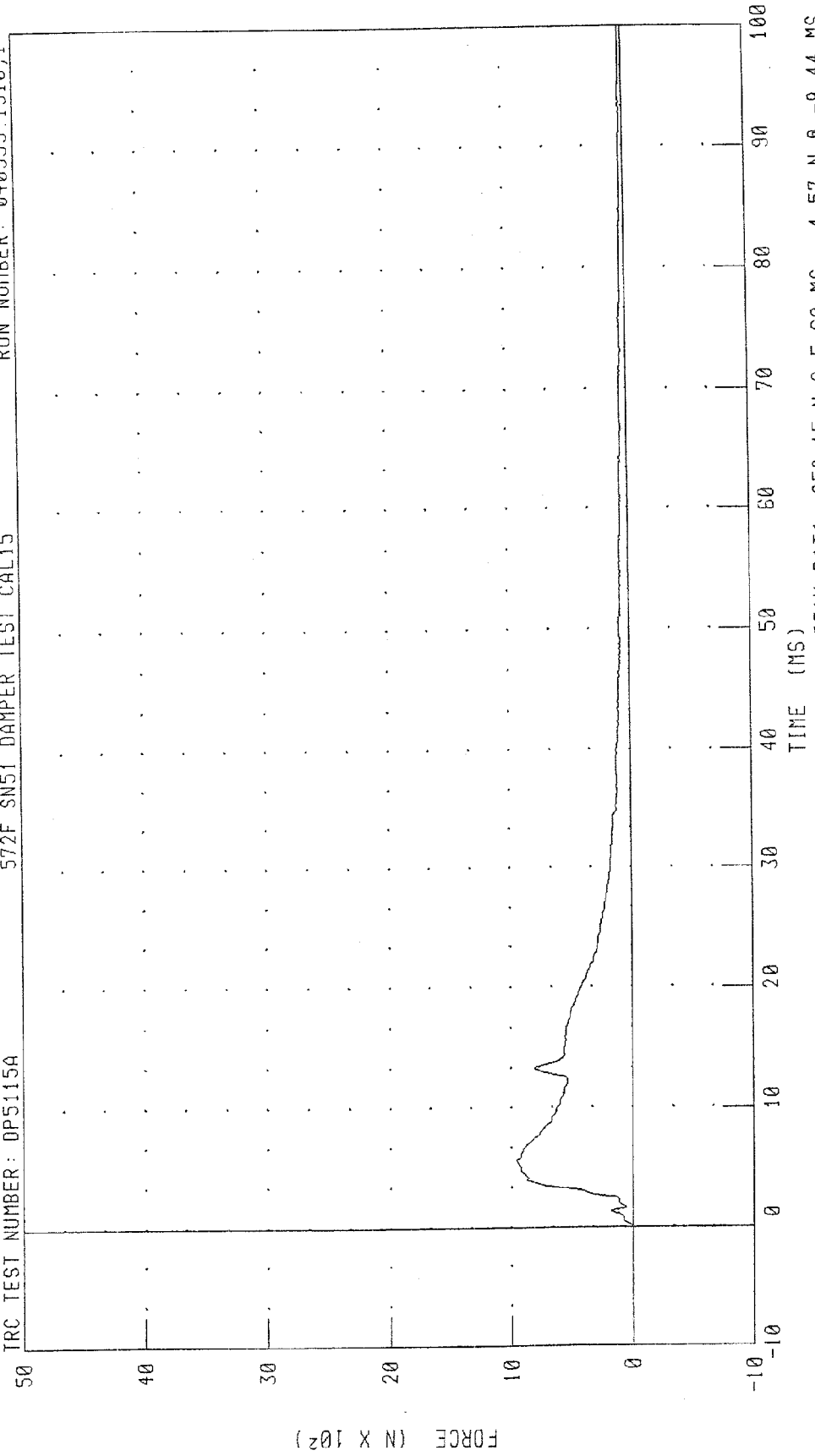
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

572F SN51 DAMPER TEST CAL15

TRC TEST NUMBER: DP5115A

RUN NUMBER: 040999.1310.1



PEAK DATA: 958.15 N @ 5.60 MS; -4.57 N @ -9.44 MS

FILTER: CH. CLASS 1000

CHANNEL: DAMPF

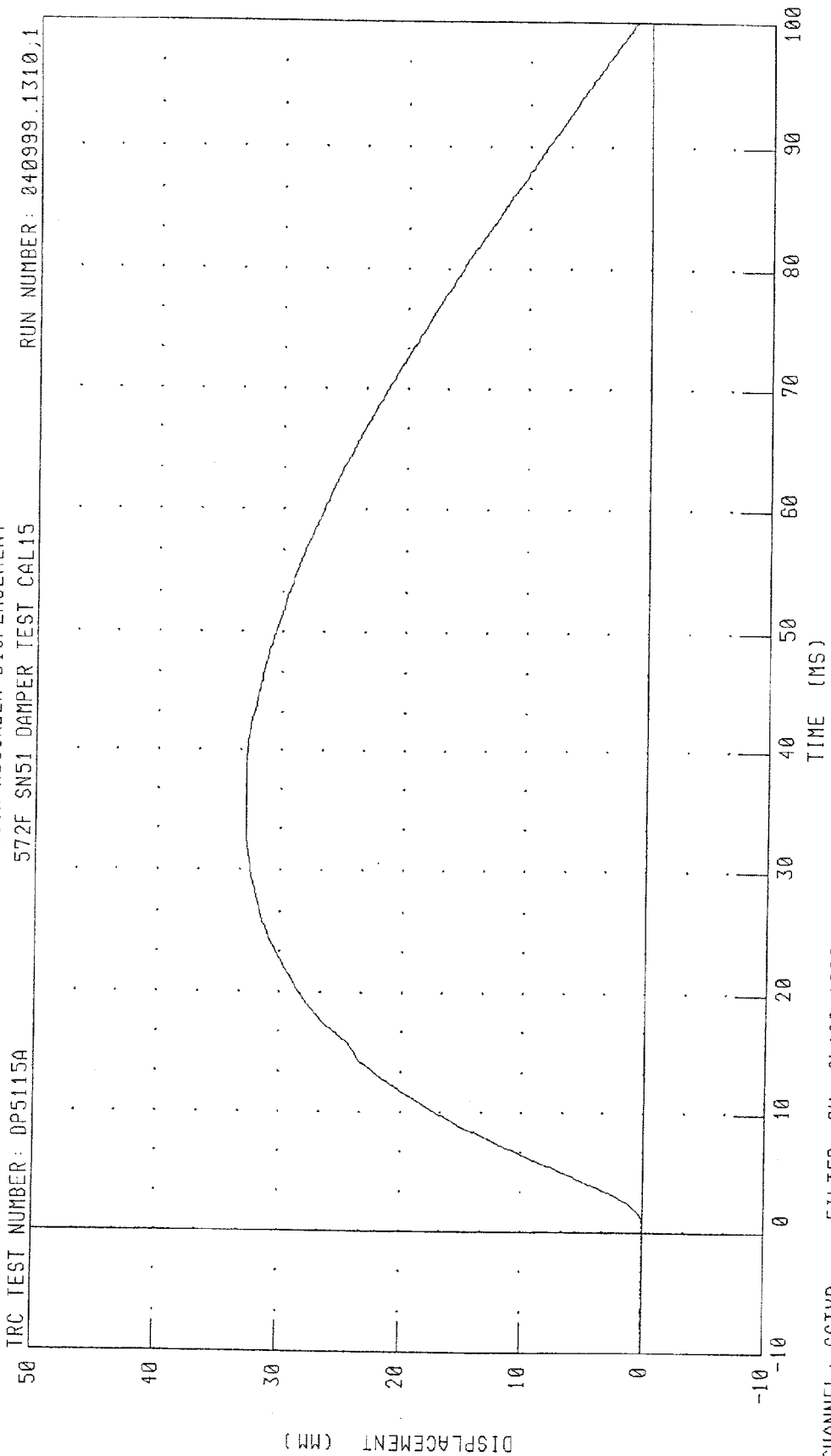
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP5115A

572F SN51 DAMPER TEST CAL15

RUN NUMBER: 040999.1310.1



CHANNEL: CSTYD

FILTER: CH. CLASS 1000

TIME (MS)

PEAK DATA: 32.84 MM @ 32.88 MS, -0.01 MM @ -10.00 MS

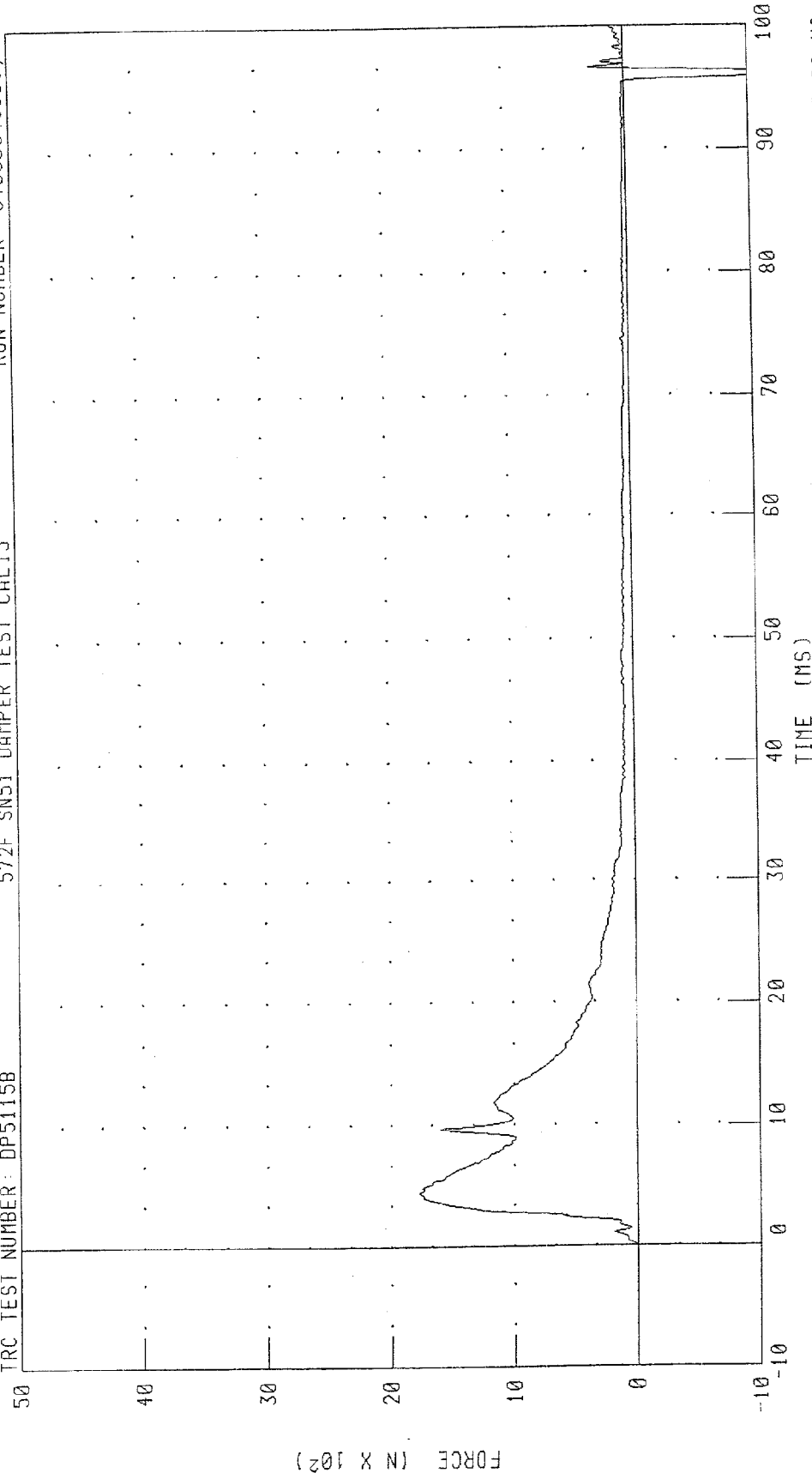
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP5115B

572F SN51 DAMPER TEST CAL15

RUN NUMBER: 040999.1311.1



CHANNEL: DAMPF

FILTER: CH. CLASS 1000

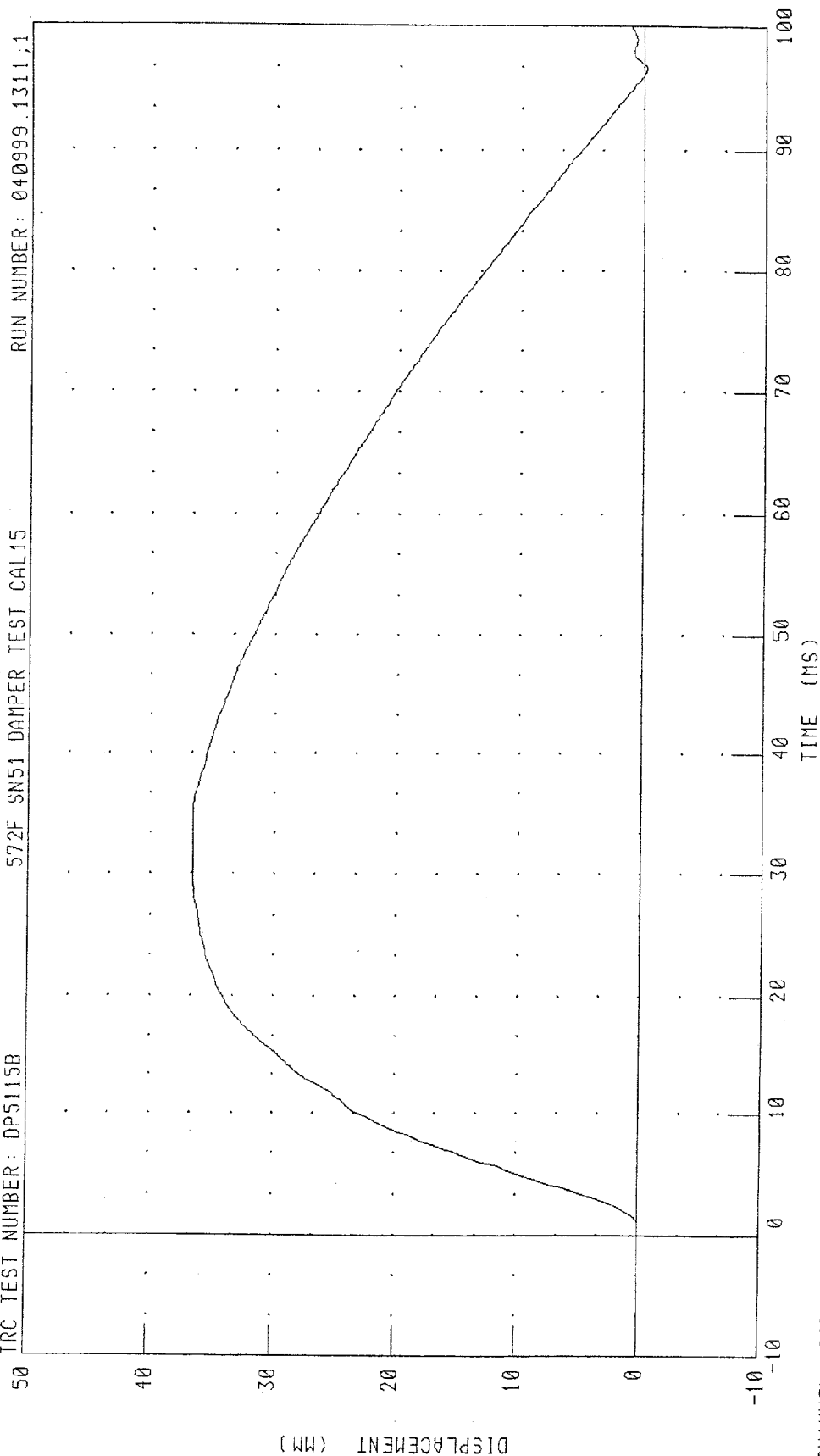
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP5115B

572F SN51 DAMPER TEST CAL15

RUN NUMBER: 040999.1311.1



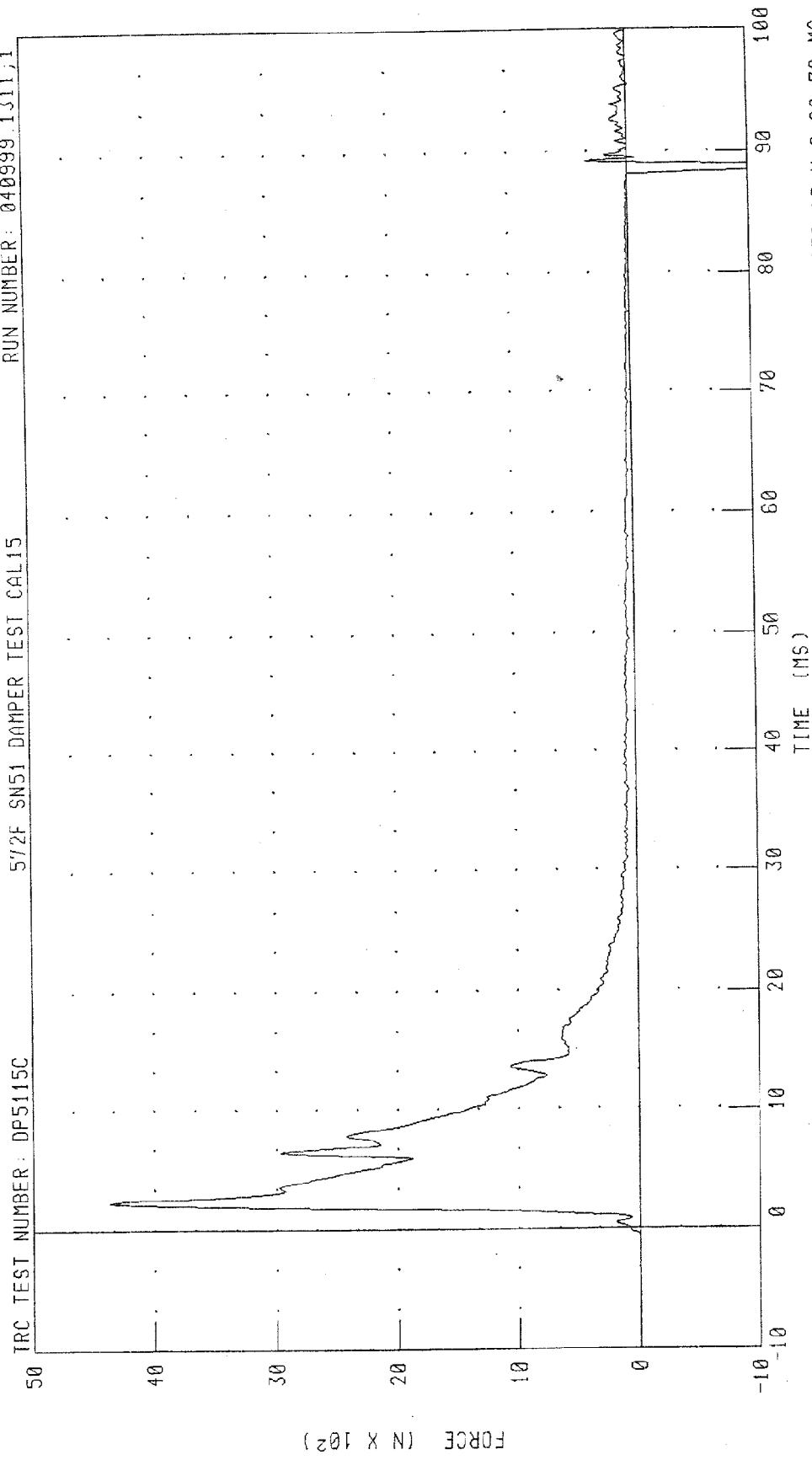
CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 36.59 MM @ 29.84 MS; -0.27 MM @ 96.64 MS

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

572F SN51 DAMPER TEST CAL15 RUN NUMBER: 040999.1311;1



PEAK DATA: 4363.69 N @ 2.24 MS; -2038.13 N @ 88.72 MS

CHANNEL: DAMPF FILTER: CH. CLASS 1000

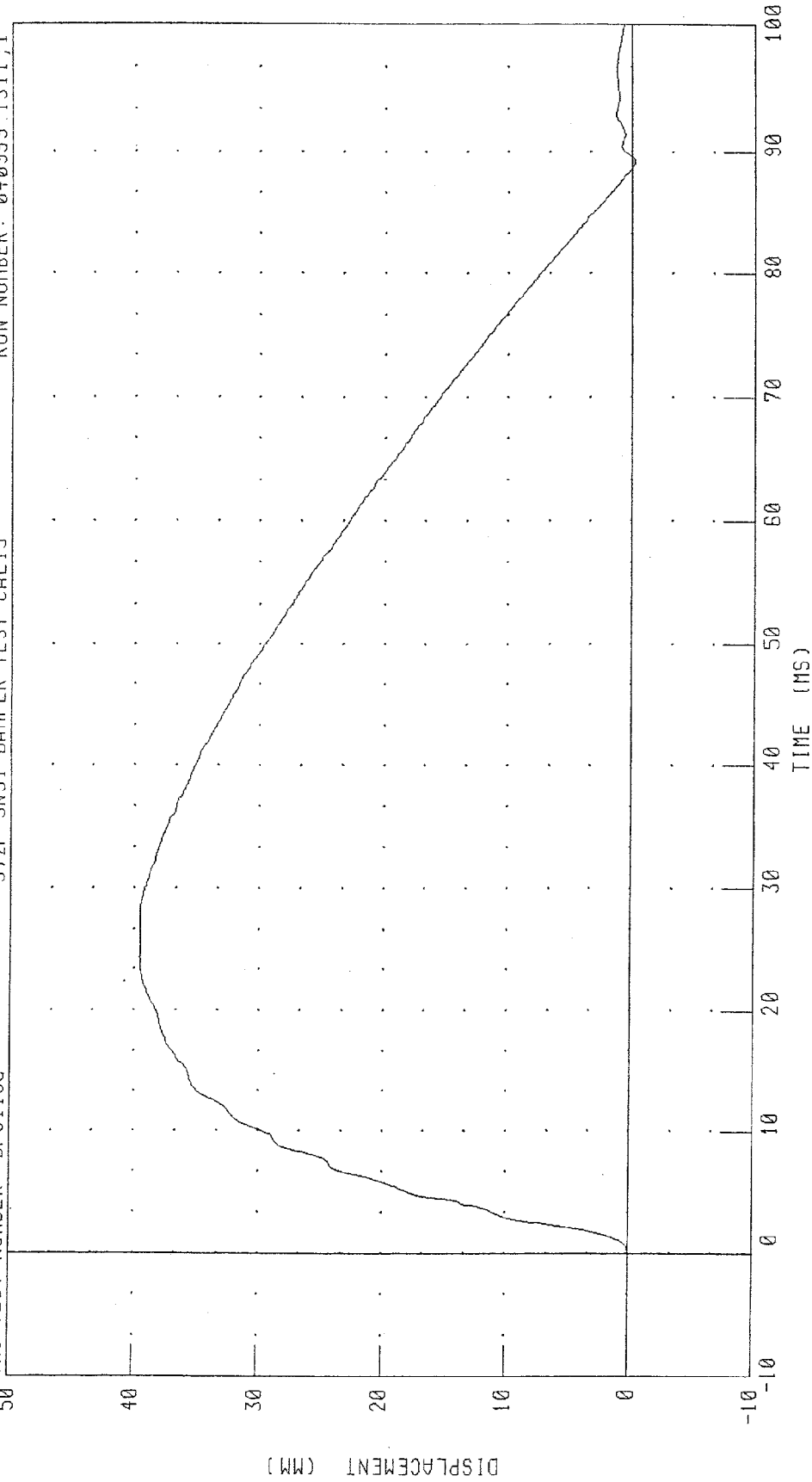
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP5115C

572F SN51 DAMPER TEST CAL15

RUN NUMBER: 040999.1311.1



PEAK DATA: 39.58 MM @ 24.24 MS; -0.31 MM @ 89.04 MS

CHANNEL: CSTYD FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

PART 572F

09-APR-99

TRC INC. TEST NO: LF5115

572F SN051 LUMBAR FLEX CAL15

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.0 C
RELATIVE HUMIDITY	10 - 70 %	33 %
FORCE AT 0 DEG. FLEXION	-26.69 - +26.69 N	0.00 N
FORCE AT 20 DEG. FLEXION	97.86 - 151.24 N	137.89 N
FORCE AT 30 DEG. FLEXION	151.24 - 204.62 N	195.71 N
FORCE AT 40 DEG. FLEXION	204.62 - 258.00 N	231.30 N
NET RETURN ANGLE	< 12 DEG.	0.00 DEG.

