

Report Numbers: 208-TRC-97-004
212-TRC-97-004
301-TRC-97-004

VZ558

Vehicle Safety Compliance Testing
for Occupant Crash Protection,
Windshield Retention and, Windshield Zone Intrusion.

General Motors Corporation
1997 Chevrolet S-10 Extended Cab
Fleetside Pickup
NHTSA Number: CV0115
TRC Test Number: 970502

Transportation Research Center Inc.
10820 State Route 347
East Liberty, OH 43319



May 30, 1997

Final Report

Prepared For:
U. S. Department of Transportation
National Highway Traffic Safety Administration
Office of Vehicle Safety Compliance (NEF-30)
400 Seventh Street, S.W., Room No. 6115
Washington, DC 20590

97 JUN 12 AM: 03

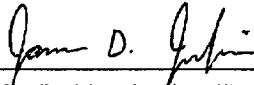
RECEIVED NSA-30

6/12/97

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-93-D-01089.

This publication is distributed by the U. S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings, and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

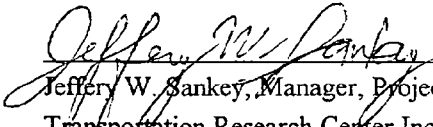
Report Prepared By:



Jason D. Jenkins, Project Engineer
Transportation Research Center Inc.

Date 06/04/97

Report Approved By:



Jeffery W. Sankey, Manager, Project Operations
Transportation Research Center Inc.

Date 6/3/97

Final Report Accepted By:



Contracting Officer's Technical Representative (COTR),
NHTSA, Office of Vehicle Safety Compliance

Date 8/12/97

1. Report No. 208-TRC-97-004 212-TRC-97-004	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS Nos. 208, 212, and 219 (partial) Compliance Testing of a 1997 Chevrolet S-10 Extended Cab Fleetside Pickup, NHTSA No. CV0115		5. Report Date May 30, 1997	
		6. Performing Organization Code TRC	
7. Author(s) Jason D. Jenkins Project Engineer Transportation Research Center Inc.		8. Performing Organization Report No. 208-TRC-97-004 212-TRC-97-004	
9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, OH 43319		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTNH22-93-D-01089	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (NEF-31) 400 Seventh Street, S.W., Washington, DC 20590		13. Type of Report and Period Covered Final Report May 1997	
		14. Sponsoring Agency Code NEF-30	
15. Supplemental Notes			
16. Abstract A 30 mph flat frontal barrier impact test was conducted on a 1997 Chevrolet S-10 Extended Cab Fleetside Pickup, NHTSA No. CV0115, at Transportation Research Center Inc. on May 2, 1997. This test was conducted to determine compliance with Federal Motor Vehicle Safety Standards (FMVSS): 208, "Occupant Crash Protection"; 212, "Windshield Retention" and; 219 (partial), "Windshield Zone Intrusion." The barrier impact velocity was 29.3 mph. The vehicle's maximum static crush was 22.2 inches. The ambient temperature was 70° F. The driver's Head Injury Criteria (HIC) was 486. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 38.3 g. The driver's chest deflection was 1.6 inches. The driver's left and right femur maximum axial forces were 1038 pounds and 728 pounds, respectively. The passenger's HIC was 759. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 38.2 g. The passenger's chest deflection was 1.2 inch. The passenger's left and right femur maximum axial forces were 734 pounds and 1056 pounds, respectively.			
17. Key Words Frontal Impact 30 mph Vehicle Safety Compliance Testing: FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Retention" FMVSS 219 (partial), "Windshield Zone Intrusion"		18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division Nassif Building, Room 5108 400 Seventh Street, S.W. Washington, DC 0590	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. Number of Pages 154	22. Price

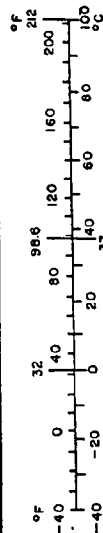
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	meters	m
yd	yards	0.9	kilometers	km
mi	miles	1.6		
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
tblsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
fl ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°f	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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
km	kilometers	1.1	miles	mi
		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	st
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



* 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, SO Catalog No. C13.10.286.

Table of Contents

<u>Section</u>	<u>Description</u>	<u>Page</u>
1.0	Purpose and Test Procedure	1-1
2.0	Frontal Barrier Impact Test Summary	2-1
3.0	FMVSS 208, 212, and 219 (Partial)	3-1
4.0	Vehicle, Occupant, and Camera Measurements	4-1
Appendix A	Photographs	A-1
Appendix B	Data Plots	B-1
Appendix C	Manufacturer's Vehicle Information	C-1

List of Tables

<u>Number</u>	<u>Description</u>	<u>Page</u>
1	Crash Test Summary	2-4
2	Test Vehicle Information	2-6
3	Post-Impact Data	2-9
4	Post-test Airbag Data	2-12
5	Vehicle Accelerometer Locations and Data Summary	2-15
6	Dummy Injury Criteria	3-2
7	FMVSS 208 Seat Belt Comfort and Convenience Test Summary Front Outboard Designated Seating Positions	3-4
8	FMVSS 208 Equipment Data	3-7
9	Fuel System Data	3-12
10	Impacted Vehicle Measurements	4-3
11	Dummy Measurement Data for Front Seat Occupants	4-6
12	Motion Picture Camera Locations	4-10

List of Figures

<u>Number</u>	<u>Description</u>	<u>Page</u>
1	Impact Velocity Measurement System	2-10
2	Accident Investigation Division Data for 30 mph Frontal Barrier Impact	2-11
3	Vehicle Accelerometer Placement	2-14
4	FMVSS 212 Test Data	3-10
5	FMVSS 219 Test Data	3-11
6	Pre-test and Post-test Measurement Points	4-2
7	Vehicle Target Locations	4-4
8	Dummy Measurement Locations for Front Seat Occupants	4-5
9	Seat Belt Position Data	4-7
10	Camera Positions	4-8

List of Photographs

<u>Figure</u>	<u>Photograph Title</u>	<u>Page</u>
A-1.	Pre-test Front View	A-2
A-2.	Post-test Front View	A-3
A-3.	Pre-test Left Side View	A-4
A-4.	Post-test Left Side View	A-5
A-5.	Pre-Test Rear View	A-6
A-6.	Post-Test Rear View	A-7
A-7.	Pre-Test Right Side View	A-8
A-8.	Post-Test Right Side View	A-9
A-9.	Pre-Test Right Front Three-Quarter View	A-10
A-10.	Post-Test Right Front Three-Quarter View	A-11
A-11.	Pre-Test Left Rear Three-Quarter View	A-12
A-12.	Post-Test Left Rear Three-Quarter View	A-13
A-13.	Pre-Test Windshield View	A-14
A-14.	Post-Test Windshield View	A-15
A-15.	Pre-Test Engine Compartment View	A-16
A-16.	Post-Test Engine Compartment View	A-17
A-17.	Pre-Test Fuel Filler Cap View	A-18
A-18.	Pre-Test Fuel Filler Neck View	A-19
A-19.	Post-Test Fuel Filler Neck View	A-20
A-20.	Pre-Test Fuel Tank View	A-21
A-21.	Post-Test Fuel Tank View	A-22
A-22.	Pre-test Front Underbody View	A-23
A-23.	Post-test Front Underbody View	A-24
A-24.	Pre-test Rear Underbody View	A-25
A-25.	Post-test Rear Underbody View	A-26
A-26.	Pre-Test Driver Dummy Position View	A-27
A-27.	Post-Test Driver Dummy Position View	A-28
A-28.	Pre-Test Passenger Dummy Position View	A-29
A-29.	Post-Test Passenger Dummy Position View	A-30

List of Photographs

<u>Figure</u>	<u>Photograph Title</u>	<u>Page</u>
A-30.	Pre-test Driver Dummy & Vehicle Interior - View 1	A-31
A-31.	Post-test Driver Dummy & Vehicle Interior - View 1	A-32
A-32.	Pre-test Driver Dummy & Vehicle Interior - View 2	A-33
A-33.	Post-test Driver Dummy & Vehicle Interior - View 2	A-34
A-34.	Pre-test Passenger Dummy & Vehicle Interior - View 1	A-35
A-35.	Post-test Passenger Dummy & Vehicle Interior - View 1	A-36
A-36.	Pre-test Passenger Dummy & Vehicle Interior - View 2	A-37
A-37.	Post-test Passenger Dummy & Vehicle Interior - View 2	A-38
A-38.	Post-Test Driver Dummy View	A-39
A-39.	Post-test Driver Dummy Head Contact - View 1	A-40
A-40.	Post-test Driver Dummy Head Contact - View 2	A-41
A-41.	Post-test Driver Dummy Knee Contact - View 1	A-42
A-42.	Post-test Driver Dummy Knee Contact - View 2	A-43
A-43.	Post-Test Passenger Dummy View	A-44
A-44.	Post-test Passenger Dummy Head Contact View	A-45
A-45.	Post-test Passenger Dummy Knee Contact - View 1	A-46
A-46.	Post-test Passenger Dummy Knee Contact - View 2	A-47
A-47.	Post-Test Seat Belt On Dummy View	A-48
A-48.	Post-Test Seat Belt Damage View	A-49
A-49.	Pre-Test Vehicle Certification Label View	A-50

Section 1.0

Purpose and Test Procedure

Purpose

This 30 mph flat frontal barrier impact test is part of the Federal Motor Vehicle Safety Standards (FMVSS) 208, 212, 219 (partial), and 301 compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by the Transportation Research Center Inc. (TRC) under Contract No. DTNH22-93-D-01089. The purpose of this test was to determine if the subject vehicle, a 1997 Chevrolet S-10 Extended Cab Fleetside Pickup, NHTSA No. CV0115, meets the performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; and FMVSS 219 (partial), "Windshield Zone Intrusion"; in the flat frontal barrier impact mode.

Test Procedure

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-208-09. Data was obtained relative to FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; and FMVSS 219 (partial), "Windshield Zone Intrusion"; performance.

The test vehicle was instrumented with seven (7) accelerometers to measure longitudinal axis accelerations and one (1) accelerometer to measure vertical axis acceleration. The vehicle's specified impact velocity range was 28.9 to 29.9 mph. The vehicle impacted a flat frontal barrier.

The test vehicle contained two (2) Part 572 E 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedure specified in Appendix B of the Laboratory Test Procedure.

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations; chest deflection potentiometers; left and right femur load cells to measure axial forces; and upper and lower tibia load cells to measure forces and moments.

The forty-six (46) data channels were digitally sampled at 12,500 samples per second and processed per Sections 11.13 through 11.15 of the Laboratory Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and fifteen (15) high-speed motion picture cameras. 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 208, 212, and 219 (partial) 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 manufacturer's vehicle information.

Section 2.0

Frontal Barrier Impact Test Summary

Test Results Summary

This flat frontal barrier test was conducted at TRC on May 2, 1997.

The test vehicle, a 1997 Chevrolet S-10 Extended Cab Fleetside Pickup, NHTSA No. CV0115, appeared to comply with the performance requirements of FMVSS 208, 212, and 219 (partial) in the flat frontal barrier impact mode. The Head Injury Criteria (HIC) calculations were less than 1000, the chest resultant accelerations did not exceed 60 g's, the chest deflections did not exceed 3.0 inches, and the compressive forces transmitted through the upper legs did not exceed 2,250 pounds as measured by Part 572 E dummies seated in the front outboard designated seating positions. The vehicle's restraint system met the applicable comfort and convenience requirements. The windshield periphery retention was 100 percent. There was no penetration into any portion of the windshield. No fluid spilled from the vehicle's fuel system following the impact.

The test vehicle was equipped with an airbag at the driver's seating position. The vehicle's test weight was 4145 pounds. The vehicle's impact speed was 29.3 mph. The vehicle's maximum static crush was 22.2 inches.

The driver's HIC was 486. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 38.3 g. The driver's chest deflection was 1.6 inches. The driver's left and right femur maximum compressive forces were 1038 pounds and 728 pounds, respectively.

The right front passenger's HIC was 759. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 38.2 g. The passenger's chest deflection was 1.2 inch. The right front passenger's left and right femur maximum compressive forces were 734 pounds and 1056 pounds, respectively.

There was no loss of windshield periphery retention and no penetration through the windshield. Following the impact, no fluid spilled from the vehicle's fuel system. Upon Impact, the passenger seat belt broke and did not fully restrain the passenger dummy.

Data Acquisition Explanations

The driver's right lower tibia moment, ANRYM1, exceeded the data channel's full scale limit from approximately 55 to 75 milliseconds.

The vehicle's right rear seat X-axis acceleration data channel, TRRXG1, recorded questionable data throughout the event.

Table 1 Crash Test Summary

NHTSA number:	CV0115
Test type:	Frontal barrier impact
Test date:	05/02/97
Test time:	1503
Ambient temperature at impact area:	70° F
Vehicle year/make/ model/body style:	1997/Chevrolet/S-10 Extended Cab/Fleetside Pickup
Vehicle test weight:	4145 lb
Impact angle ¹ :	0°
Impact velocity ² :	
Primary:	29.3 mph
Secondary:	29.3 mph
Maximum static crush:	22.2 in
Average rebound:	8.1 in
Number of cameras:	
Real-time:	1
High-speed:	15
Door opening data:	
Left-front:	Tools required
Right-front:	Easy

¹ With respect to tow track centerline.

² Speed trap measurement ($\pm .05$ mph accuracy)

Table 1. Crash Test Summary, Cont'd.

Dummies:	<u>Driver #230</u>	<u>Passenger #229</u>
Type:	Part 572 E	Part 572 E
Location:	Left front	Right front
Restraint:	Airbag and 3-point unbelt	Instrument panel
Number of data channels:	19	19
Front seat data:		
Seat track failure:	Shifted rearward 1 notch	None
Seat back failure:	Shifted forward 4°	Shifted forward 7°
Visible dummy contact points:		
Head:	Airbag, headrest	Instrument panel
Chest:	Airbag	None
Abdomen:	None	None
Left knee:	Instrument panel	Instrument panel
Right knee:	Instrument panel	Instrument panel

Table 2 Test Vehicle Information

Vehicle year/make/
model/body style: 1997/Chevrolet/S-10 Extended Cab/Fleetside Pickup

Color: Fairway Green

VIN: 1GCC519X9V8117274

NHTSA number: CV0115

Engine data:

Placement: Longitudinal/Inline

Cylinders: 6

Displacement: 4.3 liters

Transmission data: 4 speed, manual, X automatic, overdrive

Final drive: fwd, X rwd, 4wd

Date vehicle received: 04/29/97

Odometer reading: 42

Dealer's name
and address: Dave Kehl Chevrolet, Inc.
P. O. Box 8
Mechanicsburg, OH 43044

Accessories:

Power steering	Yes	Automatic transmission	Yes
Power brakes	Yes	Automatic speed control	No
Power seats	No	Tilting steering wheel	No
Power windows	No	Telescoping steering wheel	No
Tinted glass	Yes	Air conditioning	Yes
Radio	Yes	Anti-skid brake	Yes
Clock	Yes	Rear window defroster	No
Power door locks	No	Other:	None

Certification data from vehicle's label:

Vehicle manufactured by: General Motors Corporation

Date of manufacture: 09/96

VIN: 1GCC519X9V8117274

GVWR: 4600 lb

GAWR: Front: 2900 lb

Rear: 2700 lb

Table 2 Test Vehicle Information, Cont'd.

Size of tires on vehicle: P205/75R15
Spare tire: Space Saver
Type of front seats: Bucket

Tire & capacity data from vehicle's label:

Recommended tire size: P205/75R15

Recommended cold tire pressure:

Front: 35 psi

Rear: 35 psi

Designated Seating Capacity:

Front NA

Rear NA

Total NA

Payload Weight: 991 lb

Test vehicle attitudes:

Delivered attitude:	LF: 31.0 in	RF: 31.2 in	LR: 32.2 in	RR: 32.4 in
Fully loaded attitude:	LF: 30.6 in	RF: 30.7 in	LR: 30.9 in	RR: 30.8 in
Pre-test attitude:	LF: 30.6 in	RF: 30.4 in	LR: 30.7 in	RR: 30.6 in
Post-test attitude:	LF: 29.7 in	RF: 30.1 in	LR: 30.4 in	RR: 30.4 in

Table 2 Test Vehicle Information, Cont'd.

Weight of test vehicle as received (with maximum fluids):

Right front	1097 lb	Right rear	691 lb
Left front	1019 lb	Left rear	716 lb
Total front weight	2116 lb	(60.1% of total vehicle weight)	
Total rear weight	1407 lb	(39.9% of total vehicle weight)	
Total delivered weight	3523 lb		

Calculation of test vehicle's target test weight:

RCLW¹ = Rated Cargo and Luggage Weight

GVWR = Gross Vehicle Weight Rating (4600 lb)

UDW = Unloaded Delivered Weight (3523 lb)

VCW = Vehicle Capacity Weight = GVWR - UDW = 4600 - 3523 = 1077

DSC² = Designated Seating Capacity (3)

RCLW¹ = GVWR - UDW - 150 (DSC) = 4600 - 3523 - 150 (3) = 627

Target test weight = UDW + RCLW¹ + (Number of Hybrid III dummies x 167 lb per dummy)

Target test weight = 3523 + 300 + 334 = 4157 lb

Weight of test vehicle with required dummies and 64 lb of cargo weight:

Right front	1160 lb	Right rear	923 lb
Left front	1138 lb	Left rear	924 lb
Total front weight	2298 lb	(55.4% of total vehicle weight)	
Total rear weight	1847 lb	(44.6% of total vehicle weight)	
Total test weight	4145 lb	(12 lbs. under target test weight)	

Weight of ballast secured in vehicle: None

Components removed to meet target test weight: Both rear tail lights

CG rearward of front wheel centerline: 54.7 in

Vehicle Wheelbase: 122.8 in

¹ Cargo weight for multi-purpose passenger vehicles, trucks, and buses is the vehicle's calculated cargo and luggage weight or 300 pounds, whichever is less.

² The designated seating capacity is determined by counting the number of seat belts installed in the vehicle.

Table 3 Post-Impact Data

Test number: 970502
NHTSA number: CV0115
Test date: 05/02/97
Test time: 1503
Test type: Frontal barrier impact
Impact angle: 0°
Ambient temperature
at impact area: 70° F
Temperature in
occupant compartment: 70° F
Impact velocity:
Primary: 29.3 mph
Secondary: 29.3 mph
Specified range: 28.9 to 29.9 mph

Distance from vehicle to barrier:

Entering velocity trap: 14.0 in
Exiting velocity trap: 2.0 in

Test vehicle static crush:

Overall length of test vehicle:

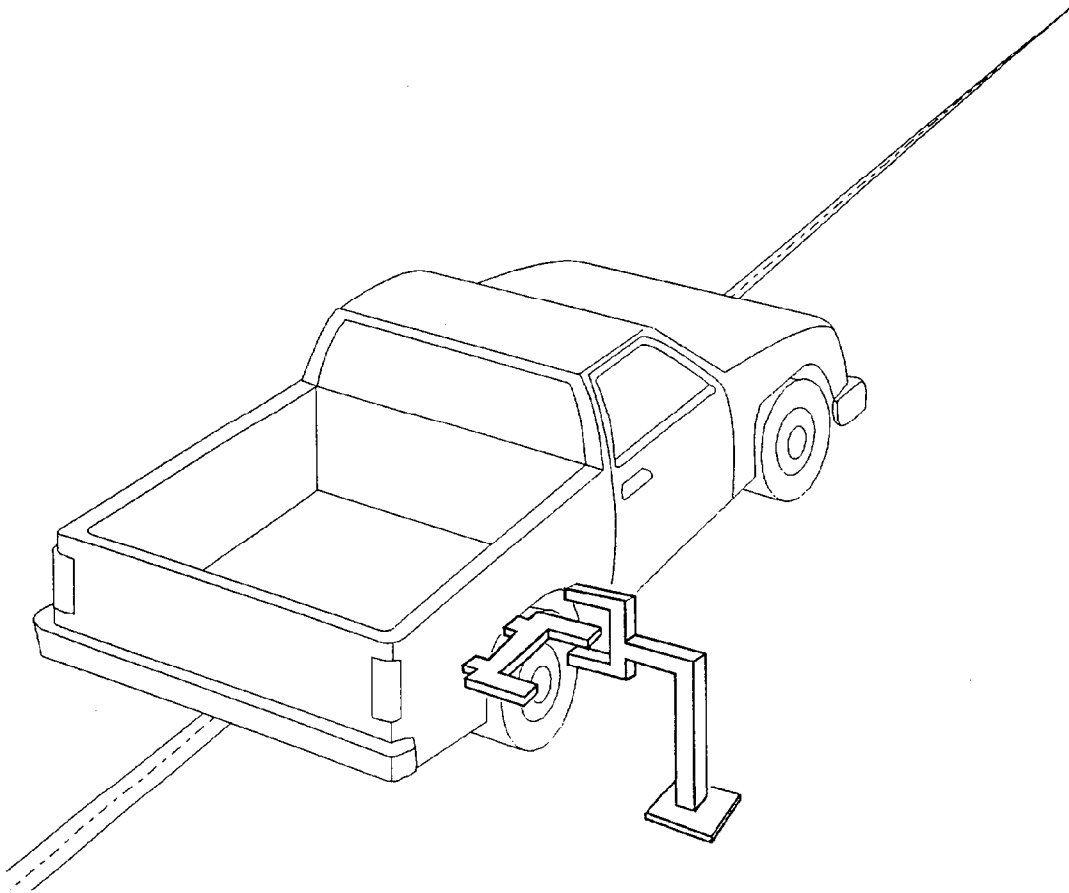
Pre-test:	L:	196.1 in	C:	203.1 in	R:	196.9 in
Post-test:	L:	182.5 in	C:	180.9 in	R:	180.1 in
Total crush:	L:	13.6 in	C:	22.2 in	R:	16.8 in
Average crush:		17.5 in				

Test vehicle rebound from flat barrier:

Distance from test vehicle to barrier:

Post-test:	L:	8.7 in	C:	7.4 in	R:	8.2 in
Average rebound:		8.1 in				

Figure 1 Impact Velocity Measurement System



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

The vanes have a one-foot spacing.

Figure 2 Accident Investigation Division Data for 30 mph Frontal Barrier Impact

NHTSA number: CV0115
 Test date: 05/02/97
 Vehicle year/make/
 model/body style: 1997/Chevrolet/S-10 Extended Cab/Fleetside Pickup
 Vehicle size category: Pickup truck
 VIN: 1GCC519X9V8117274
 Build date: 09/96
 Test weight: 4145 lb
 Vehicle wheelbase: 122.8 in
 Maximum width: 66.3 in
 Front overhang: 34.2 in

Collision Deformation

Classification (CDC) Code: 12FDEW3

Crush depth
 measurements:

C1:	13.6 in
C2:	18.3 in
C3:	19.7 in
C4:	19.8 in
C5:	19.3 in
C6:	16.8 in

Midpoint of damage: D: Vehicle Longitudinal Centerline

Length of damaged
 region:

L:	60.0 in
----	---------

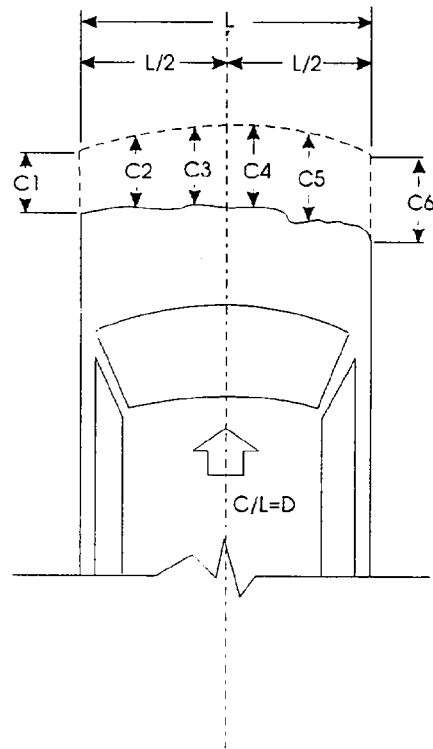


Table 4 Post-test Airbag Data

NHTSA number: CV0115
Test date: 05/02/97
Technician: Jenkins
Vehicle year/make/
model/body style: 1997/Chevrolet/S-10 Extended Cab/Fleetside Pickup

A. Number of airbag vent holes:

Driver: 2
Passenger: NA

B. Size of airbag vent holes:

Driver: 0.75 in. diameter
Passenger: NA

C. Total airbag vent area:

Driver: 0.88 in²
Passenger: NA

D. Deflated airbag length and width dimensions or, if round, diameter

Driver:	Length	NA
	Width	NA
	Diameter	20.0 in
Passenger:	Length:	NA
	Width:	NA
	Diameter:	NA

Table 4 Post-test Airbag Data, Cont'd.

E. Is the airbag tethered?

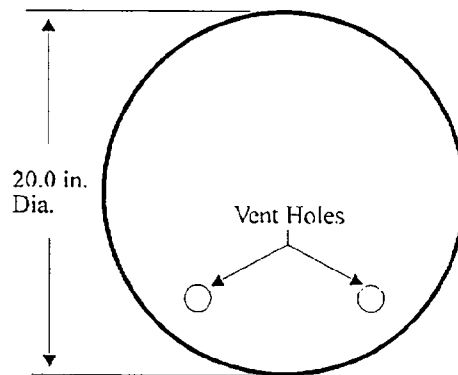
Driver: Yes

If yes, record length of tether: 8.0 inches.

Passenger: NA

If yes, record length of tether: NA

Driver's airbag:



F. Airbag and gas generator part numbers and manufacturer's names.

Driver: Manufacturer: NA

Airbag: NA

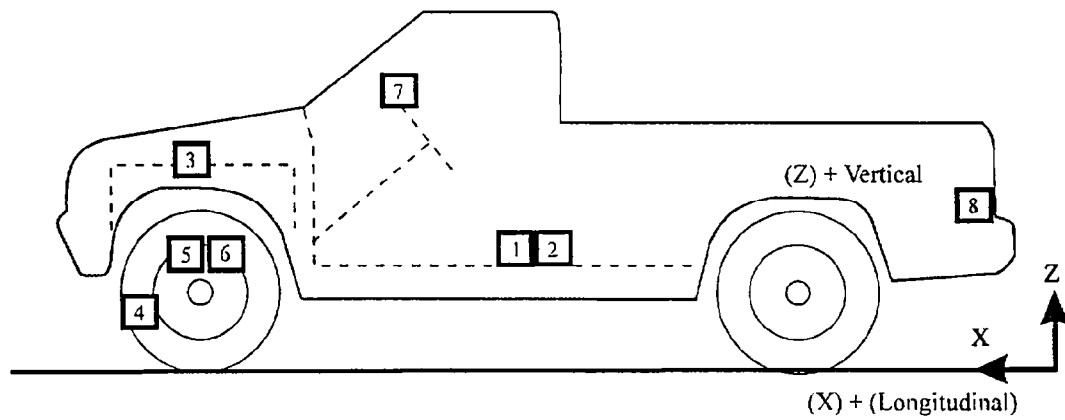
Inflator: JFG69G3VBQV

Passenger: Manufacturer: NA

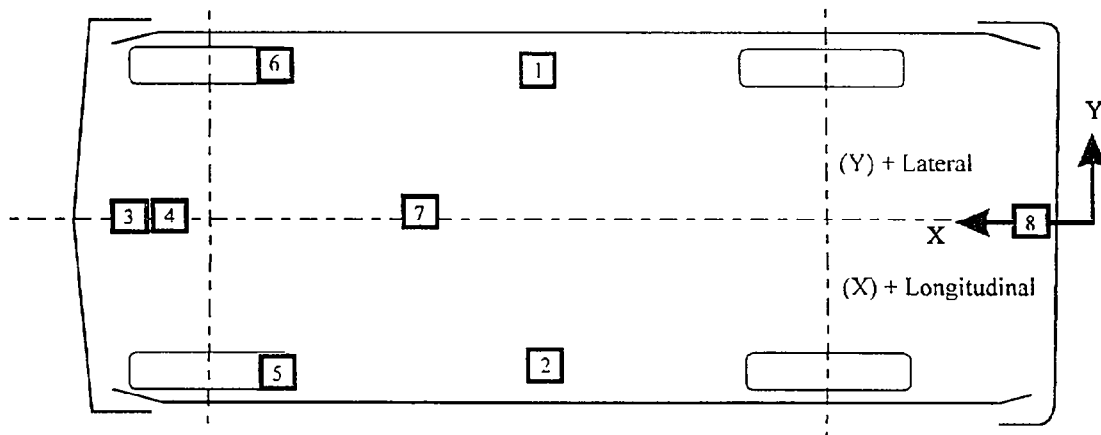
Airbag: NA

Inflator: NA

Figure 3 Vehicle Accelerometer Placement



Side View



Bottom View

Table 5 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 970502 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE 89.1 in POST 88.0 in	20.7 in 20.7 in	21.5 in 18.9 in	14.1 g @ 24.2 ms	37.6 g @ 51.5 ms
2 RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE 88.9 in POST 87.4 in	-19.7 in -19.7 in	21.5 in 18.8 in	---	---
3 ENGINE TOP LONGITUDINAL	PRE 164.5 in POST 153.5 in	-2.0 in -2.0 in	34.9 in 36.5 in	9.5 g @ 91.5 ms	78.3 g @ 43.6 ms
4 ENGINE BOTTOM LONGITUDINAL	PRE 145.3 in POST 158.5 in	-.4 in -.6 in	9.8 in 10.4 in	5.6 g @ 158.8 ms	41.5 g @ 52.5 ms
5 RIGHT BRAKE CALIPER LONGITUDINAL	PRE 166.7 in POST 160.8 in	-21.4 in -21.4 in	14.3 in 13.9 in	49.1 g @ 30.5 ms	42.5 g @ 58.8 ms

Table 5 Vehicle Accelerometer Locations and Data Summary, Cont'd.

TEST NUMBER: 970502 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
6 LEFT BRAKE CALIPER	PRE 166.7 in	21.4 in	14.3 in		
	POST 160.6 in	21.4 in	14.0 in		
LONGITUDINAL				41.6 g @ 61.0 ms	94.8 g @ 39.9 ms
7 INSTRUMENT PANEL	PRE 140.3 in	0.0 in	46.2 in		
CENTER	POST 140.2 in	0.0 in	40.7 in		
LONGITUDINAL				35.2 g @ 104.1 ms	41.6 g @ 111.5 ms
8 VEHICLE REAR CENTER	PRE 10.6 in	0.0 in	26.5 in		
	POST 11.1 in	0.0 in	28.1 in		
VERTICAL				15.3 g @ 32.0 ms	16.3 g @ 109.5 ms

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

¹See DATA ACQUISITION EXPLANATIONS

Section 3.0

FMVSS 208, 212, and 219 (Partial) Data

Table 6 Dummy Injury Criteria

	<u>Maximum Acceleration</u>						
	<u>Head</u>				<u>Chest</u>		
	X	Y	Z	R	X	Y	Z
Driver	-57.3 g	15.8 g	-16.7 g	59.1 g	-39.4 g	4.6 g	12.3 g
Passenger	-133.0 g	18.5 g	-47.8 g	142.5 g	-41.5 g	-5.0 g	-12.1 g

	<u>Maximum Femur Compressive Force</u>	
	<u>Left Femur</u>	<u>Right Femur</u>
Driver	1038 lbf	728 lbf
Passenger	734 lbf	1056 lbf

	<u>Head Injury Criteria¹</u>		
	<u>HIC</u>	<u>Time t₁</u>	<u>Time t₂</u>
Driver	486	60.6 ms	95.4 ms
Passenger	759	103.0 ms	111.9 ms

	<u>Chest Maximum Resultant Acceleration²</u>		
	<u>Acceleration</u>	<u>Time t₁</u>	<u>Time t₂</u>
Driver	38.3 g	68.2 ms	71.2 ms
Passenger	38.2 g	106.8 ms	109.8 ms

	<u>Maximum Chest Deflection</u>	
Driver	1.6 in	
Passenger	1.2 in	

¹ As defined in FMVSS No. 208

² Defined as equal to or exceeding 0.003 sec. duration

Dummy Kinematic Summary

Driver Dummy

Upon impact, the driver dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head and chest impacted the airbag. The dummy's head and chest were restrained by the airbag and the dummy's torso was restrained by the three-point unbelt. The dummy's head and upper torso rotated rearward as the dummy rebounded into the seat back. The dummy's head contacted the head restraint. The driver dummy came to rest seated in the driver's seat.

Right Front Passenger Dummy

Upon impact, the right front passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head and torso rotated forward. The dummy's head impacted the instrument panel. The dummy rebounded rearward into the seat back. The dummy came to rest seated in the right front passenger's seat.

Table 7 FMVSS 208 Seat Belt Comfort and Convenience Test Summary

Front Outboard Designated Seating Positions

NHTSA number: CV0115

Vehicle model year/make/model/body style: 1997/Chevrolet/S-10 Extended Cab/Fleetside Pickup

Date of comfort/convenience check: 05/02/97

Technician performing check: Jenkins

GVWR: 4600 lb

Automatic seat belts installed in any vehicle, other than a walk-in van-type vehicle which has a gross vehicle weight rating of 10,000 pounds or less, and is manufactured on or after September 1, 1986, shall meet the requirements for convenience hooks, webbing tension-relieving devices, and belt contact force.

Manual seat belts installed for compliance with this standard in front outboard designated seating positions of any vehicle, other than a walk-in van-type vehicle which has a gross vehicle rating of 10,000 pounds or less, and is manufactured after September 1, 1989, shall meet the requirements for belt contact force, plate access, retraction and seat belt guides, and hardware.

Vehicle Equipment:

The vehicle's front outboard seating positions were equipped with manual Type 2 seat belts which must comply with the dynamic test requirements of S5.1; requirements for webbing tension-relieving devices (S7.4.2), belt contact force (S7.4.3), latchplate access (S7.4.4), retraction (S7.4.5), and seat belt guides and hardware (S7.4.6) apply.

Convenience Hooks (S7.4.1):

Not applicable, the vehicle was not equipped with automatic seat belts.

Table 7 FMVSS 208 Seat Belt Comfort and Convenience Test Summary

Front Outboard Designated Seating Positions, Cont'd.

NHTSA number: CV0115

Vehicle model year/make/model/body style: 1997/Chevrolet/S-10 Extended Cab/Fleetside Pickup

Date of comfort/convenience check: 05/02/97

Technician performing check: Jenkins

GVWR: 4600 lb

Webbing Tension-Relieving Device (S7.4.2):

Not applicable, the vehicle is not equipped with automatic seat belts or manual type-2 belts that must comply with the dynamic test requirements.

Belt Contact Force (S7.4.3):

The belt contact force on the chest of the test dummy is 0.6 pound.

Latchplate Access (S7.4.4):

The seat belt latchplates, in their normal stowed position, are within the reach envelope.

The clearance test block moves unhindered to the latchplate or buckle.

Retraction (S7.4.5):

The seat belt automatically retracts when the seat belt latchplate is released.

The stowed seat belt webbing and hardware are not pinched when the door is closed.

Table 7 FMVSS 208 Seat Belt Comfort and Convenience Test Summary
Front Outboard Designated Seating Positions, Cont'd.

NHTSA number: CV0115

Vehicle model year/make/model/body style: 1997/Chevrolet/S-10 Extended Cab/Fleetside Pickup

Date of comfort/convenience check: 05/02/97

Technician performing check: Jenkins

GVWR: 4600 lb

Seat Belt Guides and Hardware (S7.4.6):

The seat cushion is not removable.

The seat back does not serve a function other than seating.

The seat is not removable.

The seat is movable but the space formerly occupied by the seat cannot be used for a secondary function.

Note: If the seat or seat cushion is removable or if the seat is movable so the space formerly occupied by the seat can be used for a secondary function, the seat belt guides and hardware requirements do not apply.

The webbing is not designed to pass through the seat cushion or between the cushion and seat back.

The restraint system does not include webbing guides.

The inboard seat belt receptacles are accessible without moving the center arm rest.

Table 8 FMVSS 208 Equipment Data

FMVSS 208 Seat Belt Warning System Data

With an occupant in the driver's position and the unbelt in stowed position and ignition switch placed in the "start/on" position, the duration of the reminder light is continuous. The audible warning signal operates for 6 s.

With an occupant in the driver's position and the unbelt in use and the ignition switch placed in the "start/on" position the duration of audible warning signal and reminder light operation is 0 s.

NOTE: the audible warning should not operate.

The visual seat belt warning is the symbol from Table 2 of FMVSS 101.

Table 8 FMVSS 208 Equipment Data, Cont'd.

FMVSS 208 Labeling and Driver's Manual Data

The labels which describe the manufacturer's maintenance or replacement schedule for the crash-deployed occupant protection system were located on the sun visor.

The manufacturer's recommended regular airbag maintenance is that the system does not require regular maintenance.

Appropriate instructions concerning maintenance and/or replacement of this system were provided in the owner's manual on page 1-23.

A description of the functional operation of the system was provided in the owner's manual on page 1-21 and 1-22.

A reference to the instructions and description of the system was included on the label.

An owner's manual was provided.

The owner's manual contained appropriate information concerning maintenance and/or replacement and a description of the functional operation of the systems on pages 1-21, 1-22, and 1-23.

Table 8 FMVSS 208 Equipment Data, Cont'd.

FMVSS 208 Readiness Indicator Data

The vehicle contained a crash-deployed occupant protection system which was not totally mechanical. The readiness indicator was a light located on the upper right side of the instrument cluster.

The readiness indicator was clearly visible to the driver.

A list of the elements in the occupant restraint system, being monitored by the readiness indicator was provided in the owner's manual on page 2-56.

FMVSS 208 Rear Outboard Seating Position Seat Belts

There was a folding jump seat behind the passenger front outboard position with a Type 1 manual seat belt.

Figure 4 FMVSS 212 Test Data

Details of windshield mounting such as retention method, trim type, etc.:

Plastic trim around outer perimeter and adhesive around inner perimeter.

Clips or brackets used to retain windshield: None

FMVSS 212 requirements: The post-test periphery retention amount must be at least 75% of the pre-test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants.

Windshield periphery measurements:

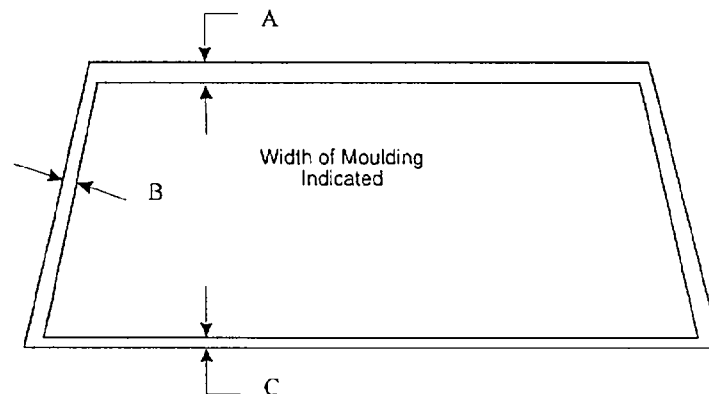
	Pre-test	Post-test	Percent Retention
Right side	83.3 in	83.3 in	100.0
Left side	83.3 in	83.3 in	100.0
Total	166.6 in	166.6 in	100.0

Pre-test windshield mounting material temperature: 70° F

A = 0.6 in

B = 1.0 in

C = 1.4 in



Front view of windshield¹

Loss of windshield retention lengths: None

¹ Indicate areas of loss of retention, if any, on windshield diagram.

Figure 5 FMVSS 219 Test Data

Protected zone lower edge requirement:

The lower edge of the protected zone is determined by placing a 6.5-inch diameter rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. Draw the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and 0.5 inch from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection onto the outer surface of the windshield of this line.

Windshield measurements:

A = 50.6 in

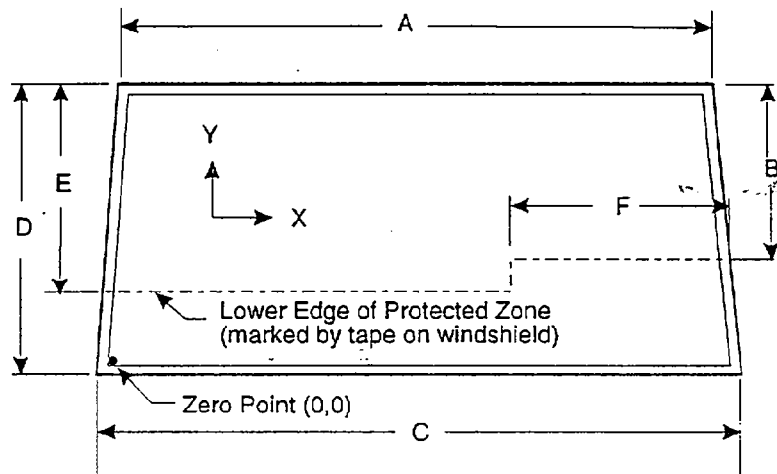
B = 14.4 in

C = 65.7 in

D = 27.2 in

E = 17.0 in

F = 18.5 in



FRONT VIEW

Method of adhering protected zone template to windshield:

NA

Areas of windshield template penetration greater than 0.25 in:

NA

Coordinates

X	Y
1.	
2.	
3.	

1.

2.

3.

Areas of windshield penetration, below the protected zone, through the inner surface of the windshield:

None

1.

2.

3.

Table 9 Fuel System Data

Vehicle year/make/ model/body style:	1997/Chevrolet/S-10 Extended Cab/Fleetside Pickup
NHTSA number:	CV0115
Fuel system capacity:	18.5 gal (from owner's manual)
Usable capacity:	18.5 gal (furnished by COTR)
Test volume range:	17.0 gal to 17.4 gal (92-94% of usable)
Actual test volume:	17.8 gal (with entire fuel system filled)
Test fluid type:	Stoddard solvent
Specific gravity:	0.764
Kinematic viscosity:	0.99 centistoke
Test fluid color:	purple
Type of fuel pump:	electric

The electric fuel pump did not operate with ignition switch "on" and the engine not operating.

Details of fuel system: The fuel tank is located in front of the rear axle. The fuel filler neck was located on the left side and entered the left side of the tank. The fuel lines ran along the left side of the vehicle.

