

Report Number: 214-TRC-95-002

Vehicle Safety Compliance Testing

FMVSS No. 214

Side Impact Protection - Passenger Cars

Subaru Motor Company

1994 Subaru Impreza

4-door sedan

NHTSA Number: CR5502

TRC Test Number: 941019

Transportation Research Center Inc.

10820 State Route 347

East Liberty, OH 43319



November 11, 1994

Final Report

Prepared For:

U.S. Department of Transportation

National Highway Traffic Safety Administration

Office of Vehicle Safety Compliance Enforcement (NEF-30)

400 Seventh Street, S.W., Room No. 6115

Washington, DC 20590

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Date 2/16/95

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16. Abstract A 30/15 mph 270° Impact (Moving Deformable Barrier) Compliance Test was conducted on a 1994 Subaru Impreza 4-door sedan, NHTSA No. CR5502, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-214D-03 for the determination of FMVSS No. 214 Side Impact Protection compliance. The test was conducted at Transportation Research Center Inc. on October 19, 1994. The impact velocity of the Moving Deformable Barrier (MDB) was 33.0 mph, and the occupant compartment temperature at the time of impact was 68° F. The target vehicle post-test maximum crush was 14.5 inches at level 2. The test vehicle's performance follows: <table border="1"> <thead> <tr> <th></th> <th>Driver</th> <th>Passenger</th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td>64.5</td> <td>52.7</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td>52.5</td> <td>59.8</td> </tr> <tr> <td>Lower Spine (T12) Accel., g</td> <td>60.9</td> <td>61.1</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td>63</td> <td>60</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td>81</td> <td>75</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.					Driver	Passenger	Left Upper Rib (LUR) Accel., g	64.5	52.7	Left Lower Rib (LLR) Accel., g	52.5	59.8	Lower Spine (T12) Accel., g	60.9	61.1	Thoracic Trauma Index (TTI)	63	60	Pelvis (PEV) Accel., g	81	75
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Approximate Conversions from Metric Measures

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.25, SD Catalog No. C13.10-286.

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Section 1.0

Purpose and Test Procedure

Purpose

This 30/15 mph 270° driver's side impact test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 214 compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by the Transportation Research Center Inc. (TRC) under Contract No. DTNH22-88-C-07292, Task Order No. TRC-74-0342. The purpose of this test was to determine if the subject vehicle, a 1994 Subaru Impreza 4-door sedan, NHTSA No. CR5502, meets the performance requirements of FMVSS 214, "Side Impact Protection - Passenger Cars," in the 30/15 mph 270° driver's side impact mode.

Test Procedure

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-214D-03. Data was obtained relative to FMVSS 214, "Side Impact Protection - Passenger Cars," performance.

The test vehicle was instrumented with seven (7) accelerometers to measure longitudinal, lateral, and vertical axis accelerations. The test vehicle was positioned so that the longitudinal centerline of the vehicle was at an angle of 63° to the tow cable system and the leading edge of contact was 37 inches forward of the mid-point of the test vehicle's wheelbase.

The test vehicle contained two (2) Part 572 F side impact adult male anthropomorphic test devices (dummies). The dummies were positioned in the left front and left rear outboard designated seating positions according to the dummy placement procedure specified as an attachment to the Laboratory Test Procedure. Both dummies were instrumented with spine and rib primary and redundant accelerometers and a pelvis accelerometer to measure lateral accelerations. The dummies were also instrumented with head accelerometers to measure longitudinal, lateral, and vertical accelerations. Each dummy was restrained by a three-point unbelt.

The moving deformable barrier was instrumented with five (5) accelerometers to measure longitudinal, lateral, and vertical axis accelerations. The moving barrier was crabbed clockwise at a 27° angle to the tow cable system. The moving deformable barrier's specified velocity range was 32.4 to 33.4 mph.

The thirty-two (32) data channels were multiplexed and recorded on a 14-track tape drive. The data was digitally sampled at 12,500 samples per second and processed per Section 12.0 of the Laboratory Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and six (6) high-speed motion picture cameras operating at 500 frames per second. The pre-test and post-test conditions were recorded by one (1) real time motion picture camera.

The vehicle and occupant data are summarized in Section 2.0. The FMVSS 214 data are presented in Section 3.0. The vehicle, occupant, and camera measurements are presented in Section 4.0. Appendix A contains the still photographic prints. Appendix B contains the dummy and vehicle data plots. Appendix C contains the dummy calibration data. Appendix D contains miscellaneous test information.

Section 2.0

Side Impact Test Summary

Test Results Summary

This 30/15 mph 270° driver's side impact test was conducted at TRC on October 19, 1994.

The test vehicle was a 1994 Subaru Impreza 4-door sedan, NHTSA No. CR5502 . The driver's and left rear passenger's Thoracic Trauma Index (TTI) were less than 85 g's. The pelvis lateral accelerations did not exceed 130 g's as measured by Part 572 F dummies seated in the left front and left rear outboard designated seating positions.

The test vehicle was equipped with a 1.8 liter, transverse engine, manual transmission, power steering, and power brakes. The vehicle's test weight was 2896 pounds. The moving deformable barrier's impact speed was 33.0 mph. The vehicle's maximum static crush was 14.5 inches.

The driver's TTI was 63. The driver's pelvis maximum lateral acceleration was 81 g.

The left rear passenger's TTI was 60. The left rear passenger's pelvis maximum lateral acceleration was 75 g.

The doors on the struck side of the test vehicle did not separate from the vehicle's main body at the hinges or latches. The doors on the opposite side did not open during the crash event.

Data Acquisition Explanations

The driver's head X and Y-axis accelerometers, HEDXG1 and HEDYG1, recorded questionable data spikes at 49 and 56 milliseconds. The data spikes affected the driver's head resultant and head injury criteria (HIC) calculations.

The following channels also recorded questionable data spikes at 49 and 56 milliseconds:

LURYG1 - driver left upper thorax rib Y-axis accelerometer

LURYGA - driver left upper thorax rib Y-axis redundant accelerometer

LLRYG1 - driver left lower thorax rib Y-axis accelerometer

T12YG1 - driver lower spine Y-axis accelerometer

PEVYG1 - driver pelvis Y-axis accelerometer

LURYGD - passenger left upper thorax rib Y-axis redundant accelerometer

The driver's head Z-axis accelerometer, HEDZG1, recorded a questionable data spike at 15 milliseconds. The data spike affected the head resultant accelerometer calculations.

The barrier center of gravity Y-axis accelerometer, BCGYG, data signal did not return to zero following the impact event. The data signal not returning to zero affected the barrier center of gravity resultant acceleration calculation.

Table 1 Crash Test Summary

Test Type:	Moving Barrier Left Side Impact	
Test Date:	10/19/94	
Test Time:	1605	
Ambient Temperature:	62° F	
Vehicle:	1994 Subaru Impreza 4-door sedan	
Vehicle Test Weight:	2896 lbs.	
Impact Angle ¹ :	270°	
Impact Velocity ² :	Primary = 33.0 mph Secondary = 33.0 mph	
Maximum Static Crush:	14.5 in.	
Dummies:	Driver #016	Left Rear Passenger #268
Type:	Part 572 F	Part 572 F
Location:	Left Front	Left Rear
Restraint:	3-Point Unibelt	3-Point Unibelt
Number of Data Channels:	32	
Number of Cameras:	High-Speed 6 Real-Time 1	

¹ With respect to tow track centerline.

² Speed trap measurement (± .05 mph accuracy)

Table 2 Test Vehicle Information

Vehicle Manufacturer:	Fuji Heavy Industries
Make/Model/Body Style:	Subaru/Impreza/4-door sedan
Model Year:	1994
NHTSA No.:	CR5502
VIN:	JF1GC2350RB541338
Color:	Purple
Engine Data:	
Type:	Transverse
Cylinders:	4
Displacement:	1.8 liter
Transmission Data:	<u>5</u> Speed, <u>X</u> Manual, <u> </u> Automatic, <u>X</u> FWD, <u> </u> RWD, <u> </u> 4WD
Date Vehicle Received:	10/11/94
Odometer Reading:	117
Dealer's Name and Address:	NA

Accessories:

Power Steering	Yes	Automatic Transmission	No
Power Brakes	Yes	Automatic Speed Control	No
Power Seats	No	Tilting Steering Wheel	Yes
Power Windows	Yes	Telescoping Steering Wheel	No
Tinted Glass	Yes	Air Conditioning	Yes
Radio	Yes	Anti-Skid Brake	No
Clock	Yes	Rear Window Defroster	Yes
Other	None		

Certification Data from Vehicle's Label:

Vehicle Manufactured by:	Fuji Heavy Industries
Date of Manufacture:	03/94
VIN:	JF1GC2350RB541338
GVWR:	3450 lbs.
GAWR: Front:	1850 lbs.
Rear:	1600 lbs.

Table 2 Test Vehicle Information, Cont'd.

Tires on Vehicle (Mfr., Line, Size): Yokohama, P165/80R13

Tire Pressure with Maximum Capacity Vehicle Load: Front: 35 psi
Rear: 35 psi

Spare Tire (Mfr., Line, Size): Bridgestone, T125/70D15

Type of Seats: Front: Bucket
Rear: Bench

Type of Front Seat Backs: Manually adjustable

Maximum Width: 66.7 inches

Wheelbase: 99.3 inches

Location of "Recommended Tire Pressure" Label:

The label was located on the driver's B-pillar.

Data From Vehicle's "Recommended Tire Pressure" Label:

Recommended Tire Size: P165/80R13

Recommended Cold Tire Pressure: Front: 32 psi; Rear: 29 psi

Seating Capacity: 2 Front 3 Rear 5 Total

Vehicle Capacity Weight: 800 lbs.

Test Vehicle Attitude (all measurements are in inches):

Delivered Attitude: LF 26.1; RF 26.5; LR 25.5; RR 25.7

Fully loaded Attitude: LF 25.2; RF 26.3; LR 23.7; RR 24.7

Pre-test Attitude: LF 25.4; RF 26.4; LR 23.7; RR 24.7

Post-test Attitude: LF 25.8; RF 25.8; LR 23.5; RR 24.4

Table 2 Test Vehicle Information, Cont'd.

Weight of Test Vehicle as Received (with maximum fluids):

Right Front	772 lbs.	Right Rear	503 lbs.
Left Front	786 lbs.	Left Rear	489 lbs.
Total Front Weight	1508 lbs.	(60.3% of Total Vehicle Weight)	
Total Rear Weight	992 lbs.	(39.7% of Total Vehicle Weight)	
Total Delivered Weight	2500 lbs.		

Calculation of Test Vehicle's Target Test Weight:

RCLW = Rated Cargo and Luggage Weight

UDW = Unloaded Vehicle Weight (2500 lbs.)

VCW¹ = Vehicle Capacity Weight (800 lbs.)

DSC = Designated Seating Capacity (5)

RCLW = VCW - 150 (DSC) = 50 lbs.

Target Test Weight = UDW + RCLW + (No. of Part 572F Dummies X 178 lbs.)

Target Test Weight = 2500 + 50 + 356 = 2906 lbs.

Weight of test vehicle with required dummies and 94 lb of cargo weight:

Right Front	721 lbs.	Right Rear	617 lbs.
Left Front	870 lbs.	Left Rear	688 lbs.
Total Front Weight	1591 lbs.	(54.9% of Total Vehicle Weight)	
Total Rear Weight	1305 lbs.	(45.1% of Total Vehicle Weight)	
Total Test Weight	2896 lbs.	(0.3% Under Target Test Weight)	

Weight of Ballast Secured in Vehicle Cargo Area: 0 lbs.

Components Removed to Meet Target Test Weight: Spare tire

CG = 44.8 inches rearward of front wheel centerline

¹ From vehicle's certification label.

Table 2 Test Vehicle Information, Cont'd.

Arm Rest Location:

Driver: NA inches

Passenger: NA inches

Seat Belt Anchorage Location: One position down from uppermost

Automatic Belt Rail Location: NA

Front Seat Cushion Placement: Mid-point of fore/aft travel

Rear Seat Cushion Placement: Non-adjustable

Total Number of Seat Adjustment Positions for Front Seat: 17

Adjustment Position: 9th from front

Total Number of Seat Adjustment Positions for Rear Seat: Non-adjustable

Adjustment Positions: NA

Front Seat Back Angle: 25°

Front Seat Cushion Vertical Position: Non-adjustable

Window Positions:

	Front	Rear
Left	Up	Up
Right	Down	Down

Amount of Stoddard in Fuel Tank: 12.3 gallons (93% of Useable Capacity)

Intended location of Impact Point on Test Vehicle Left Side: 37 inches forward of the wheelbase mid-point.

Table 3 Moving Deformable Barrier (MDB) Data

Overall Width of Framework Carriage: 49.2 inches
Overall Length of MDB: 162.0 inches
Wheelbase of Framework Carriage: 102.0 inches
Tread Width of Framework Carriage: 74.0 inches
CG Location Rearward of Front Axle: 43.3 inches
CG Location Right of Barrier Centerline 0.1 inches

MDB Test Weight:

Left Front	864 lbs.	Left Rear	638 lbs.
Right Front	869 lbs.	Right Rear	640 lbs.
Total Front Weight	1733 lbs.		
Total Rear Weight	1278 lbs.		
Total Test Weight	3011 lbs.		

Table 4 Post-Impact Data

Test Number:	941019
Test Date:	10/19/94
Test Time:	1605
Test Type:	Moving Barrier Side Impact
Impact Angle:	270°
Ambient Temperature at Impact Area:	62° F
Temperature in Occupant Compartment:	68° F
Impact Velocity:	Primary = 33.0 mph Secondary = 33.0 mph (Specified Range = 32.4 to 33.4 mph)
Distance from Vehicle to Barrier:	Entering Velocity Trap = 14.0 inches Existing Velocity Trap = 2.0 inches

Table 5 Test Conditions

Test Number: 941019
Date of Test: 10/19/94
Time of Test: 1605
Ambient Temperature
at Impact Area: 62° F
Temperature in
Occupant Compartment: 68° F

Vehicle Data

	<u>Actual</u>	<u>Intended</u>
Subject Vehicle Test Weight (lbs.):	2896	2886 - 2896
Moving Deformable Barrier Test Weight (lbs.):	3011	3000 - 3015
Moving Deformable Barrier Velocity (mph) ¹ :	33.0	32.4 - 33.4
Impact Point (in.) ² :	36.6	37.0

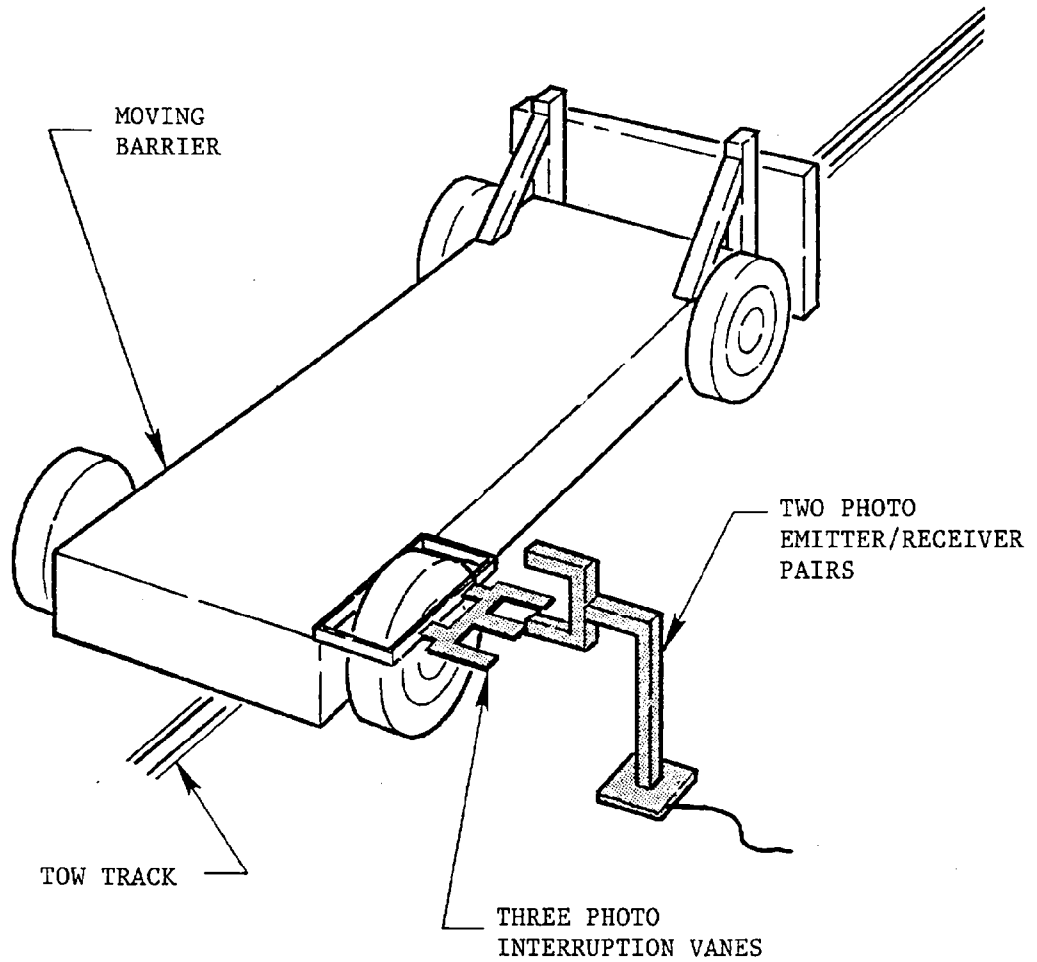
¹ As measured over final 12 inches of travel.

² As measured forward of the subject vehicle's wheelbase mid-point.

Table 5 Test Conditions, Cont'd.

	<u>Dummy Information</u>	
	<u>Driver</u>	<u>Left Rear Passenger</u>
Type:	SID	SID
Serial No.:	016	268
Instrumentation:		
Head Accelerometers:	3	3
Shoulder Accelerometers:		
Shoulder Displacement:		
Upper Spine Accelerometers:		
Upper Rib Accelerometers:	2	2
Center Rib Accelerometers:		
Lower Rib Accelerometers:	2	2
Rib Displacement:		
Lower Spine Accelerometers:	2	2
Upper Abdomen Accelerometers:		
Lower Abdomen Accelerometers:		
Abdomen Displacement:		
Pelvis Accelerometers:	1	1
Restraint System:	3-Point Unibelt	3-Point Unibelt

Figure 1 Impact Velocity Measurement System



The final vane clears the final emitter/receiver pair 2 inches before impact.

The vanes have 12-inch spacing.

Figure 2 Vehicle Accelerometer Placement

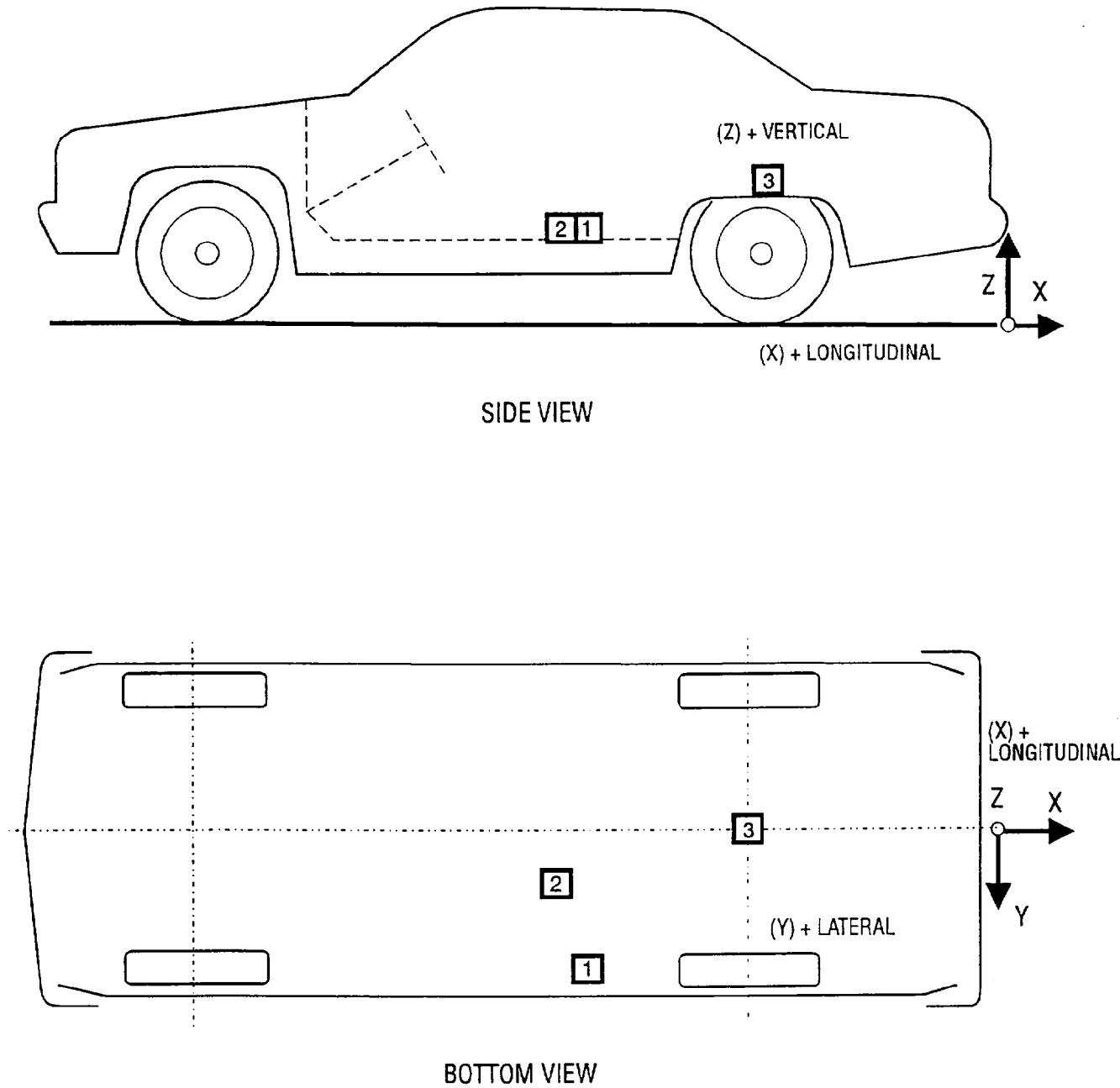
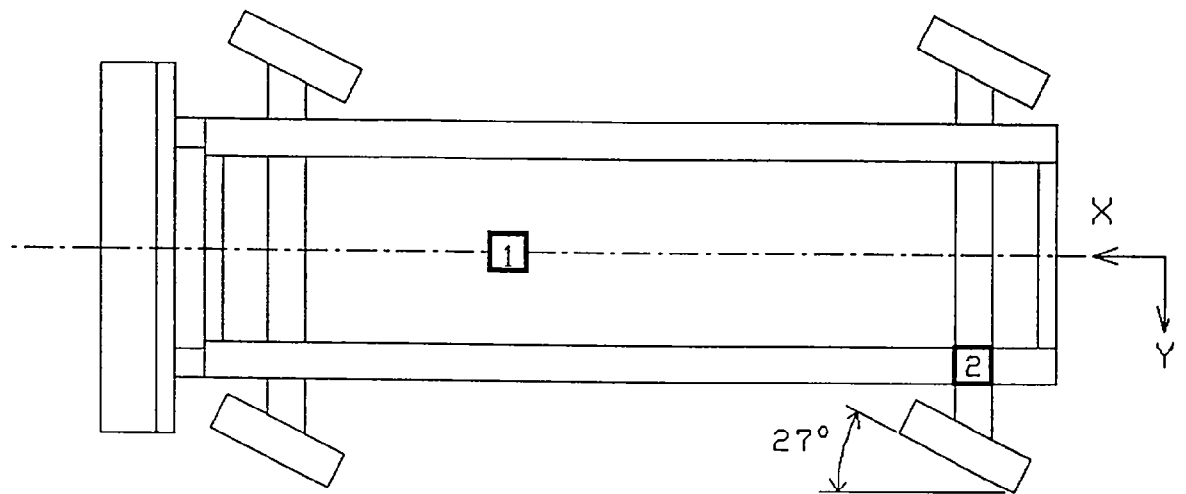


Table 6 Vehicle Accelerometer Locations and Data Summary

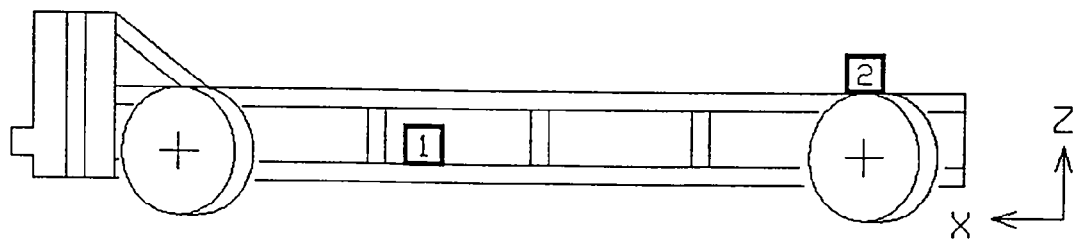
TEST NUMBER: 941019 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 RIGHT REAR SILL LONGITUDINAL	64.1 in	27.1 in	12.4 in	6.7 g @ 9.3 ms	4.7 g @ 48.2 ms
LATERAL				20.2 g @ 37.2 ms	1.9 g @ 198.0 ms
VERTICAL				7.9 g @ 14.1 ms	5.4 g @ 52.3 ms
RESULTANT				20.4 g @ 37.1 ms	
2 RIGHT REAR SEAT LATERAL	68.0 in	20.0 in	11.1 in	19.6 g @ 37.2 ms	1.6 g @ 198.2 ms
3 REAR FLOORPAN OVER AXLE	37.3 in	0.0 in	18.0 in		
LONGITUDINAL				5.8 g @ 18.9 ms	3.3 g @ 32.6 ms
LATERAL				22.9 g @ 28.2 ms	2.1 g @ 101.0 ms
VERTICAL				8.8 g @ 10.3 ms	6.3 g @ 16.4 ms
RESULTANT				23.1 g @ 28.2 ms	

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

Figure 3 Moving Barrier Accelerometer Placement



TOP VIEW



SIDE VIEW

Table 7 Moving Deformable Barrier Accelerometer Locations and Data Summary

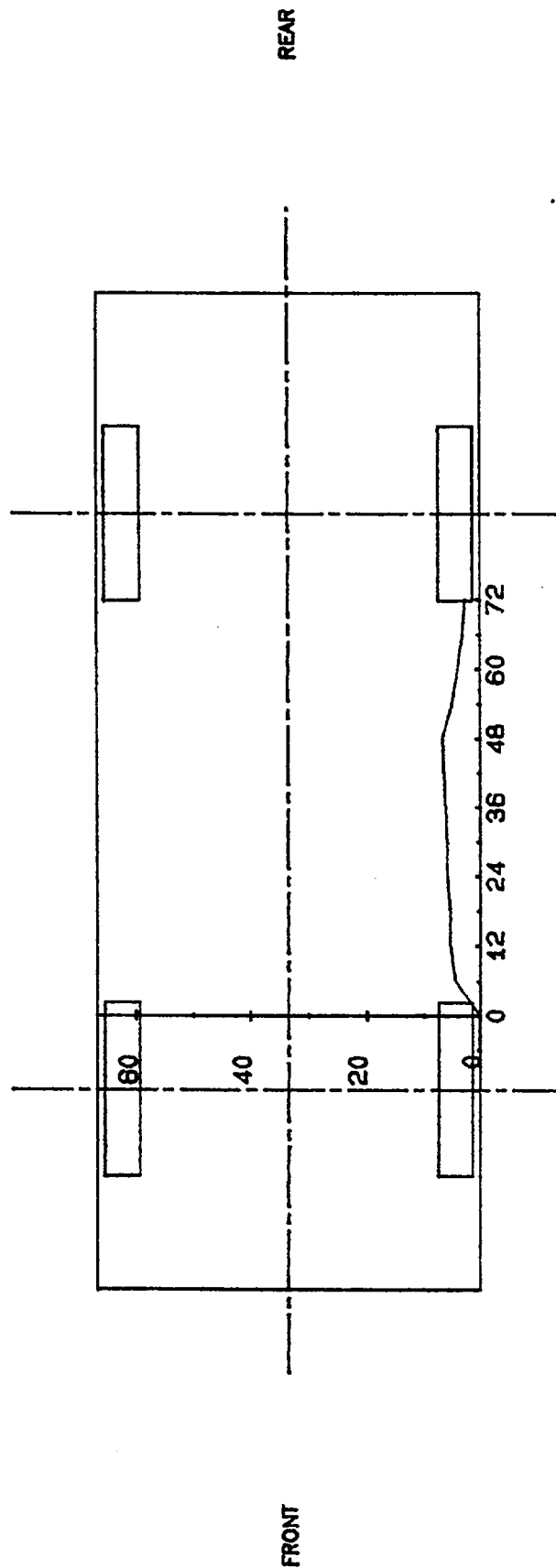
TEST NUMBER: 941019 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 CENTER OF GRAVITY	72.9 in	0.0 in	12.5 in		
LONGITUDINAL	26.5 g	@	44.8 ms	0.5 g	@ 299.2 ms
LATERAL ¹	0.0 g	@	1.7 ms	27.9 g	@ 34.2 ms
VERTICAL	17.2 g	@	128.8 ms	9.9 g	@ 142.9 ms
RESULTANT ¹	37.3 g	@	44.6 ms		
2 LEFT FRAME RAIL OVER REAR AXLE	15.1 in	-25.1 in	25.0 in		
LONGITUDINAL	19.8 g	@	33.1 ms	3.9 g	@ 118.6 ms
LATERAL	4.7 g	@	27.0 ms	4.0 g	@ 113.4 ms

REFERENCE: X: + FORWARD FROM REAR POINT OF FRAME
Y: + RIGHTWARD FROM BARRIER CENTERLINE
Z: + UPWARD FROM GROUND LEVEL

¹See DATA ACQUISITION EXPLANATIONS

Figure 4

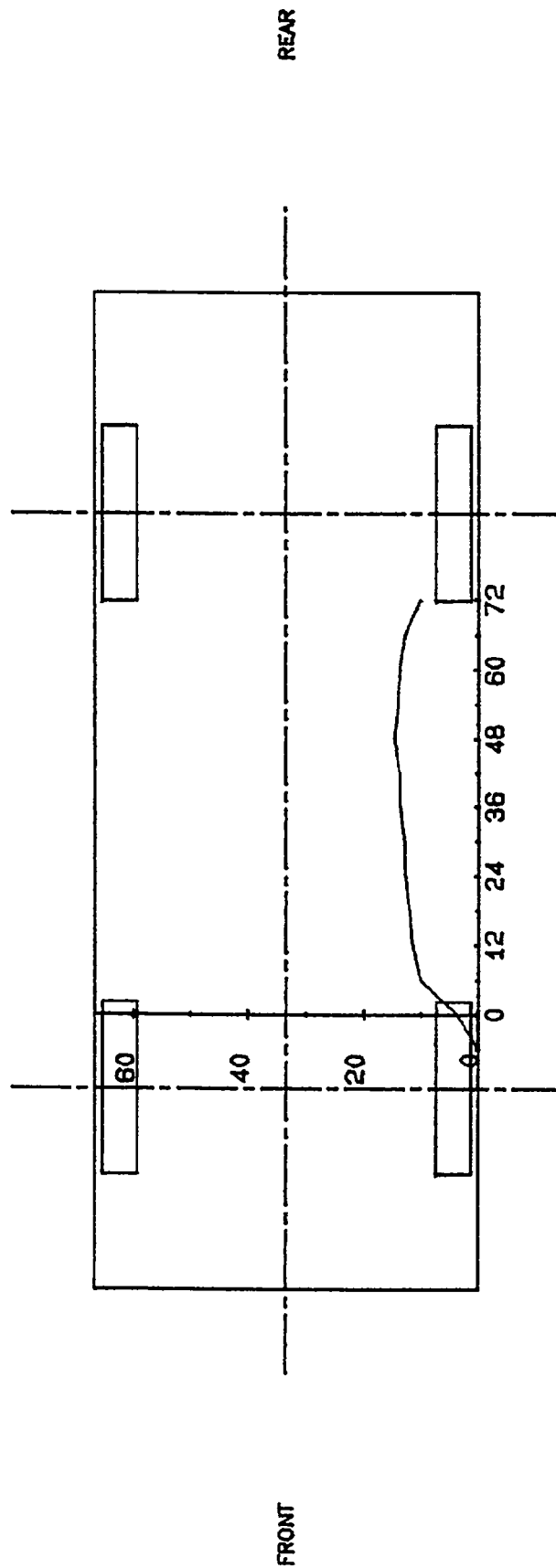
VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS AXLE HEIGHT, WHICH IS 10.6 IN. ABOVE GROUND LEVEL
(0,0) EQUALS PROJECTED IMPACT POINT

Figure 4, Cont'd.

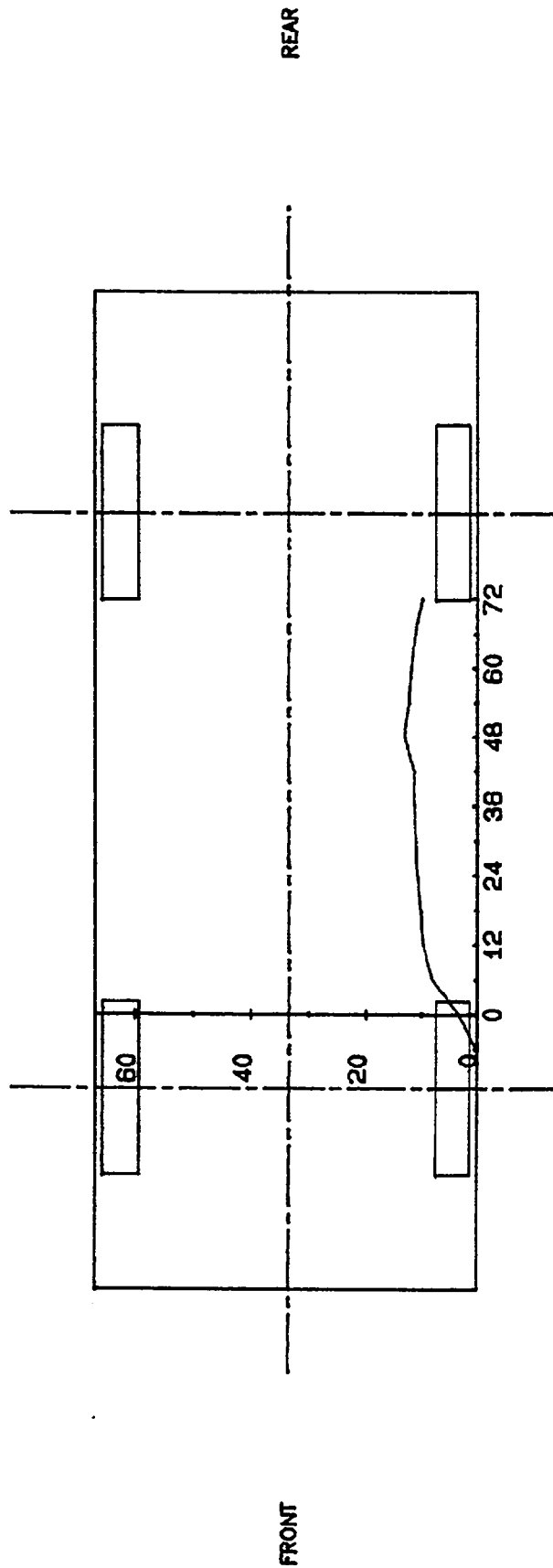
VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS H-POINT HEIGHT WHICH IS 20.2 IN. ABOVE GROUND LEVEL
(0,0) EQUALS PROJECTED IMPACT POINT

Figure 4, Cont'd.

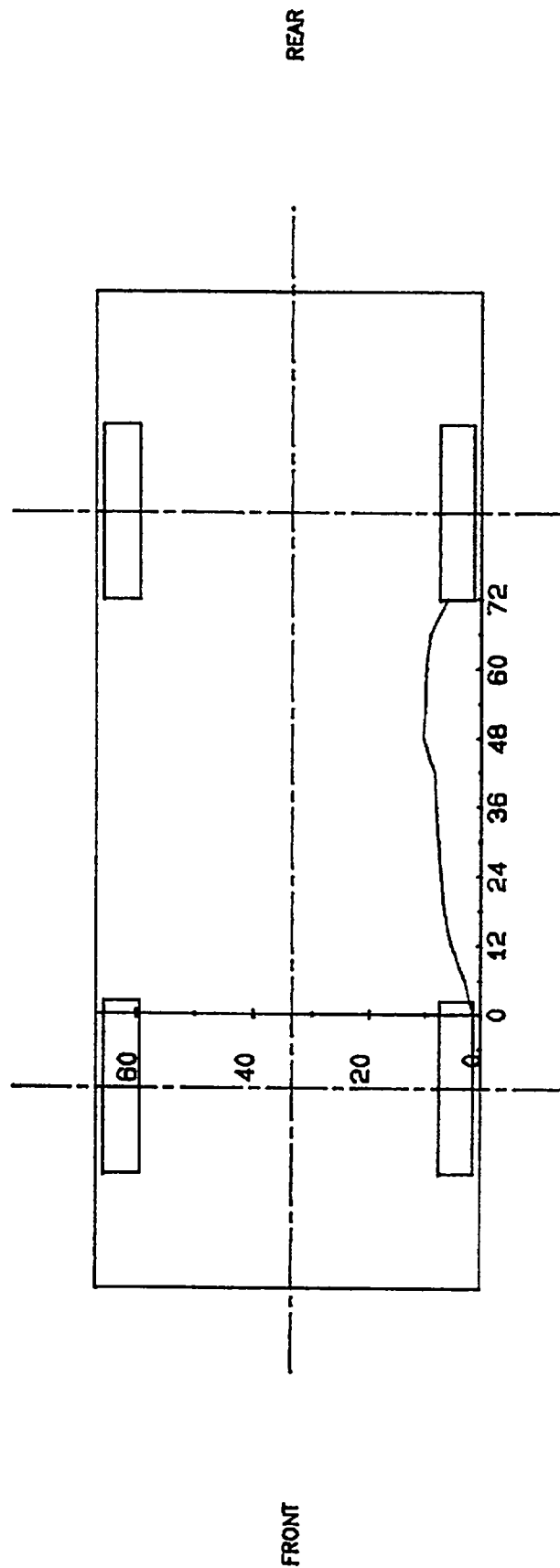
VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS MID DOOR HEIGHT WHICH IS 23.2 IN. ABOVE GROUND LEVEL
(0,0) EQUALS PROJECTED IMPACT POINT

Figure 4, Cont'd.

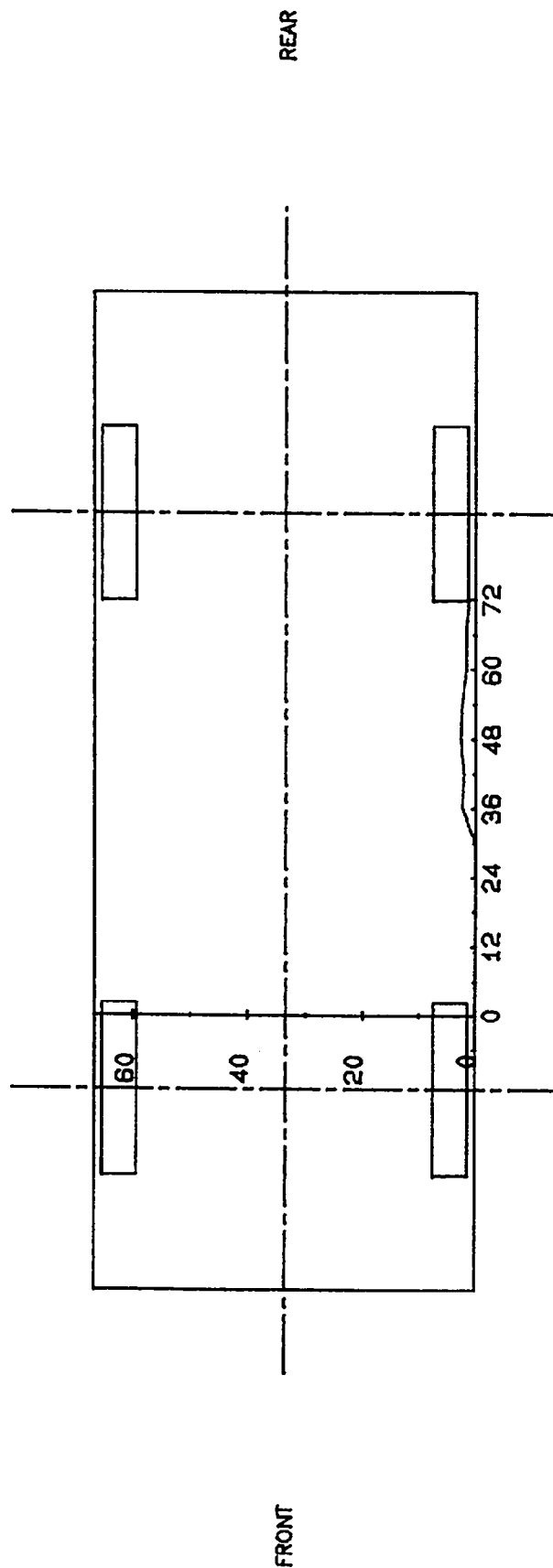
VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW SILL HEIGHT WHICH IS 34.2 IN. ABOVE GROUND LEVEL
(0,0) EQUALS PROJECTED IMPACT POINT

Figure 4, Cont'd.

VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW TOP HEIGHT WHICH IS 52.6 IN. ABOVE GROUND LEVEL
(0,0) EQUALS PROJECTED IMPACT POINT

TABLE 8 VEHICLE EXTERIOR PROFILES AND STATIC CRUSH
ZERO DISTANCE AT PROJECTED IMPACT POINT

LOCATION	HEIGHT (in)	PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE ¹)														
AXLE HEIGHT	10.6	-6.0	0.0	6.0	12.0	18.0	24.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0	
H-POINT	20.2	0.0	0.0	17.2	17.2	17.2	17.1	17.0	16.9	17.0	16.9	16.9	17.0	16.9	17.0	
MID DOOR	23.2	0.0	14.8	14.8	14.8	14.7	14.7	14.8	14.6	14.9	14.8	14.9	14.8	14.8	15.0	
WINDOW SILL	34.2	0.0	14.6	14.7	14.6	14.7	14.7	14.7	14.6	14.8	14.8	14.8	14.7	14.7	14.9	
WINDOW TOP	52.6	18.3	17.8	17.6	17.3	17.2	17.1	17.1	17.0	17.2	17.2	17.3	17.1	17.0	17.2	
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.2	26.7	26.6	26.9	26.9	27.1	27.6	

LOCATION	HEIGHT (in)	POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE ¹)														
AXLE HEIGHT	10.6	0.0	0.0	21.6	22.4	22.4	22.7	22.8	23.0	23.4	23.6	21.7	20.8	19.8	19.6	
H-POINT	20.2	0.0	18.5	24.7	26.2	26.8	27.4	27.6	28.1	28.5	29.3	28.7	28.3	27.4	24.9	
MID DOOR	23.2	0.0	17.9	22.6	24.2	24.8	25.3	25.6	25.8	26.0	27.7	26.9	26.4	25.6	24.6	
WINDOW SILL	34.2	19.5	19.1	20.4	22.6	23.7	24.2	24.6	25.0	25.4	27.5	27.1	26.7	26.0	23.0	
WINDOW TOP	52.6		0.0	0.0	0.0	0.0	0.0	0.0	28.5	28.6	29.1	29.1	28.5	28.6	28.7	

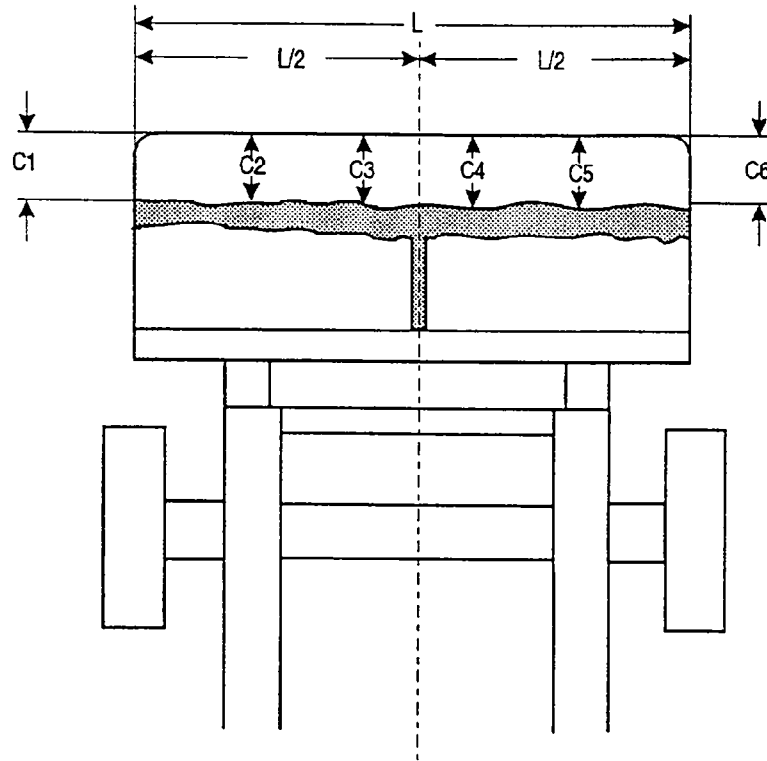
LOCATION	HEIGHT (in)	STATIC CRUSH (in)														
AXLE HEIGHT	10.6	0.0	0.0	4.4	5.2	5.2	5.6	5.8	6.1	6.4	6.7	4.8	3.8	2.9	2.6	
H-POINT	20.2	0.0	3.7	9.9	11.4	12.0	12.7	12.8	13.5	13.6	14.5	13.8	13.5	12.6	9.9	
MID DOOR	23.2	0.0	3.3	7.9	9.6	10.1	10.6	10.9	11.2	11.2	12.9	12.1	11.7	10.9	9.7	
WINDOW SILL	34.2	1.2	1.3	2.8	5.3	6.5	7.1	7.5	8.0	8.2	10.3	9.8	9.6	9.0	5.8	
WINDOW TOP	52.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	1.9	2.5	2.2	1.6	1.5	1.1	

Column readings are front to rear from left to right.
All measurements are in inches.

Impact point is 37 inches forward of driver's side wheelbase midpoint.

¹Reference plane is parallel to and 48 inches from the vehicle's longitudinal centerline

Figure 5 Moving Deformable Barrier Face Crush



NOTES: L is pre-test length of contact surface.
 C1 through C6 are spaced equally apart.
 CL is vehicle centerline.
 All measurements are in inches.

	Pre-test	Post-test	Crush
L	66.0		
C1	11.5	14.4	2.9
C2	10.9	12.4	1.5
C3	10.9	12.3	1.4
C4	10.9	12.6	1.7
C5	10.9	12.5	1.6
C6	11.7	15.0	3.3
CL	10.9	12.1	1.2

TEST NO. 941019

TABLE 9 MOVING DEFORMABLE BARRIER FACE STATIC CRUSH
ZERO DISTANCE AT BARRIER CENTERLINE¹

LOCATION	HEIGHT in	32.0	28.0	24.0	20.0	16.0	12.0	8.0	4.0	0.0	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0
		PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE ¹)																
TOP OF FACE	32.0	14.9	14.8	14.8	14.6	14.8	14.8	14.8	14.6	14.8	14.8	14.7	14.8	14.8	14.8	14.8	14.8	14.8
MID-FACE	22.0	14.9	14.9	14.9	14.8	14.8	14.8	14.9	14.8	14.9	14.9	14.8	14.9	14.9	14.9	14.9	15.0	14.9
BUMPER	17.0	11.5	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	11.0	11.7

LOCATION	HEIGHT in	POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE ¹)																
TOP OF FACE	32.0	19.3	17.9	16.2	15.6	15.4	15.4	15.3	15.3	15.0	15.1	15.1	15.0	14.9	14.9	14.8	15.3	17.6
MID-FACE	22.0	17.2	16.5	16.0	15.9	15.7	15.4	15.4	15.4	15.1	15.1	15.2	15.3	15.1	15.1	15.2	15.6	16.3
BUMPER	17.0	14.4	13.5	12.5	12.4	12.3	12.4	12.3	12.2	12.1	12.4	12.6	12.7	12.4	12.5	12.9	13.5	15.0

LOCATION	HEIGHT in	STATIC CRUSH (IN)																
TOP OF FACE	32.0	4.4	3.1	1.4	1.0	0.6	0.6	0.5	0.5	0.4	0.3	0.4	0.2	0.1	0.1	0.0	0.5	2.8
MID-FACE	22.0	2.3	1.6	1.1	1.1	0.9	0.6	0.5	0.5	0.3	0.2	0.4	0.4	0.2	0.2	0.3	0.6	1.4
BUMPER	17.0	2.9	2.6	1.6	1.5	1.4	1.5	1.4	1.3	1.2	1.5	1.7	1.8	1.5	1.6	2.0	2.5	3.3

All measurements are in inches.

¹Column readings are left to right across barrier face from left to right.

²Reference plane is 32 inches forward of the rear surface of the deformable barrier face.

Section 3.0

FMVSS 214 Data

Table 10 Dummy Data Summary

TEST NUMBER: 941019

DRIVER DUMMY SERIAL NUMBER: 016

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

HEAD ACCELERATION

LONGITUDINAL ¹	26.6 g	@	66.9 ms	26.6 g	@	55.8 ms
LATERAL ¹	58.9 g	@	48.4 ms	11.5 g	@	152.8 ms
VERTICAL ¹	21.9 g	@	15.4 ms	50.8 g	@	52.6 ms
RESULTANT ¹	72.5 g	@	48.4 ms			
HIC	250 from 39.0 to 75.0 ms ¹					

LOWER SPINE ACCELERATION

LATERAL (P) ¹	60.9 g	@	33.1 ms	20.5 g	@	63.1 ms
LATERAL (R)	59.5 g	@	33.1 ms	20.7 g	@	63.1 ms

LEFT UPPER RIB ACCELERATION

LATERAL (P) ¹	64.5 g	@	24.4 ms	21.0 g	@	72.5 ms
LATERAL (R) ¹	64.4 g	@	25.0 ms	19.8 g	@	73.1 ms

LEFT LOWER RIB ACCELERATION

LATERAL (P) ¹	52.5 g	@	37.5 ms	19.6 g	@	75.0 ms
LATERAL (R)	50.1 g	@	37.5 ms	20.0 g	@	75.0 ms
TTI d (P)	63					
TTI d (R)	62					

PELVIS ACCELERATION

LATERAL ¹	81 g	@	31.3 ms	13 g	@	78.8 ms
----------------------	------	---	---------	------	---	---------

POSITIVE DIRECTION

LONGITUDINAL: REARWARD
LATERAL: RIGHTWARD
VERTICAL: UPWARD

NEGATIVE DIRECTION

LONGITUDINAL: FORWARD
LATERAL: LEFTWARD
VERTICAL: DOWNWARD

¹See DATA ACQUISITION EXPLANATION

Table 10 Dummy Data Summary, Cont'd.

TEST NUMBER: 941019

PASSENGER DUMMY SERIAL NUMBER: 268

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

HEAD ACCELERATION

LONGITUDINAL	19.9 g	@ 46.9 ms	6.3 g	@ 159.0 ms
LATERAL	89.0 g	@ 48.5 ms	11.7 g	@ 70.7 ms
VERTICAL	57.4 g	@ 55.7 ms	35.9 g	@ 48.2 ms
RESULTANT	95.1 g	@ 48.5 ms		
HIC	536 from 45.1 to 62.0 ms			

LOWER SPINE ACCELERATION

LATERAL (P)	61.1 g	@ 43.1 ms	27.4 g	@ 70.0 ms
LATERAL (R)	59.2 g	@ 43.1 ms	27.5 g	@ 70.0 ms

LEFT UPPER RIB ACCELERATION

LATERAL (P)	52.7 g	@ 39.4 ms	14.2 g	@ 114.4 ms
LATERAL (R) ¹	52.0 g	@ 39.4 ms	14.3 g	@ 76.9 ms

LEFT LOWER RIB ACCELERATION

LATERAL (P)	59.8 g	@ 38.8 ms	20.4 g	@ 75.0 ms
LATERAL (R)	59.1 g	@ 38.8 ms	20.2 g	@ 75.0 ms
TTI d (P)	60			
TTI d (R)	59			

PELVIS ACCELERATION

LATERAL	75 g	@ 34.4 ms	10 g	@ 73.8 ms
---------	------	-----------	------	-----------

POSITIVE DIRECTION

LONGITUDINAL: REARWARD
LATERAL: RIGHTWARD
VERTICAL: UPWARD

NEGATIVE DIRECTION

LONGITUDINAL: FORWARD
LATERAL: LEFTWARD
VERTICAL: DOWNWARD

¹See DATA ACQUISITION EXPLANATION

Table 11 Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	<u>Driver #016</u>	<u>Passenger #268</u>
Head	None	C-pillar
Chest	None	None
Abdomen	None	None
Left Knee	Left front door inner panel	Left rear door inner panel
Right Knee	None	None

Door Opening:

	<u>Left</u>	<u>Right</u>
Front	NA	Easy
Rear	NA	Easy

<u>MDB distance from</u>	<u>Horizontal</u>	<u>Vertical</u>
<u>target impact point:</u>	0.4 inches rearward	0.2 inches downward

Seat Movement:

	<u>Seat Back Failure</u>	<u>Seat Shift</u>
Front	None	None
Rear	None	None

Pillar Performance: No separation

Sill Separation: No separation

Glazing Damage: Both of the left side windows shattered and the left side of the windshield cracked on impact.

Other Notable Impact Effects: None

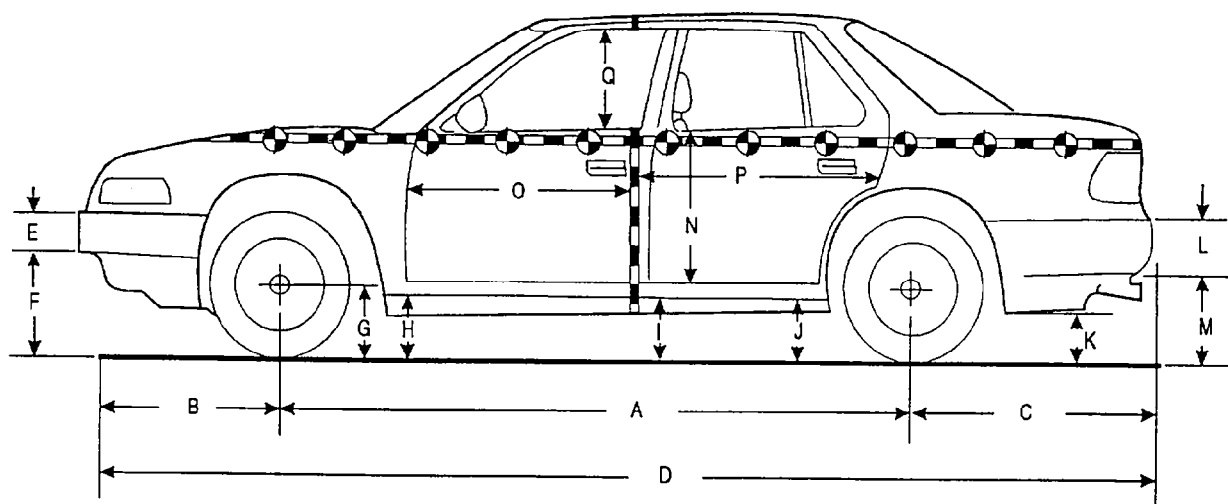
Section 4.0

Vehicle, Occupant, and Camera Measurements

Figure 6 Pre-Test and Post-Test Measurements

Vehicle: 1994 Subaru Impreza 4-door sedan

Test Date: 10/19/94 NHTSA No.: CR5502



LEFT SIDE VIEW

	Pre-Test	Post-Test	Change		Pre-Test	Post-Test	Change
A	99.4	98.1	1.3	J	7.2	7.6	-0.4
B	34.8	35.9	-1.1	K	10.0	11.3	-1.3
C	38.0	38.2	-0.2	L	7.6	7.6	0.0
D	172.2	172.3	-0.1	M	12.0	13.5	-1.5
E	6.5	6.5	0.0	N	26.1	21.6	4.5
F	9.1	8.7	0.4	O	25.4	27.0	-1.6
G	10.7	10.9	-0.2	P	54.2	51.6	2.6
H	7.9	8.6	-0.7	Q	14.7	16.1	-1.4
I	7.4	8.6	-1.2				

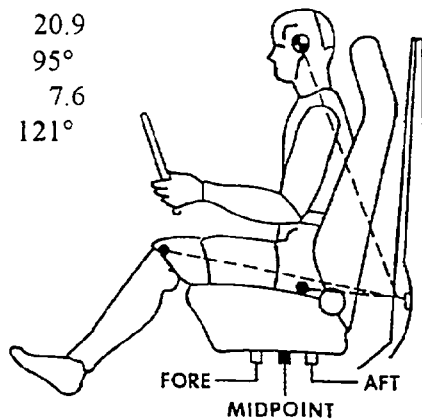
All distance measurements are in inches.

Figure 7 Dummy and Seat Positioning Data

Vehicle: 1994 Subaru Impreza 4-door sedan
 Seat Type: Bucket
 Adjuster Type: Manual
 Bucket Seat Back type: Adjustable reclining
 Technicians: D. Summers, K. Watkins, and P. Cummins
 Positioning Date: 10/19/94
 Ambient Temperature: 62° F
 Positioning Time: 1400

Driver Dummy¹ #016; Type: SID

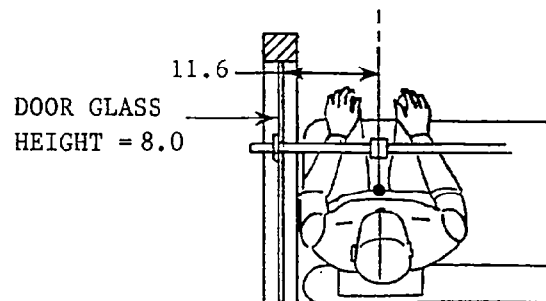
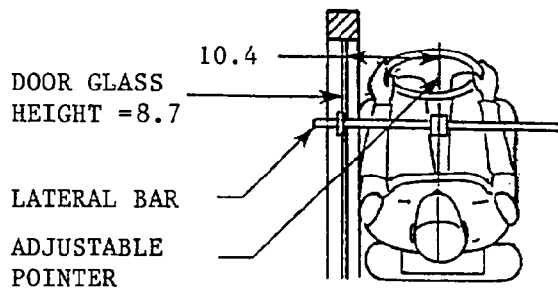
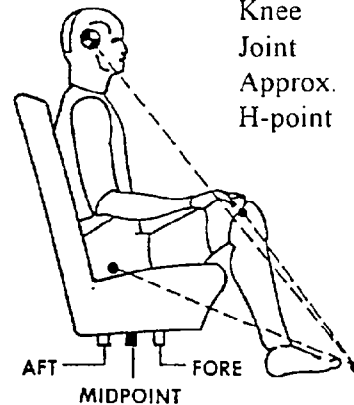
Head 20.0
 Target 0°
 Knee 20.9
 Joint 95°
 Approx. 7.6
 H-point 121°



Left Rear

Passenger Dummy² #268; Type: SID

Head 13.8
 Target 11°
 Knee 27.8
 Joint 99°
 Approx. 16.8
 H-point 131°



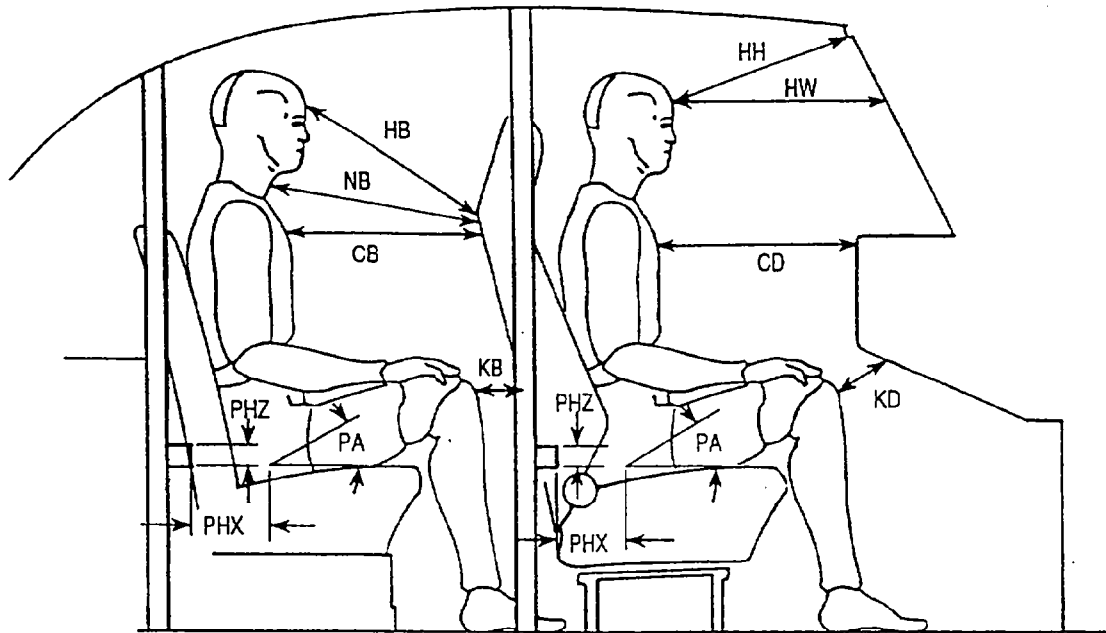
¹ Driver dummy measurements are referenced to the top of the front door striker.

² Passenger dummy measurements are referenced to the top of the rear door striker.

All distance measurements are in inches.

All angles are referenced to vertical.

Figure 8 Dummy Longitudinal Clearance Measurements



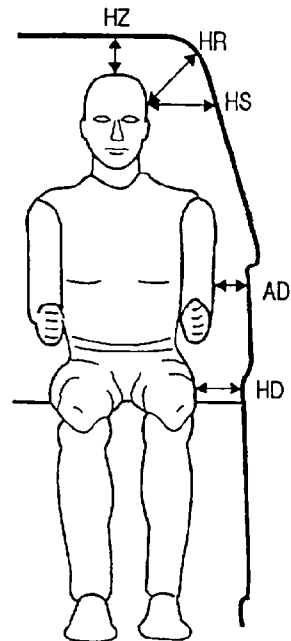
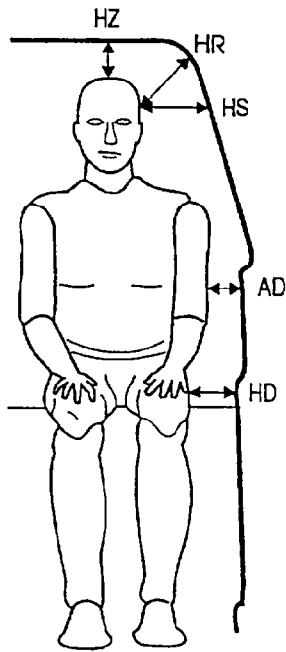
	Driver	Left Rear Passenger
HH	13.4	NA
HW	19.2	NA
CD	20.1	NA
CS	12.2	NA
KDL	5.2	NA
KDR	5.7	NA
PA	25°	22°
PHX	6.1	11.9
PHZ	4.7	12.2
HB	NA	25.0
NB	NA	NA
CB	NA	17.4
KBL	NA	4.1
KBR	NA	4.1

Note: For 2-door vehicles, the rear passenger's PHX and PHZ measurements are referenced to the front door striker.

