

V2343

Report Number TRC-96-N07

New Car Assessment Program (NCAP)

Frontal Barrier Impact Test

Rover Group Ltd. for Land Rover

1996 Land Rover Discovery

Multi-purpose Passenger Vehicle

NHTSA Number: MT0501

TRC Test Number: 951206

Prepared By:

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10820 State Route 347

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January 2, 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 Land Rover Discovery multi-purpose passenger vehicle, NHTSA No. MT0501, at Transportation Research Center Inc. on December 6, 1995. 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 846 millimeters. The ambient temperature was 22° C. The driver's Head Injury Criteria (HIC) was 825. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 53.8 g. The driver's maximum chest deflection was 35 mm. The driver's left and right femur maximum axial forces were 5879 N and 4695 N, respectively. The passenger's HIC was 379. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 62.9 g. The passenger's maximum chest deflection was 46 mm. The passenger's left and right femur maximum axial forces were 4492 N and 4129 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	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	36	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F

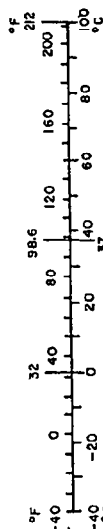


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Section 1.0

Purpose and Test Procedure

Purpose

This 56 kph (35 mph) frontal barrier impact test is part of the New Car Assessment Program (NCAP) conducted for the National Highway Traffic Safety Administration's (NHTSA) Office of 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 Land Rover Discovery multi-purpose passenger vehicle, NHTSA Number MT0501, 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 first 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, the driver dummy's lower legs were instrumented with upper and lower tibia load cells to measure forces and moments.

The one-hundred-ten (110) 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 sixteen (16) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera.

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

Section 2.0

Frontal Barrier Impact Test Summary

Test Results Summary

This frontal load cell barrier test was conducted at TRC on December 6, 1995.

The test vehicle, a 1996 Land Rover Discovery multi-purpose passenger vehicle, NHTSA Number MT0501, was equipped with a 4.0-liter transverse engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 2315 kg. The vehicle's impact speed was 56.3 kph. The vehicle sustained 846 mm of static crush during the impact.

The driver's Head Injury Criteria (HIC) was 825. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 53.8 g. The driver's maximum chest deflection was 35 mm. The driver's left and right femur maximum axial forces were 5879 N and 4695 N, respectively.

The right front passenger's HIC was 379. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 62.9 g. The passenger's maximum chest deflection was 46 mm. The passenger's left and right femur maximum axial forces were 4492 N and 4129 N, respectively.

There was loss of windshield periphery retention along the lower edge from 440 to 960 mm as measured from the lower left corner of the windshield.

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.

Data Acquisition Explanations

The driver's shoulder belt extension potentiometer, SBED1, did not function during the test.

The passenger's shoulder belt displacement potentiometer, SHBD2, recorded questionable data as a result of the transducer's cable being pinched during the impact.

The passenger's lap belt force load cell, LBOF2, did not function during the test.

Table 1 Crash Test Summary

NHTSA number:	MT0501	
Test type:	Frontal Load Cell Barrier	
Test date:	12/06/95	
Test time:	1633	
Ambient temperature:	22° C	
Vehicle year/make/ model/body style:	1996/Land Rover/Discovery/multi-purpose passenger vehicle	
Vehicle test weight:	2315 kg	
Impact angle ¹ :	0°	
Impact velocity ² :	Primary = 56.3 kph Secondary = 56.2 kph	
Maximum static crush:	846 mm	
Average rebound:	979 mm	
Dummies:	Driver #142	Passenger #192
Type:	Part 572 E	Part 572 E
Location:	Left front	Right front
Restraint:	Airbag and 3-point unbelt	Airbag and 3-point unbelt
Number of data channels:	110	
Number of cameras:	High-speed	16
	Real-time	2

¹ With respect to tow track centerline.

² Speed trap measurement (± .08 kph accuracy)

Table 2 Test Vehicle Information

Vehicle year/make/
model/body style: 1996/Land Rover/Discovery/multi-purpose passenger vehicle

Color: Green

VIN: SALJY1249TA507246

NHTSA number: MT0501

Engine data:

 Placement: Longitudinal

 Cylinders: 8

 Displacement 4.0 liters

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

Date vehicle received: 12/01/95

Odometer reading: 24

Dealer's name Williams Ford Sales, Inc.
and address: 9260 Montgomery Road
 Cincinnati, OH 45242

Accessories:

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

Certification data from vehicle's label:

Vehicle manufactured by: Rover Group Ltd. for Land Rover

Date of manufacture: 10/95

VIN: SALJY1249TA507246

GVWR: 2730 kg

GAWR: Front: 1210 kg

 Rear: 1620 kg

Table 2 Test Vehicle Information, Cont'd.

Size of tires: P235/70R16

Tire pressure with maximum
capacity vehicle load:

Front: 300 kPa

Rear: 300 kPa

Spare tire: 235/70R16

Type of front seats: Bucket

Tire & capacity data from vehicle's label:

Recommended tire size: 235/70R16

Recommended cold tire pressure:

Front: 180 kPa

Rear: 248 kPa

Designated seating capacity:

Front NA

Rear NA

Total NA

Vehicle capacity weight: NA

Luggage weight: NA

Test vehicle attitude:

Delivered attitude: LF 811 mm; RF 793 mm; LR 825 mm; RR 805 mm

Pre-test attitude: LF 805 mm; RF 778 mm; LR 803 mm; RR 772 mm

Post-test attitude: LF 891 mm; RF 682 mm; LR 799 mm; RR 774 mm

Table 2 Test Vehicle Information Cont'd

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

Right front	497 kg	Right rear	535 kg
Left front	493 kg	Left rear	510 kg
Total front weight	990 kg	(48.6% of total vehicle weight)	
Total rear weight	1045 kg	(51.4% of total vehicle weight)	
Total delivered weight	2035 kg		

Calculation of test vehicle's target test weight:

RCLW = Rated cargo and luggage weight

UDW = Unloaded delivered weight (2035 kg)

VCW¹ = Vehicle capacity weight (NA)

DSC = Designated seating capacity (NA)

RCLW¹ = VCW - 68 (DSC) = NA - 68(NA) = 136 kg

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

Target test weight = 2035 + 136 + 152

Target test weight = 2323 kg

Weight of test vehicle with required dummies and 47 kg of cargo weight:

Right front	524 kg	Right rear	645 kg
Left front	529 kg	Left rear	617 kg
Total front weight	1053 kg	(45.5% of total vehicle weight)	
Total rear weight	1262 kg	(54.5% of total vehicle weight)	
Total test weight	2315 kg	(0.3% under target test weight)	

Weight of ballast secured in vehicle: 34 kg

Components removed to meet target test weight: None

CG rearward of front wheel centerline: 1385 mm

Vehicle wheelbase: 2540 mm

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

Table 3 Post-Impact Data

Test number: 951206
NHTSA number: MT0501
Test date: 12/06/95
Test time: 1633
Test type: Frontal load cell barrier
Impact angle: 0°
Ambient temperature
at impact area: 22° C
Temperature in
occupant compartment: 22° C
Impact velocity:
 Primary 56.3 kph
 Secondary 56.2
 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:

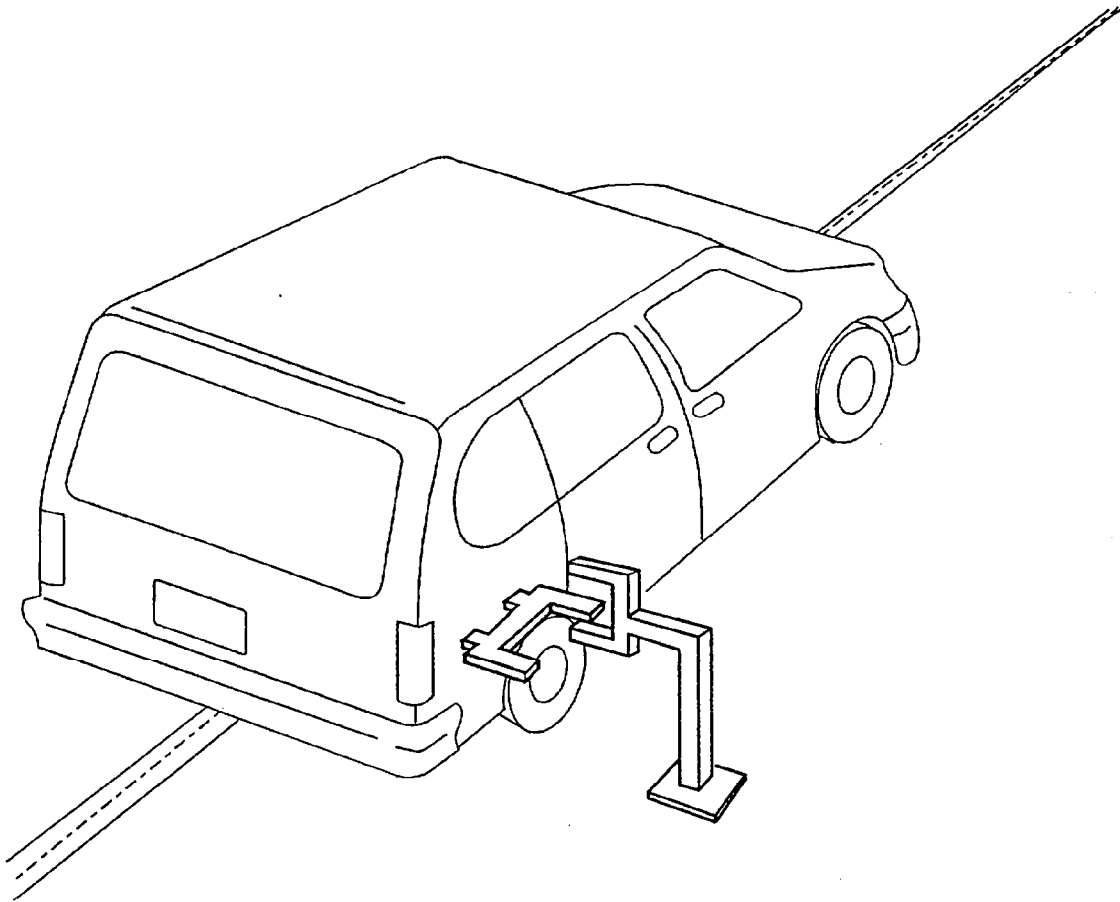
Pre-test: L 4429 mm; C 4539 mm; R 4436 mm
Post-test: L 3877 mm; C 3863 mm; R 3869 mm
Total crush: L 552 mm; C 676 mm; R 567 mm
Average crush: 598 mm

Test vehicle rebound from flat barrier:

Distance from test vehicle to barrier:

Post-test: L 997 mm; C 988 mm; R 952 mm
Average rebound 979 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.

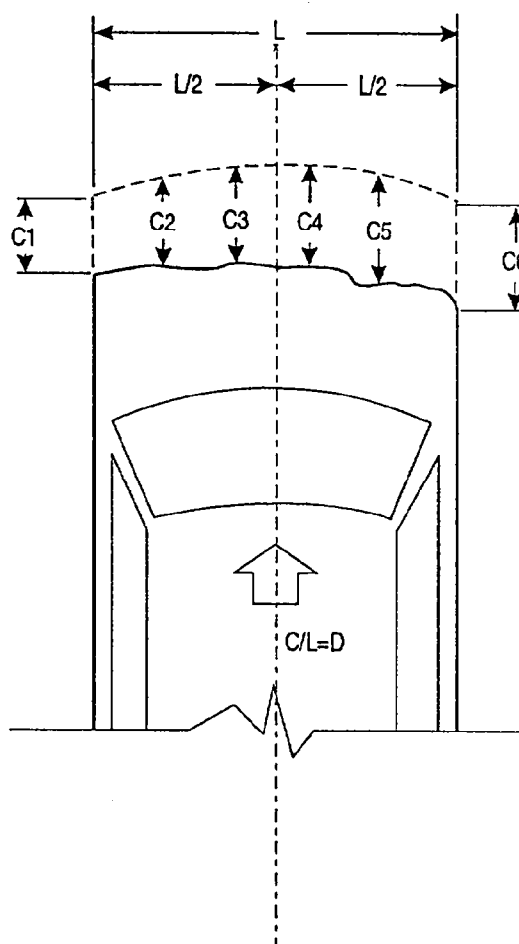
**Figure 2 Accident Investigation Division Data
for 56 kph (35 mph) Frontal Barrier Impact**

NHTSA number: MT0501
 Test date: 12/06/95
 Vehicle year/make/
 model/body style: 1996/Land Rover/Discovery/multi-purpose passenger vehicle
 Vehicle size category: Special purpose - 4WD
 VIN: SALJY1249TA507246
 Build date: 10/95
 Test weight: 2315 kg
 Vehicle wheelbase: 2540 mm
 Maximum width: 1793 mm
 Front overhang: 462 mm

Collision Deformation
 Classification (CDC) code: 12FDEW4

Crush depth
 measurements:

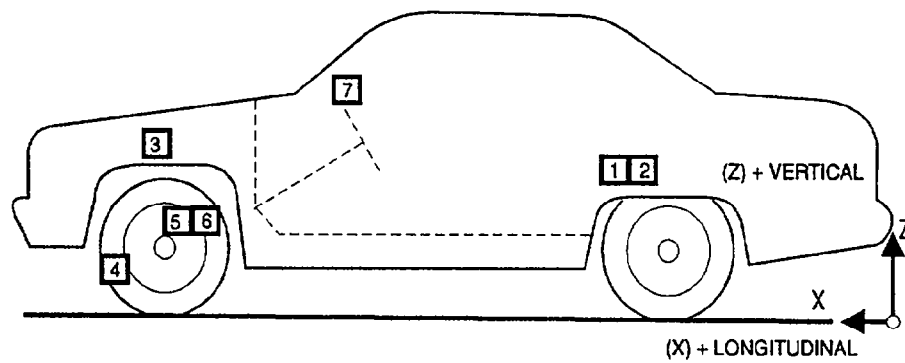
C1	=	552 mm
C2	=	628 mm
C3	=	644 mm
C4	=	846 mm
C5	=	616 mm
C6	=	567 mm



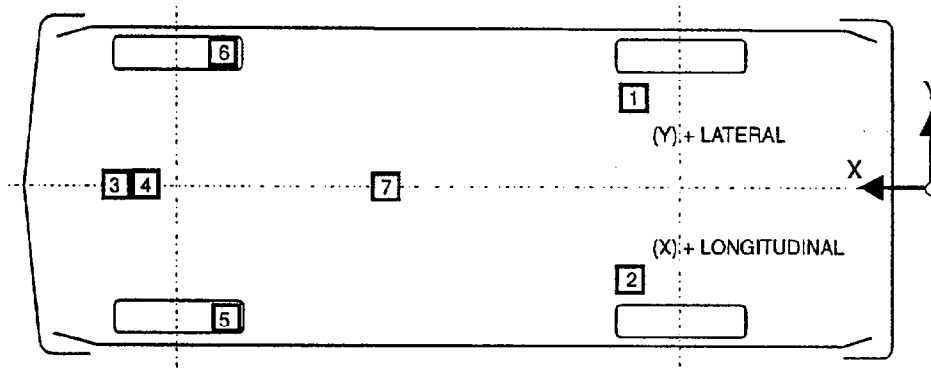
Midpoint of damage: D: Vehicle Longitudinal Centerline

Length of damaged region: L: 1524 mm

Figure 3 Vehicle Accelerometer Placement



SIDE VIEW



BOTTOM VIEW

Table 4 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 951206 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 LEFT REAR SEAT CROSSMEMBER LONGITUDINAL REDUNDANT	2948 mm	434 mm	685 mm	4.0 g @ 124.9 ms 4.0 g @ 124.8 ms	34.0 g @ 51.3 ms 34.3 g @ 51.2 ms
2 RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL REDUNDANT	2890 mm	-434 mm	694 mm	10.0 g @ 100.9 ms 10.5 g @ 100.9 ms	35.3 g @ 52.3 ms 35.7 g @ 52.3 ms
3 ENGINE TOP LONGITUDINAL	860 mm	20 mm	1068 mm	141.6 g @ 67.6 ms	125.8 g @ 34.7 ms
4 ENGINE BOTTOM LONGITUDINAL	891 mm	0 mm	458 mm	24.0 g @ 59.8 ms	104.9 g @ 34.6 ms
5 RIGHT BRAKE CALIPER LONGITUDINAL	925 mm	-597 mm	398 mm	26.4 g @ 49.9 ms	88.0 g @ 39.0 ms
6 LEFT BRAKE CALIPER LONGITUDINAL	925 mm	597 mm	412 mm	32.1 g @ 45.9 ms	108.0 g @ 34.1 ms
7 INSTRUMENT PANEL CENTER LONGITUDINAL	1555 mm	0 mm	1232 mm	28.4 g @ 48.6 ms	81.1 g @ 63.1 ms

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

Table 5 Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

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

Door Opening:

	<u>Left</u>	<u>Right</u>
Front	Easy	Difficult - tools required
Rear	Difficult - tools required	Difficult - tools required

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/Land Rover/Discovery/multi-purpose passenger vehicle
Vehicle NHTSA number: MT0501
Test date: 12/06/95

	Driver Dummy #142		Passenger Dummy #192	
<u>Maximum Accelerations:</u>				
Head X-axis	-72.6	g	-52.4	g
Head Y-axis	9.4	g	-11.4	g
Head Z-axis	30.2	g	26.5	g
Head resultant	74.7	g	55.0	g
Chest X-axis	-56.3	g	-62.0	g
Chest Y-axis	-6.7	g	-4.6	g
Chest Z-axis	-16.1	g	-19.2	g
Chest resultant ¹	53.8	g	62.9	g
Chest resultant time interval ²	.003	sec	.003	sec
<u>Head Injury Criteria (HIC) Values:</u>				
HIC ²	825		379	
HIC starting time	.057	sec	.047	sec
HIC ending time	.085	sec	.083	sec
Average head resultant acceleration during HIC time interval	61.3	g	40.6	g
<u>Maximum Chest Deflections:</u>				
Chest X-axis	35	mm	46	mm
Maximum chest deflection time	.065	sec	.072	sec
<u>Maximum Compressive Femur Forces:</u>				
Left femur	5879	N	4492	N
Right femur	4695	N	4129	N
<u>Maximum Seat Belt Forces:</u>				
Lap belt	5504	N	NA ³	N
Shoulder belt	7765	N	5129	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.

³ See Data Acquisition Explanations

Table 7 Hybrid III Data Summary

Vehicle year/make/
model/body style: 1996/Land Rover/Discovery/multi-purpose passenger vehicle
Vehicle NHTSA number: MT0501
Test date: 12/06/95

	Driver Dummy #142	Passenger Dummy #192
<u>Maximum Forces</u>		
Neck X-axis shear force	822 N	2153 N
Neck Y-axis shear force	-242 N	169 N
Neck Z-axis axial force	2837 N	2969 N
 <u>Maximum Moments</u>		
Neck moment about X-axis	-16 N·m	-16 N·m
Neck moment about Y-axis	-70 N·m	-135 N·m
Neck moment about Z-axis ¹	8 N·m	-10 N·m
 <u>Maximum Accelerations:</u>		
Pelvis X-axis	-68.2 g	-58.7 g
Pelvis Y-axis	-15.0 g	8.9 g
Pelvis Z-axis	15.6 g	14.2 g
Pelvis resultant	68.7 g	59.0 g

Table 7 Hybrid III Data Summary, Cont'd.

Vehicle year/make/
model/body style: 1996/Land Rover/Discovery/multi-purpose passenger vehicle
Vehicle NHTSA number: MT0501
Test date: 12/06/95

	Driver Dummy #142	Passenger Dummy #192
Left upper tibia moment about X-axis	-210 N'm	NA
Left upper tibia moment about Y-axis	-242 N'm	NA
Right upper tibia moment about X-axis	-122 N'm	NA
Right upper tibia moment about Y-axis	-119 N'm	NA
Left lower tibia X-axis force	-354 N	NA
Left lower tibia Z-axis force ¹	-1024 N	NA
Left lower tibia moment about Y-axis	-35 N'm	NA
Right lower tibia X-axis force	-988 N	NA
Right lower tibia Z-axis force	-3103 N	NA
Right lower tibia moment about Y-axis	-137 N'm	NA
Left foot X-axis acceleration	-51.5 g	-110.7 g
Left foot Z-axis acceleration at heel	64.4 g	78.6 g
Left foot Z-axis acceleration at toe	71.6 g	187.3 g
Right foot X-axis acceleration	-373.0 g	-101.0 g
Right foot Z-axis acceleration at heel	322.0 g	108.2 g
Right foot Z-axis acceleration at toe	350.0 g	98.2 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 rotated slightly rearward with the dummy's head and chest impacting the airbag. The dummy was restrained by the driver's airbag and the three-point unbelt. The dummy rebounded rearward into the seat with the dummy's head rotating slightly forward and then rearward contacting the head restraint. The driver dummy came to rest 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 rotated slightly forward impacting the airbag. The dummy was restrained by the passenger's airbag and 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

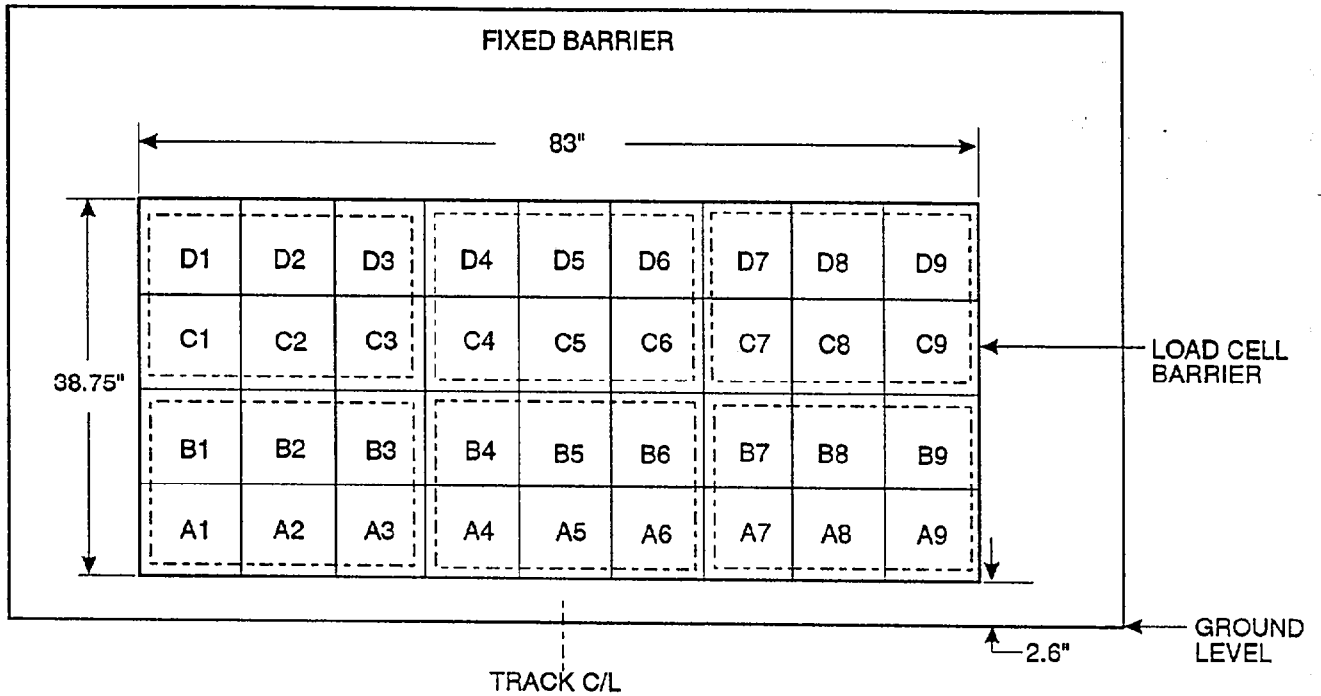
	Driver	Passenger
<u>Belt length data:</u>		
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	2710 mm	2660 mm
Shoulder belt length as measured on Part 572 dummy.	860 mm	890 mm
Lap belt length as measured on Part 572 dummy.	800 mm	740 mm
<u>Shoulder belt spool-off length:</u>		
As determined by film analysis	NA ¹	81 mm
As determined mechanically	72 mm	72 mm
As determined electronically	85 mm	NA ² mm
<u>Belt stretch length:</u>		
As measured mechanically	0 mm/m	0 mm/m
As measured electronically	NA ¹	23 mm/m
<u>Retractor lock-up time:</u>		
As determined by shoulder belt spool-off	NA ¹	72 ms

¹ Driver's seat belt camera malfunctioned during the test.

² See Data Acquisition Explanations

Figure 4 Load Cell Barrier Configuration

36 LOAD CELLS
4 ROWS
9 COLUMNS
FRONT VIEW



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

Table 9 Load Cell Barrier Data Summary

Location	Positive direction	Negative direction
Total group 1	0.6 kN @ 1.5 ms	73.6 kN @ 31.0 ms
Total group 2	0.5 kN @ 1.5 ms	200.6 kN @ 30.2 ms
Total group 3	0.8 kN @ 0.9 ms	90.5 kN @ 29.9 ms
Total group 4	0.4 kN @ 0.9 ms	86.9 kN @ 32.7 ms
Total group 5	0.2 kN @ 172.3 ms	380.1 kN @ 36.2 ms
Total group 6	0.4 kN @ 172.3 ms	97.9 kN @ 23.5 ms
Total load cell force	0.3 kN @ 199.3 ms	791.7 kN @ 34.2 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.:

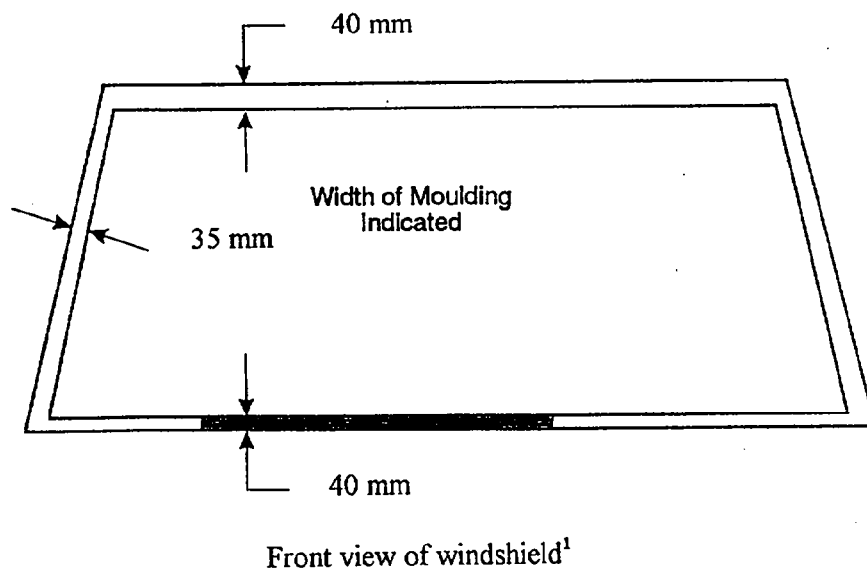
Plastic trim around outer perimeter, adhesive around inner perimeter.

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	2085 mm	1932 mm	92.7
Left side	2085 mm	1718 mm	82.4
Total	4170 mm	3650 mm	87.6

Pre-test windshield mounting material temperature: 21° C



Loss of windshield retention lengths:

Retention was lost along the lower perimeter from 440 to 960 mm as measured across the bottom edge from the lower left corner.

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

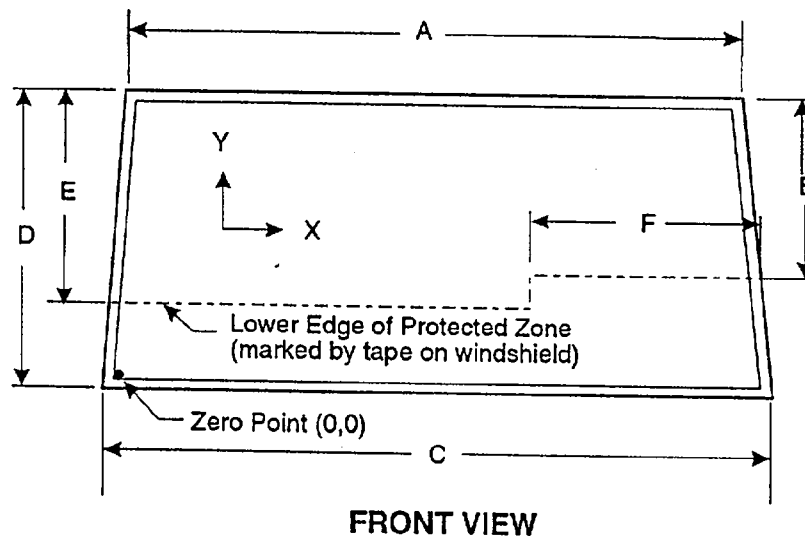
Figure 6 FMVSS 219 Test Data

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 = 1445 mm
B = 315 mm
C = 1615 mm
D = 710 mm
E = 396 mm
F = 573 mm



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.	

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/Land Rover/Discovery/multi-purpose passenger vehicle
NHTSA number:	MT0501
Fuel system capacity:	89.0 liters (from owner's manual)
Usable capacity:	88.6 liters (furnished by COTR)
Test volume range:	81.5 liters to 83.3 liters (92-94% of usable)
Actual test volume:	82.5 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 behind the rear axle. The fuel filler neck was located on the right side. The fuel lines ran along the right side to the front.

Table 11 FMVSS 301 Post-Impact Test Data

NHTSA number: MT0501
Test date: 12/06/95
Vehicle year/make/
model/body style: 1996/Land Rover/Discovery/multi-purpose passenger vehicle

Test requirements:

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

Test vehicle impact type:

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

Fuel system fluid spillage measurements:

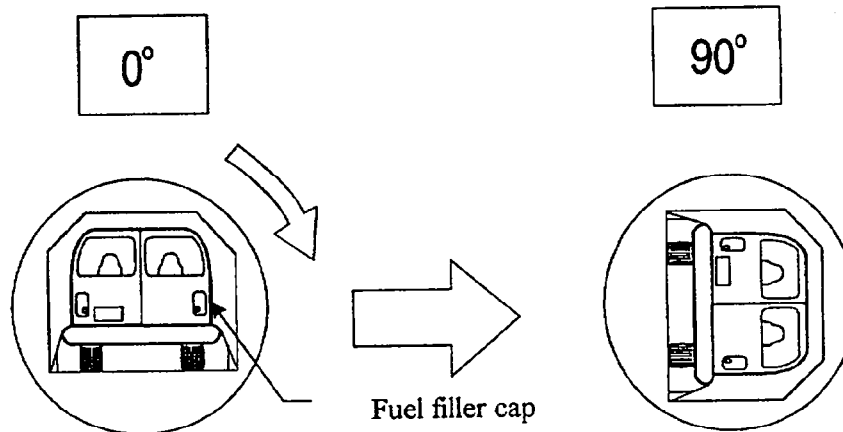
	<u>Test Results</u>	<u>Maximum Allowable</u>
1. From impact until vehicle motion ceases	0 g	28 g
2. 5-minute period after vehicle motion ceases	0 g	142 g
3. Next 25 minutes after 5-minute period	0 g	28 g/min

Fuel system fluid spillage location(s): None

Figure 7 FMVSS 301 Static Rollover Test Data

NHTSA number: MT0501

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	

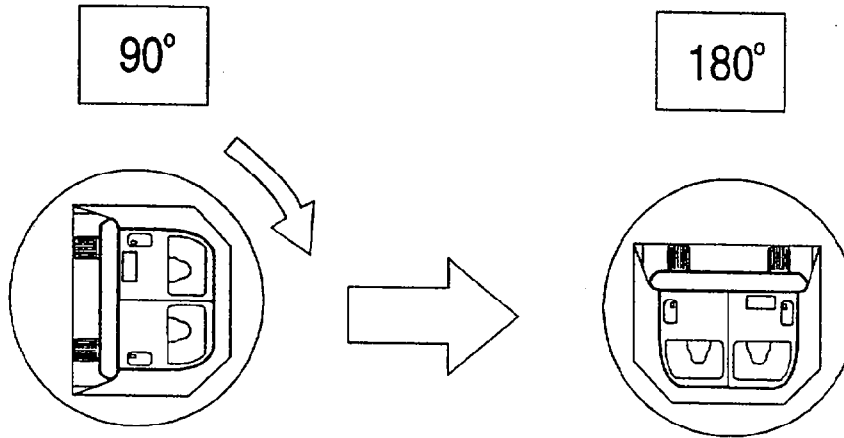
Fuel system fluid spillage measurements:

	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

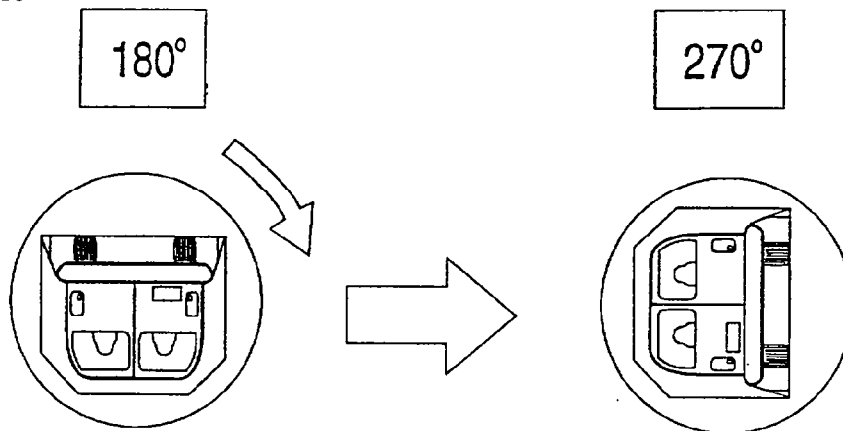
Fuel system fluid spillage measurements:

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

Fuel system fluid spillage location(s): None

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

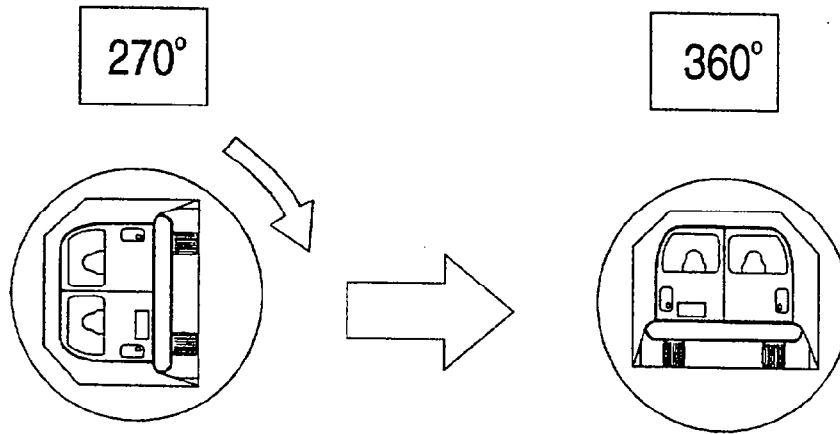
Fuel system fluid spillage measurements:

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

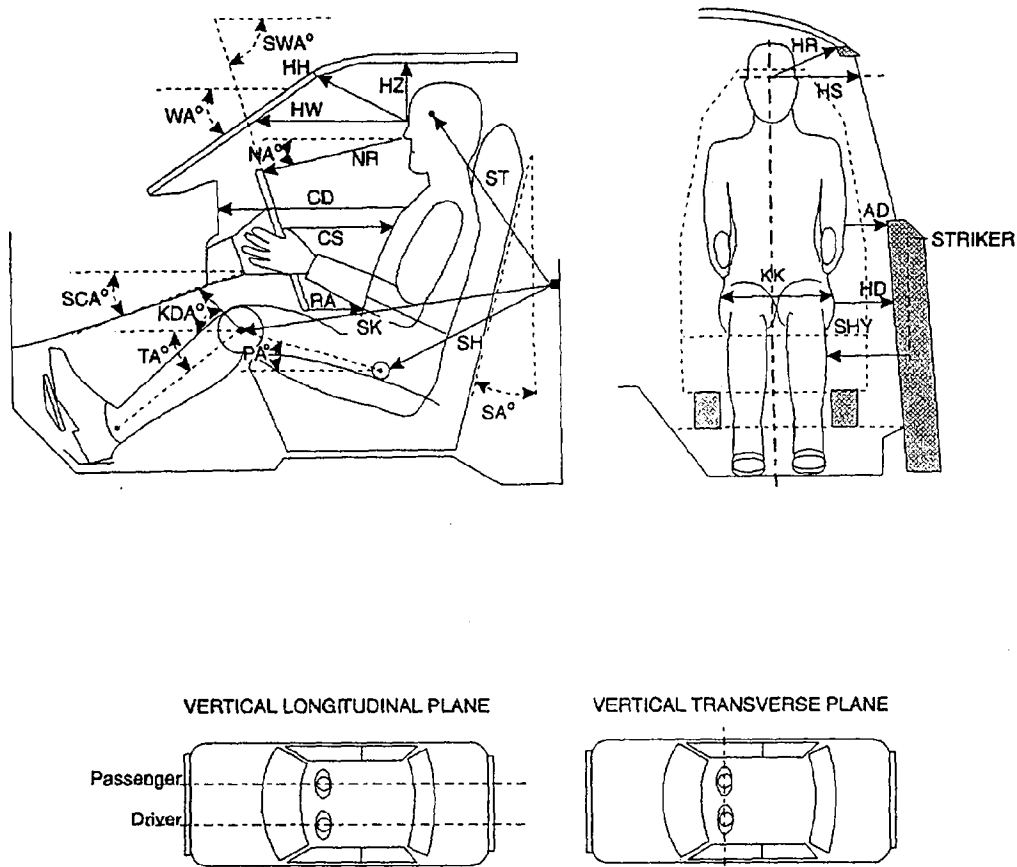


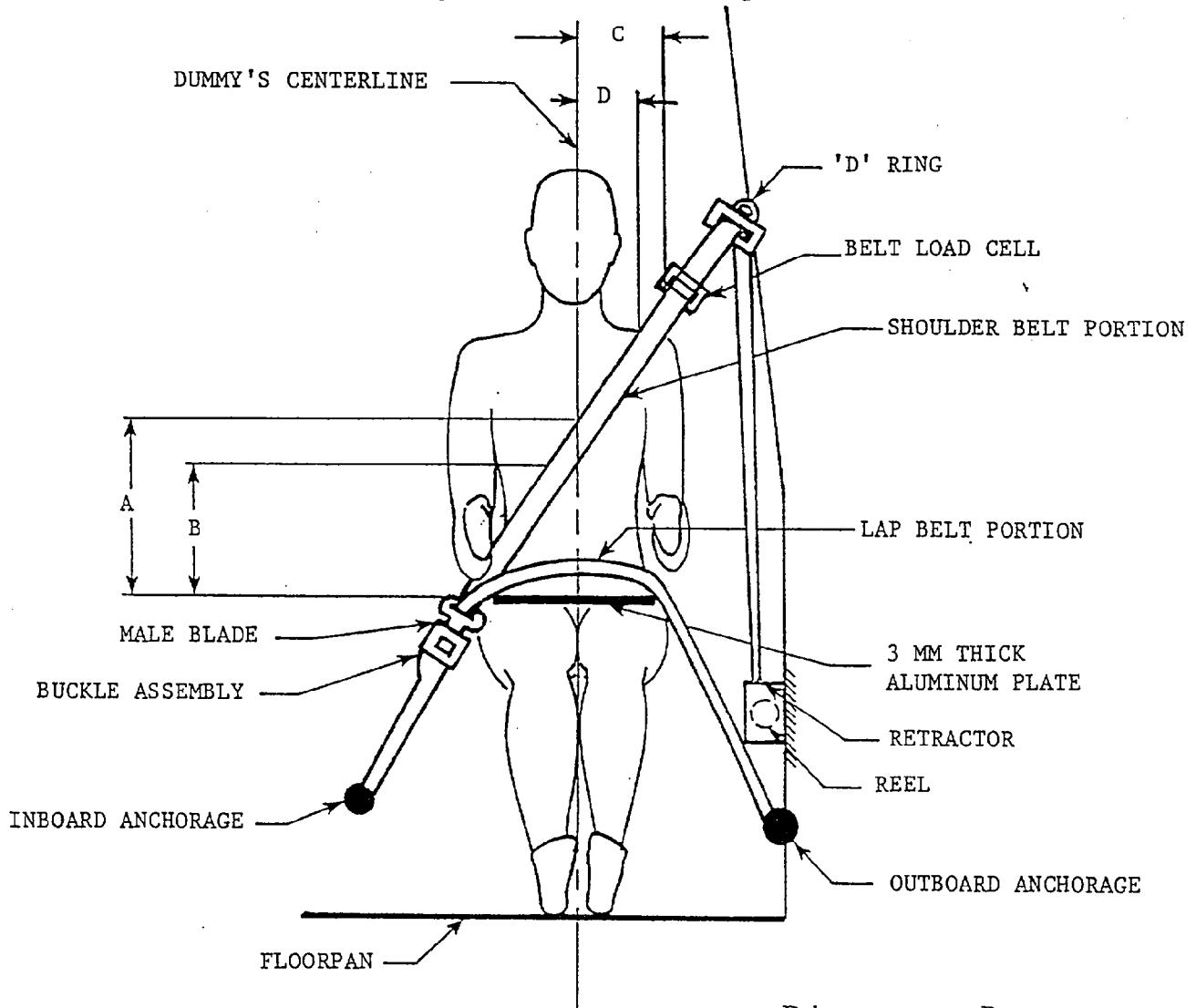
Table 12 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #142)	Passenger (Serial #192)
WA	Windshield angle	41°	NA
SWA	Steering wheel angle	27°	NA
SCA	Steering column angle	61°	NA
SA	Seat back angle	19°	19°
HZ	Head to roof	235 mm	235 mm
HH	Head to header	450 mm	461 mm
HW	Head to windshield	523 mm	517 mm
HR	Head to side header	248 mm	256 mm
NR	Nose to rim	361 mm	NA
NA	Nose to rim angle	14°	NA
CD	Chest to dash	513 mm	488 mm
CS	Steering wheel to chest	265 mm	NA
RA	Rim to abdomen	150 mm	NA
KDL	Left knee to dash	160 mm	114 mm
KDR	Right knee to dash	129 mm	127 mm
KDA	Outboard knee to dash angle	29°	31°
PA	Pelvic angle	20°	23.5°
TA	Tibial angle	41°	42°
KK	Knee to knee	394 mm	274 mm
ST ¹	Striker to head	649 mm	660 mm
	Striker to head angle	-80°	-92°
SK ¹	Striker to knee	615 mm	641 mm
	Striker to knee angle	4°	10°
SH ¹	Striker to H-point	242 mm	239 mm
	Striker to H-point angle	-2°	2°
SHY	Striker to H-point (Y dir.)	174 mm	173 mm
HS	Head to side window	300 mm	305 mm
HD	H-point to door	114 mm	102 mm
AD	Arm to door	60 mm	72 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	367 mm	349 mm
B - Top surface of aluminum plate to belt lower edge	238 mm	270 mm
C - Dummy centerline to outer edge of belt at chest flesh top	136 mm	136 mm
D - Dummy centerline to inner edge of belt at chest flesh top	74 mm	78 mm
Lap belt tension	18 N	18 N
Shoulder belt tension	18 N	18 N
Position of adjustable belt anchorage	one down from uppermost	one down from uppermost

Figure 10 Camera Positions

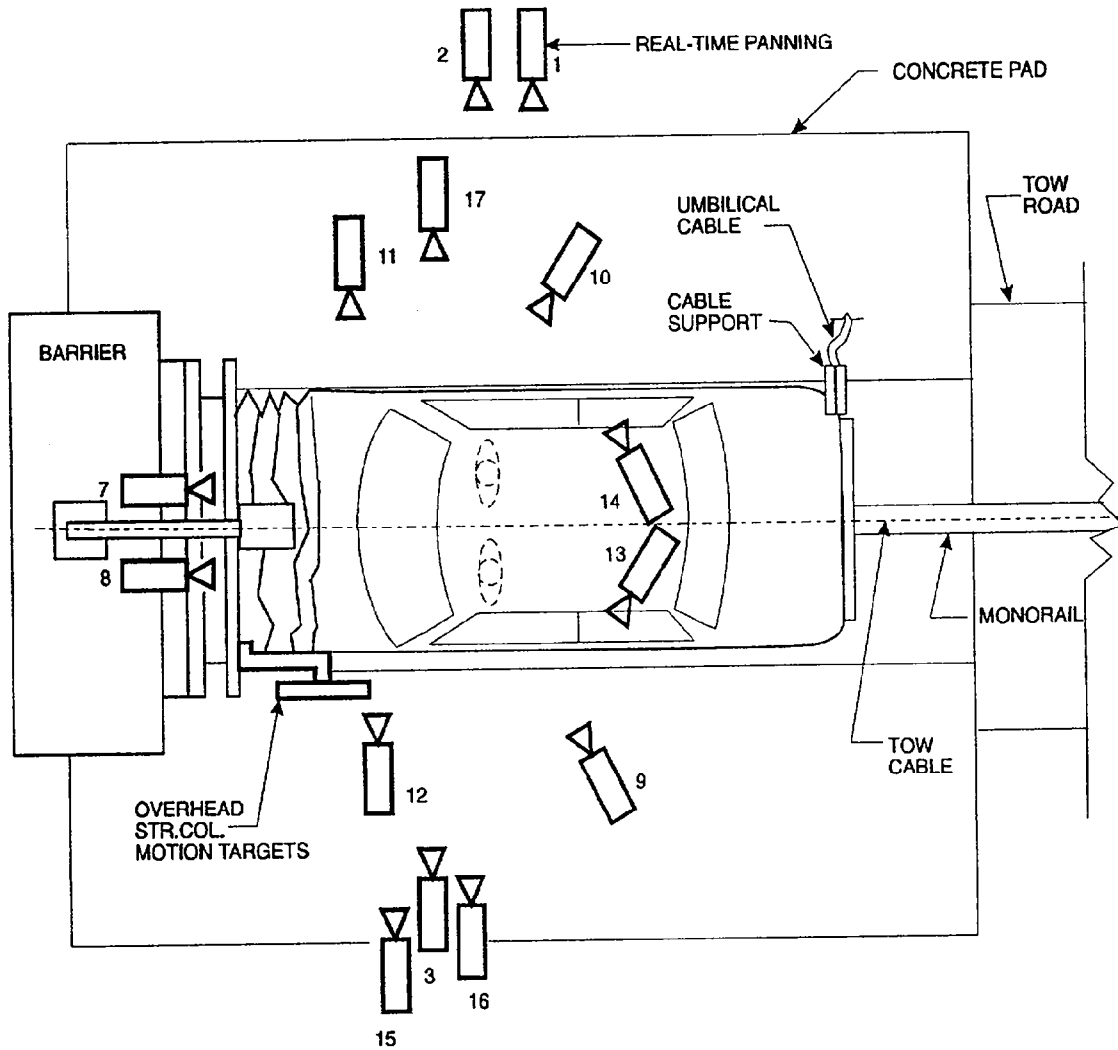


Figure 10 Camera Positions, Cont'd.