Section 4.0

Vehicle, Occupant, and Camera Measurements

Figure 6 Pre-test and Post-test Measurement Points

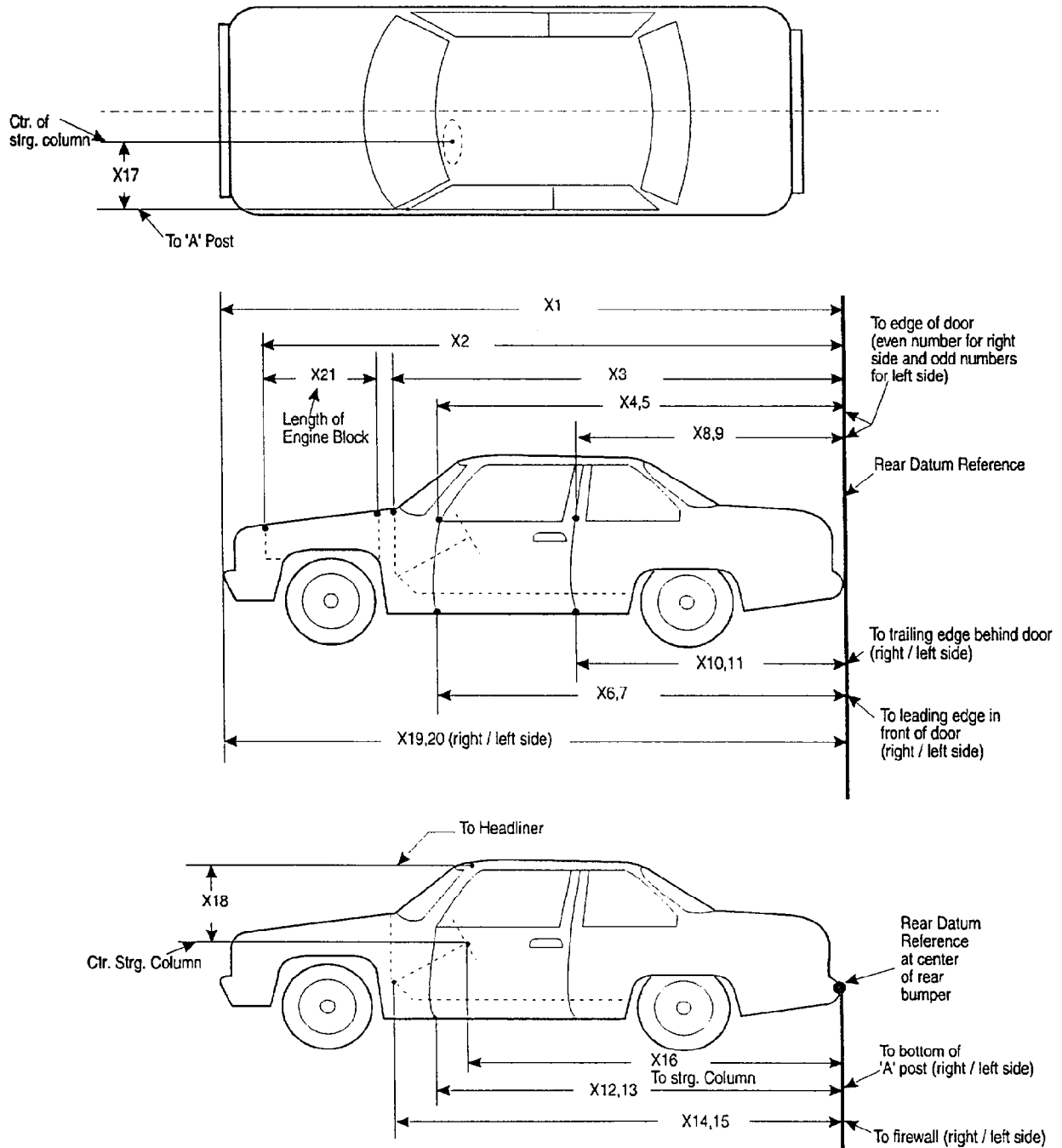


Table 10 Impacted Vehicle Measurements

Vehicle year/make/model/body style: 1997/Chevrolet/S-10 Extended Cab/Fleetside Pickup

Test Number: 970502

No.	Type of measurement	Pre-test	Post-test	Difference
X1	Total length of vehicle at centerline	203.1 in	180.9 in	22.2 in
X2	Rear surface of vehicle to front of engine block	184.0 in	172.1 in	11.9 in
X3	Rear surface of vehicle to firewall	159.6 in	157.6 in	2.0 in
X4	Rear surface of vehicle to upper leading edge of right door	148.2 in	148.2 in	0.0 in
X5	Rear surface of vehicle to upper leading edge of left door	148.1 in	147.5 in	0.6 in
X6	Rear surface of vehicle to lower leading edge of right door	147.2 in	147.1 in	0.1 in
X7	Rear surface of vehicle to lower leading edge of left door	147.4 in	146.4 in	1.0 in
X8	Rear surface of vehicle to upper trailing edge of right door	105.2 in	105.1 in	0.1 in
X9	Rear surface of vehicle to upper trailing edge of left door	105.2 in	104.7 in	0.5 in
X10	Rear surface of vehicle to lower trailing edge of right door	105.2 in	105.0 in	0.2 in
X11	Rear surface of vehicle to lower trailing edge of left door	105.2 in	104.1 in	1.1 in
X12	Rear surface of vehicle to bottom of "A" post on right side	146.7 in	147.0 in	-0.3 in
X13	Rear surface of vehicle to bottom of "A" post on left side	146.5 in	146.2 in	0.3 in
X14	Rear surface of vehicle to firewall - right side	173.9 in	154.6 in	19.3 in
X15	Rear surface of vehicle to firewall - left side	170.7 in	157.0 in	13.7 in
X16	Rear surface of vehicle to steering wheel center	130.3 in	130.2 in	0.1 in
X17	Center of steering column to "A" post	11.7 in	12.7 in	-1.0 in
X18	Center of steering column to headliner	19.3 in	16.3 in	3.0 in
X19	Rear surface of vehicle to right side of front bumper	196.9 in	180.3 in	16.6 in
X20	Rear surface of vehicle to left side of front bumper	196.1 in	182.5 in	13.6 in
X21	Length of engine block	17.5 in	17.5 in	0.0 in

Figure 7 Vehicle Target Locations

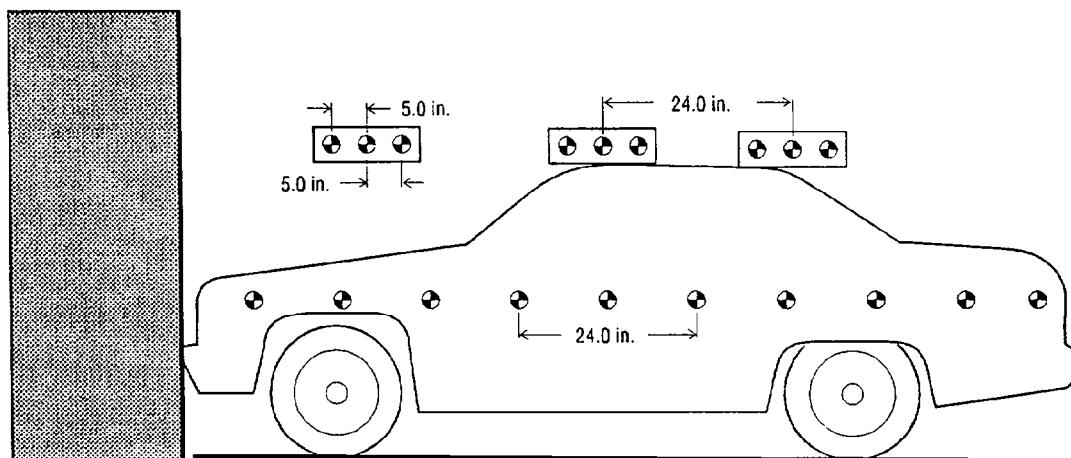


Figure 8 Dummy Measurement Locations for Front Seat Occupants

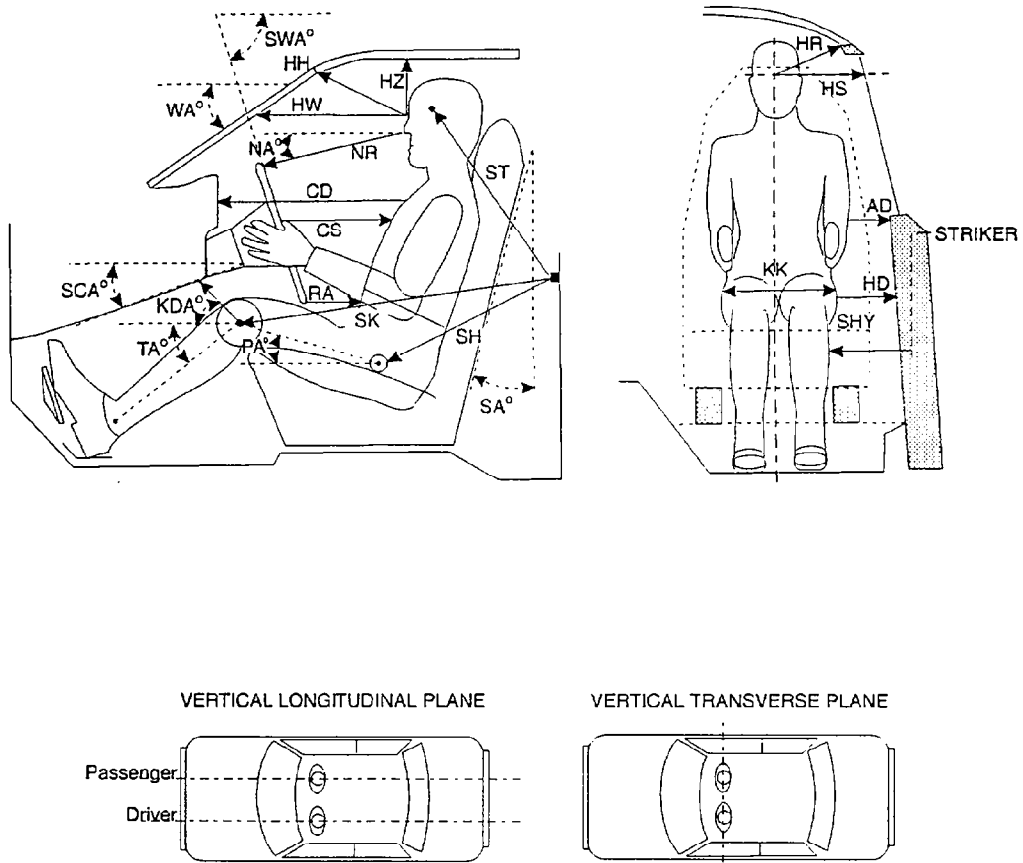


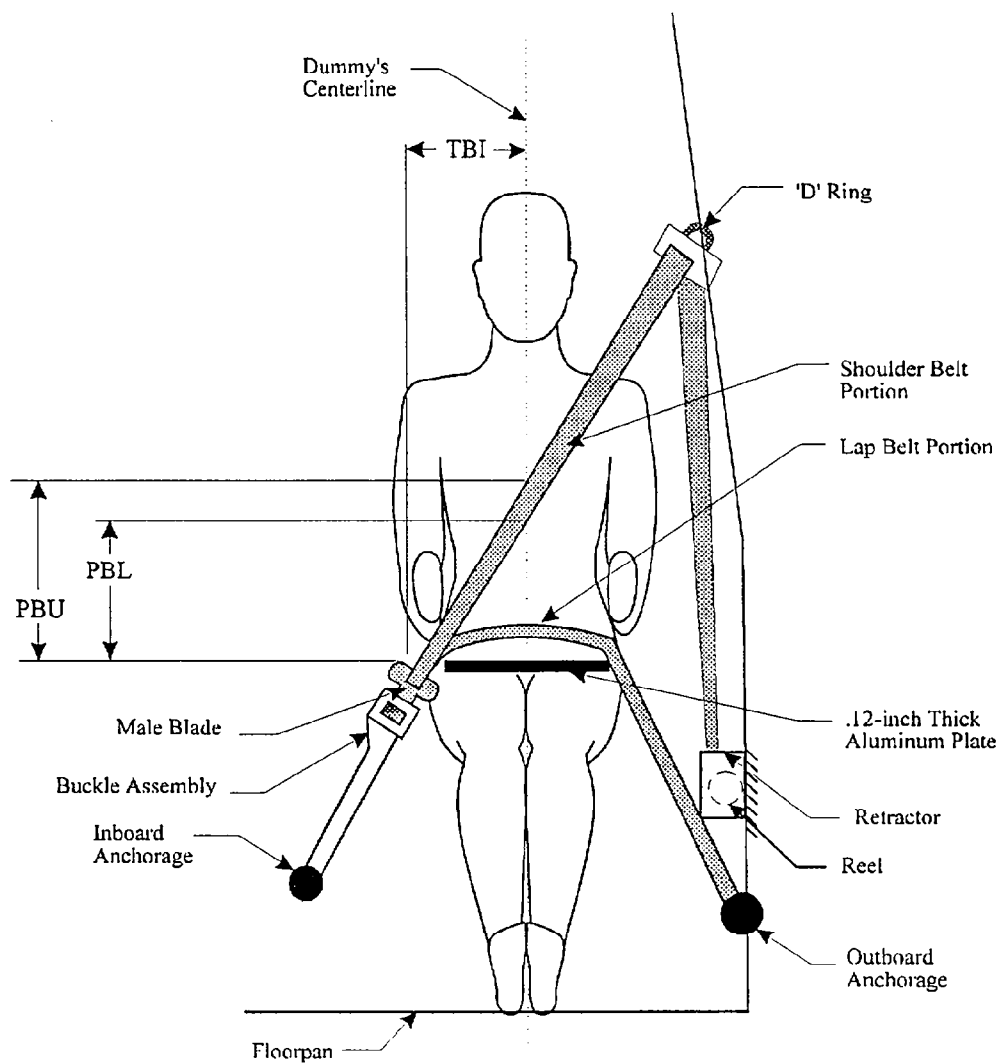
Table 11 Dummy Measurement Data for Front Seat Occupants

<u>Designation</u>	<u>Type of Measurement</u>	<u>Driver (Serial #230)</u>	<u>Passenger (Serial #229)</u>
WA	Windshield angle	35.1°	35.1°
SWA	Steering wheel angle	68.7°	NA
SCA	Steering column angle	21.3°	NA
SA	Seat back angle	23.0°	23.0°
HZ	Head to roof	8.8 in	8.6 in
HH	Head to header	18.1 in	17.6 in
HW	Head to windshield	25.6 in	24.3 in
HR	Head to side header	10.8 in	10.3 in
NR	Nose to rim	14.4 in	NA
NA	Nose to rim angle	12.2°	NA
CD	Chest to dash	20.5 in	21.4 in
CS	Steering wheel to chest	12.6 in	NA
RA	Rim to abdomen	6.7 in	NA
KDL	Left knee to dash	6.7 in	7.6 in
KDR	Right knee to dash	6.5 in	8.1 in
KDA	Outboard knee to dash angle	30°	25°
PA	Pelvic angle	24.1°	22.4°
TA	Tibial angle	45.1°	45.3°
KK	Knee to knee	11.8 in	10.3 in
ST ¹	Striker to head	23.1 in	22.6 in
	Striker to head angle	-76°	-67°
SK ¹	Striker to knee	26.7 in	27.2 in
	Striker to knee angle	3°	3°
SH ¹	Striker to H-point	12.3 in	12.9 in
	Striker to H-point angle	13°	10°
SHY	Striker to H-point (Y dir.)	9.7 in	9.4 in
HS	Head to side window	15.1 in	14.4 in
HD	H-point to door	5.7 in	4.9 in
AD	Arm to door	5.5 in	4.6 in

The seat back angle (SA°) is measured relative to vertical, all other angles are measured relative to horizontal.

¹ A negative angle indicates the measurement point was located above the striker.

Figure 9 Seat Belt Positioning Data



	Driver	Passenger
PBU - Top surface of aluminum plate to belt upper edge	11.9 in.	13.0 in.
PBI - Top surface of aluminum plate to belt lower edge	8.9 in.	9.8 in.
TBI - Dummy centerline to intersection of upper torso belt and lap belt	8.5 in.	8.7 in.

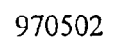
[illegible]

Figure 10 Camera Positions, Cont'd.

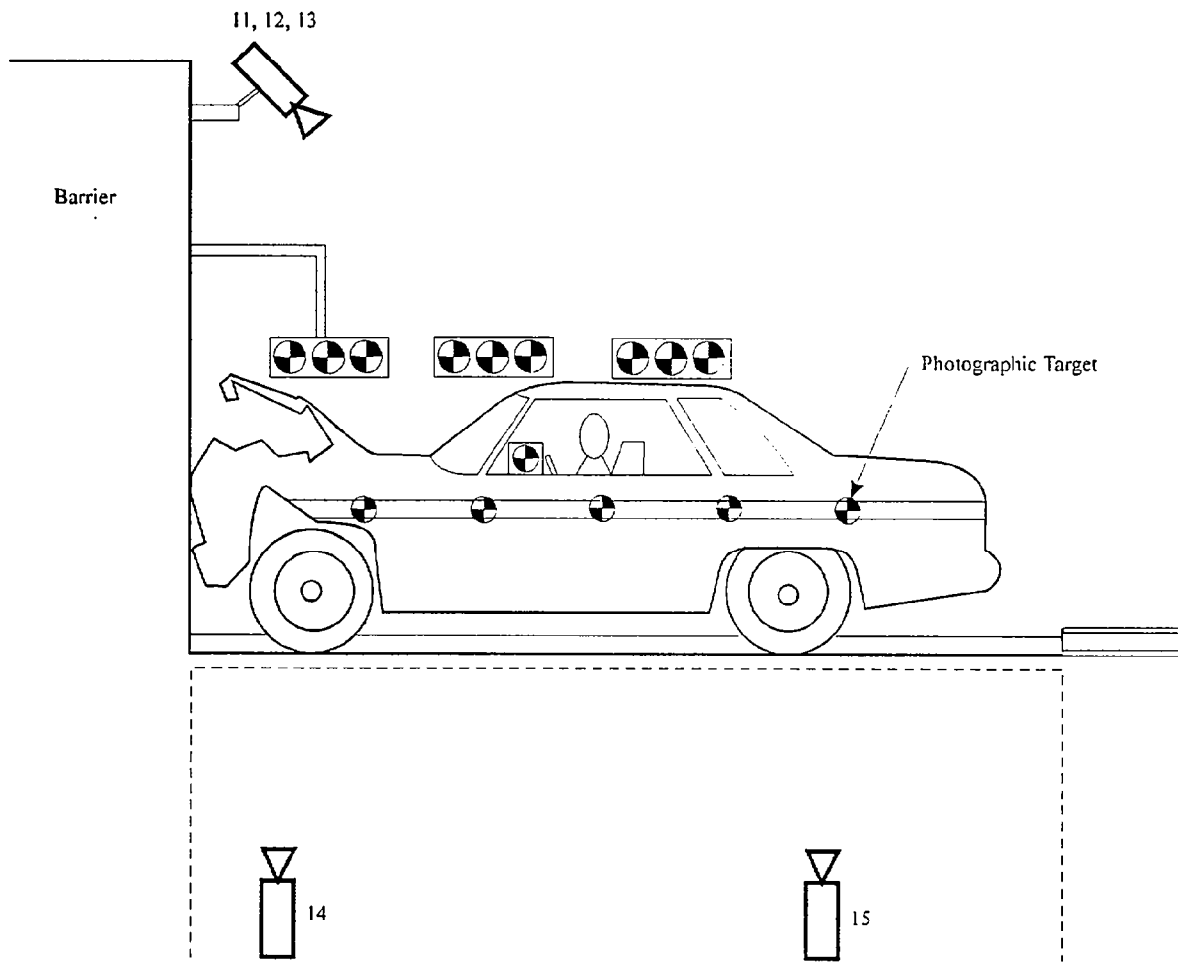


Table 12. Motion Picture Camera Locations

Vehicle year/make/model/body style: 1997/Chevrolet/S-10 Extended Cab/Fleetside Pickup

Test number: 970502

Camera Number	View	Camera Positions ¹			Camera Angle ²	Film Plane to Head Target	Camera Lens	Film Speed
		X	Y	Z				
1	Real-time panning	-142.0 in	504.0 in	61.0 in	NA	NA	16 mm	24 frames/s
2	Left vehicle crush	-41.5 in	288.0 in	44.0 in	-4°	264.0 in	25 mm	995 frames/s
3	Left windshield intrusion	-53.0 in	309.4 in	42.3 in	0°	NA	50 mm	1002 frames/s
4	Driver kinematics	-157.3 in	96.0 in	87.0 in	-27°	72.0 in	25 mm	995 frames/s
5	Steering column motion	-96.0 in	312.0 in	103.0 in	-14°	NA	25 mm	940 frames/s
6	Steering column motion	-96.0 in	312.0 in	75.1 in	-9°	NA	25 mm	1000 frames/s
7	Right overall	-81.3 in	-266.4 in	37.1 in	-2°	NA	13 mm	1002 frames/s
8	Right windshield intrusion	-38.1 in	-306.1 in	44.0 in	0°	NA	50 mm	1000 frames/s
9	Passenger kinematics	-152.1 in	-96.0 in	87.0 in	-26°	72.0 in	25 mm	1002 frames/s
10	Passenger kinematics	-38.8 in	-240.0 in	45.3 in	-4°	216.0 in	25 mm	1015 frames/s
11	Windshield front view	-6.0 in	0.0 in	88.0 in	-40°	NA	13 mm	1000 frames/s
12	Driver - front view	-6.8 in	14.5 in	93.0 in	-50°	NA	17 mm	1000 frames/s
13	Passenger - front view	-4.5 in	-13.8 in	93.0 in	-50°	NA	17 mm	1002 frames/s
14	Pit - front position	-50.5 in	0.0 in	-92.4 in	90°	NA	13 mm	1002 frames/s
15	Pit - rear position	-99.3 in	0.0 in	-99.0 in	90°	NA	13 mm	1010 frames/s
16	Passenger seat belt movement	NA	NA	NA	NA	NA	NA	1010 frames/s
17	Real-time documentation	NA	NA	NA	NA	NA	12-120 mm	24 frames/s

