

Report Number NCAP-TRC-97-005

V2548

New Car Assessment Program (NCAP)

Frontal Barrier Impact Test

General Motors Corporation
1997 Chevrolet Tahoe
multi-purpose passenger vehicle
NHTSA Number: MV0122
TRC Test Number: 970303

Prepared By:
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March 28, 1997

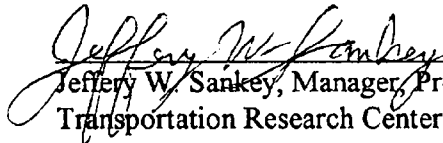
Final Report

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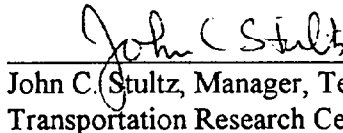
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16. Abstract A 56 kph (35 mph) frontal load cell barrier impact test was conducted on a 1997 Chevrolet Tahoe multi-purpose passenger vehicle, NHTSA No. MV0122, at Transportation Research Center Inc. on March 3, 1997. This test was conducted in accordance with Office of Crashworthiness Standards NCAPTP090196 for the determination of vehicle crashworthiness. The barrier impact velocity was 55.5 kph. The vehicle's maximum static crush was 652 millimeters. The ambient temperature was 21° C. The driver's Head Injury Criteria (HIC) was 833. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.8 g. The driver's maximum chest deflection was 45 millimeters. The driver's left and right femur maximum axial forces were 8606 N and 5162 N, respectively. The passenger's HIC was 545. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.6 g. The passenger's maximum chest deflection was 40 millimeters. The passenger's left and right femur maximum axial forces were 1635 N and 3756 N, respectively.			
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons	0.9	tonnes	t
	(2000 lb)			
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	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
ft 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

* 1 in. = 2.54 (exact). For other exact conversions and more detailed tables, see NBS Mon., Publ. 288, Units of Weights and Measures, Price \$2.25, SO Catalog No. C13.10-288.

Approximate Conversions from Metric Measures

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

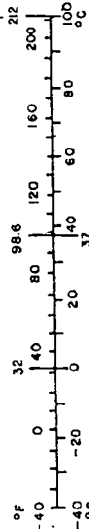


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Section 1.0

Purpose and Test Procedure

Purpose

This 56 kph (35 mph) frontal barrier impact test is part of the New Car Assessment Program (NCAP) conducted for the National Highway Traffic Safety Administration's (NHTSA) Office of Crashworthiness Standards by Transportation Research Center Inc. (TRC) under Contract Number DTNH22-96-D-22010.

The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for the subject vehicle, a 1997 Chevrolet Tahoe multi-purpose passenger vehicle, NHTSA Number MV0122, at an impact speed in excess of the current 48 kph (30 mph) FMVSS 208, 212, 219, and 301 requirements.

Test Procedure

This 56 kph (35 mph) test was conducted in accordance with NHTSA's Office of Crashworthiness Standards Laboratory Indicant Test Procedure, NCAPTP090196. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity," performance.

The test vehicle was instrumented with nine (9) accelerometers to measure longitudinal axis accelerations. The driver's and passenger's restraint systems were instrumented with load cells to measure lap and shoulder belt forces and potentiometers to measure shoulder belt stretch and spoolout. The vehicle impacted a frontal load cell barrier instrumented with thirty-six (36) barrier face load cells. The vehicle's specified impact velocity range was 55.5 to 57.1 kph.

The test vehicle contained two (2) Part 572E 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedures specified in Appendix B of the Laboratory Indicant Test Procedure. This test was the third use of the driver dummy and the first use of the passenger dummy.

Both dummies were instrumented with primary and redundant head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations, and with left and right femur load cells to measure axial forces. The dummies were also instrumented with neck moment and force load cells, chest deflection potentiometers, foot accelerometers to measure longitudinal and vertical axis accelerations, and upper and lower tibia load cells to measure forces and moments.

The one-hundred-thirty-three (133) data channels were digitally sampled and recorded at 12,500 samples per second and processed per Section 11.13 of the Laboratory Indicant Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and sixteen (16) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera.

The vehicle, occupant, and load cell barrier data are presented in Section 2.0. The occupant, camera, and vehicle measurements are presented in Section 3.0. Appendix A contains the still photographic prints. Appendix B contains the dummy, vehicle, and load cell barrier data plots. Appendix C contains the dummy certification data. Appendix D contains miscellaneous test information. Appendix E contains the restraint system instructions from the owner's manual.

Section 2.0

Frontal Barrier Impact Test Summary

Test Results Summary

This frontal load cell barrier test was conducted at TRC on March 3, 1997.

The test vehicle, a 1997 Chevrolet Tahoe multi-purpose passenger vehicle, NHTSA Number MV0122, was equipped with a 5.7-liter inline engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 2732 kg. The vehicle's impact speed was 55.5 kph. The vehicle sustained 652 mm of static crush during the impact.

The driver's Head Injury Criteria (HIC) was 833. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.8 g. The driver's maximum chest deflection was 45 mm. The driver's left and right femur maximum axial forces were 8606 N and 5162 N, respectively.

The right front passenger's HIC was 545. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.6 g. The passenger's maximum chest deflection was 40 mm. The passenger's left and right femur maximum axial forces were 1635 N and 3756 N, respectively.

There was no loss of windshield periphery retention.

There was no penetration through the windshield.

Following the impact, no fluid spilled from the vehicle's fuel system prior to the static rollover test or during the static rollover test.

Data Acquisition Explanations

The B3 position load cell, BB3F, recorded a spike at 36 milliseconds which exceeded the data channel's full scale and the load cell data did not return to zero after the crash test event. This affected the load cell barrier Group #1 and grand total force calculations.

Table 1 Crash Test Summary

NHTSA number:	MV0122	
Test type:	Frontal Load Cell Barrier	
Test date:	03/03/97	
Test time:	1557	
Ambient temperature:	21° C	
Vehicle year/make/ model/body style:	1997/Chevrolet/Tahoe/multi-purpose passenger vehicle	
Vehicle test weight:	2732 kg	
Impact angle ¹ :	0°	
Impact velocity ² :	Primary = 55.5 kph Secondary = 55.5 kph	
Maximum static crush:	652 mm	
Average rebound:	502 mm	
Dummies:	Driver #142	Passenger #192
Type:	Part 572 E	Part 572 E
Location:	Left front	Right front
Restraint:	Airbag and 3-point unbelt	Airbag and 3-point unbelt
Number of data channels:	40	40
Number of cameras:	High-speed 16 Real-time 1	

¹ With respect to tow track centerline.

² Speed trap measurement (± .08 kph accuracy)

Table 2 Test Vehicle Information

Vehicle year/make/
model/body style: 1997/Chevrolet/Tahoe/multi-purpose passenger vehicle

Color: Green

VIN: 1GNEK13R9VJ358478

NHTSA number: MV0122

Engine data:

 Placement: inline

 Cylinders: 8

 Displacement 5.7 liters

Transmission data: 4 speed, manual, X automatic, overdrive
 FWD, RWD, X 4WD

Date vehicle received: 01/3097

Odometer reading: 96

Dealer's name Steve Austins Auto Group
and address: 1515 S. Main St.
Bellefontaine, OH 43311

Accessories:

Power steering	Yes	Automatic transmission	Yes
Power brakes	Yes	Automatic speed control	Yes
Power seats	Yes	Tilting steering wheel	Yes
Power windows	Yes	Telescoping steering wheel	No
Tinted glass	Yes	Air conditioning	Yes
Radio	Yes	Anti-skid brake	Yes
Clock	Yes	Rear window defroster	Yes
Other			

Certification data from vehicle's label:

Vehicle manufactured by: General Motors Corporation

Date of manufacture: 01/97

VIN: 1GNEK13R9VJ358478

GVWR: 6800 lbs.

GAWR: Front: 3600 lbs.

 Rear: 3750 lbs.

Table 2 Test Vehicle Information, Cont'd.

Size of tires: P245/75R16

Tire pressure with maximum
capacity vehicle load:

Front: 35 psi

Rear: 35 psi

Spare tire: P245/75R16

Type of front seats: Bucket

Tire & capacity data from vehicle's label:

Recommended tire size: P245/75R16

Recommended cold tire pressure:

Front: 35 psi

Rear: 35 psi

Designated seating capacity:

Front NA

Rear NA

Total NA

Vehicle capacity weight: NA

Test vehicle attitude:

Delivered attitude: LF 911 mm; RF 928 mm; LR 878 mm; RR 893 mm

Pre-test attitude: LF 901 mm; RF 912 mm; LR 850 mm; RR 858 mm

Post-test attitude: LF 944 mm; RF 854 mm; LR 841 mm; RR 876 mm

Table 2 Test Vehicle Information Cont'd

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

Right front	633 kg	Right rear	553 kg
Left front	641 kg	Left rear	622 kg
Total front weight	1274 kg	(52.0% of total vehicle weight)	
Total rear weight	1175 kg	(48.0% of total vehicle weight)	
Total delivered weight	2449 kg		

Calculation of test vehicle's target test weight:

RCLW¹ = Rated cargo and luggage weight

GVWR = Gross Vehicle Weight Rating (3084 kg)

UDW = Unloaded delivered weight (2449 kg)

VCW = Vehicle capacity weight = GVWR - UDW = 3084 - 2449 = 635 kg

DSC = Designated seating capacity (5)

RCLW¹ = GVWR - UDW - 68 (DSC) = 3084 - 2449 - 68(5) = 295 kg

Target test weight = UDW + RCLW¹ + (Number of Hybrid III dummies x 76 kg/dummy)

Target test weight = 2449 + 136 + 152 = 2737 kg

Target test weight = 2737 kg

Weight of test vehicle with required dummies and 131 kg of cargo weight:

Right front	716 kg	Right rear	661 kg
Left front	681 kg	Left rear	674 kg
Total front weight	1397 kg	(51.1% of total vehicle weight)	
Total rear weight	1335 kg	(48.9% of total vehicle weight)	
Total test weight	2732 kg	(0.2% under target test weight)	

Weight of ballast secured in vehicle: 68 kg

Components removed to meet target test weight: None

CG rearward of front wheel centerline: 1468 mm

¹ Cargo weight for multipurpose passenger vehicles, trucks, and buses is the vehicle's rated cargo and luggage weight from the vehicle's label or 136 kilograms, whichever is less.

Table 3 Post-Impact Data

Test number: 970303
NHTSA number: MV0122
Test date: 03/03/97
Test time: 1557
Test type: Frontal load cell barrier
Impact angle: 0°
Ambient temperature
at impact area: 21° C
Temperature in
occupant compartment: 20° C
Impact velocity:
 Primary 55.5 kph
 Secondary 55.5 kph
 Specified range 55.5 to 57.1 kph

Distance from vehicle to barrier:

 Entering velocity trap 356 mm
 Exiting velocity trap 51 mm

Test vehicle static crush:

Overall length of test vehicle:

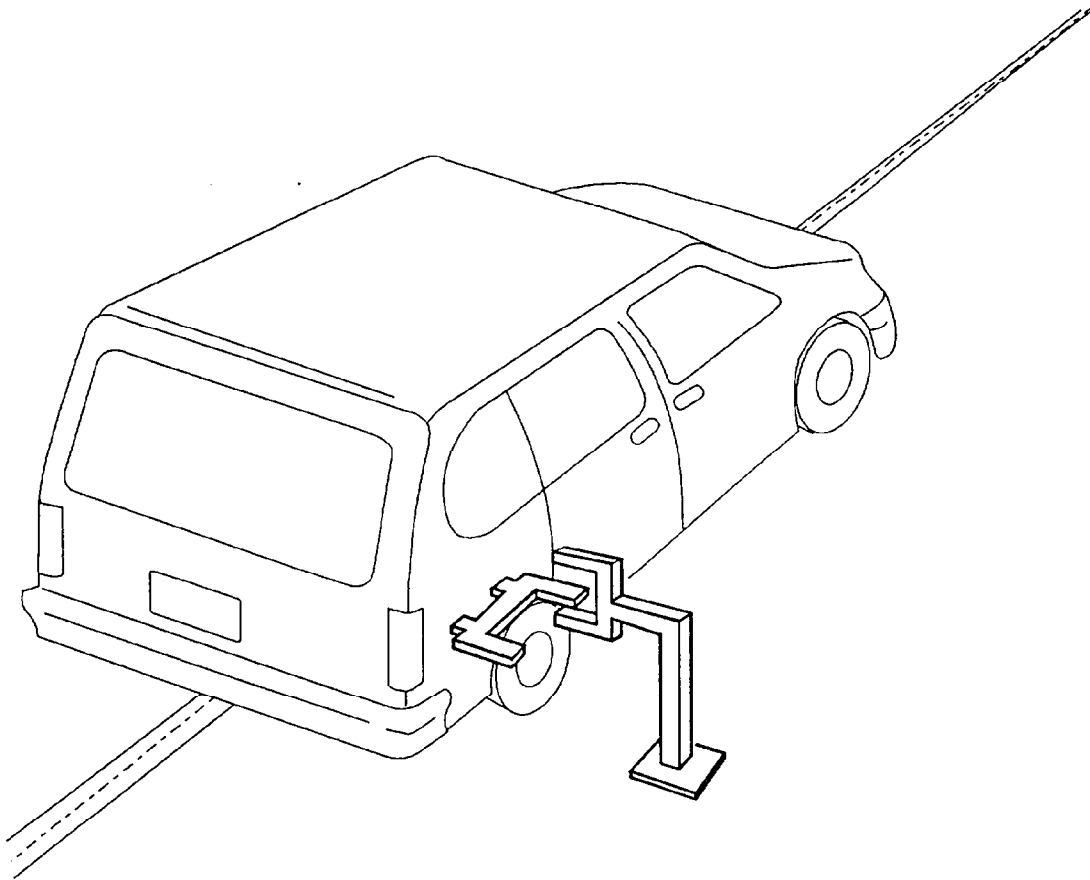
Pre-test: L 4940 mm; C 5072 mm; R 4950 mm
Post-test: L 4409 mm; C 4420 mm; R 4393 mm
Total crush: L 531 mm; C 652 mm; R 557 mm
Average crush: 580 mm

Test vehicle rebound from flat barrier:

Distance from test vehicle to barrier:

Post-test: L 541 mm; C 476 mm; R 489 mm
Average rebound 502 mm

Figure 1 Impact Velocity Measurement System



The final vane clears the final emitter/receiver pair 51 millimeters before impact.

The vanes have 305-millimeter spacing.

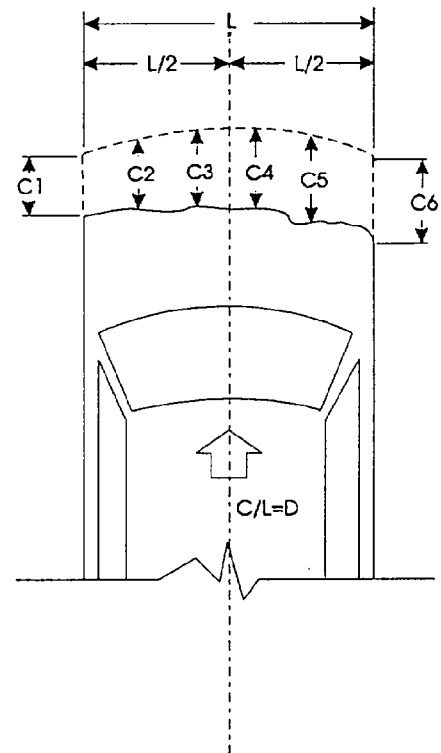
**Figure 2 Accident Investigation Division Data
for 56 kph (35 mph) Frontal Barrier Impact**

NHTSA number: MV0122
 Test date: 03/03/97
 Vehicle year/make/
 model/body style: 1997/Chevrolet/Tahoe/multi-purpose passenger vehicle
 Vehicle size category: Special purpose vehicle
 VIN: 1GNEK13R9VJ358478
 Build date: 01/97
 Test weight: 2732 kg
 Vehicle wheelbase: 3004 mm
 Maximum width: 1932 mm
 Front overhang: 920 mm

Collision Deformation
 Classification (CDC) code: 12FDEW3

Crush depth
 measurements:

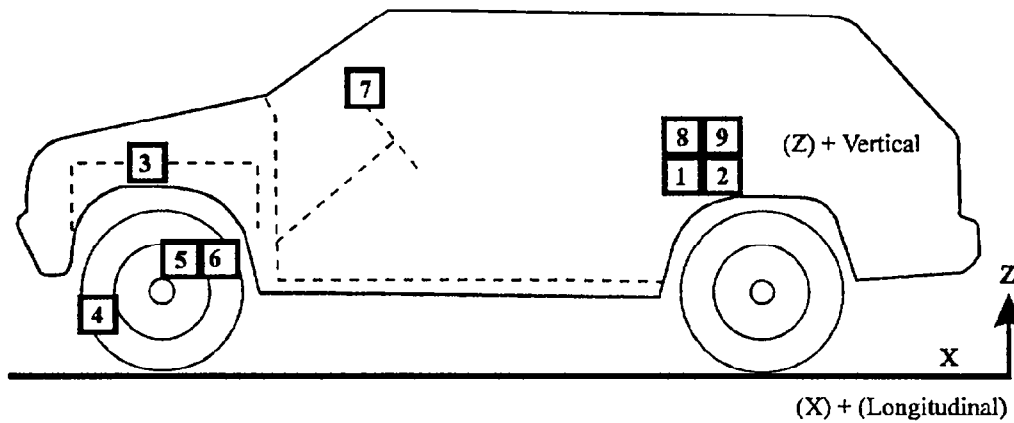
C1	=	531 mm
C2	=	580 mm
C3	=	652 mm
C4	=	646 mm
C5	=	600 mm
C6	=	557 mm



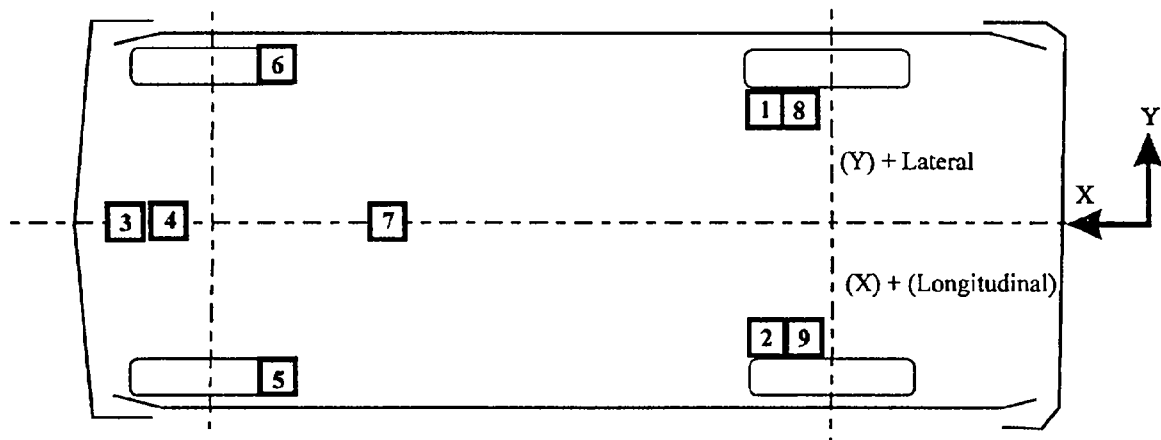
Midpoint of damage: D: Vehicle Longitudinal Centerline

Length of damaged region: L: 1524 mm

Figure 3 Vehicle Accelerometer Placement



Side View



Bottom View

Table 4 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 970303 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 LEFT REAR SEAT CROSSMEMBER LONGITUDINAL REDUNDANT	1925 mm	643 mm	558 mm	2.6 g @ 180.8 ms 2.6 g @ 180.8 ms	31.9 g @ 69.6 ms 31.8 g @ 69.8 ms
2 RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL REDUNDANT	1925 mm	-643 mm	567 mm	3.0 g @ 186.5 ms 3.0 g @ 186.6 ms	27.3 g @ 53.7 ms 27.1 g @ 53.6 ms
3 ENGINE TOP LONGITUDINAL	4019 mm	165 mm	933 mm	17.0 g @ 52.4 ms	97.1 g @ 41.2 ms
4 ENGINE BOTTOM LONGITUDINAL	3865 mm	20 mm	396 mm	11.2 g @ 59.7 ms	78.2 g @ 39.4 ms
5 RIGHT BRAKE CALIPER LONGITUDINAL	4040 mm	-695 mm	385 mm	35.4 g @ 59.2 ms	74.2 g @ 43.0 ms
6 LEFT BRAKE CALIPER LONGITUDINAL	4040 mm	695 mm	408 mm	57.8 g @ 51.0 ms	129.6 g @ 37.8 ms
7 INSTRUMENT PANEL CENTER LONGITUDINAL	3342 mm	0 mm	1372 mm	37.2 g @ 79.2 ms	71.7 g @ 34.5 ms

REFERENCE: X: + FORWARD ACCELERATION
Y: + LEFT FROM VEHICLE CENTERLINE
Z: + UP FROM GROUND LEVEL

Table 5 Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	<u>Driver #142</u>	<u>Passenger #192</u>
Head	Airbag, head restraint	Airbag, head restraint
Chest	Airbag	Airbag
Abdomen	None	None
Left knee	Instrument panel	Instrument panel
Right knee	Instrument panel	Instrument panel

Door Opening:

	<u>Left</u>	<u>Right</u>
Front	Tools & torch required	Difficult, no tools required
Rear	Difficult, no tools required	Easy

Seat Movement:

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

Glazing Damage: The entire windshield was cracked on impact.

Other Notable Impact Effects: None

Table 6 FMVSS 208 Data Summary

Vehicle year/make/
model/body style: 1997/Chevrolet/Tahoe/multi-purpose passenger vehicle

Vehicle NHTSA number: MV0122

Test date: 03/03/97

	Driver Dummy #142		Passenger Dummy #192	
<u>Maximum Accelerations:</u>				
Head X-axis	-64.6	g	-52.2	g
Head Y-axis	29.1	g	-7.8	g
Head Z-axis	-24.1	g	-31.3	g
Head resultant	69.1	g	57.6	g
Chest X-axis	-44.8	g	-44.3	g
Chest Y-axis	-3.2	g	8.6	g
Chest Z-axis	-12.7	g	17.7	g
Chest resultant ¹	44.8	g	44.6	g
Chest resultant time interval ¹	.003	sec	.003	sec
<u>Head Injury Criteria (HIC) Values:</u>				
HIC ²	833		545	
HIC starting time	.062	sec	.067	sec
HIC ending time	.098	sec	.103	sec
Average head resultant acceleration during HIC time interval	55.6	g	47.0	g
<u>Maximum Chest Deflections:</u>				
Chest X-axis	45	mm	40	mm
Maximum chest deflection time	.075	sec	.093	sec
<u>Maximum Compressive Femur Forces:</u>				
Left femur	8606	N	1635	N
Right femur	5162	N	3756	N
<u>Maximum Seat Belt Forces:</u>				
Lap belt	2460	N	5158	N
Shoulder belt	6863	N	7835	N

Note: All values listed must be occurring during primary impact event.
(Head accelerations listed must be during HIC time interval.)

¹ 0.003 Sec. Minimum duration.

² The maximum HIC time interval is 36 milliseconds.

Table 7 Hybrid III Data Summary

Vehicle year/make/
model/body style: 1997/Chevrolet/Tahoe/multi-purpose passenger vehicle
Vehicle NHTSA number: MV0122
Test date: 03/03/97

	Driver Dummy #142	Passenger Dummy #192
<u>Maximum Forces</u>		
Neck X-axis shear force	-293 N	915 N
Neck Y-axis shear force	186 N	143 N
Neck Z-axis axial force	2245 N	2266 N
<u>Maximum Moments</u>		
Neck moment about X-axis	11.9 N·m	-18.2 N·m
Neck moment about Y-axis	27.8 N·m	-51.9 N·m
Neck moment about Z-axis	25.0 N·m	-11.5 N·m
<u>Maximum Accelerations:</u>		
Pelvis X-axis	-75.2 g	-51.5 g
Pelvis Y-axis	17.4 g	13.5 g
Pelvis Z-axis	14.9 g	23.4 g
Pelvis resultant	76.3 g	53.5 g

Table 7 Hybrid III Data Summary, Cont'd.

Vehicle year/make/
model/body style: 1997/Chevrolet/Tahoe/multi-purpose passenger vehicle

Vehicle NHTSA number: MV0122

Test date: 03/03/97

	Driver Dummy #142	Passenger Dummy #192
Left upper tibia moment about X-axis	199.4 N·m	-189.0 N·m
Left upper tibia moment about Y-axis	-125.8 N·m	240.8 N·m
Right upper tibia moment about X-axis	214.2 N·m	-150.3 N·m
Right upper tibia moment about Y-axis	132.2 N·m	145.5 N·m
Left lower tibia X-axis force	-702 N	-1661 N
Left lower tibia Z-axis force	-4466 N	-6698 N
Left lower tibia moment about Y-axis	-52.4 N·m	66.7 N·m
Right lower tibia X-axis force	-1800 N	-904 N
Right lower tibia Z-axis force	-6012 N	-4853 N
Right lower tibia moment about Y-axis	-163.6 N·m	49.0 N·m
Left foot X-axis acceleration	256.1 g	-210.2 g
Left foot Z-axis acceleration at heel	117.0 g	235.9 g
Left foot Z-axis acceleration at toe	294.9 g	488.3 g
Right foot X-axis acceleration	-303.2 g	-209.6 g
Right foot Z-axis acceleration at heel	-638.0 g	69.5 g
Right foot Z-axis acceleration at toe	774.2 g	-206.9 g

Note: All values listed must be occurring during primary impact event.

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 were restrained by the driver's airbag as the dummy's torso was restrained by the three-point unbelt. The dummy's head rotated rearward into the head restraint as the dummy rebounded into the seat back. The dummy came to rest seated in the driver's seat, restrained by the three-point unbelt.

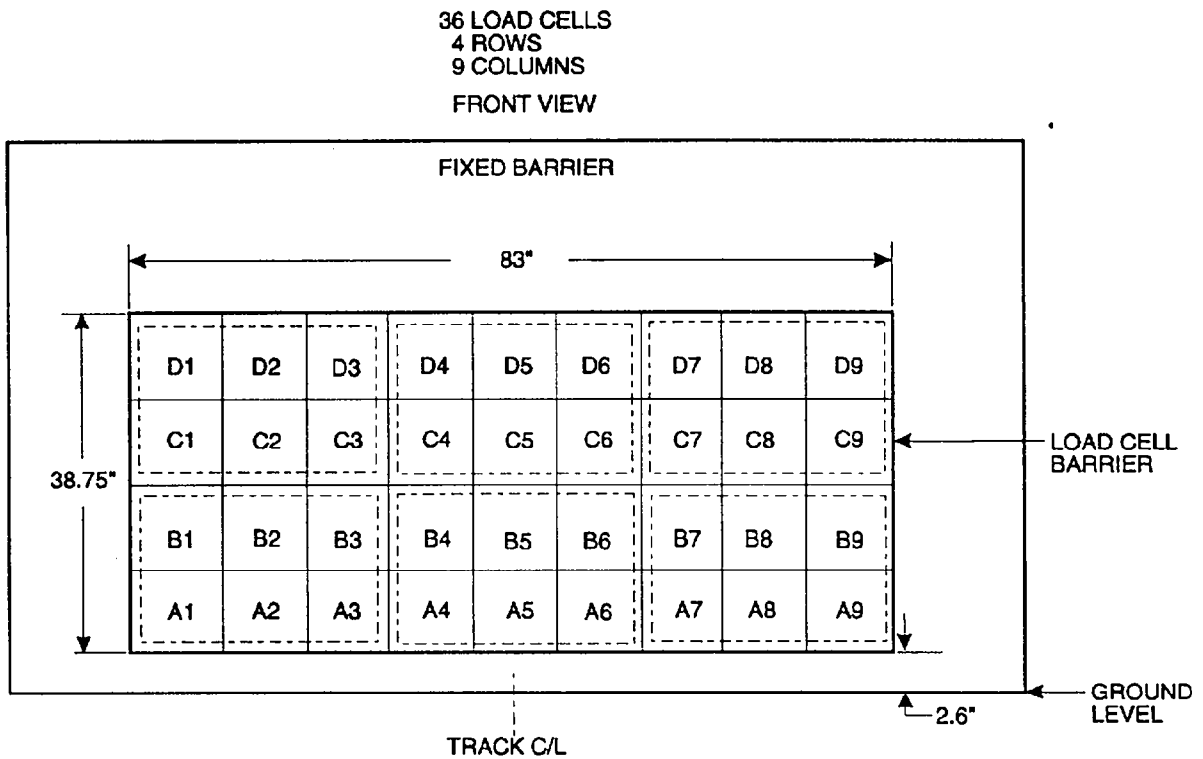
Right Front Passenger Dummy

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

Table 8 Seat Belt Performance Assessment Test Data

	Driver	Passenger
<u>Belt length data:</u>		
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	3275 mm	3360 mm
Shoulder belt length as measured on Part 572 dummy.	1670 mm	1700 mm
Lap belt length as measured on Part 572 dummy.	787 mm	825 mm
<u>Shoulder belt spool-off length:</u>		
As determined by film analysis	40 mm	50 mm
As determined mechanically	54 mm	42 mm
As determined electronically	72 mm	102 mm
<u>Belt stretch length:</u>		
As measured mechanically	0 mm/m	0 mm/m
As measured electronically	1 mm/m	0 mm/m
<u>Retractor lock-up time:</u>		
As determined by shoulder belt spool-off	78 ms	84

Figure 4 Load Cell Barrier Configuration



- Group 1: A1 through B3
- Group 2: A4 through B6
- Group 3: A7 through B9
- Group 4: C1 through D3
- Group 5: C4 through D6
- Group 6: C7 through D9

Table 9 Load Cell Barrier Data Summary

Location	Positive direction				Negative direction			
Total group 1 ¹	5.9	kN	@	4.7 ms	223.3	kN	@	37.3 ms
Total group 2	0.5	kN	@	169.9 ms	229.1	kN	@	39.8 ms
Total group 3	2.8	kN	@	4.2 ms	160.2	kN	@	39.0 ms
Total group 4	4.2	kN	@	3.0 ms	105.1	kN	@	16.6 ms
Total group 5	0.2	kN	@	228.5 ms	320.5	kN	@	44.9 ms
Total group 6	0.4	kN	@	1.4 ms	86.8	kN	@	17.7 ms
Total load cell force ^{1,2}	----	kN	@	---- ms	902.5	kN	@	41.8 ms

Tension is positive
Compression is negative

¹ See data acquisition explanation.

² No positive value in time frame of interest.

Section 3.0

FMVSS 212, 219 (partial), and 301 Data

Figure 5 FMVSS 212 Test Data

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

Adhesive around inner perimeter, plastic trim around outer perimeter.

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 windshield for vehicles equipped with automatic restraint systems for front occupants.

Windshield periphery measurements:

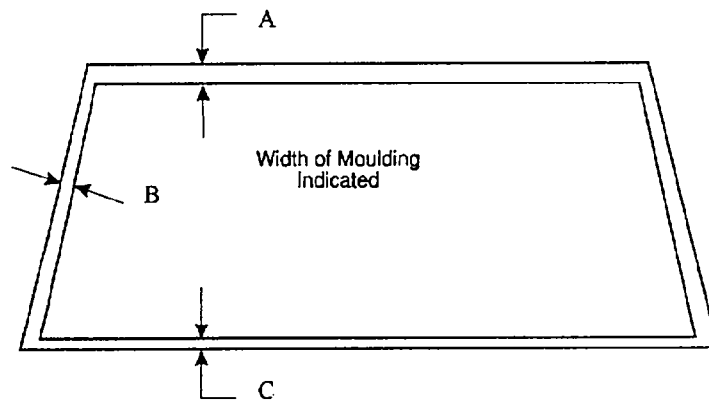
	<u>Pre-test</u>	<u>Post-test</u>	<u>Percent retention</u>
Right side	2215 mm	2215 mm	100
Left side	2215 mm	2215 mm	100
Total	4430 mm	4430 mm	100

Pre-test windshield mounting material temperature: 20° C

A = 11 mm

B = 18 mm

C = 18 mm



Front view of windshield¹

Loss of windshield retention lengths: None

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

Figure 6 FMVSS 219 Test Data

Protected zone lower edge requirement:

The lower edge of the protected zone is determined by placing a 165-millimeter diameter rigid sphere weighing 6.8 kg 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 13 millimeters 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 = 1400 mm

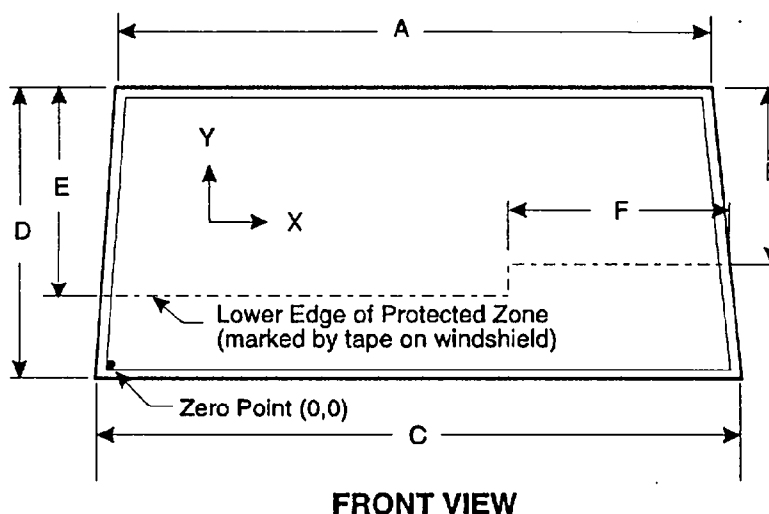
B = 335 mm

C = 1720 mm

D = 679 mm

E = 313 mm

F = 1110 mm



Method of adhering protected zone template to windshield: NA

Areas of windshield template penetration greater than 6 mm: NA

Areas of windshield penetration, below the protected zone, through the inner surface of the windshield: None

Coordinates	
X	Y
1.	
2.	
3.	

- 1.
- 2.
- 3.

Table 10 Fuel System Data

Vehicle year/make/ model/body style:	1997/Chevrolet/Tahoe/multi-purpose passenger vehicle
NHTSA number:	MV0122
Fuel system capacity:	113.0 liters (from owner's manual)
Usable capacity:	113.6 liters (furnished by COTR)
Test volume range:	104.5 liters to 106.8 liters (92-94% of usable)
Actual test volume:	105.6 liters (with entire fuel system filled)
Test fluid type:	Stoddard solvent
Specific gravity:	0.764
Kinematic viscosity:	0.99 centistoke
Test fluid color:	Purple
Did electric fuel pump operate with ignition switch "on" and the engine not operating.	No
Details of fuel system:	The fuel tank was located in front of the rear axle, between the left frame rail and the driveshaft. The fuel filler neck was located on the left side and entered the rear of the fuel tank. The fuel lines ran along the left frame rail to the engine compartment.

Table 11 FMVSS 301 Post-Impact Test Data

NHTSA number: MV0122
Test date: 03/03/97
Vehicle year/make/
model/body style: 1997/Chevrolet/Tahoe/multi-purpose passenger vehicle

Test requirements:

Test vehicle fuel tank filled to 92 to 94% of manufacturer's usable capacity and with electric fuel pump operating (if it will operate without engine operation). Part 572 test dummies located at each front designated seating position.

Test vehicle impact type:

- ☒ Frontal (56 kph)
☐ Oblique (48 kph) with ___° barrier face first contacting ___ (driver/pass.) side
☐ Rear moving barrier (48 kph)
☐ Lateral moving barrier (32 kph)

Fuel system fluid spillage measurements:

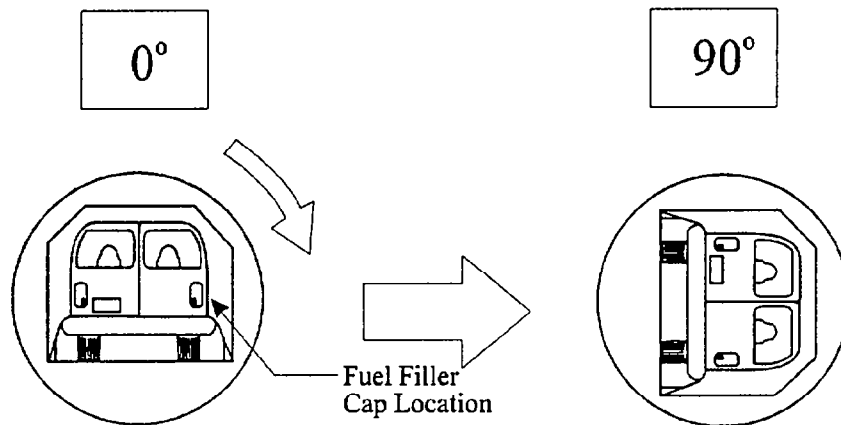
	<u>Test Results</u>	<u>Maximum Allowable</u>
1. From impact until vehicle motion ceases	0 g	28 g
2. 5-minute period after vehicle motion ceases	0 g	142 g
3. Next 25 minutes after 5-minute period	0 g	28 g/min

Fuel system fluid spillage location(s): None

Figure 7 FMVSS 301 Static Rollover Test Data

NHTSA number: MV0122

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90° = 2 minutes, 0 seconds

FMVSS 301 position hold time = 5 minutes, 0 seconds

Total = 7 minutes, 0 seconds

Next whole minute interval = 7 minutes

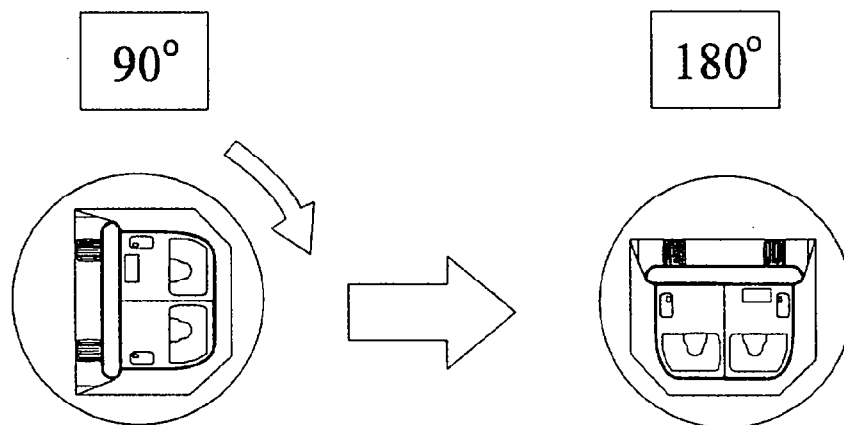
Fuel system fluid spillage measurements:

	Test Results	Maximum Allowable
<u>0° to 90° rotation (fuel filler cap down)</u>		
1. First five minutes from onset of rotation	0 g	142 g
2. Sixth minute from onset of rotation	0 g	28 g
3. Seventh minute from onset of rotation	0 g	28 g

Fuel system fluid spillage location(s): None

Figure 7 FMVSS 301 Static Rollover Test Data, Cont'd.

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90° = 2 minutes, 0 seconds

FMVSS 301 position hold time = 5 minutes, 0 seconds

Total = 7 minutes, 0 seconds

Next whole minute interval = 14 minutes

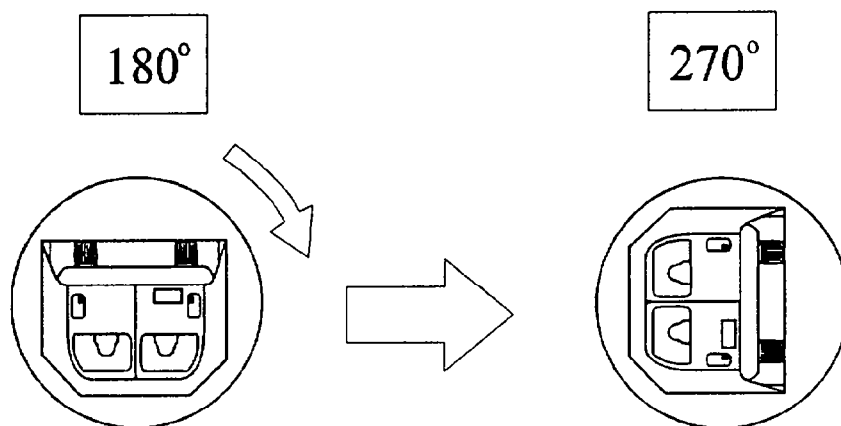
Fuel system fluid spillage measurements:

<u>90° to 180° rotation</u>		Test Results	Maximum Allowable
1.	First five minutes from onset of rotation	0 g	142 g
2.	Sixth minute from onset of rotation	0 g	28 g
3.	Seventh minute from onset of rotation	0 g	28 g

Fuel system fluid spillage location(s): None

Figure 7 FMVSS 301 Static Rollover Test Data, Cont'd.

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90° = 2 minutes, 0 seconds

FMVSS 301 position hold time = 5 minutes, 0 seconds

Total = 7 minutes, 0 seconds

Next whole minute interval = 21 minutes

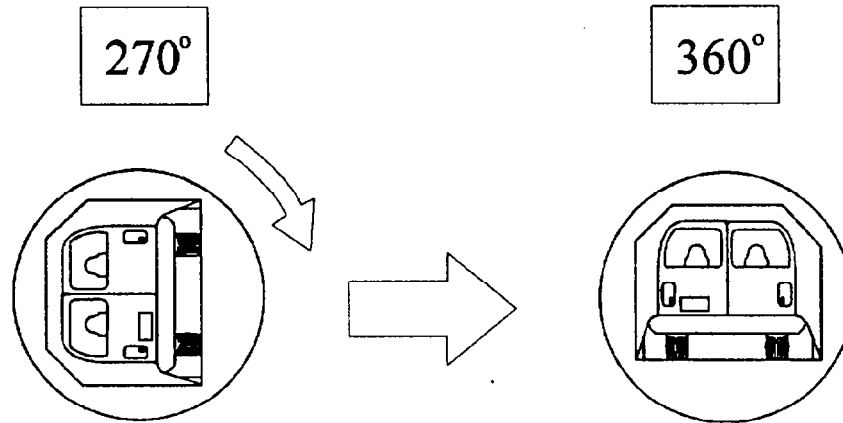
Fuel system fluid spillage measurements:

<u>180° to 270° rotation</u>		Test Results	Maximum Allowable
1.	First five minutes from onset of rotation	0 g	142 g
2.	Sixth minute from onset of rotation	0 g	28 g
3.	Seventh minute from onset of rotation	0 g	28 g

Fuel system fluid spillage location(s): None

Figure 7 FMVSS 301 Static Rollover Test Data, Cont'd.

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90° = 2 minutes, 0 seconds
 FMVSS 301 position hold time = 5 minutes, 0 seconds
 Total = 7 minutes, 0 seconds
 Next whole minute interval = 28 minutes

Fuel system fluid spillage measurements:

270° to 360° rotation	Test Results	Maximum Allowable
1. First five minutes from onset of rotation	0 g	142 g
2. Sixth minute from onset of rotation	0 g	28 g
3. Seventh minute from onset of rotation	0 g	28 g

Fuel system fluid spillage location(s): None

Section 4.0

Occupant, Camera, and Vehicle Information

Figure 8 Dummy Measurement Locations for Front Seat Occupants

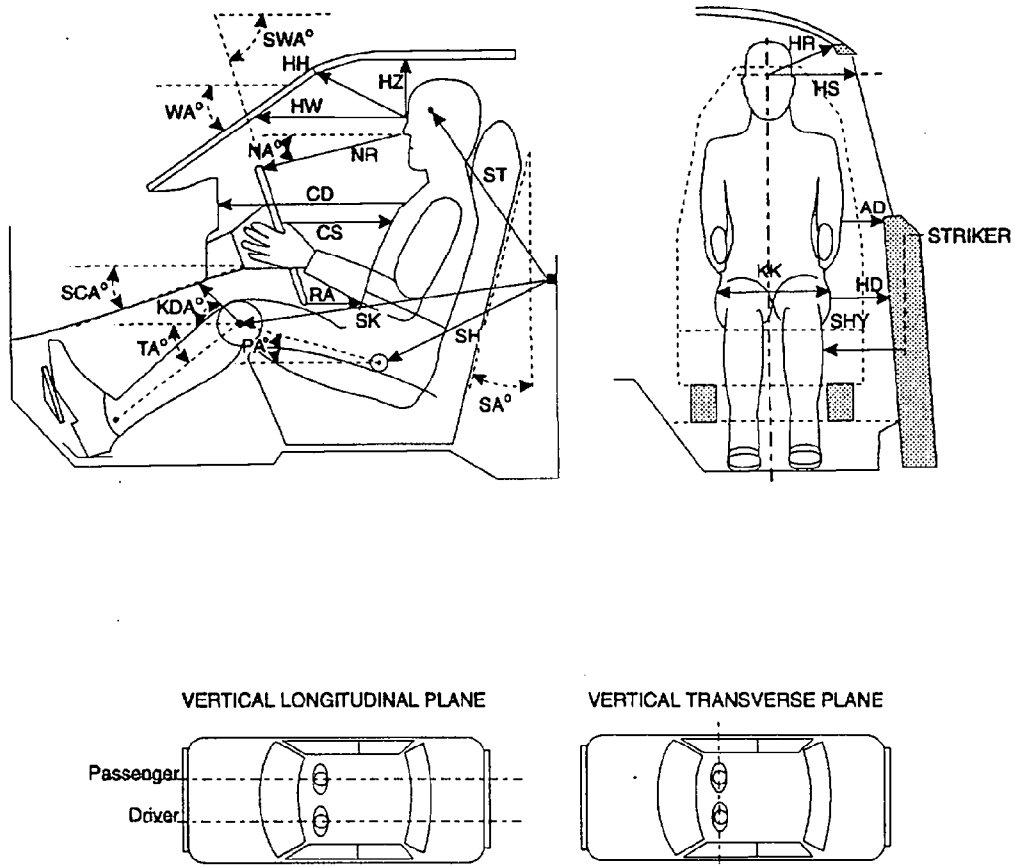


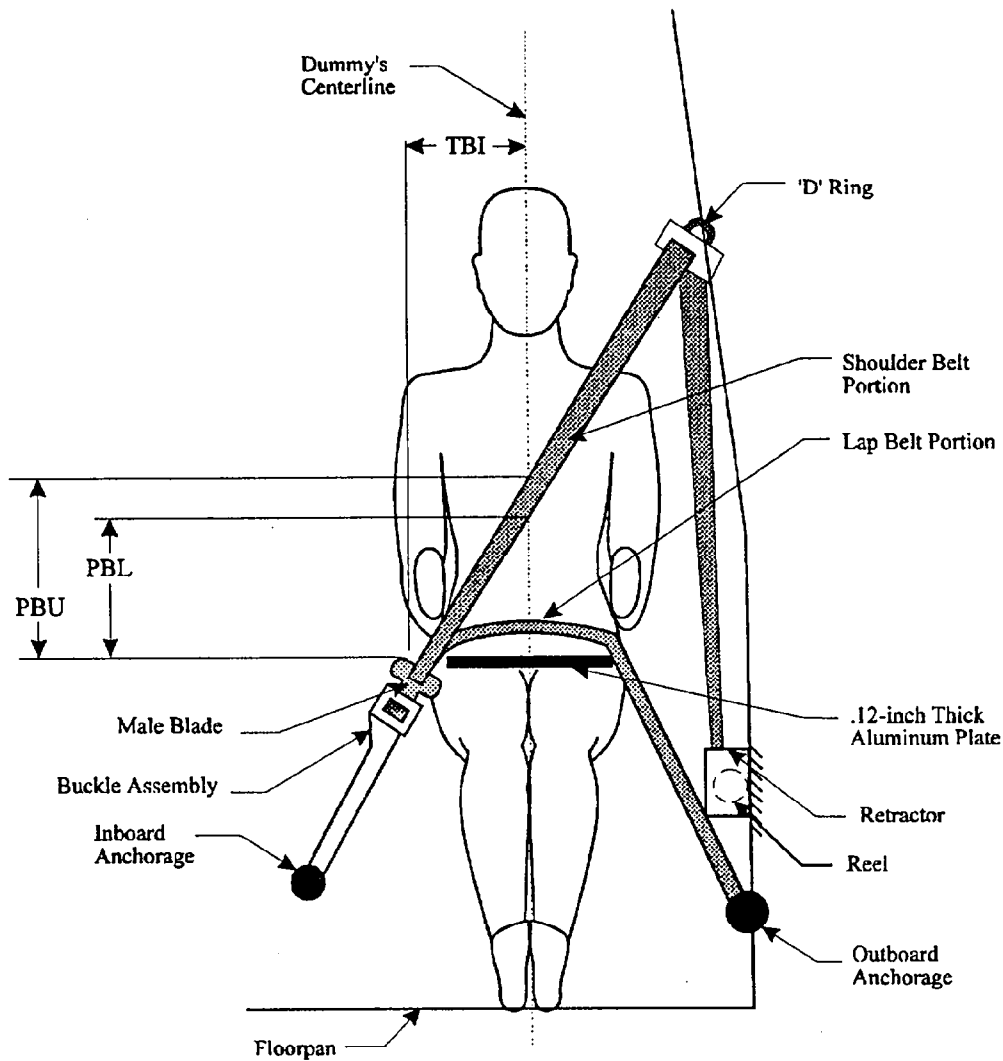
Table 12 Dummy Measurement Data For Front Seat Occupants

<u>Designation</u>	<u>Type of Measurement</u>	<u>Driver (Serial #142)</u>	<u>Passenger (Serial #192)</u>
WA	Windshield angle	40°	40°
SWA	Steering wheel angle	64°	NA
SCA	Steering column angle	26°	NA
SA	Seat back angle	22°	22°
HZ	Head to roof	247 mm	227 mm
HH	Head to header	525 mm	500 mm
HW	Head to windshield	685 mm	636 mm
HR	Head to side header	254 mm	262 mm
NR	Nose to rim	396 mm	NA
NA	Nose to rim angle	11°	NA
CD	Chest to dash	584 mm	560 mm
CS	Steering wheel to chest	346 mm	NA
RA	Rim to abdomen	182 mm	NA
KDL	Left knee to dash	179 mm	202 mm
KDR	Right knee to dash	196 mm	204 mm
KDA	Outboard knee to dash angle	27°	27°
PA	Pelvic angle	23°	21°
TA	Tibial angle	40°	46°
KK	Knee to knee	320 mm	265 mm
ST ¹	Striker to head	646 mm	666 mm
	Striker to head angle	75°	74°
SK ¹	Striker to knee	713 mm	720 mm
	Striker to knee angle	4°	7°
SH ¹	Striker to H-point	333 mm	341 mm
	Striker to H-point angle	8°	5°
SHY	Striker to H-point (Y dir.)	210 mm	250 mm
HS	Head to side window	260 mm	335 mm
HD	H-point to door	117 mm	138 mm
AD	Arm to door	119 mm	114 mm

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 above the striker.

Figure 9 Seat Belt Positioning Data



	Driver	Passenger
PBU - Top surface of aluminum plate to belt upper edge	345 mm	355 mm
PBL - Top surface of aluminum plate to belt lower edge	265 mm	279 mm
TBI - Dummy centerline to intersection of upper torso belt and lap belt	250 mm	263 mm

Figure 10 Camera Positions

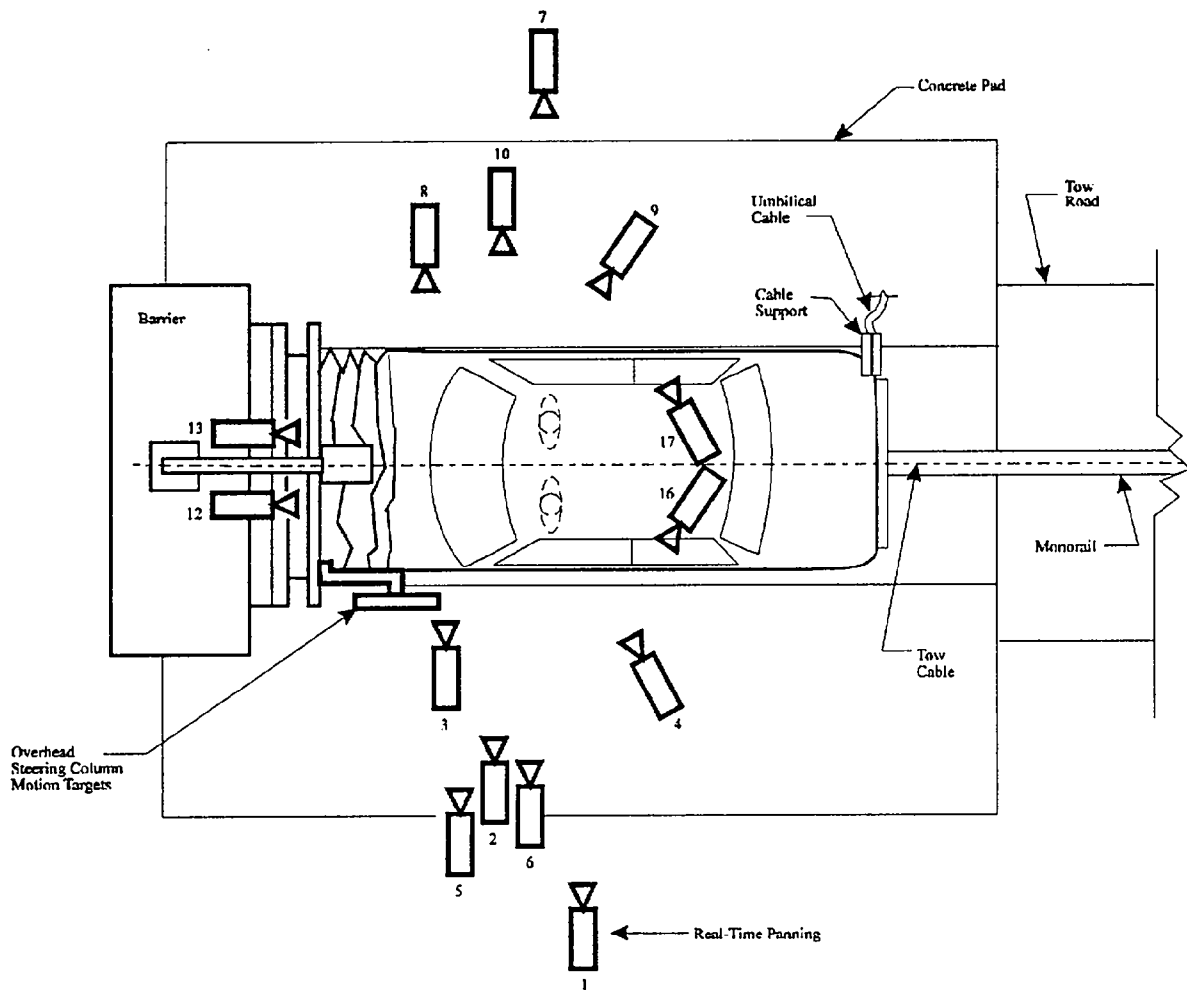


Figure 10 Camera Positions, Cont'd.

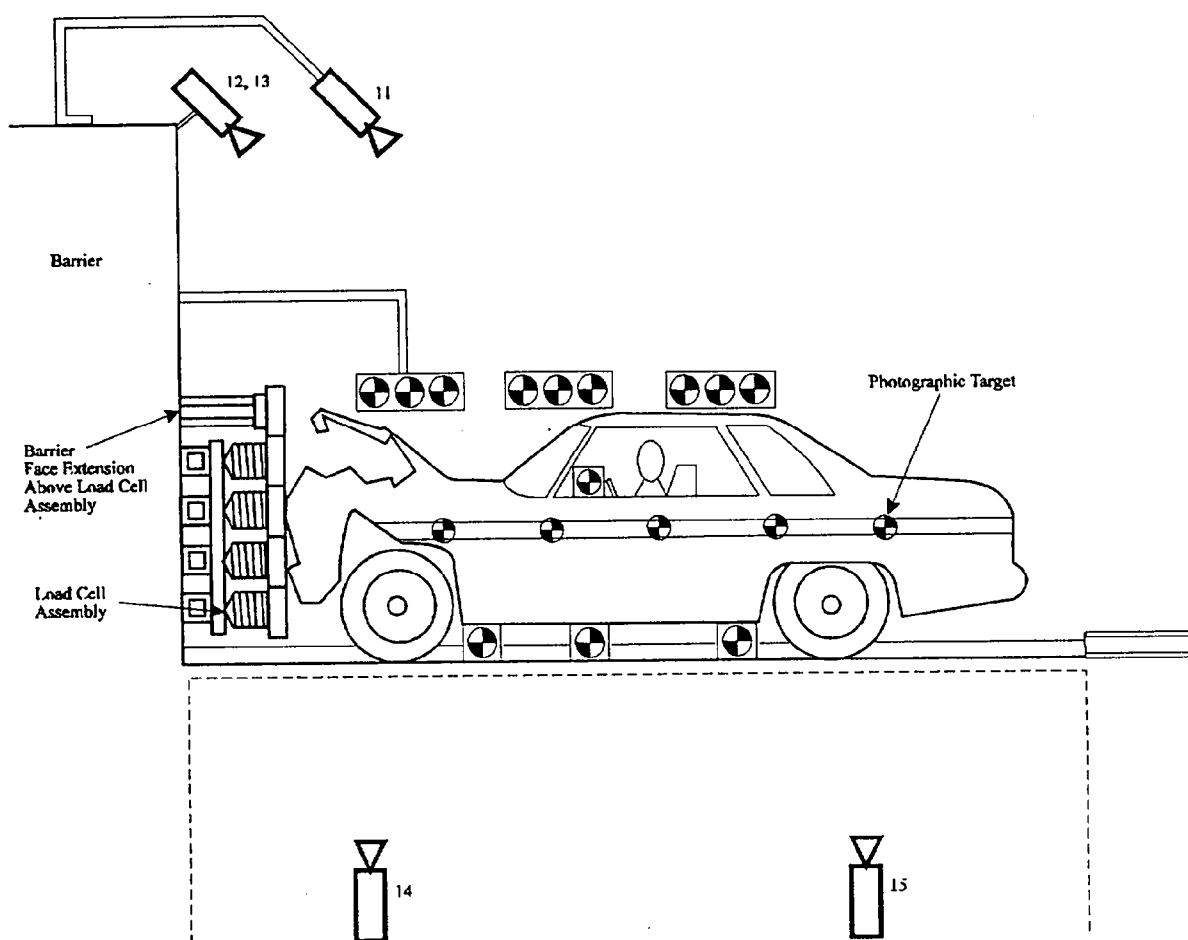


Table 13 Motion Picture Camera Locations

Test Number: 970303

Vehicle Year/Make/Model/Body Style: 1997/Chevrolet/Tahoe/multi-purpose passenger vehicle

Camera Number	View	Camera Positions ¹			Angle ²	Film Plane to Head Target	Lens	Film Speed
		X	Y	Z				
1	Real-time panning	-3607 mm	2802 mm	1549 mm	NA	NA	16 mm	24 frames/s
2	Left Barrier to seat back	-4572 mm	8230 mm	2591 mm	-27°	7010 mm	25 mm	990 frames/s
3	Left windshield intrusion	-1346 mm	7859 mm	1074 mm	0°	NA	50 mm	1002 frames/s
4	Dummy angled view	-1054 mm	2438 mm	1118 mm	-12°	2184 mm	25 mm	995 frames/s
5	Column movement - upper	-3353 mm	8230 mm	2616 mm	-14°	NA	25 mm	998 frames/s
6	Column movement - lower	-3353 mm	8230 mm	1908 mm	-9°	NA	25 mm	1008 frames/s
7	Right side overall	-2065 mm	-6767 mm	942 mm	-2°	NA	13 mm	1095 frames/s
8	Right windshield intrusion	-968 mm	-7775 mm	1118 mm	0°	NA	50 mm	1005 frames/s
9	Passenger angled view	-986 mm	2438 mm	1151 mm	7°	2134 mm	25 mm	1002 frames/s
10	Right medium tight	-4674 mm	7010 mm	2540 mm	-26°	6096 mm	25 mm	1020 frames/s
11	Windshield - barrier center	-925 mm	0 mm	2489 mm	-40°	NA	13 mm	1000 frames/s
12	Driver - barrier view	-173 mm	368 mm	2159 mm	-41°	NA	17 mm	1000 frames/s
13	Passenger - barrier view	-114 mm	-351 mm	2159 mm	-40°	NA	17 mm	1002 frames/s
14	Crush & fluid spillage - front pit	-1283 mm	0 mm	-2347 mm	90°	NA	13 mm	995 frames/s
15	Fluid spillage - rear pit	-2522 mm	0 mm	-2515 mm	90°	NA	13 mm	1000 frames/s
16	Driver seat belt movement	NA	NA	NA	NA	NA	NA mm	1005 frames/s
17	Passenger seat belt movement	NA	NA	NA	NA	NA	NA mm	1000 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]

Figure 11 Vehicle Target Locations

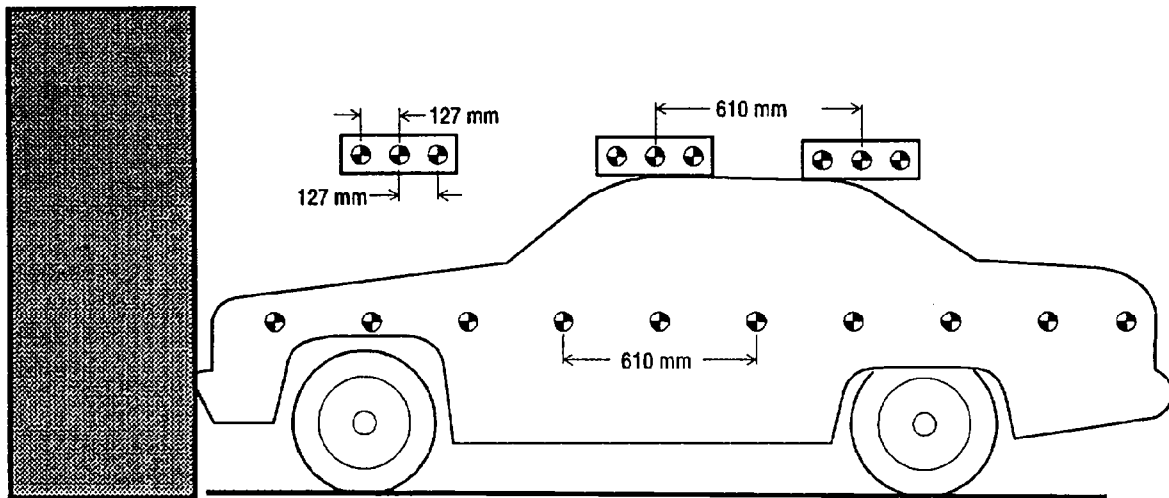


Figure 12 Pre-Test And Post-Test Measurement Points

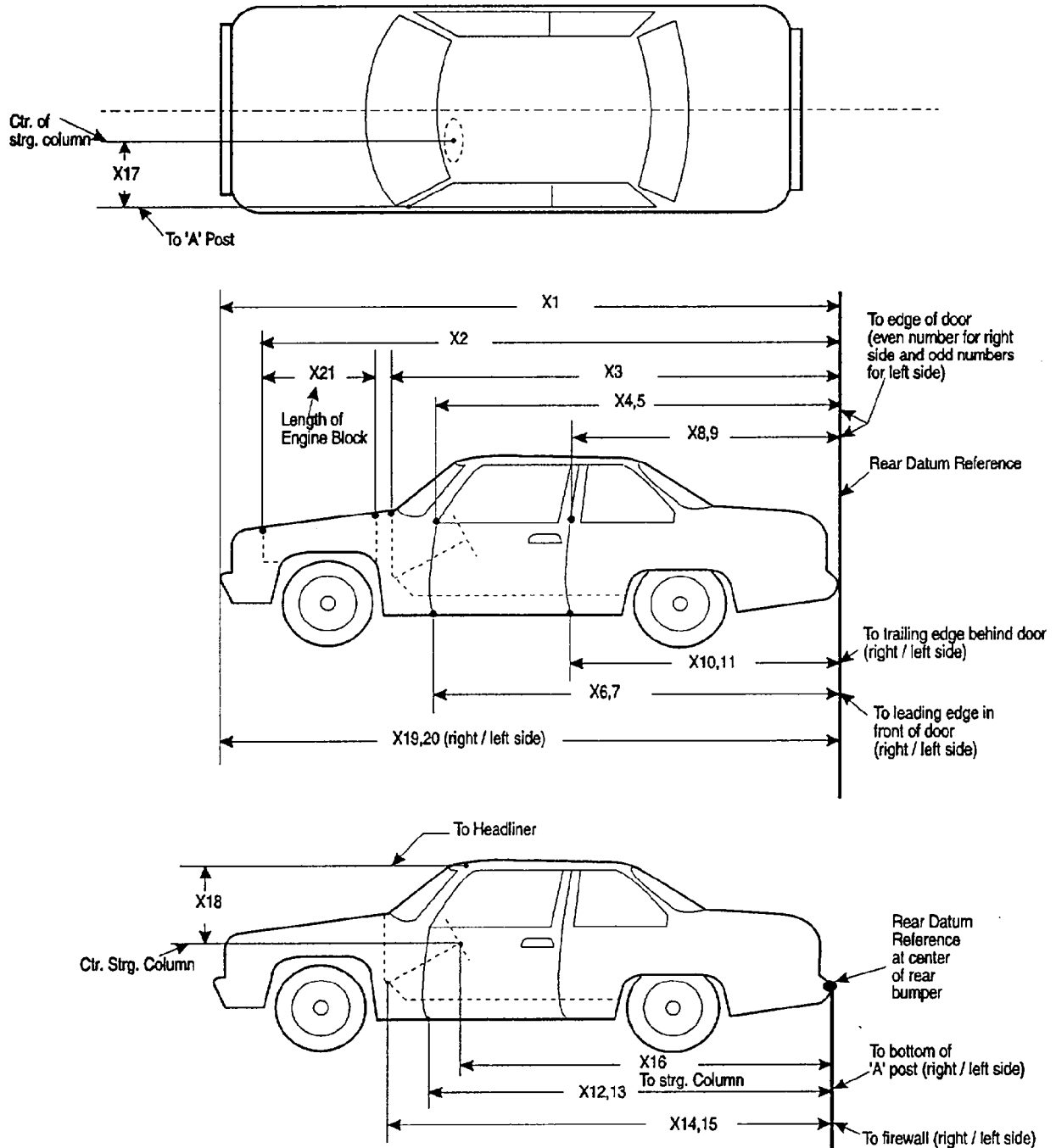


Table 14 Impacted Vehicle Measurements

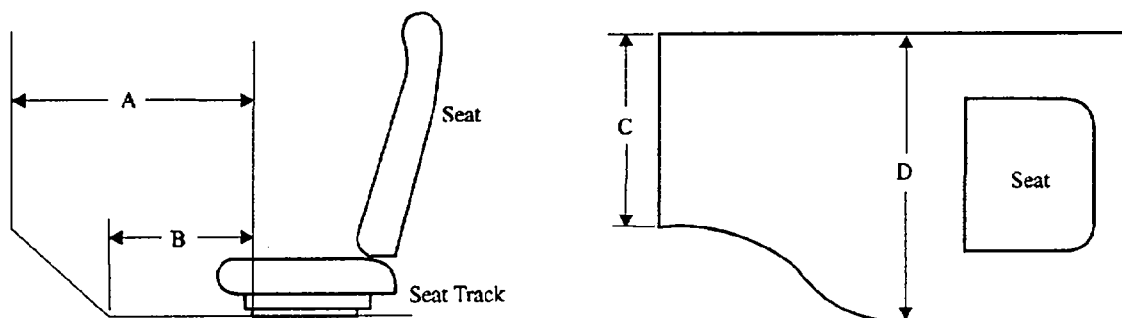
Test number: 970303

Vehicle year/make/model/body style: 1997/Chevrolet/Tahoe/multi-purpose passenger vehicle

No.	Type of measurement	Pre-test	Post-test	Difference
X1	Total length of vehicle at centerline	5072mm	4420 mm	652 mm
X2	Rear surface of vehicle to front of engine block	4272 mm	4108 mm	164 mm
X3	Rear surface of vehicle to firewall	3812 mm	3780 mm	32 mm
X4	Rear surface of vehicle to upper leading edge of right door	3600 mm	3627 mm	-27 mm
X5	Rear surface of vehicle to upper leading edge of left door	3592 mm	3614 mm	-22 mm
X6	Rear surface of vehicle to lower leading edge of right door	3564 mm	3563 mm	1 mm
X7	Rear surface of vehicle to lower leading edge of left door	3545 mm	3544 mm	1 mm
X8	Rear surface of vehicle to upper trailing edge of right door	2376 mm	2400 mm	-24 mm
X9	Rear surface of vehicle to upper trailing edge of left door	2367 mm	2392 mm	-25 mm
X10	Rear surface of vehicle to lower trailing edge of right door	2390 mm	2379 mm	-11 mm
X11	Rear surface of vehicle to lower trailing edge of left door	2386 mm	2367 mm	-19 mm
X12	Rear surface of vehicle to bottom of "A" post on right side	3538 mm	3549 mm	-11 mm
X13	Rear surface of vehicle to bottom of "A" post on left side	3538 mm	3556 mm	-18 mm
X14	Rear surface of vehicle to firewall - right side	3823 mm	3837 mm	-14 mm
X15	Rear surface of vehicle to firewall - left side	3817 mm	3822 mm	-5 mm
X16	Rear surface of vehicle to steering wheel center	3020 mm	3035 mm	-15 mm
X17	Center of steering column to "A" post	328 mm	345 mm	-17 mm
X18	Center of steering column to headliner	496 mm	495 mm	1 mm
X19	Rear surface of vehicle to right side of front bumper	4950 mm	4393 mm	557 mm
X20	Rear surface of vehicle to left side of front bumper	4940 mm	4409 mm	531 mm
X21	Length of engine block	641 mm	641 mm	0 mm
RD	Rear surface of vehicle to right side of dash panel	3301 mm	3300 mm	1 mm
CD	Rear surface of vehicle to center of dash panel	3257 mm	3283 mm	-26 mm
LD	Rear surface of vehicle to left side of dash panel	3287 mm	3288 mm	-1 mm

Figure 13 Vehicle Intrusion Measurements

Static Footwell Deformation



Driver's Side

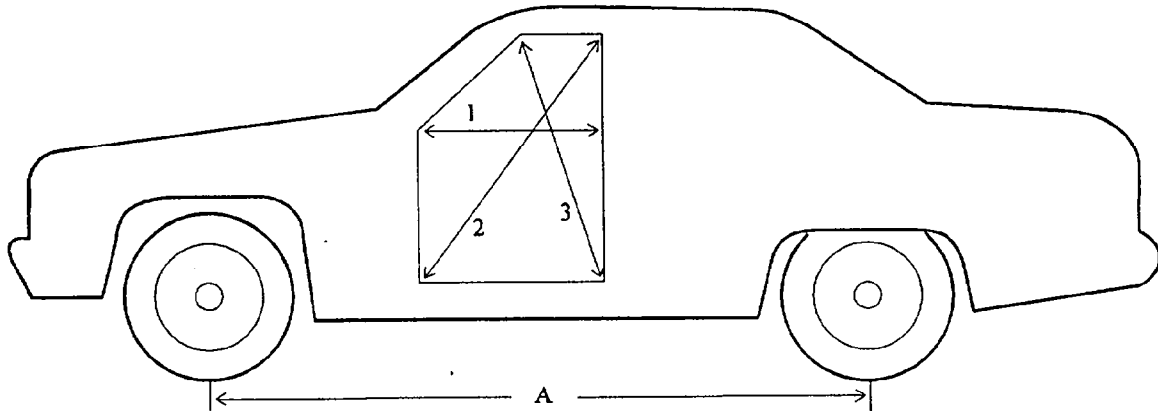
Measurement	Pre-Test	Post-Test	Difference
A	746 mm	750 mm	-4 mm
B	570 mm	607 mm	-37 mm
C	505 mm	455 mm	50 mm
D	490 mm	360 mm	130 mm

Passenger's Side

Measurement	Pre-Test	Post-Test	Difference
A	704 mm	713 mm	-9 mm
B	533 mm	554 mm	-21 mm
C	304 mm	360 mm	-56 mm
D	380 mm	360 mm	20 mm

Figure 14 Vehicle Intrusion Measurements

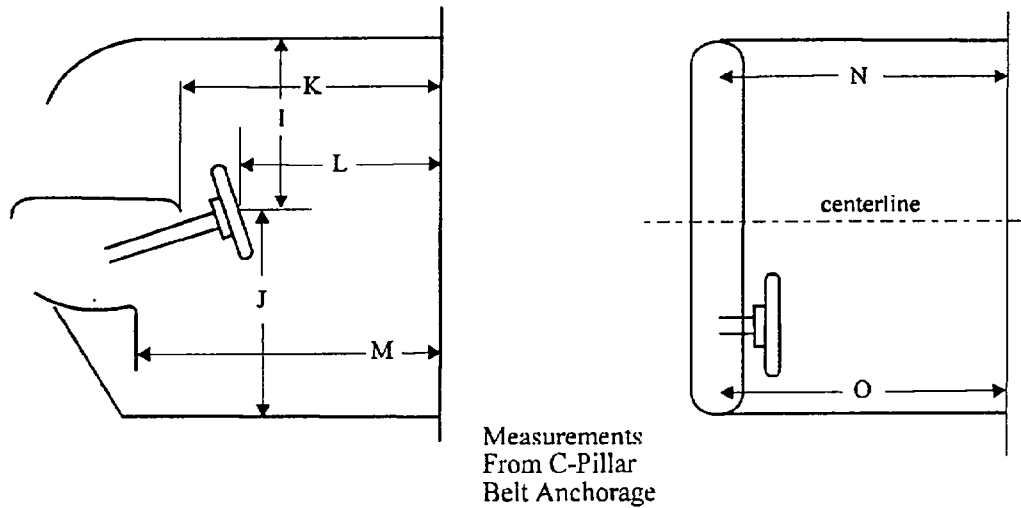
Door Opening Width



Units (mm)	Left			Right		
Measurement	1	2	3	1	2	3
Pre-Test	1095 mm	1470 mm	1250 mm	1089 mm	1475 mm	1247 mm
Post-Test	1074 mm	1441 mm	1324 mm	1073 mm	1452 mm	1294 mm
Difference	21 mm	29 mm	-74 mm	16 mm	23 mm	-47 mm

Units (mm)	A = Wheelbase Left	A = Wheelbase Right
Pre-Test	2988 mm	3004 mm
Post-Test	2825 mm	2840 mm
Difference	163 mm	164 mm

Figure 15 Vehicle Intrusion Measurements
Static Passenger Compartment Intrusion



Measurement	Pre-Test	Post-Test	Difference
I	496 mm	500 mm	-4 mm
J	674 mm	774 mm	-100 mm
K (driver's side)	2920 mm	2870 mm	50 mm
L	2896 mm	2815 mm	81 mm
M (driver's side)	2989 mm	2950 mm	39 mm
N	2965 mm	2920 mm	45 mm
O	2937 mm	2873 mm	64 mm
Passenger's side	2970 mm	2930 mm	40 mm
Passenger's side	2999 mm	2962 mm	37 mm

Appendix A

Photographs



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

970303

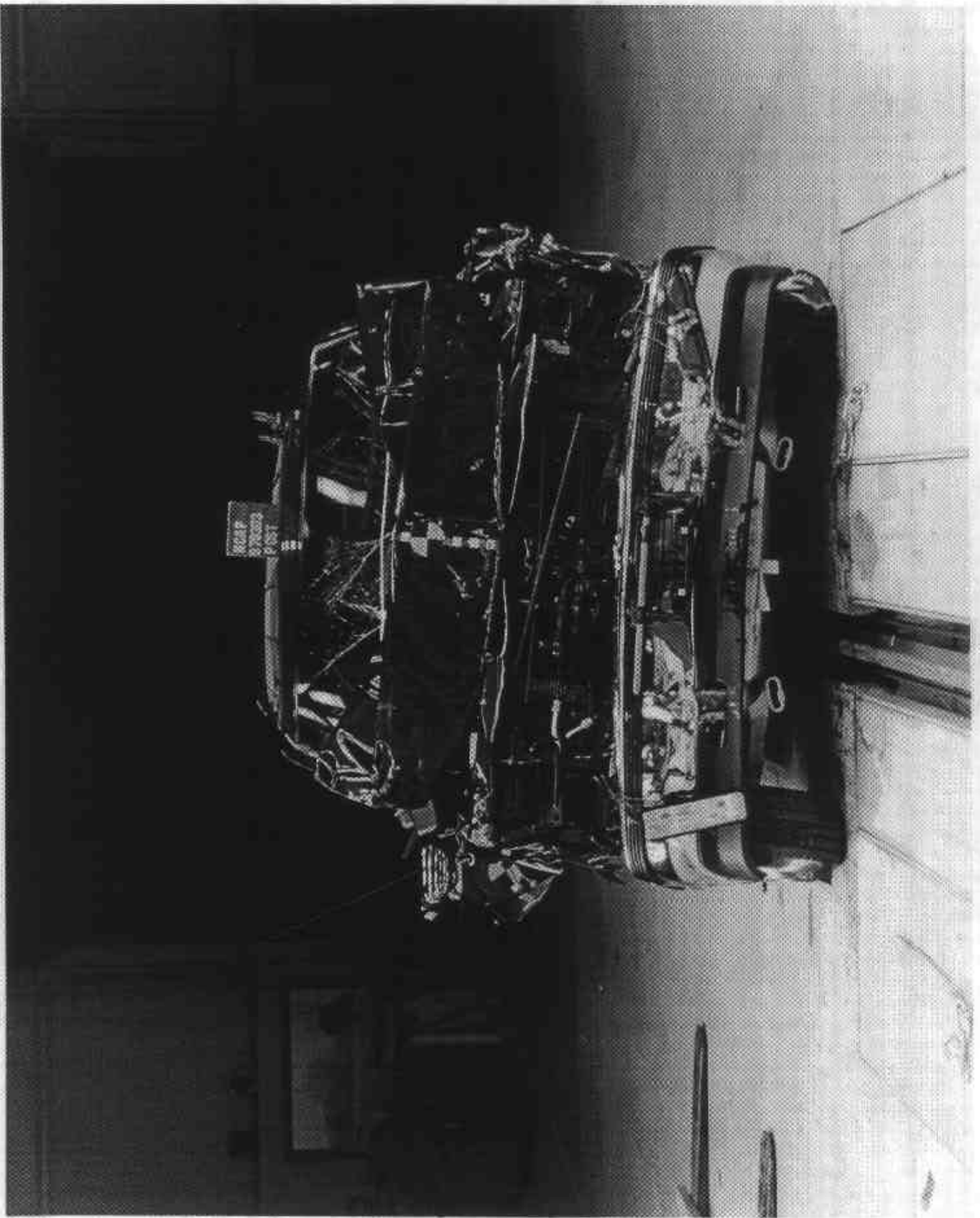


Figure A-2 Post-Test Front View
A-3

970303

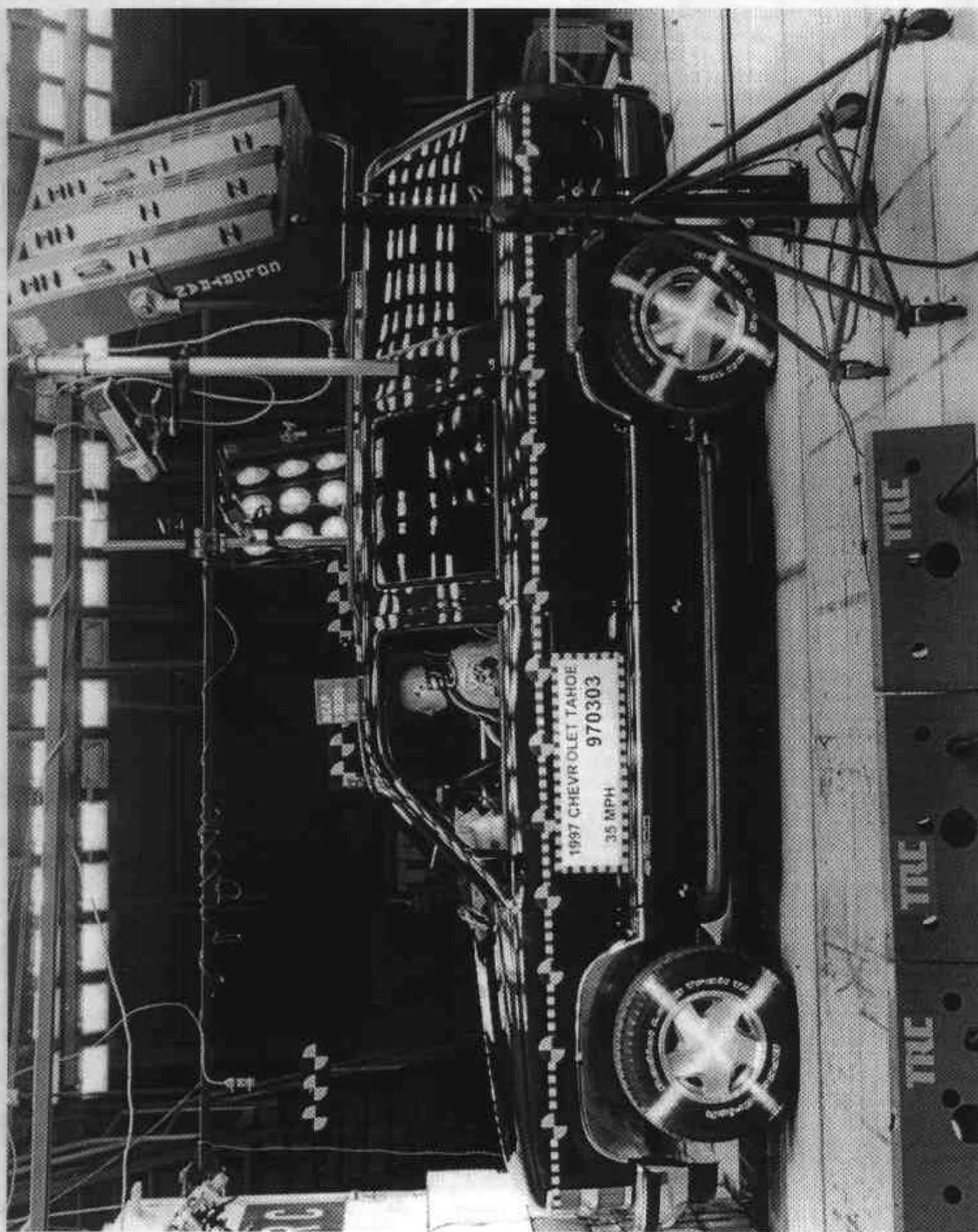


Figure A-3 Pre-Test Left Side View
A-4

970303

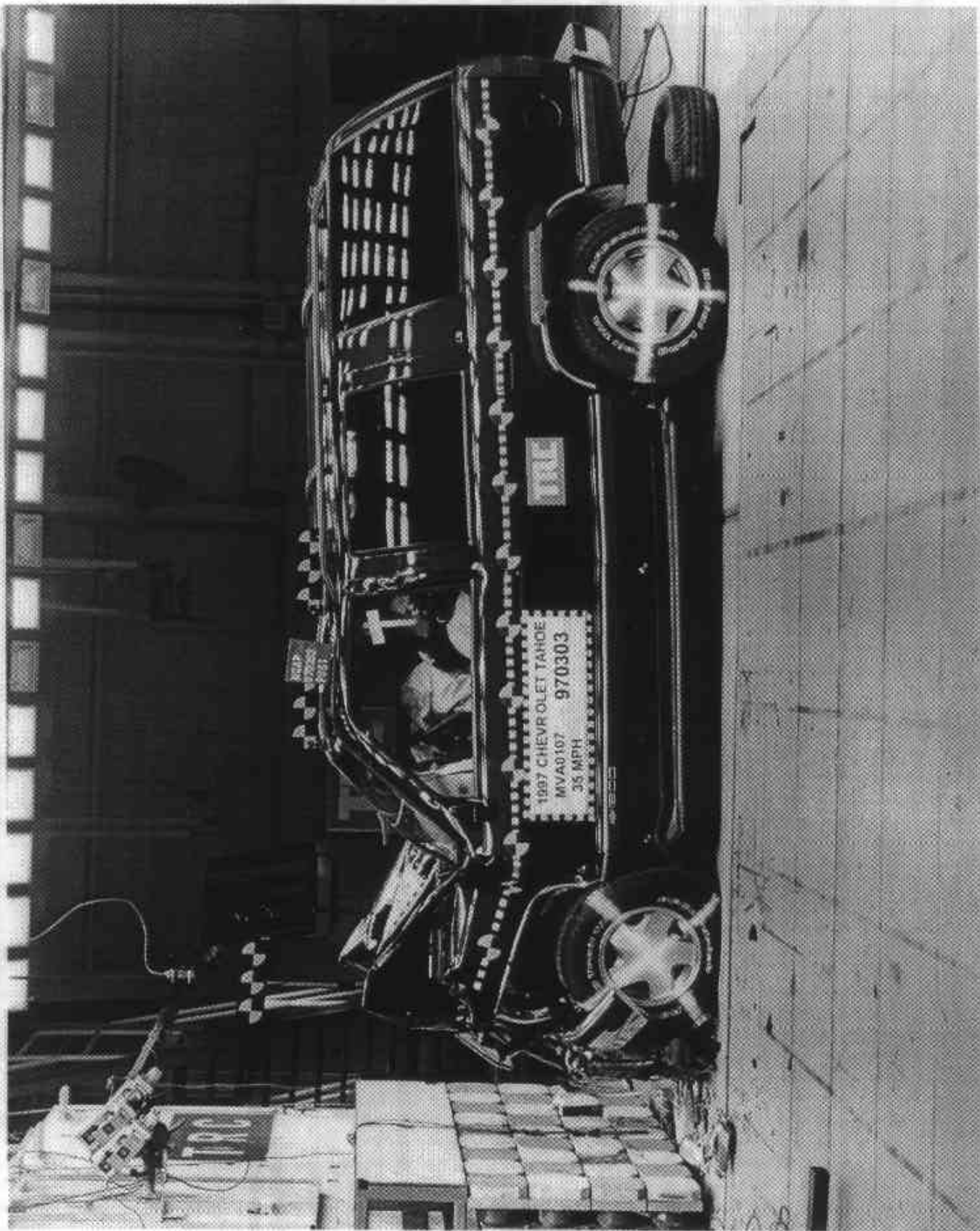


Figure A-4 Post-Test Left Side View
A-5

970303

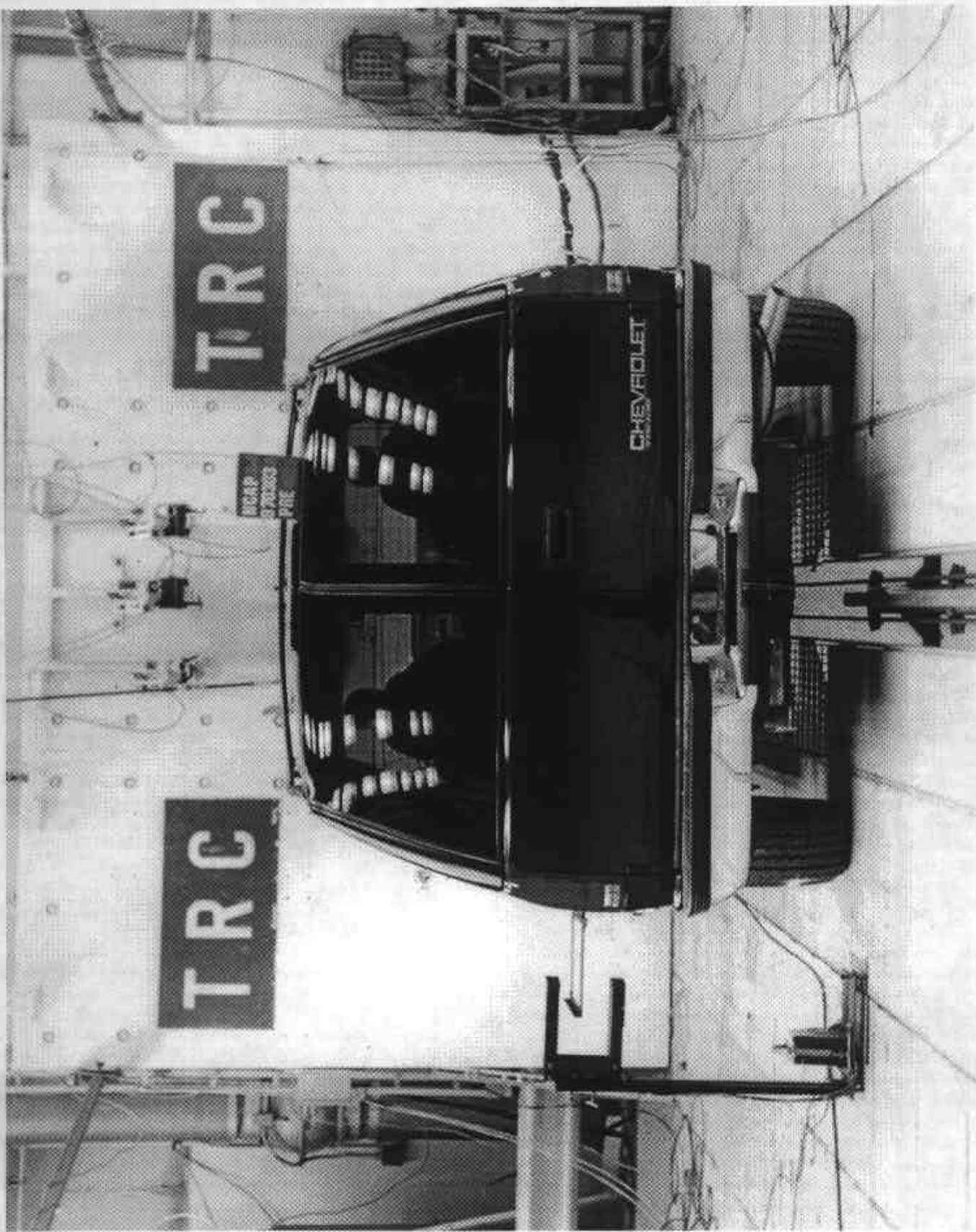


Figure A-5 Pre-Test Rear View
A-6

970303

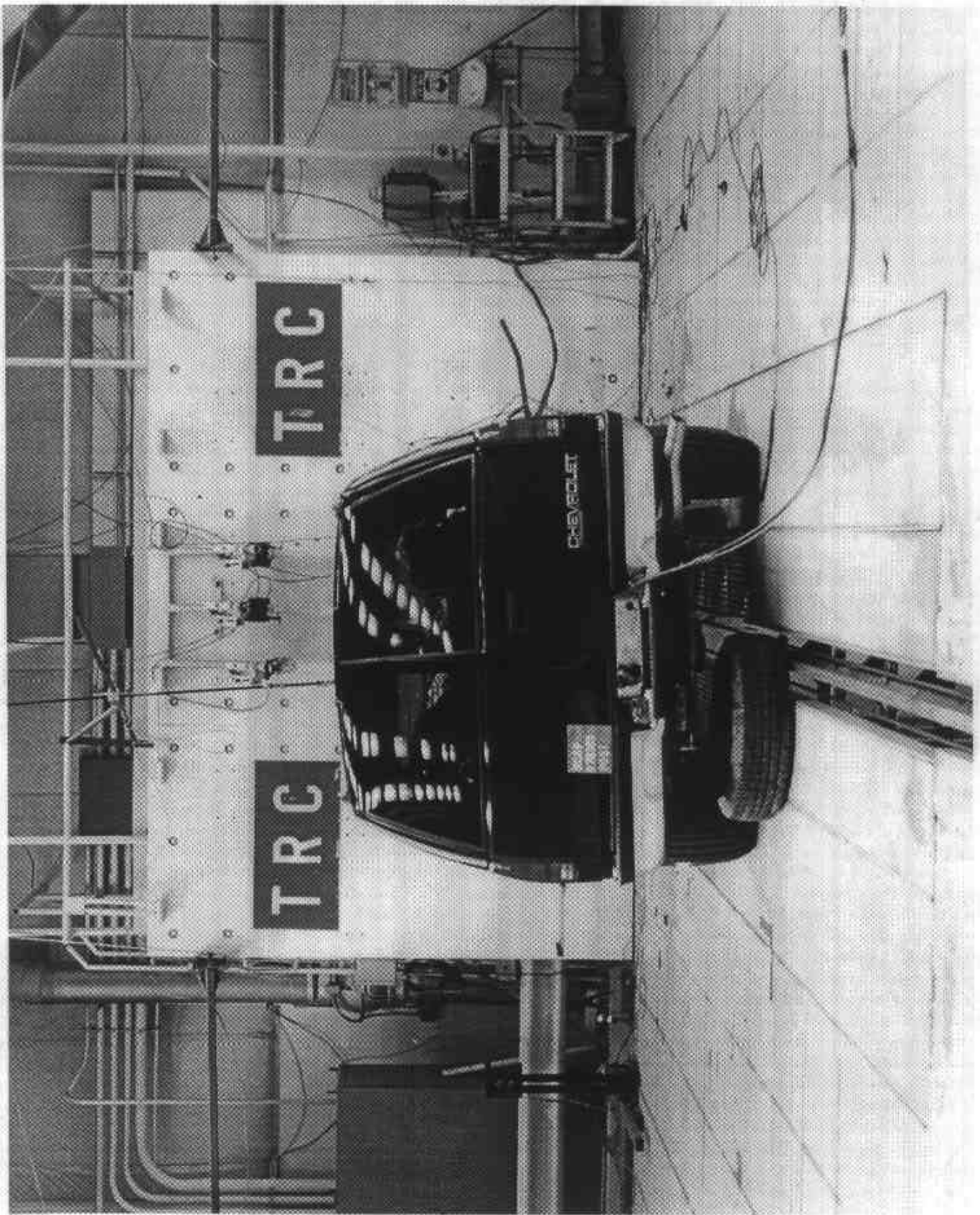


Figure A-6 Post-Test Rear View
A-7

970303

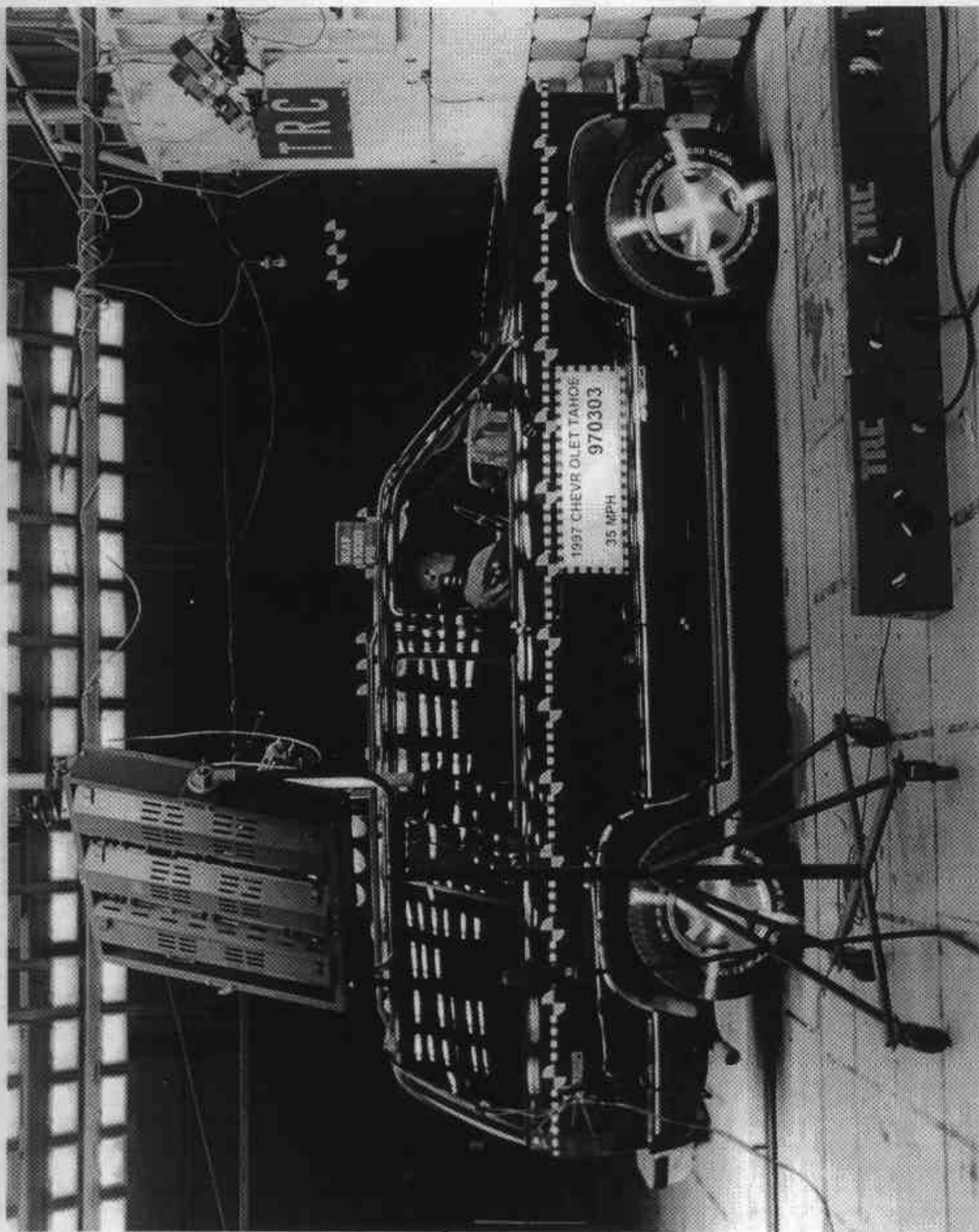


Figure A-7 Pre-Test Right Side View
A-8

970303

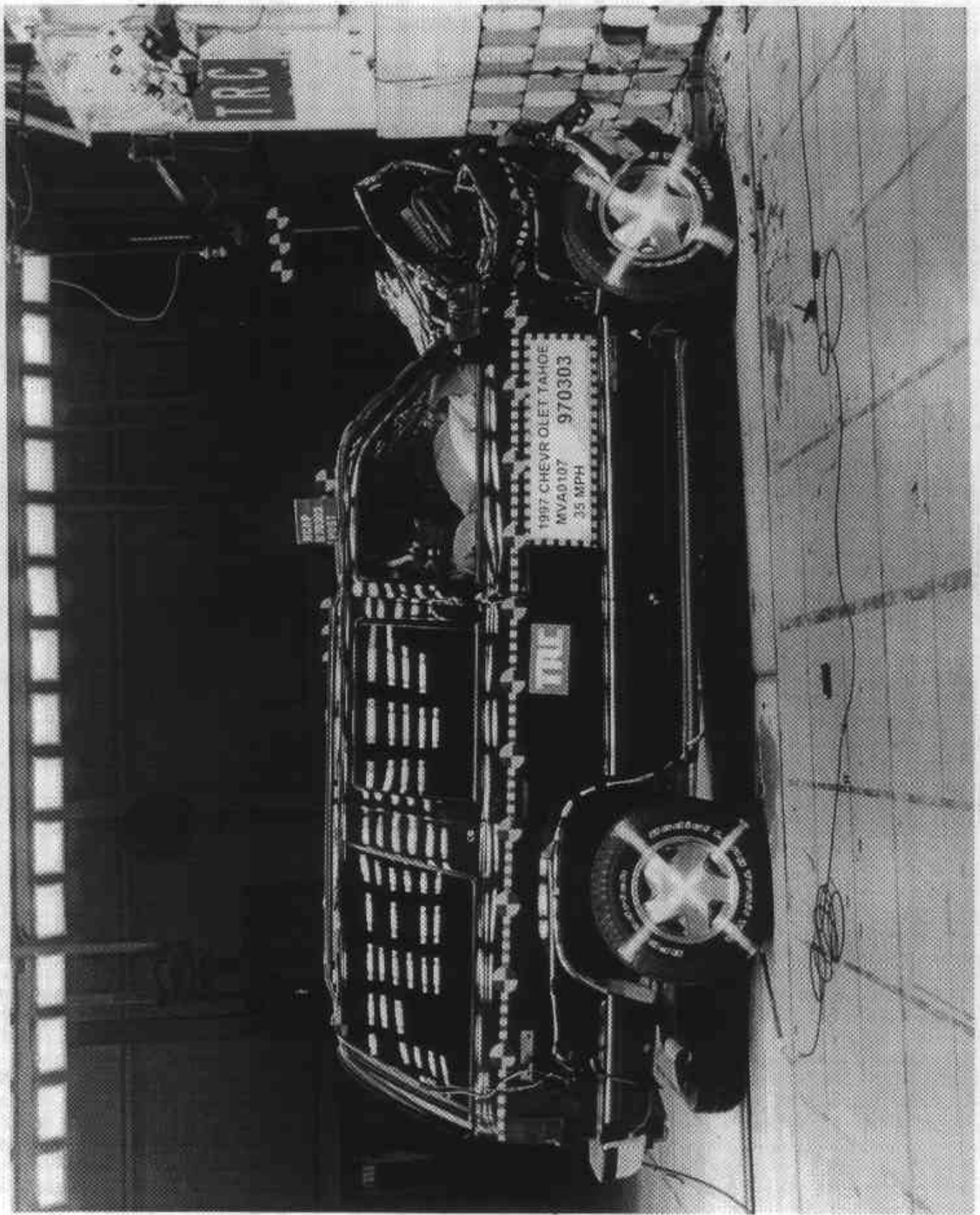


Figure A-8 Post-Test Right Side View
A-9

970303



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

970303

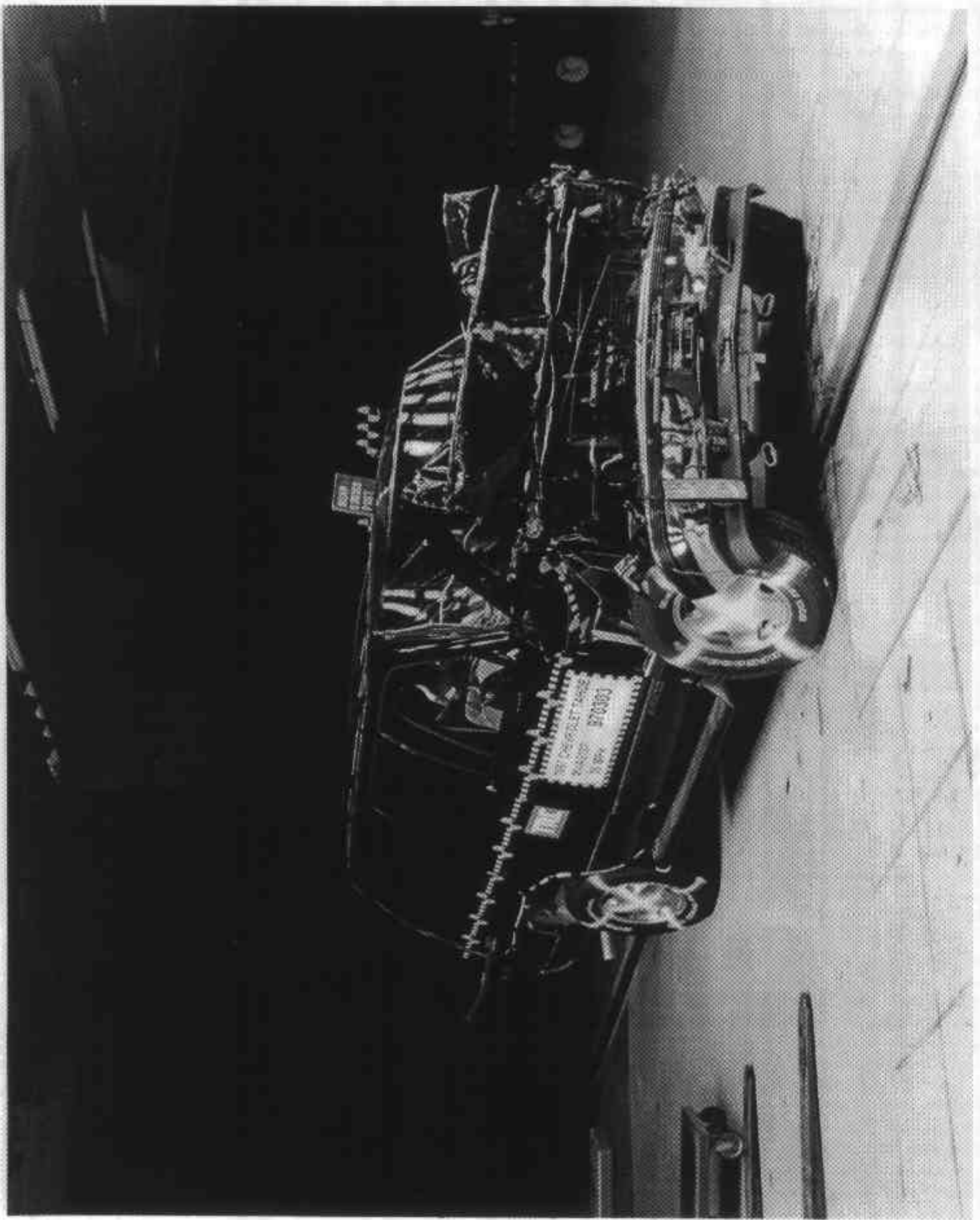


Figure A-10. Post-Test Right Front Three-Quarter View
A-11

970303

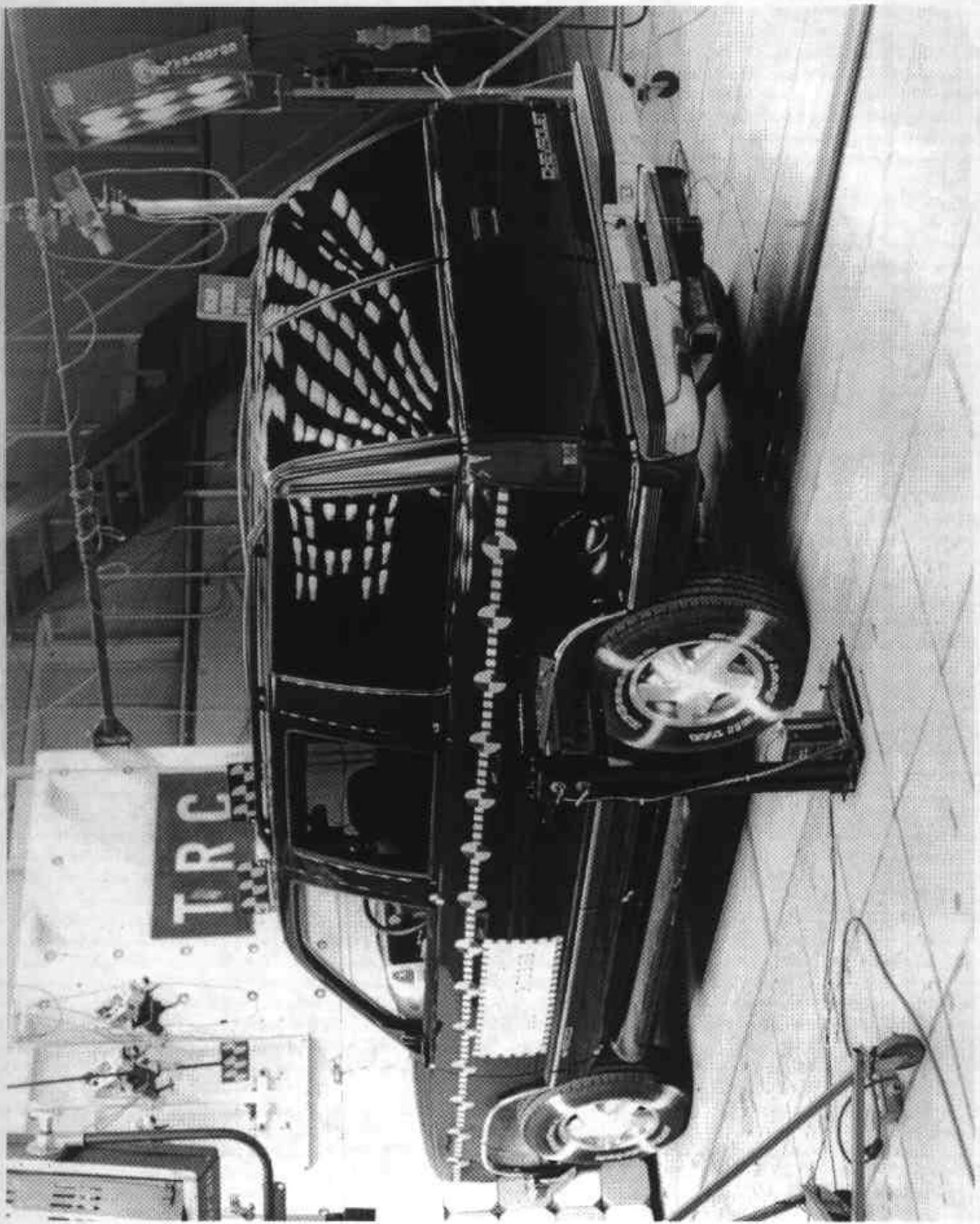


Figure A-11 Pre-Test Left Rear Three-Quarter View
A-12

970303

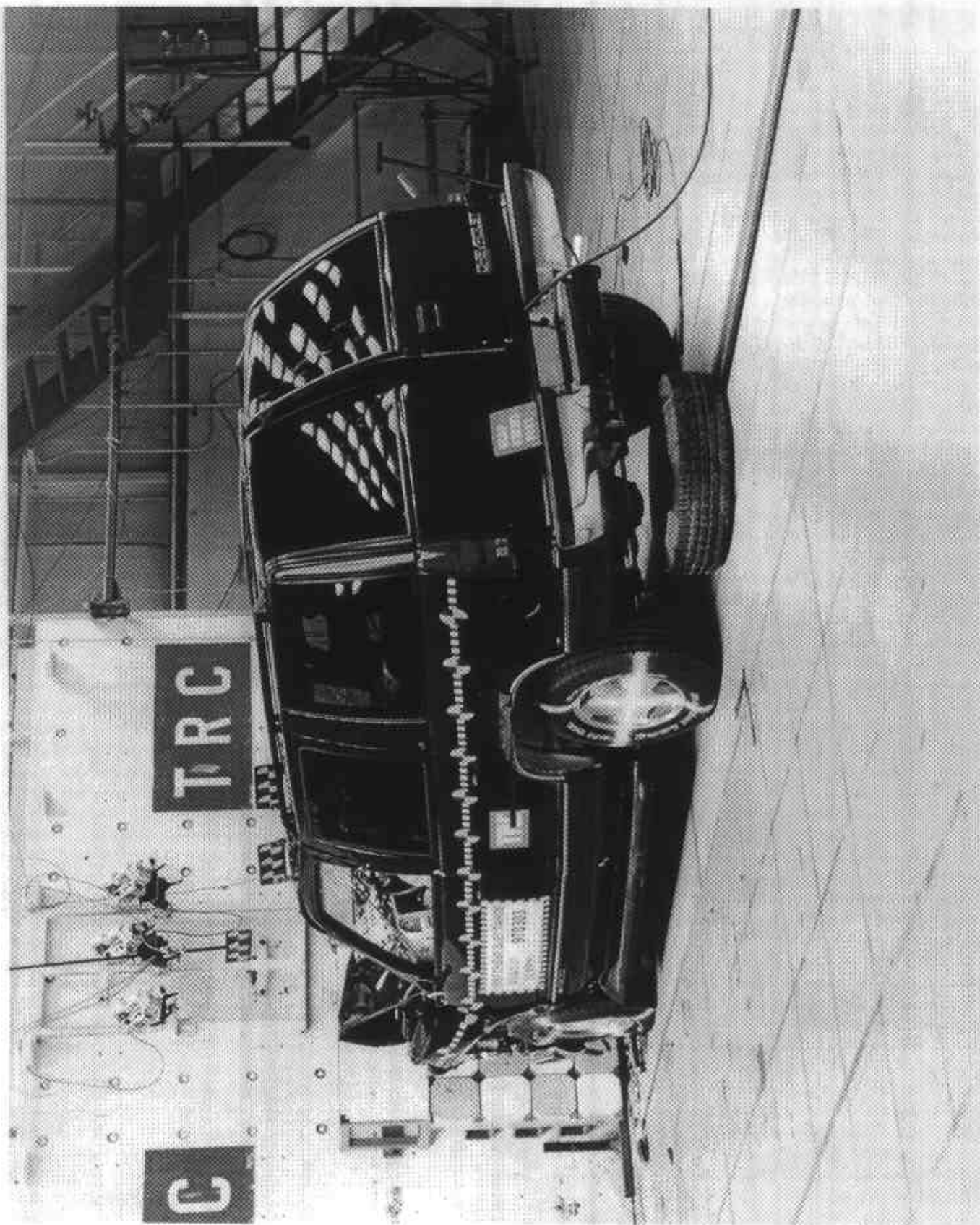


Figure A-12 Post-Test Left Rear Three-Quarter View

A-13

970303

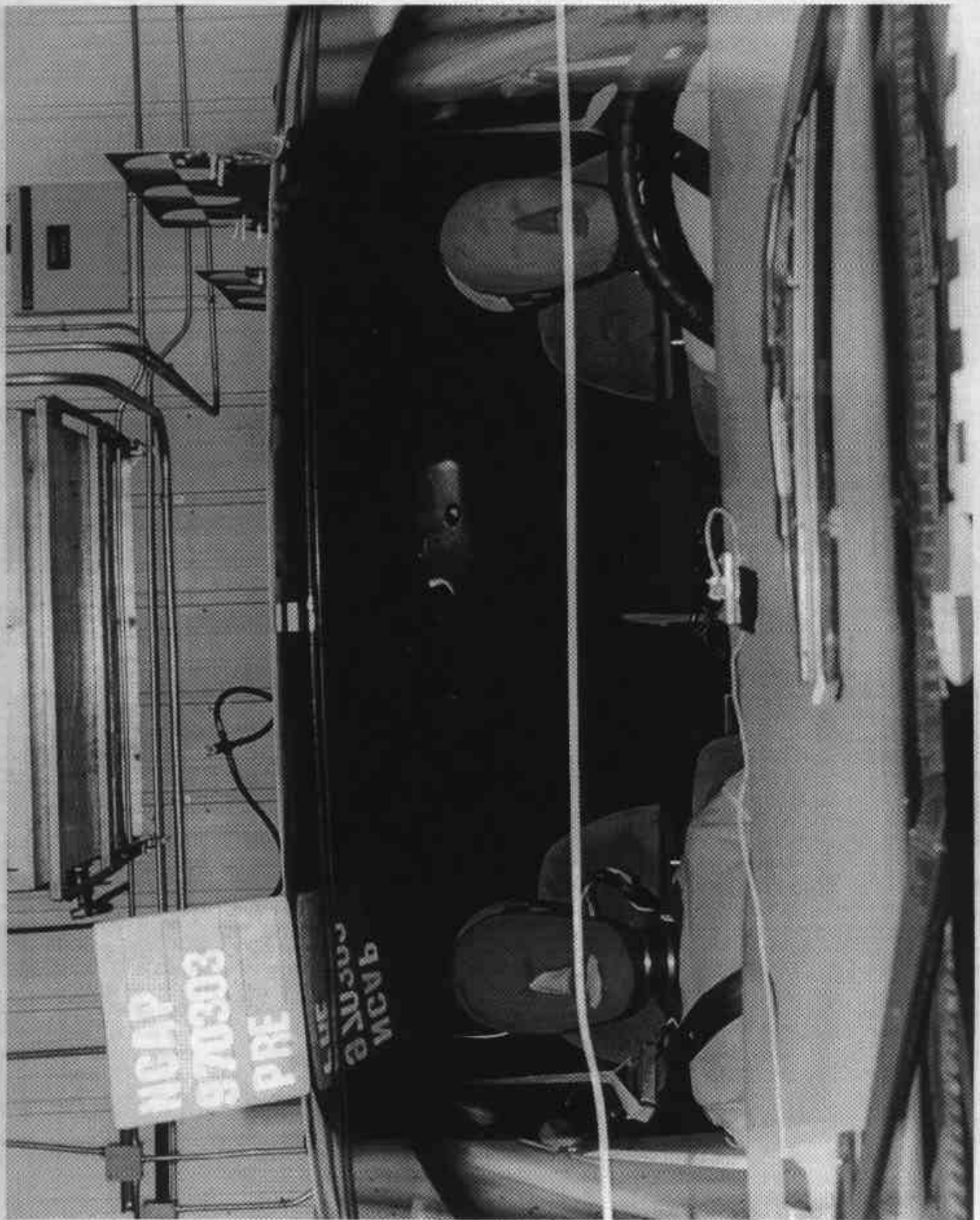


Figure A-13 Pre-Test Windshield View
A-14

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

970303

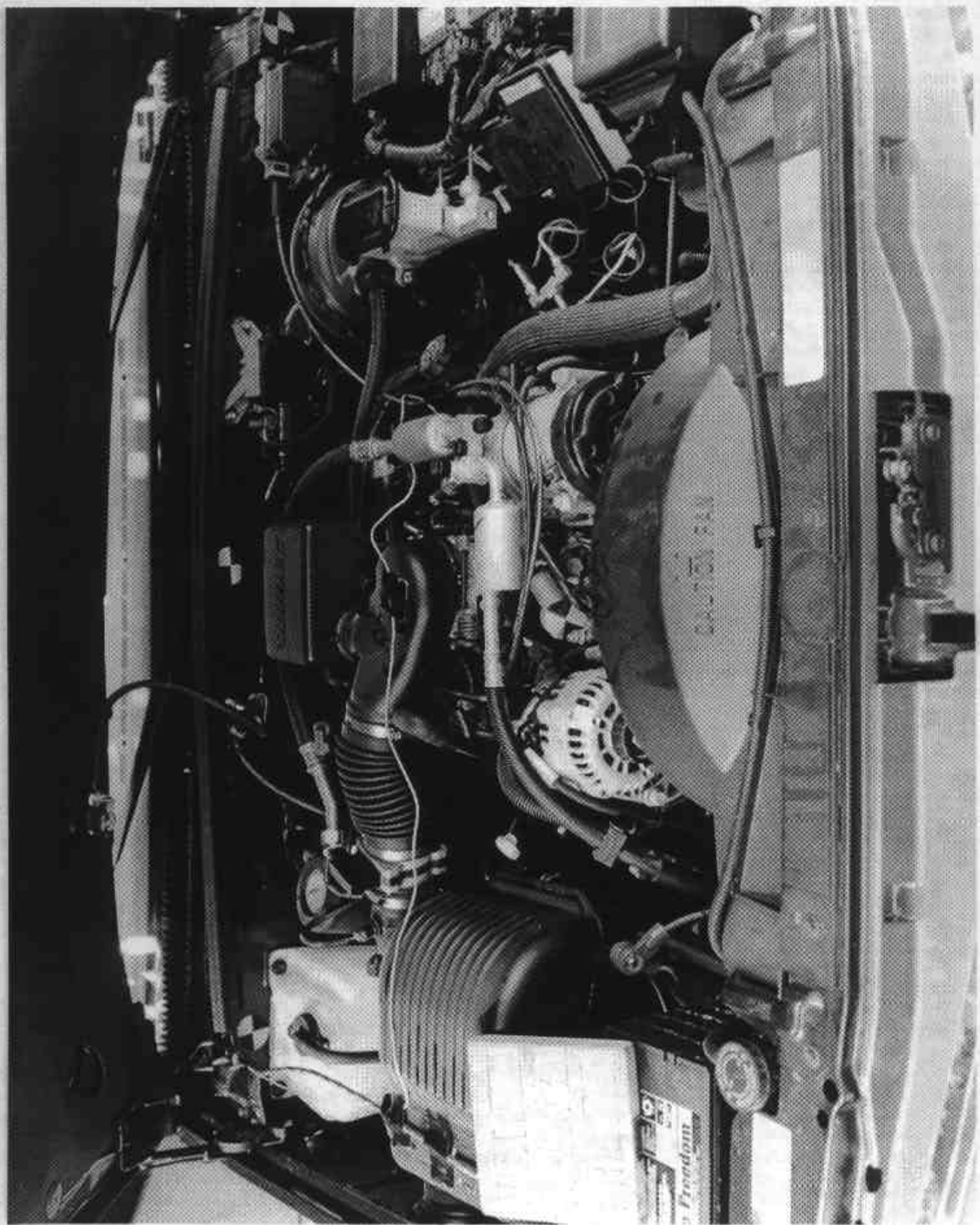


Figure A-15 Pre-Test Engine Compartment View
A-16

970303

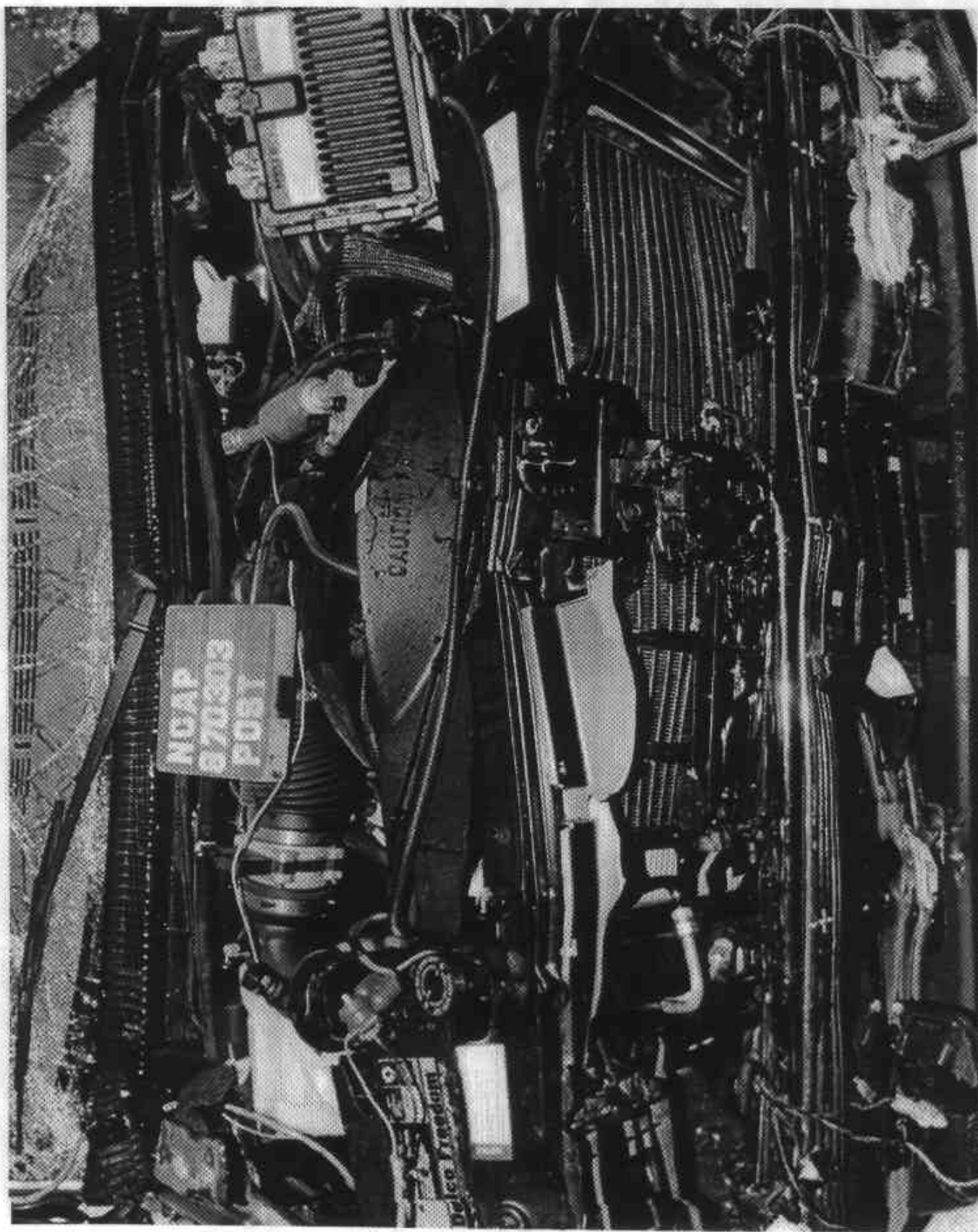


Figure A-16 Post-Test Engine Compartment View
A-17

970303

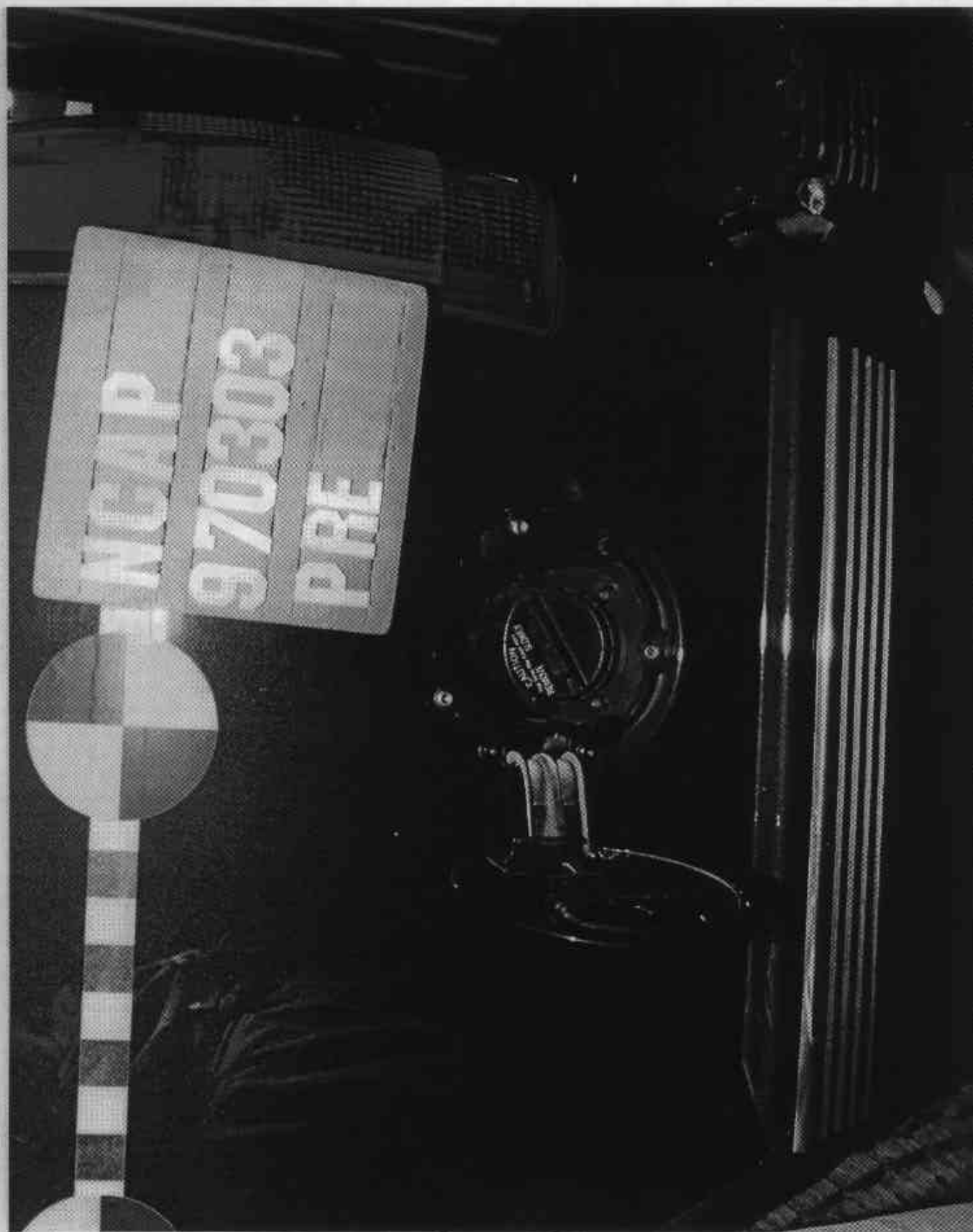


Figure A-17 Pre-Test Fuel Filler Cap View

A-18

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Figure A-18 Post-Test Fuel Filler Cap View
A-19