All distance measurements are in inches.

All angles are referenced to horizontal.

Figure 9 Dummy Lateral Clearance Measurements



	Driver	Left Rear Passenger
HR	6.3	7.0
HS	8.2	6.6
AD	2.8	3.3
HD	6.7	7.1
HZ	3.7	2.8

All distance measurements are in inches.

Figure 10 Camera Positions

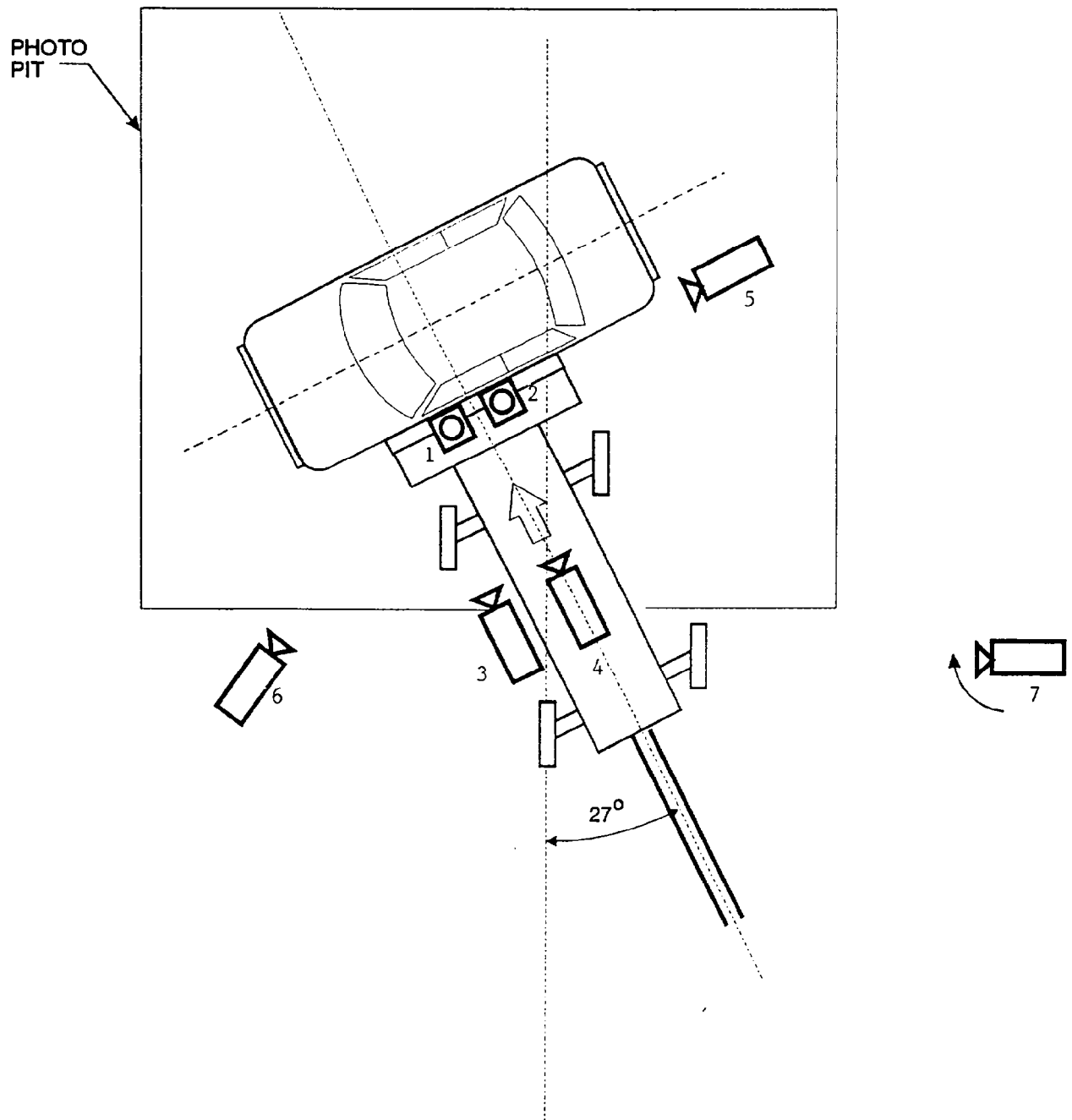


Table 12 Camera Information

Camera Number	Location	Type	Lens (mm)	Speed (fps)	Purpose of Camera Data
1	Overhead wide	Photosonic	8.5	500	Vehicle crush
2	Overhead tight	Photosonic	25	508	Vehicle crush
3	Moving barrier tight	Photosonic	25	520	Impact alignment
4	Moving barrier center	Photosonic	13	498	Impact alignment
5	Right wide	Photosonic	13	500	Vehicle crush
6	Left medium tight	Photosonic	25	500	Vehicle crush
7	Right panning	Beaulieu	120	24	Vehicle dynamics
8	Documentation	Beaulieu	120	24	Real-time documentation