DUMMY MEETS SPECIFICATIONS

TECHNICIAN David H. [Signature]

RUN NUMBER: 050499.1342

Calibration Test Results

Pre-Test

SID: 052

Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Thorax Impact Test:	The lateral thorax passed all impact test requirements.
Pelvis Impact Tests:	The lateral pelvis passed all impact test requirements.
Thorax Shock Absorbers:	The thorax passed all shock absorber requirements.
Abdominal Compression Test:	The torso passed all 572-B abdominal compression test requirements.
Lumbar Flexion Test:	The torso passed all 572-B lumbar flexion test requirements.

TRANSPORTATION RESEARCH CENTER INC.
SIDE IMPACT DUMMY
EXTERNAL DIMENSIONS
LEFT SIDE CONFIGURATION
SN SN052 VECTOR

09-APR-99

TRC INC. TEST NO: ED5214 572F SN052 EXT.DIMENSION CAL14

DIMENSIONS WITH CHEST JACKET INSTALLED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
	TEMPERATURE		21.1 DEG. C
	RELATIVE HUMIDITY		22.0 %
SH	SEATED HEIGHT	889 - 909 MM	900.2 MM
HP	HIP PIVOT HEIGHT	99 MM REF.	99. MM
KH	KNEE PIVOT FROM BACKLINE	511 - 526 MM	519.6 MM
KV	KNEE PIVOT FROM FLOOR	490 - 506 MM	493.3 MM
HW	HIP WIDTH	356 - 391 MM	366.5 MM

DIMENSIONS WITH CHEST JACKET REMOVED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
RH	RIB HEIGHT	501 - 520 MM	514.0 MM
RD	RIB FROM BACKLINE	229 - 241 MM	239.4 MM
RW-1	TOP RIB WIDTH FROM C/L	165. - 180 MM	174.2 MM
RW-2	BOTTOM RIB WIDTH FROM C/L	165 - 180 MM	174.2 MM
	DIFFERENCE BETWEEN TOP & BOTTOM RIB WIDTH FROM C/L	≤ 2.5 MM	0.0 MM

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

By [Signature]

RUN NUMBER: 020399.1045

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

09-APR-99

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: STL5214

572F SN52 LEFT THORAX CAL14

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PENDULUM VELOCITY	4.27 - 4.33 M/S	4.31 M/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	-42.7 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	-42.4 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	-20.1 G

TEST MEETS SPECIFICATIONS

TECHNICIAN

Ray cult

RUN NUMBER: 040999.1521;1

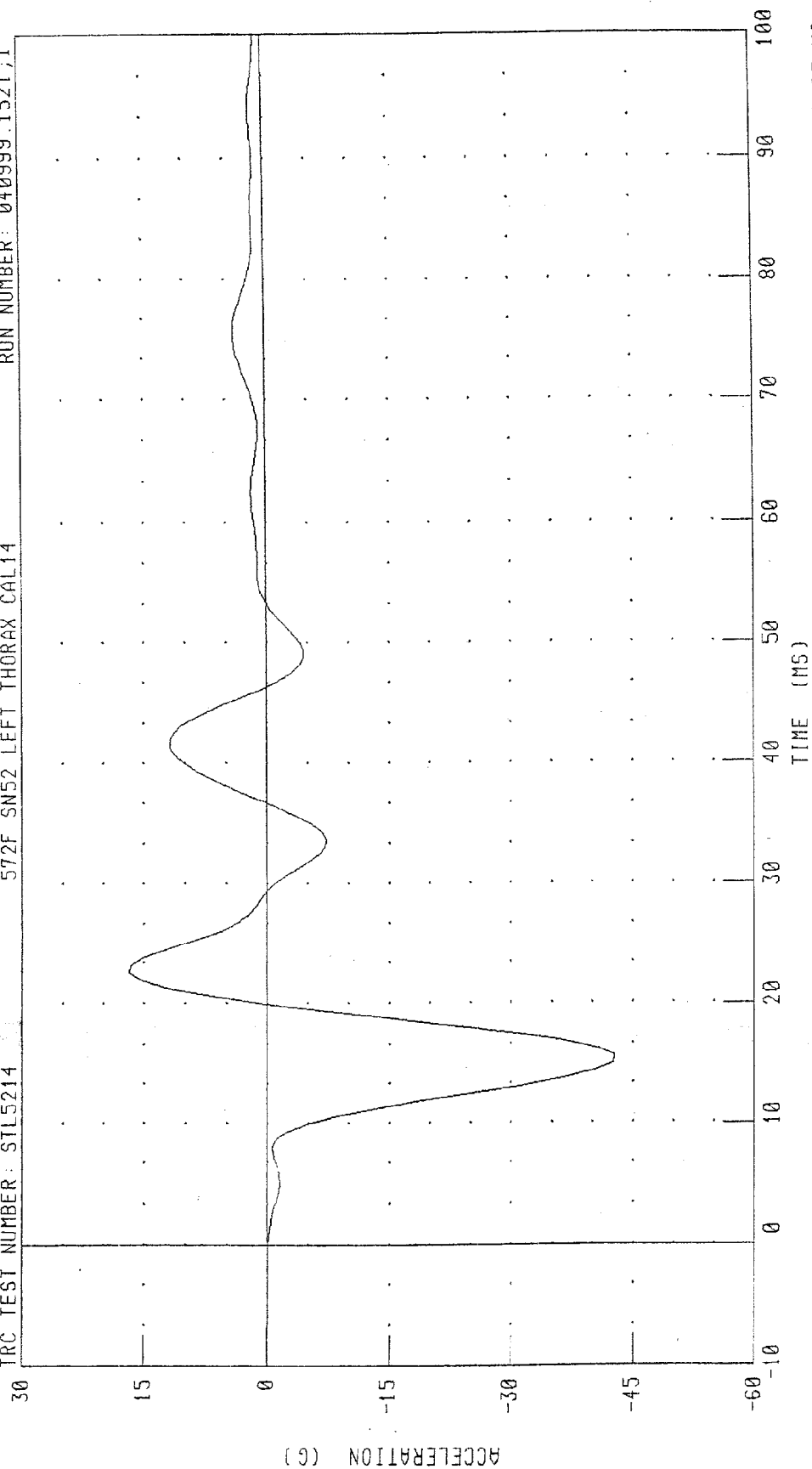
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT UPPER RIB ACCELERATION Y AXIS

TRC TEST NUMBER: STL5214

572F SN52 LEFT THORAX CAL14

RUN NUMBER: 040999.1521;1

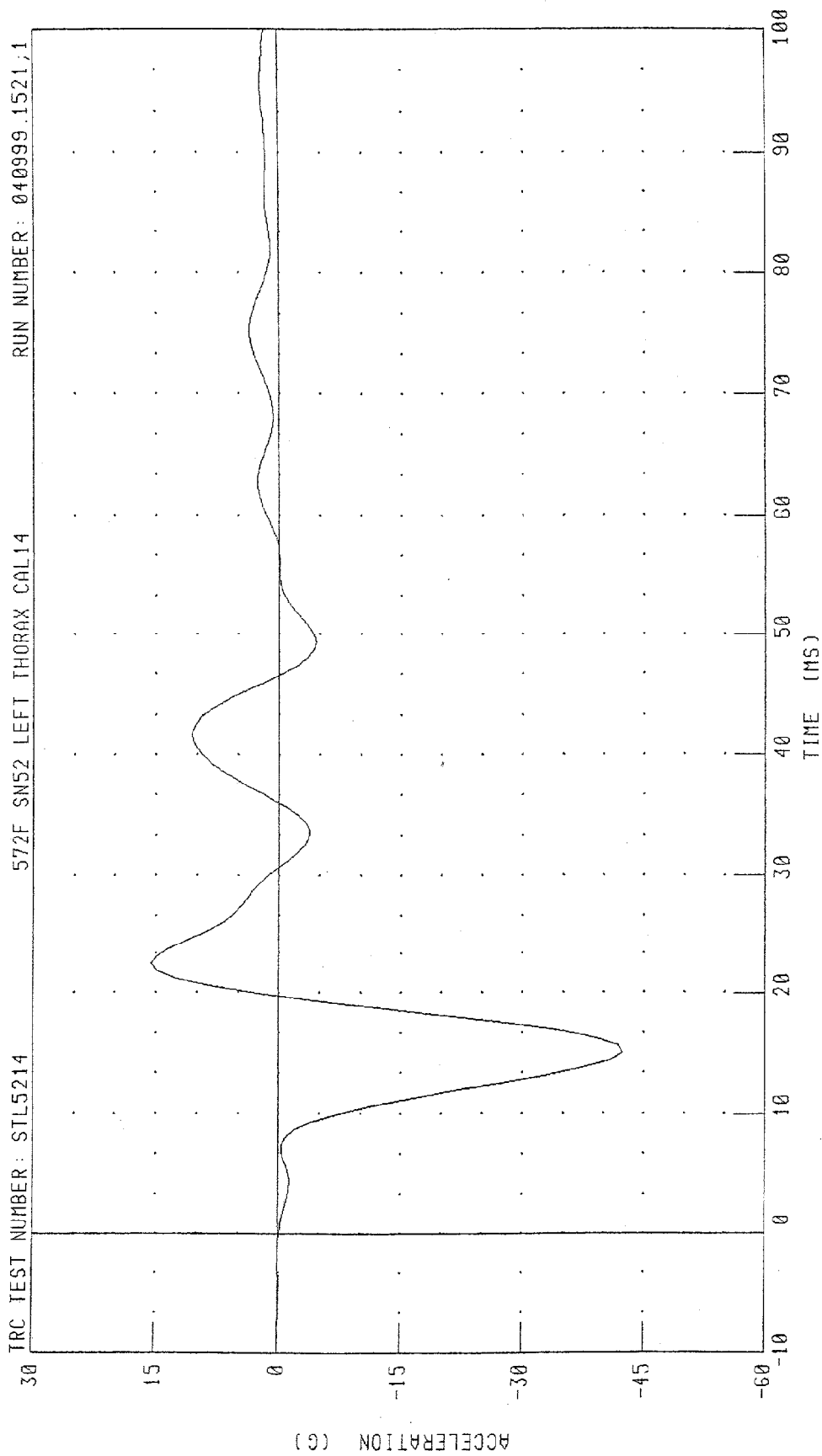


CHANNEL: LURYG

FILTER: FIR 100

PEAK DATA: 16.81 G @ 22.50 MS; -42.72 G @ 15.63 MS

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)
 LEFT LOWER RIB ACCELERATION Y AXIS



CHANNEL: LLRYC FILTER: FIR 100

PEAK DATA: 15.49 G @ 22.50 MS; -42.37 G @ 15.00 MS

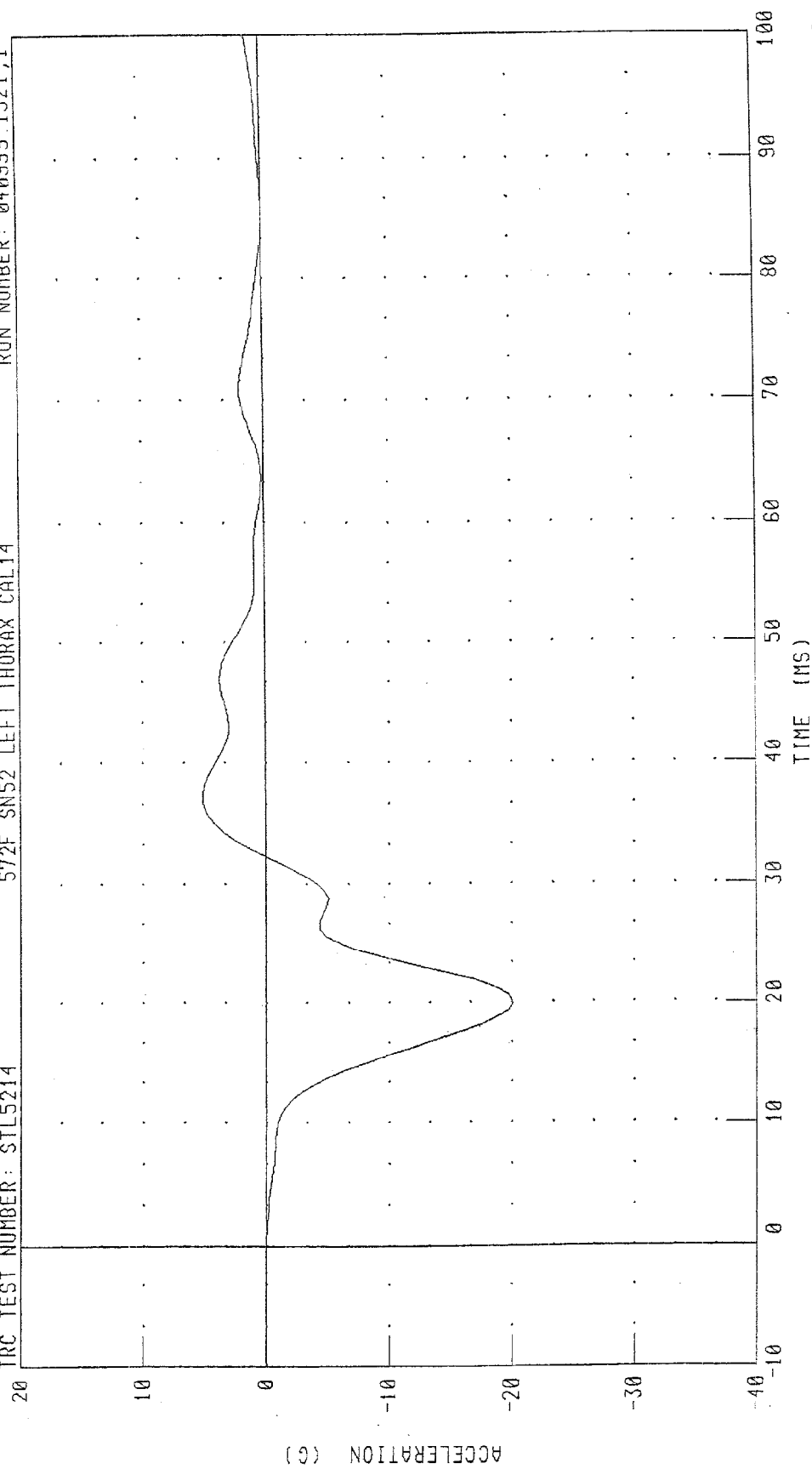
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LOWER SPINE ACCELERATION Y AXIS

TRC TEST NUMBER: STL5214

572F SN52 LEFT THORAX CAL14

RUN NUMBER: 040999.1521,1



CHANNEL: T12YC

FILTER: FIR 100

PEAK DATA: 5.14 G @ 37.50 MS; -20.13 G @ 20.00 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

09-APR-99

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: SPL5214

572F SN052 LEFT PELVIS CAL14

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PENDULUM VELOCITY	4.27 - 4.33 M/S	4.31 M/S
PEAK PELVIC ACCELERATION	40 - 60 G	-50.9 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	5.7 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

Bryant

RUN NUMBER: 040999.1519;1

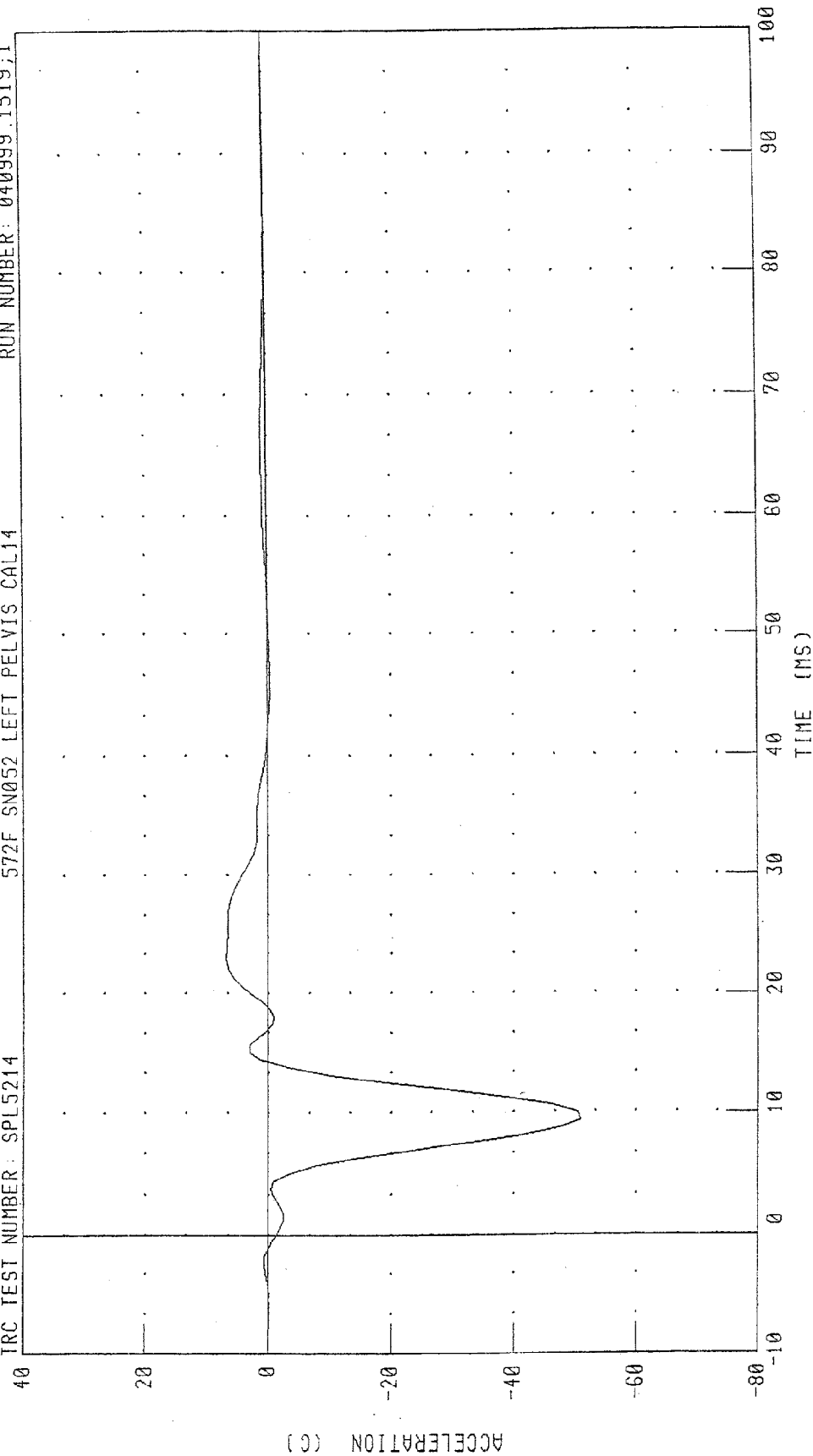
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

572F SN052 LEFT PELVIS CAL14

RUN NUMBER: 040999.1519;1

TRC TEST NUMBER: SPL5214



CHANNEL: PEVYC

FILTER: FIR 100

TRANSPORTATION RESEARCH CENTER INC.

ABDOMEN COMPRESSION TEST

PART 572B

09-APR-99

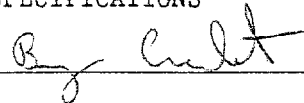
TRC INC. TEST NO: ABD5214

ABDOMIN COMPRESSION TEST SN52

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.0 C
RELATIVE HUMIDITY	10 - 70 %	22 %
DEFLECTION RATE	6.4 - 8.9 MM/S	7.78 MM/S
FORCE AT 0.00 MM DISP.	44.48 N	44.48 N
FORCE AT 12.7 MM DISP.	102.30 - 160.13 N	122.28 N
FORCE AT 19.1 MM DISP.	160.13 - 222.40 N	182.44 N
FORCE AT 25.4 MM DISP.	222.40 - 280.22 N	257.76 N
FORCE AT 33.0 MM DISP.	324.70 - 391.42 N	369.28 N

DUMMY MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 040999.0912;1

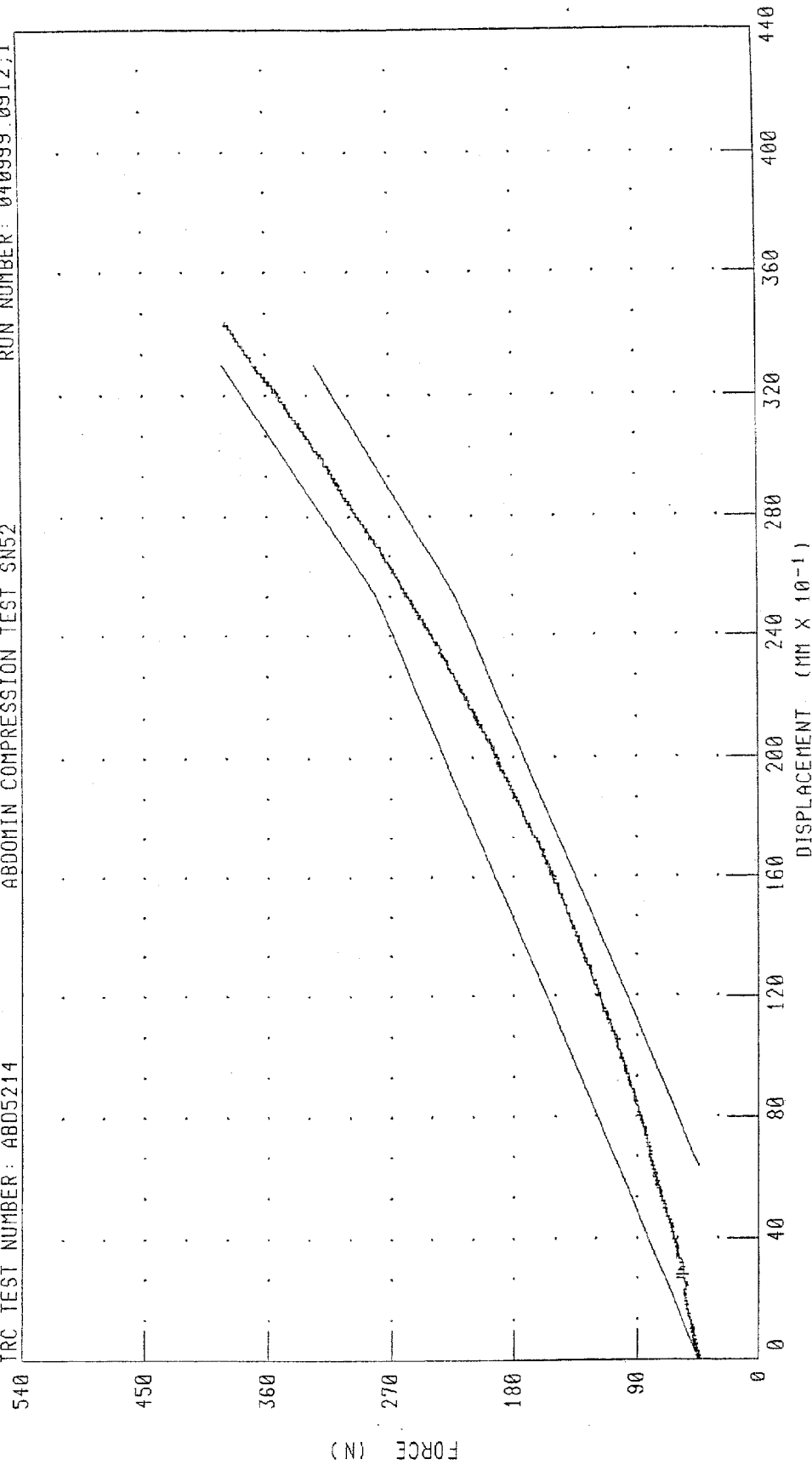
PART 572-B HYBRID II ABDOMEN CALIBRATION

ABDOMEN FORCE VS DISPLACEMENT

ABDOMIN COMPRESSION TEST SN52

RUN NUMBER: 040999.0912,1

TRC TEST NUMBER: AB05214



PEAK DATA: 34.39 MM @ 4.40 S; 0.00 MM @ 0.00 S
389.82 N @ 4.40 S; 43.04 N @ 0.01 S

CHANNEL: ABXD FILTER: CH. CLASS 1000
ABXF CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

09-APR-99

TRC INC.