970303

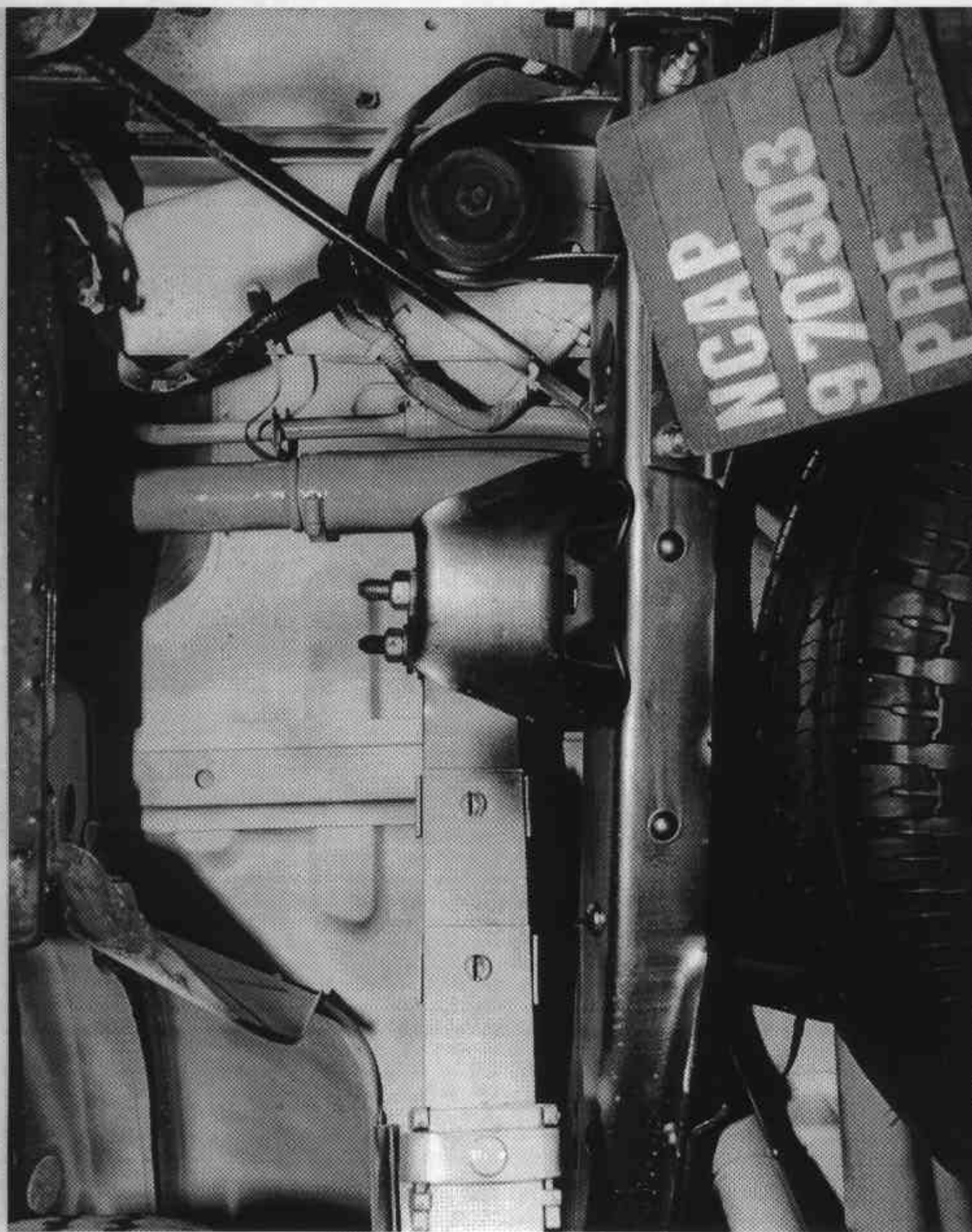


Figure A-19 Pre-Test Fuel Filler Neck View
A-20

970303

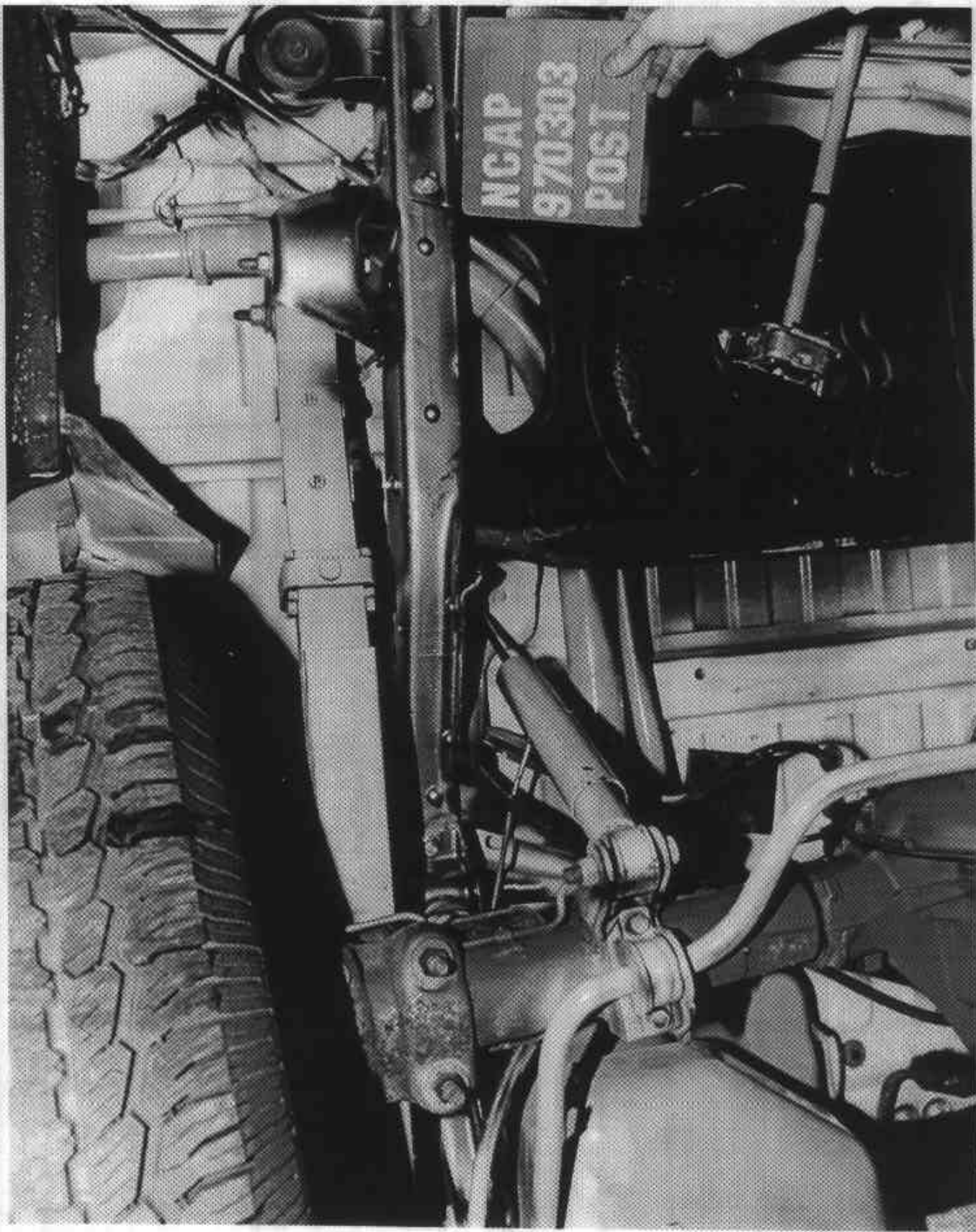


Figure A-20 Post-Test Fuel Filler Neck View
A-21

970303

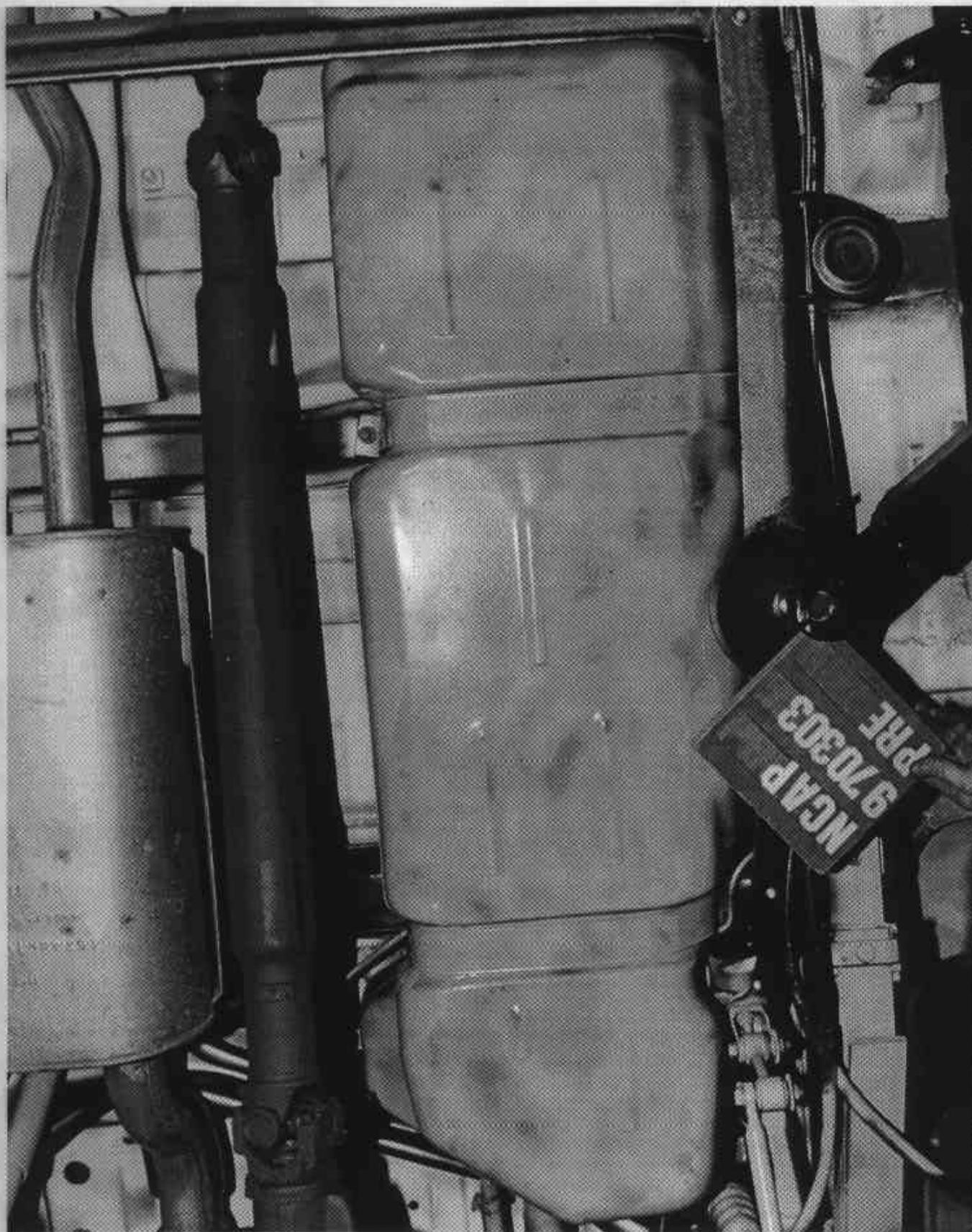


Figure A-21 Pre-Test Fuel Tank View
A-22

970303

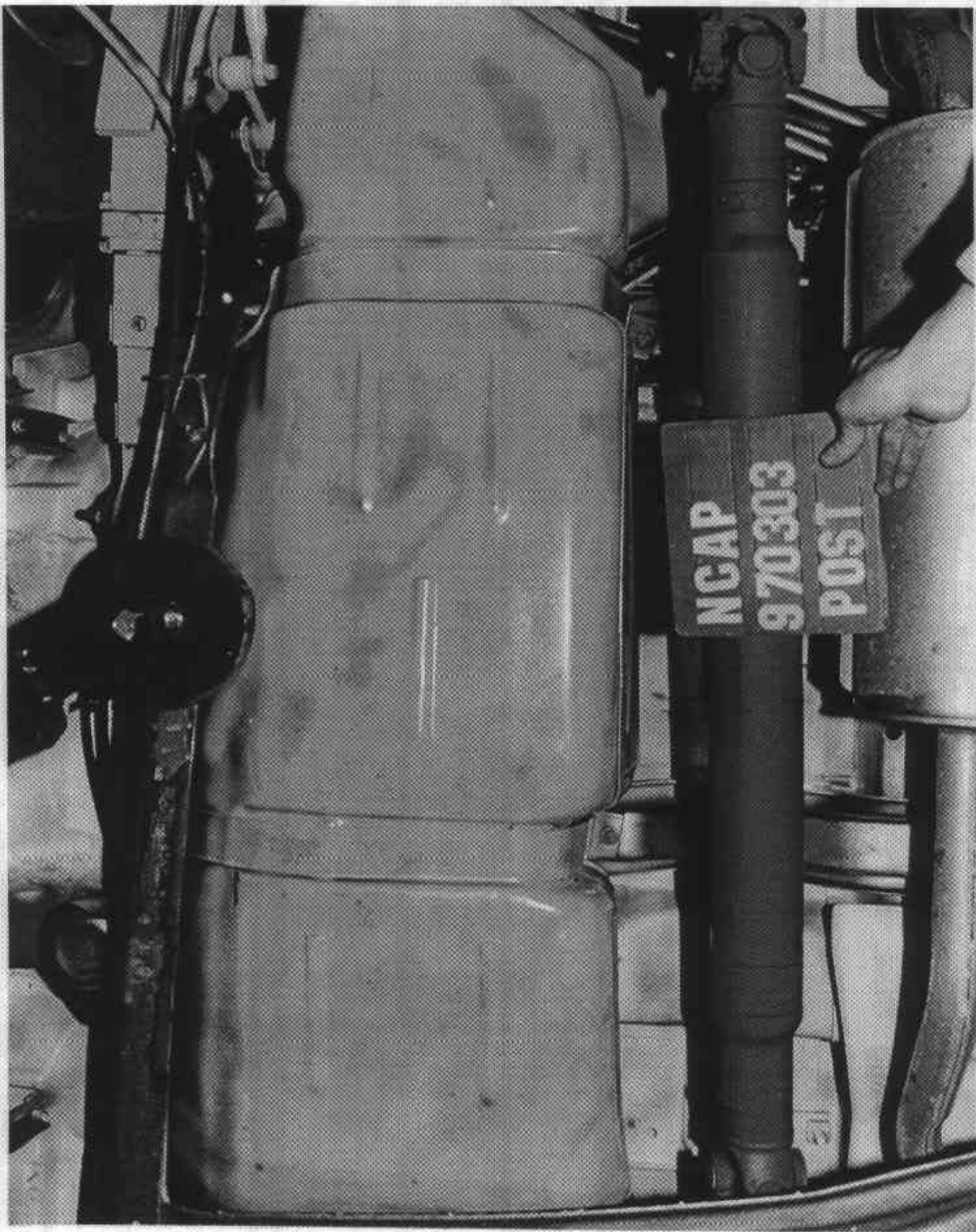


Figure A-22 Post-Test Fuel Tank View

A-23

970303

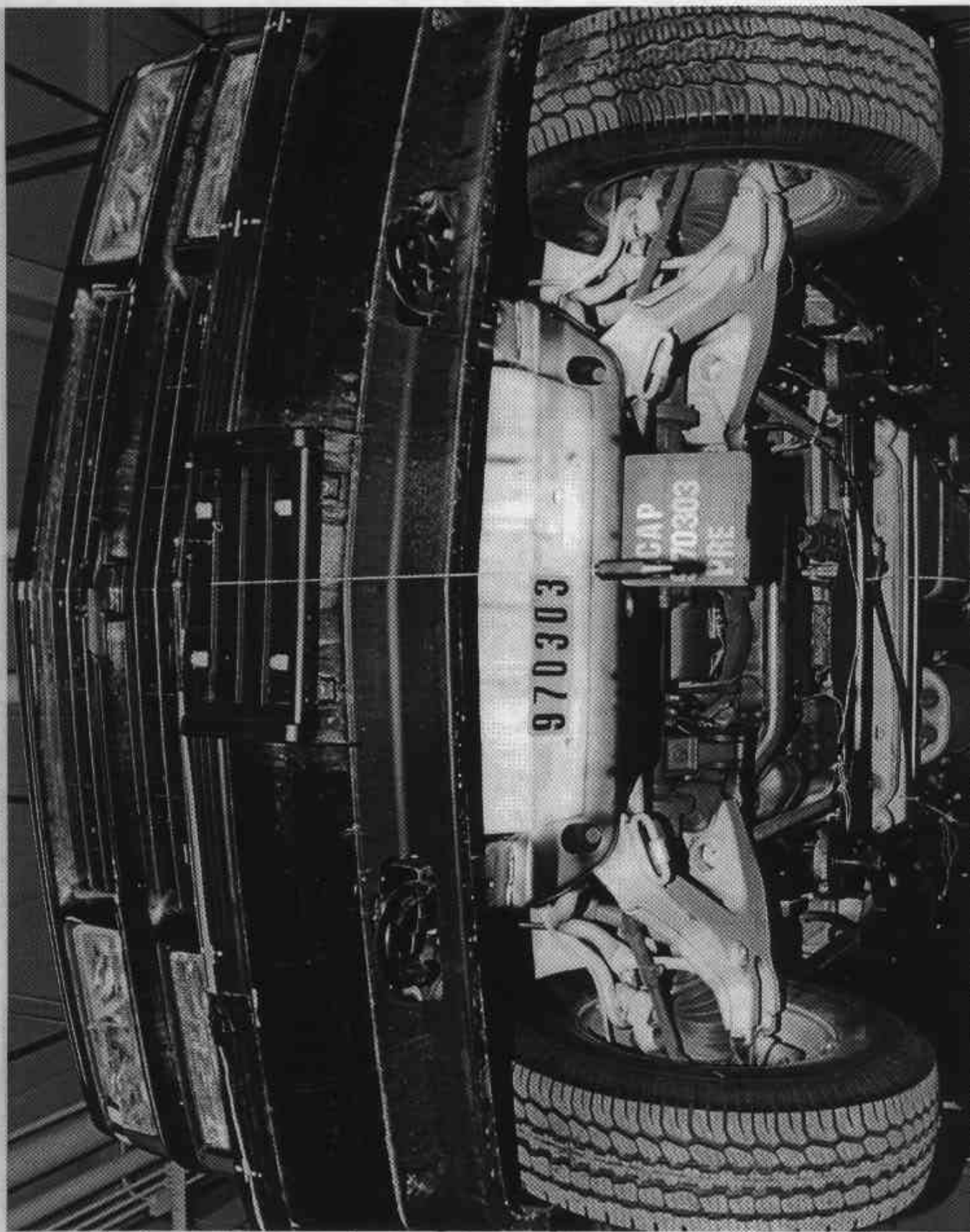


Figure A-23 Pre-Test Front Underbody View

A-24

970303

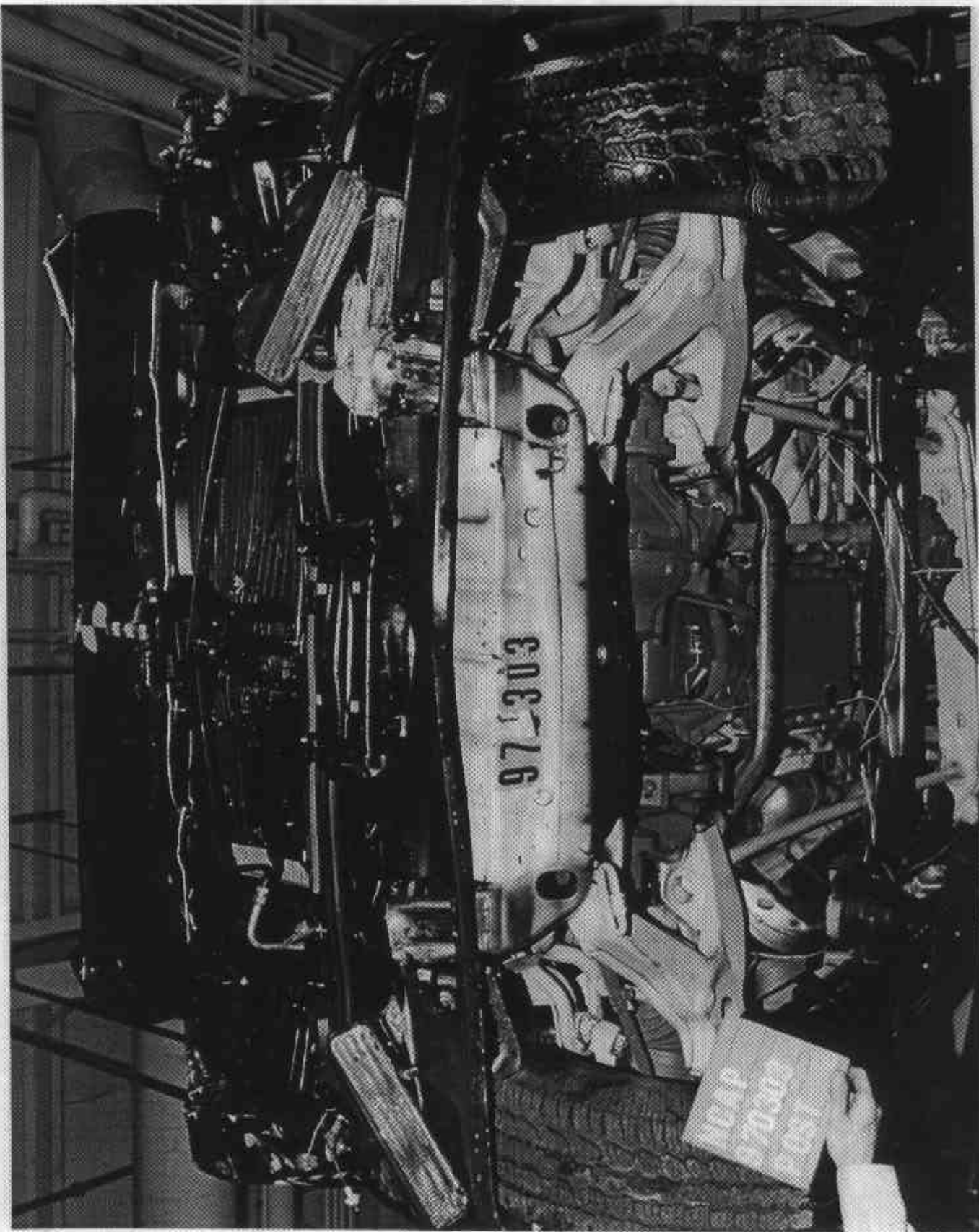


Figure A-24 Post-Test Front Underbody View

A-25

970303

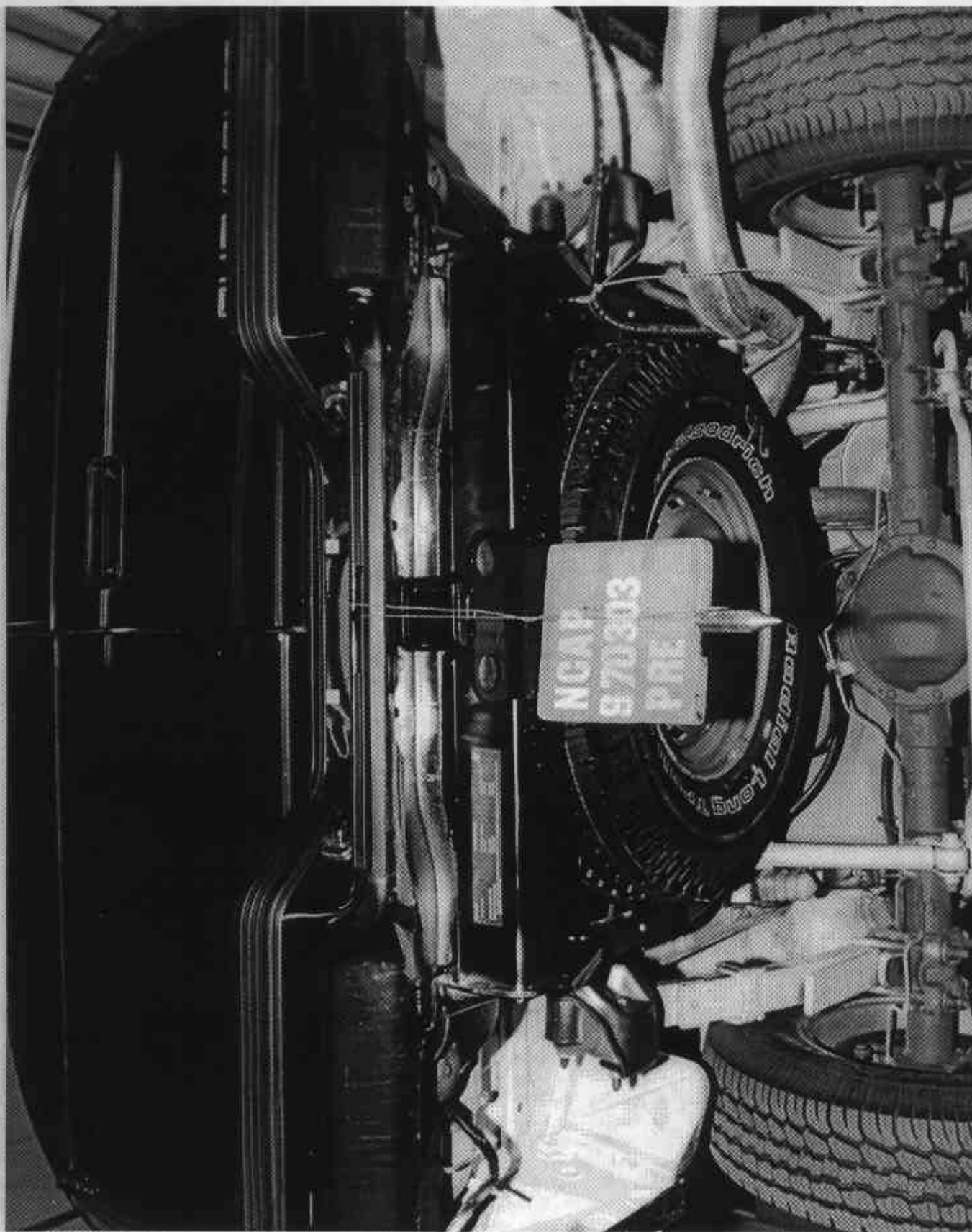


Figure A-25 Pre-Test Rear Underbody View

A-26

970303

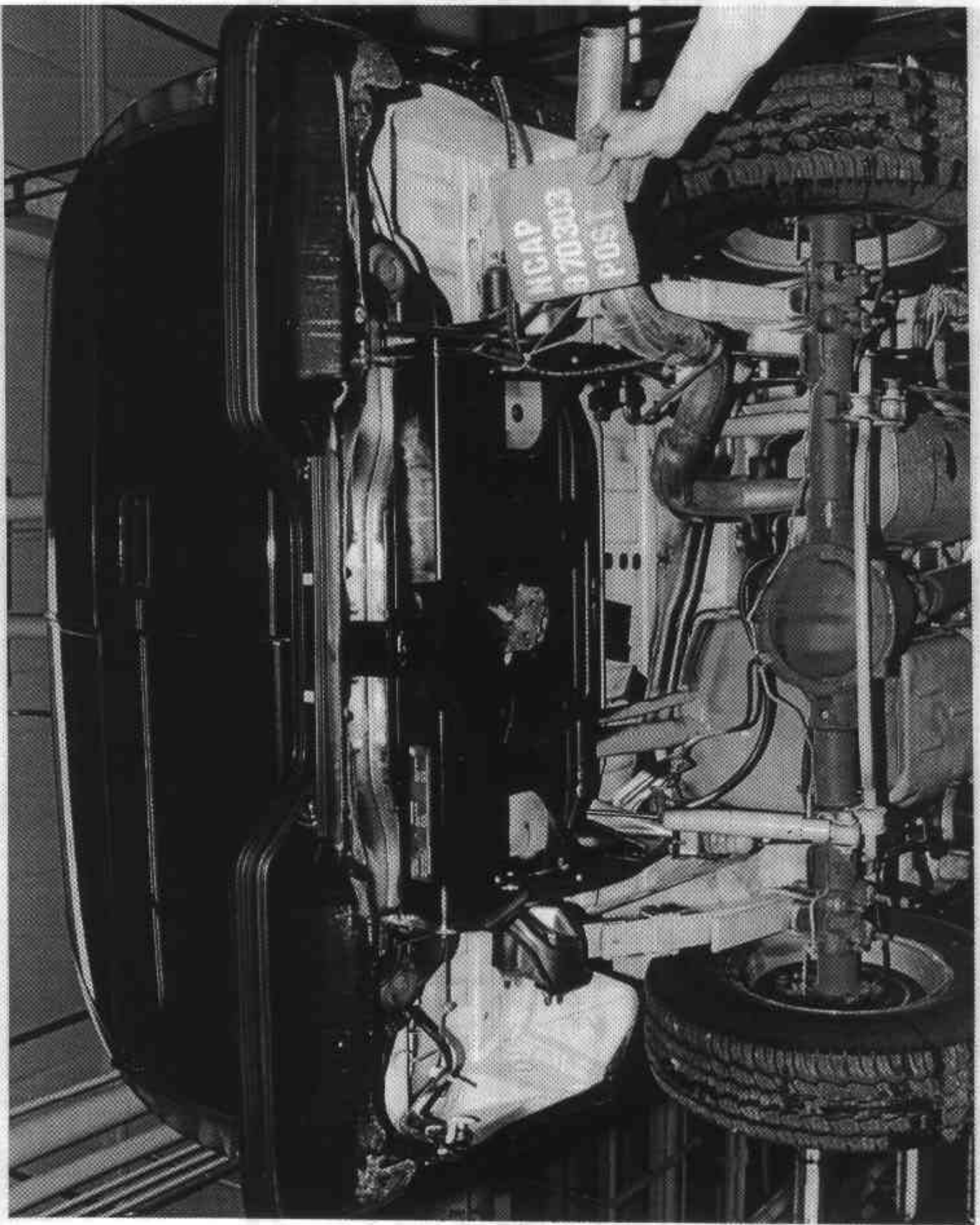


Figure A-26 Post-Test Rear Underbody View
A-27

970303

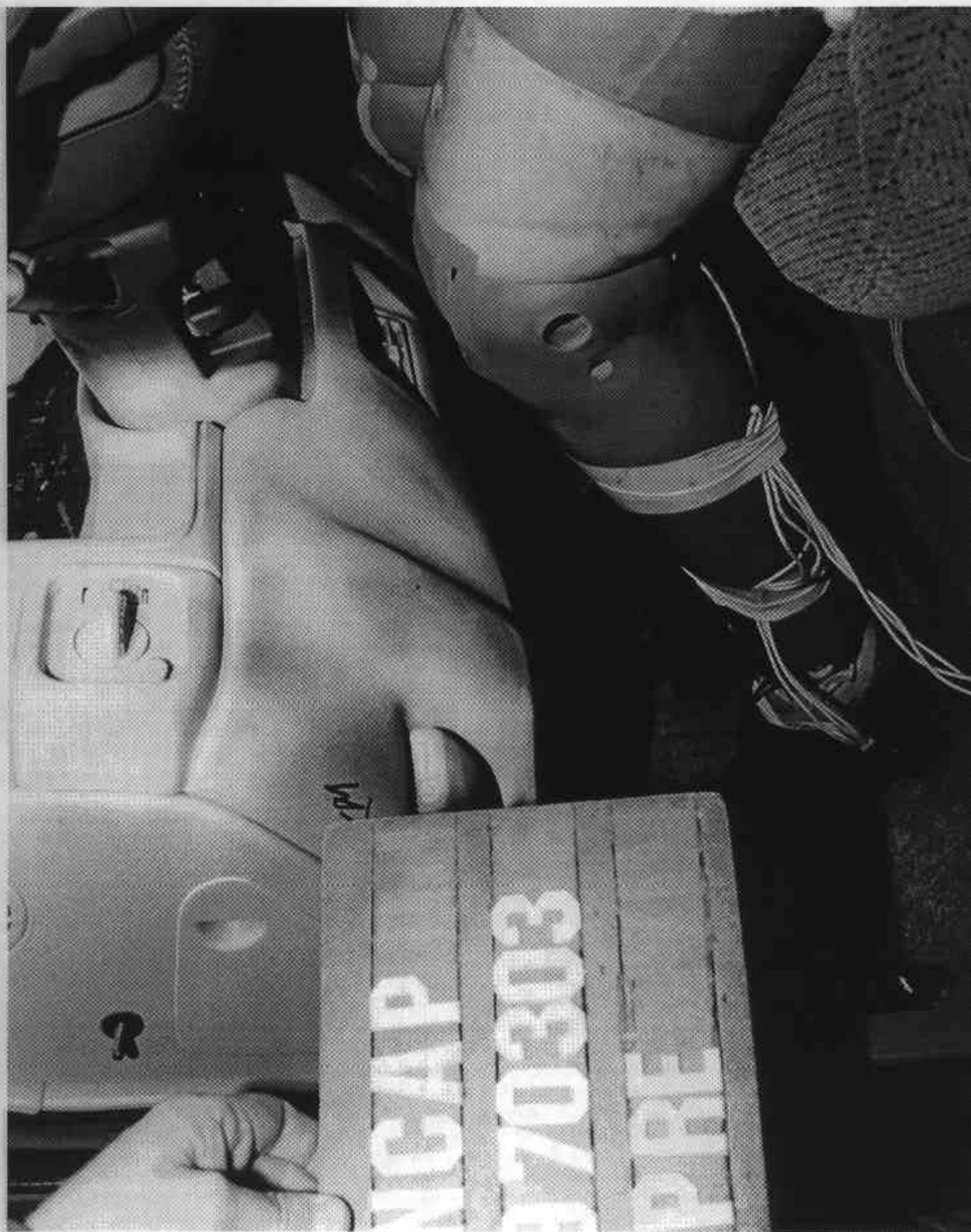


Figure A-27 Pre-Test Driver's Knee Bolster View



Figure A-28 Pre-Test Passenger's Knee Bolster View

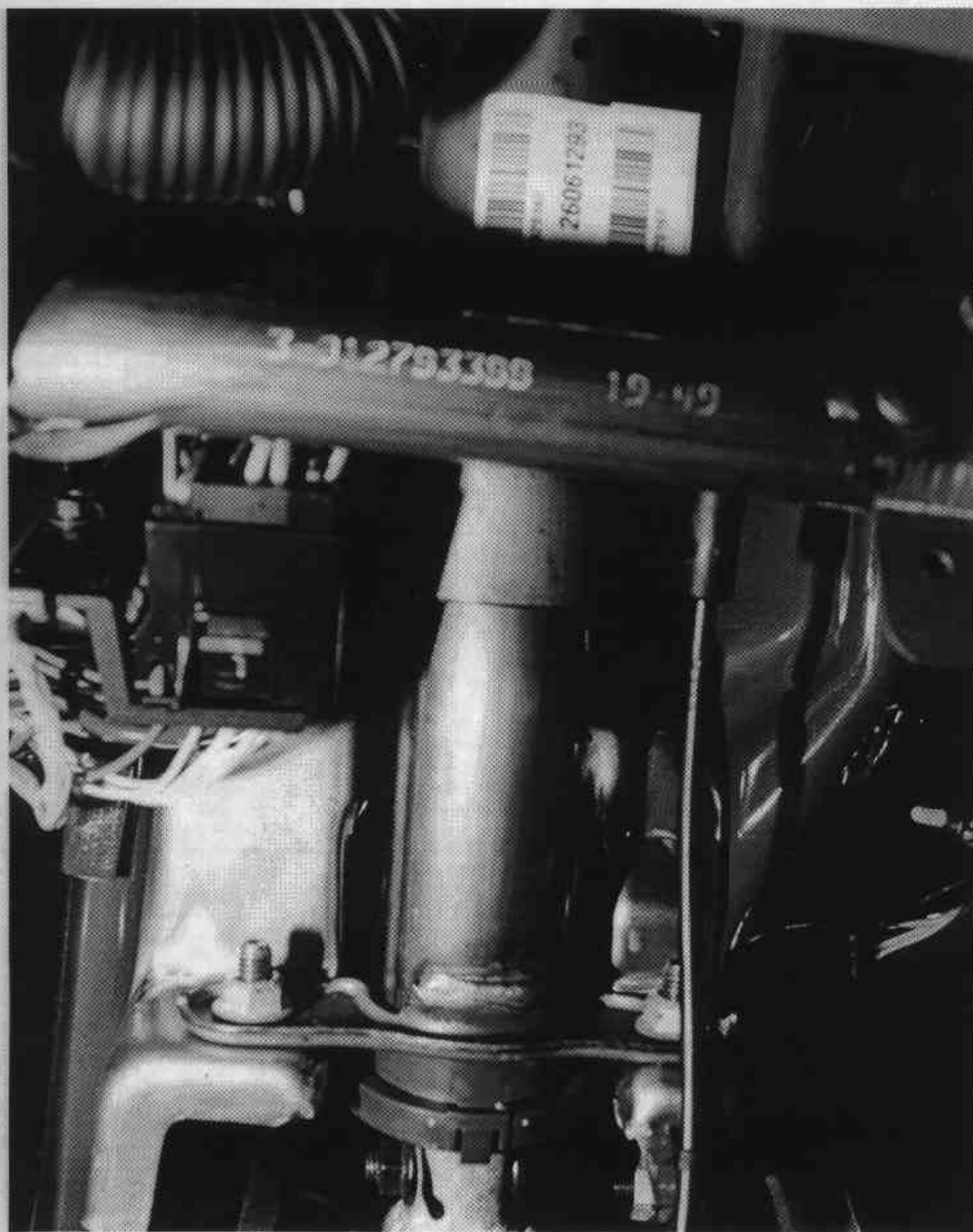


Figure A-29 Pre-Test Steering Column - Interior View

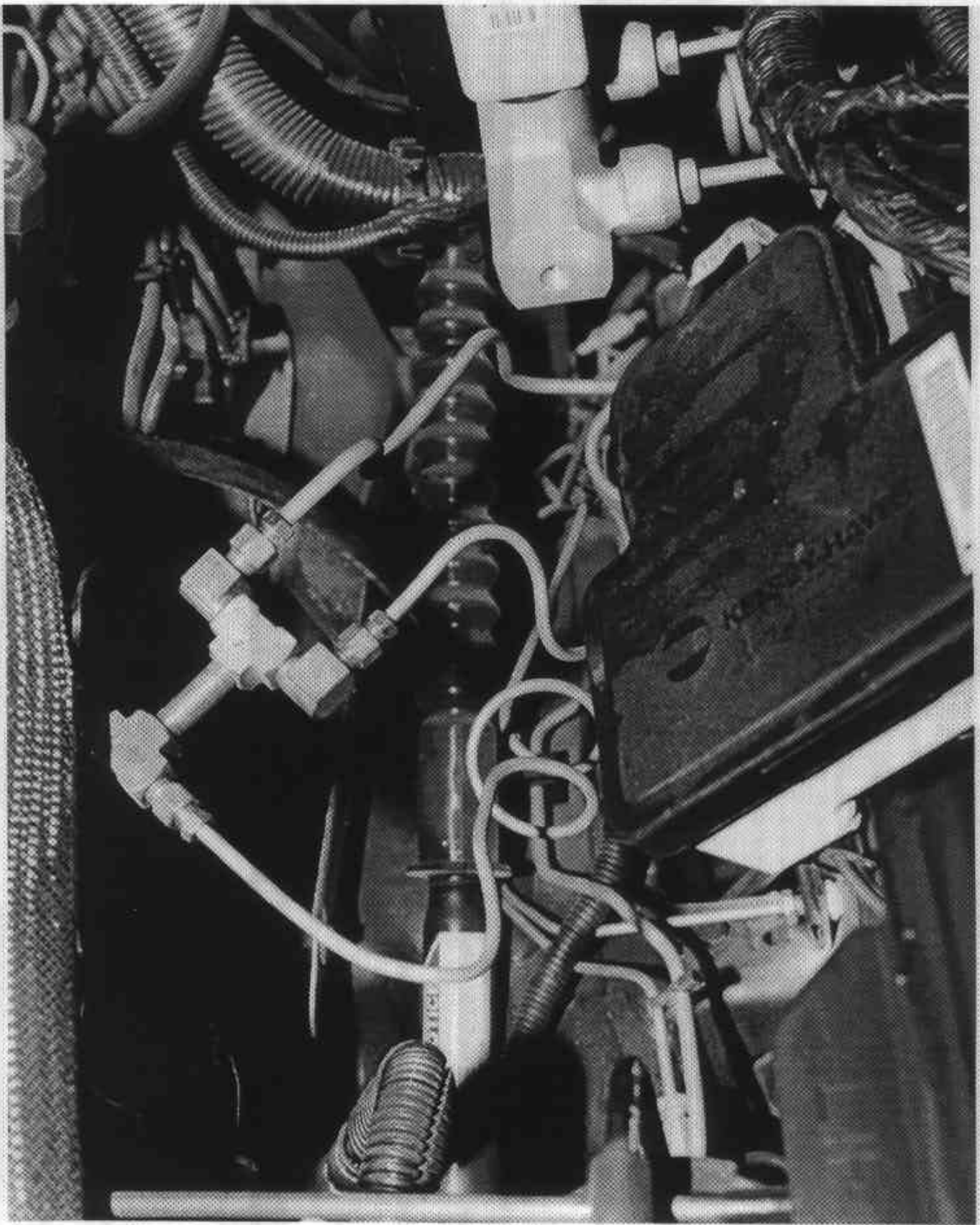


Figure A-30 Pre-Test Steering Column - Exterior View

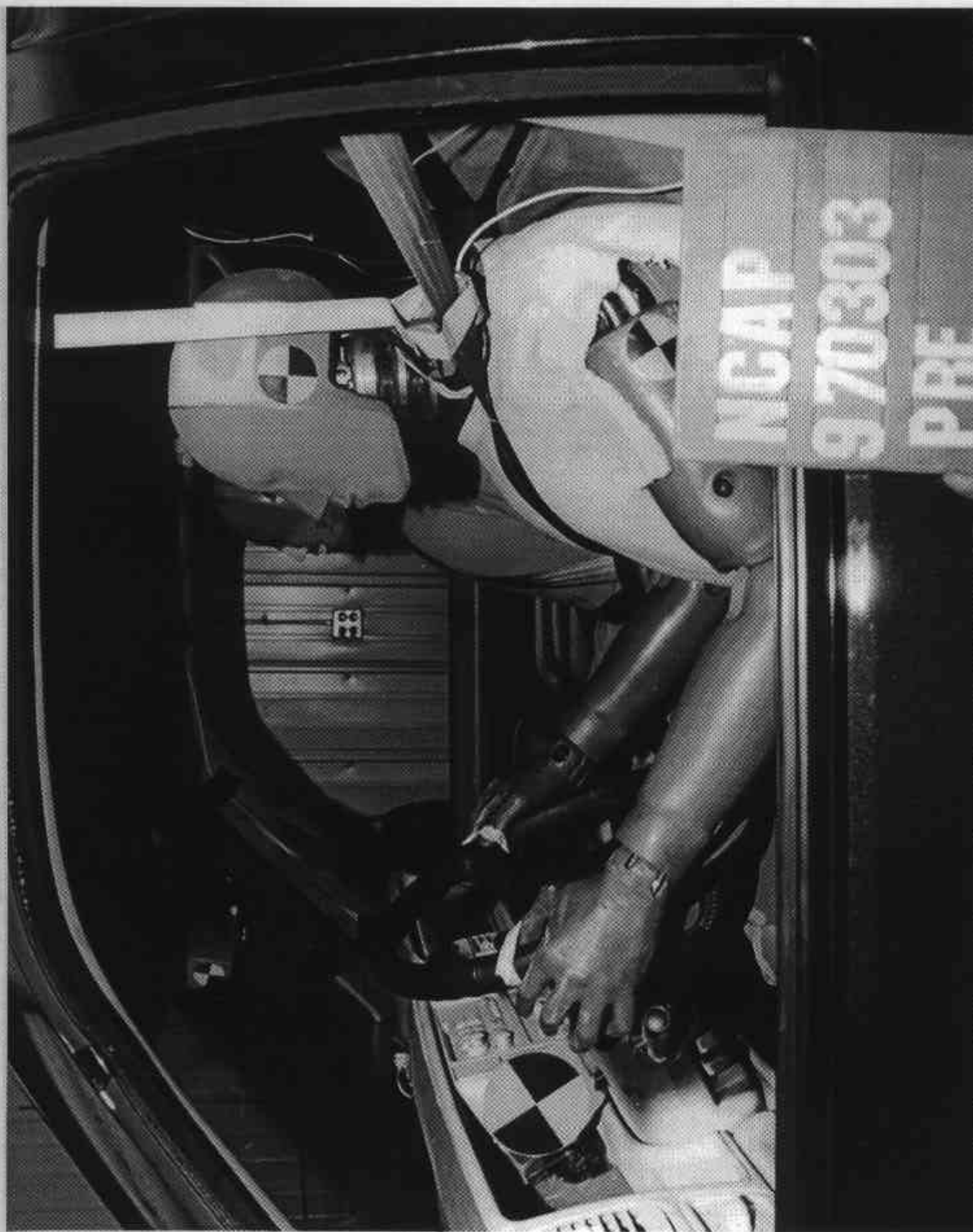


Figure A-31 Pre-Test Driver Dummy Position View
A-32

970303

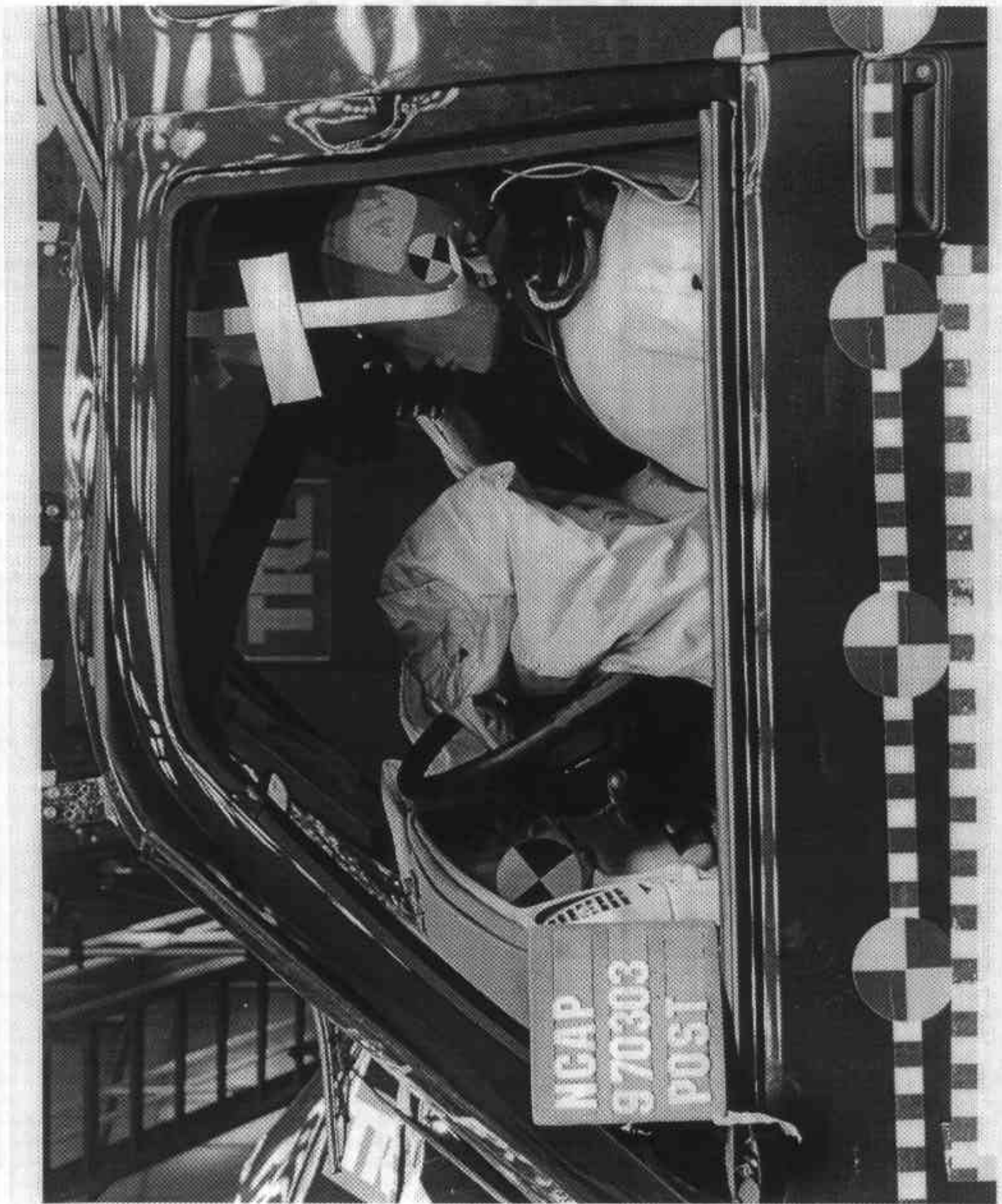


Figure A-32 Post-Test Driver Dummy Position View
A-33

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Figure A-33 Pre-Test Passenger Dummy Position View
A-34

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Figure A-34 Post-Test Passenger Dummy Position View
A-35

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Figure A-35 Pre-Test Driver Dummy and Vehicle Interior - View 1

A-36

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Figure A-36 Post-Test Driver Dummy and Vehicle Interior - View 1

A-37

970303



Figure A-37 Pre-Test Driver Dummy and Vehicle Interior - View 2

A-38

970303



Figure A-38 Post-Test Driver Dummy and Vehicle Interior - View 2

A-39

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Figure A-39 Pre-Test Passenger Dummy and Vehicle Interior - View 1

A-40

970303

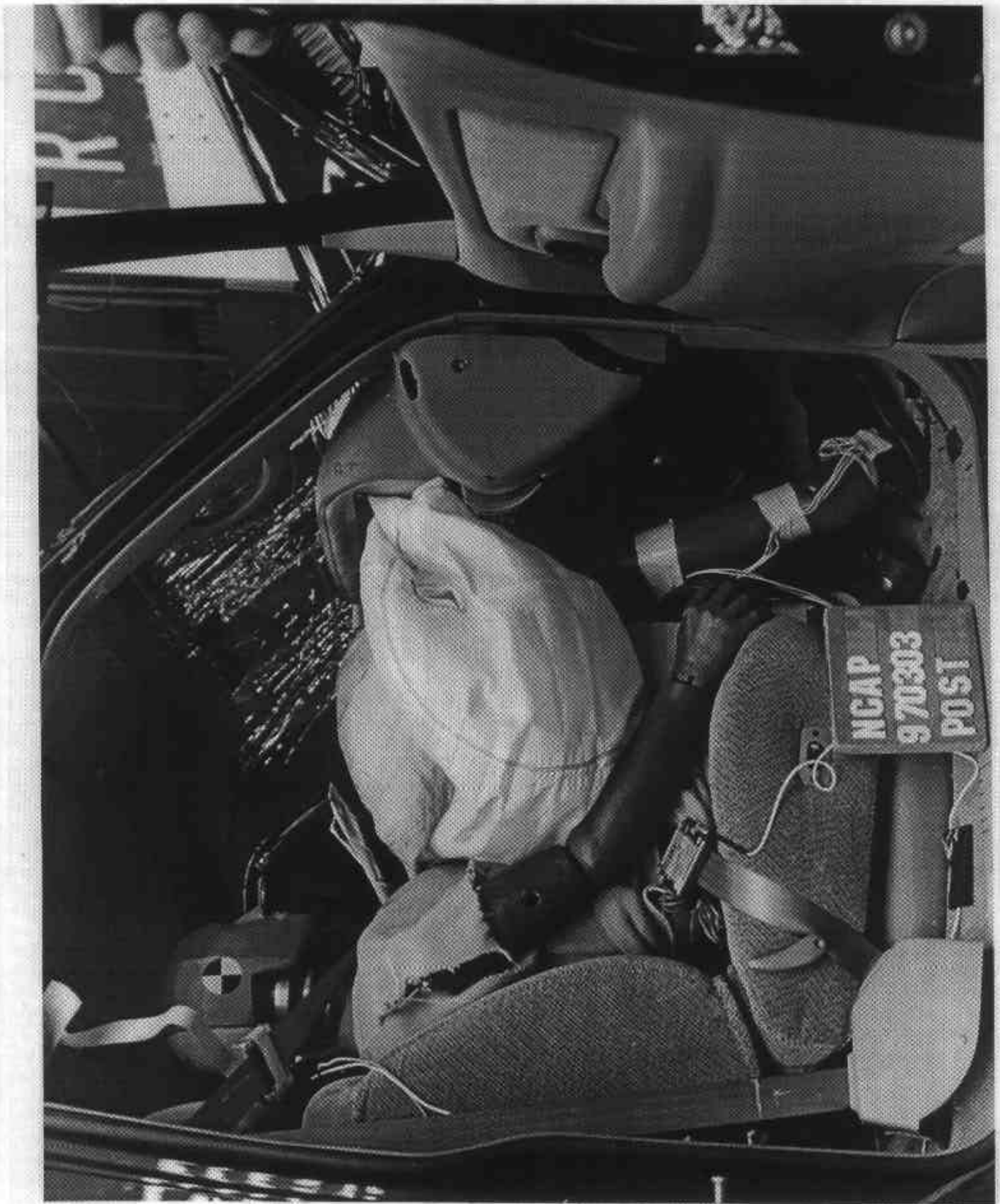


Figure A-40 Post-Test Passenger Dummy and Vehicle Interior - View 1

A-41

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Figure A-41 Pre-Test Passenger Dummy and Vehicle Interior - View 2

A-42

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Figure A-42 Post-Test Passenger Dummy and Vehicle Interior - View 2

A-43

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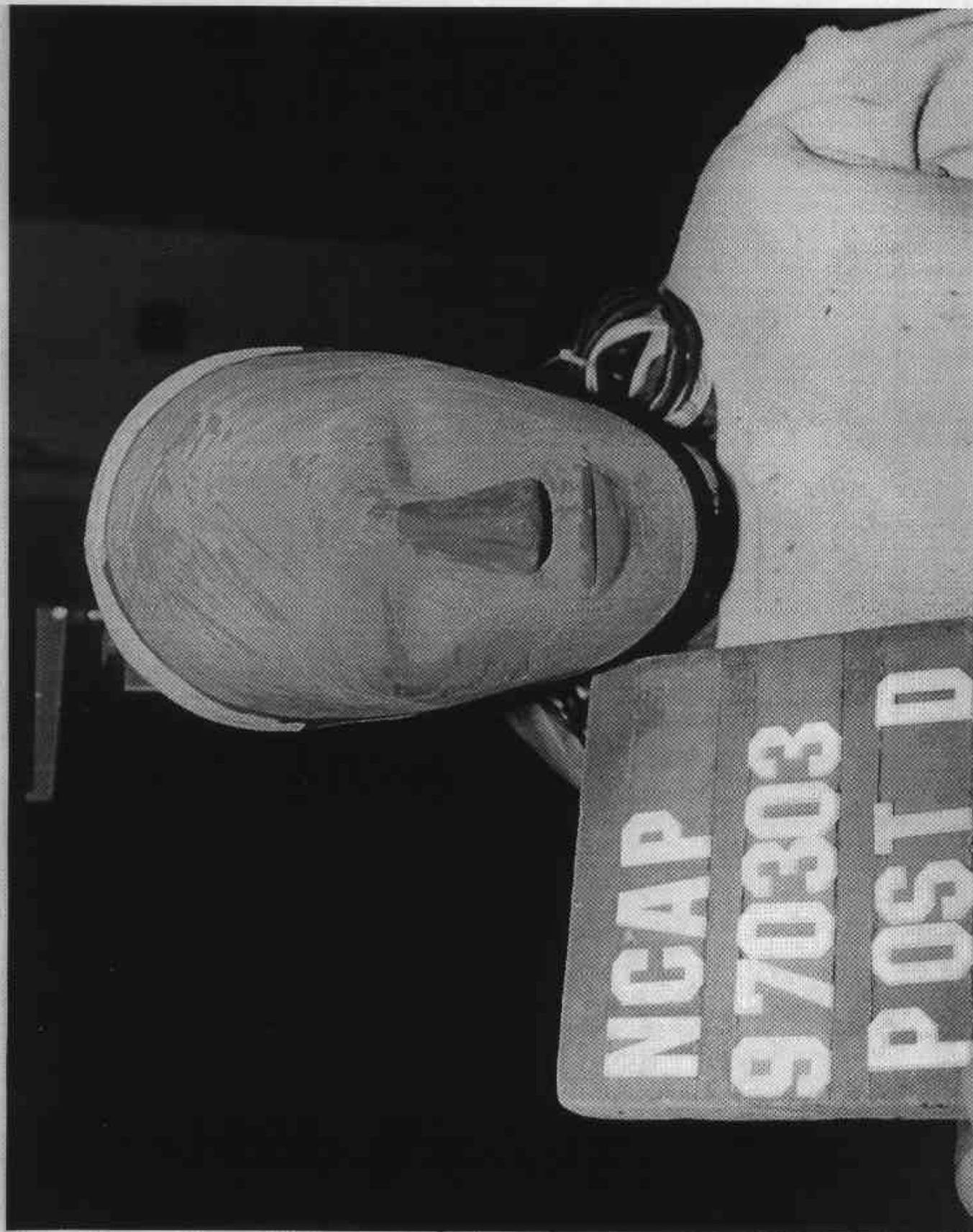


Figure A-43 Post-Test Driver Dummy Head Contact - View 1

A-44

970303

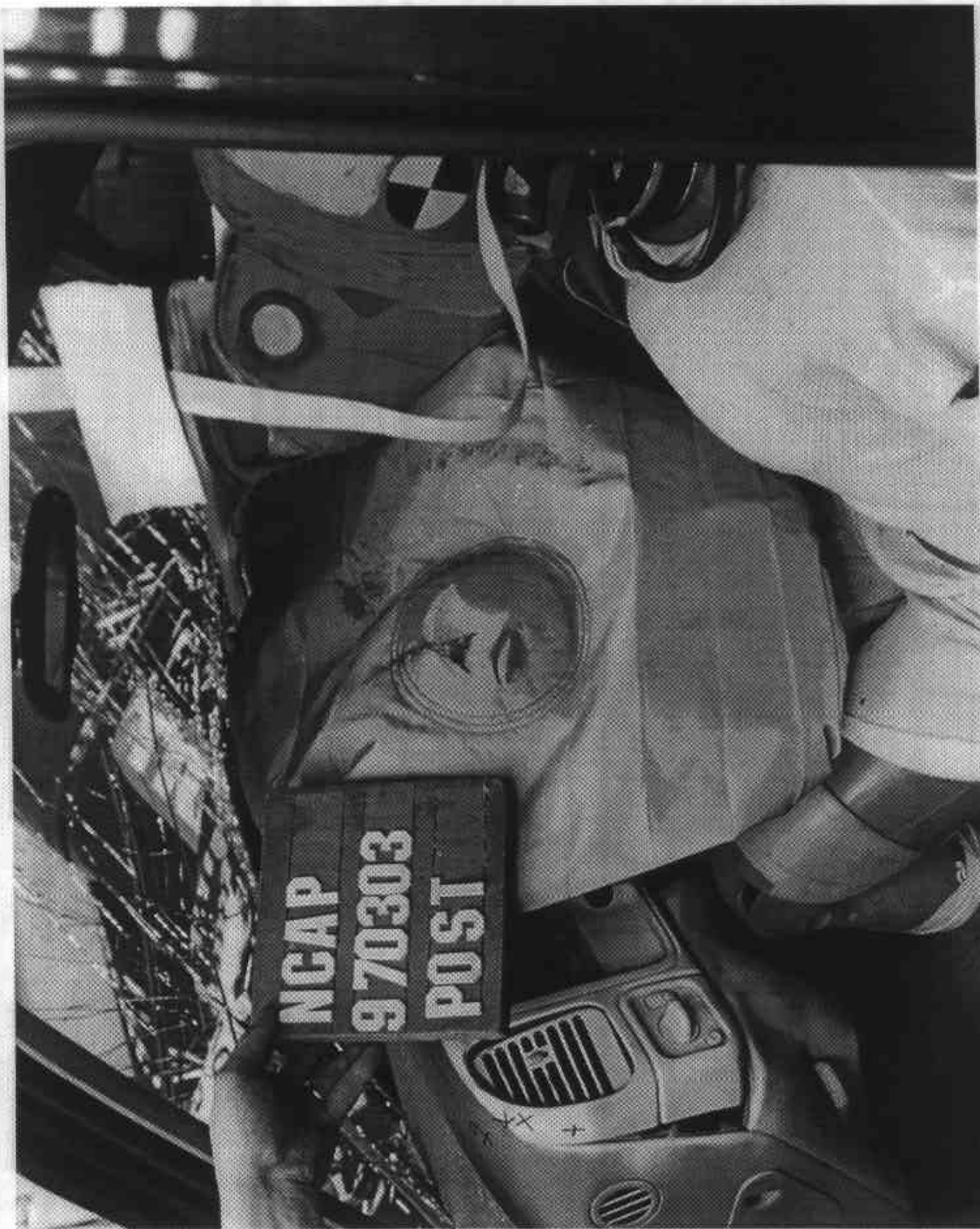


Figure A-44 Post-Test Driver Dummy Head Contact - View 2

A-45

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Figure A-45 Post-Test Driver Dummy Head Contact - View 3

A-46

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Figure A-46 Post-Test Driver Dummy Knee Contact - View 1

A-47

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Figure A-47 Post-Test Driver Dummy Knee Contact - View 2

A-48

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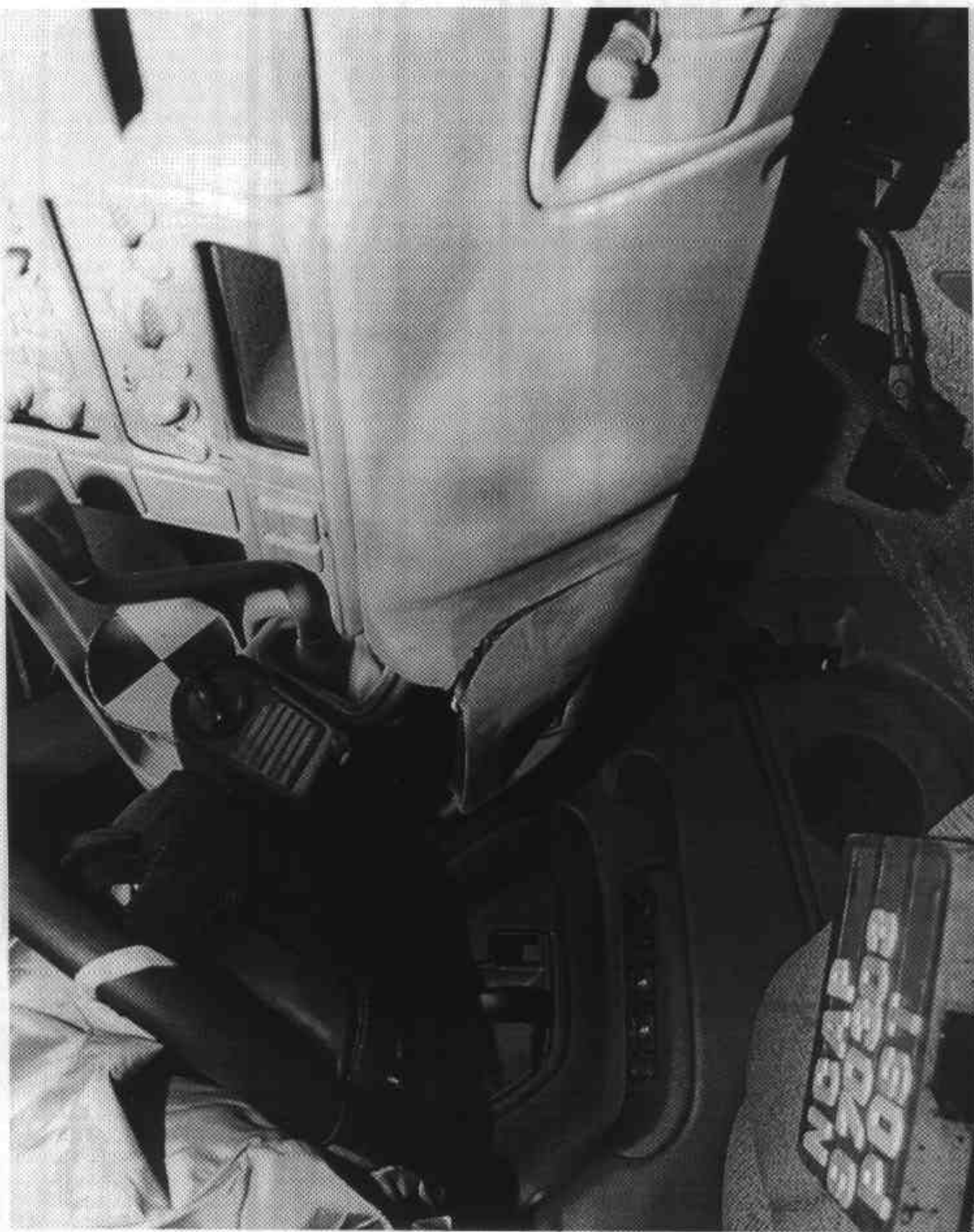


Figure A-48 Post-Test Driver Dummy Knee Contact - View 3

A-49

970303

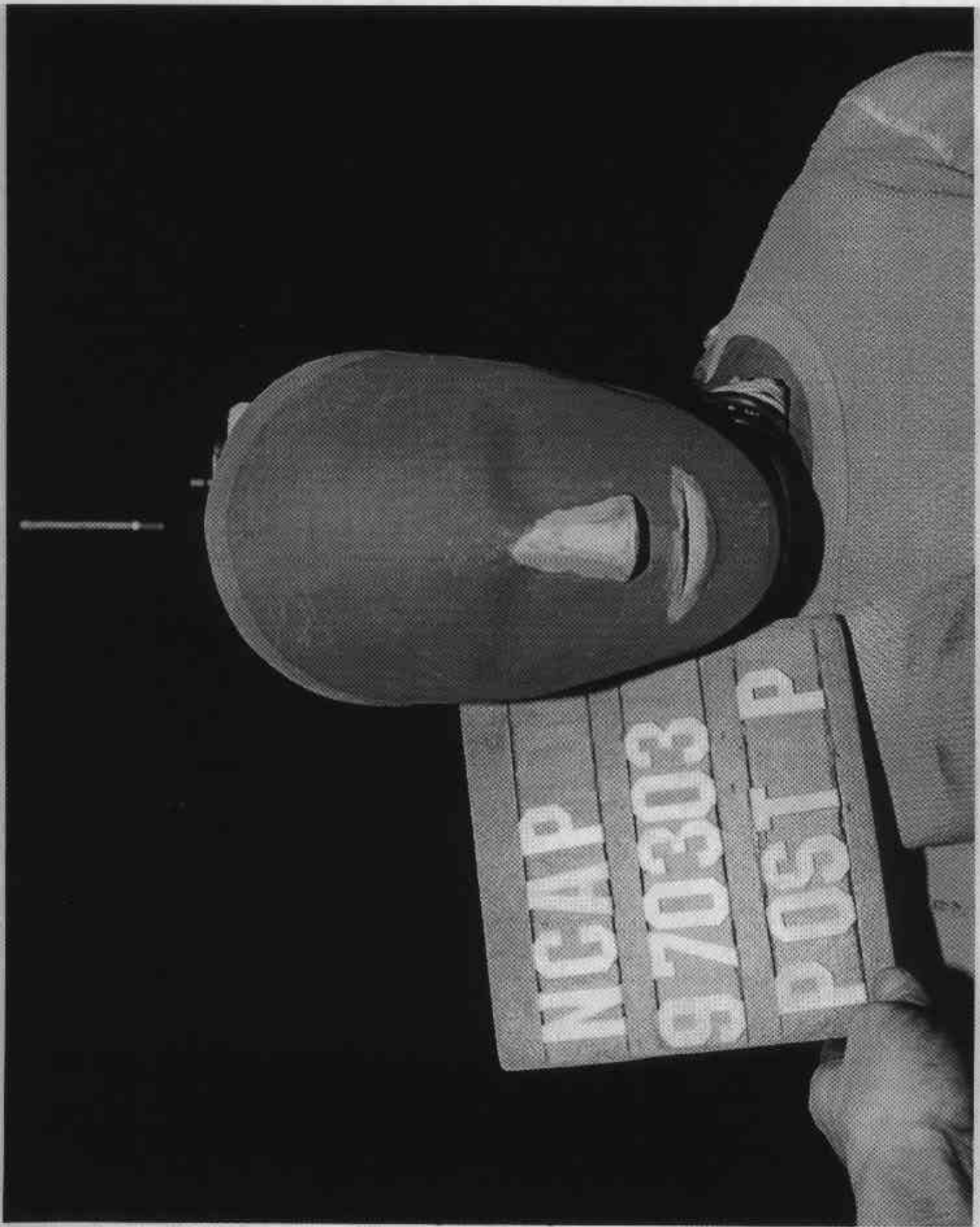


Figure A-49 Post-Test Passenger Dummy Head Contact - View 1

A-50

970303

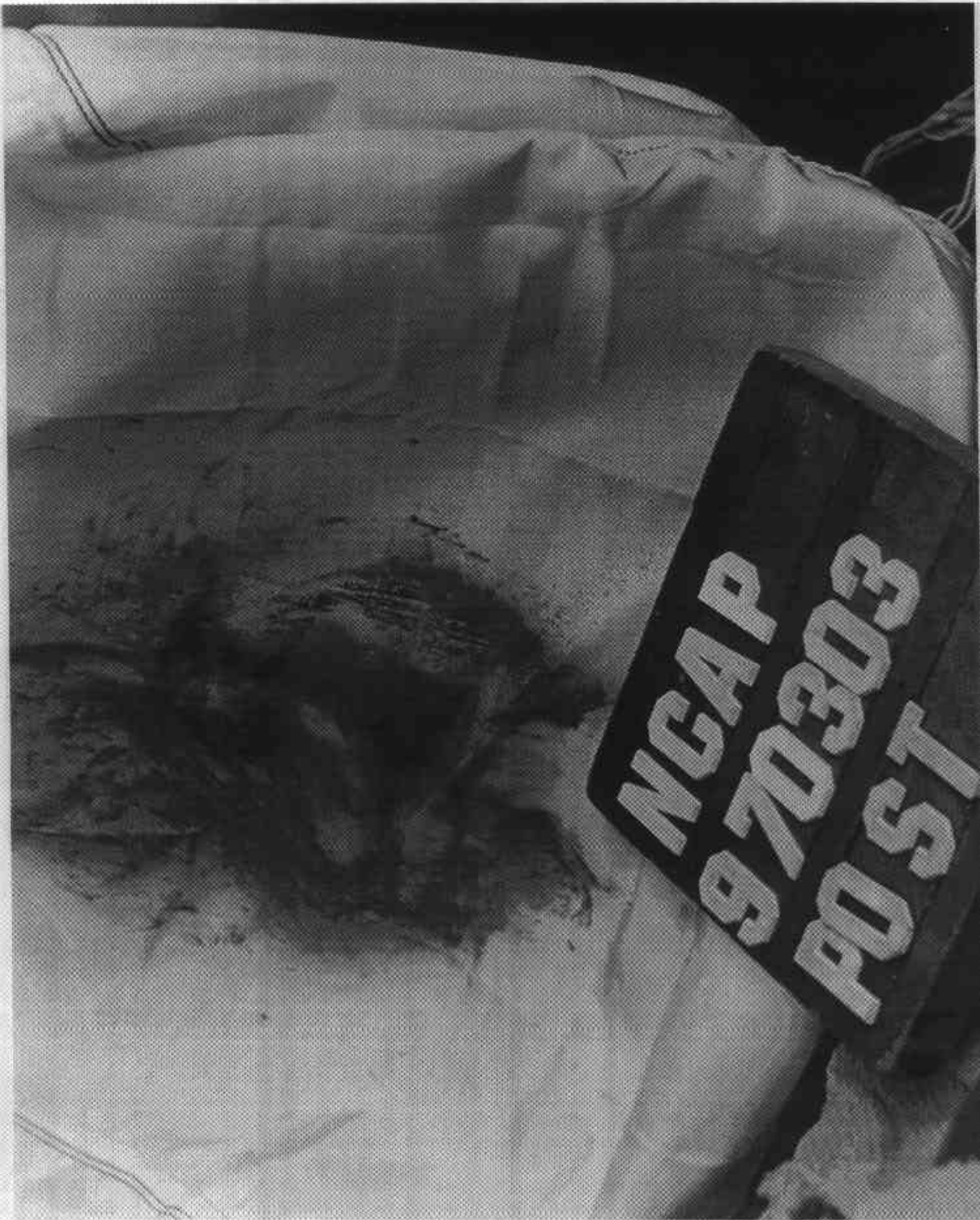


Figure A-50 Post-Test Passenger Dummy Head Contact - View 2

A-51

970303

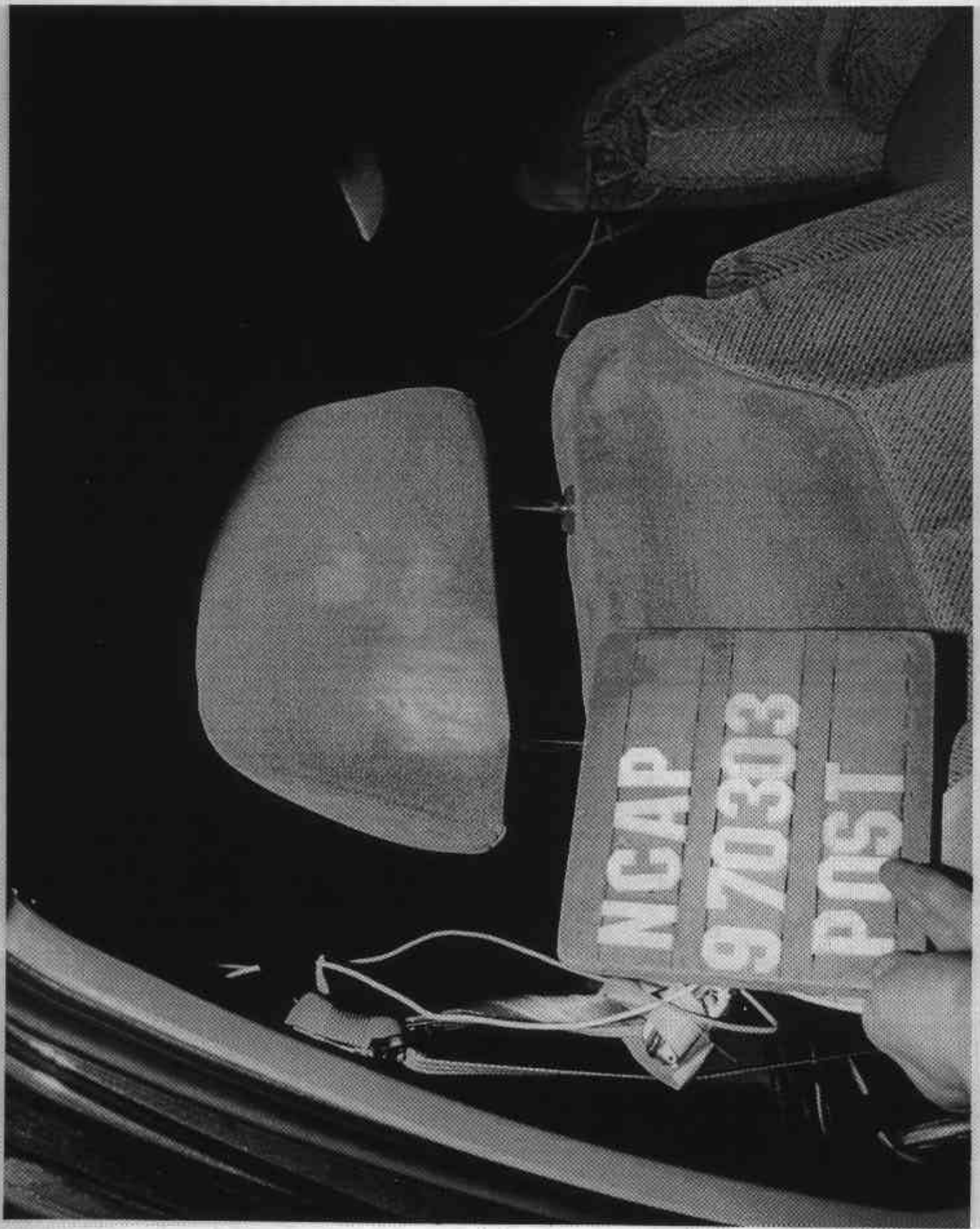


Figure A-51 Post-Test Passenger Dummy Head Contact - View 3
A-52

970303

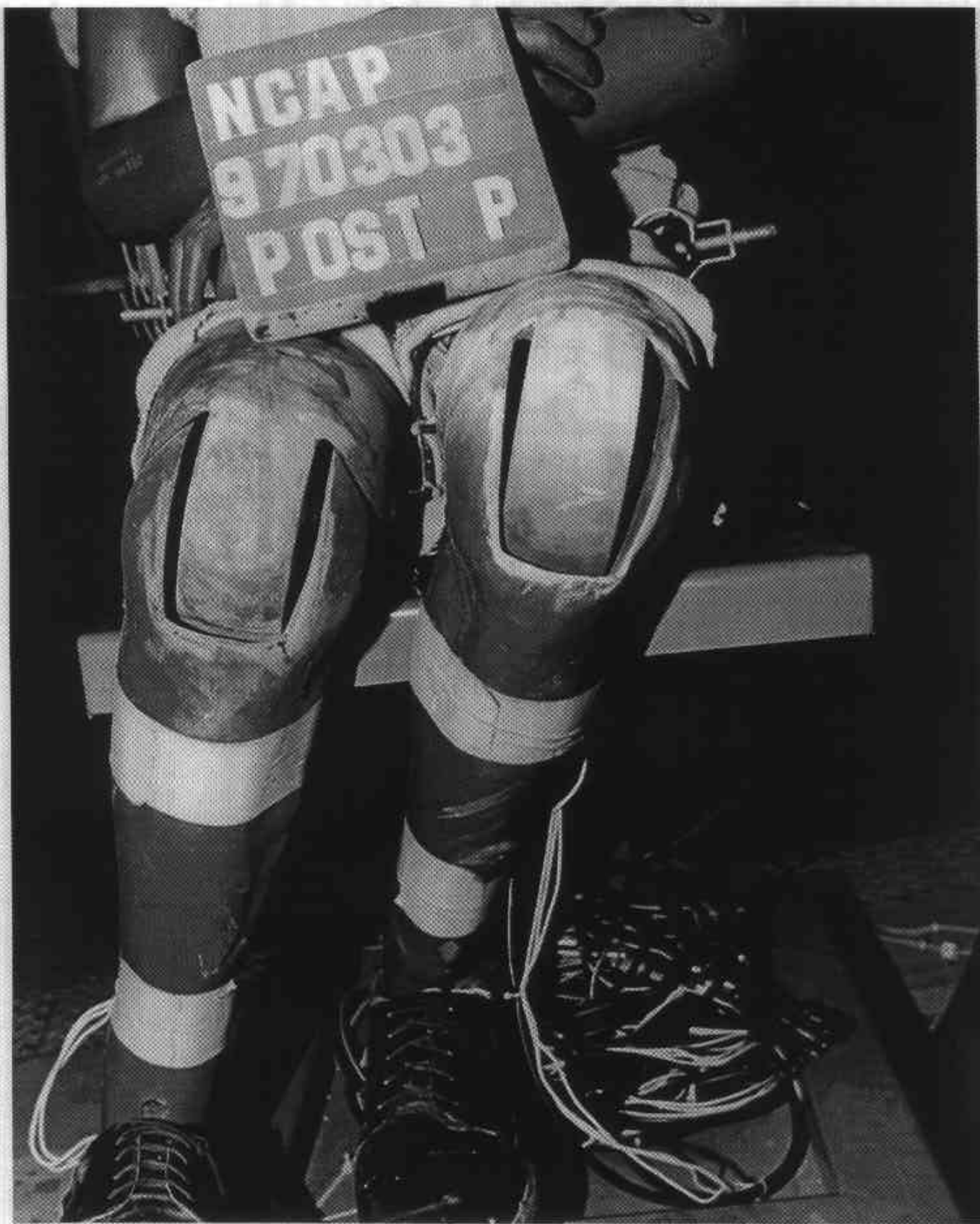


Figure A-52 Post-Test Passenger Dummy Knee Contact - View 1

A-53

970303

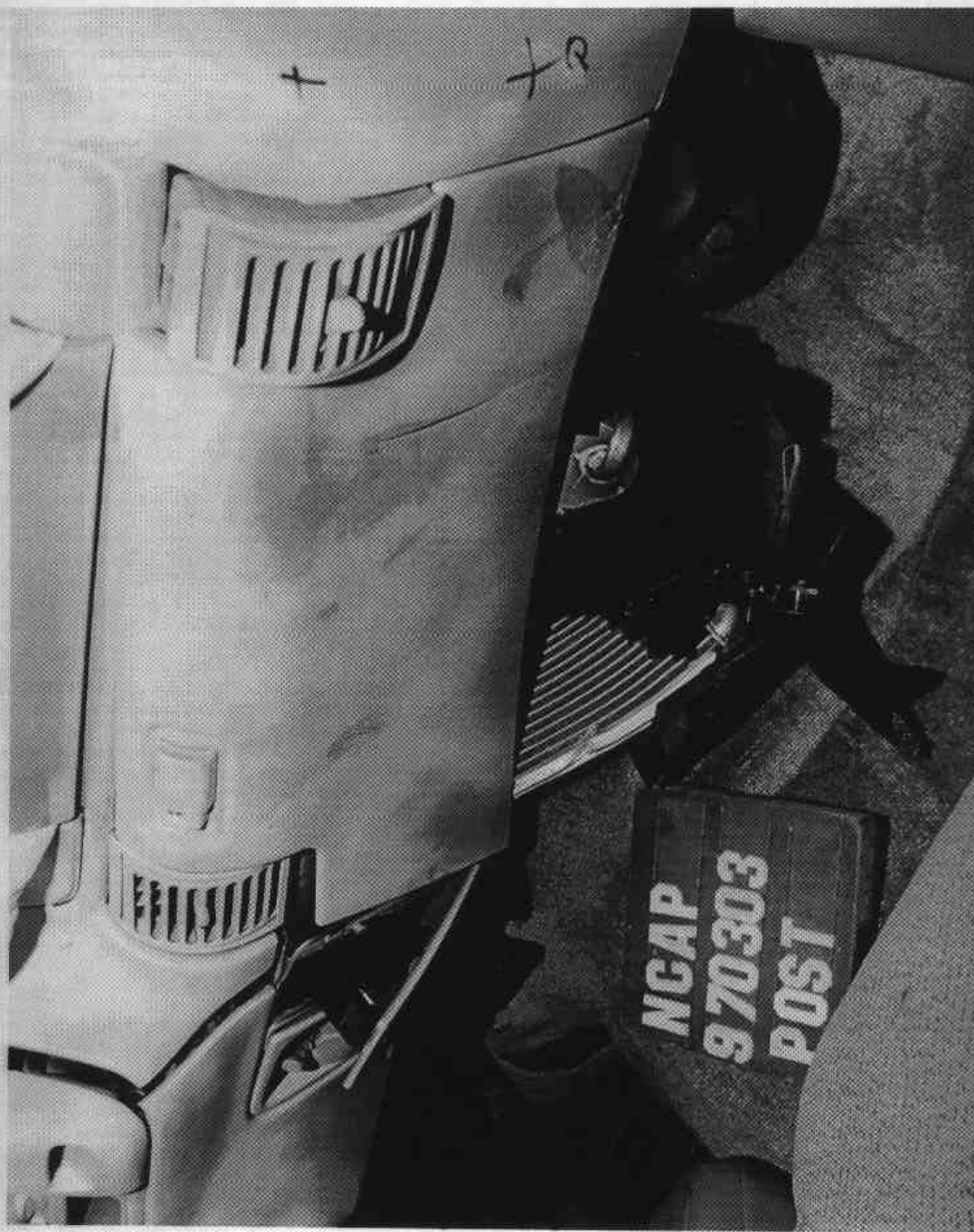


Figure A-53 Post-Test Passenger Dummy Knee Contact - View 2

A-54

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		MFD BY GENERAL MOTORS CORP		01/97
GVWR	GAWR FRT	GAWR RR		
6800/3085	3630/1633	3750/1701 LB/KG		
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.				
1GNEK13R9VJ358478		TYPE: M.P.V.		
MODEL: K10706				
KPBA	TIRE SIZE	SPEED RTG	RIM	COLD TIRE PRESSURE
FRT	P245/75R16	S	16X7/6.5J	35/240 PSI/KPA
RR	P245/75R16	S	16X7/6.5J	35/240 PSI/KPA
SEE OWNER'S MANUAL FOR MORE INFORMATION.				

Figure A-54 Pre-Test Vehicle Certification Label View

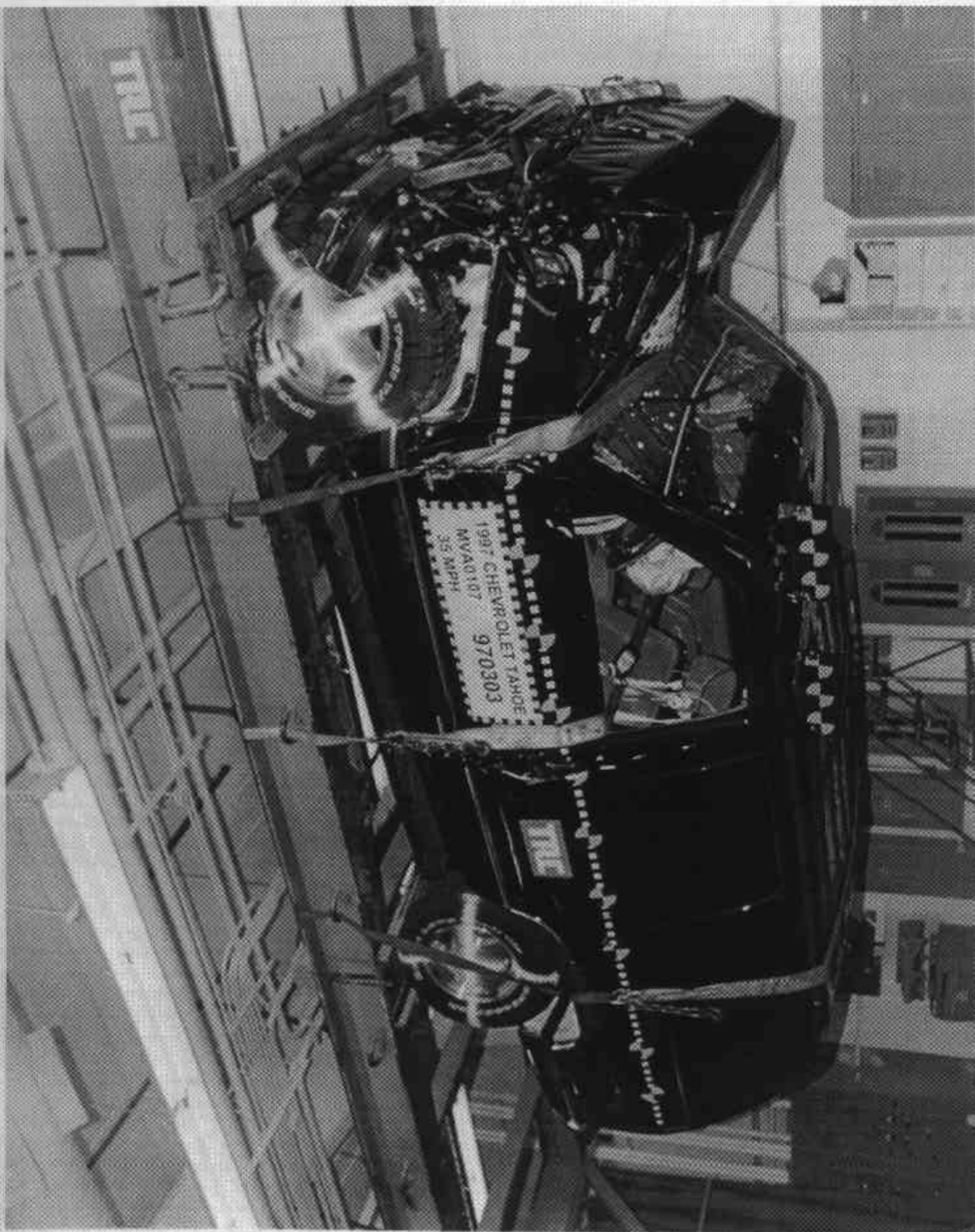


Figure A-55 Post-Test Vehicle on Static Rollover Machine View

A-56

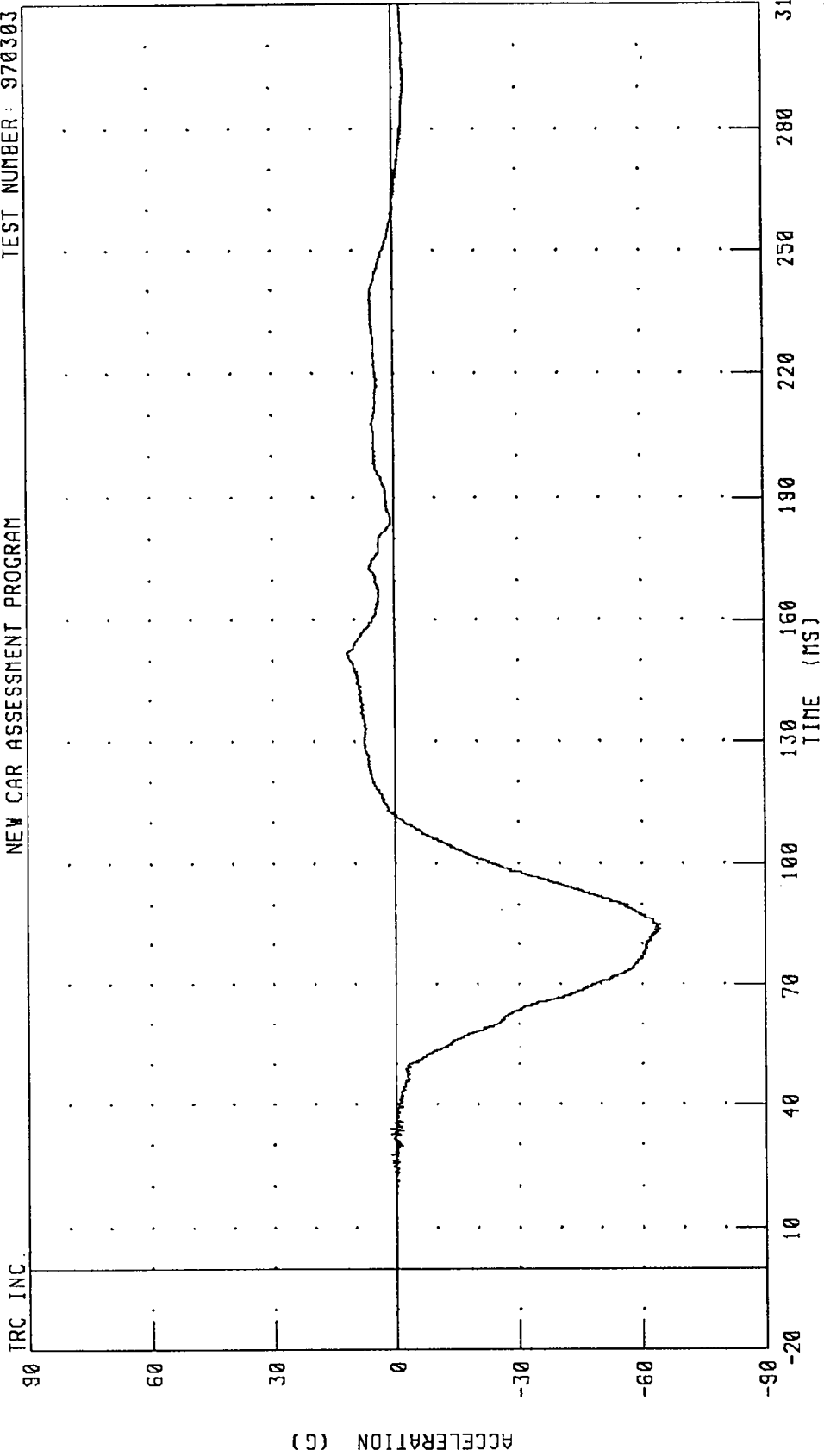
970303

Appendix B

Data Plots

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

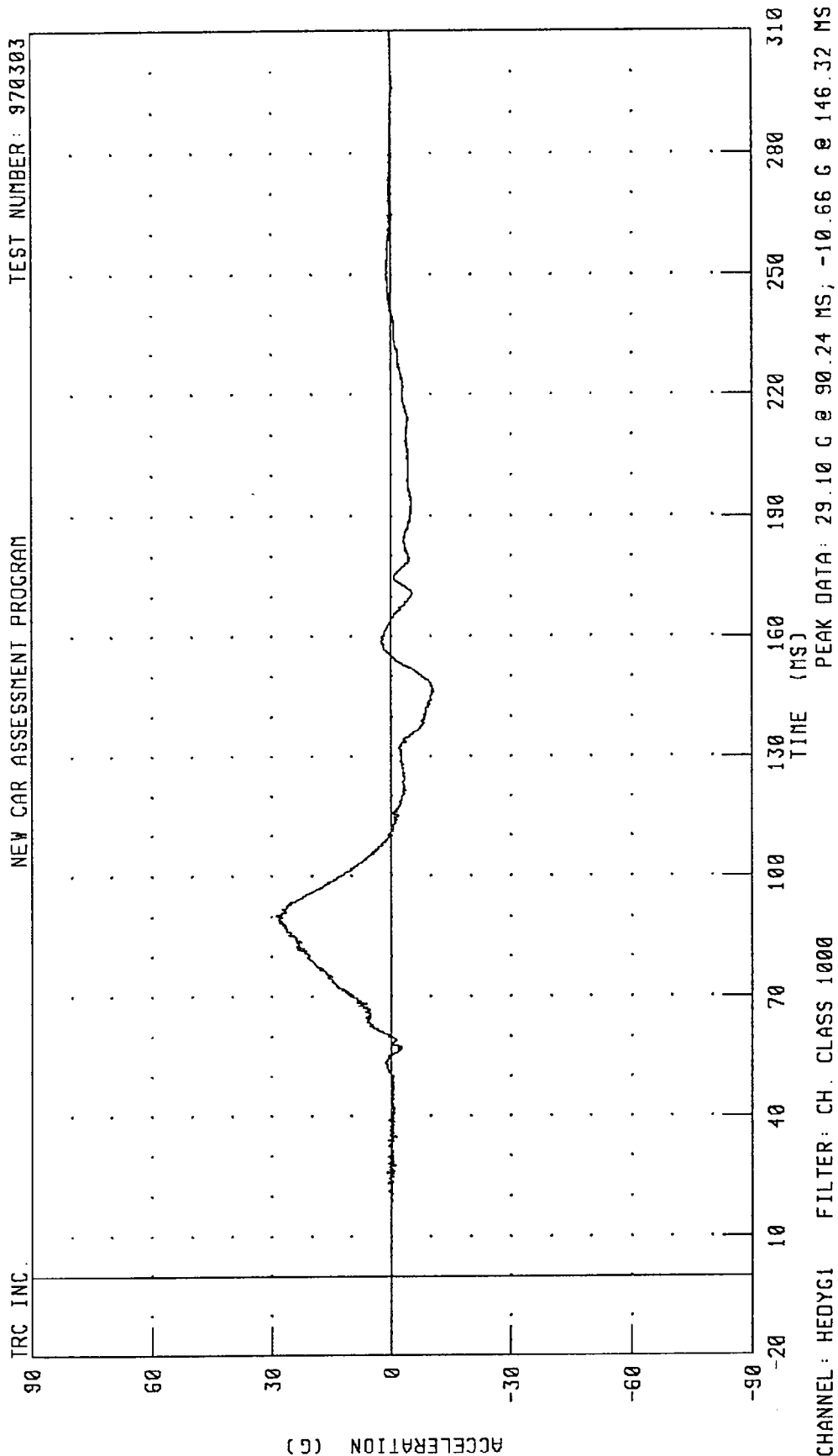


PEAK DATA: 11.57 G @ 151.52 MS; -64.60 G @ 83.92 MS

CHANNEL: HEDXG1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Y-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



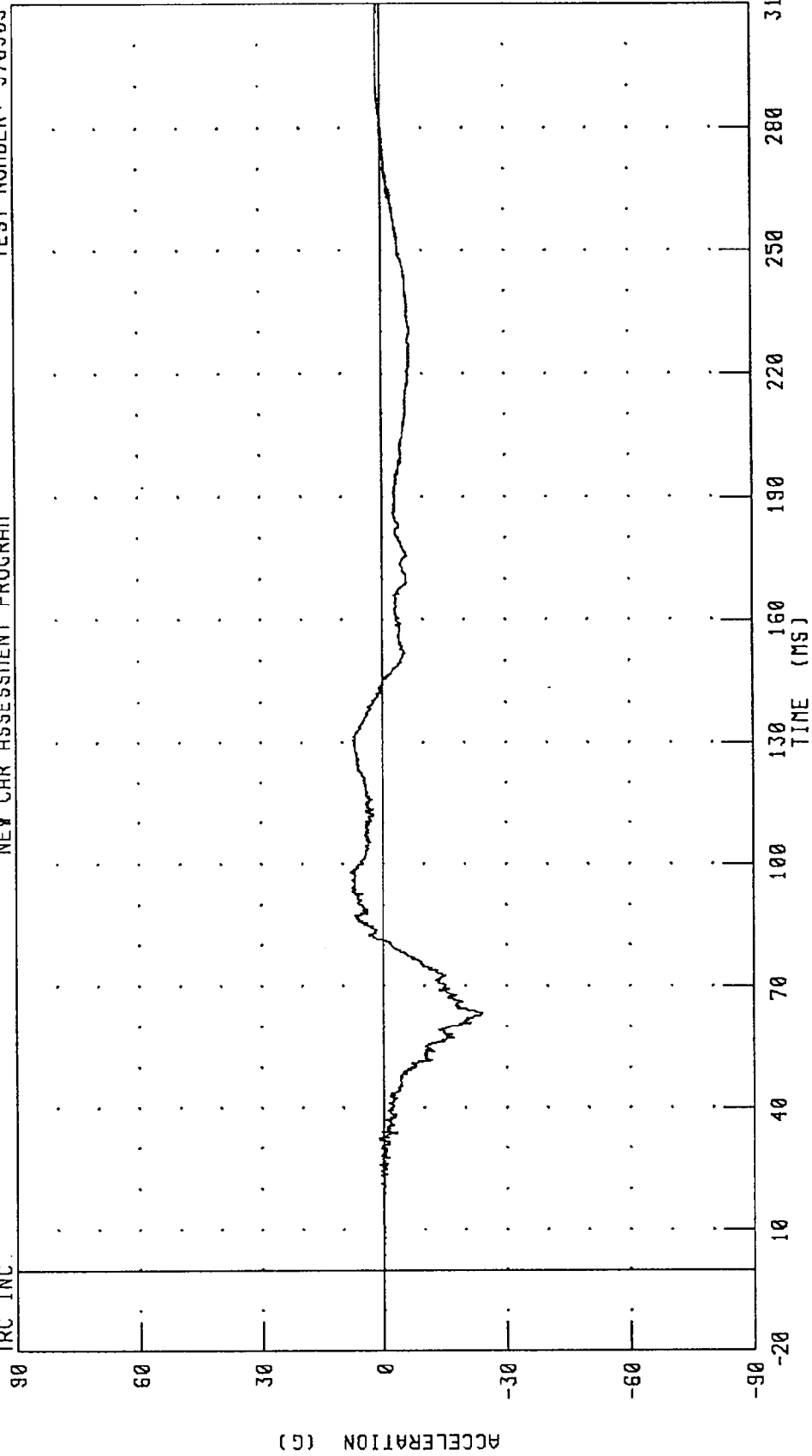
PEAK DATA: 29.10 G @ 90.24 MS; -10.66 G @ 146.32 MS

CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Z-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

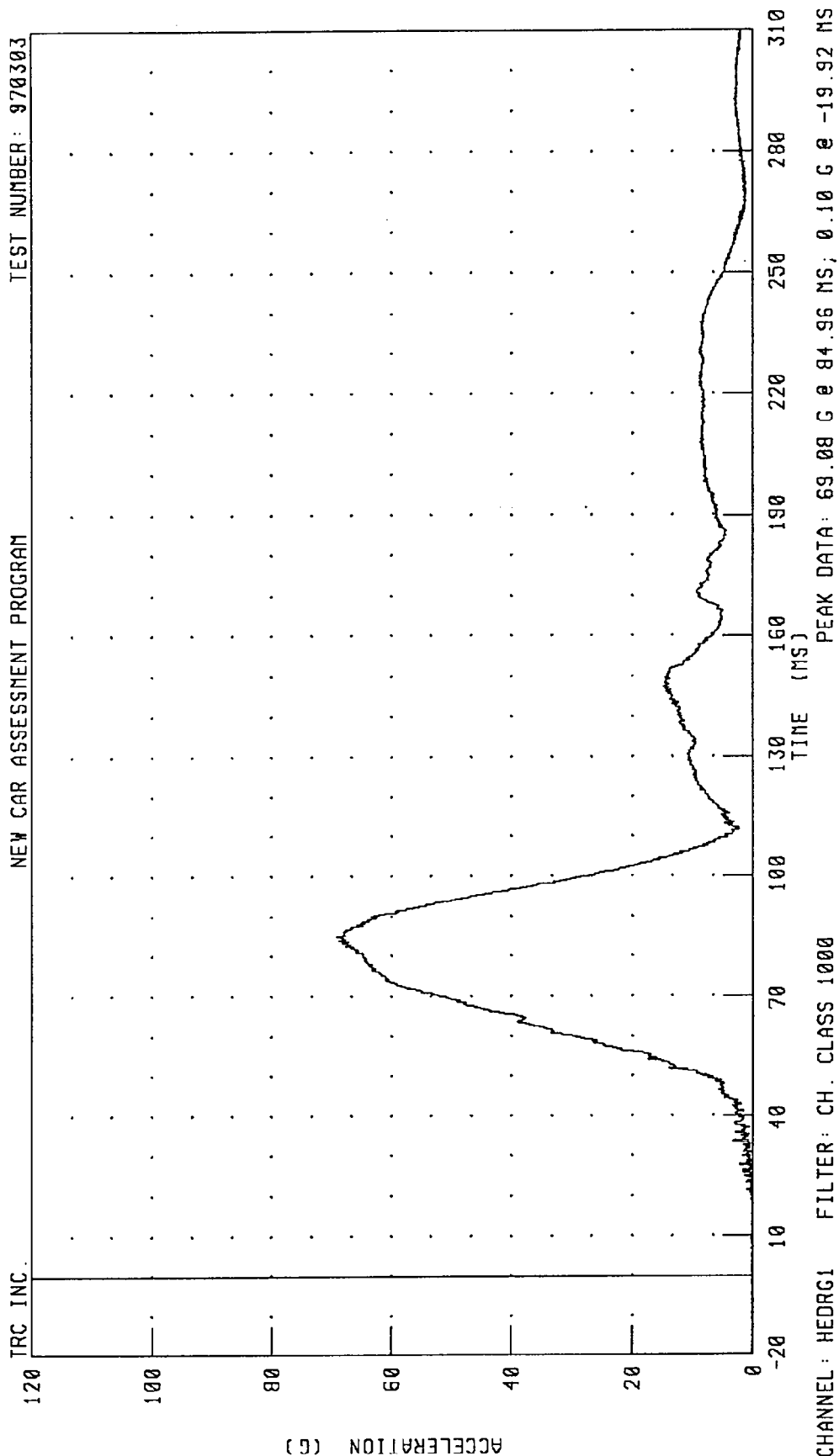


CHANNEL: HEDZG1 FILTER: CH. CLASS 1000

PEAK DATA: 8.16 G @ 97.92 MS; -24.13 G @ 63.52 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD RESULTANT ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

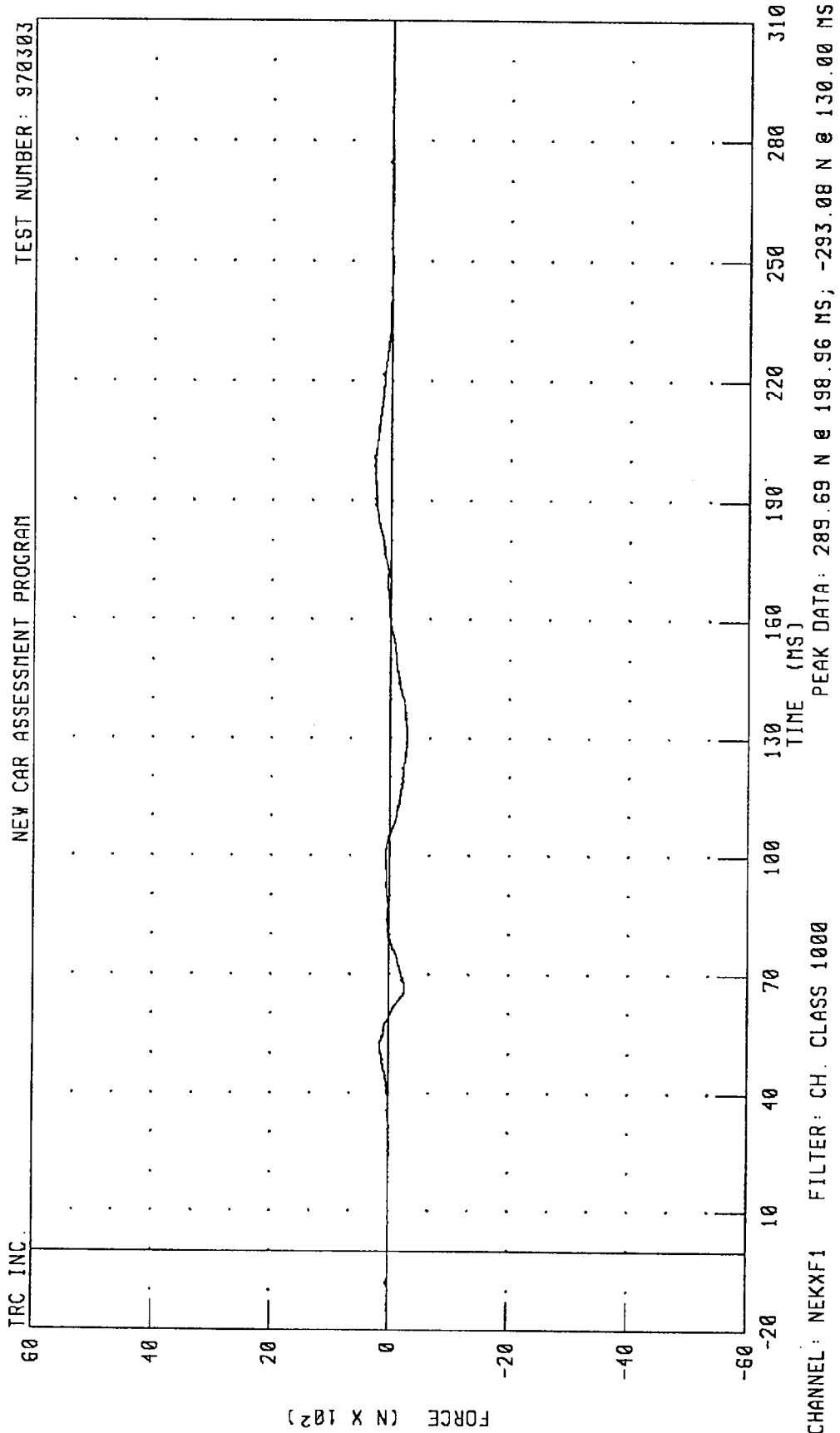


PEAK DATA: 69.08 G @ 84.96 MS; 0.10 G @ -19.92 MS

CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK X-AXIS SHEAR FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK Y-AXIS SHEAR FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

60

40

20

0

-20

-40

-60

FORCE (N X 10²)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

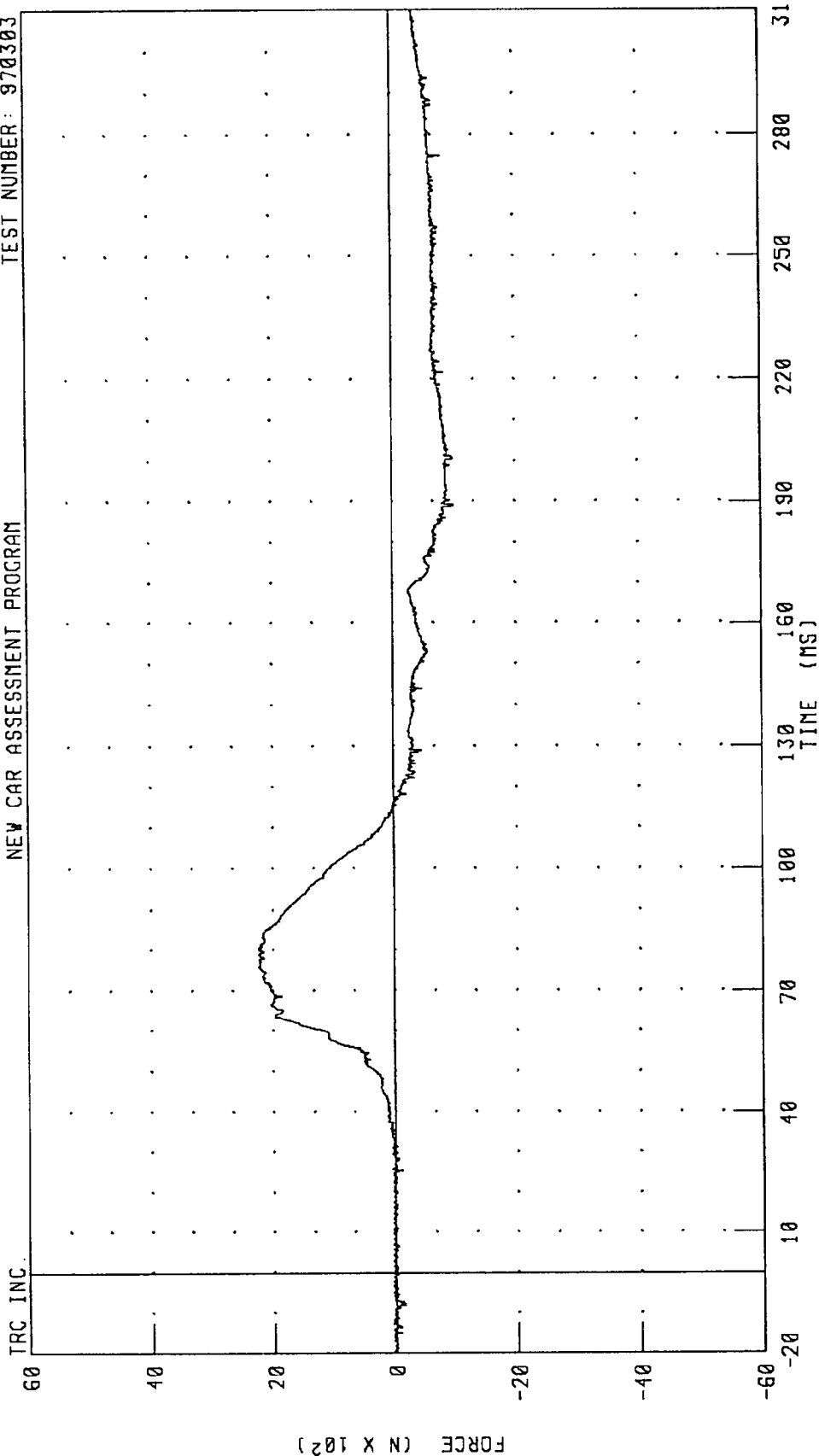
PEAK DATA: 186.20 N @ 58.08 MS; -183.08 N @ 242.24 MS

FILTER: CH. CLASS 1000

CHANNEL: NEKYF1

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK Z-AXIS AXIAL FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



PEAK DATA: 2244.67 N @ 75.92 MS; -1002.24 N @ 189.12 MS

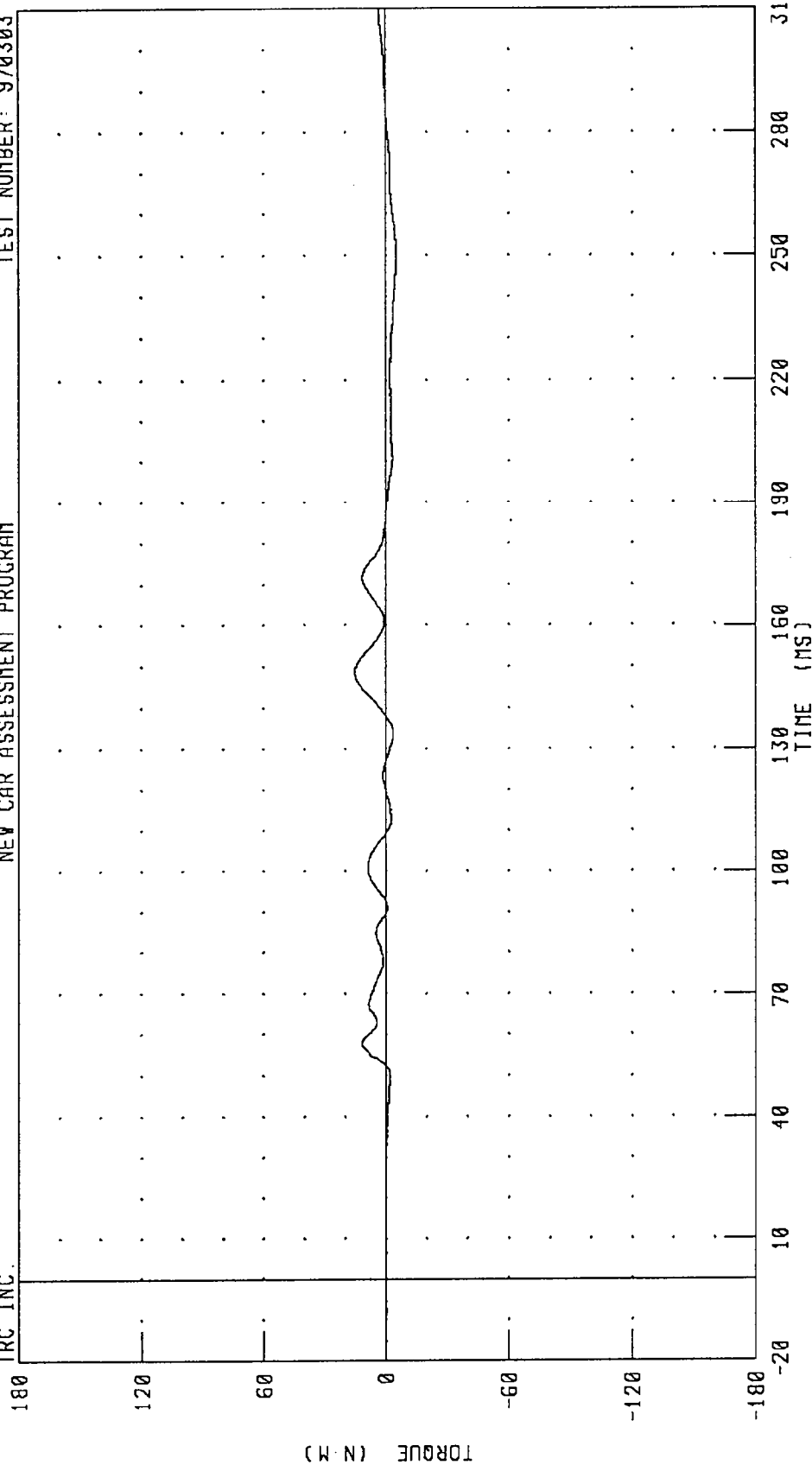
CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT X AXIS

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

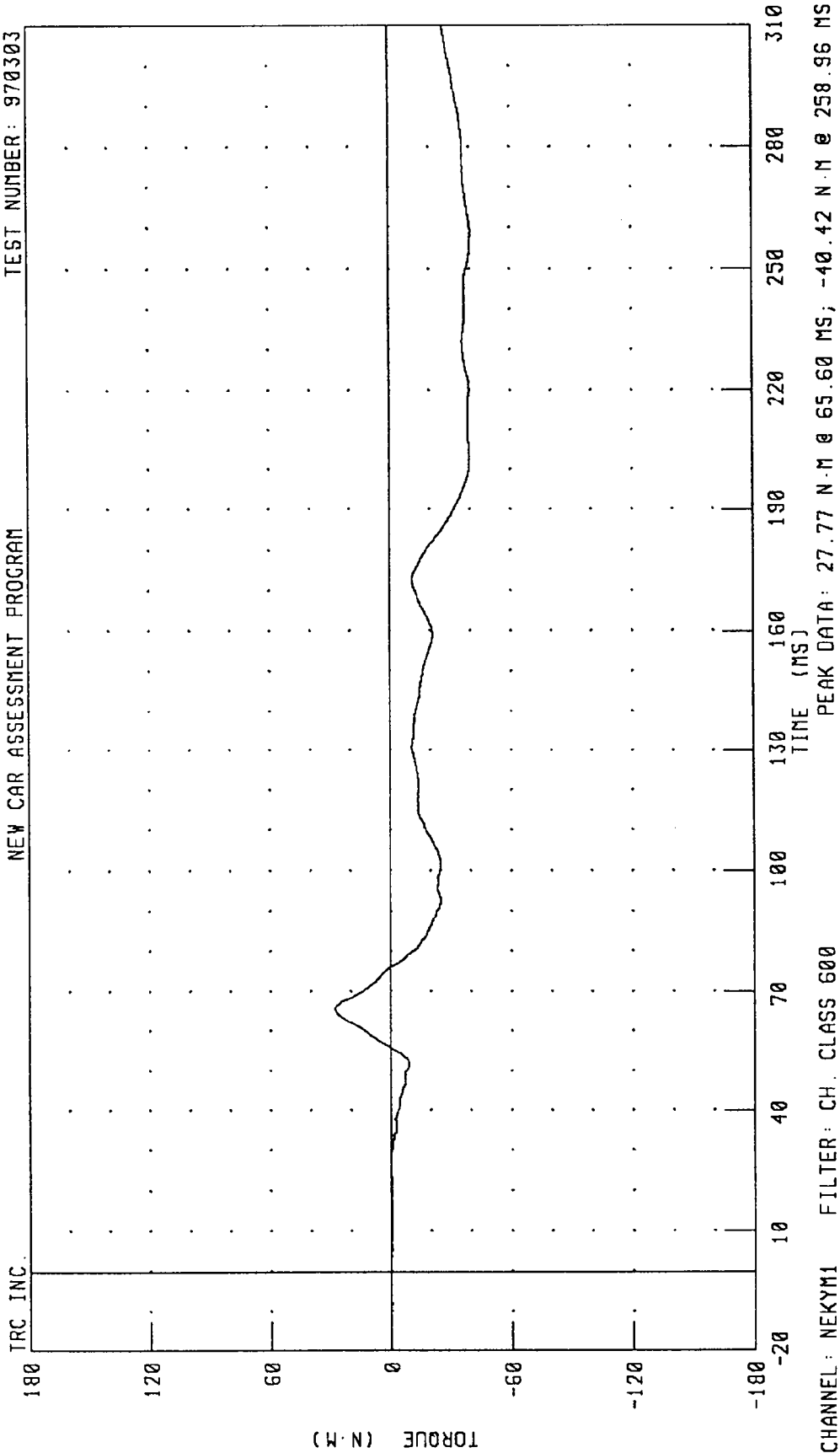


PEAK DATA: 15.21 N-M @ 148.40 MS; -5.23 N-M @ 251.36 MS

CHANNEL: NEKXM1 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT Y AXIS
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT Z AXIS
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

180

120

60

0

-60

-120

-180

TORQUE (N·M)

TIME (MS)

130

160

190

220

250

280

310

PEAK DATA: 25.00 N·M @ 110.00 MS; -0.45 N·M @ -7.84 MS

FILTER: CH. CLASS 600

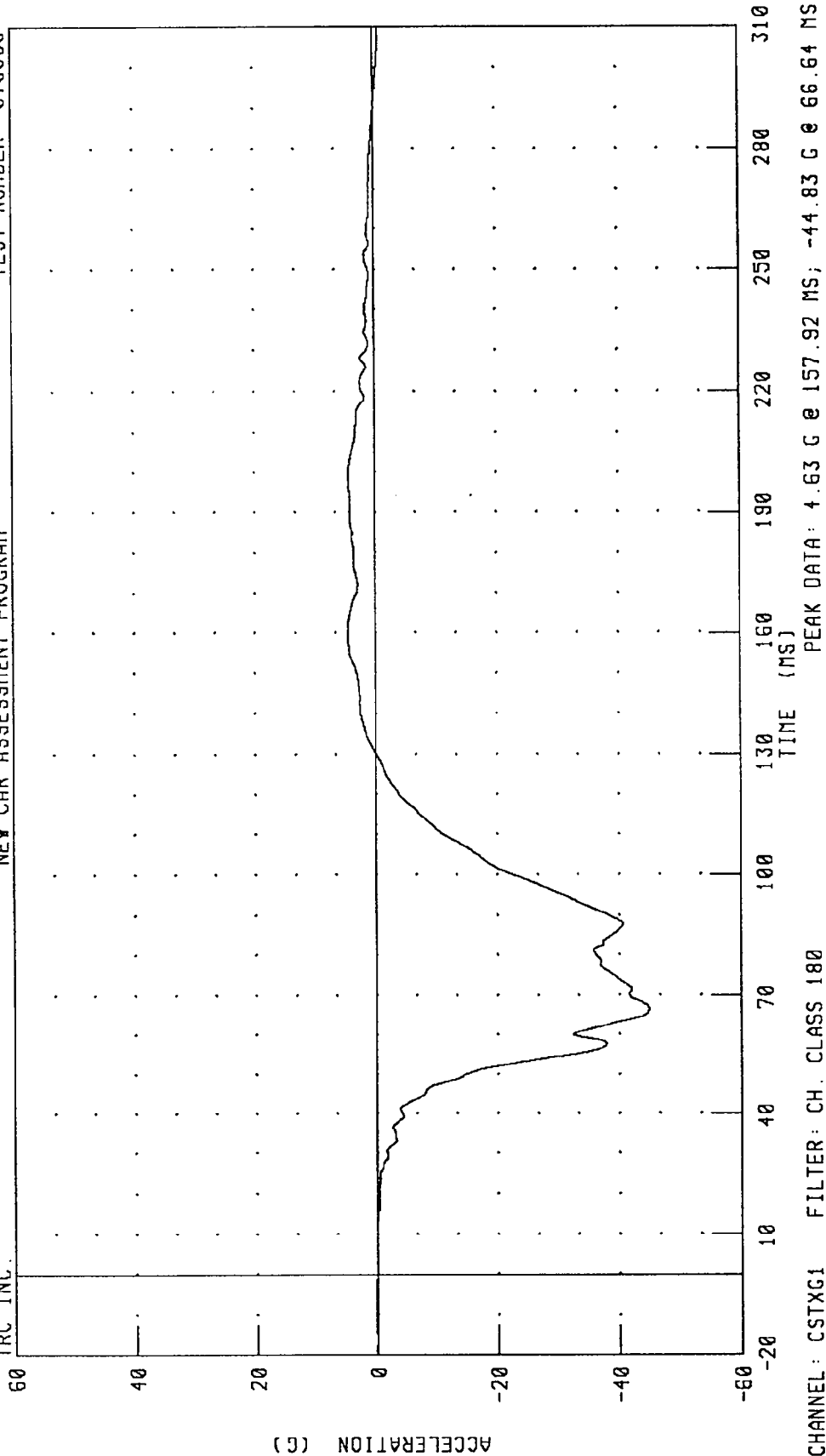
CHANNEL: NEKZM1

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST X-AXIS ACCELERATION

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



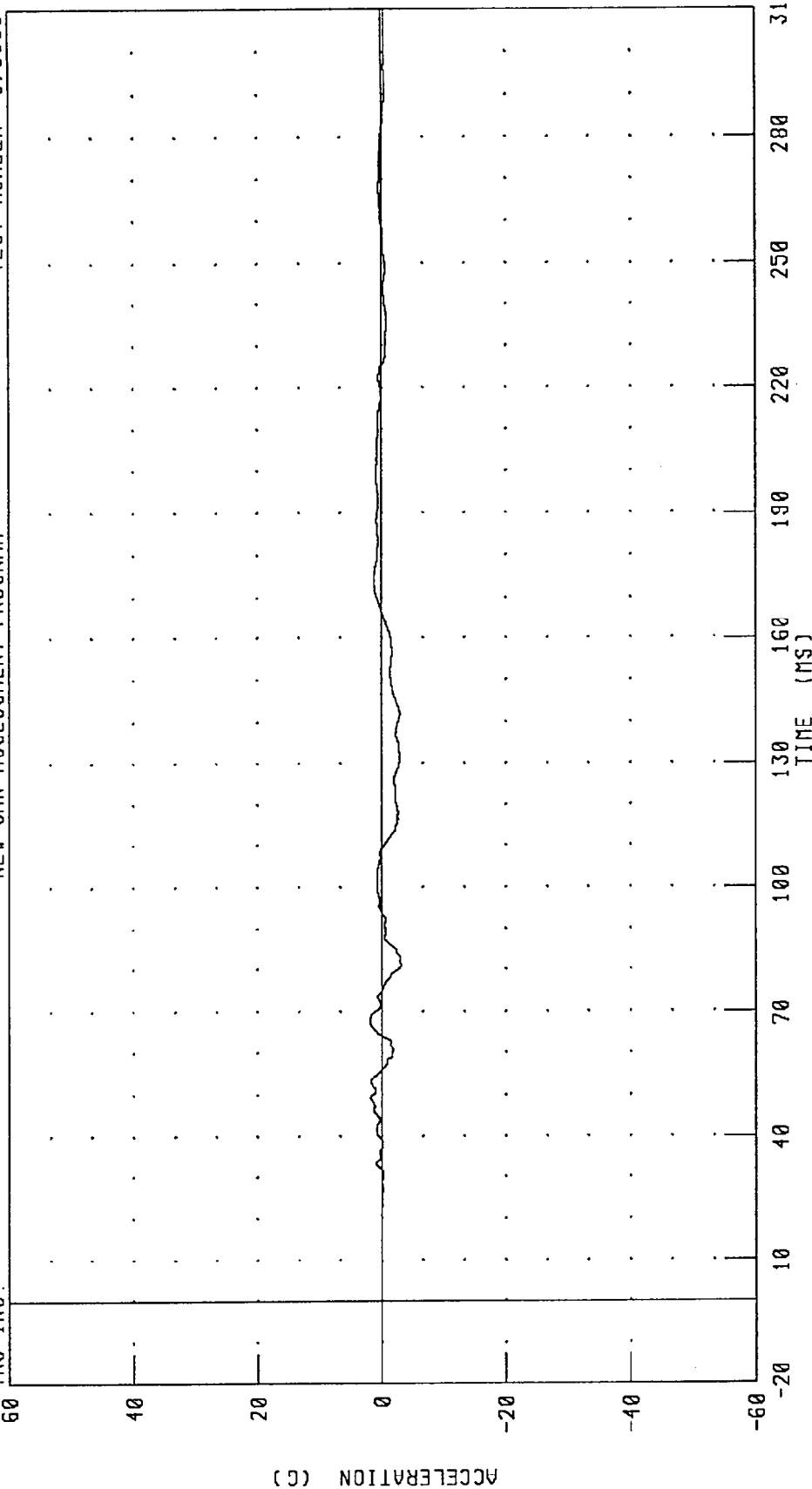
CHANNEL: CSTXG1 FILTER: CH. CLASS 180

PEAK DATA: 4.63 G @ 157.92 MS; -44.83 G @ 66.64 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Y-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



PEAK DATA: 1.93 G @ 67.68 MS, -3.15 G @ 81.12 MS

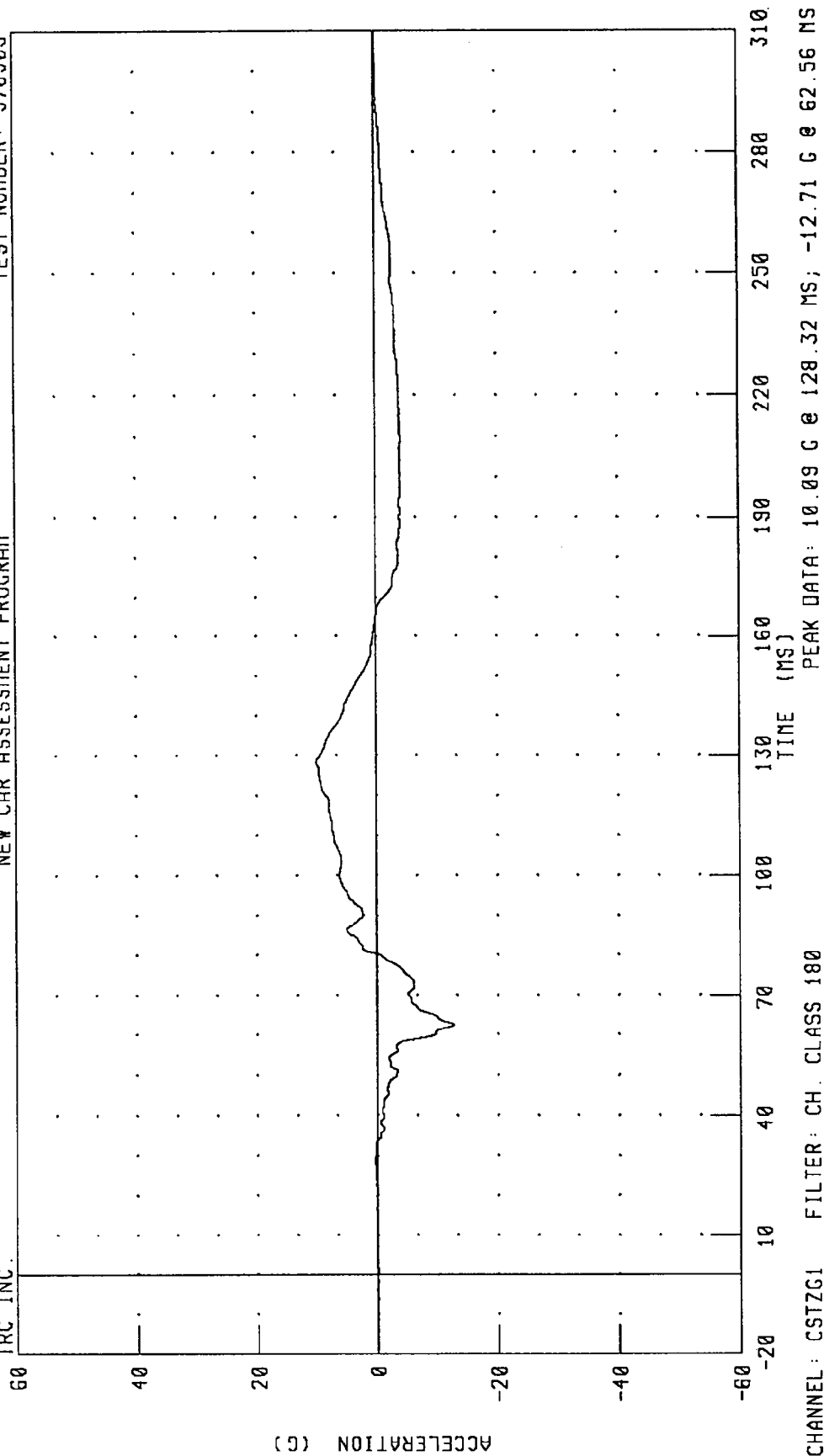
CHANNEL: CSTYG1 FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: CSTZG1 FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST RESULTANT ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

IRC INC.