Appendix A

Photographs

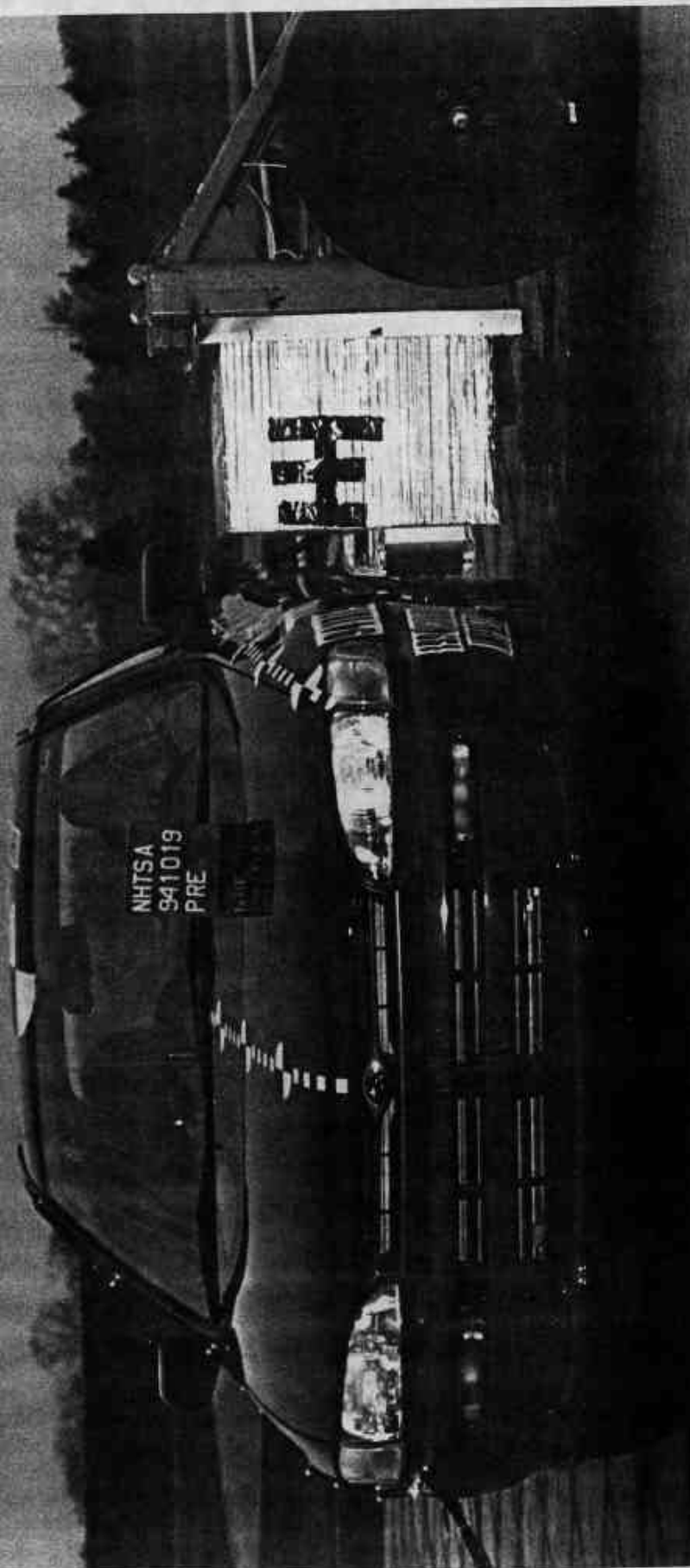


Figure A-1 Pre-test Front View
A-2

941019

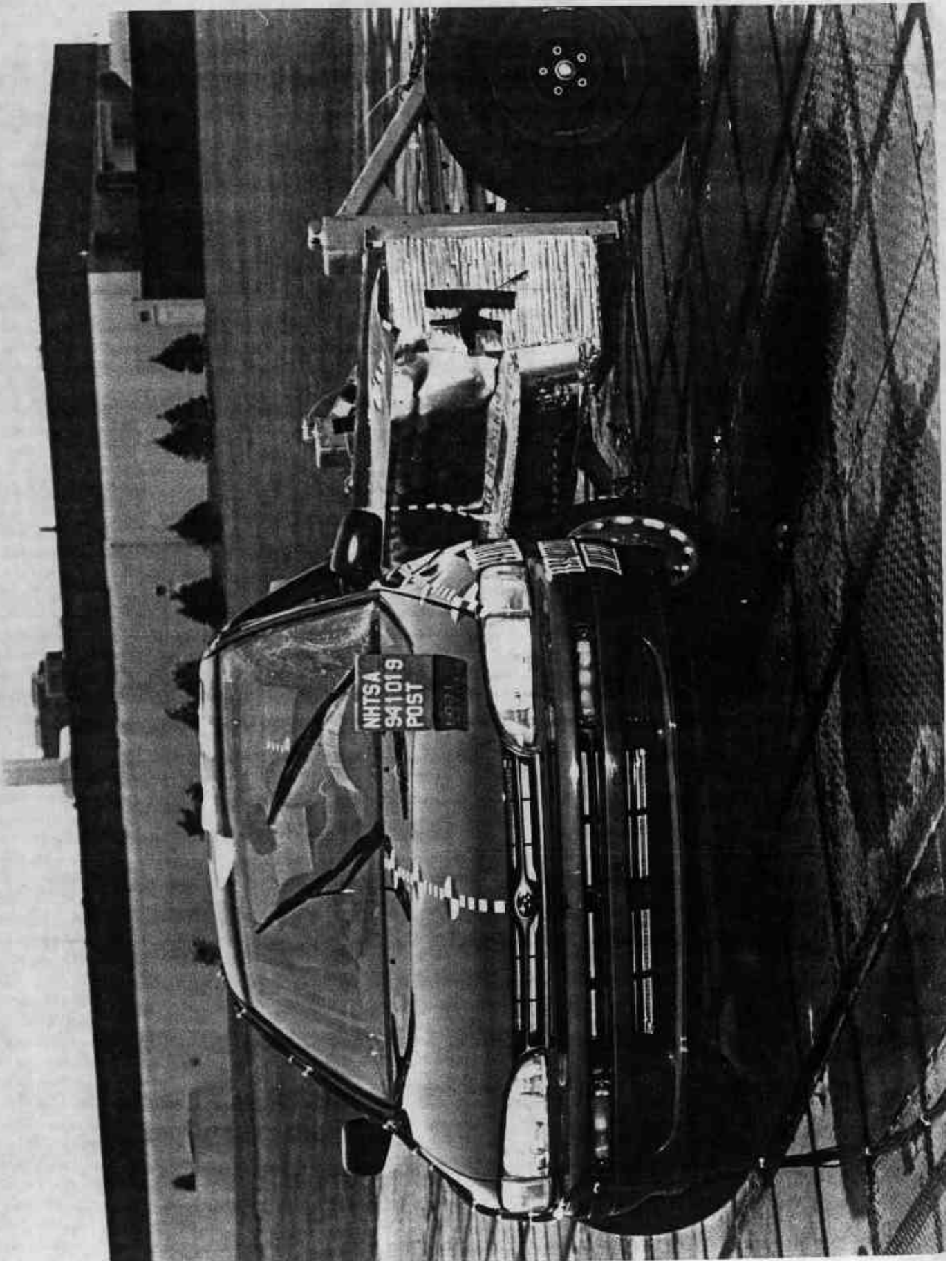


Figure A-2 Post-test Front View
A-3

941019

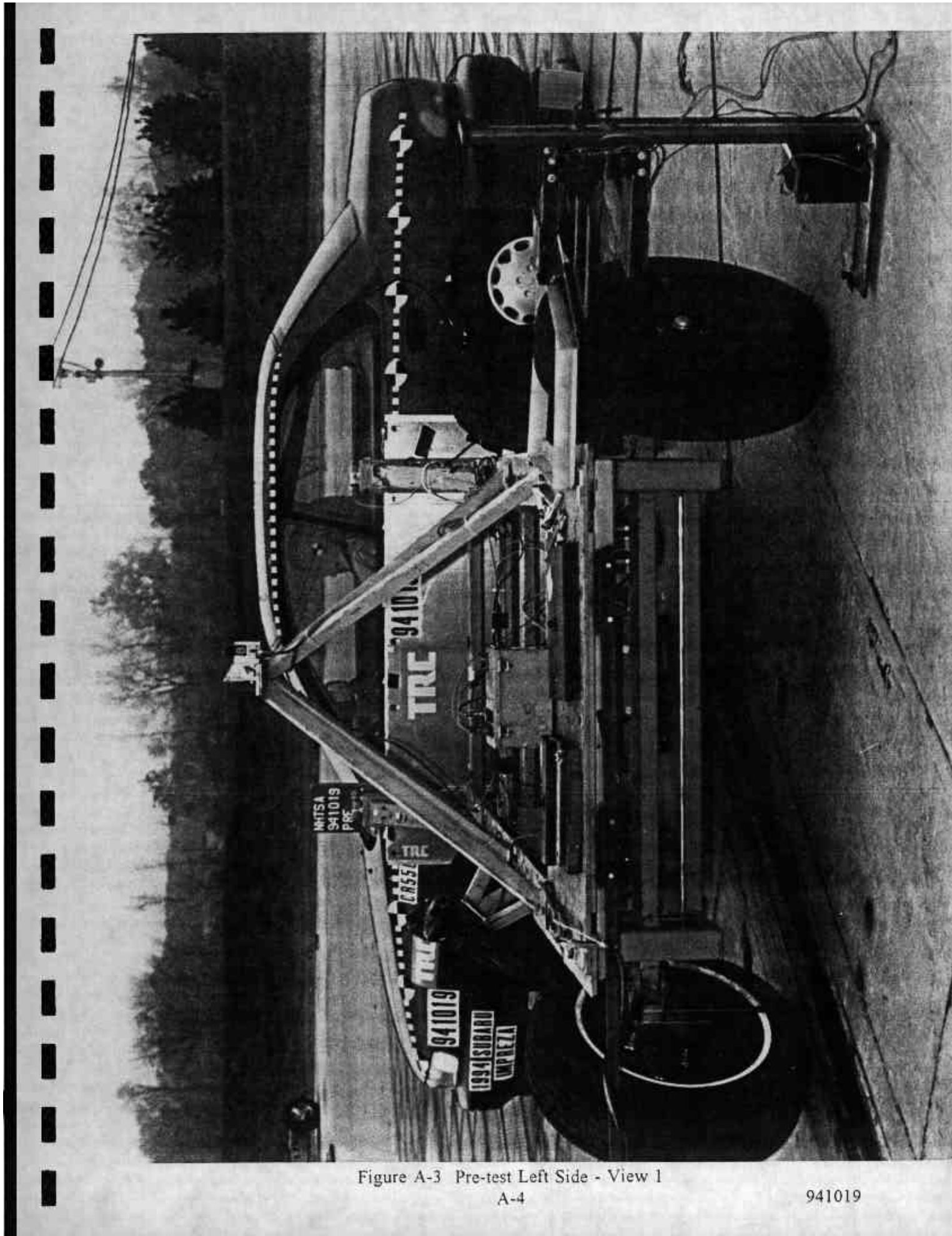


Figure A-3 Pre-test Left Side - View 1
A-4

941019

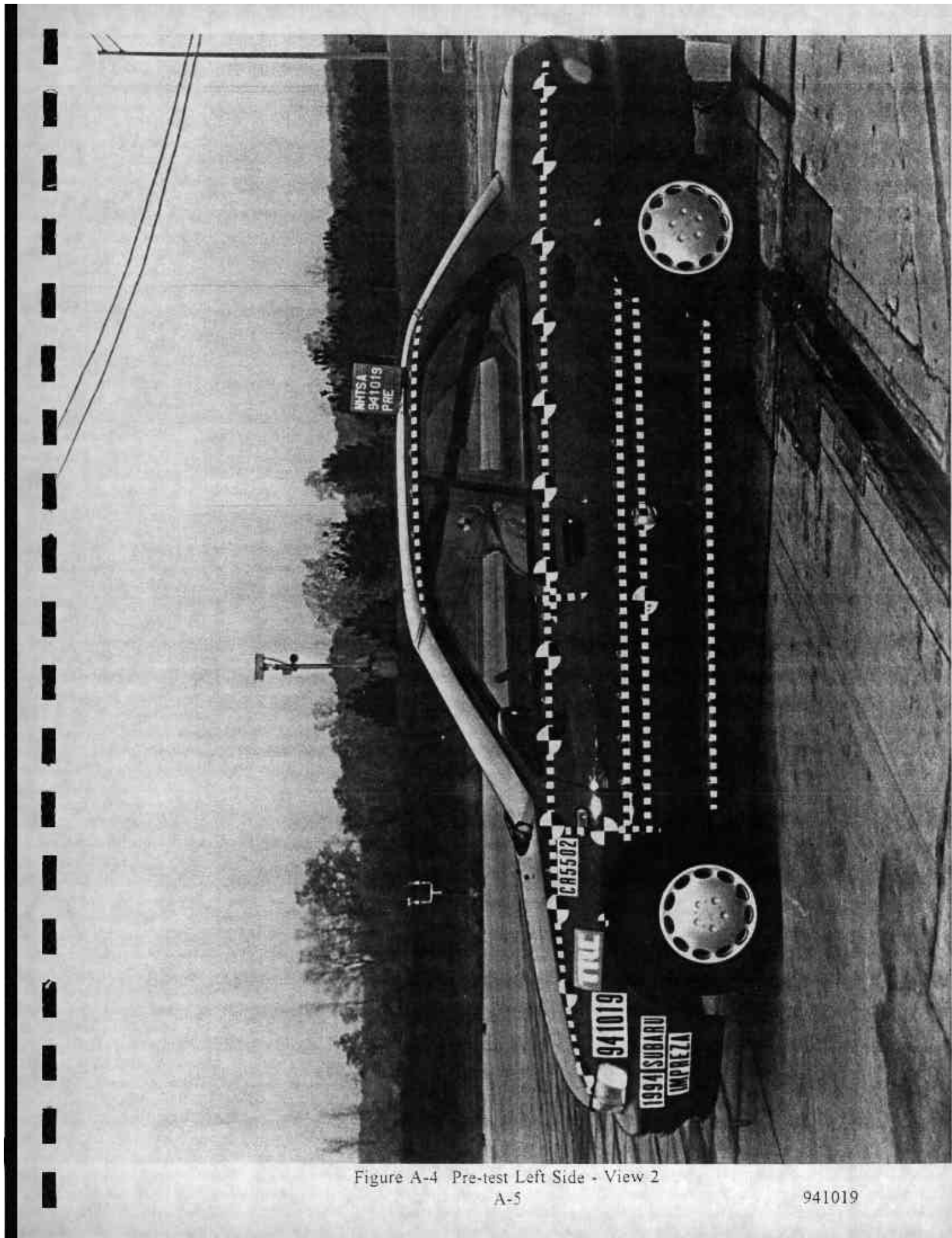


Figure A-4 Pre-test Left Side - View 2
A-5

941019

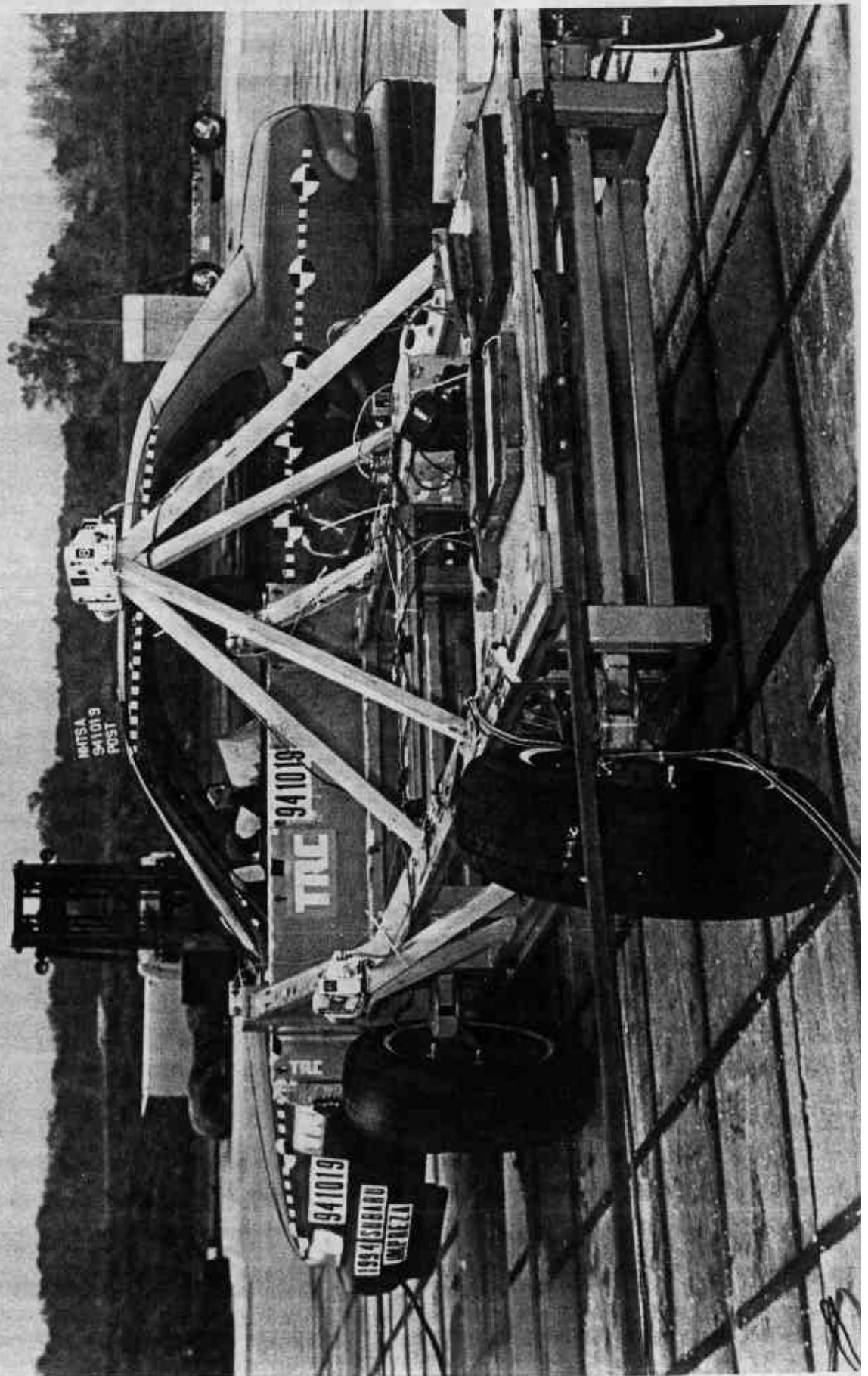


Figure A-5 Post-test Left Side-- View 1
A-6

941019

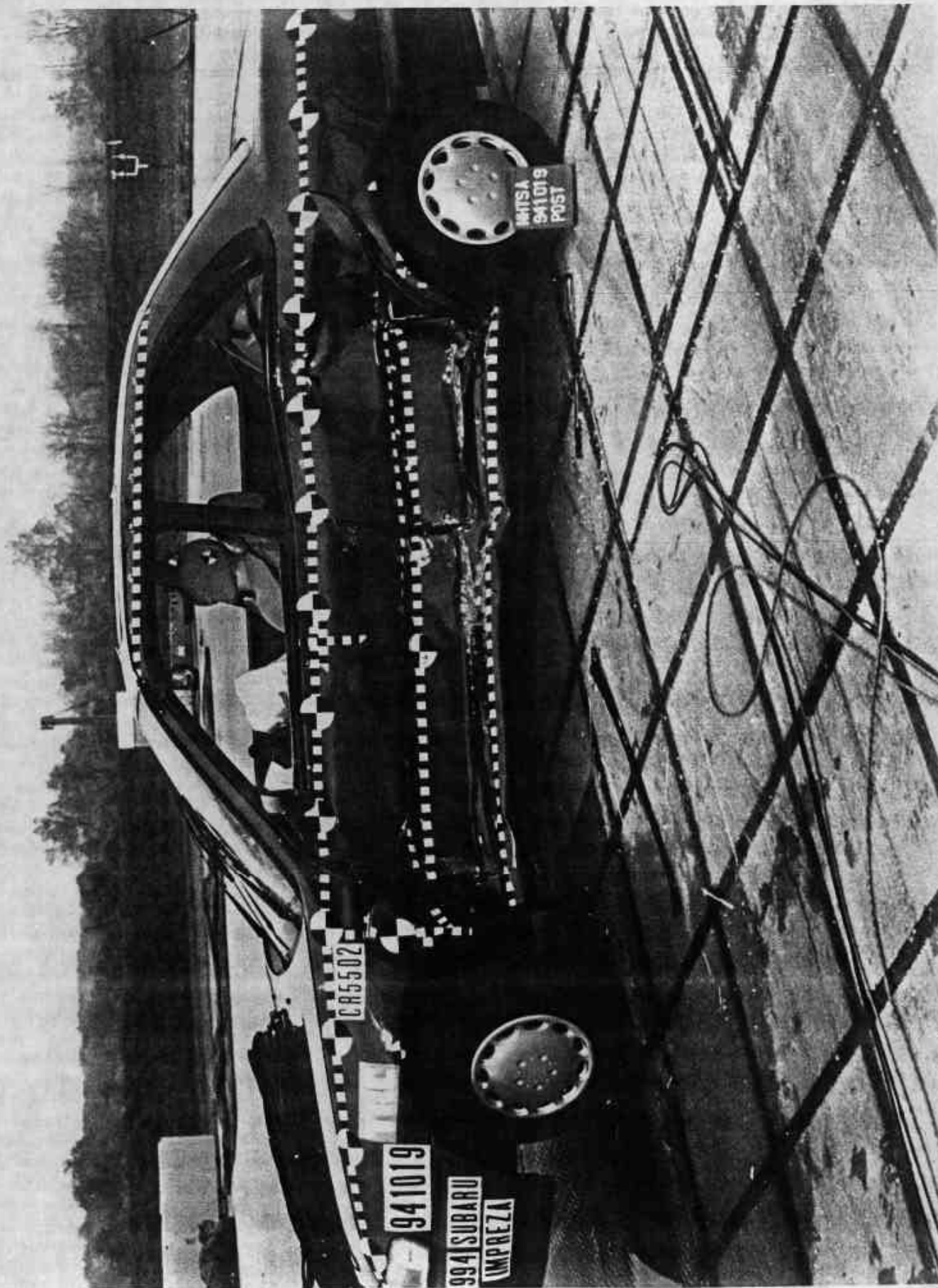


Figure A-6 Post-test Left Side - View 2

A-7

941019

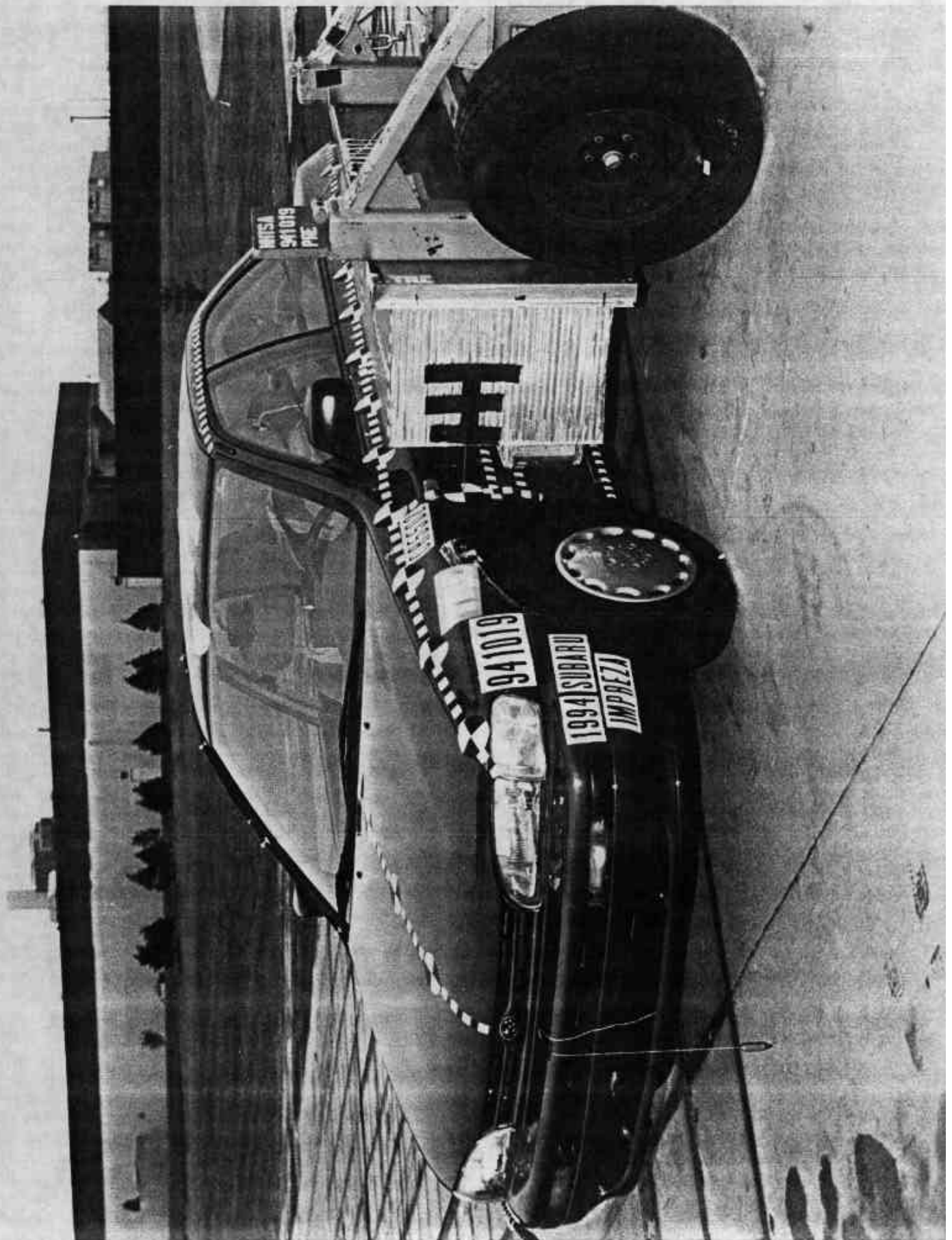


Figure A-7 Pre-test Left Front View
A-8

941019

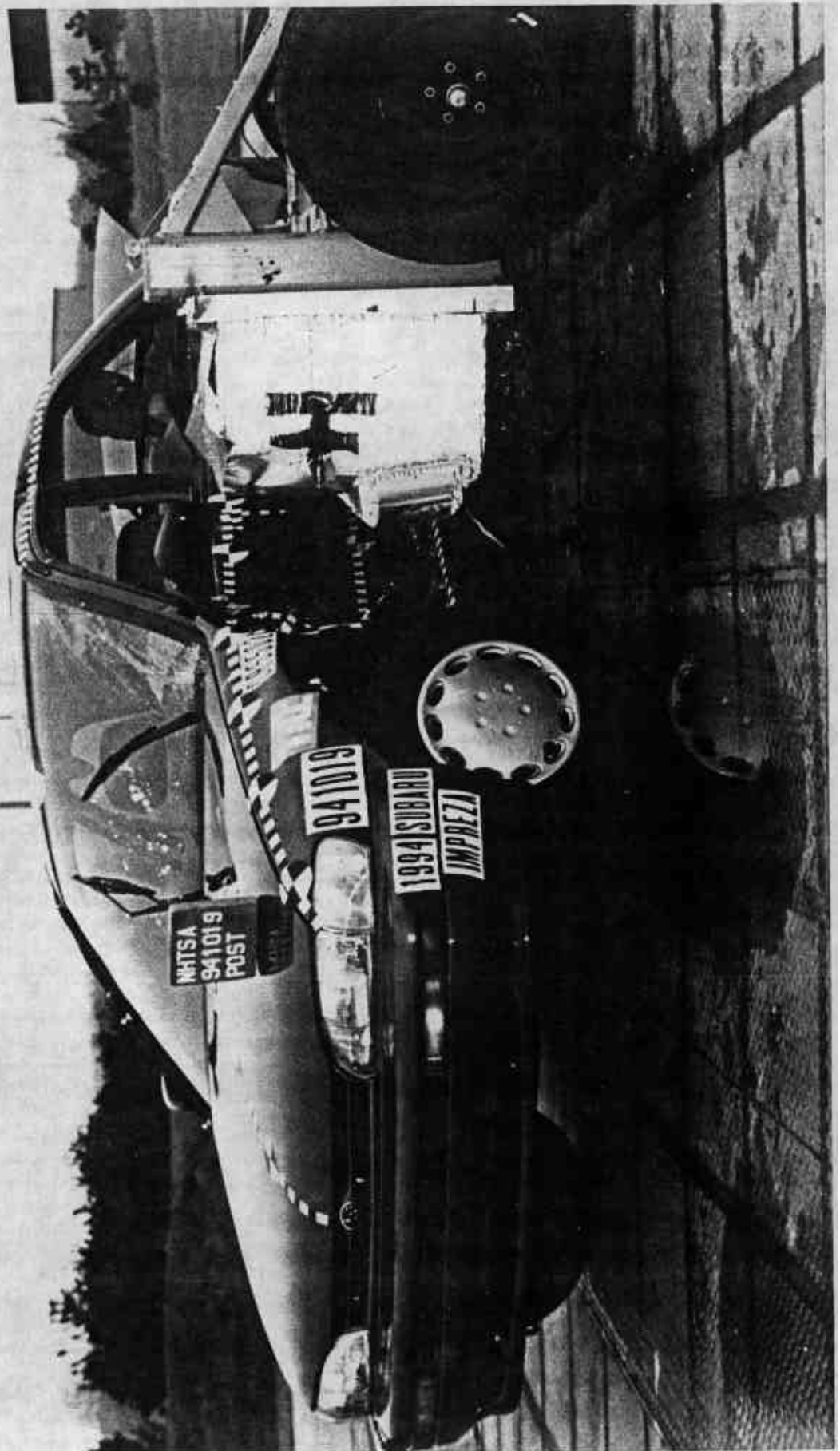


Figure A-8 Post-test Left Front View
A-9

941019



Figure A-9 Pre-test Left Rear - View 1
A-10

941019

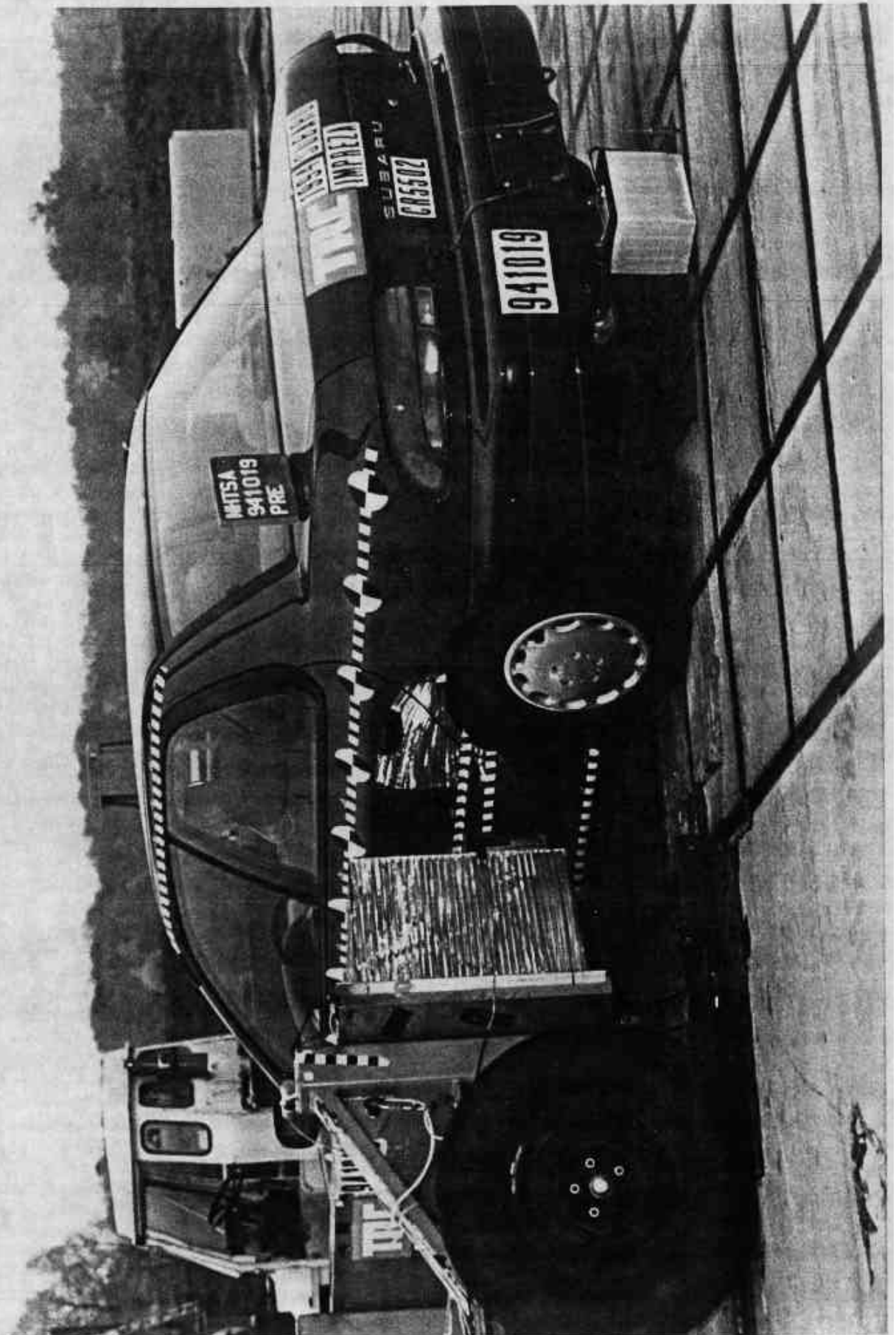


Figure A-10 Pre-test Left Rear - View 2
A-11

941019

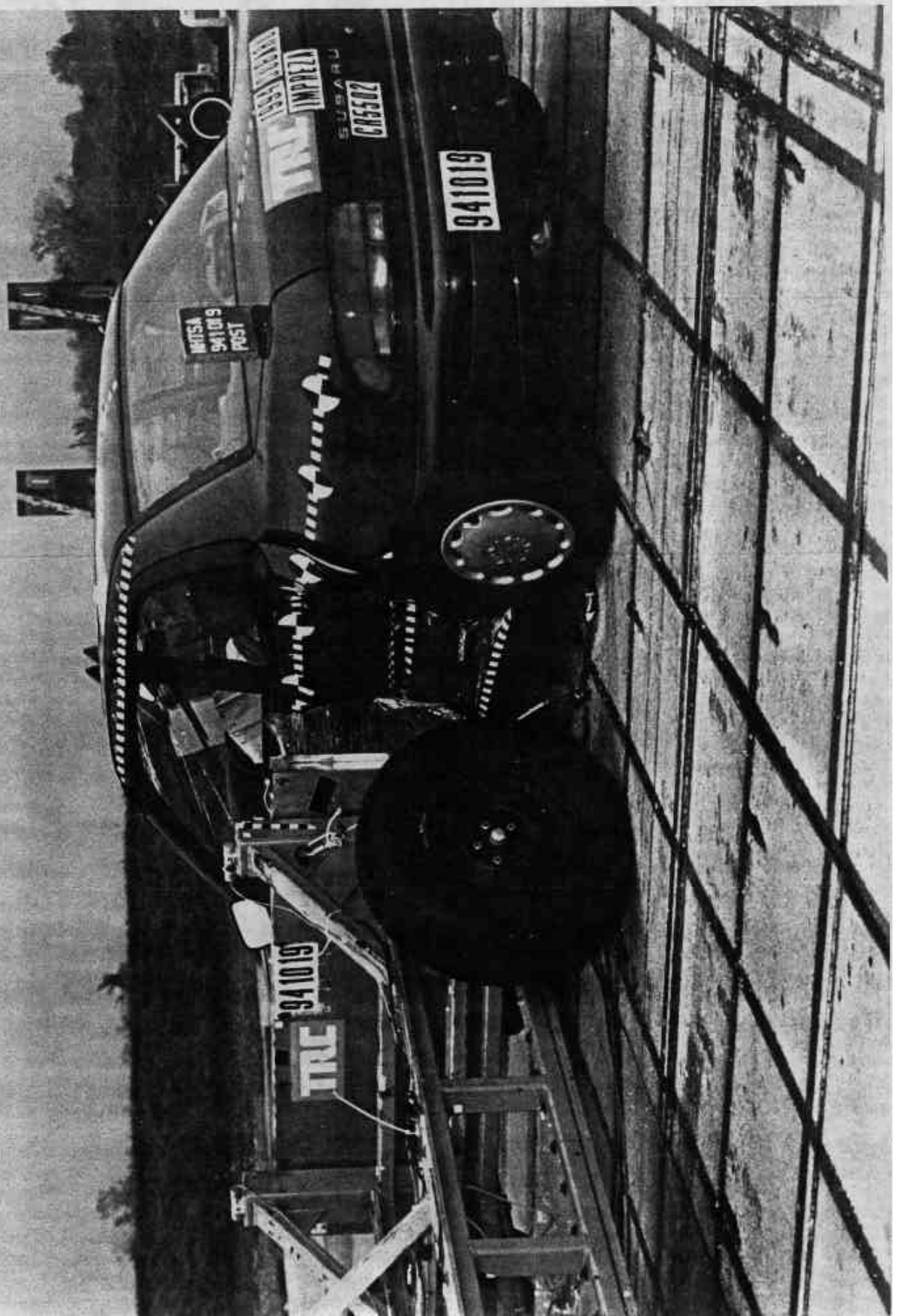


Figure A-11 Post-test Left Rear View
A-12

941019



Figure A-12 Pre-test Rear View
A-13

941019



Figure A-13 Post-test Rear View
A-14

941019



Figure A-14 Pre-test Overhead View
A-15

941019

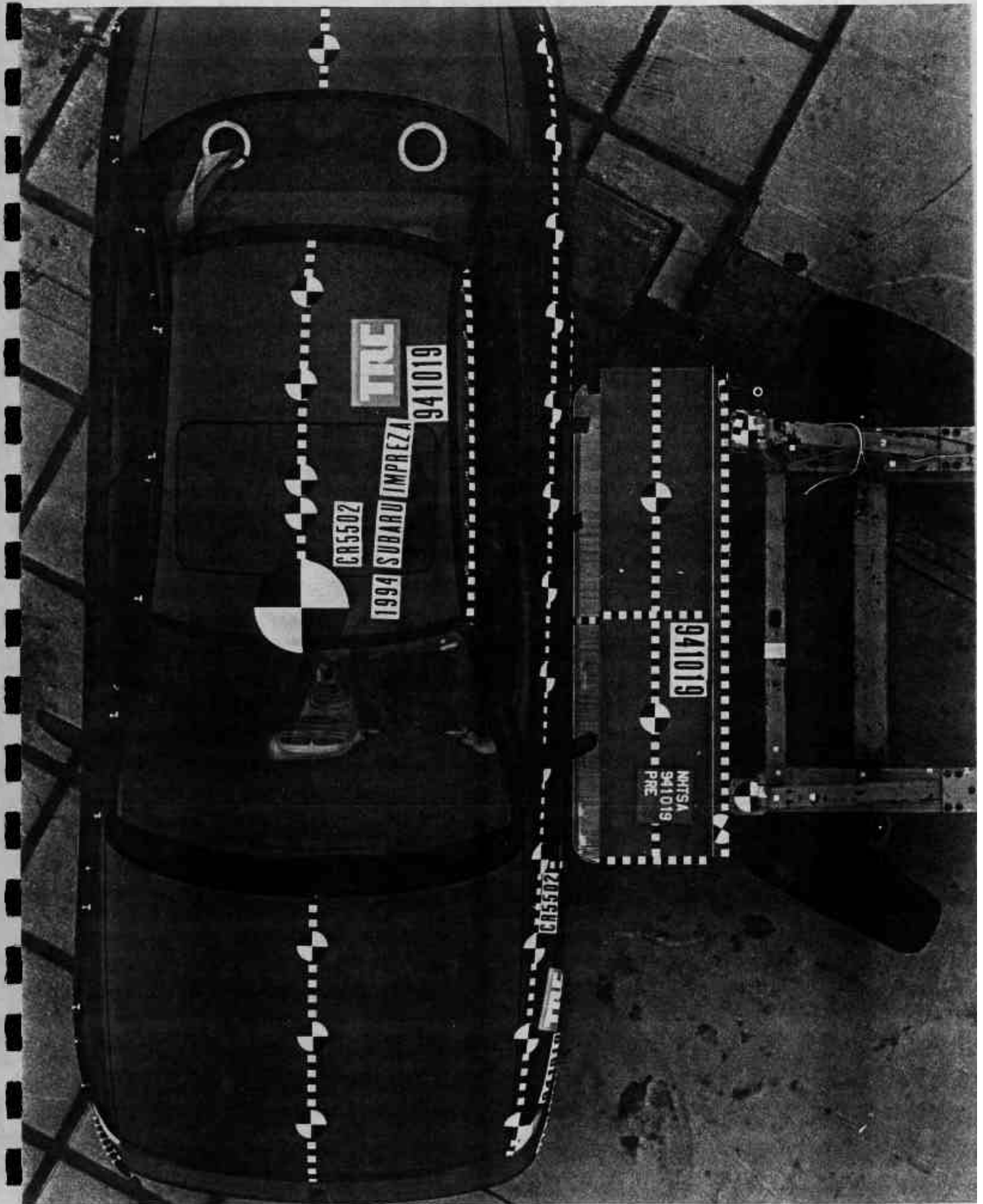


Figure A-15 Pre-test Overhead Close-up View
A-16

941019

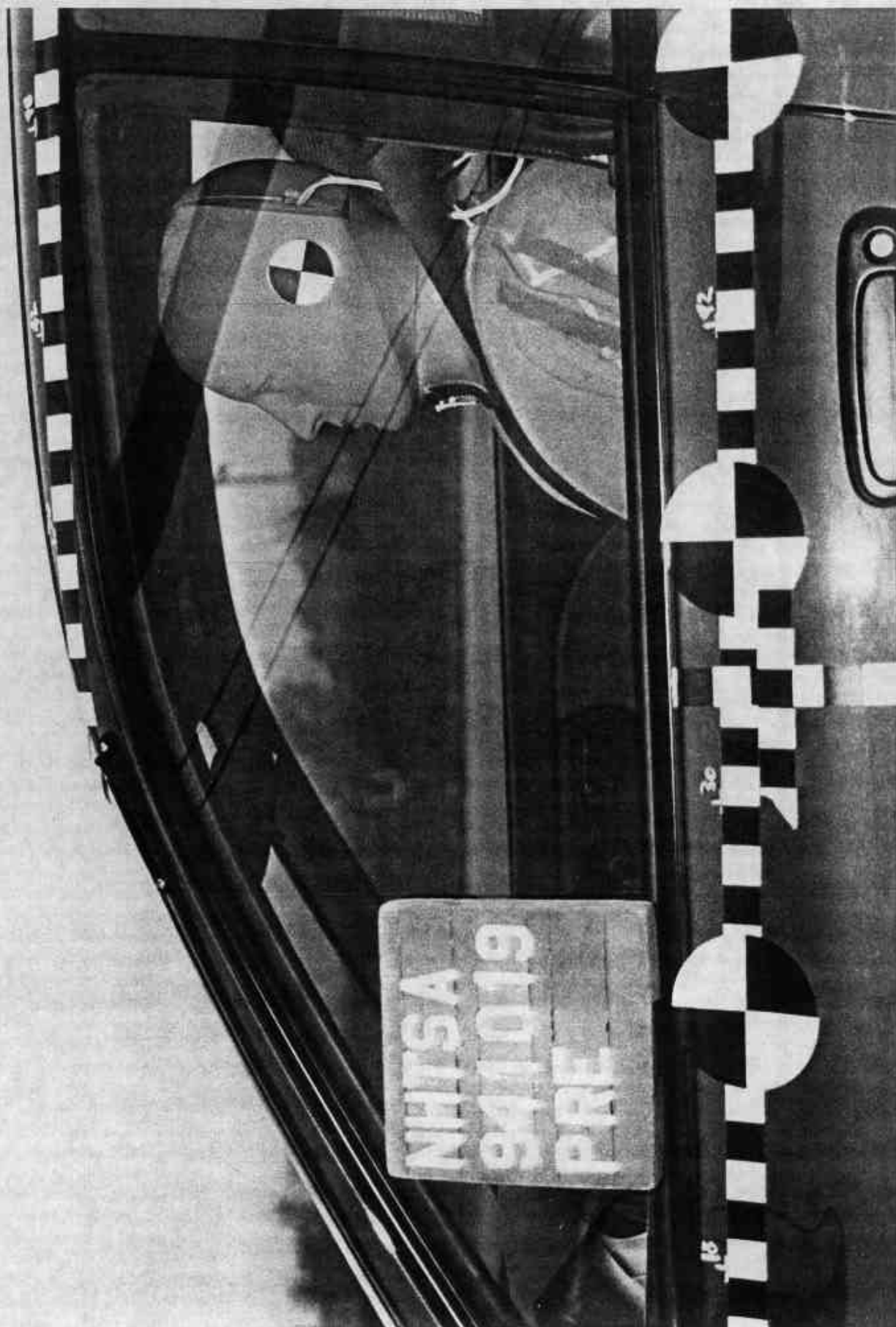


Figure A-16 Pre-test Driver Dummy Position - View 1
A-17

941019

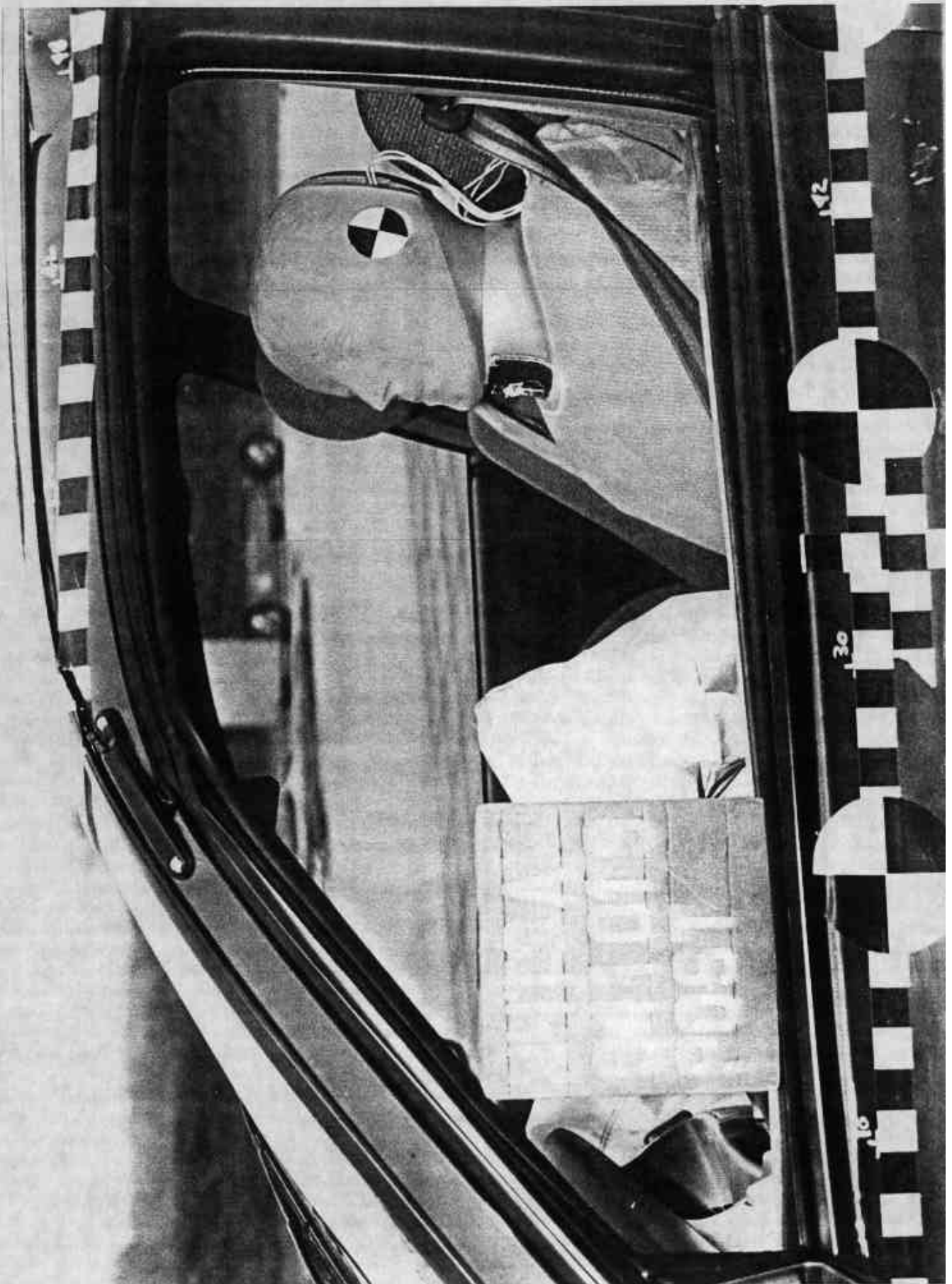


Figure A-17 Post-test Driver Dummy Position - View 1
A-18

941019



Figure A-18 Pre-test Driver Dummy Position - View 2
A-19

941019



Figure A-19 Post-test Driver Dummy Position - View 2
A-20

941019

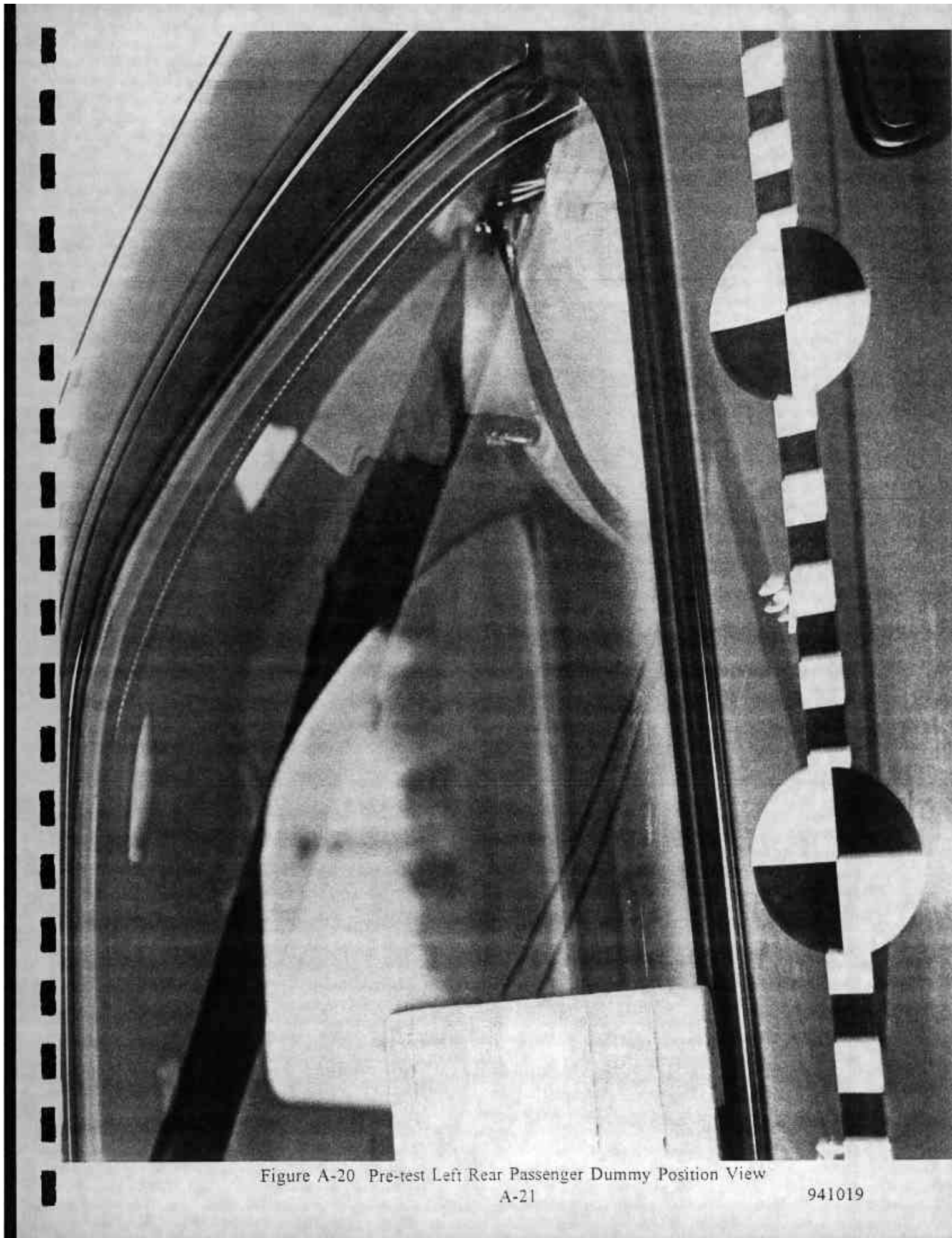


Figure A-20 Pre-test Left Rear Passenger Dummy Position View
A-21

941019



Figure A-21 Post-test Left Rear Passenger Dummy Position - View 1
A-22

941019

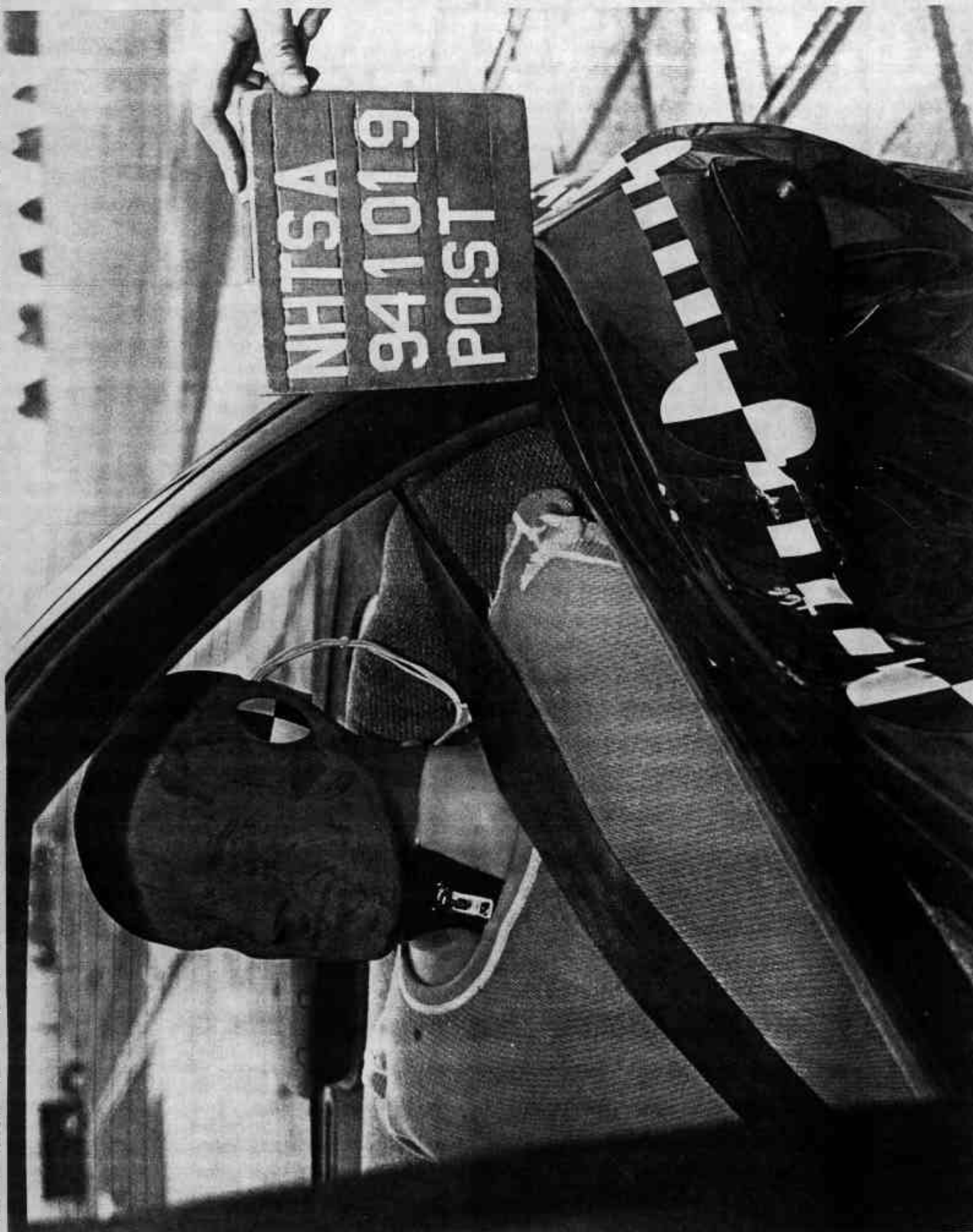


Figure A-22 Post-test Left Rear Passenger Dummy Position - View 2
A-23

941019



Figure A-23 Pre-test Driver Dummy to Door Clearance View
A-24

941019

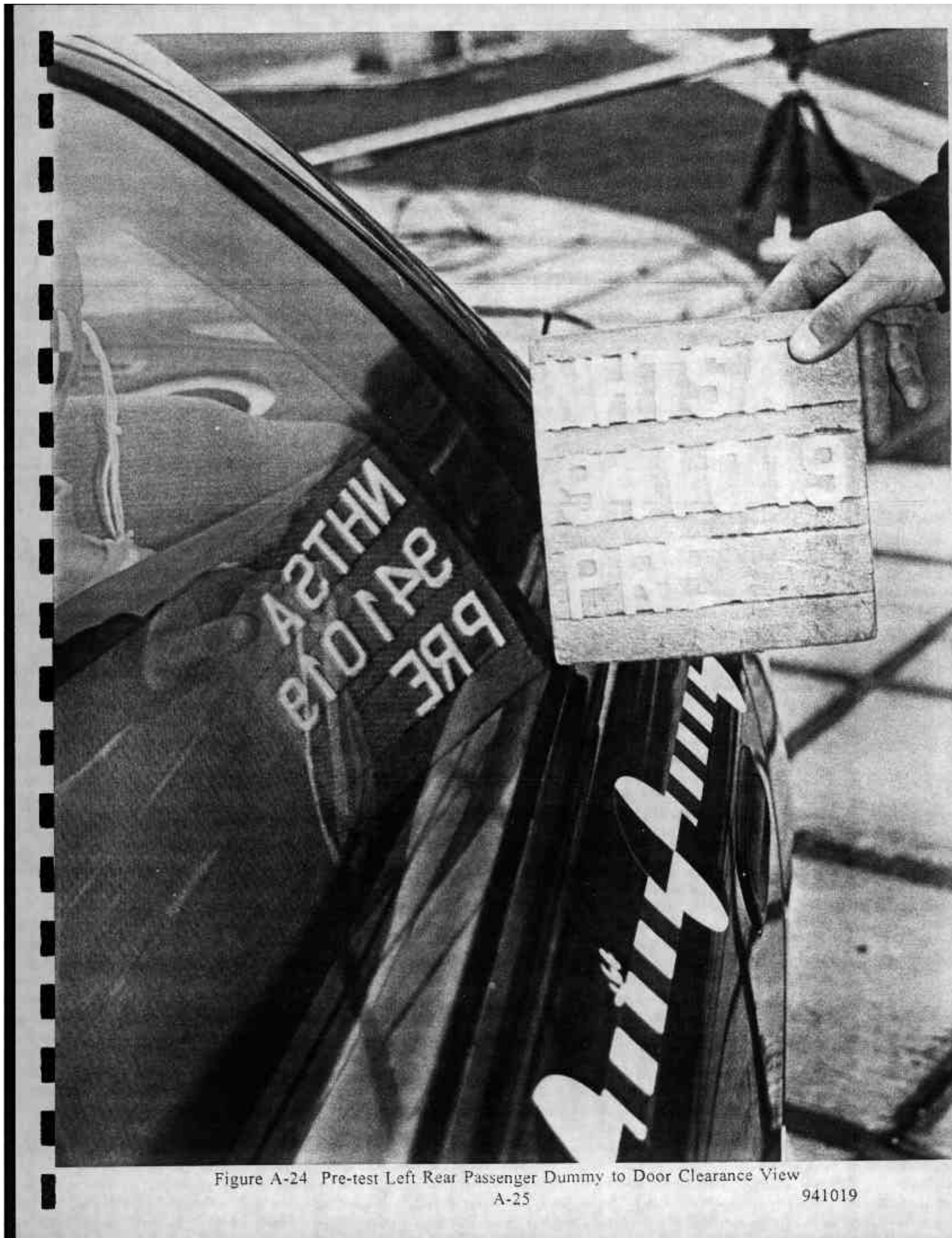


Figure A-24 Pre-test Left Rear Passenger Dummy to Door Clearance View



Figure A-25 Pre-test Driver Dummy & Vehicle Interior - View 1
A-26

941019

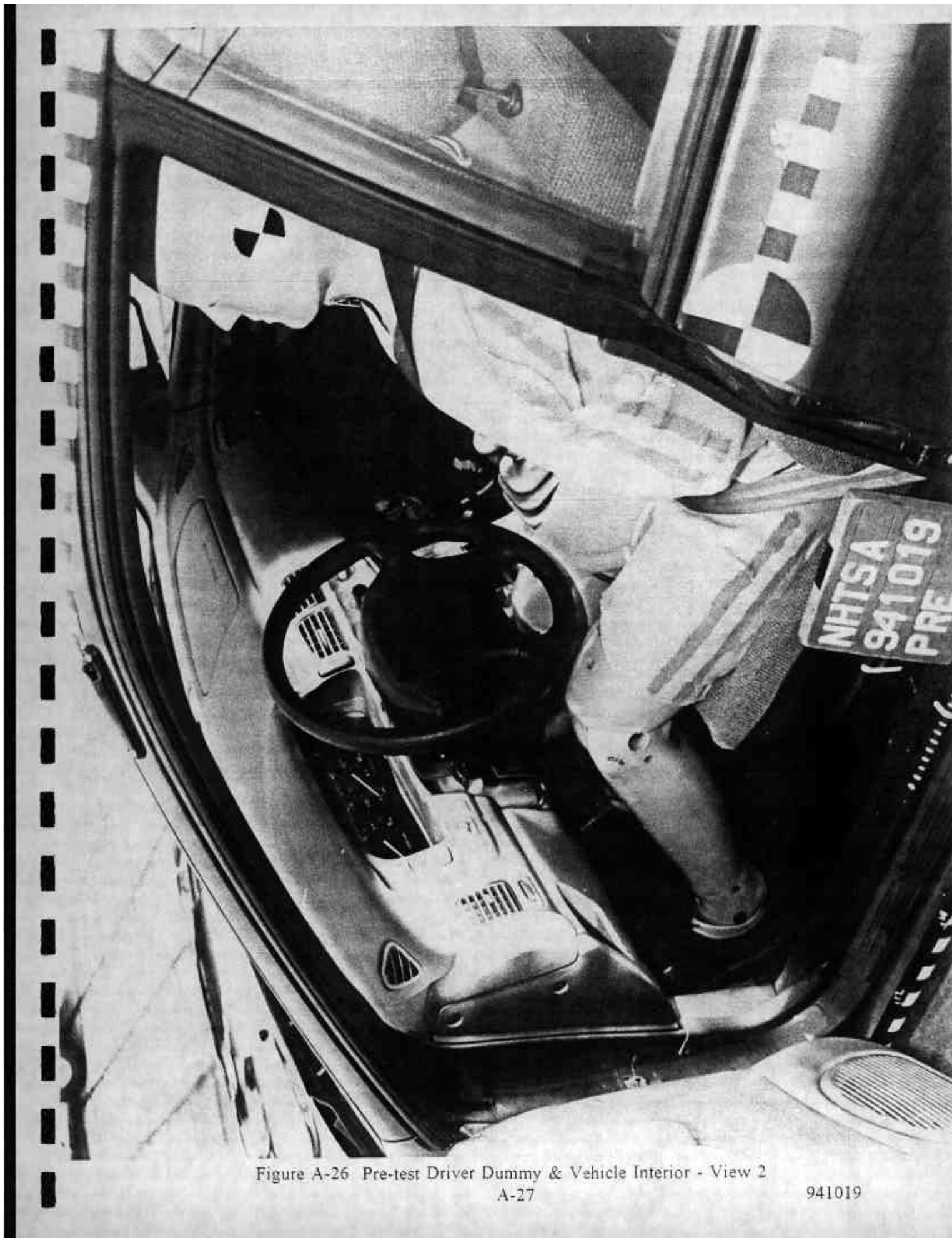


Figure A-26 Pre-test Driver Dummy & Vehicle Interior - View 2
A-27

941019



Figure A-27 Pre-test Driver Dummy & Vehicle Interior - View 3
A-28

941019



Figure A-28 Pre-test Left Rear Passenger Dummy & Vehicle Interior - View 1

A-29

941019



Figure A-29 Pre-test Left Rear Passenger Dummy & Vehicle Interior - View 2



Figure A-30 Pre-test Left Rear Passenger Dummy & Vehicle Interior - View 3

A-31

941019

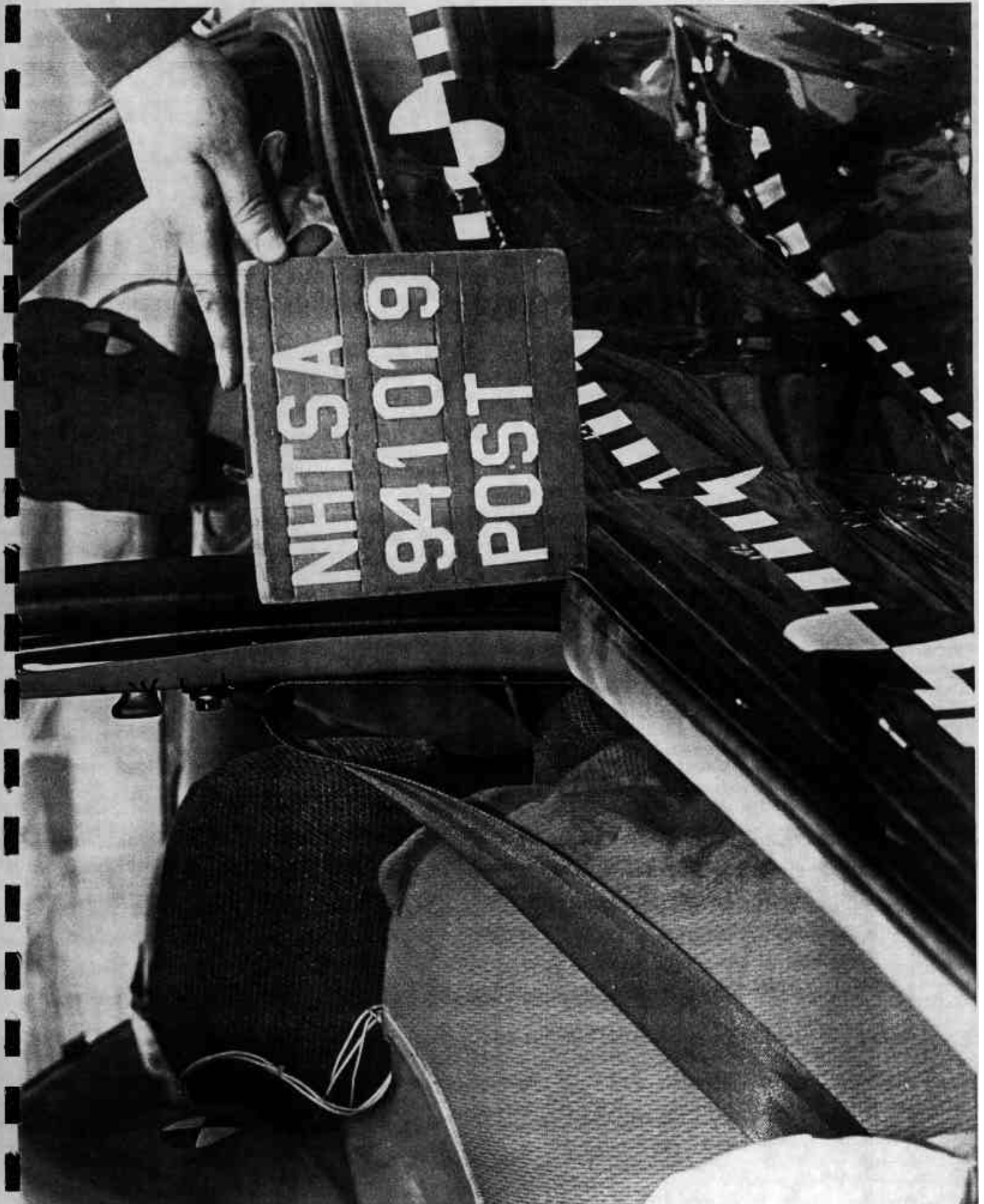


Figure A-31 Post-test Driver Dummy Contact - View 1
A-32

941019

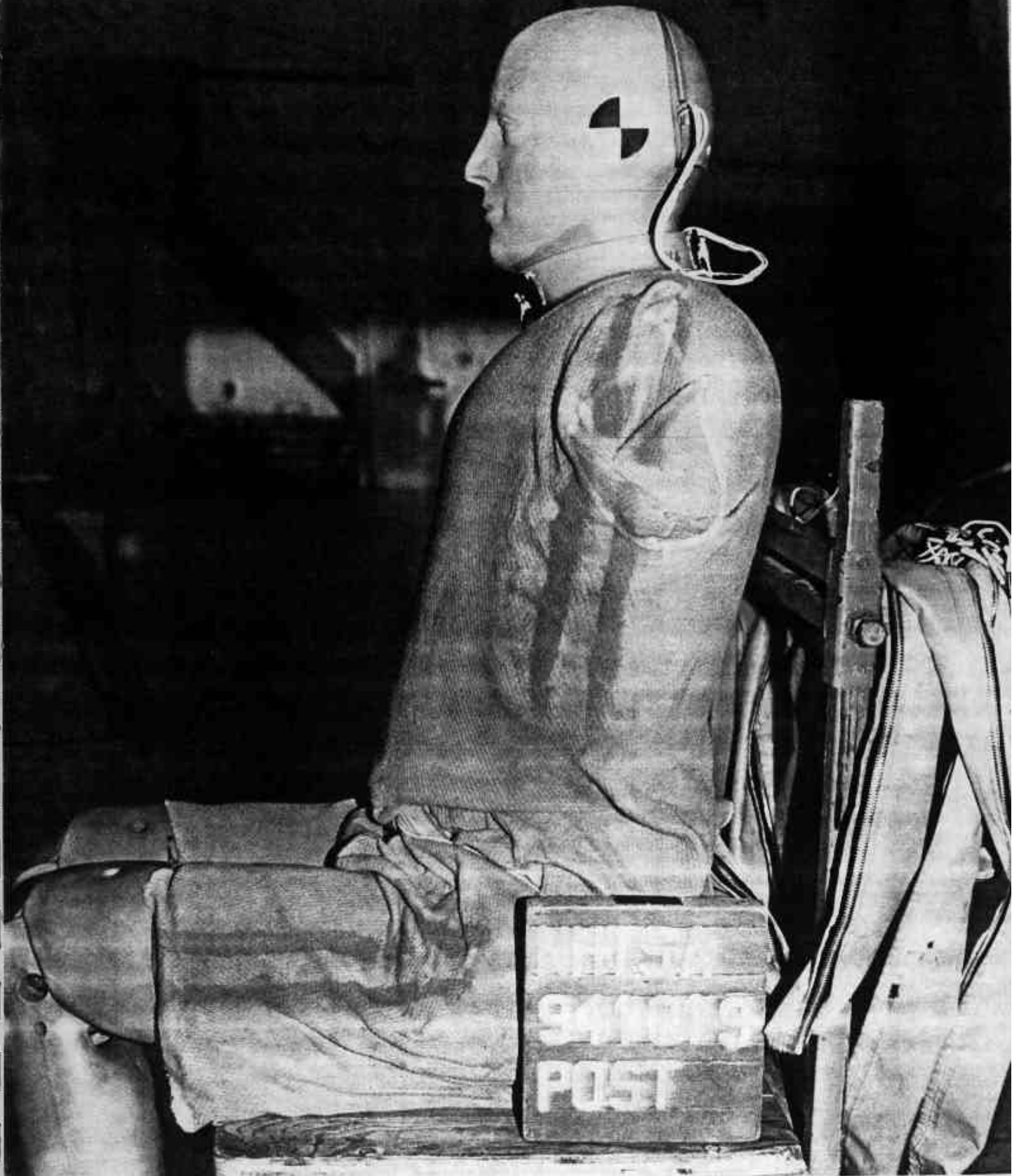


Figure A-32 Post-test Driver Dummy Contact - View 2
A-33

941019



Figure A-33 Post-test Driver Dummy Contact - View 3
A-34

941019



Figure A-34 Post-test Left Rear Passenger Dummy Contact - View 1
A-35

941019

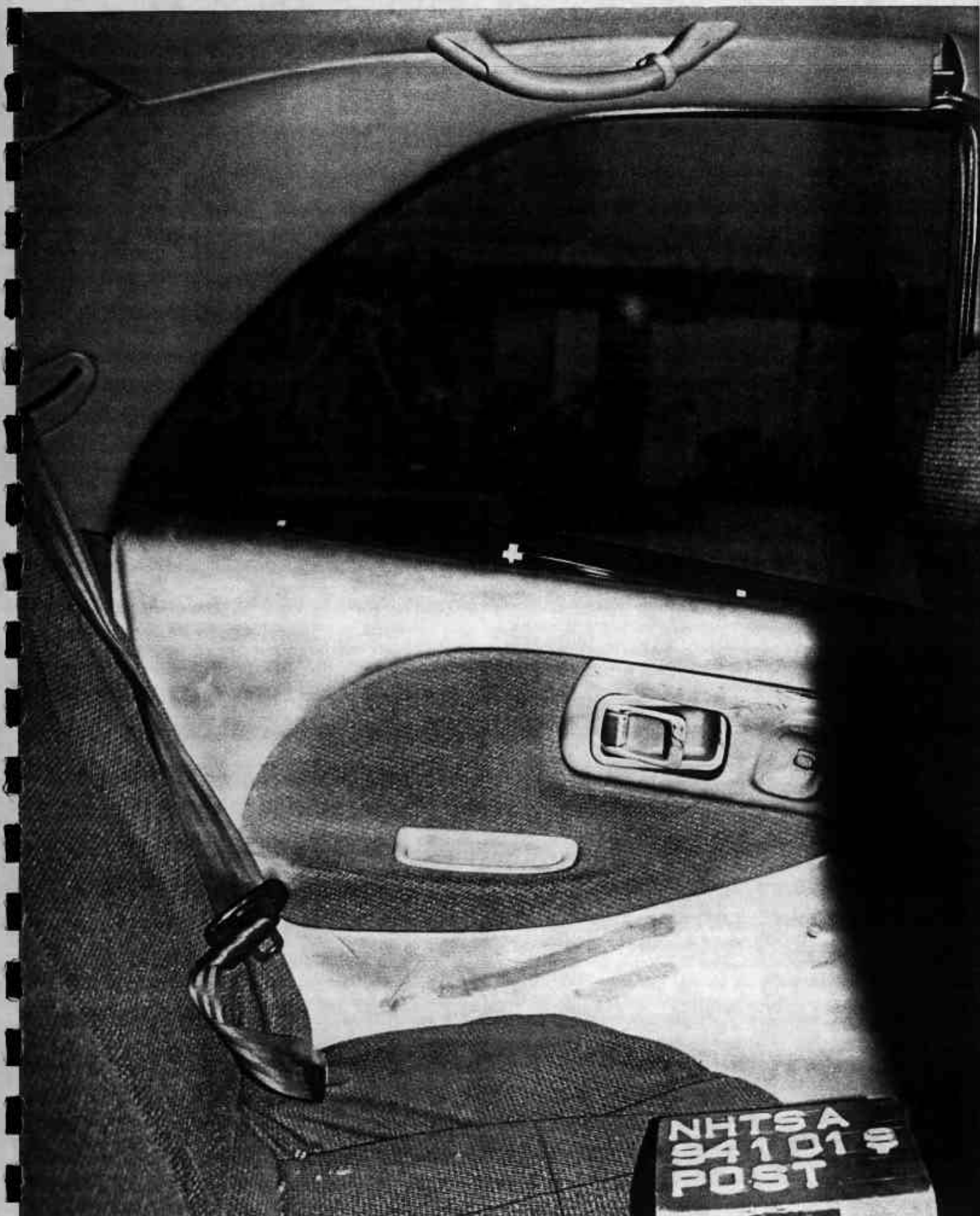


Figure A-35 Post-test Left Rear Passenger Dummy Contact - View 2
A-36

941019

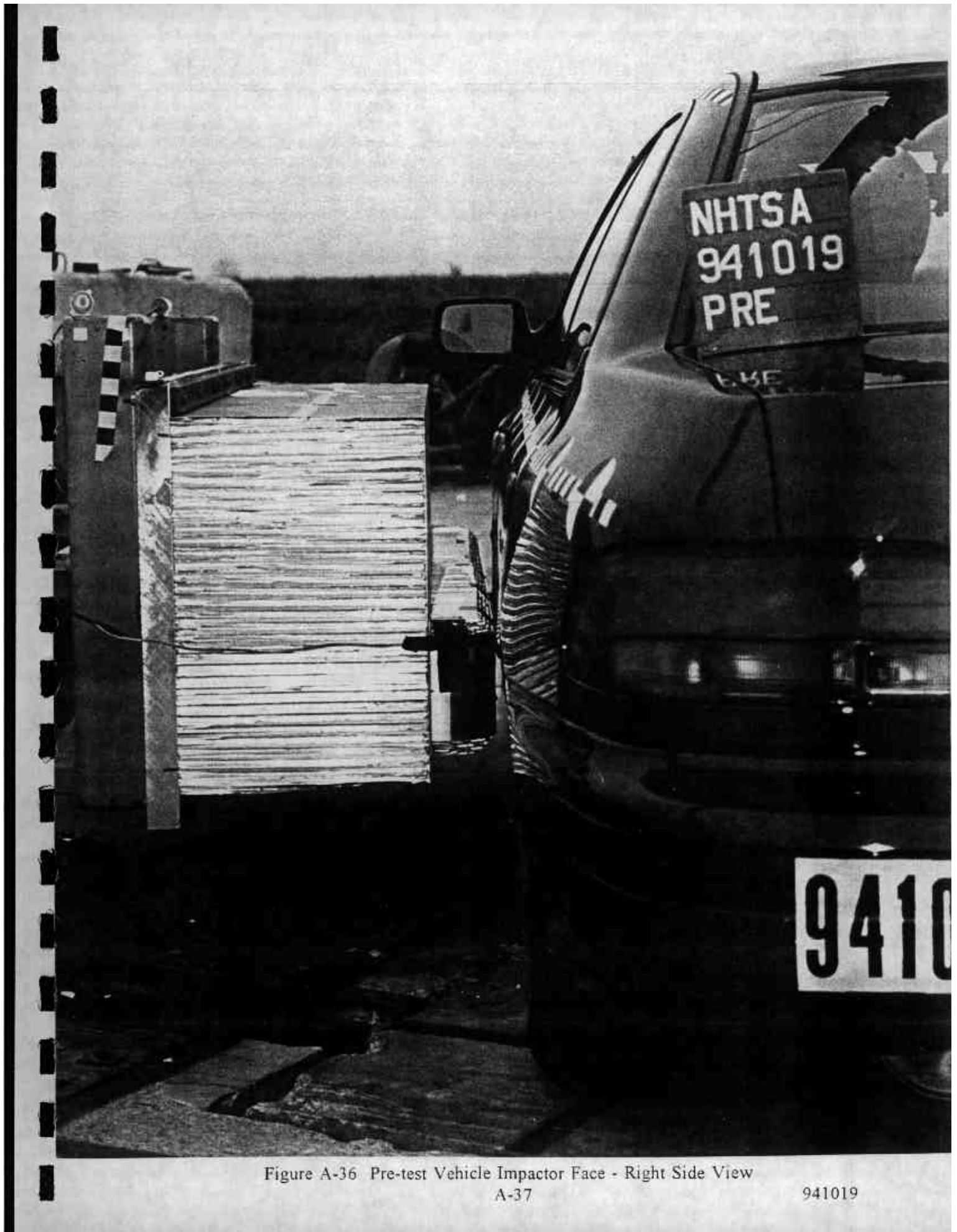


Figure A-36 Pre-test Vehicle Impactor Face - Right Side View
A-37

941019

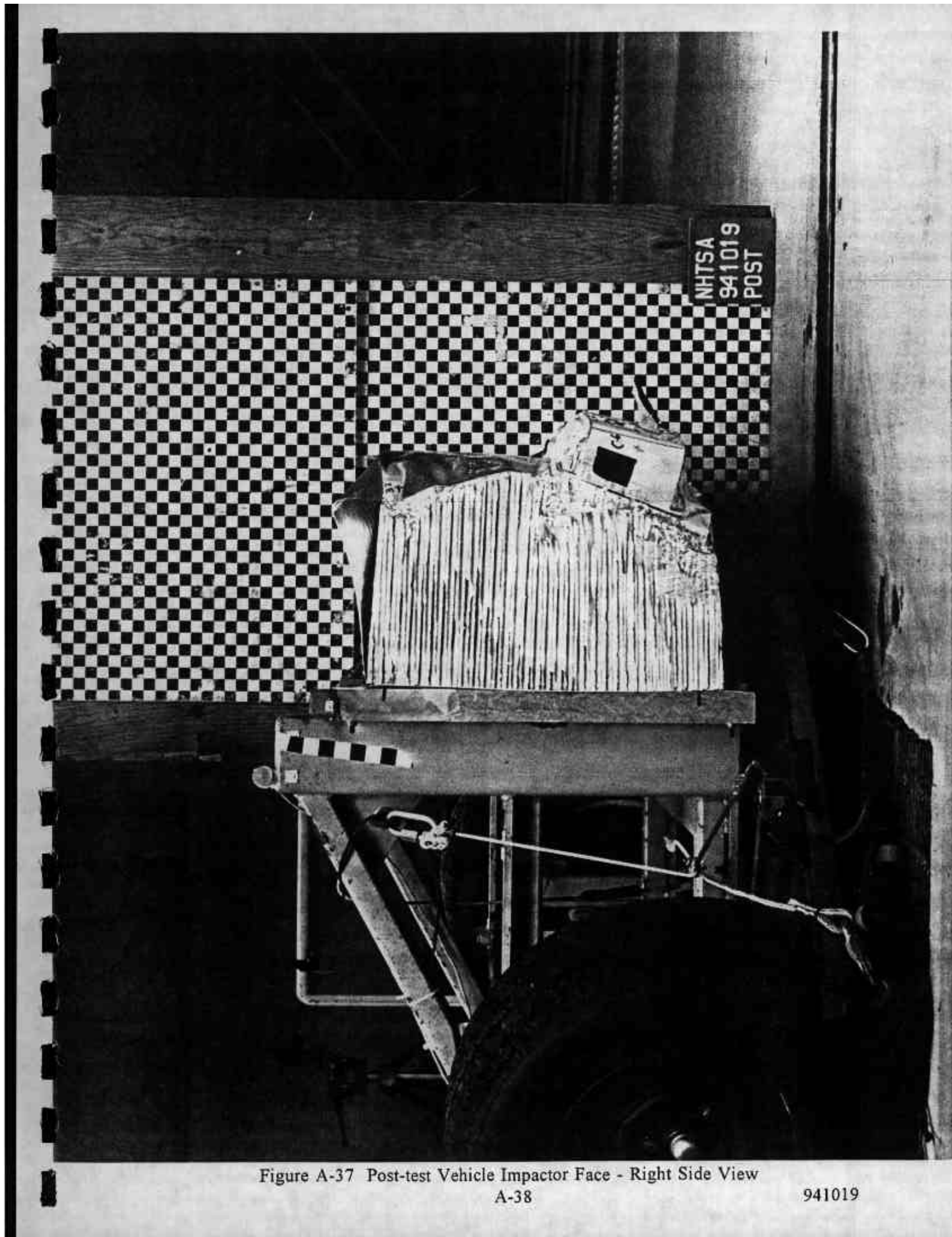


Figure A-37 Post-test Vehicle Impactor Face - Right Side View
A-38

941019

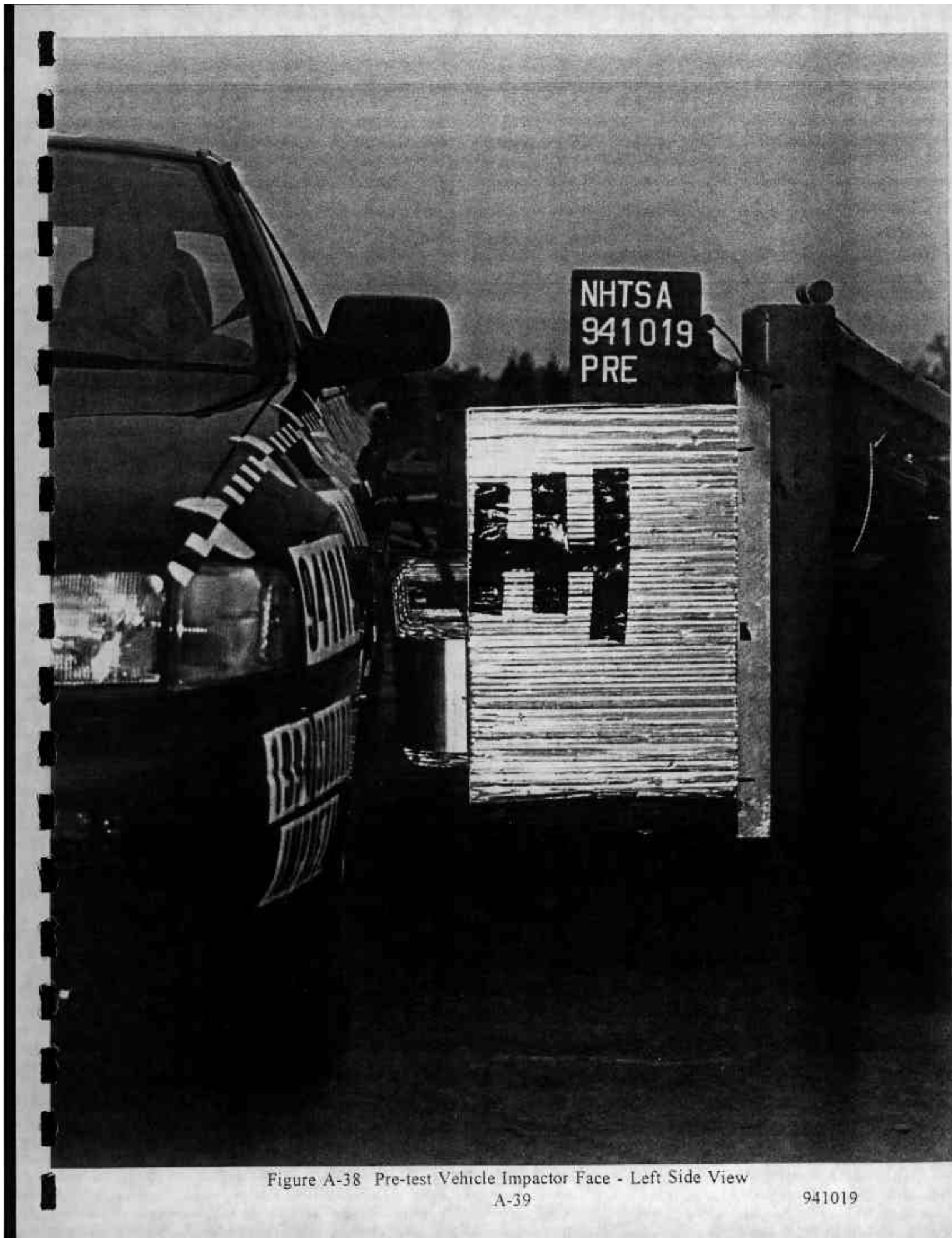


Figure A-38 Pre-test Vehicle Impactor Face - Left Side View
A-39

941019

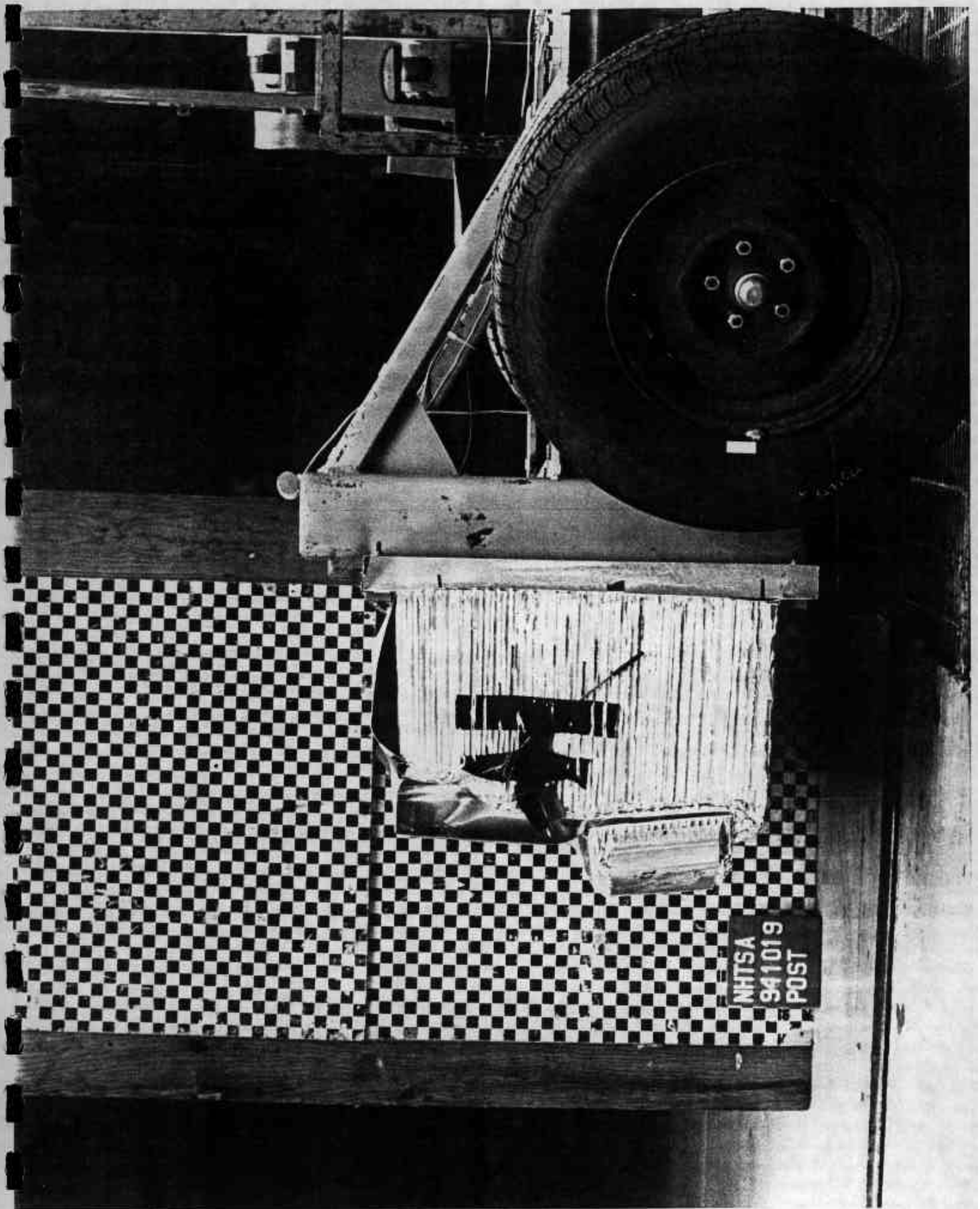


Figure A-39 Post-test Vehicle Impactor Face - Left Side View
A-40

941019

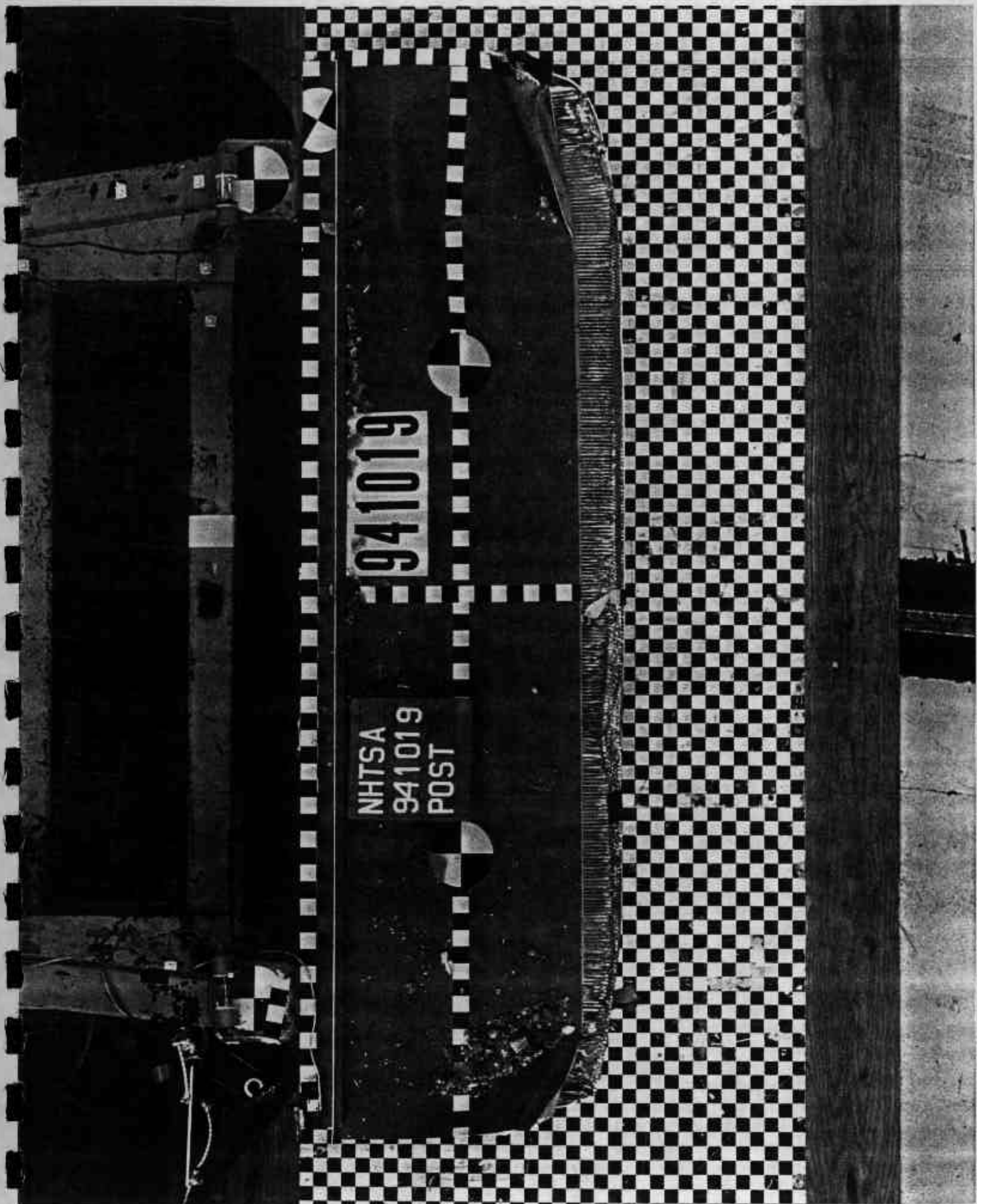


Figure A-40 Post-test Deformable Barrier Face - Top View
A-41

941019

MFD BY FUJI HEAVY IND. LTD. JAPAN
MFD IN 03/94

GVWR: 3450LB(1565KG)
GAWR: FRONT-1850LB(839KG)
REAR -1600LB(726KG)

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

VIN : F1G02350R3541338

(F000) PASSENGER CAR

Figure A-41 Pre-test Vehicle Certification Label View
A-42

941019

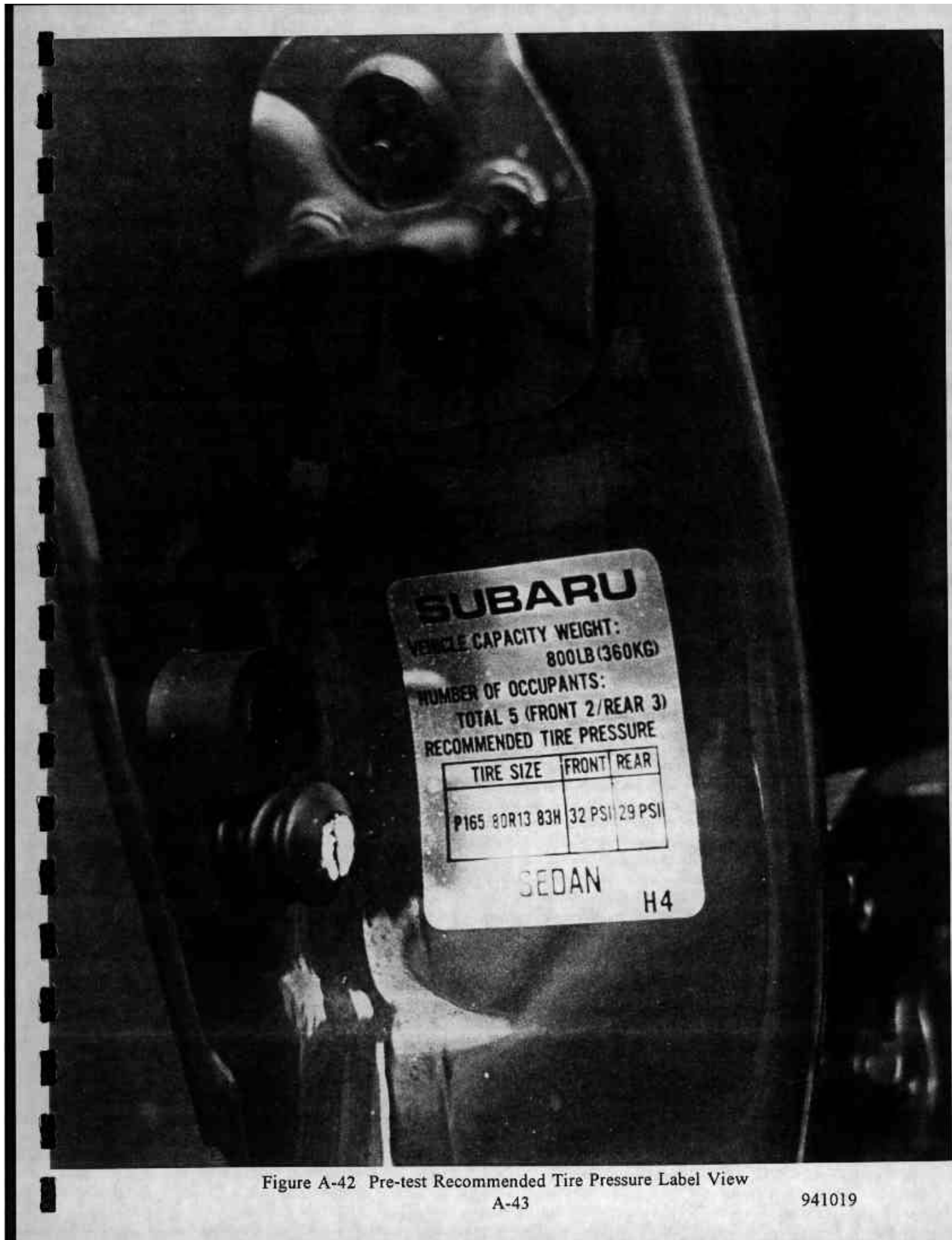


Figure A-42 Pre-test Recommended Tire Pressure Label View
A-43

941019

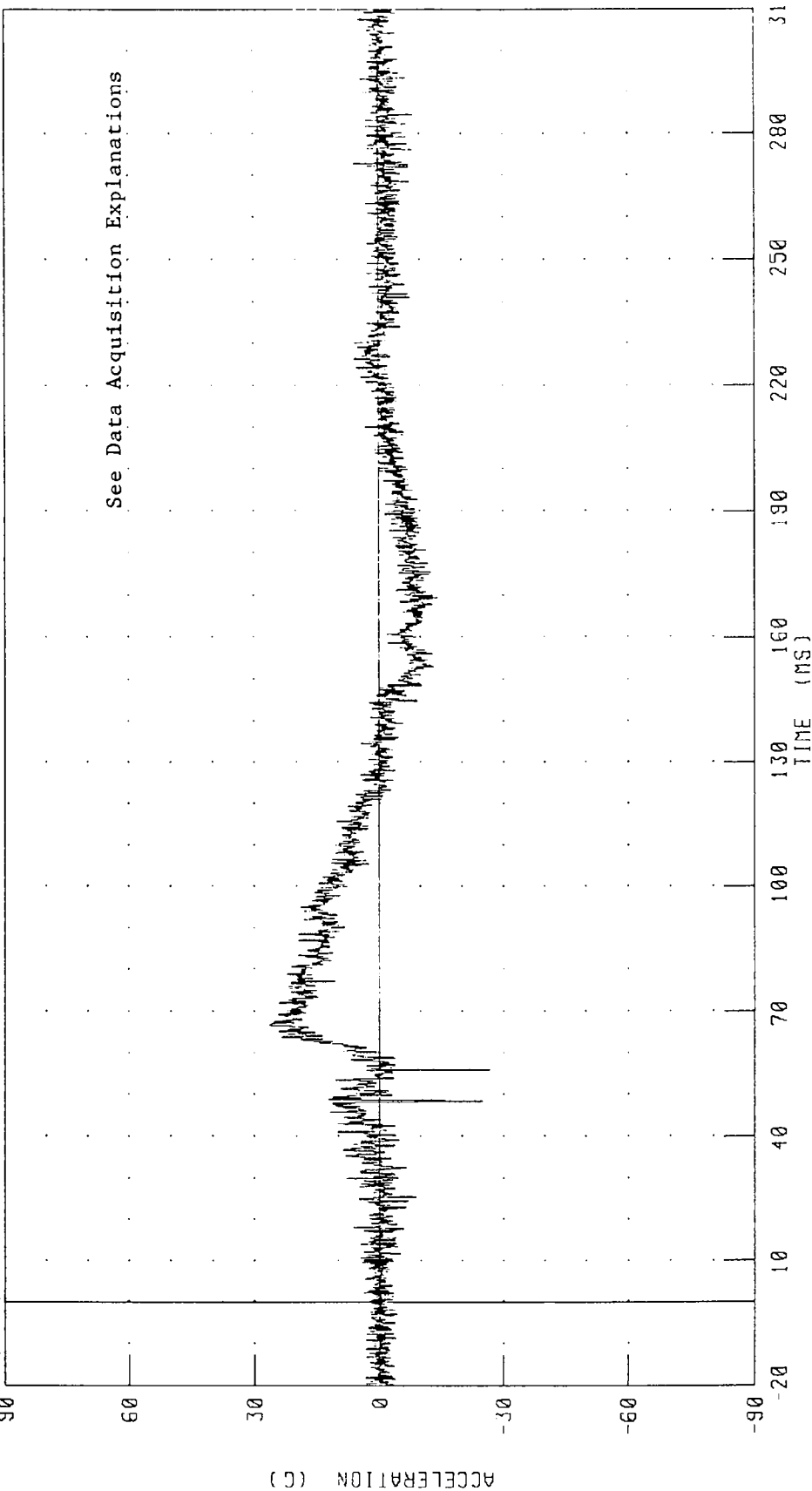
Appendix B

Data Plots

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 DRIVER HEAD X-AXIS ACCELERATION
 FMVSS 214 SIDE IMPACT CR5502

TEST NUMBER 941019

IRC INC



CHANNEL HEDXG1 FILTER CH CLASS 1000

PEAK DATA 26 59 G @ 66 88 MS, -26 64 G @ 55 84 MS

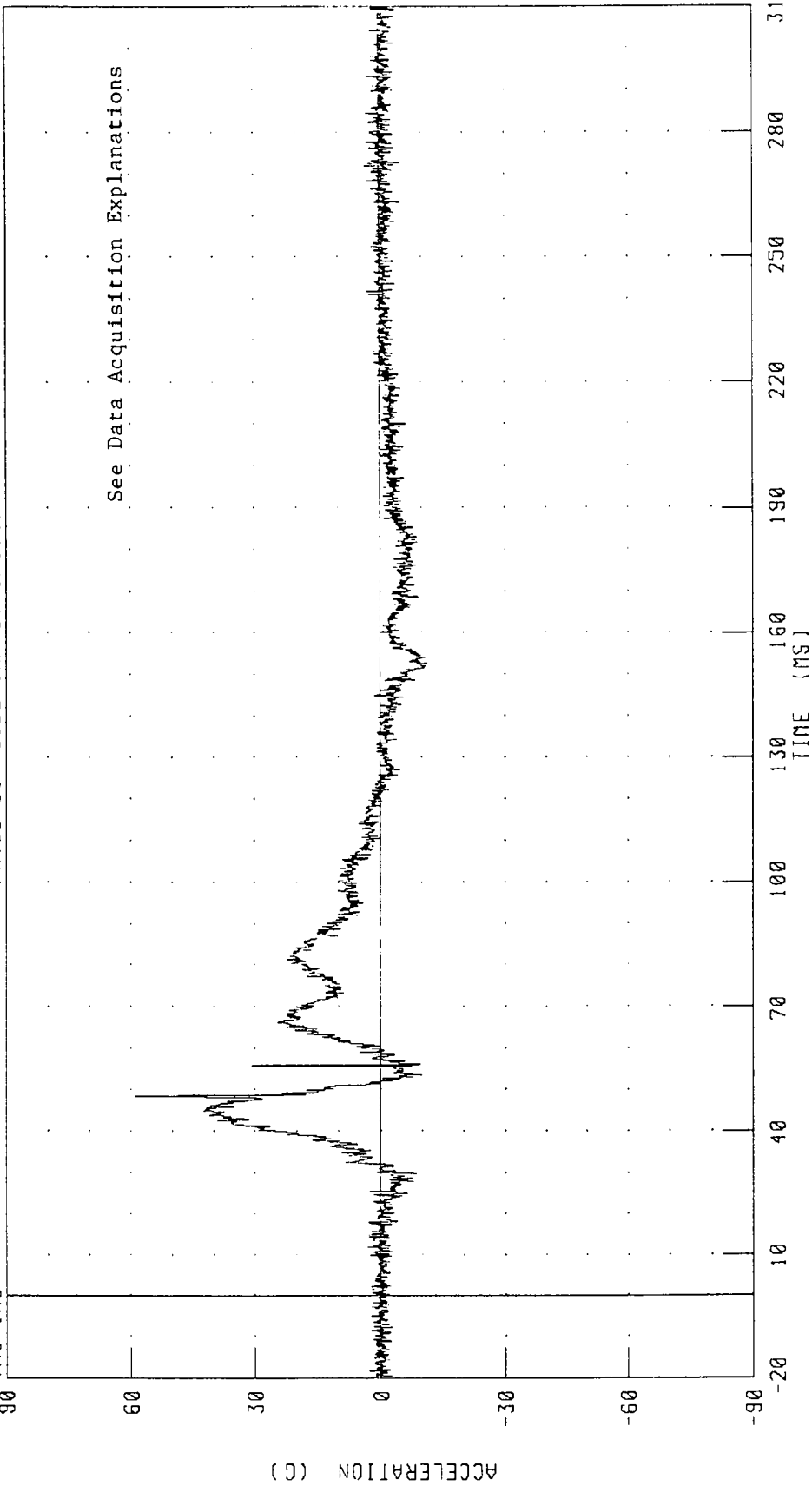
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA

DRIVER HEAD Y-AXIS ACCELERATION

FMVSS 214 SIDE IMPACT CR5502

TEST NUMBER 941019

TRC INC



See Data Acquisition Explanations

CHANNEL HEDYG1 FILTER CH CLASS 1000

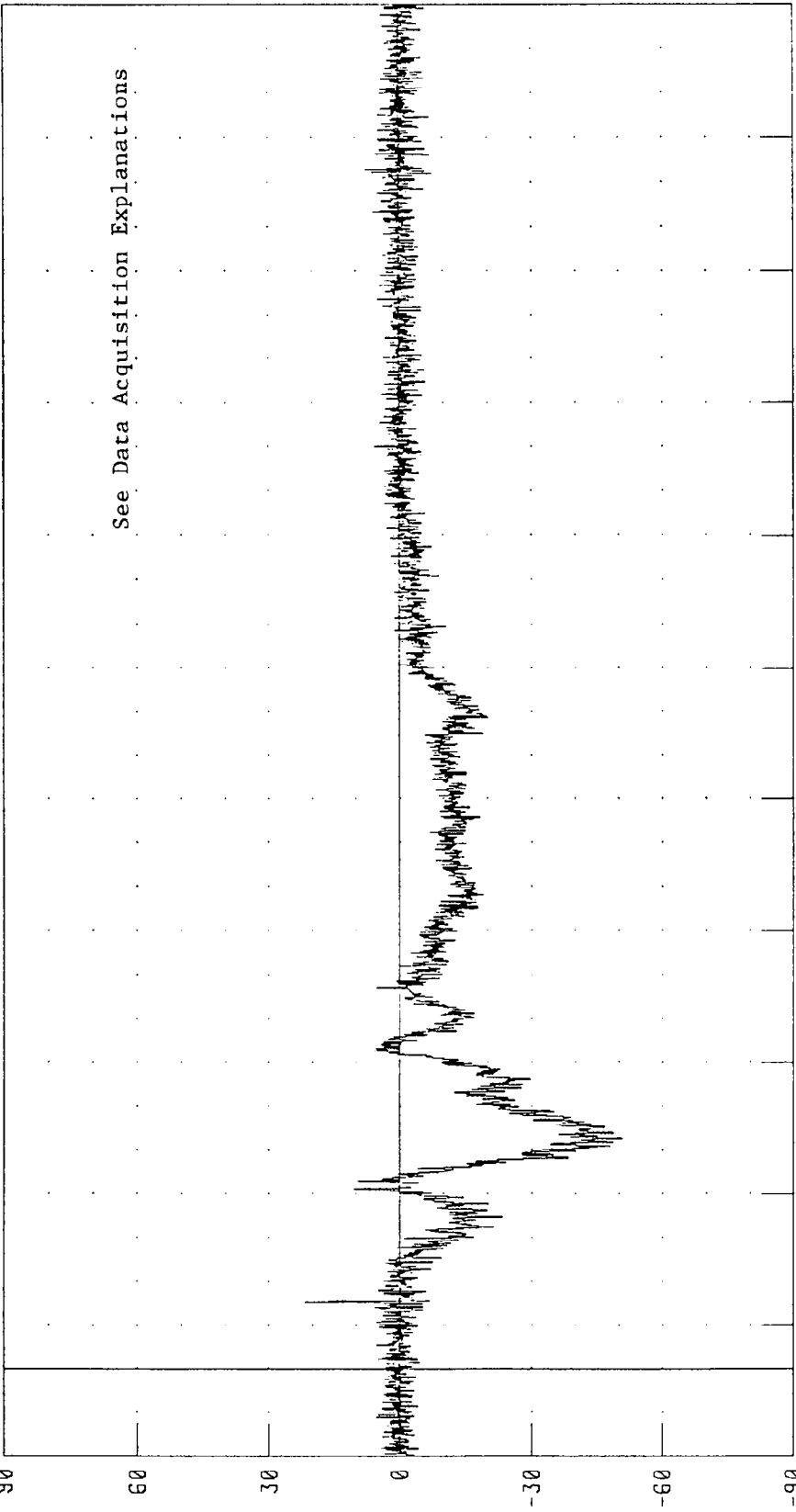
PEAK DATA 58 93 G @ 48 40 MS, -11 50 G @ 152 80 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
DRIVER HEAD Z-AXIS ACCELERATION

FMVSS 214 SIDE IMPACT CR5502

TEST NUMBER 941019

TRC INC



ACCELERATION (G)

TIME (MS)

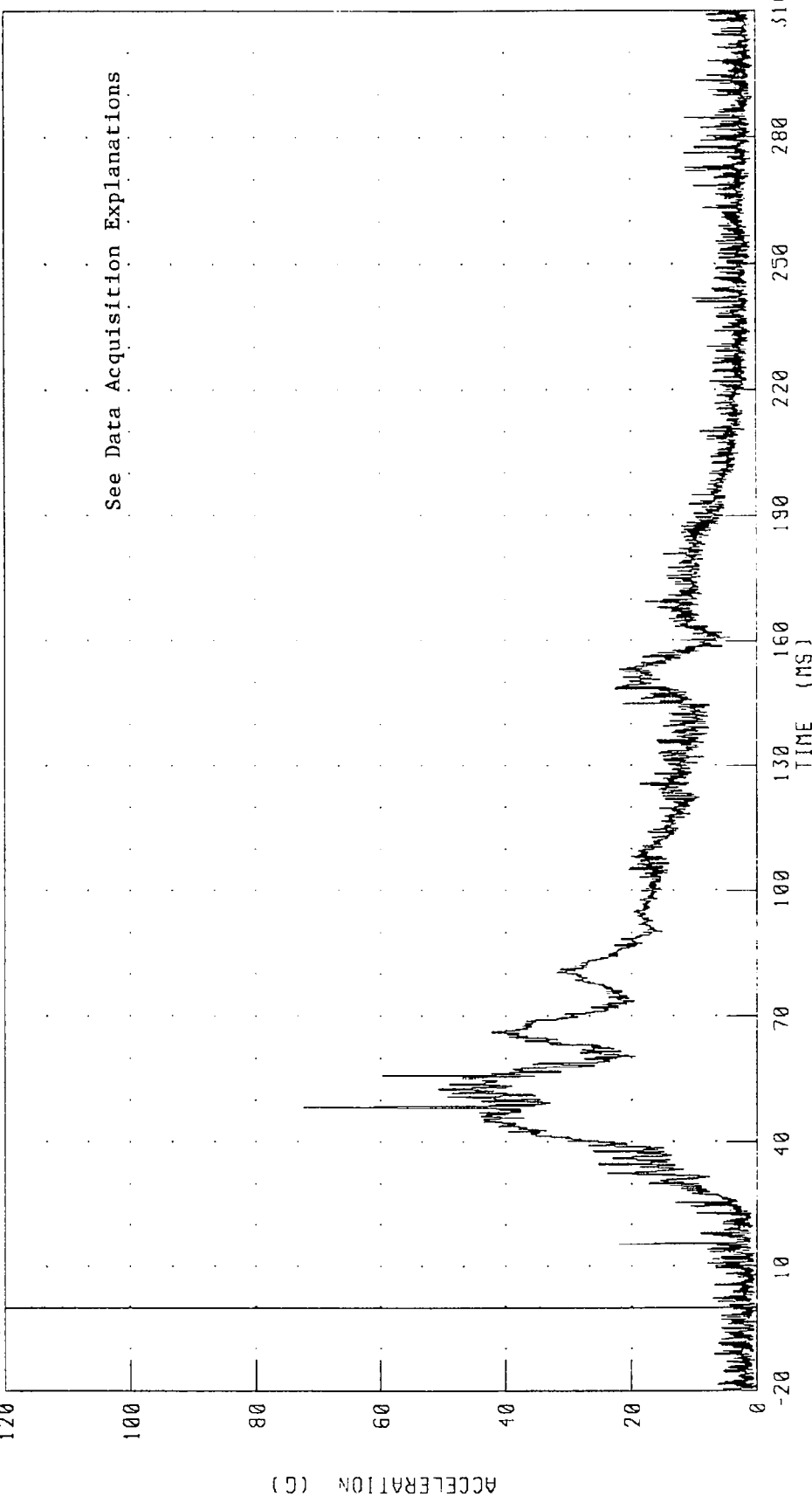
CHANNEL HEDZG1 FILTER CH CLASS 1000

PEAK DATA 21 94 G @ 15 36 MS, -50 75 G @ 52 56 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 DRIVER HEAD RESULTANT ACCELERATION
 FMVSS 214 SIDE IMPACT CR5502

TEST NUMBER 941019

IRC INC



See Data Acquisition Explanations

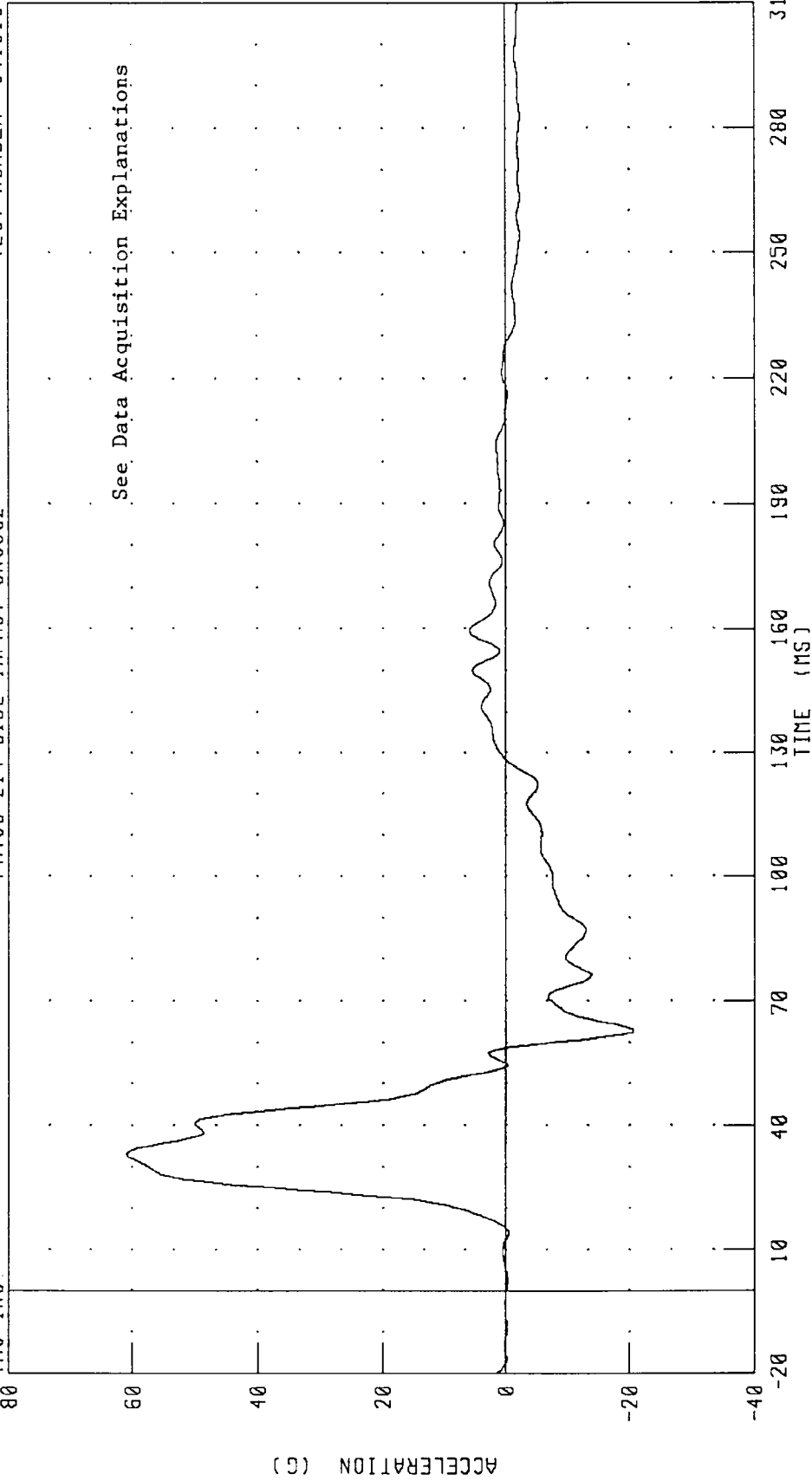
CHANNEL: HEDRC1 FILTER CH: CLASS 1000

PEAK DATA 72 54 G @ 48 40 MS, 0 20 G @ -18 96 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 DRIVER LOWER SPINE Y-AXIS ACCELERATION
 FMVSS 214 SIDE IMPACT CR5502

TEST NUMBER 941019

TRC INC



See Data Acquisition Explanations

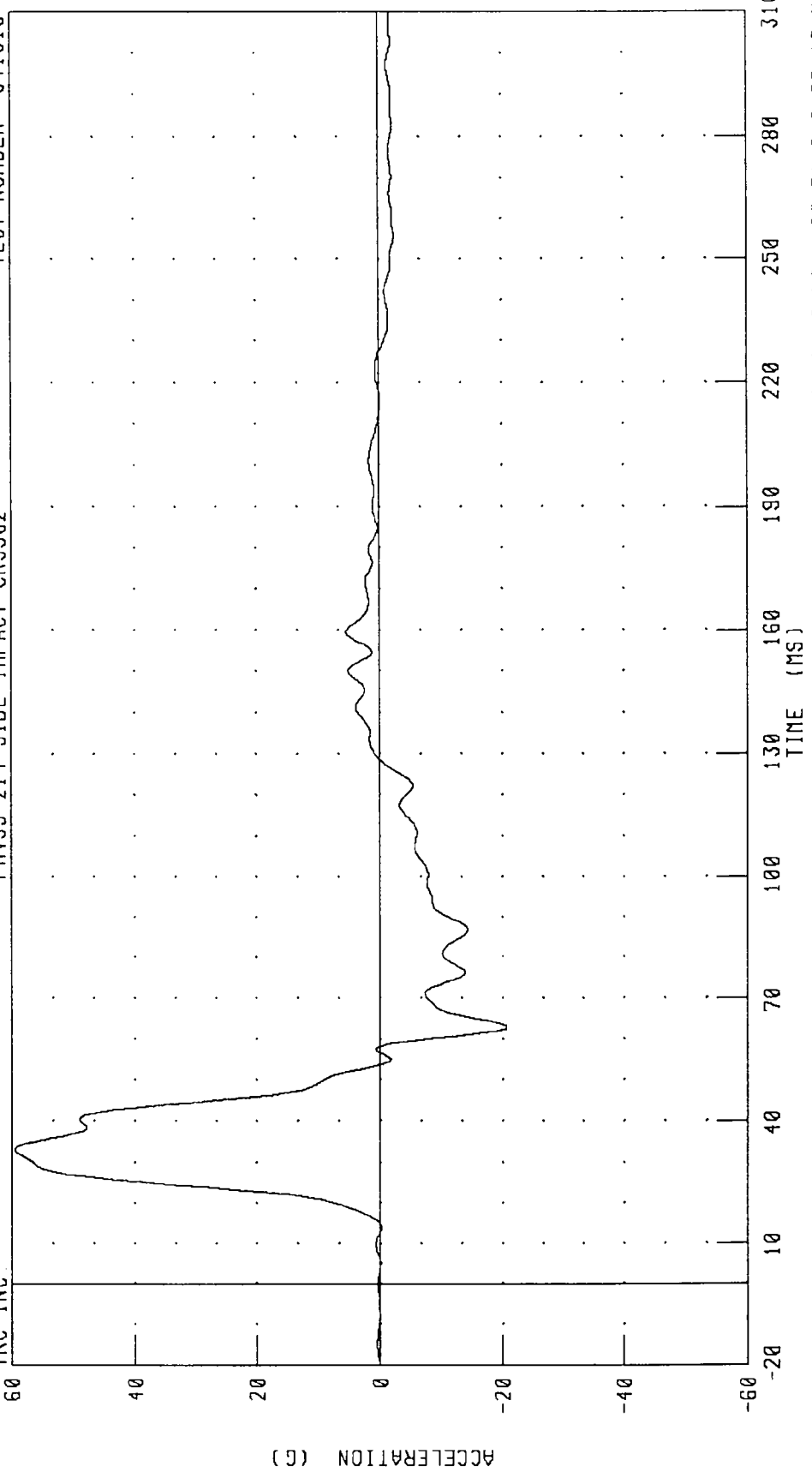
CHANNEL: T12YG1 FILTER: FIR 100

PEAK DATA: 60.94 G @ 33.13 MS, -20.54 G @ 63.13 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION
 FMVSS 214 SIDE IMPACT CR5502

TEST NUMBER: 941019

TRC INC



PEAK DATA: 59.48 G @ 33.13 MS; -20.71 G @ 63.13 MS

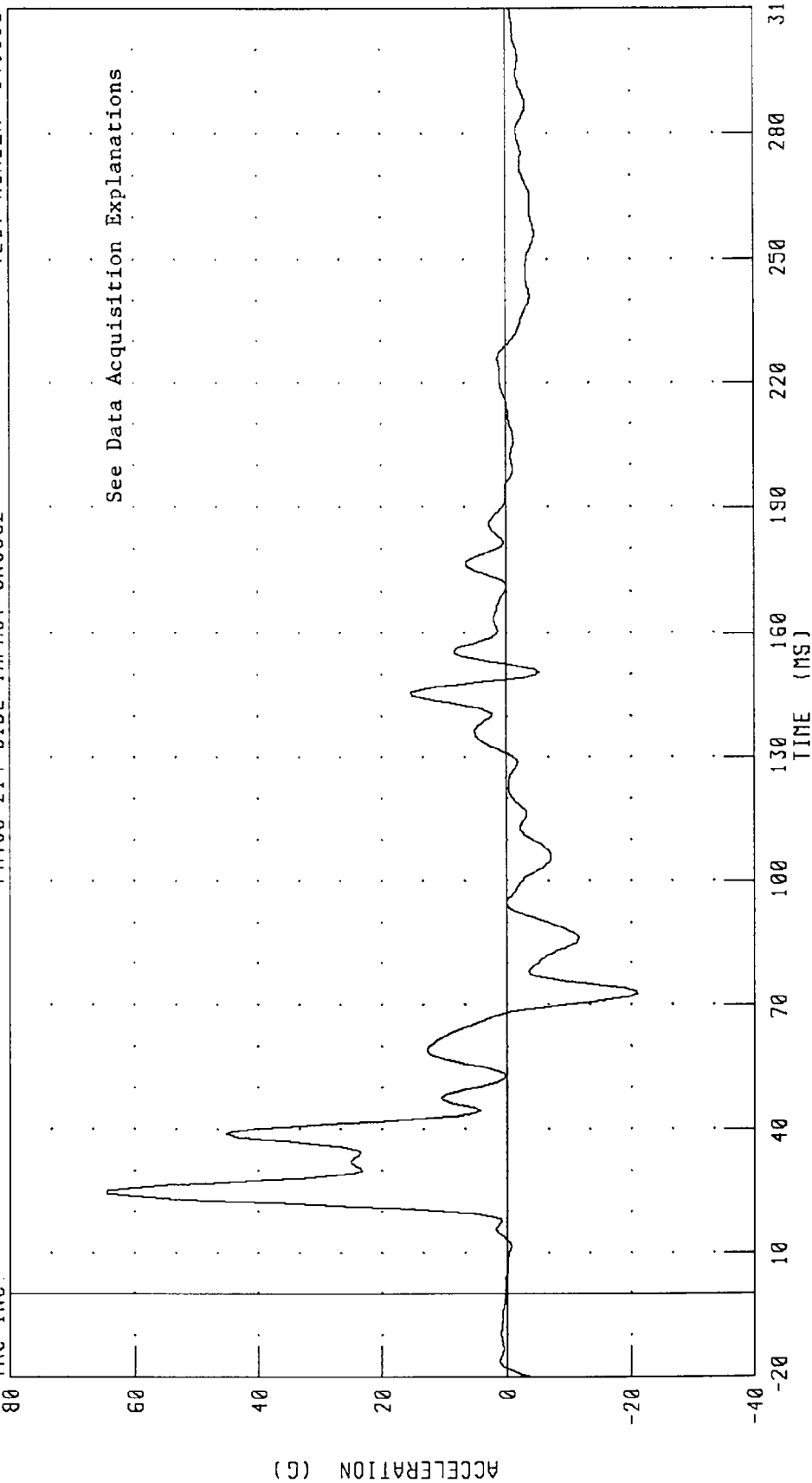
CHANNEL: T12YGA FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
DRIVER LEFT UPPER THORAX RIB Y-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC.