572F SN52 DAMPER TEST CAL14

TEST NUMBERS: DP5214A,DP5214B,DP5214C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
VELOCITY	FORCE	856 - 1146 N	1002 N
3.08 M/S	DISPLACEMENT	30.2 - 35.2 MM	32.8 MM
VELOCITY	FORCE	1733 - 2100 N	1882 N
4.28 M/S	DISPLACEMENT	31.6 - 37.2 MM	35.6 MM
VELOCITY	FORCE	3784 - 4495 N	4420 N
6.12 M/S	DISPLACEMENT	33.3 - 39.6 MM	37.3 MM

DAMPER SETTING = 9.0

TEST MEETS SPECIFICATIONS

TECHNICIAN Ray Calt

RUN NUMBER: 040999.1353;2

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP5214A

572F SN52 DAMPER TEST CAL14

RUN NUMBER: 040999.1354;2

50

40

30

20

10

0

-10

FORCE (N X 10²)

TIME (MS)

100

CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 1001.54 N @ 5.52 MS, -0.27 N @ -10.00 MS

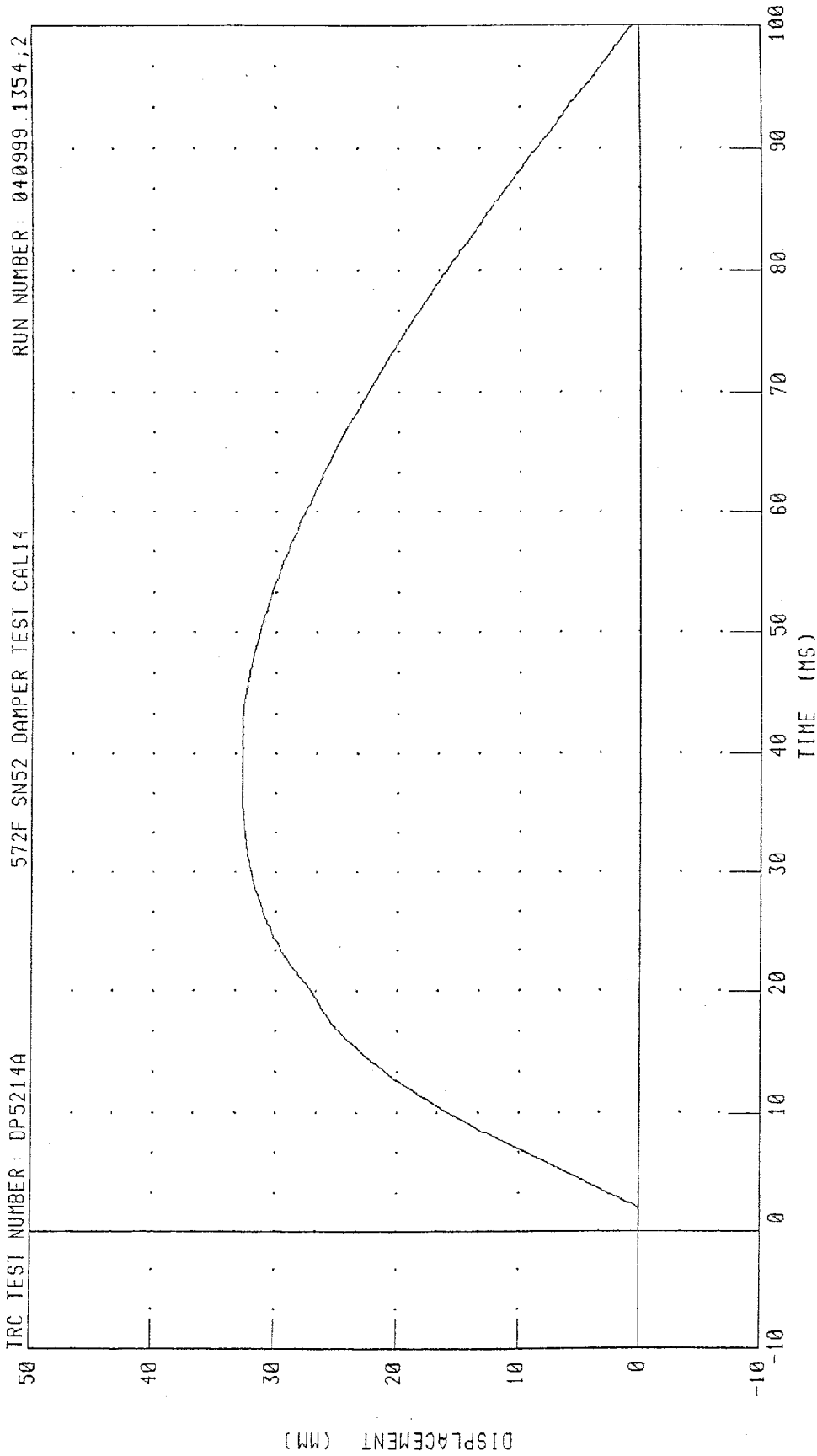
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP5214A

572F SN52 DAMPER TEST CAL14

RUN NUMBER: 040999.1354,2



CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 32.78 MM @ 36.00 MS; -0.04 MM @ -7.92 MS

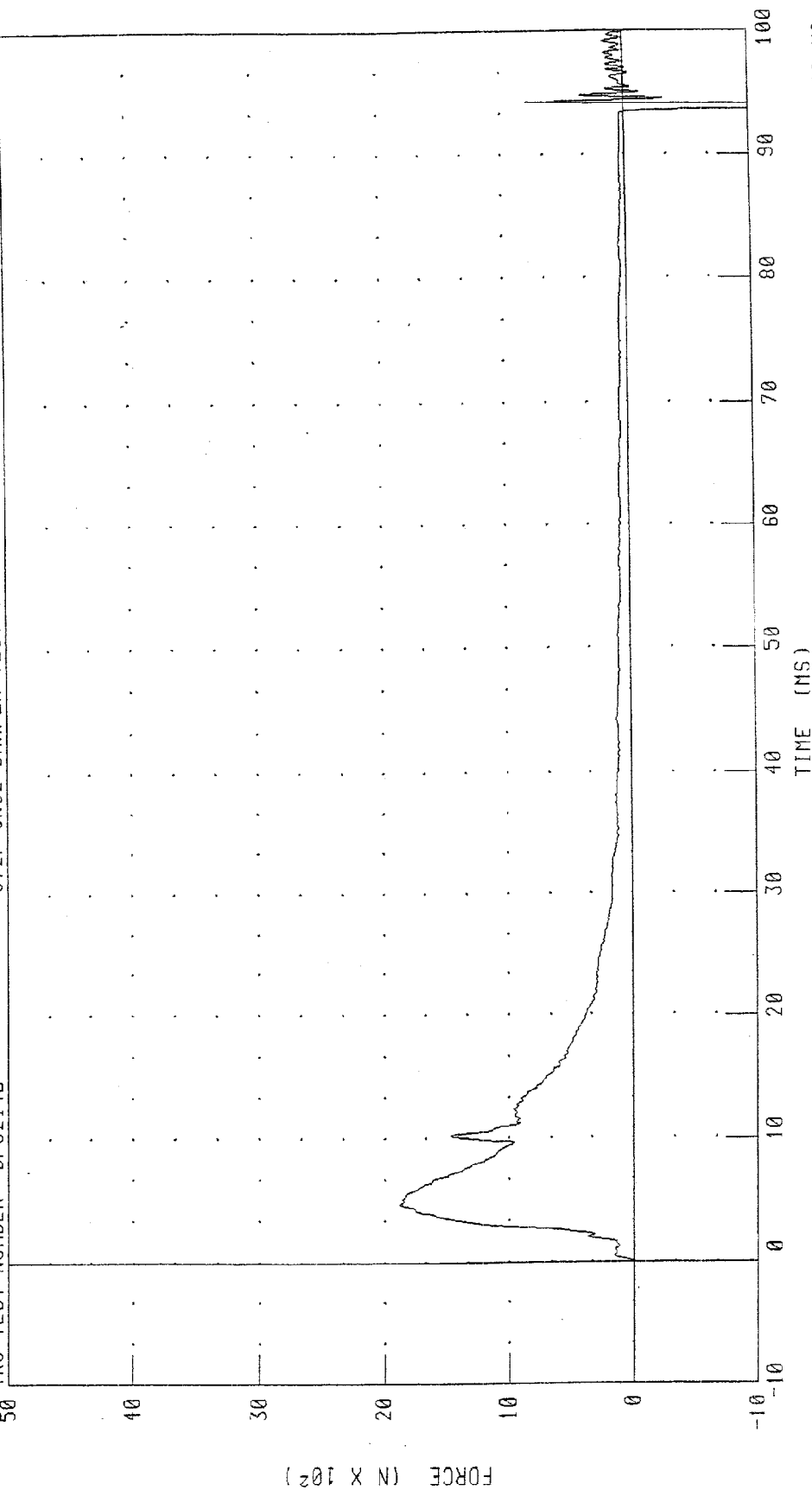
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC.)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: 0P5214B

572F SN52 DAMPER TEST CAL14

RUN NUMBER: 040999.1355,3



PEAK DATA: 1881.62 N @ 4.72 MS, -2721.83 N @ 94.00 MS

FILTER: CH. CLASS 1000

CHANNEL: DAMPF

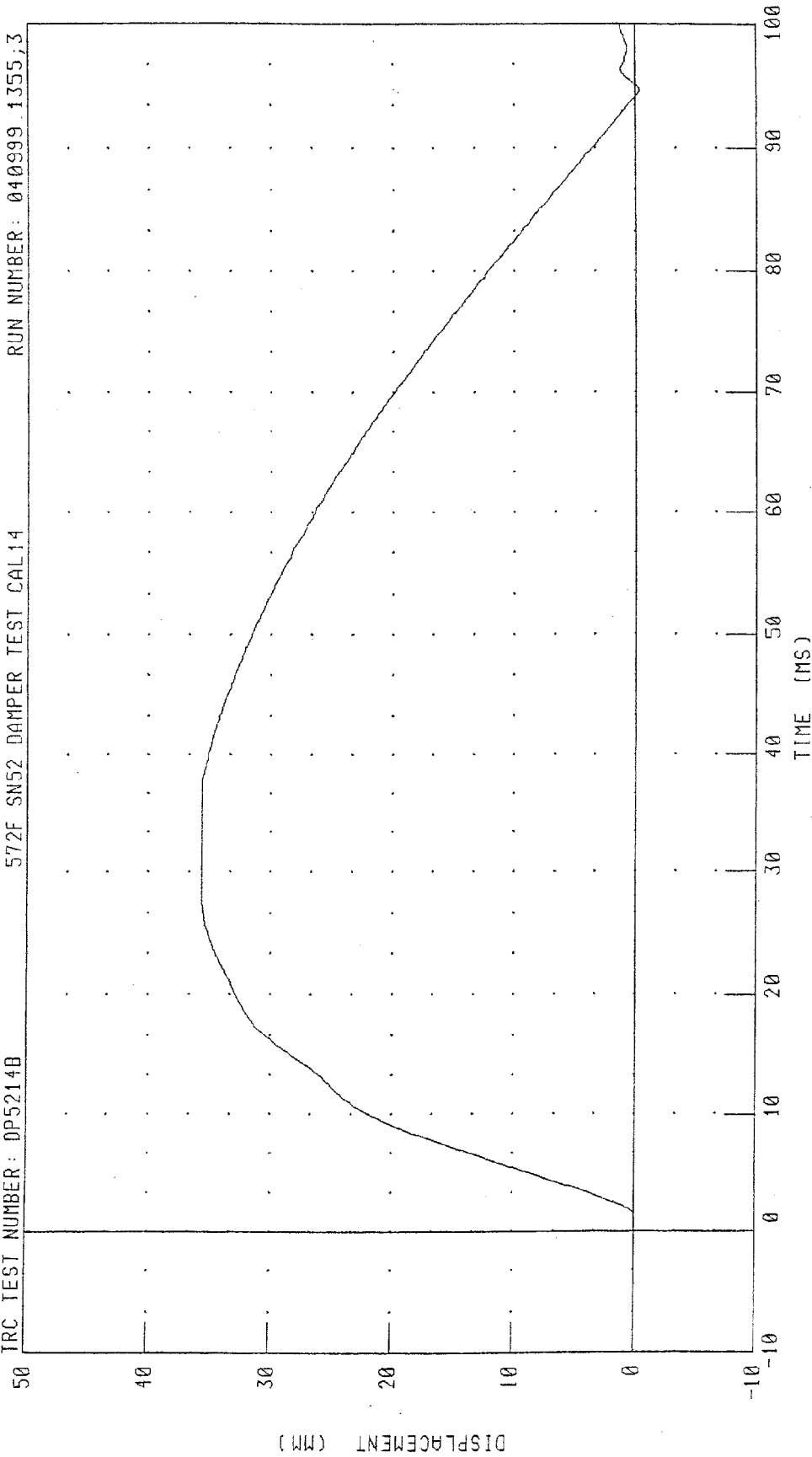
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP5214B

572F SN52 DAMPER TEST CAL14

RUN NUMBER: 040999.1355;3



CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 35.63 MM @ 28.00 MS; -0.34 MM @ 94.56 MS

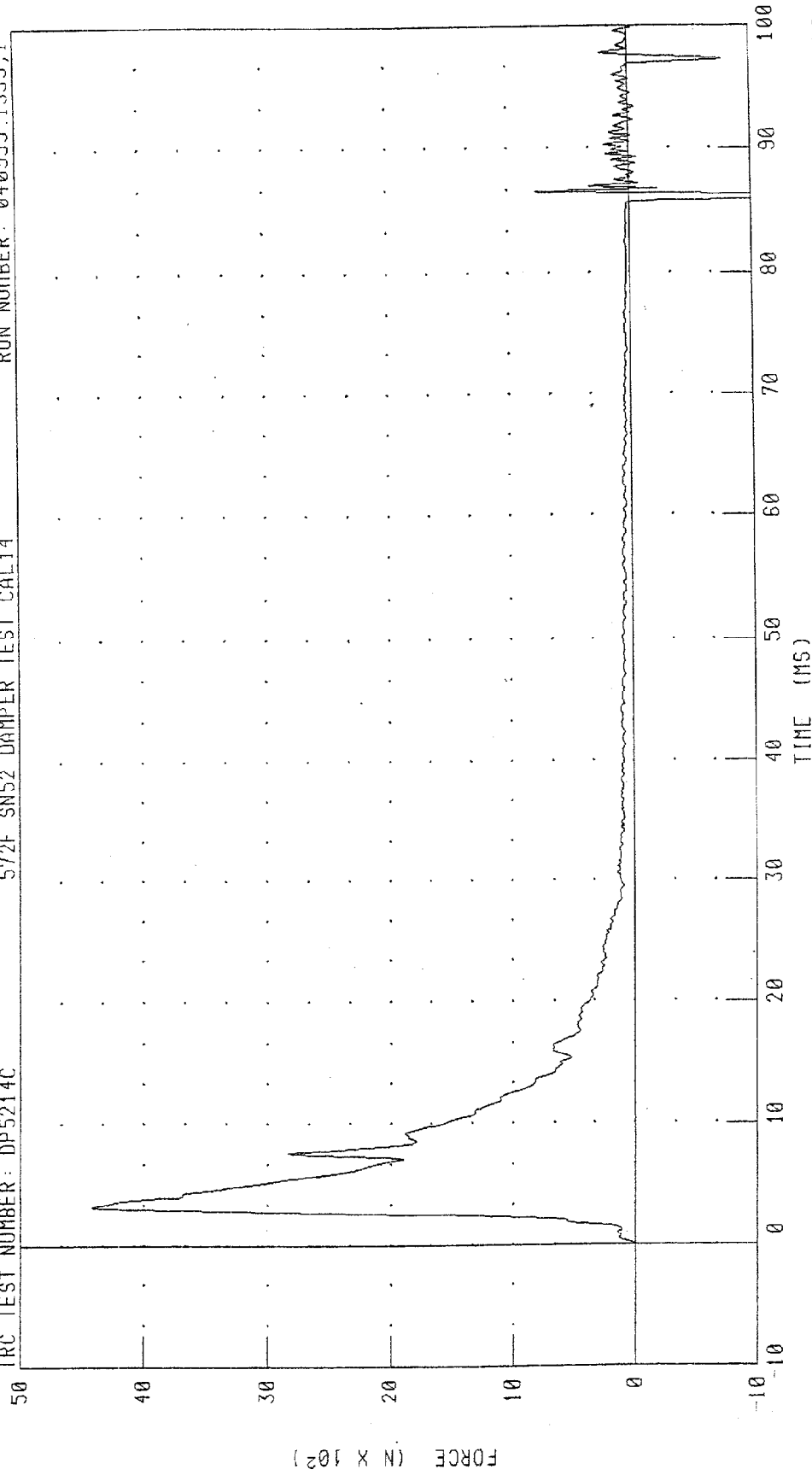
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP5214C

572F SN52 DAMPER TEST CAL14

RUN NUMBER: 040999.1355.1



PEAK DATA: 4419.76 N @ 3.20 MS; -3042.51 N @ 86.16 MS

CHANNEL: DAMPF FILTER: CH. CLASS 1000

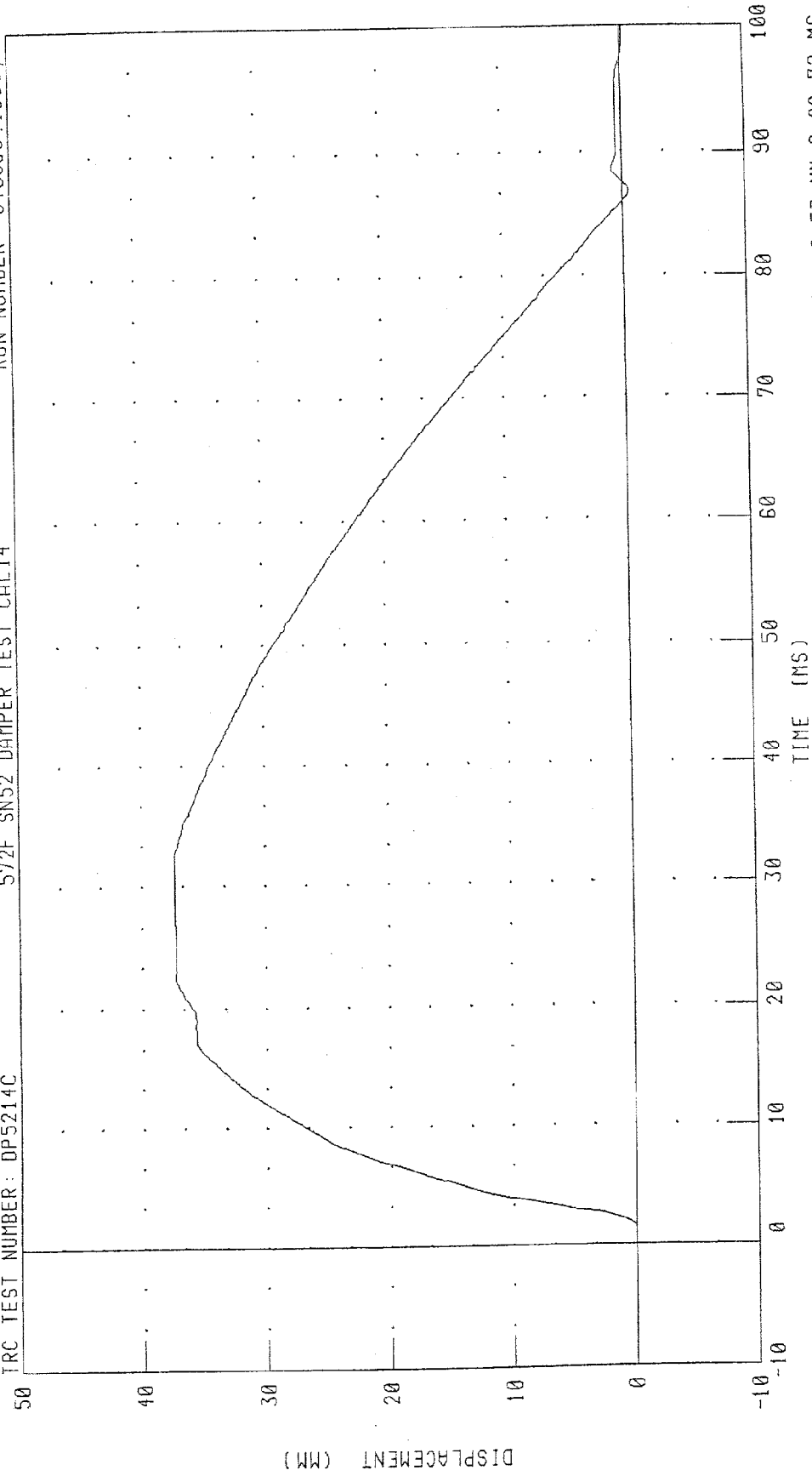
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER DISPLACEMENT

RUN NUMBER: 040999.1355;1

TRC TEST NUMBER: DP5214C

572F SN52 DAMPER TEST CAL14



PEAK DATA: 37.34 MM @ 27.20 MS; -0.53 MM @ 86.72 MS

CHANNEL: CSTYD FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

PART 572F

09-APR-99

TRC INC. TEST NO: LF5214

572F SN052 LUMBAR FLEX CAL14

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.0 C
RELATIVE HUMIDITY	10 - 70 %	33 %
FORCE AT 0 DEG. FLEXION	-26.69 - +26.69 N	0.00 N
FORCE AT 20 DEG. FLEXION	97.86 - 151.24 N	120.10 N
FORCE AT 30 DEG. FLEXION	151.24 - 204.62 N	169.02 N
FORCE AT 40 DEG. FLEXION	204.62 - 258.00 N	240.19 N
NET RETURN ANGLE	< 12 DEG.	4.00 DEG.

DUMMY MEETS SPECIFICATIONS

TECHNICIAN *David K. [Signature]*

RUN NUMBER: 050499.1350

Calibration Test Results

Post-Test

SID: 051

Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Thorax Impact Test:	The lateral thorax passed all impact test requirements.
Pelvis Impact Tests:	The lateral pelvis passed all impact test requirements.
Thorax Shock Absorbers:	The thorax passed all shock absorber requirements.
Abdominal Compression Test:	The torso did not pass all 572-B abdominal compression test requirements.
Lumbar Flexion Test:	The torso passed all 572-B lumbar flexion test requirements.