120

100

80

60

40

20

0

ACCELERATION (G)

310

280

250

220

190

160

130
TIME (MS)

100

70

40

10

-20

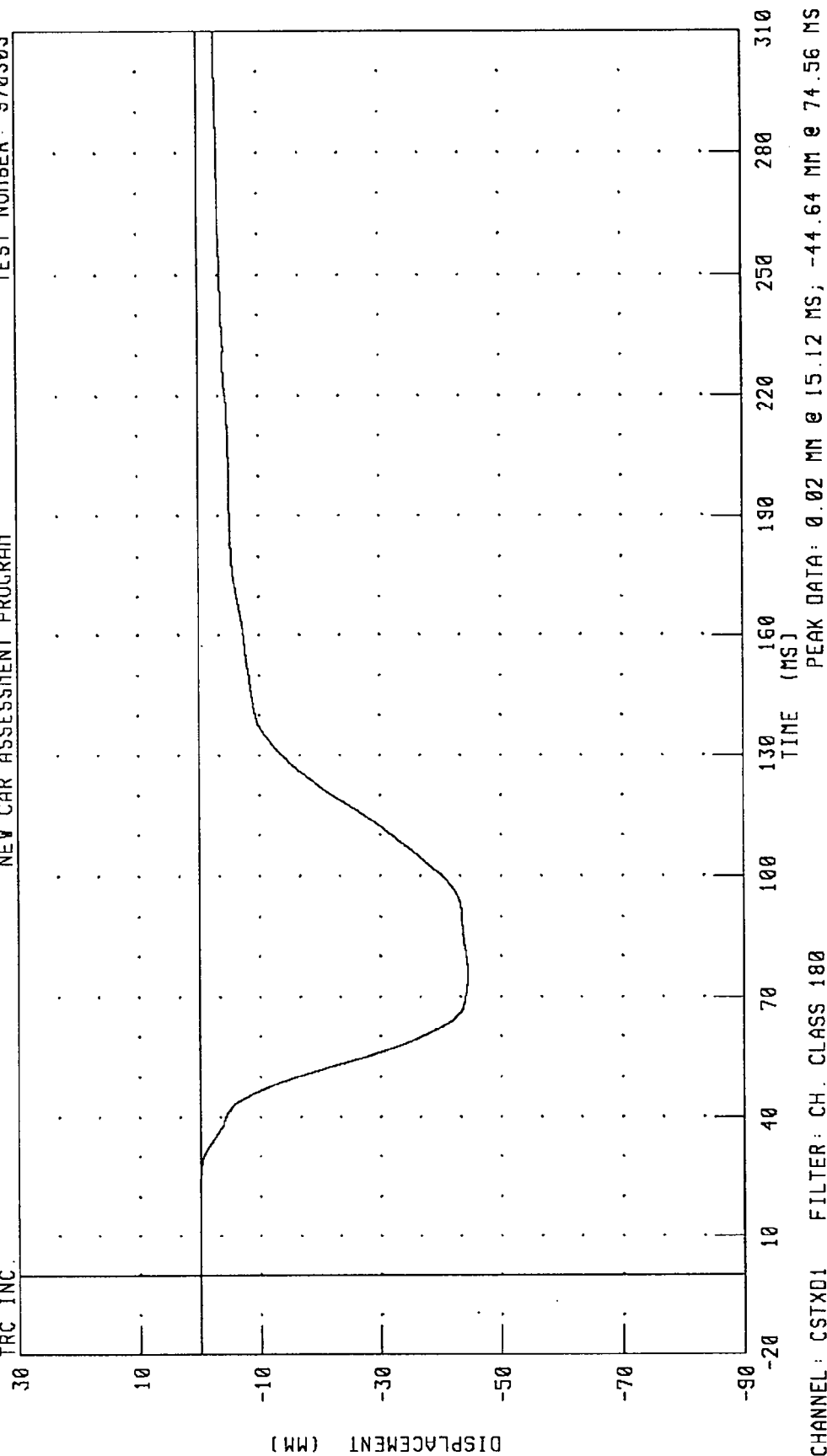
PEAK DATA: 45.46 G @ 65.68 MS; 0.01 G @ -20.00 MS

CHANNEL: CSTRG1 FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST DEFLECTION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



CHANNEL: CSTXD1 FILTER: CH. CLASS 180

PEAK DATA: 0.02 MM @ 15.12 MS; -44.64 MM @ 74.56 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER PELVIS X-AXIS ACCELERATION

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

40

20

0

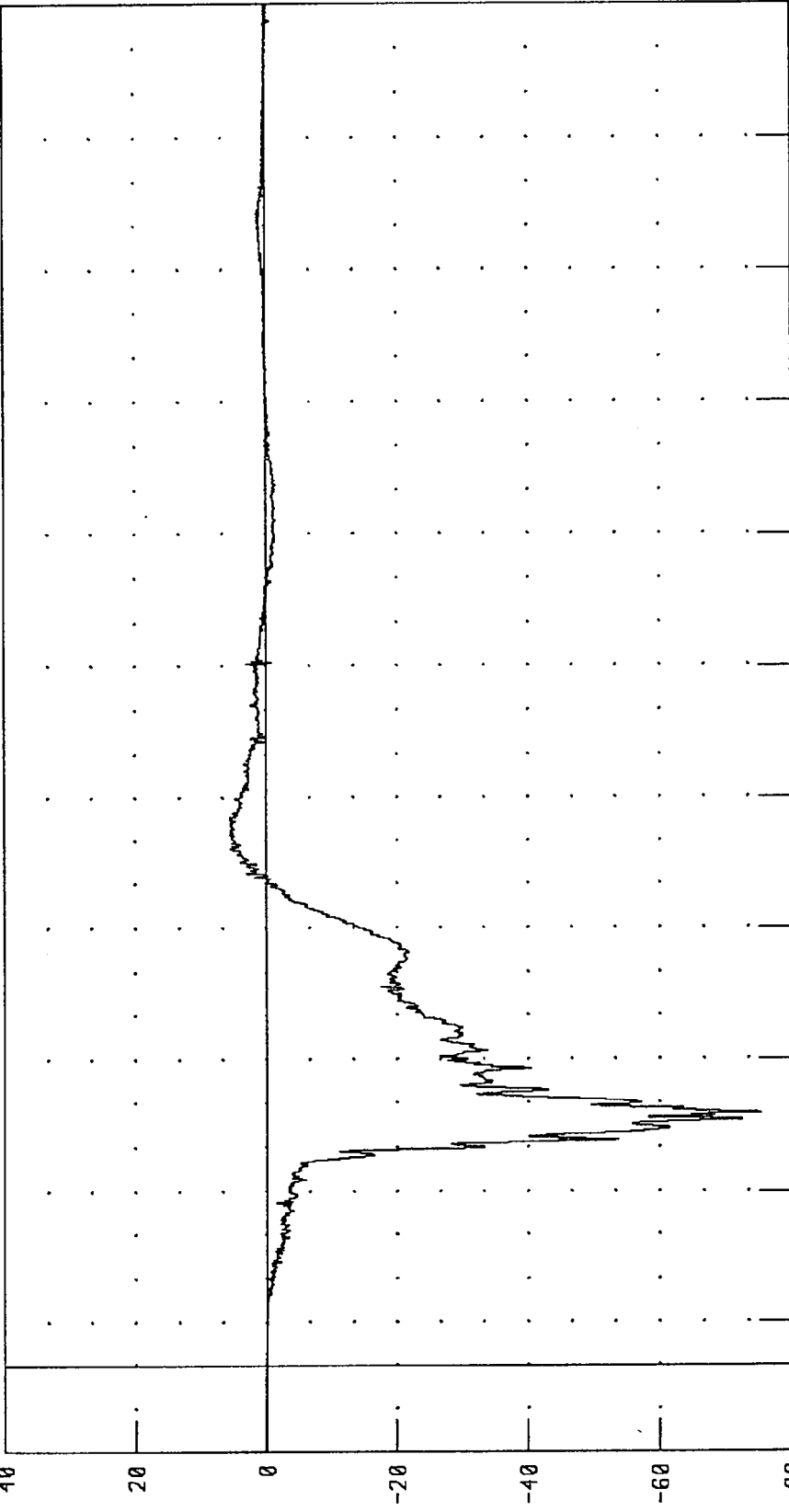
-20

-40

-60

-80

ACCELERATION (G)

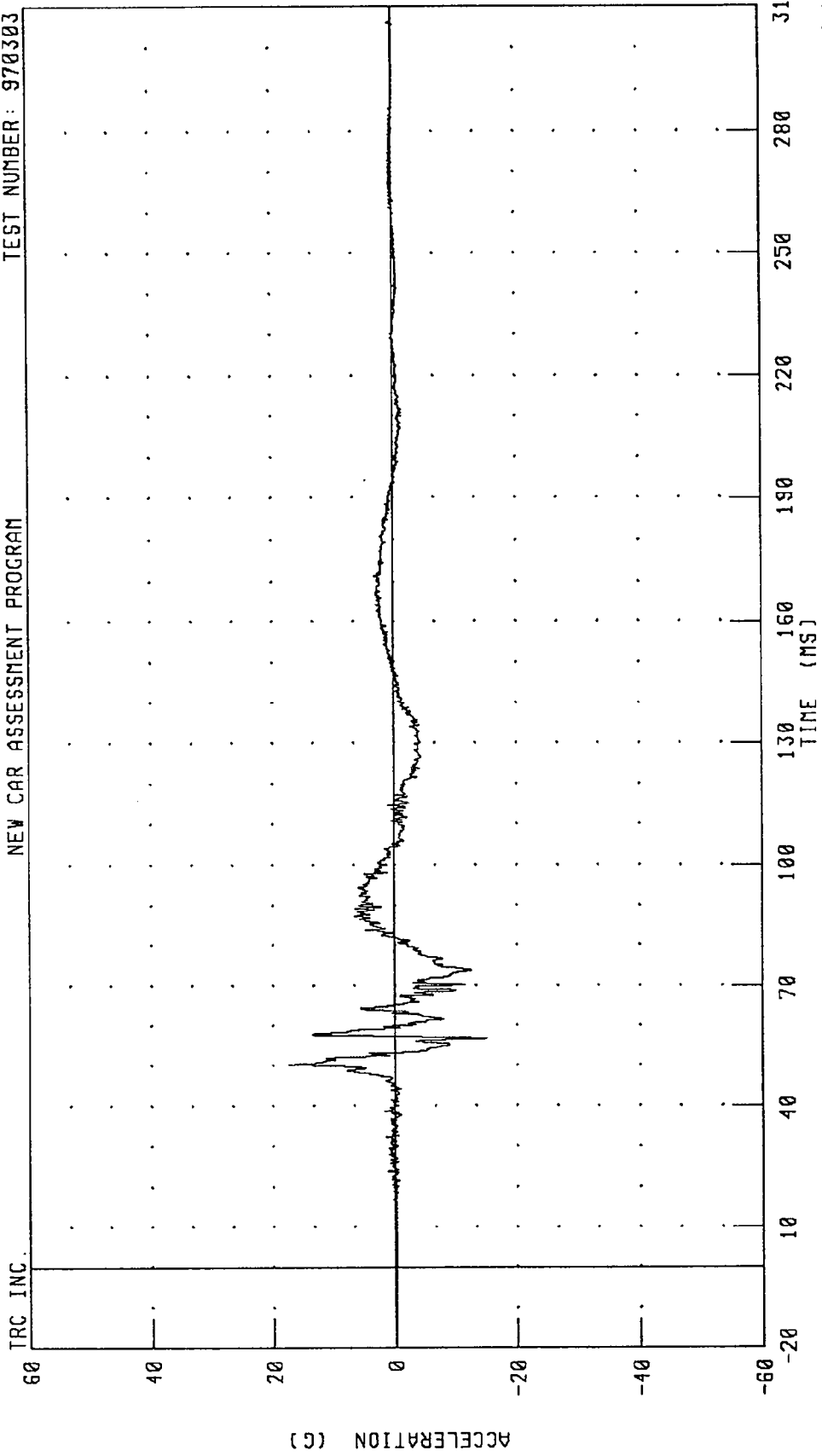


PEAK DATA: 5.64 G @ 121.52 MS; -75.21 G @ 57.60 MS

CHANNEL: PEVXG1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS Y-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



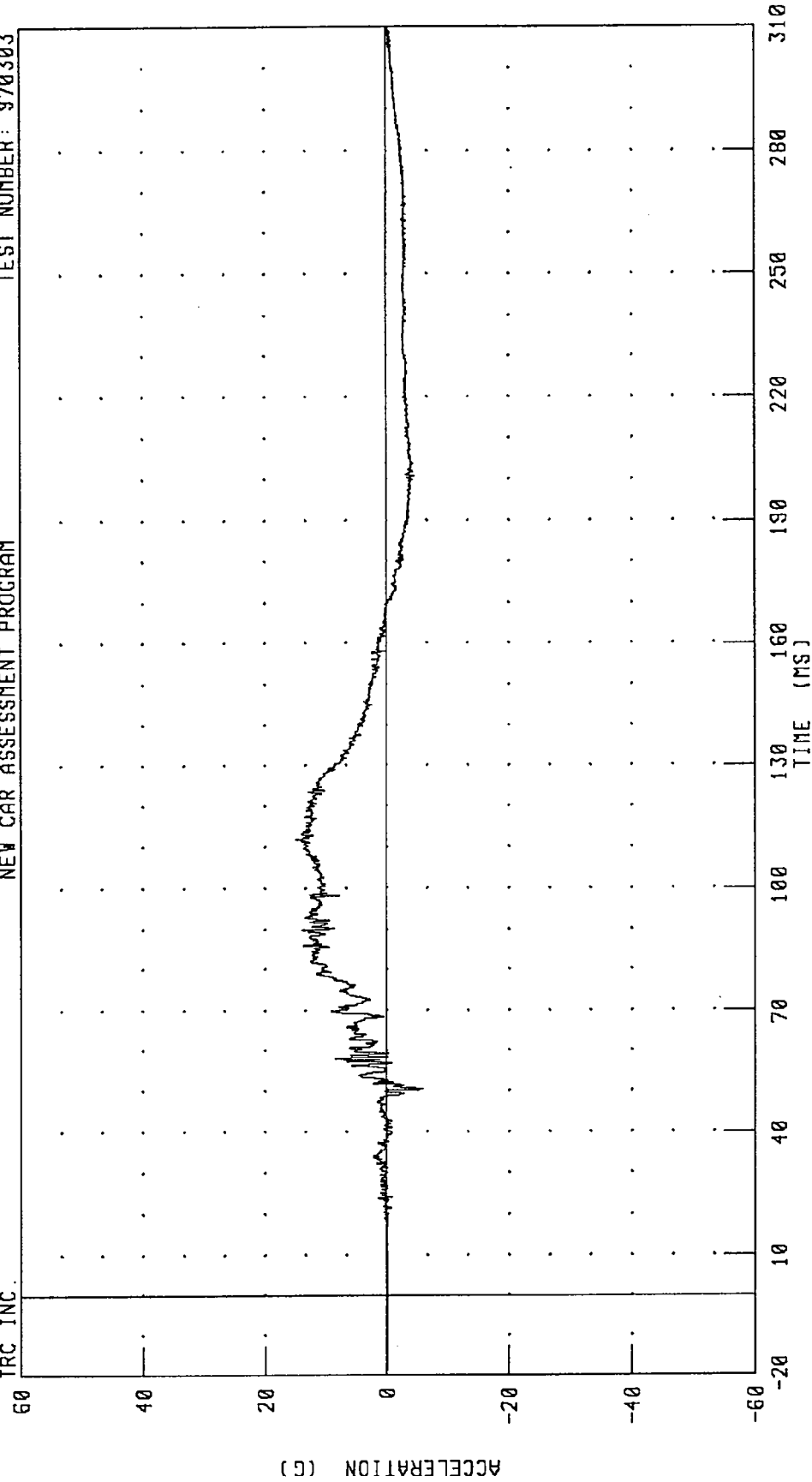
CHANNEL: PEVYG1 FILTER: CH. CLASS 1000

PEAK DATA: 17.37 G @ 50.16 MS; -15.04 G @ 56.72 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER PELVIS Z-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

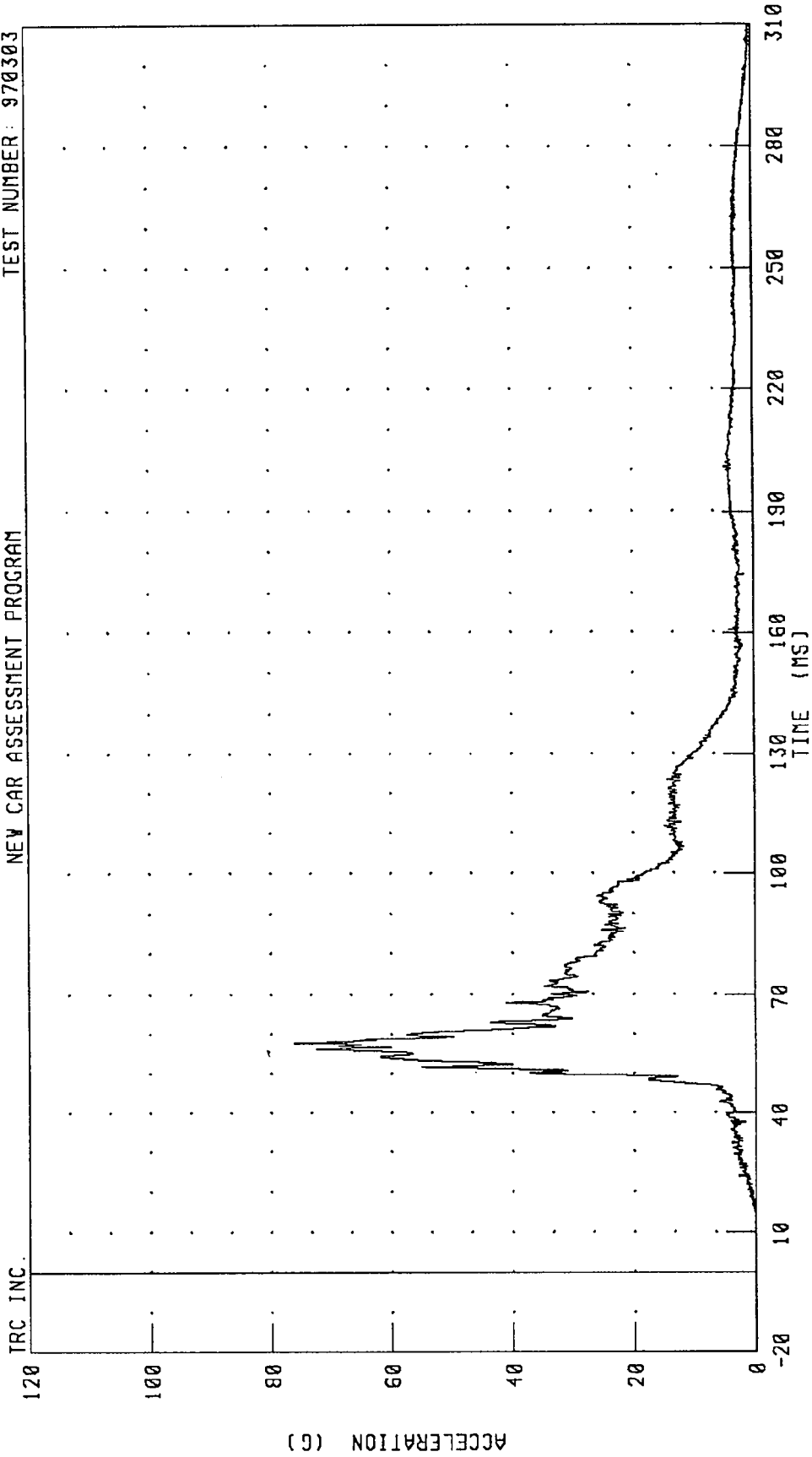


PEAK DATA: 14.92 G @ 112.08 MS; -5.89 G @ 50.40 MS

CHANNEL: PEVZG1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS RESULTANT ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



CHANNEL: PEVRG1 FILTER: CH. CLASS 1000

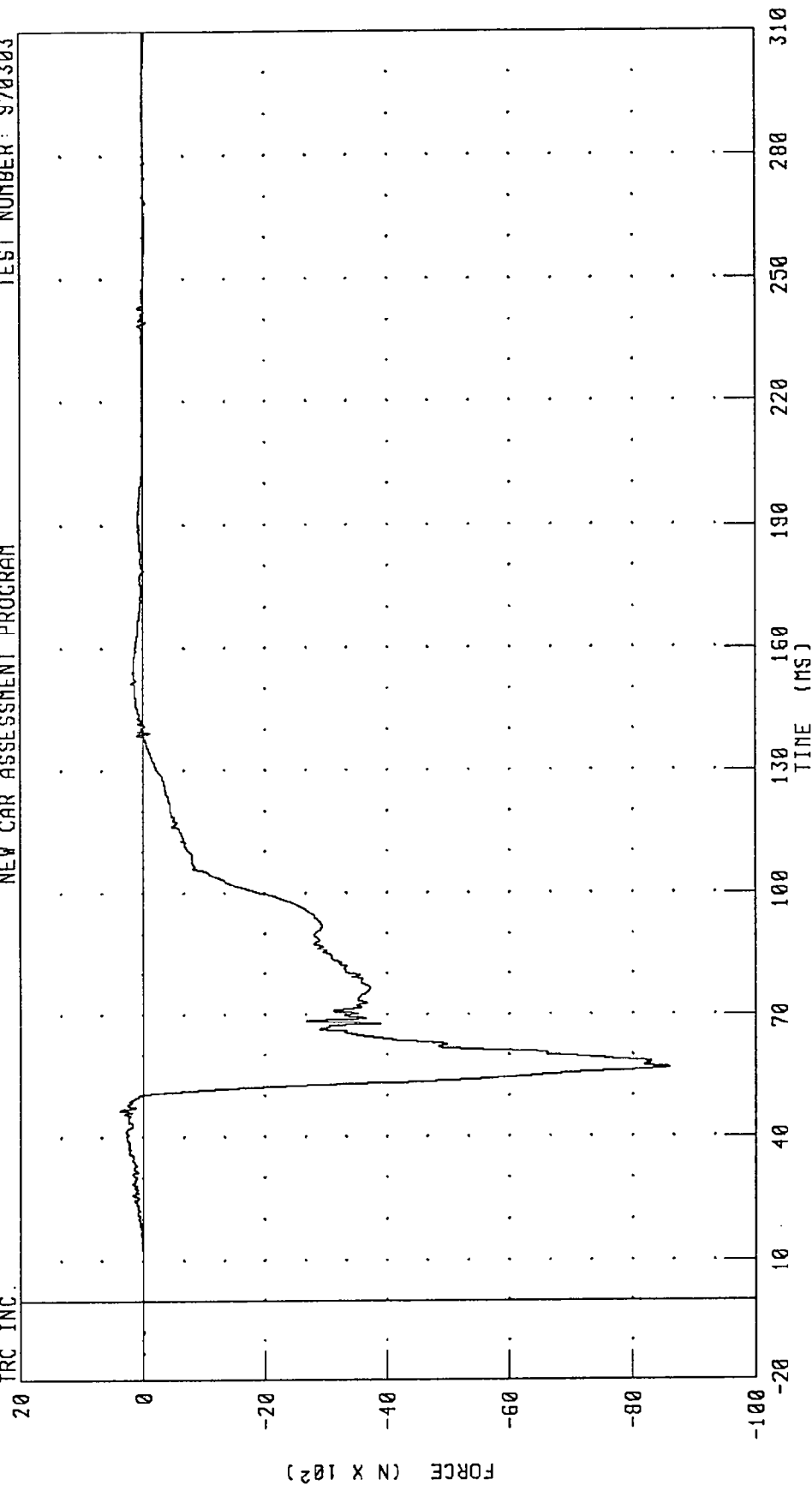
1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER

DRIVER LEFT FEMUR FORCE

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



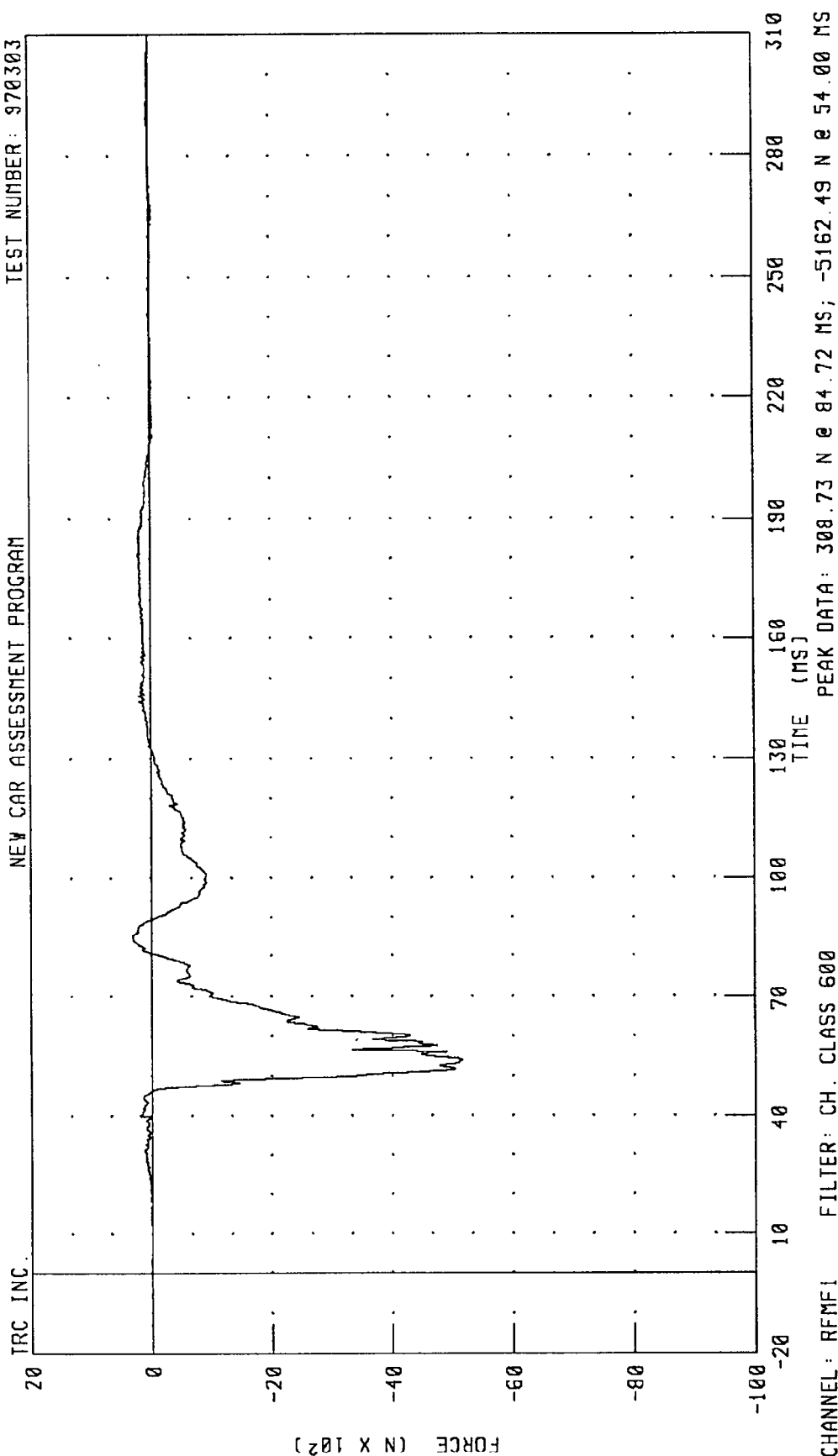
PEAK DATA: 377.53 N @ 46.56 MS; -8605.88 N @ 56.80 MS

FILTER: CH. CLASS 600

CHANNEL: LFMF1

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT FEMUR FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



CHANNEL: RFMF1 FILTER: CH. CLASS 600

PEAK DATA: 308.73 N @ 84.72 MS; -5162.49 N @ 54.00 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD X-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90

60

30

0

-30

-60

-90

ACCELERATION (G)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

PEAK DATA: 11.78 G @ 151.20 MS; -63.53 G @ 83.92 MS

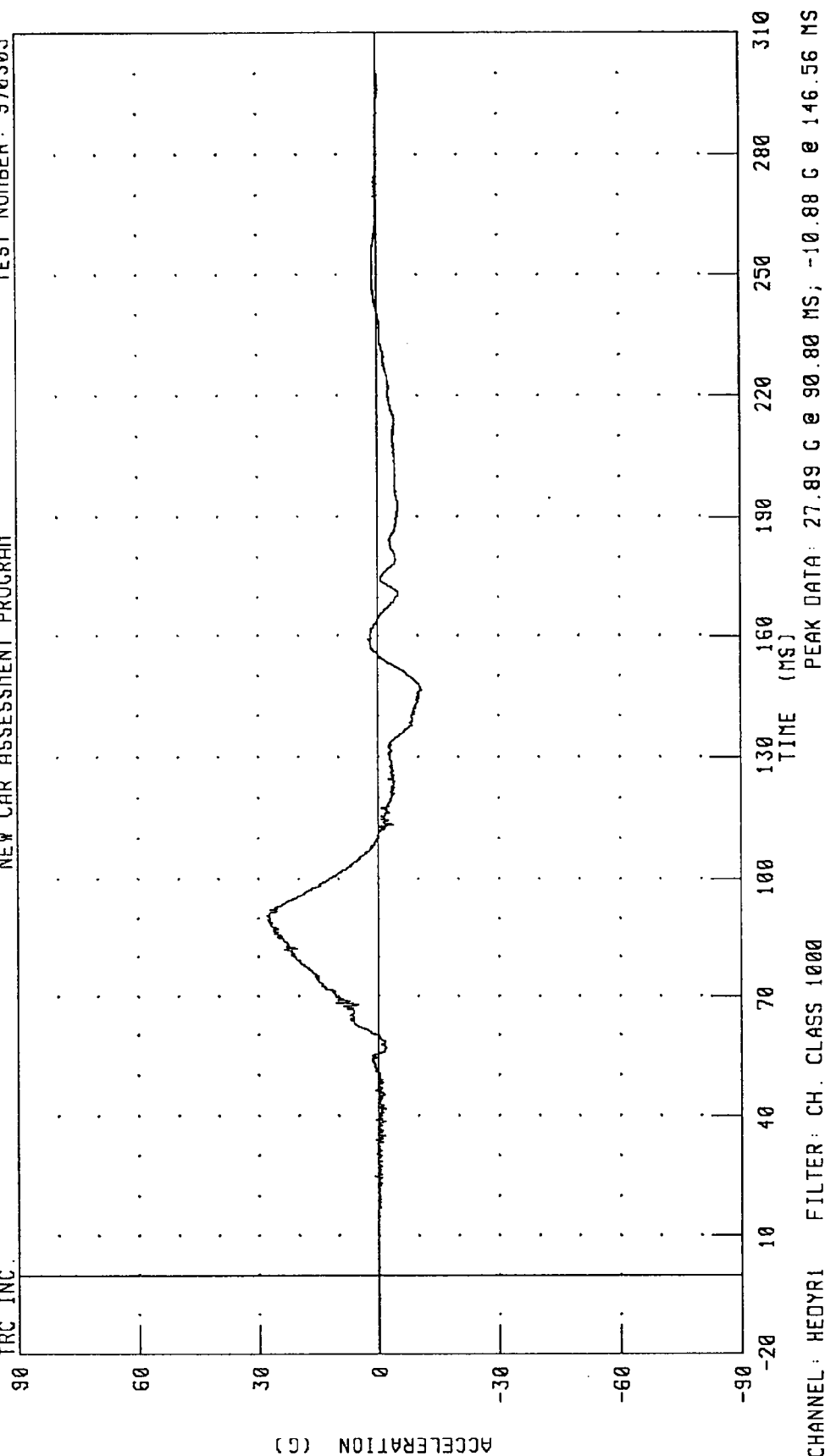
CHANNEL: HEDXR1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



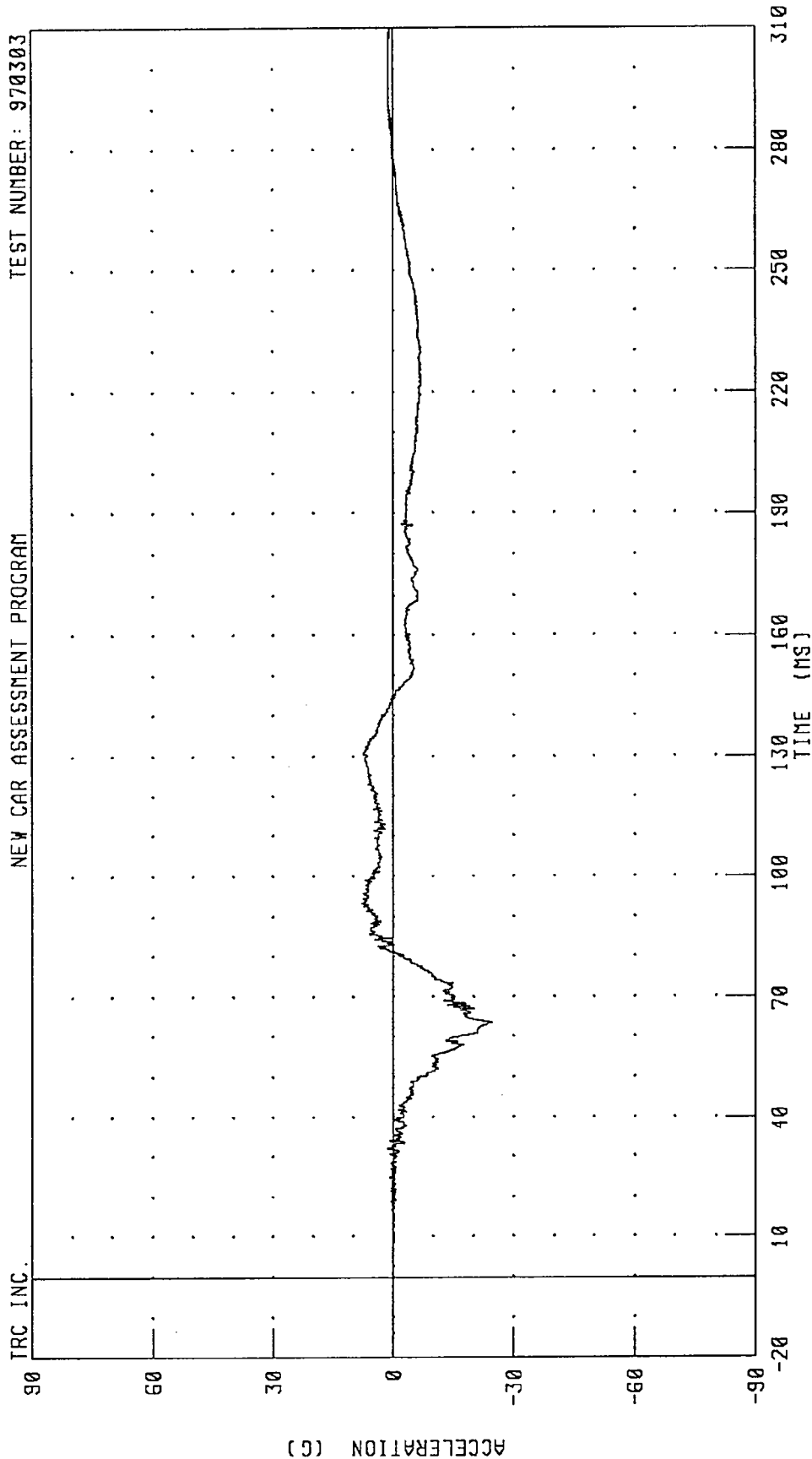
CHANNEL: HEDYRI FILTER: CH. CLASS 1000

PEAK DATA: 27.89 G @ 90.80 MS; -10.88 G @ 146.56 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Z-AXIS ACCELERATION - REDUNDANT
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



PEAK DATA: 7.86 G @ 93.36 MS; -24.51 G @ 63.60 MS

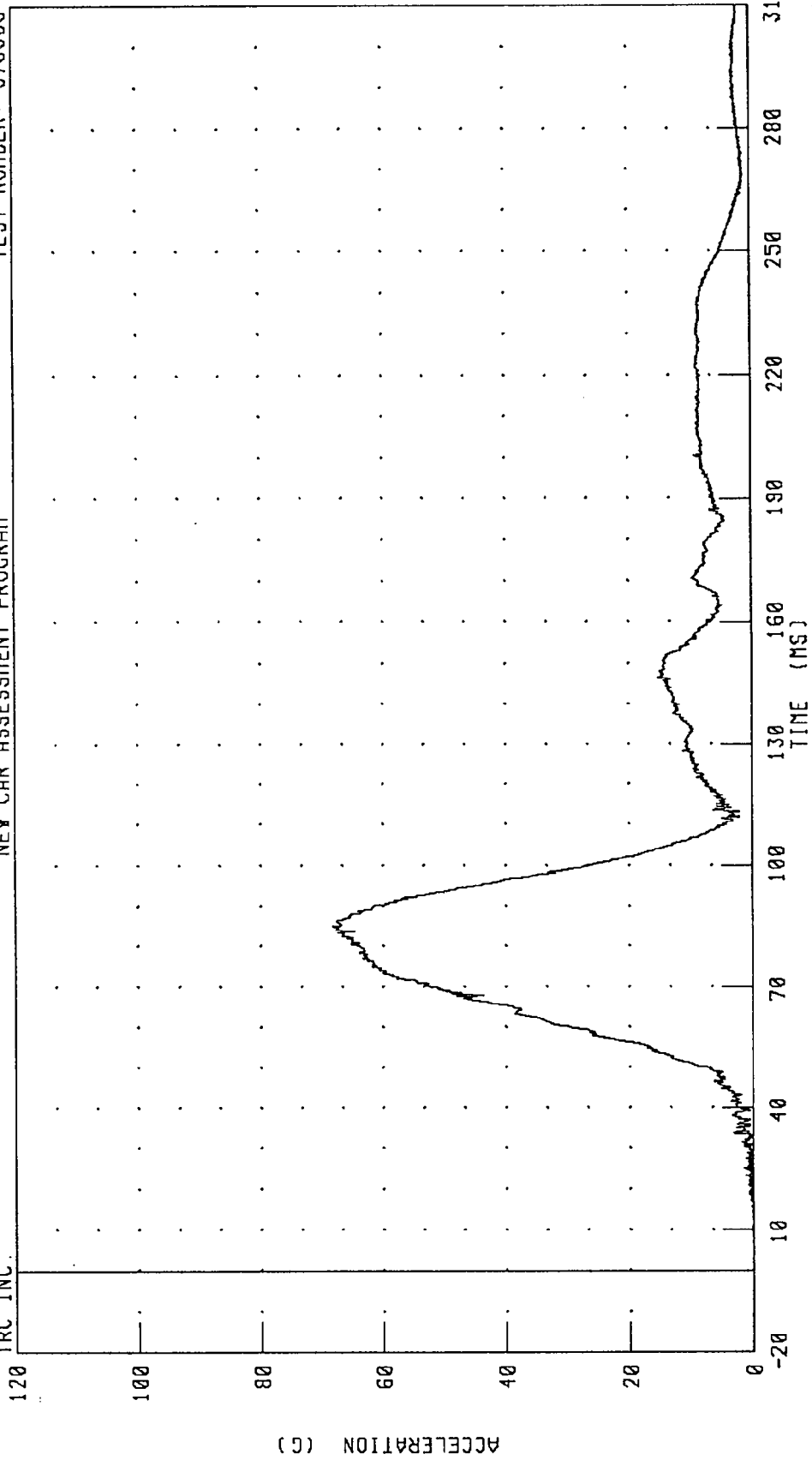
CHANNEL: HEDZR1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 68.30 G @ 68.30 MS; 0.08 G @ -20.00 MS

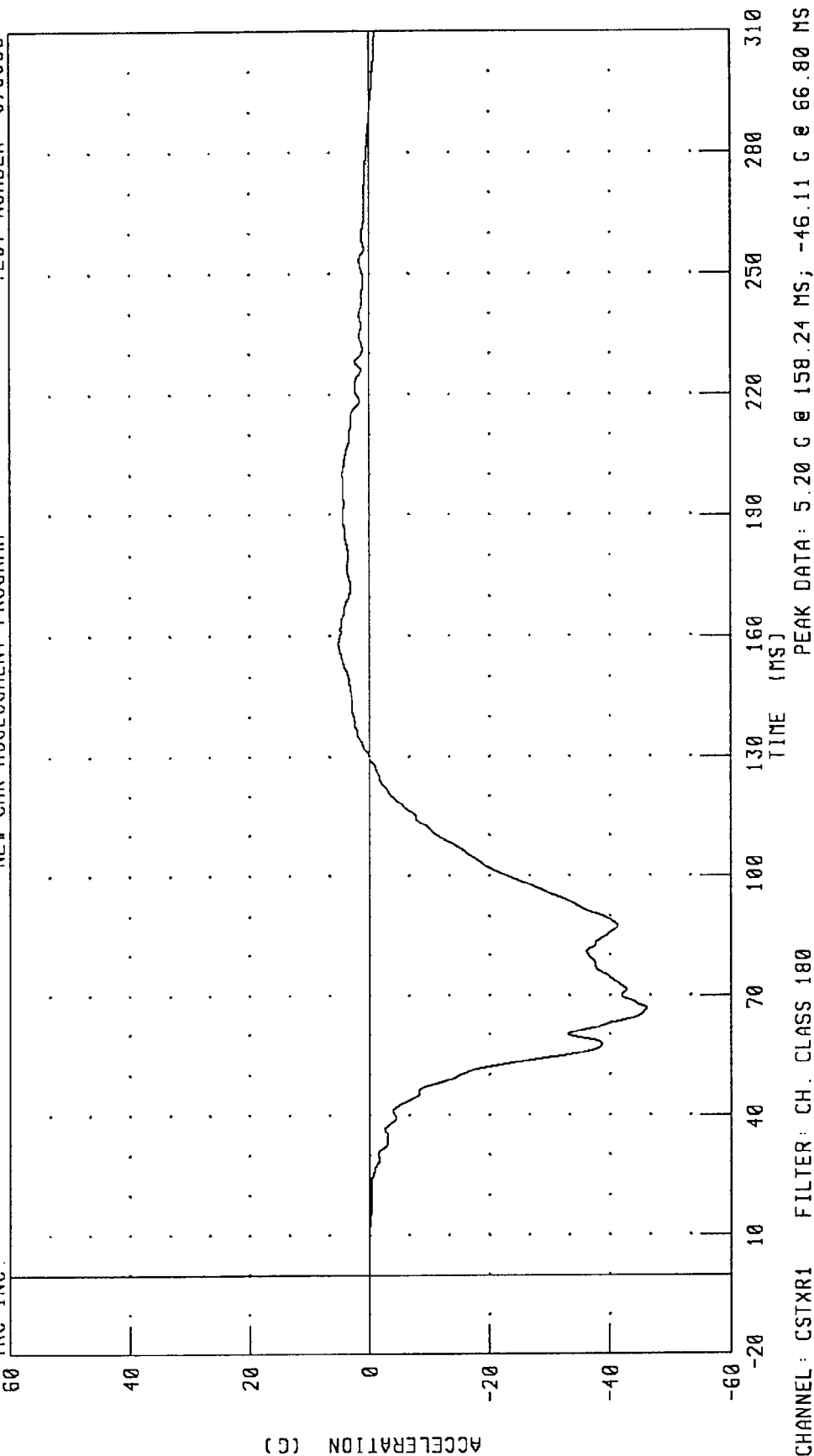
CHANNEL: HEDRR1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST X-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: CSTXR1 FILTER: CH. CLASS 180

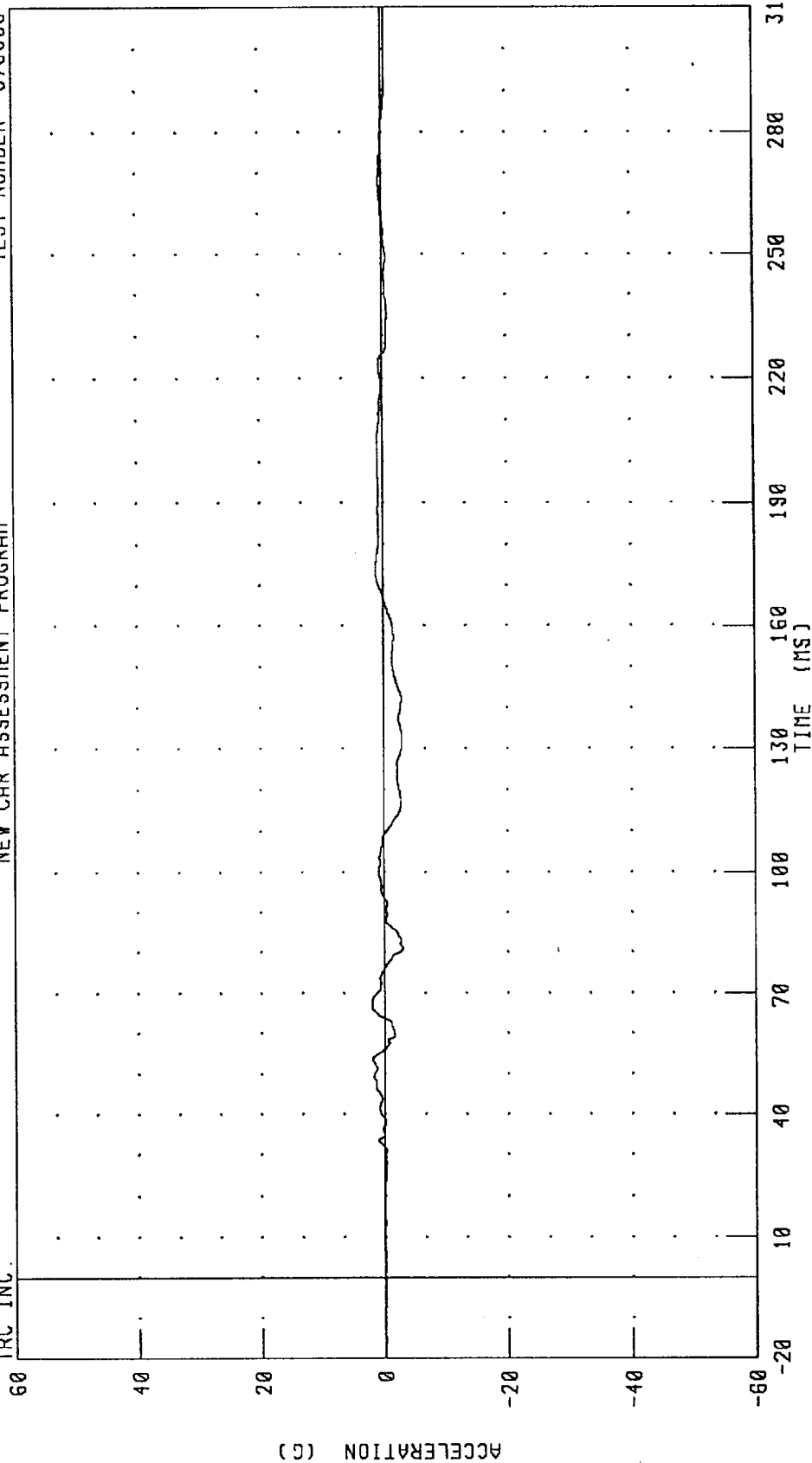
PEAK DATA: 5.20 G @ 158.24 MS; -46.11 G @ 66.80 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

IRC INC.



CHANNEL: CSTYR1 FILTER: CH. CLASS 180

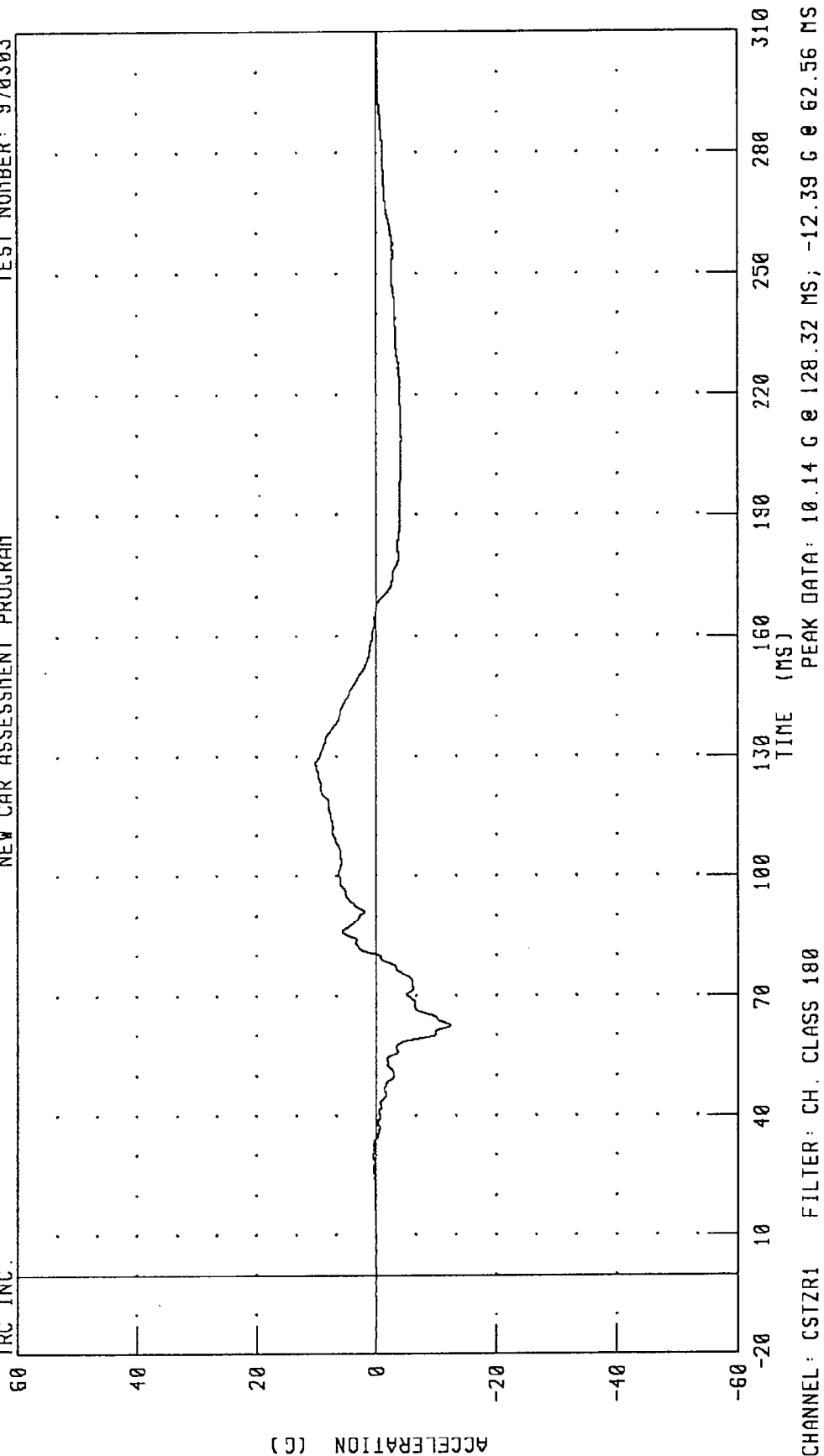
PEAK DATA: 2.12 G @ 67.52 MS; -3.08 G @ 81.04 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Z-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: CSTZR1 FILTER: CH. CLASS 180

PEAK DATA: 10.14 G @ 128.32 MS; -12.39 G @ 62.56 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

120

100

80

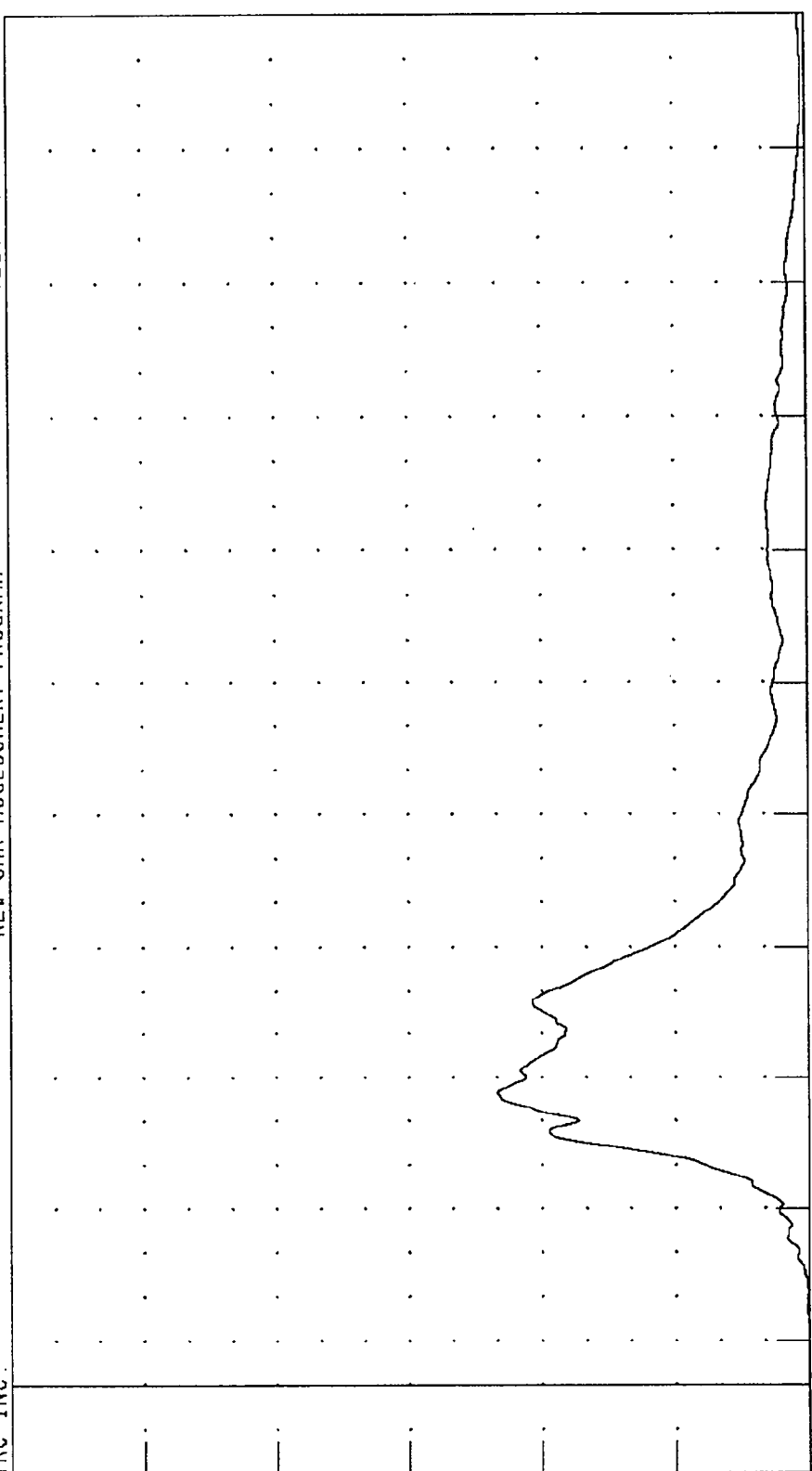
60

40

20

0

ACCELERATION (G)



TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

PEAK DATA: 46.63 G @ 66.80 MS; 0.01 G @ -20.00 MS

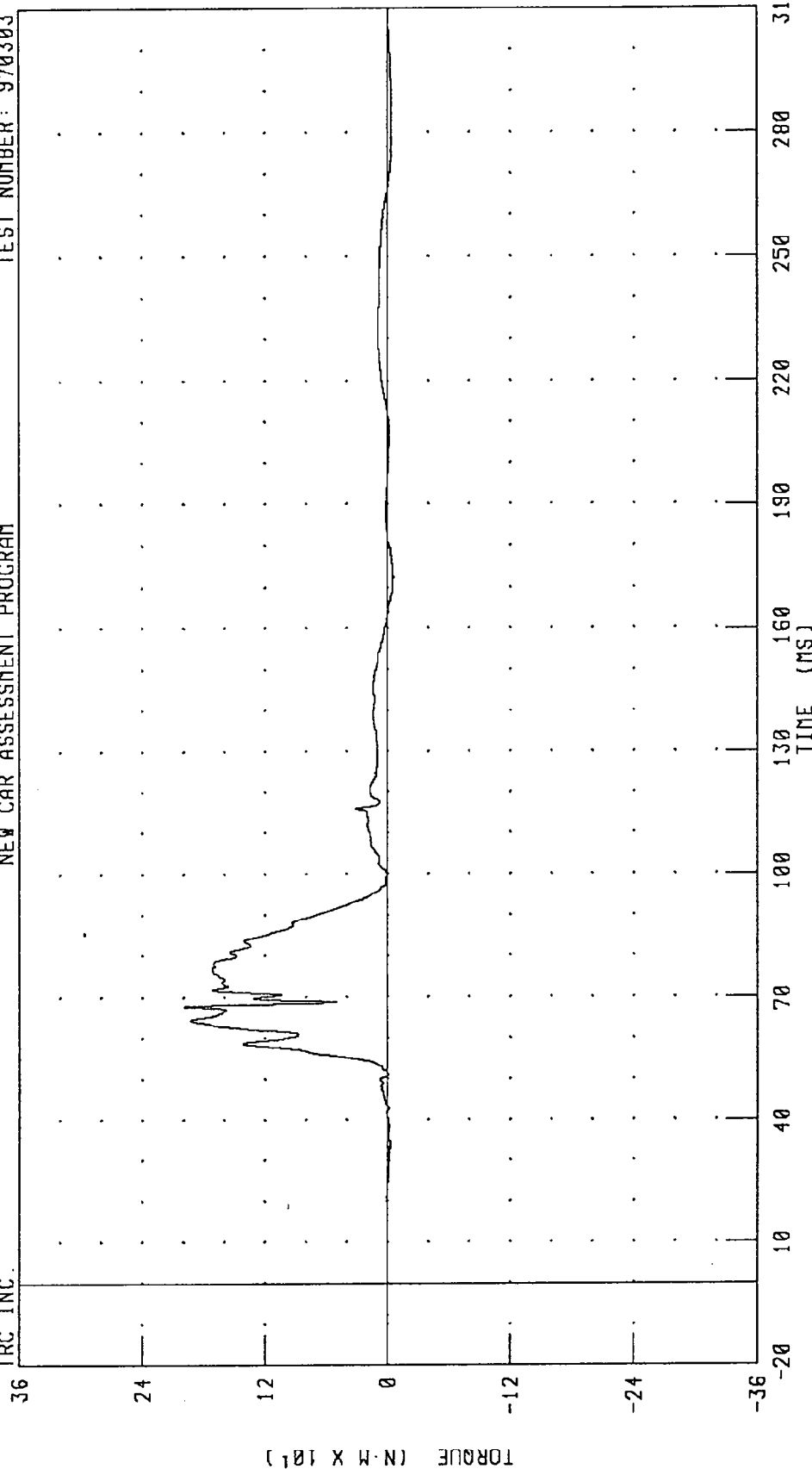
CHANNEL: CSTRR1 FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



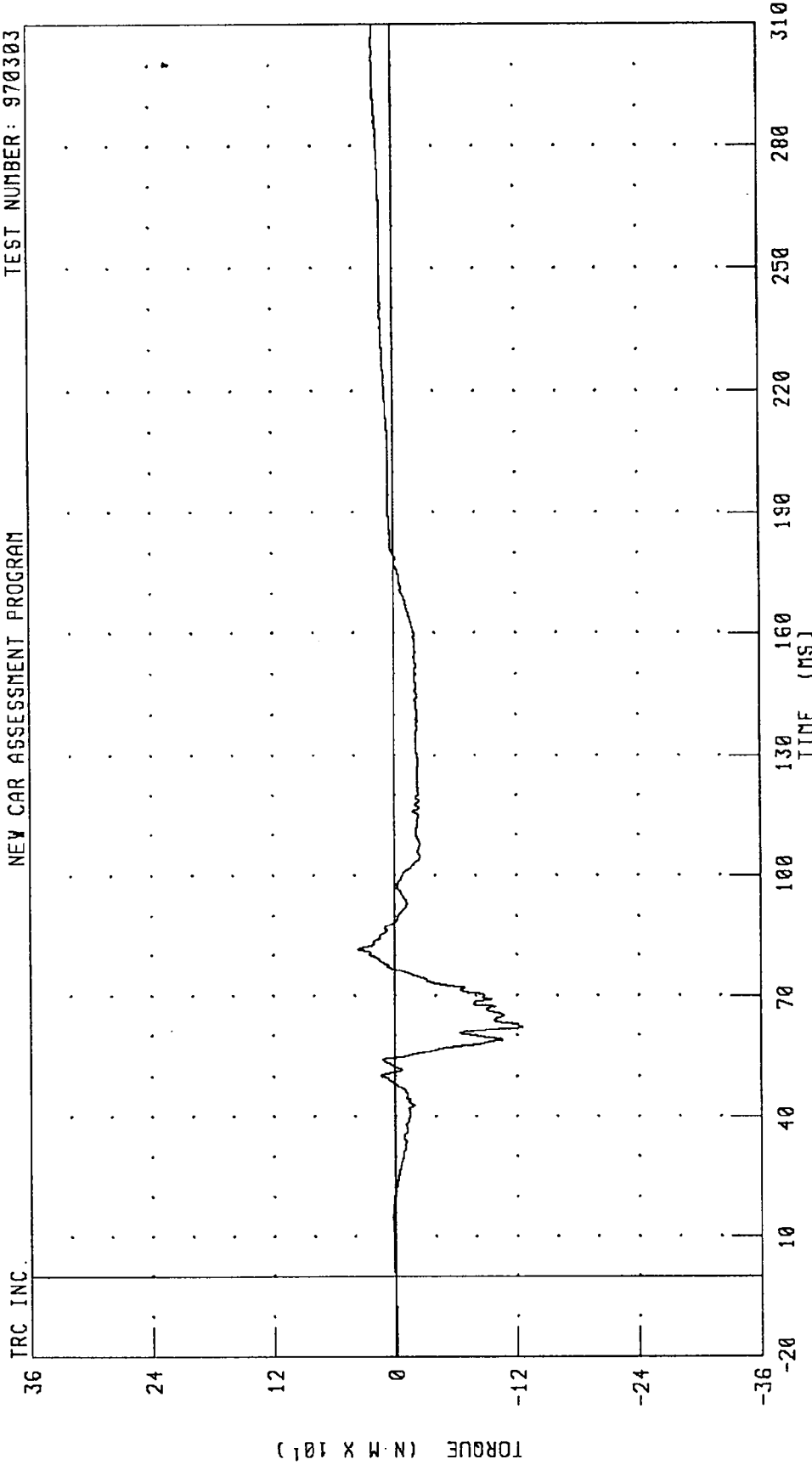
PEAK DATA: 199.38 N·m @ 67.84 ms; -5.55 N·m @ 172.48 ms

CHANNEL: TBLXM1 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM



PEAK DATA: 36.26 N-M @ 81.60 MS; -125.75 N-M @ 62.24 MS

CHANNEL: TBLYM1 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

36

24

12

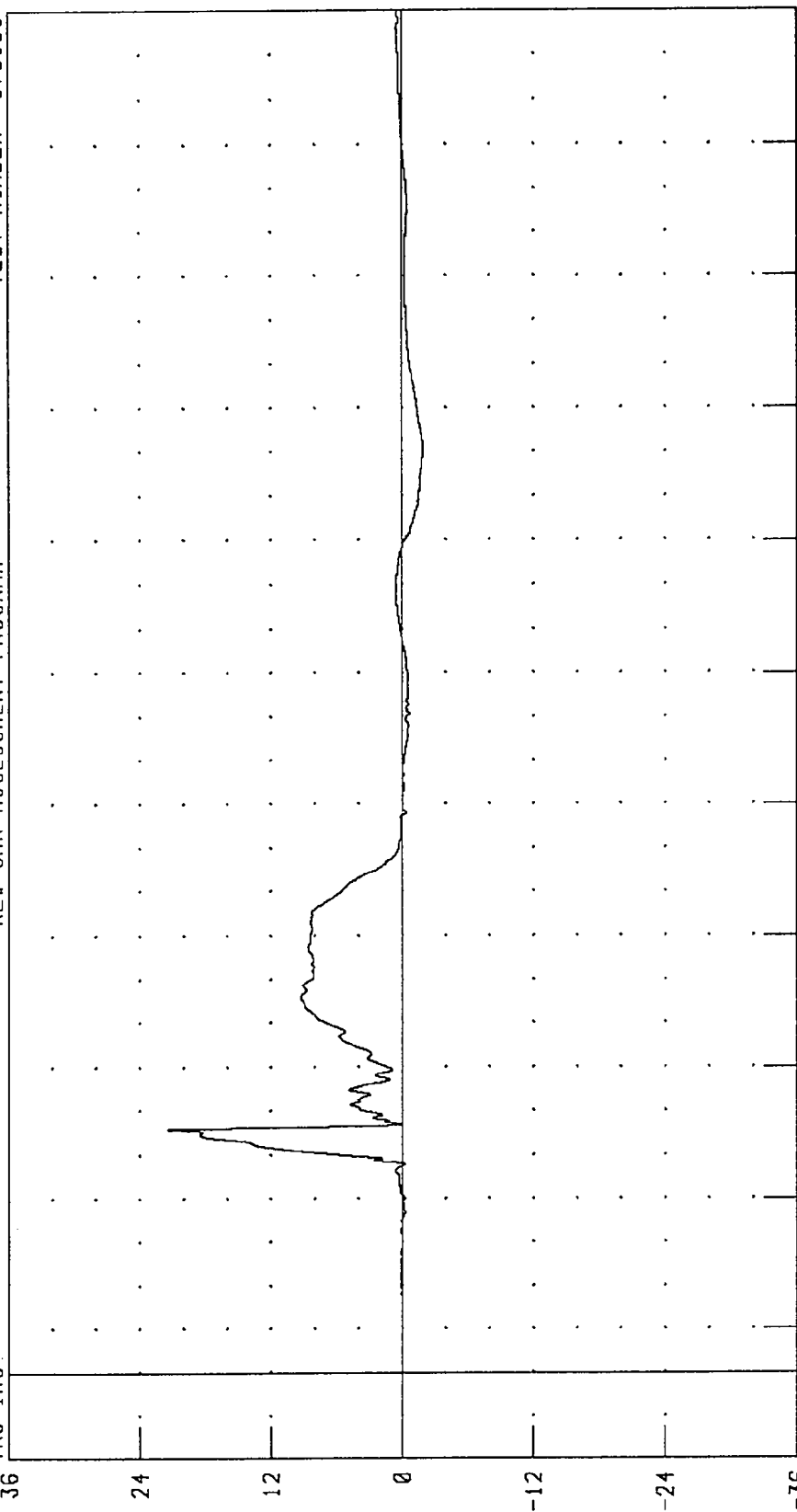
0

-12

-24

-36

TORQUE (N·M X 10¹)



TIME (MS) 310 280 250 220 190 160 130 100 70 40 10

CHANNEL: TBRXM1 FILTER: CH. CLASS 600

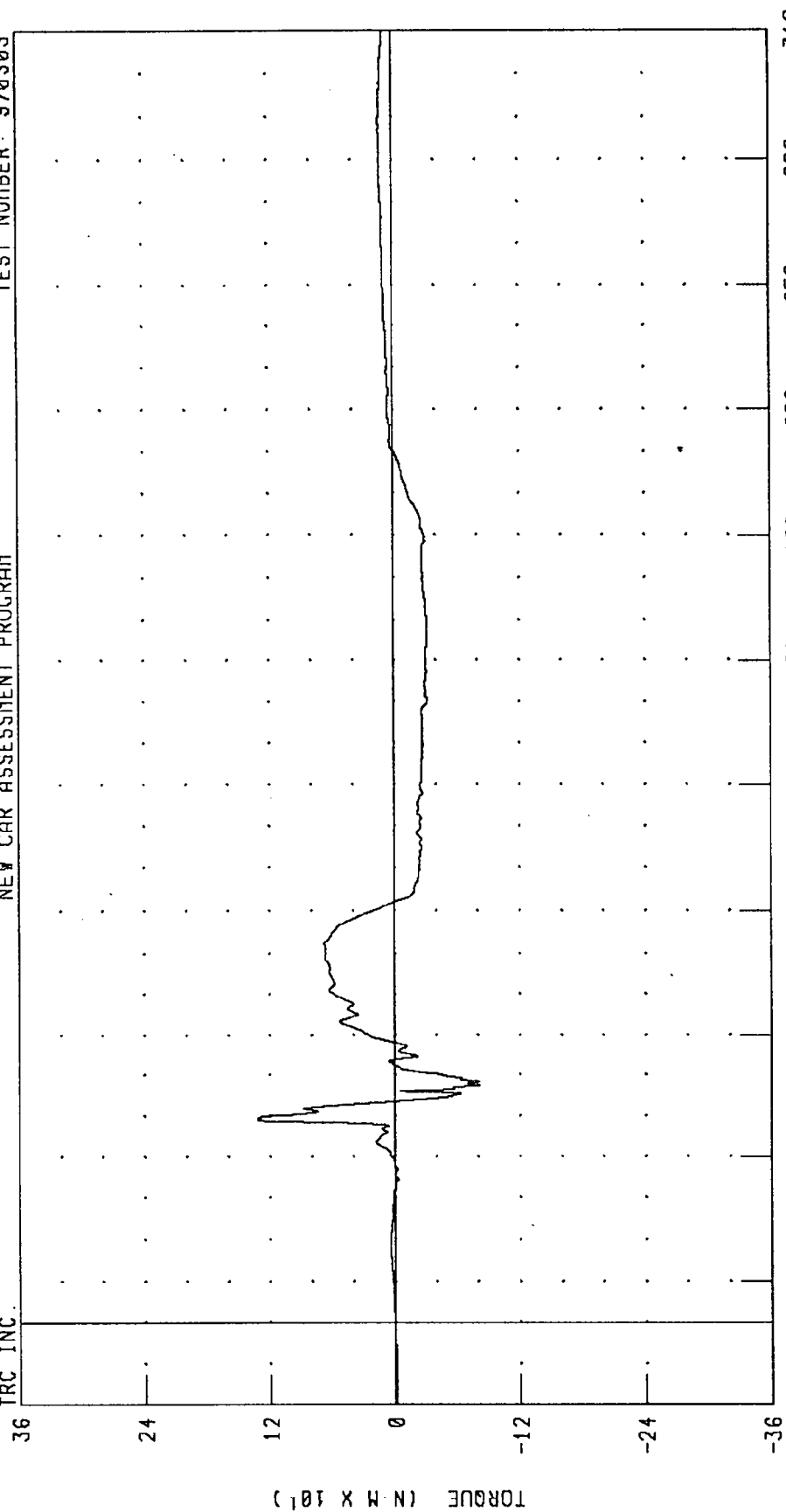
PEAK DATA: 214.24 N·M @ 55.84 MS; -19.51 N·M @ 209.76 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 132.23 N-M @ 48.88 MS; -81.68 N-M @ 58.32 MS

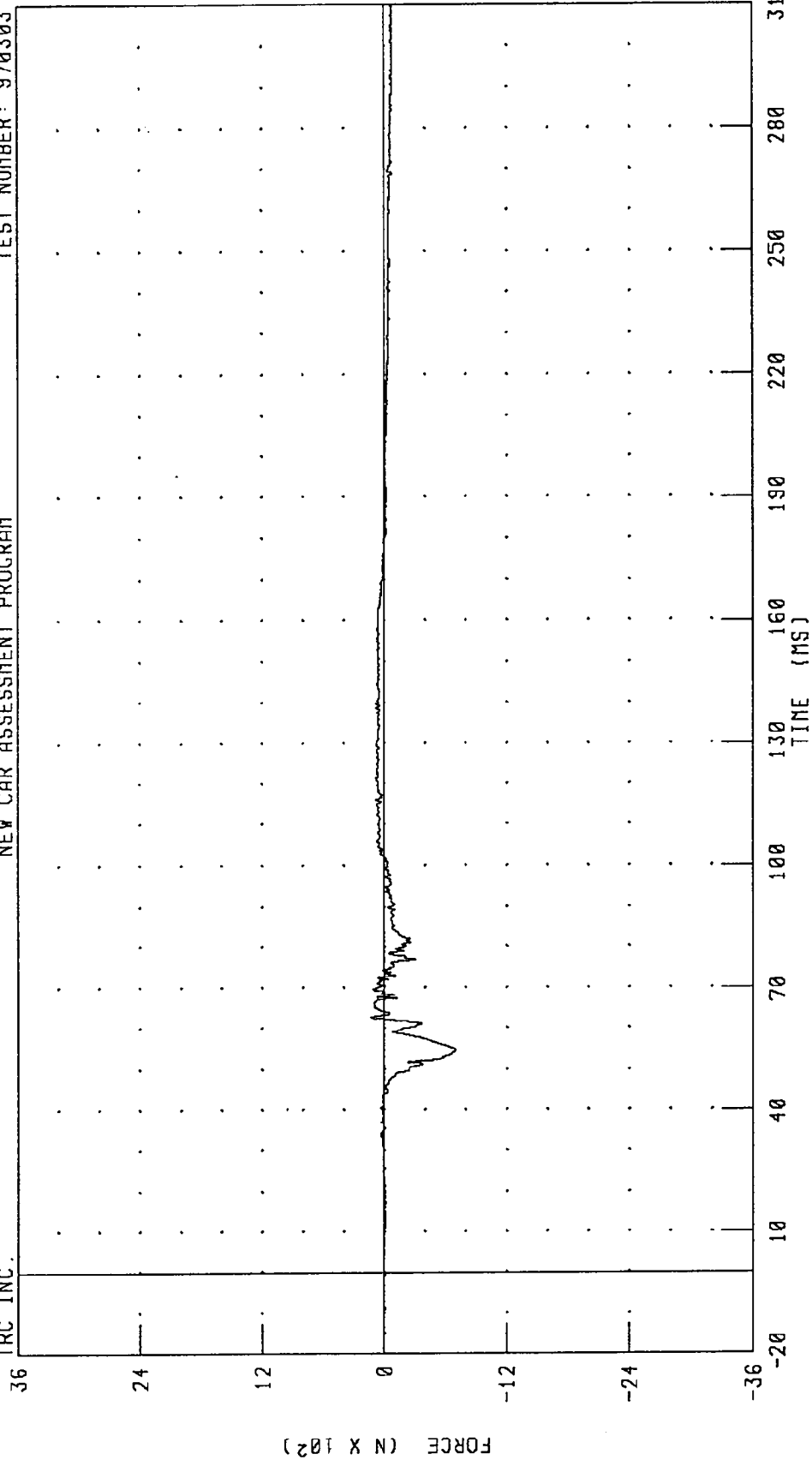
CHANNEL: TBRYM1 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT LOWER TIBIA X-AXIS FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 136.81 N @ 62.64 MS; -702.51 N @ 54.64 MS

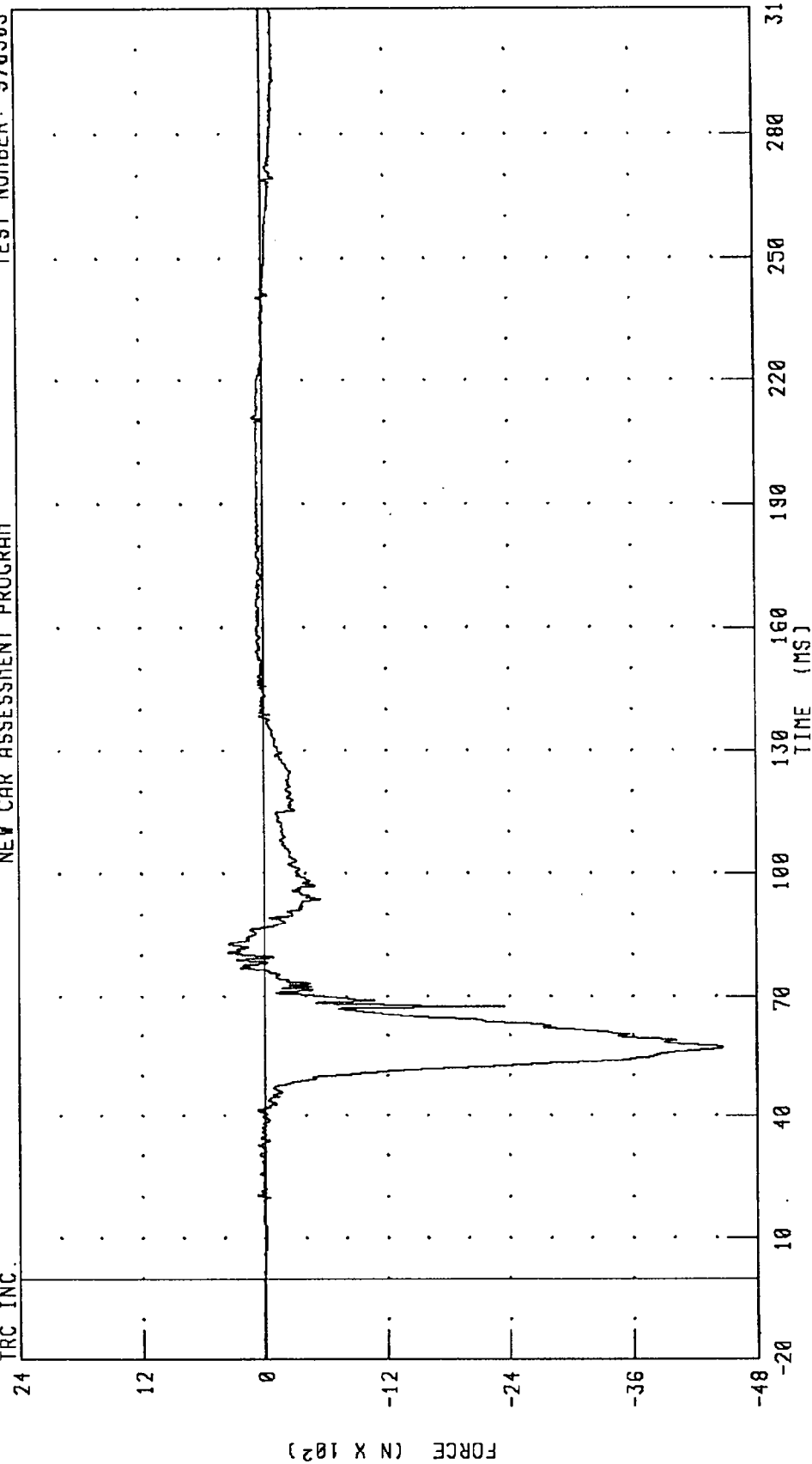
CHANNEL: ANLXF1 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



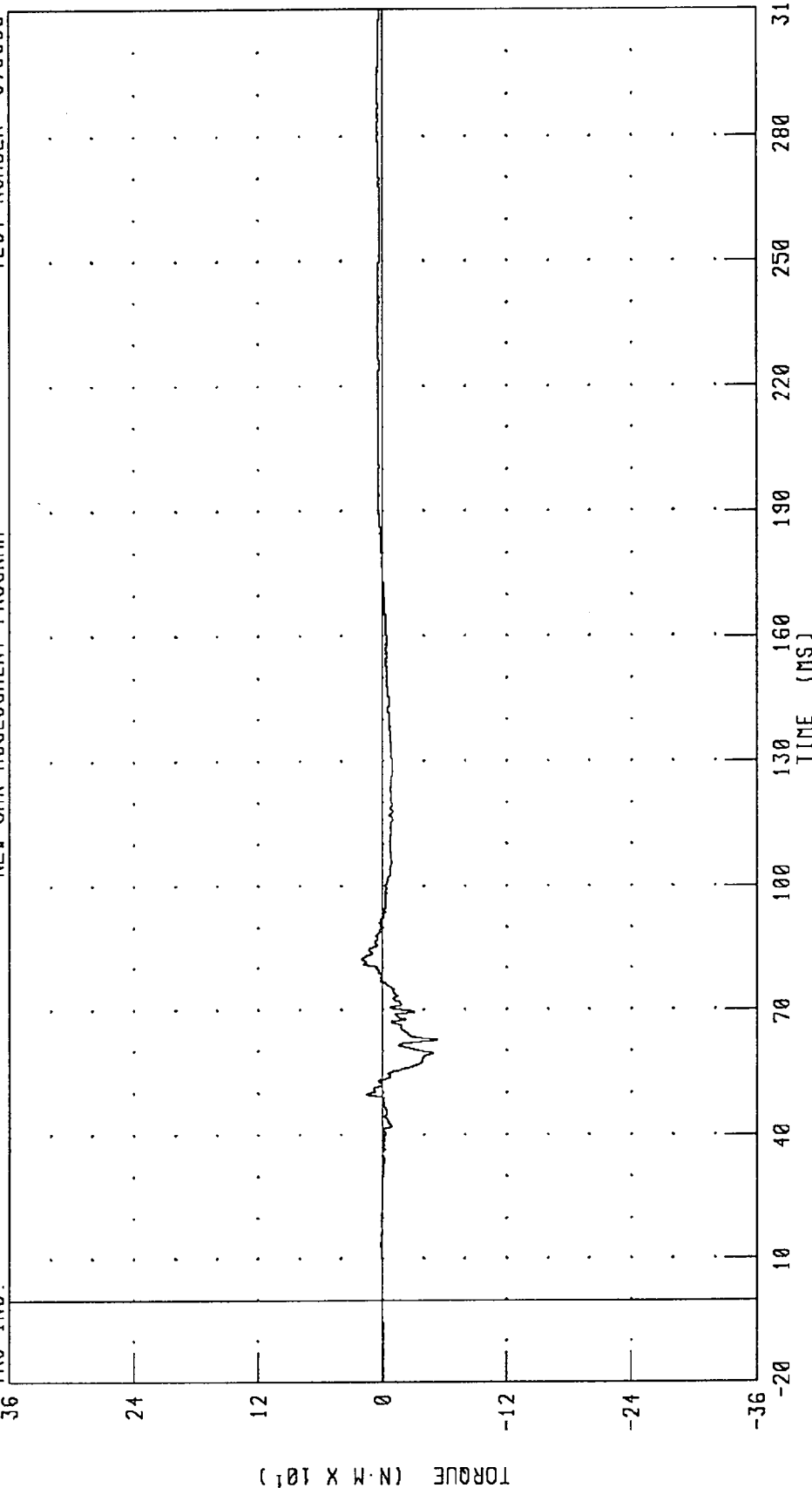
CHANNEL: ANLZF1 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



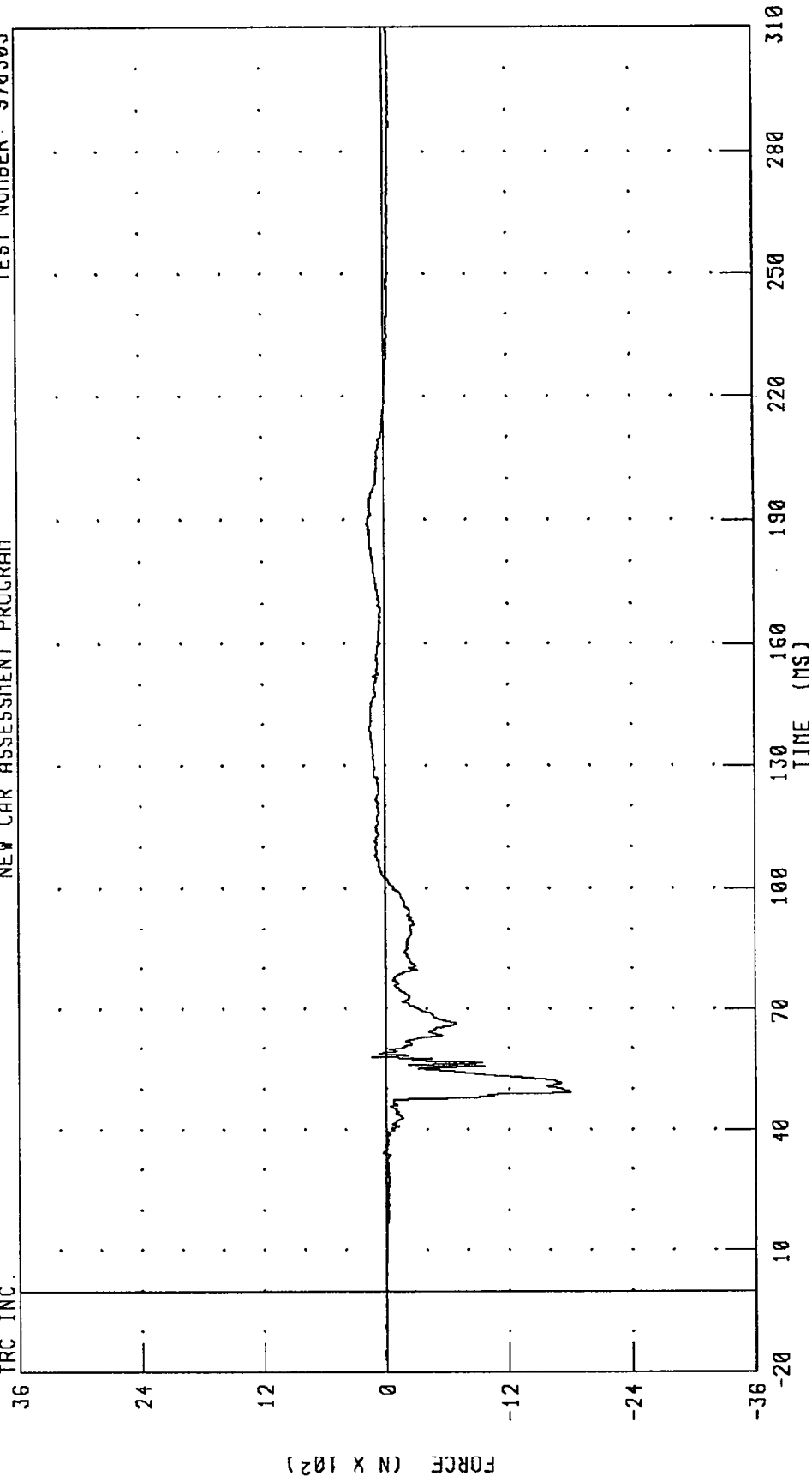
CHANNEL: ANLYM1 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT LOWER TIBIA X-AXIS FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

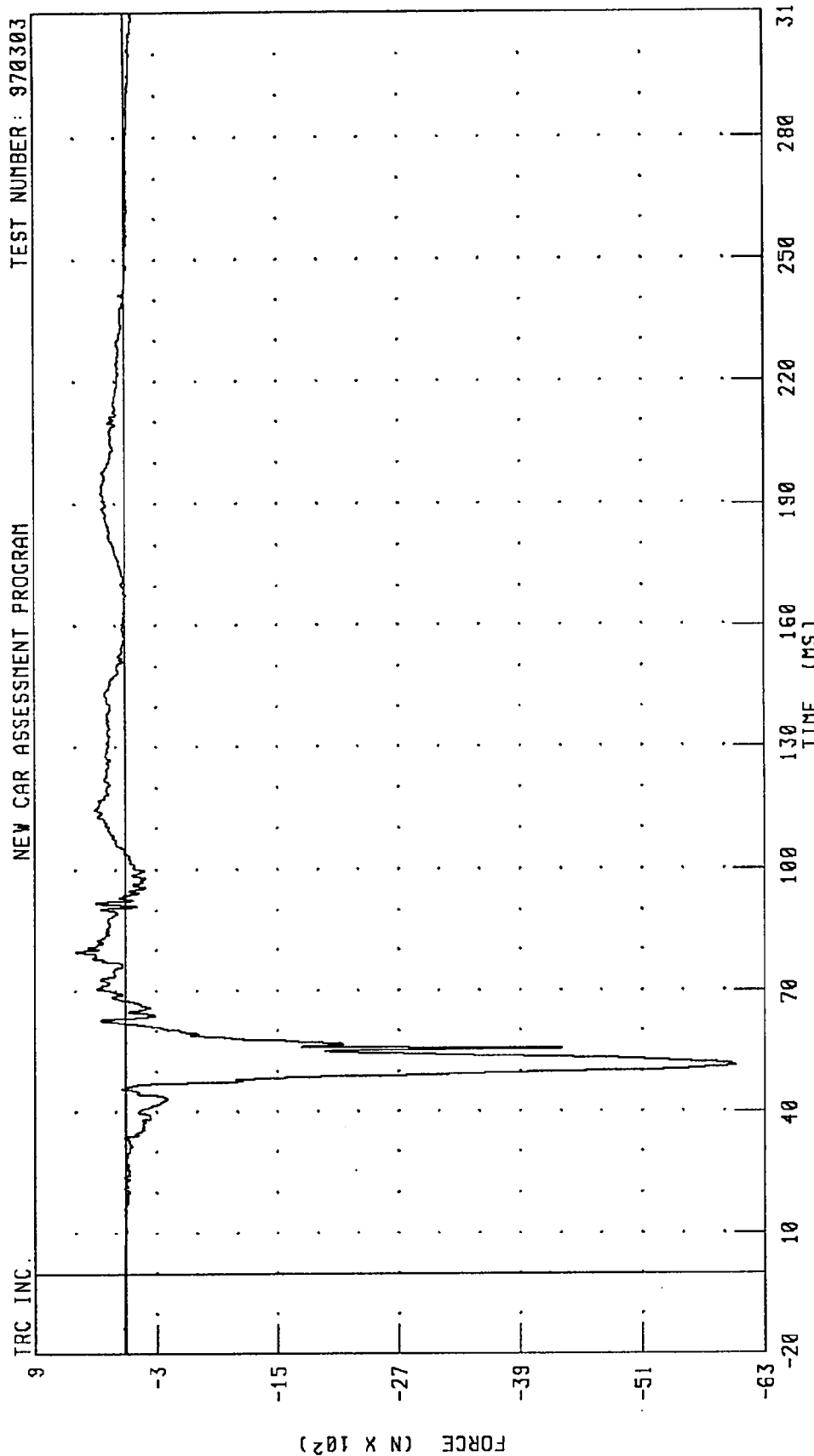


CHANNEL: ANRXF1 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM



PEAK DATA: 491.46 N @ 79.76 MS; -6012.49 N @ 51.20 MS

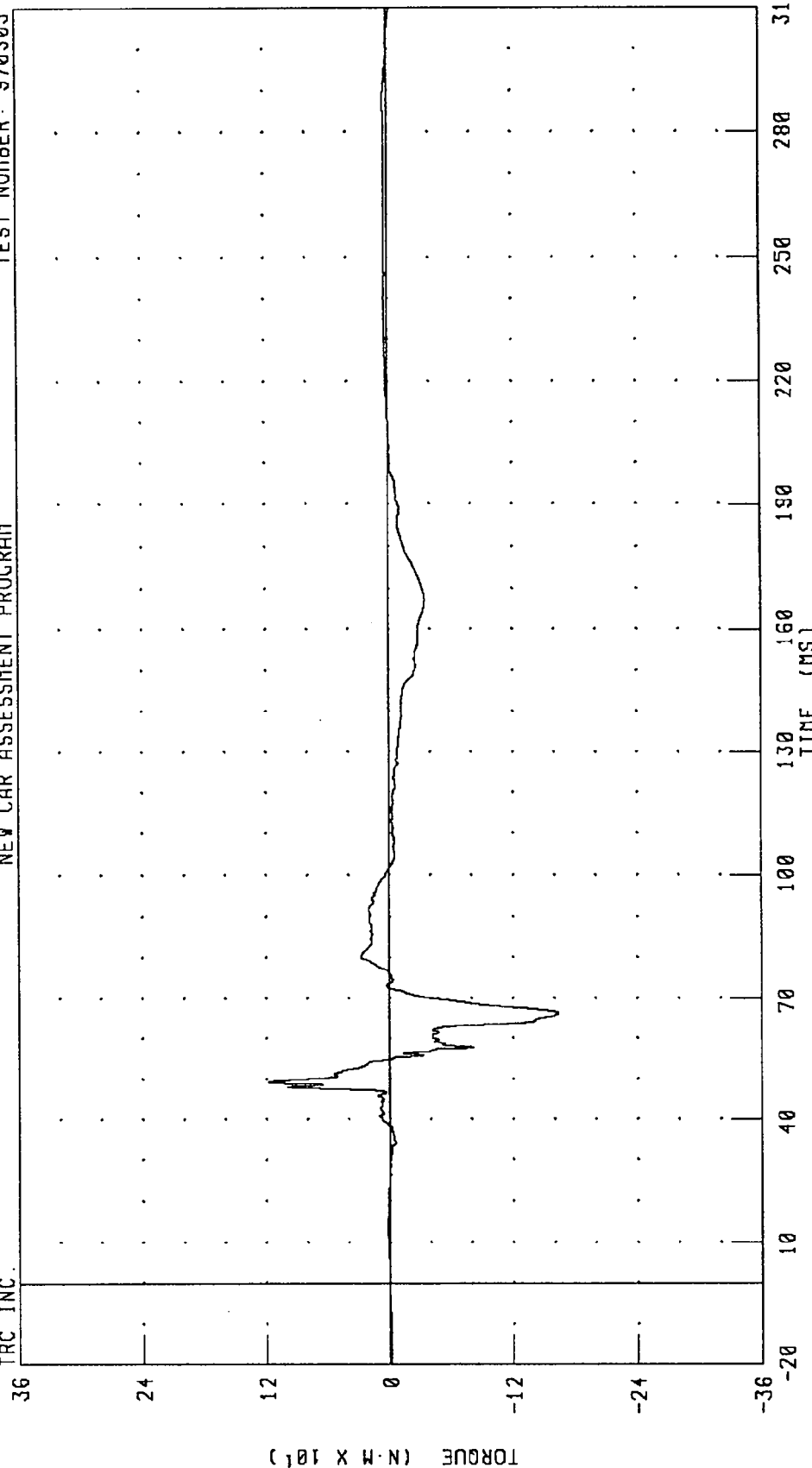
CHANNEL: ANRZF1 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

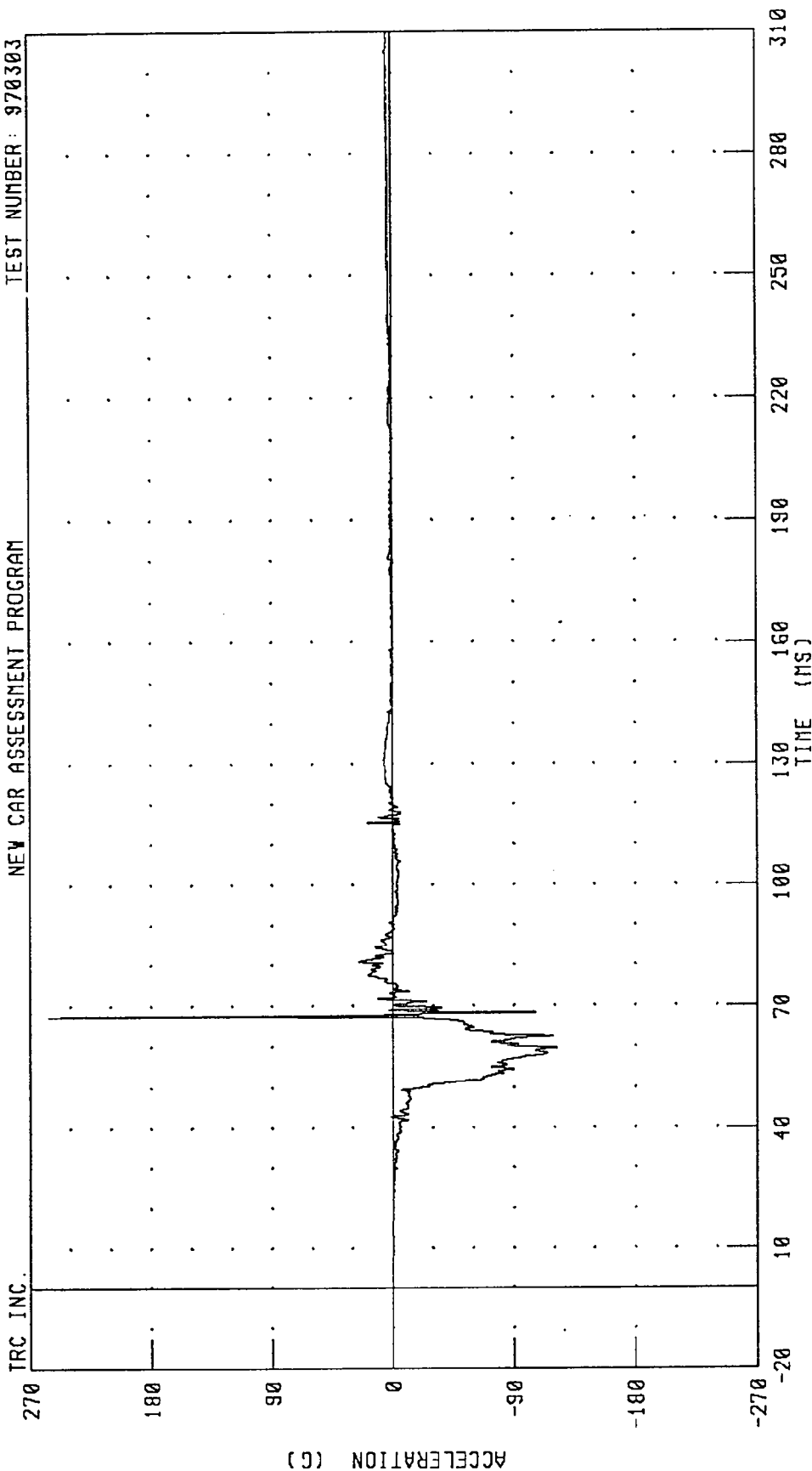


PEAK DATA: 118.40 N·M @ 49.36 MS; -163.57 N·M @ 66.48 MS

CHANNEL: ANRYM1 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT FOOT X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



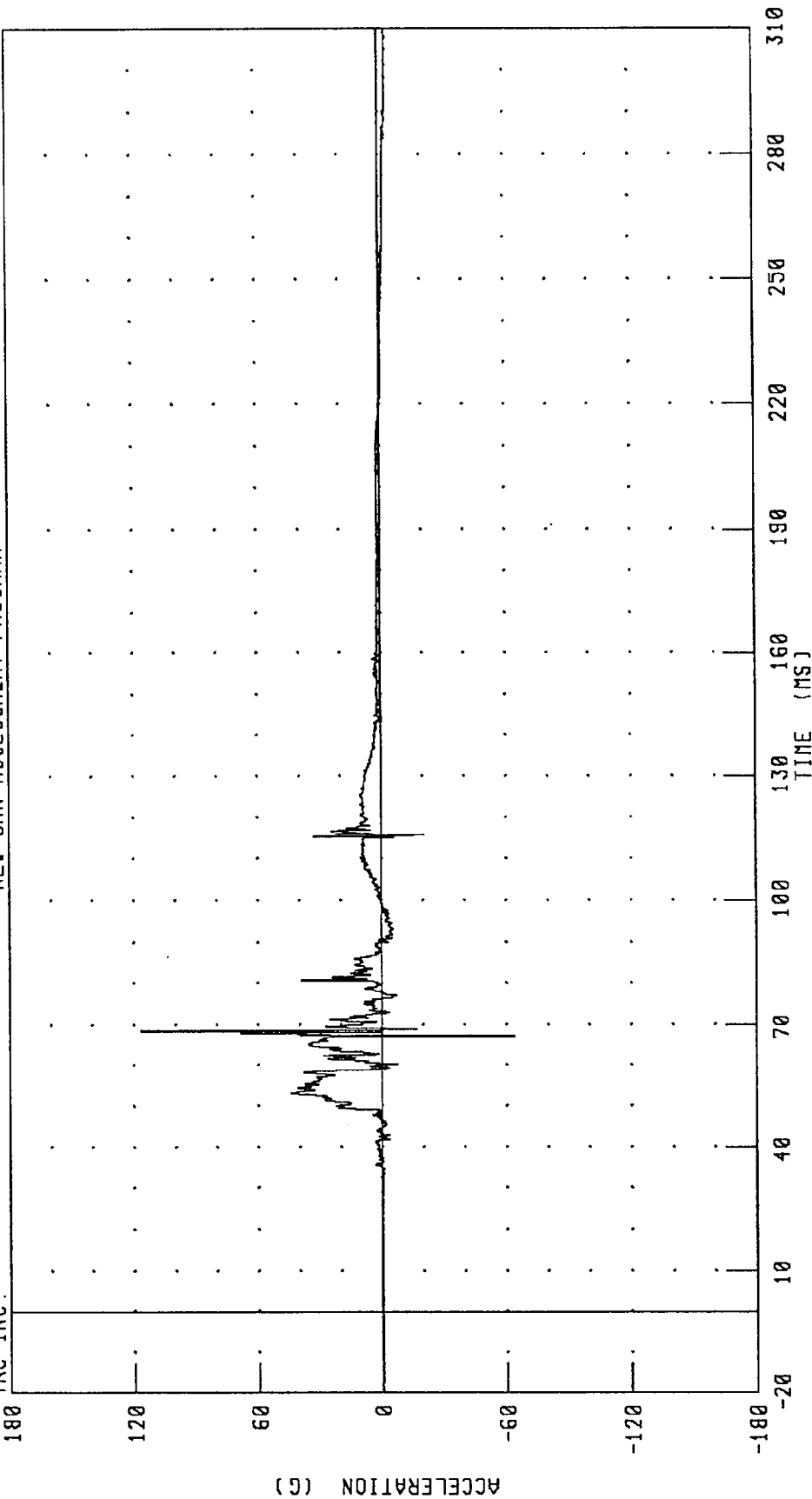
CHANNEL: FTLXG1 FILTER: CH. CLASS 1000 PEAK DATA: 256.09 G @ 67.44 MS; -121.58 G @ 59.68 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: FTLZH1 FILTER: CH. CLASS 1000

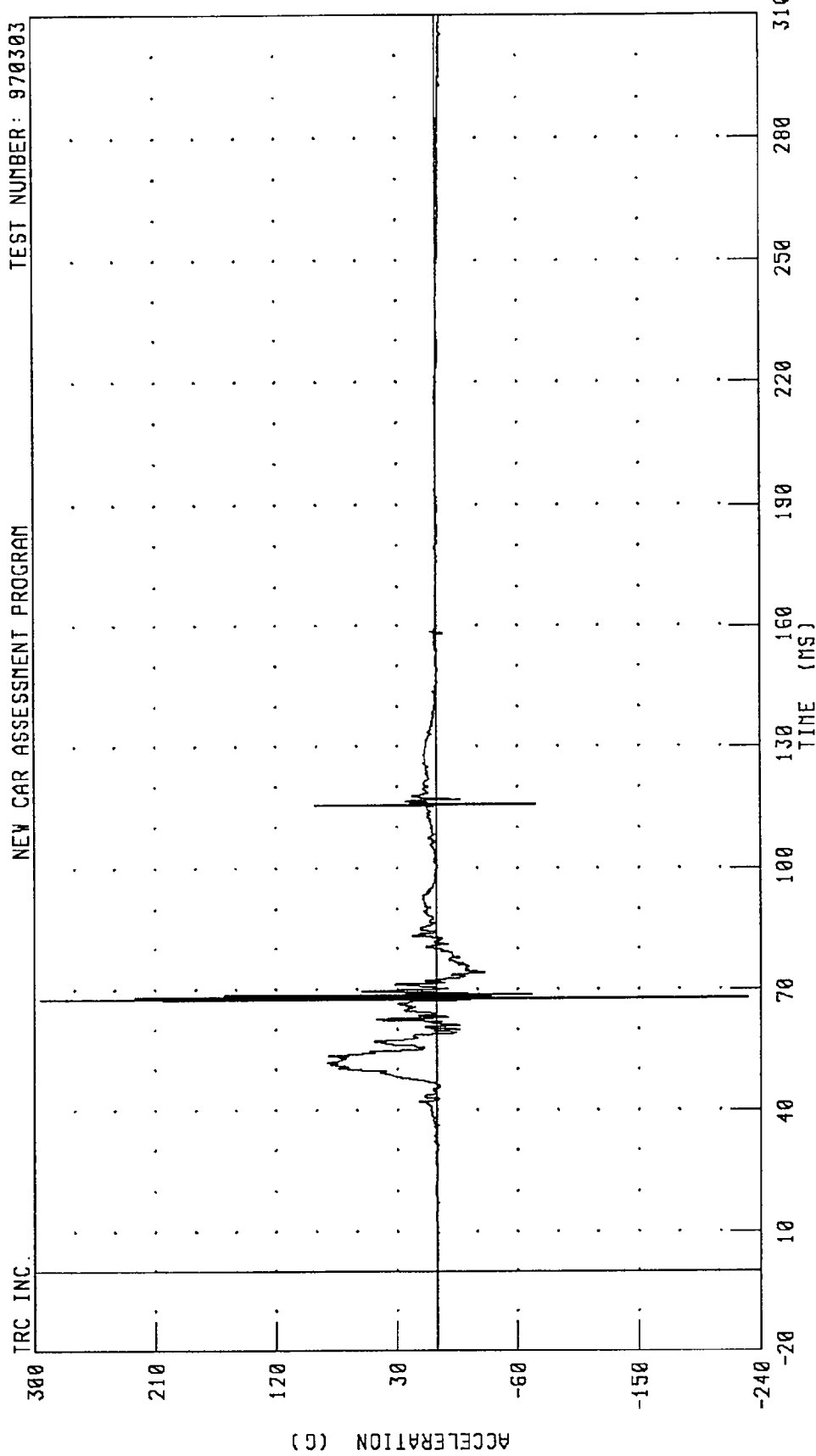
PEAK DATA: 116.96 G @ 68.56 MS; -64.15 G @ 116.28 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

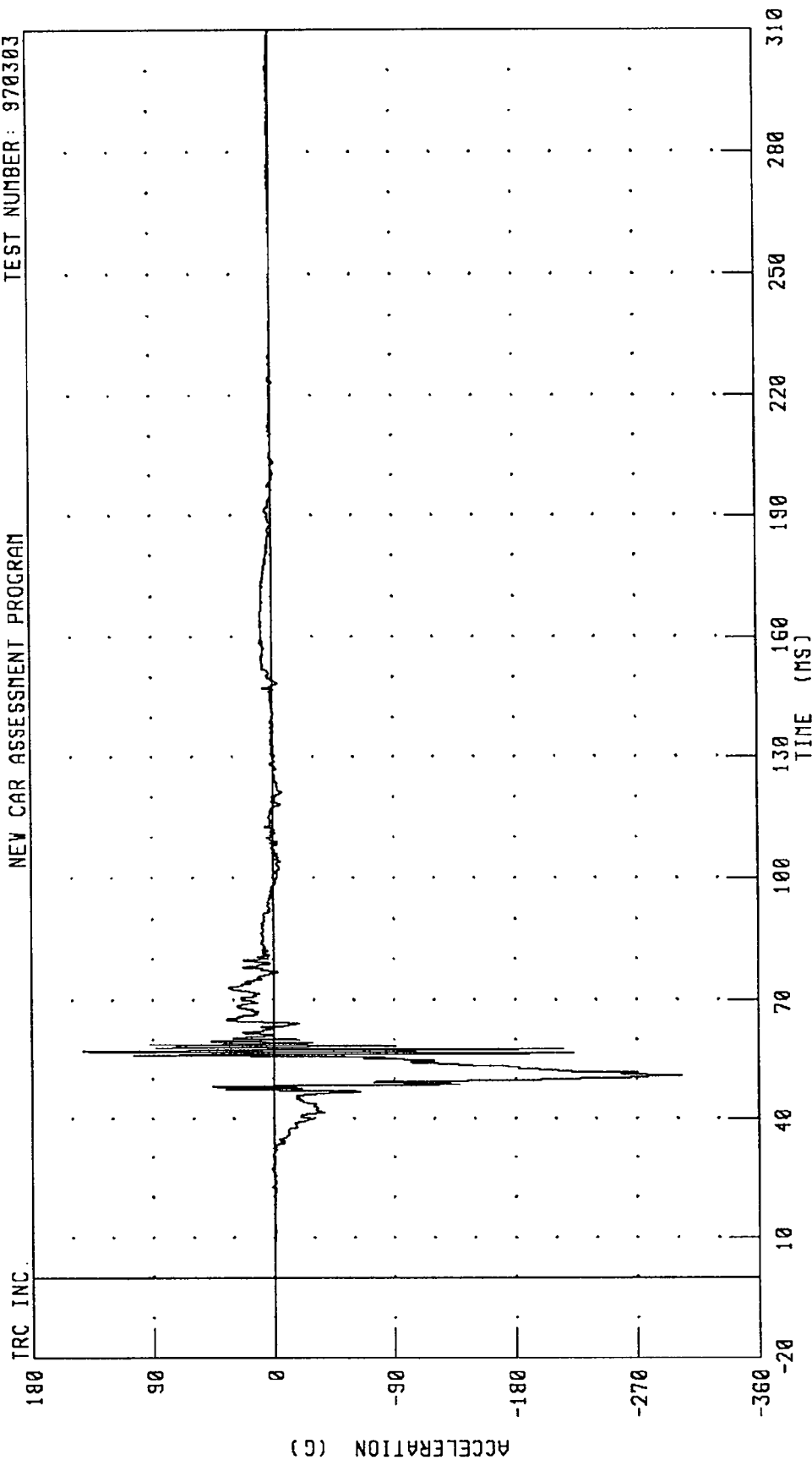


PEAK DATA: 294.89 G @ 67.60 MS; -230.46 G @ 67.84 MS

CHANNEL: FTLZT1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT FOOT X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



CHANNEL: FTRXG1 FILTER: CH. CLASS 1000

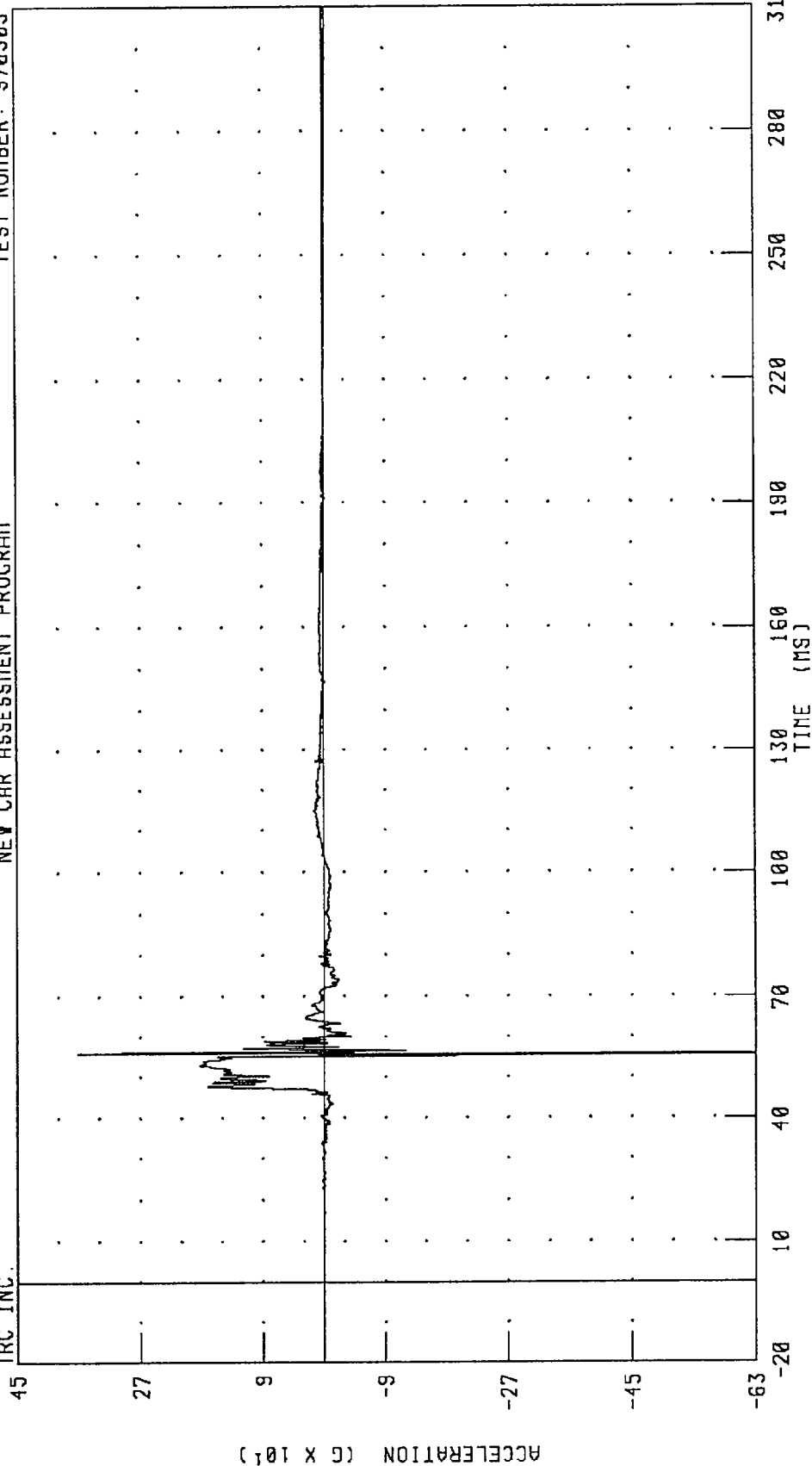
PEAK DATA: 141.42 G @ 56.96 MS; -303.20 G @ 50.80 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 360.83 G @ 56.08 MS; -637.99 G @ 55.52 MS

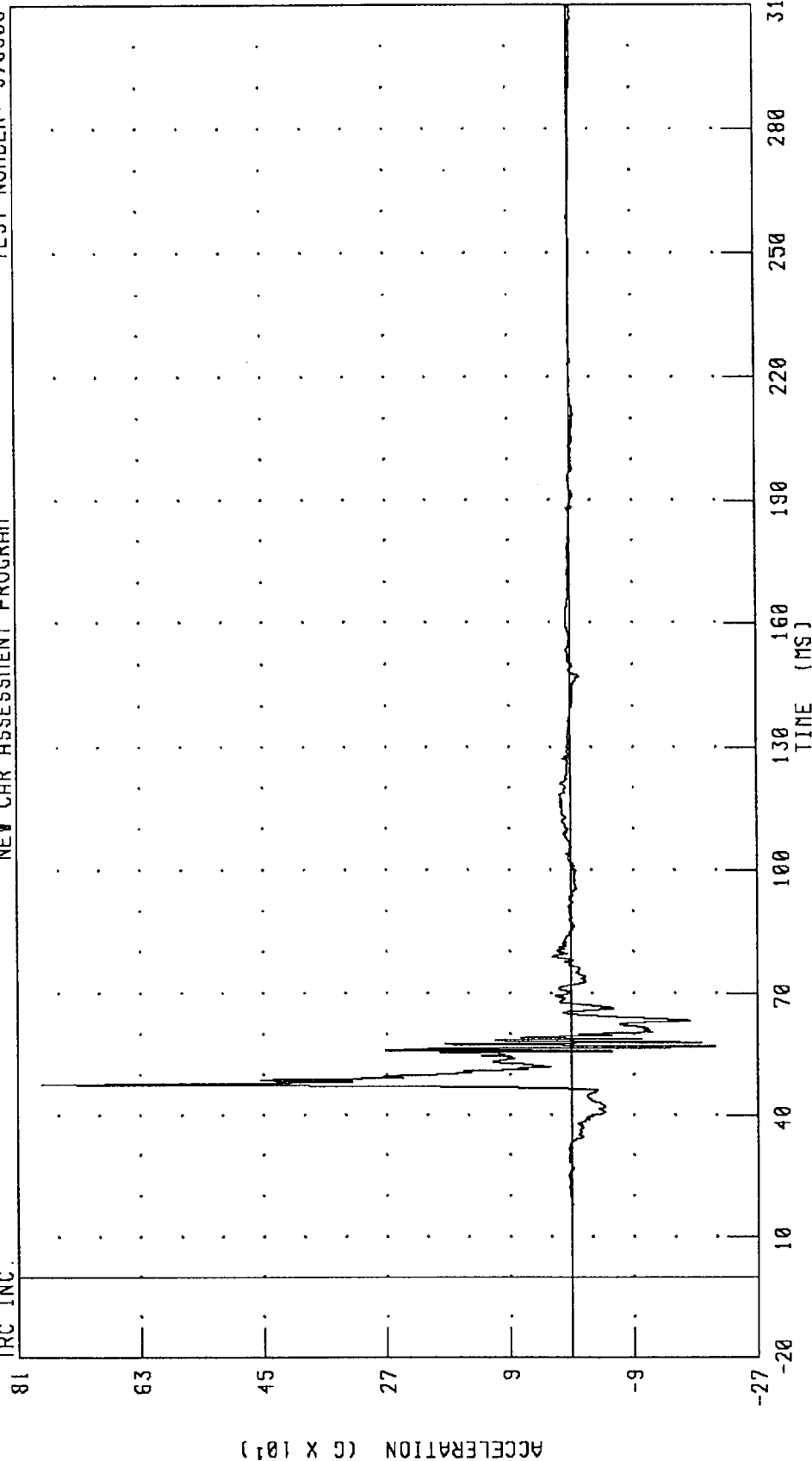
CHANNEL: FTRZH1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



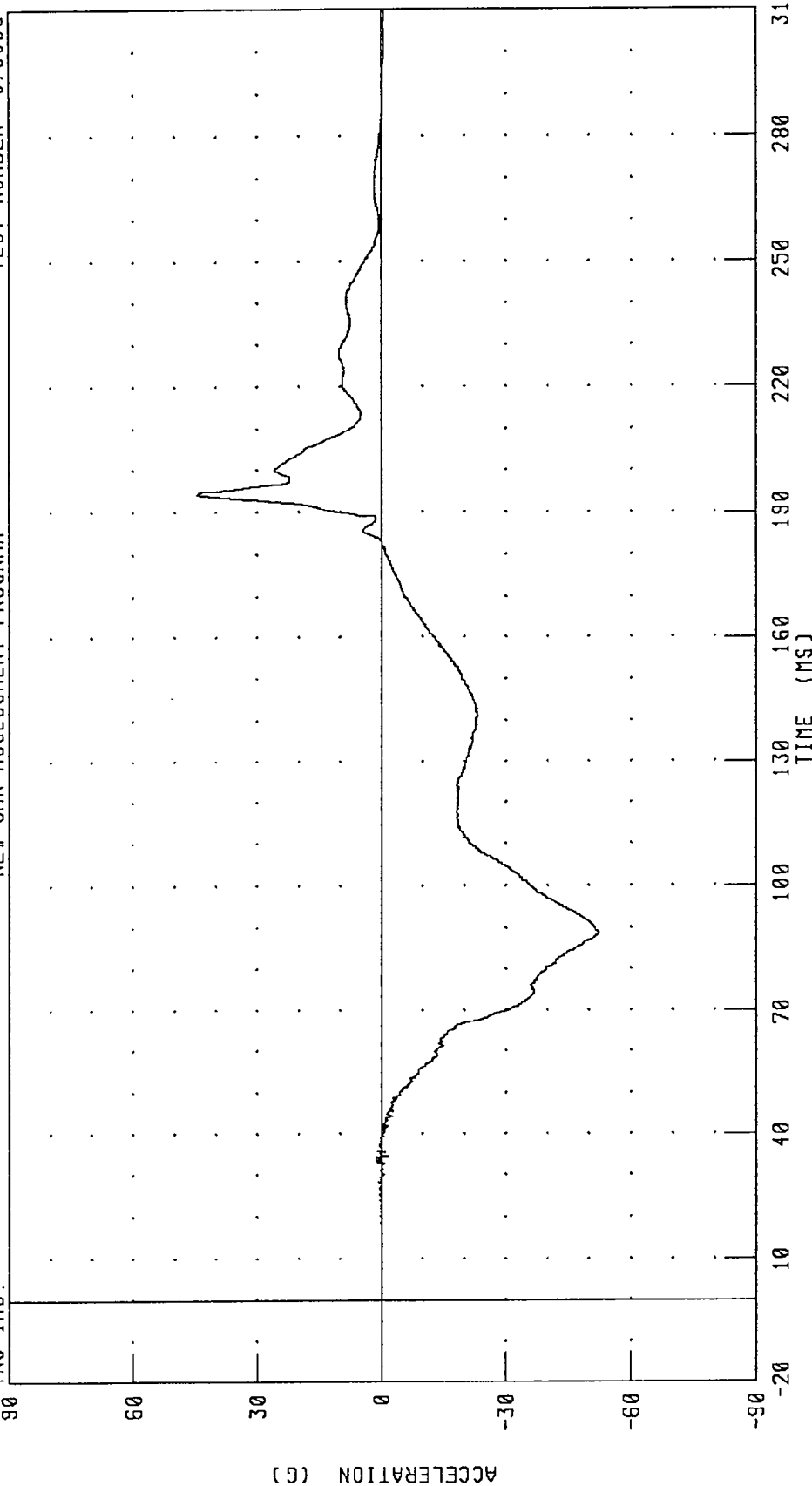
PEAK DATA: 774.22 G @ 47.60 MS; -207.75 G @ 56.88 MS

CHANNEL: FTRZT1 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

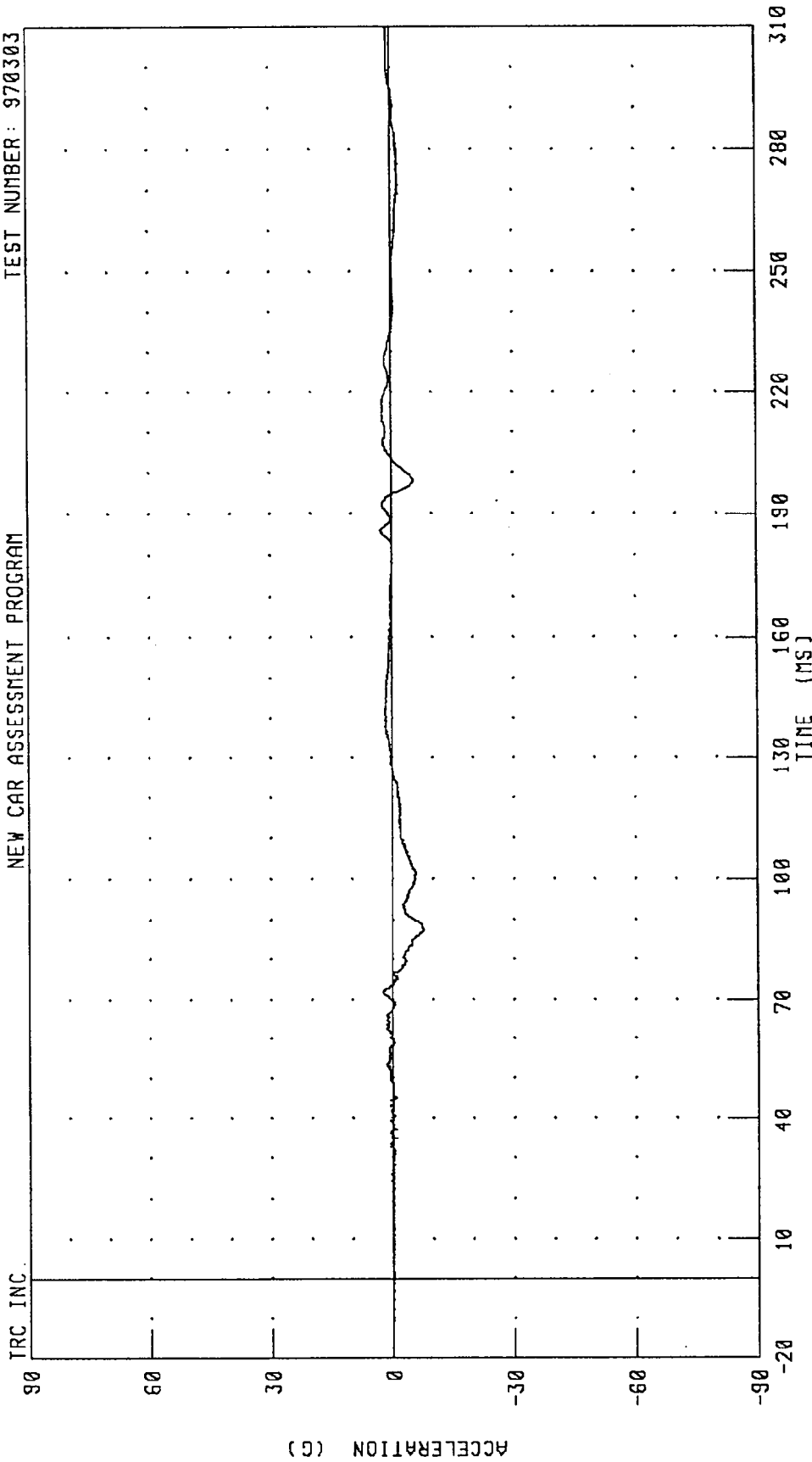


CHANNEL: HEDXC2 FILTER: CH. CLASS 1000

PEAK DATA: 44.67 G @ 194.48 MS; -52.23 G @ 88.48 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



CHANNEL: HEDYG2 FILTER: CH. CLASS 1000 PEAK DATA: 2.82 G @ 185.76 MS; -7.85 G @ 87.52 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

90

60

30

ACCELERATION (G)

0

-30

-60

-90

310

280

250

220

190

160

130

100

70

40

10

-20

TIME (MS)

CHANNEL: HED762 FILTER: CH. CLASS 1000

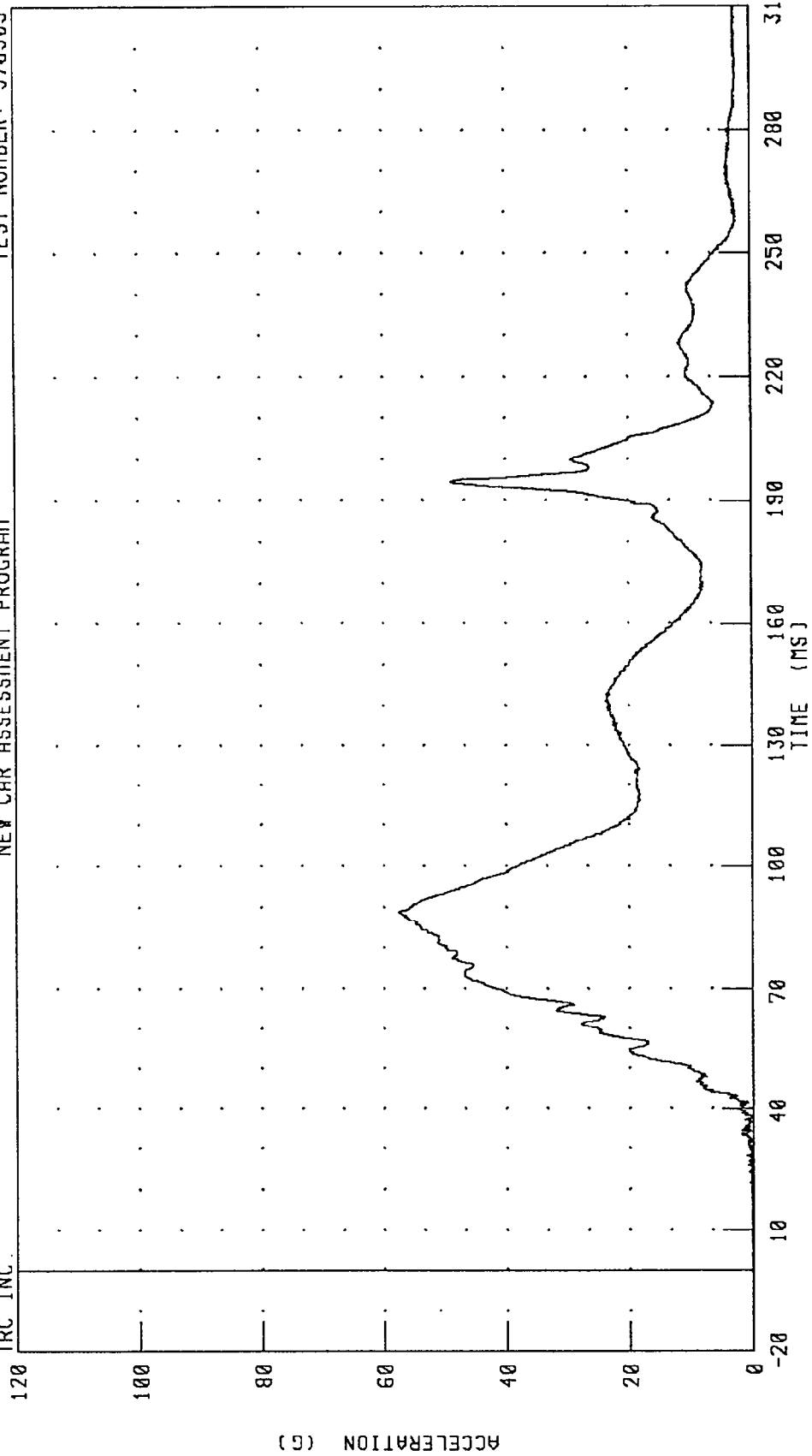
PEAK DATA: 4.93 G @ 146.56 MS; -31.31 G @ 77.60 MS

970303

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



CHANNEL: HEDRG2 FILTER: CH. CLASS 1000

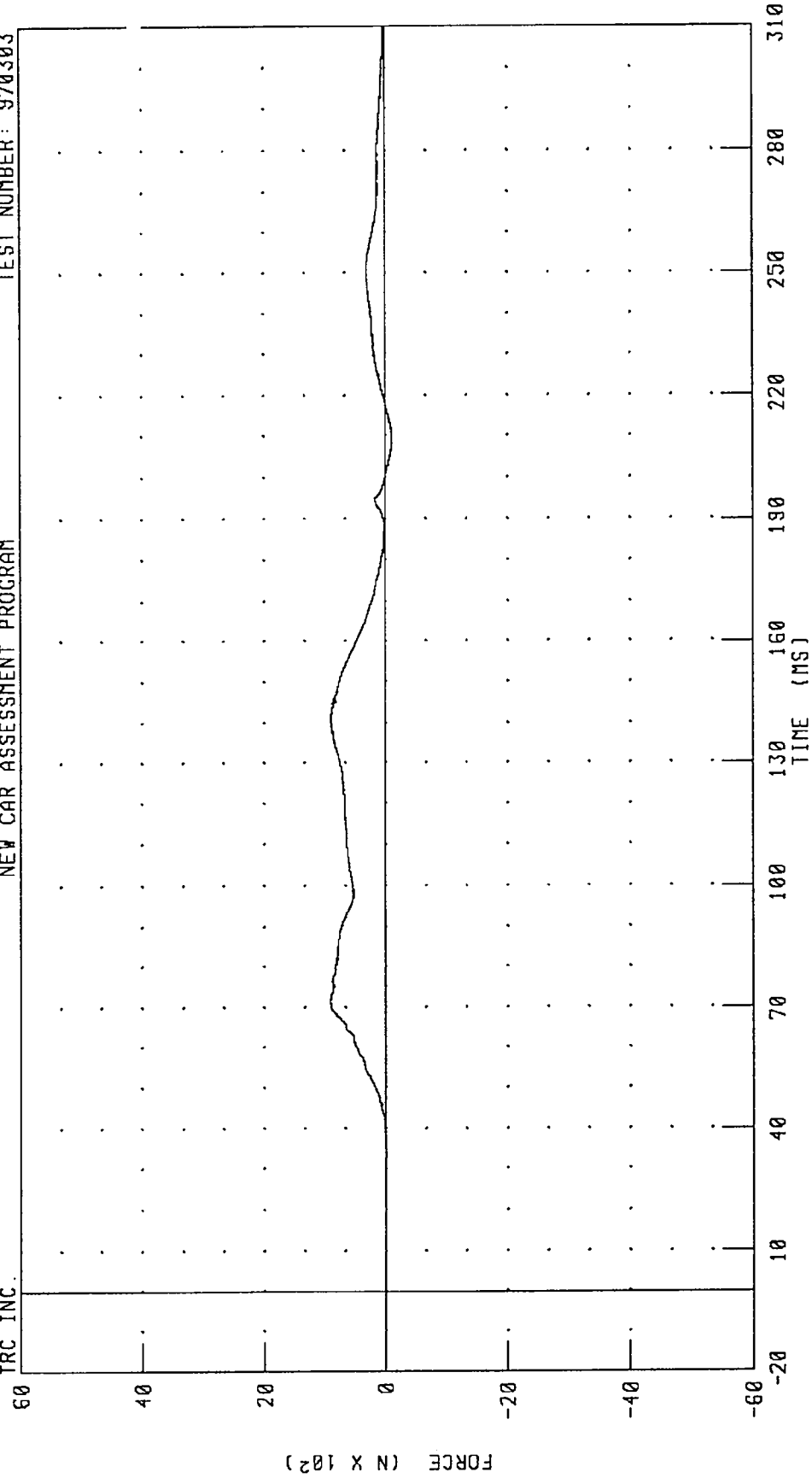
PEAK DATA: 57.65 G @ 88.88 MS; 0.08 G @ -19.68 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK X-AXIS SHEAR FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



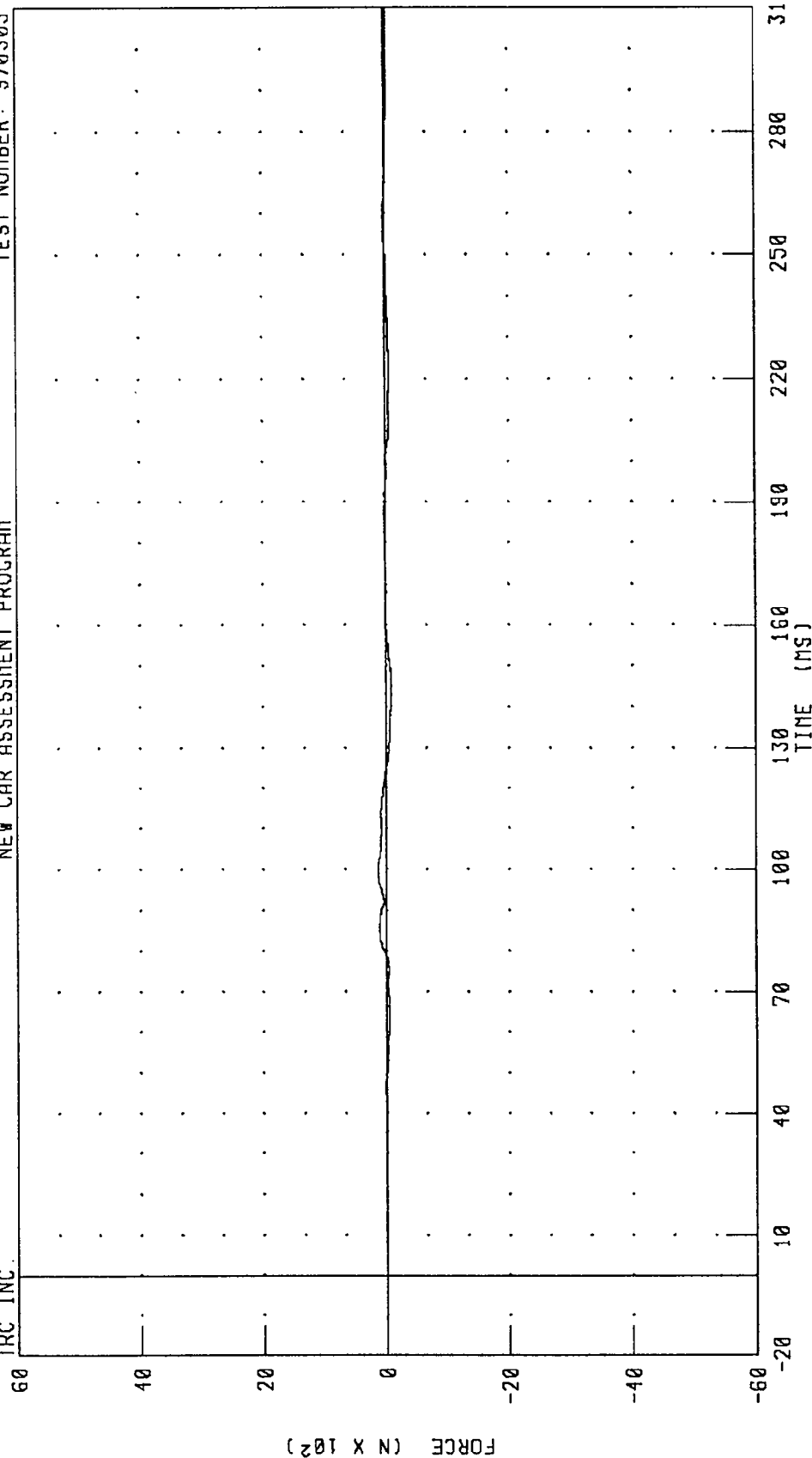
PEAK DATA: 914.68 N @ 71.12 MS; -97.45 N @ 210.48 MS

CHANNEL: NEKXF2 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Y-AXIS SHEAR FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



CHANNEL: NEKYF2 FILTER: CH. CLASS 1000

PEAK DATA: 143.21 N @ 99.12 MS; -95.68 N @ 145.12 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Z-AXIS AXIAL FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

60

40

20

0

-20

-40

-60

FORCE (N X 10²)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

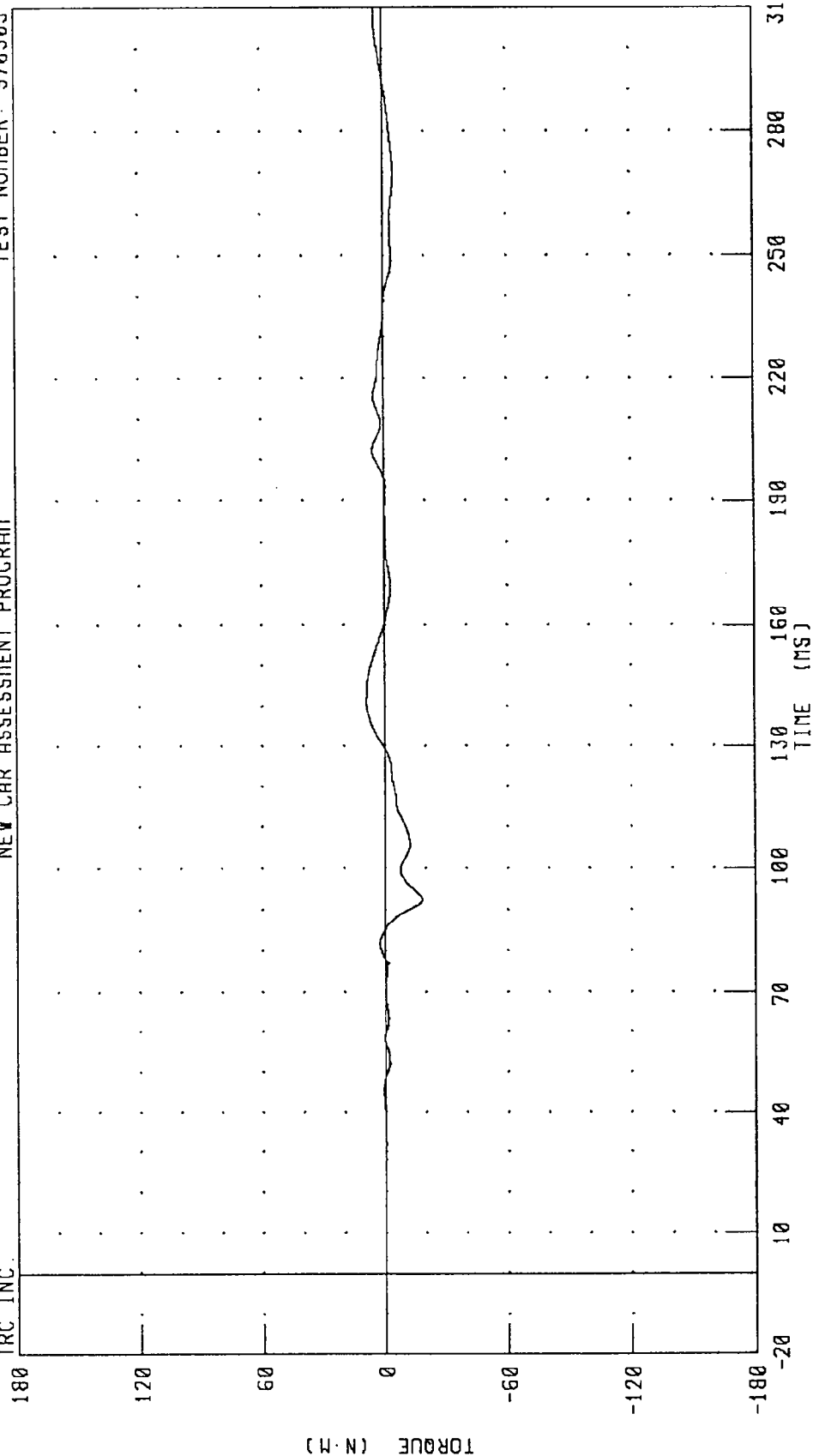
PEAK DATA: 2265.86 N @ 80.16 MS; -659.95 N @ 248.64 MS

CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT X AXIS
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



CHANNEL: NEKXN2 FILTER: CH. CLASS 600

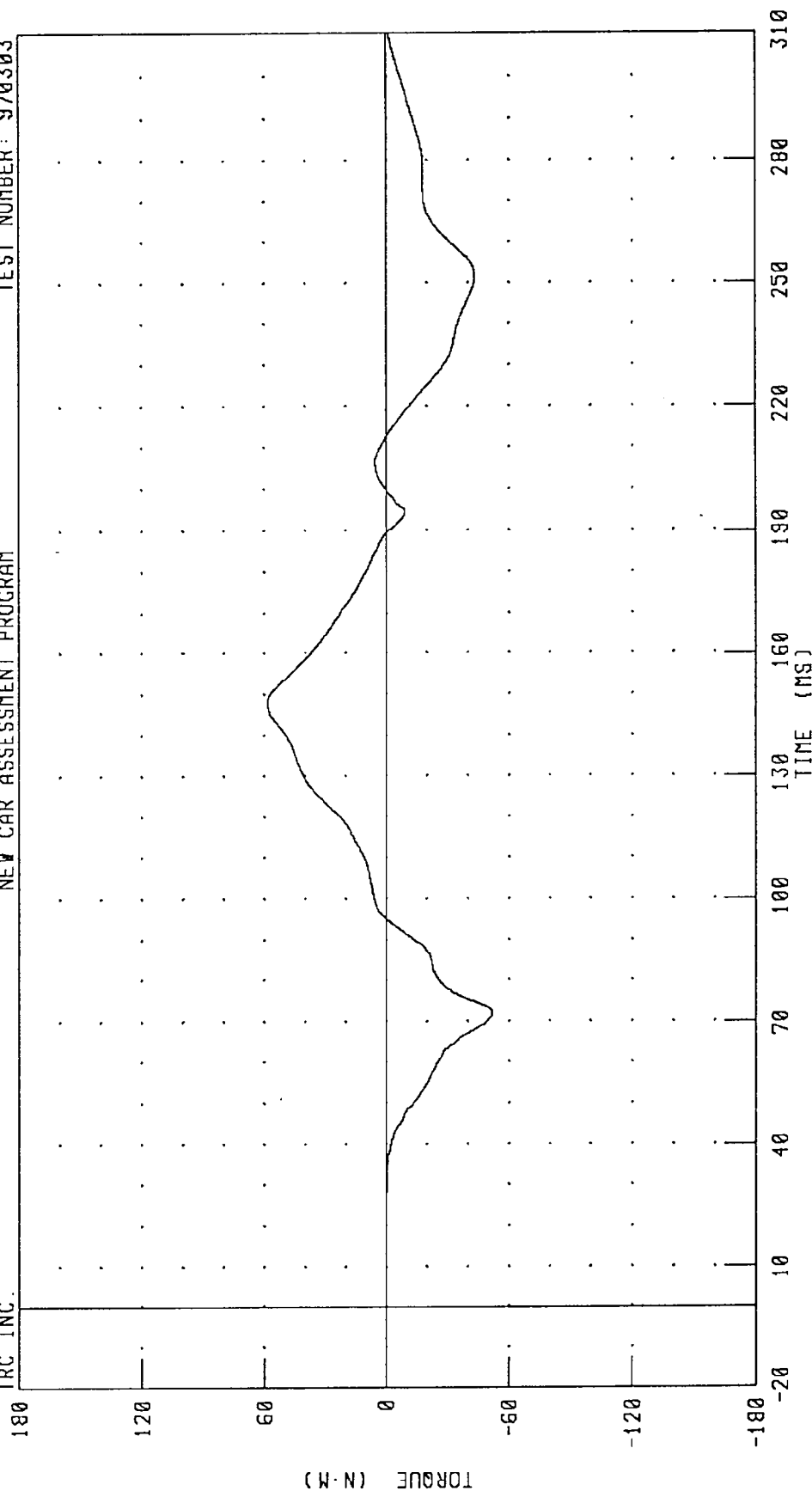
PEAK DATA: 8.99 N·m @ 141.12 ms; -18.23 N·m @ 92.40 ms

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Y AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 58.56 N-M @ 148.08 MS; -51.92 N-M @ 72.08 MS

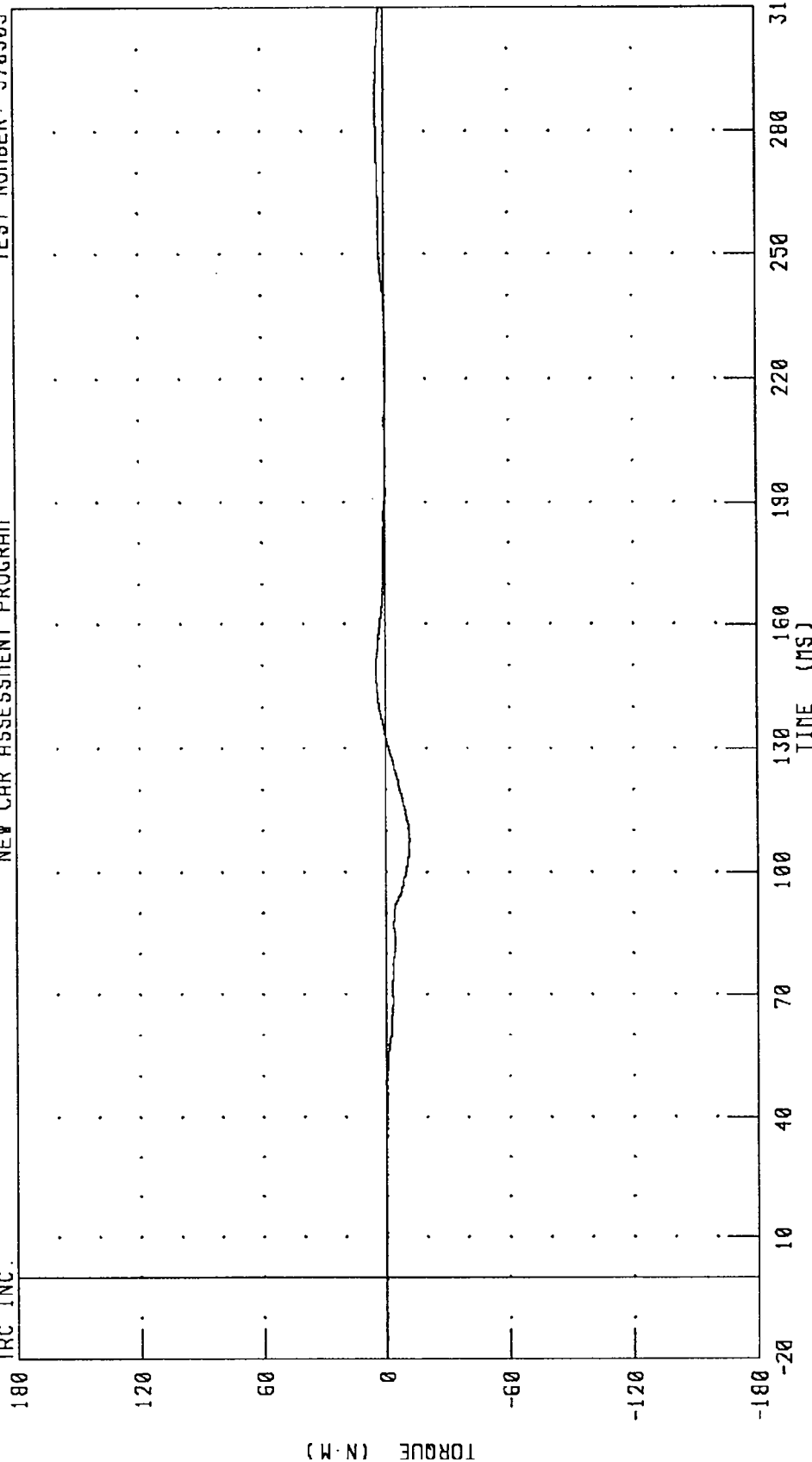
CHANNEL: NEYM2 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

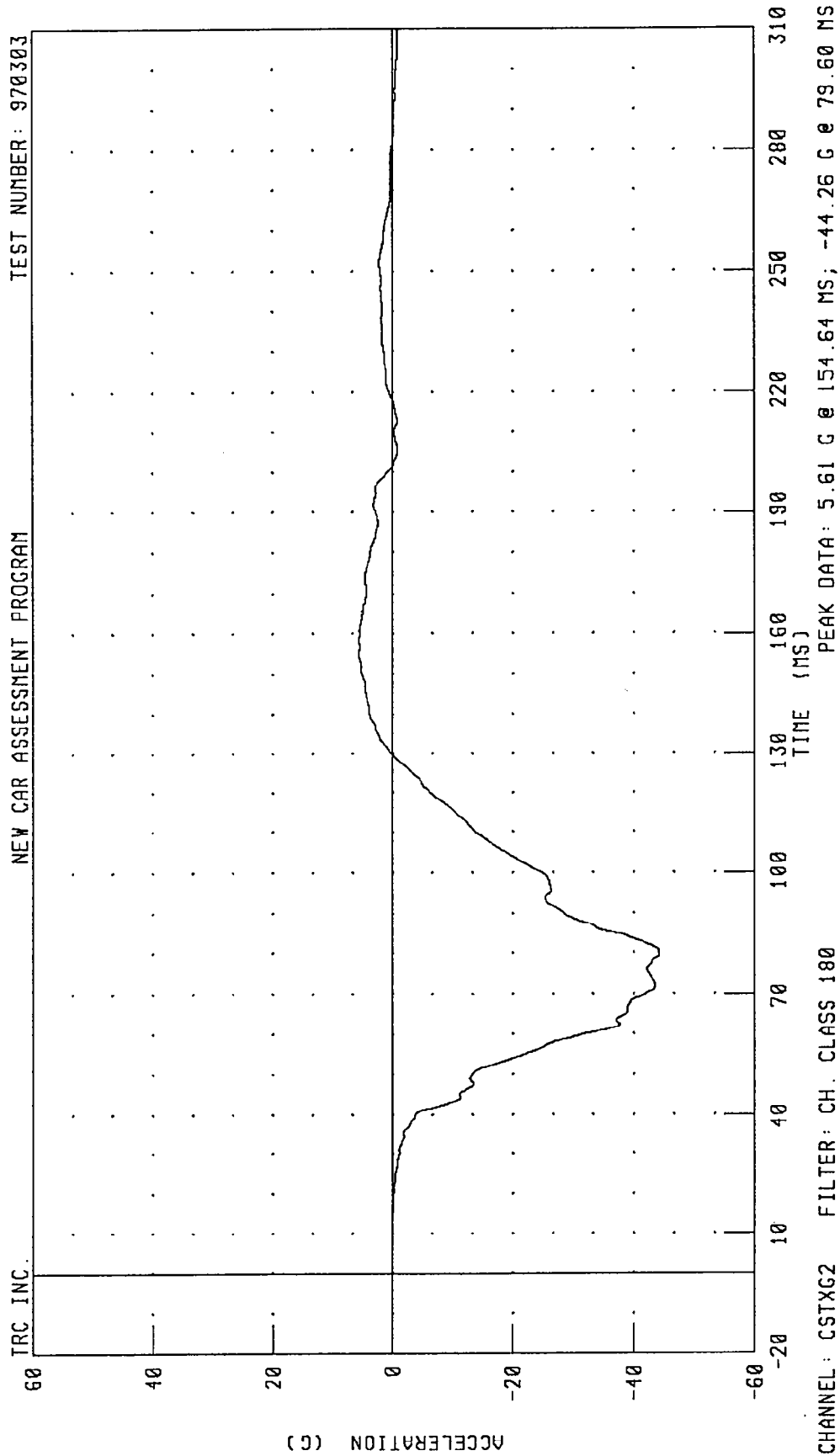
TRC INC.



