

✓2373

Report Number TRC-96-N10

New Car Assessment Program (NCAP)

Frontal Barrier Impact Test

Fuji Heavy Industries, Ltd.

1996 Subaru Impreza

4-door sedan

NHTSA Number: MT5500

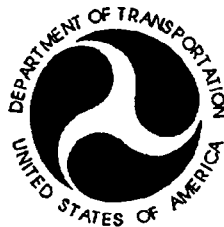
TRC Test Number: 960131

Prepared By:

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February 23, 1996

Final Report

Prepared For:

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16. Abstract A 56 kph (35 mph) frontal load cell barrier impact test was conducted on a 1996 Subaru Impreza 4-door sedan, NHTSA No. MT5500, at Transportation Research Center Inc. on January 31, 1996. This test was conducted to obtain new car assessment and research data indicant of FMVSS 208, 212, 219 (partial), and 301 performance. The barrier impact velocity was 56.3 kph. The vehicle's maximum static crush was 530 millimeters. The ambient temperature was 20° C. The driver's Head Injury Criteria (HIC) was 491. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 50.8 g. The driver's maximum chest deflection was 33 mm. The driver's left and right femur maximum axial forces were 2981 N and 1834 N, respectively. The passenger's HIC was 515. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 54.4 g. The passenger's maximum chest deflection was 41 mm. The passenger's left and right femur maximum axial forces were 3741 N and 2541 N, respectively.			
17. Key Words 56 kph (35 mph) Frontal Barrier Impact Test: New Car Assessment Program (NCAP) FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Retention" FMVSS 219, "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity"		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Reference Division Nassif Building, Room 5108 400 Seventh Street, S.W. Washington, DC 20590	
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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	cm
ft	feet	30	cm
yd	yards	0.9	m
mi	miles	1.6	km

AREA

in ²	square inches	6.5	cm ²
ft ²	square feet	0.09	m ²
yd ²	square yards	0.8	m ²
mi ²	square miles	2.6	km ²
	acres	0.4	ha

MASS (weight)

oz	ounces	28	g
lb	pounds	0.45	kg
	short tons	0.9	t
	(2000 lb)		

VOLUME

tsp	teaspoons	5	ml
Tbsp	tablespoons	15	ml
fl oz	fluid ounces	30	ml
c	cups	0.24	l
pt	pints	0.47	l
qt	quarts	0.95	l
gal	gallons	3.8	l
ft ³	cubic feet	0.03	m ³
yd ³	cubic yards	0.76	m ³

TEMPERATURE (exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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* 1 in = 2.54 (exact). For other exact conversions and more detailed tables, see NBS Mon. Publ. 285, Units of Weight and Measure, Price \$2.25, SO Catalog No. C13.10286.

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
km	kilometers	1.1	yards	yd
		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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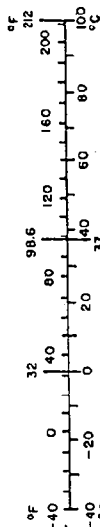


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Section 1.0

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 Market Incentives by Transportation Research Center Inc. (TRC) under Contract Number DTNH22-90-D-22121.

The purpose of this test was to obtain new car assessment and research data for vehicle crashworthiness and occupant restraint system performance for the subject vehicle, a 1996 Subaru Impreza 4-door sedan, NHTSA Number MT5500, at an impact speed in excess of the current 48 kph (30 mph) FMVSS 208 requirements.

Test Procedure

This test was conducted in accordance with NHTSA's Laboratory Indicant Test Procedure, New Car Assessment Program, dated January 1, 1990. 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 Appendices VII and VIII of the Laboratory Indicant Test Procedure. This test was the second use of the driver dummy and 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, and foot accelerometers to measure longitudinal and vertical axis accelerations. In addition, both dummies' lower legs were instrumented with 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 IP11 of the Laboratory Indicant Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and fourteen (14) 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 January 31, 1996.

The test vehicle, a 1996 Subaru Impreza 4-door sedan, NHTSA Number MT5500, was equipped with a 2.2-liter transverse engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 1435 kg. The vehicle's impact speed was 56.3 kph. The vehicle sustained 530 mm of static crush during the impact.

The driver's Head Injury Criteria (HIC) was 491. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 50.8 g. The driver's maximum chest deflection was 33 mm. The driver's left and right femur maximum axial forces were 2981 N and 1834 N, respectively.

The right front passenger's HIC was 515. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 54.4 g. The passenger's maximum chest deflection was 41 mm. The passenger's left and right femur maximum axial forces were 3741 N and 2541 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 any portion of the static rollover test.

Table 1 Crash Test Summary

NHTSA number:	MT5500	
Test type:	Frontal Load Cell Barrier	
Test date:	01/31/96	
Test time:	1617	
Ambient temperature:	20° C	
Vehicle year/make/ model/body style:	1996/Subaru/Impreza/4-door sedan	
Vehicle test weight:	1435 kg	
Impact angle ¹ :	0°	
Impact velocity ² :	Primary = 56.3 kph Secondary = 56.2 kph	
Maximum static crush:	530 mm	
Average rebound:	328 mm	
Dummies:	Driver #192	Passenger #142
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:	133	
Number of cameras:	High-speed 14 Real-time 2	

¹ With respect to tow track centerline.

² Speed trap measurement ($\pm$.08 kph accuracy)

Table 2 Test Vehicle Information

Vehicle year/make/
model/body style: 1996/Subaru/Impreza/4-door sedan

Color: Blue

VIN: JF1GC435XTH511831

NHTSA number: MT5500

Engine data:

 Placement: Inline

 Cylinders: 4

 Displacement 2.2 liters

Transmission data: 4 speed, __manual, X automatic, __overdrive
 __FWD, __RWD, X 4WD

Date vehicle received: 01/25/95

Odometer reading: 88

Dealer's name Subaru of America
and address: Subaru Plaza, P.O. Box 6000
 Cherry Hill, NJ 08034

Accessories:

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

Certification data from vehicle's label:

Vehicle manufactured by: Fuji Heavy Industries, Ltd.

Date of manufacture: 11/95

VIN: JF1GC435XTH511831

GVWR: 1701 kg

GAWR: Front: 885 kg

 Rear: 816 kg

Table 2 Test Vehicle Information, Cont'd.

Size of tires: P195/60R15 87H

Tire pressure with maximum
capacity vehicle load:

Front: 240 kPa

Rear: 240 kPa

Spare tire: Temp

Type of front seats: Bucket

Tire & capacity data from vehicle's label:

Recommended tire size: P195/60R15 87H

Recommended cold tire pressure:

Front: 220 kPa

Rear: 200 kPa

Designated seating capacity:

Front 2

Rear 3

Total 5

Vehicle capacity weight: 360 kg

Test vehicle attitude:

Delivered attitude: LF 691 mm; RF 698 mm; LR 680 mm; RR 683 mm

Pre-test attitude: LF 666 mm; RF 675 mm; LR 665 mm; RR 665 mm

Post-test attitude: LF 798 mm; RF 741 mm; LR 656 mm; RR 646 mm

Table 2 Test Vehicle Information Cont'd

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

Right front	358.5 kg	Right rear	257.5 kg
Left front	376.5 kg	Left rear	263.5 kg
Total front weight	735.0 kg	(58.5% of total vehicle weight)	
Total rear weight	521.0 kg	(41.5% of total vehicle weight)	
Total delivered weight	1256.0 kg		

Calculation of test vehicle's target test weight:

RCLW = Rated cargo and luggage weight

UDW = Unloaded delivered weight (1256 kg)

VCW¹ = Vehicle capacity weight (360 kg)

DSC¹ = Designated seating capacity (5)

RCLW = VCW - 68 (DSC) = 360 - 68 (5) = 20 kg

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

Target test weight = 1256 + 20 + 152

Target test weight = 1428 kg

Weight of test vehicle with required dummies and 27 kg of cargo weight:

Right front	406.0 kg	Right rear	305.5 kg
Left front	414.0 kg	Left rear	309.5 kg
Total front weight	820.0 kg	(57.1% of total vehicle weight)	
Total rear weight	615.0 kg	(42.9% of total vehicle weight)	
Total test weight	1435.0 kg	(0.5% over target test weight)	

Weight of ballast secured in vehicle: None

Components removed to meet target test weight: Trunk lid, muffler, door panels

CG rearward of front wheel centerline: 1073 mm

Vehicle wheelbase: 2504 mm

¹ From vehicle's tire load label.

Table 3 Post-Impact Data

Test number: 960131
NHTSA number: MT5500
Test date: 01/31/96
Test time: 1617
Test type: Frontal load cell barrier
Impact angle: 0°
Ambient temperature
at impact area: 20° C
Temperature in
occupant compartment: 20° C
Impact velocity:
Primary 56.3 kph
Secondary 56.2 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:

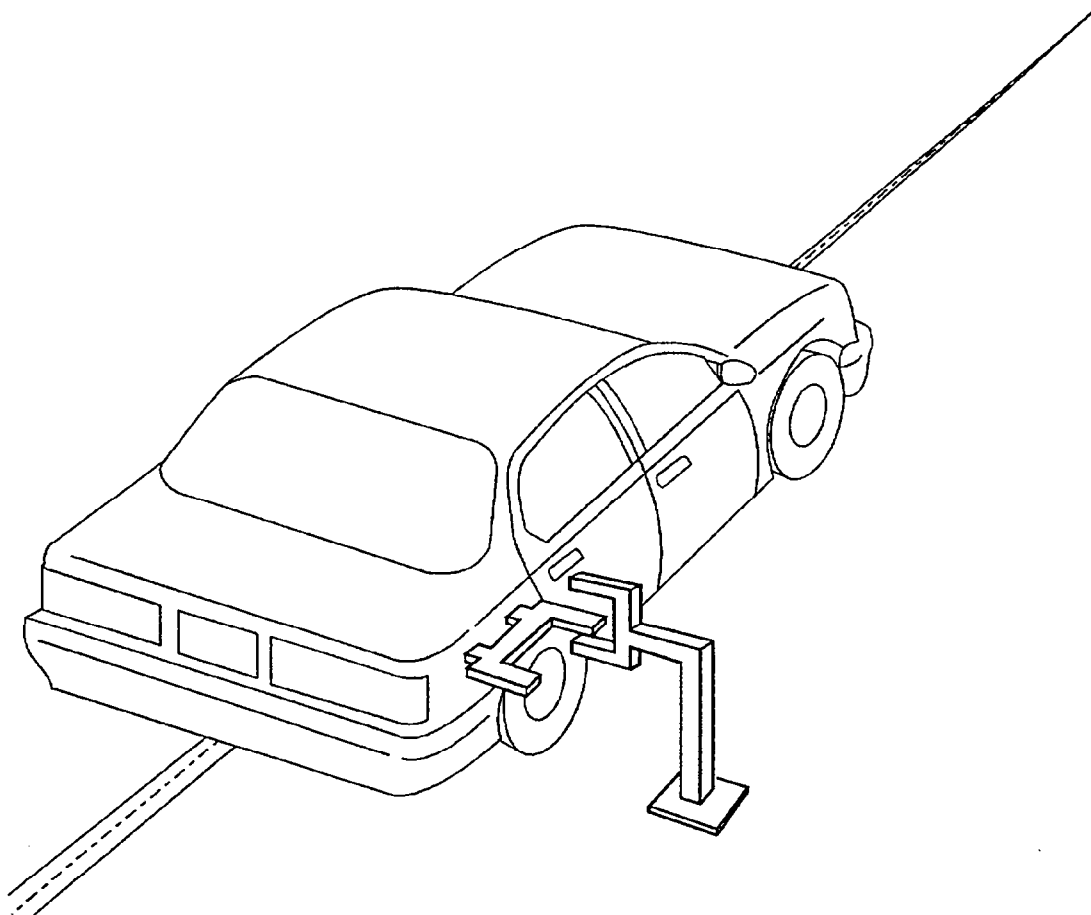
Pre-test: L 4245 mm; C 4339 mm; R 4244 mm
Post-test: L 3755 mm; C 3812 mm; R 3737 mm
Total crush: L 490 mm; C 527 mm; R 507 mm
Average crush: 508 mm

Test vehicle rebound from flat barrier:

Distance from test vehicle to barrier:

Post-test: L 320 mm; C 327 mm; R 338 mm
Average rebound 328 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.

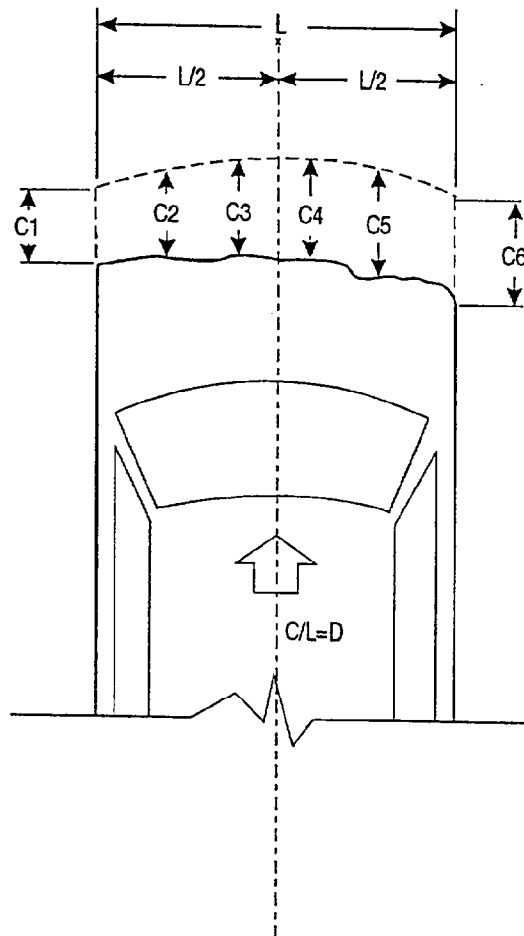
**Figure 2 Accident Investigation Division Data
for 56 kph (35 mph) Frontal Barrier Impact**

NHTSA number: MT5500
 Test date: 01/31/96
 Vehicle year/make/
 model/body style: 1996/Subaru/Impreza/4-door sedan
 Vehicle size category: Subcompact
 VIN: JF1GC435XTH511831
 Build date: 11/95
 Test weight: 1435 kg
 Vehicle wheelbase: 2503 mm
 Maximum width: 1698 mm
 Front overhang: 864 mm

Collision Deformation
 Classification (CDC) code: 12FDEW3

Crush depth
 measurements:

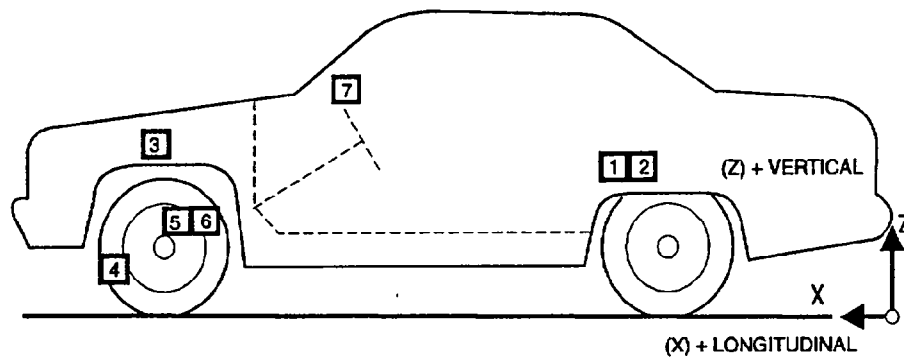
C1	=	490 mm
C2	=	520 mm
C3	=	530 mm
C4	=	511 mm
C5	=	516 mm
C6	=	507 mm



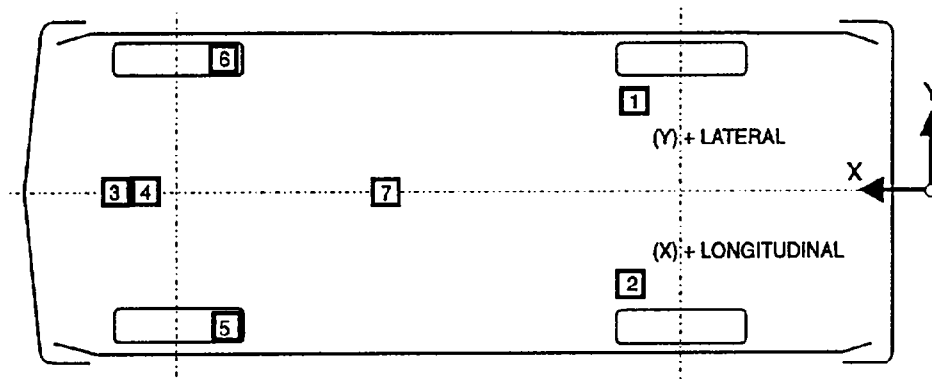
Midpoint of damage: D: Vehicle Longitudinal Centerline

Length of damaged region: L: 1422 mm

Figure 3 Vehicle Accelerometer Placement



SIDE VIEW



BOTTOM VIEW

Table 4 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 960131 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 LEFT REAR SEAT CROSSMEMBER LONGITUDINAL REDUNDANT	2679 mm	680 mm	354 mm	3.2 g @ 137.5 ms 3.3 g @ 138.1 ms	42.3 g @ 33.0 ms 44.1 g @ 33.0 ms
2 RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL REDUNDANT	2690 mm	-685 mm	351 mm	4.1 g @ 138.9 ms 4.1 g @ 138.9 ms	47.9 g @ 32.4 ms 47.7 g @ 32.4 ms
3 ENGINE TOP LONGITUDINAL	610 mm	-170 mm	778 mm	41.4 g @ 36.3 ms	133.0 g @ 26.4 ms
4 ENGINE BOTTOM LONGITUDINAL	553 mm	100 mm	331 mm	16.4 g @ 35.4 ms	122.6 g @ 27.7 ms
5 RIGHT BRAKE CALIPER LONGITUDINAL	866 mm	-611 mm	316 mm	19.7 g @ 64.6 ms	72.5 g @ 36.4 ms
6 LEFT BRAKE CALIPER LONGITUDINAL	956 mm	611 mm	305 mm	24.6 g @ 54.4 ms	86.4 g @ 36.8 ms
7 INSTRUMENT PANEL CENTER LONGITUDINAL	1330 mm	0 mm	970 mm	45.3 g @ 20.0 ms	89.7 g @ 24.6 ms

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN MILLIMETERS. X-AXIS

LOCATIONS ARE MEASURED REARWARD FROM THE FRONT BUMPER.

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 #192</u>	<u>Passenger #142</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	Easy	Easy
Rear	Easy	Easy

Seat Movement:

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

Glazing Damage:

The entire windshield cracked on impact.

Other Notable Impact Effects:

None

Table 6 FMVSS 208 Data Summary

Vehicle year/make/
model/body style: 1996/Subaru/Impreza/4-door sedan
Vehicle NHTSA number: MT5500
Test date: 01/31/96

	Driver Dummy #192		Passenger Dummy #142	
<u>Maximum Accelerations:</u>				
Head X-axis	-49.4	g	-53.3	g
Head Y-axis	-5.8	g	19.7	g
Head Z-axis	-24.0	g	-22.3	g
Head resultant	52.8	g	56.1	g
Chest X-axis	-51.2	g	-55.4	g
Chest Y-axis	6.4	g	5.5	g
Chest Z-axis	11.2	g	11.1	g
Chest resultant ¹	50.8	g	54.4	g
Chest resultant time interval ¹	.003	sec	.003	sec
<u>Head Injury Criteria (HIC) Values:</u>				
HIC ²	491		515	
HIC starting time	.050	sec	.052	sec
HIC ending time	.086	sec	.088	sec
Average head resultant acceleration during HIC time interval	45.0	g	45.9	g
<u>Maximum Chest Deflections:</u>				
Chest X-axis	33	mm	41	mm
Maximum chest deflection time	.079	sec	.067	sec
<u>Maximum Compressive Femur Forces:</u>				
Left femur	2981	N	3741	N
Right femur	1834	N	2541	N
<u>Maximum Seat Belt Forces:</u>				
Lap belt	8549	N	7562	N
Shoulder belt	7893	N	6732	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: 1996/Subaru/Impreza/4-door sedan
Vehicle NHTSA number: MT5500
Test date: 01/31/96

	Driver Dummy #192	Passenger Dummy #142
<u>Maximum Forces</u>		
Neck X-axis shear force	259 N	315 N
Neck Y-axis shear force	-199 N	-246 N
Neck Z-axis axial force	1798 N	1789 N
 <u>Maximum Moments</u>		
Neck moment about X-axis	-10 Nm	22 Nm
Neck moment about Y-axis	-22 Nm	-33 Nm
Neck moment about Z-axis	-9 Nm	28 Nm
 <u>Maximum Accelerations:</u>		
Pelvis X-axis	-68.5 g	-70.1 g
Pelvis Y-axis	-8.6 g	-5.6 g
Pelvis Z-axis	24.7 g	30.5 g
Pelvis resultant	70.3 g	71.5 g

Table 7 Hybrid III Data Summary, Cont'd.

Vehicle year/make/
model/body style: 1996/Subaru/Impreza/4-door sedan
Vehicle NHTSA number: MT5500
Test date: 01/31/96

	Driver Dummy #192		Passenger Dummy #142	
Left upper tibia moment about X-axis	41	N·m	-42	N·m
Left upper tibia moment about Y-axis	82	N·m	117	N·m
Right upper tibia moment about X-axis	68	N·m	-49	N·m
Right upper tibia moment about Y-axis	153	N·m	87	N·m
Left lower tibia X-axis force	-613	N	-805	N
Left lower tibia Z-axis force	-1750	N	-2516	N
Left lower tibia moment about Y-axis	-64	N·m	-81	N·m
Right lower tibia X-axis force	-1290	N	-614	N
Right lower tibia Z-axis force	-4512	N	-1972	N
Right lower tibia moment about Y-axis	-136	N·m	36	N·m
Left foot X-axis acceleration	-34.5	g	-60.5	g
Left foot Z-axis acceleration at heel	58.3	g	61.4	g
Left foot Z-axis acceleration at toe	66.4	g	65.2	g
Right foot X-axis acceleration	-83.9	g	-66.6	g
Right foot Z-axis acceleration at heel	111.4	g	130.6	g
Right foot Z-axis acceleration at toe	181.1	g	163.7	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 and the dummy's torso was restrained by the three-point unbelt. The dummy rebounded rearward into the seat with the dummy's head rotating rearward contacting the head restraint. 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 and chest were restrained by the passenger's airbag and the dummy's torso was restrained by the three-point unbelt. The dummy rebounded rearward into the seat back as the dummy's head rotated slightly rearward contacting the head restraint. The right front passenger dummy came to rest 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.	2471 mm	2500 mm
Shoulder belt length as measured on Part 572 dummy.	870 mm	880 mm
Lap belt length as measured on Part 572 dummy.	820 mm	850 mm
<u>Shoulder belt spool-off length:</u>		
As determined by film analysis	NA ¹	NA ¹
As determined mechanically	50 mm	51 mm
As determined electronically	50 mm	44 mm
<u>Belt stretch length:</u>		
As measured mechanically	4 mm/m	5 mm/m
As measured electronically	45 mm/m	0 mm/m
<u>Retractor lock-up time:</u>		
As determined by shoulder belt spool-off	NA ¹	NA ¹

¹ No onboard cameras were used.

Table 9 Load Cell Barrier Data Summary

Location	Positive direction				Negative direction			
Total group 1	1.9	kN	@	1.4 ms	87.1	kN	@	17.6 ms
Total group 2	0.3	kN	@	145.2 ms	251.9	kN	@	28.8 ms
Total group 3	1.5	kN	@	0.9 ms	80.5	kN	@	41.0 ms
Total group 4	1.1	kN	@	2.7 ms	52.6	kN	@	26.1 ms
Total group 5	1.7	kN	@	2.1 ms	144.9	kN	@	26.8 ms
Total group 6	0.2	kN	@	1.5 ms	29.2	kN	@	29.8 ms
Total load cell force	0.5	kN	@	145.4 ms	608.6	kN	@	27.2 ms

Tension is positive
Compression is negative

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.:

Plastic trim around outer perimeter, adhesive around inner 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:

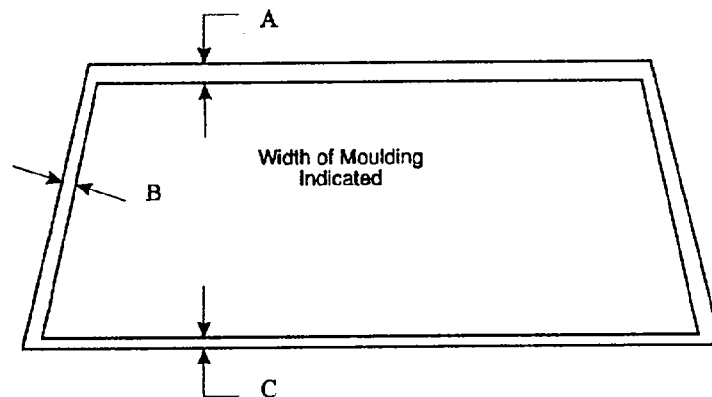
	<u>Pre-test</u>	<u>Post-test</u>	<u>Percent retention</u>
Right side	2052 mm	2052 mm	100.0
Left side	2052 mm	2052 mm	88.6
Total	4104 mm	4104 mm	94.3

Pre-test windshield mounting material temperature: 20° C

A = 20 mm

B = 18 mm

C = 7 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 = 1110 mm

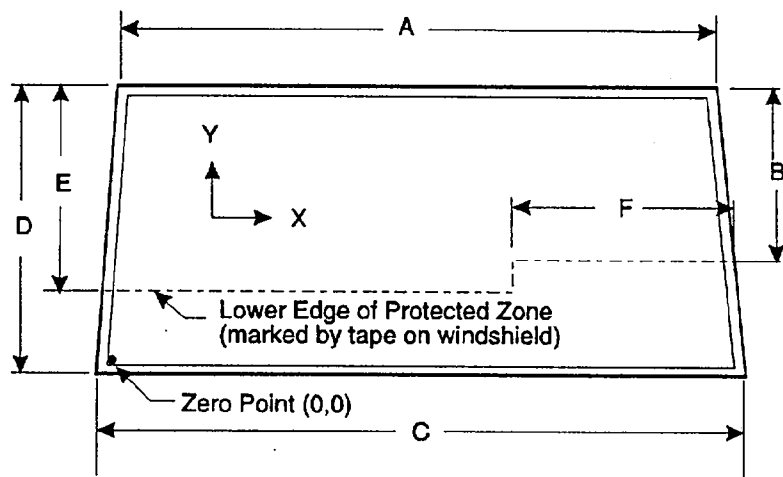
B = 510 mm

C = 1471 mm

D = 860 mm

E = 578 mm

F = 582 mm



FRONT VIEW

Method of adhering protected zone template to windshield: NA

Areas of windshield template penetration greater than 6 mm: NA

Coordinates

	X	Y
1.		
2.		
3.		

1.

2.

3.

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

1.

2.

3.

Table 10 Fuel System Data

Vehicle year/make/ model/body style:	1996/Subaru/Impreza/4-door sedan
NHTSA number:	MT5500
Fuel system capacity:	NA ¹ liters (from owner's manual)
Usable capacity:	60.2 liters (furnished by COTR)
Test volume range:	55.4 liters to 56.6 liters (92-94% of usable)
Actual test volume:	56.0 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. The fuel filler neck was located on the right side The fuel lines ran along the right side to the front.

¹ The owner's manual does not contain the fuel tank capacity for the model equipped with the 2.2-liter engine.

Table 11 FMVSS 301 Post-Impact Test Data

NHTSA number: MT5500
Test date: 01/31/96
Vehicle year/make/
model/body style: 1996/Subaru/Impreza/4-door sedan

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:

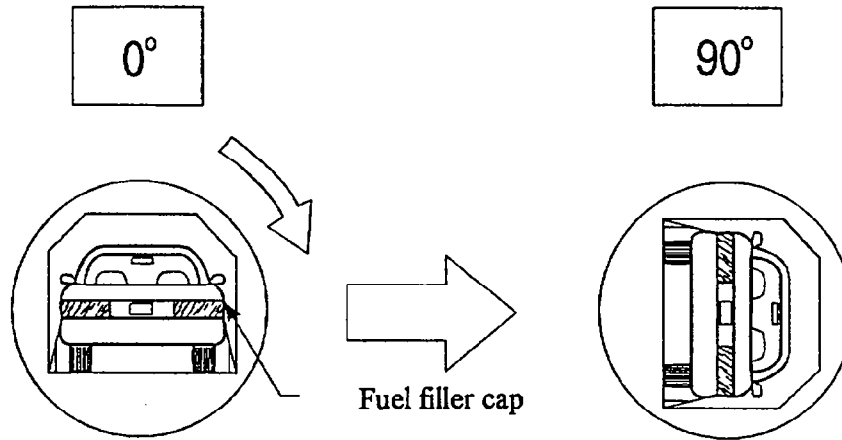
	<u>Test Results</u>	<u>Maximum Allowable</u>
1. From impact until vehicle motion ceases	0 g	28 g
2. 5-minute period after vehicle motion ceases	0 g	142 g
3. Next 25 minutes after 5-minute period	0 g	28 g/min

Fuel system fluid spillage location(s): None

Figure 7 FMVSS 301 Static Rollover Test Data

NHTSA number: MT5500

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

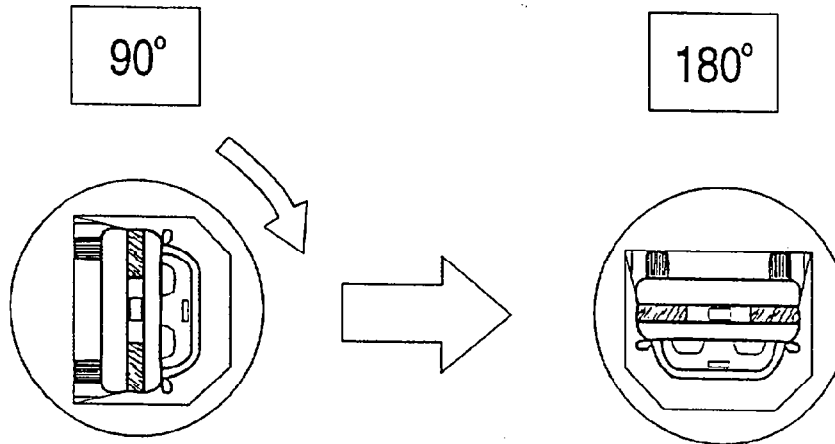
Fuel system fluid spillage measurements:

	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

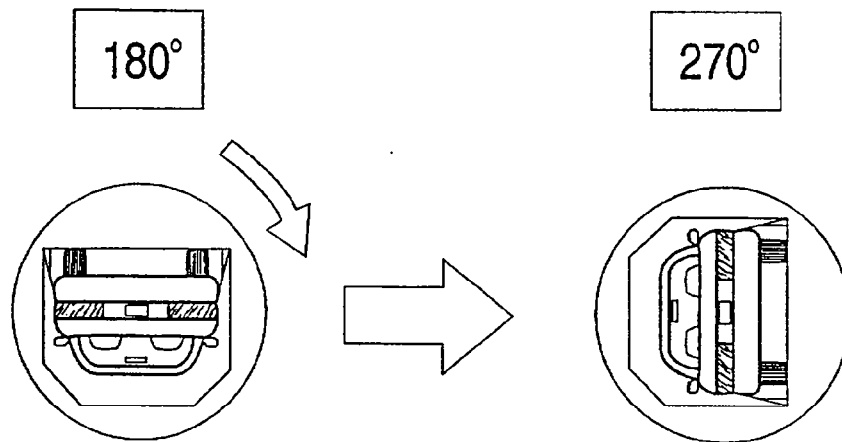
Fuel system fluid spillage measurements:

<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

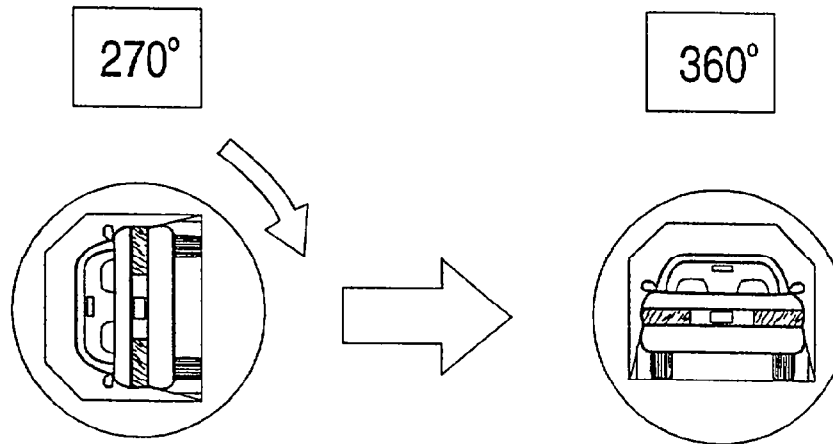
Fuel system fluid spillage measurements:

<u>180° to 270° rotation</u>	<u>Test Results</u>	<u>Maximum Allowable</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 = 28 minutes

Fuel system fluid spillage measurements:

<u>270° to 360° rotation</u>	<u>Test Results</u>	<u>Maximum Allowable</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

Section 4.0

Occupant, Camera, and Vehicle Information

Figure 8 Dummy Measurement Locations for Front Seat Occupants

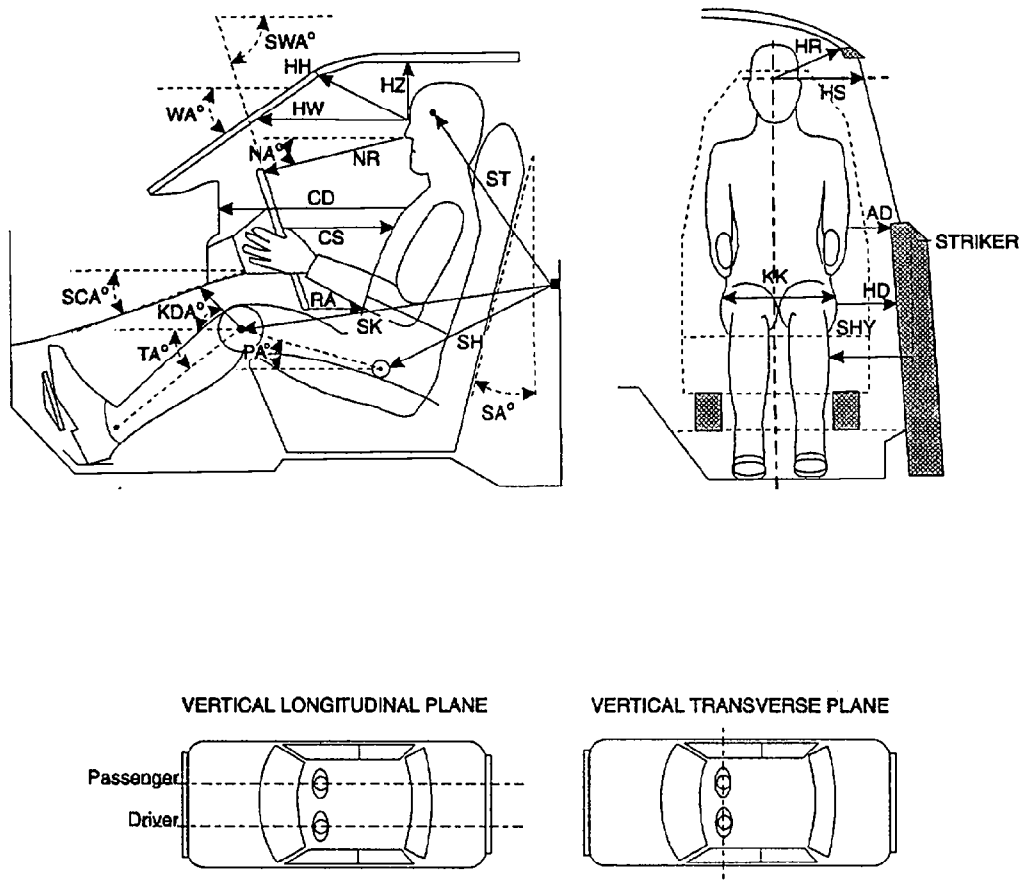


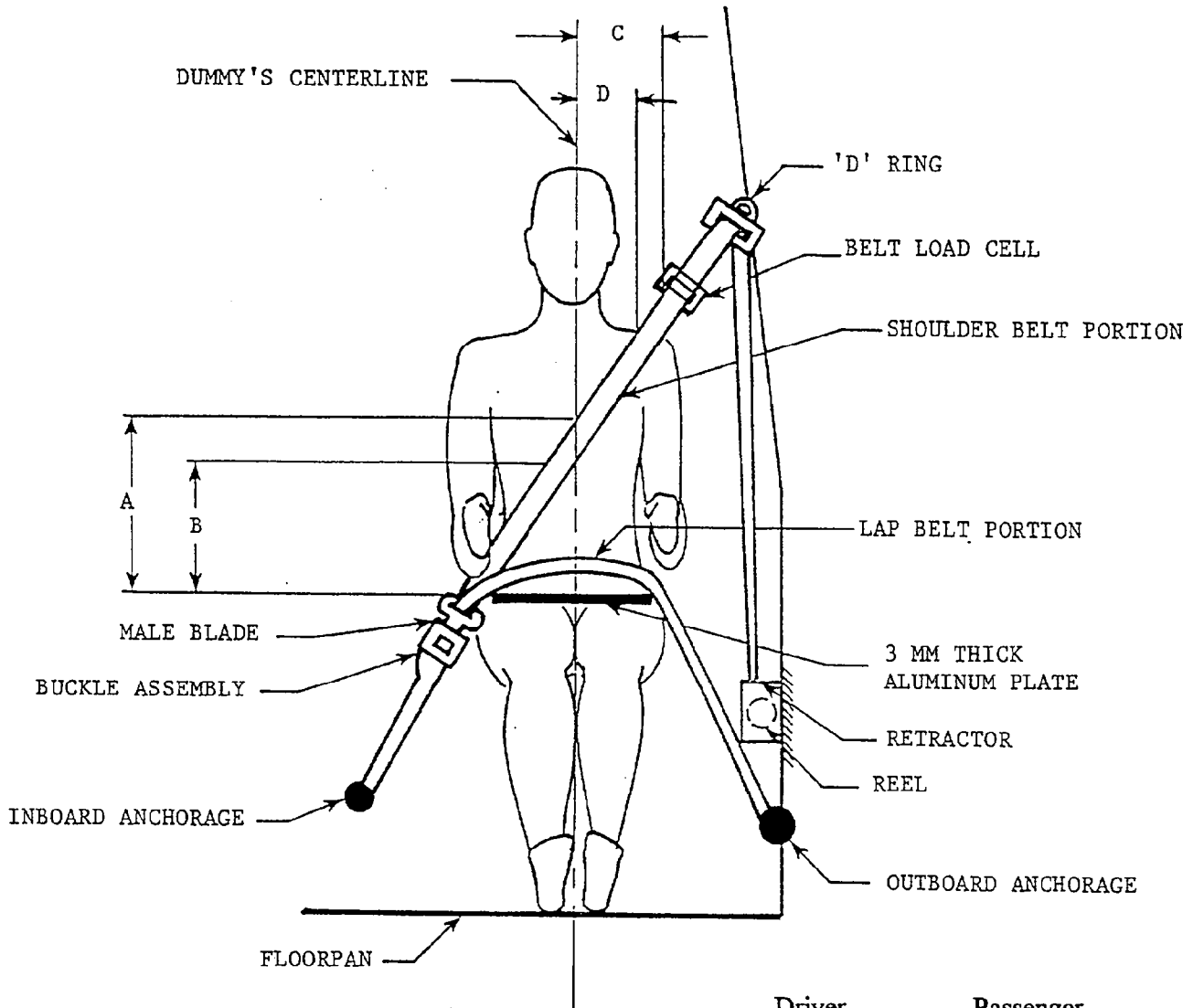
Table 12 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #192)	Passenger (Serial #142)
WA	Windshield angle	28°	NA
SWA	Steering wheel angle	66°	NA
SCA	Steering column angle	24°	NA
SA	Seat back angle	15°	15°
HZ	Head to roof	173 mm	196 mm
HH	Head to header	279 mm	292 mm
HW	Head to windshield	476 mm	510 mm
HR	Head to side header	198 mm	215 mm
NR	Nose to rim	393 mm	NA
NA	Nose to rim angle	16°	NA
CD	Chest to dash	523 mm	568 mm
CS	Steering wheel to chest	317 mm	NA
RA	Rim to abdomen	193 mm	NA
KDL	Left knee to dash	217 mm	178 mm
KDR	Right knee to dash	205 mm	184 mm
KDA	Outboard knee to dash angle	27°	26°
PA	Pelvic angle	21°	24°
TA	Tibial angle	43°	40°
KK	Knee to knee	323 mm	265 mm
ST ¹	Striker to head	538 mm	529 mm
	Striker to head angle	-95°	-84°
SK ¹	Striker to knee	511 mm	521 mm
	Striker to knee angle	-3°	-7°
SH ¹	Striker to H-point	182 mm	204 mm
	Striker to H-point angle	34°	33°
SHY	Striker to H-point (Y dir.)	214 mm	215 mm
HS	Head to side window	286 mm	290 mm
HD	H-point to door	149 mm	145 mm
AD	Arm to door	91 mm	89 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
A - Top surface of aluminum plate to belt upper edge	336 mm	330 mm
B - Top surface of aluminum plate to belt lower edge	256 mm	242 mm
C - Dummy centerline to outer edge of belt at chest flesh top	122 mm	121 mm
D - Dummy centerline to inner edge of belt at chest flesh top	56 mm	58 mm
Lap belt tension	18 N	18 N
Shoulder belt tension	13 N	9 N
Position of adjustable belt anchorage	2nd of four	2nd of four

Figure 10 Camera Positions

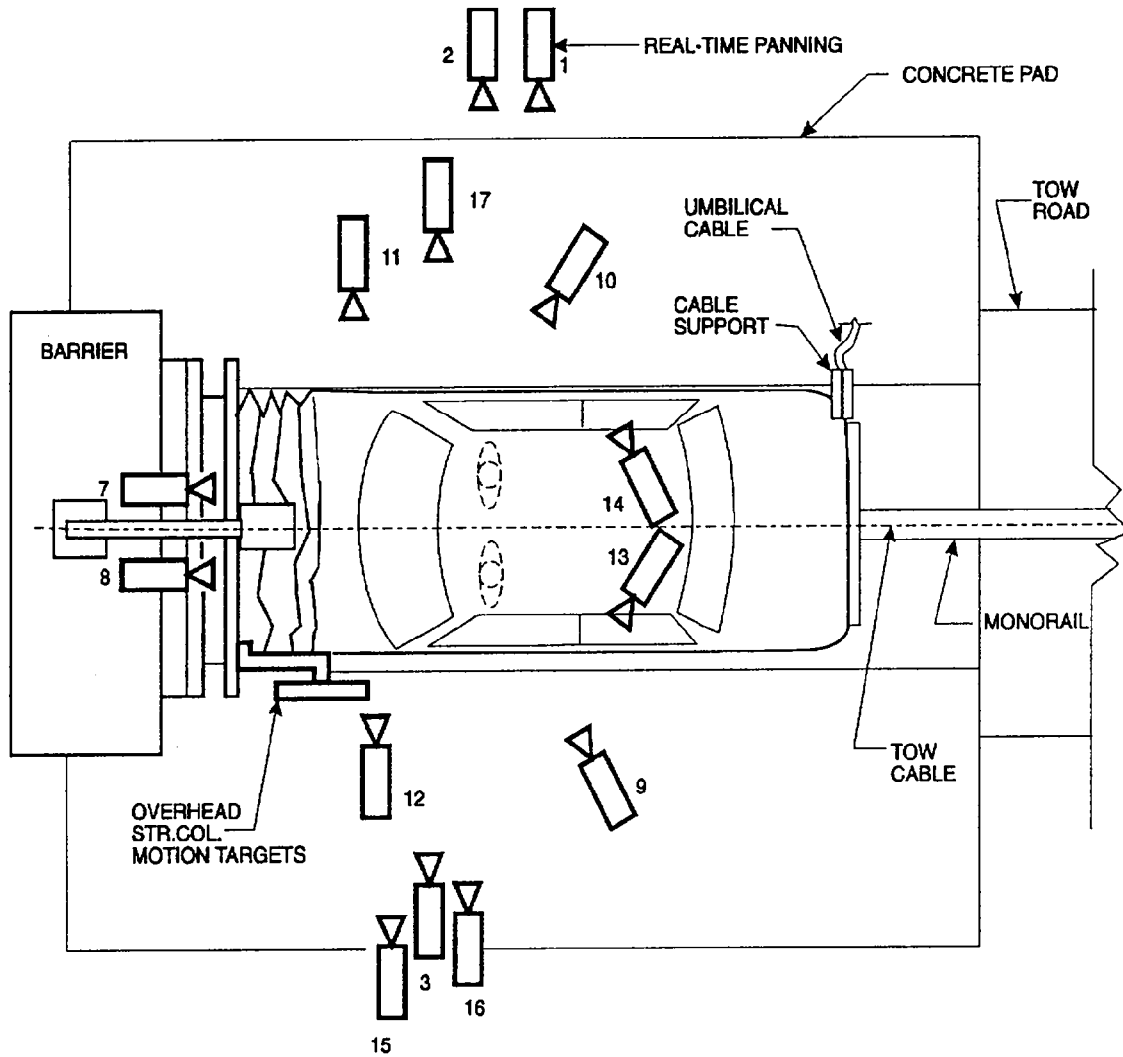


Figure 10 Camera Positions, Cont'd.

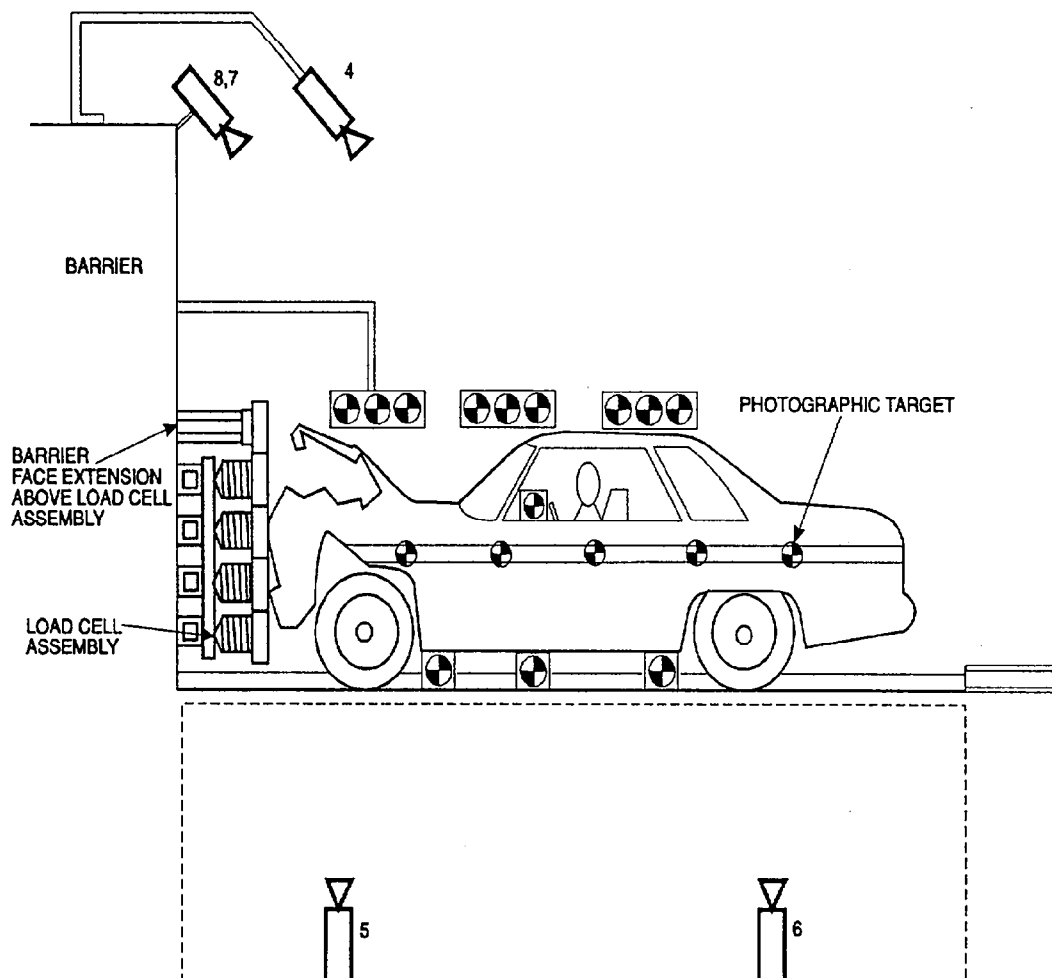


Table 13 Motion Picture Camera Locations

Test Number: 960131

Vehicle year/make/model/body style: 1996/Subaru/Impreza/4-door sedan

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 mm	16 mm	24 frames/s
2	Vehicle crush	-2065 mm	-6767 mm	942 mm	-2°	NA mm	13 mm	498 frames/s
3	Dummy kinematics	-1054 mm	7493 mm	1118 mm	-12°	5639 mm	25 mm	498 frames/s
4	Windshield damage	-925 mm	0 mm	2489 mm	-40°	NA mm	13 mm	500 frames/s
5	Crush & fluid spillage	-1283 mm	0 mm	-2347 mm	90°	NA mm	13 mm	1005 frames/s
6	Fluid spillage	-2522 mm	0 mm	-2515 mm	90°	NA mm	13 mm	1002 frames/s
7	Passenger kinematics	-114 mm	-351 mm	2159 mm	-40°	NA mm	17 mm	502 frames/s
8	Driver kinematics	-173 mm	368 mm	2159 mm	-41°	NA mm	17 mm	1008 frames/s
9	Driver kinematics	-4572 mm	1854 mm	2591 mm	-27°	2642 mm	25 mm	485 frames/s
10	Passenger kinematics	-4674 mm	-1880 mm	2540 mm	-26°	2286 mm	25 mm	492 frames/s
11	Windshield intrusion	-968 mm	-7775 mm	1118 mm	0°	NA mm	50 mm	502 frames/s
12	Windshield intrusion	-1346 mm	7859 mm	1074 mm	0°	NA mm	50 mm	505 frames/s
13	Driver seat belt movement ³	NA	NA	NA	NA	NA	NA	NA ³
14	Passenger seat belt movement ³	NA	NA	NA	NA	NA	NA	NA ³
15	Column movement	-2337 mm	7264 mm	2616 mm	-14°	NA mm	25 mm	948 frames/s
16	Column movement	-2337 mm	7264 mm	1908 mm	-9°	NA mm	25 mm	500 frames/s
17	Passenger kinematics	-986 mm	-5354 mm	1151 mm	7°	5893 mm	25 mm	1005 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

³ Onboard cameras were not used to achieve test weight.

Figure 11 Vehicle Target Locations

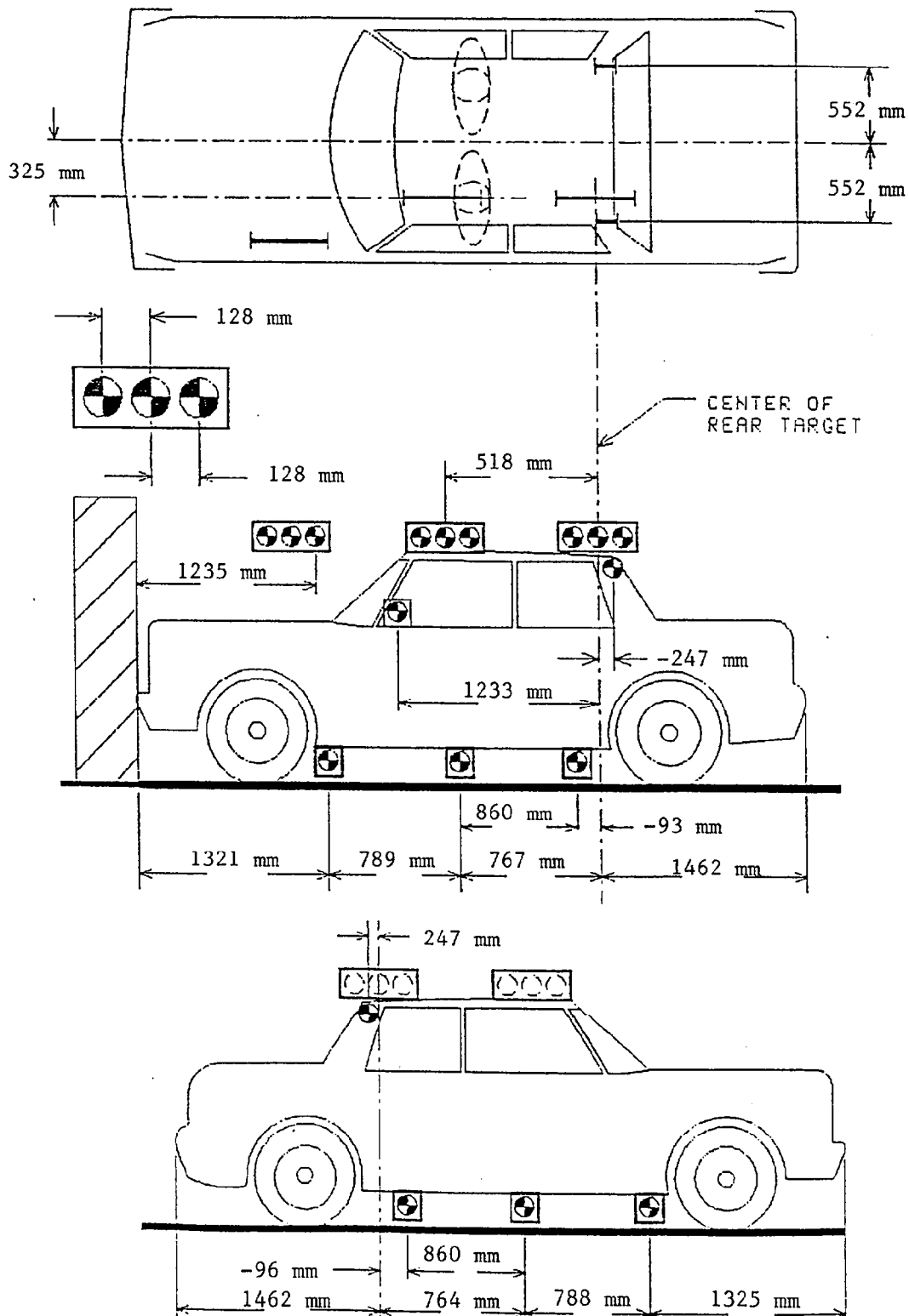


Figure 12 Pre-Test And Post-Test Measurement Points

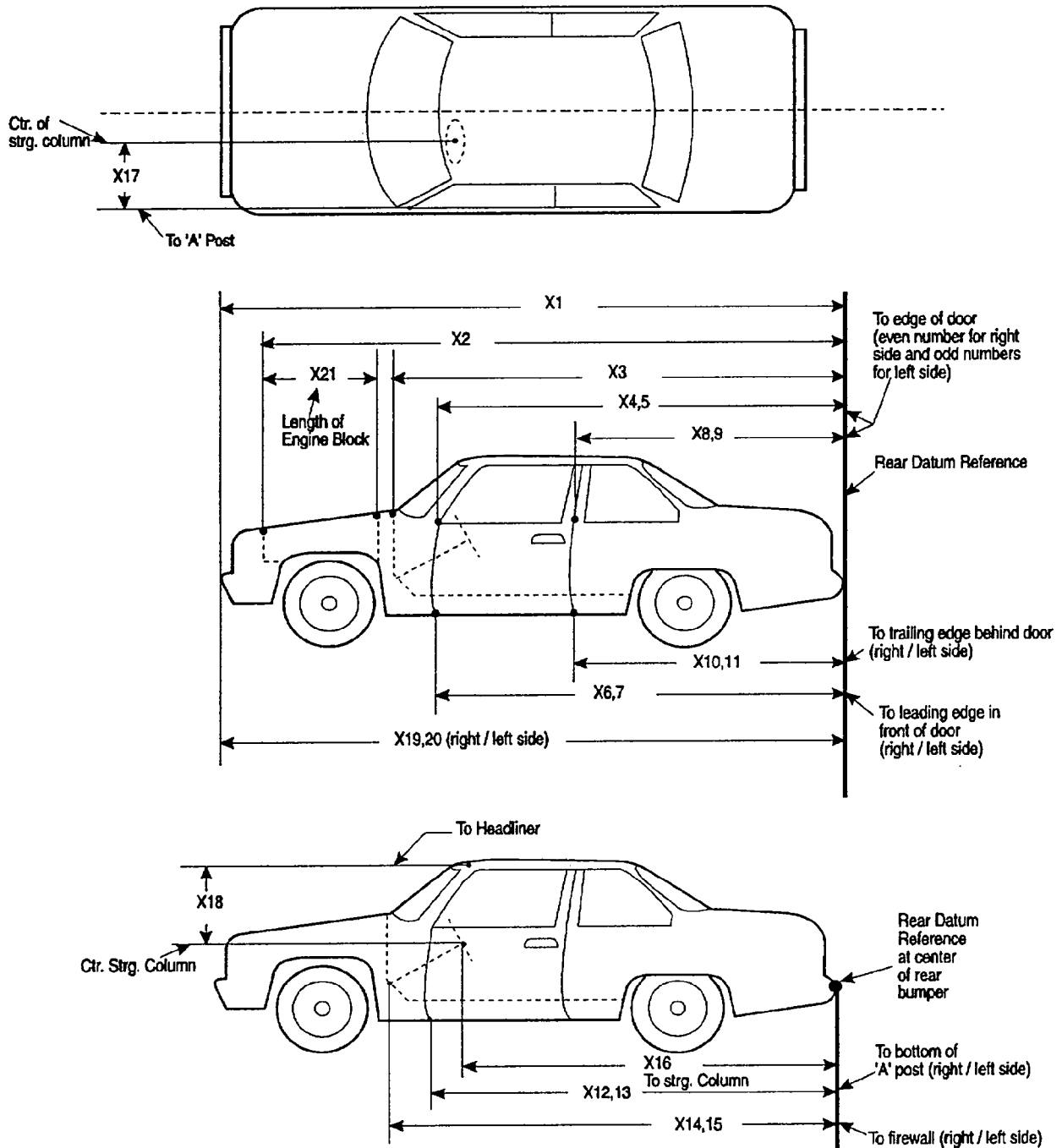


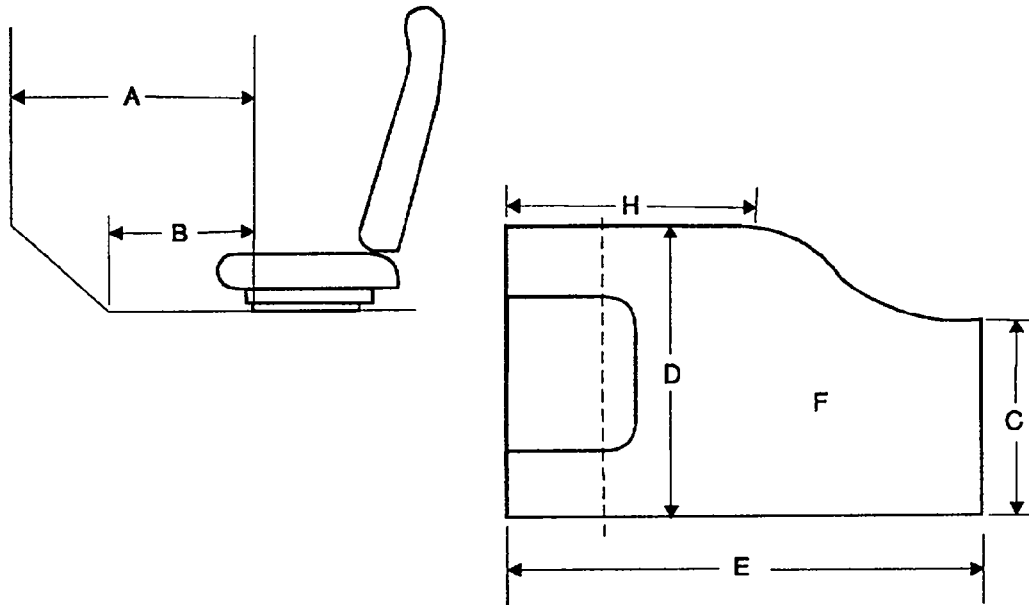
Table 14 Impacted Vehicle Measurements

Vehicle Make/Model: Subaru/Impreza

Test Number: 960131

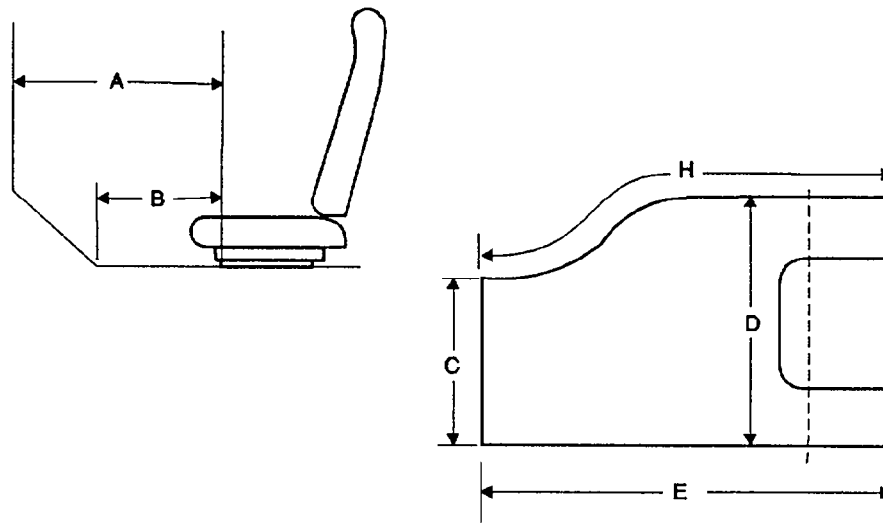
No.	Type of measurement	Pre-test	Post-test	Diff.
X1	Total length of vehicle at centerline	4339 mm	3812 mm	527 mm
X2	Rear surface of vehicle to front of engine block	3967 mm	3668 mm	299 mm
X3	Rear surface of vehicle to firewall	3279 mm	3251 mm	28 mm
X4	Rear surface of vehicle to upper leading edge of right door	2978 mm	2977 mm	1 mm
X5	Rear surface of vehicle to upper leading edge of left door	2975 mm	2974 mm	1 mm
X6	Rear surface of vehicle to lower leading edge of right door	3010 mm	3005 mm	5 mm
X7	Rear surface of vehicle to lower leading edge of left door	3011 mm	2998 mm	13 mm
X8	Rear surface of vehicle to upper trailing edge of right door	1956 mm	1959 mm	-3 mm
X9	Rear surface of vehicle to upper trailing edge of left door	1958 mm	1955 mm	3 mm
X10	Rear surface of vehicle to lower trailing edge of right door	1986 mm	1980 mm	6 mm
X11	Rear surface of vehicle to lower trailing edge of left door	1986 mm	1976 mm	10 mm
X12	Rear surface of vehicle to bottom of "A" post on right side	2988 mm	2985 mm	3 mm
X13	Rear surface of vehicle to bottom of "A" post on left side	2980 mm	2978 mm	2 mm
X14	Rear surface of vehicle to firewall - right side	3247 mm	3215 mm	32 mm
X15	Rear surface of vehicle to firewall - left side	3251 mm	3185 mm	66 mm
X16	Rear surface of vehicle to steering wheel center	2515 mm	2550 mm	-35 mm
X17	Center of steering column to "A" post	297 mm	300 mm	-3 mm
X18	Center of steering column to headliner	430 mm	458 mm	-28 mm
X19	Rear surface of vehicle to right side of front bumper	4244 mm	3737 mm	507 mm
X20	Rear surface of vehicle to left side of front bumper	4245 mm	3755 mm	490 mm
X21	Length of engine block	400 mm	400 mm	0 mm

Figure 13 Static Footwell Deformation
(Driver's Side)



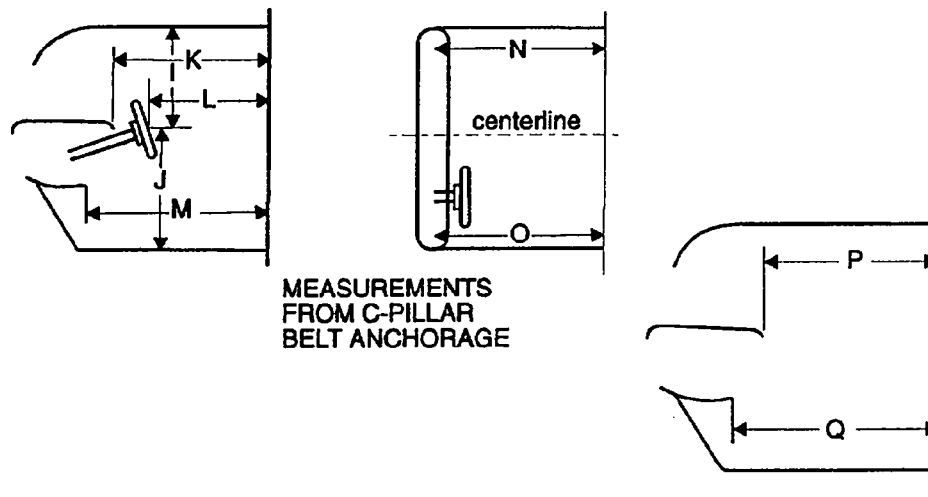
Measurement	Pre-Test	Post-Test	Difference
A	761 mm	667 mm	94 mm
B	519 mm	509 mm	10 mm
C	265 mm	235 mm	30 mm
D	420 mm	426 mm	-6 mm
E	1156 mm	932 mm	224 mm
H	970 mm	1061 mm	-91 mm

Figure 14 Static Footwell Deformation
(Passenger's Side)



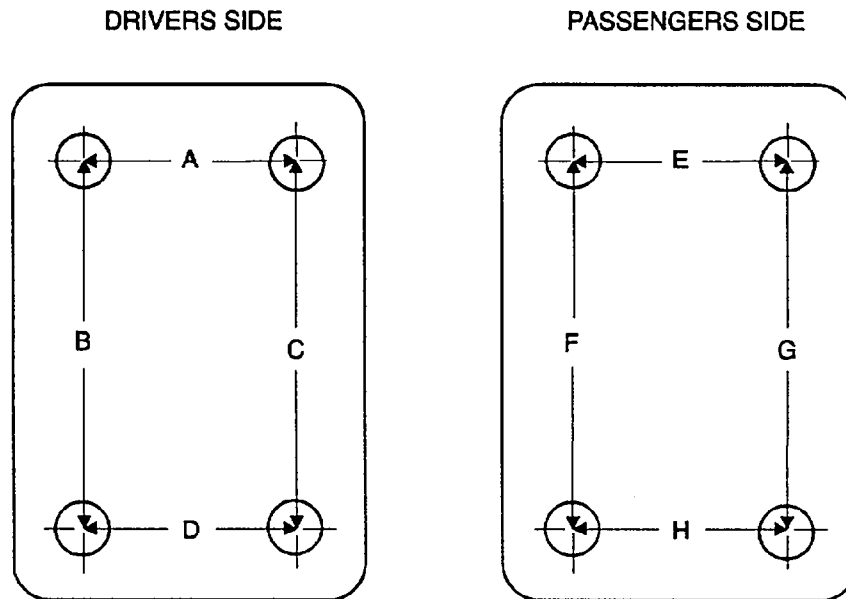
Measurement	Pre-Test	Post-Test	Difference
A	632 mm	567 mm	65 mm
B	492 mm	477 mm	15 mm
C	271 mm	280 mm	-9 mm
D	367 mm	369 mm	-2 mm
E	1103 mm	972 mm	131 mm
H	1073 mm	980 mm	93 mm

Figure 15 Static Passenger Compartment Intrusion



Measurement	Pre-Test	Post-Test	Difference
I	454 mm	410 mm	44 mm
J	561 mm	637 mm	-76 mm
K	1710 mm	1743 mm	-33 mm
L	1574 mm	1591 mm	-17 mm
M	1874 mm	1862 mm	12 mm
N	1880 mm	1866 mm	14 mm
O	1815 mm	1797 mm	18 mm
P	1806 mm	1786 mm	20 mm
Q	1928 mm	1926 mm	2 mm

Figure 16 Underbody Floorboard Deformation



Measurement	Pre-Test	Post-Test	Difference
A	385 mm	392 mm	-7 mm
B	502 mm	501 mm	1 mm
C	551 mm	549 mm	2 mm
D	385 mm	385 mm	0 mm
E	485 mm	379 mm	106 mm
F	501 mm	458 mm	43 mm
G	470 mm	466 mm	4 mm
H	410 mm	413 mm	-3 mm