TRANSPORTATION RESEARCH CENTER INC.
SIDE IMPACT DUMMY
EXTERNAL DIMENSIONS
LEFT SIDE CONFIGURATION
SN SN051 VECTOR

28-06-99

TRC.INC TEST NO: 572F SN051 EXT.DIMENSION CAL16

DIMENSIONS WITH CHEST JACKET INSTALLED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
	TEMPERATURE		21.1 DEG. C
	RELATIVE HUMIDITY		44.0 %
SH	SEATED HEIGHT	889 - 909 MM	904.5 MM
HP	HIP PIVOT HEIGHT	99 MM REF.	99.1 MM
KH	KNEE PIVOT FROM BACKLINE	511 - 526 MM	516.4 MM
KV	KNEE PIVOT FROM FLOOR	490 - 506 MM	491.5 MM
HW	HIP WIDTH	356 - 391 MM	363.0 MM
DIMENSIONS WITH CHEST JACKET REMOVED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
RH	RIB HEIGHT	501 - 520 MM	511.8 MM
RD	RIB FROM BACKLINE	229 - 241 MM	234.7 MM
RW-1	TOP RIB WIDTH FROM C/L	165. - 180 MM	177.8 MM
RW-2	BOTTOM RIB WIDTH FROM C/L	165 - 180 MM	177.8 MM
	DIFFERENCE BETWEEN TOP & BOTTOM RIB WIDTH FROM C/L	≤ 2.5 MM	0.0 MM

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

Chris [Signature]

RUN NUMBER: 062899.1304

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

19-JUN-99

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: STL5116

572F SN51 LEFT THORAX CAL16

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PENDULUM VELOCITY	4.27 - 4.33 M/S	4.32 M/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	-39.3 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	-42.2 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	-19.7 G

TEST MEETS SPECIFICATIONS

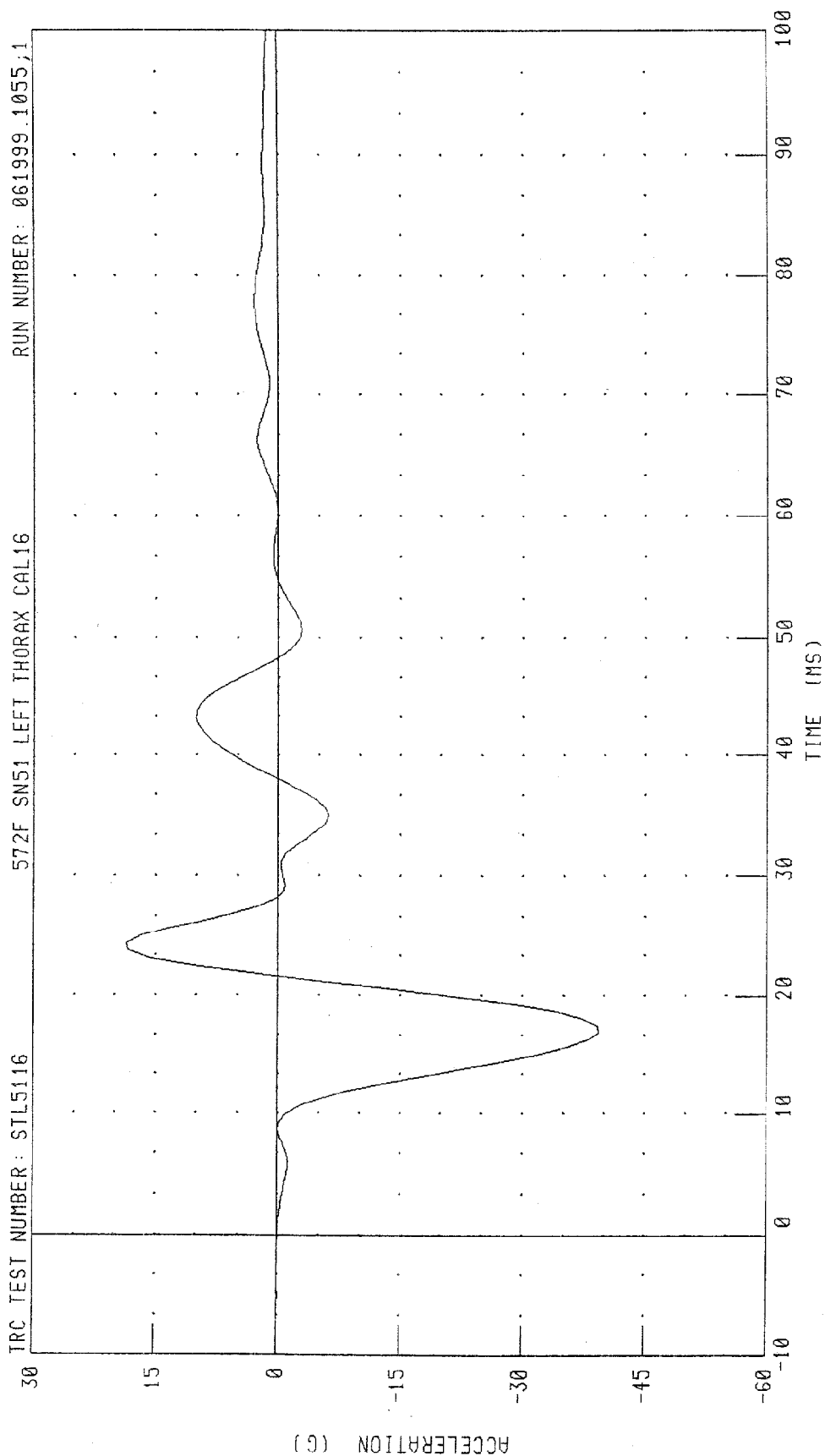
TECHNICIAN

Red Rife

RUN NUMBER: 061999.1054;1

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

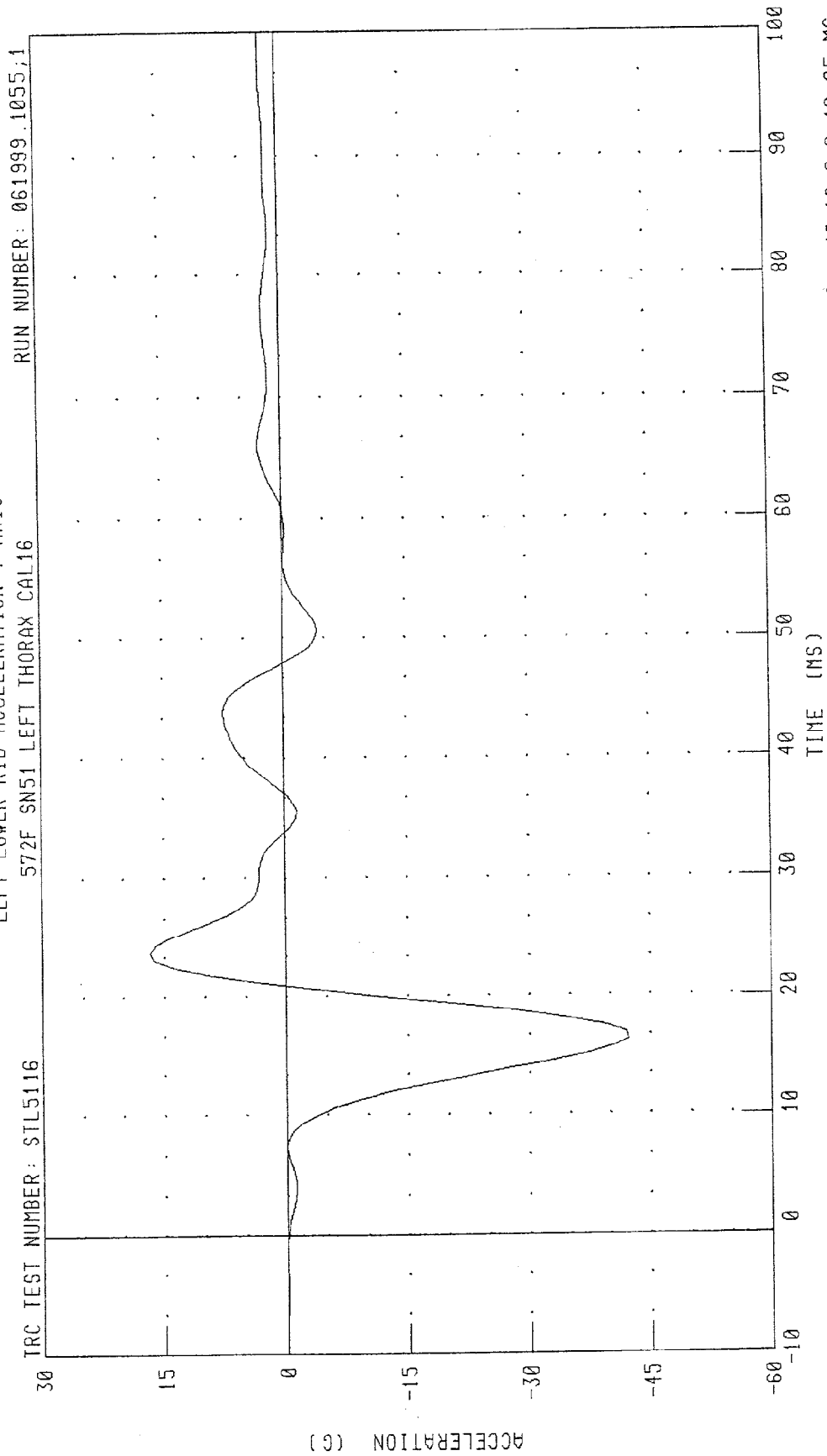
LEFT UPPER RIB ACCELERATION Y AXIS



CHANNEL: LURYG FILTER: FIR 100

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT LOWER RIB ACCELERATION Y AXIS



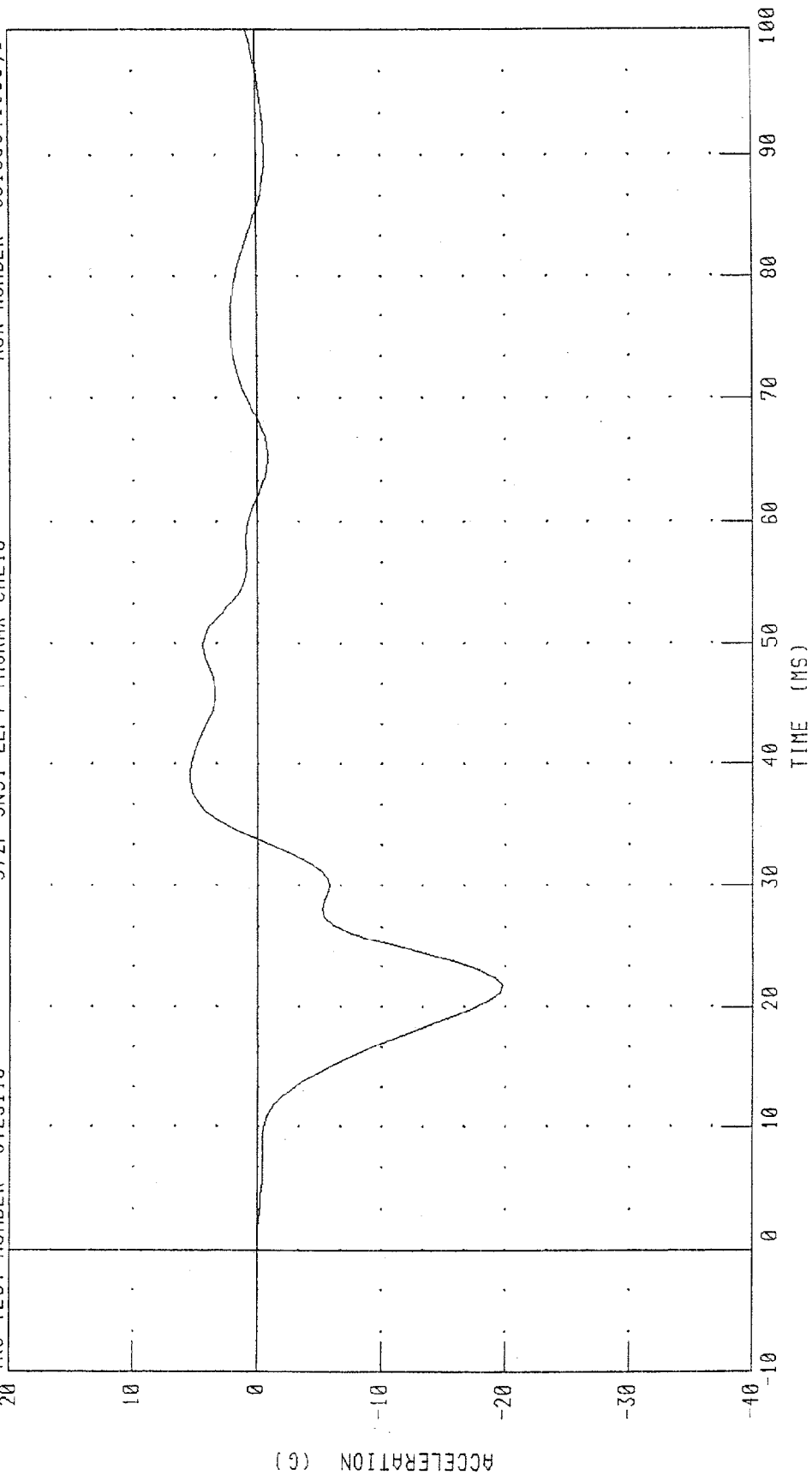
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LOWER SPINE ACCELERATION Y AXIS

572F SN51 LEFT THORAX CAL16

TRC TEST NUMBER: STL5116

RUN NUMBER: 061999.1055;1



CHANNEL: T12YC FILTER: FIR 100

PEAK DATA: 5.45 G @ 38.75 MS; -19.75 G @ 21.88 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

19-JUN-99

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: SPL5116

572F SN 51 LEFT PELVIS CAL16

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PENDULUM VELOCITY	4.27 - 4.33 M/S	4.31 M/S
PEAK PELVIC ACCELERATION	40 - 60 G	-53.1 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	5.8 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chad Rife

RUN NUMBER: 061999.1018;1

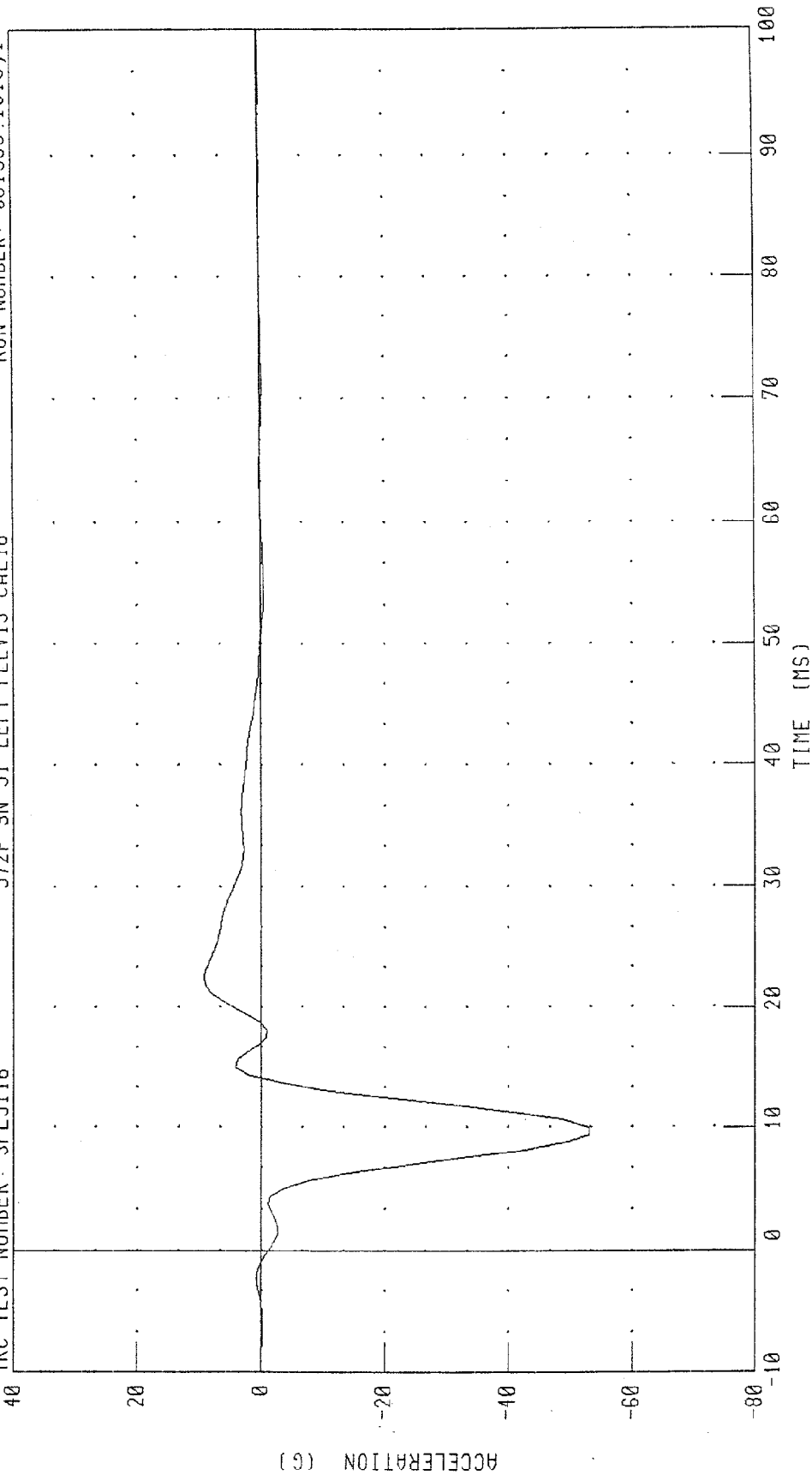
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

572F SN 51 LEFT PELVIS CAL16

TRC TEST NUMBER: SPL5116

RUN NUMBER: 061999.1019;1



CHANNEL: PEVYG FILTER: FIR 100

PEAK DATA: 9.23 G @ 22.50 MS, -53.14 G @ 9.37 MS

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

22-JUN-99

TRC INC.

572F SN51 DAMPER TEST CAL16

TEST NUMBERS: DP5116A,DP5116B ,DP5116C3

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	44.0 %
VELOCITY	FORCE	838 - 1125 N	967 N
3.04 M/S	DISPLACEMENT	30.2 - 35.2 MM	31.6 MM
VELOCITY	FORCE	1733 - 2100 N	1910 N
4.28 M/S	DISPLACEMENT	31.6 - 37.2 MM	35.3 MM
VELOCITY	FORCE	3743 - 4448 N	3794 N
6.10 M/S	DISPLACEMENT	33.3 - 39.5 MM	36.6 MM

DAMPER SETTING = 6.0

TEST MEETS SPECIFICATIONS

TECHNICIAN C. R. Rife

RUN NUMBER: 062299.1414;1

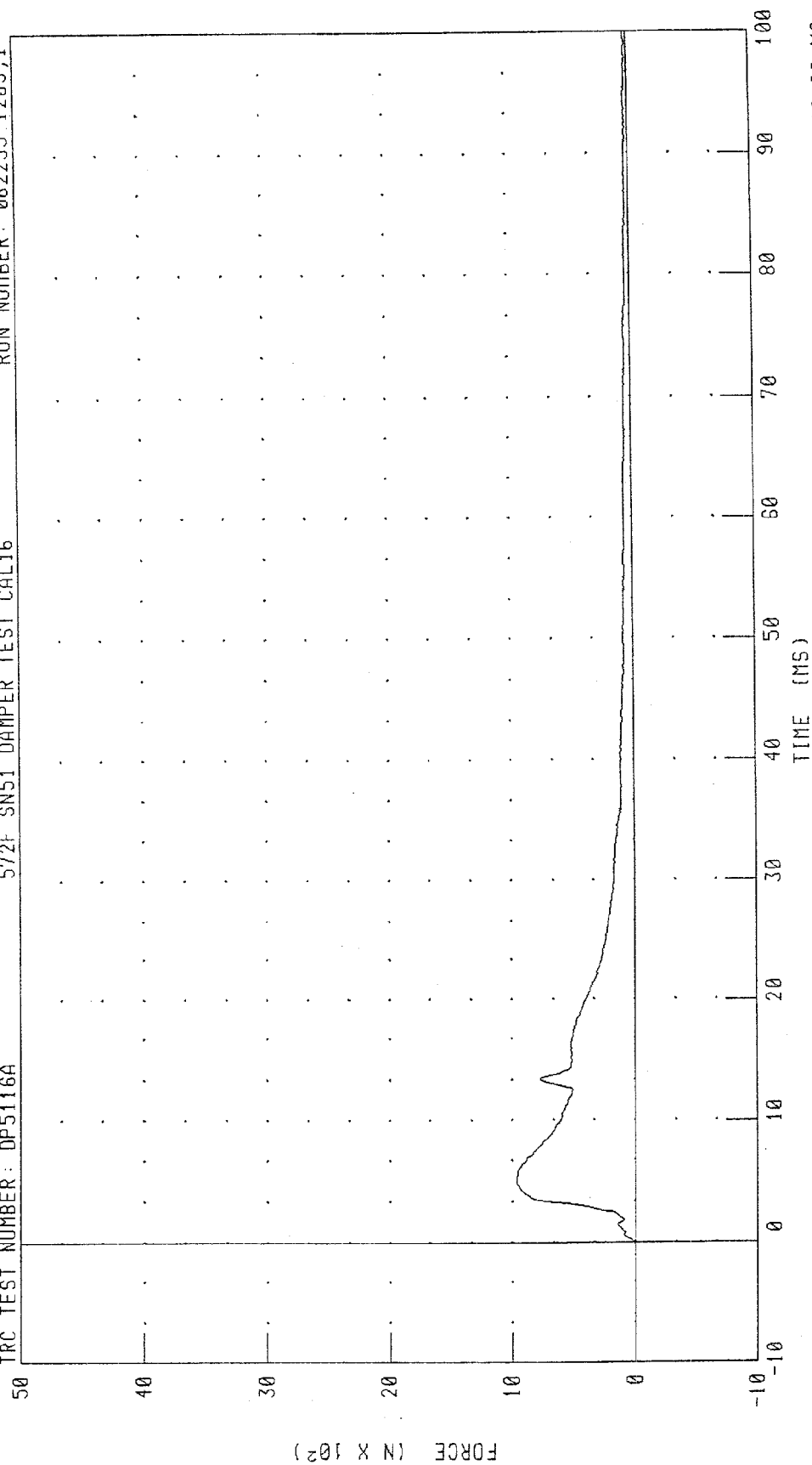
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP5116A

572F SN51 DAMPER TEST CAL16

RUN NUMBER: 062299 1203,1



CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 966.66 N @ 4.88 MS, -0.28 N @ -10.00 MS

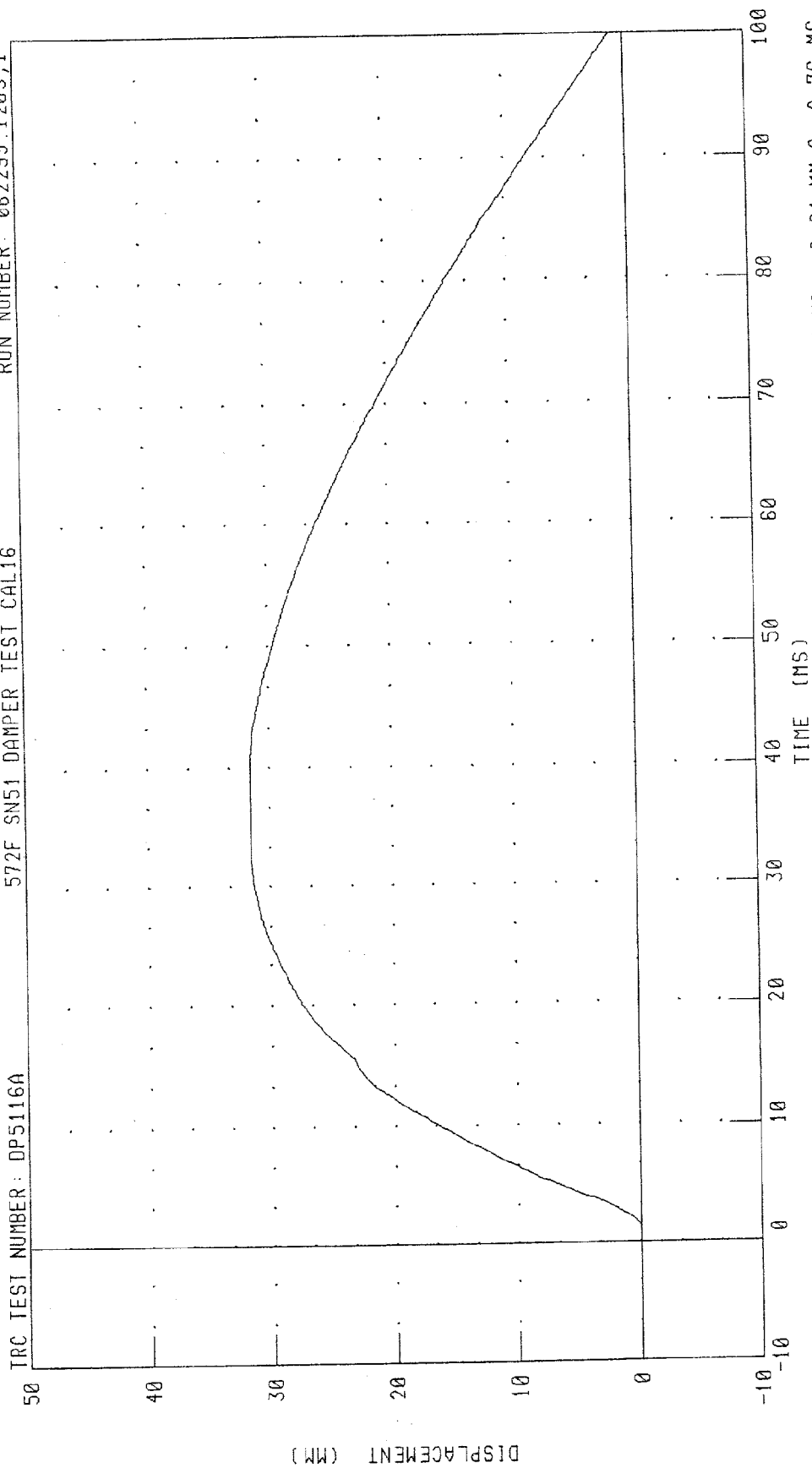
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER DISPLACEMENT