1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

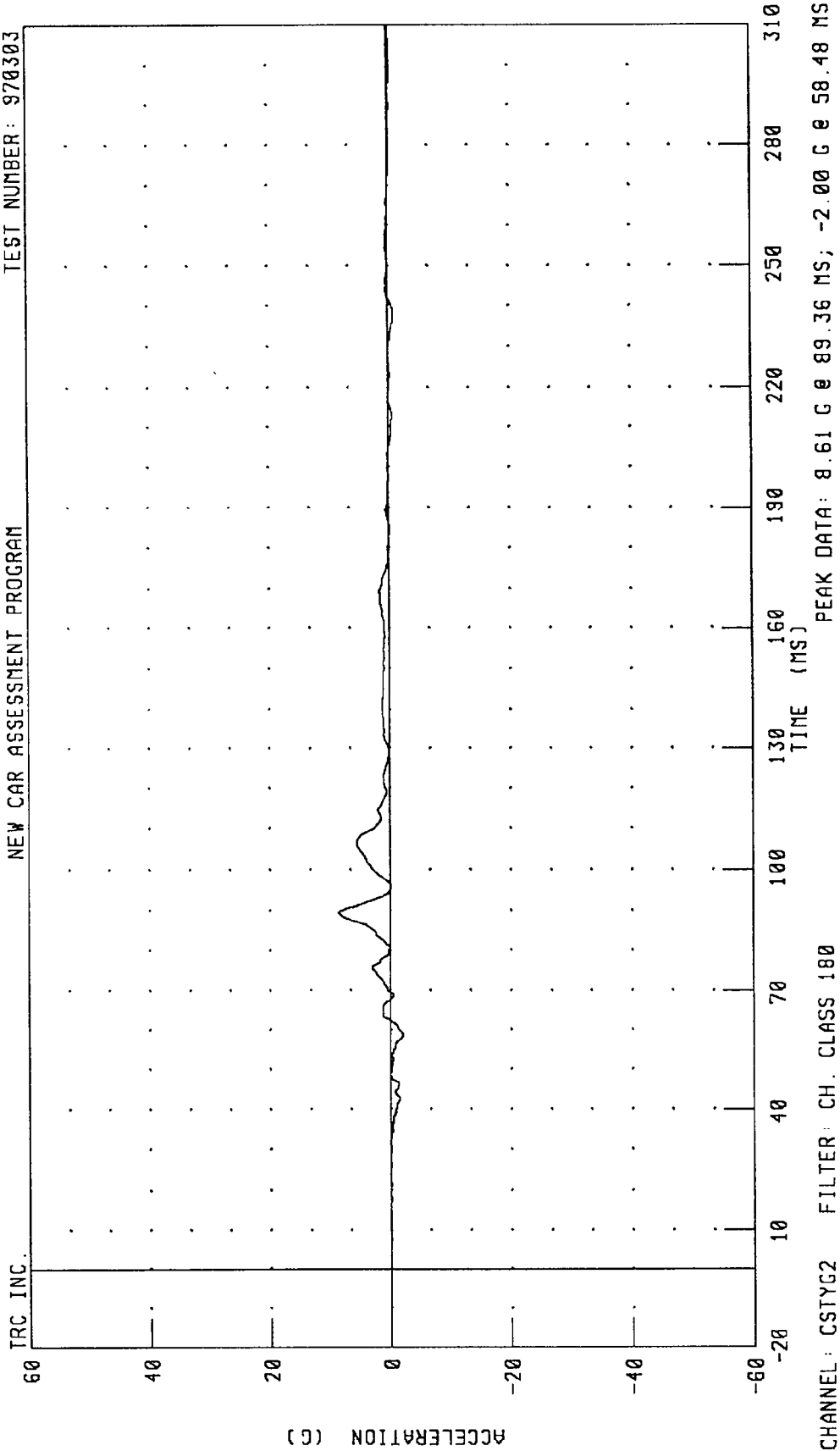
TRC INC.



CHANNEL: CSTXG2 FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Y-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

60

40

20

0

-20

-40

-60

ACCELERATION (G)

310

280

250

220

190

160

130

100

70

40

10

-20

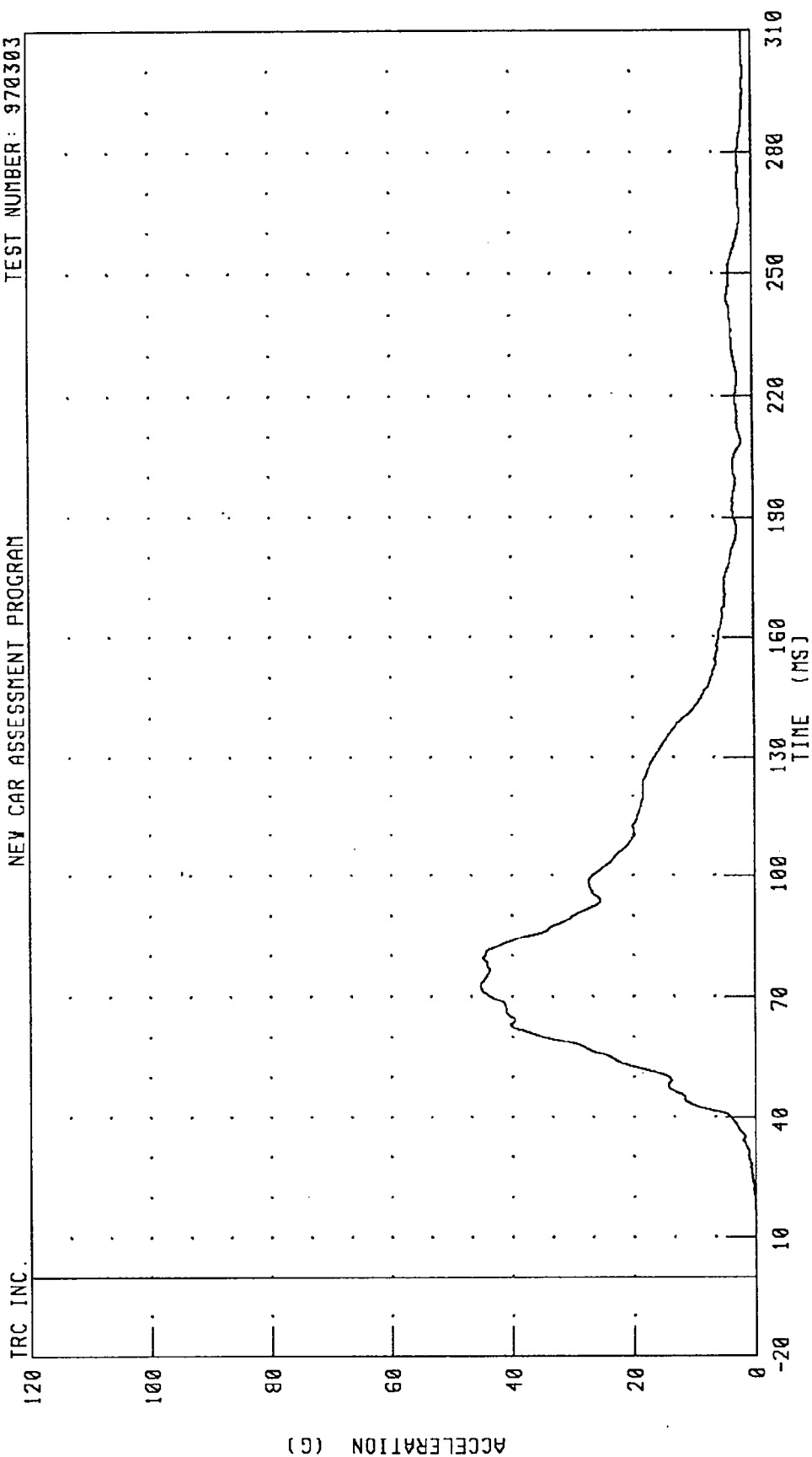
TIME (MS)

CHANNEL: CSTZG2 FILTER: CH. CLASS 180

PEAK DATA: 17.74 G @ 124.00 MS; -14.83 G @ 63.20 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST RESULTANT ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

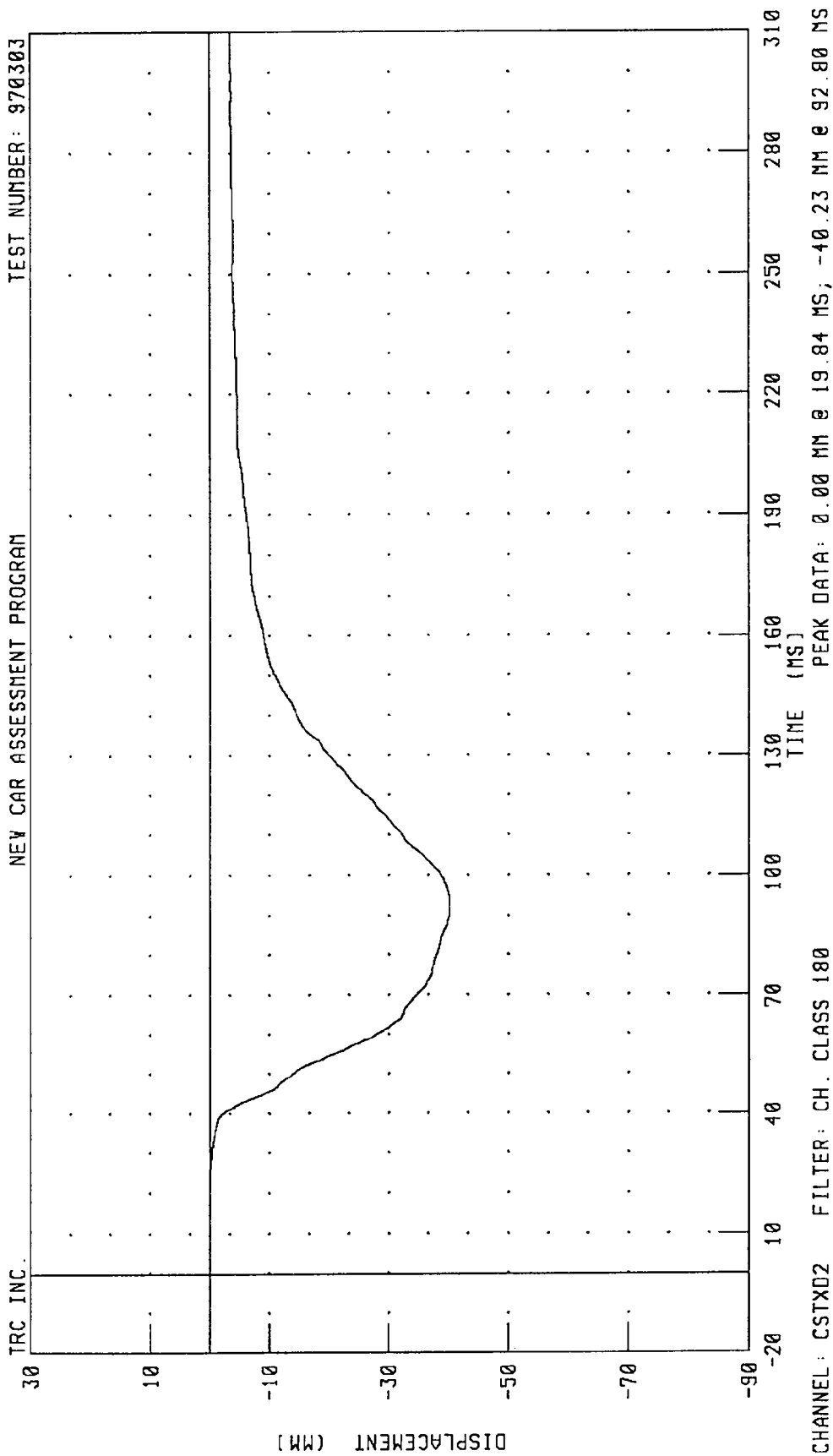


PEAK DATA: 45.11 G @ 72.72 MS; 0.00 G @ -20.00 MS

CHANNEL: CSTRG2 FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST DEFLECTION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



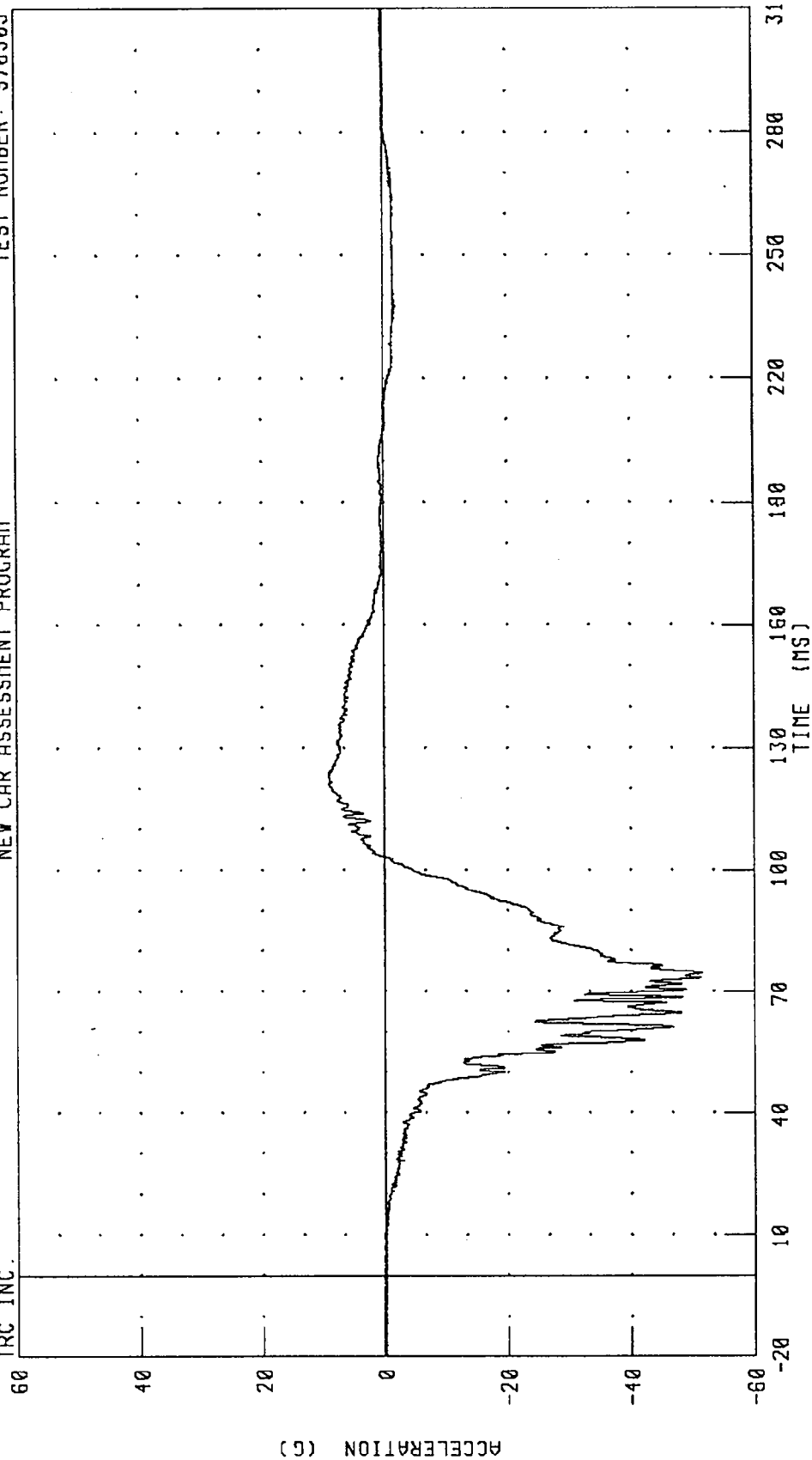
CHANNEL: CSTXD2 FILTER: CH. CLASS 180

PEAK DATA: 0.00 MM @ 19.84 MS; -40.23 MM @ 92.80 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



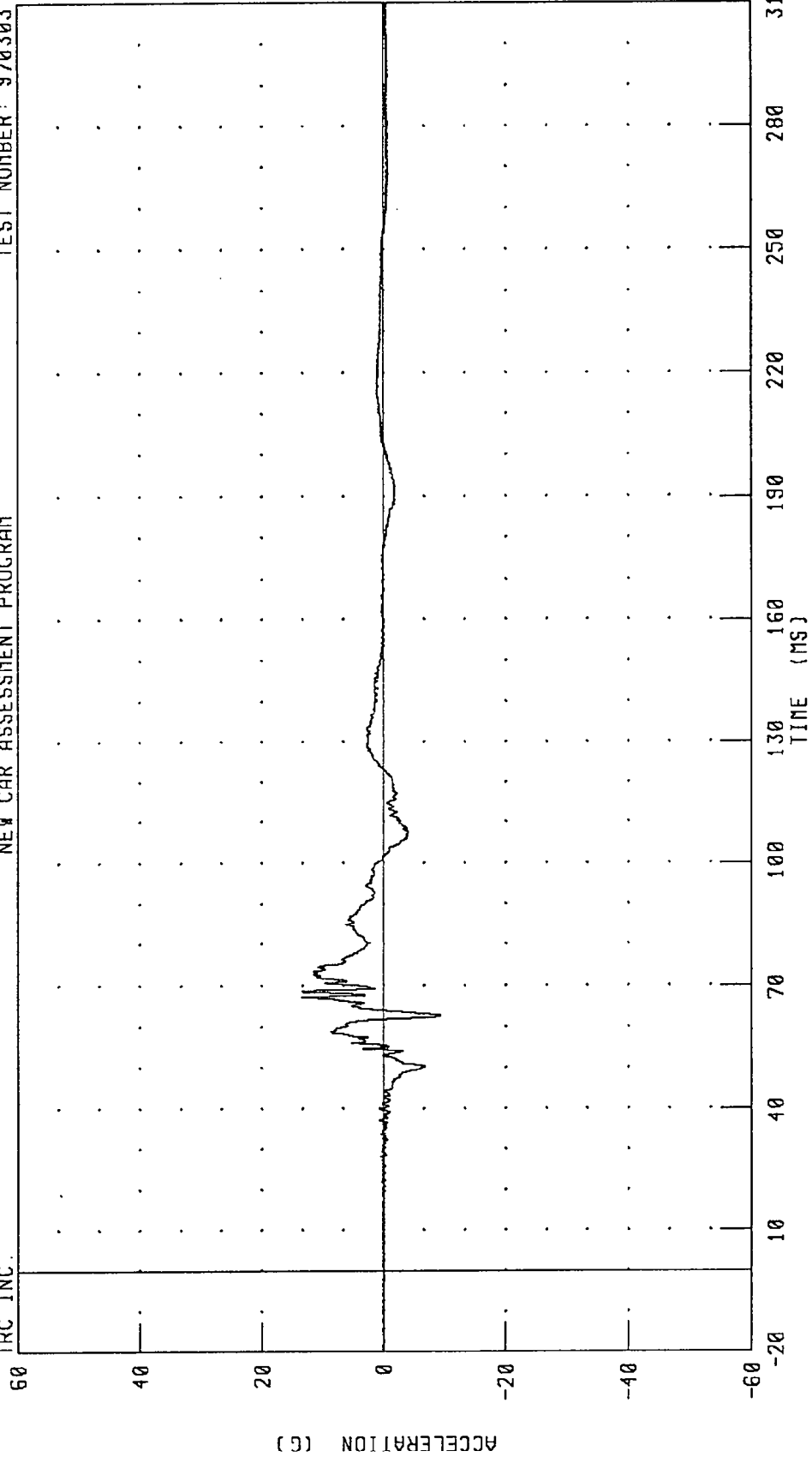
CHANNEL: PEVXG2 FILTER: CH. CLASS 1000

PEAK DATA: 9.10 G @ 121.12 MS; -51.53 G @ 74.48 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS Y-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



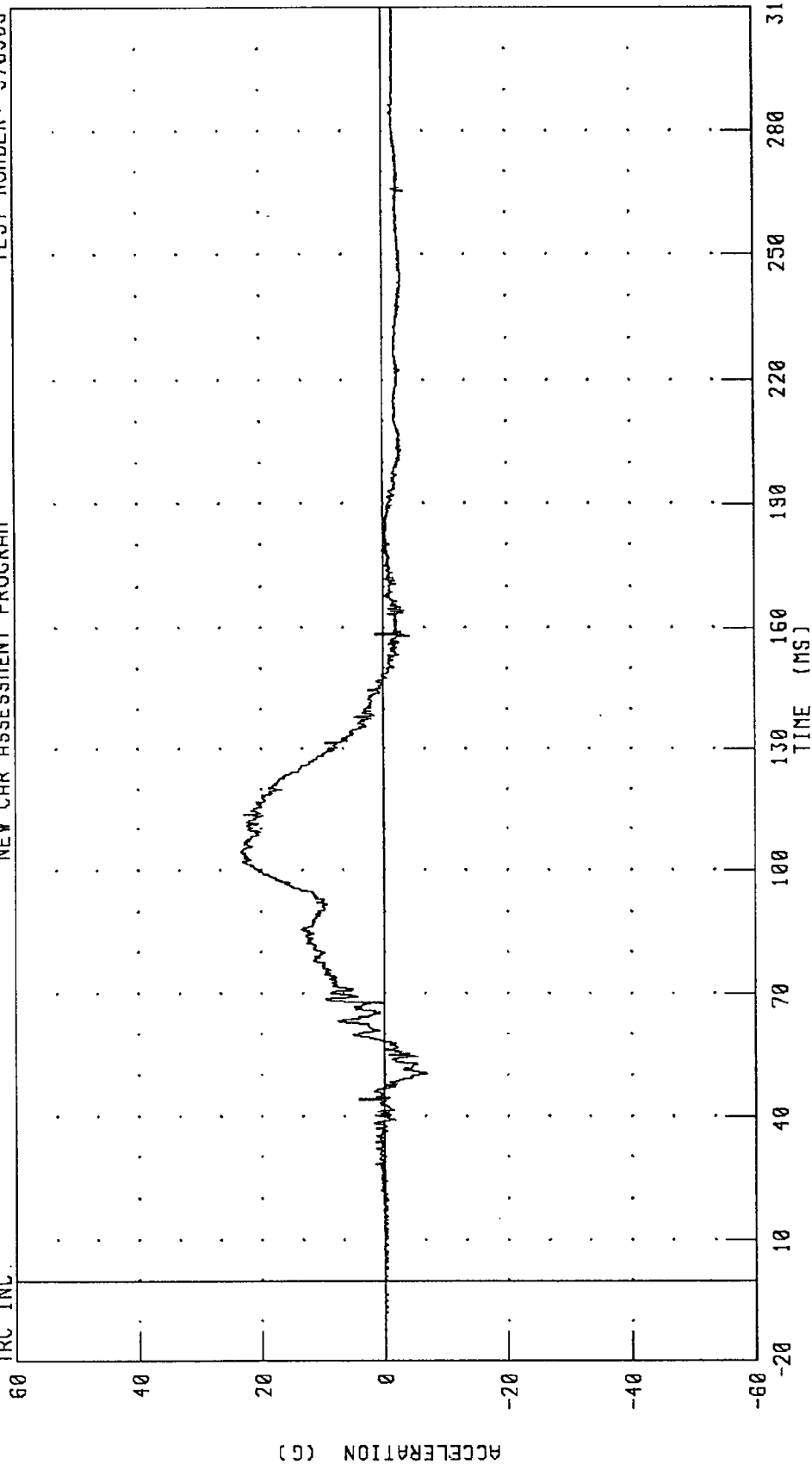
CHANNEL: PEVYG2 FILTER: CH. CLASS 1000

PEAK DATA: 13.54 G @ 67.28 MS; -9.36 G @ 62.72 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS Z-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



CHANNEL: PEVZG2 FILTER: CH. CLASS 1000

PEAK DATA: 23.38 G @ 104.48 MS; -6.95 G @ 50.40 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS RESULTANT ACCELERATION

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

120

100

80

60

40

20

0

ACCELERATION (G)

310

280

250

220

190

160

130

100

70

40

10

-20

TIME (MS)

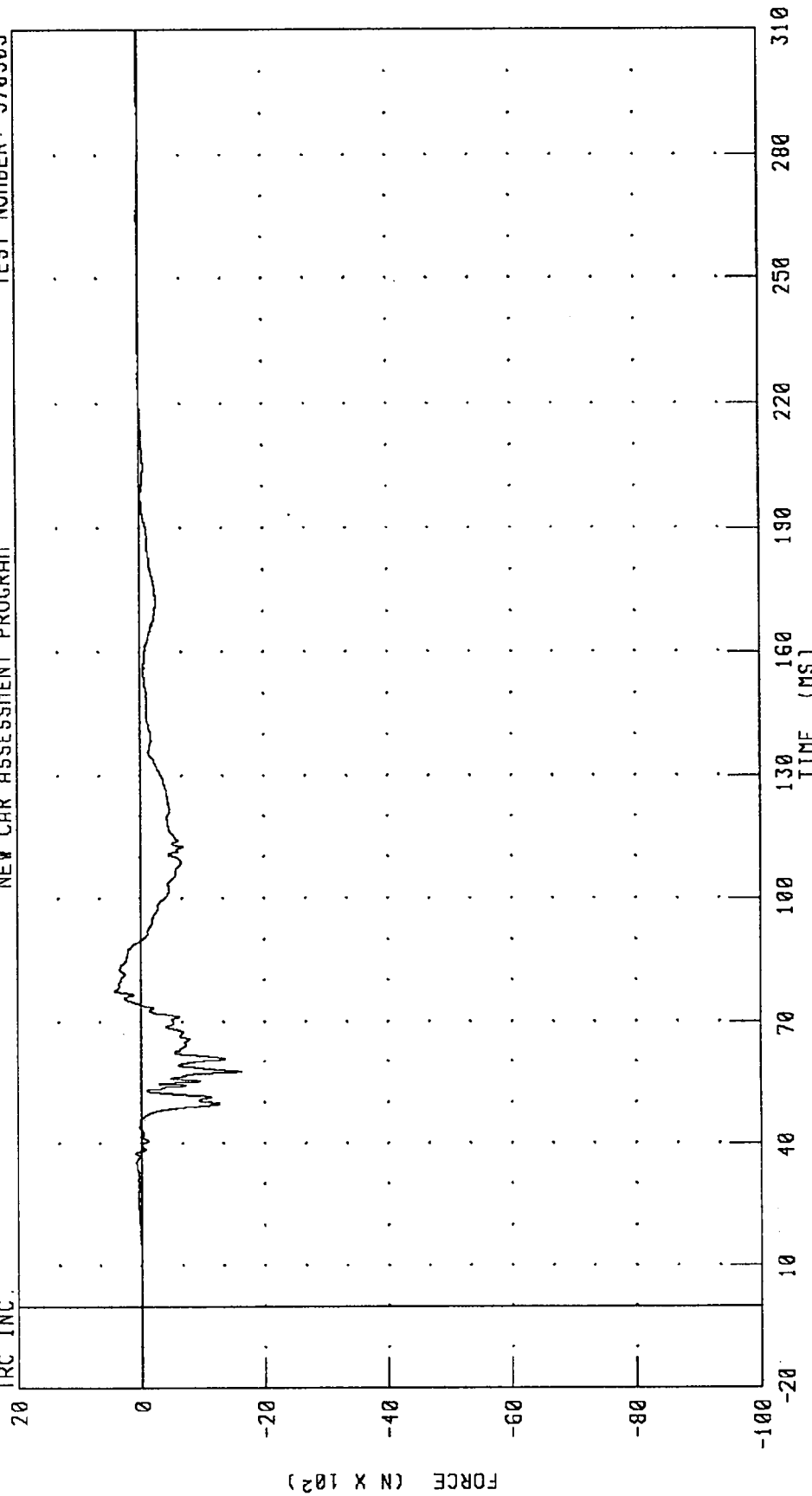
CHANNEL: PEVRG2 FILTER: CH. CLASS 1000

PEAK DATA: 53.54 G @ 74.56 MS; 0.13 G @ -19.44 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER LEFT FEMUR FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

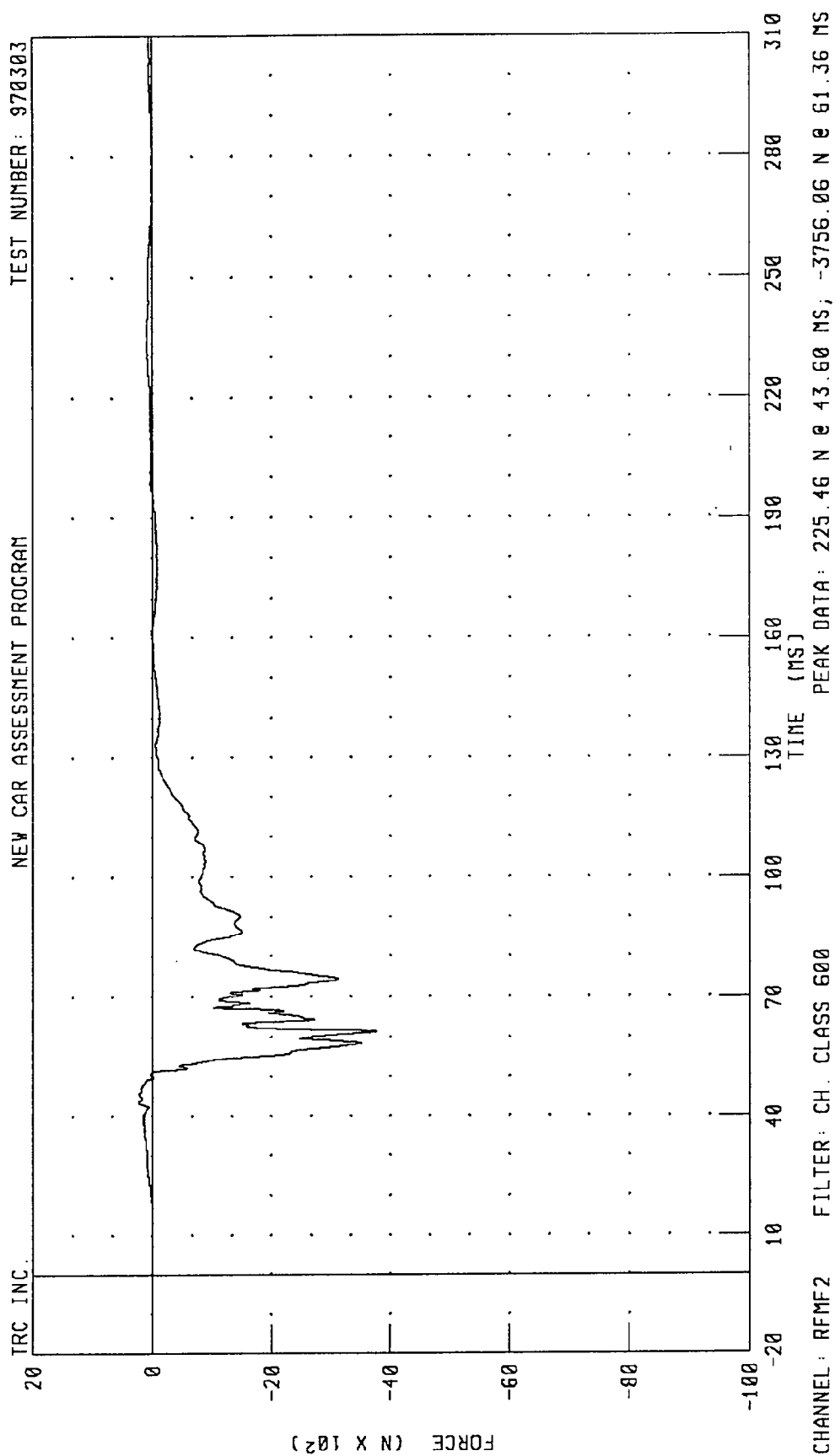


PEAK DATA: 419.10 N @ 77.52 MS; -1634.52 N @ 57.52 MS

CHANNEL: LFMF2 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FEMUR FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

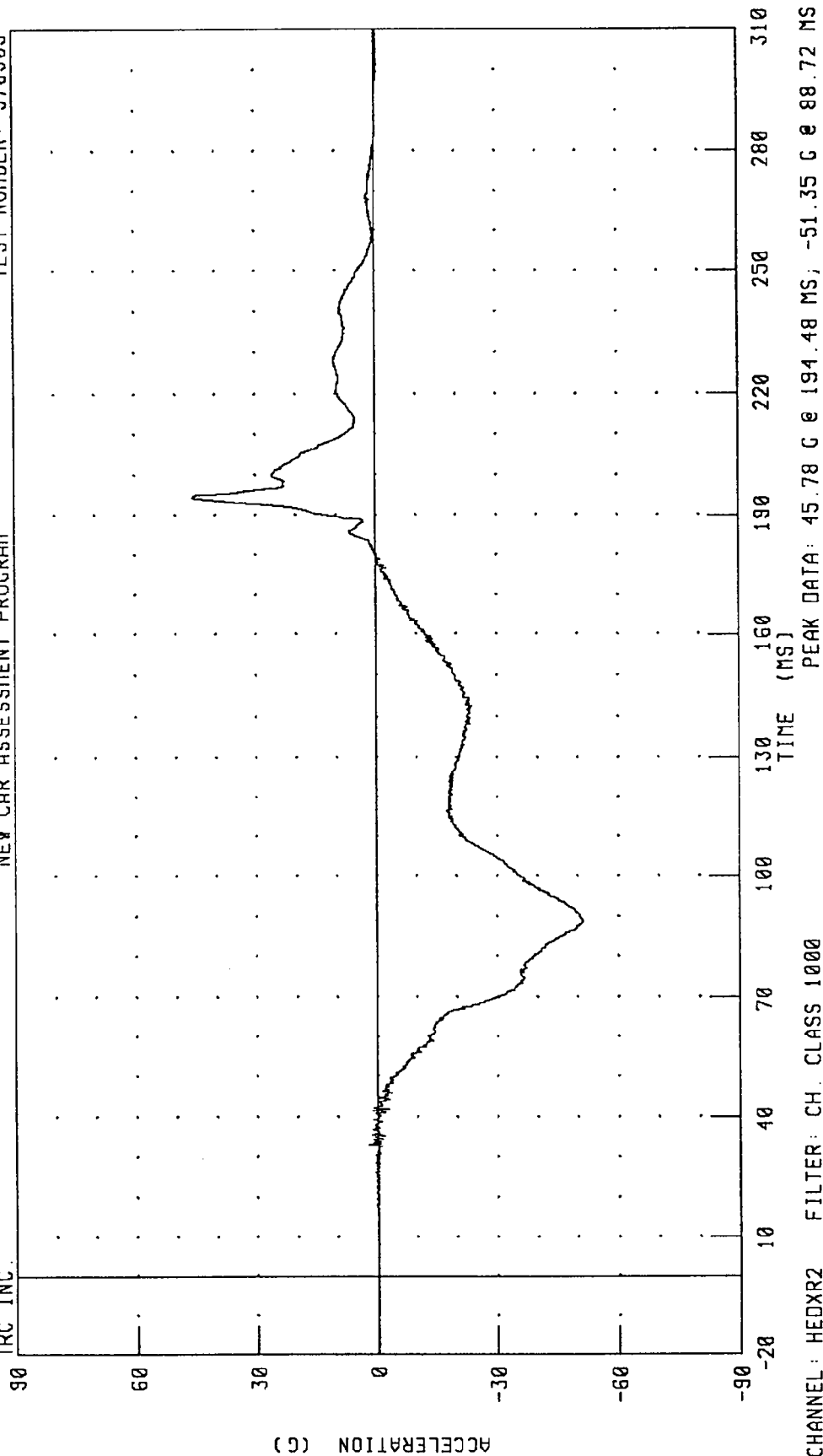


1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: HEDXR2 FILTER: CH. CLASS 1000

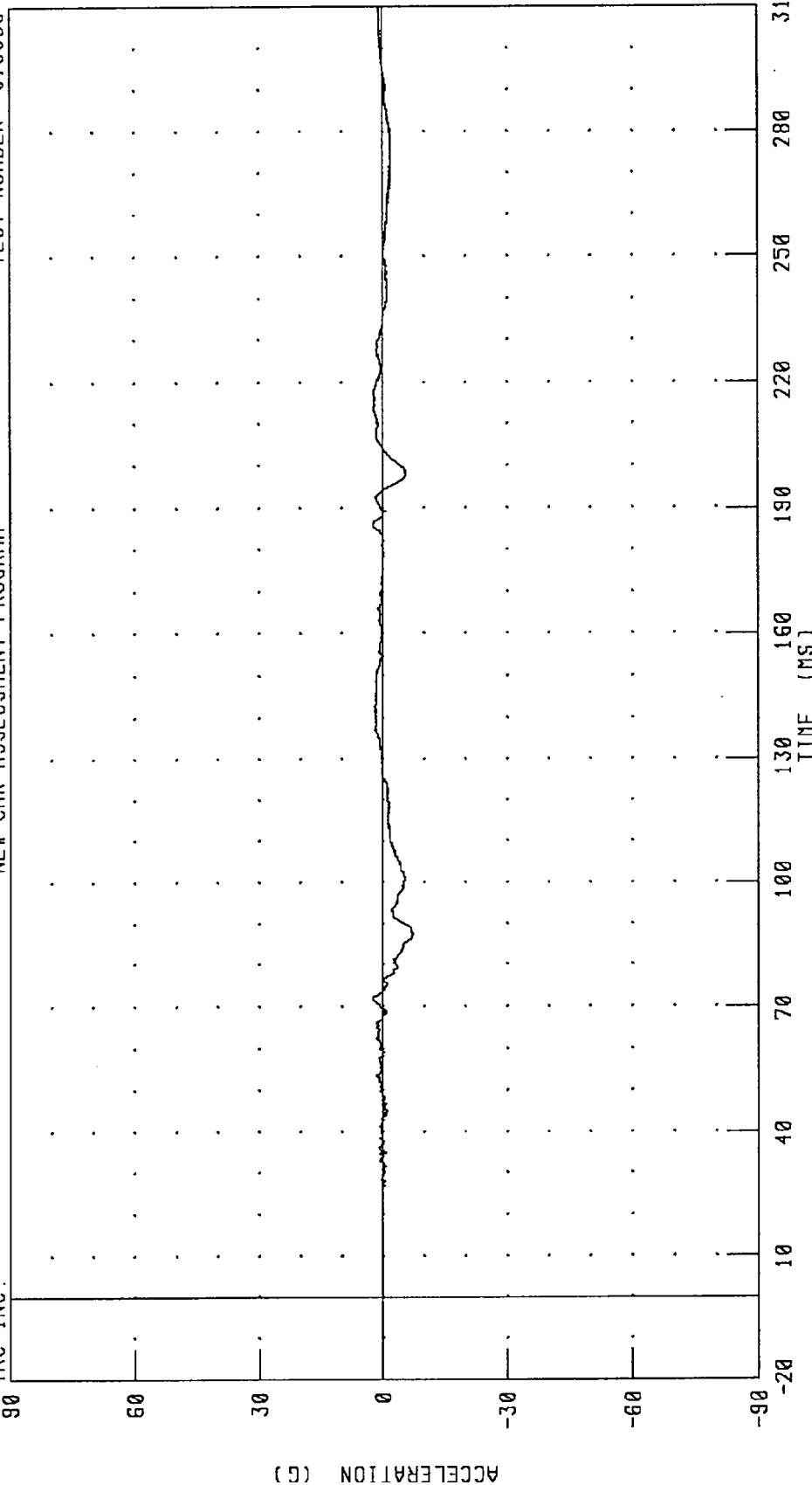
PEAK DATA: 45.78 G @ 194.48 MS; -51.35 G @ 88.72 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 2.63 G @ 71.76 MS; -7.34 G @ 87.60 MS

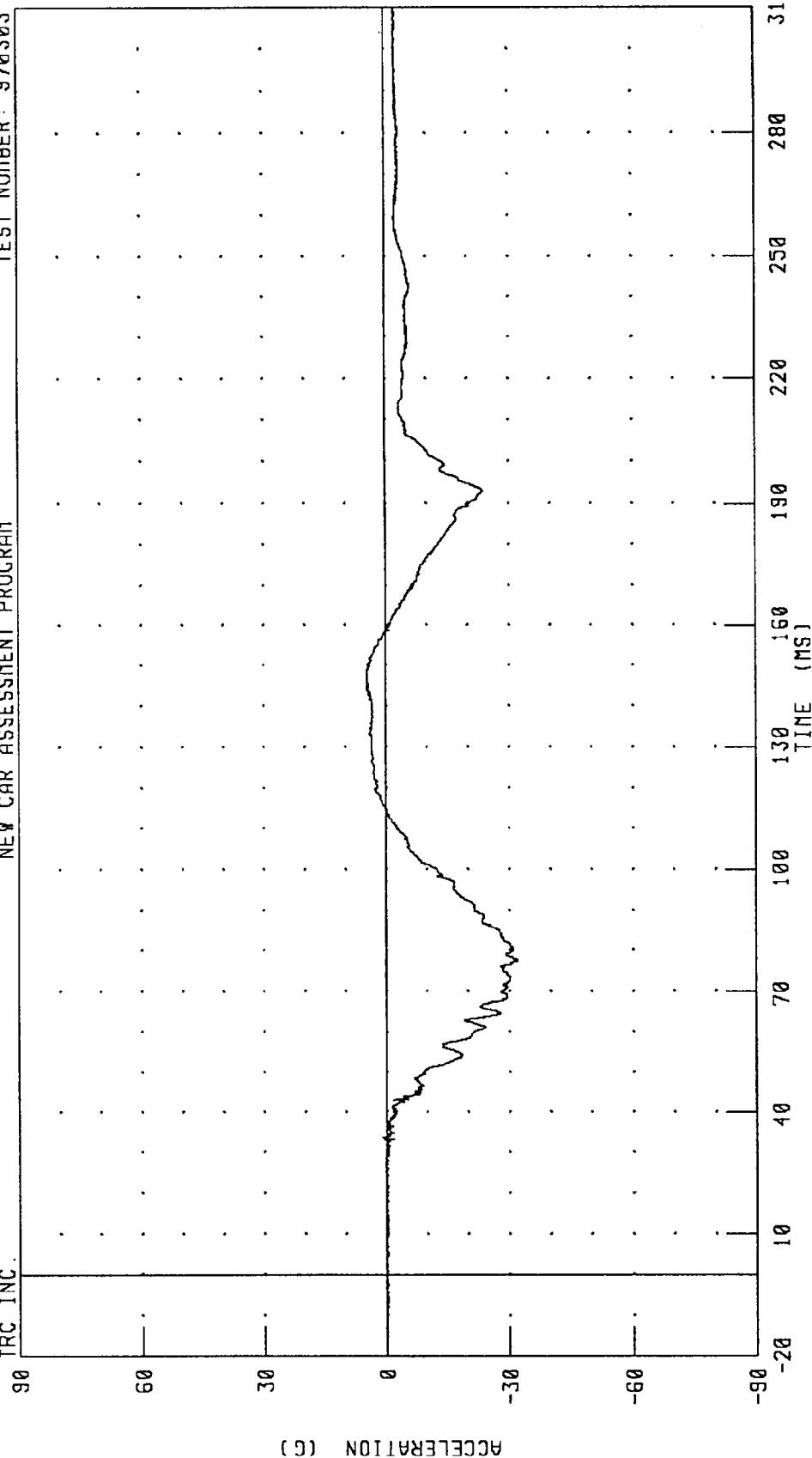
CHANNEL: HEDYR2 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: HEDZR2 FILTER: CH. CLASS 1000

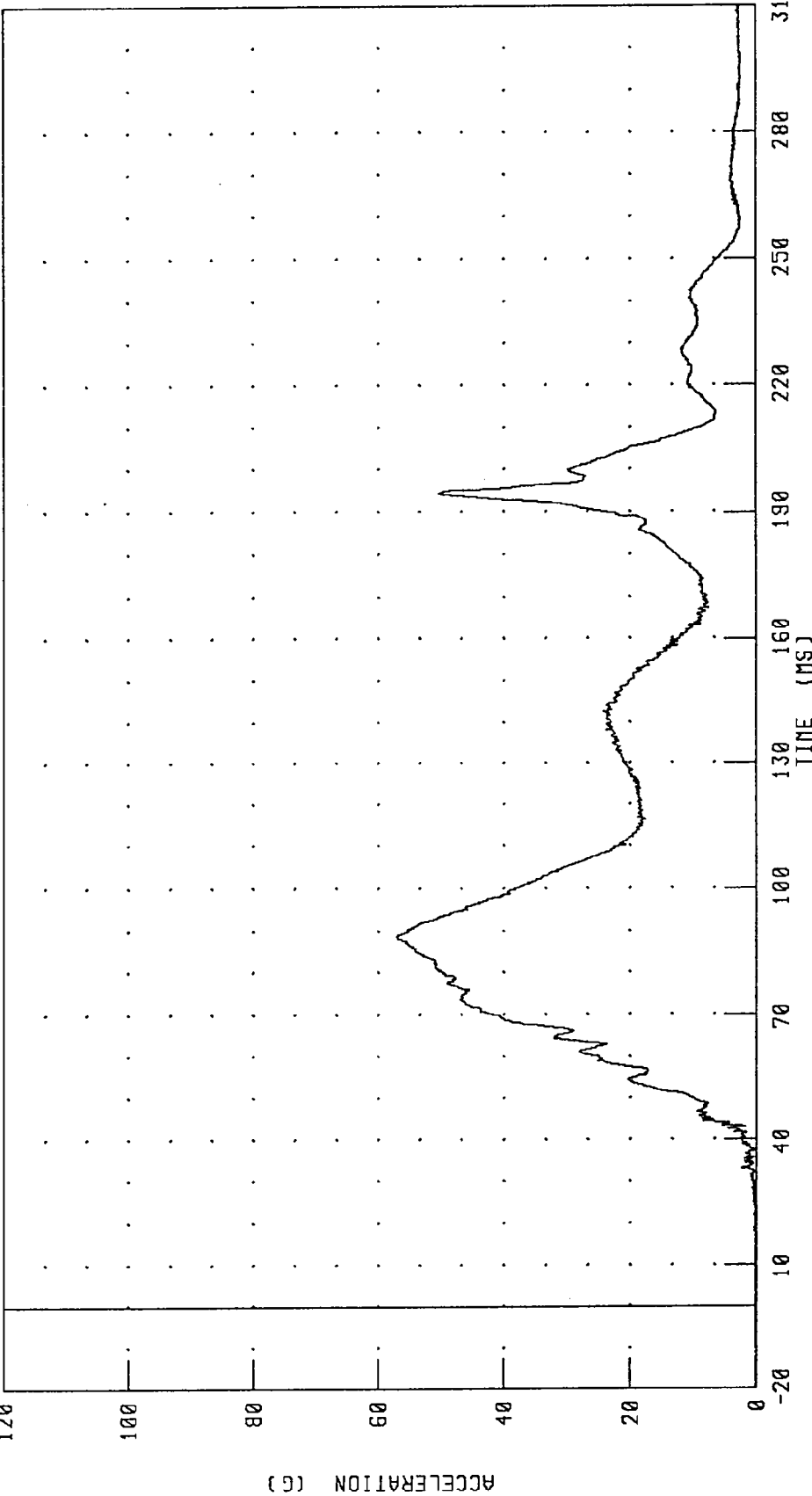
PEAK DATA: 4.67 G @ 143.60 MS; -31.90 G @ 77.44 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: HEORR2 FILTER: CH. CLASS 1000

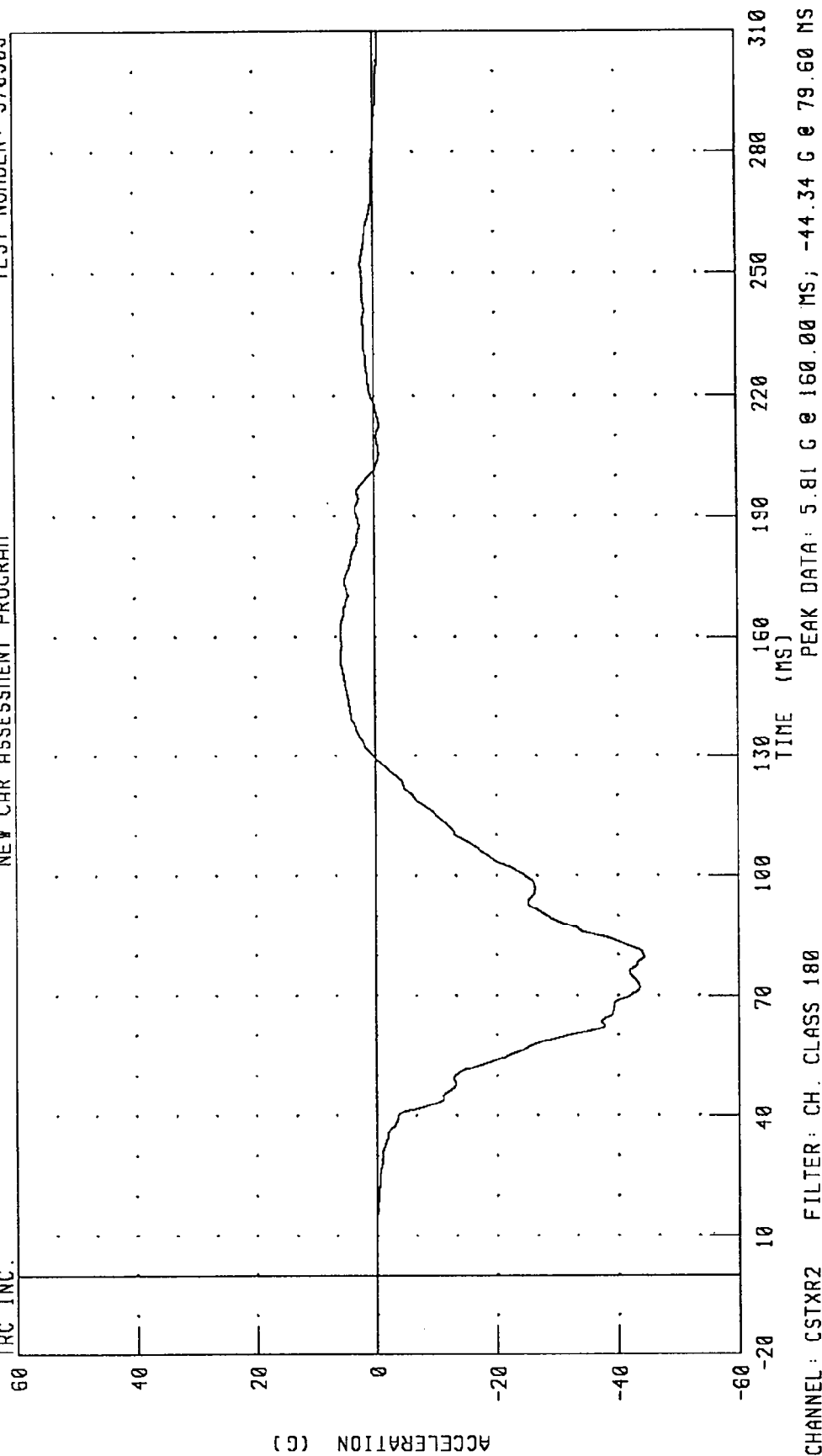
PEAK DATA: 57.04 G @ 88.72 MS; 0.11 G @ -20.00 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



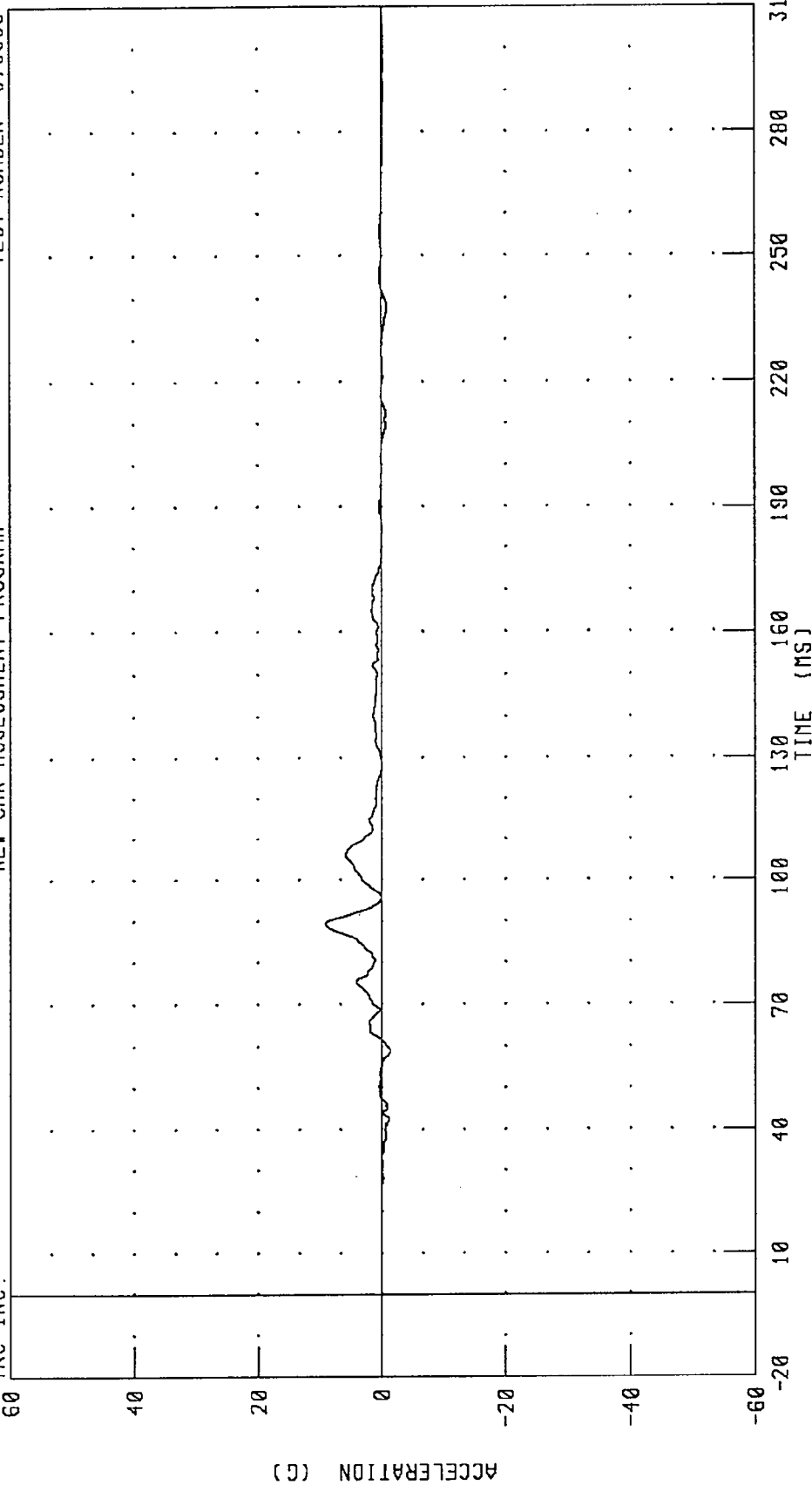
CHANNEL: CSTXR2 FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Y-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: CSTYR2 FILTER: CH. CLASS 180

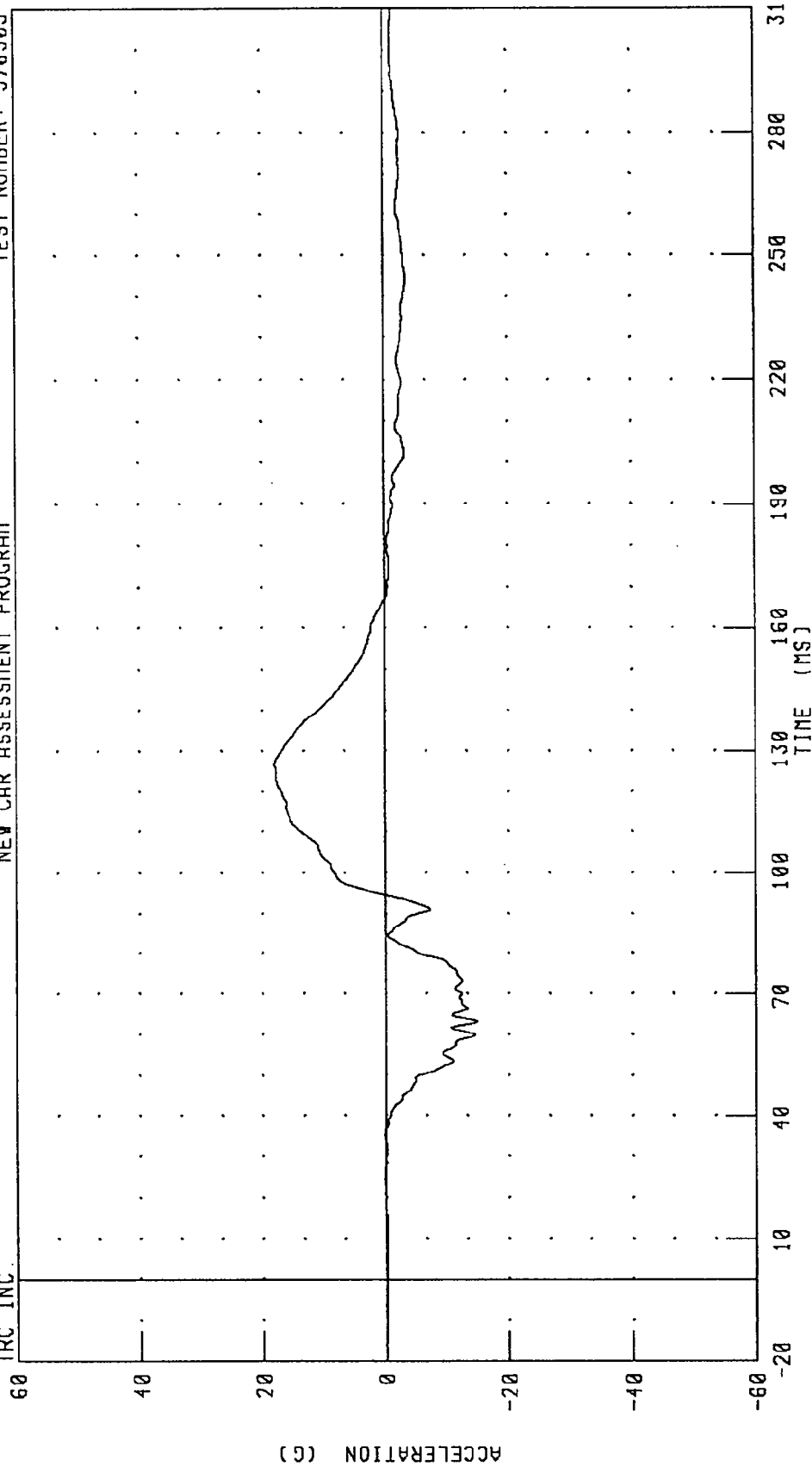
PEAK DATA: 9.08 G @ 89.44 MS; -1.36 G @ 59.04 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



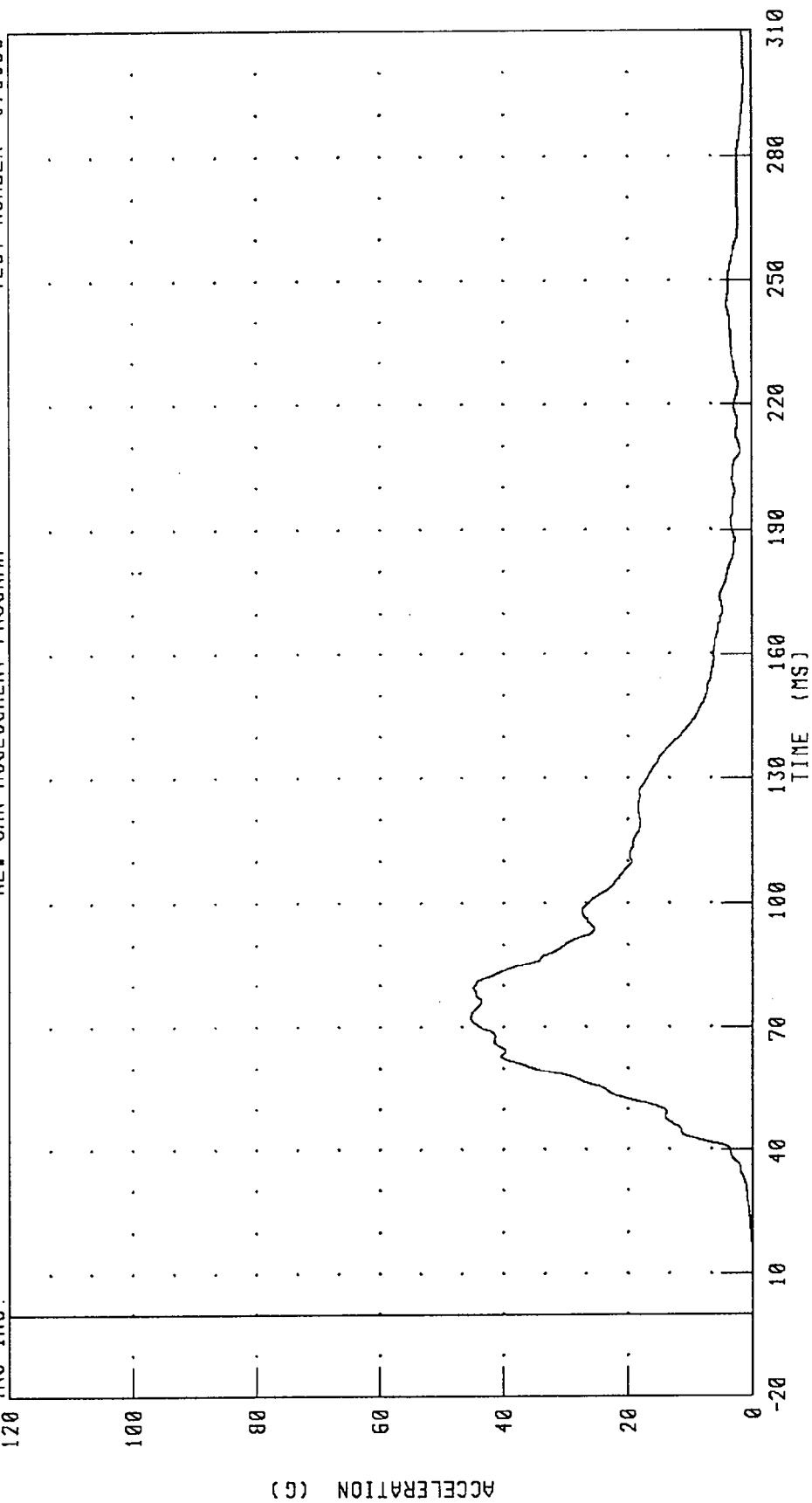
CHANNEL: CSTZR2 FILTER: CH. CLASS 180

PEAK DATA: 18.08 G @ 126.64 MS; -14.85 G @ 63.20 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST RESULTANT ACCELERATION - REDUNDANT
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



PEAK DATA: 45.22 G @ 72.40 MS; 0.01 G @ -20.00 MS

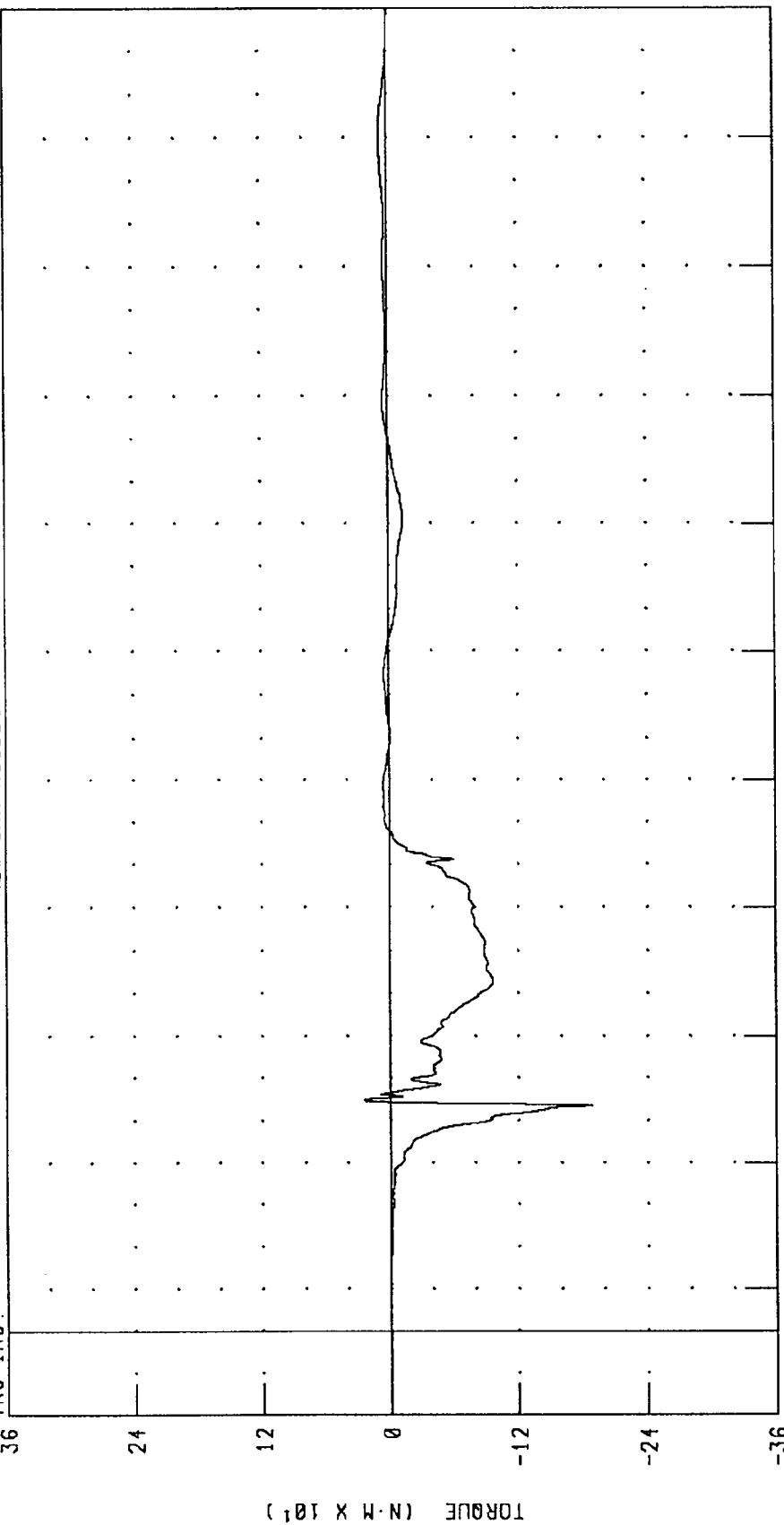
CHANNEL: CSTR2 FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: TBLXM2 FILTER: CH. CLASS 600

PEAK DATA: 24.65 N·M @ 54.88 MS; -188.96 N·M @ 53.52 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

36

24

12

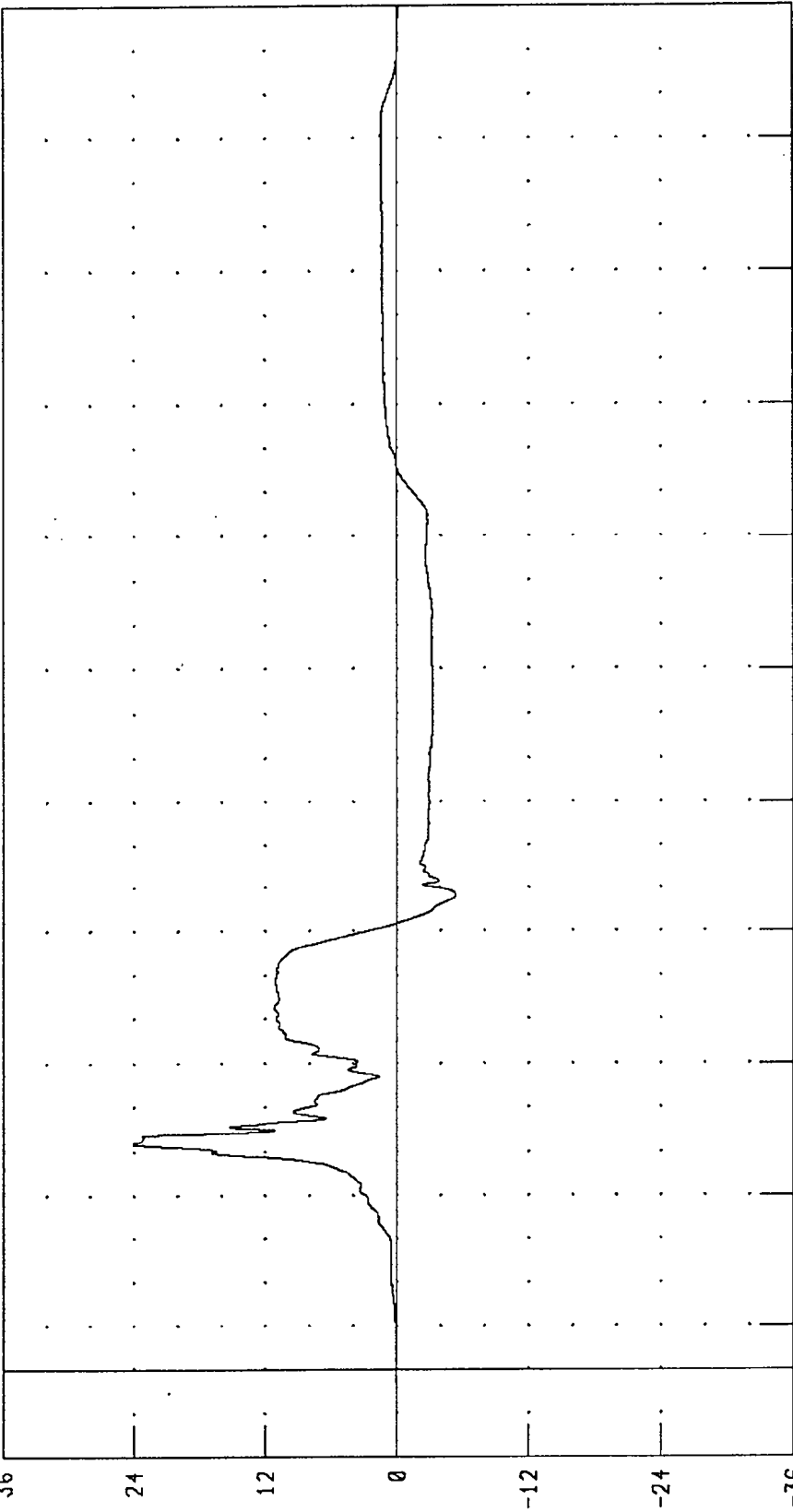
0

-12

-24

-36

TORQUE (N·M X 10¹)



PEAK DATA: 240.82 N·M @ 51.92 MS; -53.28 N·M @ 108.24 MS

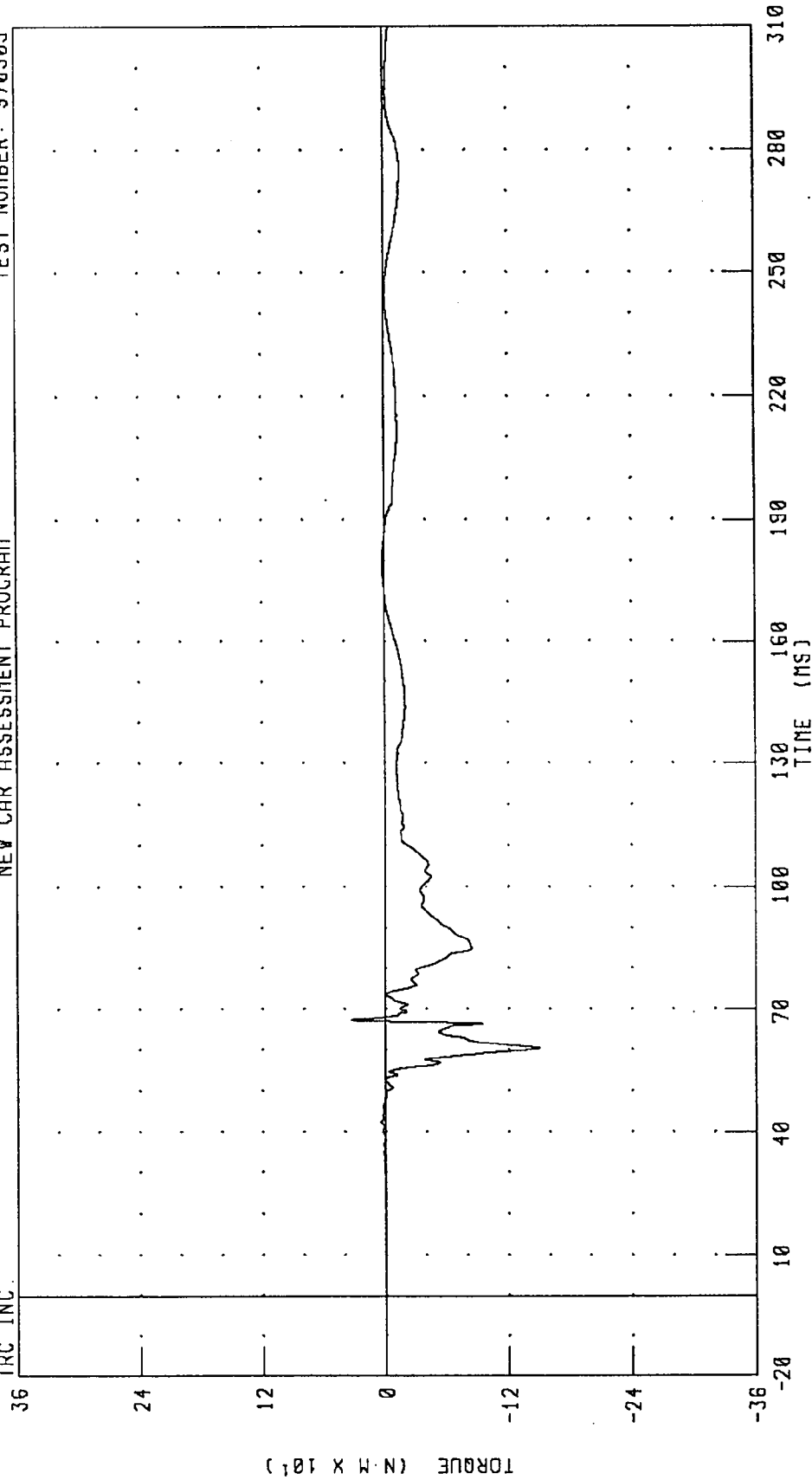
CHANNEL: TBLM2 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 33.67 N-M @ 67.36 MS; -150.26 N-M @ 60.32 MS

FILTER: CH. CLASS 600

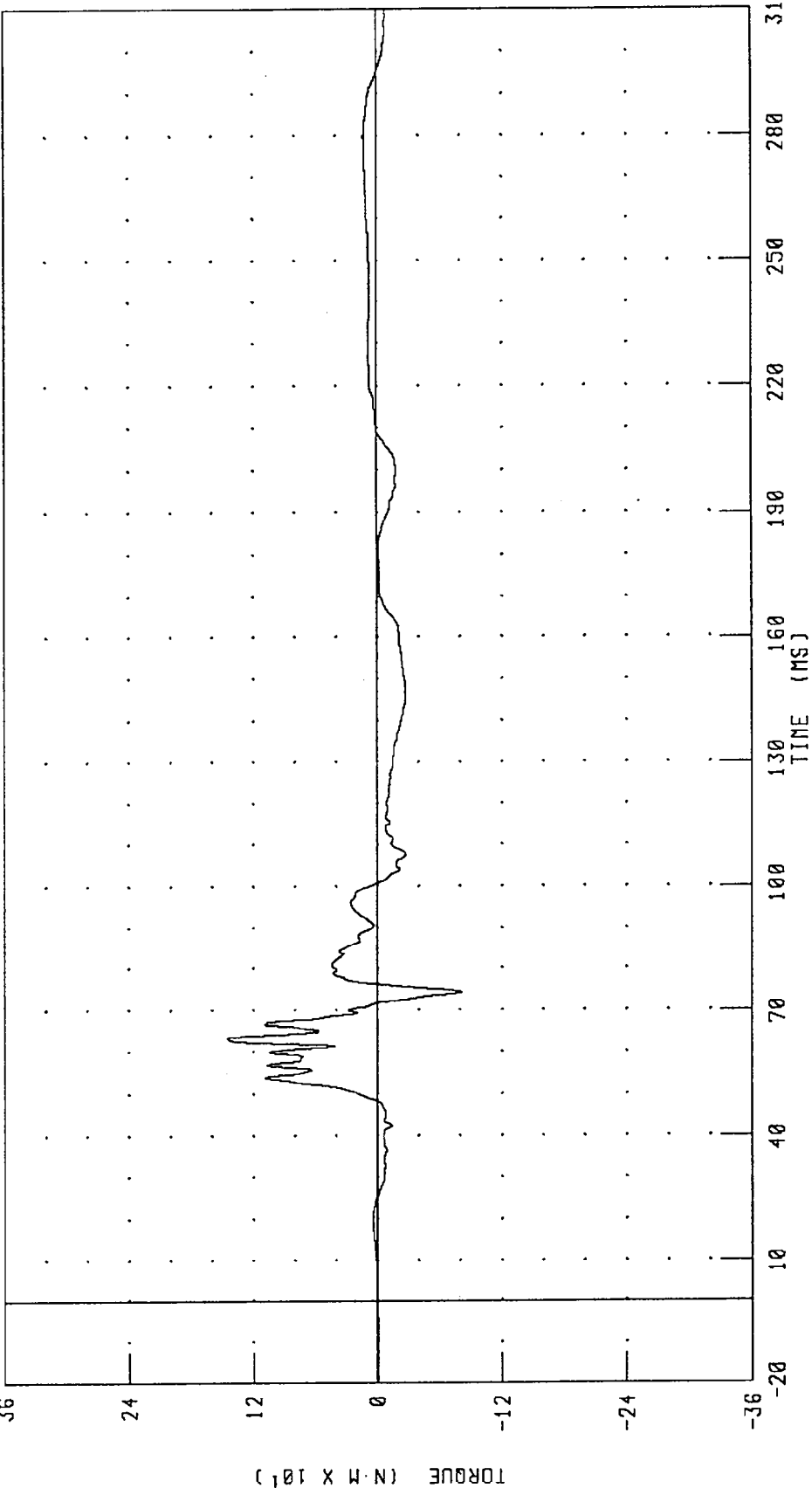
CHANNEL: TBRXM2

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: TBRYM2 FILTER: CH. CLASS 600

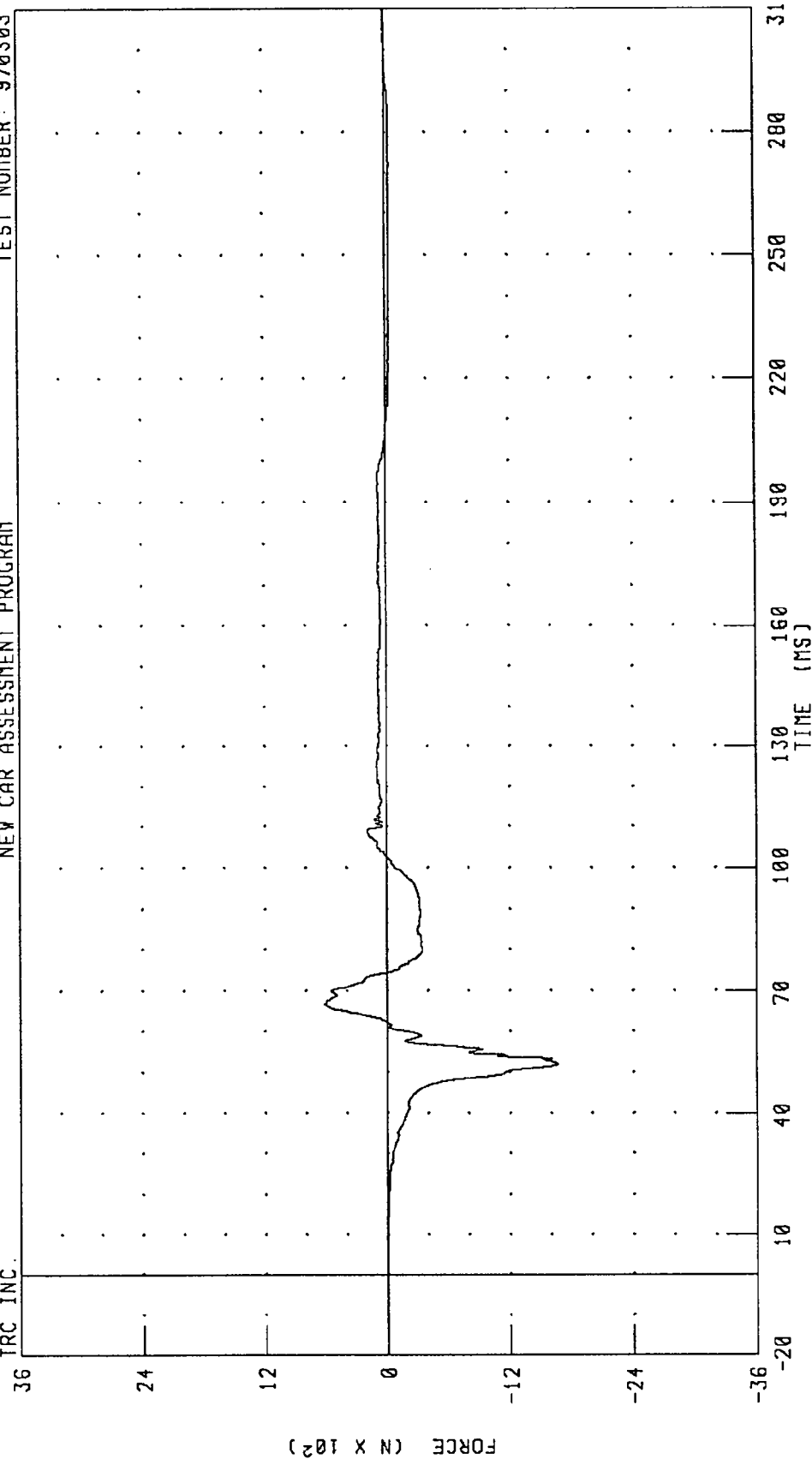
PEAK DATA: 145.48 N.M @ 63.36 MS; -81.47 N.M @ 74.24 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT LOWER TIBIA X-AXIS FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 616.00 N @ 66.80 MS; -1660.87 N @ 52.08 MS

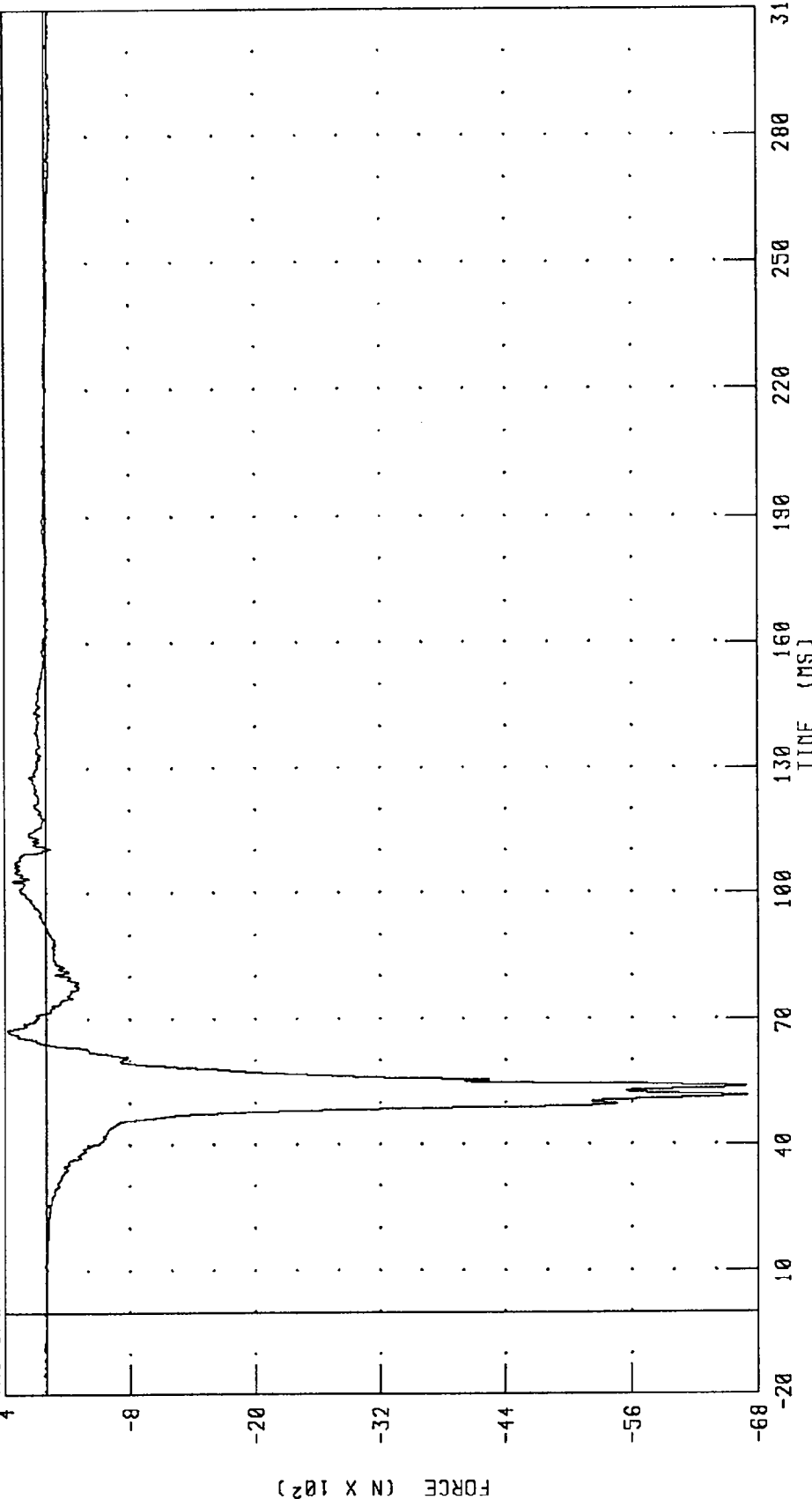
CHANNEL: ANLXF2 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: ANLZF2 FILTER: CH. CLASS 600

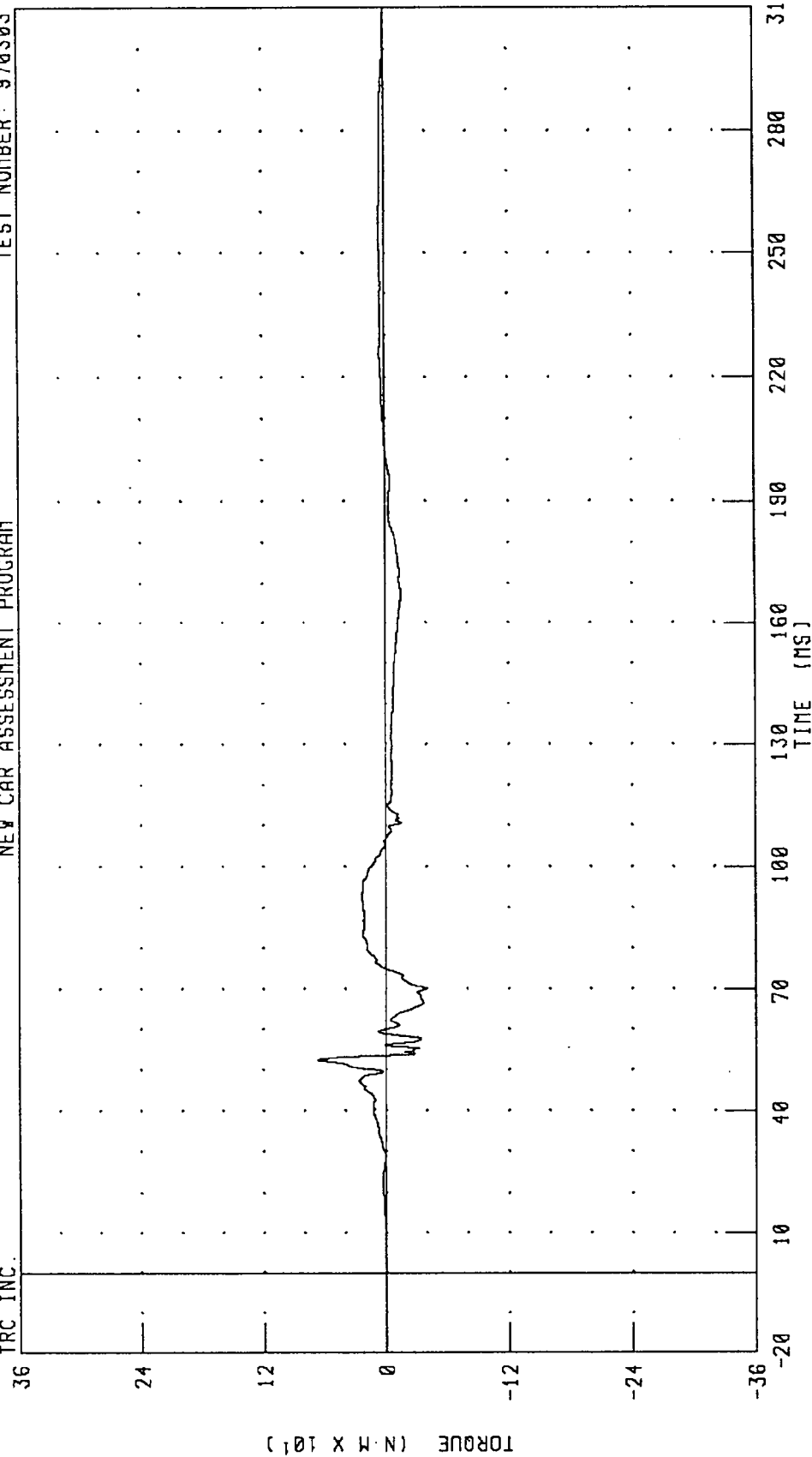
PEAK DATA: 365.71 N @ 67.44 MS; -6698.25 N @ 51.60 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 66.70 N-M @ 52.40 MS; -38.41 N-M @ 70.16 MS

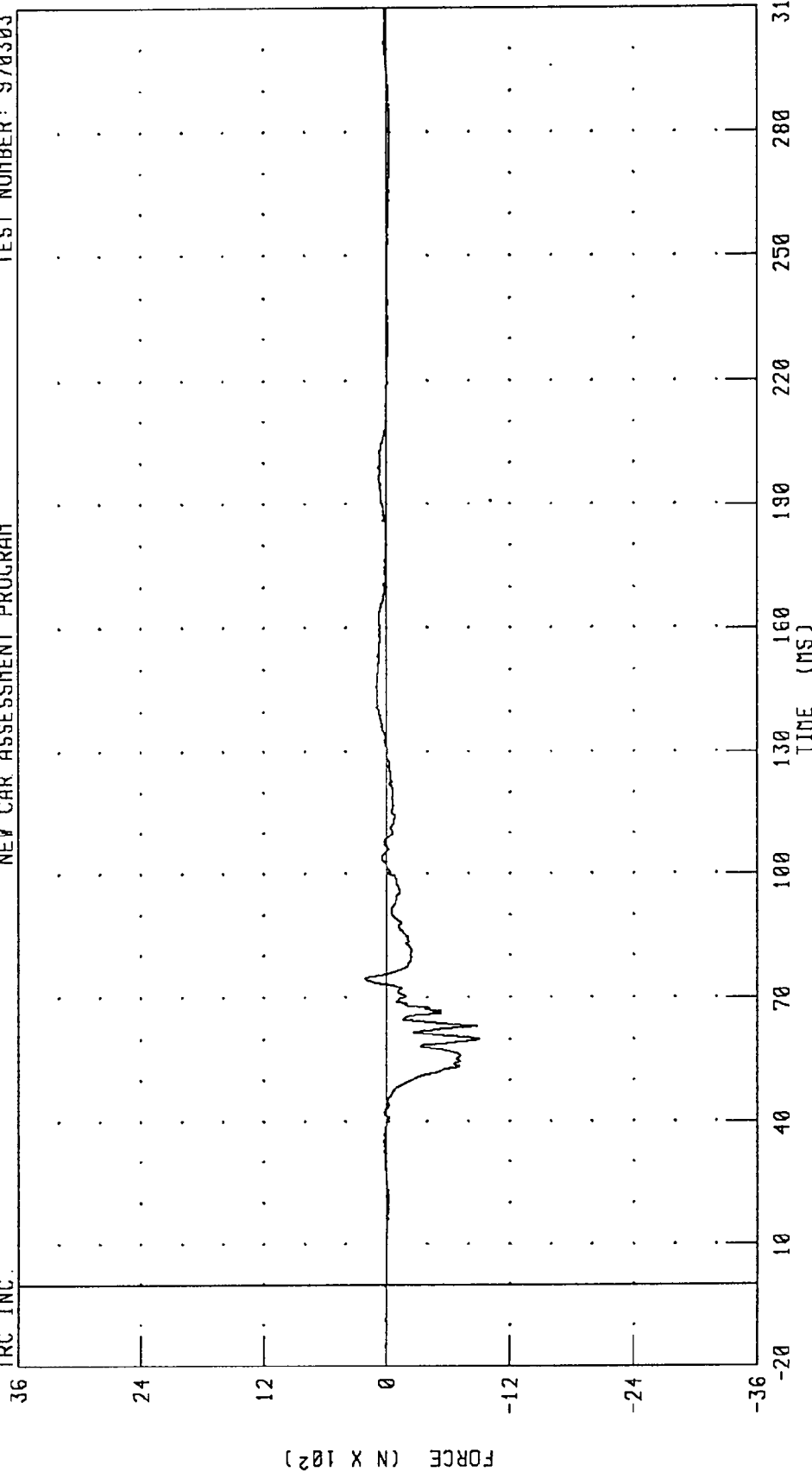
CHANNEL: ANLYM2 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT LOWER TIBIA X-AXIS FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 209.79 N @ 74.48 MS; -904.34 N @ 60.16 MS

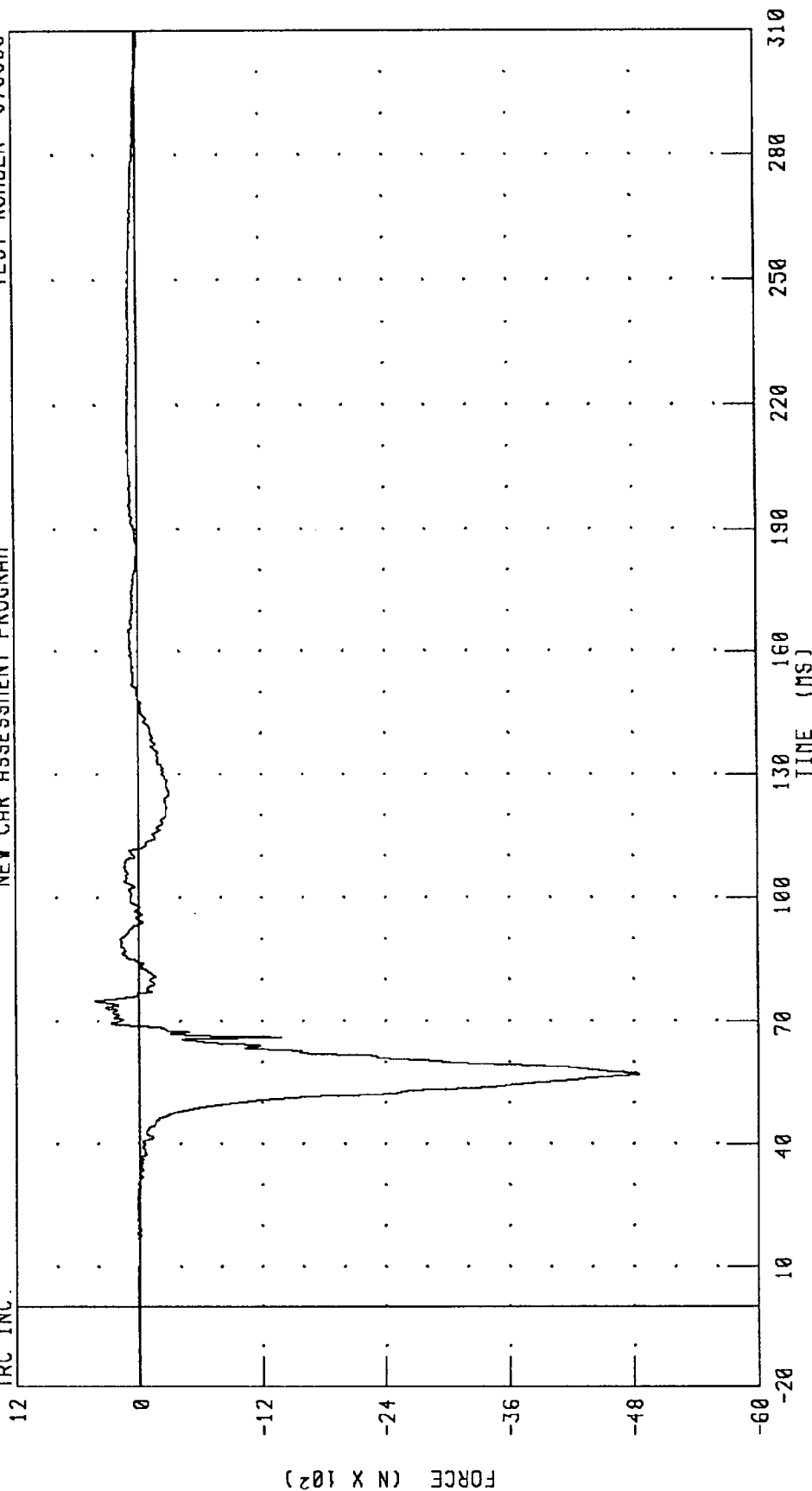
CHANNEL: ANRPF2 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: ANRZF2 FILTER: CH. CLASS 600

PEAK DATA: 421.05 N @ 74.88 MS; -4853.11 N @ 56.96 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

36

24

12

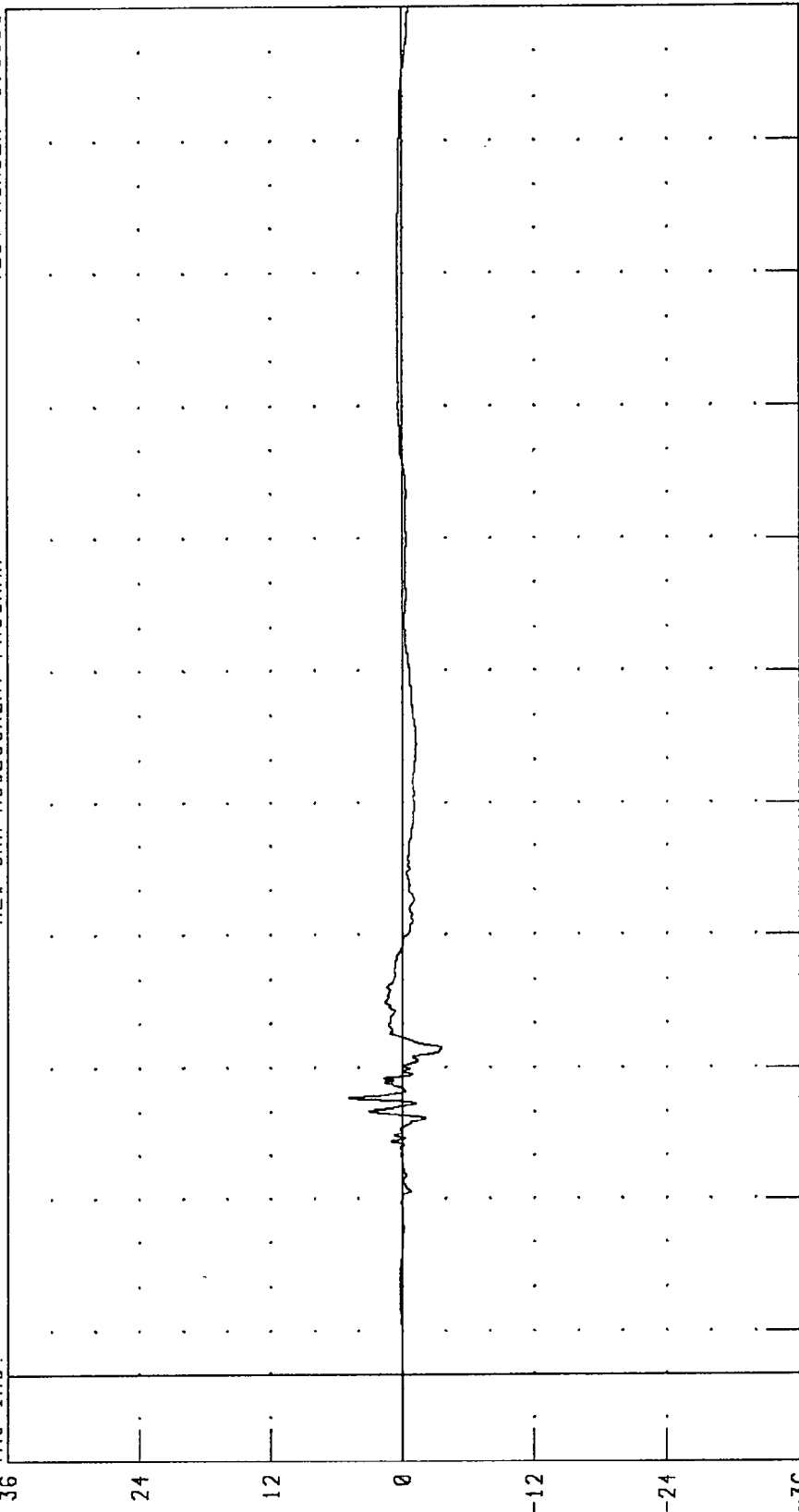
0

-12

-24

-36

TORQUE (N·M X 10¹)



310

280

250

220

190

160

130

100

70

40

10

-20

-36

TIME (MS)

PEAK DATA: 48.97 N·M @ 63.20 MS; -35.33 N·M @ 74.56 MS

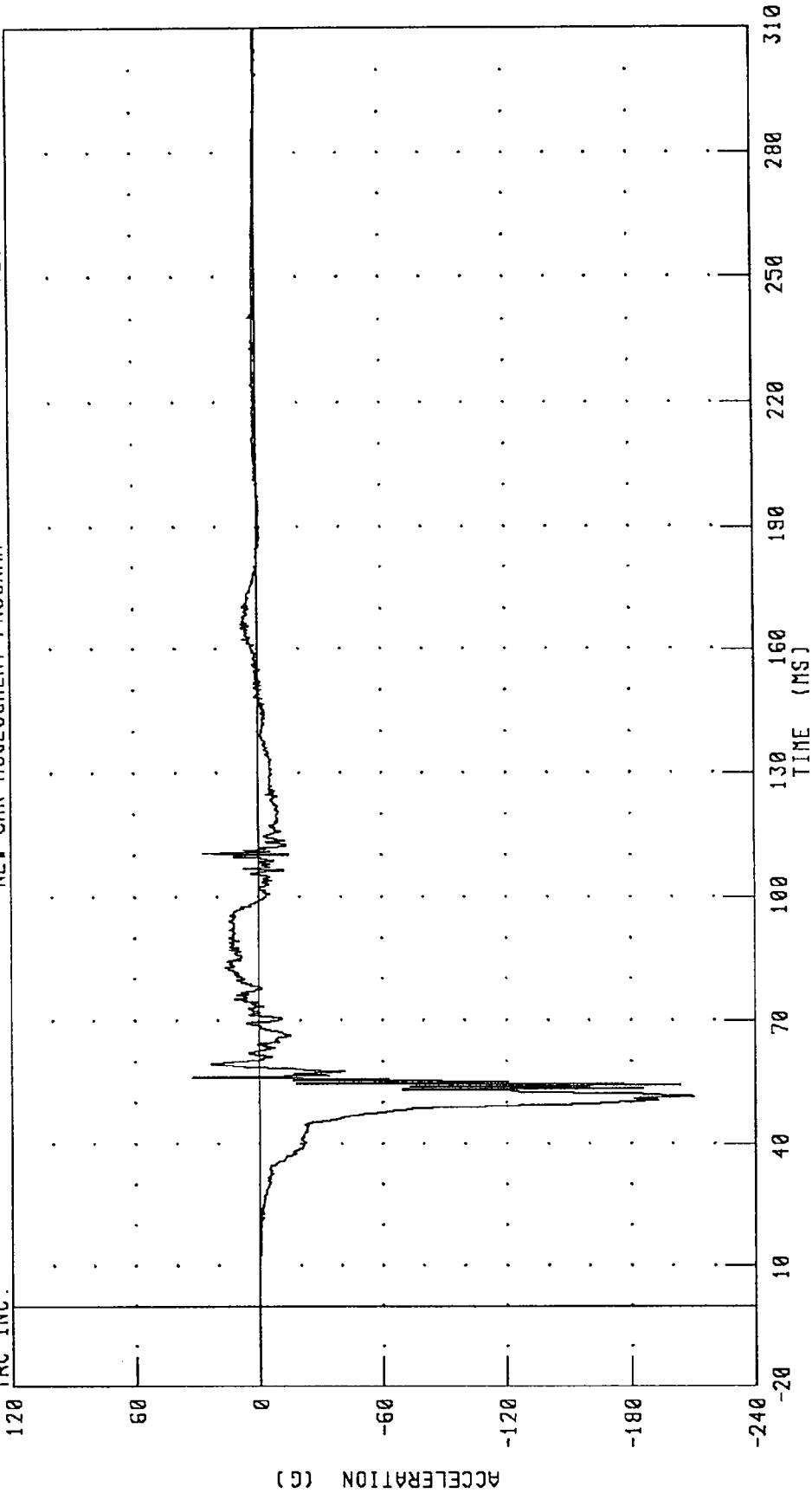
CHANNEL: ANRYM2 FILTER: CH. CLASS 600

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT X-AXIS ACCELERATION

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: FTLXG2 FILTER: CH. CLASS 1000

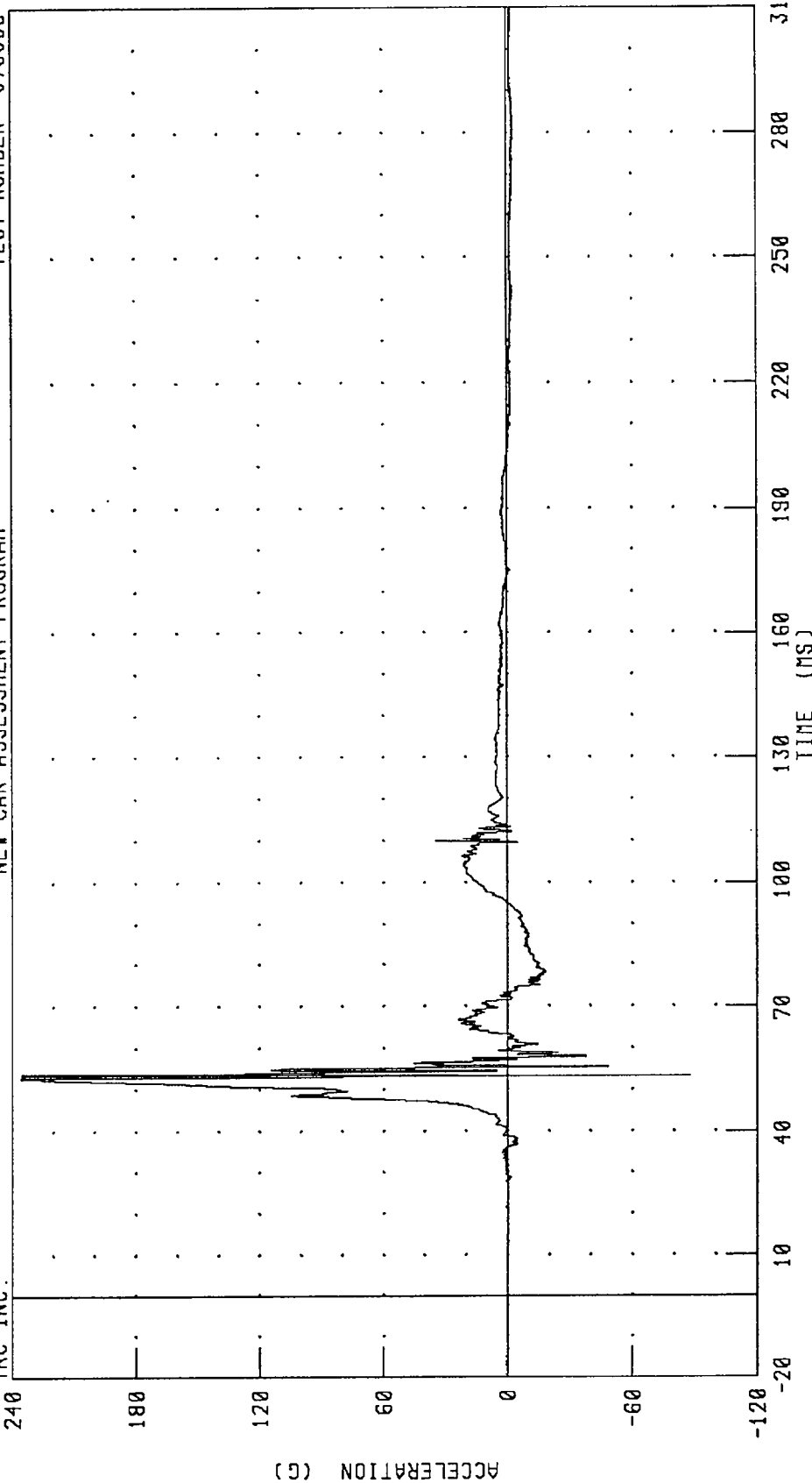
PEAK DATA: 32.62 G @ 56.08 MS; -210.25 G @ 51.44 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 235.91 G @ 52.80 MS; -87.92 G @ 53.20 MS

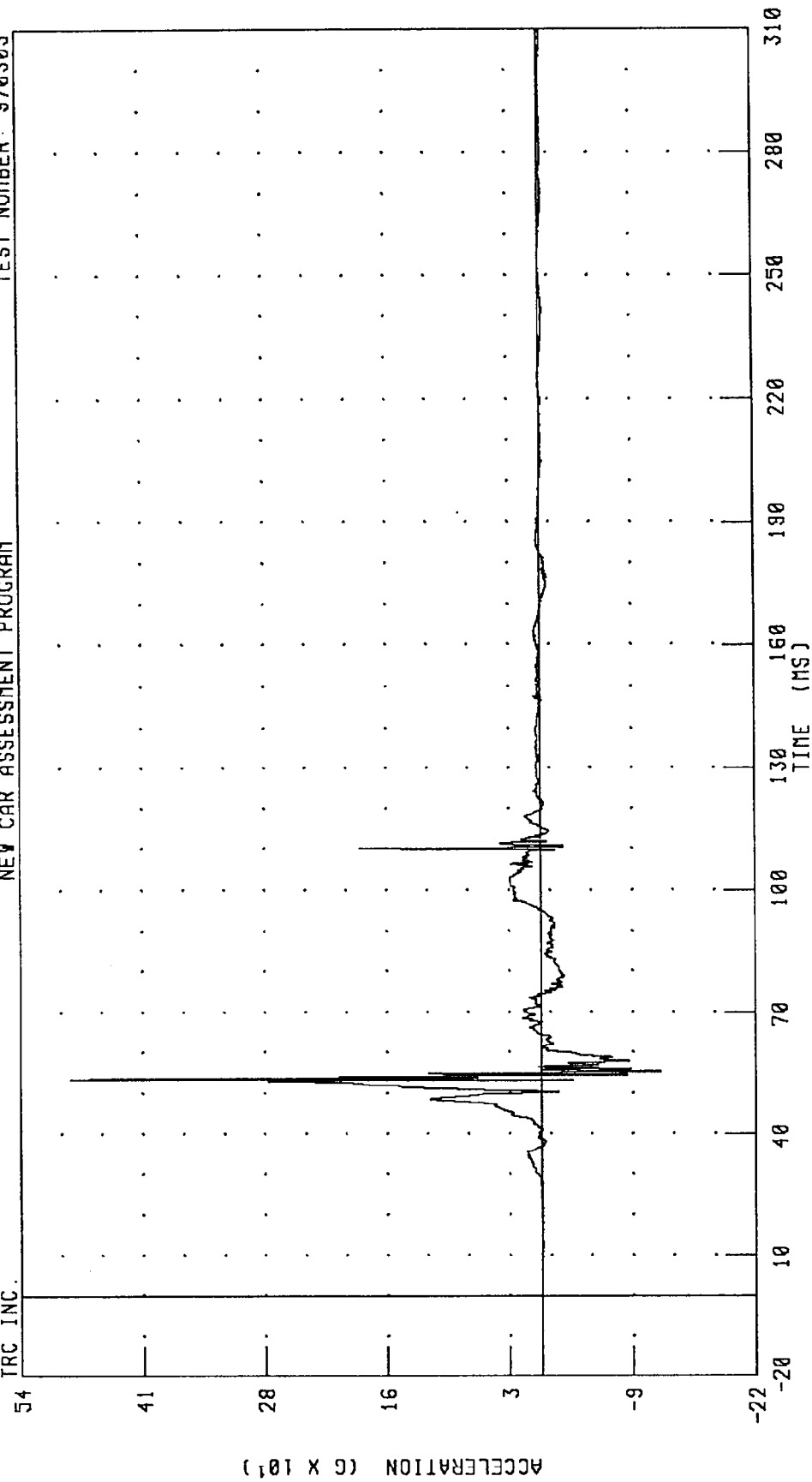
CHANNEL: FTL7H2 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 488.28 G @ 53.52 MS; -121.76 G @ 55.36 MS

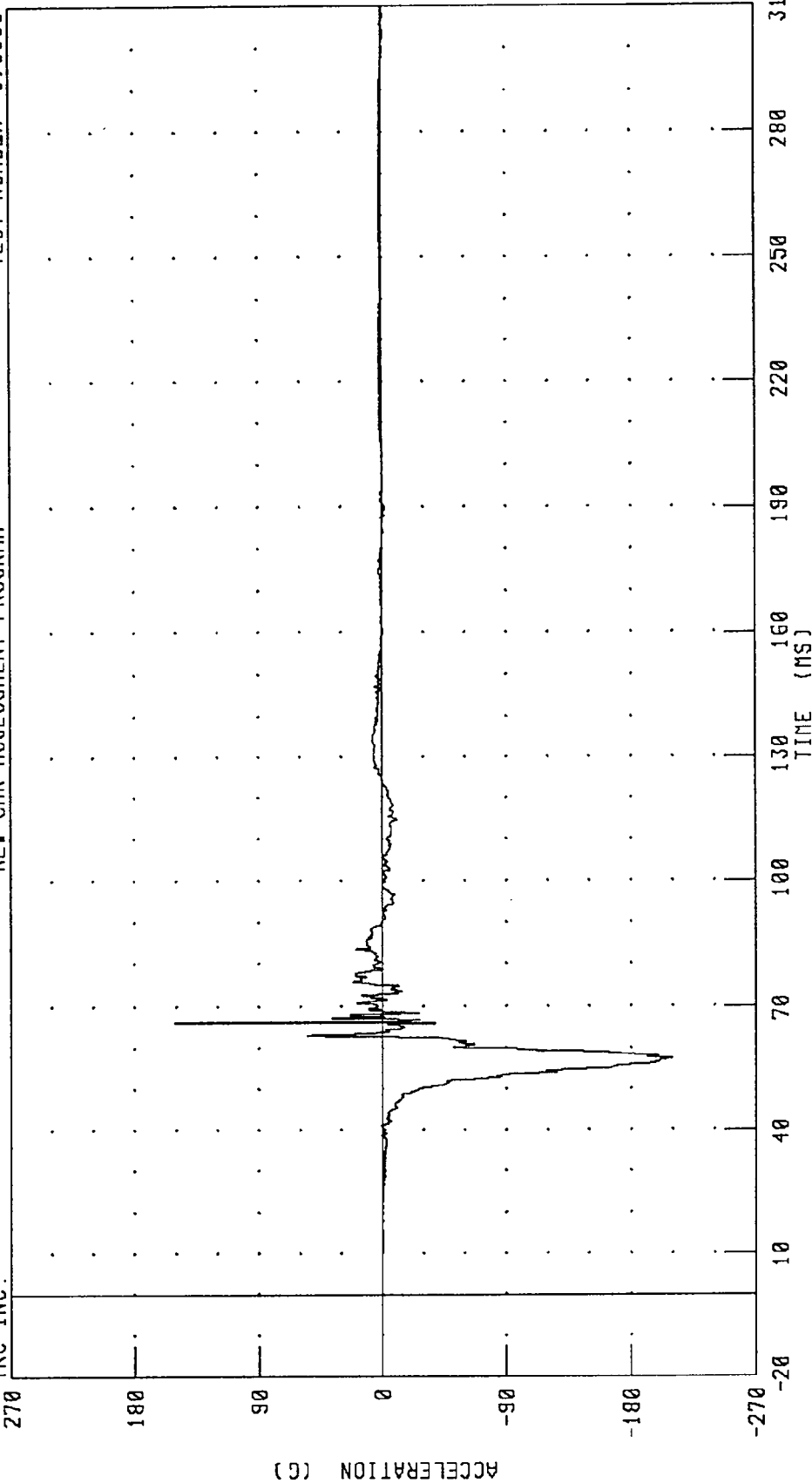
CHANNEL: FTLZT2 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT X-AXIS ACCELERATION

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: FTRXG2 FILTER: CH. CLASS 1000

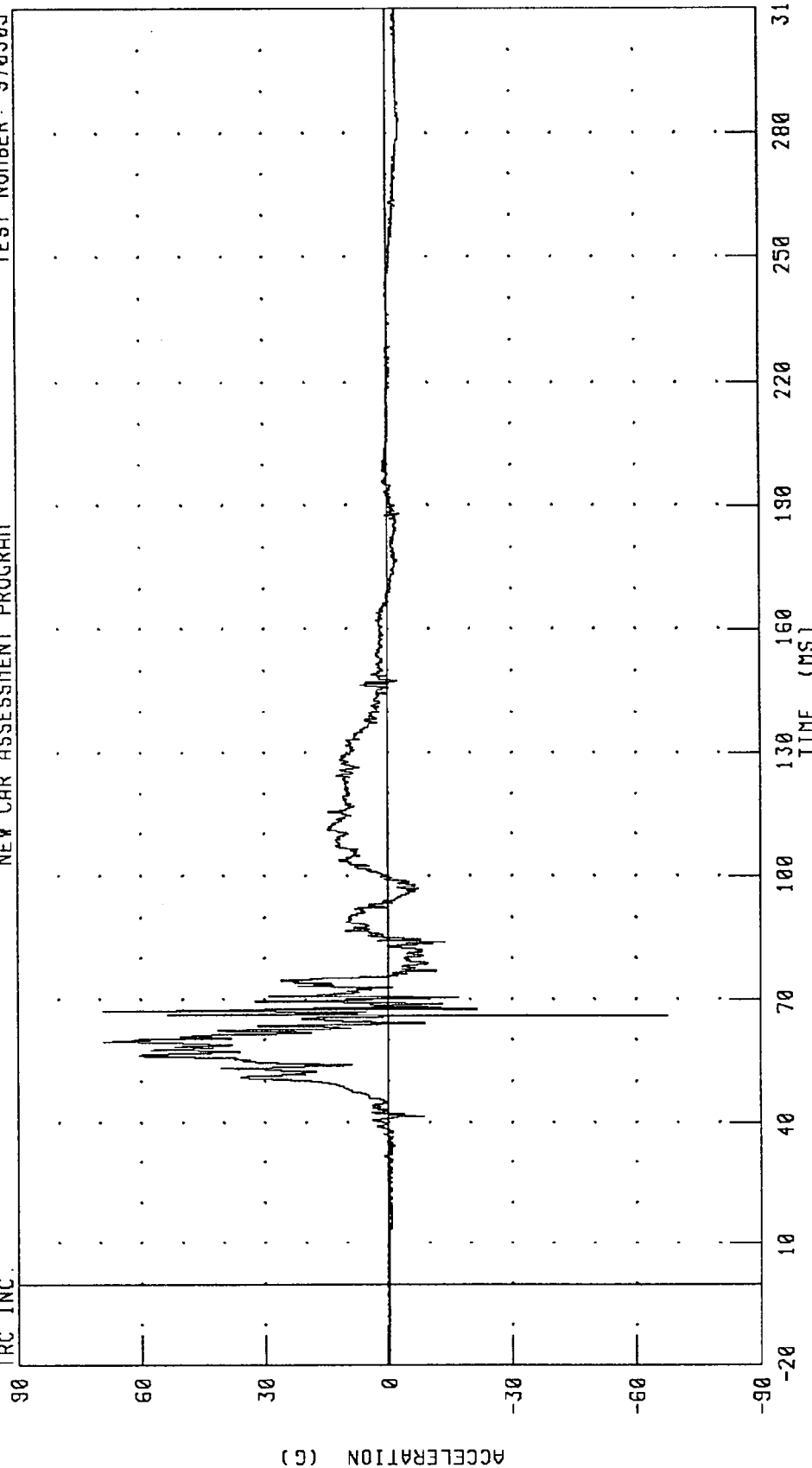
PEAK DATA: 151.17 G @ 66.32 MS; -209.60 G @ 57.28 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 69.48 G @ 67.20 MS; -67.58 G @ 66.00 MS

CHANNEL: FTRZH2 FILTER: CH. CLASS 1000

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

150

90

30

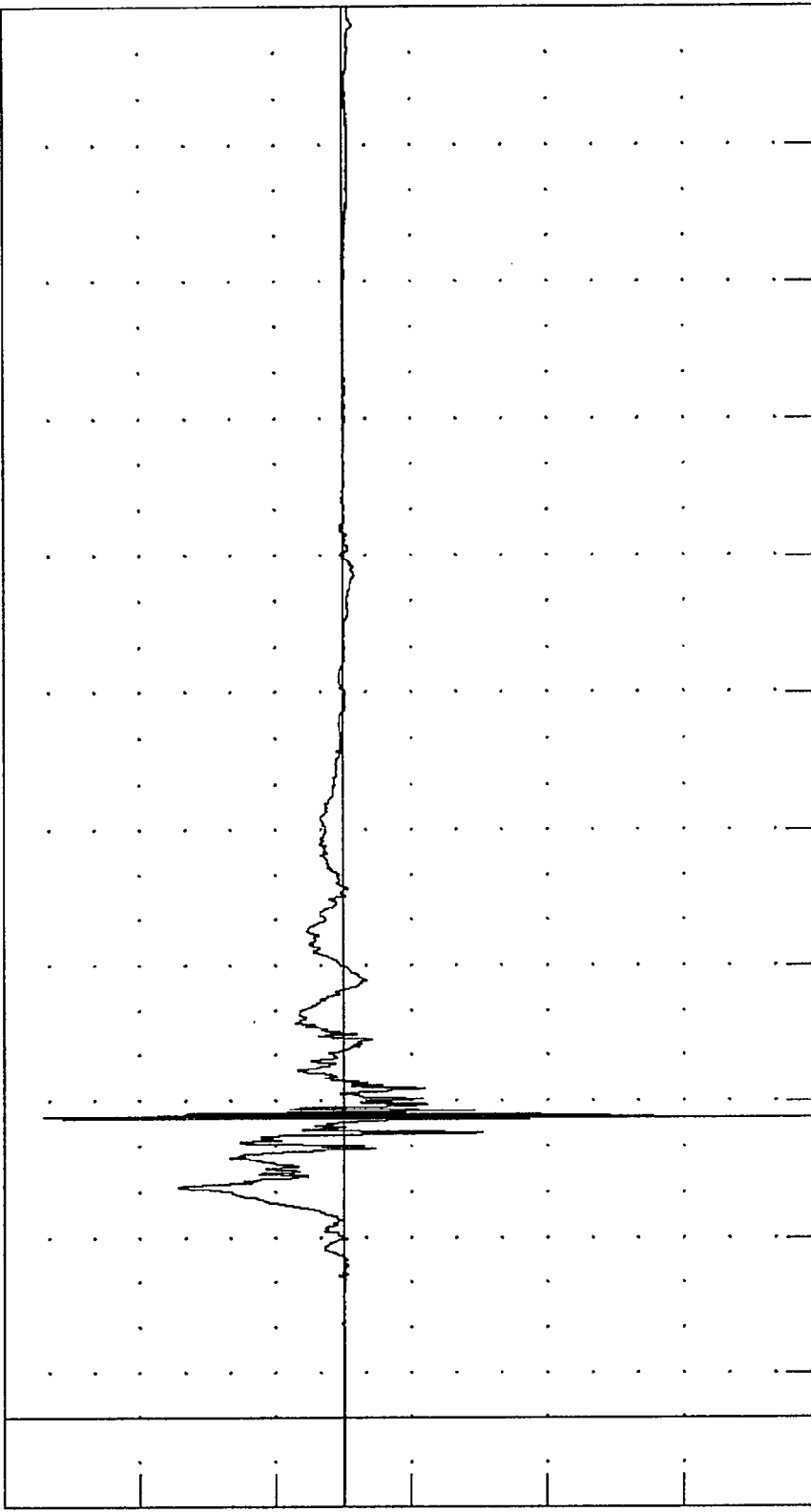
ACCELERATION (G)

-30

-90

-150

-210



310

TIME (MS)

130

160

190

220

250

280

310

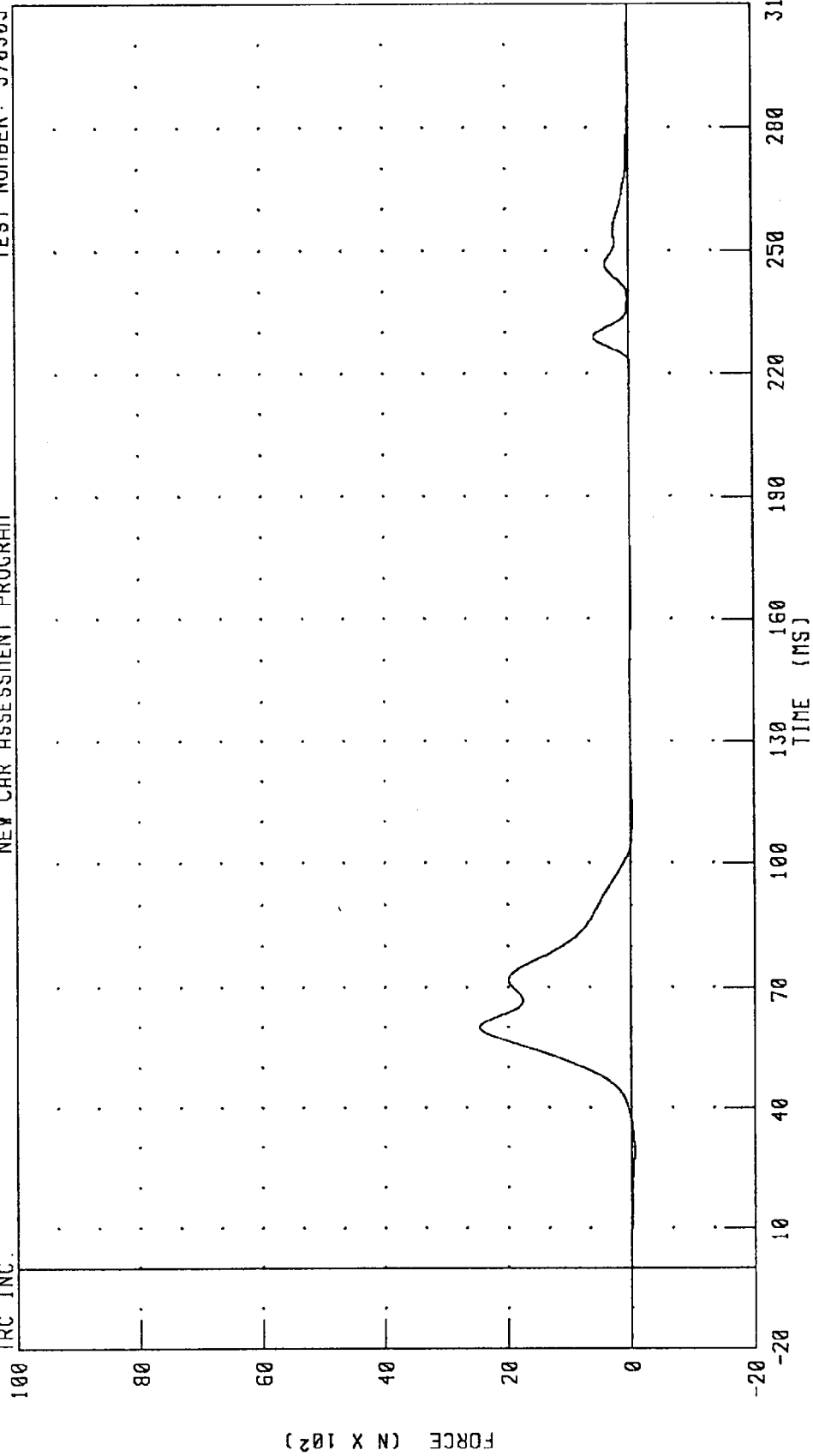
CHANNEL: FTRZ12 FILTER: CH. CLASS 1000

PEAK DATA: 132.42 G @ 66.72 MS; -206.94 G @ 66.48 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER LAP BELT OUTBOARD FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