Appendix A

Photographs

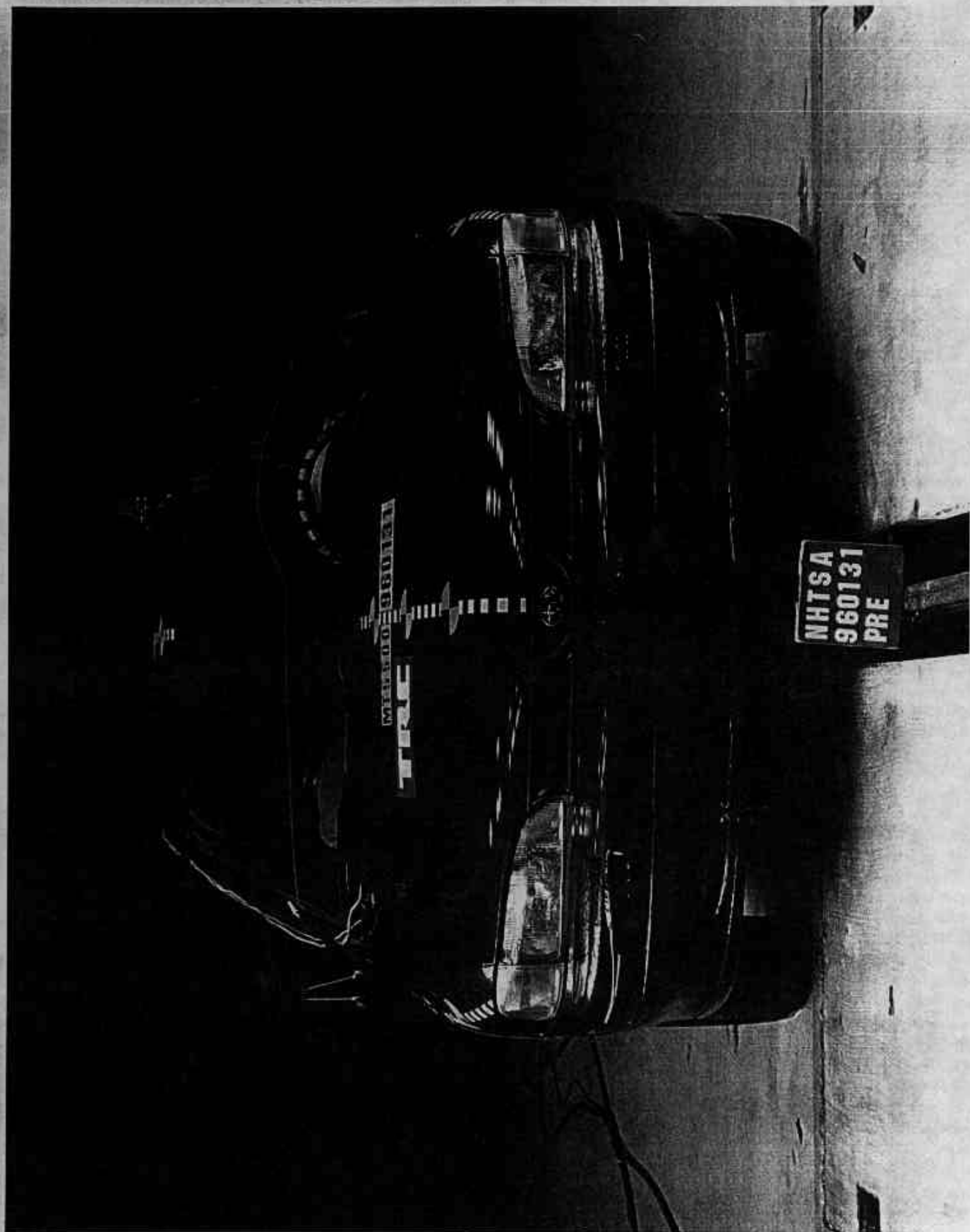


Figure A-1. Pre-Test Front View

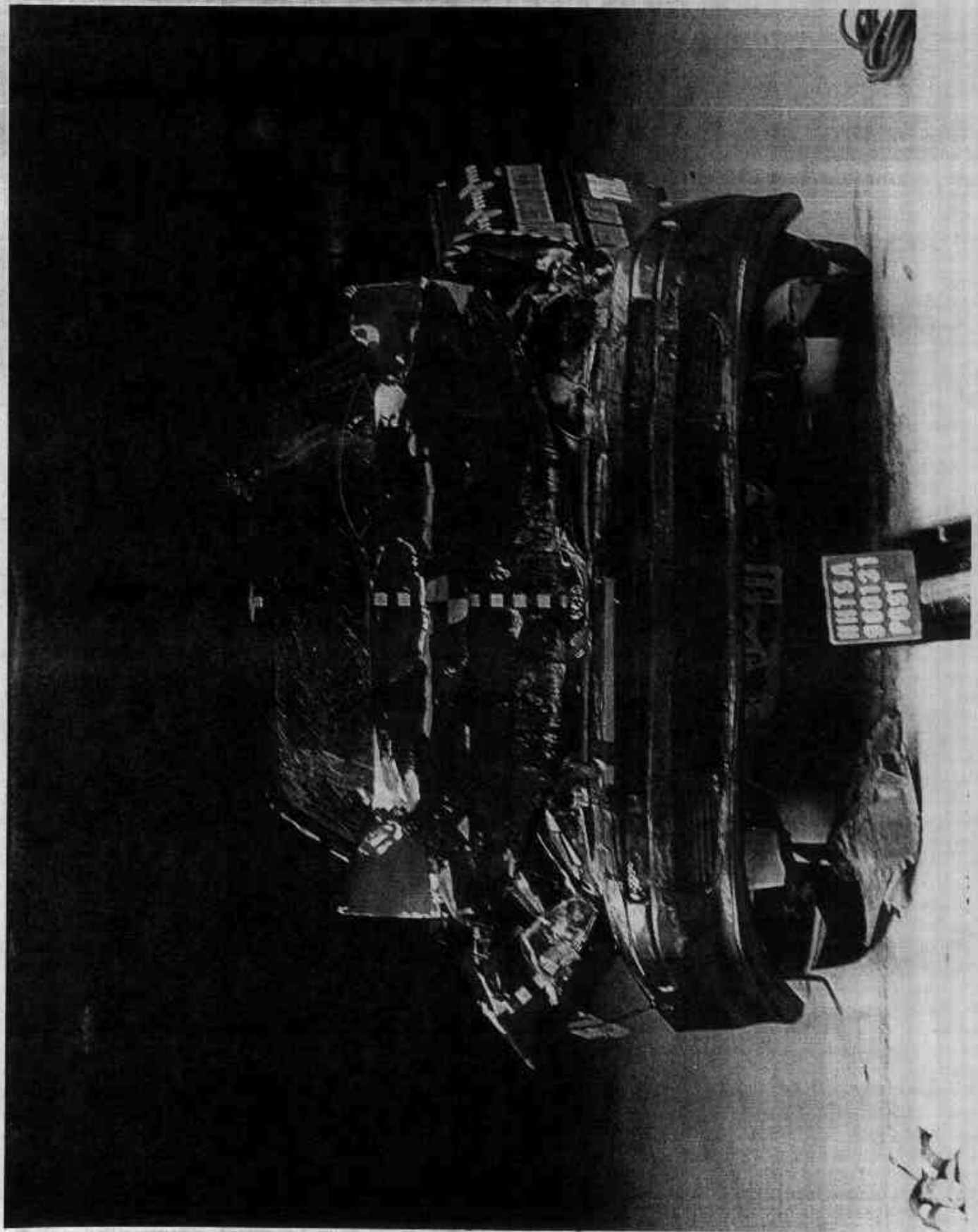


Figure A-2. Post-Test Front View

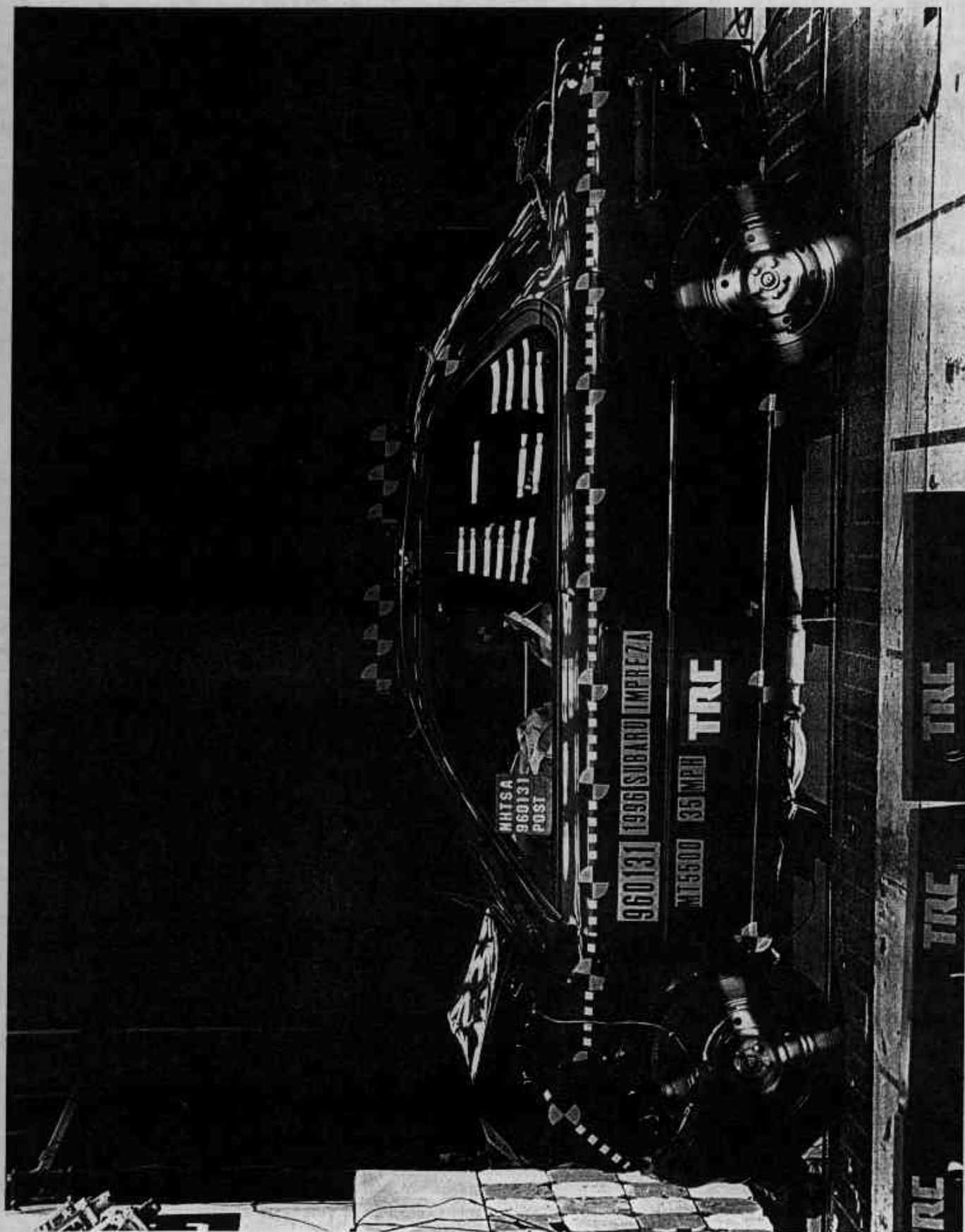


Figure A-3. Post-Test Left Side View

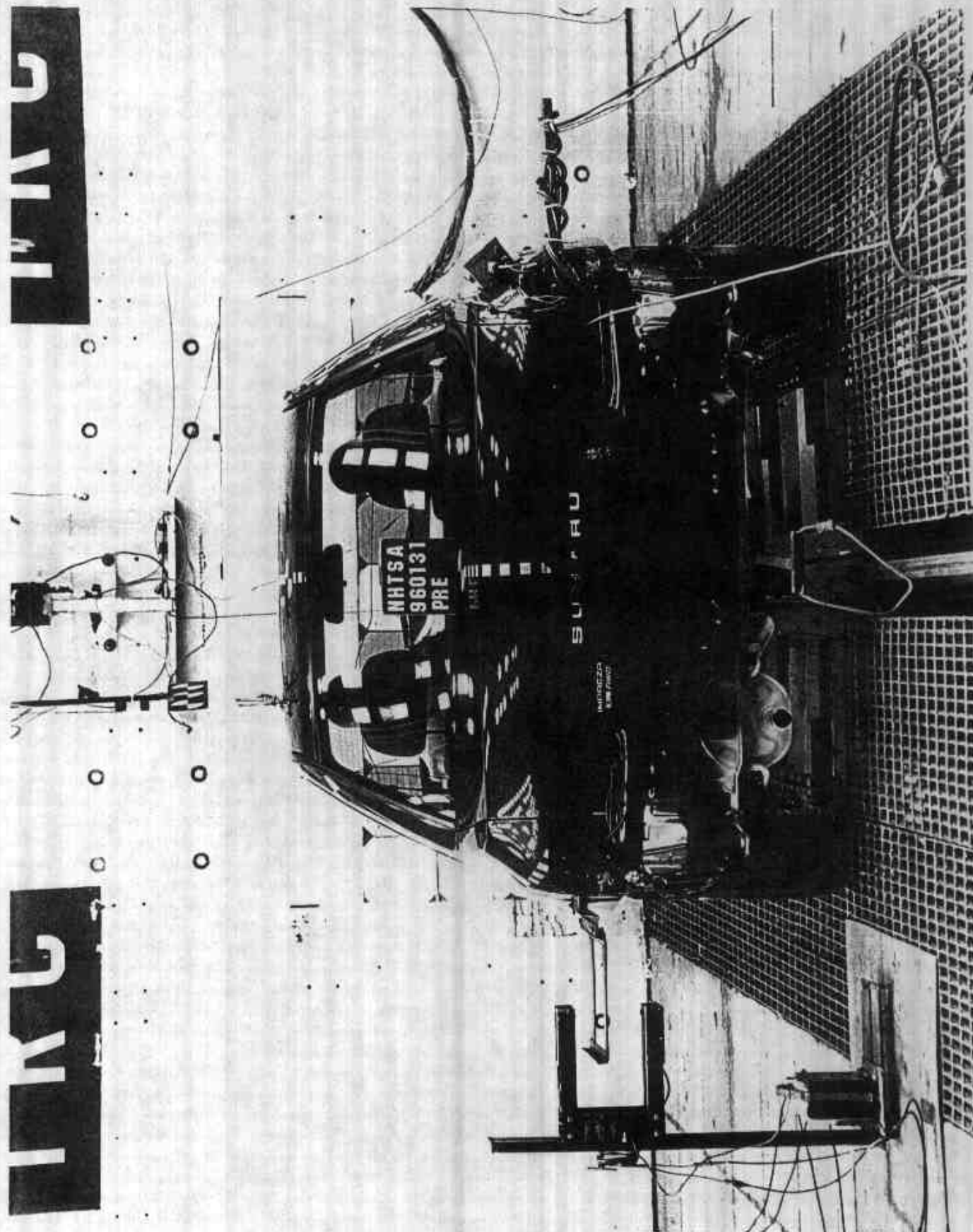


Figure A-4. Pre-Test Rear View

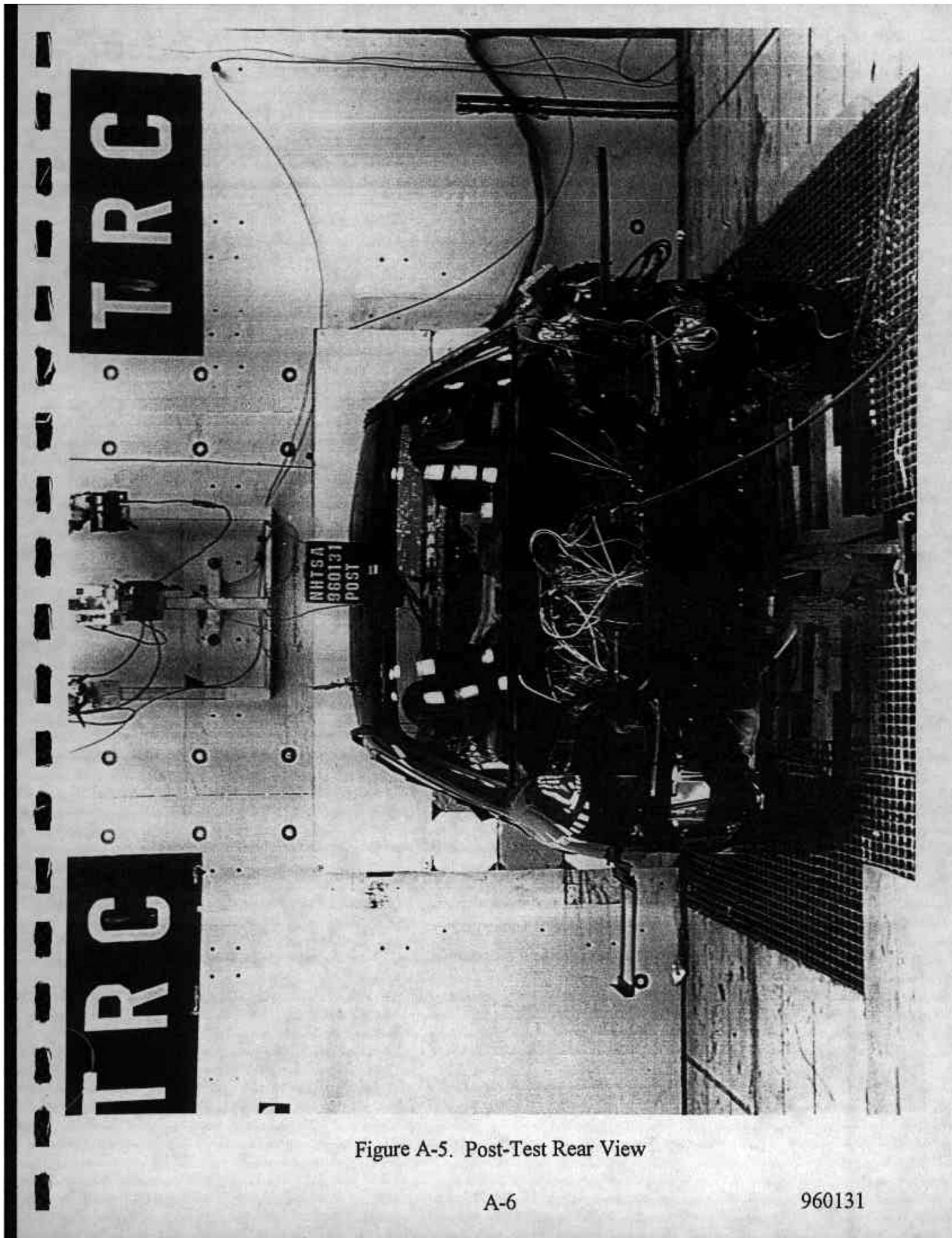


Figure A-5. Post-Test Rear View

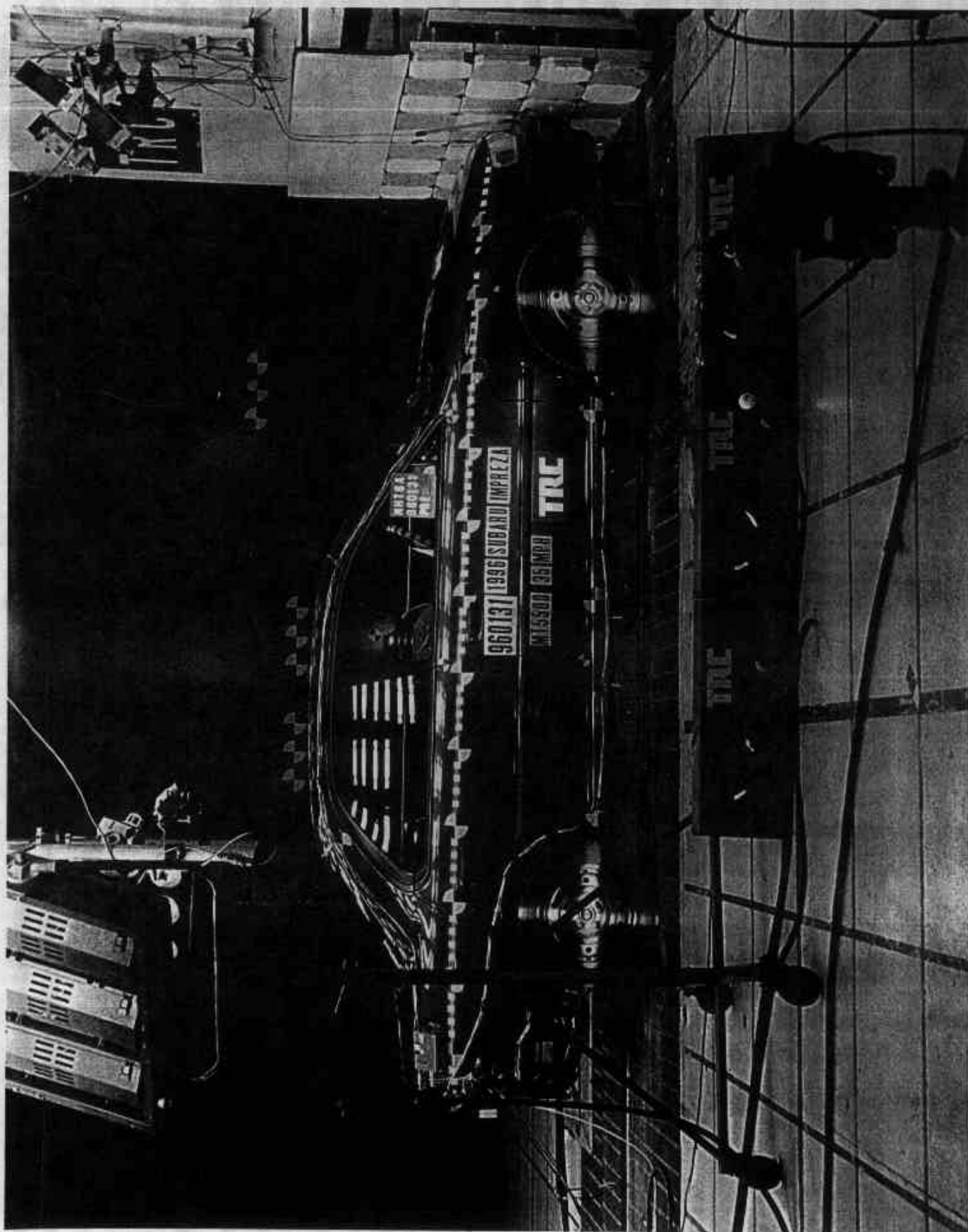


Figure A-6. Pre-Test Right Side View

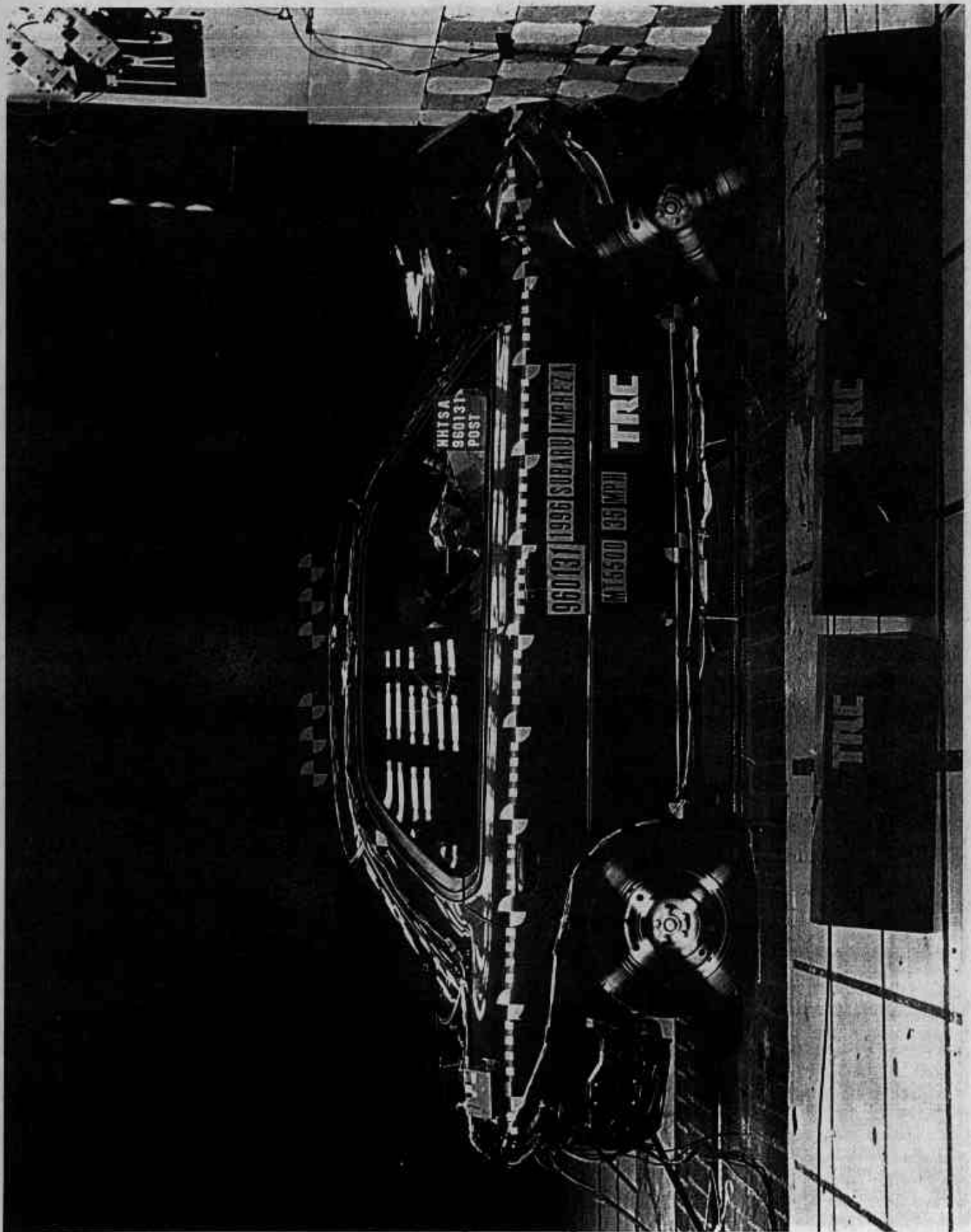


Figure A-7. Post-Test Right Side View

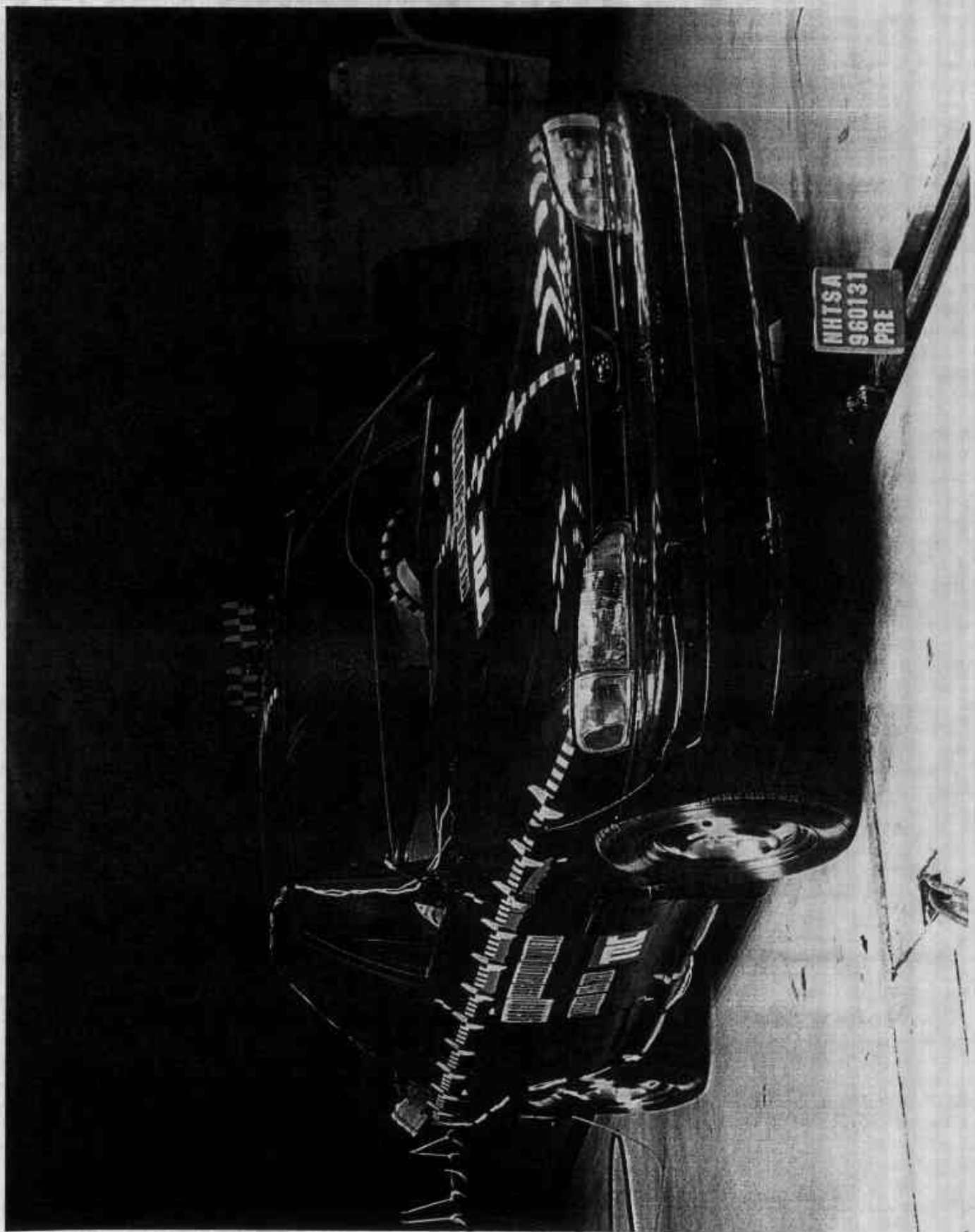


Figure A-8. Pre-Test Right Front Three-Quarter View

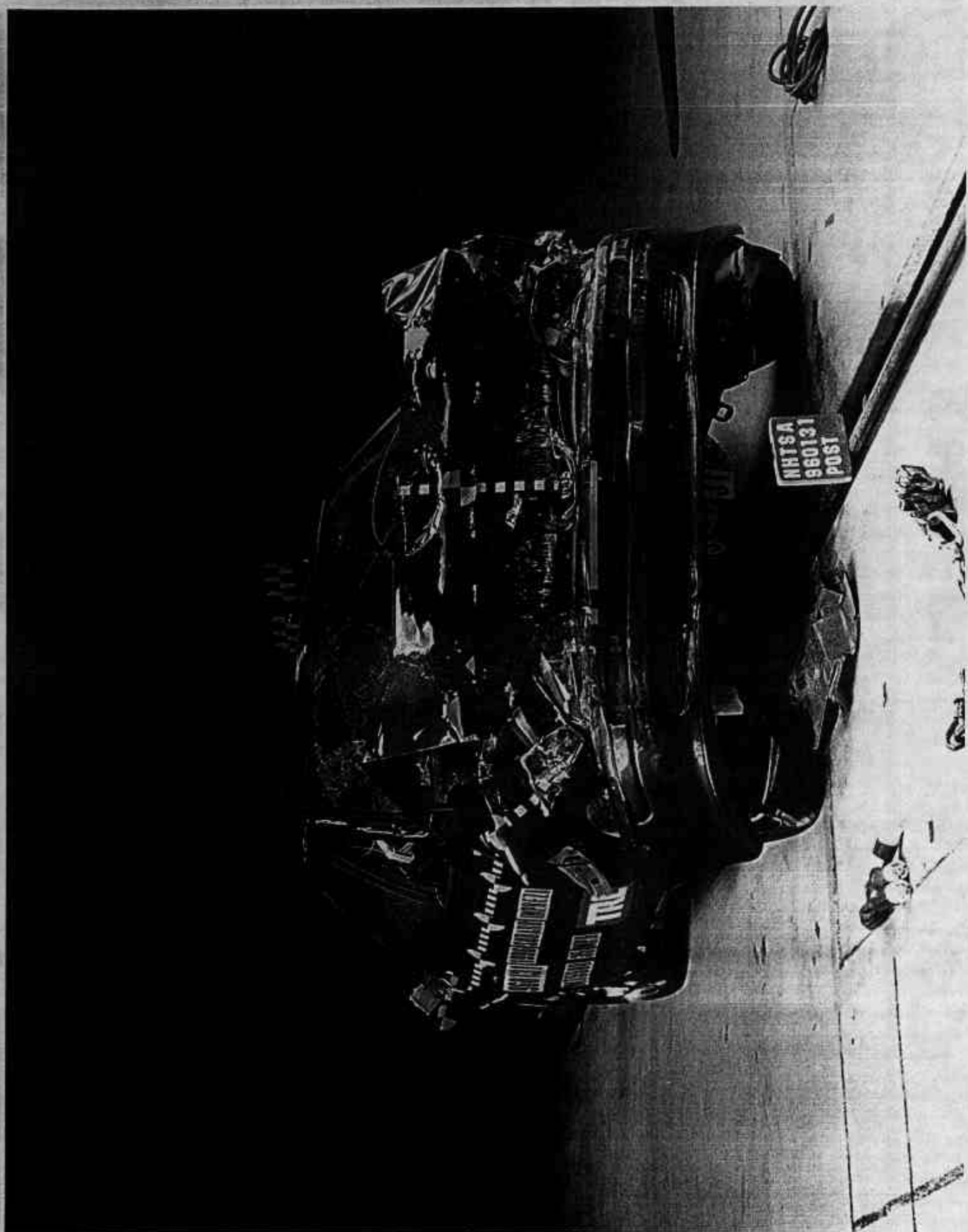


Figure A-9. Post-Test Right Front Three-Quarter View

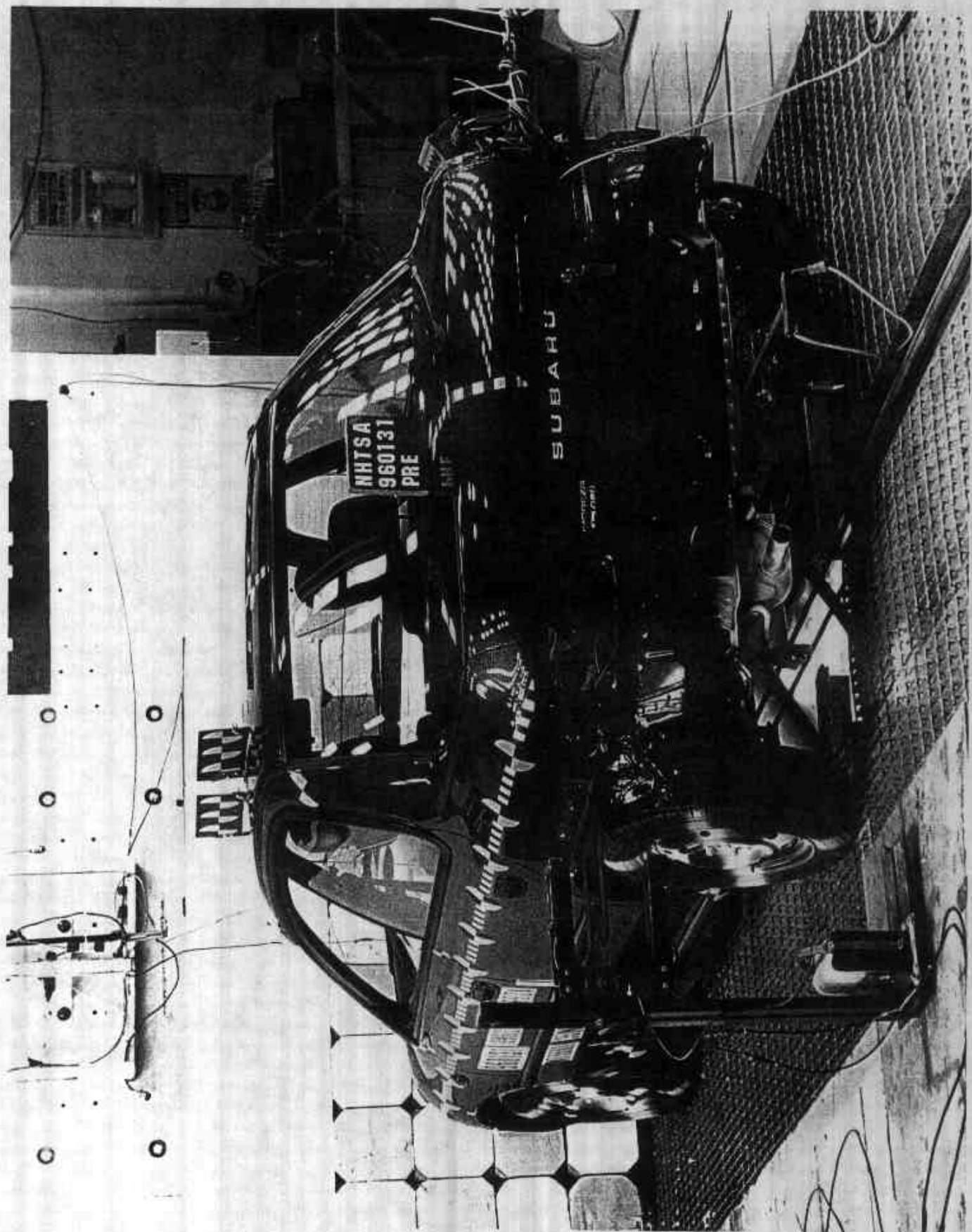


Figure A-10. Pre-Test Left Rear Three-Quarter View

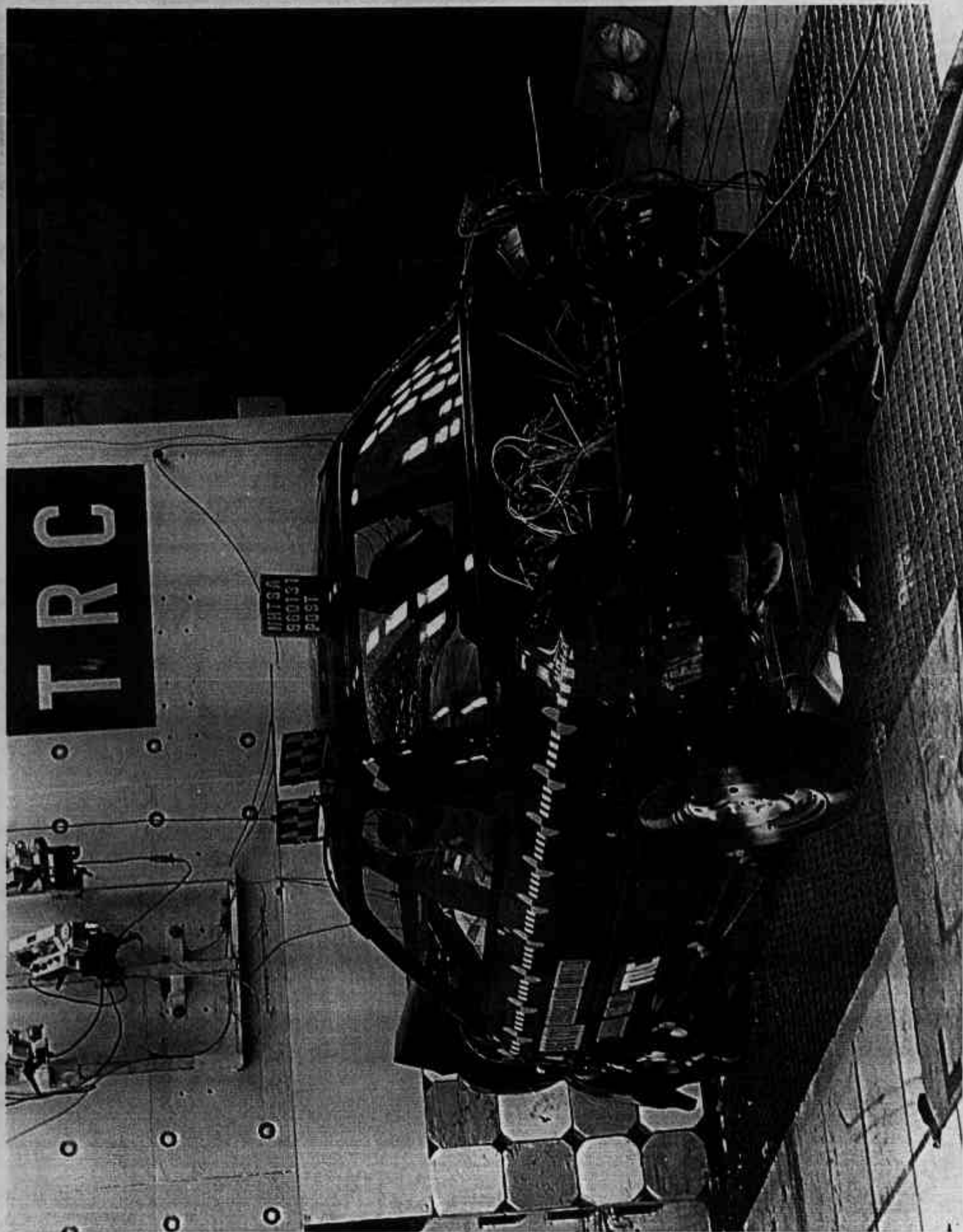


Figure A-11. Post-Test Left Rear Three-Quarter View

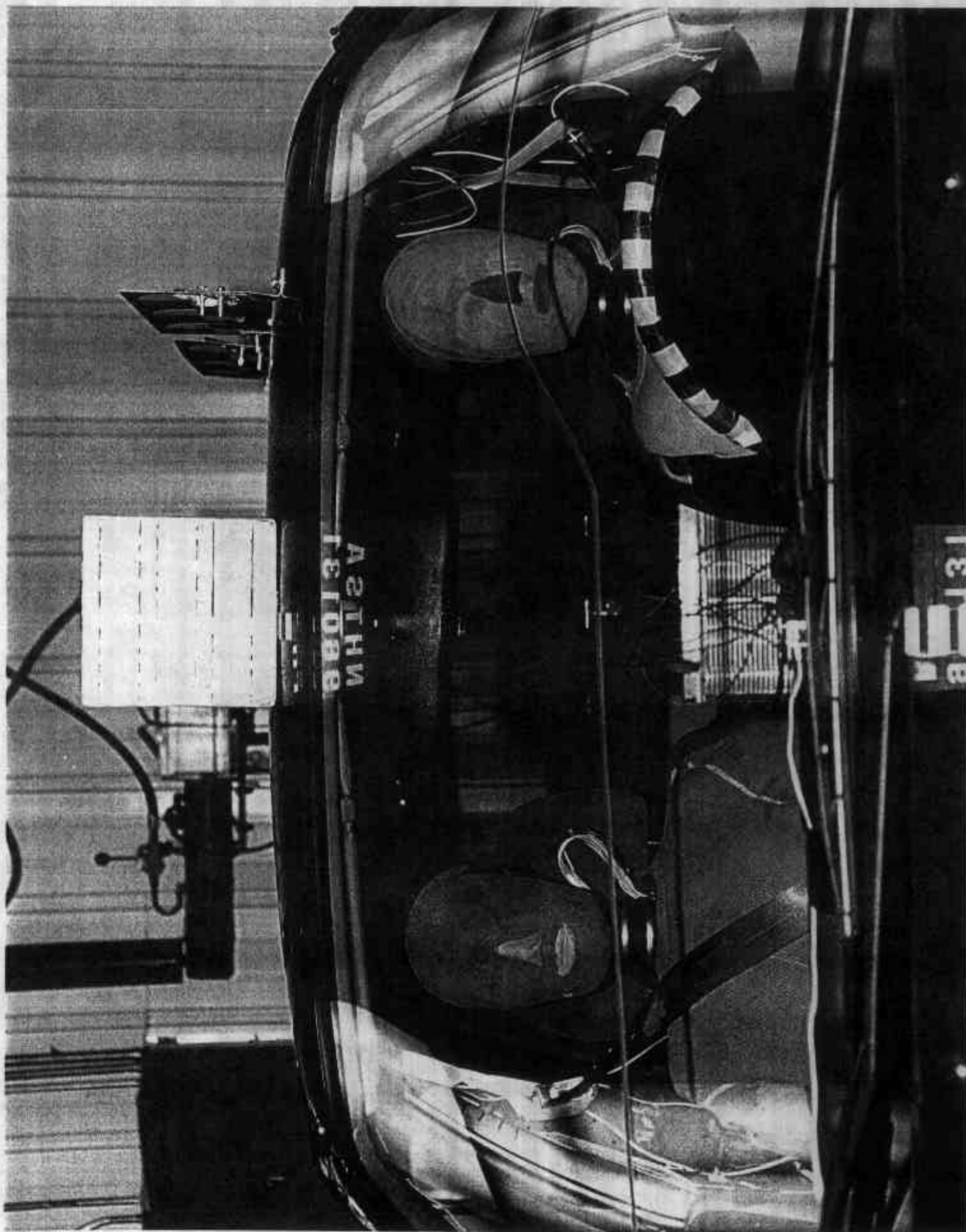


Figure A-12. Pre-Test Windshield View

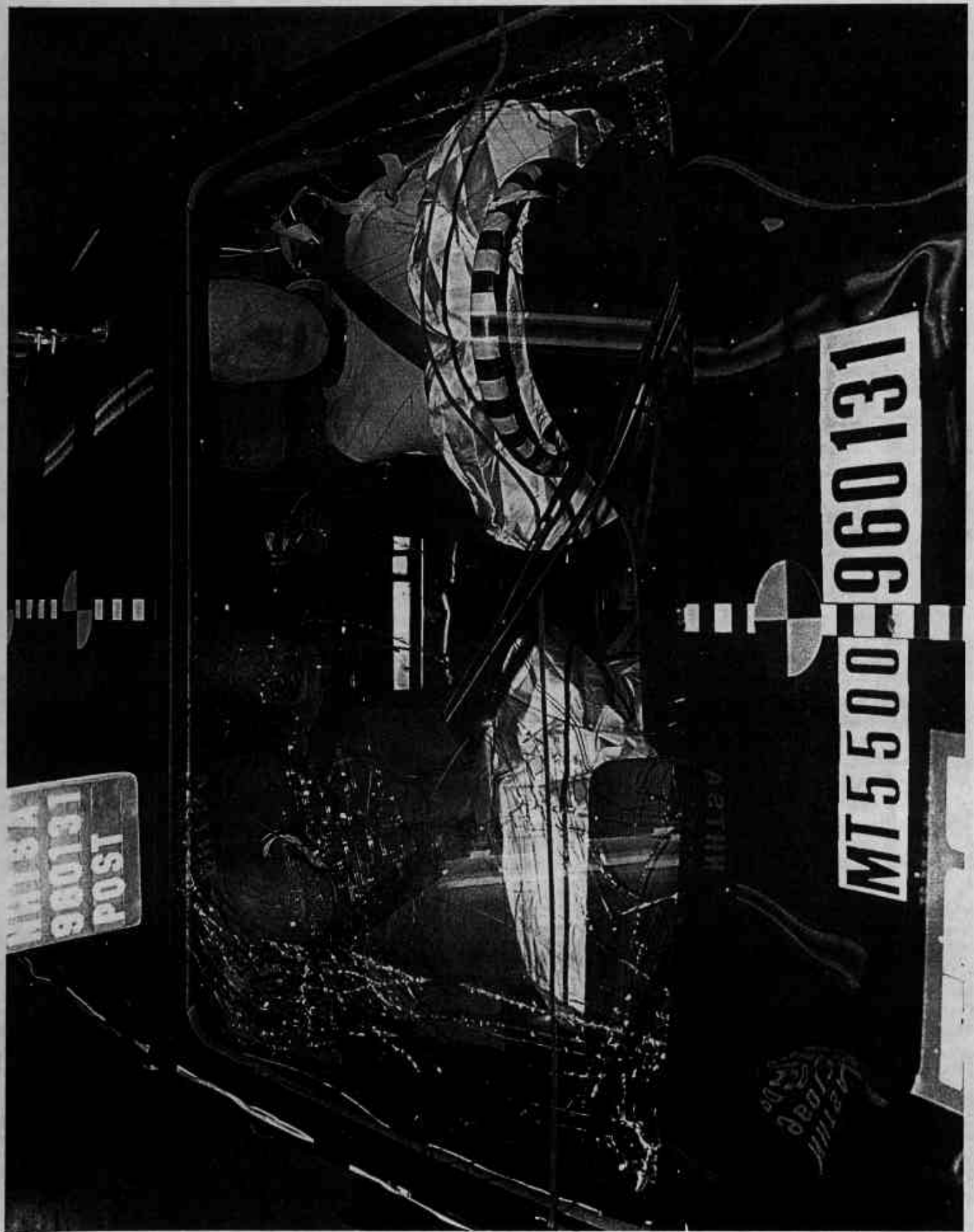


Figure A-13. Post-Test Windshield View

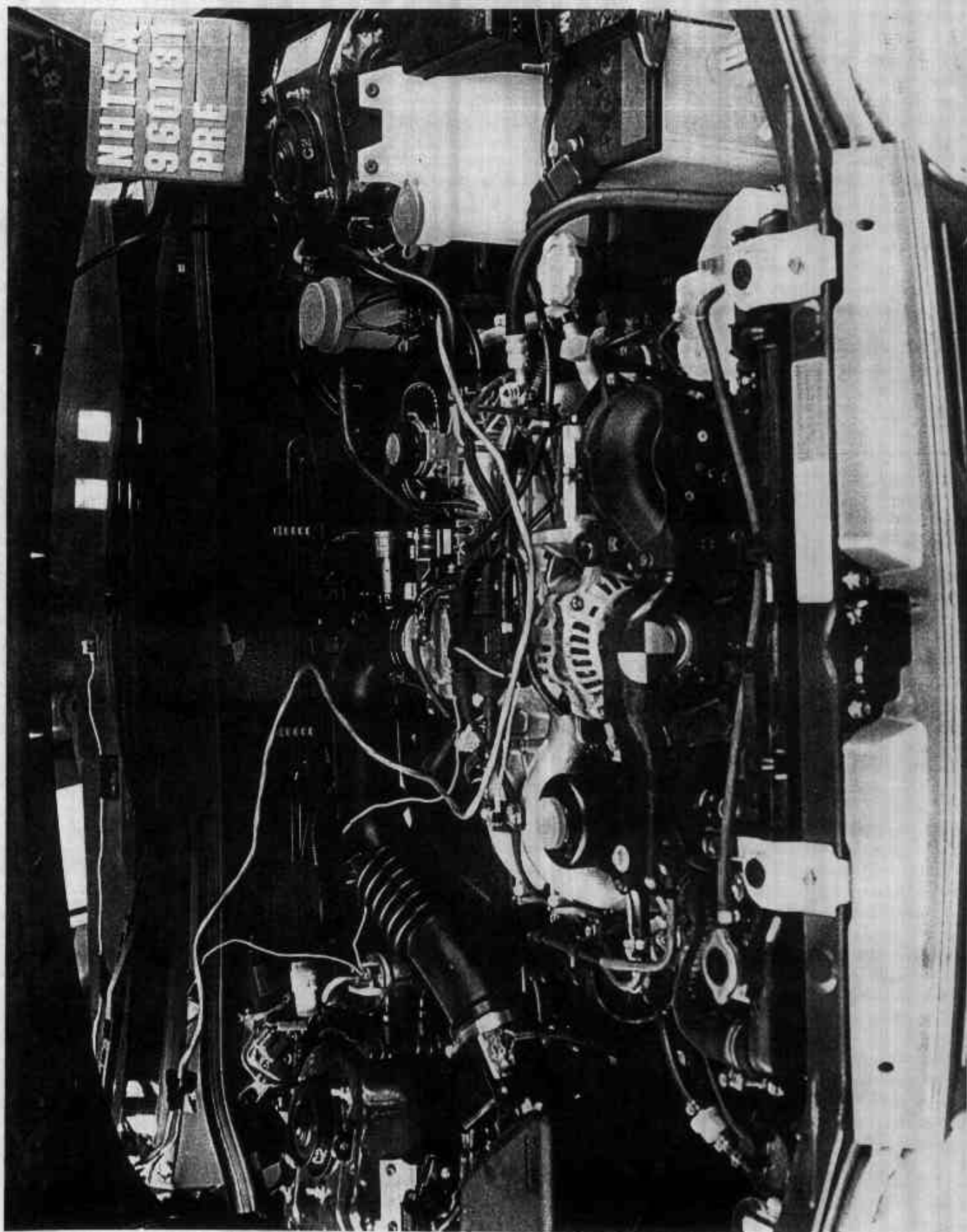


Figure A-14. Pre-Test Engine Compartment View

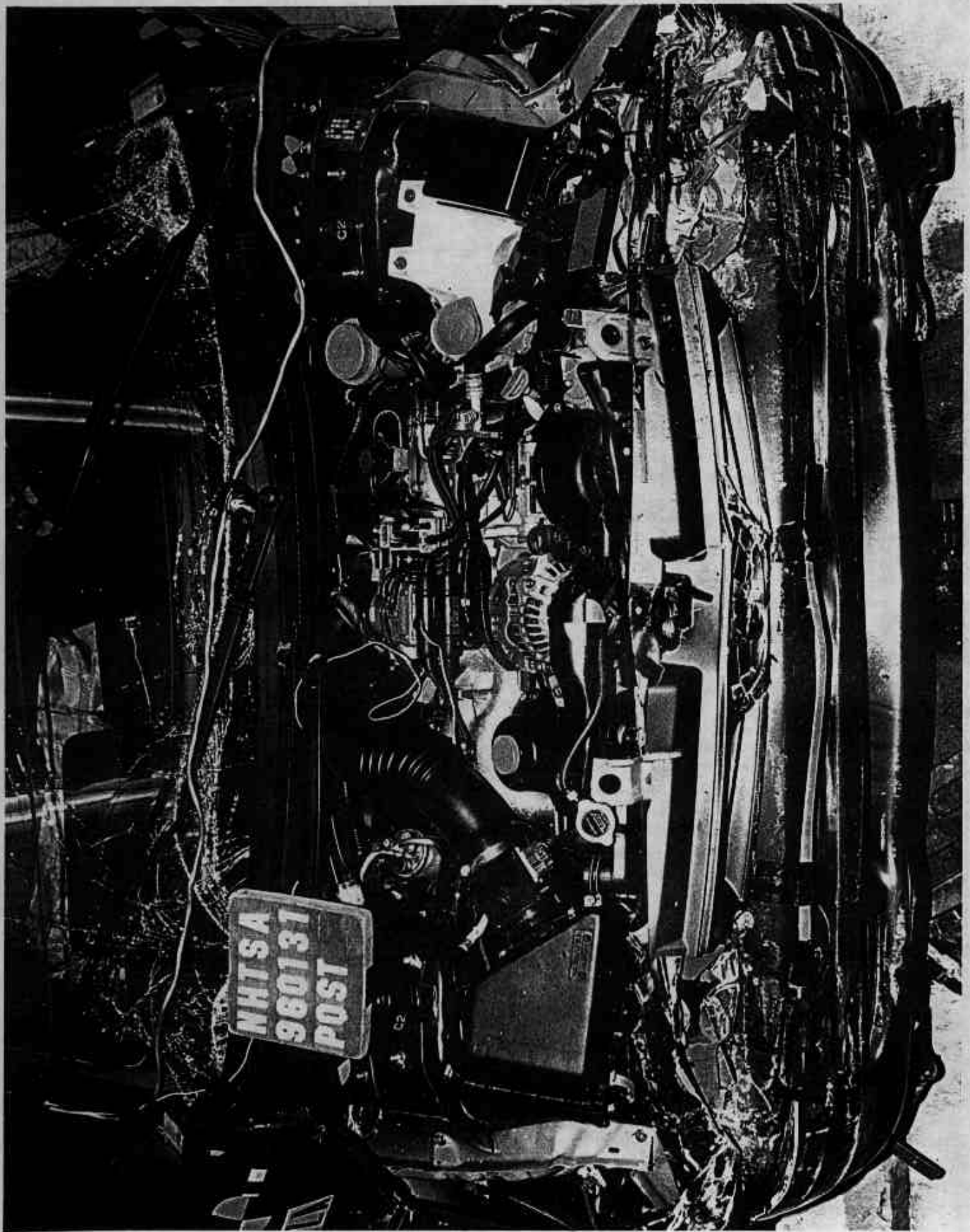


Figure A-15. Post-Test Engine Compartment View

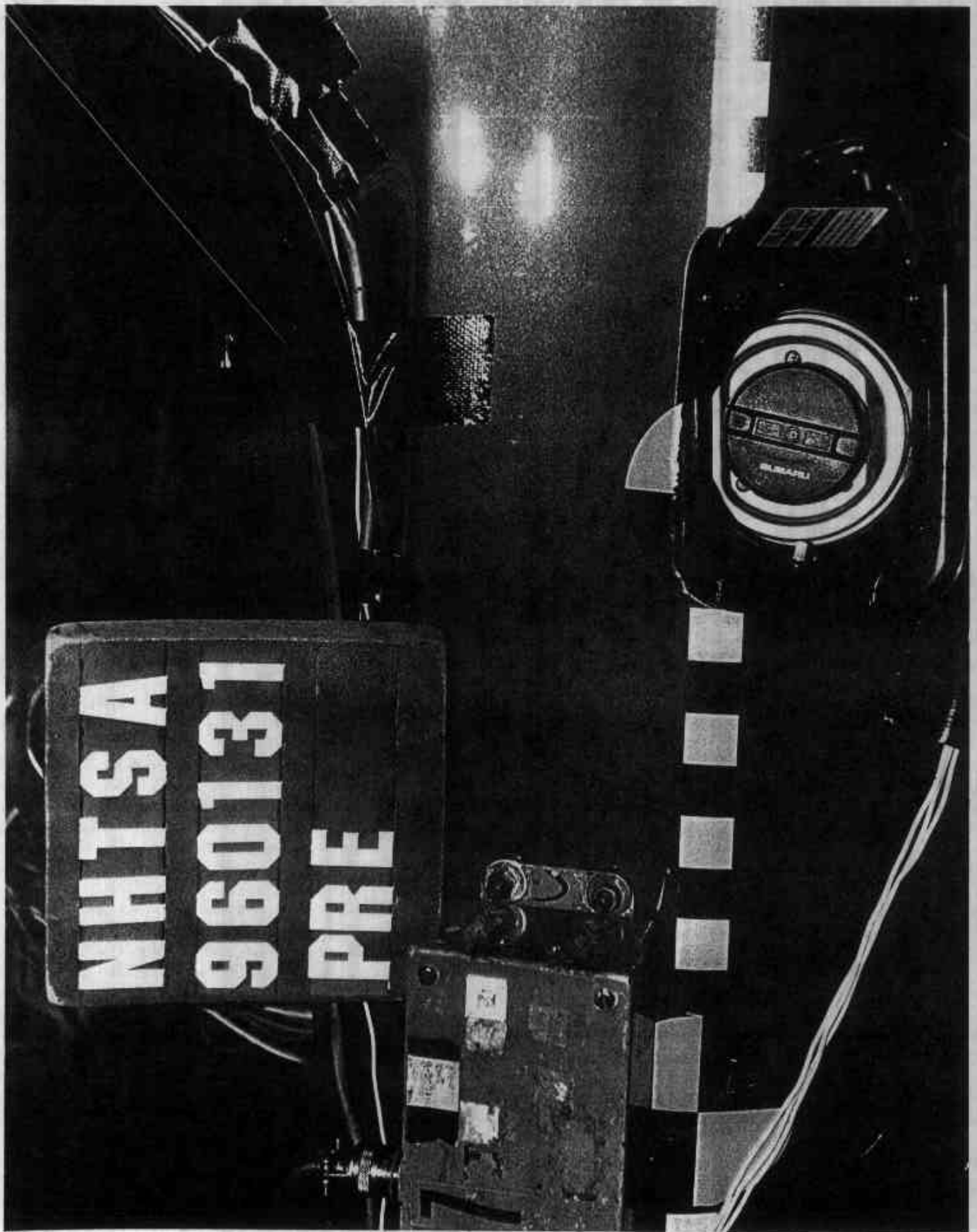


Figure A-16. Pre-Test Fuel Filler Cap View



Figure A-17. Post-Test Fuel Filler Cap View

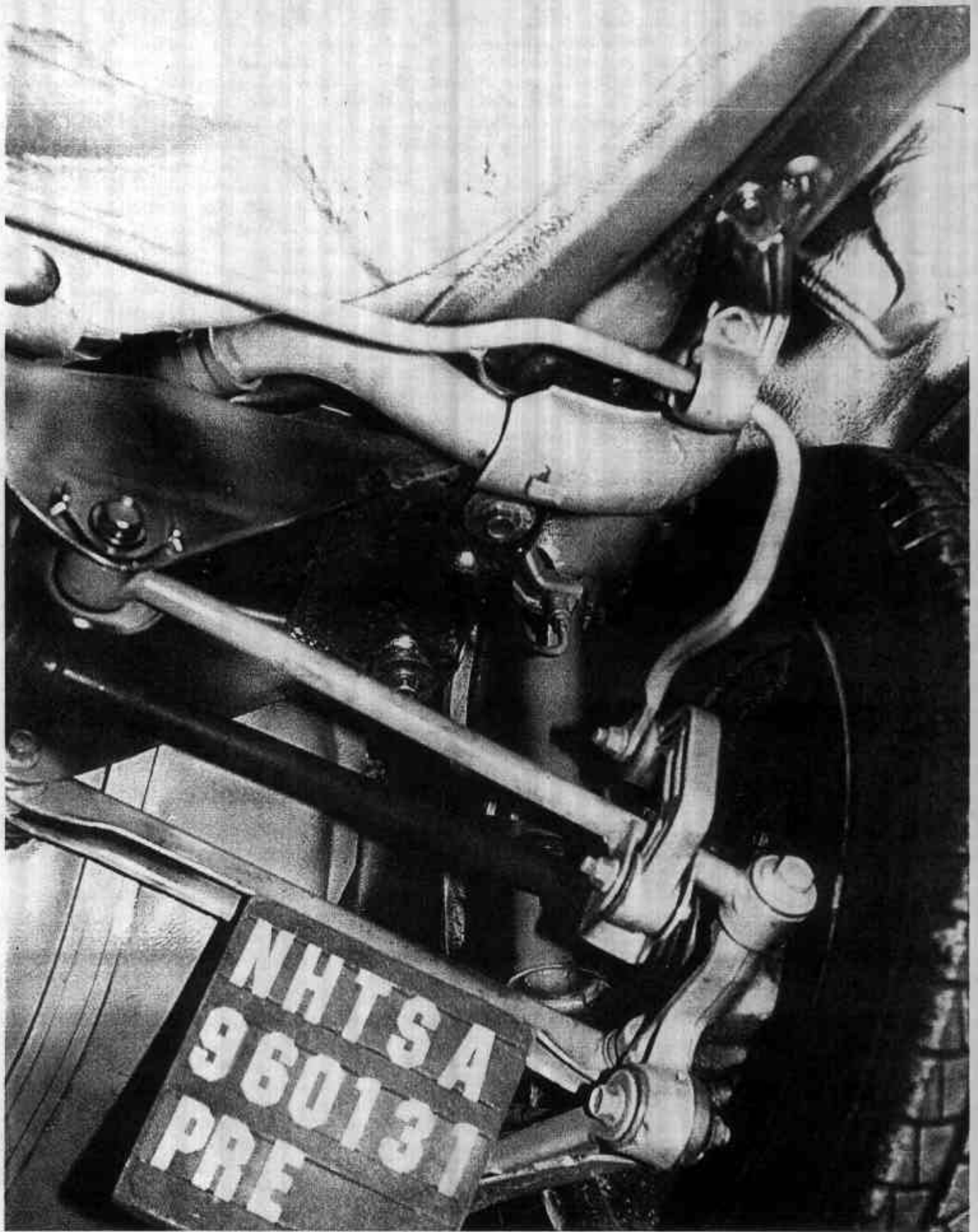


Figure A-18. Pre-Test Fuel Filler Neck View



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

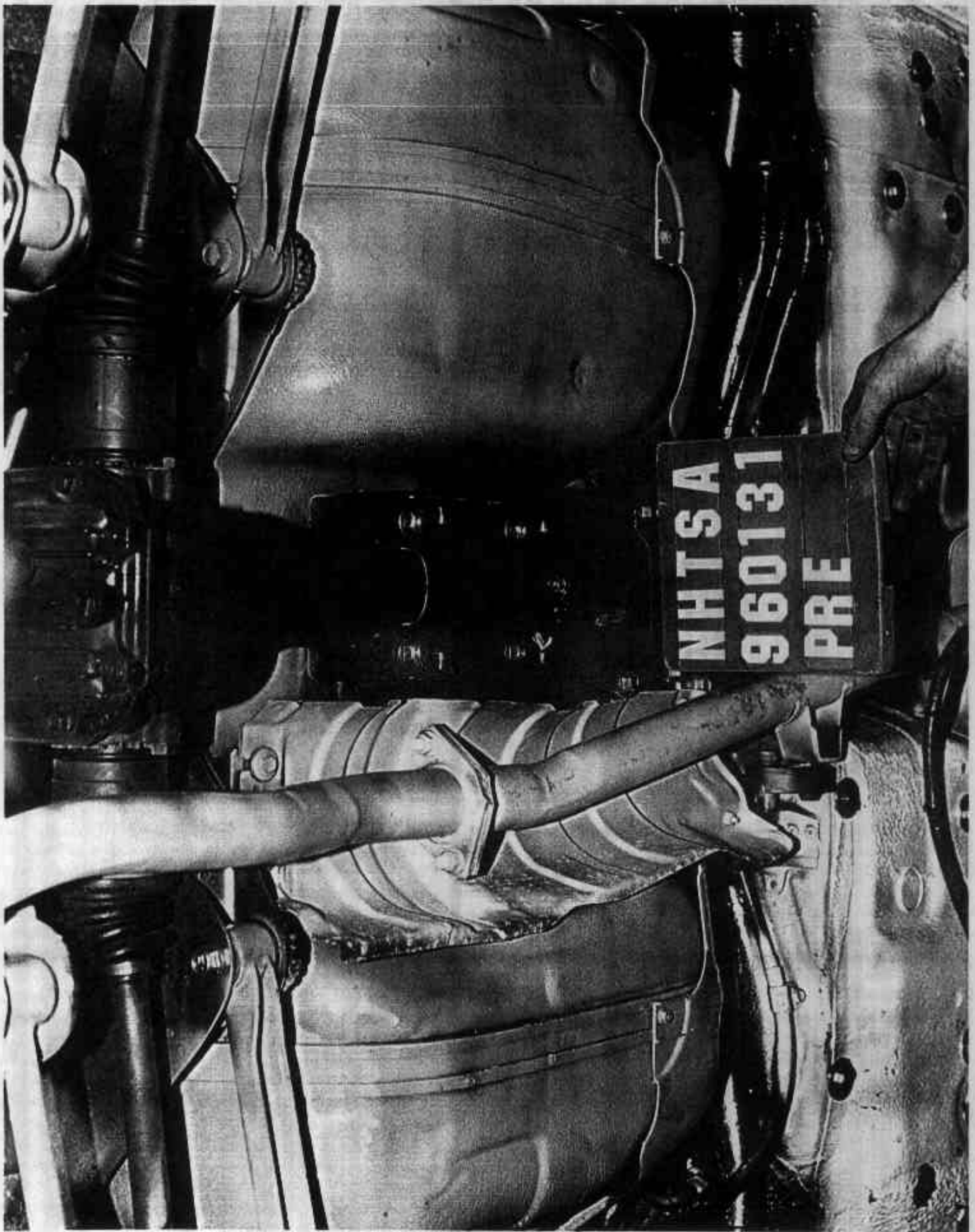


Figure A-20. Pre-Test Fuel Tank View

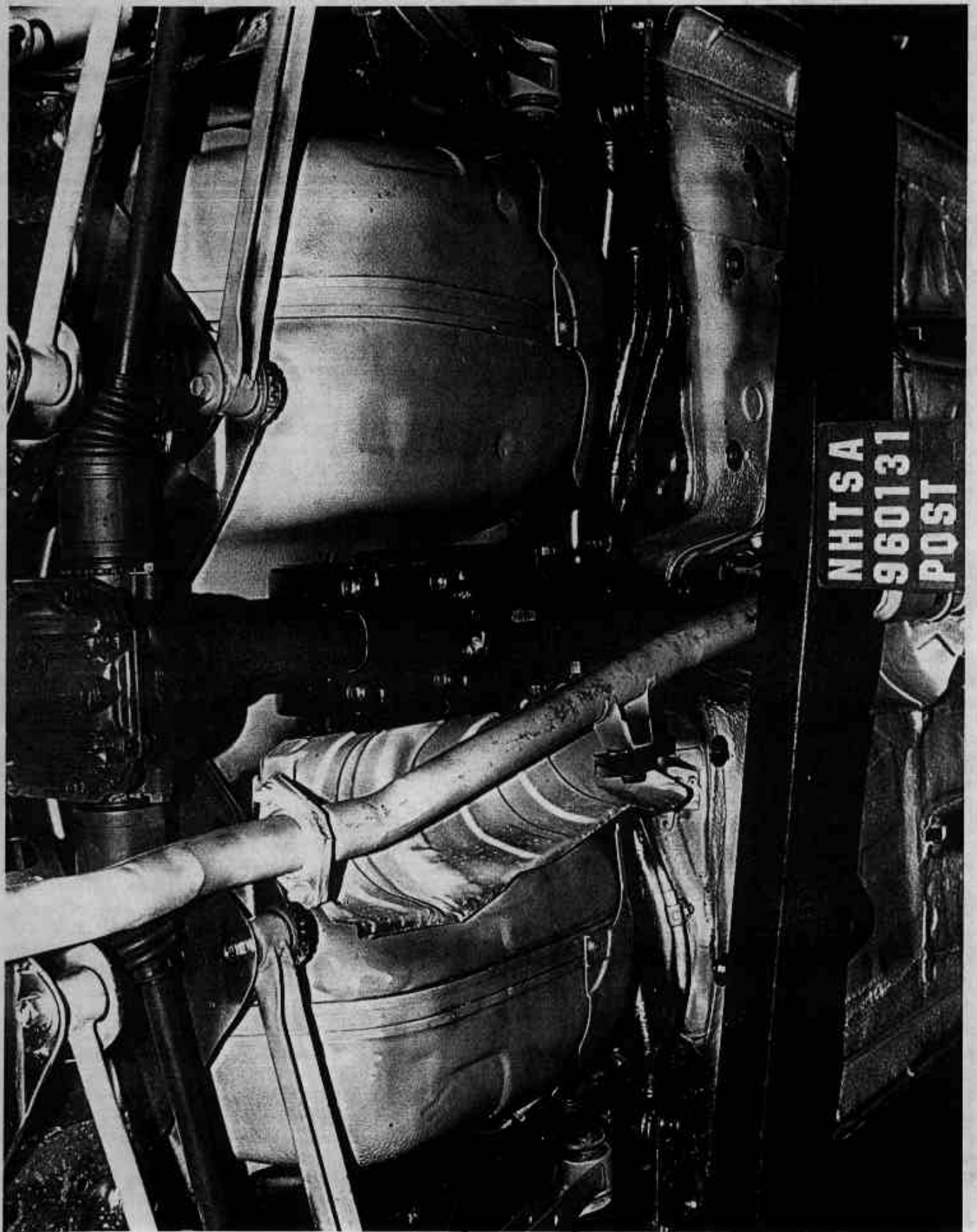


Figure A-21. Post-Test Fuel Tank View

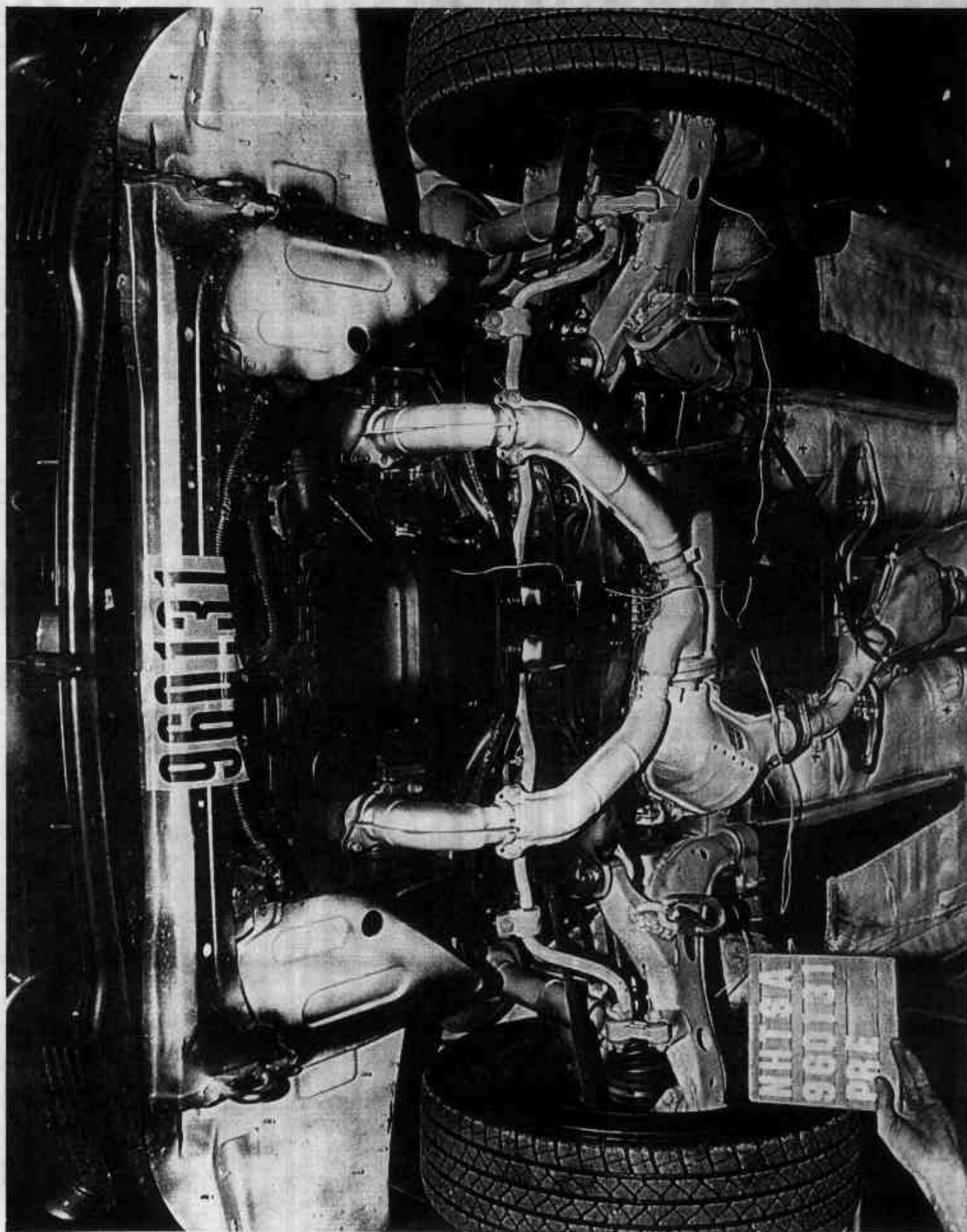


Figure A-22. Pre-Test Front Underbody View

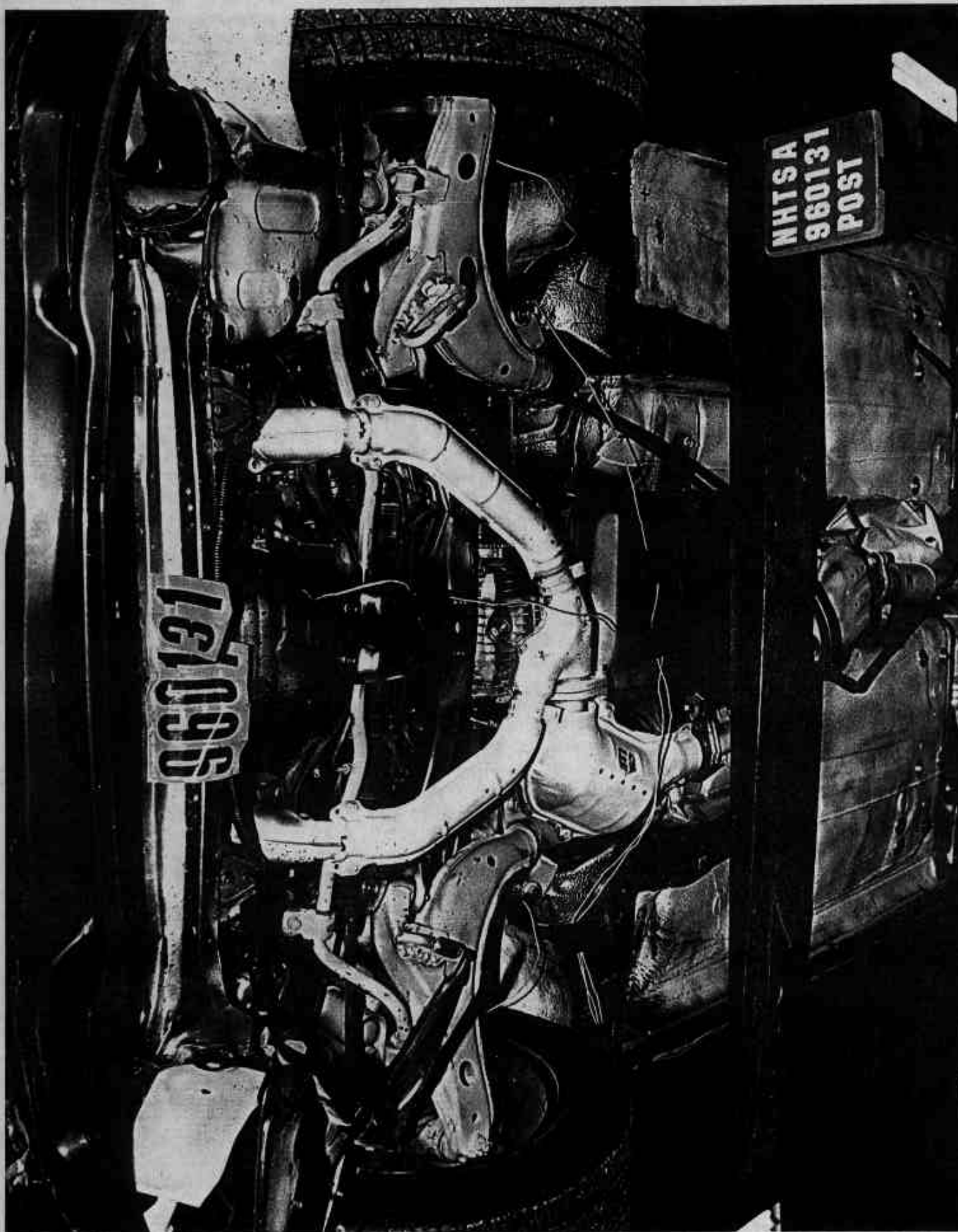


Figure A-23. Post-Test Front Underbody View

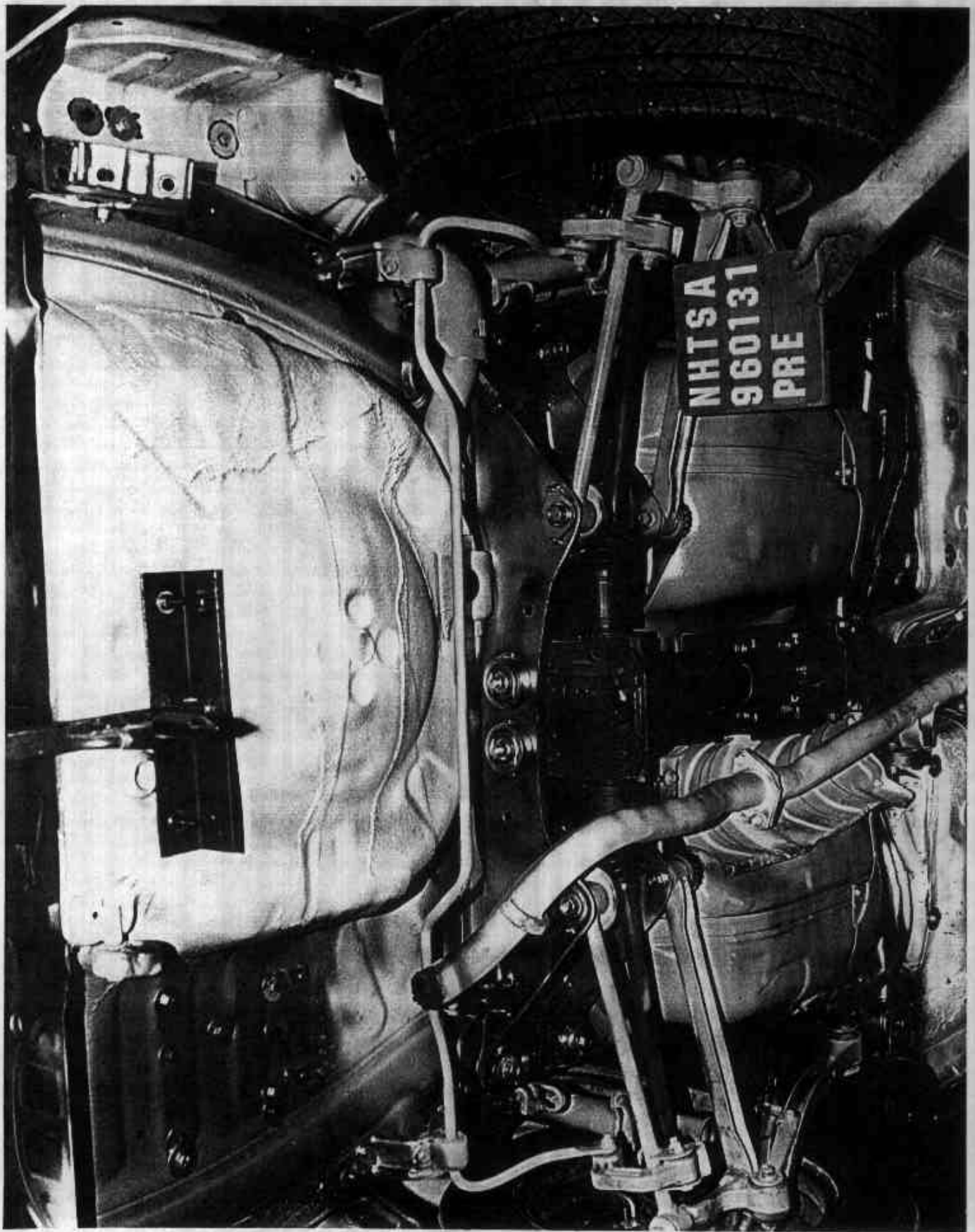


Figure A-24. Pre-Test Rear Underbody View

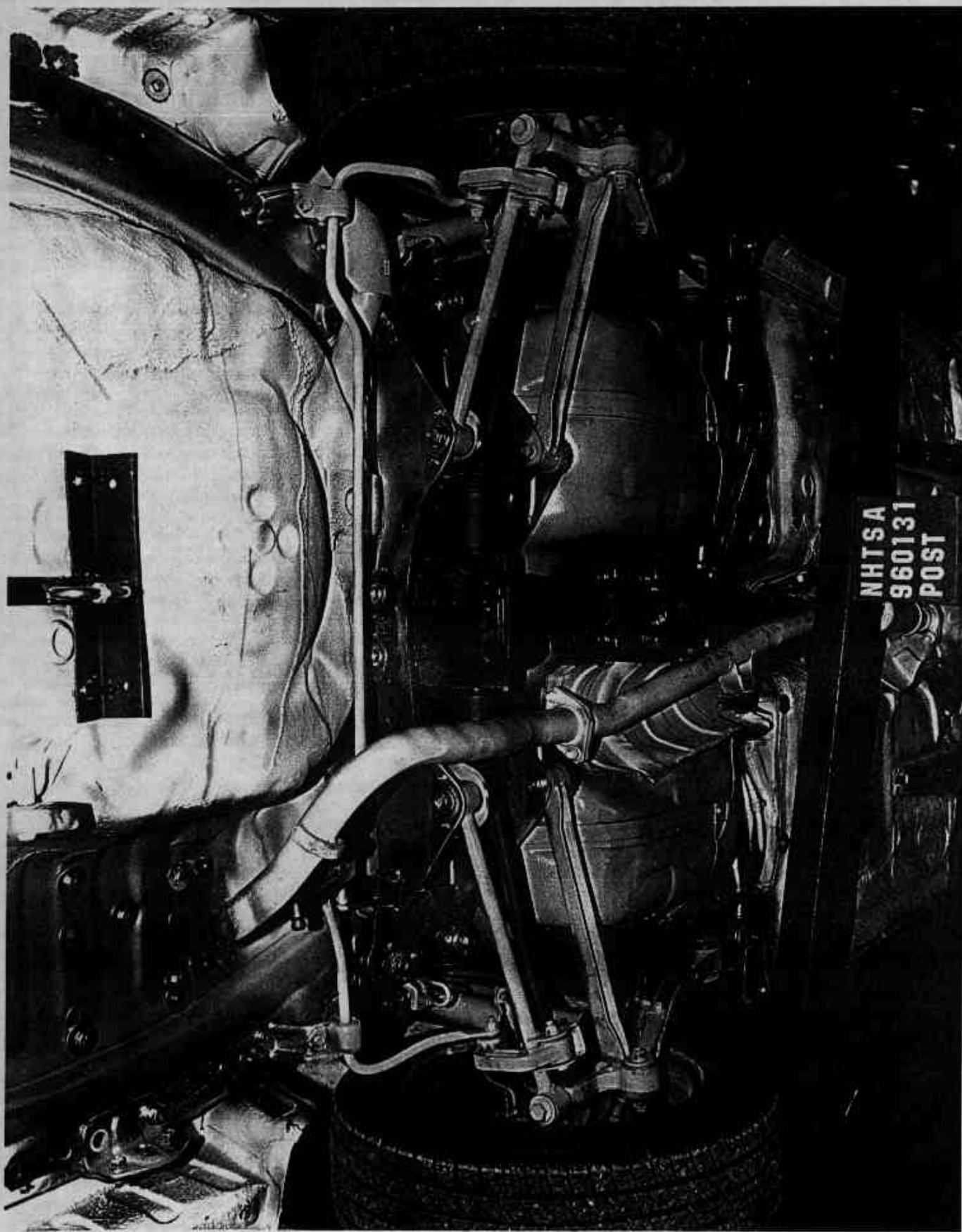


Figure A-25. Post-Test Rear Underbody View

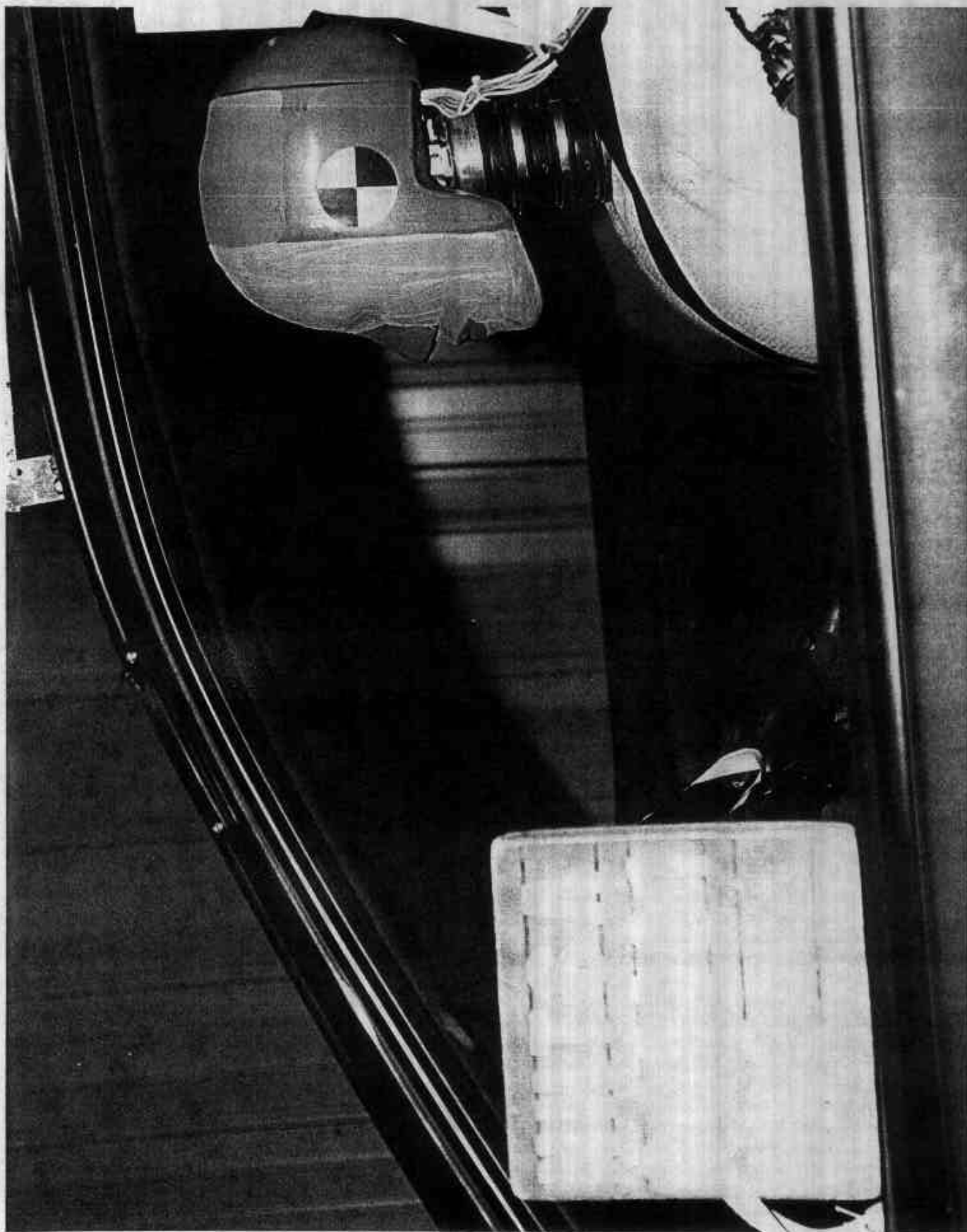


Figure A-26. Pre-Test Driver Dummy Position View

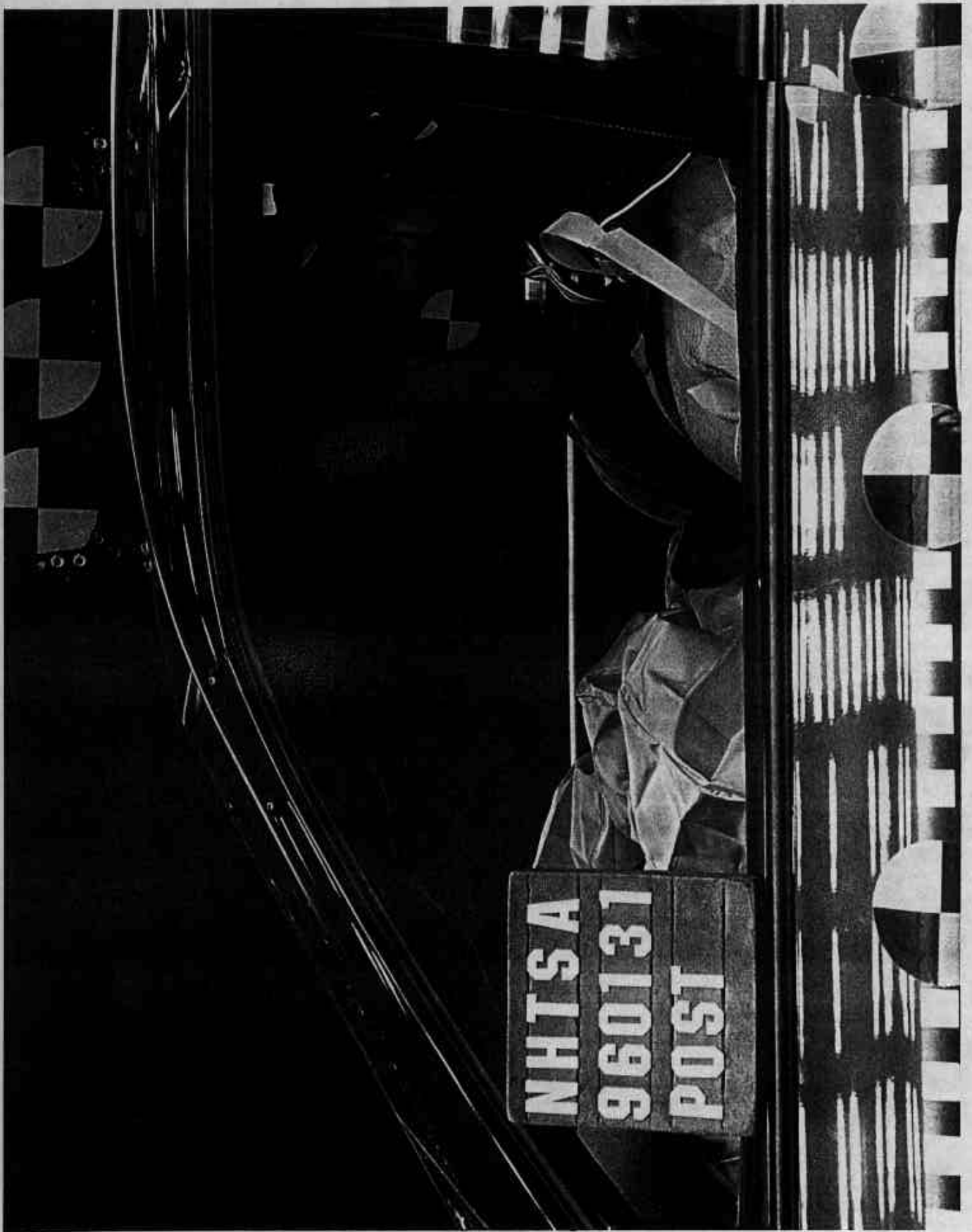


Figure A-27. Post-Test Driver Dummy Position View

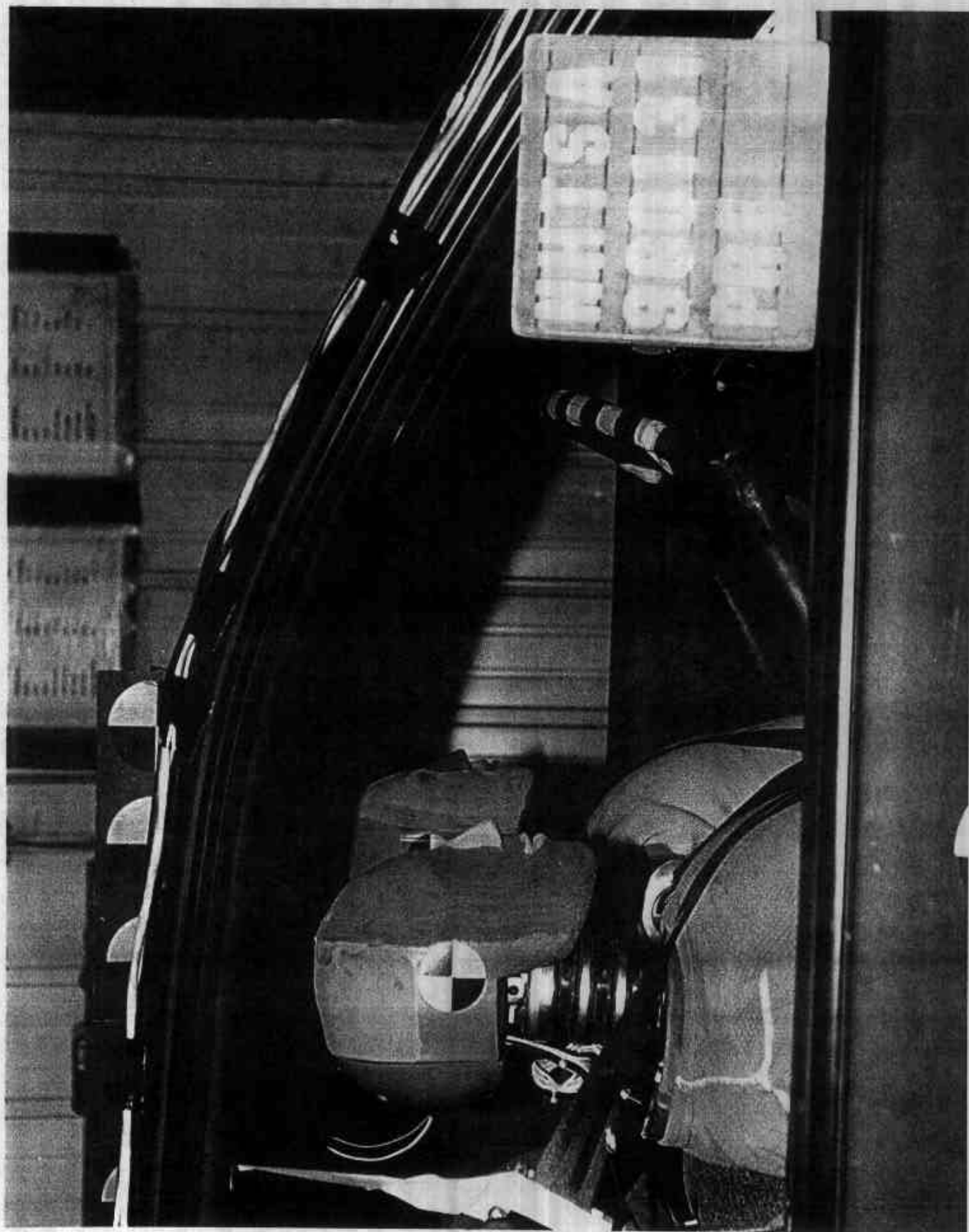


Figure A-28. Pre-Test Passenger Dummy Position View



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

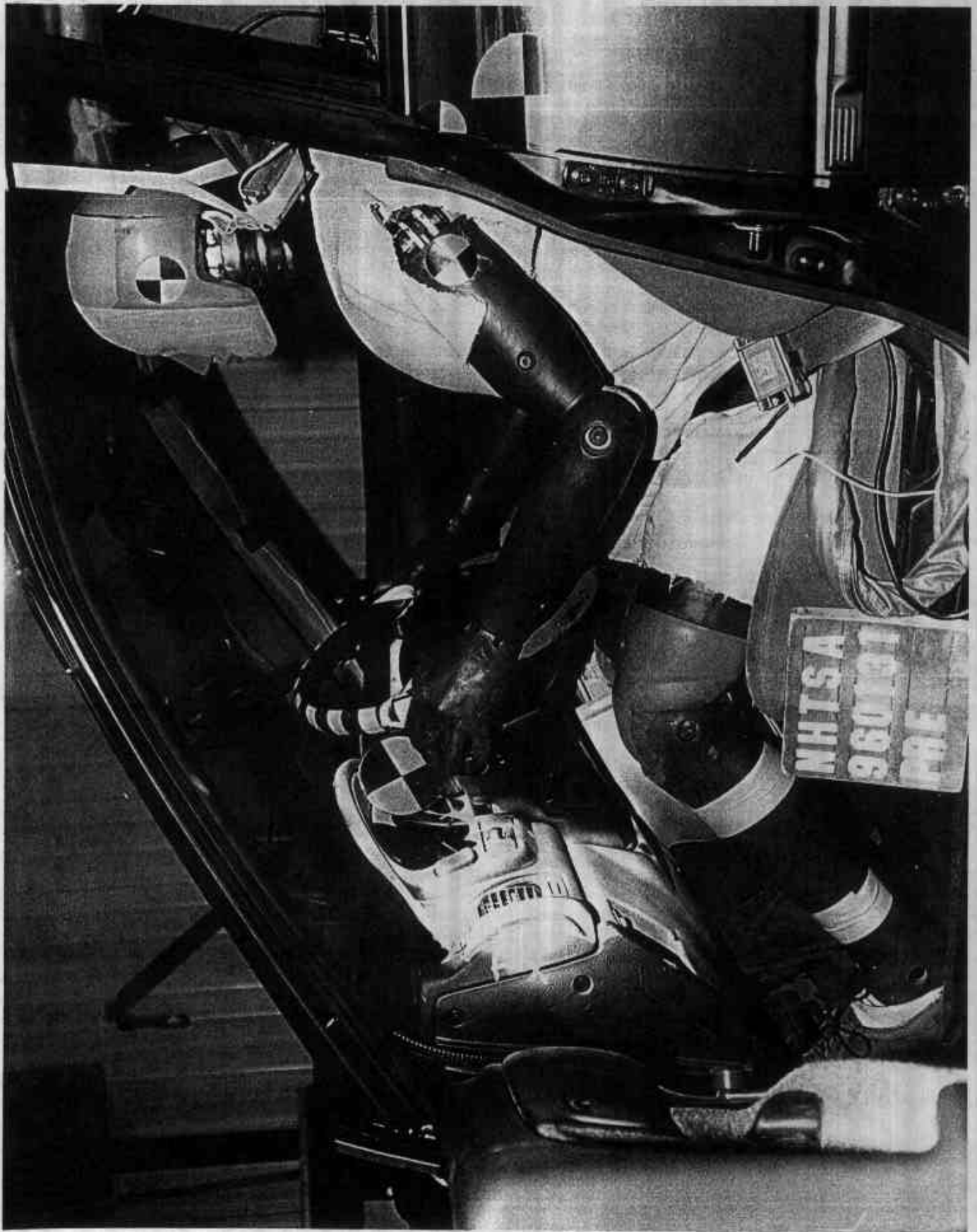


Figure A-30. Pre-Test Driver Dummy & Vehicle Interior - View 1

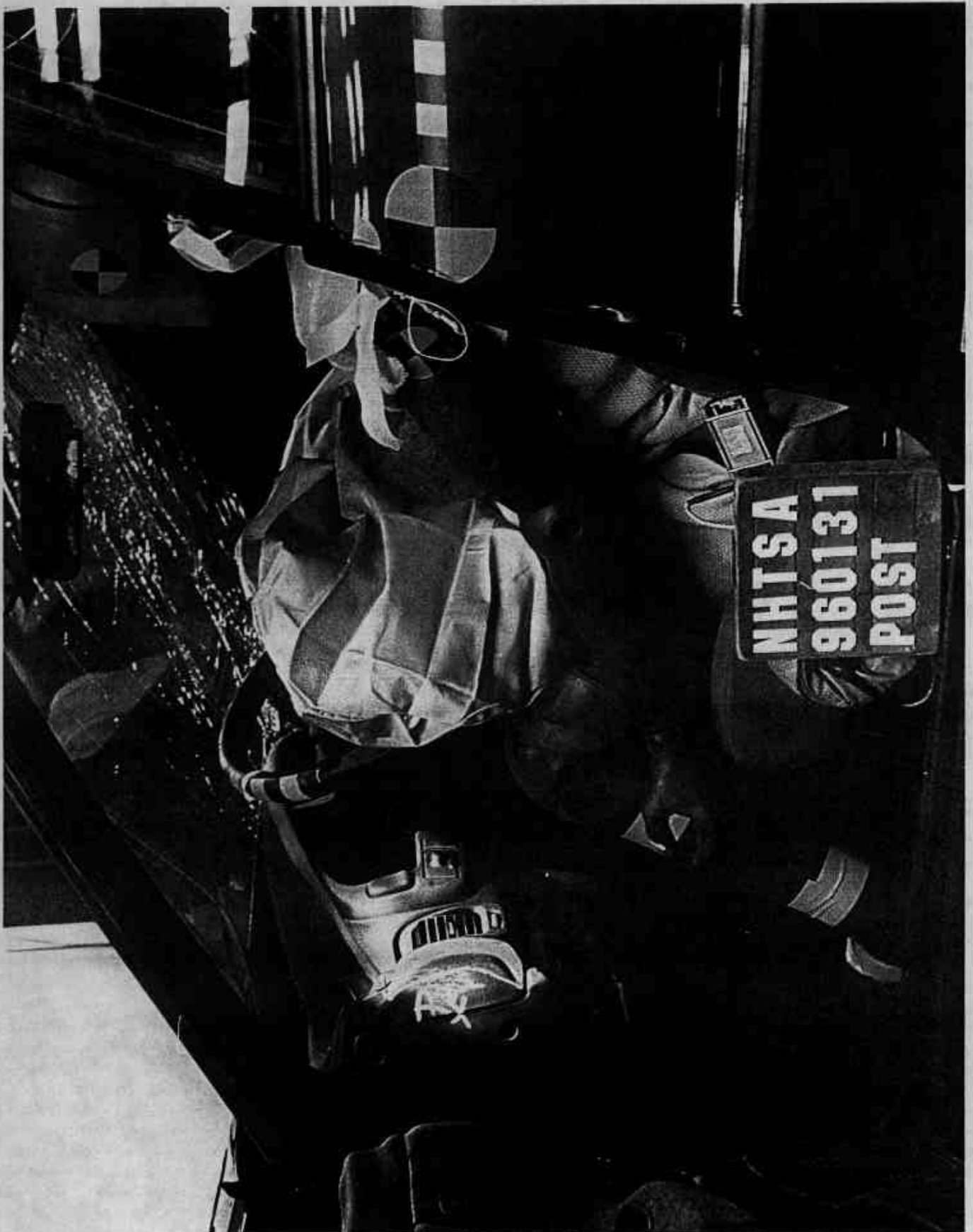


Figure A-31. Post-Test Driver Dummy & Vehicle Interior - View 1



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

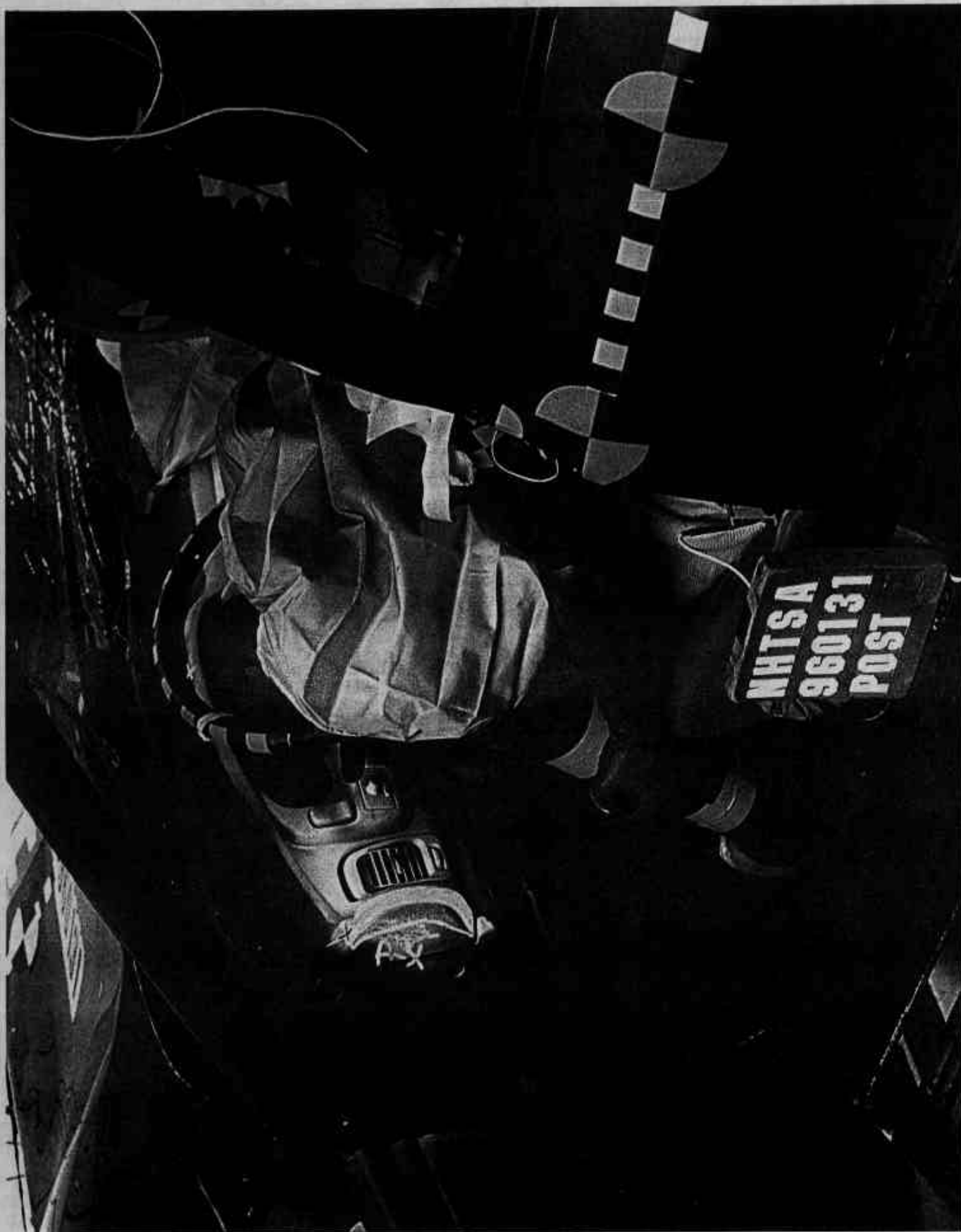


Figure A-33. Post-Test Driver Dummy & Vehicle Interior - View 2



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

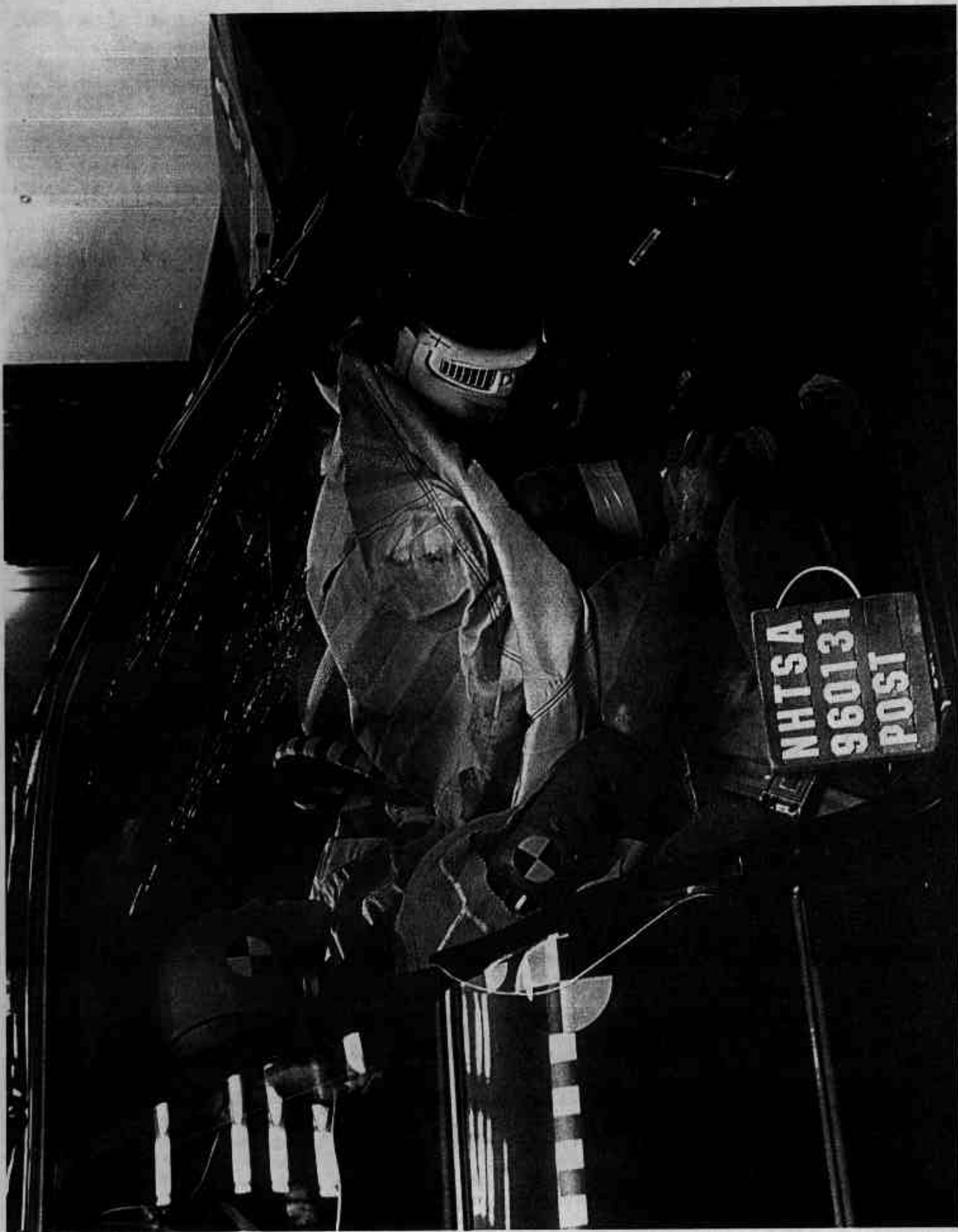


Figure A-35. Post-Test Passenger Dummy & Vehicle Interior - View 1

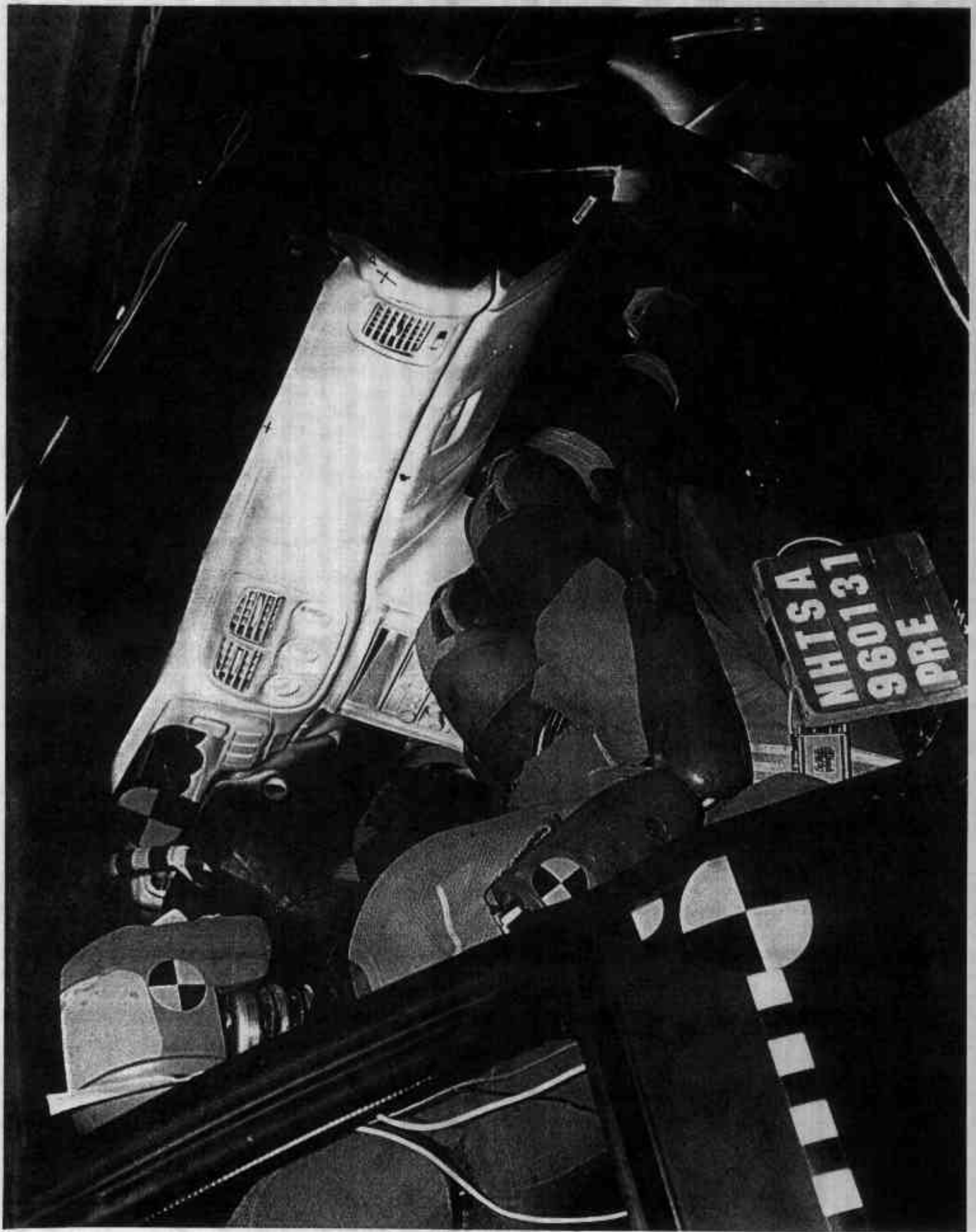


Figure A-36. Pre-Test Passenger Dummy & Vehicle Interior - View 2



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

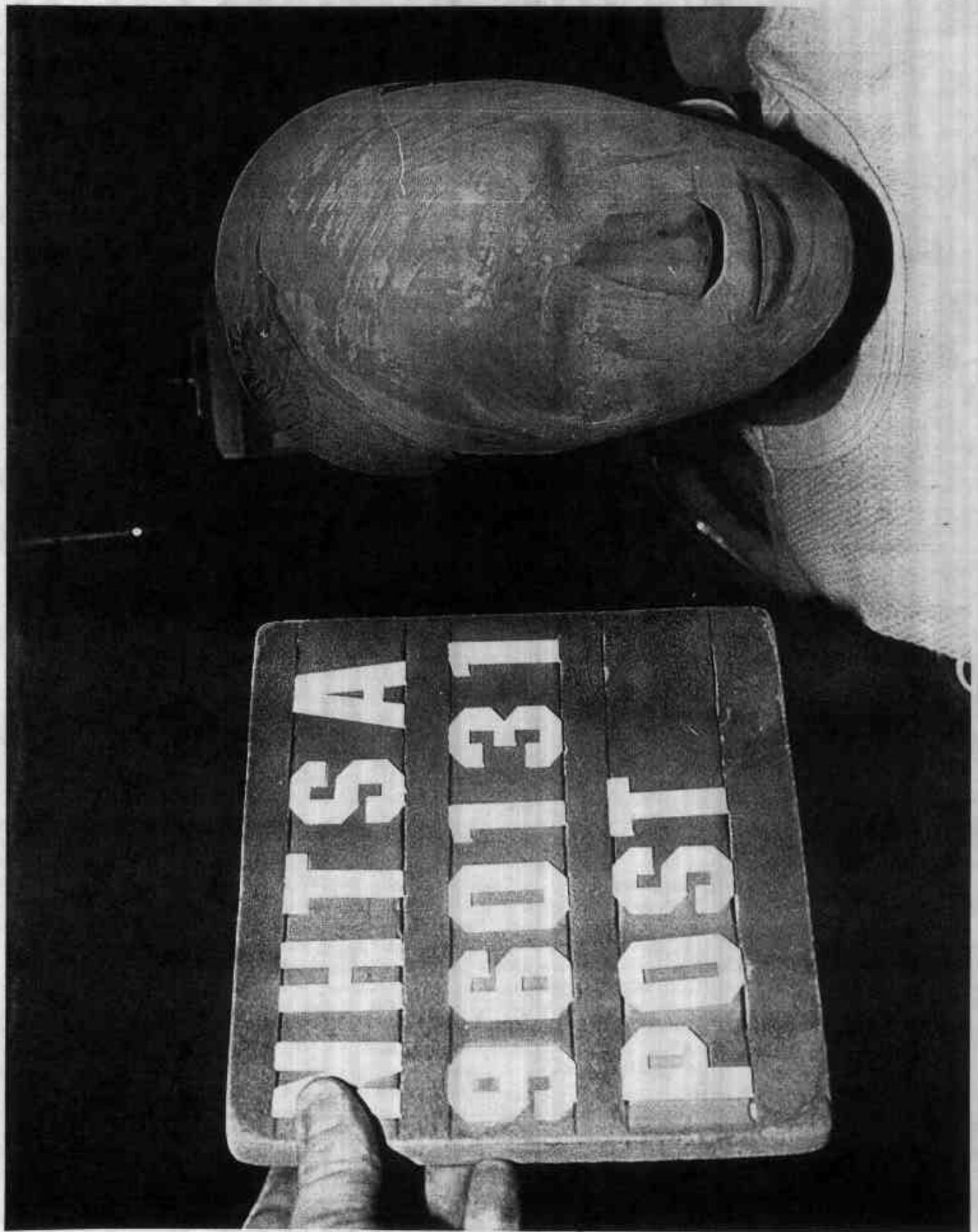


Figure A-38. Post-Test Driver Dummy Head Contact - View 1



Figure A-39. Post-Test Driver Dummy Head Contact - View 2

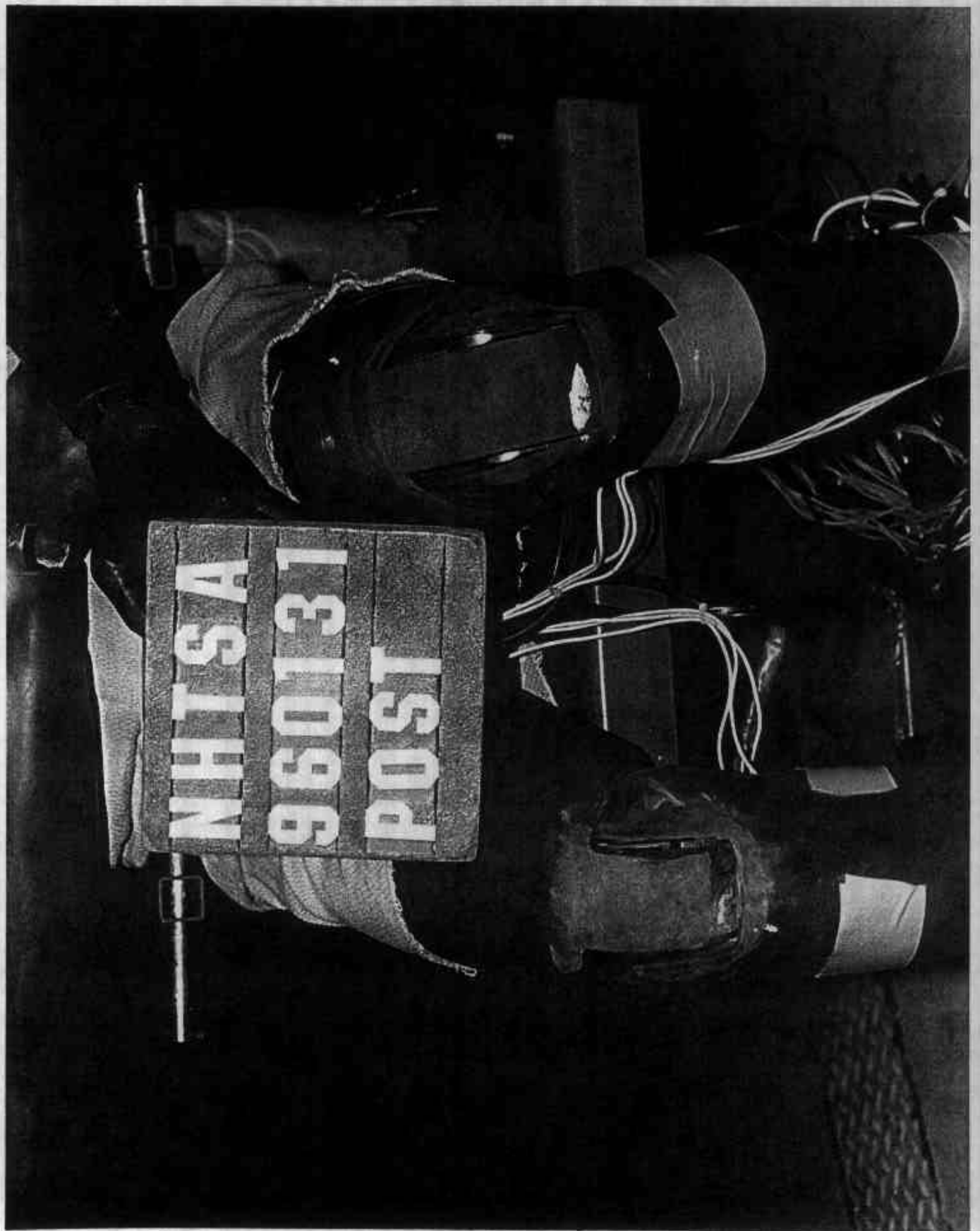


Figure A-40. Post-Test Driver Dummy Knee Contact - View 1



Figure A-41. Post-Test Driver Dummy Knee Contact - View 2

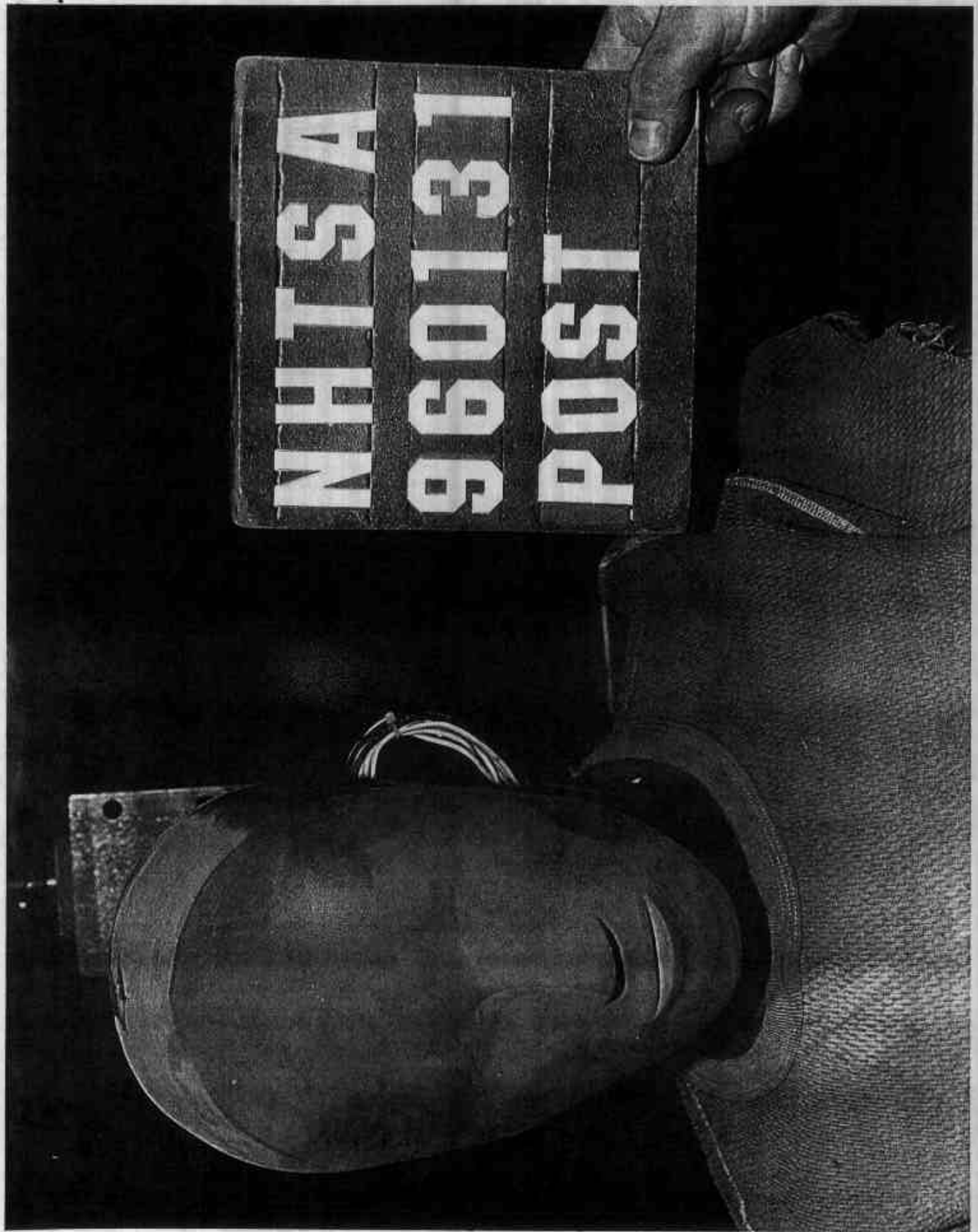


Figure A-42. Post-Test Passenger Dummy Head Contact - View 1



Figure A-43. Post-Test Passenger Dummy Head Contact - View 2

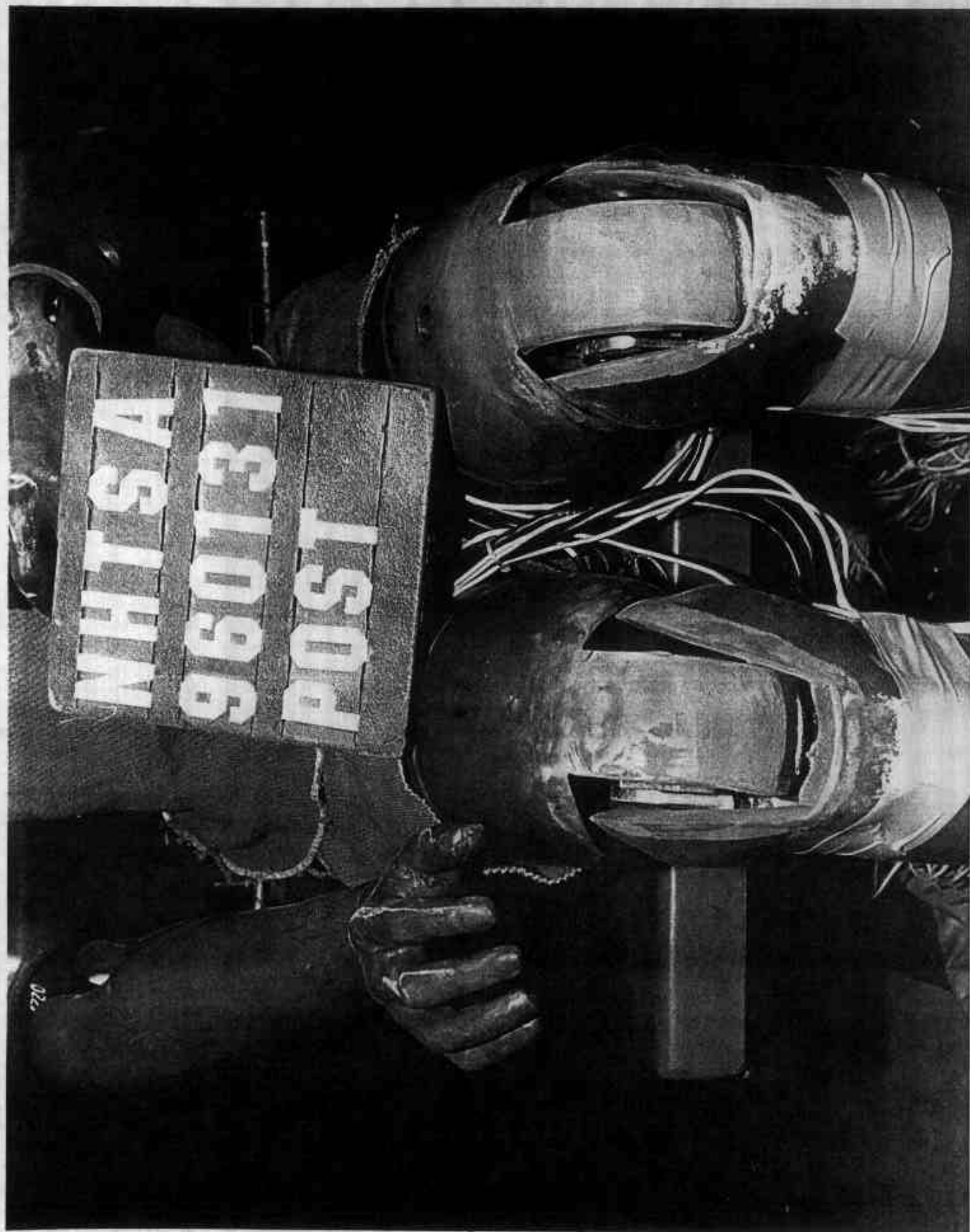
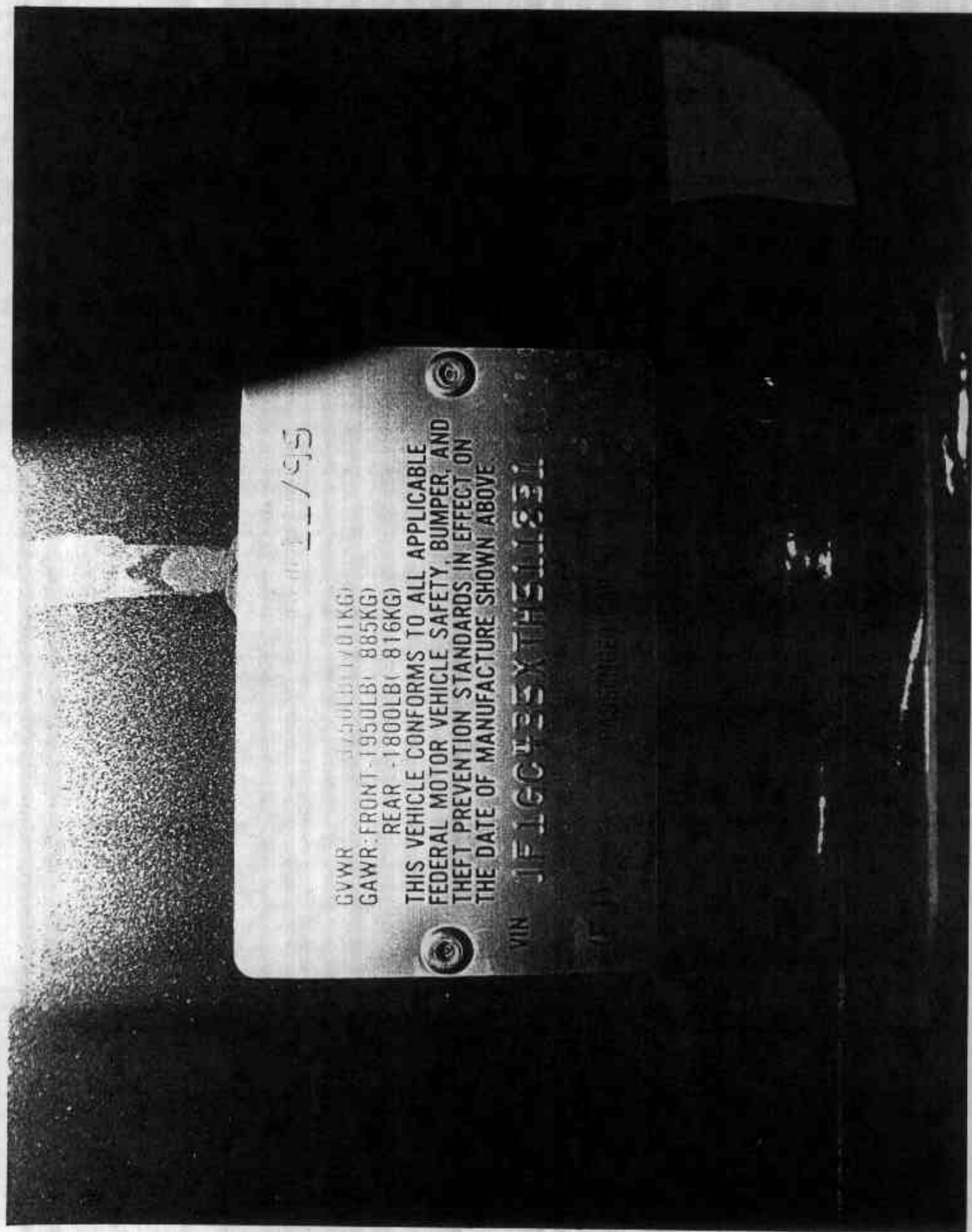


Figure A-44. Post-Test Passenger Dummy Knee Contact - View 1



Figure A-45. Post-Test Passenger Dummy Knee Contact - View 2



011/95

GVWR 3750LB (1701KG)
GAWR: FRONT-1950LB (885KG)
REAR -1800LB (816KG)

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

VIN JF16C435XTH5111831

Figure A-46. Pre-Test Vehicle Certification Label View

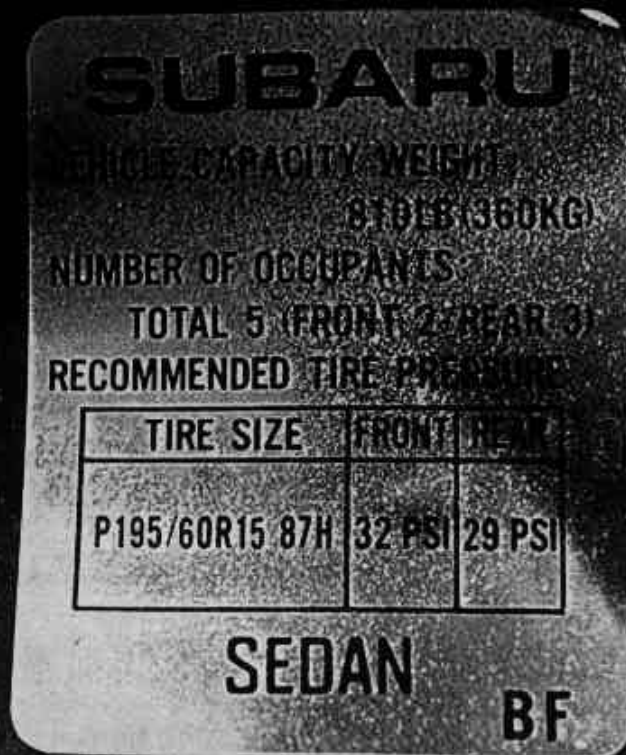


Figure A-47. Pre-Test Recommended Tire Pressure Label View

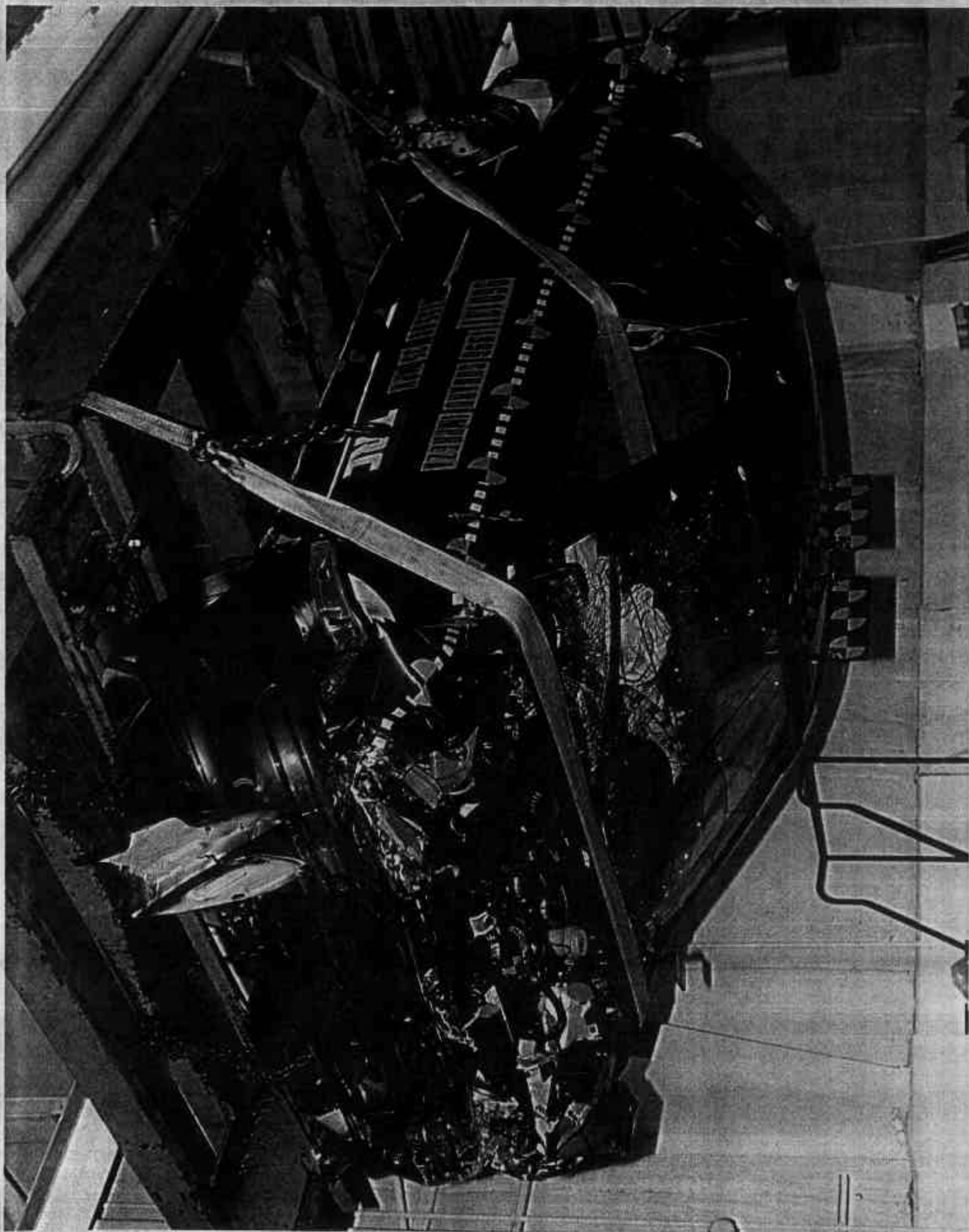


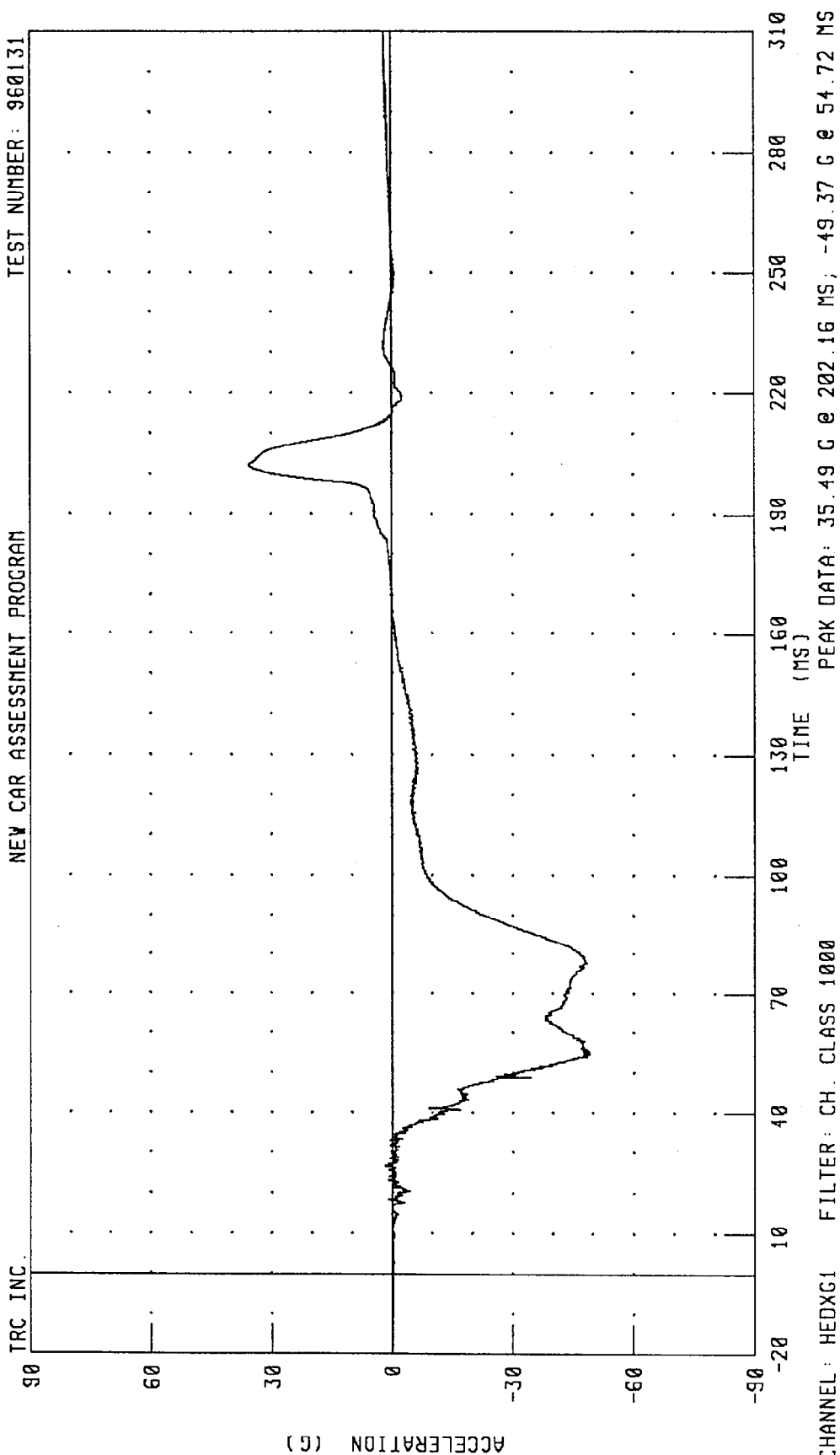
Figure A-48. Post-Test Vehicle on Static Rollover Machine View

Appendix B

Data Plots

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

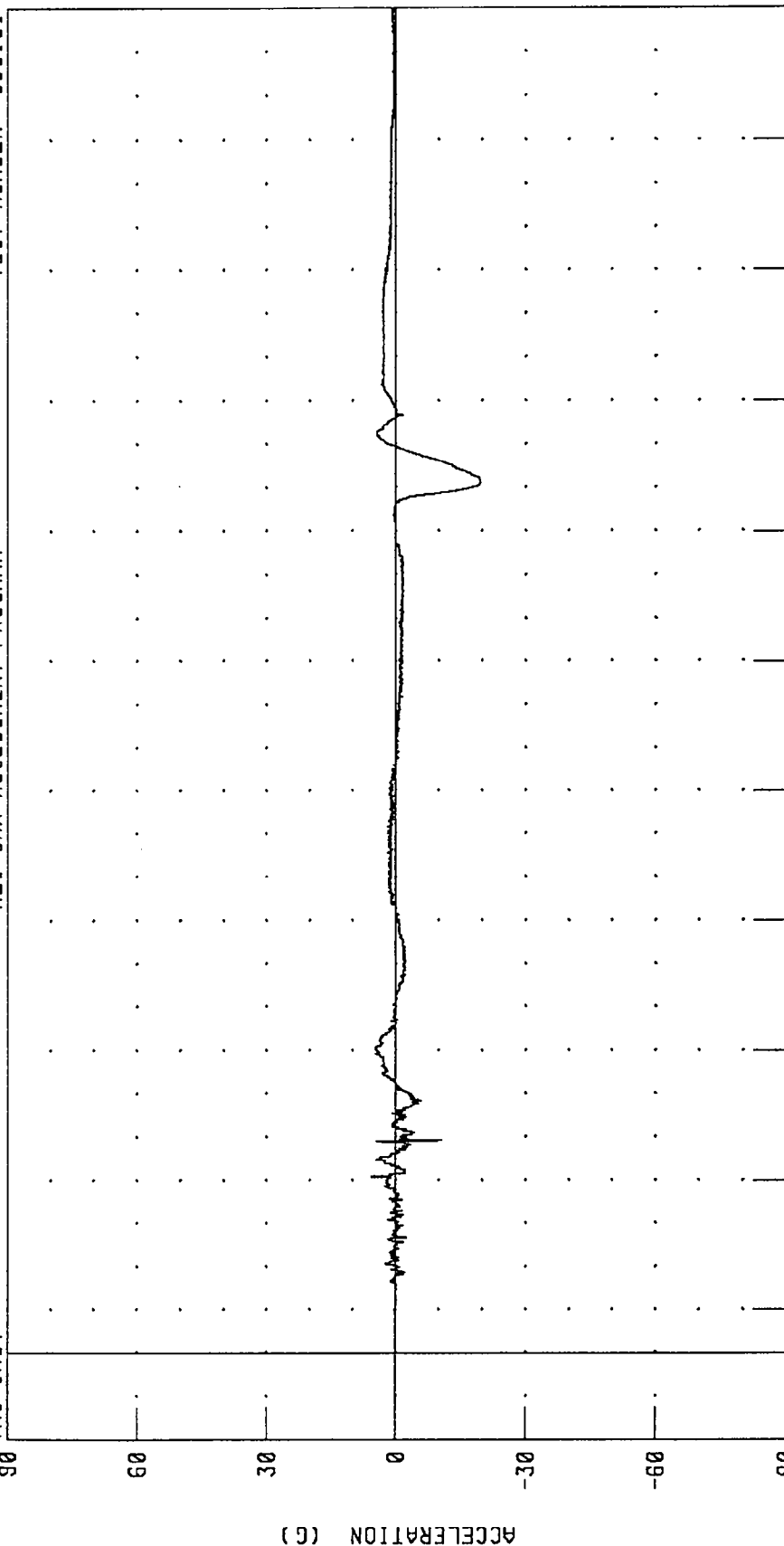
TEST NUMBER: 960131



1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Y-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



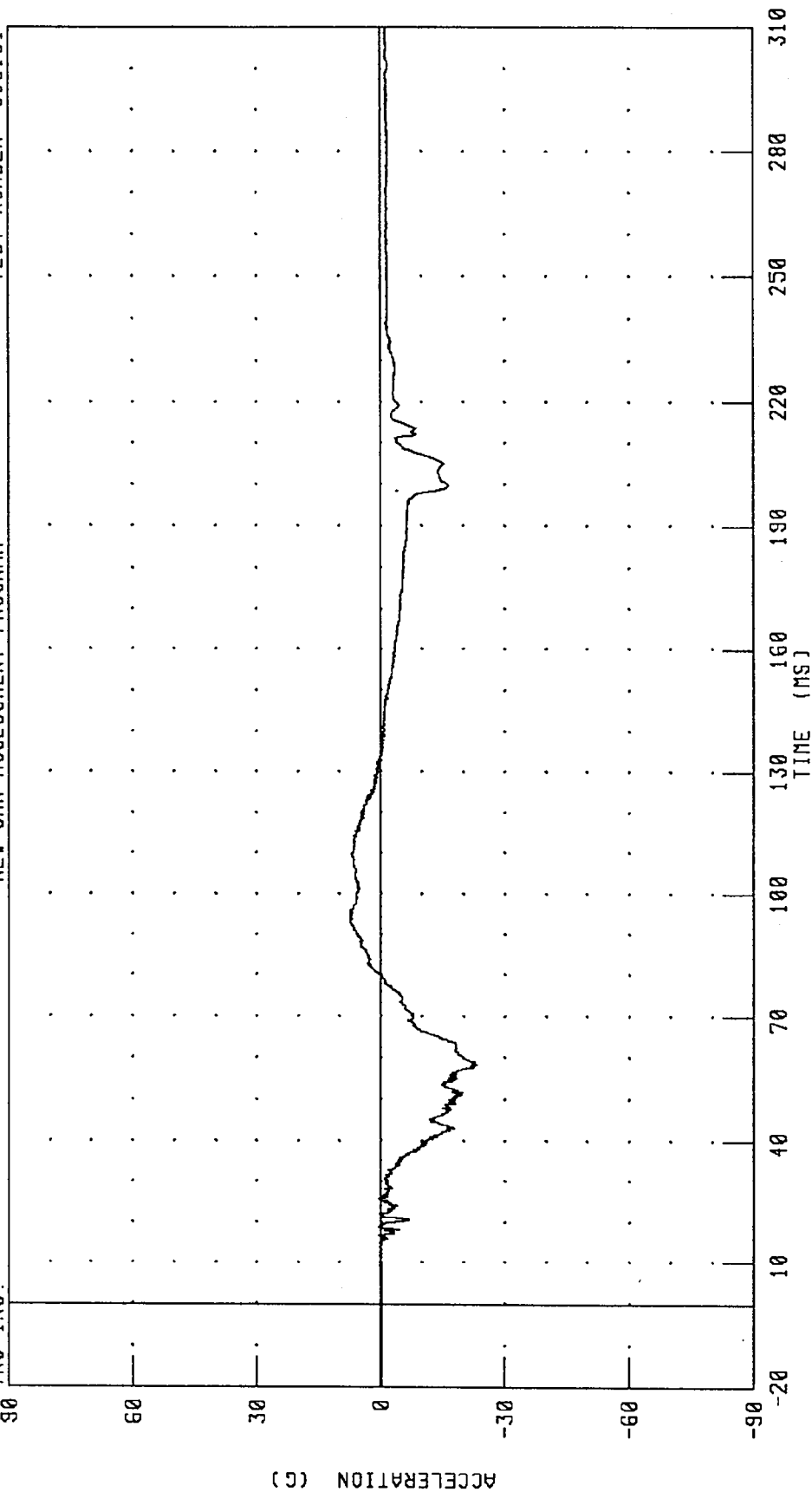
PEAK DATA: 5.64 G @ 40.88 MS; -19.58 G @ 201.12 MS

CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Z-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



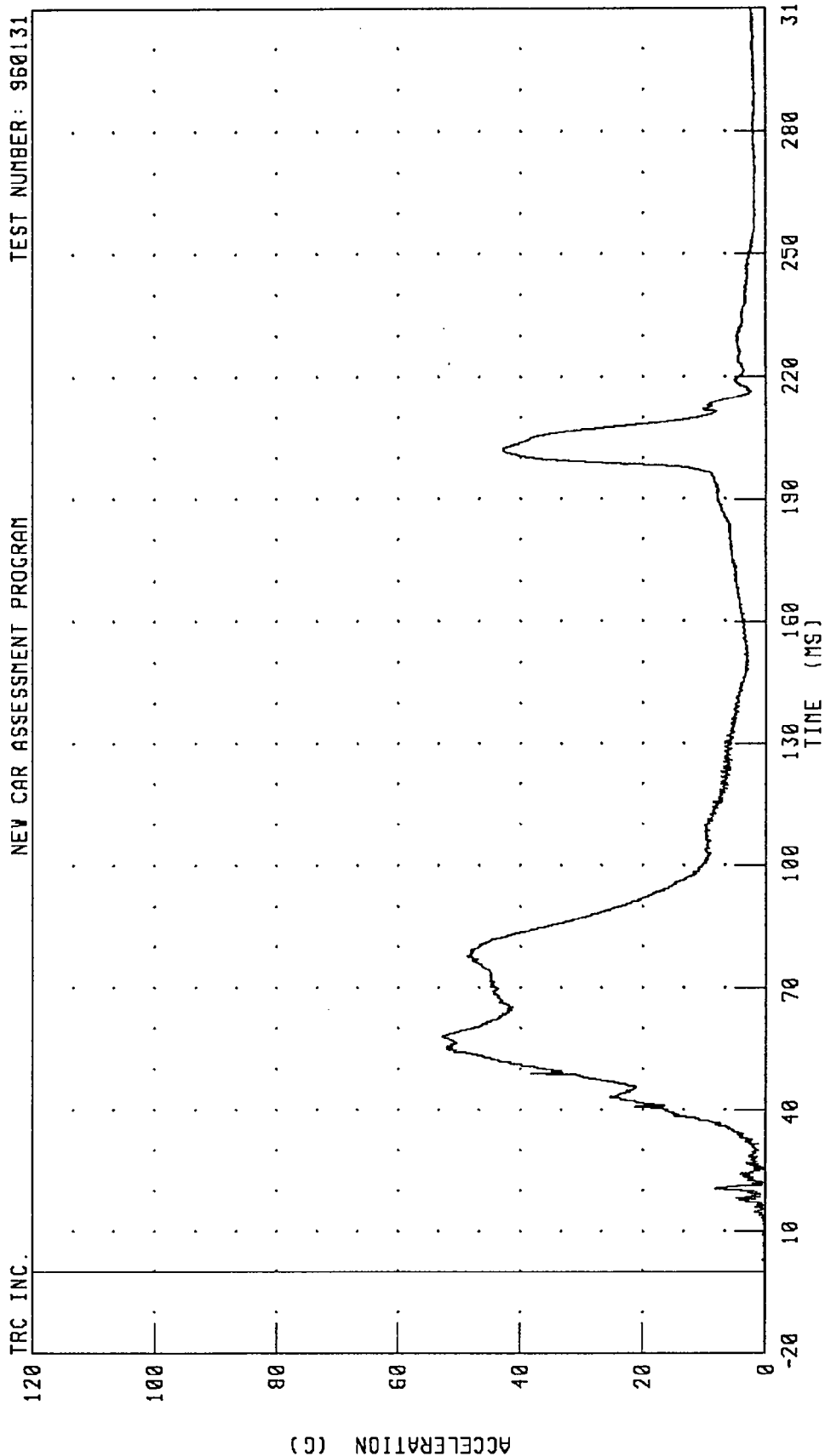
PEAK DATA: 7.50 G @ 93.36 MS; -23.39 G @ 58.24 MS

CHANNEL: HEDZG1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD RESULTANT ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



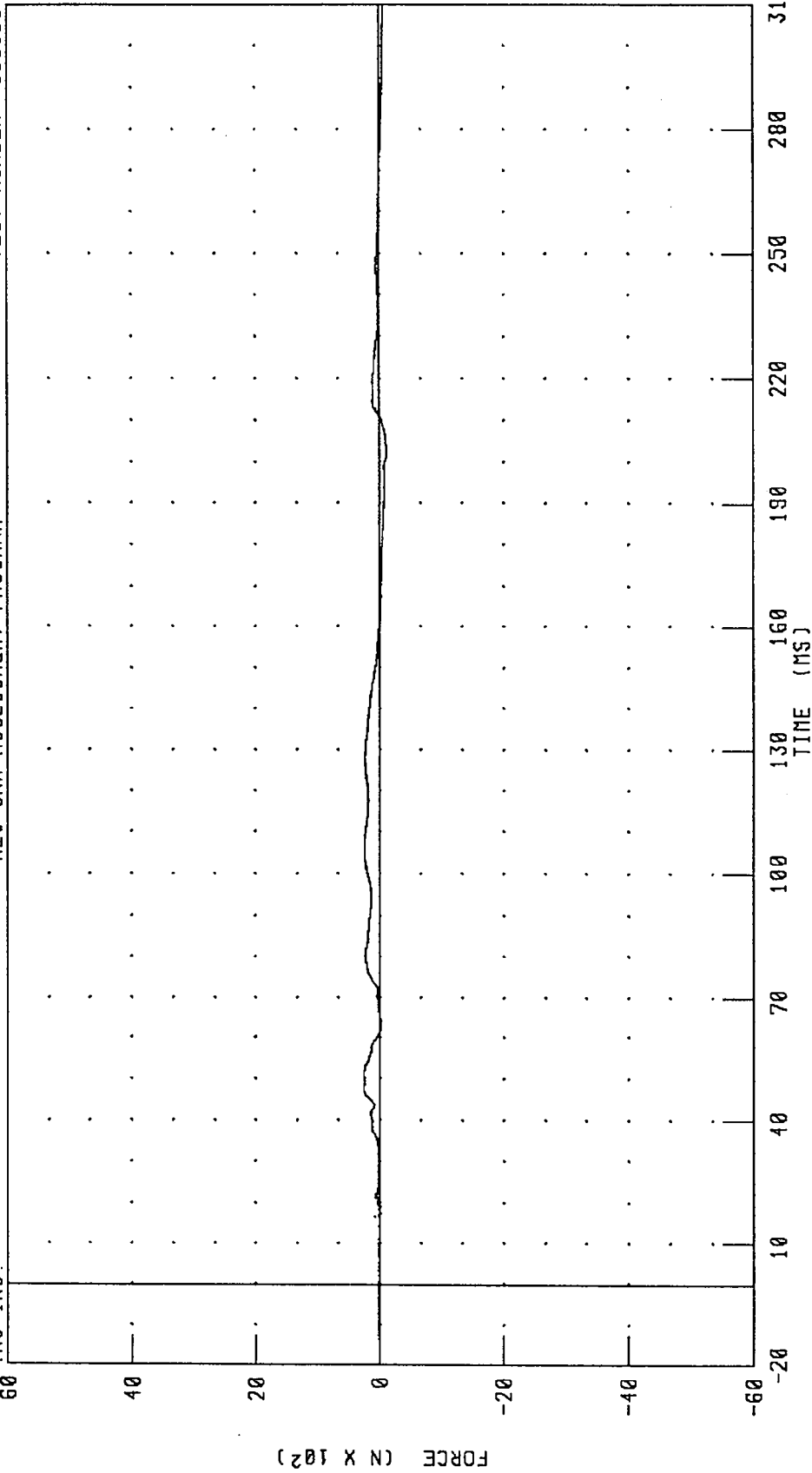
PEAK DATA: 52.80 G @ 58.08 MS; 0.12 G @ -19.28 MS

CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK X-AXIS SHEAR FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

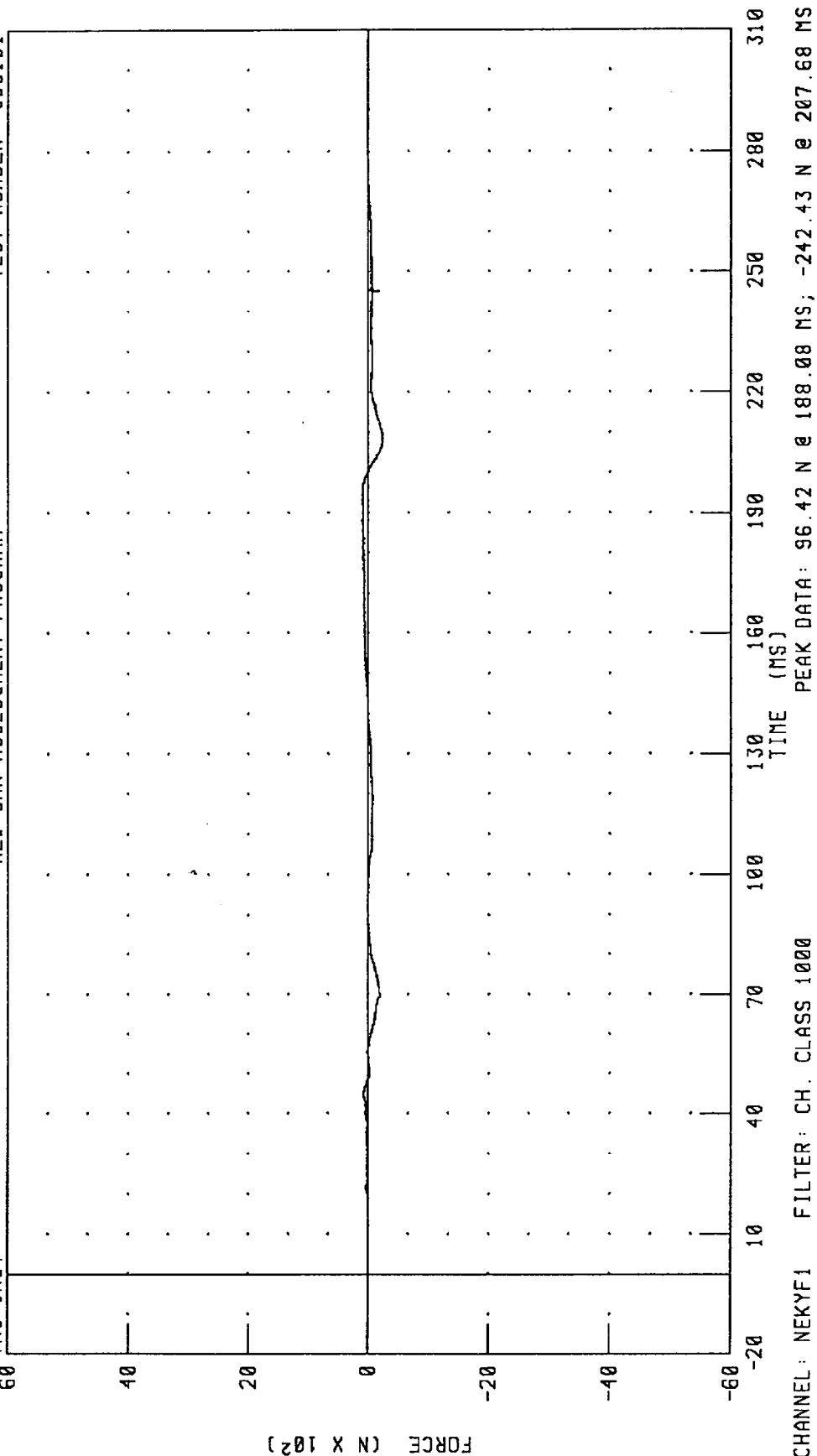


CHANNEL: NEKXF1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK Y-AXIS SHEAR FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

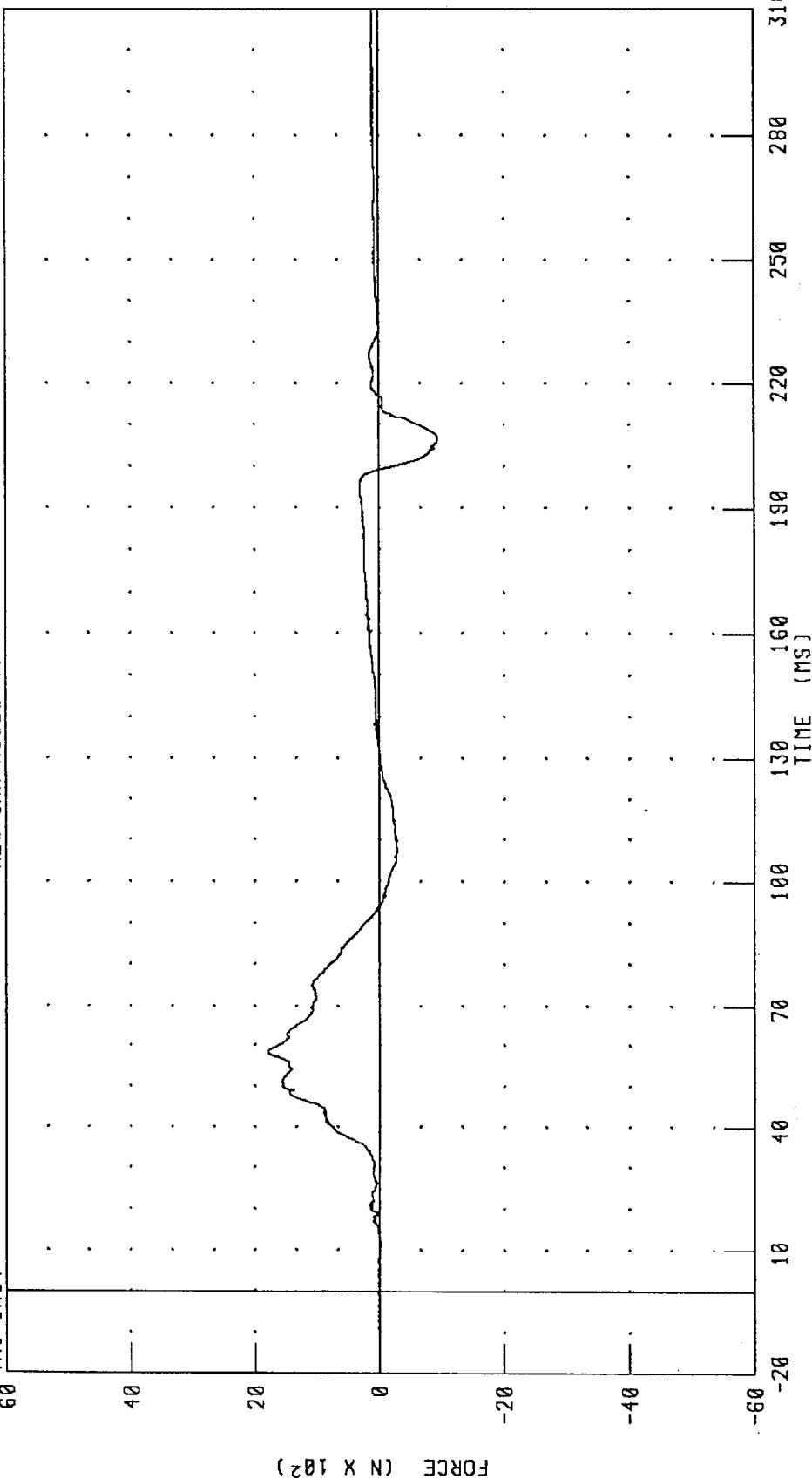


CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK Z-AXIS AXIAL FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



PEAK DATA: 1797.59 N @ 58.08 MS; -941.75 N @ 206.32 MS

CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT X AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

180

120

60

0

-60

-120

-180

TORQUE (N·M)

310

280

250

220

190

160

130

100

70

40

10

-20

TIME (MS)

PEAK DATA: 6.99 N·M @ 235.52 MS; -23.86 N·M @ 209.36 MS

CHANNEL: NEKXM1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT Y AXIS
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

180

120

60

0

-60

-120

-180

TORQUE (N·M)

TIME (MS)
 310 280 250 220 190 160 130 100 70 40 10 -20

PEAK DATA: 24.66 N·M @ 118.88 MS; -24.12 N·M @ 214.16 MS

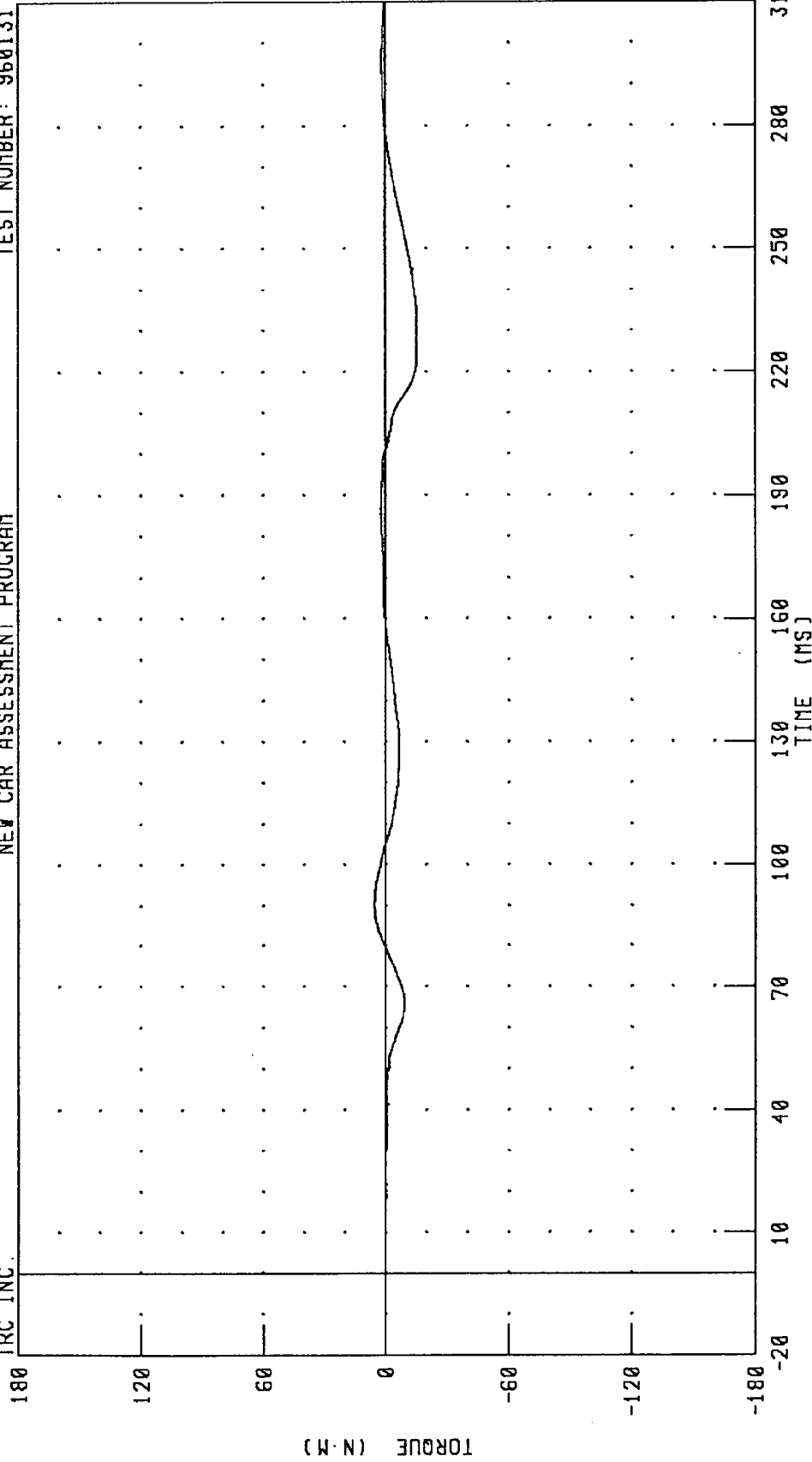
CHANNEL: NEKYM1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



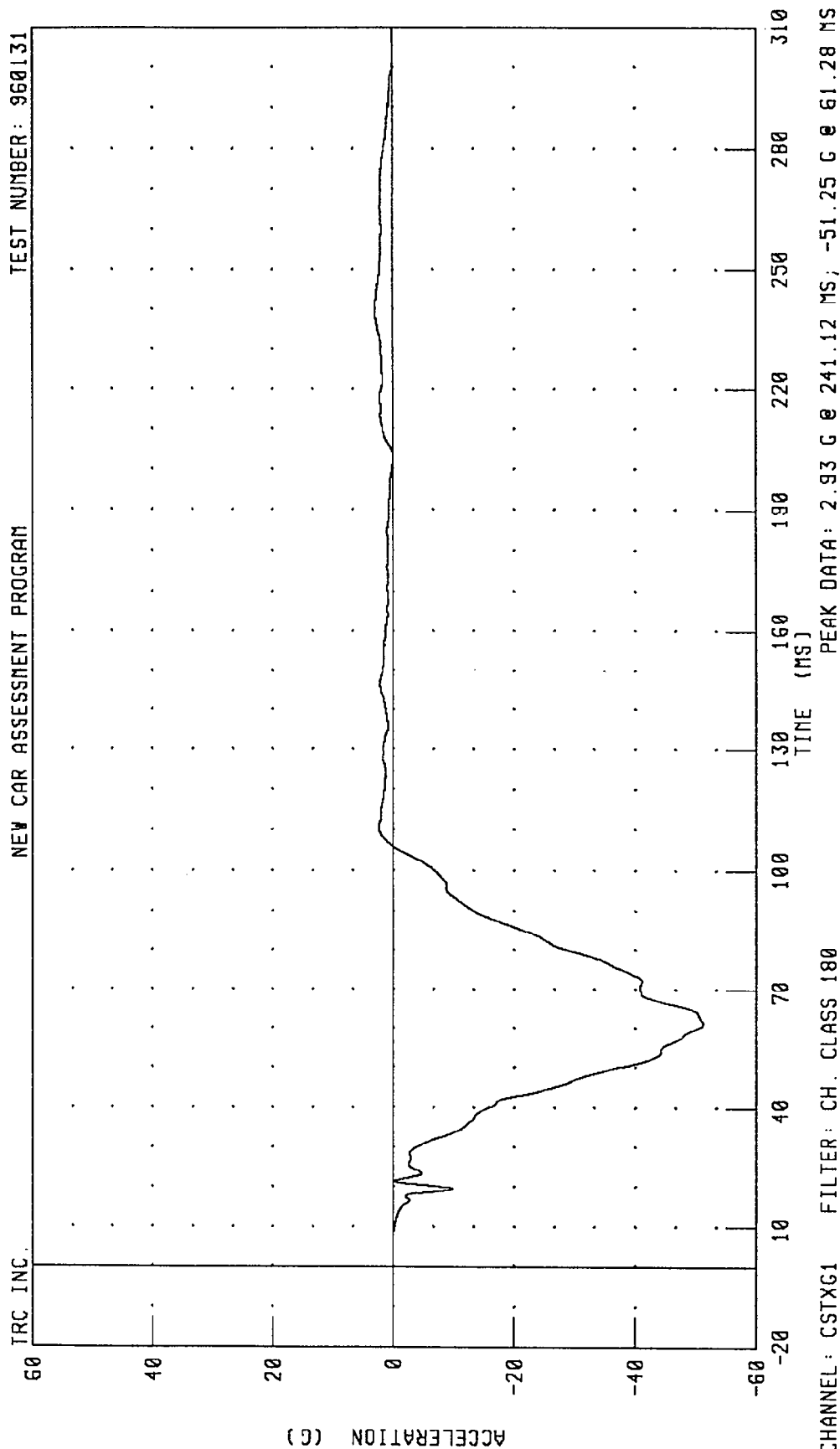
PEAK DATA: 5.47 N·M @ 90.64 MS; -15.23 N·M @ 222.40 MS

CHANNEL: NEKZM1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



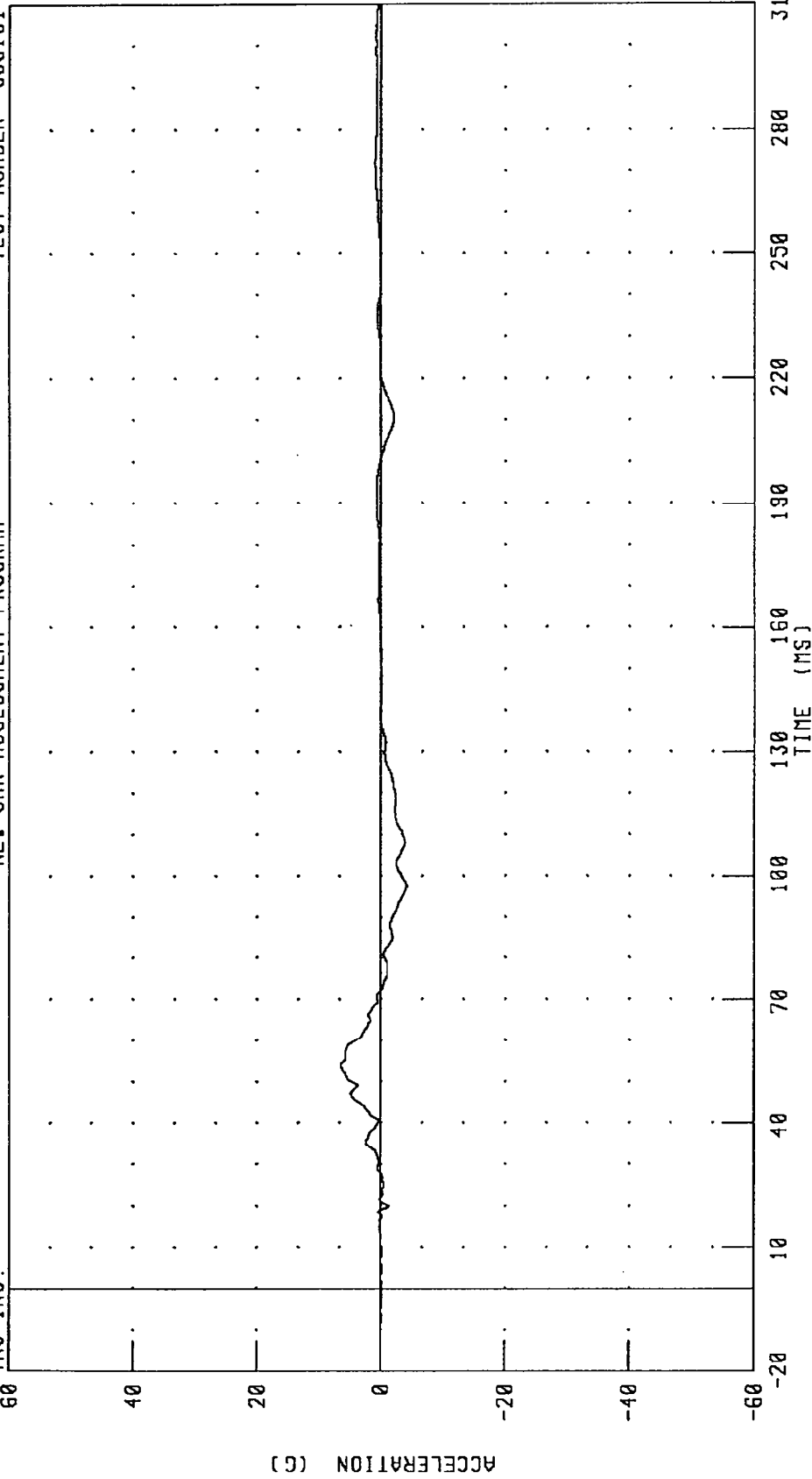
CHANNEL: CSTXG1 FILTER: CH. CLASS 180

PEAK DATA: 2.93 G @ 241.12 MS; -51.25 G @ 61.28 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Y-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



PEAK DATA: 6.44 G @ 54.00 MS; -4.16 G @ 97.68 MS

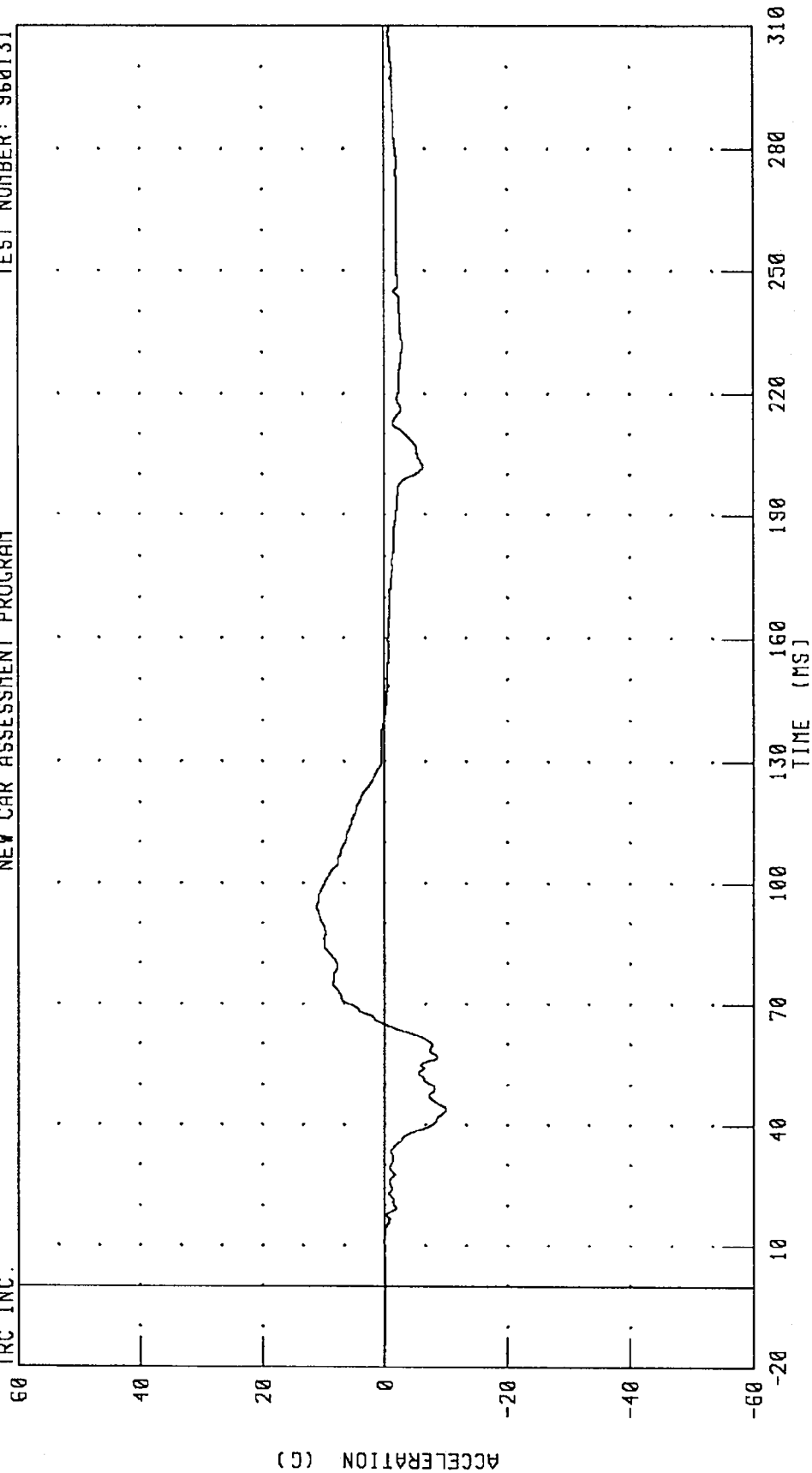
CHANNEL: CSTYG1 FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: CSTZG1 FILTER: CH. CLASS 180

PEAK DATA: 11.15 G @ 94.00 MS; -10.00 G @ 43.84 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST RESULTANT ACCELERATION

TEST NUMBER: 960131

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

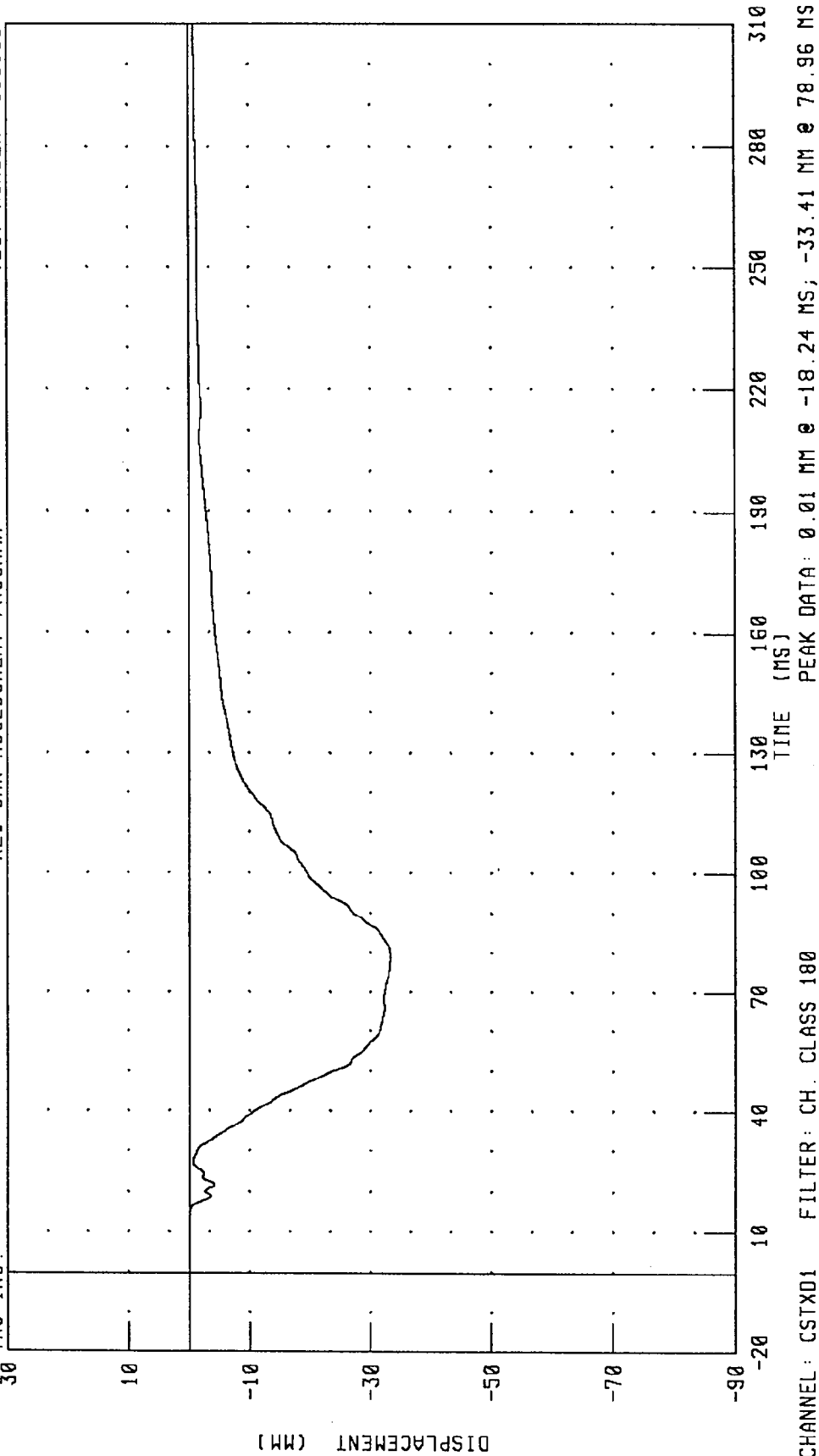
PEAK DATA: 51.77 G @ 61.12 MS; 0.01 G @ -20.00 MS