RUN NUMBER: 062299.1203,1

TRC TEST NUMBER: DP5116A

572F SN51 DAMPER TEST CAL16



PEAK DATA: 31.59 MM @ 32.64 MS; -0.04 MM @ -9.76 MS

FILTER: CH. CLASS 1000

CHANNEL: CSTYD

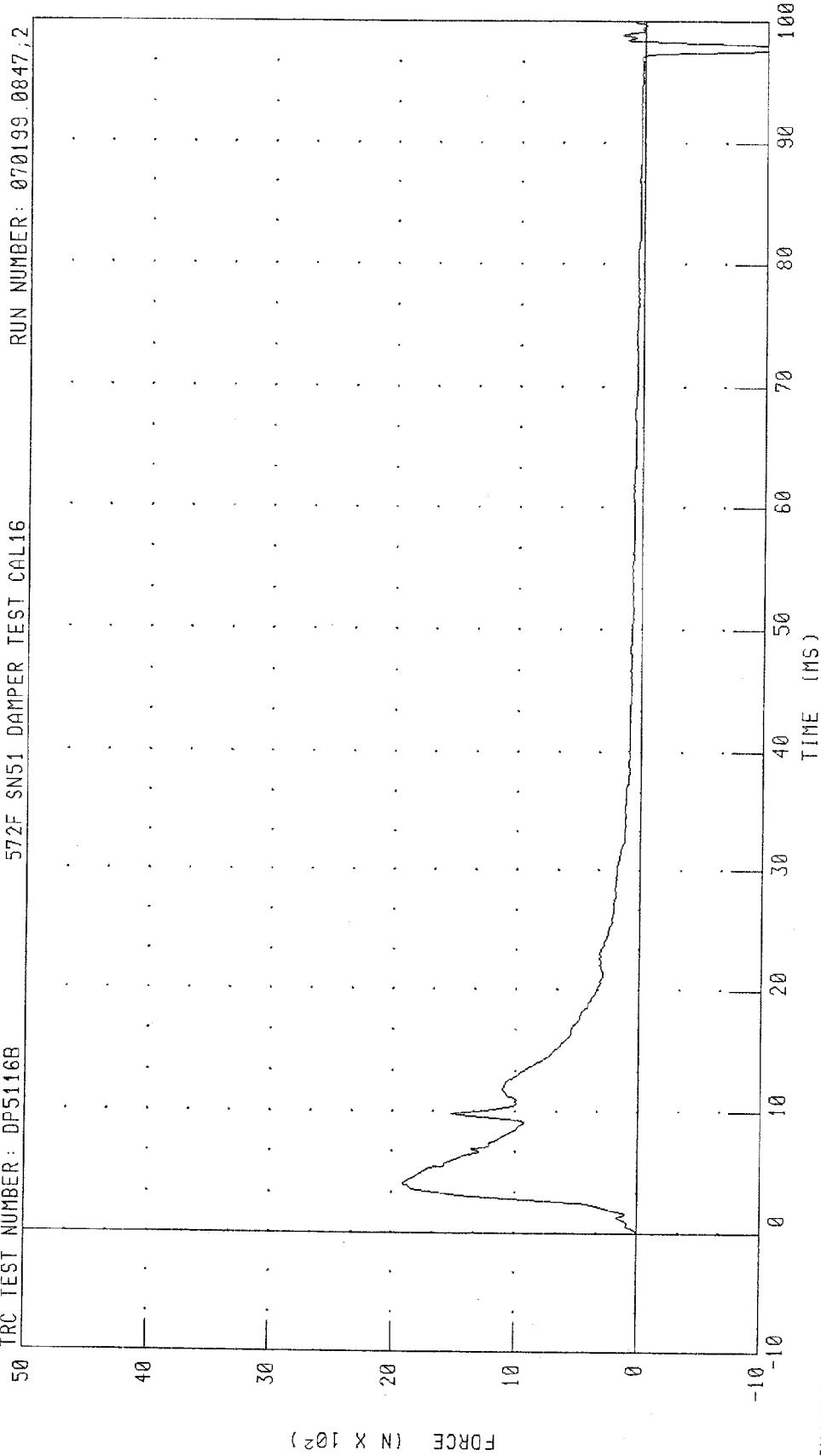
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP5116B

572F SN51 DAMPER TEST CAL16

RUN NUMBER: 070199.0847,2



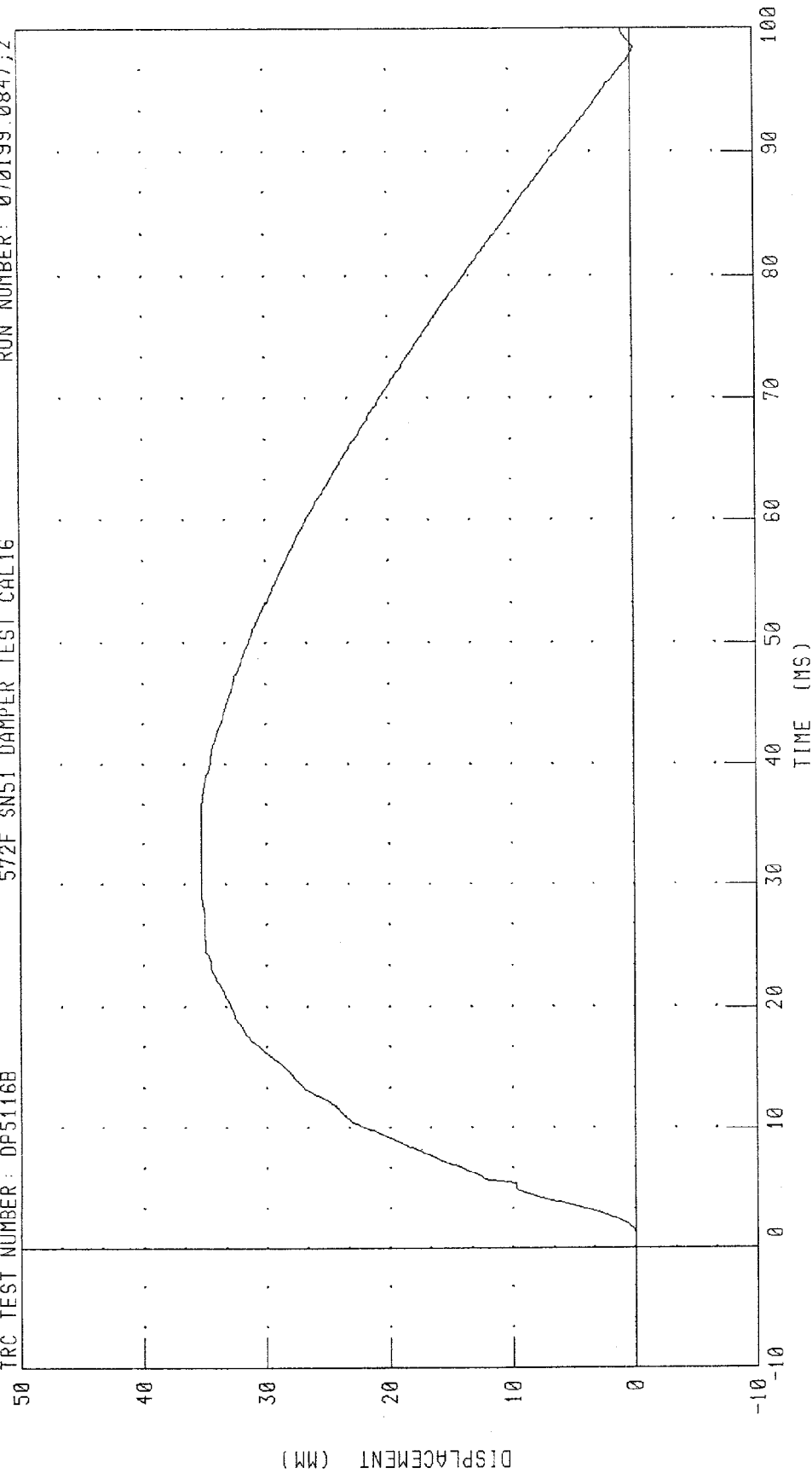
CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 1910.14 N @ 4.16 MS, -1728.09 N @ 97.76 MS

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP5116B 572F SN51 DAMPER TEST CAL16 RUN NUMBER: 070199.0847;2



PEAK DATA: 35.33 MM @ 29.84 MS; -0.23 MM @ 98.32 MS

CHANNEL: CSTDYD FILTER: CH. CLASS 1000

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (8.1 M/SEC)

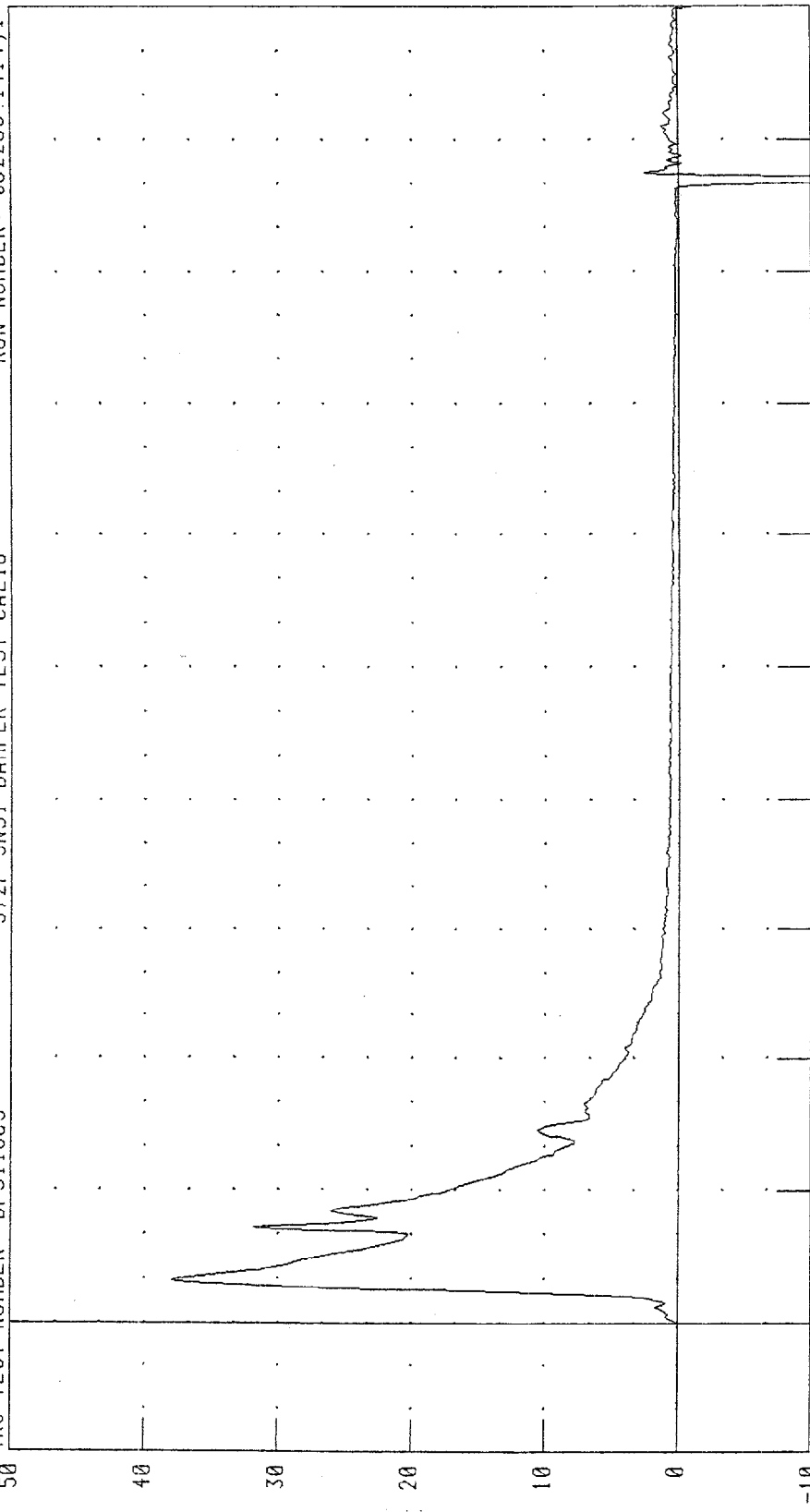
SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP5116C3

572F SN51 DAMPER TEST CAL16

RUN NUMBER: 062299.1414;1

50



FORCE (N X 10²)

TIME (MS)

PEAK DATA: 3794.39 N @ 3.20 MS, -1992.58 N @ 86.96 MS

CHANNEL: DAMPF FILTER: CH. CLASS 1000

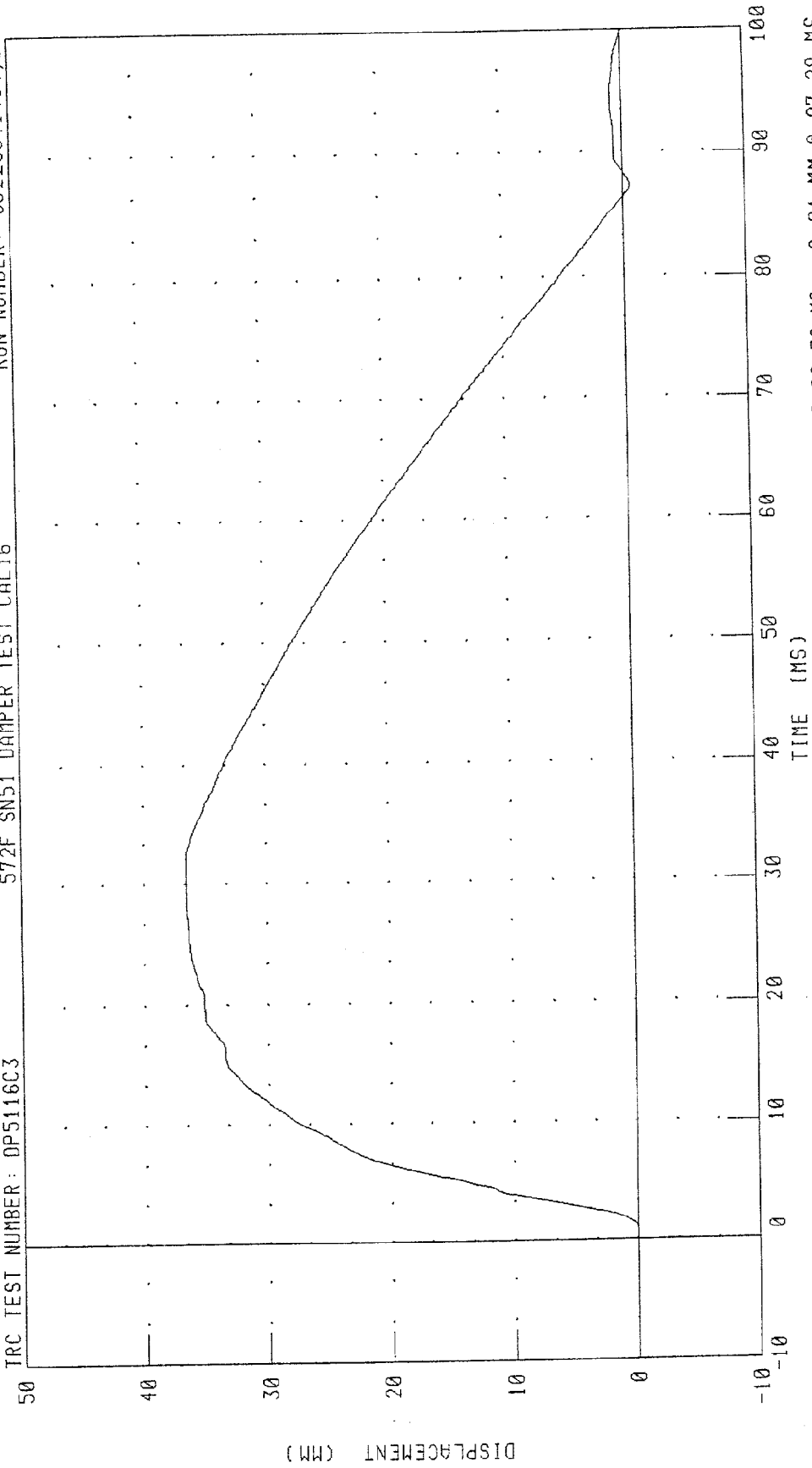
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 N/SEC)

SHOCK ABSORBER DISPLACEMENT

RUN NUMBER: 0622299.1414;1

TRC TEST NUMBER: DP5116C3

572F SN51 DAMPER TEST CAL16



PEAK DATA: 36.60 MM @ 29.76 MS; -0.64 MM @ 87.28 MS

FILTER: CH. CLASS 1000

CHANNEL: CSTYD

TRANSPORTATION RESEARCH CENTER INC.

ABDOMEN COMPRESSION TEST

PART 572B

23-JUN-99

TRC INC. TEST NO: ABD5116B

ABDOMEN COMPRESSION TEST SN51

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.0 C
RELATIVE HUMIDITY	10 - 70 %	44 %
DEFLECTION RATE	6.4 - 8.9 MM/S	7.89 MM/S
FORCE AT 0.00 MM DISP.	44.48 N	44.48 N
FORCE AT 12.7 MM DISP.	102.30 - 160.13 N	135.96 N
FORCE AT 19.1 MM DISP.	160.13 - 222.40 N	201.02 N
FORCE AT 25.4 MM DISP.	222.40 - 280.22 N	277.81 N
FORCE AT 33.0 MM DISP.	324.70 - 391.42 N	393.24 N *
25.22 MM	220.69 - 278.52 N	278.78 N *

* DUMMY DOES NOT MEET SPECIFICATIONS

TECHNICIAN

C. A. Rife

RUN NUMBER: 062499.0739;1

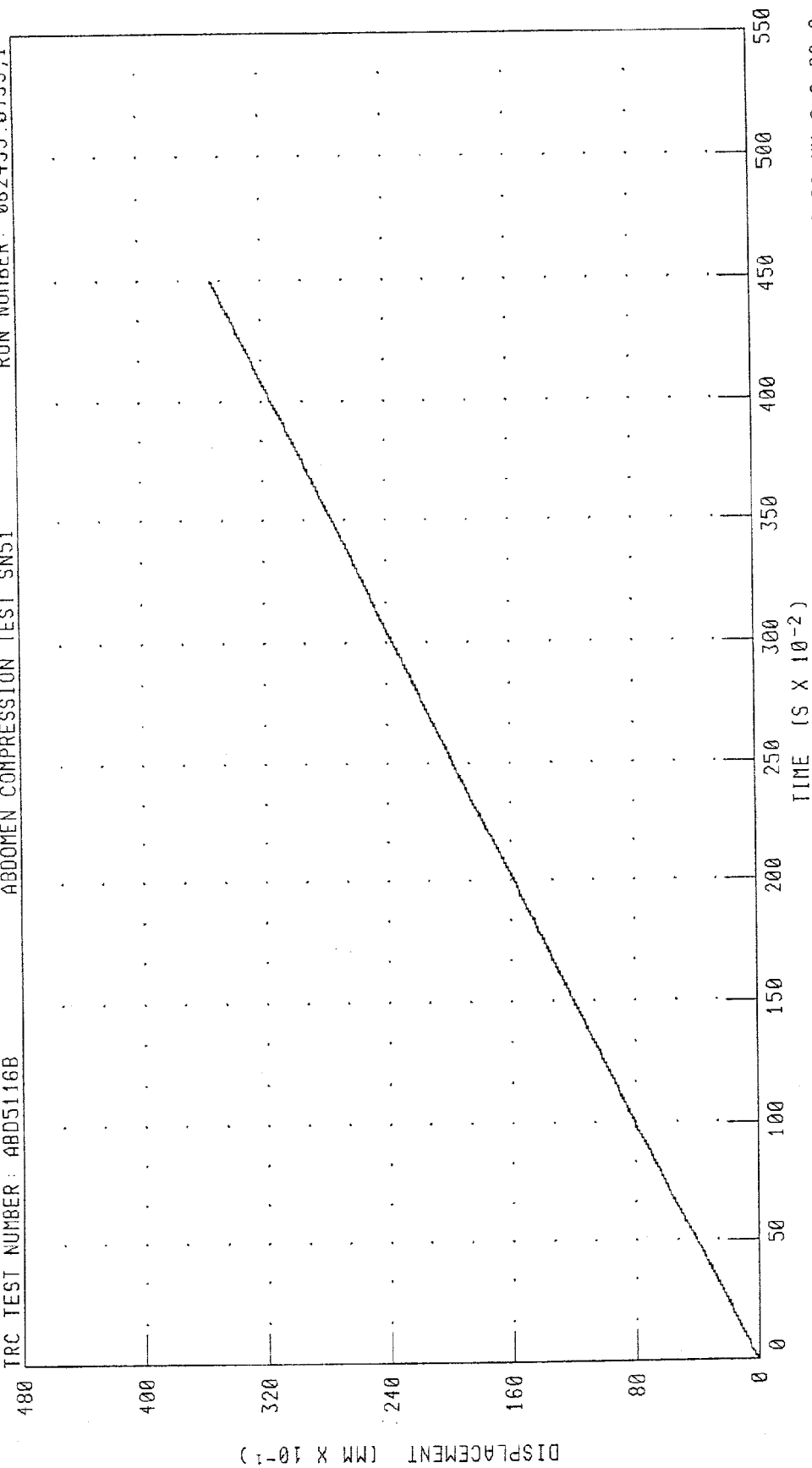
PART 572-B HYBRID II ABDOMEN CALIBRATION