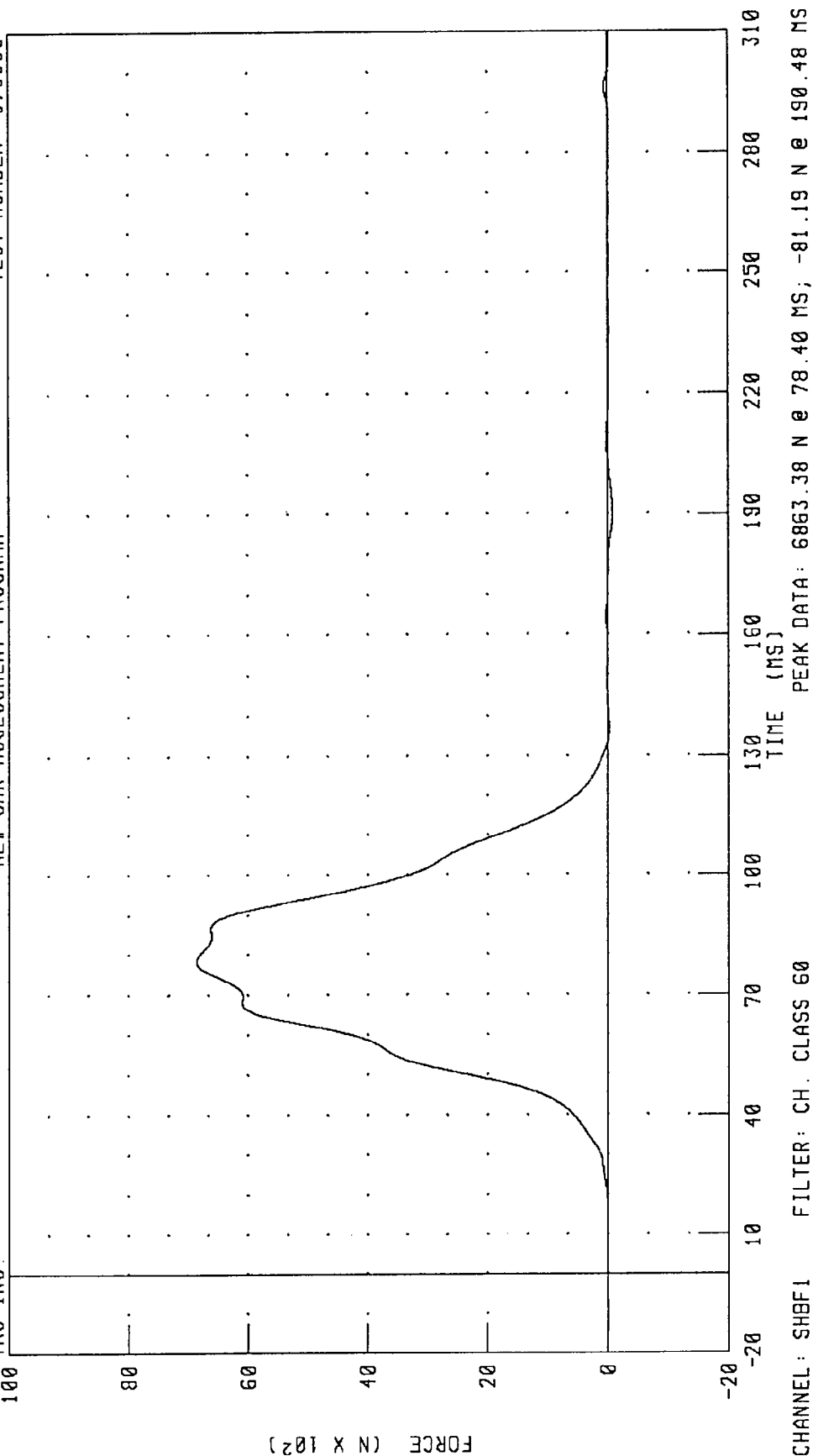
PEAK DATA: 2460.17 N @ 60.00 MS; -46.28 N @ 29.28 MS

CHANNEL: LBOFI FILTER: CH. CLASS 60

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



CHANNEL: SHBF1 FILTER: CH. CLASS 60

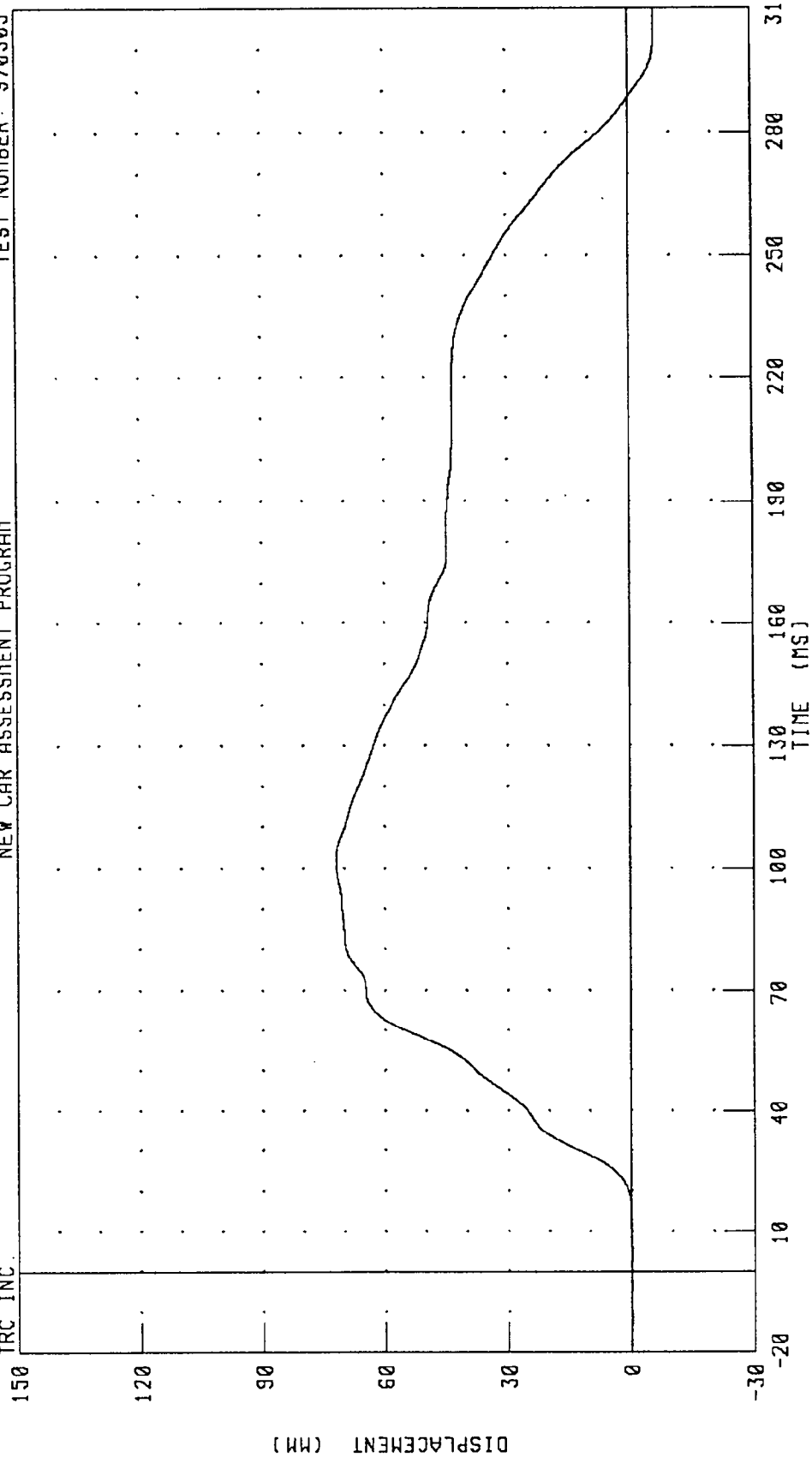
PEAK DATA: 6863.38 N @ 78.40 MS; -81.19 N @ 190.48 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
DRIVER SHOULDER BELT DISPLACEMENT

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



CHANNEL: SHBD1 FILTER: CH. CLASS 60

PEAK DATA: 71.93 MM @ 101.76 MS; -6.25 MM @ 303.84 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 DRIVER SEAT BELT EXTENSION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

90

60

30

0

-30

-60

-90

DISPLACEMENT (MM X 10⁻¹)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

PEAK DATA: 0.04 MM @ 77.68 MS; -0.80 MM @ 281.12 MS

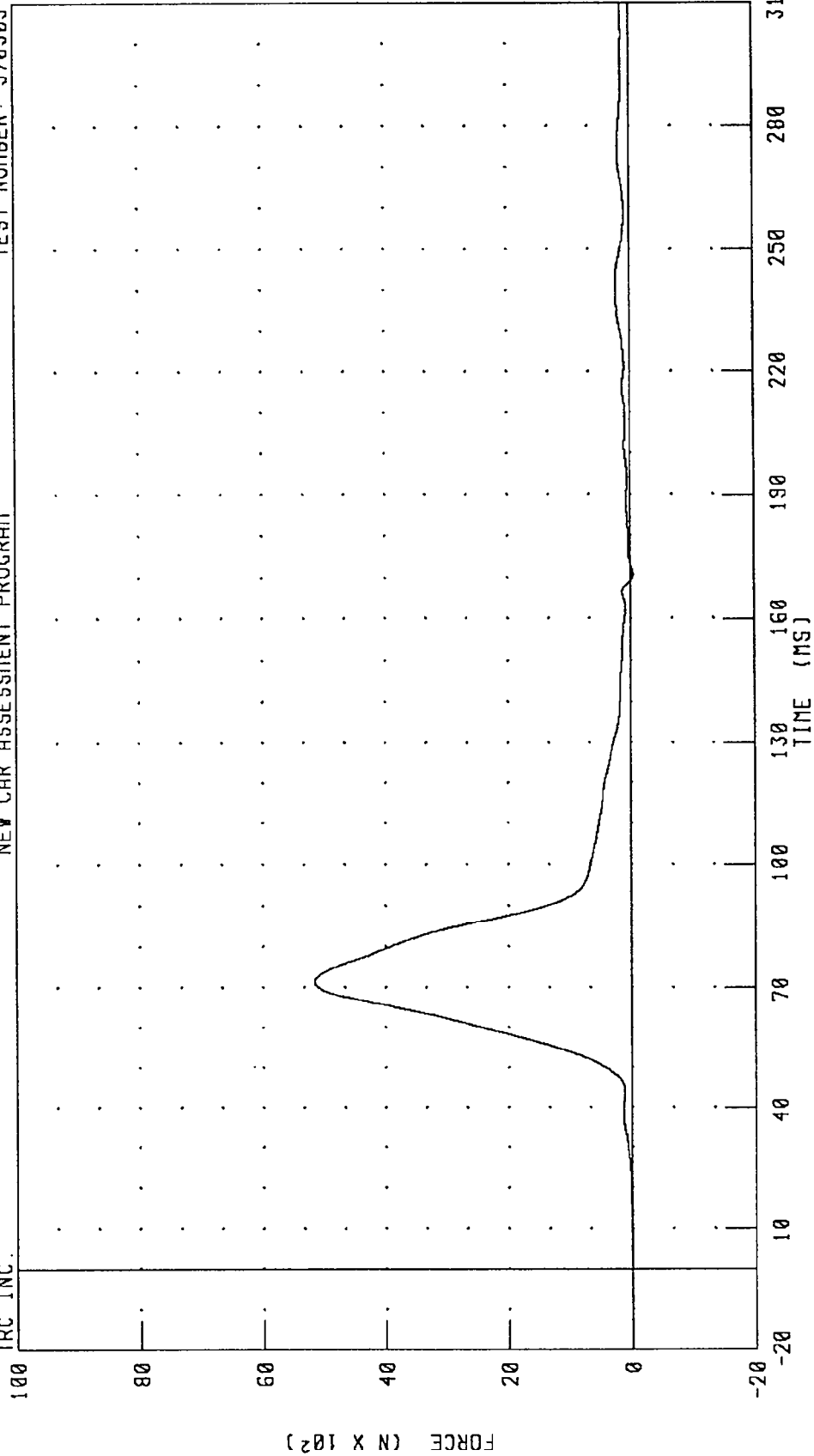
FILTER: CH. CLASS 60

CHANNEL: SBED1

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER LAP BELT OUTBOARD FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



PEAK DATA: 5157.57 N @ 71.44 MS; -39.22 N @ 170.72 MS

FILTER: CH. CLASS 60

CHANNEL: LBOF2

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

100

80

60

FORCE (N X 10²)

40

20

0

-20

-20

0

20

40

60

80

100

120

140

160

180

200

220

240

260

280

300

310

TIME (MS)

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20

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50

60

70

80

90

100

110

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140

150

160

170

180

190

200

210

220

230

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270

280

290

300

310

TIME (MS)

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310

TIME (MS)

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TIME (MS)

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310

TIME (MS)

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310

TIME (MS)

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310

TIME (MS)

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310

TIME (MS)

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300

310

TIME (MS)

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20

30

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70

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90

100

110

120

130

140

150

160

170

180

190

200

210

220

230

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT DISPLACEMENT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

150

120

90

60

30

0

-30

DISPLACEMENT (MM)

-20

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

PEAK DATA: 101.97 MM @ 106.56 MS; -0.15 MM @ 16.32 MS

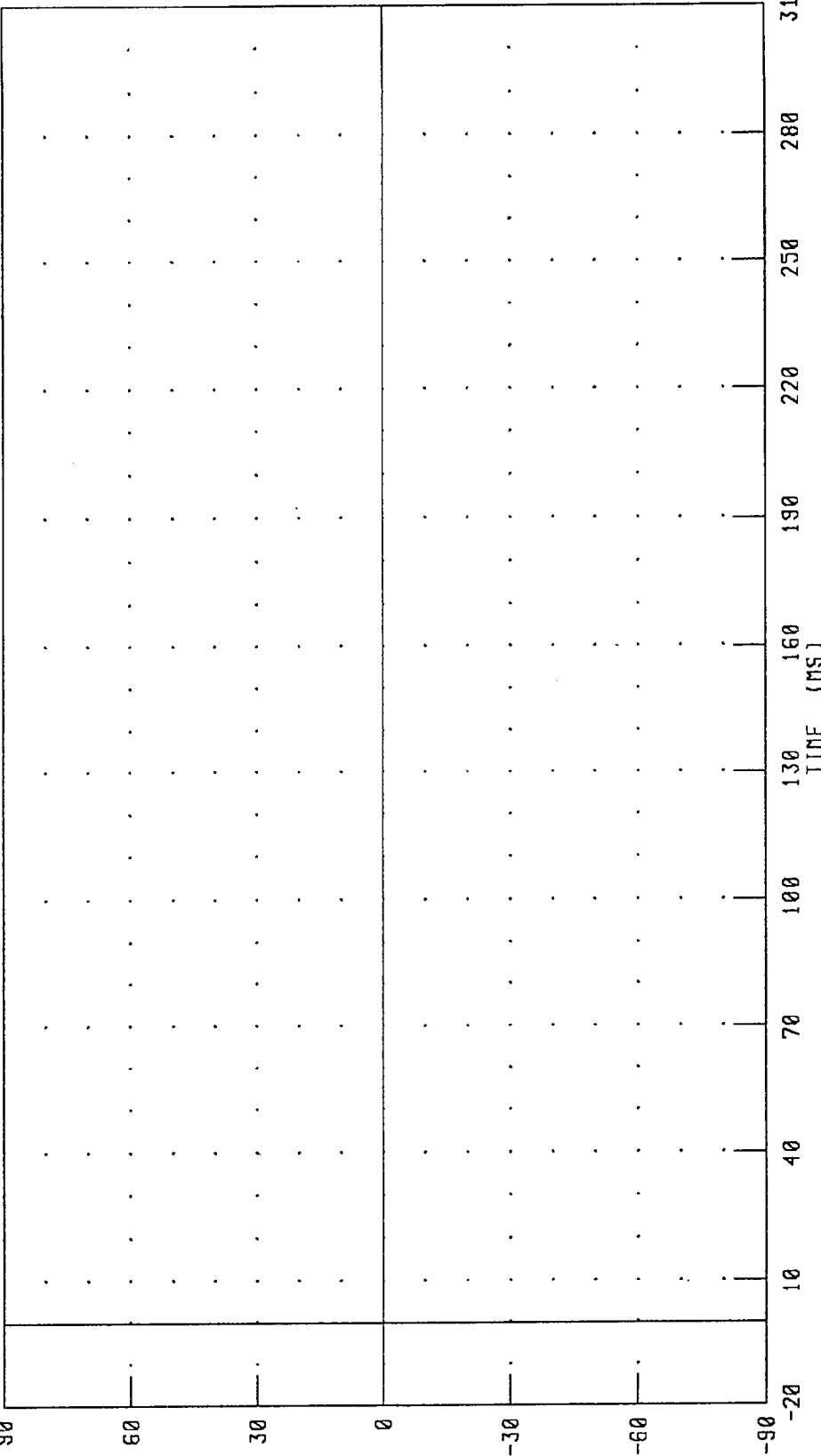
CHANNEL: SH002 FILTER: CH. CLASS 60

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
PASSENGER SEAT BELT EXTENSION

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: SBED2 FILTER: CH. CLASS 60

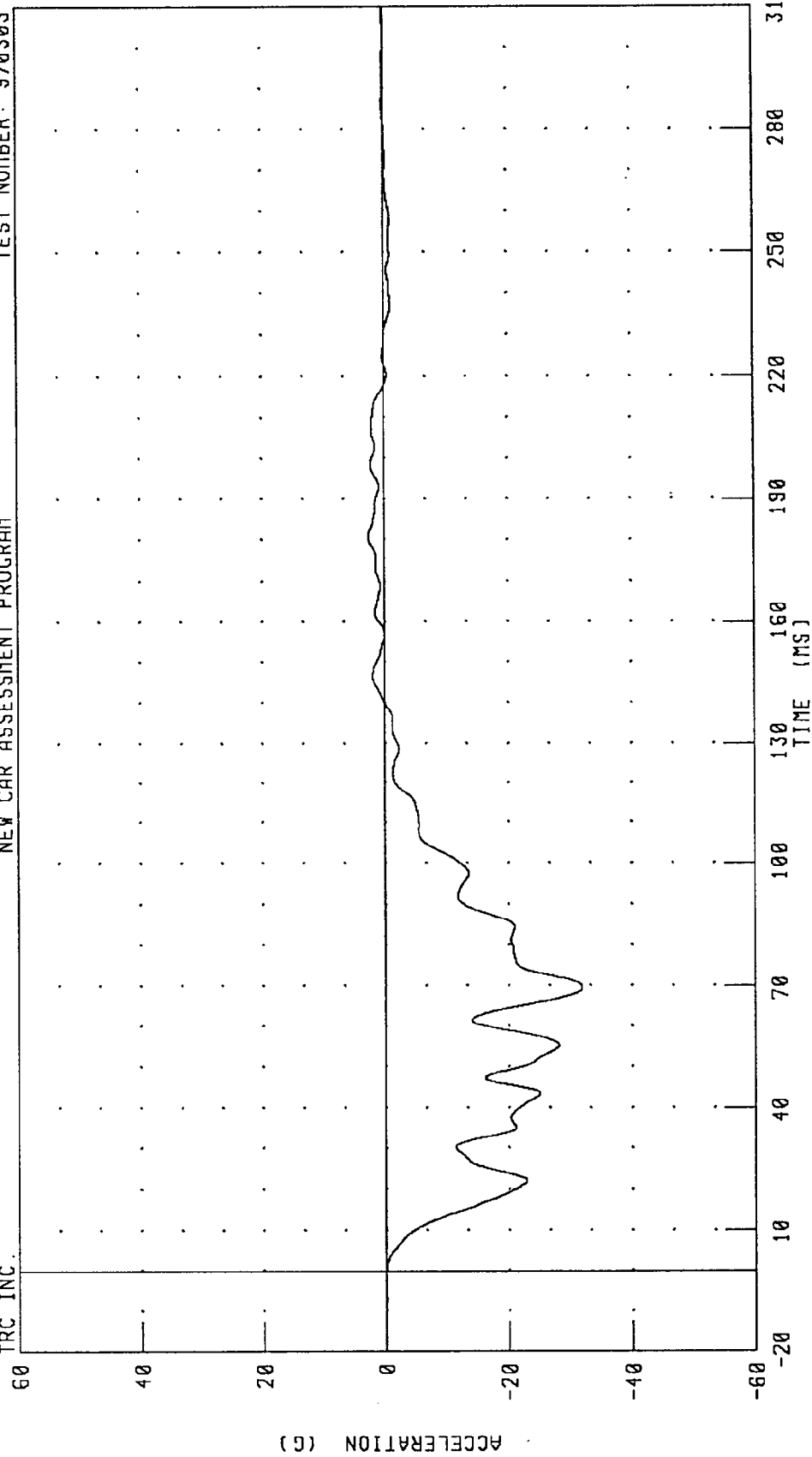
PEAK DATA: 0.00 MM @ 59.04 MS; 0.00 MM @ 63.76 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



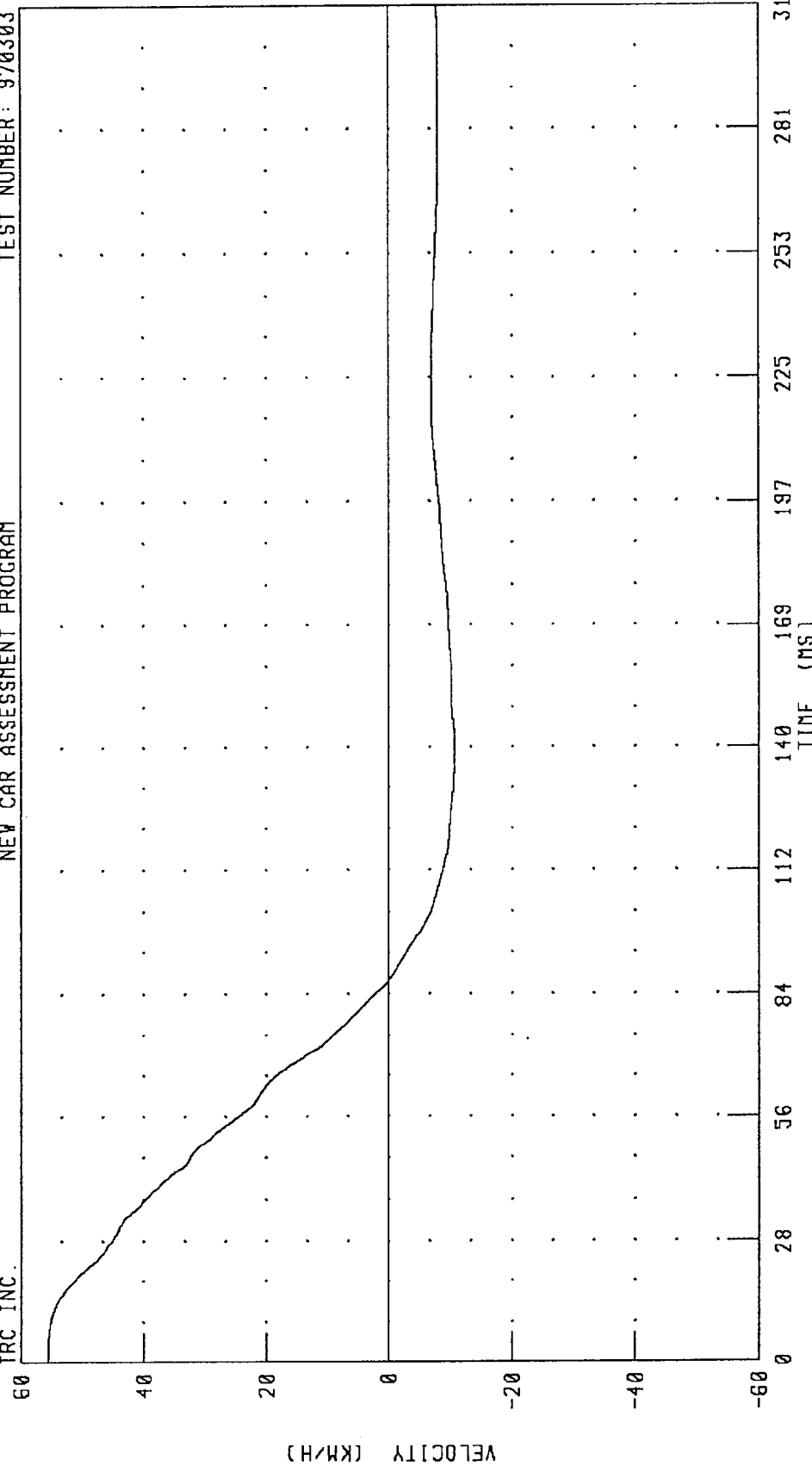
CHANNEL: TLRXG1 FILTER: CH. CLASS 60

PEAK DATA: 2.62 G @ 180.80 MS; -31.88 G @ 69.60 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS VELOCITY
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



CHANNEL: TLRXV1 FILTER: CH. CLASS 180

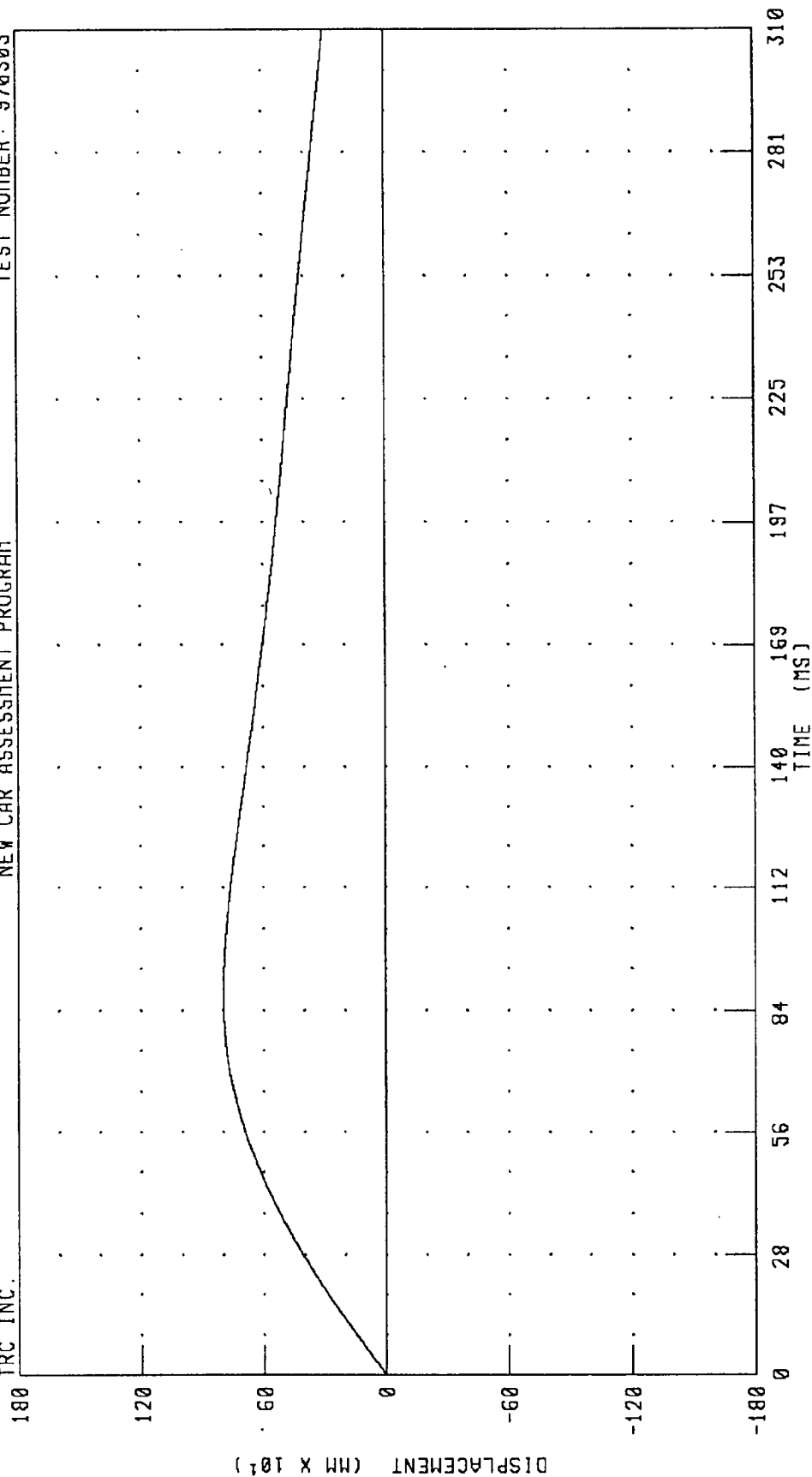
PEAK DATA: 55.60 KM/H @ 0.00 MS, -10.74 KM/H @ 139.36 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS DISPLACEMENT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

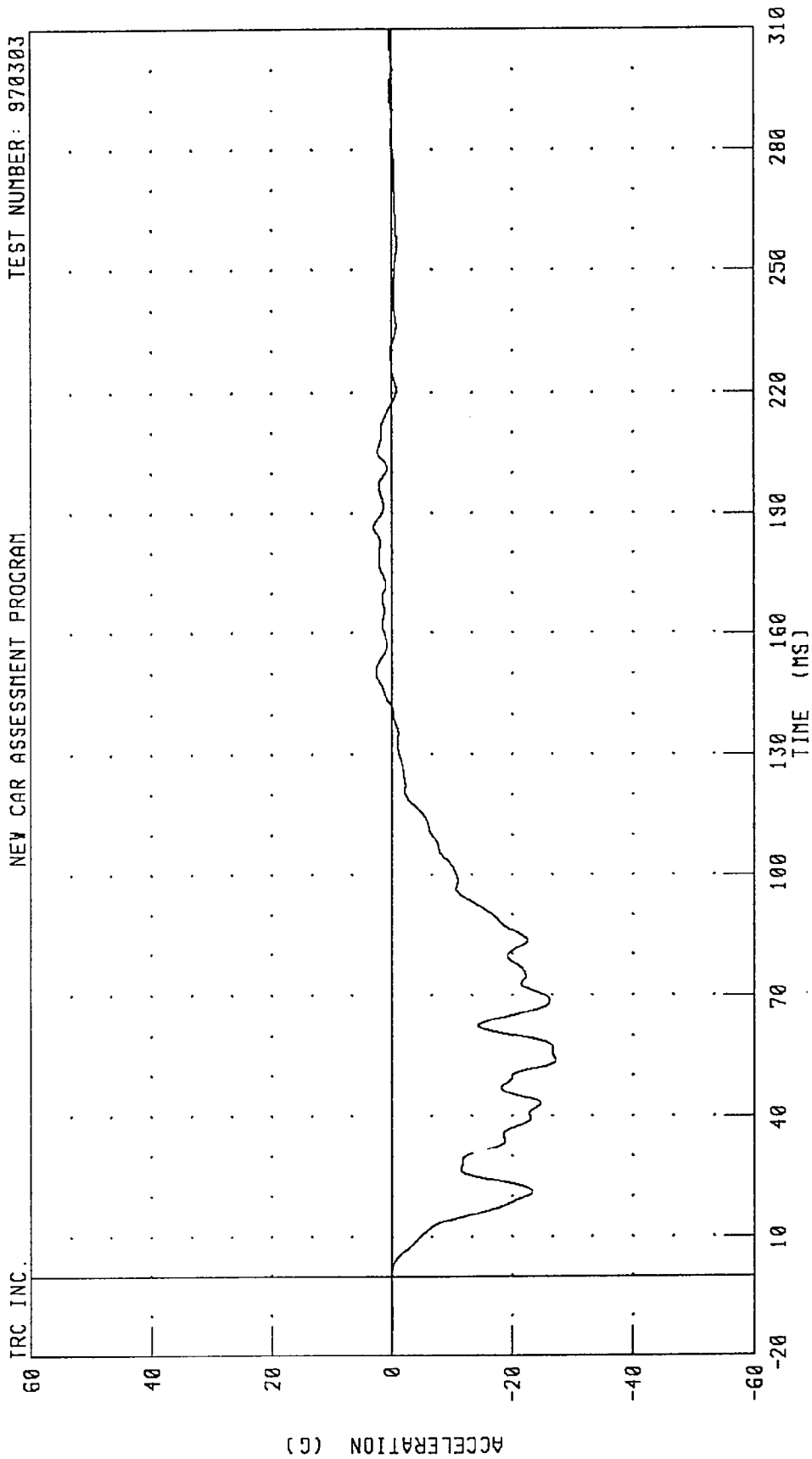


PEAK DATA: 798.40 MM @ 87.68 MS; 0.00 MM @ 0.00 MS

CHANNEL: TLRX01 FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

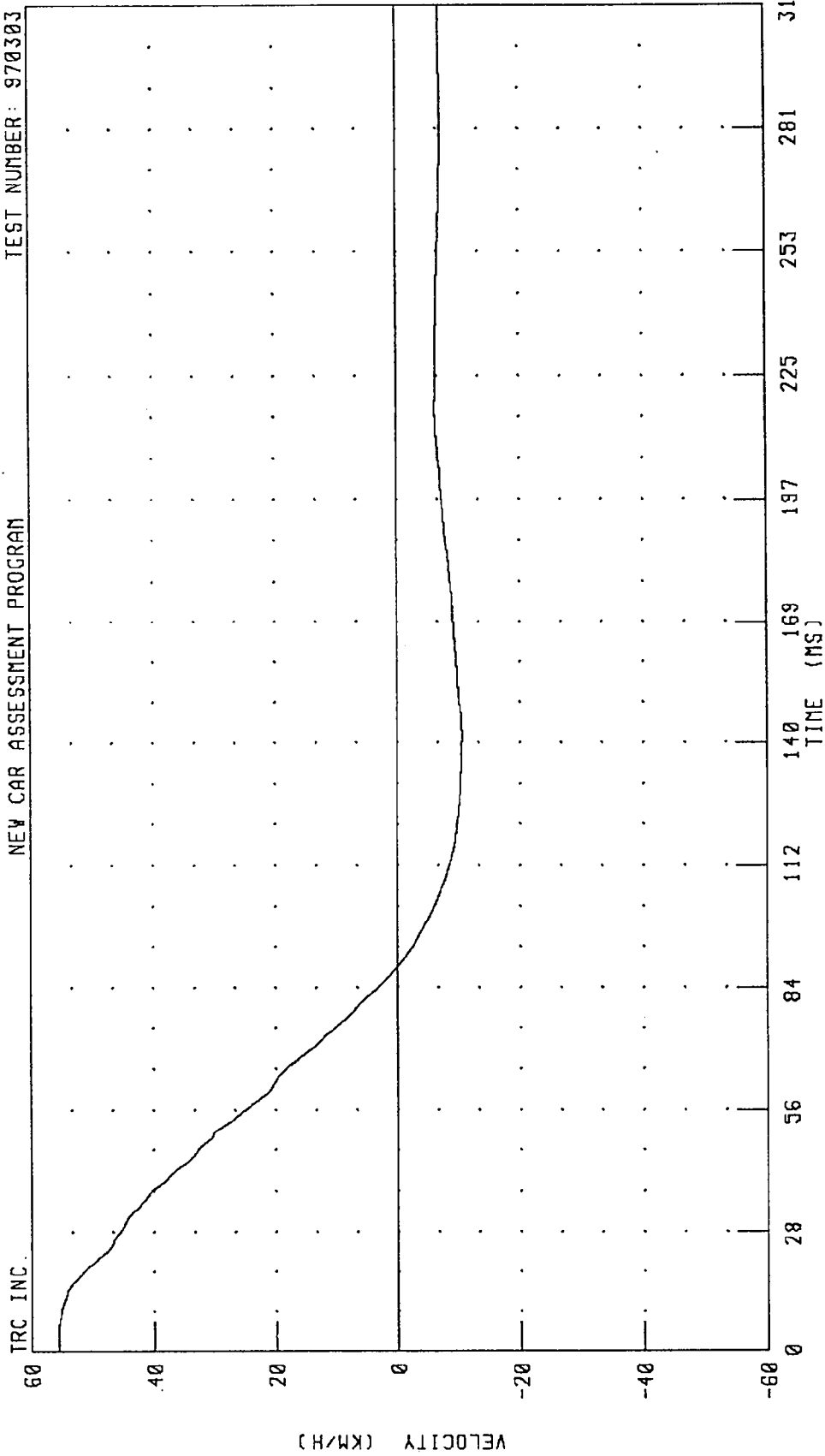


CHANNEL: TRRXG1 FILTER: CH. CLASS 60

PEAK DATA: 3.03 G @ 186.48 MS; -27.33 G @ 53.68 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS VELOCITY
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



PEAK DATA: 55.60 KM/H @ 0.88 MS; -10.61 KM/H @ 142.56 MS

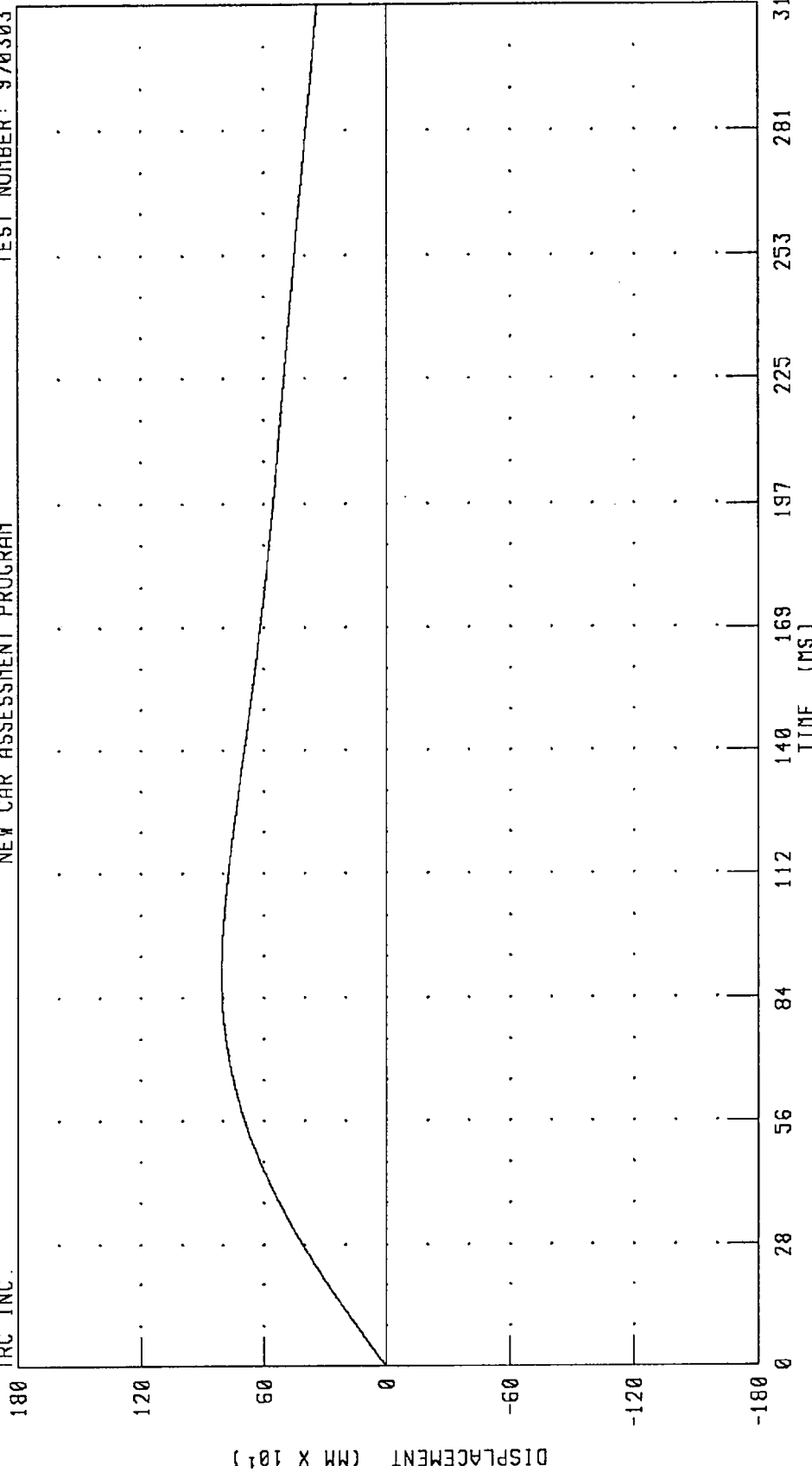
CHANNEL: TRRXVI FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS DISPLACEMENT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

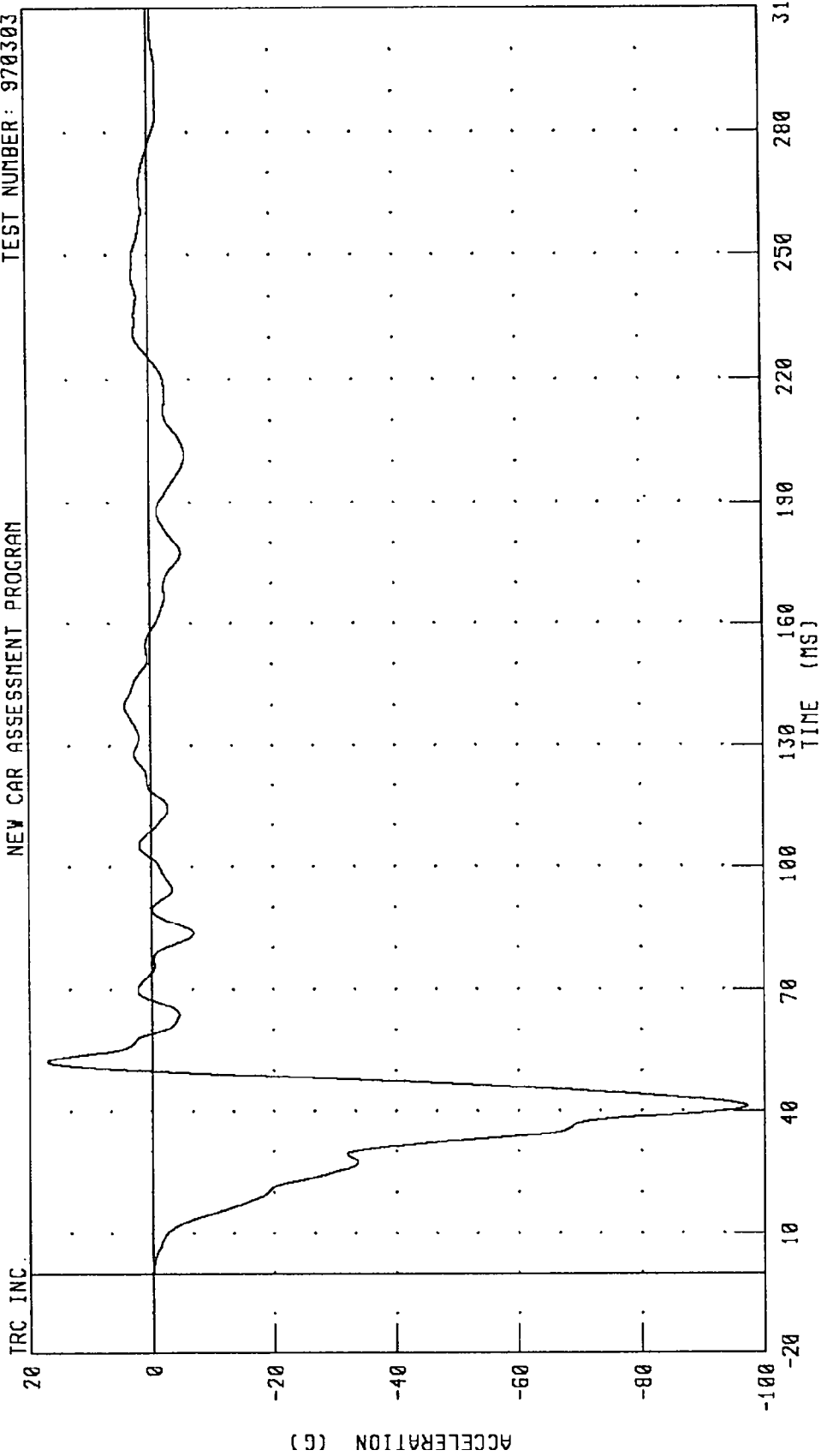


PEAK DATA: 806.67 MM @ 89.52 MS; 0.00 MM @ 0.00 MS

CHANNEL: TRRX01 FILTER: CH. CLASS 180

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
ENGINE TOP X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



CHANNEL: ENGXG1 FILTER: CH. CLASS 60

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
ENGINE BOTTOM X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

40

20

0

-20

-40

-60

-80

ACCELERATION (G)

TIME (MS)

100

70

40

10

-20

-40

-60

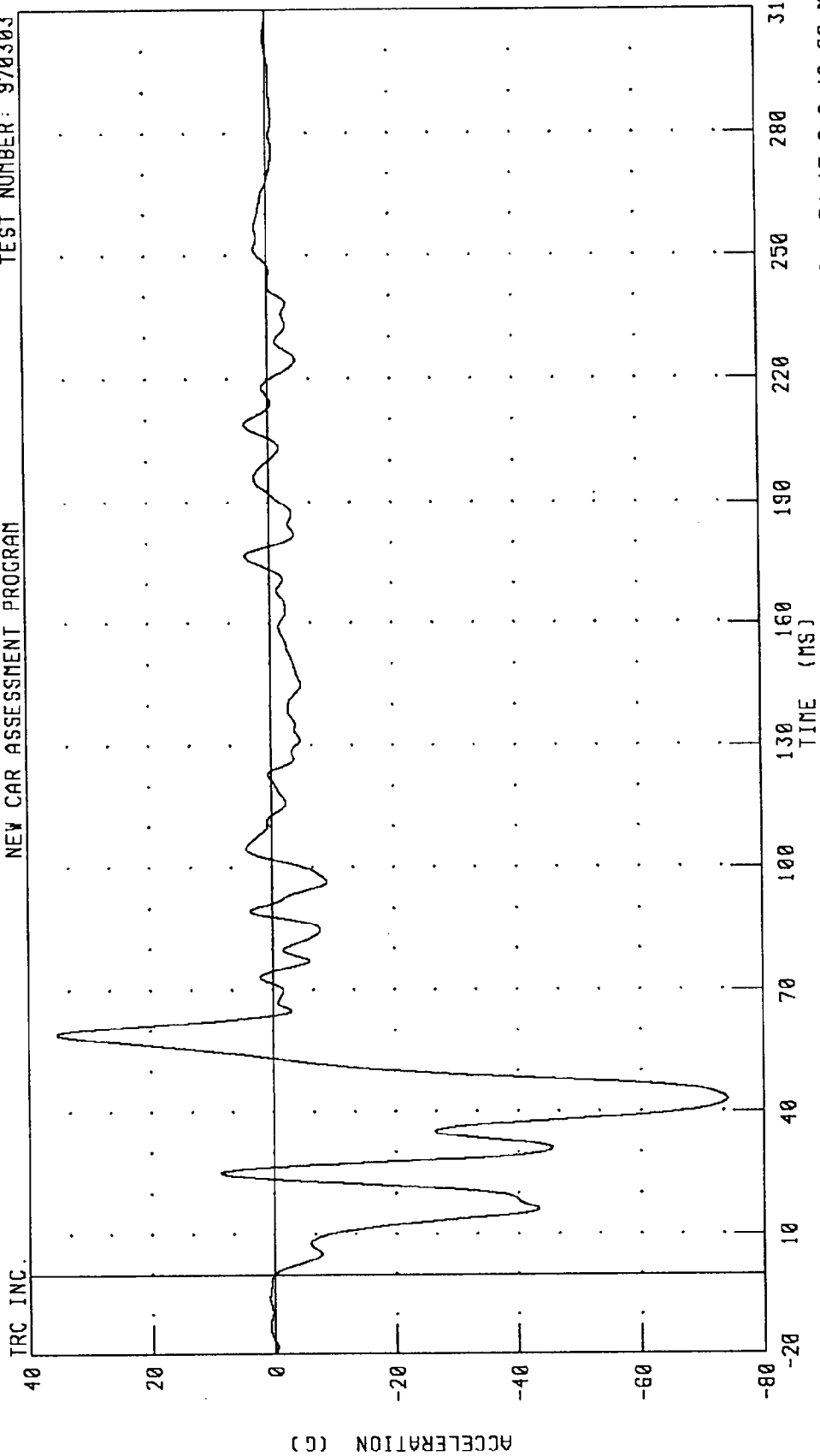
-80

PEAK DATA: 11.17 G @ 59.68 MS; -78.21 G @ 39.36 MS

CHANNEL: ENGXC2 FILTER: CH. CLASS 60

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
RIGHT BRAKE CALIPER X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

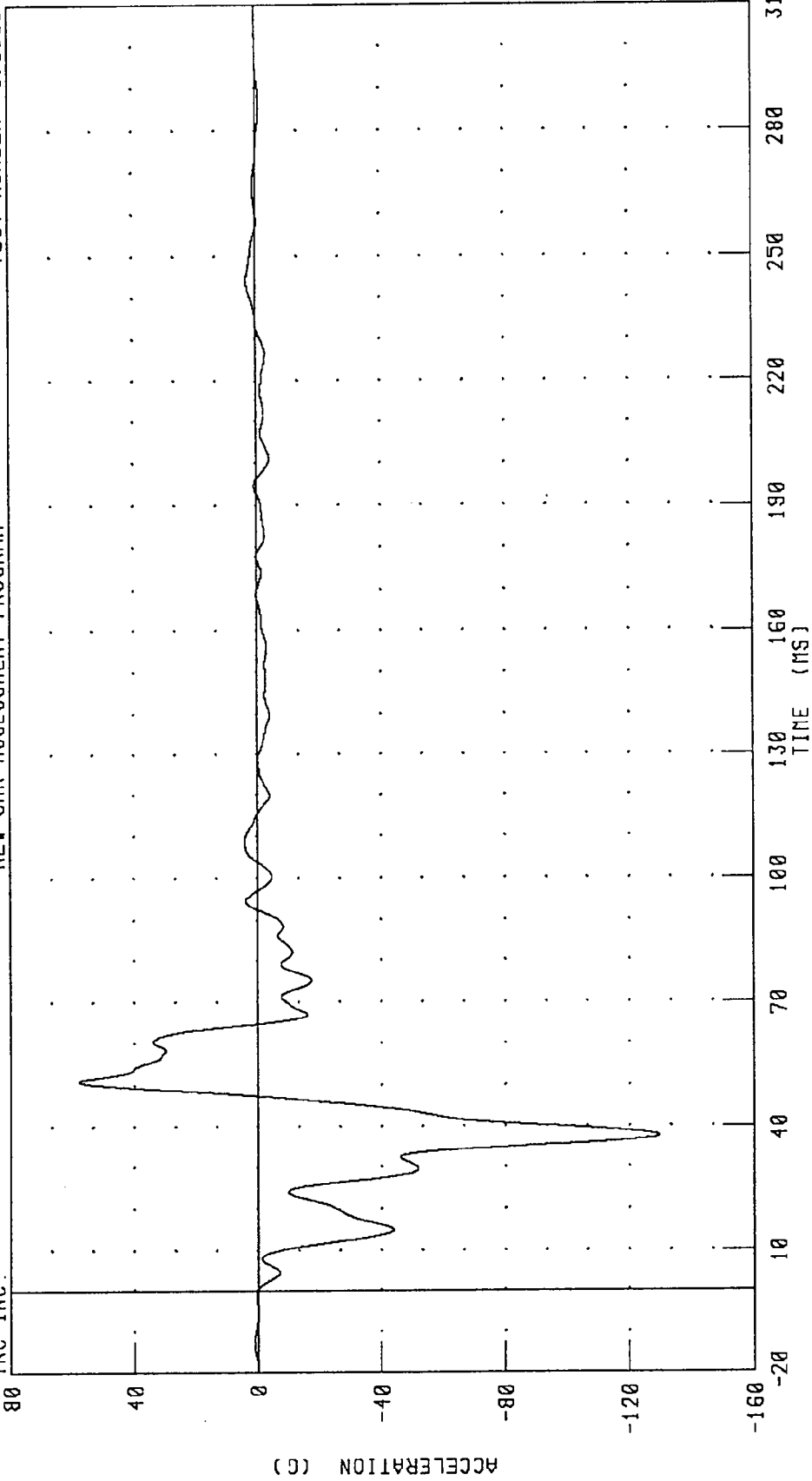


CHANNEL: BCRXG1 FILTER: CH. CLASS 60

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.

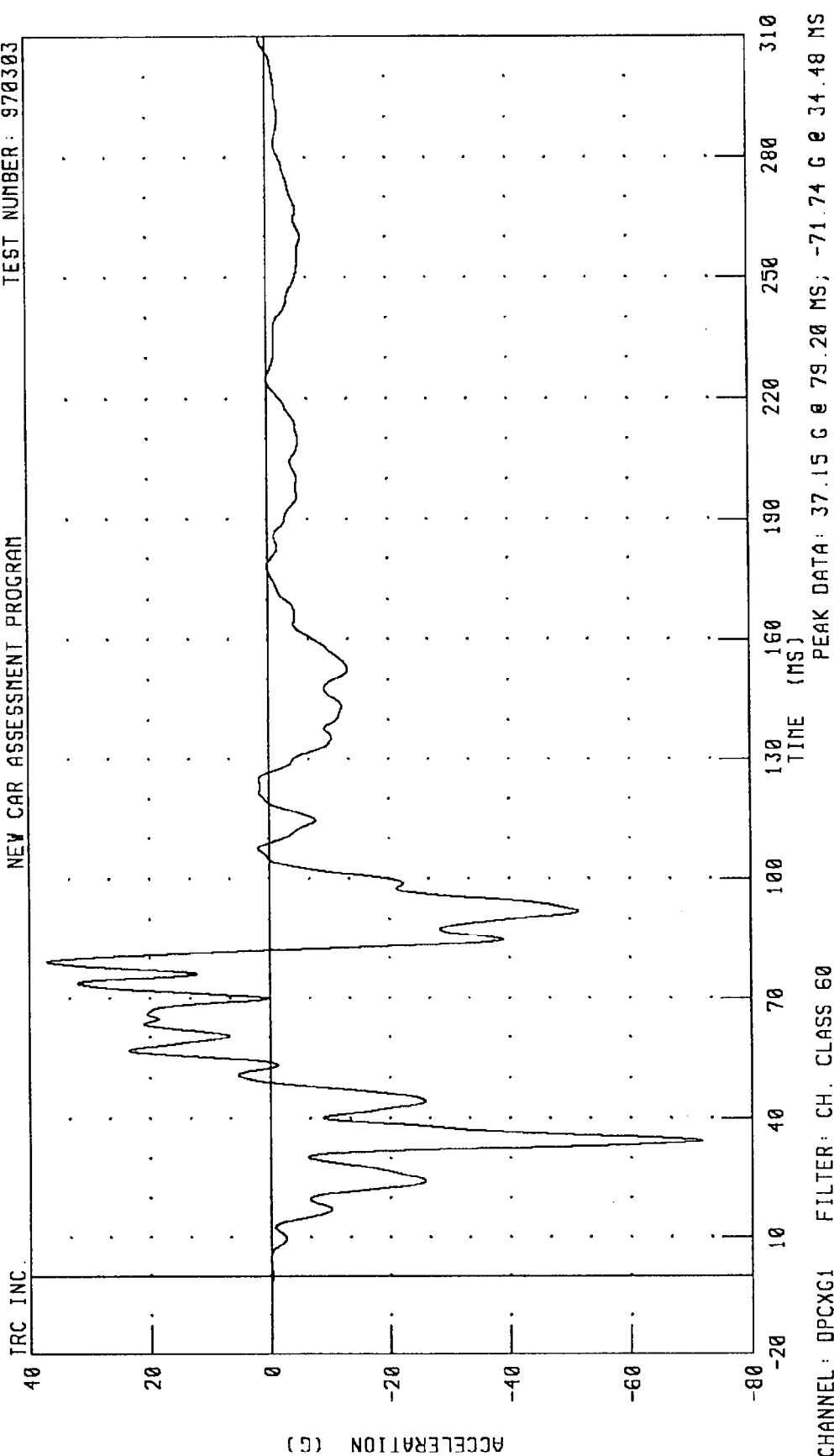


CHANNEL: BCLXG1 FILTER: CH. CLASS 60

PEAK DATA: 57.76 G @ 50.96 MS; -129.56 G @ 37.76 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

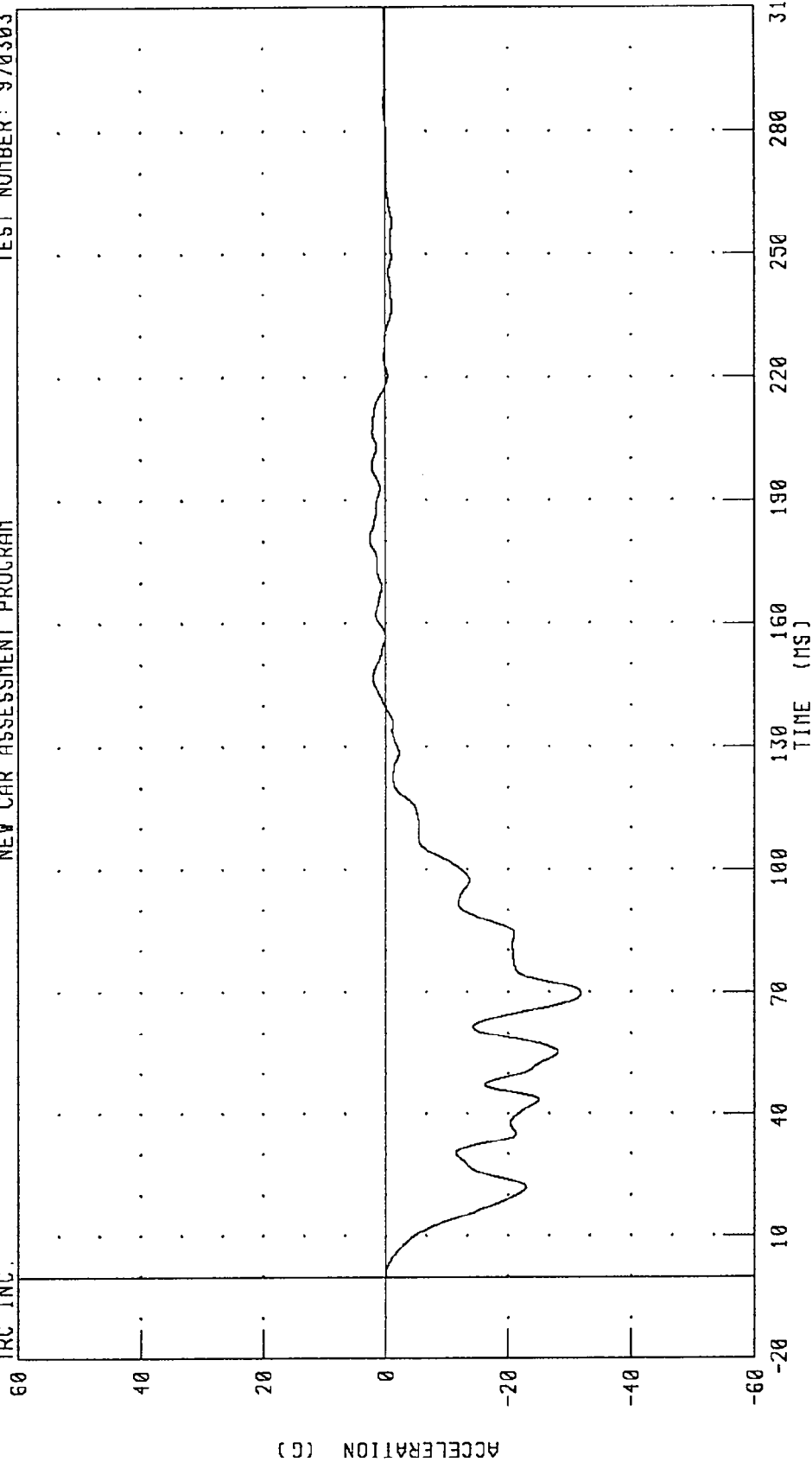


1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

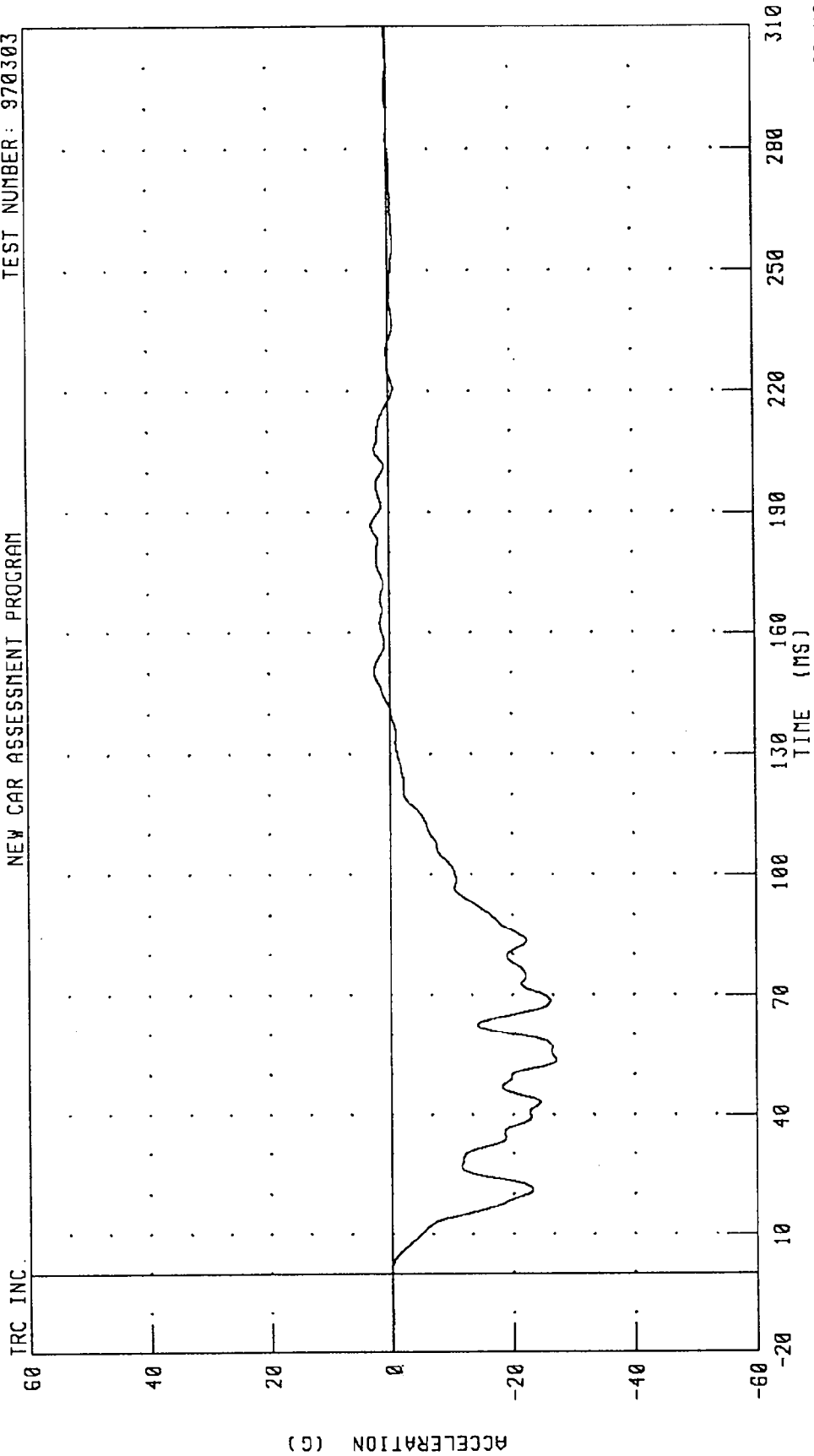


CHANNEL: TLXGA FILTER: CH. CLASS 60

970303

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT REDUNDANT X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



CHANNEL: TRRXGA FILTER: CH. CLASS 60

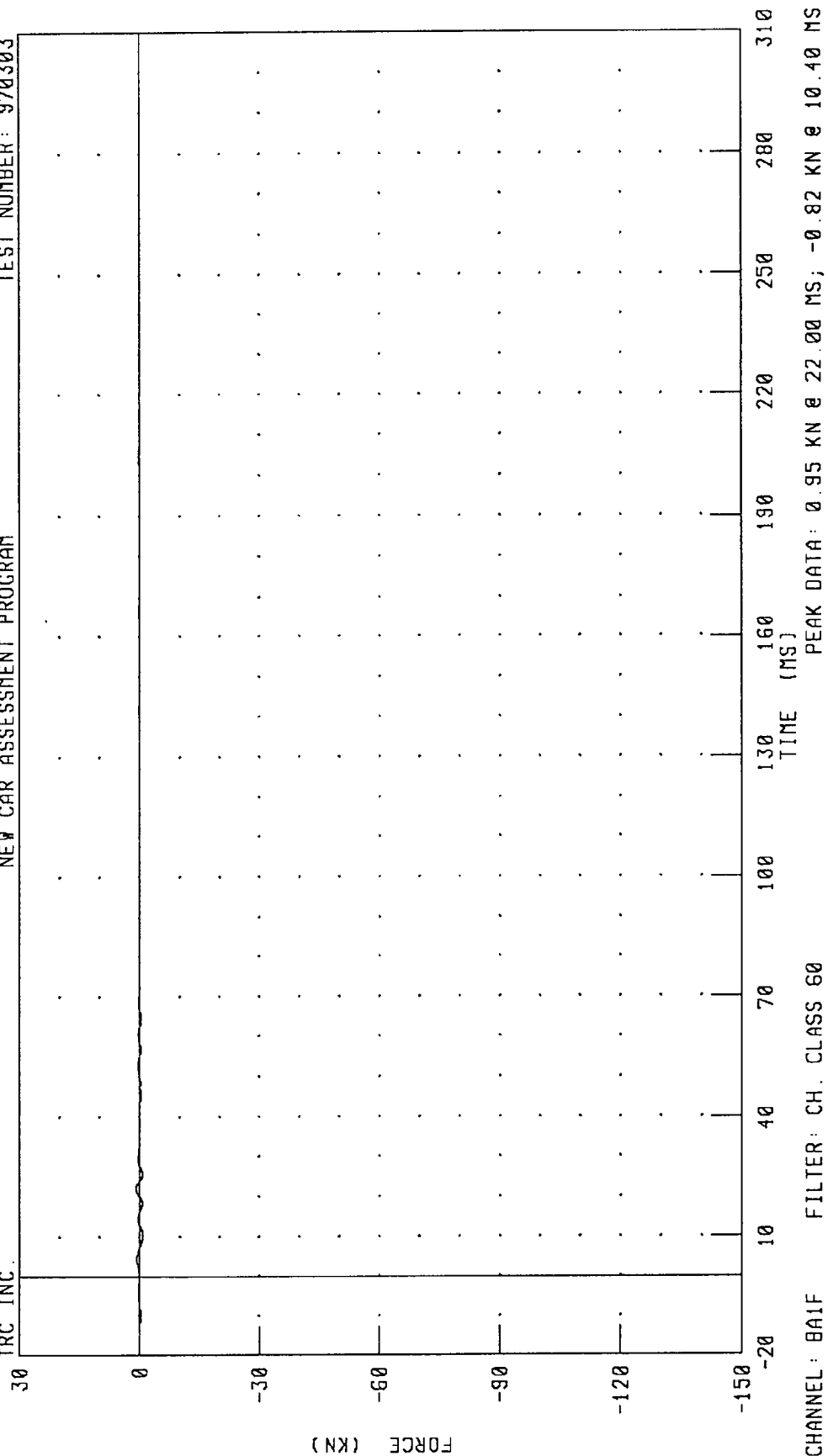
PEAK DATA: 3.01 G @ 186.56 MS; -27.13 G @ 53.60 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A1 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



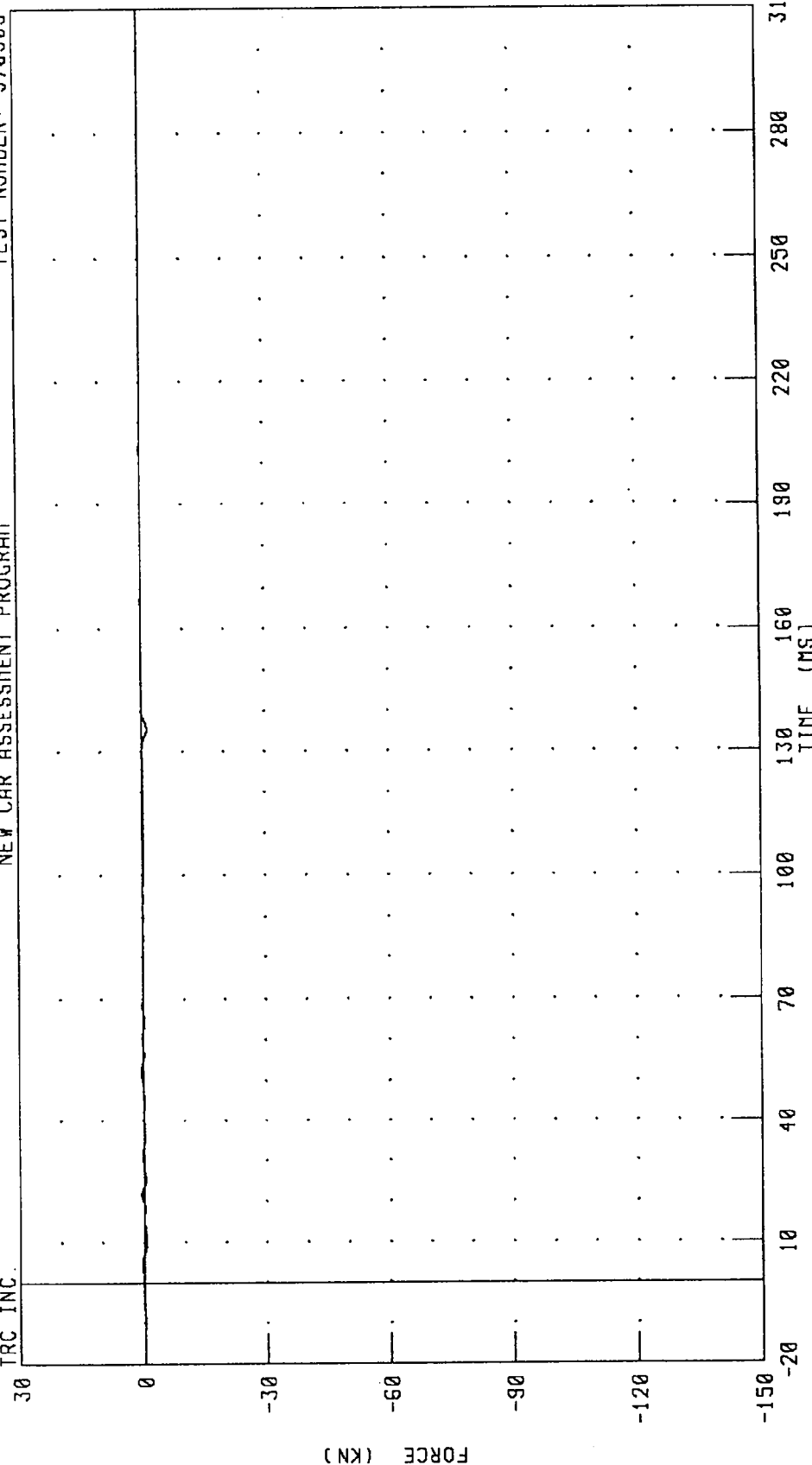
CHANNEL: BA1F FILTER: CH. CLASS 60

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A2 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.61 KN @ 21.76 MS; -1.27 KN @ 135.44 MS

FILTER: CH. CLASS 60

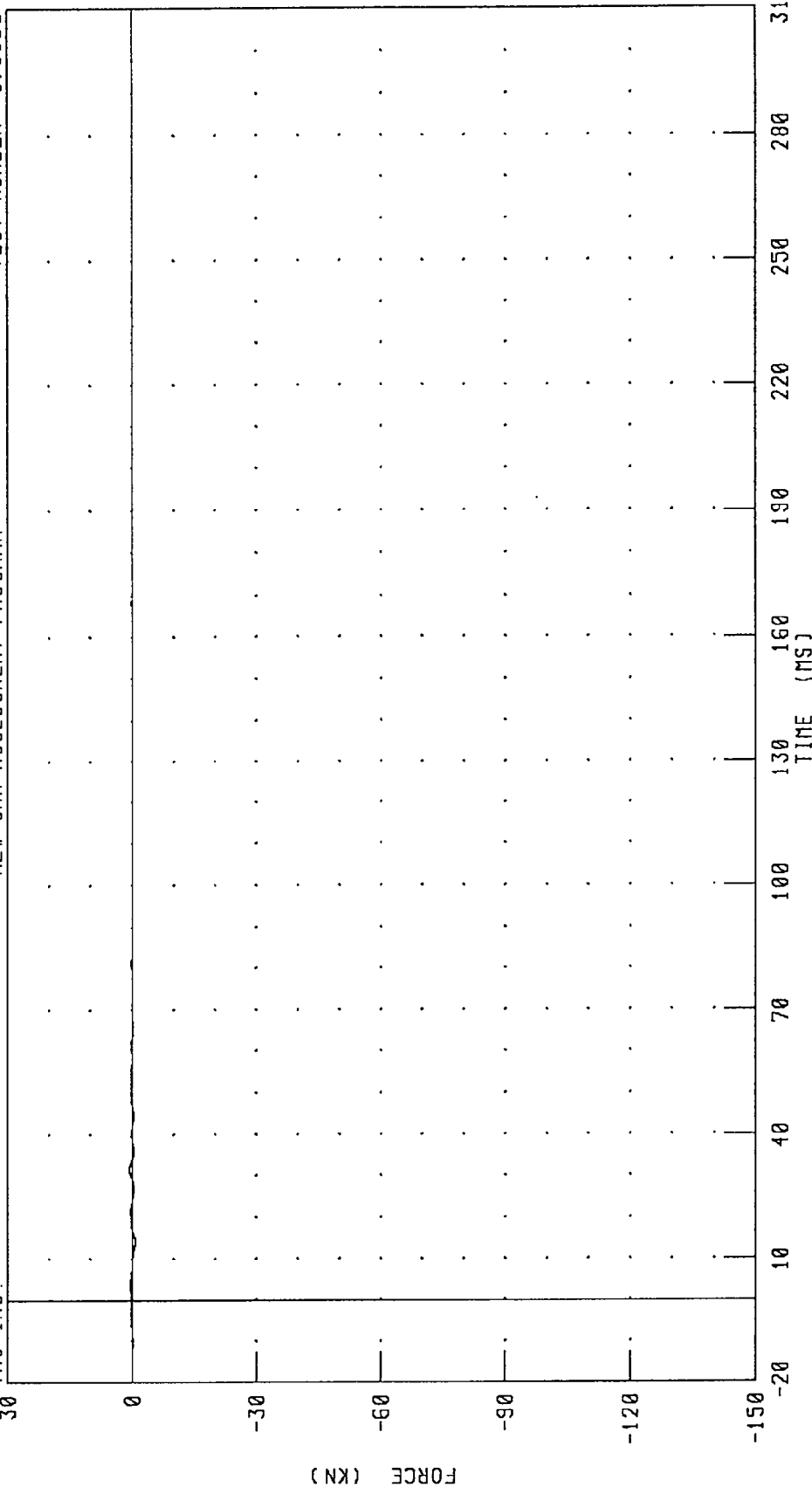
CHANNEL: BA2F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A3 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: BA3F

FILTER: CH. CLASS 60

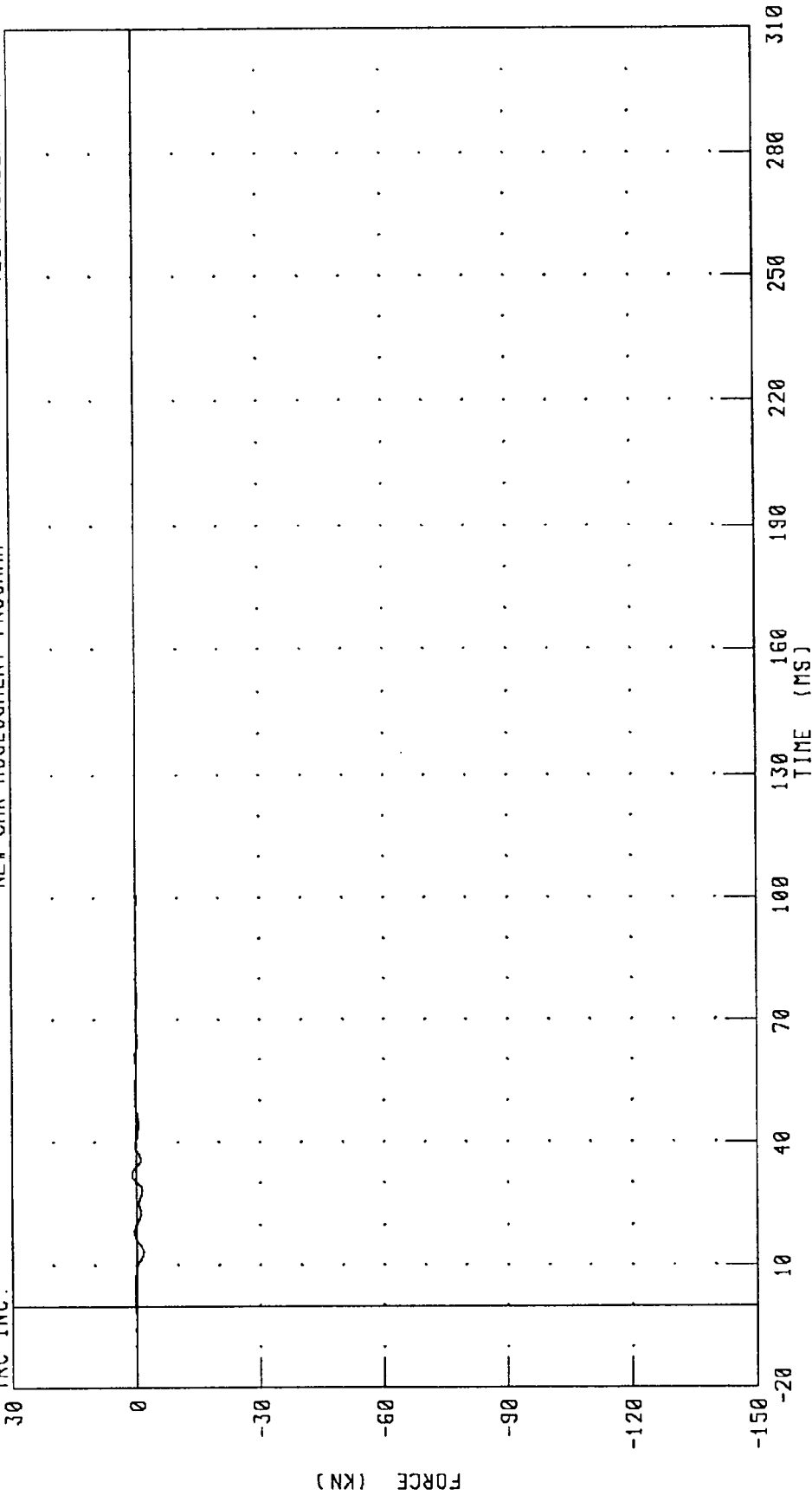
PEAK DATA: 0.68 KN @ 31.68 MS; -0.82 KN @ 14.32 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A4 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 1.07 KN @ 32.16 MS; -1.70 KN @ 13.44 MS

FILTER: CH. CLASS 60

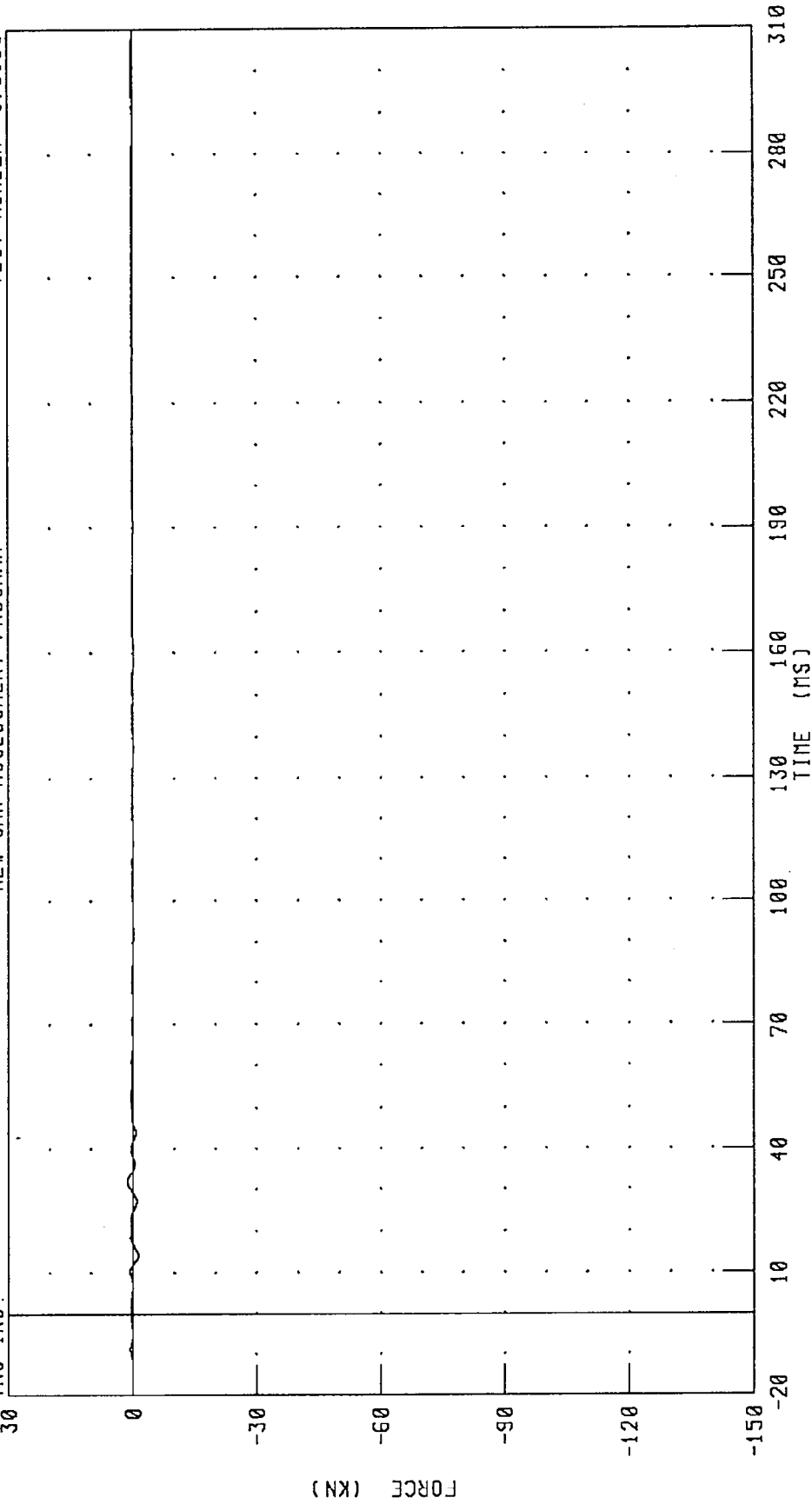
CHANNEL: BA4F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A5 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 1.30 KN @ 32.00 MS; -1.28 KN @ 14.16 MS

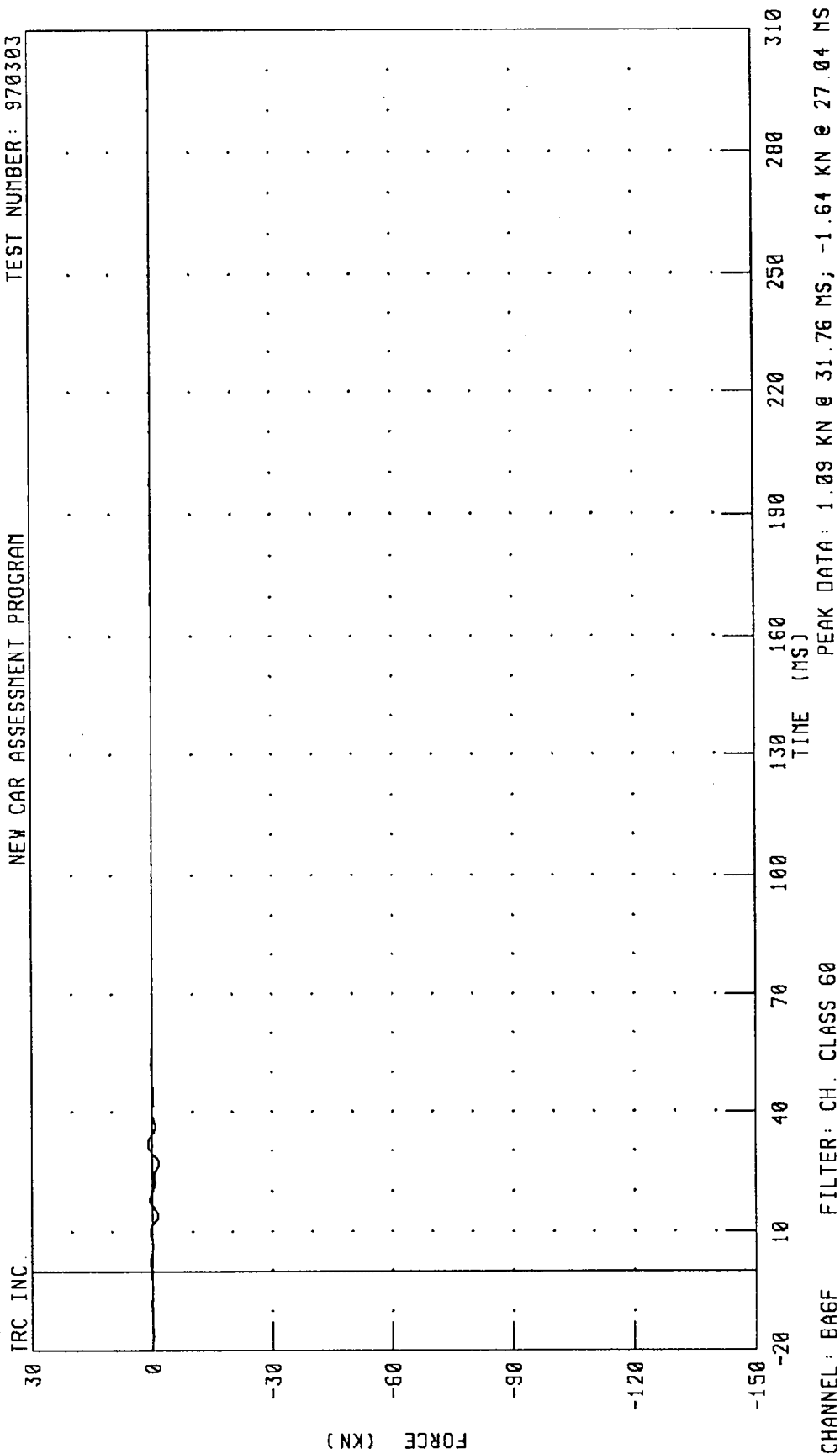
FILTER: CH. CLASS 60

CHANNEL: BASF

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A6 FORCE

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

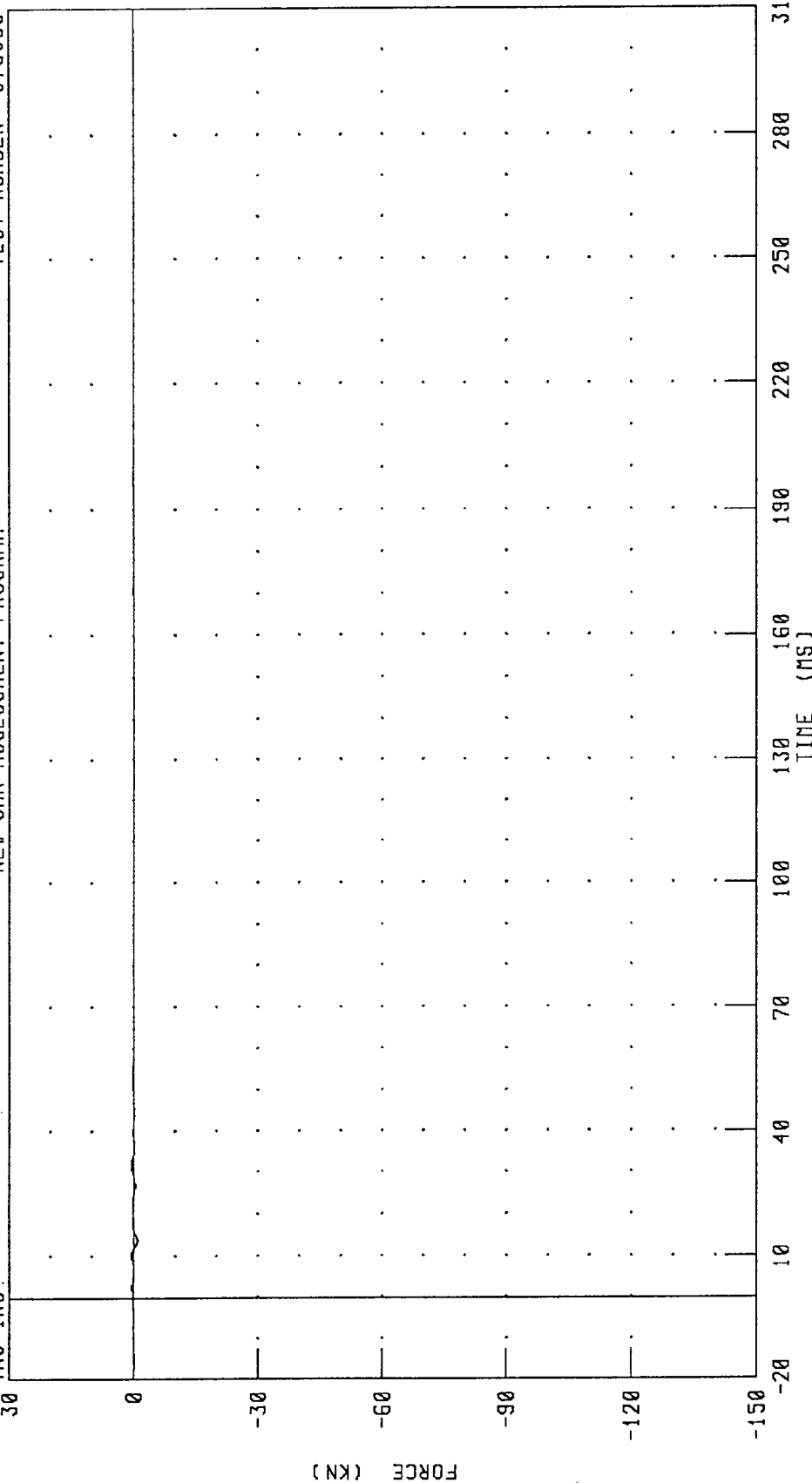


1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A7 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.55 KN @ 31.84 MS; -0.95 KN @ 13.68 MS

FILTER: CH. CLASS 60

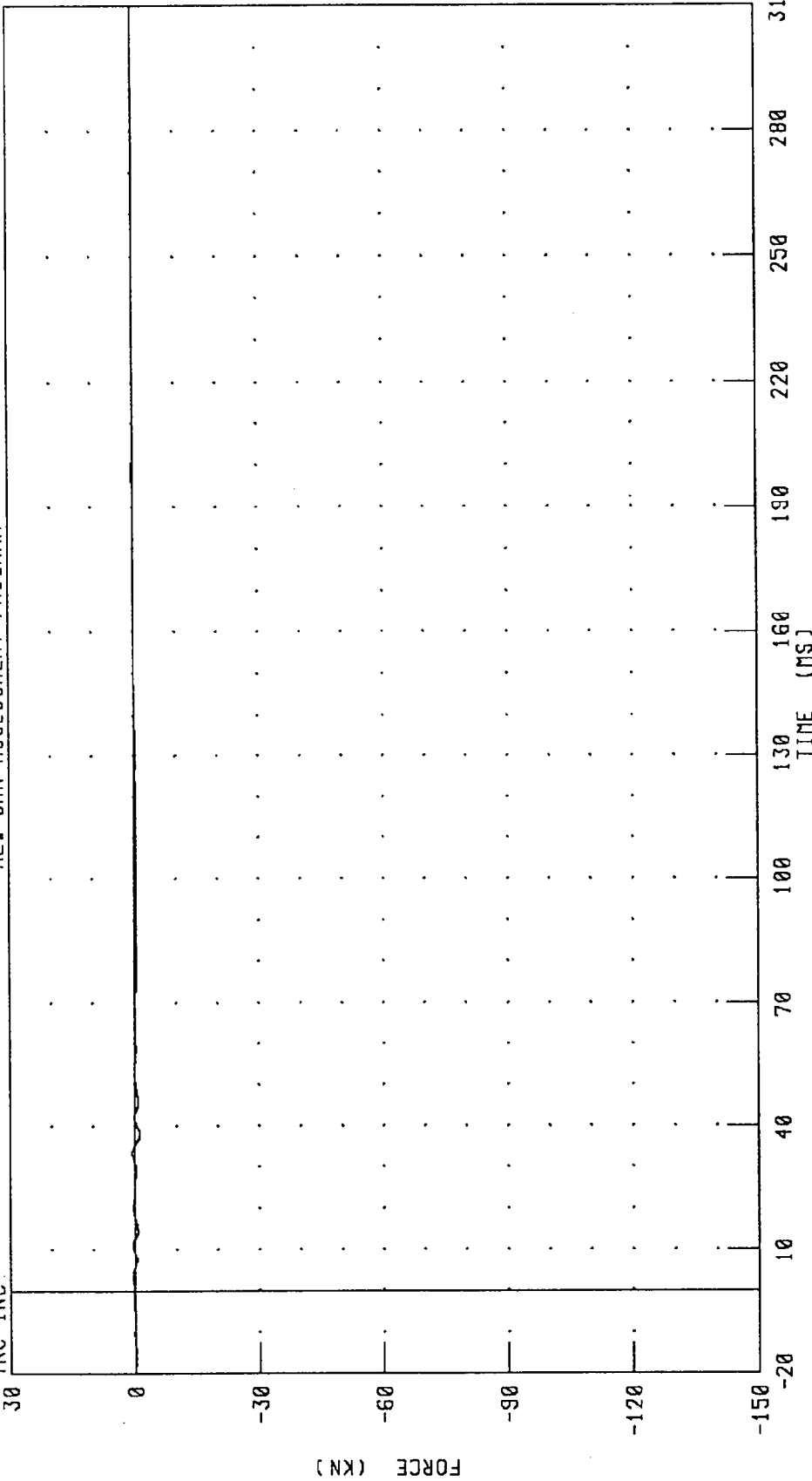
CHANNEL: BA7F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A8 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: B8BF

FILTER: CH. CLASS 60

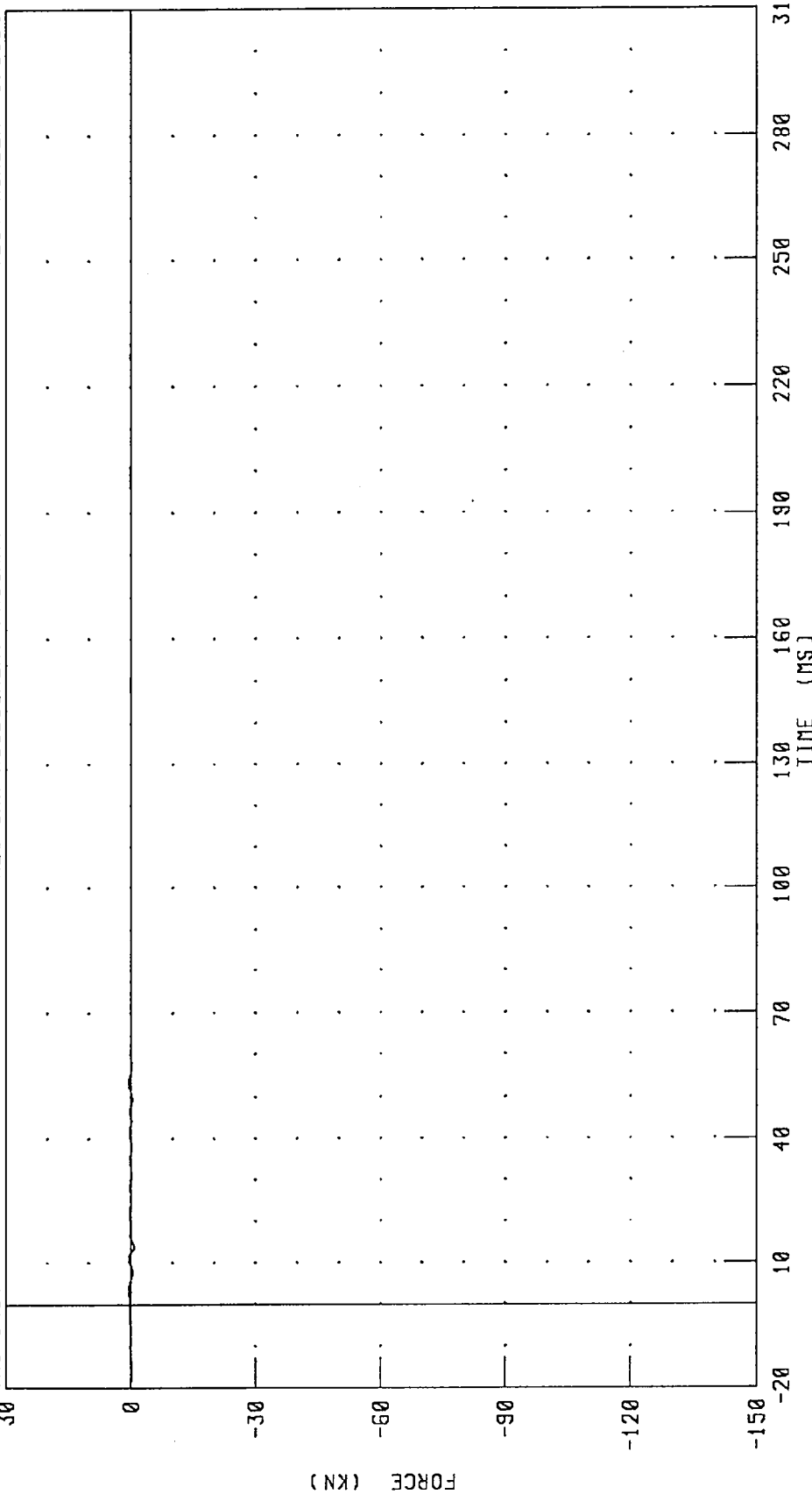
PEAK DATA: 0.65 KN @ 33.44 MS; -1.15 KN @ 38.00 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A9 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: BA9F

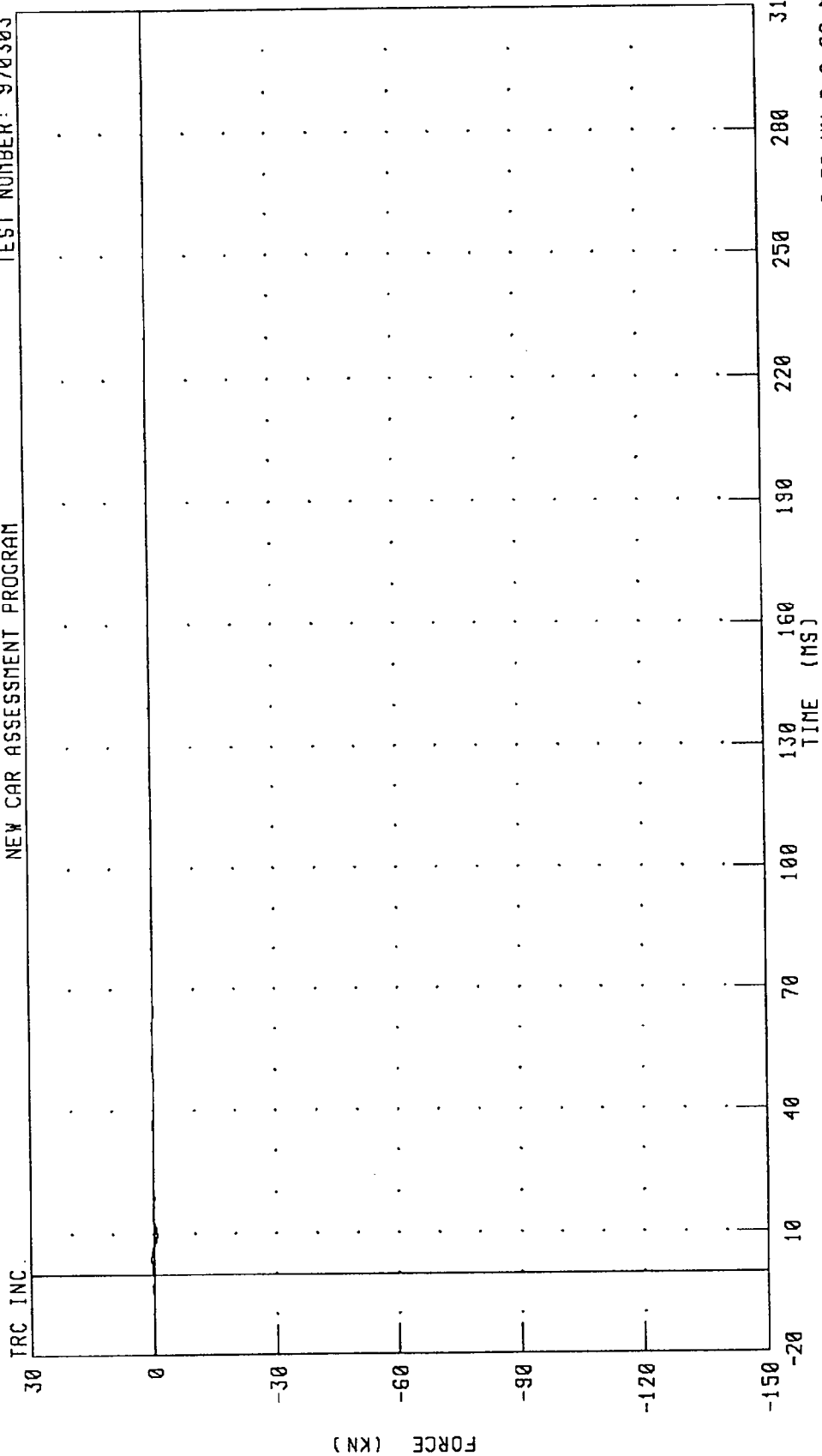
FILTER: CH. CLASS 60

PEAK DATA: 0.58 KN @ 11.12 MS; -0.84 KN @ 14.00 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B1 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM



PEAK DATA: 0.61 KN @ 3.60 MS; -0.70 KN @ 9.60 MS

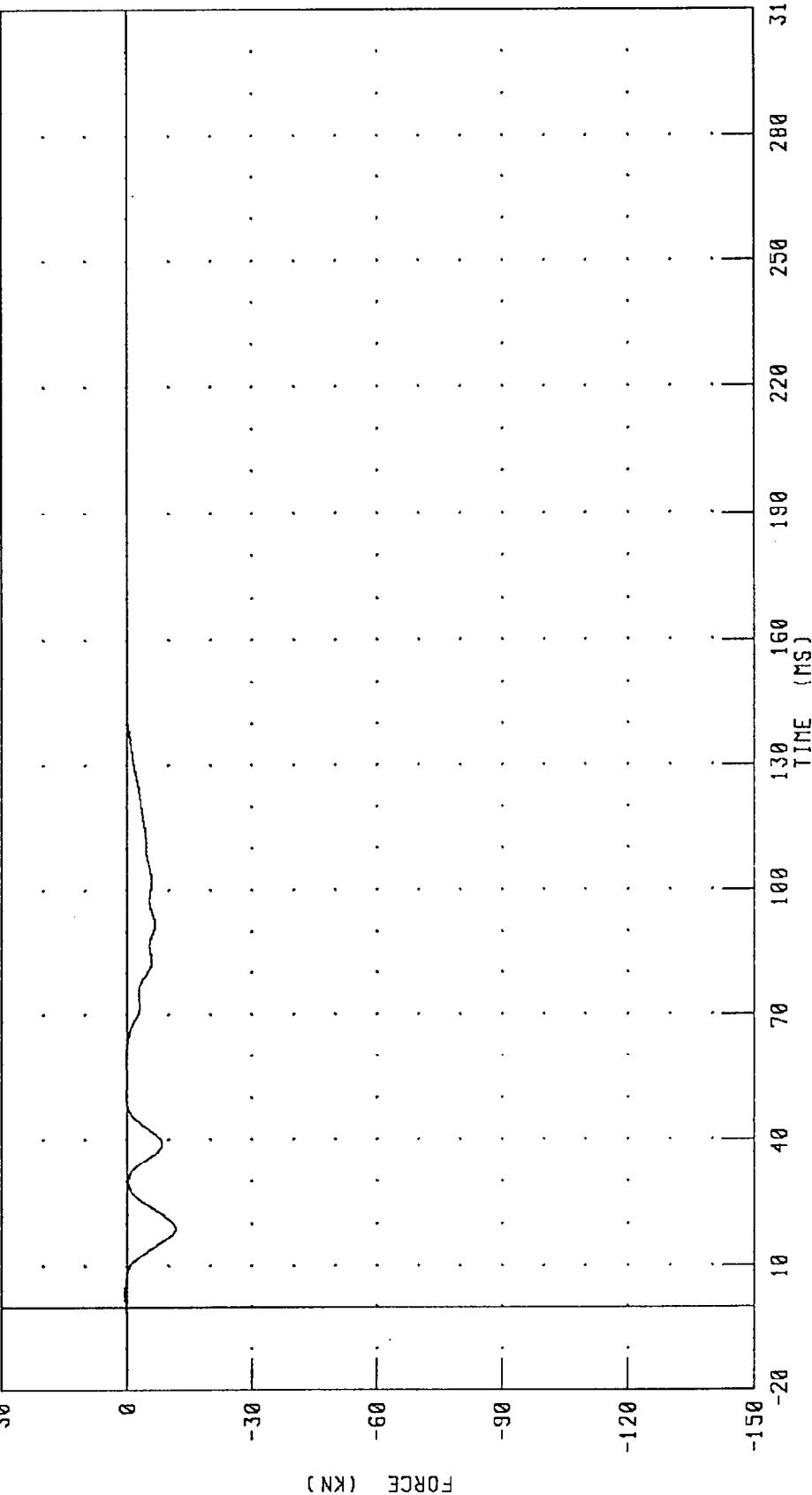
CHANNEL: BB1F FILTER: CH. CLASS 60

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B2 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

IRC INC.



PEAK DATA: 0.42 KN @ 2.72 MS; -11.67 KN @ 18.96 MS

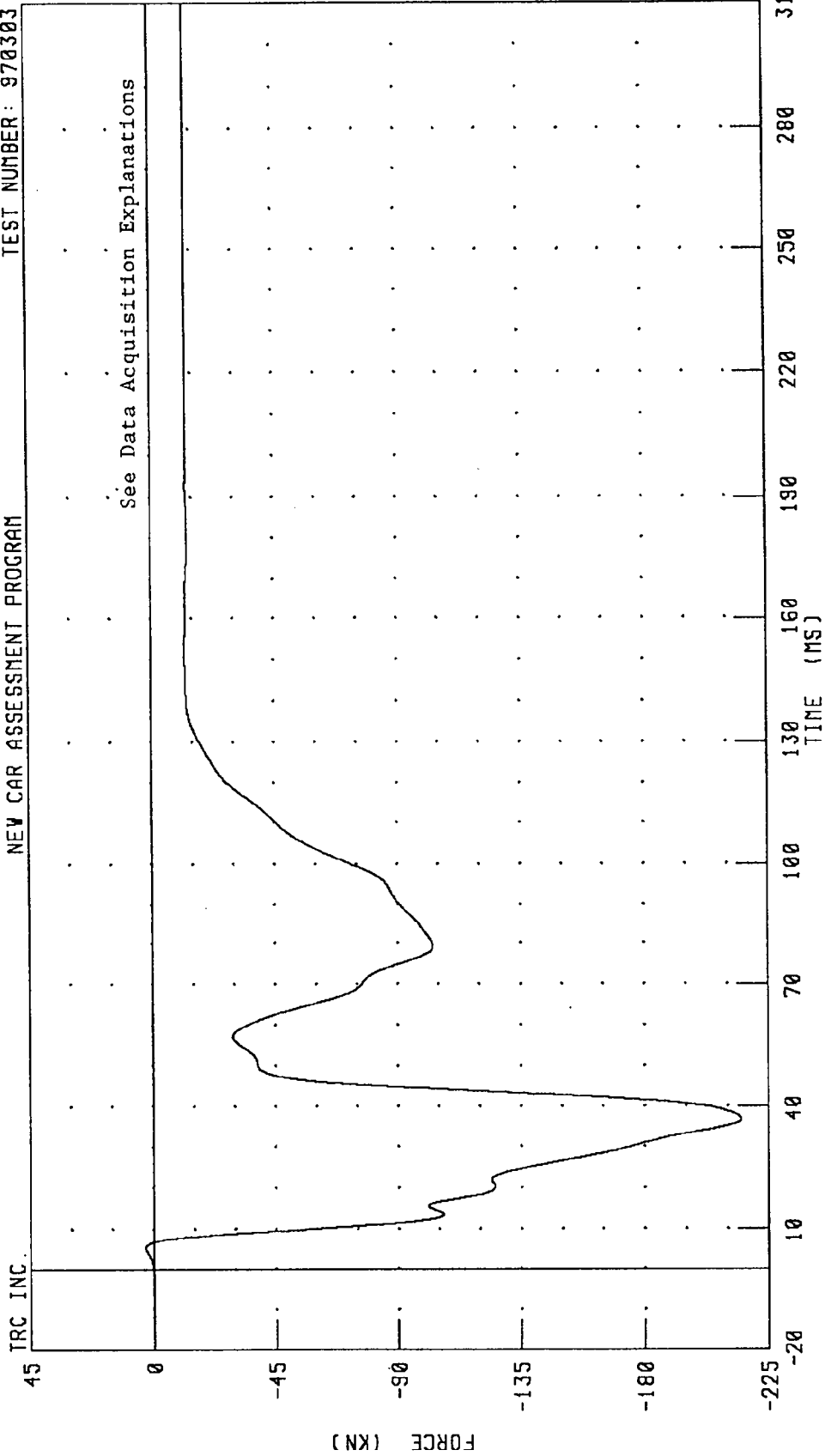
FILTER: CH. CLASS 60

CHANNEL: 882F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B3 FORCE

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



PEAK DATA: 3.03 KN @ 5.12 MS; -215.02 KN @ 36.88 MS

FILTER: CH. CLASS 60

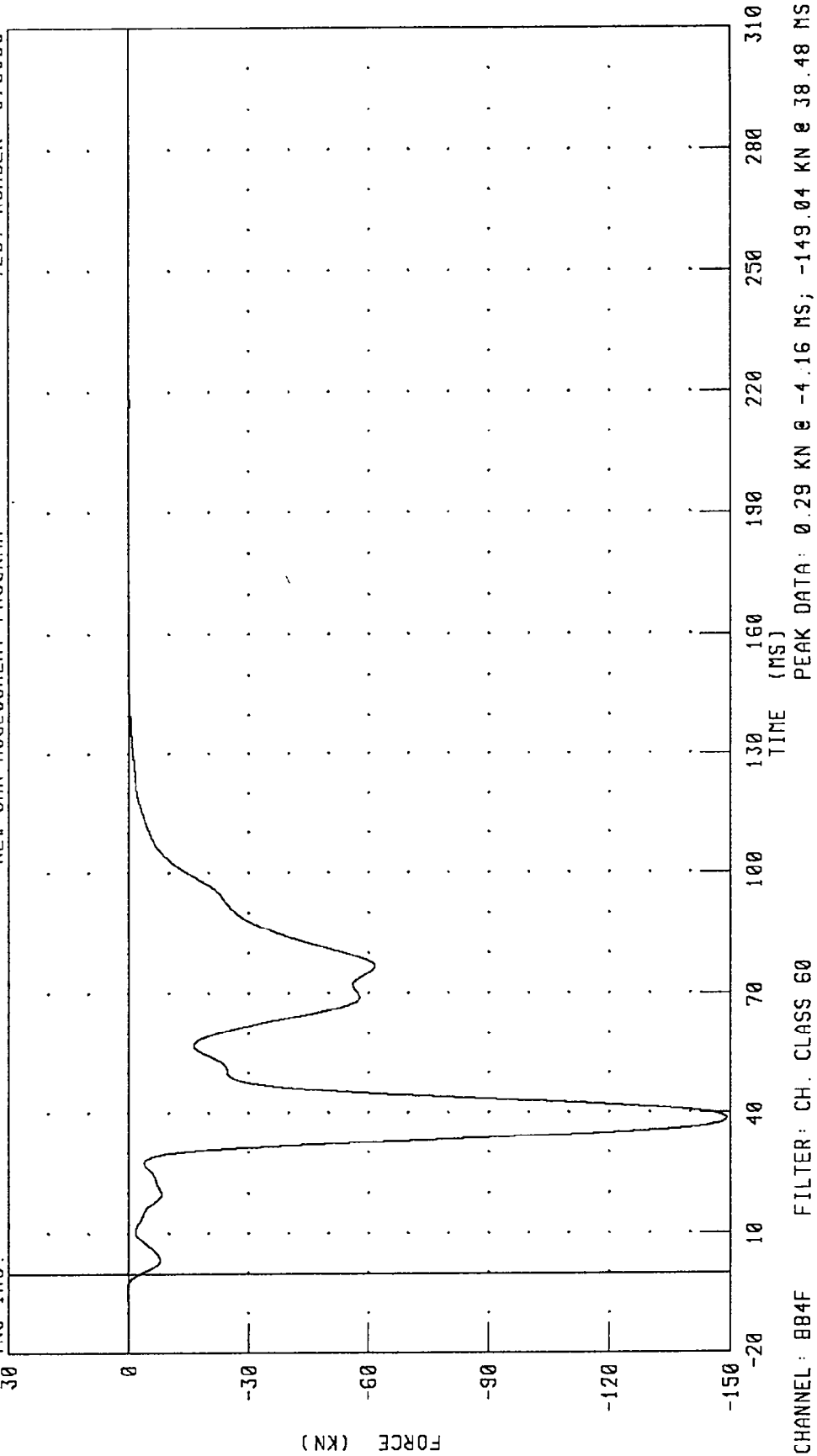
CHANNEL: 883F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B4 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.29 KN @ -4.16 MS; -149.04 KN @ 38.48 MS

FILTER: CH. CLASS 60

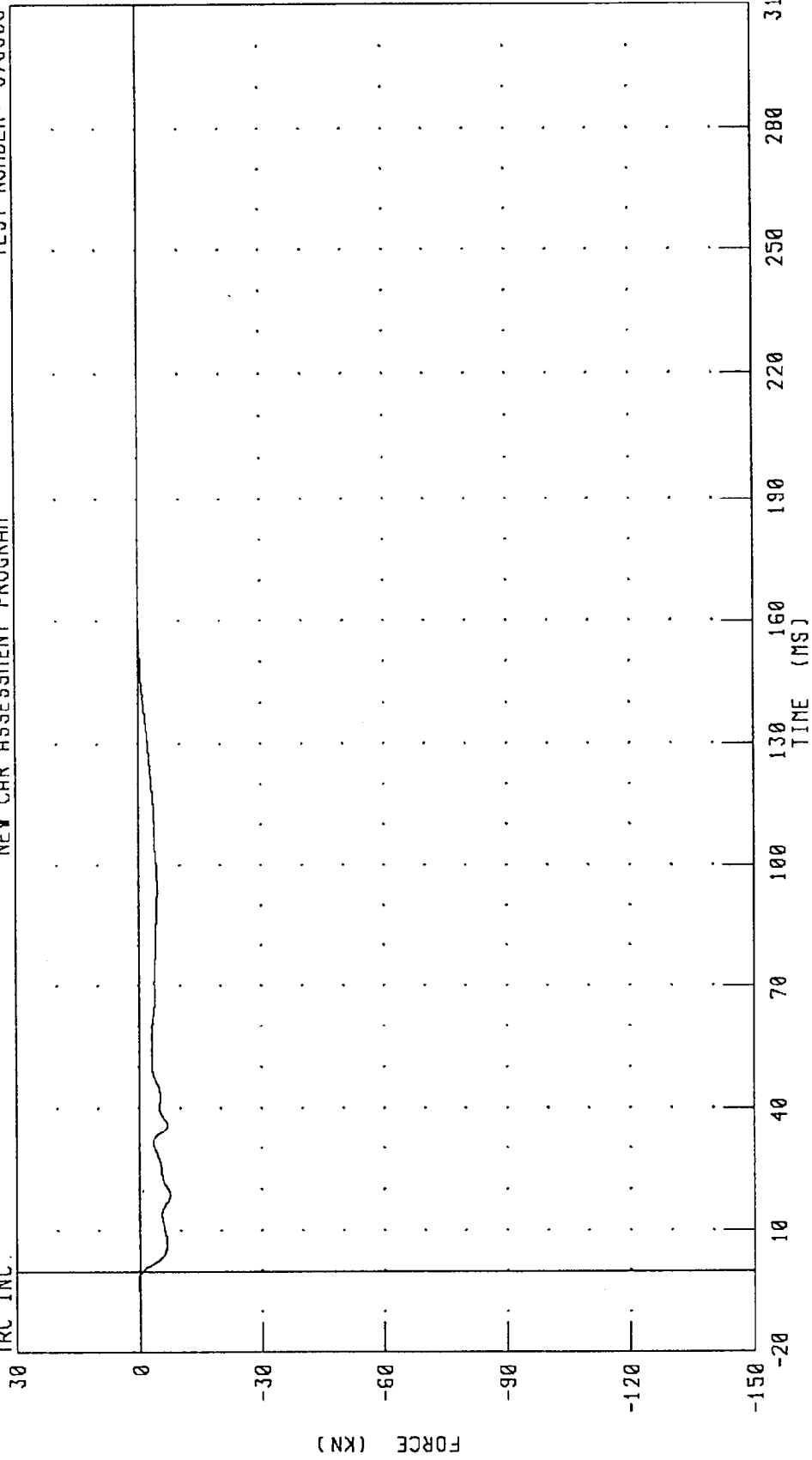
CHANNEL: BB4F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B5 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.23 KN @ -2.32 MS; -7.47 KN @ 18.96 MS

FILTER: CH. CLASS 60

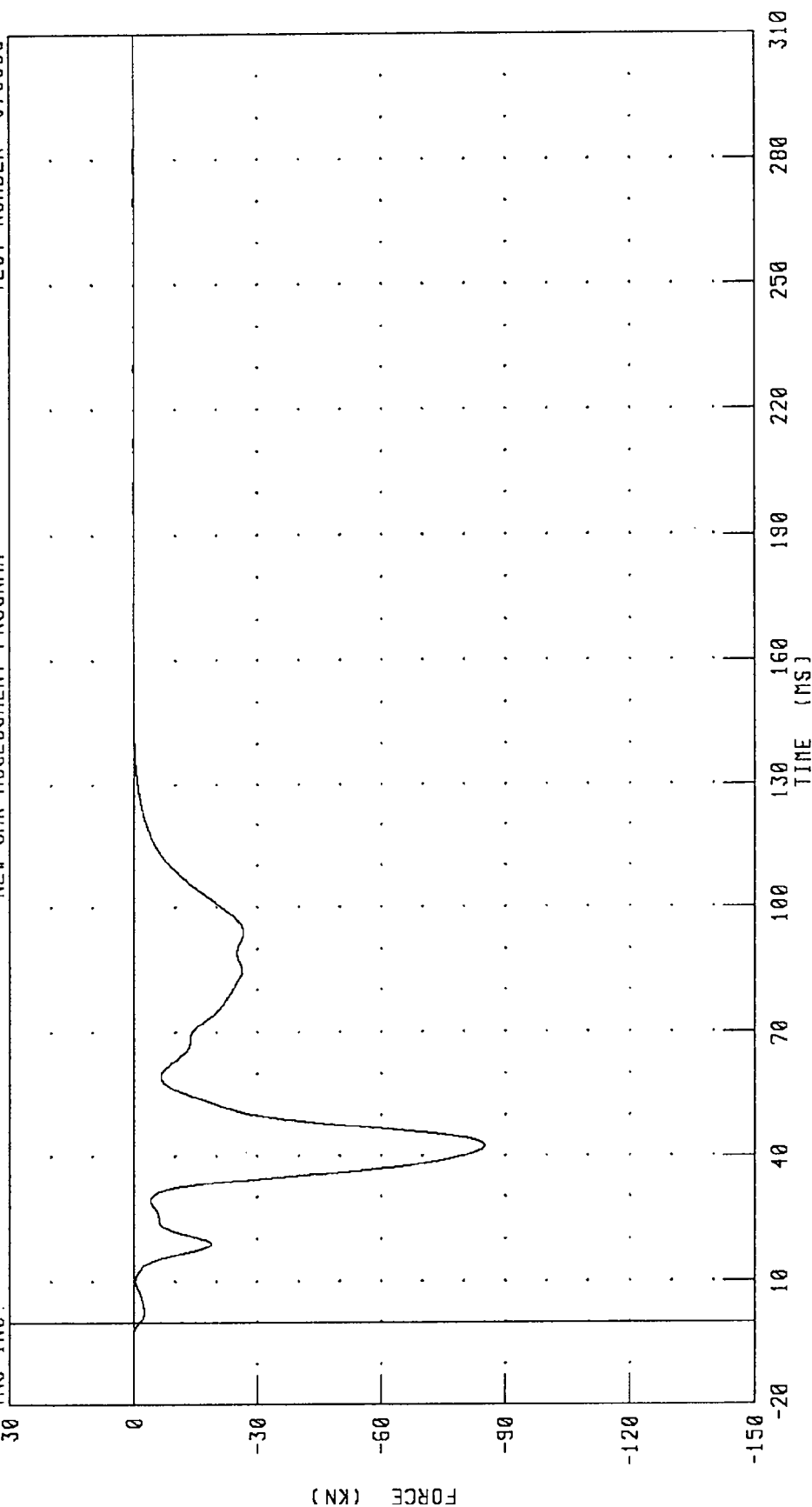
CHANNEL: BBSF

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B6 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.15 KN @ -4.56 MS; -85.09 KN @ 42.56 MS

FILTER: CH. CLASS 60

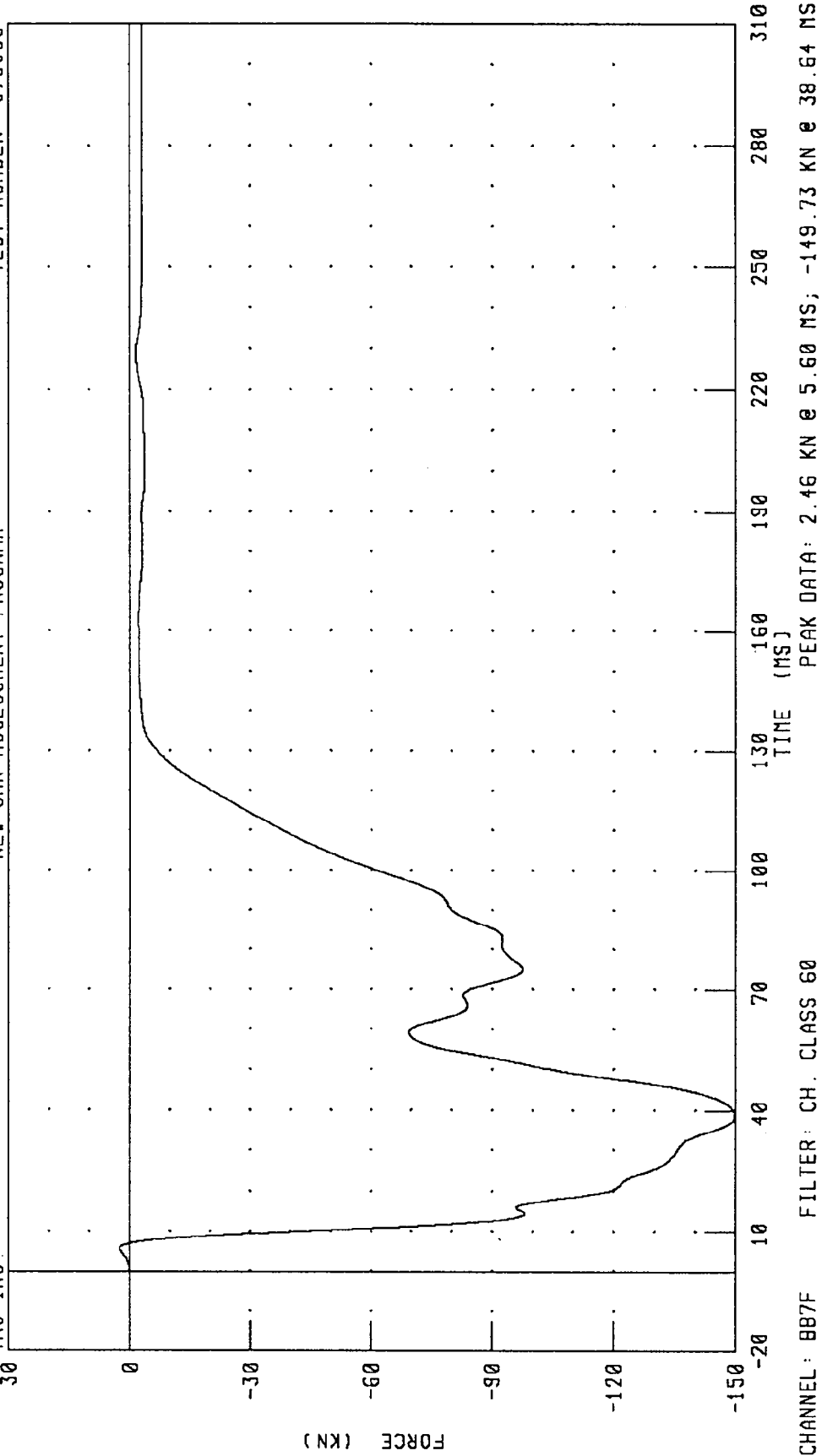
CHANNEL: BB6F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B7 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: B87F

FILTER: CH. CLASS 60

PEAK DATA: 2.46 KN @ 5.60 MS; -149.73 KN @ 38.64 MS

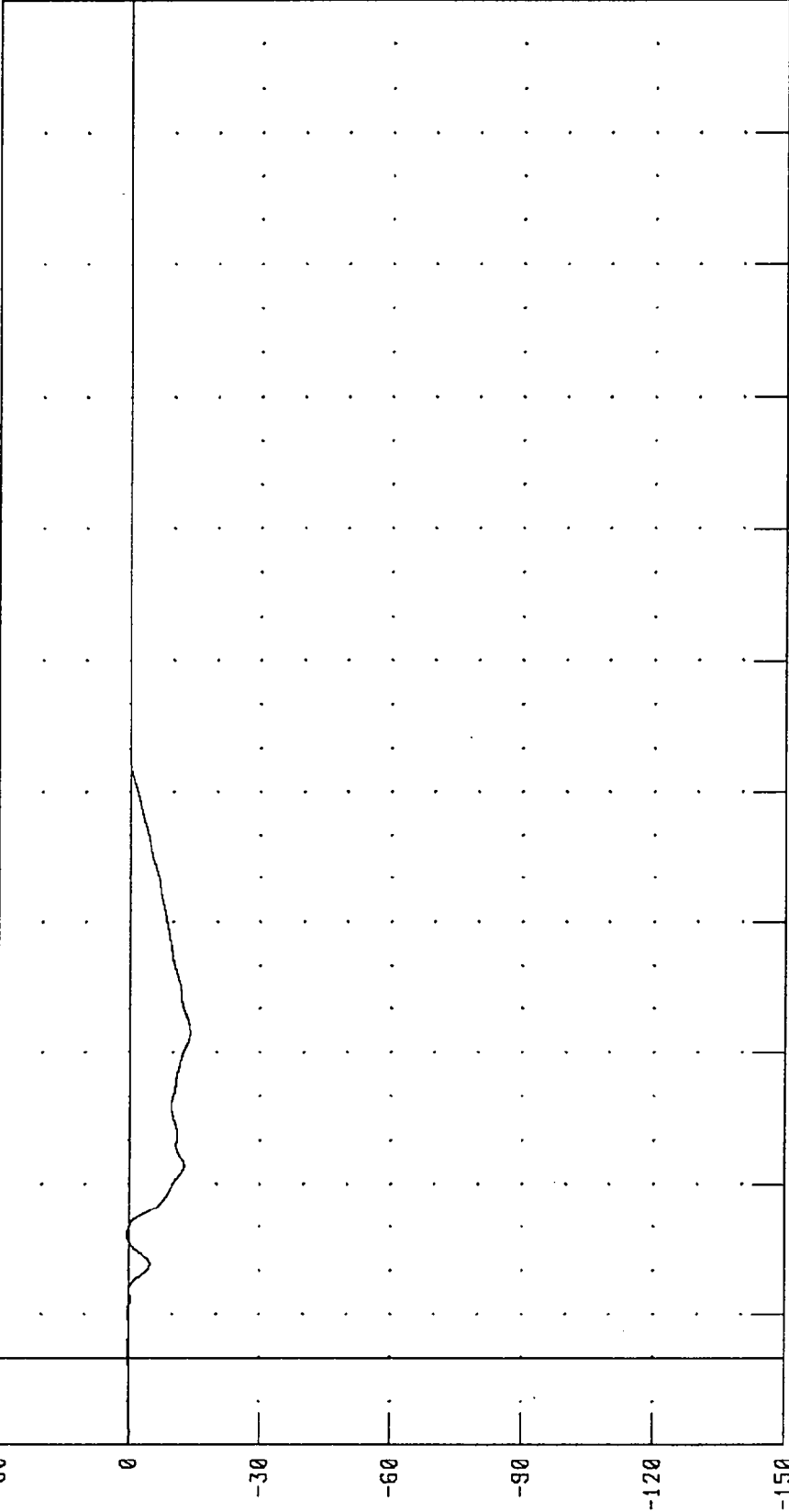
1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B8 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

30



FORCE (KN)

TIME (MS)

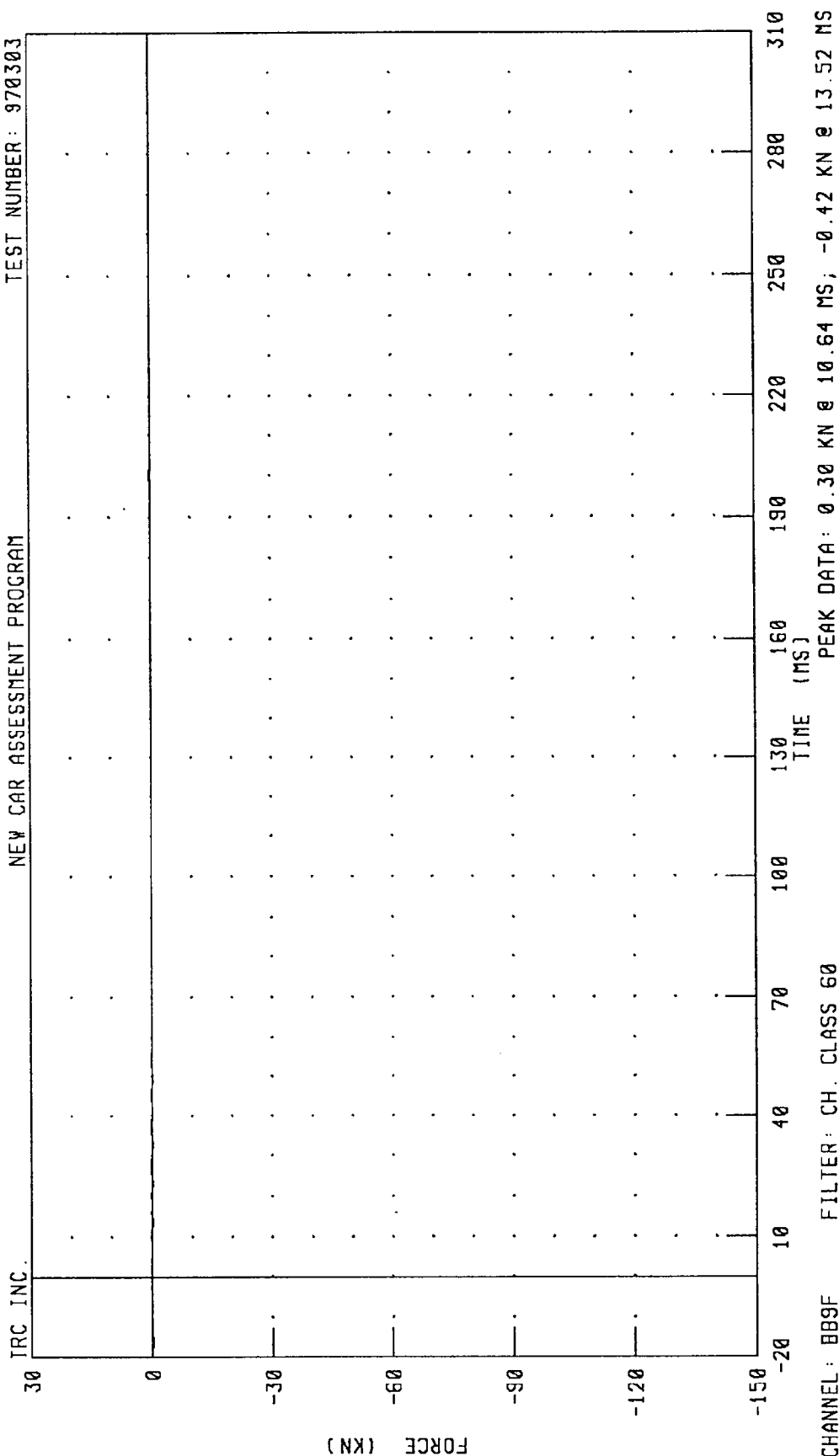
CHANNEL: BB8F

FILTER: CH. CLASS 60

PEAK DATA: 0.41 KN @ 28.16 MS; -13.91 KN @ 74.64 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B9 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

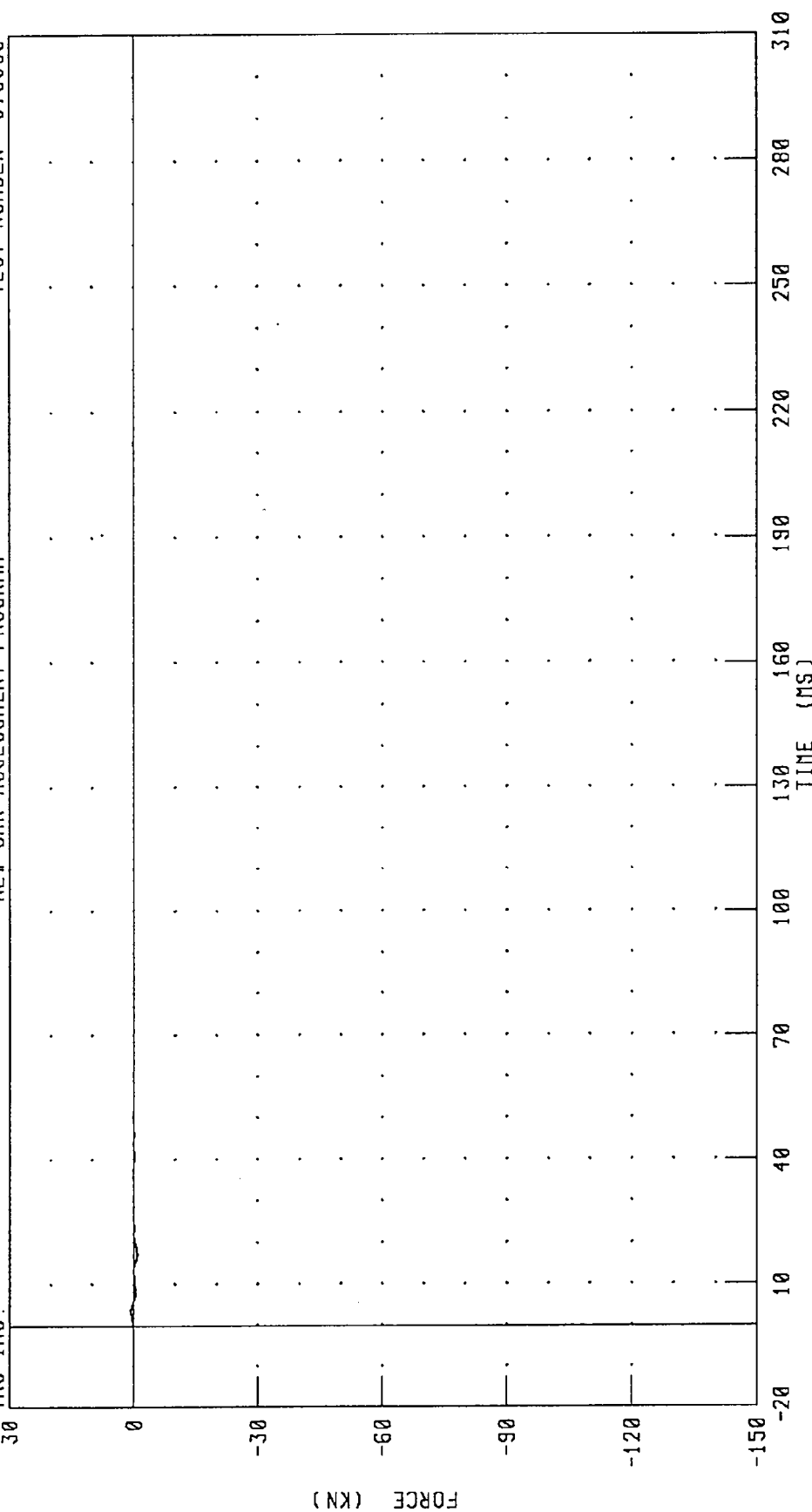


1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C1 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.64 KN @ 3.28 MS; -0.93 KN @ 17.28 MS