PEAK DATA: 64.51 G @ 24.38 MS, -21.00 G @ 72.50 MS

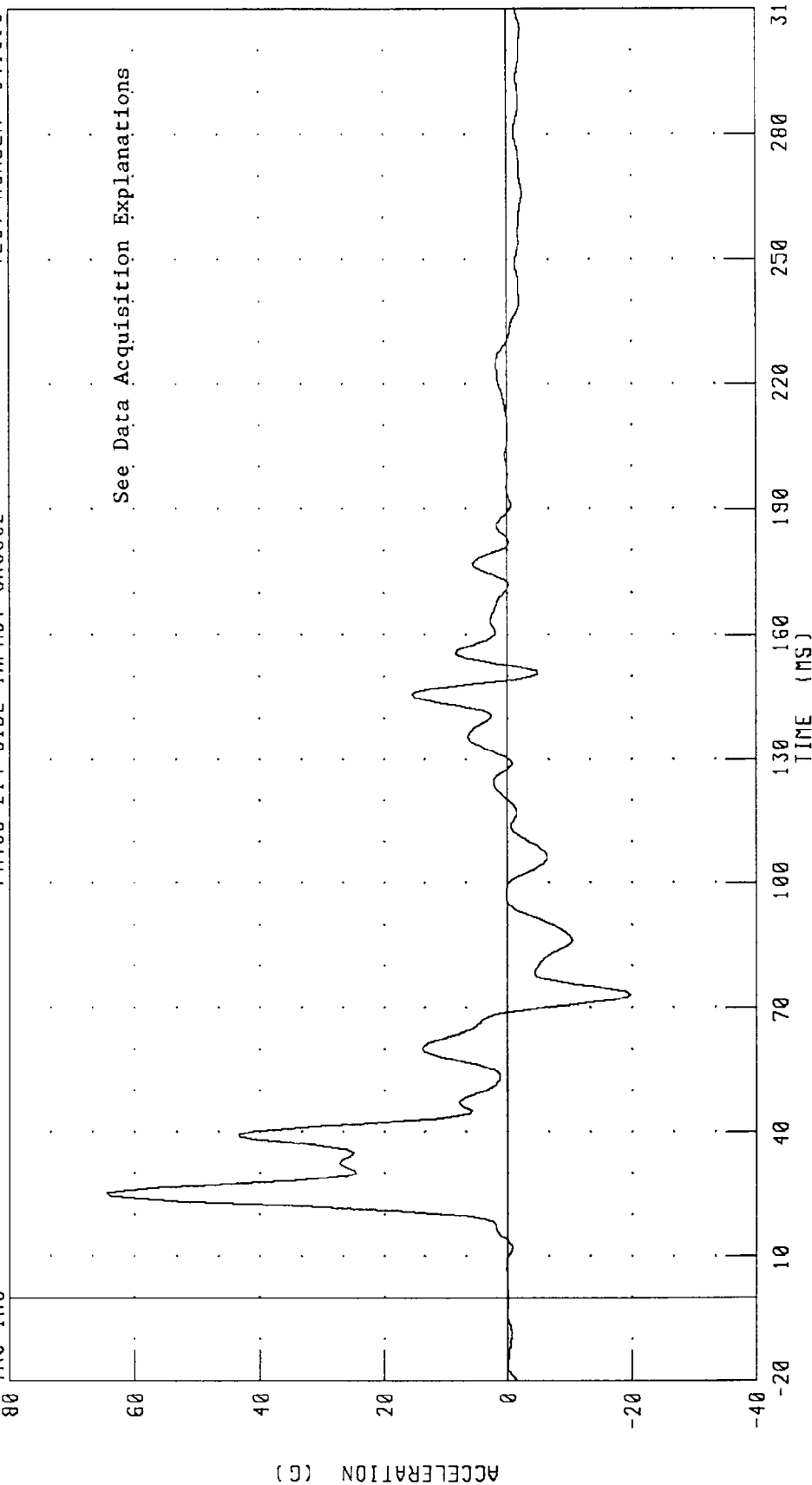
CHANNEL: LURYG1 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 DRIVER LEFT UPPER THORAX RIB Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC



CHANNEL: LURYGA FILTER: FIR 100

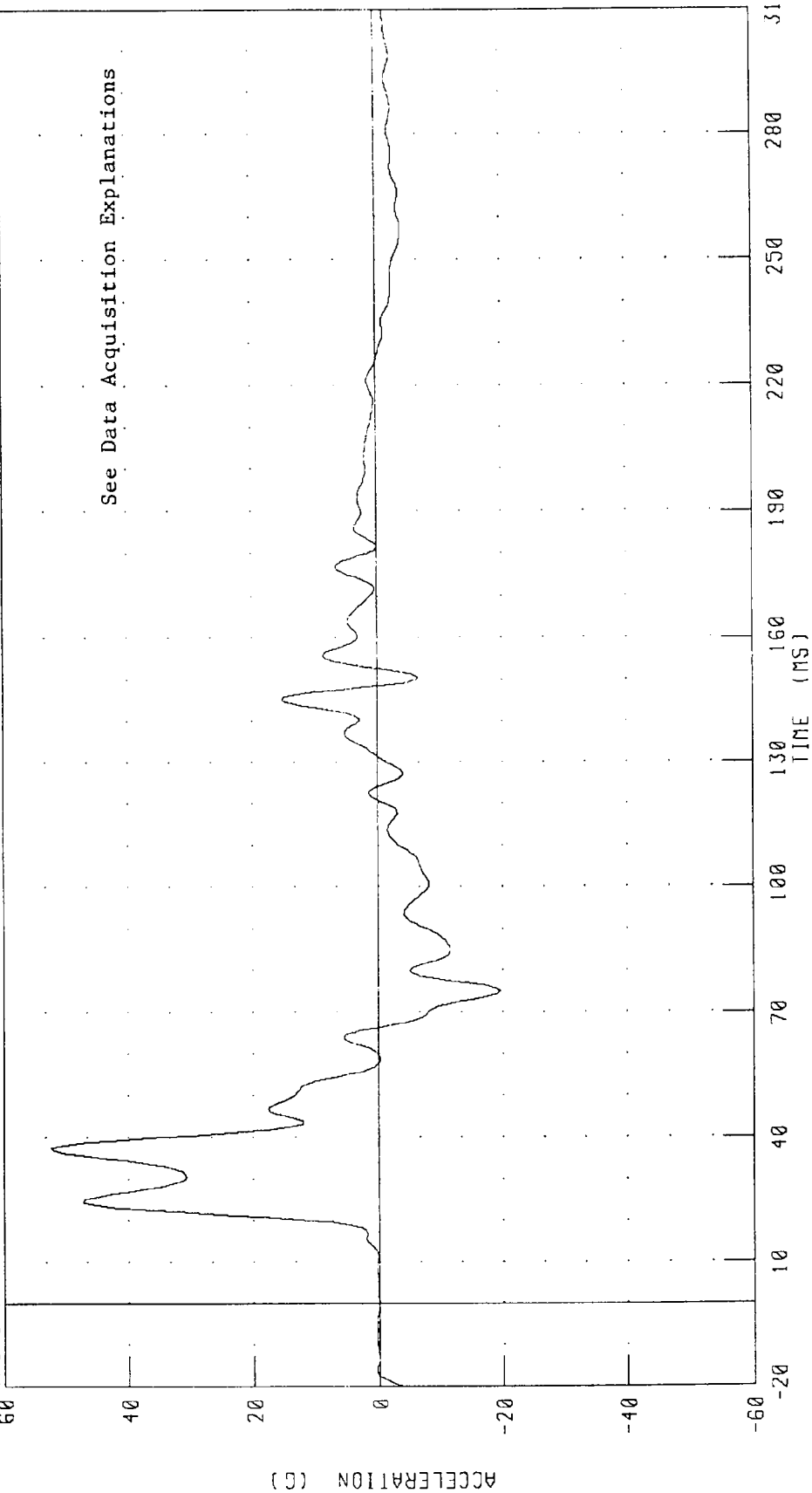
PEAK DATA: 64.45 G @ 25.00 MS, -19.84 G @ 73.13 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 DRIVER LEFT LOWER THORAX RIB Y-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC



PEAK DATA 52 51 G @ 37 50 MS, -19 57 G @ 75 00 MS

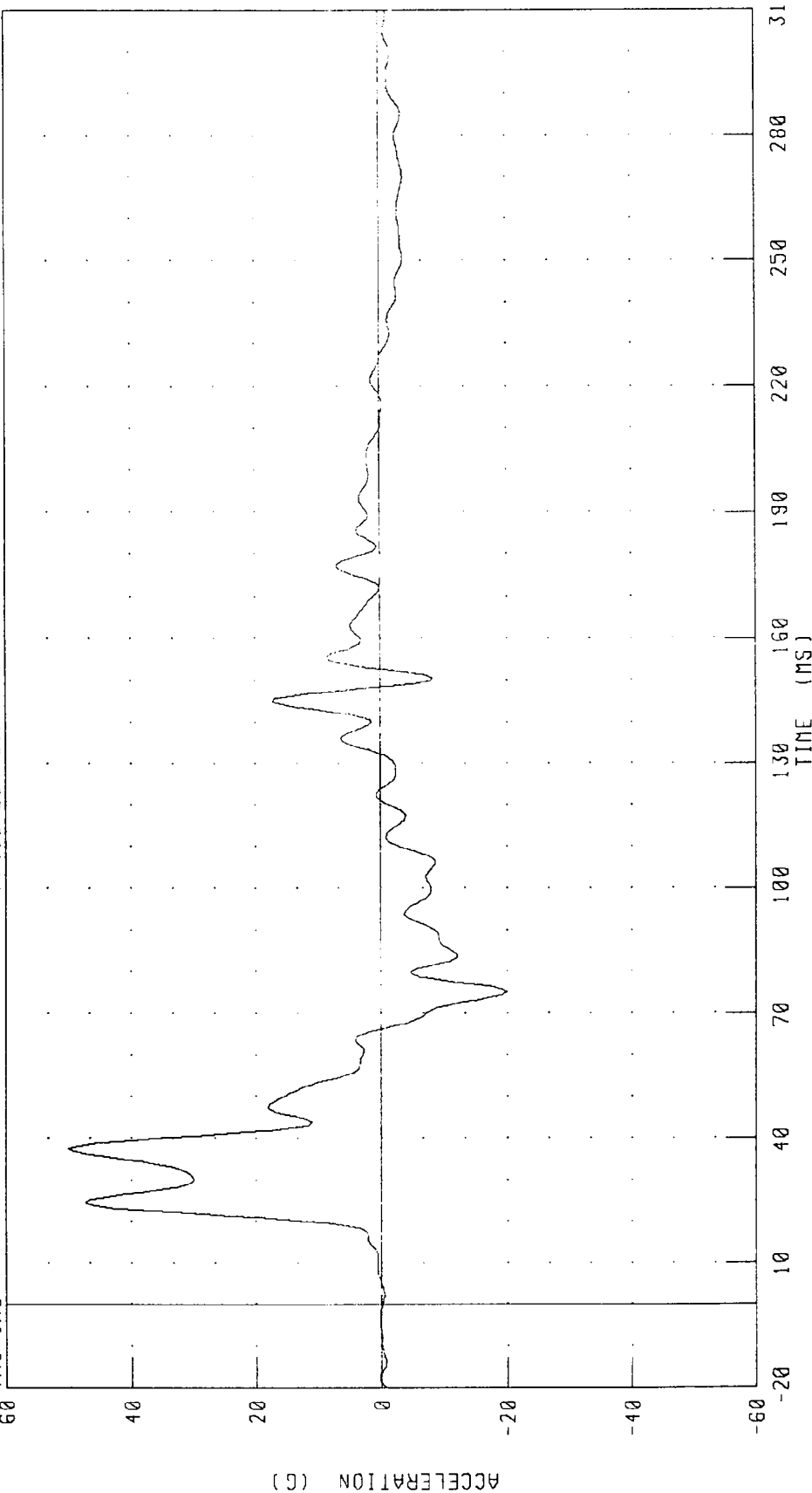
CHANNEL LLRYG1 FILTER FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 DRIVER LEFT LOWER THORAX RIB Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC



CHANNEL LLRYGA FILTER FIR 100

PEAK DATA 50 09 G @ 37 50 MS, -19 95 G @ 75 00 MS

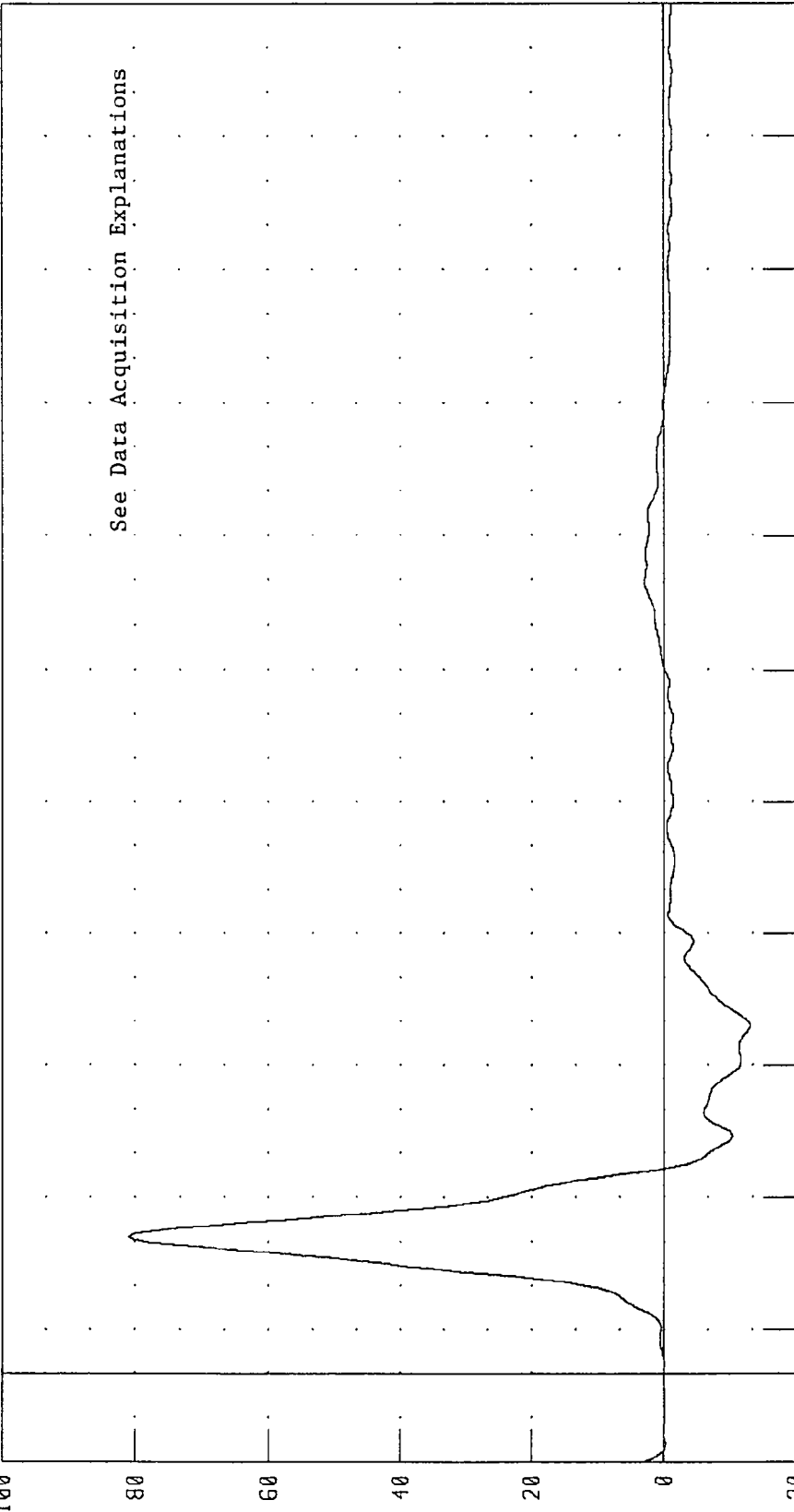
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
DRIVER PELVIS Y-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC

100



See Data Acquisition Explanations

TIME (MS)

PEAK DATA: 81.03 G @ 31.25 MS; -12.94 G @ 78.75 MS

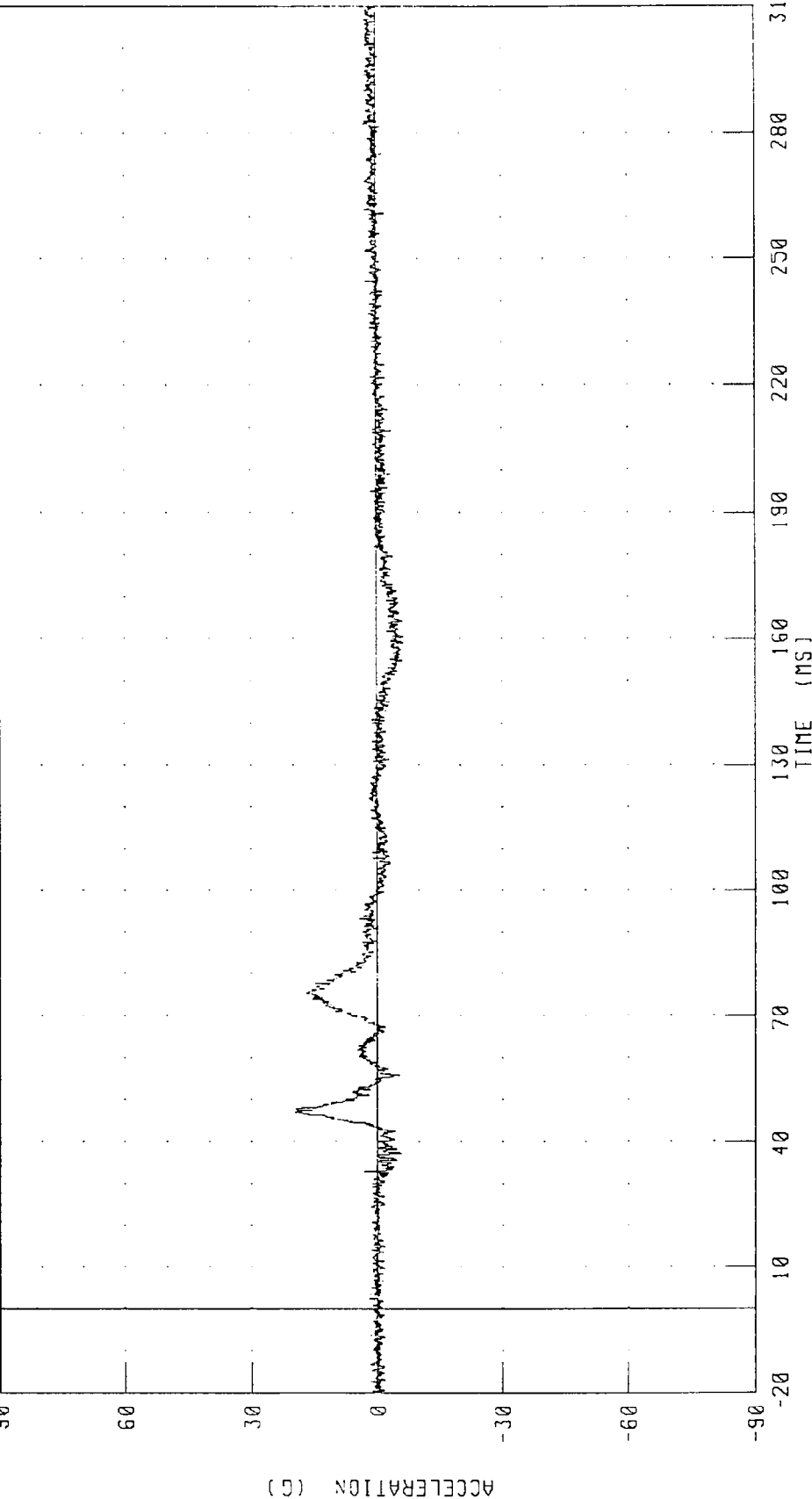
CHANNEL: PEVY01 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
LEFT REAR PASSENGER HEAD X-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC

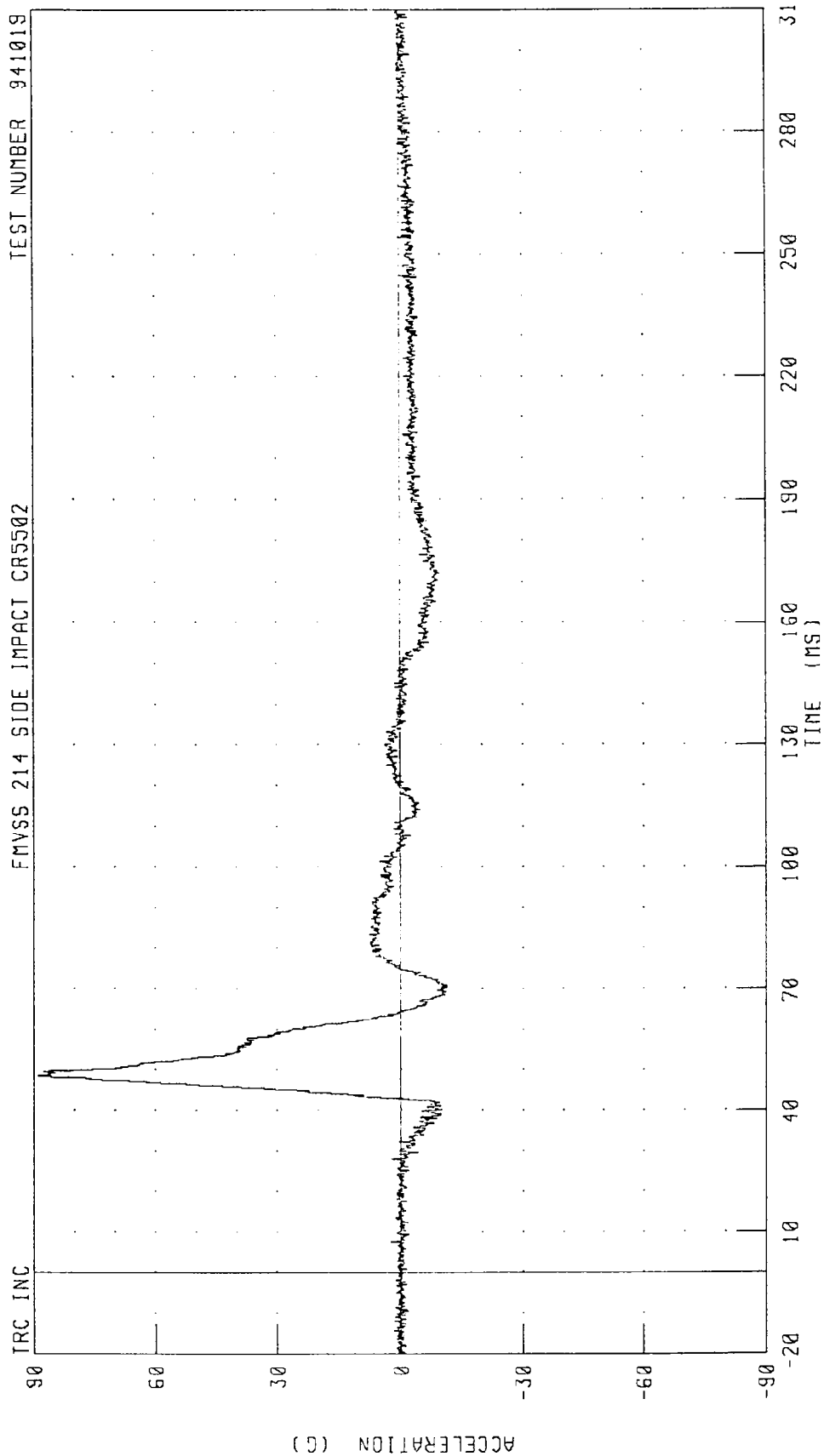


PEAK DATA 19 85 G @ 46 88 MS, -6 25 G @ 158 96 MS

CHANNEL HEDXG4 FILTER CH CLASS 1000

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 LEFT REAR PASSENGER HEAD Y-AXIS ACCELERATION
 FMVSS 214 SIDE IMPACT CR5502

TEST NUMBER 941019



PEAK DATA 89 01 G @ 48 48 MS, -11 69 G @ 70 72 MS

CHANNEL HEDYG4 FILTER CH CLASS 1000

ACCELERATION (G)

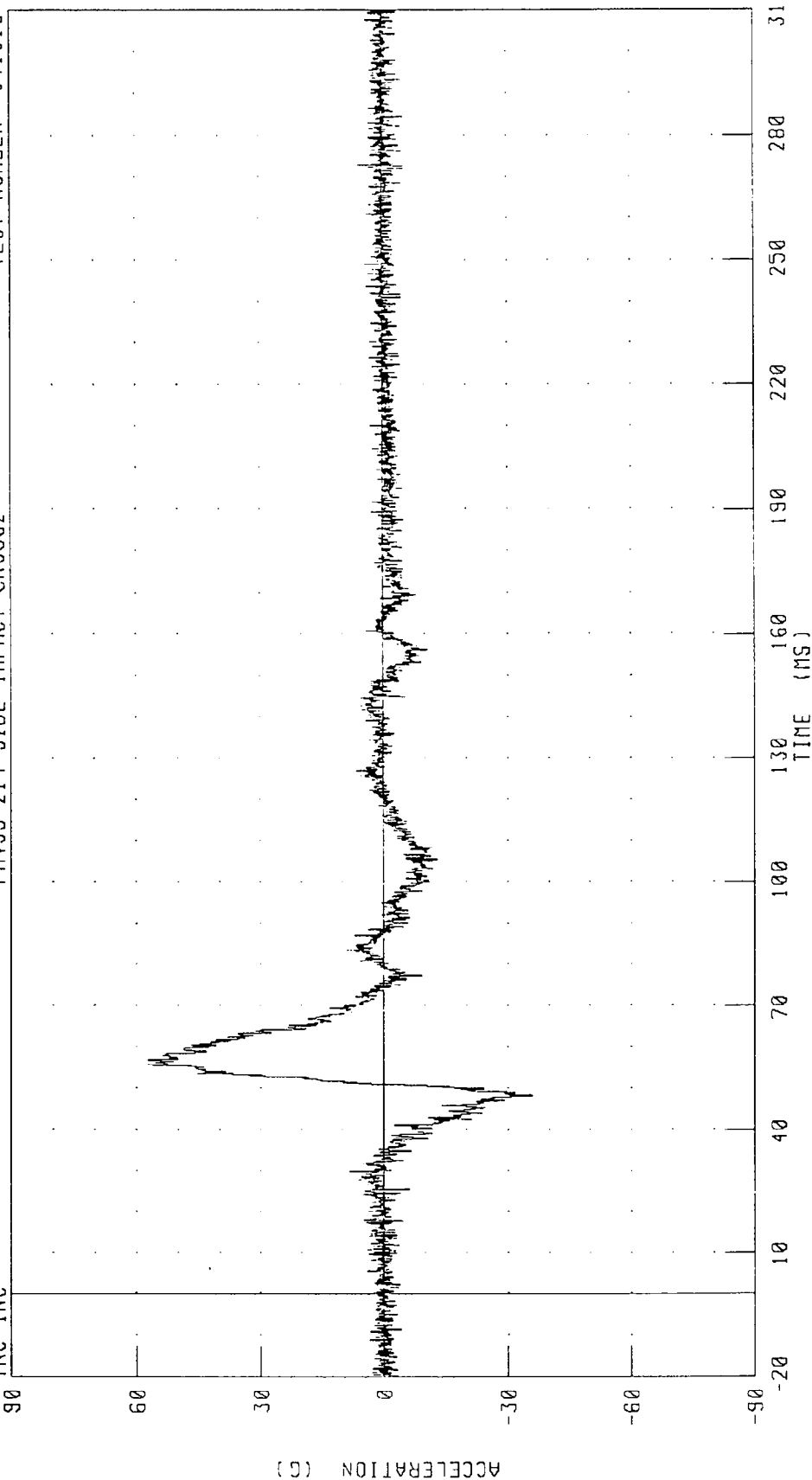
TIME (MS)

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
LEFT REAR PASSENGER HEAD Z-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

IRC INC

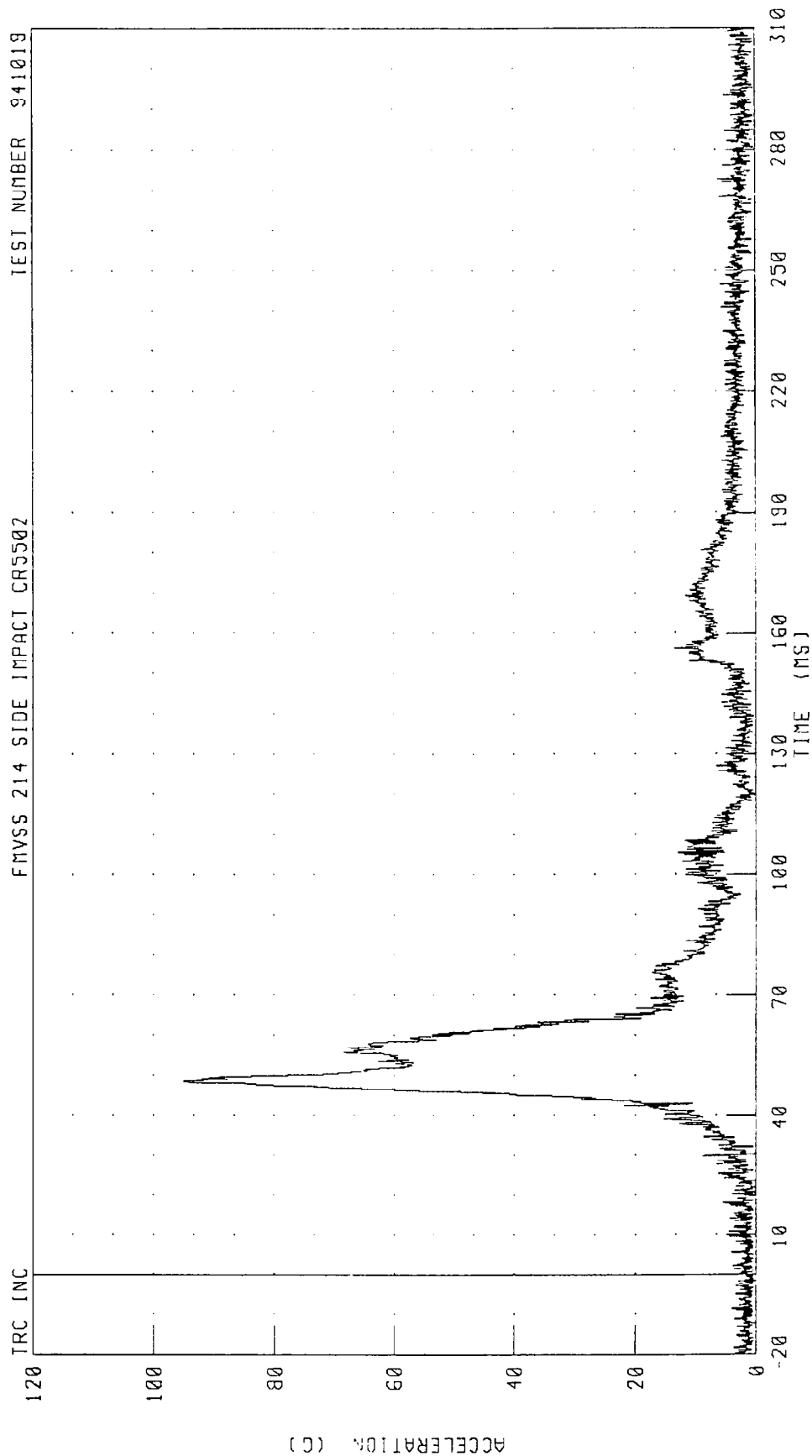


PEAK DATA 57 37 G @ 55 68 MS, -35 88 G @ 48 24 MS

CHANNEL HEDZG4 FILTER CH CLASS 1000

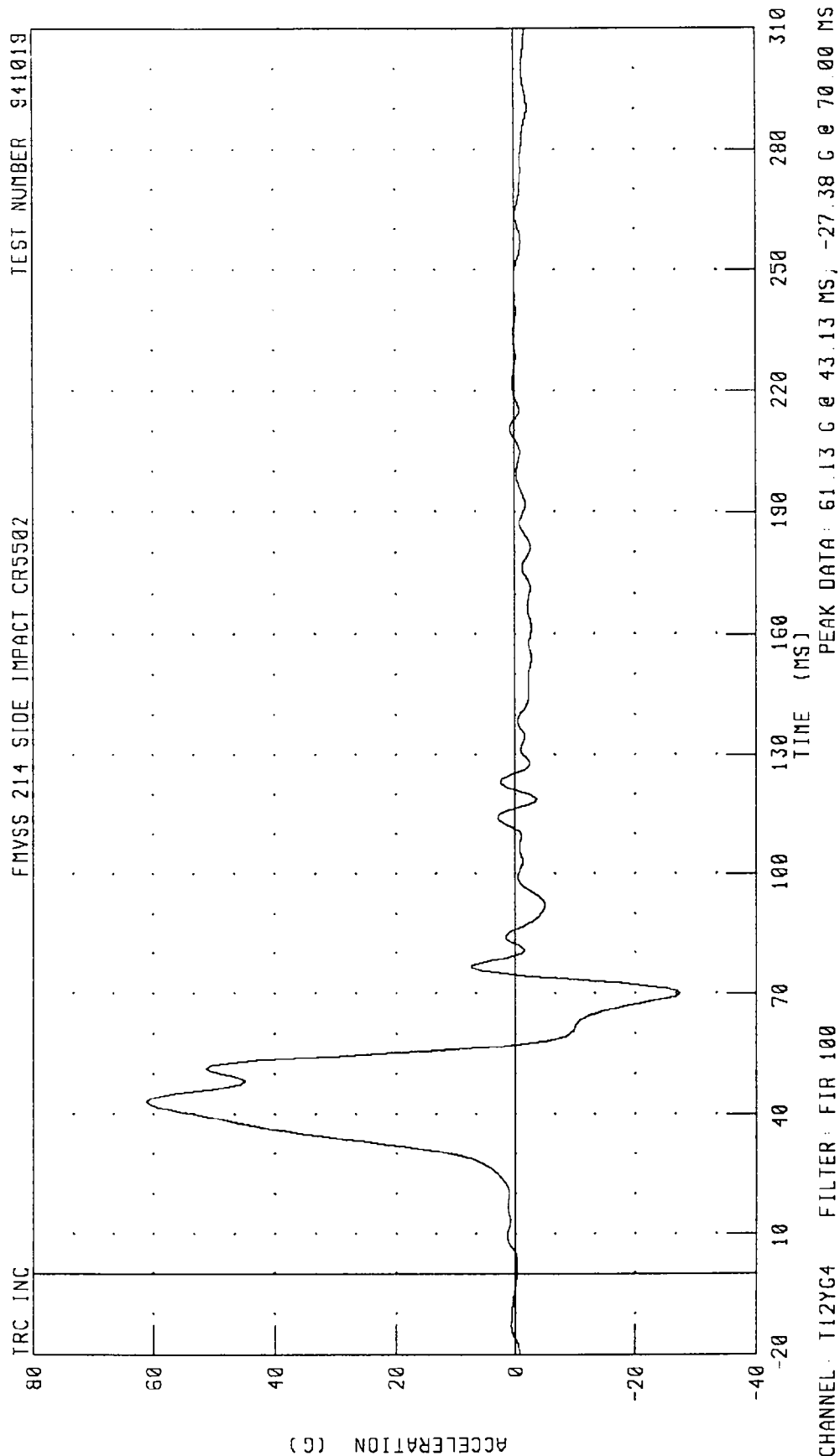
MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION

FMVSS 214 SIDE IMPACT CR5502 TEST NUMBER 941019



CHANNEL HEADG4 FILTER CH. CLASS 1000 PEAK DATA 95 08 G @ 48 MS, 0 14 G @ 22 00 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION
 FMVSS 214 SIDE IMPACT CR5502



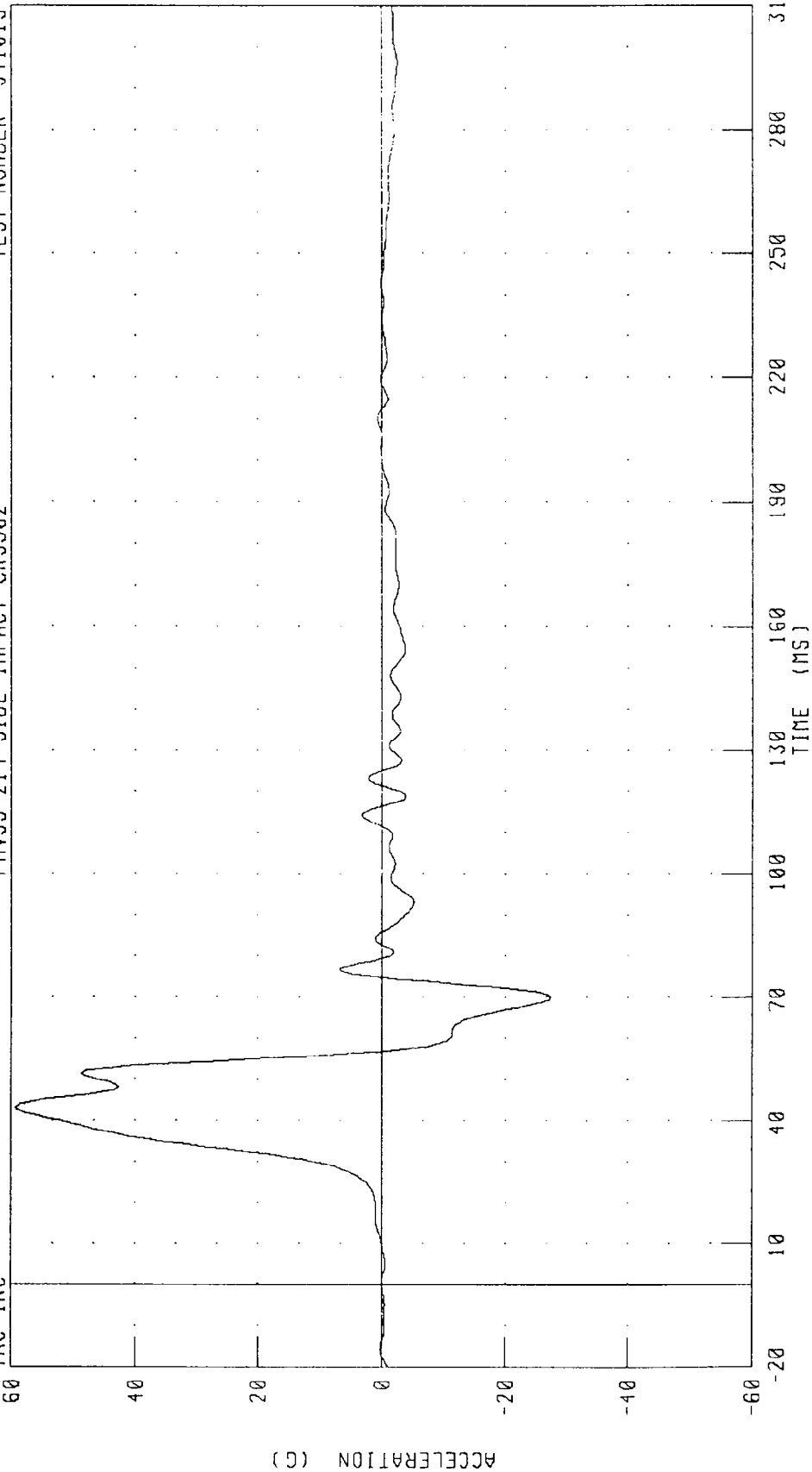
CHANNEL: T12YG4 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

IRC INC



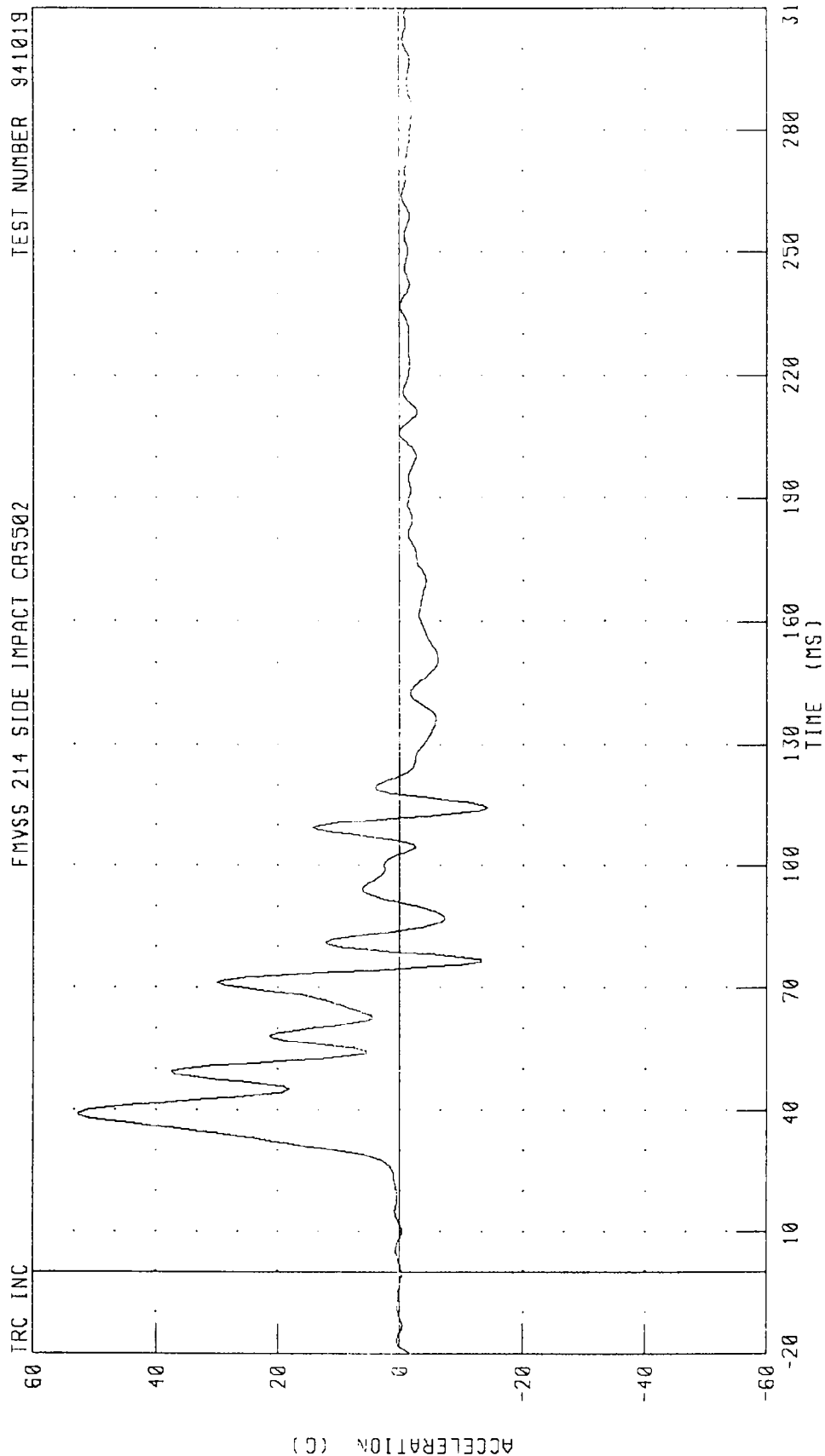
CHANNEL T12YGD FILTER FIR 100

PEAK DATA 59 22 G @ 43 13 MS, -27 50 G @ 70 00 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 LEFT REAR PASSENGER LEFT UPPER THORAX RIB Y-AXIS ACCELERATION

TEST NUMBER 941019

FVSS 214 SIDE IMPACT CR5502



PEAK DATA 52 68 G @ 39.38 MS, -14 15 G @ 114 37 MS

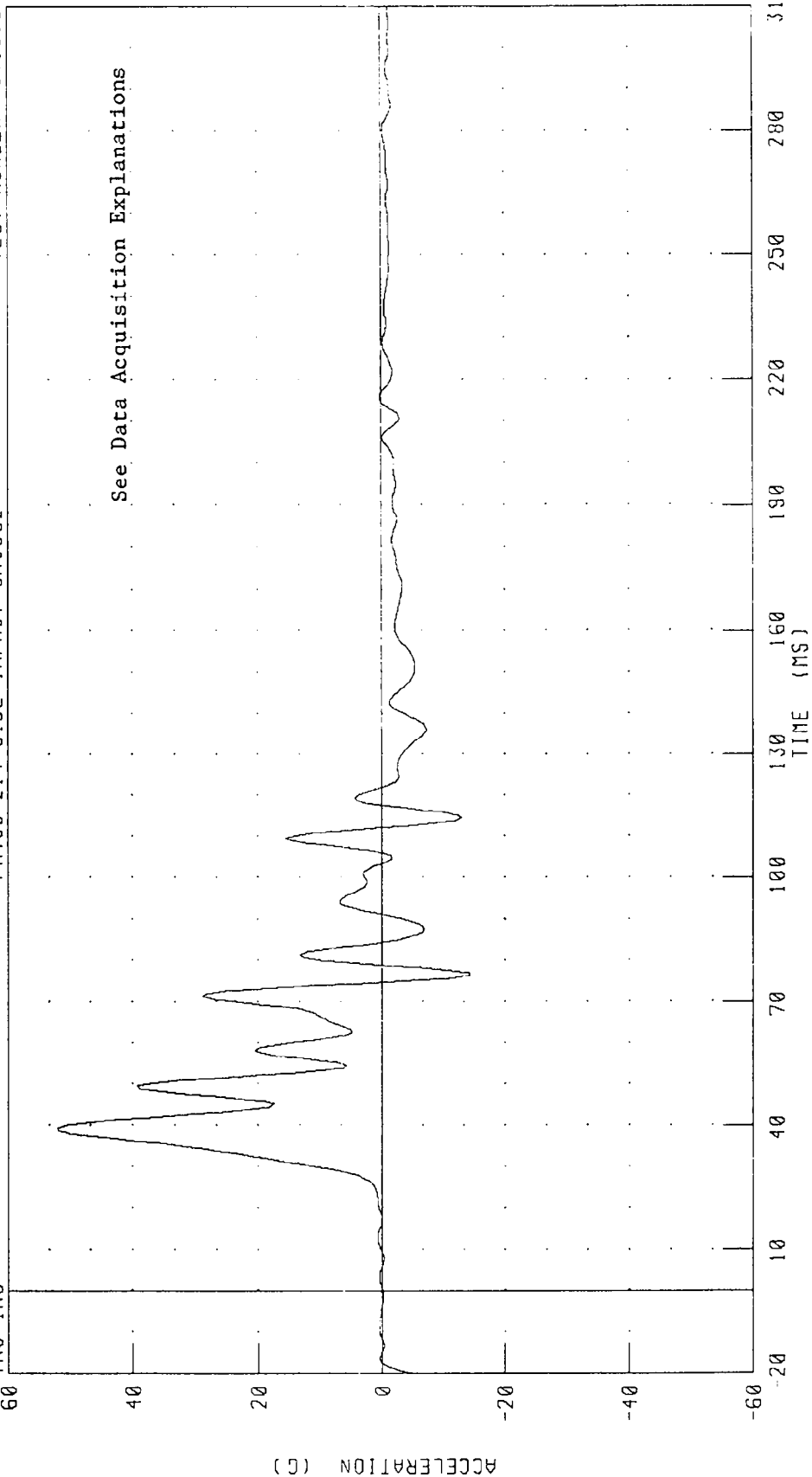
CHANNEL LURYG4 FILTER FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 LEFT REAR PASSENGER LEFT UPPER THORAX RIB Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC



CHANNEL LURYGD FILTER FIR 100

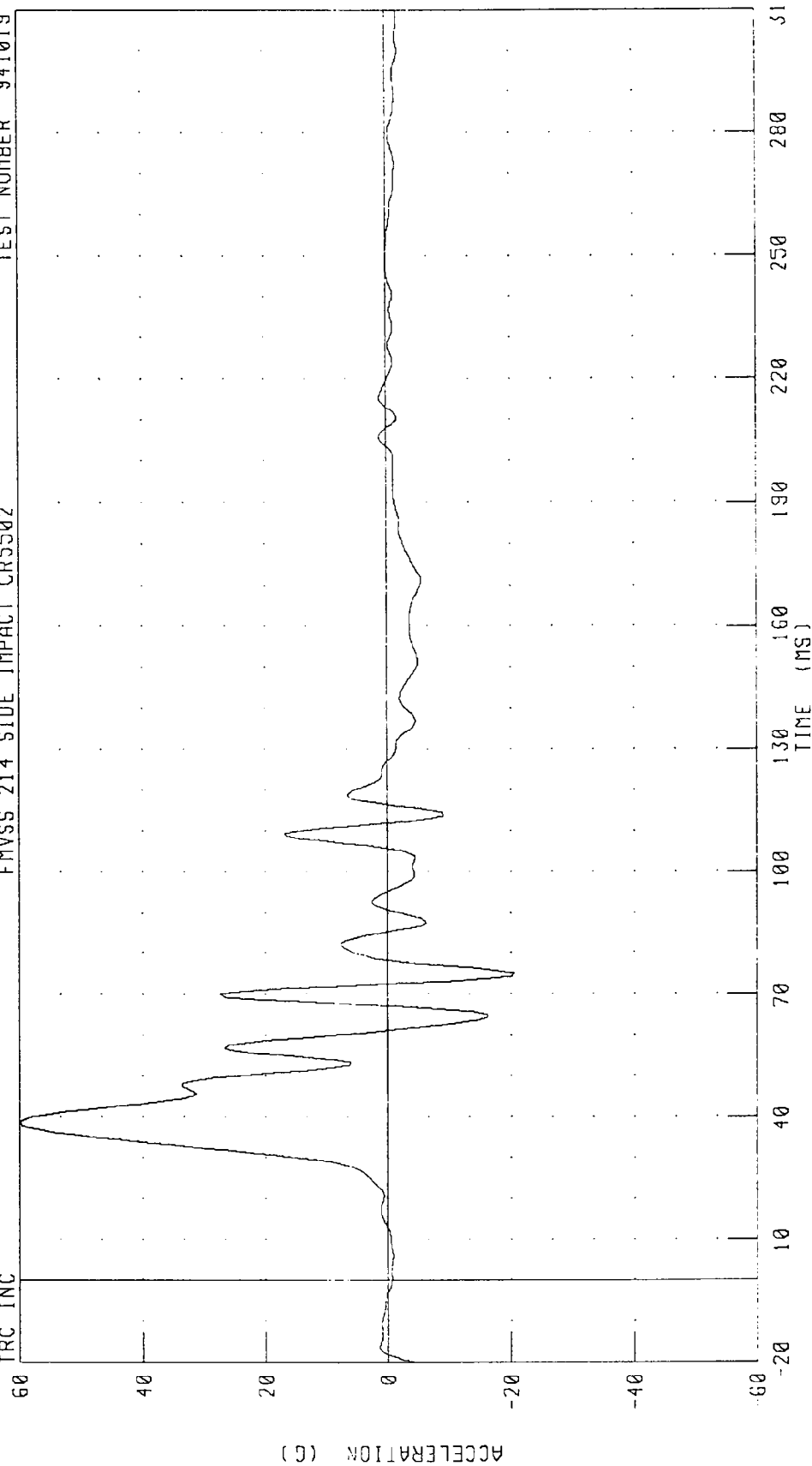
PEAK DATA 51 98 G @ 39 38 MS, -14 25 G @ 76 88 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
LEFT REAR PASSENGER LEFT LOWER THORAX RIB Y-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC



CHANNEL LLRYC4 FILTER FIR 100

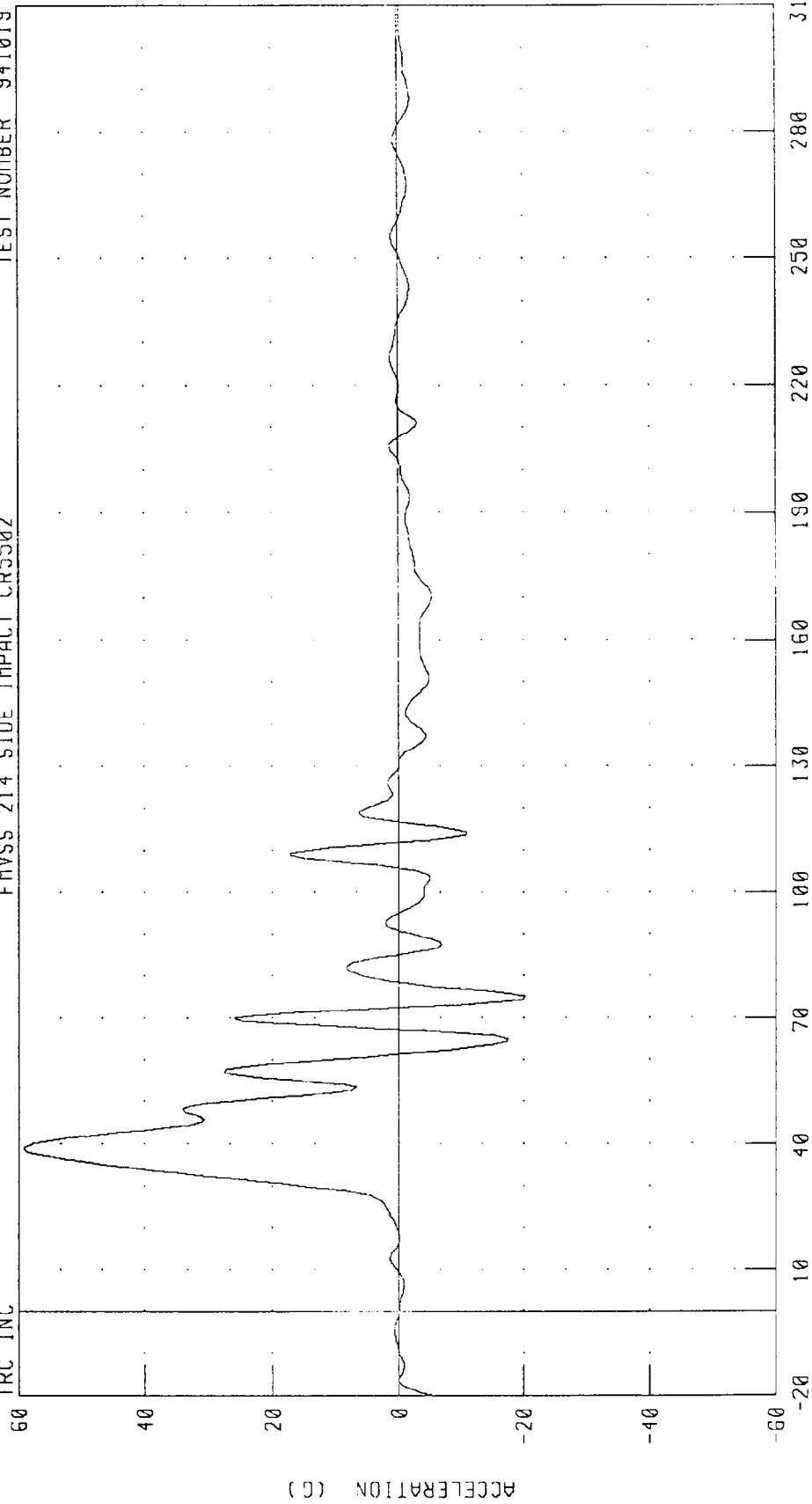
PEAK DATA 59 82 G @ 38 75 MS, -20 42 G @ 75 00 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
LEFT REAR PASSENGER LEFT LOWER THORAX RIB Y-AXIS REDUNDANT ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC

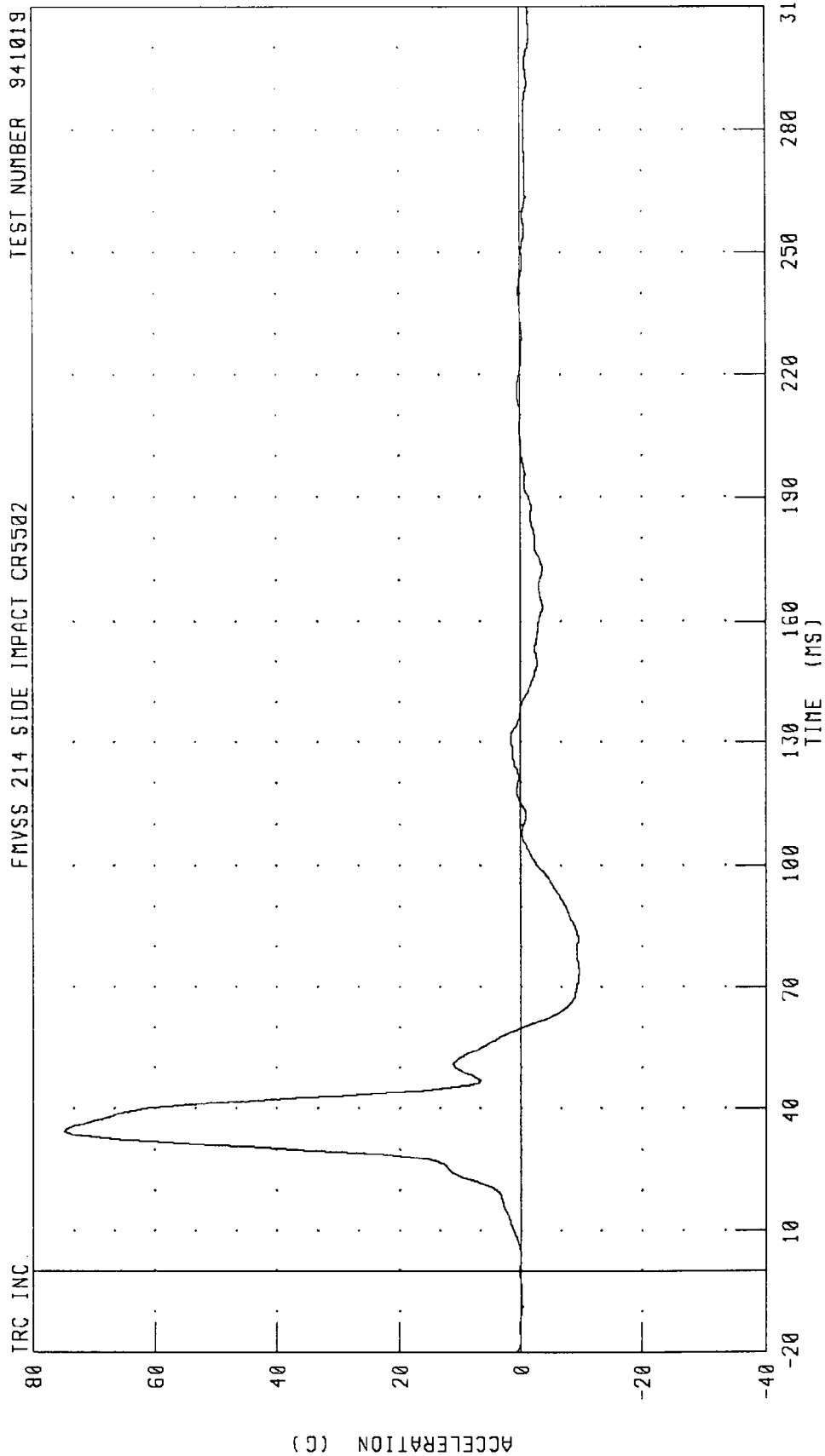


CHANNEL LLRYGD FILTER FIR 100

PEAK DATA 59 15 G @ 38 75 MS, -20 23 G @ 75 00 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
LEFT REAR PASSENGER PELVIS Y-AXIS ACCELERATION