ABDOMEN DISPLACEMENT

TRC TEST NUMBER: ABD5116B

ABDOMEN COMPRESSION TEST SN51

RUN NUMBER: 062499.0739;1

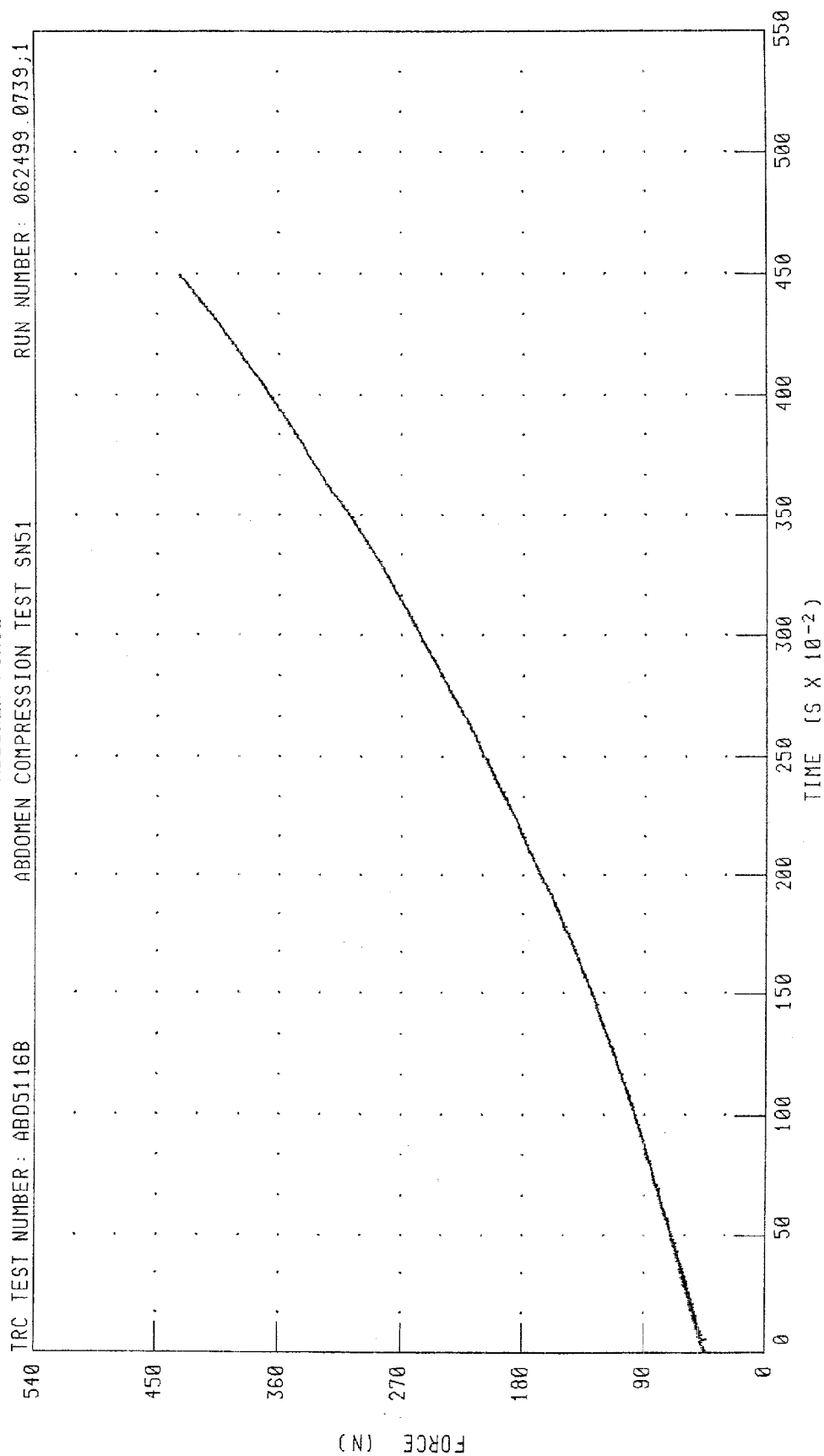


PEAK DATA: 35.28 MM @ 4.50 S; 0.00 MM @ 0.00 S

CHANNEL: ABXD FILTER: CH. CLASS 1000

PART 572-B HYBRID II ABDOMEN CALIBRATION

ABDOMEN FORCE



TRC TEST NUMBER: ABD5116B

ABDOMEN COMPRESSION TEST SN51

RUN NUMBER: 062499.0739;1

PEAK DATA: 433.34 N @ 4.50 S; 43.03 N @ 0.01 S

CHANNEL: ABXF FILTER: CH. CLASS 1000

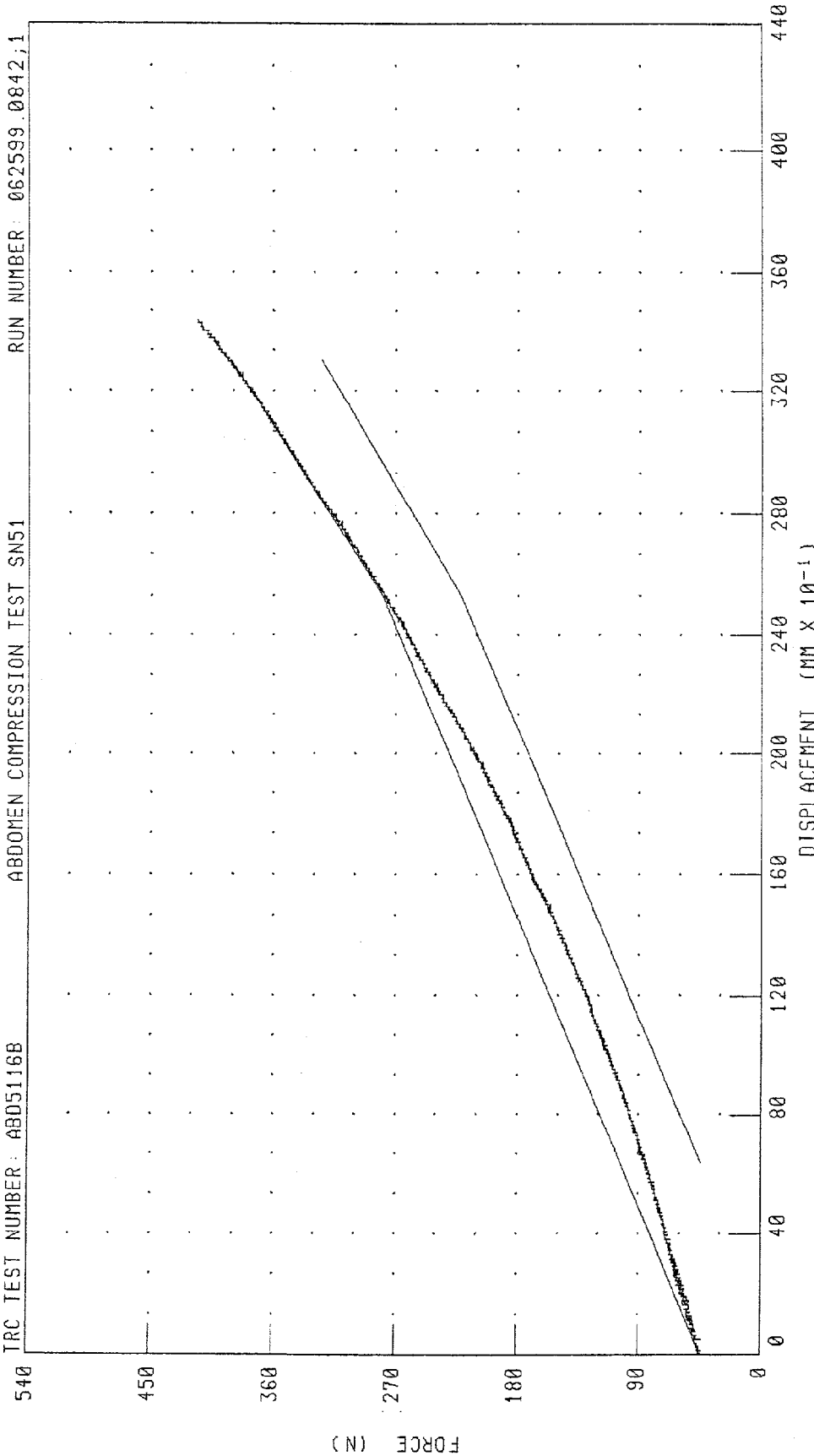
PART 572-B HYBRID II ABDOMEN CALIBRATION

ABDOMEN FORCE VS DISPLACEMENT

ABDOMEN COMPRESSION TEST SN51

RUN NUMBER: 062599.0842;1

TRC TEST NUMBER: AB05116B



CHANNEL: ABXD
ABXF

FILTER: CH. CLASS 1000
CH. CLASS 1000

PEAK DATA: 34.39 MM @ 4.38 S; 0.00 MM @ 0.00 S
415.74 N @ 4.38 S; 43.03 N @ 0.01 S

TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

PART 572B

6

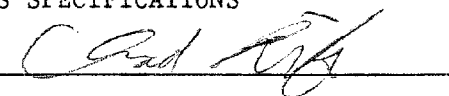
TRC INC. TEST NO:

SID SN 51 LUMBAR FLEX CAL 16

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 F	70.0 F
RELATIVE HUMIDITY	10 - 70 %	44 %
FORCE AT 0 DEG. FLEXION	-6.0 - +6.0 LB	0.00 LB
FORCE AT 20 DEG. FLEXION	22.00 - 34.00 LB	27.00 LB
FORCE AT 30 DEG. FLEXION	34.00 - 46.00 LB	41.00 LB
FORCE AT 40 DEG. FLEXION	46.00 - 58.00 LB	46.00 LB
NET RETURN ANGLE	< 12 DEG.	5.00 DEG.

DUMMY MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 062599.0905

Calibration Test Results

Post-Test

SID: 052

Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Thorax Impact Test:	The lateral thorax passed all impact test requirements.
Pelvis Impact Tests:	The lateral pelvis passed all impact test requirements.
Thorax Shock Absorbers:	The thorax passed all shock absorber requirements.
Abdominal Compression Test:	The torso passed all 572-B abdominal compression test requirements.
Lumbar Flexion Test:	The torso passed all 572-B lumbar flexion test requirements.

TRANSPORTATION RESEARCH CENTER INC.
 SIDE IMPACT DUMMY
 EXTERNAL DIMENSIONS
 LEFT SIDE CONFIGURATION
 SN SN052 VECTOR

28-06-99

TRC INC. TEST NO: 572F SN052 EXT.DIMENSION CAL15

DIMENSIONS WITH CHEST JACKET INSTALLED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
	TEMPERATURE		21.1 DEG. C
	RELATIVE HUMIDITY		44.0 %
SH	SEATED HEIGHT	889 - 909 MM	899.2 MM
HP	HIP PIVOT HEIGHT	99 MM REF.	99.1 MM
KH	KNEE PIVOT FROM BACKLINE	511 - 526 MM	519.4 MM
KV	KNEE PIVOT FROM FLOOR	490 - 506 MM	493.3 MM
HW	HIP WIDTH	356 - 391 MM	366.3 MM
DIMENSIONS WITH CHEST JACKET REMOVED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
RH	RIB HEIGHT	501 - 520 MM	513.8 MM
RD	RIB FROM BACKLINE	229 - 241 MM	239.3 MM
RW-1	TOP RIB WIDTH FROM C/L	165. - 180 MM	174.0 MM
RW-2	BOTTOM RIB WIDTH FROM C/L	165 - 180 MM	174.0 MM
	DIFFERENCE BETWEEN TOP & BOTTOM RIB WIDTH FROM C/L	≤ 2.5 MM	0.0 MM

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chad Rife

RUN NUMBER: 062899.1310

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

19-JUN-99

LEFT SIDE CONFIGURATION

TRC INC. TEST NO: STL5215

572F SN52 LEFT THORAX CAL15

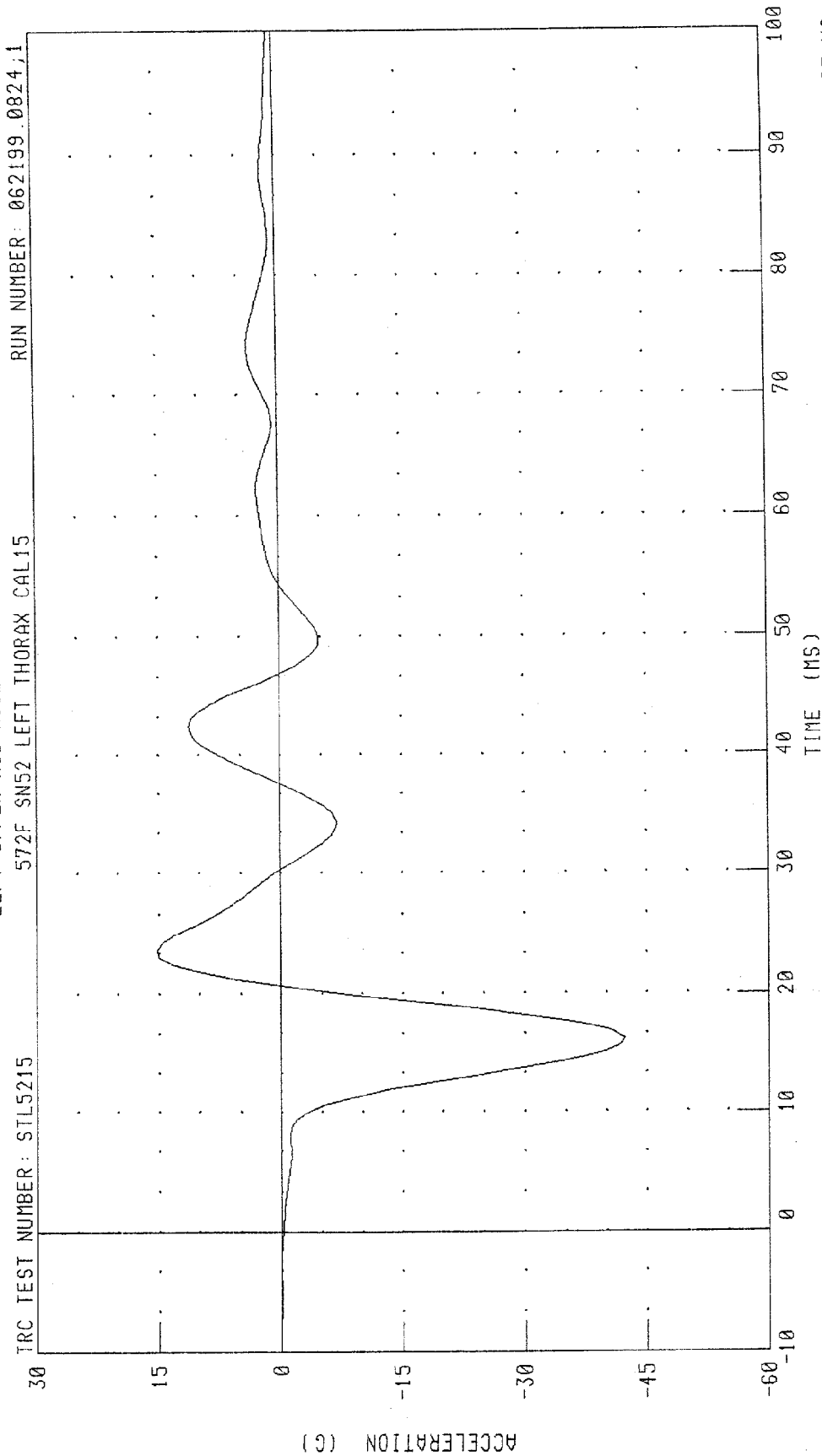
TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	50.0 %
PENDULUM VELOCITY	4.27 - 4.33 M/S	4.33 M/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	-42.2 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	-40.7 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	-18.9 G

TEST MEETS SPECIFICATIONS

TECHNICIAN Chris Rife

RUN NUMBER: 061999.1222;1

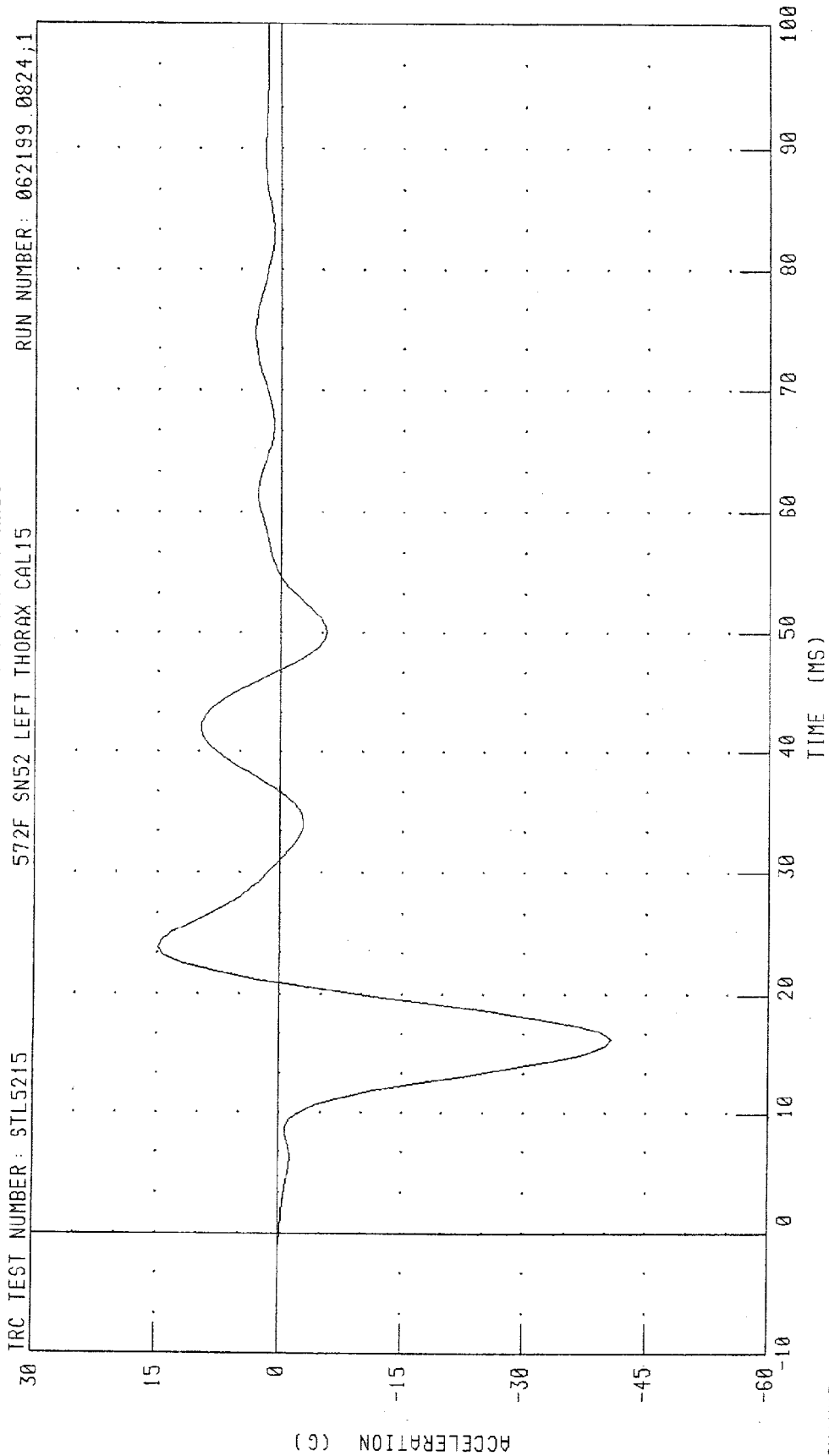
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)
 LEFT UPPER RIB ACCELERATION Y AXIS



PEAK DATA: 15.21 G @ 23.75 MS; -42.24 G @ 16.25 MS

CHANNEL: LURYG FILTER: FIR 100

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)
LEFT LOWER RIB ACCELERATION Y AXIS



CHANNEL: LLRYG FILTER: FIR 100

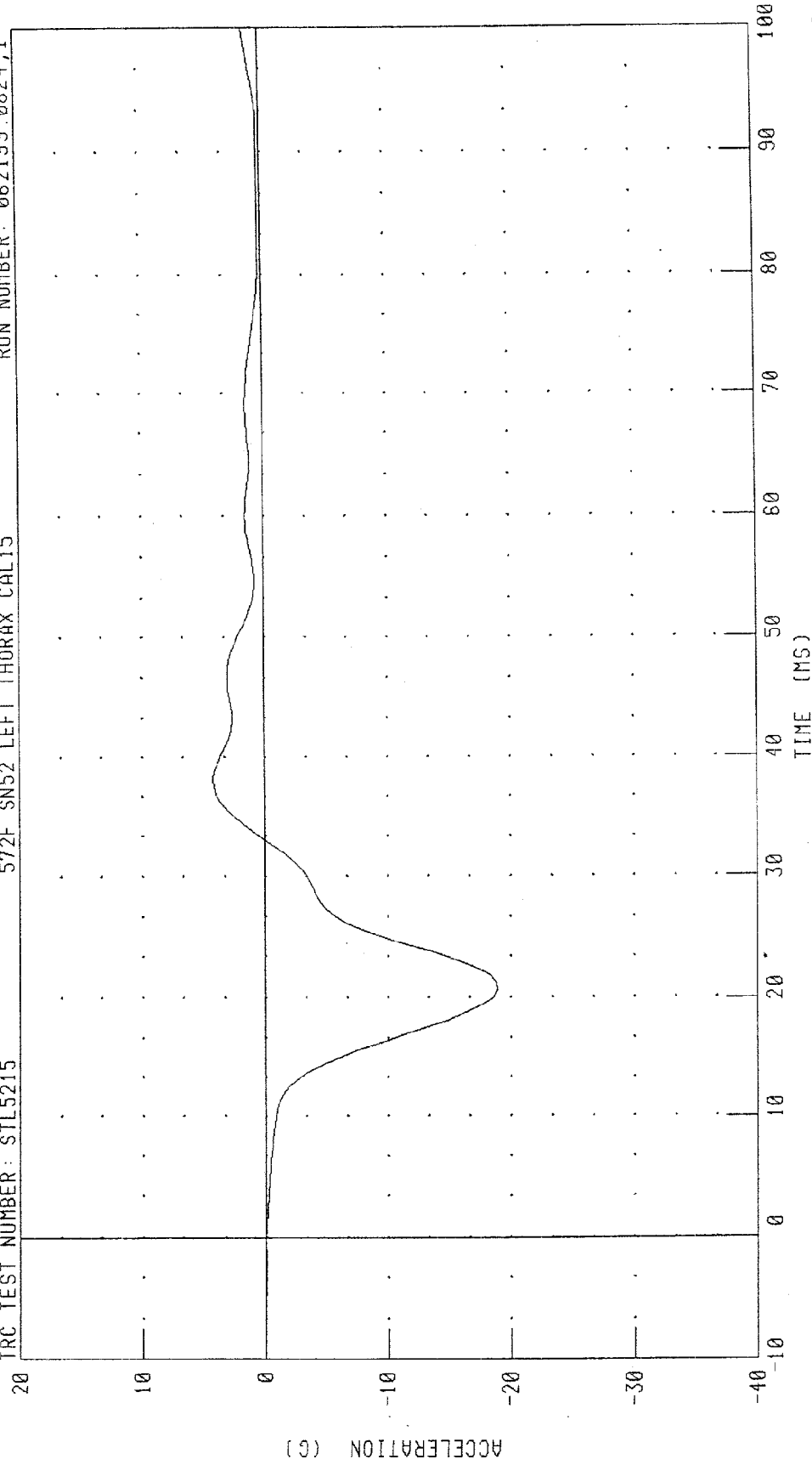
PEAK DATA: 14.86 G @ 23.75 MS; -40.65 G @ 16.25 MS

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LOWER SPINE ACCELERATION Y AXIS

572F SN52 LEFT THORAX CAL15 RUN NUMBER: 062199.0824,1

TRC TEST NUMBER: STL5215



CHANNEL: T12YG FILTER: FIR 100

PEAK DATA: 4.25 G @ 38.13 MS, -18.95 G @ 20.62 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

19-JUN-99

LEFT SIDE CONFIGURATION

TRC INC.

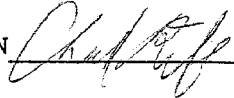
TEST NO: SPL5215

572F SN052 LEFT PELVIS CAL15

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	50.0 %
PENDULUM VELOCITY	4.27 - 4.33 M/S	4.32 M/S
PEAK PELVIC ACCELERATION	40 - 60 G	-49.4 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	5.9 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 061999.1200;1

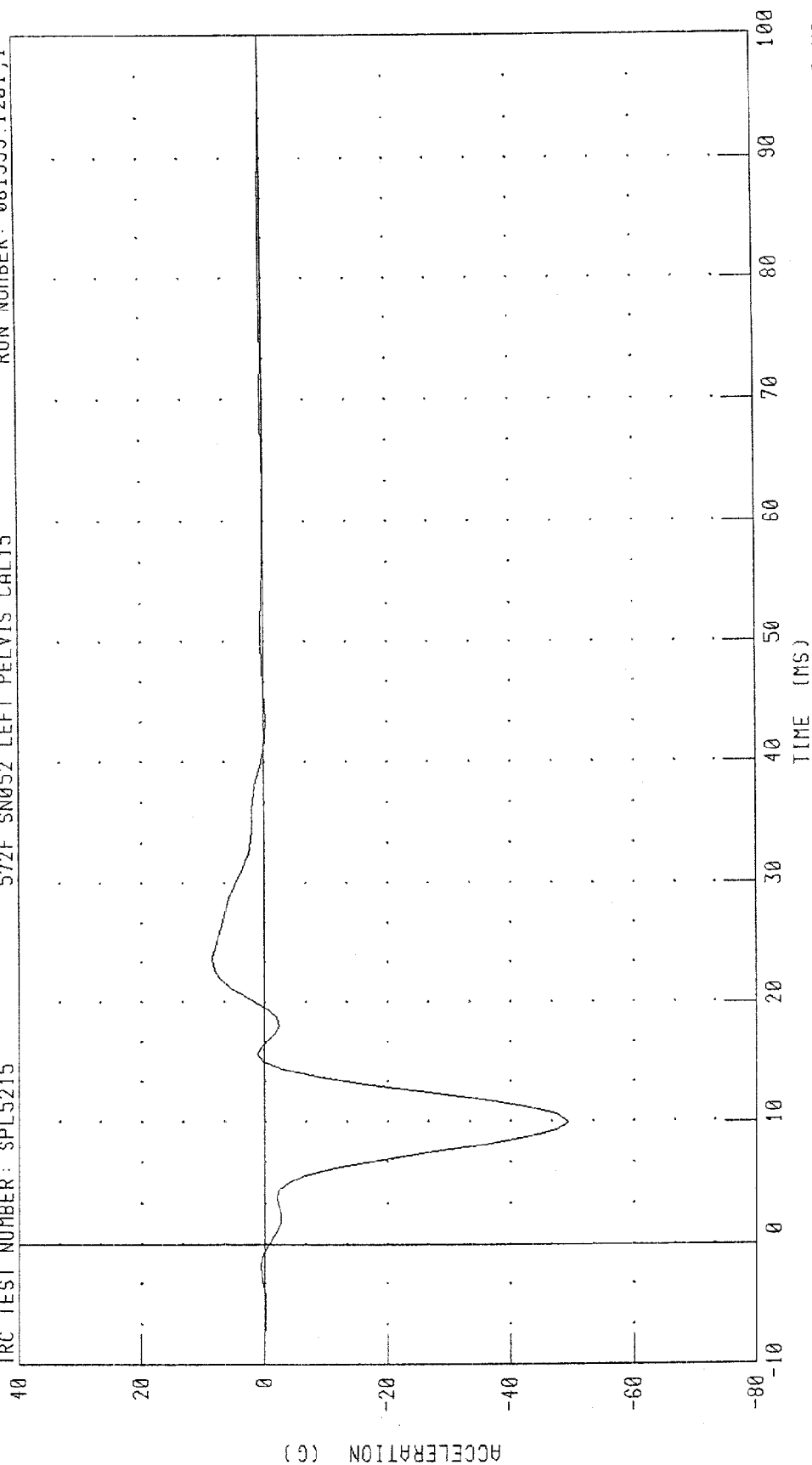
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

TRC TEST NUMBER: SPL5215

572F SN052 LEFT PELVIS CAL15

RUN NUMBER: 061999.1201.1



PEAK DATA: 8.46 G @ 23.75 MS; -49.39 G @ 10.00 MS

CHANNEL: PEVYG FILTER: FIR 100

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

22-JUN-99

TRC INC.