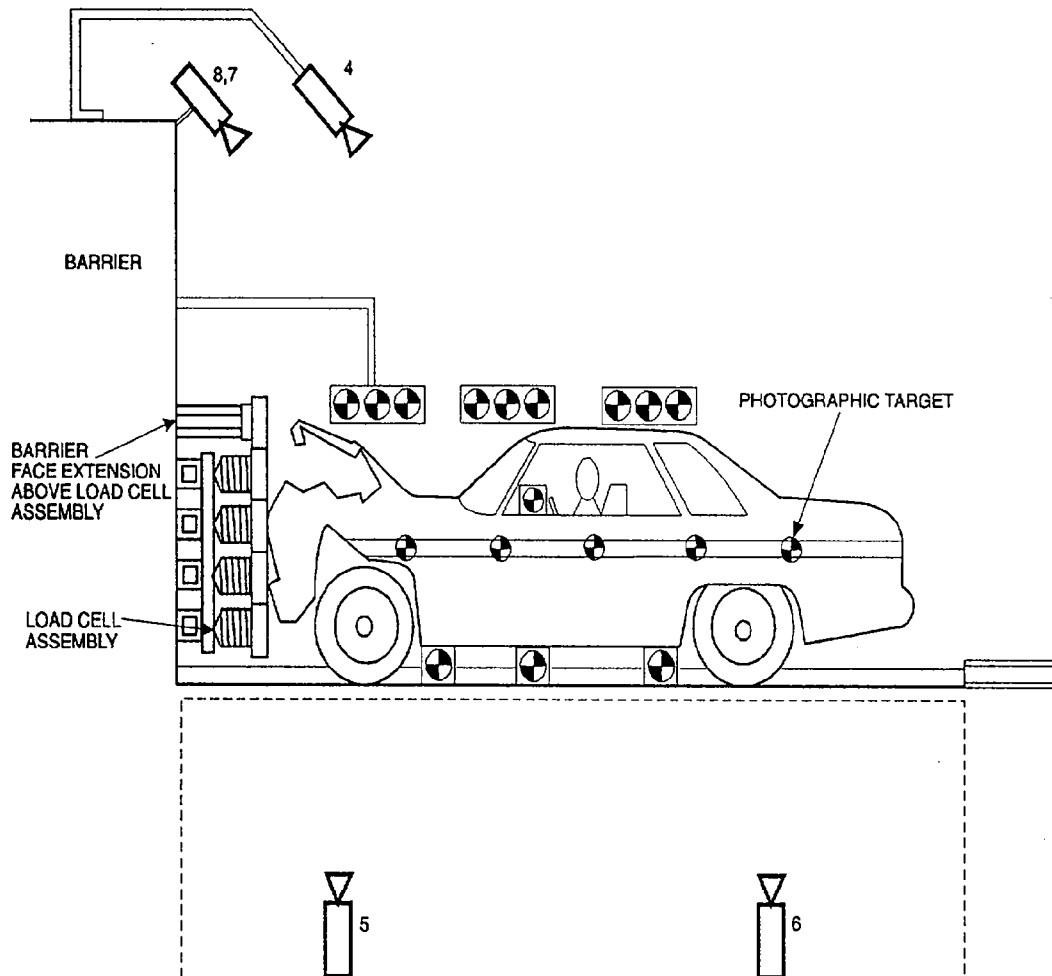


Table 13 Motion Picture Camera Locations

Test Number: 951206

Vehicle year/make/model/body style: 1996/Land Rover/Discovery/multi-purpose passenger vehicle

Camera Number	View	Camera Positions ¹			Angle ²	Film Plane to Head Target	Lens	Film Speed
		X	Y	Z				
1	Real-time panning	-3607 mm	-2802 mm	1549 mm	NA	NA mm	16 mm	24 frames/s
2	Vehicle crush	-2065 mm	-6767 mm	942 mm	-2°	NA mm	13 mm	502 frames/s
3	Dummy kinematics	-1054 mm	7493 mm	1118 mm	-12°	5715 mm	25 mm	1020 frames/s
4	Windshield damage	-925 mm	0 mm	2489 mm	-40°	NA mm	13 mm	510 frames/s
5	Crush & fluid spillage	-1283 mm	0 mm	-2347 mm	90°	NA mm	13 mm	1000 frames/s
6	Fluid spillage	-2522 mm	0 mm	-2515 mm	90°	NA mm	13 mm	508 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	498 frames/s
9	Driver kinematics	-4572 mm	1854 mm	2591 mm	-27°	2794 mm	25 mm	505 frames/s
10	Passenger kinematics	-4674 mm	-1880 mm	2540 mm	-26°	2921 mm	25 mm	495 frames/s
11	Windshield intrusion	-968 mm	-7775 mm	1118 mm	0°	NA mm	50 mm	508 frames/s
12	Windshield intrusion	-1346 mm	7859 mm	1074 mm	0°	NA mm	50 mm	502 frames/s
13	Driver's seat belt movement	-2032 mm	NA	NA	NA	NA mm	NA mm	NA ³ frames/s
14	Passenger seat belt movement	-2032 mm	NA	NA	NA	NA mm	NA mm	450 frames/s
15	Column movement	-2845 mm	7264 mm	2616 mm	-14°	NA mm	25 mm	500 frames/s
16	Column movement	-2845 mm	7264 mm	1908 mm	-9°	NA mm	25 mm	500 frames/s
17	Passenger kinematics	-986 mm	-5354 mm	1151 mm	7°	5944 mm	25 mm	1045 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 Camera malfunctioned during the test.

Figure 11 Vehicle Target Locations

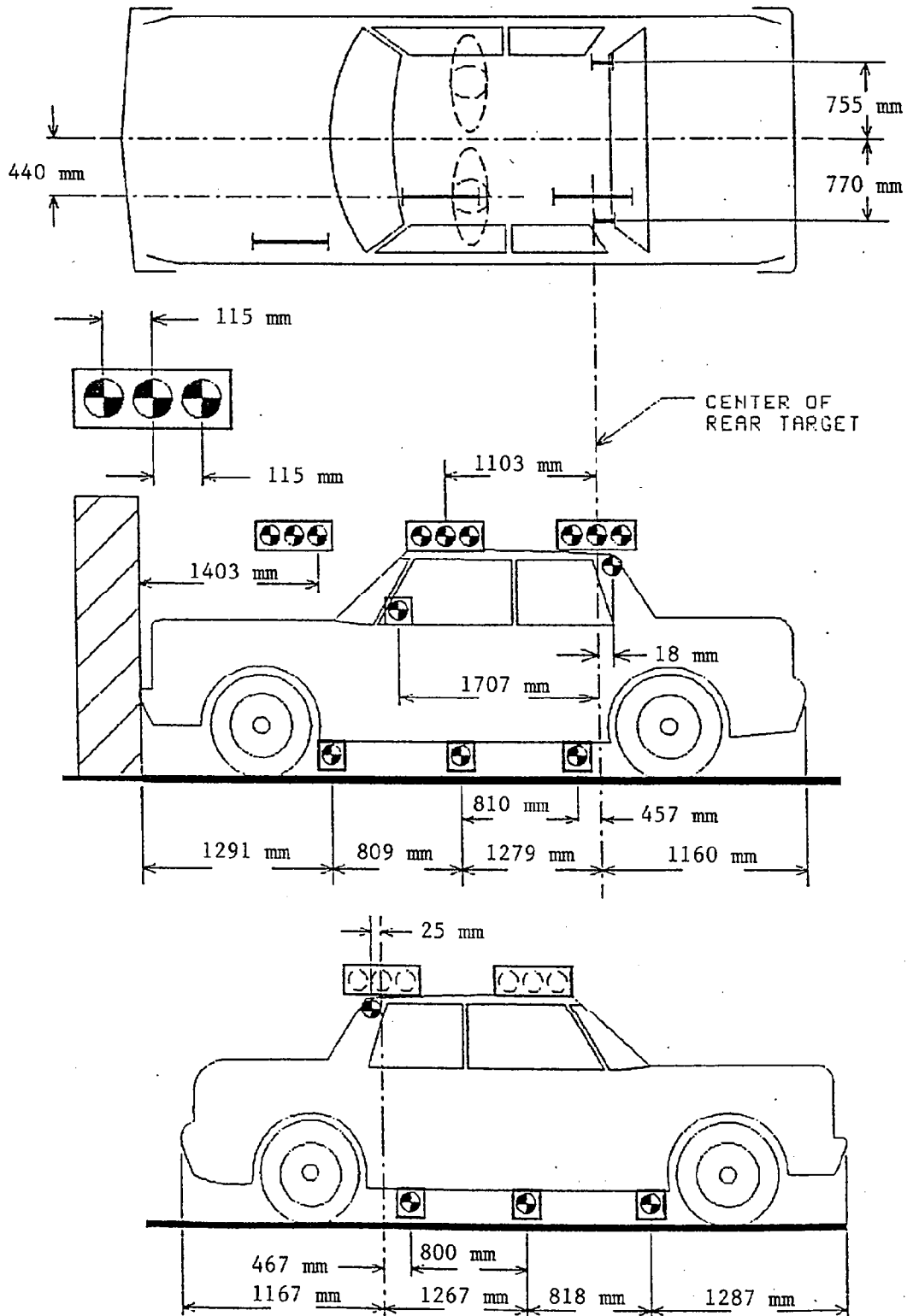


Figure 12 Pre-Test And Post-Test Measurement Points

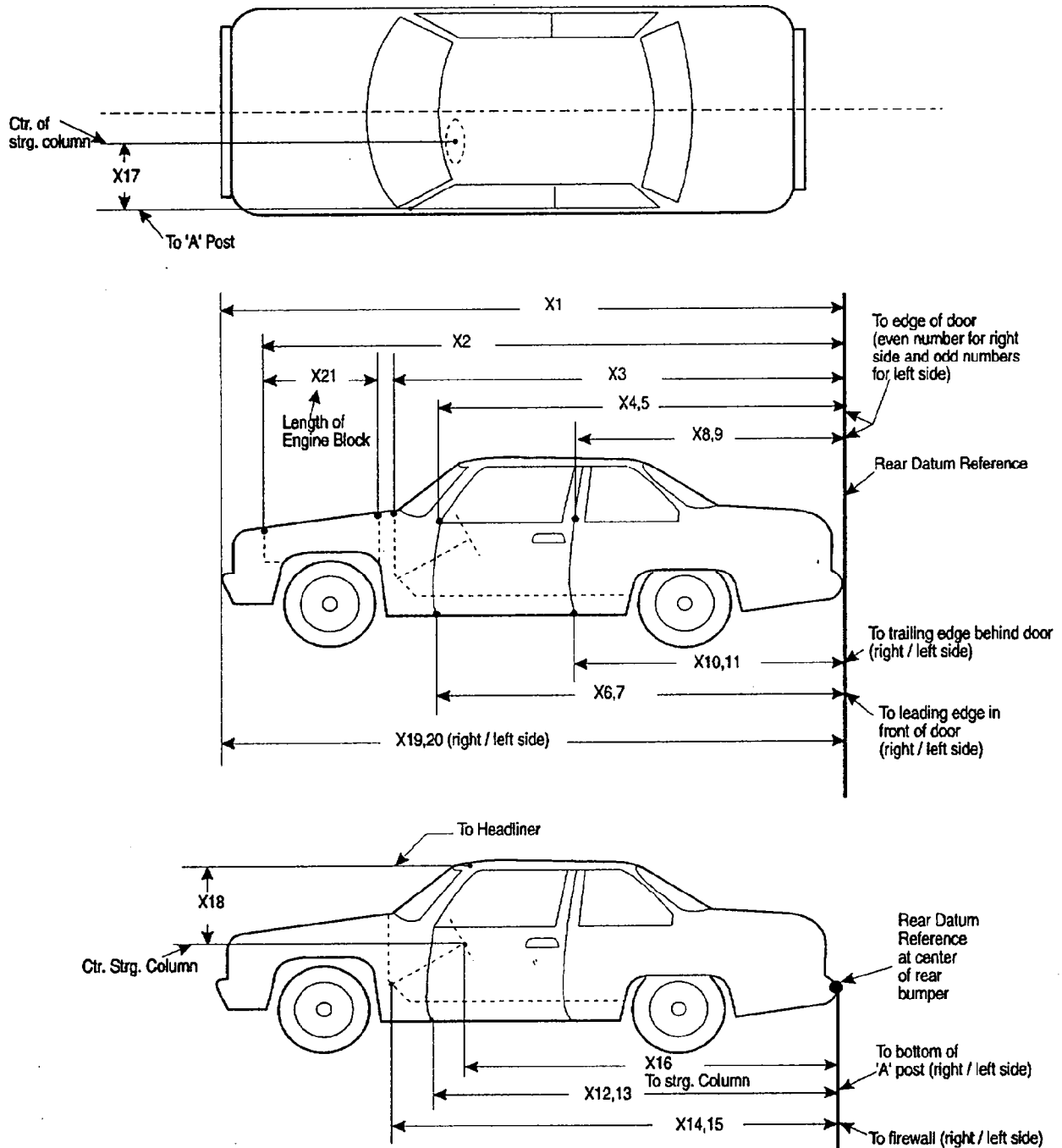


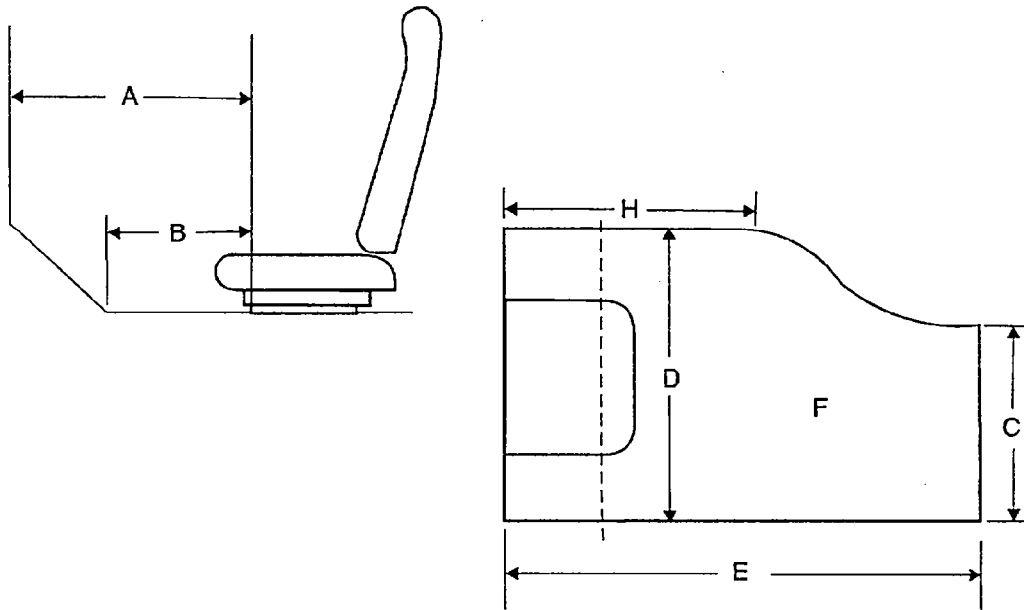
Table 14 Impacted Vehicle Measurements

Vehicle Make/Model: Land Rover/Discovery

Test Number: 951206

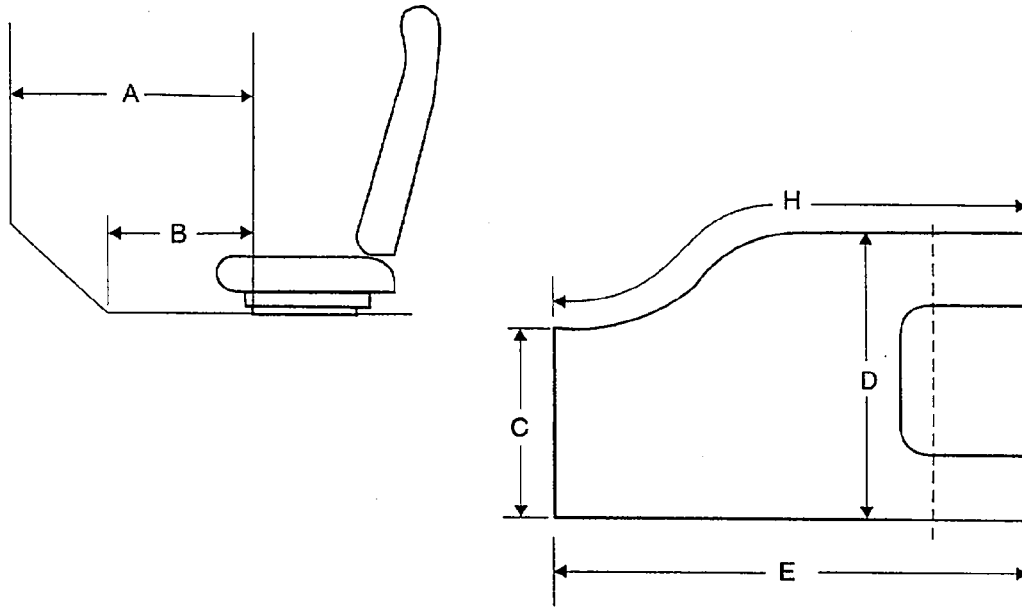
No.	Type of measurement	Pre-test		Post-test		Diff.
X1	Total length of vehicle at centerline	4539	mm	3863	mm	676 mm
X2	Rear surface of vehicle to front of engine block	3909	mm	3492	mm	417 mm
X3	Rear surface of vehicle to firewall	3373	mm	3088	mm	285 mm
X4	Rear surface of vehicle to upper leading edge of right door	2990	mm	2987	mm	3 mm
X5	Rear surface of vehicle to upper leading edge of left door	2997	mm	2952	mm	45 mm
X6	Rear surface of vehicle to lower leading edge of right door	3000	mm	2954	mm	46 mm
X7	Rear surface of vehicle to lower leading edge of left door	3010	mm	2962	mm	48 mm
X8	Rear surface of vehicle to upper trailing edge of right door	2032	mm	2030	mm	2 mm
X9	Rear surface of vehicle to upper trailing edge of left door	2035	mm	2011	mm	24 mm
X10	Rear surface of vehicle to lower trailing edge of right door	2040	mm	1992	mm	48 mm
X11	Rear surface of vehicle to lower trailing edge of left door	2050	mm	2002	mm	48 mm
X12	Rear surface of vehicle to bottom of "A" post on right side	2969	mm	2951	mm	18 mm
X13	Rear surface of vehicle to bottom of "A" post on left side	2975	mm	2948	mm	27 mm
X14	Rear surface of vehicle to firewall - right side	3347	mm	3196	mm	151 mm
X15	Rear surface of vehicle to firewall - left side	3323	mm	3259	mm	64 mm
X16	Rear surface of vehicle to steering wheel center	2593	mm	2600	mm	-7 mm
X17	Center of steering column to "A" post	309	mm	285	mm	24 mm
X18	Center of steering column to headliner	435	mm	322	mm	113 mm
X19	Rear surface of vehicle to right side of front bumper	4436	mm	3869	mm	567 mm
X20	Rear surface of vehicle to left side of front bumper	4429	mm	3877	mm	552 mm
X21	Length of engine block	500	mm	500	mm	0 mm

Figure 13 Static Footwell Deformation
(Driver's Side)



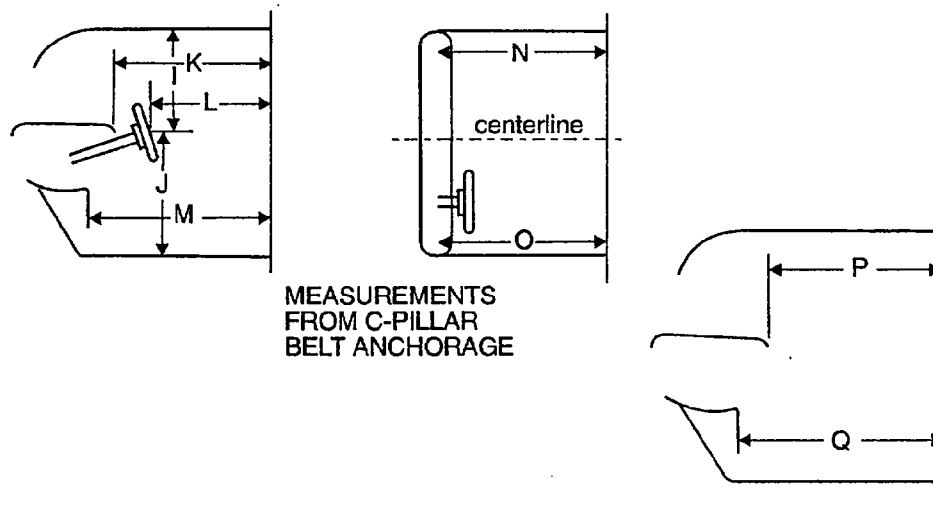
Measurement	Pre-Test	Post-Test	Difference
A	840 mm	760 mm	80 mm
B	680 mm	610 mm	70 mm
C	480 mm	450 mm	30 mm
D	520 mm	500 mm	20 mm
E	1060 mm	1060 mm	0 mm
H	1100 mm	1060 mm	40 mm

Figure 14 Static Footwell Deformation
(Passenger's Side)



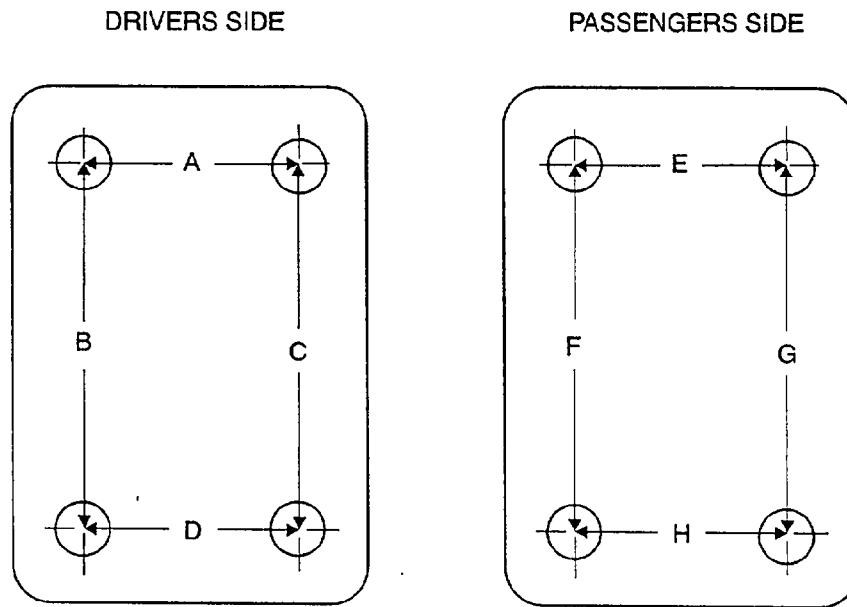
Measurement	Pre-Test	Post-Test	Difference
A	750 mm	720 mm	30 mm
B	660 mm	580 mm	80 mm
C	500 mm	480 mm	20 mm
D	520 mm	500 mm	20 mm
E	1060 mm	1150 mm	-90 mm
H	1100 mm	1020 mm	-20 mm

Figure 15 Static Passenger Compartment Intrusion



Measurement	Pre-Test	Post-Test	Difference
I	520 mm	420 mm	100 mm
J	680 mm	825 mm	-145 mm
K	750 mm	780 mm	-30 mm
L	480 mm	520 mm	-40 mm
M	720 mm	730 mm	-10 mm
N	800 mm	830 mm	-30 mm
O	800 mm	870 mm	-70 mm
P	710 mm	750 mm	-40 mm
Q	720 mm	740 mm	-20 mm

Figure 16 Underbody Floorboard Deformation



Measurement	Pre-Test	Post-Test	Difference
A	NA	NA	NA
B	NA	NA	*NA
C	NA	NA	NA
D	NA	NA	NA
E	NA	NA	NA
F	NA	NA	NA
G	NA	NA	NA
H	NA	NA	NA