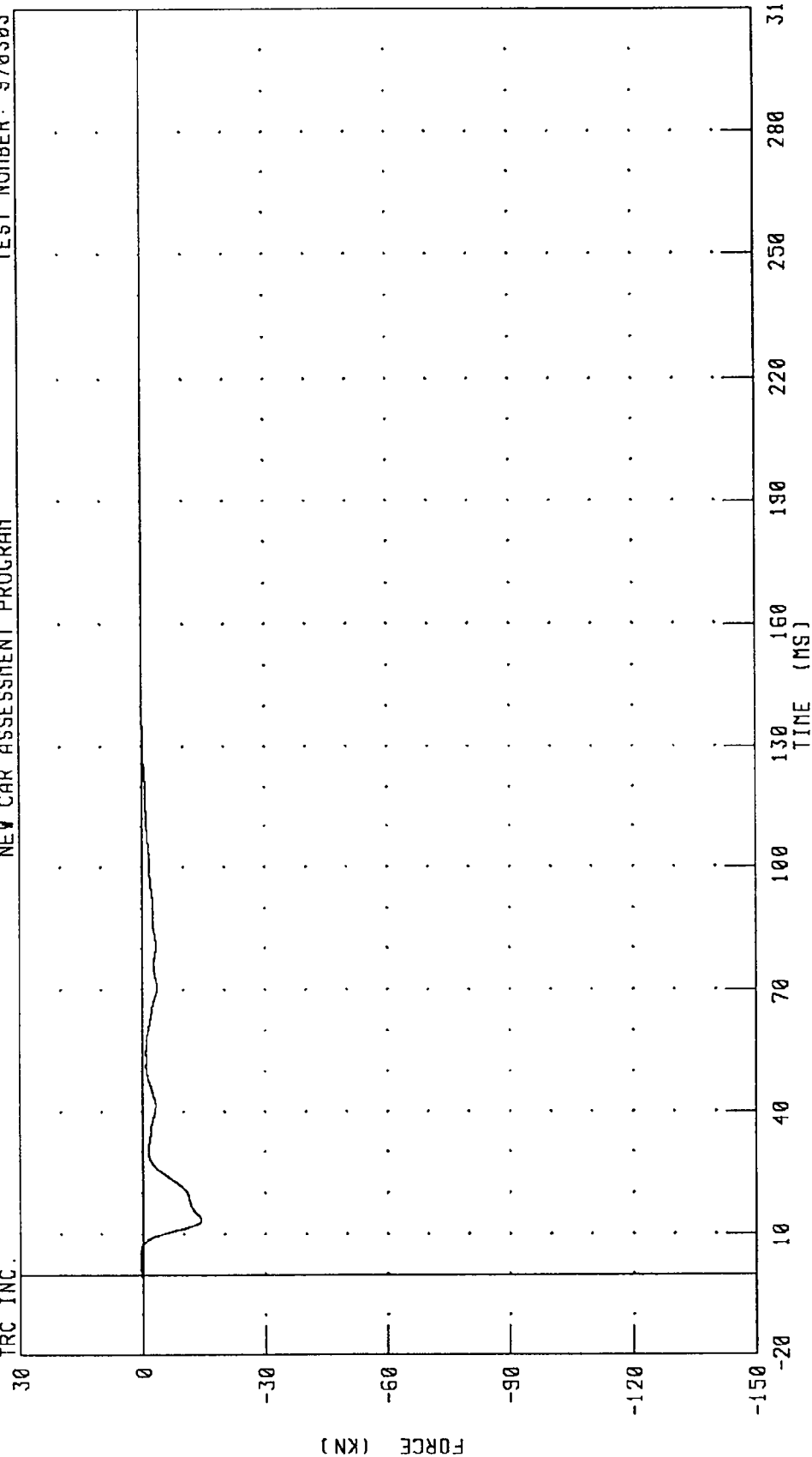
CHANNEL: BC1F FILTER: CH, CLASS 60

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C2 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



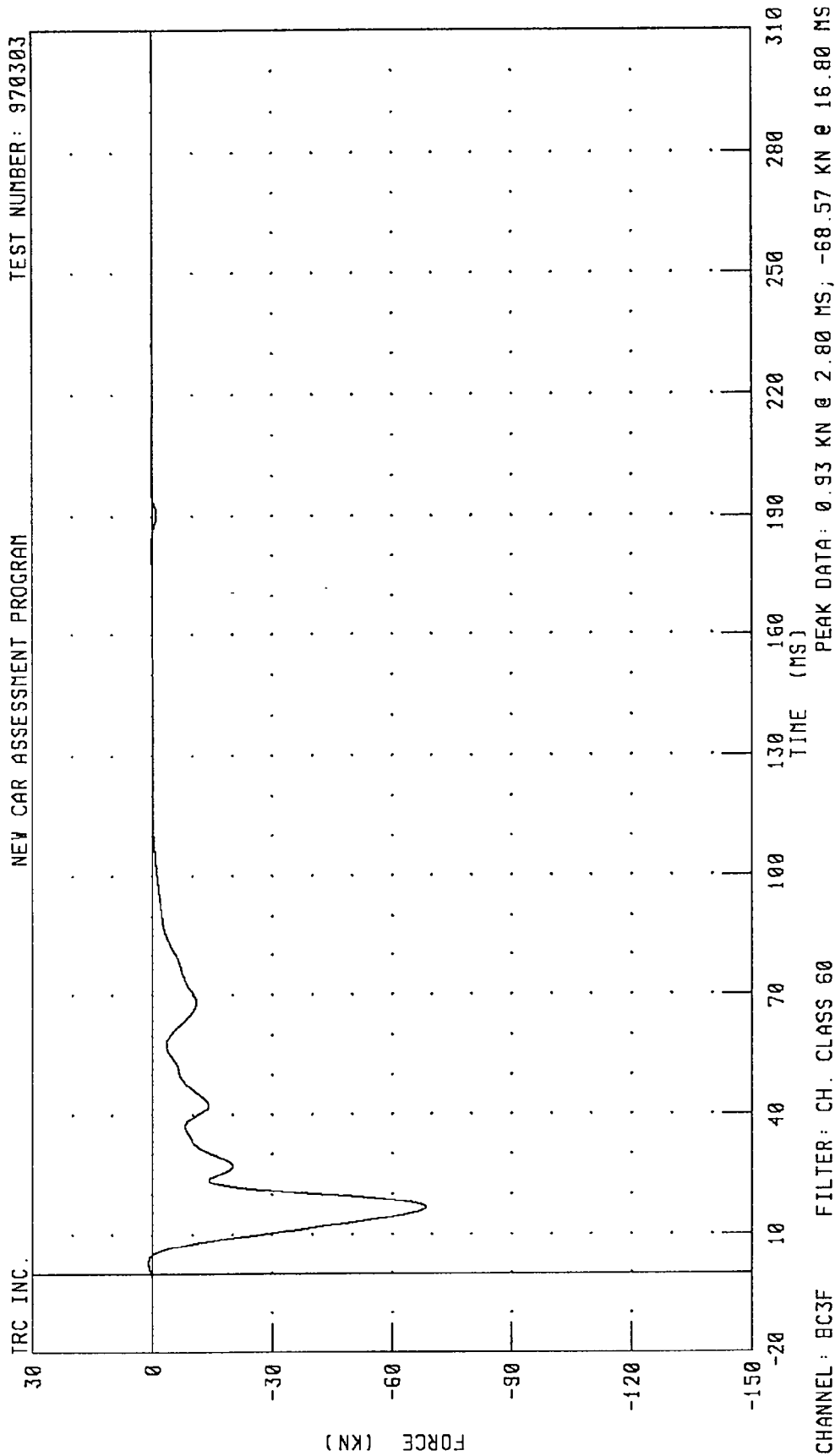
PEAK DATA: 0.54 KN @ 3.04 MS; -14.22 KN @ 13.52 MS

FILTER: CH. CLASS 60

CHANNEL: BC2F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C3 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



PEAK DATA: 0.93 KN @ 2.80 MS; -68.57 KN @ 16.80 MS

FILTER: CH. CLASS 60

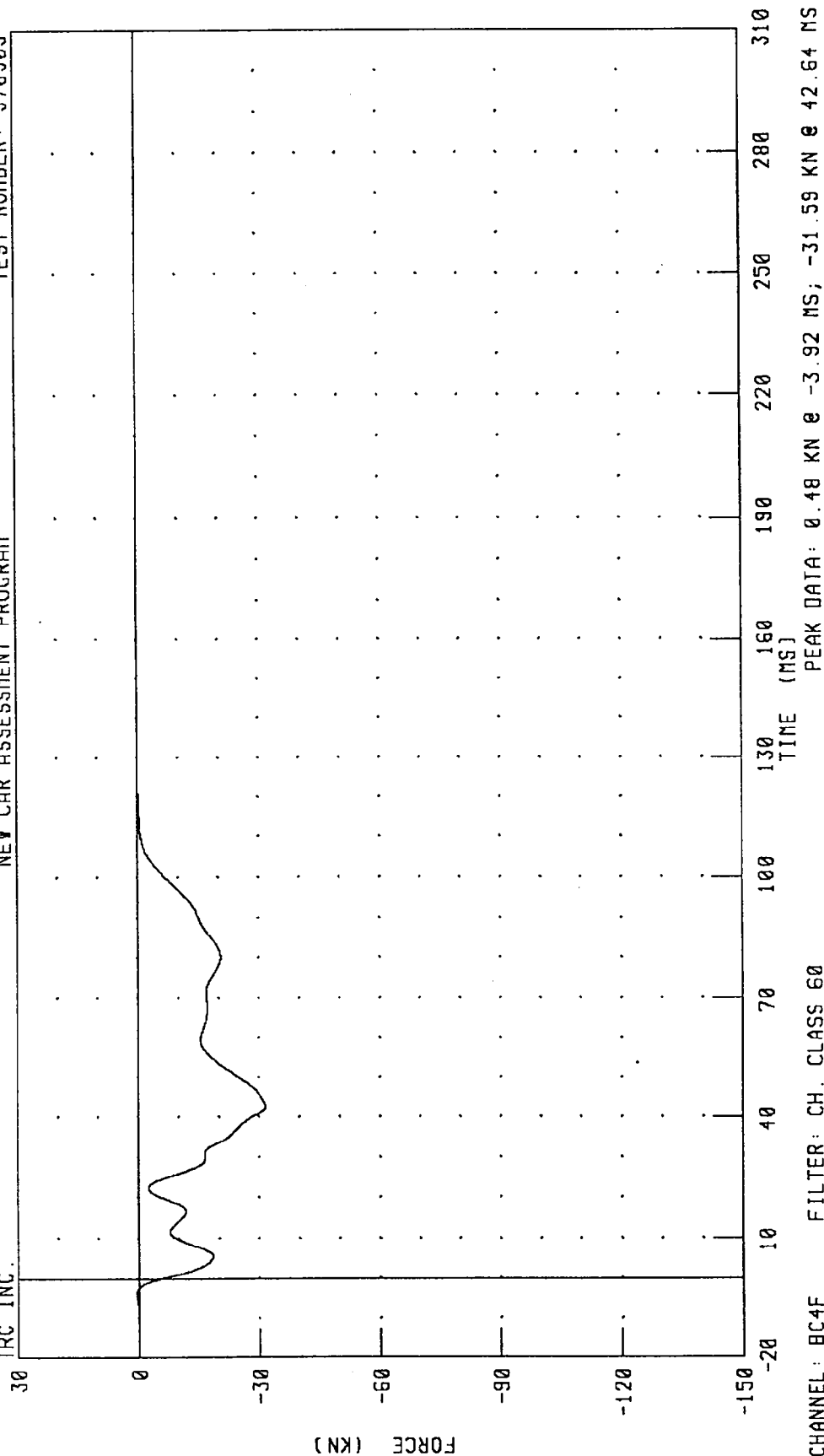
CHANNEL: BC3F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C4 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.48 KN @ -3.92 MS; -31.59 KN @ 42.64 MS

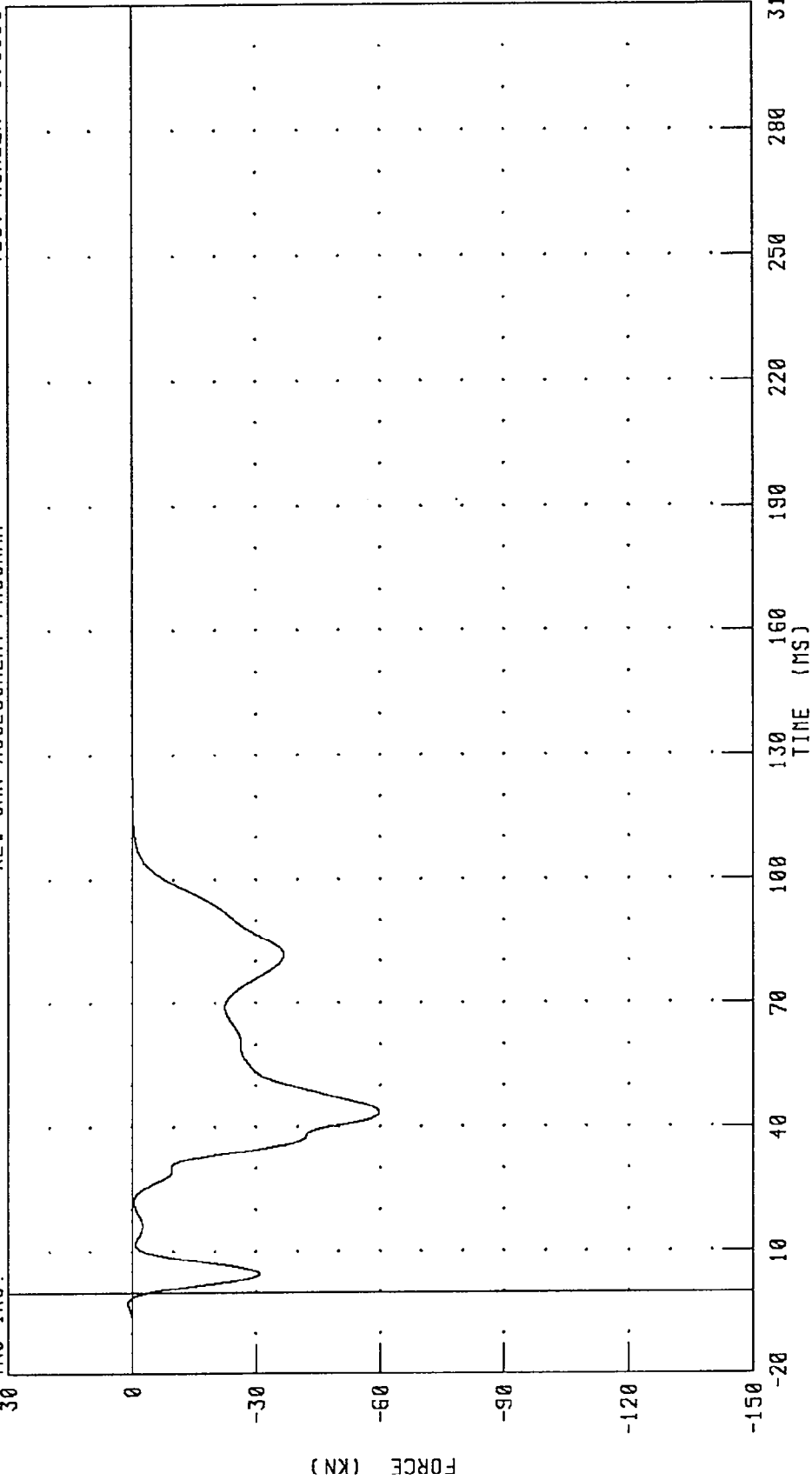
FILTER: CH. CLASS 60

CHANNEL: BC4F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C5 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



CHANNEL: BC5F

FILTER: CH. CLASS 60

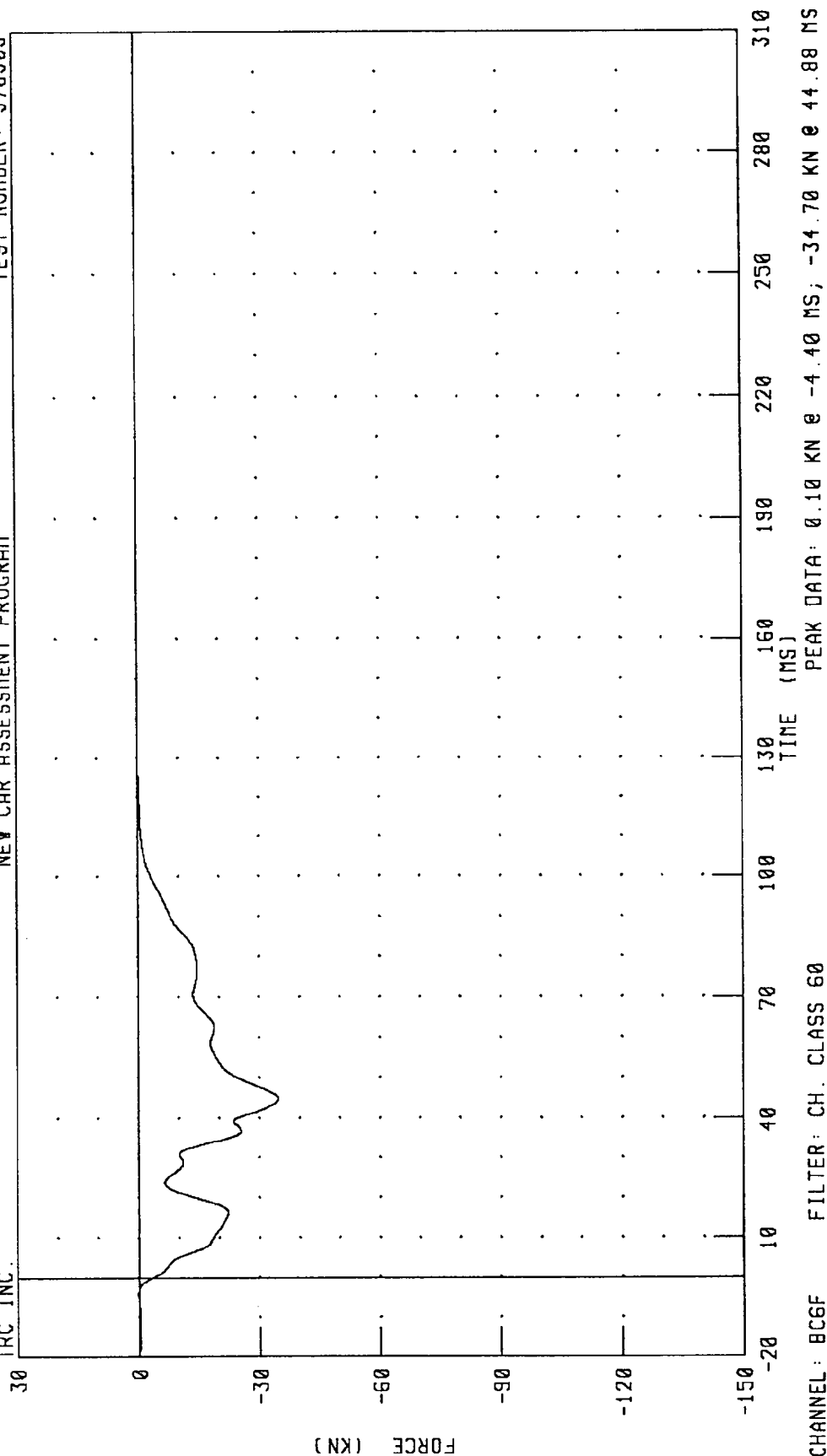
PEAK DATA: 0.96 KN @ -2.72 MS; -59.82 KN @ 43.60 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C6 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: BC6F FILTER: CH. CLASS 60

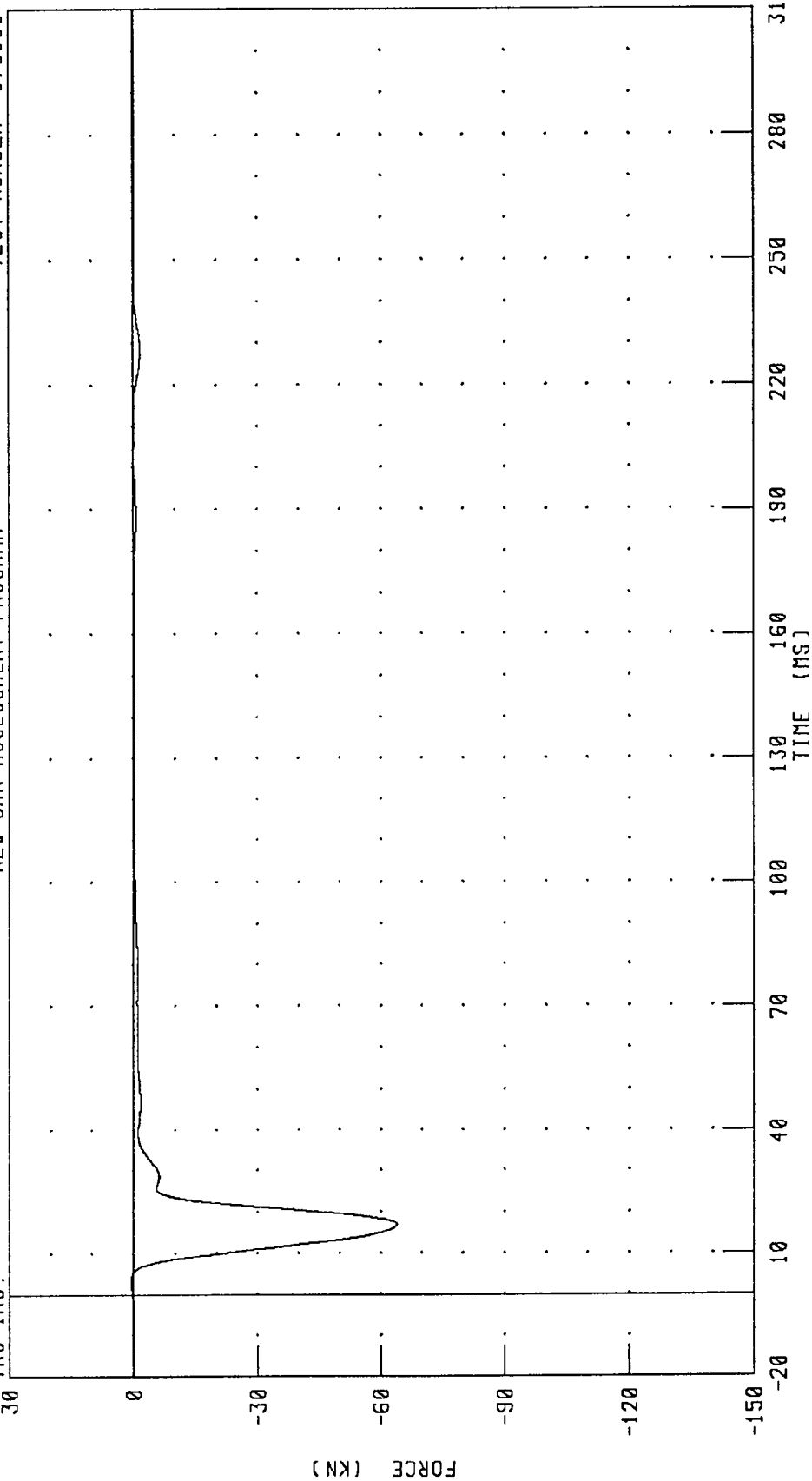
PEAK DATA: 0.10 KN @ -4.40 MS; -34.70 KN @ 44.88 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C7 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.45 KN @ 3.28 MS; -64.01 KN @ 16.96 MS

FILTER: CH. CLASS 60

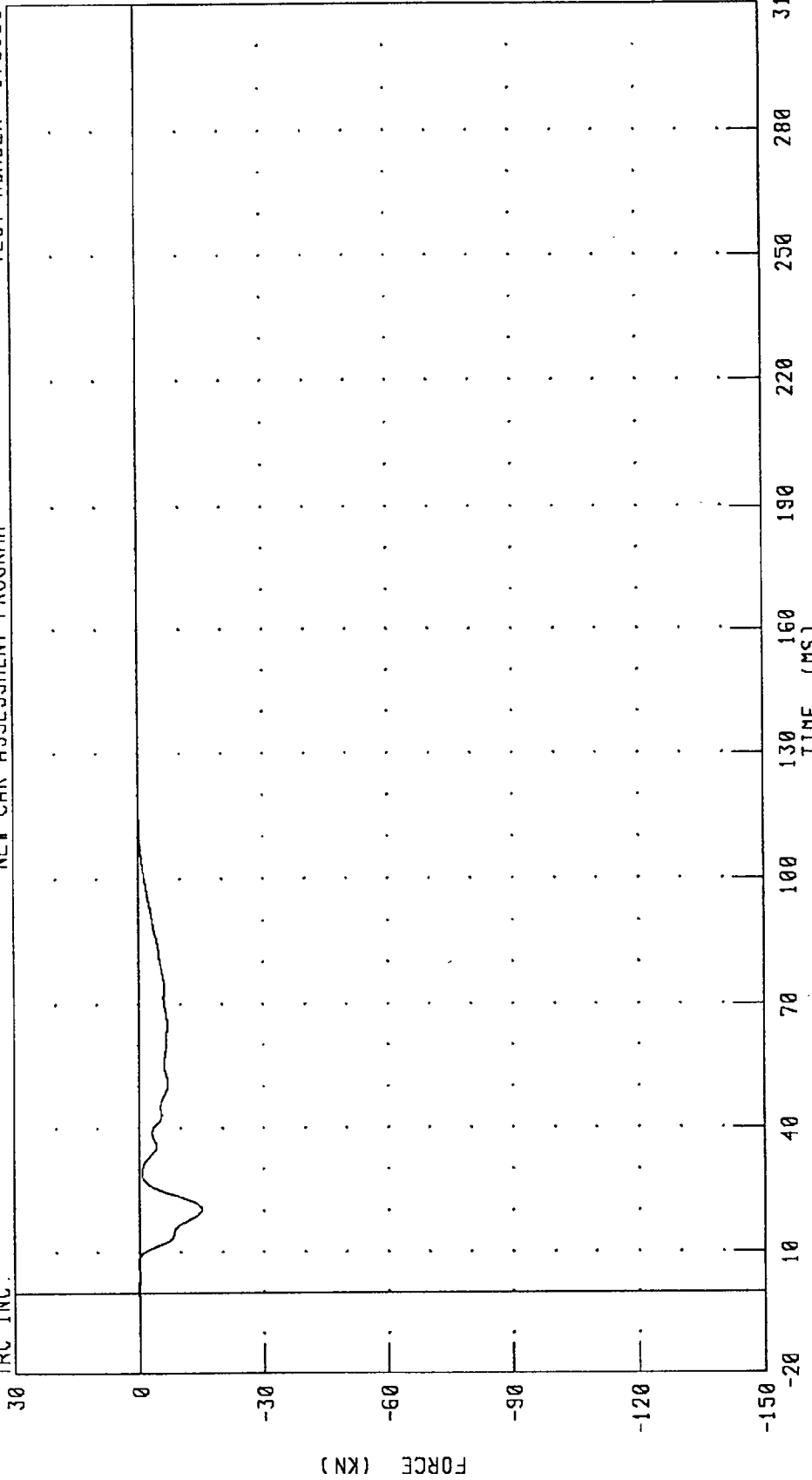
CHANNEL: BC7F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C8 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.25 KN @ 7.36 MS; -14.99 KN @ 20.48 MS

FILTER: CH. CLASS 60

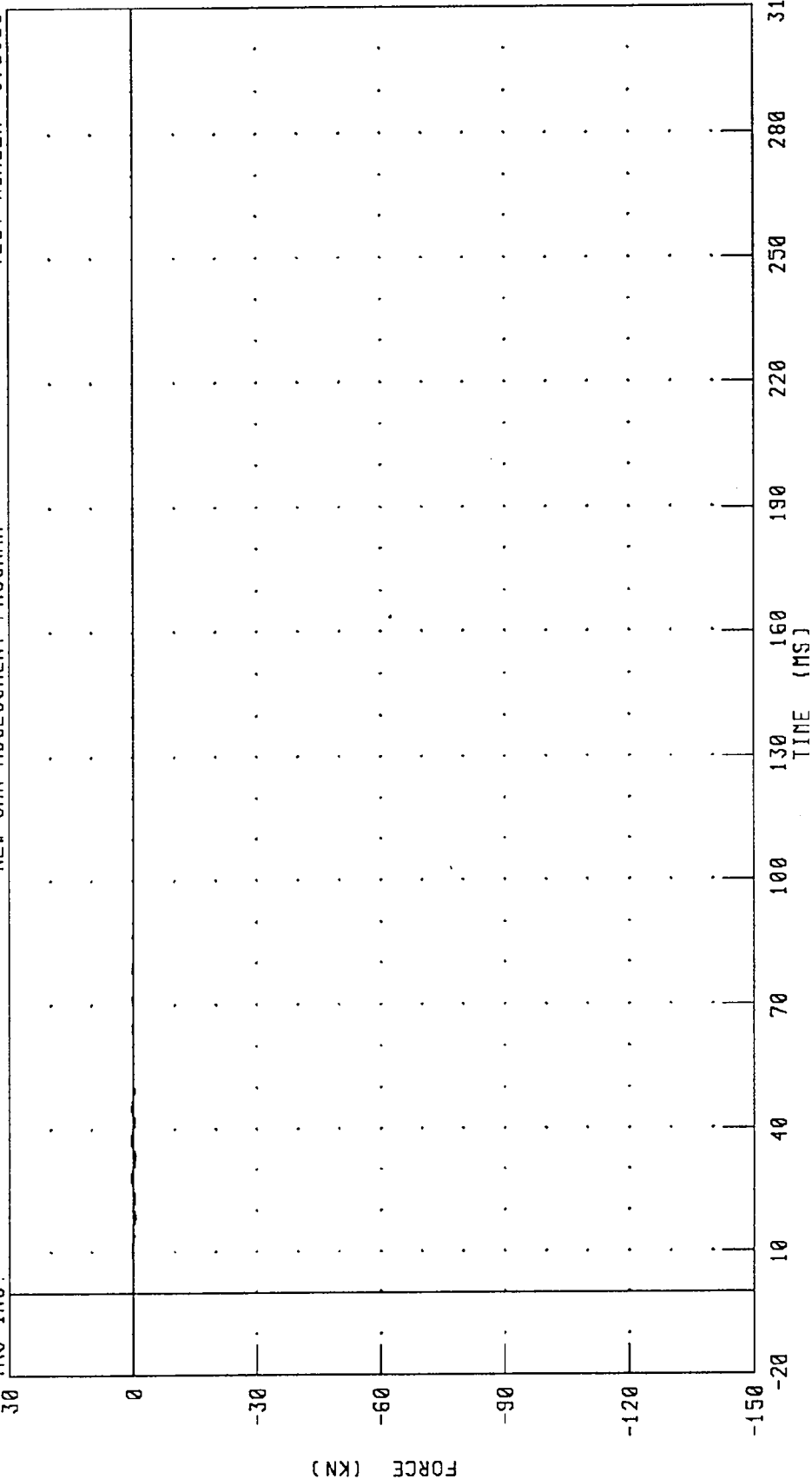
CHANNEL: BC8F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C9 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.50 KN @ 28.24 MS; -0.50 KN @ 33.20 MS

FILTER: CH. CLASS 60

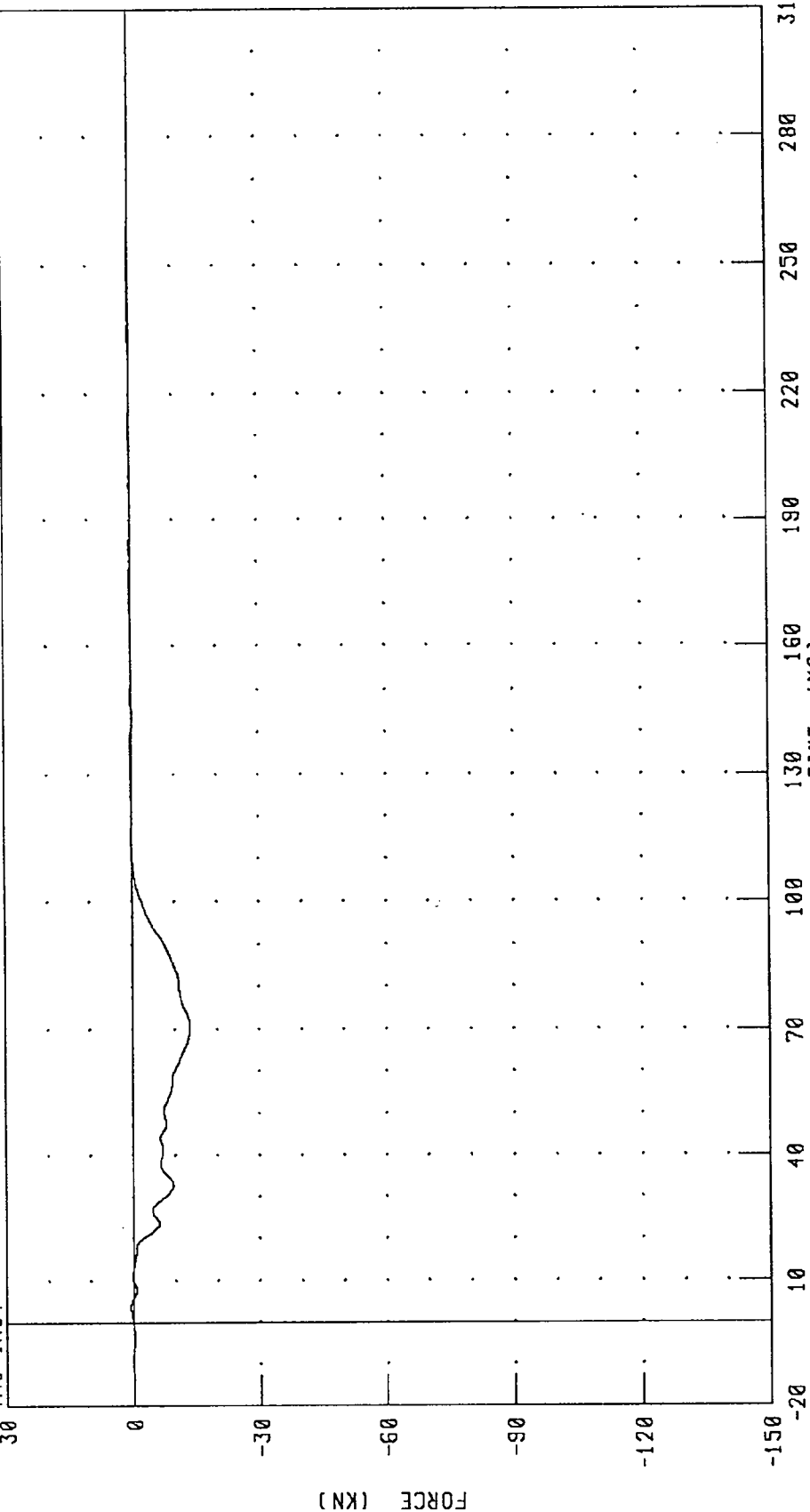
CHANNEL: BC9F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D1 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

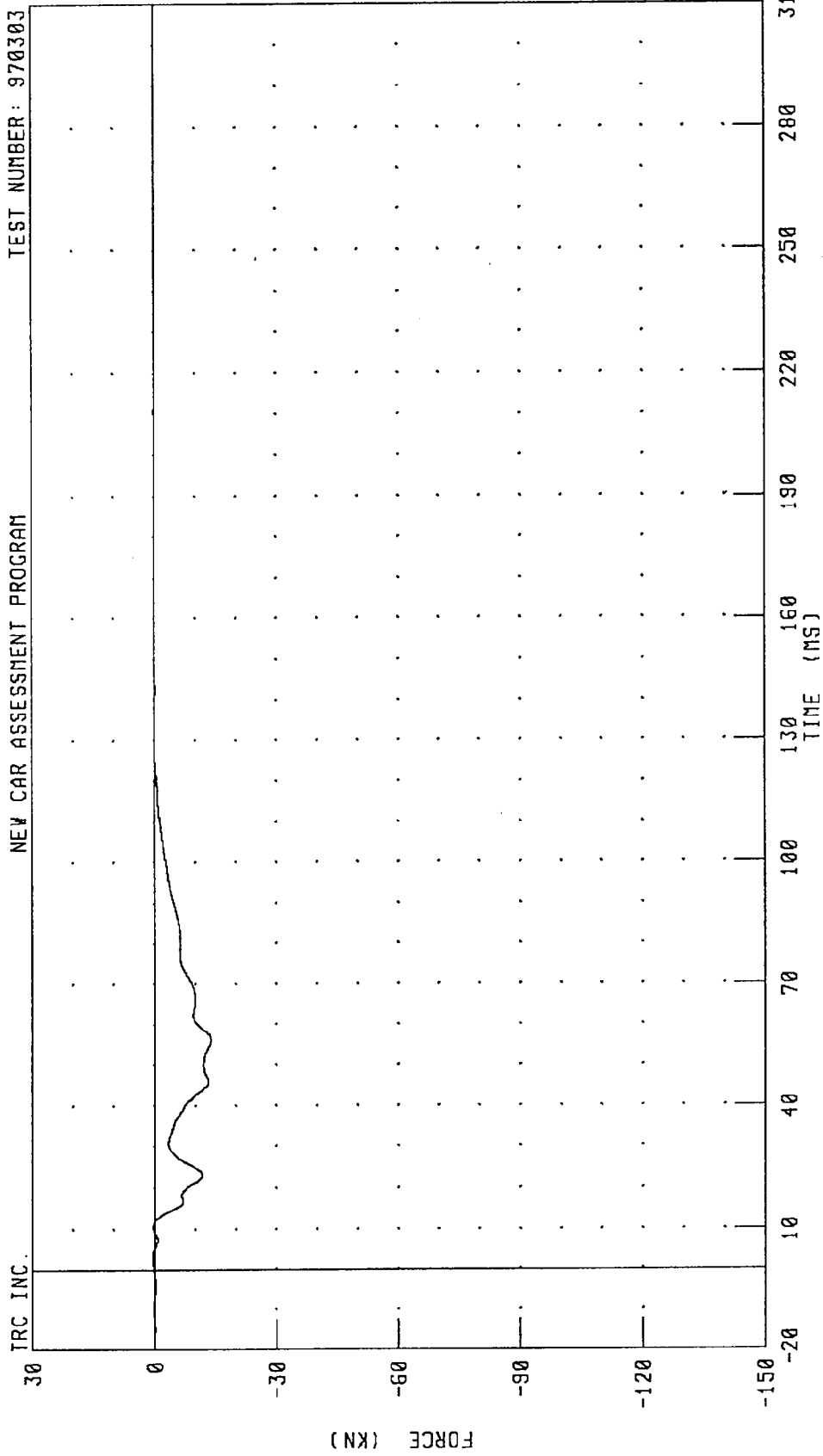


PEAK DATA: 0.67 KN @ 3.60 MS; -13.59 KN @ 70.56 MS

CHANNEL: BD1F FILTER: CH. CLASS 60

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D2 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



PEAK DATA: 0.55 KN @ 2.88 MS; -13.92 KN @ 56.08 MS

FILTER: CH. CLASS 60

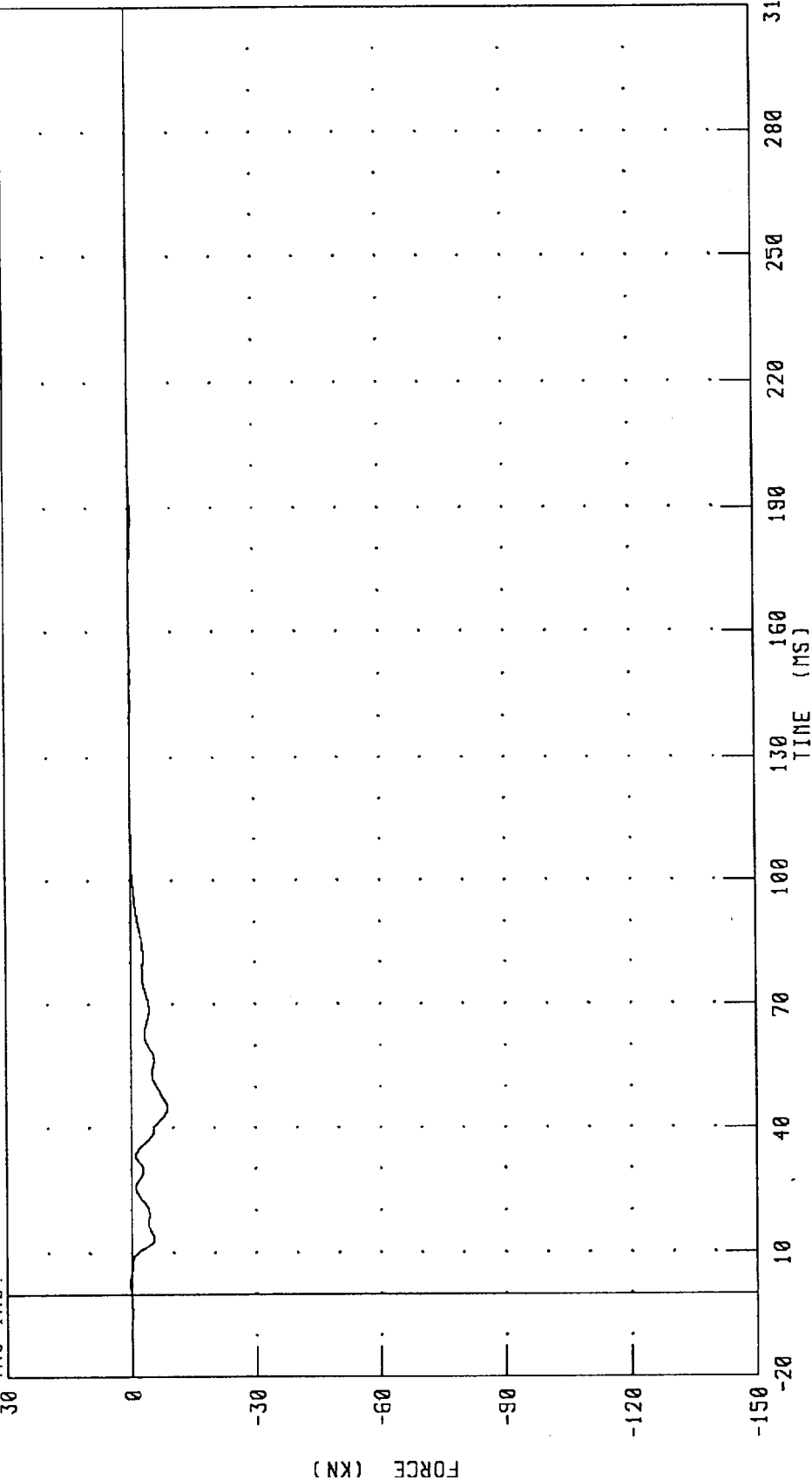
CHANNEL: BD2F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION 03 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



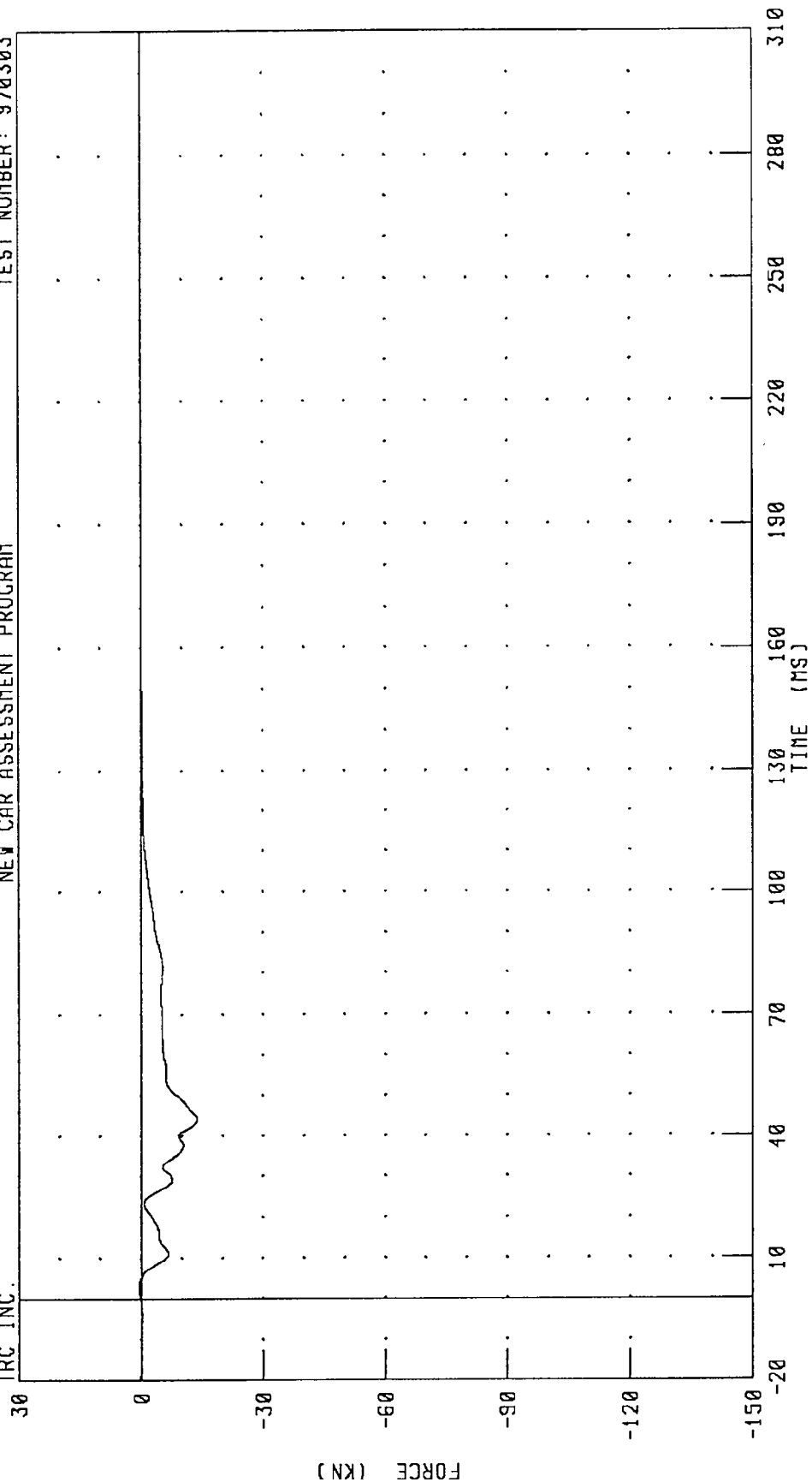
CHANNEL: 803F FILTER: CH. CLASS 60

PEAK DATA: 0.44 KN @ 2.48 MS; -8.74 KN @ 44.88 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D4 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



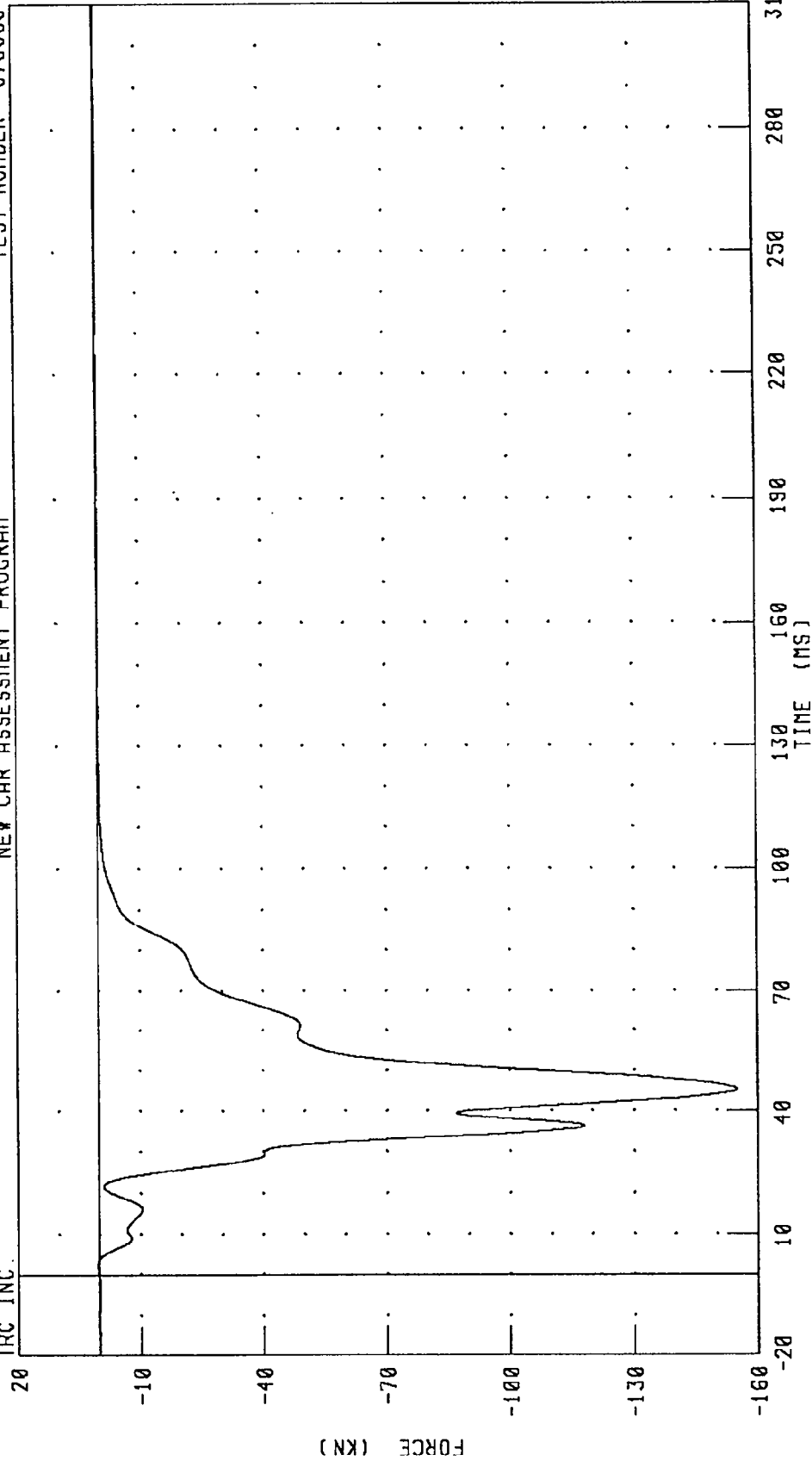
CHANNEL: BD4F FILTER: CH. CLASS 60 PEAK DATA: 0.54 KN @ 2.64 MS; -13.72 KN @ 44.24 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D5 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.55 KN @ 2.24 MS; -155.04 KN @ 45.28 MS

FILTER: CH. CLASS 60

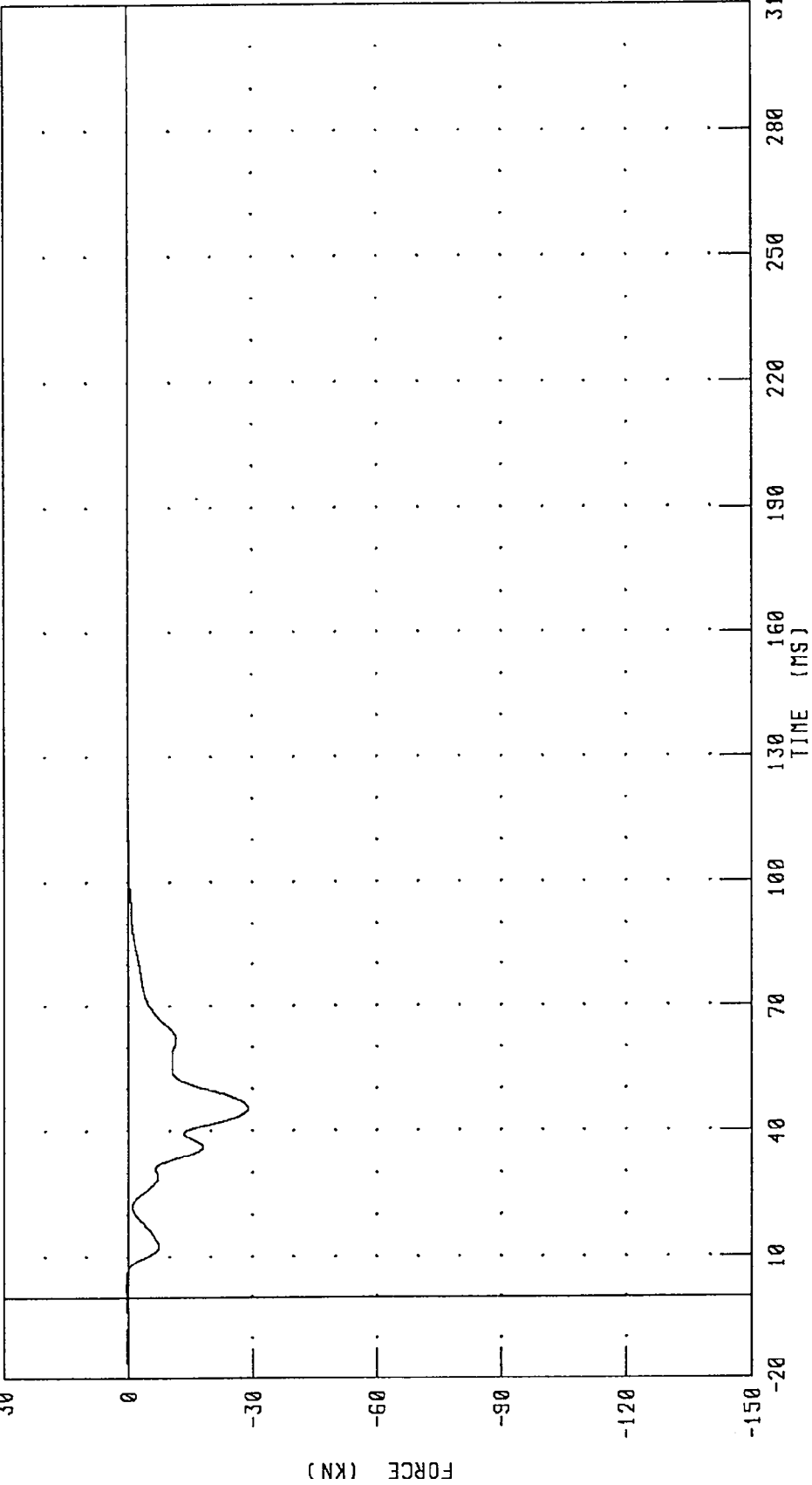
CHANNEL: B05F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D6 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.38 KN @ 2.32 MS; -29.04 KN @ 45.36 MS

FILTER: CH. CLASS 60

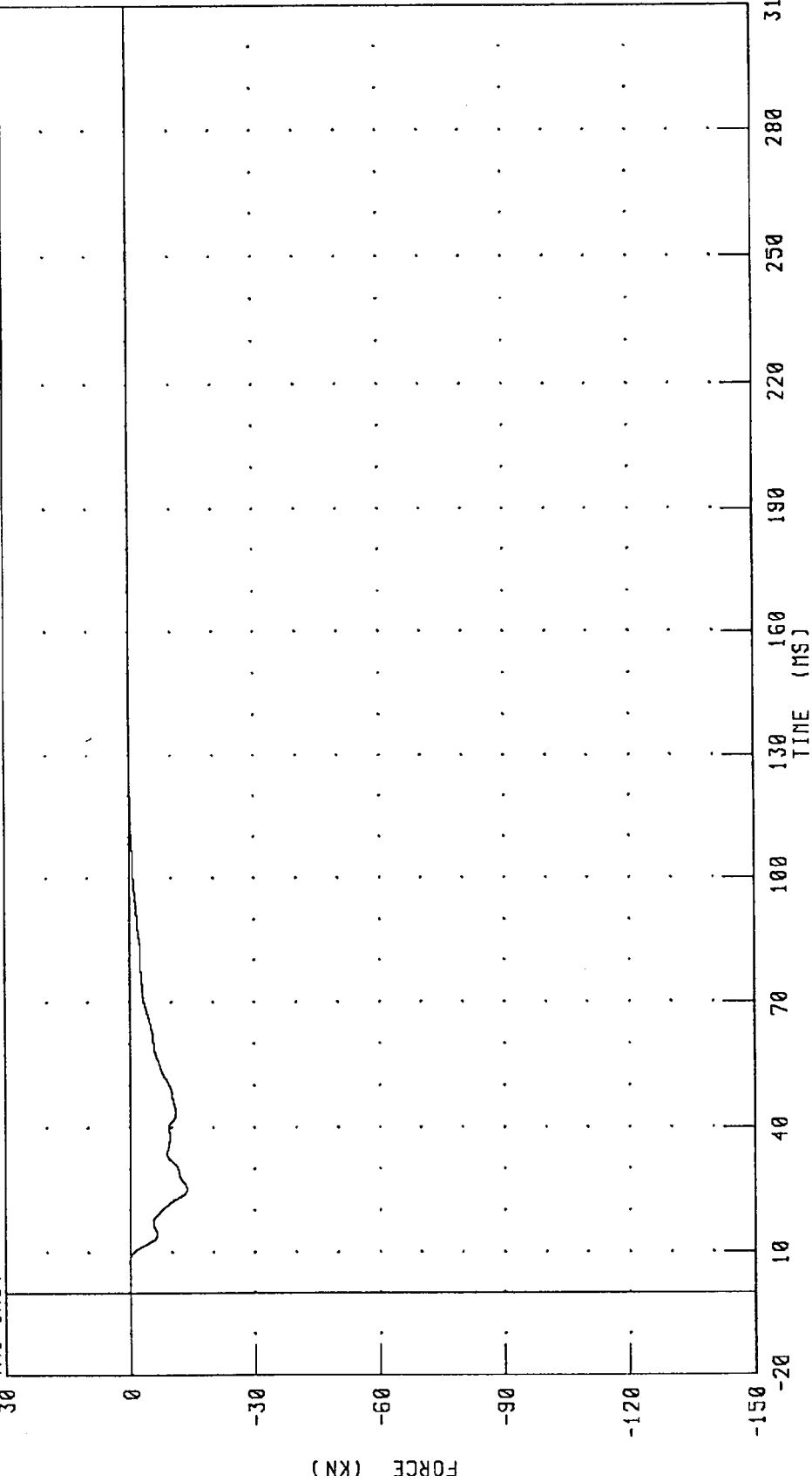
CHANNEL: 806F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D7 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.11 KN @ 7.52 MS; -13.67 KN @ 25.12 MS

FILTER: CH. CLASS 60

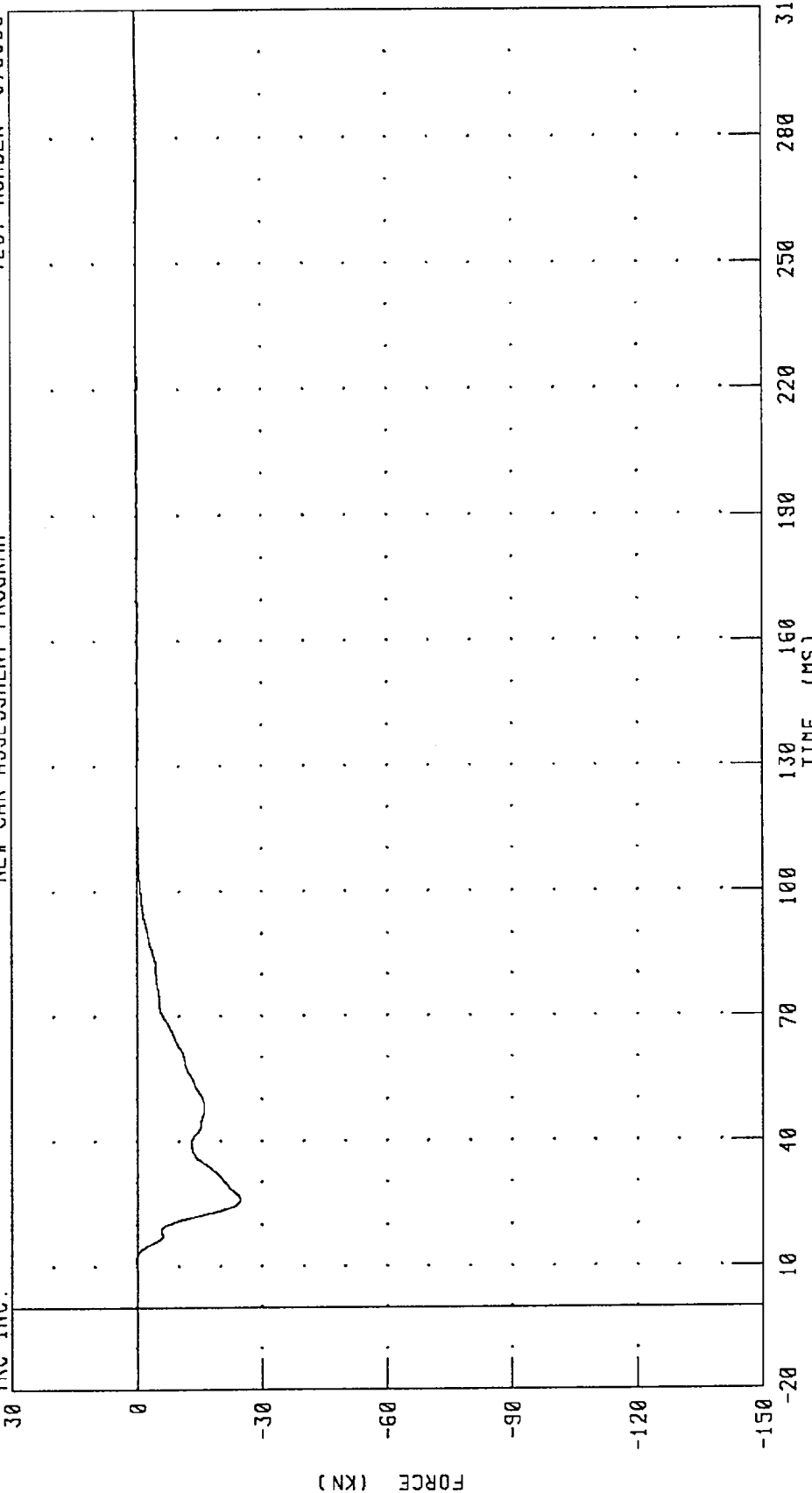
CHANNEL: 807F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D8 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.13 KN @ -20.00 MS; -24.76 KN @ 26.00 MS

FILTER: CH. CLASS 60

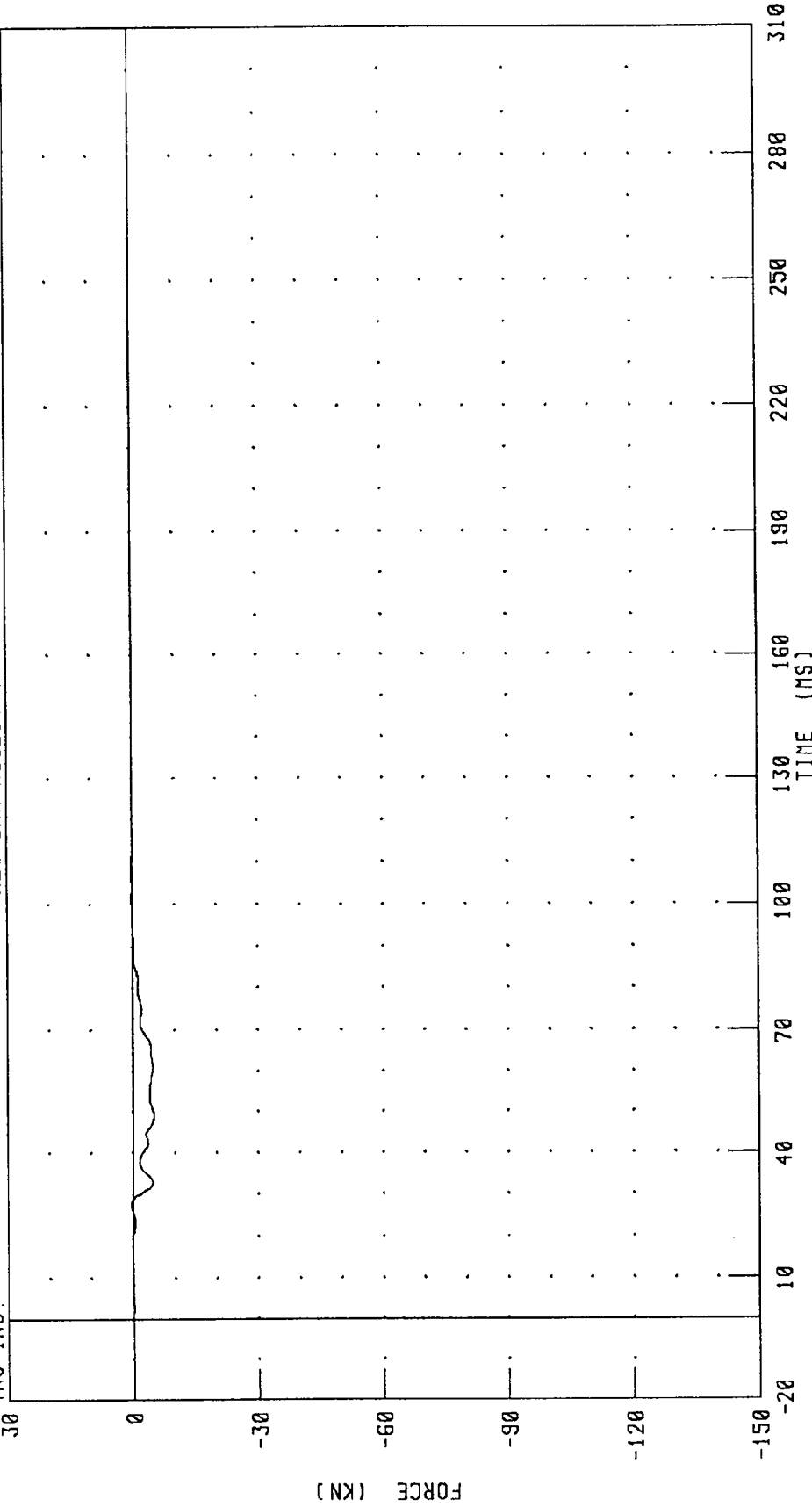
CHANNEL: BD8F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D9 FORCE

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.47 KN @ 27.60 MS; -5.08 KN @ 49.20 MS

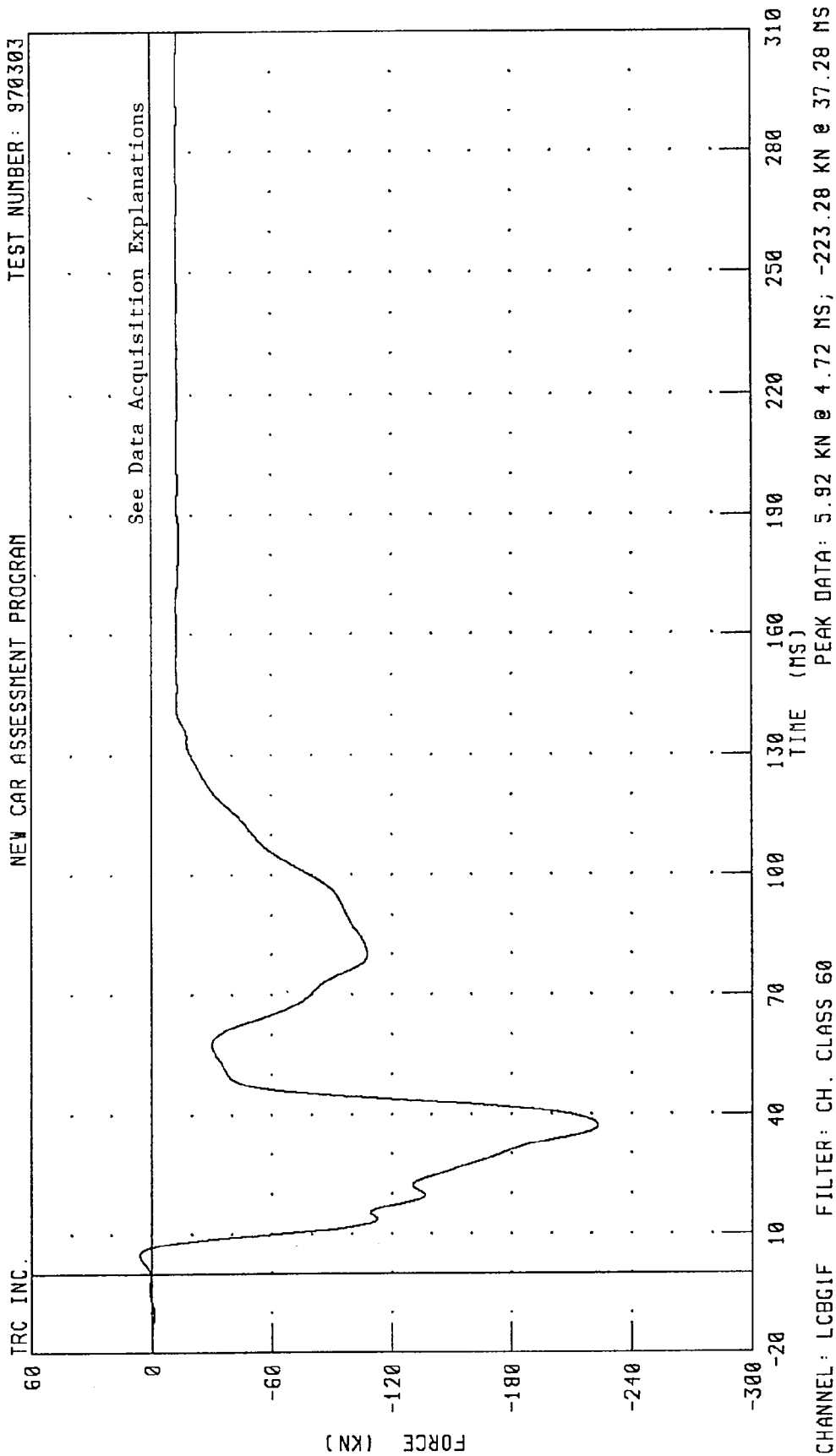
FILTER: CH. CLASS 60

CHANNEL: BD9F

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 1 FORCE TOTAL

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



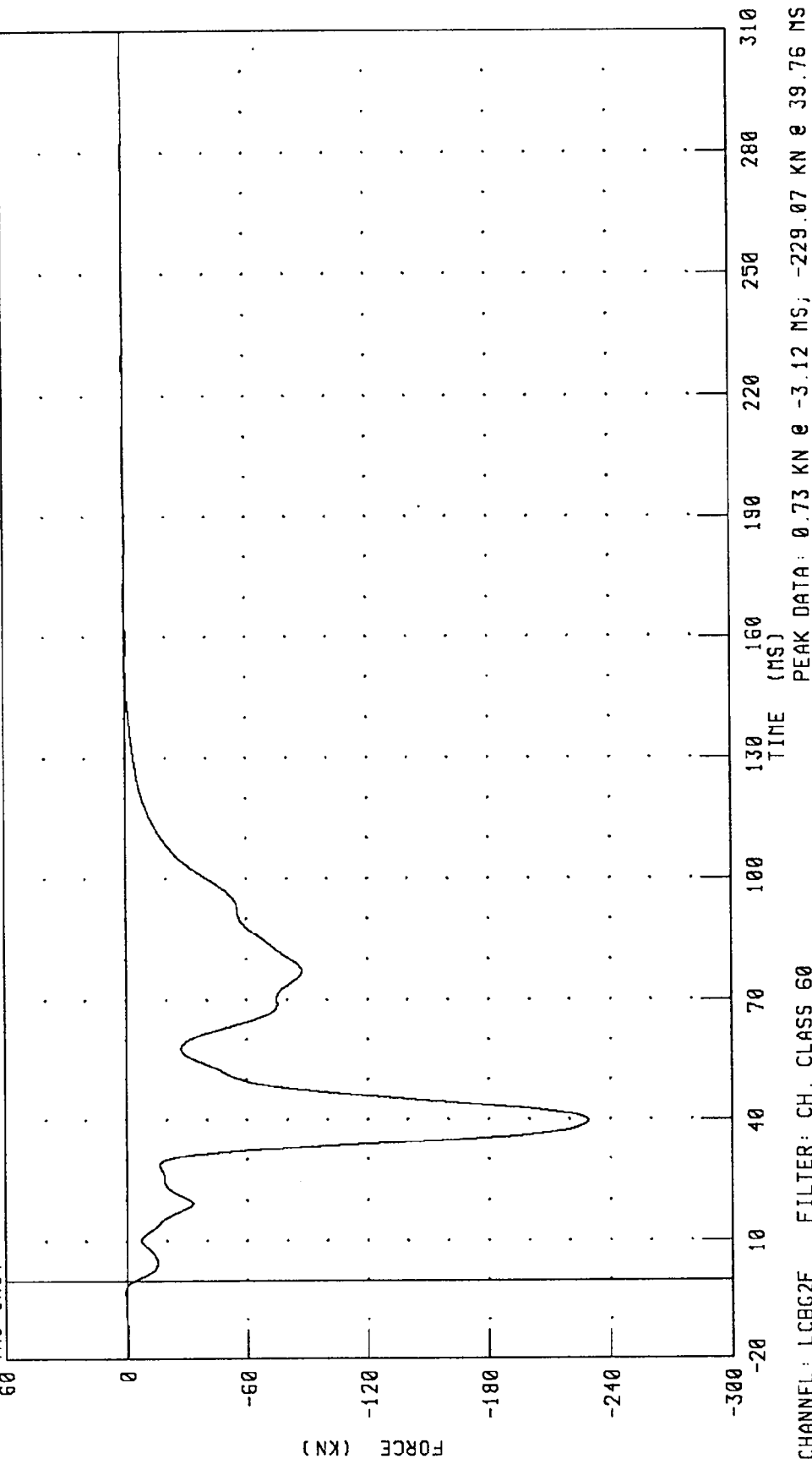
CHANNEL: LCBGIF FILTER: CH. CLASS 60

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 2 FORCE TOTAL

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: LCBG2F FILTER: CH. CLASS 60

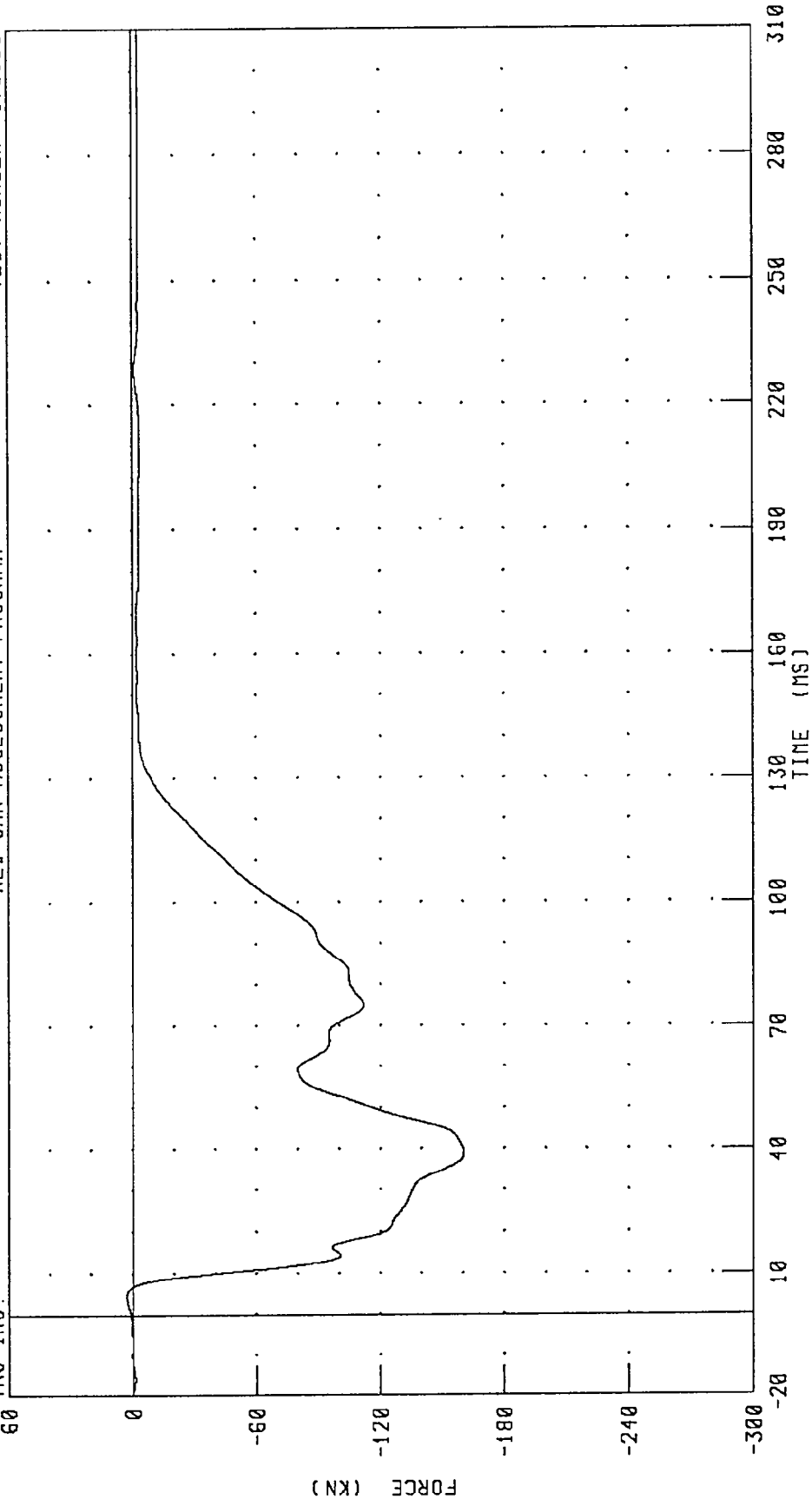
PEAK DATA: 0.73 KN @ -3.12 MS; -229.07 KN @ 39.76 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 3 FORCE TOTAL

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: LCBG3F FILTER: CH. CLASS 60

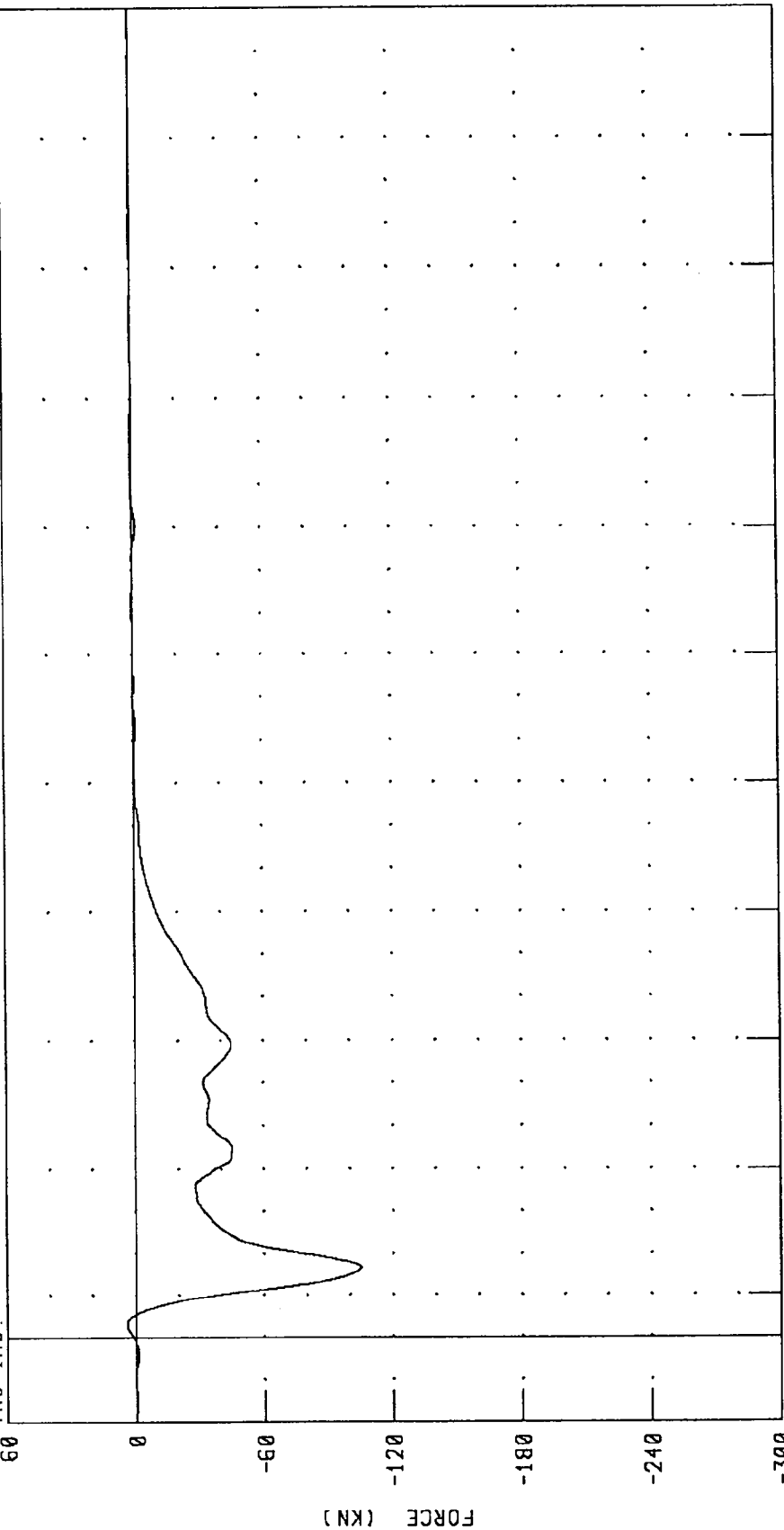
PEAK DATA: 2.81 KN @ 4.24 MS; -160.17 KN @ 39.04 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 4 FORCE TOTAL

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.



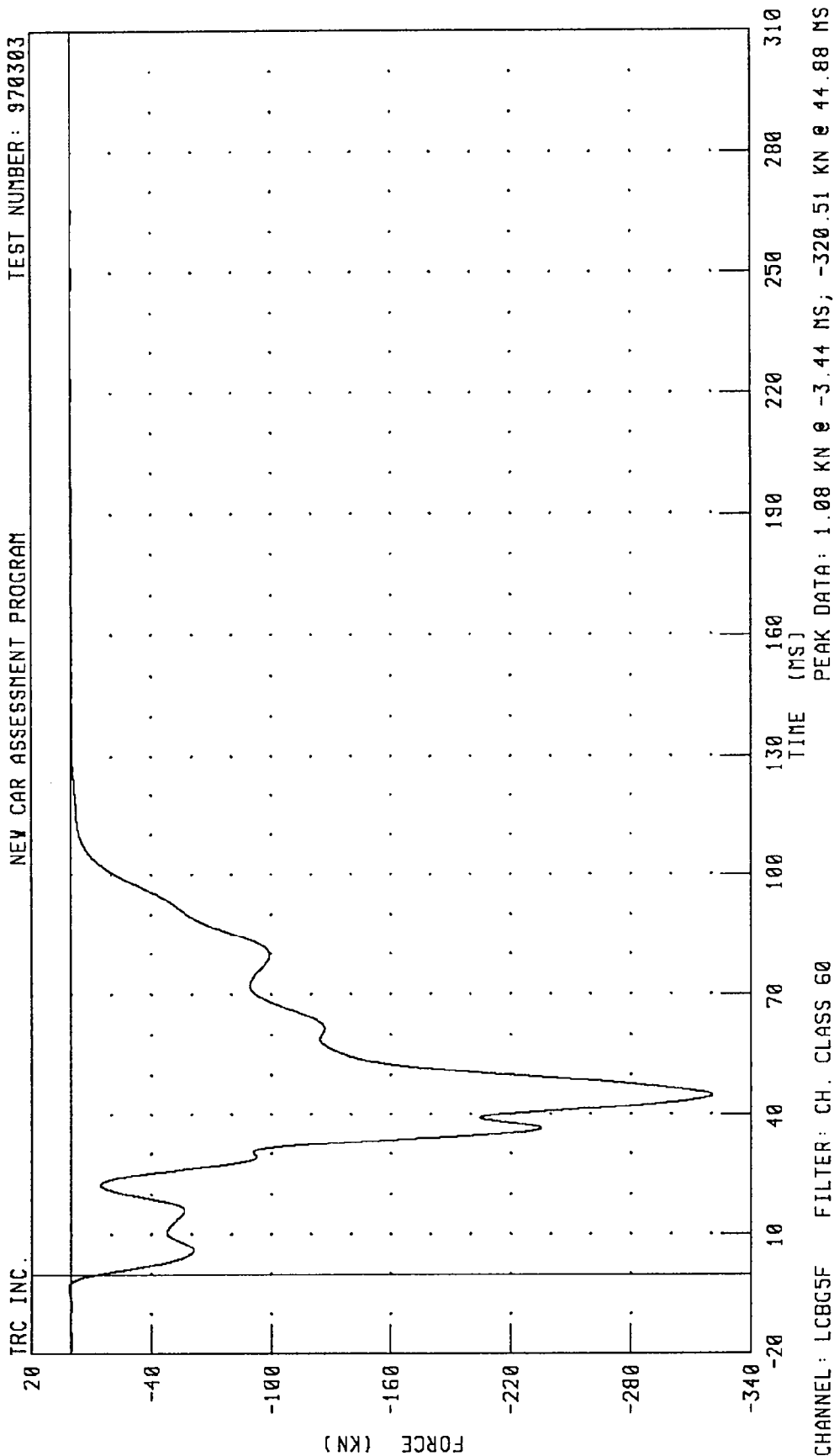
CHANNEL: LCB04F FILTER: CH. CLASS 60

PEAK DATA: 4.24 KN @ 3.04 MS, -105.11 KN @ 16.64 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 5 FORCE TOTAL

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303



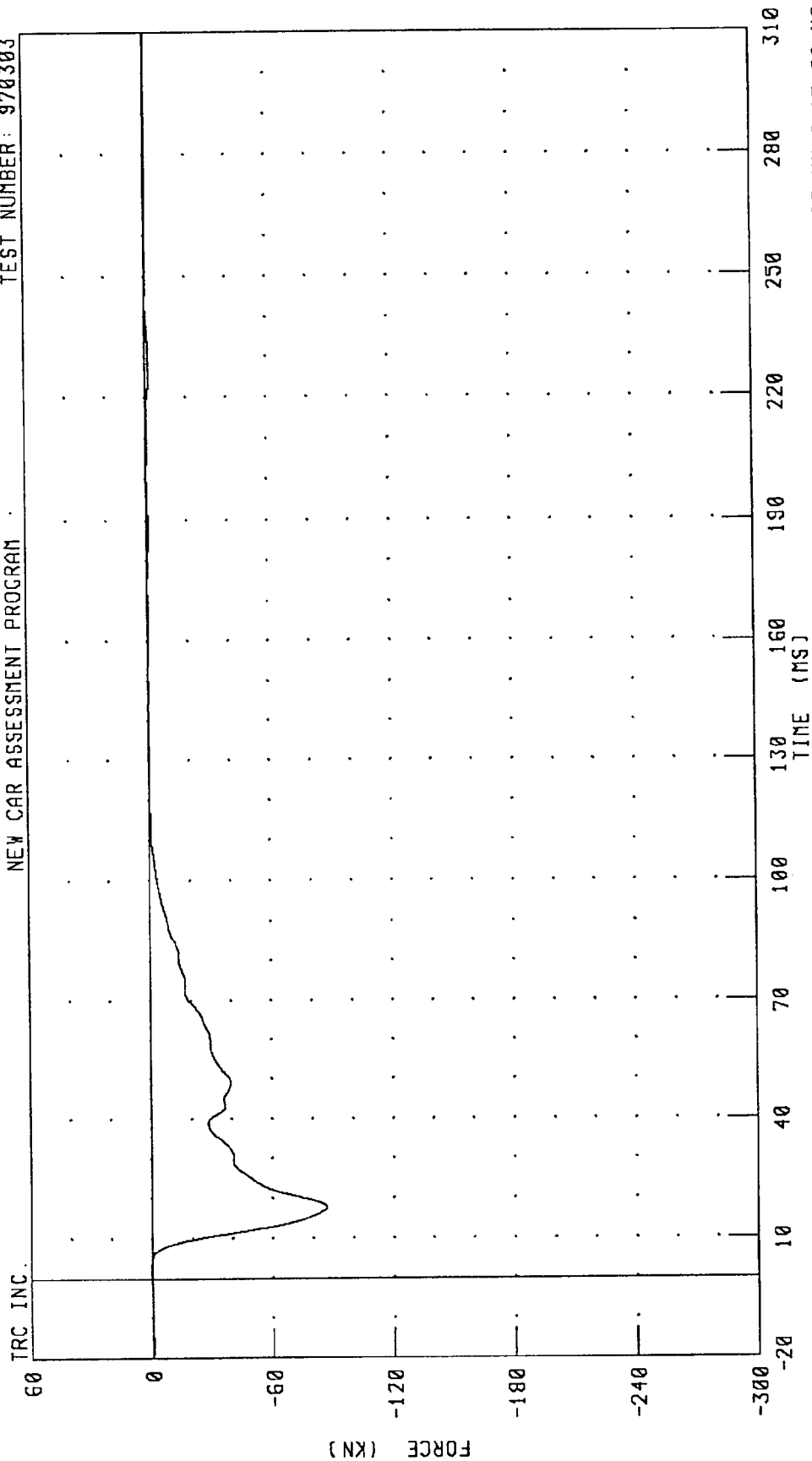
CHANNEL: LCBG5F FILTER: CH. CLASS 60

970303

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 6 FORCE TOTAL

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM



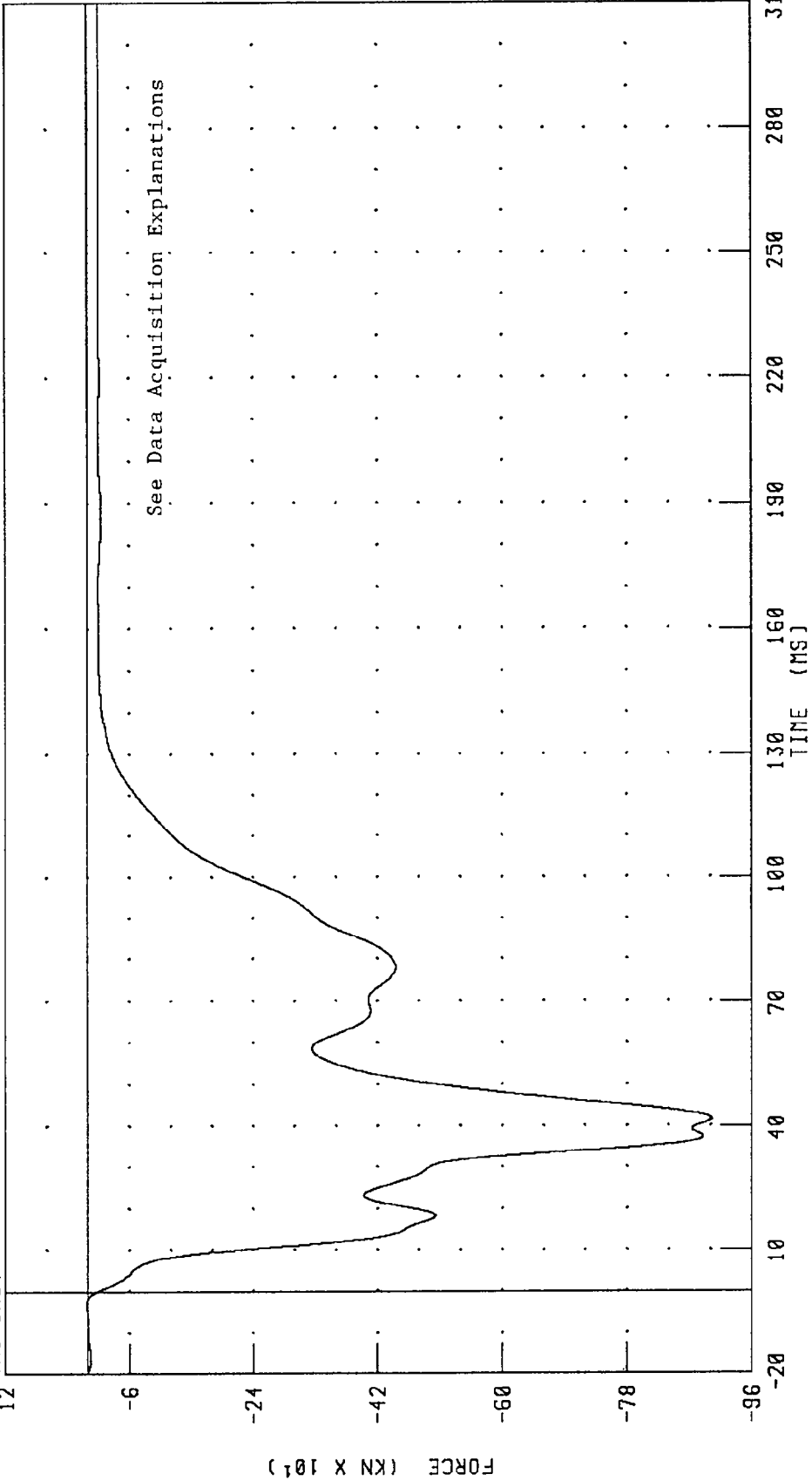
CHANNEL: LCBG6F FILTER: CH. CLASS 60

PEAK DATA: 0.41 KN @ 1.36 MS; -86.77 KN @ 17.68 MS

1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 TOTAL LOAD CELL BARRIER FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 970303

TRC INC.



PEAK DATA: 2.17 KN @ -3.20 MS; -902.55 KN @ 41.76 MS

FILTER: CH. CLASS 60

CHANNEL: LCBGT

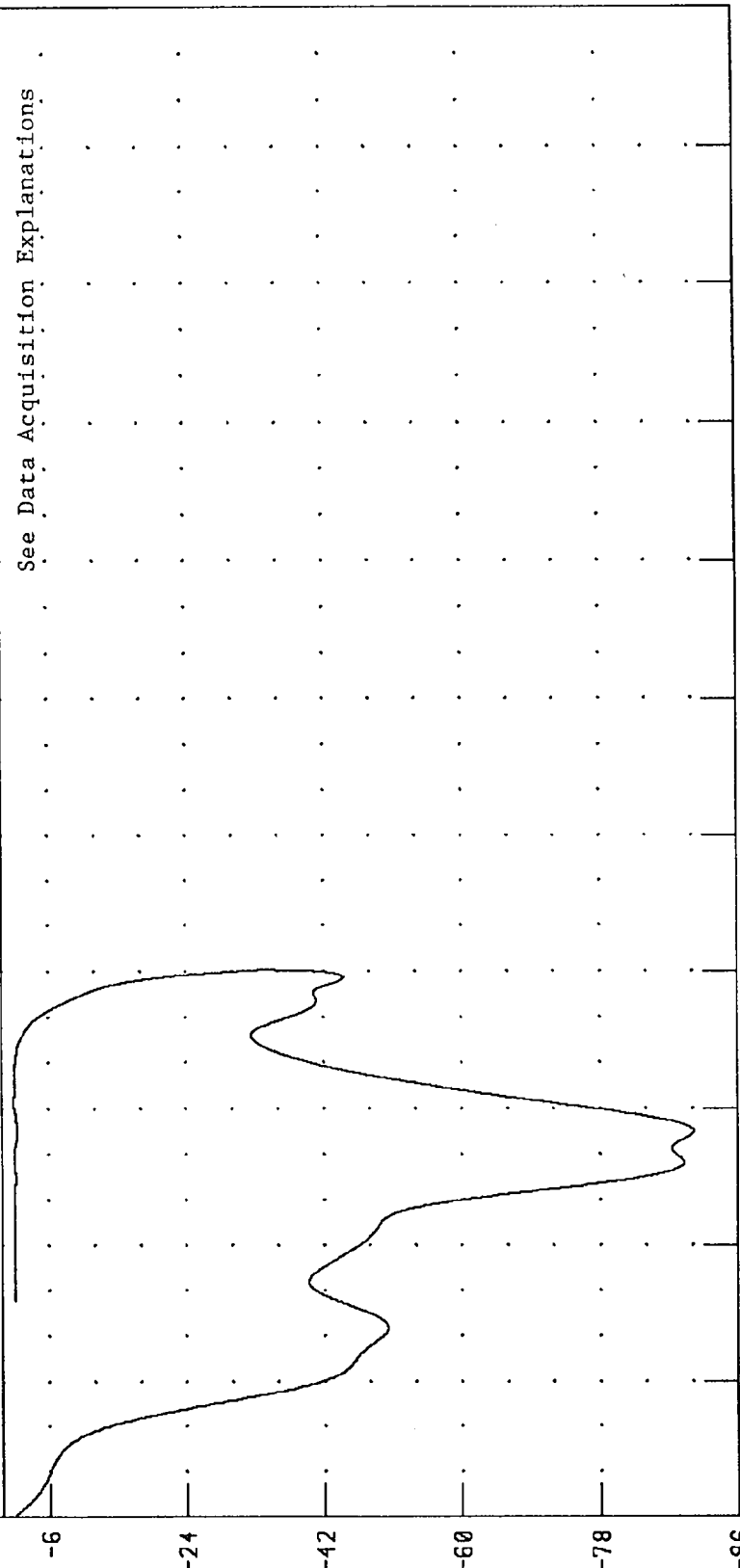
1997 CHEVROLET TAHOE INTO FRONTAL LOAD CELL BARRIER
 TOTAL LOAD CELL BARRIER FORCE VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TEST NUMBER: 970303

NEW CAR ASSESSMENT PROGRAM

TRC INC.

See Data Acquisition Explanations



CHANNEL: 0THXD
 LCBGT
 FILTER: CH. CLASS 180
 CH. CLASS 60
 PEAK DATA: 802.46 MM @ 88.72 MS;
 -14.42 KN @ 170.00 MS;
 -902.55 KN @ 41.76 MS

Appendix C

Dummy Certification Data

Pre-test Certification Data

Driver Dummy S/N: 142

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III EXTERNAL DIMENSIONS

SN 142 HUMANOID

23-JAN-97

TRC INC.

TEST NO: 142C36ED1

572E SN142 EXT.DIMENSION CAL36

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
LOCATION FOR CHEST CIRCUMFERENCE (AA)		429 - 434 MM	432. MM
LOCATION FOR WAIST CIRCUMFERENCE (BB)		226 - 231 MM	229. MM
CHEST CIRCUMFERENCE	(Y)	970 -1001 MM	986. MM
WAIST CIRCUMFERENCE	(Z)	836 - 866 MM	848. MM
CHEST DEPTH	(O)	213 - 229 MM	221. MM
H-POINT HEIGHT	(C)	84 - 89 MM	84. MM
H-POINT FROM SEATBACK	(D)	135 - 140 MM	137. MM
SKULL CAP TO BACKLINE	(H)	41 - 46 MM	43. MM
TOTAL SITTING HEIGHT	(A)	879 - 889 MM	879. MM
THIGH CLEARANCE	(F)	140 - 155 MM	145. MM
BUTTOCK KNEE LENGTH	(K)	579 - 605 MM	602. MM
BUTTOCK POPLITEAL LENGTH	(N)	452 - 478 MM	470. MM
POPLITEAL HEIGHT	(L)	429 - 455 MM	445. MM
KNEE PIVOT HEIGHT	(M)	485 - 500 MM	488. MM
FOOT LENGTH	(P)	252 - 267 MM	257. MM
FOOT BREADTH	(W)	91 - 107 MM	97. MM
SHOULDER PIVOT FROM BACKLINE	(E)	84 - 94 MM	91. MM
SHOULDER BREADTH	(V)	422 - 437 MM	429. MM
SHOULDER PIVOT HEIGHT	(B)	506 - 521 MM	508. MM
ELBOW REST HEIGHT	(J)	191 - 211 MM	203. MM
SHOULDER-ELBOW LENGTH	(I)	330 - 345 MM	345. MM
BACK OF ELBOW TO WRIST PIVOT	(G)	290 - 305 MM	292. MM

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Richard L. Van

RUN NUMBER: 012397.0831

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III

23-JAN-97

TRC INC.

TEST NO: 142C36HD1

572E SN142 HEAD DROP CAL 36

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	29.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	266.55 G
PEAK LATERAL ACCELERATION	15 G MAX	-5.57 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

Richard LeVan

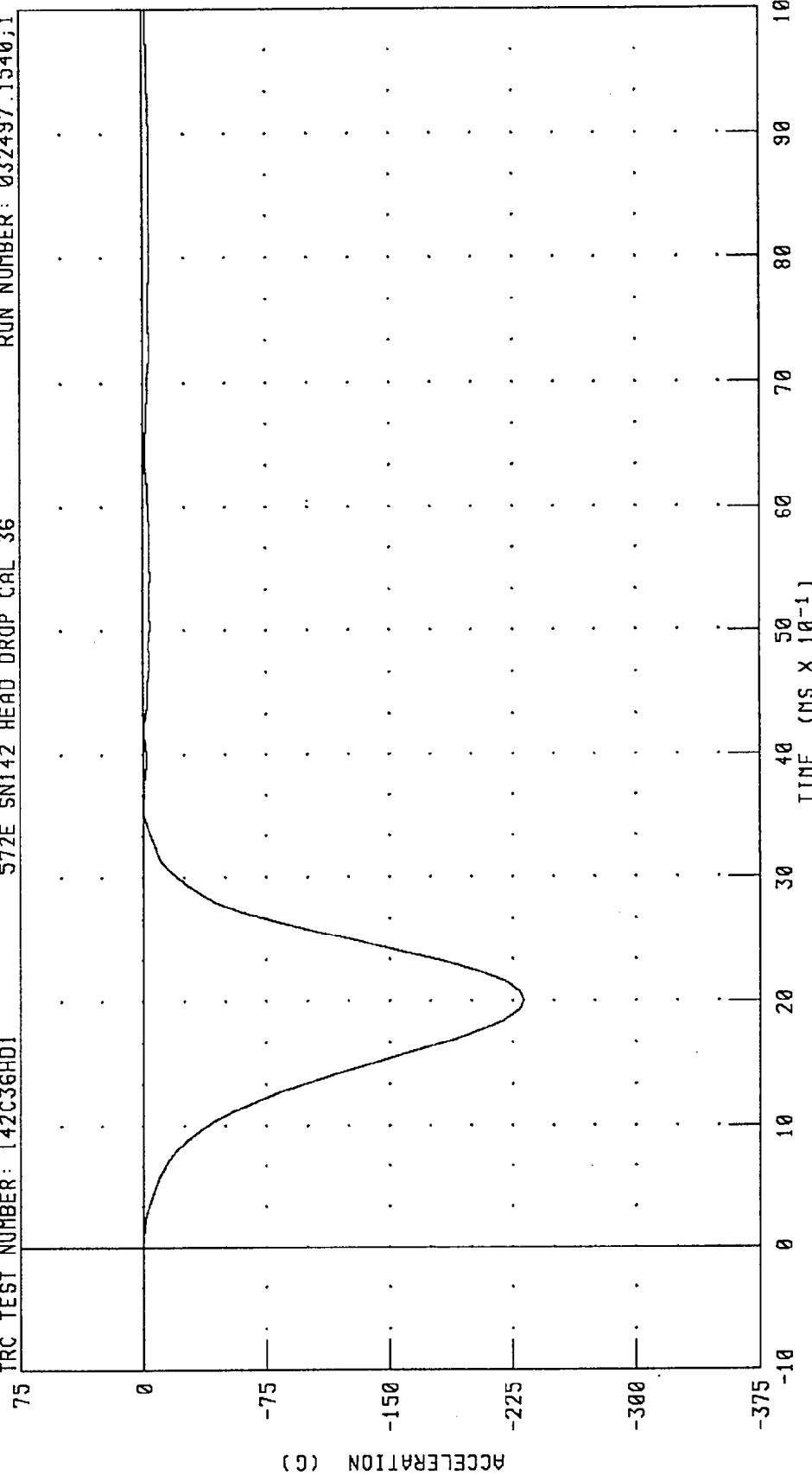
RUN NUMBER: 012397.0933;1

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS

TRC TEST NUMBER: 142C36HD1

572E SN142 HEAD DROP CAL 36

RUN NUMBER: 032497.1540;1

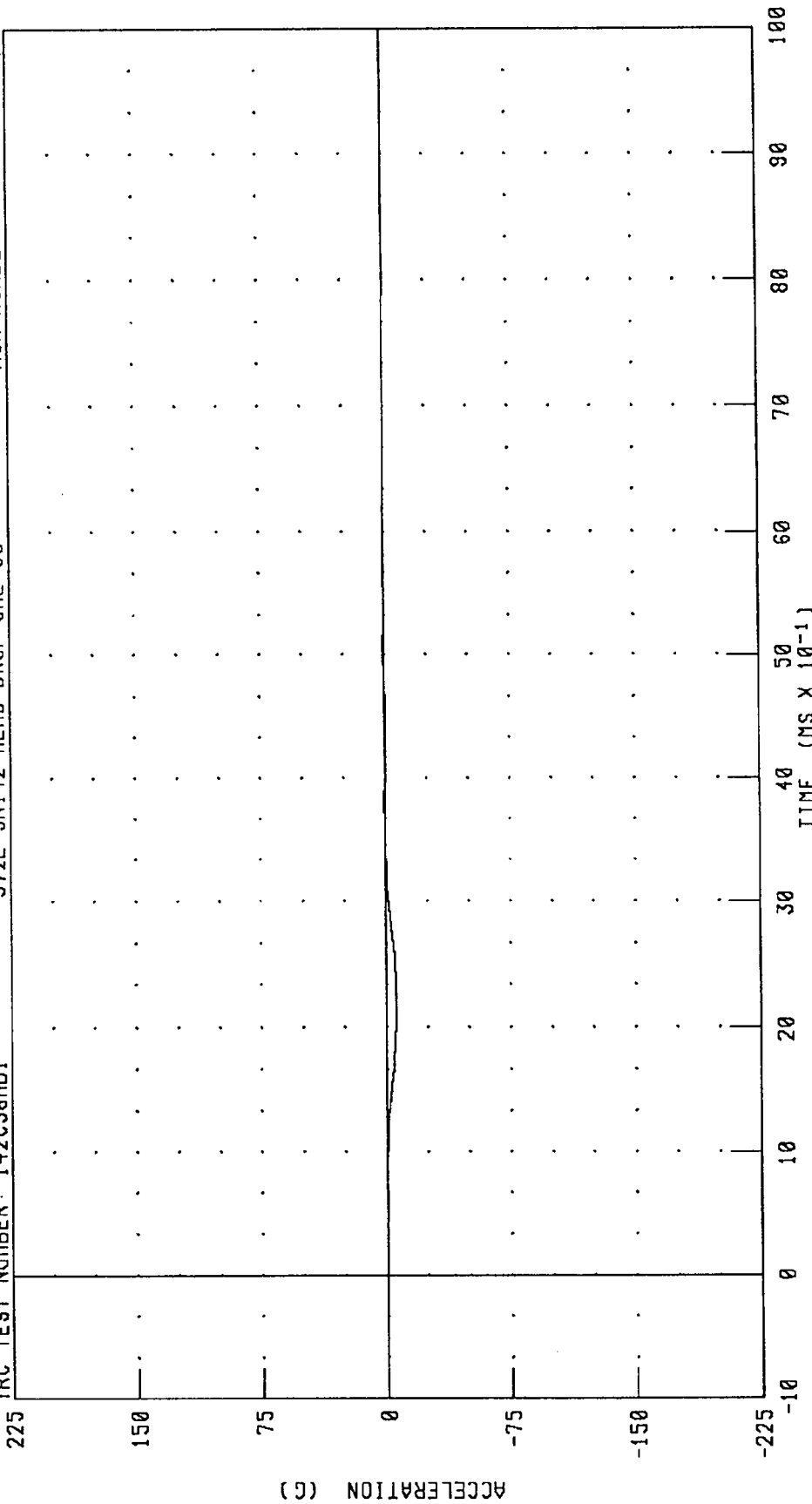


PEAK DATA: 0.06 G @ 0.00 MS; -232.00 G @ 2.00 MS

CHANNEL: HEDXC FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Y AXIS

IRC TEST NUMBER: 142C36HD1 572E SN142 HEAD DROP CAL 36 RUN NUMBER: 032497.1540.1



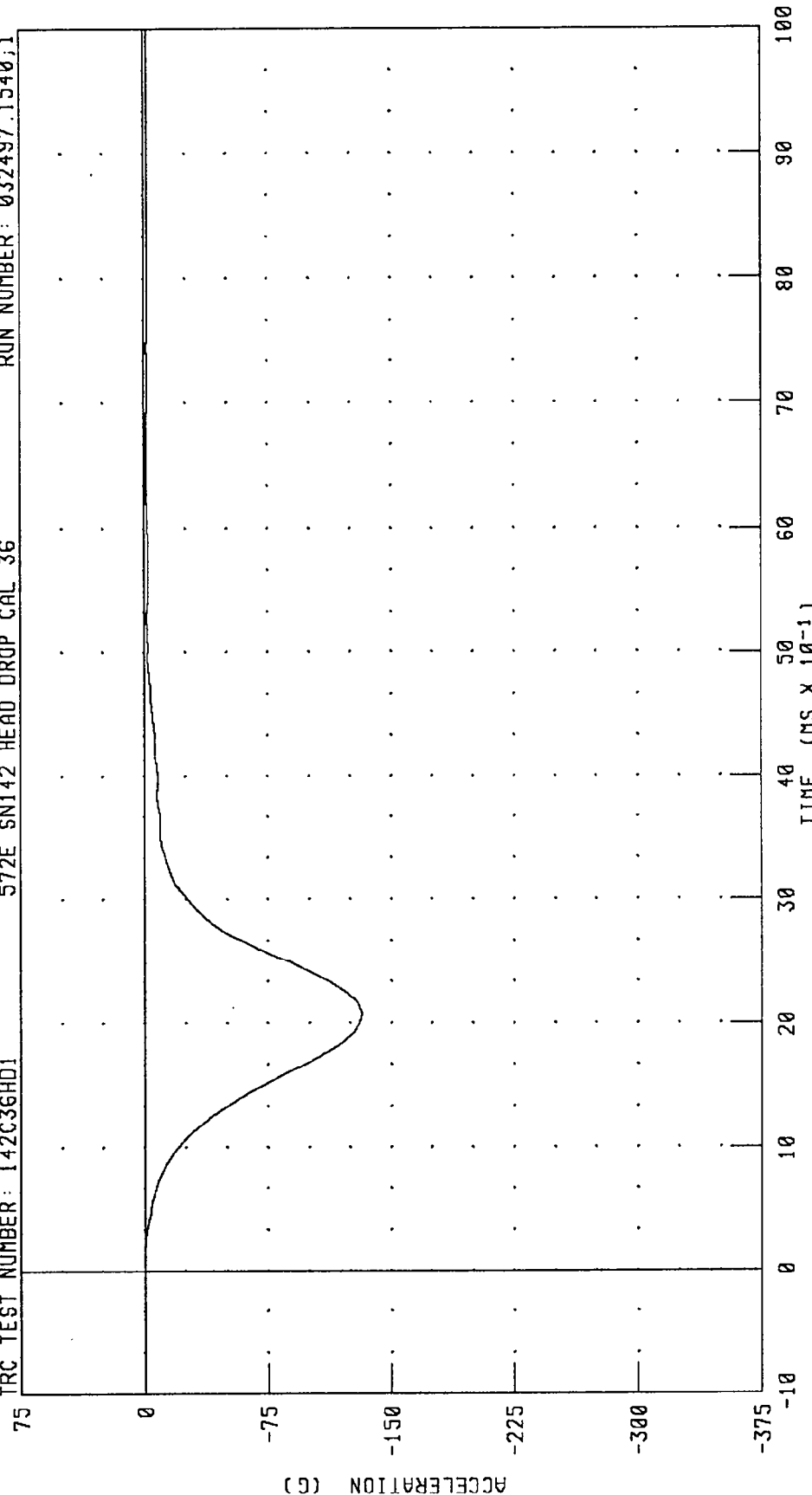
CHANNEL: HEDYG FILTER: CH. CLASS 1000 PEAK DATA: 0.63 G @ 6.00 MS; -5.58 G @ 2.24 MS

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS

TRC TEST NUMBER: 142C36HD1

572E SN142 HEAD DROP CAL 36

RUN NUMBER: 032497.1540;1



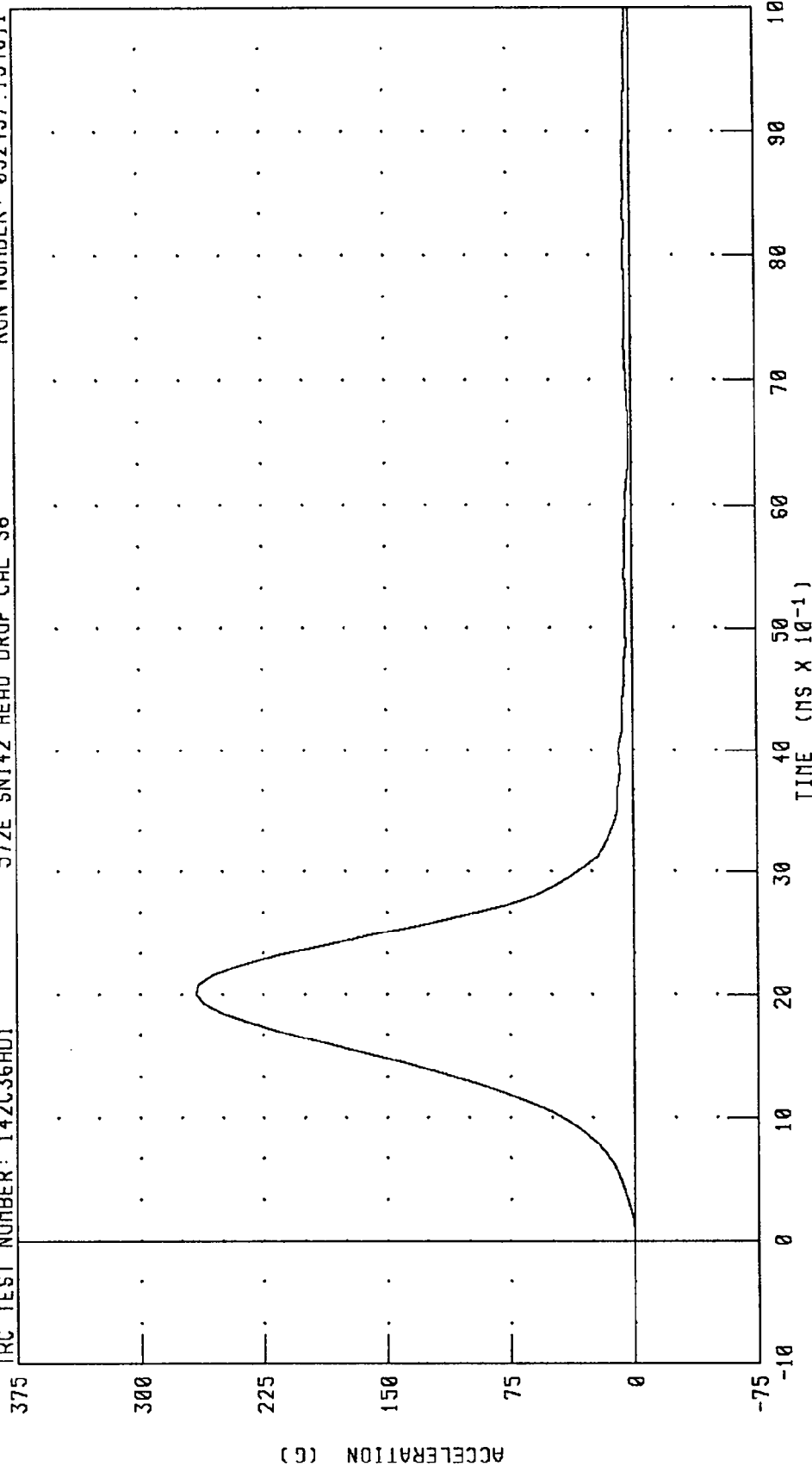
PEAK DATA: 0.02 G @ 0.08 MS; -131.93 G @ 2.08 MS

CHANNEL: HEDZG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION

TRC TEST NUMBER: 142C36HD1 RUN NUMBER: 032497.1540;1

572E SN142 HEAD DROP CAL 36



CHANNEL: HEDRG FILTER: CH. CLASS 1000

PEAK DATA: 266.56 G @ 2.00 MS; 0.09 G @ -0.56 MS

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

23-JAN-97

TRC INC. TEST NO: 142C36NF1 572E SN142 NECK FLEXION CAL36

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	29.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.93 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.07 G
	20 MS	17.60 - 22.60 G	20.97 G
	30 MS	12.50 - 18.50 G	15.98 G
MAX PENDULUM G		29 G MAX	23.84 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	15.88 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	36.40 MS
D PLANE	MAX	64 - 78 DEG.	74.39 DEG.
ROTATION	TIME	57 - 64 MS	58.56 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	97.12 NM
	TIME	47 - 58 MS	50.32 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	114.88 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	99.52 MS

TEST MEETS SPECIFICATIONS

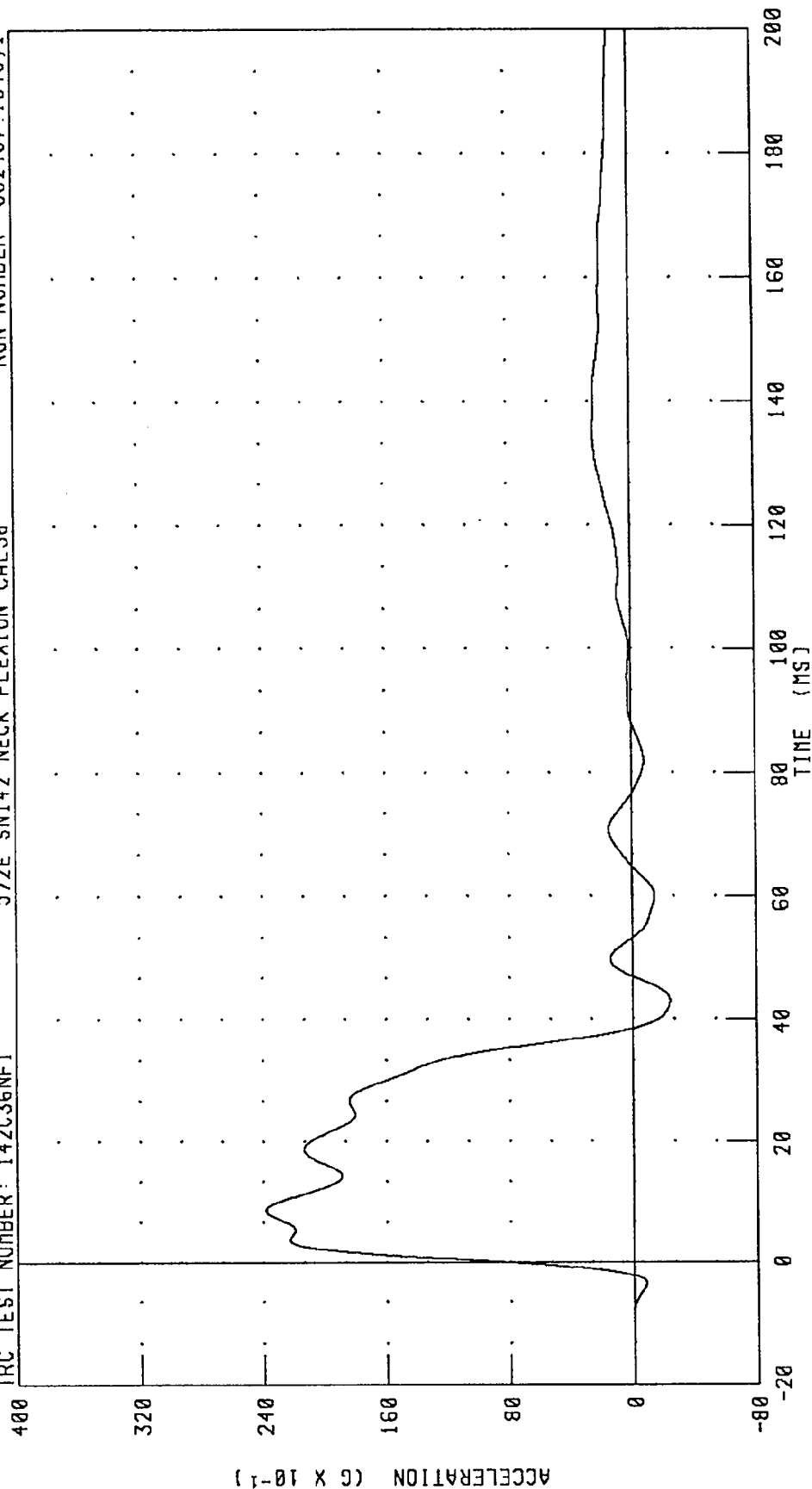
TECHNICIAN Richard L. Van

RUN NUMBER: 012397.1048;1

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 PENDULUM DECELERATION

IRC TEST NUMBER: 142C36NF1 RUN NUMBER: 032497.1540;1

572E SN142 NECK FLEXION CAL36



PEAK DATA: 23.84 G @ 8.64 MS; -2.40 G @ 42.96 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

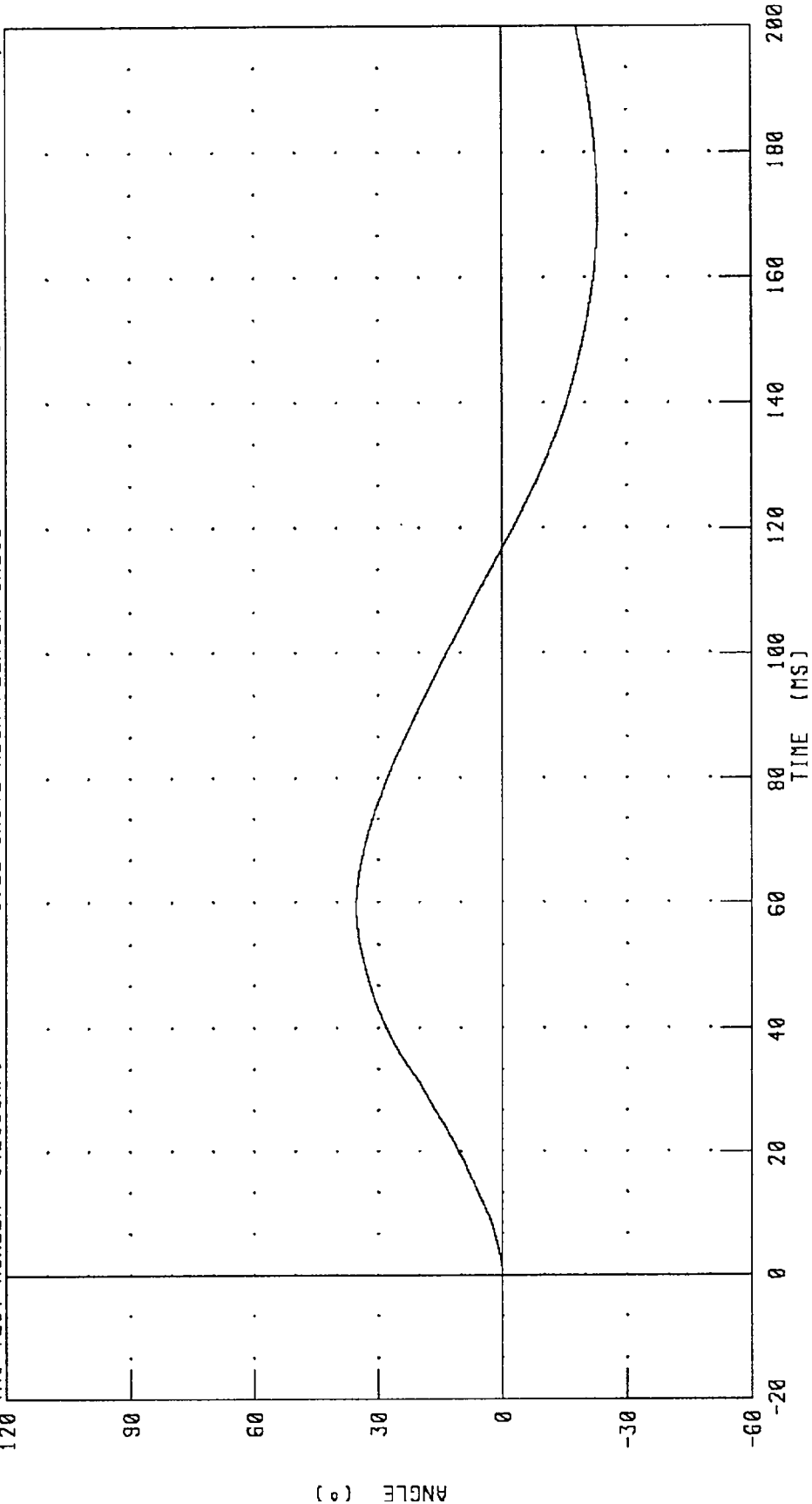
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN142 NECK FLEXION CAL36

TRC TEST NUMBER: 142C36NF1

RUN NUMBER: 032497.1540;1



PEAK DATA: 35.30 ° @ 59.20 MS; -23.05 ° @ 170.88 MS

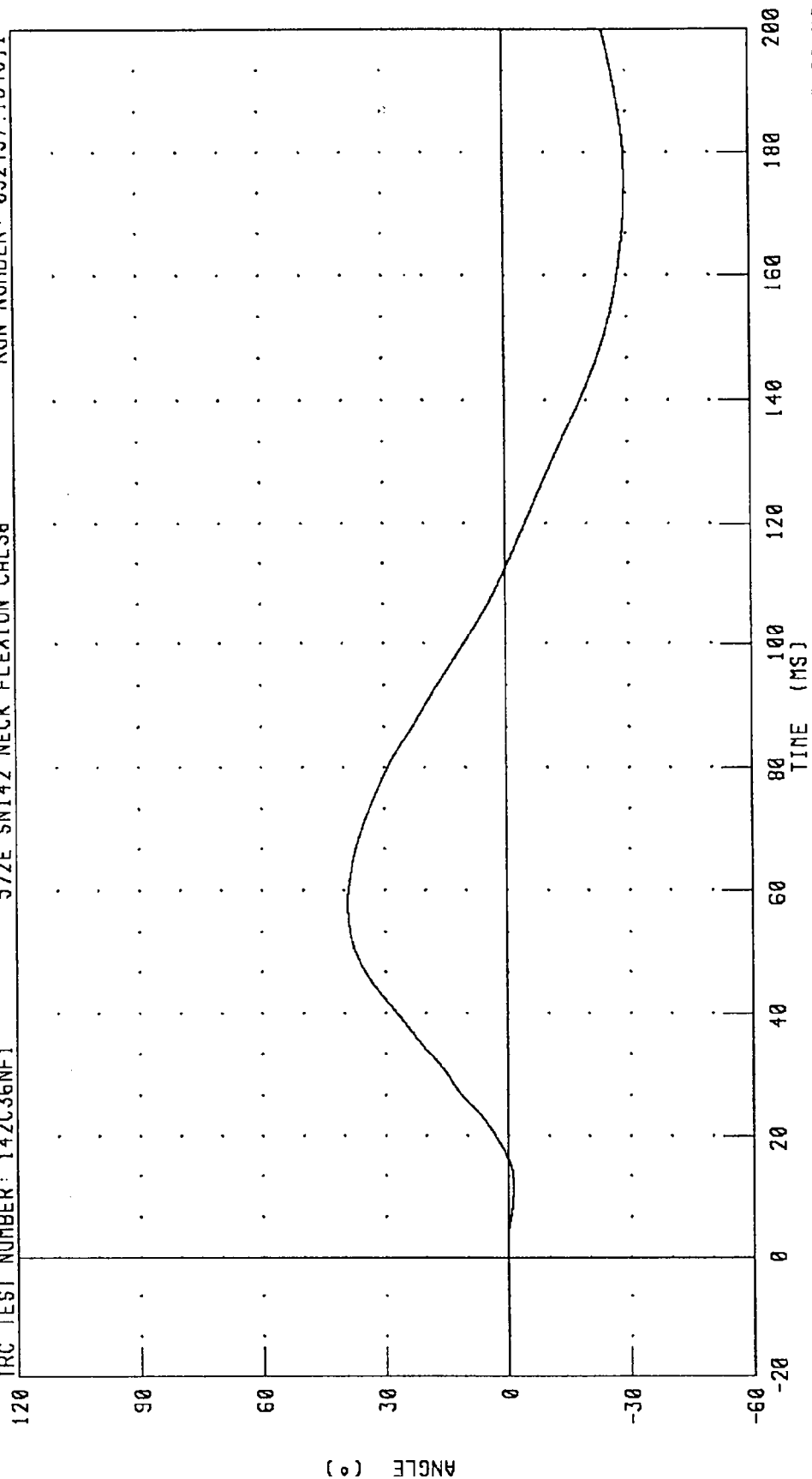
FILTER: CH. CLASS 60

CHANNEL: BETA

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 142C36NF1 RUN NUMBER: 032497.1540;1

572E SN142 NECK FLEXION CAL36

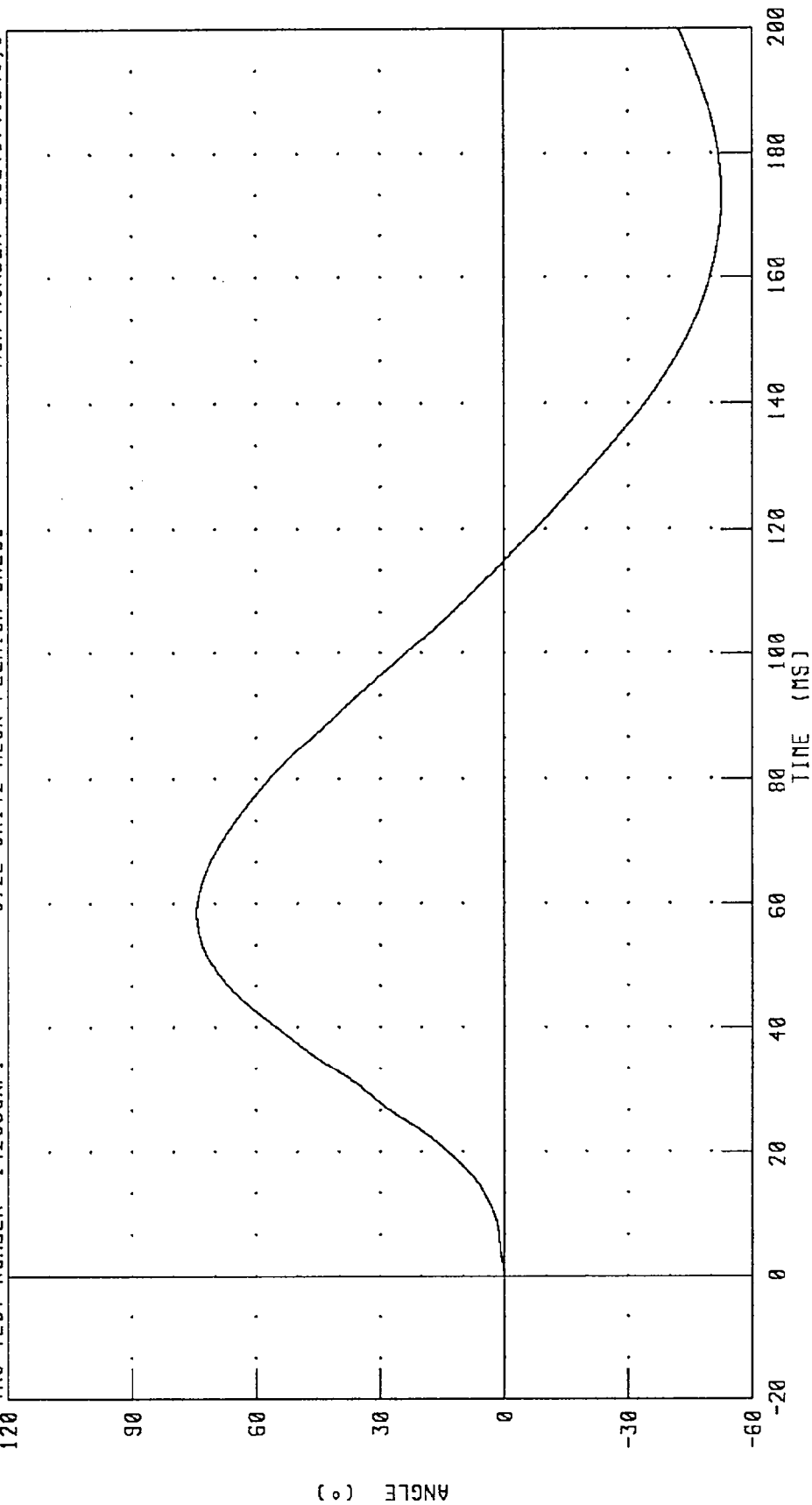


CHANNEL: THETA FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 142C36NF1 572E SN142 NECK FLEXION CAL36 RUN NUMBER: 032497.1540;1



PEAK DATA: 74.40 ° @ 58.56 MS; -52.53 ° @ 173.20 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