CHANNEL: CSTRG1 FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST DEFLECTION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



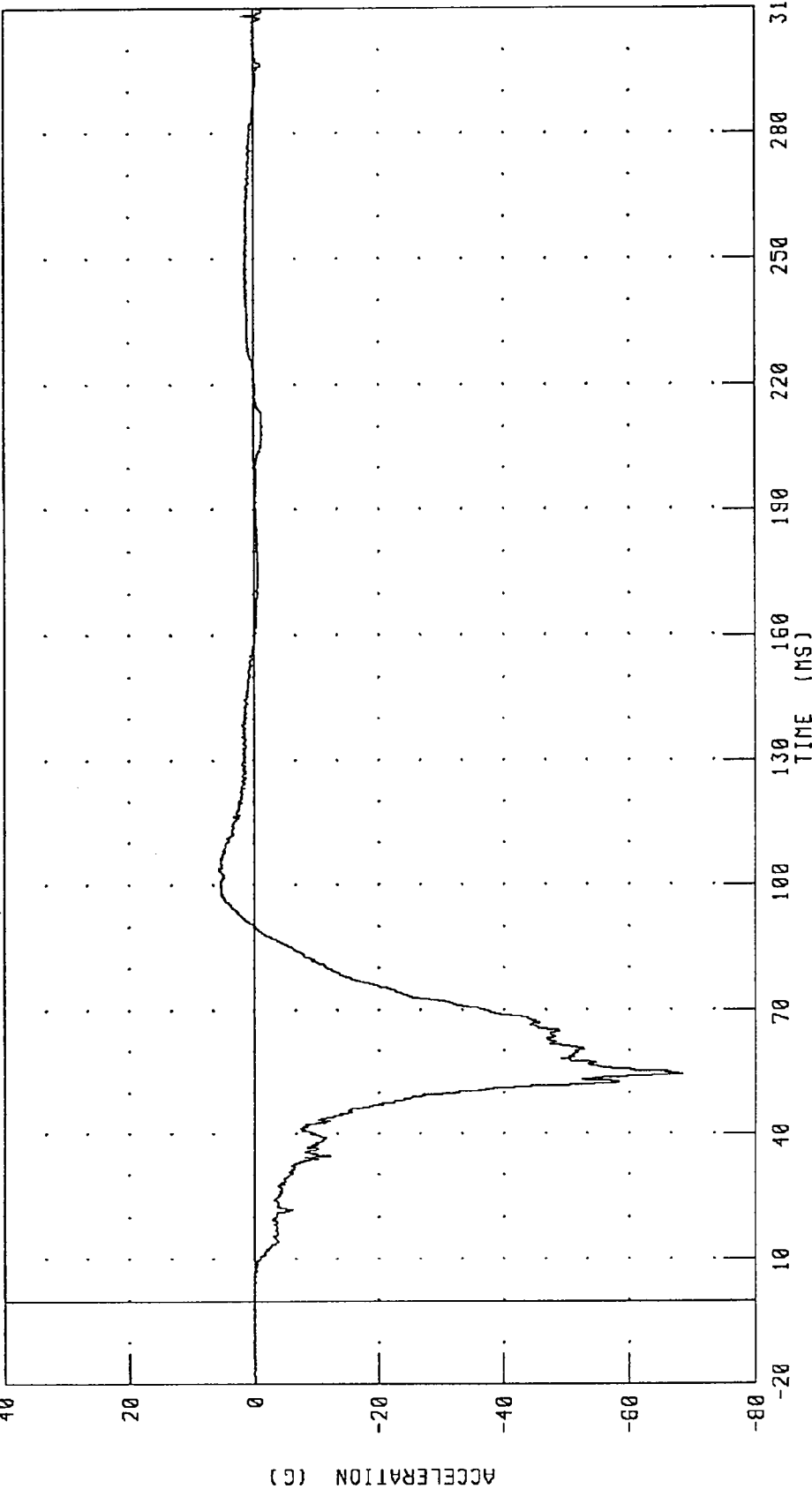
CHANNEL: CSTXD1 FILTER: CH. CLASS 180

PEAK DATA: 0.01 MM @ -18.24 MS; -33.41 MM @ 78.96 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER PELVIS X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



CHANNEL: PEVXG1 FILTER: CH. CLASS 1000

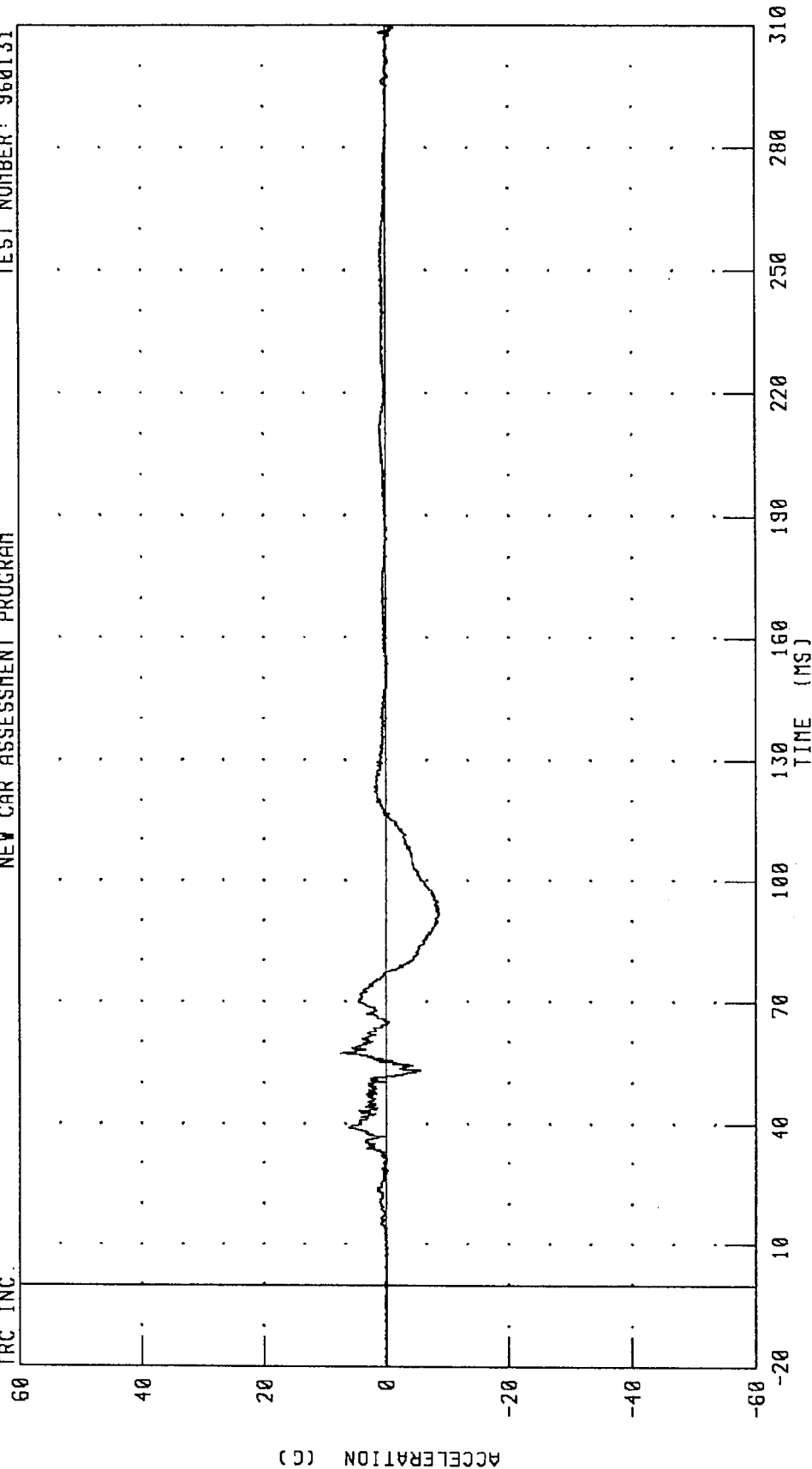
PEAK DATA: 5.69 G @ 103.60 MS; -68.47 G @ 54.48 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS Y-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 7.42 G @ 57.28 MS; -8.58 G @ 91.52 MS

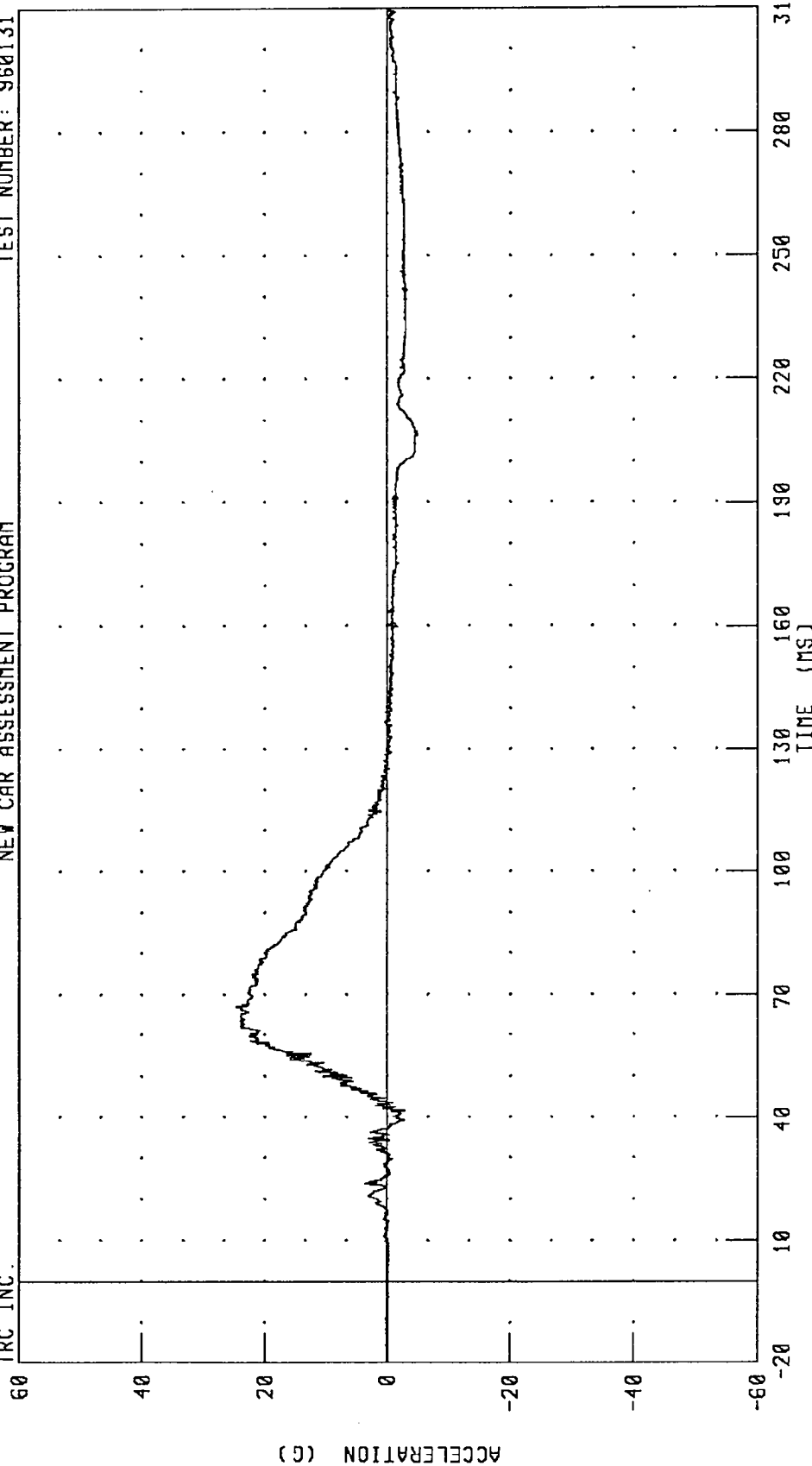
CHANNEL: PEVYG1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER PELVIS Z-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



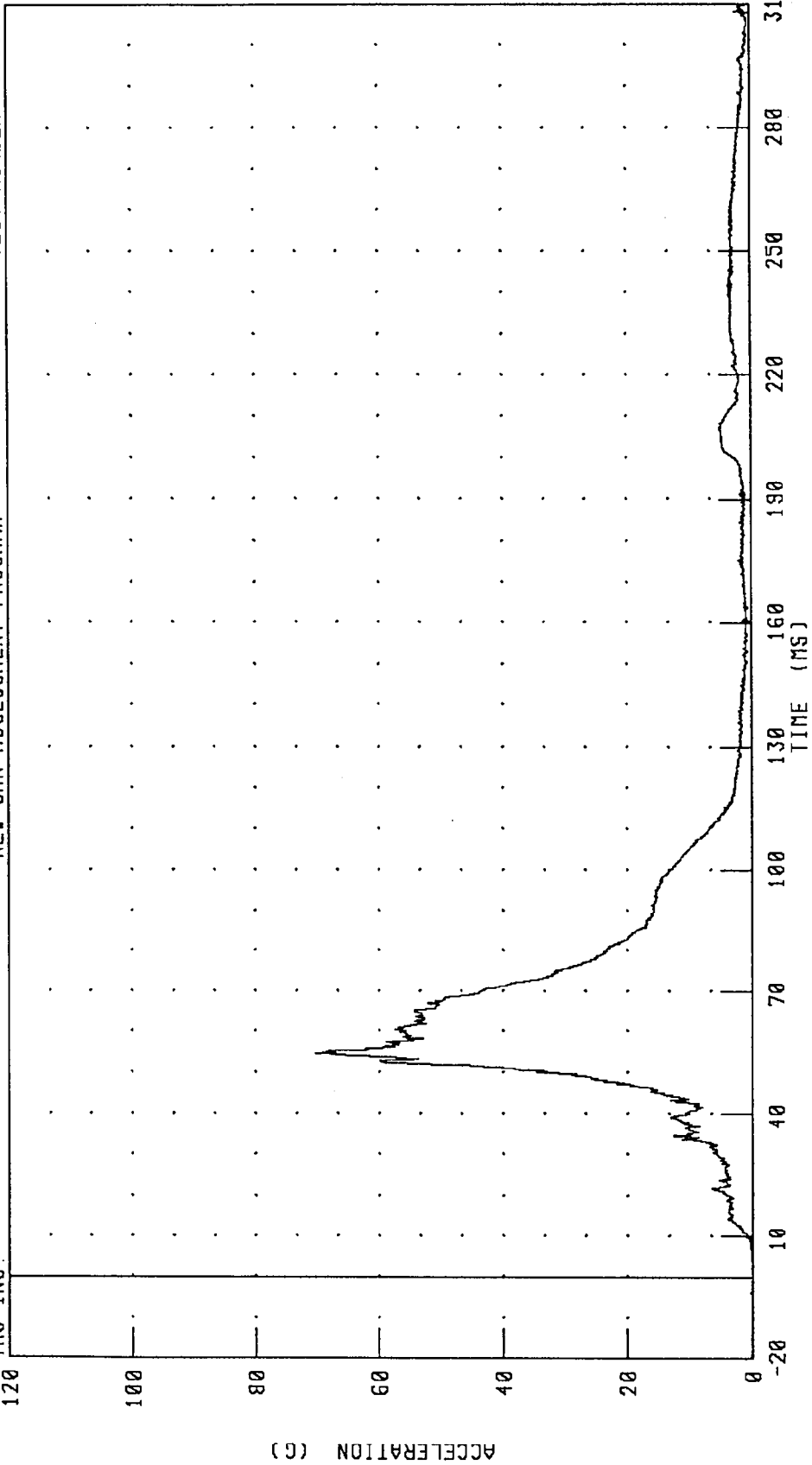
CHANNEL: PEVZG1 FILTER: CH. CLASS 1000

PEAK DATA: 24.71 G @ 66.96 MS; -4.82 G @ 206.32 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS RESULTANT ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.
120



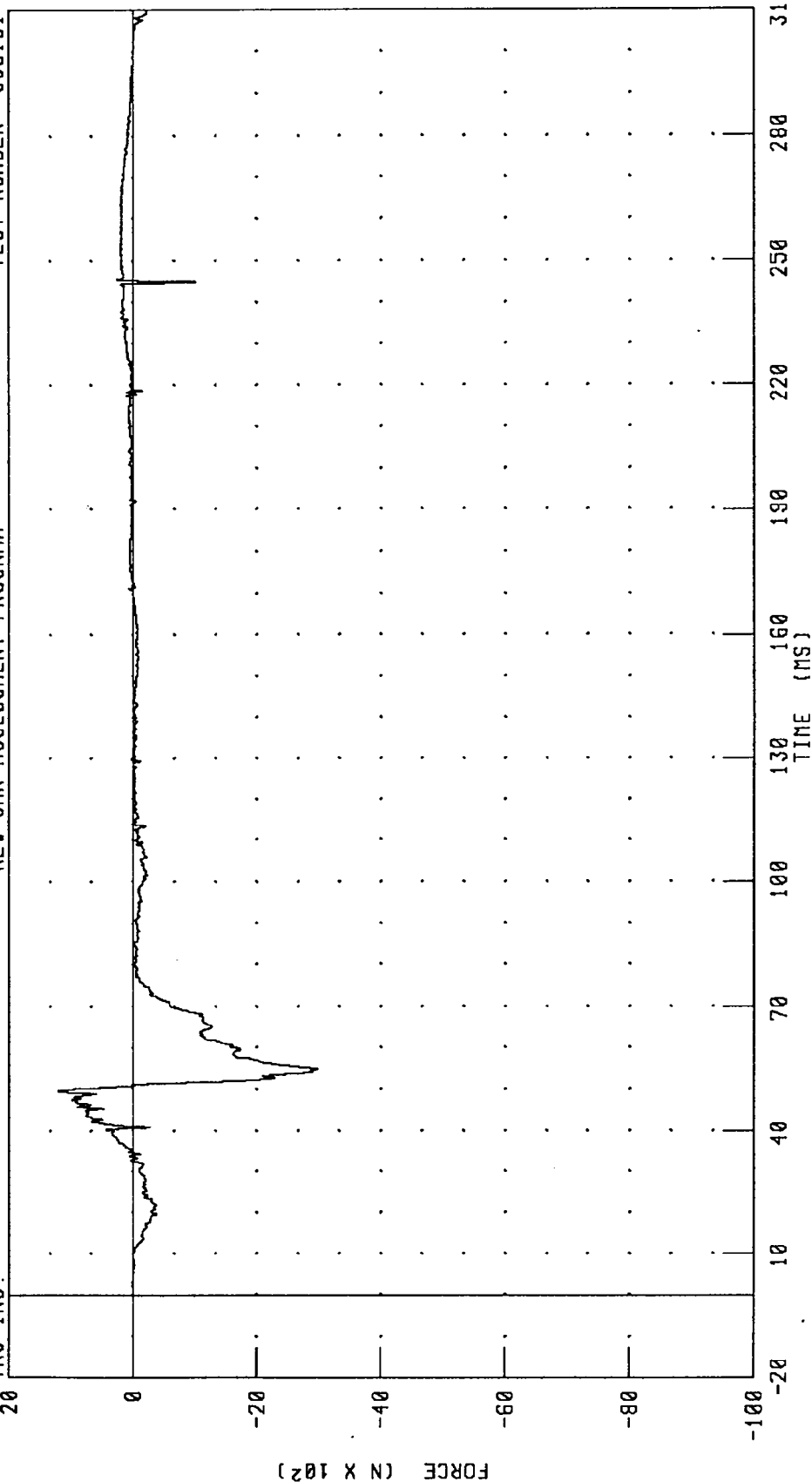
CHANNEL: PEVRG1 FILTER: CH. CLASS 1000

PEAK DATA: 70.30 G @ 54.48 MS; 0.13 G @ -20.00 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT FEMUR FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



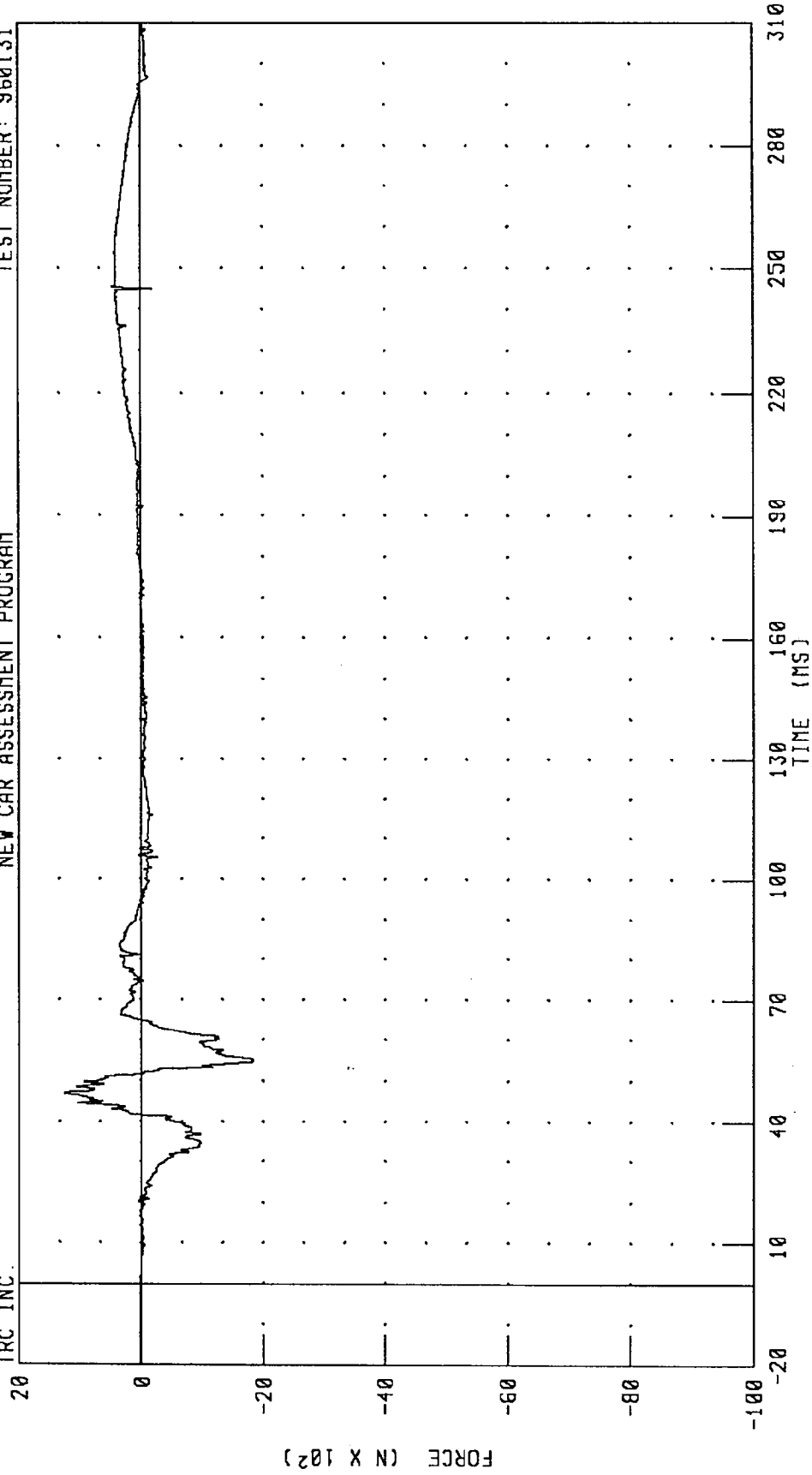
PEAK DATA: 1203.01 N @ 49.52 MS; -2980.92 N @ 54.80 MS

CHANNEL: LFMF1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT FEMUR FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



PEAK DATA: 1248.91 N @ 46.96 MS; -1833.72 N @ 54.96 MS

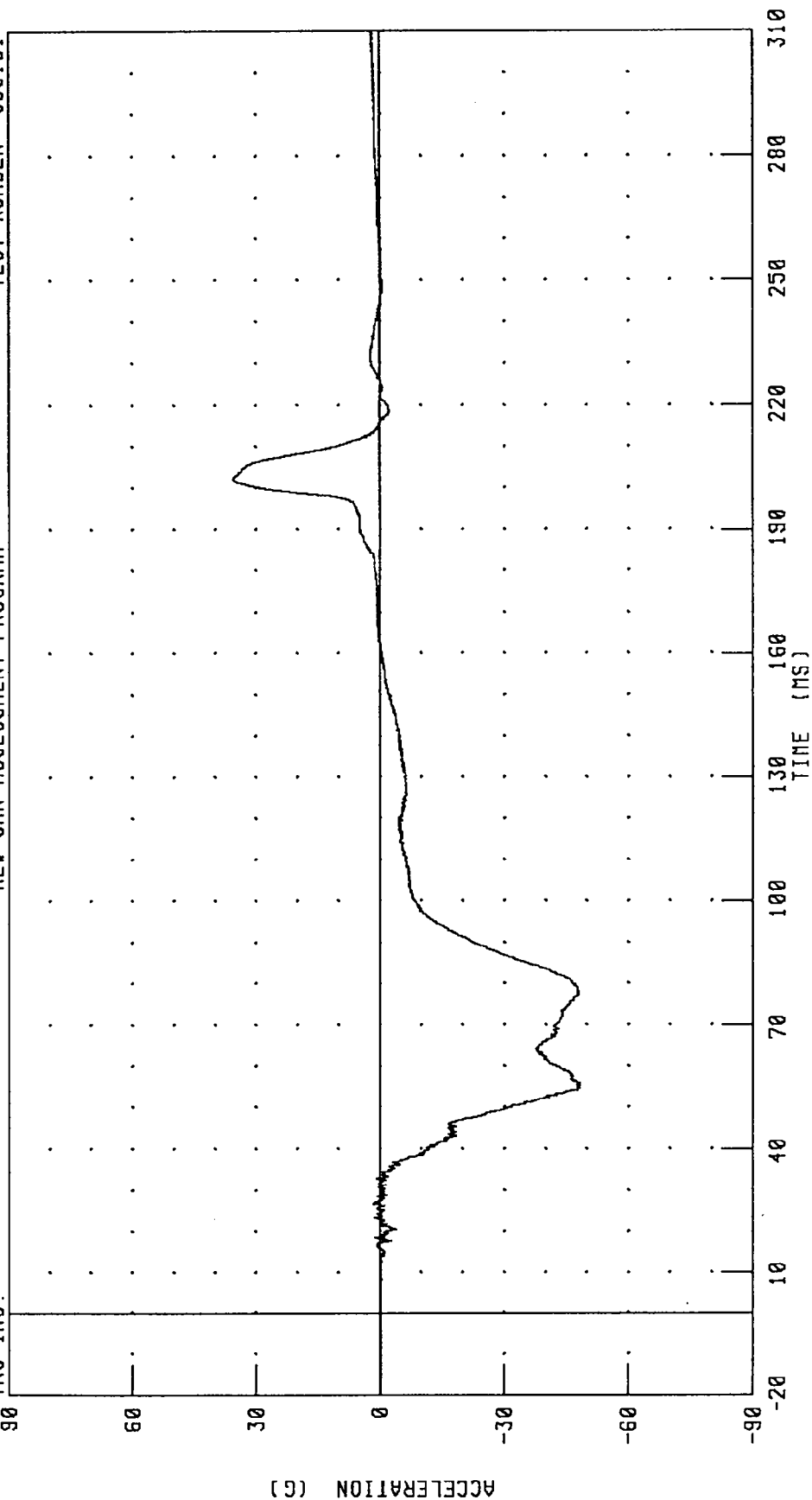
CHANNEL: RFMF1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD X-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: HEDXR1 FILTER: CH. CLASS 1000

PEAK DATA: 35.58 G @ 202.16 MS; -48.20 G @ 54.48 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90

60

30

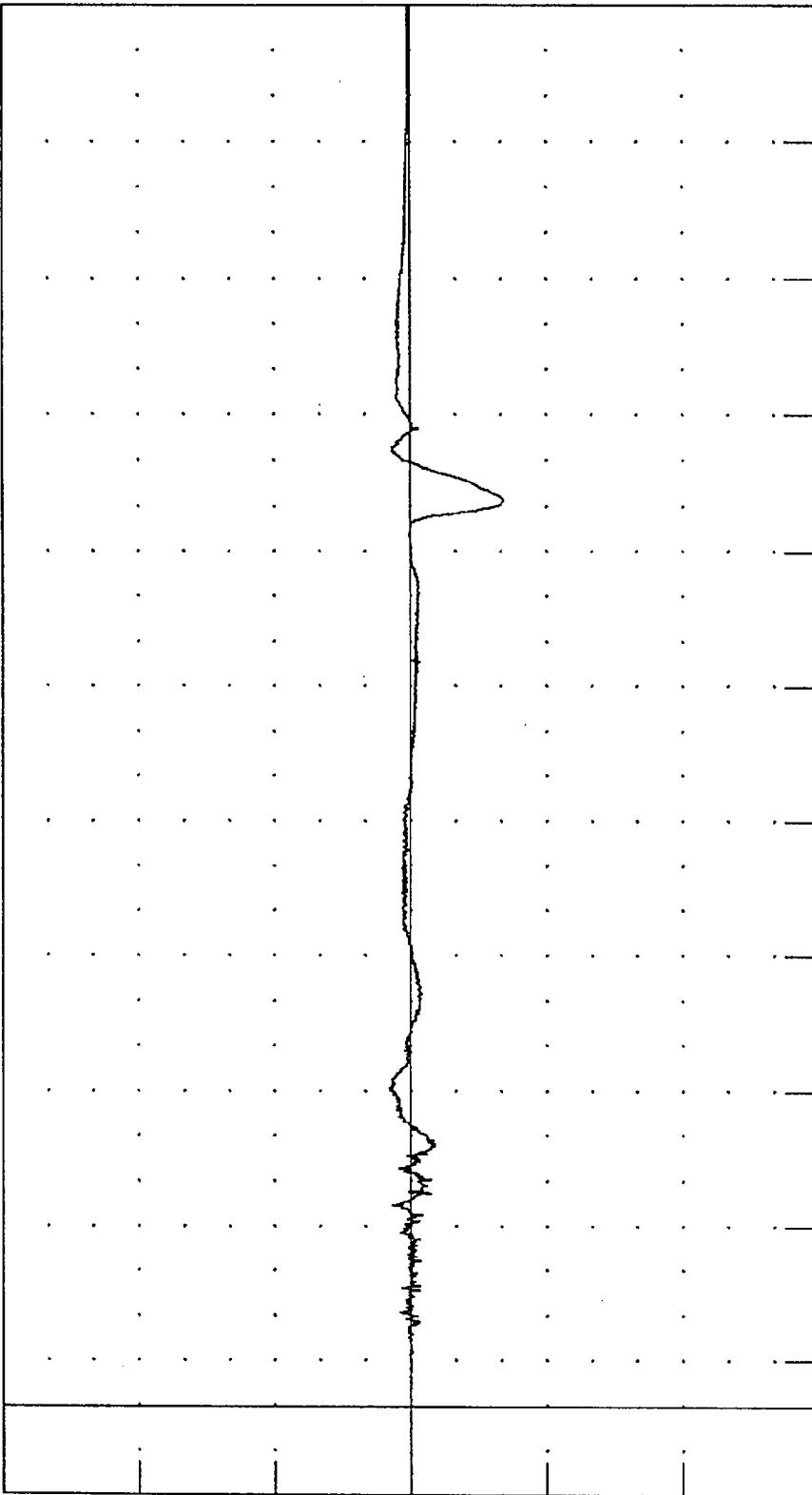
0

-30

-60

-90

ACCELERATION (G)



TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

PEAK DATA: 4.75 G @ 70.72 MS; -20.65 G @ 201.44 MS

CHANNEL: HEDYR1 FILTER: CH. CLASS 1000

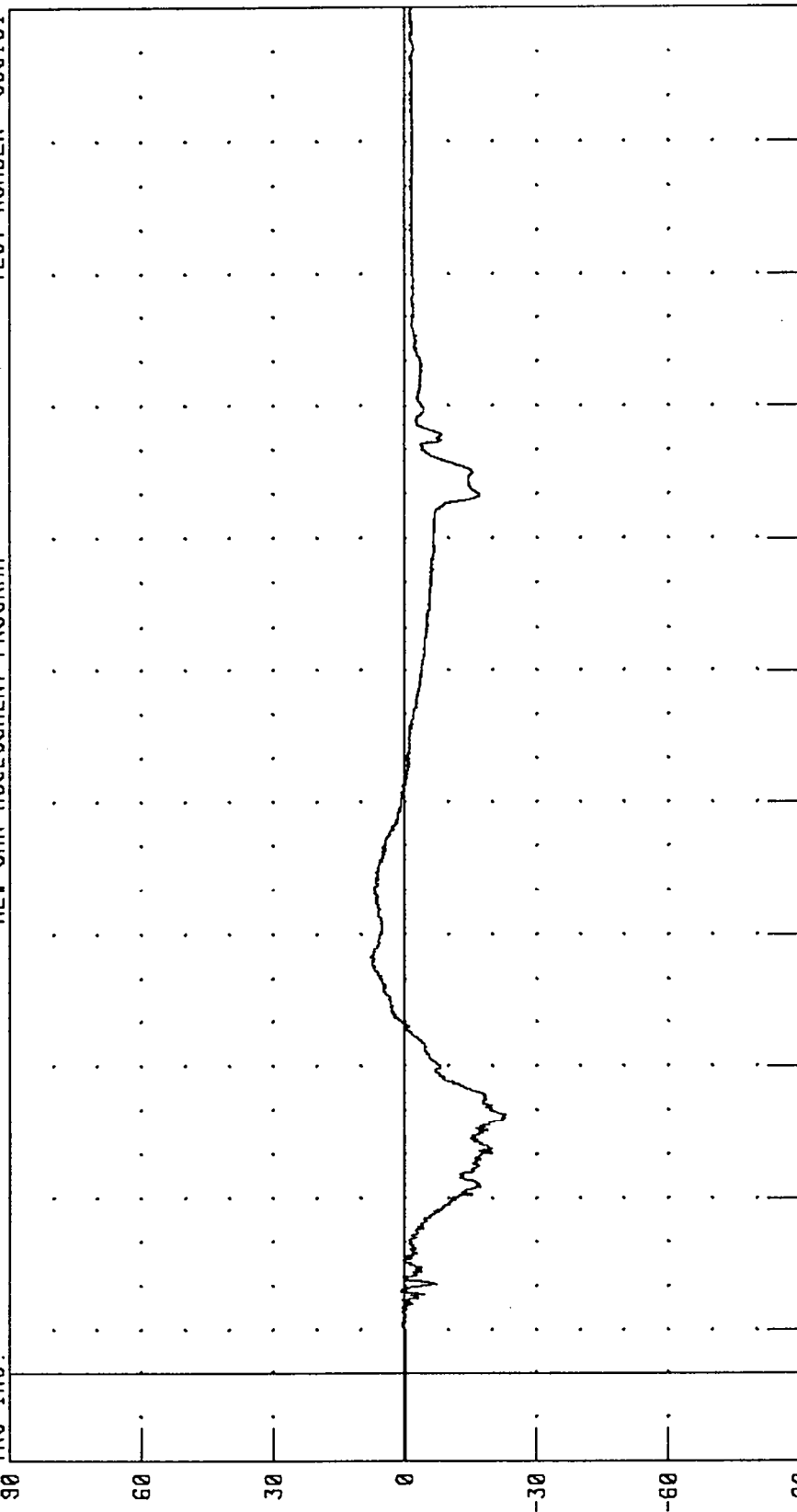
1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD Z-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90



PEAK DATA: 7.57 G @ 94.96 MS; -22.84 G @ 58.24 MS

CHANNEL: HEDZR1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

120

100

80

60

40

20

0

ACCELERATION (G)

-20

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

CHANNEL: HEDRRI FILTER: CH. CLASS 1000

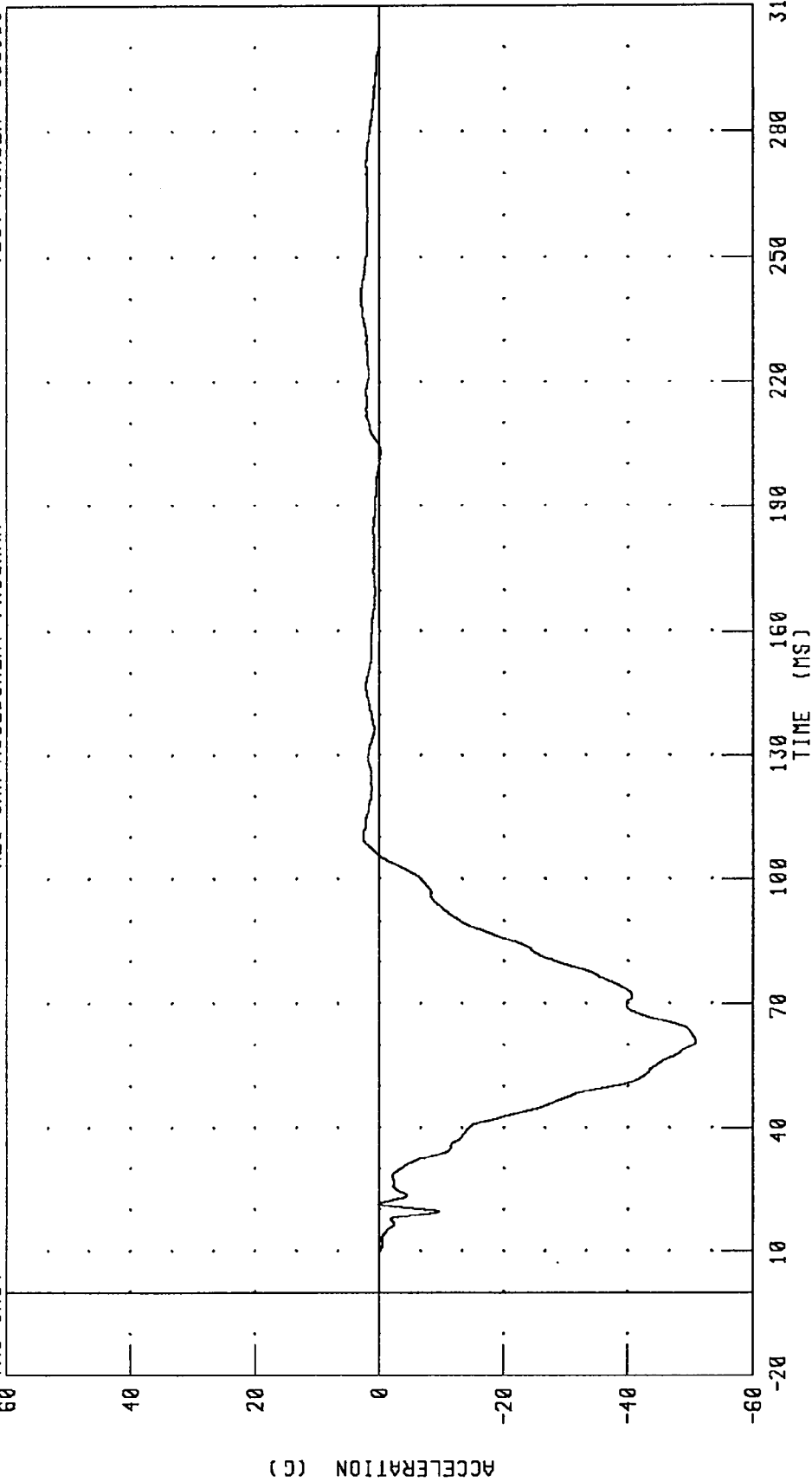
PEAK DATA: 51.62 G @ 57.92 MS; 0.16 G @ -17.76 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST X-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

IRC INC.



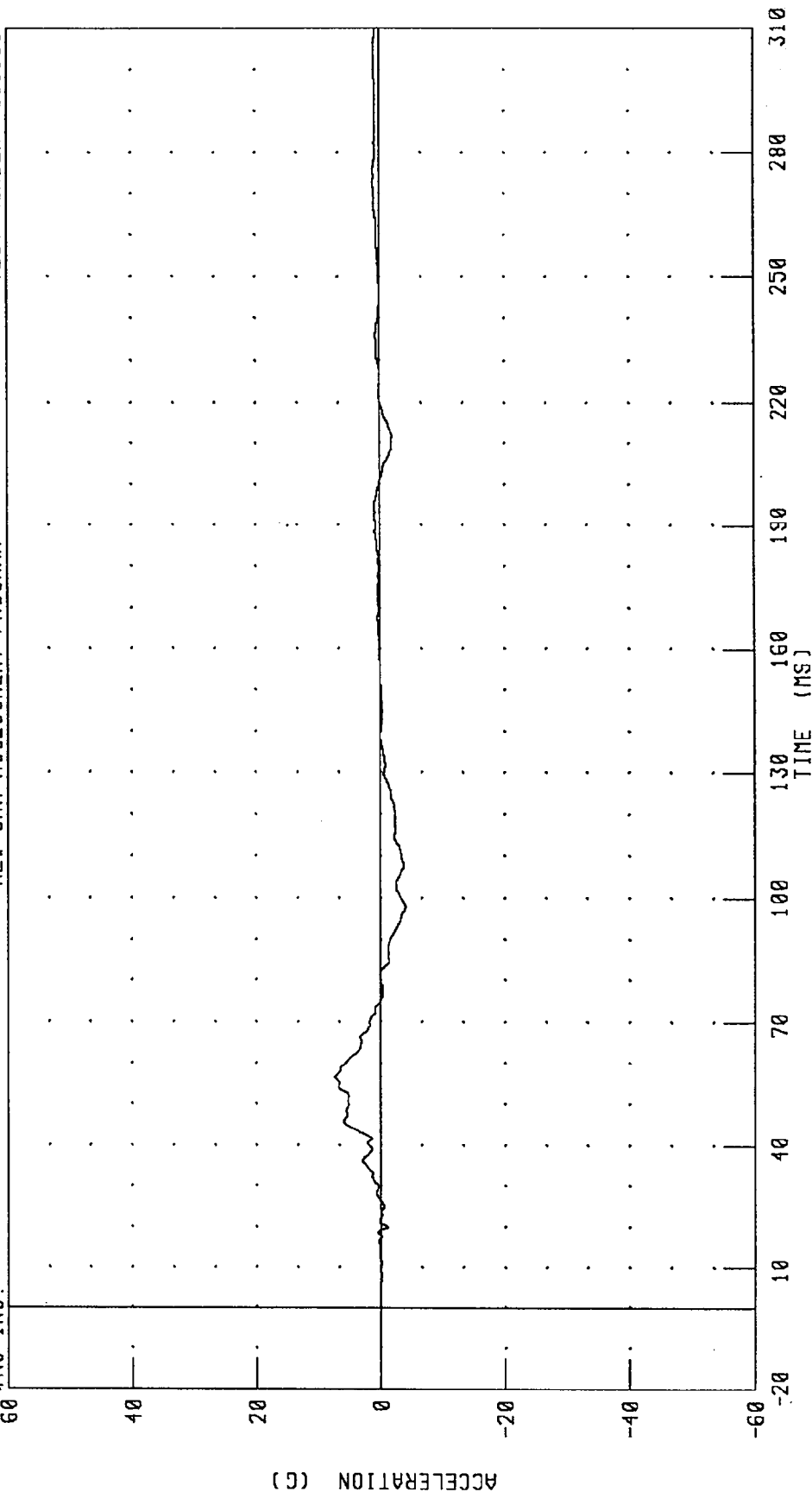
CHANNEL: CSTXR1 FILTER: CH. CLASS 180

PEAK DATA: 2.90 G @ 242.00 MS; -50.83 G @ 61.04 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Y-AXIS ACCELERATION - REDUNDANT
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

JRC INC.



CHANNEL: CSTYR1 FILTER: CH. CLASS 180

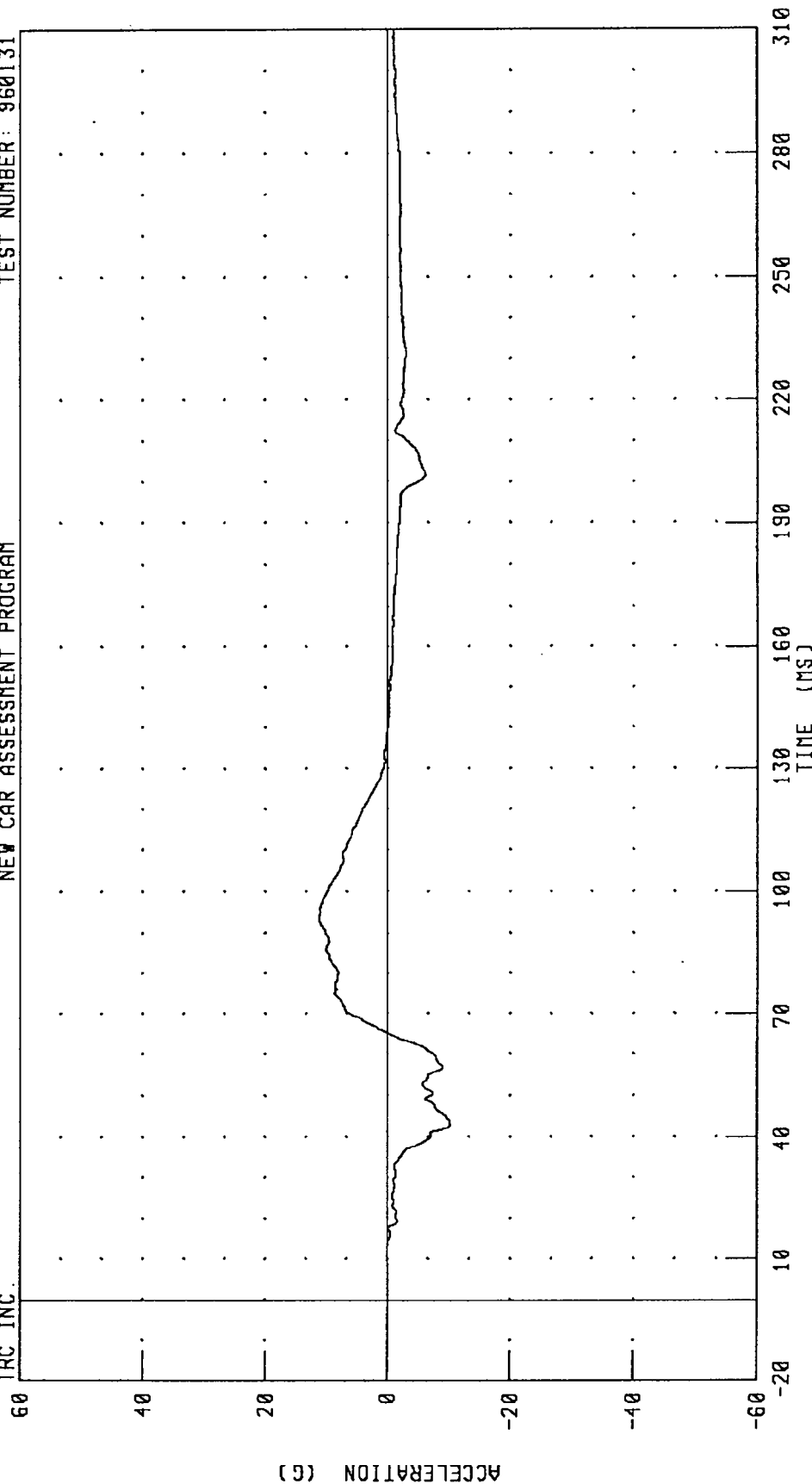
PEAK DATA: 7.40 G @ 56.40 MS; -3.98 G @ 97.84 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: CSTZR1 FILTER: CH. CLASS 180

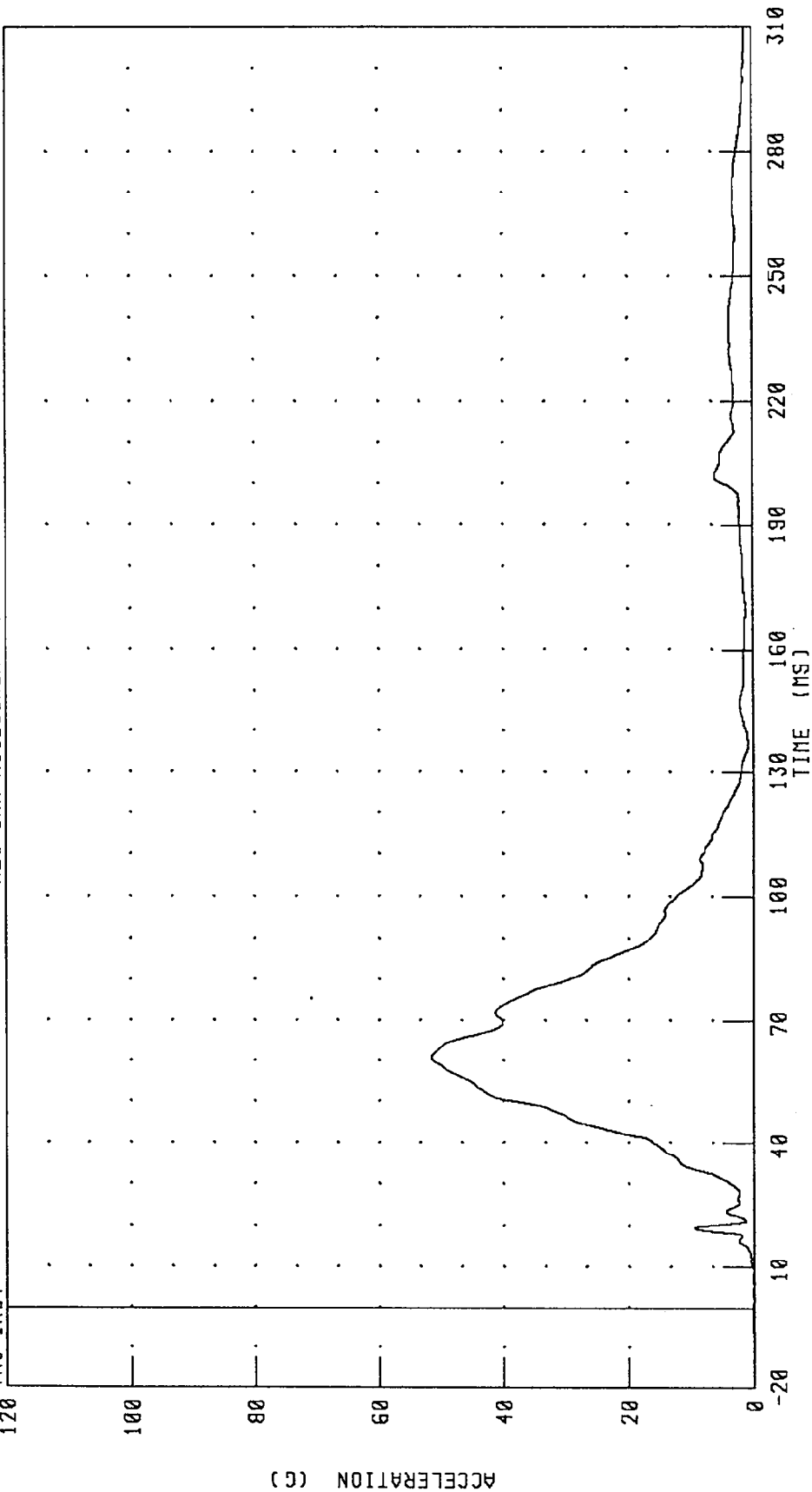
PEAK DATA: 11.21 G @ 93.60 MS; -10.24 G @ 42.96 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

IRC INC.



PEAK DATA: 51.52 G @ 60.72 MS, 0.00 G @ -20.00 MS

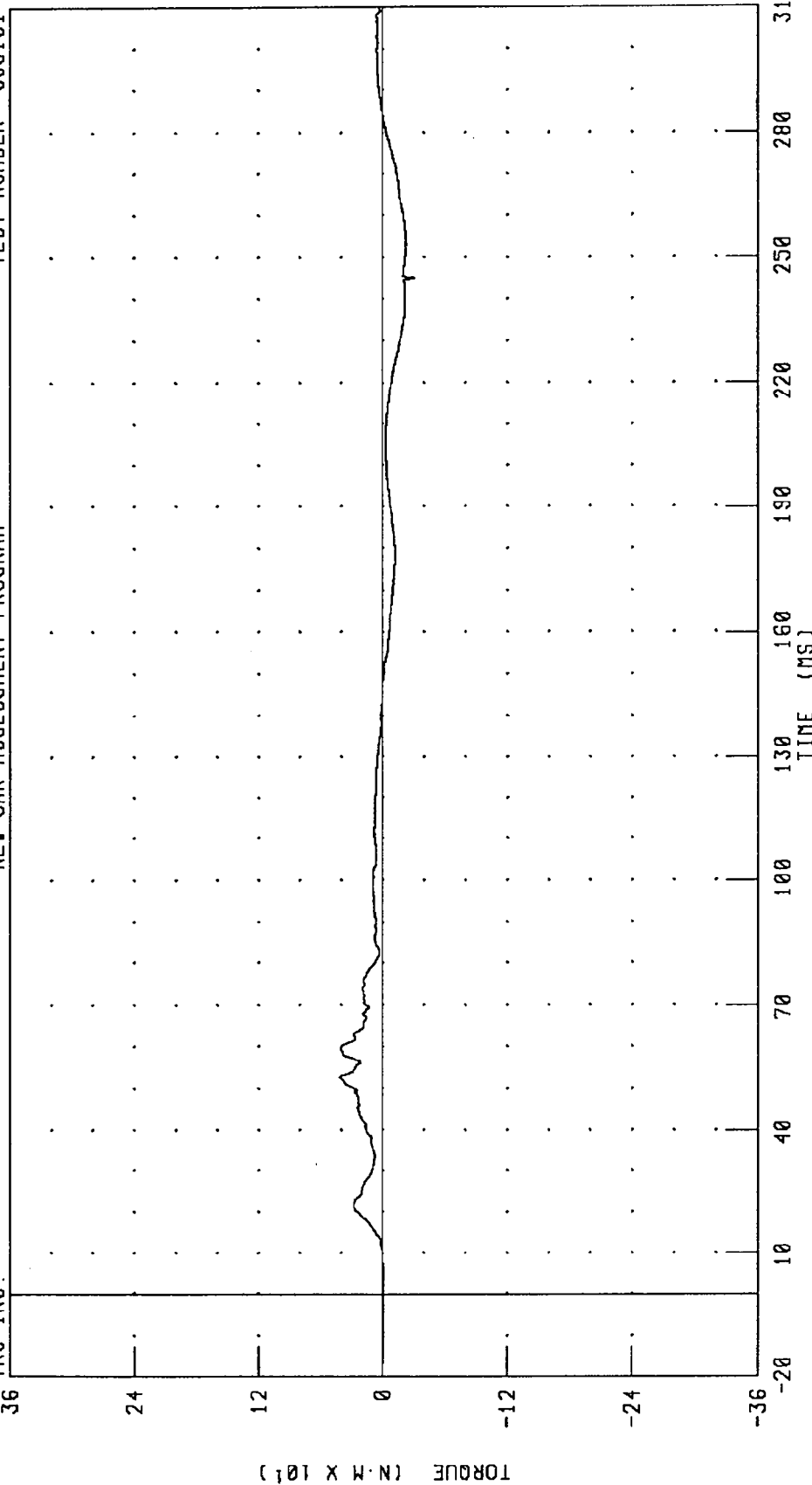
CHANNEL: CSTRRI FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



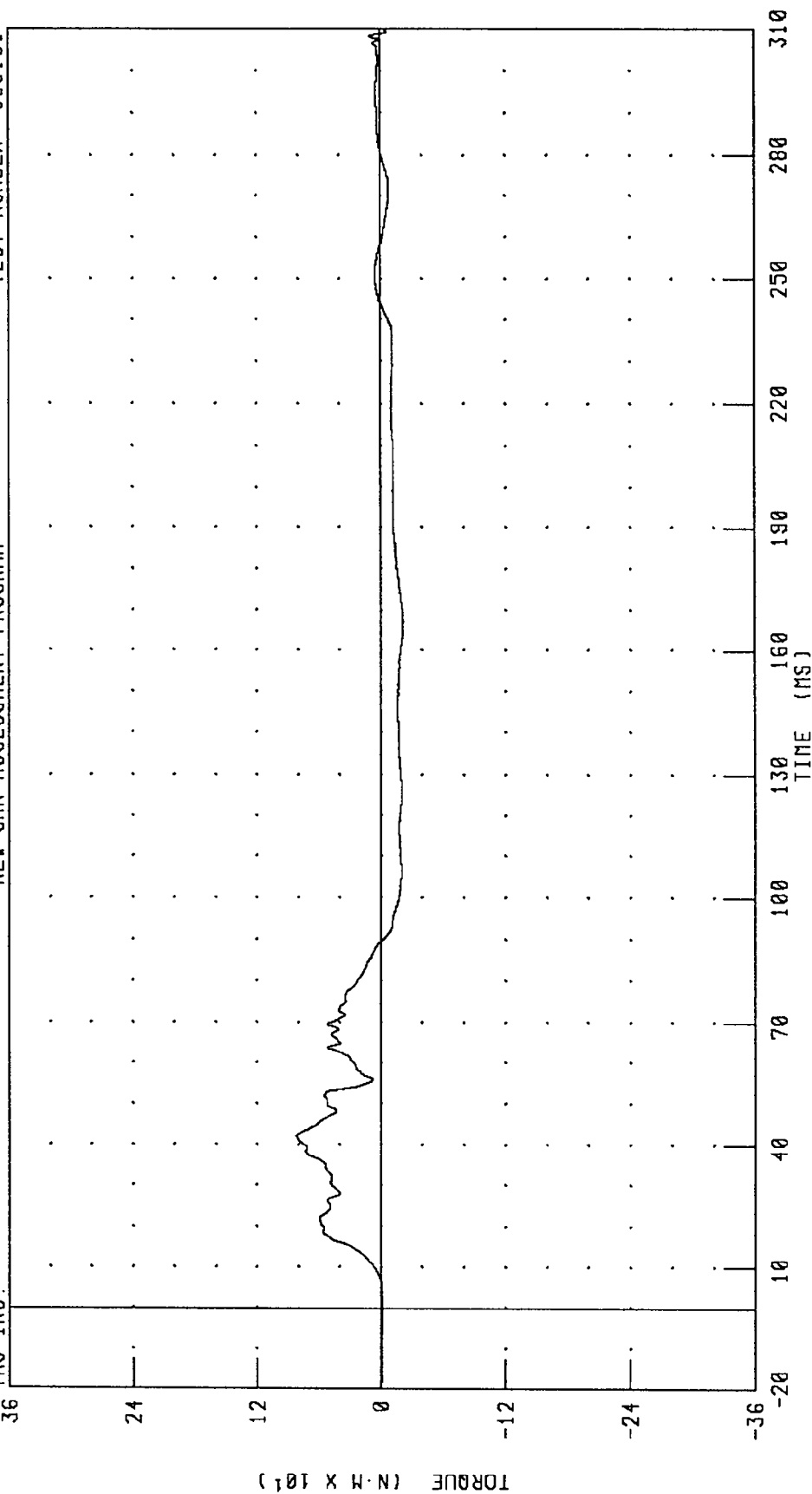
CHANNEL: TBLXM1 FILTER: CH. CLASS 600

PEAK DATA: 41.35 N.M @ 52.64 MS; -30.17 N.M @ 245.04 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



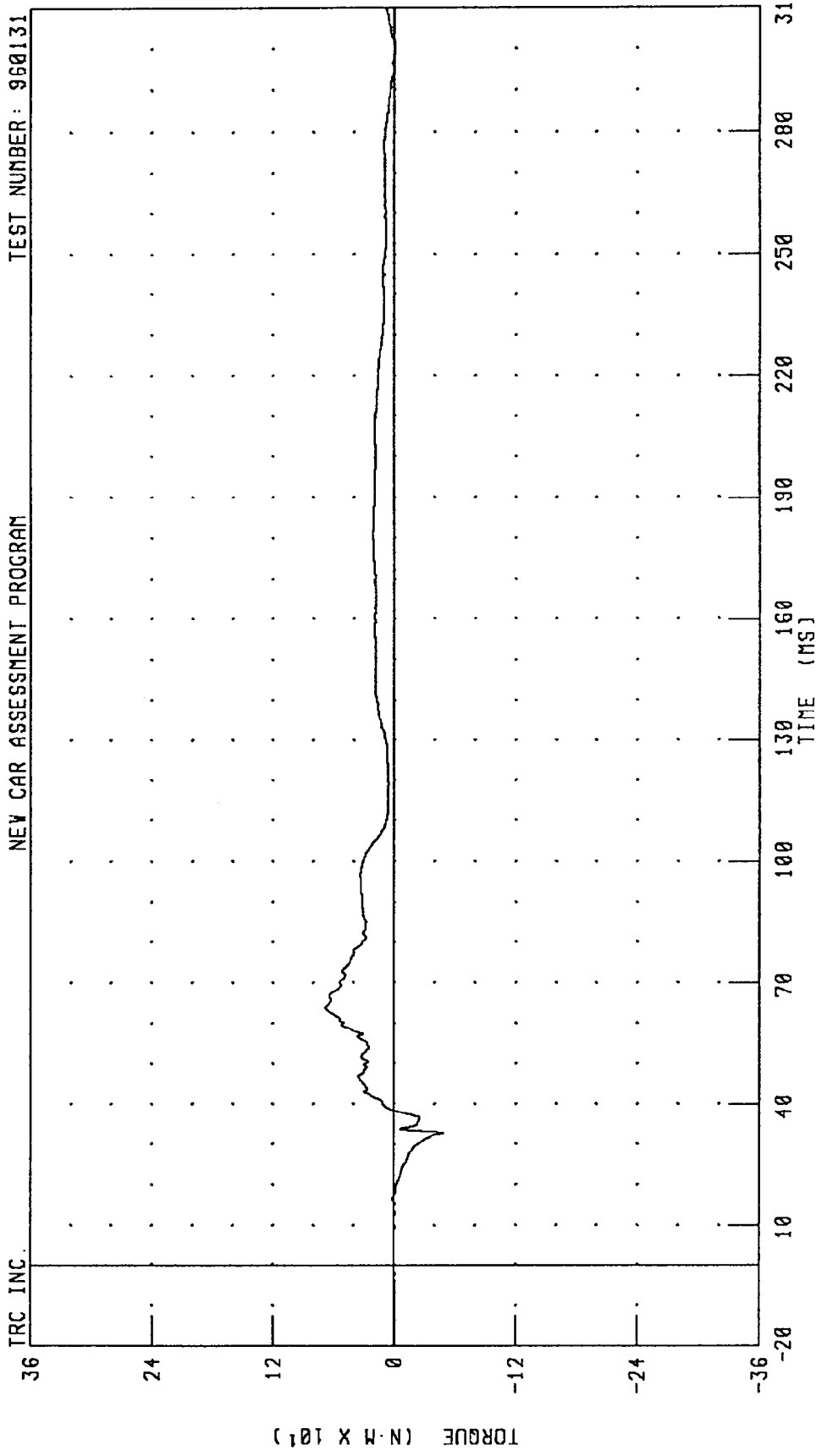
PEAK DATA: 81.96 N·m @ 42.08 MS; -22.01 N·m @ 167.12 MS

CHANNEL: TBLYM1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM



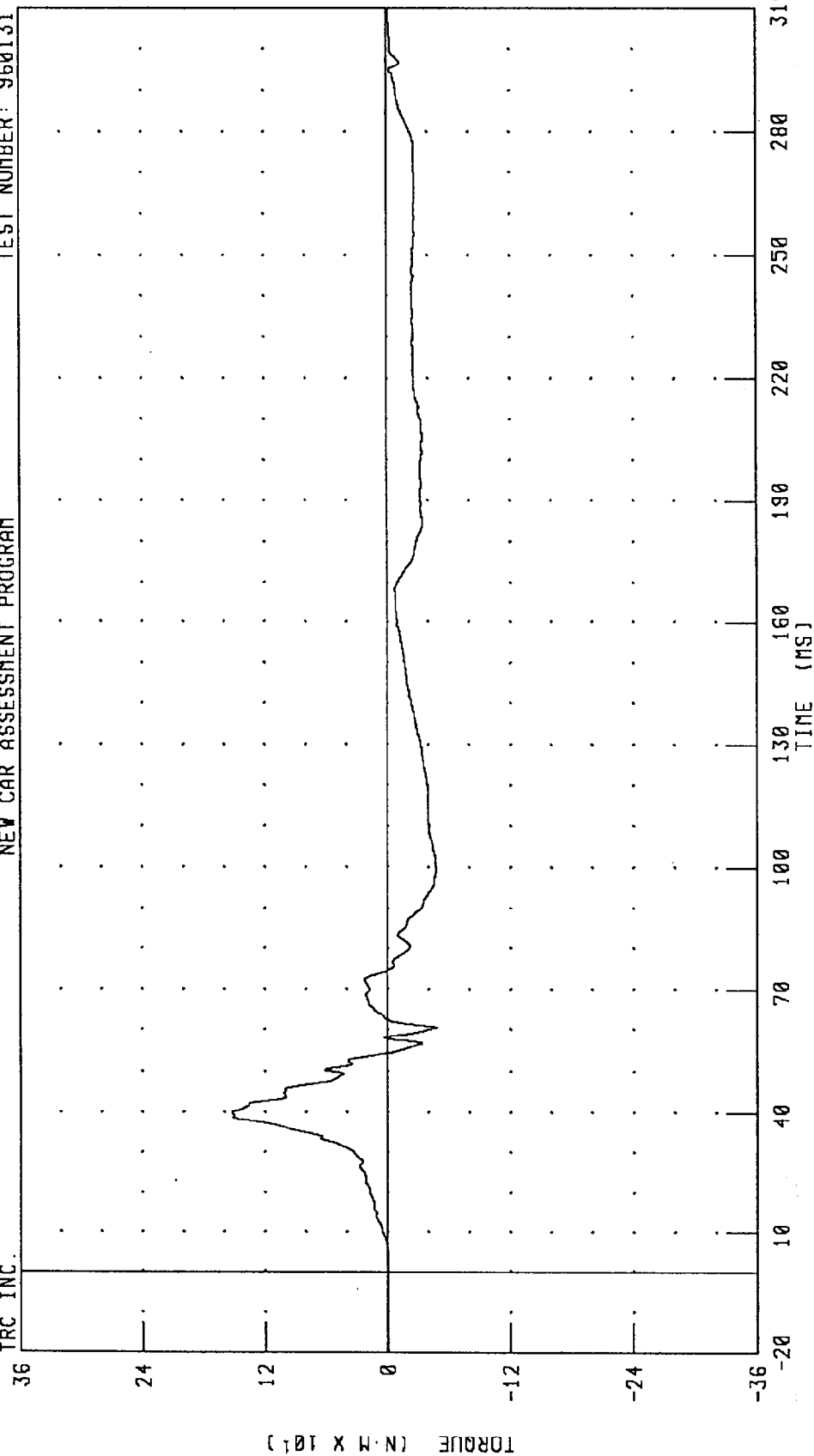
CHANNEL: TBRXM1 FILTER: CH. CLASS 600 PEAK DATA: 67.76 N-M @ 63.92 MS; -48.53 N-M @ 33.04 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 152.60 N-M @ 40.00 MS; -48.28 N-M @ 60.56 MS

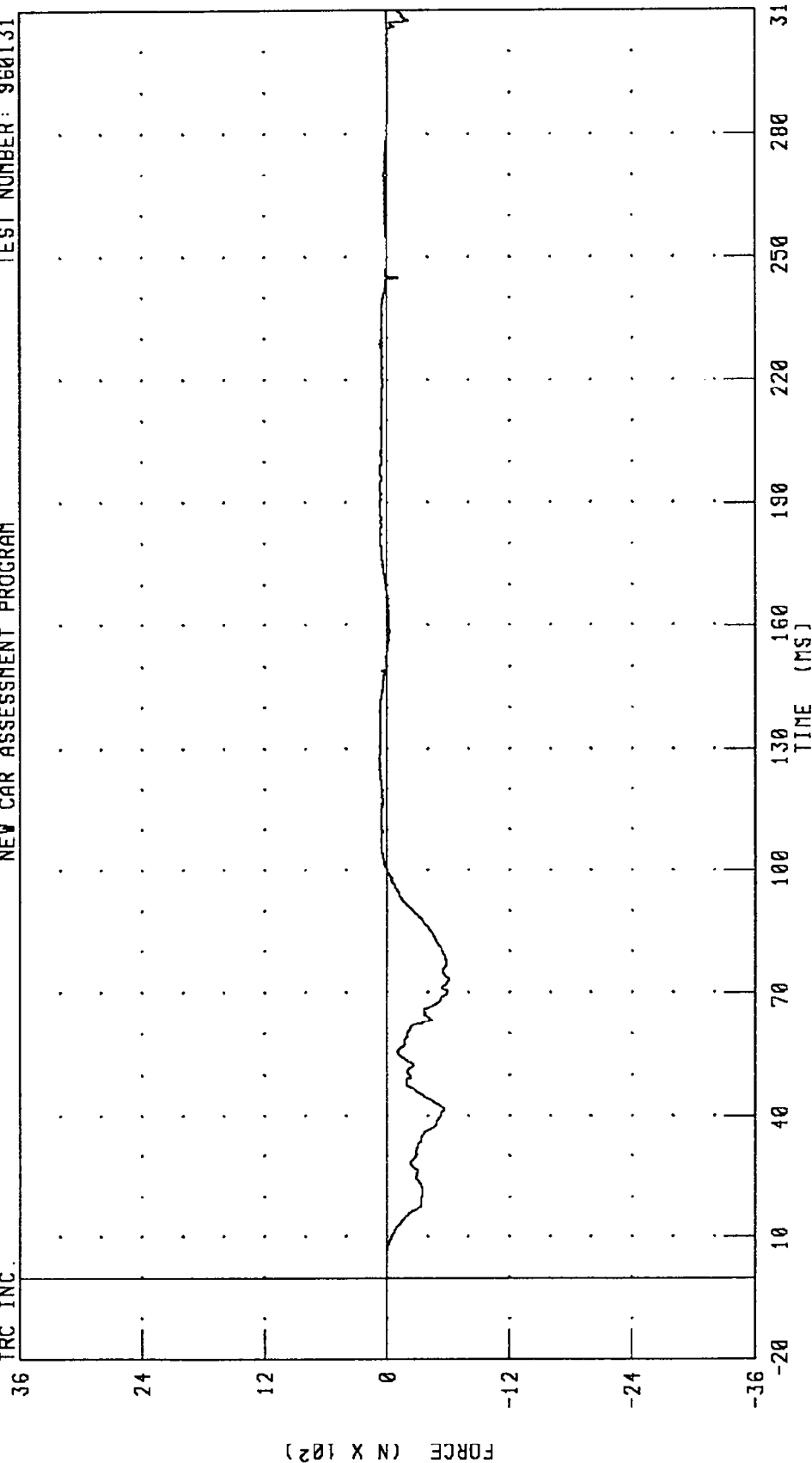
CHANNEL: TBRYM1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT LOWER TIBIA X-AXIS FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: ANLXF1 FILTER: CH. CLASS 600

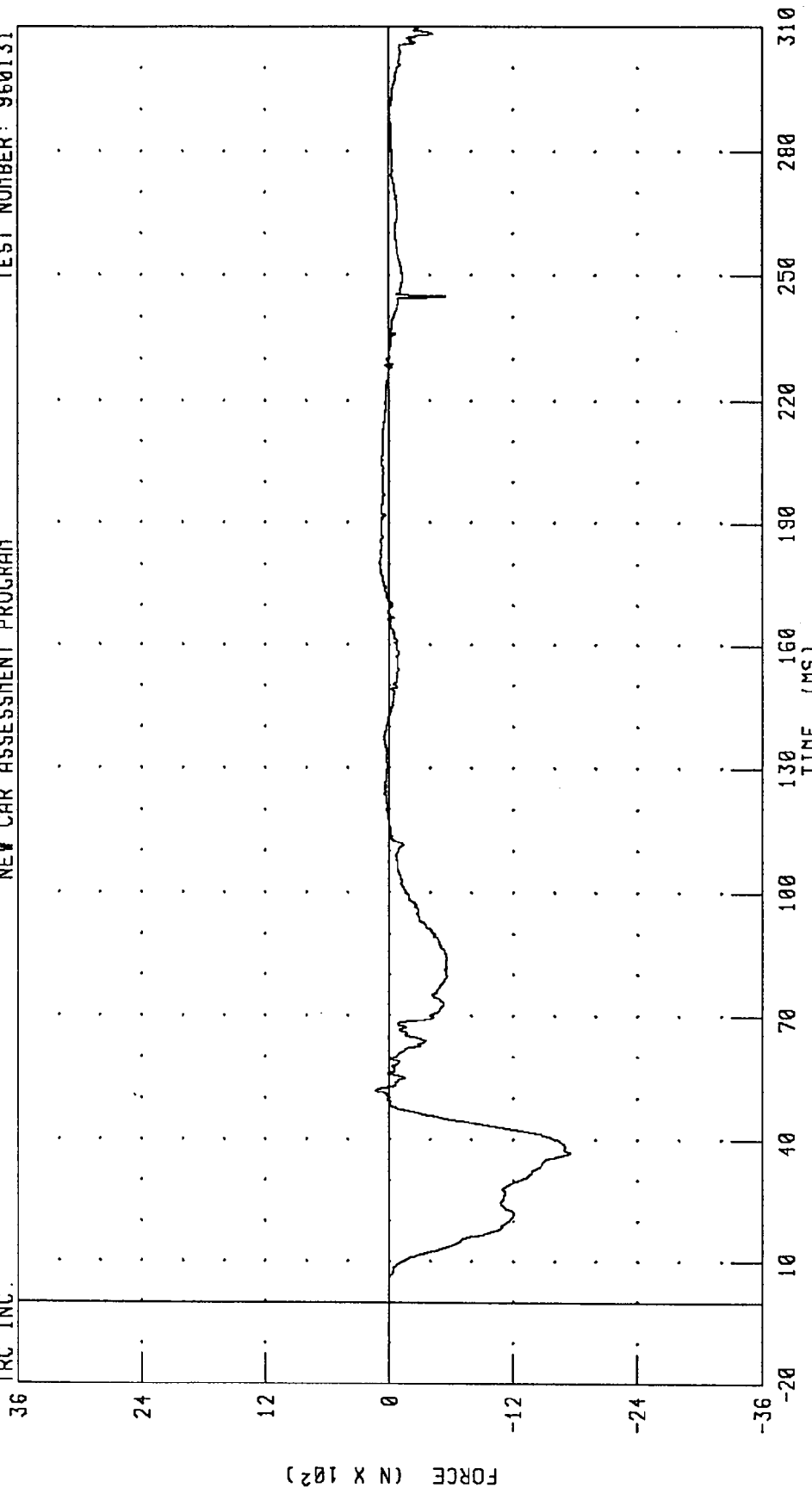
PEAK DATA: 70.86 N @ 127.12 MS; -612.80 N @ 73.44 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



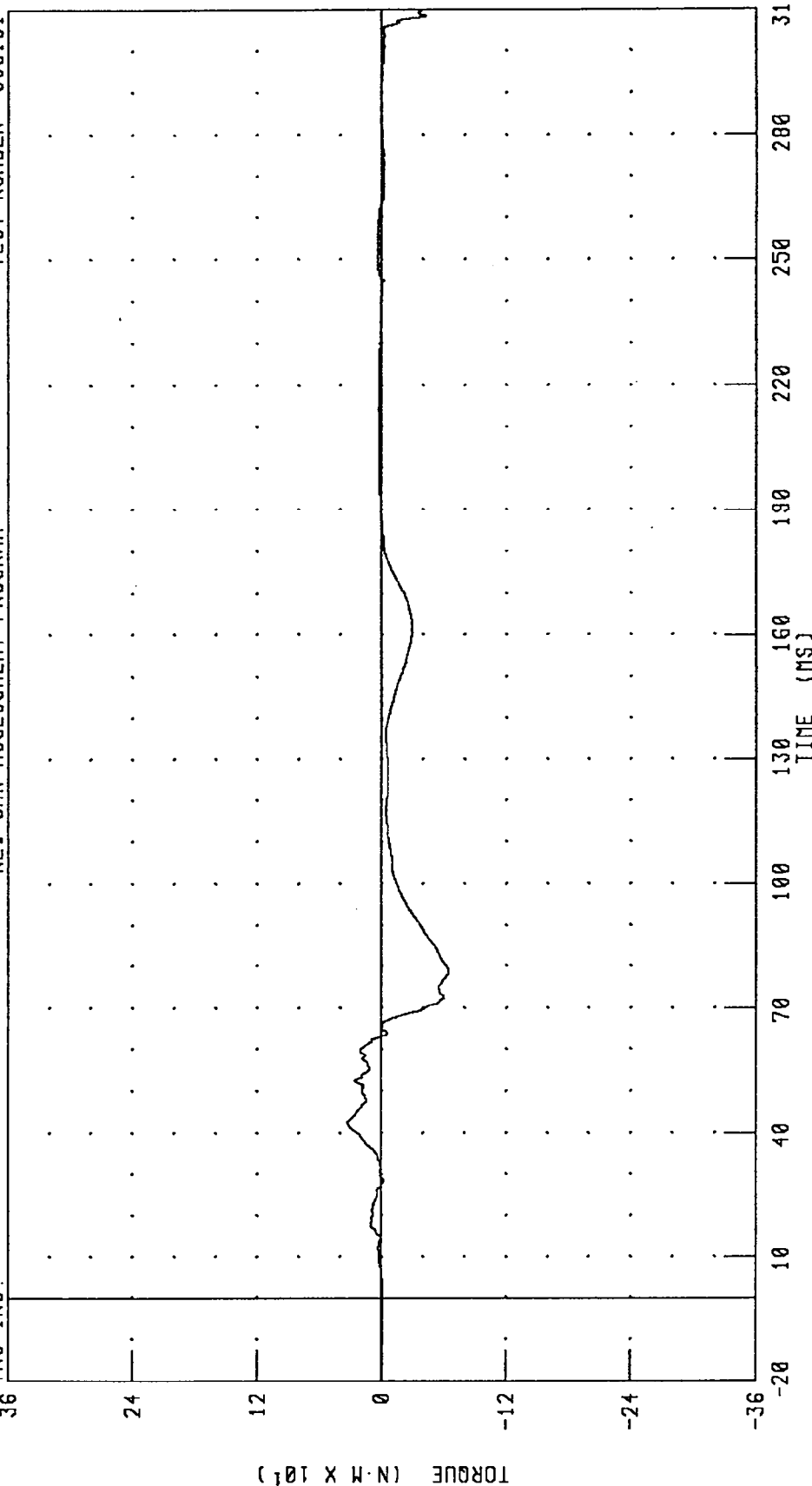
CHANNEL: ANLZF1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



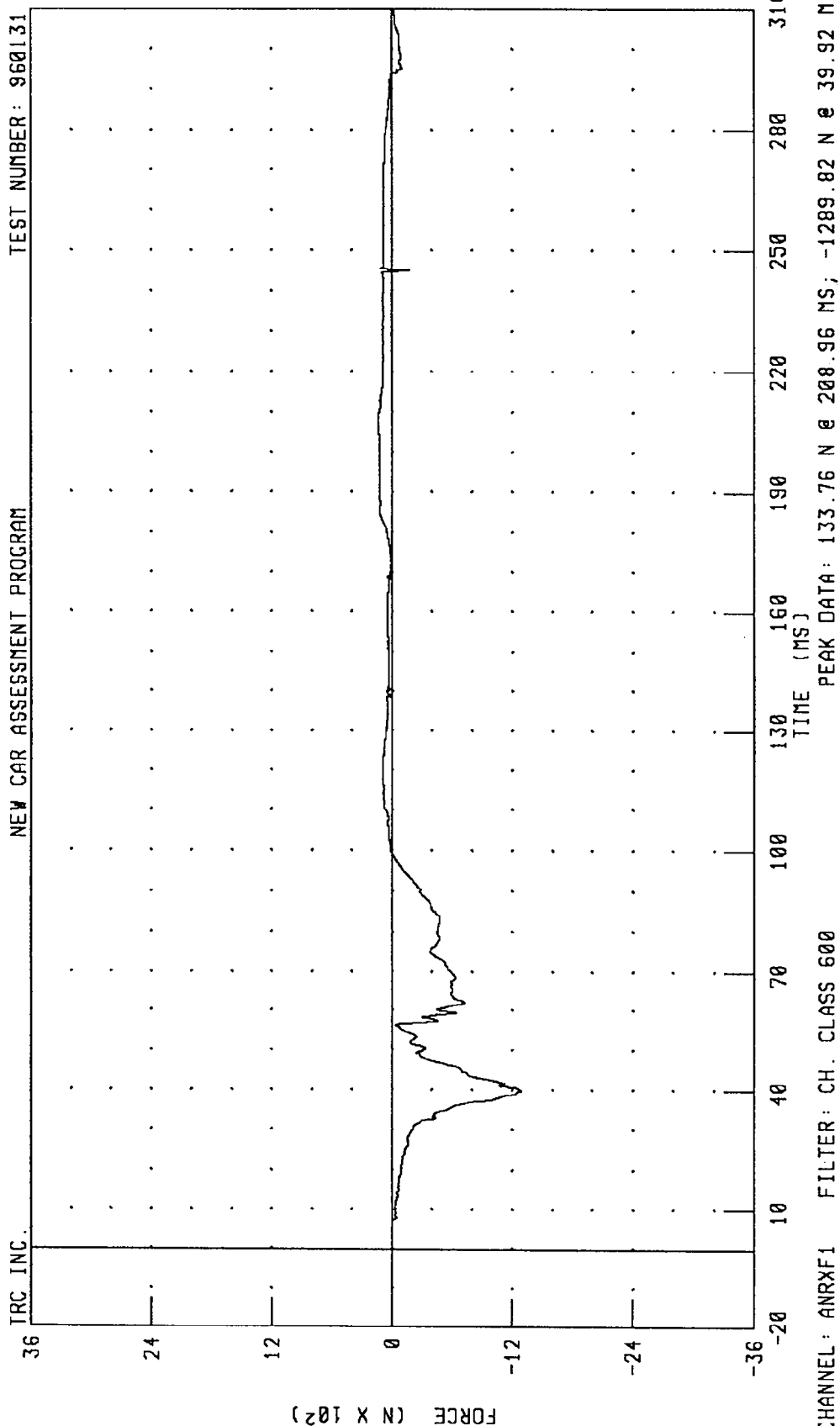
CHANNEL: ANLYM1 FILTER: CH. CLASS 600

PEAK DATA: 32.13 N·m @ 42.48 ms; -64.40 N·m @ 79.04 ms

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT LOWER TIBIA X-AXIS FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



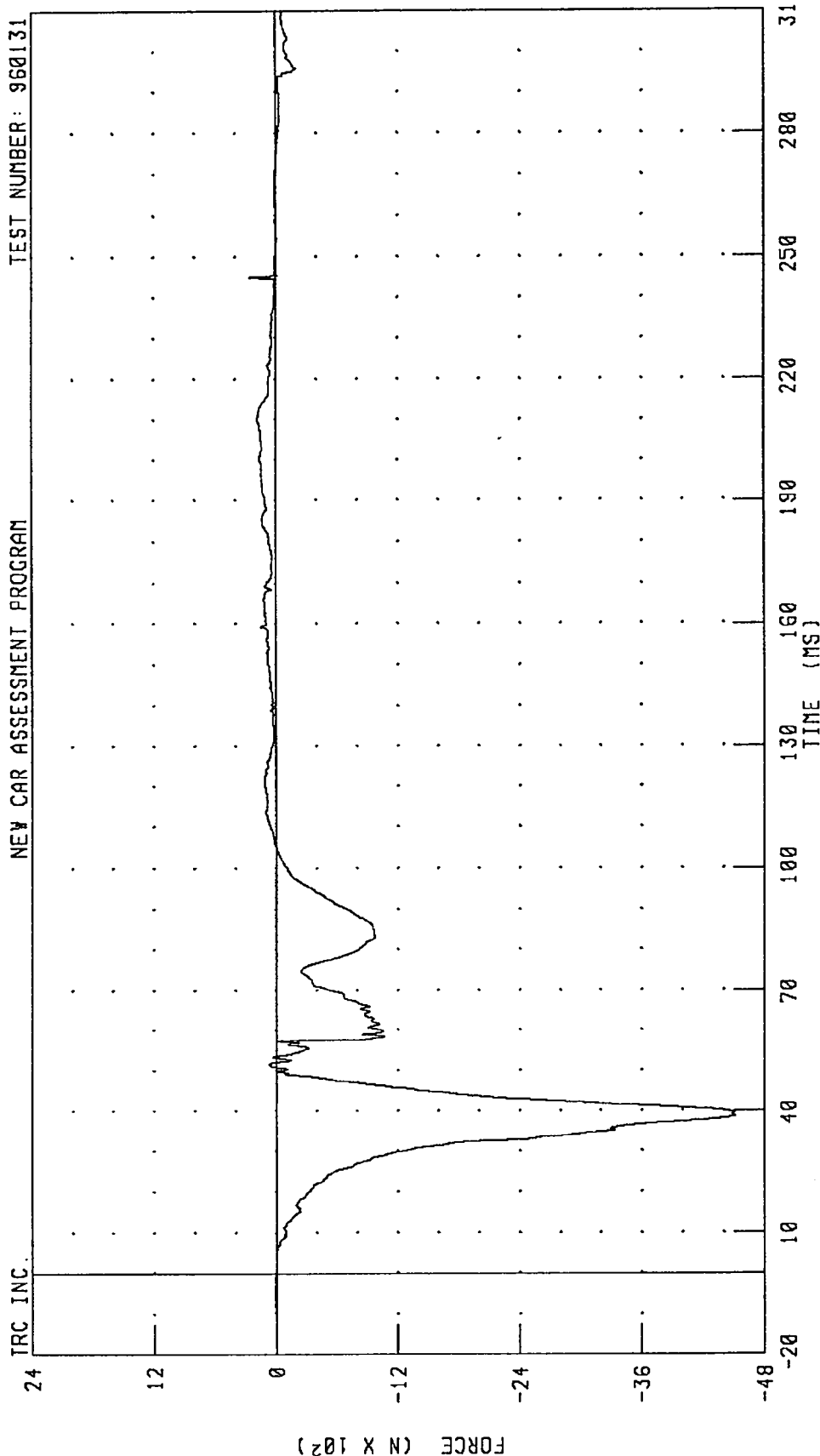
CHANNEL: ANRXF1 FILTER: CH. CLASS 600

PEAK DATA: 133.76 N @ 208.96 ms; -1289.82 N @ 39.92 ms

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM



PEAK DATA: 264.66 N @ 245.04 MS, -4512.40 N @ 38.64 MS

CHANNEL: ANRZF1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

36

24

12

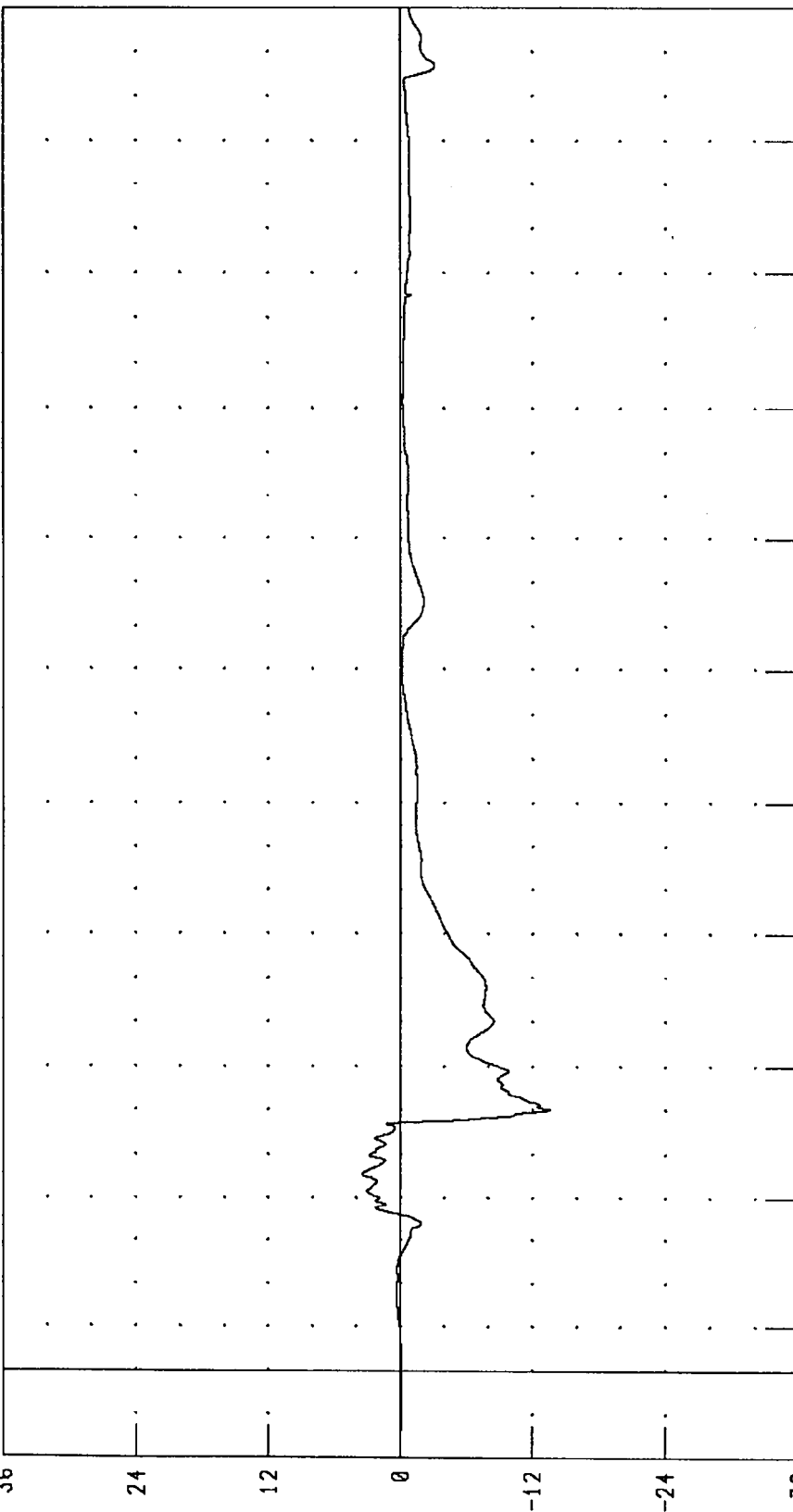
0

-12

-24

-36

TORQUE (N·M X 10¹)



PEAK DATA: 34.64 N·M @ 45.44 MS; -136.14 N·M @ 60.08 MS

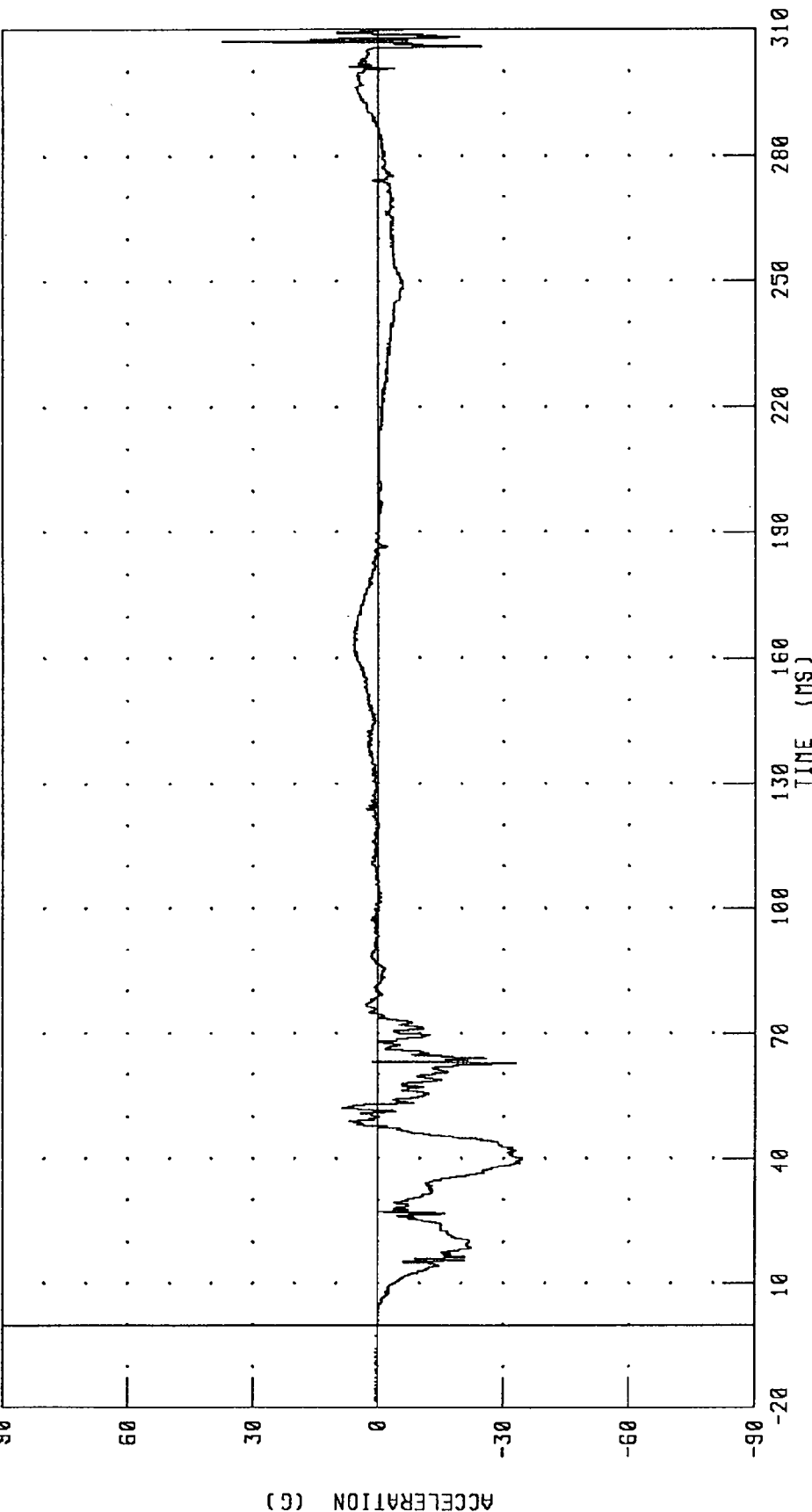
CHANNEL: ANRYM1 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT FOOT X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: FTLXG1 FILTER: CH. CLASS 1000

PEAK DATA: 37.46 G @ 307.20 MS; -34.53 G @ 39.84 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90

60

30

0

-30

-60

-90

ACCELERATION (G)

310 280 250 220 190 160 130 100 70 40 10
TIME (MS)
PEAK DATA: 58.34 G @ 40.80 MS; -25.28 G @ 307.52 MS

CHANNEL: FTLZH1 FILTER: CH. CLASS 1000

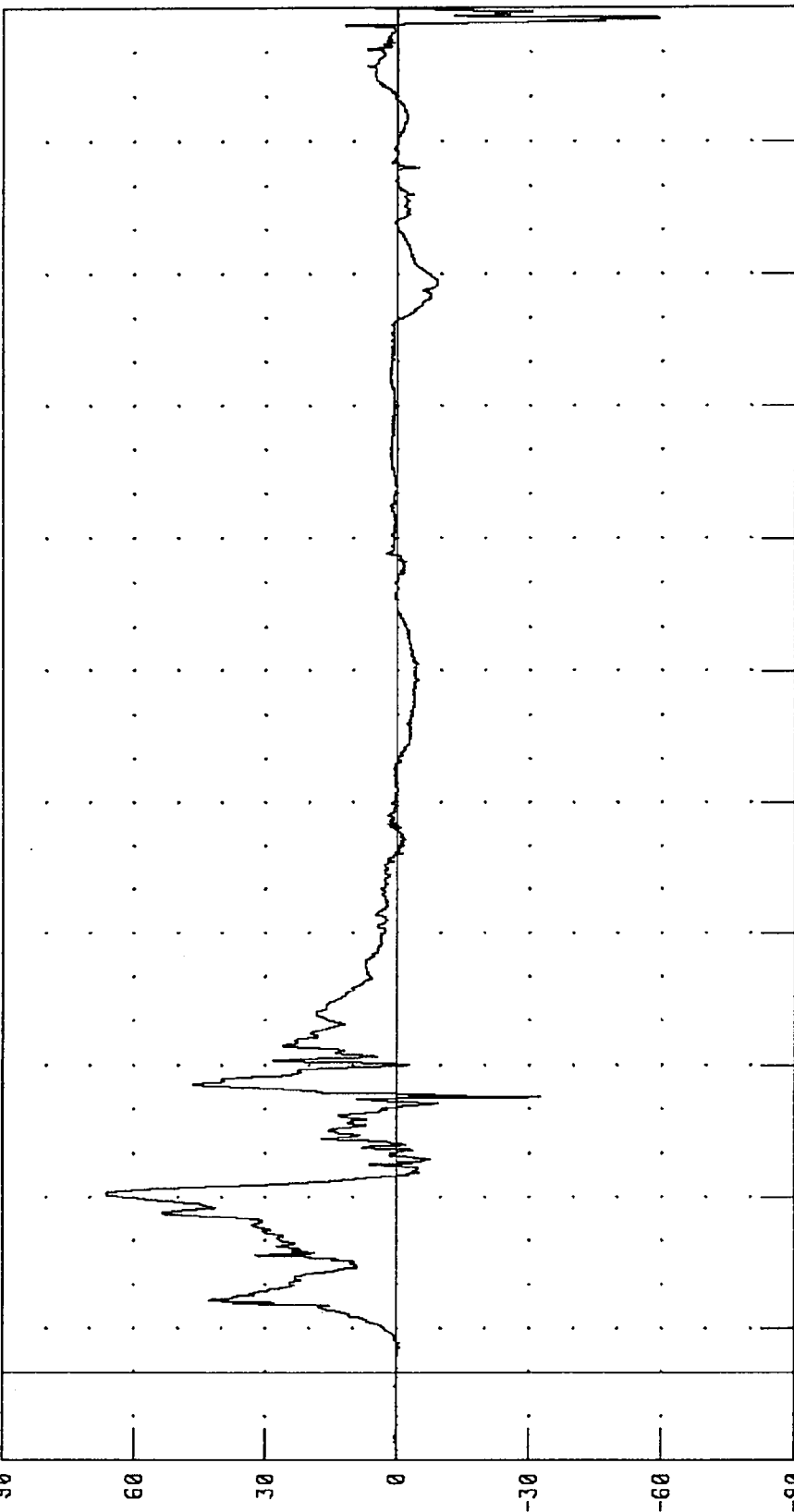
1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90



CHANNEL: FTLZT1 FILTER: CH. CLASS 1000

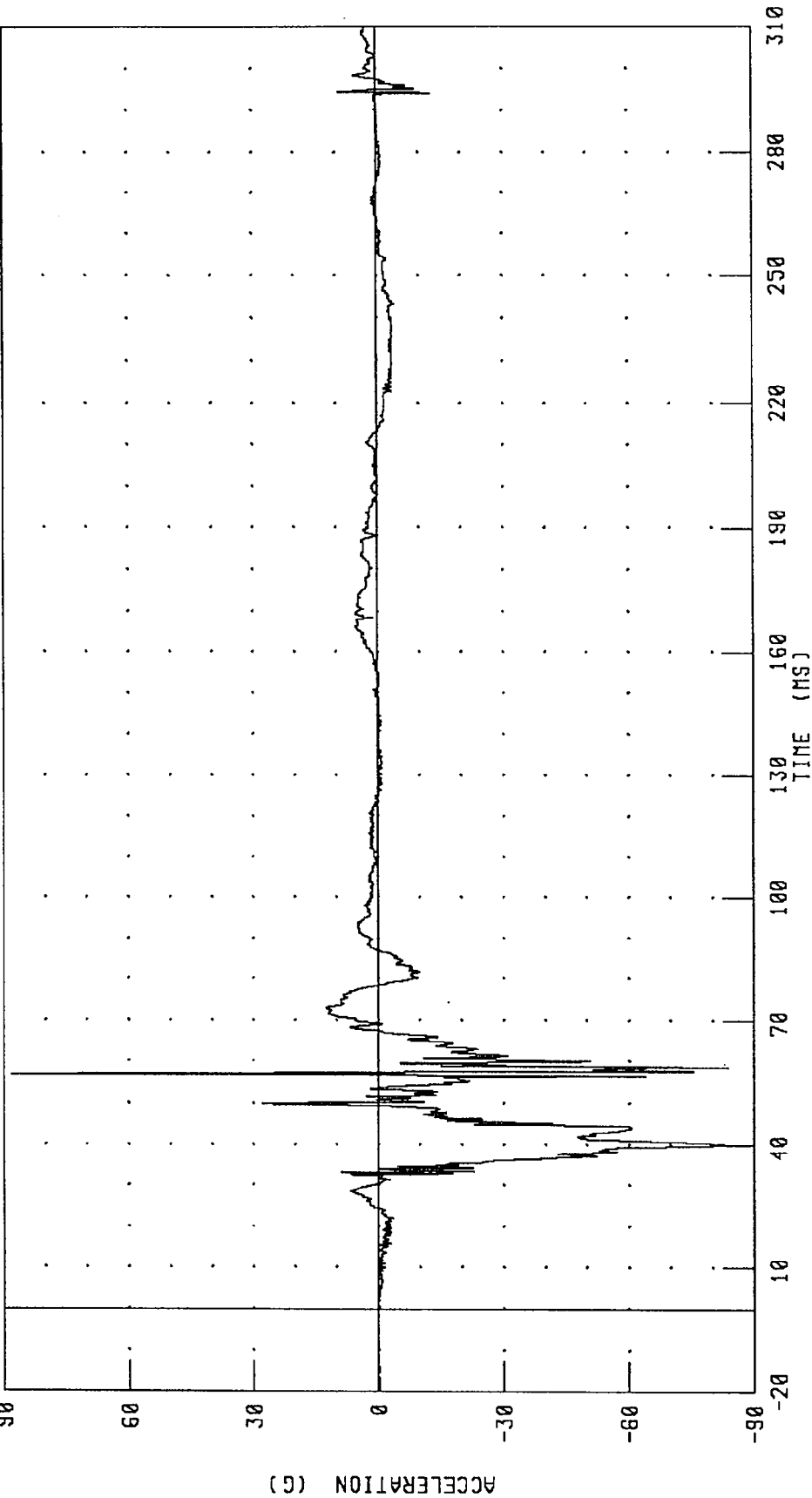
960131

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FOOT X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



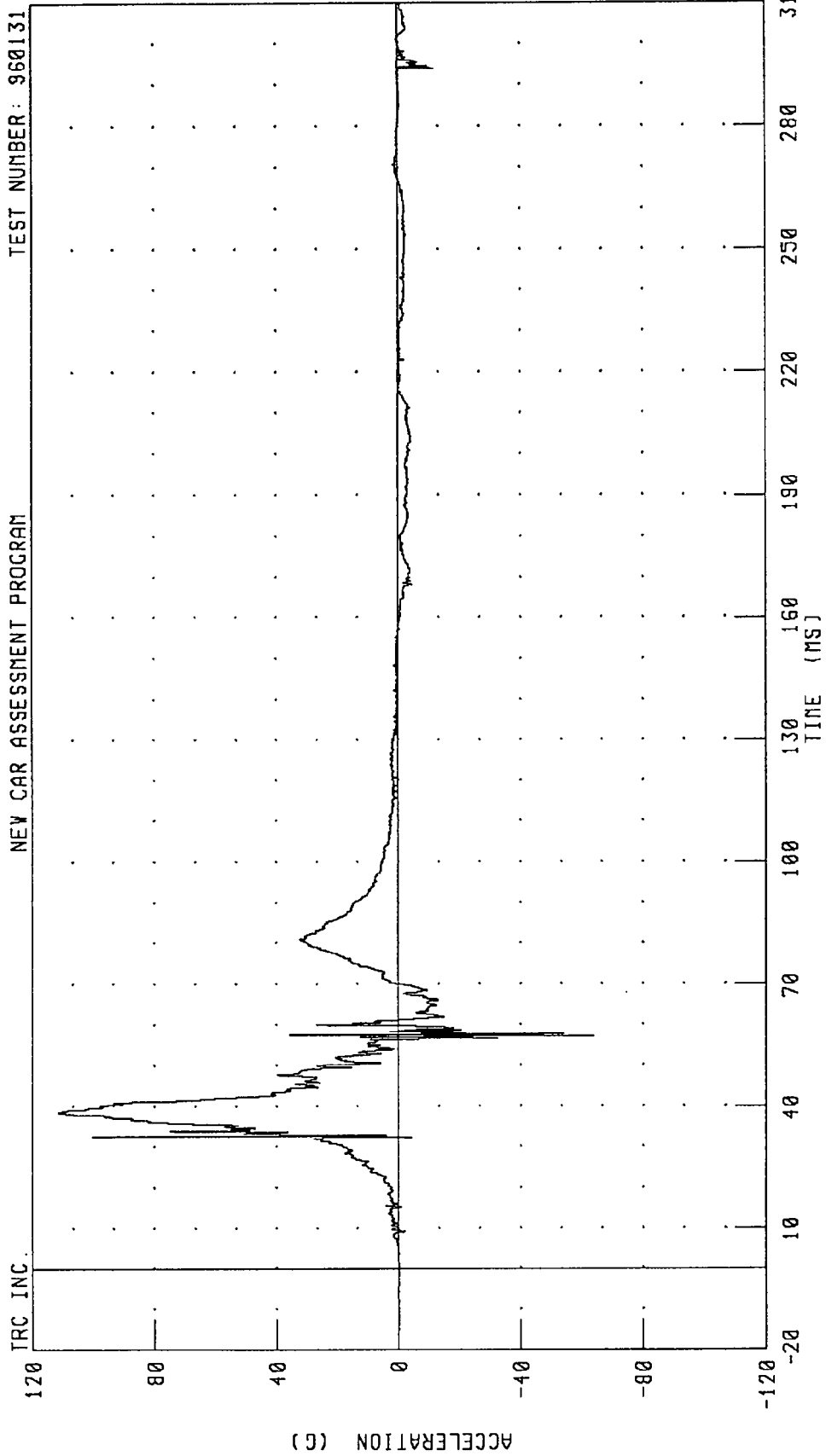
PEAK DATA: 88.12 G @ 56.80 MS; -83.88 G @ 58.56 MS

CHANNEL: FTRXG1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM



PEAK DATA: 111.37 G @ 38.64 MS; -63.86 G @ 57.04 MS

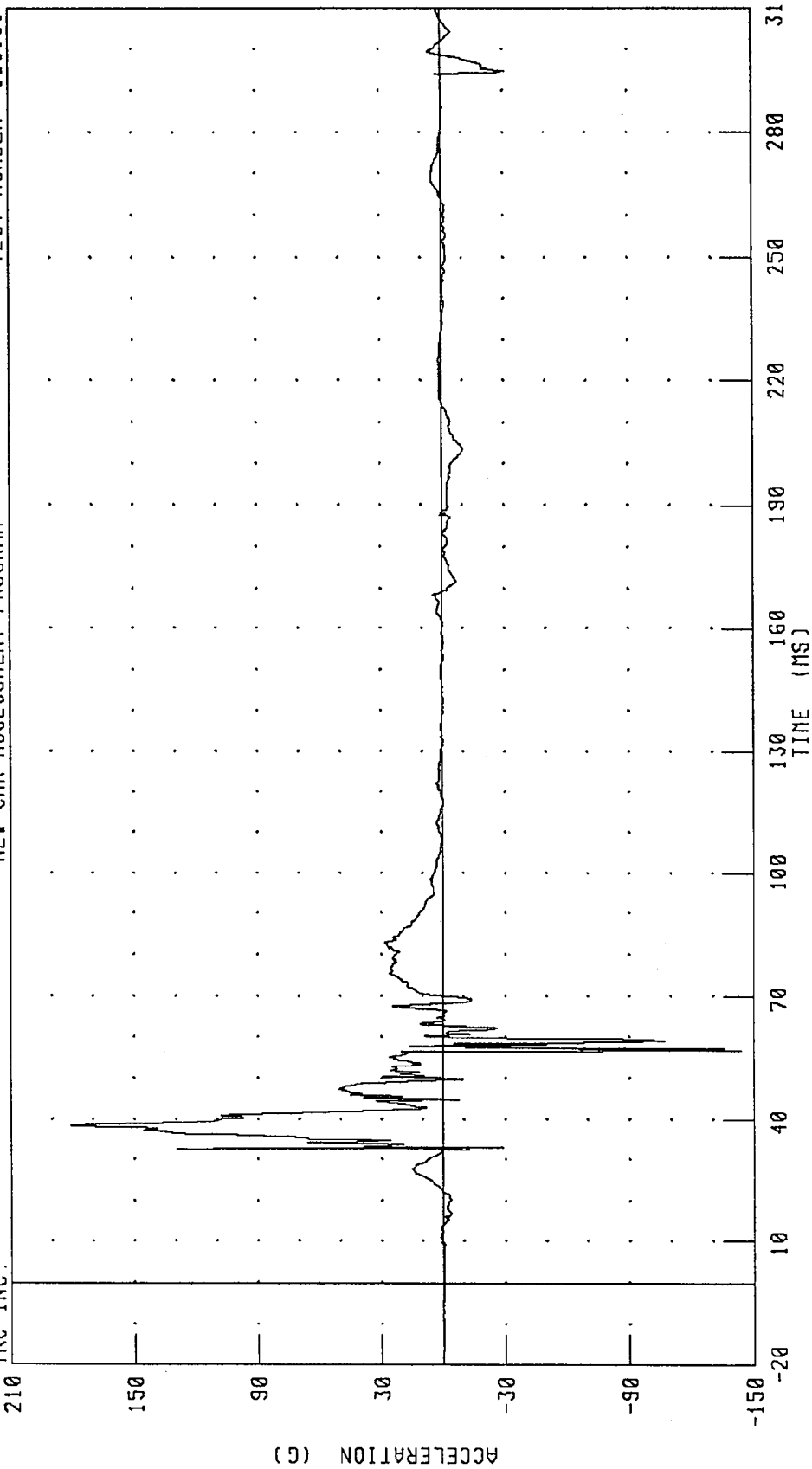
CHANNEL: FTRZH1 FILTER: CH. CLASS 1000

1986 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

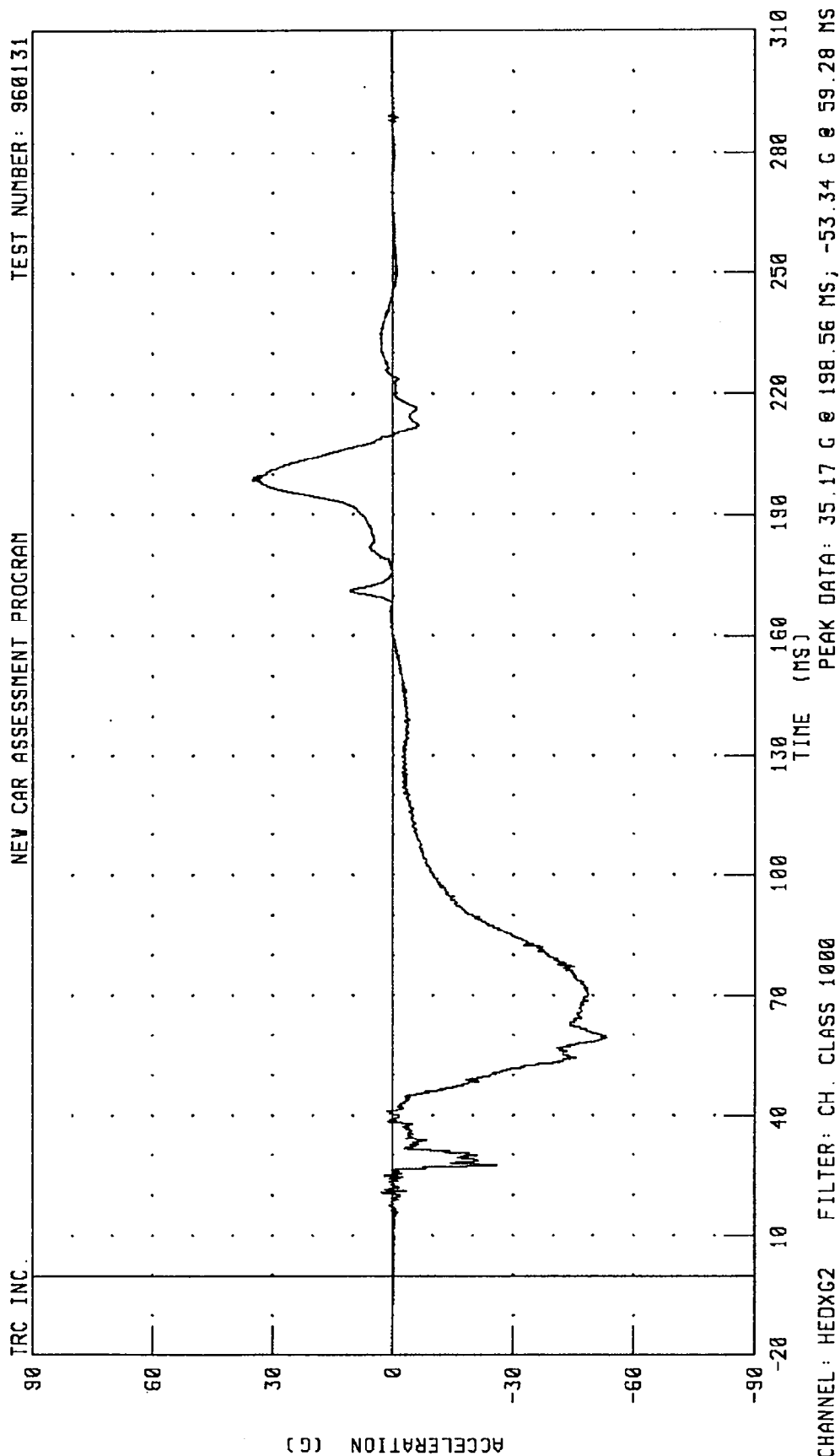
TRC INC.