¹ +X: Film plane forward of barrier face

+Y: Film plane to left of monorail centerline

+Z: Film plane above ground level

² +Angle: Film plane angled upward from horizontal plane

Appendix A

Photographs

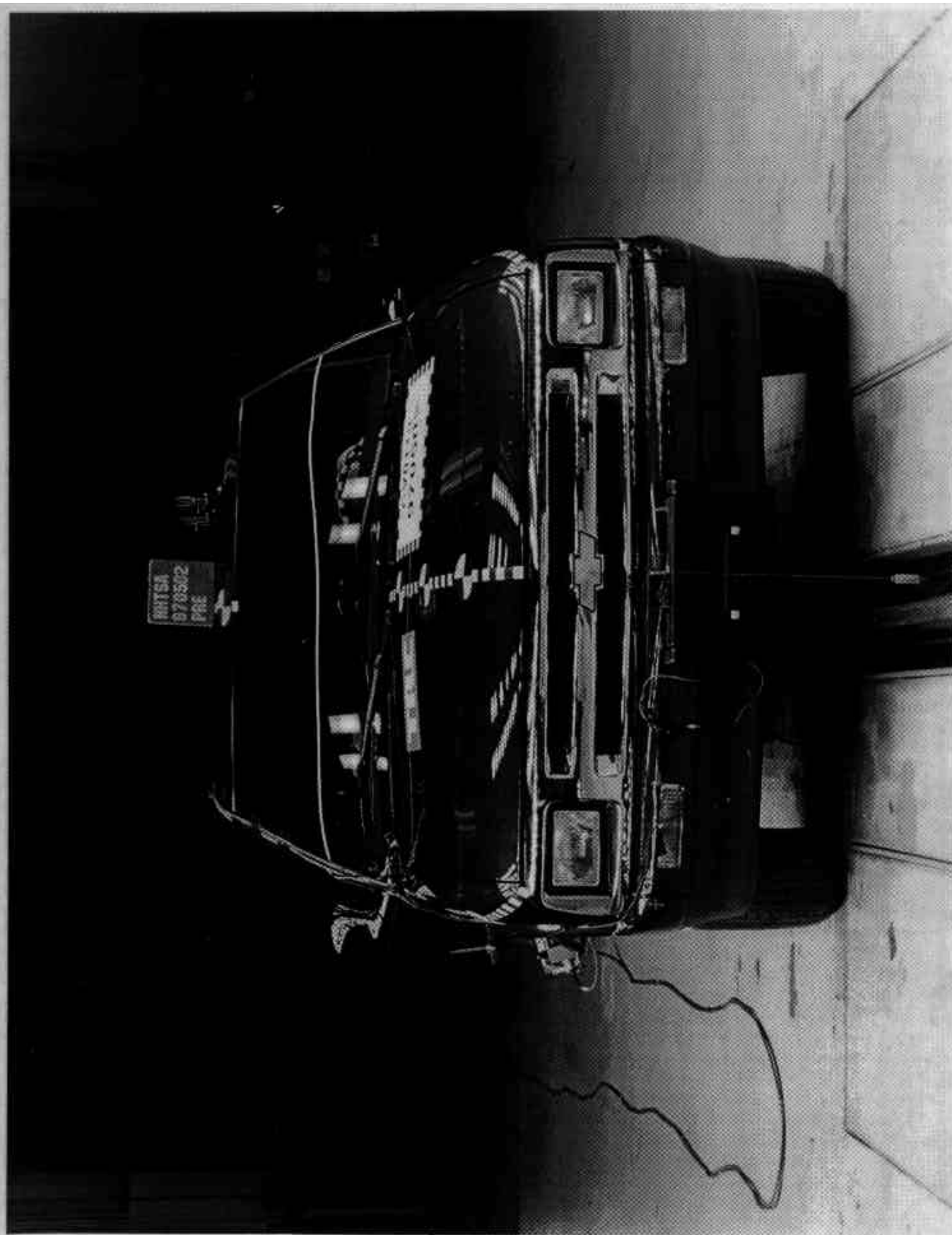


Figure A-1 Pre-Test Front View
A-2

970502

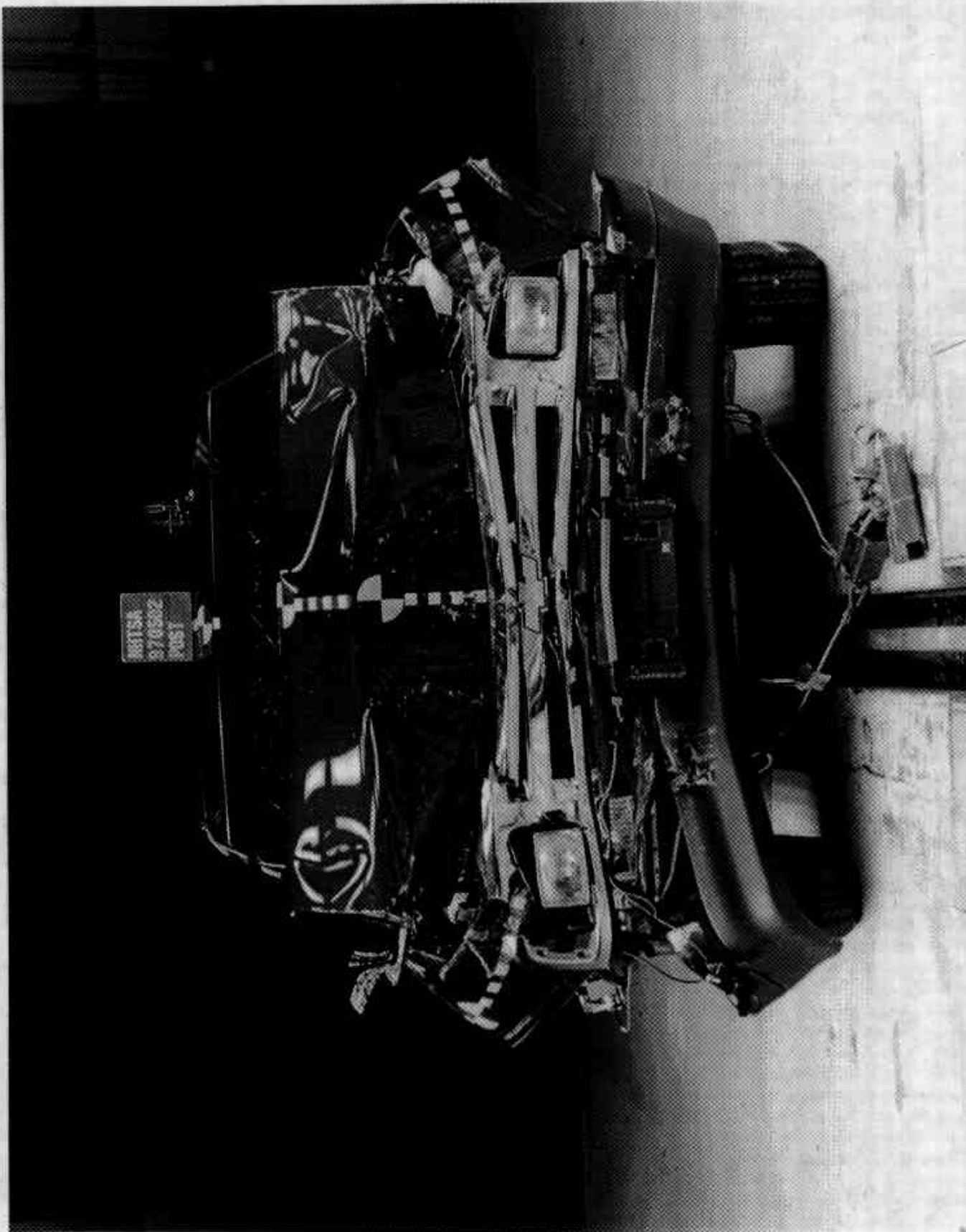


Figure A-2 Post-Test Front View
A-3

970502

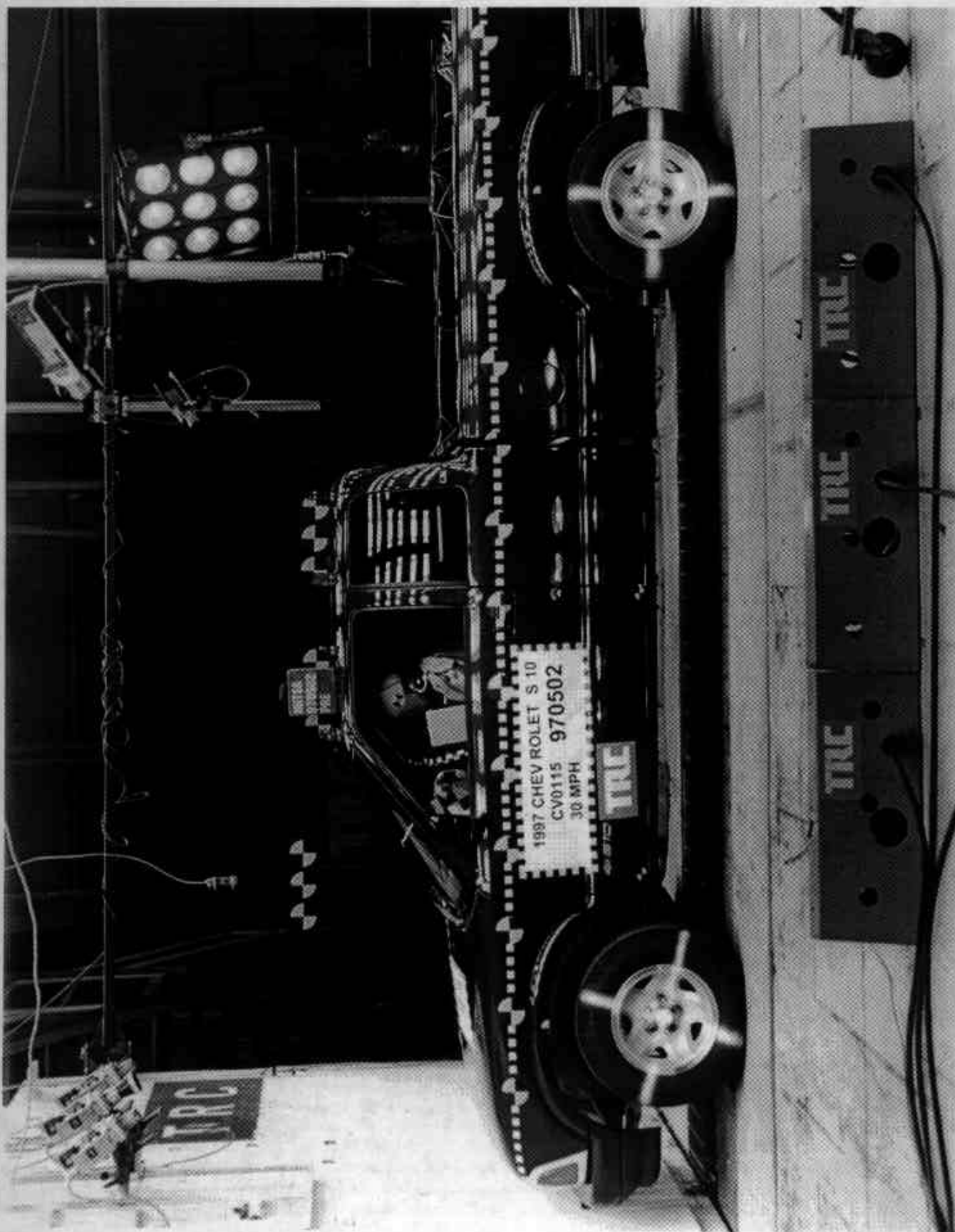


Figure A-3 Pre-Test Left Side View
A-4

970502

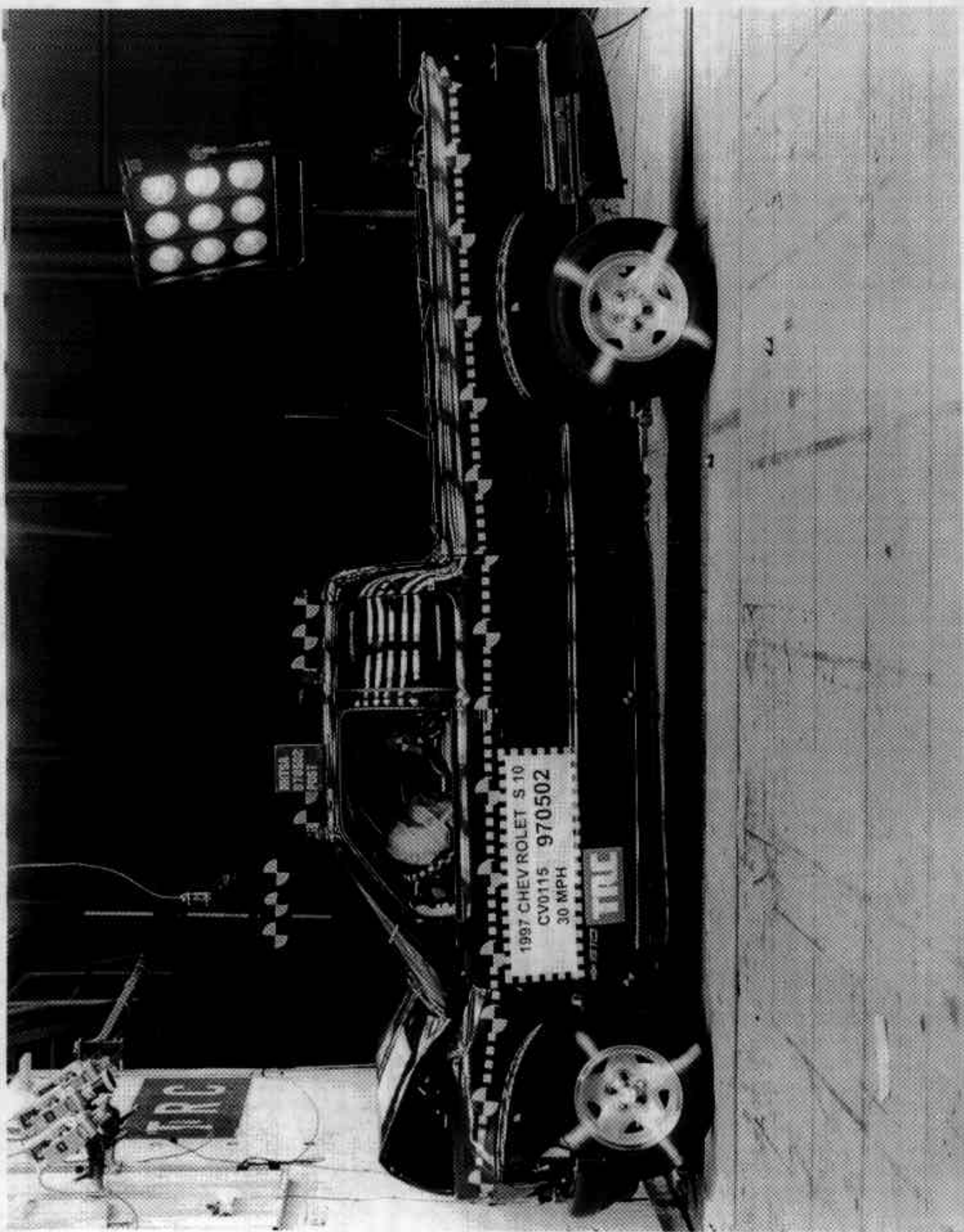


Figure A-4 Post-Test Left Side View
A-5

970502

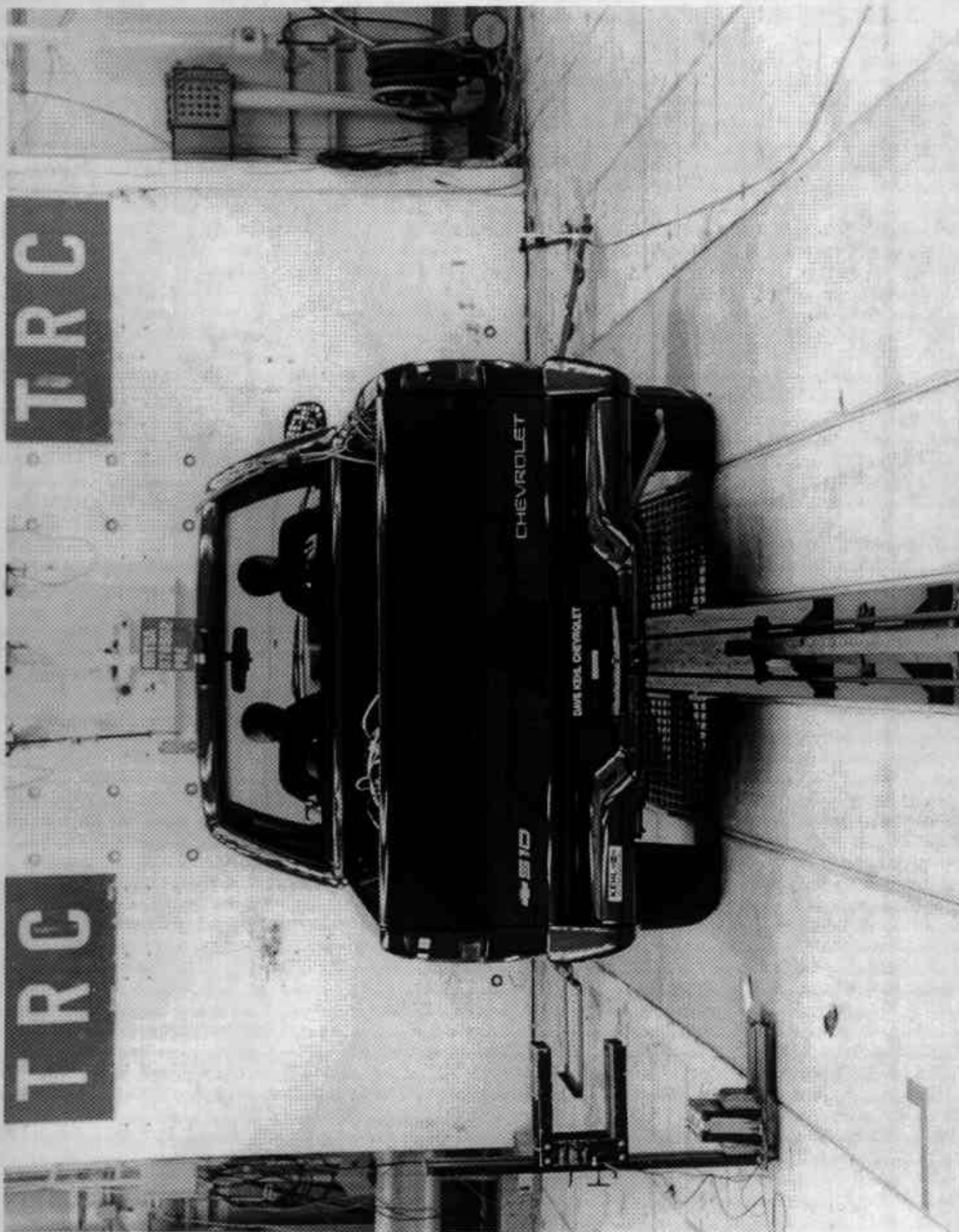


Figure A-5 Pre-Test Rear View
A-6

970502

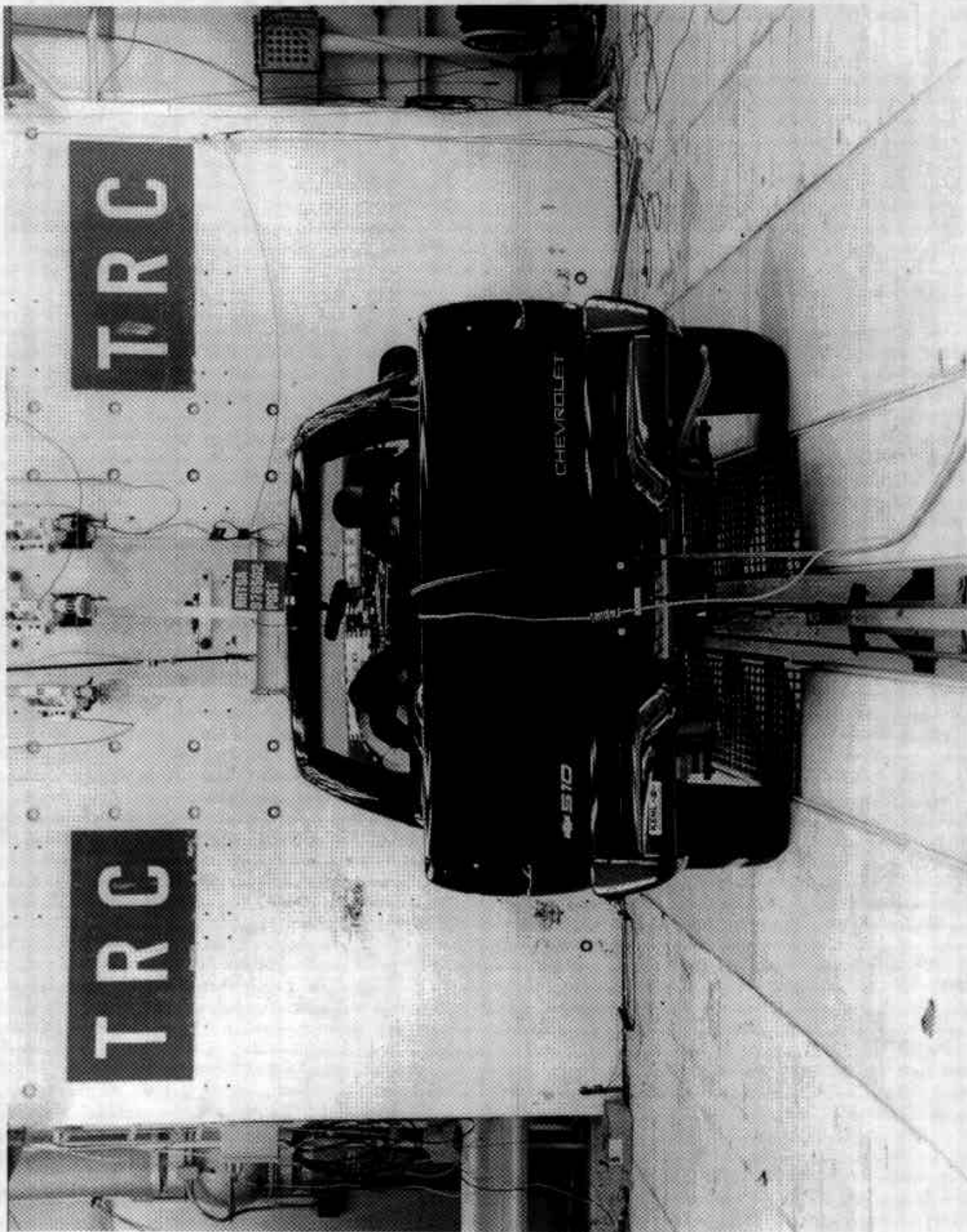


Figure A-6 Post-Test Rear View
A-7

970502

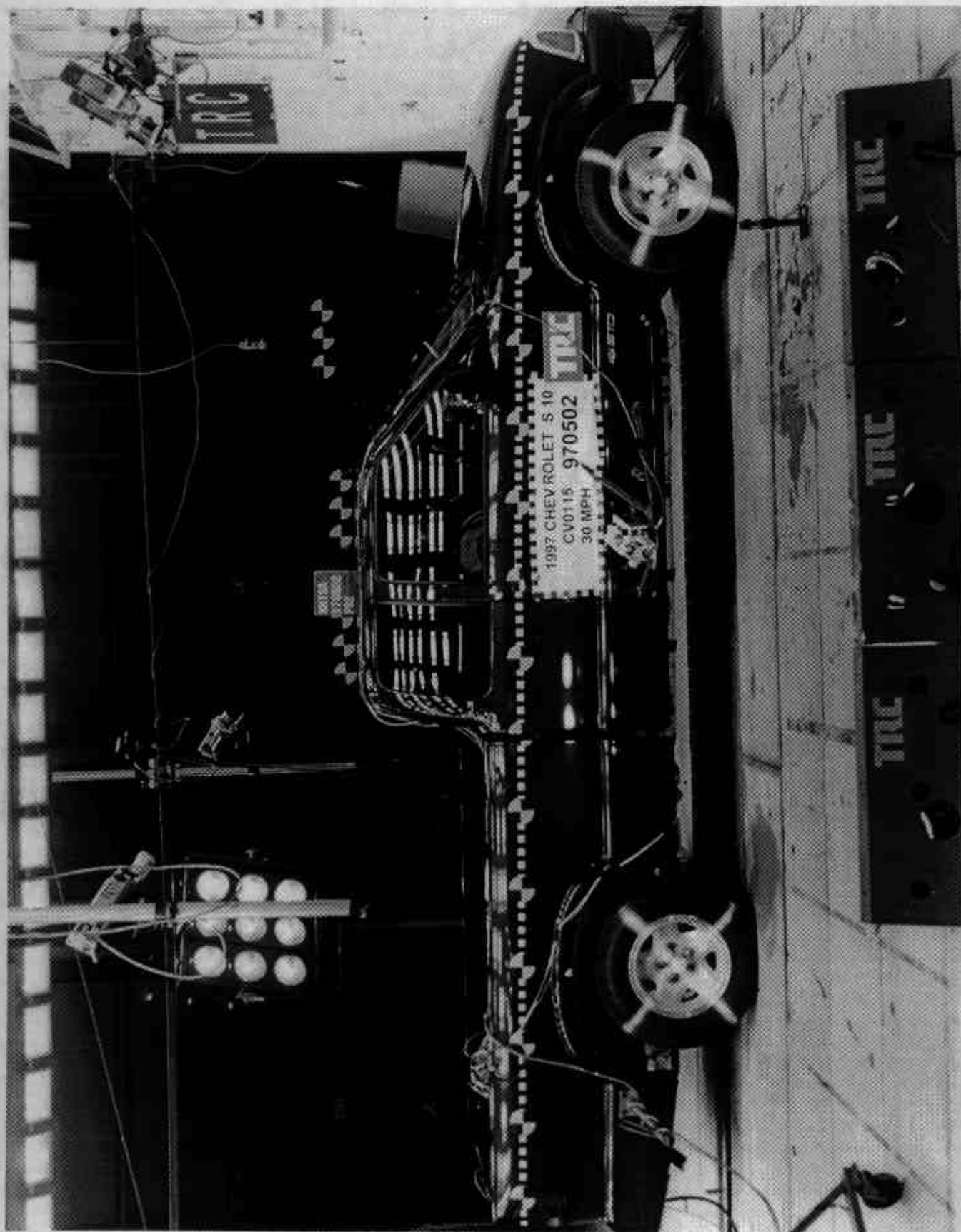


Figure A-7 Pre-Test Right Side View
A-8

970502

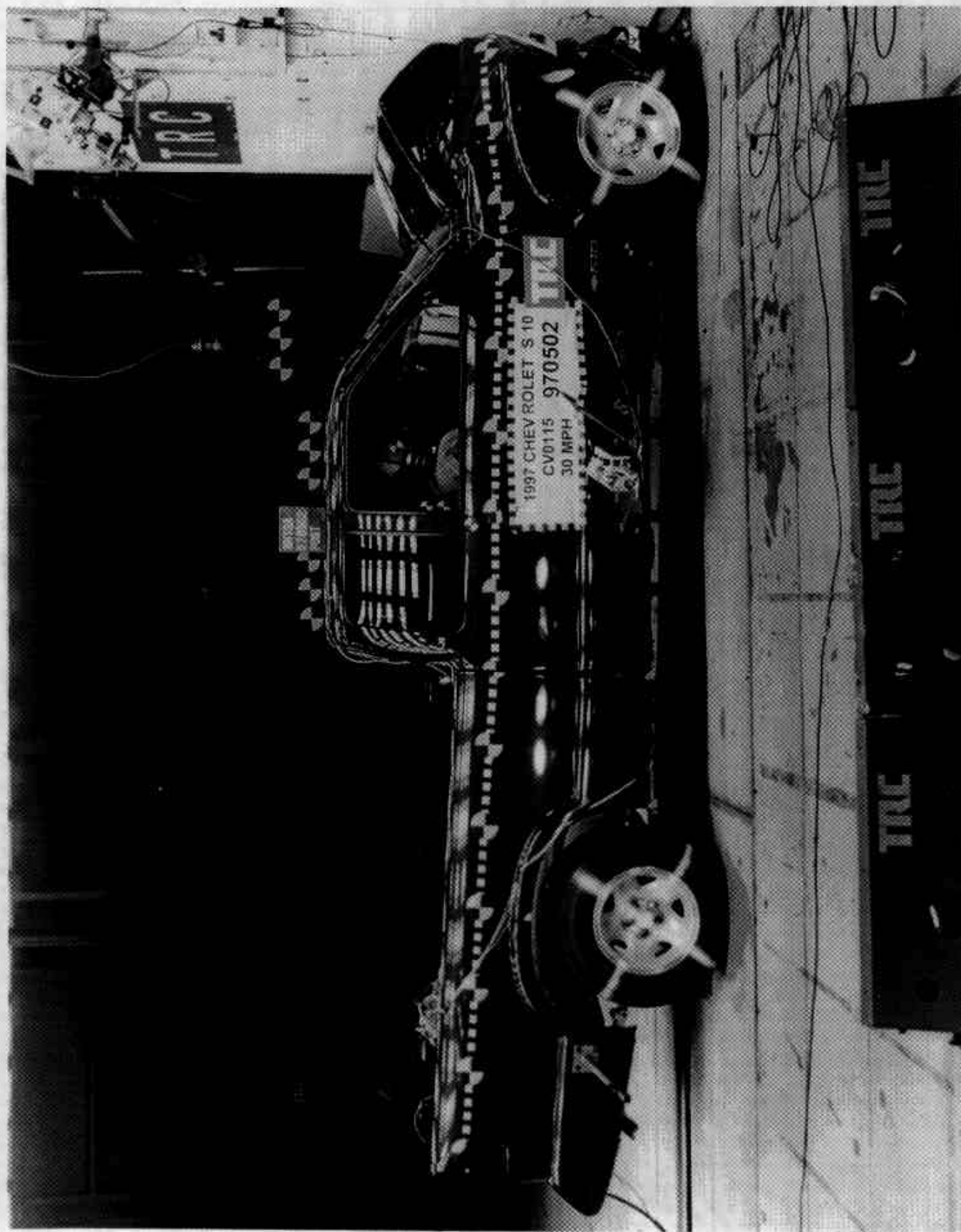


Figure A-8 Post-Test Right Side View
A-9

970502

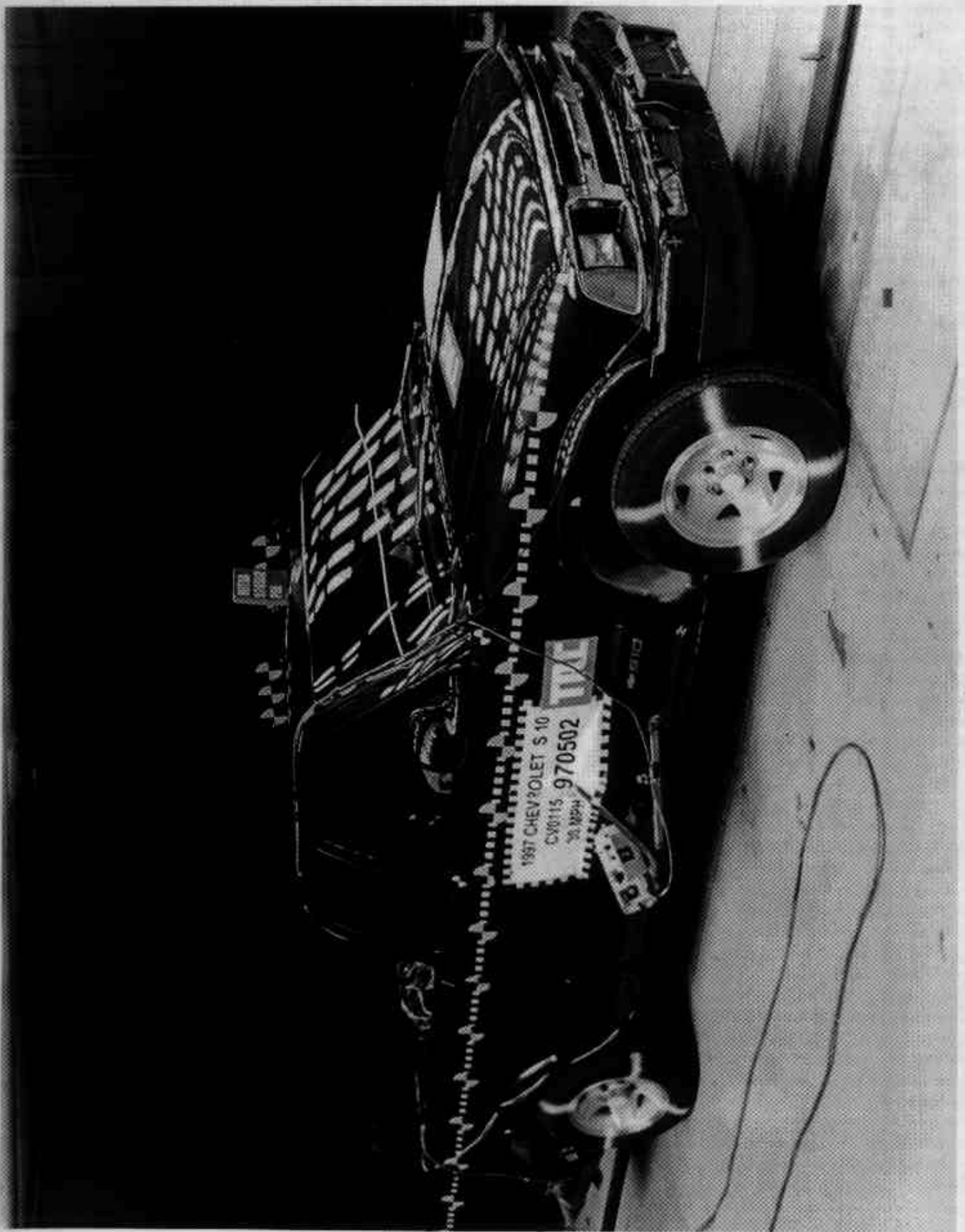


Figure A-9 Pre-Test Right Front Three-Quarter View
A-10

970502

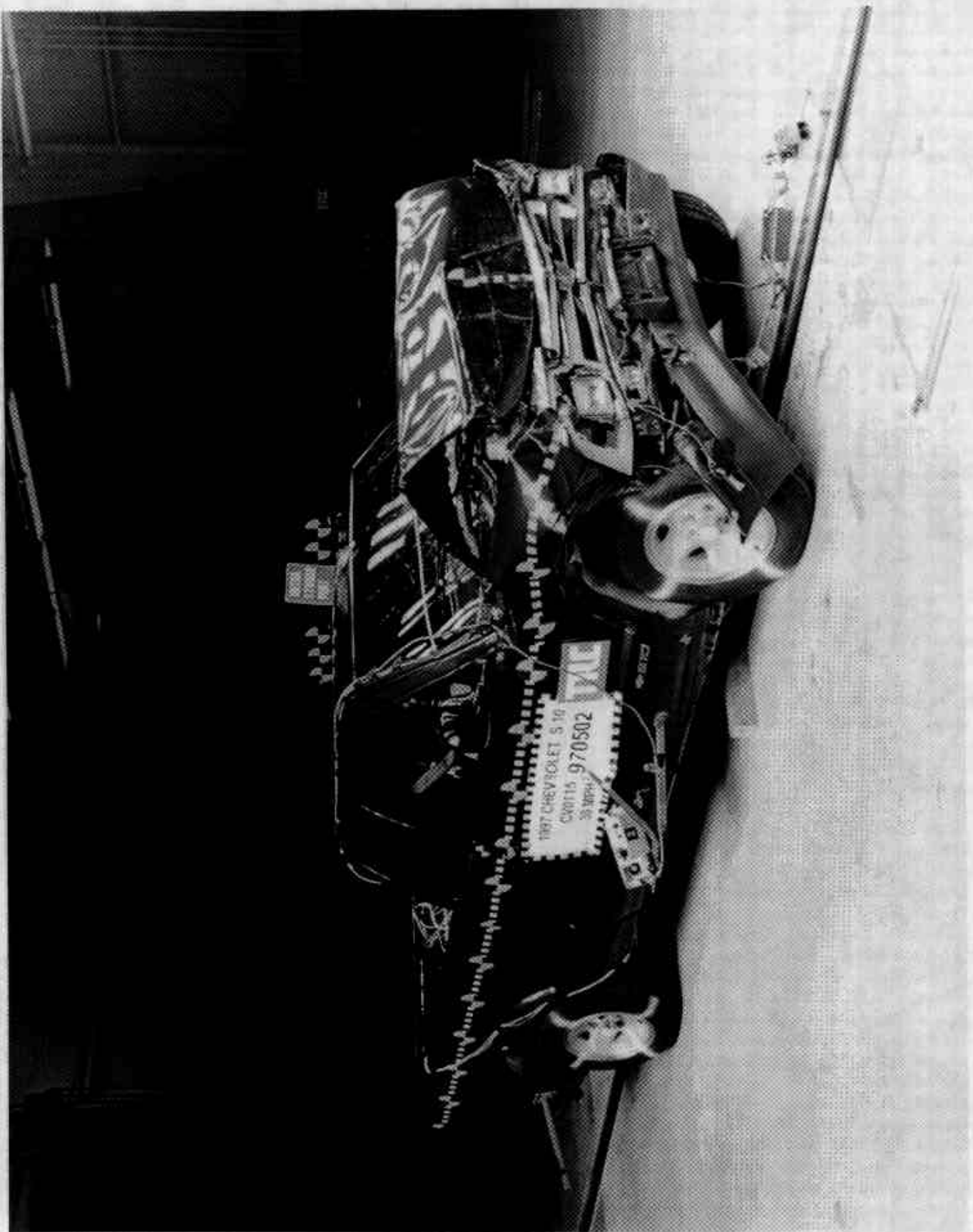


Figure A-10 Post-Test Right Front Three-Quarter View
A-11

970502

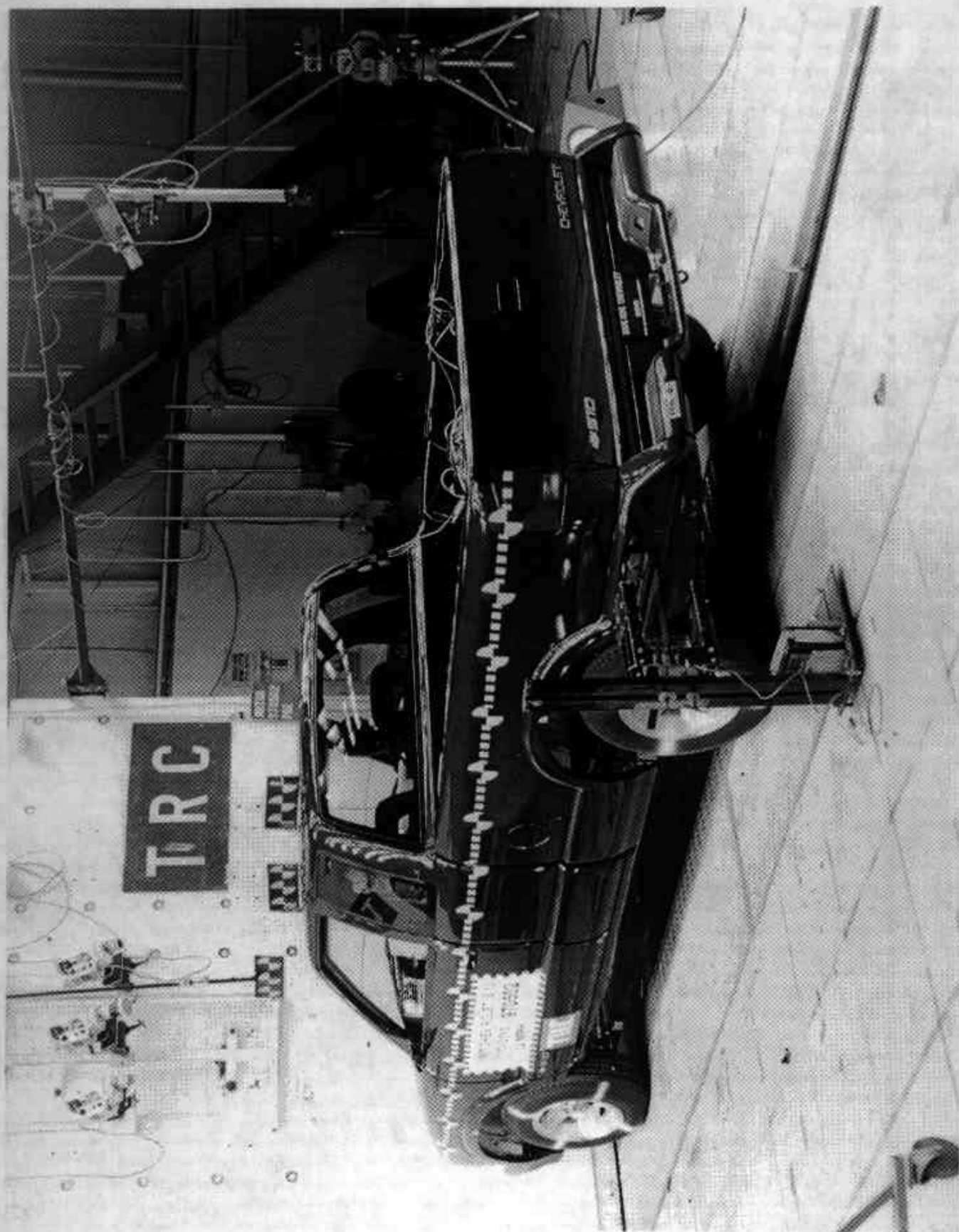


Figure A-11 Pre-Test Left Rear Three-Quarter View
A-12

970502

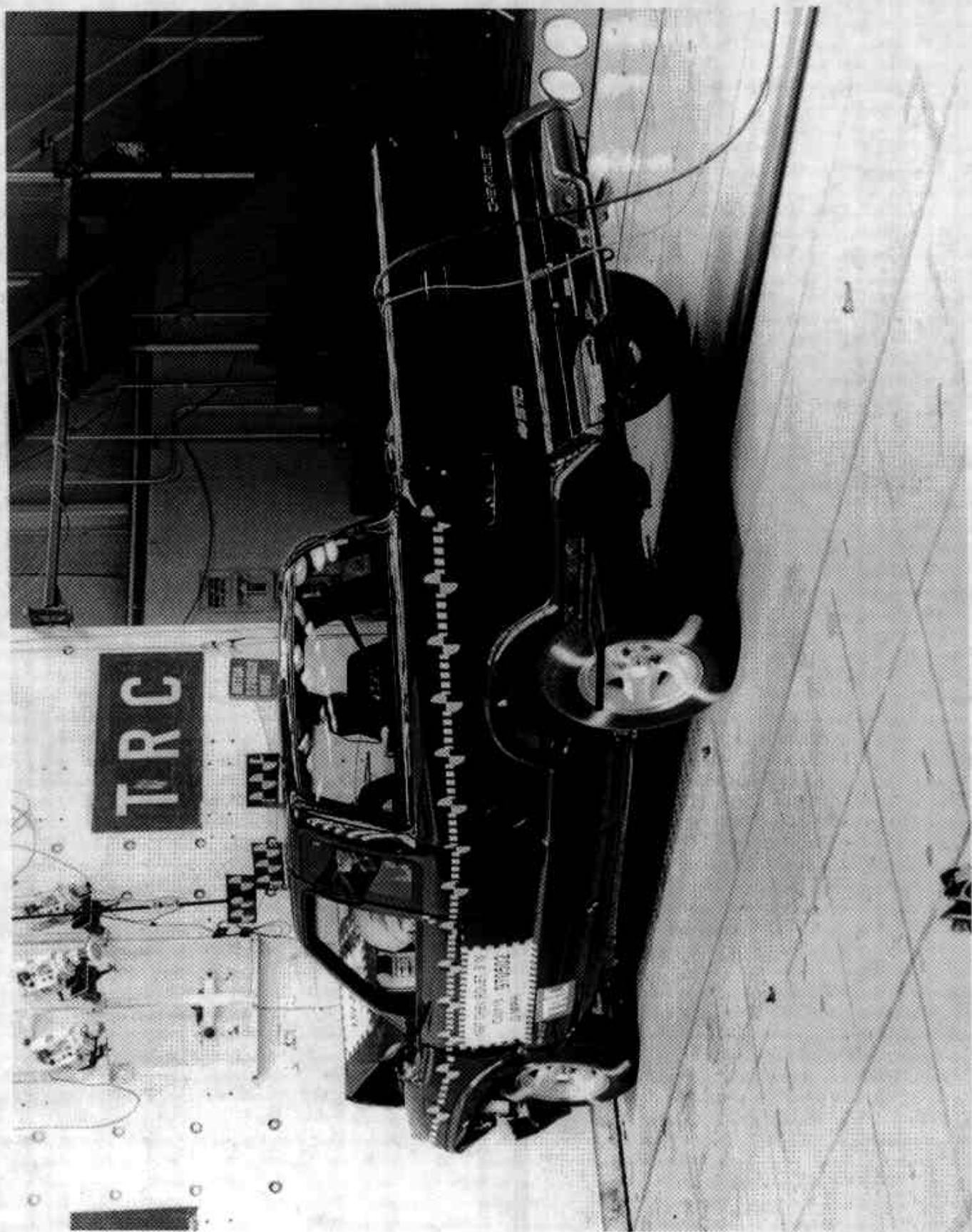


Figure A-12 Post-Test Left Rear Three-Quarter View
A-13

970502

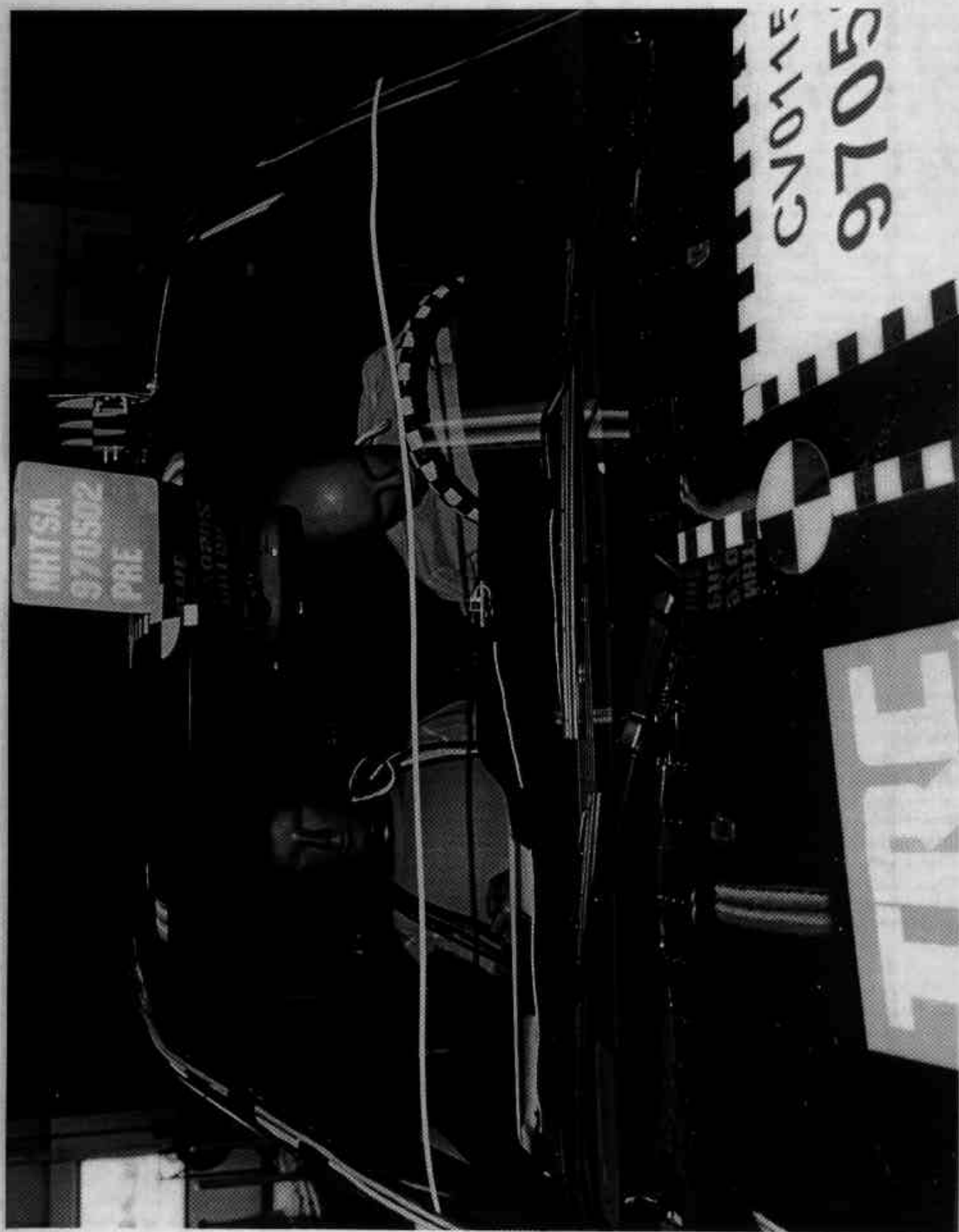


Figure A-13 Pre-Test Windshield View
A-14

970502

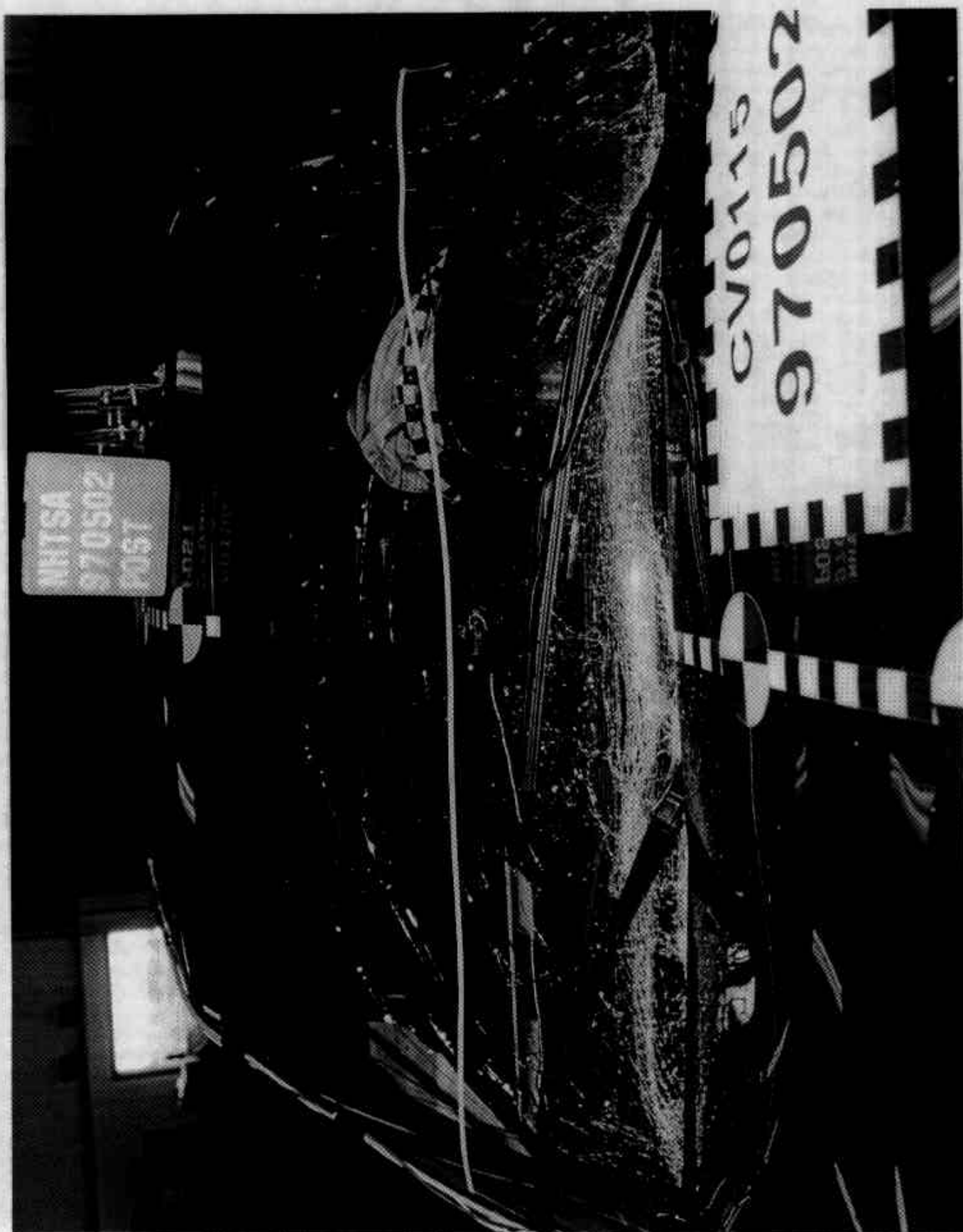


Figure A-14 Post-Test Windshield View
A-15

970502

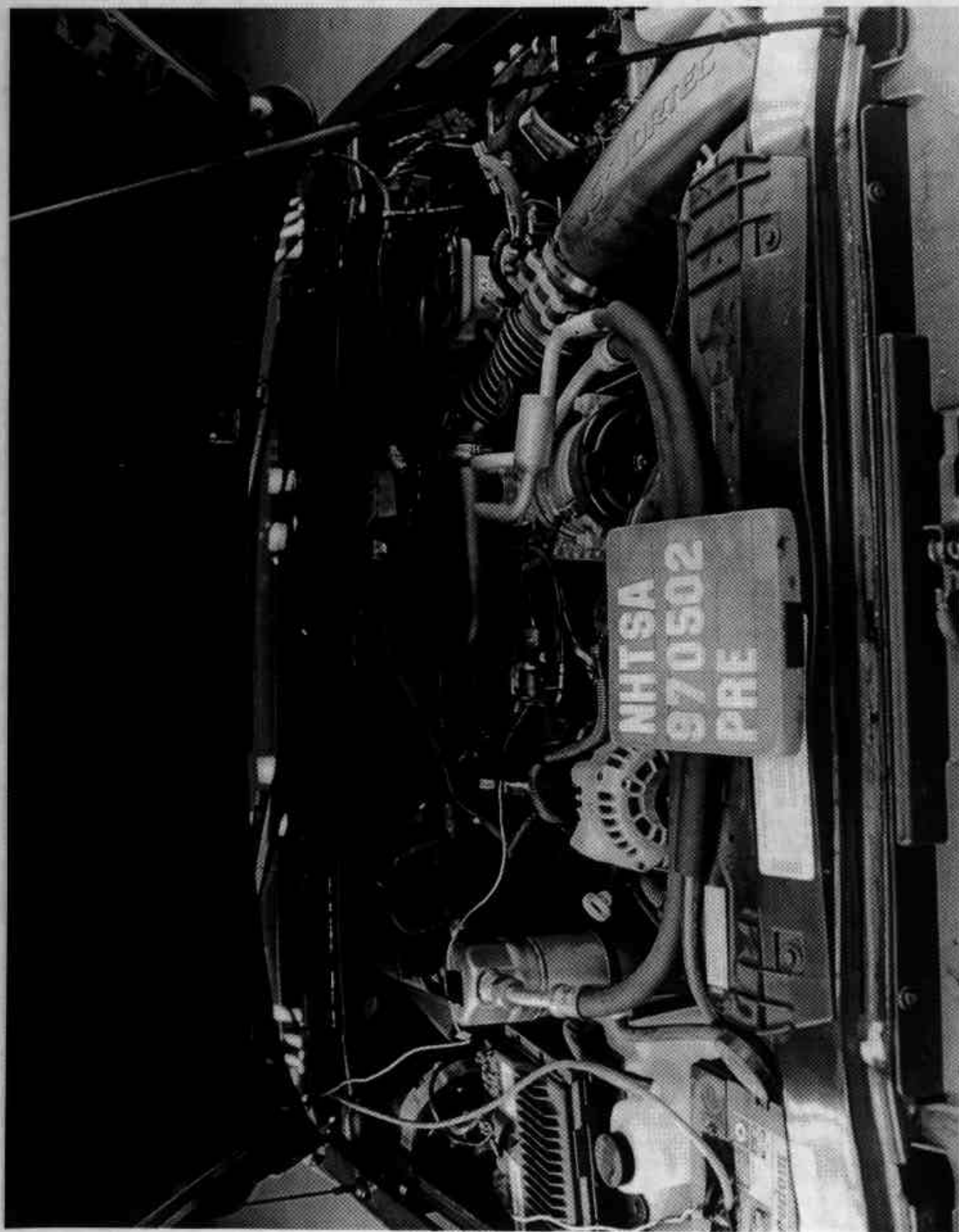


Figure A-15 Pre-Test Engine Compartment View
A-16

970502

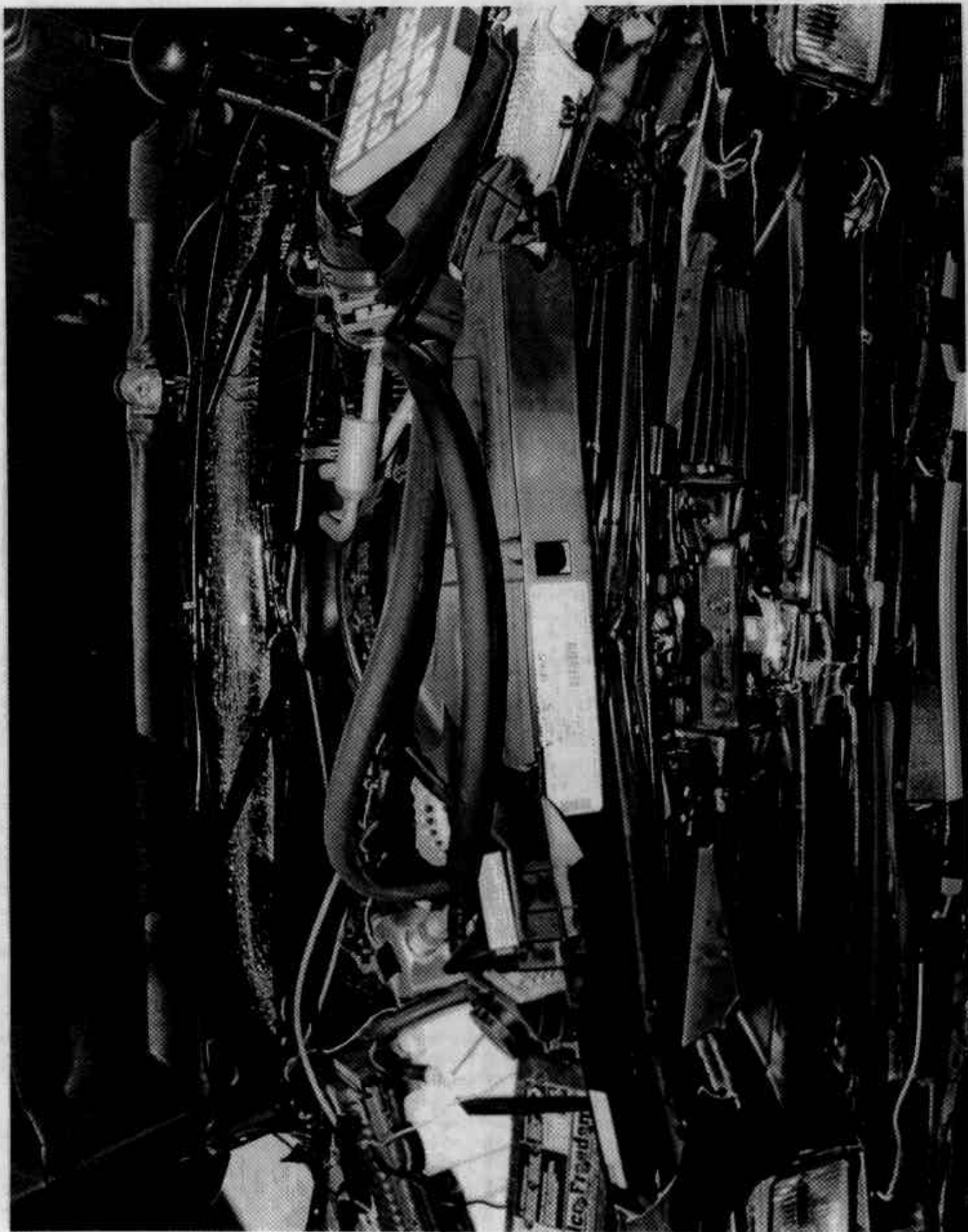


Figure A-16 Post-Test Engine Compartment View
A-17

970502



Figure A-17 Pre-Test Fuel Filler Cap View
A-18

970502



Figure A-18 Pre-Test Fuel Filler Neck View
A-19

970502

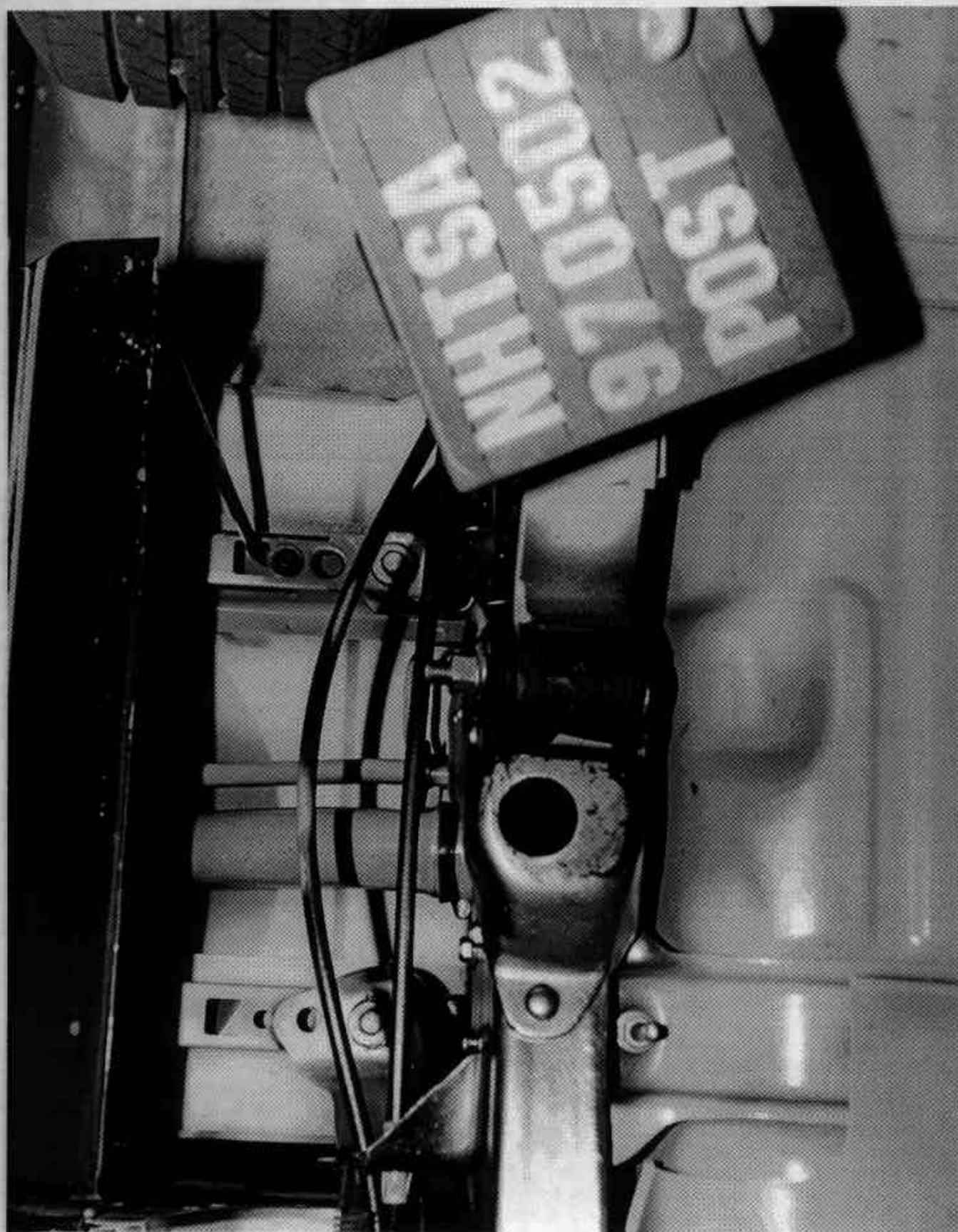


Figure A-19 Post-Test Fuel Filler Neck View
A-20

970502



Figure A-20 Pre-Test Fuel Tank View
A-21

970502

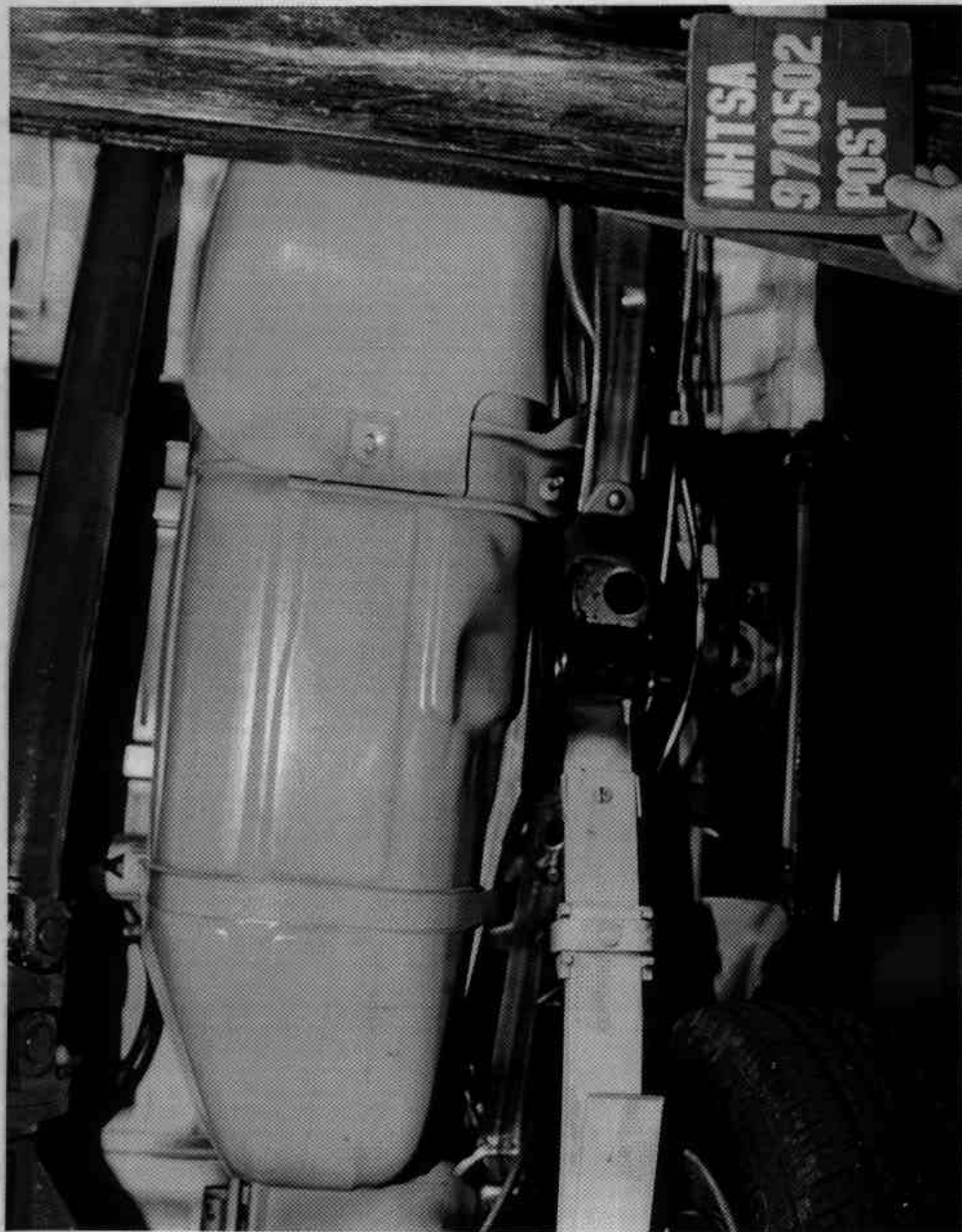


Figure A-21 Post-Test Fuel Tank View
A-22

970502

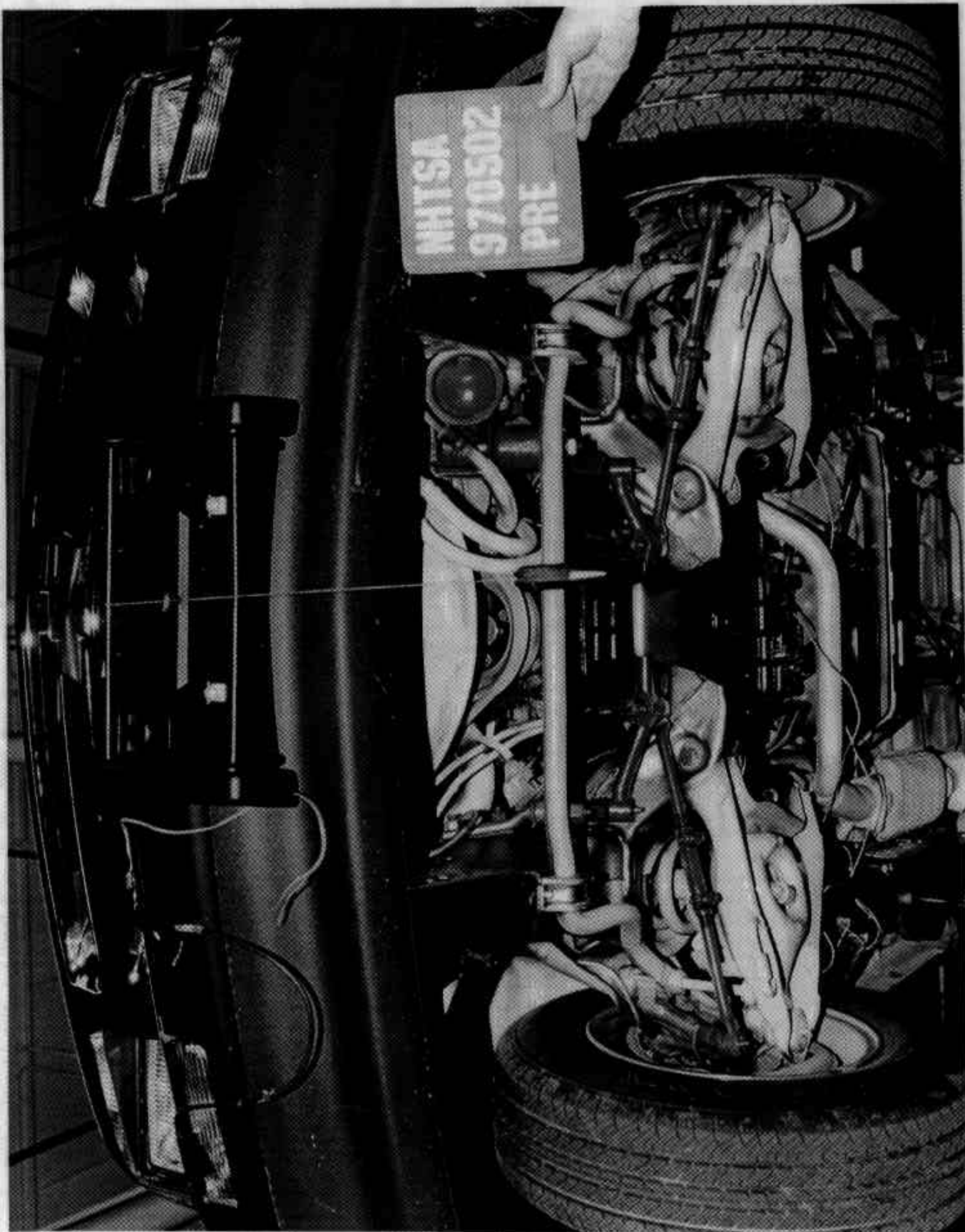


Figure A-22 Pre-Test Front Underbody View
A-23

970502



Figure A-23 Post-Test Front Underbody View
A-24

970502

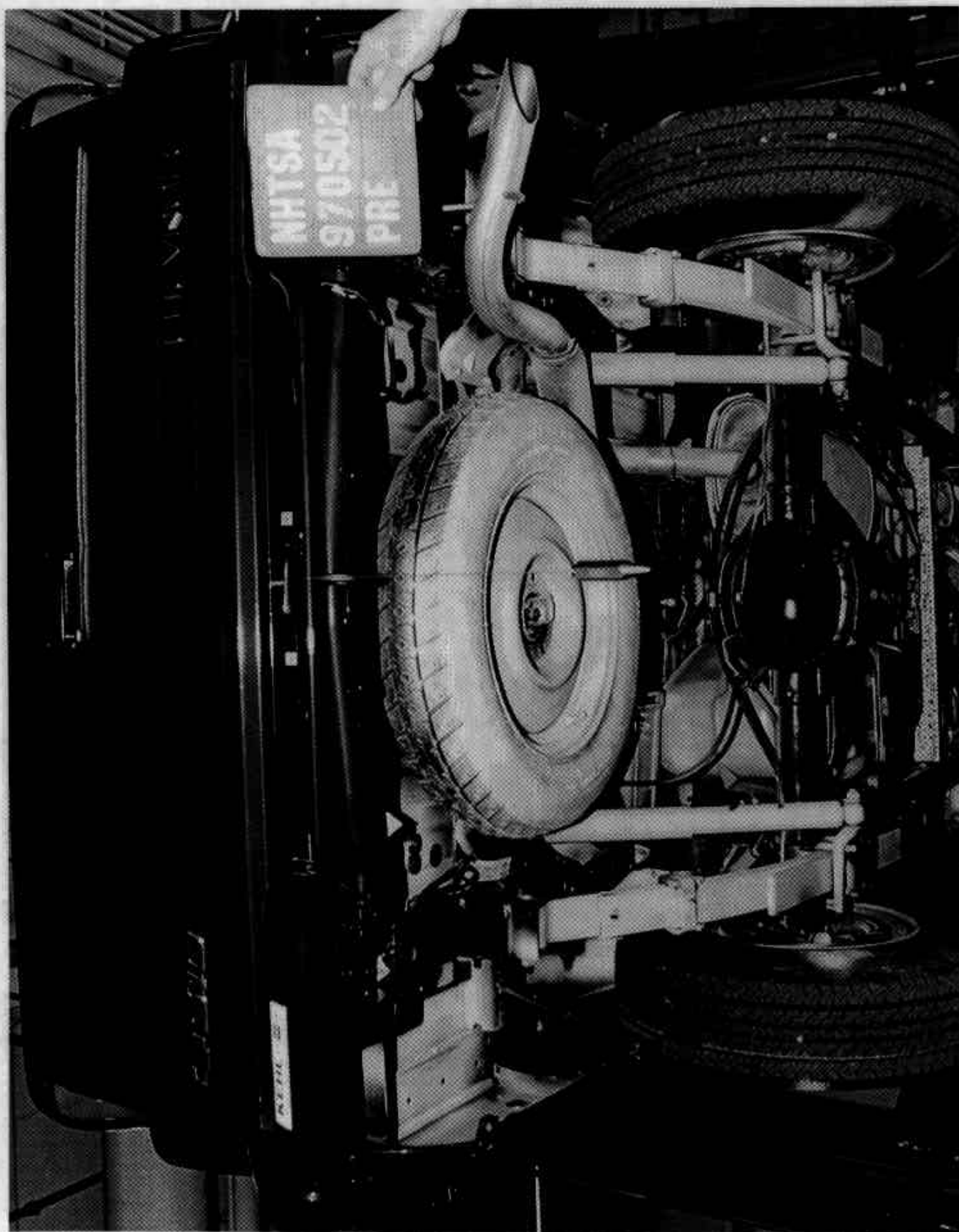


Figure A-24 Pre-Test Rear Underbody View
A-25

970502

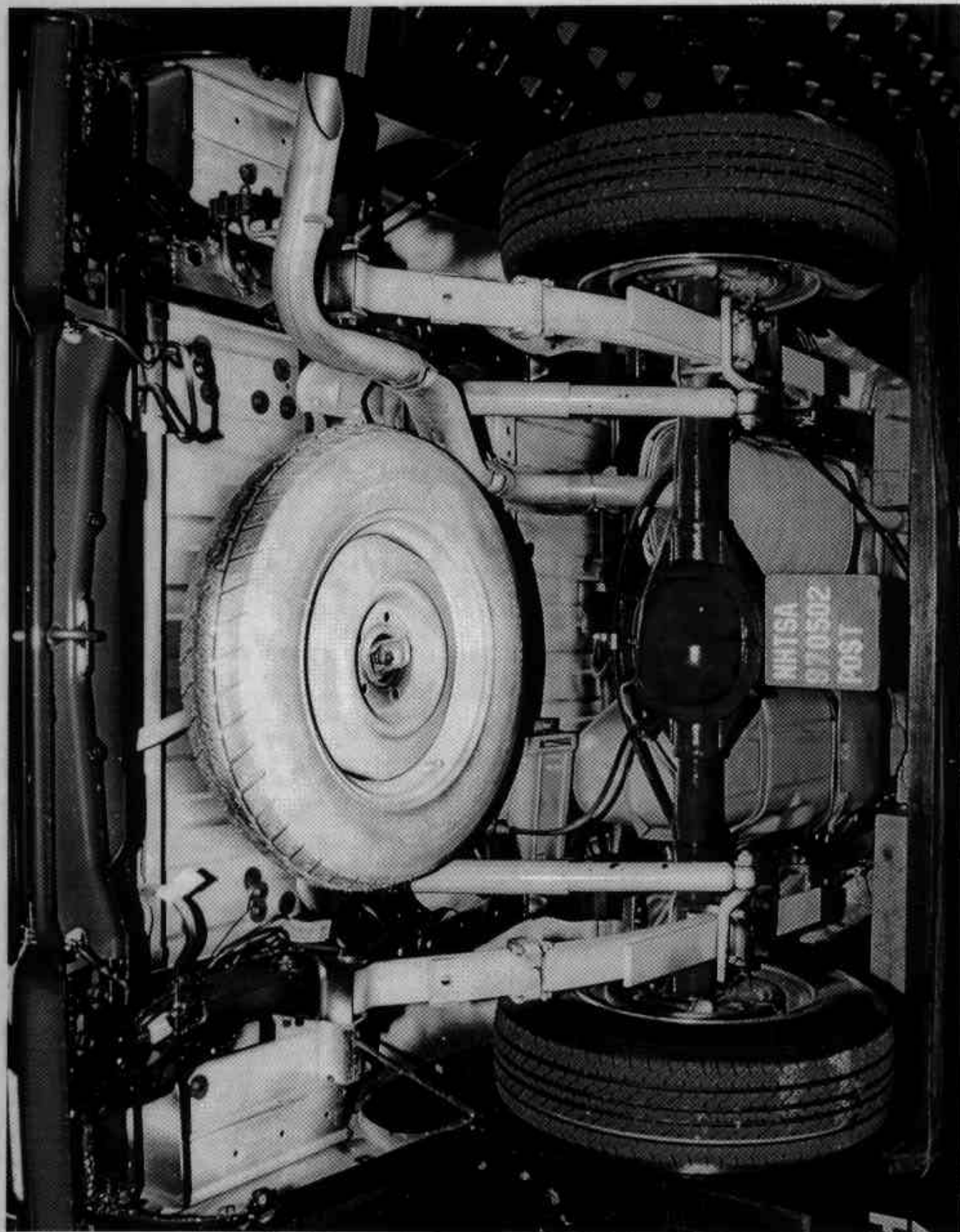


Figure A-25 Post-Test Rear Underbody View
A-26

970502

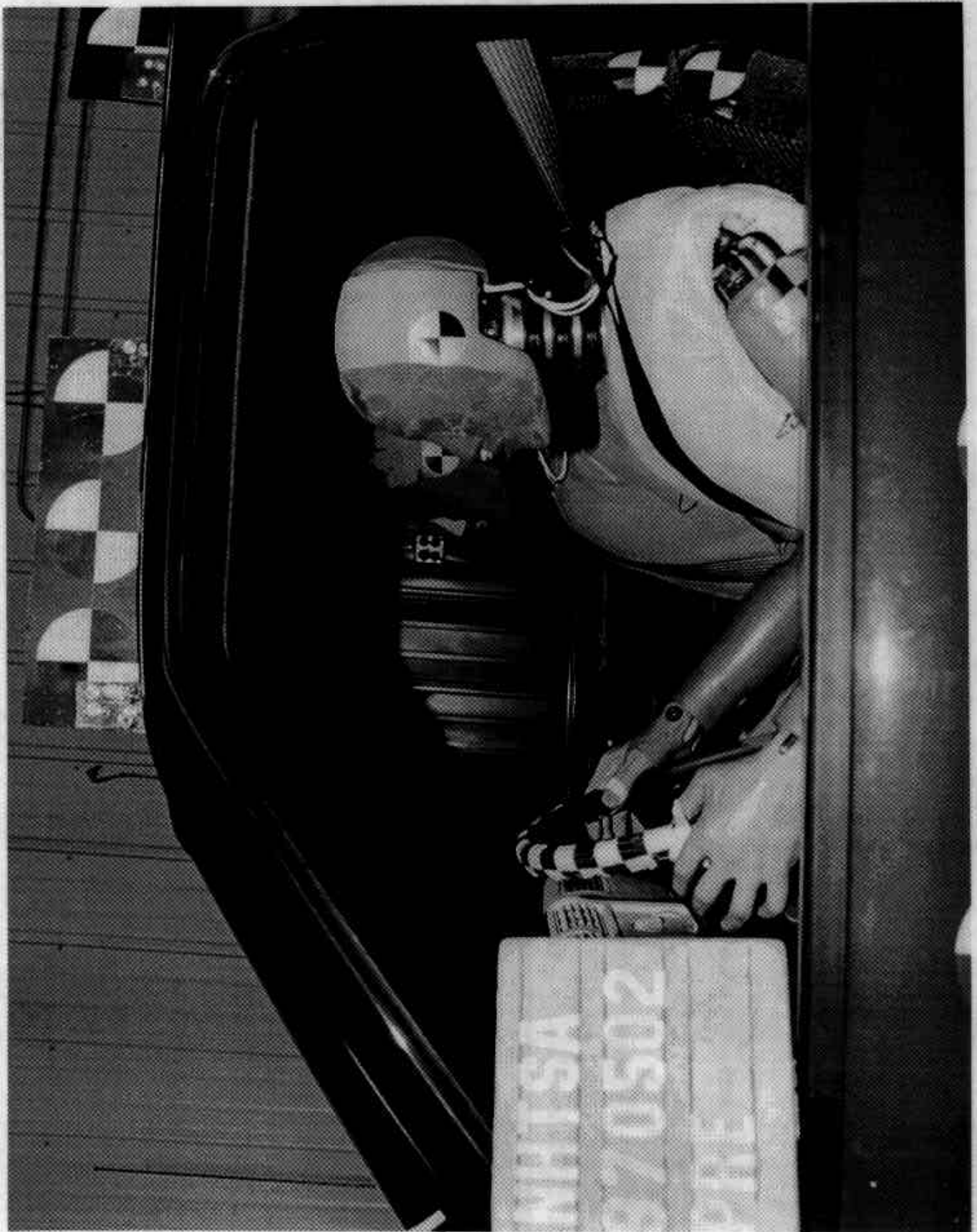


Figure A-26 Pre-Test Driver Dummy Position View
A-27

970502



Figure A-27 Post-Test Driver Dummy Position View
A-28

970502

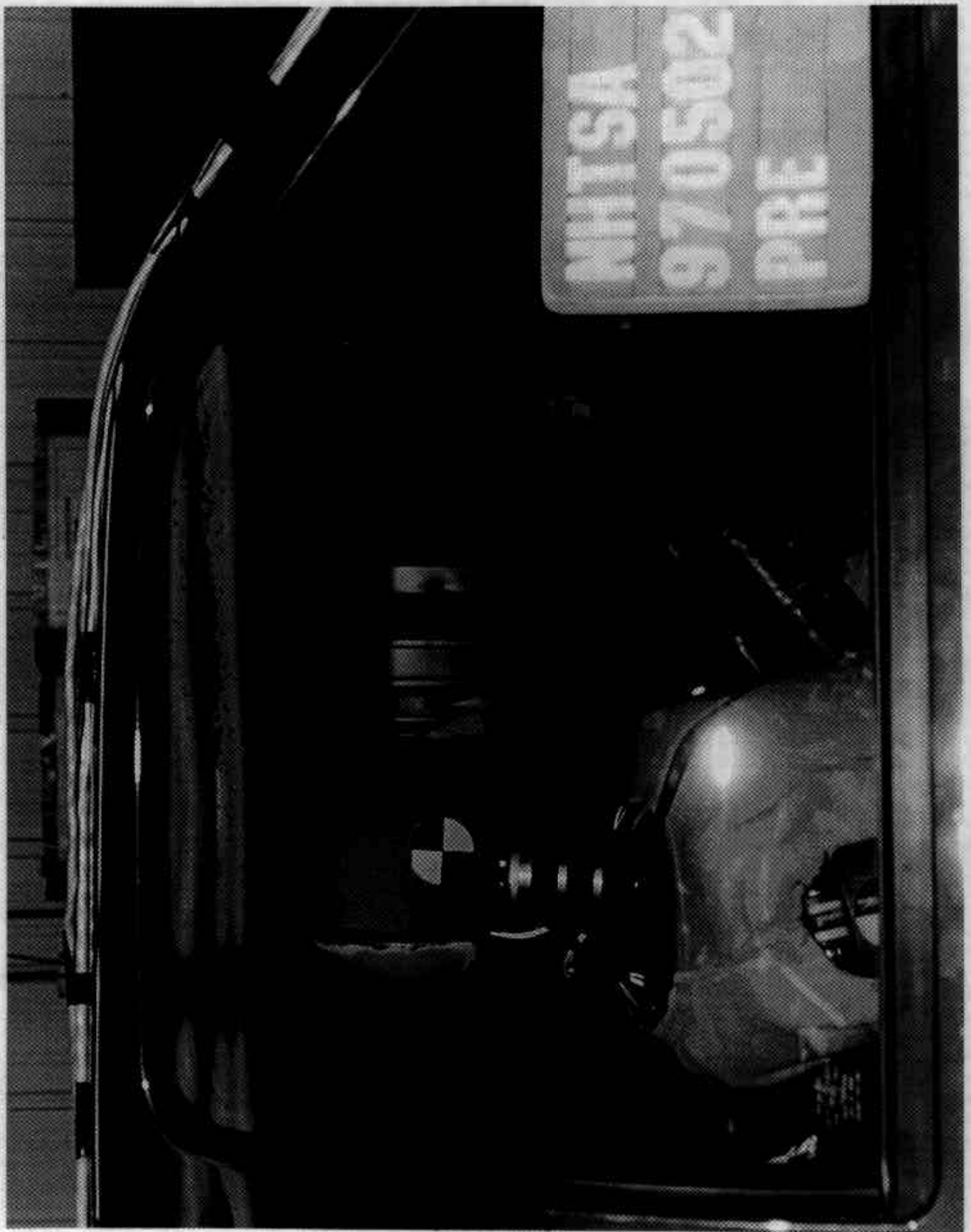


Figure A-28 Pre-Test Passenger Dummy Position View
A-29

970502