572F SN52 DAMPER TEST CAL15

TEST NUMBERS: DP5215A,DP5215B ,DP5215C2

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		18.9 - 25.5 C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	44.0 %
VELOCITY	FORCE	838 - 1125 N	1049 N
3.04 M/S	DISPLACEMENT	30.2 - 35.2 MM	31.3 MM
VELOCITY	FORCE	1733 - 2100 N	2022 N
4.28 M/S	DISPLACEMENT	31.6 - 37.2 MM	31.7 MM
VELOCITY	FORCE	3784 - 4495 N	4261 N
6.12 M/S	DISPLACEMENT	33.3 - 39.6 MM	36.3 MM

DAMPER SETTING = 9.0

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chad Aff

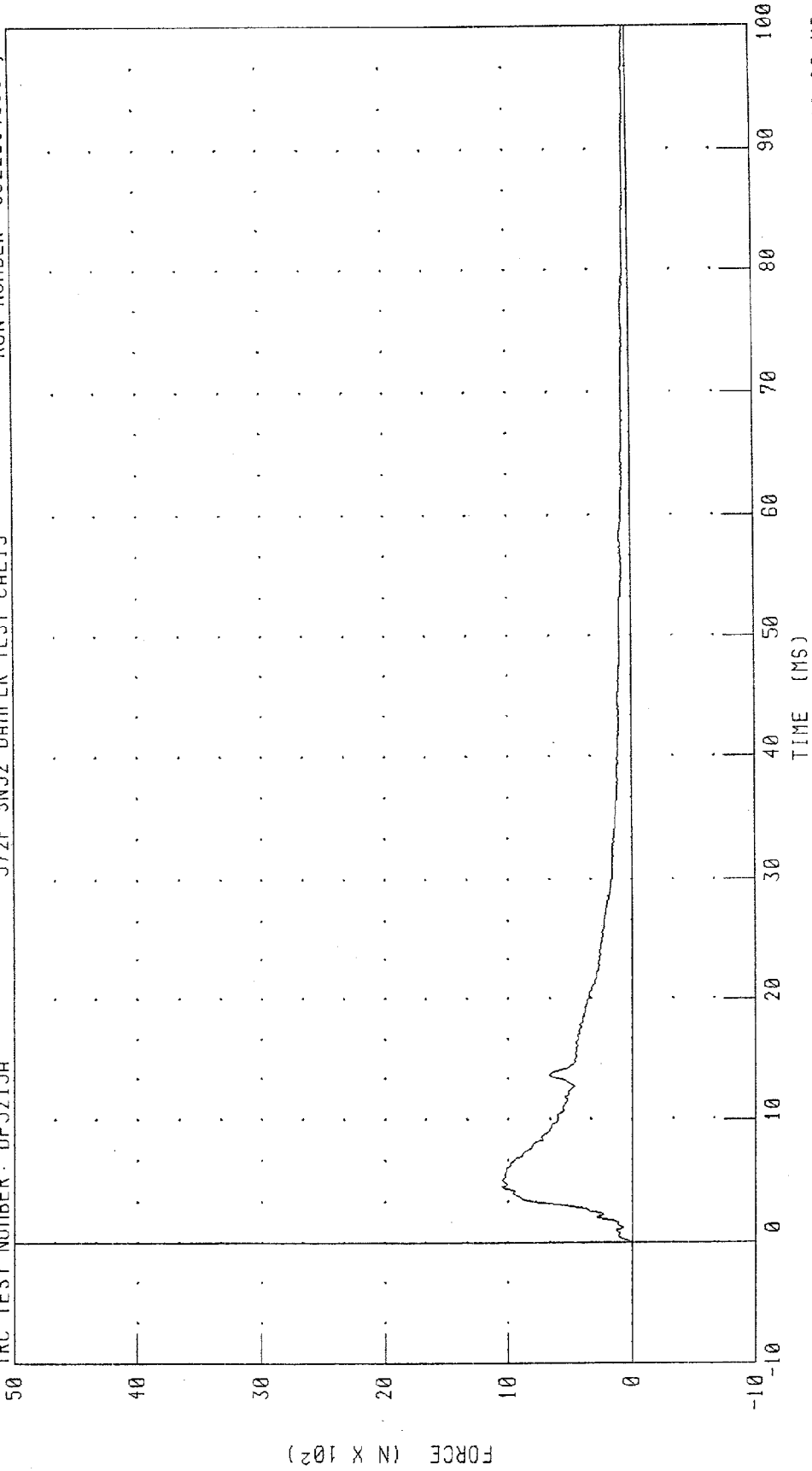
RUN NUMBER: 062299.1252;1

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

572F SN52 DAMPER TEST CAL15 RUN NUMBER: 0622299.1137,1

TRC TEST NUMBER: DP5215A



CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 1049.38 N @ 4.56 MS, -0.58 N @ -10.00 MS

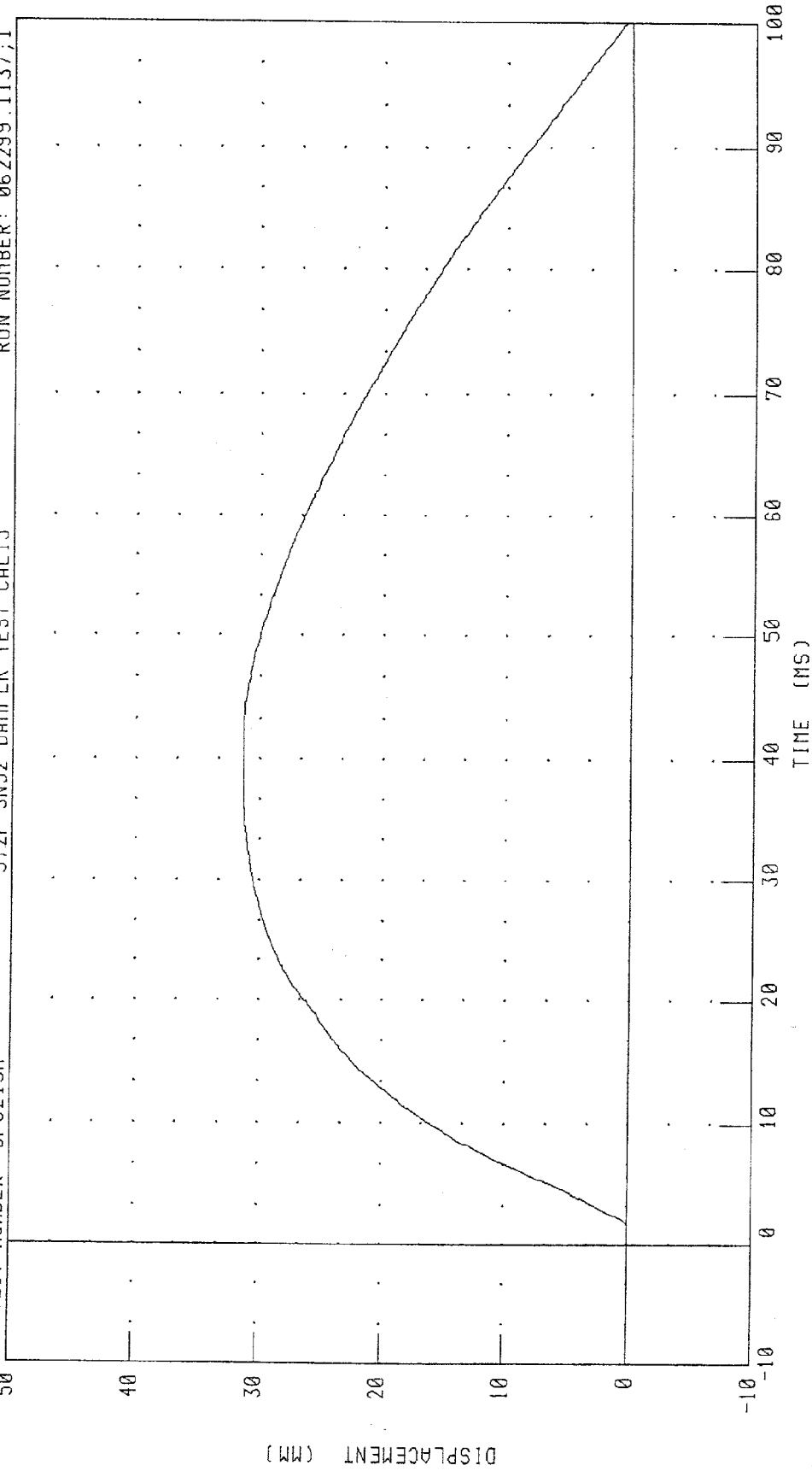
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP5215A

572F SN52 DAMPER TEST CAL15

RUN NUMBER: 062299.1137;1



PEAK DATA: 31.34 MM @ 36.64 MS, -0.02 MM @ -9.52 MS

CHANNEL: CSTYD FILTER: CH. CLASS 1000

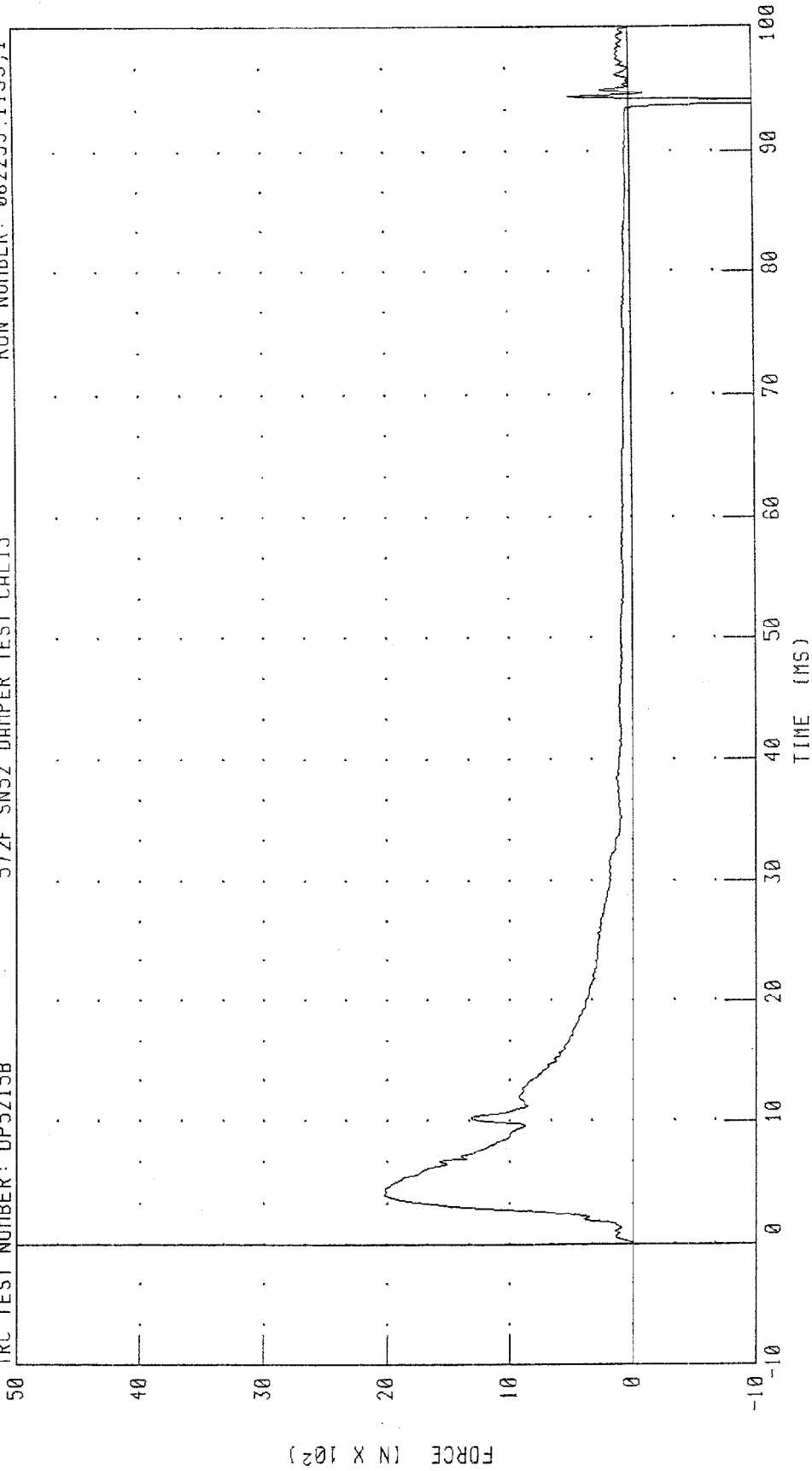
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP5215B

572F SN52 DAMPER TEST CAL15

RUN NUMBER: 0622299.1139,1



CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 2021.79 N @ 4.08 MS, -2480.82 N @ 94.00 MS

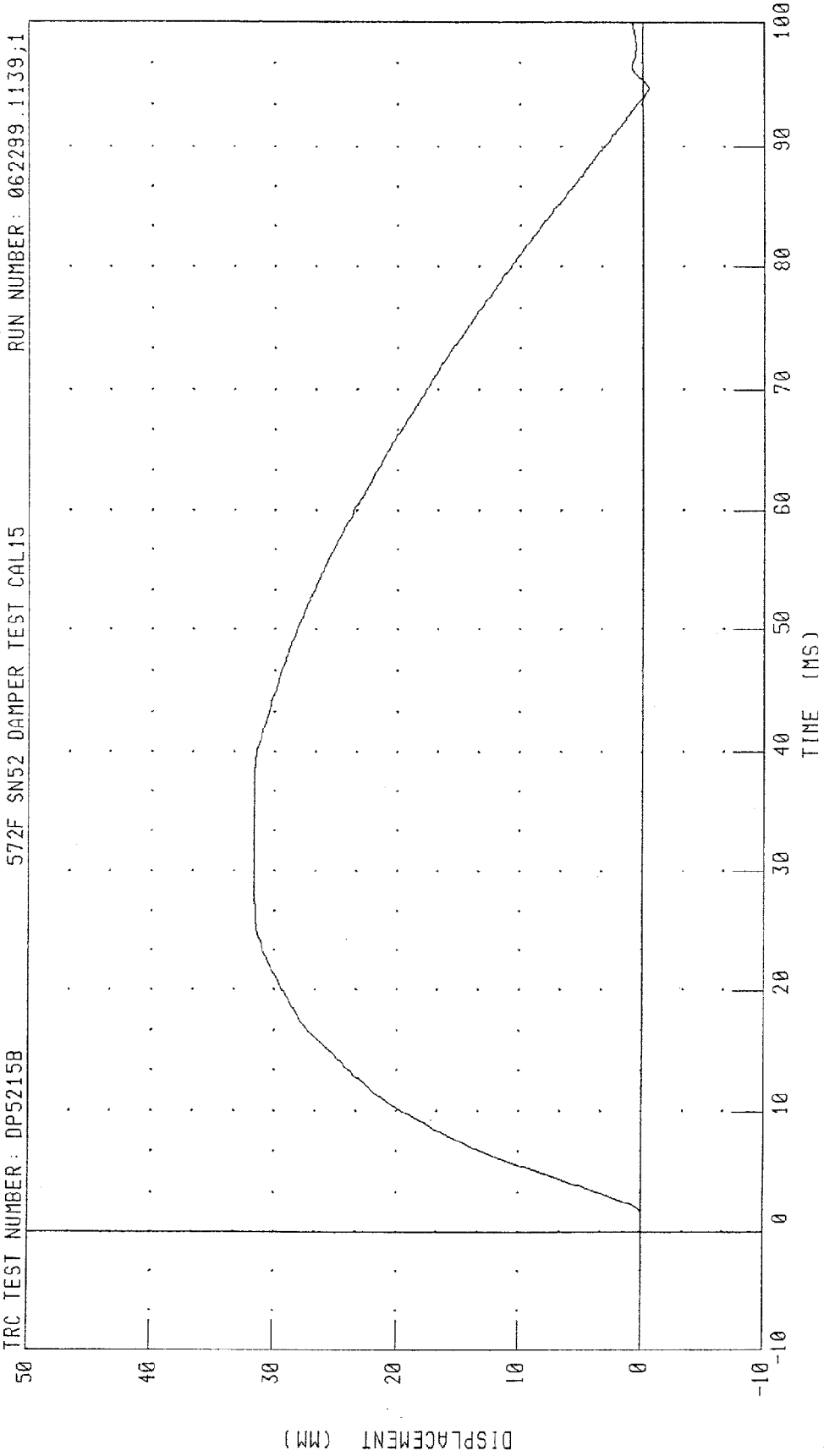
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP5215B

572F SN52 DAMPER TEST CAL15

RUN NUMBER: 062299.1139,1



CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 31.66 MM @ 28.16 MS; -0.50 MM @ 94.64 MS

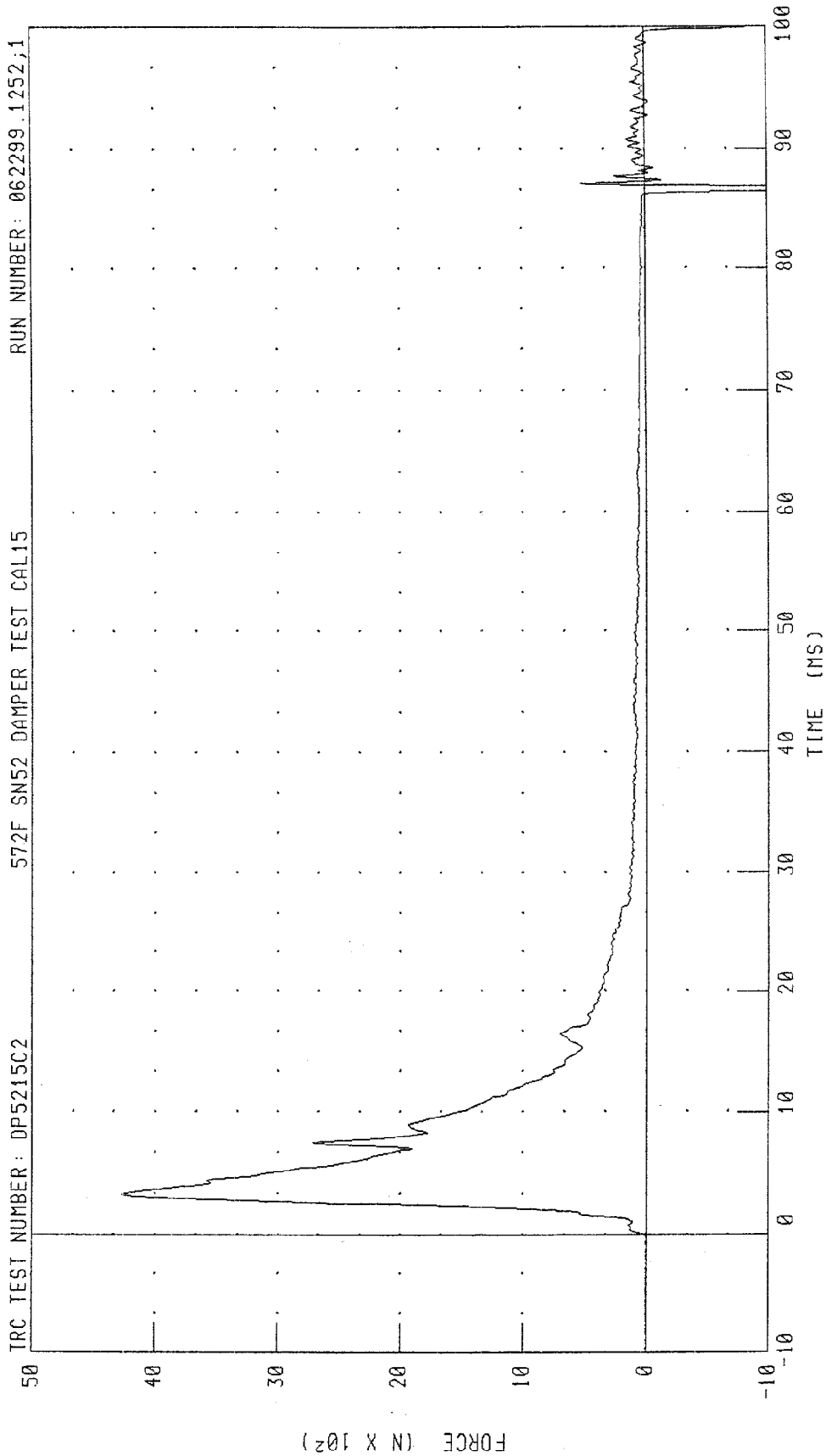
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP5215C2

572F SN52 DAMPER TEST CAL15

RUN NUMBER: 062299.1252;1



CHANNEL: DAMPF FILTER: CH. CLASS 1000

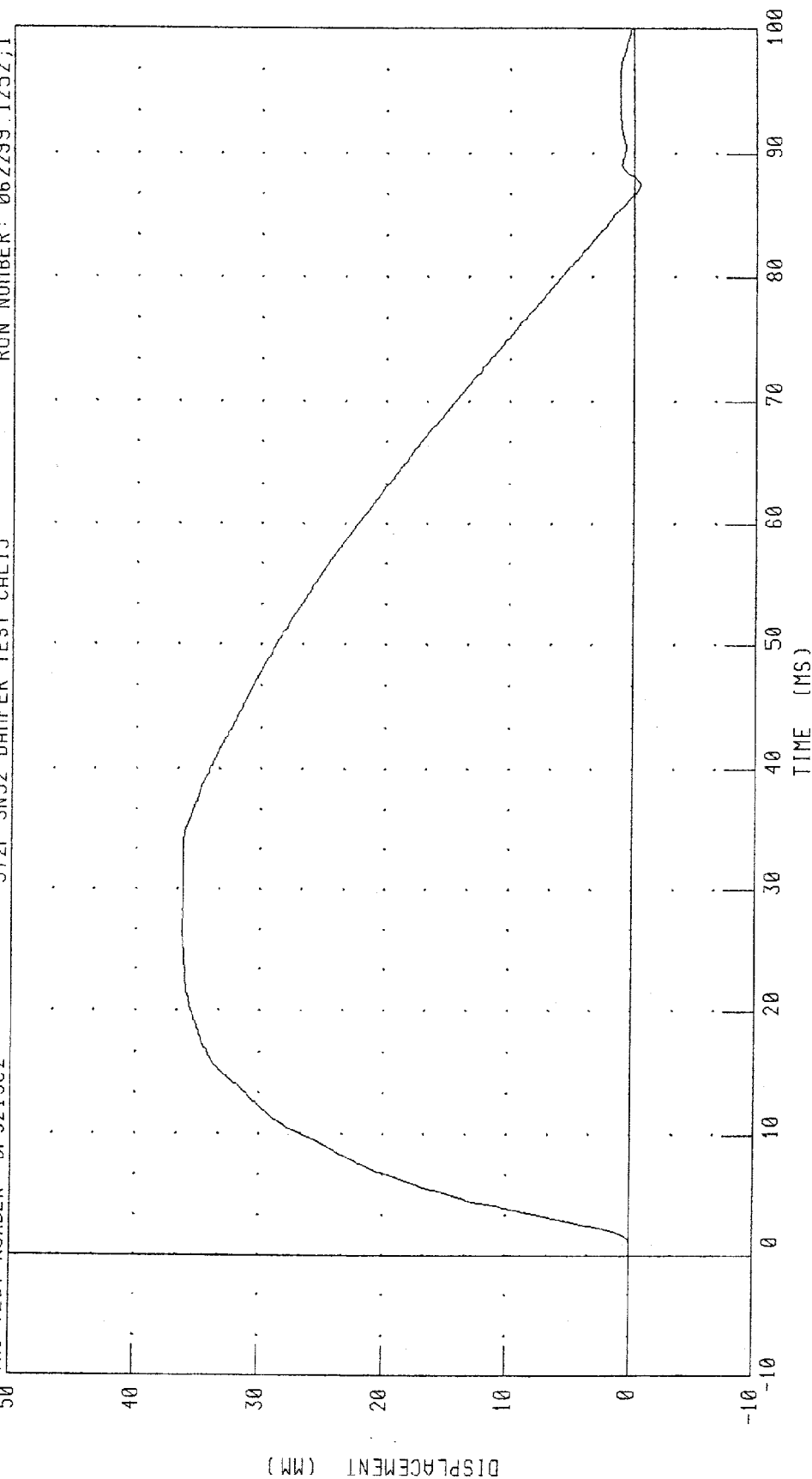
PEAK DATA: 4261.35 N @ 3.28 MS; -2795.33 N @ 86.72 MS

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER DISPLACEMENT

572F SN52 DAMPER TEST CAL15 RUN NUMBER: 062299.1252,1

TRC TEST NUMBER: 0P521502



CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 36.33 MM @ 26.64 MS; -0.53 MM @ 87.36 MS

TRANSPORTATION RESEARCH CENTER INC.