PEAK DATA: 181.10 G @ 38.32 MS; -143.73 G @ 56.80 MS

CHANNEL: FTRZT1 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION

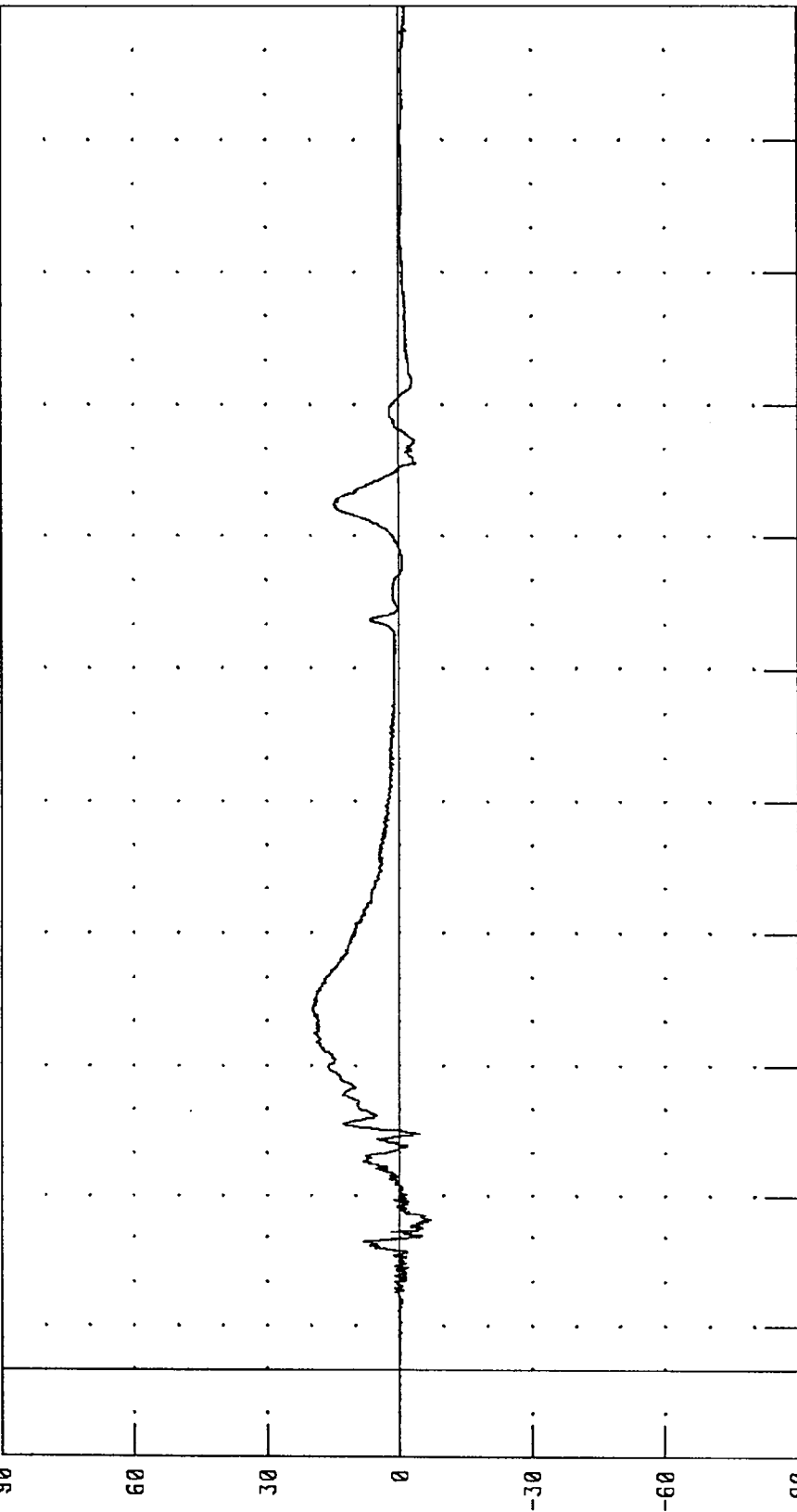


1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

90



-90

-20

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

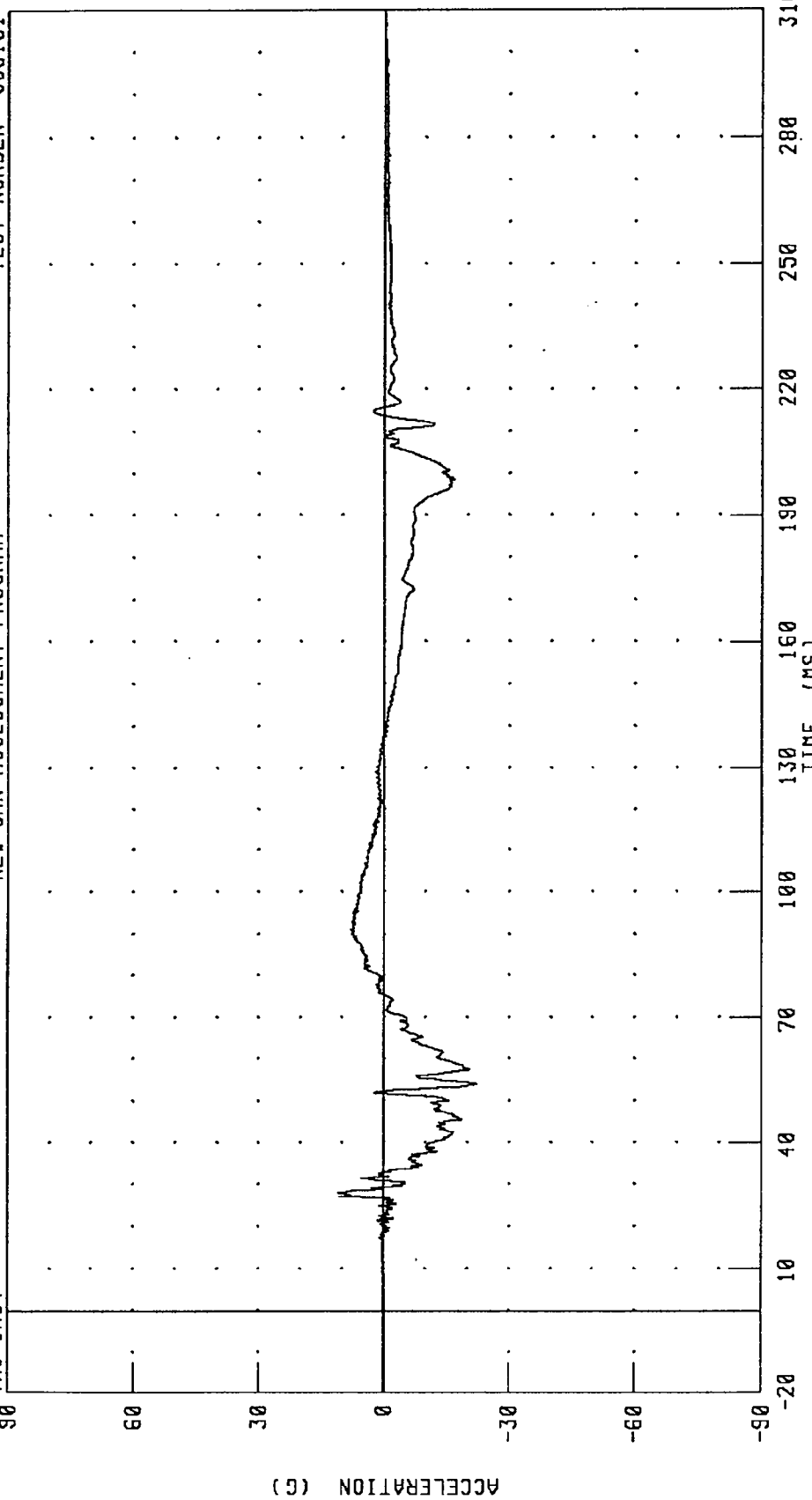
PEAK DATA: 19.69 G @ 82.32 MS; -71.3 G @ 341.16 MS

CHANNEL: HEDYG2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



CHANNEL: HEDZG2 FILTER: CH. CLASS 1000

PEAK DATA: 10.99 G @ 28.00 MS; -22.28 G @ 54.00 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

120

100

80

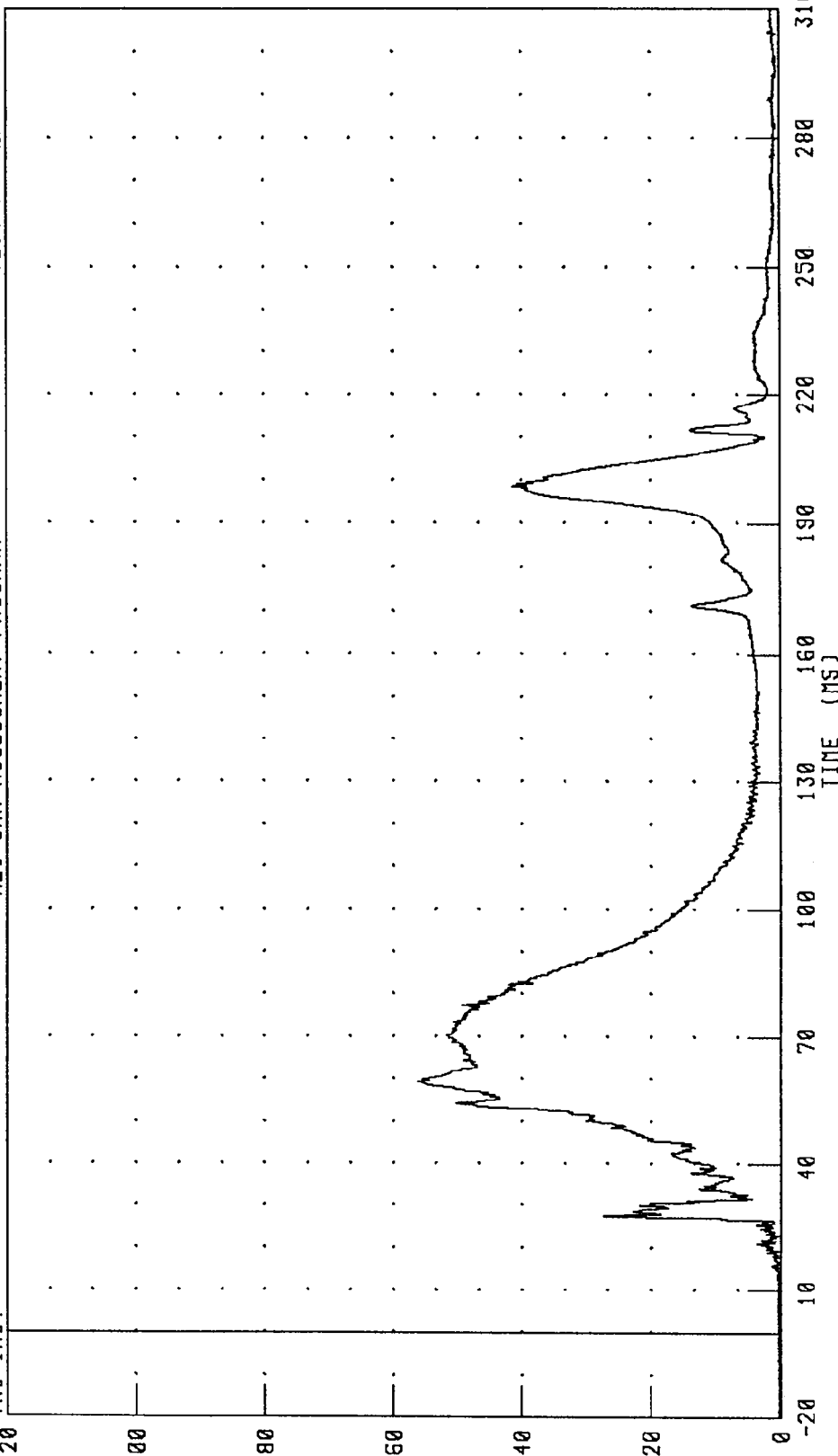
60

40

20

0

ACCELERATION (G)



TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

CHANNEL: HEDRG2 FILTER: CH. CLASS 1000

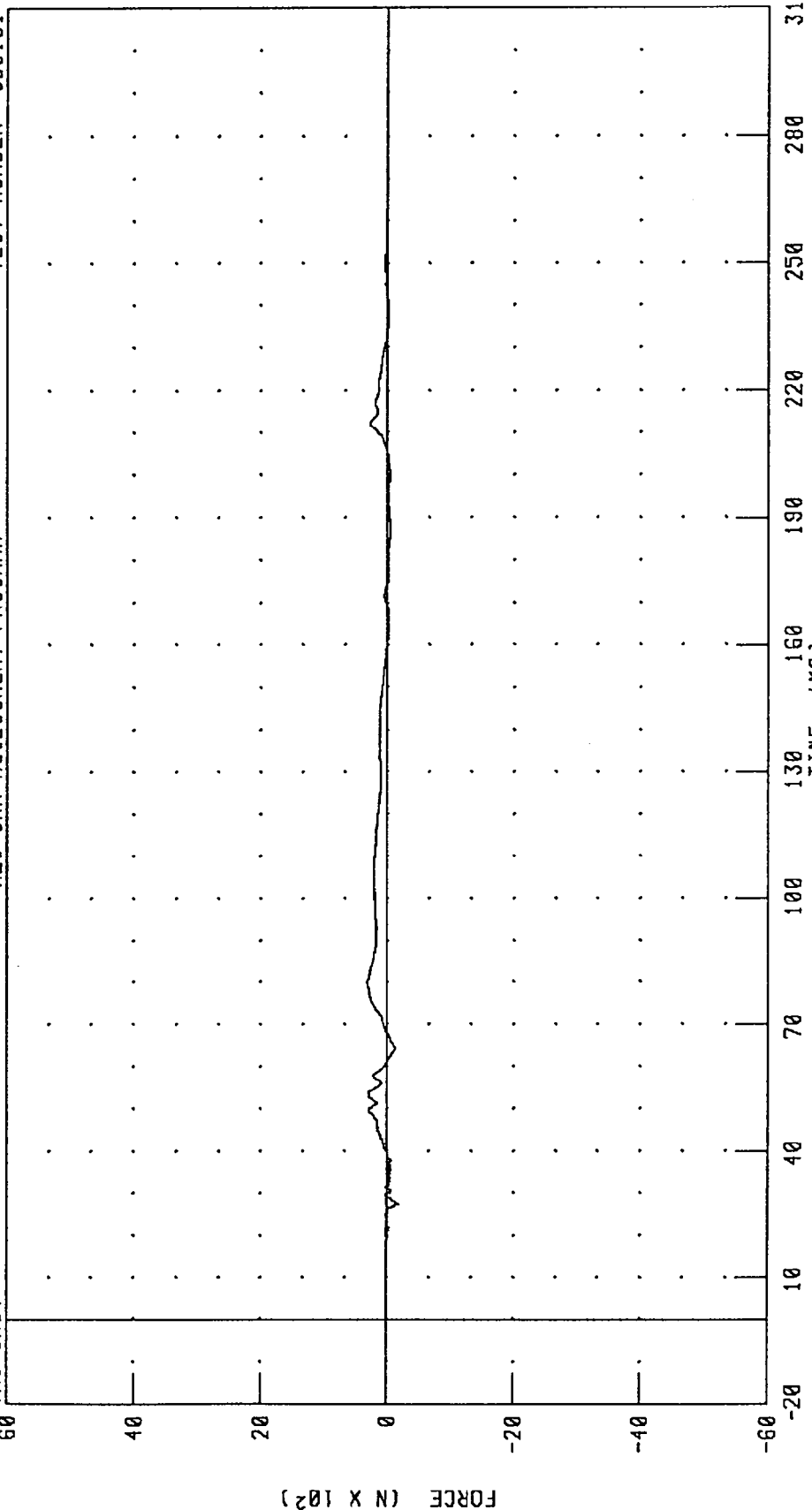
PEAK DATA: 56.14 G @ 59.28 MS; 0.06 G @ -19.76 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK X-AXIS SHEAR FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: NEKXF2 FILTER: CH. CLASS 1000

PEAK DATA: 314.87 N @ 79.84 MS; -180.70 N @ 27.44 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Y-AXIS SHEAR FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

60

40

20

0

-20

-40

-60

FORCE (N X 10²)

TIME (MS)

130

100

70

40

10

220

250

280

310

PEAK DATA: 297.93 N @ 207.20 MS; -245.80 N @ 86.80 MS

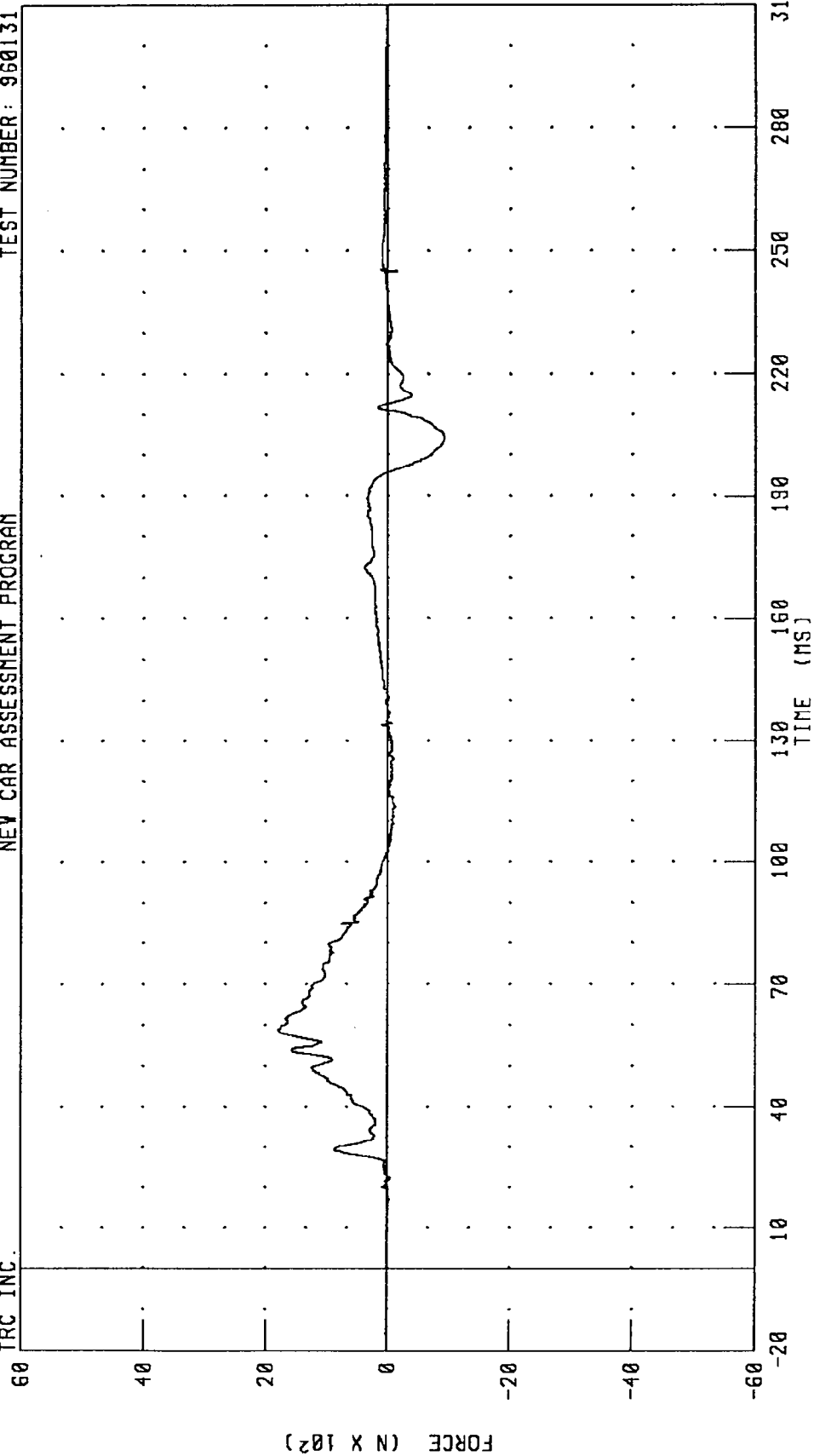
CHANNEL: NEKYF2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Z-AXIS AXIAL FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

PEAK DATA: 1788.70 N @ 58.88 MS; -924.34 N @ 203.92 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT X AXIS
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

180

120

60

0

-60

-120

-180

TORQUE (N·M)

310

280

250

220

190

160

130

100

70

40

10

TIME (MS)

PEAK DATA: 23.11 N·M @ 207.84 MS; -9.45 N·M @ 229.76 MS

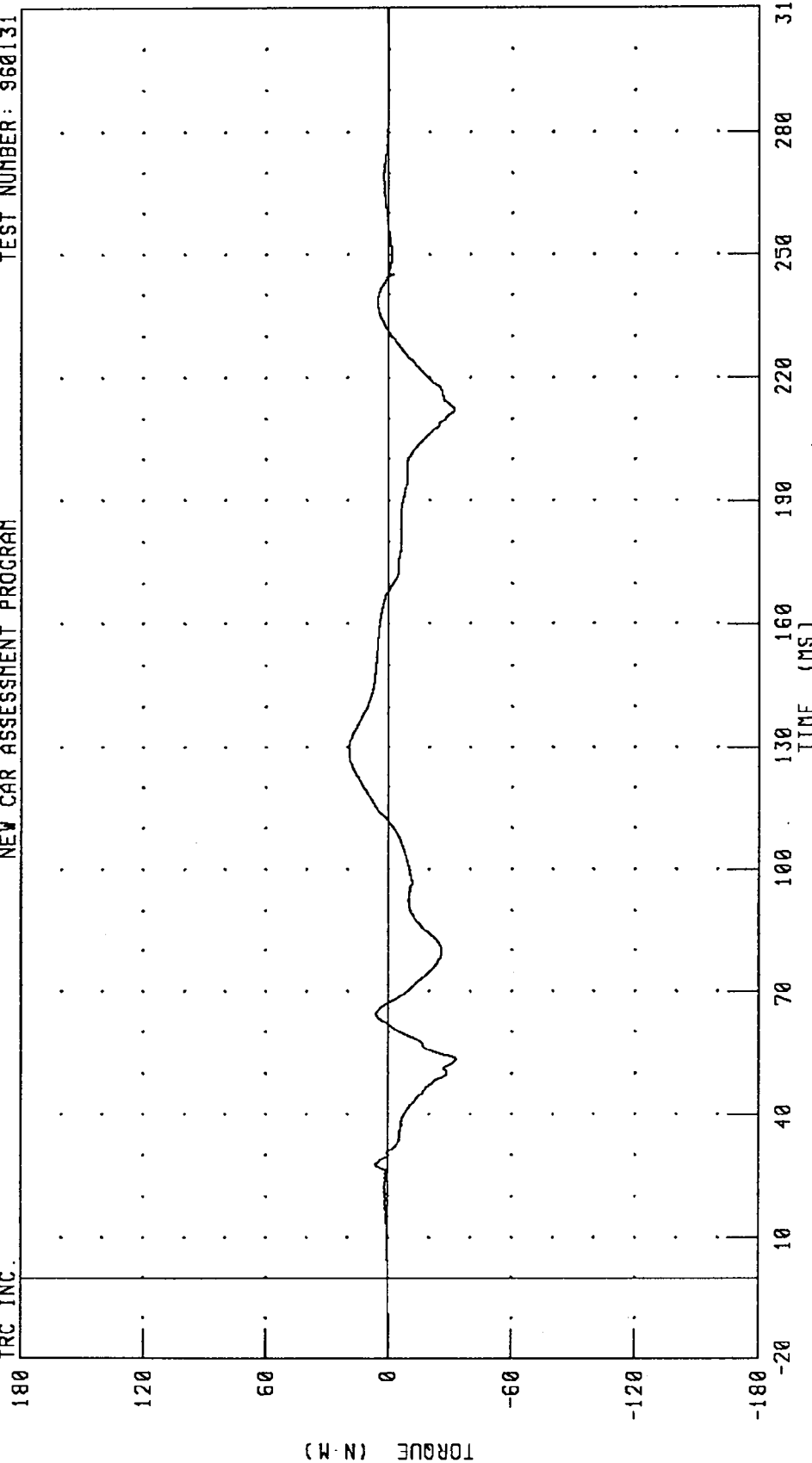
CHANNEL: NEKXM2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Y AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: NEKYM2 FILTER: CH. CLASS 600

PEAK DATA: 19.43 N-M @ 129.04 MS; -32.82 N-M @ 53.44 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Z AXIS
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

180

120

60

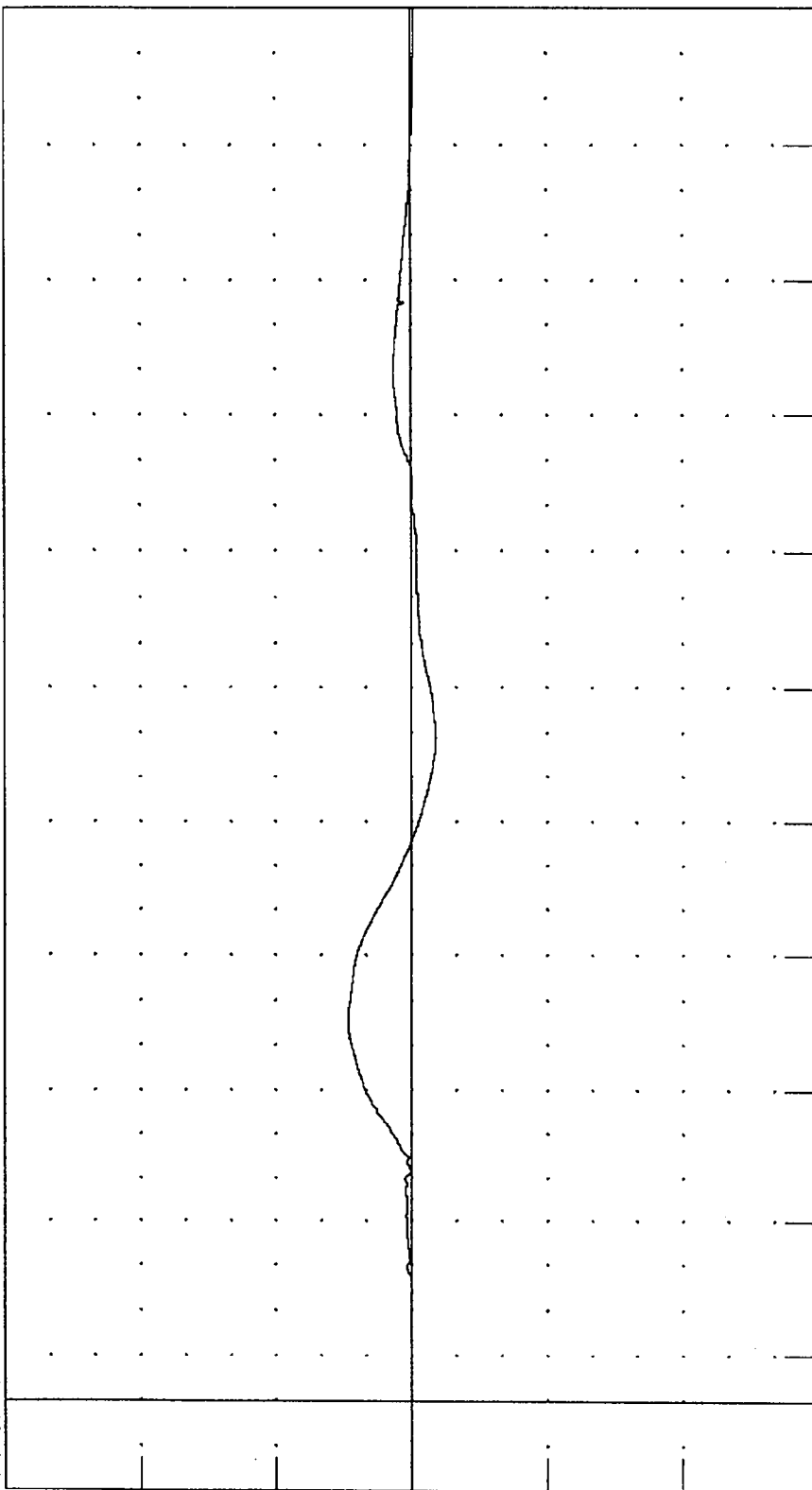
0

-60

-120

-180

TORQUE (N·M)



TIME (MS) 310 280 250 220 190 160 130
PEAK DATA: 28.08 N·M @ 84.56 MS; -10.90 N·M @ 148.96 MS

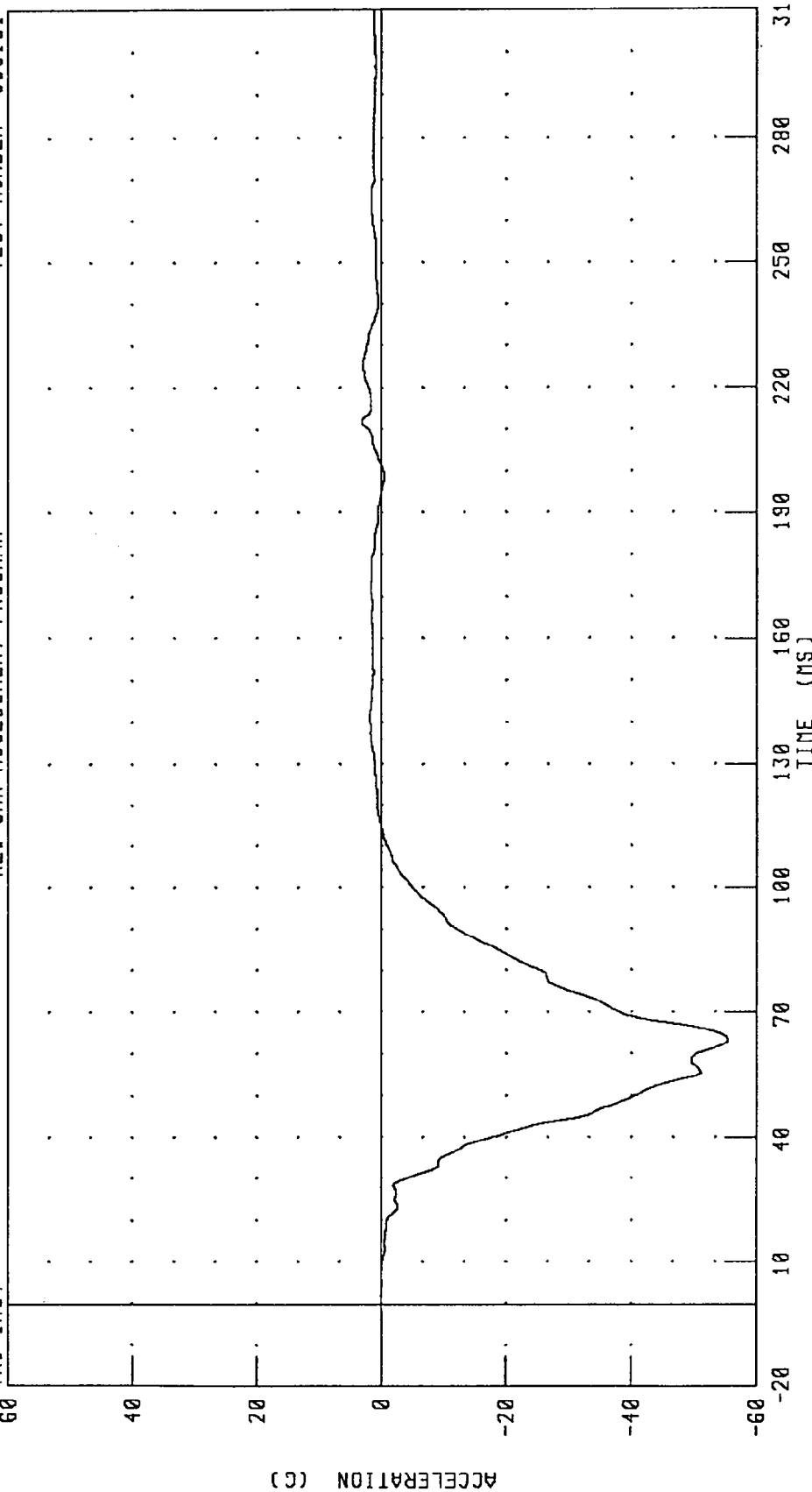
CHANNEL: NEKZM2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



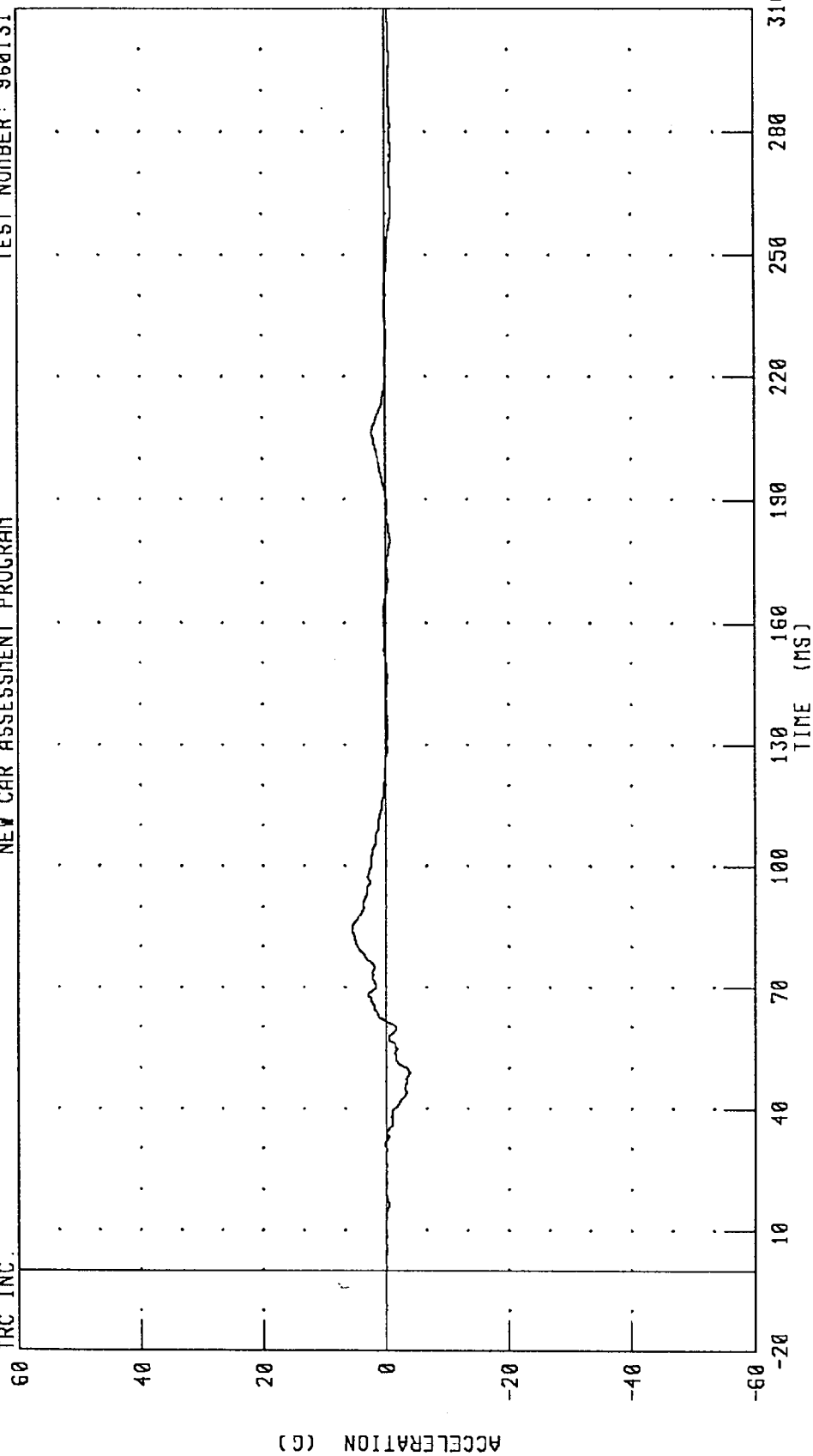
CHANNEL: CSTXG2 FILTER: CH. CLASS 180

PEAK DATA: 3.14 G @ 211.84 MS; -55.44 G @ 63.36 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Y-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

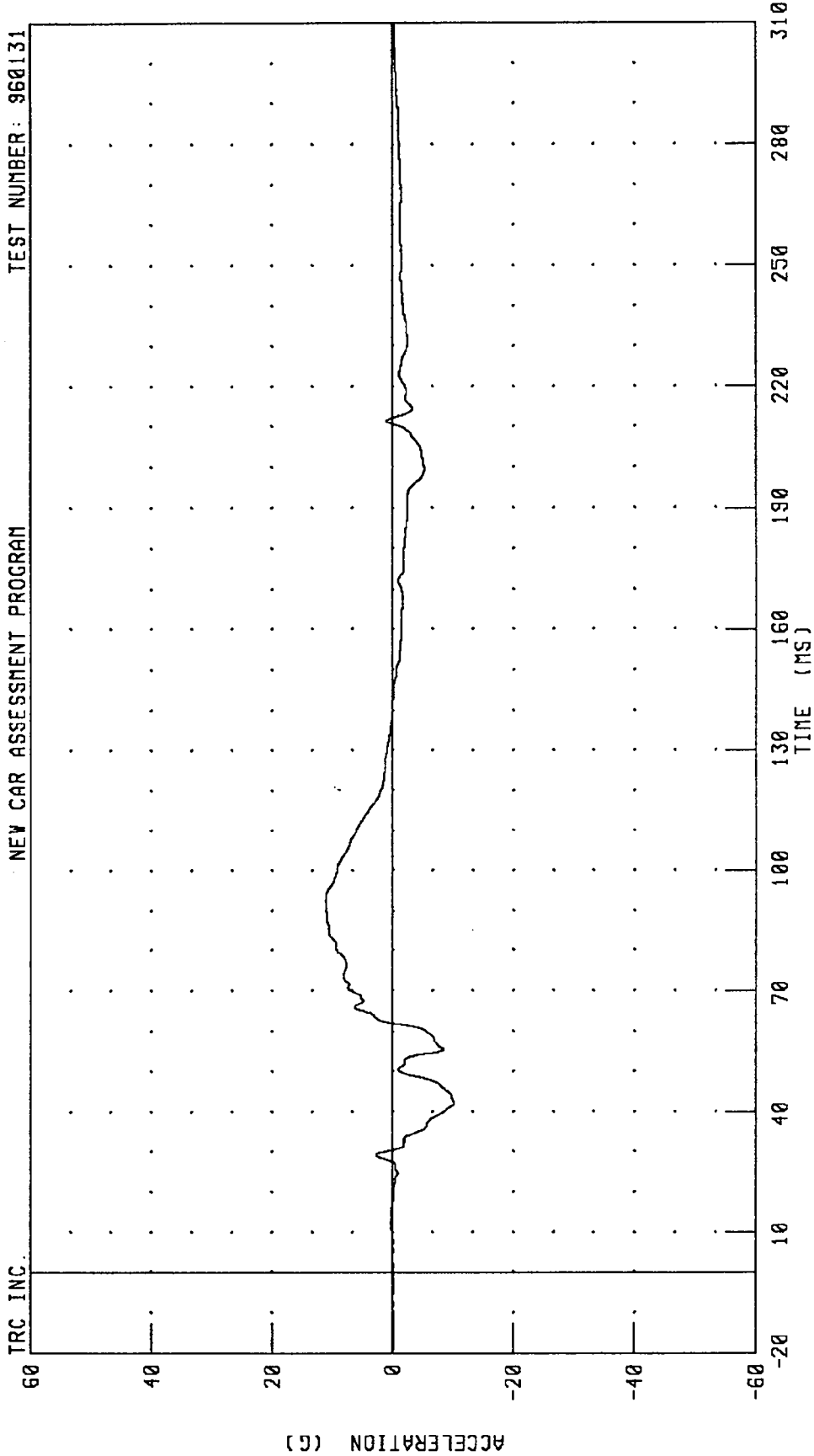


CHANNEL: CSTYG2 FILTER: CH. CLASS 180

PEAK DATA: 5.51 G @ 84.88 MS; -3.81 G @ 48.72 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION

NEW CAR ASSESSMENT PROGRAM TEST NUMBER: 960131



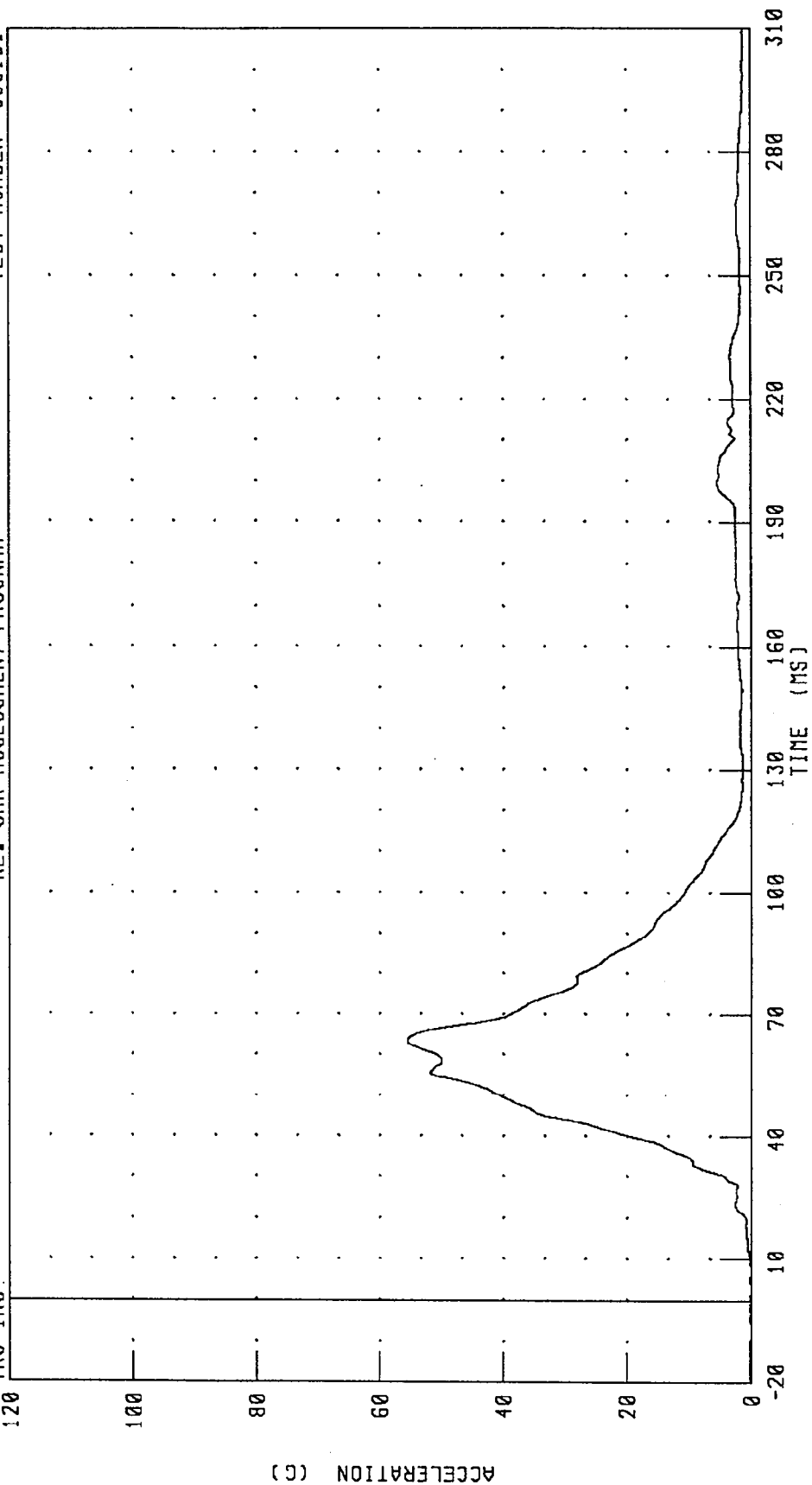
CHANNEL: CST7G2 FILTER: CH. CLASS 180

PEAK DATA: 11.11 G @ 92.48 MS; -10.14 G @ 42.32 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST RESULTANT ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



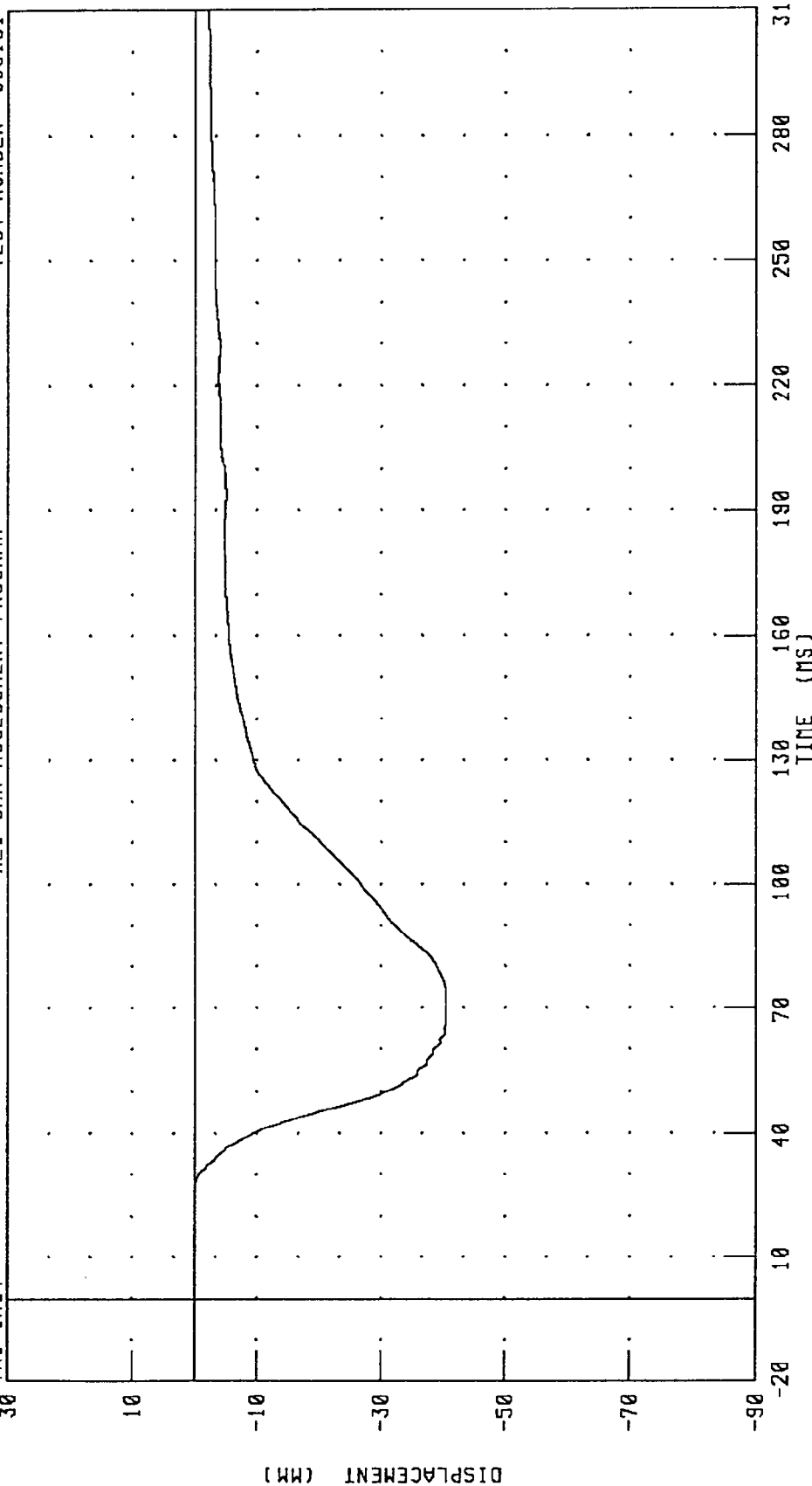
CHANNEL: CSTRG2 FILTER: CH. CLASS 180

PEAK DATA: 55.53 G @ 63.36 MS; 0.02 G @ -20.00 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST DEFLECTION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



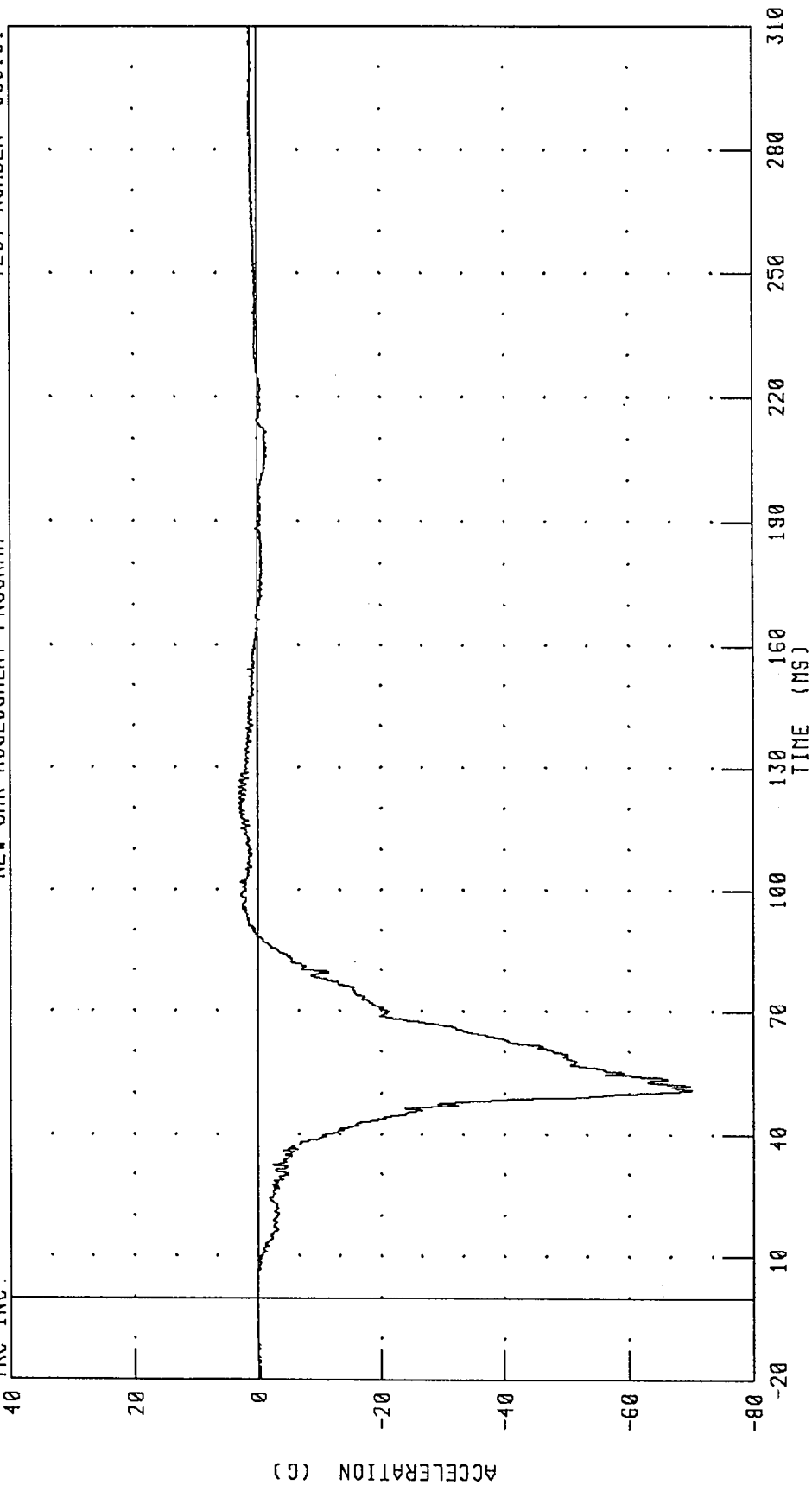
PEAK DATA: 0.01 MM @ -7.52 MS; -40.54 MM @ 66.72 MS

CHANNEL: CSTXD2 FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



PEAK DATA: 3.25 G @ 125.28 MS; -70.09 G @ 50.88 MS

CHANNEL: PEVXG2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS Y-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

60

40

20

ACCELERATION (G)

-20

-40

-60

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

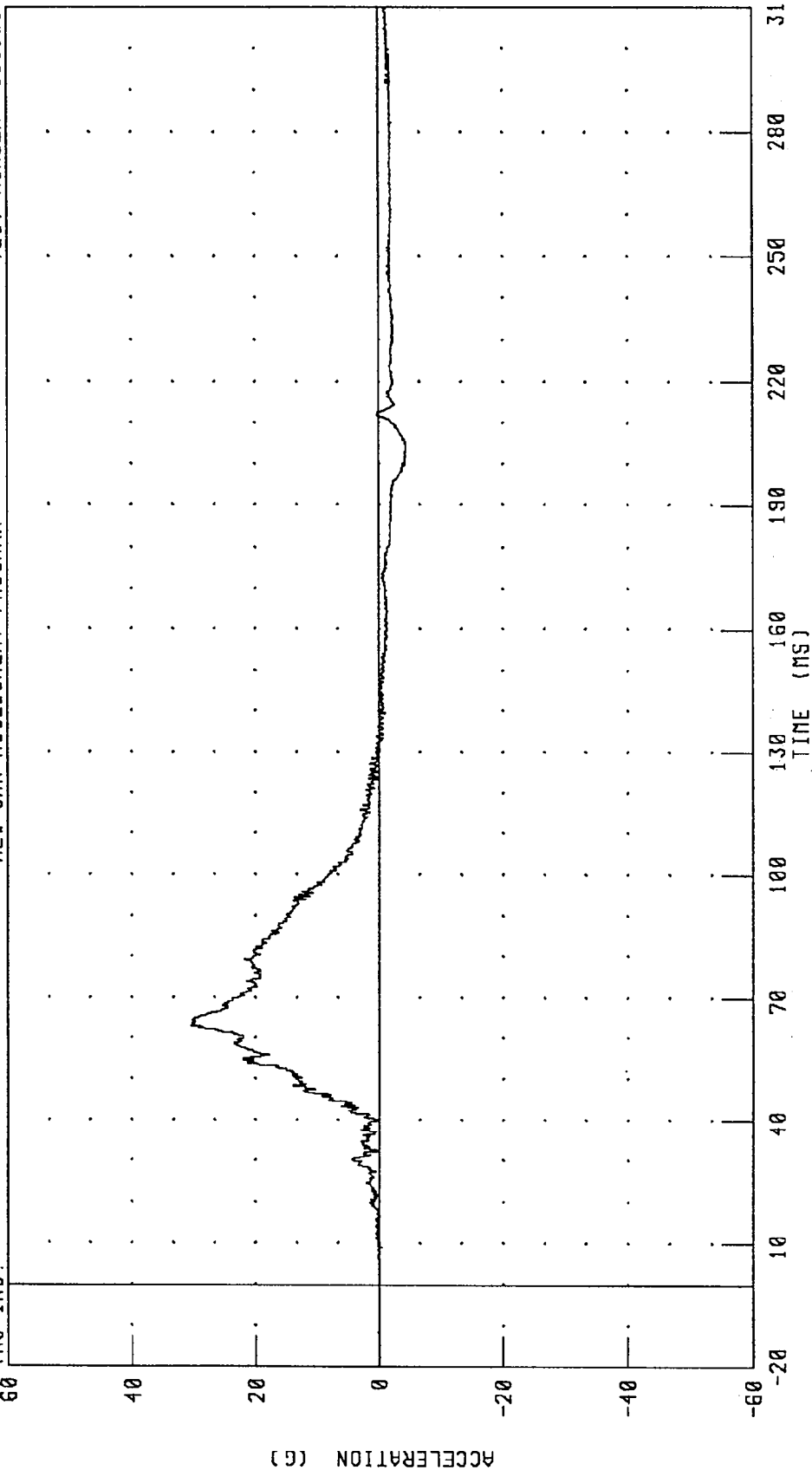
PEAK DATA: 4.81 G @ 79.28 MS; -5.58 G @ 52.56 MS

CHANNEL: PEVYC2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS Z-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



PEAK DATA: 30.52 G @ 62.96 MS; -4.35 G @ 201.92 MS

CHANNEL: PEVZG2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS RESULTANT ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

120

100

80

60

40

20

0

ACCELERATION (G)

-20

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

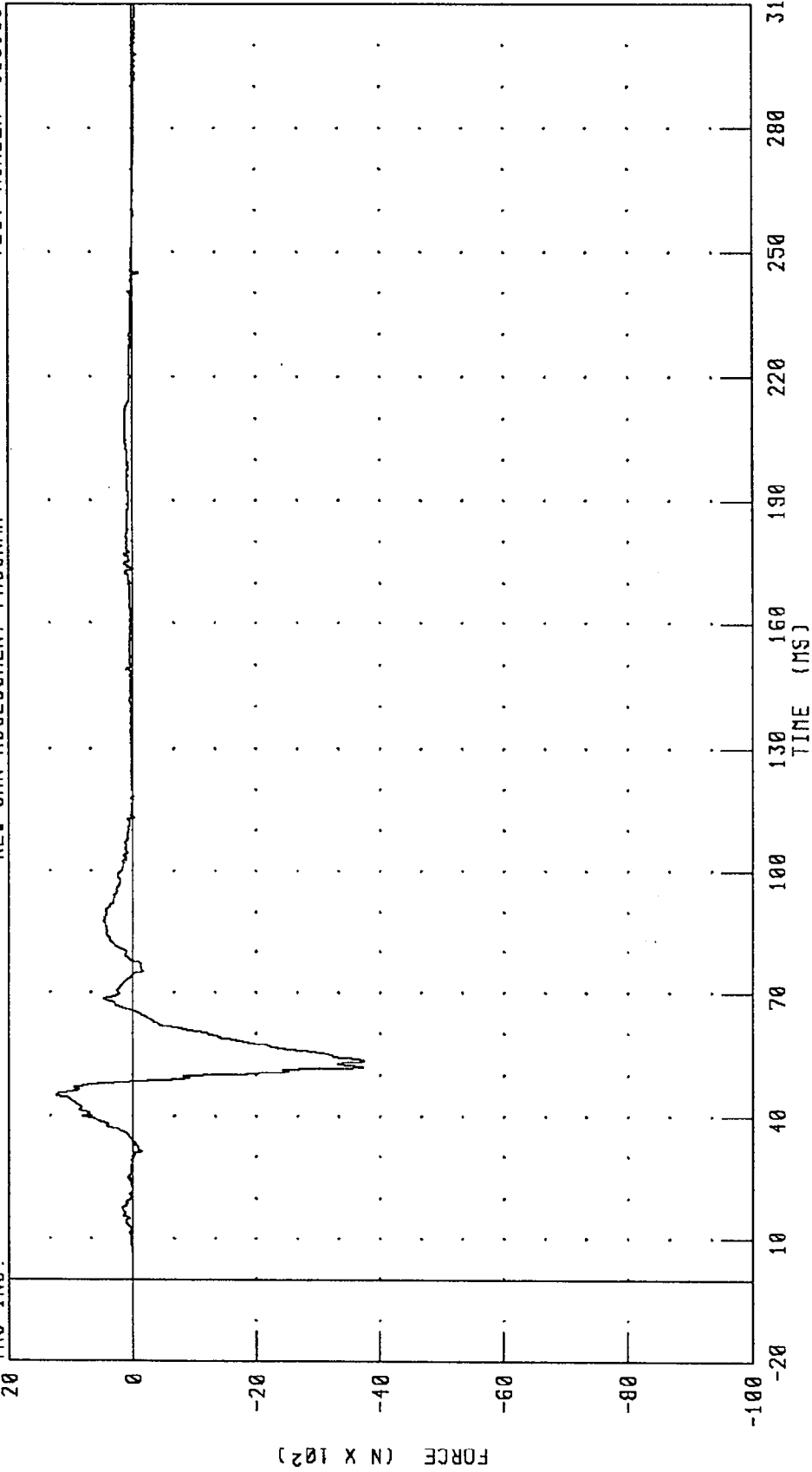
CHANNEL: PEVRG2 FILTER: CH. CLASS 1000

PEAK DATA: 71.49 G @ 50.88 MS; 0.13 G @ -19.84 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FEMUR FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



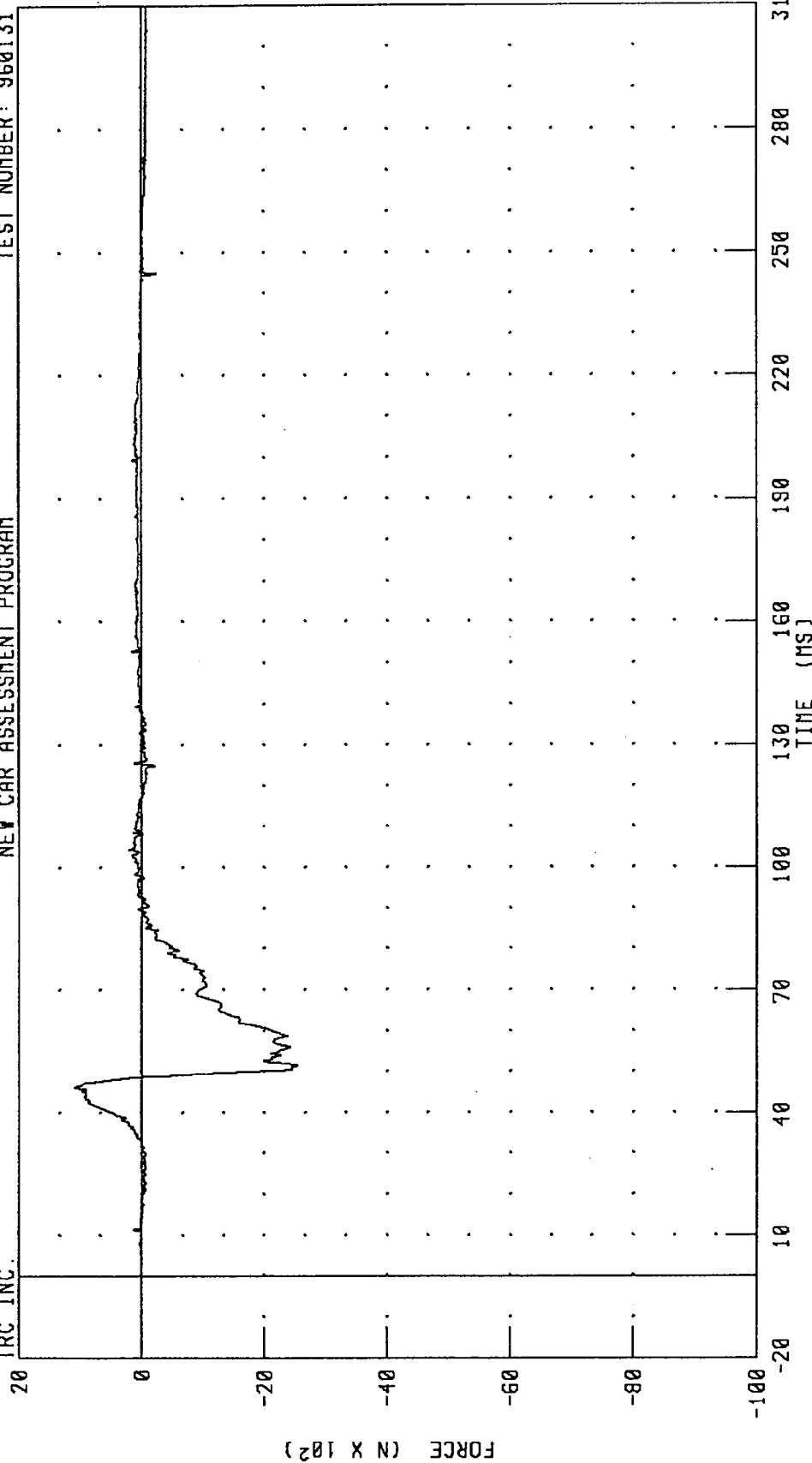
CHANNEL: LFMF2 FILTER: CH. CLASS 600

PEAK DATA: 1239.44 N @ 45.20 MS; -3740.77 N @ 53.52 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FEMUR FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



PEAK DATA: 1080.24 N @ 46.32 MS; -2541.23 N @ 51.36 MS

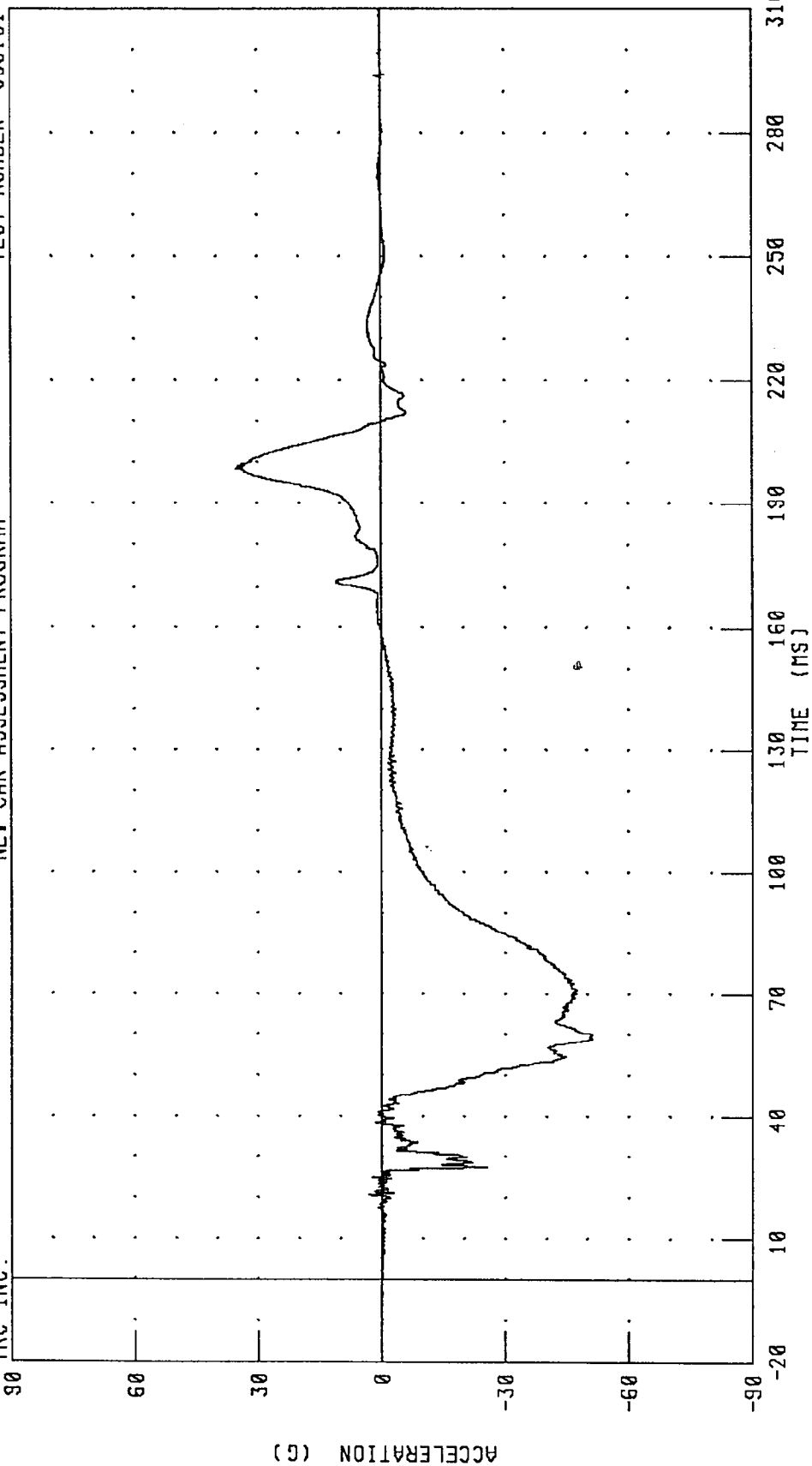
CHANNEL: REMF2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: HEDXR2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90

60

30

0

-30

-60

-90

ACCELERATION (G)

20 10 40 70 100 130 160 190 220 250 280 310

TIME (MS)

CHANNEL: HEDYR2 FILTER: CH. CLASS 1000

PEAK DATA: 19.01 G @ 83.20 MS; -6.21 G @ 33.68 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90

60

30

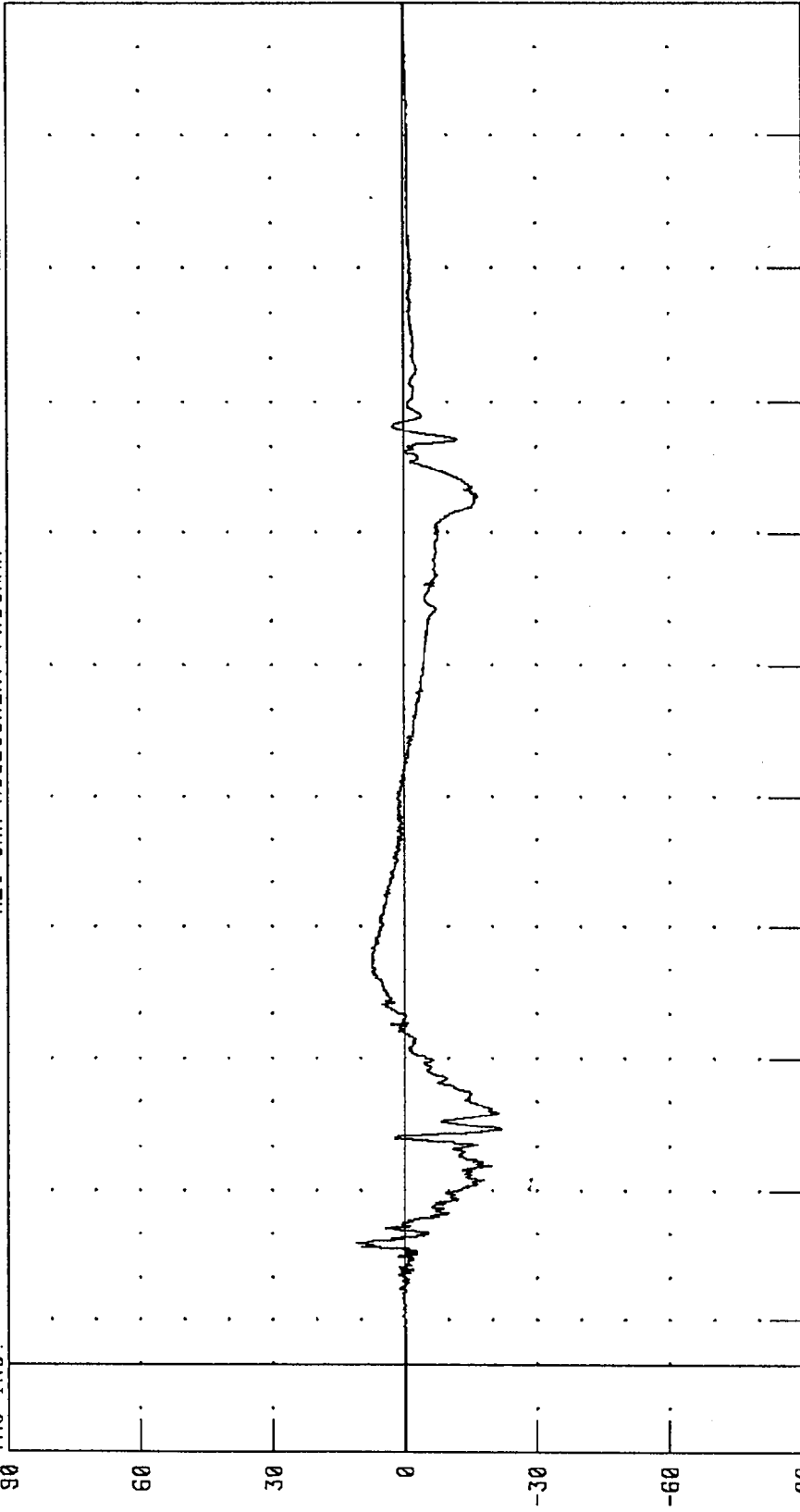
0

-30

-60

-90

ACCELERATION (G)



CHANNEL: HEDZR2 FILTER: CH. CLASS 1000
PEAK DATA: 10.81 G @ 28.00 MS; -22.06 G @ 53.92 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

120

100

80

60

40

20

0

ACCELERATION (G)

-20

10

40

70

100

130

160

190

220

250

280

310

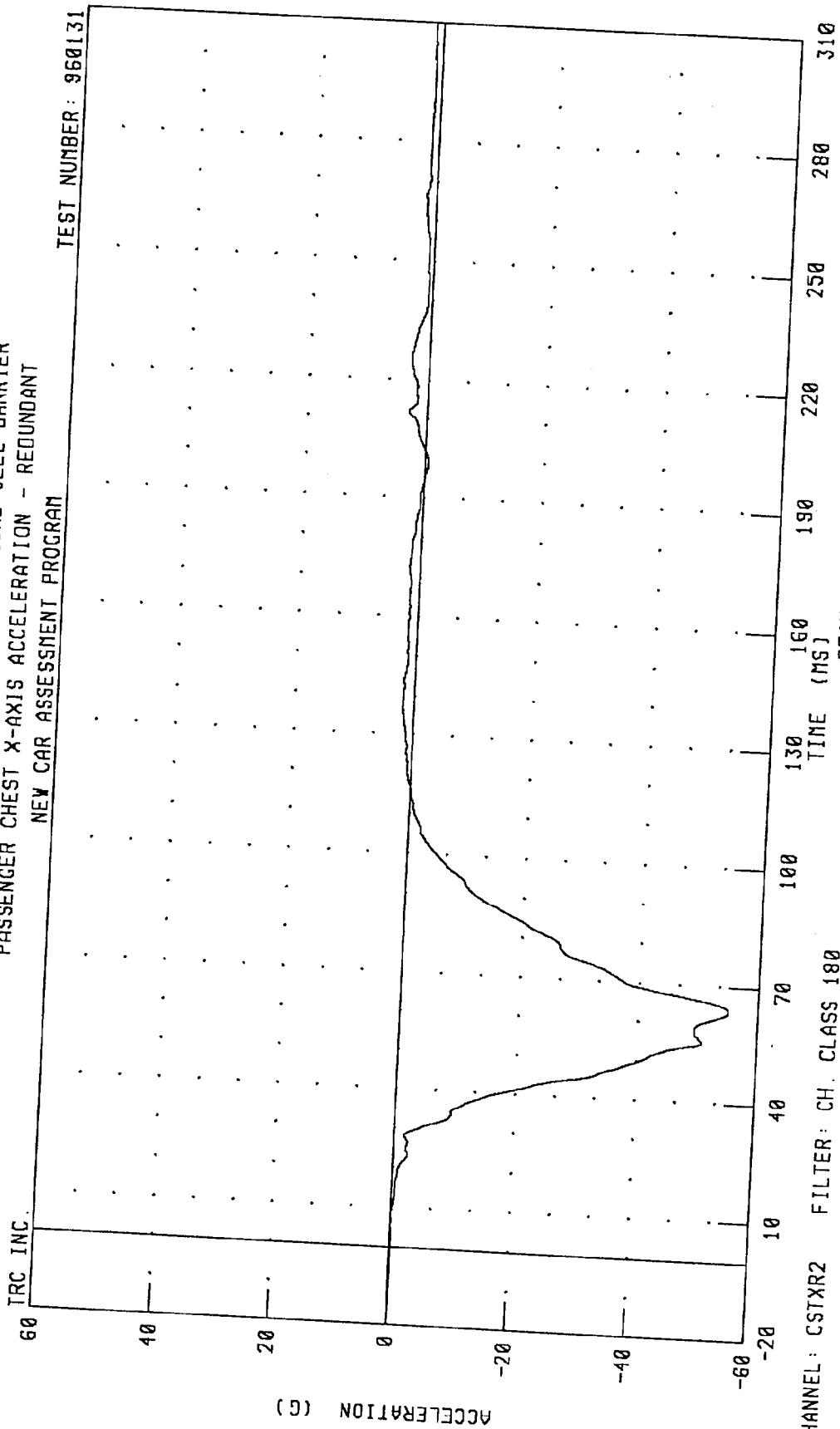
TIME (MS)

CHANNEL: HEDRR2 FILTER: CH. CLASS 1000

PEAK DATA: 54.58 G @ 58.96 MS; 0.13 G @ 8.88 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION - REDUNDANT
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131



CHANNEL: CSTXR2 FILTER: CH. CLASS 180

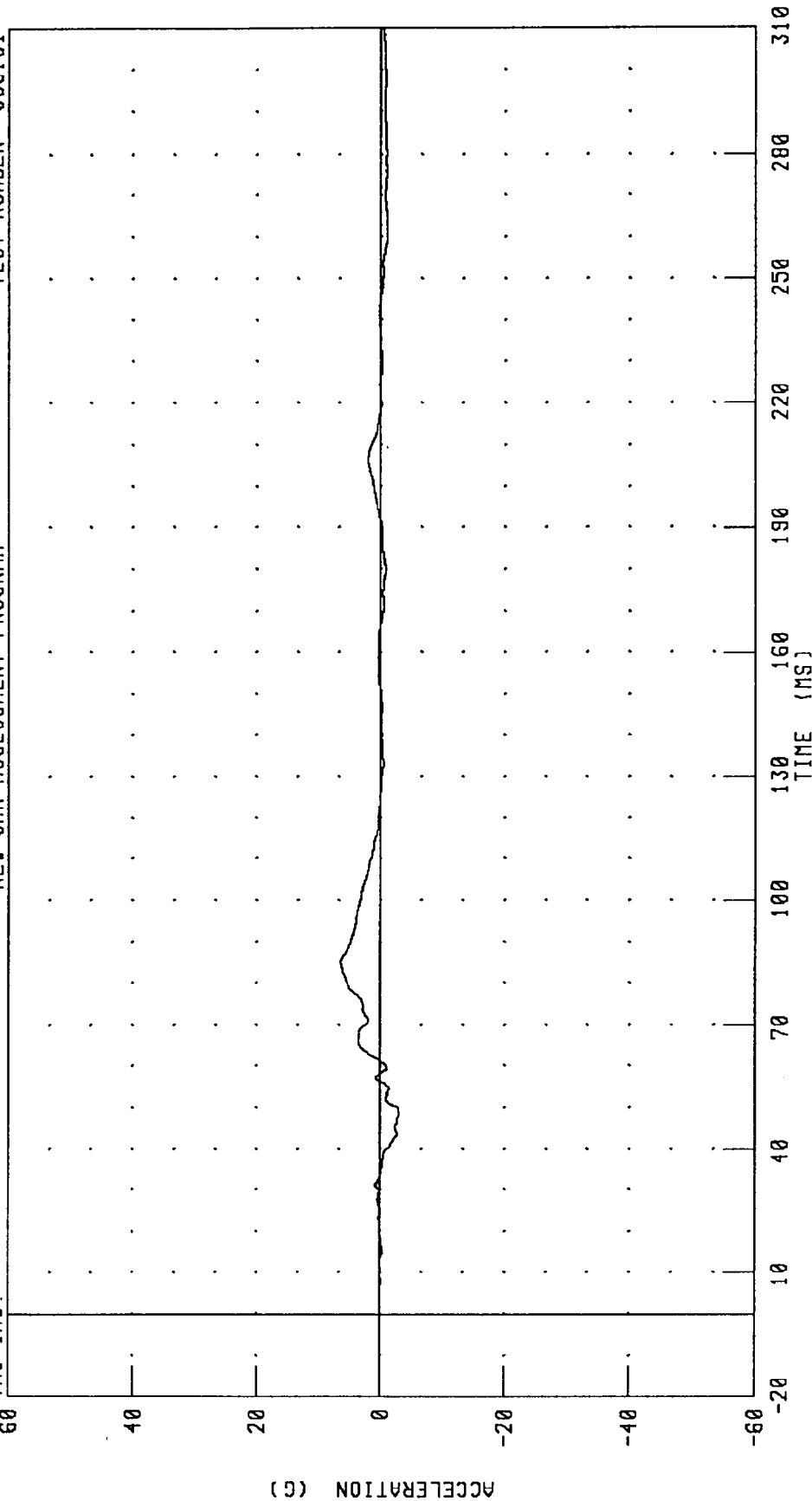
PEAK DATA: 3.14 G @ 211.84 MS; -54.87 G @ 63.28 MS

1986 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Y-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: CSTYR2 FILTER: CH. CLASS 180

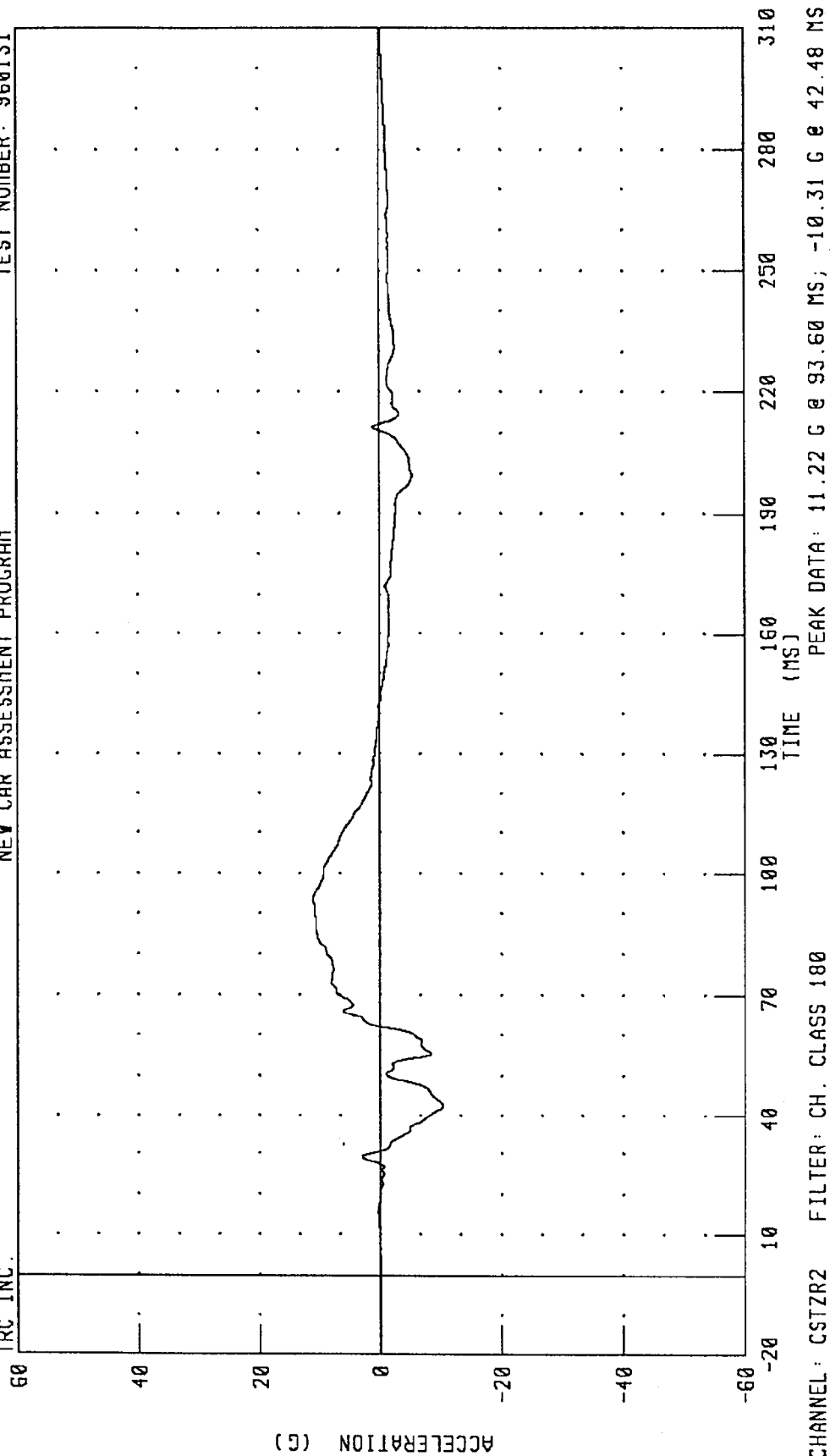
PEAK DATA: 6.38 G @ 85.12 MS; -3.02 G @ 48.48 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: CSTZR2 FILTER: CH. CLASS 180

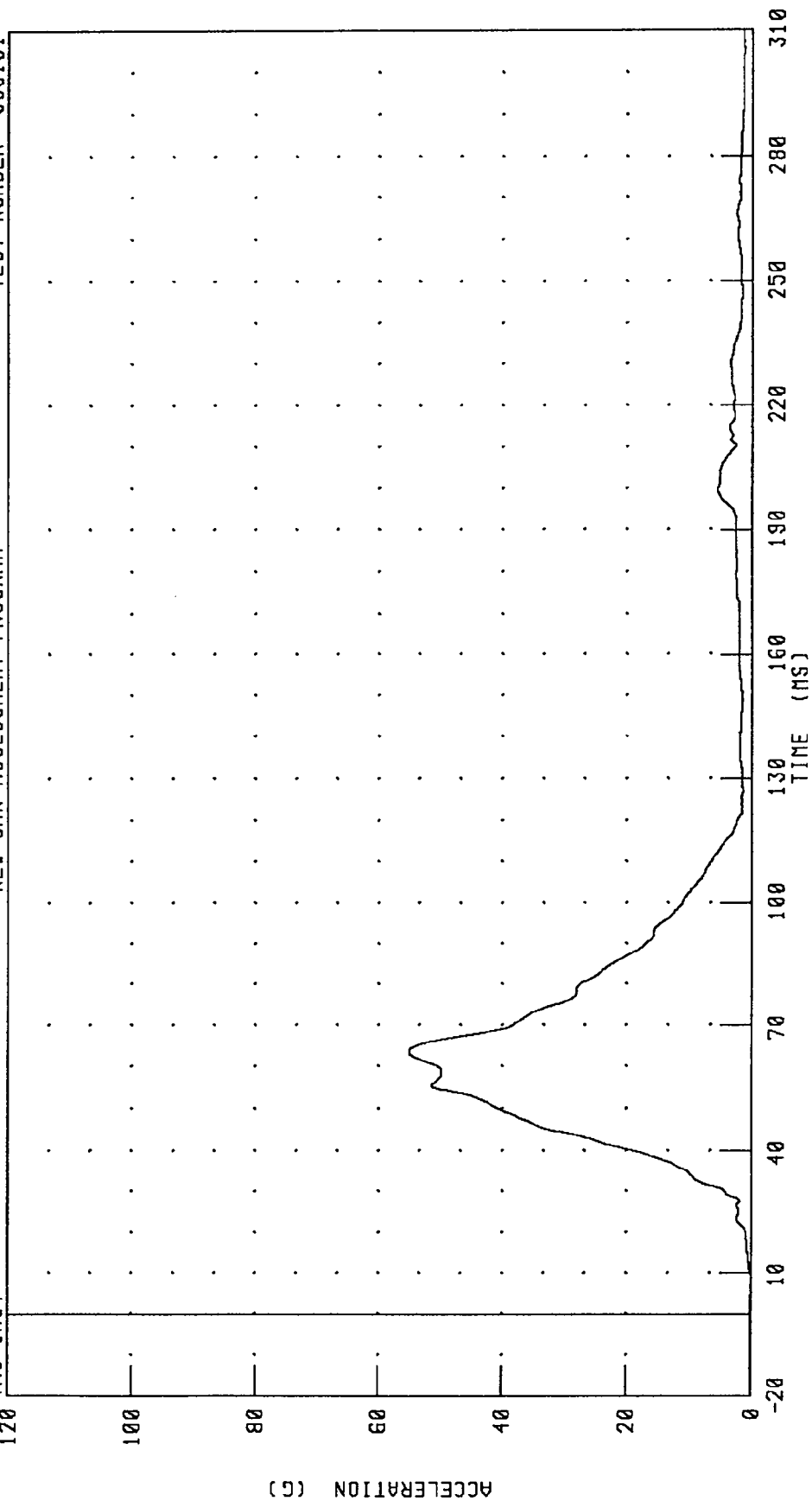
PEAK DATA: 11.22 G @ 93.60 MS; -10.31 G @ 42.48 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



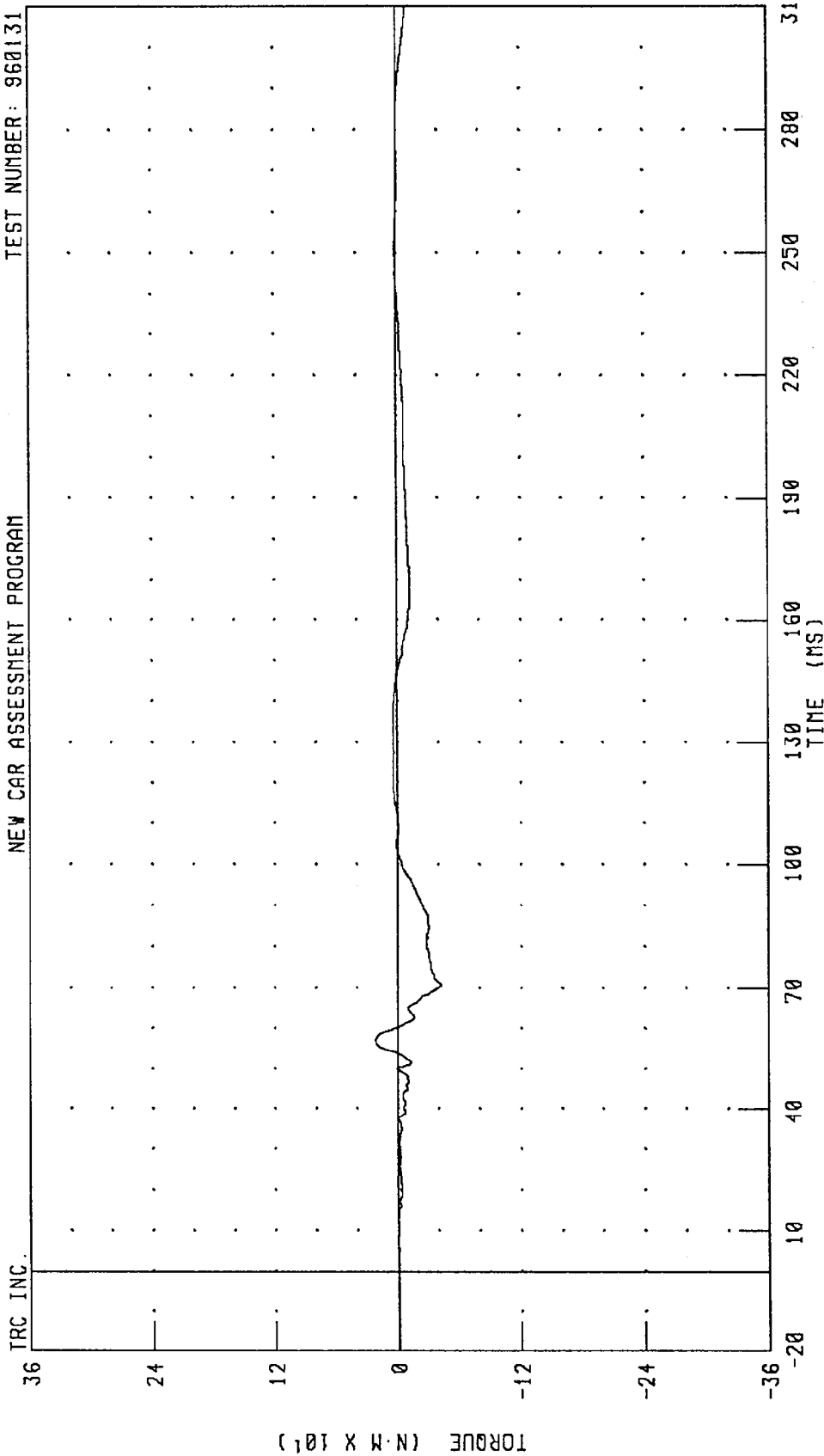
CHANNEL: CSTRR2 FILTER: CH. CLASS 180

PEAK DATA: 54.97 G @ 63.36 MS; 0.01 G @ -20.00 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM



PEAK DATA: 21.97 N·m @ 57.04 ms; -42.39 N·m @ 70.72 ms

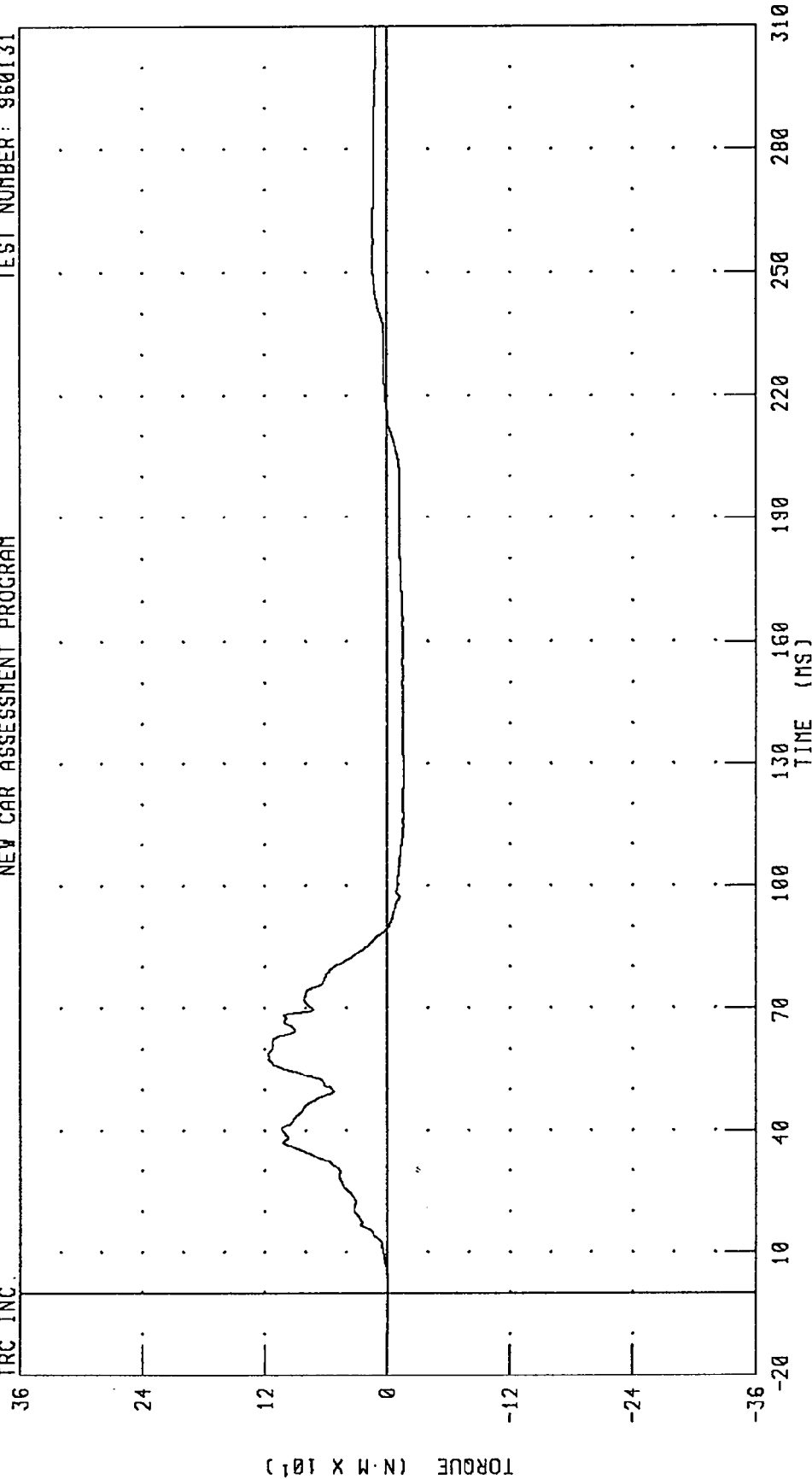
CHANNEL: TBLXM2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 117.07 N-M @ 58.72 MS; -15.96 N-M @ 127.44 MS

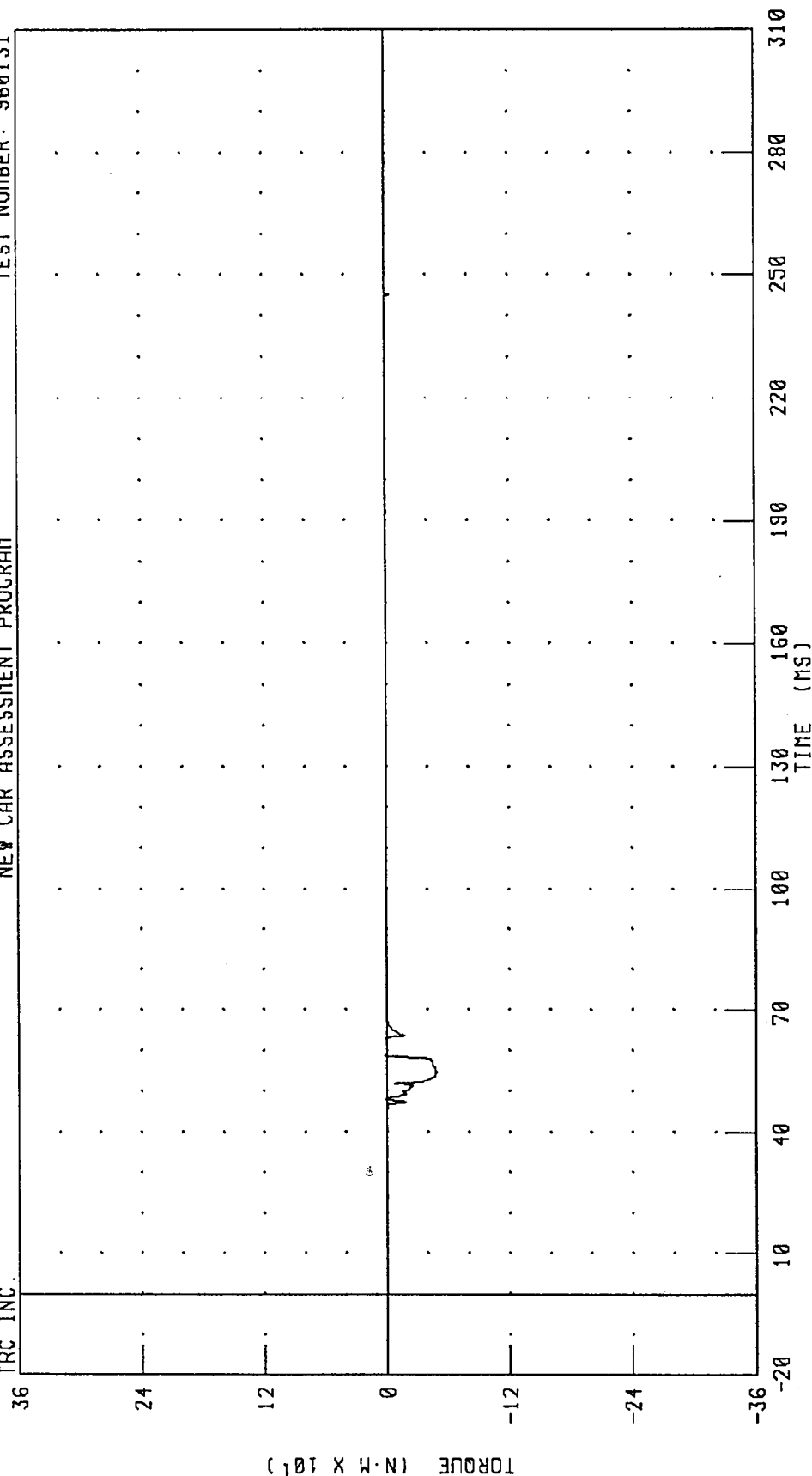
CHANNEL: TBLYM2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 2.05 N-M @ 58.80 MS; -48.70 N-M @ 54.88 MS

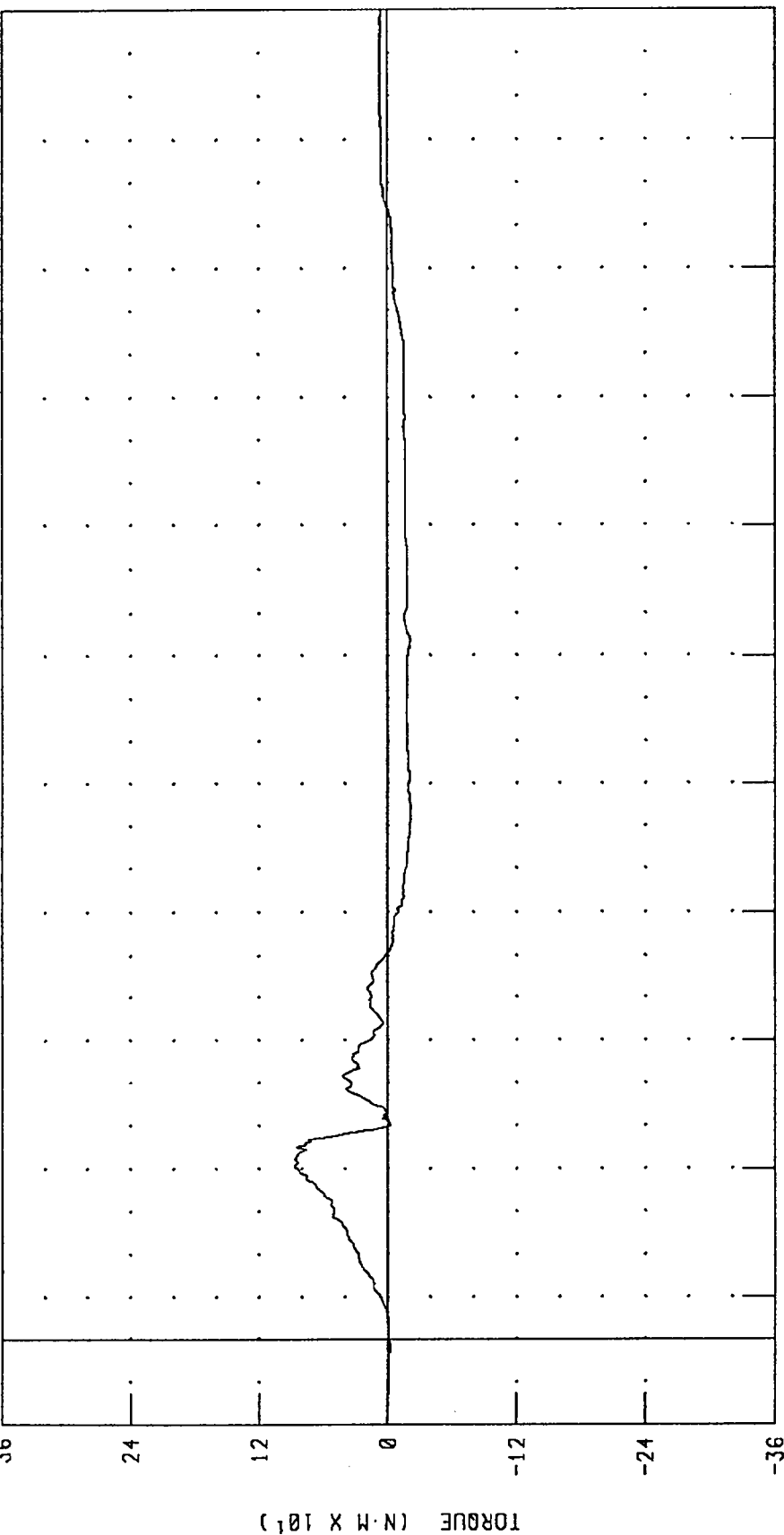
CHANNEL: TBRXM2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



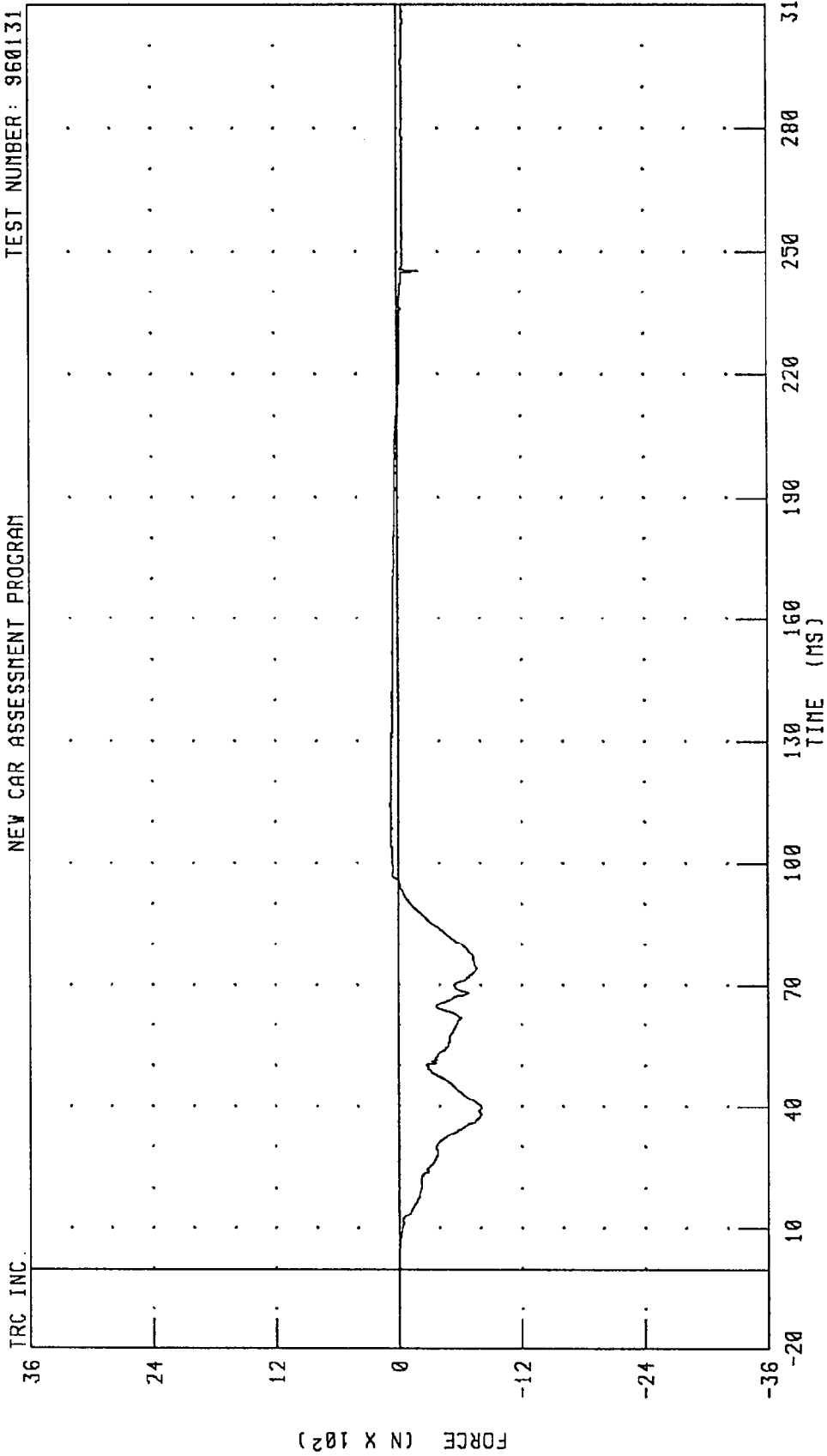
PEAK DATA: 86.79 N·m @ 40.56 MS; -21.21 N·m @ 123.36 MS

CHANNEL: TBRYM2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT LOWER TIBIA X-AXIS FORCE

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131



PEAK DATA: 78.01 N @ 113.84 MS; -805.47 N @ 39.68 MS

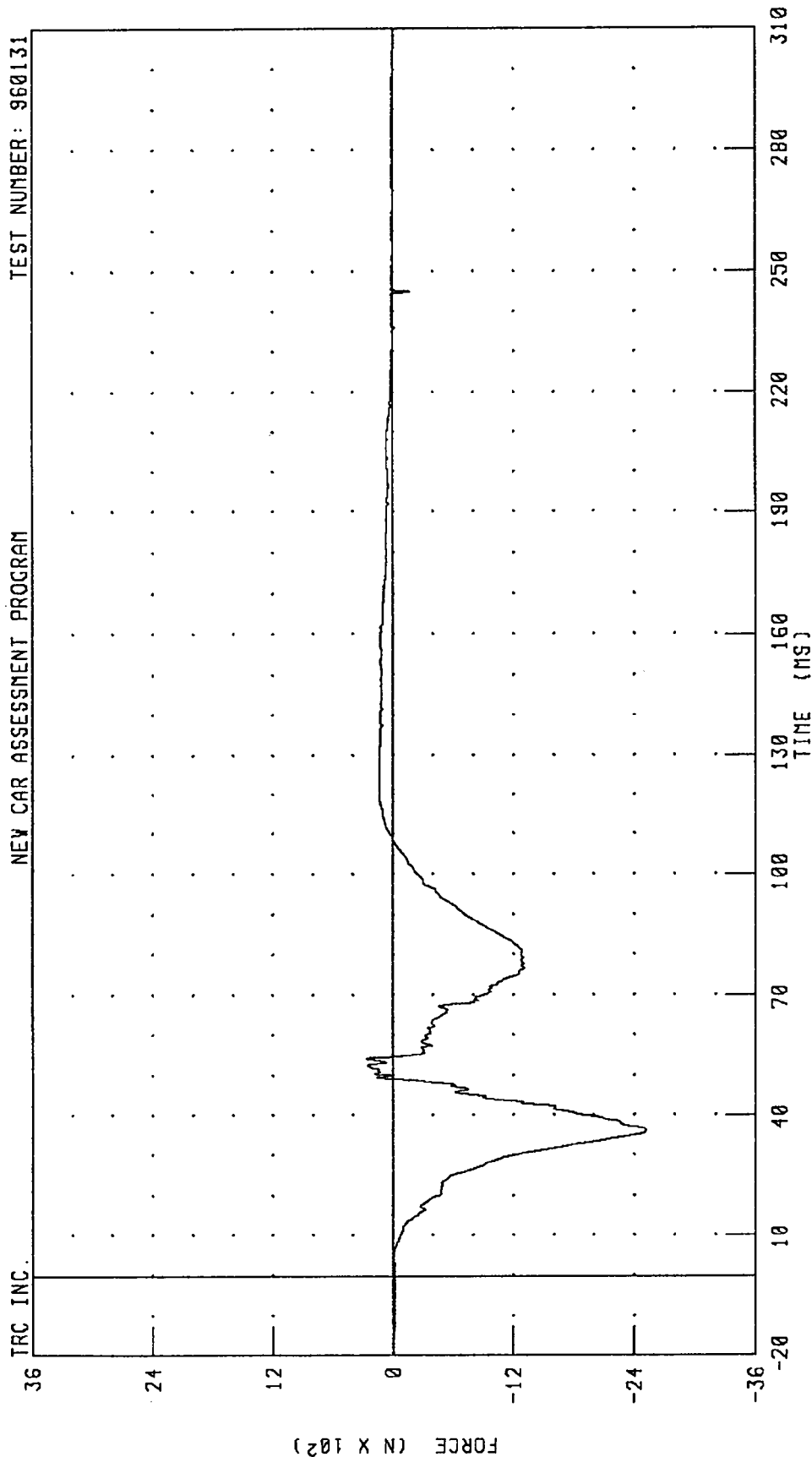
CHANNEL: ANLXF2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: ANLZF2 FILTER: CH. CLASS 600

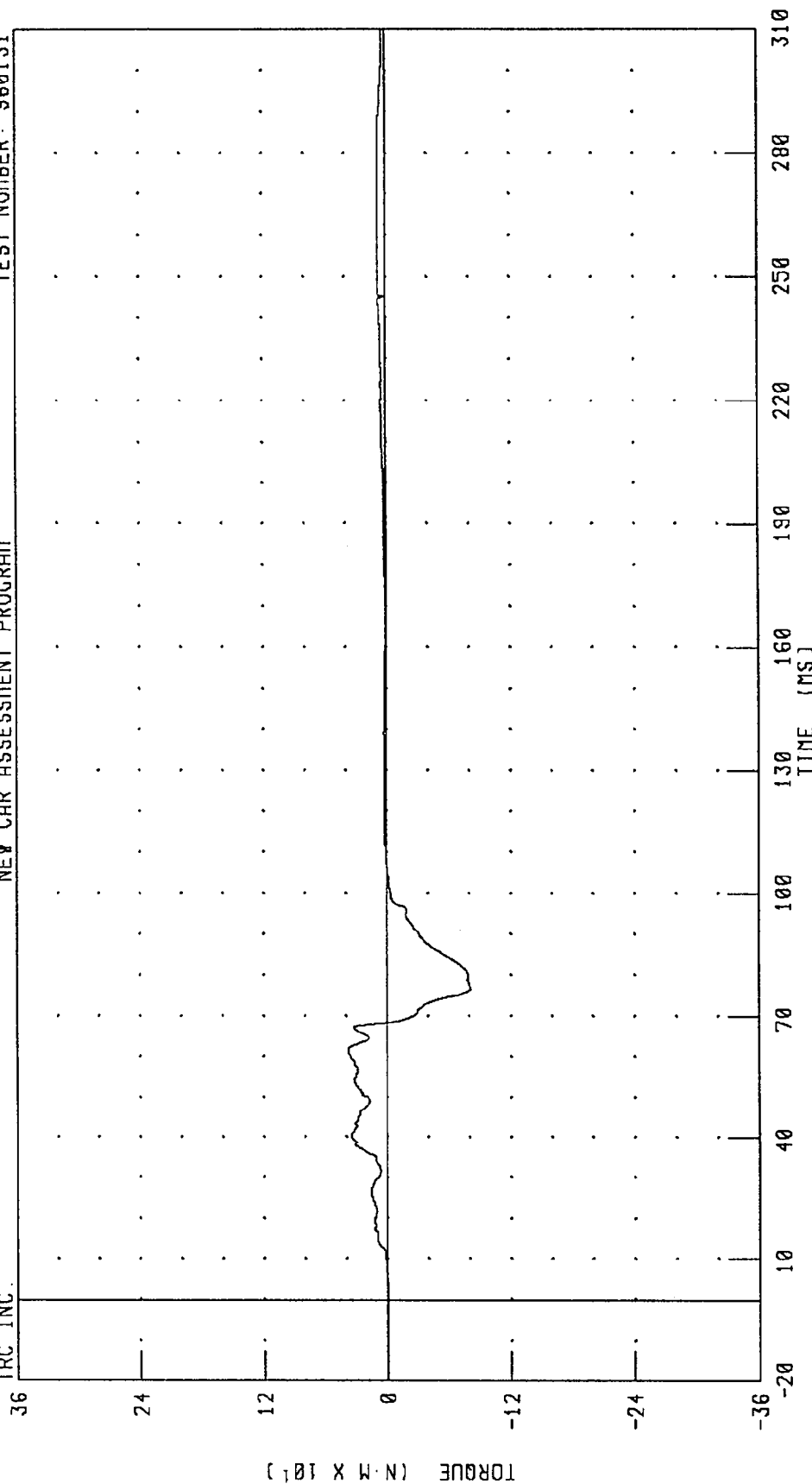
PEAK DATA: 261.66 N @ 54.16 MS; -2516.05 N @ 36.00 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 38.03 N-M @ 61.20 MS; -81.40 N-M @ 76.72 MS

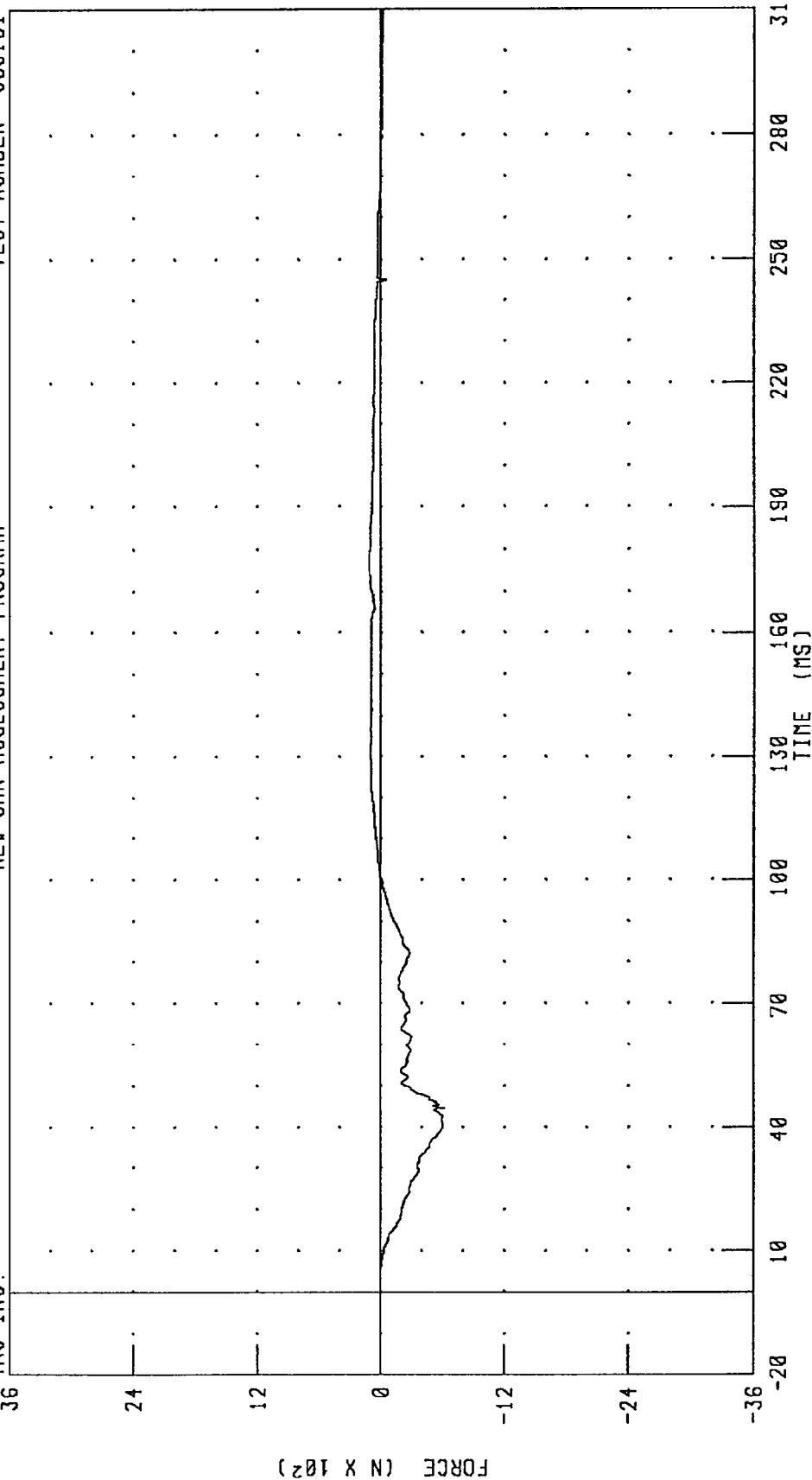
CHANNEL: ANLYM2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT LOWER TIBIA X-AXIS FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 108.74 N @ 174.32 MS; -614.16 N @ 44.72 MS

CHANNEL: ANRFX2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

IRC INC.

36

24

12

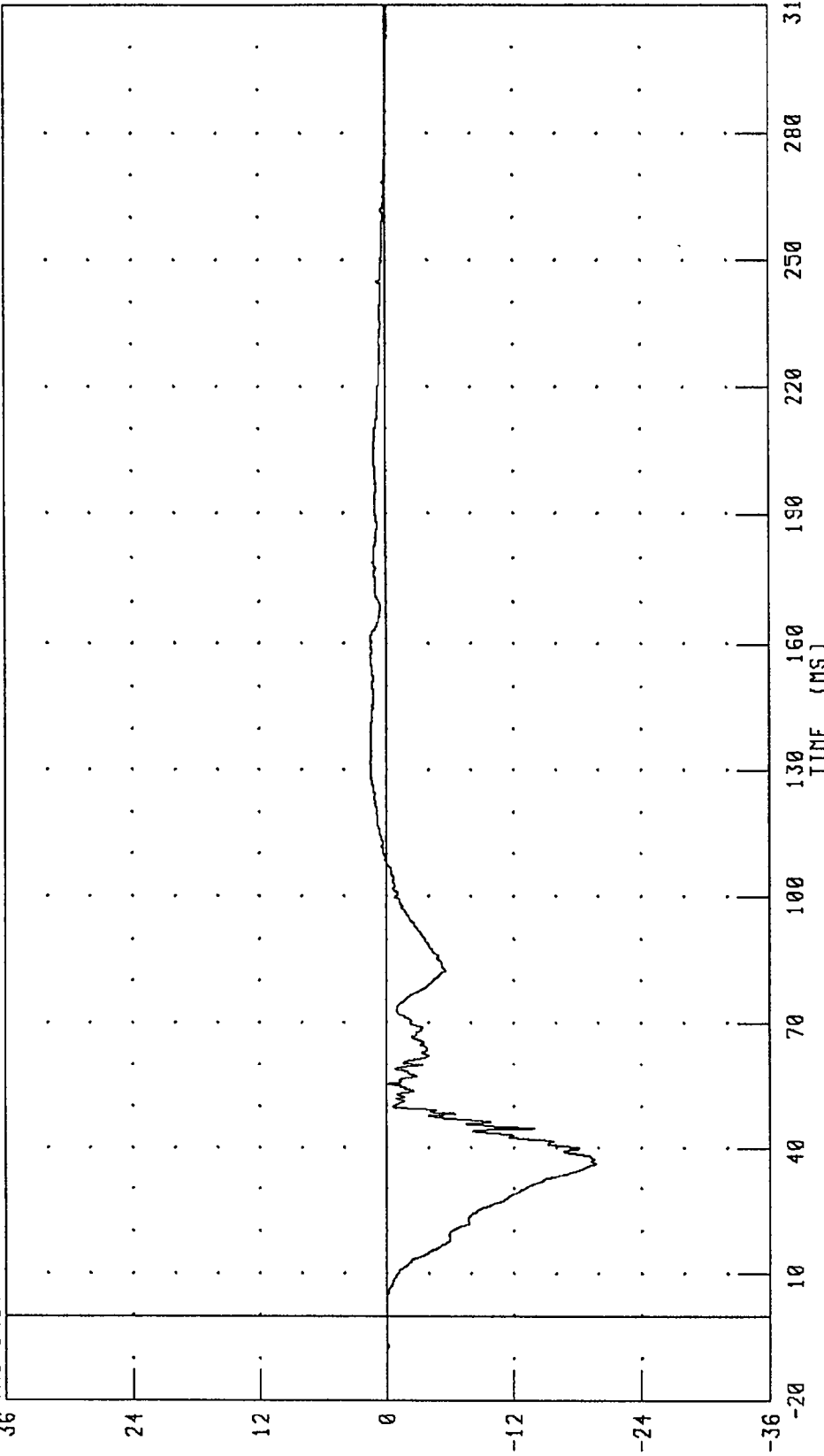
0

-12

-24

-36

FORCE (N X 10²)



CHANNEL: ANRZF2 FILTER: CH. CLASS 600

PEAK DATA: 149.19 N @ 131.76 MS; -1972.35 N @ 36.32 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

36

24

12

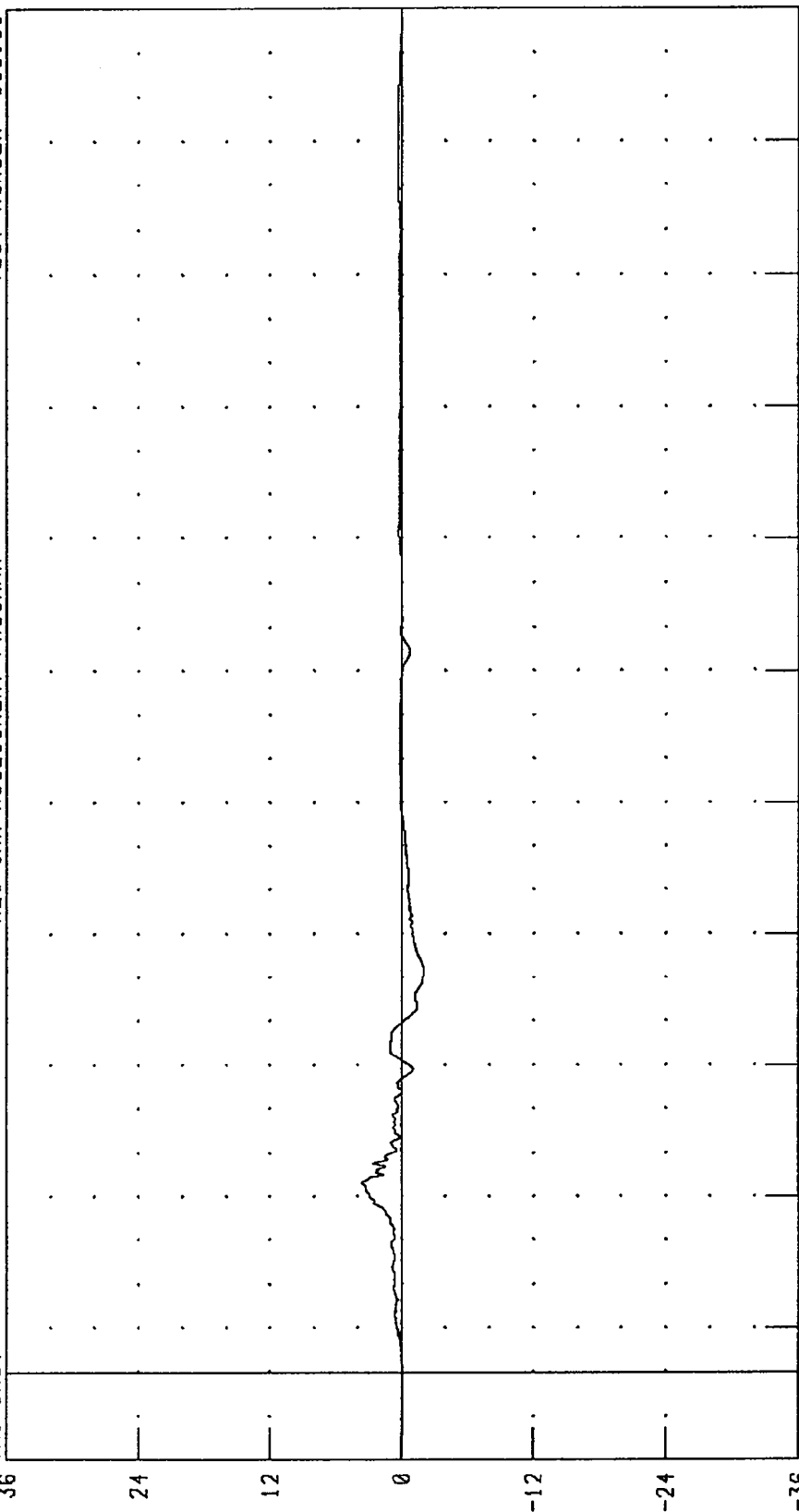
0

-12

-24

-36

TORQUE (N·M X 10¹)



PEAK DATA: 36.43 N·M @ 43.12 MS; -20.34 N·M @ 91.60 MS

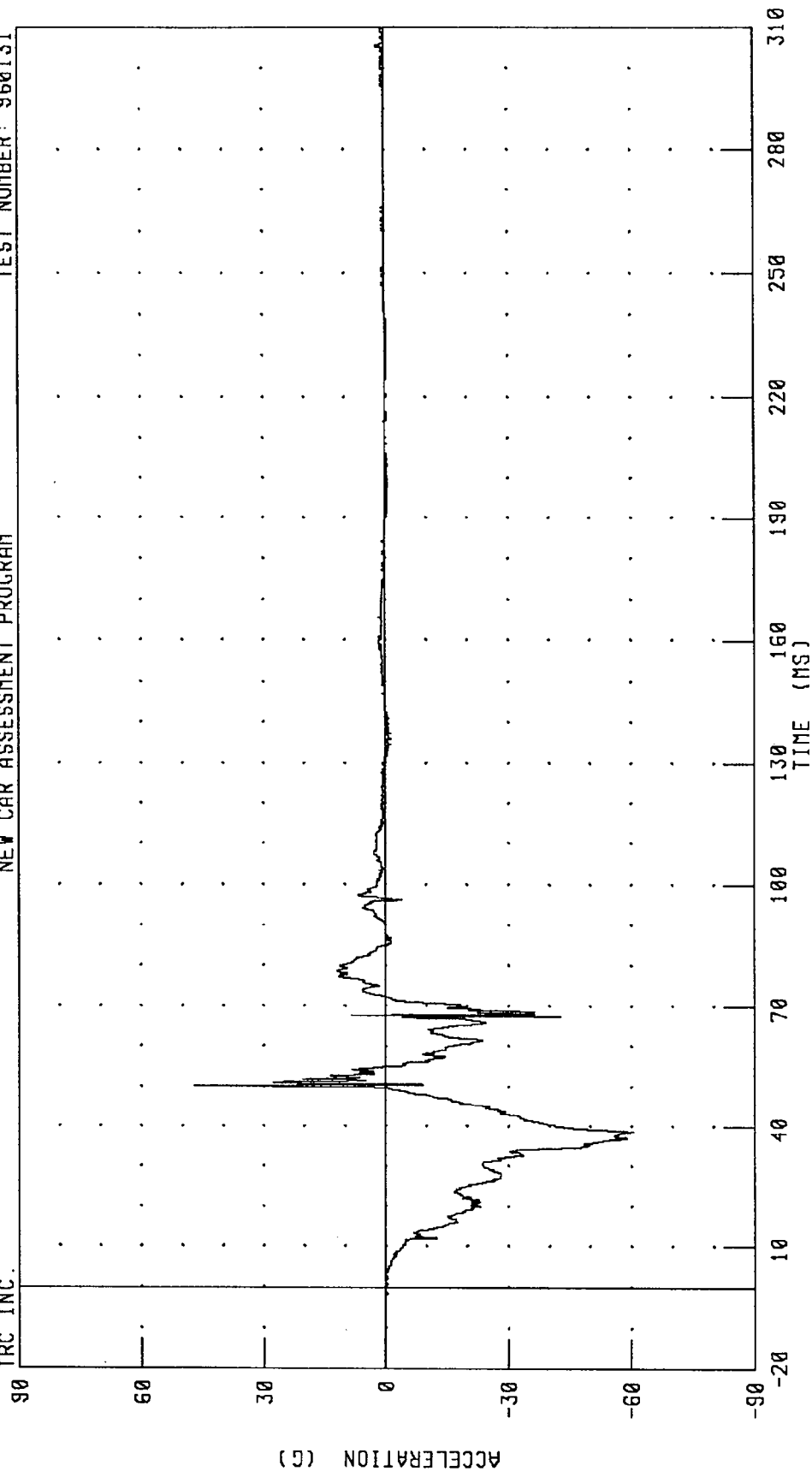
CHANNEL: ANRYM2 FILTER: CH. CLASS 600

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



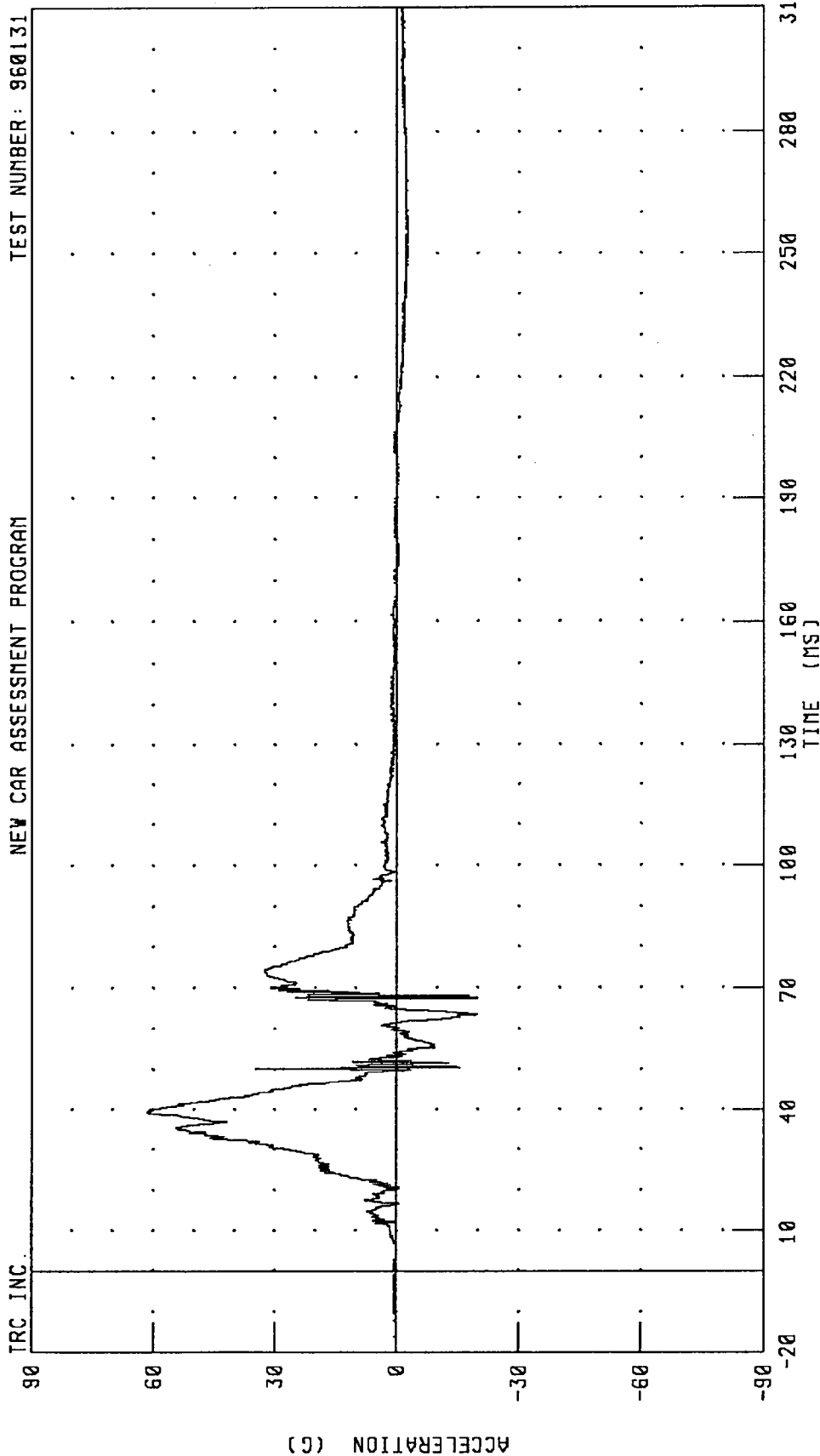
PEAK DATA: 46.92 G @ 50.16 MS; -60.53 G @ 38.64 MS

CHANNEL: FTLXG2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM



CHANNEL: FTLZH2 FILTER: CH. CLASS 1000

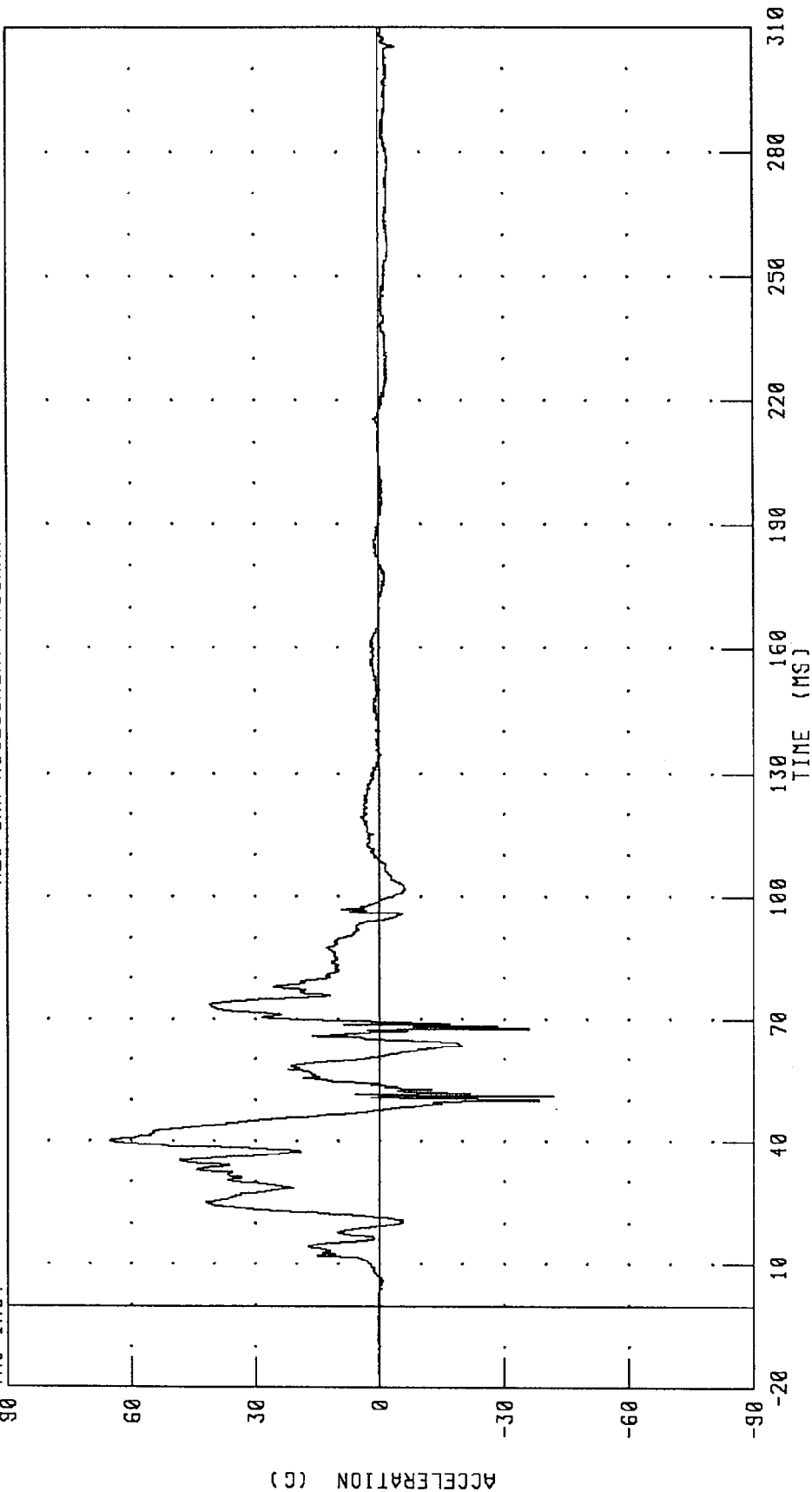
PEAK DATA: 61.40 G @ 39.20 MS; -19.78 G @ 63.60 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



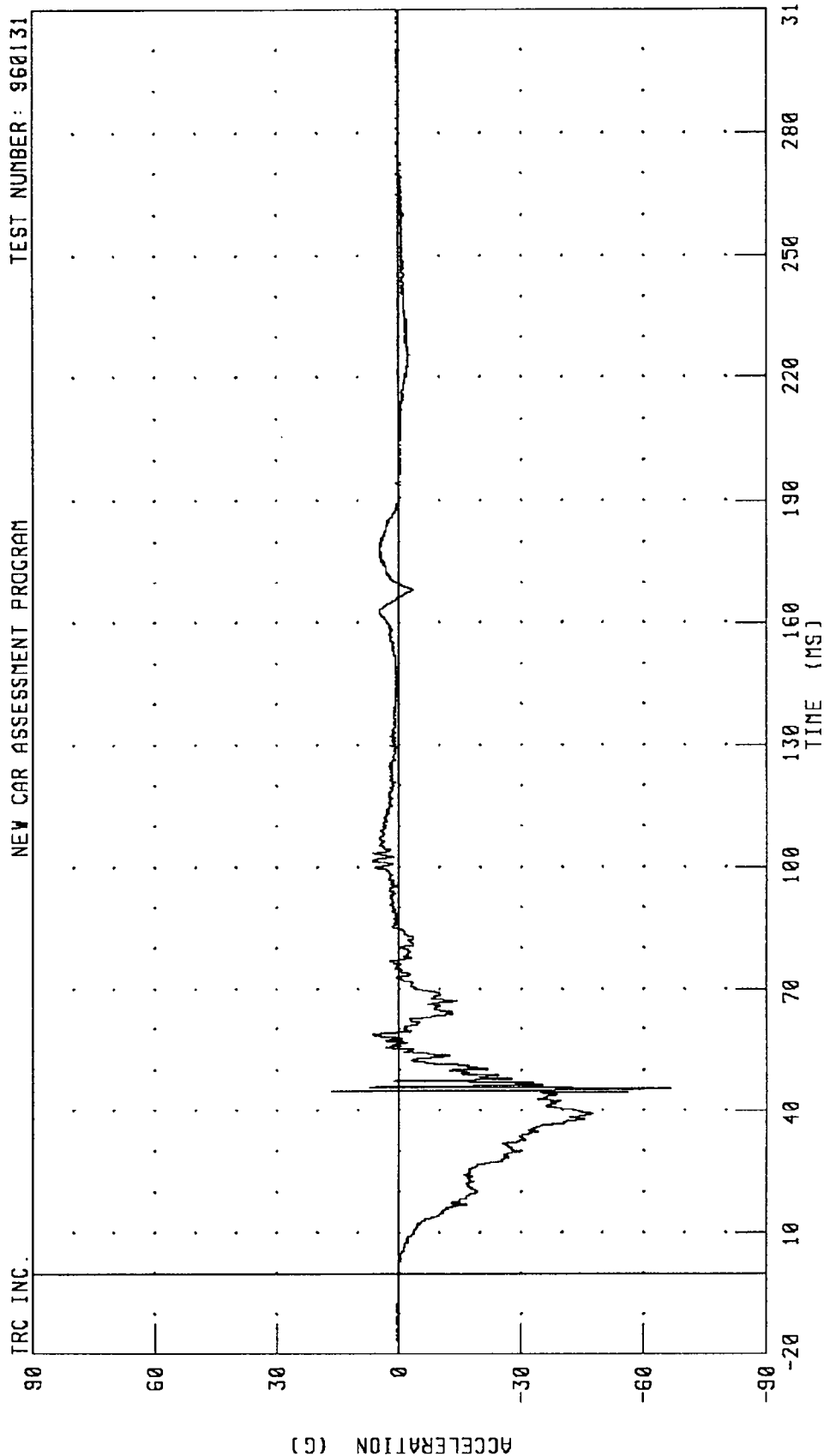
CHANNEL: FTLZT2 FILTER: CH. CLASS 1000

PEAK DATA: 65.20 G @ 40.08 MS; -41.91 G @ 51.04 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM



PEAK DATA: 16.47 G @ 44.88 MS; -66.57 G @ 45.52 MS

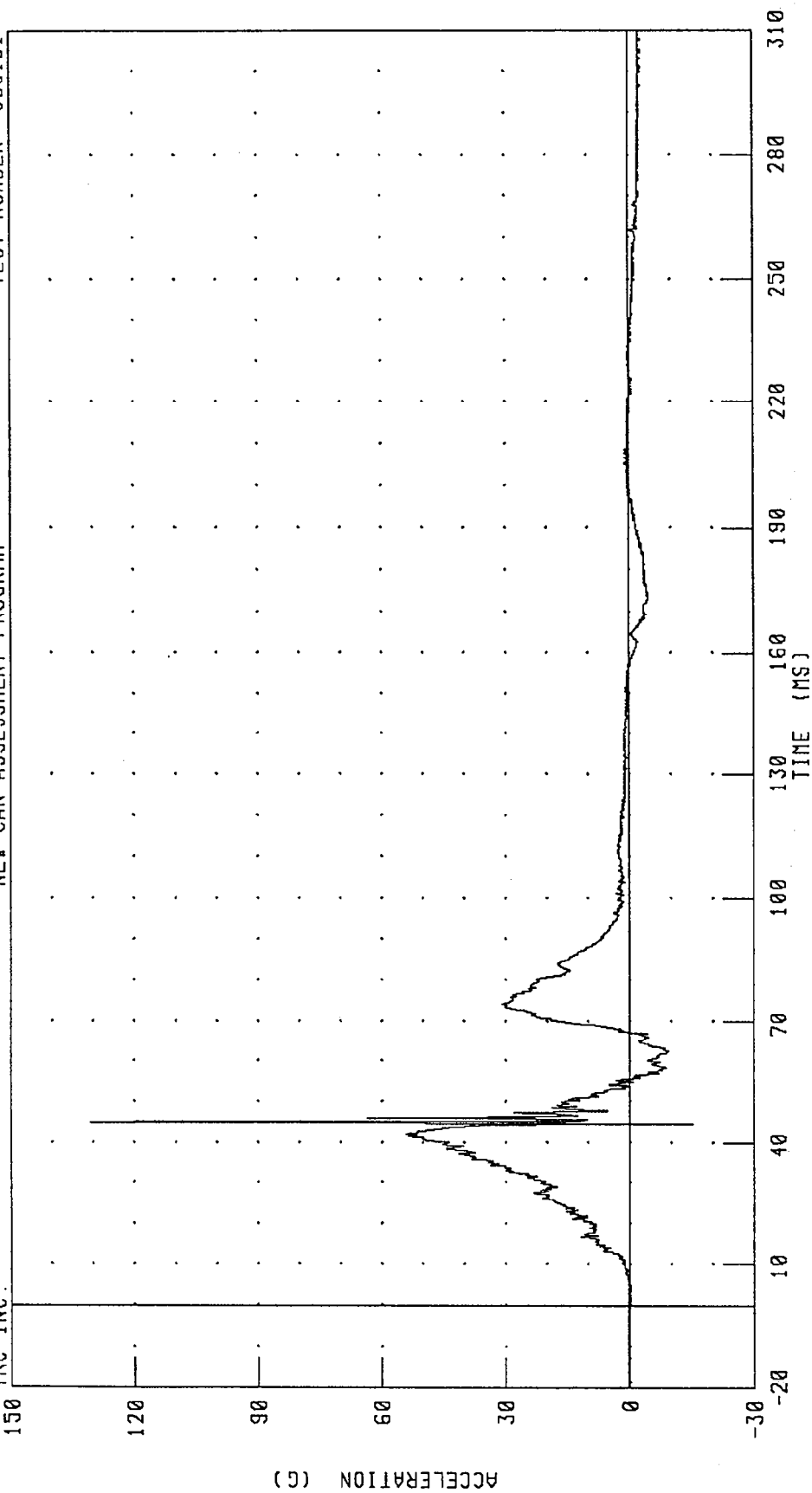
CHANNEL: FTRXC2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



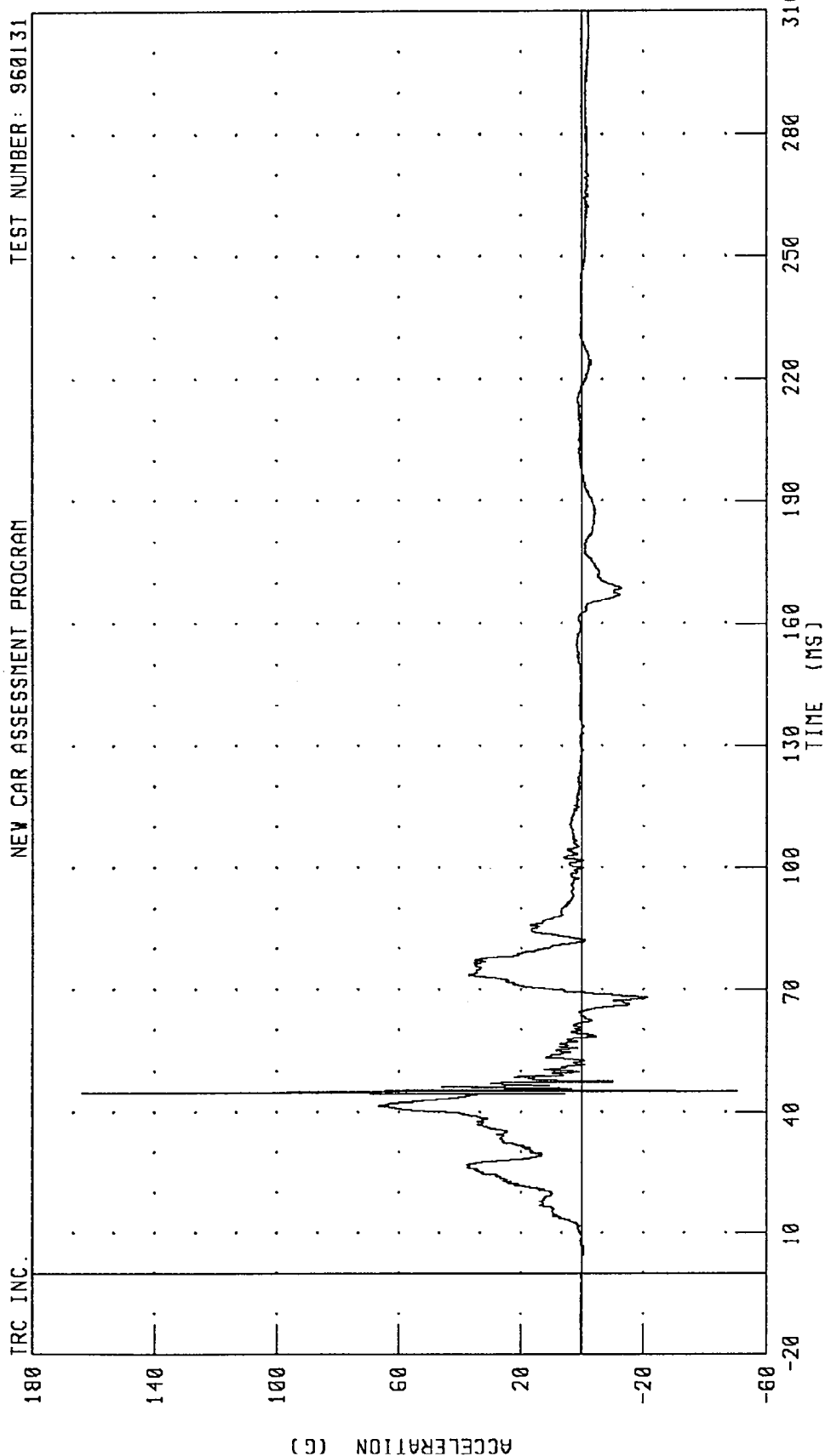
PEAK DATA: 130.65 G @ 44.88 MS; -15.27 G @ 44.56 MS

CHANNEL: FTRZH2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

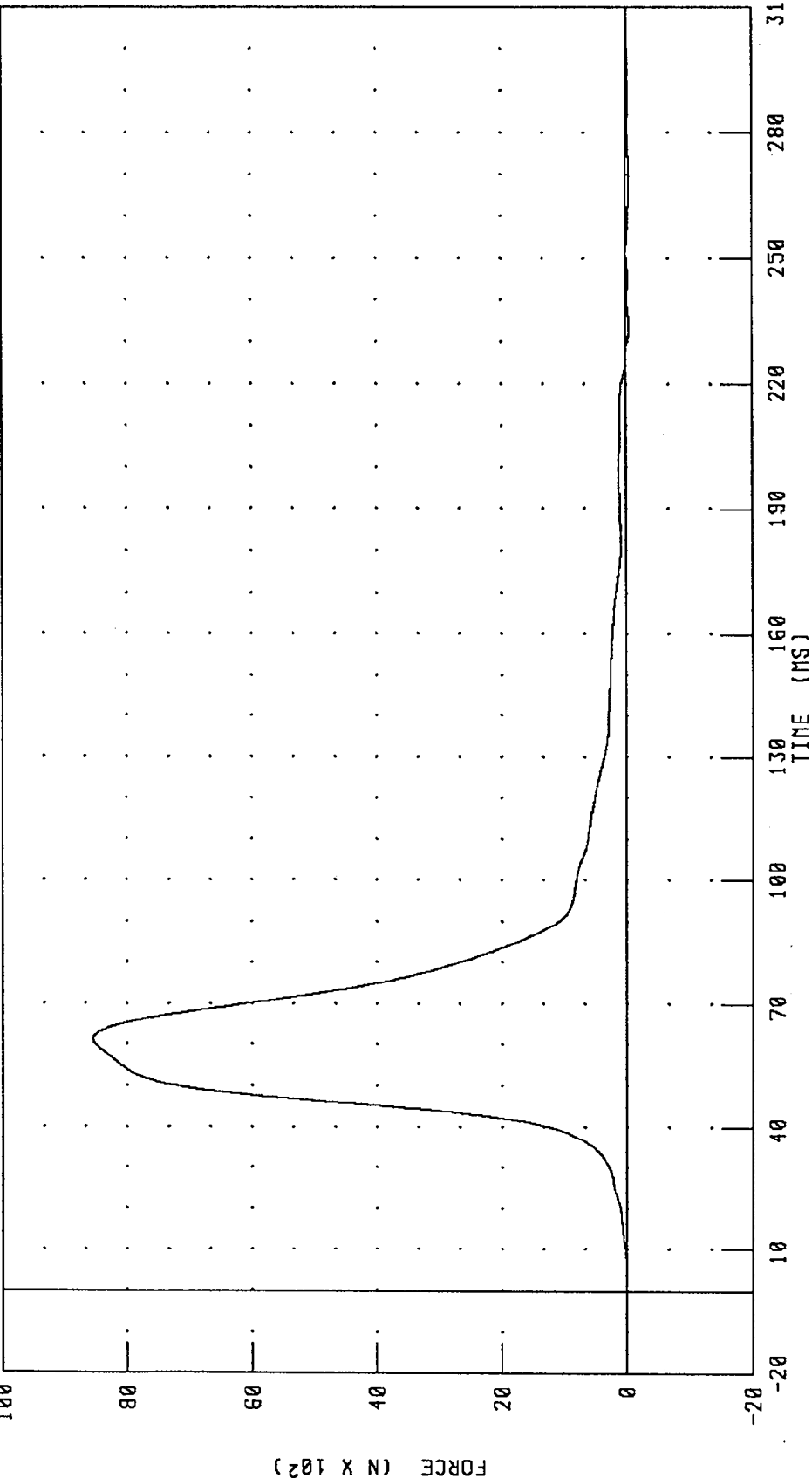


CHANNEL: FTRZT2 FILTER: CH. CLASS 1000

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER LAP BELT OUTBOARD FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

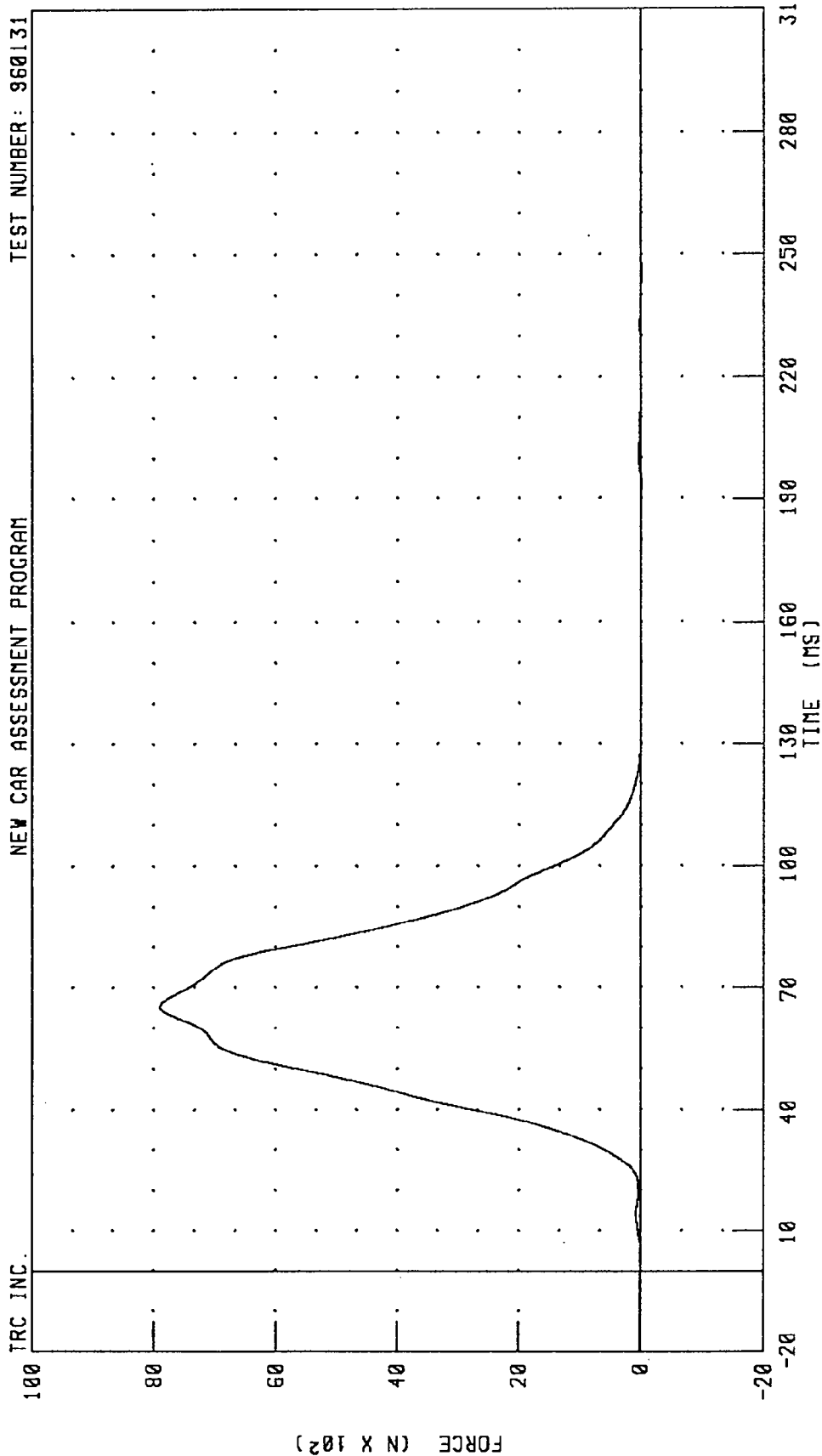


PEAK DATA: 8549.10 N @ 61.36 MS; -51.44 N @ 233.36 MS

CHANNEL: LBOFI FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131



CHANNEL: SHBF1 FILTER: CH. CLASS 60

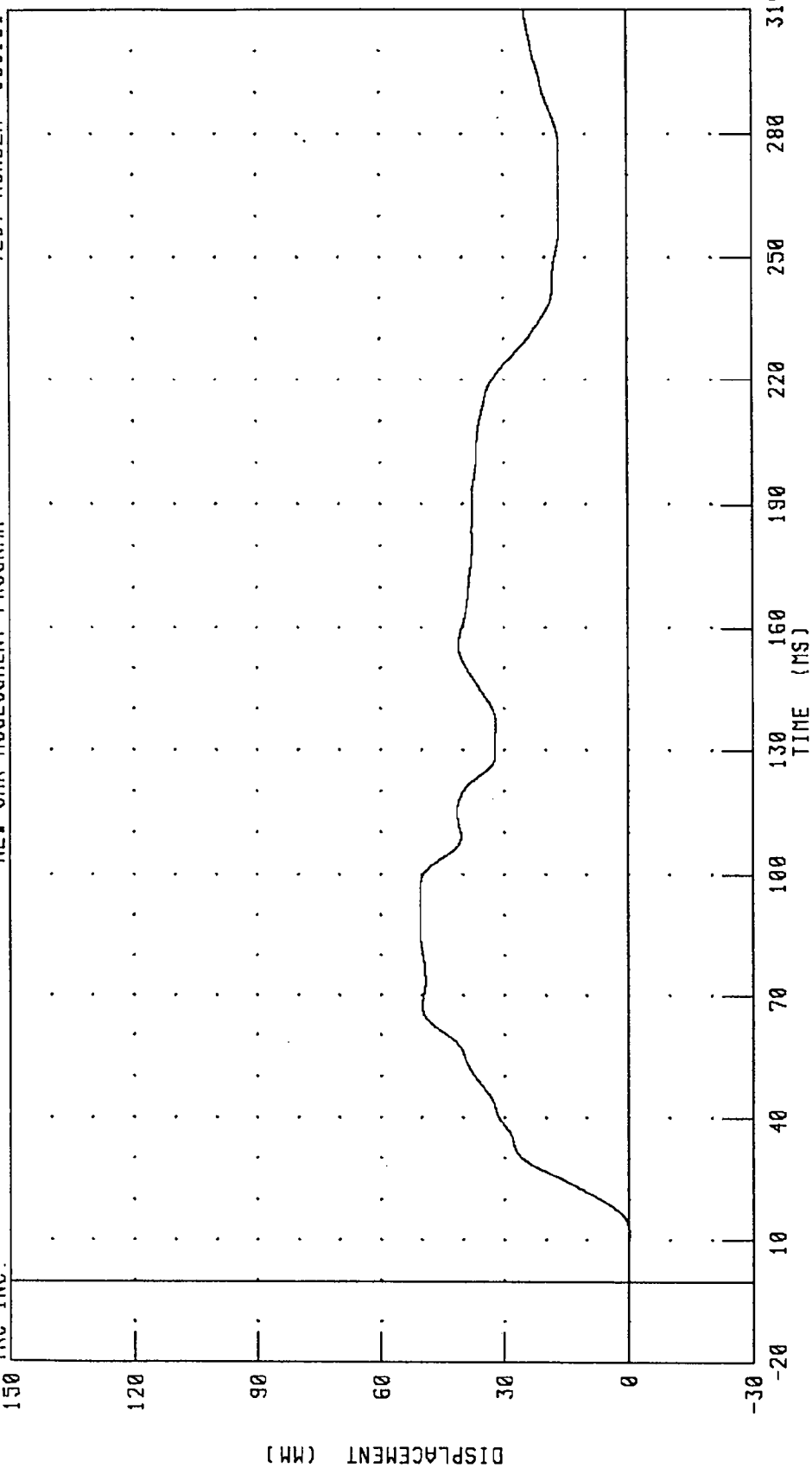
PEAK DATA: 7892.94 N @ 65.36 MS; -8.32 N @ 244.96 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER SHOULDER BELT DISPLACEMENT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

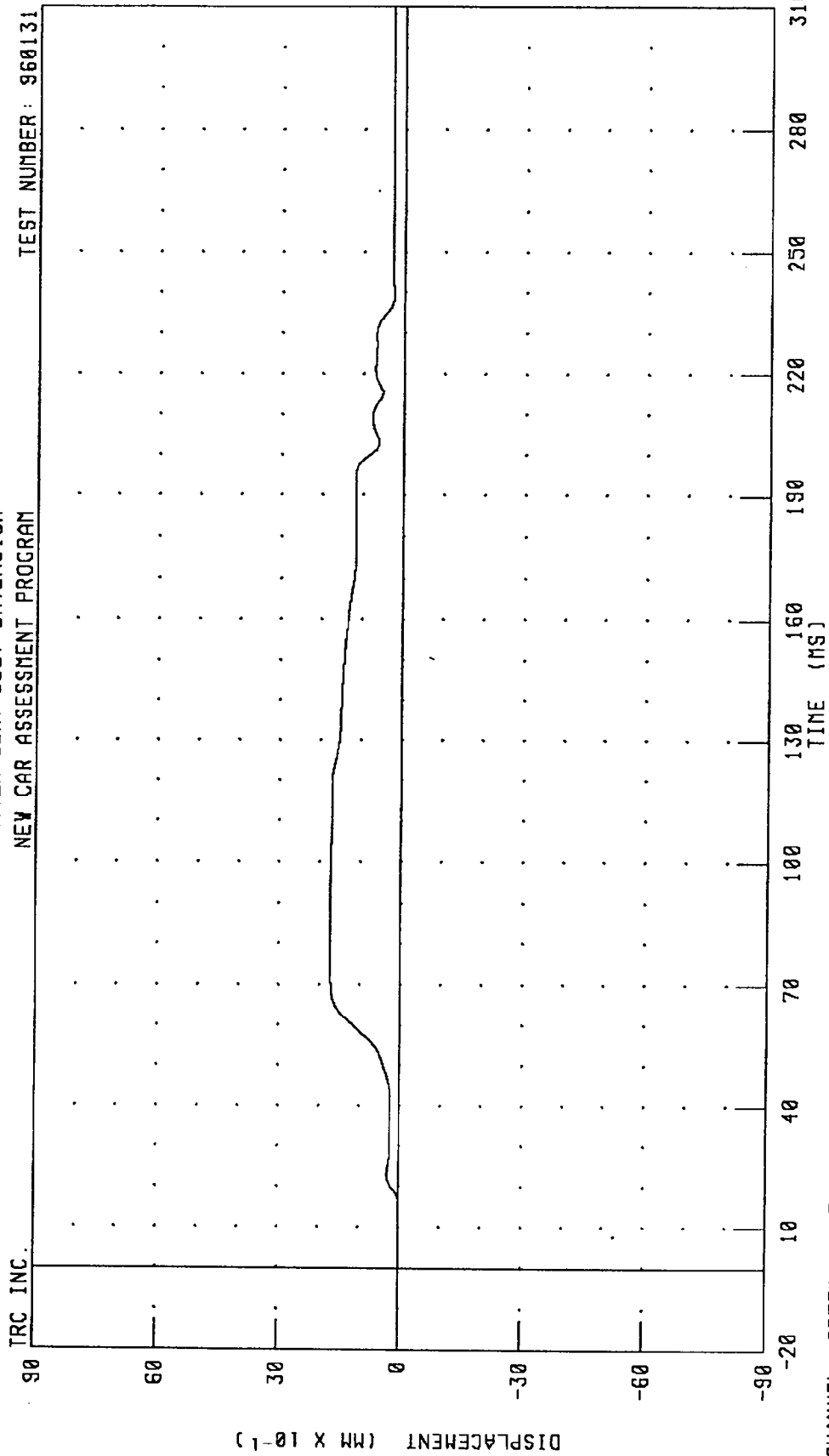


CHANNEL: SHBD1 FILTER: CH. CLASS 60

PEAK DATA: 50.44 MM @ 86.80 MS; -0.07 MM @ 11.76 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
DRIVER SEAT BELT EXTENSION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131



CHANNEL: SBED1 FILTER: CH. CLASS 60

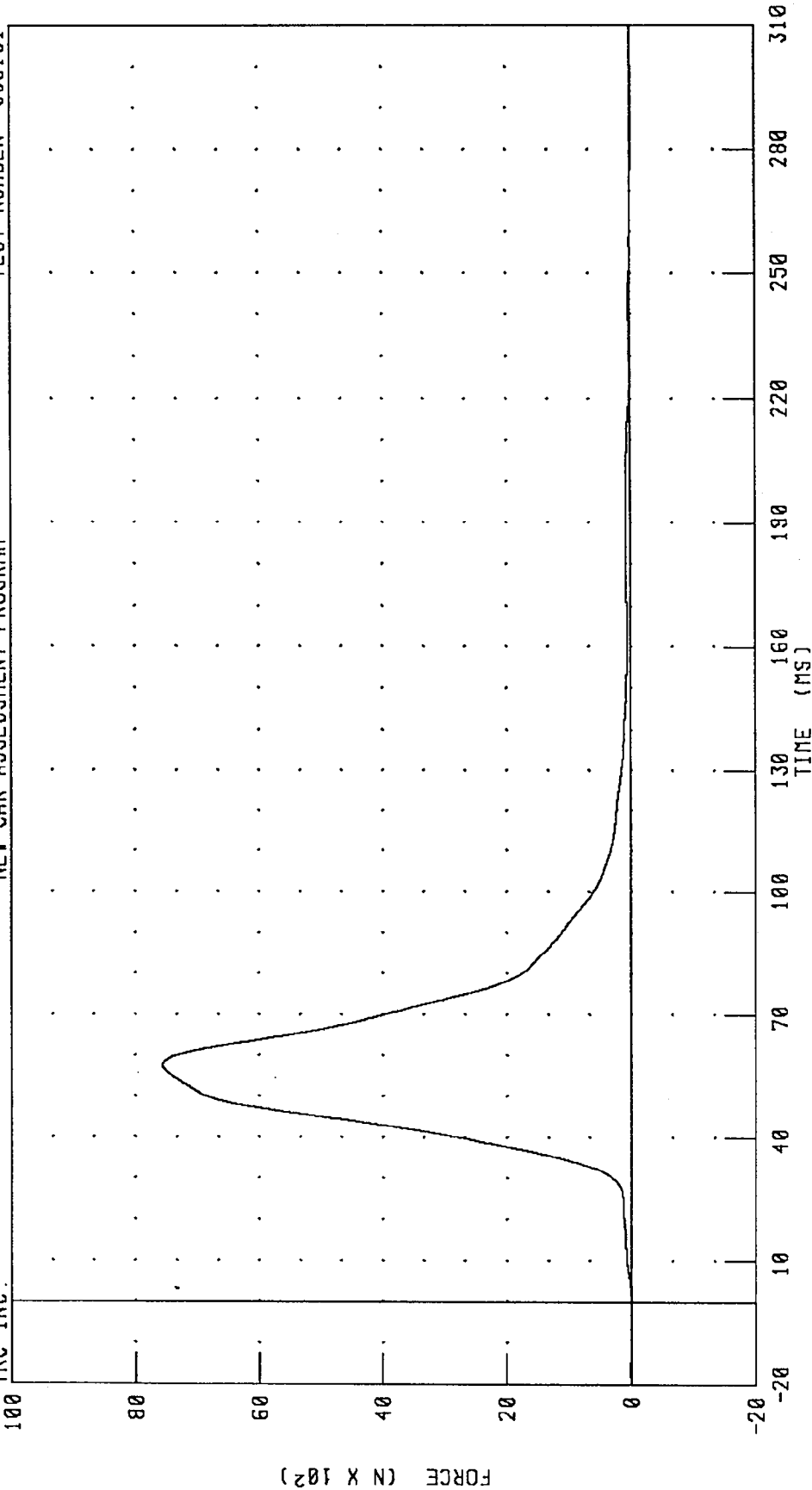
PEAK DATA: 1.73 MM @ 85.12 MS; -0.01 MM @ 14.88 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER LAP BELT OUTBOARD FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

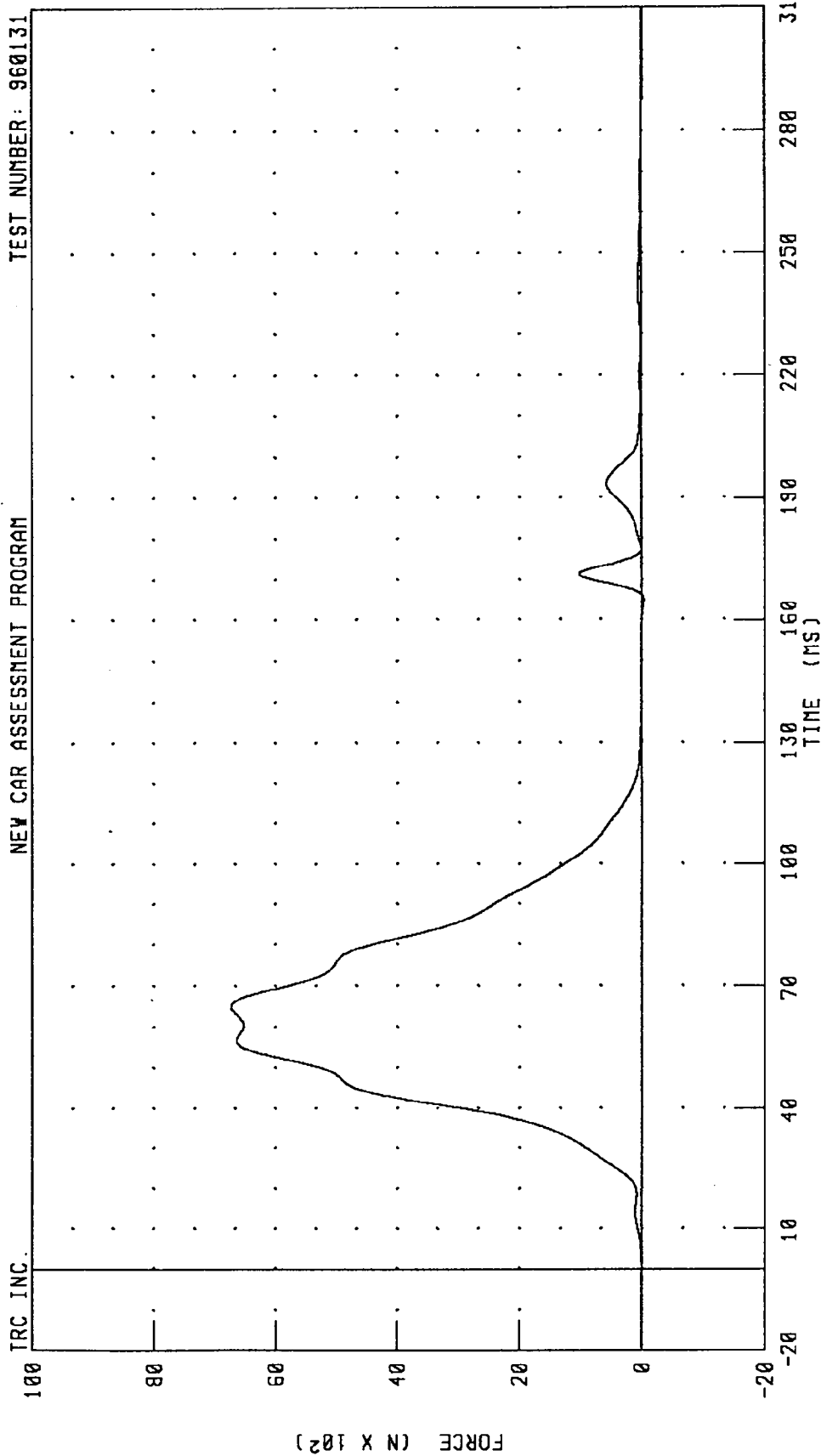


CHANNEL: LB0F2 FILTER: CH. CLASS 60

PEAK DATA: 7561.65 N @ 57.52 MS; -8.59 N @ 289.68 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131



CHANNEL: SHBF2 FILTER: CH. CLASS 60

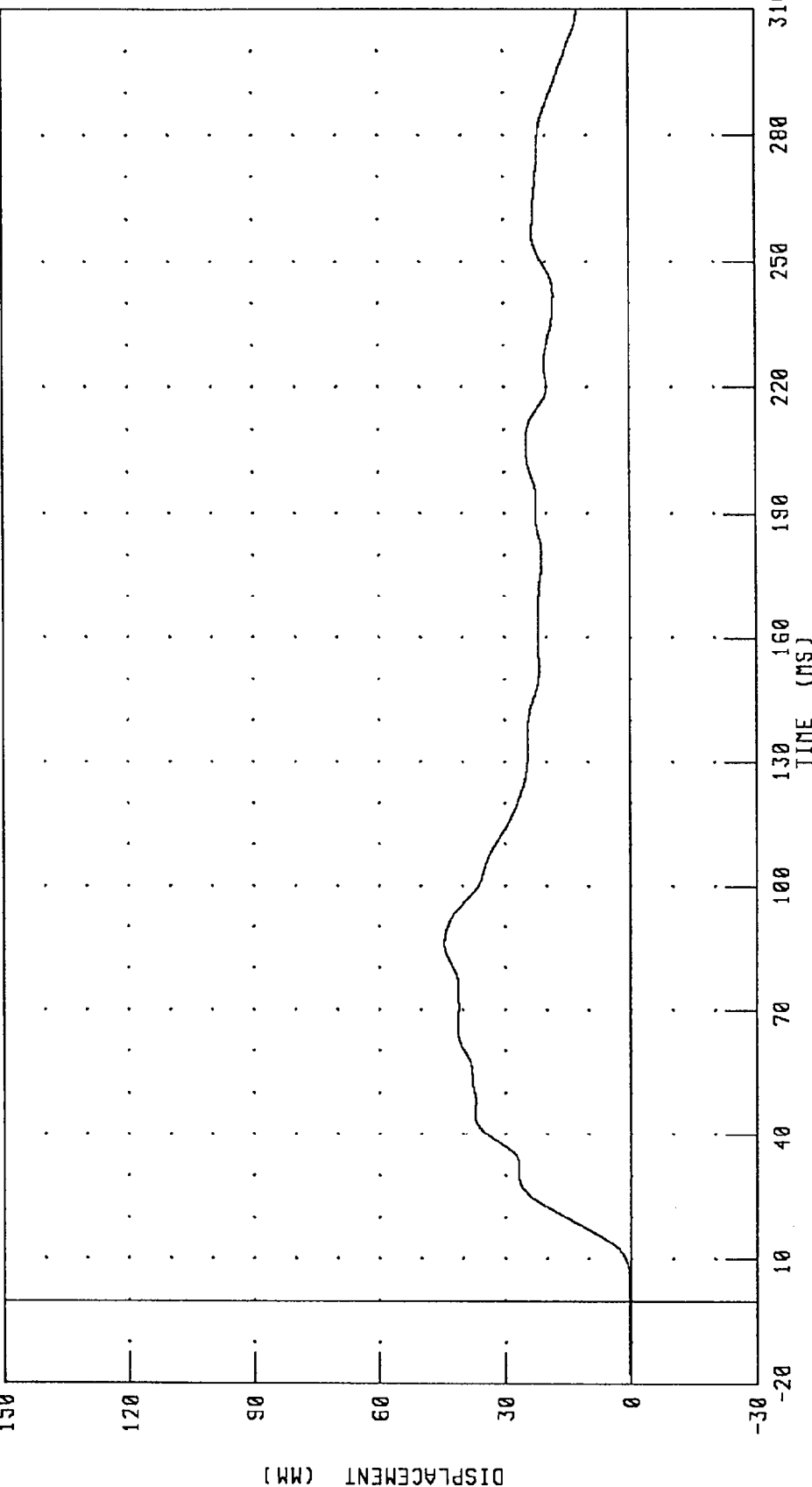
PEAK DATA: 6731.83 N @ 65.04 MS, -38.21 N @ 164.96 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT DISPLACEMENT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



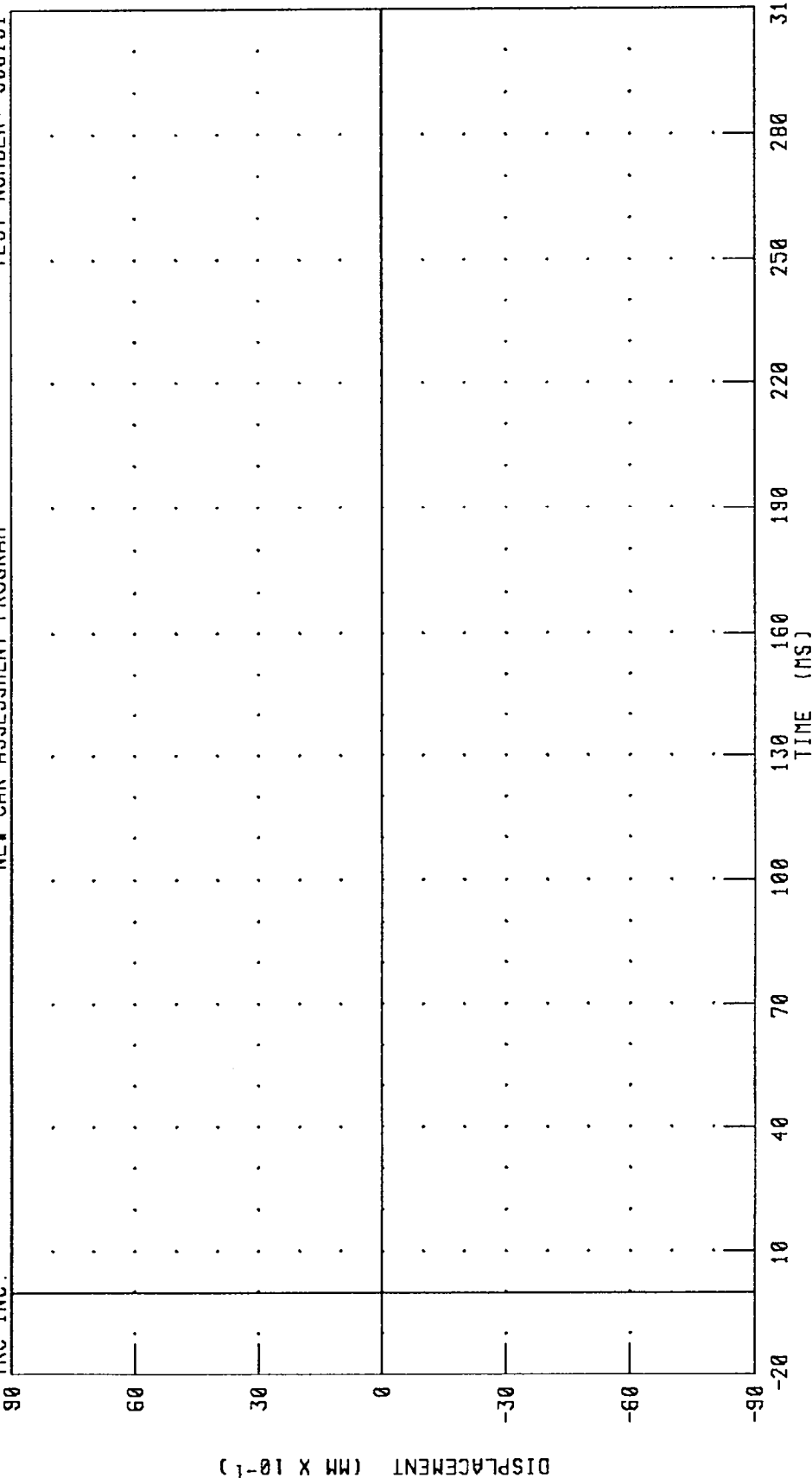
CHANNEL: SHB02 FILTER: CH. CLASS 60

PEAK DATA: 44.44 MM @ 85.92 MS; 0.00 MM @ -20.00 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
PASSENGER SEAT BELT EXTENSION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



CHANNEL: SBED2 FILTER: CH. CLASS 60

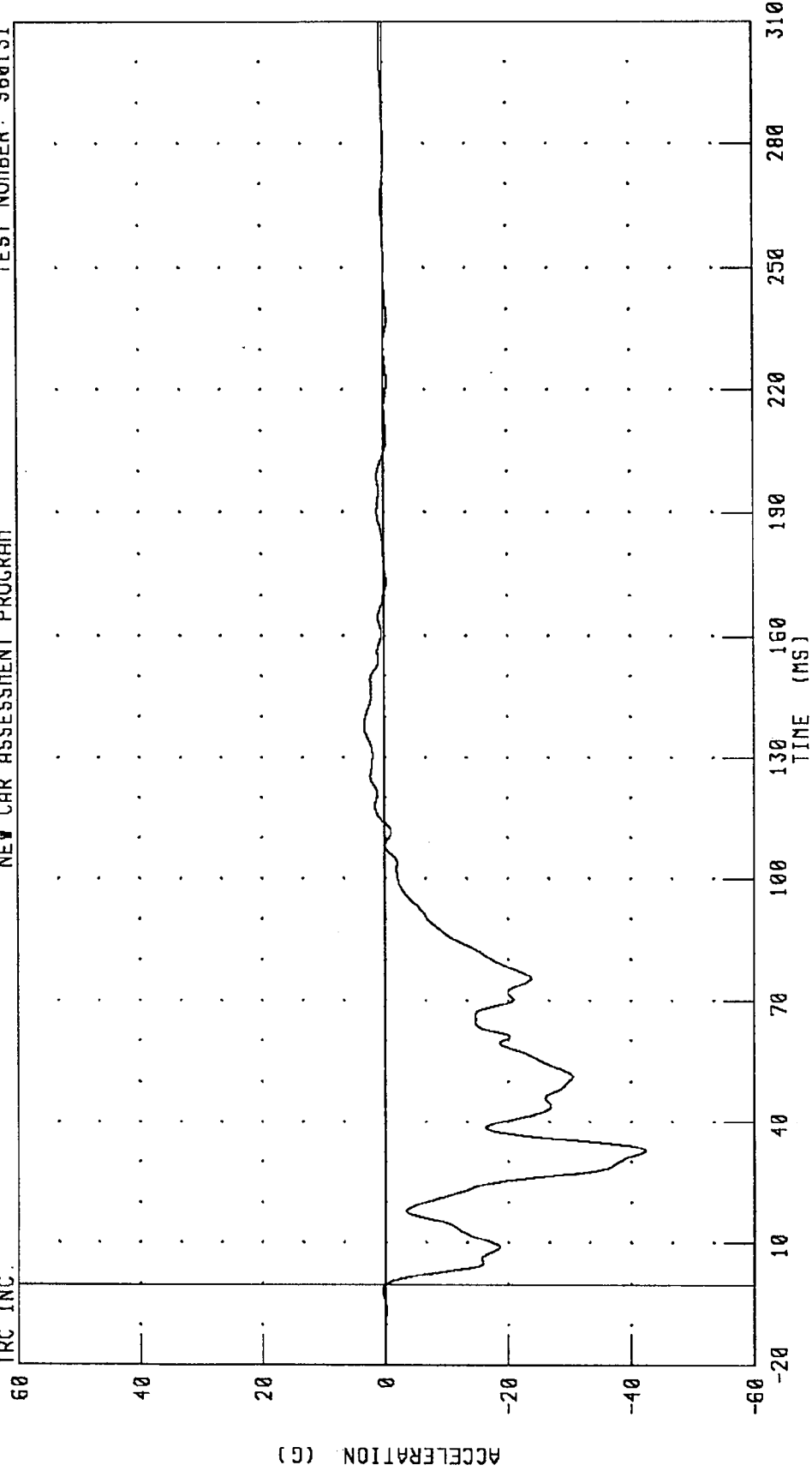
PEAK DATA: 0.00 MM @ 217.44 MS; 0.00 MM @ 50.32 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



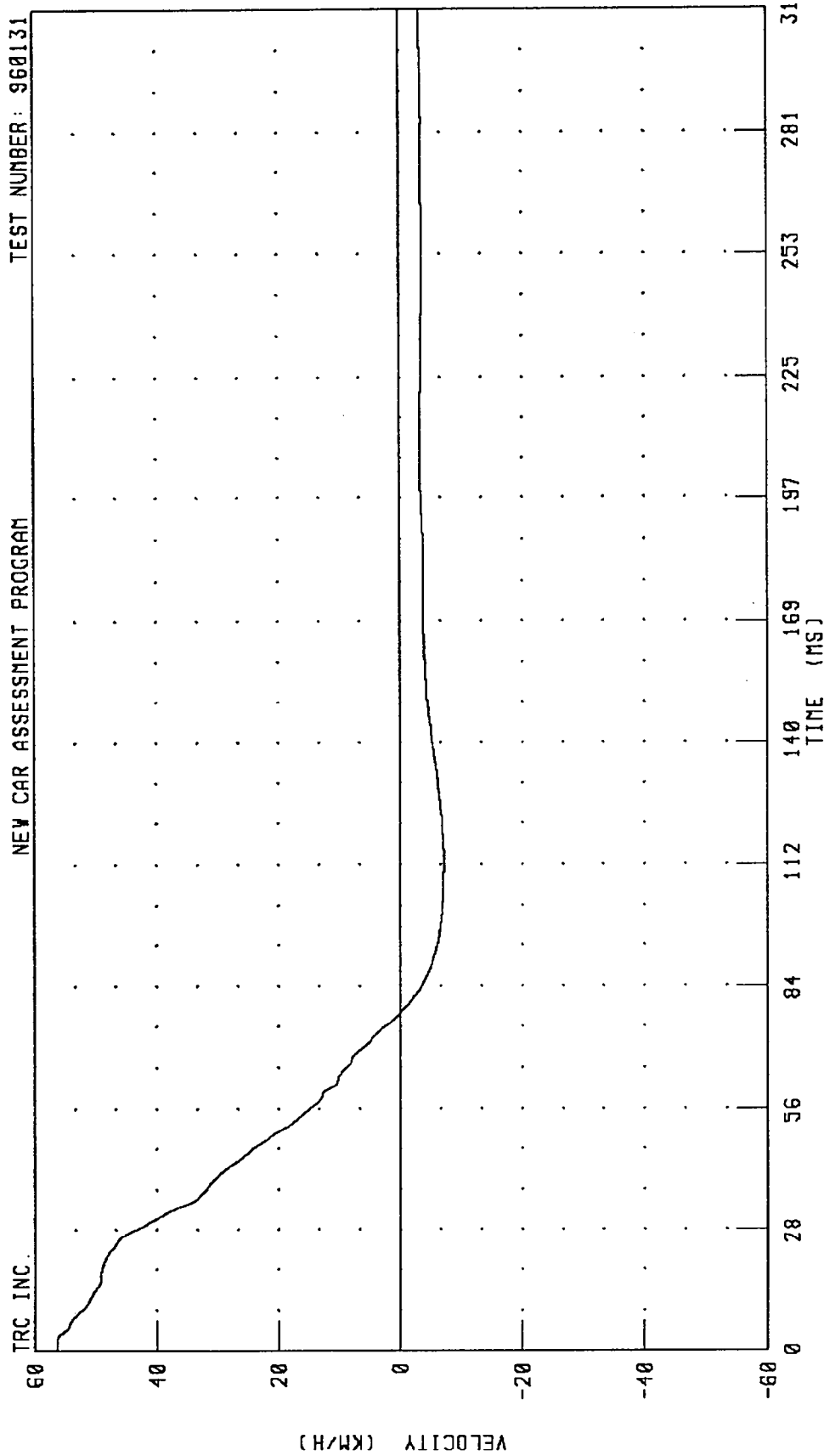
PEAK DATA: 3.24 G @ 137.52 MS; -42.28 G @ 32.96 MS

CHANNEL: TLRXG1 FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS VELOCITY

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

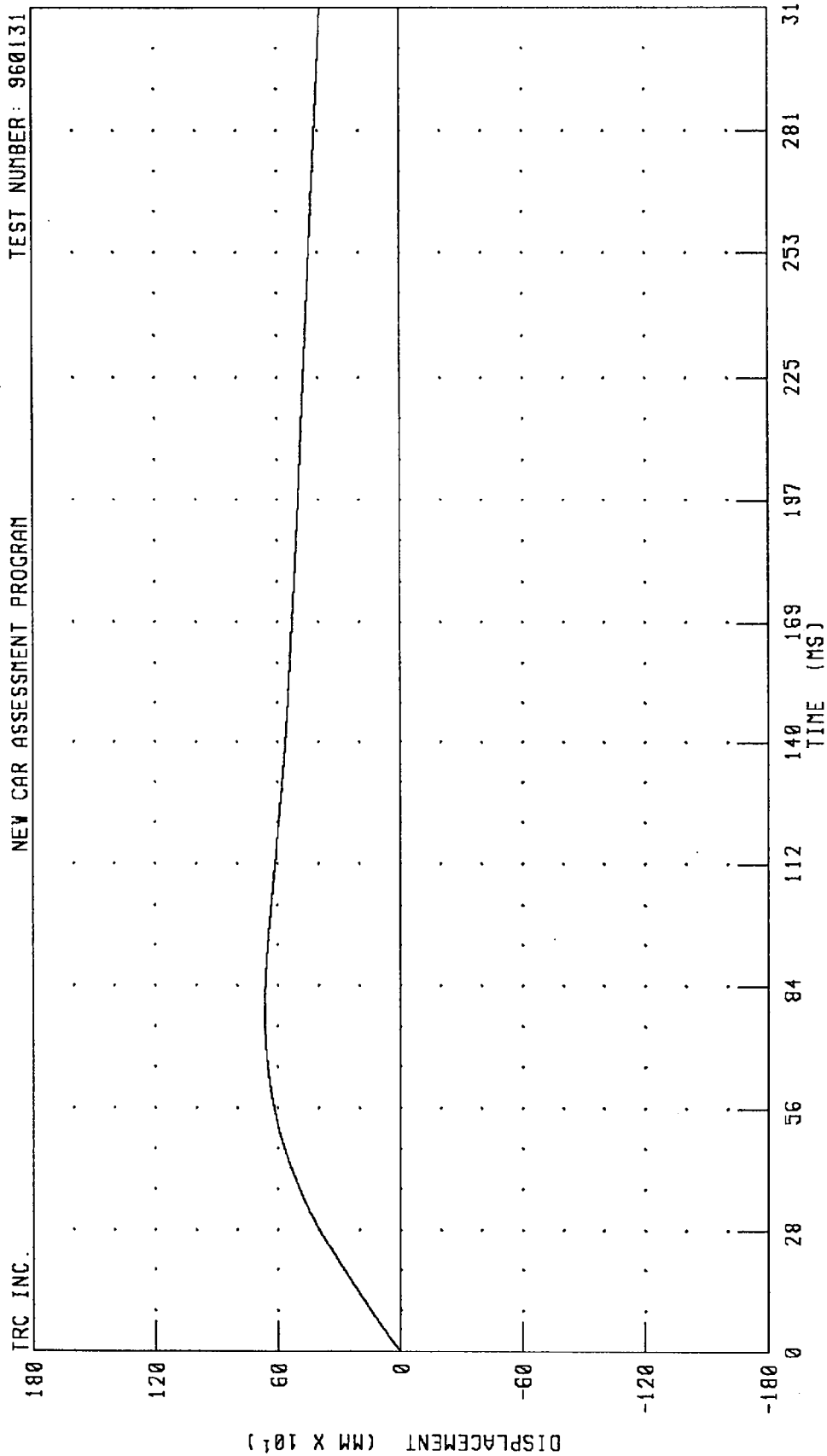


PEAK DATA: 56.30 KM/H @ 0.00 MS; -7.31 KM/H @ 113.44 MS

CHANNEL: TLRXV1 FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS DISPLACEMENT
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131



PEAK DATA: 666.23 MM @ 78.32 MS; 0.00 MM @ 0.00 MS

CHANNEL: TLRX01 FILTER: CH. CLASS 180

TRC INC.

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.

60

40

20

0

-20

-40

-60

ACCELERATION (G)

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

190

200

210

220

230

240

250

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290

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360

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2900

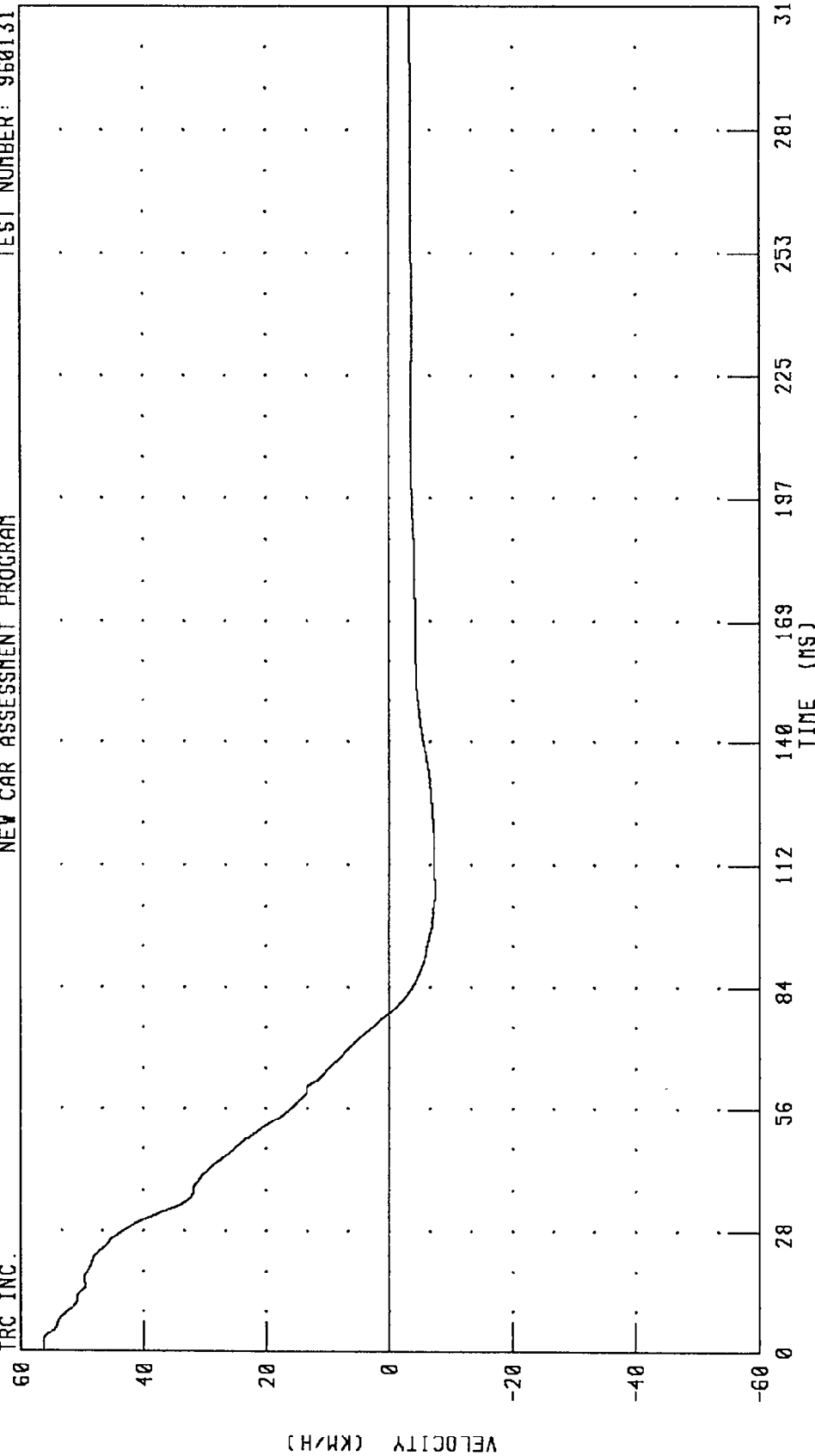
2910

2920</

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS VELOCITY
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.

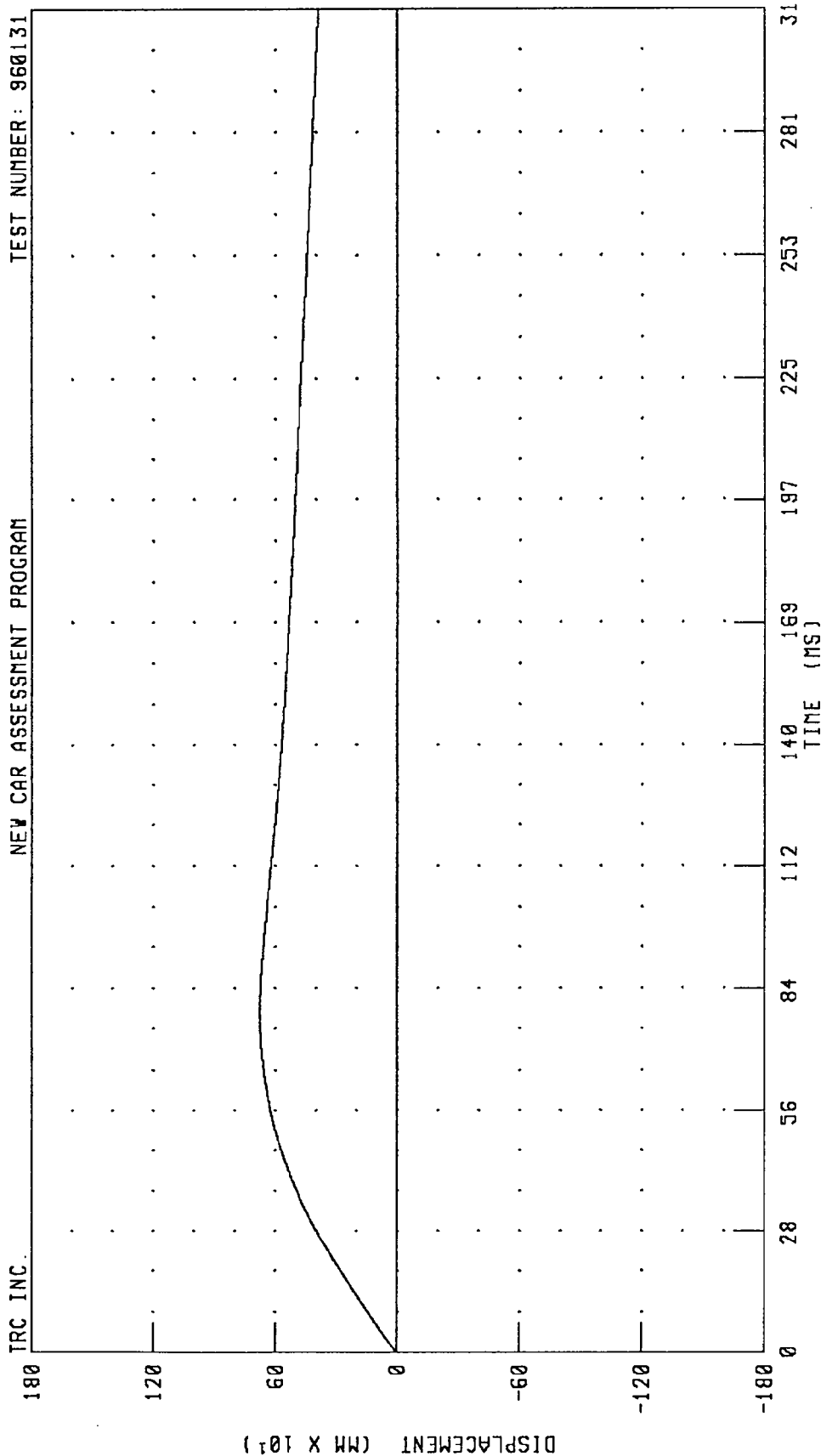


PEAK DATA: 56.30 KM/H @ 1.36 MS; -7.48 KM/H @ 107.76 MS

CHANNEL: TRRXV1 FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS DISPLACEMENT
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

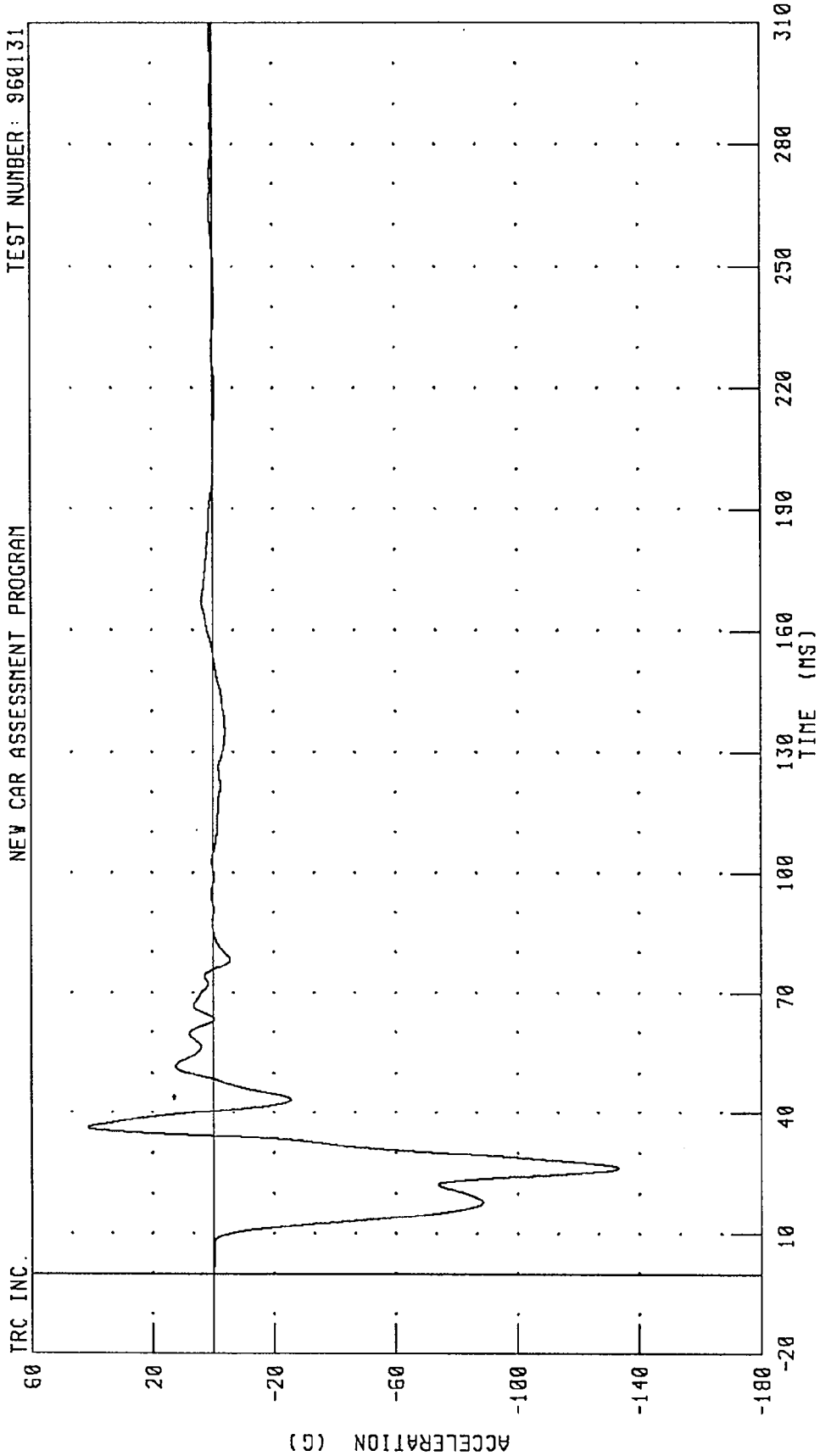


PEAK DATA: 675.59 MM @ 78.56 MS; 0.00 MM @ 0.00 MS

CHANNEL: TRRXD1 FILTER: CH. CLASS 180

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
ENGINE TOP X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

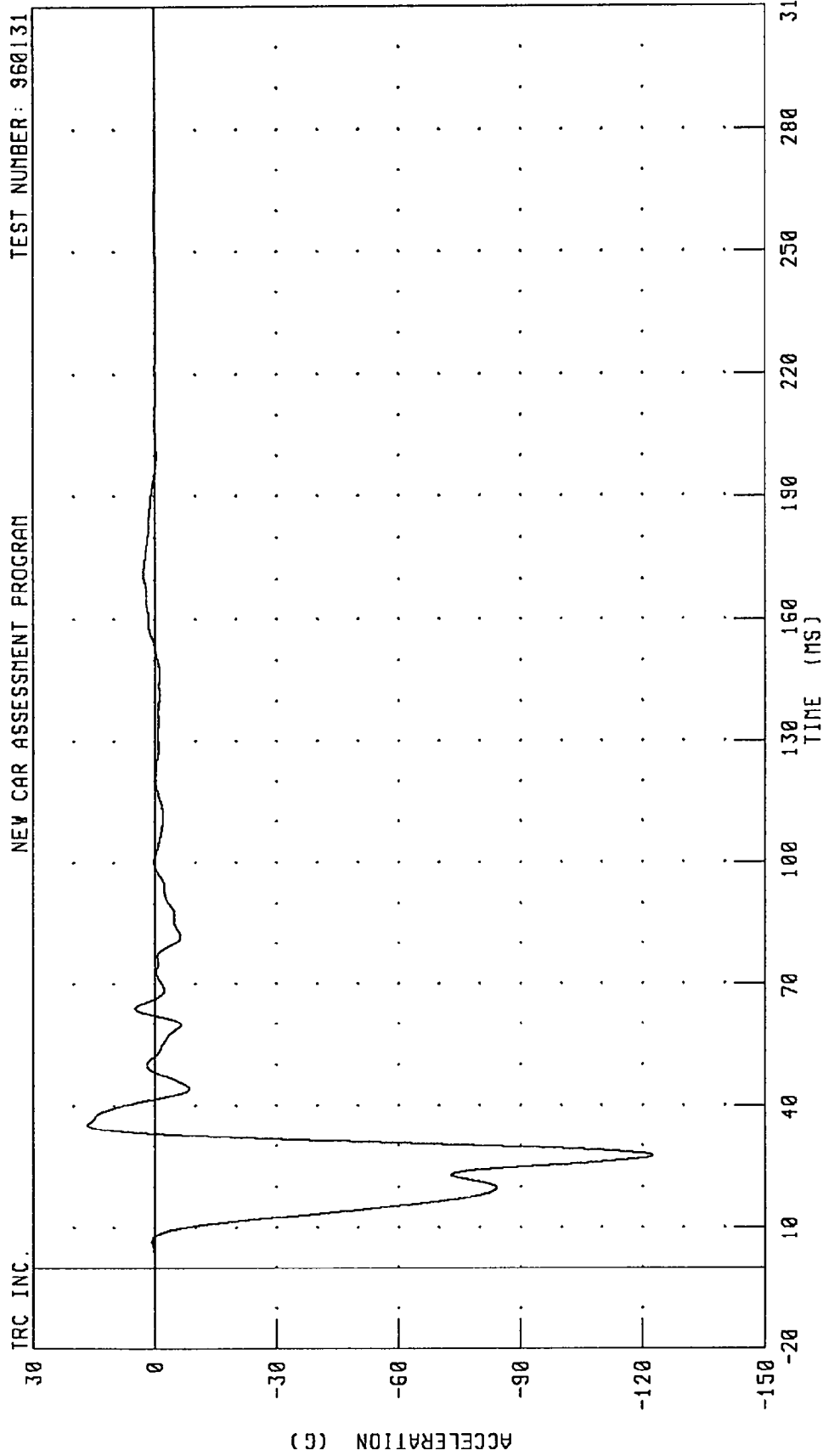
TEST NUMBER: 960131



CHANNEL: ENG1 FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
ENGINE BOTTOM X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131



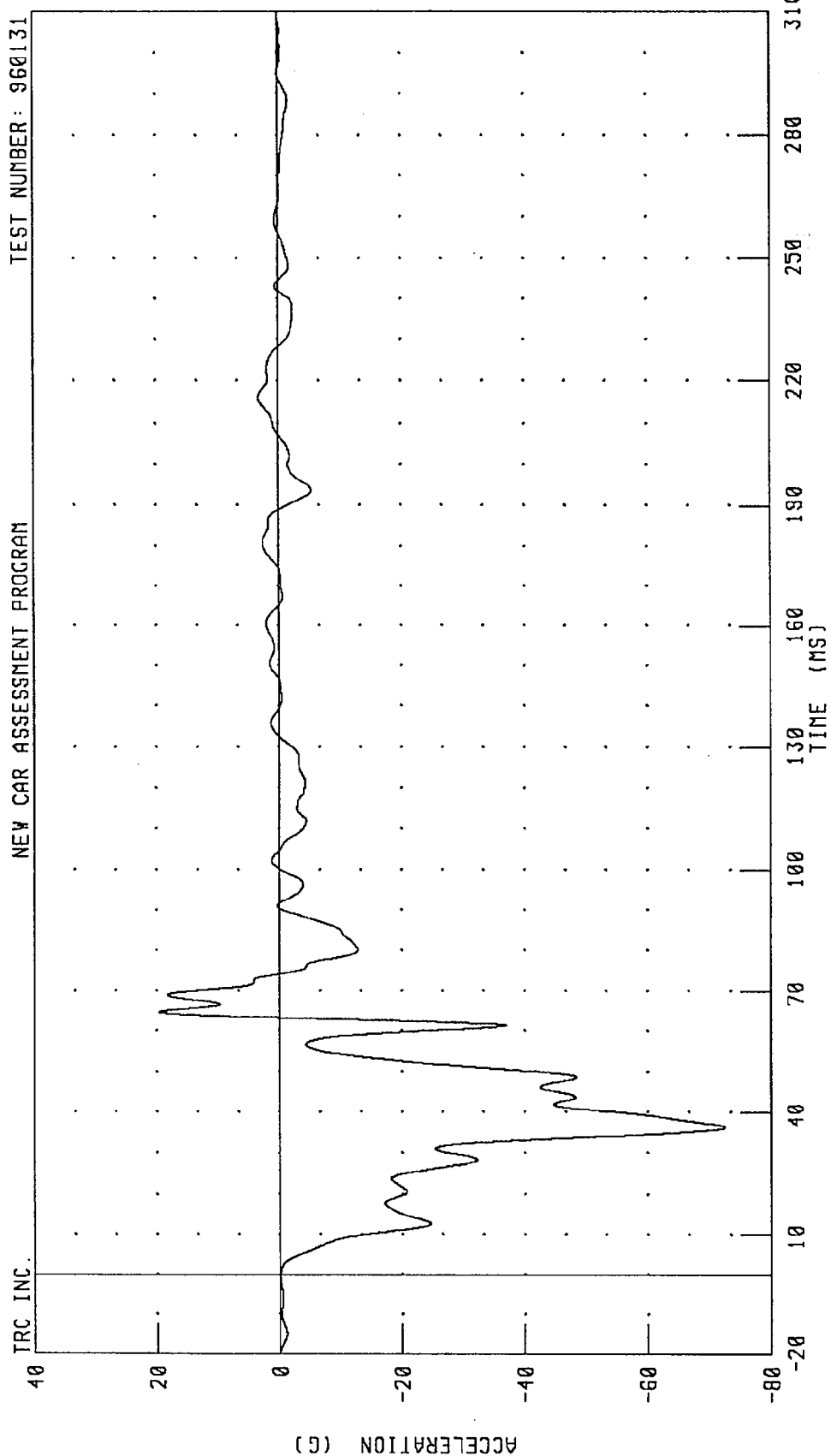
CHANNEL: ENGXC2 FILTER: CH. CLASS 60

PEAK DATA: 16.41 G @ 35.44 MS; -122.59 G @ 27.68 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

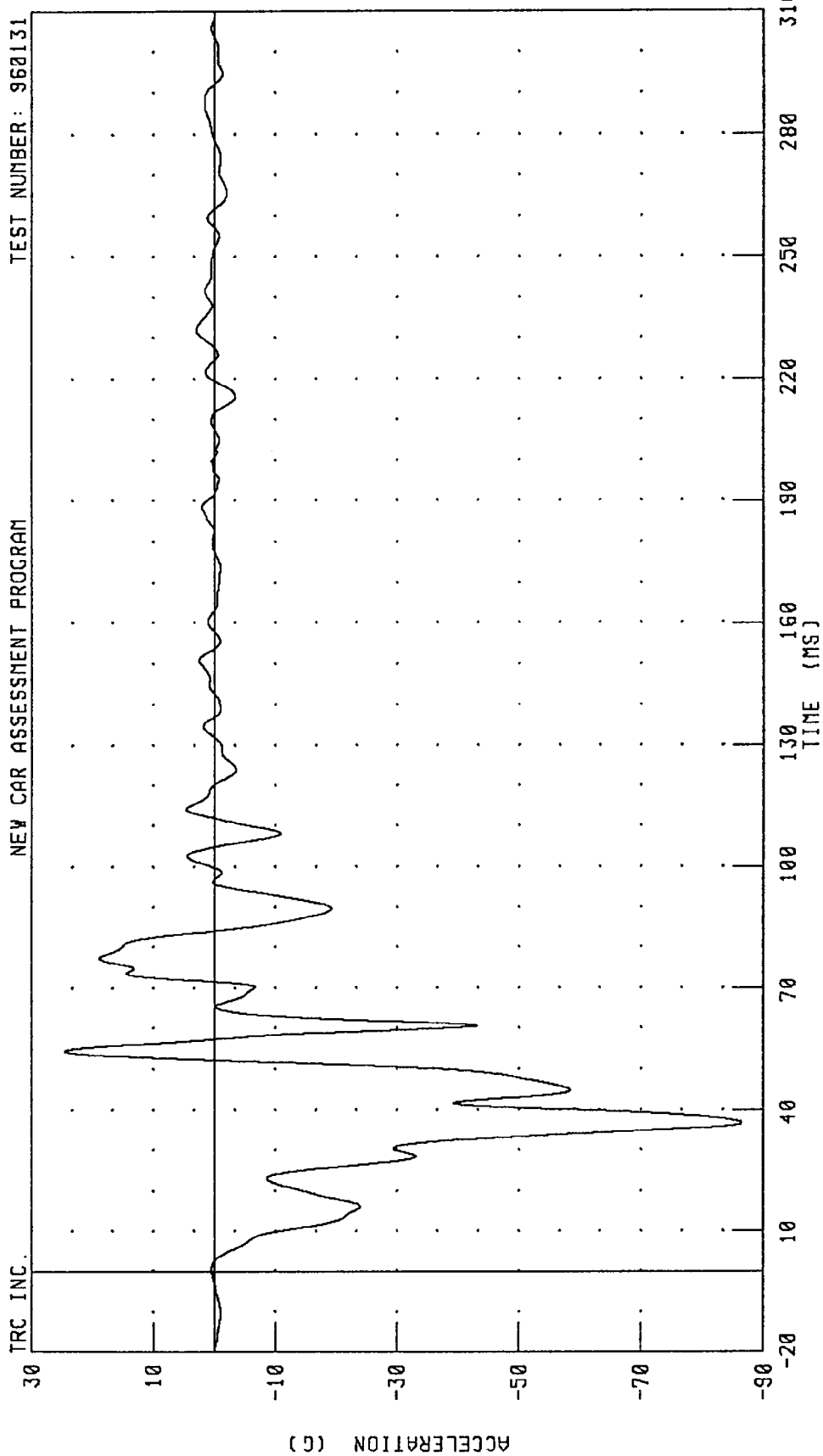


CHANNEL: BCRXG1 FILTER: CH. CLASS 60

PEAK DATA: 19.68 G @ 64.56 MS; -72.46 G @ 36.40 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131



PEAK DATA: 24.58 G @ 54.40 MS; -86.44 G @ 36.80 MS

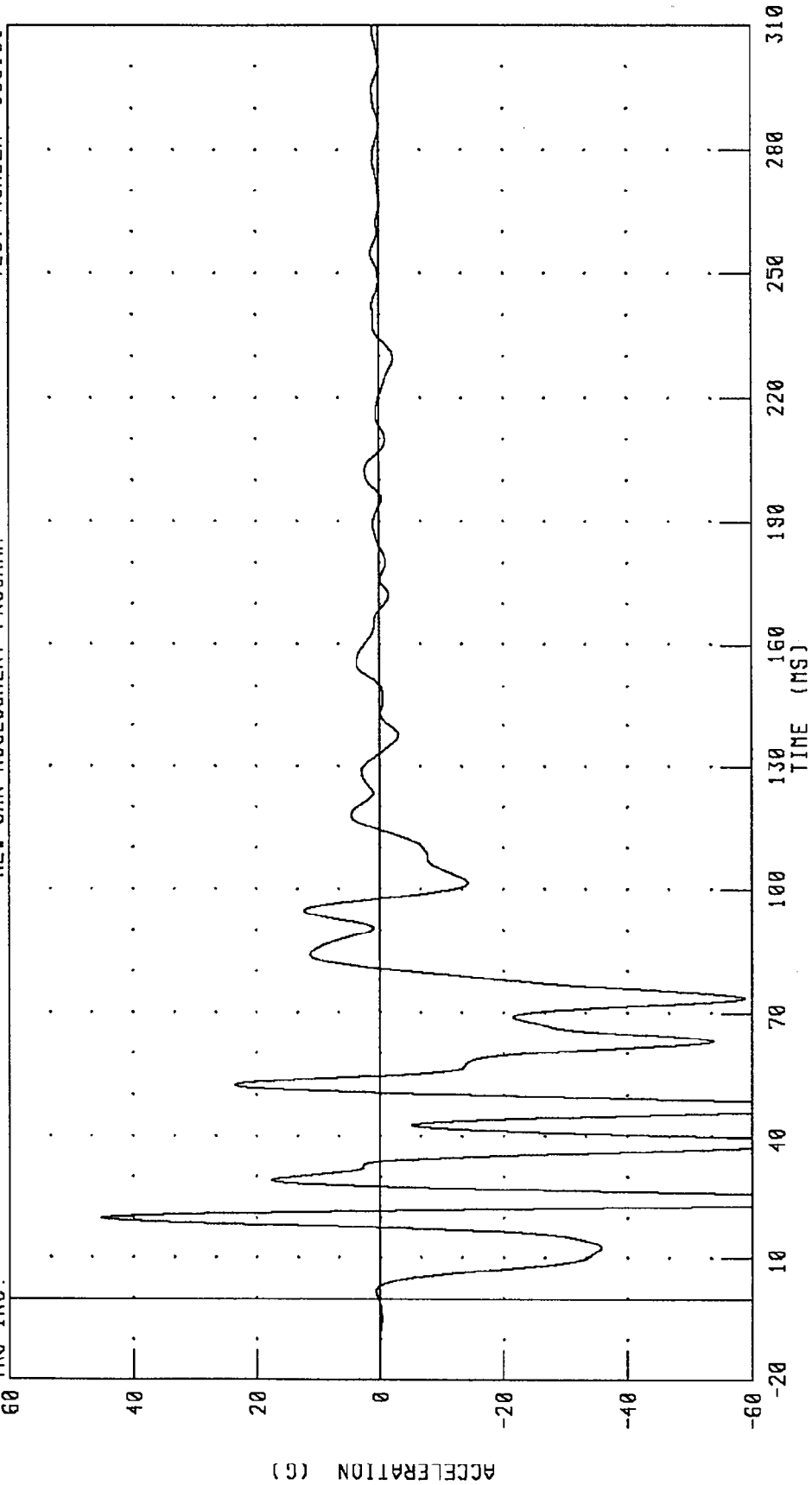
CHANNEL: BCLXG1 FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



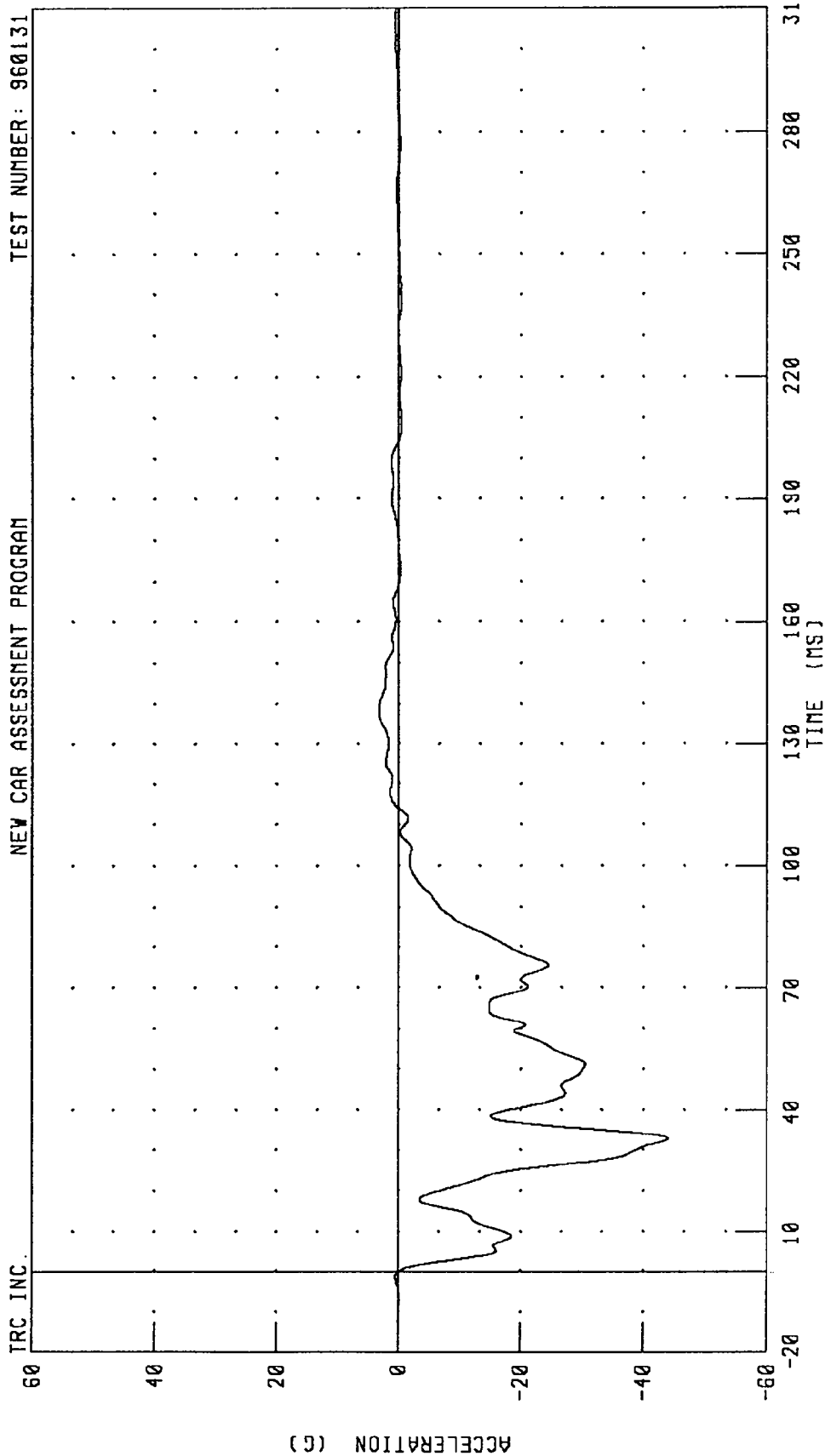
PEAK DATA: 45.25 G @ 20.00 MS, -89.71 G @ 24.56 MS

CHANNEL: DPCXG1 FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM



CHANNEL: TLRXGA FILTER: CH. CLASS 60

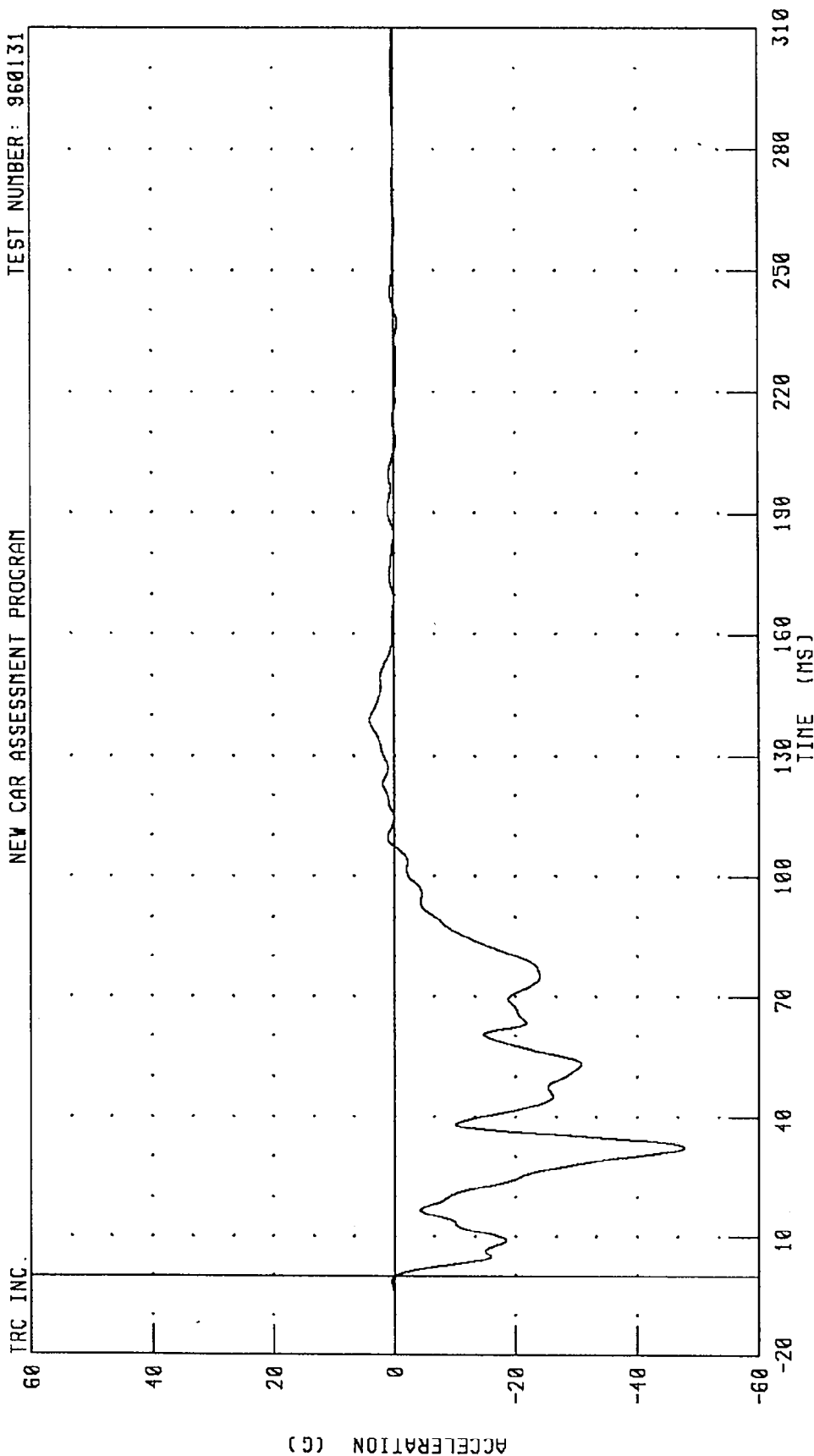
PEAK DATA: 3.26 G @ 138.08 MS; -44.07 G @ 33.04 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

IRC INC.



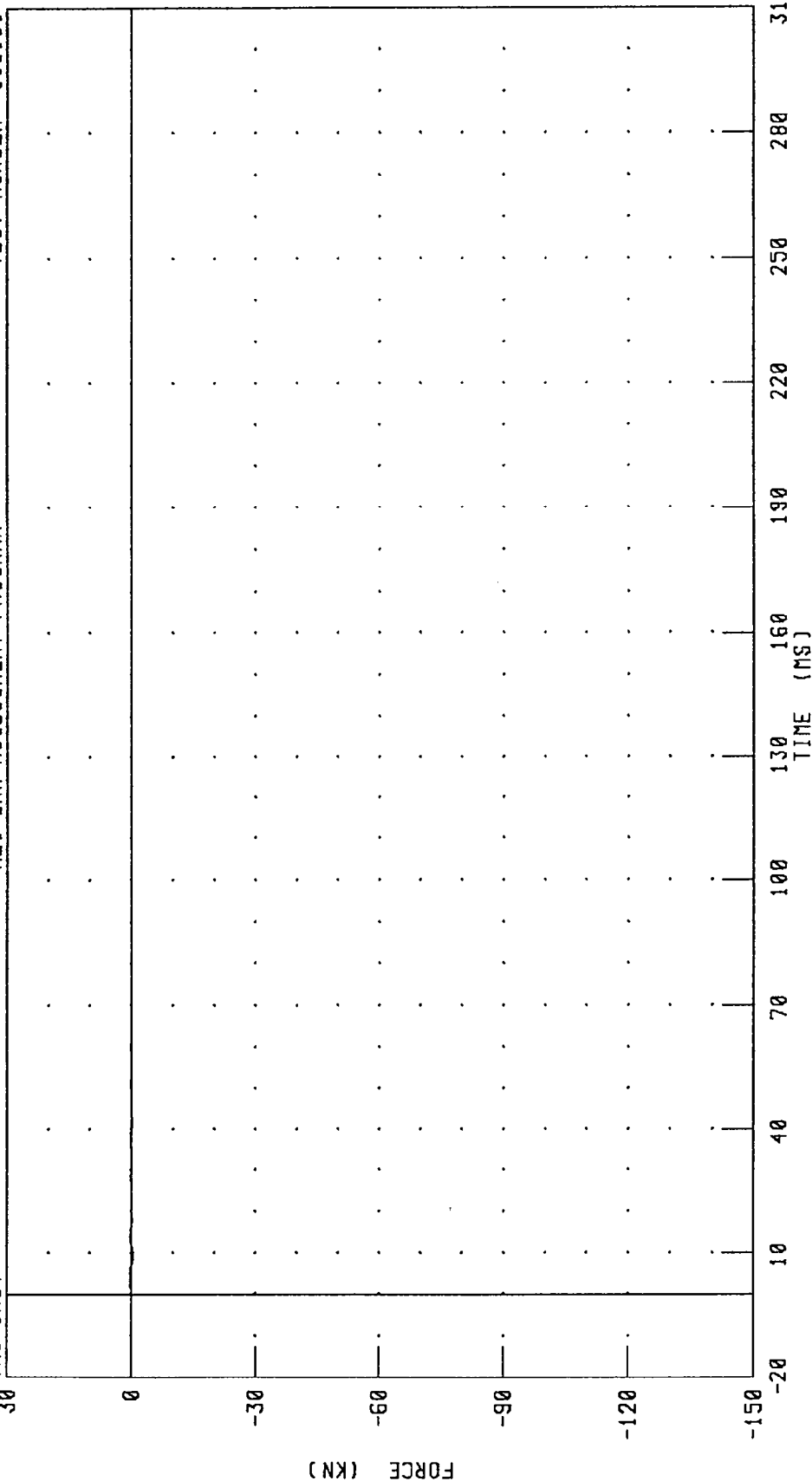
CHANNEL: TRRXGA FILTER: CH. CLASS 60

PEAK DATA: 4.07 G @ 138.88 MS; -47.75 G @ 32.40 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A1 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



PEAK DATA: 0.33 KN @ 37.52 MS; -0.57 KN @ 9.20 MS

FILTER: CH. CLASS 60

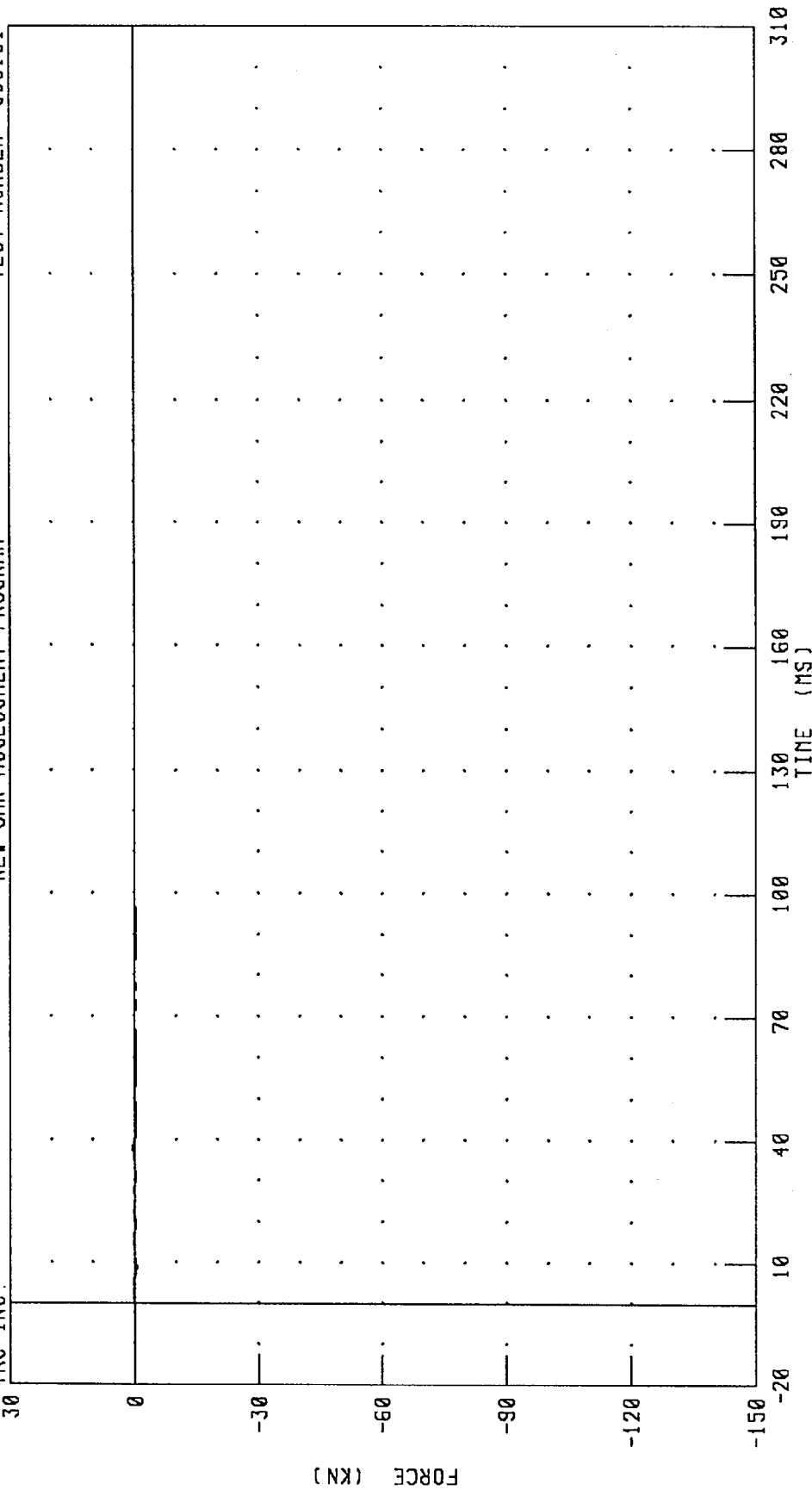
CHANNEL: BA1F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A2 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



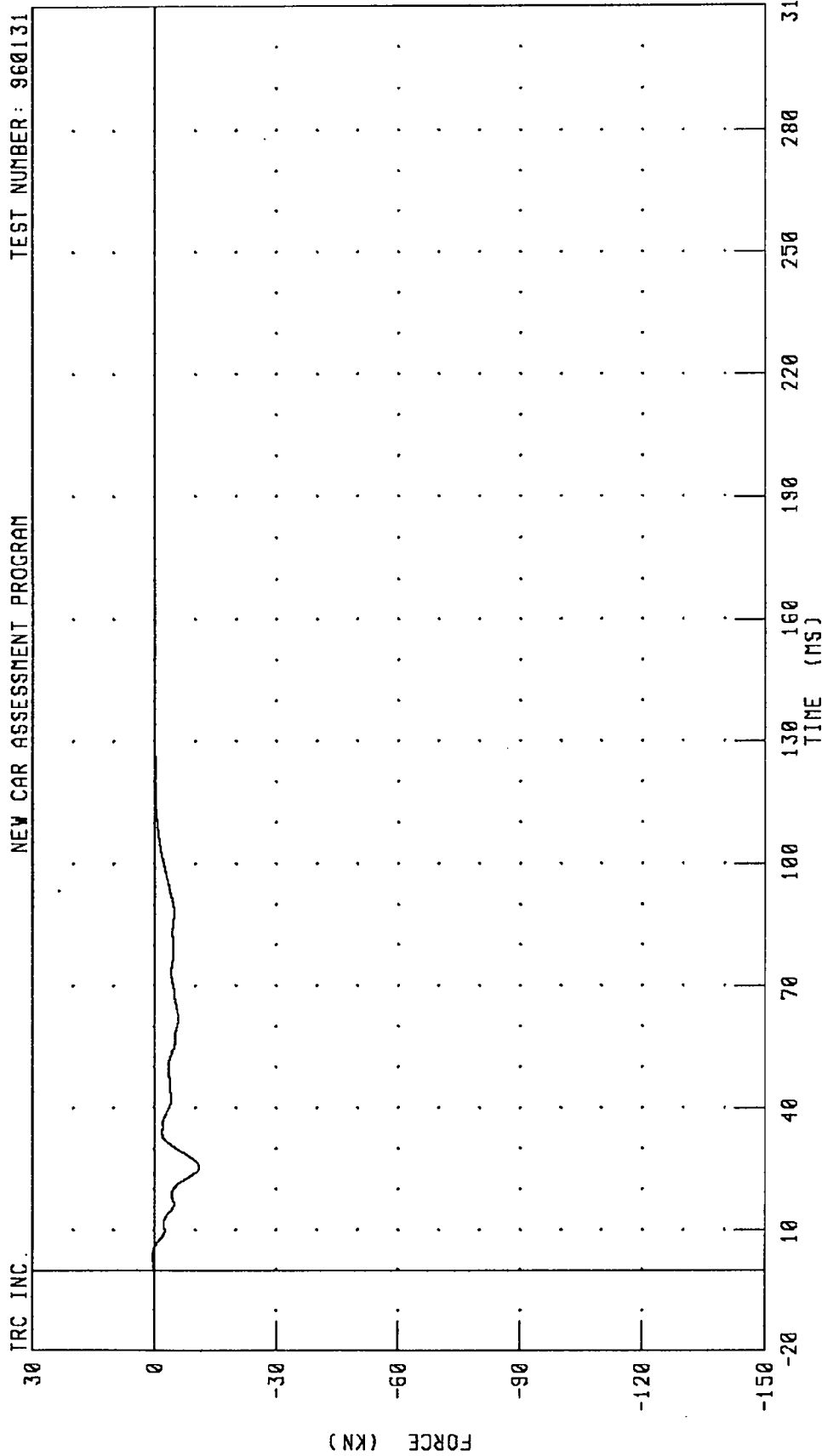
PEAK DATA: 0.37 KN @ 38.00 MS; -0.45 KN @ 8.72 MS

CHANNEL: BA2F FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A3 FORCE

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131



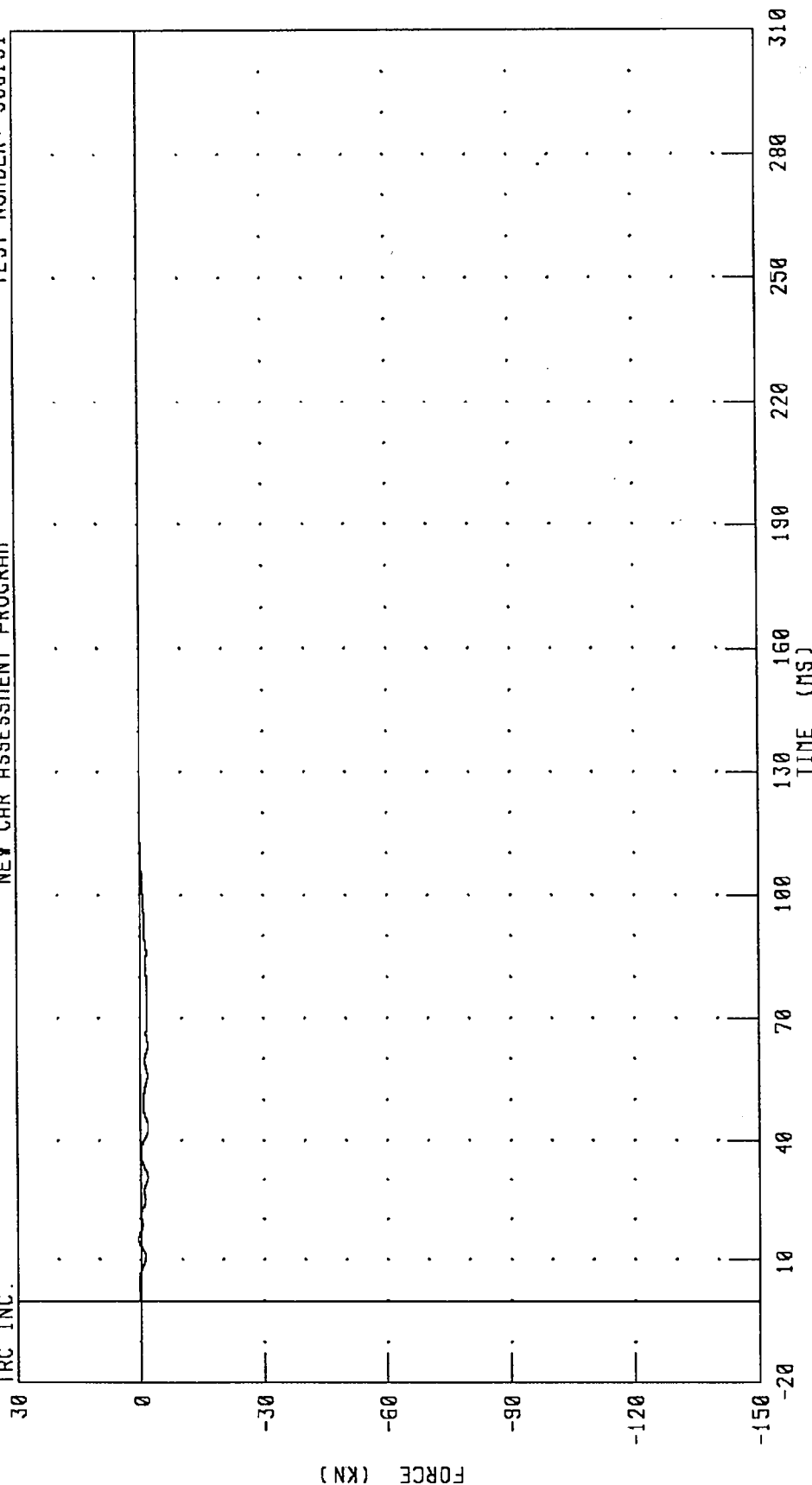
CHANNEL: BA3F FILTER: CH. CLASS 60

PEAK DATA: 0.37 KN @ 3.04 MS; -10.97 KN @ 25.60 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A4 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



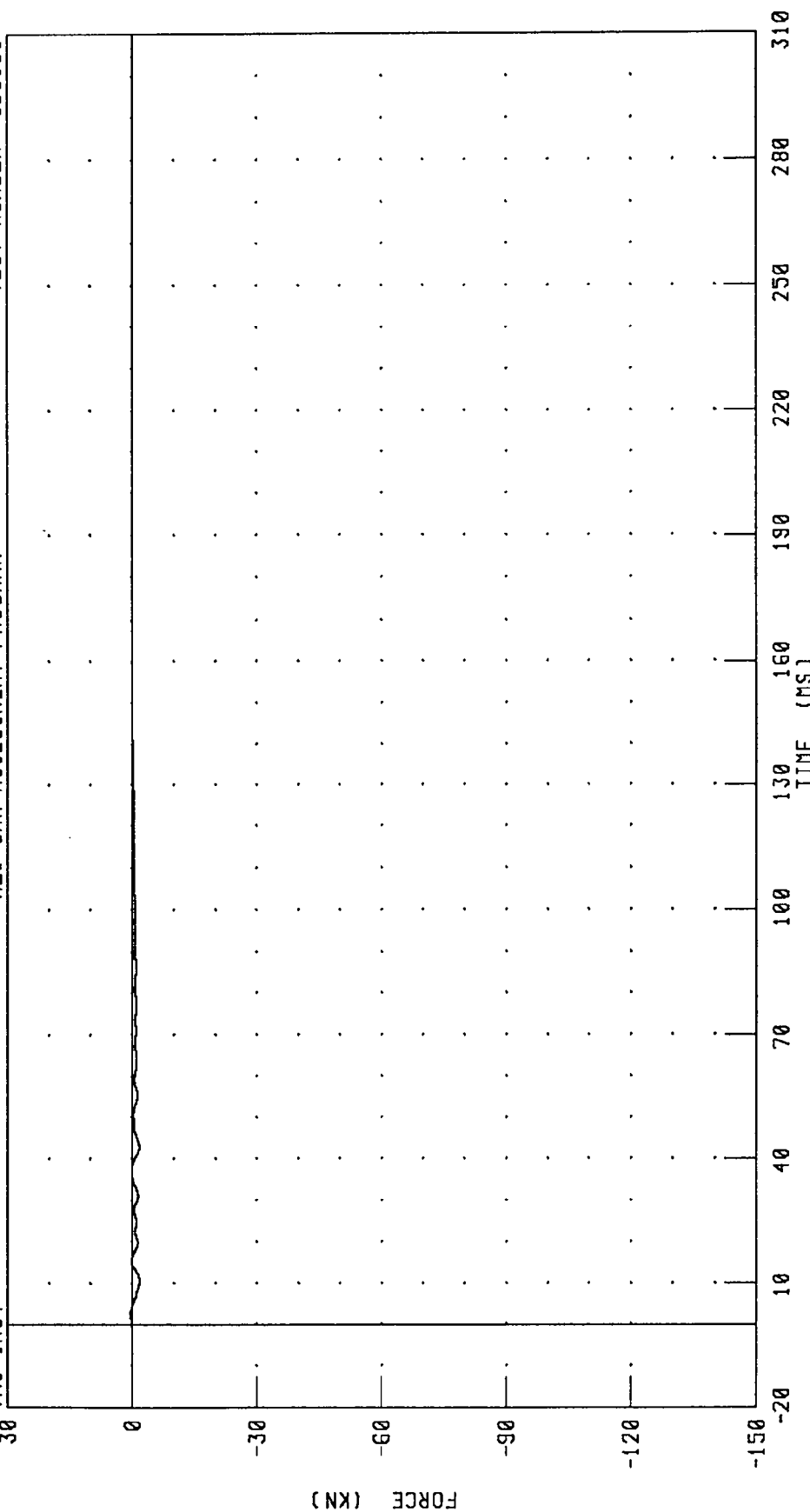
PEAK DATA: 0.67 KN @ 15.12 MS; -1.87 KN @ 43.12 MS

CHANNEL: BA4F FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A5 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



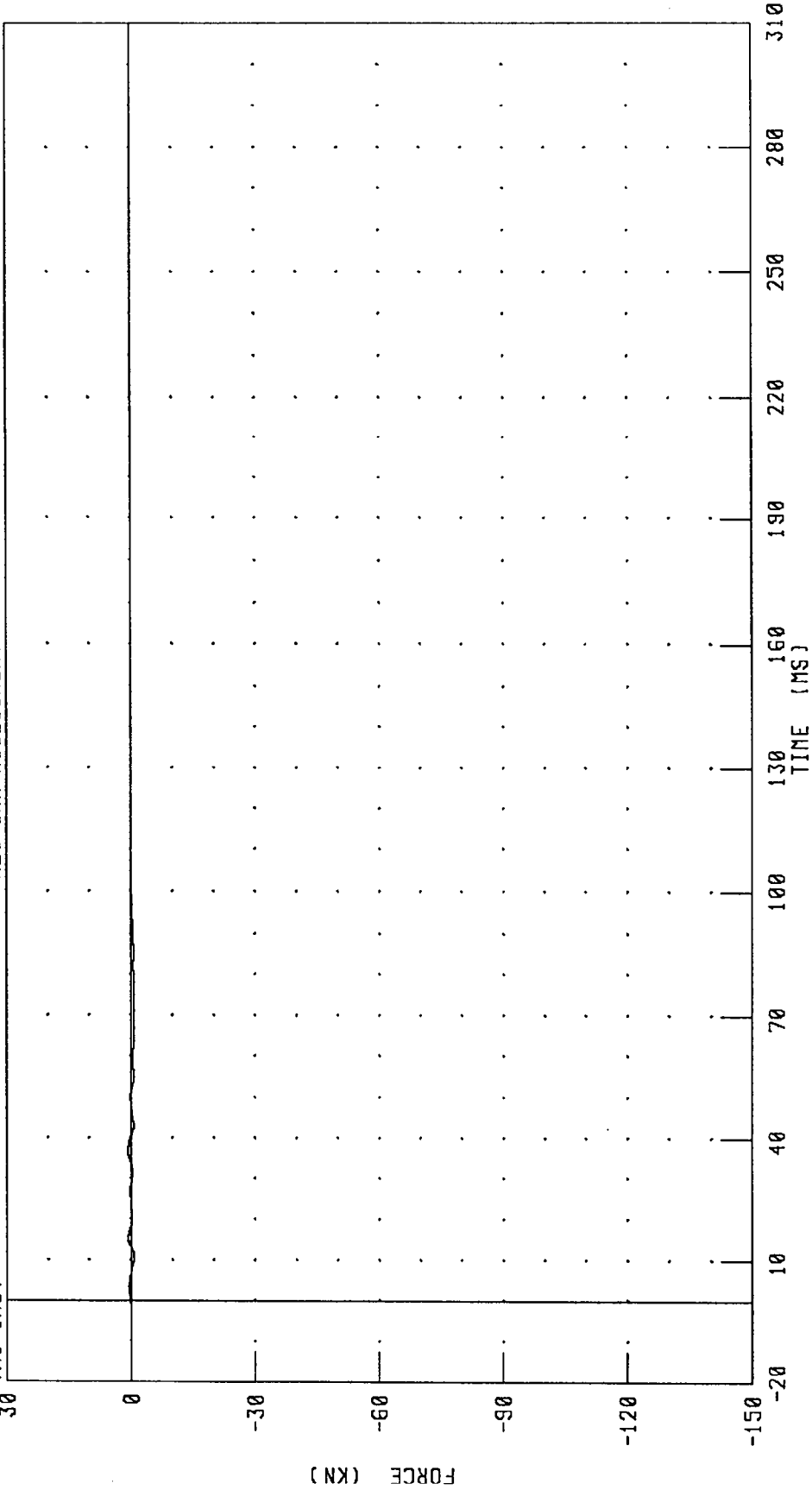
PEAK DATA: 0.41 KN @ 2.40 MS; -1.78 KN @ 10.48 MS

FILTER: CH. CLASS 60

CHANNEL: BASF

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A6 FORCE

TRC INC. NEW CAR ASSESSMENT PROGRAM TEST NUMBER: 960131



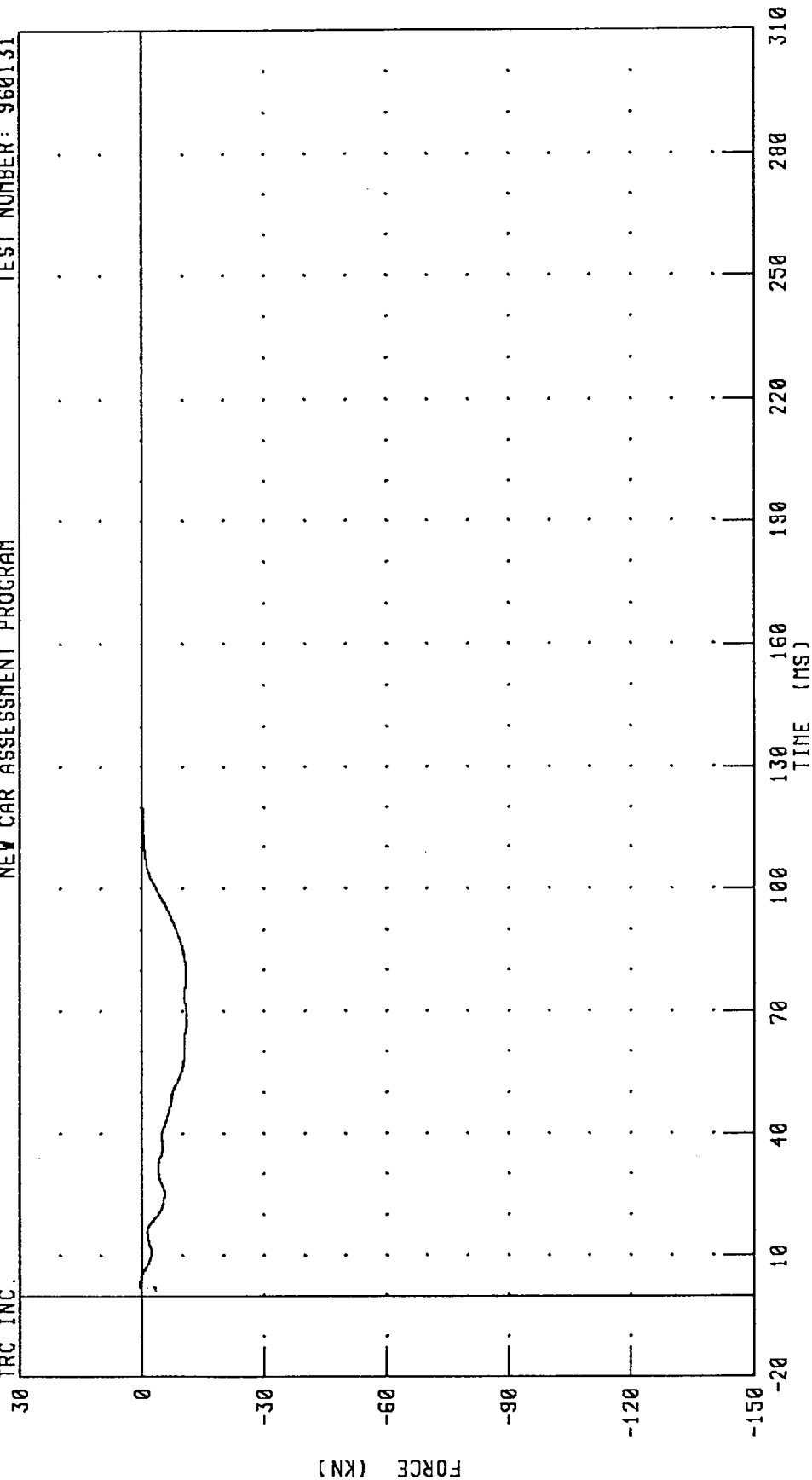
CHANNEL: B6GF FILTER: CH. CLASS 60 PEAK DATA: 0.71 KN @ 15.28 MS; -0.90 KN @ 10.72 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A7 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.37 KN @ 2.80 MS; -11.07 KN @ 68.48 MS

FILTER: CH. CLASS 60

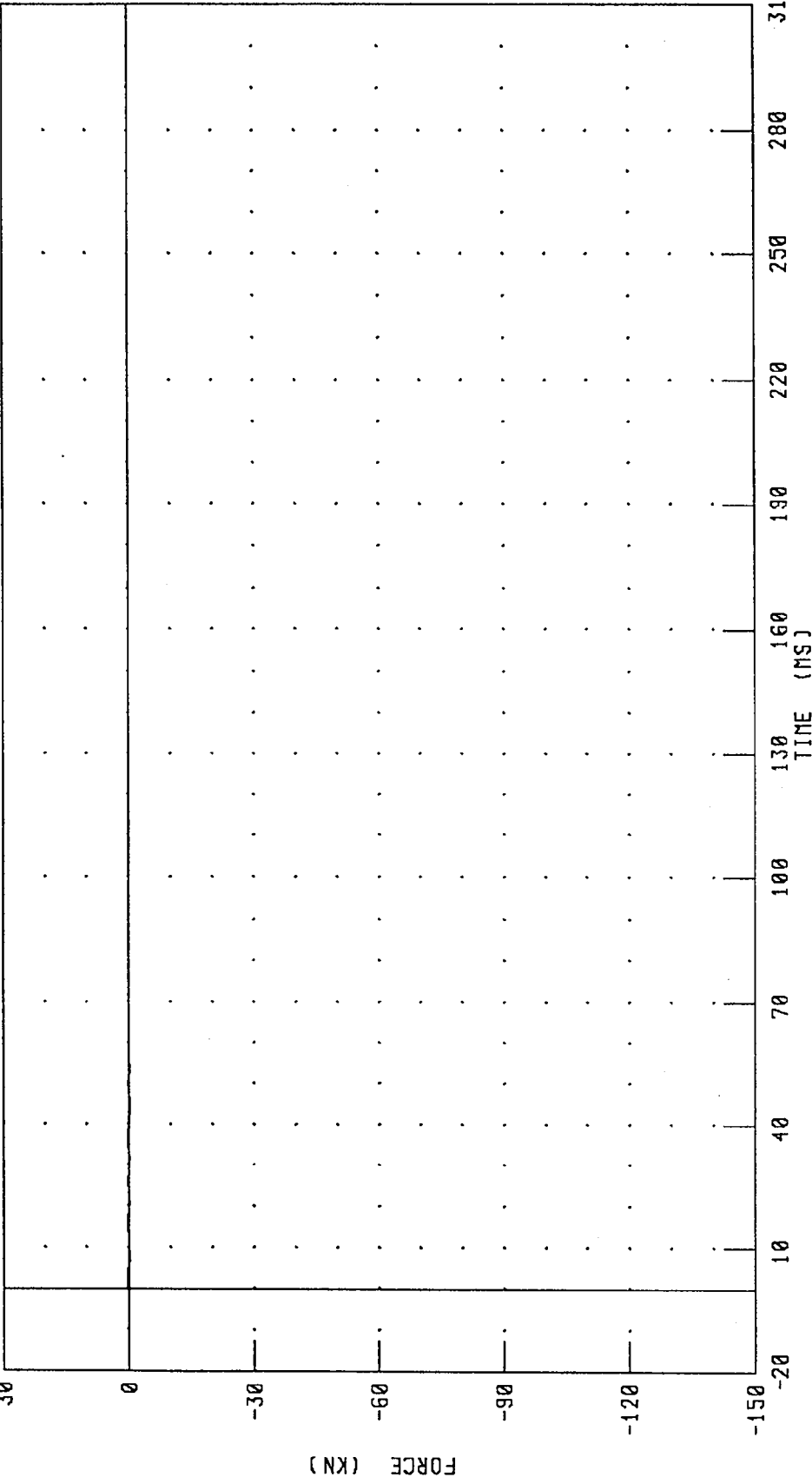
CHANNEL: BA7F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A8 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: BA8F

FILTER: CH. CLASS 60

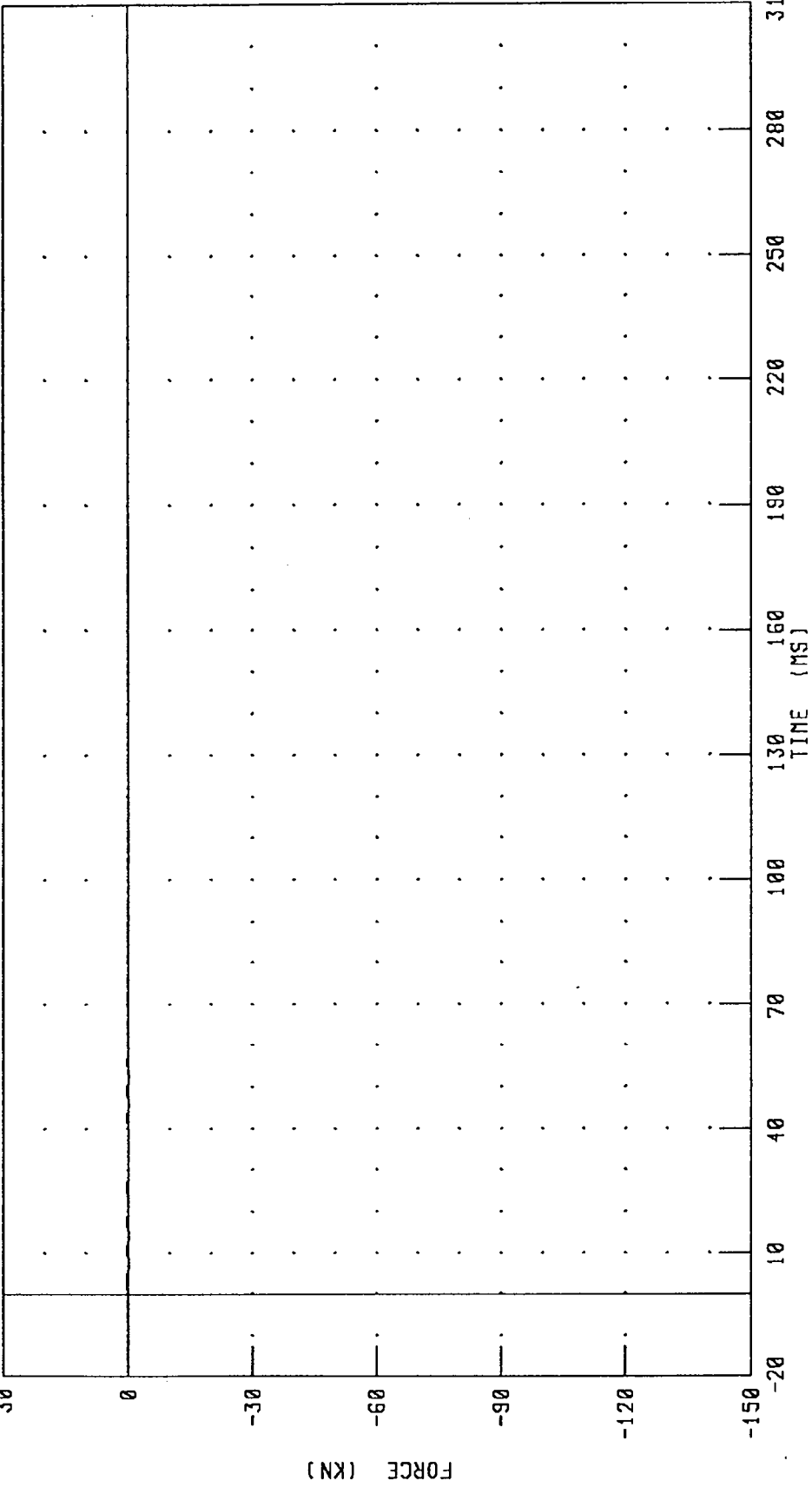
PEAK DATA: 0.25 KN @ 2.88 MS; -0.28 KN @ 7.76 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A9 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.29 KN @ 10.64 MS; -0.34 KN @ 7.52 MS

FILTER: CH. CLASS 60

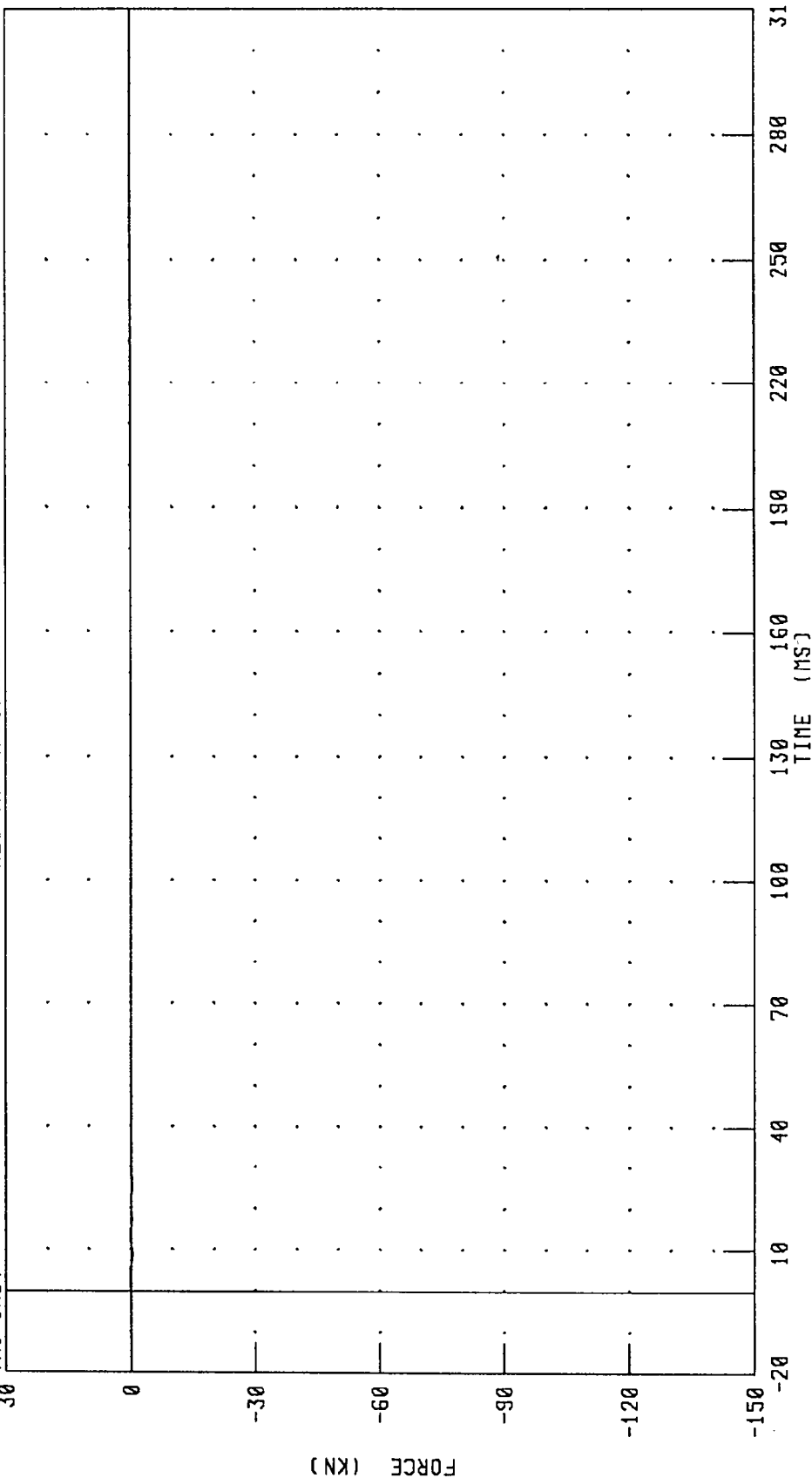
CHANNEL: BA9F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B1 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.29 KN @ 3.68 MS; -0.45 KN @ 8.72 MS

FILTER: CH. CLASS 60

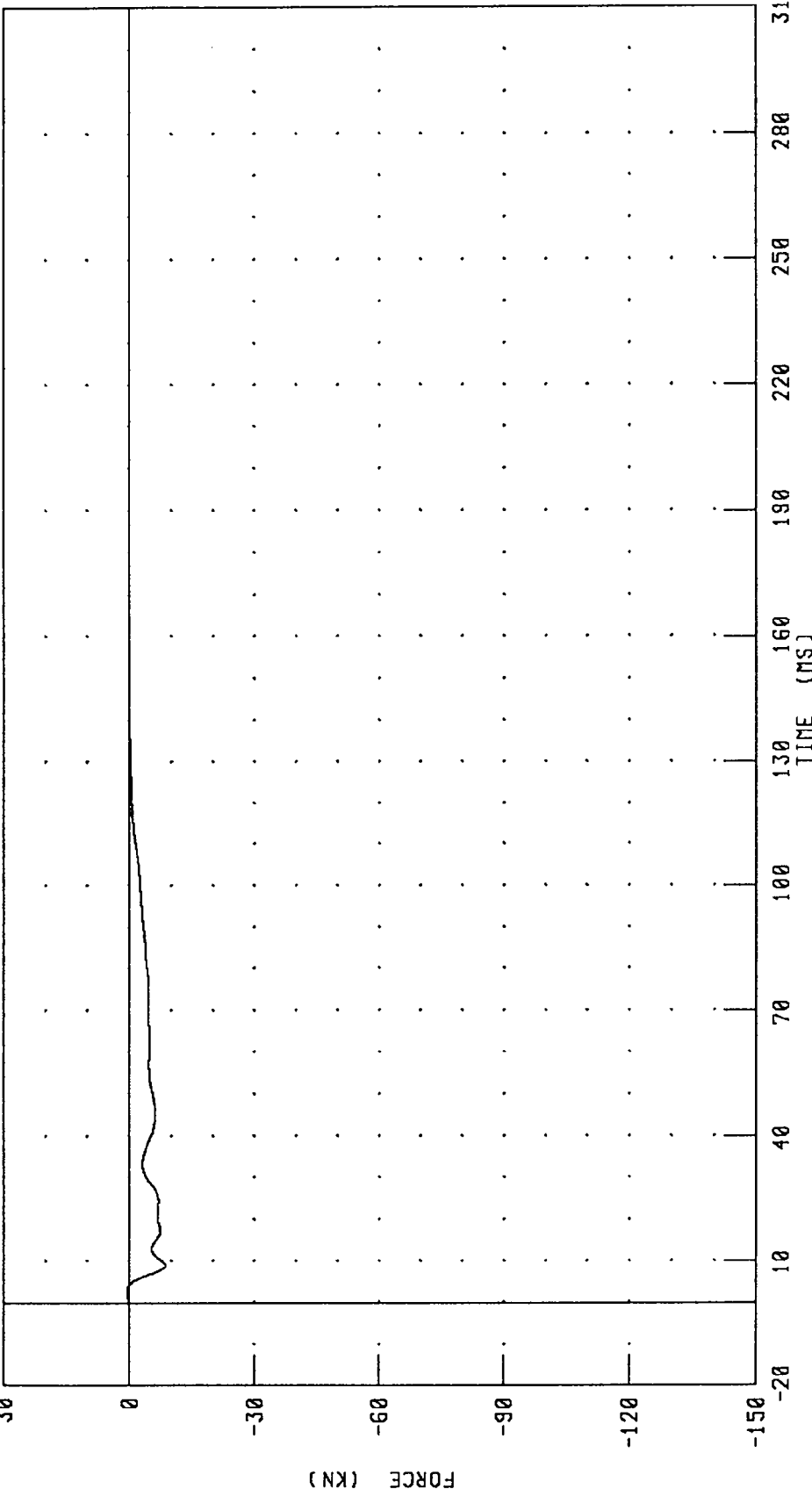
CHANNEL: BB1F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B2 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: BB2F