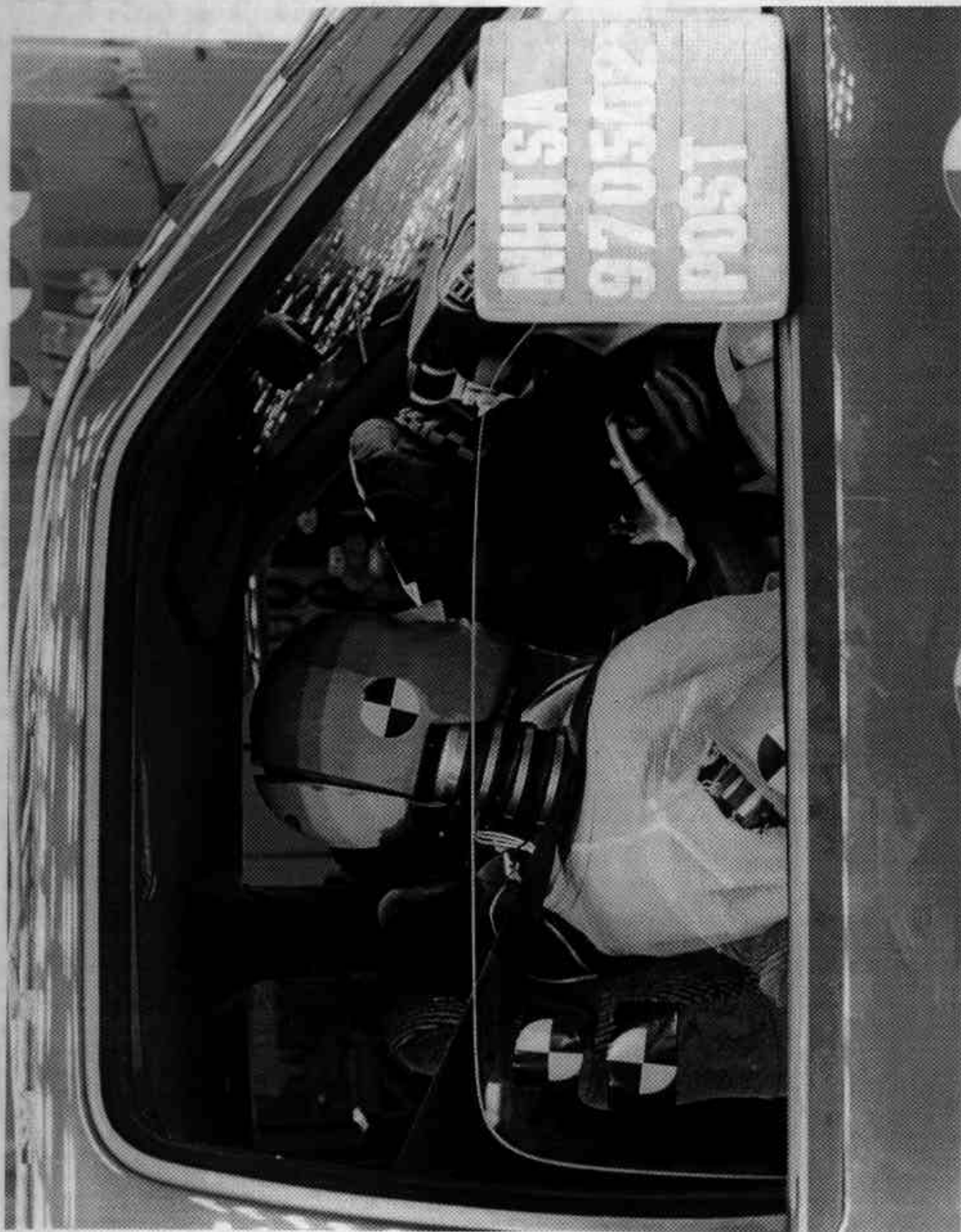


Figure A-29 Post-Test Passenger Dummy Position View
A-30

970502

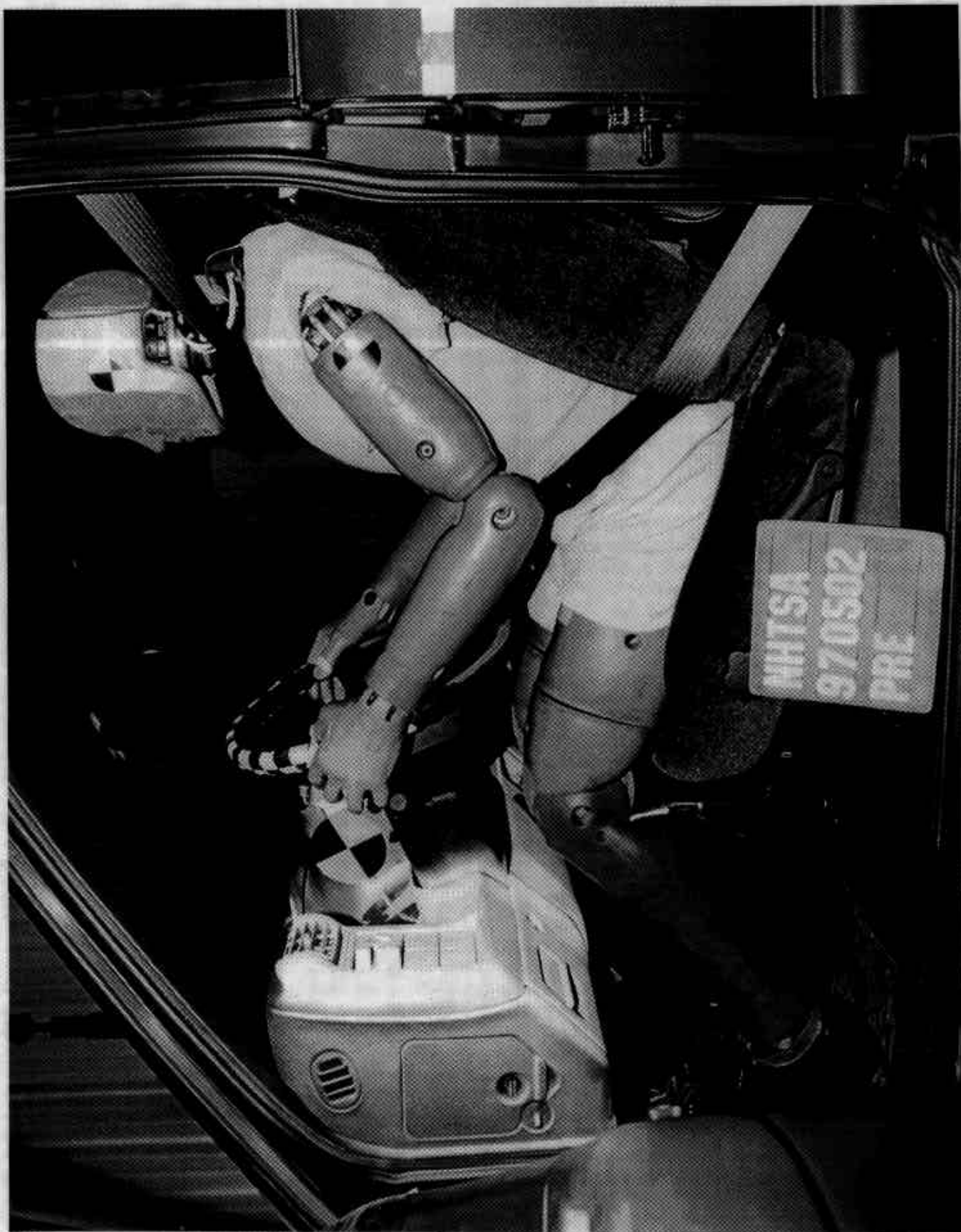


Figure A-30 Pre-Test Driver Dummy and Vehicle Interior - View 1

A-31

970502



Figure A-31 Post-Test Driver Dummy and Vehicle Interior - View 1

A-32

970502



Figure A-32 Pre-Test Driver Dummy and Vehicle Interior - View 2

A-33

970502



Figure A-33 Post-Test Driver Dummy and Vehicle Interior - View 2

A-34

970502

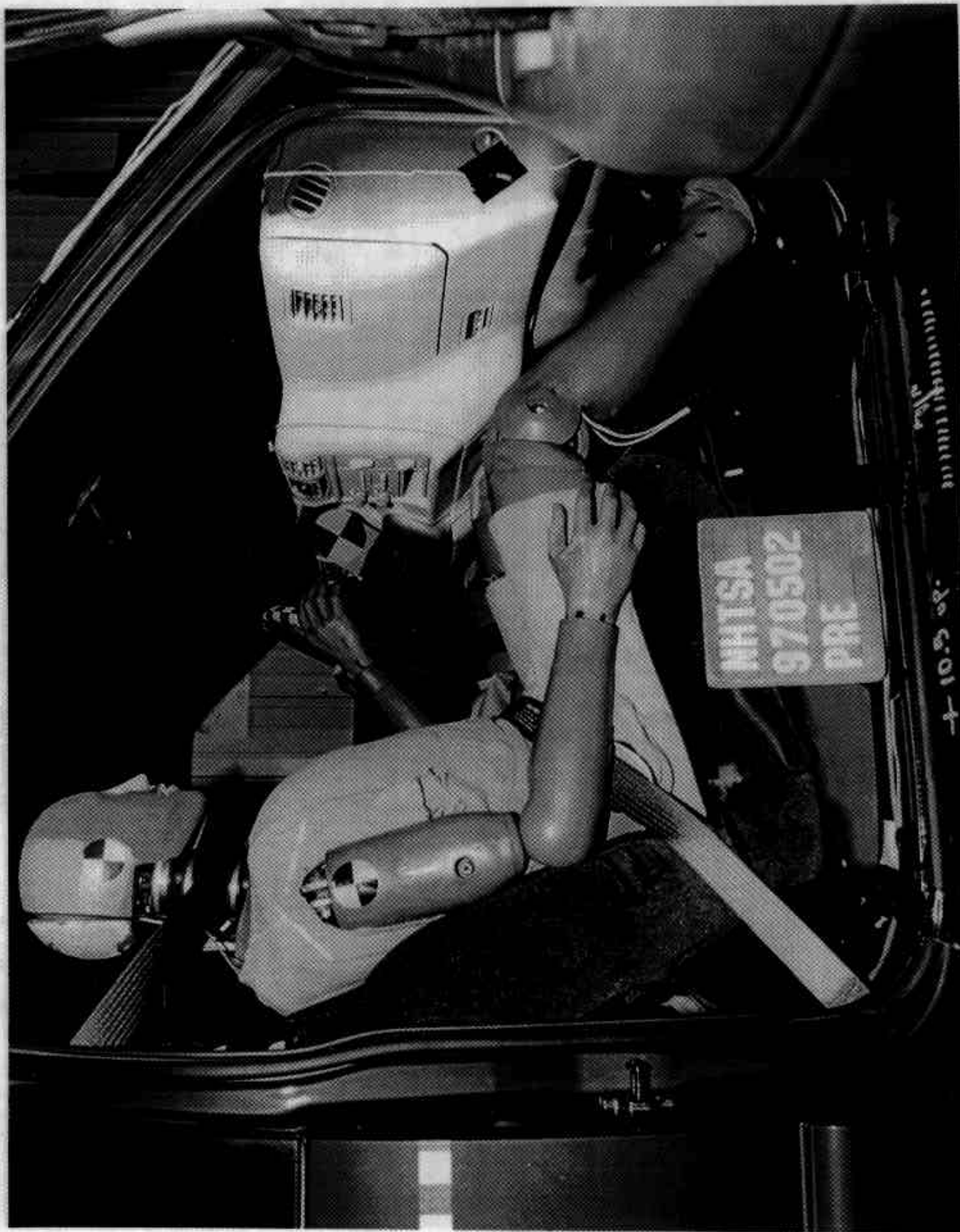


Figure A-34 Pre-Test Passenger Dummy and Vehicle Interior - View 1

A-35

970502



Figure A-35 Post-Test Passenger Dummy and Vehicle Interior - View 1

A-36

970502

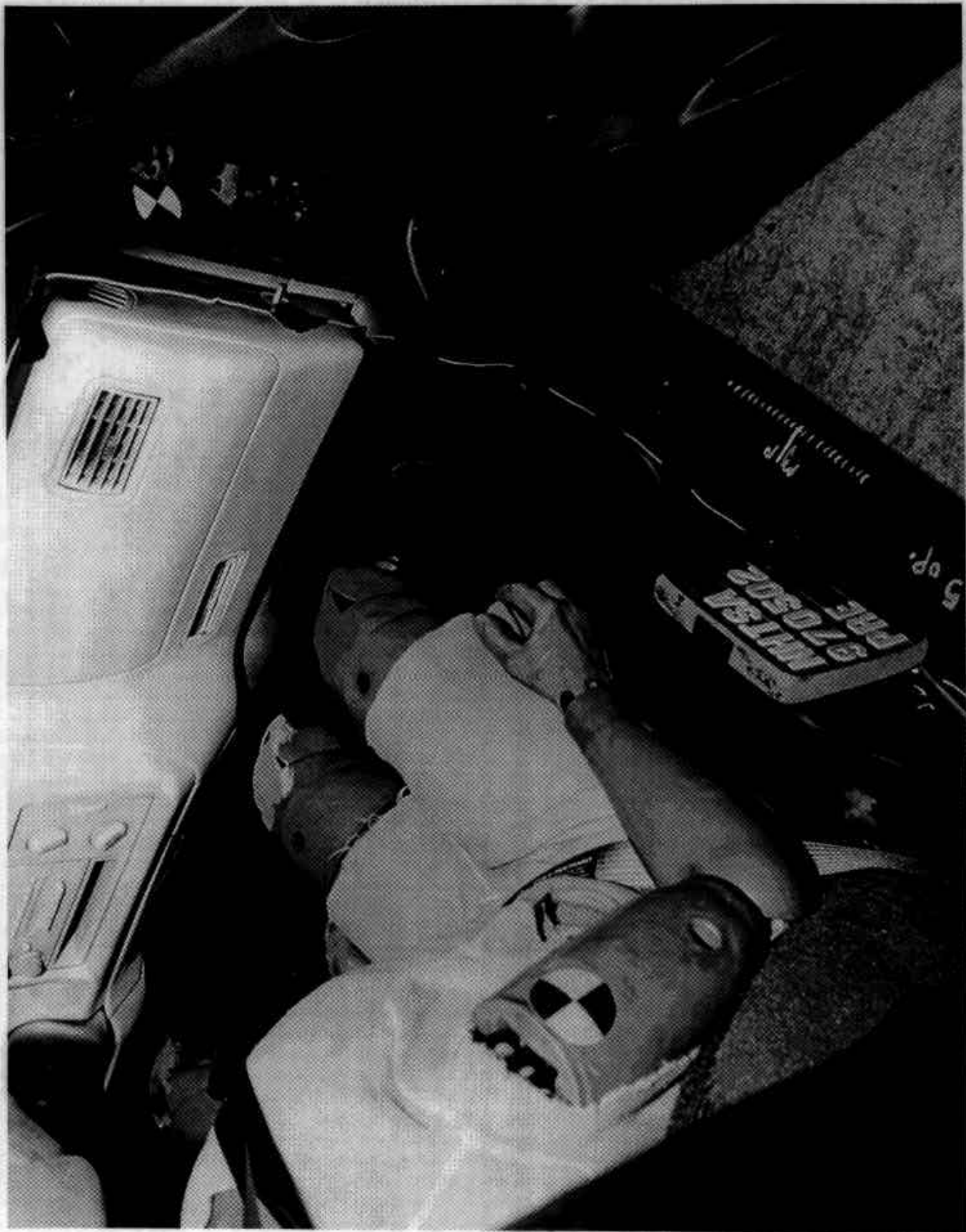


Figure A-36 Pre-Test Passenger Dummy and Vehicle Interior - View 2

A-37

970502



Figure A-37 Post-Test Passenger Dummy and Vehicle Interior - View 2

A-38

970502

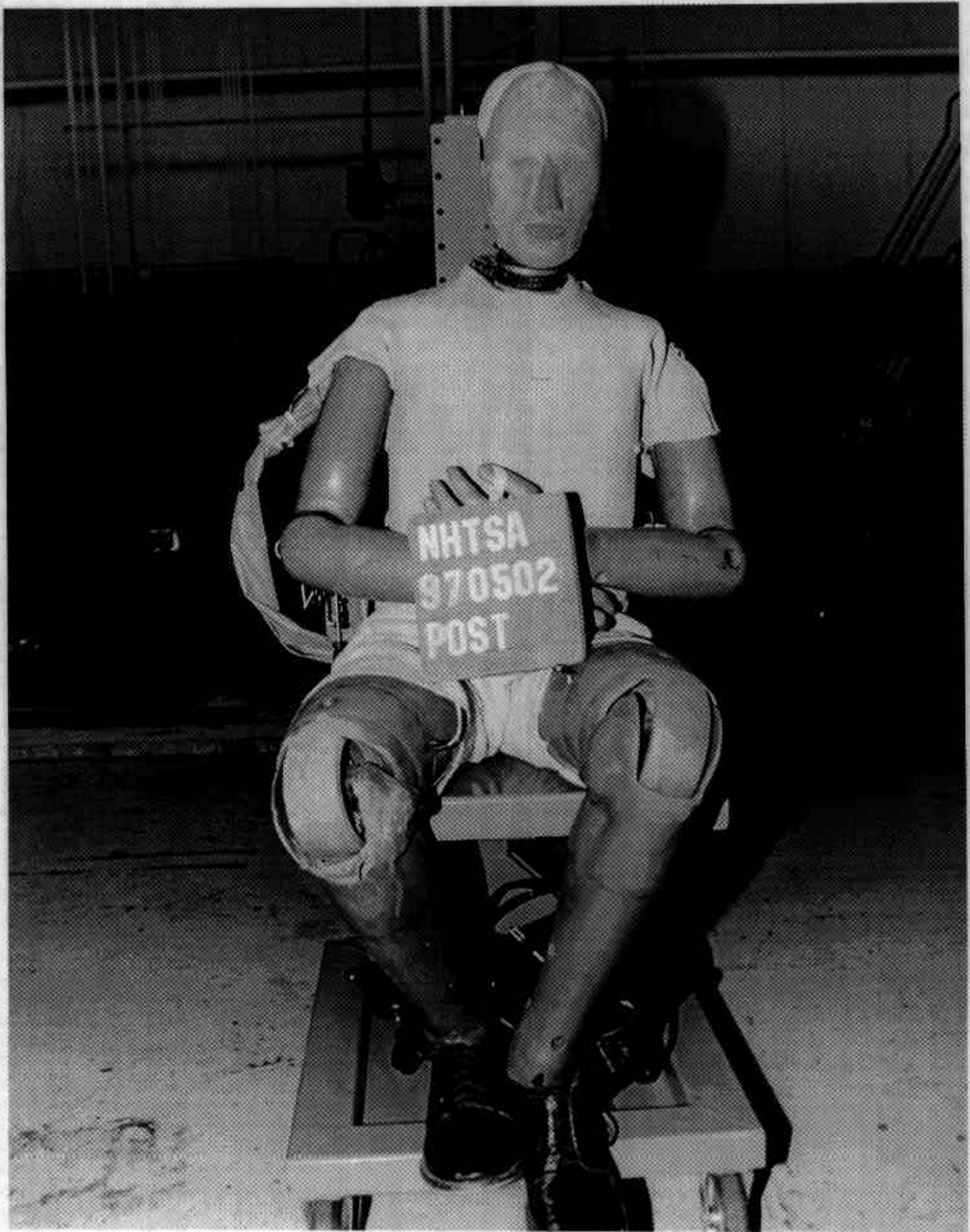


Figure A-38 Post-Test Driver Dummy View
A-39

970502



Figure A-39 Post-Test Driver Dummy Head Contact - View 1
A-40

970502

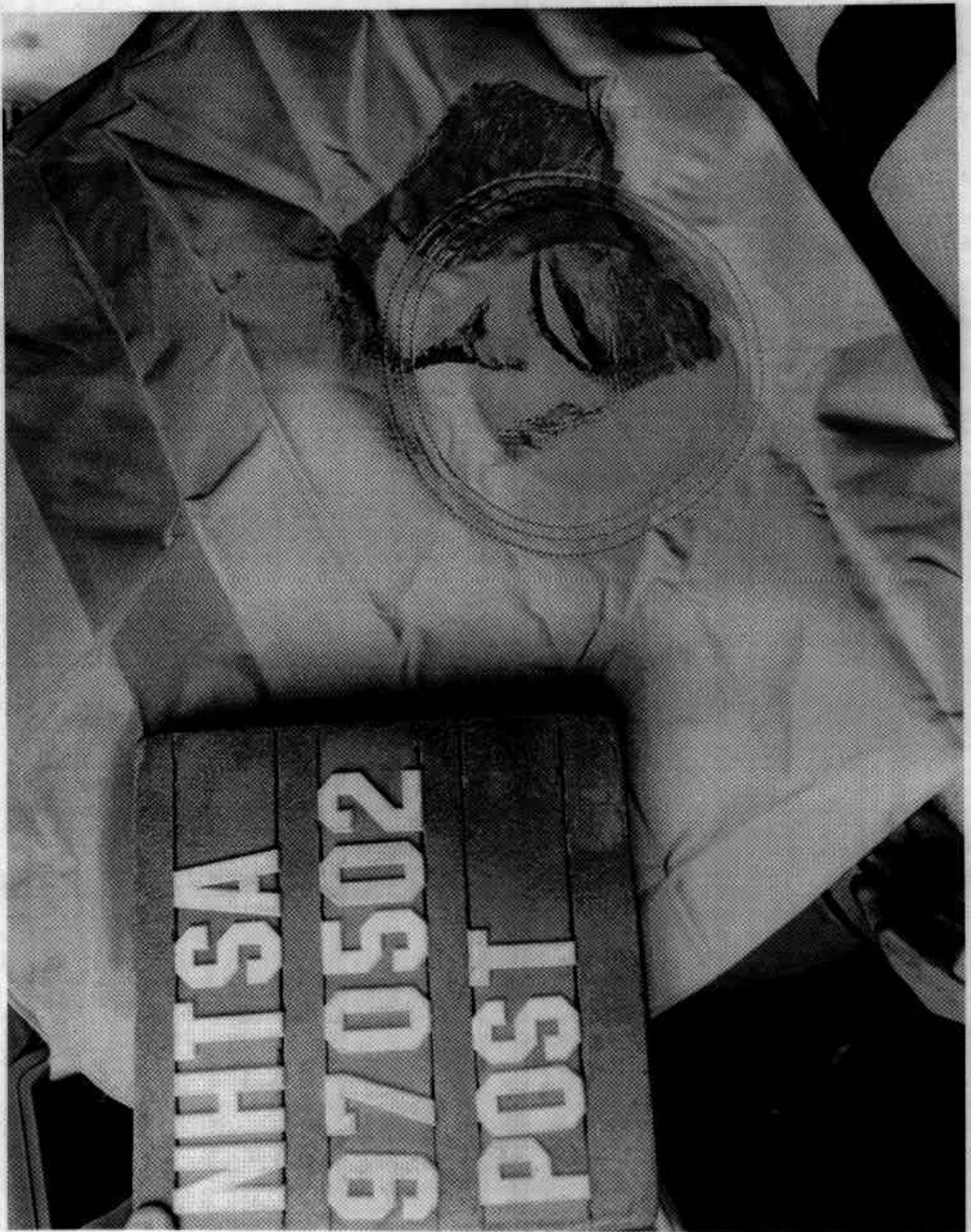


Figure A-40 Post-Test Driver Dummy Head Contact - View 2

A-41

970502



Figure A-41 Post-Test Driver Dummy Knee Contact - View 1
A-42

970502



Figure A-42 Post-Test Driver Dummy Knee Contact - View 2

A-43

970502



Figure A-43 Post-Test Passenger Dummy View
A-44

970502

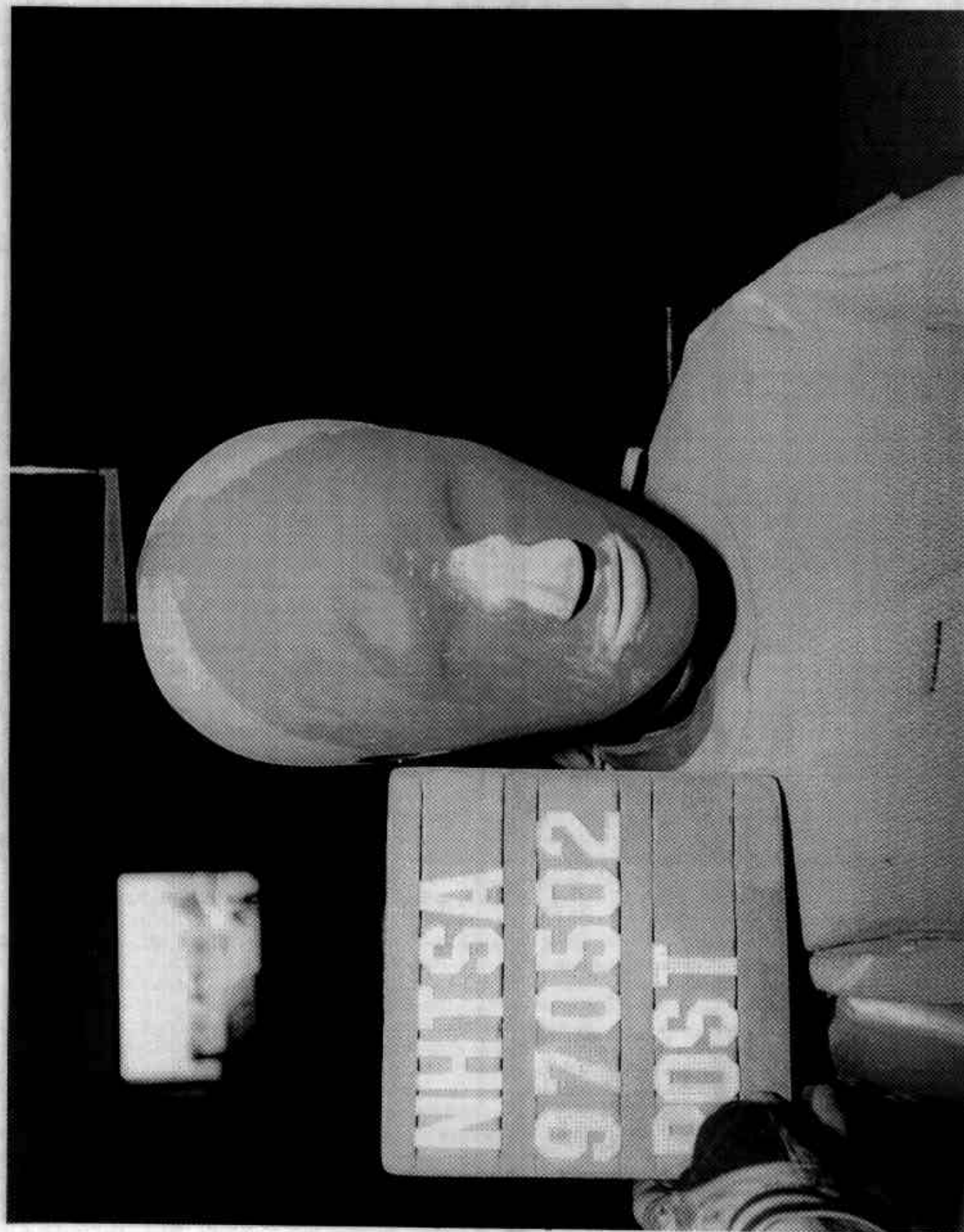


Figure A-44 Post-Test Passenger Dummy Head Contact View
A-45

970502



Figure A-45 Post-Test Passenger Dummy Knee Contact - View 1

A-46

970502

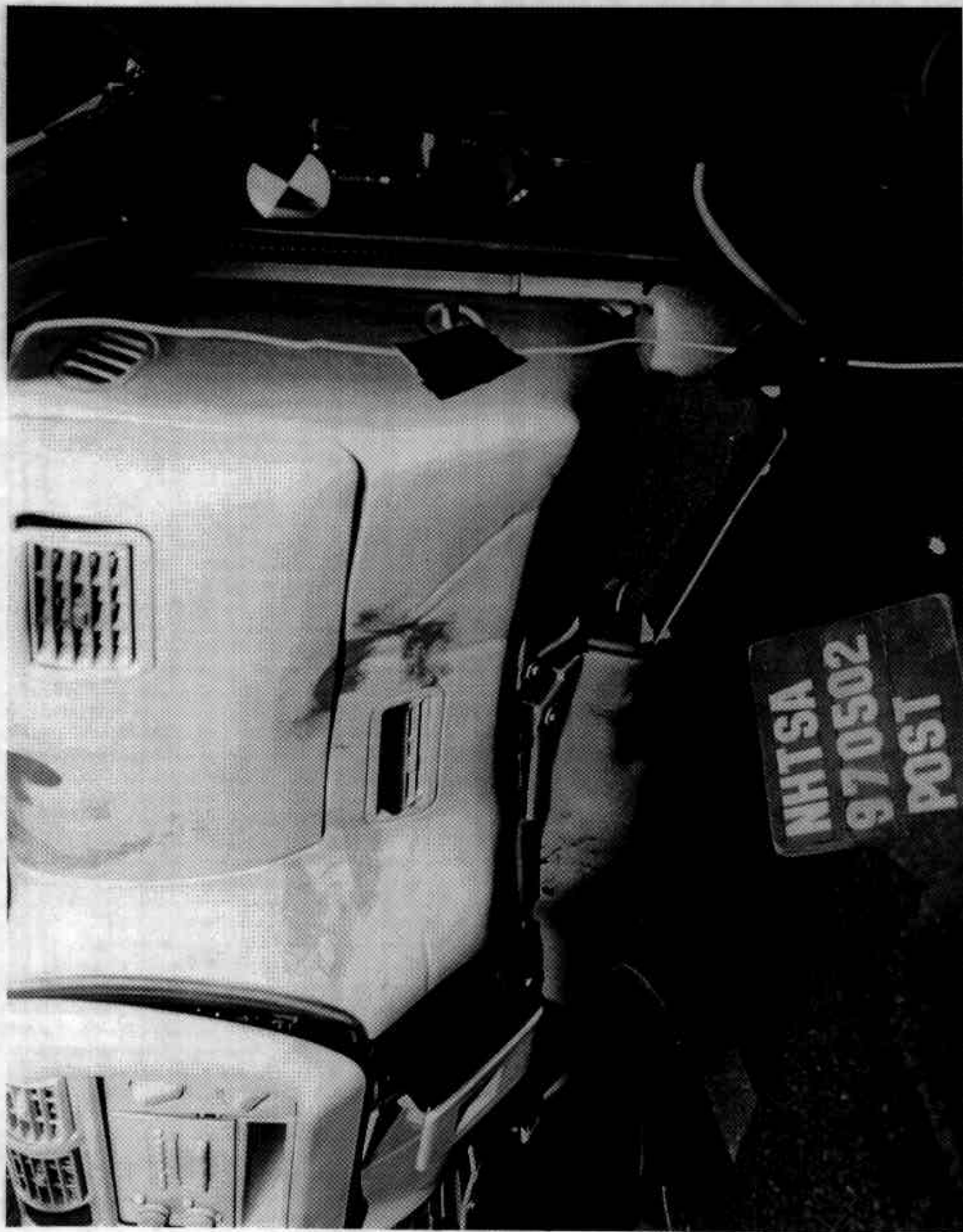


Figure A-46 Post-Test Passenger Dummy Knee Contact - View 2

A-47

970502

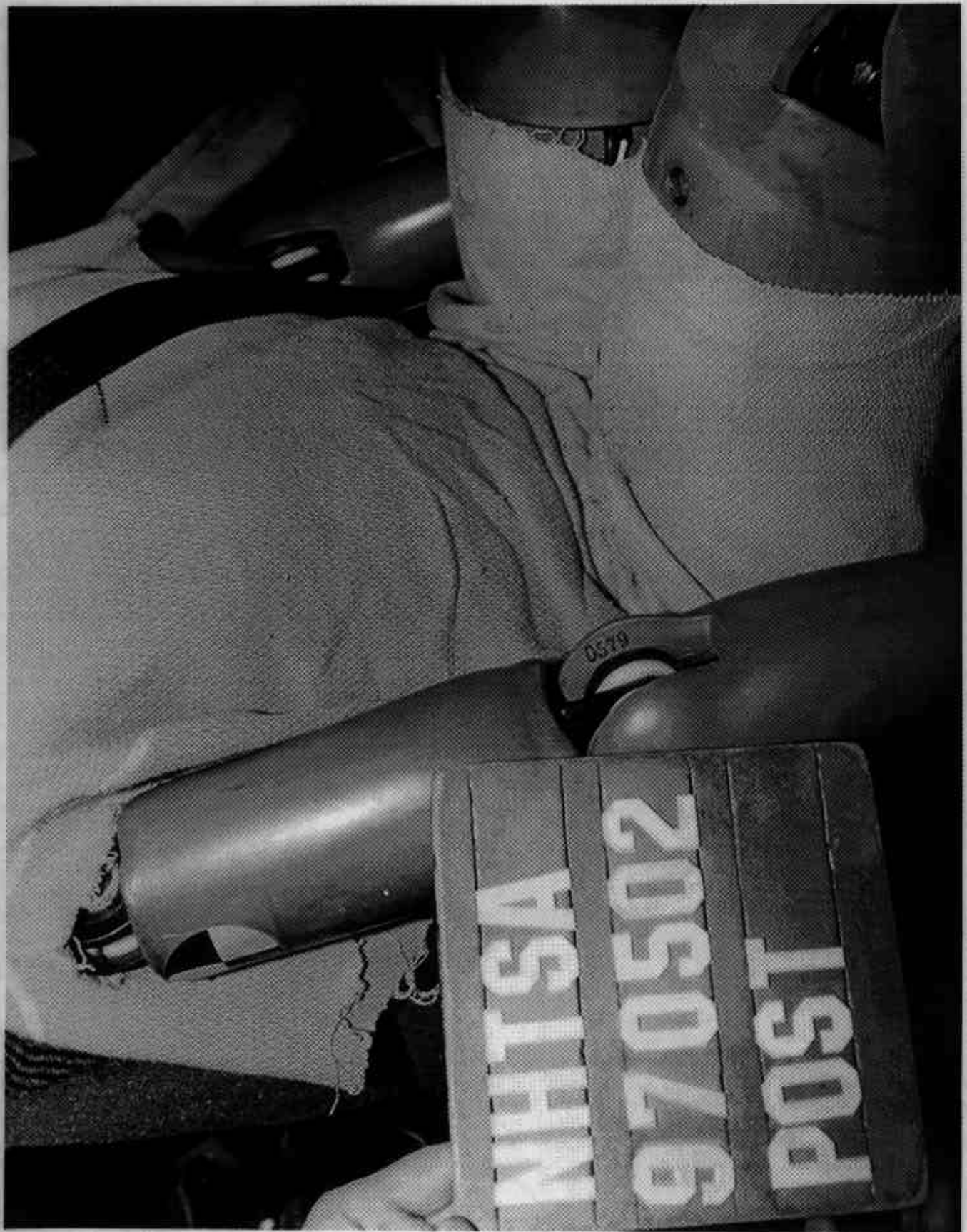


Figure A-47 Post-Test Seat Belt On Dummy View
A-48

970502



Figure A-48 Post-Test Seat Belt Damage View

A-49

970502



09/96

MFD BY GENERAL MOTORS CORP.

GVWR
4600/2087
GAW: FRT
2500/134
GAWR RR
2700/1225 LB/KG

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

1GCCS19X9V8117274 TYPE: TRUCK

MODEL: S10653 PAYLOAD = 991 LB / 450 KG

SPDA TIRE SIZE SPEED RTG RIM COLD TIRE PRESSURE

FRT P205/75R15 S 15X7J 35/240 PSI/KPA

RR P205/75R15 S 15X7J 35/240 PSI/KPA

SPA T155/90D16 M 16X4T 60/420 PSI/KPA

SEE OWNER'S MANUAL FOR MORE INFORMATION.

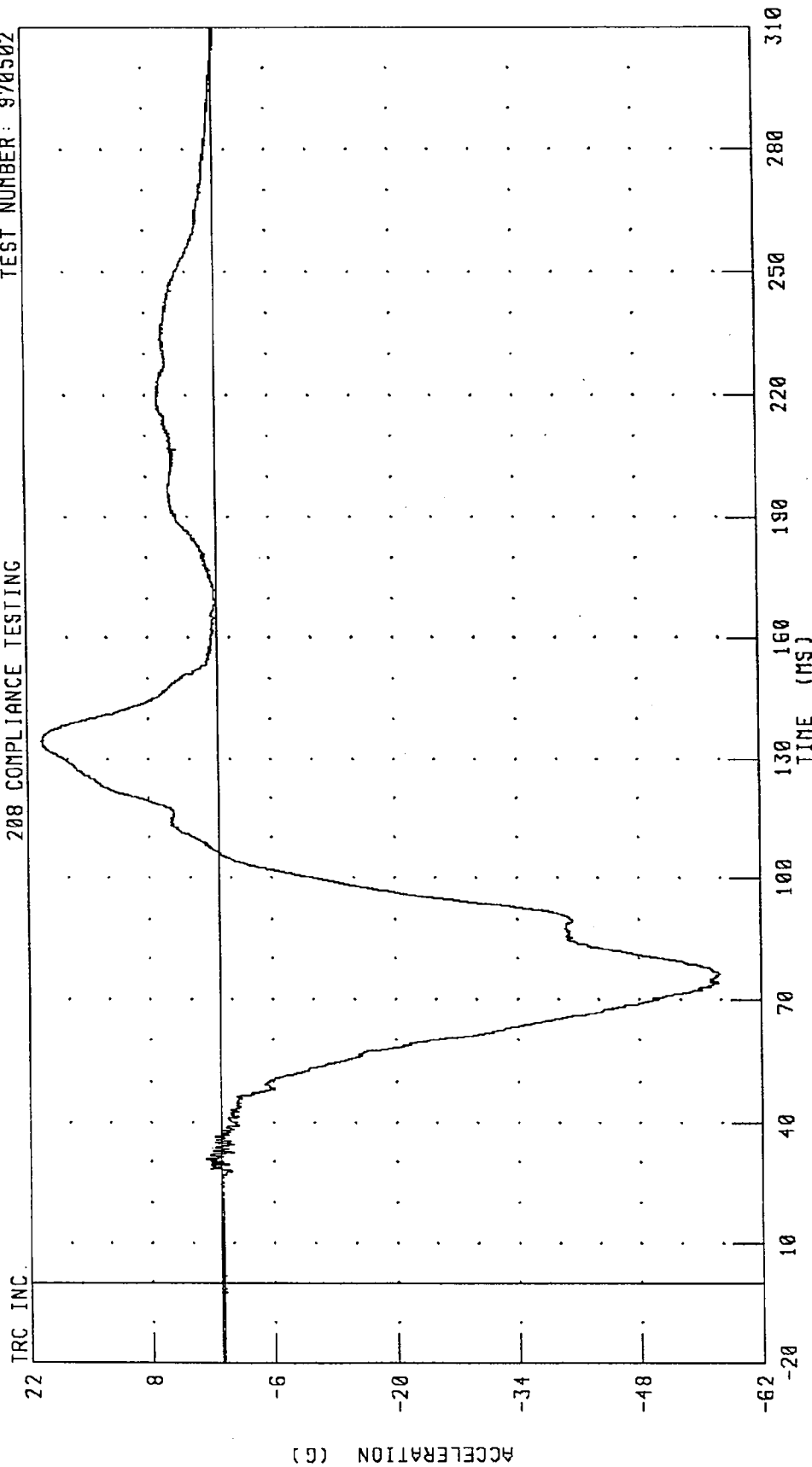
Figure A-49 Pre-Test Vehicle Certification Label view

Appendix B

Data Plots

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER HEAD X-AXIS ACCELERATION
 208 COMPLIANCE TESTING

TEST NUMBER: 970502

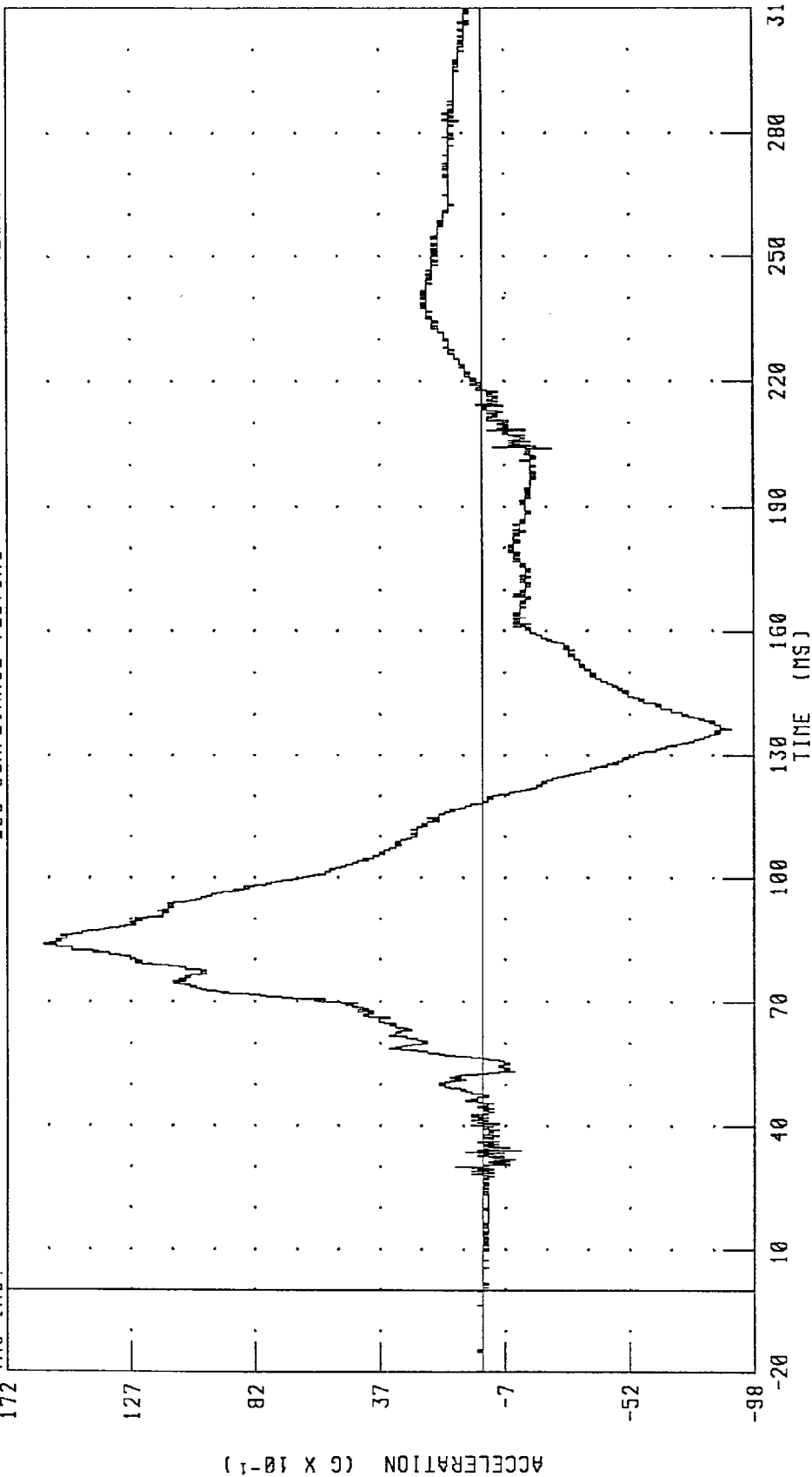


CHANNEL: HEDXG1 FILTER: CH. CLASS 1000

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER HEAD Y-AXIS ACCELERATION
 208 COMPLIANCE TESTING

TEST NUMBER: 970502

IRC INC.