Appendix A

Photographs

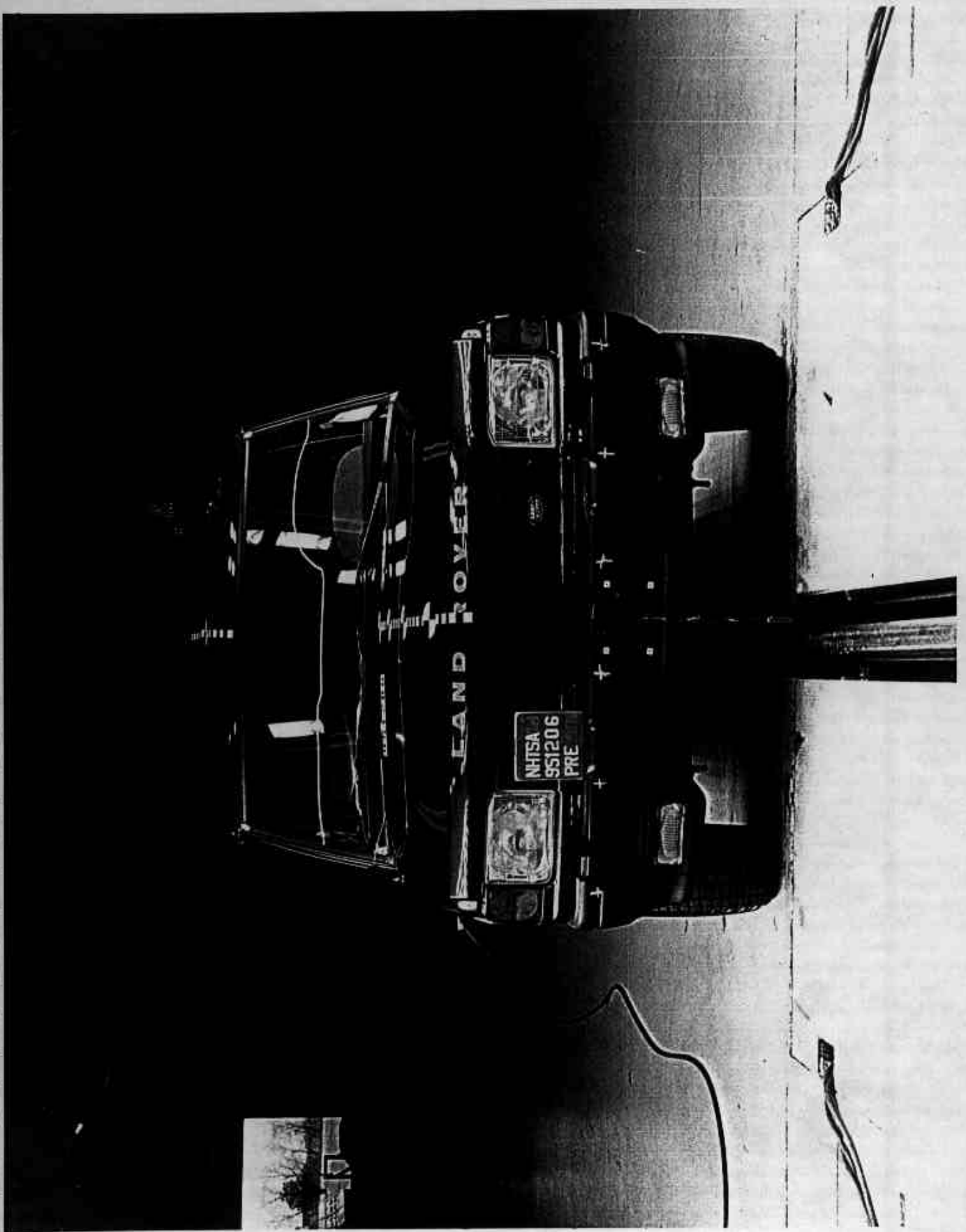


Figure A-1. Pre-Test Front View

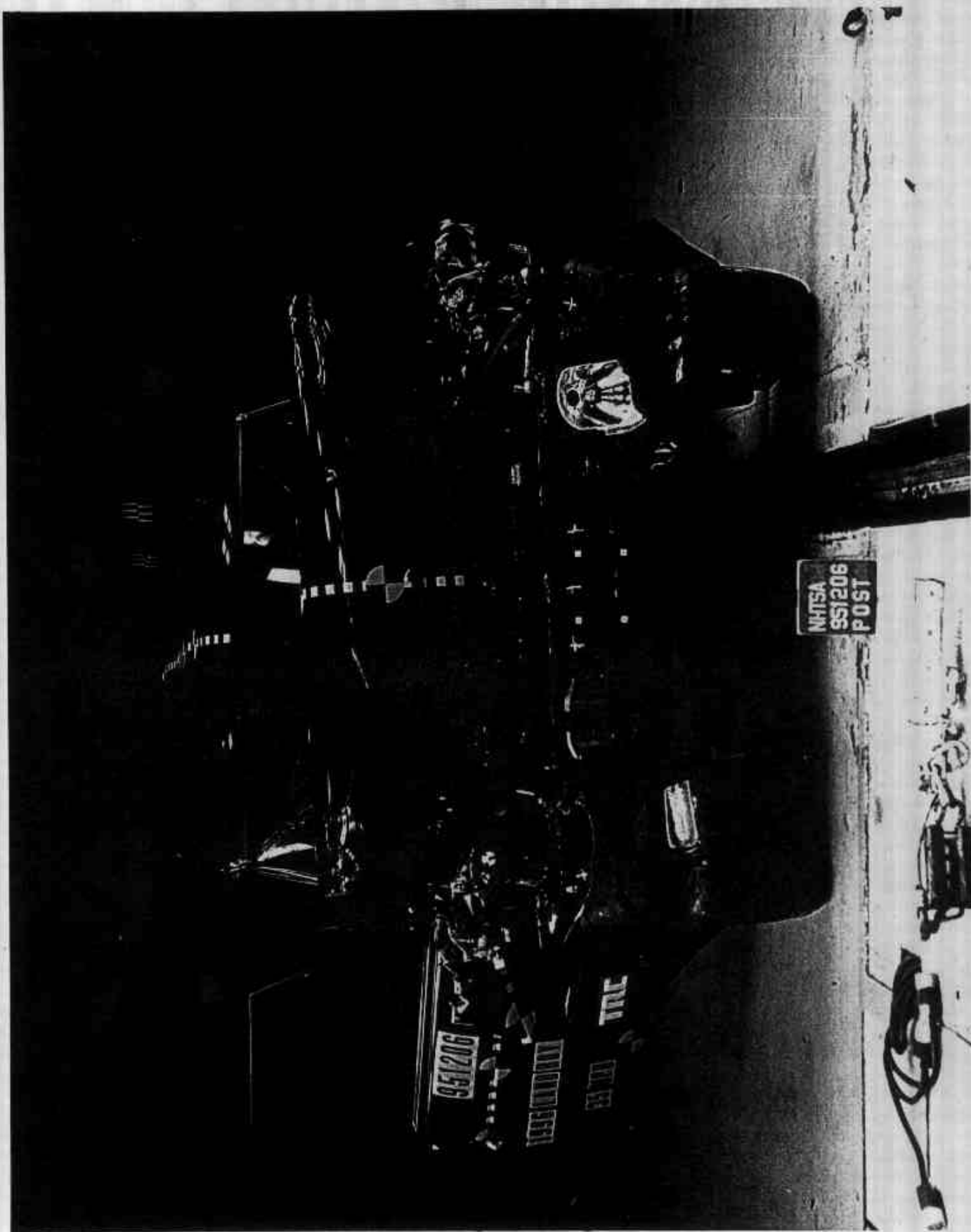


Figure A-2. Post-Test Front View

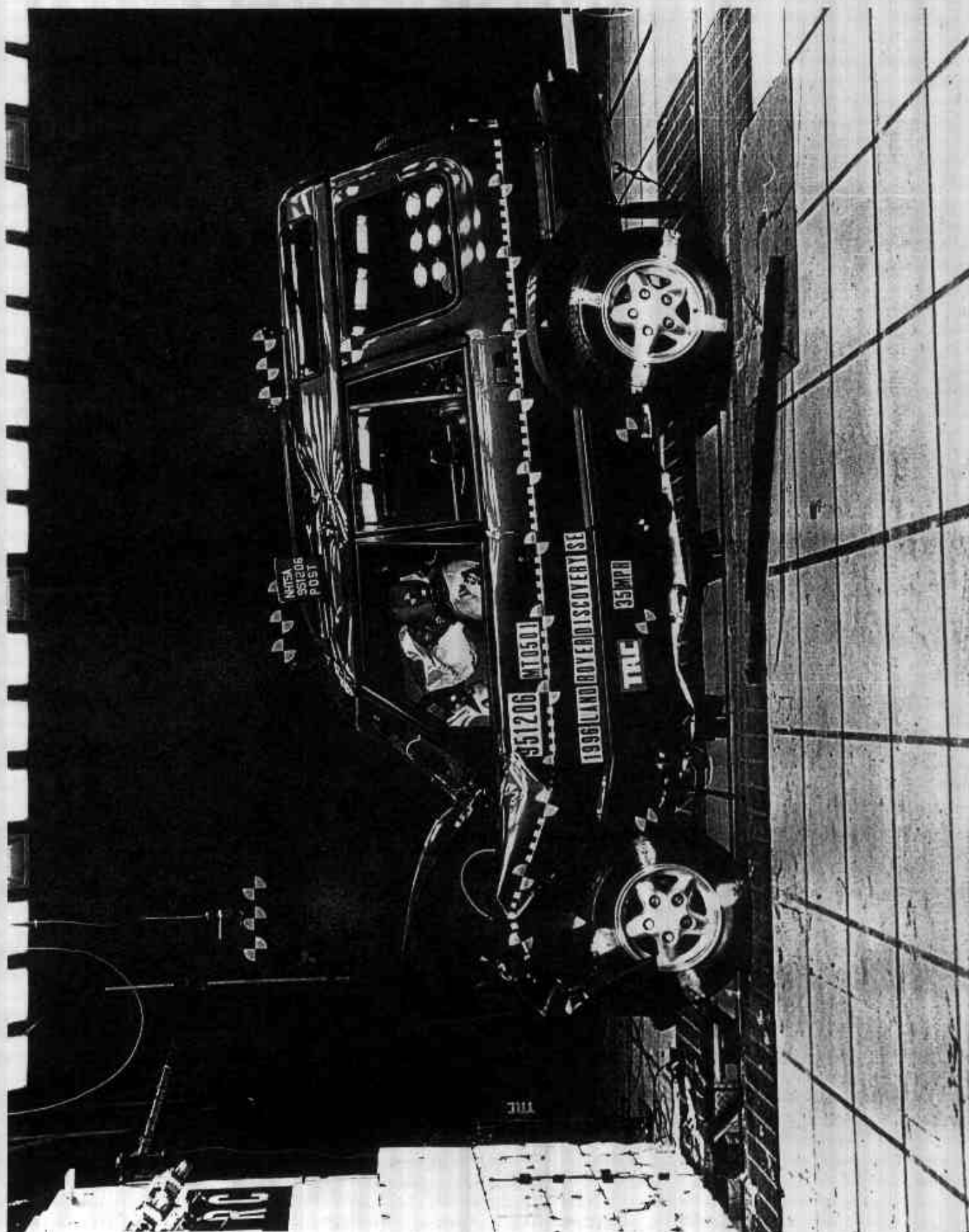


Figure A-4. Post-Test Left Side View

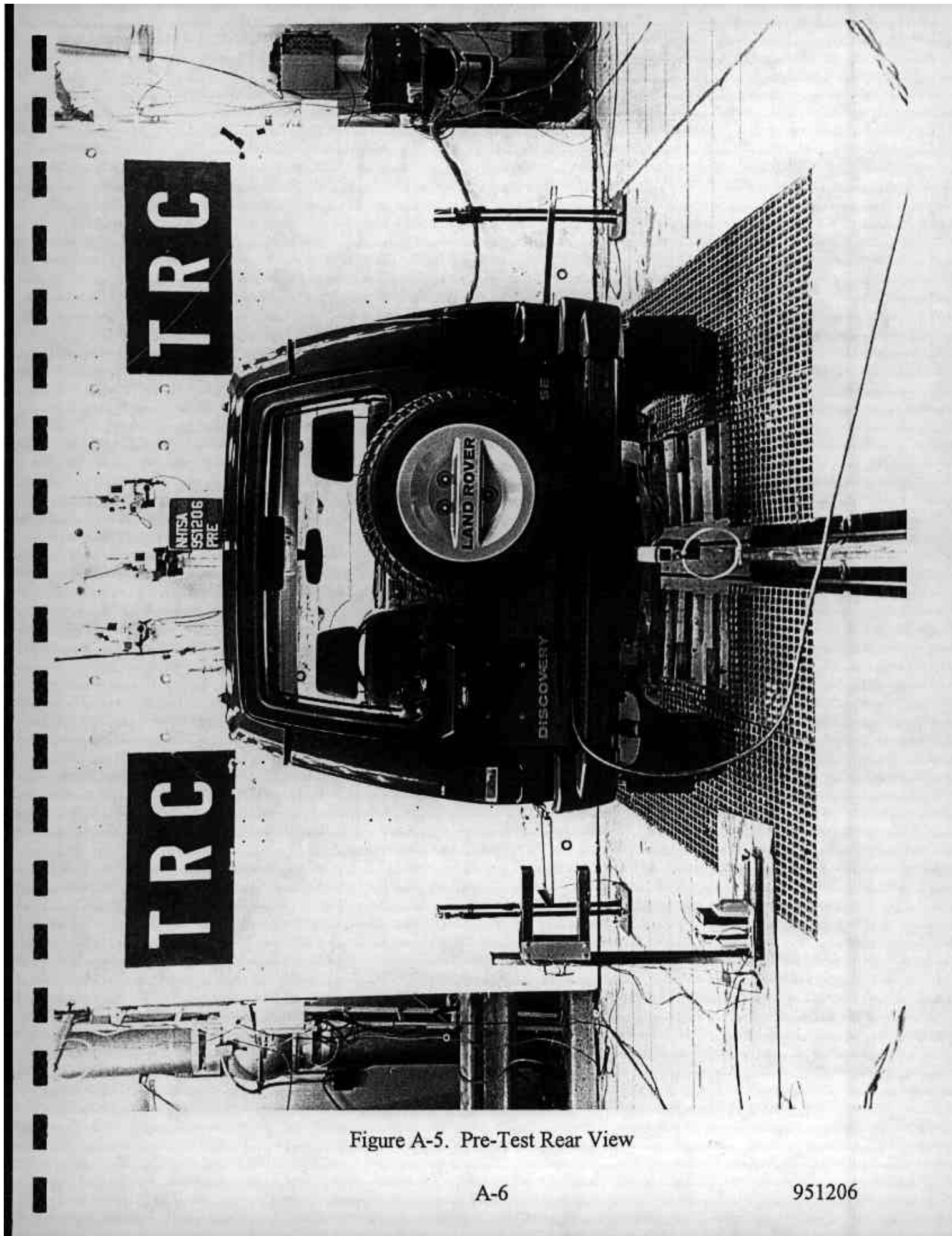


Figure A-5. Pre-Test Rear View

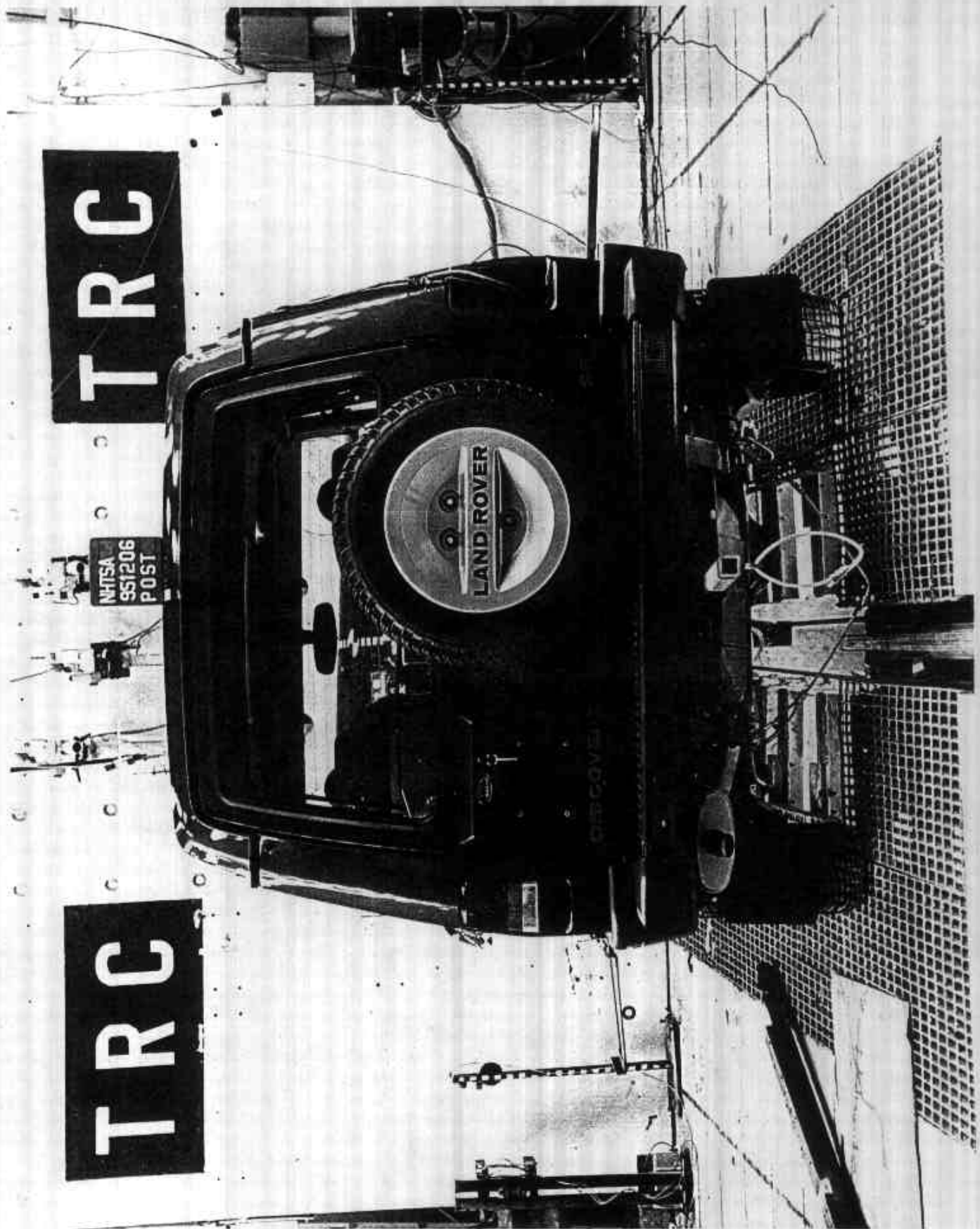


Figure A-6. Post-Test Rear View

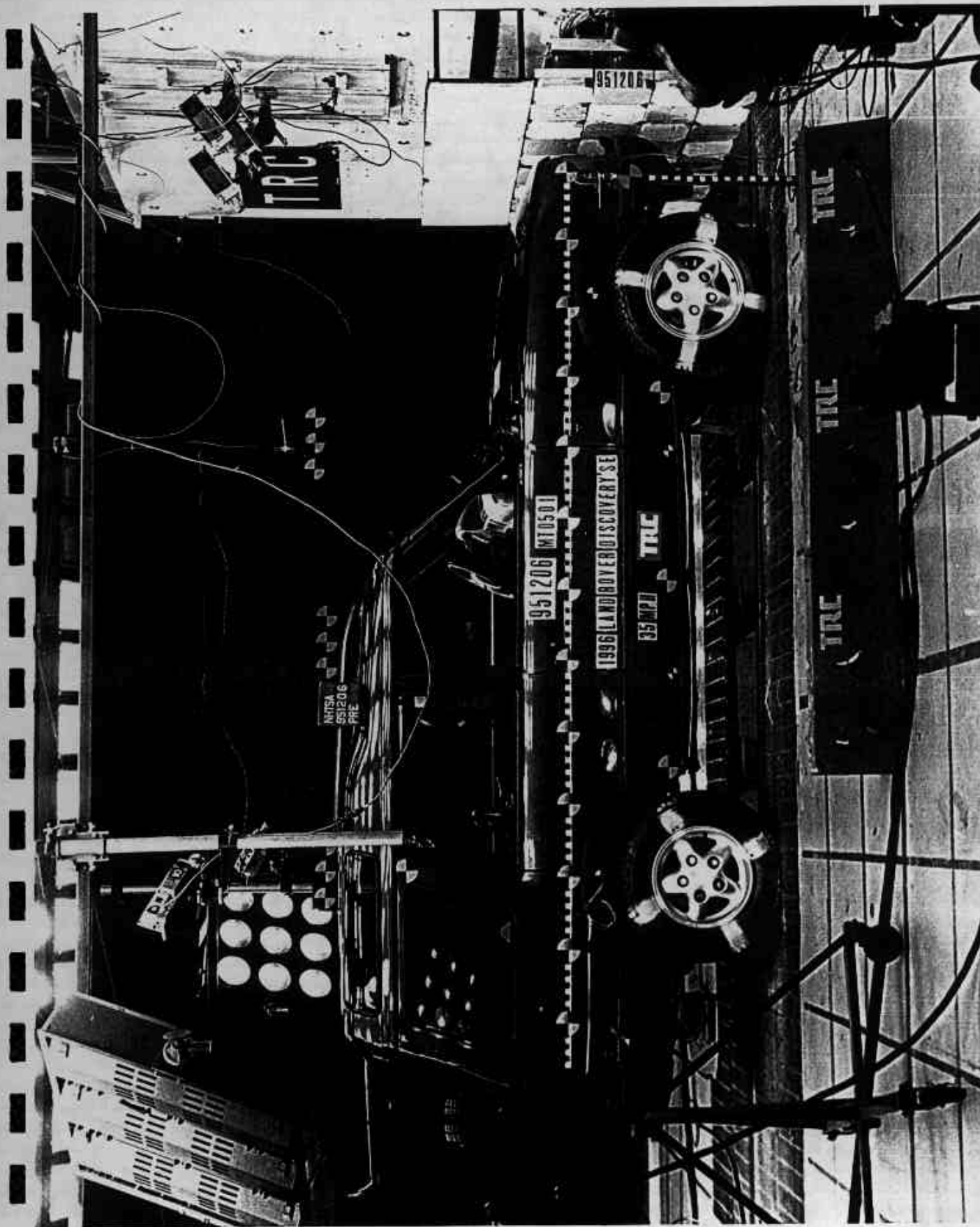


Figure A-7. Pre-Test Right Side View

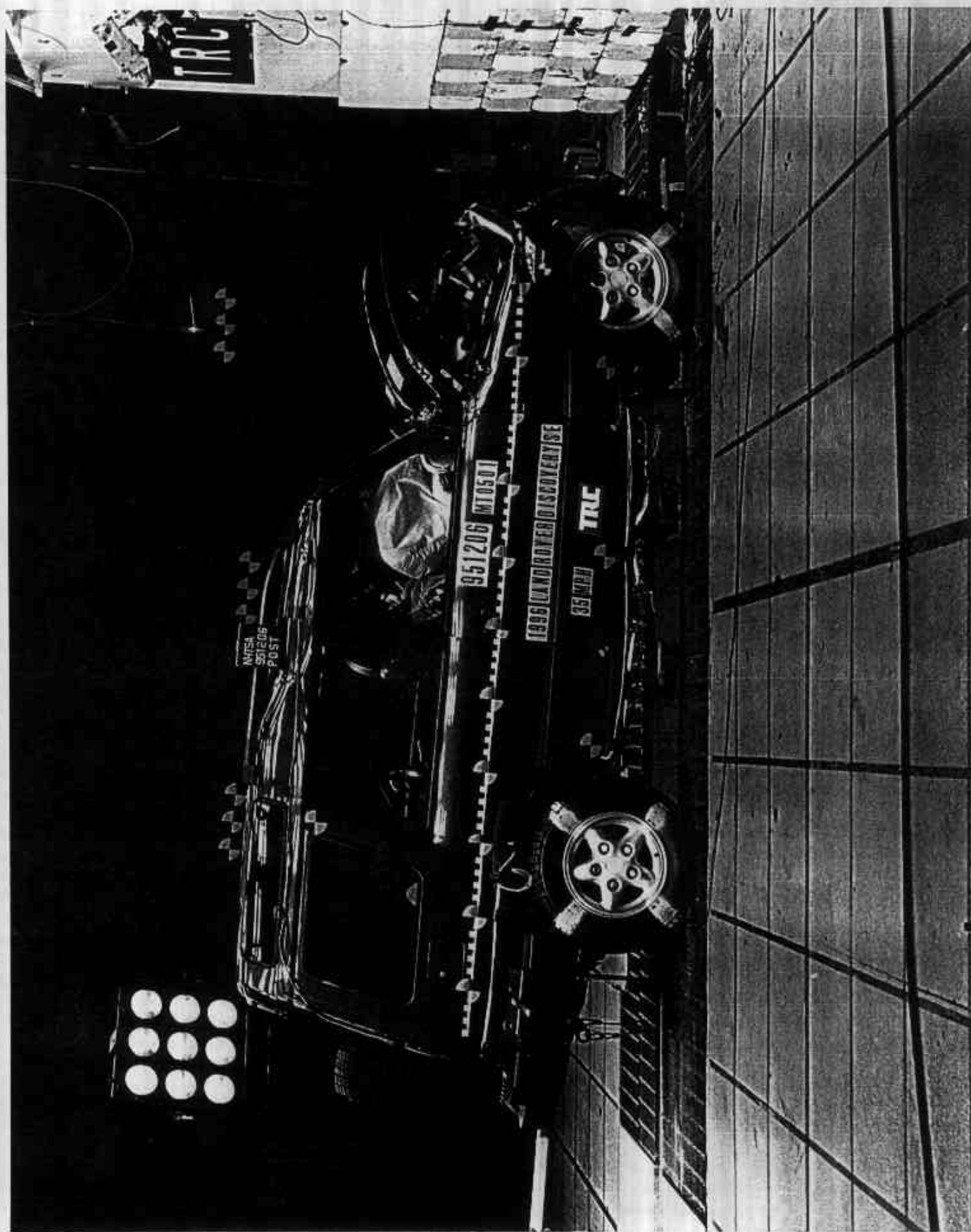


Figure A-8. Post-Test Right Side View

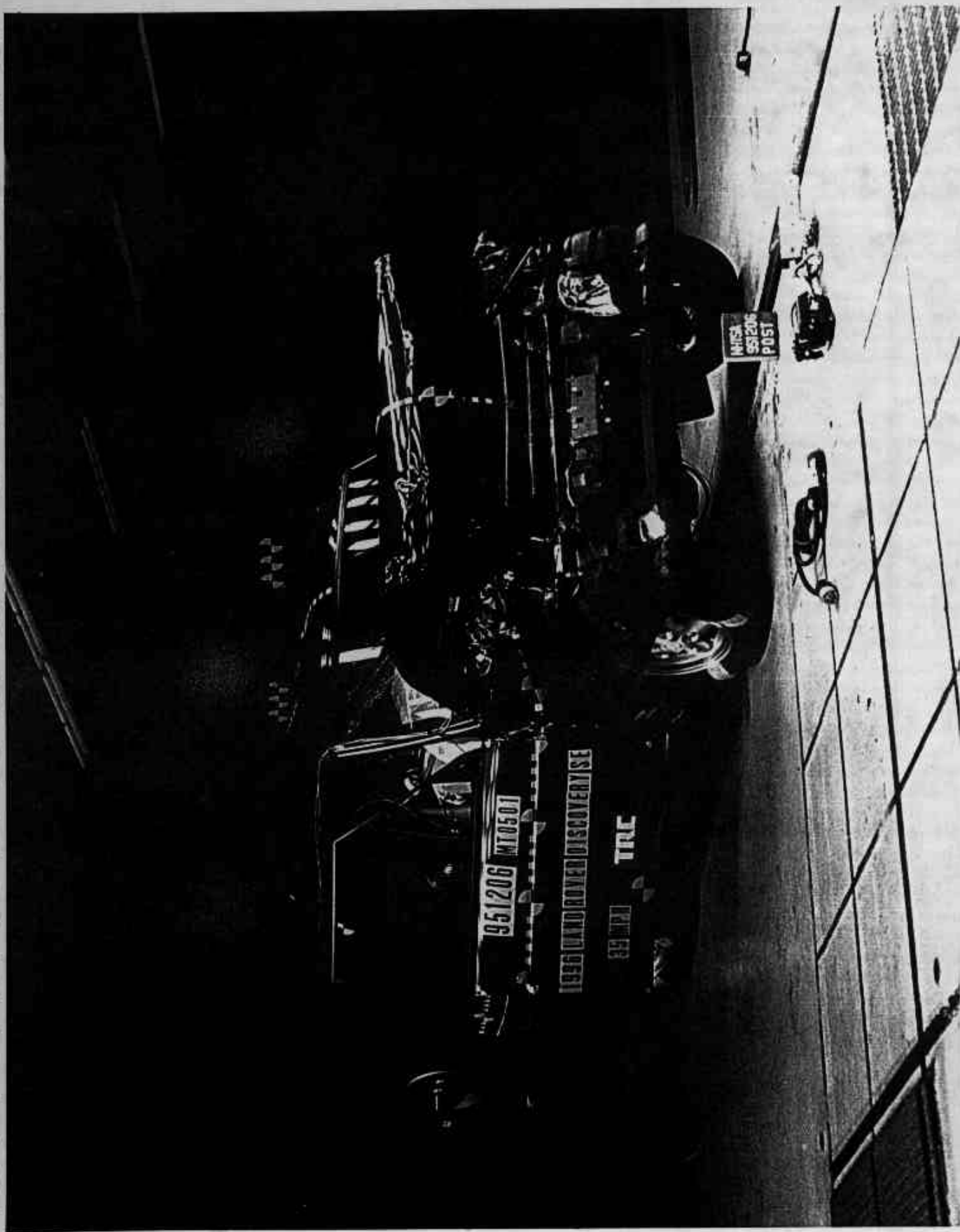


Figure A-9. Post-Test Right Front Three-Quarter View

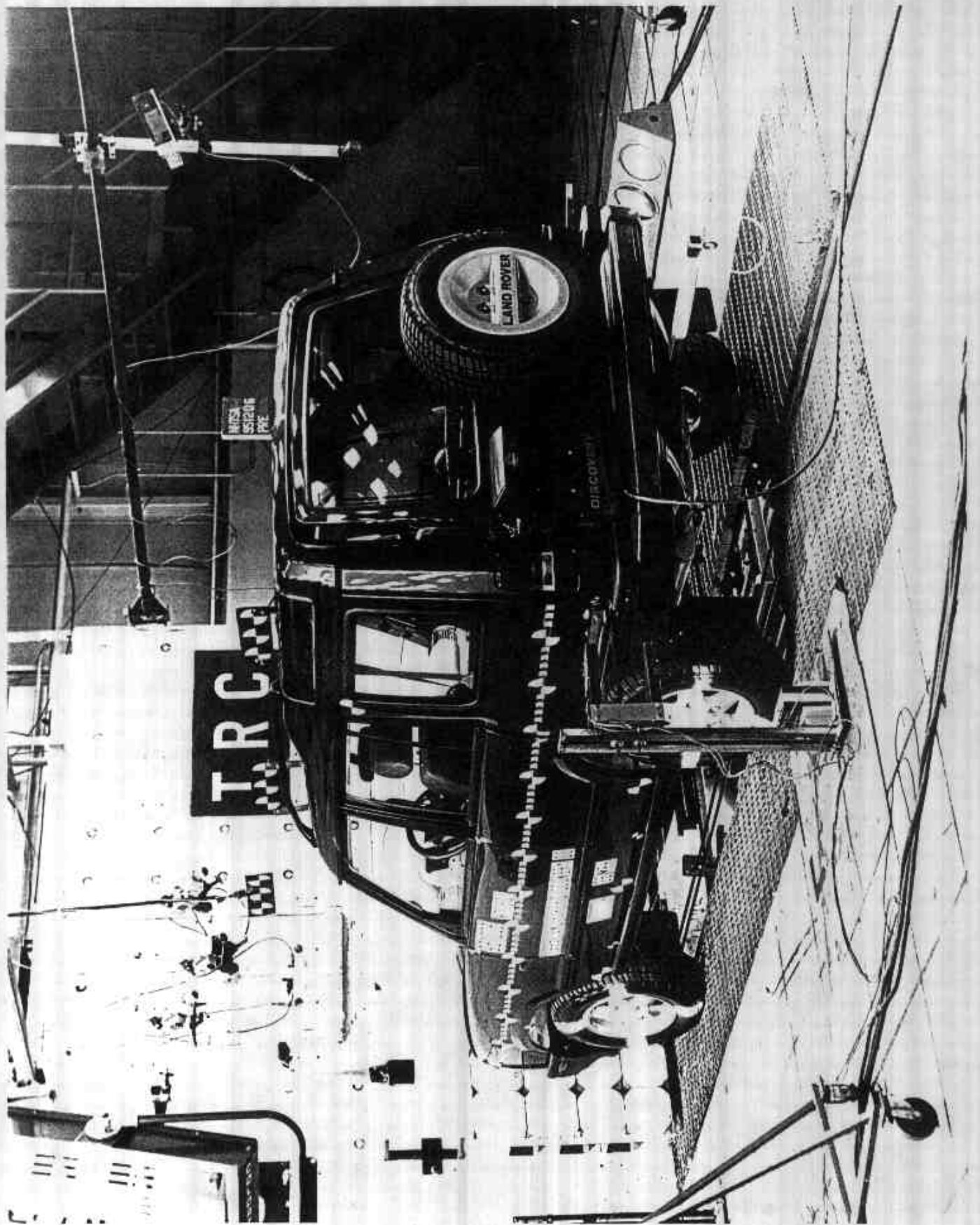


Figure A-10. Pre-Test Left Rear Three-Quarter View

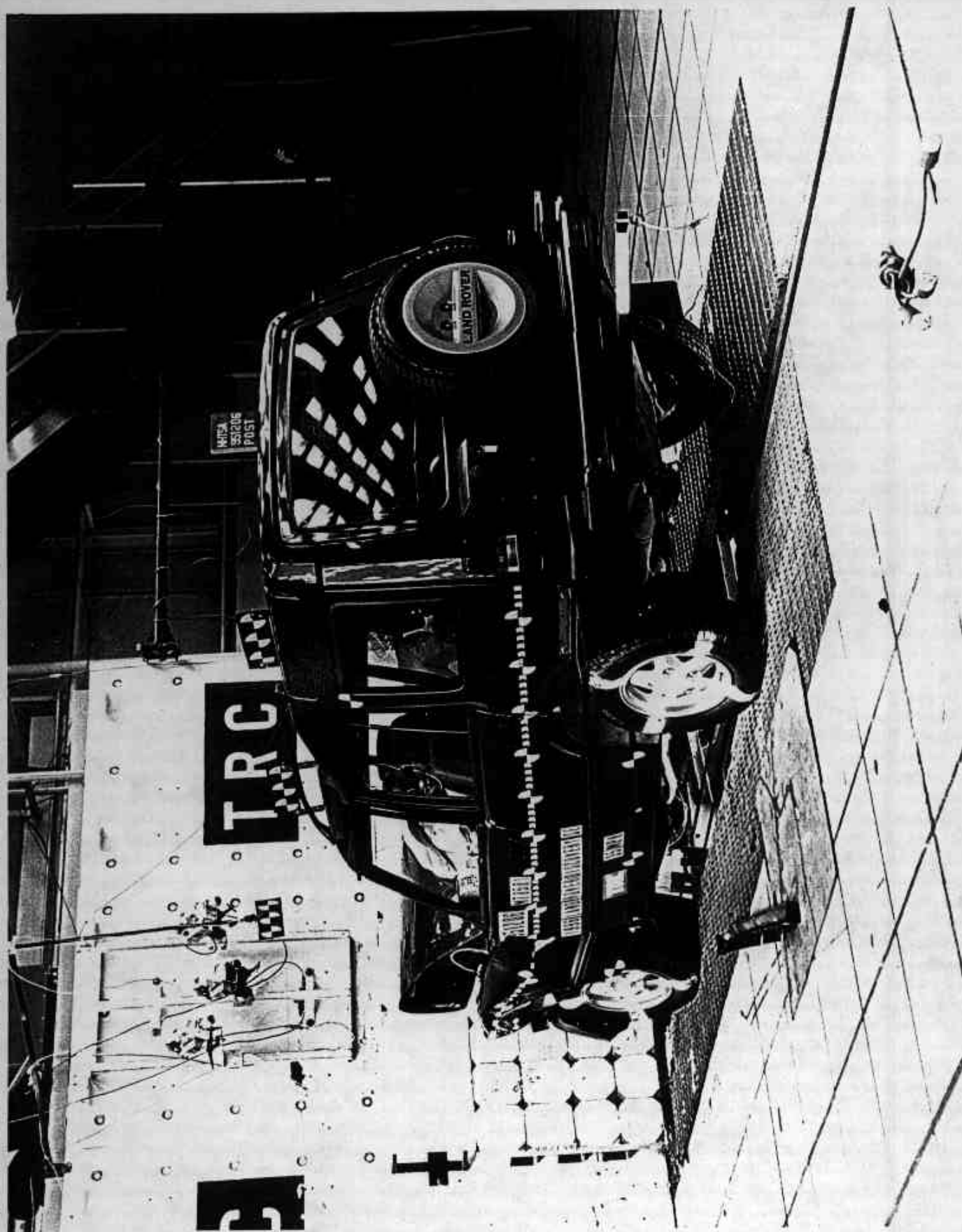


Figure A-11. Post-Test Left Rear Three-Quarter View

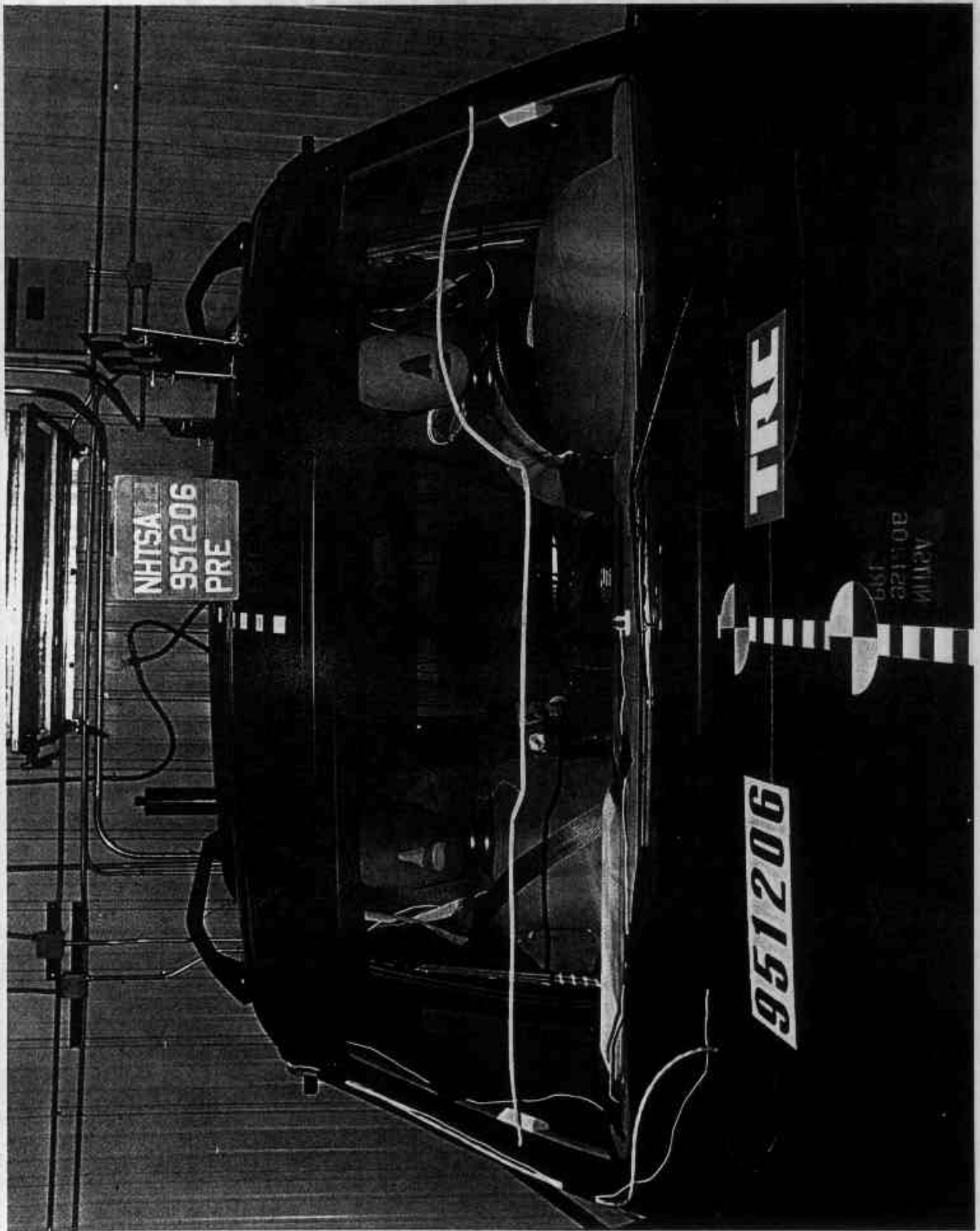


Figure A-12. Pre-Test Windshield View

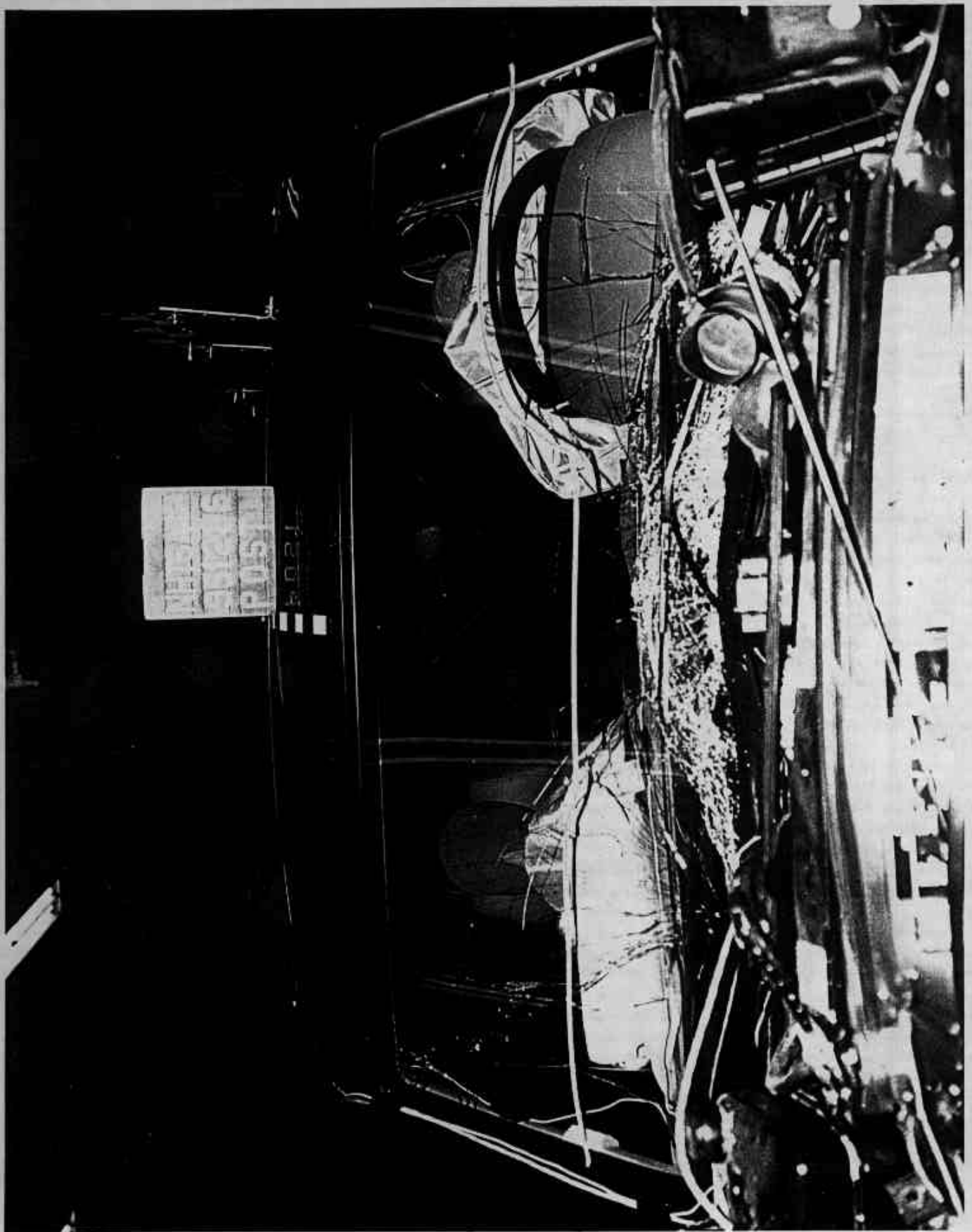


Figure A-13. Post-Test Windshield View

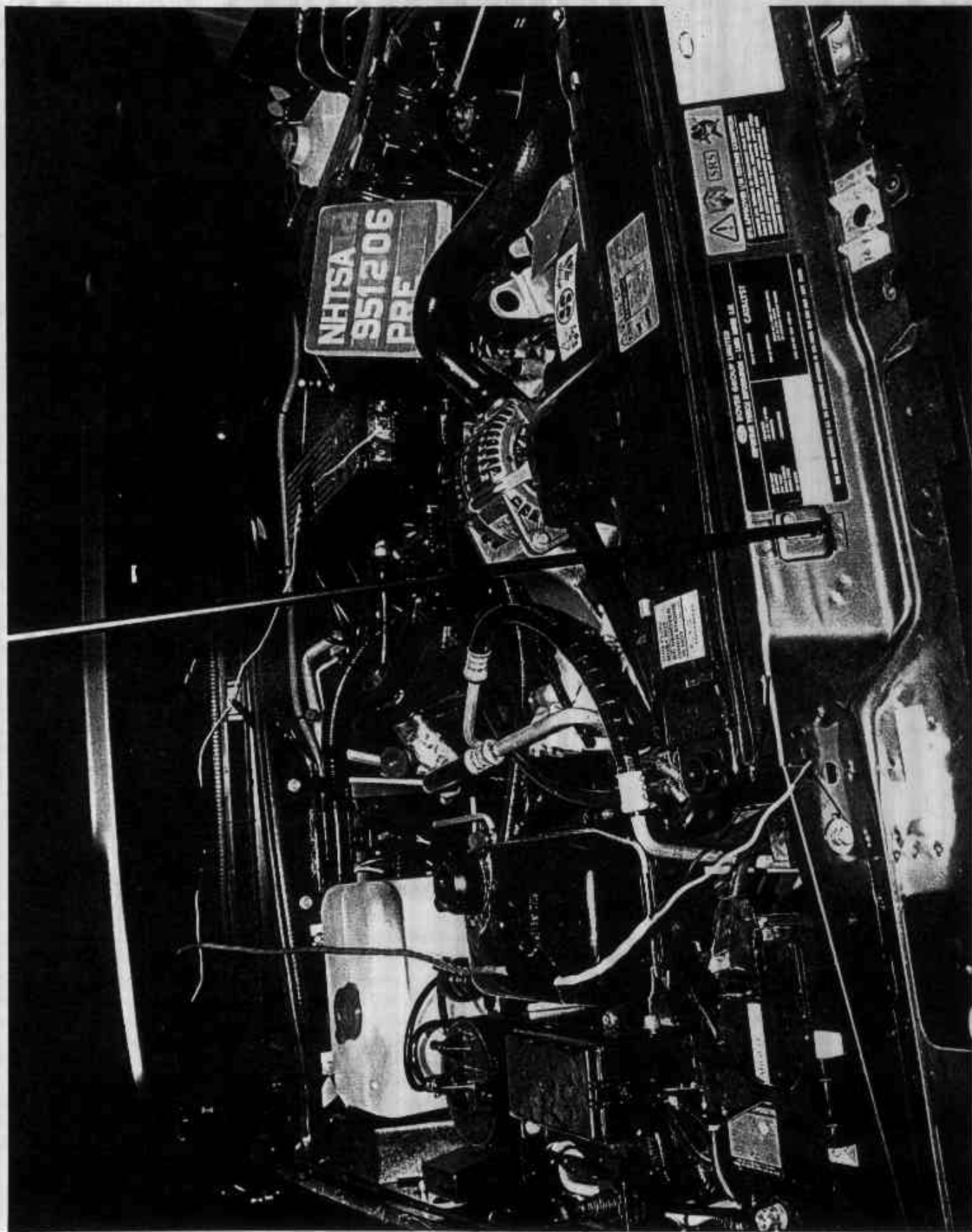


Figure A-14. Pre-Test Engine Compartment View

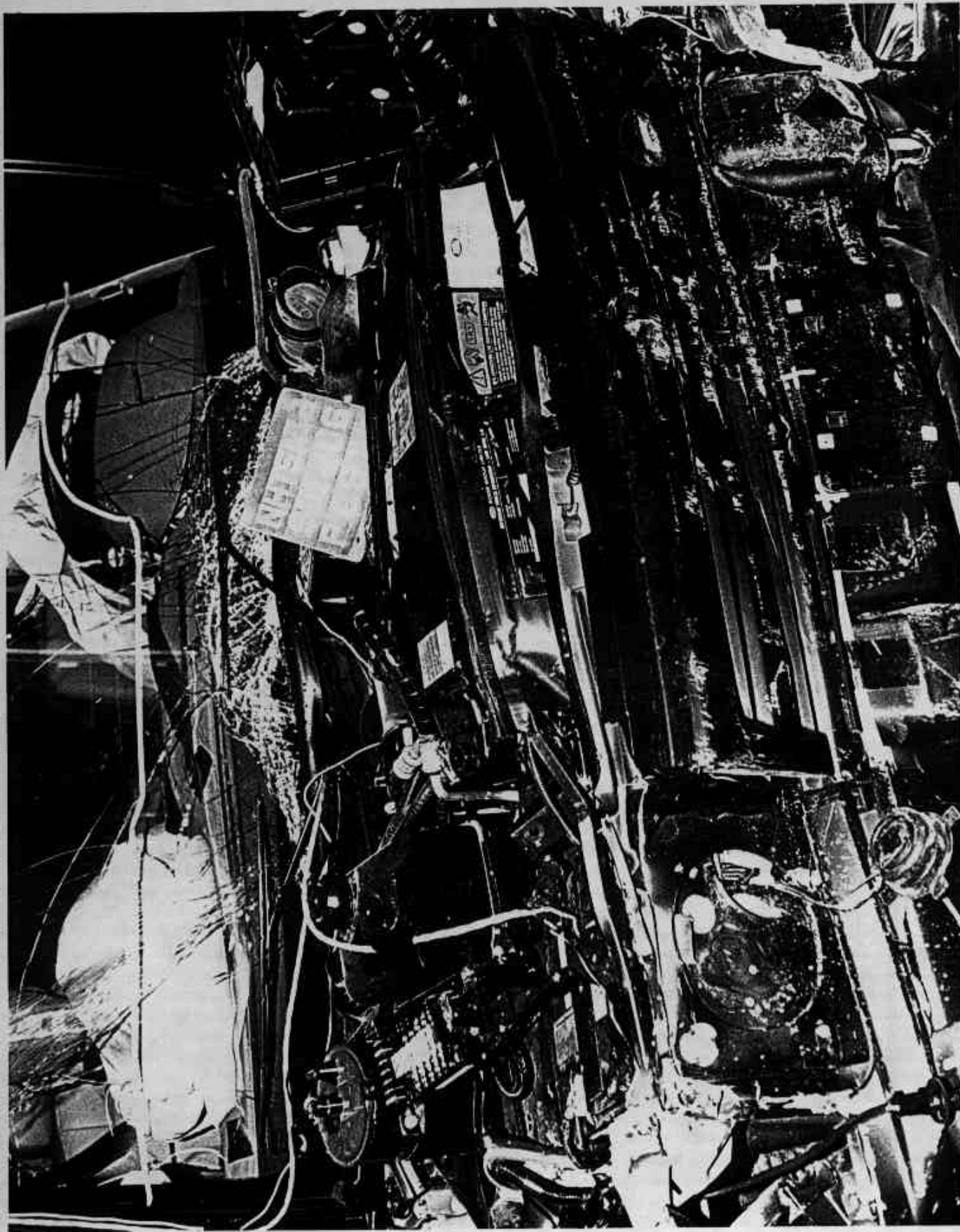


Figure A-15. Post-Test Engine Compartment View



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

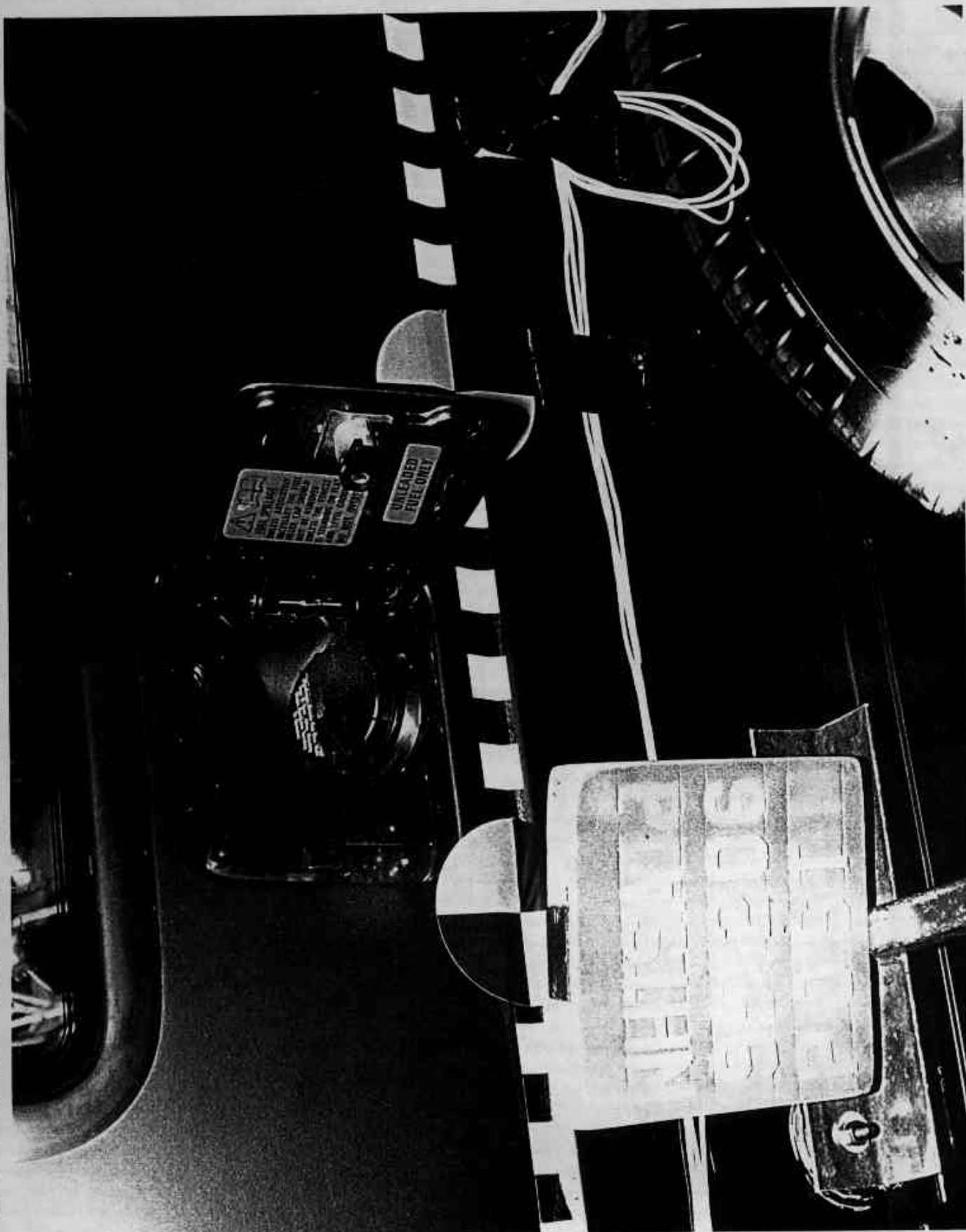


Figure A-17. Post-Test Fuel Filler Cap View

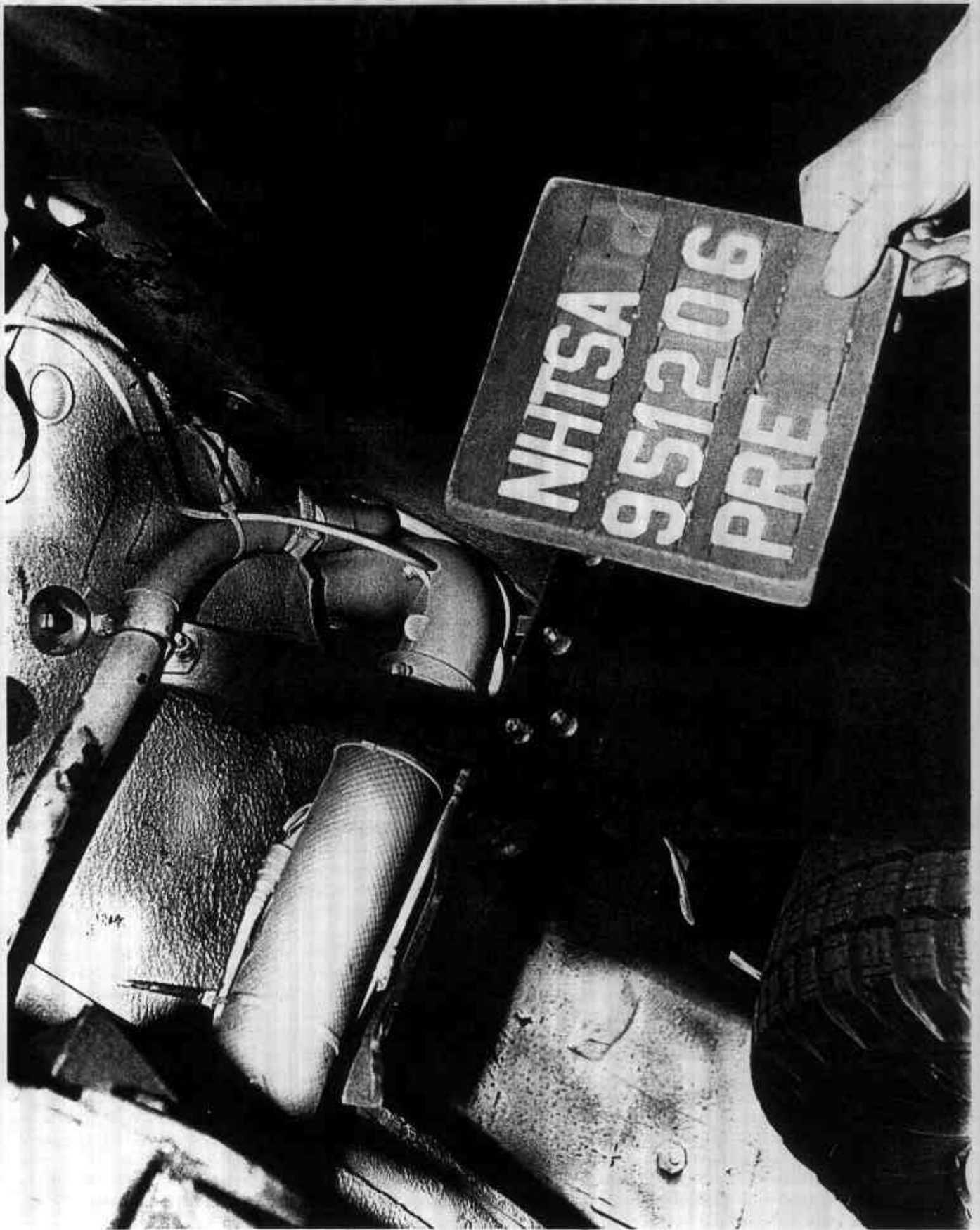


Figure A-18. Pre-Test Fuel Filler Neck View

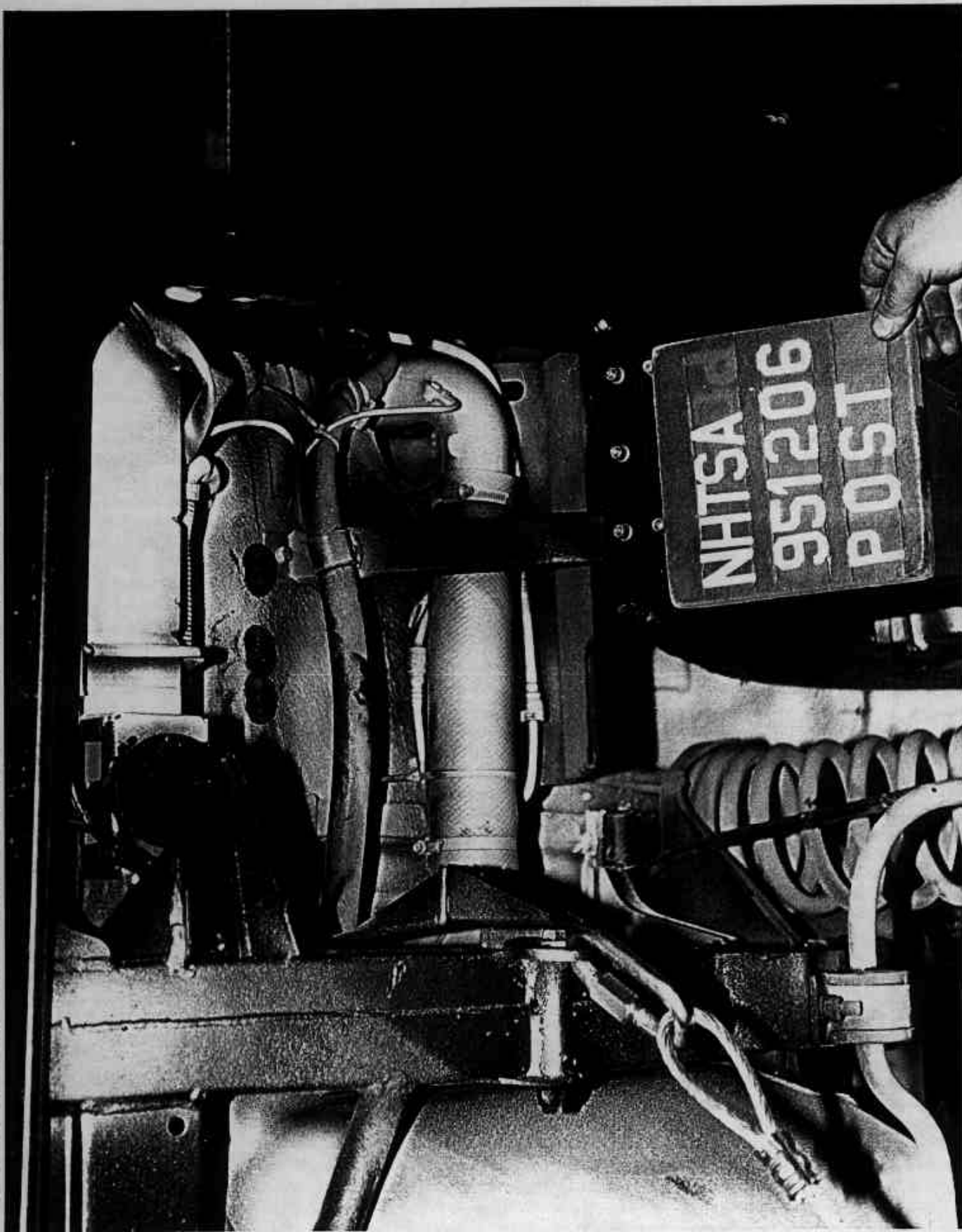


Figure A-19. Post-Test Fuel Filler Neck View

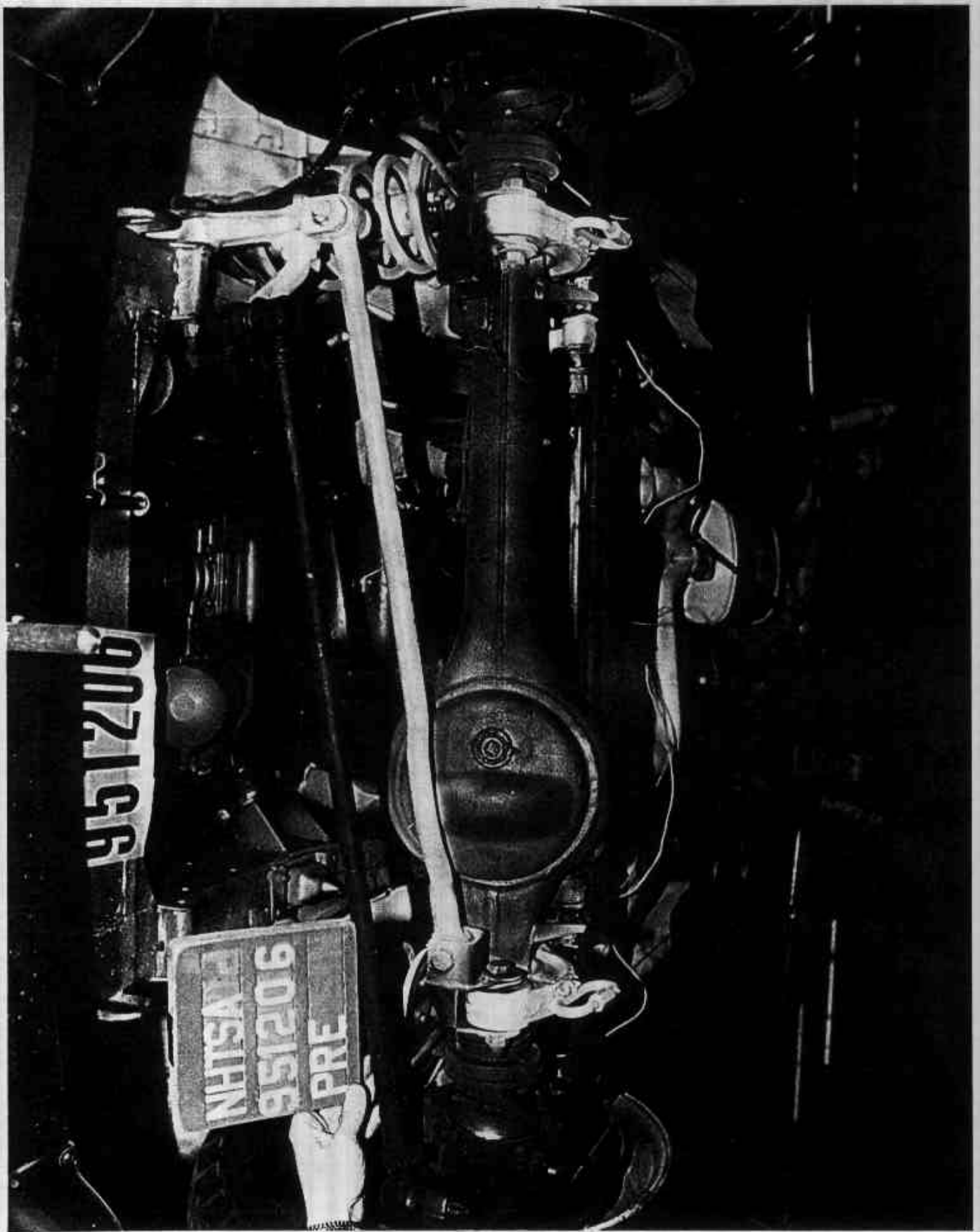


Figure A-20. Pre-Test Front Underbody View

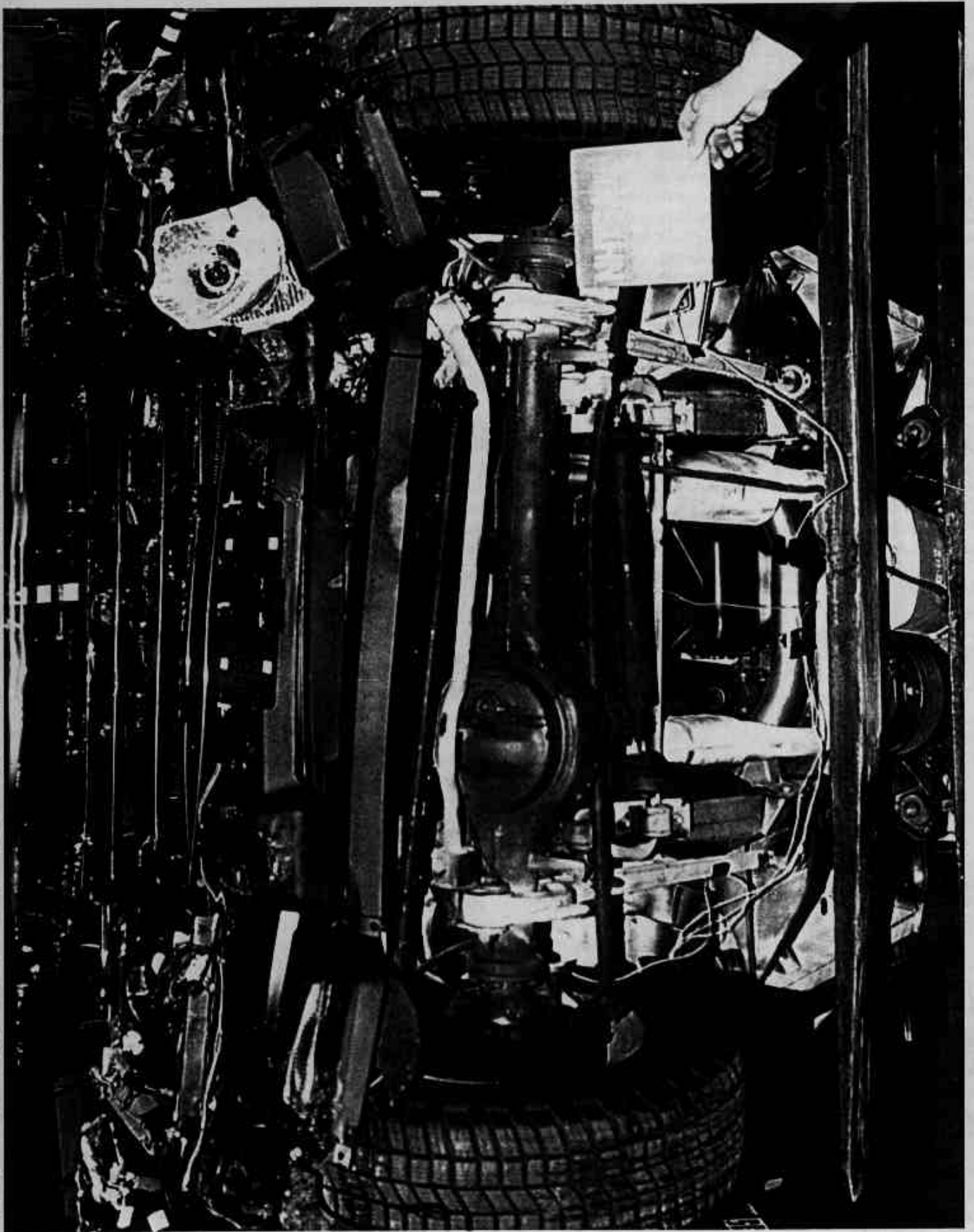


Figure A-21. Post-Test Front Underbody View

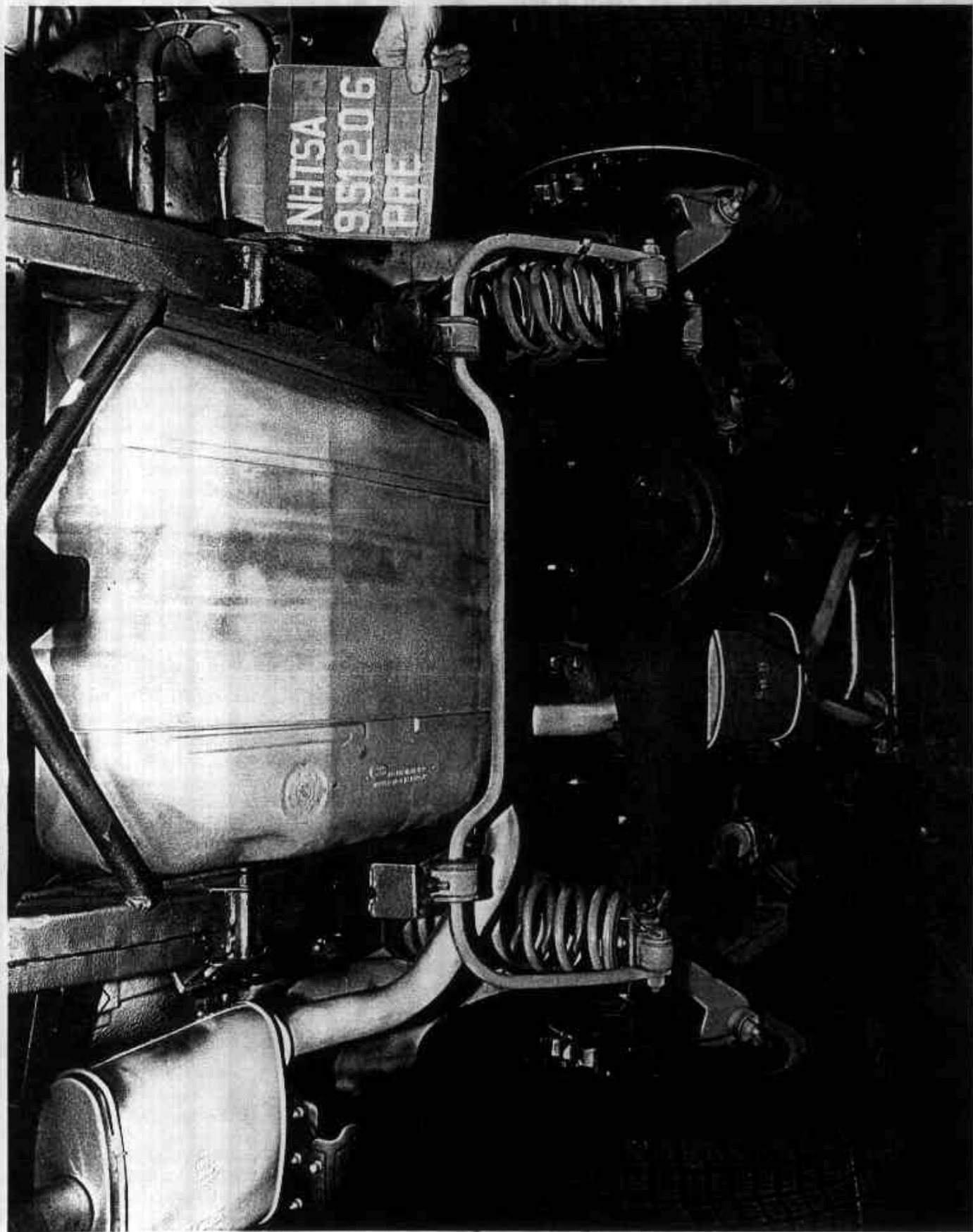


Figure A-22. Pre-Test Rear Underbody View

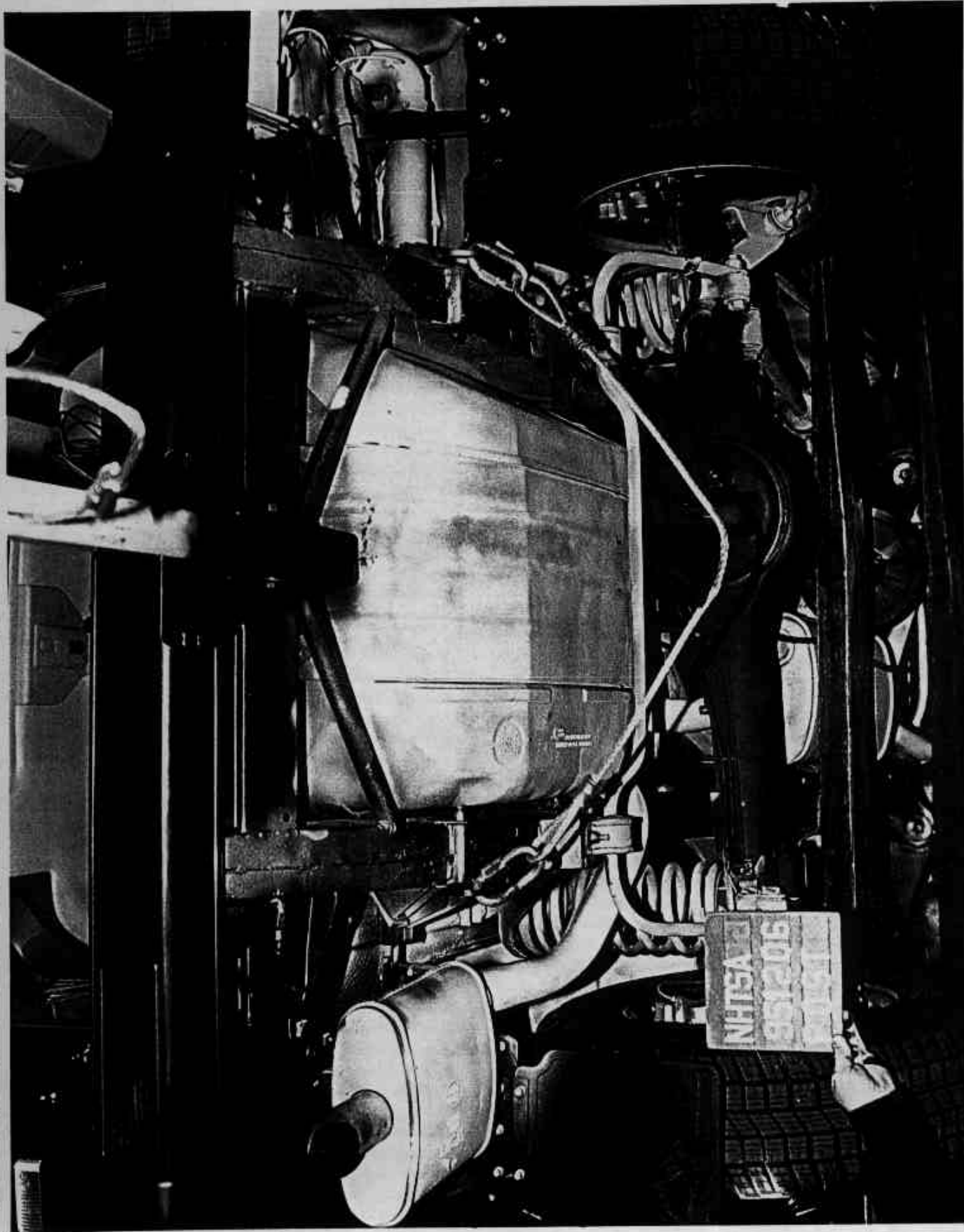


Figure A-23. Post-Test Rear Underbody View



Figure A-24. Pre-Test Driver Dummy Position View



Figure A-25. Post-Test Driver Dummy Position View



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



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



Figure A-28. Pre-Test Driver Dummy & Vehicle Interior - View 1

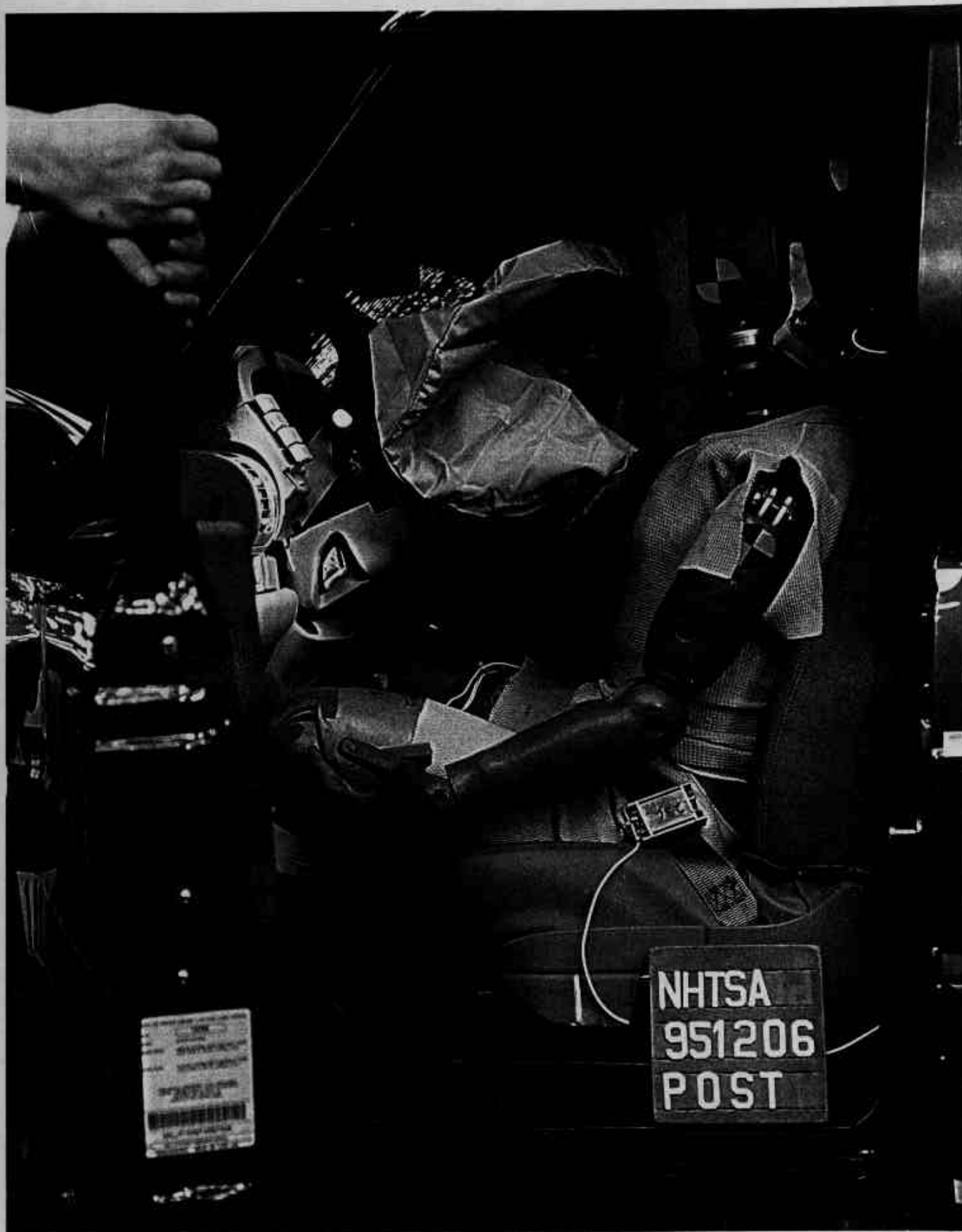


Figure A-29. Post-Test Driver Dummy & Vehicle Interior - View 1

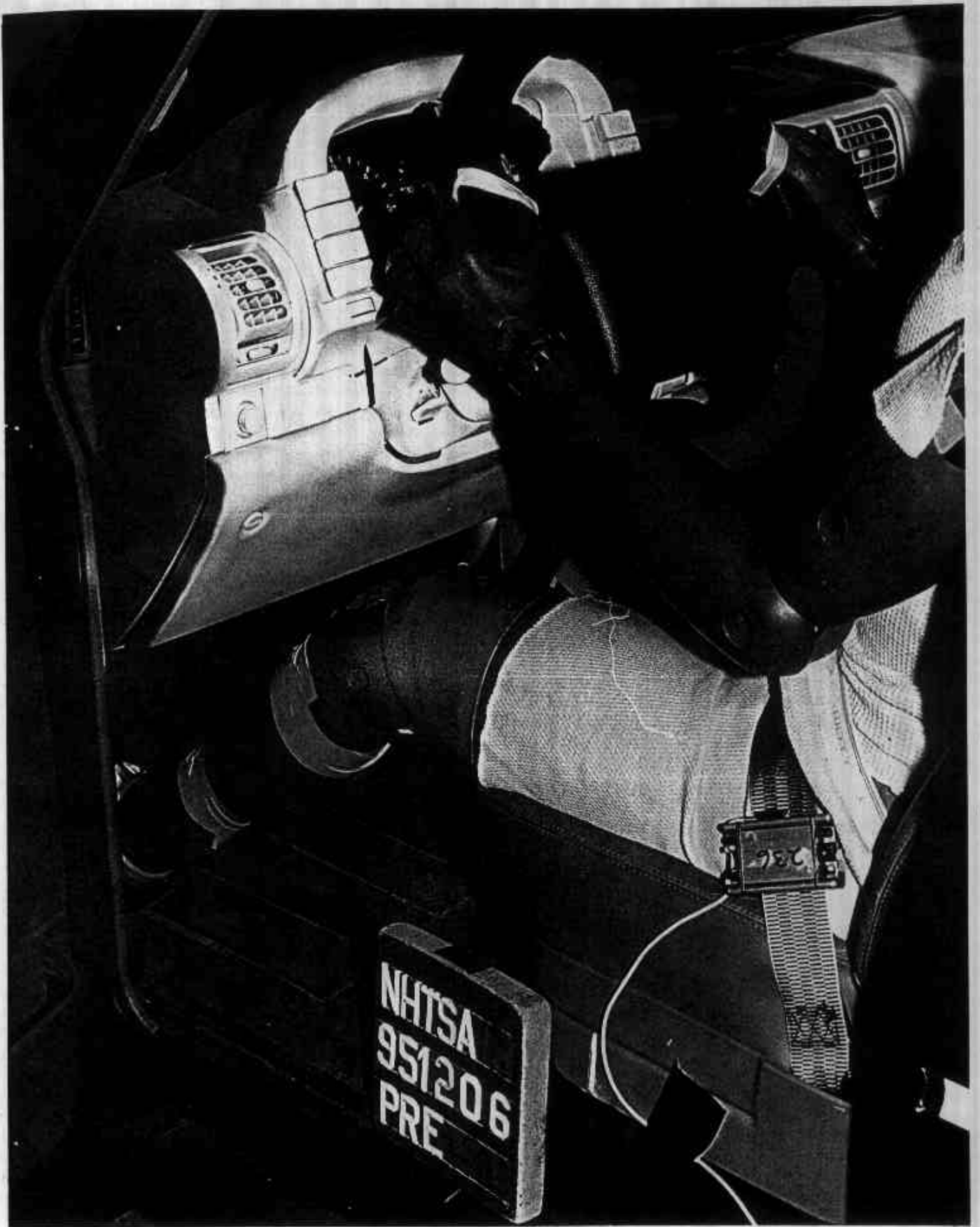


Figure A-30. Pre-Test Driver Dummy & Vehicle Interior - View 2



Figure A-31. Post-Test Driver Dummy & Vehicle Interior - View 2

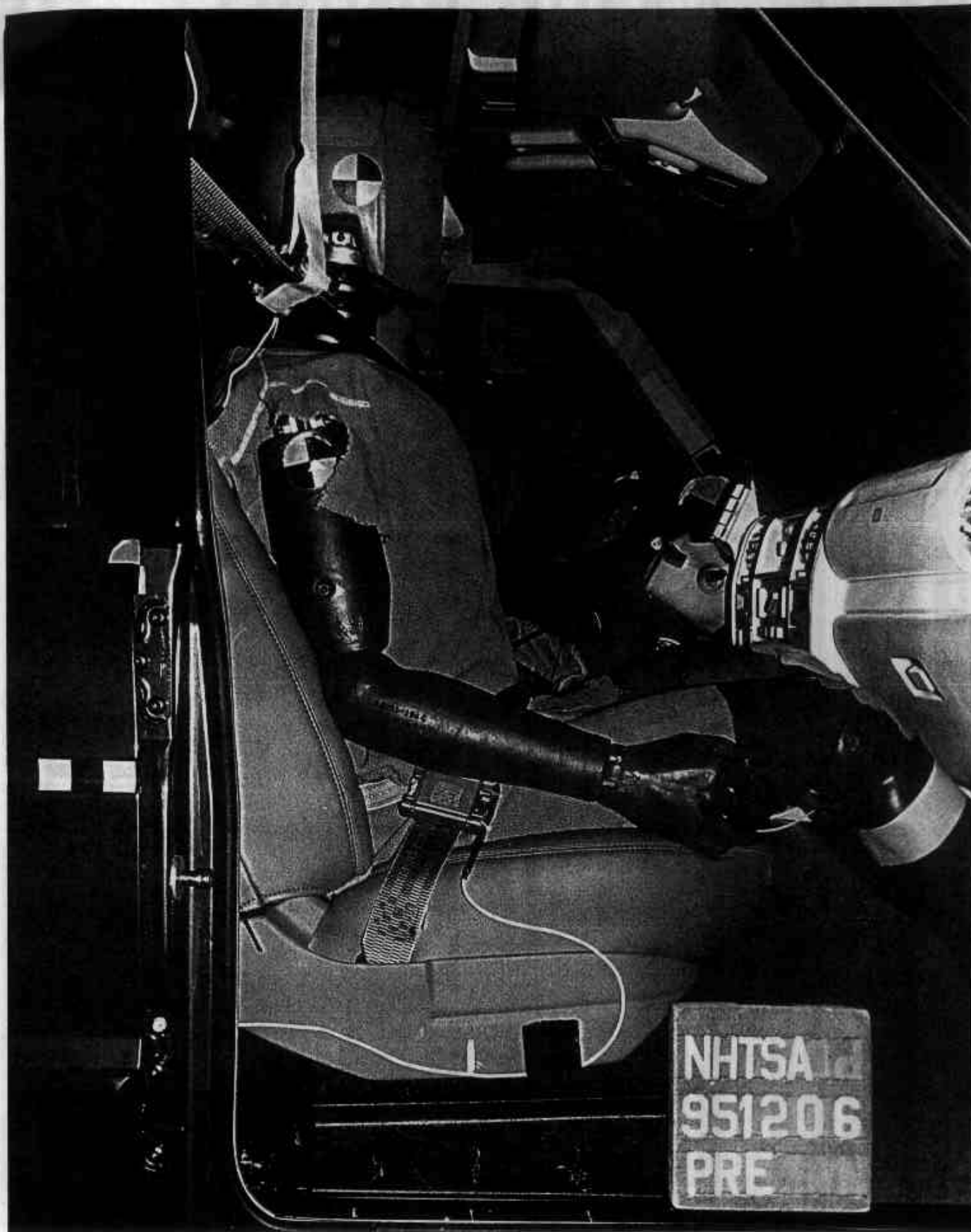