FMVSS 214 SIDE IMPACT CR5502 TEST NUMBER 941019



PEAK DATA: 74.85 G @ 34.38 MS; -9.58 G @ 73.75 MS

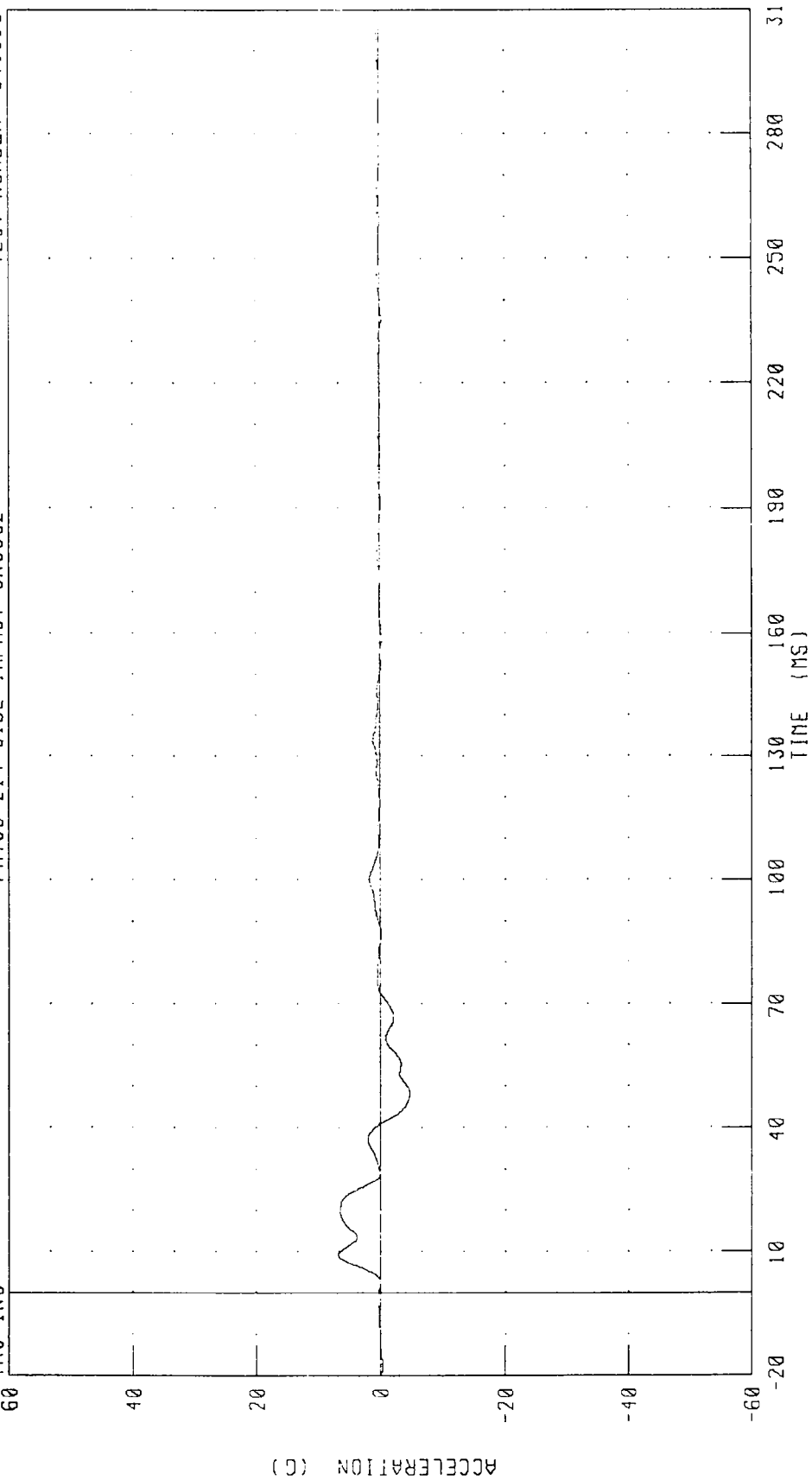
CHANNEL: PEVYG4 FILTER: FIR 100

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 VEHICLE RIGHT REAR SILL X-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC



CHANNEL RRSXG FILTER CH CLASS 60

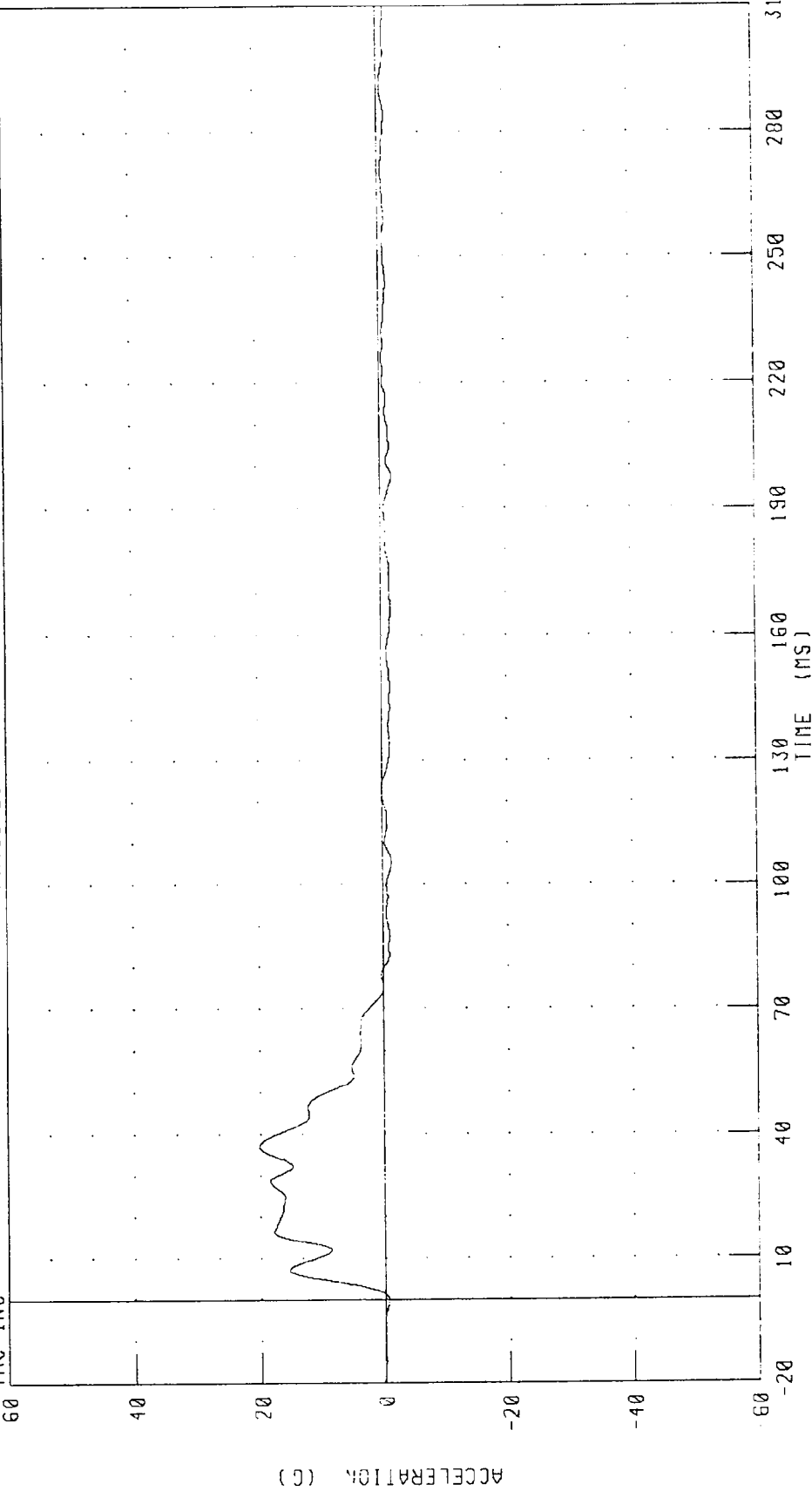
PEAK DATA 6 72 G @ 9 28 MS, -4 70 G @ 48 16 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
VEHICLE RIGHT REAR SILL Y-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC



PEAK DATA 20 19 G @ 37 20 MS, -1 90 G @ 198 00 MS

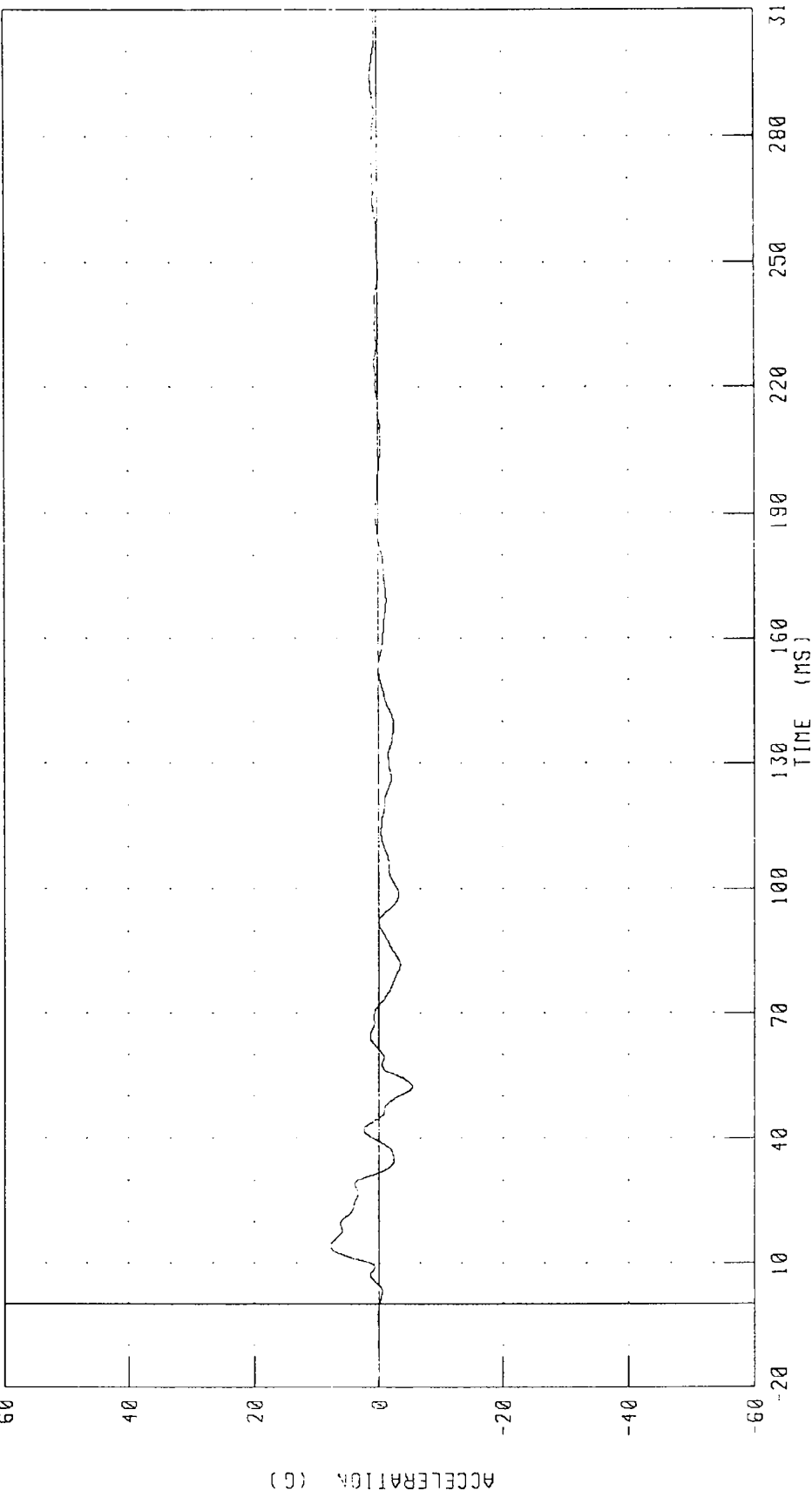
CHANNEL RRSYG FILTER CH CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 VEHICLE RIGHT REAR SILL Z-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC.



CHANNEL RRSZC FILTER CH CLASS 60

PEAK DATA 7 87 G @ 14 08 MS, -5 40 G @ 52 32 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 VEHICLE RIGHT REAR SILL RESULTANT ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC

80

65

50

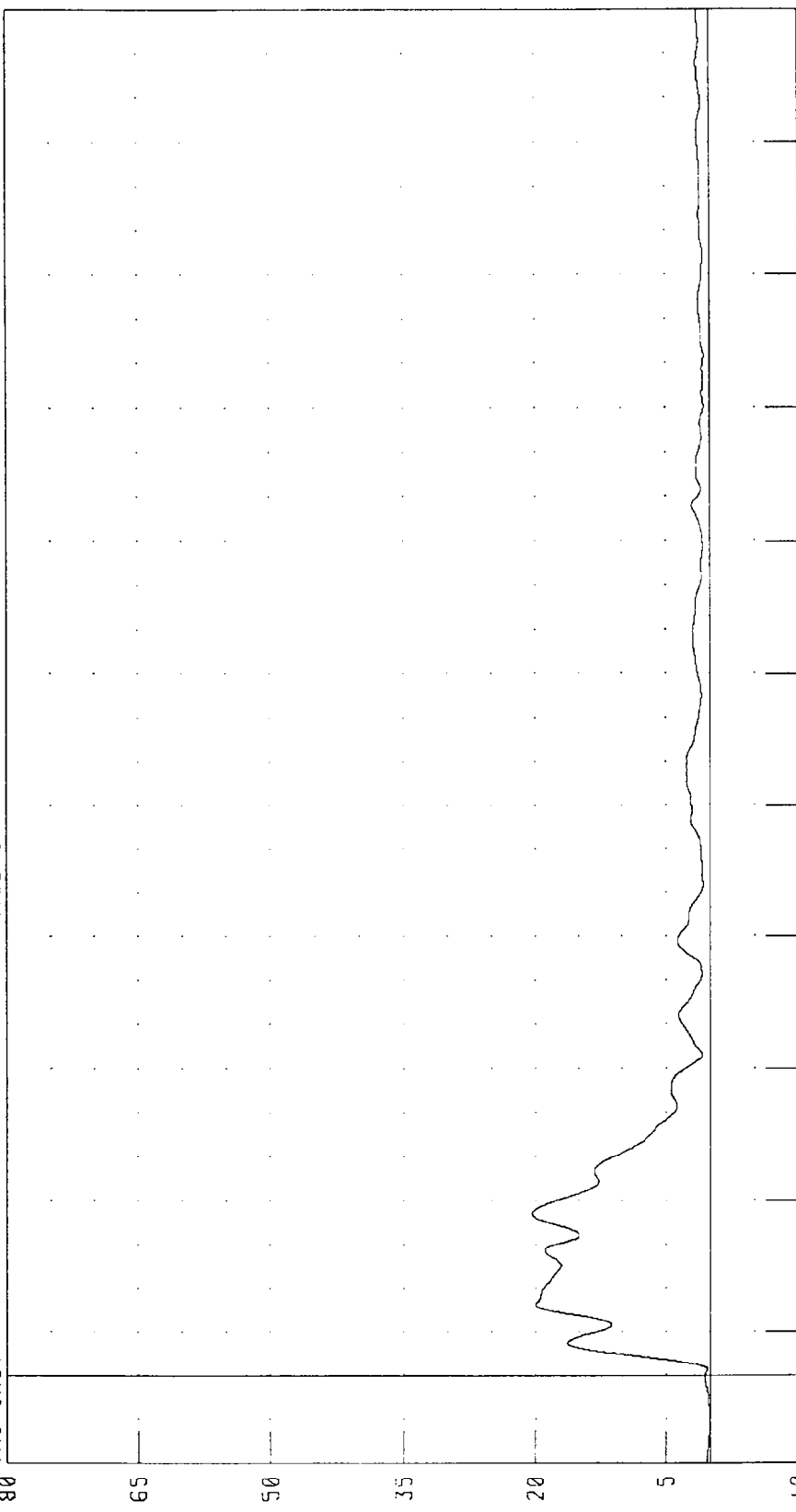
35

20

5

-10

ACCELERATION (G)



TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

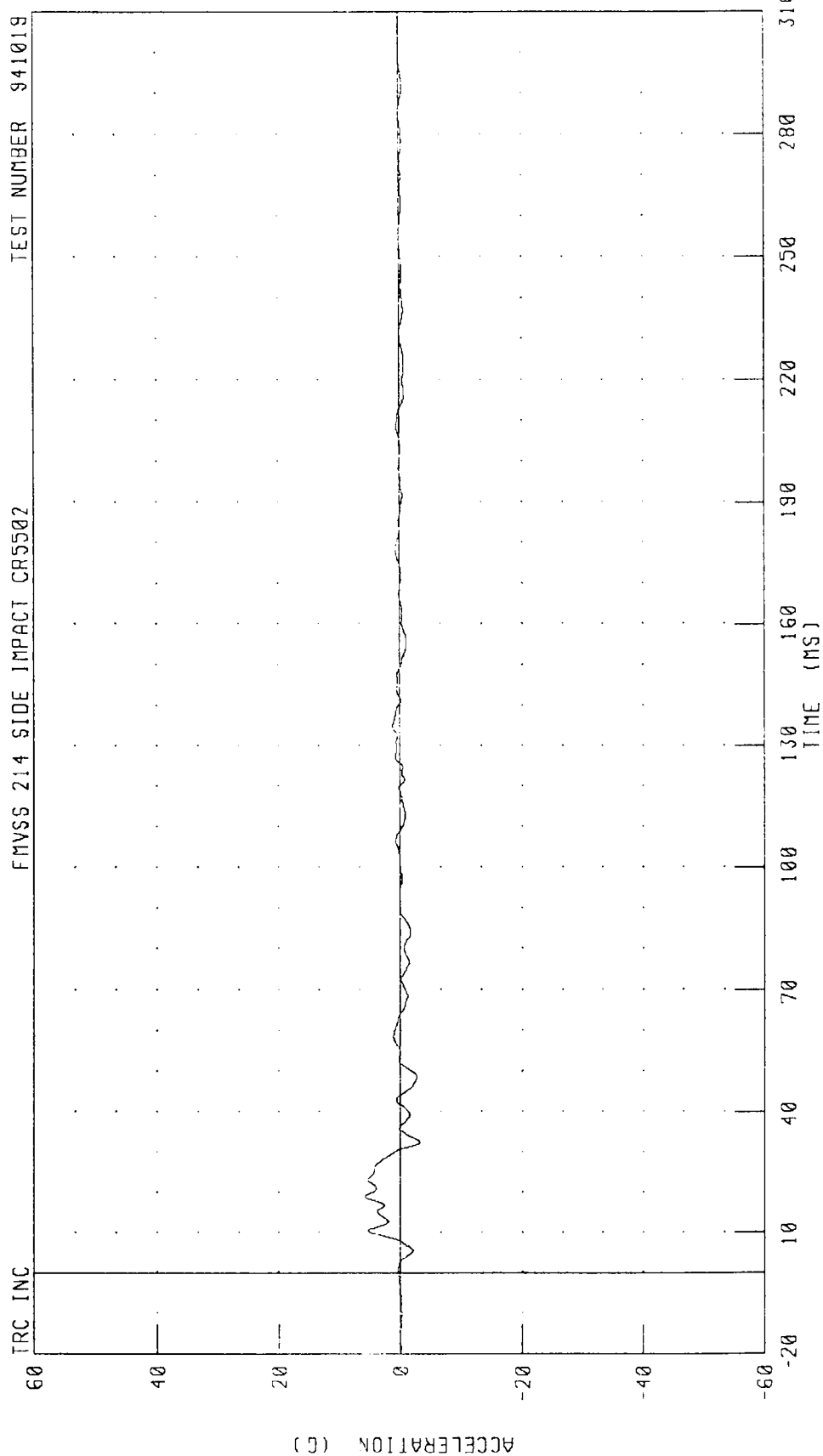
PEAK DATA 20 39 G @ 37 12 MS, 0 03 G @ -12 56 MS

FILTER CH CLASS 60

CHANNEL RRSRG

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
VEHICLE REAR DECK X-AXIS ACCELERATION

FMVSS 214 SIDE IMPACT CR5502 TEST NUMBER 941019

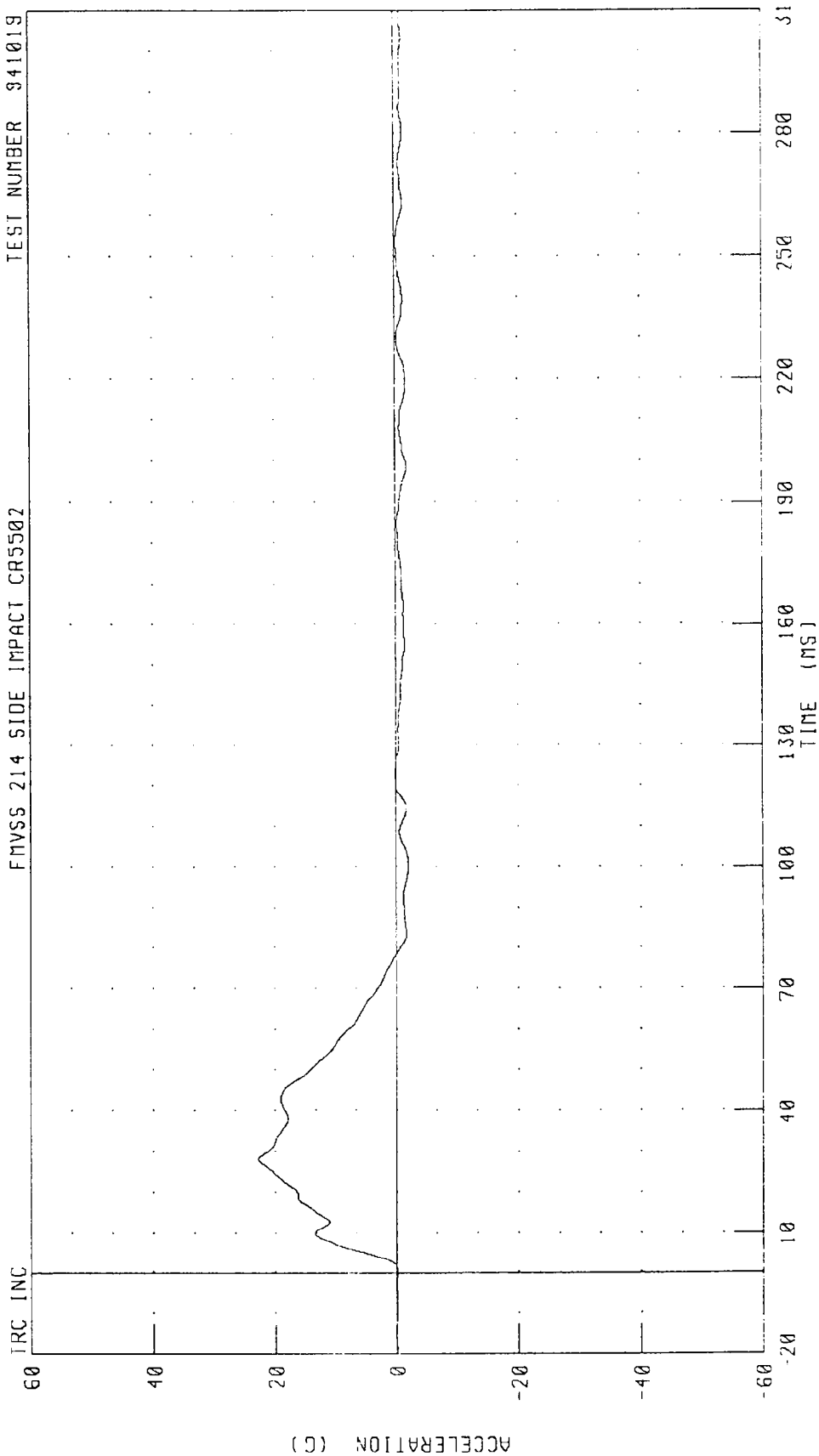


PEAK DATA 5 77 G @ 18 88 MS, -3 28 G @ 32 64 MS

CHANNEL R0KXG FILTER CH CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 VEHICLE REAR DECK Y-AXIS ACCELERATION

FMVSS 214 SIDE IMPACT CR5502 TEST NUMBER 941019

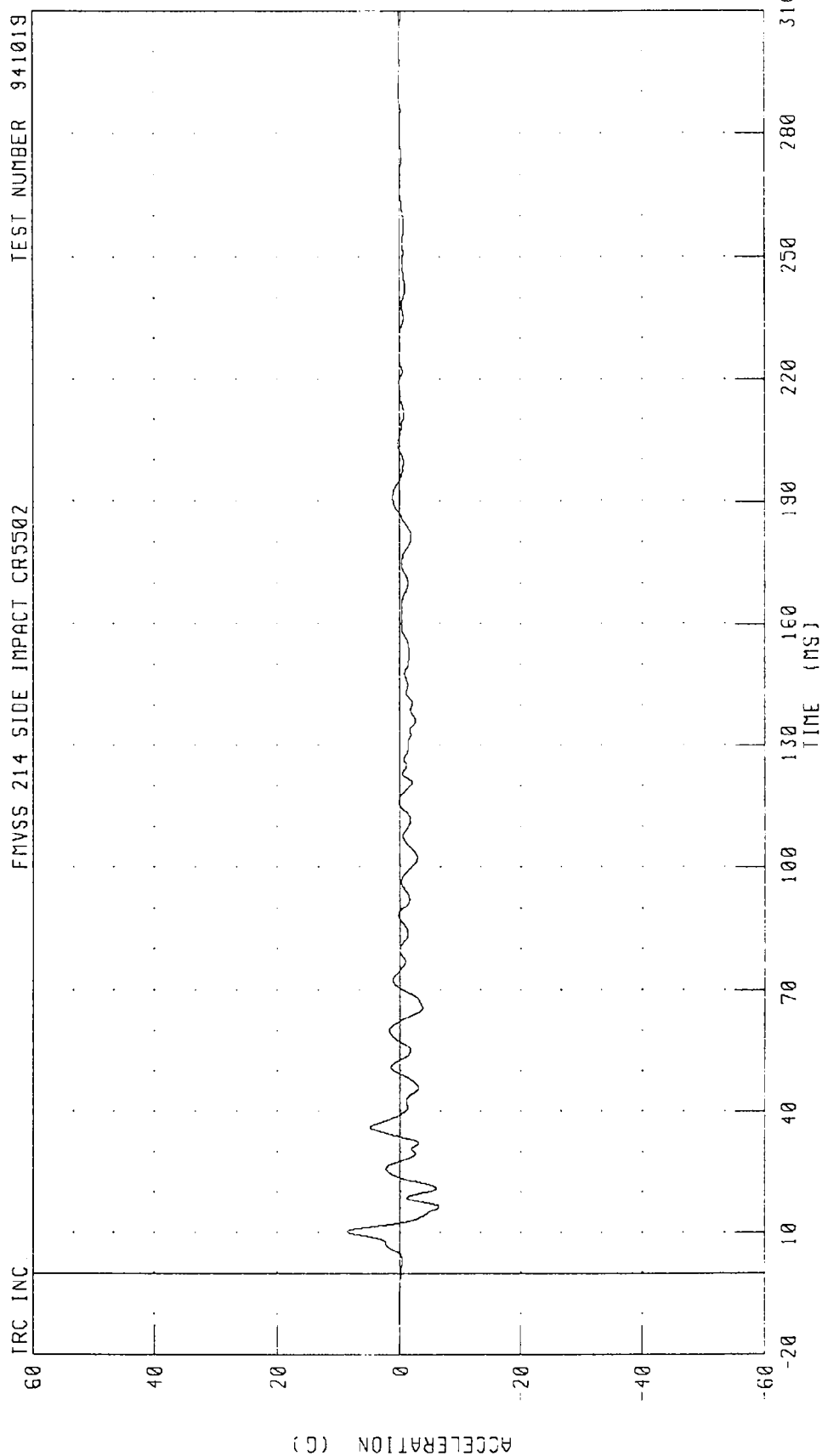


PEAK DATA 22 88 G @ 28 24 MS, -2 07 G @ 101 04 MS

CHANNEL RDKYC FILTER CH CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
VEHICLE REAR DECK Z-AXIS ACCELERATION

FMVSS 214 SIDE IMPACT CR5502 TEST NUMBER 941019



CHANNEL ROKZC FILTER CH CLASS 60

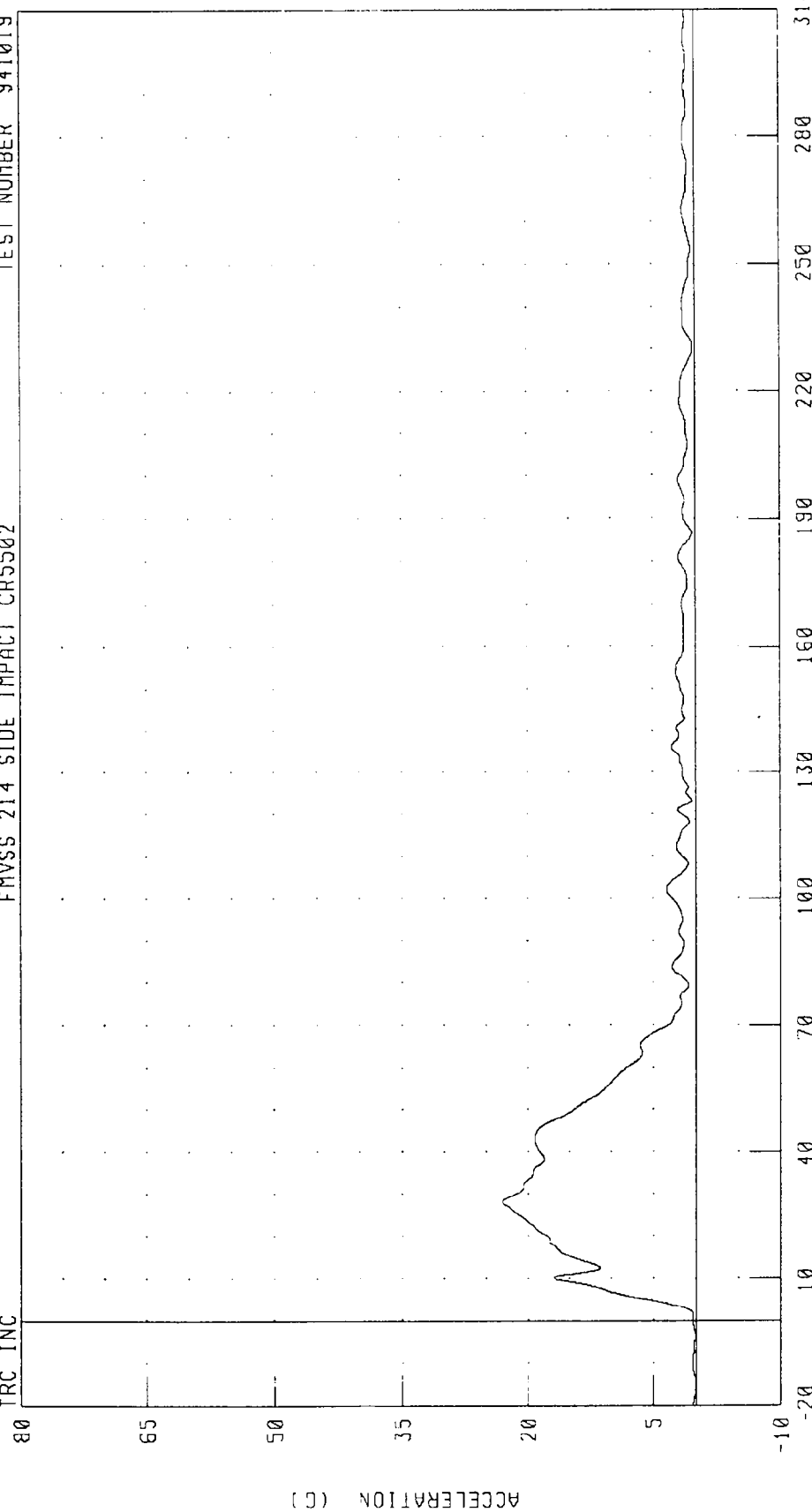
PEAK DATA 8 77 G @ 10 32 MS, -6 33 G @ 16 40 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
VEHICLE REAR DECK RESULTANT ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC

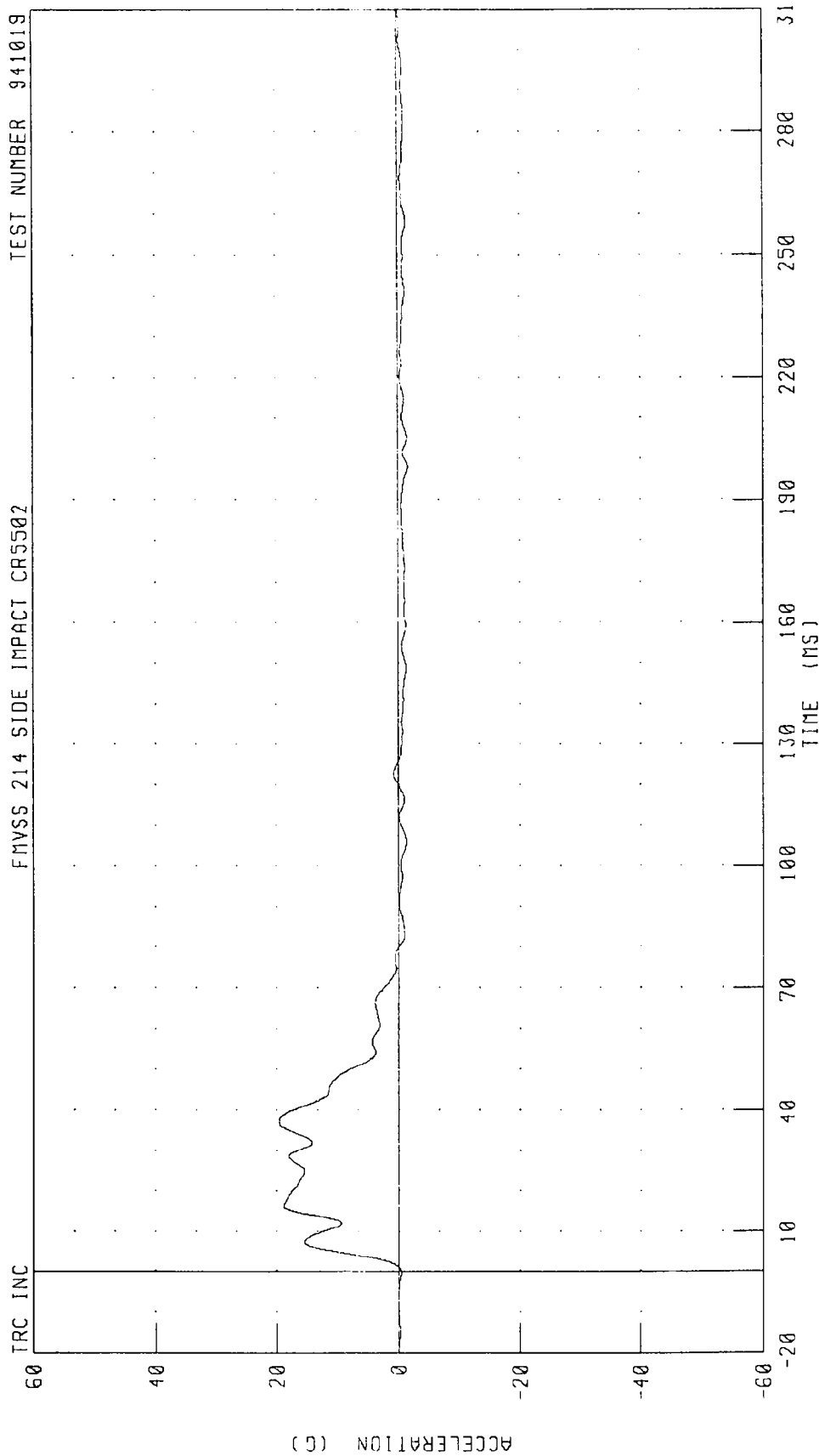


PEAK DATA 23 07 G @ 28 24 MS, 0 05 G @ -3 44 MS

CHANNEL RDKRC FILTER CH CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 REAR FLOORPAN TUNNEL Y-AXIS ACCELERATION

TRC INC FHYSS 214 SIDE IMPACT CR5502 TEST NUMBER 941019



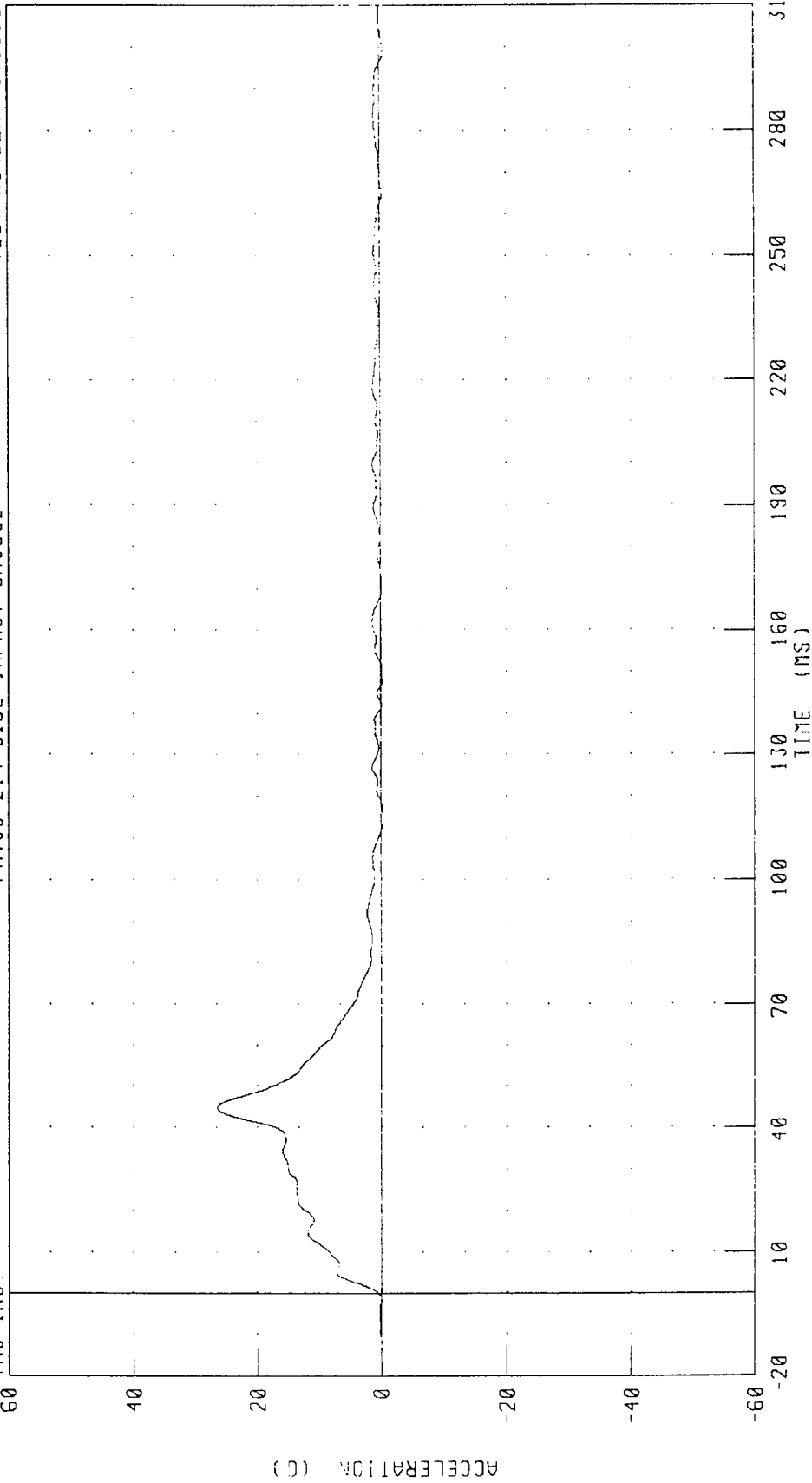
CHANNEL TTRYC FILTER CH CLASS 60 PEAK DATA 19 57 G @ 37 20 MS, -1 64 G @ 198 16 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 BARRIER CENTER OF GRAVITY X-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC.

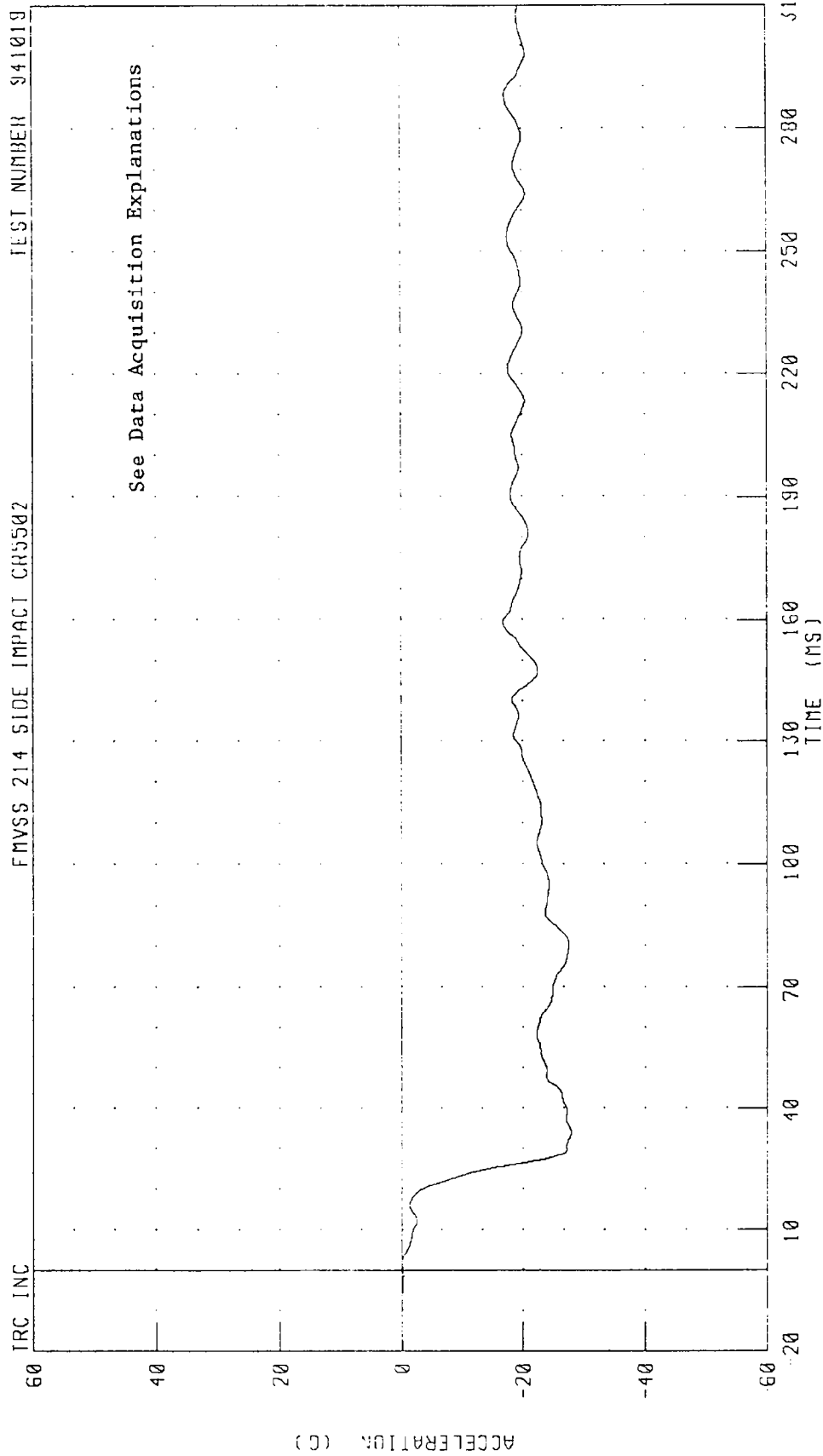


PEAK DATA 26.47 G @ 44.80 MS, -0.55 G @ 299.20 MS

CHANNEL BCGXC FILTER CH CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 BARRIER CENTER OF GRAVITY Y-AXIS ACCELERATION
 FMVSS 214 SIDE IMPACT CR5502

TEST NUMBER 941019



PEAK DATA 0 04 G @ -13 84 MS, -27 92 G @ 34 16 MS

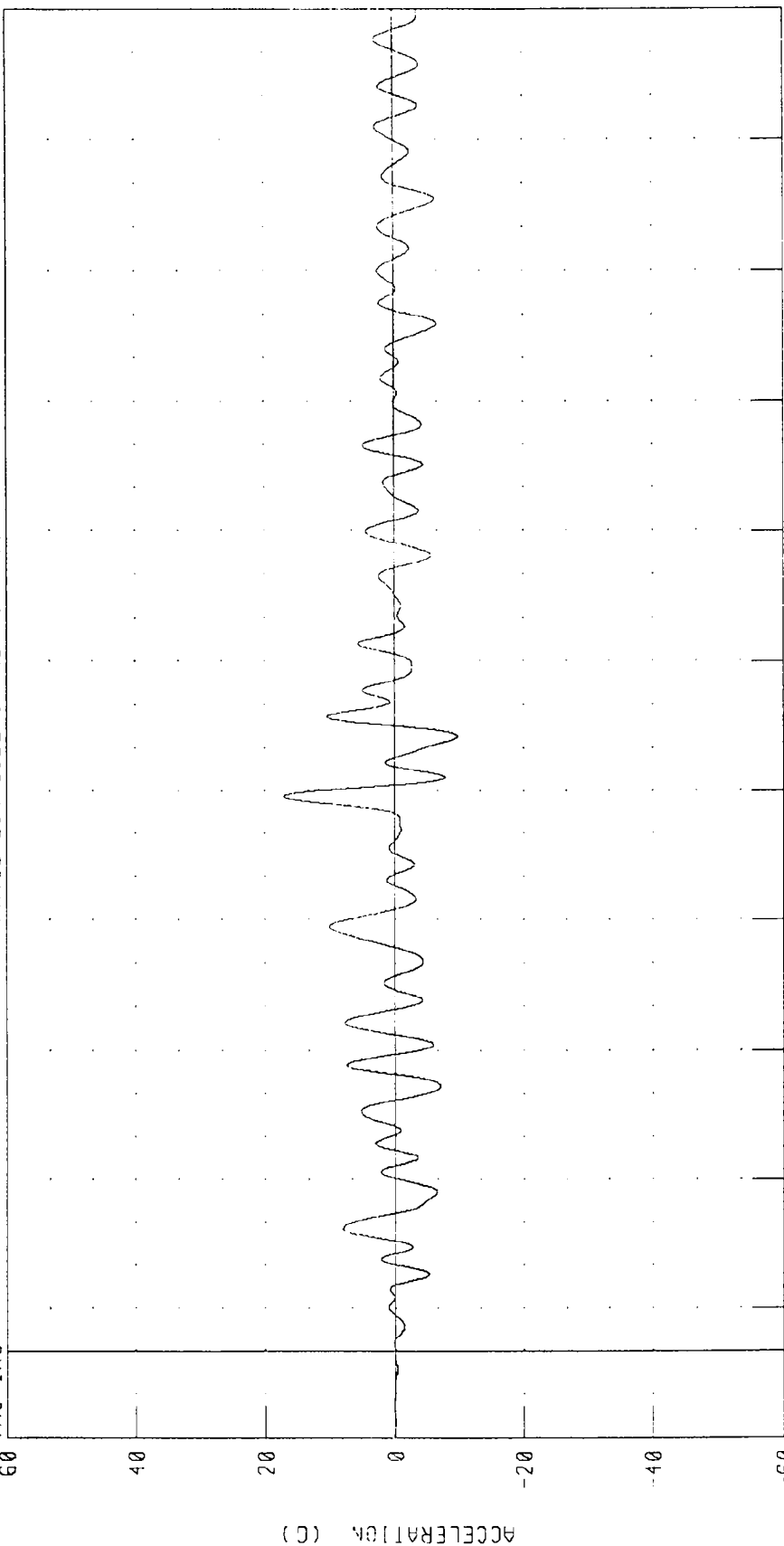
CHANNEL BCCYG FILTER CH CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 BARRIER CENTER OF GRAVITY Z-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

IRC INC



PEAK DATA 17 18 G @ 128 80 MS, -9 85 G @ 142 88 MS

CHANNEL BCGZG FILTER CH CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 BARRIER CENTER OF GRAVITY RESULTANT ACCELERATION

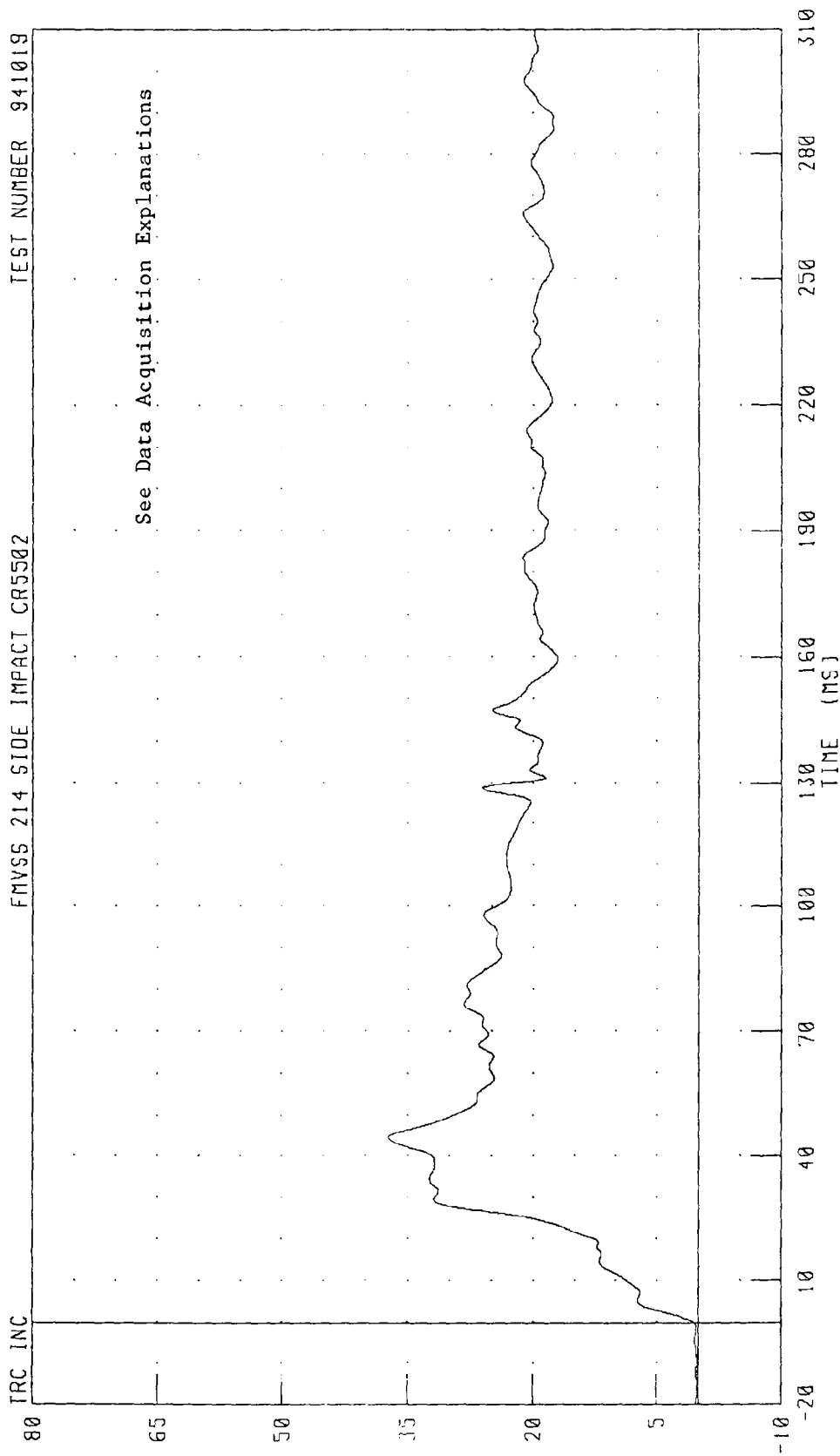
TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

IRC INC

See Data Acquisition Explanations

ACCELERATION (G)



CHANNEL BCGRG FILTER CH CLASS 60

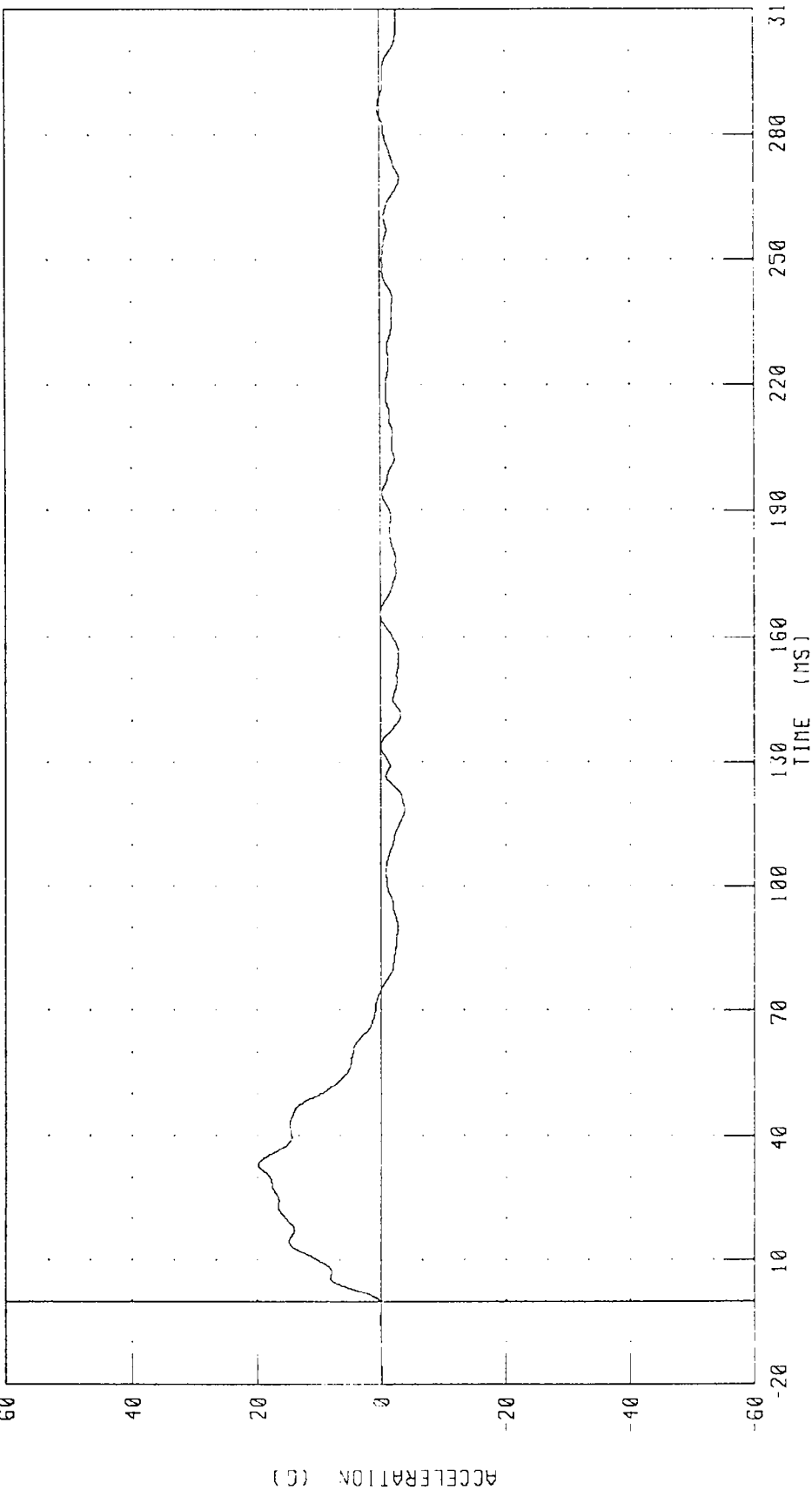
PEAK DATA 37 30 C @ 44 56 MS, 0 03 G @ -14 96 MS

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 BARRIER LEFT FRAME RAIL OVER REAR AXLE X-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC



PEAK DATA 19 80 G @ 33 12 MS, -3 89 G @ 118 64 MS

CHANNEL BSRXG FILTER CH CLASS 60

MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 1994 SUBARU IMPREZA
 BARRIER LEFT FRAME RAIL OVER REAR AXLE Y-AXIS ACCELERATION

TEST NUMBER 941019

FMVSS 214 SIDE IMPACT CR5502

TRC INC

60

40

20

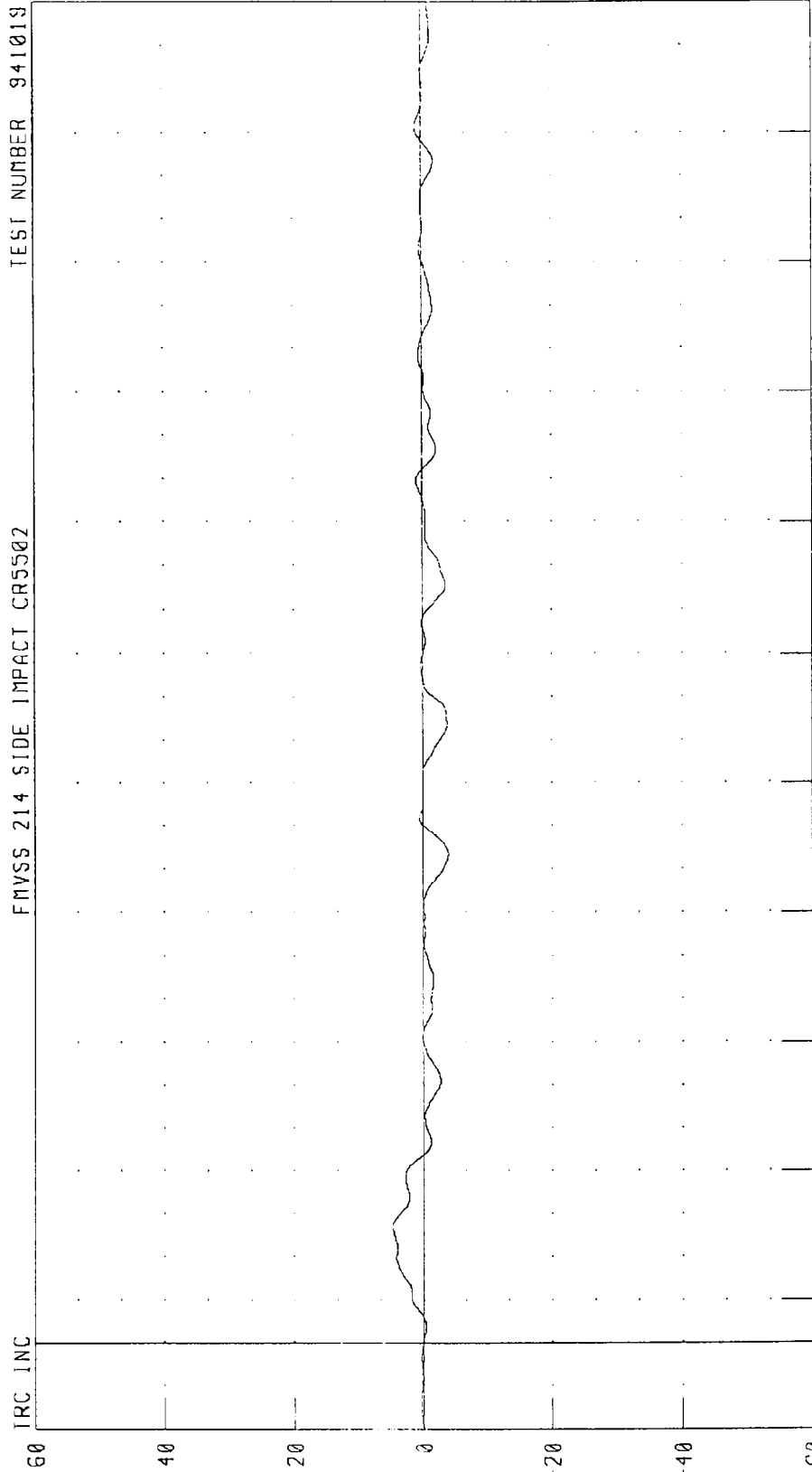
0

-20

-40

-60

ACCELERATION (G)



TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

PEAK DATA 4 72 G @ 26 96 MS, -3 99 G @ 113 44 MS

CHANNEL BSRYG FILTER CH CLASS 60

Appendix C

Dummy Calibration Information

Pre-test Calibration

Driver Dummy S/N 016

Calibration Test Results Summary

Dummy Serial Number: 016

Pre-test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thoracic Shock Absorber Test:	The shock absorber passed all test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lateral Pelvis Impact Test:	The pelvis passed all impact test requirements.

TRANSPORTATION RESEARCH CENTER INC.
 SIDE IMPACT DUMMY
 EXTERNAL DIMENSIONS
 LEFT SIDE CONFIGURATION
 SN 016 VECTOR

18-OCT-94

TRC INC. TEST NO: ED01603 572F SN016 EXT.DIMENSION CAL03

DIMENSIONS WITH CHEST JACKET INSTALLED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
	TEMPERATURE		71.0 DEG. F
	RELATIVE HUMIDITY		48.0 %
SH	SEATED HEIGHT	35.0 - 35.8 IN	35.5 IN
HP	HIP PIVOT HEIGHT	3.9 IN REF.	3.9 IN
KH	KNEE PIVOT FROM BACKLINE	20.1 - 20.7 IN	20.5 IN
KV	KNEE PIVOT FROM FLOOR	19.3 - 19.9 IN	19.3 IN
HW	HIP WIDTH	14.0 - 15.4 IN	14.8 IN
DIMENSIONS WITH CHEST JACKET REMOVED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
RH	RIB HEIGHT	19.75 - 20.50 IN	20.30 IN
RD	RIB FROM BACKLINE	9.0 - 9.5 IN	9.2 IN
RW-1	TOP RIB WIDTH FROM C/L	6.5 - 7.1 IN	6.8 IN
RW-2	BOTTOM RIB WIDTH FROM C/L	6.5 - 7.1 IN	6.8 IN
	DIFFERENCE BETWEEN TOP & BOTTOM RIB WIDTH FROM C/L	≤ 0.1 IN	0.0 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

[Signature]

RUN NUMBER: 101894.0848

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

13-OCT-94

TRC INC.