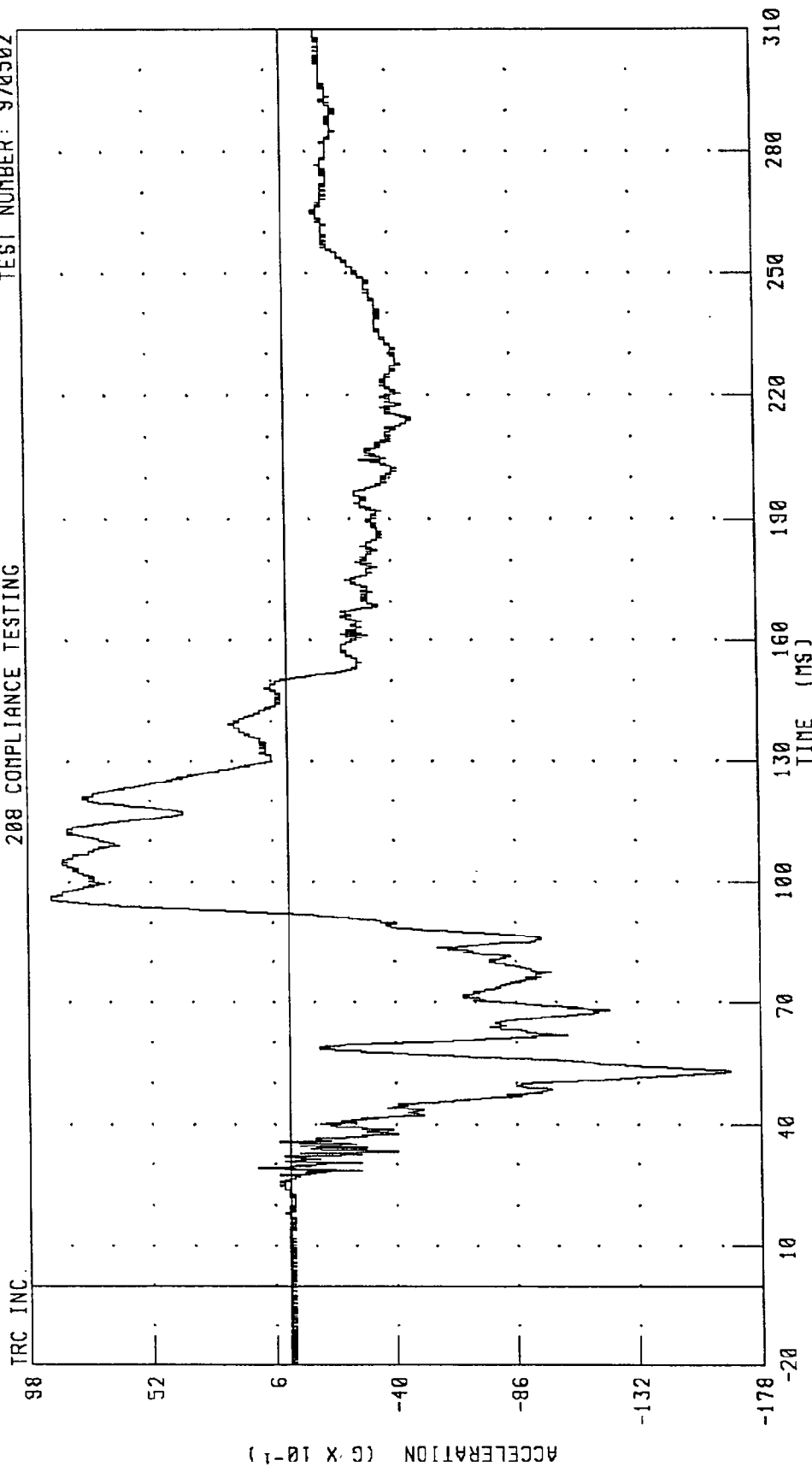
PEAK DATA: 15.85 G @ 83.76 MS; -8.97 G @ 136.32 MS

CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
DRIVER HEAD Z-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING



CHANNEL: HEDZG1 FILTER: CH. CLASS 1000

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.

60

50

40

30

20

10

0

ACCELERATION (G)

TIME (MS)

130

160

190

220

250

280

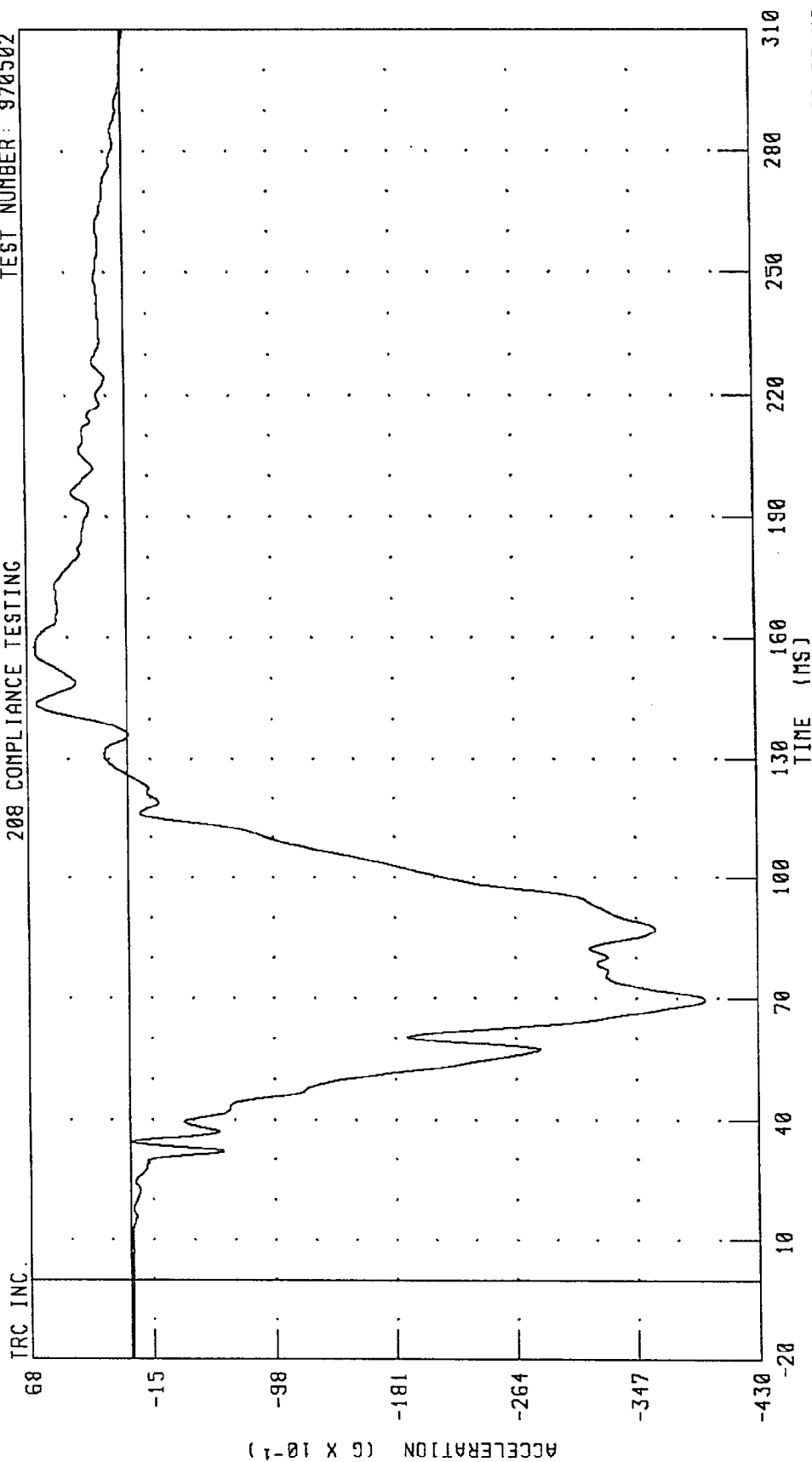
310

PEAK DATA: 59.06 G @ 76.32 MS; 0.07 G @ -20.00 MS

CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
DRIVER CHEST X-AXIS ACCELERATION

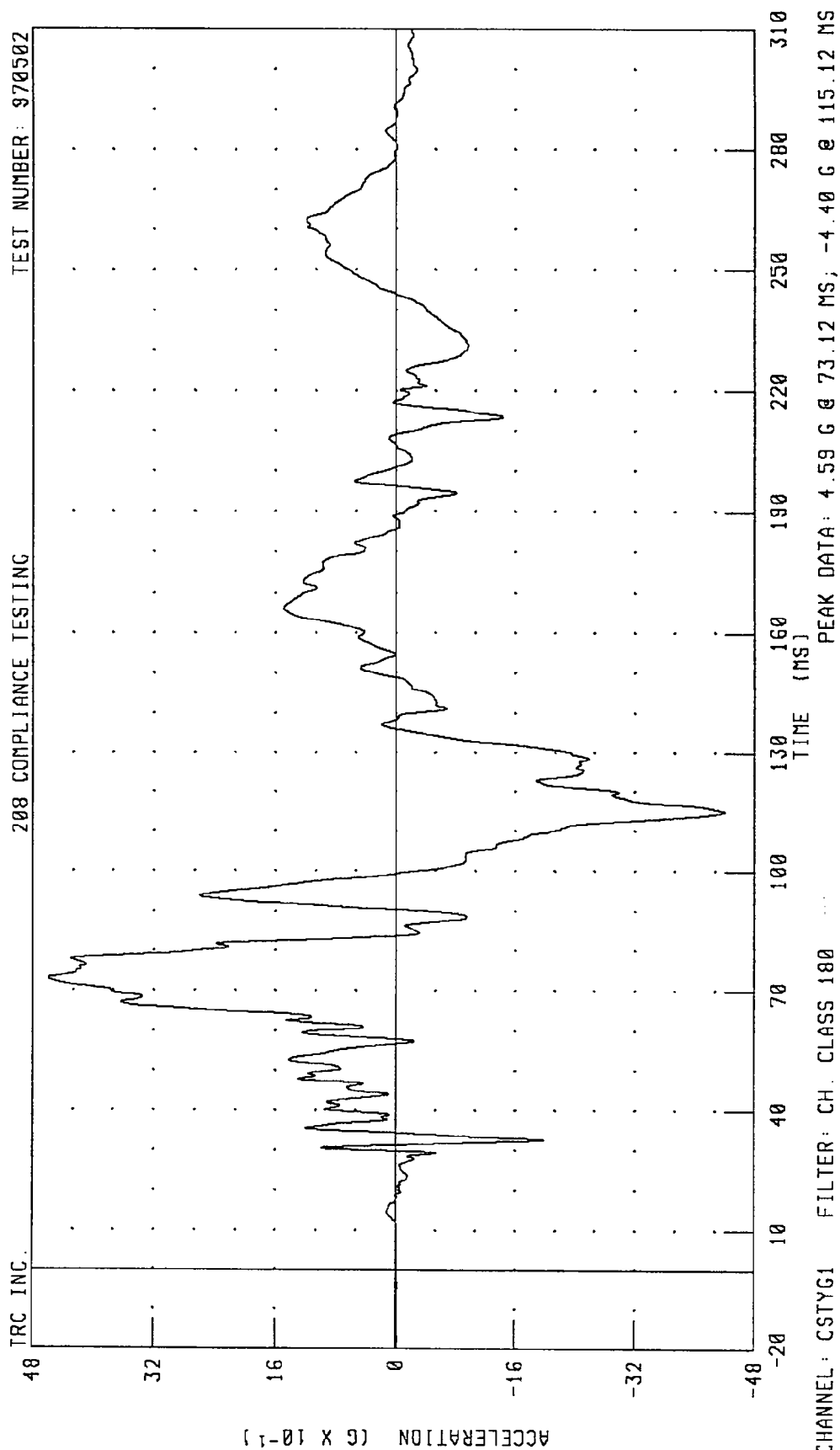
208 COMPLIANCE TESTING TEST NUMBER: 970502



CHANNEL: CSTXG1 FILTER: CH. CLASS 180

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER CHEST Y-AXIS ACCELERATION
 208 COMPLIANCE TESTING

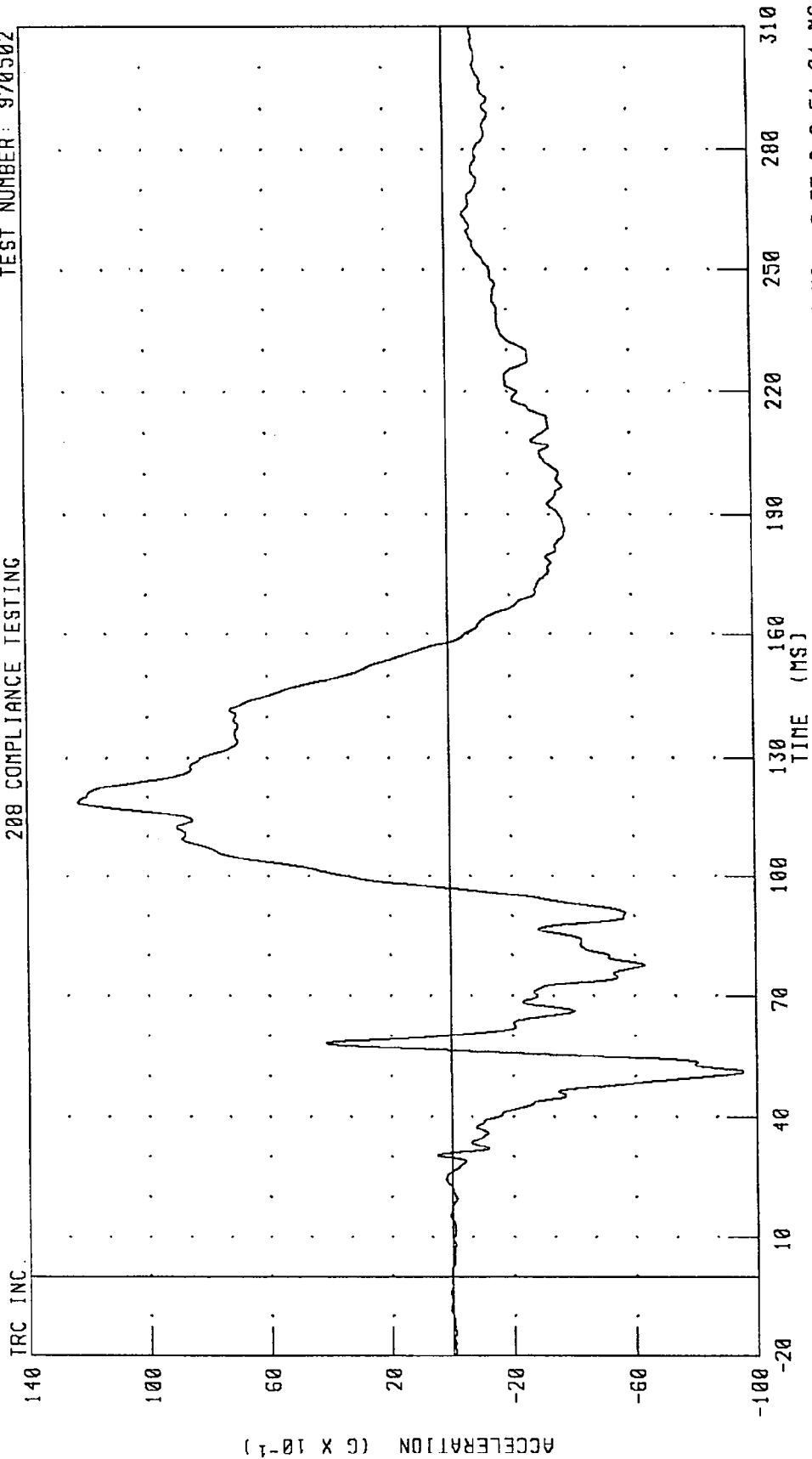
TEST NUMBER: 970502



CHANNEL: CSTYG1 FILTER: CH. CLASS 180

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER CHEST Z-AXIS ACCELERATION
 208 COMPLIANCE TESTING

TEST NUMBER: 970502



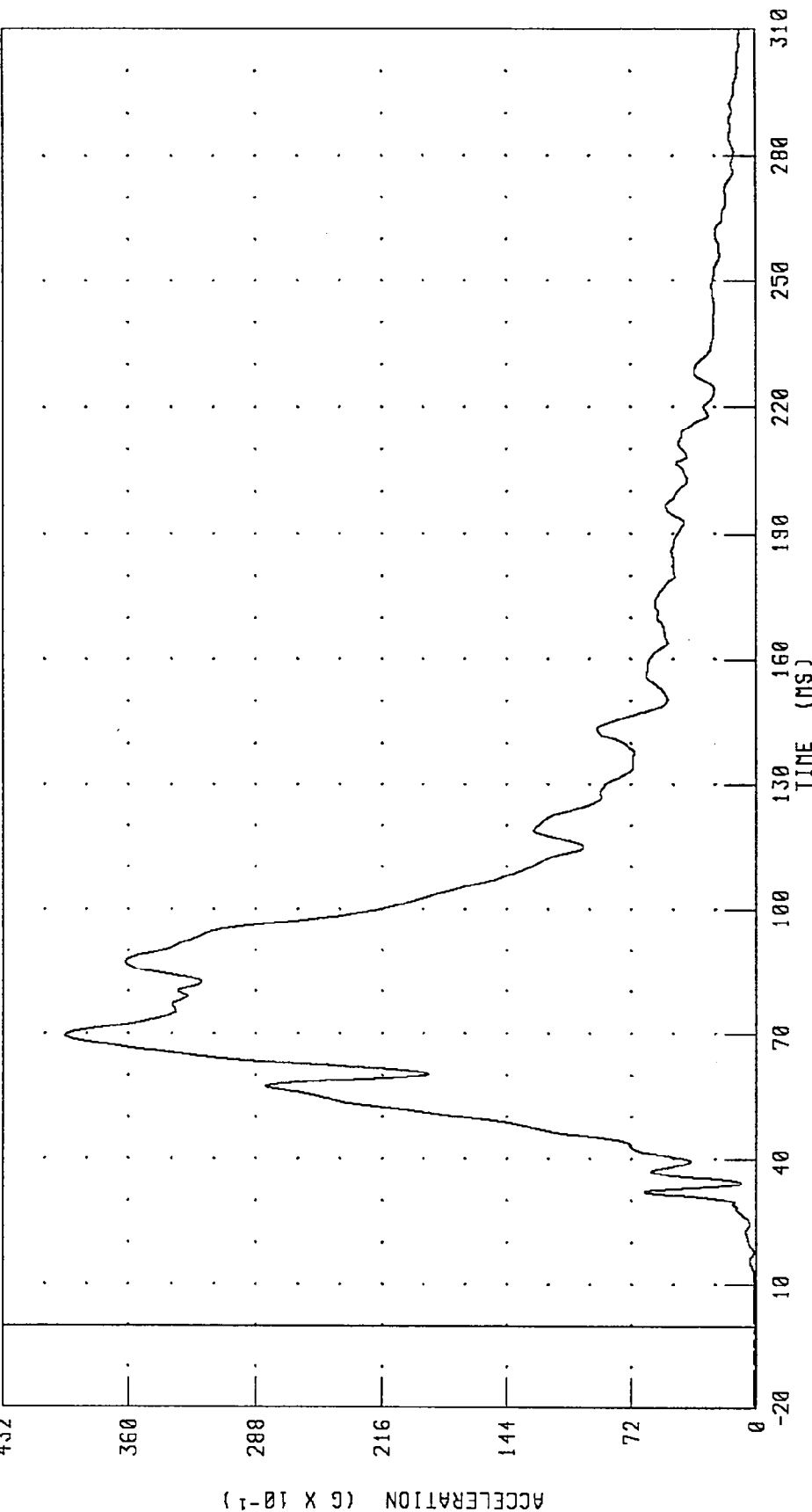
CHANNEL: CSTZG1 FILTER: CH. CLASS 180

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
DRIVER CHEST RESULTANT ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.

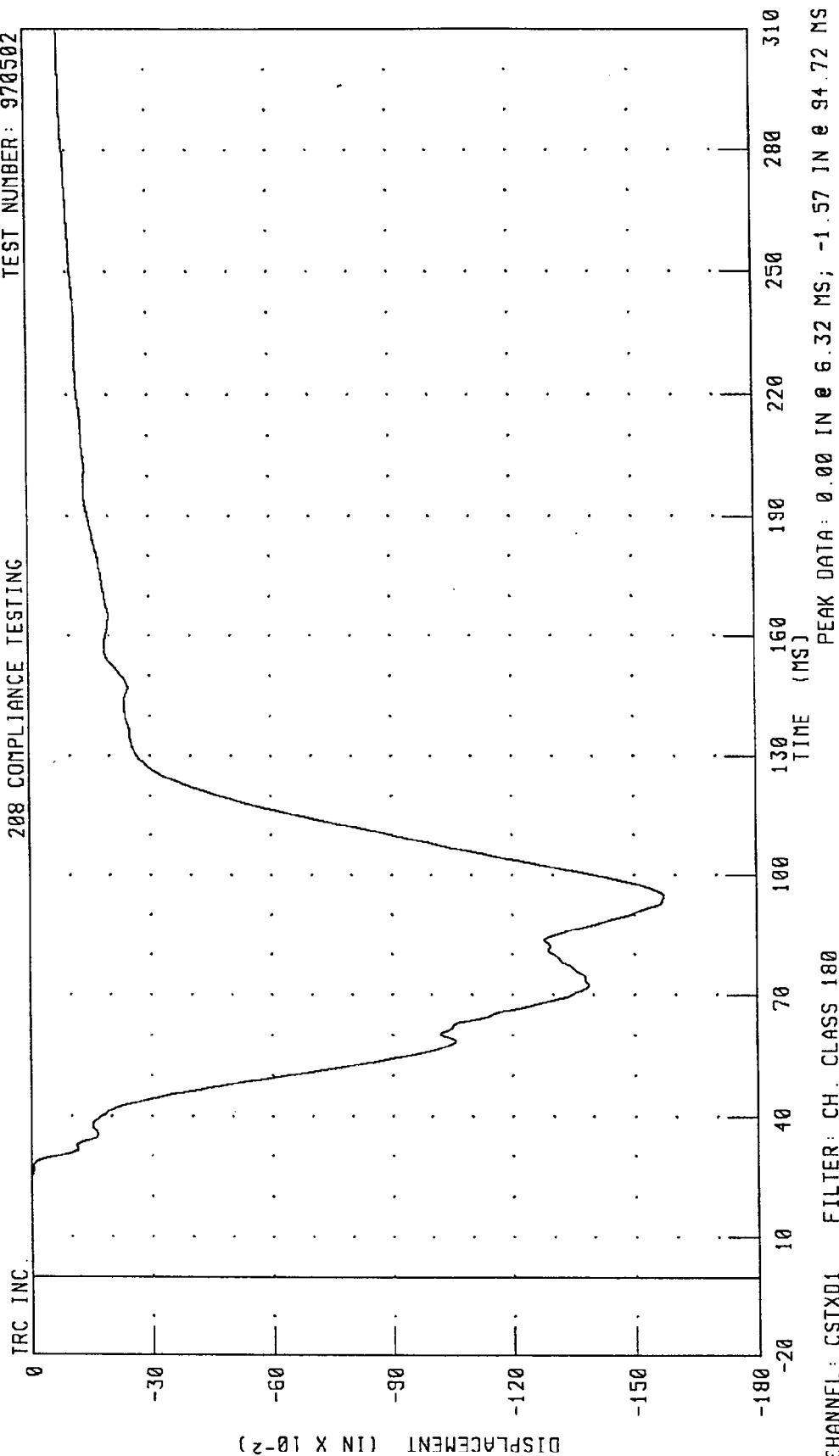


PEAK DATA: 39.62 G @ 69.60 MS; 0.01 G @ -20.00 MS

CHANNEL: CSTRG1 FILTER: CH. CLASS 180

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
DRIVER CHEST DEFLECTION
208 COMPLIANCE TESTING

TEST NUMBER: 970502



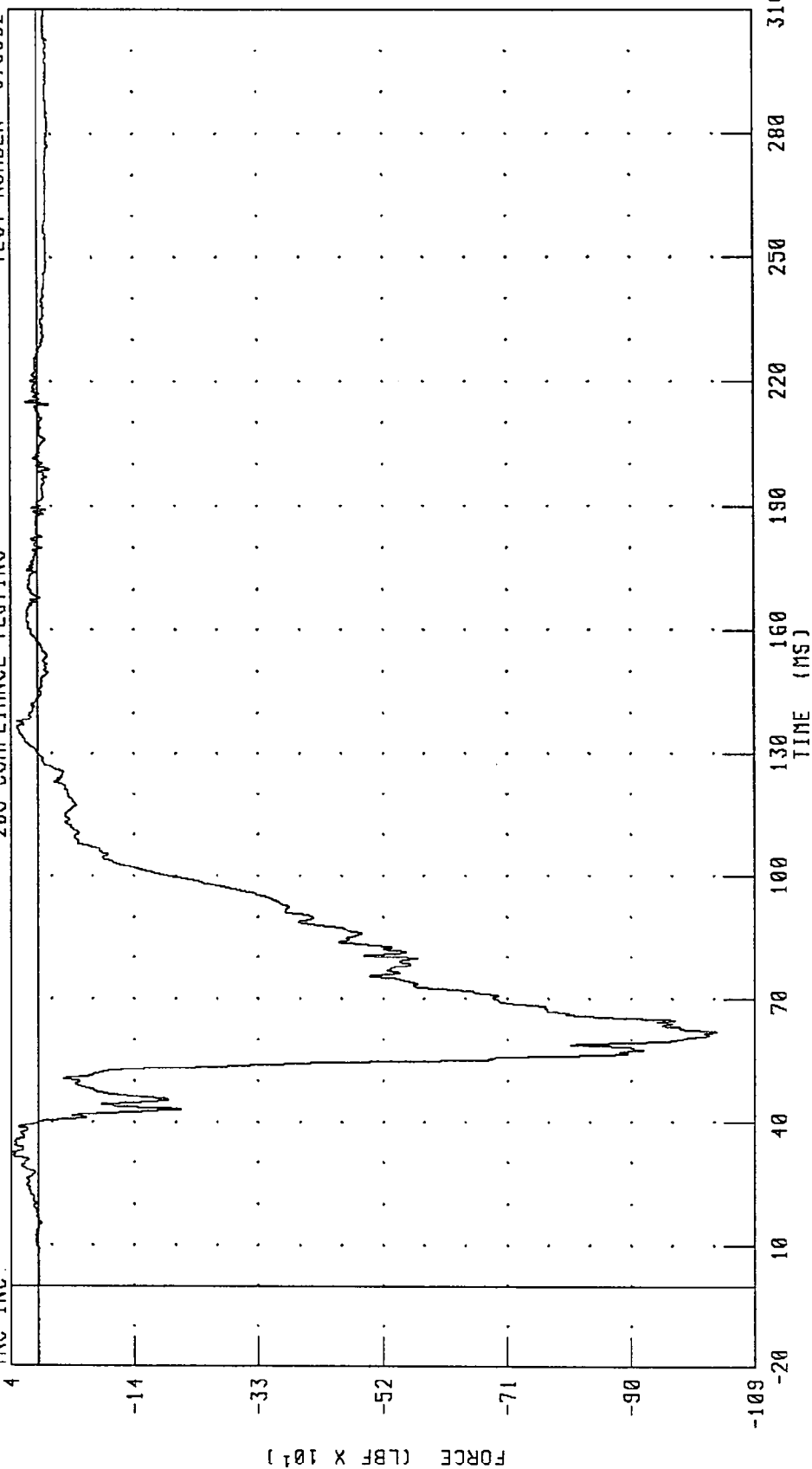
CHANNEL: CSTXD1 FILTER: CH. CLASS 180

PEAK DATA: 0.00 IN @ 6.32 MS; -1.57 IN @ 94.72 MS

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER LEFT FEMUR FORCE
 208 COMPLIANCE TESTING

TEST NUMBER: 970502

TRC INC.



PEAK DATA: 39.26 LBF @ 31.76 MS; -1038.48 LBF @ 62.16 MS

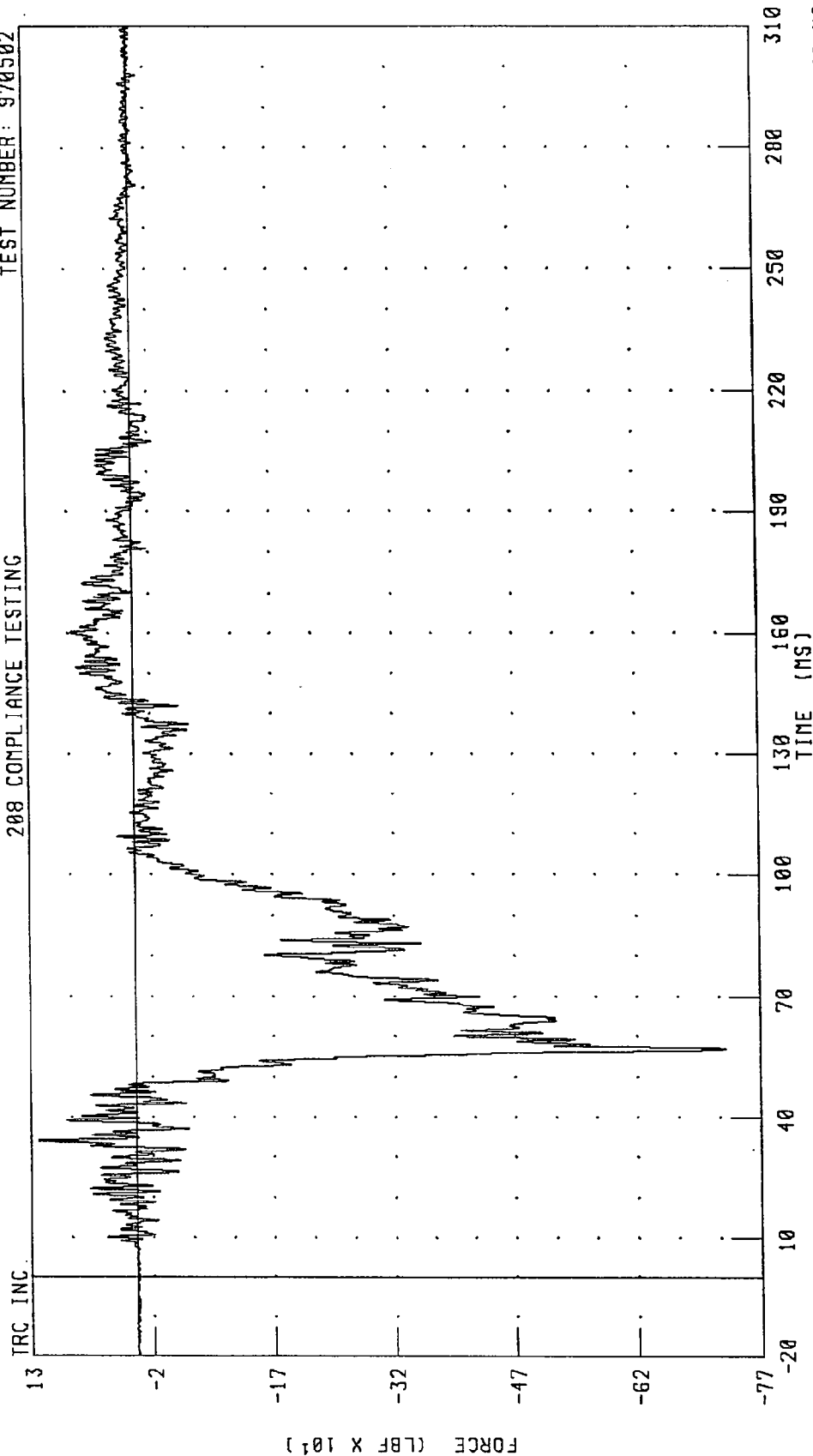
CHANNEL: LFMF1 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER

DRIVER RIGHT FEMUR FORCE

208 COMPLIANCE TESTING

TEST NUMBER: 970502



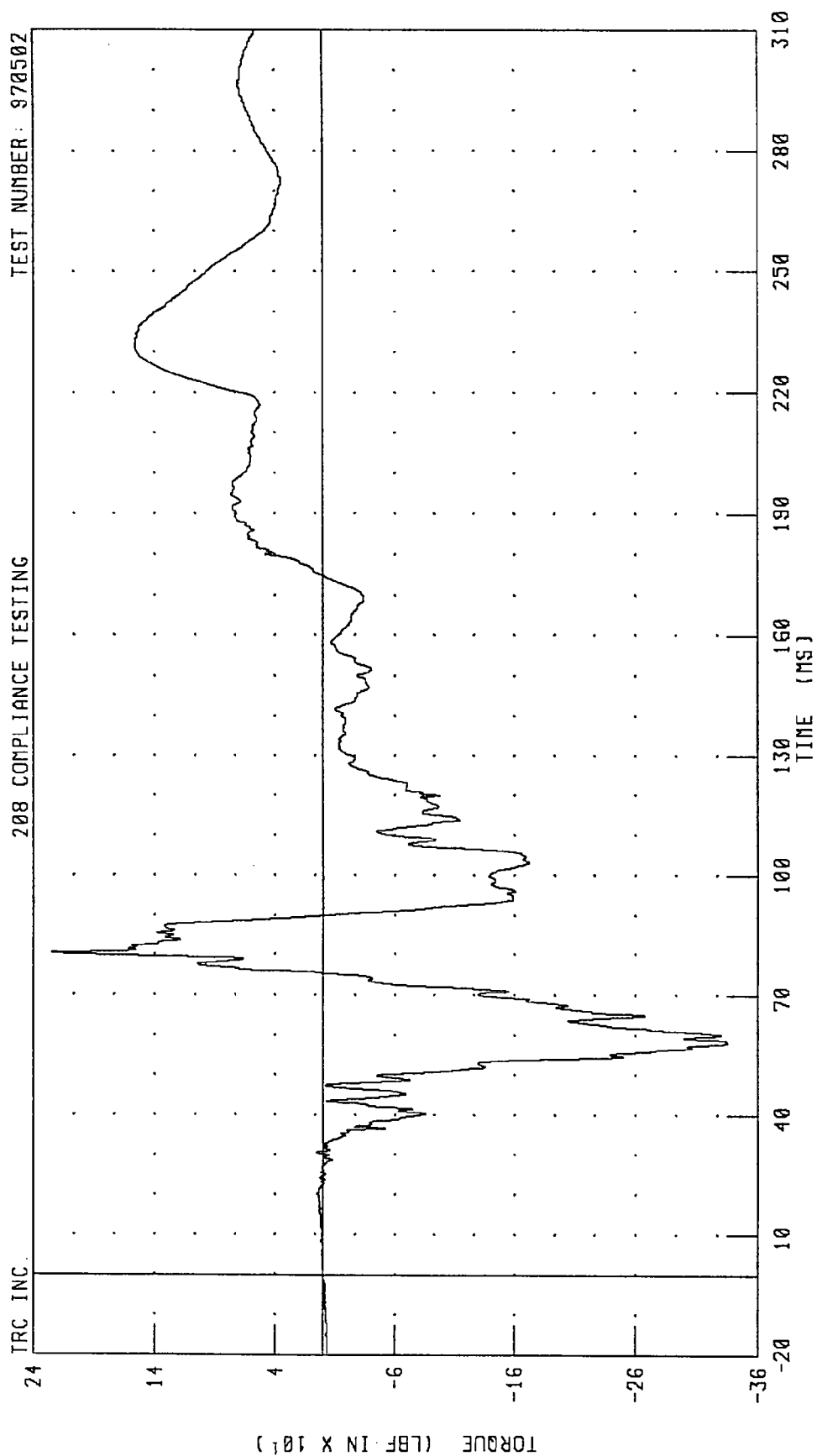
PEAK DATA: 120.59 LBF @ 34.00 MS; -727.52 LBF @ 56.96 MS

CHANNEL: RFMFI FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
DRIVER LEFT UPPER TIBIA MOMENT ABOUT X-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING



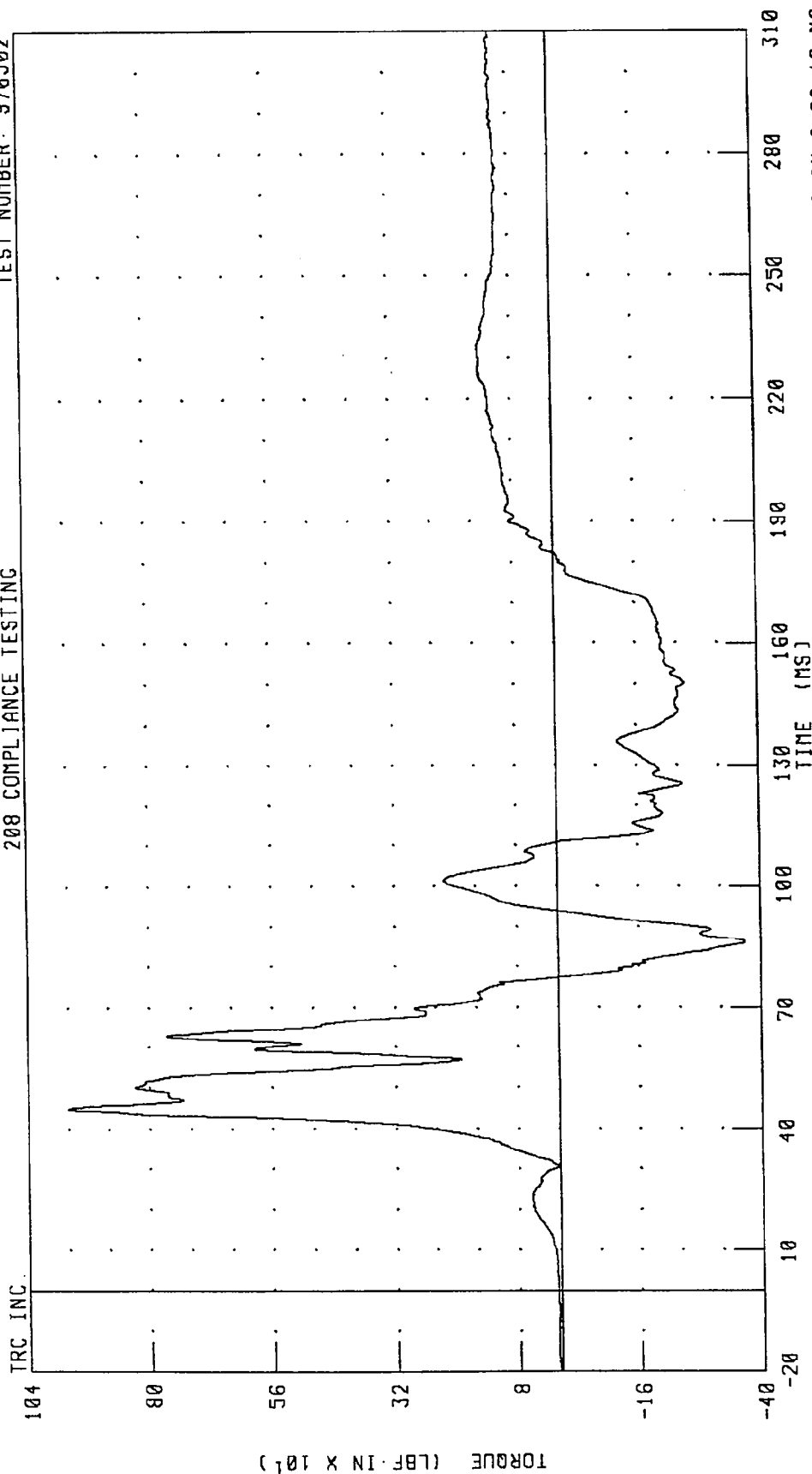
PEAK DATA: 224.18 LBF-IN @ 80.48 MS; -335.08 LBF-IN @ 58.16 MS

CHANNEL: TBLXM1 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER LEFT UPPER TIBIA MOMENT ABOUT Y-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING



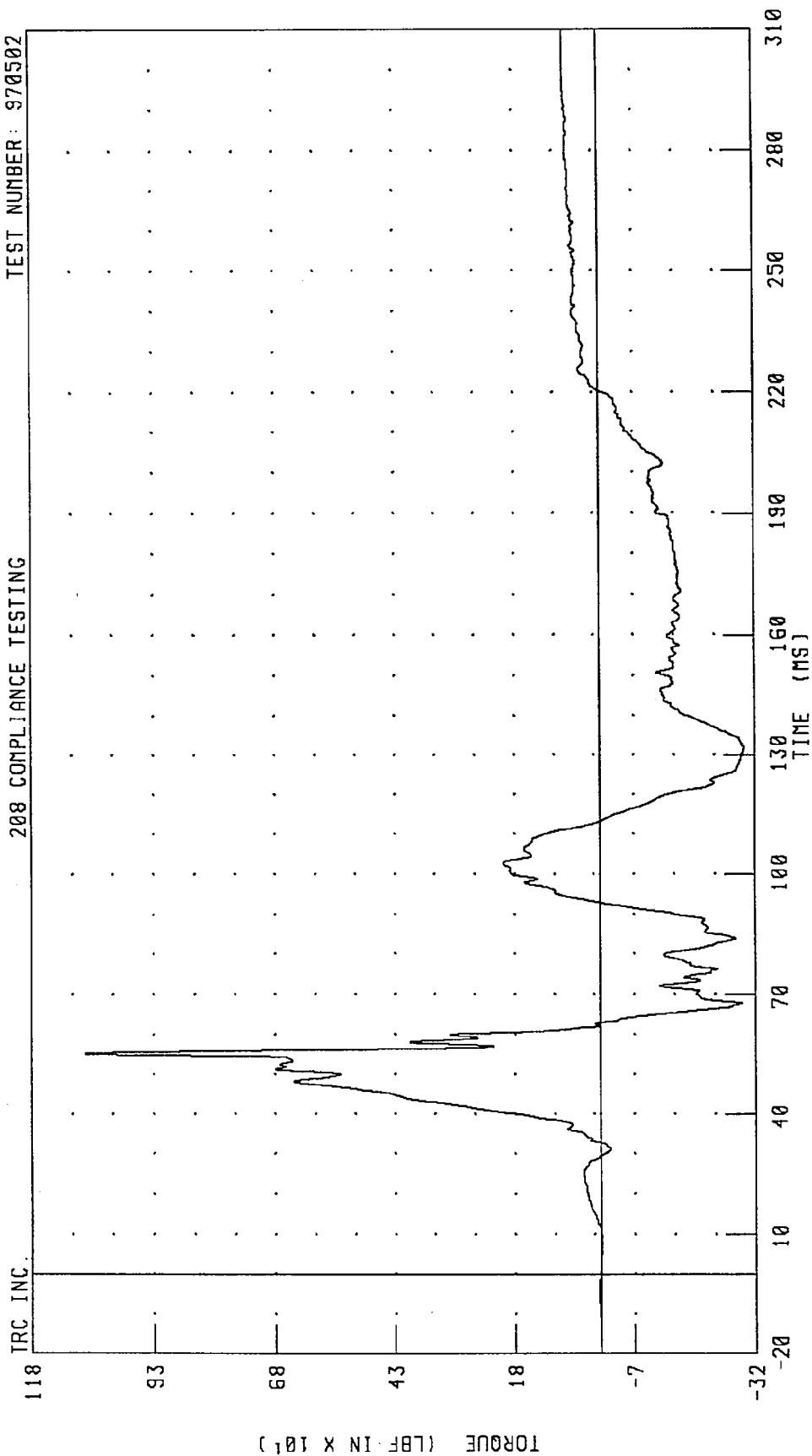
PEAK DATA: 960.35 LBF·IN @ 44.96 MS; -368.30 LBF·IN @ 86.16 MS

CHANNEL: TBLYM1 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
DRIVER RIGHT UPPER TIBIA MOMENT ABOUT X-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING

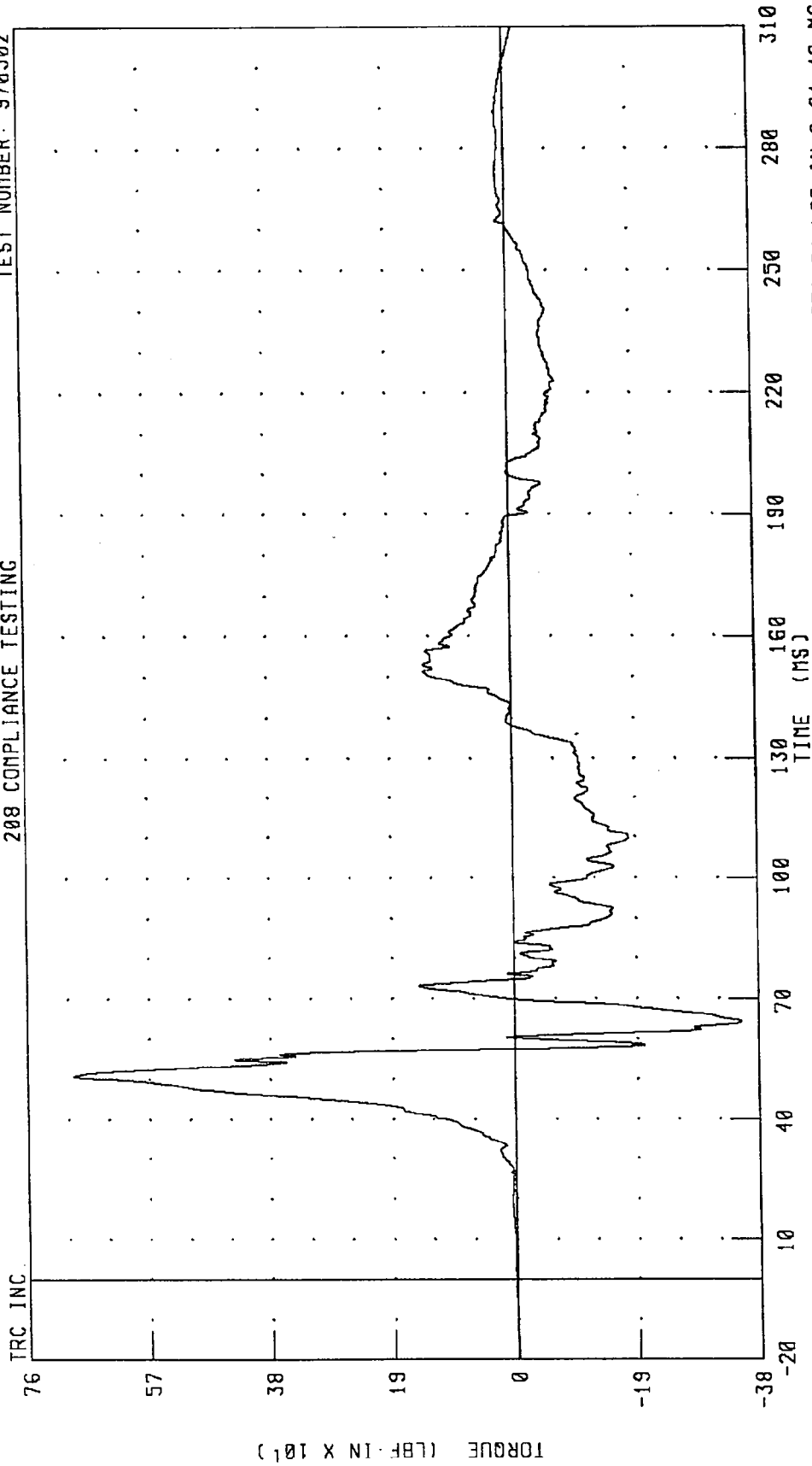


PEAK DATA: 1070.07 LBF-IN @ 55.12 MS; -297.82 LBF-IN @ 131.68 MS

CHANNEL: TBRXM1 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER RIGHT UPPER TIBIA MOMENT ABOUT Y-AXIS

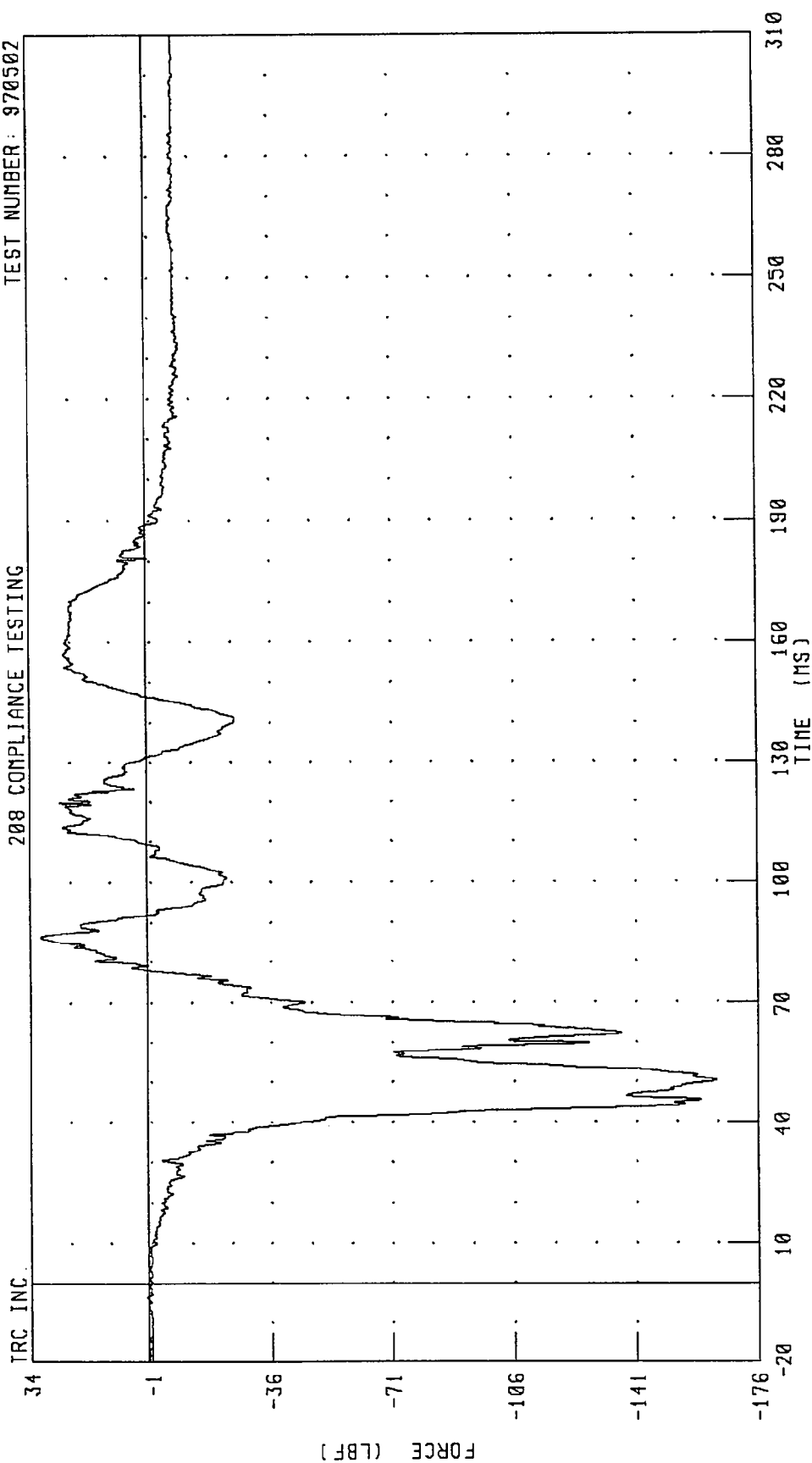
208 COMPLIANCE TESTING TEST NUMBER: 970502



CHANNEL: TBRYM1 FILTER: CH CLASS 600 PEAK DATA: 688.32 LBF-IN @ 50.88 MS; -351.84 LBF-IN @ 64.48 MS

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER LEFT LOWER TIBIA X-AXIS FORCE
 208 COMPLIANCE TESTING

TEST NUMBER: 970502



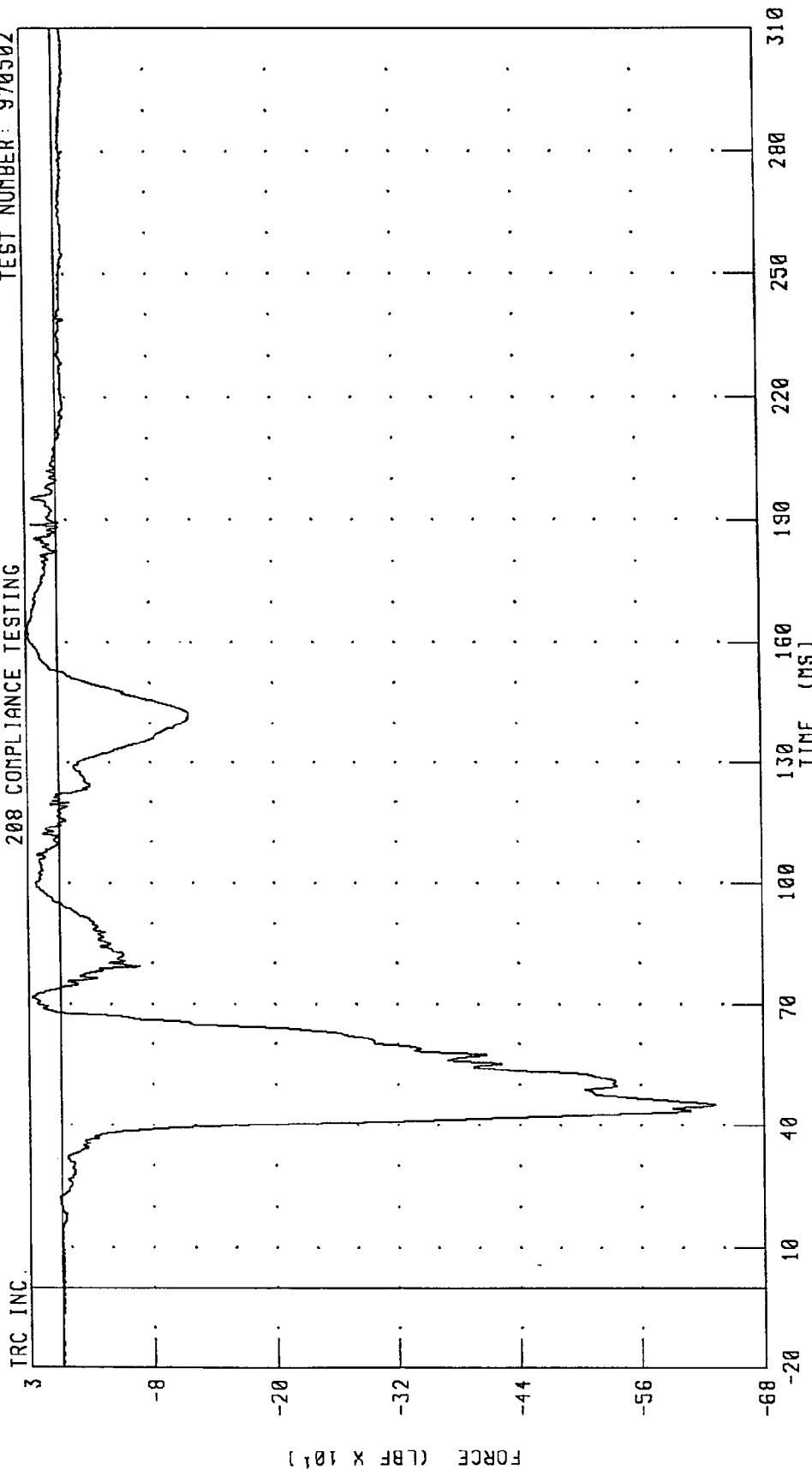
CHANNEL: ANLXF1 FILTER: CH. CLASS 600

PEAK DATA: 30.93 LBF @ 86.40 MS; -164.08 LBF @ 50.24 MS

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER LEFT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 970502

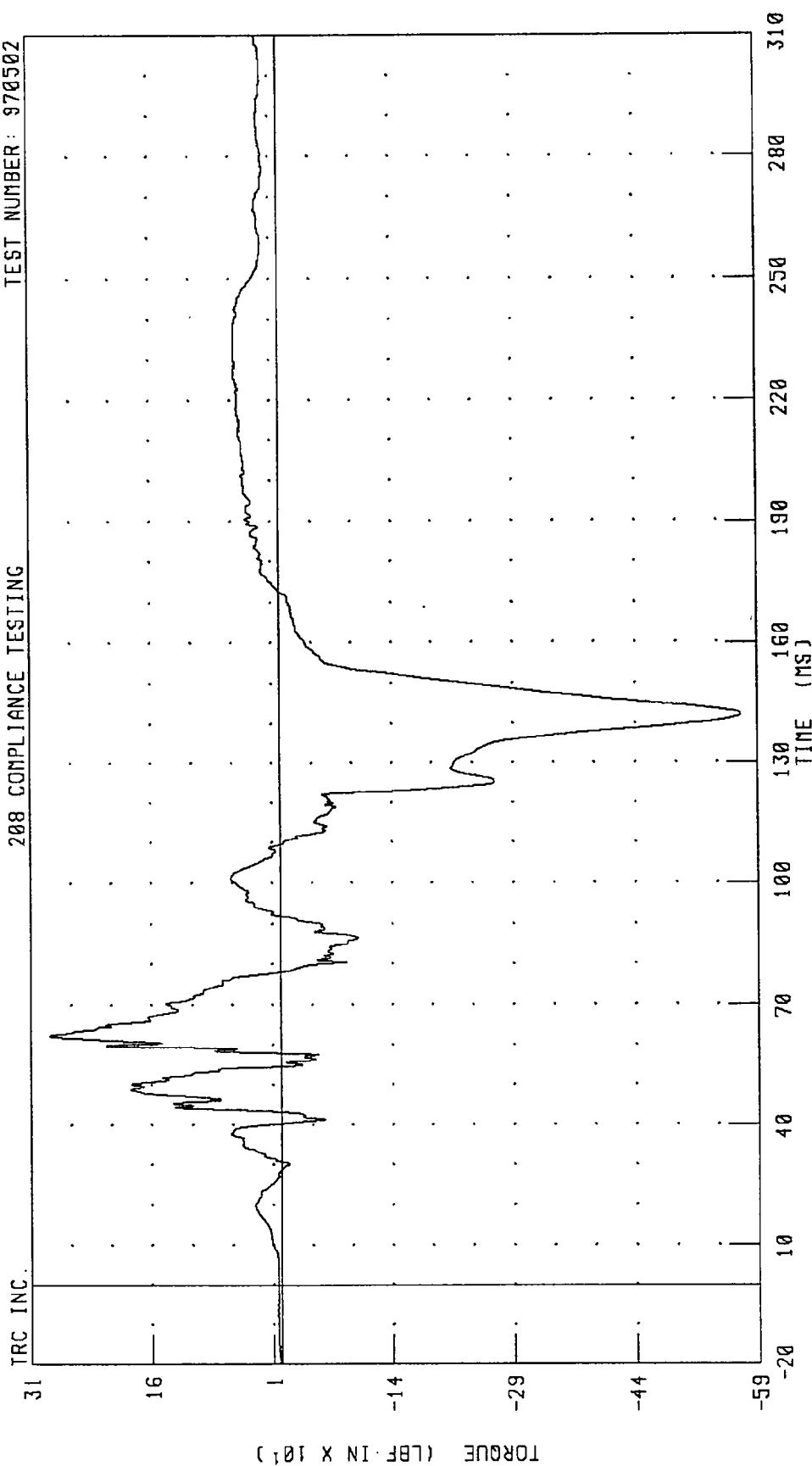
200 COMPLIANCE TESTING



1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER LEFT LOWER TIBIA MOMENT ABOUT Y-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING

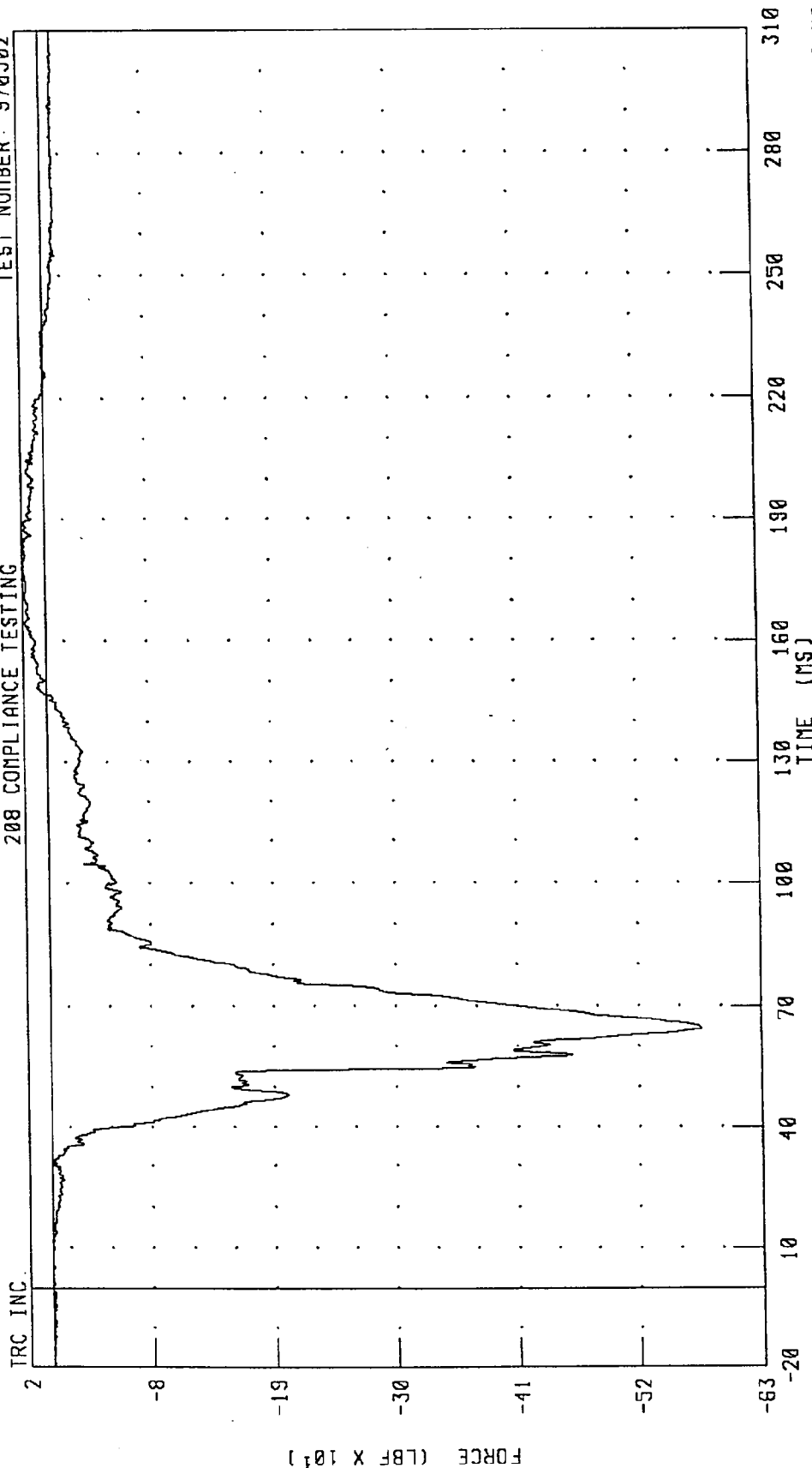


PEAK DATA: 286.72 LBF-IN @ 62.40 MS; -569.62 LBF-IN @ 142.24 MS

CHANNEL: ANLYM1 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER RIGHT LOWER TIBIA X-AXIS FORCE
 208 COMPLIANCE TESTING

TEST NUMBER: 970502

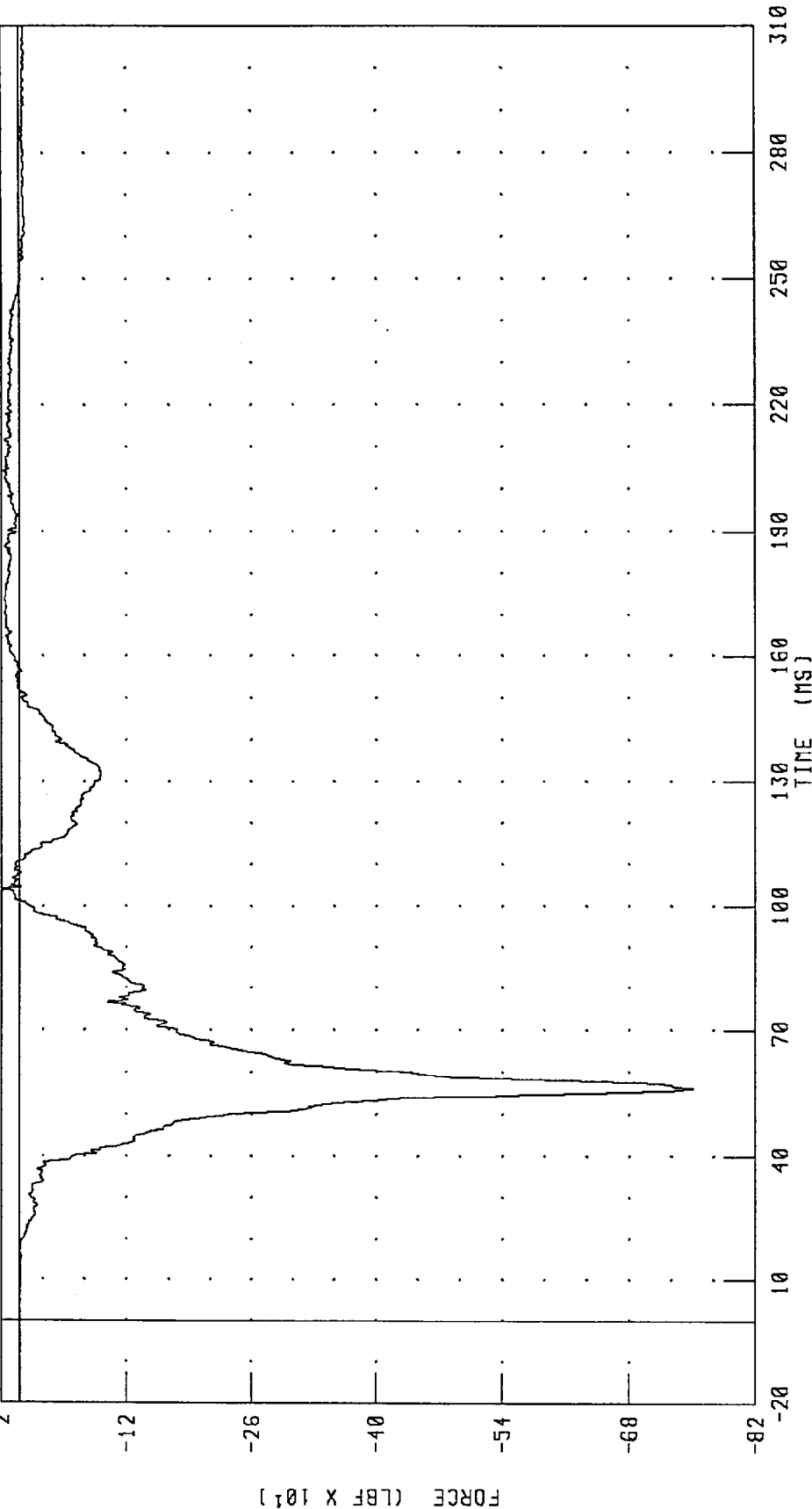


1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
DRIVER RIGHT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.

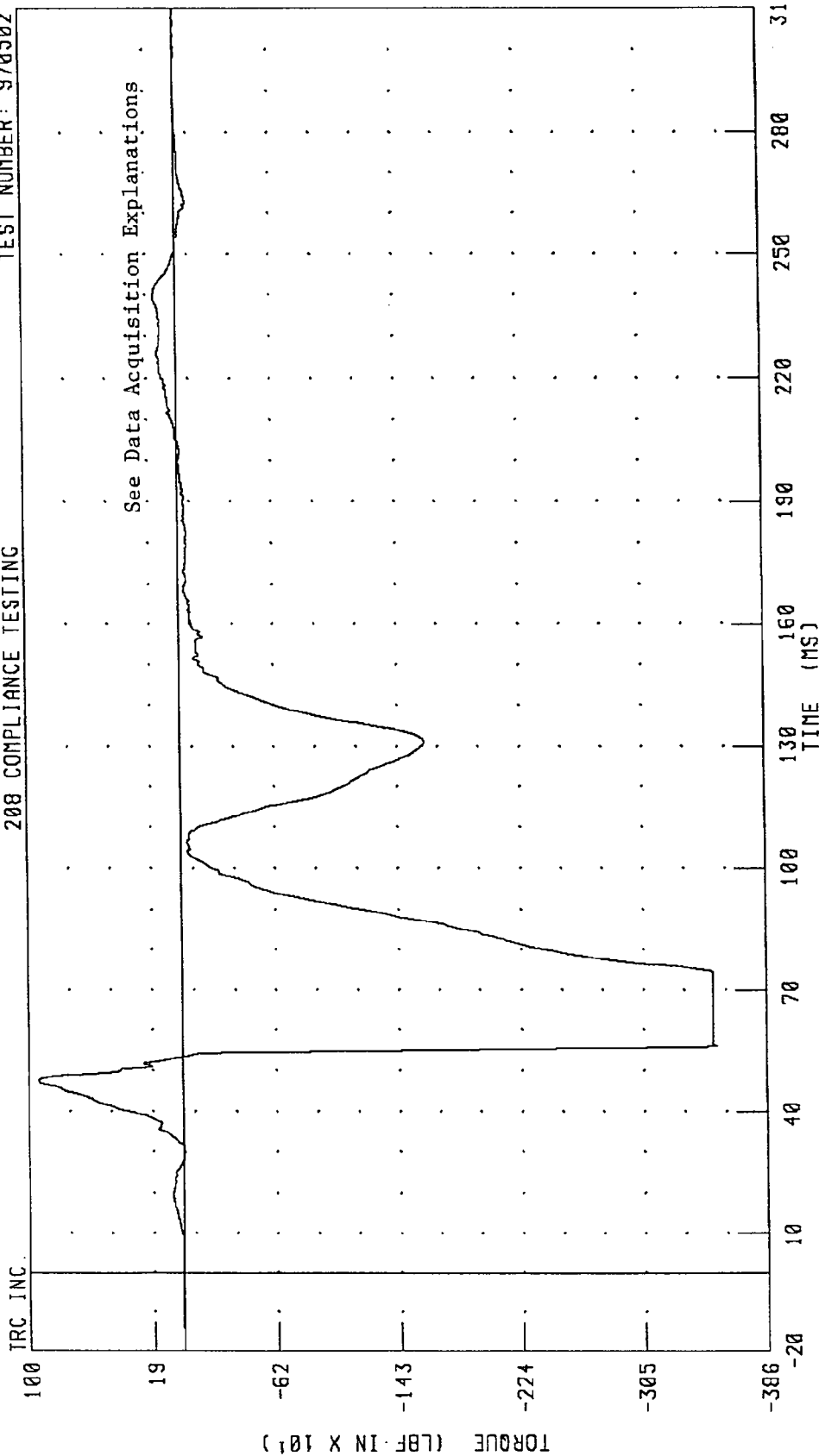


CHANNEL: ANRZF1 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 DRIVER RIGHT LOWER TIBIA MOMENT ABOUT Y-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING



CHANNEL: ANRYM1 FILTER: CH. CLASS 600

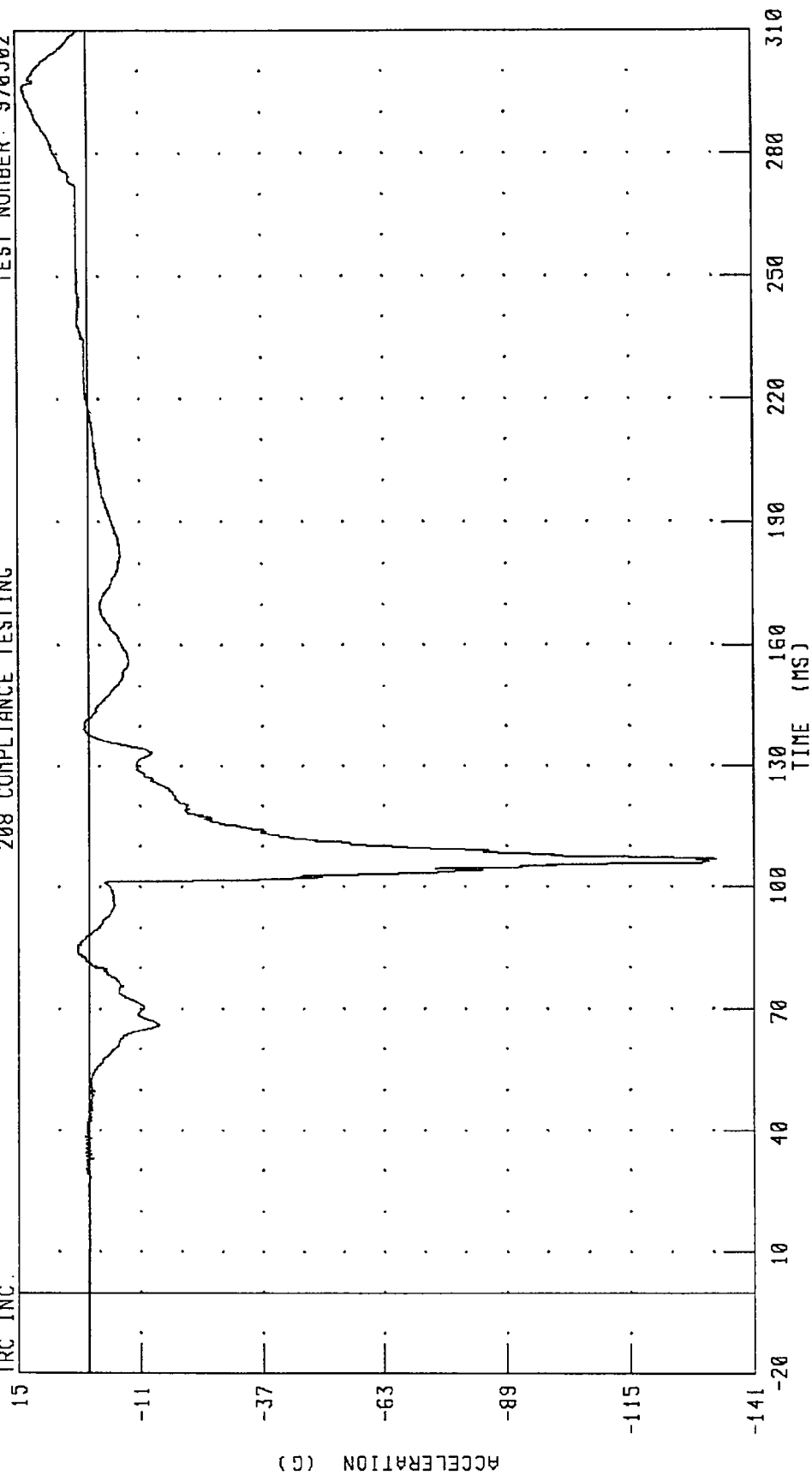
PEAK DATA: 933.94 LBF-IN @ 47.44 MS; -3532.57 LBF-IN @ 56.00 MS

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.



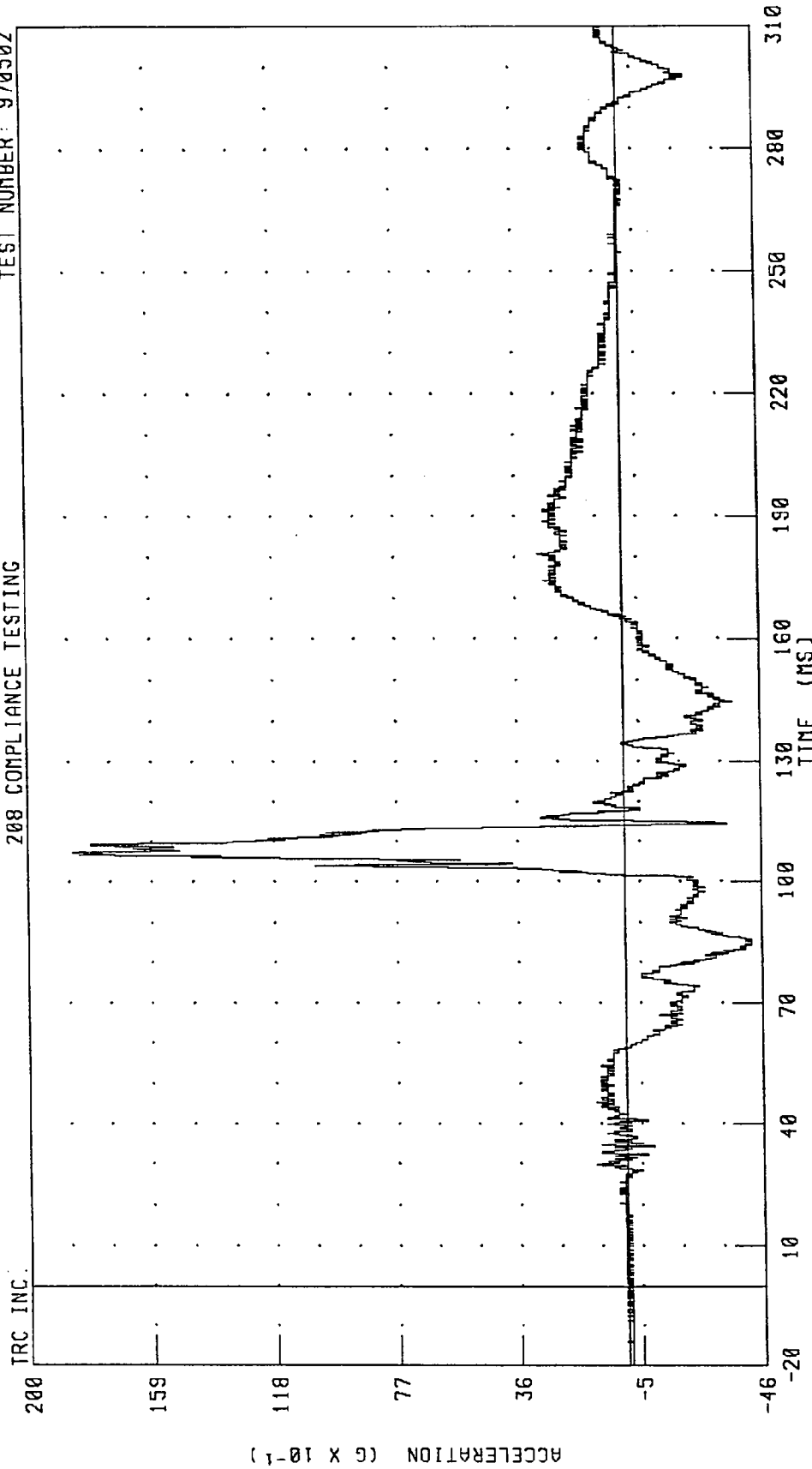
CHANNEL: HEDXG2 FILTER: CH. CLASS 1000

PEAK DATA: 13.67 G @ 295.68 MS; -132.95 G @ 106.88 MS

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING



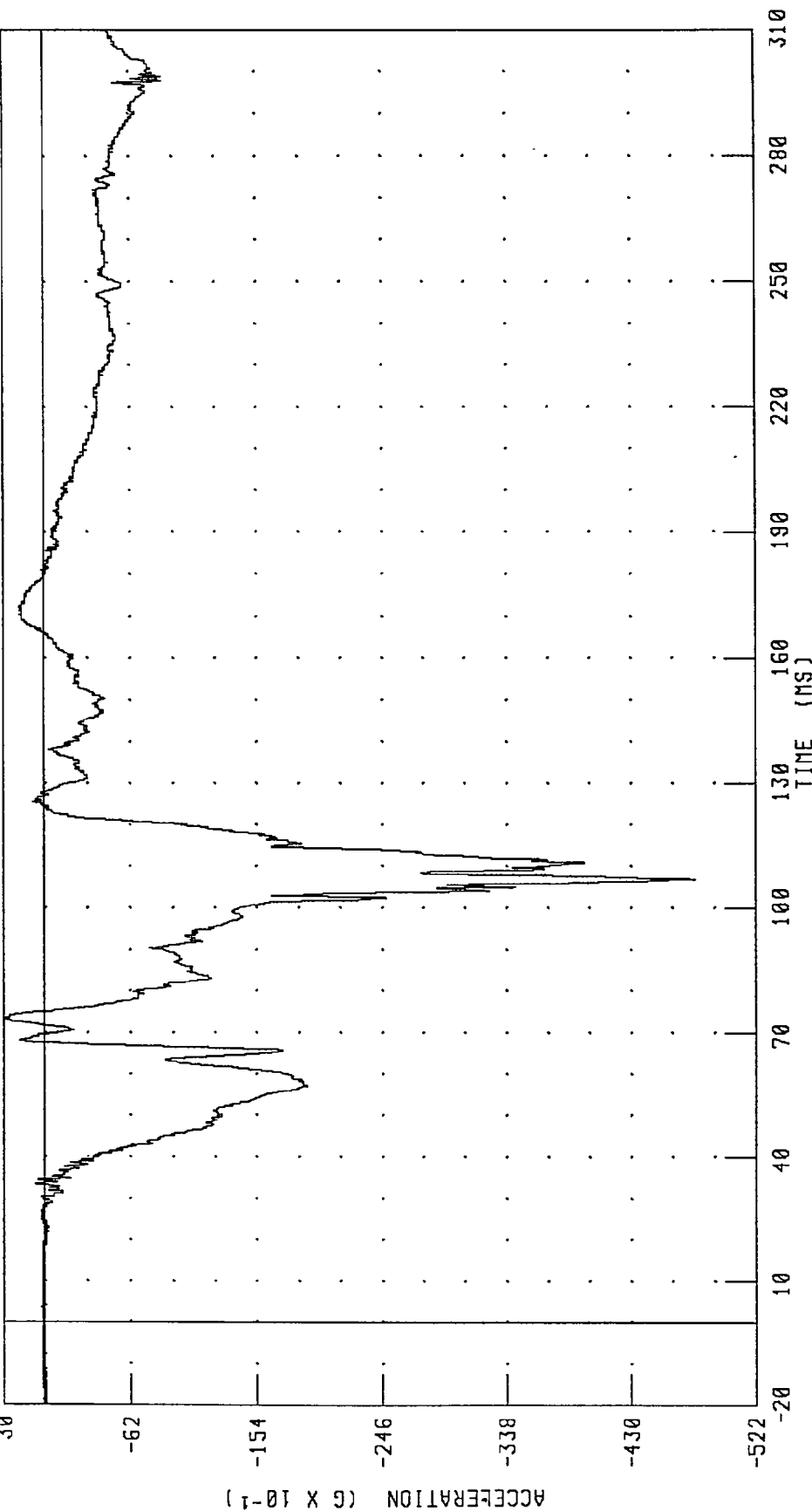
CHANNEL: HEDYG2 FILTER: CH. CLASS 1000

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.



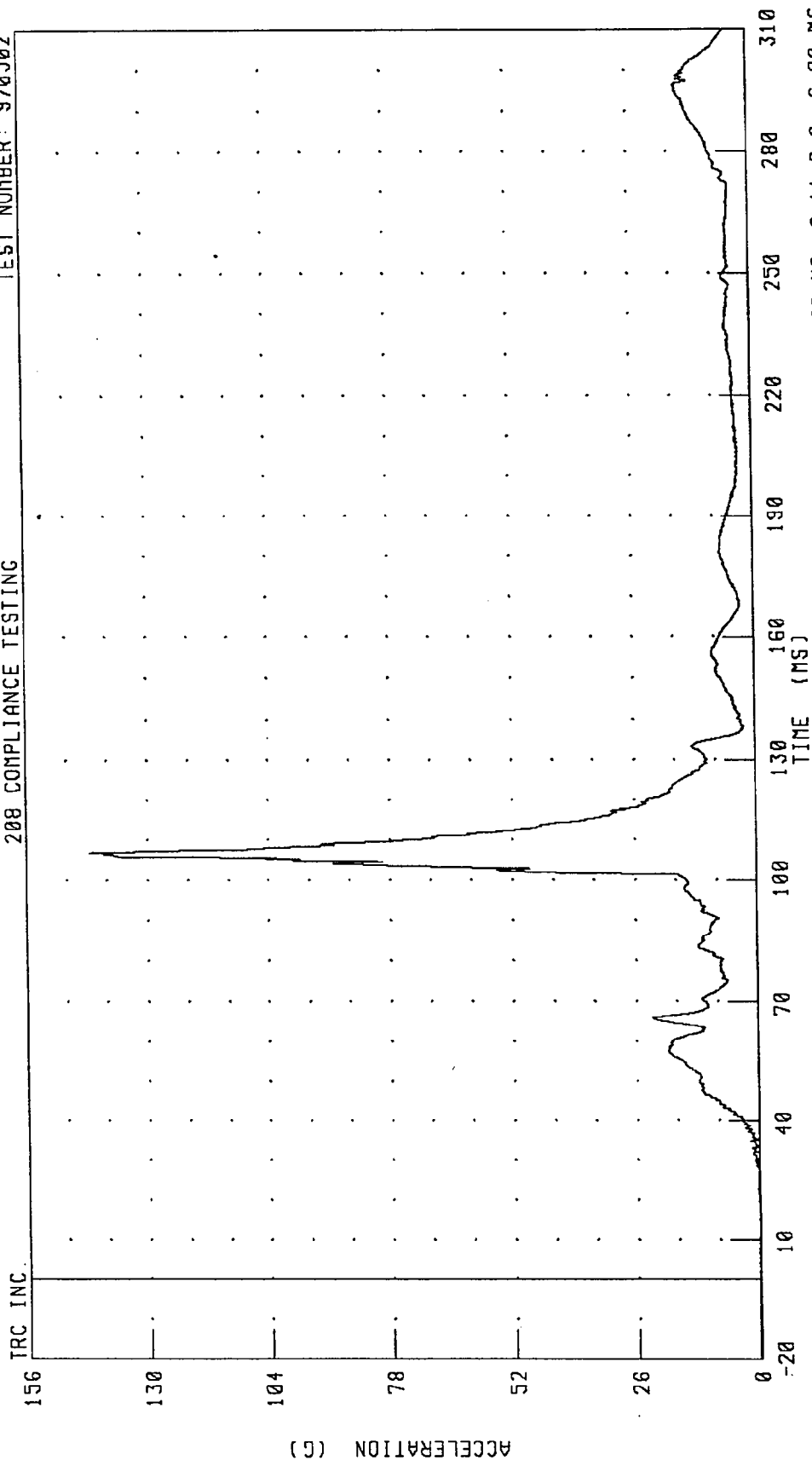
PEAK DATA: 2.80 G @ 73.20 MS, -47.75 G @ 106.88 MS

CHANNEL: HEDZG2 FILTER: CH. CLASS 1000

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

TEST NUMBER: 970502

200 COMPLIANCE TESTING



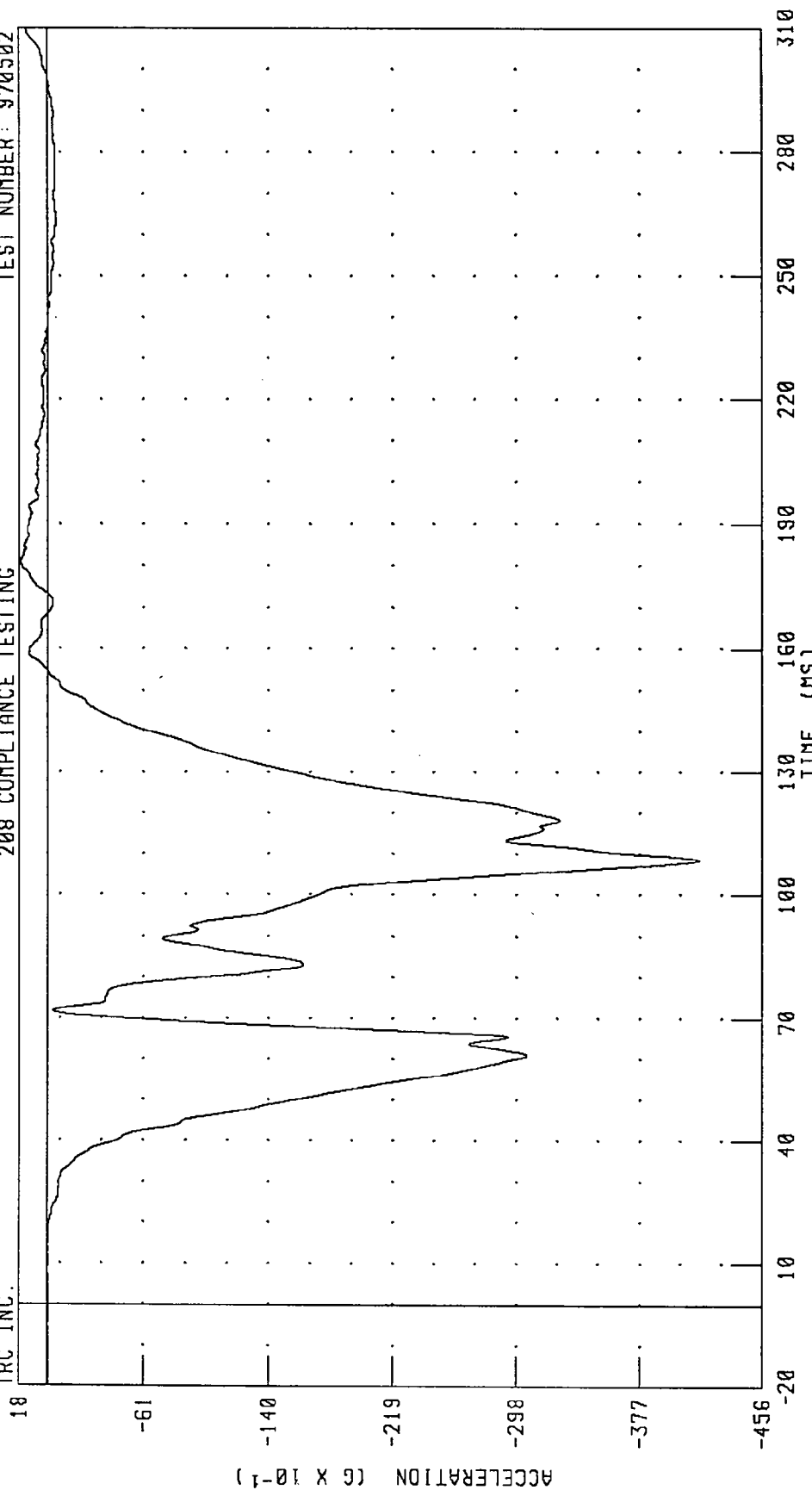
CHANNEL: HEDRG2 FILTER: CH. CLASS 1000

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.