Figure A-32. Pre-Test Passenger Dummy & Vehicle Interior - View 1



Figure A-33. Post-Test Passenger Dummy & Vehicle Interior - View 1



Figure A-34. Pre-Test Passenger Dummy & Vehicle Interior - View 2



Figure A-35. Post-Test Passenger Dummy & Vehicle Interior - View 2

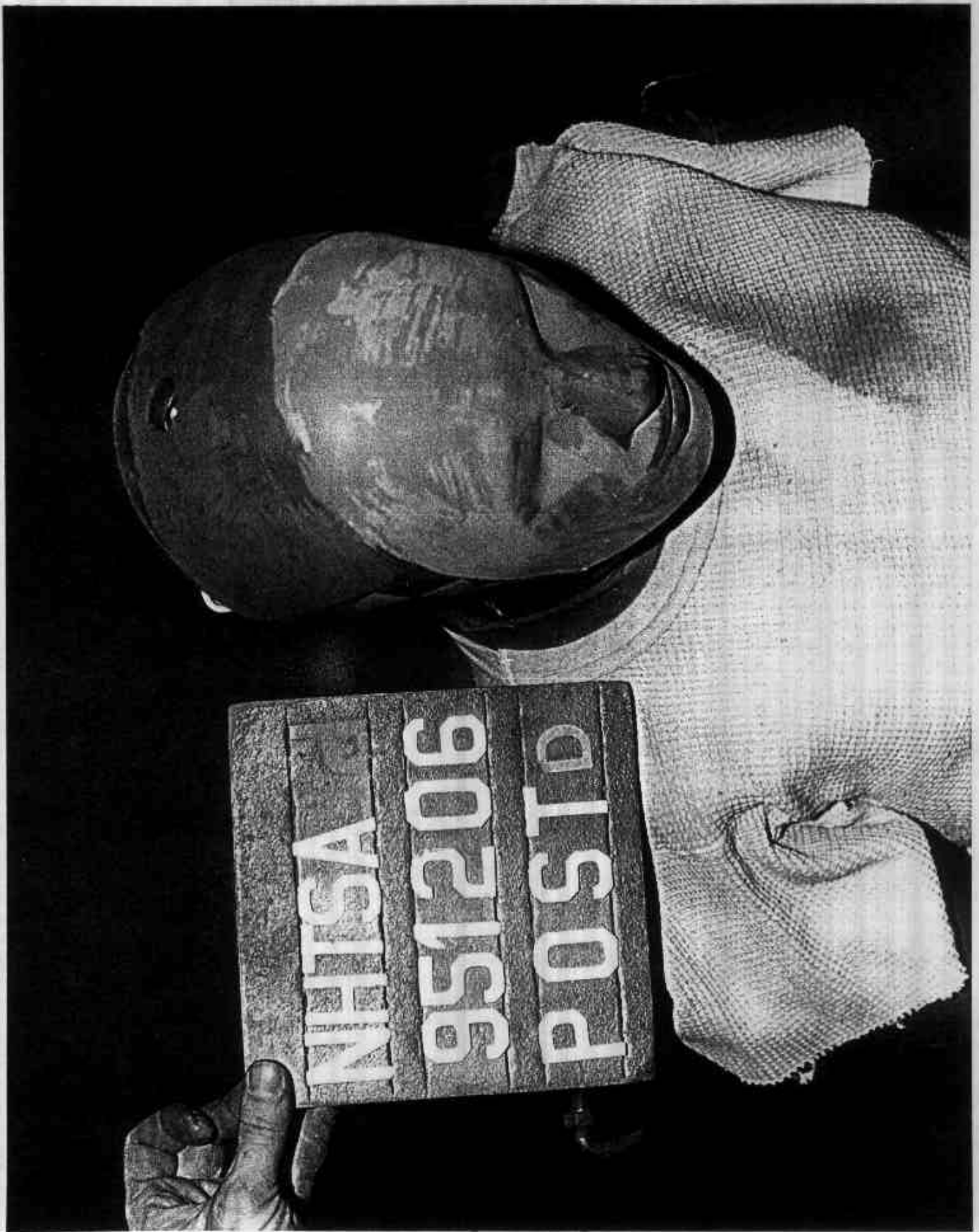


Figure A-36. Post-Test Driver Dummy Head Contact - View 1



Figure A-37. Post-Test Driver Dummy Head Contact - View 2



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



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

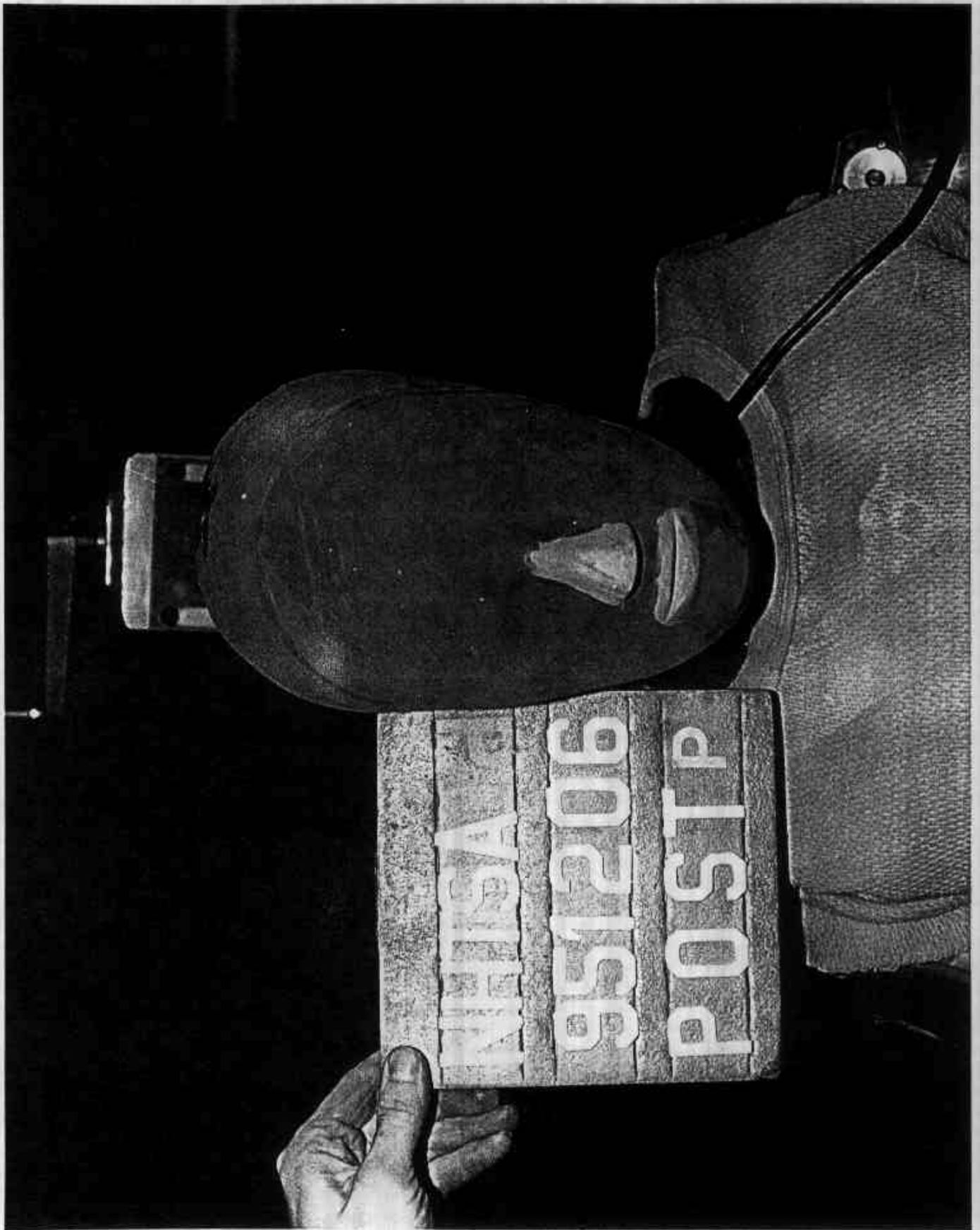


Figure A-40. Post-Test Passenger Dummy Head Contact - View 1



Figure A-41. Post-Test Passenger Dummy Head Contact - View 2



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

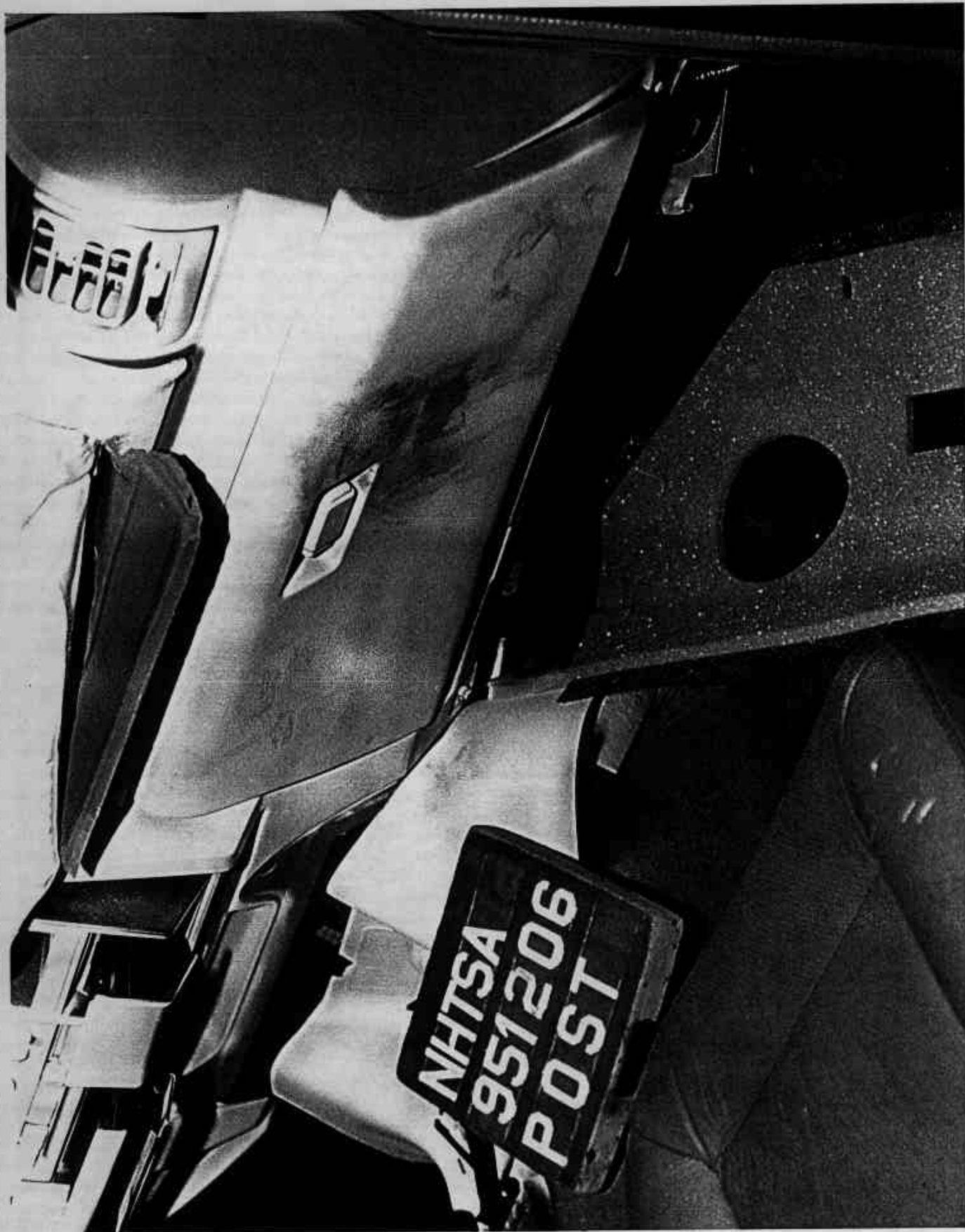


Figure A-43. Post-Test Passenger Dummy Knee Contact - View 2



Figure A-44. Pre-Test Ballast Location View

MFD BY ROVER GROUP LTD FOR LAND ROVER

DATE

10/95

GVWR

6019LBS (2730Kg)

GAWR FRONT

2668LBS (1210Kg) WITH 235/70R16 TYRES
7JX16 RIMS @ 26 PSI (179Kpa) COLD

GAWR REAR

3572LBS (1620Kg) WITH 235/70R16 TYRES
7JX16 RIMS @ 36 PSI (248Kpa) COLD

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



SALJY1249TA507246

TYPE

MULTIPURPOSE PASSENGER VEHICLE

DISCOVERY MFD IN THE UK

Figure A-45. Pre-Test Vehicle Certification and Recommended Tire Pressure Label View

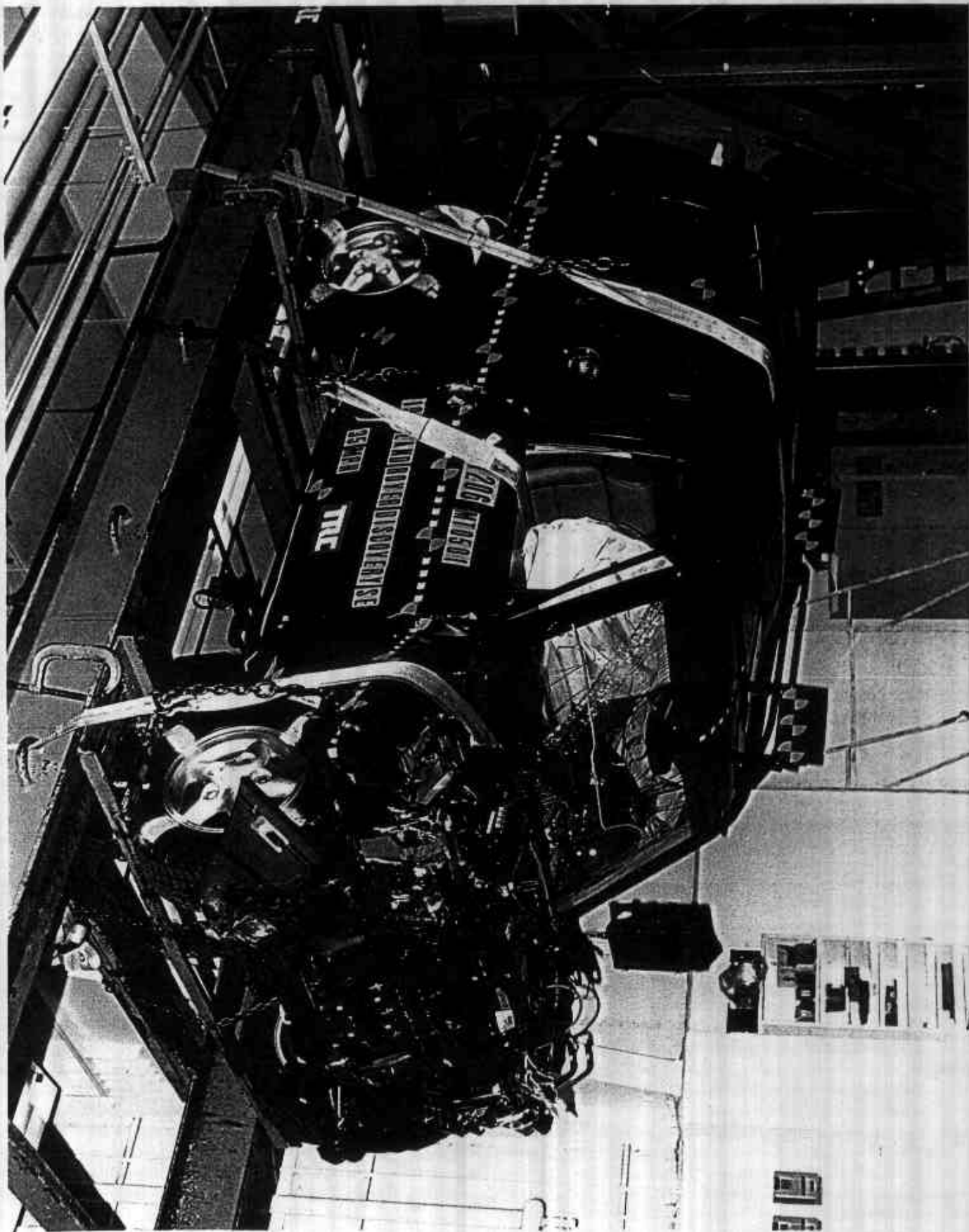


Figure A-46. Post-Test Vehicle on Static Rollover Machine View

Appendix B

Data Plots

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

90

60

30

0

-30

-60

-90

ACCELERATION (G)

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

PEAK DATA: 18.25 G @ 206.80 MS; -72.62 G @ 78.16 MS

CHANNEL: HEDXG1

FILTER: CH. CLASS 1000

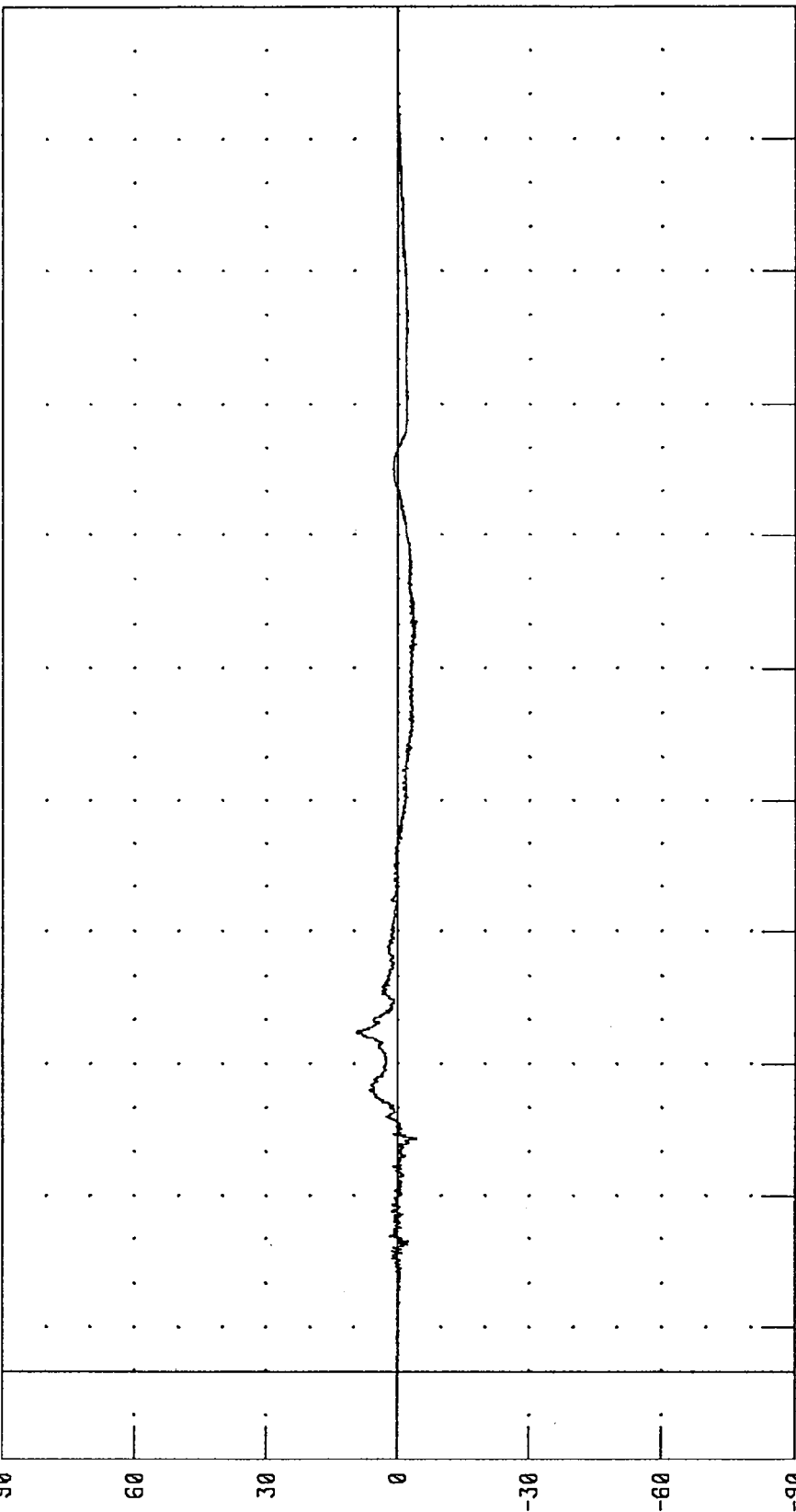
1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90



TIME (MS)

PEAK DATA: 9.38 G @ 77.20 MS; -4.42 G @ 95.72 MS

CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

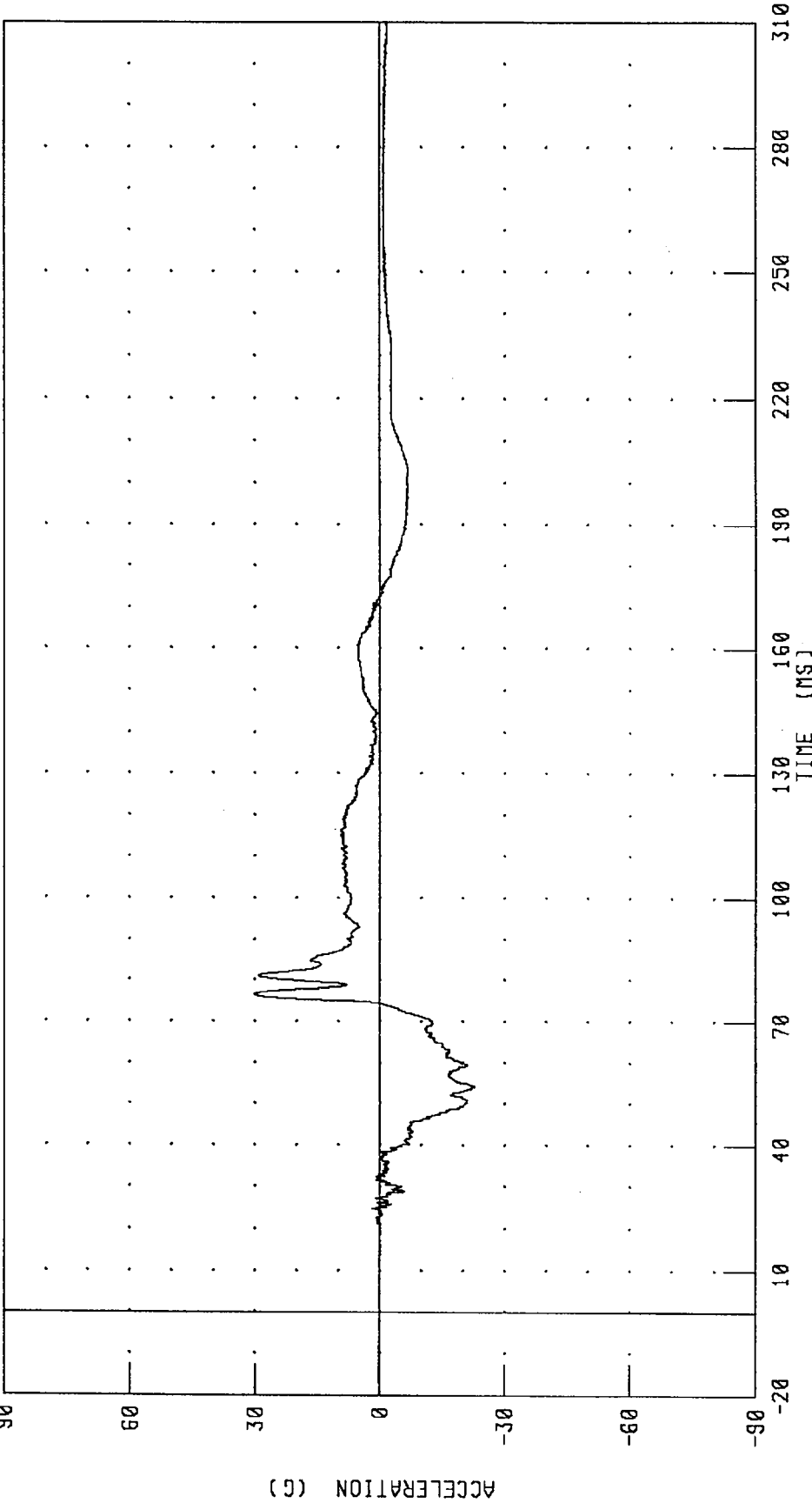
1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER

DRIVER HEAD Z-AXIS ACCELERATION

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



CHANNEL: HEDZG1 FILTER: CH. CLASS 1000

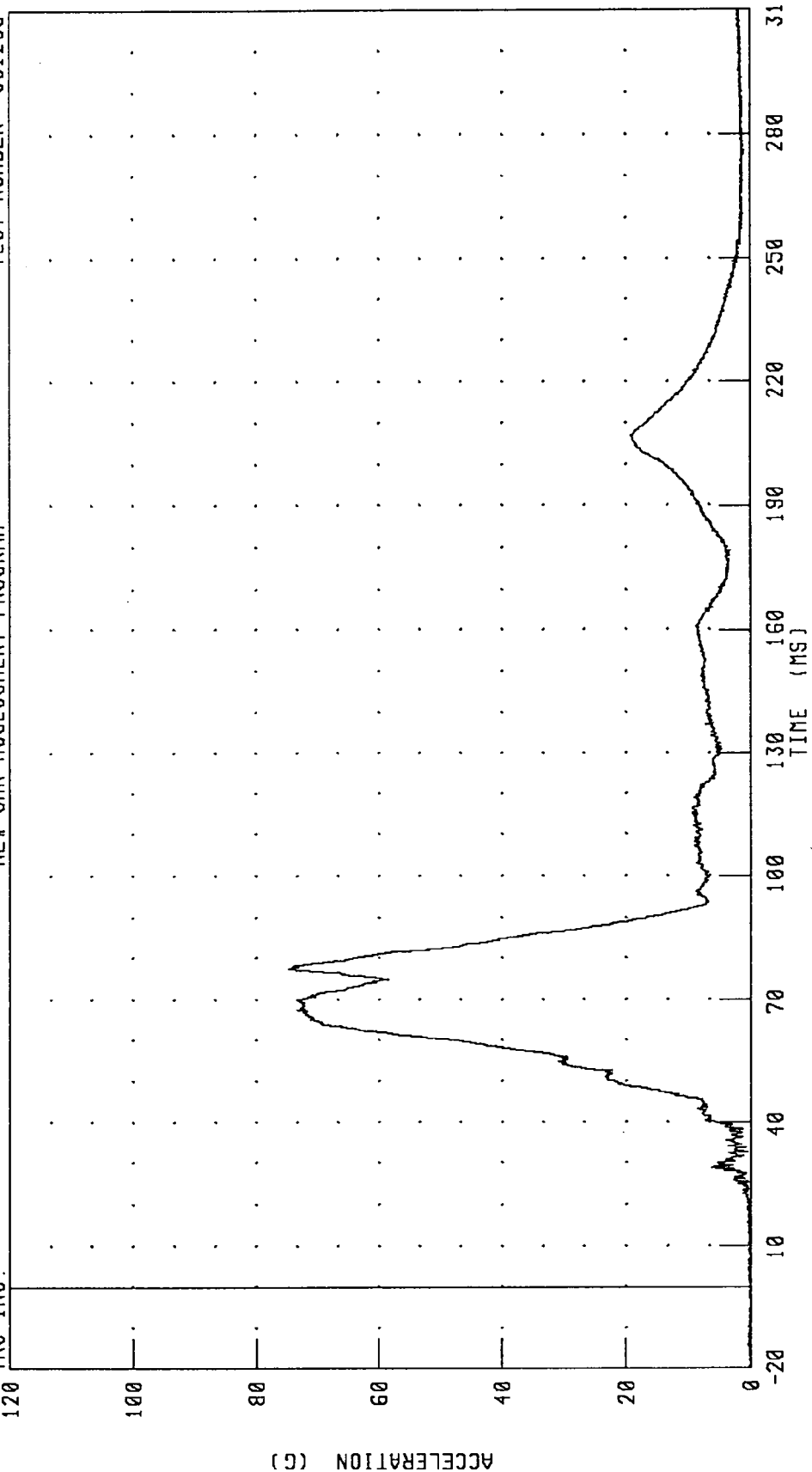
PEAK DATA: 30.21 G @ 76.56 MS; -22.94 G @ 54.00 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

PEAK DATA: 74.66 G @ 77.44 MS; 0.13 G @ -19.84 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER

DRIVER NECK X-AXIS SHEAR FORCE

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

60

40

20

0

-20

-40

-60

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

PEAK DATA: 822.26 N @ 78.64 MS; -208.00 N @ 94.24 MS

CHANNEL: NEKXF1 FILTER: CH. CLASS 1000

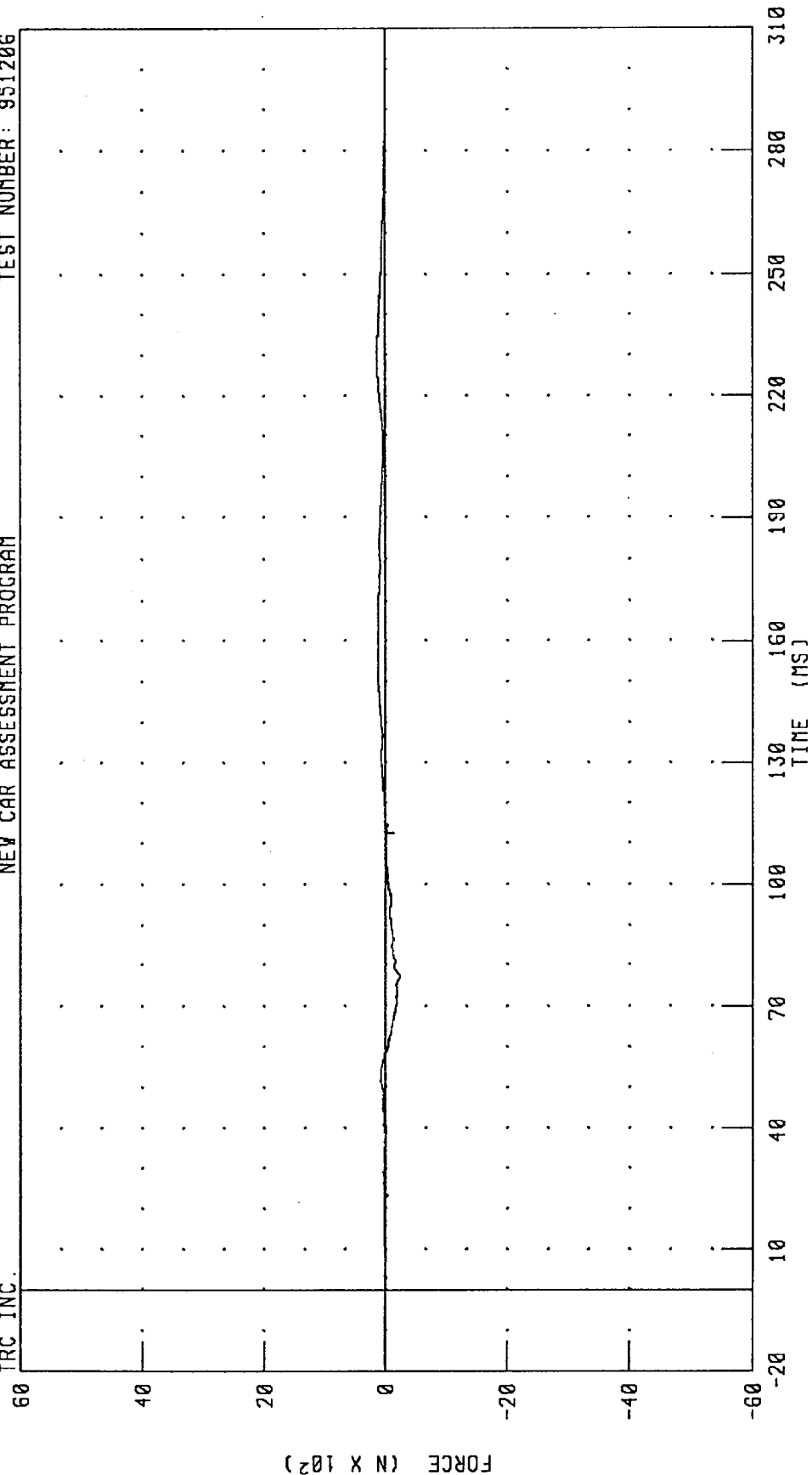
FORCE (N X 10²)

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK Y-AXIS SHEAR FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



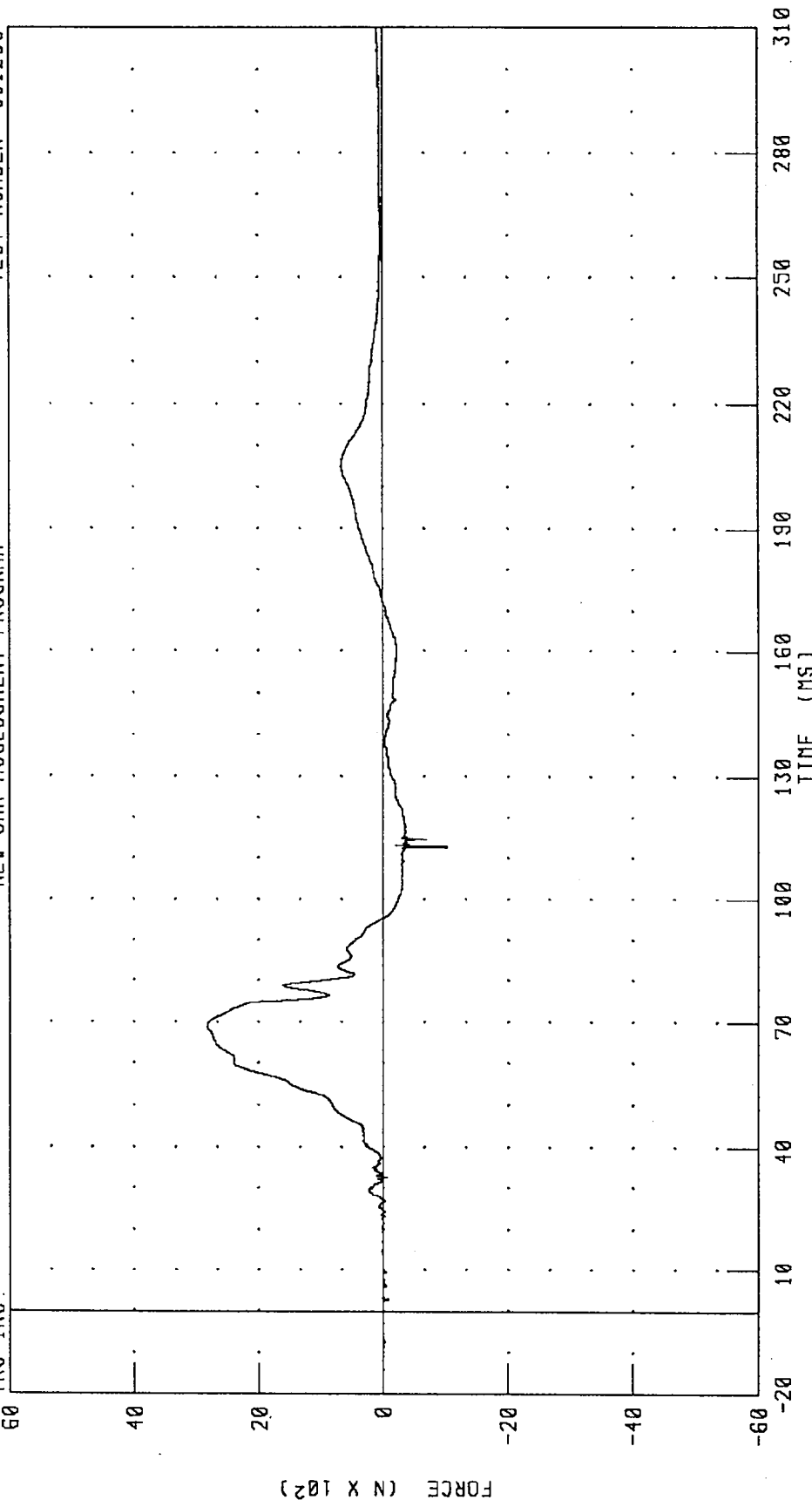
PEAK DATA: 140.55 N @ 226.64 MS; -242.24 N @ 77.28 MS

CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK Z-AXIS AXIAL FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



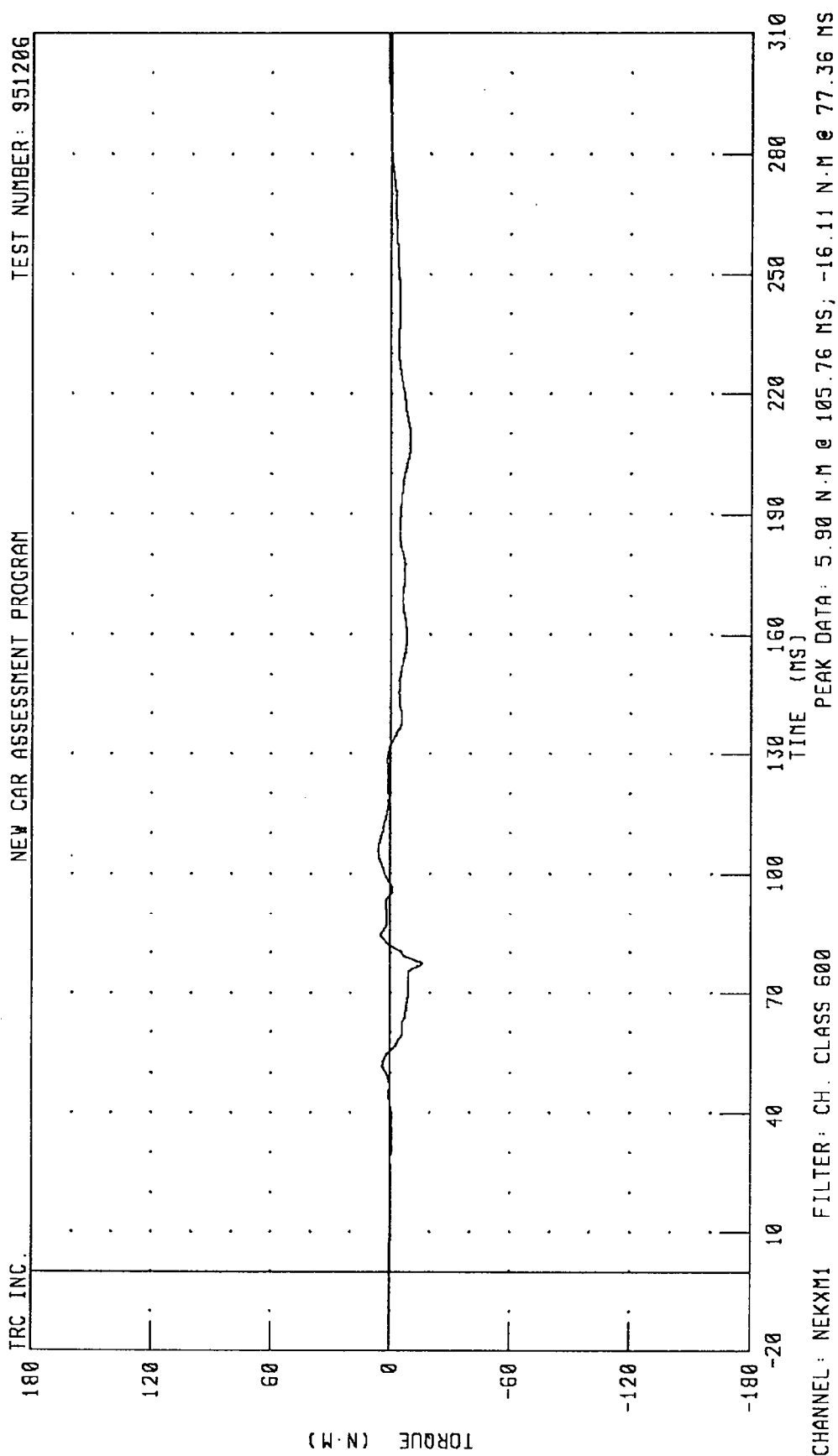
CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

PEAK DATA: 2836.83 N @ 68.96 MS; -1030.56 N @ 112.80 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT X AXIS
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



CHANNEL: NEKXM1 FILTER: CH. CLASS 600

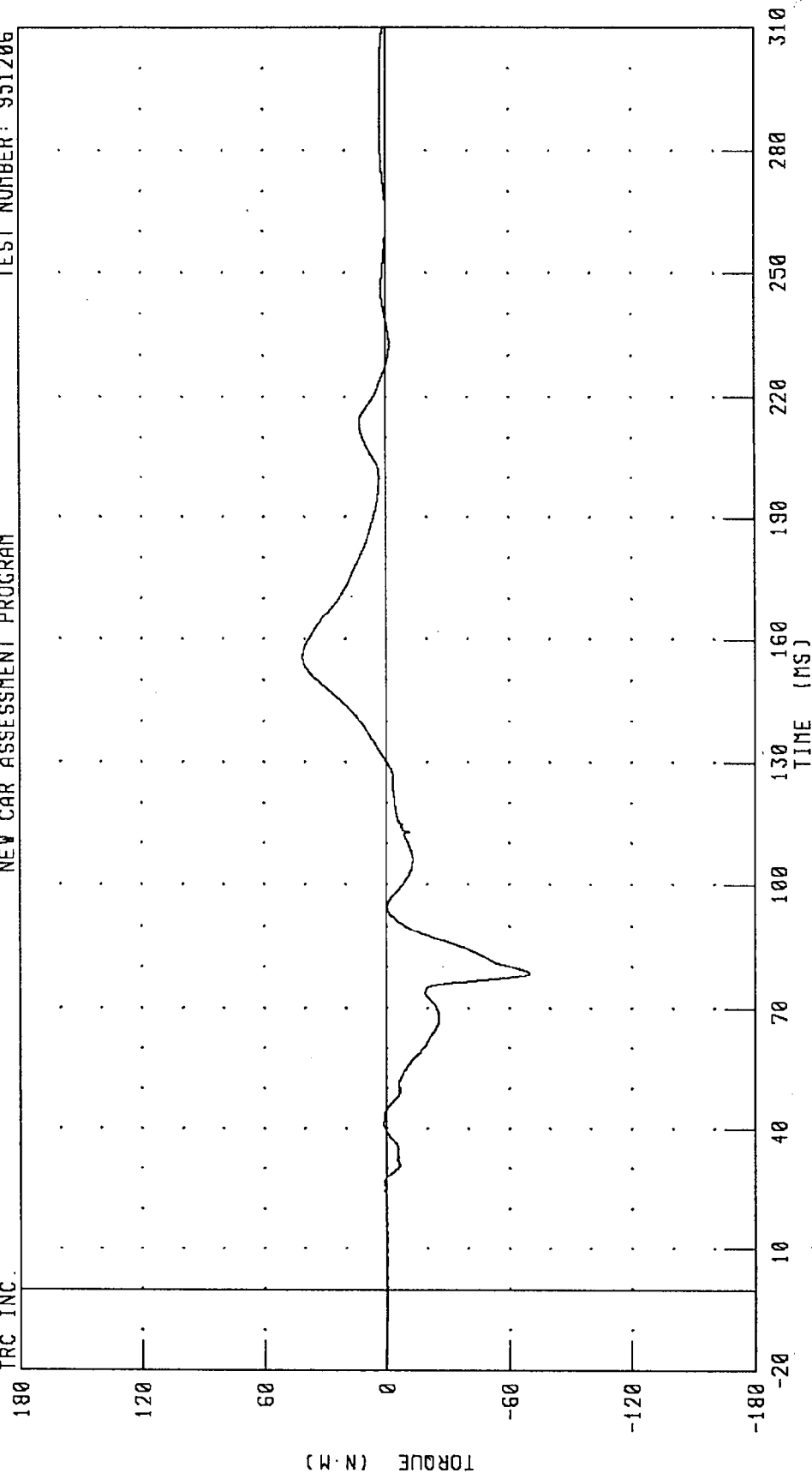
PEAK DATA: 5.90 N-M @ 105.76 MS; -16.11 N-M @ 77.36 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT Y AXIS

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: NEKYM1 FILTER: CH. CLASS 600

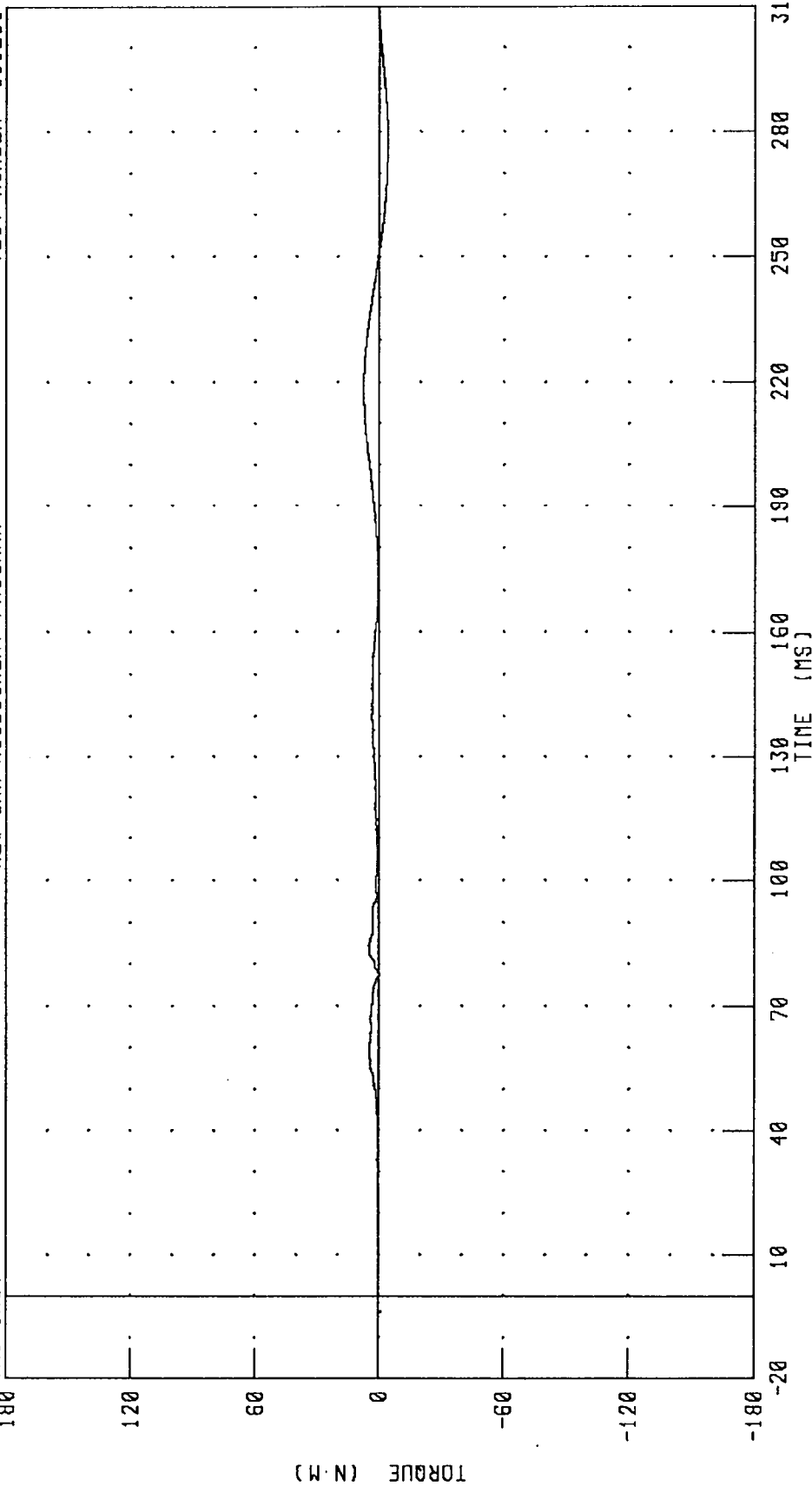
PEAK DATA: 41.03 N.M @ 155.84 MS; -70.23 N.M @ 78.48 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

IRC INC.



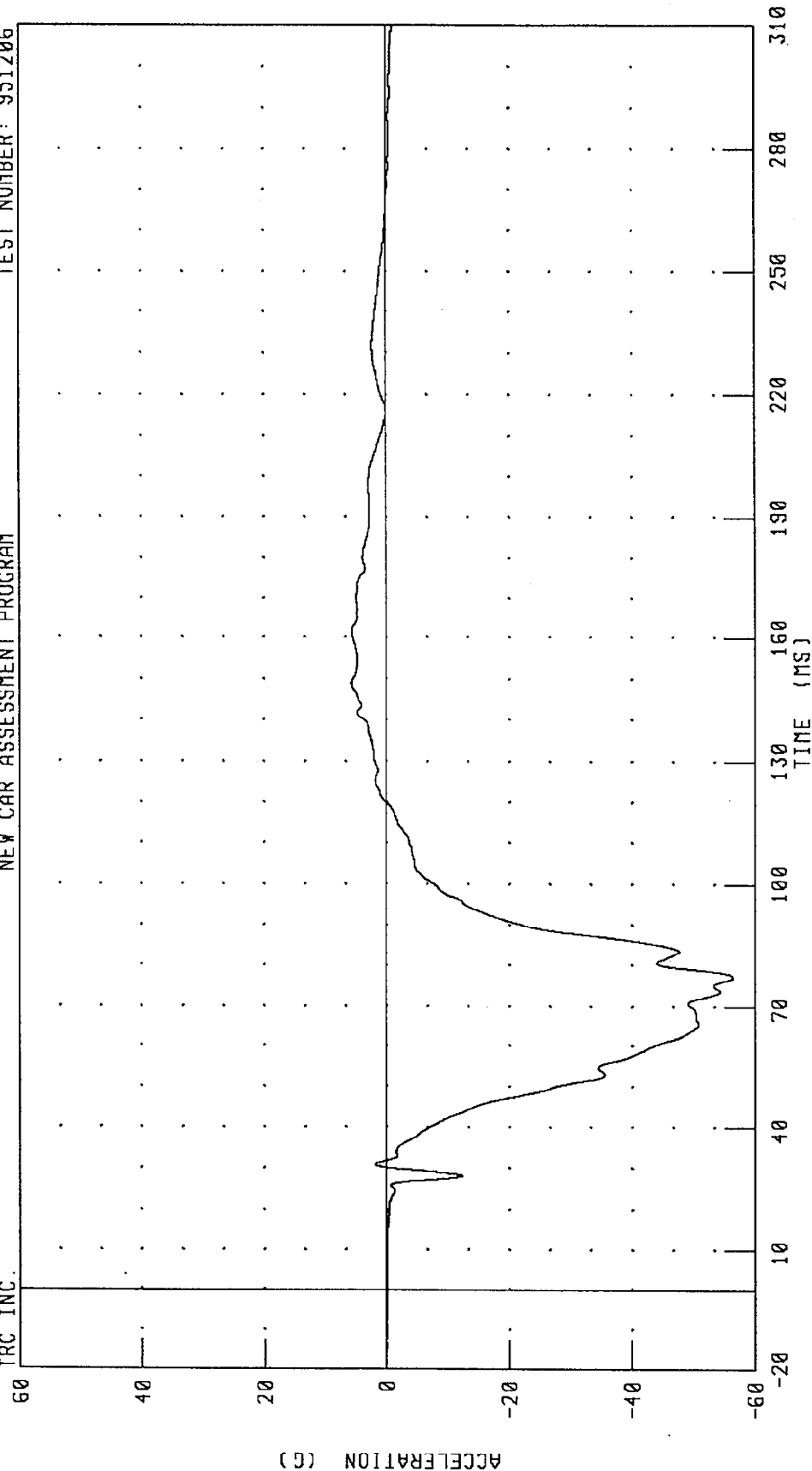
CHANNEL: NEKZM1 FILTER: CH. CLASS 600

PEAK DATA: 7.59 N-M @ 220.96 MS; -4.00 N-M @ 279.36 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



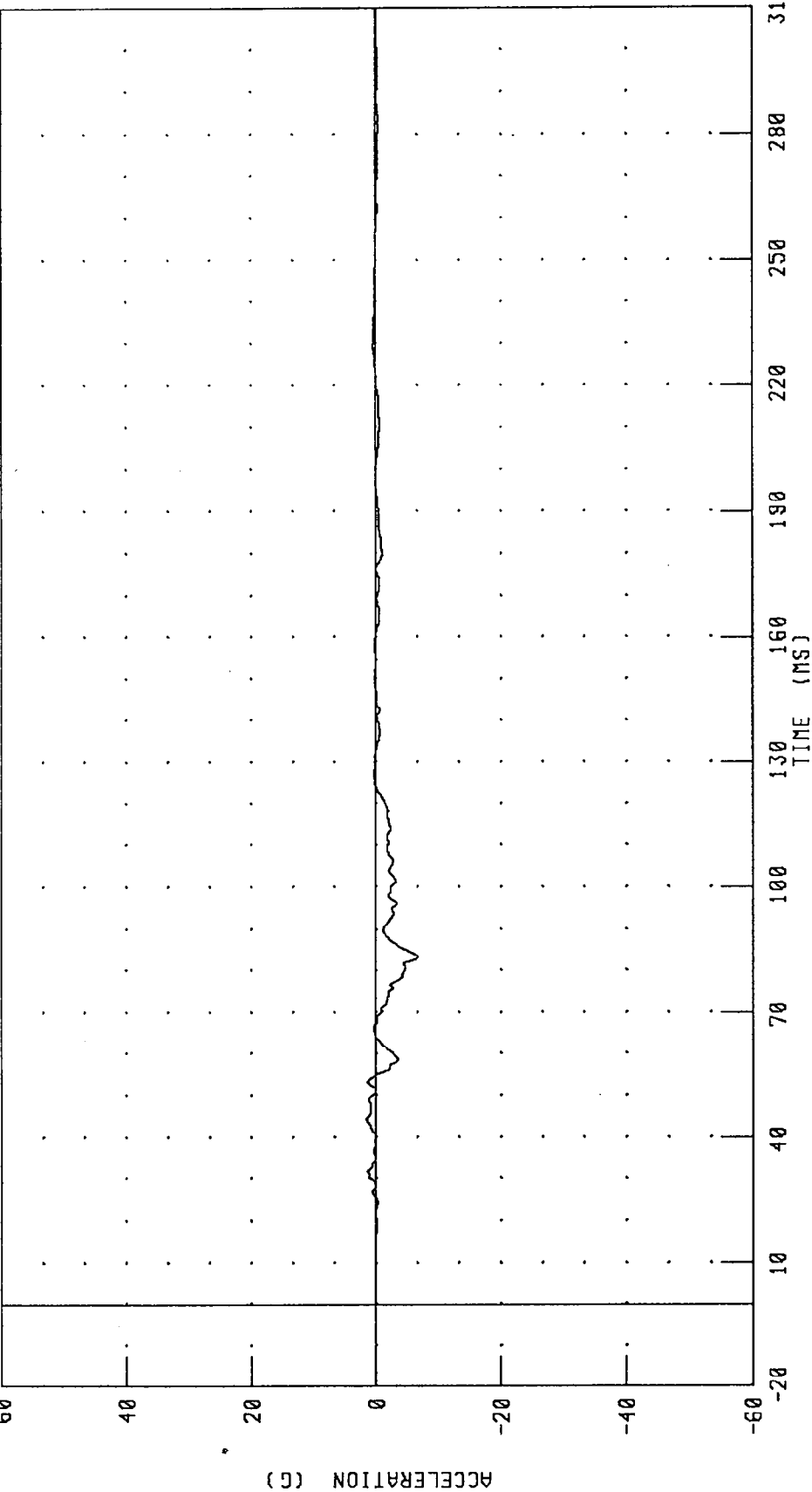
CHANNEL: CSTXG1 FILTER: CH. CLASS 180

PEAK DATA: 5.69 G @ 149.04 MS, -56.34 G @ 77.12 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Y-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



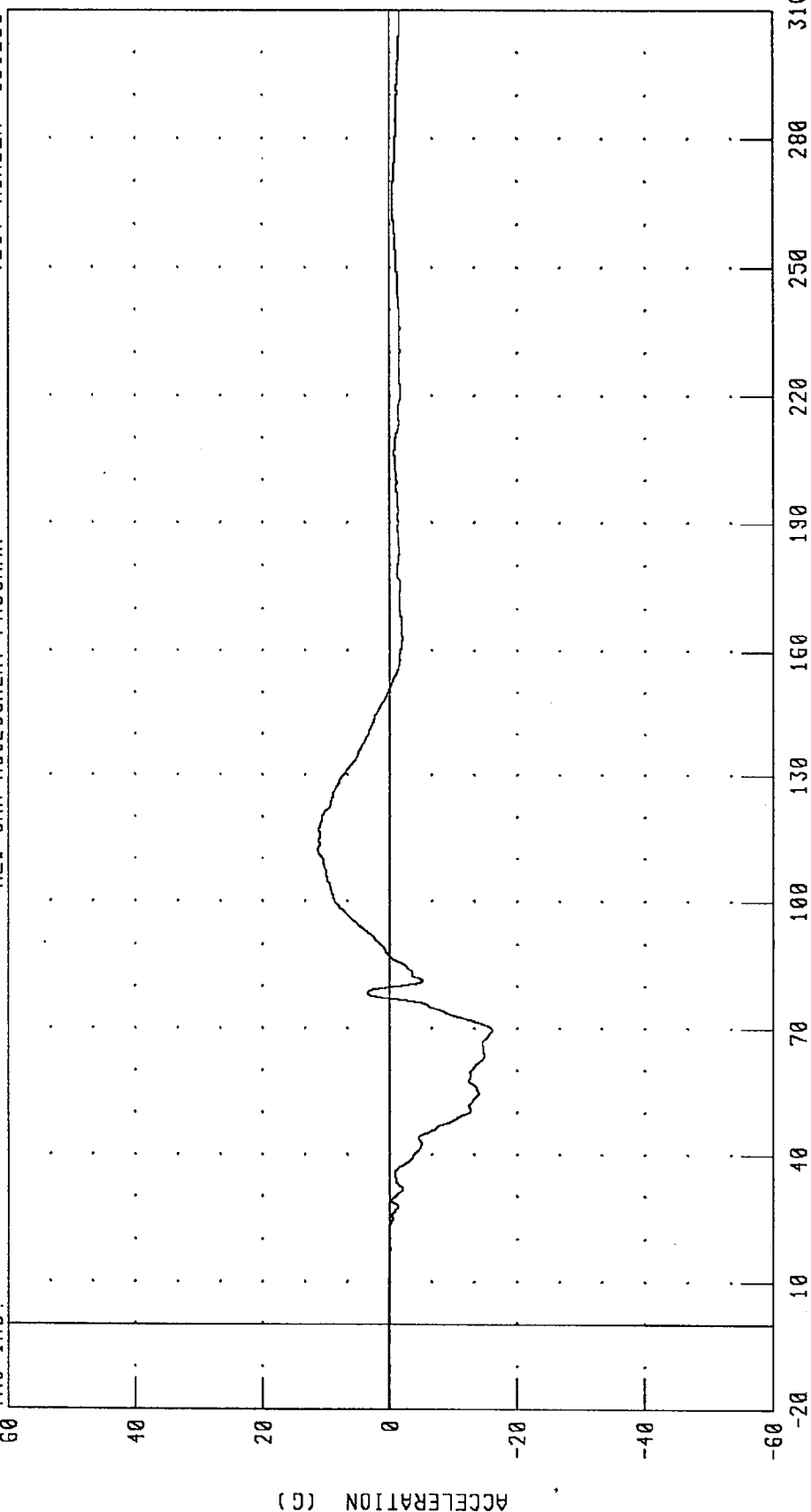
PEAK DATA: 1.47 G @ 44.16 MS; -6.71 G @ 83.28 MS

CHANNEL: CSTYG1 FILTER: CH. CLASS 180

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Z-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



PEAK DATA: 11.30 G @ 112.24 MS, -16.05 G @ 69.60 MS

CHANNEL: CSTZG1 FILTER: CH. CLASS 180

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST RESULTANT ACCELERATION

TEST NUMBER: 951206

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: CSTRG1 FILTER: CH. CLASS 180

PEAK DATA: 56.41 G @ 77.12 MS; 0.01 G @ -20.00 MS

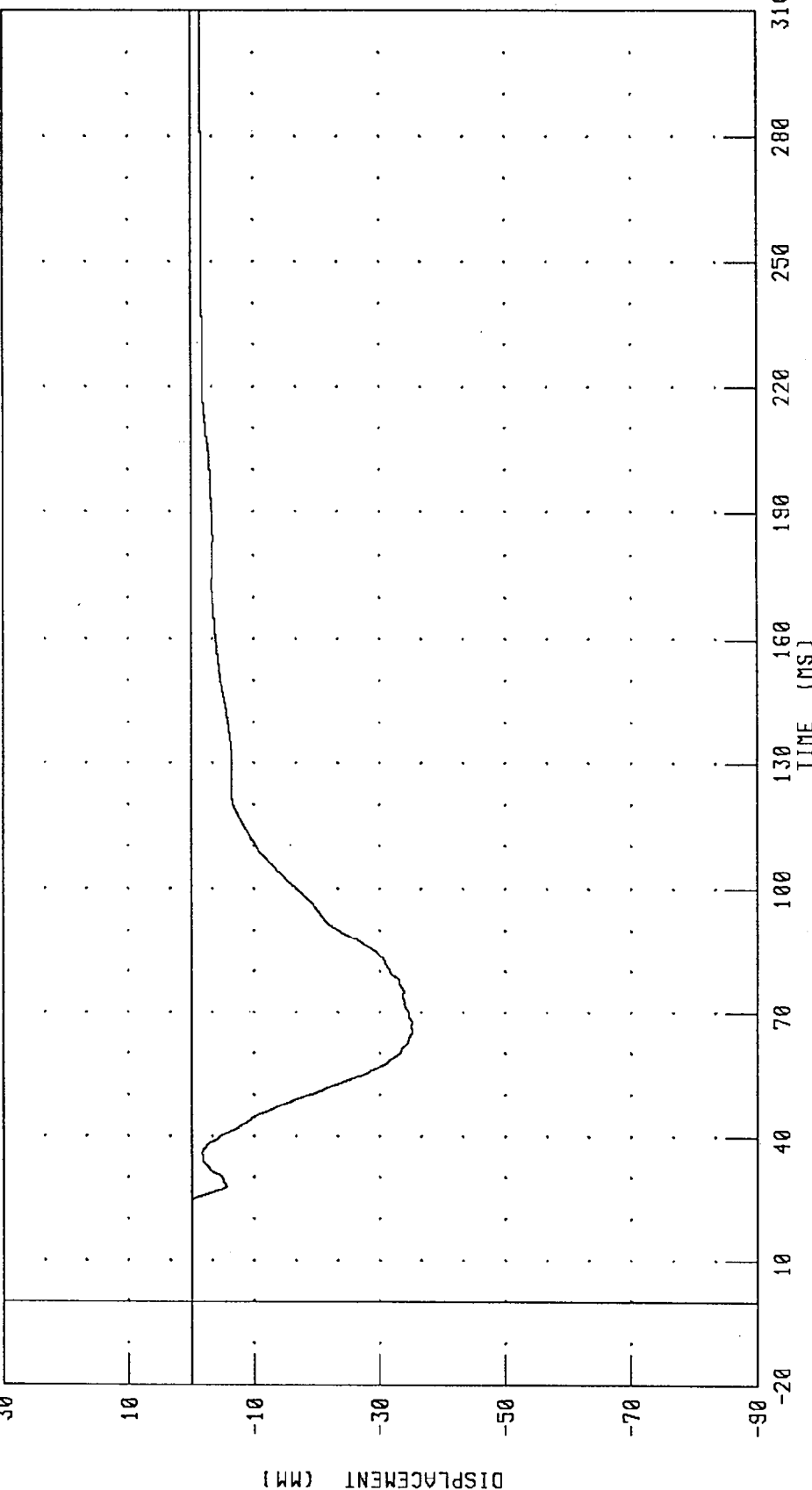
1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER

DRIVER CHEST DEFLECTION

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

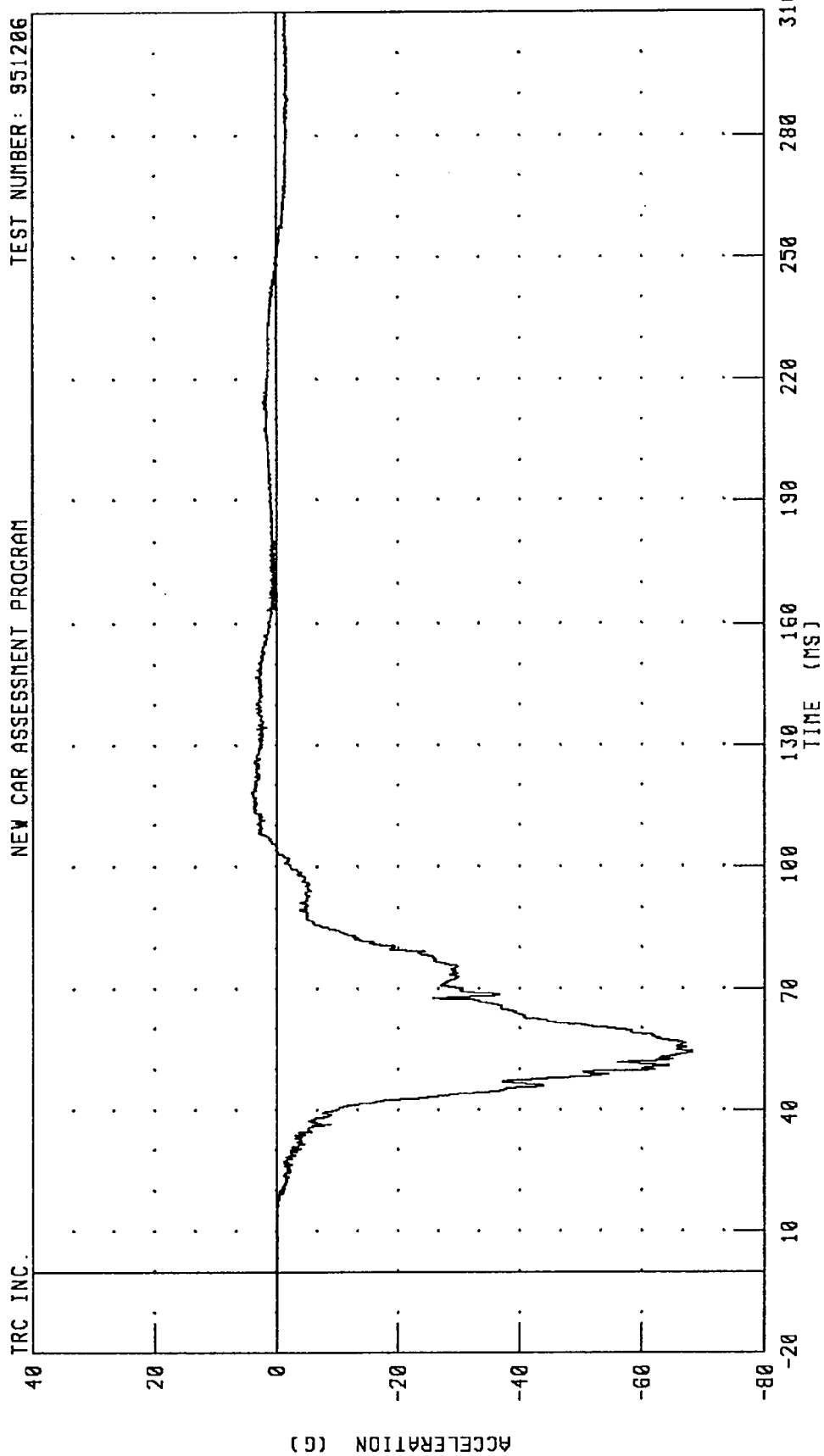


CHANNEL: CSTXD1 FILTER: CH. CLASS 180

PEAK DATA: 0.02 MM @ 6.00 MS; -35.29 MM @ 65.44 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER PELVIS X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



PEAK DATA: 4.12 G @ 118.32 MS; -68.24 G @ 54.08 MS

CHANNEL: PEVXG1 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS Y-AXIS ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

60

40

20

ACCELERATION (G)

8-18

-20

-40

-60

-20

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

CHANNEL: PEVYG1 FILTER: CH. CLASS 1000

PEAK DATA: 4.82 G @ 42.32 MS, -14.98 G @ 51.36 MS

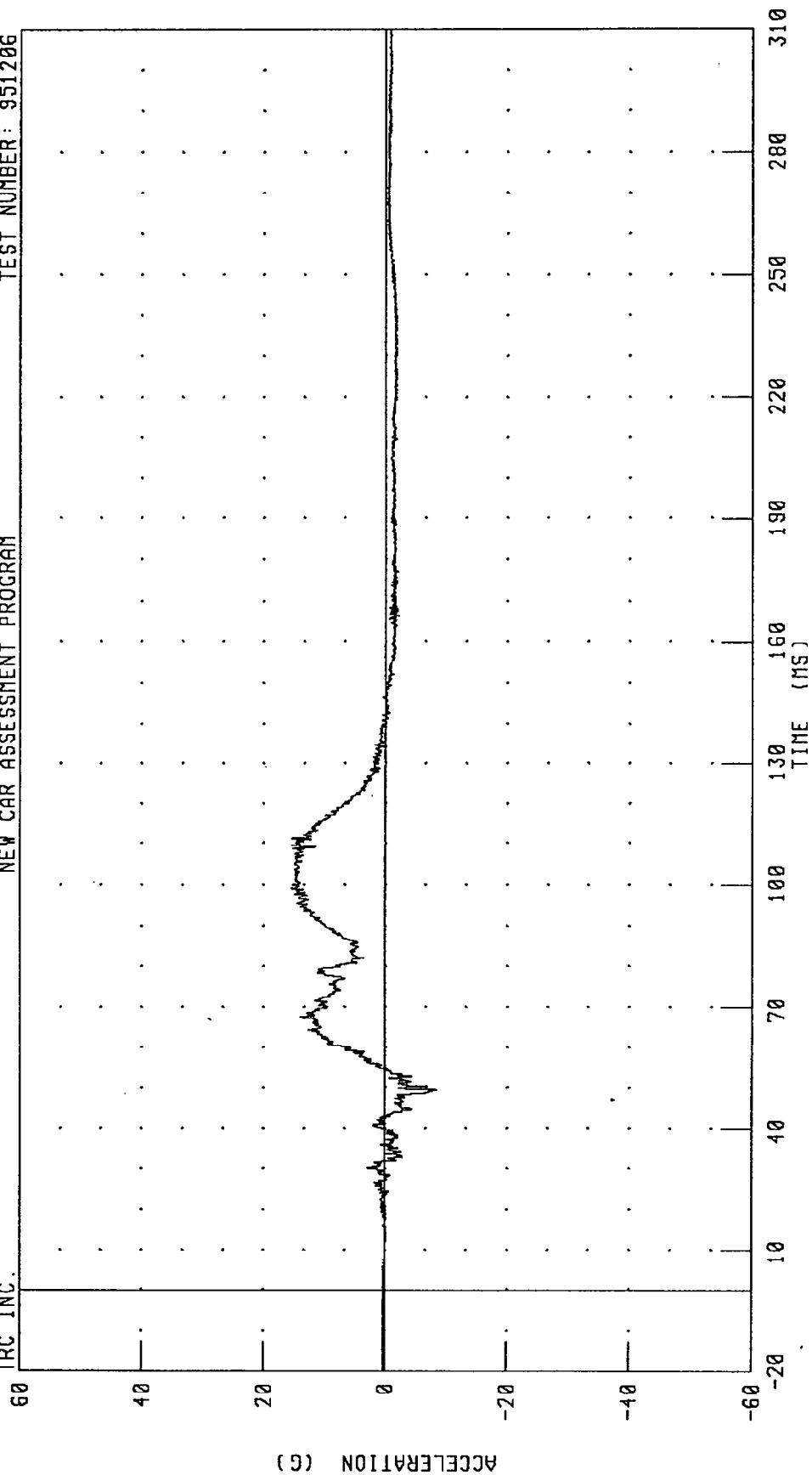
951206

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS Z-AXIS ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 15.57 G @ 99.12 MS; -8.53 G @ 49.44 MS

CHANNEL: PEVZG1 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS RESULTANT ACCELERATION

TEST NUMBER: 951206

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

CHANNEL: PEVRG1 FILTER: CH. CLASS 1000

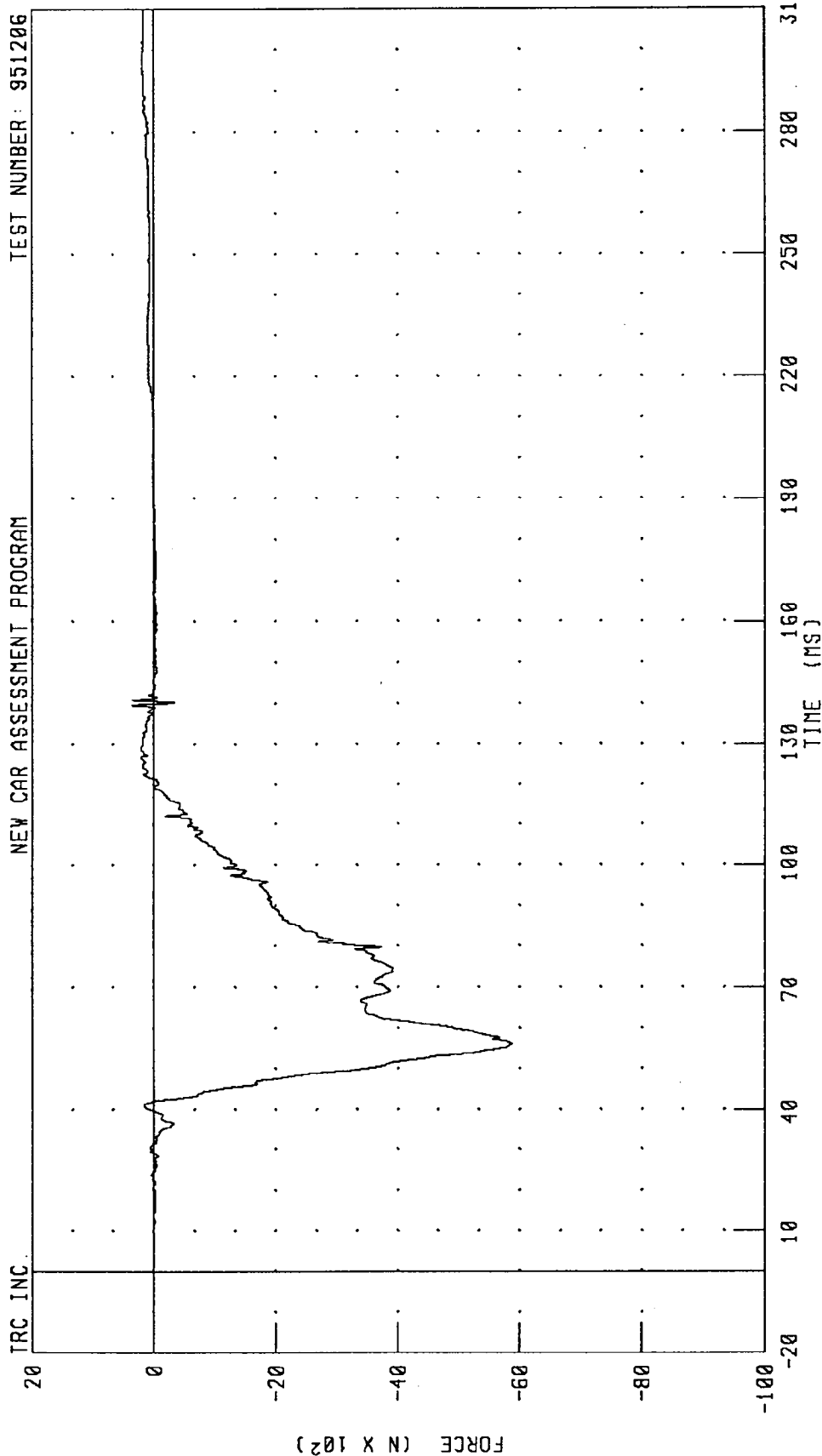
PEAK DATA: 68.75 G @ 54.40 MS; 0.12 G @ -19.76 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER

DRIVER LEFT FEMUR FORCE

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



CHANNEL: LFMF1 FILTER: CH. CLASS 600

PEAK DATA: 354.69 N @ 139.76 MS; -5878.92 N @ 56.00 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER

DRIVER RIGHT FEMUR FORCE

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

20

0

-20

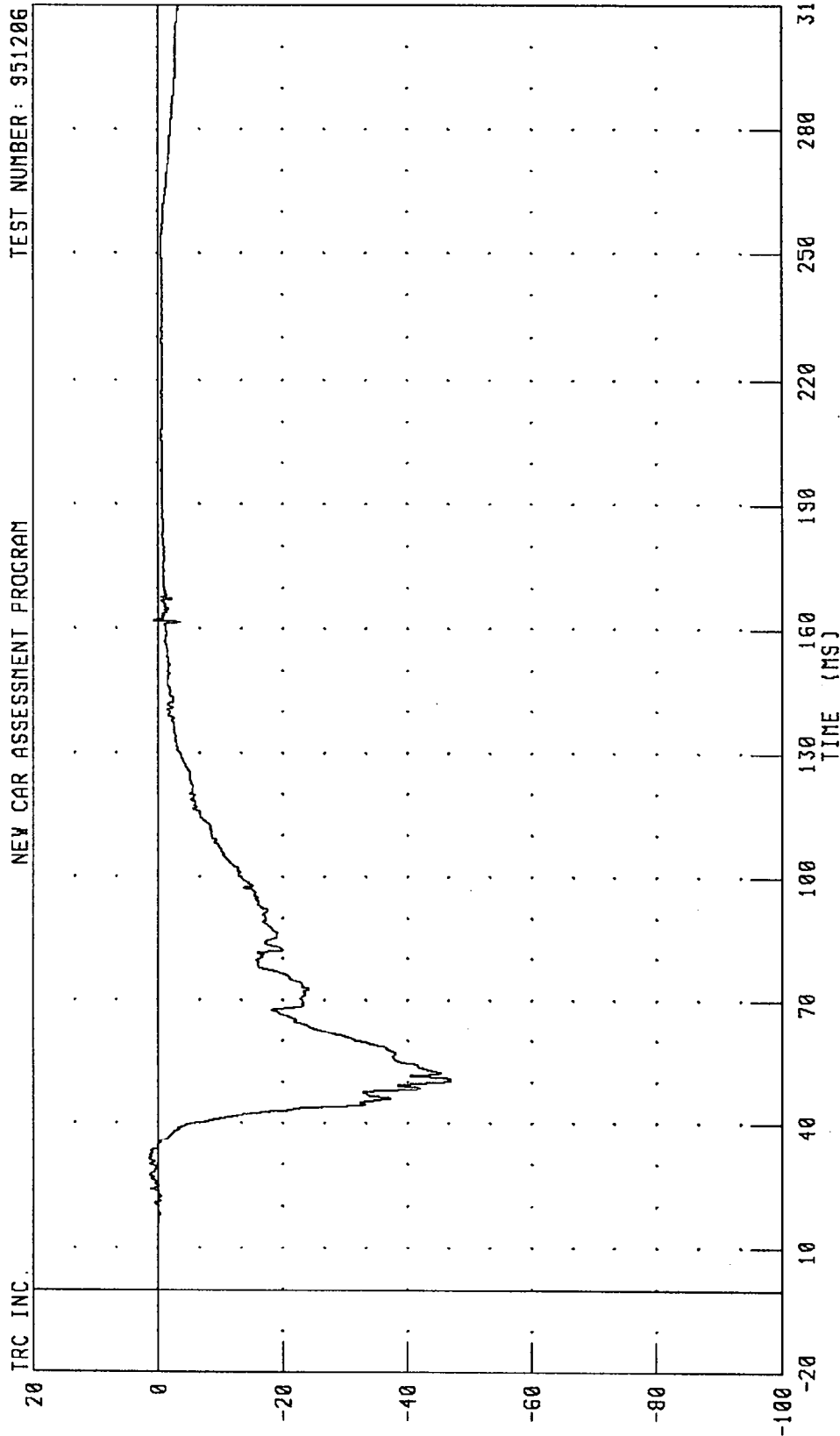
-40

-60

-80

-100

FORCE (N X 10²)



CHANNEL: RFMFI FILTER: CH. CLASS 600

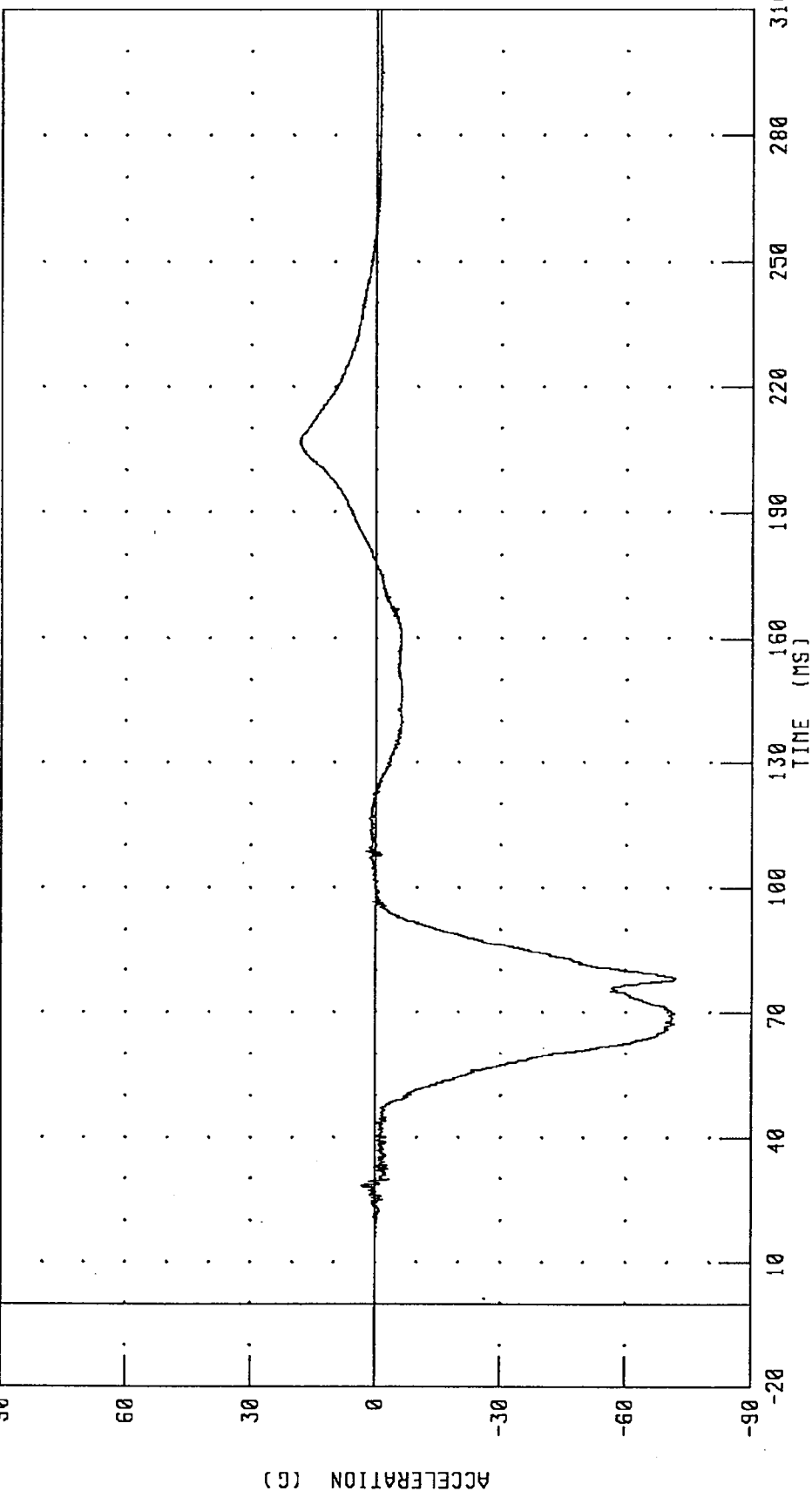
PEAK DATA: 141.91 N @ 31.28 MS; -4695.08 N @ 50.24 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD X-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: HEDXR1 FILTER: CH. CLASS 1000

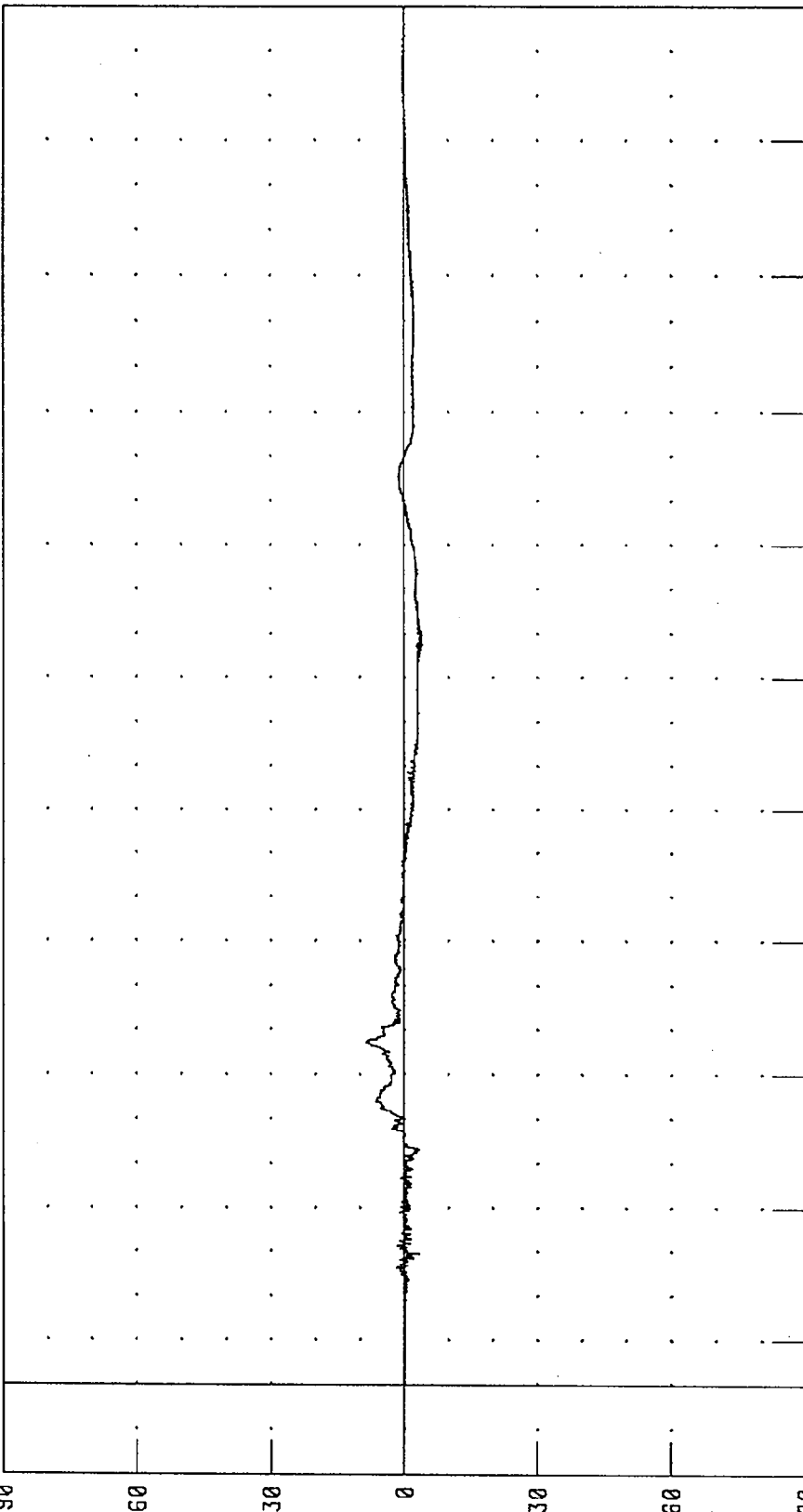
PEAK DATA: 18.30 G @ 206.16 MS; -71.95 G @ 78.24 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Y-AXIS ACCELERATION - REDUNDANT
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

90



ACCELERATION (G)

-90

-60

-30

0

30

60

90

120

150

180

210

240

270

300

310

TIME (MS)

130

160

190

220

250

280

310

340

370

400

430

460

490

520

550

580

610

640

670

700

730

760

790

820

850

880

910

940

970

1000

1030

1060

1090

1120

1150

1180

1210

1240

1270

1300

1330

1360

1390

1420

1450

1480

1510

1540

1570

1600

1630

1660

1690

1720

1750

1780

1810

1840

1870

1900

1930

1960

1990

2020

2050

2080

2110

2140

2170

2200

2230

2260

2290

2320

2350

2380

2410

2440

2470

2500

2530

2560

2590

2620

2650

2680

2710

2740

2770

2800

2830

2860

2890

2920

2950

2980

3010

3040

3070

3100

3130

3160

3190

3220

3250

3280

3310

3340

3370

3400

3430

3460

3490

3520

3550

3580

3610

3640

3670

3700

3730

3760

3790

3820

3850

3880

3910

3940

3970

4000

4030

4060

4090

4120

4150

4180

4210

4240

4270

4300

4330

4360

4390

4420

4450

4480

4510

4540

4570

4600

4630

4660

4690

4720

4750

4780

4810

4840

4870

4900

4930

4960

4990

5020

5050

5080

5110

5140

5170

5200

5230

5260

5290

5320

5350

5380

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5440

5470

5500

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5590

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5800

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5890

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6070

6100

6130

6160

6190

6220

6250

6280

6310

6340

6370

6400

6430

6460

6490

6520

6550

6580

6610

6640

6670

6700

6730

6760

6790

6820

6850

6880

6910

6940

6970

7000

7030

7060

7090

7120

7150

7180

7210

7240

7270

7300

7330

7360

7390

7420

7450

7480

7510

7540

7570

7600

7630

7660

7690

7720

7750

7780

7810

7840

7870

7900

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8530

8560

8590

8620

8650

8680

8710

8740

8770

8800

8830

8860

8890

8920

8950

8980

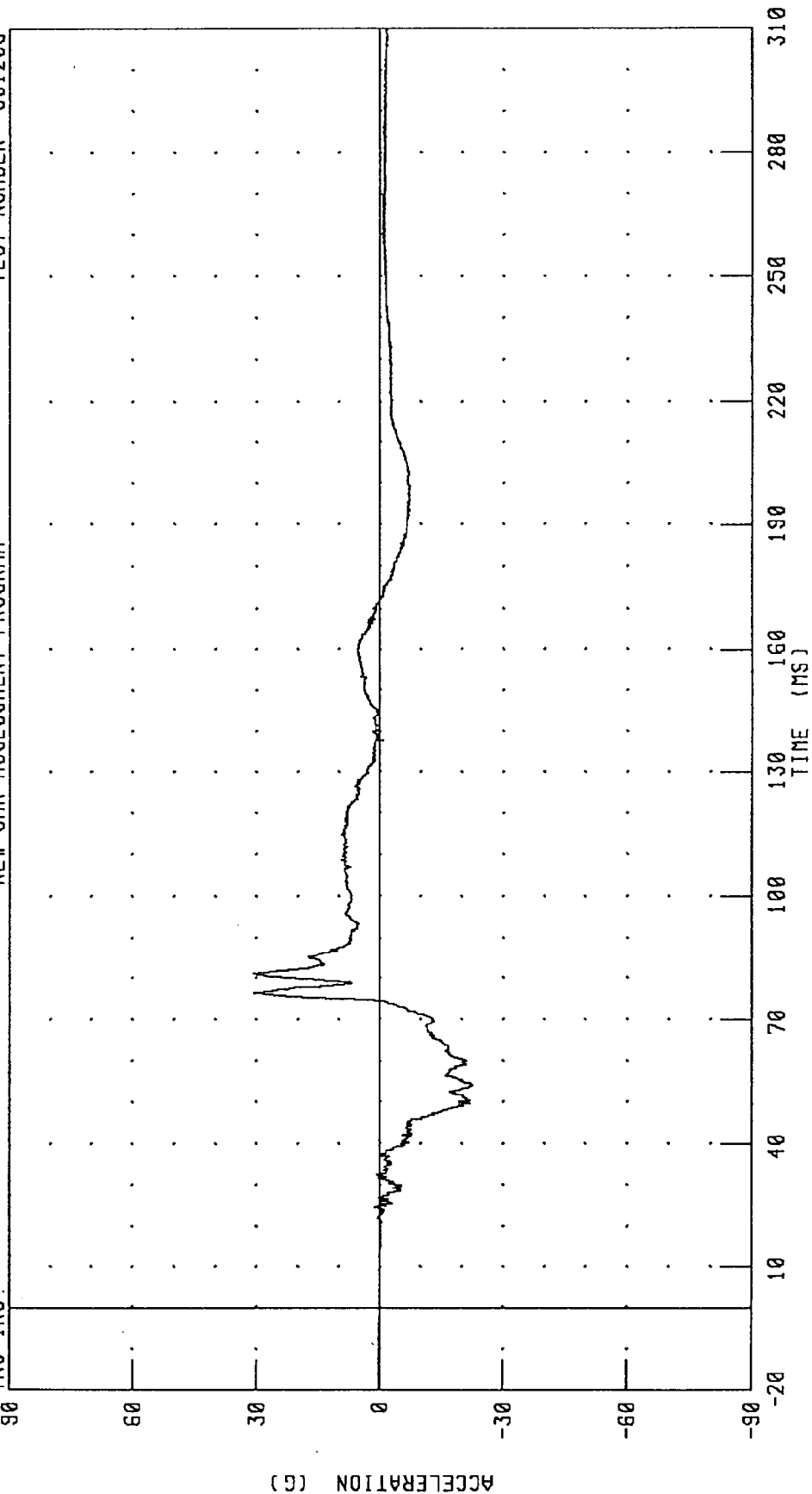
9010

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Z-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 30.86 G @ 76.48 MS; -22.55 G @ 53.76 MS

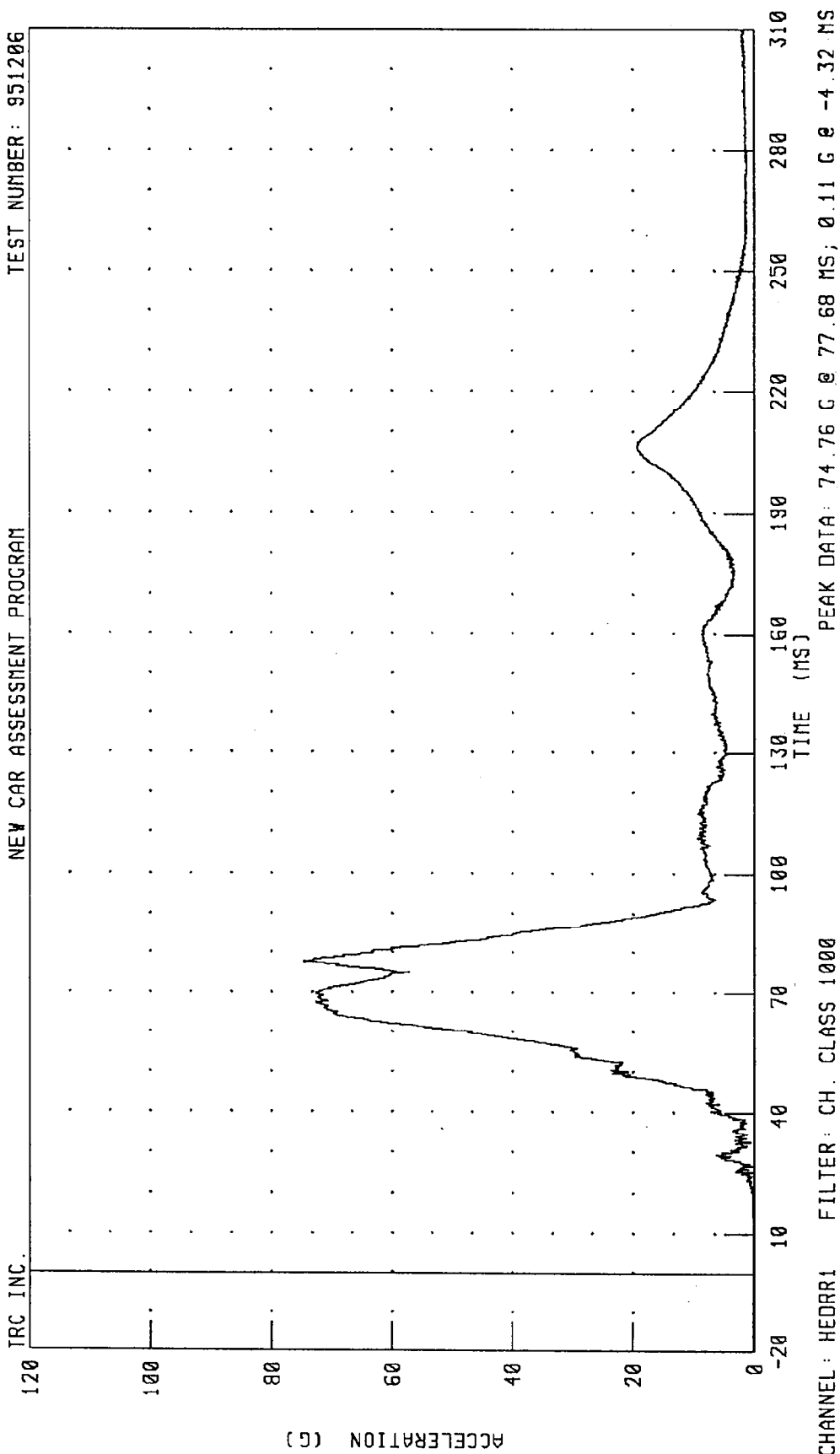
CHANNEL: HEDZR1 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST X-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

60

40

20

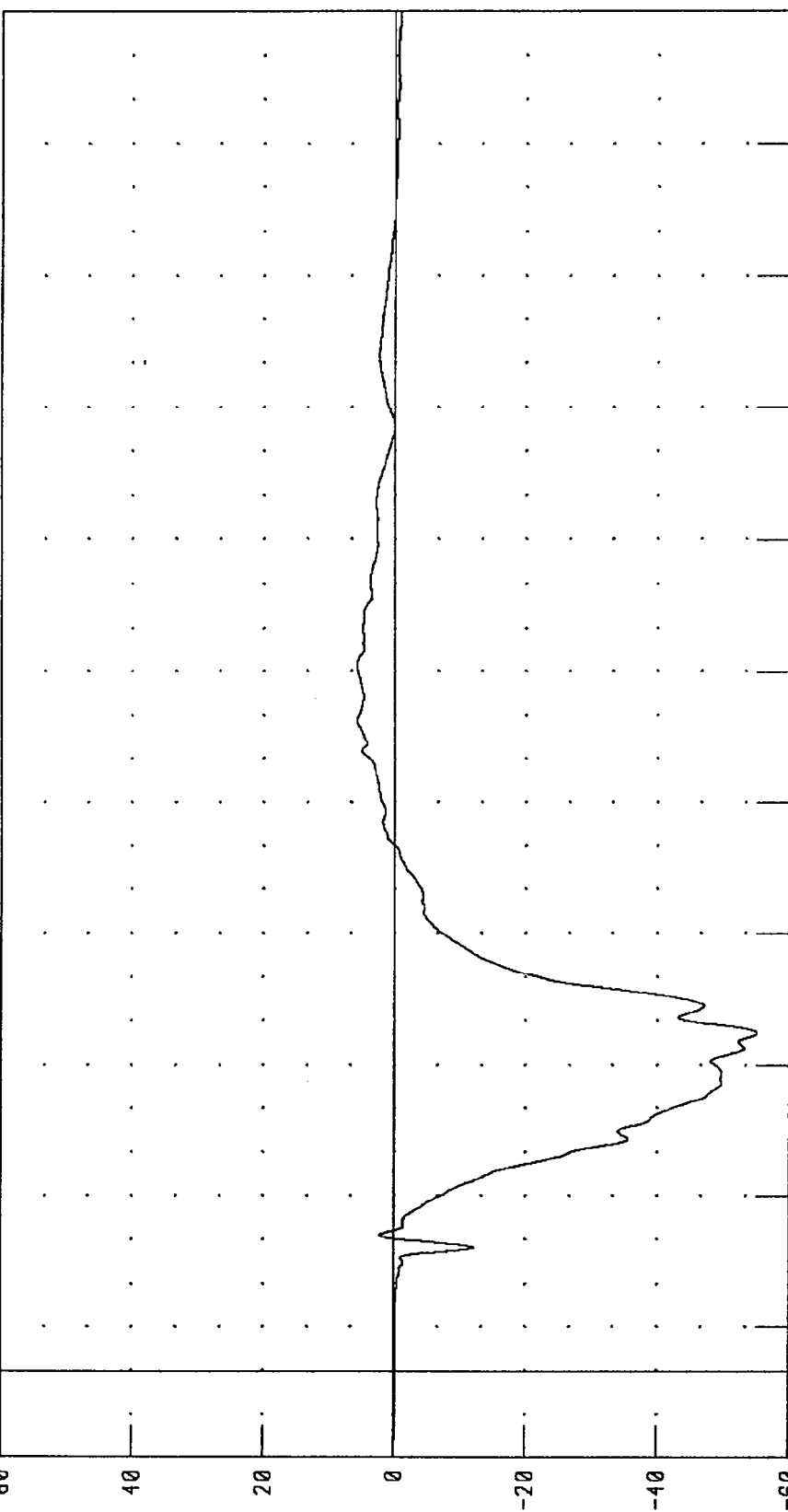
0

-20

-40

-60

ACCELERATION (G)



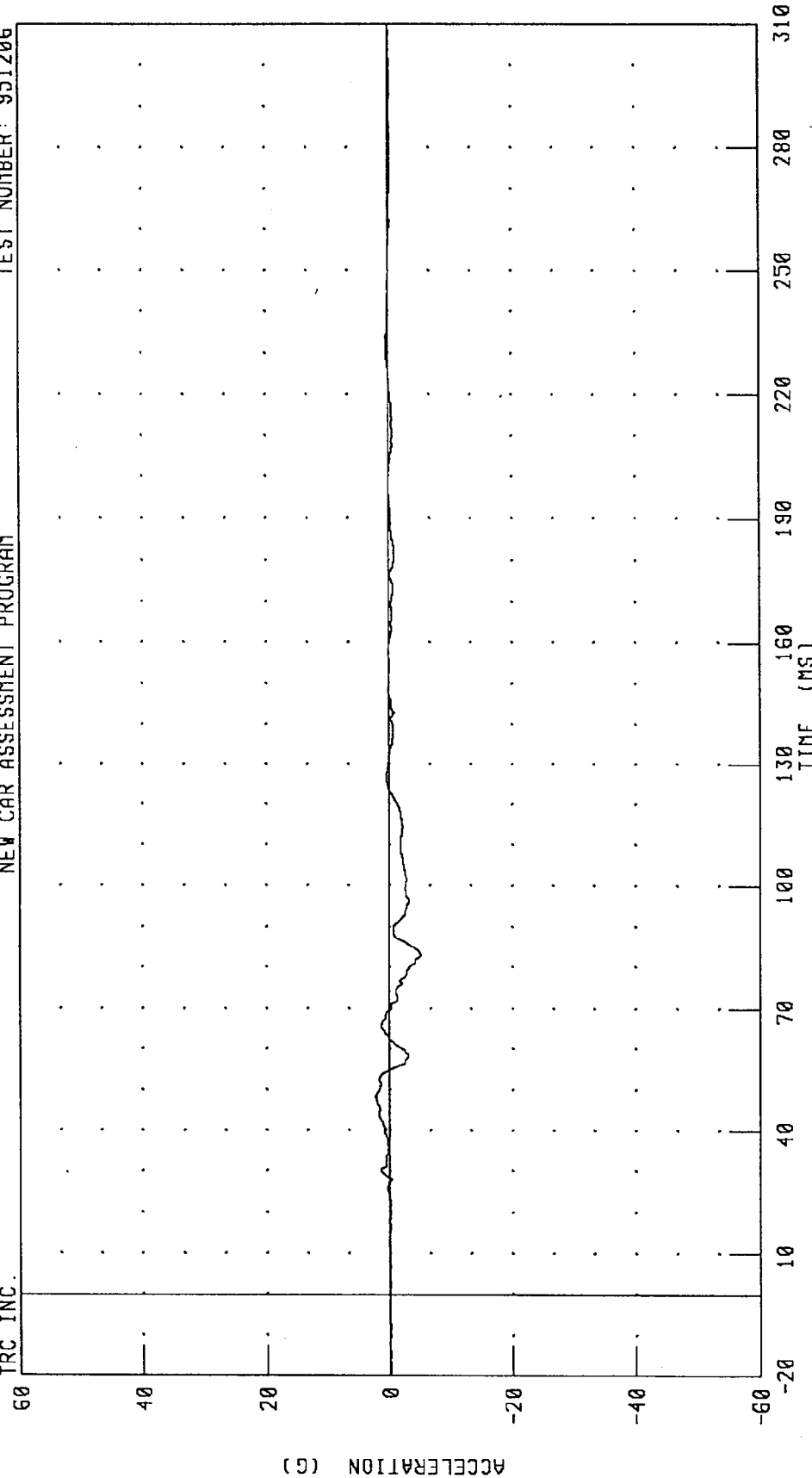
CHANNEL: CSTXR1 FILTER: CH. CLASS 180
 PEAK DATA: 5.81 G @ 148.88 MS; -55.09 G @ 77.28 MS
 TIME (MS)

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 2.30 G @ 48.32 MS; -5.08 G @ 82.96 MS

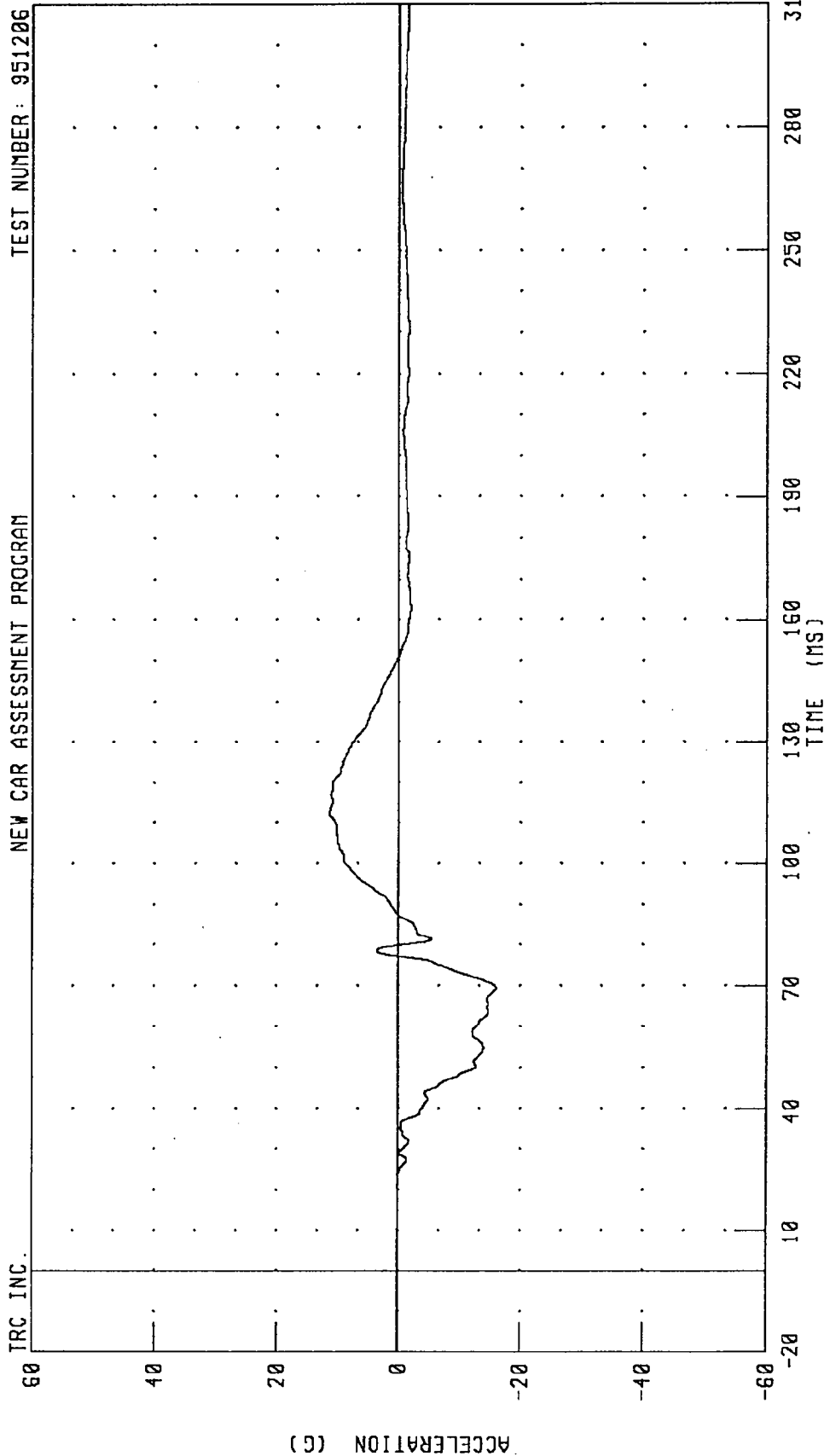
CHANNEL: CSTYR1 FILTER: CH. CLASS 180

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: CSTZR1 FILTER: CH. CLASS 180

PEAK DATA: 11.42 G @ 112.16 MS; -16.03 G @ 69.60 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

120

100

80

60

40

20

0

ACCELERATION (G)

310

280

250

220

190

160

130

100

70

40

10

-20

TIME (MS)

CHANNEL: CSTRR1 FILTER: CH. CLASS 180

PEAK DATA: 55.14 G @ 77.28 MS; 0.01 G @ -20.00 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

IRC INC.

36

24

12

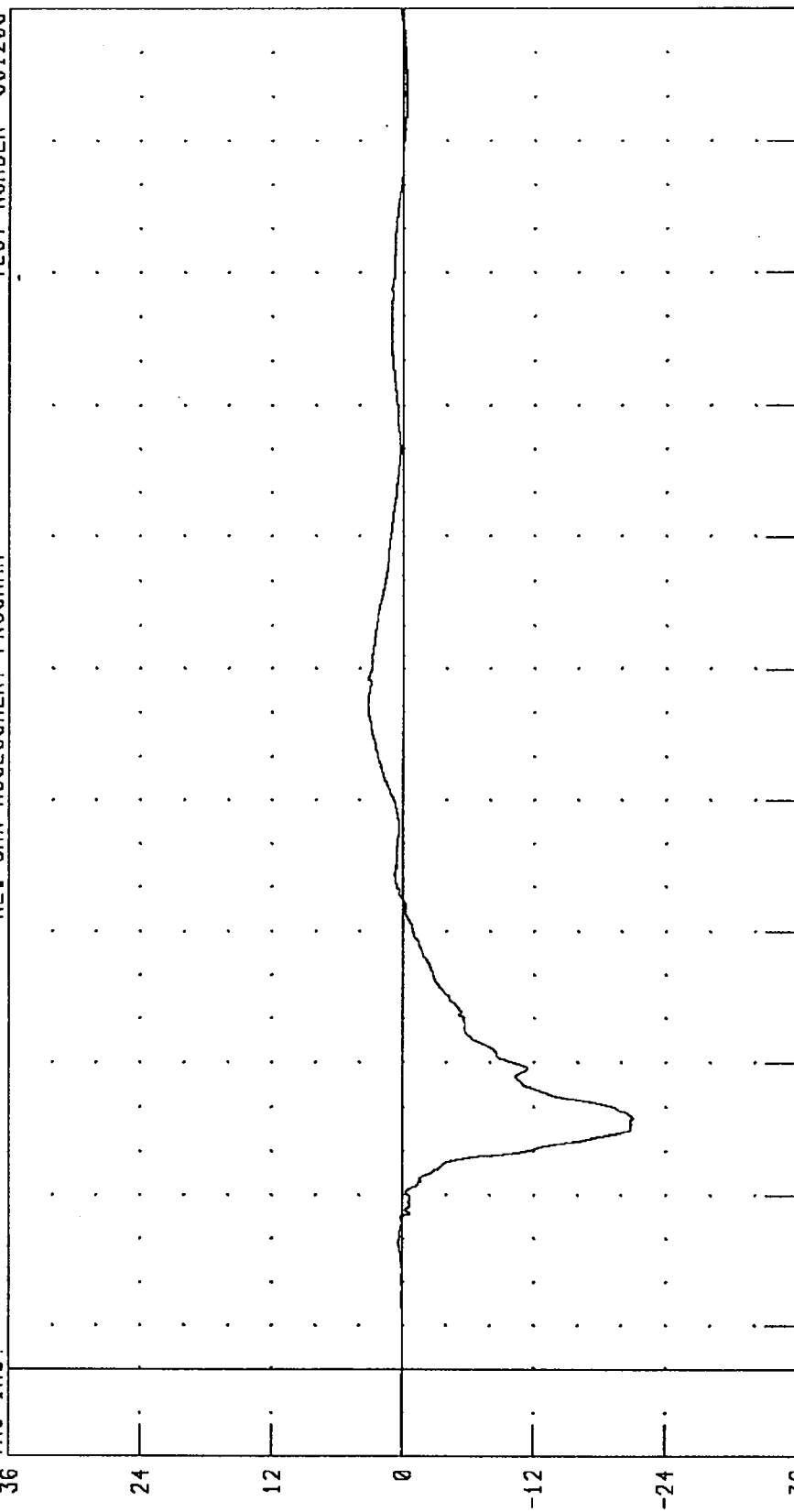
0

-12

-24

-36

TORQUE (N·M X 10¹)



PEAK DATA: 32.30 N·M @ 151.92 MS; -209.83 N·M @ 57.44 MS

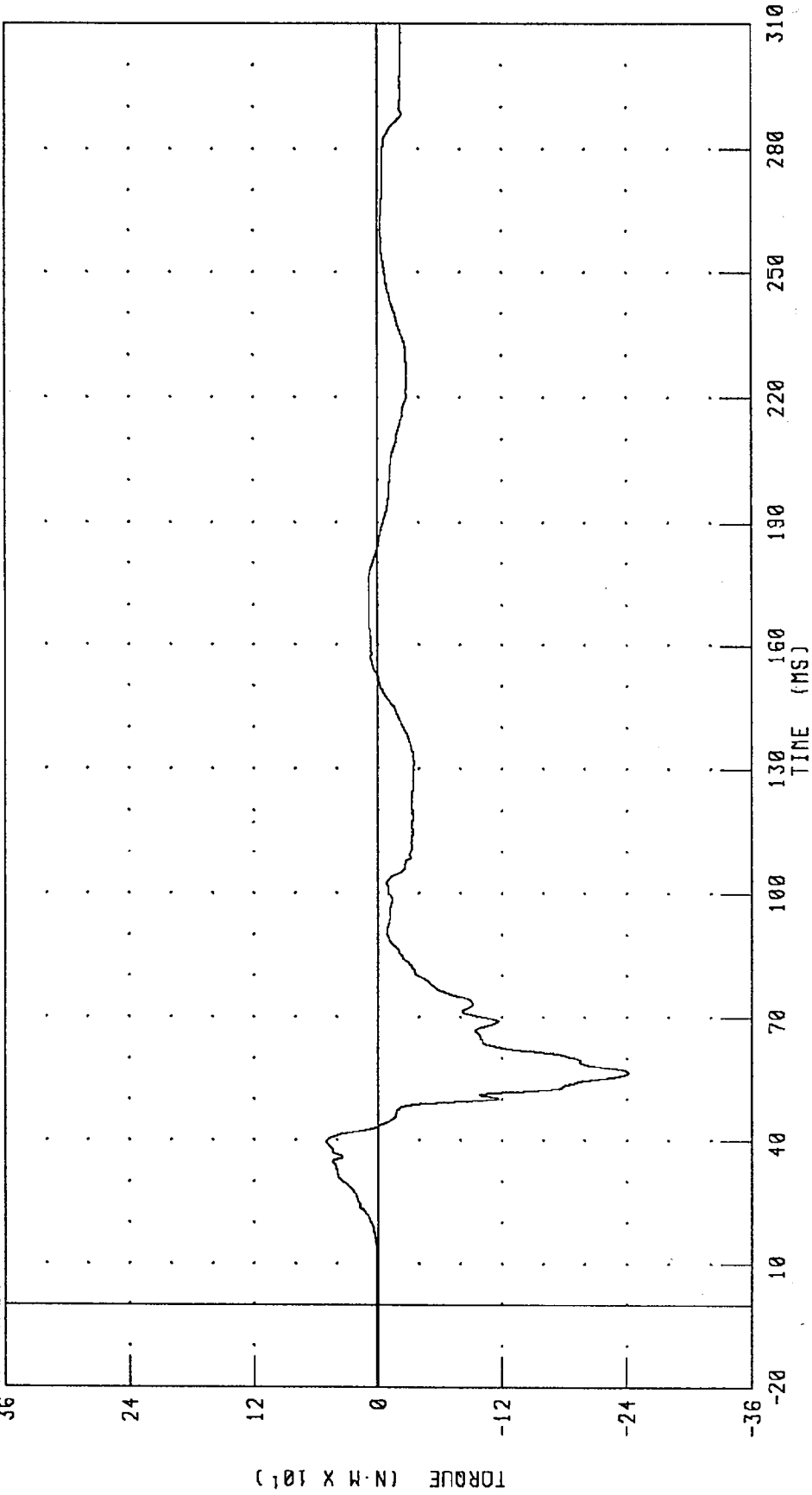
CHANNEL: TBLX11 FILTER: CH. CLASS 600

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



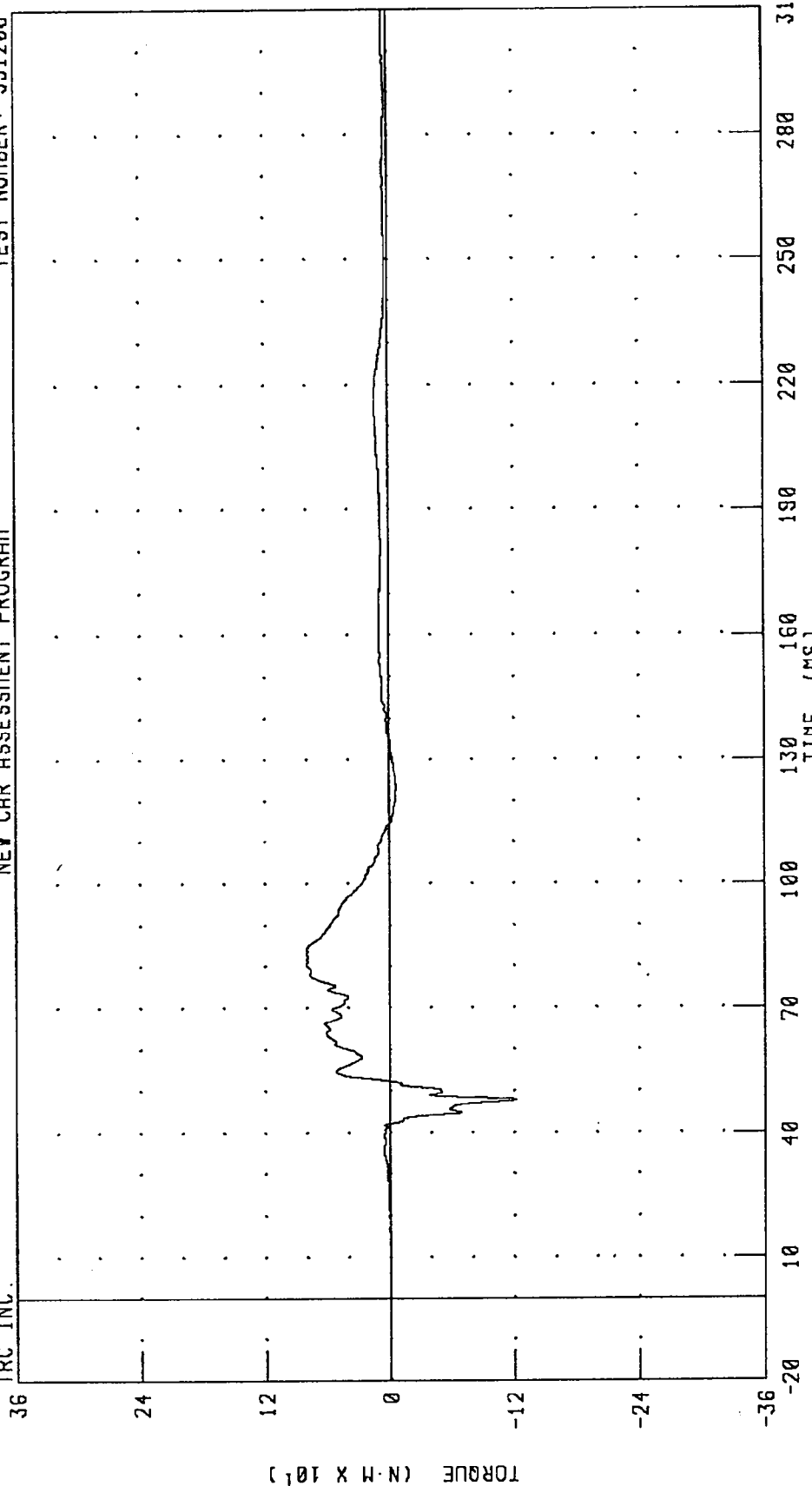
CHANNEL: TBLYM1 FILTER: CH. CLASS 600

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 80.80 N·m @ 82.96 MS, -121.75 N·m @ 47.92 MS