572F SN016 DAMPER TEST CAL03

TEST NUMBERS: DP01603A,DP01603B,DP01603C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66 - 78 F	70.0 DEG. F
RELATIVE HUMIDITY		10 - 70 %	50.0 %
VELOCITY	FORCE	188 - 253 LB	208 LB
10.0 FT/S	DISPLACEMENT	1.19 - 1.38 IN	1.30 IN
VELOCITY	FORCE	389 - 472 LB	403 LB
14.0 FT/S	DISPLACEMENT	1.25 - 1.47 IN	1.42 IN
VELOCITY	FORCE	841 - 1000 LB	926 LB
20.0 FT/S	DISPLACEMENT	1.31 - 1.56 IN	1.48 IN

DAMPER SETTING = 7.0

TEST MEETS SPECIFICATIONS

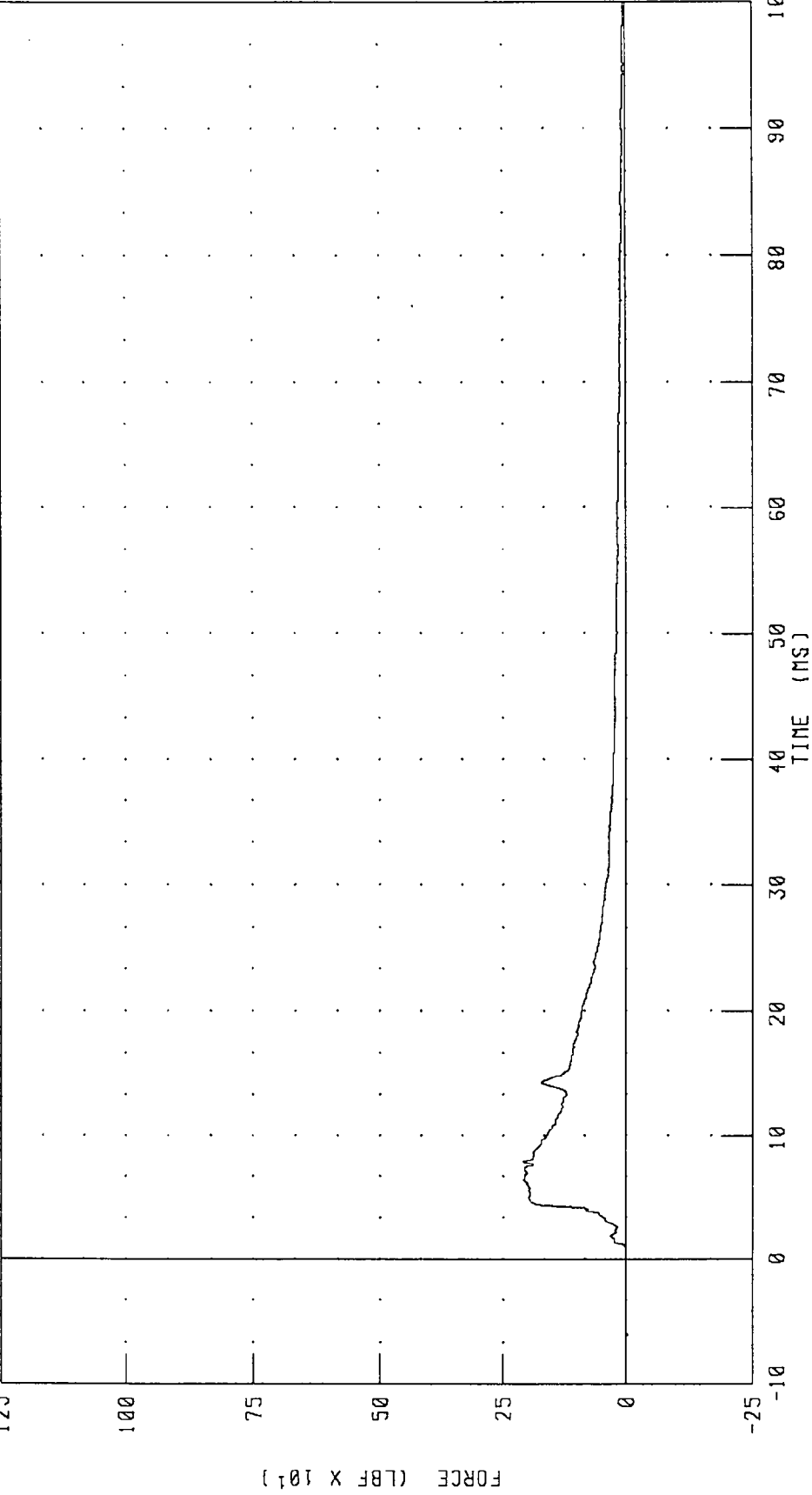
TECHNICIAN V. F. Wattana

RUN NUMBER: 101394.1118;1

PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (10 FT/SEC)

SHOCK ABSORBER RESISTIVE FORCE

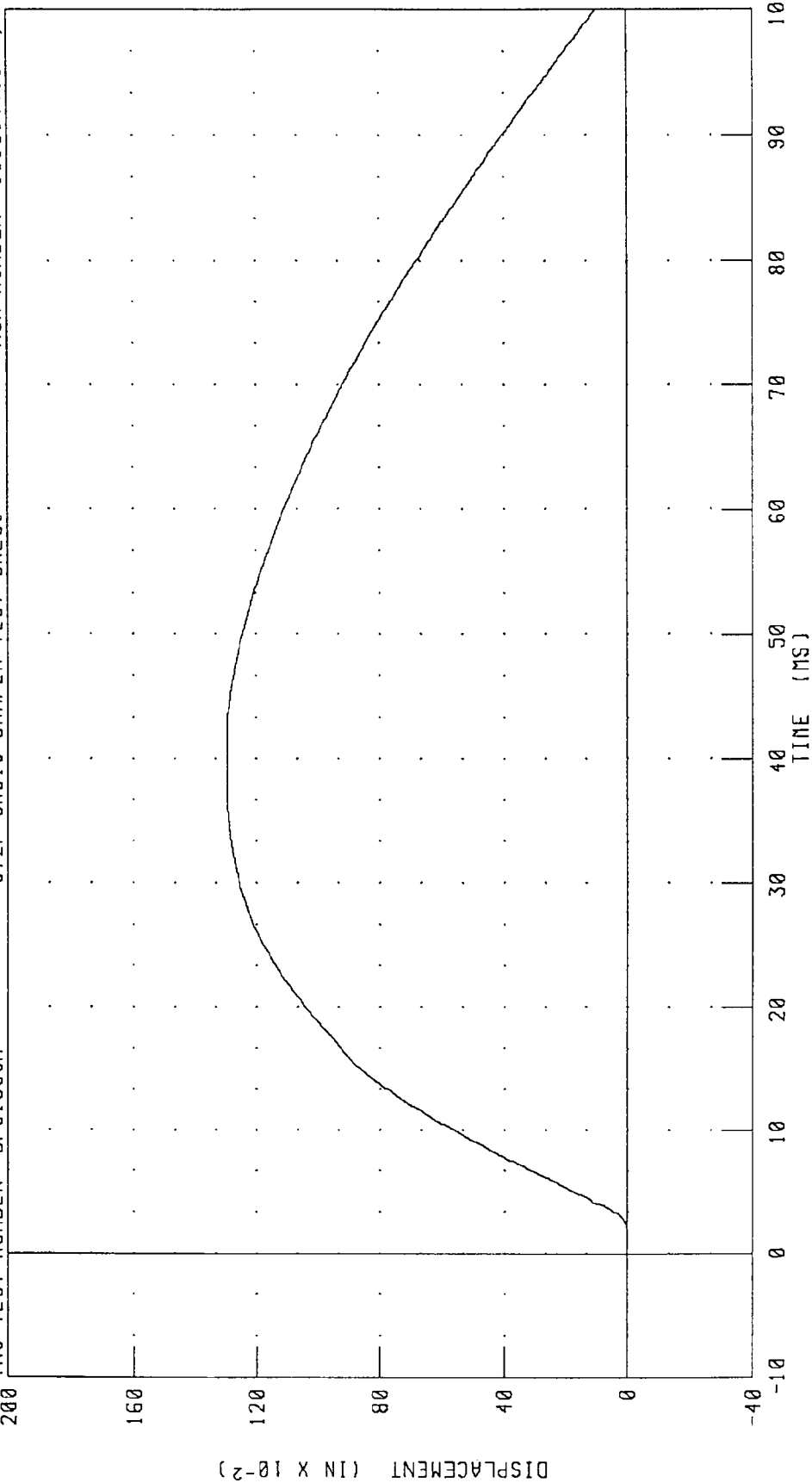
IRC TEST NUMBER DP01603A 572F SN016 DAMPER TEST CAL03 RUN NUMBER 101394 1030,1



CHANNEL: DAMPF FILTER: CH. CLASS 1000 PEAK DATA: 207.82 LBF @ 7.92 MS, -3.19 LBF @ -5.08 MS

PART 572-F S I D. THORACIC SHOCK ABSORBER CALIBRATION (10 FT/SEC)
SHOCK ABSORBER DISPLACEMENT

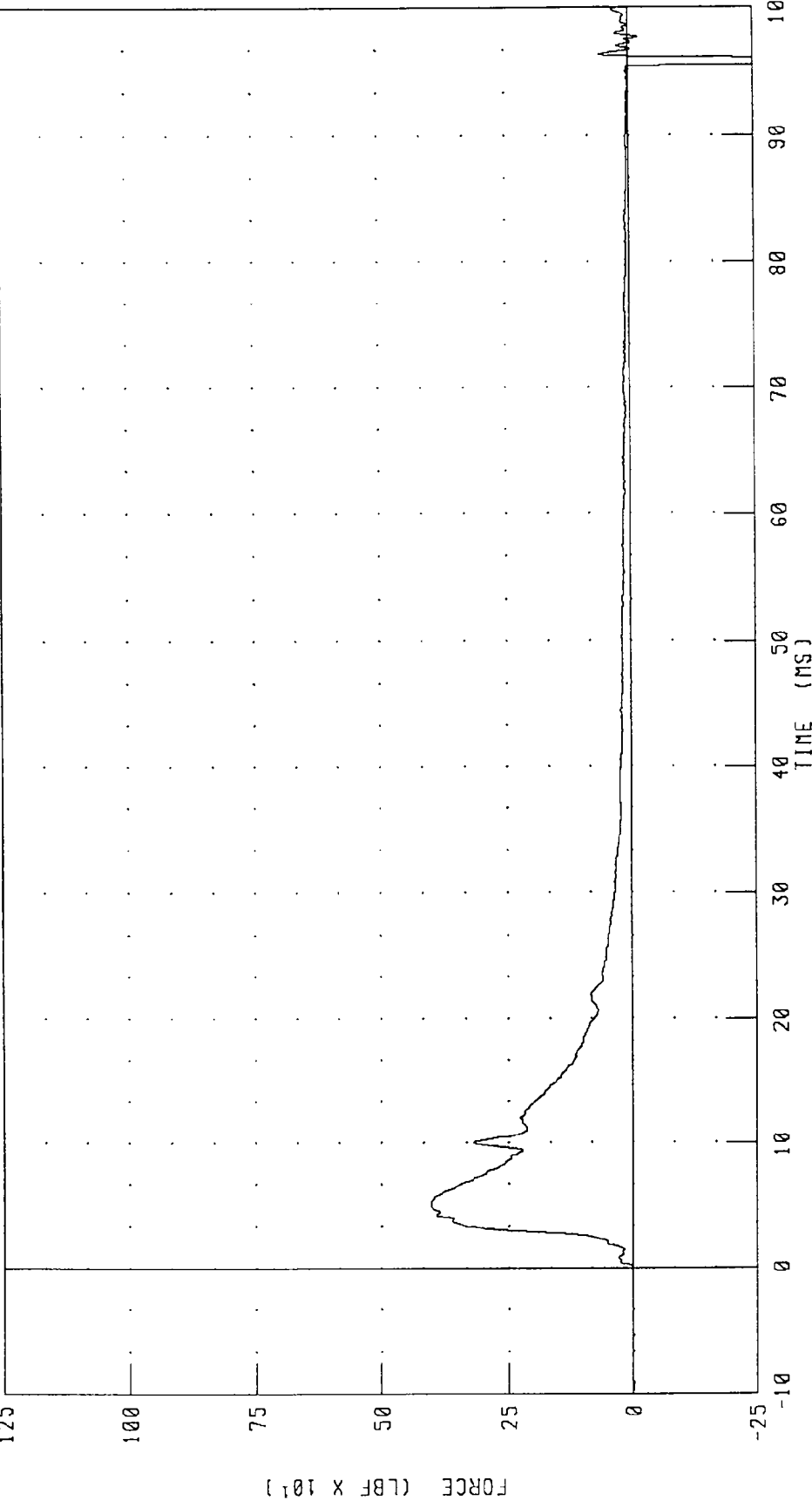
TRC TEST NUMBER: DP01603A 572F SN016 DAMPER TEST CAL03 RUN NUMBER: 101394 1030,1



CHANNEL: CSTYD FILTER: CH. CLASS 1000 PEAK DATA: 1 30 IN @ 39.84 MS; 0 00 IN @ -7 20 MS

PART 572-F S I O THORACIC SHOCK ABSORBER CALIBRATION (14 FT/SEC)
 SHOCK ABSORBER RESISTIVE FORCE

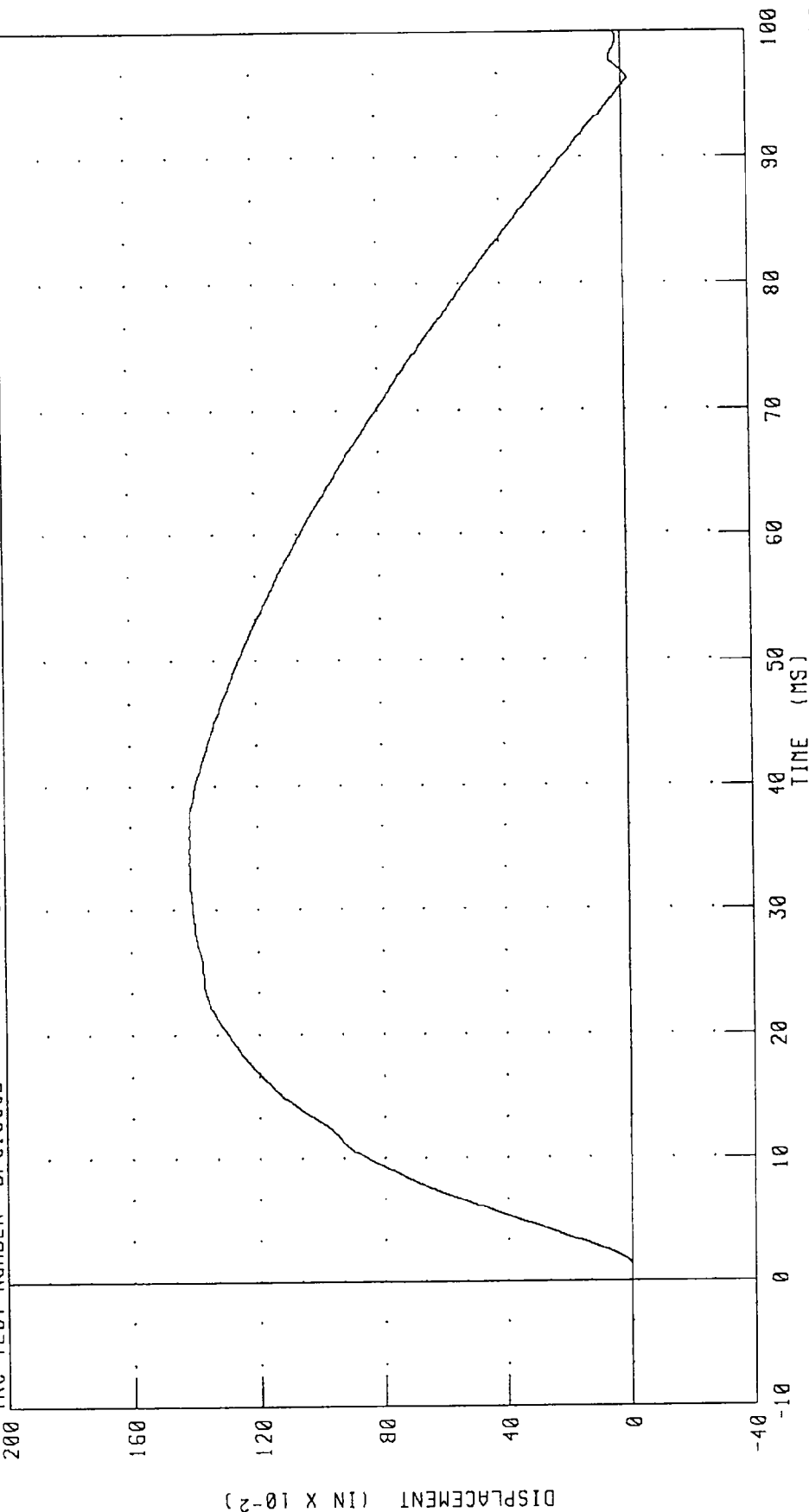
TRC TEST NUMBER: DP016038 572F SN016 DAMPER TEST CAL03 RUN NUMBER 101394 1052,1



CHANNEL: DAMPF FILTER: CH. CLASS 1000 PEAK DATA: 403 16 LBF @ 5.20 MS, -512.10 LBF @ 95.68 MS

PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (14 FT/SEC)
 SHOCK ABSORBER DISPLACEMENT

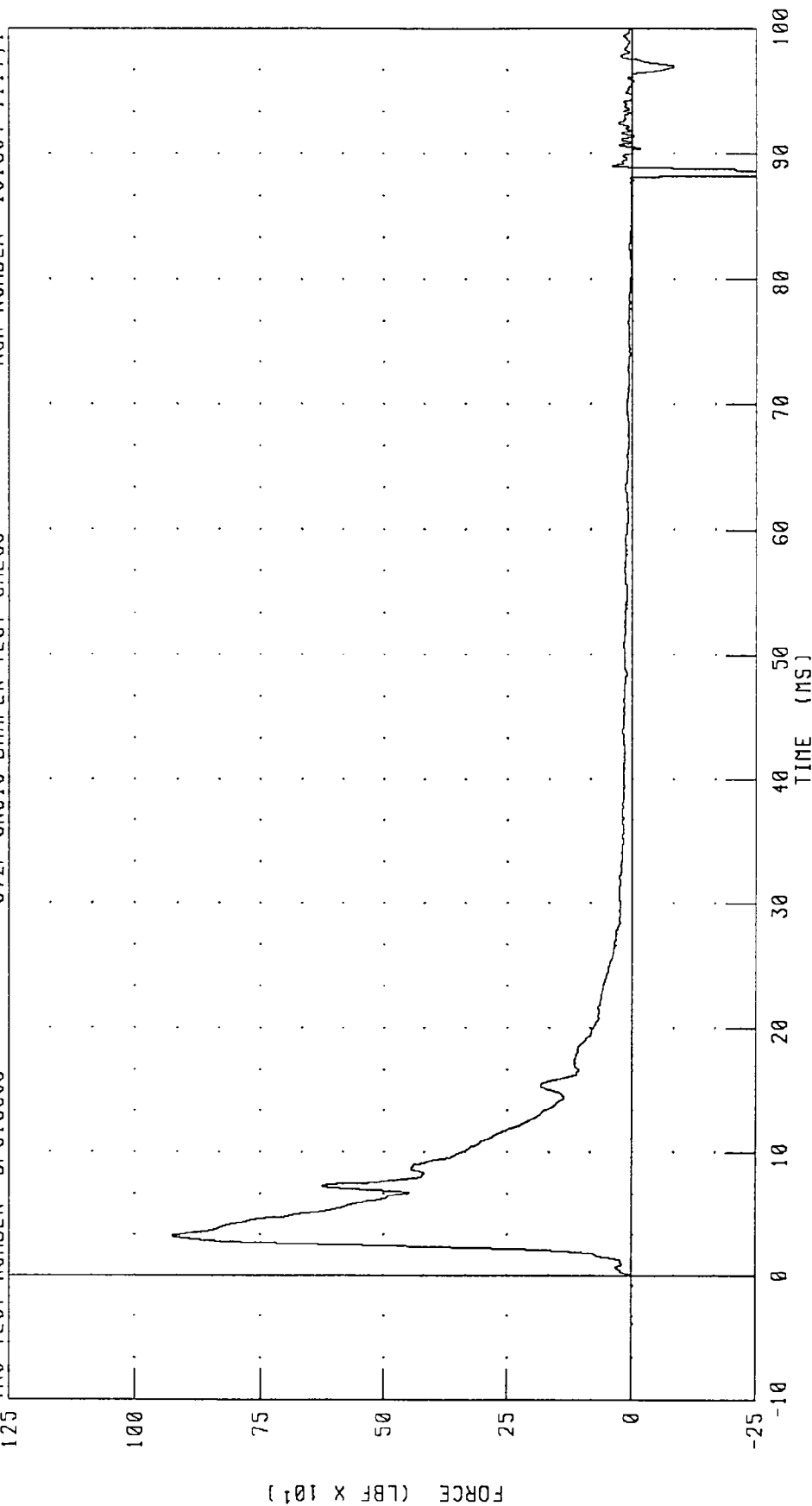
TRC TEST NUMBER: DP01603B 572F SN016 DAMPER TEST CAL03 RUN NUMBER 101394 1052,1



CHANNEL: CSTYD FILTER: CH. CLASS 1000 PEAK DATA: 1.42 IN @ 33.76 MS; -0.02 IN @ 96.32 MS

PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (20 FT/SEC)
SHOCK ABSORBER RESISTIVE FORCE

IRC TEST NUMBER DP01603C 572F SN016 DAMPER TEST CAL03 RUN NUMBER 101394 1117,1



CHANNEL: DAMPF FILTER: CH. CLASS 1000 PEAK DATA: 925.91 LBF @ 3.20 MS, -467.34 LBF @ 88.40 MS

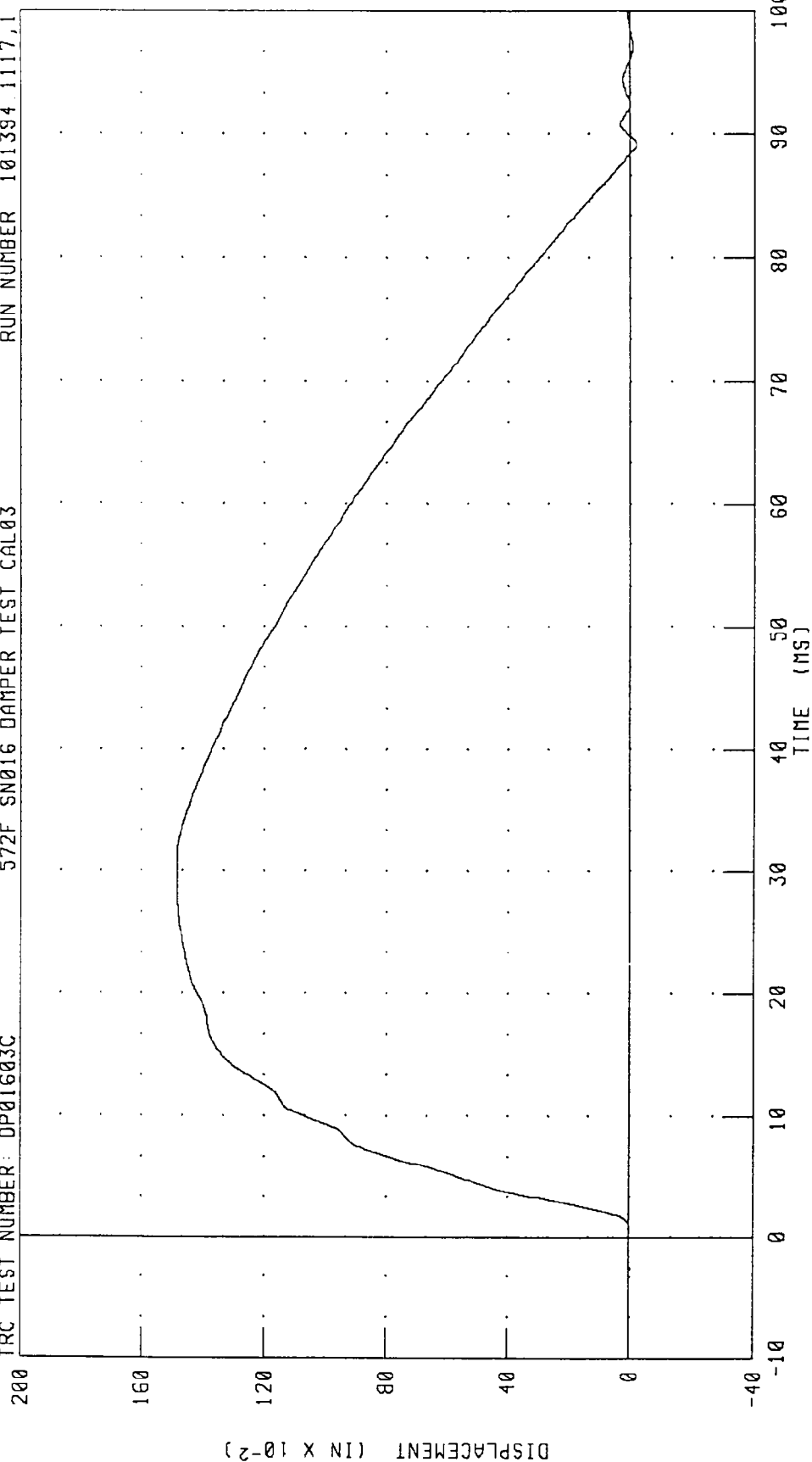
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (20 FT/SEC)

SHOCK ABSORBER DISPLACEMENT

572F SN016 DAMPER TEST CAL03

TRC TEST NUMBER: DP01603C

RUN NUMBER 101394 1117,1



CHANNEL: CSTYD FILTER: CH. CLASS 1000 PEAK DATA: 1.48 IN @ 31.76 MS, -0.02 IN @ 89.20 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

17-OCT-94

LEFT SIDE CONFIGURATION

TRC INC. TEST NO: STL01603B

572F SN016 LEFT THORAX CAL03

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	66 - 78 F	70.0 DEG. F
RELATIVE HUMIDITY	10 - 70 %	48.0 %
PISTON VELOCITY	13.80 - 14.20 FT/S	14.08 FT/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	38.4 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	38.0 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	18.1 G

TEST MEETS SPECIFICATIONS

TECHNICIAN V. Z. Watter

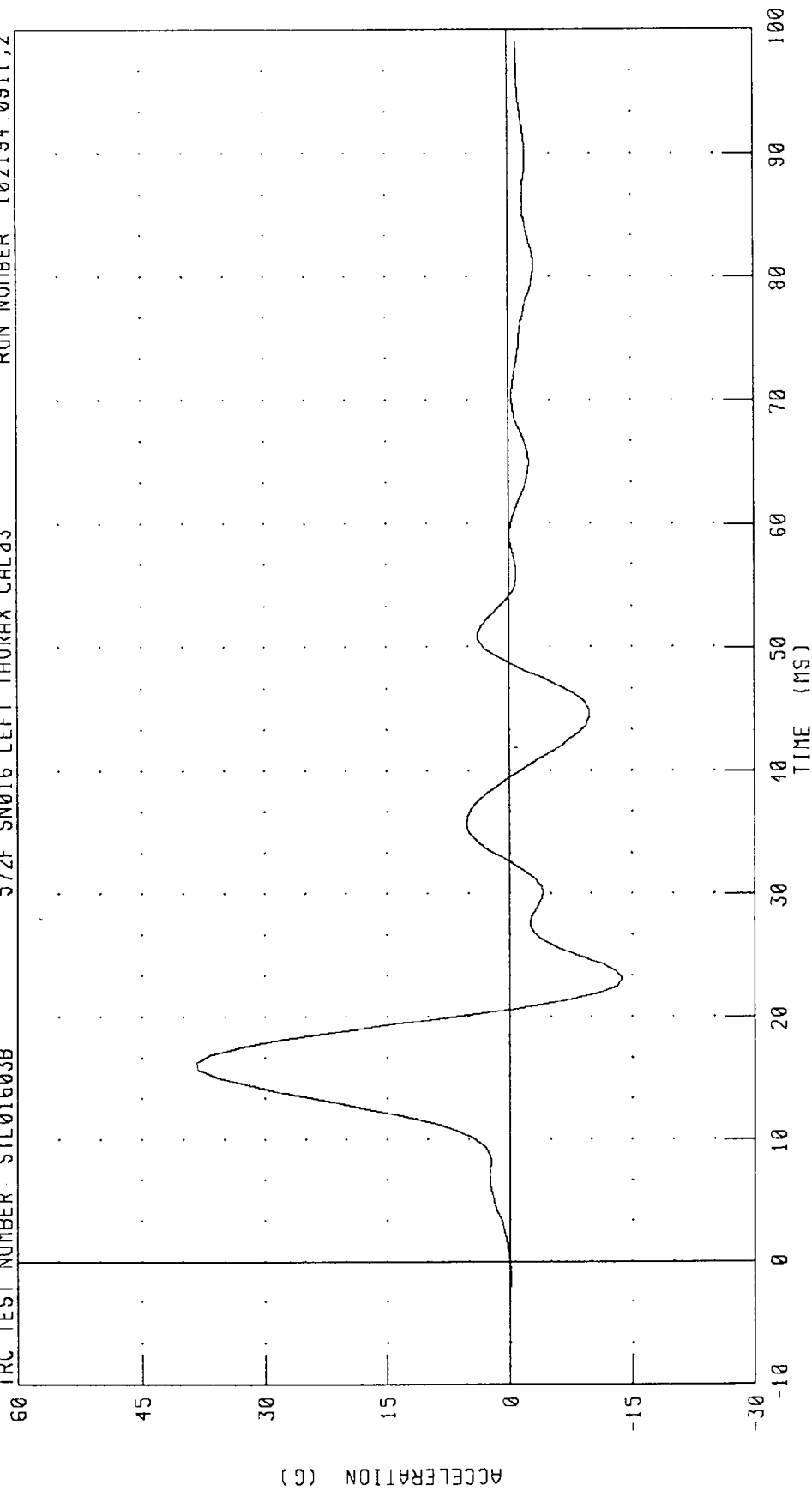
RUN NUMBER: 102094.0814;2

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

TRC TEST NUMBER: STL01603B

572F SN016 LEFT THORAX CAL03

RUN NUMBER: 102194 0911,2

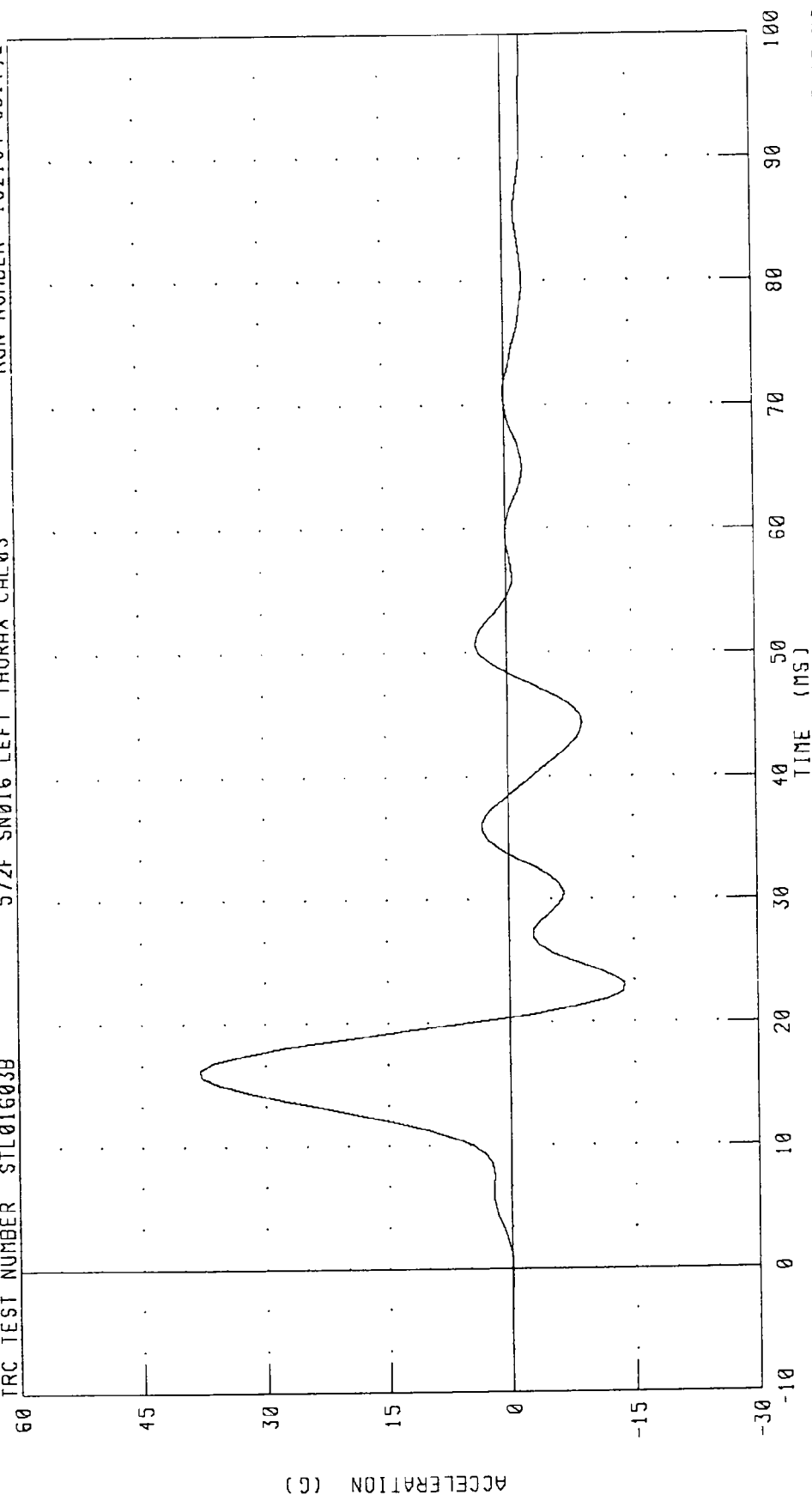


PEAK DATA: 38.38 G @ 16.25 MS, -13.83 G @ 23.13 MS

CHANNEL: LURYG FILTER: FIR 100

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

TRC TEST NUMBER STL01603B 572F SN016 LEFT THORAX CAL03 RUN NUMBER 102194 0811,2



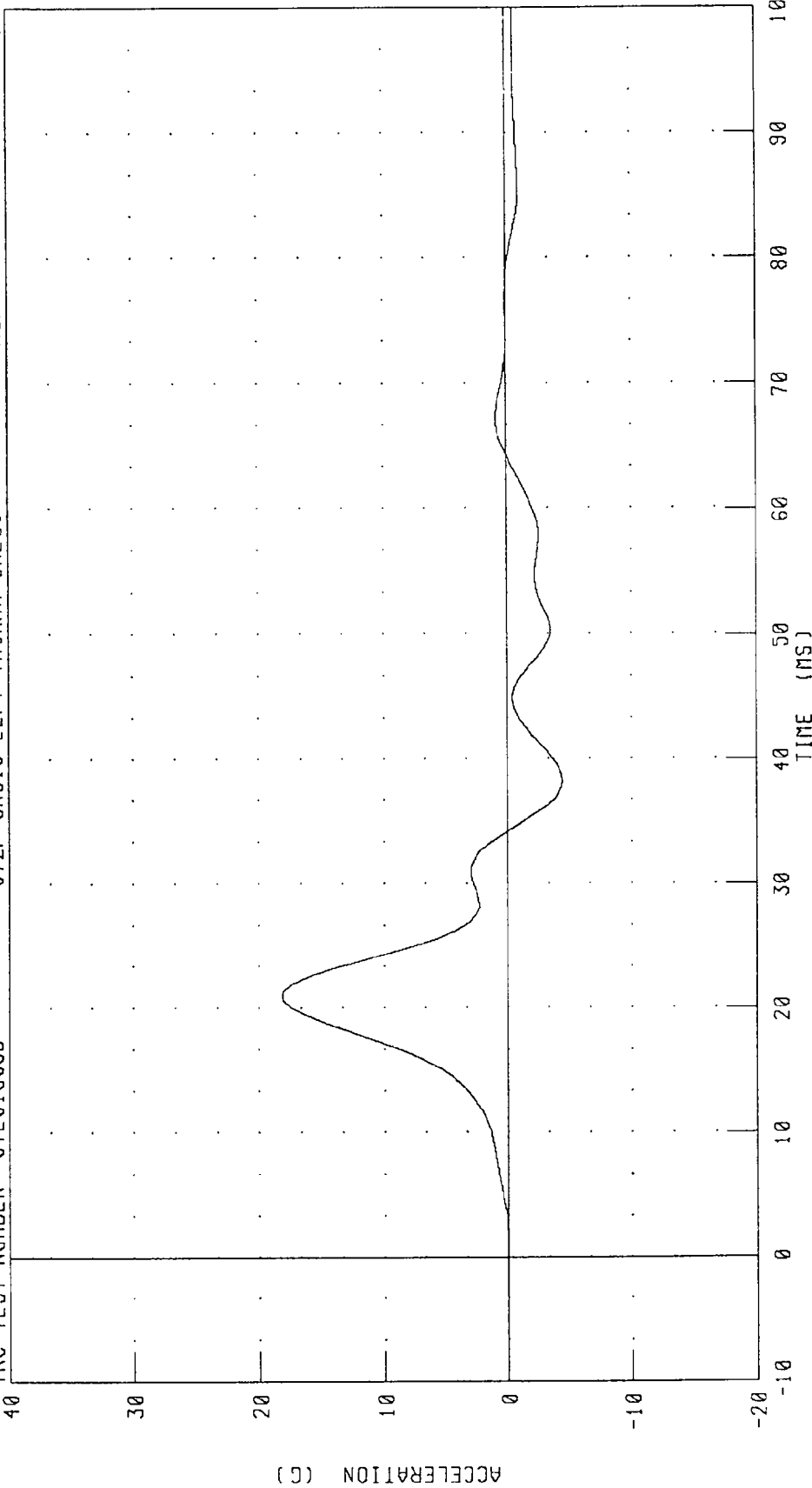
PEAK DATA: 38.01 G @ 16.25 MS, -13.79 G @ 23.13 MS

CHANNEL: LLRYG FILTER: FIR 100

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

LOWER SPINE ACCELERATION Y AXIS

TRC TEST NUMBER: STL016038 572F SN016 LEFT THORAX CAL03 RUN NUMBER 102194 0911,2



PEAK DATA: 18.11 G @ 21.25 MS; -4.47 G @ 38.13 MS

CHANNEL: T12YG FILTER: FIR 100

TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

13-OCT-94

LEFT SIDE CONFIGURATION

TRC INC. TEST NO: SPL01603

572F SN016 LEFT PELVIS CAL03

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	66 - 78 F	70.0 DEG. F
RELATIVE HUMIDITY	10 - 70 %	50.0 %
PISTON VELOCITY	13.80 - 14.20 FT/S	14.08 FT/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 V. Z. Watters

RUN NUMBER: 110194.1555;3

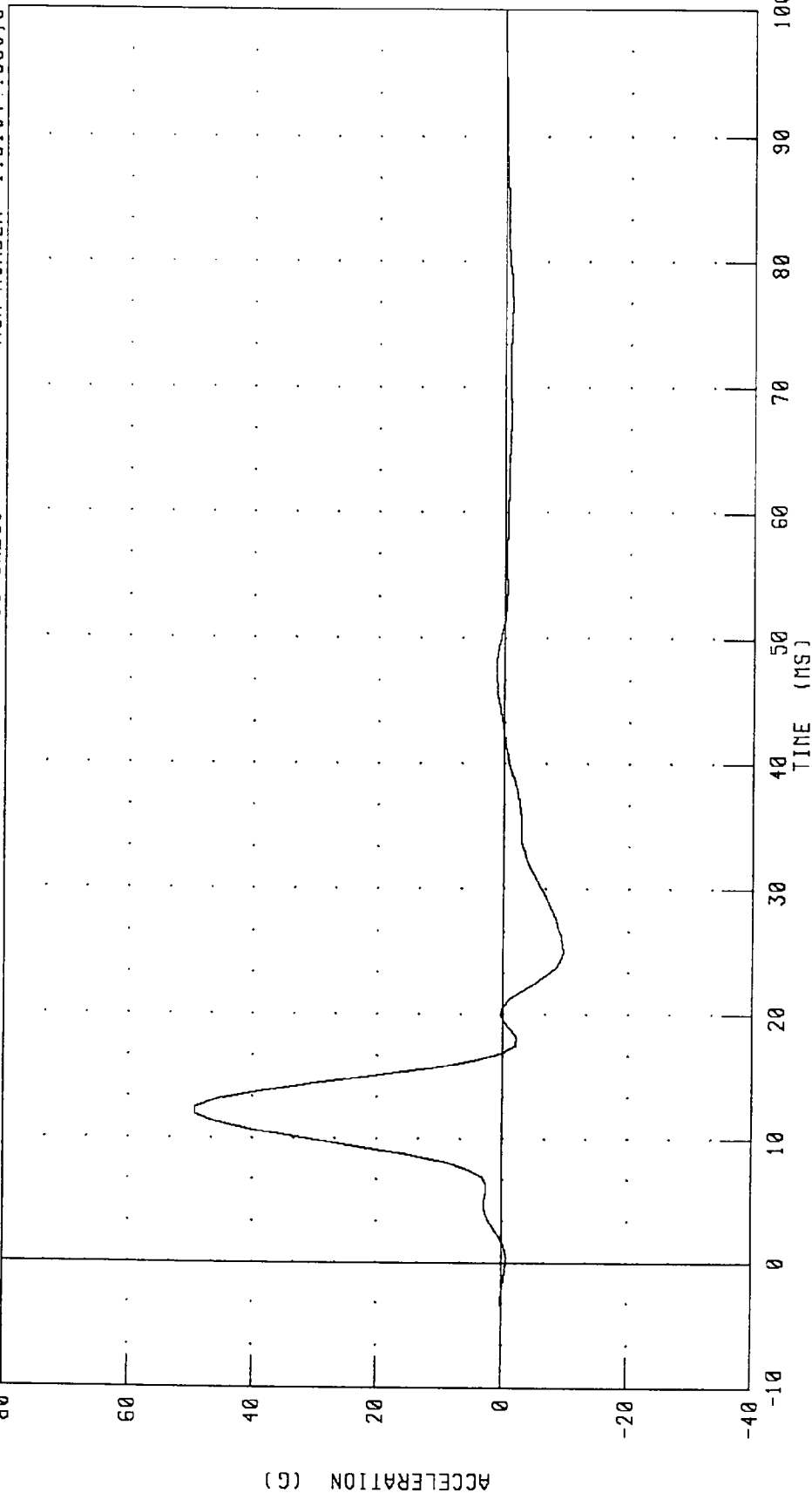
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

IRC TEST NUMBER: SPL01603

572F SN016 LEFT PELVIS CAL03

RUN NUMBER: 110194.1555,3



CHANNEL: PEVYG FILTER: FIR 100

PEAK DATA: 49.38 G @ 11.88 MS, -9.61 G @ 25.00 MS

Pre-test Calibration

Left Rear Passenger Dummy S/N 268

Calibration Test Results Summary

Dummy Serial Number: 268

Pre-test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thoracic Shock Absorber Test:	The shock absorber passed all test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lateral Pelvis Impact Test:	The pelvis passed all impact test requirements.

TRANSPORTATION RESEARCH CENTER INC.
 SIDE IMPACT DUMMY
 EXTERNAL DIMENSIONS
 LEFT SIDE CONFIGURATION
 SN 268 FIRST TECHNOLOGY

18-OCT-94

TRC INC. TEST NO: ED26803 572F SN268 EXT.DIMENSION CAL03

DIMENSIONS WITH CHEST JACKET INSTALLED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
	TEMPERATURE		71.0 DEG. F
	RELATIVE HUMIDITY		48.0 %
SH	SEATED HEIGHT	35.0 - 35.8 IN	35.3 IN
HP	HIP PIVOT HEIGHT	3.9 IN REF.	3.9 IN
KH	KNEE PIVOT FROM BACKLINE	20.1 - 20.7 IN	20.4 IN
KV	KNEE PIVOT FROM FLOOR	19.3 - 19.9 IN	19.4 IN
HW	HIP WIDTH	14.0 - 15.4 IN	15.1 IN
DIMENSIONS WITH CHEST JACKET REMOVED			
SYMB	DESCRIPTION	SPECIFICATION	TEST RESULTS
RH	RIB HEIGHT	19.75 - 20.50 IN	20.10 IN
RD	RIB FROM BACKLINE	9.0 - 9.5 IN	9.4 IN
RW-1	TOP RIB WIDTH FROM C/L	6.5 - 7.1 IN	6.9 IN
RW-2	BOTTOM RIB WIDTH FROM C/L	6.5 - 7.1 IN	6.9 IN
	DIFFERENCE BETWEEN TOP & BOTTOM RIB WIDTH FROM C/L	≤ 0.1 IN	0.0 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Pete FSA

RUN NUMBER: 101894.0845

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

18-OCT-94

TRC INC.

572F SN268 DAMPER TEST CAL03

TEST NUMBERS: DP26803A,DP26803B,DP26803C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66 - 78 F	71.0 DEG. F
RELATIVE HUMIDITY		10 - 70 %	48.0 %
VELOCITY	FORCE	192 - 258 LB	207 LB
10.1 FT/S	DISPLACEMENT	1.19 - 1.39 IN	1.25 IN
VELOCITY	FORCE	389 - 472 LB	397 LB
14.0 FT/S	DISPLACEMENT	1.25 - 1.47 IN	1.38 IN
VELOCITY	FORCE	841 - 1000 LB	901 LB
20.0 FT/S	DISPLACEMENT	1.31 - 1.56 IN	1.46 IN

DAMPER SETTING = 6.0

TEST MEETS SPECIFICATIONS

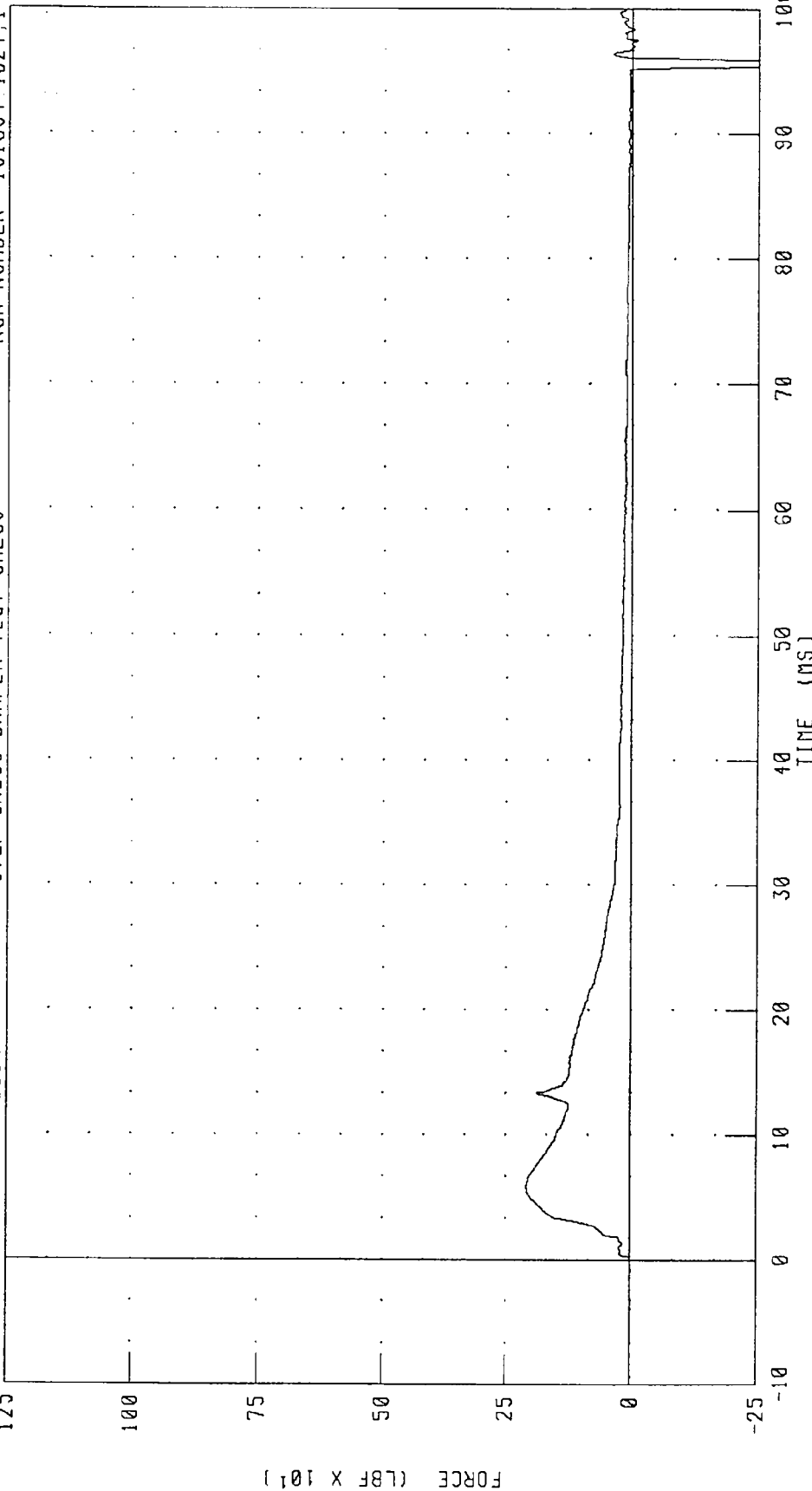
TECHNICIAN

Pete F. St

RUN NUMBER: 101894.1107;1

PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (10 FT/SEC)
 SHOCK ABSORBER RESISTIVE FORCE

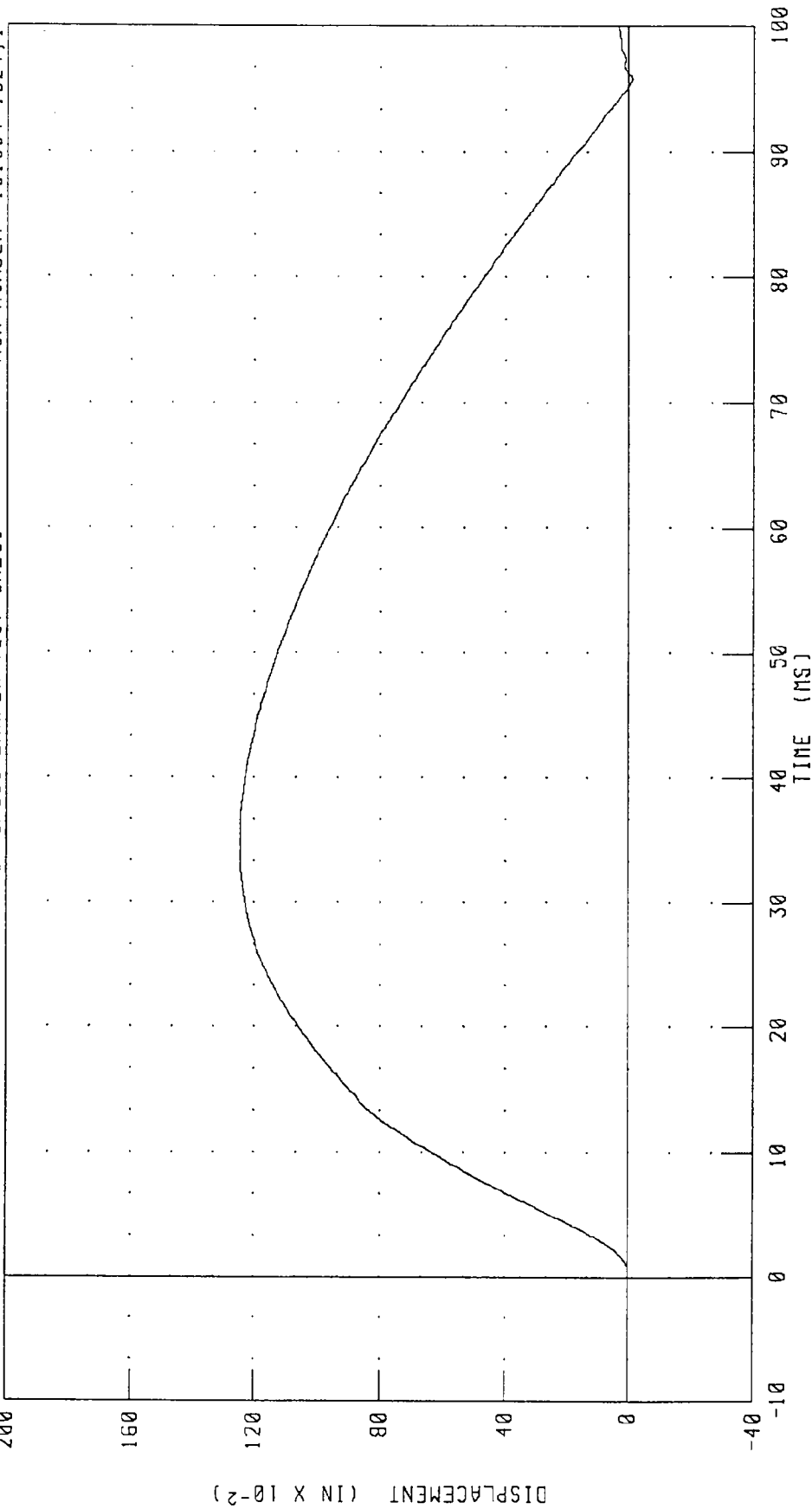
IRC TEST NUMBER: DP26803A 572F SN268 DAMPER TEST CAL03 RUN NUMBER 101894 1024,1



CHANNEL: DAMPF FILTER: CH: CLASS 1000 PEAK DATA 207.18 LBF @ 5.84 MS, -384.98 LBF @ 95.60 MS

PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (10 FT/SEC)
SHOCK ABSORBER DISPLACEMENT

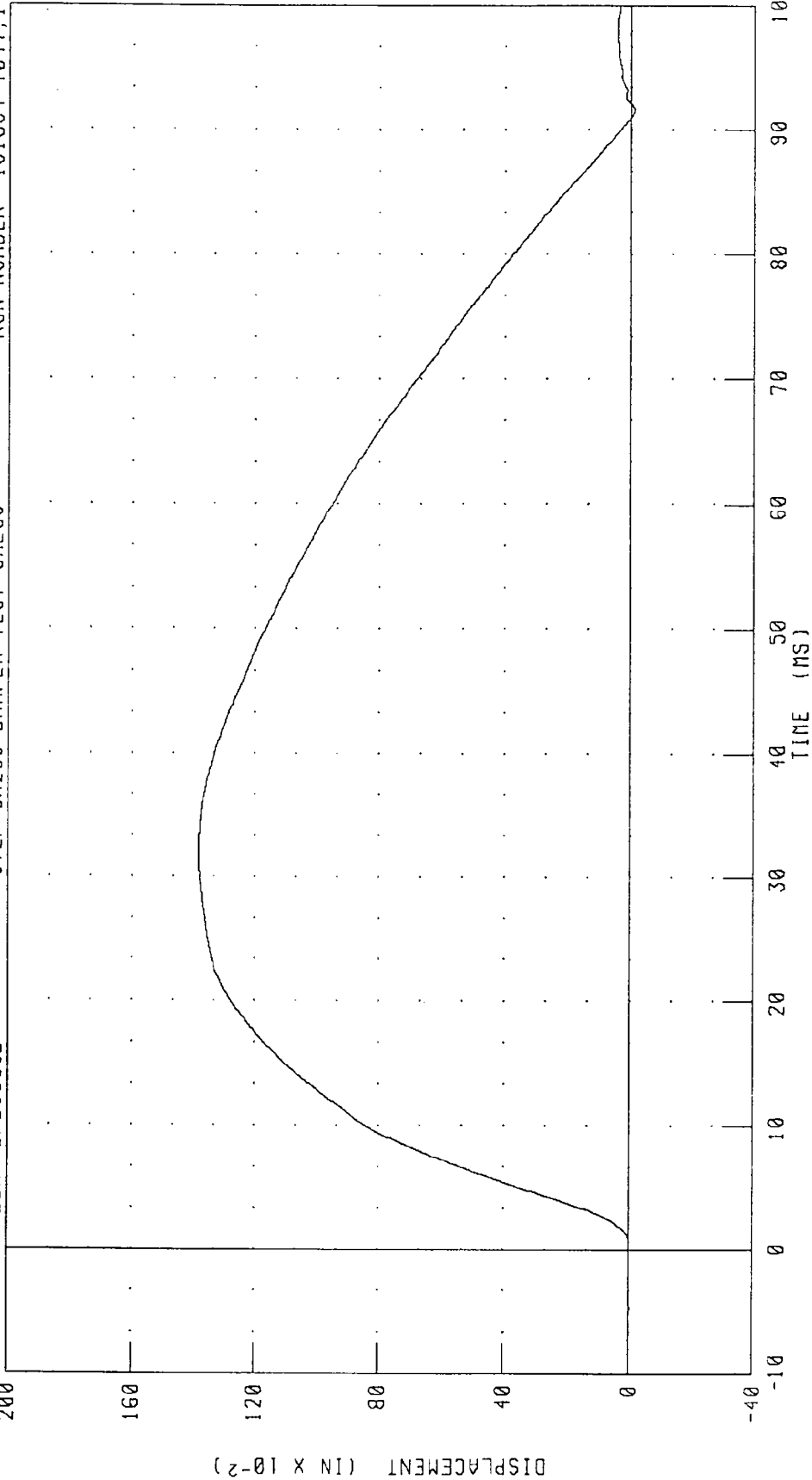
TRC TEST NUMBER DP26803A 572F SN268 DAMPER TEST CAL03 RUN NUMBER 101894 1024,1



CHANNEL: CSTYD FILTER: CH CLASS 1000 PEAK DATA: 1.25 IN @ 35.84 MS, -0.01 IN @ 55.76 MS

PART 572-F S.I.D THORACIC SHOCK ABSORBER CALIBRATION (14 FT/SEC)
SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER DP26803B 572F SN268 DAMPER TEST CAL03 RUN NUMBER 101894 1044,1

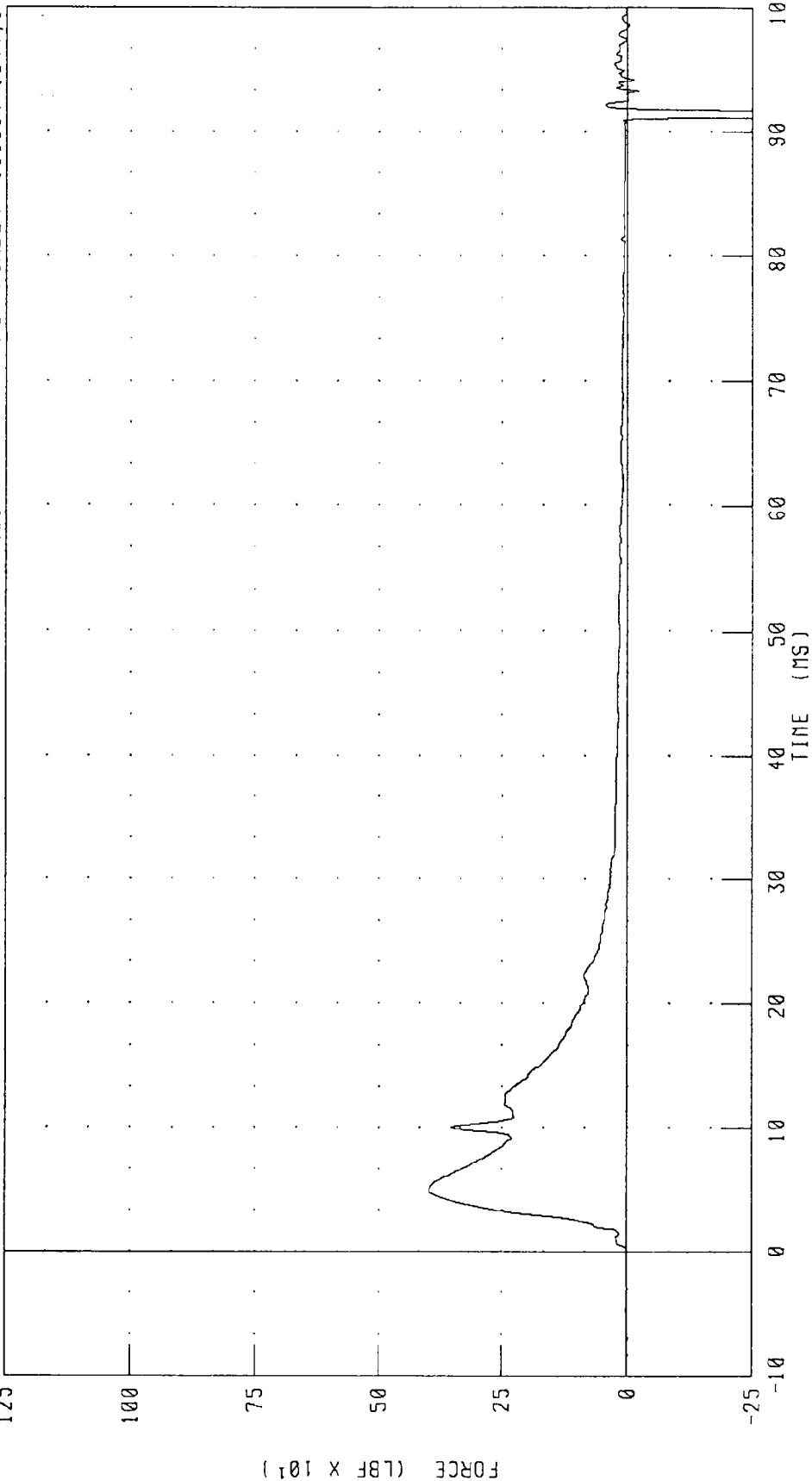


CHANNEL: CSTYD FILTER: CH CLASS 1000 PEAK DATA: 1 38 IN @ 31.92 MS, -0.01 IN @ 91.52 MS

PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (14 FT/SEC)