FILTER: CH. CLASS 60

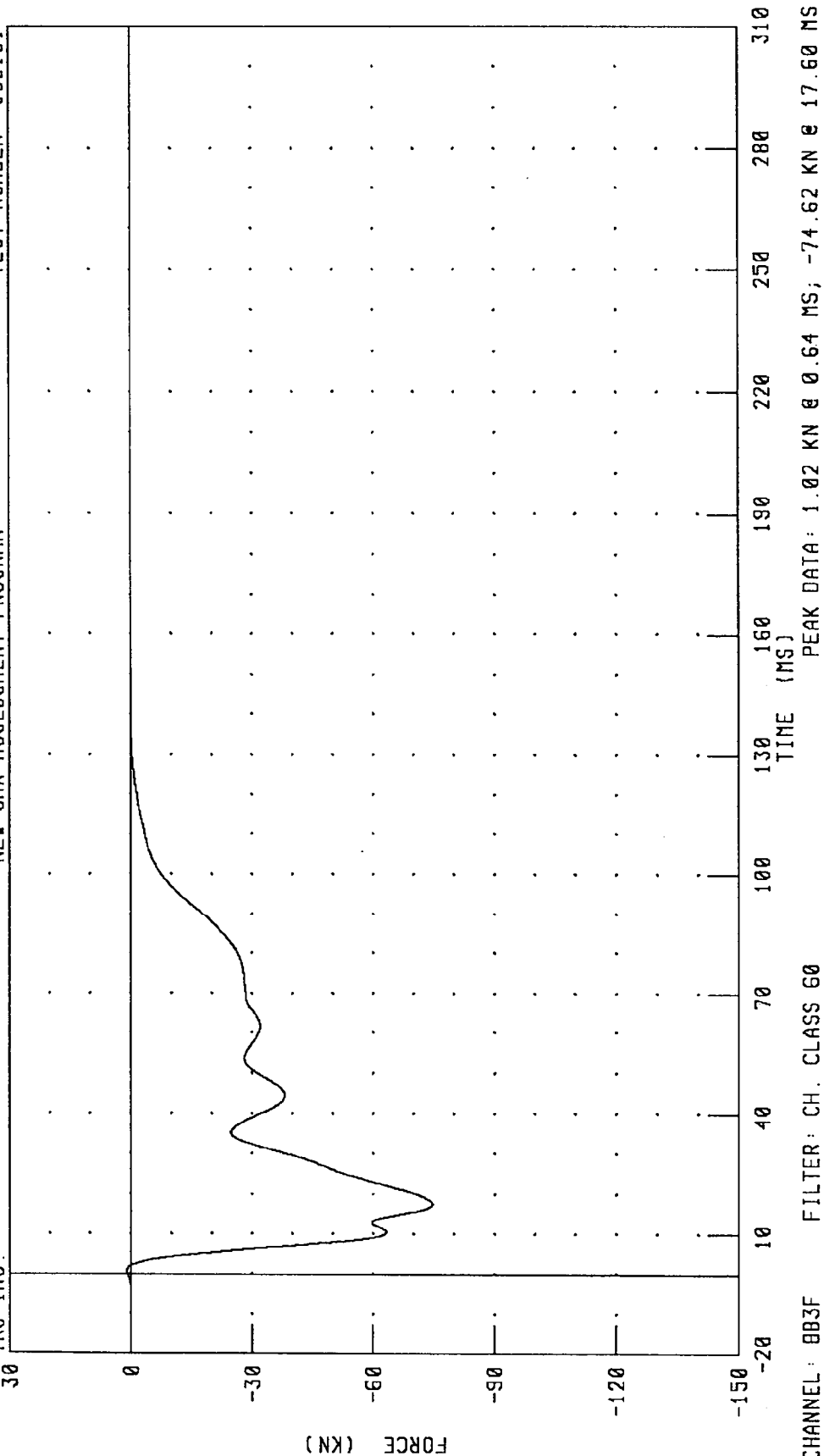
PEAK DATA: 0.55 KN @ 2.56 MS; -8.66 KN @ 8.88 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B3 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 1.02 KN @ 0.64 MS; -74.62 KN @ 17.60 MS

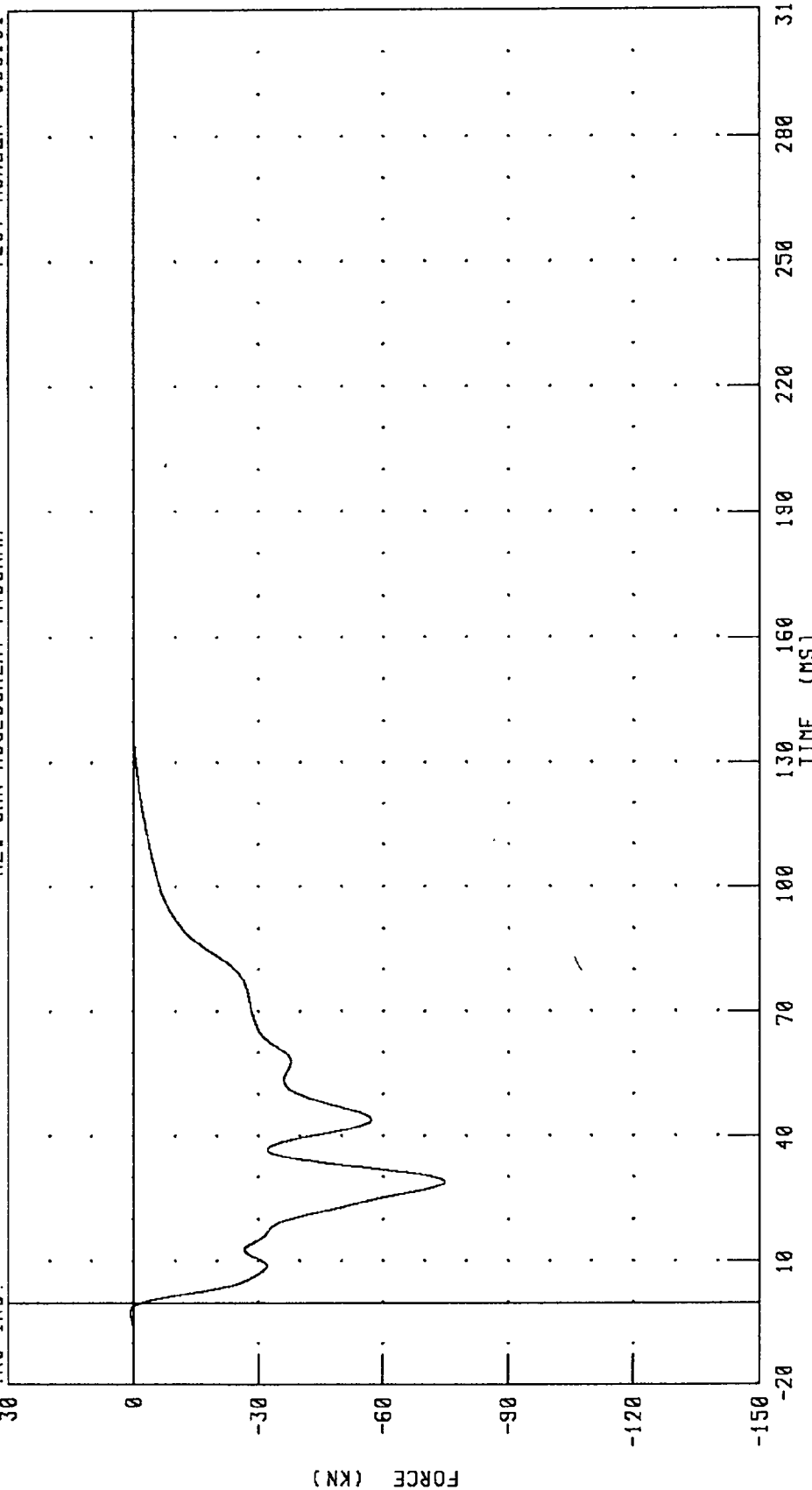
CHANNEL: BB3F FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B4 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



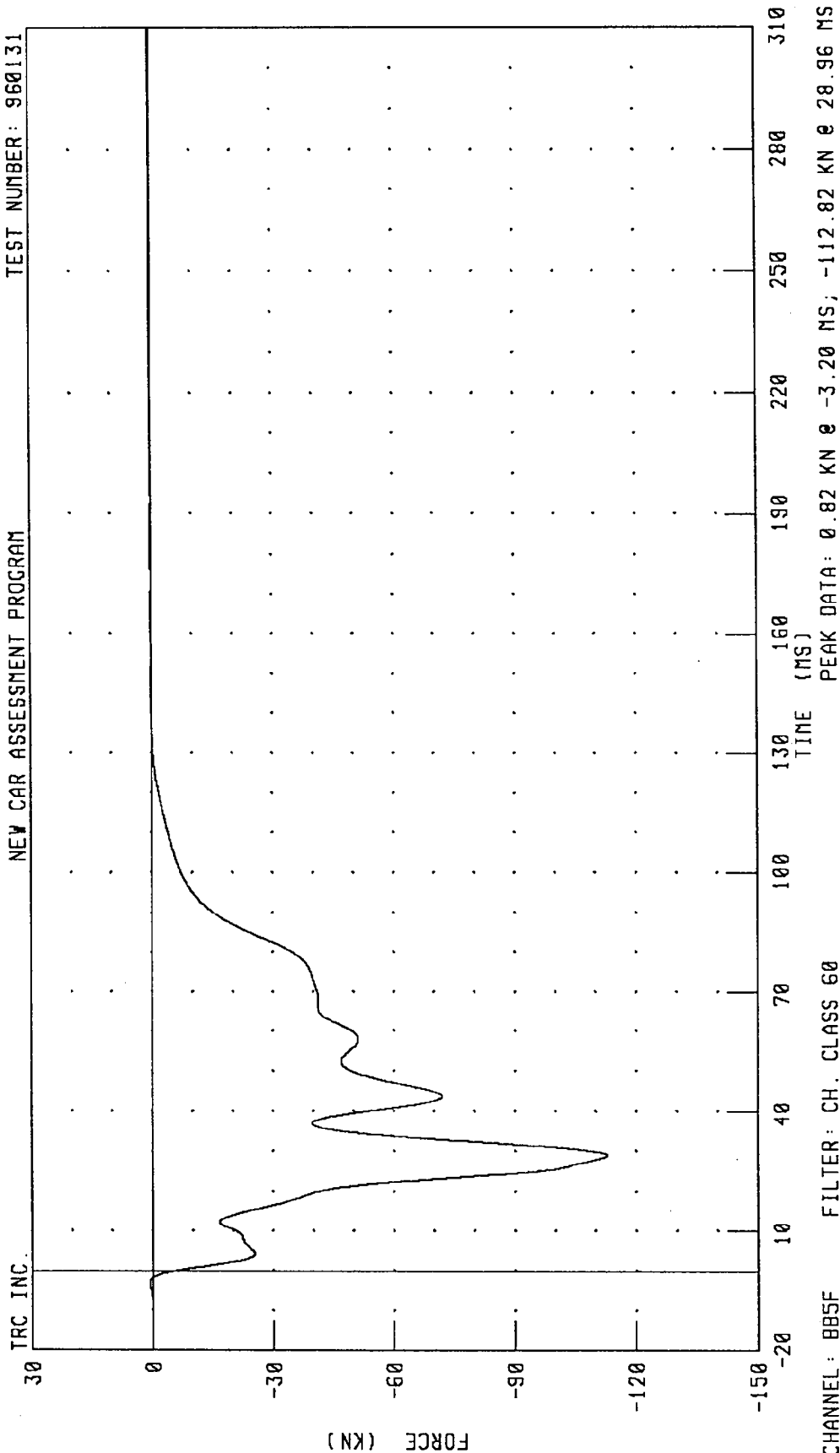
PEAK DATA: 0.73 KN @ -2.40 MS; -74.75 KN @ 28.96 MS

FILTER: CH. CLASS 60

CHANNEL: BB4F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B5 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131



CHANNEL: BB5F FILTER: CH. CLASS 60

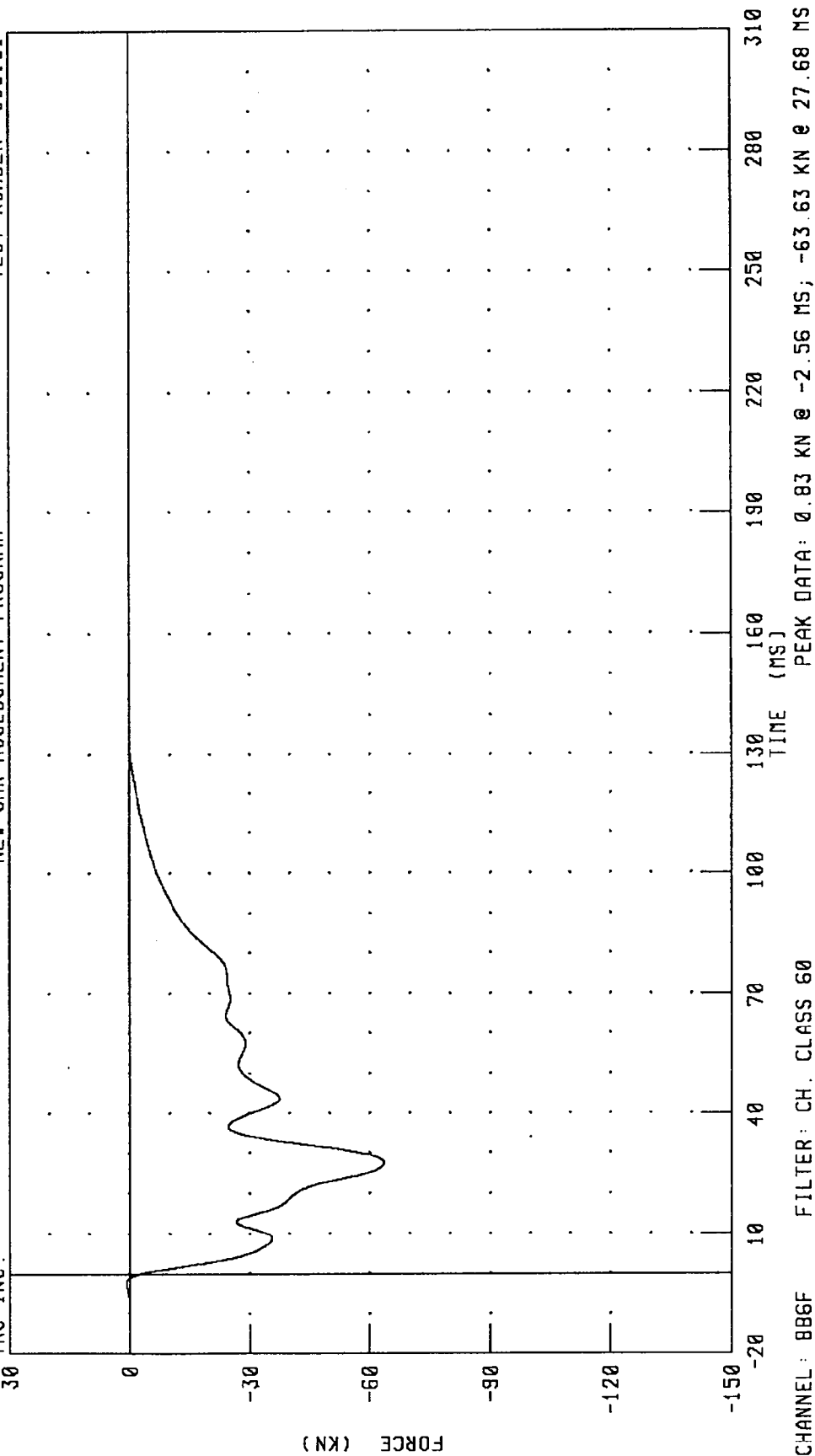
PEAK DATA: 0.82 KN @ -3.20 MS; -112.82 KN @ 28.96 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B6 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: BB6F

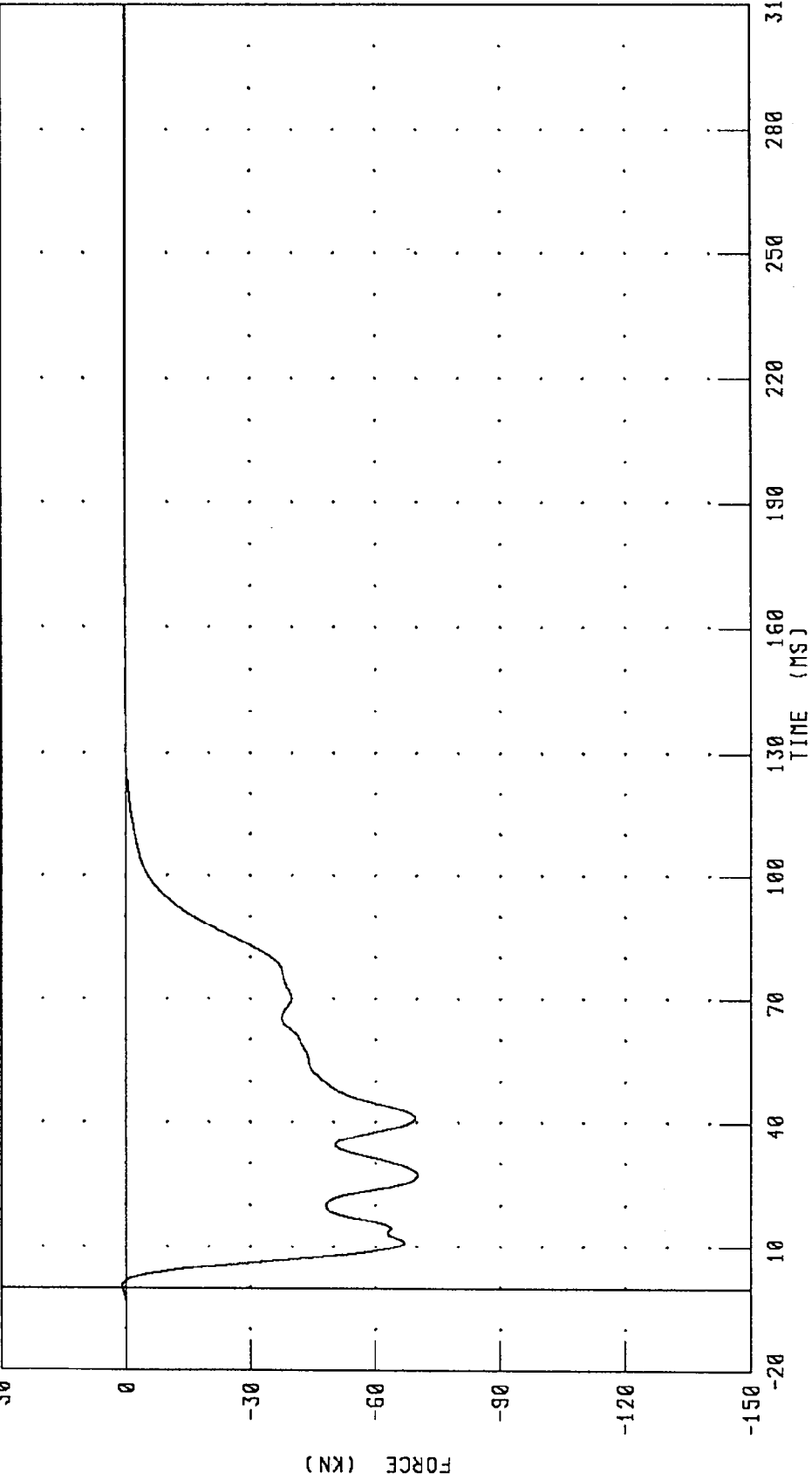
FILTER: CH. CLASS 60

PEAK DATA: 0.83 KN @ -2.56 MS; -63.63 KN @ 27.68 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B7 FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



CHANNEL: BB7F

FILTER: CH. CLASS 60

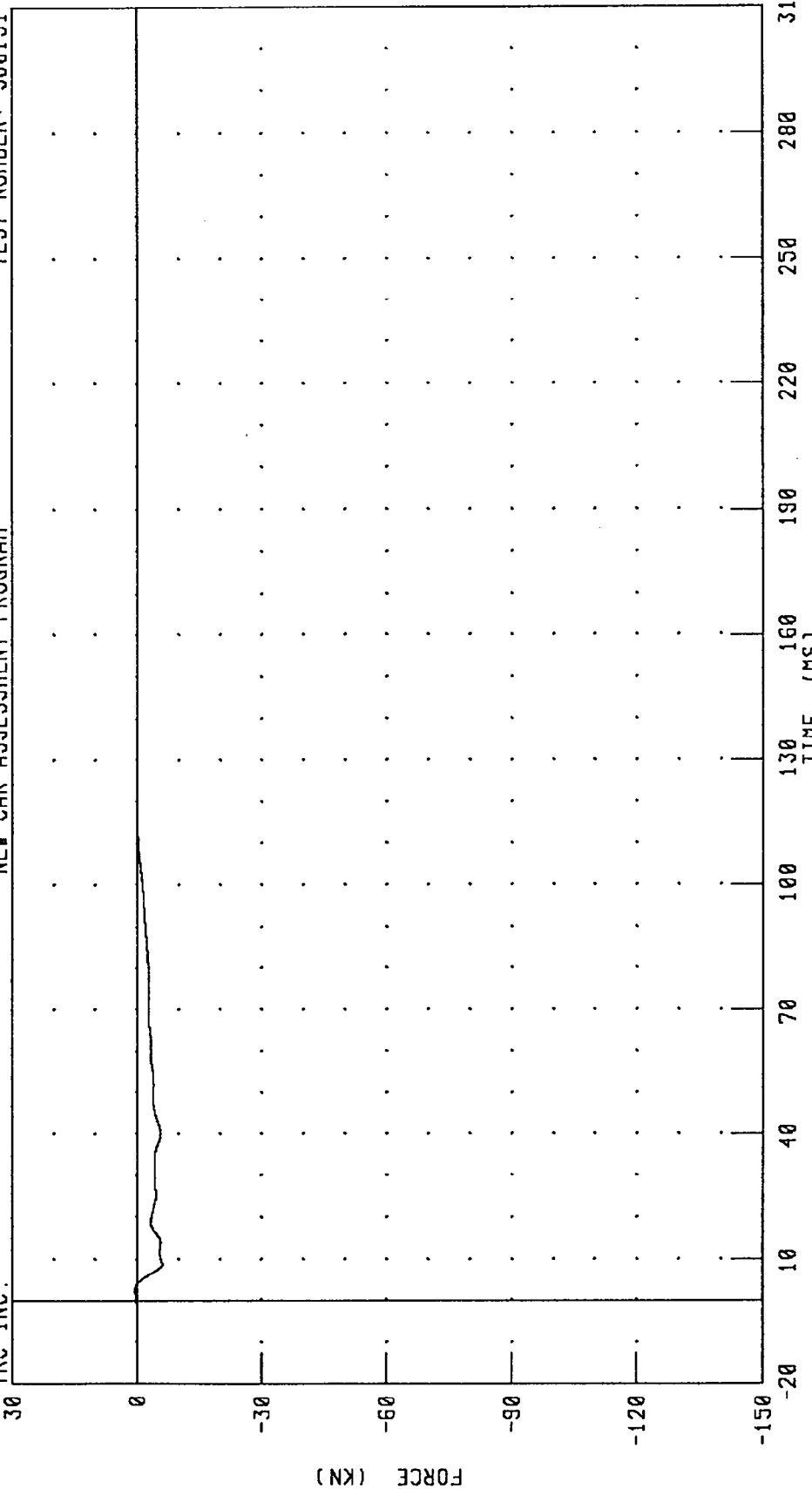
PEAK DATA: 0.92 KN @ 0.32 MS; -70.21 KN @ 27.12 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B8 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



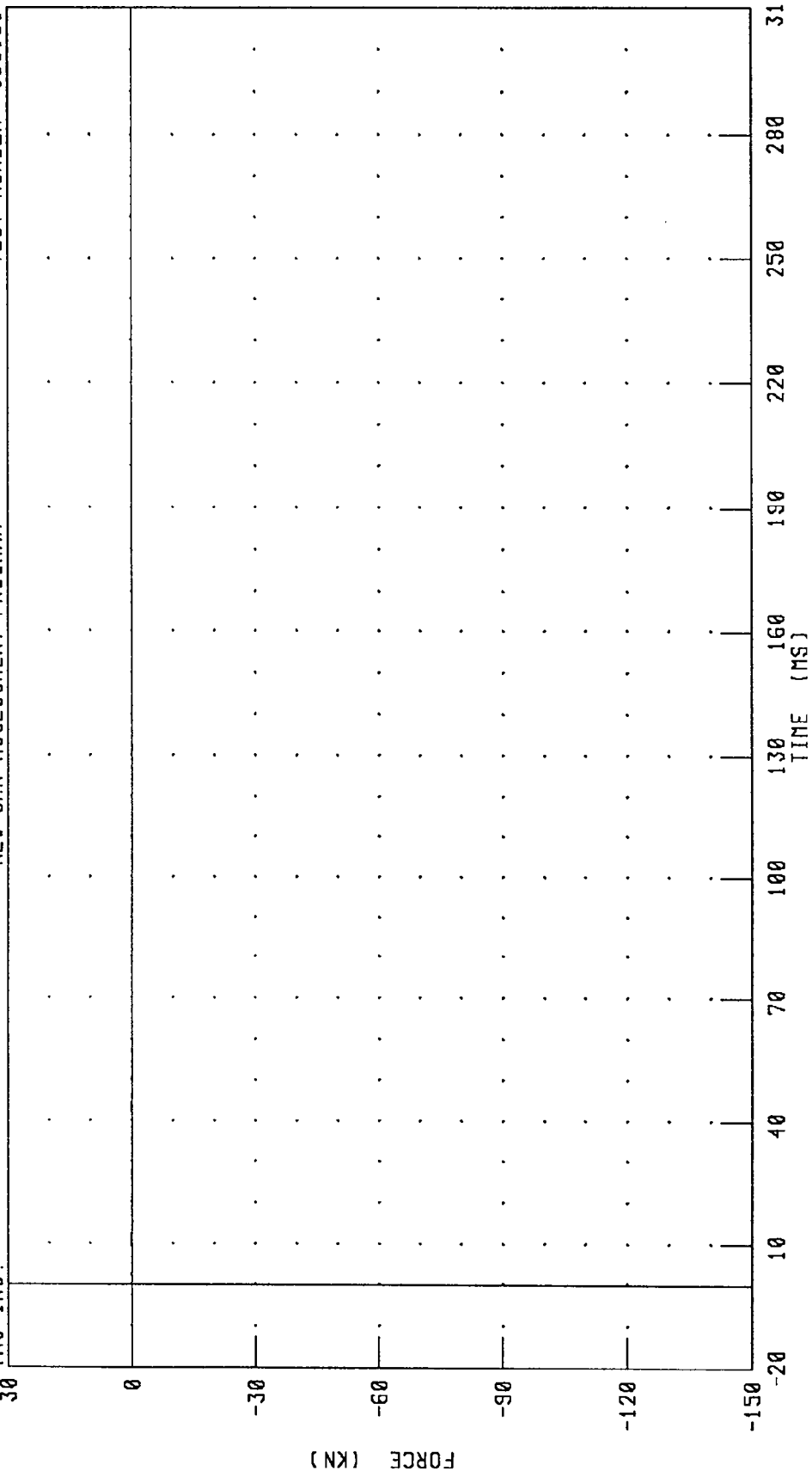
CHANNEL: 888F FILTER: CH. CLASS 60

PEAK DATA: 0.37 KN @ 2.24 MS; -6.05 KN @ 8.96 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B9 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



PEAK DATA: 0.18 KN @ 10.64 MS; -0.18 KN @ 15.28 MS

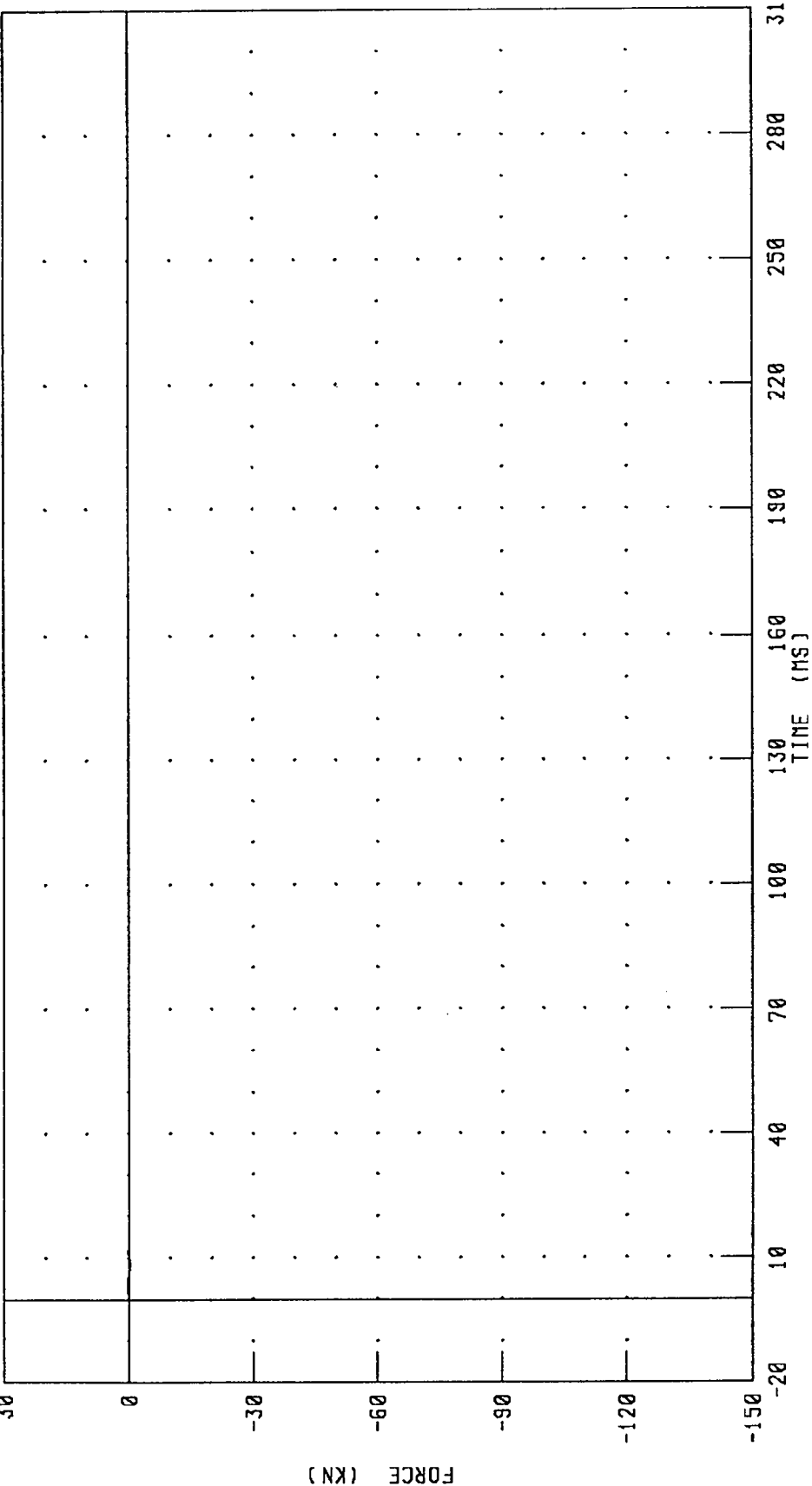
CHANNEL: BB9F FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C1 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.20 KN @ 3.60 MS; -0.30 KN @ 8.48 MS

FILTER: CH. CLASS 60

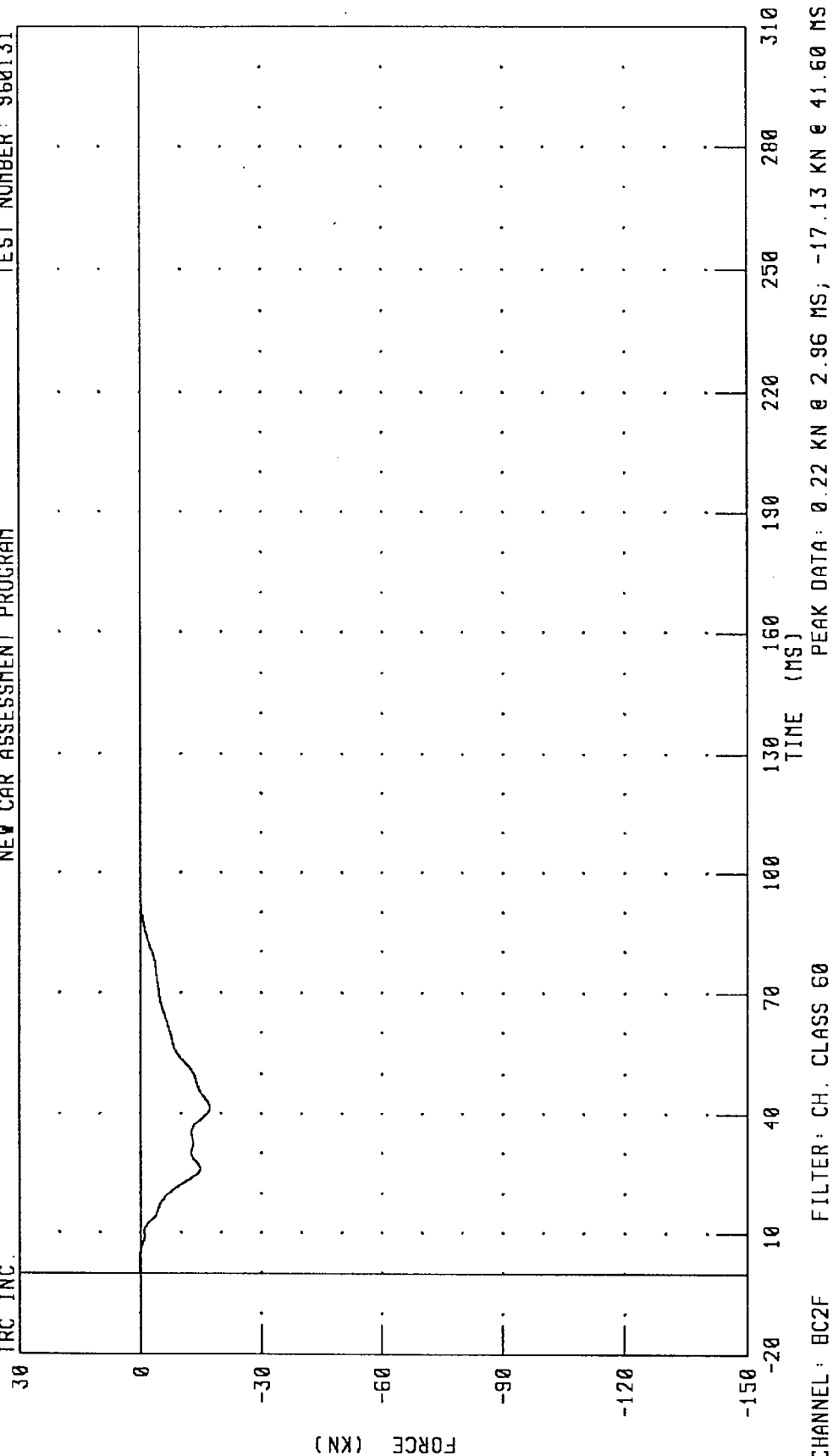
CHANNEL: BC1F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C2 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: BC2F FILTER: CH. CLASS 60

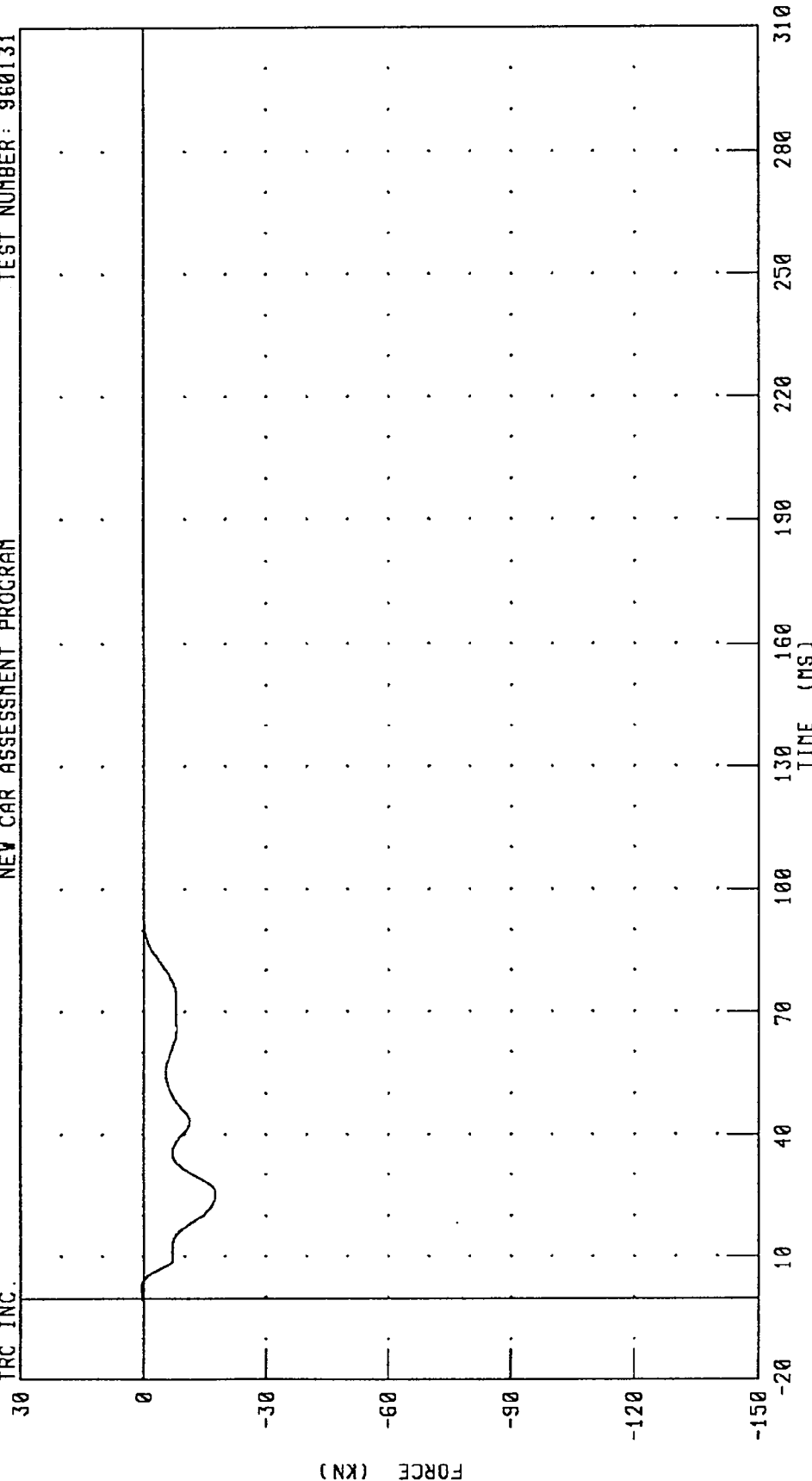
PEAK DATA: 0.22 KN @ 2.96 MS; -17.13 KN @ 41.60 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C3 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.47 KN @ 2.40 MS; -17.67 KN @ 25.28 MS

FILTER: CH. CLASS 60

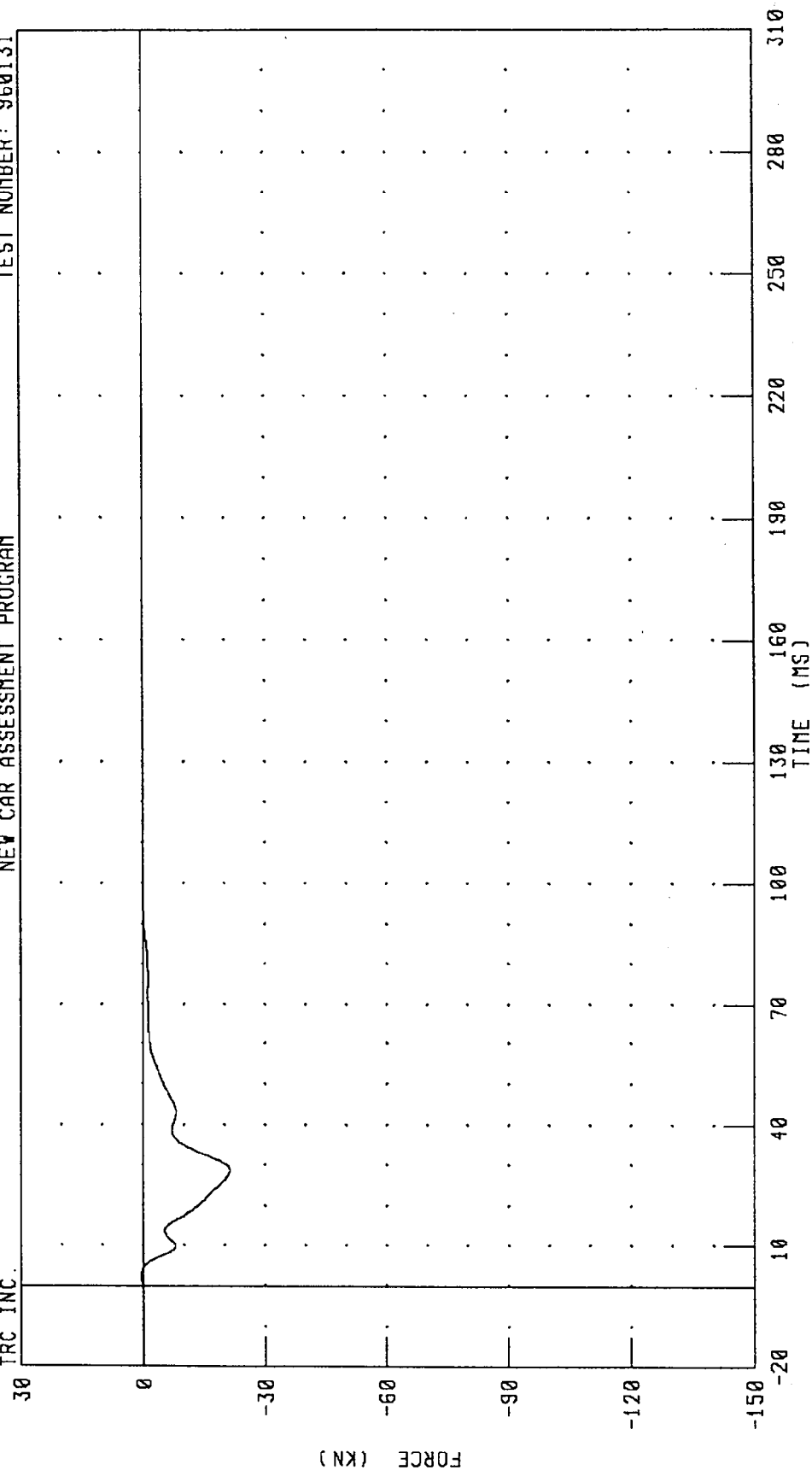
CHANNEL: BC3F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C4 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



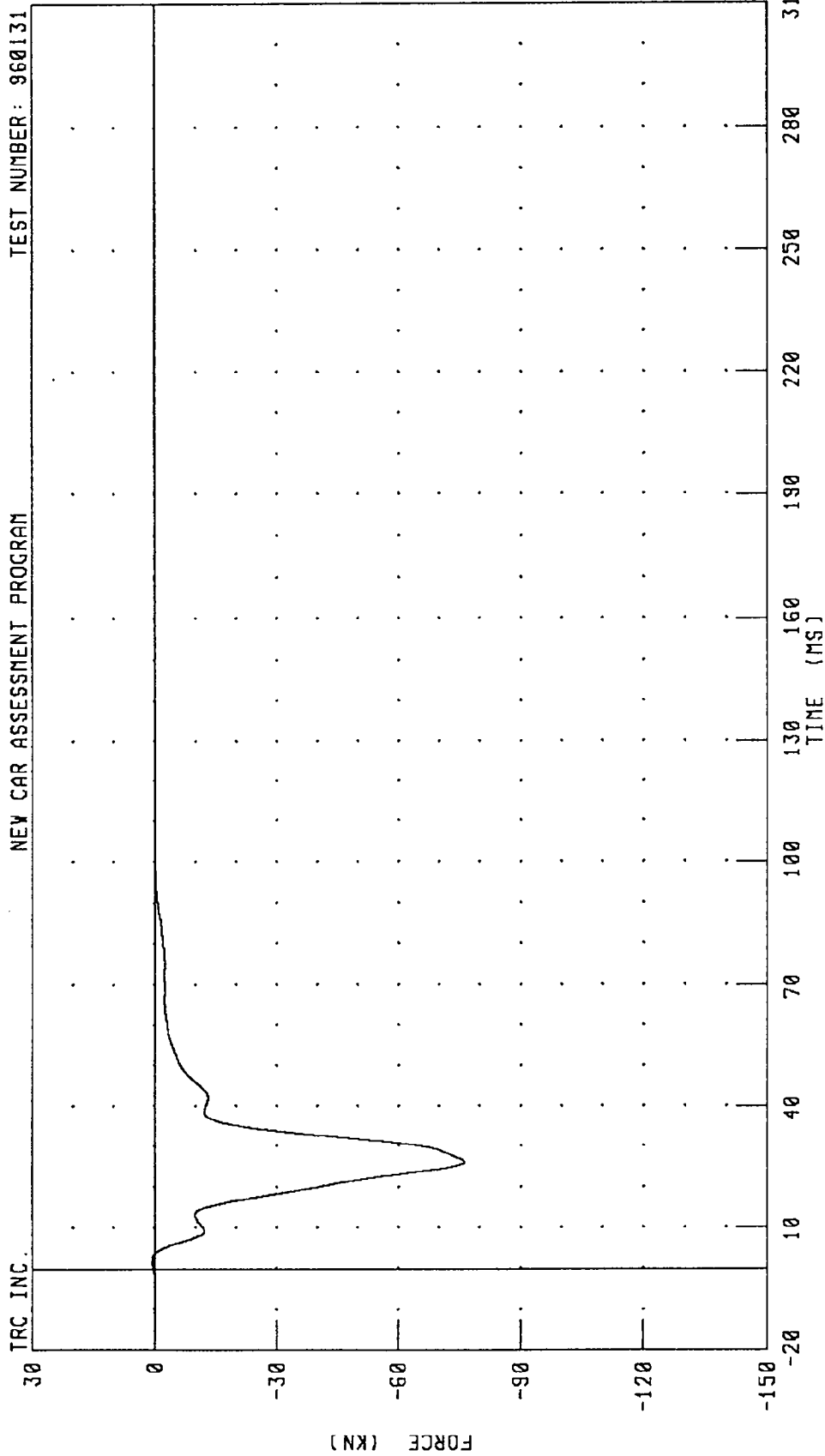
PEAK DATA: 0.45 KN @ 2.32 MS; -21.27 KN @ 28.72 MS

FILTER: CH. CLASS 60

CHANNEL: BC4F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C5 FORCE

NEW CAR ASSESSMENT PROGRAM TEST NUMBER: 960131



CHANNEL: BC5F FILTER: CH. CLASS 60

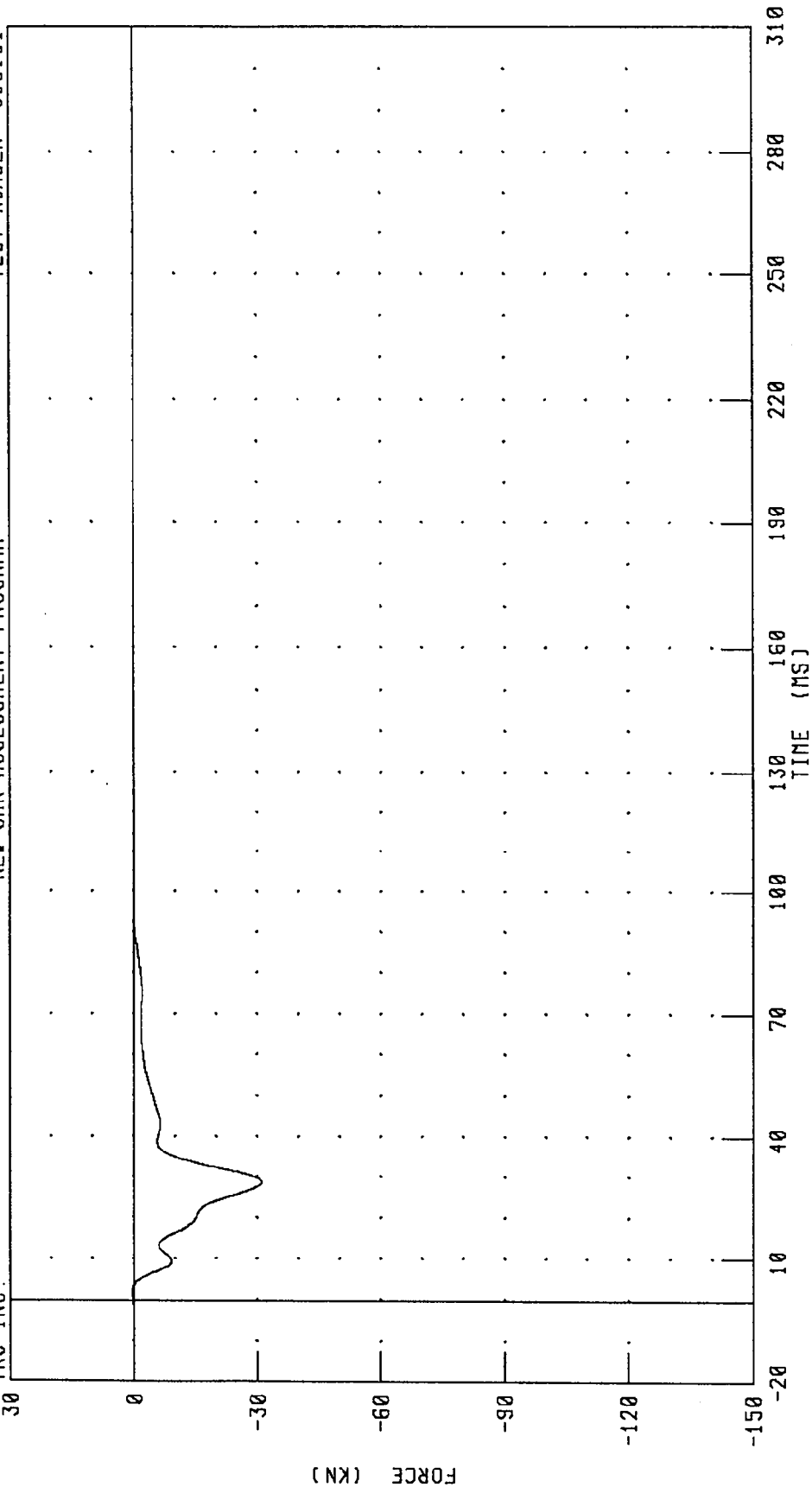
PEAK DATA: 0.58 KN @ 1.84 MS; -76.28 KN @ 26.08 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C6 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: BCGF

FILTER: CH. CLASS 60

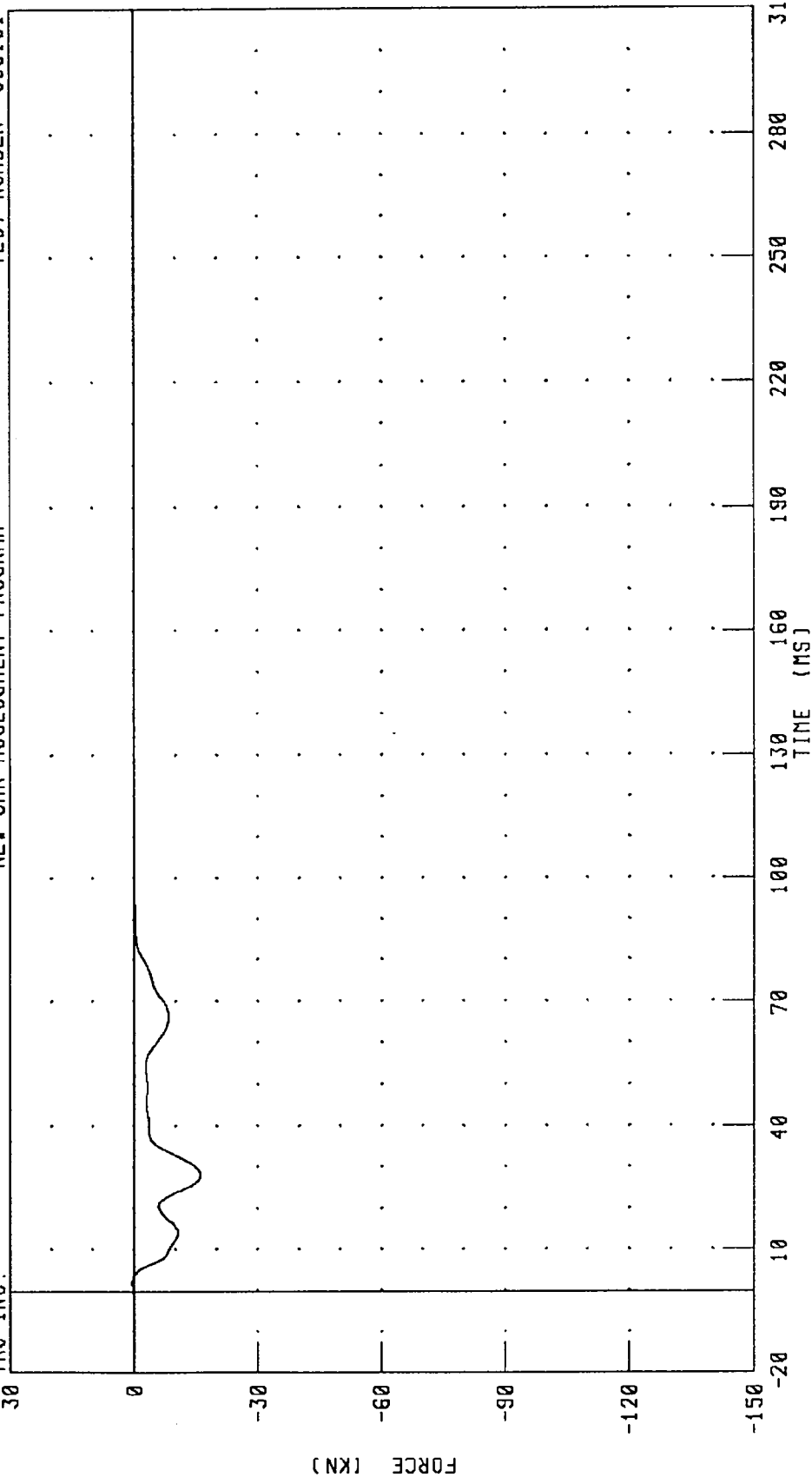
PEAK DATA: 0.45 KN @ 1.84 MS; -31.02 KN @ 28.72 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C7 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.36 KN @ 2.08 MS; -16.02 KN @ 28.24 MS

FILTER: CH. CLASS 60

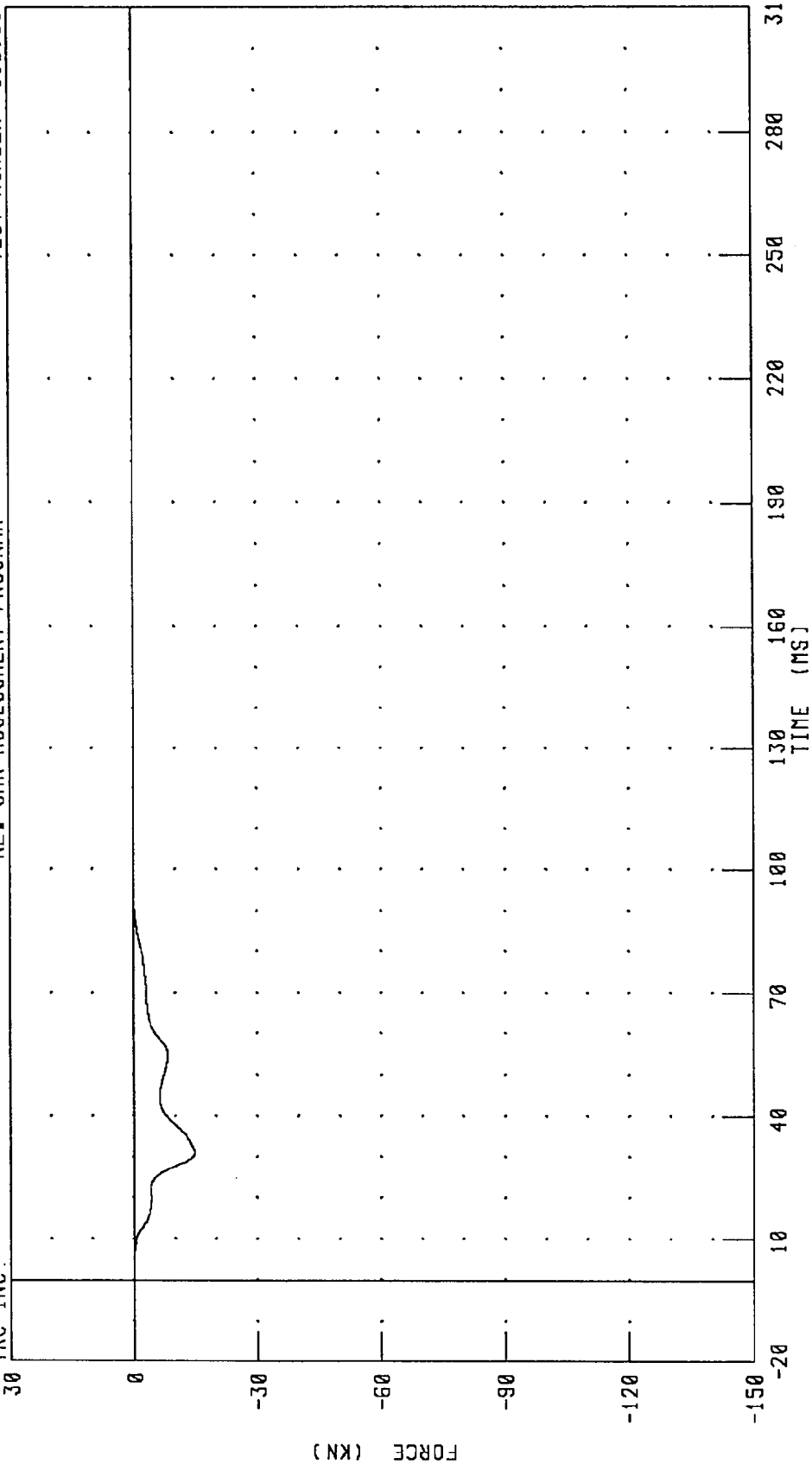
CHANNEL: BC7F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C8 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.04 KN @ 1.76 MS; -14.73 KN @ 31.04 MS

FILTER: CH. CLASS 60

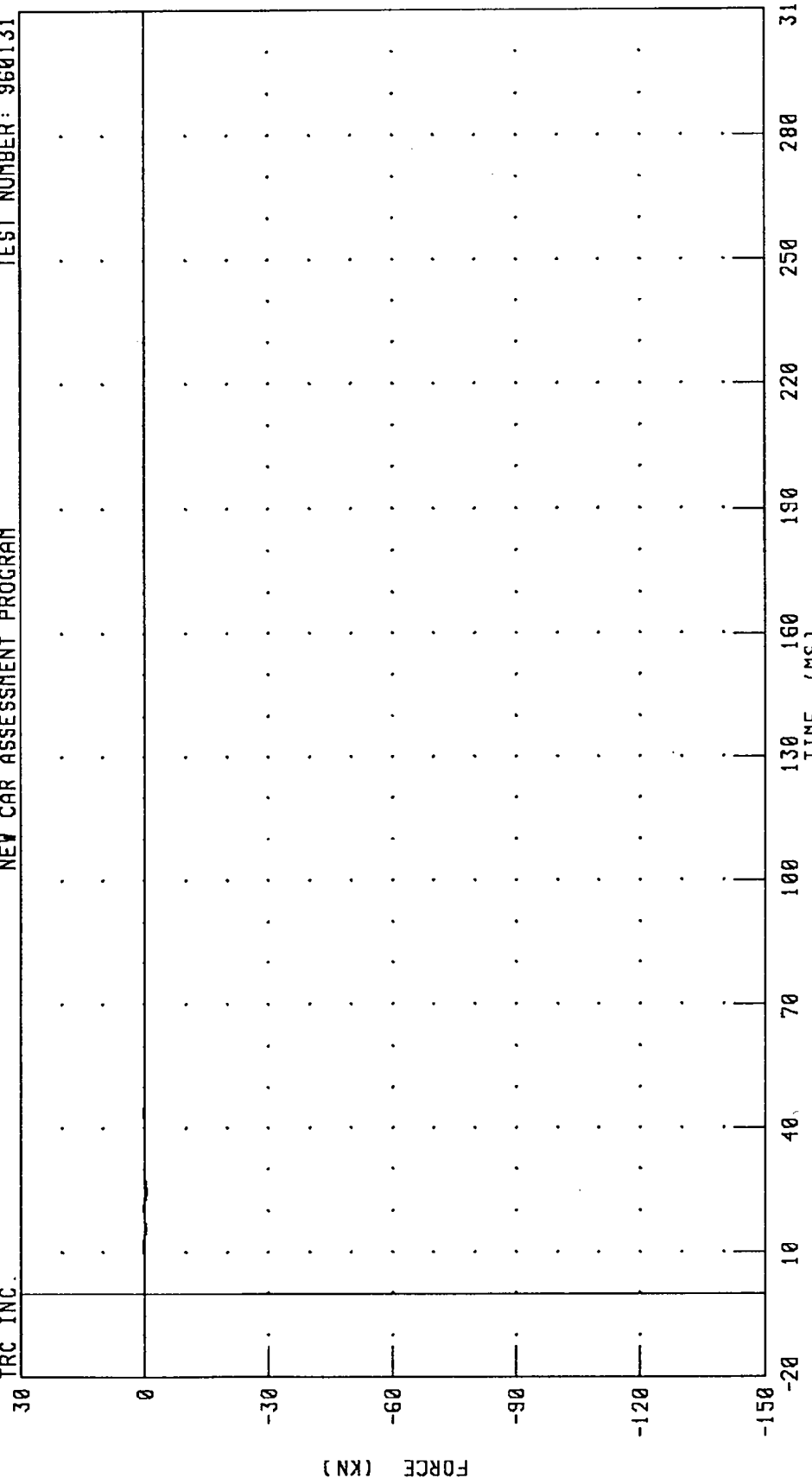
CHANNEL: BC8F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C9 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.24 KN @ 11.20 MS; -0.50 KN @ 24.72 MS

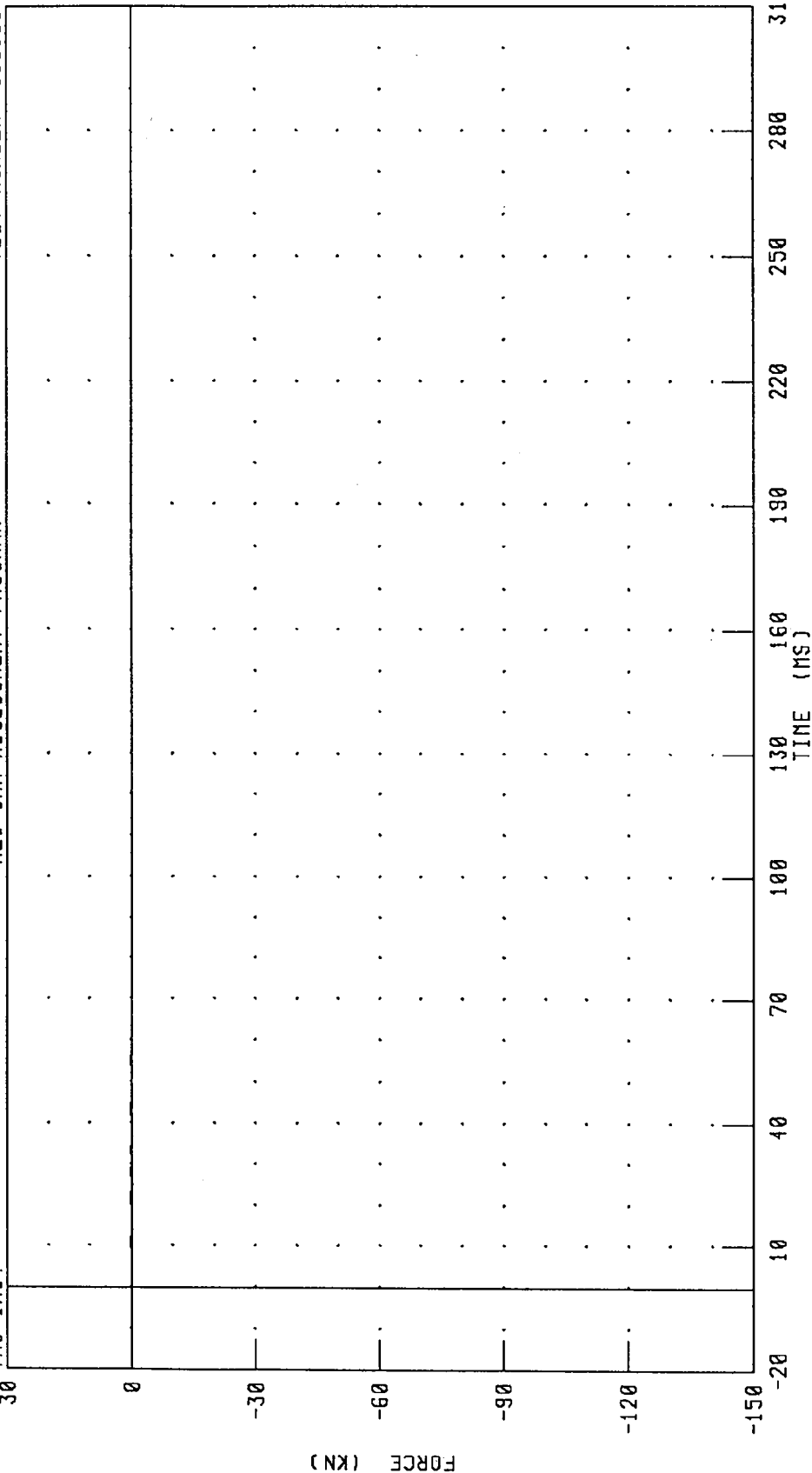
FILTER: CH. CLASS 60

CHANNEL: BC9F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D1 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

IRC INC.



CHANNEL: BD1F

FILTER: CH. CLASS 60

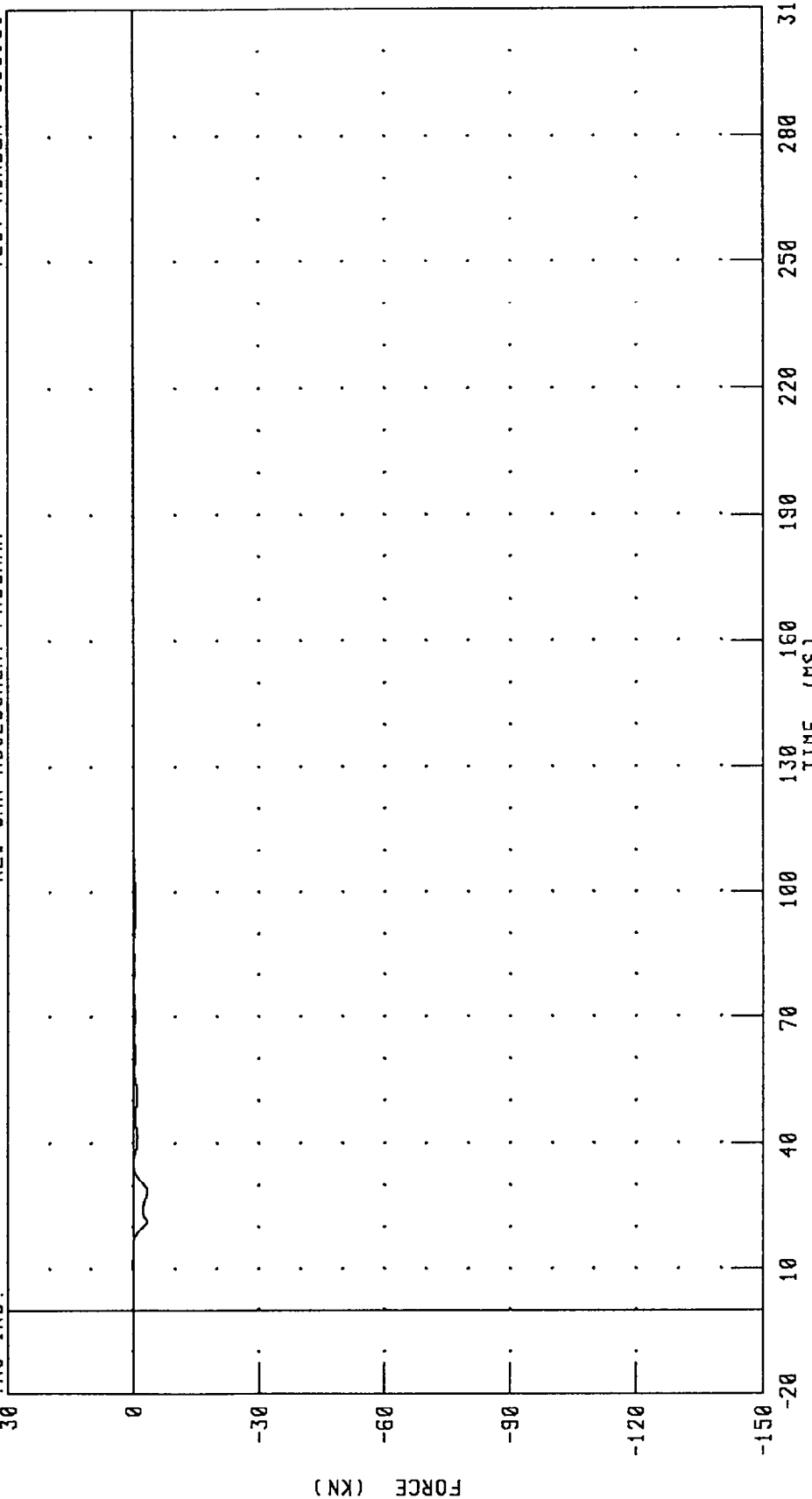
PEAK DATA: 0.24 KN @ 11.04 MS; -0.17 KN @ 24.96 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D2 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.12 KN @ 11.20 MS; -3.43 KN @ 28.72 MS

FILTER: CH. CLASS 60

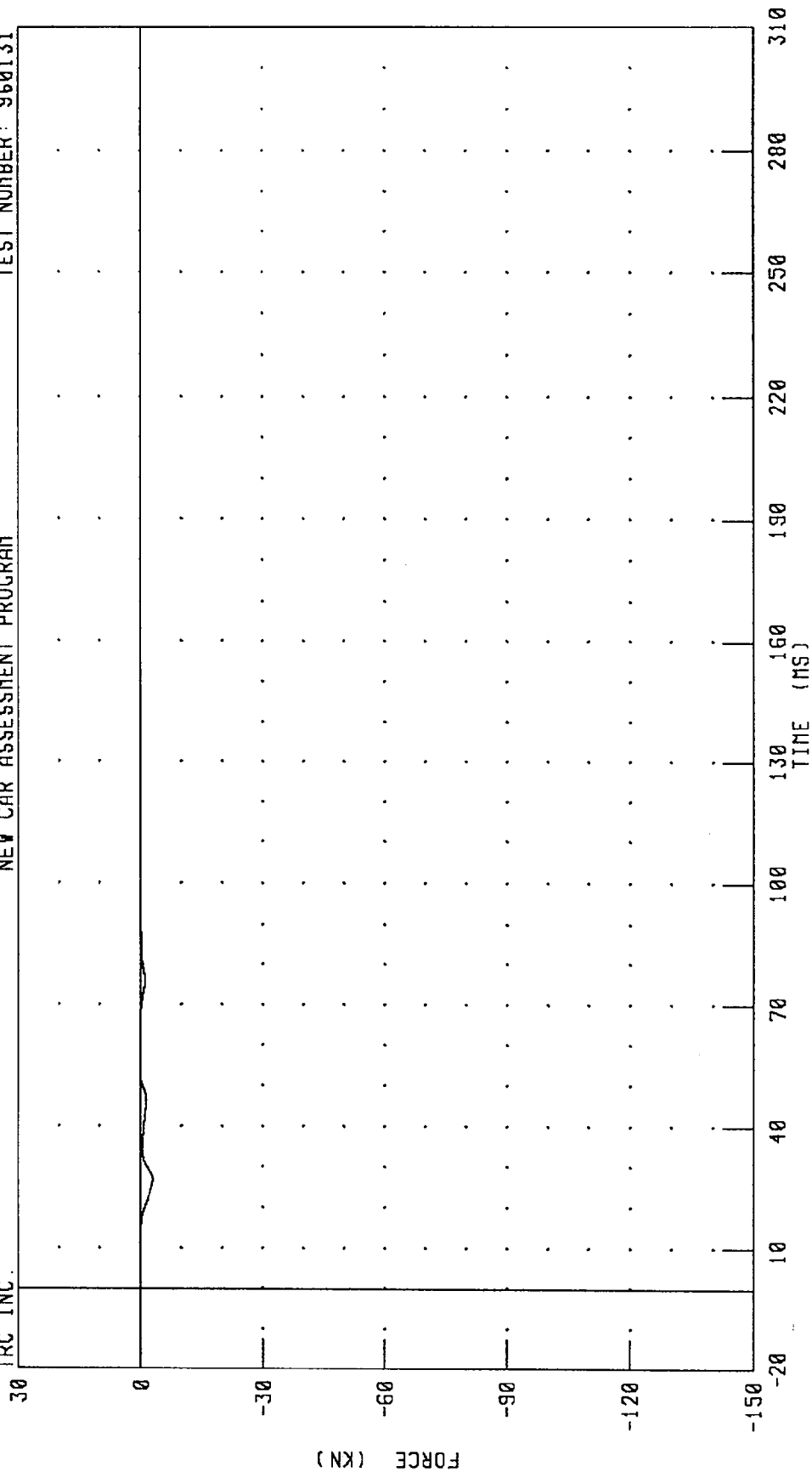
CHANNEL: BD2F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D3 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

IRC INC.



CHANNEL: B03F

FILTER: CH. CLASS 60

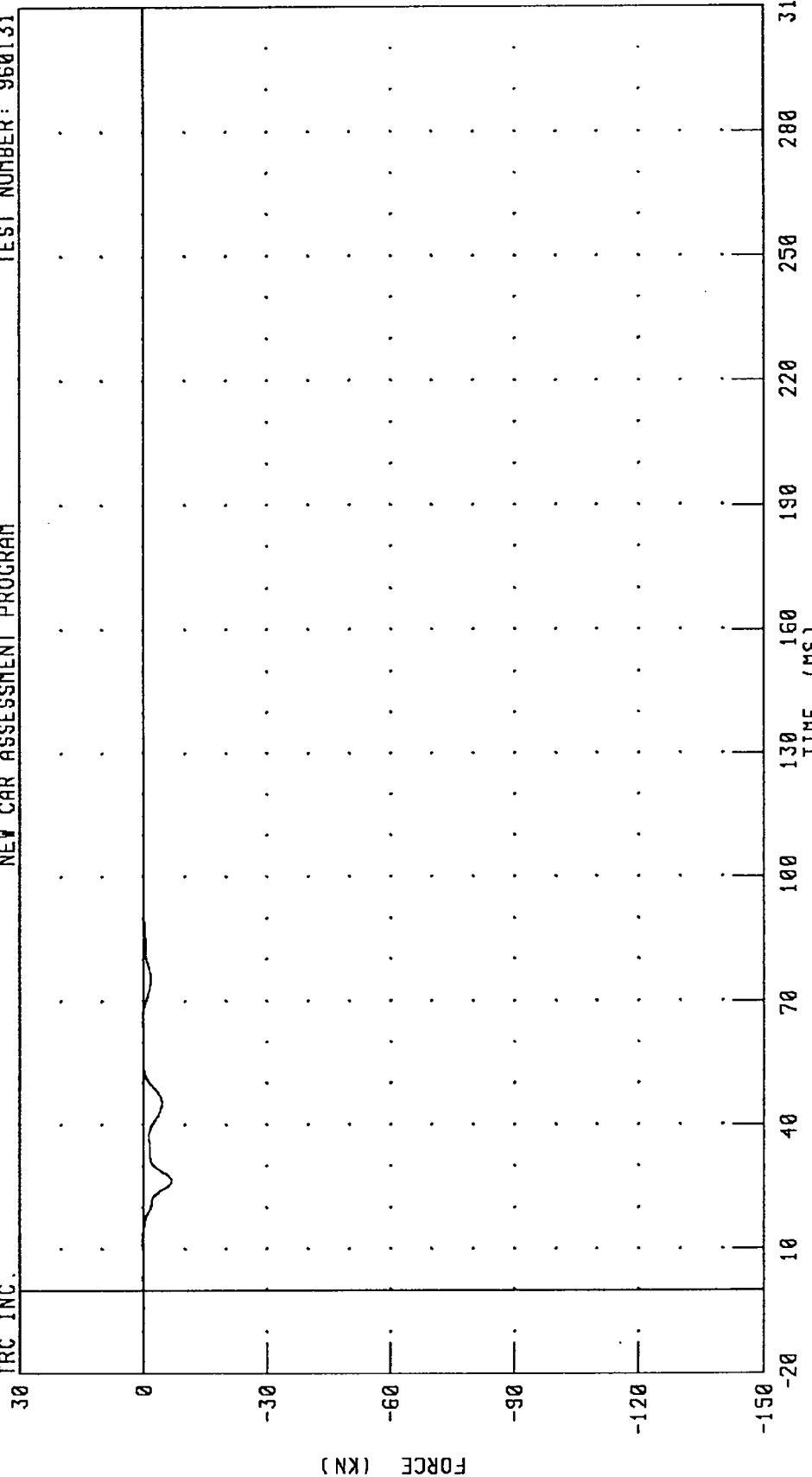
PEAK DATA: 0.17 KN @ 11.44 MS; -2.98 KN @ 26.88 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D4 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



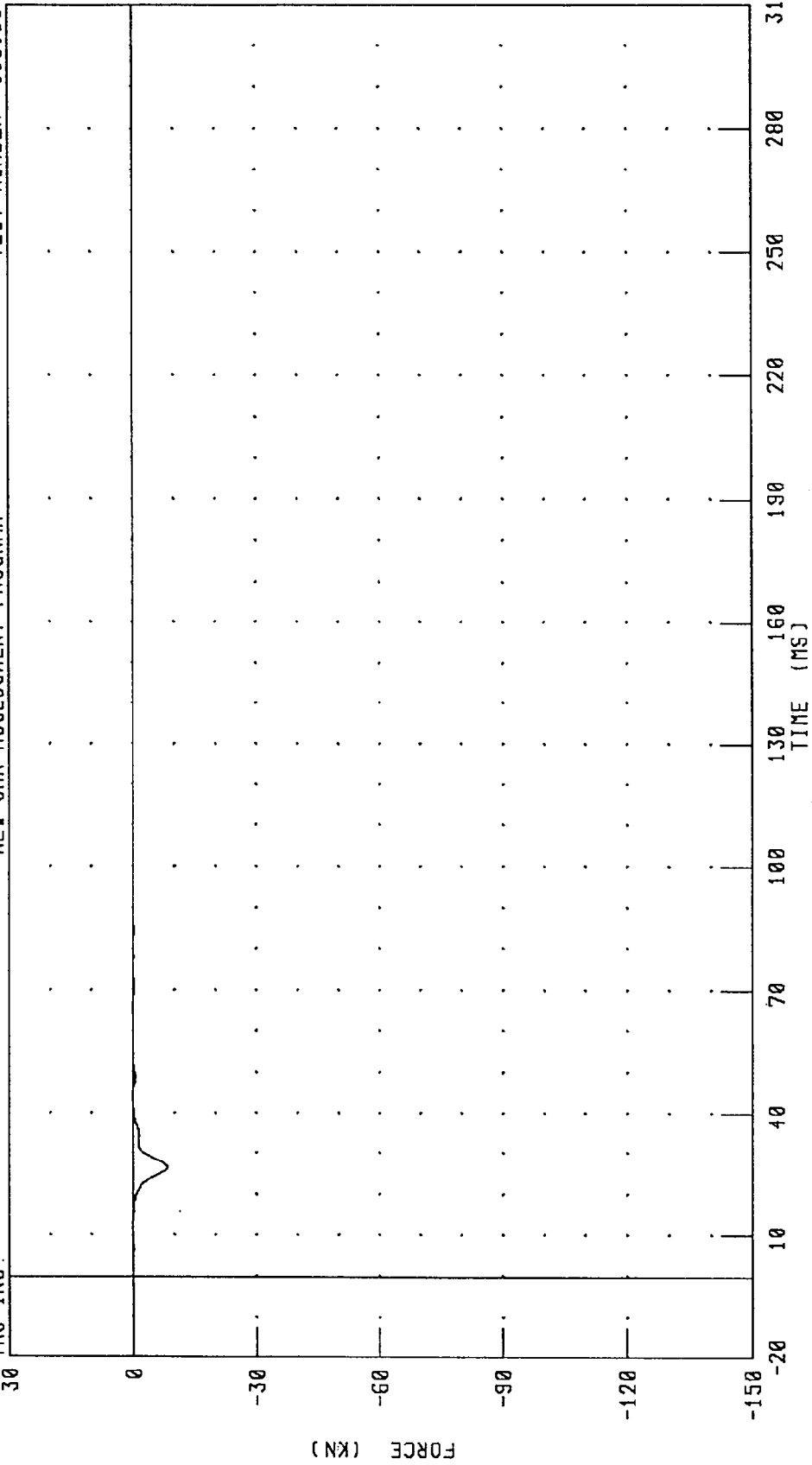
PEAK DATA: 0.23 KN @ 12.24 MS; -6.95 KN @ 26.56 MS

CHANNEL: BD4F FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D5 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



CHANNEL: BD5F

FILTER: CH. CLASS 60

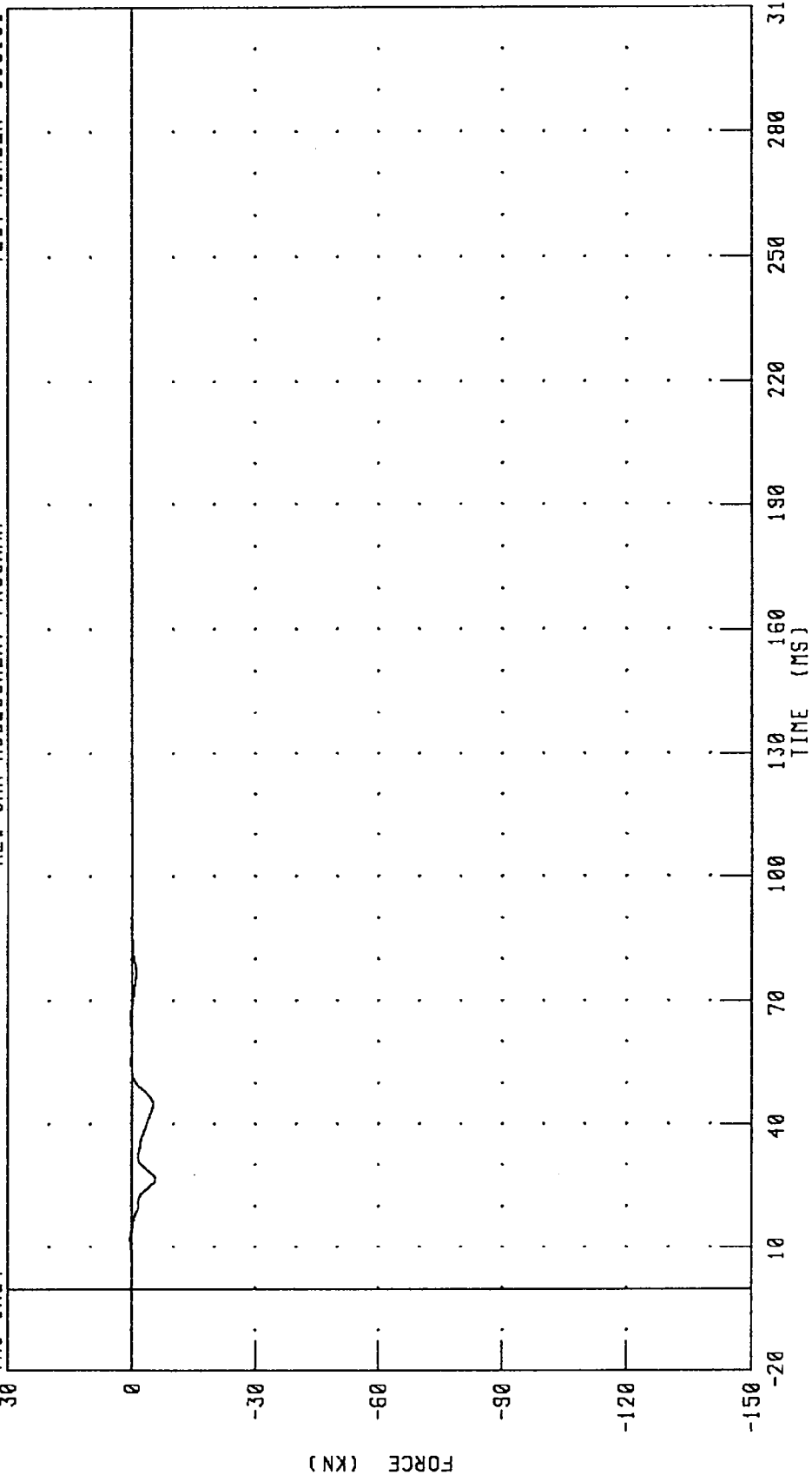
PEAK DATA: 0.31 KN @ 11.68 MS; -8.31 KN @ 26.64 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION 06 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: BD6F

FILTER: CH. CLASS 60

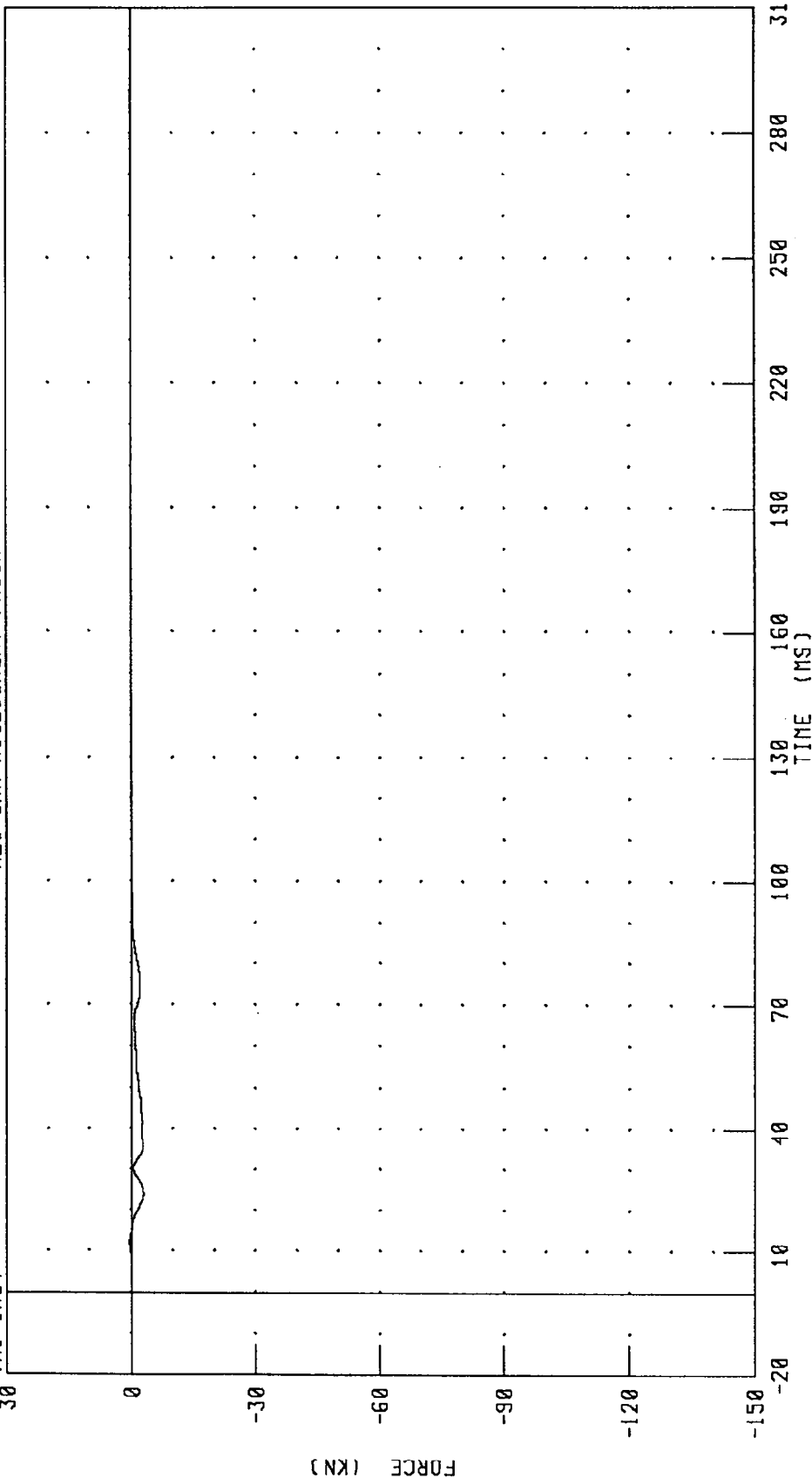
PEAK DATA: 0.36 KN @ 12.00 MS; -5.73 KN @ 26.64 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D7 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: BD7F

FILTER: CH. CLASS 60

TIME (MS)

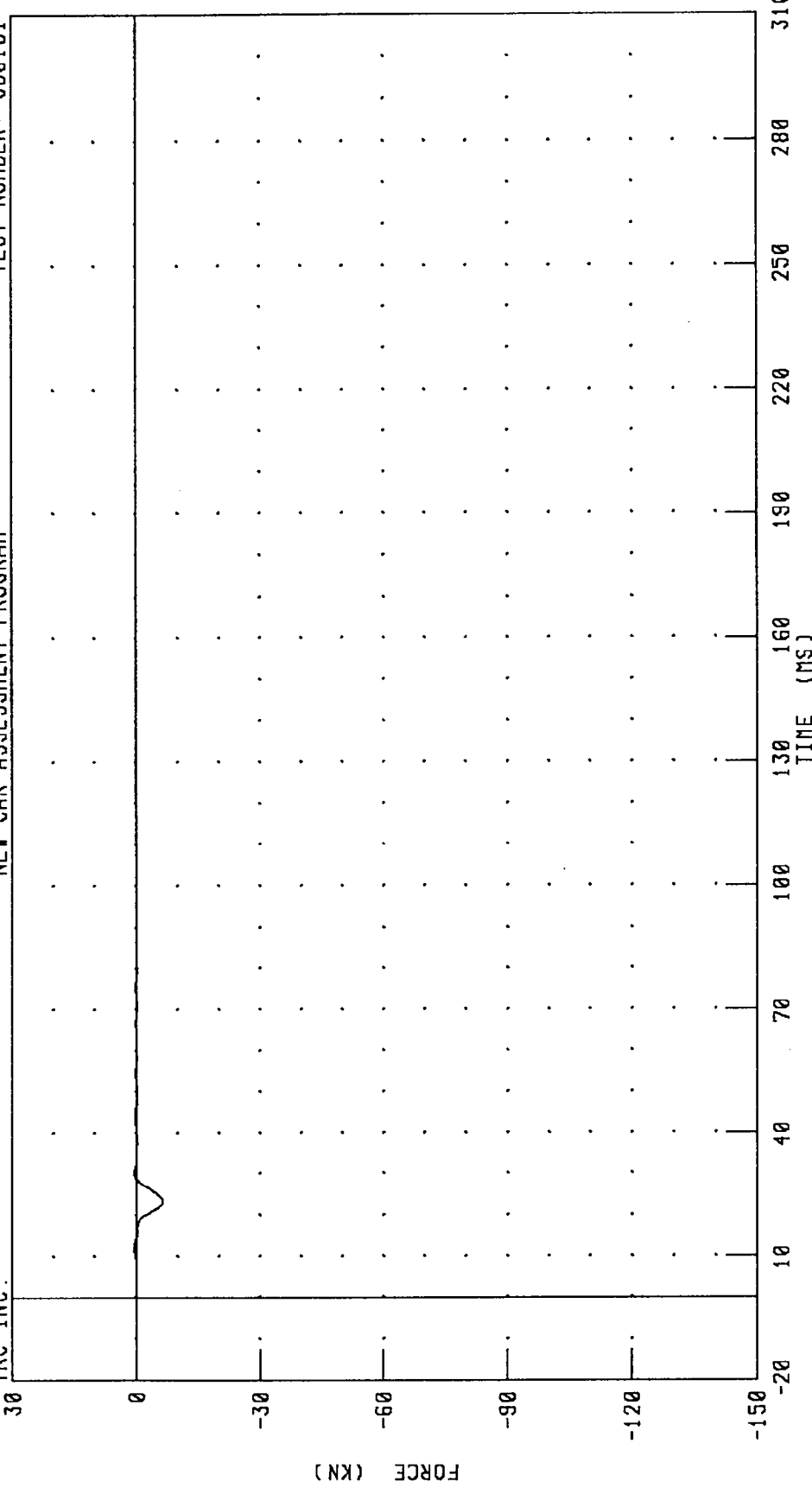
PEAK DATA: 0.38 KN @ 12.16 MS, -2.98 KN @ 23.68 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D8 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.42 KN @ 12.08 MS; -6.39 KN @ 23.28 MS

FILTER: CH. CLASS 60

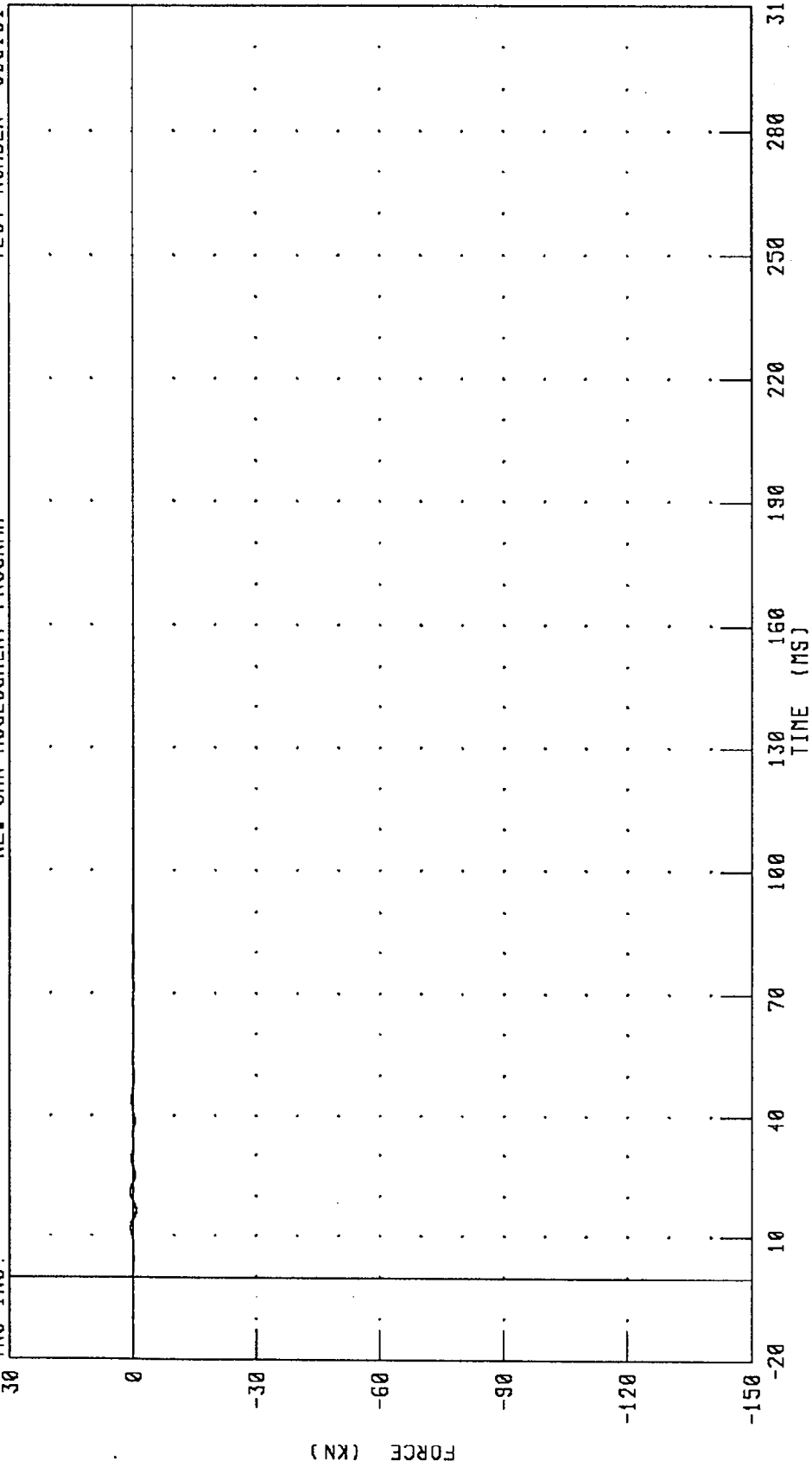
CHANNEL: BD8F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D9 FORCE

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.83 KN @ 20.88 MS; -0.83 KN @ 16.24 MS

FILTER: CH. CLASS 60

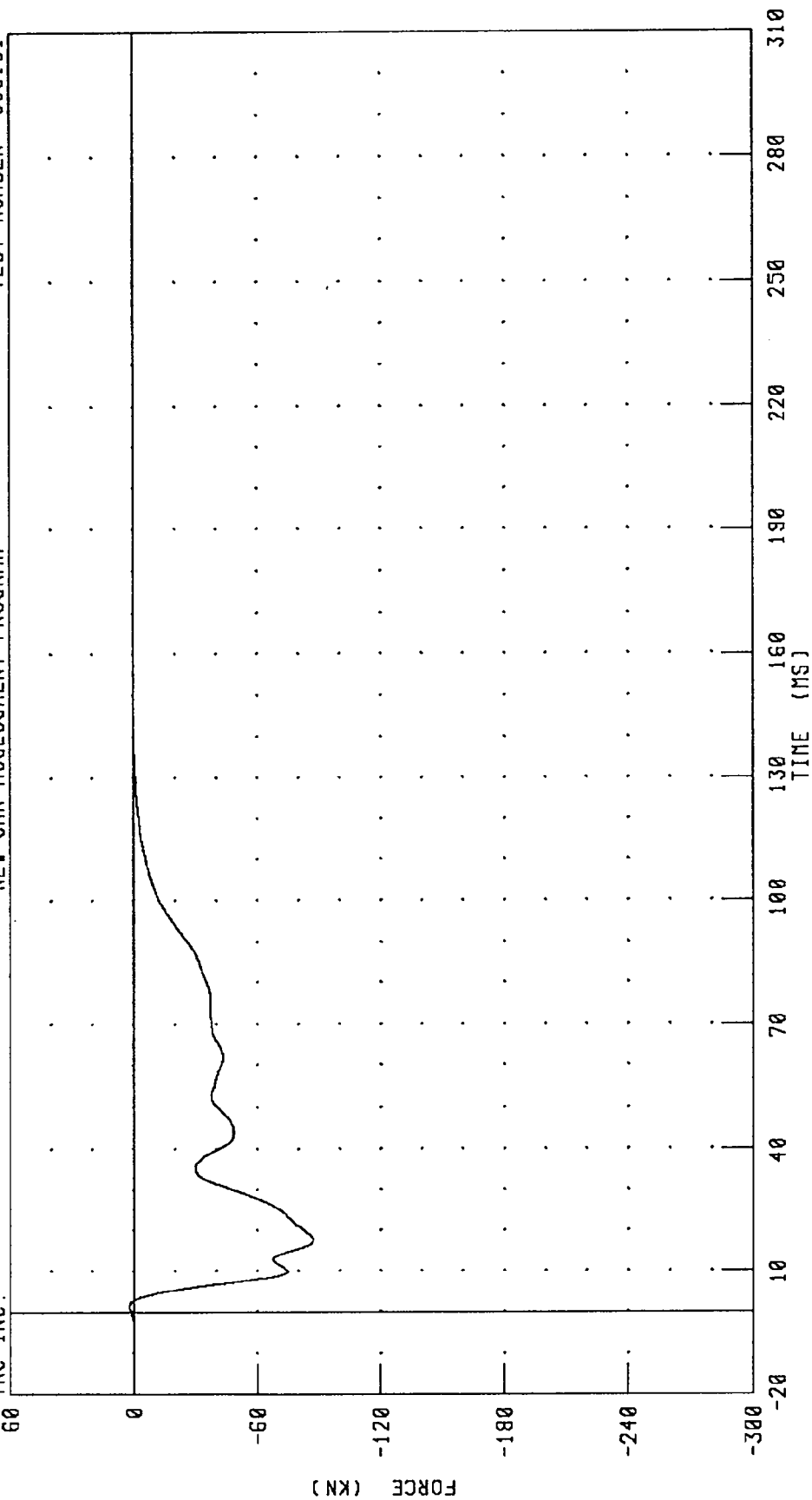
CHANNEL: BD9F

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 1 FORCE TOTAL

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: LCBGIF FILTER: CH. CLASS 60

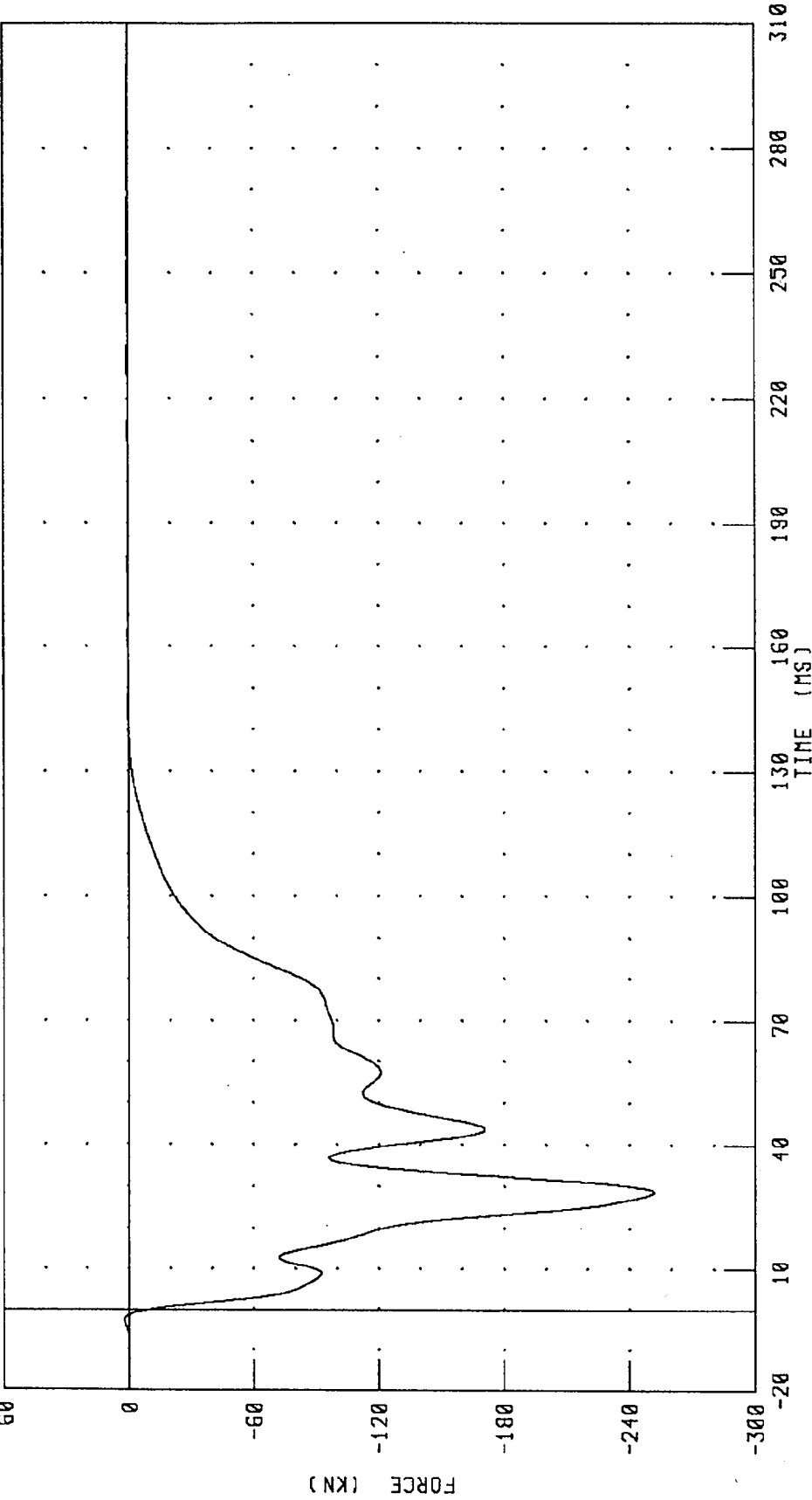
PEAK DATA: 1.91 KN @ 1.36 MS; -87.10 KN @ 17.60 MS

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 2 FORCE TOTAL

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



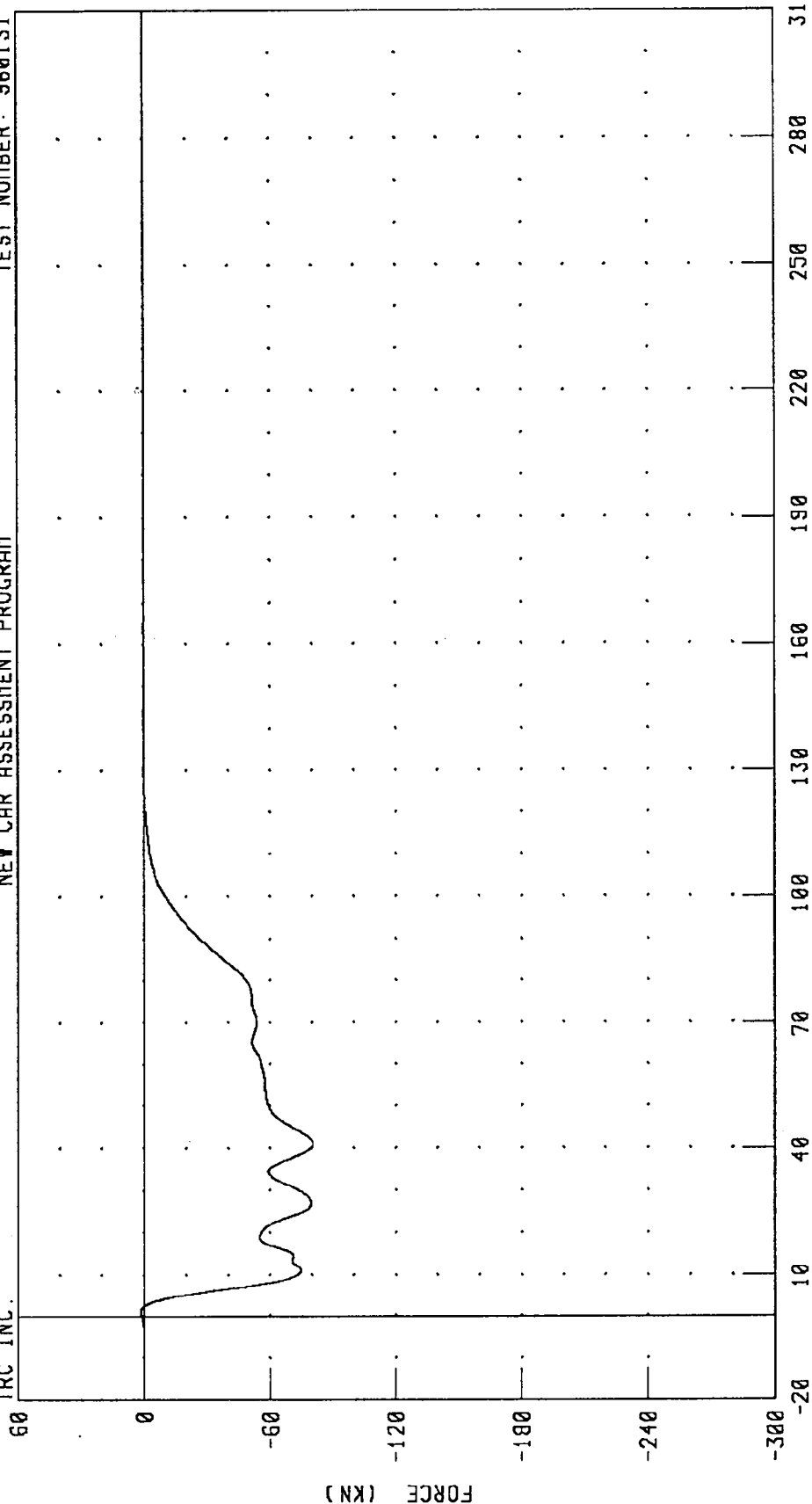
PEAK DATA: 2.24 KN @ -2.80 MS; -251.86 KN @ 28.80 MS

CHANNEL: LCBG2F FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 3 FORCE TOTAL
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



PEAK DATA: 1.53 KN @ 0.88 MS; -80.55 KN @ 41.04 MS

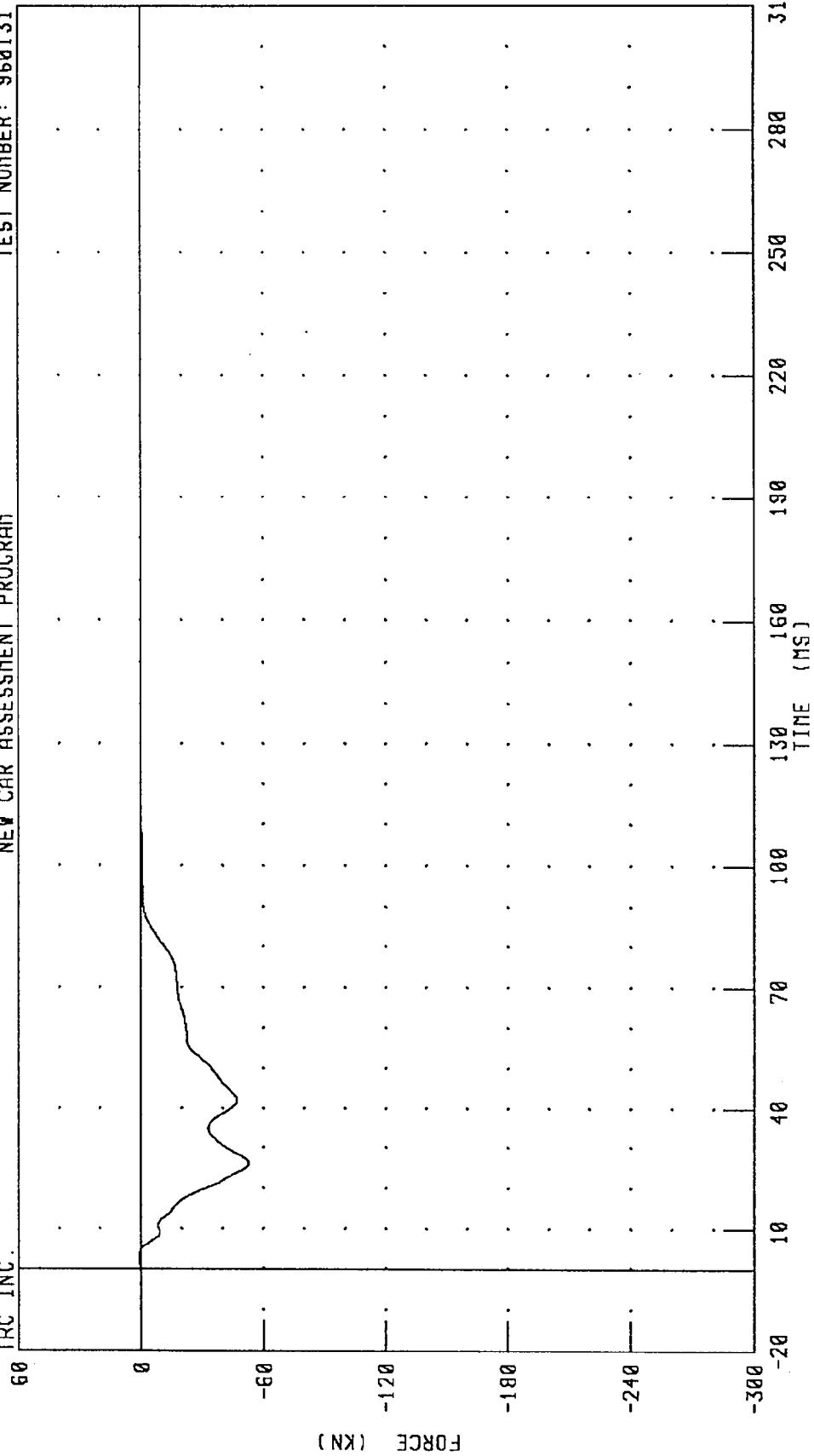
CHANNEL: LCBG3F FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 4 FORCE TOTAL

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 1.13 KN @ 2.72 MS; -52.60 KN @ 26.08 MS

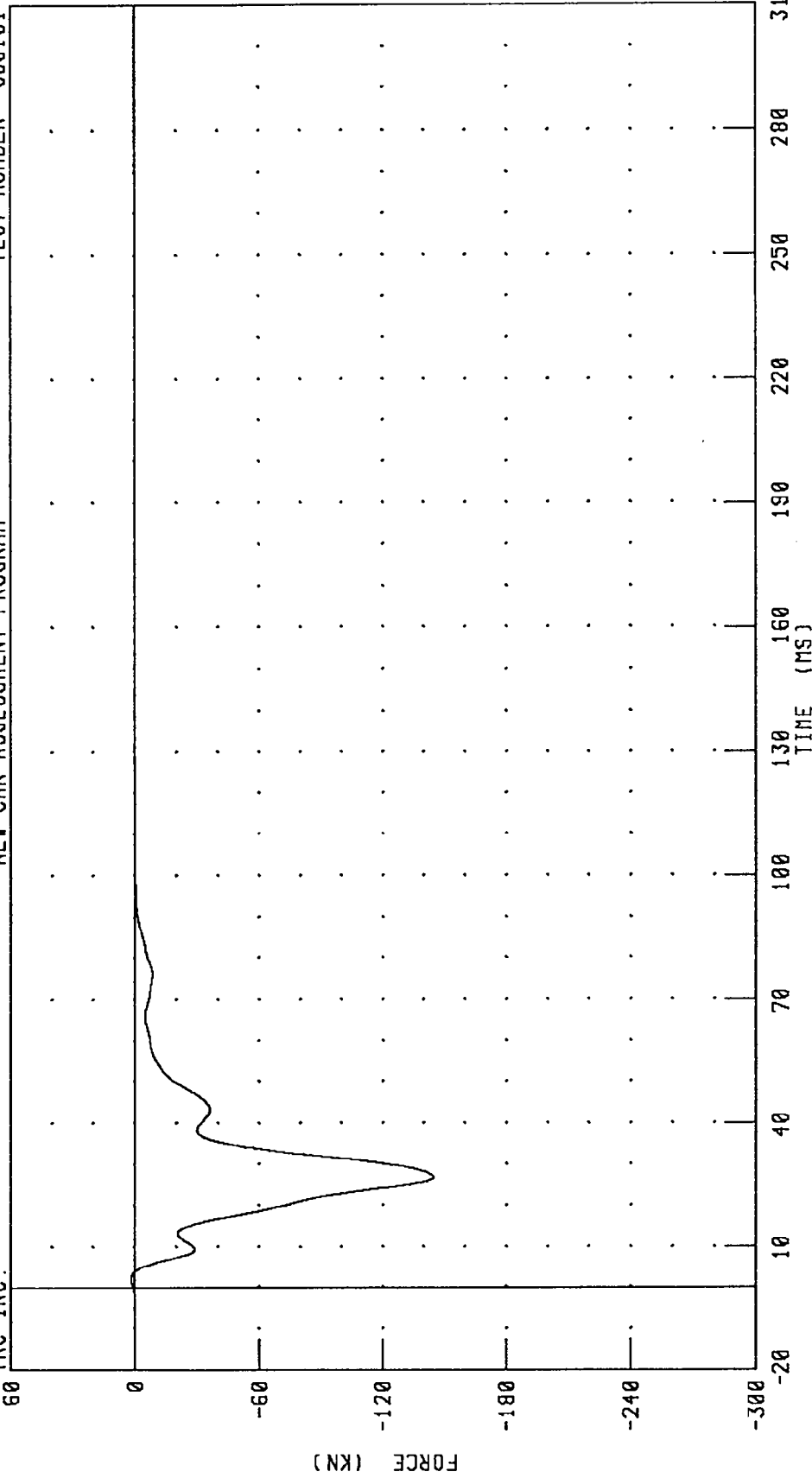
CHANNEL: LCBG4F FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 5 FORCE TOTAL

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 1.67 KN @ 2.08 MS; -144.86 KN @ 26.80 MS

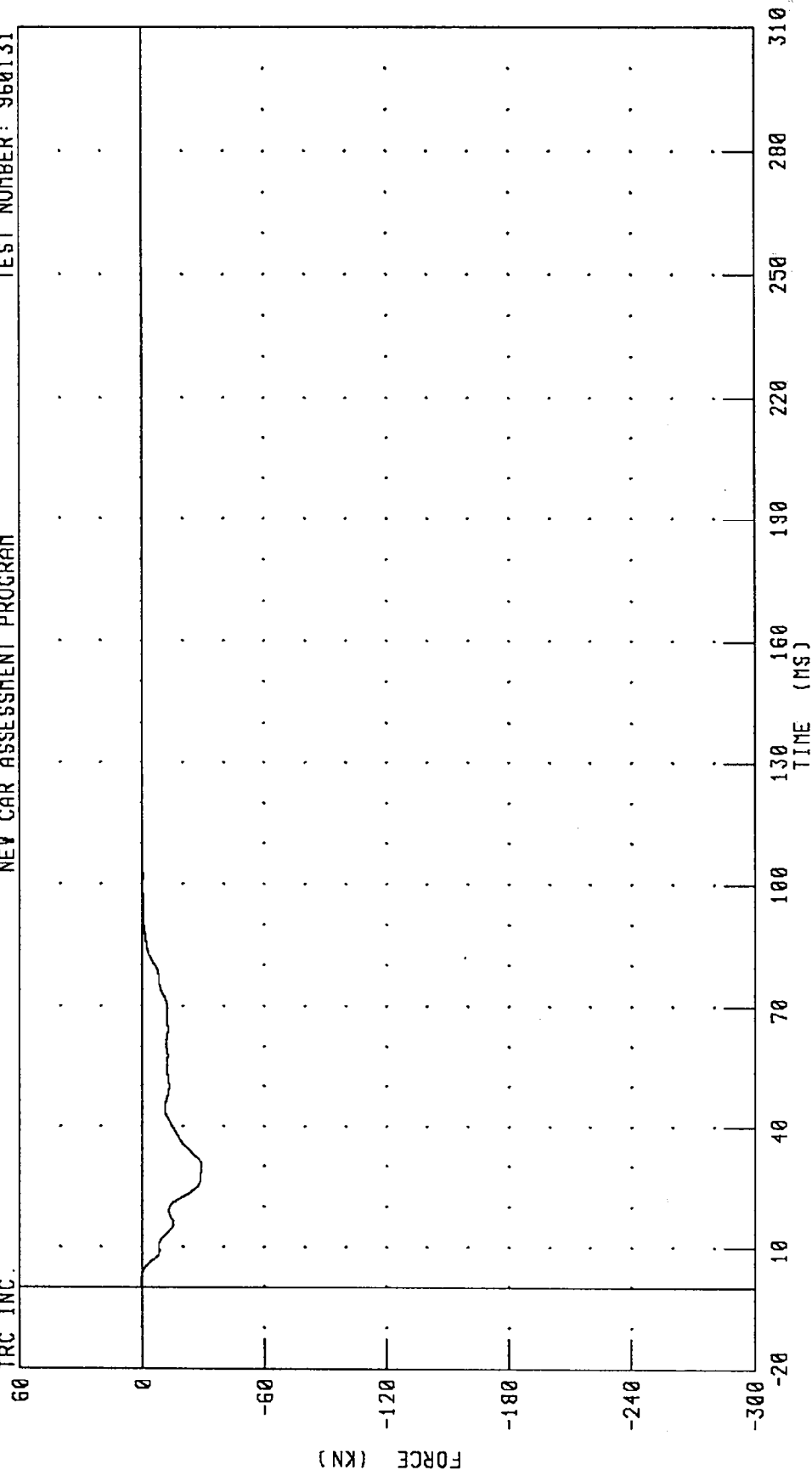
CHANNEL: LCBG5F FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 6 FORCE TOTAL

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



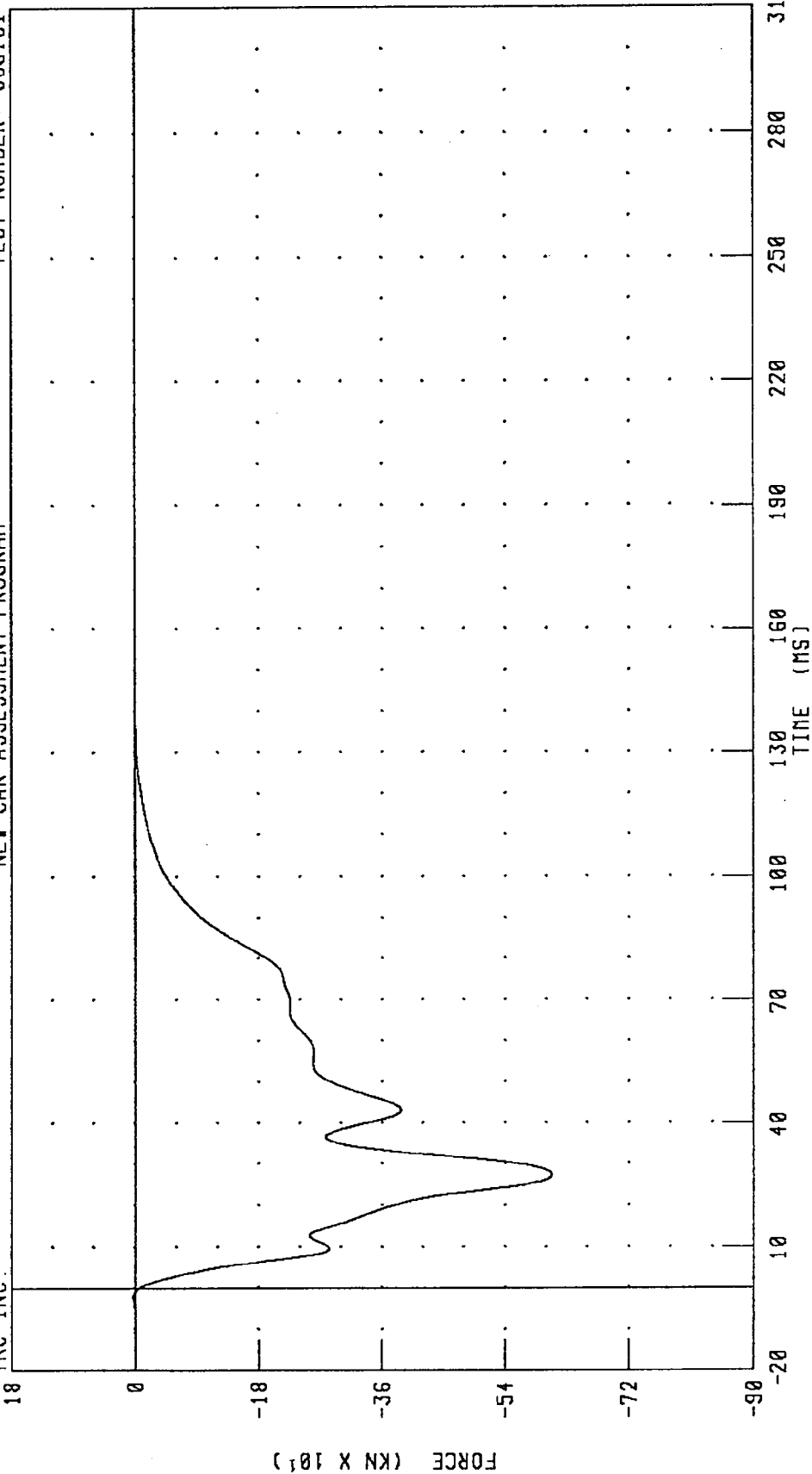
PEAK DATA: 0.25 KN @ 1.52 MS; -29.24 KN @ 29.84 MS

CHANNEL: LCBG6F FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
 TOTAL LOAD CELL BARRIER FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 960131

TRC INC.



PEAK DATA: 2.13 KN @ -2.40 MS; -608.56 KN @ 27.20 MS

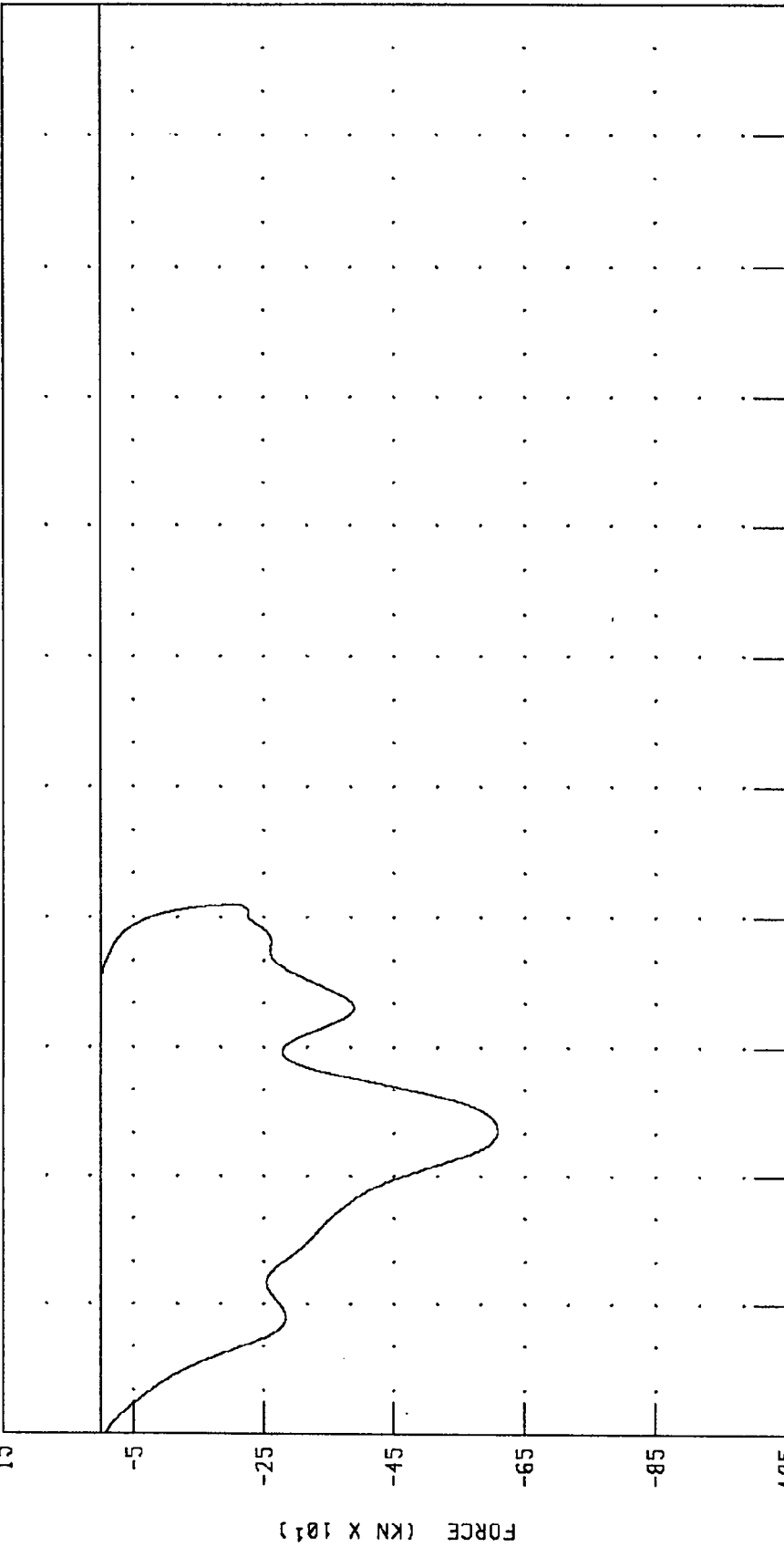
CHANNEL: LCBGT FILTER: CH. CLASS 60

1996 SUBARU IMPREZA INTO FRONTAL LOAD CELL BARRIER
TOTAL LOAD CELL BARRIER FORCE VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TEST NUMBER: 960131

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: QTHXD FILTER: CH. CLASS 180
LCBGT CH. CLASS 60
DISPLACEMENT (MM X 10¹)
PEAK DATA: 670.91 MM @ 78.40 MS;
0.48 KN @ 145.36 MS; -608.56 KN @ 27.20 MS

Appendix C

Dummy Certification Data

Pre-test Certification Data

Driver Dummy S/N: 192

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS
SN 192 ALDERSON

16-JAN-96

TRC INC. TEST NO: 192C31ED1 572E SN192 EXT.DIMENSION CAL31

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 Chris. M. Smith

RUN NUMBER: 011696.1302

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III

16-JAN-96

TRC INC.