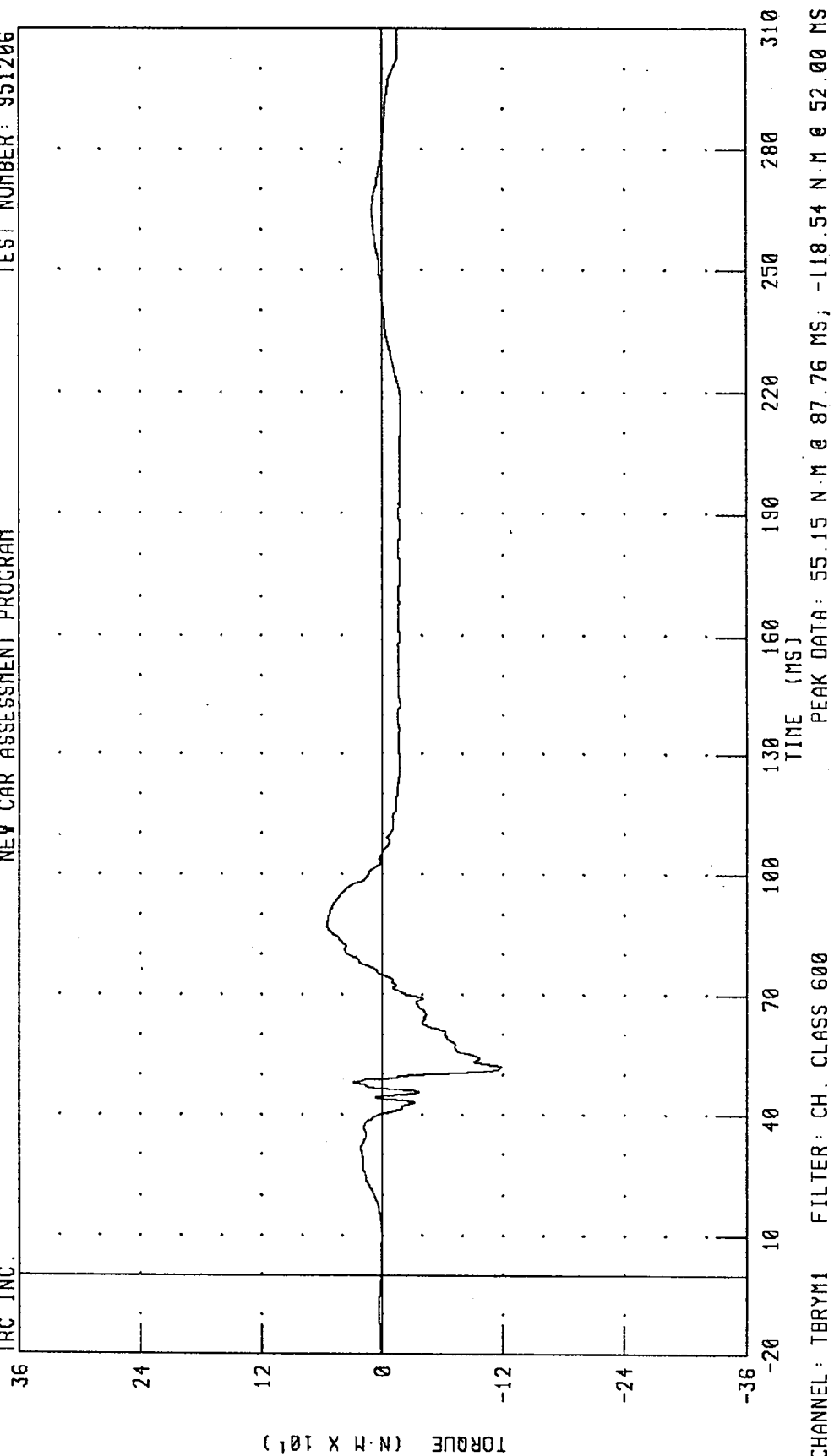
CHANNEL: TBRXM1 FILTER: CH. CLASS 600

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



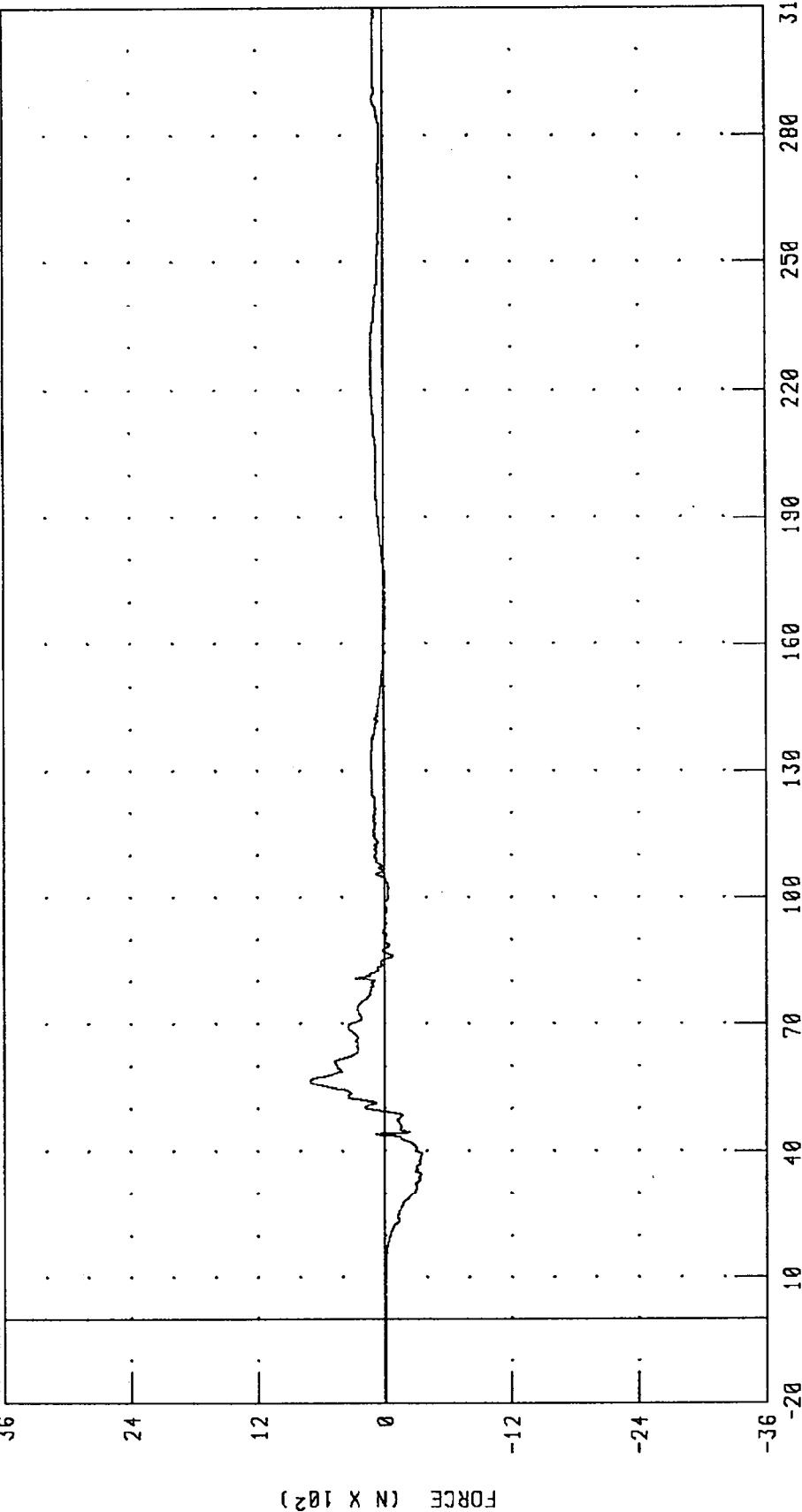
CHANNEL: TBRYM1 FILTER: CH. CLASS 600

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT LOWER TIBIA X-AXIS FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

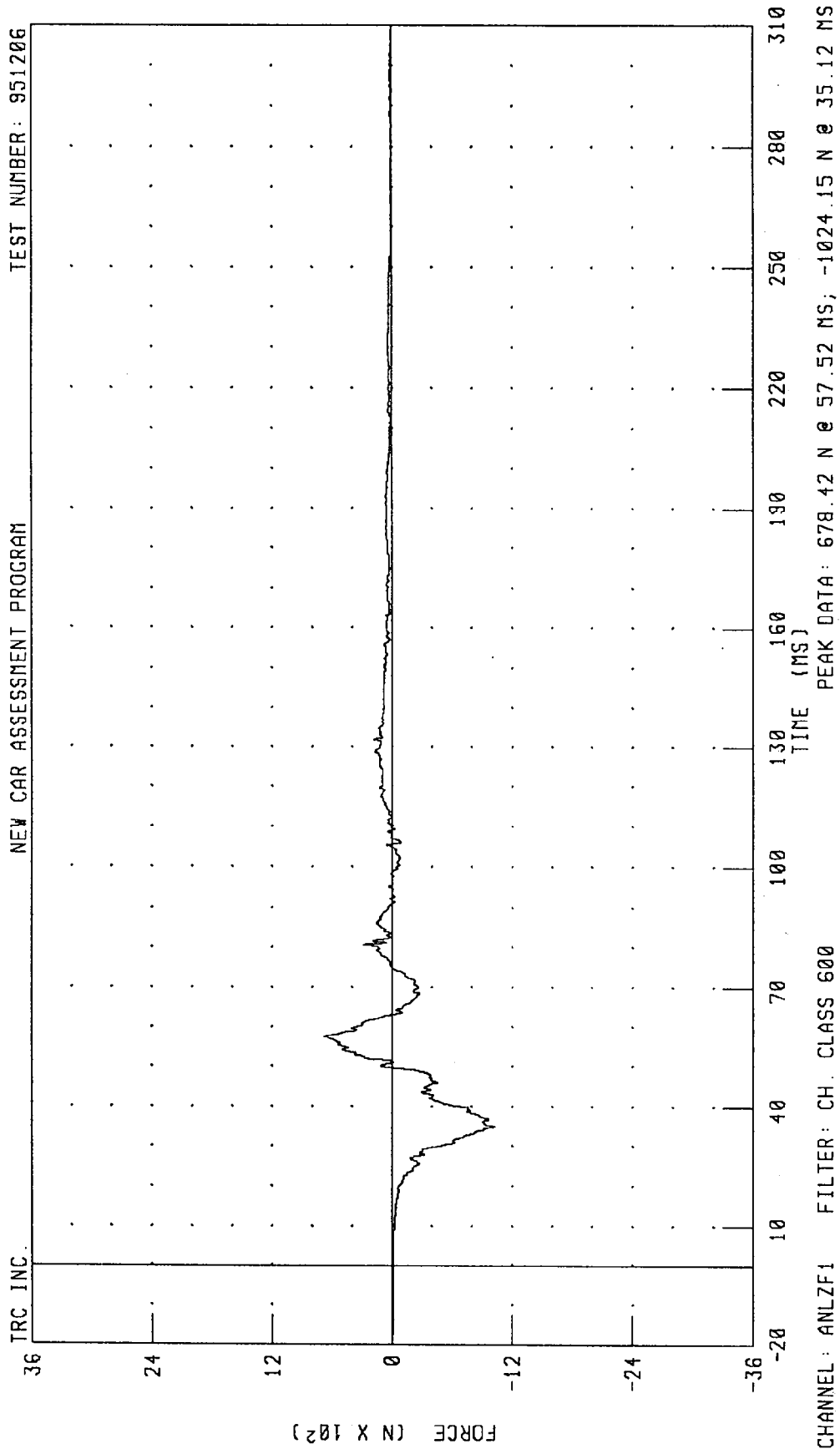


CHANNEL: ANLXF1 FILTER: CH. CLASS 600

PEAK DATA: 703.30 N @ 56.16 MS, -353.74 N @ 39.52 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT LOWER TIBIA Z-AXIS FORCE
 NEW CAR ASSESSMENT PROGRAM

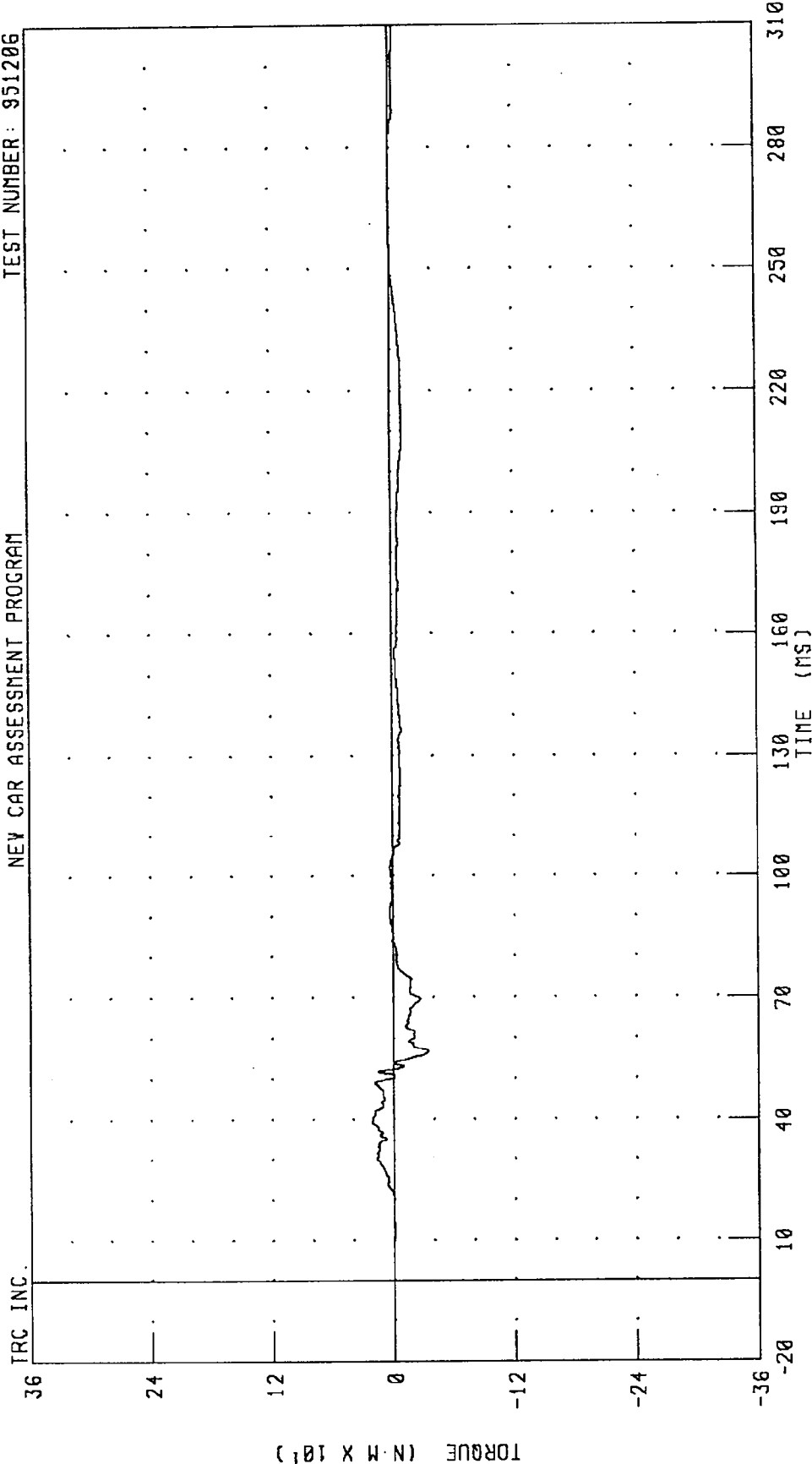
TEST NUMBER: 951206



1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

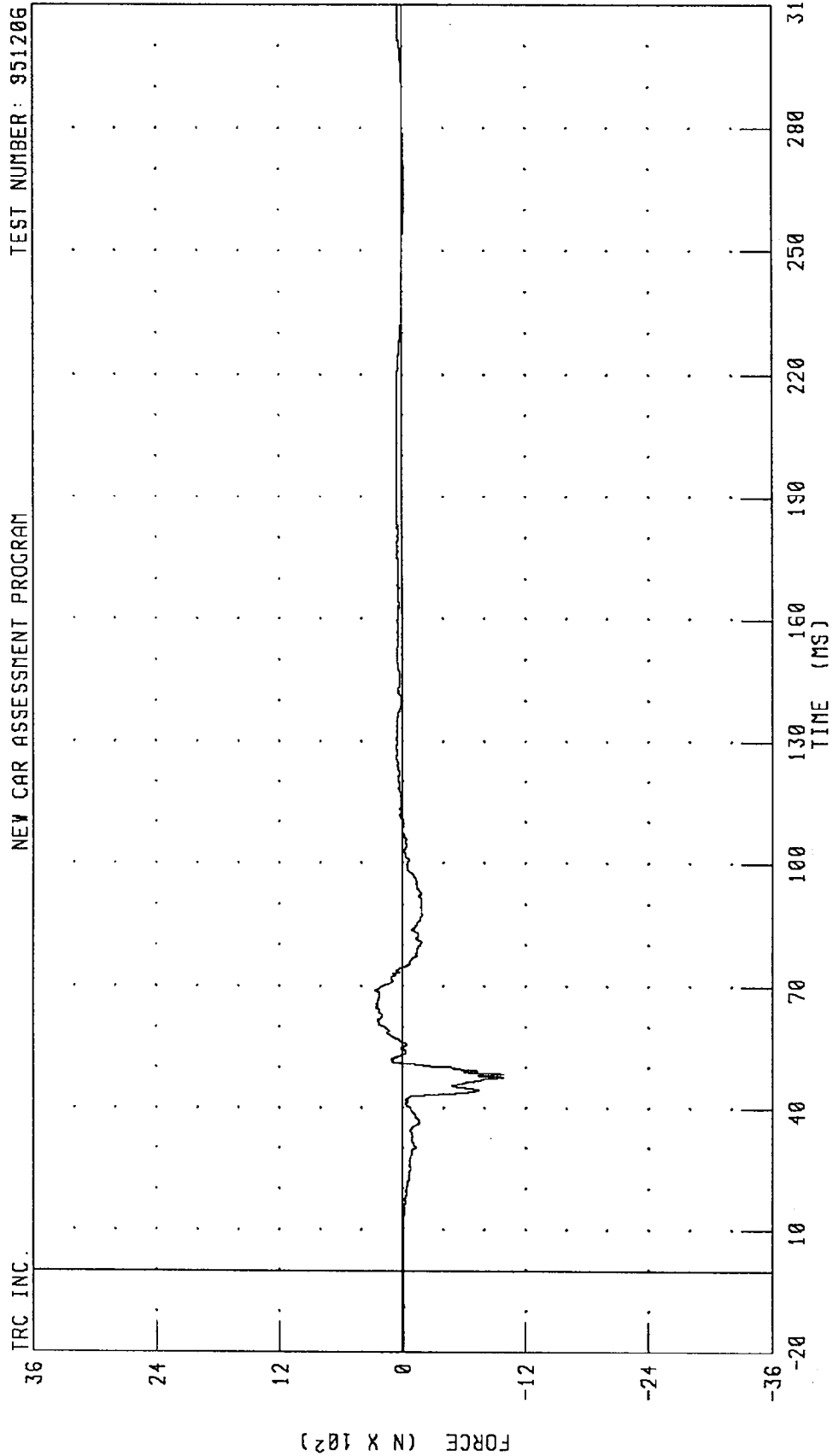


CHANNEL: ANLYM1 FILTER: CH. CLASS 600

PEAK DATA: 21.64 N.M @ 39.36 MS, -34.61 N.M @ 56.72 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT LOWER TIBIA X-AXIS FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



CHANNEL: ANRXF1 FILTER: CH. CLASS 600
 PEAK DATA: 262.67 N @ 69.04 MS; -987.83 N @ 48.40 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT LOWER TIBIA Z-AXIS FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

36

24

12

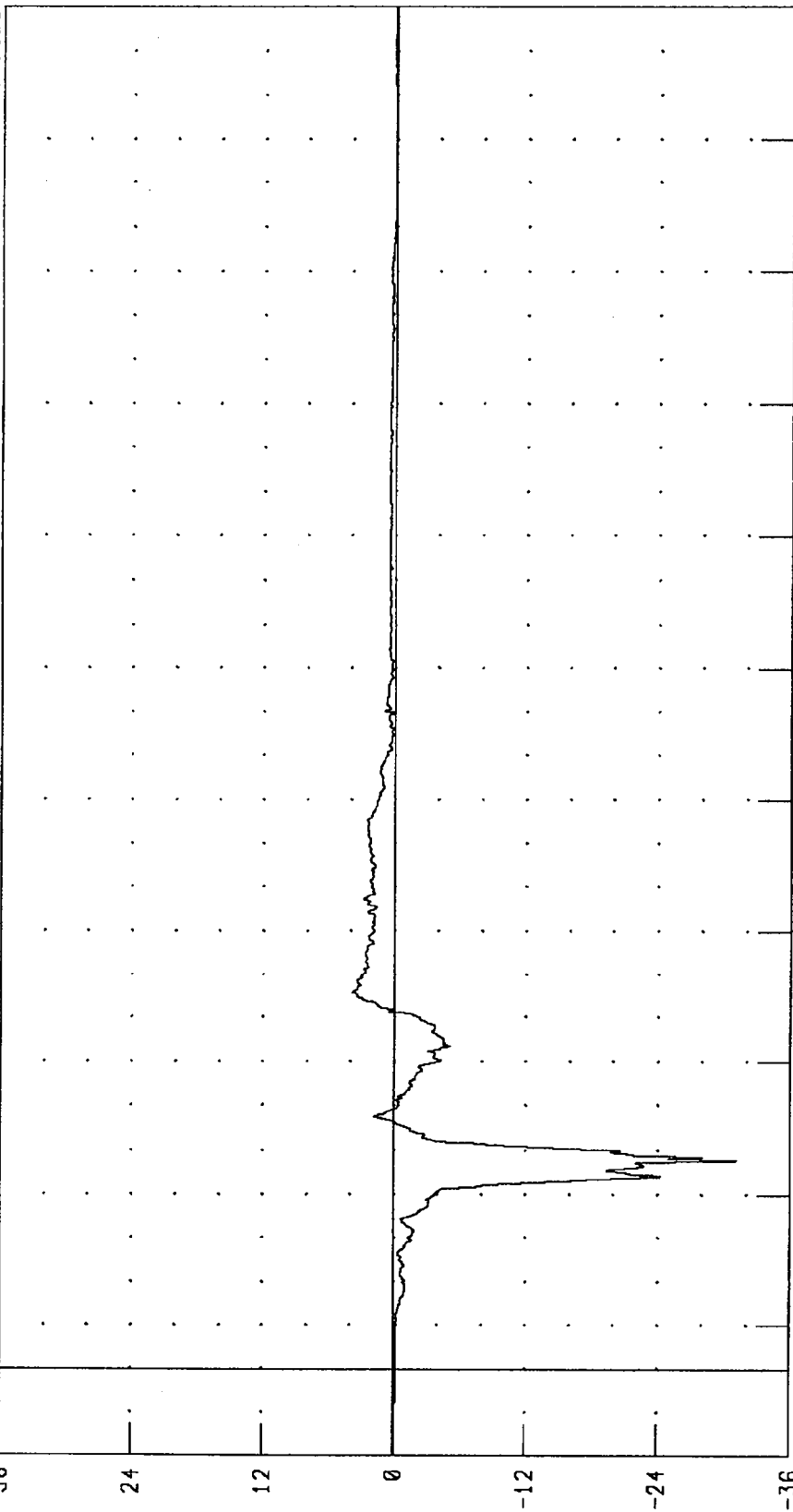
0

-12

-24

-36

FORCE (N X 10²)



PEAK DATA: 384.77 N @ 85.84 MS; -3103.41 N @ 47.84 MS

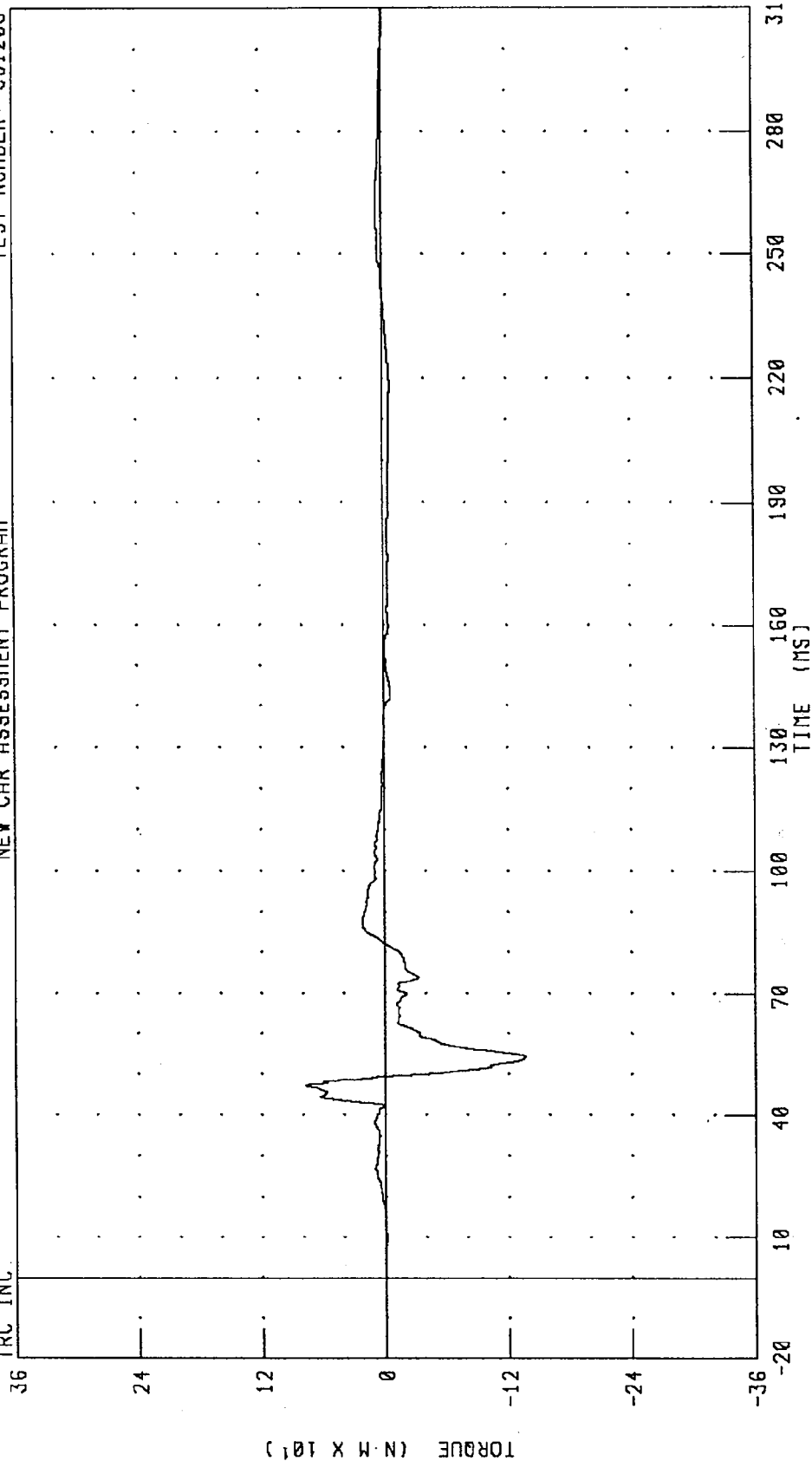
CHANNEL: ANRZF1 FILTER: CH. CLASS 600

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



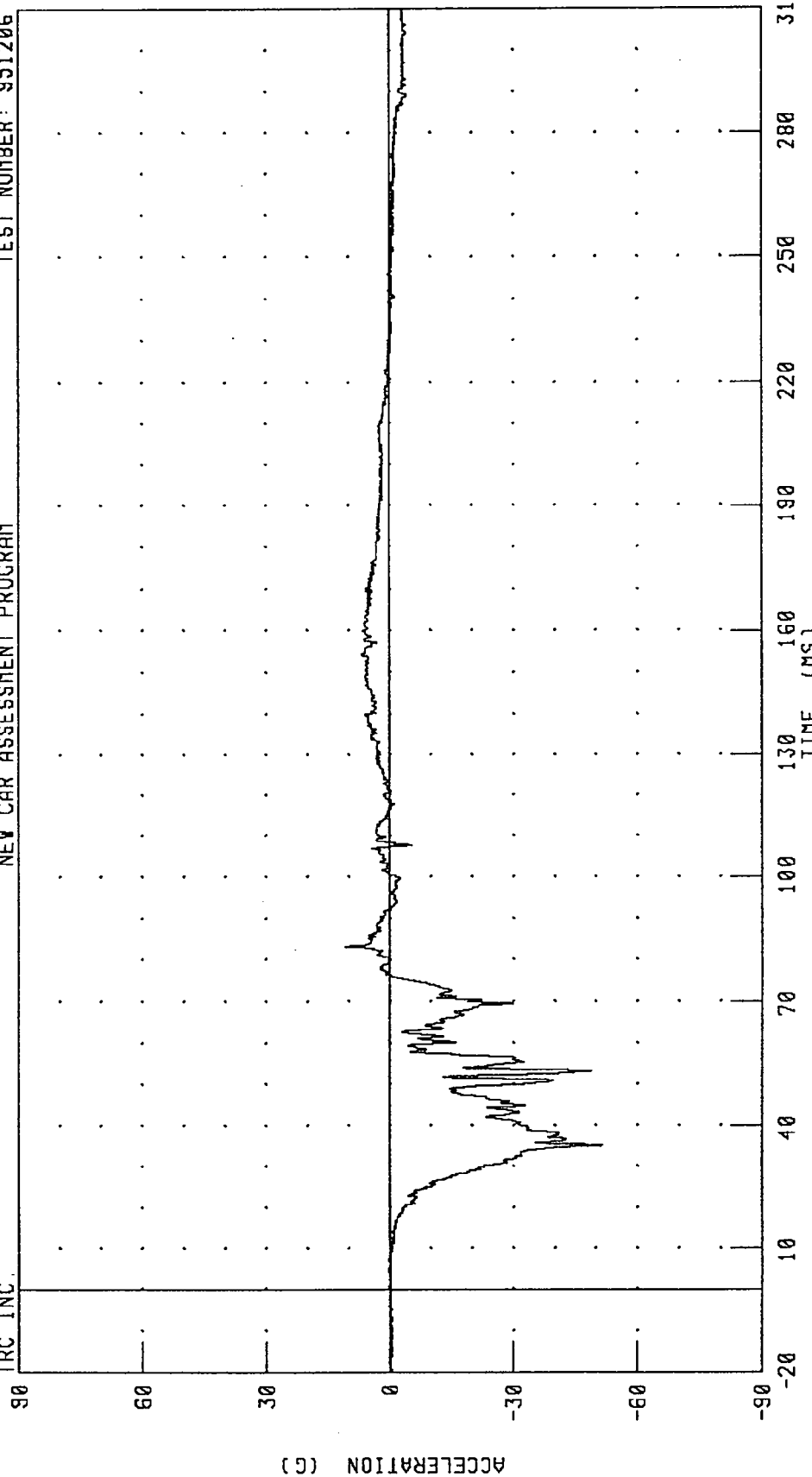
CHANNEL: ANRYM1 FILTER: CH. CLASS 600

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT FOOT X-AXIS ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: FTLXG1 FILTER: CH. CLASS 1000

PEAK DATA: 10.97 G @ 83.28 MS; -51.51 G @ 35.36 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 951206

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

-20

TIME (MS)

CHANNEL: FILZHI FILTER: CH. CLASS 1000

PEAK DATA: 64.39 G @ 52.88 MS; -9.67 G @ 70.96 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90

60

30

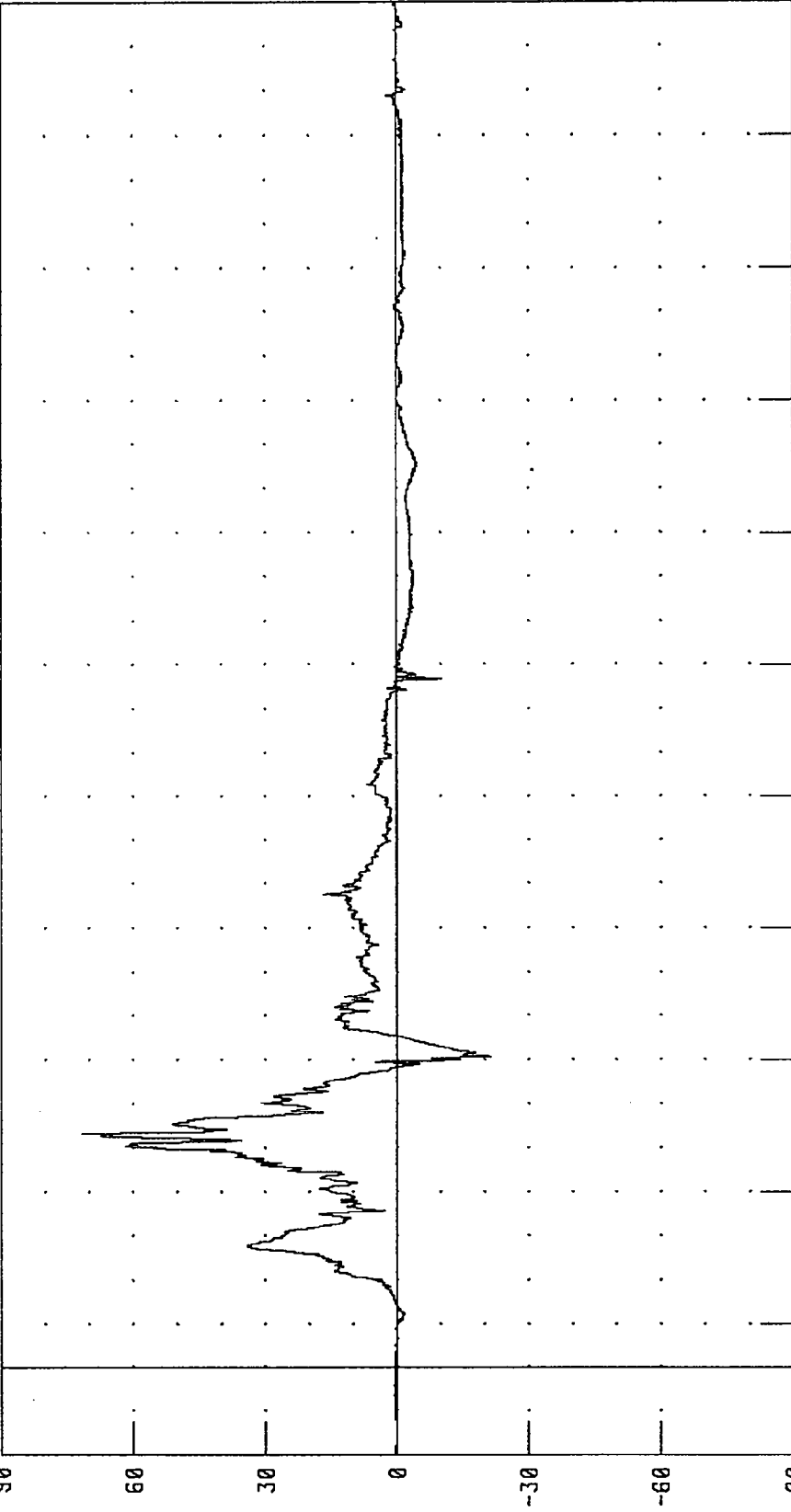
0

-30

-60

-90

ACCELERATION (G)



310 280 250 220 190 160 130 100 70 40 10

TIME (MS)

CHANNEL: FTLZT1 FILTER: CH. CLASS 1000

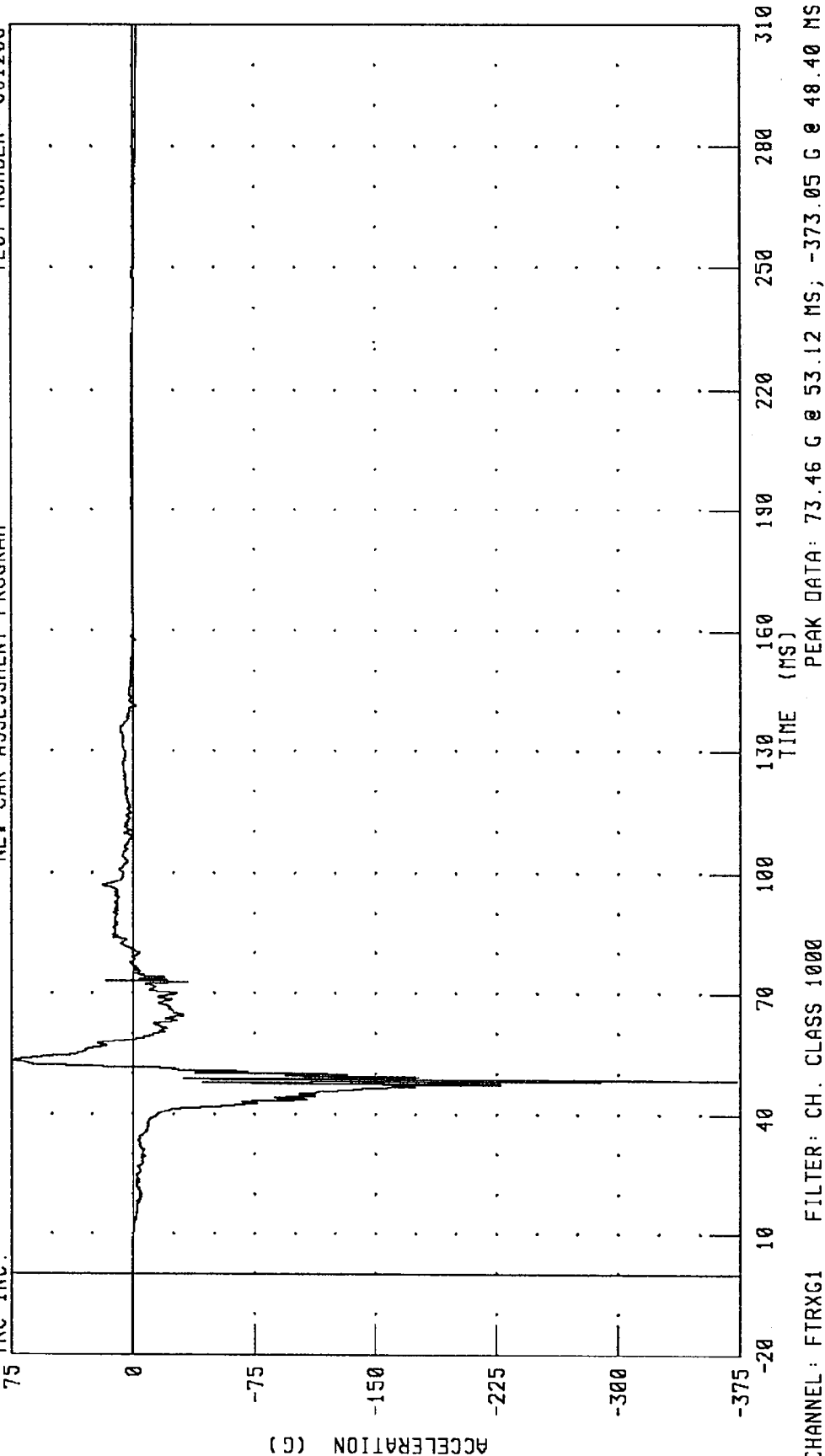
PEAK DATA: 71.59 G @ 53.20 MS; -21.28 G @ 70.80 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FOOT X-AXIS ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: FTRXG1 FILTER: CH. CLASS 1000

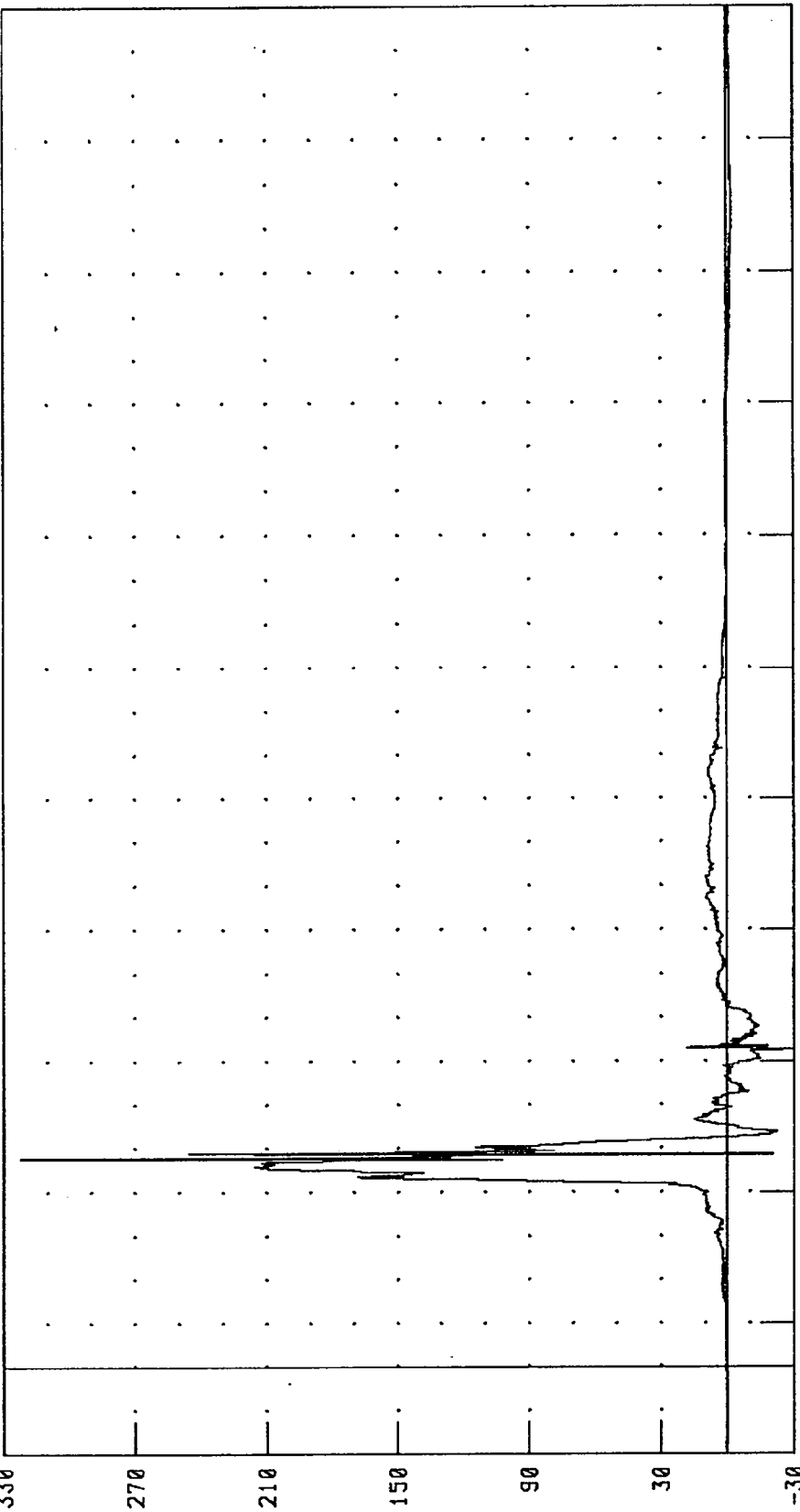
PEAK DATA: 73.46 G @ 53.12 MS; -373.05 G @ 48.40 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 322.02 G @ 47.76 MS; -30.08 G @ 72.72 MS

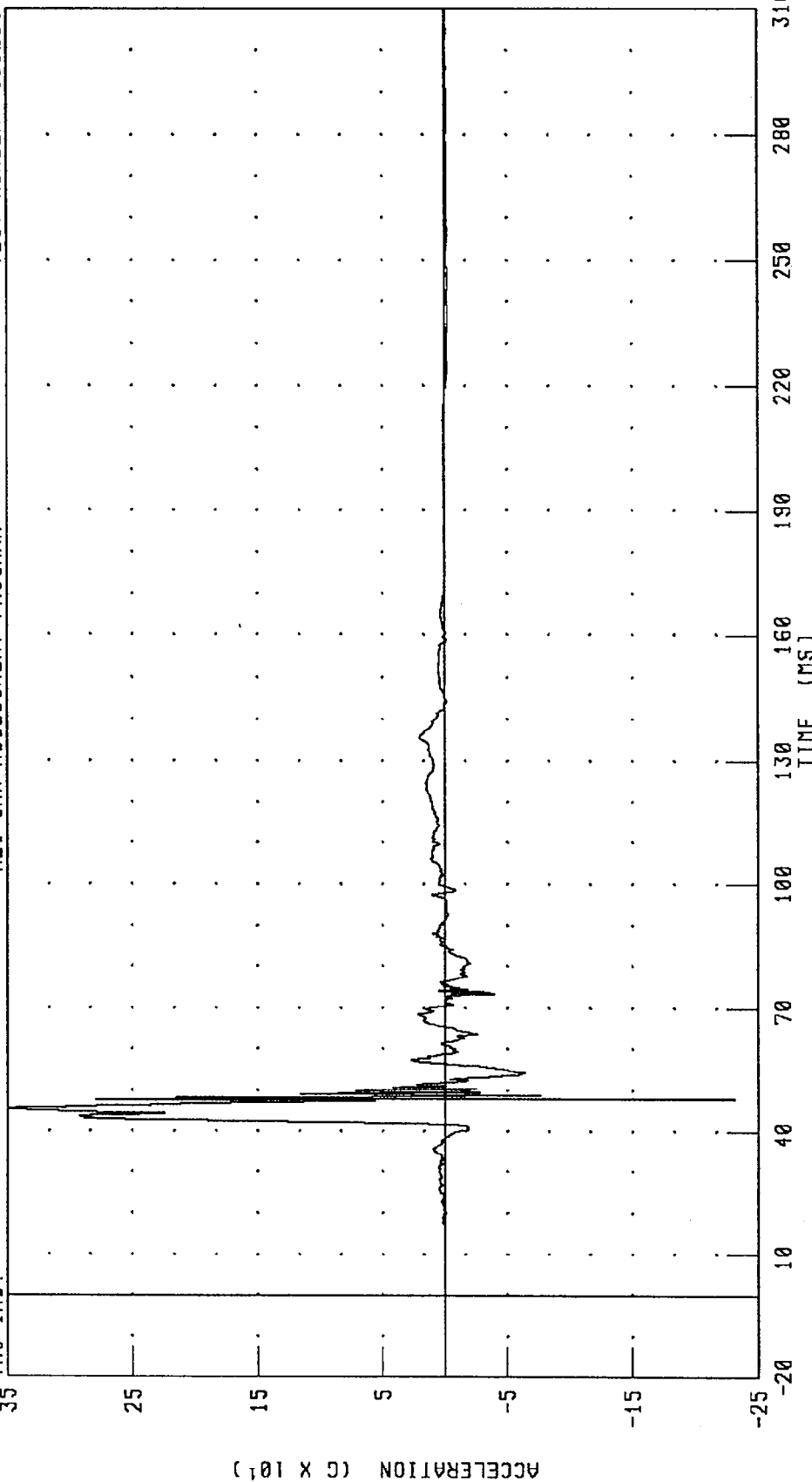
CHANNEL: FTRZH1 FILTER: CH. CLASS 1000

1986 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

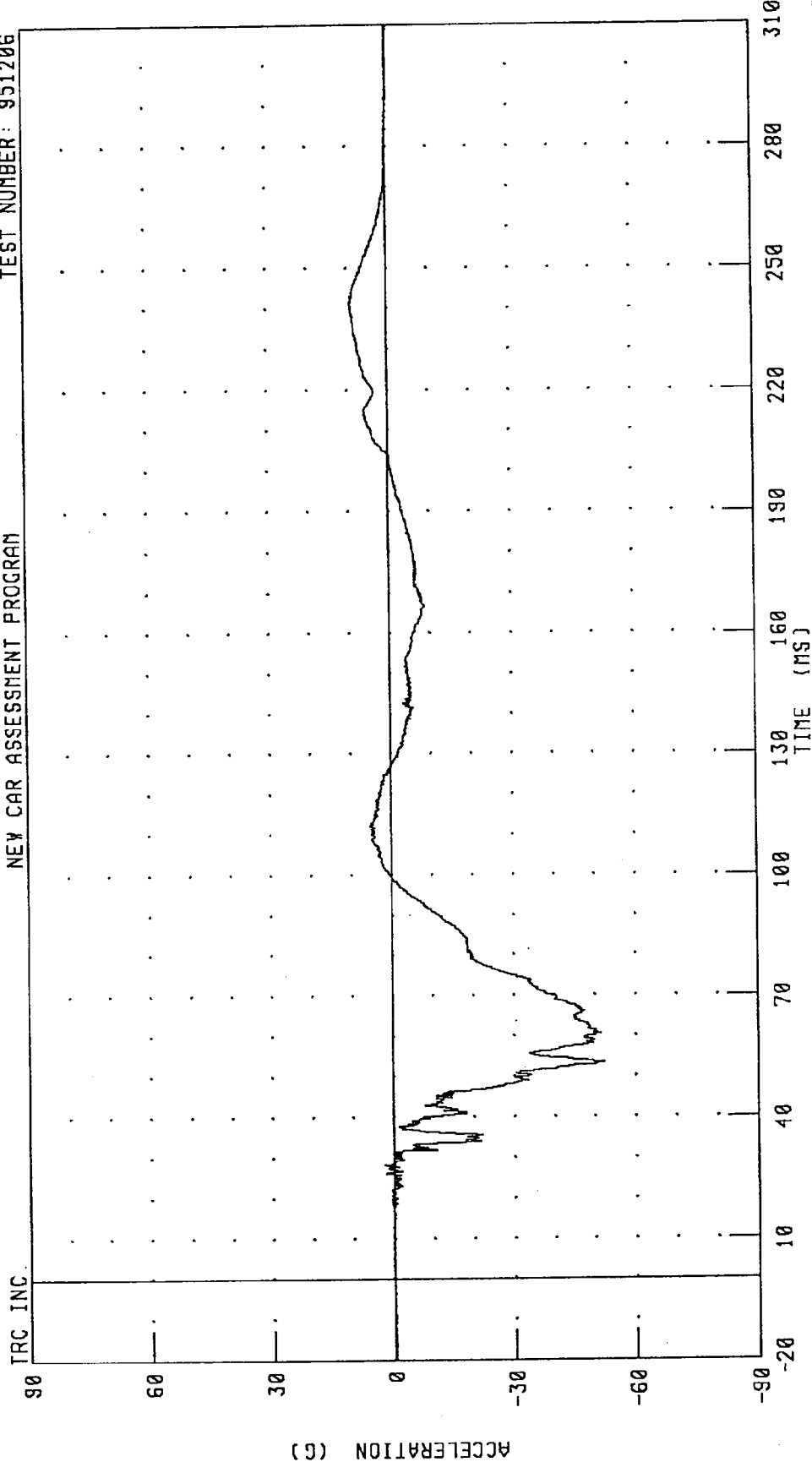


PEAK DATA: 350.46 G @ 45.44 MS; -231.02 G @ 48.00 MS

CHANNEL: FTRZT1 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



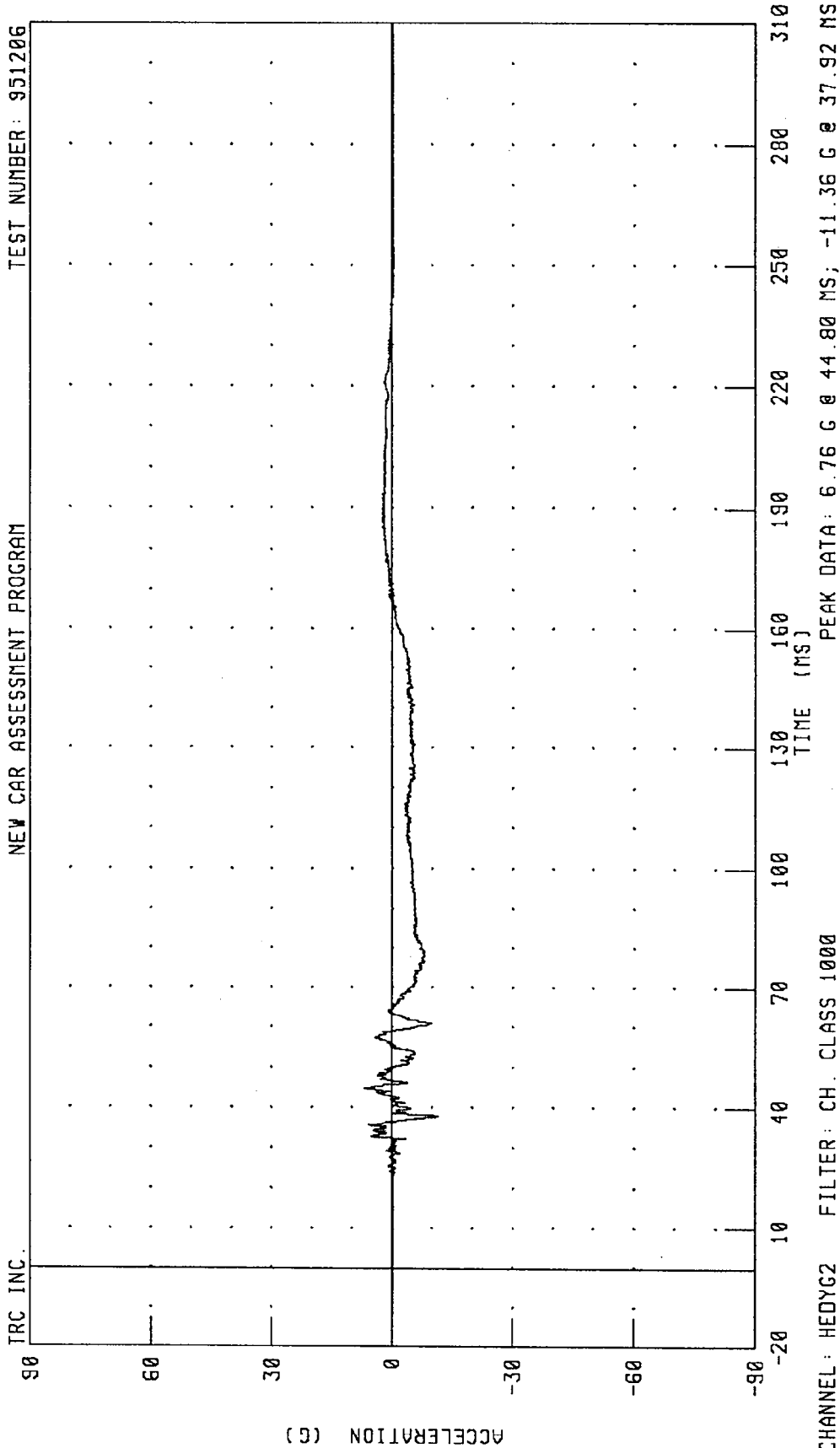
PEAK DATA: 9.08 G @ 239.20 MS; -52.41 G @ 53.28 MS