SHOCK ABSORBER RESISTIVE FORCE

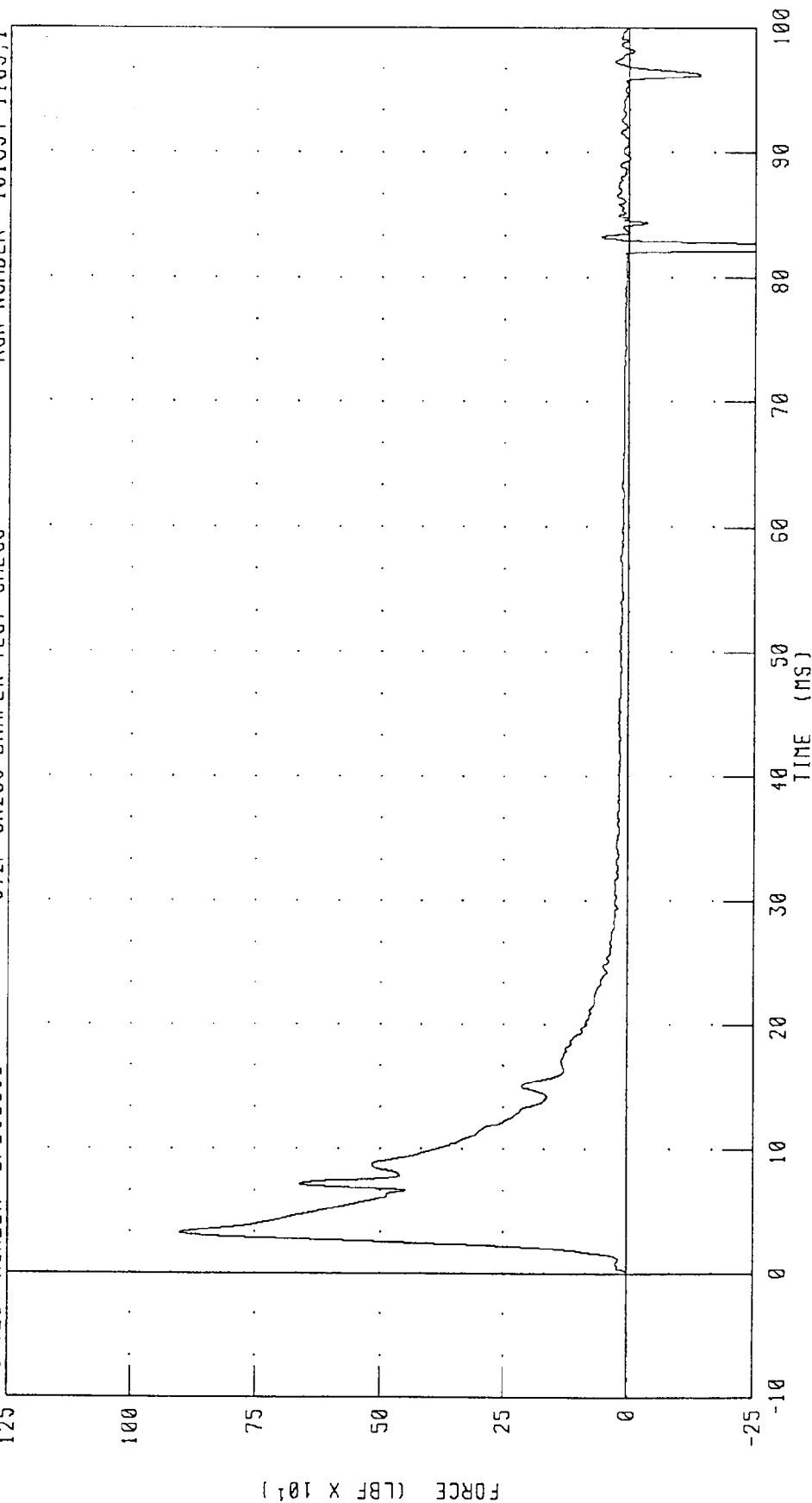
IRC TEST NUMBER DP26803B 572F SN268 DAMPER TEST CAL03 RUN NUMBER 101894 1044,1



CHANNEL DAMPF FILTER CH CLASS 1000 PEAK DATA: 397.40 LBF @ 4.96 MS, -429.63 LBF @ 91.36 MS

PART 572-F S I D. THORACIC SHOCK ABSORBER CALIBRATION (20 FT/SEC)
 SHOCK ABSORBER RESISTIVE FORCE

IRC TEST NUMBER DP26803C 572F SN268 DAMPER TEST CAL03 RUN NUMBER 101894 1105,1

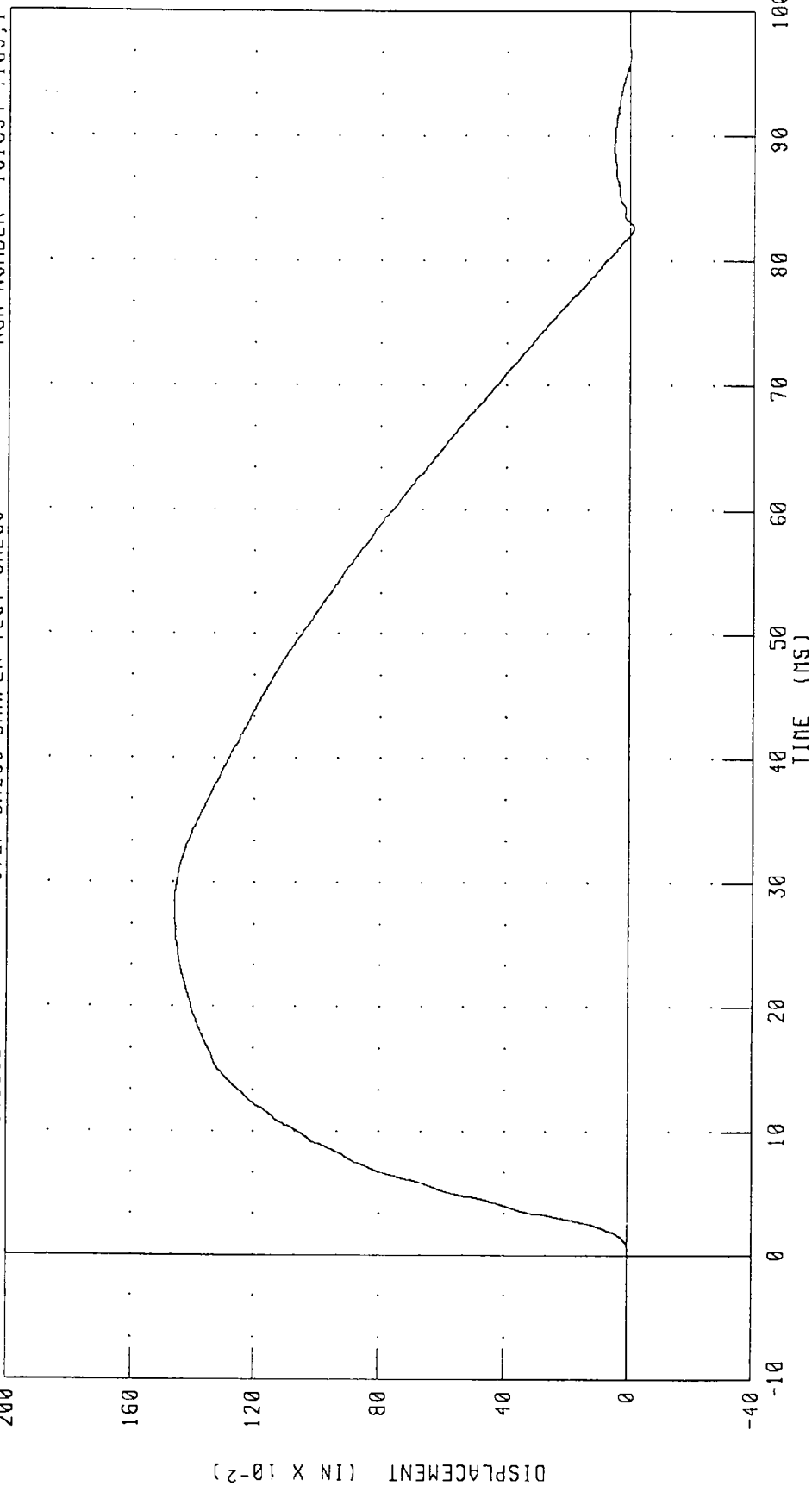


CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 900.68 LBF @ 3.28 MS, -444.83 LBF @ 82.40 MS

PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (20 FT/SEC)
SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER DP26803C 572F SN268 DAMPER TEST CAL03 RUN NUMBER 101894 1105,1



CHANNEL CSTYD FILTER CH CLASS 1000 PEAK DATA 1 46 IN @ 28.72 MS, -0 01 IN @ 82.56 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

18-OCT-94

LEFT SIDE CONFIGURATION

TRC INC. TEST NO: STL26803F

572F SN268 LEFT THORAX CAL03

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	66 - 78 F	71.0 DEG. F
RELATIVE HUMIDITY	10 - 70 %	48.0 %
PISTON VELOCITY	13.80 - 14.20 FT/S	14.08 FT/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	40.1 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	38.0 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	17.0 G

TEST MEETS SPECIFICATIONS

TECHNICIAN

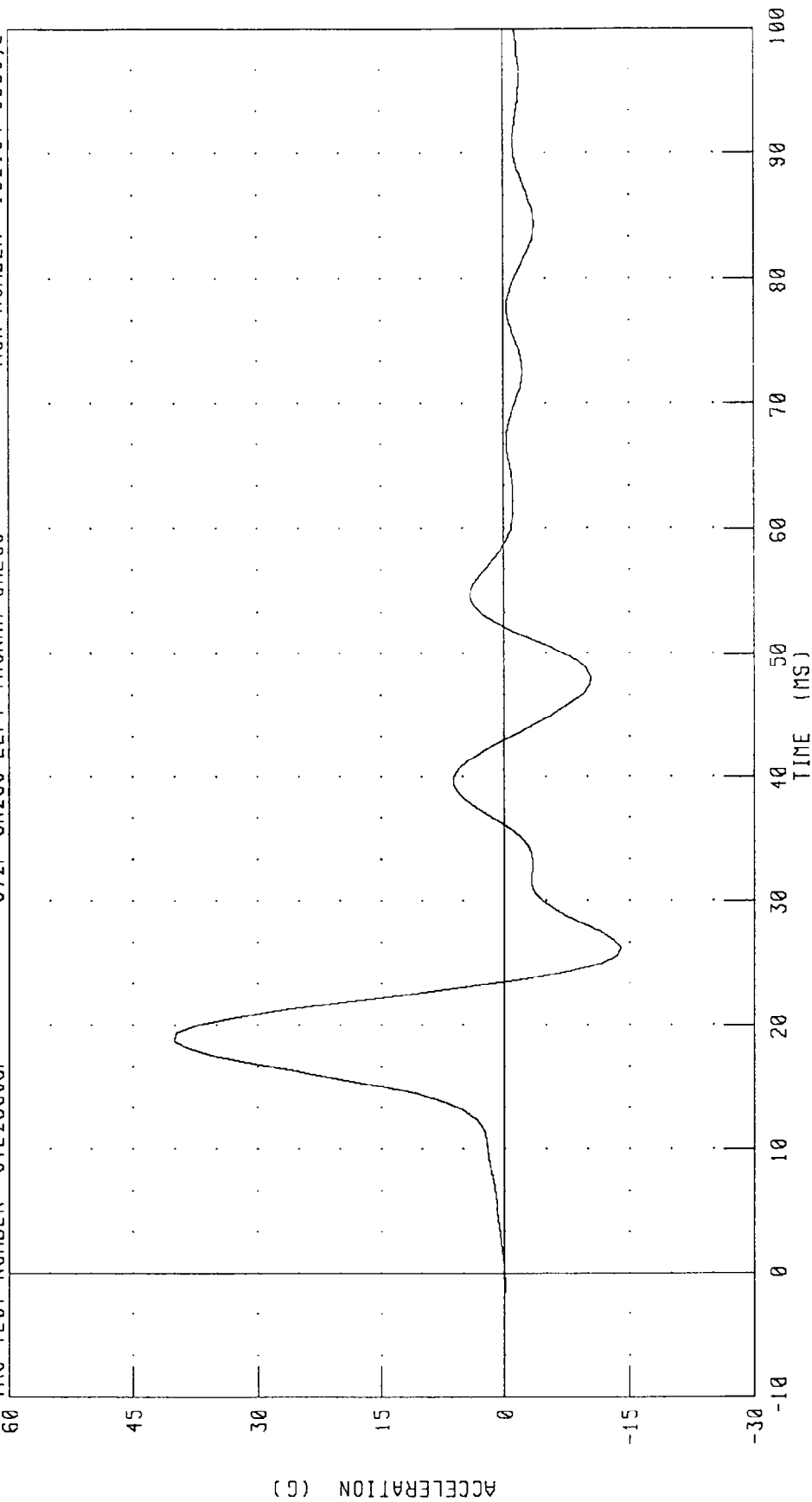
V.F. Waters

RUN NUMBER: 102094.0850;2

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

LEFT UPPER RIB ACCELERATION Y AXIS

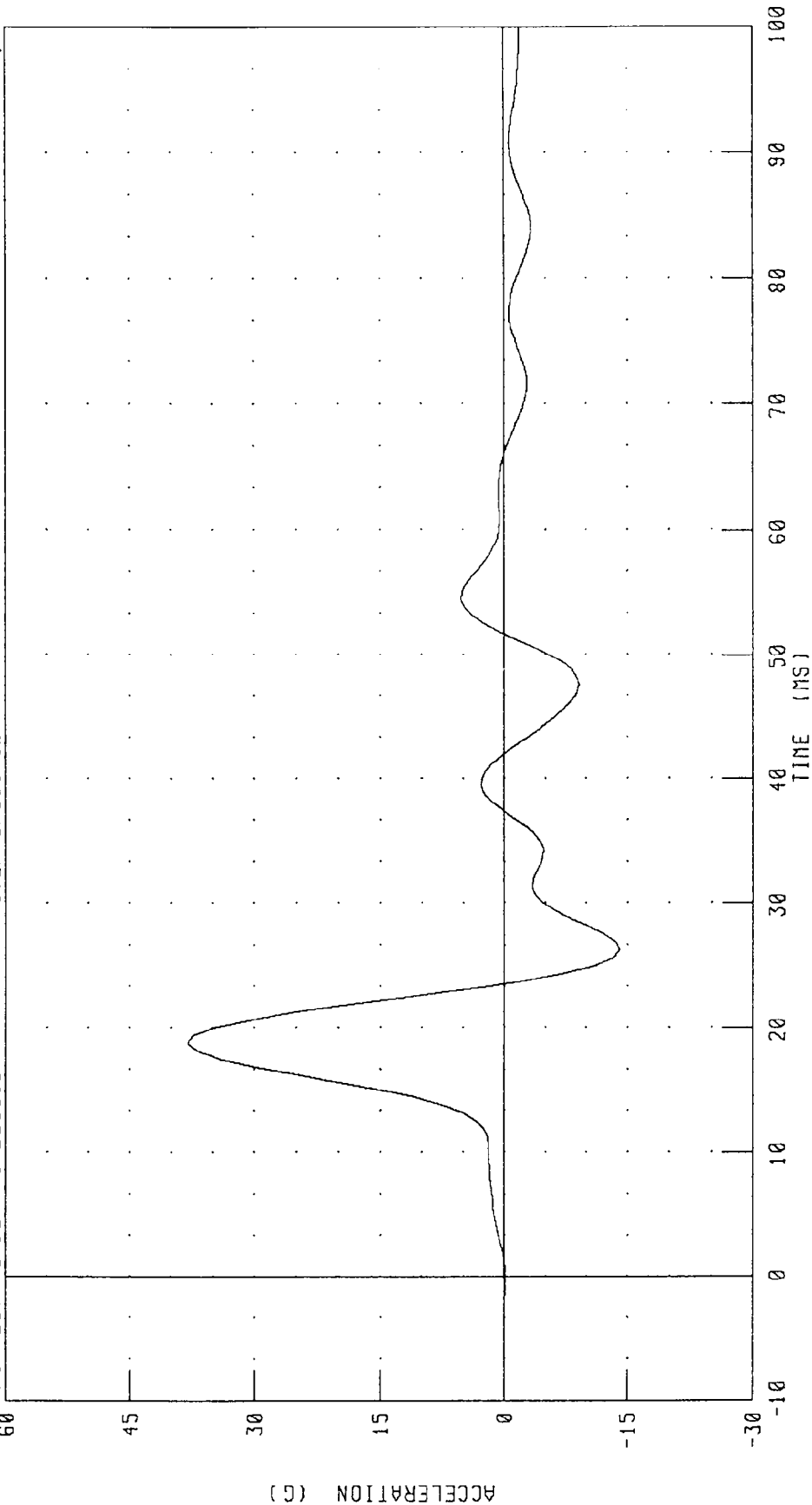
TRC TEST NUMBER STL26803F 572F SN268 LEFT THORAX CAL03 RUN NUMBER 102194 09J3,2



CHANNEL: LURYG FILTER: FIR 100 PEAK DATA: 40.09 G @ 18.75 MS, -13.90 G @ 26.25 MS

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

TRC TEST NUMBER: STL26803F 572F SN268 LEFT THORAX CAL03 RUN NUMBER 102194 0933,2

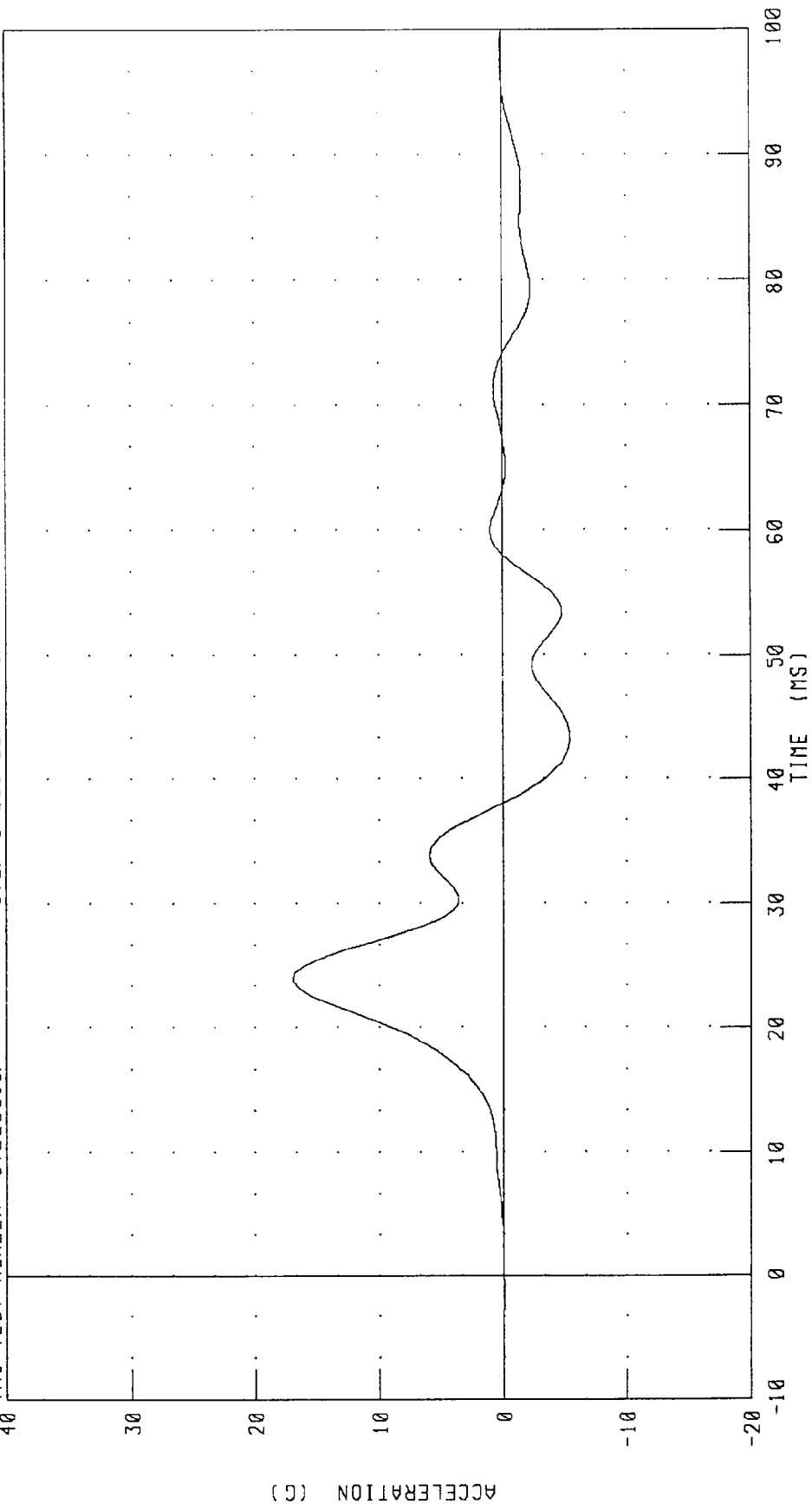


CHANNEL: LLRYG FILTER: FIR 100 PEAK DATA 37.98 G @ 18.75 MS, -14.04 G @ 26.25 MS

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

LOWER SPINE ACCELERATION Y AXIS

TRC TEST NUMBER STL26803F 572F SN268 LEFT THORAX CAL03 RUN NUMBER 102194 0933,2



CHANNEL: T12YG FILTER: FIR 100 PEAK DATA: 16.98 G @ 23.75 MS, -5.41 G @ 43.13 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

18-OCT-94

LEFT SIDE CONFIGURATION

TRC INC. TEST NO: SPL26803E

572F SN268 LEFT PELVIS CAL03

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	66 - 78 F	71.0 DEG. F
RELATIVE HUMIDITY	10 - 70 %	48.0 %
PISTON VELOCITY	13.80 - 14.20 FT/S	14.08 FT/S
PEAK PELVIC ACCELERATION	40 - 60 G	49.5 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	5.4 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

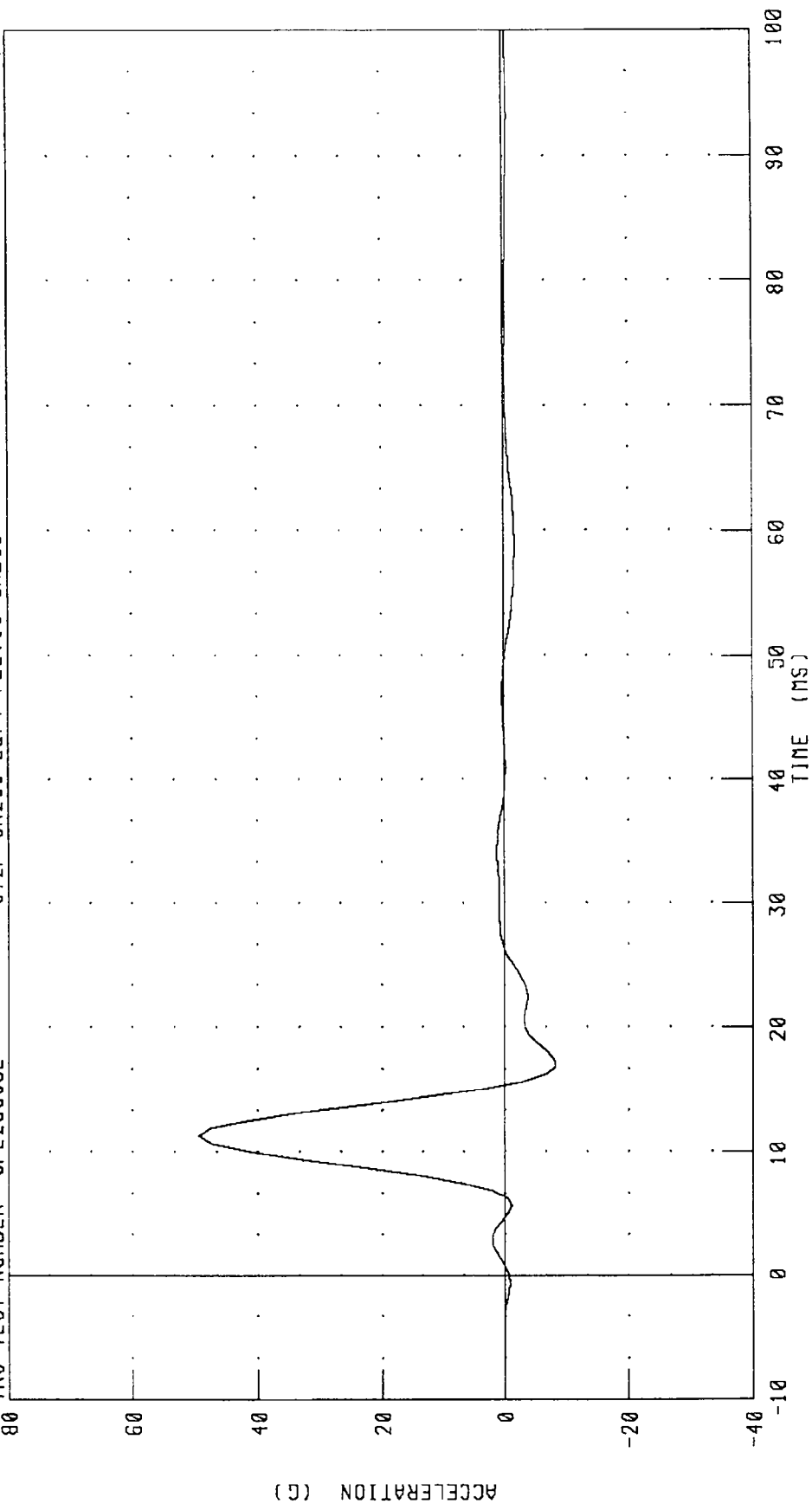
V. F. Watters

RUN NUMBER: 110194.1542;3

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

PELVIS ACCELERATION Y AXIS

IRC TEST NUMBER: SPL26803E 572F SN268 LEFT PELVIS CAL03 RUN NUMBER 110194 1543,3



CHANNEL: PEVYG FILTER: FIR 100

Post-test Calibration

Driver Dummy S/N 016

Calibration Test Results Summary

Dummy Serial Number: 016

Post-test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thoracic Shock Absorber Test:	The shock absorber passed all test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lateral Pelvis Impact Test:	The pelvis passed all impact test requirements.

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

21-OCT-94

TRC INC.

572F SN016 DAMPER TEST CAL04

TEST NUMBERS: DP01604A,DP01604B,DP01604C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66 - 78 F	71.0 DEG. F
RELATIVE HUMIDITY		10 - 70 %	56.0 %
VELOCITY	FORCE	192 - 258 LB	212 LB
10.1 FT/S	DISPLACEMENT	1.19 - 1.39 IN	1.30 IN
VELOCITY	FORCE	389 - 472 LB	414 LB
14.0 FT/S	DISPLACEMENT	1.25 - 1.47 IN	1.42 IN
VELOCITY	FORCE	851 - 1011 LB	966 LB
20.1 FT/S	DISPLACEMENT	1.31 - 1.56 IN	1.49 IN

DAMPER SETTING = 7.0

TEST MEETS SPECIFICATIONS

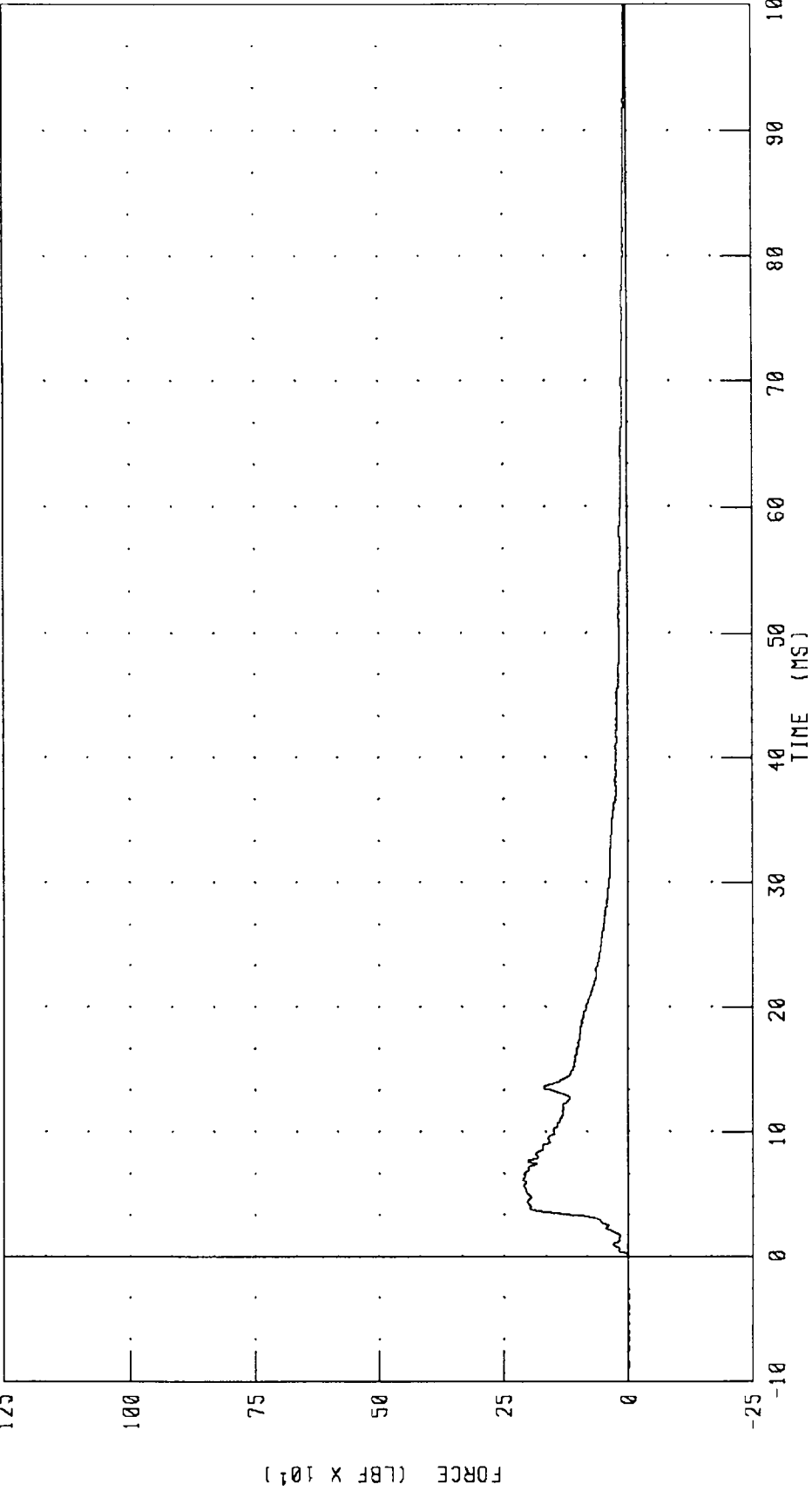
TECHNICIAN V.L. Watters

RUN NUMBER: 110194.1522;1

PART 572-F S I D. THORACIC SHOCK ABSORBER CALIBRATION (10 FT/SEC)

SHOCK ABSORBER RESISTIVE FORCE

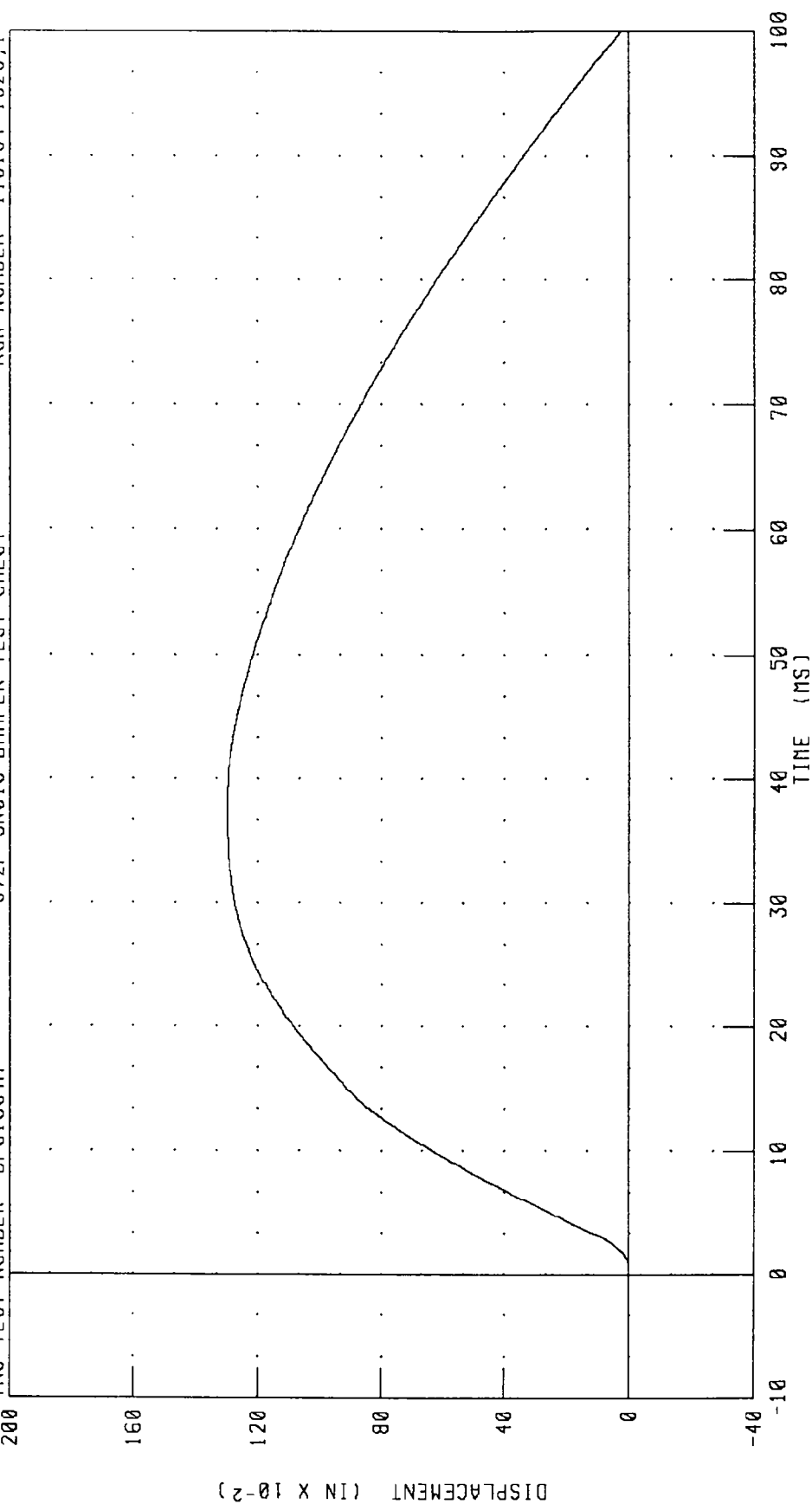
TRC TEST NUMBER: DP01604A 572F SN016 DAMPER TEST CAL04 RUN NUMBER: 110194.1523,1



CHANNEL: DAMPF FILTER: CH. CLASS 1000 PEAK DATA: 211.80 LBF @ 6.24 MS, -0.73 LBF @ -6.08 MS

PART 572-F S I D. THORACIC SHOCK ABSORBER CALIBRATION (10 FT/SEC)
SHOCK ABSORBER DISPLACEMENT

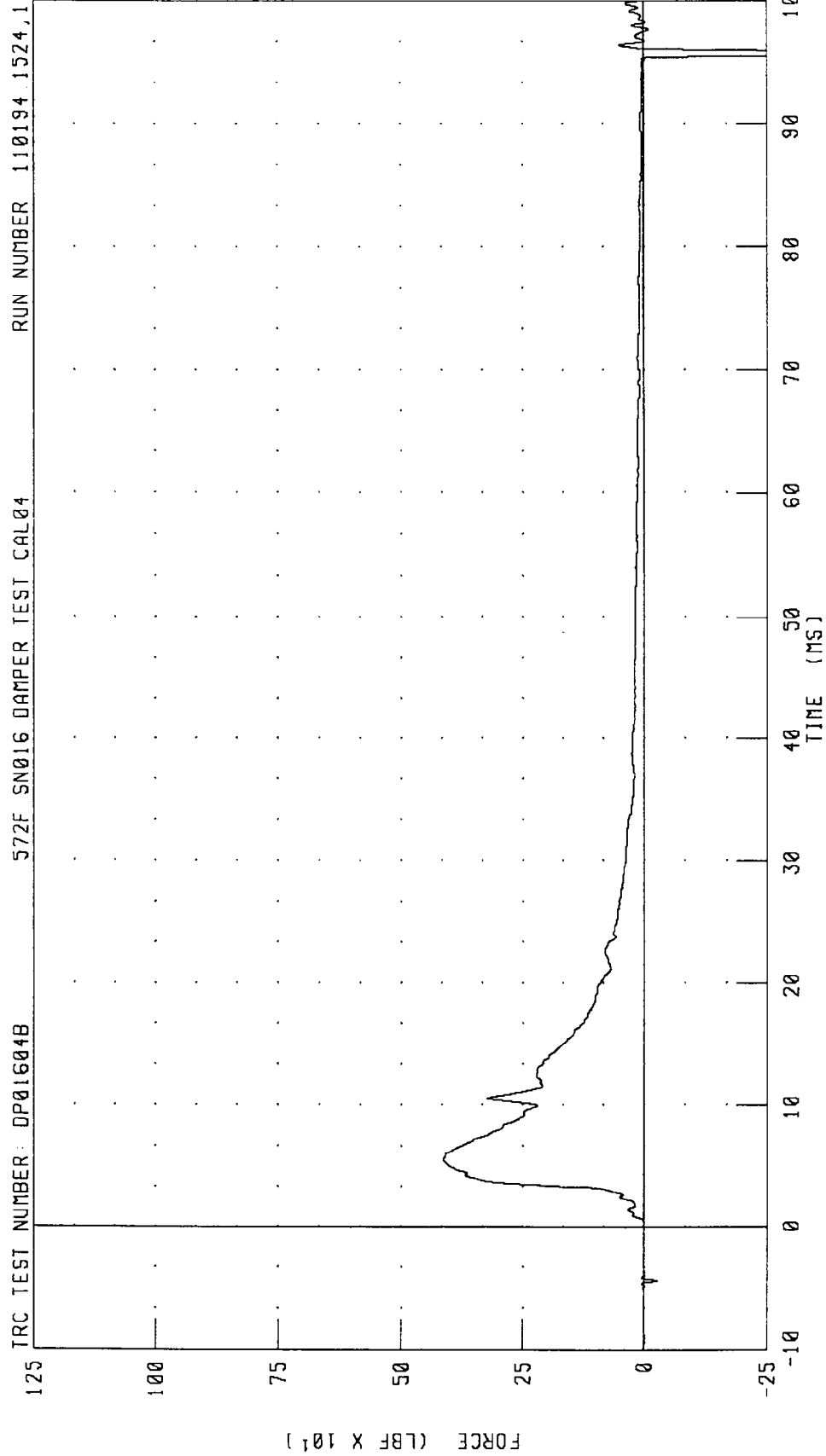
TRC TEST NUMBER DP01604A 572F SN016 DAMPER TEST CAL04 RUN NUMBER 110194 1523,1



PEAK DATA: 1.30 IN @ 39.12 MS, 0.00 IN @ -4.08 MS

CHANNEL: CSTYD FILTER: CH. CLASS 1000

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (14 FT/SEC)
 SHOCK ABSORBER RESISTIVE FORCE



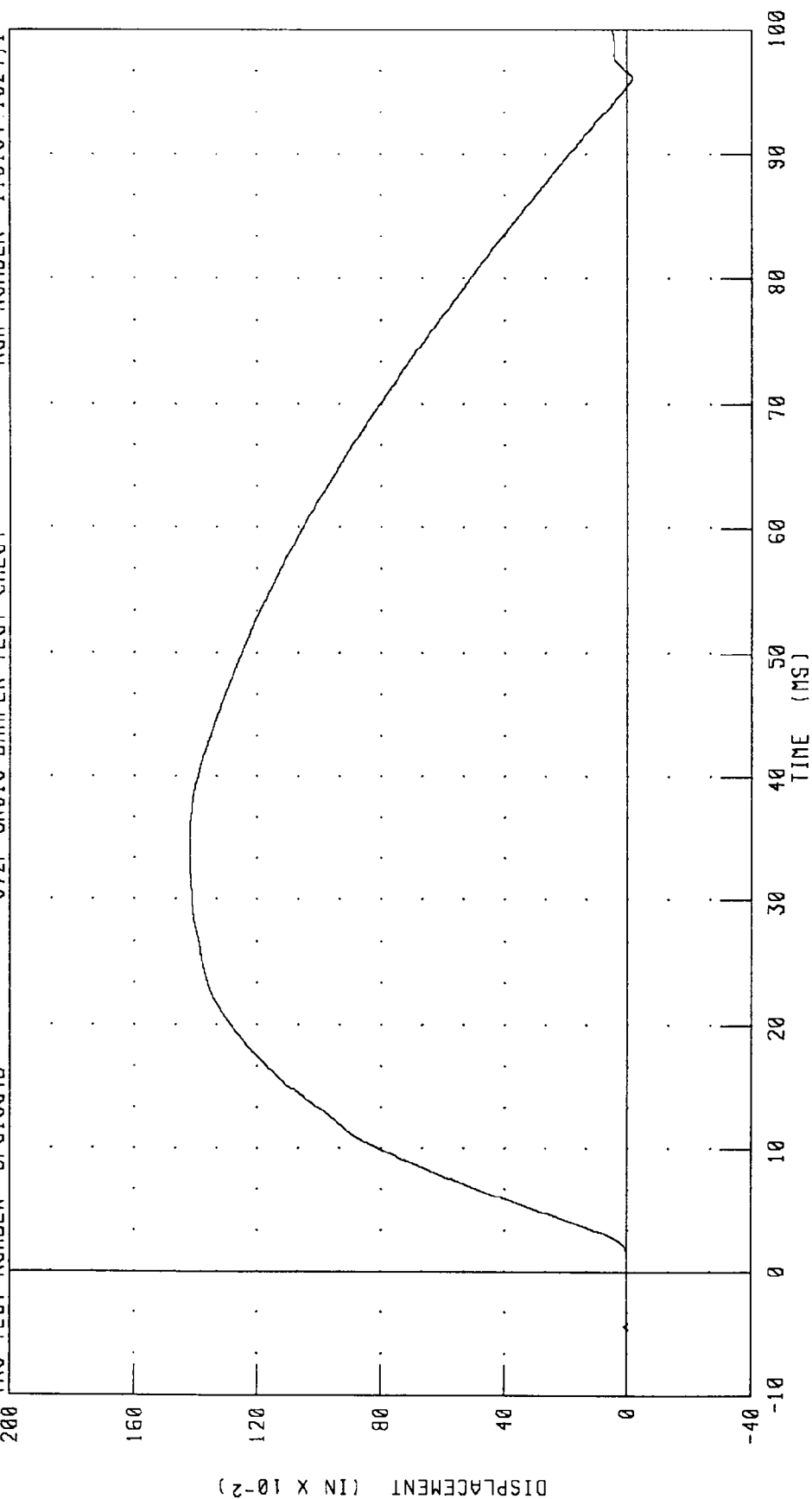
PEAK DATA: 413.65 LBF @ 5.52 MS; -654.88 LBF @ 95.68 MS

CHANNEL: DAMPF FILTER: CH. CLASS 1000

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (14 FT/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP01604B 572F SN016 DAMPER TEST CAL04 RUN NUMBER: 110194 1524,1



CHANNEL: CSTYD FILTER: CH CLASS 1000 PEAK DATA: 1.42 IN @ 33.44 MS, -0.02 IN @ 96.08 MS

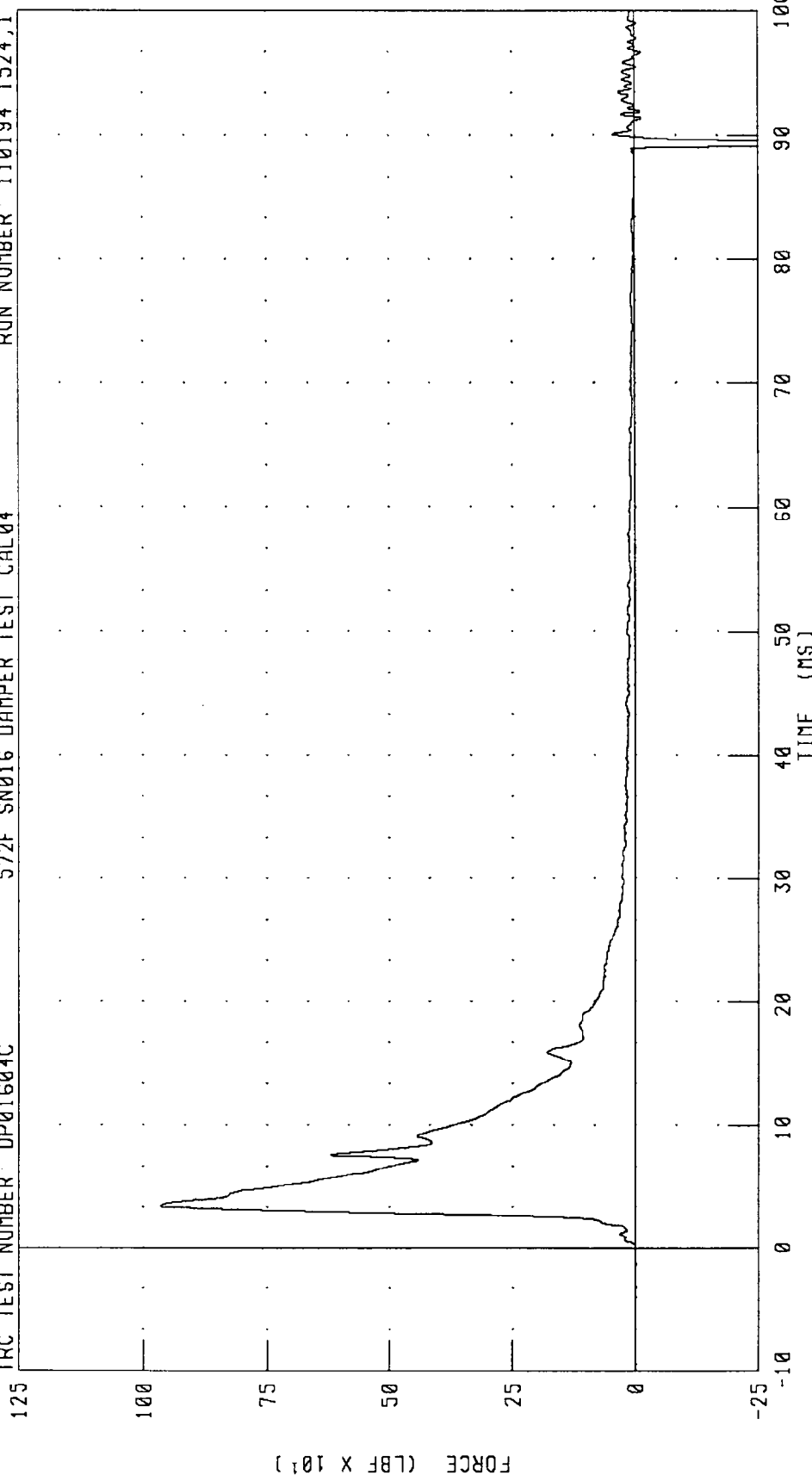
PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (20 FT/SEC)

SHOCK ABSORBER RESISTIVE FORCE

572F SN016 DAMPER TEST CAL04

TRC TEST NUMBER DP01604C

RUN NUMBER 110194 1524,1



CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 966.09 LBF @ 3.44 MS, -639.94 LBF @ 89.36 MS

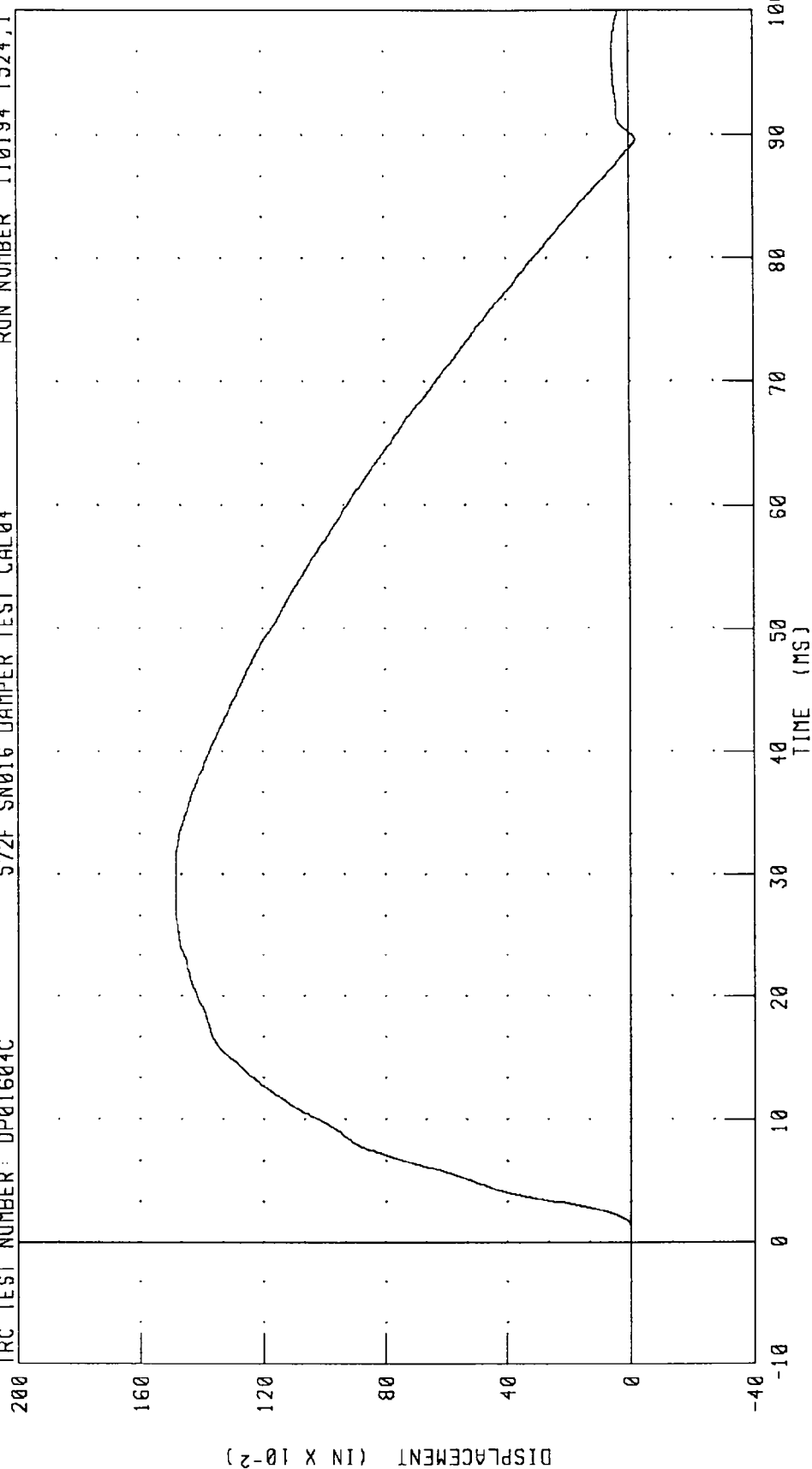
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (20 FT/SEC)

SHOCK ABSORBER DISPLACEMENT

572F SN016 DAMPER TEST CAL04

TRC TEST NUMBER: DP01604C

RUN NUMBER 110194 1524.1



CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 1.49 IN @ 28.24 MS, -0.02 IN @ 89.60 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

21-OCT-94

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: STL01604

572F SN016 LEFT THORAX CAL04

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	66 - 78 F	71.0 DEG. F
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PISTON VELOCITY	13.80 - 14.20 FT/S	14.08 FT/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	38.4 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	37.8 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	17.3 G

TEST MEETS SPECIFICATIONS

TECHNICIAN

Ruth F. S.

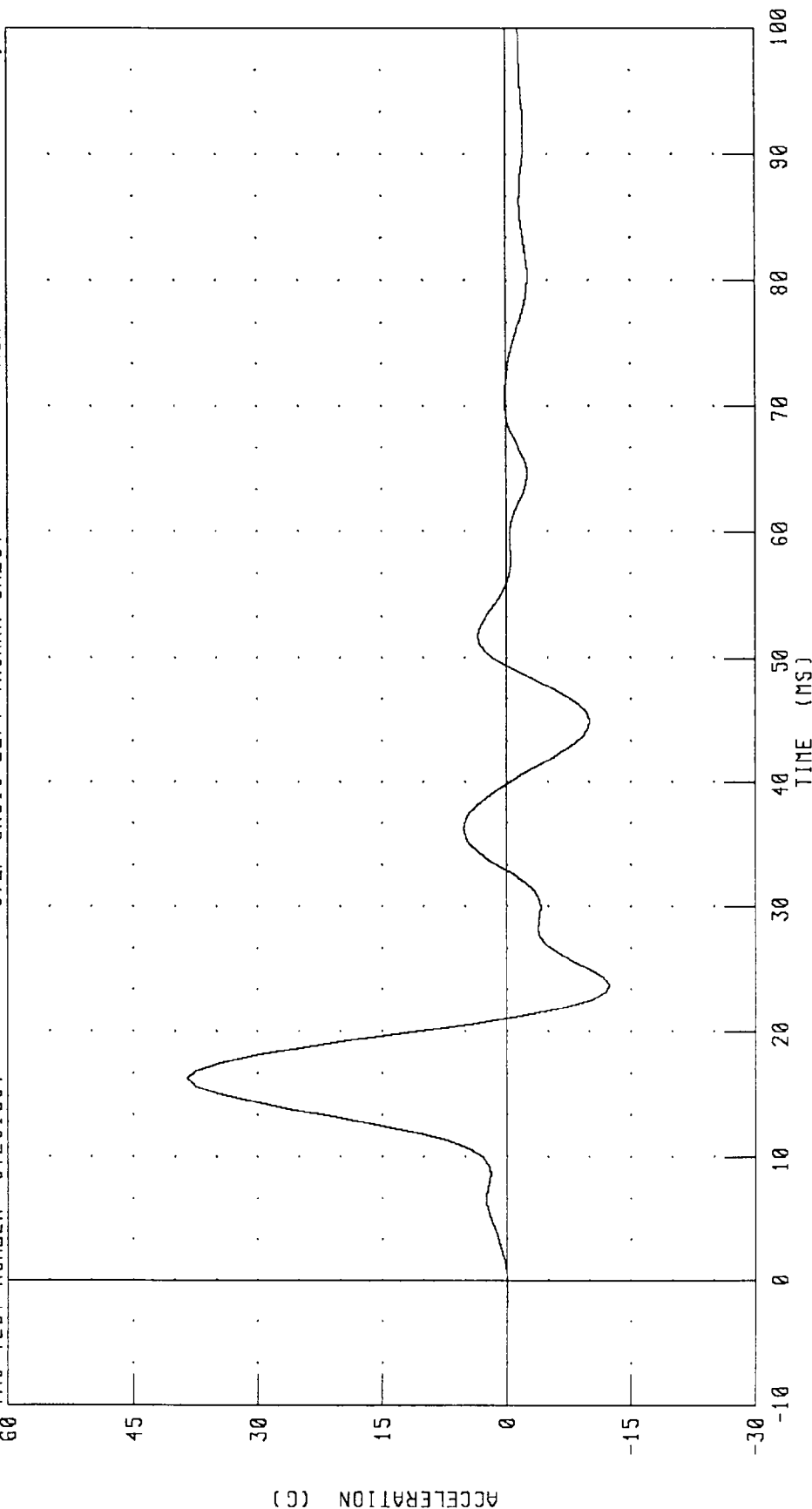
RUN NUMBER: 102194.1314;1

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

TRC TEST NUMBER: STL01604

572F SN016 LEFT THORAX CAL04

RUN NUMBER: 102194.1315,1

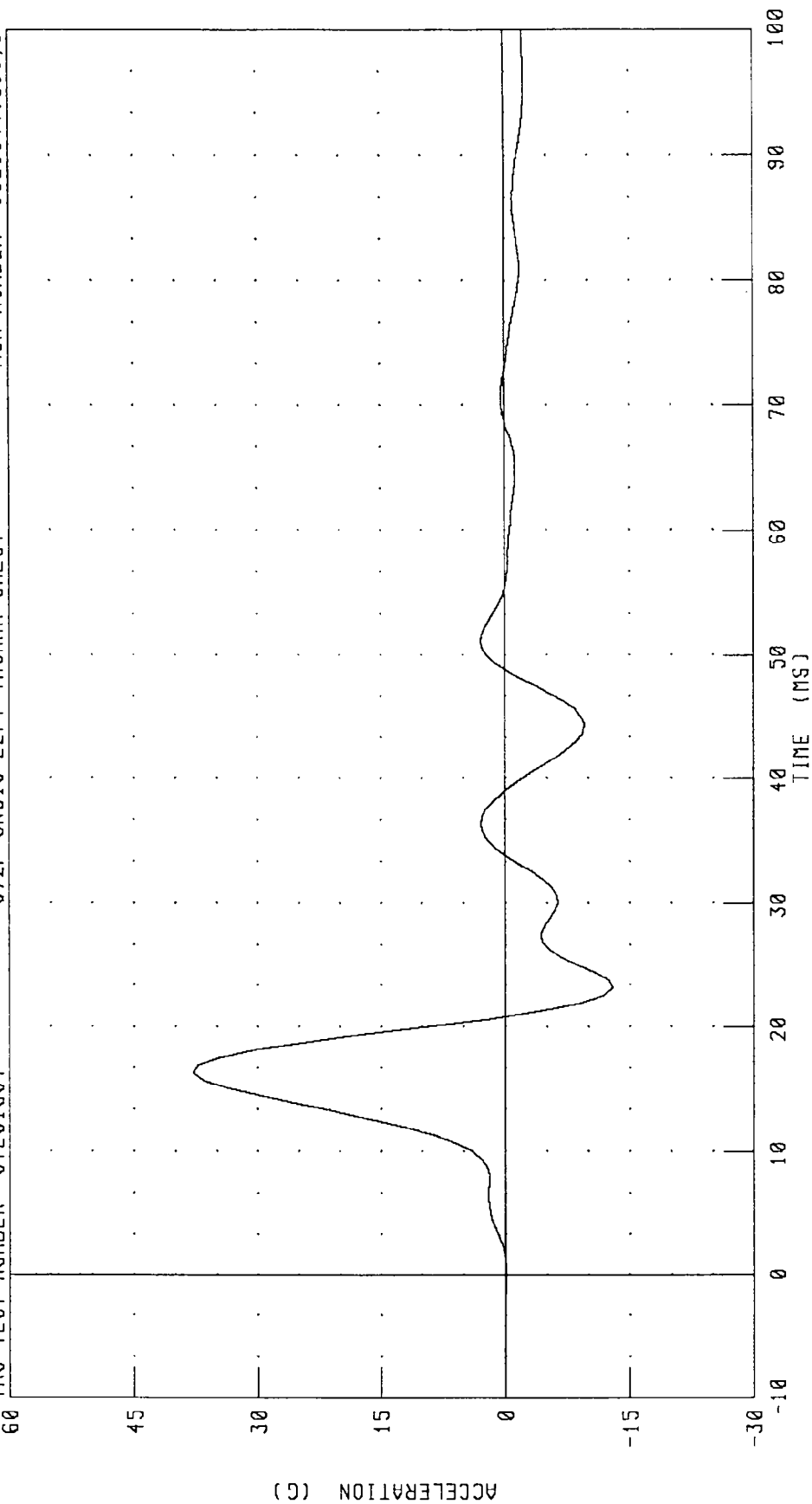


PEAK DATA: 38.45 G @ 16.25 MS, -12.46 G @ 23.75 MS

CHANNEL LURYG FILTER: FIR 100

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

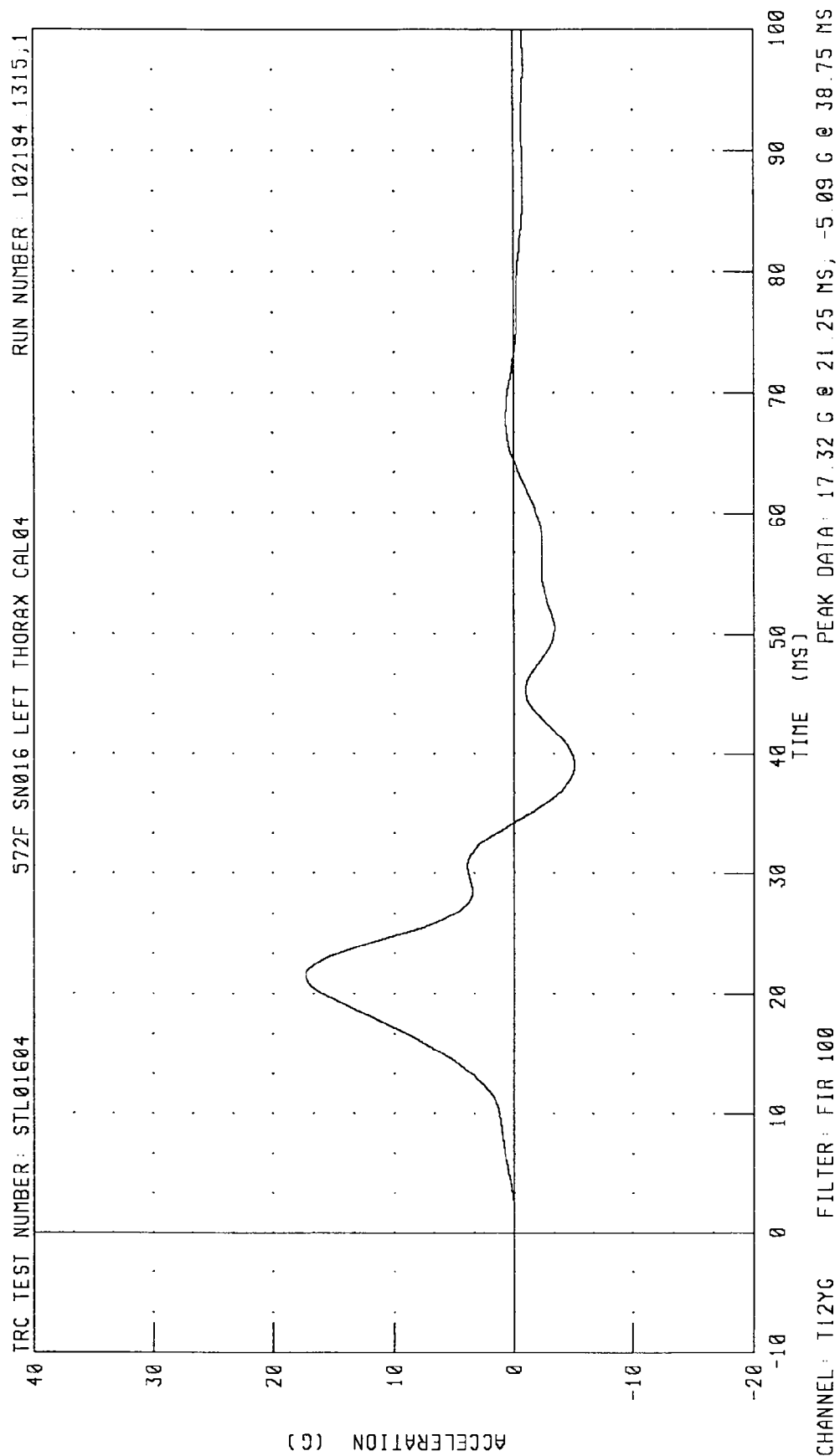
TRC TEST NUMBER: STL01604 572F SN016 LEFT THORAX CAL04 RUN NUMBER: 102194.1315.1



PEAK DATA: 37.82 G @ 16.25 MS, -12.87 G @ 23.13 MS

CHANNEL: LLRYG FILTER: FIR 100

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



TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

21-OCT-94

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: SPL01604

572F SN016 LEFT PELVIS CAL04

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	66 - 78 F	71.0 DEG. F
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PISTON VELOCITY	13.80 - 14.20 FT/S	14.08 FT/S
PEAK PELVIC ACCELERATION	40 - 60 G	43.7 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	6.0 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

Pete FSA

RUN NUMBER: 102194.1246;1

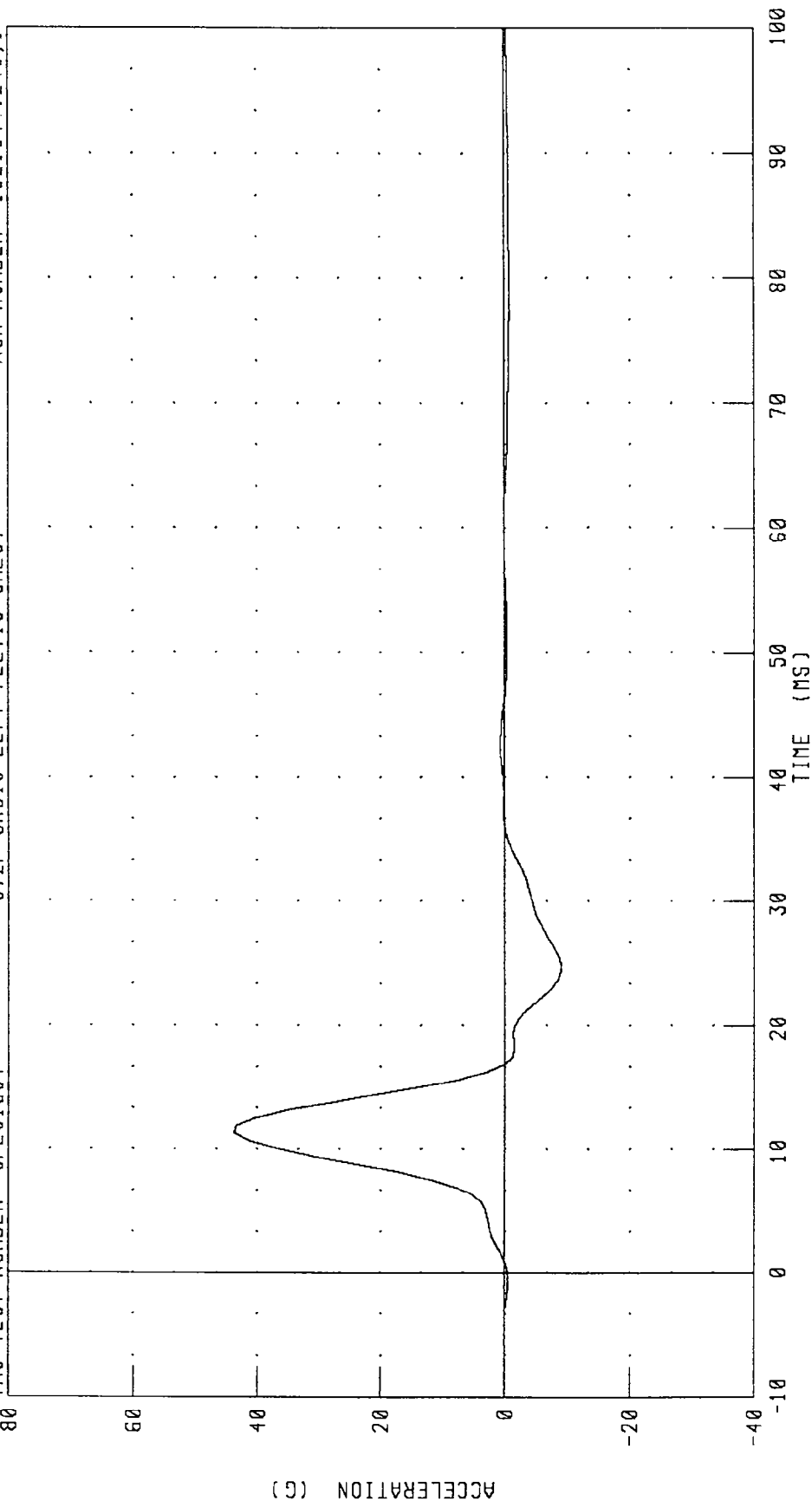
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

572F SN016 LEFT PELVIS CAL04

TRC TEST NUMBER: SPL01604

RUN NUMBER: 102194.1246,1



PEAK DATA: 43.70 G @ 11.25 MS, -8.98 G @ 24.38 MS

CHANNEL: PEVYG FILTER: FIR 100

Post-test Calibration

Left Rear Passenger Dummy S/N 268

Calibration Test Results Summary

Dummy Serial Number: 268

Post-test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thoracic Shock Absorber Test:	The shock absorber passed all test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lateral Pelvis Impact Test:	The pelvis passed all impact test requirements.