TEST NO: 192C31HD1

572E SN192 HEAD DROP CAL 31

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	23.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	258.94 G
PEAK LATERAL ACCELERATION	15 G MAX	-4.21 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

Ch. M. Hildt

RUN NUMBER: 011696.0757;1

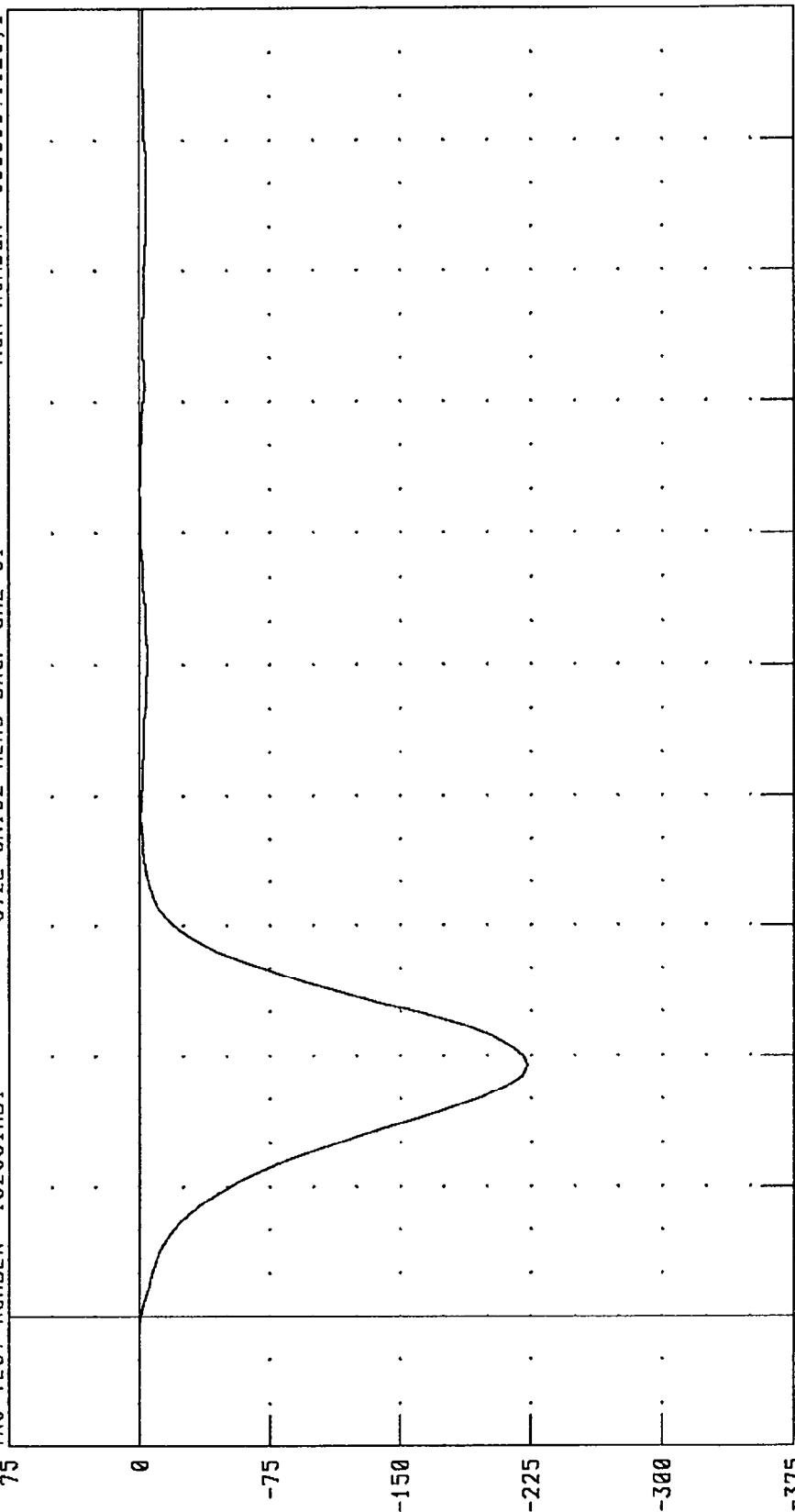
PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS

TRC TEST NUMBER: 192C31HD1

572E SN192 HEAD DROP CAL 31

RUN NUMBER: 030696.1126;1

75



ACCELERATION (G)

TIME (MS X 10⁻¹)

PEAK DATA: 0.03 G @ -0.16 MS; -222.80 G @ 1.92 MS

CHANNEL: HEDXC FILTER: CH. CLASS 1000

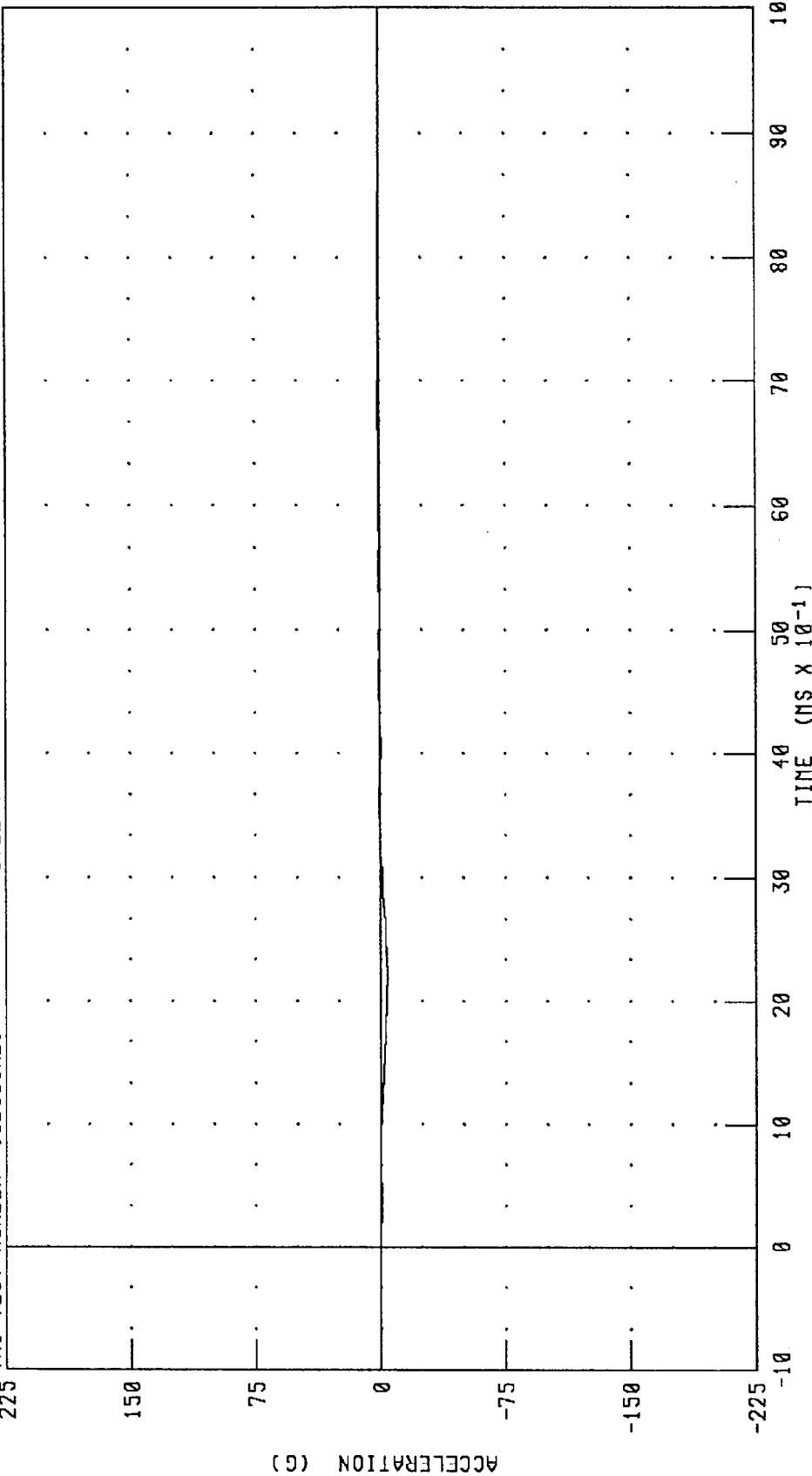
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

572E SN192 HEAD DROP CAL 31

TRC TEST NUMBER: 192C31HD1

RUN NUMBER: 030696.1126,1



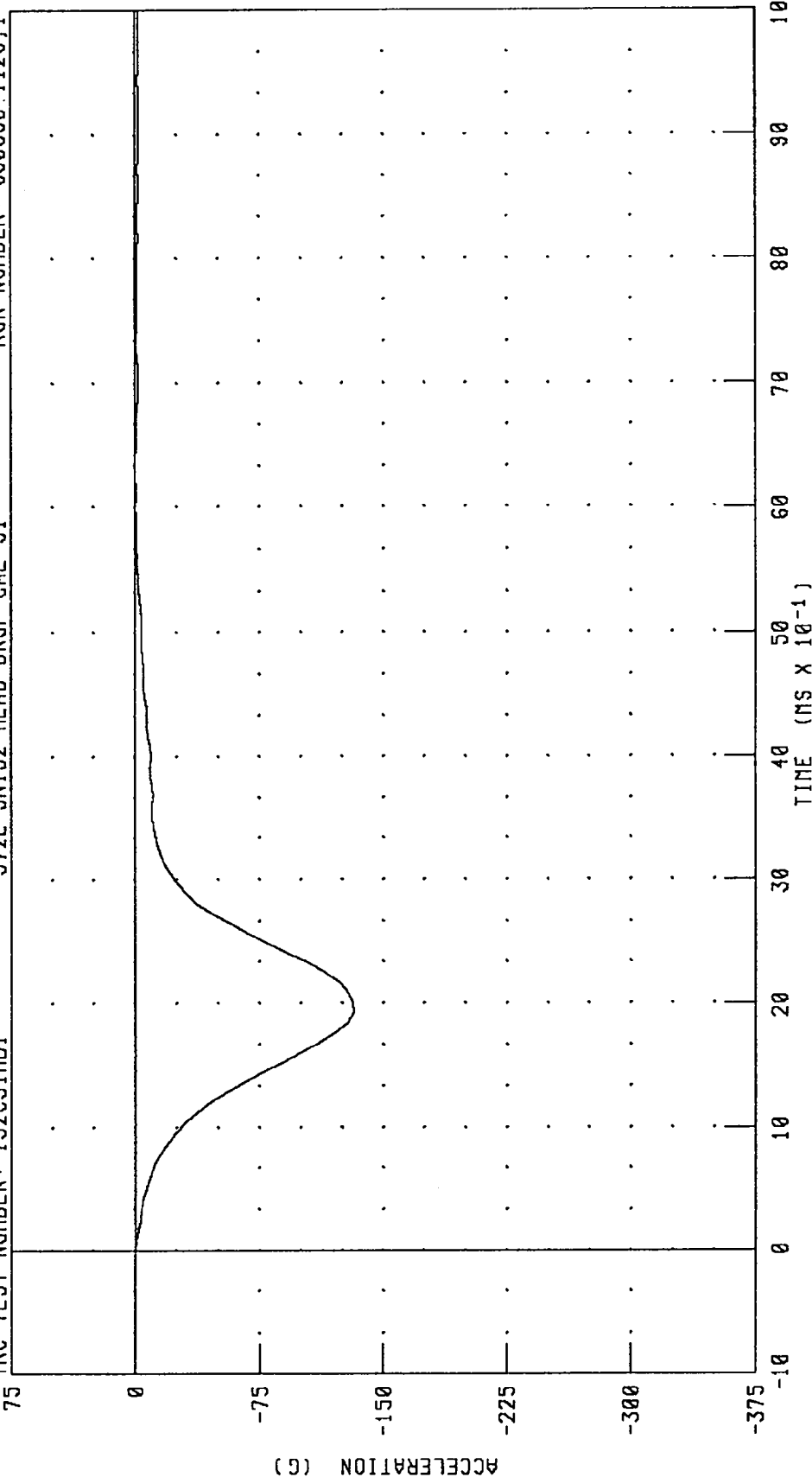
PEAK DATA: 1.19 G @ 6.72 MS; -4.22 G @ 2.24 MS

FILTER: CH. CLASS 1000

CHANNEL: HEDYG

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

TRC TEST NUMBER: 192C31HD1 572E SNI92 HEAD DROP CAL 31 RUN NUMBER: 030696.1126.1



PEAK DATA: 0.03 G @ -0.08 MS; -131.90 G @ 1.92 MS

CHANNEL: HEDZG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION

TRC TEST NUMBER: 192C31HD1

572E SN192 HEAD DROP CAL 31

RUN NUMBER: 030696.1126.1

375

300

225

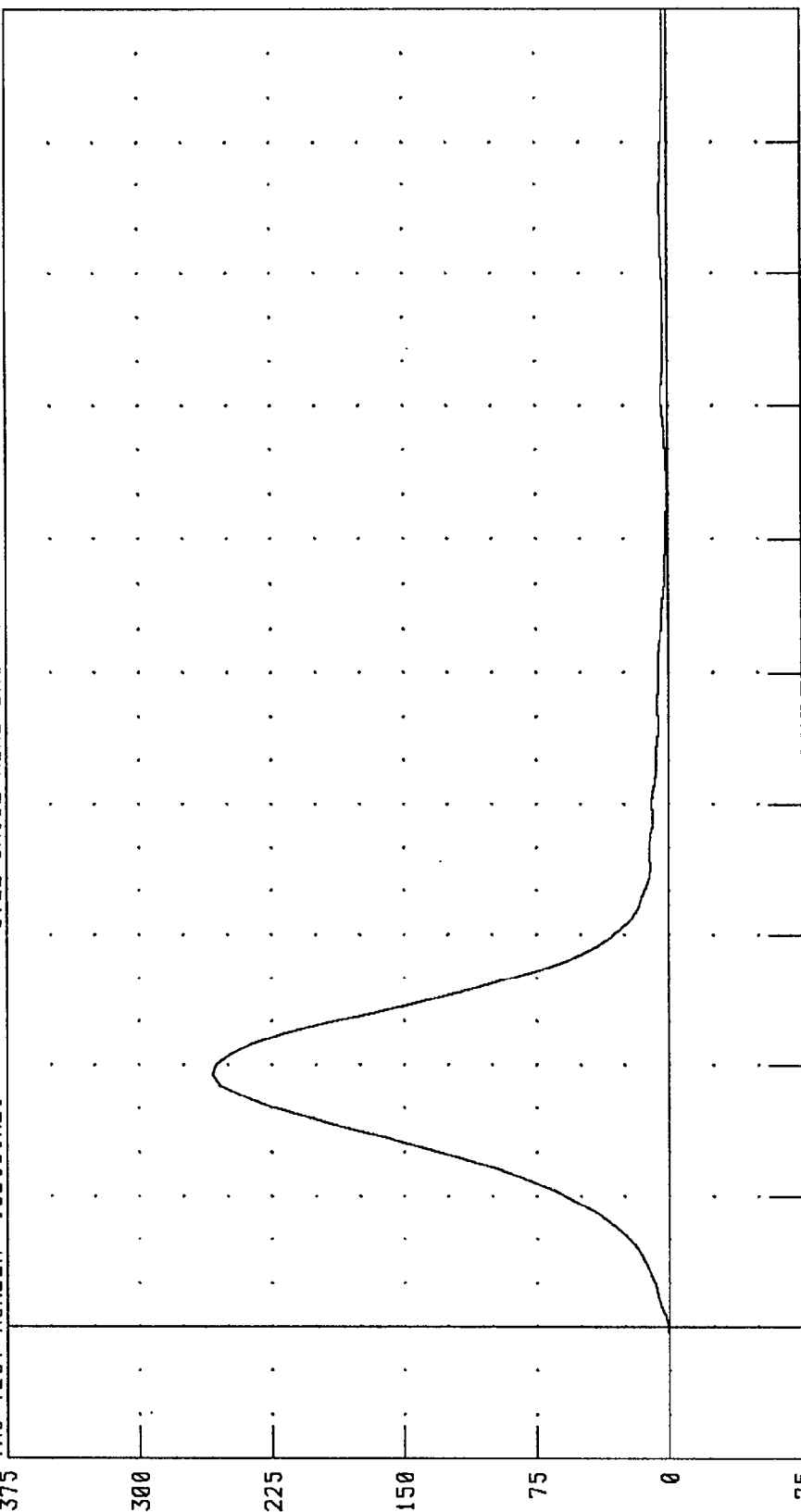
150

75

0

-75

ACCELERATION (G)



TIME (MS X 10⁻¹)

100

90

80

70

60

50

40

30

20

10

0

-10

PEAK DATA: 258.94 G @ 1.92 MS; 0.02 G @ -0.80 MS

CHANNEL: HEDRC FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

16-JAN-96

TRC INC. TEST NO: 192C31NF1 572E SN192 NECK FLEXION CAL31

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	23.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.06 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	22.65 G
	20 MS	17.60 - 22.60 G	20.79 G
	30 MS	12.50 - 18.50 G	17.09 G
MAX PENDULUM G		29 G MAX	23.10 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	17.03 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	37.84 MS
D PLANE	MAX	64 - 78 DEG.	69.30 DEG.
ROTATION	TIME	57 - 64 MS	58.32 MS
MOMENT ABOUT OCCIPITAL	MAX	88.2 - 108.5 NM	99.78 NM
CONDYLE	TIME	47 - 58 MS	50.48 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	113.04 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	99.12 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chris M. Middel

RUN NUMBER: 011696.1039;3

PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 192C31NF1

572E SN192 NECK FLEXION CAL31

RUN NUMBER: 030696.1126,3

400

320

240

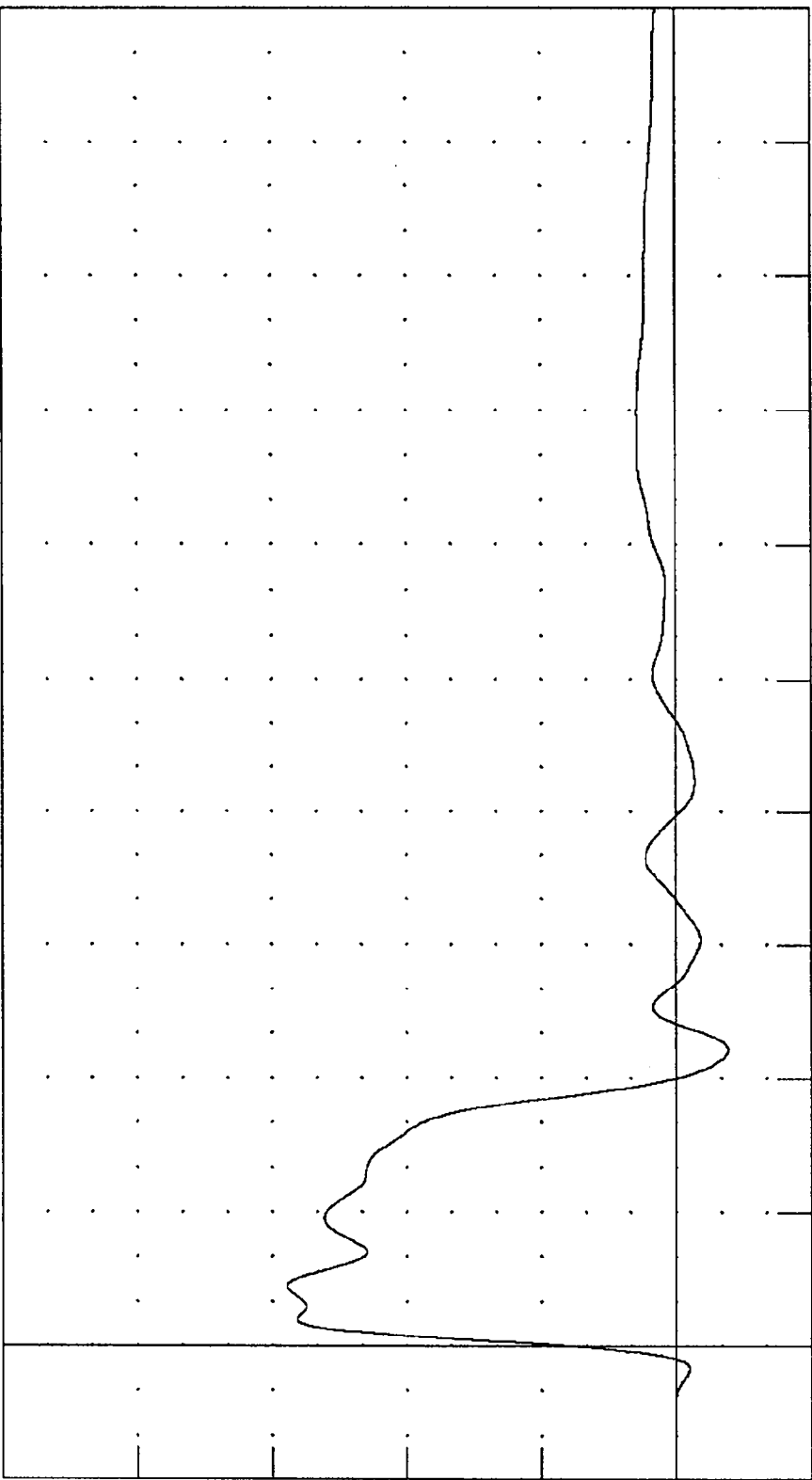
160

80

0

-80

ACCELERATION ($G \times 10^{-1}$)



PEAK DATA: 23.11 G @ 8.96 MS; -3.08 G @ 44.32 MS

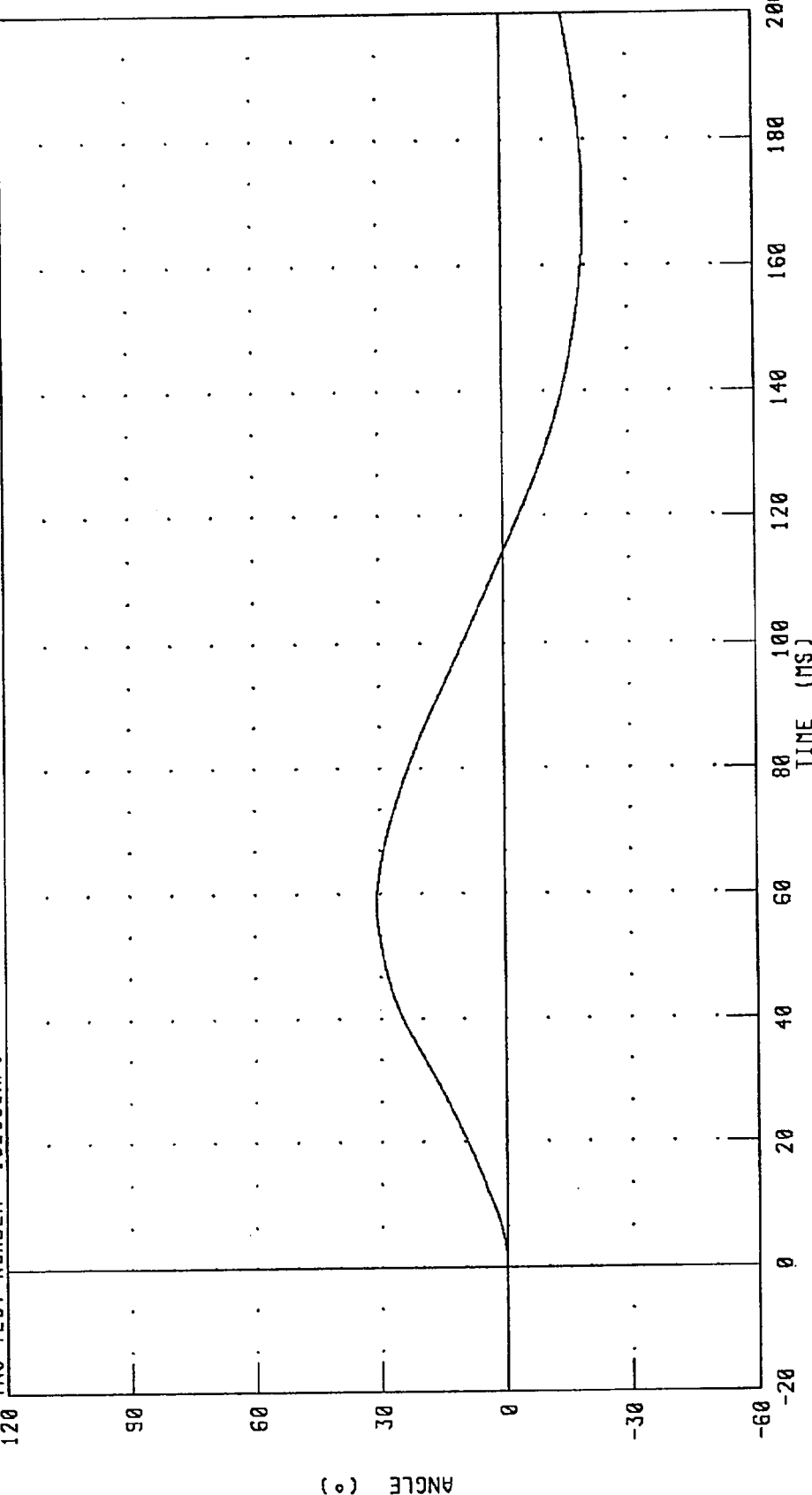
CHANNEL: PENXG FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 192C3INF1

572E SN192 NECK FLEXION CAL31

RUN NUMBER: 030696.1126;3

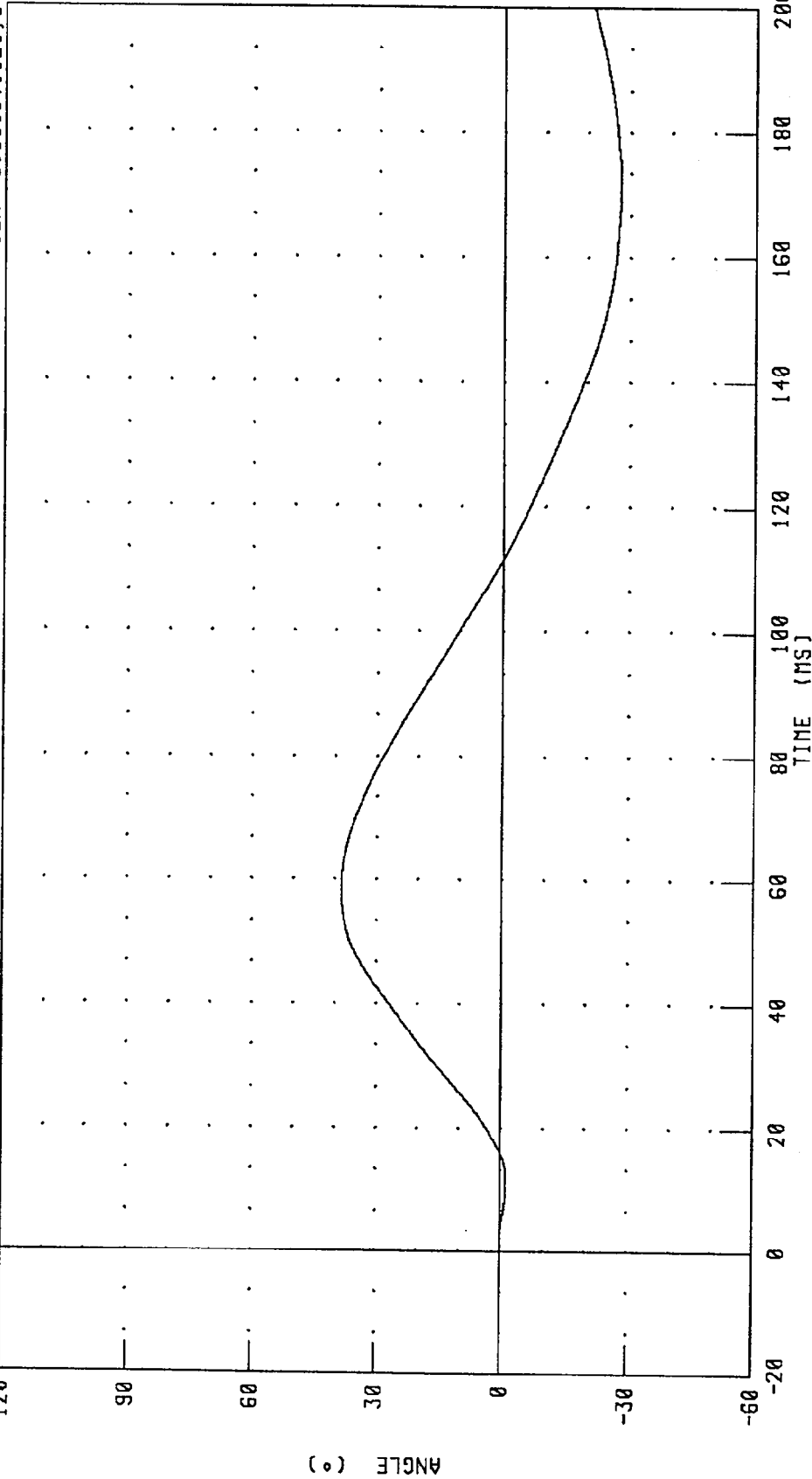


PEAK DATA: 30.86 ° @ 58.24 MS; -19.51 ° @ 164.56 MS

CHANNEL: BETA FILTER: CH. CLASS 60

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

IRC TEST NUMBER: 192C31NF1 572E SN192 NECK FLEXION CAL31 RUN NUMBER: 030696.1126;3



CHANNEL: THETA FILTER: CH. CLASS 60 PEAK DATA: 38.45 ° @ 58.56 MS; -27.70 ° @ 171.92 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION

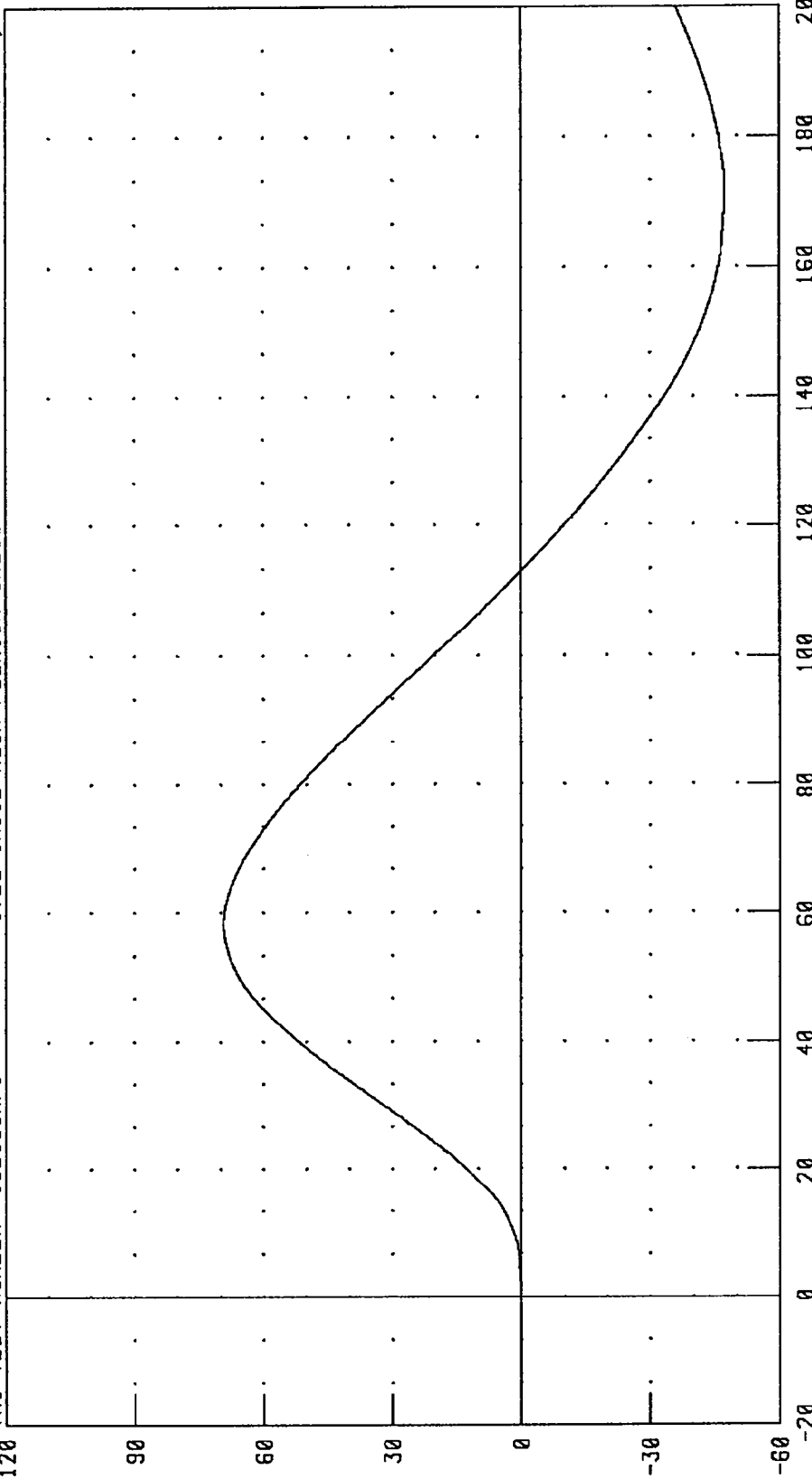
TOTAL ROTATION

TRC TEST NUMBER: 192C31NF1

572E SNI92 NECK FLEXION CAL31

RUN NUMBER: 030696.1126,3

120



ANGLE (°)

TIME (MS)

PEAK DATA: 69.30 ° @ 58.32 MS; -47.21 ° @ 172.40 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

960131

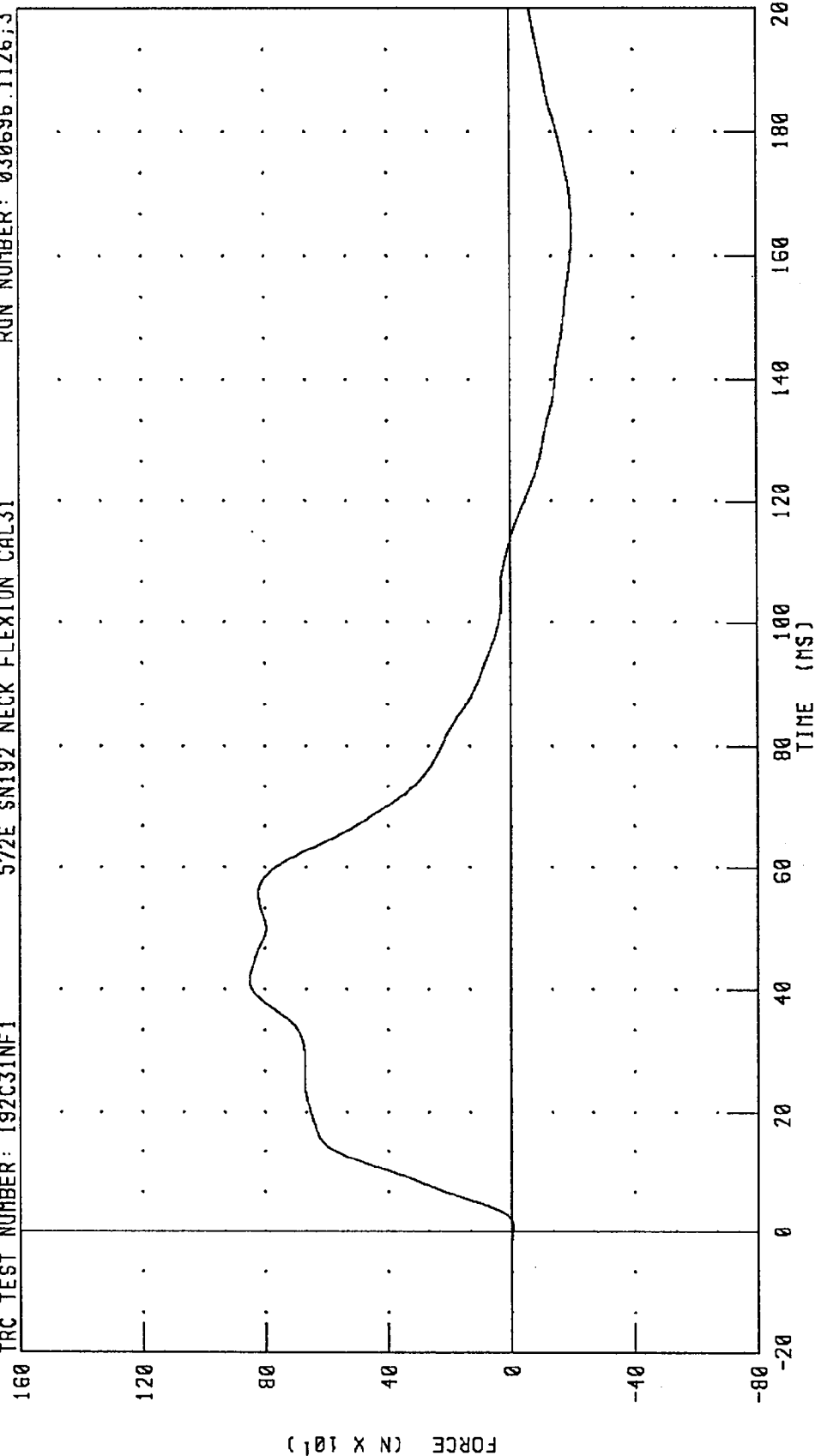
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 192C31NF1

572E SN192 NECK FLEXION CAL31

RUN NUMBER: 030696.1126;3



PEAK DATA: 851.82 N @ 41.52 MS; -199.75 N @ 163.92 MS

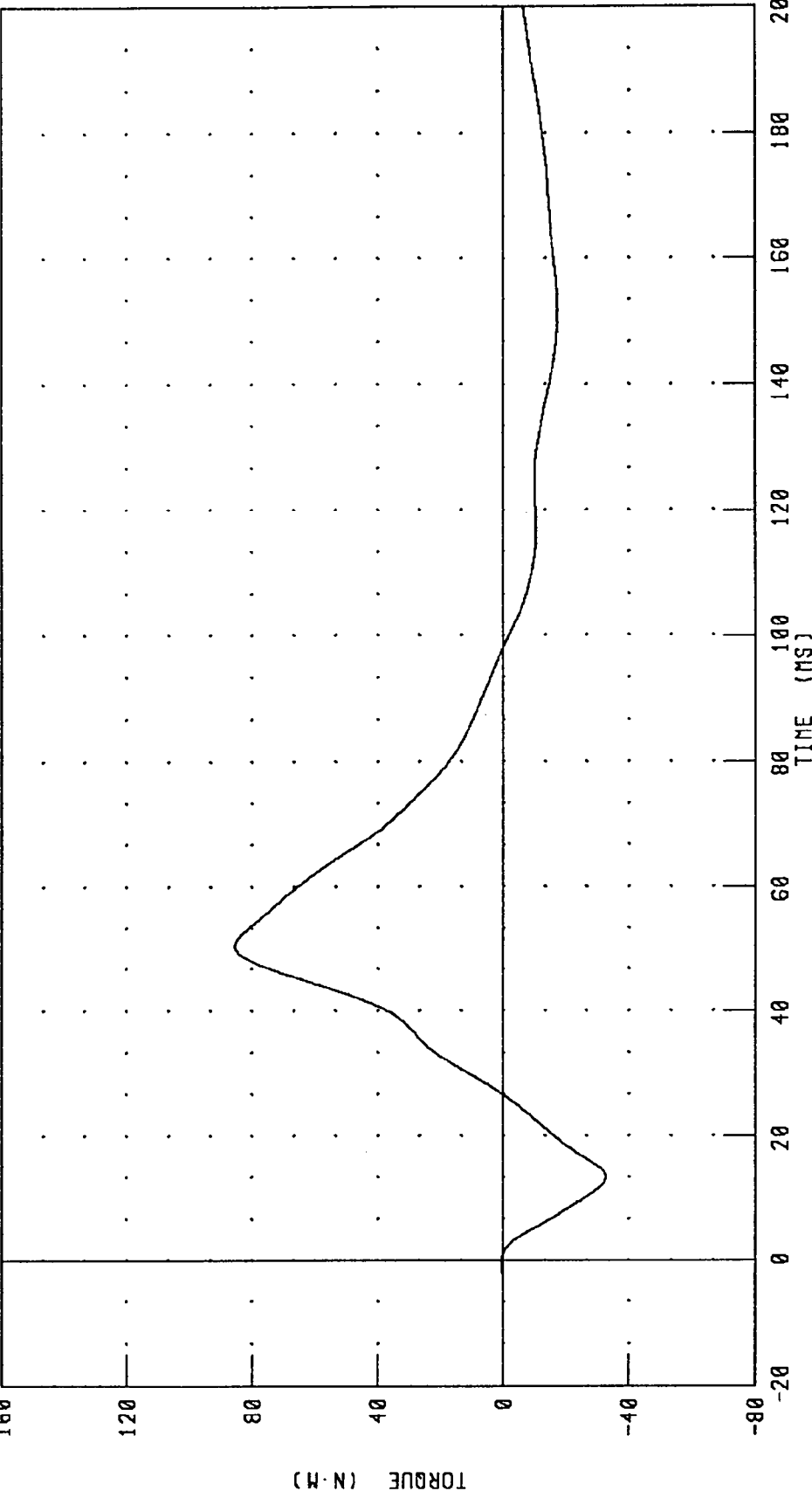
FILTER: CH. CLASS 60

CHANNEL: NEKXF

PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 192C31NF1 572E SN192 NECK FLEXION CAL31 RUN NUMBER: 030696.1126;3



CHANNEL: NEKYM FILTER: CH. CLASS 60

PEAK DATA: 85.59 N·M @ 50.40 MS; -32.69 N·M @ 13.44 MS

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

TRC TEST NUMBER: 192C31NF1 RUN NUMBER: 030696.1126;3

572E SN192 NECK FLEXION CAL31

160

120

80

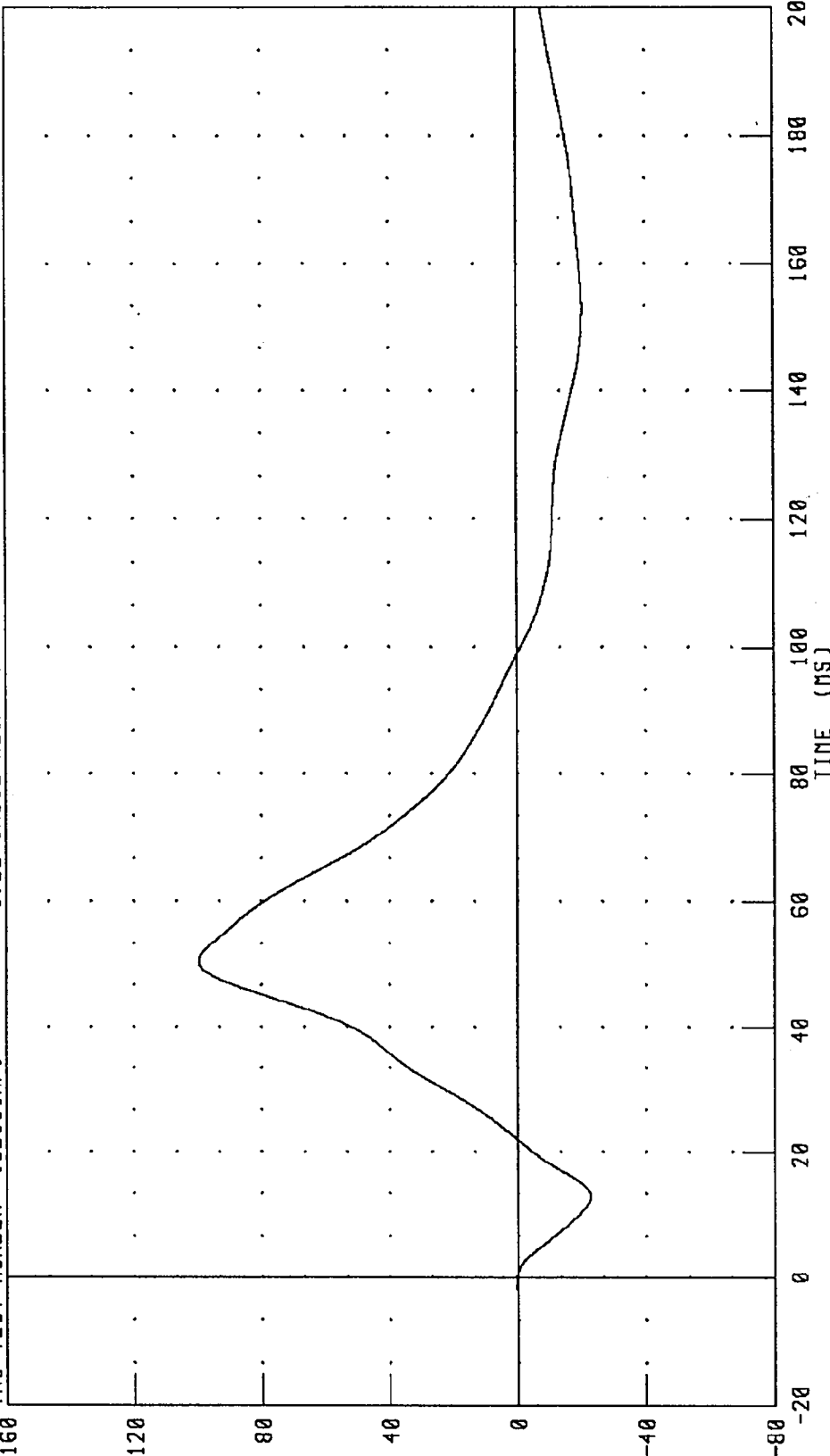
40

0

-40

-80

TORQUE (N·M)



PEAK DATA: 99.78 N·M @ 50.48 MS; -22.68 N·M @ 12.88 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

960131

TRANSPORTATION RESEARCH CENTER INC.
NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

16-JAN-96

TRC INC. TEST NO: 192C31NE1 572E SN192 NECK EXT. CAL31

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	23.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	17.99 G
	20 MS	14.00 - 19.00 G	16.37 G
	30 MS	11.00 - 16.00 G	12.72 G
MAX PENDULUM G		22 G MAX	18.48 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	12.68 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	41.36 MS
D PLANE	MAX	81 - 106 DEG.	95.15 DEG.
ROTATION	TIME	72 - 82 MS	77.52 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-62.09 NM
	TIME	65 - 79 MS	71.68 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	156.40 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	139.84 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. Middle

RUN NUMBER: 011696.1122;1

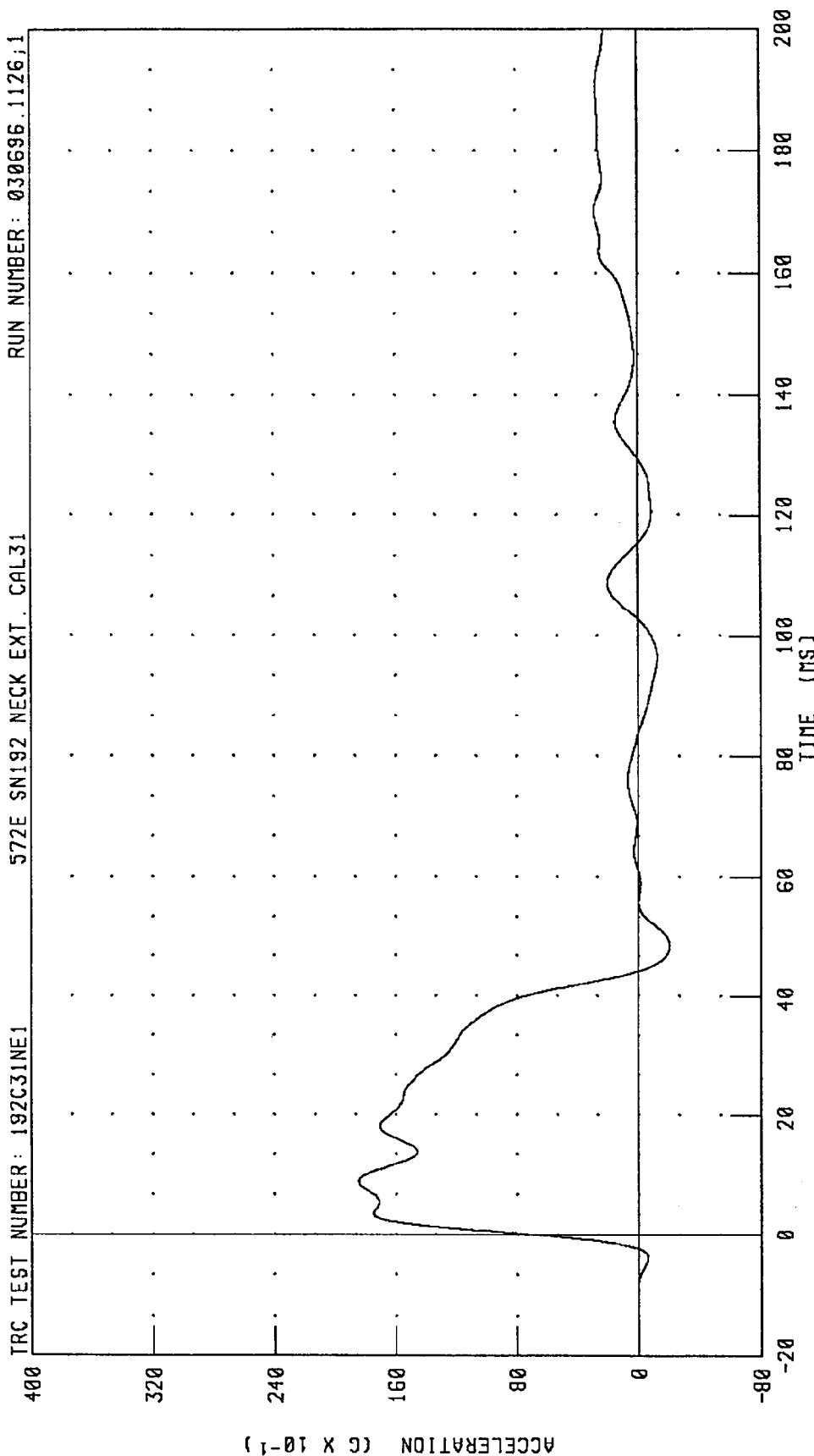
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 192C31NE1

572E SN192 NECK EXT. CAL31

RUN NUMBER: 030696.1126;1

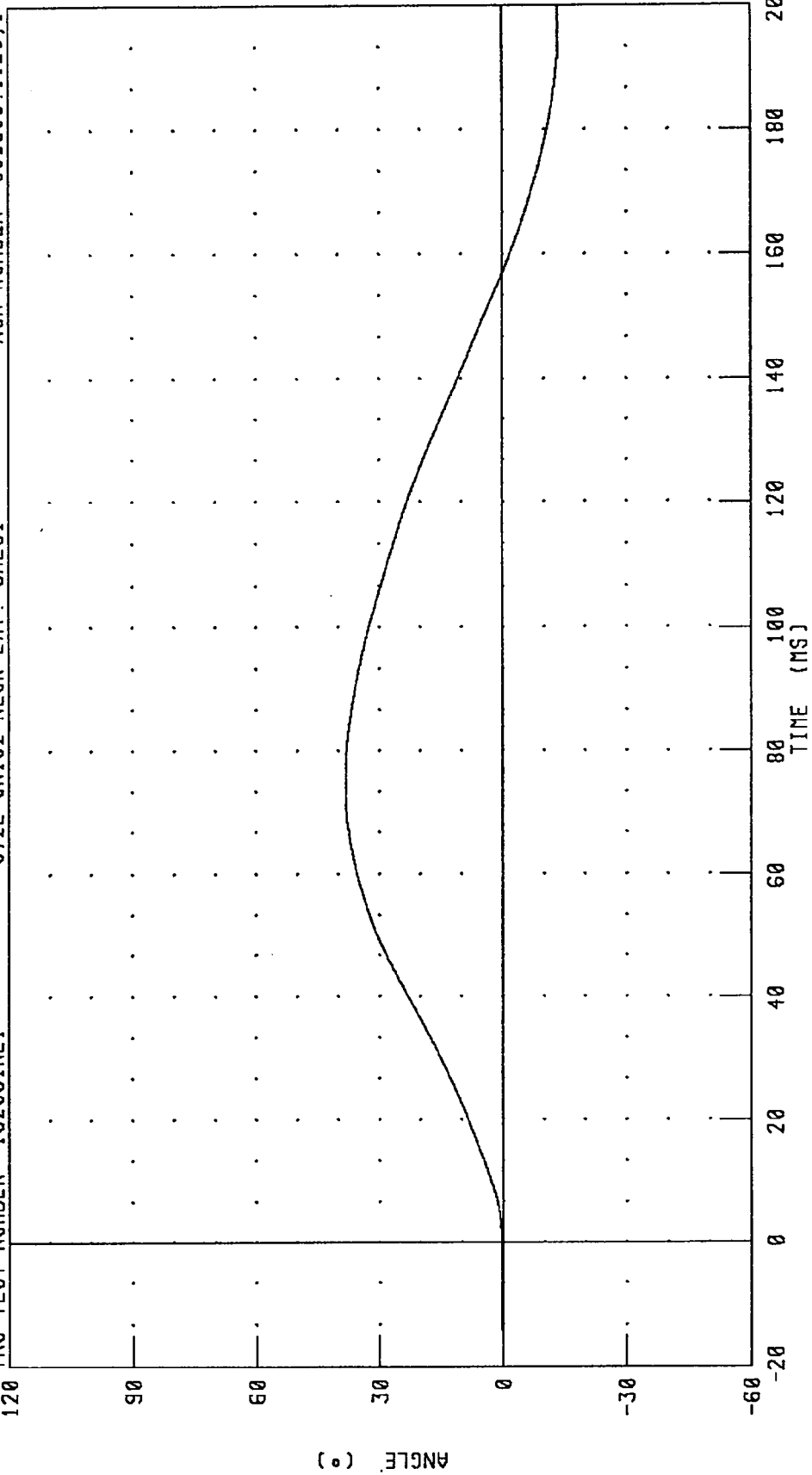


CHANNEL: PENXG FILTER: CH. CLASS 60

PEAK DATA: 18.48 G @ 8.88 MS; -2.04 G @ 48.40 MS

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

TRC TEST NUMBER: 192C31NE1 572E SN192 NECK EXT. CAL31 RUN NUMBER: 030696.1126;1

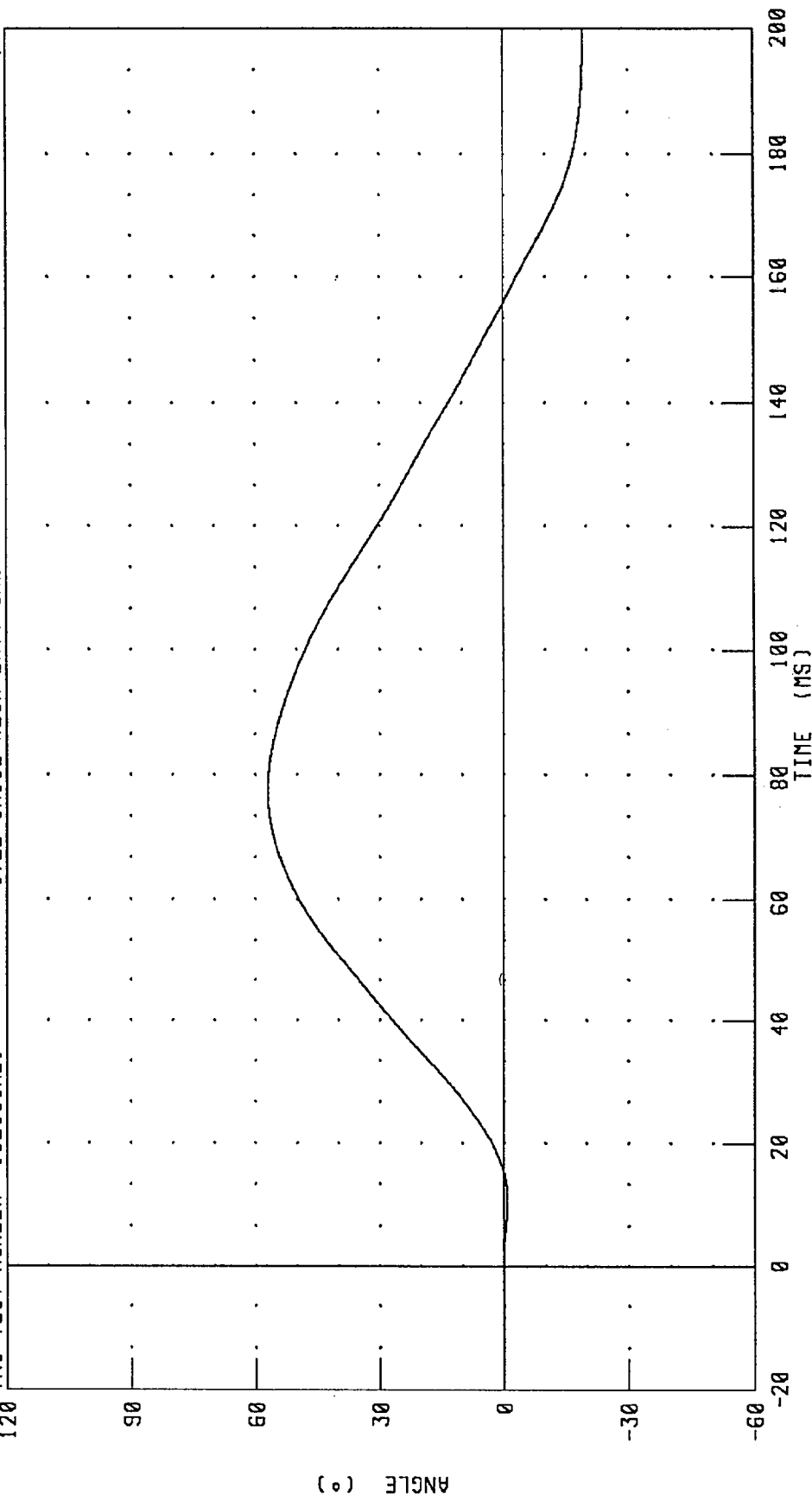


PEAK DATA: 38.15 ° @ 73.04 MS; -13.52 ° @ 195.76 MS

CHANNEL: BETA FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 192C31NE1 572E SN192 NECK EXT. CAL31 RUN NUMBER: 030696.1126;1

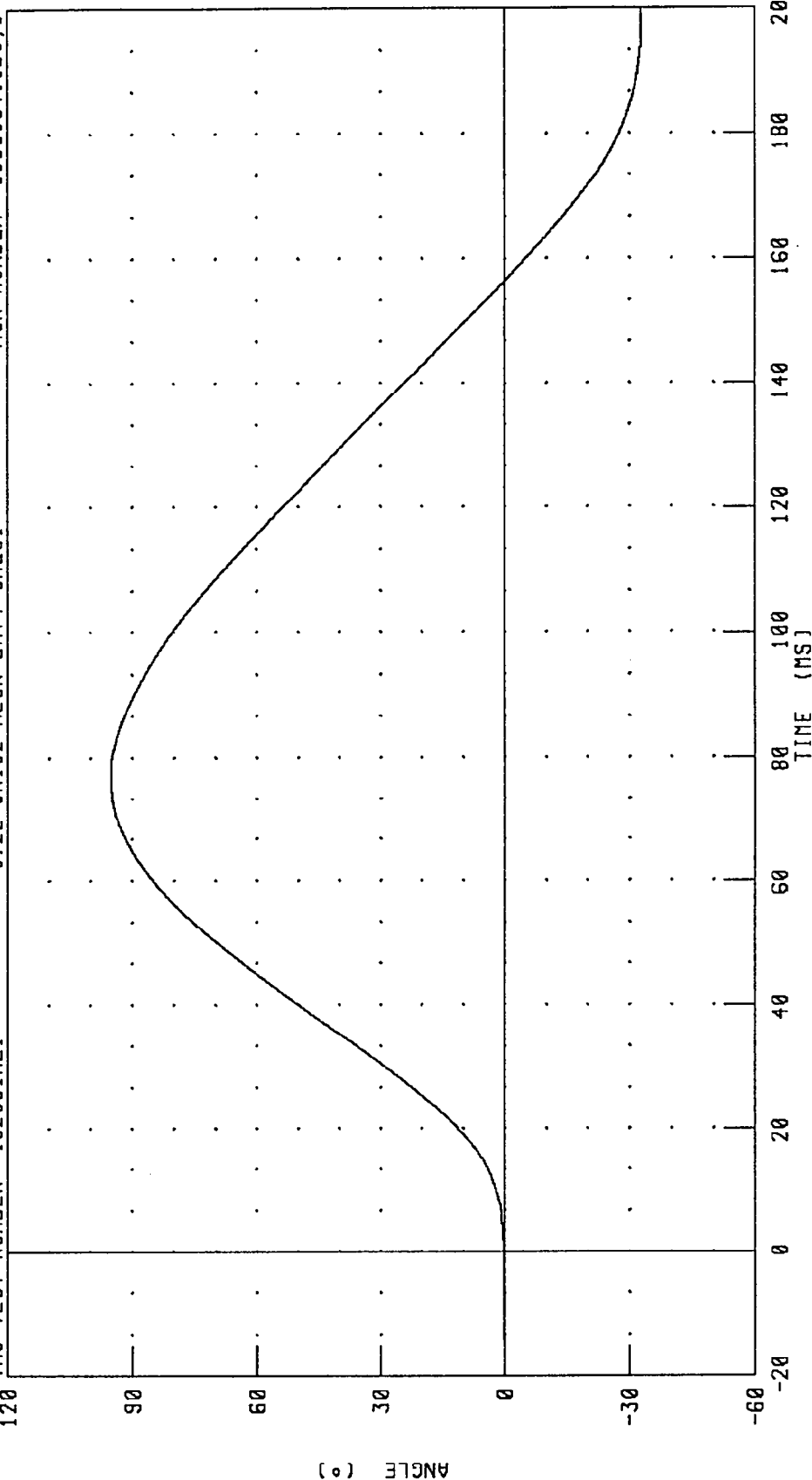


CHANNEL: THETA FILTER: CH. CLASS 60 PEAK DATA: 57.01 ° @ 77.68 MS; -19.22 ° @ 197.04 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 192C31NE1 572E SN192 NECK EXT. CAL31 RUN NUMBER: 030696.1126,1



PEAK DATA: 95.16 ° @ 77.52 MS; -32.74 ° @ 197.04 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

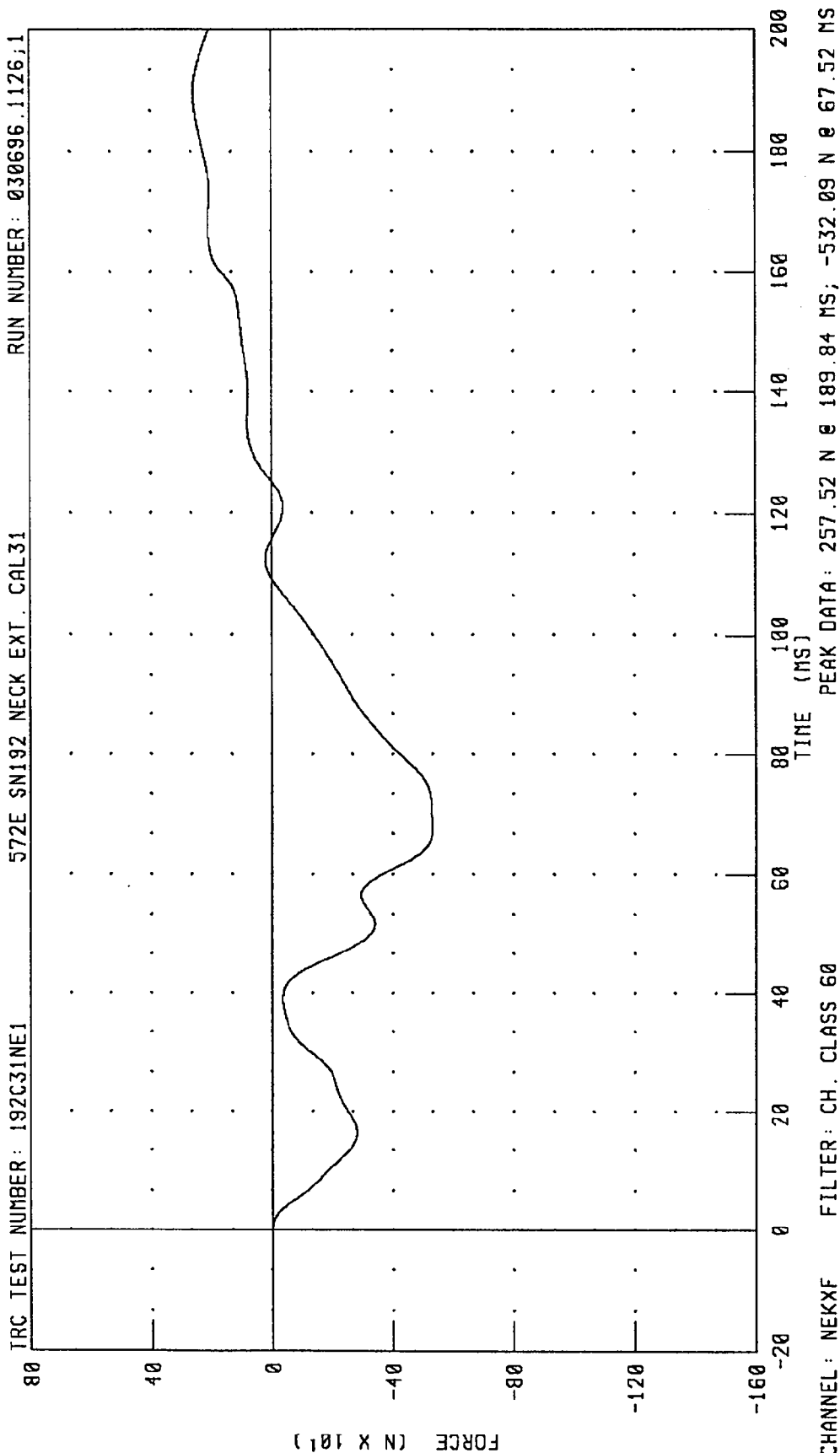
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

IRC TEST NUMBER: 192C31NE1

572E SN192 NECK EXT. CAL31

RUN NUMBER: 030696.1126,1



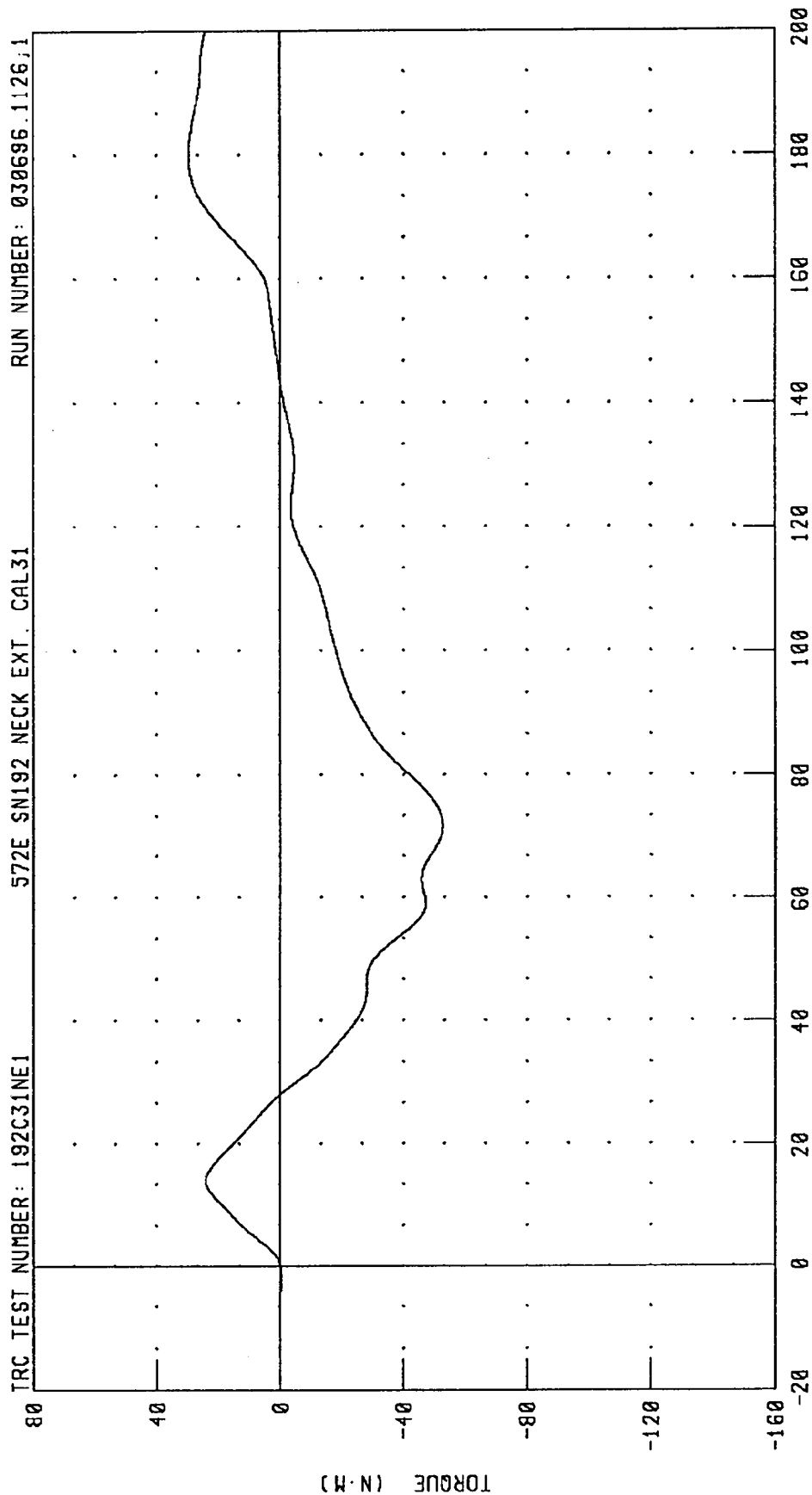
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 192C31NE1

572E SN192 NECK EXT. CAL31

RUN NUMBER: 030696.1126;1



PEAK DATA: 29.53 N.M @ 180.00 MS; -52.70 N.M @ 71.76 MS

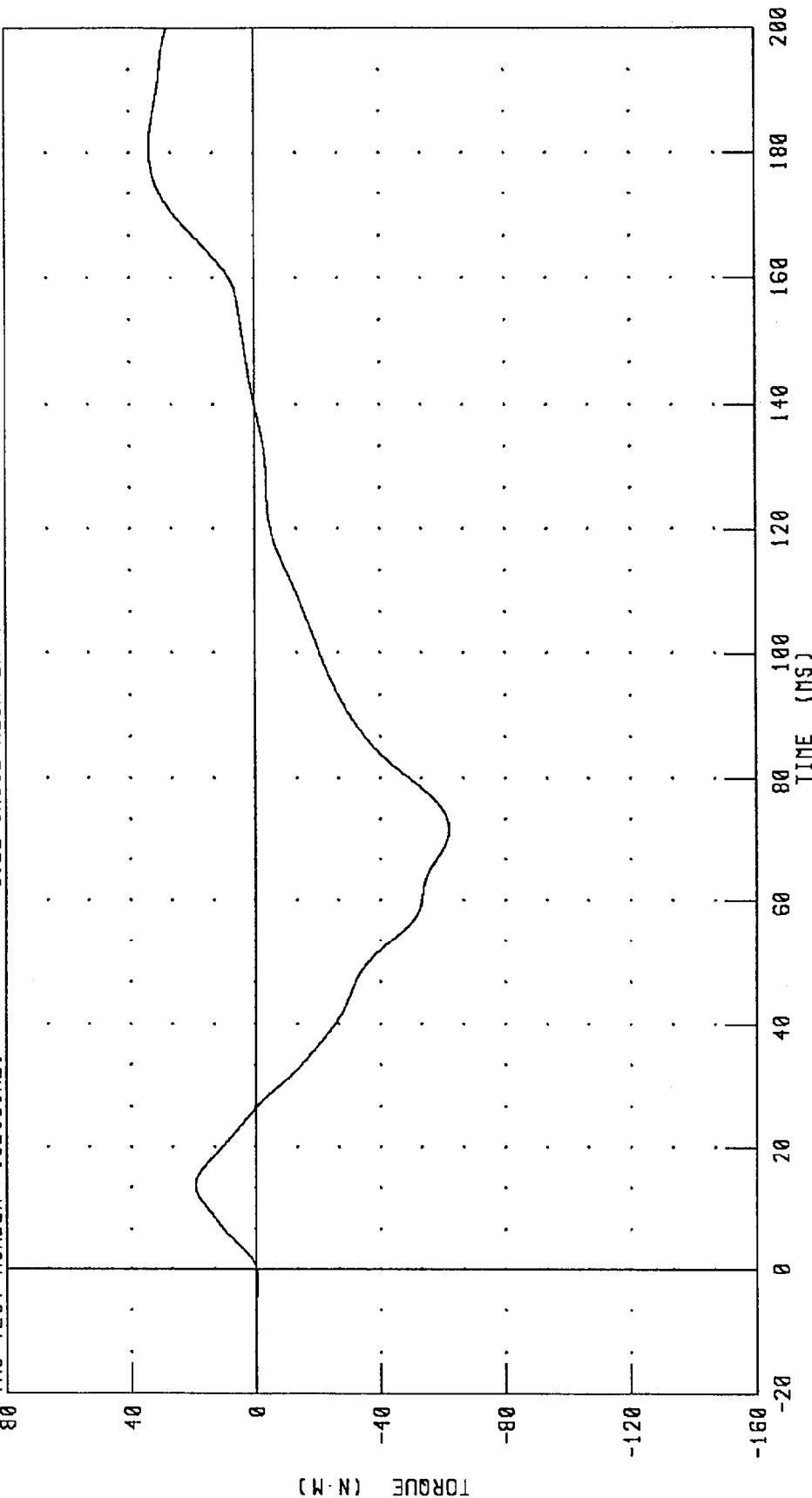
CHANNEL: NEKYM FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 192C31NE1

572E SNI92 NECK EXT. CAL31

RUN NUMBER: 030696.1126;1



PEAK DATA: 33.59 N-M @ 180.88 MS; -62.09 N-M @ 71.68 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III

16-JAN-96

TRC INC.

TEST NO: 192C31TH1

572E SN192 H.S.THORAX CAL31

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	22.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	23.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.62 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	66.6 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5855. N
INTERNAL HYSTERESIS	69% - 85%	71.8%

TEST MEETS SPECIFICATIONS

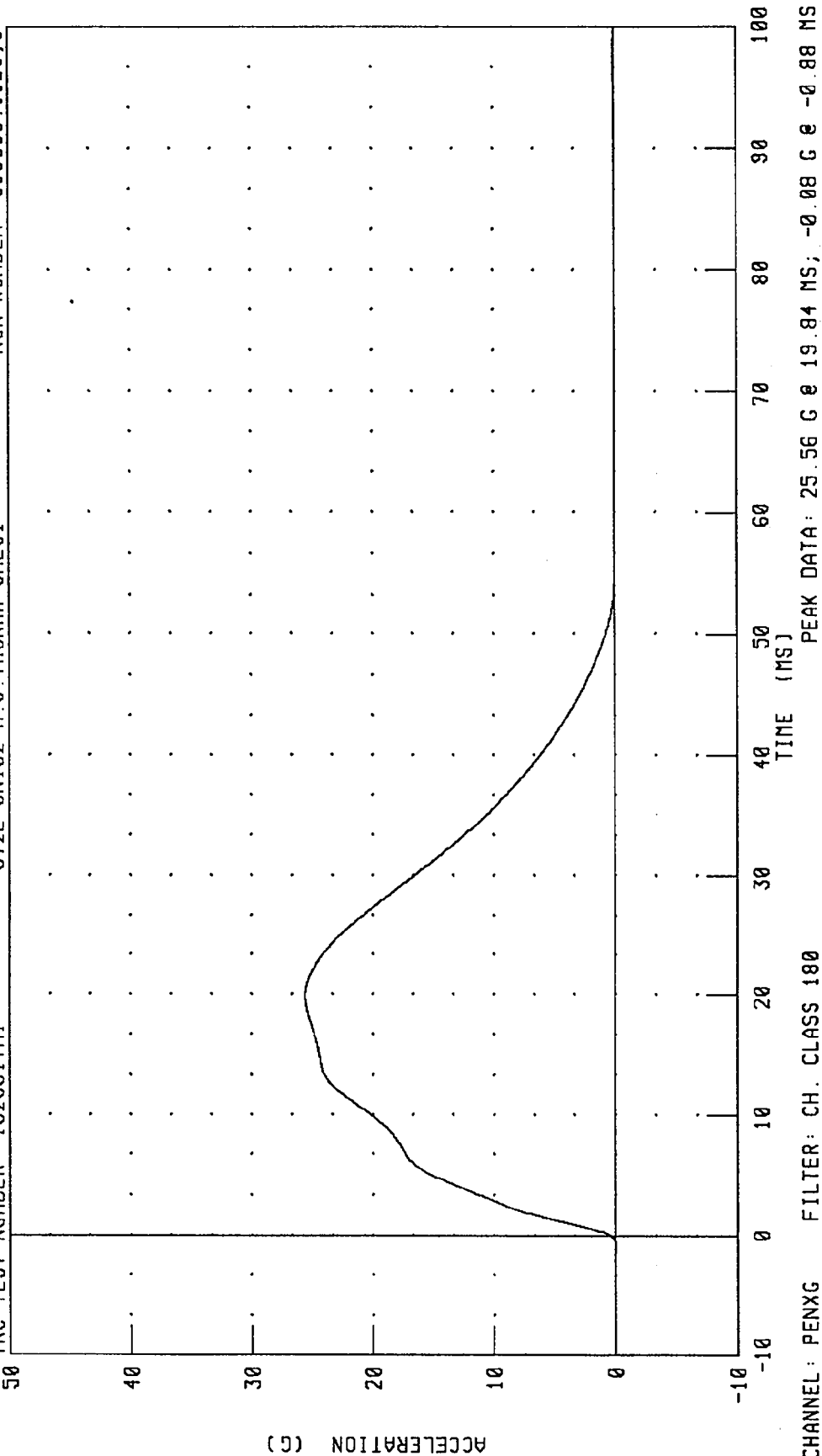
TECHNICIAN

Chris M. Miller

RUN NUMBER: 011696.1546;3

PART 572-E HYBRID III THORAX CALIBRATION
 PENDULUM DECELERATION

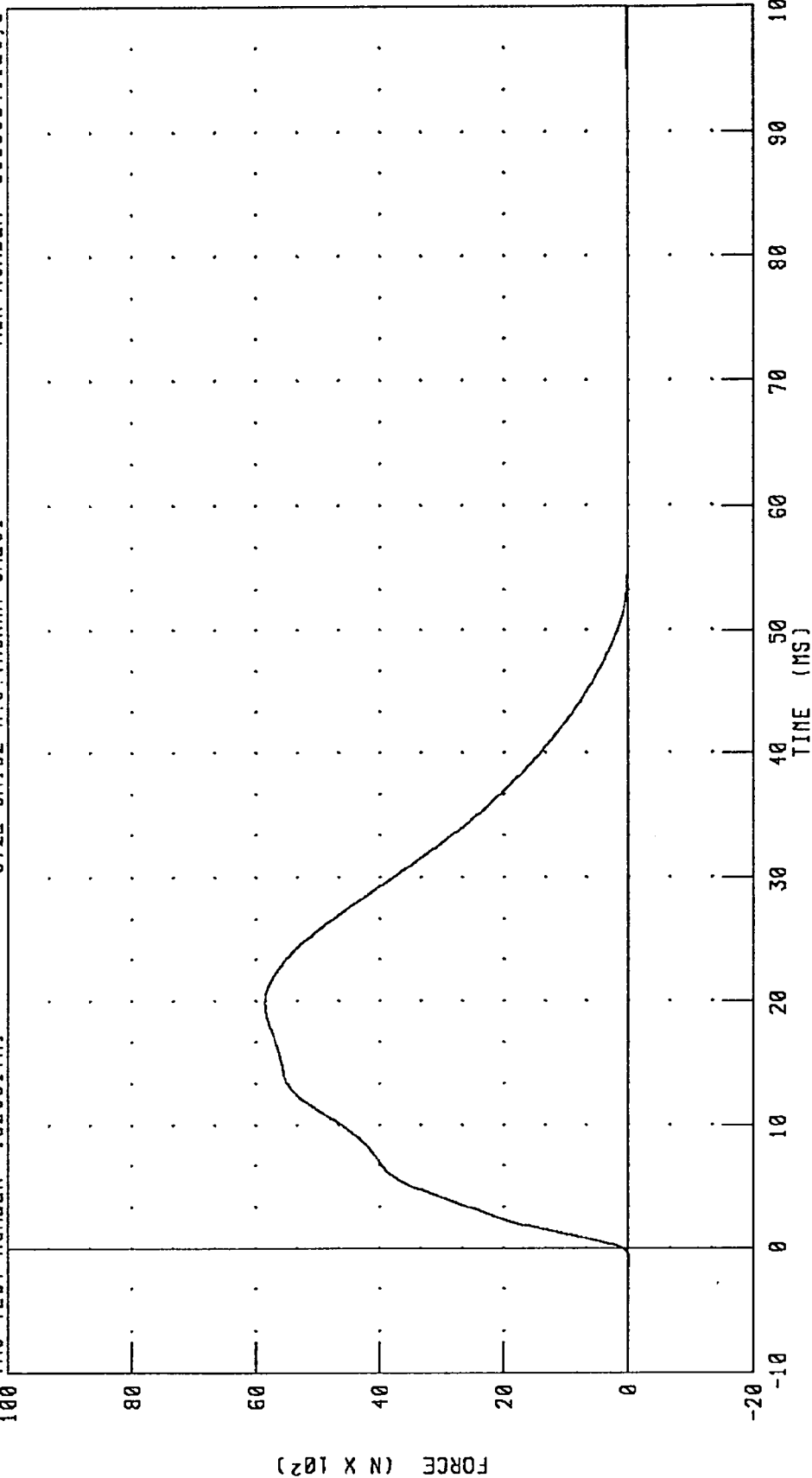
TRC TEST NUMBER: 192C31TH1 572E SN192 H.S. THORAX CAL31 RUN NUMBER: 030696.1126J3



CHANNEL: PENXG FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION PENDULUM FORCE

TRC TEST NUMBER: 192C31TH1 572E SN192 H.S. THORAX CAL31 RUN NUMBER: 030696.1126;3



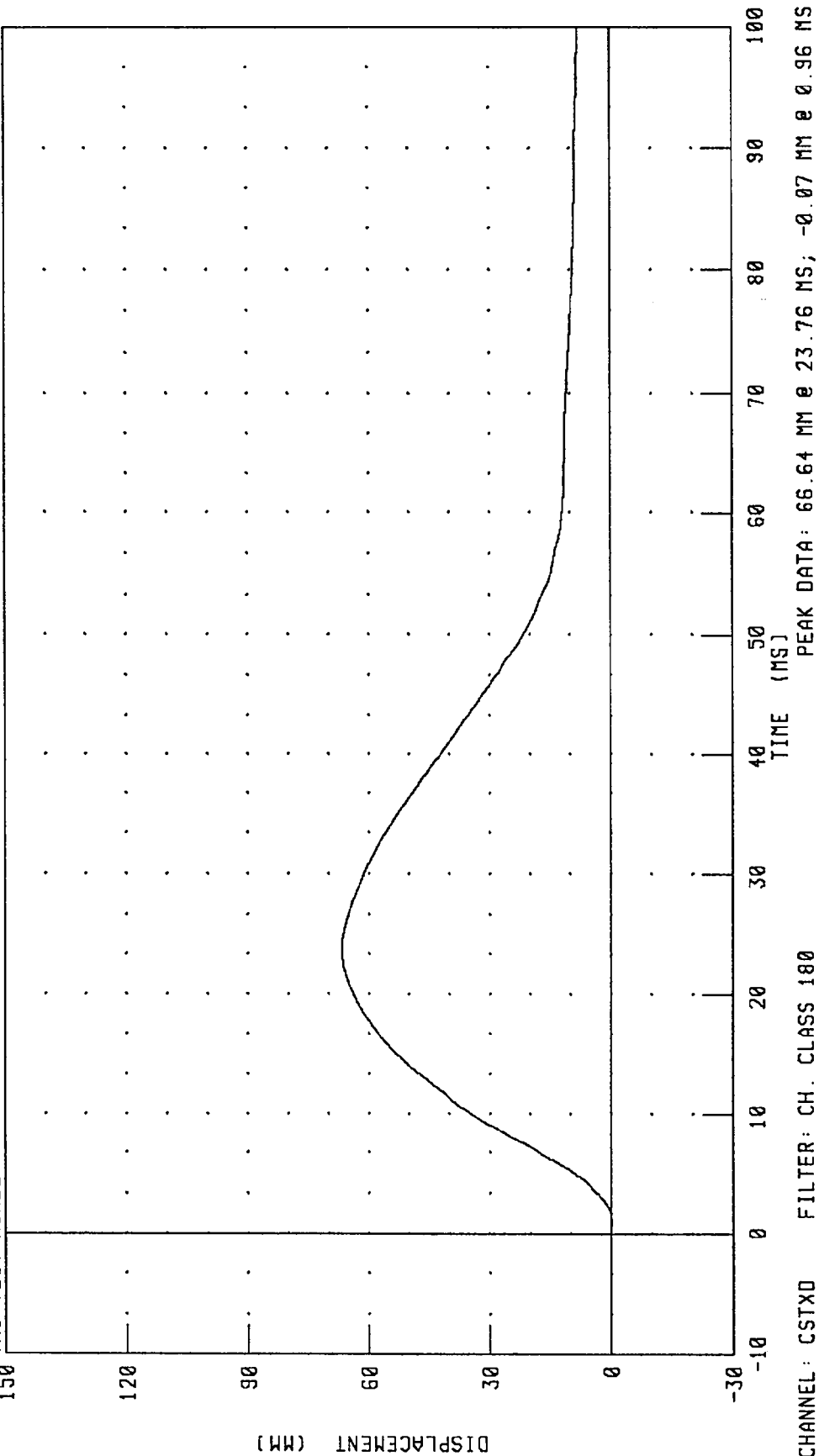
PEAK DATA: 5855.78 N @ 19.84 MS; -19.30 N @ -0.88 MS

CHANNEL: PENXF FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

TRC TEST NUMBER: 192C31TH1 572E SN192 H.S.THORAX CAL31 RUN NUMBER: 030696.112613



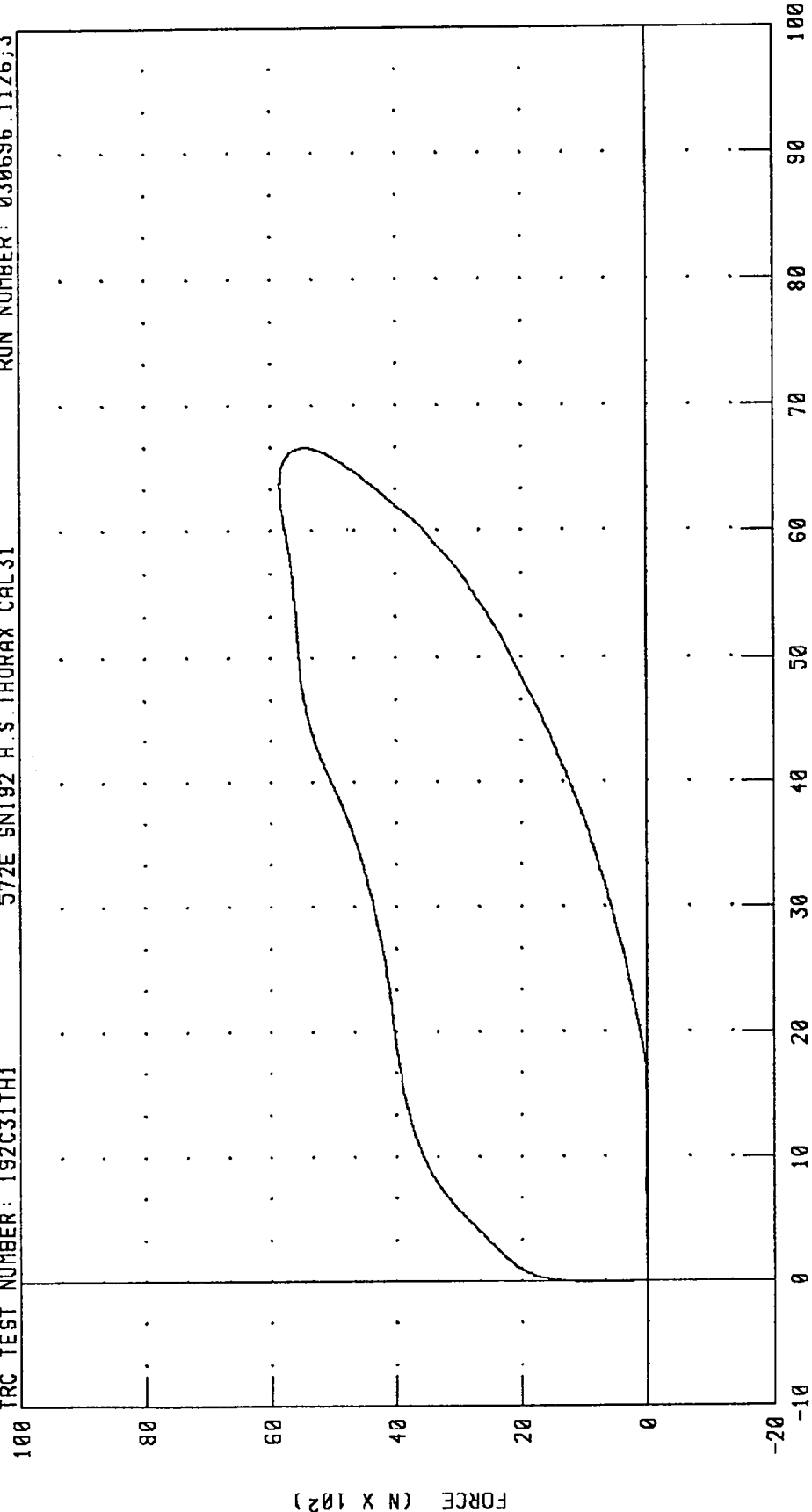
CHANNEL: CSTXD FILTER: CH. CLASS 180

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

TRC TEST NUMBER: 192C31TH1

572E SN192 H.S. THORAX CAL31

RUN NUMBER: 030696.1126;3



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

PEAK DATA: 66.64 MM @ 23.76 MS; -0.07 MM @ 0.96 MS
5855.78 N @ 19.84 MS; -19.30 N @ -0.88 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III

16-JAN-96

TRC INC.

TEST NO: 192C31RK1

572E SN192 RIGHT KNEE CAL 31

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	23.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5483.2 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chris M. Licht

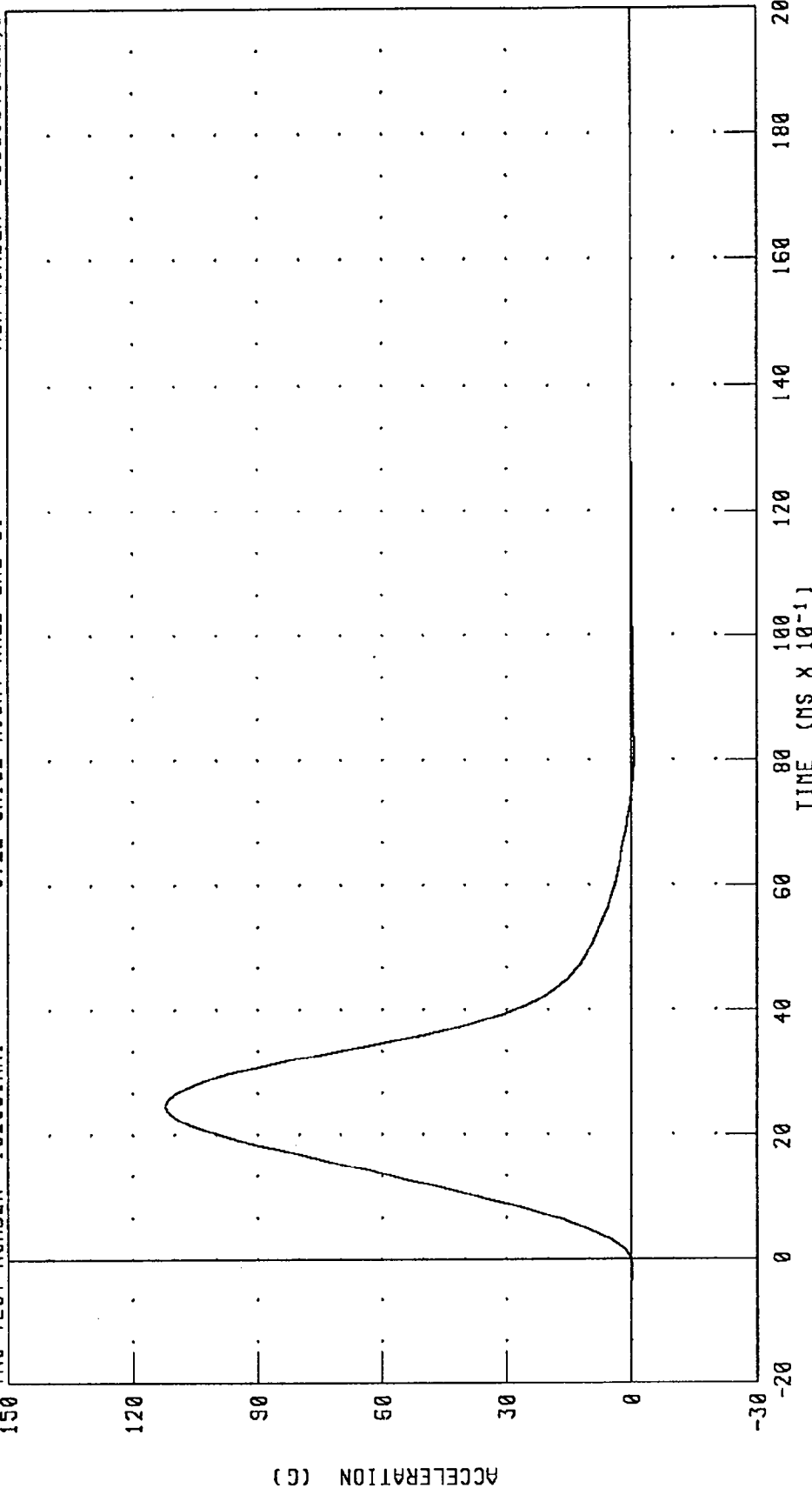
RUN NUMBER: 011696.0855;1

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

TRC TEST NUMBER: 192C31RK1

572E SNI92 RIGHT KNEE CAL 31

RUN NUMBER: 030696.1126;1



PEAK DATA: 112.07 G @ 2.48 MS; -0.65 G @ 8.08 MS

CHANNEL: PENXG FILTER: CH. CLASS 600

PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

572E SN192 RIGHT KNEE CAL 31

TRC TEST NUMBER: 192C31RK1

75

60

45

30

15

0

-15

TIME (NS X 10⁻¹)

80

100

120

140

160

180

200

PEAK DATA: 5483.28 N @ 2.48 MS; -32.04 N @ 8.08 MS

CHANNEL: PENXF

FILTER: CH. CLASS 600

960131

C-32

960131

960131

960131

960131

960131

960131

960131

960131

960131

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III

16-JAN-96

TRC INC.

TEST NO: 192C31LK1

572E SN192 LEFT KNEE CAL 31

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	23.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5145.2 N

TEST MEETS SPECIFICATIONS

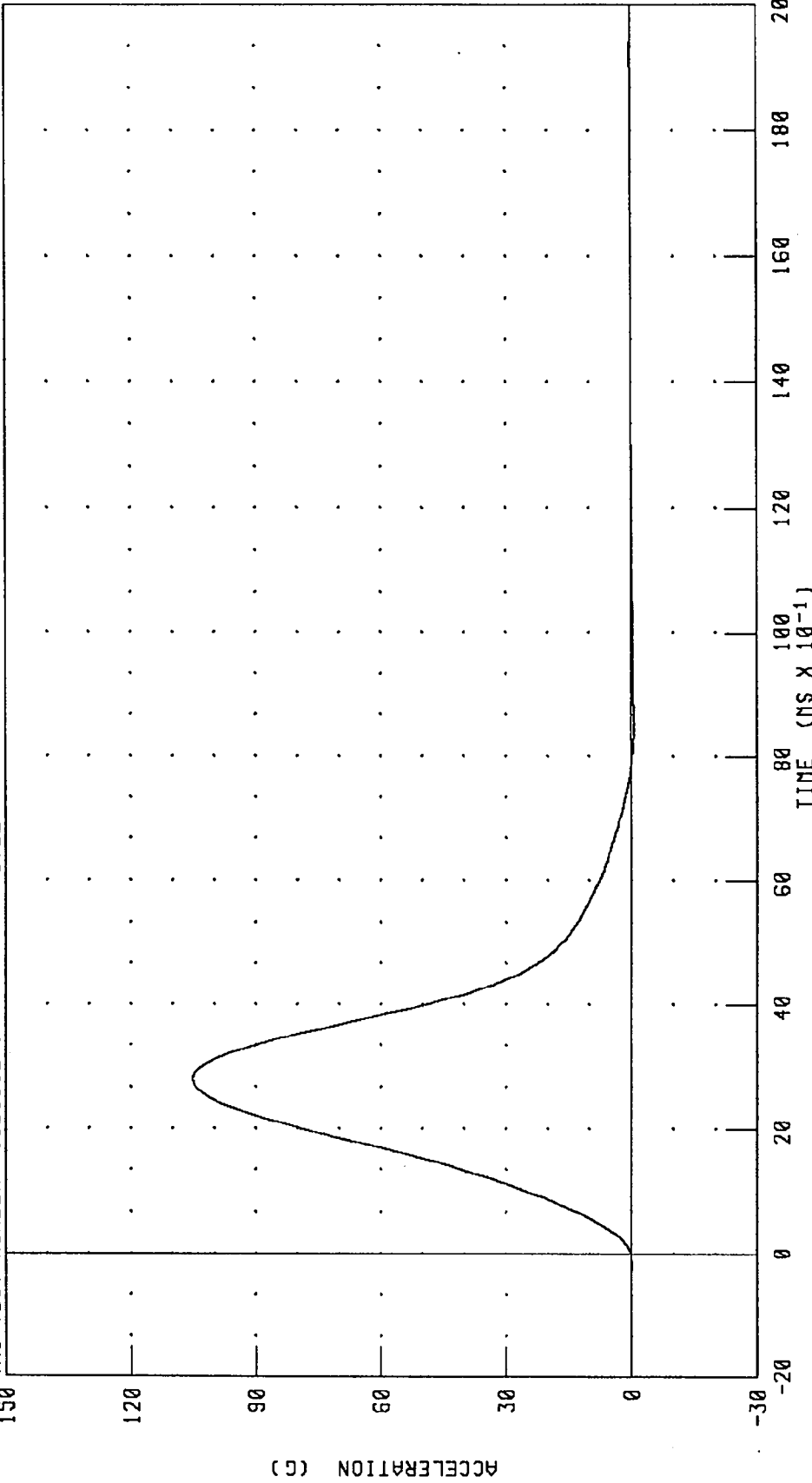
TECHNICIAN

Chas. Middel

RUN NUMBER: 011696.0852;1

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

TRC TEST NUMBER: 192C31LK1 572E SN192 LEFT KNEE CAL 31 RUN NUMBER: 030696.1126.1



CHANNEL: PENXG FILTER: CH. CLASS 600

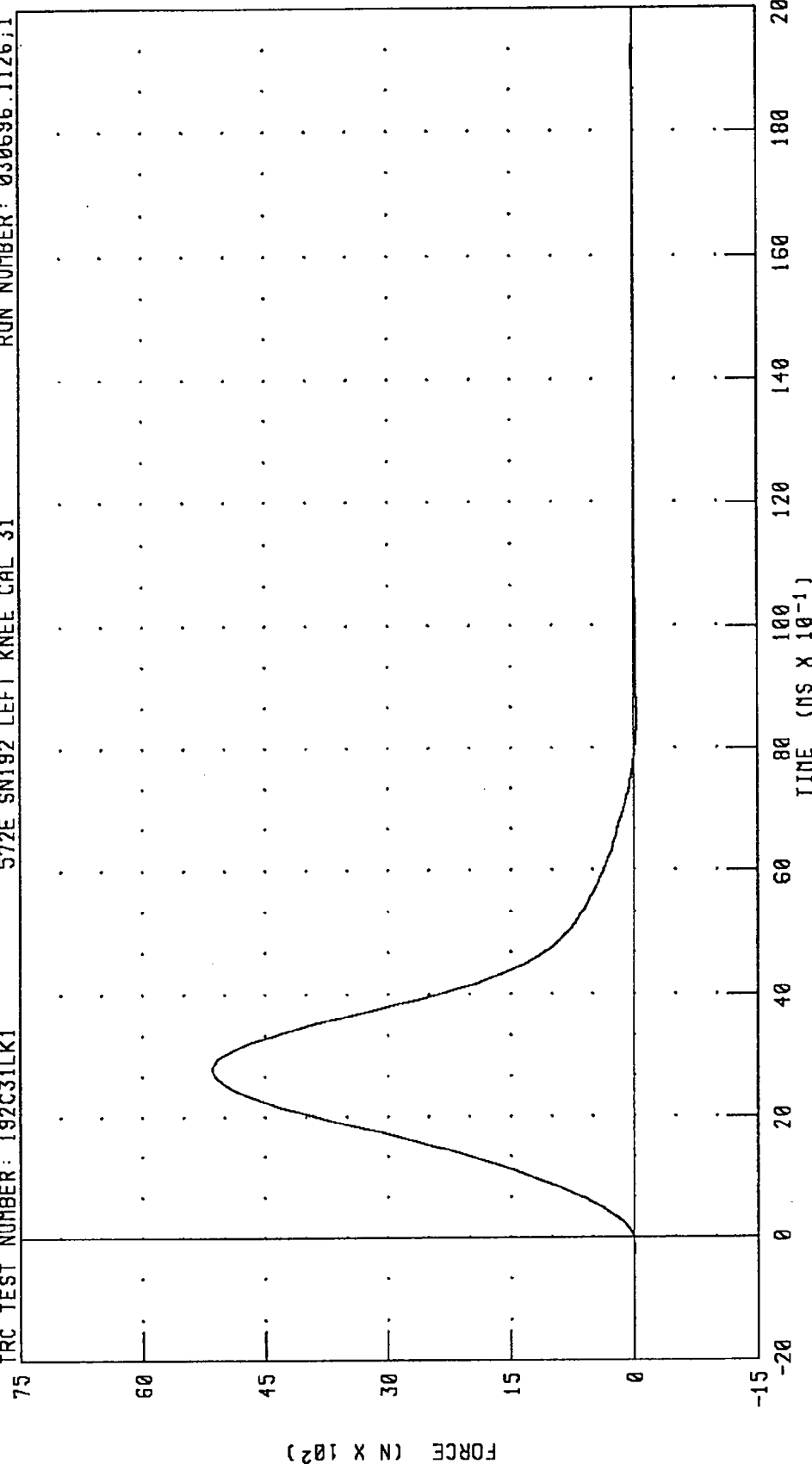
PEAK DATA: 105.16 G @ 2.80 MS; -0.70 G @ 8.56 MS

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

TRC TEST NUMBER: 192C31LK1

572E SN192 LEFT KNEE CAL 31

RUN NUMBER: 030696.1126.1



PEAK DATA: 5145.25 N @ 2.80 MS; -34.32 N @ 8.56 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

Pre-test Certification Data

Passenger Dummy S/N: 142

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III EXTERNAL DIMENSIONS

SN 142 HUMANOID

15-JAN-96

TRC INC.

TEST NO: 142C31ED1

572E SN142 EXT.DIMENSION CAL31

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 Chas. M. Smith

RUN NUMBER: 011596.1250

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III

15-JAN-96

TRC INC.

TEST NO: 142C31HD1

572E SN142 HEAD DROP CAL 31

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	261.30 G
PEAK LATERAL ACCELERATION	15 G MAX	1.77 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chas. Mischke

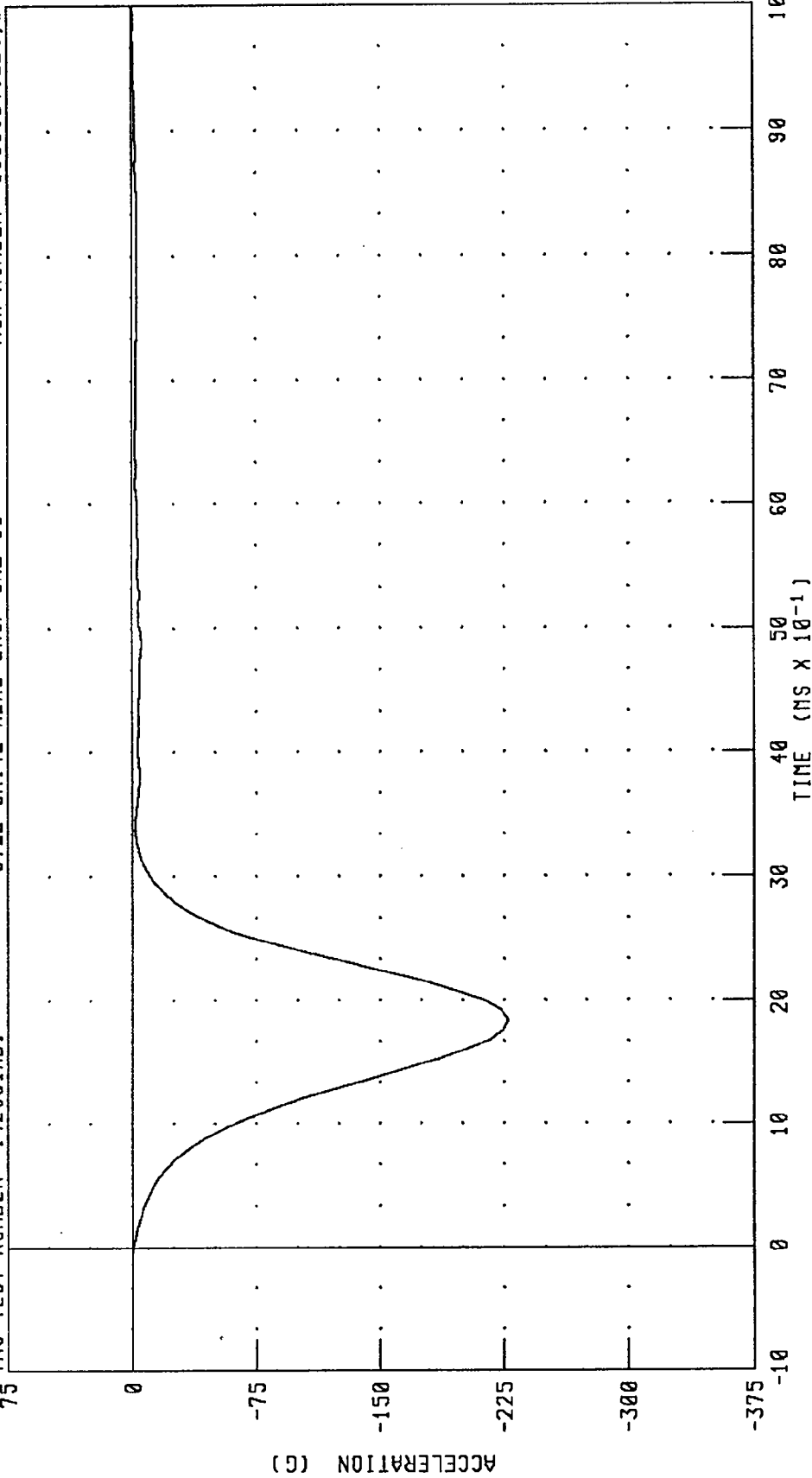
RUN NUMBER: 011696.0725;2

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

TRC TEST NUMBER: 142C31HD1

572E SN142 HEAD DROP CAL 31

RUN NUMBER: 030696.1220;2



CHANNEL: HEDXG FILTER: CH. CLASS 1000

PEAK DATA: 0.08 G @ -0.16 MS; -227.35 G @ 1.84 MS

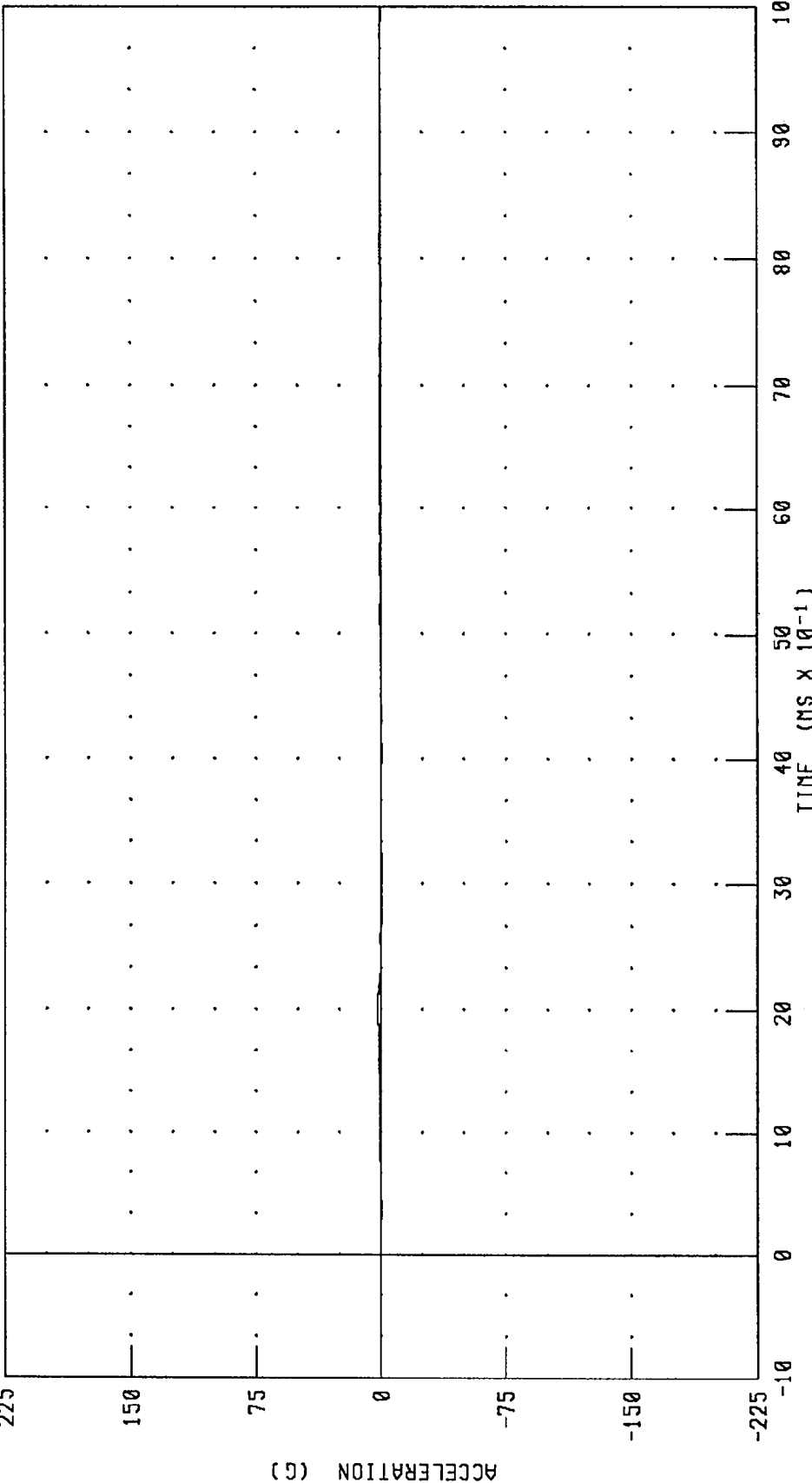
HEAD ACCELERATION Y AXIS

RUN NUMBER: 030696.1220;2

TRC TEST NUMBER: 142C31HD1

572E SN142 HEAD DROP CAL 31

777



CHANNEL: HEDYG FILTER: CH. CLASS 1000

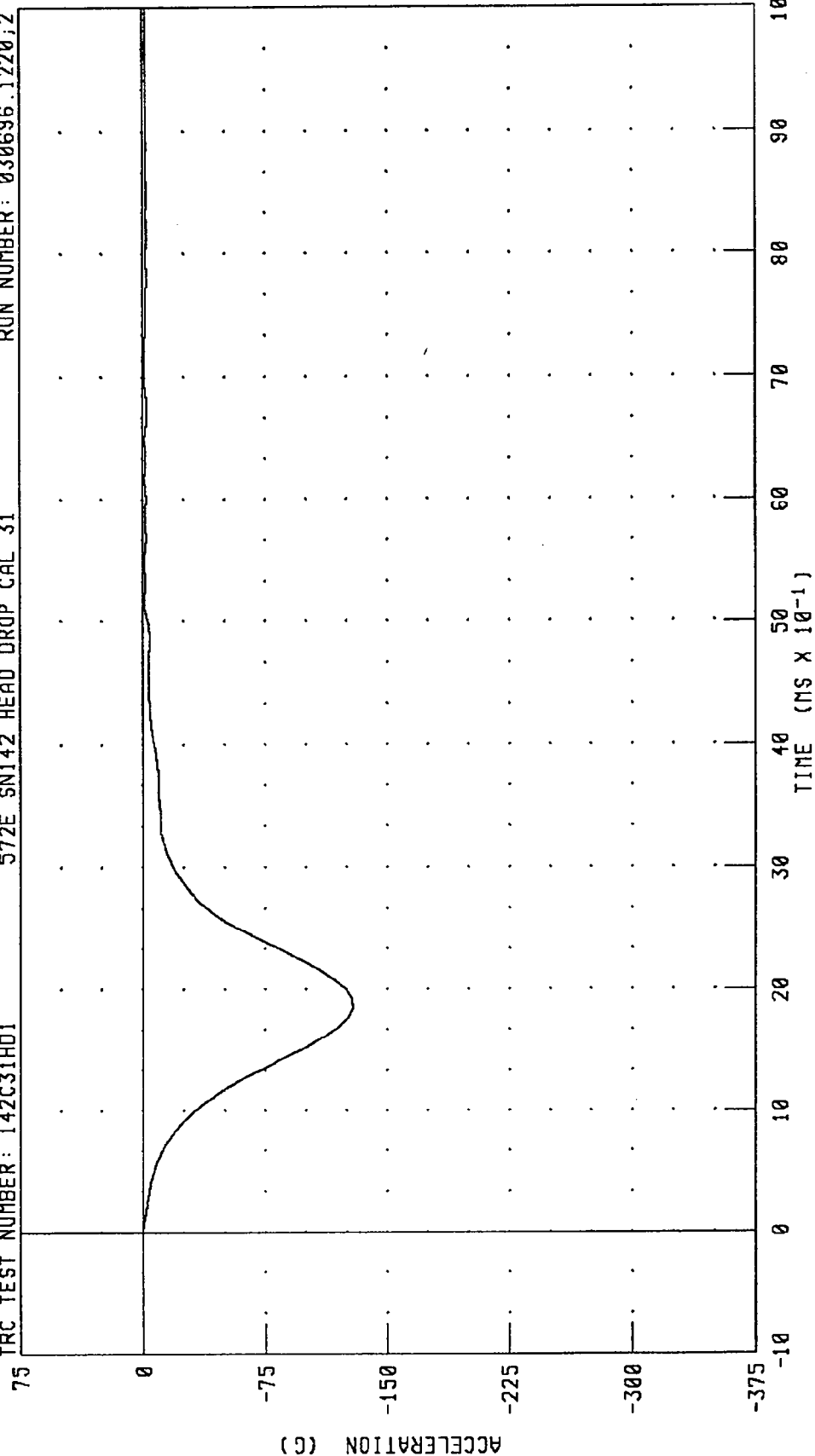
PEAK DATA: 1.78 G @ 2.00 MS; -0.85 G @ 2.80 MS

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

TRC TEST NUMBER: 142C31H01

572E SN142 HEAD DROP CAL 31

RUN NUMBER: 030696.1220;2



PEAK DATA: 0.04 G @ -0.08 MS; -128.80 G @ 1.84 MS

CHANNEL: HEDZG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION

572E SN142 HEAD DROP CAL 31 RUN NUMBER: 030696.1220;2

TRC TEST NUMBER: 142C31HD1

375

300

ACCELERATION (G)

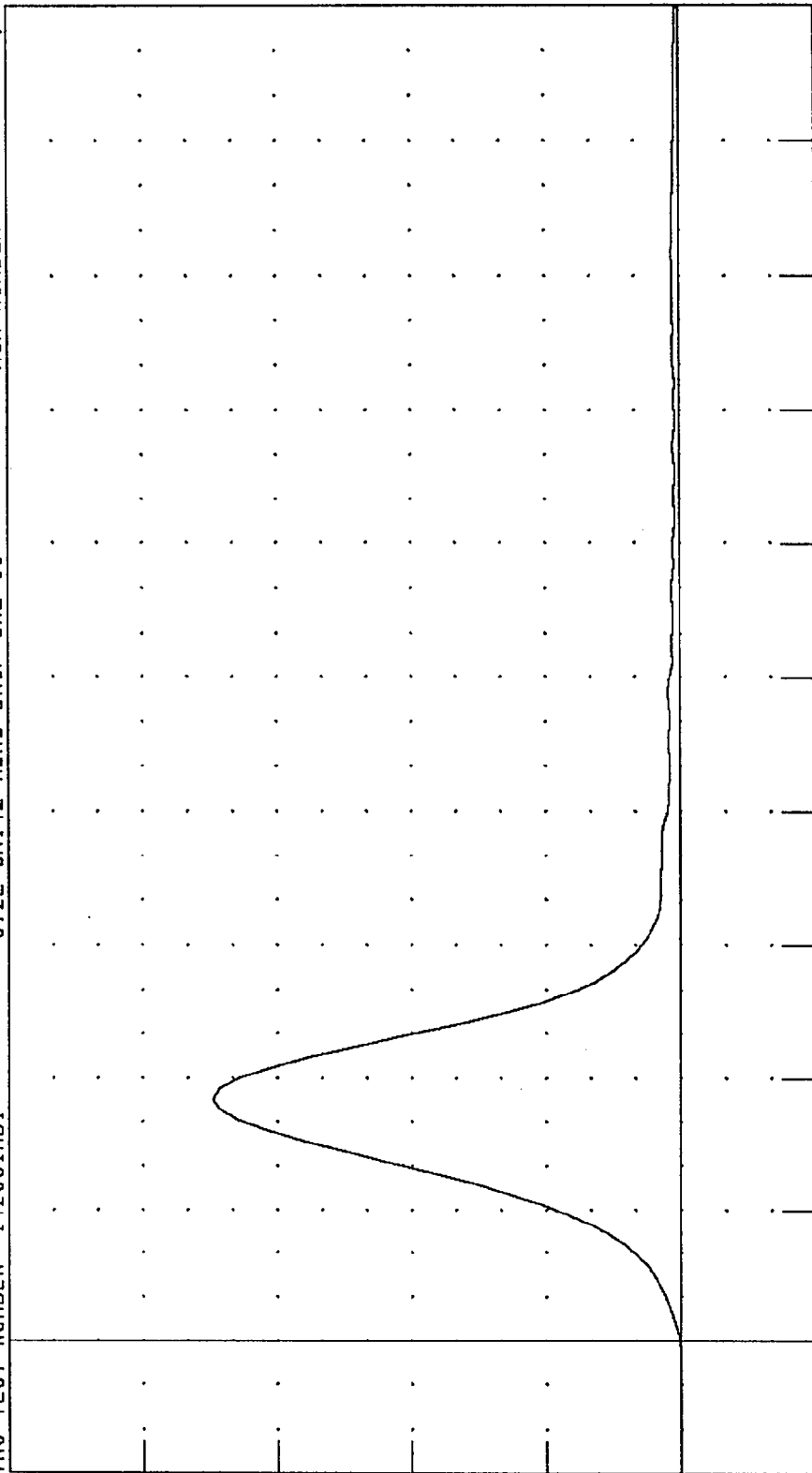
225

150

75

0

-75



TIME (MS X 10⁻¹)

30

40

50

60

70

80

90

100

CHANNEL: HEDRG FILTER: CH. CLASS 1000

PEAK DATA: 261.31 G @ 1.84 MS; 0.01 G @ -0.40 MS

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

16-JAN-96

TRC INC. TEST NO: 142C31NF1 572E SN142 NECK FLEXION CAL31

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	23.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.06 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	22.57 G
	20 MS	17.60 - 22.60 G	20.72 G
	30 MS	12.50 - 18.50 G	17.79 G
MAX PENDULUM G		29 G MAX	23.38 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	17.72 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	36.88 MS
D PLANE	MAX	64 - 78 DEG.	75.21 DEG.
ROTATION	TIME	57 - 64 MS	59.52 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	99.74 NM
	TIME	47 - 58 MS	50.56 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	115.44 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	102.80 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. Milder

RUN NUMBER: 011696.0900;2

PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 142C31NF1

572E SNI42 NECK FLEXION CAL31

RUN NUMBER: 030696.1220;2

400

320

ACCELERATION (G X 10⁻¹)

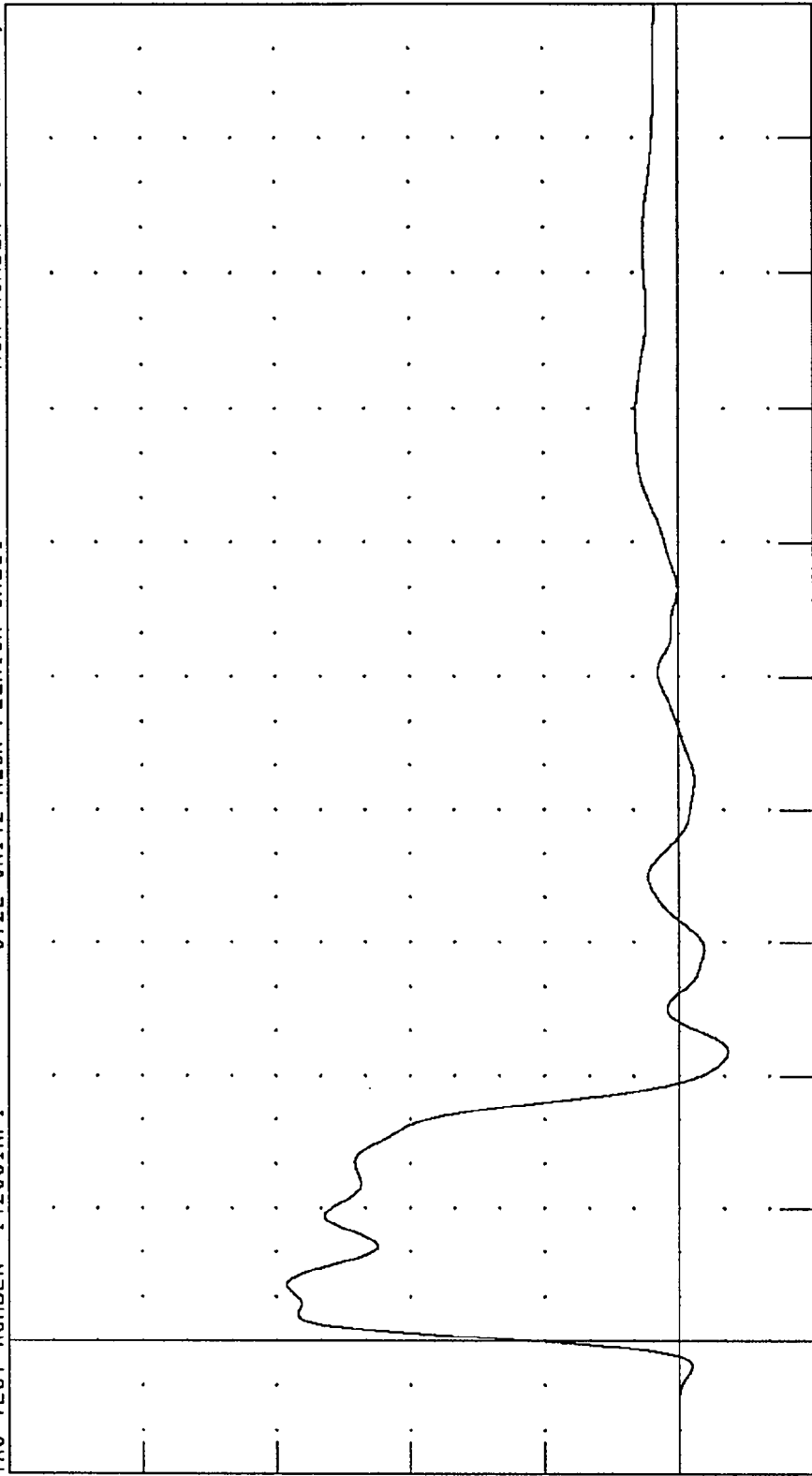
240

160

80

0

-80



TIME (MS)

200

180

160

140

120

100

80

60

40

20

0

-20

-40

-60

-80

-100

-120

-140

-160

-180

-200

-220

-240

-260

-280

-300

CHANNEL: PENXC FILTER: CH. CLASS 60

960131

PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN142 NECK FLEXION CAL31

IRC TEST NUMBER: 142C31NF1

120

90

60

30

0

-30

-60

ANGLE (°)

TIME (MS)