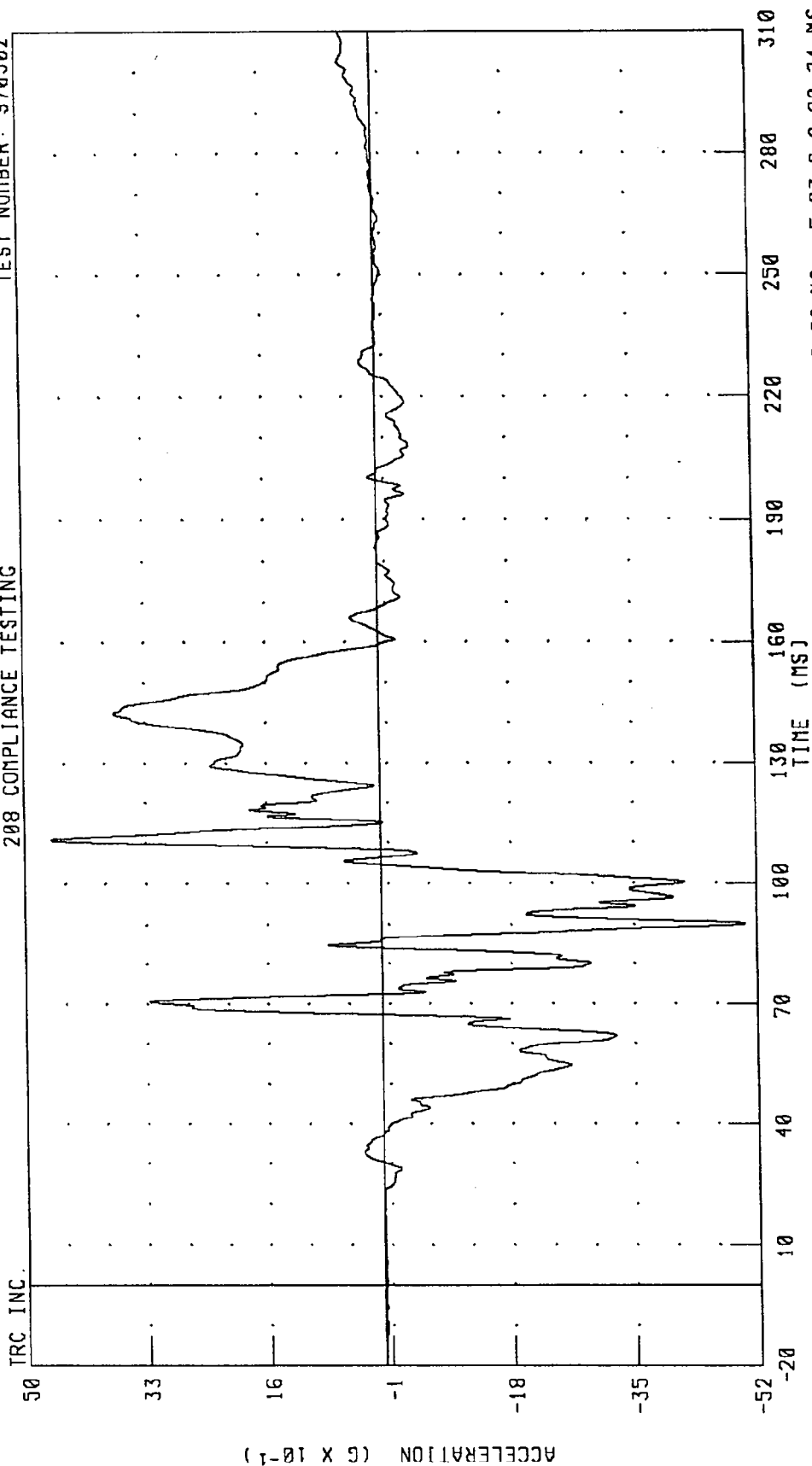
PEAK DATA: 1.71-G @ 180.96 MS; -41.54 G @ 108.48 MS

CHANNEL: CSTXG2 FILTER: CH. CLASS 180

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

TEST NUMBER: 970502

200 COMPLIANCE TESTING



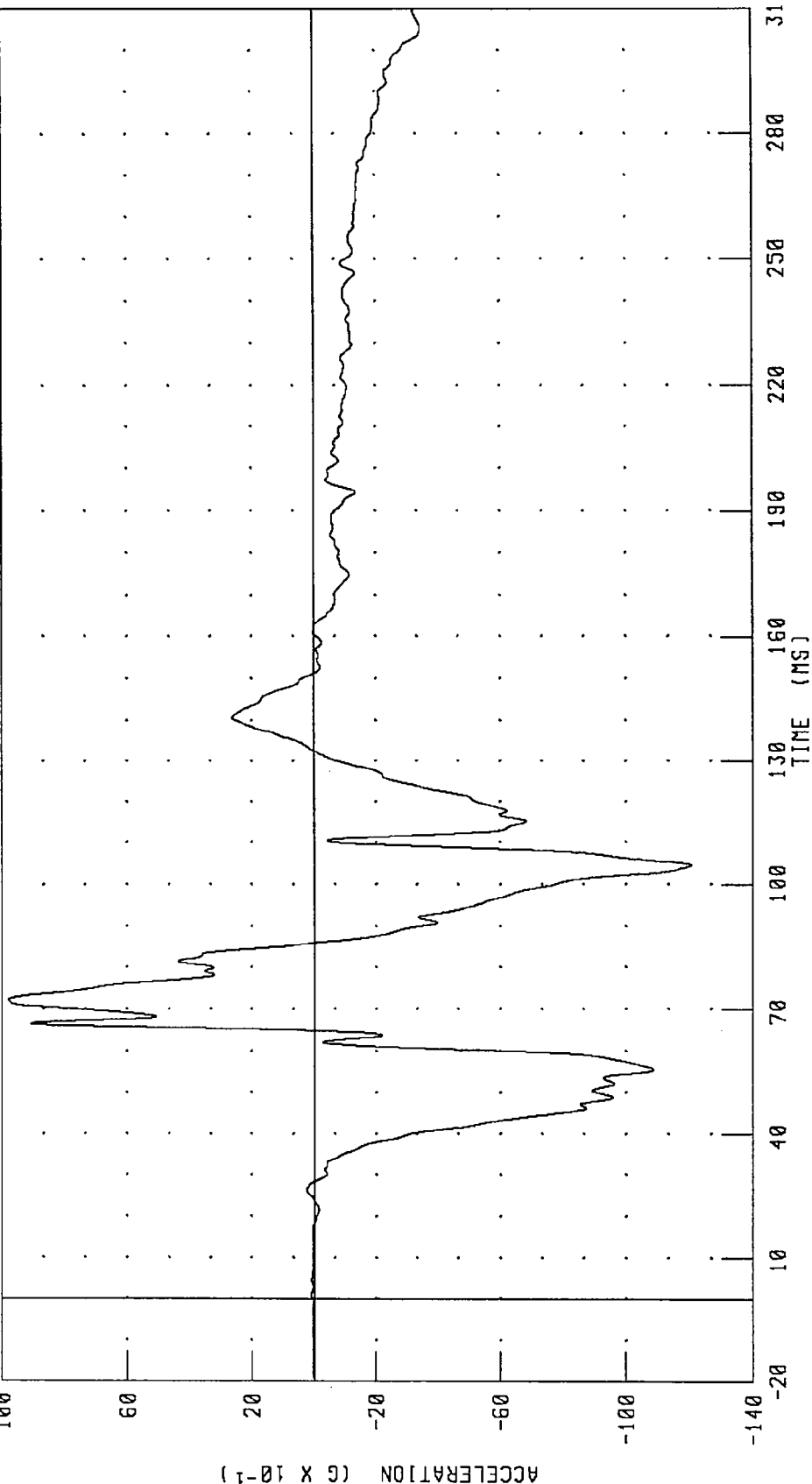
CHANNEL: CSTYG2 FILTER: CH. CLASS 180

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.

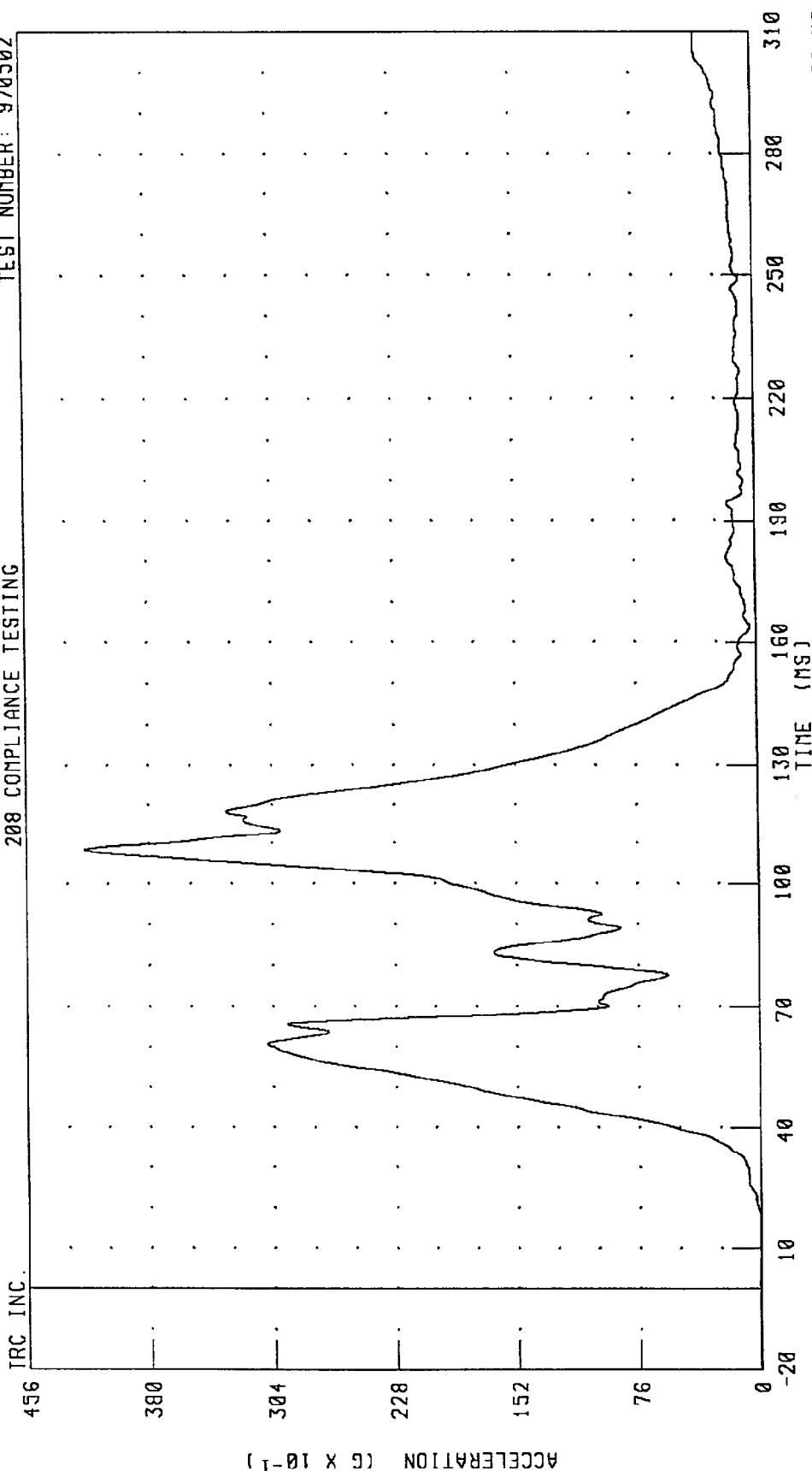


CHANNEL: CSTZG2 FILTER: CH. CLASS 180

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING



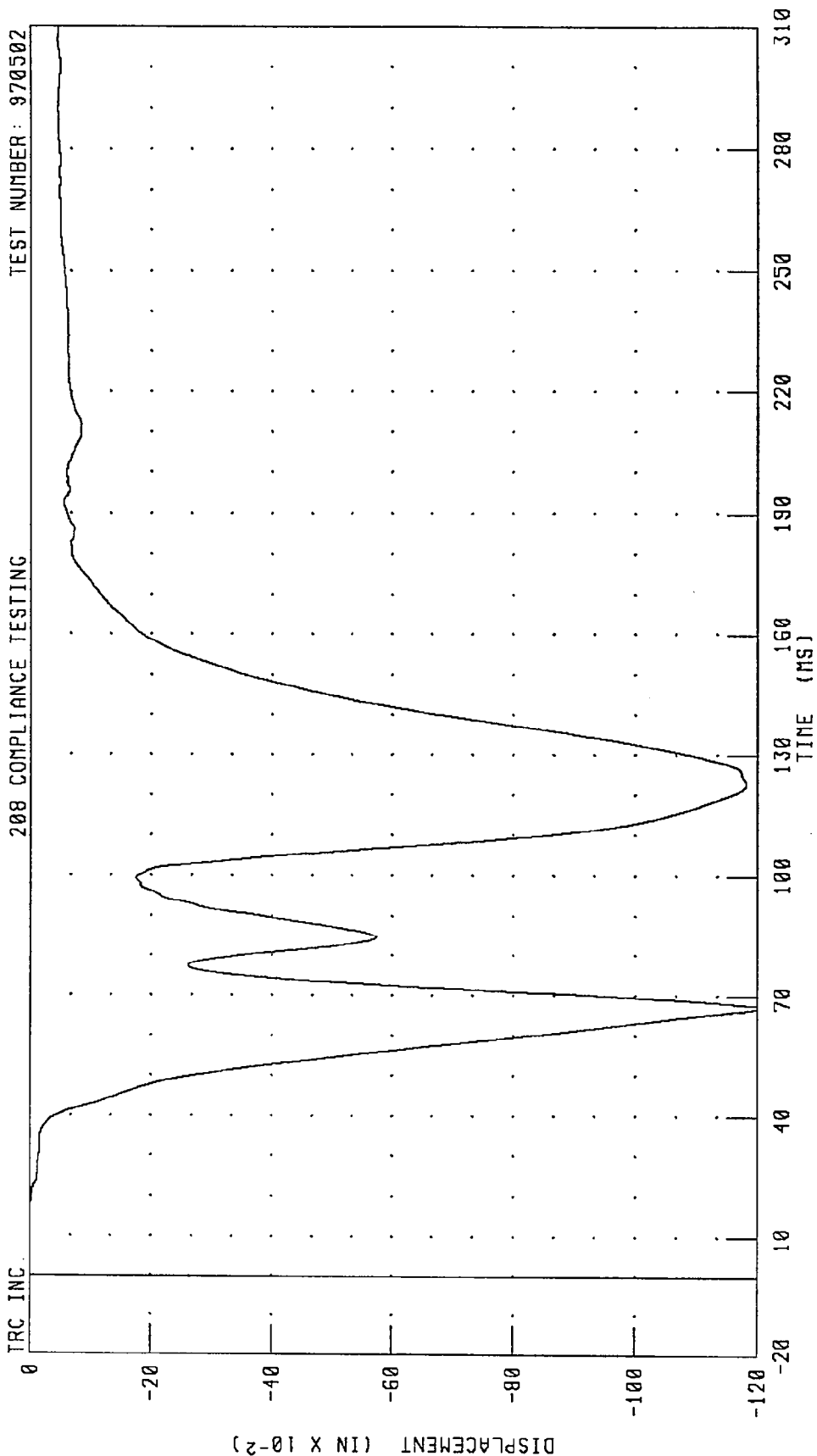
PEAK DATA: 41.98 G @ 108.40 MS; 0.01 G @ -20.00 MS

CHANNEL: CSTRG2 FILTER: CH. CLASS 180

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST DEFLECTION

208 COMPLIANCE TESTING

TEST NUMBER: 970502

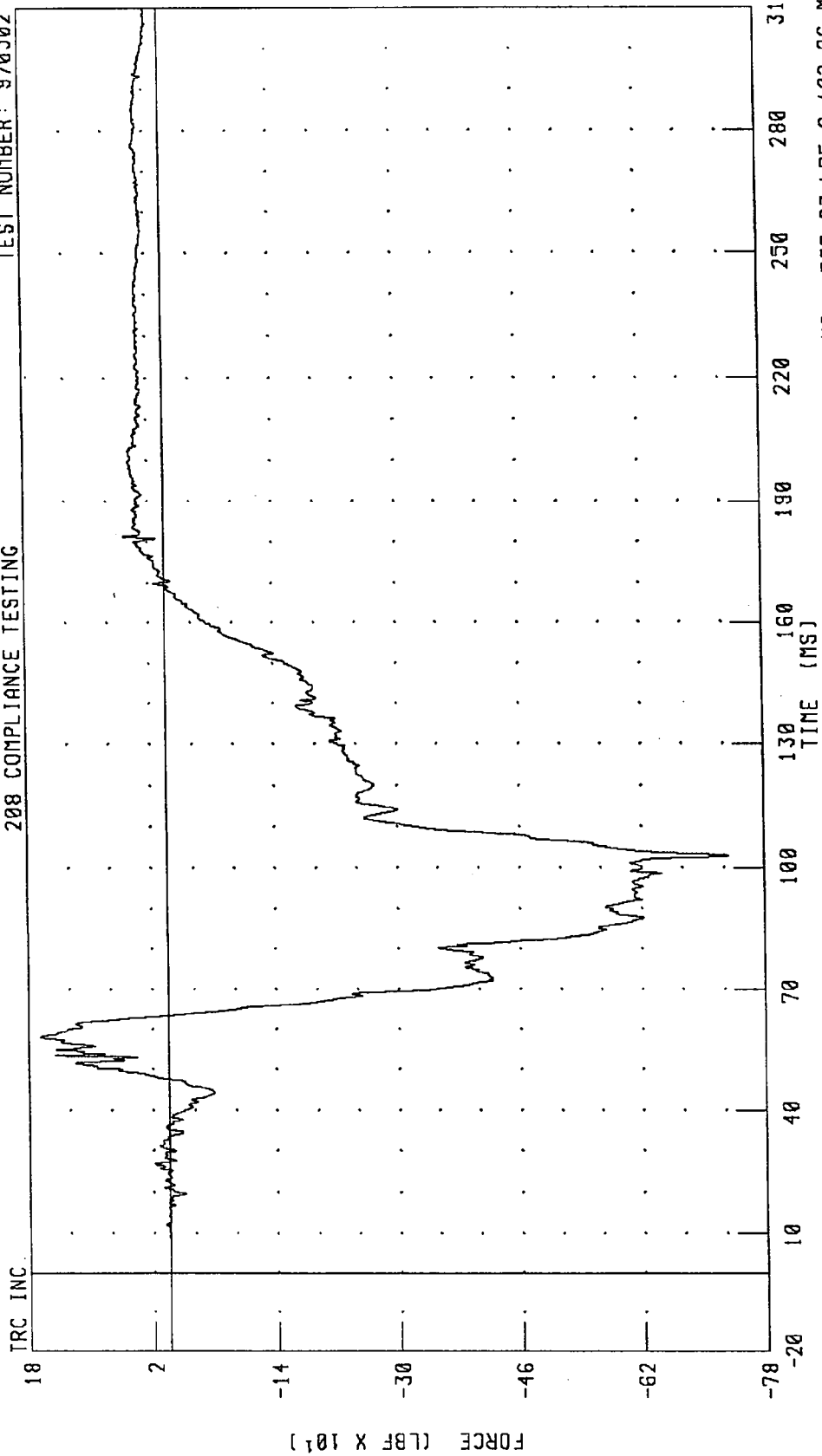


CHANNEL: CSTXD2 FILTER: CH. CLASS 180

PEAK DATA: 0.00 IN @ 16.72 MS; -1.21 IN @ 67.12 MS

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER LEFT FEMUR FORCE
 208 COMPLIANCE TESTING

TEST NUMBER: 970502



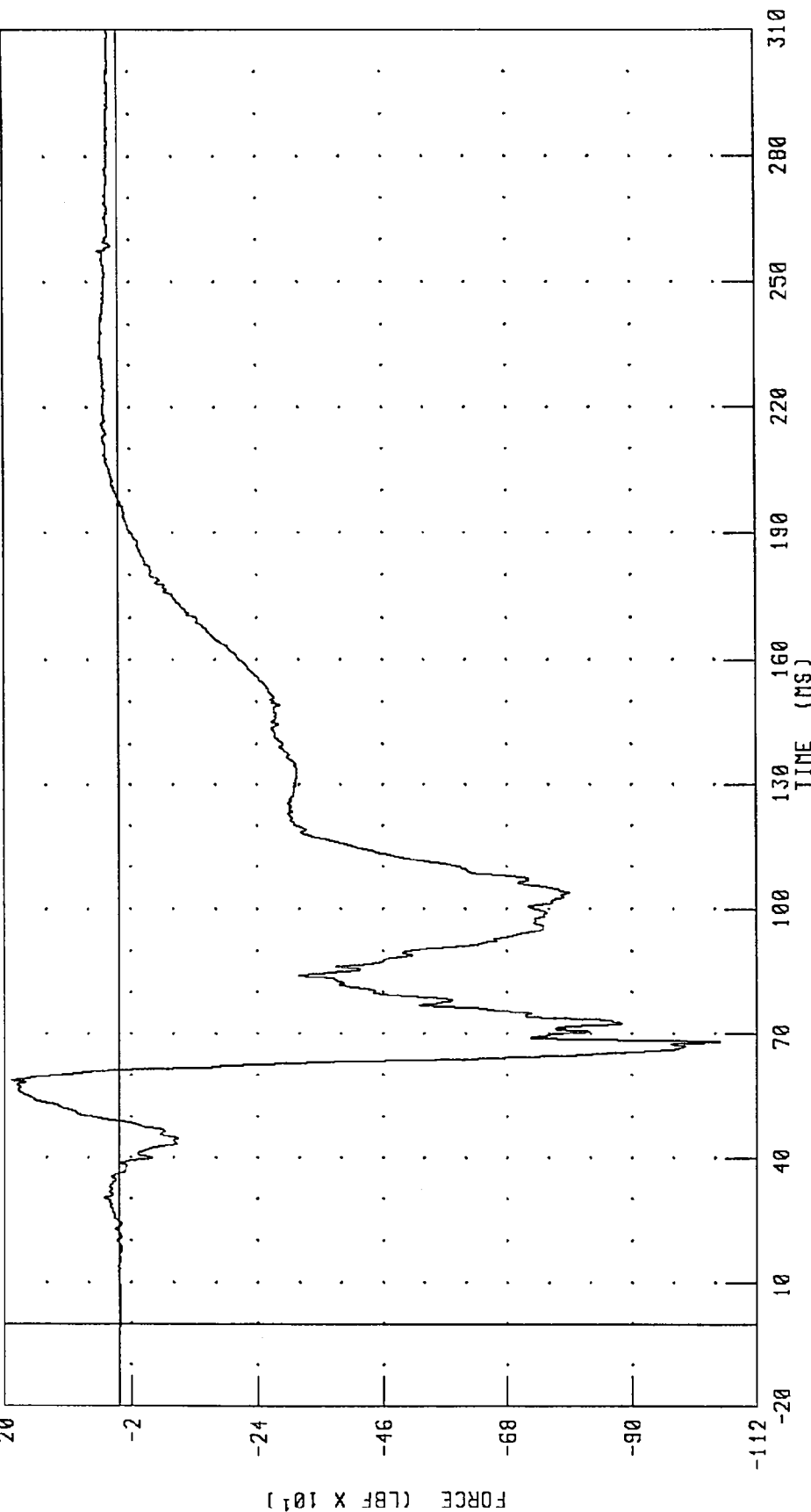
CHANNEL: LFMF2 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.



PEAK DATA: 185.66 LBF @ 58.72 MS; -1056.26 LBF @ 68.08 MS

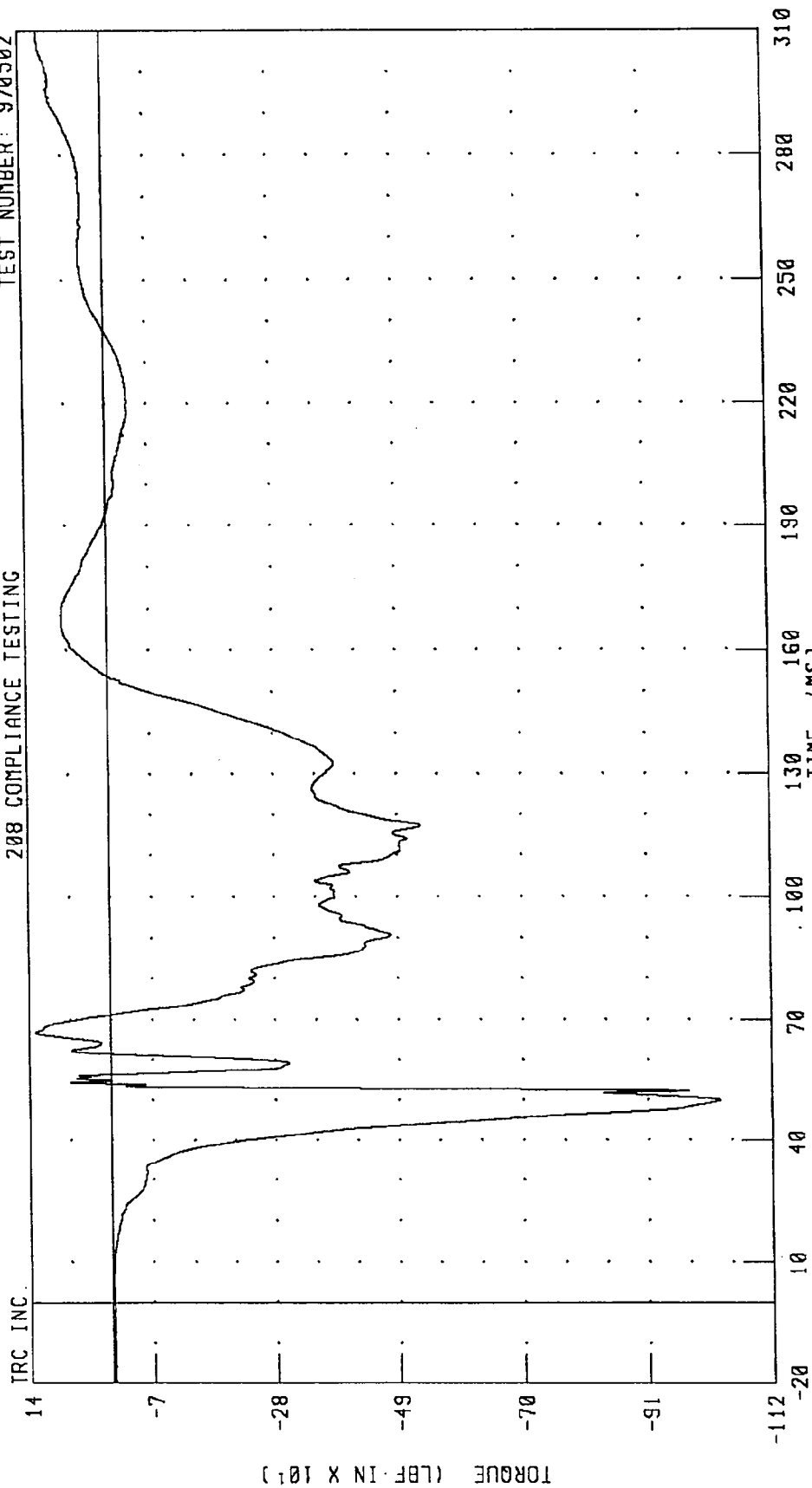
FILTER: CH. CLASS 600

CHANNEL: RFMF2

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER LEFT UPPER TIBIA MOMENT ABOUT X-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING



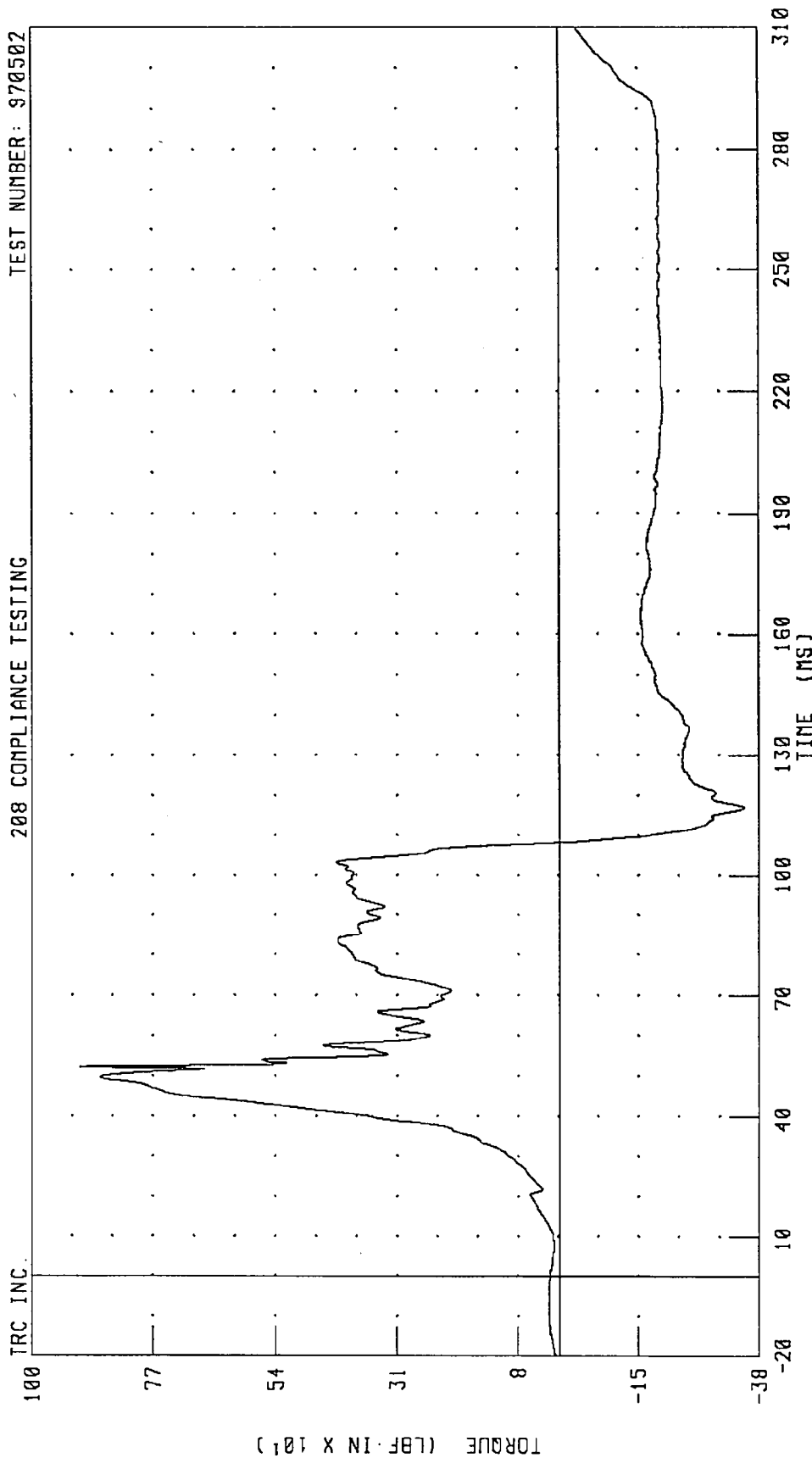
PEAK DATA: 129.71 LBF-IN @ 66.88 MS; -1030.68 LBF-IN @ 49.84 MS

CHANNEL: TBLXM2 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER LEFT UPPER TIBIA MOMENT ABOUT Y-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING



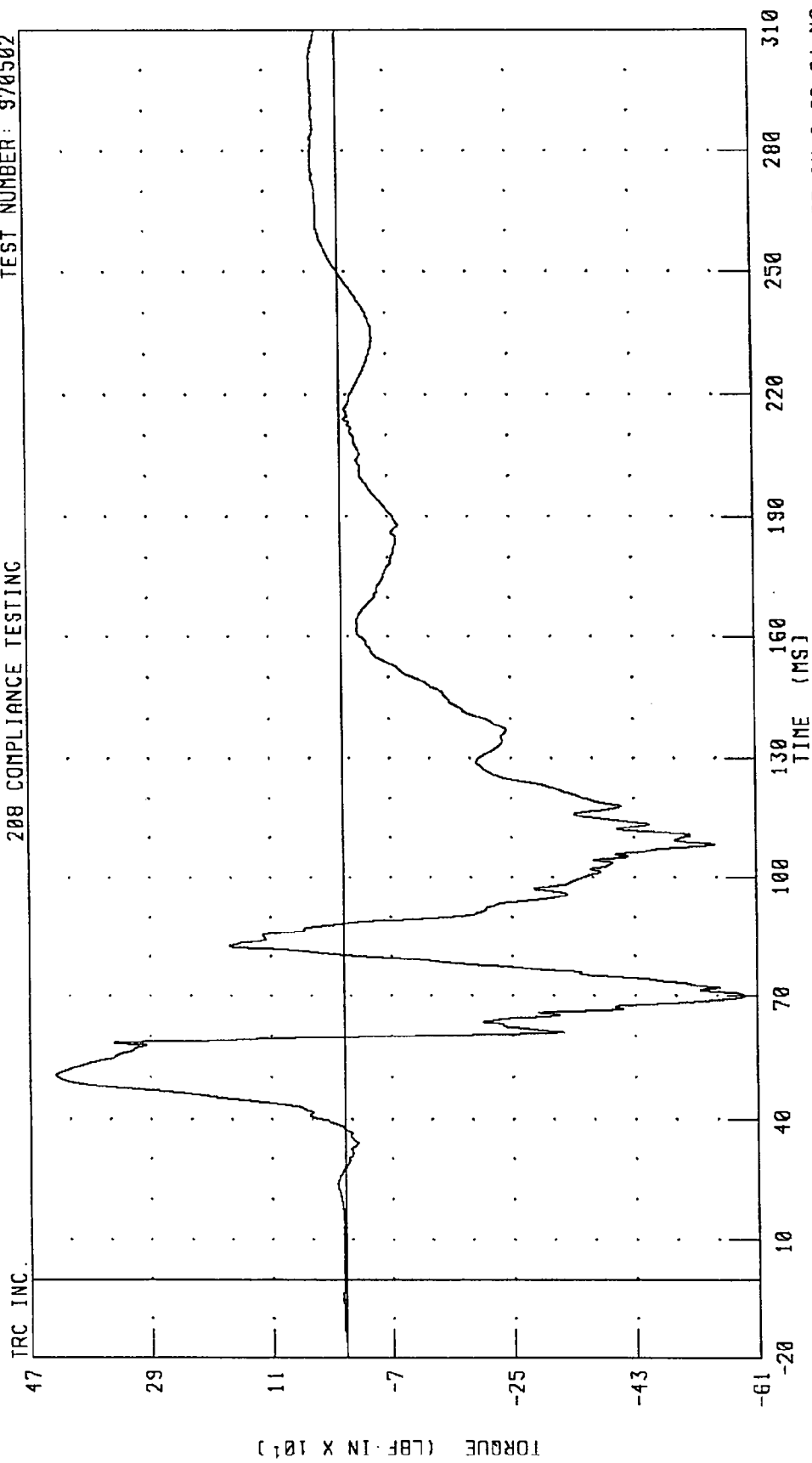
PEAK DATA: 907.56 LBF-IN @ 52.24 MS; -352.39 LBF-IN @ 117.04 MS

CHANNEL: TBLYM2 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT X-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING



PEAK DATA: 430.74 LBF · IN @ 50.56 MS; -590.64 LBF · IN @ 69.84 MS

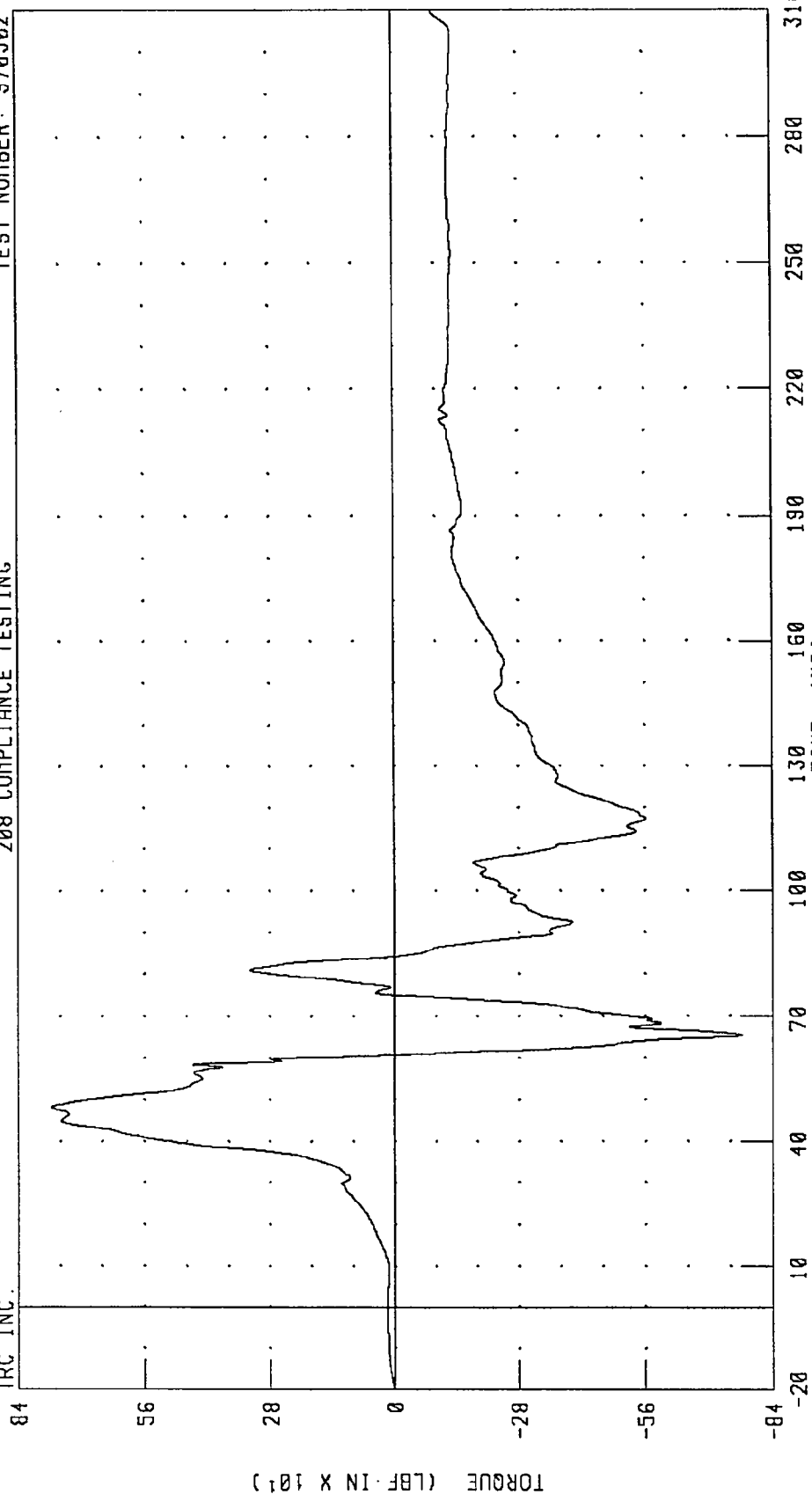
CHANNEL: TBRXM2 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT Y-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.



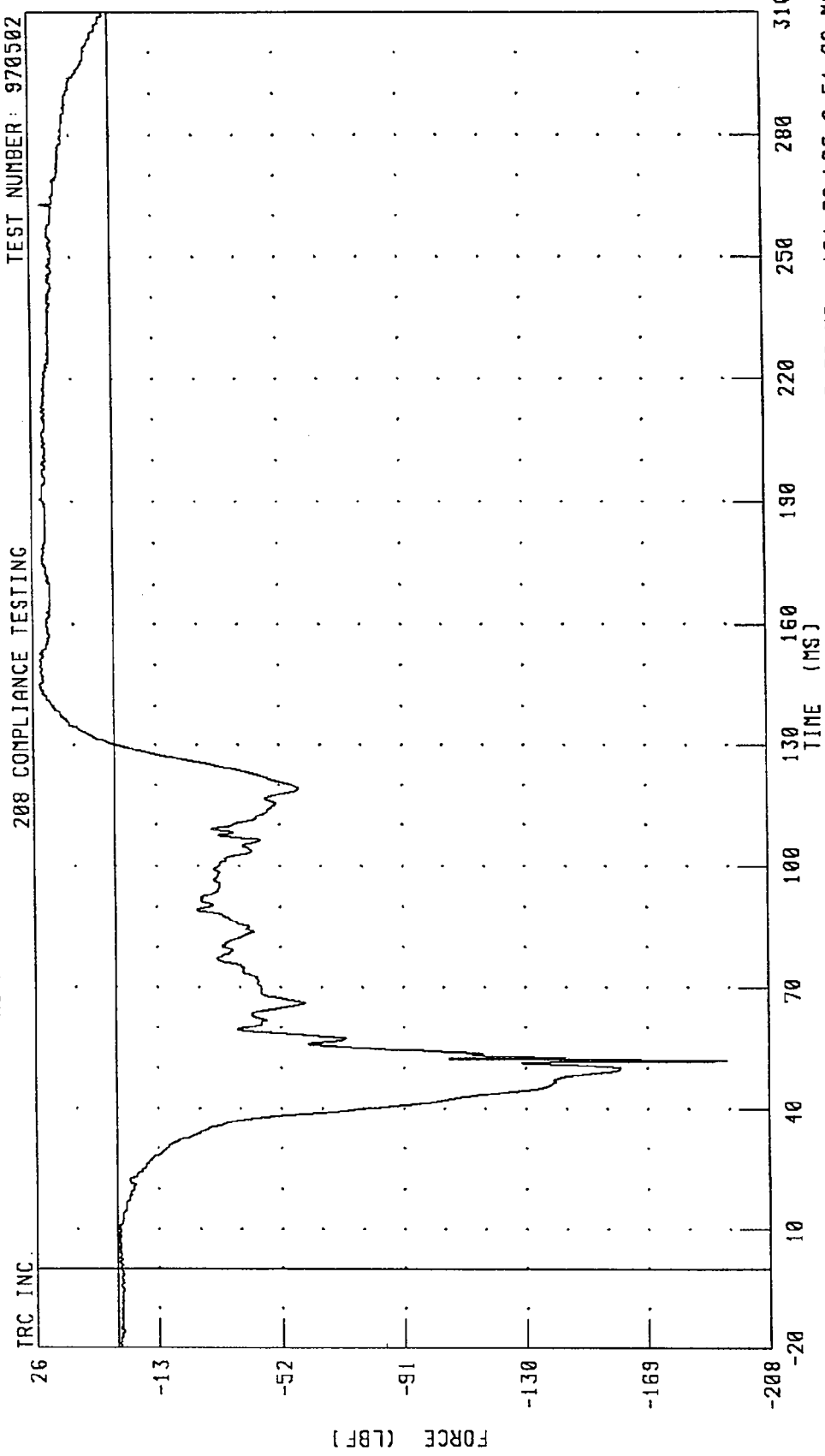
PEAK DATA: 765.53 LBF-IN @ 48.32 MS; -772.16 LBF-IN @ 65.44 MS

CHANNEL: TBRYM2 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER LEFT LOWER TIBIA X-AXIS FORCE

TEST NUMBER: 970502

208 COMPLIANCE TESTING



CHANNEL: ANLXF2 FILTER: CH. CLASS 600

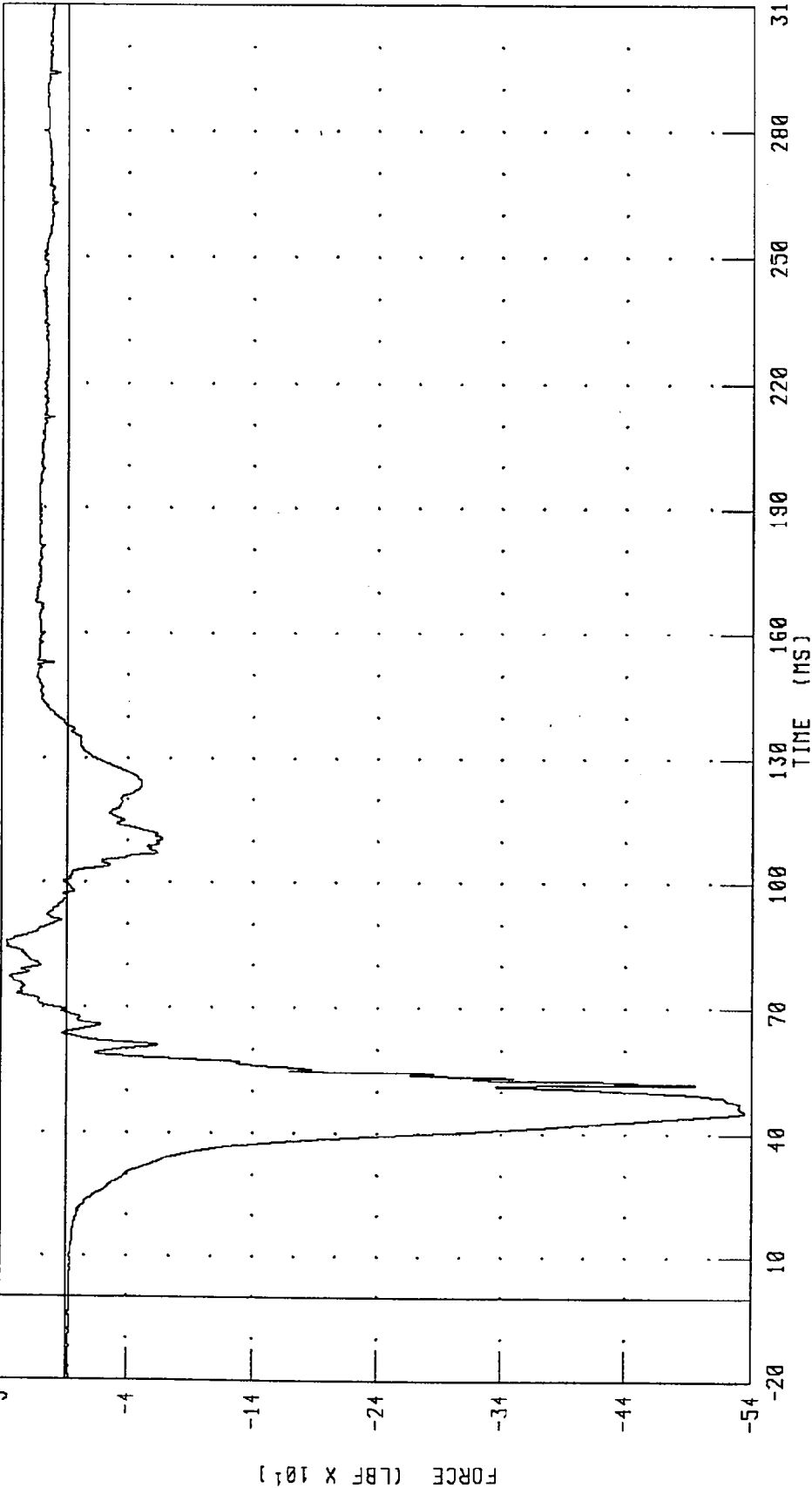
PEAK DATA: 23.77 LBF @ 145.36 MS; -194.30 LBF @ 51.92 MS

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER LEFT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.



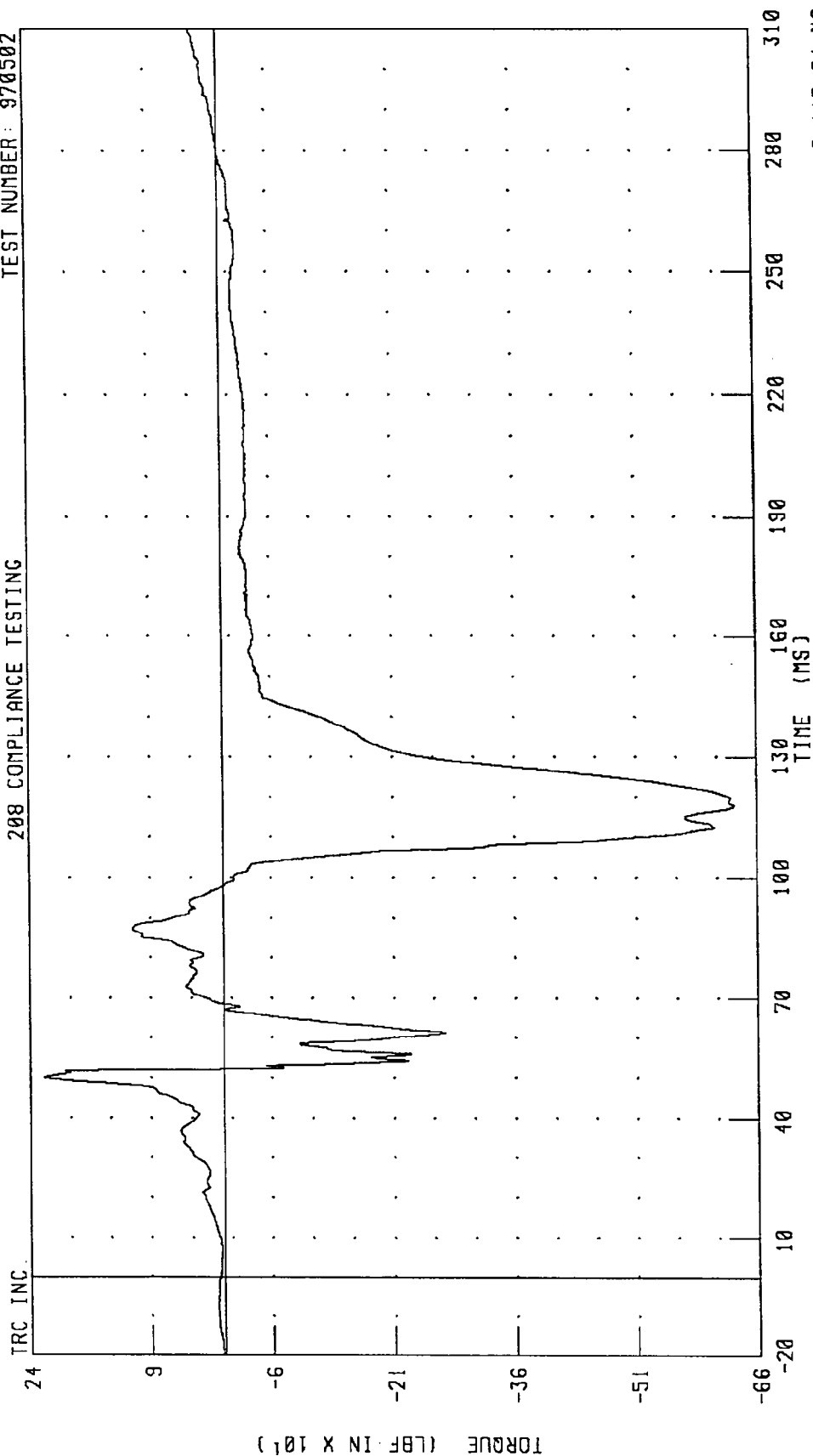
CHANNEL: ANLZF2 FILTER: CH. CLASS 600

PEAK DATA: 47.96 LBF @ 84.64 MS; -542.65 LBF @ 45.28 MS

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER LEFT LOWER TIBIA MOMENT ABOUT Y-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING



PEAK DATA: 223.48 LBF IN @ 50.08 MS; -631.94 LBF IN @ 117.84 MS

CHANNEL: ANLYM2 FILTER: CH. CLASS 600

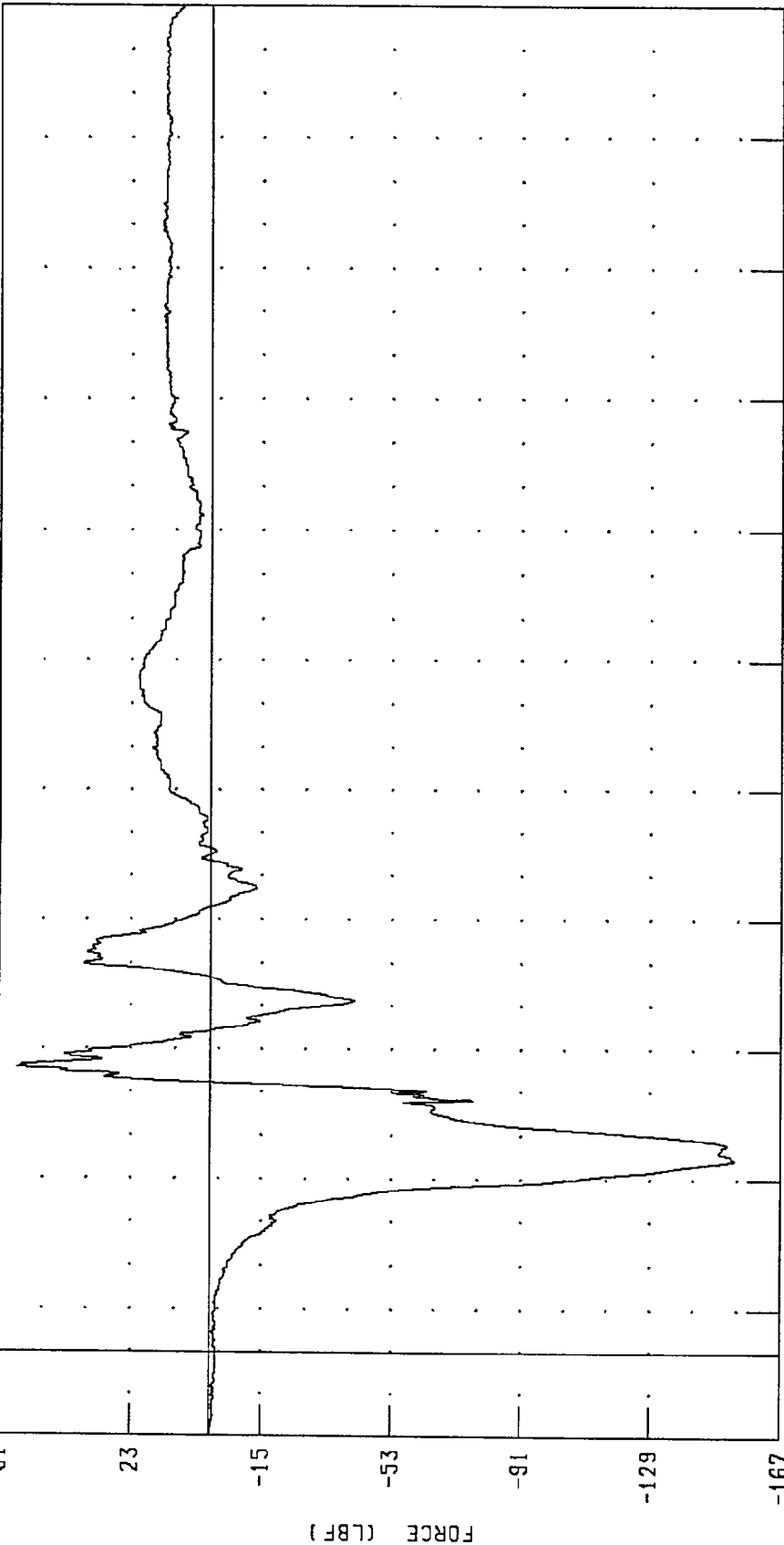
1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER RIGHT LOWER TIBIA X-AXIS FORCE

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.