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

21-OCT-94

TRC INC.

572F SN268 DAMPER TEST CAL04

TEST NUMBERS: DP26804A,DP26804B,DP26804C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66 - 78 F	71.0 DEG. F
RELATIVE HUMIDITY		10 - 70 %	56.0 %
VELOCITY	FORCE	192 - 258 LB	213 LB
10.1 FT/S	DISPLACEMENT	1.19 - 1.39 IN	1.22 IN
VELOCITY	FORCE	389 - 472 LB	412 LB
14.0 FT/S	DISPLACEMENT	1.25 - 1.47 IN	1.36 IN
VELOCITY	FORCE	841 - 1000 LB	932 LB
20.0 FT/S	DISPLACEMENT	1.31 - 1.56 IN	1.45 IN

DAMPER SETTING = 6.0

TEST MEETS SPECIFICATIONS

TECHNICIAN

V. F. Watters

RUN NUMBER: 102194.1435;1

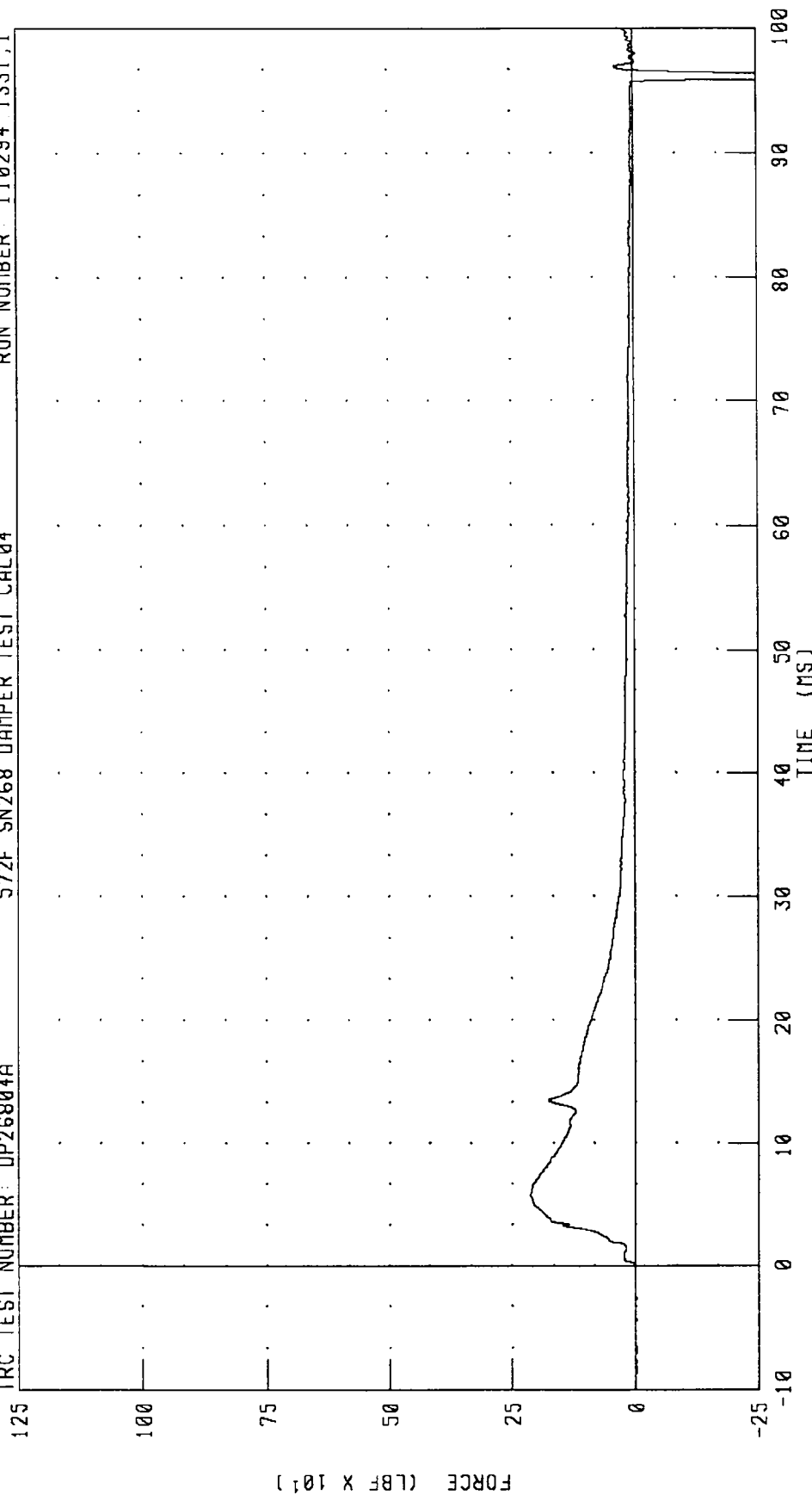
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (10 FT/SEC)

SHOCK ABSORBER RESISTIVE FORCE

572F SN268 DAMPER TEST CAL04

TRC TEST NUMBER: DP26804A

RUN NUMBER: 110294 1331,1

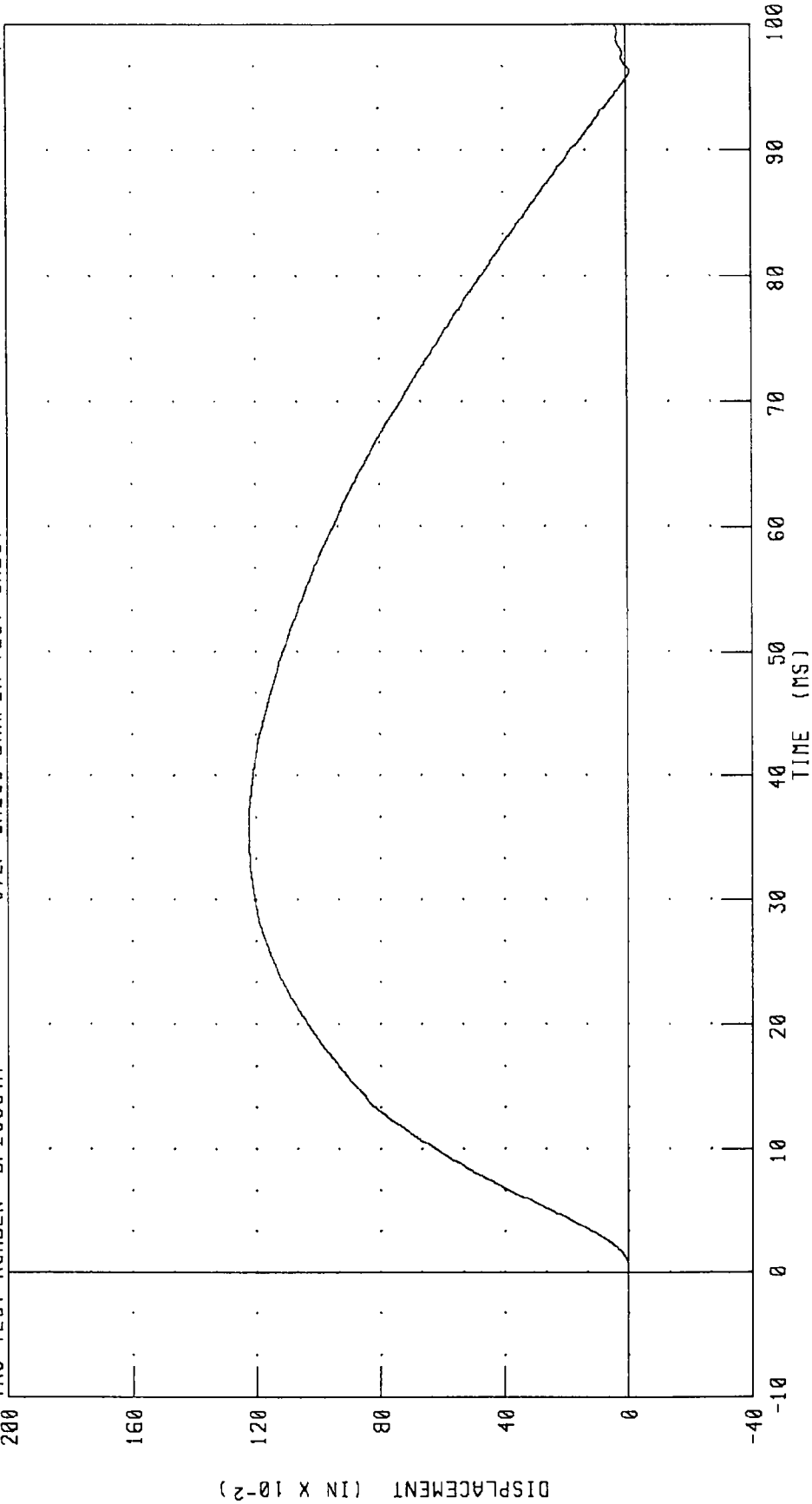


CHANNEL: DAMPF FILTER: CH. CLASS 1000 PEAK DATA: 213.38 LBF @ 5.68 MS; -388.43 LBF @ 96.00 MS

PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (10 FT/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP26804A 572F SN268 DAMPER TEST CAL04 RUN NUMBER: 110294.1331,1



CHANNEL: CSTYD FILTER: CH. CLASS 1000 PEAK DATA: 1.22 IN @ 35.36 MS, -0.01 IN @ 96.24 MS

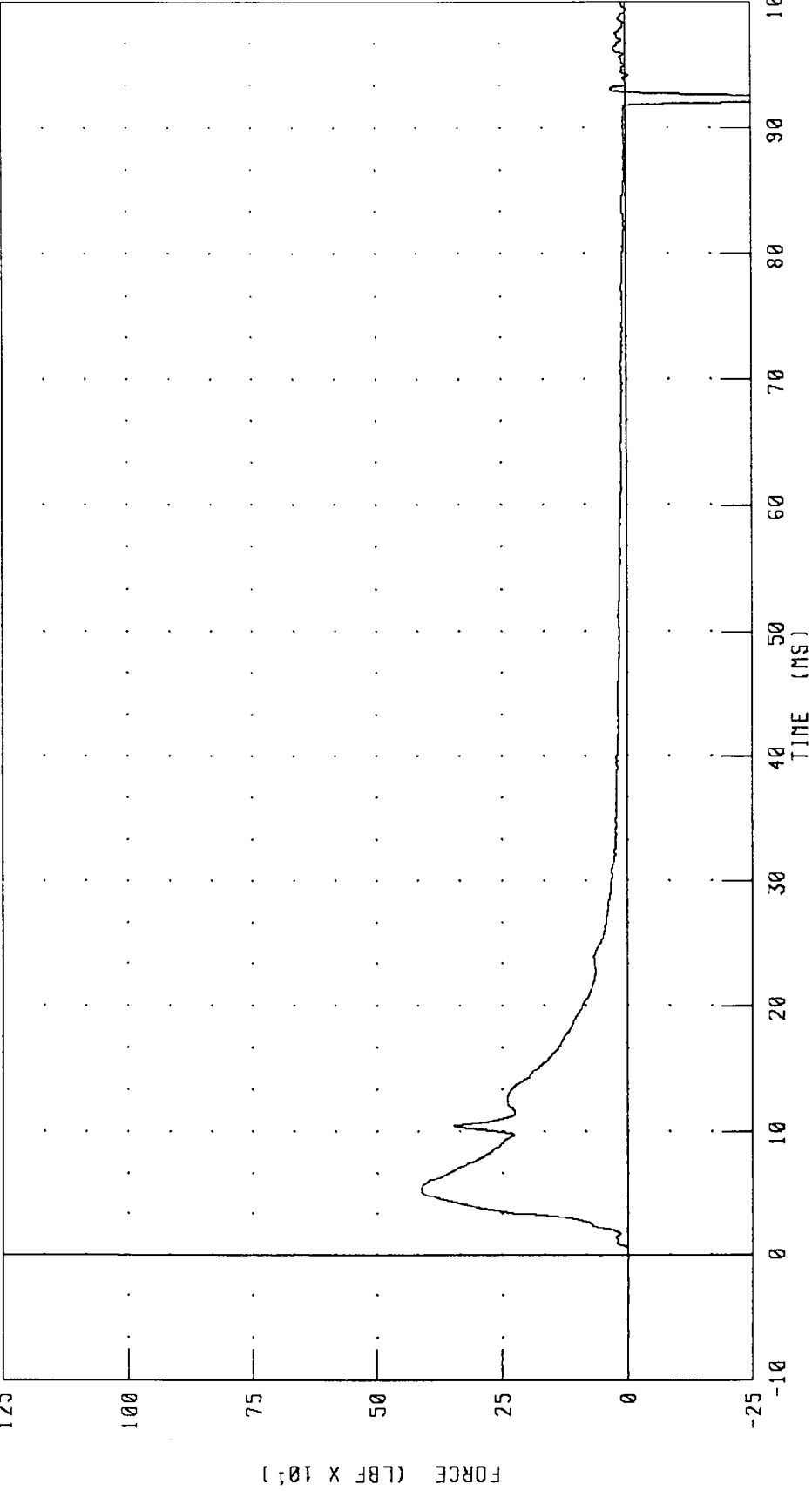
PART 572-F S.I.D THORACIC SHOCK ABSORBER CALIBRATION (14 FT/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP26804B

572F SN268 DAMPER TEST CAL04

RUN NUMBER: 110294 1332.1



PEAK DATA: 411.97 LBF @ 5.28 MS; -423.14 LBF @ 92.24 MS

CHANNEL: DAMPF FILTER: CH. CLASS 1000

PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (14 FT/SEC)

SHOCK ABSORBER DISPLACEMENT

572F SN268 DAMPER TEST CAL04

RUN NUMBER 110294 1332,1

TRC TEST NUMBER: DP26804B

200

160

120

80

40

0

-40

DISPLACEMENT (IN X 10⁻²)

100

50

TIME (MS)

40

30

20

10

0

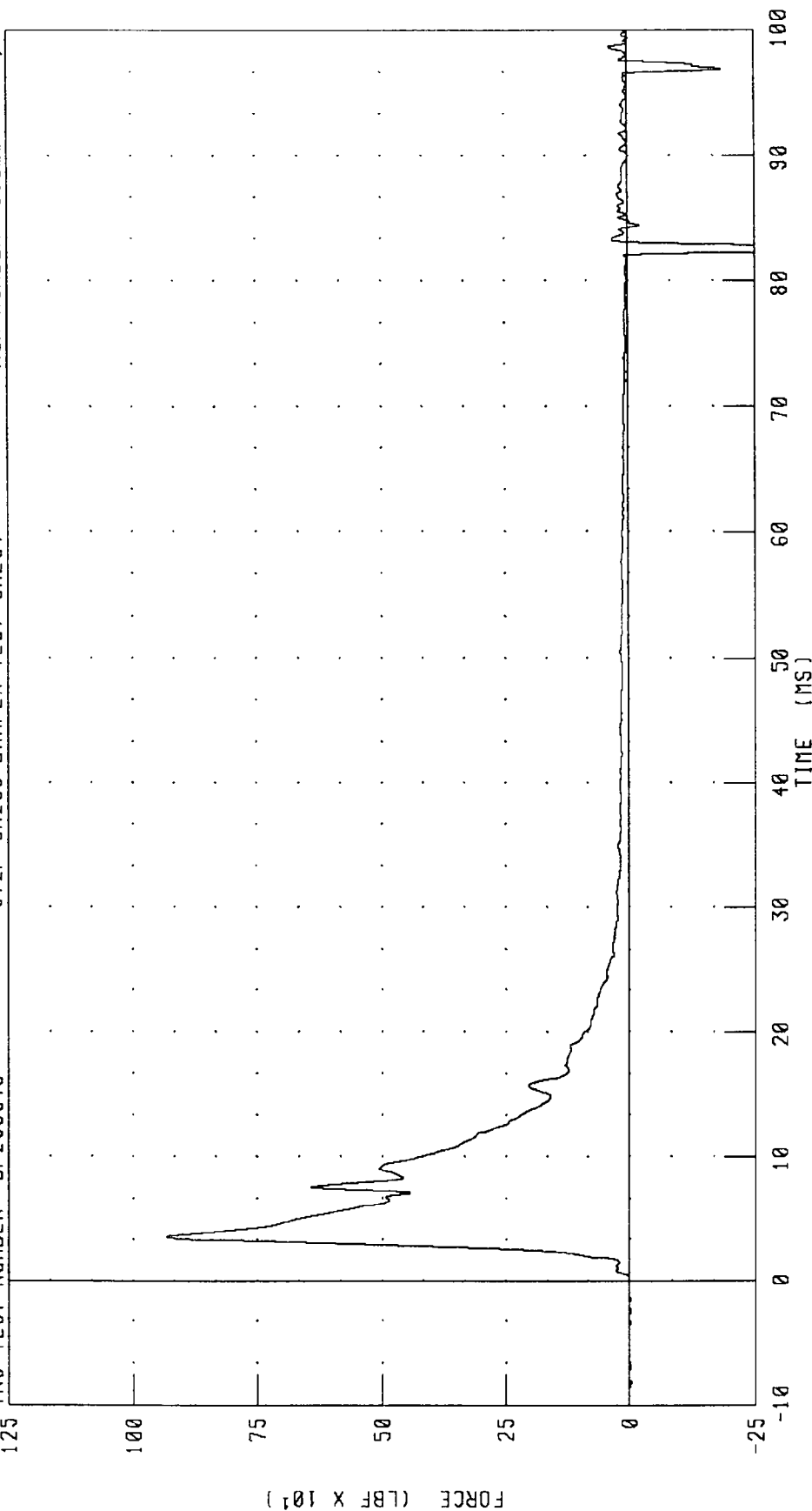
-10

CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 1.36 IN @ 32.40 MS, -0.01 IN @ 92.40 MS

PART 572-F S I D THORACIC SHOCK ABSORBER CALIBRATION (20 FT/SEC)
SHOCK ABSORBER RESISTIVE FORCE

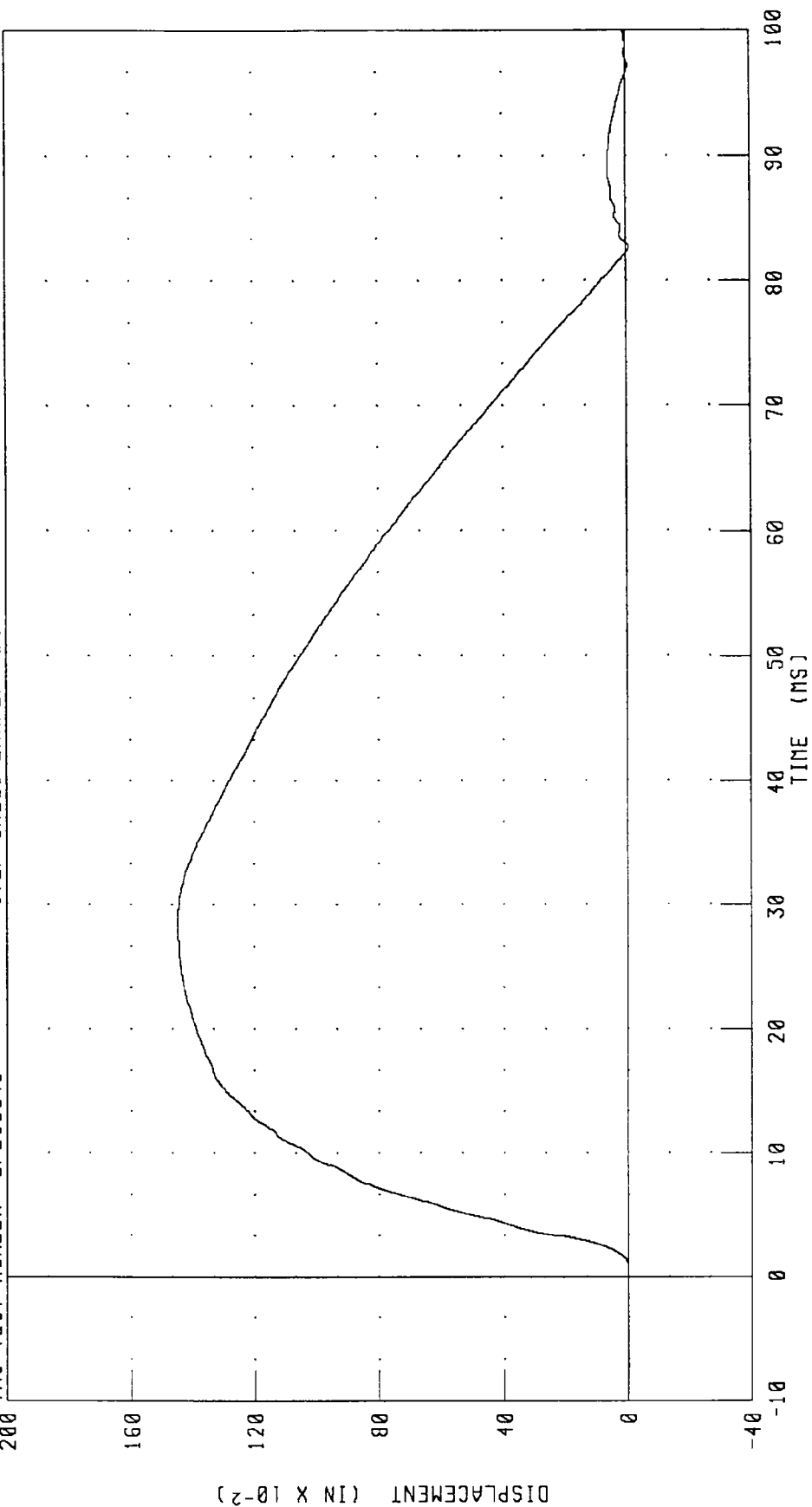
TRC TEST NUMBER: DP26804C 572F SN268 DAMPER TEST CAL04 RUN NUMBER 110294 1333,1



CHANNEL: DAMPF FILTER: CH. CLASS 1000 PEAK DATA: 932 06 LBF @ 3.52 MS, -413.10 LBF @ 82.48 MS

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (20 FT/SEC)
SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP26804C 572F SN268 DAMPER TEST CAL04 RUN NUMBER: 110294.1333,1



CHANNEL: CSTYD FILTER: CH. CLASS 1000 PEAK DATA: 1.45 IN @ 27.36 MS, -0.01 IN @ 82.64 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

21-OCT-94

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: STL26804

572F SN268 LEFT THORAX CAL04

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	66 - 78 F	71.0 DEG. F
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PISTON VELOCITY	13.80 - 14.20 FT/S	14.08 FT/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	44.2 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	41.3 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	18.0 G

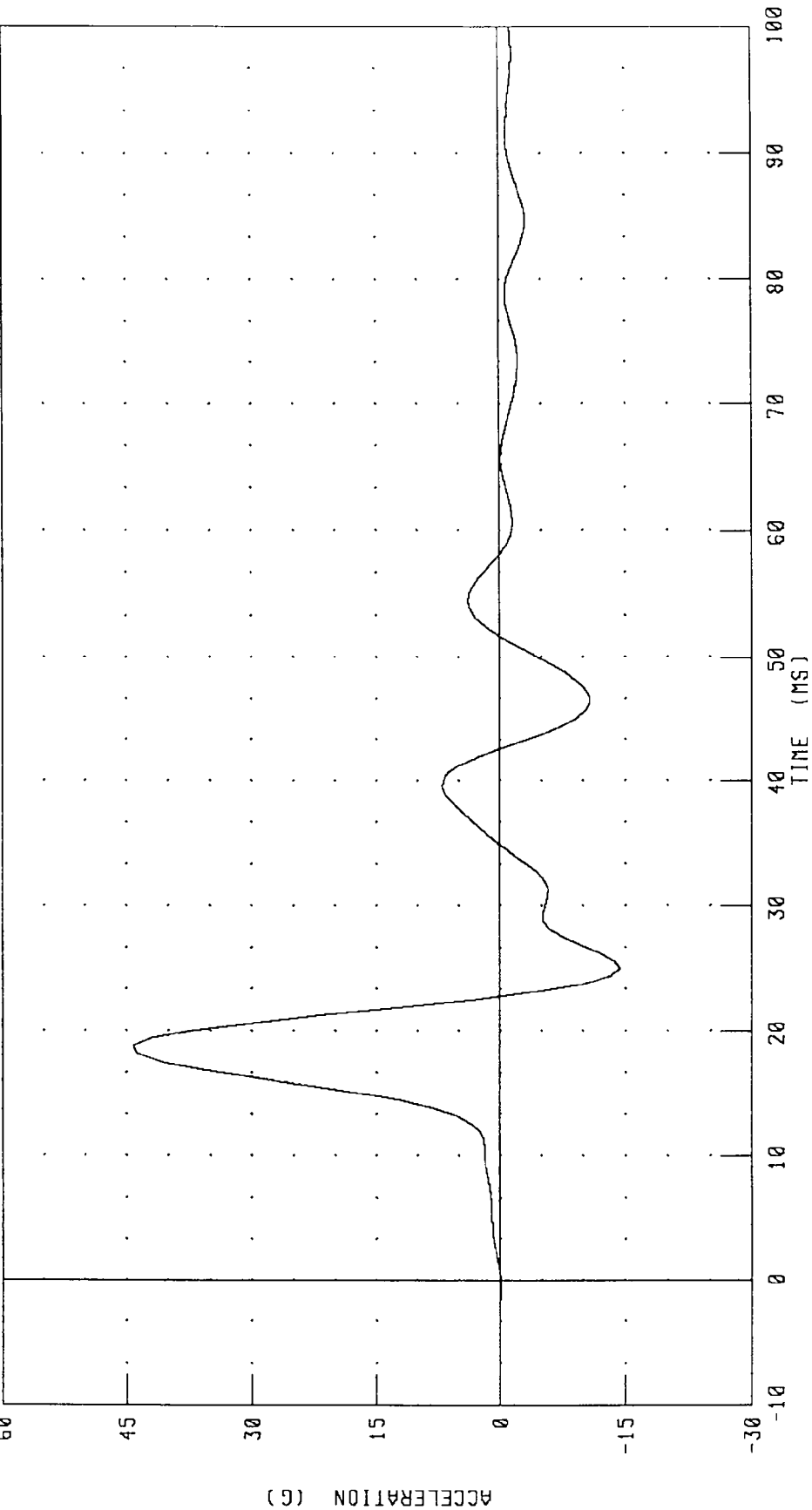
TEST MEETS SPECIFICATIONS

TECHNICIAN P. L. F. S.

RUN NUMBER: 102194.1230;1

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

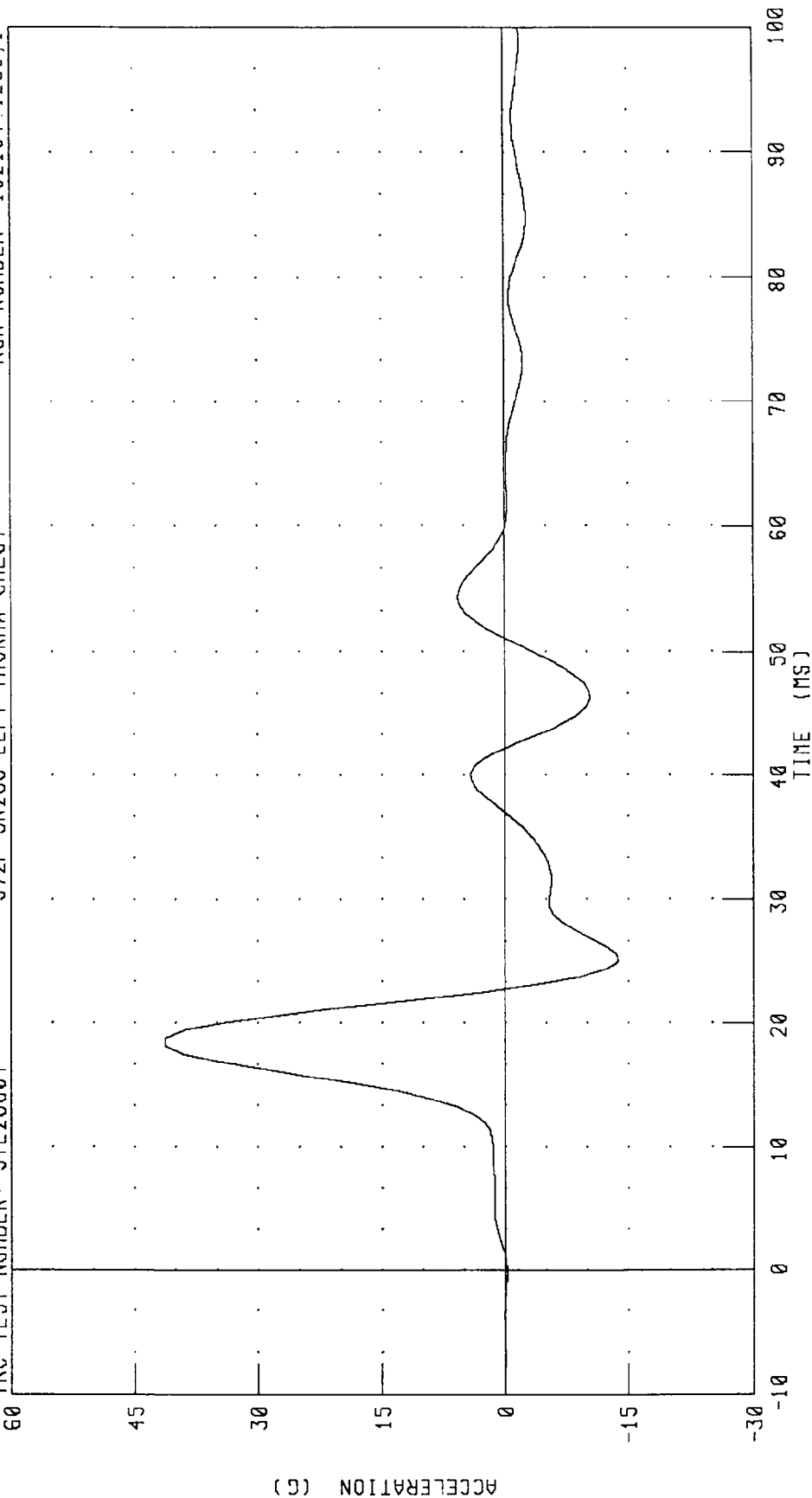
TRC TEST NUMBER: STL26804 572F SN268 LEFT THORAX CAL04 RUN NUMBER: 102194.1230.1



CHANNEL: LURYG FILTER: FIR 100 PEAK DATA: 44.24 G @ 18.75 MS, -14.38 G @ 25.00 MS

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

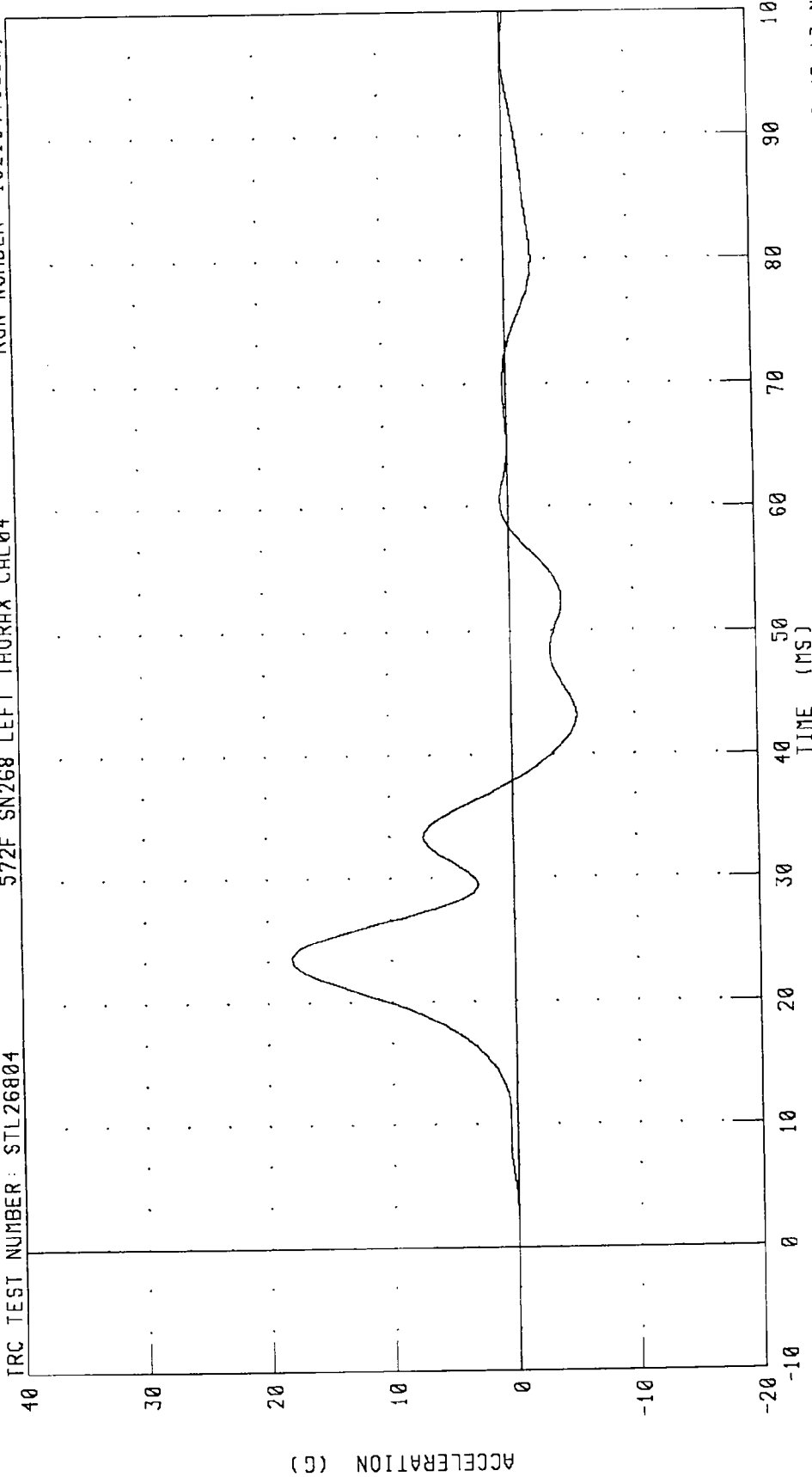
TRC TEST NUMBER: STL26804 572F SN268 LEFT THORAX CAL04 RUN NUMBER: 102194.1230.1



CHANNEL: LLRYG FILTER: FIR 100 PEAK DATA: 41.34 G @ 18.13 MS, -13.77 G @ 25.00 MS

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

IRC TEST NUMBER: STL26804 572F SN268 LEFT THORAX CAL04 RUN NUMBER: 102194.1230.1



PEAK DATA: 18.05 G @ 23.75 MS; -5.29 G @ 43.13 MS

CHANNEL: T12YG FILTER: FIR 100

TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

21-OCT-94

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: SPL26804

572F SN268 LEFT PELVIS CAL04

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	66 - 78 F	71.0 DEG. F
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PISTON VELOCITY	13.80 - 14.20 FT/S	14.08 FT/S
PEAK PELVIC ACCELERATION	40 - 60 G	52.7 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	5.4 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

Pete Foster

RUN NUMBER: 102194.1221;1

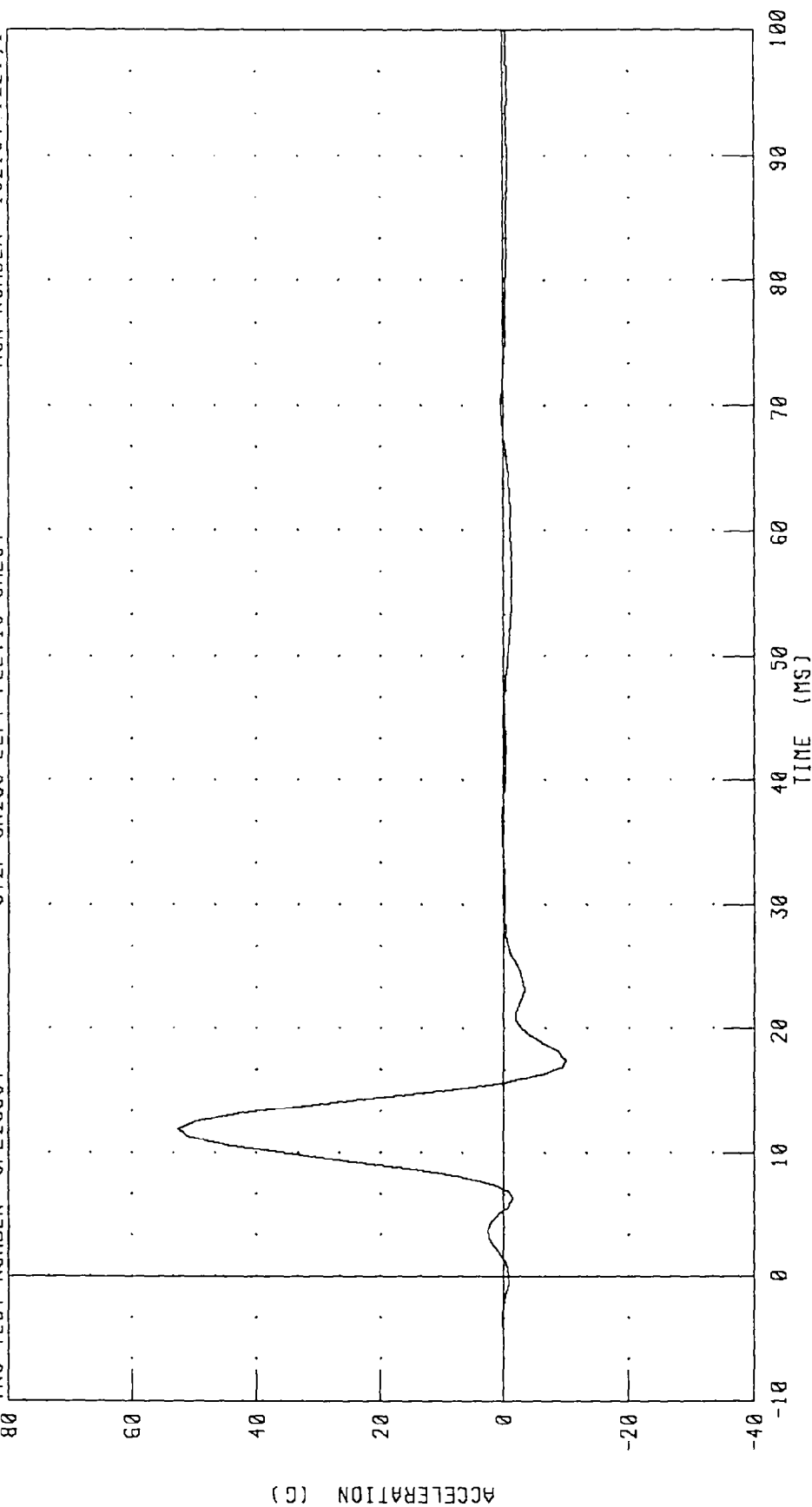
PART 572-F S I D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

572F SN268 LEFT PELVIS CAL04

TRC TEST NUMBER: SPL26804

RUN NUMBER: 102194.1221.1



CHANNEL: PEVYG FILTER: FIR 100

PEAK DATA: 52.69 G @ 11.88 MS, -10.03 G @ 17.50 MS

Appendix D

Miscellaneous Test Information

Dummy Instrumentation Placement

Dummy Manufacturer & S/N: Vector Research/016

Seating Position: Driver

Mnemonic	Location	Axis	Mfr.	Model	S/N	Orientation (+ Sensing)
HEDXG1	Head	X	Endevco	7264	AJ5N1	Rear
HEDYG1	Head	Y	Endevco	7264	AJ4A2	Left
HEDZG1	Head	Z	Endevco	7264	AJ4A3	Up
T12YG1	Lower Spine	Y	Endevco	7264	AJ4B3	Left
T12YGA	Lower Spine Redundant	Y	Endevco	7264	AJ4B4	Left
LURYG1	Left Upper Rib	Y	Endevco	7264	AJ5M9	Right
LURYGA	Left Upper Rib Redundant	Y	Endevco	7264	AJ5N0	Right
LLRYG1	Left Lower Rib	Y	Endevco	7264	AJ5N5	Right
LLRYGA	Left Lower Rib Redundant	Y	Endevco	7264	AJ5N6	Right
PEVYG1	Pelvis	Y	Endevco	7264	AJ5P6	Left

Dummy Instrumentation Placement

Dummy Manufacturer & S/N: First Technology Safety Systems/268

Seating Position: Left Rear Passenger

Mnemonic	Location	Axis	Mfr.	Model	S/N	Orientation (+ Sensing)
HEDXG4	Head	X	Endevco	7264	AJ5R6	Rear
HEDYG4	Head	Y	Endevco	7264	AJ5T0	Left
HEDZG4	Head	Z	Endevco	7264	AJ5T3	Up
T12YG4	Lower Spine	Y	Endevco	7264	AJ5W4	Left
T12YGD	Lower Spine Redundant	Y	Endevco	7264	AJ7F6	Left
LURYG4	Left Upper Rib	Y	Endevco	7264	AJ7F9	Right
LURYGD	Left Upper Rib Redundant	Y	Endevco	7264	AJ7G2	Right
LLRYG4	Left Lower Rib	Y	Endevco	7264	AJ7G5	Right
LLRYGD	Left Lower Rib Redundant	Y	Endevco	7264	AJ7H0	Right
PEVYG4	Pelvis	Y	Endevco	7264	AJ7Y2	Left

Vehicle Instrumentation Placement

Location	Axis	Mfr.	Model	S/N	Orientation (+ Sensing)
Right Rear Sill	X	Endevco	7264	CW06H	Front
Right Rear Sill	Y	Endevco	7264	CC71H	Right
Right Rear Sill	Z	Endevco	7264	BW77H	Up
Rear Floorpan Over Axle	X	Endevco	7264	DK26H	Front
Rear Floorpan Over Axle	Y	Endevco	7264	CR83H	Left
Rear Floorpan Over Axle	Z	Endevco	7264	CK65H	Up
Right Rear Seat	Y	Endevco	7264	CR26H	Right

Moving Barrier Instrumentation Placement

No.	Location	Axis	Mfr.	Model	S/N	Orientation (+ Sensing)
1	Center of Gravity	X	Endevco	7264	DW34JC	Front
		Y	Endevco	7264	DR49J7	Left
		Z	Endevco	7264	AGRF4	Up
2	Left Frame Rail Over Rear Axle	X	Endevco	7264	CP90H	Front
		Y	Endevco	7264	CM27H	Left

Frequency Response Classes
NHTSA Laboratory Procedure TP-214D-03

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Acceleration for use in:	
Total Vehicle Comparison	60
Collision Simulation Input	60
Component Analysis	600
Integration for Velocity or Displacement	180
Anthropomorphic Test Device	
Head Accelerations (linear and angular)	1000
Thorax	
Spine Acceleration ¹	180
Rib Accelerations ¹	180
Deflections	180
Pelvis	
Accelerations ¹	180

¹ The Channel Class 180 data is further processed by subsampling to a 1600 Hz sample rate, removing bias, and filtering with the Finite Impulse Response (FIR100) filter program.



PLAScore

SIDE IMPACT BARRIER CERTIFICATION
PER NHTSA TP 214

Date: October 11, 1994

To: TRC
10602 St. Rt 347
Bldg # 50
E. Liberty, OH 43319
Attn: Jeff Sankey

Purchase Order Number: 95984
Quantity: 06

Core Type: PAMG-1.6-3/8-P-5052-T
Block Number: 080B0694, 021B0894, 024B0894
Cell Size: .375 inches
Density: 1.6 pcf

Unit Numbers: 080B0694 - 2
021B0894 - 1,2,3,4
024B0894 - 1

This is to certify that the aluminum honeycomb core supplied, under the unit numbers provided, meet the crush requirements of 45 psi +/- 2.5 psi per NHTSA TP214.


Quality Control Representative

 PLASCORECrush Data per NHTSA 214

45 psi +/- 2.5 psi

7 of 8 samples

Block Number: 080B0694

<u>Specimen Number</u>	<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>
1	44.88	45.39	47.08
2	46.92	46.93	47.02
3	45.51	45.04	46.37
4	45.93	45.19	46.74
5	45.91	46.12	45.83
6	46.24	45.21	45.38
7	46.85	46.84	45.83

Block Number: 021B0894

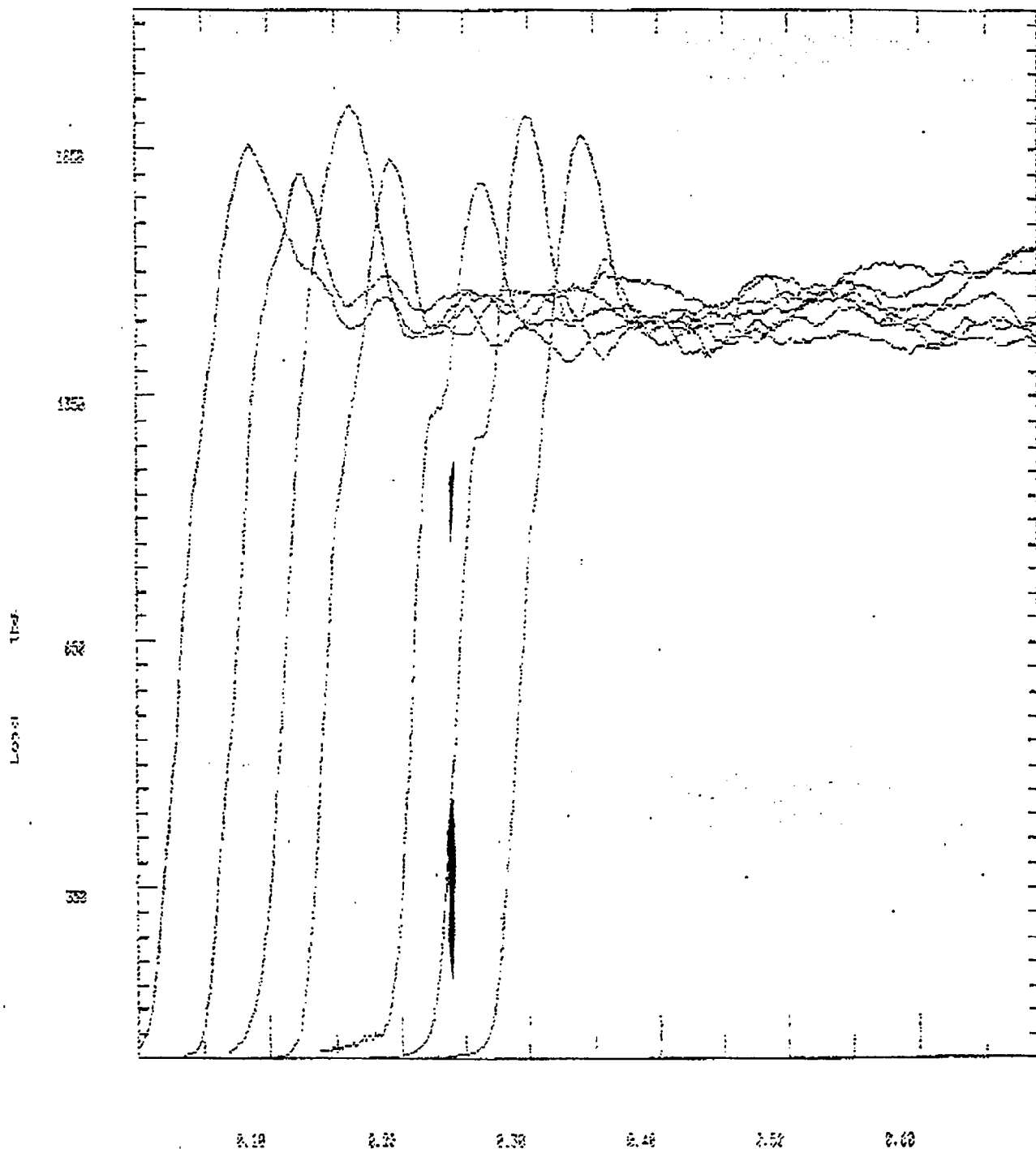
<u>Specimen Number</u>	<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>
1	43.11	42.49	42.35
2	45.64	45.70	46.55
3	45.18	46.17	46.32
4	44.06	44.76	45.69
5	44.43	44.39	43.80
6	44.73	45.81	46.86
7	45.67	45.60	46.10
8	45.12	45.76	45.60

BlockNumber: 024B0894

<u>Specimen Number</u>	<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>
1	43.66	44.08	43.69
2	44.87	44.94	45.58
3	44.65	44.60	43.40
4	43.48	44.47	44.94
5	44.15	44.61	43.66
6	44.28	44.20	44.43
7	44.39	45.53	45.35
8	43.97	44.24	44.25

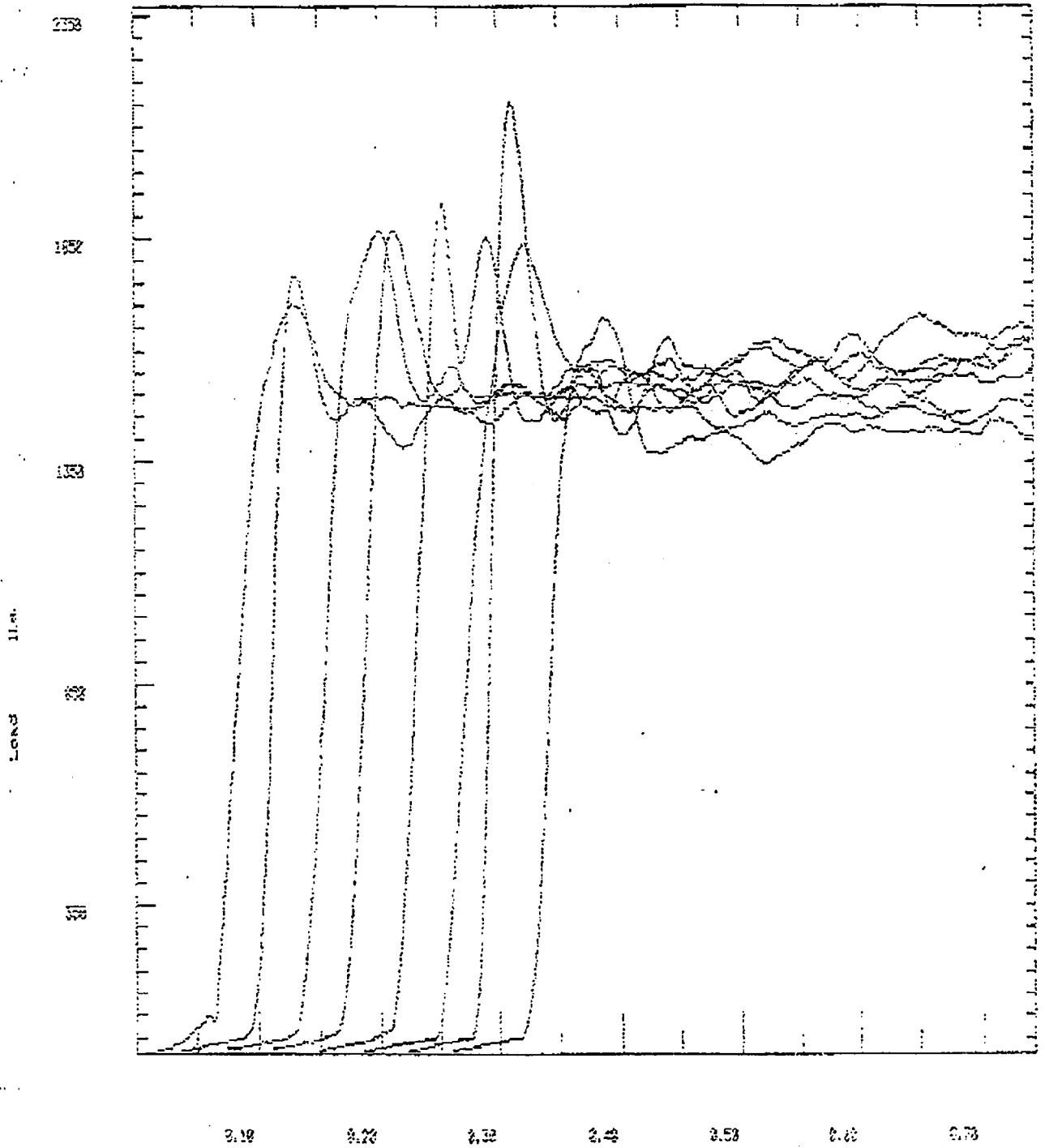
080B06941 ALL

080B06941 01



21B08941 ALL

21B08941 21



D-10

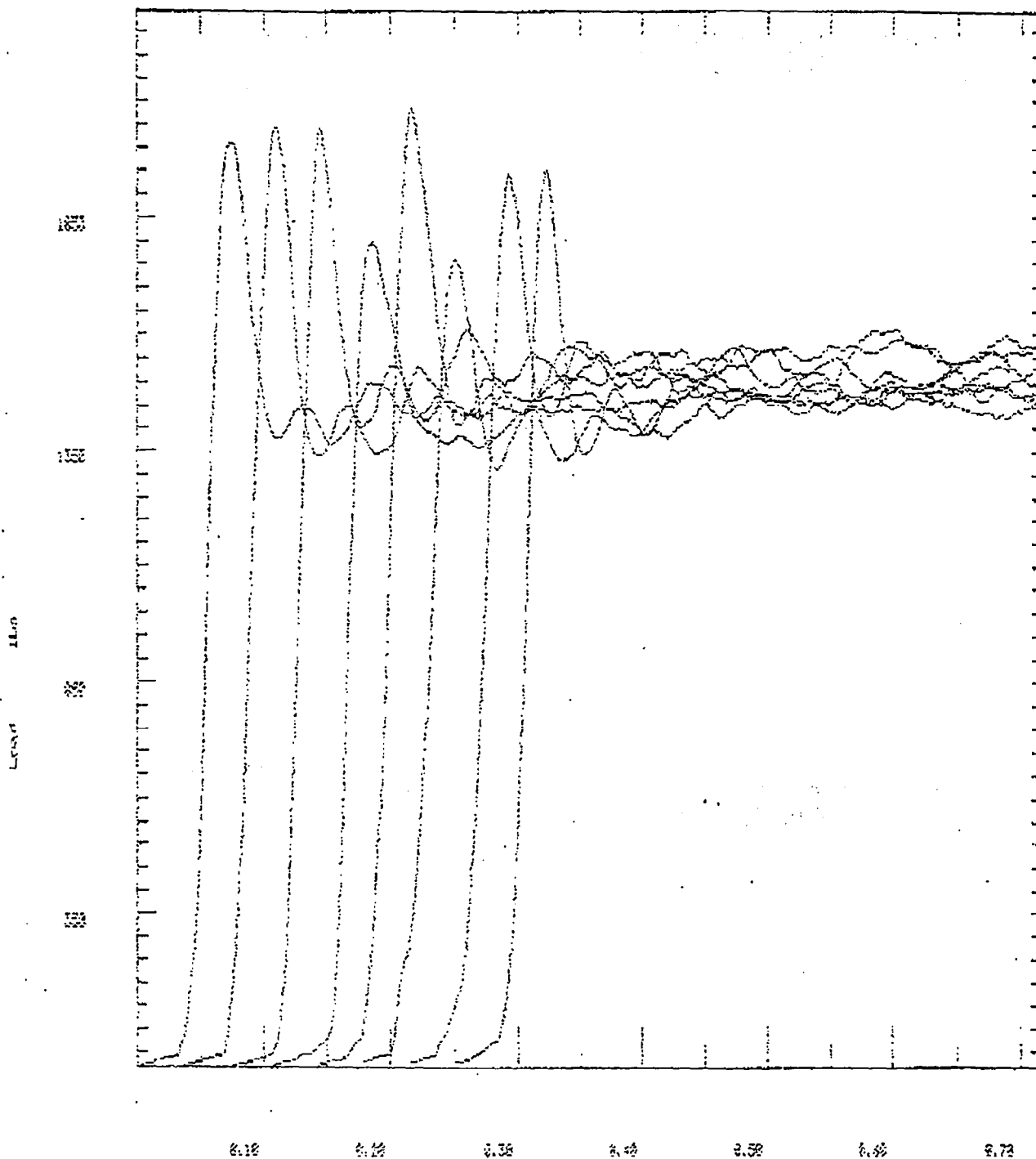
941019

(S) 21B08941

DEC 1 1994 13:04 FROM PLASCORE

24 B08941 ALL

2408741 21

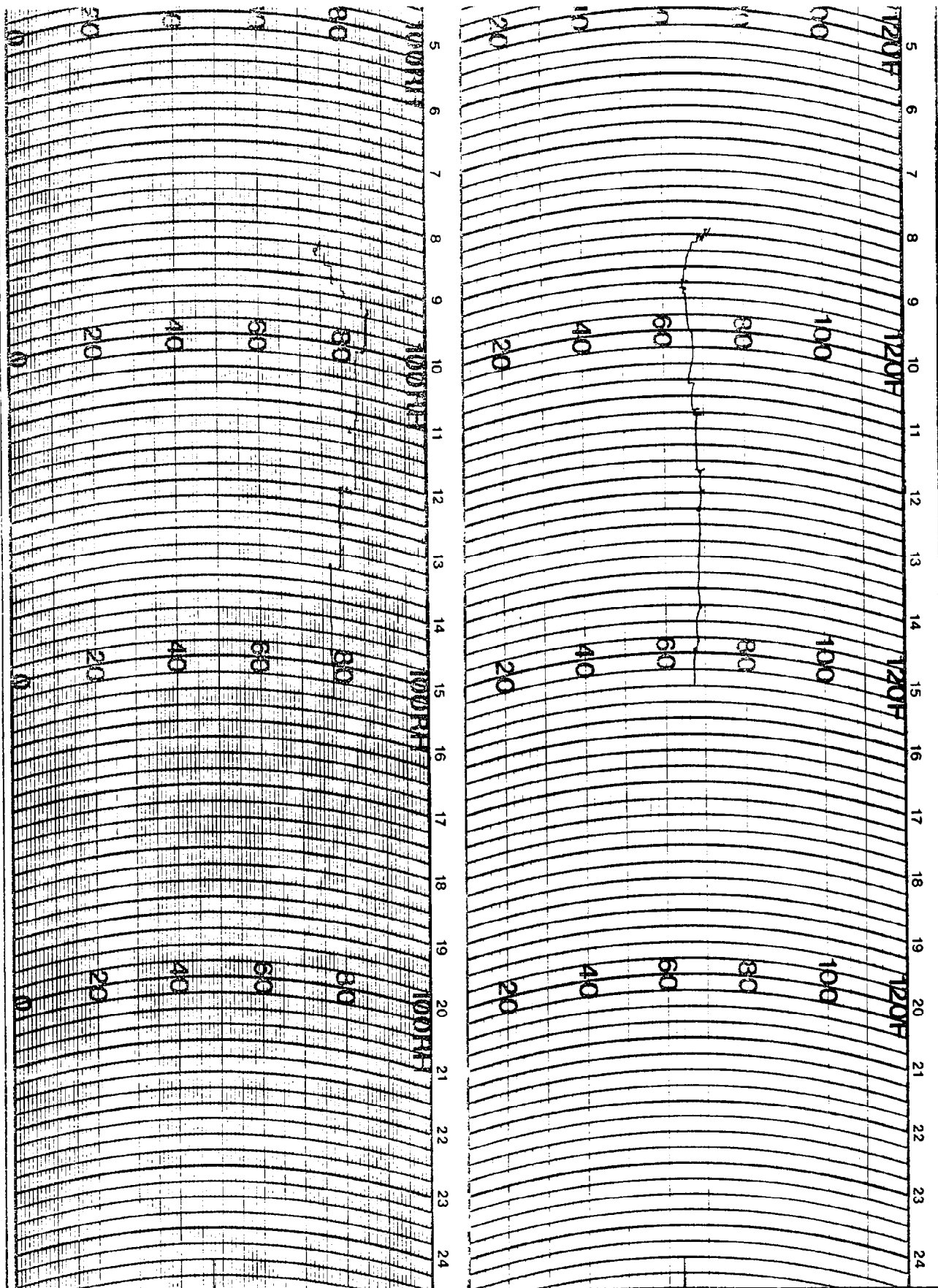


D-11

941019

Displacement (in)

DEC 1 1994 13:04 FROM PLASCORE



WEATHER MEASURE
P.O. BOX 41257
SACRAMENTO, CA. 95841
PHONE (916) 481-7565

HYGROTHERMOGRAPH
1 DAY

CHART # C311 D HF
PART # 699123

STATION _____ DATE ON _____ DATE OFF _____