ABDOMEN COMPRESSION TEST

PART 572B

24-JUN-99

TRC INC.

TEST NO: ABD5215A

ABDOMEN COMPRESSION TEST SN52

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.0 C
RELATIVE HUMIDITY	10 - 70 %	44 %
DEFLECTION RATE	6.4 - 8.9 MM/S	7.79 MM/S
FORCE AT 0.00 MM DISP.	44.48 N	44.48 N
FORCE AT 12.7 MM DISP.	102.30 - 160.13 N	128.83 N
FORCE AT 19.1 MM DISP.	160.13 - 222.40 N	191.93 N
FORCE AT 25.4 MM DISP.	222.40 - 280.22 N	267.74 N
FORCE AT 33.0 MM DISP.	324.70 - 391.42 N	382.68 N

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chel Rife

RUN NUMBER: 062499.1016;1

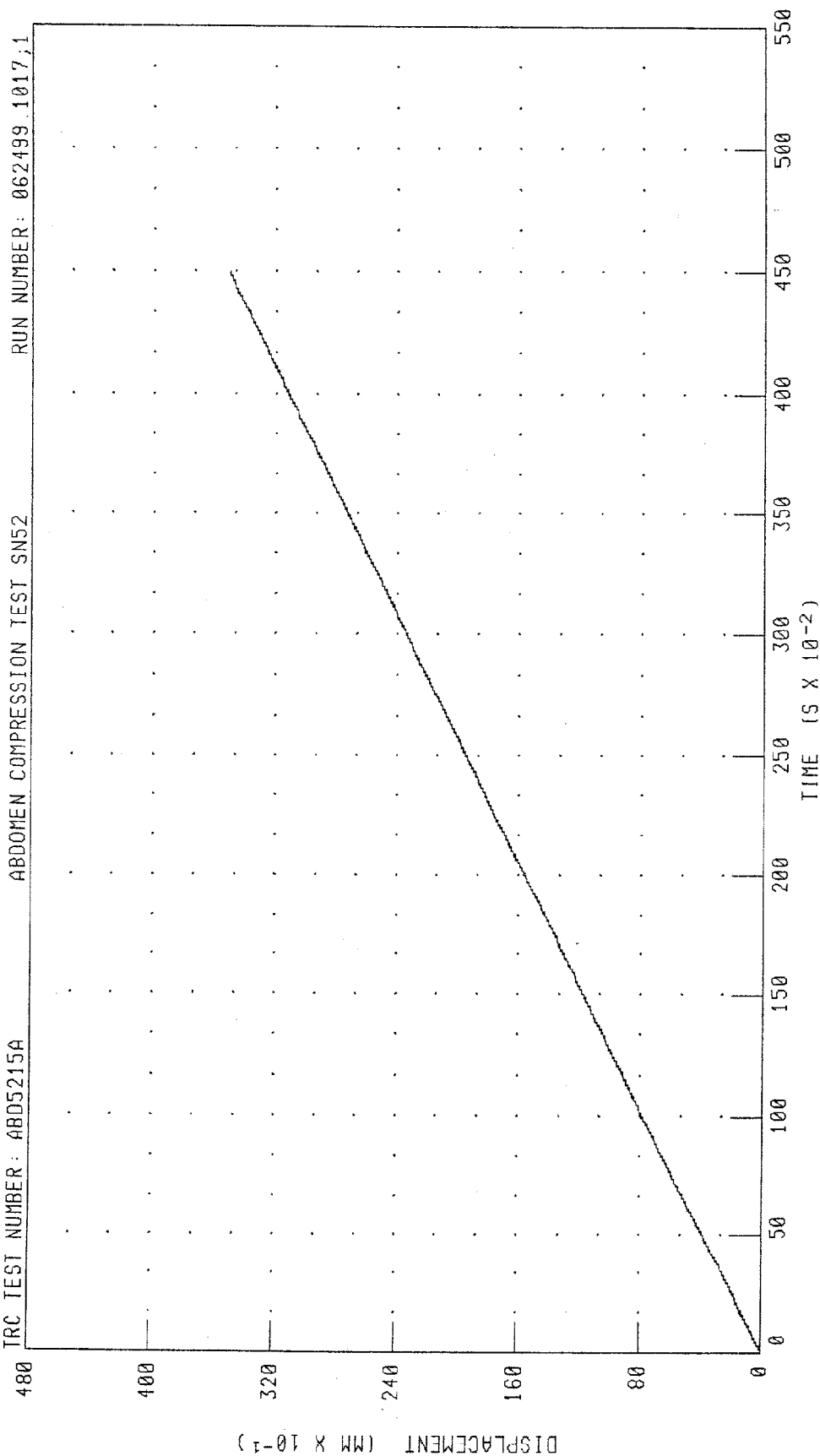
PART 572-B HYBRID II ABDOMEN CALIBRATION

ABDOMEN DISPLACEMENT

TRC TEST NUMBER: ABD5215A

ABDOMEN COMPRESSION TEST SN52

RUN NUMBER: 062499.1017;1

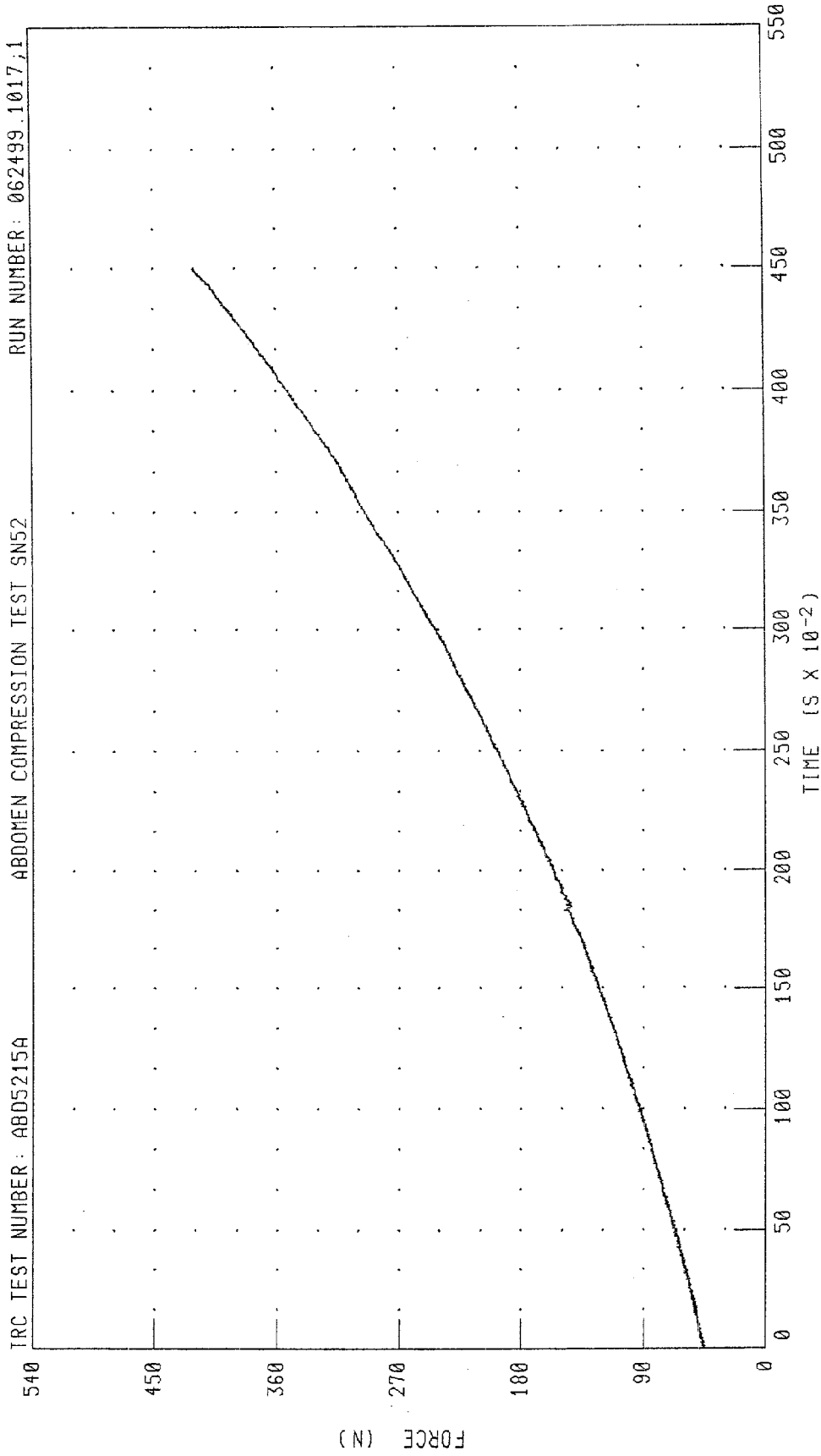


CHANNEL: ABXD FILTER: CH. CLASS 1000

PEAK DATA: 35.02 MM @ 4.50 S; 0.00 MM @ 0.00 S

PART 572-B HYBRID II ABDOMEN CALIBRATION

ABDOMEN FORCE



CHANNEL: ABXF FILTER: CH. CLASS 1000

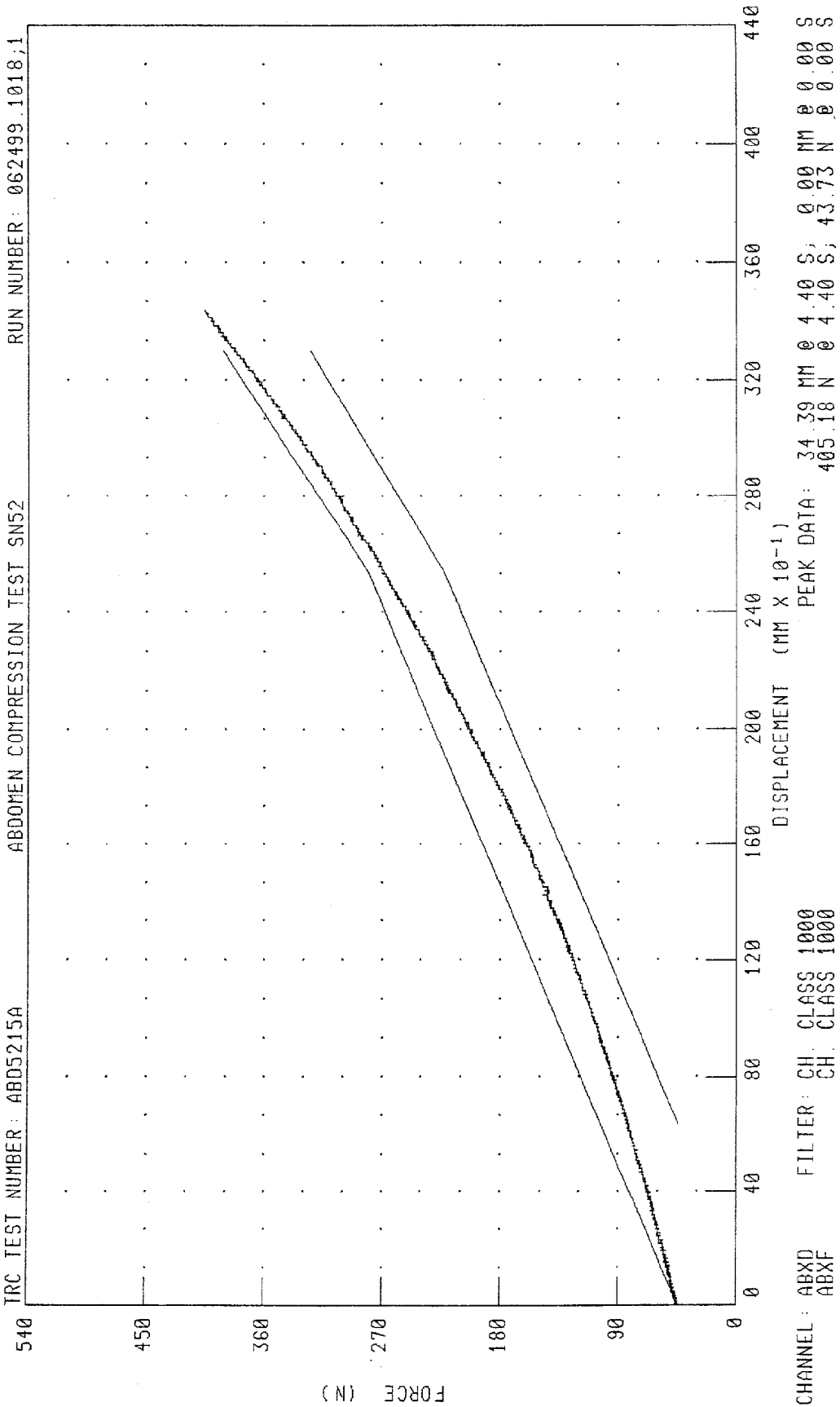
PART 572-B HYBRID II ABDOMEN CALIBRATION

ABDOMEN FORCE VS DISPLACEMENT

ABDOMEN COMPRESSION TEST SN52

TRC TEST NUMBER: ABD5215A

RUN NUMBER: 062499.1018;1



TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

PART 572B

22-6-99

SID SN 52 TEST NO:

SID SN 52 LUMBAR FLEX CAL 15

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 F	70.0 F
RELATIVE HUMIDITY	10 - 70 %	44 %
FORCE AT 0 DEG. FLEXION	-6.0 - +6.0 LB	0.00 LB
FORCE AT 20 DEG. FLEXION	22.00 - 34.00 LB	27.00 LB
FORCE AT 30 DEG. FLEXION	34.00 - 46.00 LB	40.00 LB
FORCE AT 40 DEG. FLEXION	46.00 - 58.00 LB	48.00 LB
NET RETURN ANGLE	< 12 DEG.	1.00 DEG.

SID SN 52 LUMBAR FLEX CAL 15

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

Carl [Signature]

RUN NUMBER: 062599.0855

APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

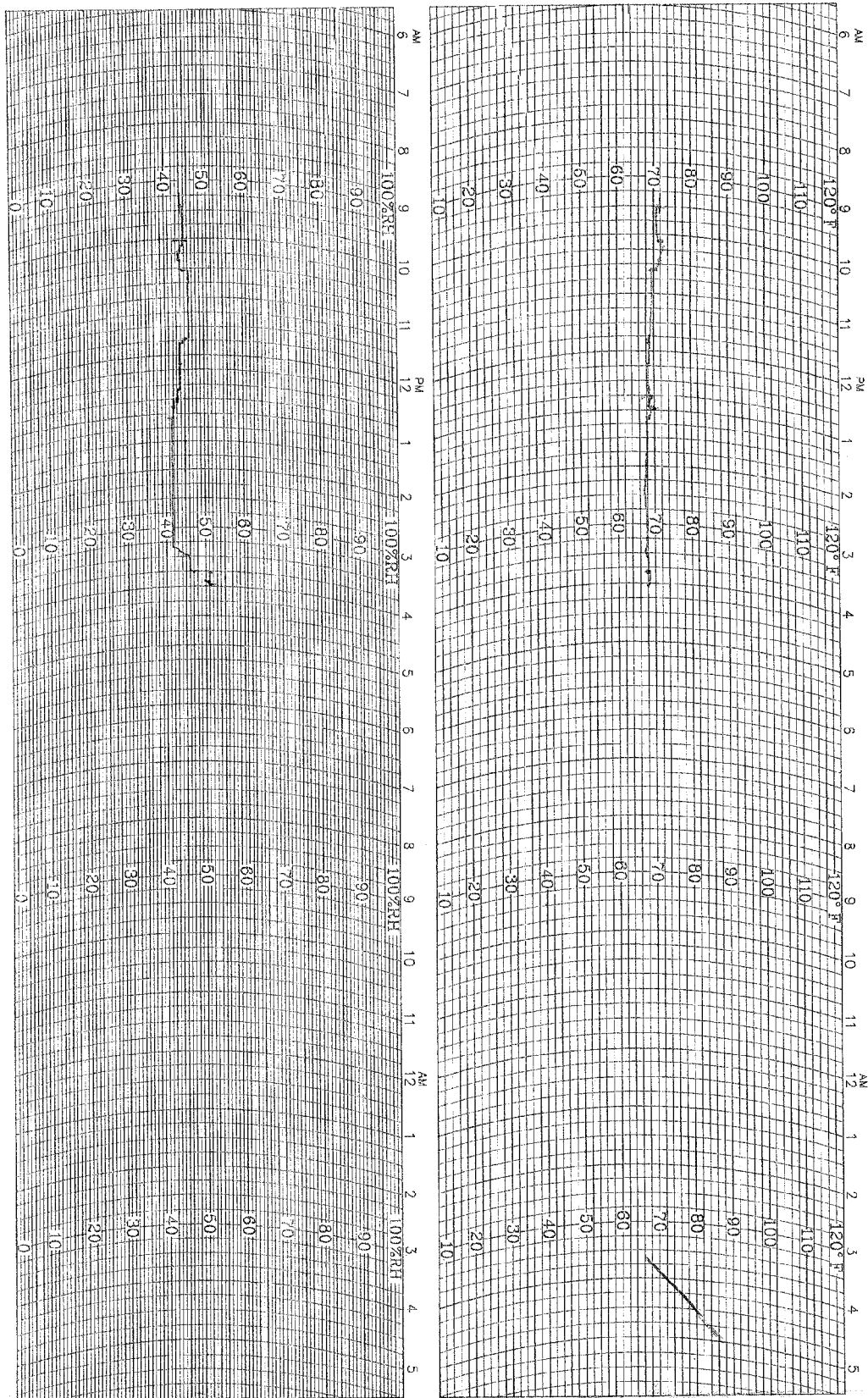
SID INSTRUMENTATION

FRONT SID NO.: 051			
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
Upper Rib	J22075	Endevco	11/98
Lower Rib	J22047	Endevco	11/98
Lower Spine	J15372	Endevco	11/98
Pelvis	J22197	Endevco	11/98
Upper Rib Redundant	J20184	Endevco	11/98
Lower Rib Redundant	J22046	Endevco	11/98
Lower Spine Redundant	J20024	Endevco	11/98
Pelvis Redundant	J20387	Endevco	11/98

REAR SID NO.: 052			
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
Upper Rib	J20148	Endevco	11/98
Lower Rib	J18811	Endevco	11/98
Lower Spine	J19303	Endevco	11/98
Pelvis	J20243	Endevco	11/98
Upper Rib Redundant	J20005	Endevco	11/98
Lower Rib Redundant	J20561	Endevco	11/98
Lower Spine Redundant	J20025	Endevco	11/98
Pelvis Redundant	J20462	Endevco	11/98

VEHICLE AND MDB INSTRUMENTATION

	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
Right Front Sill (X)	J27879	Endevco	03/99
Right Front Sill (Y)	J27940	Endevco	03/99
Right Front Sill (Z)	J27347	Endevco	04/99
Right Rear Sill (X)	J22740	Endevco	02/99
Right Rear Sill (Y)	J28468	Endevco	03/99
Right Rear Sill (Z)	J27947	Endevco	03/99
Rear Floorpan Above Axle (X)	J27303	Endevco	04/99
Rear Floorpan Above Axle (Y)	J27305	Endevco	04/99
Rear Floorpan Above Axle (Z)	J27329	Endevco	04/99
Left Rear Sill (Y)	---	---	---
Left Front Sill (Y)	---	---	---
Right Rear Seat Occupant Comp. (Y)	J26494	Endevco	01/99
Lower Left B-Pillar (Y)	---	---	---
Upper Left B-Pillar (Y)	---	---	---
Lower Left A-Pillar (Y)	99A28Z22LT	Entran	12/98
Middle Left A-Pillar (Y)	99A28Z01LT	Entran	02/99
Front Seat Track (Y)	----	----	----
Rear Seat Track (Y)	----	----	----
Vehicle CG (X)	J27938	Endevco	03/99
Vehicle CG (Y)	J27369	Endevco	04/99
Vehicle CG (Z)	J27361	Endevco	04/99
Left Front Door Centerline (Y)	J28376	Endevco	01/99
Left Front Door Midrear (Y)	---	---	---
Left Front Door Upper Centerline (Y)	J25991	Endevco	12/98
Left Rear Door Midrear (Y)	---	---	---
Left Rear Door Upper Centerline (Y)	J27726	Endevco	12/98
MDB CG (X)	J27410	Endevco	04/99
MDB CG (Y)	J27413	Endevco	04/99
MDB CG (Z)	J27415	Endevco	04/99
MDB Rear Frame Member (X)	J27684	Endevco	03/99
MDB Rear Frame Member (Y)	J27729	Endevco	02/99



Weather Measure
WEATHERtronics
Division of QUALIMETRICS, Inc.

P.O. BOX 41039
SACRAMENTO, CA 95841
PHONE: (916) 923-0055

HYGROTHERMOGRAPH

1 DAY

CHART NO. M699123

C311-D-HF

ECN 2717

6-9-87

05-12-99 NO. NHISA

SINCAP

STATION

DATE ON

DATE OFF

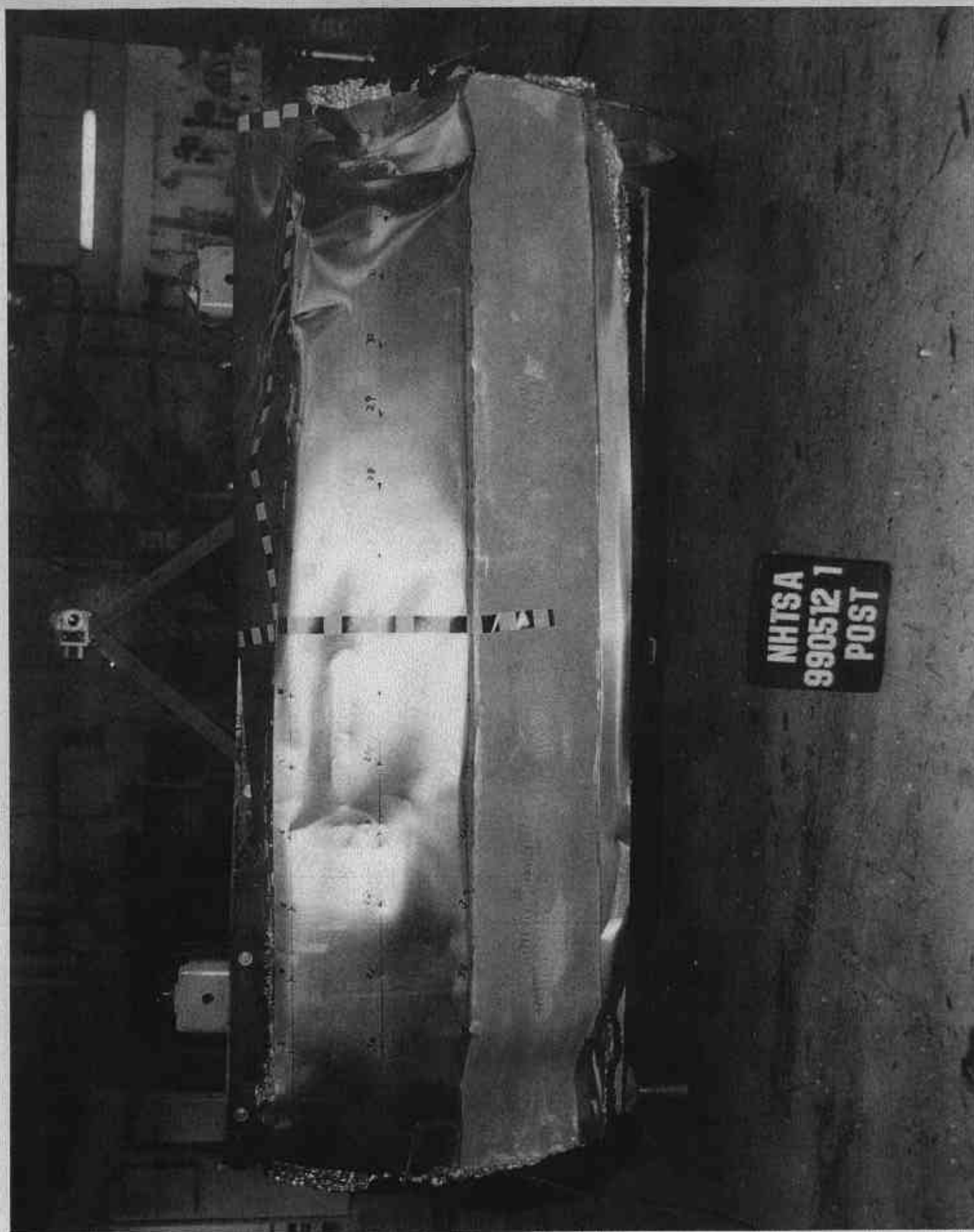


Figure A-8 Post-Test Frontal View of Impactor Face
A-10

990512