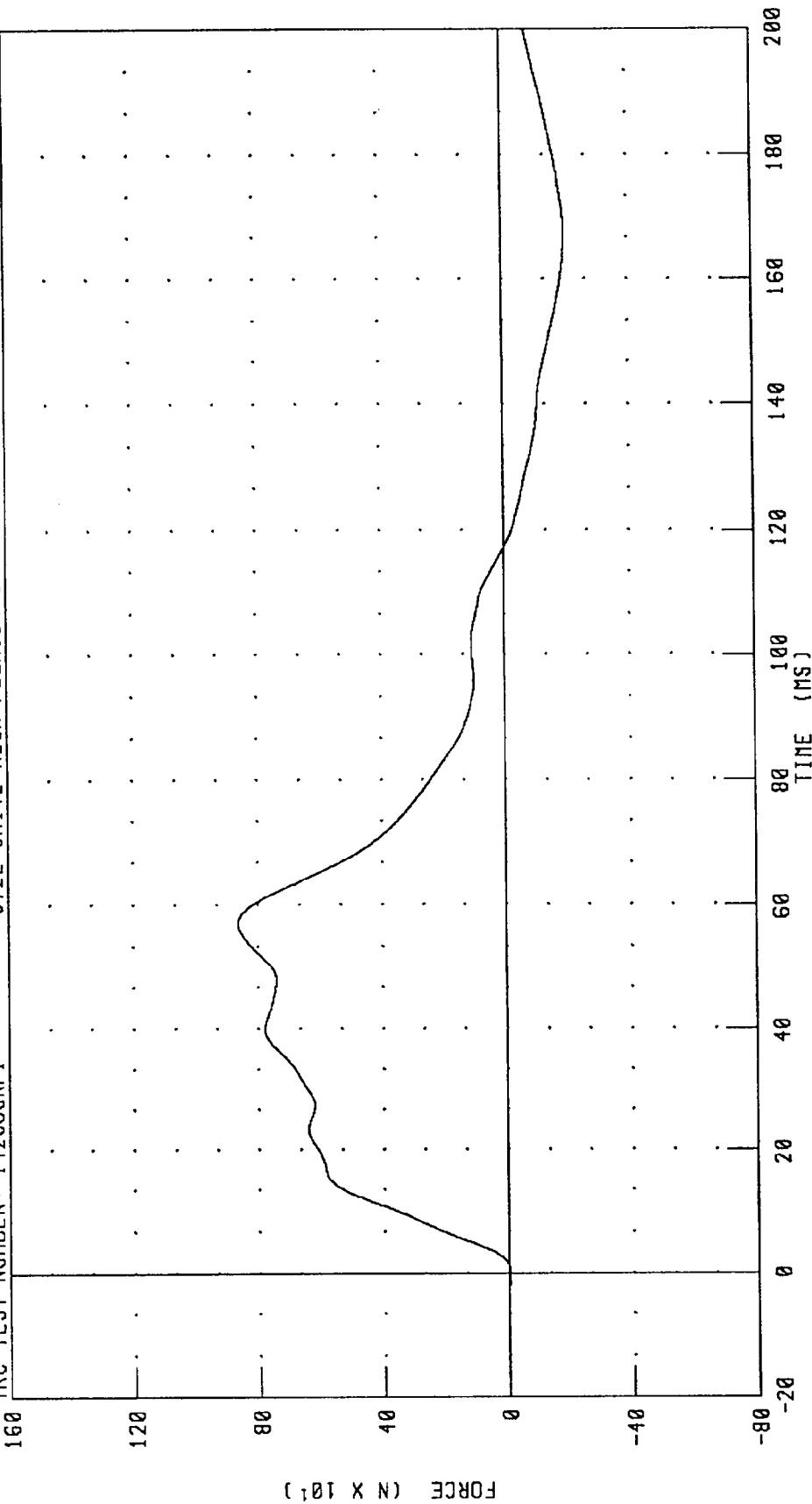
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 142C36NF1

572E SN142 NECK FLEXION CAL36

RUN NUMBER: 032497.1540.1



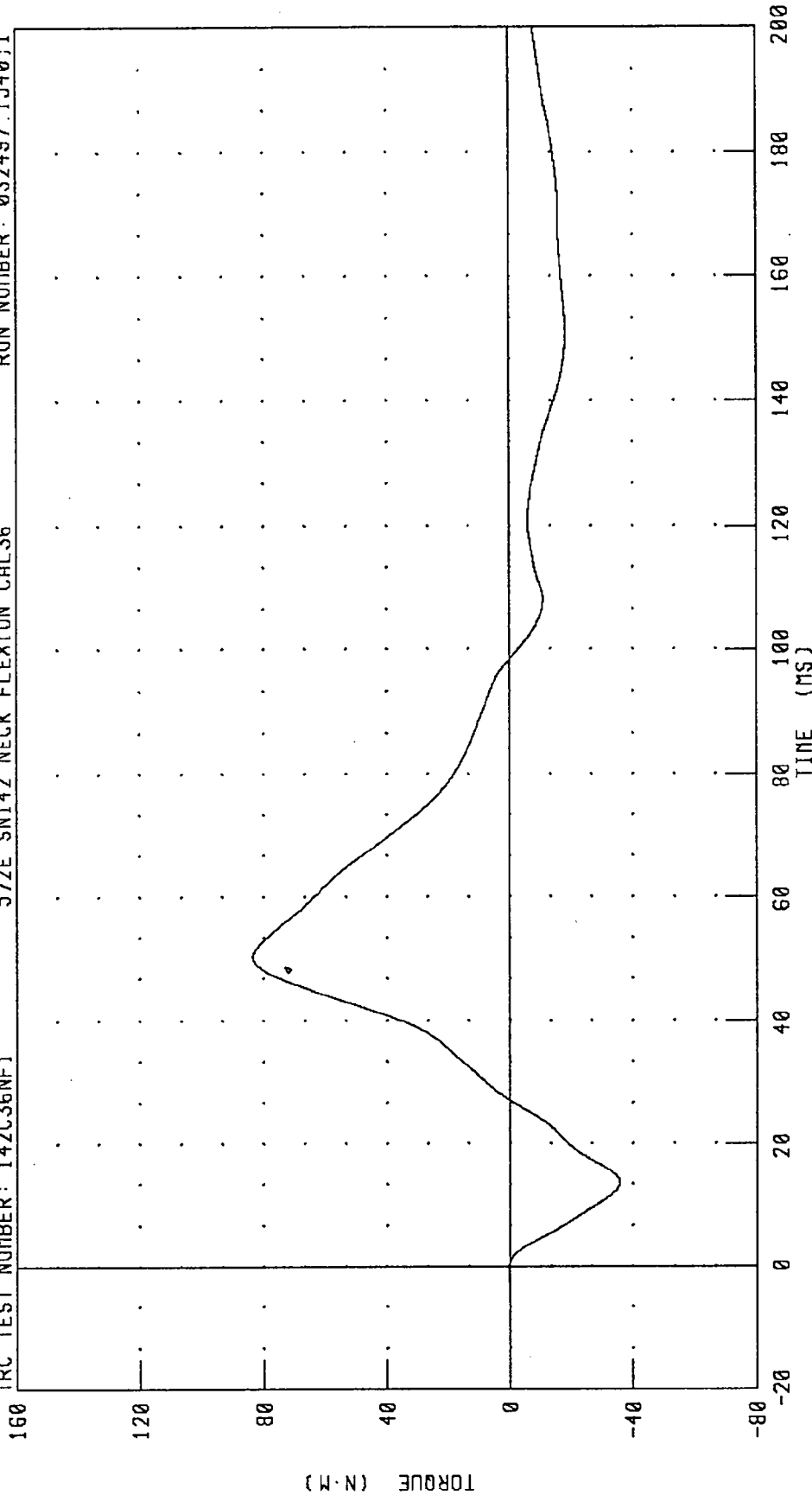
PEAK DATA: 863.99 N @ 57.04 MS; -199.75 N @ 167.36 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS

TRC TEST NUMBER: 142C36NF1 RUN NUMBER: 032497.1540;1

572E SN142 NECK FLEXION CAL36



PEAK DATA: 83.59 N·M @ 50.16 MS; -35.59 N·M @ 13.60 MS

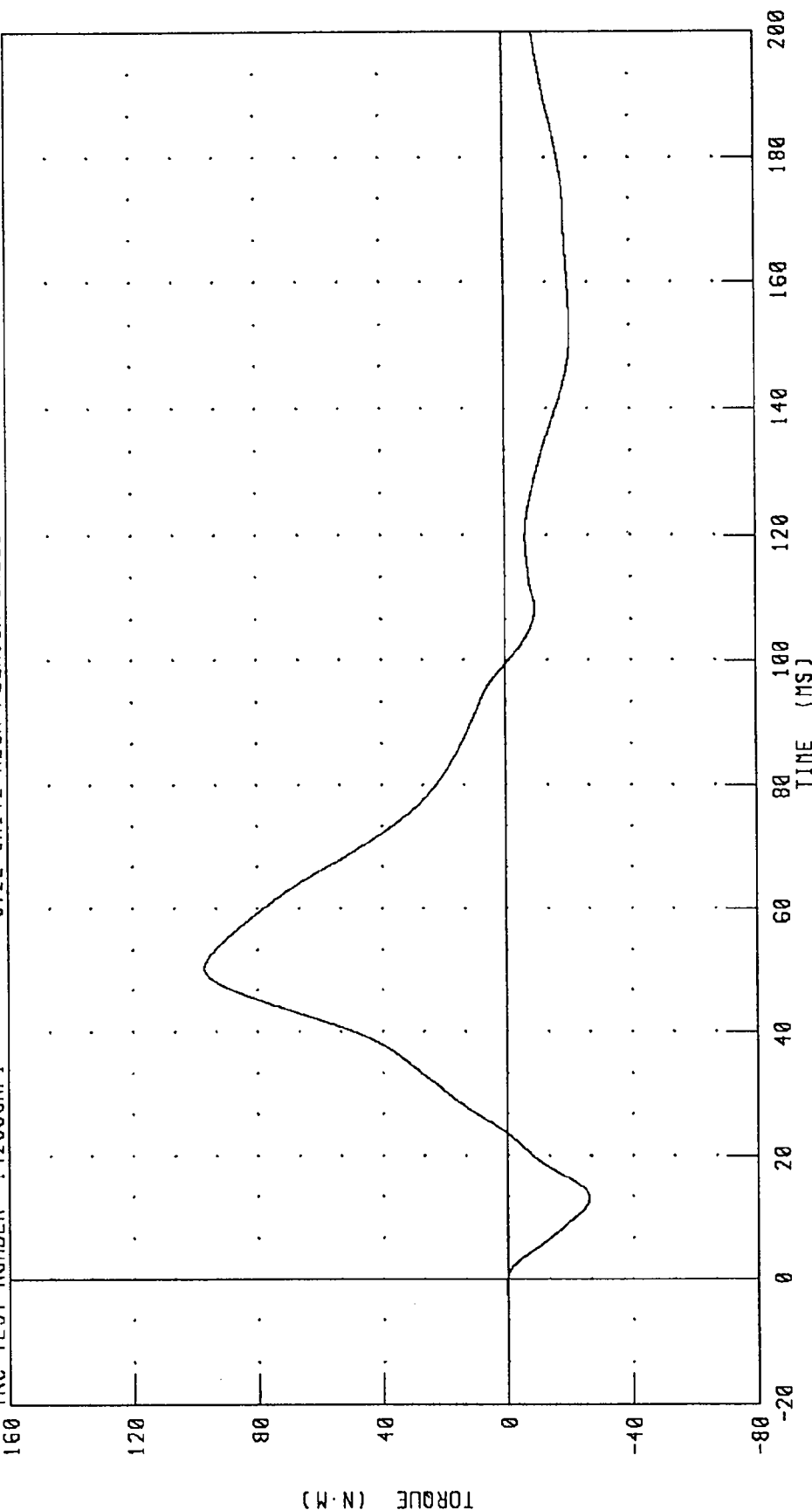
CHANNEL: NEKYM FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 142C36NF1

572E SN142 NECK FLEXION CAL36

RUN NUMBER: 032497.1540;1



CHANNEL: NEKOM FILTER: CH. CLASS 60

PEAK DATA: 97.12 N·M @ 50.32 MS; -26.15 N·M @ 13.12 MS

TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

23-JAN-97

TRC INC. TEST NO: 142C36NE1 572E SN142 NECK EXT. CAL36

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	29.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	19.04 G
	20 MS	14.00 - 19.00 G	17.30 G
	30 MS	11.00 - 16.00 G	13.86 G
MAX PENDULUM G		22 G MAX	19.19 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	13.81 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	38.08 MS
D PLANE	MAX	81 - 106 DEG.	96.29 DEG.
ROTATION	TIME	72 - 82 MS	73.44 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-76.75 NM
	TIME	65 - 79 MS	68.72 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	150.32 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	133.44 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

Richard L. Loman

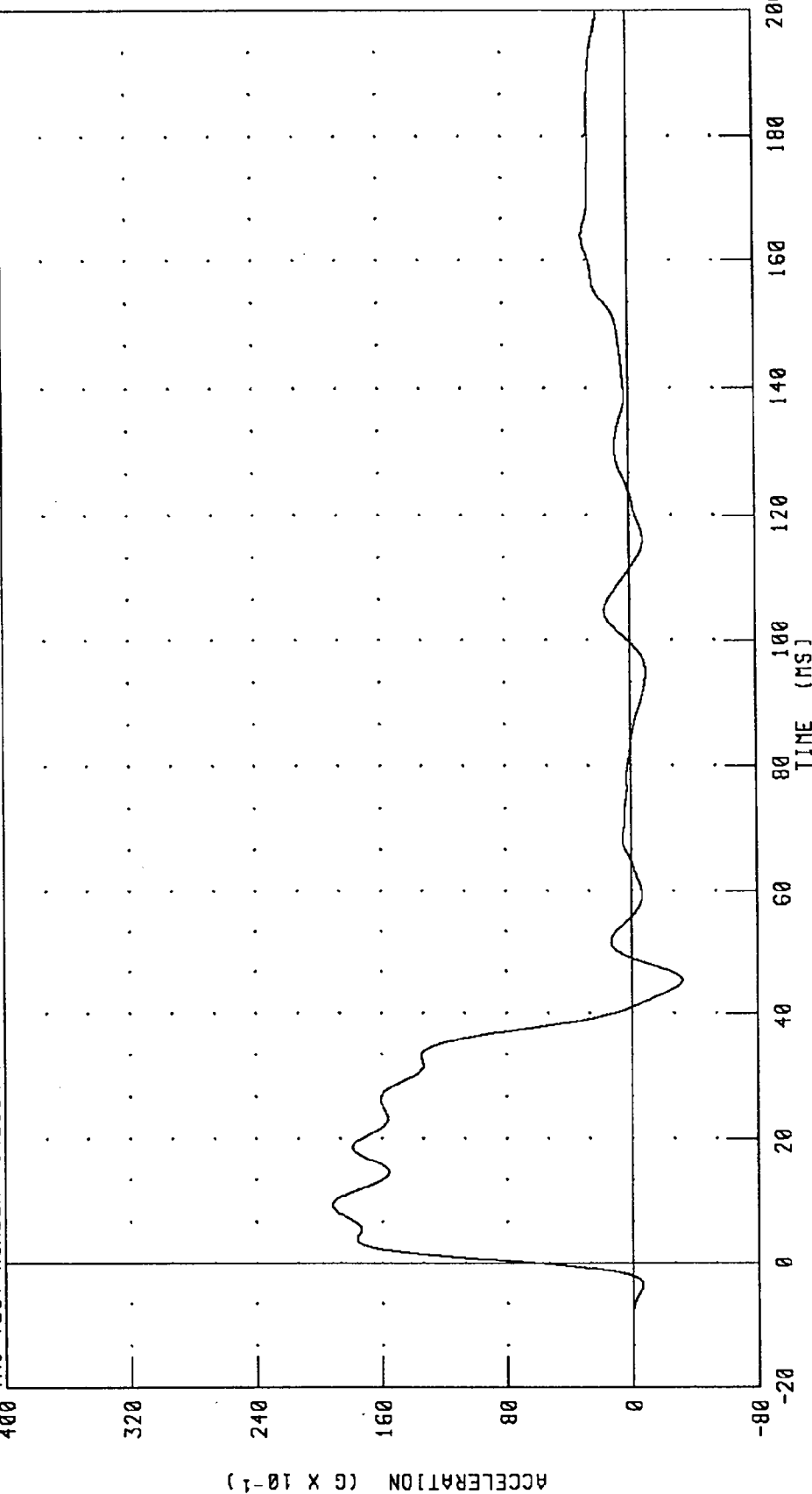
RUN NUMBER: 012397.1121;2

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 142C36NE1

572E SN142 NECK EXT. CAL36

RUN NUMBER: 032497.1540;2



PEAK DATA: 19.19 G @ 9.36 MS; -3.21 G @ 45.28 MS

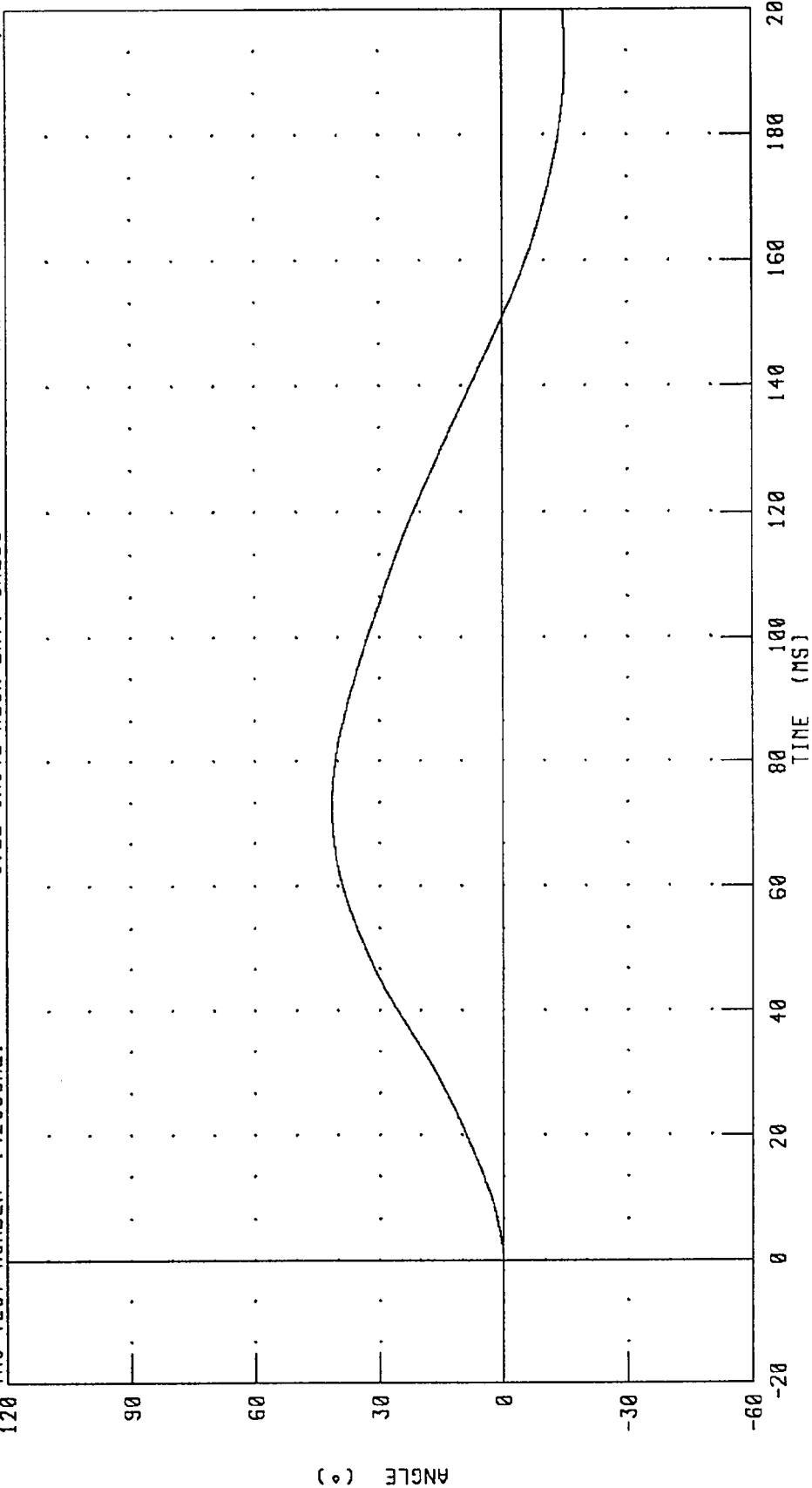
CHANNEL: PENXG FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 142C36NE1

572E SN142 NECK EXT. CAL36

RUN NUMBER: 032497.1540;2



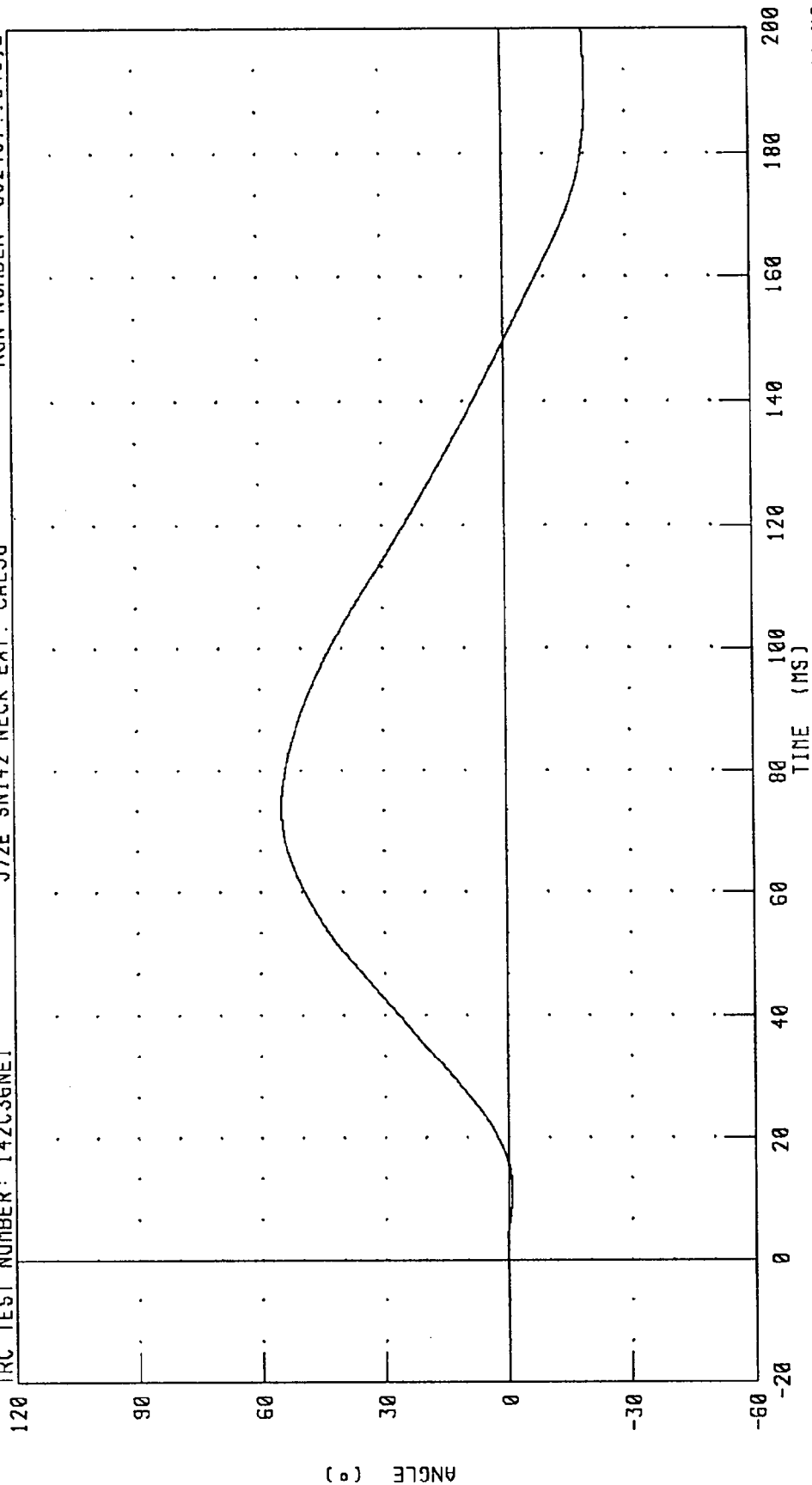
CHANNEL: BETA FILTER: CH. CLASS 60 PEAK DATA: 41.43 ° @ 72.64 MS; -15.23 ° @ 192.72 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 142C3GNE1

572E SN142 NECK EXT. CAL36

RUN NUMBER: 032497.1540;2



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 54.88 ° @ 73.92 MS; -20.32 ° @ 191.44 MS

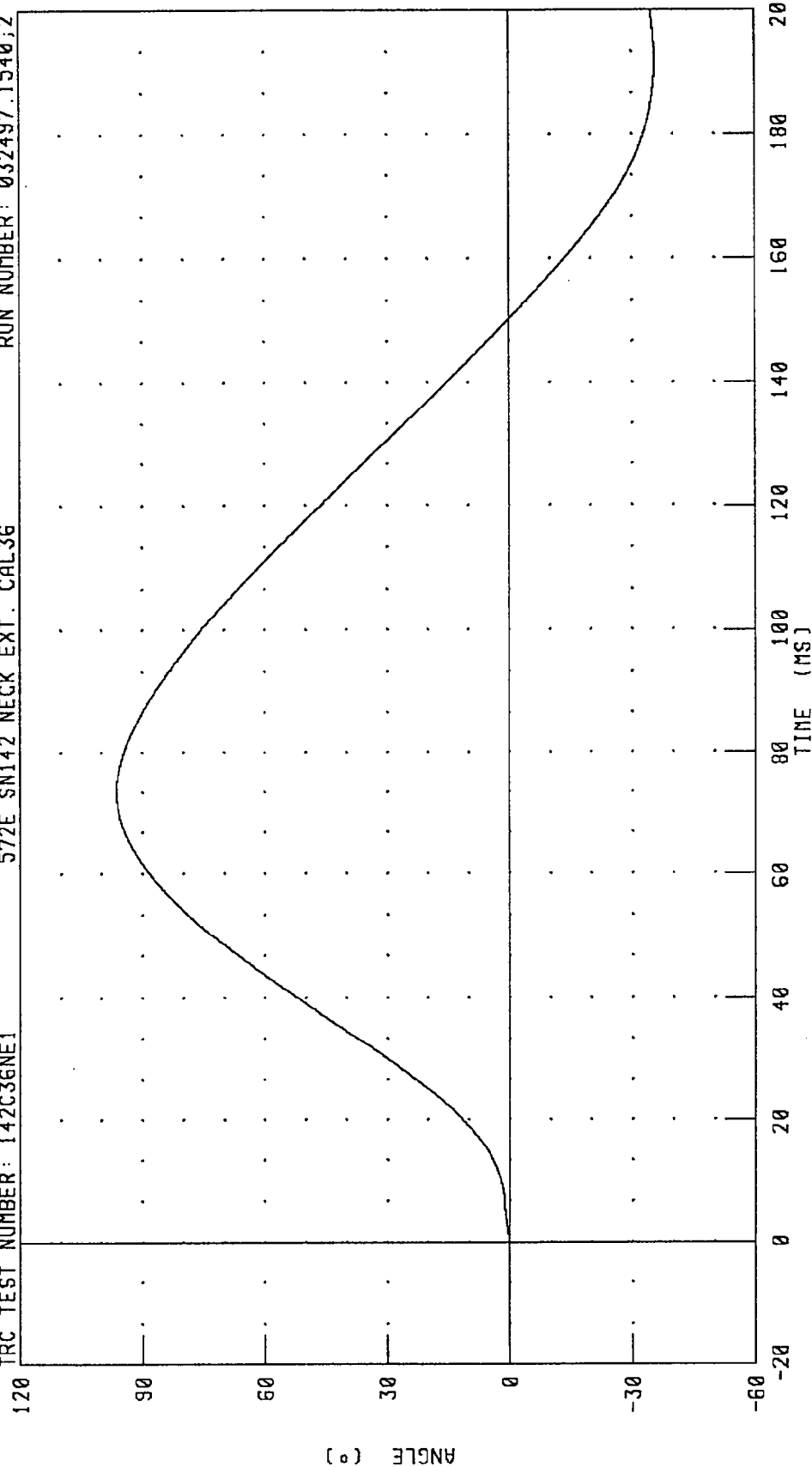
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 142C36NE1

572E SN142 NECK EXT. CAL36

RUN NUMBER: 032497.1540;2



CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 96.29 ° @ 73.44 MS; -35.54 ° @ 192.08 MS

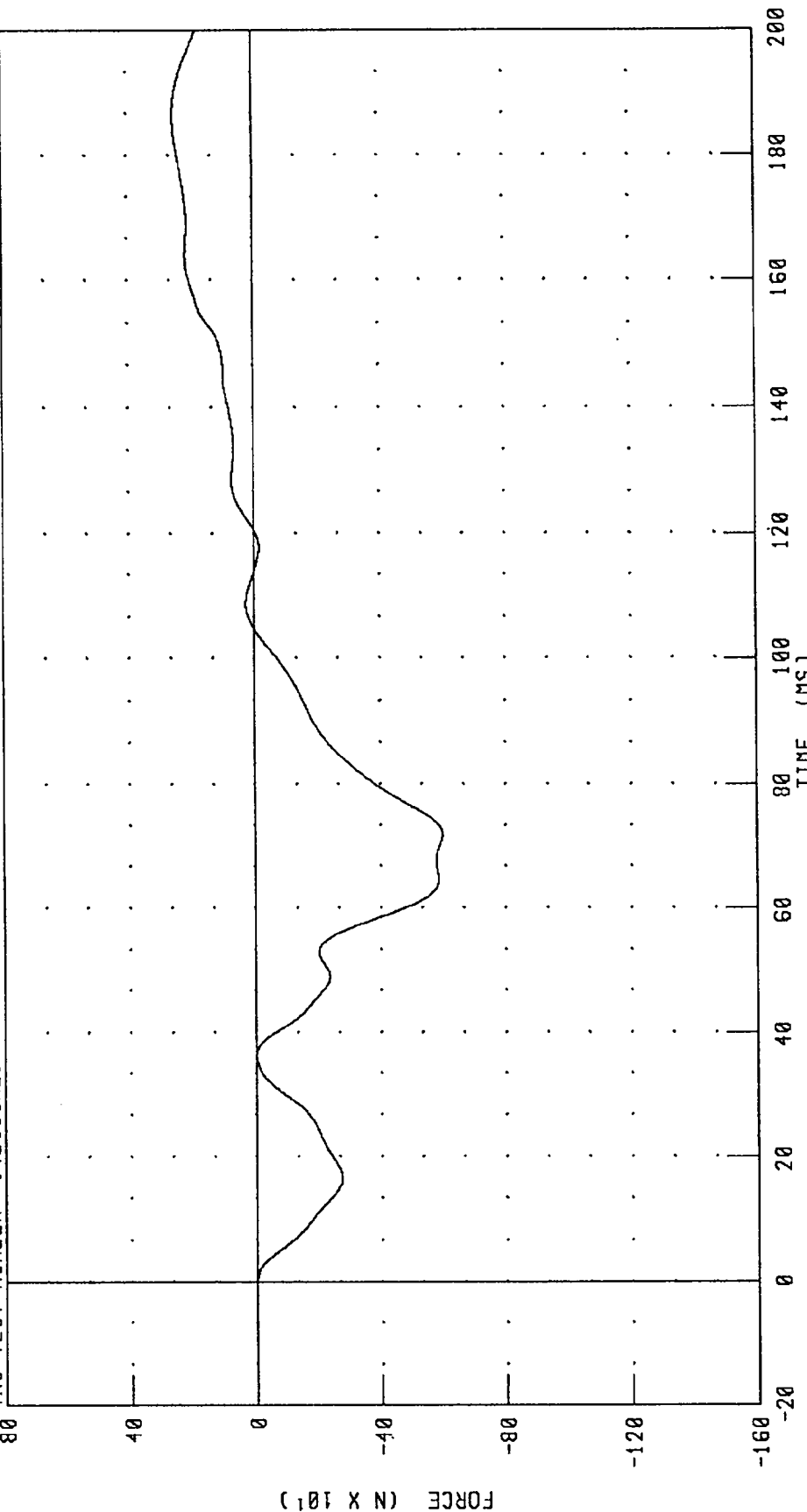
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 142C36NE1

572E SN142 NECK EXT. CAL36

RUN NUMBER: 032497.1540;2



PEAK DATA: 253.00 N @ 186.48 MS; -598.67 N @ 71.92 MS

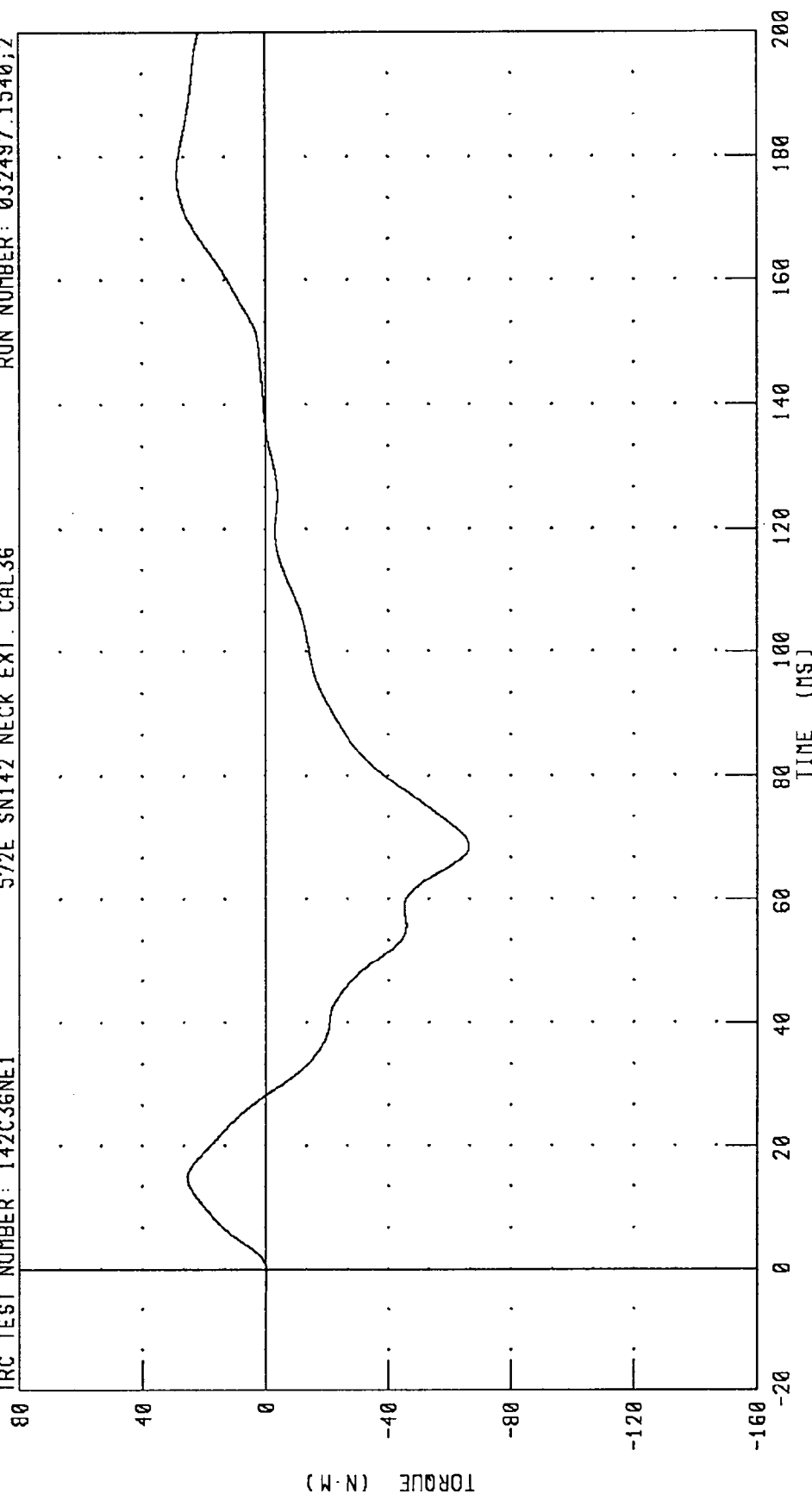
CHANNEL: NEKXF FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS

TRC TEST NUMBER: 142C36NE1

572E SN142 NECK EXT. CAL36

RUN NUMBER: 032497.1540;2



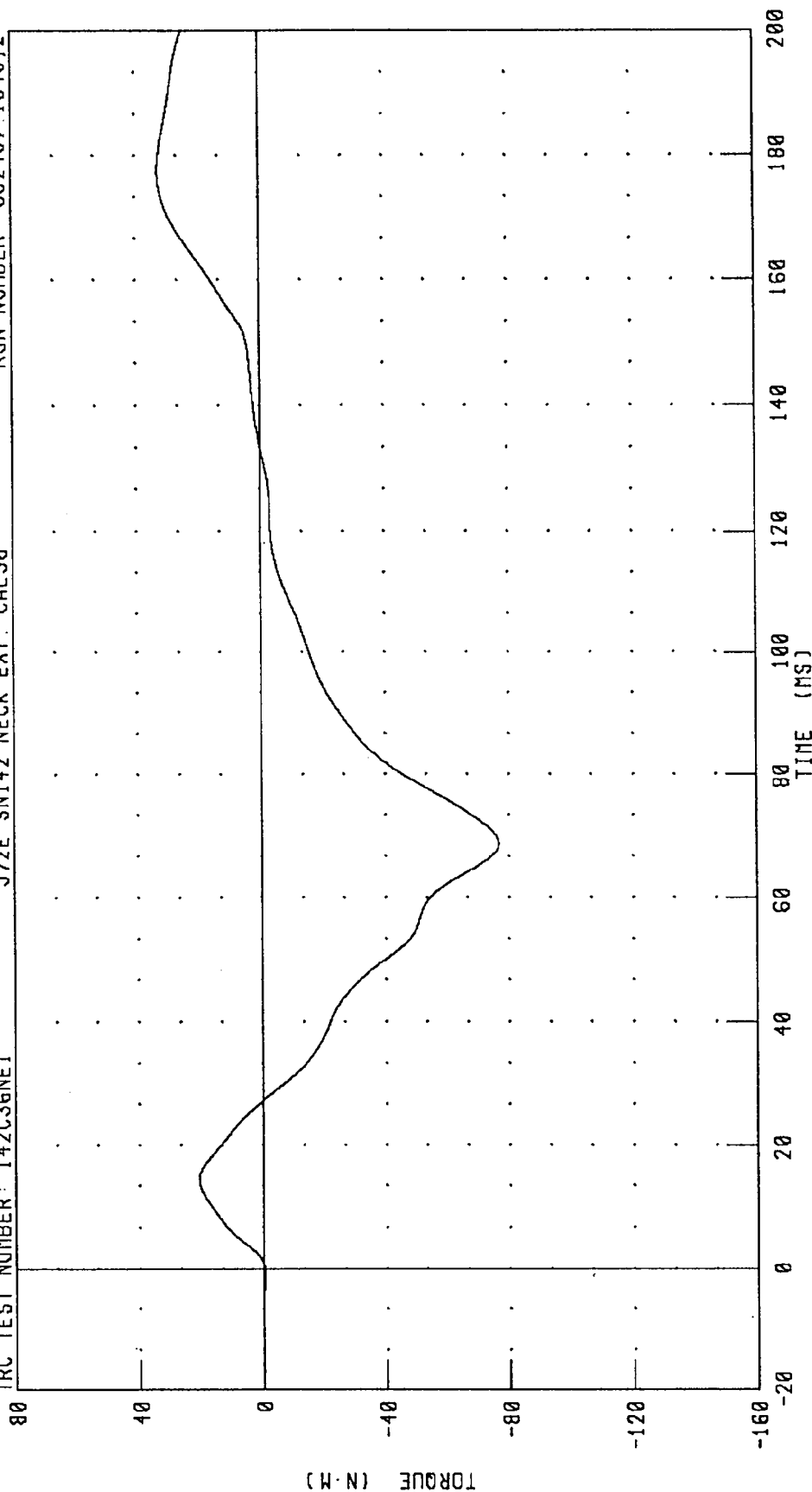
PEAK DATA: 28.64 N·M @ 177.12 MS; -66.42 N·M @ 68.72 MS

CHANNEL: NEKYM FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 142C36NE1 RUN NUMBER: 032497.1540,2

572E SN142 NECK EXT. CAL36



PEAK DATA: 32.72 N-M @ 177.68 MS; -76.75 N-M @ 68.72 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III

23-JAN-97

TRC INC.

TEST NO: 142C36TH2

572E SN 142 H.S.THORAX CAL 36

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.8 DEG. C
RELATIVE HUMIDITY	10 - 70 %	29.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.62 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	71.6 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5608. N
INTERNAL HYSTERESIS	69% - 85%	70.2%

TEST MEETS SPECIFICATIONS

TECHNICIAN Richard L. Van

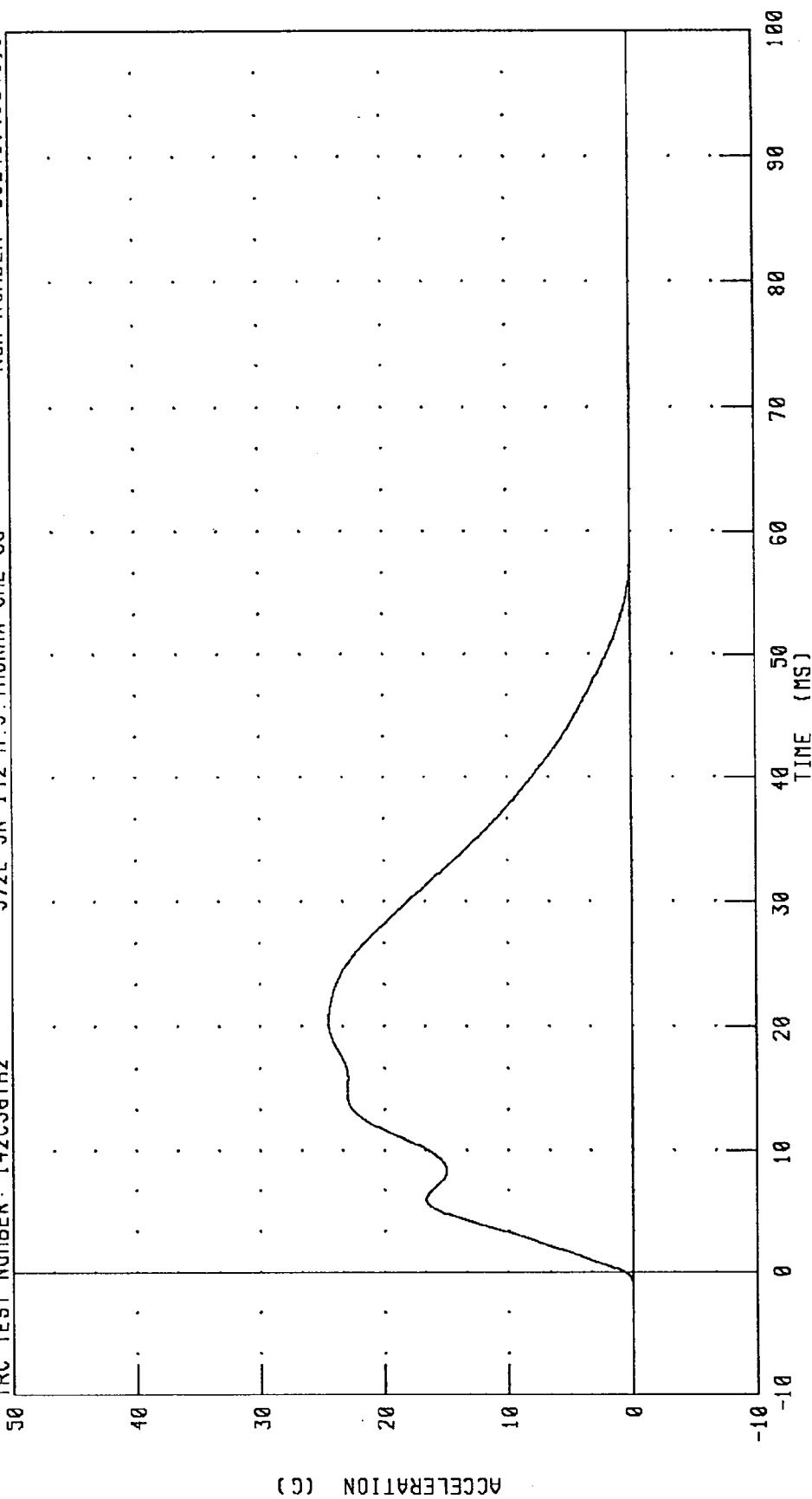
RUN NUMBER: 012397.1603;1

PART 572-E HYBRID III THORAX CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 142C36TH2

572E SN 142 H.S. THORAX CAL 36

RUN NUMBER: 032497.1540;1



PEAK DATA: 24.48 G @ 20.40 MS; -0.03 G @ 71.12 MS

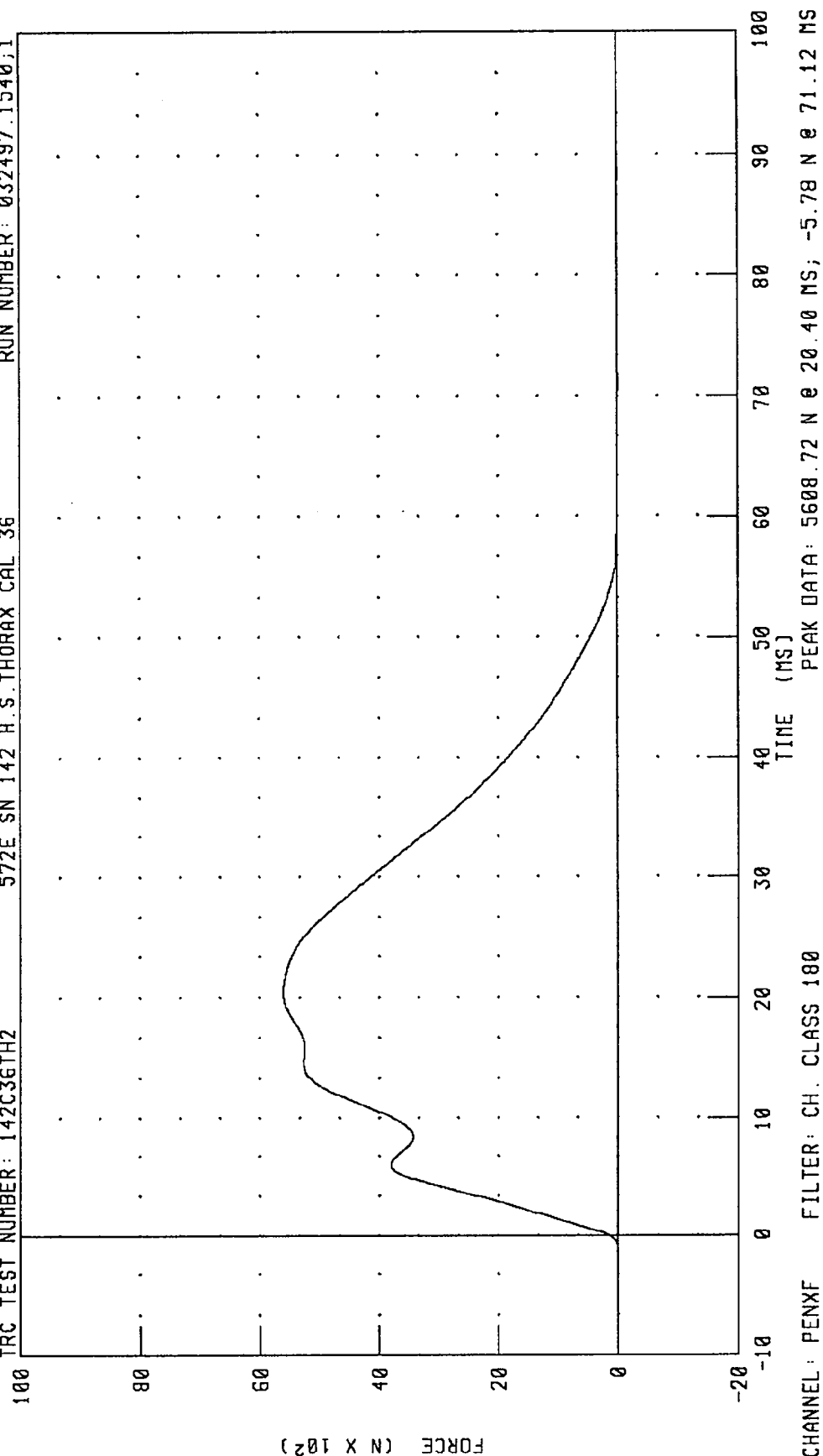
CHANNEL: PENXG FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE

TRC TEST NUMBER: 142C36TH2

572E SN 142 H.S. THORAX CAL 36

RUN NUMBER: 032497.1540;1



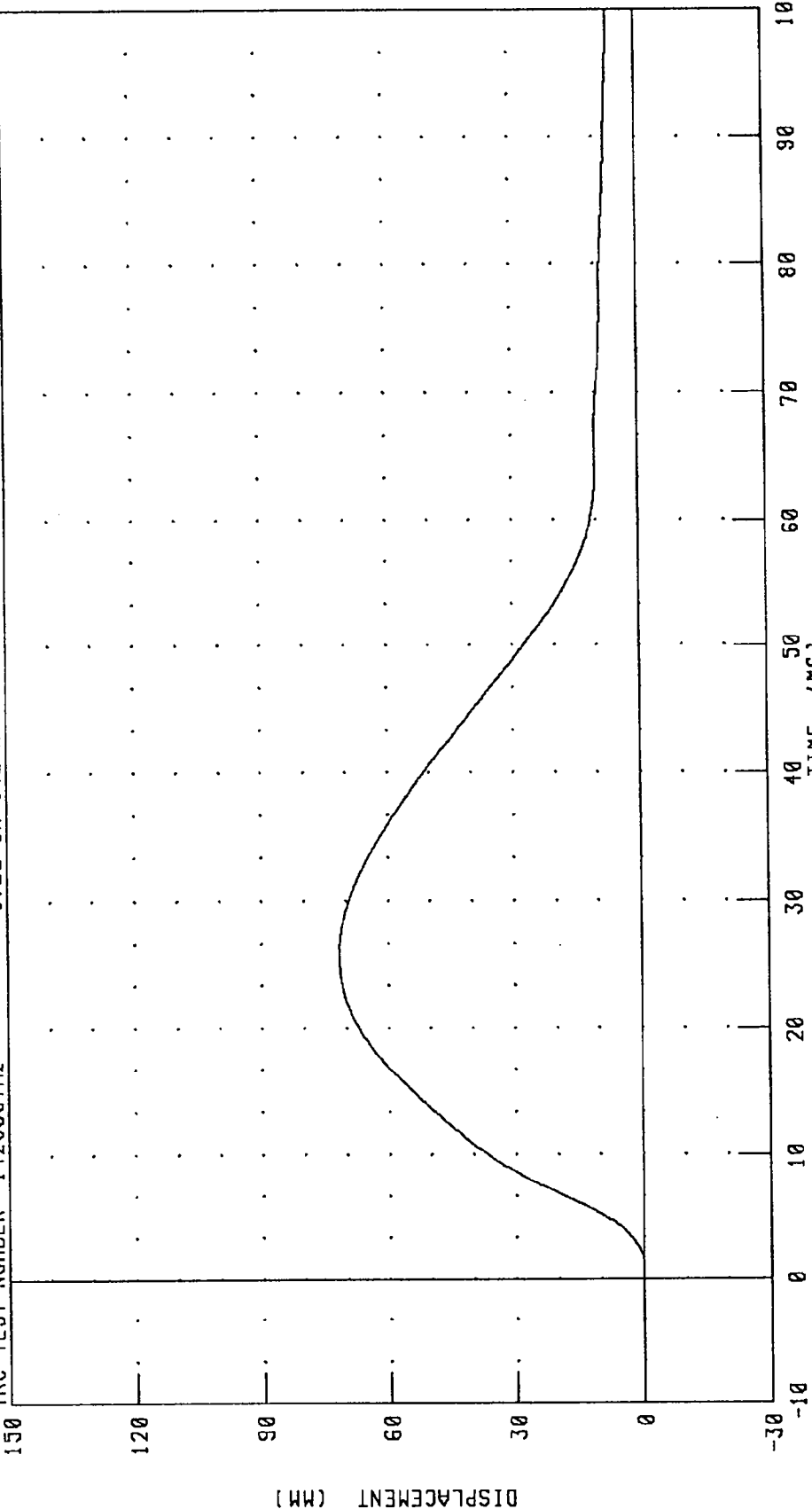
CHANNEL: PENXF FILTER: CH. CLASS 180 PEAK DATA: 5608.72 N @ 20.40 MS; -5.78 N @ 71.12 MS

PART 572-E HYBRID III THORAX CALIBRATION STERNUM DISPLACEMENT

TRC TEST NUMBER: 142C36TH2

572E SN 142 H.S. THORAX CAL 36

RUN NUMBER: 032497.1540;1



PEAK DATA: 71.68 MM @ 25.68 MS; -0.03 MM @ 0.56 MS

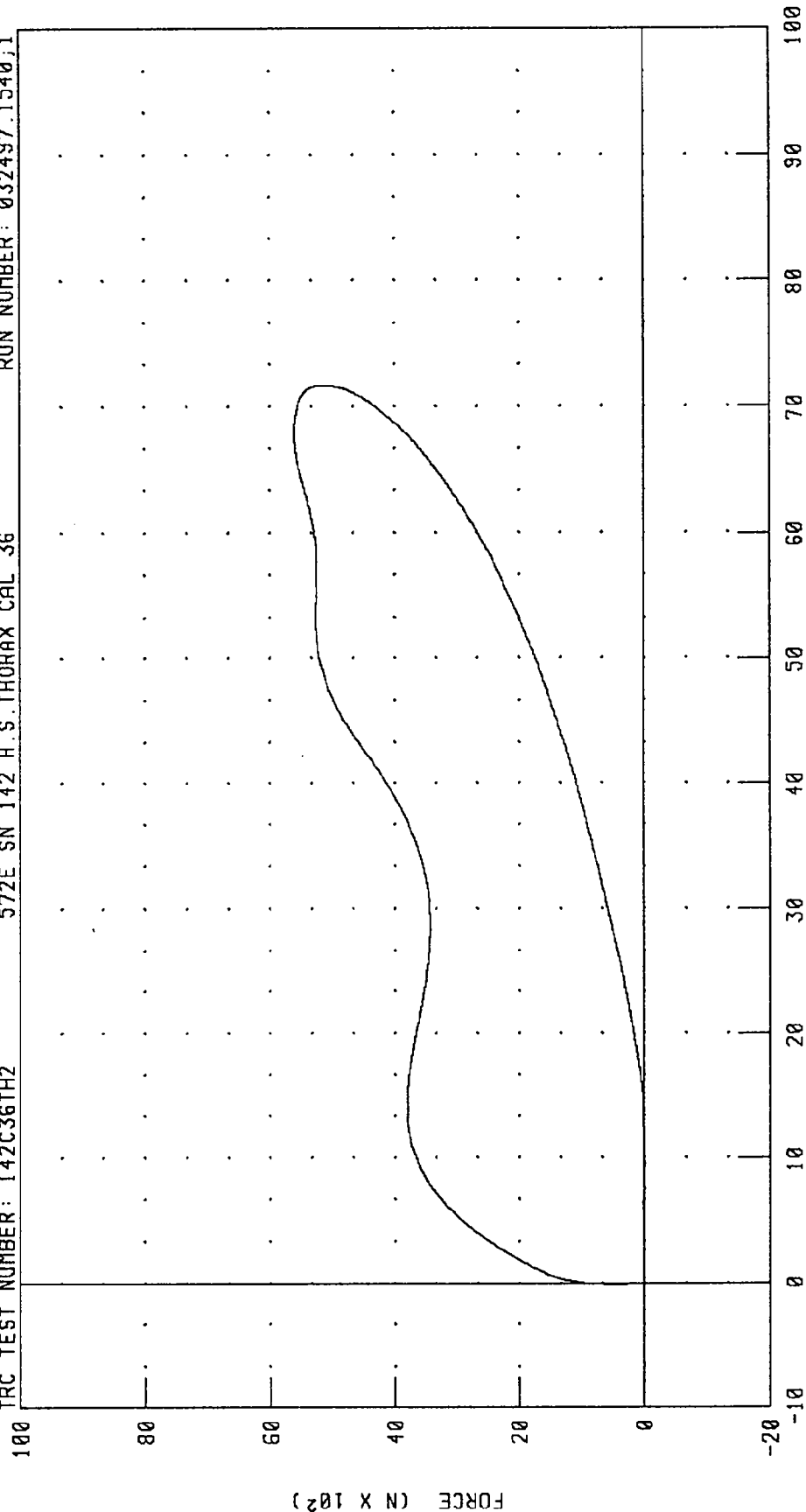
CHANNEL: CSTXD FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE

TRC TEST NUMBER: 142C36TH2

572E SN 142 H.S. THORAX CAL 36

RUN NUMBER: 032497.1540;1



CHANNEL: CSTXD FILTER: CH. CLASS 180
PENXF CH. CLASS 180

PEAK DATA: 71.68 MM @ 25.68 MS; -0.03 MM @ 0.56 MS
5608.72 N @ 20.40 MS; -5.78 N @ 71.12 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III

23-JAN-97

TRC INC.

TEST NO: 142C36RK1

572E SN142 RIGHT KNEE CAL 36

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	29.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	4895.6 N

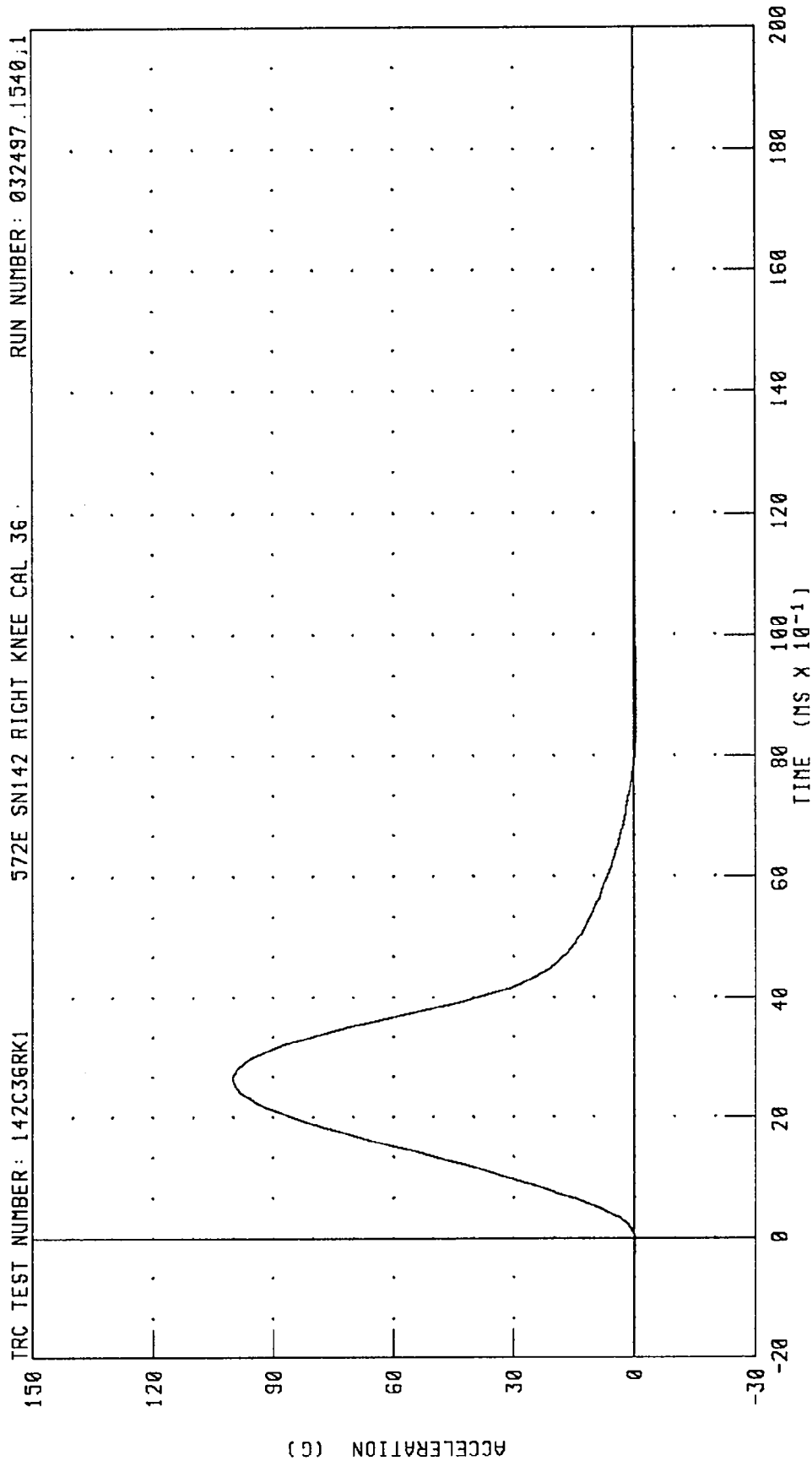
TEST MEETS SPECIFICATIONS

TECHNICIAN Richard L. L...

RUN NUMBER: 012397.0908;1

PART 572-E HYBRID III RIGHT KNEE CALIBRATION
 PENDULUM DECELERATION (5 KG PEND.)

TRC TEST NUMBER: 142C36RK1 572E SN142 RIGHT KNEE CAL 36 RUN NUMBER: 032497.1540.1

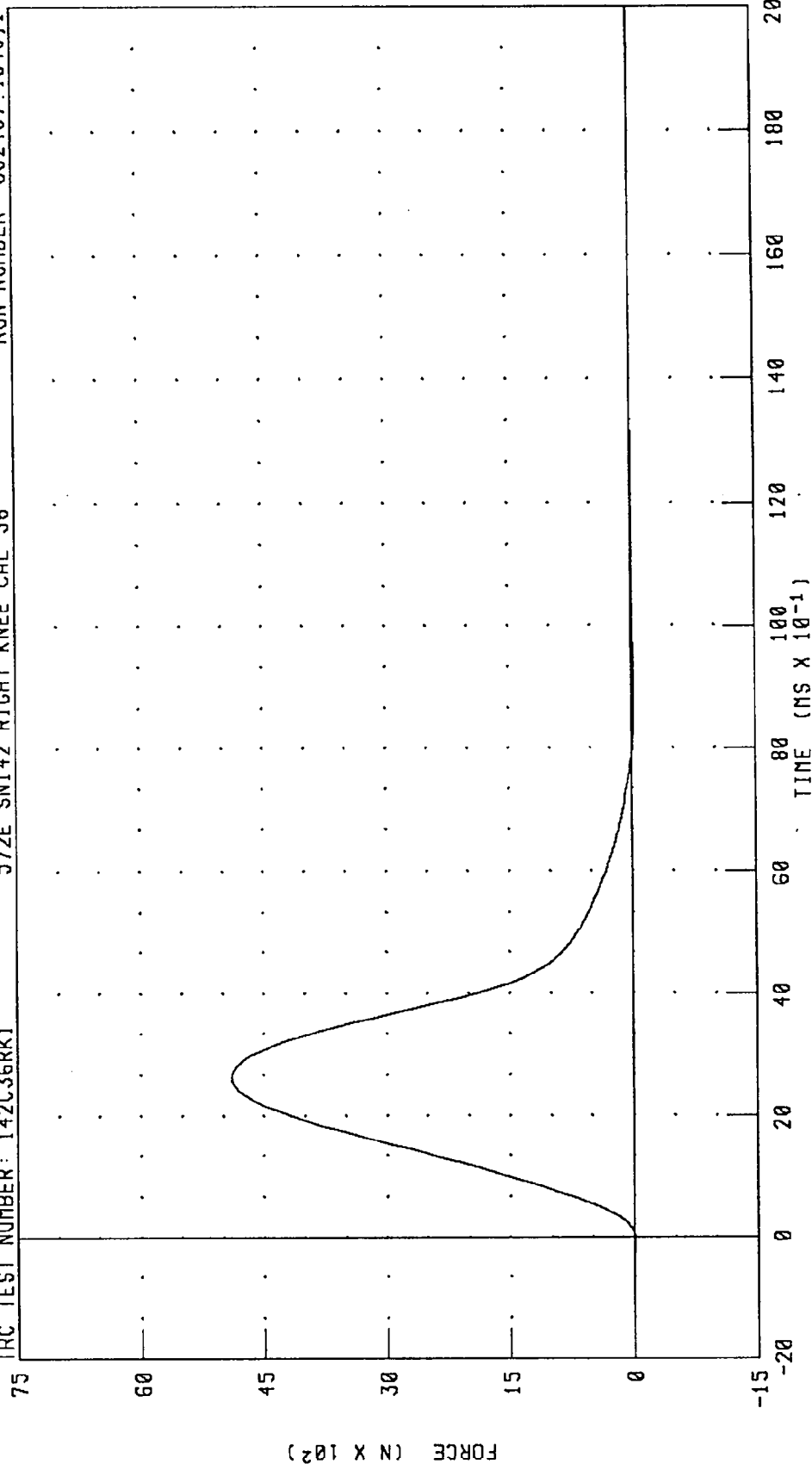


CHANNEL: PENXG FILTER: CH. CLASS 600 PEAK DATA: 100.06 G @ 2.64 MS; -0.45 G @ 8.56 MS

PART 572-E HYBRID III RIGHT KNEE CALIBRATION
 PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 142C36RK1 RUN NUMBER: 032497.1540;1

572E SN142 RIGHT KNEE CAL 36



PEAK DATA: 4895.67 N @ 2.64 MS; -22.21 N @ 8.56 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III

23-JAN-97

TRC INC.

TEST NO: 142C36LK1

572E SN142 LEFT KNEE CAL 36

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	29.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	4867.7 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Richard L. L...

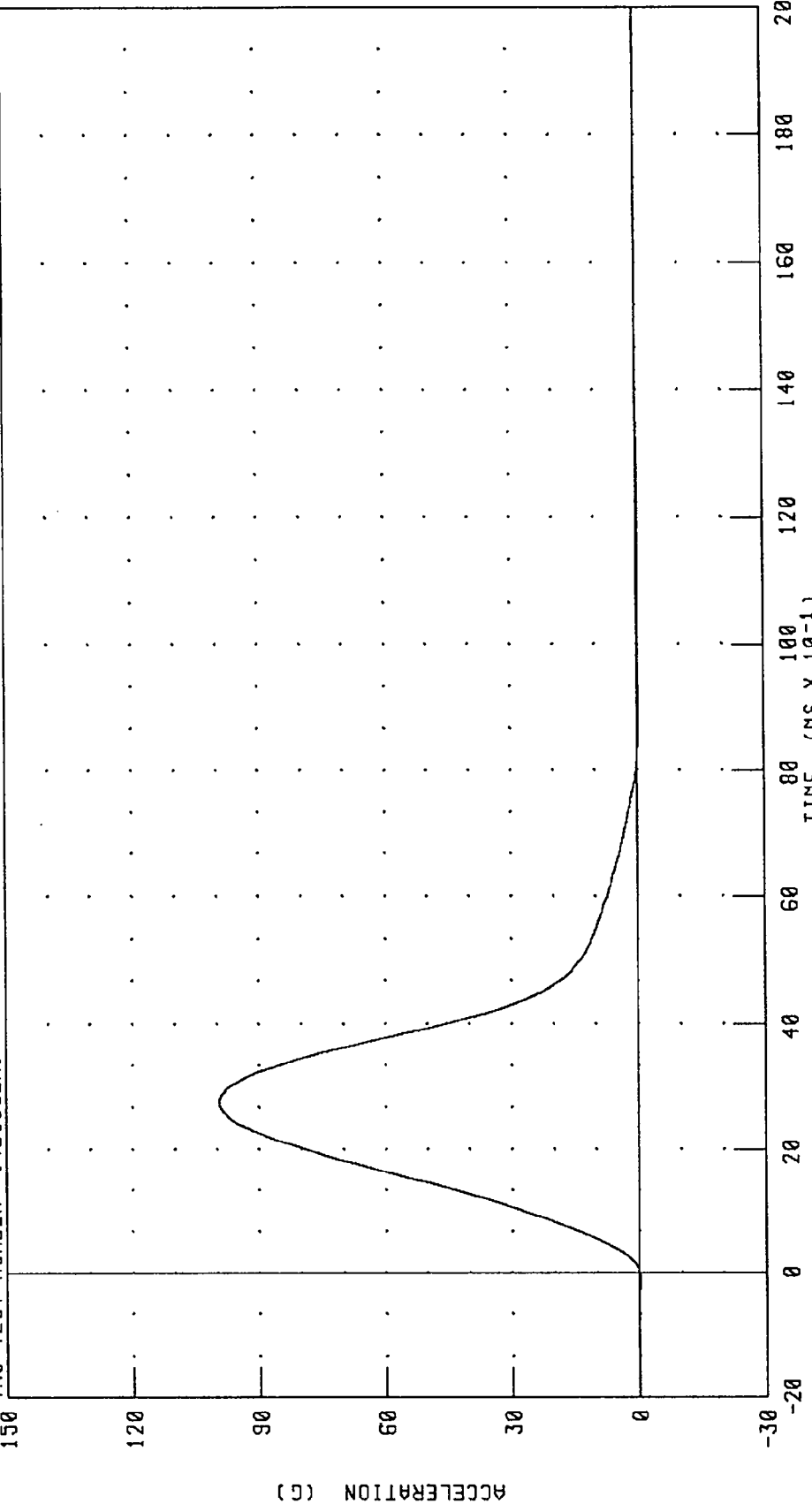
RUN NUMBER: 012397.0903;1

PART 572-E HYBRID III LEFT KNEE CALIBRATION
 PENDULUM DECELERATION (5 KG PEND.)

TRC TEST NUMBER: 142C36LK1

572E SN142 LEFT KNEE CAL 36

RUN NUMBER: 032497.1540;1



CHANNEL: PENXG FILTER: CH. CLASS 600

PEAK DATA: 99.49 G @ 2.72 MS; -0.39 G @ 8.96 MS

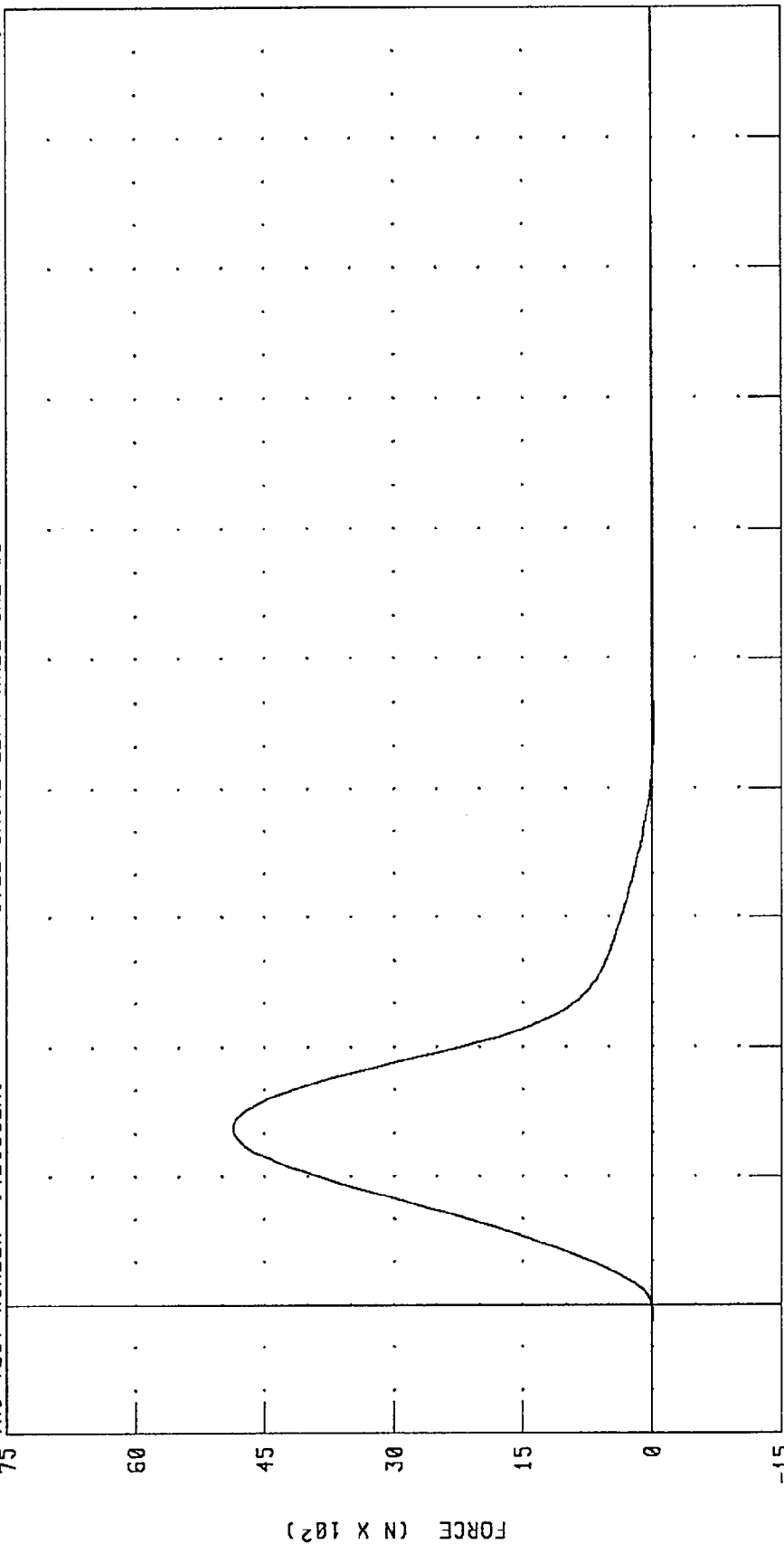
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 142C36LK1

572E SN142 LEFT KNEE CAL 36

RUN NUMBER: 032497.1540;1



PEAK DATA: 4867.71 N @ 2.72 MS; -19.09 N @ 8.96 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

Pre-test Certification Data

Passenger Dummy S/N: 192

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III EXTERNAL DIMENSIONS

SN 192 ALDERSON

26-FEB-97

TRC INC.

TEST NO: 192C36ED1

572E SN192 EXT.DIMENSION CAL36

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
LOCATION FOR CHEST CIRCUMFERENCE (AA)		429 - 434 MM	432. MM
LOCATION FOR WAIST CIRCUMFERENCE (BB)		226 - 231 MM	229. MM
CHEST CIRCUMFERENCE	(Y)	970 -1001 MM	980. MM
WAIST CIRCUMFERENCE	(Z)	836 - 866 MM	851. MM
CHEST DEPTH	(O)	213 - 229 MM	218. MM
H-POINT HEIGHT	(C)	84 - 89 MM	84. MM
H-POINT FROM SEATBACK	(D)	135 - 140 MM	135. MM
SKULL CAP TO BACKLINE	(H)	41 - 46 MM	43. MM
TOTAL SITTING HEIGHT	(A)	879 - 889 MM	889. MM
THIGH CLEARANCE	(F)	140 - 155 MM	150. MM
BUTTOCK KNEE LENGTH	(K)	579 - 605 MM	597. MM
BUTTOCK POPLITEAL LENGTH	(N)	452 - 478 MM	470. MM
POPLITEAL HEIGHT	(L)	429 - 455 MM	447. MM
KNEE PIVOT HEIGHT	(M)	485 - 500 MM	493. MM
FOOT LENGTH	(P)	252 - 267 MM	259. MM
FOOT BREADTH	(W)	91 - 107 MM	102. MM
SHOULDER PIVOT FROM BACKLINE	(E)	84 - 94 MM	94. MM
SHOULDER BREADTH	(V)	422 - 437 MM	429. MM
SHOULDER PIVOT HEIGHT	(B)	506 - 521 MM	516. MM
ELBOW REST HEIGHT	(J)	191 - 211 MM	211. MM
SHOULDER-ELBOW LENGTH	(I)	330 - 345 MM	345. MM
BACK OF ELBOW TO WRIST PIVOT	(G)	290 - 305 MM	290. MM

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

Richard L. Van

RUN NUMBER: 022697.0925

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III

26-FEB-97

TRC INC.

TEST NO: 192C36HD1

572E SN192 HEAD DROP CAL 36

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	30.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	252.26 G
PEAK LATERAL ACCELERATION	15 G MAX	-7.39 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN Richard L. Van

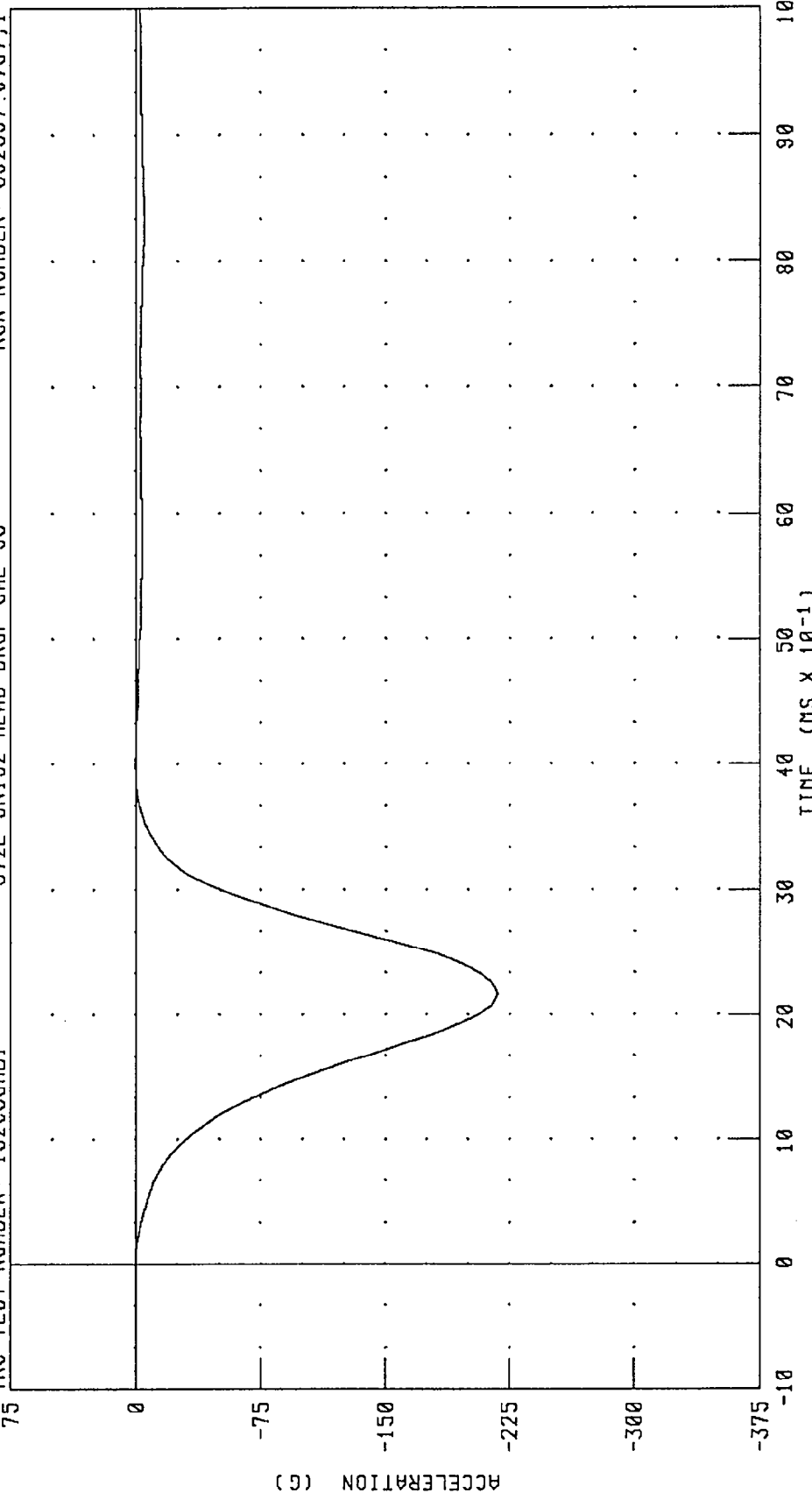
RUN NUMBER: 022697.1036;1

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS

TRC TEST NUMBER: 192C36HD1

572E SN192 HEAD DROP CAL 36

RUN NUMBER: 032597.0737,1



CHANNEL: HEDXG FILTER: CH. CLASS 1000

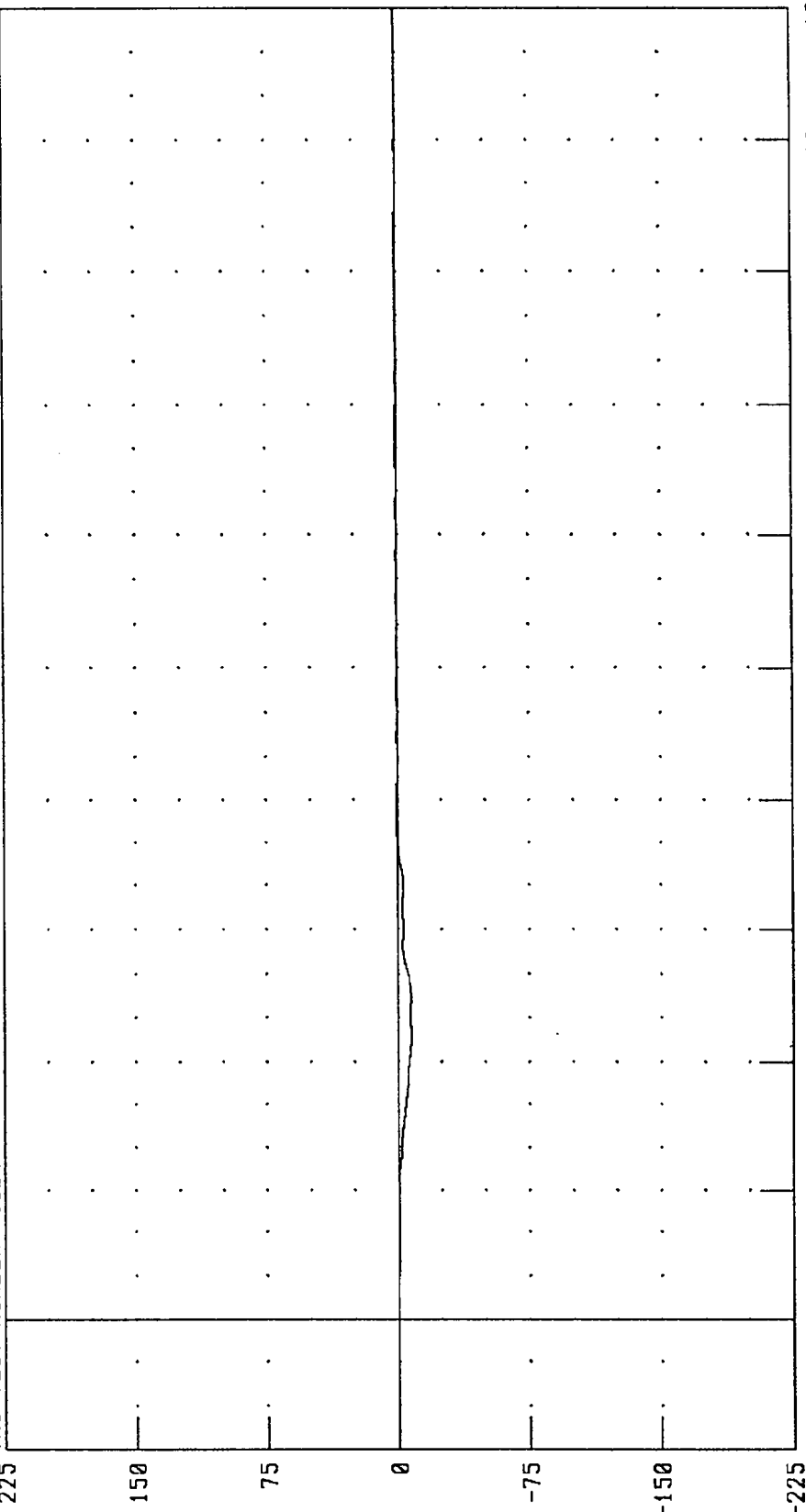
PEAK DATA: 0.24 G @ 4.00 MS, -217.69 G @ 2.16 MS

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Y AXIS

TRC TEST NUMBER: 192C36HD1

572E SN192 HEAD DROP CAL 36

RUN NUMBER: 032597.0737;1

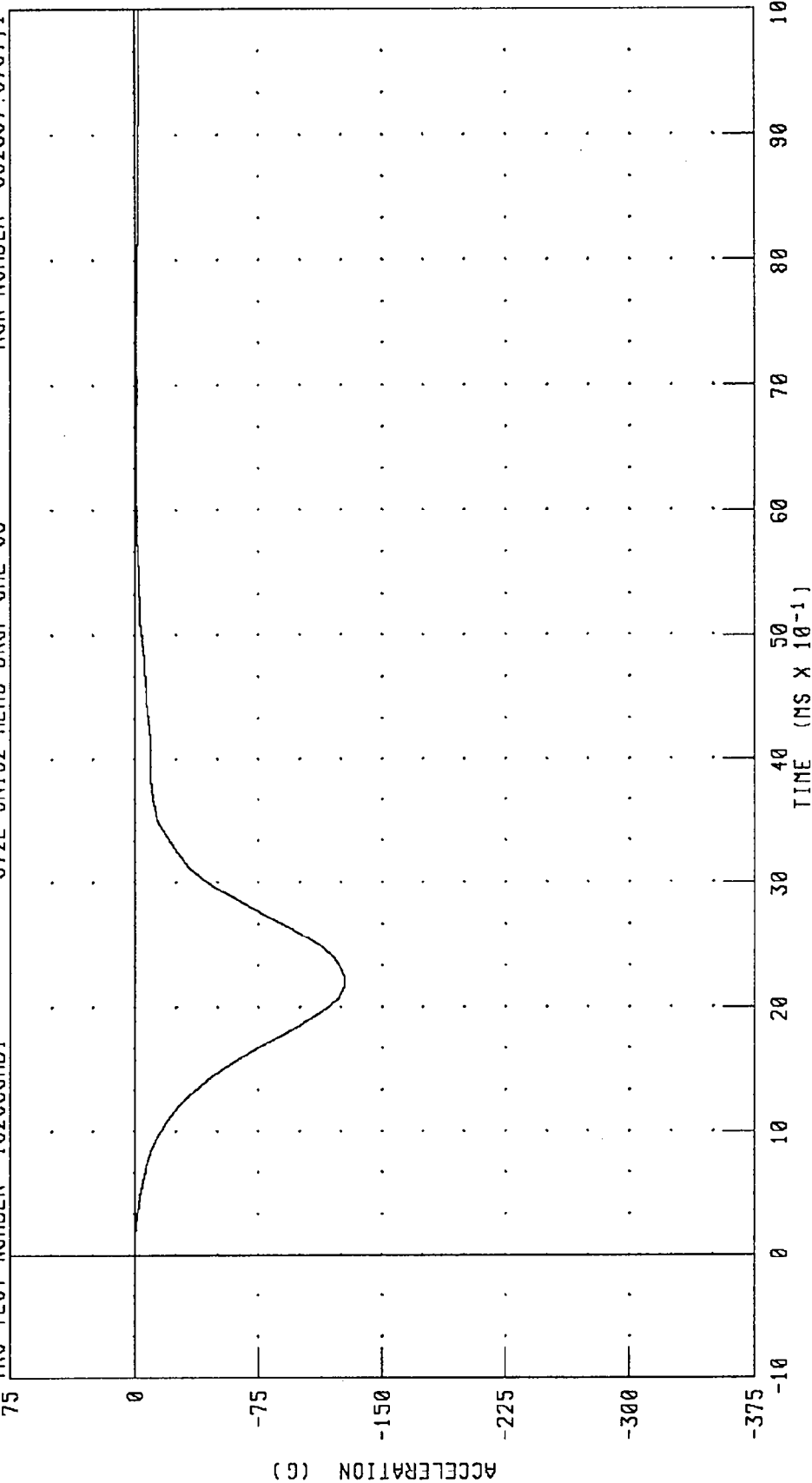


PEAK DATA: 0.93 G @ 3.84 MS; -7.40 G @ 2.16 MS

CHANNEL: HEDYC FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS

TRC TEST NUMBER: 192C36HD1 572E SN192 HEAD DRQP CAL 36 RUN NUMBER: 032597.0737;1



PEAK DATA: 0.07 G @ 0.08 MS; -127.28 G @ 2.24 MS

CHANNEL: HEDZG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
 HEAD RESULTANT ACCELERATION
 572E SN192 HEAD DROP CAL 36

RUN NUMBER: 032597.0737;1

TRC TEST NUMBER: 192C36HD1

375

300

225

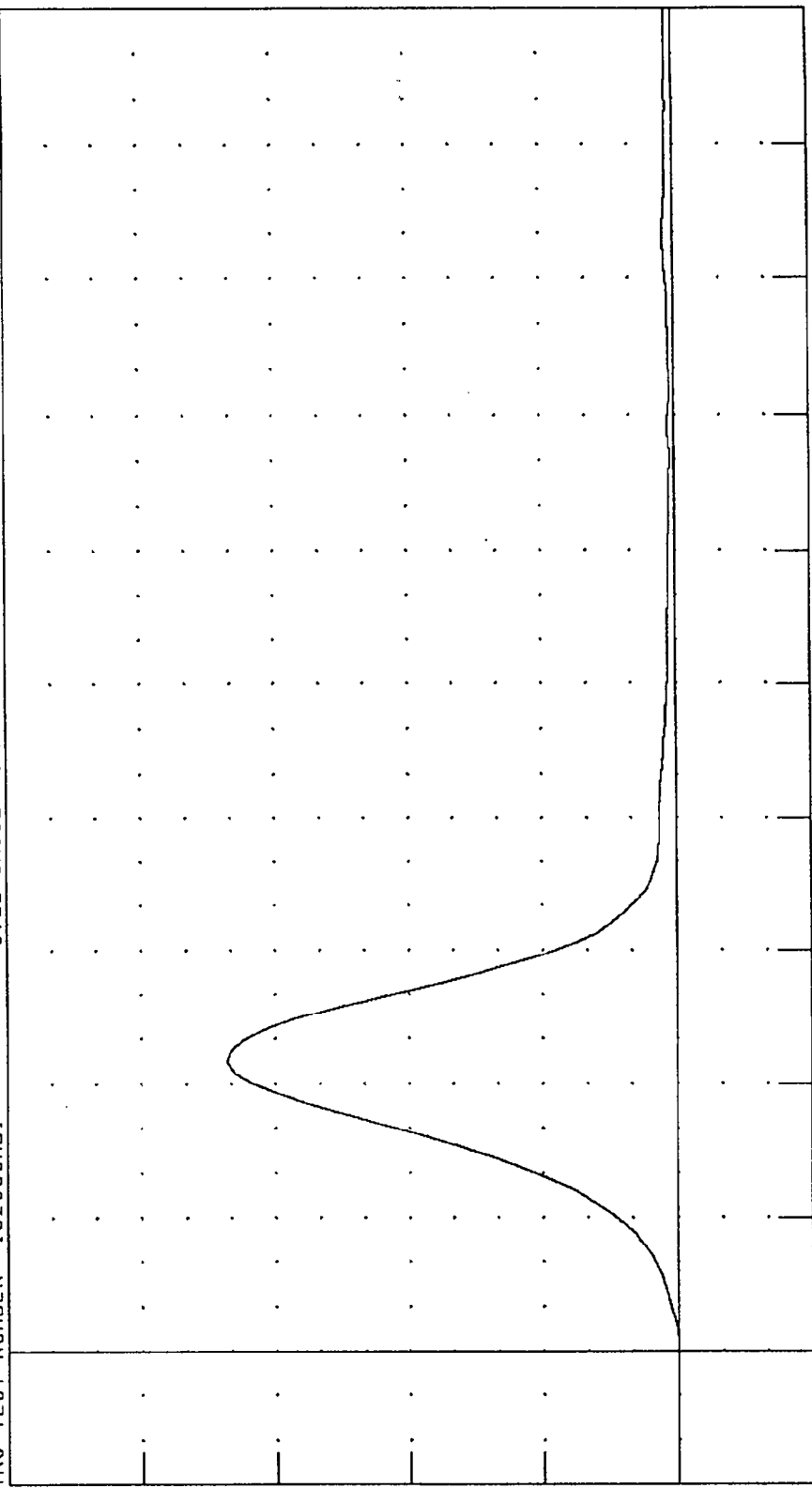
150

75

0

-75

ACCELERATION (G)



TIME (MS X 10⁻¹)

PEAK DATA: 252.26 G @ 2.16 MS; 0.09 G @ -0.64 MS

CHANNEL: HEDRG FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

26-FEB-97

TRC INC. TEST NO: 192C36NF2 572E SN192 NECK FLEXION CAL36

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	30.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.99 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	22.71 G
	20 MS	17.60 - 22.60 G	20.47 G
	30 MS	12.50 - 18.50 G	15.03 G
MAX PENDULUM G		29 G MAX	23.40 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	14.99 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	38.08 MS
D PLANE	MAX	64 - 78 DEG.	72.74 DEG.
ROTATION	TIME	57 - 64 MS	58.24 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	100.77 NM
	TIME	47 - 58 MS	51.28 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	113.36 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	100.80 MS

TEST MEETS SPECIFICATIONS

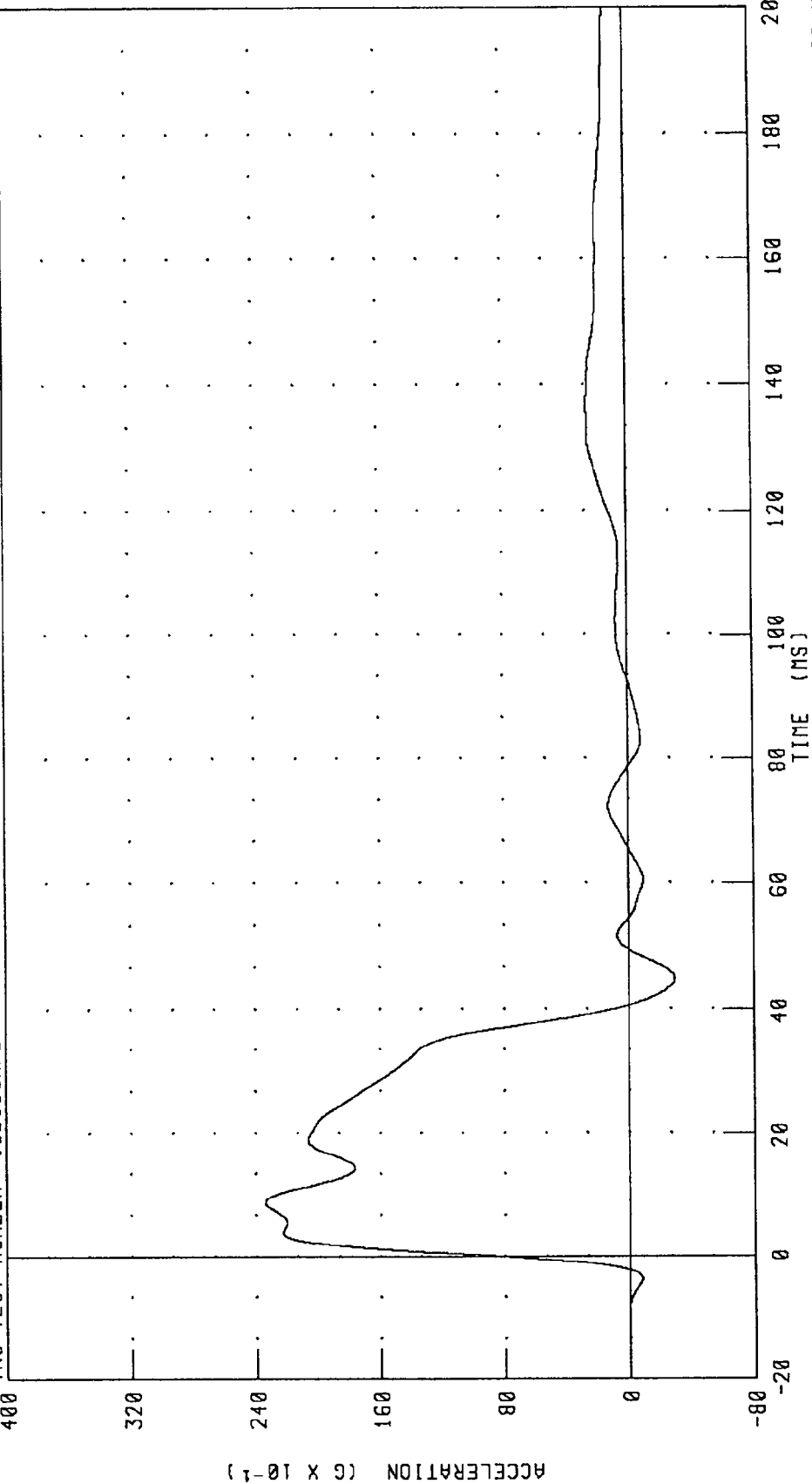
TECHNICIAN Richard L. San

RUN NUMBER: 022697.1256;1

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 192C36NF2 RUN NUMBER: 032597.0737,1

572E SN192 NECK FLEXION CAL36



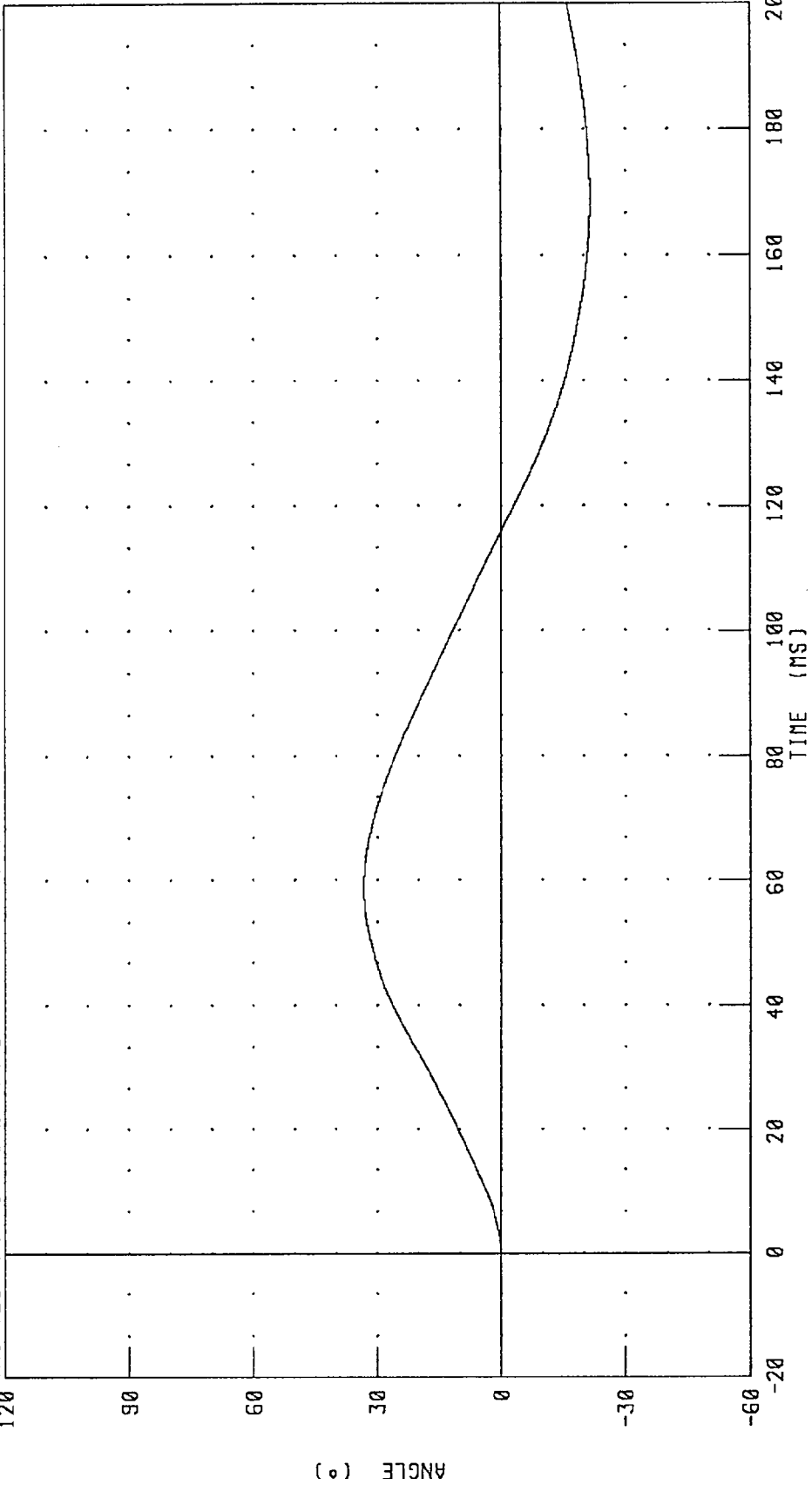
PEAK DATA: 23.41 G @ 8.80 MS; -2.93 G @ 44.88 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 192C36NF2 RUN NUMBER: 032597.0737;1

572E SN192 NECK FLEXION CAL36



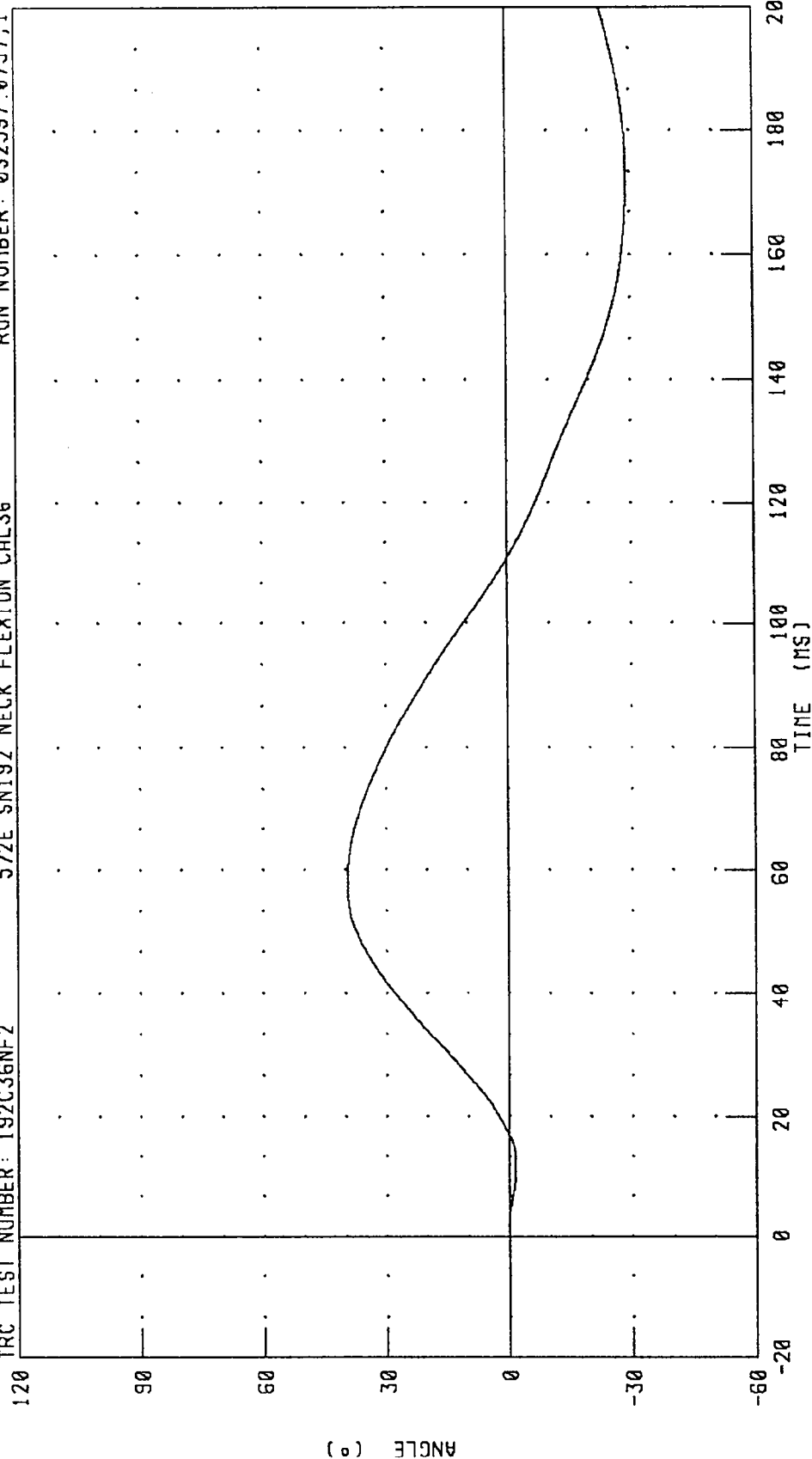
CHANNEL: BETA FILTER: CH. CLASS 60

PEAK DATA: 33.26 ° @ 58.80 MS; -21.50 ° @ 169.20 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 192C36NF2 RUN NUMBER: 032597.0737;1

572E SN192 NECK FLEXION CAL36



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 39.49 ° @ 57.76 MS; -29.24 ° @ 172.88 MS

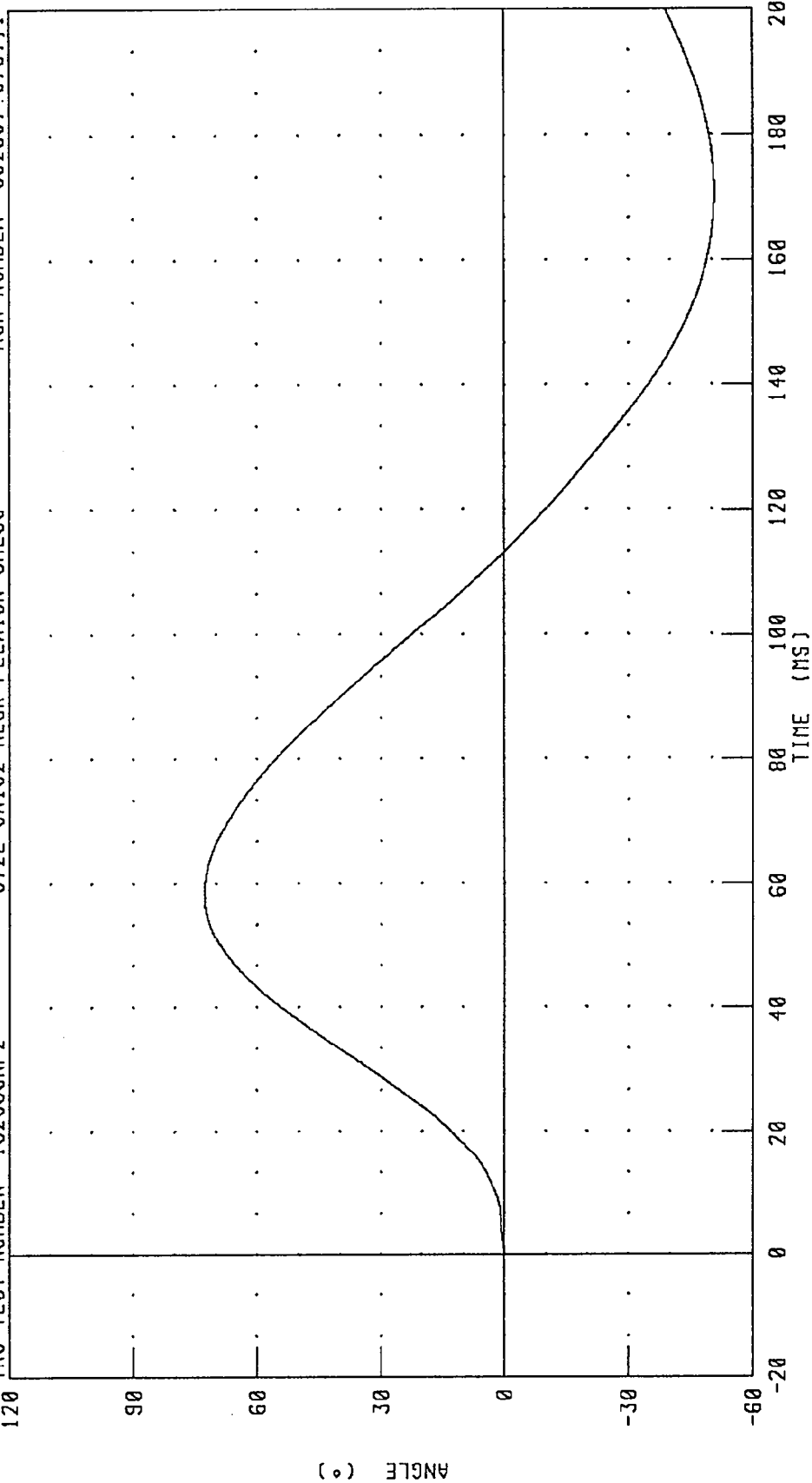
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 192C36NF2

572E SN192 NECK FLEXION CAL36

RUN NUMBER: 032597.0737,1



CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 72.74 ° @ 58.24 MS; -50.69 ° @ 170.80 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

572E SN192 NECK FLEXION CAL36

RUN NUMBER: 032597.0737;1

TRC TEST NUMBER: 192C36NF2

160

120

80

40

0

-40

-80

FORCE (N X 10¹)

TIME (MS)

200

180

160

140

120

100

80

60

40

20

0

-20

PEAK DATA: 875.95 N @ 56.48 MS; -204.13 N @ 166.32 MS

FILTER: CH. CLASS 60

CHANNEL: NEKXF

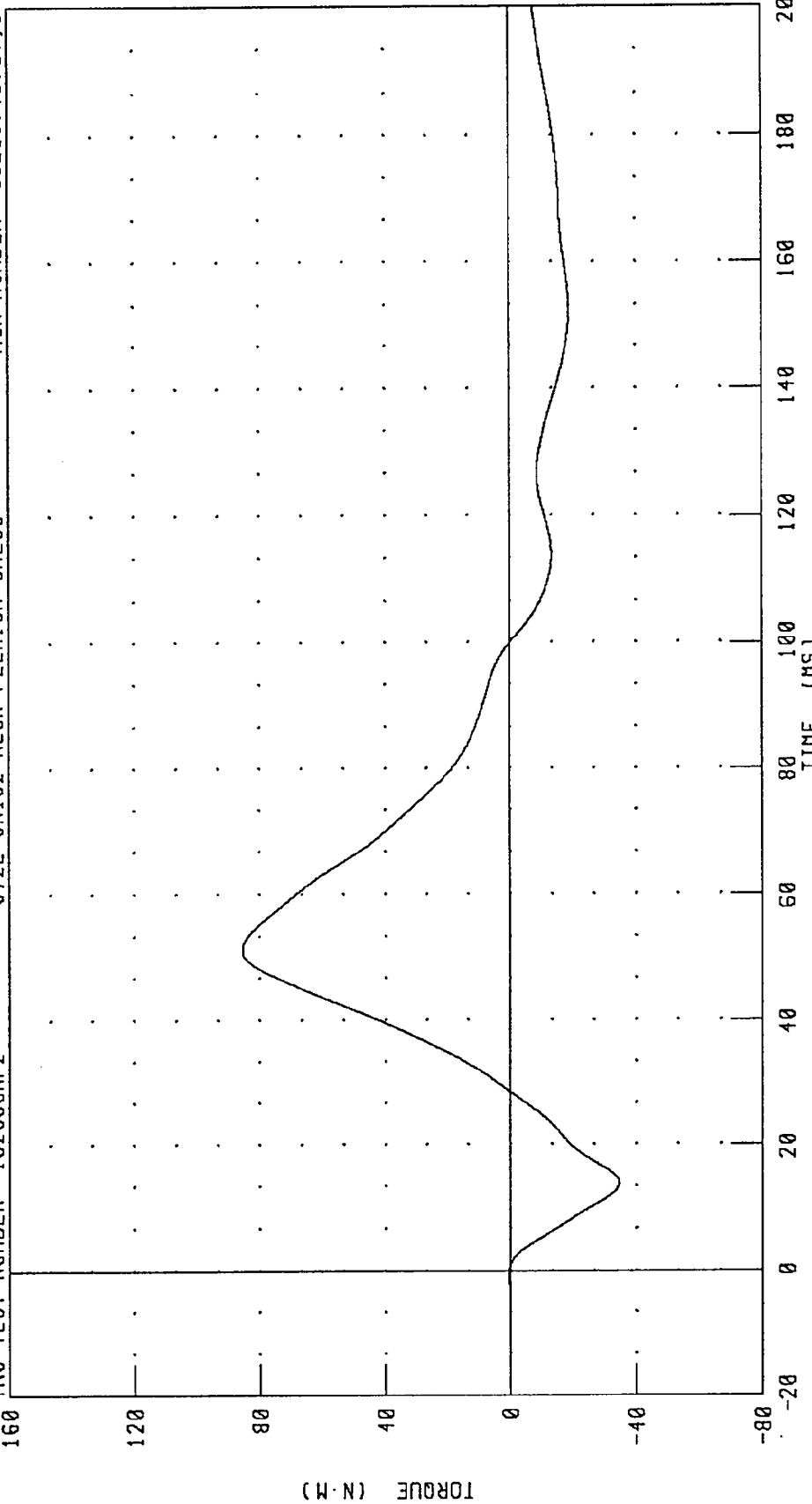
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

RUN NUMBER: 032597.0737,1

572E SN192 NECK FLEXION CAL36

TRC TEST NUMBER: 192C36NF2



PEAK DATA: 85.57 N·M @ 51.20 MS; -34.54 N·M @ 13.84 MS

CHANNEL: NEKYM FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

RUN NUMBER: 032597.0737;1

572E SN192 NECK FLEXION CAL36

TRC TEST NUMBER: 192C36NF2

160

120

80

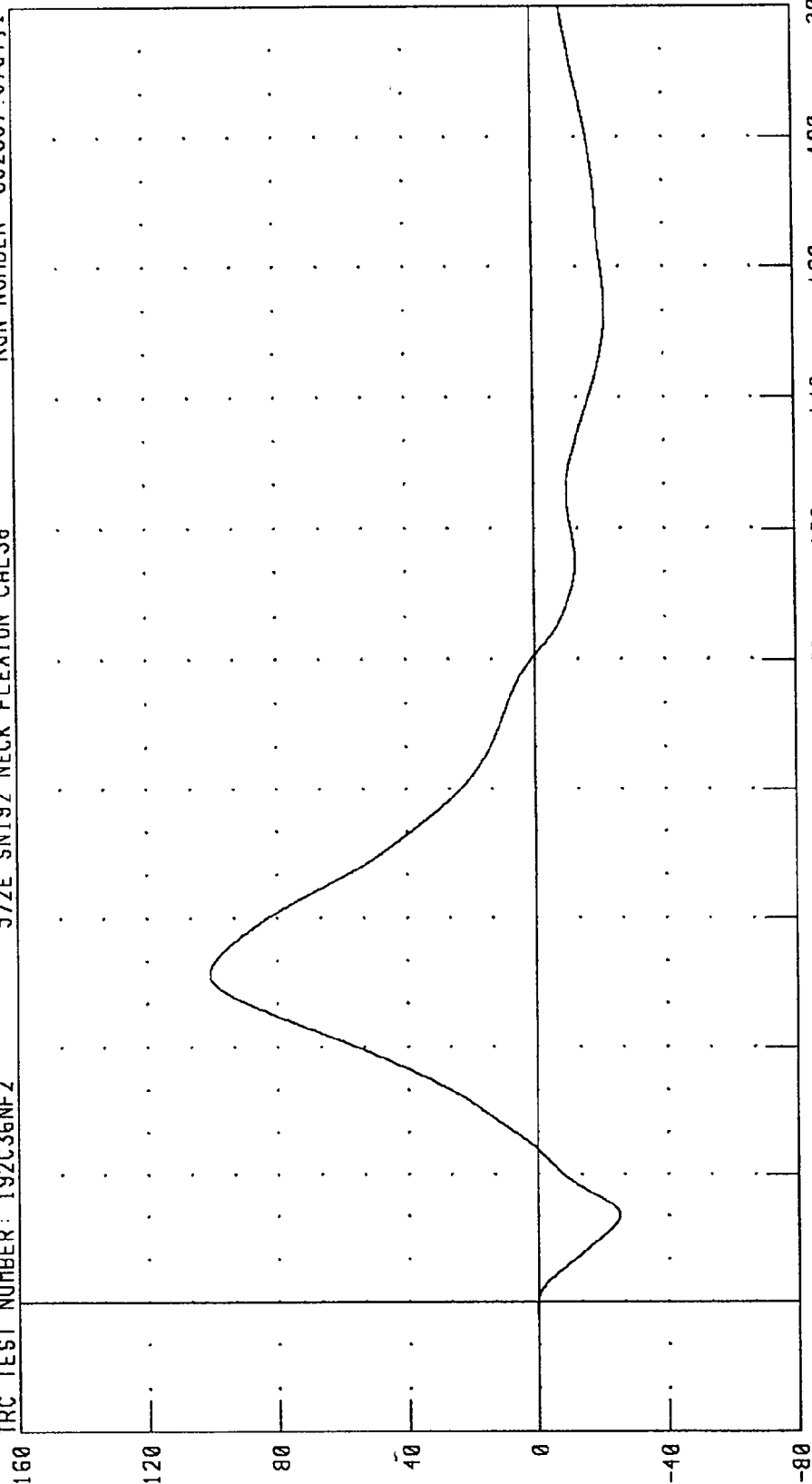
40

0

-40

-80

TORQUE (N·M)



TIME (MS)

PEAK DATA: 100.77 N·M @ 51.28 MS; -25.07 N·M @ 13.44 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

26-FEB-97

TRC INC. TEST NO: 192C36NE3 572E SN192 NECK EXT. CAL36

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	30.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.00 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	17.67 G
	20 MS	14.00 - 19.00 G	15.31 G
	30 MS	11.00 - 16.00 G	12.61 G
MAX PENDULUM G		22 G MAX	18.09 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	12.57 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	43.28 MS
D PLANE	MAX	81 - 106 DEG.	95.77 DEG.
ROTATION	TIME	72 - 82 MS	77.12 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-64.85 NM
	TIME	65 - 79 MS	72.64 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	155.44 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	140.96 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Richard L. L...

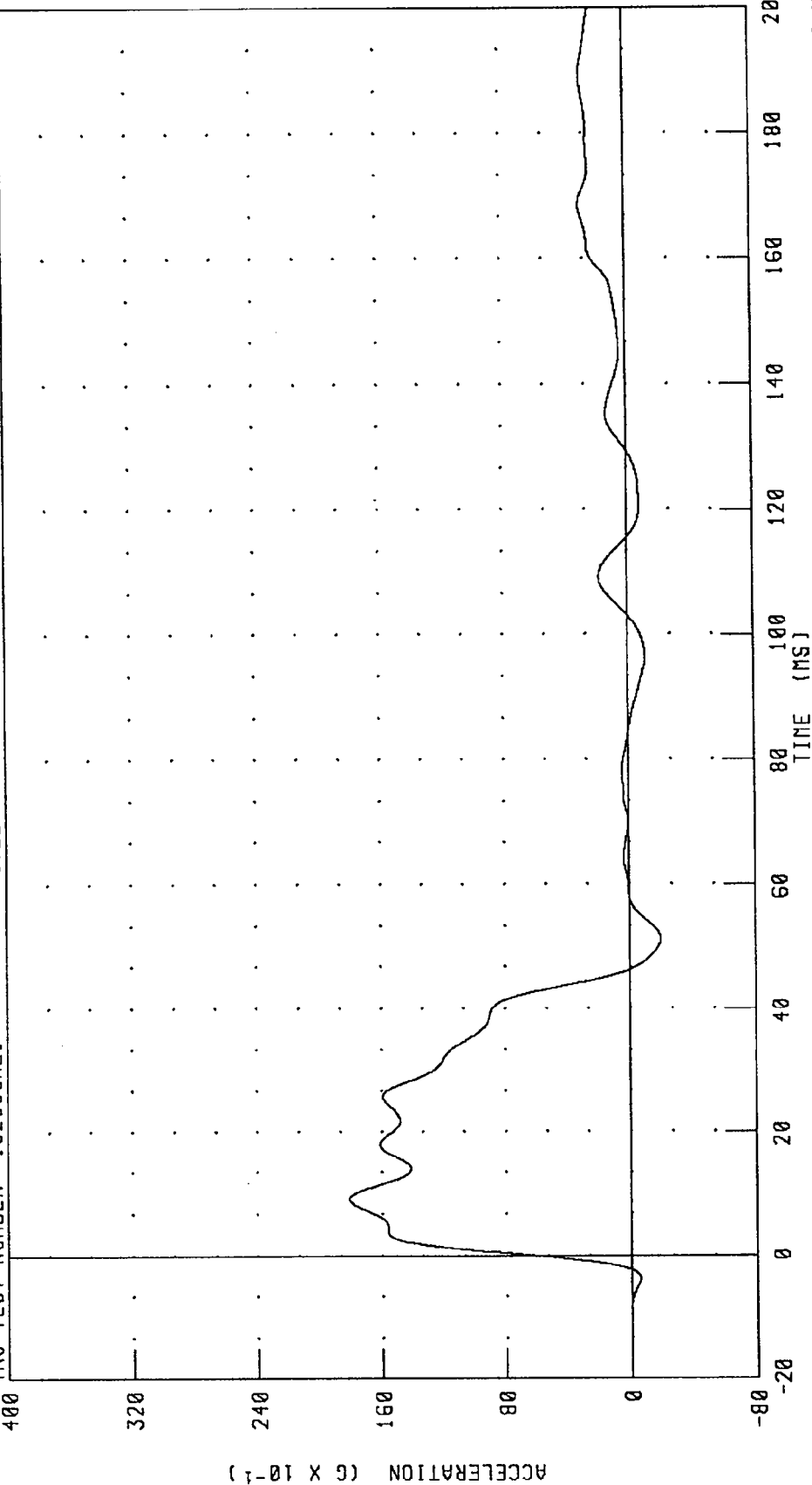
RUN NUMBER: 022697.1524;1

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 192C36NE3

572E SN192 NECK EXT. CAL36

RUN NUMBER: 032597.0737;1



PEAK DATA: 18.10 G @ 9.04 MS; -1.97 G @ 51.12 MS

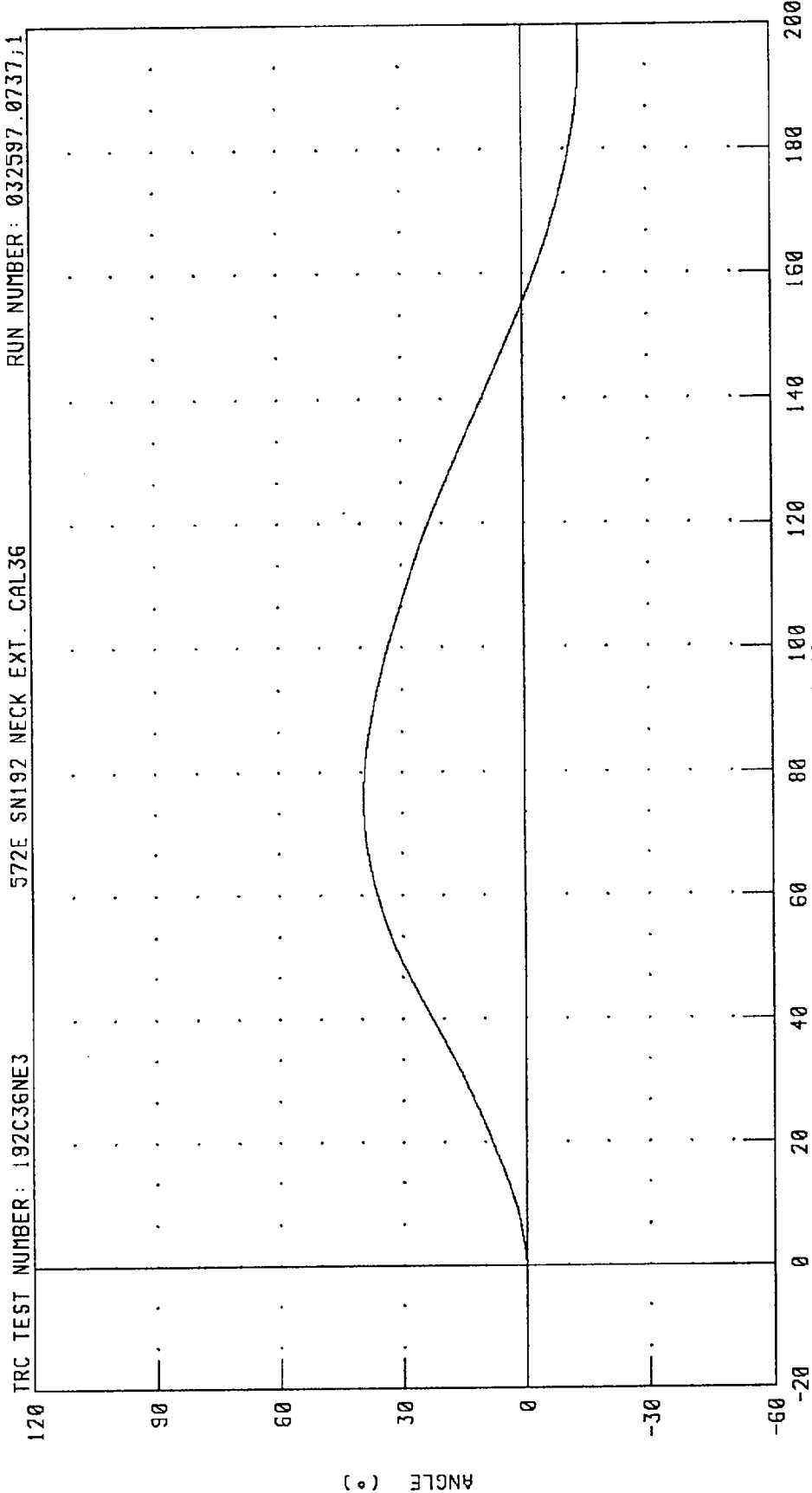
CHANNEL: PENXC FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 192C36NE3

572E SN192 NECK EXT. CAL36

RUN NUMBER: 032597.0737,1



CHANNEL: BETA FILTER: CH. CLASS 60

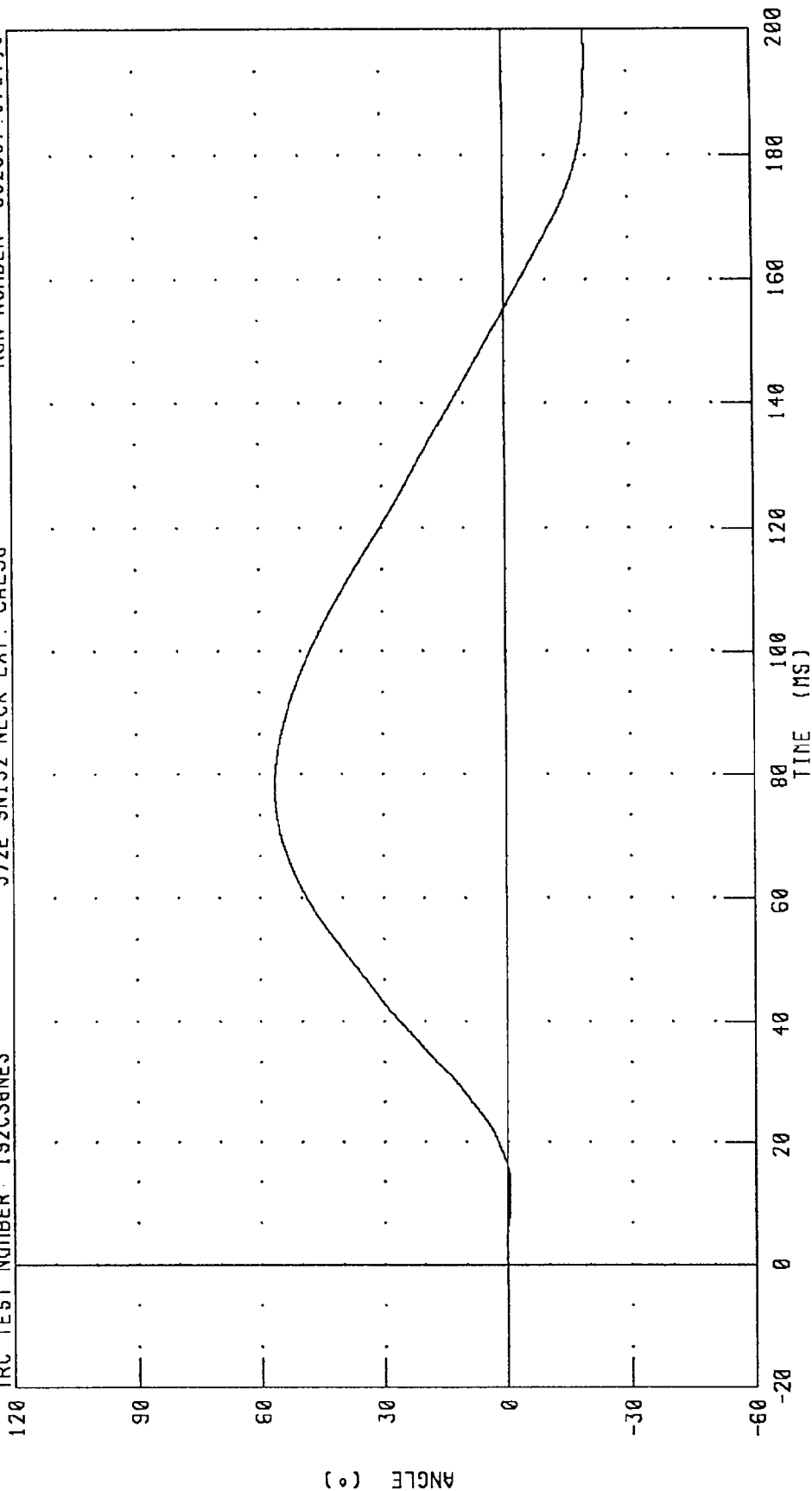
PEAK DATA: 39.38 ° @ 75.76 MS; -13.95 ° @ 195.84 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 192C36NE3

572E SN192 NECK EXT. CAL36

RUN NUMBER: 032597.0737,1



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 56.43 ° @ 77.84 MS; -19.92 ° @ 195.52 MS

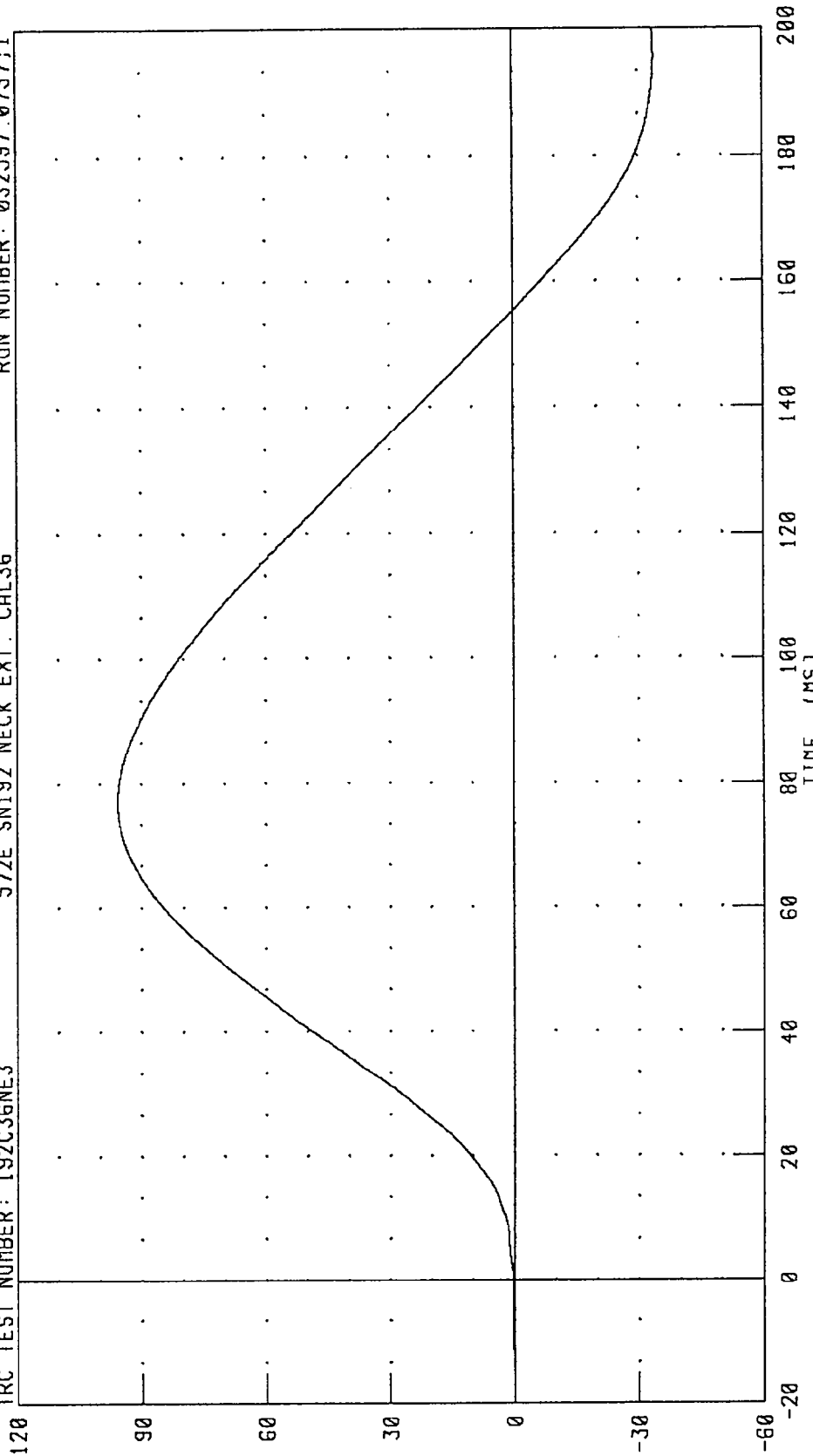
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 192C36NE3

572E SN192 NECK EXT. CAL36

RUN NUMBER: 032597.0737;1

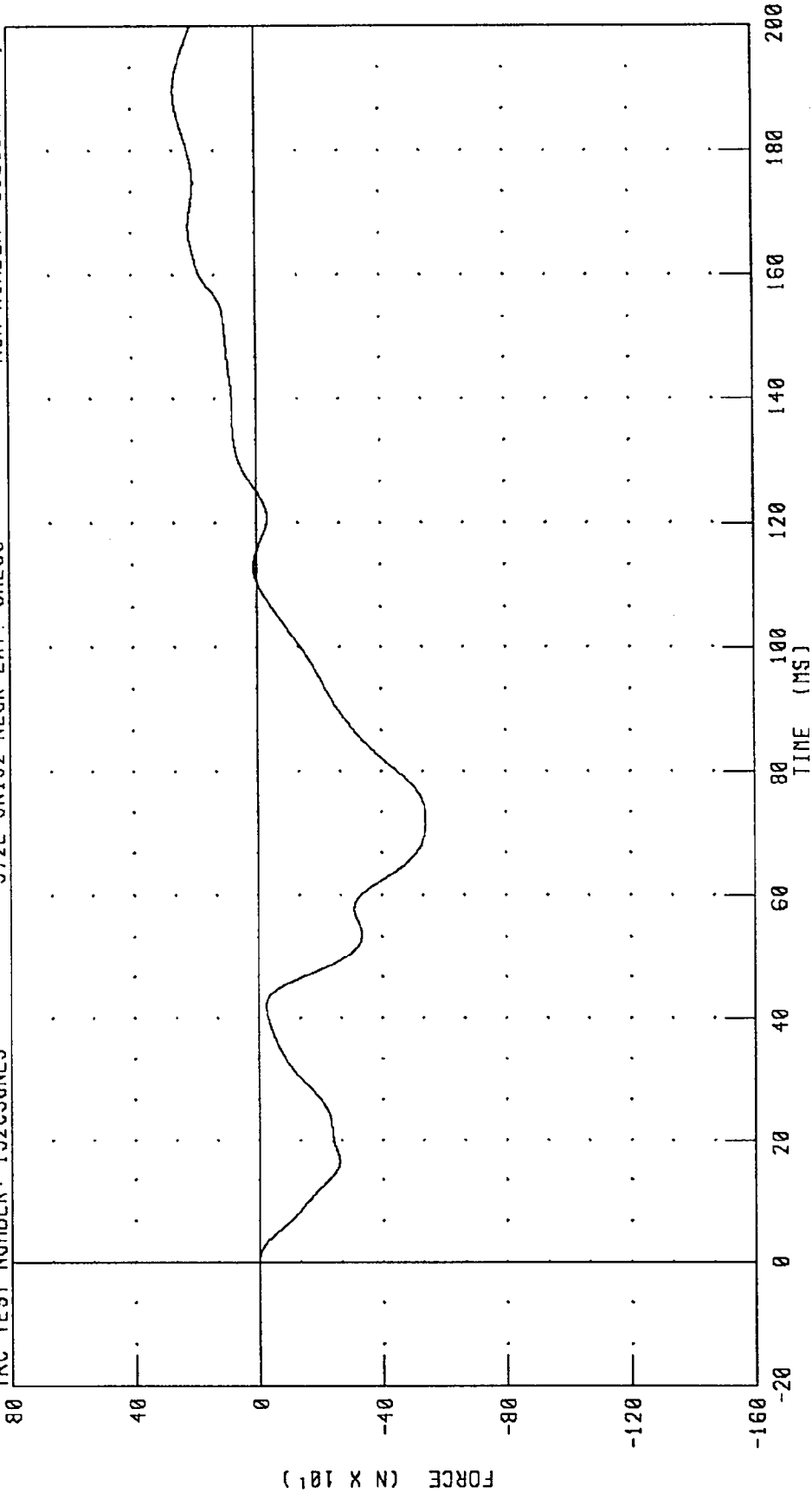


CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 95.78 ° @ 77.12 MS; -33.87 ° @ 195.76 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK FORCE X AXIS

TRC TEST NUMBER: 192C36NE3 572E SN192 NECK EXT. CAL36 RUN NUMBER: 032597.0737.1



PEAK DATA: 262.48 N @ 189.60 MS; -543.54 N @ 72.24 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

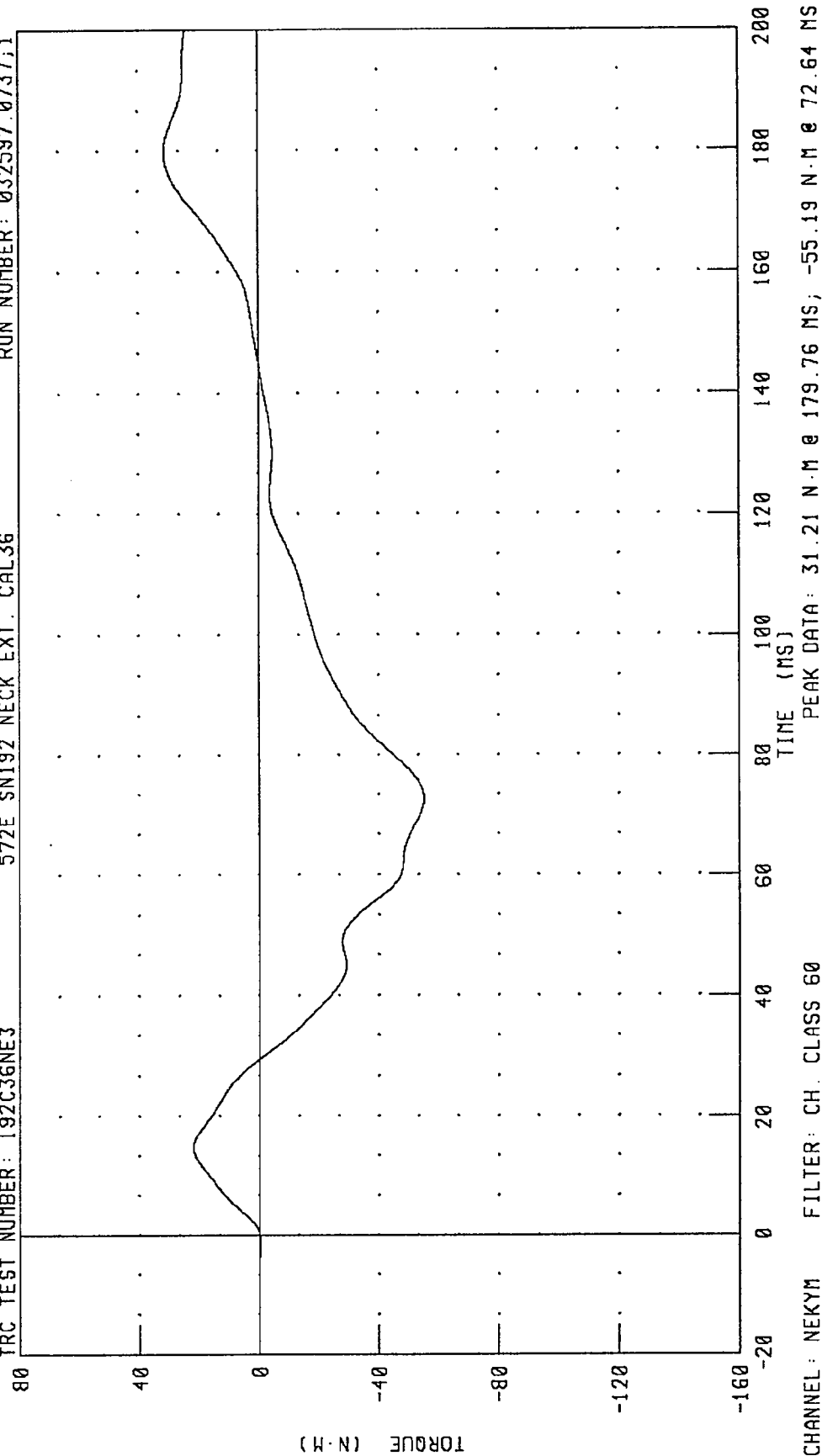
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 192C36NE3

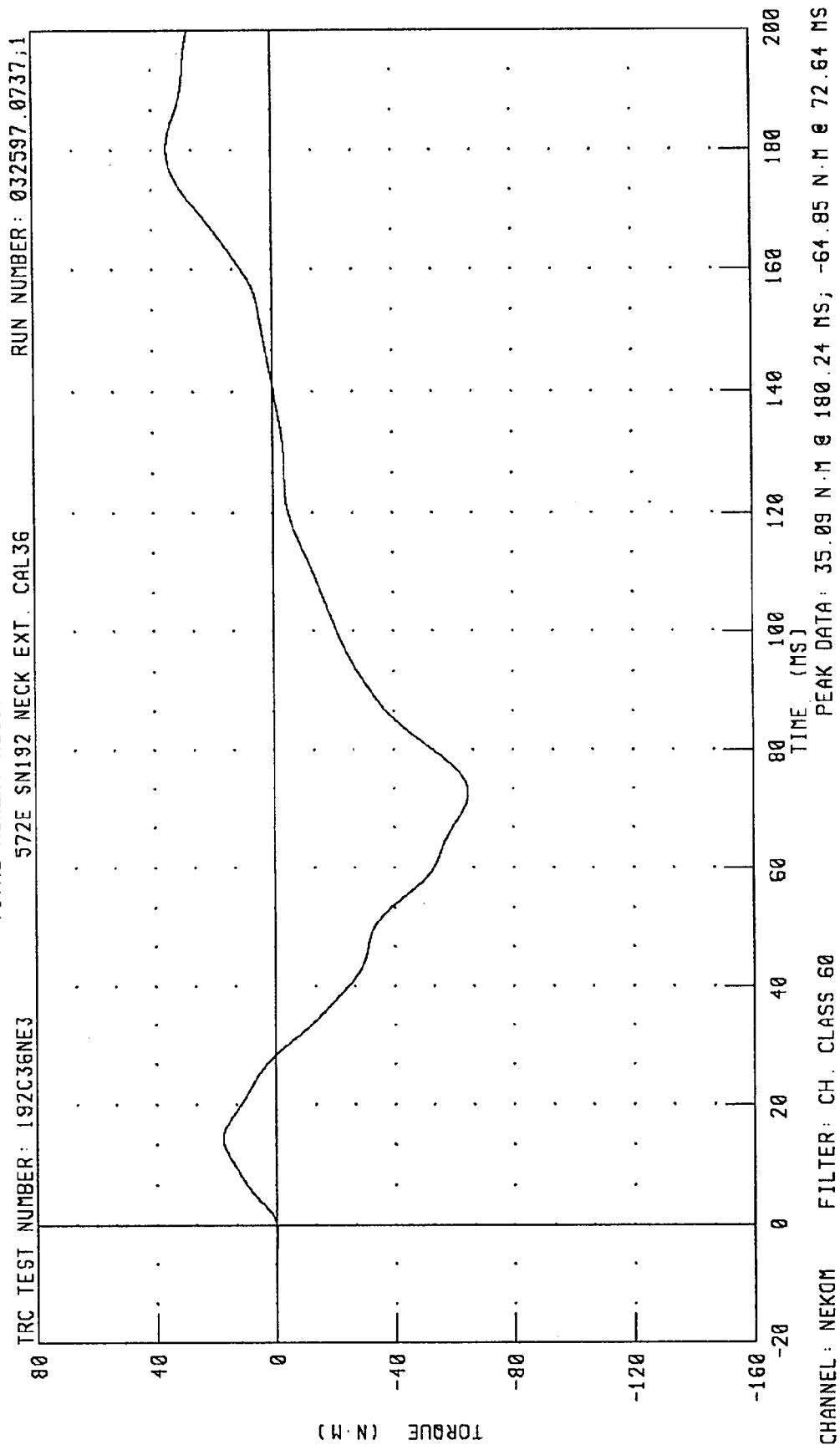
572E SN192 NECK EXT. CAL36

RUN NUMBER: 032597.0737;1



CHANNEL: NEKYM FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE



TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III

26-FEB-97

TRC INC.