61



PEAK DATA: 55.78 LBF @ 65.68 MS; -153.68 LBF @ 44.56 MS

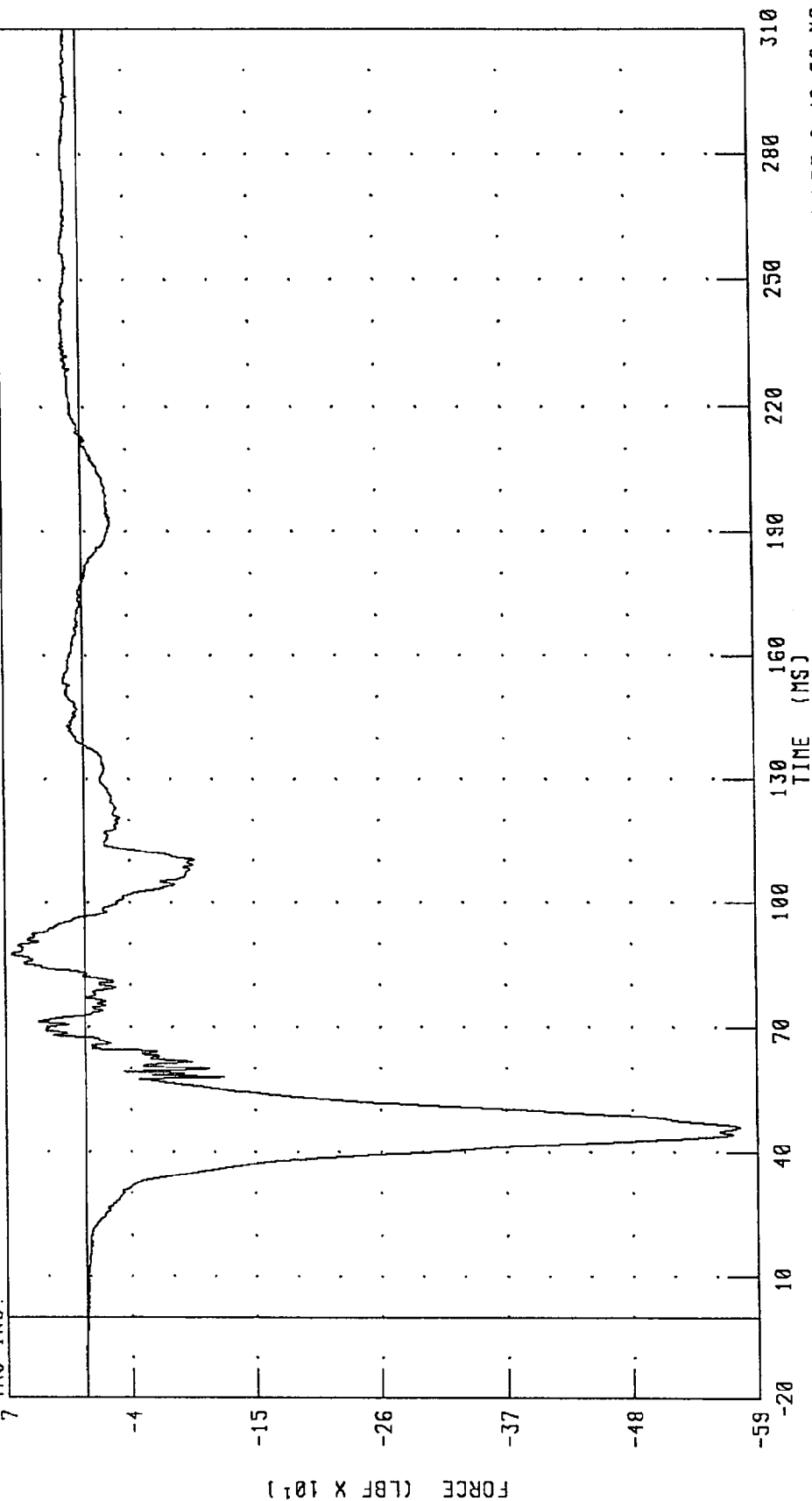
CHANNEL: ANRXP2 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER RIGHT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 970502

208 COMPLIANCE TESTING

7 IRC INC.



PEAK DATA: 64.07 LBF @ 87.60 MS; -573.82 LBF @ 46.00 MS

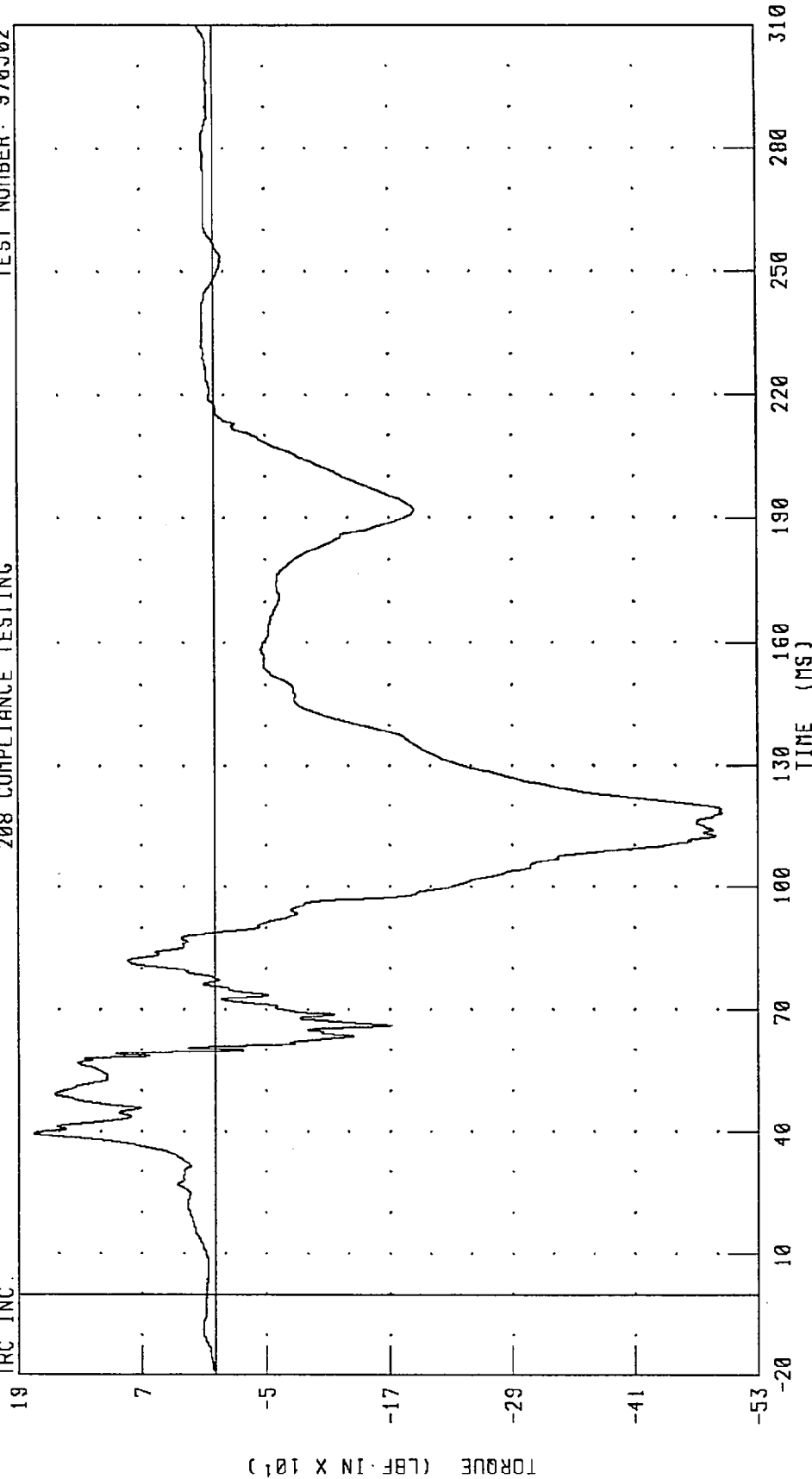
CHANNEL: ANRZF2 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT FRONT PASSENGER RIGHT LOWER TIBIA MOMENT ABOUT Y-AXIS

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.

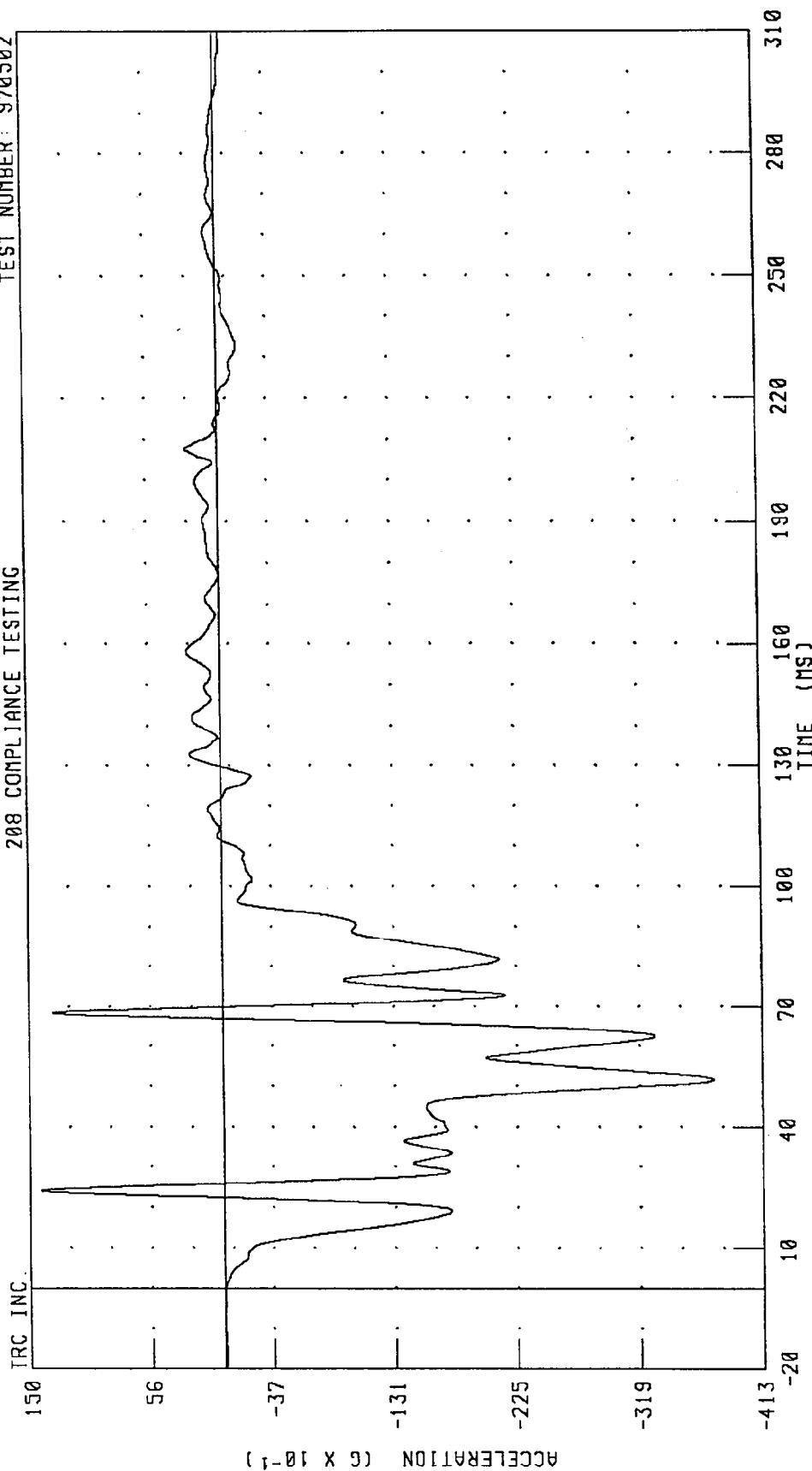


PEAK DATA: 174.97 LBF-IN @ 39.68 MS; -494.77 LBF-IN @ 118.16 MS

CHANNEL: ANRYM2 FILTER: CH. CLASS 600

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 LEFT REAR SEAT X-AXIS ACCELERATION
 208 COMPLIANCE TESTING

TEST NUMBER: 970502



CHANNEL: TLRXG1 FILTER: CH. CLASS 60

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.

457

372

287

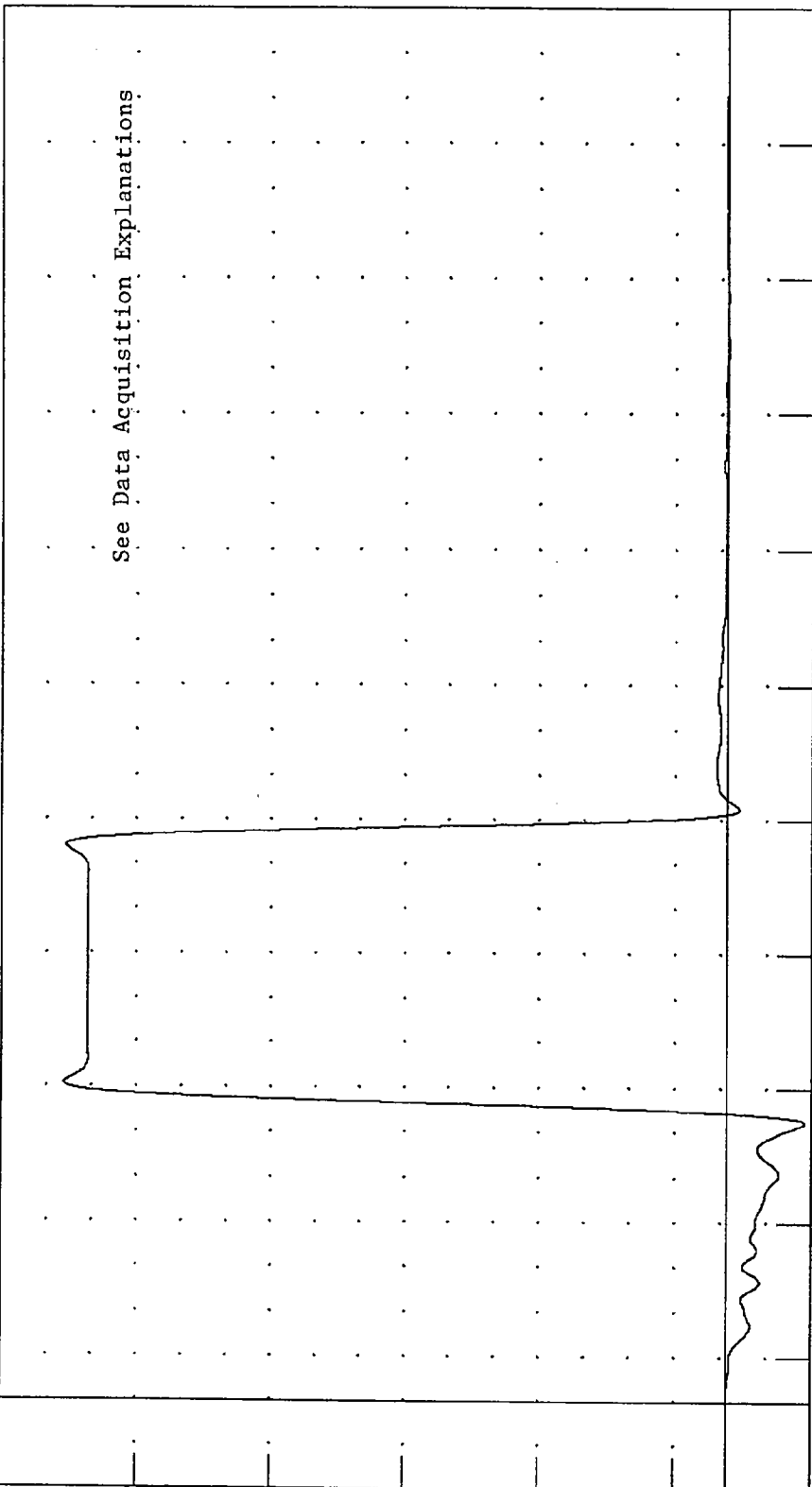
202

117

32

-53

ACCELERATION (G)



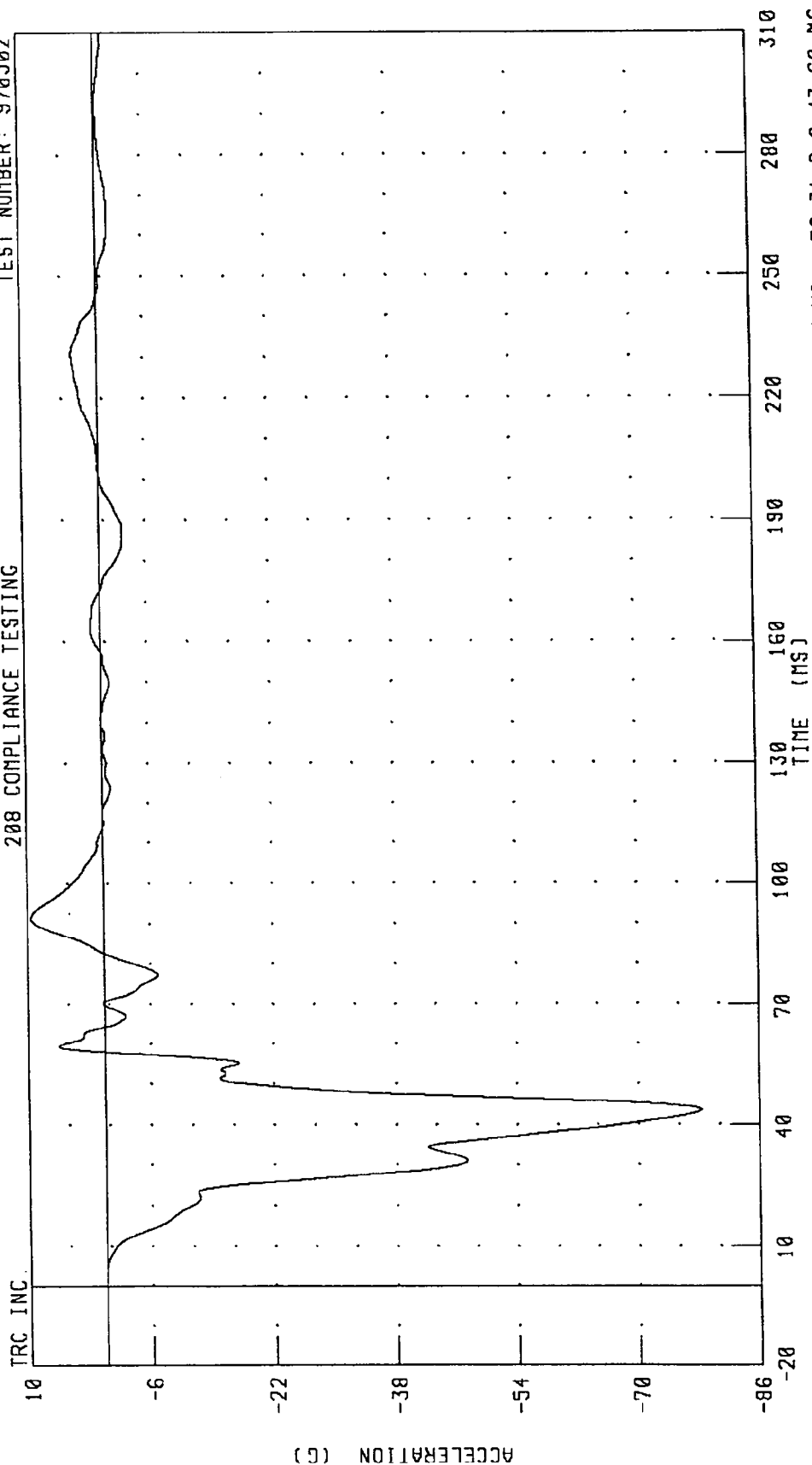
TIME (MS) 310 280 250 220 190 160 130

CHANNEL: TRRXG1 FILTER: CH. CLASS 60

PEAK DATA: 417.73 G @ 70.80 MS; -48.47 G @ 62.48 MS

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
ENGINE UPPER BLOCK X-AXIS ACCELERATION
208 COMPLIANCE TESTING

TEST NUMBER: 970502



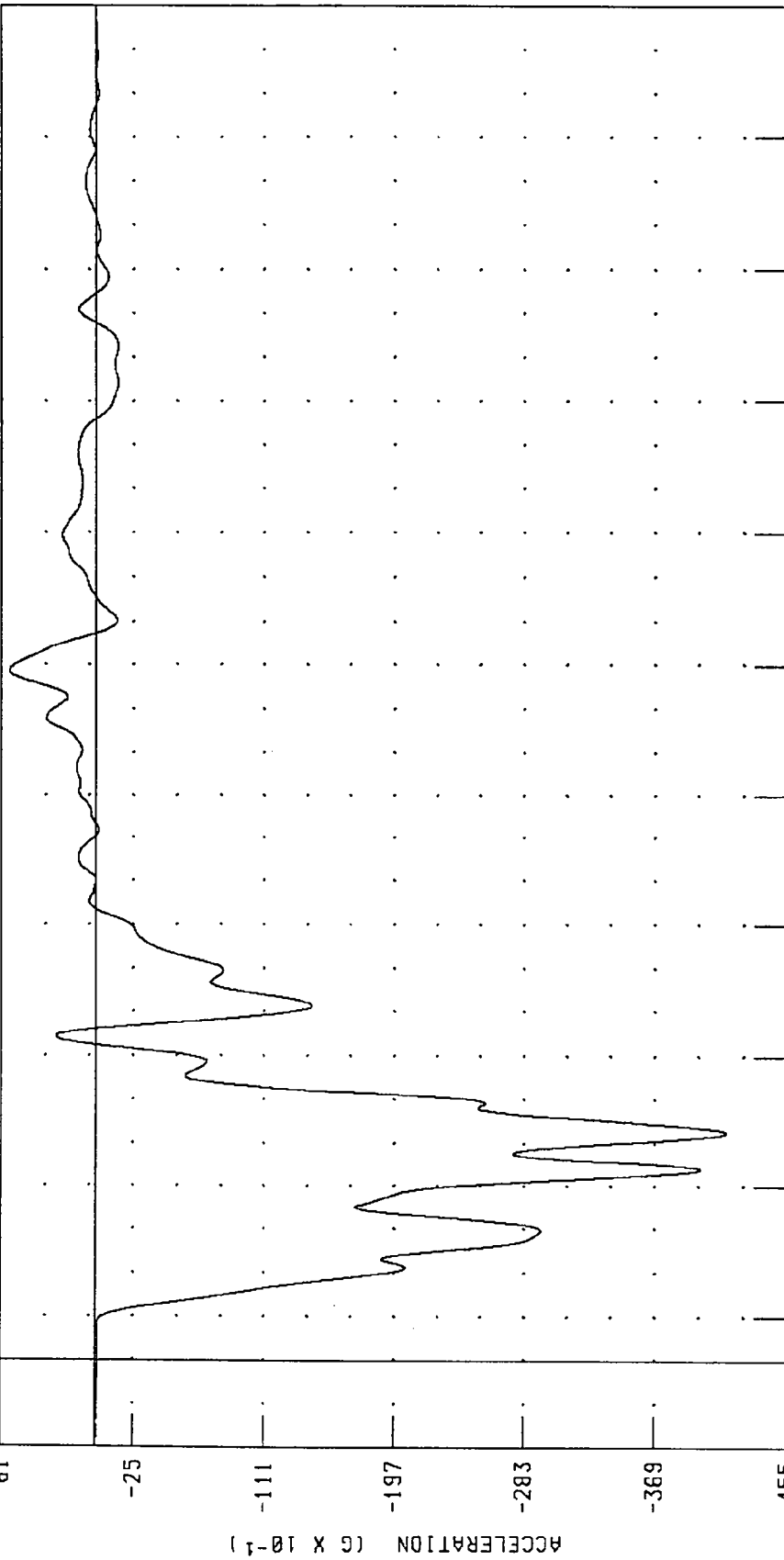
CHANNEL: ENGXG1 FILTER: CH. CLASS 60

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
ENGINE BOTTOM BLOCK X-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.

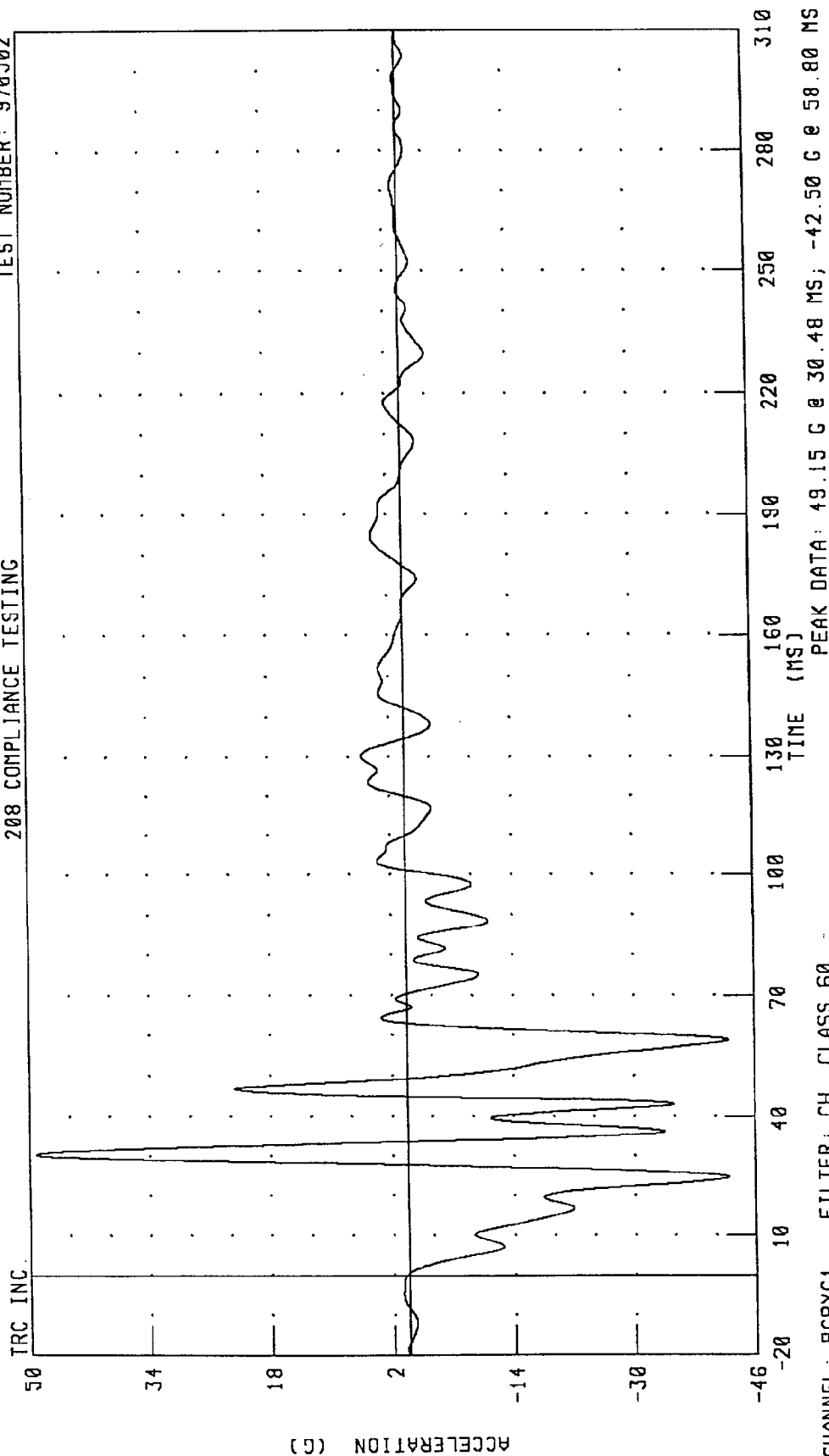


PEAK DATA: 5.58 G @ 158.80 MS, -41.54 G @ 52.48 MS

CHANNEL: ENGXG2 FILTER: CH. CLASS 60

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
 RIGHT BRAKE CALIPER X-AXIS ACCELERATION
 208 COMPLIANCE TESTING

TEST NUMBER: 970502



CHANNEL: BCRXG1 FILTER: CH. CLASS 60

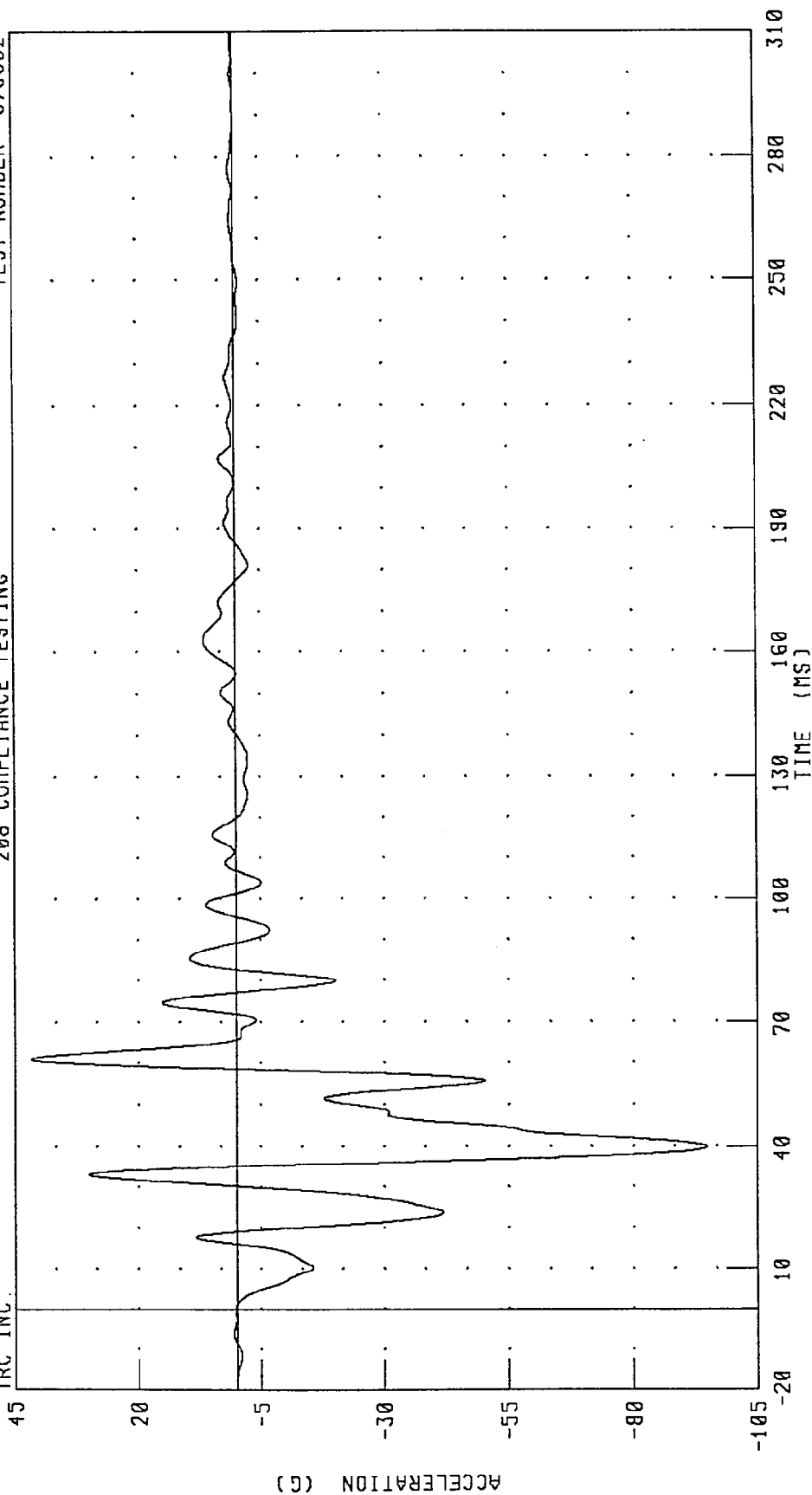
PEAK DATA: 49.15 G @ 30.48 MS; -42.50 G @ 42.50 MS

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING

TRC INC.

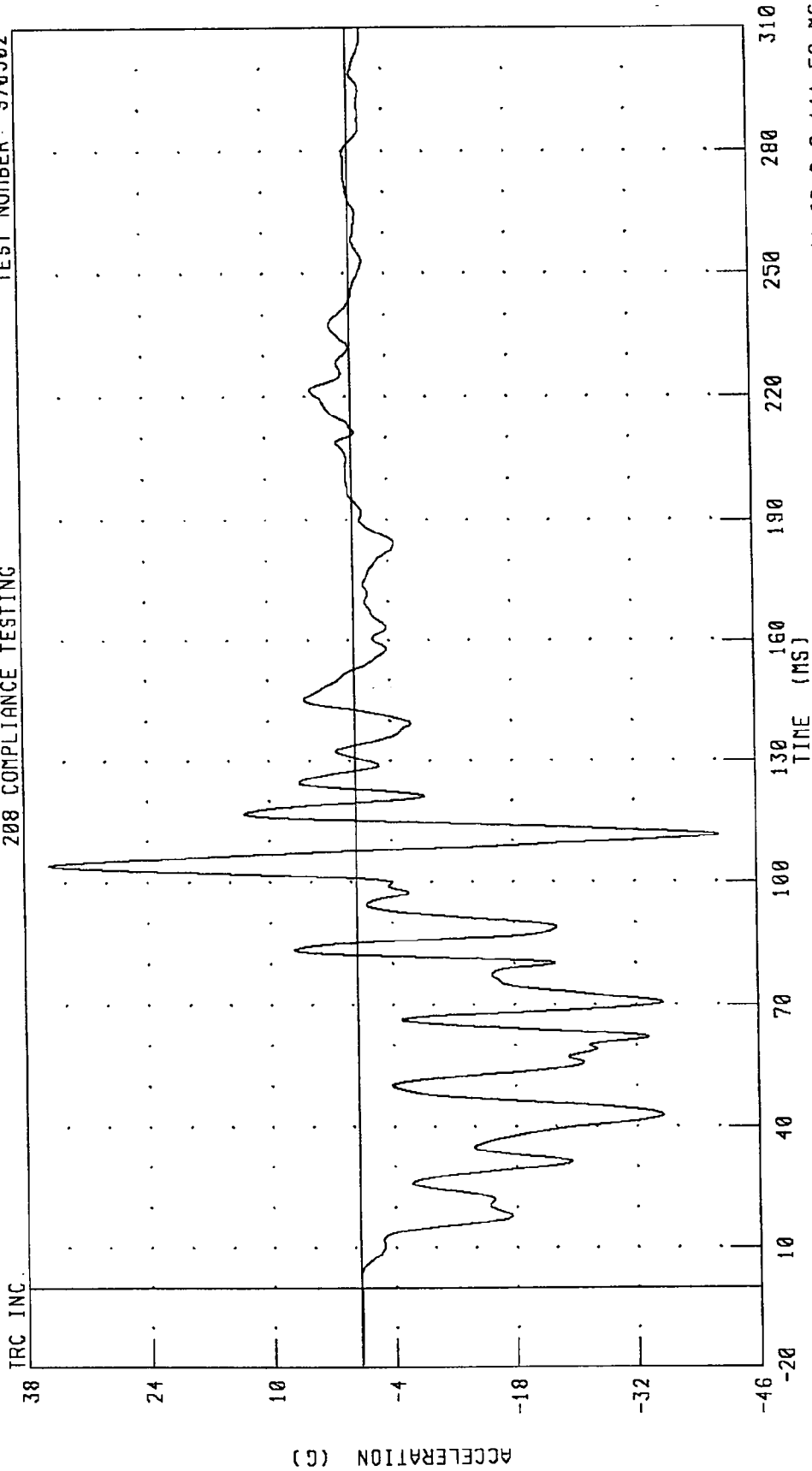


CHANNEL: BCLXG1 FILTER: CH. CLASS 60

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
DASH PANEL CENTER X-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING

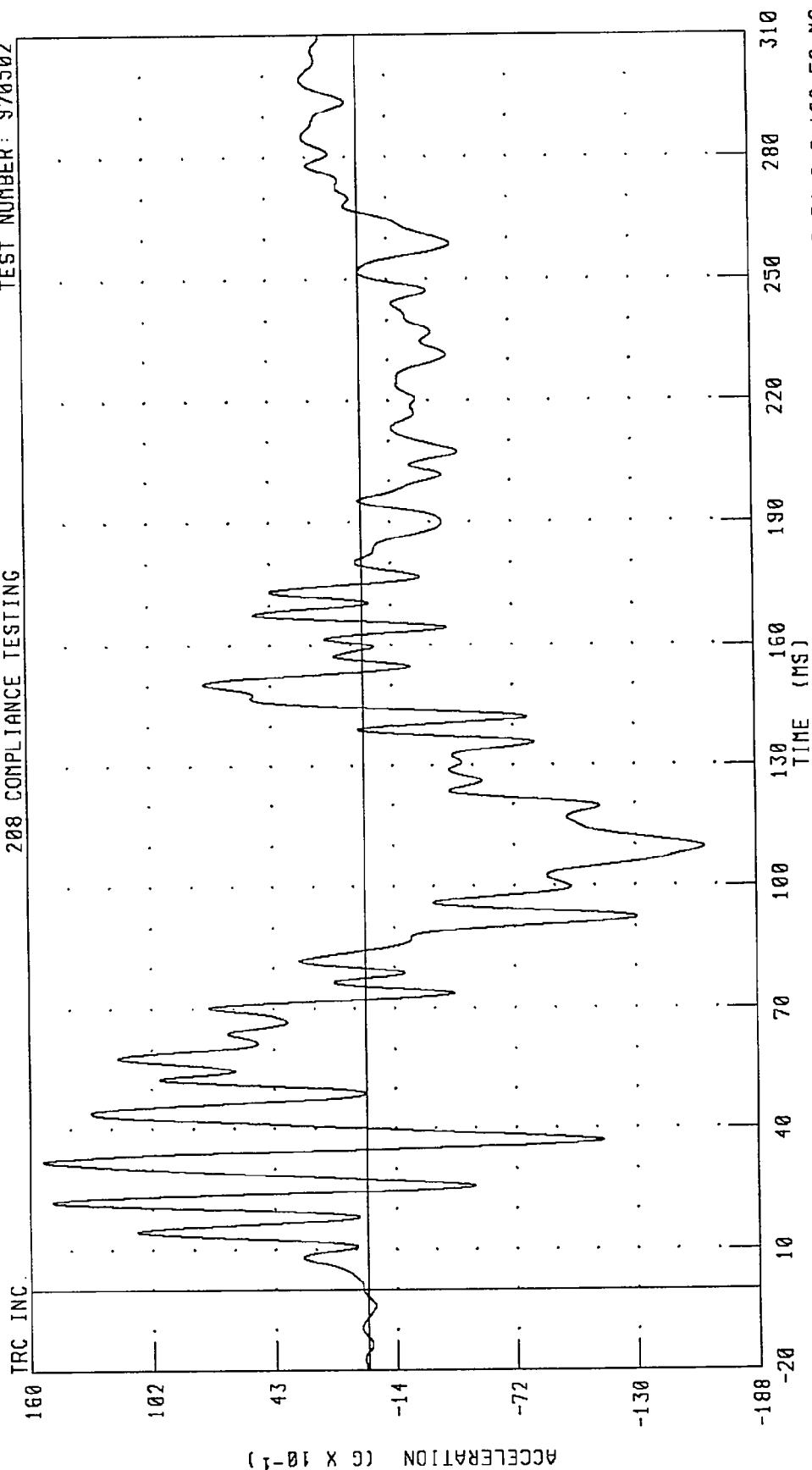


CHANNEL: DPCXG1 FILTER: CH. CLASS 60

1997 CHEVROLET S-10 EXTENDED CAB PICKUP TRUCK INTO FLAT FRONTAL BARRIER
VEHICLE REAR CENTER Z-AXIS ACCELERATION

TEST NUMBER: 970502

208 COMPLIANCE TESTING



PEAK DATA: 15.33 G @ 32.00 MS; -16.34 G @ 109.52 MS

CHANNEL: TFCZG1 FILTER: CH. CLASS 60

Appendix C

Manufacturer's Vehicle Information

OVSC QUESTIONS & GM RESPONSES
REGARDING FMVSS 208 INFORMATION REQUEST
1997 Chevrolet S10 Extended Cab Pickup Truck
NSA-31CCa / IR-1813

1. Please inform OVSC whether the air bag restraint system at the driver's seating position is certified to meet the requirements of S4.1.2.1. If it is, please inform OVSC whether the air bag restraint provided at the driver's and passenger's seating position is certified to meet the requirements of S4.1.2.1(c)(1) or S4.1.2.1(c)(2) for FMVSS No. 208.

If the air bag restraints were installed to meet the requirements of S4.1.2.1(c)(1), please provide a copy of the certification test reports for each of the test configurations required by that section of the standard (i.e., moving barrier lateral impact and dynamic rollover) and a copy of the certification test reports for the frontal/angular barrier impact test required by S4.1.2.1.

If the manual 3-point safety belt is provided with the driver's air bag restraint in order to meet the requirements of S4.1.2.1(c)(2), please provide certification test reports for each of the test configurations required by that section of the standard (i.e., frontal angular barrier impact test of the automatic restraint system with the manual safety belt unfastened and the frontal/angular barrier impact test of the automatic restraint system with the manual safety belt fastened).

GM Response

The air bag restraint system provided at the driver's seating position in the subject vehicle, along with the manual 3-point safety belt, were installed to meet the requirements of paragraphs S4.1.2.1(a) and S4.1.2.1(c)(2) of FMVSS 208.

Since the subject vehicle's front outboard restraint systems are installed to meet the requirements of S4.1.2.1(c)(2), no response is required.

Attachment A includes the portion of the frontal barrier test report pertinent to the FMVSS 208 requirements for the specific subject vehicle.

2. If the air bag restraint at the driver's seating position were not installed to meet the requirements of S4.1.2.1, please inform OVSC whether the 3-point manual belts provided in the front outboard seating positions were installed to meet the requirements of S4.1.2.3 as referenced by S4.2.2.

If the manual belts at the front outboard seating positions were installed in accordance with S4.1.2.3, please provide a copy of your certification test reports for the requirements specified (frontal crash test requirements of S5.1) in S4.6 of the standard.

GM Response

Since the air bag restraint system provided at the driver's seating position in the subject vehicle, along with the manual 3-point safety belt, were installed to meet the requirements of paragraphs S4.1.2.1(a) and S4.1.2.1(c)(2) of FMVSS 208, no response is required.

3. State for any safety belt system in this vehicle whether or not it is equipped with a tension-relieving device. Provide a copy of the information furnished in accordance with S7.4.2 if the tension-relieving device is used.

GM Response

No tension-relieving devices are used.

4. FMVSS No. 208, S8.1.5 allows the manufacturer the option of having movable vehicle windows and vents placed in the closed position. State whether the vehicle's movable windows and vents were opened or closed for the certification tests.

GM Response

All windows were closed.

5. FMVSS No. 208, S5.1 provides a manufacturer with the option of using either a Part 572(B) or a Part 572(E) test dummy. Please inform OVSC which test dummy was used in each seat for each certification test. Submit dummy placement measurements, including diagrams or photographs which show exactly where measurements were taken. Enclosed is a diagram of some of OVSC's dummy measurements. Where possible, use the dimension shown in the diagram to provide the individual dummy placement measurements.

State whether the vehicle has a foot rest for the driver.

GM Response

The Part 572(E) test dummy should be used. There is no foot rest for the driver. The dummy measurements are shown on Attachment B.

6. Provide seat positioning, steering column positioning, and fuel tank data on the enclosed form. If more than one front seating configuration, steering column or fuel tank are available, provide separate information for each.

GM Response

The completed forms are included as Attachment C.

7. If the vehicle is equipped with adjustable seat belt anchorages, provide the manufacturer's nominal design position for a 50th percentile adult male occupant.

GM Response

Adjustable seat belt anchorages are not used.

8. Provide the speed at impact, vehicle test weight, and resulting injury criteria (i.e., HIC, chest acceleration, chest compression for the Part 572(E) dummy and femur loads) recorded for all certification tests conducted to meet the requirements of S4.1.2.1 or S4.1.2.3.

In addition, include each dummy's head and chest acceleration versus time plots and femur load versus time plots for the full frontal barrier impact tests.

GM Response

The 1997 S/T Extended Cab Pickup data is included as Attachment D.

9. When vehicle components must be removed to obtain the proper test weight, what components do you recommend for removal and in what priority order do you recommend removal.

GM Response

GM does not typically prioritize which components are to be removed from a test vehicle to achieve test mass. However, components that have been removed during testing of pickups has included the tailgate, rear bumper, spare tire and exhaust system rearward of the catalytic converter.