80

100

120

140

160

180

200

220

240

260

280

300

320

340

360

380

400

420

440

460

480

500

520

540

560

580

600

620

640

660

680

700

720

740

760

780

800

820

840

860

880

900

920

940

960

980

1000

1020

1040

1060

1080

1100

1120

1140

1160

1180

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2000

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2120

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2280

2300

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4080

4100

4120

4140

4160

4180

4200

4220

4240

4260

4280

4300

4320

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5100

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5140

5160

5180

5200

5220

5240

5260

5280

5300

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5700

5720

5740

5760

5780

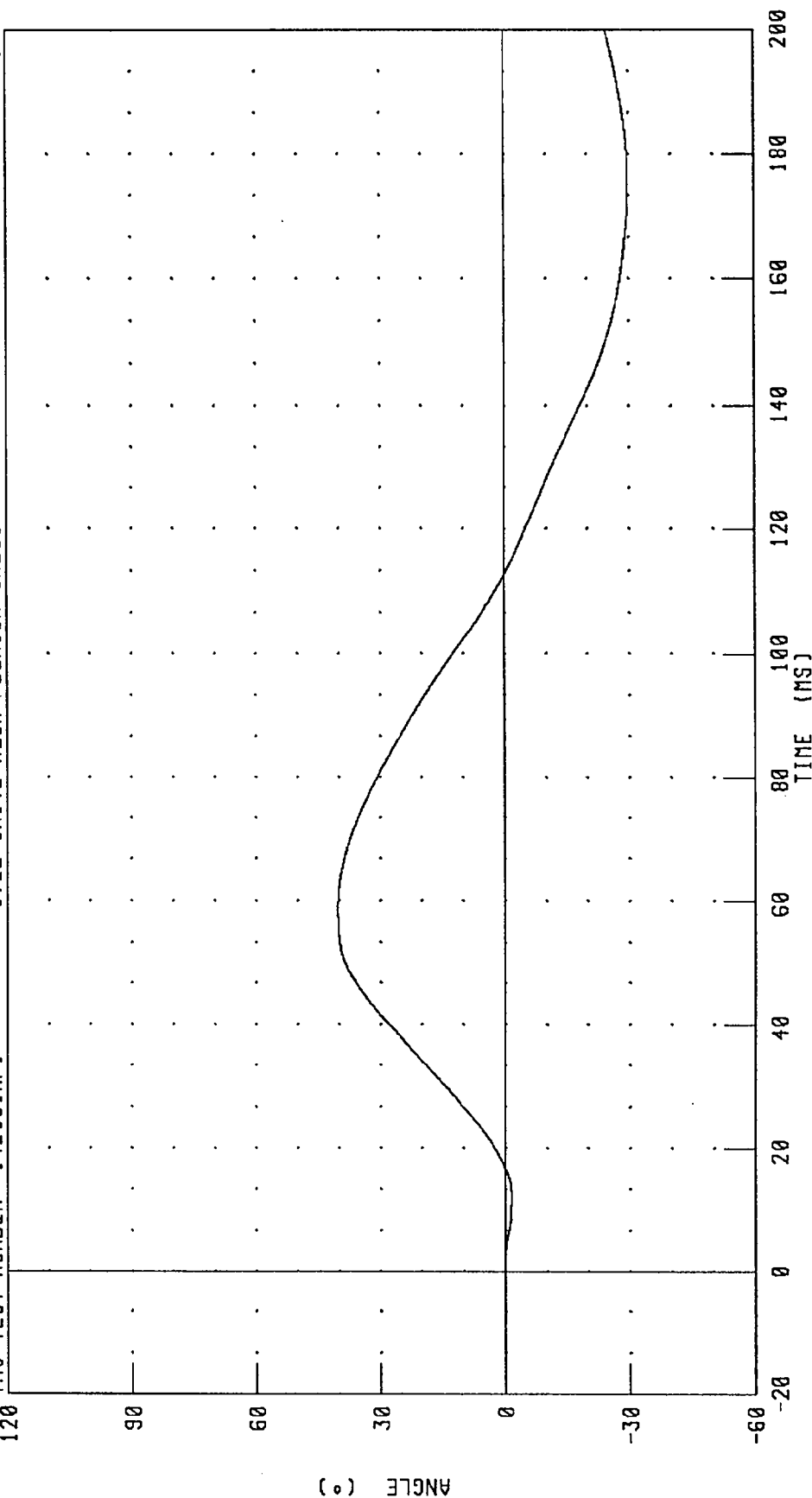
5800

5820

5840

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

TRC TEST NUMBER: 142C31NF1 572E SN142 NECK FLEXION CAL31 RUN NUMBER: 030696.1270;2



CHANNEL: THETA FILTER: CH. CLASS 60 PEAK DATA: 40.31 ° @ 58.64 MS; -29.61 ° @ 178.40 MS

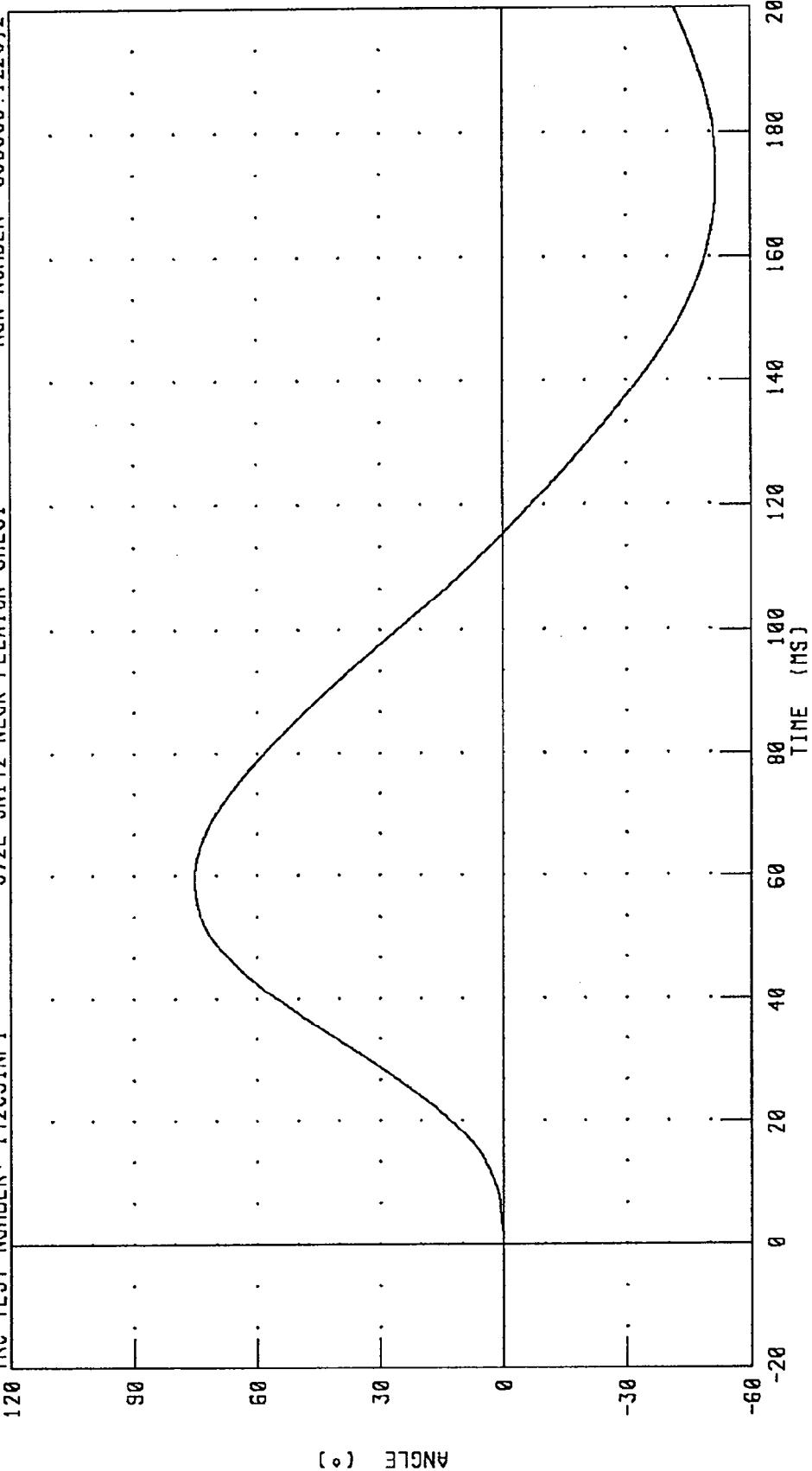
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 142C31NF1

572E SN142 NECK FLEXION CAL31

RUN NUMBER: 030696.1220;2



PEAK DATA: 75.22 ° @ 59.52 MS; -51.64 ° @ 172.96 MS

CHANNEL: TOTAL FILTER: CH. CLASS 60

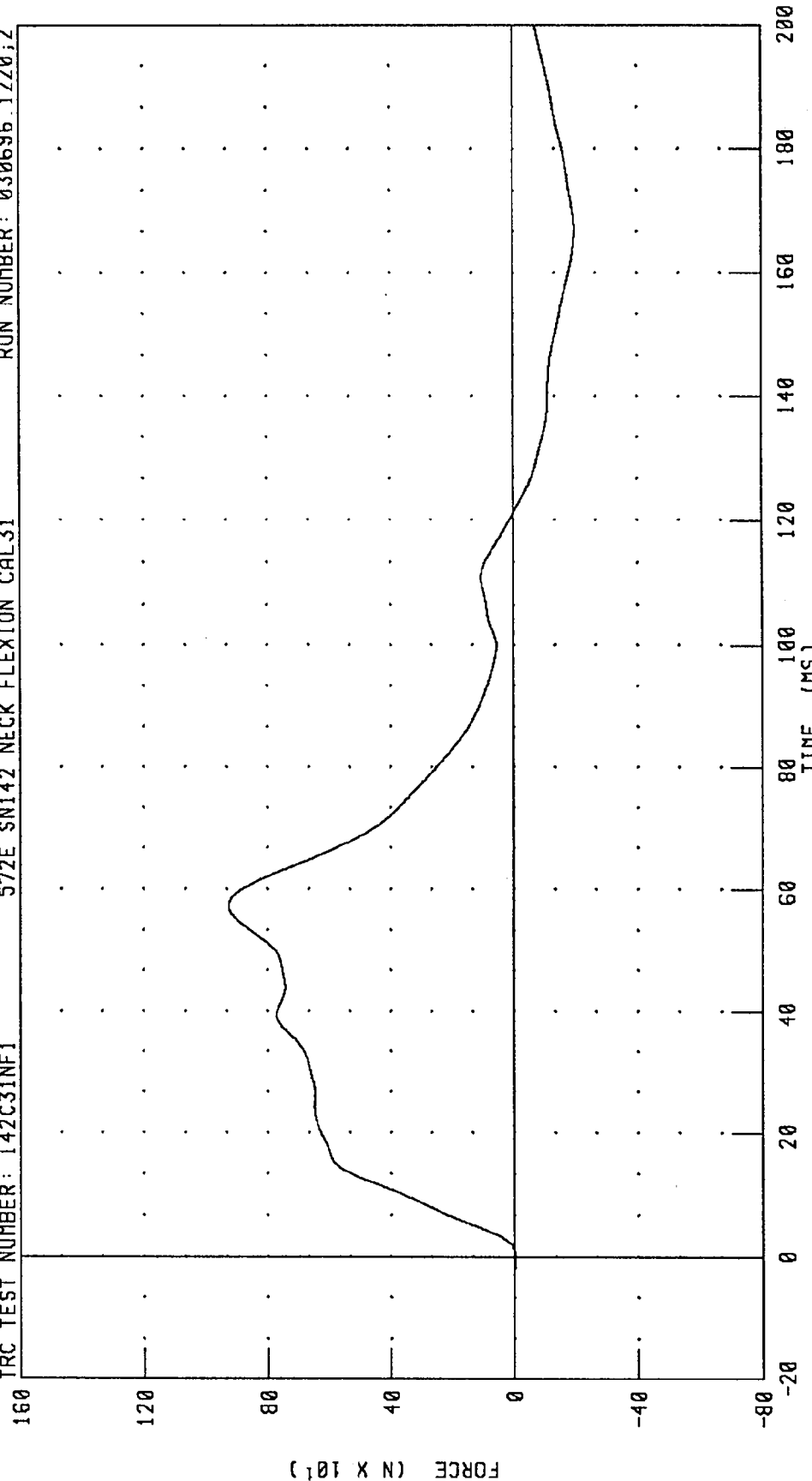
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 142C31NF1

572E SN142 NECK FLEXION CAL31

RUN NUMBER: 030696.1220;2



CHANNEL: NEKXF FILTER: CH. CLASS 60

PEAK DATA: 926.61 N @ 57.28 MS; -198.20 N @ 166.80 MS

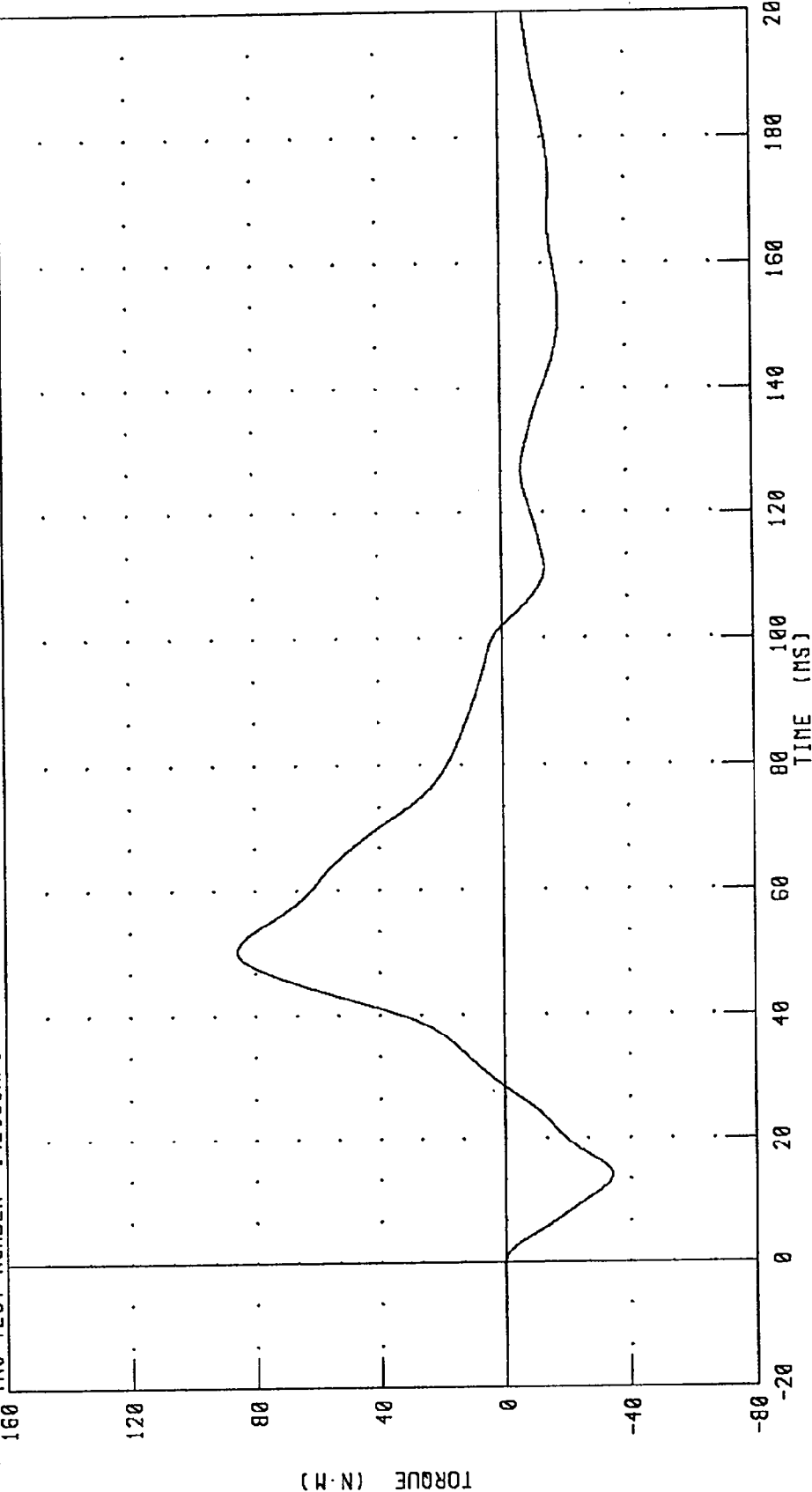
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 142C31NF1

572E SN142 NECK FLEXION CAL31

RUN NUMBER: 030696.1220;2

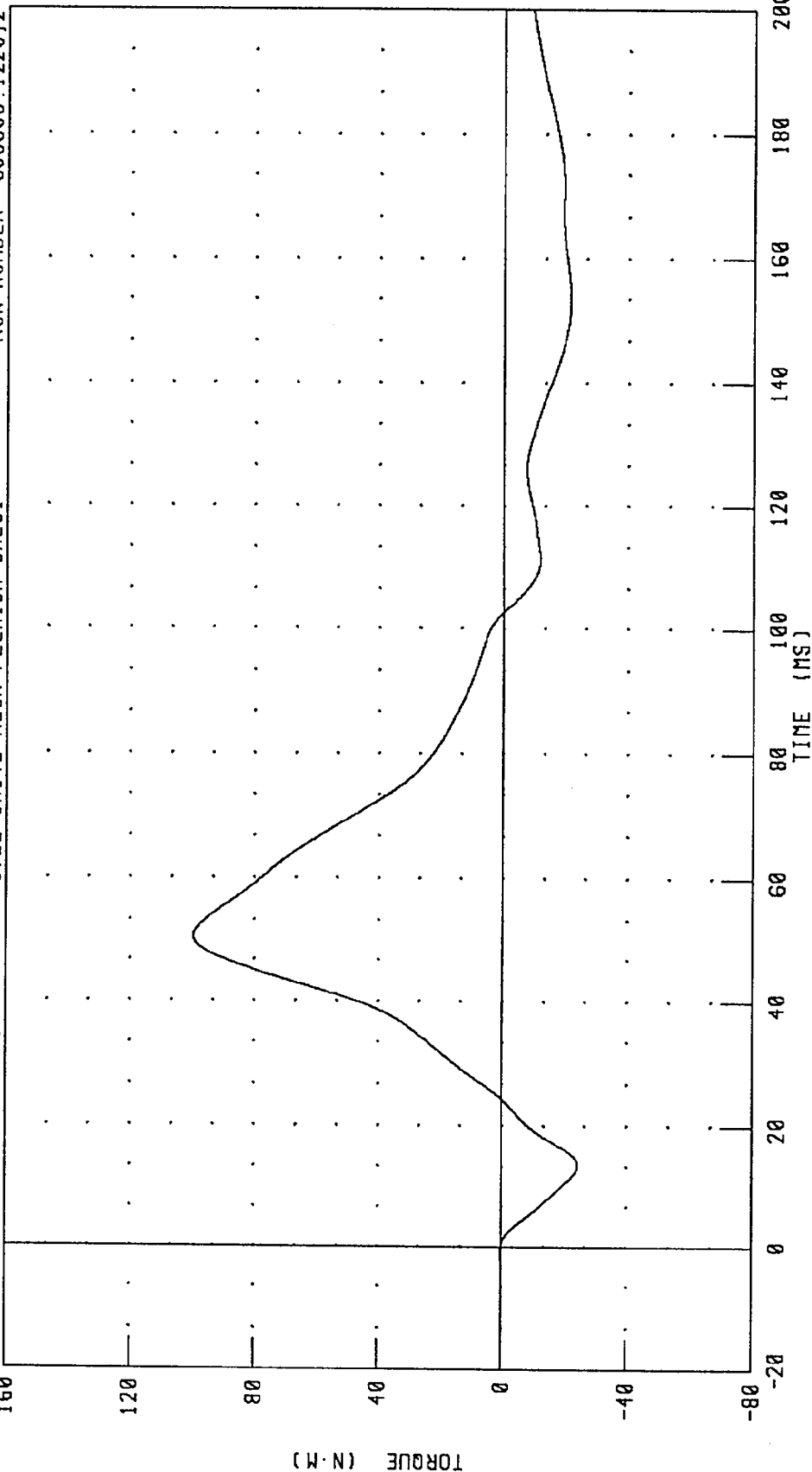


PEAK DATA: 85.81 N·M @ 50.32 MS; -34.19 N·M @ 14.00 MS

CHANNEL: NEKYM FILTER: CH. CLASS 60

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

IRC TEST NUMBER: 142C31NF1 572E SN142 NECK FLEXION CAL31 RUN NUMBER: 030696.1220;2



CHANNEL: NEKOM FILTER: CH. CLASS 60 PEAK DATA: 99.74 N·M @ 50.56 MS; -24.44 N·M @ 13.60 MS

TRANSPORTATION RESEARCH CENTER INC.
NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

16-JAN-96

TRC INC. TEST NO: 142C31NE1 572E SN142 NECK EXT. CAL31

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	23.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.19 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	17.45 G
	20 MS	14.00 - 19.00 G	16.33 G
	30 MS	11.00 - 16.00 G	14.31 G
MAX PENDULUM G		22 G MAX	17.98 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	14.26 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	41.04 MS
D PLANE	MAX	81 - 106 DEG.	97.38 DEG.
ROTATION	TIME	72 - 82 MS	74.88 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-75.61 NM
	TIME	65 - 79 MS	70.24 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	151.68 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	135.76 MS

TEST MEETS SPECIFICATIONS

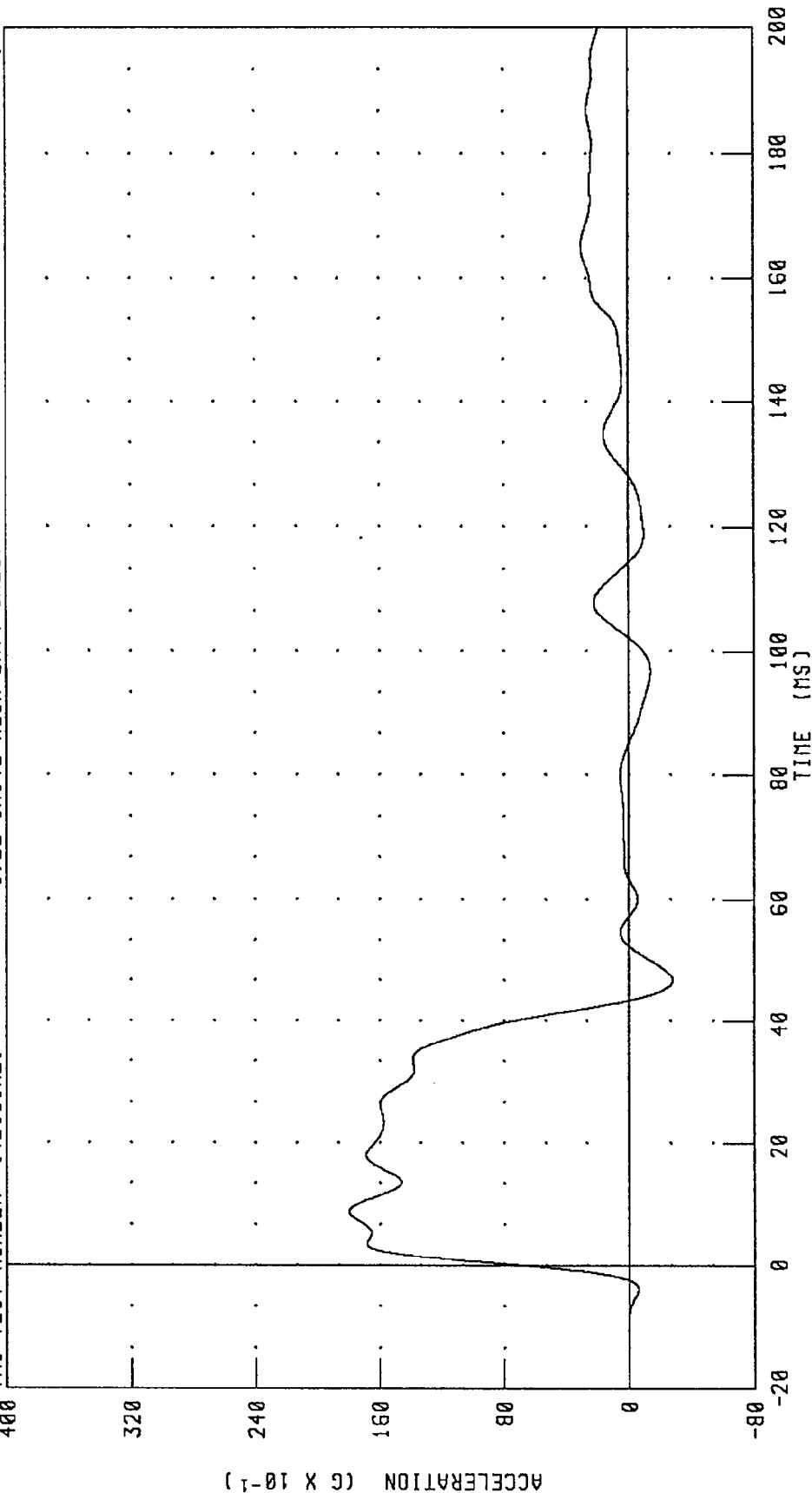
TECHNICIAN

Chris Middel

RUN NUMBER: 011696.0920;1

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 142C31NE1 572E SN142 NECK EXT. CAL31 RUN NUMBER: 030696.1220,1



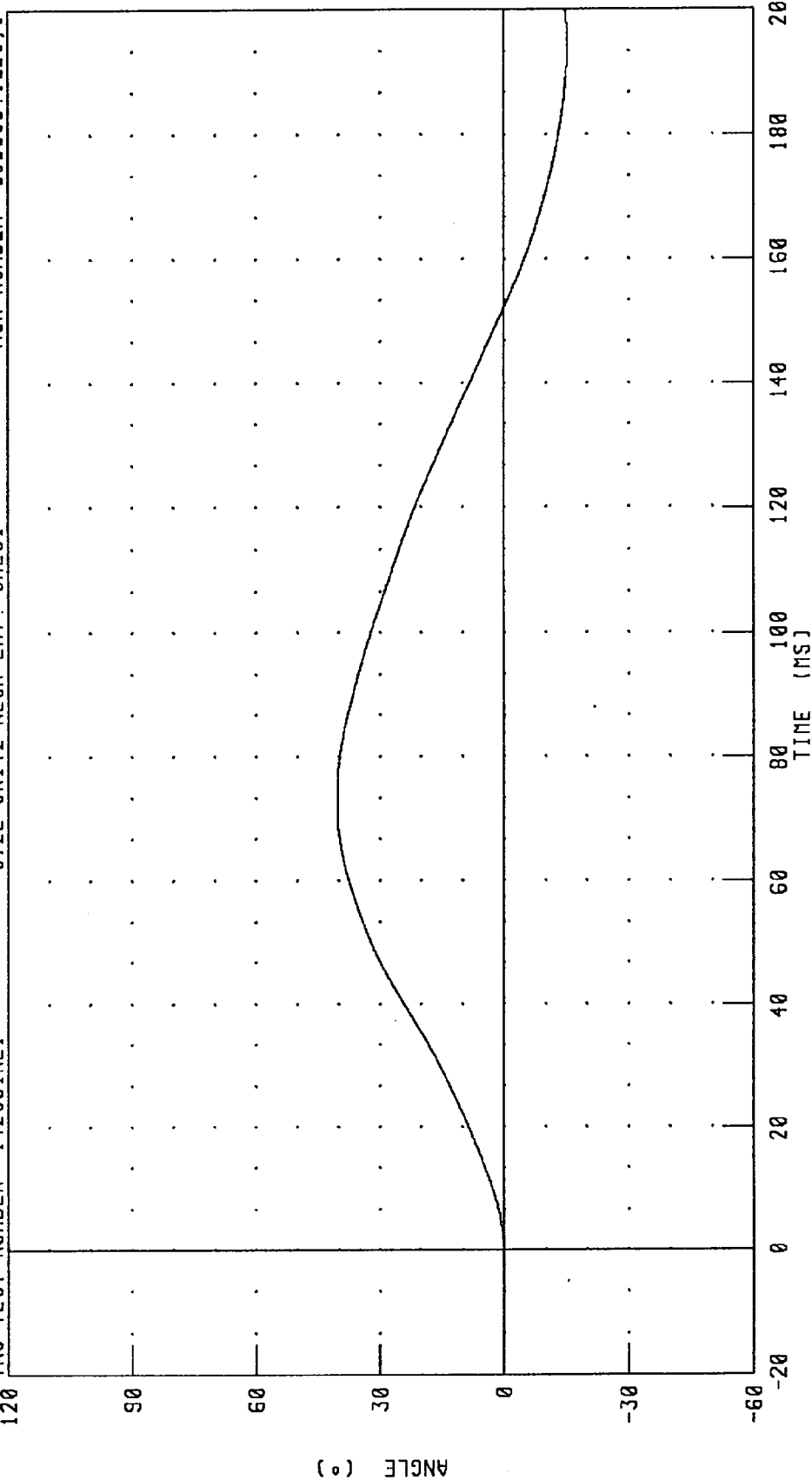
PEAK DATA: 17.99 G @ 8.80 MS; -2.77 G @ 46.72 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 142C31NE1 572E SN142 NECK EXT. CAL31 RUN NUMBER: 030696.1220;1



PEAK DATA: 40.28 ° @ 72.16 MS; -15.14 ° @ 195.12 MS

FILTER: CH. CLASS 60

CHANNEL: BETA

ANGLE (°)

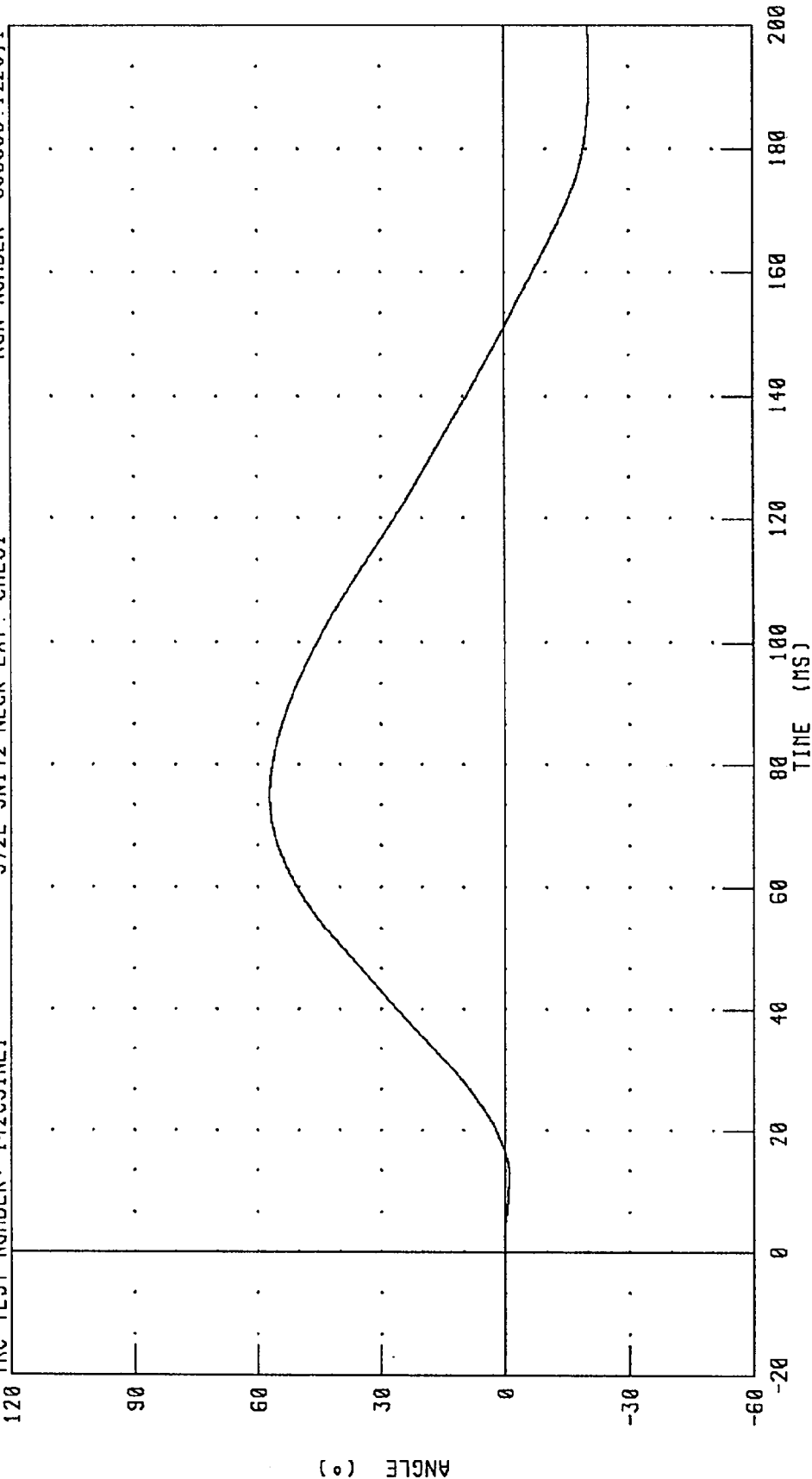
TIME (MS)

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

TRC TEST NUMBER: 142C31NE1

572E SN142 NECK EXT. CAL31

RUN NUMBER: 030696.1220.1



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 57.11 ° @ 74.96 MS; -20.60 ° @ 194.96 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

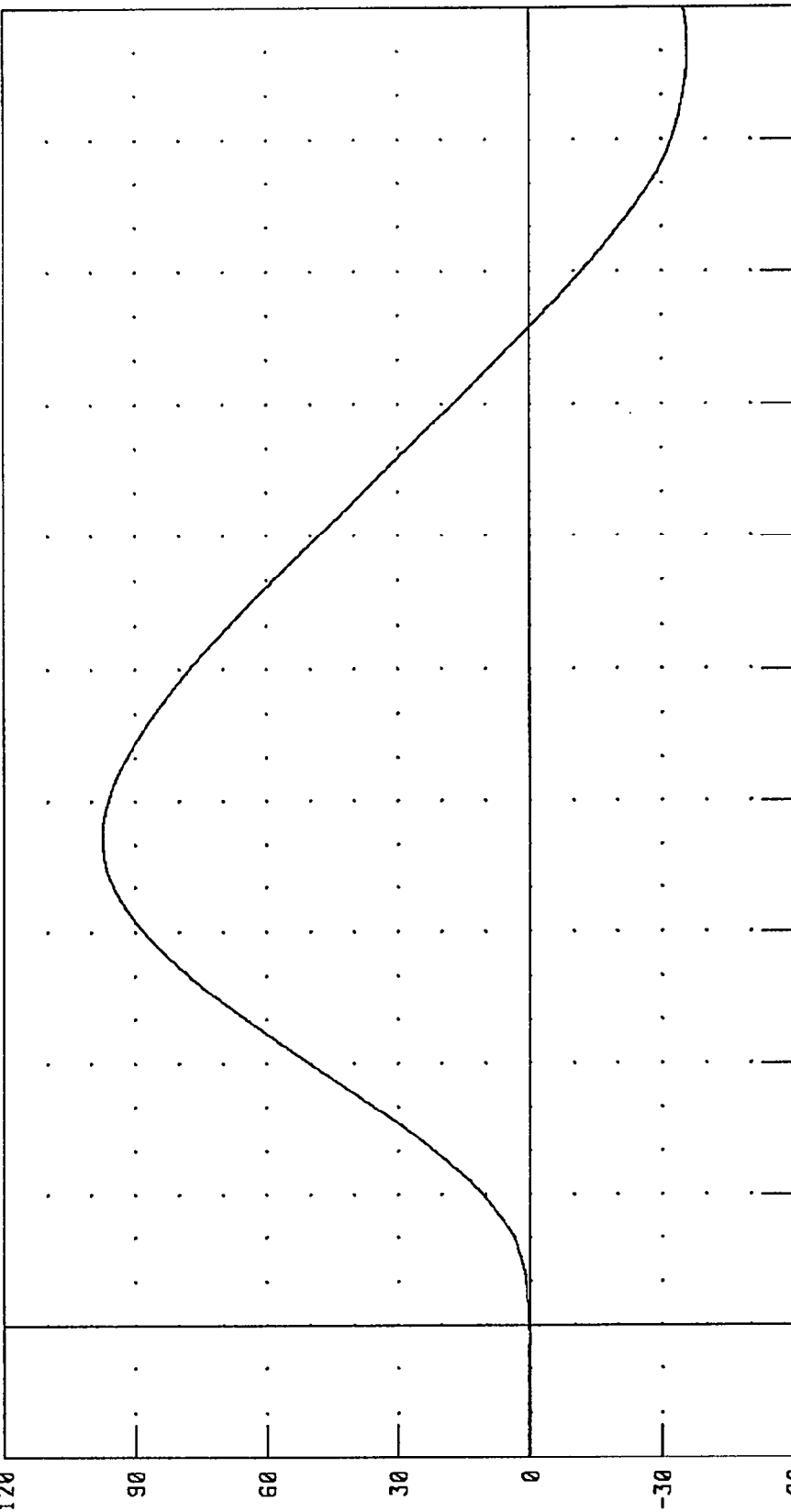
TOTAL ROTATION

TRC TEST NUMBER: 142C31NE1

572E SN142 NECK EXT. CAL31

RUN NUMBER: 030696.1220;1

120



ANGLE (°)

TIME (MS)

200

180

160

140

120

100

80

60

40

20

0

-20

-40

-60

CHANNEL: TOTAN

FILTER: CH. CLASS 60

PEAK DATA:

97.39 ° @ 74.88 MS;

-35.74 ° @ 194.96 MS

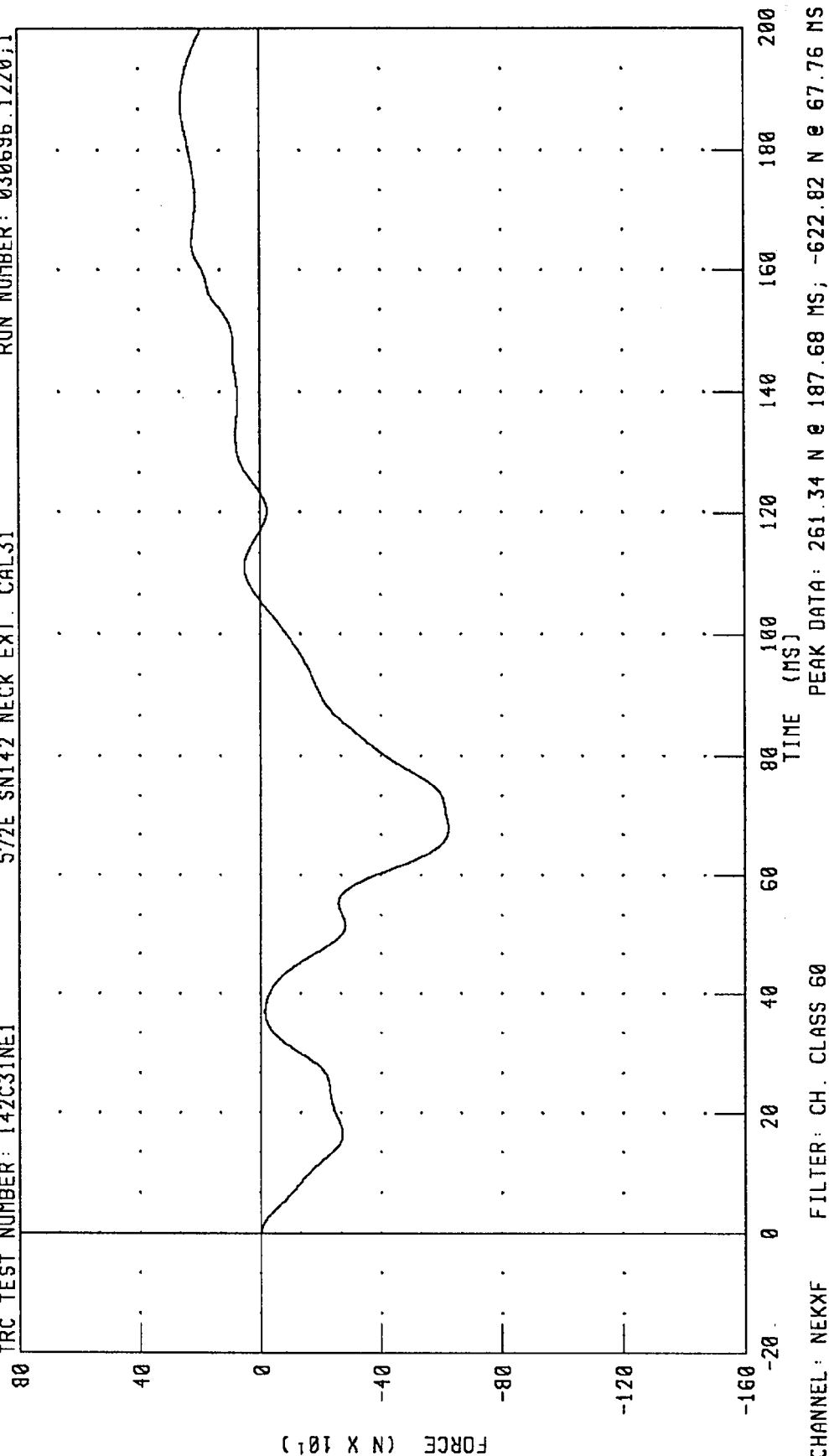
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 142C31NE1

572E SN142 NECK EXT. CAL31

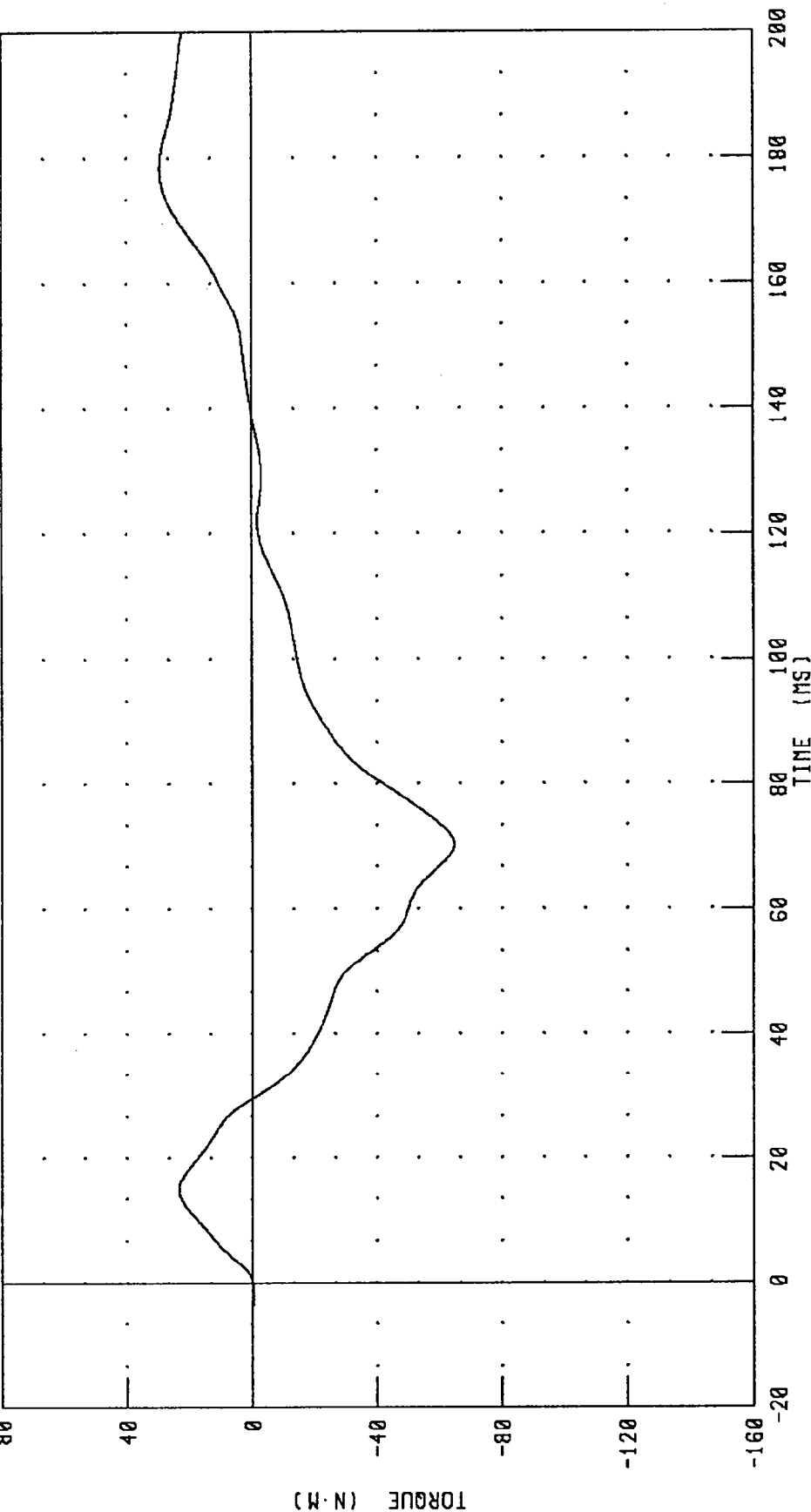
RUN NUMBER: 030696.1220.1



PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

IRC TEST NUMBER: 142C31NE1 572E SN142 NECK EXT. CAL31 RUN NUMBER: 030696.1220;1



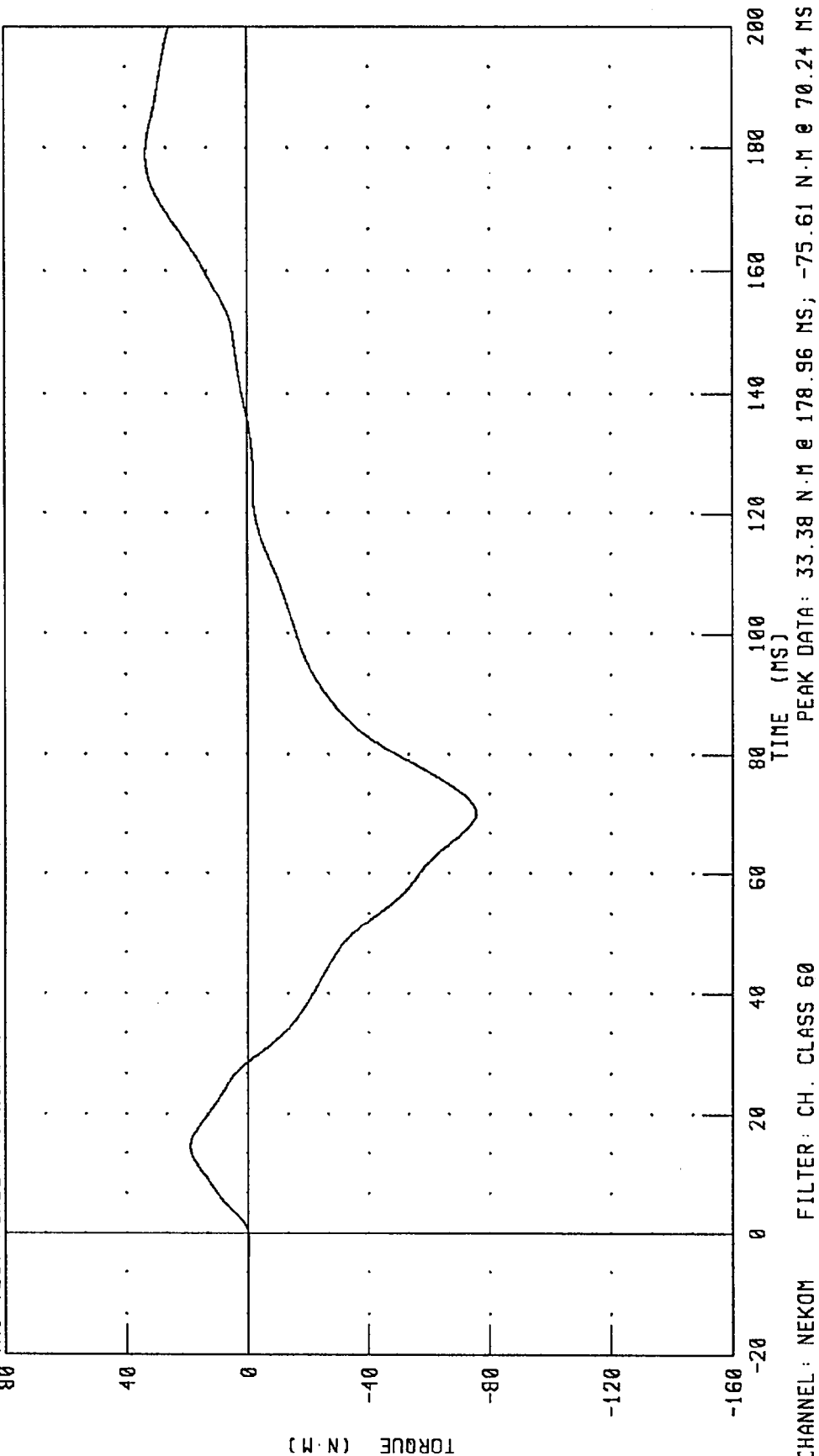
CHANNEL: NEKYM FILTER: CH. CLASS 60 PEAK DATA: 29.28 N·M @ 178.40 MS; -64.67 N·M @ 70.32 MS

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

TRC TEST NUMBER: 142C31NE1

572E SN142 NECK EXT. CAL31

RUN NUMBER: 030696.1220,1



TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III

16-JAN-96

TRC INC.

TEST NO: 142C31TH1

572E SN142 H.S.THORAX CAL31

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.5 DEG. C
RELATIVE HUMIDITY	10 - 70 %	23.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.62 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	69.0 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5638. N
INTERNAL HYSTERESIS	69% - 85%	71.6%

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chas. M. Hildt

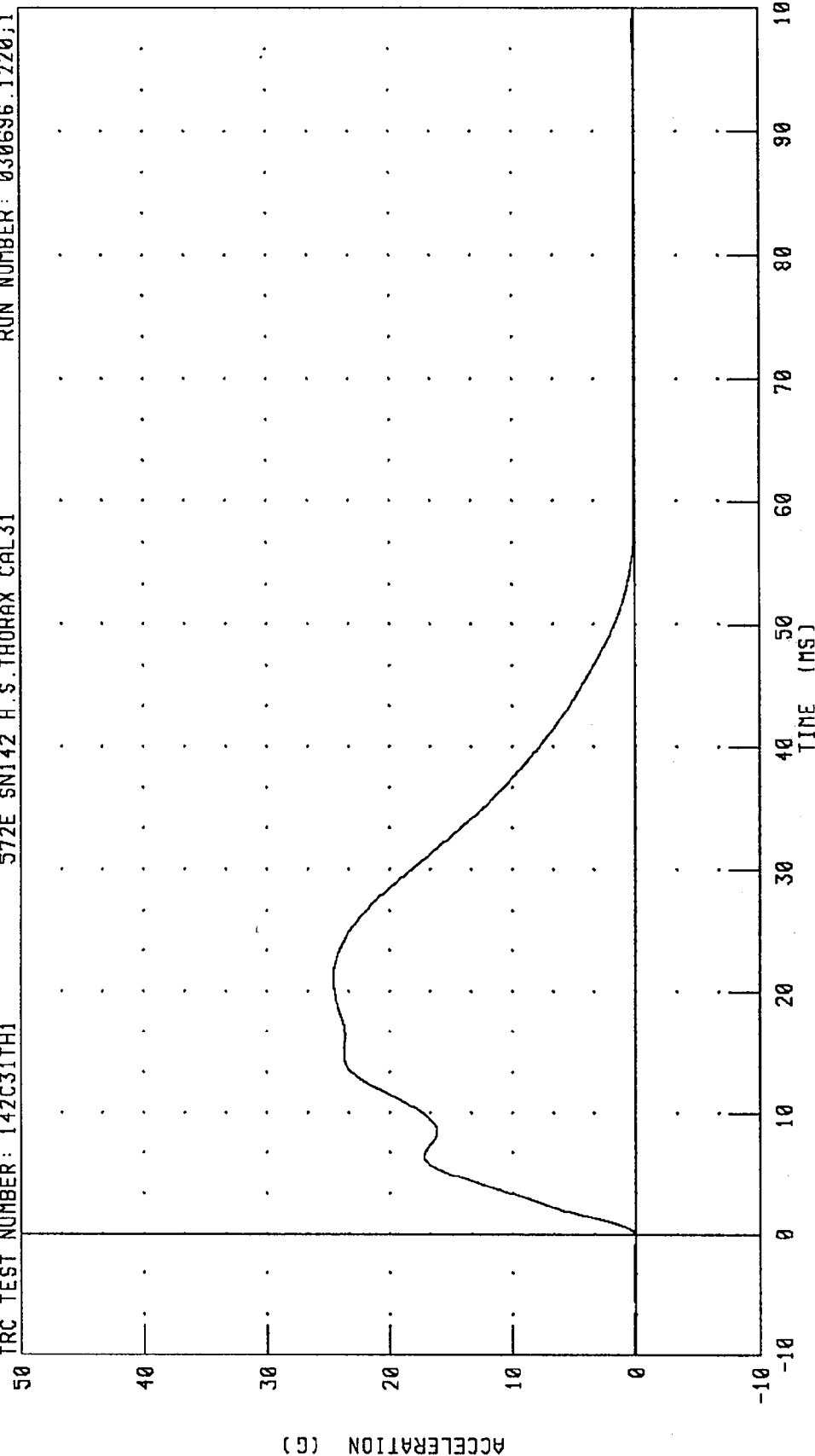
RUN NUMBER: 011696.1251;1

PART 572-E HYBRID III THORAX CALIBRATION PENDULUM DECELERATION

IRC TEST NUMBER: 142C31TH1

572E SN142 H.S.THORAX CAL31

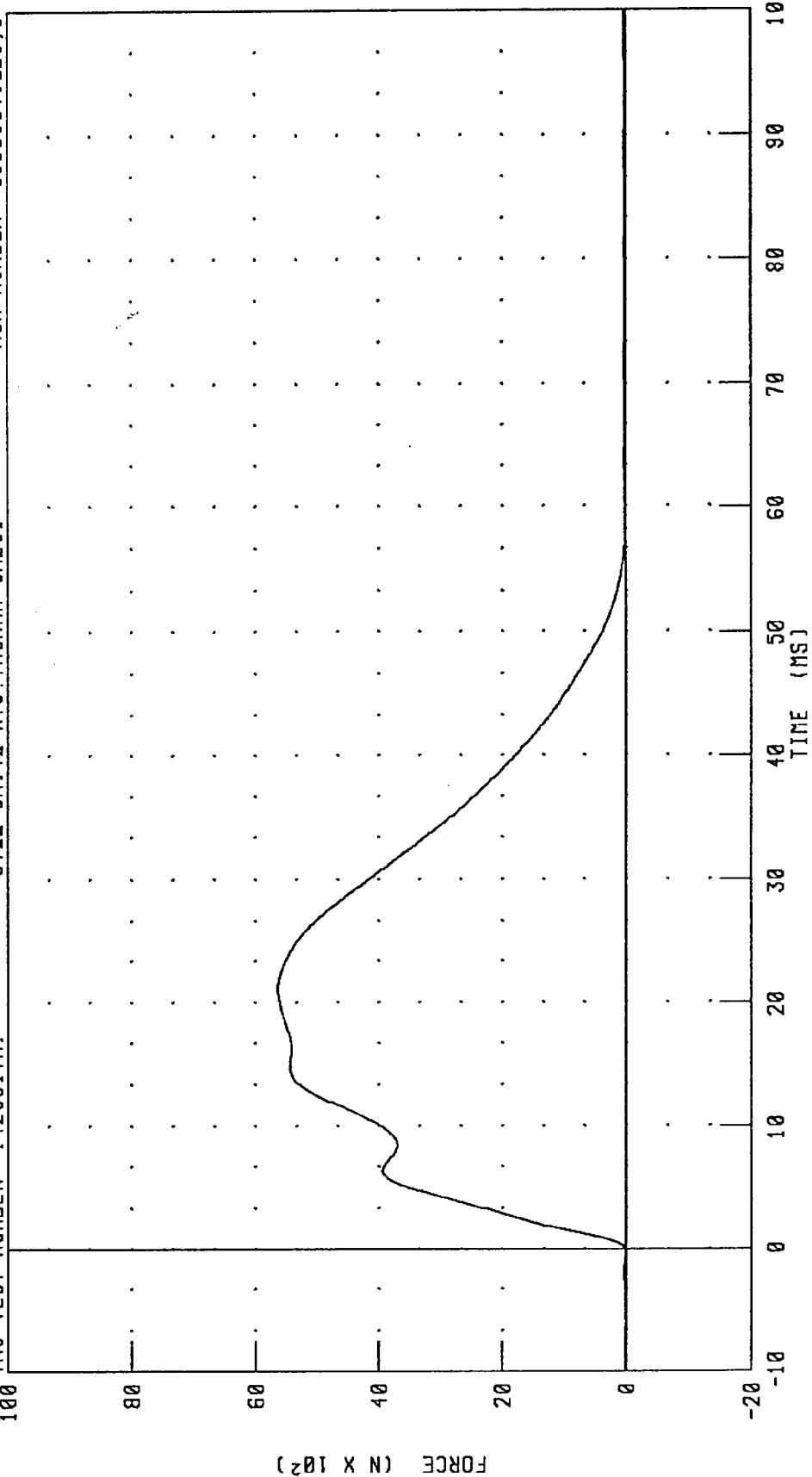
RUN NUMBER: 030696.1220;1



CHANNEL: PENXG FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION
 PENDULUM FORCE

TRC TEST NUMBER: 142C31TH1 572E SN142 H.S. THORAX CAL31 RUN NUMBER: 030696.1220;1



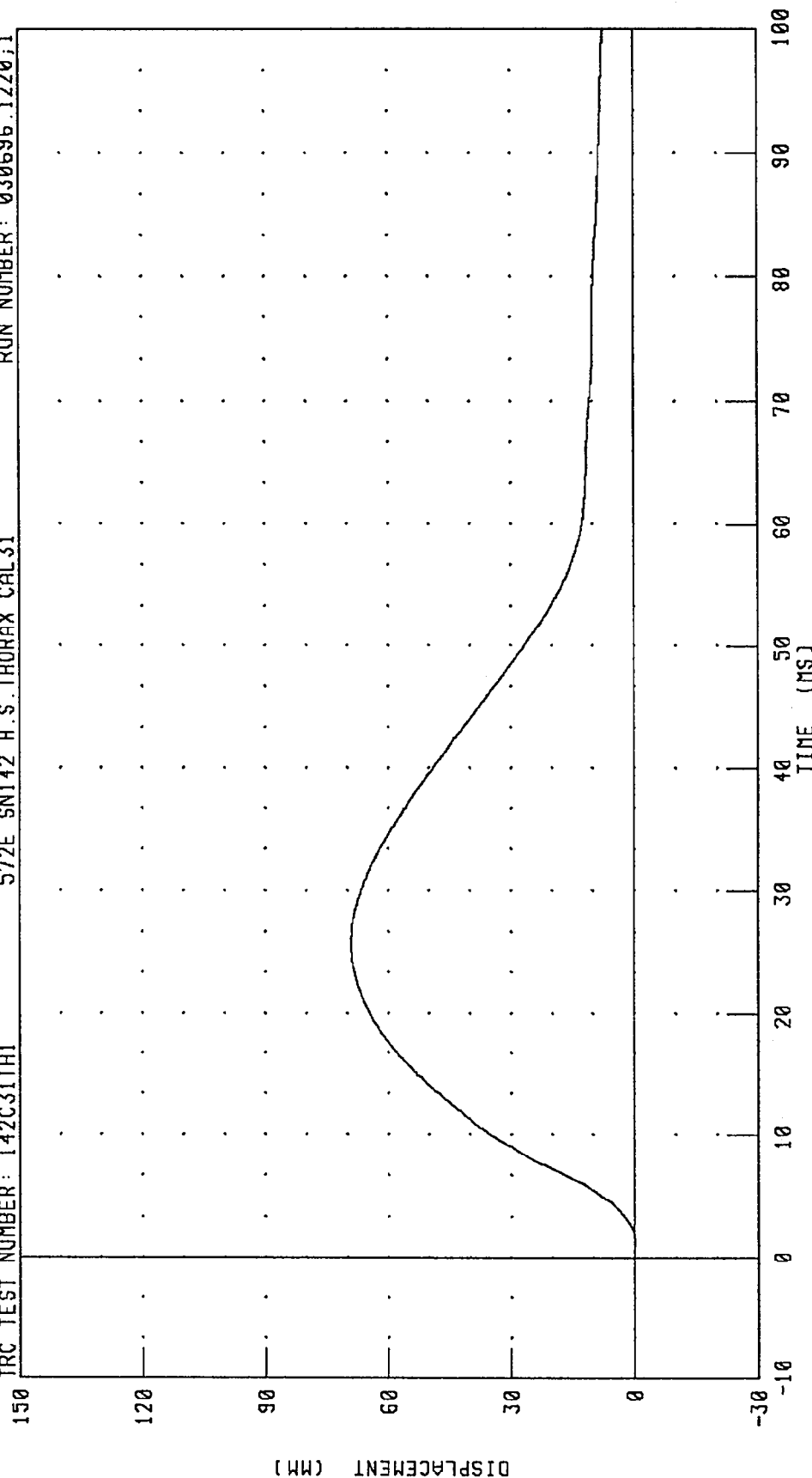
CHANNEL: PENXF FILTER: CH. CLASS 180 PEAK DATA: 5638.80 N @ 21.12 MS; 1.94 N @ -0.32 MS

PART 572-E HYBRID III THORAX CALIBRATION STERNUM DISPLACEMENT

IRC TEST NUMBER: 142C31TH1

572E SN142 H.S. THORAX CAL31

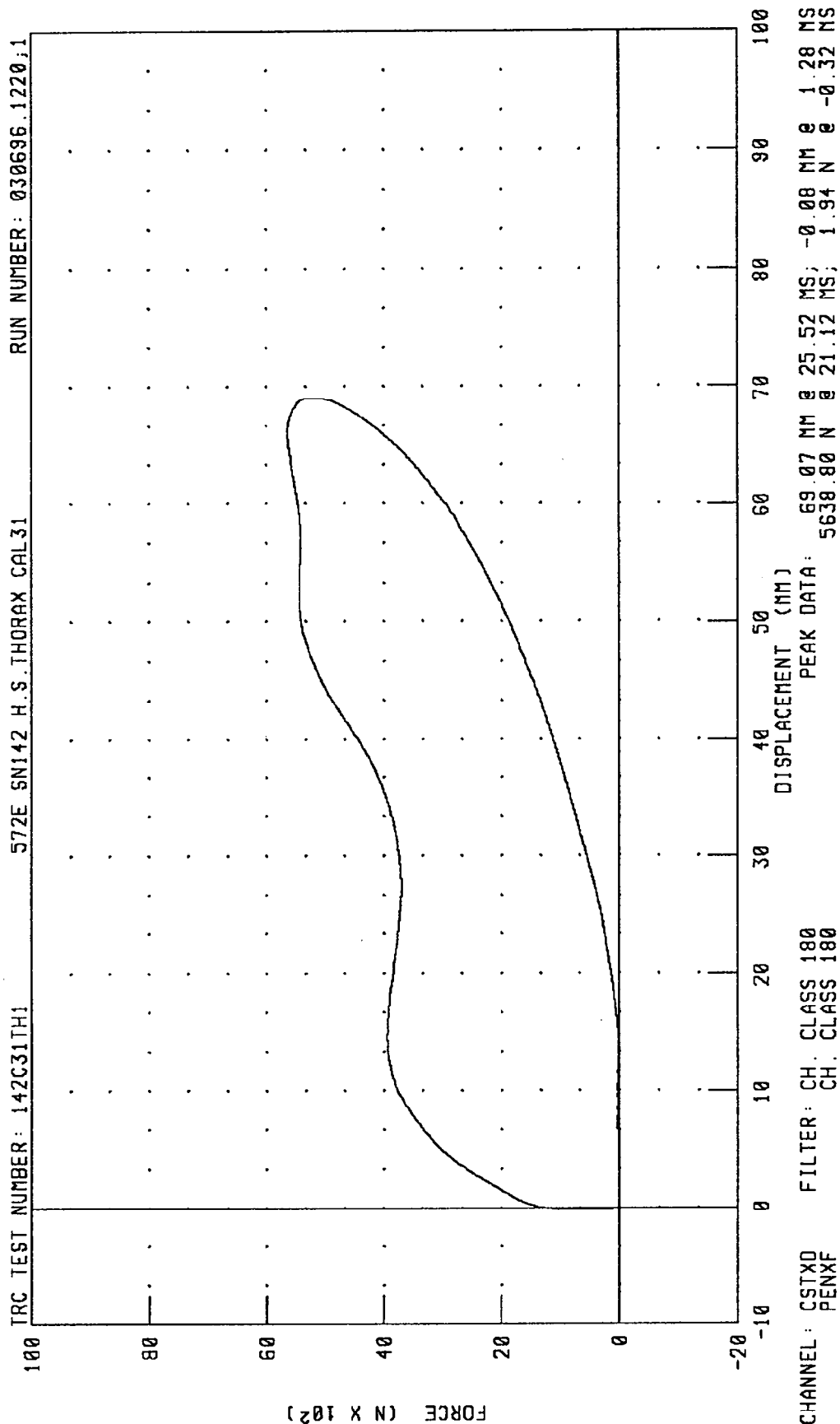
RUN NUMBER: 030696.1220;1



PEAK DATA: 69.07 MM @ 25.52 MS; -0.08 MM @ 1.28 MS

CHANNEL: CSTXD FILTER: CH. CLASS 180

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



TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III

16-JAN-96

TRC INC.

TEST NO: 142C31RK1

572E SN142 RIGHT KNEE CAL 31

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	23.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	4791.3 N

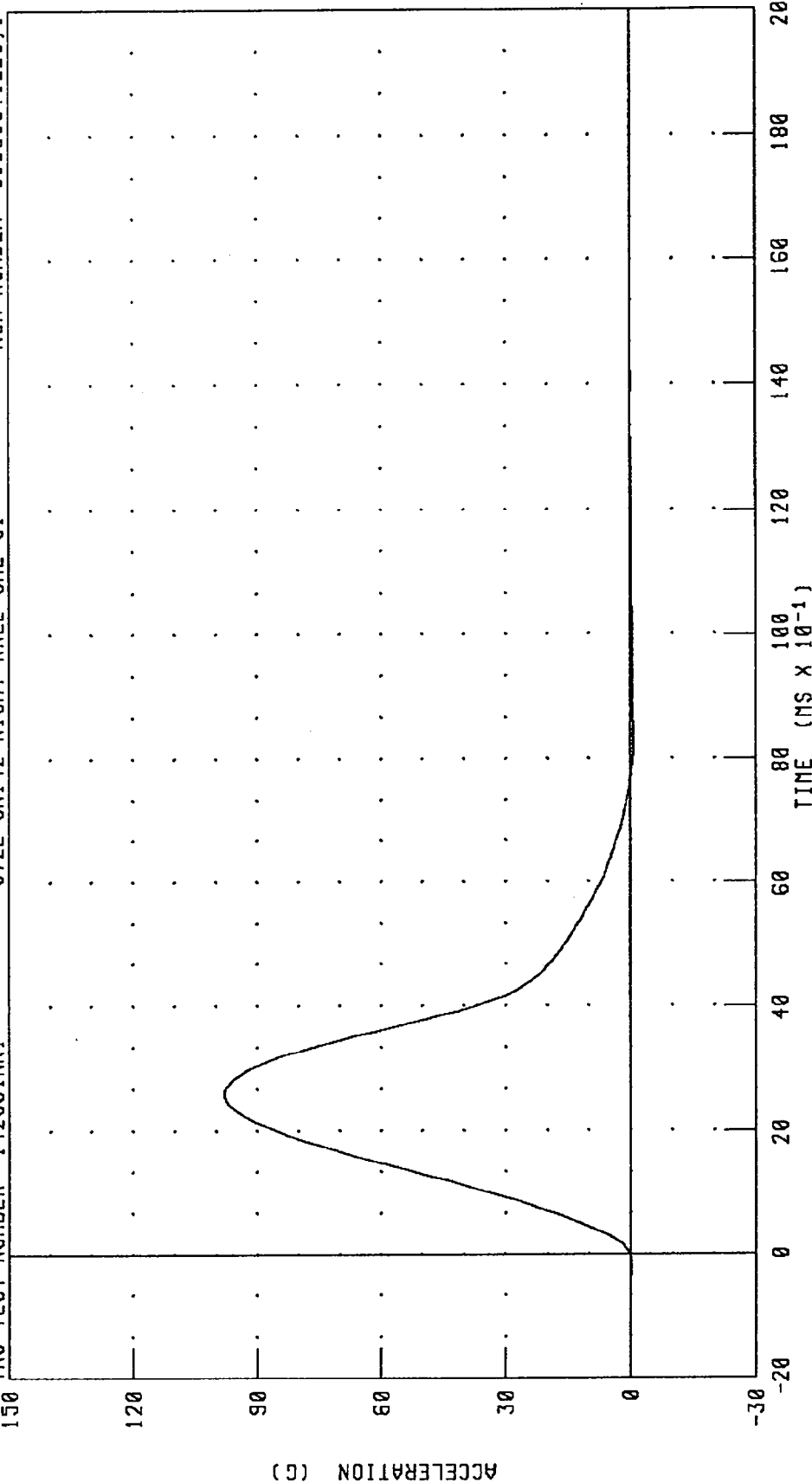
TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. Middel

RUN NUMBER: 011696.0848;1

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

IRC TEST NUMBER: 142C31RK1 572E SN142 RIGHT KNEE CAL 31 RUN NUMBER: 030696.1220;1



CHANNEL: PENXC FILTER: CH. CLASS 600

PEAK DATA: 97.93 G @ 2.56 MS; -0.71 G @ 8.32 MS

PART 572-E HYBRID III RIGHT KNEE CALIBRATION

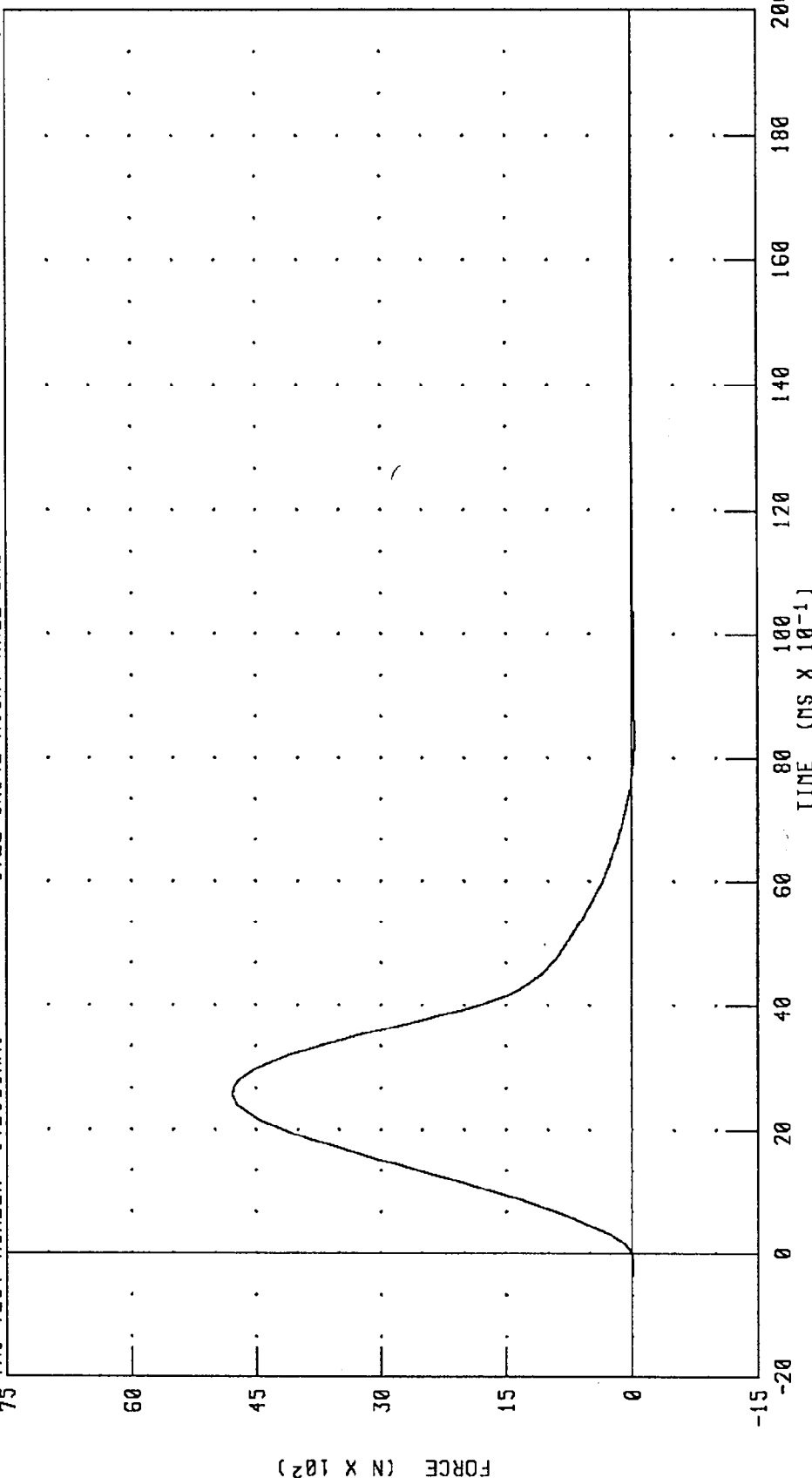
PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 142C31RK1

572E SN142 RIGHT KNEE CAL 31

RUN NUMBER: 030696.1220;1

75



CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 4791.38 N @ 2.56 MS; -34.53 N @ 8.32 MS

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III

16-JAN-96

TRC INC.

TEST NO: 142C31LK1

572E SN142 LEFT KNEE CAL 31

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	23.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5257.1 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chris M. Hildt

RUN NUMBER: 011696.0839;1

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

TRC TEST NUMBER: 142C31LK1

572E SN142 LEFT KNEE CAL 31

RUN NUMBER: 030696.1220;1

150

120

90

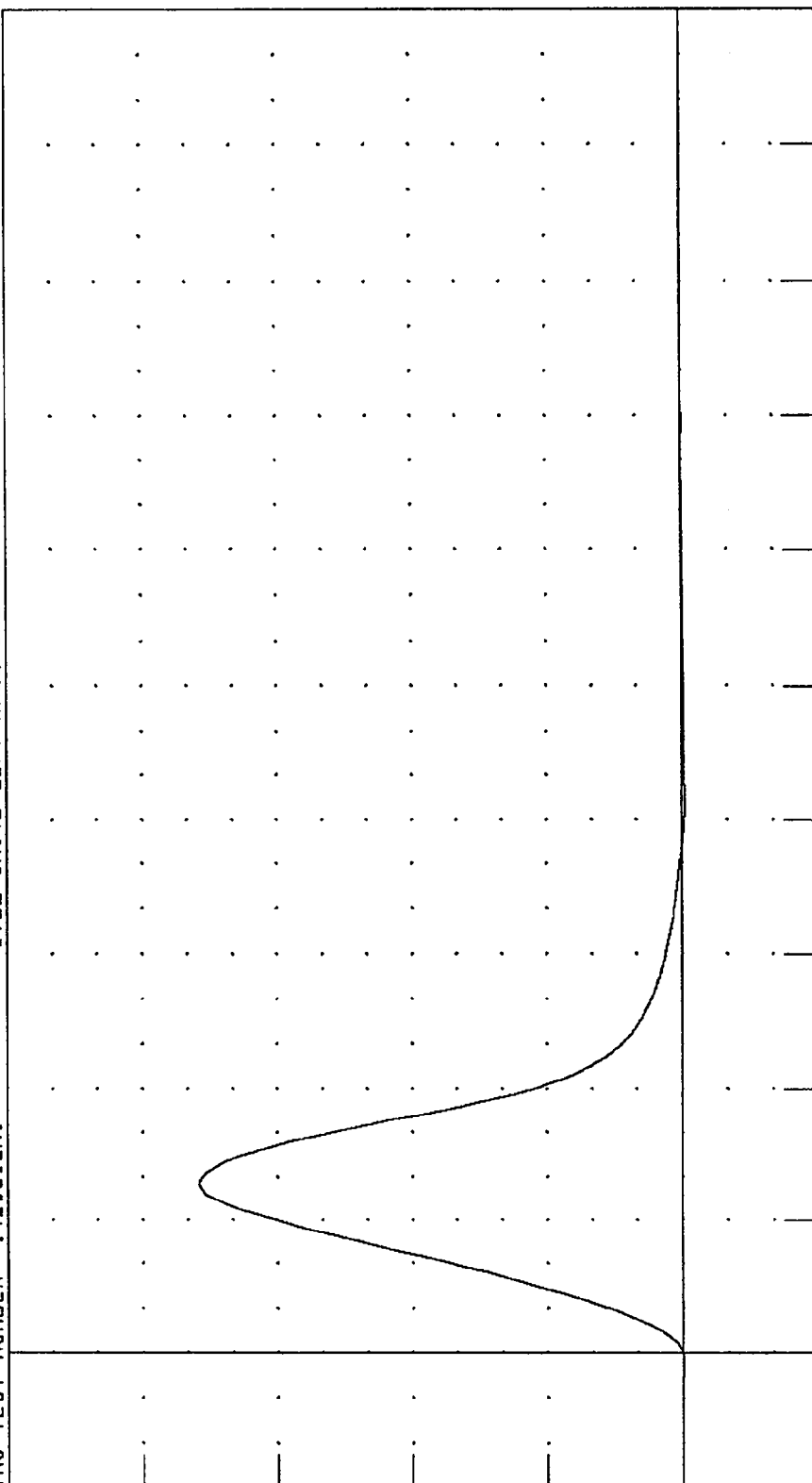
60

30

0

-30

ACCELERATION (G)



TIME (MS X 10⁻¹)

200

180

160

140

120

100

80

60

40

20

0

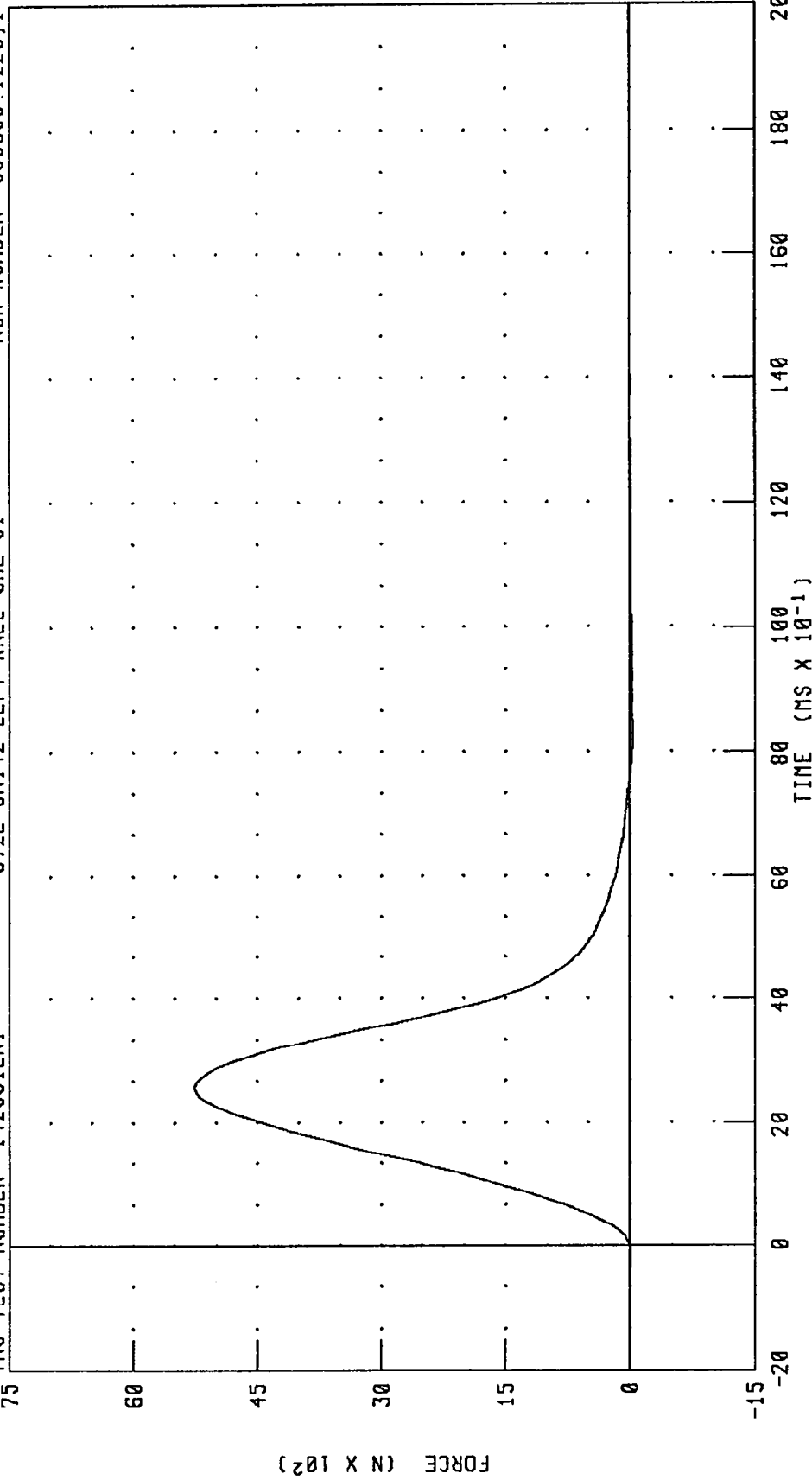
PEAK DATA: 107.45 G @ 2.56 MS; -0.63 G @ 8.32 MS

CHANNEL: PENXG FILTER: CH. CLASS 600

PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KC PEND.)

TRC TEST NUMBER: 142C31LK1 572E SN142 LEFT KNEE CAL 31 RUN NUMBER: 030696.1220;1



CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 5257.18 N @ 2.56 MS; -30.67 N @ 8.32 MS

Appendix D

Miscellaneous Test Information

Dummy Instrument Calibrations
Driver Dummy #192

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Head X-axis accelerometer	AAL82	7264	Endevco	08/30/95	03/01/96
Head X-axis accelerometer-redundant	AJ8J7	7264	Endevco	08/30/95	03/01/96
Head Y-axis accelerometer	A84JJ	7264	Endevco	08/30/95	03/01/96
Head Y-axis accelerometer-redundant	AJ8A6	7264	Endevco	08/30/95	03/01/96
Head Z-axis accelerometer	FH87J	7264	Endevco	08/30/95	03/01/96
Head Z-axis accelerometer-redundant	AC8W6	7264	Endevco	08/30/95	03/01/96
Chest X-axis accelerometer	CT22H	7264	Endevco	08/30/95	03/01/96
Chest X-axis accelerometer-redundant	A79GJ	7264	Endevco	08/30/95	03/01/96
Chest Y-axis accelerometer	AC708	7264	Endevco	08/30/95	03/01/96
Chest Y-axis accelerometer-redundant	AGR69	7264	Endevco	08/30/95	03/01/96
Chest Z-axis accelerometer	CW59H	7264	Endevco	08/30/95	03/01/96
Chest Z-axis accelerometer-redundant	DB74H	7264	Endevco	08/30/95	03/01/96
Left femur force load cell	986	2430	GSE	08/30/95	03/01/96
Right femur force load cell	987	2430	GSE	08/30/95	03/01/96
Neck X-axis force load cell ¹	85	1716	Denton	08/30/95	03/01/96
Neck Y-axis force load cell ¹	85	1716	Denton	08/30/95	03/01/96
Neck Z-axis force load cell ¹	85	1716	Denton	08/30/95	03/01/96
Neck Moment about X-axis load cell ¹	85	1716	Denton	08/30/95	03/01/96
Neck Moment about Y-axis load cell ¹	85	1716	Denton	08/30/95	03/01/96
Neck Moment about Z-axis load cell ¹	85	1716	Denton	08/30/95	03/01/96
Pelvis X-axis accelerometer	AJ694	7264	Endevco	08/30/95	03/01/96
Pelvis Y-axis accelerometer	AJ656	7264	Endevco	08/30/95	03/01/96
Pelvis Z-axis accelerometer	AJ788	7264	Endevco	08/30/95	03/01/96
Chest deflection potentiometer	87313-96	14CB1-2981	Vernitech	08/30/95	03/01/96
Lap belt force load cell	234	3419	Lebow	01/22/96	07/22/96
Shoulder belt force load cell	612	3419	Lebow	01/22/96	07/22/96

¹ Hybrid III use only.

Dummy Instrument Calibrations, Cont'd.
Driver Dummy #192

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Left upper tibia moment about X-axis load cell	82	1583	Denton	01/16/96	07/16/96
Left upper tibia moment about Y-axis load cell	82	1583	Denton	01/16/96	07/16/96
Right upper tibia moment about X-axis load cell	83	1583	Denton	01/16/96	07/16/96
Right upper tibia moment about Y-axis load cell	83	1583	Denton	01/16/96	07/16/96
Left Lower tibia X-axis force load cell	77	1584	Denton	01/16/96	07/16/96
Left Lower tibia Z-axis force load cell	77	1584	Denton	01/16/96	07/16/96
Left Lower tibia moment about Y-axis load cell	77	1584	Denton	01/16/96	07/16/96
Right Lower tibia X-axis force load cell	76	1584	Denton	01/16/96	07/16/96
Right Lower tibia Z-axis force load cell	76	1584	Denton	01/16/96	07/16/96
Right Lower tibia moment about Y-axis load cell	76	1584	Denton	01/16/96	07/16/96
Left foot X-axis accelerometer	10073	7264	Endevco	10/17/95	04/17/96
Left foot heel Z-axis accelerometer	10263	7264	Endevco	10/16/95	04/16/96
Left foot toe Z-axis accelerometer	10101	7264	Endevco	10/17/95	04/17/96
Right foot X-axis accelerometer	APYT4	7264	Endevco	10/17/95	04/17/96
Right foot heel Z-axis accelerometer	APOR8	7264	Endevco	10/17/95	04/17/96
Right foot toe Z-axis accelerometer	10076	7264	Endevco	10/16/95	04/16/96

Dummy Instrument Calibrations, Cont'd.
Right Front Passenger Dummy #142

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Head X-axis accelerometer	A74JJ	7264	Endevco	09/01/95	03/01/96
Head X-axis accelerometer-redundant	AC8L5	7264	Endevco	09/01/95	03/01/96
Head Y-axis accelerometer	ACCR7	7264	Endevco	09/01/95	03/01/96
Head Y-axis accelerometer-redundant	AC872	7264	Endevco	09/01/95	03/01/96
Head Z-axis accelerometer	ACCJ1	7264	Endevco	09/01/95	03/01/96
Head Z-axis accelerometer-redundant	A68JJ	7264	Endevco	09/01/95	03/01/96
Chest X-axis accelerometer	AC721	7264	Endevco	09/01/95	03/01/96
Chest X-axis accelerometer-redundant	A65JJ	7264	Endevco	09/01/95	03/01/96
Chest Y-axis accelerometer	CY47H	7264	Endevco	09/01/95	03/01/96
Chest Y-axis accelerometer-redundant	FH14J	7264	Endevco	09/01/95	03/01/96
Chest Z-axis accelerometer	AAL44	7264	Endevco	09/01/95	03/01/96
Chest Z-axis accelerometer-redundant	AC745	7264	Endevco	09/01/95	03/01/96
Left femur force load cell	903	2430	GSE	09/01/95	03/01/96
Right femur force load cell	904	2430	GSE	09/01/95	03/01/96
Neck X-axis force load cell ¹	280	1716	Denton	09/01/95	03/01/96
Neck Y-axis force load cell ¹	280	1716	Denton	09/01/95	03/01/96
Neck Z-axis force load cell ¹	280	1716	Denton	09/01/95	03/01/96
Neck Moment about X-axis load cell ¹	280	1716	Denton	09/01/95	03/01/96
Neck Moment about Y-axis load cell ¹	280	1716	Denton	09/01/95	03/01/96
Neck Moment about Z-axis load cell ¹	280	1716	Denton	09/01/95	03/01/96
Pelvis X-axis accelerometer	CY63H	7264	Endevco	09/01/95	03/01/96
Pelvis Y-axis accelerometer	AMWA9	7264	Endevco	09/01/95	03/01/96
Pelvis Z-axis accelerometer	ANA55	7264	Endevco	09/01/95	03/01/96
Chest deflection potentiometer ¹	142	14CB1-2981	Vernitech	09/01/95	03/01/96
Lap belt force load cell	130	3419	Lebow	01/22/96	07/22/96
Shoulder belt force load cell	613	3419	Lebow	01/22/96	07/22/96

¹ Hybrid III use only.

Dummy Instrument Calibrations, Cont'd.
Right Front Passenger Dummy #142

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Left upper tibia moment about X-axis load cell	46	1583	Denton	10/03/95	04/03/96
Left upper tibia moment about Y-axis load cell	46	1583	Denton	10/03/95	04/03/96
Right upper tibia moment about X-axis load cell	35	1583	Denton	10/03/95	04/03/96
Right upper tibia moment about Y-axis load cell	35	1583	Denton	10/03/95	04/03/96
Left Lower tibia X-axis force load cell	42	1584	Denton	10/03/95	04/03/96
Left Lower tibia Z-axis force load cell	42	1584	Denton	10/03/95	04/03/96
Left Lower tibia moment about Y-axis load cell	42	1584	Denton	10/03/95	04/03/96
Right Lower tibia X-axis force load cell	39	1584	Denton	10/03/95	04/03/96
Right Lower tibia Z-axis force load cell	39	1584	Denton	10/03/95	04/03/96
Right Lower tibia moment about Y-axis load cell	39	1584	Denton	10/03/95	04/03/96
Left foot X-axis accelerometer	APOA1	7264	Endevco	10/16/95	04/16/96
Left foot heel Z-axis accelerometer	10102	7264	Endevco	10/16/95	04/16/96
Left foot toe Z-axis accelerometer	10074	7264	Endevco	10/16/95	04/16/96
Right foot X-axis accelerometer	10088	7264	Endevco	10/16/95	04/16/96
Right foot heel Z-axis accelerometer	10089	7264	Endevco	10/16/95	04/16/96
Right foot toe Z-axis accelerometer	10087	7264	Endevco	10/17/95	04/17/96

Vehicle and Calibration Laboratory Instrument Calibrations

Vehicle Accelerometers

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Left rear seat crossmember X-axis	J10789	7264	Endevco	11/30/95	05/30/96
Left rear seat crossmember X-axis redundant	CG13H	7264	Endevco	10/27/95	04/27/96
Right rear seat crossmember X-axis	AMTA9	7264	Endevco	01/04/96	07/04/96
Right rear seat crossmember X-axis redundant	AMR93	7264	Endevco	01/04/96	07/04/96
Engine top X-axis	DH74J	7264	Endevco	01/17/96	07/17/96
Engine bottom X-axis	CH75H	7264	Endevco	01/17/96	07/17/96
Right brake caliper X-axis	AGR58	7264	Endevco	12/27/95	06/27/96
Left brake caliper X-axis	AGR75	7264	Endevco	12/04/95	06/04/96
Instrument panel center X-axis	CK01H	7264	Endevco	08/14/95	02/14/96

Calibration Laboratory Instruments

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Neck bending pendulum accelerometer	CB27	7232	Endevco	09/19/95	03/19/96
Neck bending rotary potentiometer	NA	35435-1-102	Bournes	Mfr. Specification	
Neck bending linear potentiometer	NA	5184-2051846003	Bournes	09/19/95	03/19/96
Thorax/Hybrid II femur pendulum accelerometer	CC64	7232	Endevco	09/19/95	03/19/96
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	09/19/95	03/19/96
Abdomen compression force gauge	3443	3167	Lebow	09/19/95	03/19/96
Hybrid III femur pendulum accelerometer	CG83	7232	Endevco	09/19/95	03/19/96

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

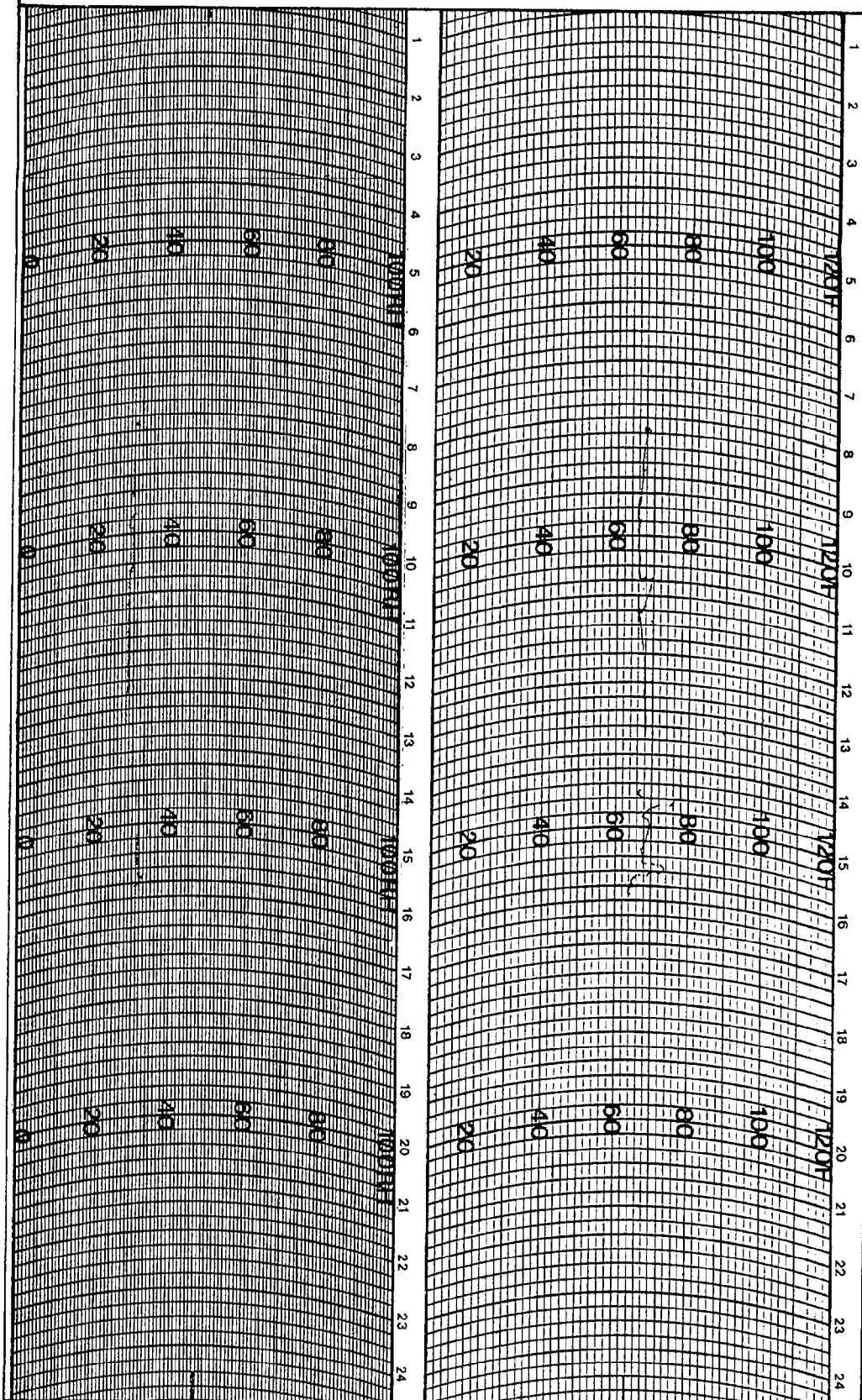
Tibia load cells:

+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



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

HYGROTHERMOGRAPH
 1 DAY

CHART # C311 D HF
 PART # 699123

STATION _____ DATE ON _____ DATE OFF _____

Appendix E

Restraint System Instructions from Owner's Manual

3-point type seat belts (Combination lap/shoulder belts)

WARNING

- Never use a belt that is twisted or reversed. In an accident, this can increase the risk or severity of injury.
- Never place the shoulder belt under the arm. If an accident occurs, this can increase the risk or severity of injury.
- Seat belts provide maximum restraint when the occupant sits well back and upright in the seat. To eliminate the risk of sliding under the seat belt in a collision, the front seatbacks should be always used in the upright position while the vehicle is running. If the front seatbacks are not used in the upright position in a collision, the risk of sliding under the lap belt and sliding up of the lap belt over the abdomen will increase, and both can result in serious internal injury or death.

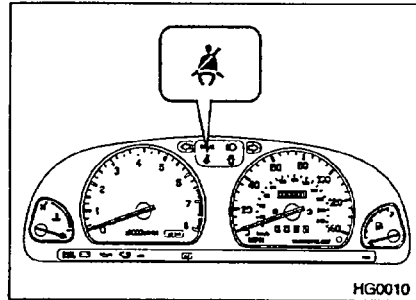
Especially when the occupant of the front passenger's seat is a child, be sure to position the seatback upright. Children are more likely to slide under the lap belt than adults if the seatback is reclined in a collision.

- Keep the lap belt as low as possible on your hips. In a collision, this spreads the force of the lap belt over stronger hip bones instead of across the weaker abdomen.

– CONTINUED –

2-9

■ Seat belt warning light and chime



Your vehicle is equipped with a seat belt warning device at the driver's seat.

This device causes the seat belt warning light on the instrument panel to light up for about six seconds when the ignition switch is turned to "ON". If the driver's seat belt is not fastened, a warning chime sounds at the same time.

■ ELR (Emergency Locking Retractor) function

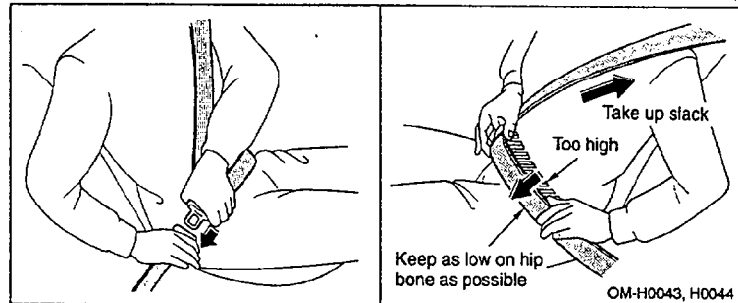
3-point type seat belts have an emergency locking retractor. This allows normal body movement but the retractor locks automatically during a sudden stop, impact or if you pull the belt very quickly out of the retractor.

■ ALR (Automatic Locking Retractor) function

When securing a child restraint system on the front passenger's seat and on either rear seat, the three-point type seat belt must be changed over to the ALR (Automatic Locking Retractor) mode.

When the child restraint system is removed, make sure that the retractor operates as an ELR (Emergency Locking Retractor). For instruction on how to convert the retractor to the ALR mode and restore it to the ELR mode, see the Child Restraint System section in this chapter.

■ Fastening the seat belt

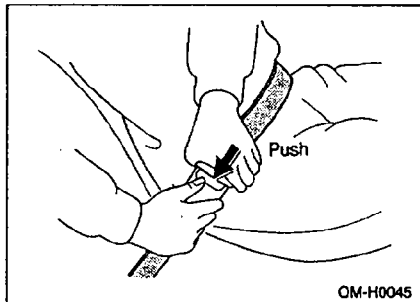


1. Adjust the seat position and sit well back.
 2. Pick up the tongue plate and pull the belt out slowly. Do not let it get twisted. If the belt stops before reaching the buckle, return the belt slightly and pull it out more slowly.
 3. Insert the tongue plate into the buckle until you hear a click.
- As for the driver's side seat belt, seat belt warning device is provided; if the driver is not wearing the seat belt with the ignition in the "ON" position, the warning light on the instrument panel comes on and a warning chime also sounds to remind the driver to wear the seat belt. Refer to Warning and Indicator Lights section (chapter 3) for more detail.
4. To make the lap part tight, pull up on the shoulder belt. And place the lap belt as low as possible on your hips, not on your waist.

— CONTINUED —

2-11

■ **Unfastening the belt**



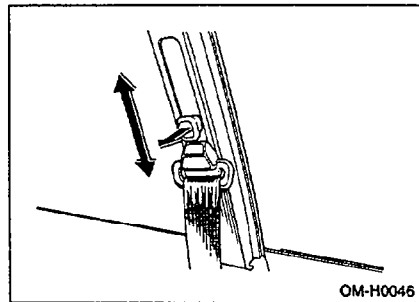
Push the button on the buckle.

Before closing the door, make sure that the belts retract properly to avoid catching the belt webbing in the door.

■ **Adjusting the shoulder belt anchor height (Sedan and Wagon)**

⚠ WARNING

When wearing the front seat belts, make sure the shoulder portion of the webbing does not pass over your neck. If it does, adjust the seat belt anchor to a lower position. Placing the shoulder belt over the neck may result in neck injury during sudden braking or in a collision. Be certain to follow this warning especially when the front seat occupant is a child.



The shoulder belt anchor height should be adjusted to the position best for you. To adjust the anchor height, pull the release knob and move the anchor to the desired position so that the shoulder belt passes over the middle of the shoulder without touching the neck.

■ **Seat belt guide (Coupe)**

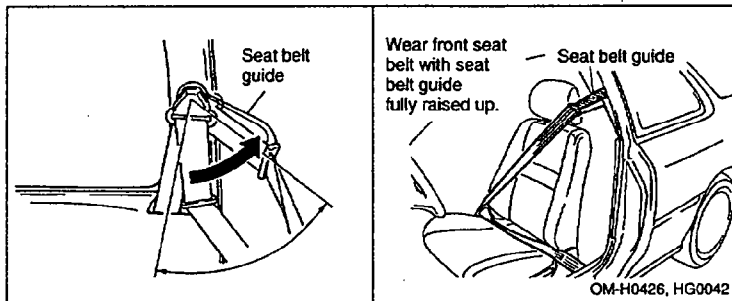
⚠ WARNING

The seat belt guide must be in its fully raised position when the seat belt is worn.

Otherwise, the seat belt will be less effective in prevailing injury in an accident.

Before fastening the seat belt, raise the belt guide until it stops so that the seat belt can be easily handled. When getting in and out the rear seat, lower the guide to the storing position.

- CONTINUED -
2-13



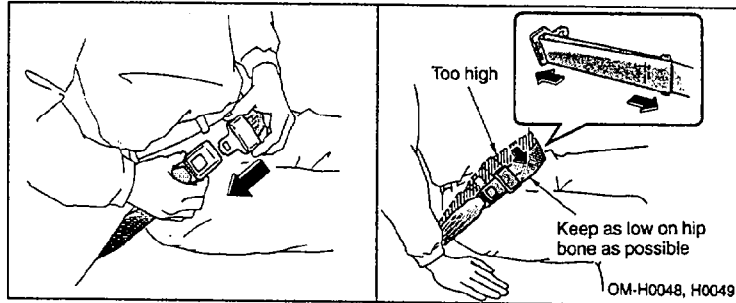
2-point type seat belt (lap only belt)

⚠ WARNING

- Never use a belt that is twisted or reversed. In an accident, this can increase the risk or severity of injury.
- Keep the lap belt as low as possible on your hips. In a collision, this spreads the force of the lap belt over stronger hip bones instead of across the weaker abdomen.

The 2-point type seat belt has a manual adjustment device.

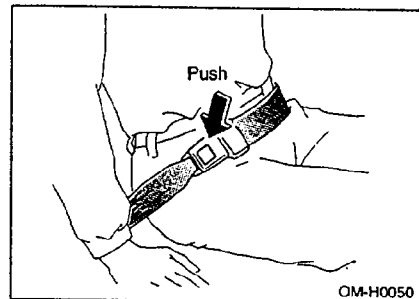
■ Fastening the seat belt



1. Sit well back and pick up the tongue plate marked "CENTER". Be careful not to twist the belt.
2. Insert the tongue plate into the buckle marked "CENTER" until you hear a click. If the belt is not long enough for you, hold the tongue plate at a right angle to the belt and pull the belt to extend.
3. To make the belt tight, pull up on the belt. And place the lap belt as low as possible on your hips, not on your waist.

The tongue plate marked "CENTER" can be fastened only into the buckle marked "CENTER".

■ Unfastening the belt



- CONTINUED -

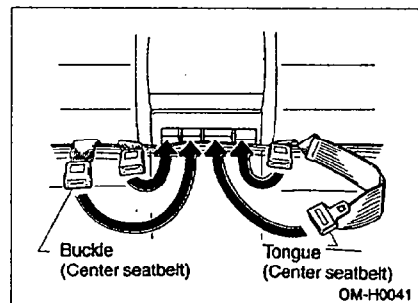
2-15

Push the button on the buckle.

When the belt is not in use, buckle the belt to prevent it from being caught in the door.

NOTE

When folding down the rear seat of the wagon, store the seat belts in the seat belt pocket to prevent them from falling below the cushion.



Seat belt safety tips

⚠ WARNING

- All persons in the vehicle should fasten their seat belts **BEFORE** the vehicle starts to move. Otherwise, the possibility of serious injury becomes greater in the event of a sudden stop or accident.
- All belts should fit snugly in order to provide full restraint. Loose fitting belts are not as effective in preventing or reducing injury.
- Each seat belt is designed to support only one person. Never use a single belt for two or more persons — even children.
- Replace all seat belt assemblies including retractors and attaching hardware worn by occupants of a vehicle that has been in a serious accident. The entire assembly should be replaced even if damage is not obvious.

■ **Infants or small children**

Use a child restraint system that is suitable for your vehicle. See information on "Child restraint system" in this section.

■ **Children**

If a child is too big for a child restraint system, the child should sit in the rear seat and be restrained using the seat belts. According to accident statistics, children are safer when properly restrained in the rear seat than in the front seat. Never allow a child to stand up or kneel on the seat.

If the shoulder portion of the belt crosses the face or neck, move the child closer to the center of vehicle to help provide a good shoulder belt fit. If the shoulder portion of the belt can not be properly positioned, a child restraint system should be used. If that is not possible, the child should sit in the center rear seat and use the 2-point type seat belt. Care must be taken to securely place the lap belt as low as possible on the hips and not on the child's waist.

■ **Expectant mothers**

Expectant mothers also need to use the seat belts. They should consult their doctor for specific recommendations. The lap belt should be worn securely and as low as possible over the hips, not over the waist.

■ **Maintenance**

 CAUTION

- Keep sharp edged or other objects that may cause damage away from belts and other parts of the passenger restraint system.
- Keep the belts free of polishes, oils, chemicals and particularly battery acid.
- Never attempt to make modifications or changes that will prevent the seat belt from operating properly.

– CONTINUED –

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To clean the seat belts, use a mild soap and lukewarm water. Never bleach or dye the belts because this could seriously affect their strength.

Inspect the seat belts and attachments including the webbing and all hardware periodically for cracks, cuts, gashes, tears, damage, loose bolts or worn areas. Replace the seat belts even if only minor damage is found.

Child restraint system

WARNING

- Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision, because the child will be caught between the passenger and objects inside the vehicle.
- If your vehicle is equipped with a passenger's side airbag, do not install a rearward facing child seat in the front passenger's seat. Doing so risks serious injury to the child by placing the child's head too close to the SRS AIRBAG. Because of the SRS AIRBAG, we strongly recommend that you do not put any type of child seat in the front passenger's seat. If, however, you do install a forward facing child seat in the front passenger's seat, slide the seat to its rear-most position.

Infants and small children should always be placed in an infant or child restraint system while riding in the vehicle. You should use an infant or child restraint system that meets Federal Motor Vehicle Safety Standard and is appropriate for the child's age and size. All child restraint systems are designed to be secured in the vehicle seats by lap belts or the lap portion of a lap/shoulder belt.

Children could be endangered in an accident if their child restraints are not properly secured in the vehicle. When installing the child restraint system, carefully follow the manufacturer's instructions.

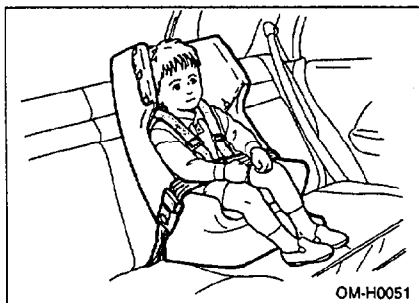
According to accident statistics, children are safer when properly re-

Seat, seat belt and SRS AIRBAG

strained in the rear seat than the front seat. These statistics also indicate that the safest position for a child restraint system is the center of the rear seat.

■ Rear seat installation

▼ Center position



1. Set the child restraint system in the seating position.
2. Fasten the seat belt over the child restraint system.
3. Tighten the belt.

If the child restraint system requires a top strap, latch the hook onto the top strap anchor and tighten the top strap.

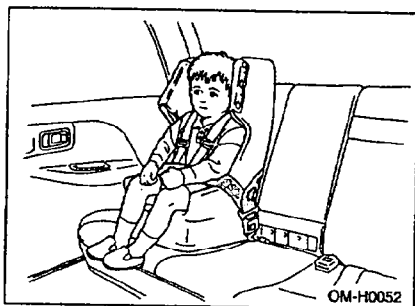
▼ Outer position

NOTE

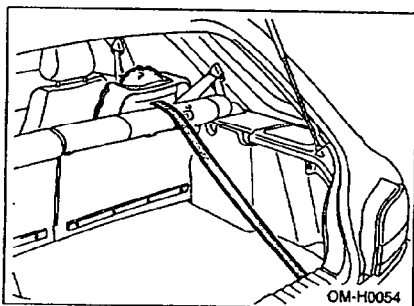
When the child restraint system is no longer in use, remove it and restore the ELR function of the retractor. That function is restored by allowing the seat belt to retract fully.

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1. Fasten the lap and shoulder belts over the child restraint system.
2. Take up the slack in the lap belt.
3. Put the shoulder portion of the belt between the rear seatback and the child restraint system.
4. Pull out the seat belt fully from the retractor to change the retractor over from the ELR (Emergency Locking Retractor) to the ALR (Automatic Locking Retractor) function. Then, allow the belt to rewind into the retractor. As the belt is rewinding, clicks will be heard which indicate the retractor functions as ALR.
5. Before having a child sit on the child restraint system, move it back and forth to check if it is firmly secured.
6. Pull at the shoulder portion of the belt to confirm that it cannot be pulled out (ALR properly functioning).



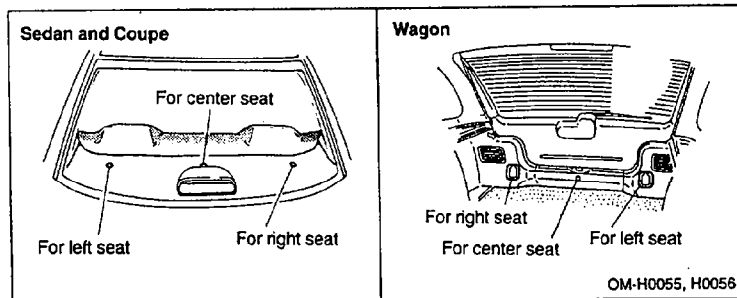
2-20

If the child restraint system requires a top strap, latch the hook onto the top strap anchor and tighten the top strap.

■ Top strap anchors

CAUTION
Always use a genuine top strap anchor.

▼ Installation point

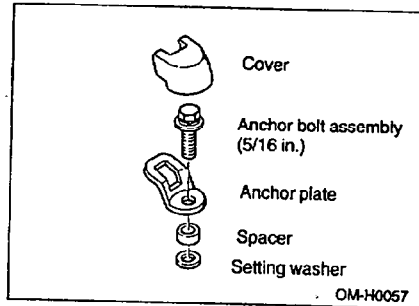


- Sedan and Coupe: Anchor installation points are located under the covers on the rear shelf.
- Wagon: Anchor installation points are located under the covers on the rear luggage compartment.

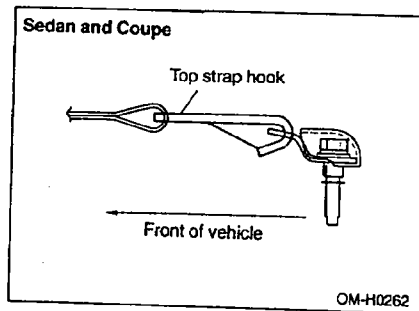
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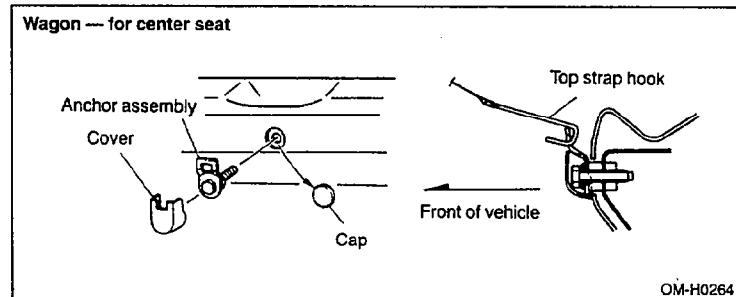
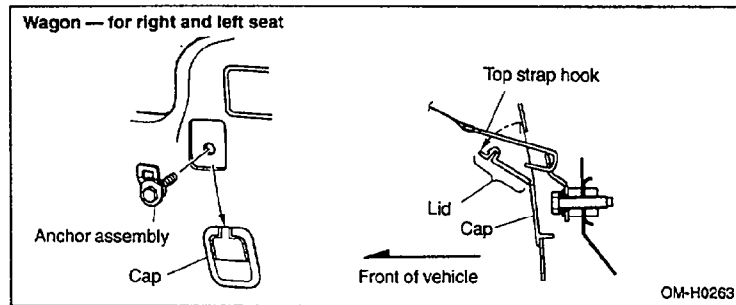
▼ Top strap anchor installation (for Canada models)

All vehicles built for sale in Canada include an anchor kit in the glove compartment.



1. Take the anchor kit out and make sure that it is assembled as shown in the illustration above.





2. Remove the cover of the anchor installation point.
 3. Set the anchor at the desired installation point and tighten the bolt until the anchor is firmly secured.
 4. Install the anchor plate cover.
- Please contact your SUBARU dealer about any questions you may have regarding the installation of the top strap anchor.

▼ **Top strap anchor installation (for U.S. models)**

Vehicles built for sale in U.S. do not include an anchor kit in the glove compartment. However, the anchor kit and installation instructions are available from your SUBARU dealer. You can also follow the installation instructions for Canada models.

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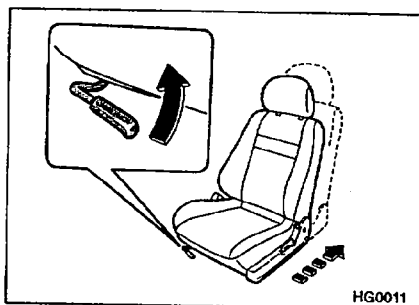
2-23

■ Front seat installation

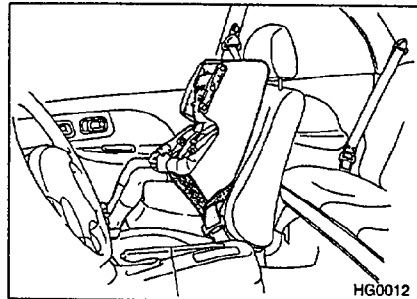
WARNING

If your vehicle is equipped with a passenger's side airbag, do not install a rearward facing child seat in the front passenger's seat. Doing so risks serious injury to the child by placing the child's head too close to the SRS AIRBAG. Because of the SRS AIRBAG, we strongly recommend that you do not put any type of child seat in the front passenger's seat. If, however, you do install a forward facing child seat in the front passenger's seat, slide the seat to its rearmost position.

1. Slide the front passenger's seat to the rearmost position while holding the lever up. Then release the lever and move the seat back and forth to make sure that it is securely locked into place.



2. Set the child restraint system in the seating position.
3. Fasten the lap and shoulder belts over the child restraint system.
4. Take up the slack in the lap belt.
5. Put the shoulder portion of the belt between the seatback and the child restraint system.



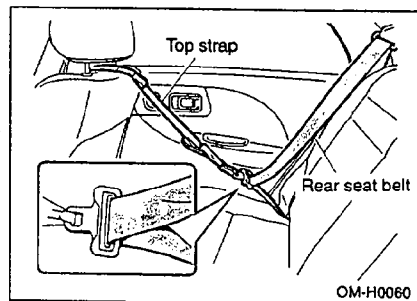
6. Pull out the seat belt fully from the retractor to change the retractor over from the ELR (Emergency Locking Retractor) to the ALR (Automatic Locking Retractor) function. Then, allow the belt to rewind into the retractor. As the belt is rewinding, clicks will be heard which indicate the retractor functions as ALR.

7. Before having a child sit on the child restraint system, move it back and forth to check if it is firmly secured.

8. Pull at the shoulder portion of the belt to confirm that it cannot be pulled out (ALR properly functioning).

NOTE

When the child restraint system is no longer in use, remove it and restore the ELR function of the retractor. That function is restored by allowing the seat belt to retract fully.



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2-25

If the child restraint system requires a top strap, pull out the rear seat belt fully from the retractor to change the retractor over from ELR (Emergency Locking Retractor) to the ALR (Automatic Locking Retractor) function. Then latch the hook onto the tongue hole and take a slack of the top strap by allowing the seat belt rewind until it stops. As the belt is rewinding, clicks will be heard which indicate the retractor functions as ALR. Before having a child sit on the child restraint system, pull at the shoulder portion of the belt to confirm it cannot be pulled out.

SRS AIRBAG

■ Vehicle with driver's side airbag and lap/shoulder restraint

WARNING

- To obtain maximum protection in the event of an accident, the driver and all passengers in the vehicle should always wear seat belts when the vehicle is moving. The SRS AIRBAG does not do away with the need to fasten seat belts. In combination with the seat belts, it offers the best combined protection in case of a serious accident.

Not wearing a seat belt increases the chance of severe injury or death in a crash even when the car has an SRS AIRBAG.

For instructions and precautions concerning the seat belt system, see the sections 3-point Type Seat Belts and 2-point Type Seat Belts (Chapter 2).

- Do not place any objects over the SRS AIRBAG cover or between you and the SRS AIRBAG. If the SRS AIRBAG deploys, those objects could interfere with its proper operation and could be propelled inside the car and cause injury.
- Do not sit or lean unnecessarily close to the SRS AIRBAG. The SRS AIRBAG deploys with considerable force and can injure an occupant whose body is too close to it. It is also important to wear your seat belt to help avoid injuries that can result when the SRS AIRBAG contacts an occupant not in proper position.
- To avoid accidental actuation of the system or rendering the system inoperative, which may result in serious injury, no modifications

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should be made to any components or wiring of the SRS AIRBAG. This includes the installation of "custom" steering wheels or additional trim material, or badges over the steering wheel hub. Installation of additional electrical/electronic equipment on or near SRS AIRBAG components and/or wiring is not advisable.

NOTE

The SRS AIRBAG can function only when the ignition switch is in the "ON" position.

The SRS (Supplemental Restraint System) AIRBAG in your vehicle affords the driver additional protection during a frontal collision. This system is available for the driver only and is designed to supplement the protection provided by the seat belt.

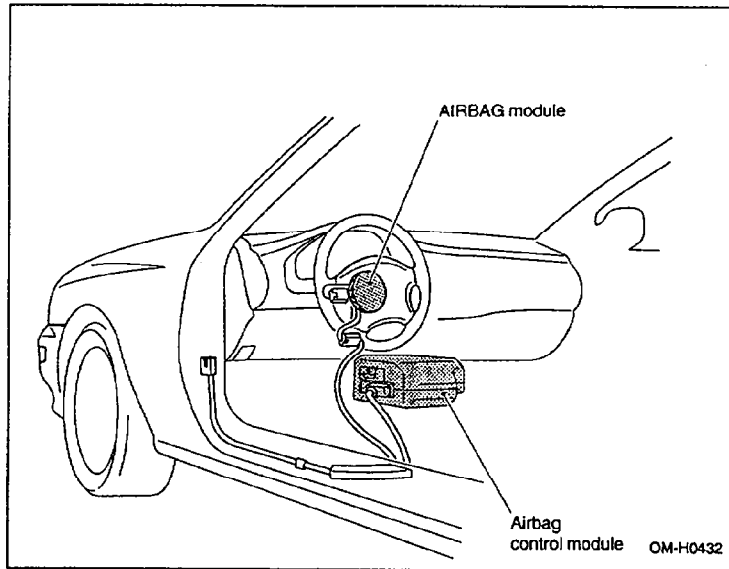
The SRS AIRBAG is designed to deploy in the event of an accident involving a moderate to severe frontal collision. It is not designed to assist the driver in lesser frontal impacts, in side or rear impacts or in roll-over accidents. The SRS AIRBAG is designed to function on a one-time-only basis. In the event that the SRS AIRBAG is deployed, replacement of the system must be performed only by an authorized SUBARU dealer. When the components of the SRS AIRBAG are replaced, use only genuine SUBARU parts.

The driver's side SRS AIRBAG is stored in the center portion of the steering wheel.

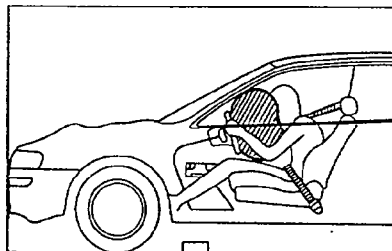
If either of the front sensors and the safety sensor in the airbag control module (type A single airbag system) or the impact sensor in the airbag control module (type B single airbag system) detect a certain predetermined amount of force during a frontal or front-angled collision, the airbag will deploy instantly to help prevent the driver from contacting the steering wheel or dashboard. After the deployment, the airbag immediately starts to deflate so that the driver's vision is not obstructed.

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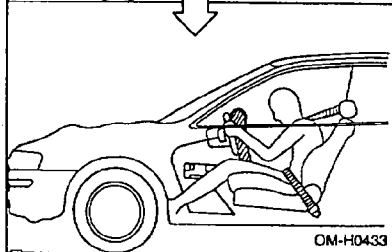
2-27



Airbags deploy as soon as a collision occurs.



After deployment, airbag starts to deflate immediately so that the driver's vision is not obstructed.



OM-H0433

■ Vehicle with driver's side and passenger's side airbags and lap/shoulder restraints

⚠ WARNING

- To obtain maximum protection in the event of an accident, the driver and all passengers in the vehicle should always wear seat belts when the vehicle is moving. The SRS AIRBAG does not do away with the need to fasten seat belts. In combination with the seat belts, it offers the best combined protection in case of a serious accident.

Not wearing a seat belt increases the chance of severe injury or death in a crash even when the car has the SRS AIRBAG.

For instructions and precautions concerning the seat belt system, see the sections 3-point Type Seat Belts and 2-point Type Seat Belts (Chapter 2).

- Do not place any objects over the SRS AIRBAG cover or between you and the SRS AIRBAG. If the SRS AIRBAG deploys, those objects could interfere with its proper operation and could be propelled inside the car and cause injury.
- Do not sit or lean unnecessarily close to the SRS AIRBAG. The SRS AIRBAG deploys with considerable force and can injure an occupant whose body is too close to it. It is also important to wear your seat belt to help avoid injuries that can result when the SRS AIRBAG contacts an occupant not in proper position.
- Do not install a rearward facing child seat in the front seat. Doing so risks serious injury to the child by placing the child's head too close to the SRS AIRBAG. Because of the SRS AIRBAG, we strongly recommend that you do not put any type of child seat in the front passenger seat. If, however, you do install a forward facing child seat in the front seat, slide the seat to its rear-most position.

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- To avoid accidental actuation of the system or rendering the system inoperative, which may result in serious injury, no modifications should be made to any components or wiring of the SRS AIRBAG. This includes the installation of "custom" steering wheels or additional trim material, or badges over the steering wheel hub. Installation of additional electrical/electronic equipment on or near SRS AIRBAG components and/or wiring is not advisable.

NOTE

The SRS AIRBAG can function only when the ignition switch is in the "ON" position.

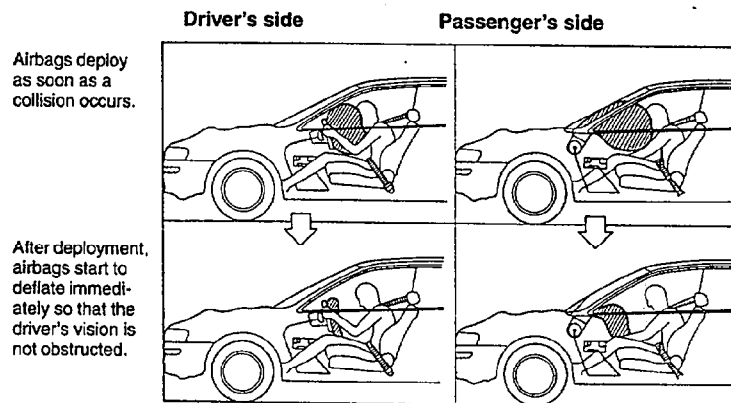
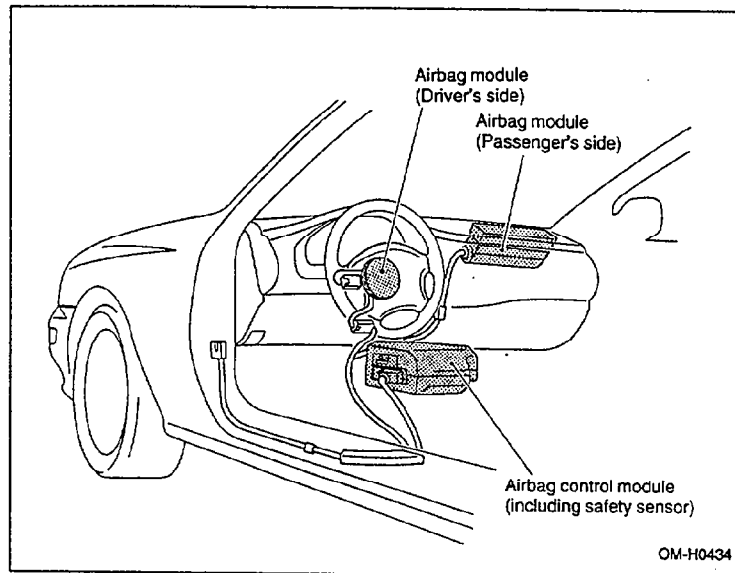
The SRS (Supplemental Restraint System) AIRBAG in your vehicle affords the driver and front seat passenger additional protection during a frontal collision. This system is available for the driver and front seat passenger and is designed to supplement the protection provided by the seat belt.

The SRS AIRBAG is designed to deploy in the event of an accident involving a moderate to severe frontal collision. It is not designed to assist the driver and front seat passenger in lesser frontal impacts, in side or rear impacts or in roll-over accidents. The SRS AIRBAG is designed to function on a one-time-only basis. In the event that the SRS AIRBAG is deployed, replacement of the system must be performed only by an authorized SUBARU dealer. When the components of the SRS AIRBAG are replaced, use only genuine SUBARU parts.

The driver's side SRS AIRBAG is stored in the center portion of the steering wheel. The passenger's side SRS AIRBAG is stored near the top of the dashboard under the cover marked "SRS AIRBAG".

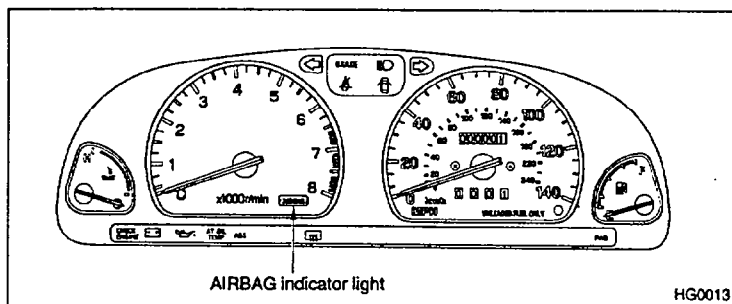
If the impact sensors in the airbag control module detect a certain predetermined amount of force during a frontal or front-angled collision, both driver's and passenger's side airbags deploy instantly at the same time to help prevent the driver and right front seat passenger from contacting the steering wheel or dashboard. After the deployment, the airbags immediately start to deflate so that the driver's vision is not obstructed.

Seat, seat belt and SRS AIRBAG



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■ System monitors



A diagnostic system continually monitors the readiness of the SRS AIRBAG while the vehicle is being driven. The AIRBAG indicator light will show normal system operation by lighting for about 8 seconds when the ignition key is first turned to the "ON" position and then turning off.

The following components are monitored by the indicator:

- AIRBAG control module
- AIRBAG module (driver's side)
- AIRBAG module (passenger's side)
- All related wiring

In the event of a malfunction indicated by any of following, the vehicle should be taken promptly to your nearest SUBARU dealer to have the system checked. Unless checked and repaired, the SRS AIRBAG will not function reliably:

- Flashing or flickering of the indicator light.
- Failure of the indicator light to illuminate when the ignition switch is first turned to the "ON" position.
- Continuous illumination of the indicator light.
- Illumination of the indicator light while driving.

■ Safety guidelines for the SRS AIRBAG

During a moderate to severe frontal impact, a sudden, fairly loud inflation noise will be heard and some smoke will be released. These occurrences are normal and not harmful. This smoke does not indicate a fire in

the vehicle.

Although it is highly unlikely that the SRS AIRBAG would activate in a non-accident situation, should it occur, the bag will deflate quickly, not obscuring vision and will not interfere with the driver's ability to maintain control of the vehicle.

NOTE

When you sell your vehicle, we urge you to explain to the buyer that it is equipped with an SRS AIRBAG by alerting him to the applicable section in this owner's manual.

■ System servicing

⚠ WARNING

- When discarding an airbag module or scrapping the entire car damaged by a collision, consult your SUBARU dealer.
- The SRS AIRBAG has no user-serviceable parts. Tampering with or disconnecting the system's wiring could result in accidental inflation of the airbag or could make the system inoperative, which may result in serious injury. For required servicing of the SRS AIRBAG, see your nearest SUBARU dealer.

⚠ CAUTION

The impact sensors are located under the center console. If you need service or repair in this area or near the steering wheel and column, we recommended that you have an authorized SUBARU dealer perform the work.

To ensure its long-term reliability, the SRS AIRBAG must be inspected by a SUBARU dealer ten years after the date of manufacture, which is shown on the certification label attached to the driver's door jamb.