TEST NO: 192C36TH1

572E SN192 H.S.THORAX CAL 36

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.6 DEG. C
RELATIVE HUMIDITY	10 - 70 %	30.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.71 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	67.2 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5827. N
INTERNAL HYSTERESIS	69% - 85%	73.2%

TEST MEETS SPECIFICATIONS

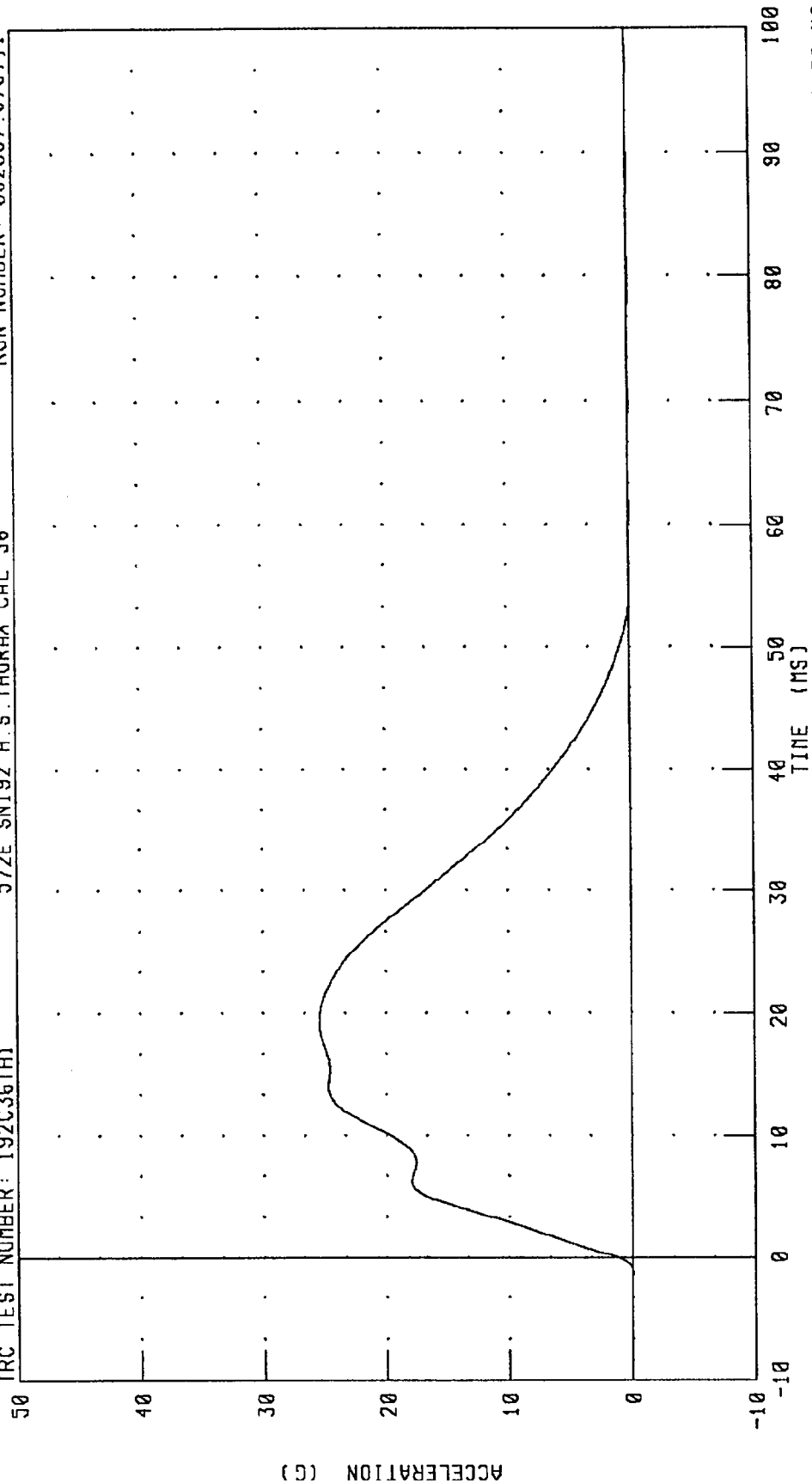
TECHNICIAN Richard L. L...

RUN NUMBER: 022697.0903;1

PART 572-E HYBRID III THORAX CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 192C36TH1 RUN NUMBER: 032597.0737,1

572E SN192 H.S.THORAX CAL 36

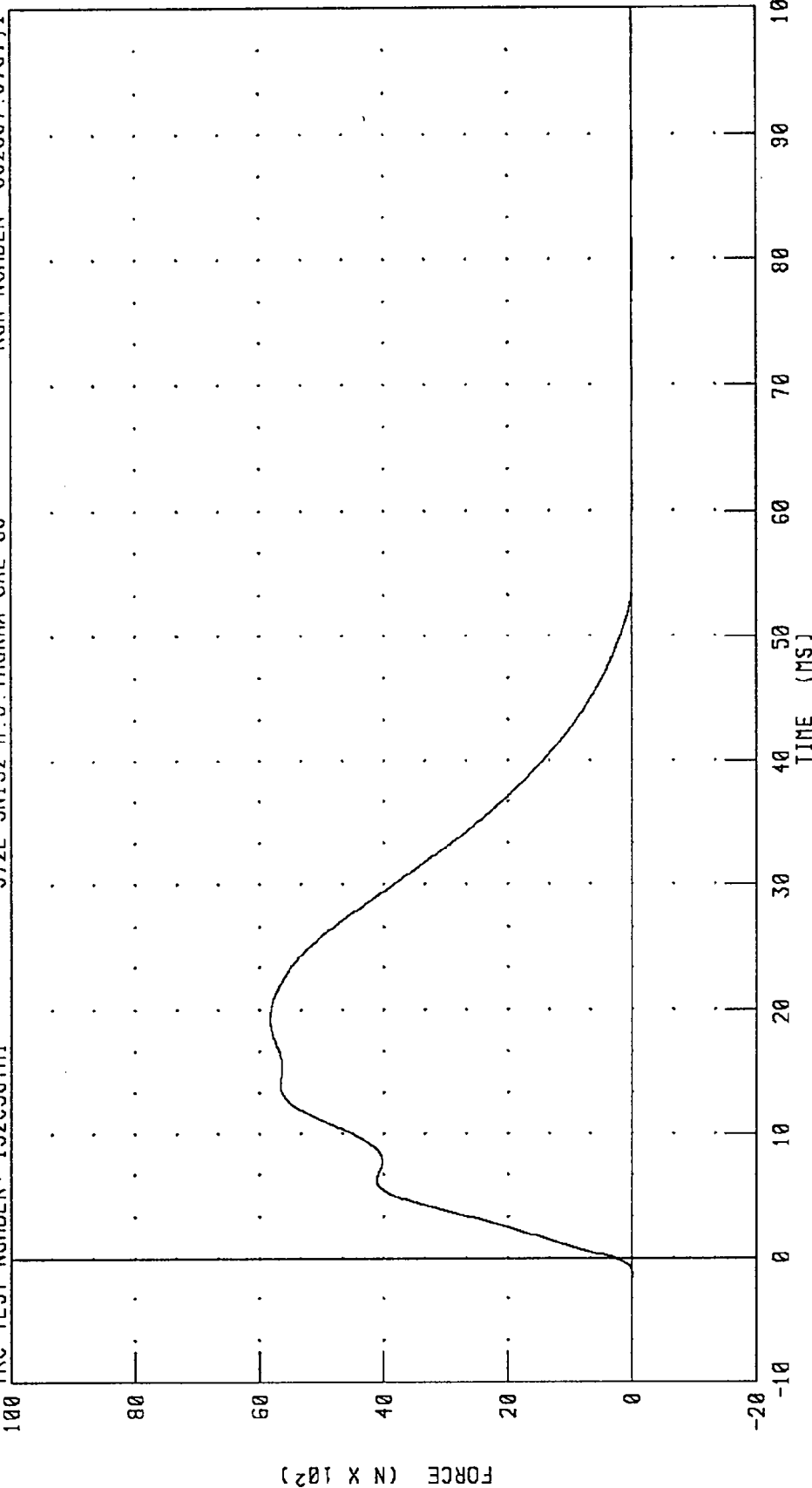


CHANNEL: PENXG FILTER: CH. CLASS 180

PEAK DATA: 25.44 G @ 19.28 MS; -0.04 G @ 79.36 MS

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE

TRC TEST NUMBER: 192C36TH1 572E SN192 H.S. THORAX CAL 36 RUN NUMBER: 032597.0737,1



PEAK DATA: 5827.23 N @ 19.28 MS; -8.75 N @ 79.36 MS

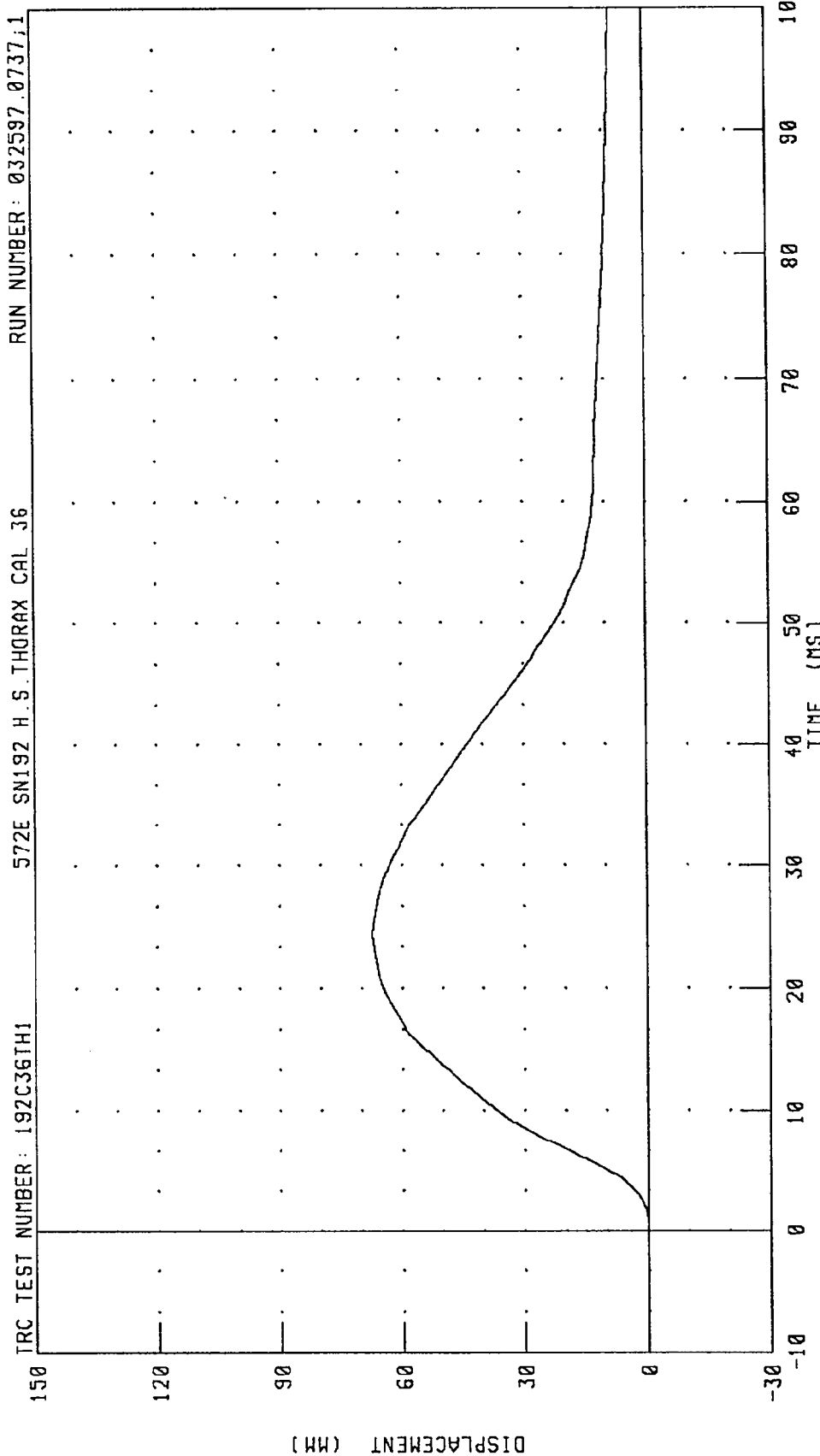
CHANNEL: PENXF FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION STERNUM DISPLACEMENT

TRC TEST NUMBER: 192C36TH1

572E SN192 H.S. THORAX CAL 36

RUN NUMBER: 032597.0737;1



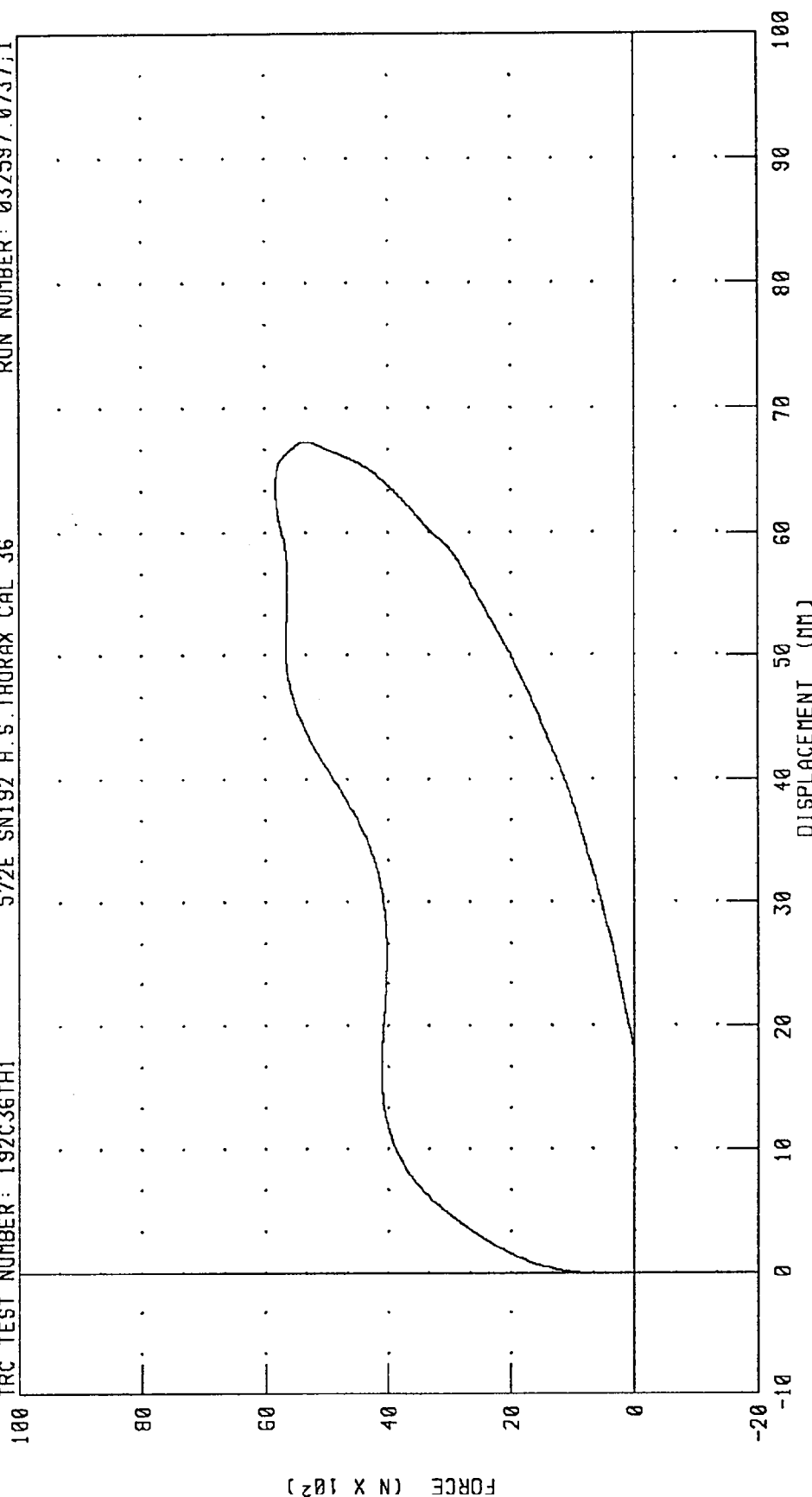
CHANNEL: CSTXD FILTER: CH. CLASS 180

PEAK DATA: 67.29 MM @ 24.32 MS; -0.02 MM @ 0.00 MS

PART 572-E HYBRID III THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE

TRC TEST NUMBER: 192C36TH1 RUN NUMBER: 032597 0737;1

572E SN192 H.S. THORAX CAL 36



CHANNEL: CSTXD FILTER: CH. CLASS 180
PENXF CH. CLASS 180

PEAK DATA:

67.29 MM @ 24.32 MS; -0.02 MM @ 0.00 MS
5827.23 N @ 19.28 MS; -8.75 N @ 79.36 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III

27-FEB-97

TRC INC.

TEST NO: 192C36RK1

572E SN192 RIGHT KNEE CAL 36

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	36.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5347.5 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Richard L. Van

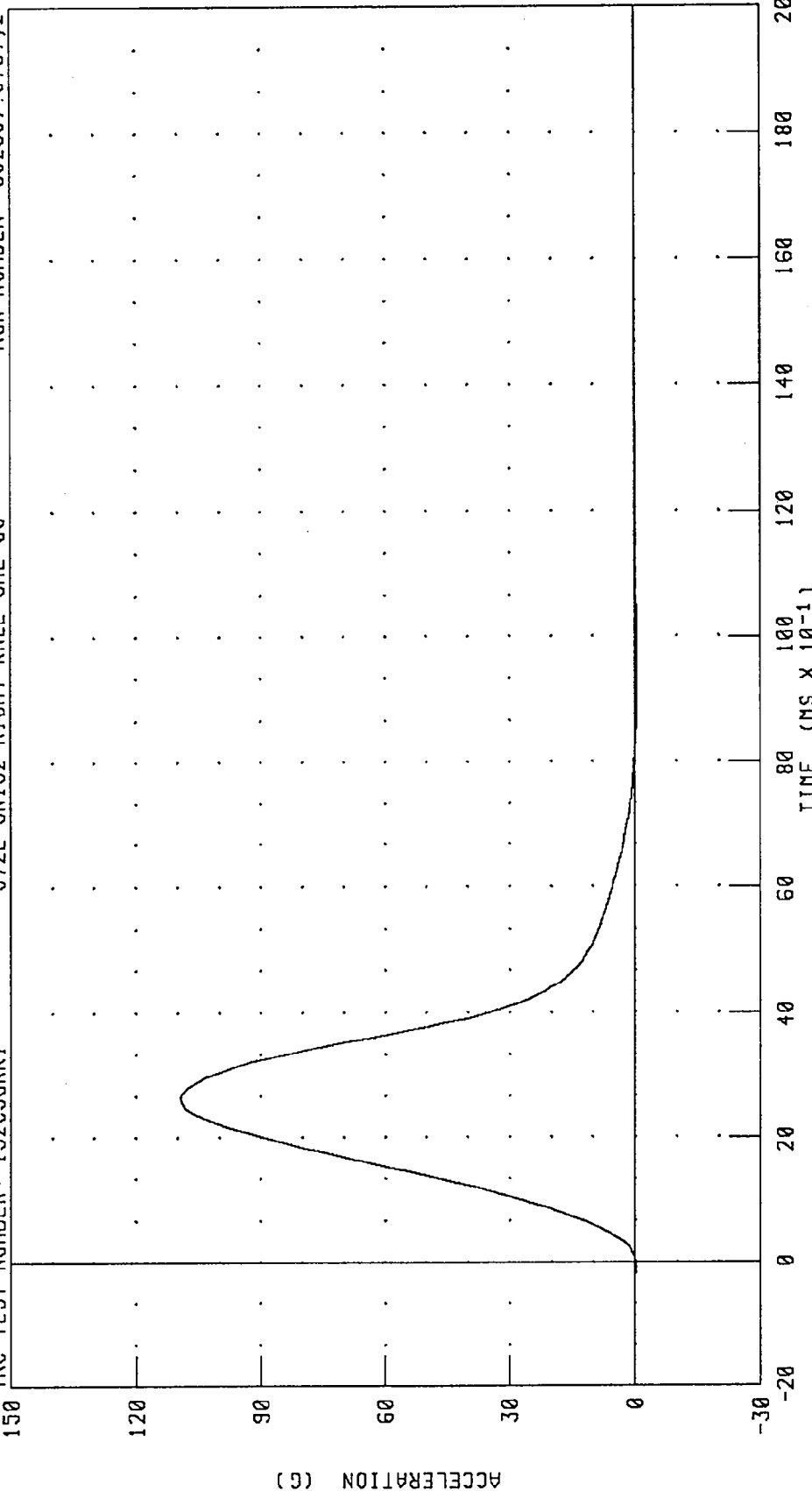
RUN NUMBER: 022797.0843;2

PART 572-E HYBRID III RIGHT KNEE CALIBRATION
 PENDULUM DECELERATION (5 KG PEND.)

TRC TEST NUMBER: 192C36RK1

572E SN192 RIGHT KNEE CAL 36

RUN NUMBER: 032597.0737;2



CHANNEL: PENXG FILTER: CH. CLASS 600

PEAK DATA: 109.29 G @ 2.64 MS; -0.51 G @ 8.96 MS

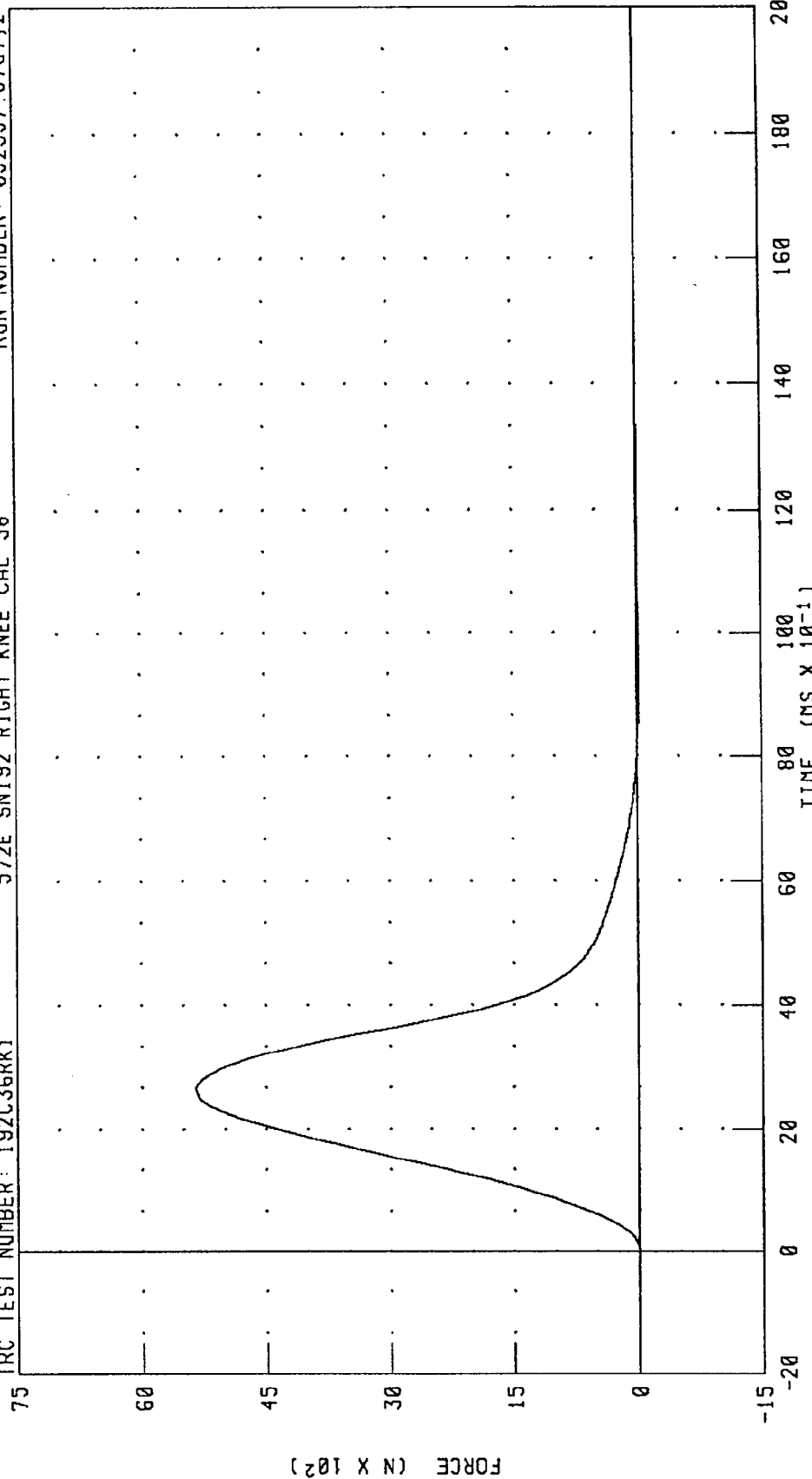
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

572E SN192 RIGHT KNEE CAL 36

RUN NUMBER: 032597.0737;2

TRC TEST NUMBER: 192C36RK1



PEAK DATA: 5347.58 N @ 2.64 MS; -25.20 N @ 8.96 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III

27-FEB-97

TRC INC.

TEST NO: 192C36LK1

572E SN192 LEFT KNEE CAL 36

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	66.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.12 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5340.0 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

Richard L. Van

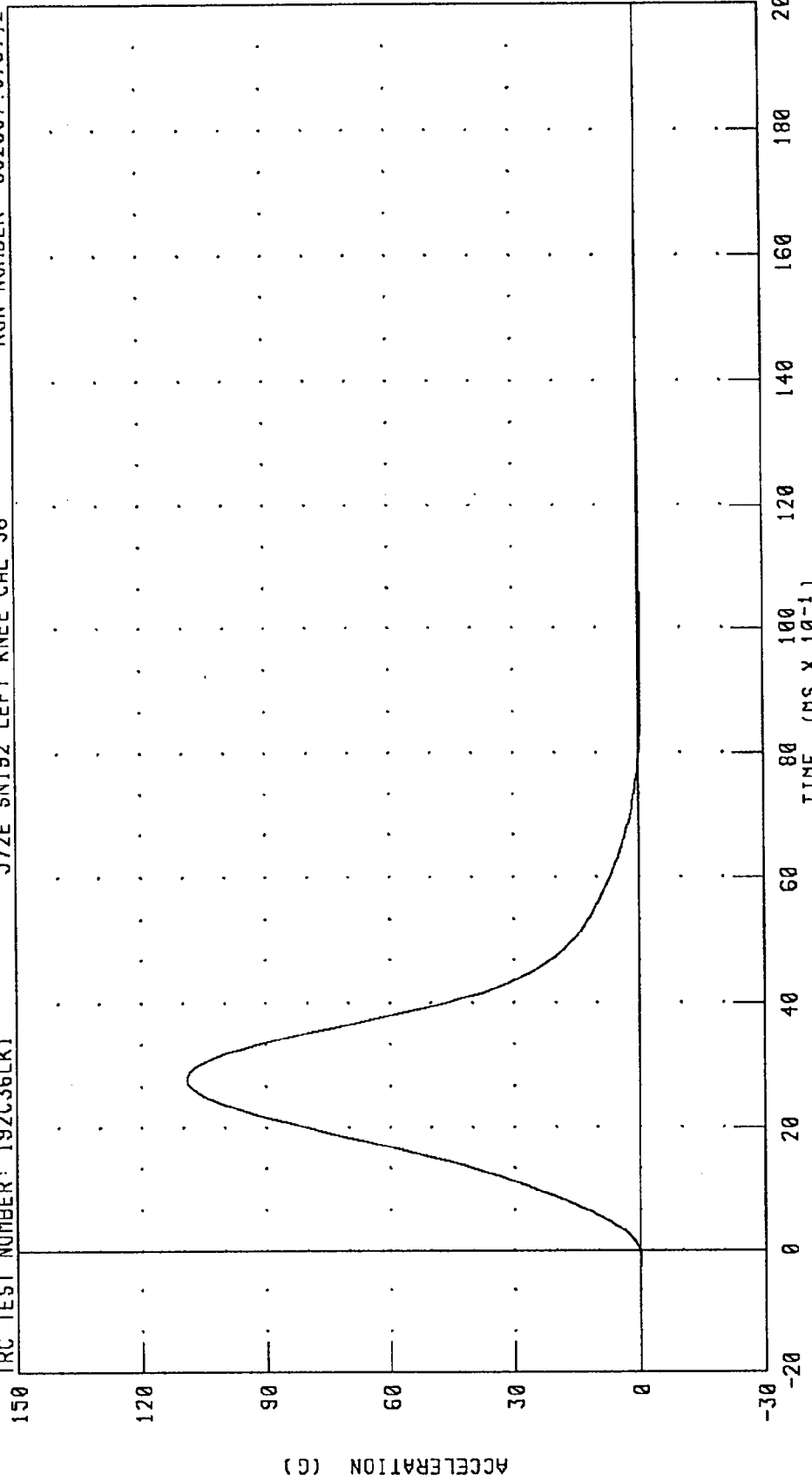
RUN NUMBER: 022797.0838;2

PART 572-E HYBRID III LEFT KNEE CALIBRATION
 PENDULUM DECELERATION (5 KG PEND.)

RUN NUMBER: 032597.0737.2

572E SN192 LEFT KNEE CAL 36

TRC TEST NUMBER: 192C36LK1



PEAK DATA: 109.14 G @ 2.80 MS; -0.52 G @ 9.04 MS

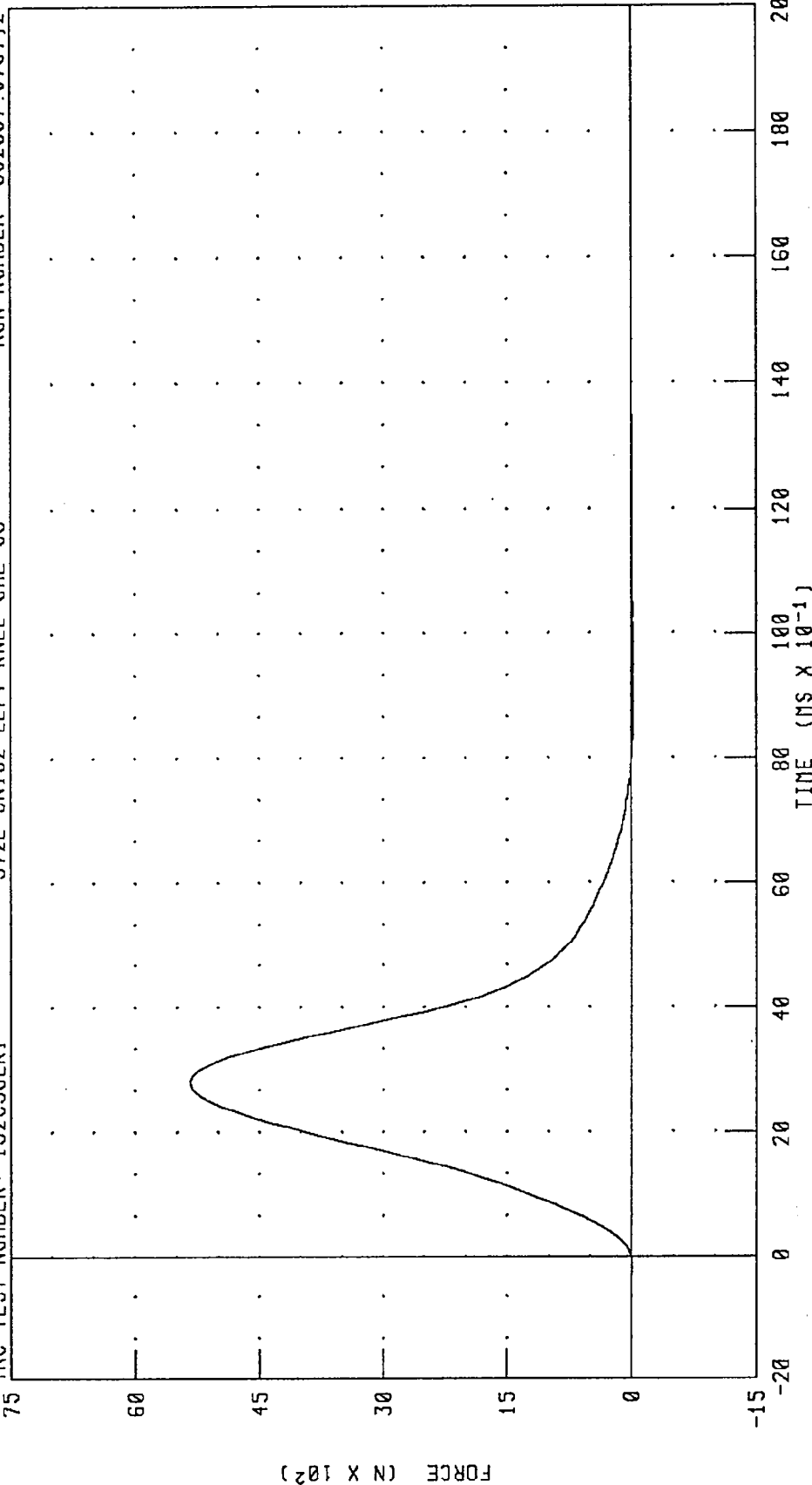
CHANNEL: PENXG FILTER: CH. CLASS 600

PART 572-E HYBRID III LEFT KNEE CALIBRATION
 PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 192C36LK1

572E SN192 LEFT KNEE CAL 36

RUN NUMBER: 032597.0737;2



PEAK DATA: 5340.07 N @ 2.80 MS; -25.46 N @ 9.04 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

Appendix D

Miscellaneous Test Information

Dummy Instrument Calibrations

Driver Dummy #142

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Head X-axis accelerometer	ACC63	7264	Endevco	01/21/97	07/21/97
Head X-axis accelerometer-redundant	AC8L5	7264	Endevco	01/21/97	07/21/97
Head Y-axis accelerometer	ACC02	7264	Endevco	01/21/97	07/21/97
Head Y-axis accelerometer-redundant	ACCR7	7264	Endevco	01/21/97	07/21/97
Head Z-axis accelerometer	ACCF3	7264	Endevco	01/21/97	07/21/97
Head Z-axis accelerometer-redundant	A68JJ	7264	Endevco	01/21/97	07/21/97
Chest X-axis accelerometer	ACC14	7264	Endevco	01/21/97	07/21/97
Chest X-axis accelerometer-redundant	A65JJ	7264	Endevco	01/21/97	07/21/97
Chest Y-axis accelerometer	ACCR0	7264	Endevco	01/21/97	07/21/97
Chest Y-axis accelerometer-redundant	FH14J	7264	Endevco	01/21/97	07/21/97
Chest Z-axis accelerometer	ACCT5	7264	Endevco	01/21/97	07/21/97
Chest Z-axis accelerometer-redundant	AC745	7264	Endevco	01/21/97	07/21/97
Left femur force load cell	257	2121	Denton	01/21/97	07/21/97
Right femur force load cell	258	2121	Denton	01/21/97	07/21/97
Neck X-axis force load cell ¹	441	1716	Denton	01/21/97	07/21/97
Neck Y-axis force load cell ¹	441	1716	Denton	01/21/97	07/21/97
Neck Z-axis force load cell ¹	441	1716	Denton	01/21/97	07/21/97
Neck Moment about X-axis load cell ¹	441	1716	Denton	01/21/97	07/21/97
Neck Moment about Y-axis load cell ¹	441	1716	Denton	01/21/97	07/21/97
Neck Moment about Z-axis load cell ¹	441	1716	Denton	01/21/97	07/21/97
Pelvis X-axis accelerometer	CY63H	7264	Endevco	01/21/97	07/21/97
Pelvis Y-axis accelerometer	AMWA9	7264	Endevco	01/21/97	07/21/97
Pelvis Z-axis accelerometer	ANA55	7264	Endevco	01/21/97	07/21/97
Chest deflection potentiometer	142	14CB1-2981	Vernitech	01/21/97	07/21/97
Lap belt force load cell	134	3419	Lebow	01/31/97	07/31/97
Shoulder belt force load cell	143	3419	Lebow	01/31/97	07/31/97

Dummy Instrument Calibrations, Cont'd.
Driver Dummy #142

	Serial Number	Model Number	Manufacturer	Calibration Date Last	Due
Left upper tibia moment about X-axis load cell	46	1583	Denton	01/21/97	07/21/97
Left upper tibia moment about Y-axis load cell	46	1583	Denton	01/21/97	07/21/97
Right upper tibia moment about X-axis load cell	35	1583	Denton	01/21/97	07/21/97
Right upper tibia moment about Y-axis load cell	35	1583	Denton	01/21/97	07/21/97
Left Lower tibia X-axis force load cell	42	1584	Denton	01/21/97	07/21/97
Left Lower tibia Z-axis force load cell	42	1584	Denton	01/21/97	07/21/97
Left Lower tibia moment about Y-axis load cell	42	1584	Denton	01/21/97	07/21/97
Right Lower tibia X-axis force load cell	39	1584	Denton	01/21/97	07/21/97
Right Lower tibia Z-axis force load cell	39	1584	Denton	01/21/97	07/21/97
Right Lower tibia moment about Y-axis load cell	39	1584	Denton	01/21/97	07/21/97
Left foot X-axis accelerometer	APA01	7264	Endevco	01/21/97	07/21/97
Left foot heel Z-axis accelerometer	10102	7264	Endevco	01/21/97	07/21/97
Left foot toe Z-axis accelerometer	10074	7264	Endevco	01/21/97	07/21/97
Right foot X-axis accelerometer	10088	7264	Endevco	01/21/97	07/21/97
Right foot heel Z-axis accelerometer	10089	7264	Endevco	01/21/97	07/21/97
Right foot toe Z-axis accelerometer	10087	7264	Endevco	01/21/97	07/21/97

Dummy Instrument Calibrations, Cont'd.
Driver Dummy #142

	Serial Number	Model Number	Manufacturer	Calibration Date Last	Due
Left knee left sensor	21	1587	Denton	08/20/96	02/20/97
Left knee right sensor	21	1587	Denton	08/20/96	02/20/97
Right knee left sensor	42	1587	Denton	08/20/96	02/20/97
Right knee right sensor	42	1587	Denton	08/20/96	02/20/97

Dummy Instrument Calibrations, Cont'd.
Right Front Passenger Dummy #192

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Head X-axis accelerometer	AAL54	7264	Endevco	01/13/97	07/13/97
Head X-axis accelerometer-redundant	AJ8J7	7264	Endevco	01/13/97	07/13/97
Head Y-axis accelerometer	AAMP5	7264	Endevco	01/13/97	07/13/97
Head Y-axis accelerometer-redundant	J10458	7264	Endevco	01/13/97	07/13/97
Head Z-axis accelerometer	ACB35	7264	Endevco	01/13/97	07/13/97
Head Z-axis accelerometer-redundant	AC8W6	7264	Endevco	01/13/97	07/13/97
Chest X-axis accelerometer	ACCD0	7264	Endevco	01/13/97	07/13/97
Chest X-axis accelerometer-redundant	A79GJ	7264	Endevco	01/13/97	07/13/97
Chest Y-axis accelerometer	ACC82	7264	Endevco	01/13/97	07/13/97
Chest Y-axis accelerometer-redundant	AGR69	7264	Endevco	01/13/97	07/13/97
Chest Z-axis accelerometer	ACC59	7264	Endevco	01/13/97	07/13/97
Chest Z-axis accelerometer-redundant	AAL82	7264	Endevco	01/13/97	07/13/97
Left femur force load cell	263	2121	Denton	01/13/97	07/13/97
Right femur force load cell	264	2121	Denton	01/13/97	07/13/97
Neck X-axis force load cell	445	1716	Denton	01/13/97	07/13/97
Neck Y-axis force load cell	445	1716	Denton	01/13/97	07/13/97
Neck Z-axis force load cell	445	1716	Denton	01/13/97	07/13/97
Neck Moment about X-axis load cell	445	1716	Denton	01/13/97	07/13/97
Neck Moment about Y-axis load cell	445	1716	Denton	01/13/97	07/13/97
Neck Moment about Z-axis load cell	445	1716	Denton	01/13/97	07/13/97
Pelvis X-axis accelerometer	AJ694	7264	Endevco	01/13/97	07/13/97
Pelvis Y-axis accelerometer	AJ656	7264	Endevco	01/13/97	07/13/97
Pelvis Z-axis accelerometer	AJ788	7264	Endevco	01/13/97	07/13/97
Chest deflection potentiometer	87313-96	14CB1-2981	Vernitech	01/13/97	07/13/97
Lap belt force load cell	234	3419	Lebow	01/31/97	07/31/97
Shoulder belt force load cell	590	3419	Lebow	01/31/97	07/31/97

Dummy Instrument Calibrations, Cont'd.
Right Front Passenger Dummy #192

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Left upper tibia moment about X-axis load cell	617	1583	Denton	01/14/97	07/14/97
Left upper tibia moment about Y-axis load cell	617	1583	Denton	01/14/97	07/14/97
Right upper tibia moment about X-axis load cell	616	1583	Denton	01/14/97	07/14/97
Right upper tibia moment about Y-axis load cell	616	1583	Denton	01/14/97	07/14/97
Left Lower tibia X-axis force load cell	600	1584	Denton	01/14/97	07/14/97
Left Lower tibia Z-axis force load cell	600	1584	Denton	01/14/97	07/14/97
Left Lower tibia moment about Y-axis load cell	600	1584	Denton	01/14/97	07/14/97
Right Lower tibia X-axis force load cell	599	1584	Denton	01/14/97	07/14/97
Right Lower tibia Z-axis force load cell	599	1584	Denton	01/14/97	07/14/97
Right Lower tibia moment about Y-axis load cell	599	1584	Denton	01/14/97	07/14/97
Left foot X-axis accelerometer	10073	7264	Endevco	01/13/97	07/13/97
Left foot heel Z-axis accelerometer	10263	7264	Endevco	01/13/97	07/13/97
Left foot toe Z-axis accelerometer	10101	7264	Endevco	01/13/97	07/13/97
Right foot X-axis accelerometer	APYT4	7264	Endevco	01/13/97	07/13/97
Right foot heel Z-axis accelerometer	AP0R8	7264	Endevco	01/13/97	07/13/97
Right foot toe Z-axis accelerometer	10076	7264	Endevco	01/13/97	07/13/97

Dummy Instrument Calibrations, Cont'd.
Right Front Passenger Dummy #192

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Left knee left sensor	574	1587	Denton	08/20/96	02/20/97
Left knee right sensor	574	1587	Denton	08/20/96	02/20/97
Right knee left sensor	573	1587	Denton	08/20/96	02/20/97
Right knee right sensor	573	1587	Denton	08/20/96	02/20/97

Vehicle and Calibration Laboratory Instrument Calibrations

Vehicle Accelerometers

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Left rear seat crossmember X-axis	J14148	7264	Endevco	02/14/97	08/14/97
Left rear seat crossmember X-axis redundant	ACB93	7264	Endevco	02/18/97	08/18/97
Right rear seat crossmember X-axis	J14477	7264	Endevco	10/23/96	04/23/97
Right rear seat crossmember X-axis redundant	10074	7264	Endevco	02/11/97	08/11/97
Engine top X-axis	CL65H	7264	Endevco	02/04/97	08/04/97
Engine bottom X-axis	CP50H	7264	Endevco	02/04/97	08/04/97
Right brake caliper X-axis	J14337	7264	Endevco	01/21/97	07/21/97
Left brake caliper X-axis	CK11H	7264	Endevco	02/04/97	08/04/97
Instrument panel center X-axis	CH74H	7264	Endevco	02/14/97	08/14/97

Calibration Laboratory Instruments

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Neck bending pendulum accelerometer	CB27	7232	Endevco		
Neck bending rotary potentiometer	NA6	35425-1-102	Bournes	Mfr/ Specification	
Neck bending linear potentiometer	NA	5184-2051846003	Bournes		
Thorax/Hybrid II femur pendulum accelerometer	CC64	7232	Endevco		
Lumbar flexion force gauge	NA	DPPH-50	Chatillon	05/03/89	repaired
Lumbar flexion rotation gauge	CP17-0601-1	7020	Humphrey	Mfr. Specification	
Abdomen compression displacement gauge	4075-175	80294-2051941504	Bournes		
Abdomen compression force gauge	3443	3167	Lebow		
Hybrid III femur pendulum accelerometer	CB35	7232	Endevco	09/18/96	03/18/97

Sign Convention
NHTSA Data Tape Reference Guide

Accelerometers:

+X: Forward
+Y: Leftward
+Z: Upward

Potentiometers:

+Chest longitudinal deflection: Outward
+Chest lateral deflection: Leftward
+Seat belt displacement: Outward
+Seat belt extension: Elongation
+Knee slider displacement: Distance between femur and tibia
increased (in relation to a seated dummy)

Load cells:

+Femur force: Tension
+Seat belt force: Tension
+Barrier force: Tension

Neck load cells:

+X force: Head pushed forward
+y force: Head pushed leftward
+Z force: Head pulled upward (tension on neck)
+X moment: Right ear rotating toward right shoulder
+Y moment: Chin rotating toward chest
+Z moment: Chin rotating toward left shoulder

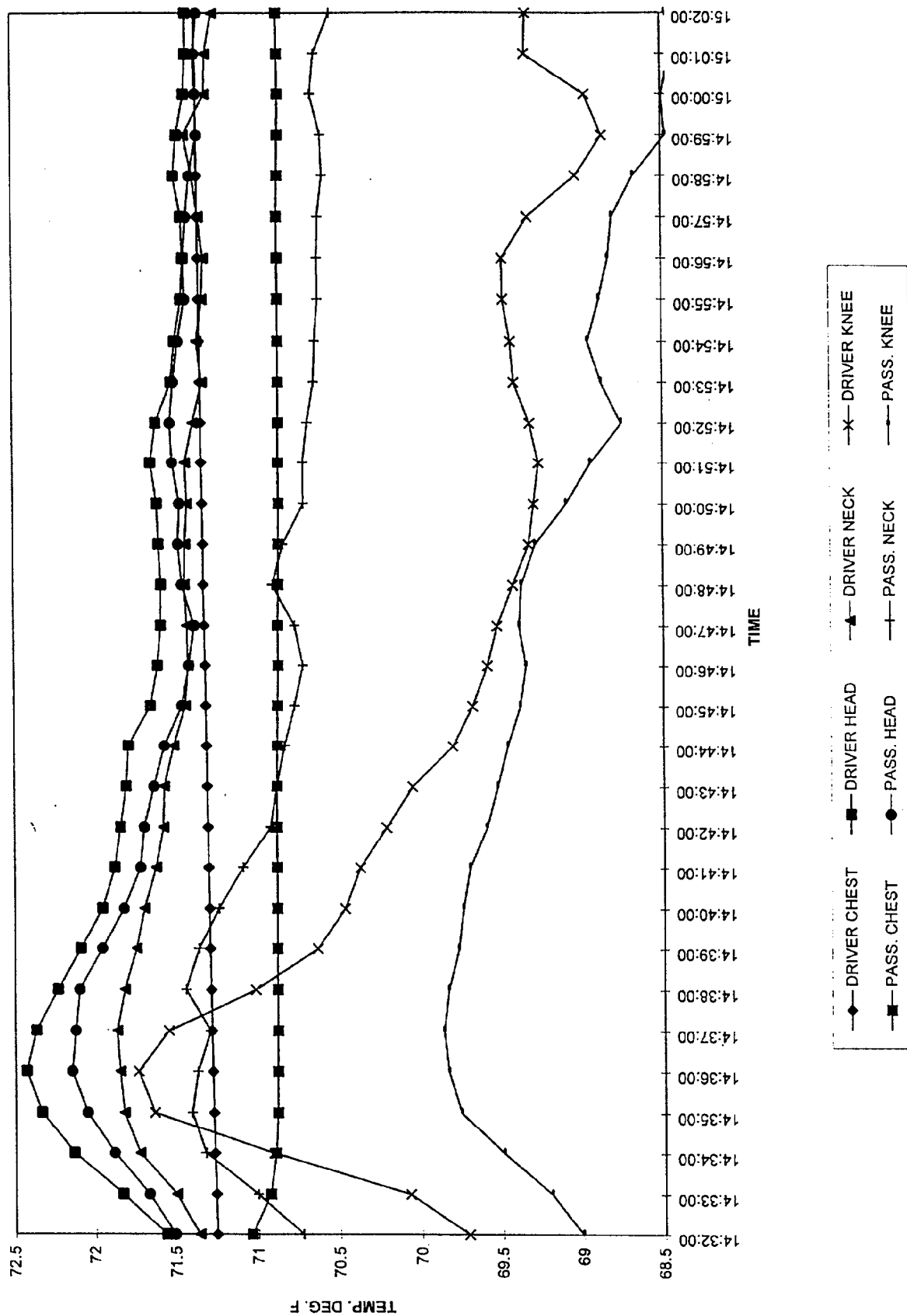
Tibia load cells:

+X force: Tension
+Y force: Tension
+Z force: Tension
+X moment: Bottom of tibia moving leftward
+Y moment: Bottom of tibia moving rearward

Frequency Response Classes
SAE J211 OCT88

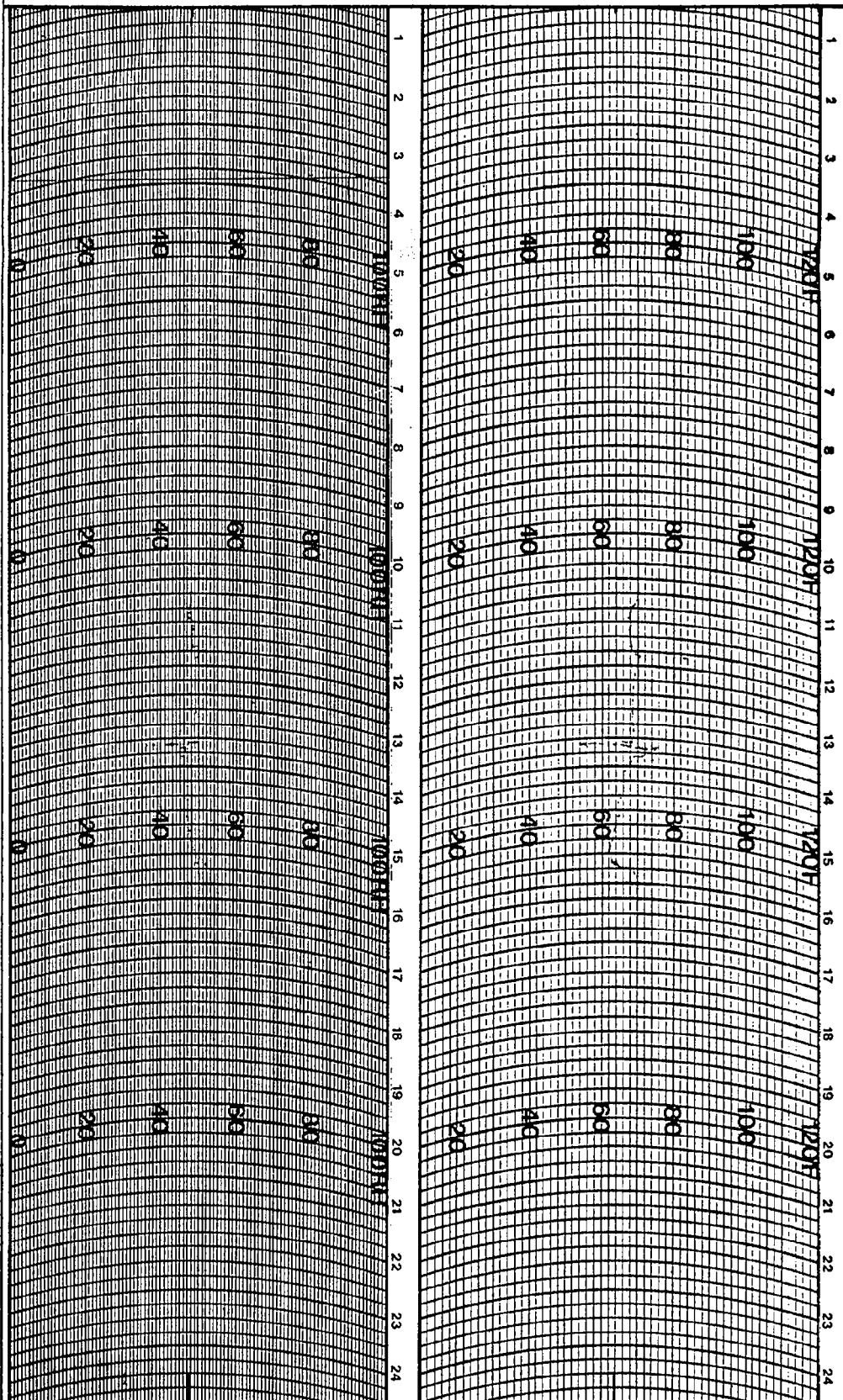
<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Barrier Face Forces	60
Belt Restraint System Loads	60
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Neck	
Forces	1000
Moments	600
Thorax	
Spine accelerations	180
Rib accelerations	1000
Sternum accelerations	1000
Deflections	180
Lumbar	
Forces	1000
Moments	1000
Pelvis	
Accelerations	1000
Forces	1000
Moments	1000
Femur/Knee/Tibia/Ankle	
Forces	600
Moments	600
Displacements	180
Sled Accelerations	60
Steering Column Loads	600
Head form Accelerations	1000

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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 3-3-97 DATE OFF _____

Appendix E

Restraint System Instructions from Owner's Manual

Section 1 Seats and Restraint Systems

Here you'll find information about the seats in your vehicle and how to use your safety belts properly. You can also learn about some things you should *not* do with air bags and safety belts.

1-2	Seats and Seat Controls	1-39	Rear Seat Passengers
1-17	Safety Belts: They're for Everyone	1-45	Rear Safety Belt Comfort Guides for Children and Small Adults
1-21	Here Are Questions Many People Ask About Safety Belts -- and the Answers	1-48	Children
1-22	How to Wear Safety Belts Properly	1-50	Child Restraints
1-22	Driver Position	1-58	Larger Children
1-30	Safety Belt Use During Pregnancy	1-61	Safety Belt Extender
1-31	Right Front Passenger Position	1-62	Checking Your Restraint Systems
1-31	Supplemental Inflatable Restraint System	1-62	Replacing Restraint System Parts After a Crash
1-38	Center Passenger Position		

1-1

Seats and Seat Controls

This section tells you about the seats -- how to adjust them and fold them up and down. It also tells you about reclining front seatbacks and head restraints.

Manual Front Seat

CAUTION:

You can lose control of the vehicle if you try to adjust a manual driver's seat while the vehicle is moving. The sudden movement could startle and confuse you, or make you push a pedal when you don't want to. Adjust the driver's seat only when the vehicle is not moving.

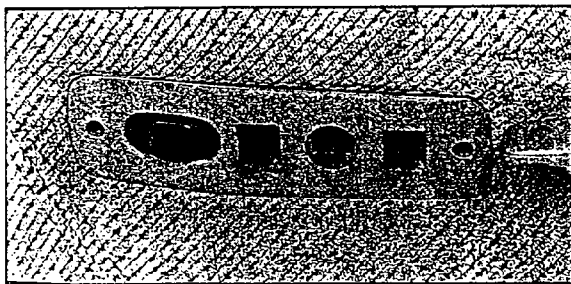


If your vehicle has a manual bucket, split bench or full bench seat, you can adjust it with this lever at the front of the seat.

Slide the lever at the front of the seat toward the passenger's side to unlock it. Using your body, slide the seat to where you want it. Then, release the lever and try to move the seat with your body to make sure the seat is locked into place.

1-2

Power Driver's Seat (If Equipped)



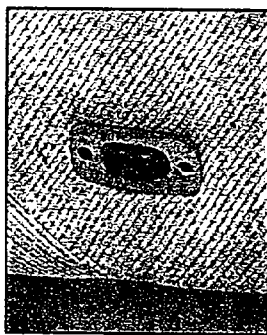
If your vehicle has a power seat on the driver's side, you can adjust it with these controls at the outside edge of the seat.

You can use the round center knob to move the seat to where you want it. To raise the seat, move the knob up. To lower the seat, move the knob down. To move the seat forward, move the knob toward the front of the vehicle. To move the seat rearward, move the knob toward the rear of the vehicle.

You can also raise and lower the front and rear of the seat. To raise the front of the seat, move the front lever up. To lower the front of the seat, move the front lever down. To raise the rear of the seat, move the rear lever up. To lower the rear of the seat, move the rear lever down.

1-3

Power Lumbar Adjustment (If Equipped)



If you have power lumbar adjustment, you can increase or decrease lumbar support in an area of the lower seatback.

To increase support, press and hold the front of the rocker switch. Let go of the switch when the lower seatback reaches the desired level of support.

To decrease support, press and hold the rear of the rocker switch. Let go of the switch when the lower seatback reaches the desired level of support.

Reclining Front Seatbacks



To adjust the seatback, move the lever rearward.

Release the lever to lock the seatback where you want it. Move the lever again rearward and the seatback will go to an upright position.

1-4



But don't have a seatback reclined if your vehicle is moving.

⚠ CAUTION:

Sitting in a reclined position when your vehicle is in motion can be dangerous. Even if you buckle up, your safety belts can't do their job when you're reclined like this.

The shoulder belt can't do its job because it won't be against your body. Instead, it will be in front of you. In a crash you could go into it, receiving neck or other injuries.

The lap belt can't do its job either. In a crash the belt could go up over your abdomen. The belt forces would be there, not at your pelvic bones. This could cause serious internal injuries.

For proper protection when the vehicle is in motion, have the seatback upright. Then sit well back in the seat and wear your safety belt properly.

1-5

Head Restraints

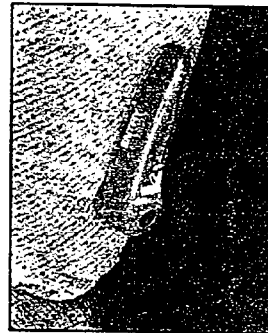
Slide the head restraint up or down so that the top of the restraint is closest to the top of your ears. This position reduces the chance of a neck injury in a crash.

Seatback Latches (2-Door Utility)

⚠ CAUTION:

If the seatback isn't locked, it could move forward in a sudden stop or crash. That could cause injury to the person sitting there. Always press rearward on the seatback to be sure it is locked.

The front seatback folds forward to let you access the rear of the vehicle.



To fold a seatback forward, pull this lever forward and tilt the seatback forward.

To return the seatback to the upright position, just push the seatback rearward until it latches.

After returning the seatback to its upright position, pull the seatback forward to make sure it is locked.

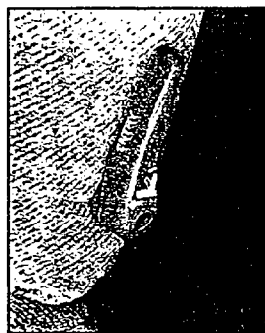
1-6

Easy Entry Seat (2-Door Utility)

CAUTION:

If any easy entry seat isn't locked, it can move. In a sudden stop or crash, the person sitting there could be injured. And, even if there is no crash or sudden stop, a driver sitting in an unlocked easy entry seat could be startled by the sudden movement and hit the wrong control or pedal, causing an accident. After you've used it, be sure to push rearward on any easy entry seat to be sure it is locked.

The driver and passenger front bucket seat and the 60/40 split bench seat of your vehicle have an easy entry feature. This makes it easy to get in and out of the rear seat. On vehicles equipped with the power driver's seat, only the passenger's front seat will have the easy entry feature.



To operate the seat, pull forward on the top of the lever located at the side of the seatback, and tilt the back forward toward the front of the vehicle.

When you do, the seat bottom will release. Just pull or push the seat forward until it stops.

To return the seat to its regular position, return the seatback to its upright position, then push the whole seat rearward until it latches.

After returning the seat to its regular position, try to move the seat with your body, to make sure the seat is locked into place.

1-7

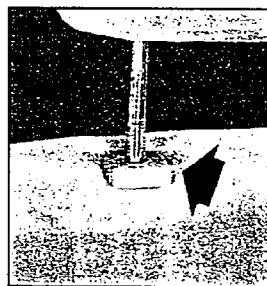
Rear Seats

CAUTION:

If a head restraint is not installed on the seatback or stored in the vehicle properly, it could be thrown about the vehicle in a crash or sudden maneuver. People in the vehicle could be injured. Remove the head restraints only when you need to fold the seat, and be sure that the head restraints are stored securely in the storage bag and placed under the rear seat. When the seat is returned to the passenger position, be sure the head restraints are installed properly.

Folding the Rear Seat (2-Door Utility Model)

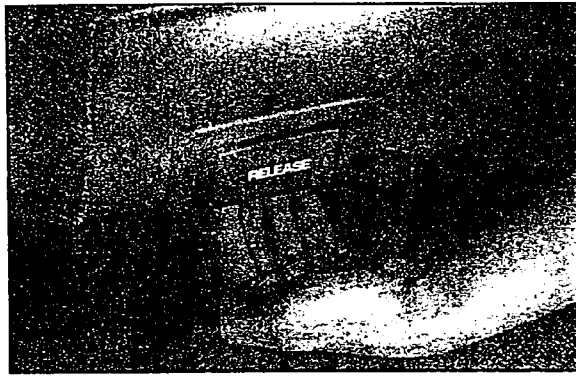
If your vehicle has a rear seat, the seat can be folded flat for more cargo space. Before folding, make sure that nothing is under or in front of the seat. When the seat is folded, it will lay almost flat on the floor.



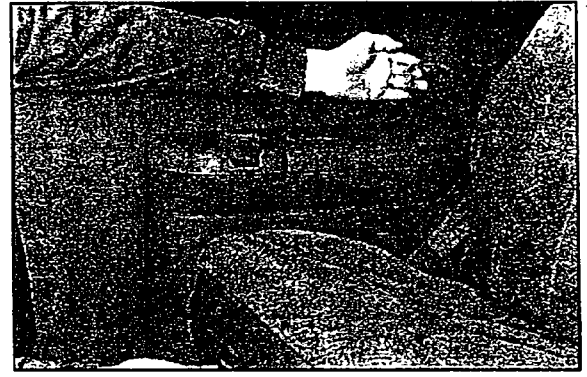
When folding the seat, first remove the head restraints. Push the button at the top of the seat back and slide the head restraint out of the height-adjust tubes.

Detach the stowage bag from the back of the rear seat. Then, put the head restraints in the stowage bag and place the bag in the rear seat footwell, under the seat.

1-8



To fold the seat, pull on the release handle at the bottom of the seat cushion marked RELEASE.



When you release the seat cushion, the seatback is automatically released. Pull the loop on the seatback forward and fold the seatback onto the seat cushion.

While the seat is in the folded position, hang the latch plate end of the outer passenger position safety belts on the hooks at the top of each retractor cover, out of the way.

To return the seat to the passenger position, just lift up on the seatback and push it rearward until it latches.

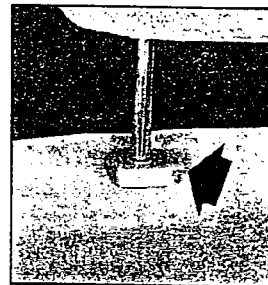
1-9

After returning the seat to the passenger position, pull forward on the seatback to make sure it is locked into place. Also, return the safety belts and head restraints to their original positions, so they will be available for rear seat passengers to use.

Folding the Rear Seat (4-Door Utility Model)

If your vehicle has a 60/40 rear seat, either side may be folded down to give you more cargo space.

Before folding, place the latch portion of the center safety belt in the center armrest. That way, the center safety belt will be out of the way when the seat is folded and also will be easily available for passengers to use when the seat is returned to the passenger position. Also, make sure that nothing is under or in front of the seat. When the seat is folded, it will lay flat on the floor.



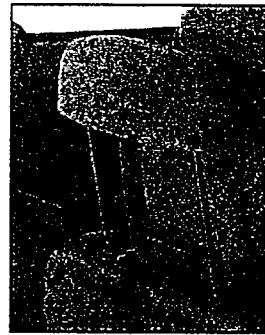
When folding the seat, first remove the head restraints. Push the release buttons at the bottom of each head restraint height adjust post and slide the head restraint out of the height-adjust tubes.

Set the head restraints aside for now. You will stow them in their proper position after you are done folding the seat.

1-10



To fold the seat, pull up on the strap loop at the rear of the seat cushion.



Then, stow the head restraints by sliding them into the rear of the seatback. Make sure the posts go in all the way.

Then, pull the seat cushion up and fold it forward.

After folding the seat cushion fully forward, pull the seatback forward and fold the seatback down until it is flat.

To return the seat to the passenger position, first remove the head restraints by sliding them out of the seat cushion. Lift the seatback up and push rearward all the way. Then, lower the seat cushion until it latches in position.

After returning the seat to the passenger position, return the head restraints to the top of the seatback. Pull forward on the seatback and up on the seat cushion to make sure that the seat is securely in place.

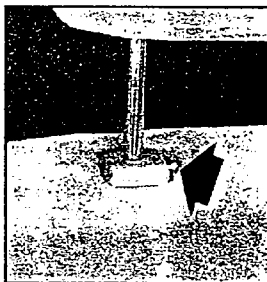
If the latch plate portion of the center safety belt was put in the center armrest when the seat was folded, take the latch plate portion out and place it on the seat. That way, the center position safety belt will be available for the center rear seat passenger to use.

1-11

Folding the Second Seat (Suburban)

If your vehicle has a 60/40 rear seat, either side may be folded down to give you more cargo space.

Before folding, place the latch portion of the center safety belt in the center armrest. That way, the center safety belt will be out of the way when the seat is folded and also will be easily available for passengers to use when the seat is returned to the passenger position. Also, make sure that nothing is under or in front of the seat. When the seat is folded, it will lay flat on the floor.



When folding the seat, first remove the head restraints. Push the release buttons at the bottom of each head restraint height-adjust post and slide the head restraint out of the height-adjust tubes.



To fold the seat, pull up on the strap loop at the rear outer edge of the seat cushion. Then, pull the seat cushion up.

After folding the seat cushion forward, push down on the lever at the side of the seatback and fold the seatback forward until it is flat.



Then, stow the head restraints by sliding them into the rear of the seatback. Make sure the posts go in all the way.

Set the head restraints aside for now. You will stow them in their proper positions after you are done folding the seat.

1-12



To create a load floor, release the panels from the seatback by pushing rearward on the latch and fold them out to cover the rear seat footwell.

Then lift the rear seatback up and push rearward until it latches. Return the head restraints to their original positions and lower the seat cushion until it latches into position.

After returning the seat to the passenger position, pull forward on the seatback and up on the cushion to make sure the seat is locked into place.

If the latch plate portion of the center safety belt was put in the center armrest when the seat was folded, take the latch plate portion out and place it on the seat. That way, the center position safety belt will be available for the center rear seat passenger to use.

To return the seat to the passenger position, lift the load floor panels and latch them into the seatback.

1-13

Entry to the Rear Seat (Suburban Second Seat)

The right side of the rear 60/40 split folding bench seat, has an easy entry feature. That makes it easy to get in and out of the third seat, if you have one.

To operate the seat, move the lever at the side of the seat down.

Tilt the seatback toward the front of the vehicle by pulling the top of the seatback forward.

When you do, the seat bottom will release. Just pull the seat forward until it stops.



There is a foot-operated release lever for rear seat passengers to use when getting out of the third seat.

To release the easy entry second seat, lift up on the top of the release lever with your foot. Push the top of the seatback forward and tilt it toward the front of the vehicle.

To return the seat to its regular position, return the seatback to its upright position, then push the whole seat rearward until it latches.

After returning the seat to its regular position, try to move the seat with your body, to make sure the seat is locked into place.



CAUTION:

A seat that isn't locked into place properly can move around in a collision or sudden stop. People in the vehicle could be injured. Be sure to lock the seat into place properly when installing it.

1-14

CAUTION:

A safety belt that is twisted or not properly attached won't provide the protection needed in a crash. The person wearing the belt could be seriously injured. After installing the seat, always check to be sure that the safety belts are not twisted and are properly attached.



To unlatch the safety belt, press the tip of a key into the release hole of the safety belt attachment while pulling up on the safety belt.

Removing the Rear (Suburban Third Seat)

If your vehicle has a rear seat, it can be taken out for more cargo space.

Before removing the seat, unlatch the outside passenger position safety belts from the seat frame.



Then, hang the latch plate end of the belt on the hook at the top of the retractor cover, out of the way.

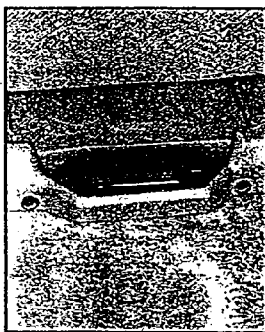
To remove the seat, fully open the rear load doors and enter the back of the vehicle.

1-15



Move the seatback release lever, at the right rear of the seat, toward the center of the vehicle.

Then, fold the seatback forward into the seat cushion.



To unlatch the seat from the floor, pull up on the center release handle at the rear of the seat and lift the rear seat up, off of the floor.

Turn the seat sideways and take it out of the vehicle.

1-16

Replacing the Rear Seat

To put the seat back in, hold the seat sideways and put it into the vehicle. Turn the seat to the forward position and set it down, with the latches at the bottom of the seat over the hooks in the floor. Pull up on the center release handle and let the seat drop into place. Release the handle to let the seat latch close and make sure it locks into place. Then, move the seatback release lever at the right rear of the seat toward the center of the vehicle and raise the seatback.

After returning the seatback to the upright position, push the seatback forward to make sure it is locked into place.

Then, return the outside passenger position safety belts to the seat frame buckles, so they will be available for rear seat passengers to use.

Safety Belts: They're for Everyone

This part of the manual tells you how to use safety belts properly. It also tells you some things you should not do with safety belts.

And it explains the Supplemental Inflatable Restraint system, or air bag system.

CAUTION:

Don't let anyone ride where he or she can't wear a safety belt properly. If you are in a crash and you're not wearing a safety belt, your injuries can be much worse. You can hit things inside the vehicle or be ejected from it. You can be seriously injured or killed. In the same crash, you might not be if you are buckled up. Always fasten your safety belt, and check that your passengers' belts are fastened properly too.

CAUTION:

It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed. Do not allow people to ride in any area of your vehicle that is not equipped with seats and safety belts. Be sure everyone in your vehicle is in a seat and using a safety belt properly.

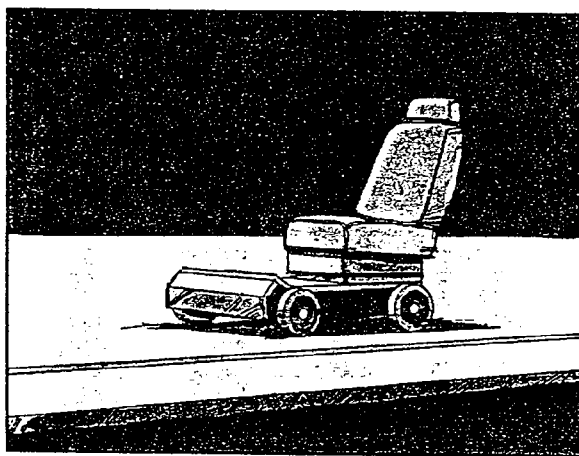
1-17



Your vehicle has a light that comes on as a reminder to buckle up. (See "Safety Belt Reminder Light" in the Index.)

Why Safety Belts Work

When you ride in or on anything, you go as fast as it goes.



Take the simplest vehicle. Suppose it's just a seat on wheels.

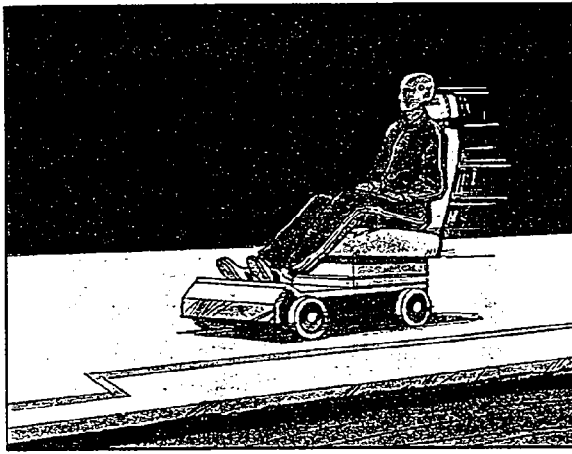
In most states and Canadian provinces, the law says to wear safety belts. Here's why: *They work.*

You never know if you'll be in a crash. If you do have a crash, you don't know if it will be a bad one.

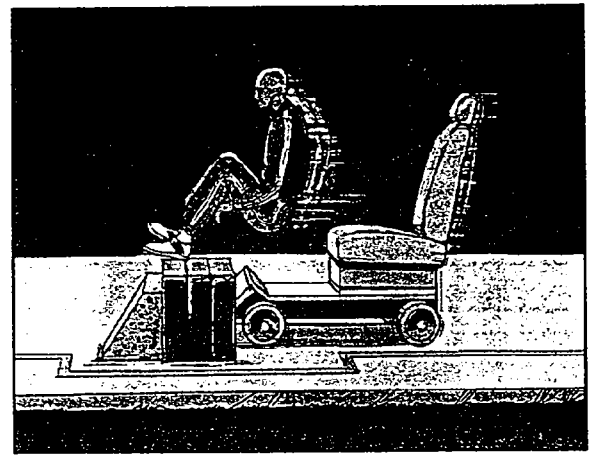
A few crashes are mild, and some crashes can be so serious that even buckled up a person wouldn't survive. But most crashes are in between. In many of them, people who buckle up can survive and sometimes walk away. Without belts they could have been badly hurt or killed.

After more than 25 years of safety belts in vehicles, the facts are clear. In most crashes buckling up does matter ... a lot!

1-18

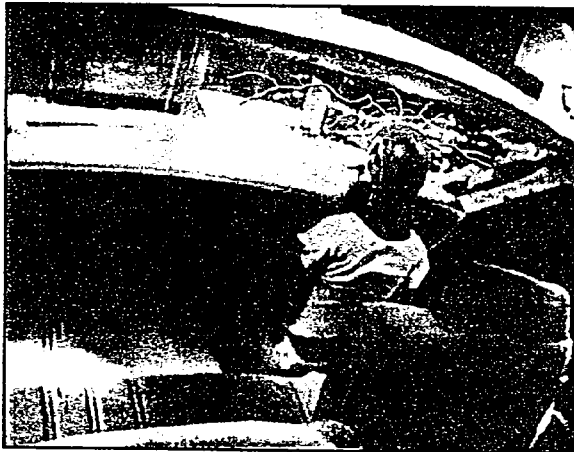


Put someone on it.

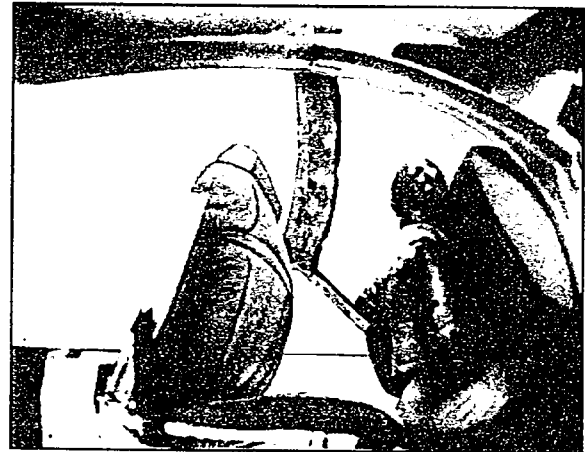


Get it up to speed. Then stop the vehicle. The rider doesn't stop.

1-19

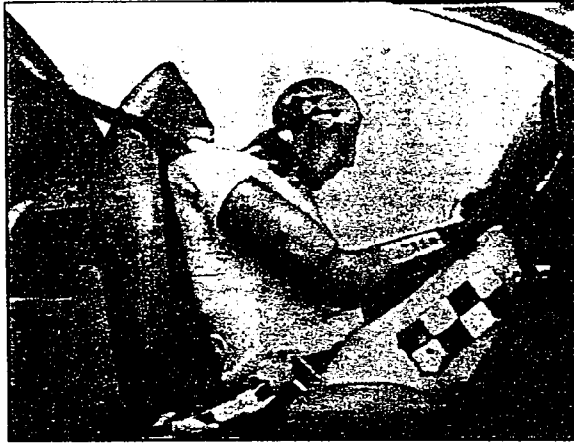


The person keeps going until stopped by something.
In a real vehicle, it could be the windshield ...



or the instrument panel ...

1-20



or the safety belts!

With safety belts, you slow down as the vehicle does. You get more time to stop. You stop over more distance, and your strongest bones take the forces. That's why safety belts make such good sense.

Here Are Questions Many People Ask About Safety Belts -- and the Answers

Q: Won't I be trapped in the vehicle after an accident if I'm wearing a safety belt?

A: You *could* be -- whether you're wearing a safety belt or not. But you can unbuckle a safety belt, even if you're upside down. And your chance of being conscious during and after an accident, so you *can* unbuckle and get out, is *much* greater if you are belted.

Q: If my vehicle has air bags, why should I have to wear safety belts?

A: Air bags are in many vehicles today and will be in most of them in the future. But they are supplemental systems only; so they work *with* safety belts -- not instead of them. Every air bag system ever offered for sale has required the use of safety belts. Even if you're in a vehicle that has air bags, you still have to buckle up to get the most protection. That's true not only in frontal collisions, but especially in side and other collisions.

1-21

Q: If I'm a good driver, and I never drive far from home, why should I wear safety belts?

A: You may be an excellent driver, but if you're in an accident -- even one that isn't your fault -- you and your passengers can be hurt. Being a good driver doesn't protect you from things beyond your control, such as bad drivers.

Most accidents occur within 25 miles (40 km) of home. And the greatest number of serious injuries and deaths occur at speeds of less than 40 mph (65 km/h).

Safety belts are for everyone.

How to Wear Safety Belts Properly

Adults

This part is only for people of adult size.

Be aware that there are special things to know about safety belts and children. And there are different rules for smaller children and babies. If a child will be riding in your vehicle, see the part of this manual called "Children." Follow those rules for everyone's protection.

First, you'll want to know which restraint systems your vehicle has.

We'll start with the driver position.

Driver Position

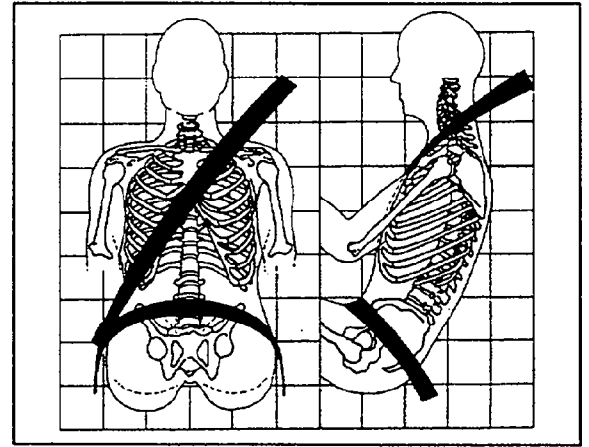
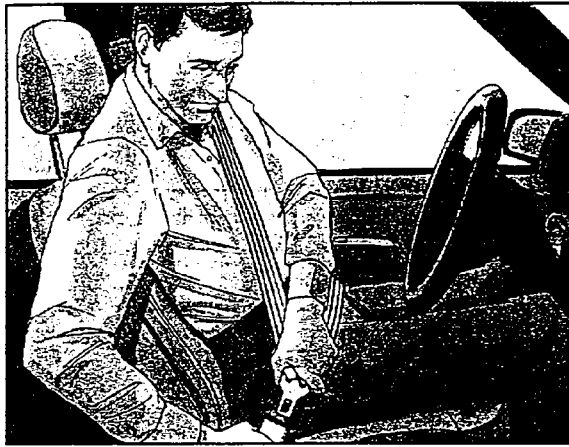
This part describes the driver's restraint system.

Lap-Shoulder Belt

The driver has a lap-shoulder belt. Here's how to wear it properly.

1. Close and lock the door.
2. Adjust the seat (to see how, see "Seats" in the Index) so you can sit up straight.

1-22



3. Pick up the latch plate and pull the belt across you. Don't let it get twisted.
4. Push the latch plate into the buckle until it clicks. Pull up on the latch plate to make sure it is secure.

If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

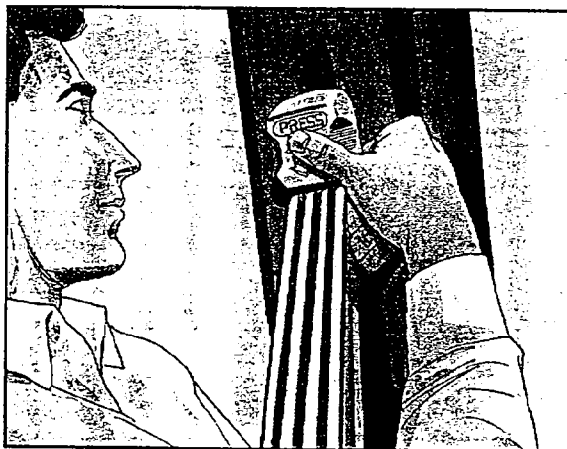
The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

The safety belt locks if there's a sudden stop or a crash.

1-23

Shoulder Belt Height Adjuster

Before you begin to drive, move the shoulder belt adjuster to the height that is right for you.

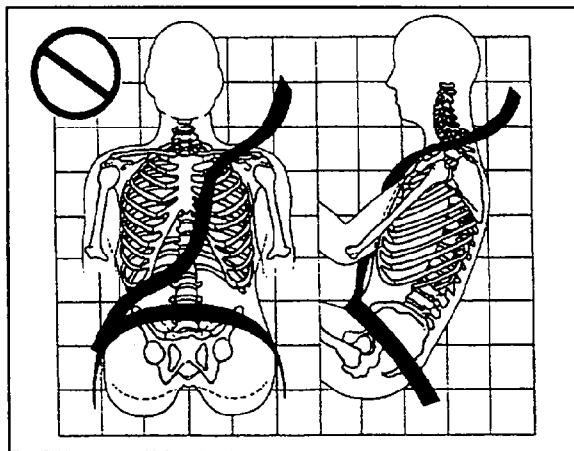


To move it down, push in at the word PRESS and move the height adjuster to the desired position. You can move the adjuster up just by pushing up on the shoulder belt guide. After you move the adjuster to where you want it, try to move it down without pushing in to make sure it has locked into position.

Adjust the height so that the shoulder portion of the belt is centered on your shoulder. The belt should be away from your face and neck, but not falling off your shoulder.

1-24

Q: What's wrong with this?



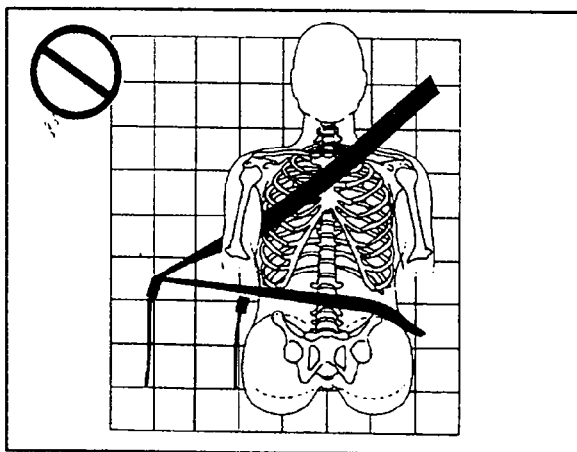
A: The shoulder belt is too loose. It won't give nearly as much protection this way.

⚠ CAUTION:

You can be seriously hurt if your shoulder belt is too loose. In a crash, you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

1-25

Q: What's wrong with this?



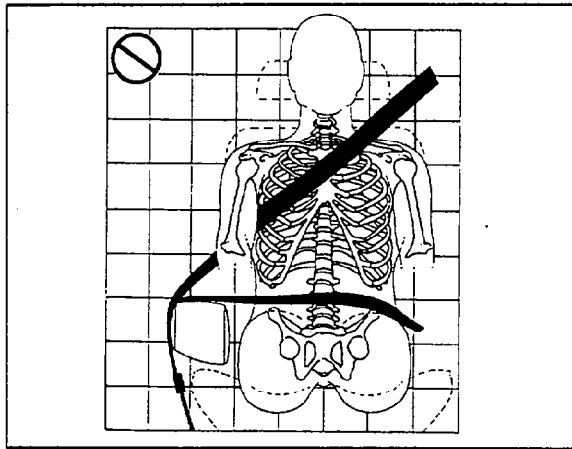
A: The belt is buckled in the wrong place.

⚠ CAUTION:

You can be seriously injured if your belt is buckled in the wrong place like this. In a crash, the belt would go up over your abdomen. The belt forces would be there, not at the pelvic bones. This could cause serious internal injuries. Always buckle your belt into the buckle nearest you.

1-26

Q: What's wrong with this?



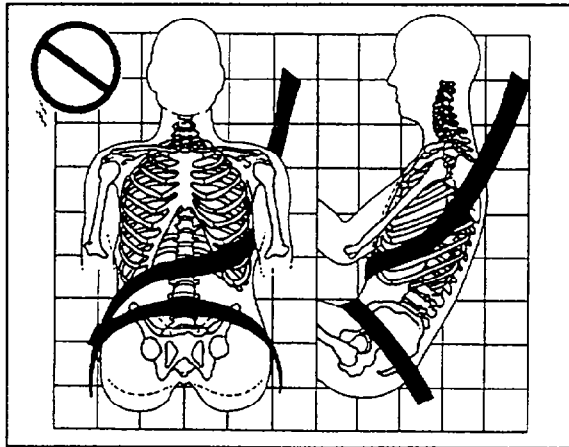
A: The belt is over an armrest.

⚠ CAUTION:

You can be seriously injured if your belt goes over an armrest like this. The belt would be much too high. In a crash, you can slide under the belt. The belt force would then be applied at the abdomen, not at the pelvic bones, and that could cause serious or fatal injuries. Be sure the belt goes under the armrests.

1-27

Q: What's wrong with this?



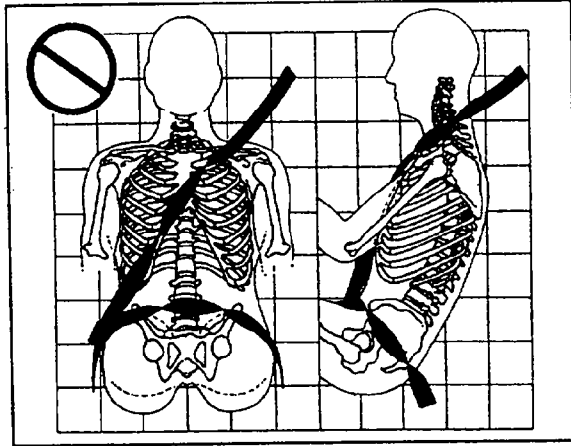
A: The shoulder belt is worn under the arm. It should be worn over the shoulder at all times.

⚠ CAUTION:

You can be seriously injured if you wear the shoulder belt under your arm. In a crash, your body would move too far forward, which would increase the chance of head and neck injury. Also, the belt would apply too much force to the ribs, which aren't as strong as shoulder bones. You could also severely injure internal organs like your liver or spleen.

1-28

Q: What's wrong with this?

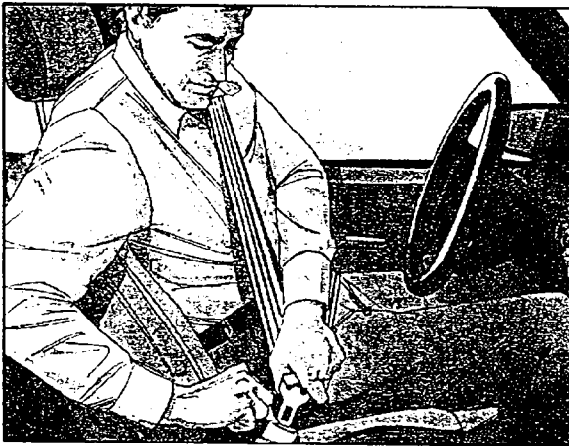


A: The belt is twisted across the body.

⚠ CAUTION:

You can be seriously injured by a twisted belt. In a crash, you wouldn't have the full width of the belt to spread impact forces. If a belt is twisted, make it straight so it can work properly, or ask your dealer to fix it.

1-29

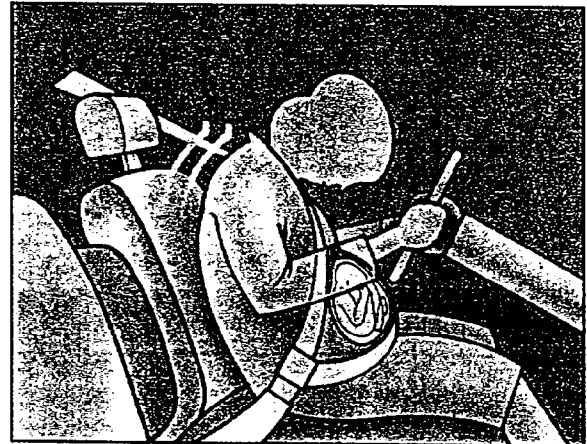


To unlatch the belt, just push the button on the buckle. The belt should go back out of the way.

Before you close the door, be sure the belt is out of the way. If you slam the door on it, you can damage both the belt and your vehicle.

Safety Belt Use During Pregnancy

Safety belts work for everyone, including pregnant women. Like all occupants, they are more likely to be seriously injured if they don't wear safety belts.



A pregnant woman should wear a lap-shoulder belt, and the lap portion should be worn as low as possible, below the rounding, throughout the pregnancy.

1-30

The best way to protect the fetus is to protect the mother. When a safety belt is worn properly, it's more likely that the fetus won't be hurt in a crash. For pregnant women, as for anyone, the key to making safety belts effective is wearing them properly.

Right Front Passenger Position

The right front passenger's safety belt works the same way as the driver's safety belt. See "Driver Position" earlier in this section.

When the lap belt is pulled out all the way, it will lock. (This is the child restraint locking feature working normally.) If the belt locks, let it go back all the way and start again.

Supplemental Inflatable Restraint System

This part explains the Supplemental Inflatable Restraint system or air bag system.

Your vehicle has two air bags -- one air bag for the driver and another air bag for the right front passenger.

Here are the most important things to know about the air bag system:

CAUTION:

You can be severely injured or killed in a crash if you aren't wearing your safety belt -- even if you have air bags. Wearing your safety belt during a crash helps reduce your chance of hitting things inside the vehicle or being ejected from it. Air bags are "supplemental restraints" to the safety belts. All air bags are designed to work with safety belts, but don't replace them. Air bags are designed to work only in moderate to severe crashes where the front of your vehicle hits something. They aren't designed to inflate at all in rollover, rear, side or low-speed frontal crashes. Everyone in your vehicle should wear a safety belt properly -- whether or not there's an air bag for that person.

1-31

CAUTION:

Air bags inflate with great force, faster than the blink of an eye. If you're too close to an inflating air bag, it could seriously injure you. Safety belts help keep you in position before and during a crash. Always wear your safety belt, even with air bags. The driver should sit as far back as possible while still maintaining control of the vehicle.

CAUTION:

An inflating air bag can seriously injure small children. Always secure children properly in your vehicle. To read how, see the part of this manual called "Children" and the caution label on the right front passenger's safety belt.

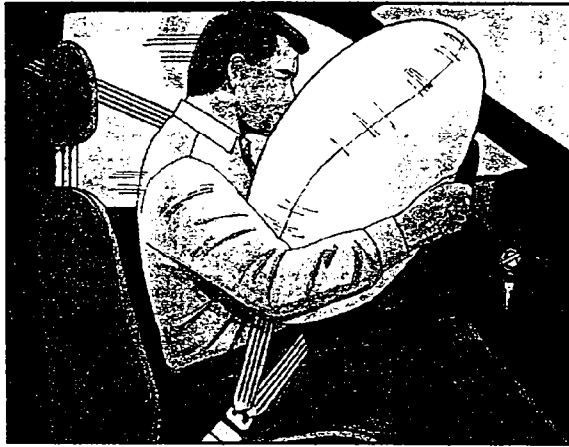
AIR
BAG

There is an air bag readiness light on the instrument panel, which shows AIR BAG.

The system checks the air bag electrical system for malfunctions. The light tells you if there is an electrical problem. See "Air Bag Readiness Light" in the Index for more information.

1-32

How the Air Bag System Works



Where are the air bags?

The driver's air bag is in the middle of the steering wheel.



The right front passenger's air bag is in the instrument panel on the passenger's side.

1-33



CAUTION:

If something is between an occupant and an air bag, the bag might not inflate properly or it might force the object into that person. The path of an inflating air bag must be kept clear. Don't put anything between an occupant and an air bag, and don't attach or put anything on the steering wheel hub or on or near any other air bag covering.

When should an air bag inflate?

An air bag is designed to inflate in a moderate to severe frontal or near-frontal crash. The air bag will inflate only if the impact speed is above the system's designed "threshold level." If your vehicle goes straight into a wall that doesn't move or deform, the threshold level is about 9 to 16 mph (14 to 26 km/h). The threshold level can vary, however, with specific vehicle design, so that it can be somewhat above or below this range. If your vehicle strikes something that will move or deform, such

as a parked car, the threshold level will be higher. The air bag is not designed to inflate in rollovers, side impacts or rear impacts, because inflation would not help the occupant.

In any particular crash, no one can say whether an air bag should have inflated simply because of the damage to a vehicle or because of what the repair costs were. Inflation is determined by the angle of the impact and how quickly the vehicle slows down in frontal or near-frontal impacts.

The air bag system is designed to work properly under a wide range of conditions, including off-road usage. Observe safe driving speeds, especially on rough terrain. As always, wear your safety belt. See "Off-Road Driving" in the Index for more tips on off-road driving.

What makes an air bag inflate?

In an impact of sufficient severity, the air bag sensing system detects that the vehicle is in a crash. The sensing system triggers a release of gas from the inflator, which inflates the air bag. The inflator, air bag and related hardware are all part of the air bag modules inside the steering wheel and in the instrument panel in front of the right front passenger.

1-34

How does an air bag restrain?

In moderate to severe frontal or near-frontal collisions, even belted occupants can contact the steering wheel or the instrument panel. Air bags supplement the protection provided by safety belts. Air bags distribute the force of the impact more evenly over the occupant's upper body, stopping the occupant more gradually. But air bags would not help you in many types of collisions, including rollovers, rear impacts and side impacts, primarily because an occupant's motion is not toward those air bags. Air bags should never be regarded as anything more than a supplement to safety belts, and then only in moderate to severe frontal or near-frontal collisions.

What will you see after an air bag inflates?

After an air bag inflates, it quickly deflates, so quickly that some people may not even realize the air bag inflated. Some components of the air bag module -- the steering wheel hub for the driver's air bag, or the instrument panel for the right front passenger's bag -- will be hot for a short time. The parts of the bag that come into contact with you may be warm, but not too hot to touch. There will be some smoke and dust coming from vents in the deflated air bags. Air bag inflation doesn't prevent the driver from seeing or from being able to steer the vehicle, nor does it stop people from leaving the vehicle.



CAUTION:

When an air bag inflates, there is dust in the air. This dust could cause breathing problems for people with a history of asthma or other breathing trouble. To avoid this, everyone in the vehicle should get out as soon as it is safe to do so. If you have breathing problems but can't get out of the vehicle after an air bag inflates, then get fresh air by opening a window or door.

In many crashes severe enough to inflate an air bag, windshields are broken by vehicle deformation. Additional windshield breakage may also occur from the right front passenger air bag.

- Air bags are designed to inflate only once. After they inflate, you'll need some new parts for your air bag system. If you don't get them, the air bag system won't be there to help protect you in another crash. A new system will include air bag modules and possibly other parts. The service manual for your vehicle covers the need to replace other parts.

1-35

- Your vehicle is equipped with a crash sensing and diagnostic module, which records information about the air bag system. The module records information about the readiness of the system, when the sensors are activated and driver's safety belt usage at deployment.
- Let only qualified technicians work on your air bag system. Improper service can mean that your air bag system won't work properly. See your dealer for service.

NOTICE:

If you damage the covering for the driver's or the right front passenger's air bag, the bag may not work properly. You may have to replace the air bag module in the steering wheel or both the air bag module and the instrument panel for the passenger's air bag. Do not open or break the air bag coverings.

Servicing Your Air Bag-Equipped Vehicle

Air bags affect how your vehicle should be serviced. There are parts of the air bag system in several places around your vehicle. You don't want the system to inflate while someone is working on your vehicle. Your GM dealer and the service manual have information about servicing your vehicle and the air bag system. To purchase a service manual, see "Service and Owner Publications" in the Index.



CAUTION:

For up to 10 minutes after the ignition key is turned off and the battery is disconnected, an air bag can still inflate during improper service. You can be injured if you are close to an air bag when it inflates. Avoid wires wrapped with yellow tape or yellow connectors. They are probably part of the air bag system. Be sure to follow proper service procedures, and make sure the person performing work for you is qualified to do so.

The air bag system does not need regular maintenance.

1-36

Adding Equipment to Your Air Bag-Equipped Vehicle

Q: If I add a push bumper or a bicycle rack to the front of my vehicle, will it keep the air bags from working properly?

A: As long as the push bumper or bicycle rack is attached to your vehicle so that the vehicle's basic structure isn't changed, it's not likely to keep the air bags from working properly in a crash.

Q: Is there anything I might add to the front of the vehicle that could keep the air bags from working properly?

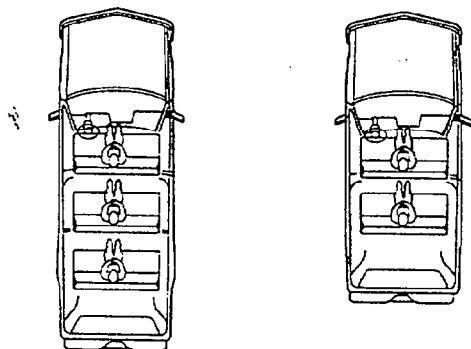
A: Yes. If you add things that change your vehicle's frame, bumper system, front end sheet metal or height, they may keep the air bag system from working properly. Also, the air bag system may not work properly if you relocate any of the air bag sensors. If you have any questions about this, you should contact Customer Assistance before you modify your vehicle. (The phone numbers and addresses for Customer Assistance are in Step Two of the Customer Satisfaction Procedure in this manual. See "Customer Satisfaction Procedure" in the Index.)

Q: What if I add a snow plow? Will it keep the air bags from working properly?

A: We've designed our air bag systems to work properly under a wide range of conditions, including snow plowing with vehicles equipped with the optional Snow Plow Prep Package (RPO VYU). But don't change or defeat the snow plow's "tripping mechanism." If you do, it can damage your snow plow and your vehicle, and it may cause an air bag inflation.

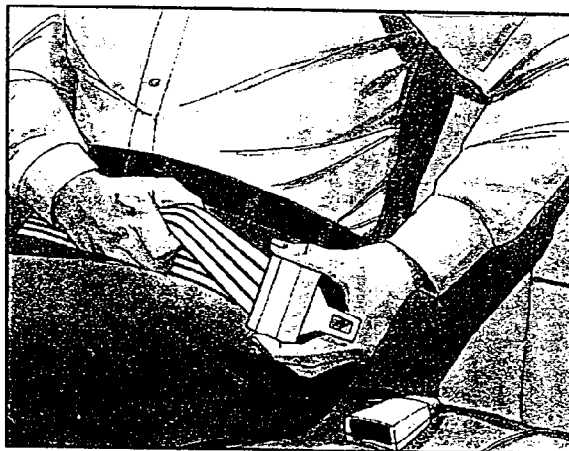
1-37

Center Passenger Position



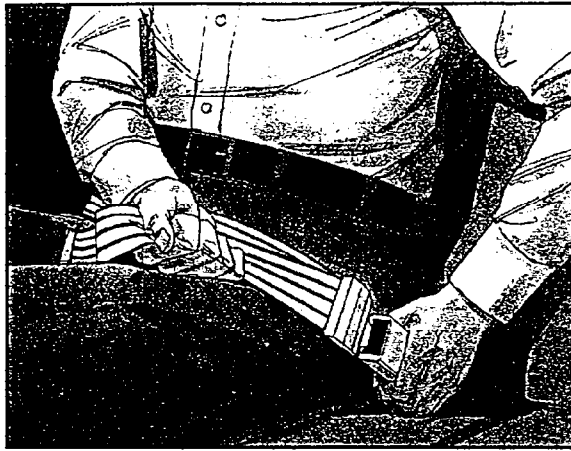
Lap Belt

If your vehicle has front and rear bench seats, someone can sit in the center positions.



When you sit in a center seating position, you have a lap safety belt, which has no retractor. To make the belt longer, tilt the latch plate and pull it along the belt.

1-38



To make the belt shorter, pull its free end as shown until the belt is snug.

Buckle, position and release it the same way as the lap part of a lap-shoulder belt. If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

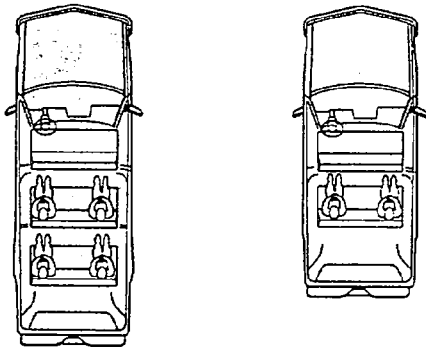
Rear Seat Passengers

It's very important for rear seat passengers to buckle up! Accident statistics show that unbelted people in the rear seat are hurt more often in crashes than those who are wearing safety belts.

Rear passengers who aren't safety belted can be thrown out of the vehicle in a crash. And they can strike others in the vehicle who are wearing safety belts.

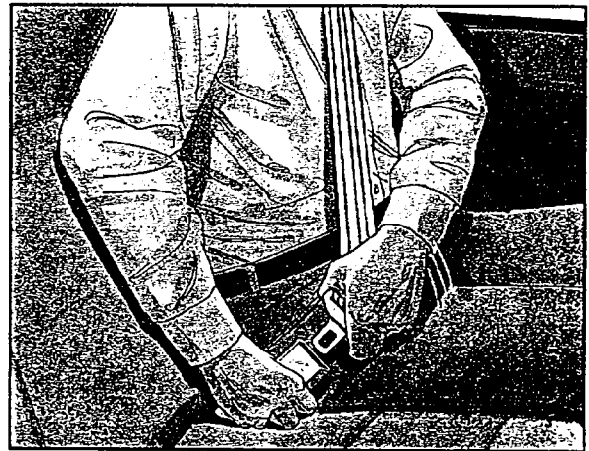
1-39

Rear Seat Outside Passenger Positions



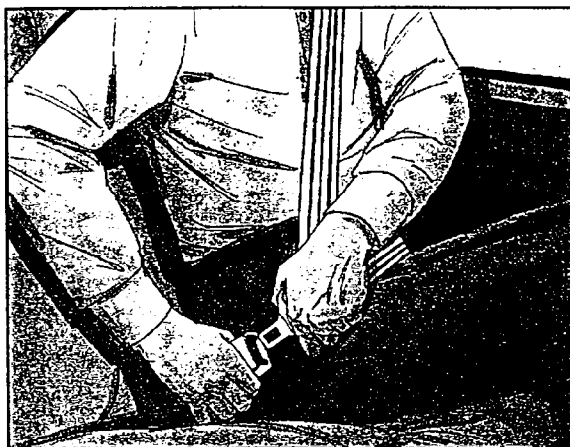
Lap-Shoulder Belt

The positions next to the windows have lap-shoulder belts. Here's how to wear one properly.



2-Door Utility and Suburban

1-40



4-Door Utility

1. Pick up the latch plate and pull the belt across you. Don't let it get twisted.
2. Push the latch plate into the buckle until it clicks.

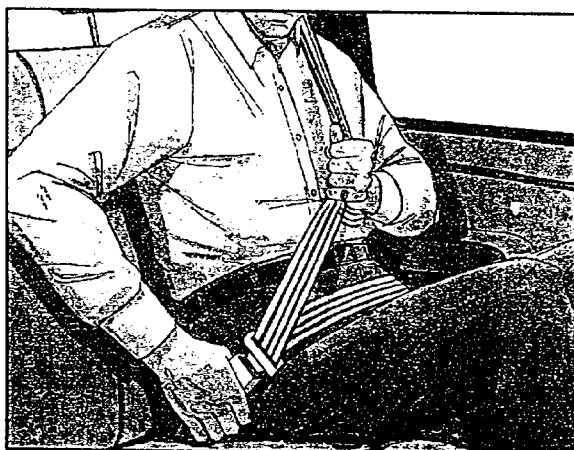
Pull up on the latch plate to make sure it is secure.

When the shoulder belt is pulled out all the way, it will lock. If it does, let it go back all the way and start again.



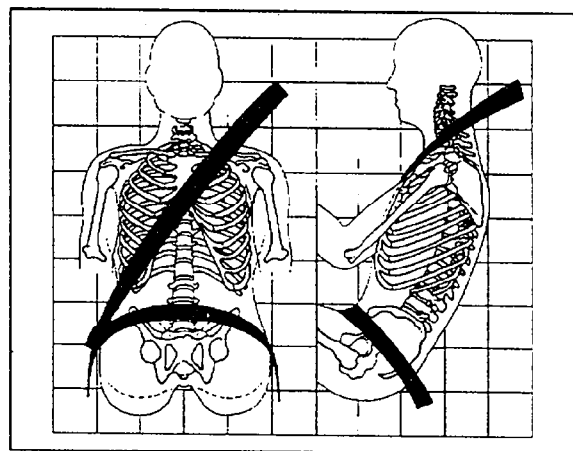
2-Door Utility and Suburban

1-41



4-Door Utility

3. To make the lap part tight, pull down on the buckle end of the belt as you pull up on the shoulder part.



The lap part of the belt should be worn low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under the belt, it would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

The safety belt locks if there's a sudden stop or a crash.

1-42

Four-door utility models and the second seat of Suburbans have shoulder belt height adjusters. Move the shoulder belt height adjuster to the height that is right for you.



To move the height adjuster down, push in at the word **PRESS** and move the height adjuster to the desired position. You can move the adjuster up just by pushing

up on the shoulder belt guide. After you move the adjuster to where you want it, try to move it down without pushing in to make sure it has locked into position.

Adjust the height so that the shoulder portion of the belt is centered on your shoulder. The belt should be away from your face and neck, but not falling off your shoulder.

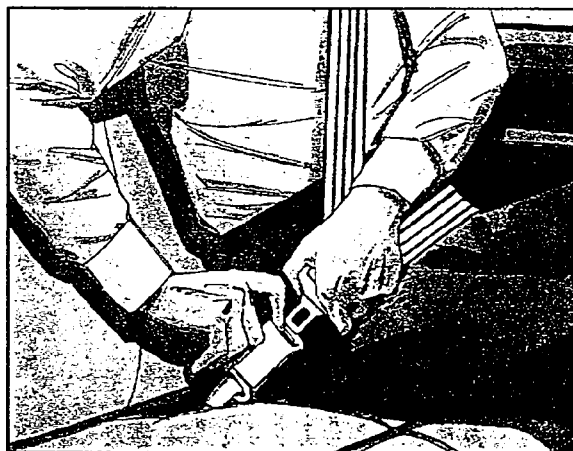
⚠ CAUTION:

You can be seriously hurt if your shoulder belt is too loose. In a crash, you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

1-43



2-Door Utility and Suburban



4-Door Utility

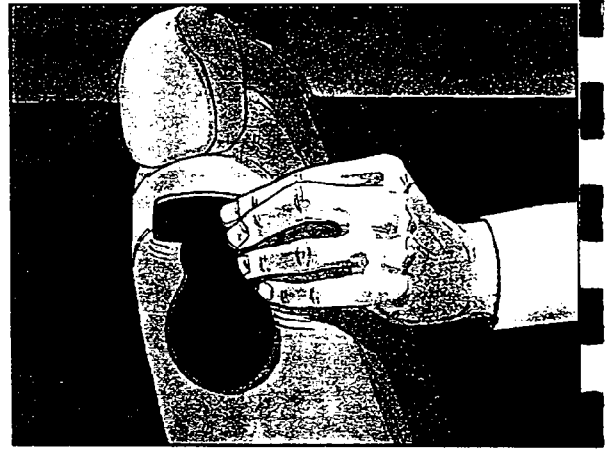
To unlatch the belt, just push the button on the buckle.

1-44

Rear Safety Belt Comfort Guides for Children and Small Adults

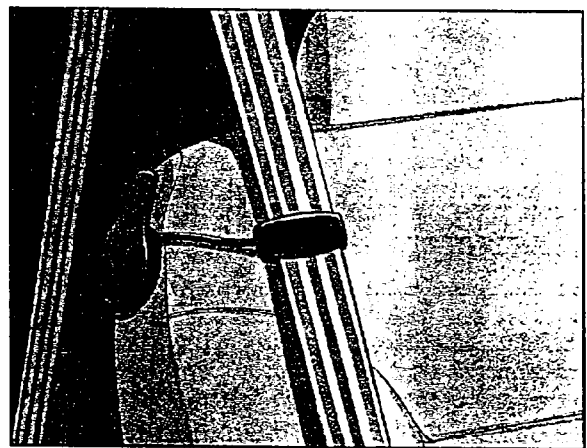
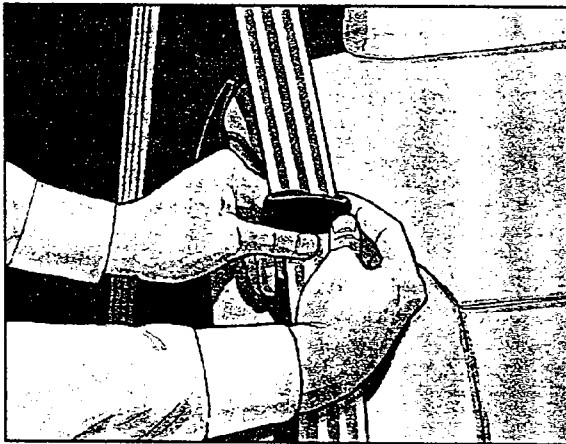
Your vehicle may have rear shoulder belt comfort guides. This feature will provide added safety belt comfort for children who have outgrown child restraints and for small adults. When installed on a shoulder belt, the comfort guide pulls the belt away from the neck and head.

There is one guide for each outside passenger position in the rear seat. To provide added safety belt comfort for children who have outgrown child restraints and for smaller adults, the comfort guides may be installed on the shoulder belts. Here's how to install a comfort guide and use the safety belt:



1. Remove the guide from its storage clip on the side of the seatback.

1-45



2. Slide the guide under and past the belt. The elastic cord must be under the belt. Then, place the guide over the belt, and insert the two edges of the belt into the slots of the guide.
3. Be sure that the belt is not twisted and it lies flat. The elastic cord must be under the belt and the guide on top.

1-46



4. Buckle, position and release the safety belt as described in "Rear Seat Outside Passenger Positions" earlier in this section. Make sure that the shoulder belt crosses the shoulder.

To remove and store the comfort guides, squeeze the belt edges together so that you can take them out from the guides. Slide the guide onto the storage clip.

Make sure you remove the comfort guide from the belt before you fold a rear seat down or use an easy-entry seat, if your vehicle has one.

1-47

Children

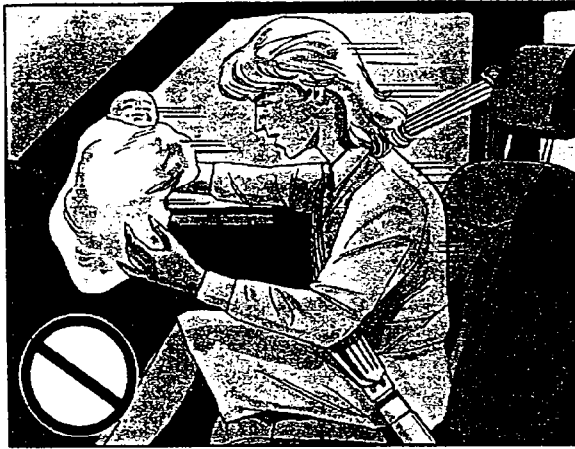
Everyone in a vehicle needs protection! That includes infants and all children smaller than adult size. In fact, the law in every state in the United States and in every Canadian province says children up to some age must be restrained while in a vehicle.

Smaller Children and Babies

CAUTION:

Smaller children and babies should always be restrained in a child or infant restraint. The instructions for the restraint will say whether it is the right type and size for your child. A very young child's hip bones are so small that a regular belt might not stay low on the hips, as it should. Instead, the belt will likely be over the child's abdomen. In a crash, the belt would apply force right on the child's abdomen, which could cause serious or fatal injuries. So, be sure that any child small enough for one is always properly restrained in a child or infant restraint.

1-48



⚠ CAUTION:

Never hold a baby in your arms while riding in a vehicle. A baby doesn't weigh much -- until a crash. During a crash a baby will become so heavy you can't hold it. For example, in a crash

CAUTION: (Continued)

CAUTION: (Continued)

at only 25 mph (40 km/h), a 12-lb. (5.5 kg) baby will suddenly become a 240-lb. (110 kg) force on your arms. The baby would be almost impossible to hold.

Secure the baby in an infant restraint.



1-49

Child Restraints

Be sure the child restraint is designed to be used in a vehicle. If it is, it will have a label saying that it meets Federal Motor Vehicle Safety Standards.

Then follow the instructions for the restraint. You may find these instructions on the restraint itself or in a booklet, or both. These restraints use the belt system in your vehicle, but the child also has to be secured within the restraint to help reduce the chance of personal injury. The instructions that come with the infant or child restraint will show you how to do that.

Where to Put the Restraint

Accident statistics show that children are safer if they are restrained in the rear rather than the front seat. We at General Motors therefore recommend that you put your child restraint in a rear seat. *Never* put a rear-facing child restraint in the right front passenger seat. Here's why:

⚠ CAUTION:

A child in a rear-facing child restraint can be seriously injured if the right front passenger's air bag inflates. This is because the back of a rear-facing child restraint would be very close to the inflating air bag. Always secure a rear-facing child restraint in a rear seat.

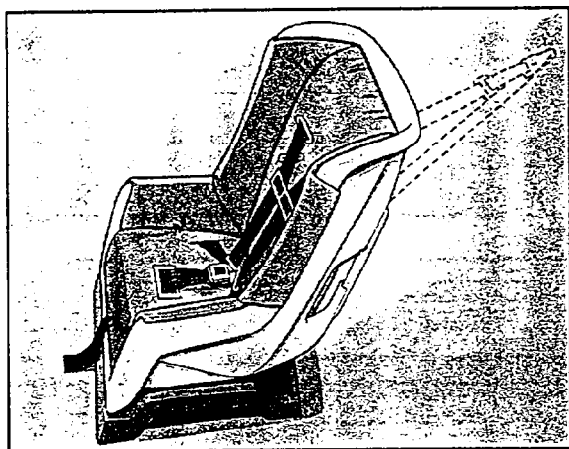
You may, however, secure a forward-facing child restraint in the right front seat. Before you secure a forward-facing child restraint, always move the front passenger seat as far back as it will go. Or, secure the child restraint in a rear seat.

Wherever you install it, be sure to secure the child restraint properly.

Keep in mind that an unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle. Be sure to properly secure any child restraint in your vehicle -- even when no child is in it.

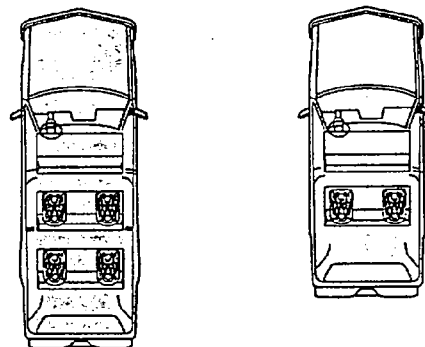
1-50

Top Strap



If your child restraint has a top strap, it should be anchored. If you need to have an anchor installed, you can ask your GM dealer to put it in for you. If you want to install an anchor yourself, your dealer can tell you how to do it.

Securing a Child Restraint in a Rear Outside Seat Position



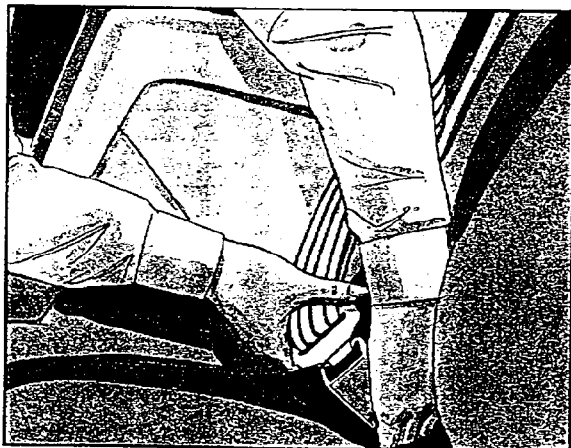
You'll be using the lap-shoulder belt. See the earlier part about the top strap if the child restraint has one.

1. Put the restraint on the seat. Follow the instructions for the child restraint.
2. Secure the child in the child restraint as the instructions say.

1-51

3. Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.

If the shoulder belt goes in front of the child's face or neck, put it behind the child restraint.



5. Pull the rest of the shoulder belt all the way out of the retractor to set the lock.

4. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

1-52

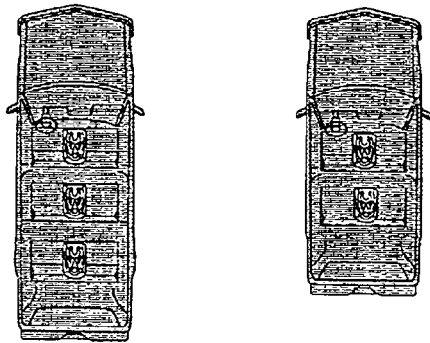


6. To tighten the belt, feed the shoulder belt back into the retractor while you push down on the child restraint.
7. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

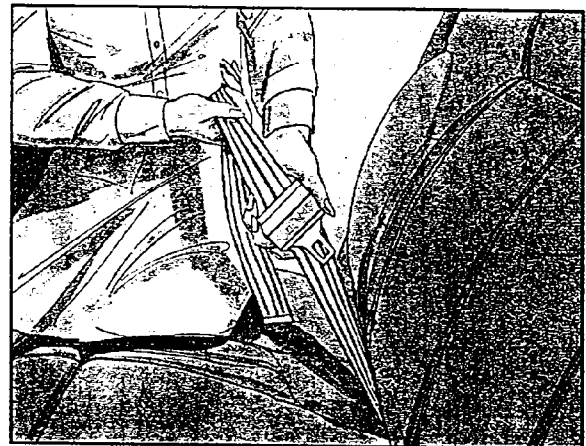
1-53

Securing a Child Restraint in a Center Seat Position



You'll be using the lap belt.

See the earlier part about the top strap if the child restraint has one.



1. Make the belt as long as possible by tilting the latch plate and pulling it along the belt.
2. Put the restraint on the seat. Follow the instructions for the child restraint.
3. Secure the child in the child restraint as the instructions say.
4. Run the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.

1-54



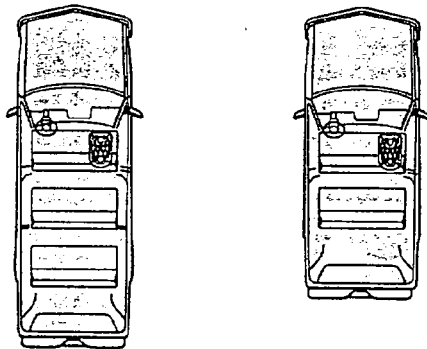
5. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

6. To tighten the belt, pull its free end while you push down on the child restraint.
7. Push and pull the child restraint in different directions to be sure it is secure. If it isn't, secure the restraint in a different place in the vehicle and contact the child restraint maker for their advice about how to attach the child restraint properly.

To remove the child restraint, just unbuckle the vehicle's safety belt. It will be ready to work for an adult or larger child passenger.

1-55

Securing a Child Restraint in the Right Front Seat Position



Your vehicle has a right front passenger air bag. *Never* put a rear-facing child restraint in this seat. Here's why:

CAUTION:

A child in a rear-facing child restraint can be seriously injured if the right front passenger's air bag inflates. This is because the back of a rear-facing child restraint would be very close to the inflating air bag. Always secure a rear-facing child restraint in the rear seat.

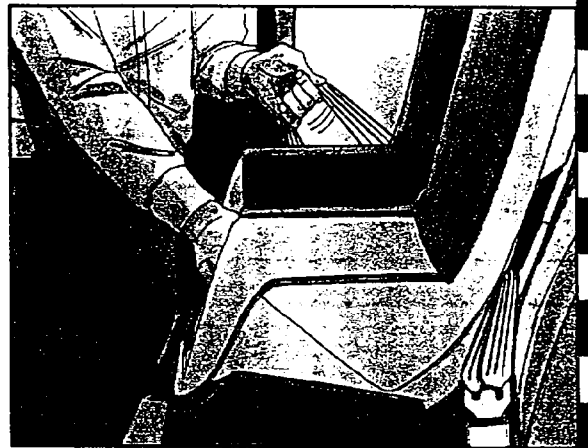
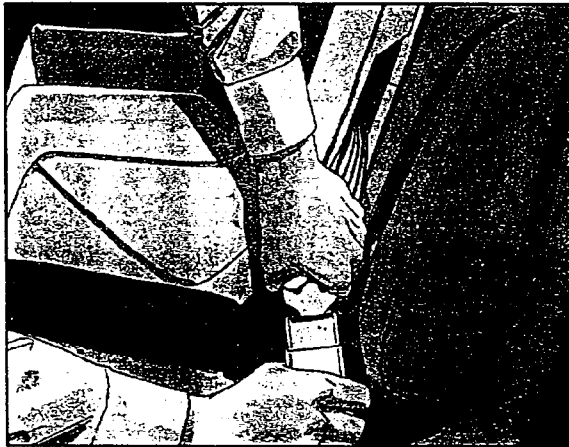
You'll be using the lap-shoulder belt. See the earlier part about the top strap if the child restraint has one.

1. Because your vehicle has a right front passenger air bag, always move the seat as far back as it will go before securing a forward-facing child restraint. (See "Seats" in the Index.)
2. Put the restraint on the seat. Follow the instructions for the child restraint.
3. Secure the child in the child restraint as the instructions say.

1-56

4. Pick up the latch plate, and run the lap and shoulder portions of the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.

If the shoulder belt goes in front of the child's face or neck, put it behind the child restraint.



6. Pull the rest of the lap belt all the way out of the retractor to set the lock.

5. Buckle the belt. Make sure the release button is positioned so you would be able to unbuckle the safety belt quickly if you ever had to.

1-57



7. To tighten the belt, feed the lap belt back into the retractor while you push down on the child restraint.
8. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

Larger Children



Children who have outgrown child restraints should wear the vehicle's safety belts.

If you have the choice, a child should sit next to a window so the child can wear a lap-shoulder belt and get the additional restraint a shoulder belt can provide.

1-58

Accident statistics show that children are safer if they are restrained in the rear seat. But they need to use the safety belts properly.

- Children who aren't buckled up can be thrown out in a crash.
- Children who aren't buckled up can strike other people who are.



CAUTION:

Never do this.

Here two children are wearing the same belt. The belt can't properly spread the impact forces. In a crash, the two children can be crushed together and seriously injured. A belt must be used by only one person at a time.

Q: What if a child is wearing a lap-shoulder belt, but the child is so small that the shoulder belt is very close to the child's face or neck?

A: Move the child toward the center of the vehicle, but be sure that the shoulder belt still is on the child's shoulder, so that in a crash the child's upper body would have the restraint that belts provide. If the child is so small that the shoulder belt is still very close to the child's face or neck, you might want to place the child in a seat that has a lap belt, if your vehicle has one.

1-59



2-Door Utility and Suburban



4-Door Utility

1-60

 CAUTION:

Never do this.

Here a child is sitting in a seat that has a lap-shoulder belt, but the shoulder part is behind the child. If the child wears the belt in this way, in a crash the child might slide under the belt. The belt's force would then be applied right on the child's abdomen. That could cause serious or fatal injuries.

Wherever the child sits, the lap portion of the belt should be worn low and snug on the hips, just touching the child's thighs. This applies belt force to the child's pelvic bones in a crash.

Safety Belt Extender

If the vehicle's safety belt will fasten around you, you should use it.

But if a safety belt isn't long enough to fasten, your dealer will order you an extender. It's free. When you go in to order it, take the heaviest coat you will wear, so the extender will be long enough for you. The extender will be just for you, and just for the seat in your vehicle that you choose. Don't let someone else use it, and use it only for the seat it is made to fit. To wear it, just attach it to the regular safety belt.

1-61

Checking Your Restraint Systems

Now and then, make sure the safety belt reminder light and all your belts, buckles, latch plates, retractors and anchorages are working properly. Look for any other loose or damaged safety belt system parts. If you see anything that might keep a safety belt system from doing its job, have it repaired.

Torn or frayed safety belts may not protect you in a crash. They can rip apart under impact forces. If a belt is torn or frayed, get a new one right away.

Also look for any opened or broken air bag covers, and have them repaired or replaced. (The air bag system does not need regular maintenance.)

Replacing Restraint System Parts After a Crash

If you've had a crash, do you need new belts?

After a very minor collision, nothing may be necessary. But if the belts were stretched, as they would be if worn during a more severe crash, then you need new belts.

If belts are cut or damaged, replace them. Collision damage also may mean you will need to have safety belt or seat parts repaired or replaced. New parts and repairs may be necessary even if the belt wasn't being used at the time of the collision.

If an air bag inflates, you'll need to replace air bag system parts. See the part on the air bag system earlier in this section.

1-62