CHANNEL: HEDXC2 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



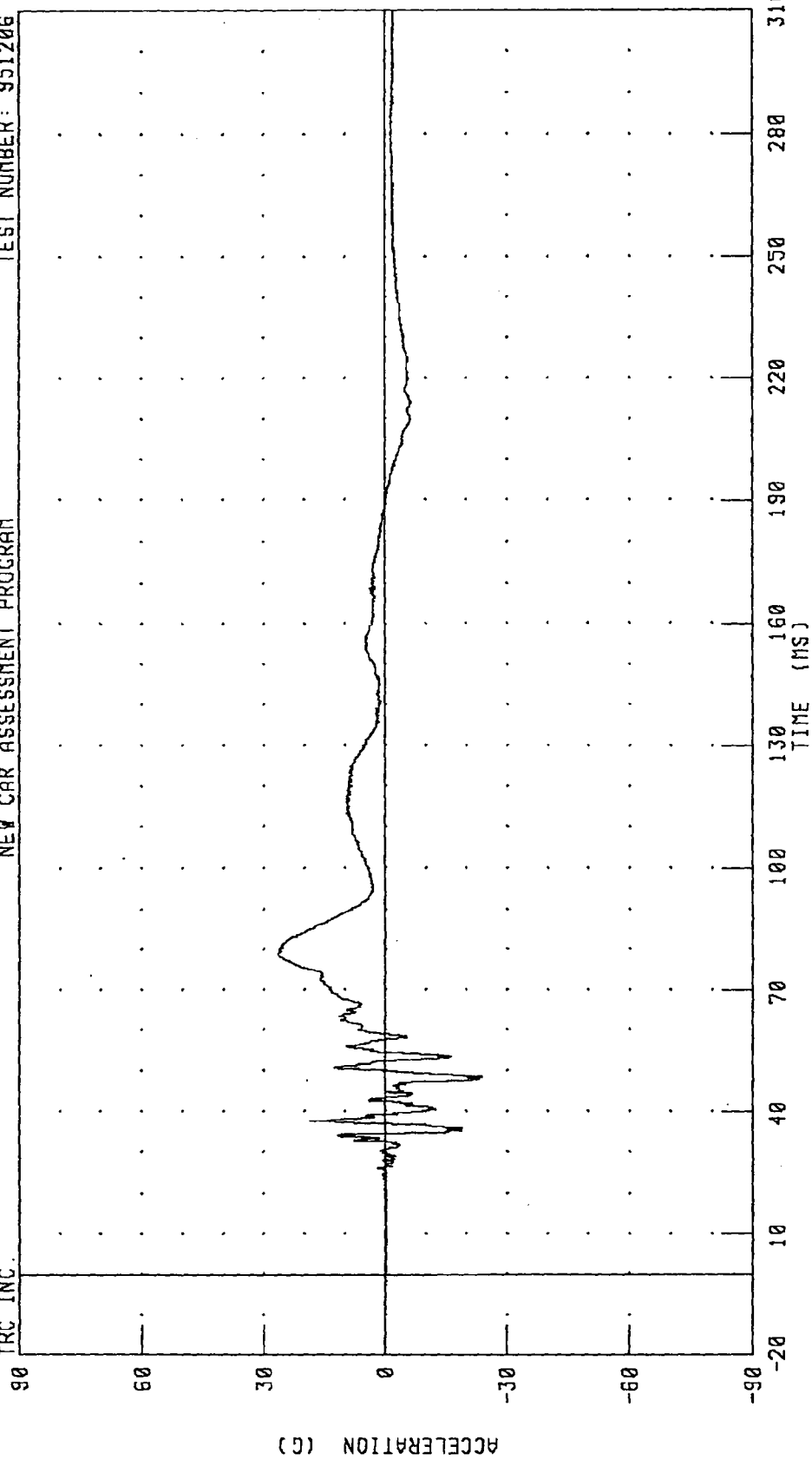
CHANNEL: HEDYG2 FILTER: CH. CLASS 1000

PEAK DATA: 6.76 G @ 44.80 MS; -11.36 G @ 37.92 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



PEAK DATA: 26.45 G @ 78.56 MS; -23.98 G @ 48.48 MS

CHANNEL: HEDZG2 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

120

100

80

60

40

20

0

ACCELERATION (G)

310

280

250

220

190

160

130

100

70

40

10

-20

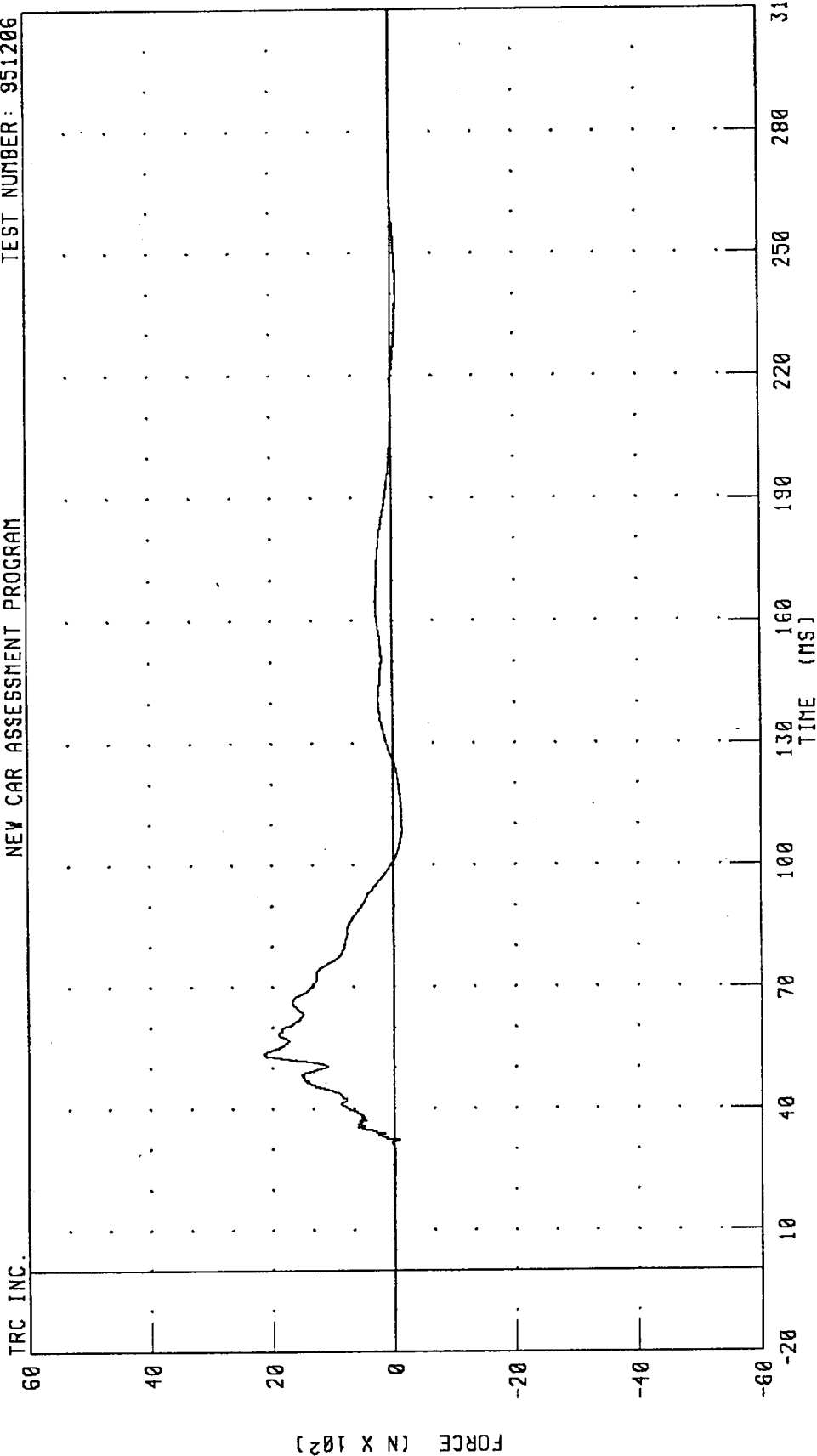
TIME (MS)

CHANNEL: HEDRG2 FILTER: CH. CLASS 1000

PEAK DATA: 54.98 G @ 53.36 MS; 0.10 G @ -20.00 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK X-AXIS SHEAR FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



PEAK DATA: 2152.90 N @ 53.28 MS; -151.82 N @ 108.64 MS

CHANNEL: NEKXF2 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Y-AXIS SHEAR FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

60

40

20

0

-20

-40

-60

FORCE (N X 10²)

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

CHANNEL: NEKYF2 FILTER: CH. CLASS 1000

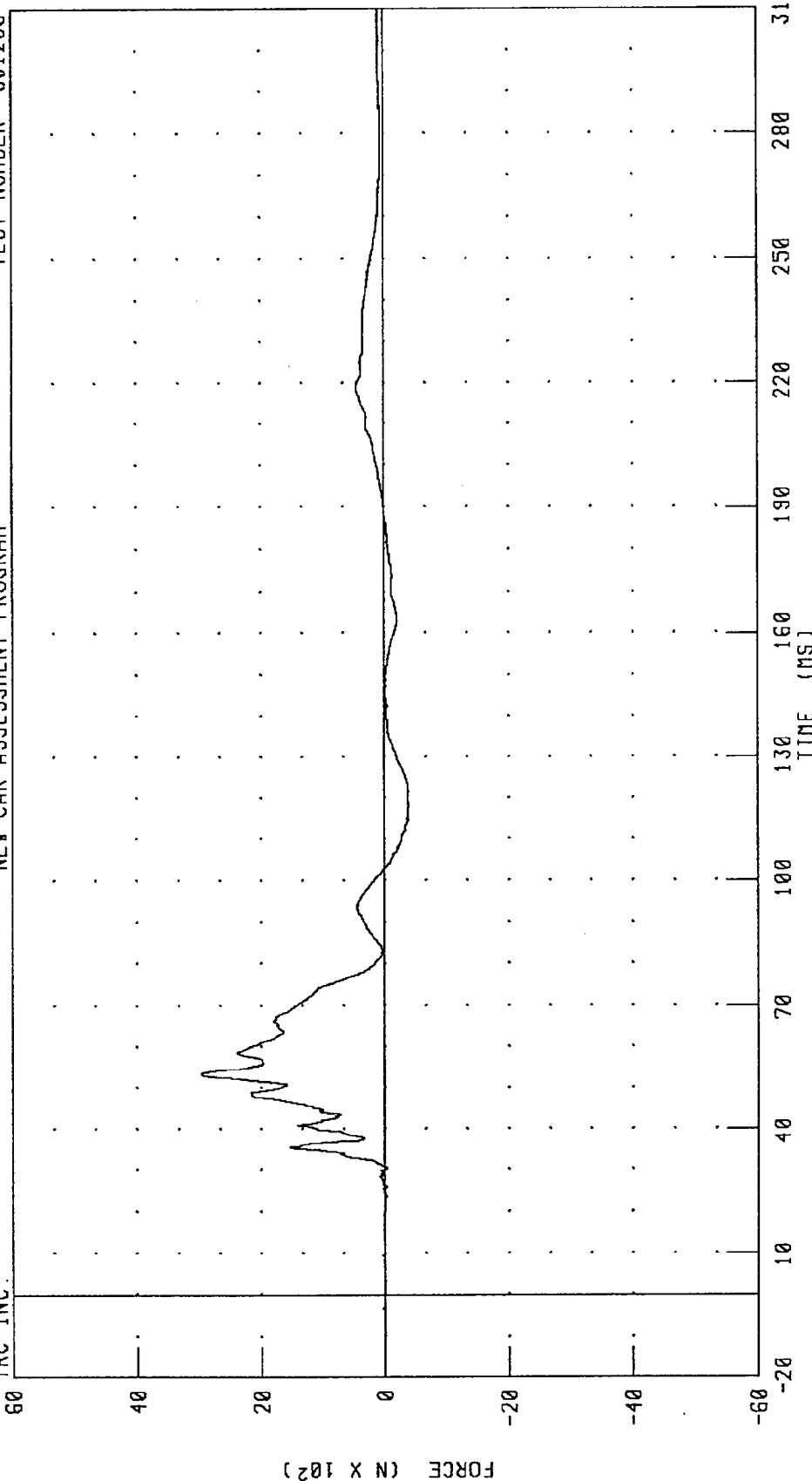
PEAK DATA: 169.23 N @ 128.80 MS; -117.50 N @ 54.56 MS

1986 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Z-AXIS AXIAL FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 2969.04 N @ 53.20 MS; -389.92 N @ 117.92 MS

CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT X AXIS

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

180

120

60

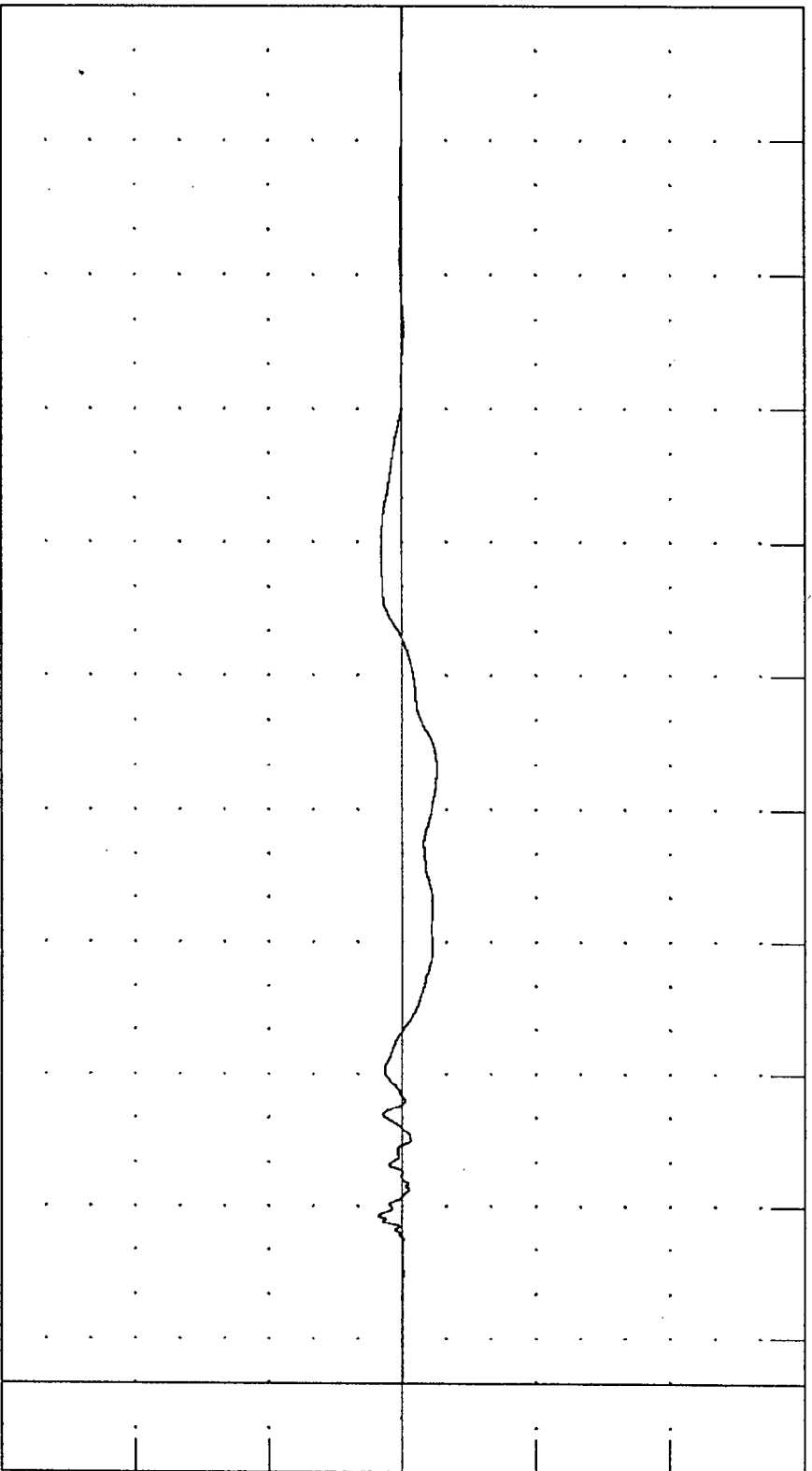
0

-60

-120

-180

TORQUE (N·M)



PEAK DATA: 10.83 N·M @ 37.92 MS; -15.60 N·M @ 140.64 MS

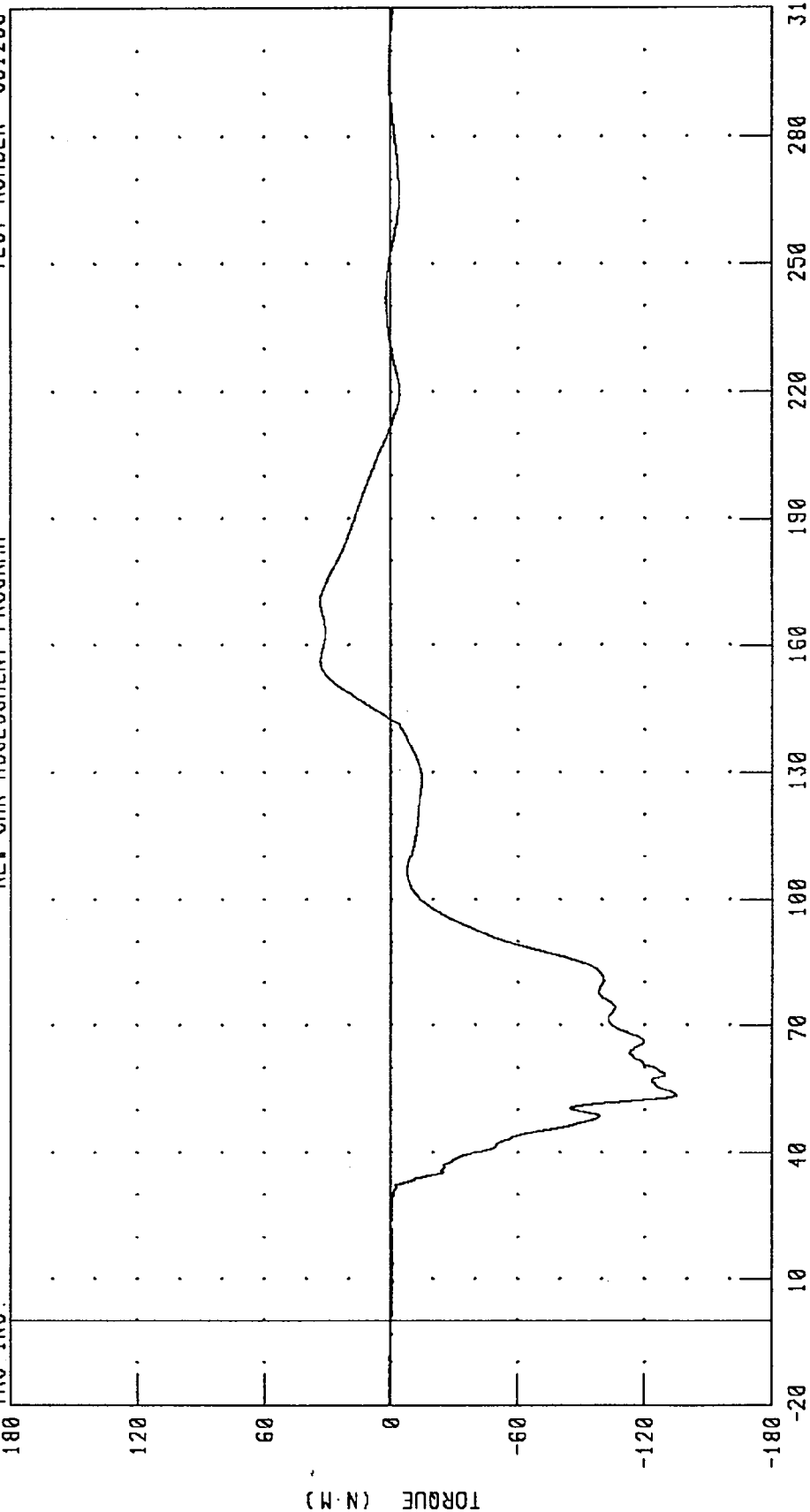
CHANNEL: NEKXM2 FILTER: CH. CLASS 600

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Y AXIS

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 33.63 N-M @ 170.64 MS; -135.14 N-M @ 53.36 MS

CHANNEL: NEKYM2 FILTER: CH. CLASS 600

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 951206

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)

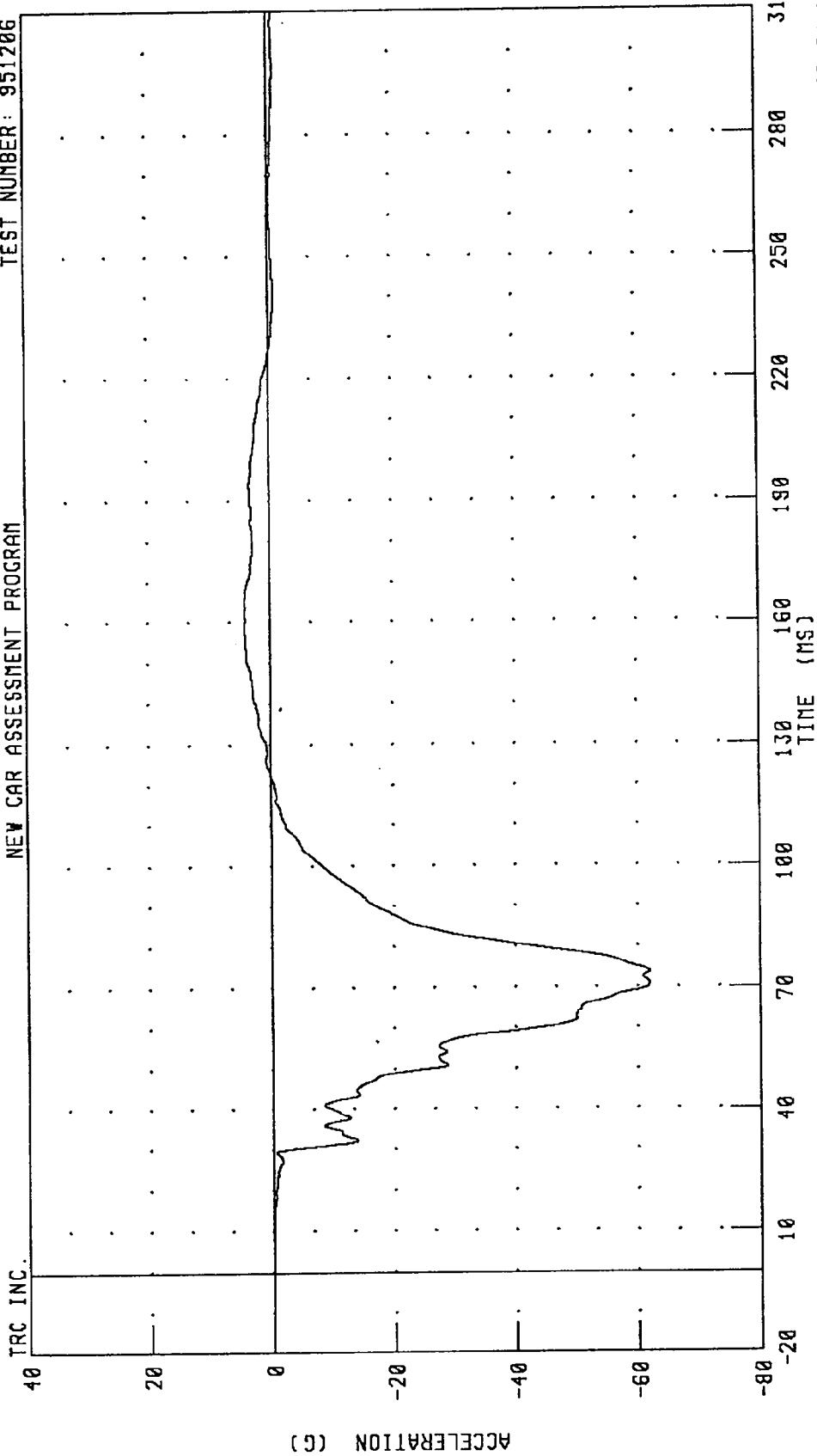
CHANNEL: NEKZM2 FILTER: CH. CLASS 600

PEAK DATA: 8.34 N·M @ 174.72 MS; -9.55 N·M @ 114.64 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM



CHANNEL: CSTXG2 FILTER: CH. CLASS 180

PEAK DATA: 4.28 G @ 158.32 MS; -61.99 G @ 73.84 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Y-AXIS ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

60

40

20

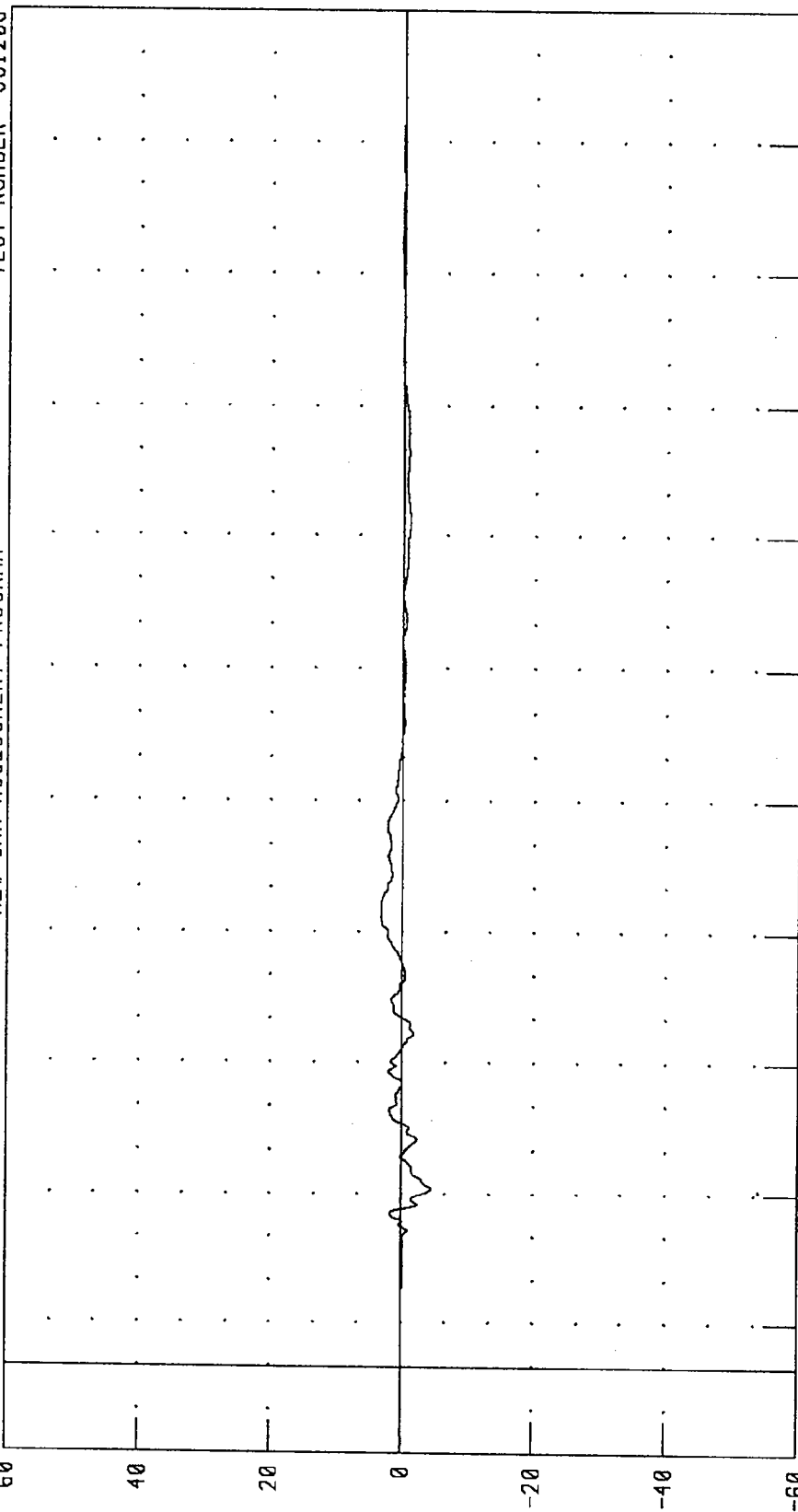
0

-20

-40

-60

ACCELERATION (G)



TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

-40

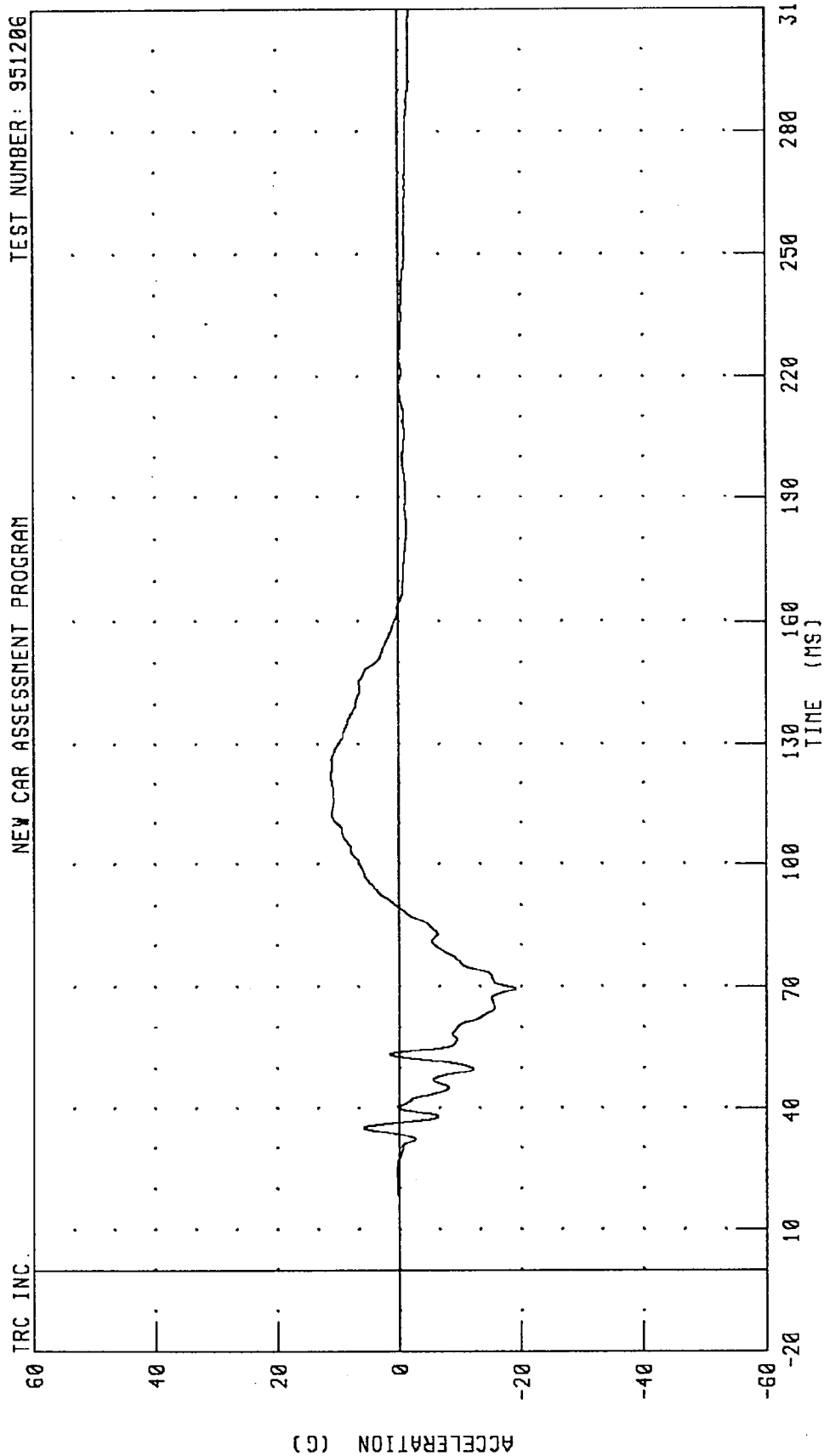
-60

CHANNEL: CSTYG2 FILTER: CH. CLASS 180

PEAK DATA: 3.30 G @ 104.32 MS, -4.60 G @ 41.36 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



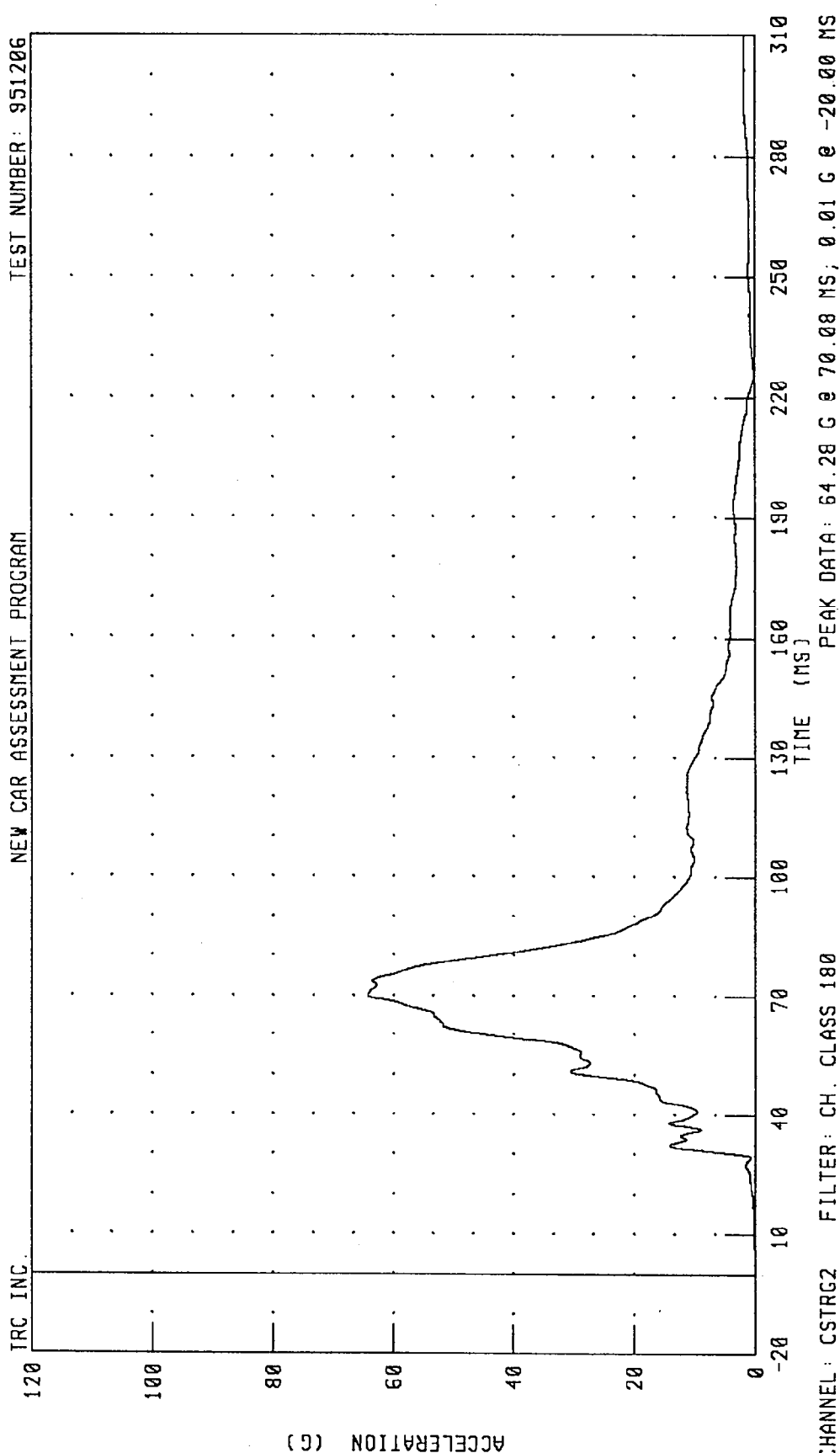
CHANNEL: CSTZG2 FILTER: CH. CLASS 180

PEAK DATA: 11.18 G @ 121.44 MS; -19.20 G @ 69.52 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST RESULTANT ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

IRC INC.

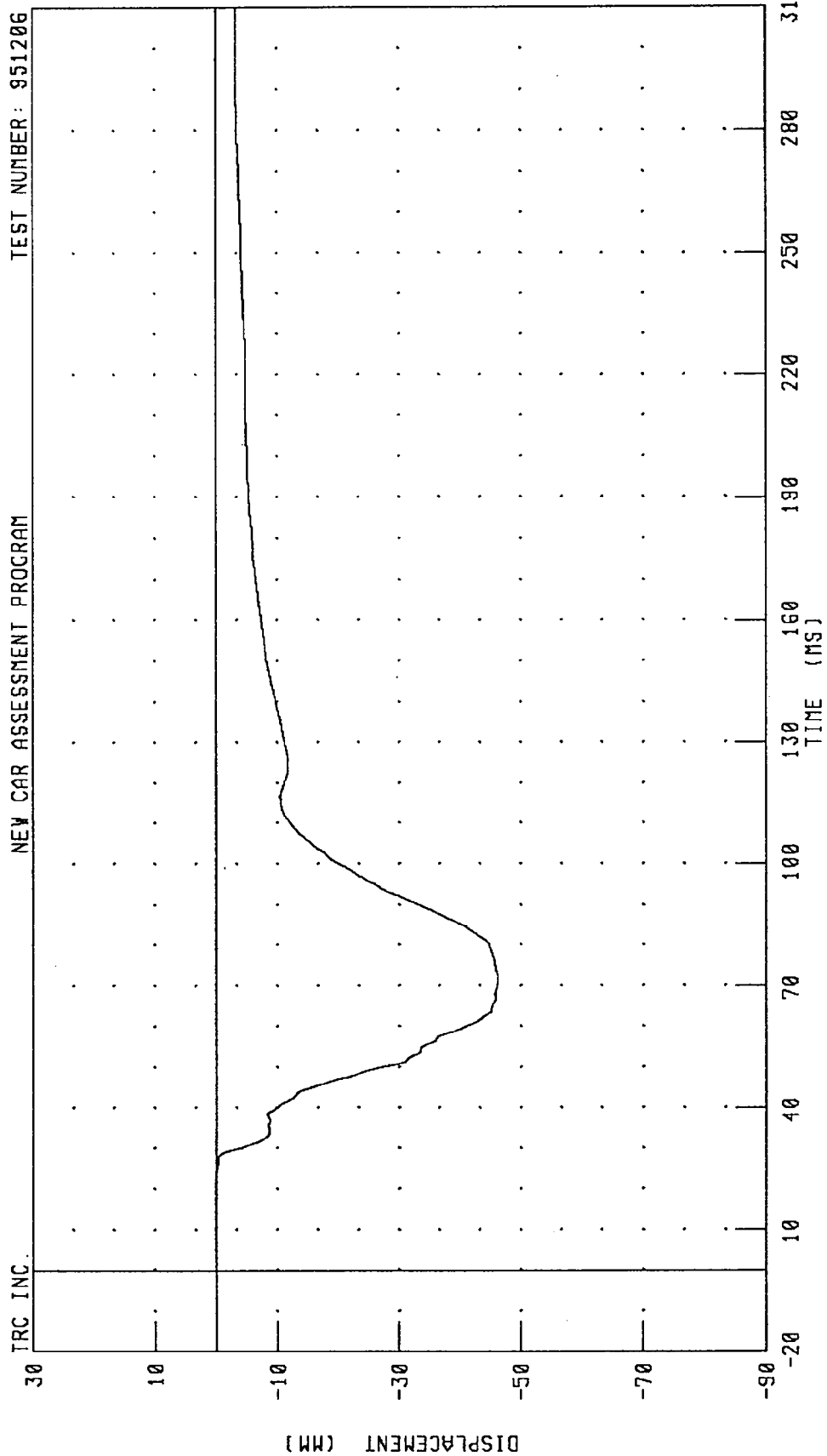


951206

8-60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST DEFLECTION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



PEAK DATA: 0.02 MM @ 16.00 MS; -46.32 MM @ 71.52 MS

CHANNEL: CSTXD2 FILTER: CH. CLASS 180

1986 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

60

40

20

0

-20

-40

-60

ACCELERATION (G)

TIME (MS)

130

160

190

220

250

280

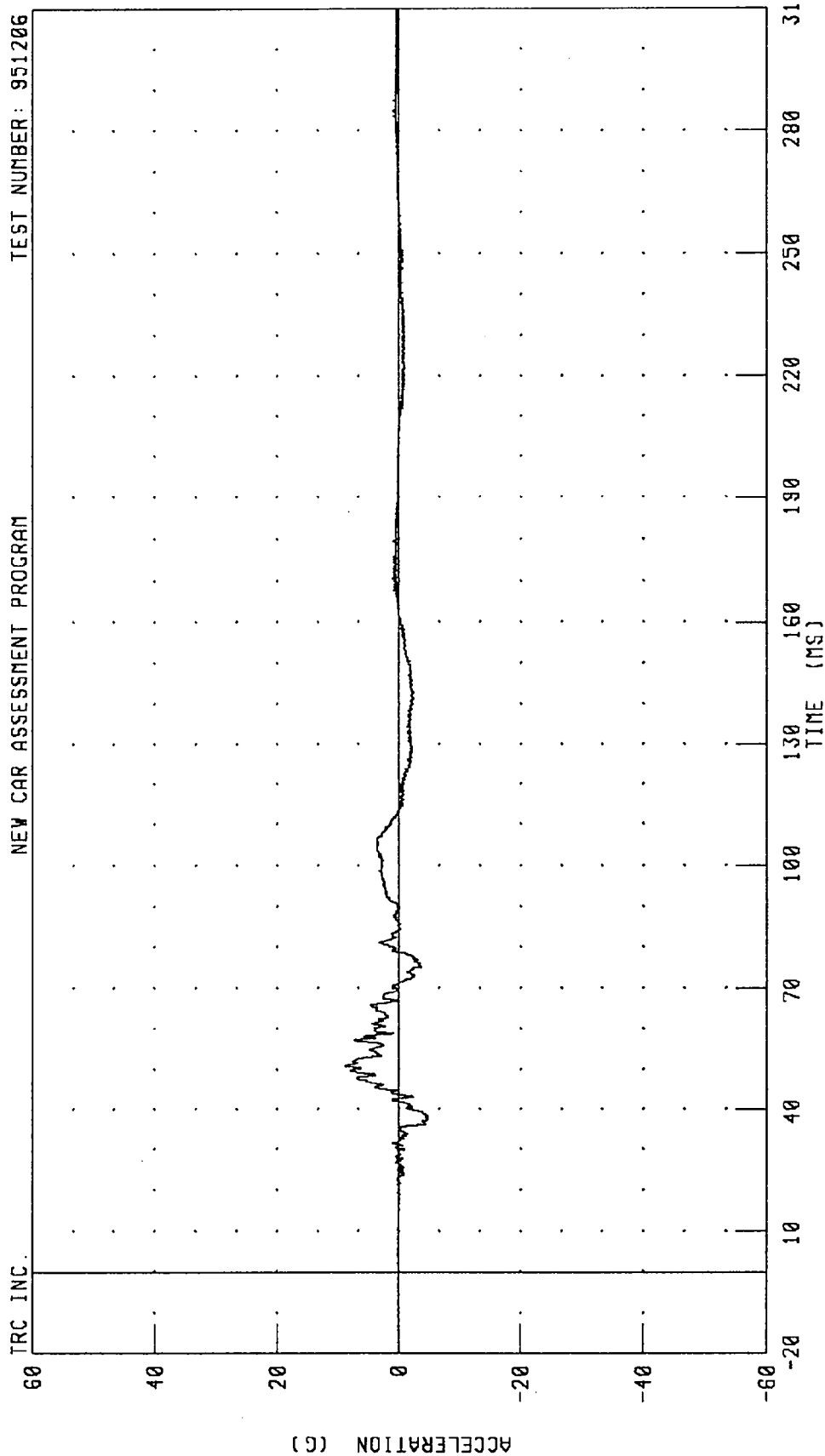
310

PEAK DATA: 7.00 G @ 138.48 MS; -58.75 G @ 53.52 MS.

CHANNEL: PEVXC2 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS Y-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

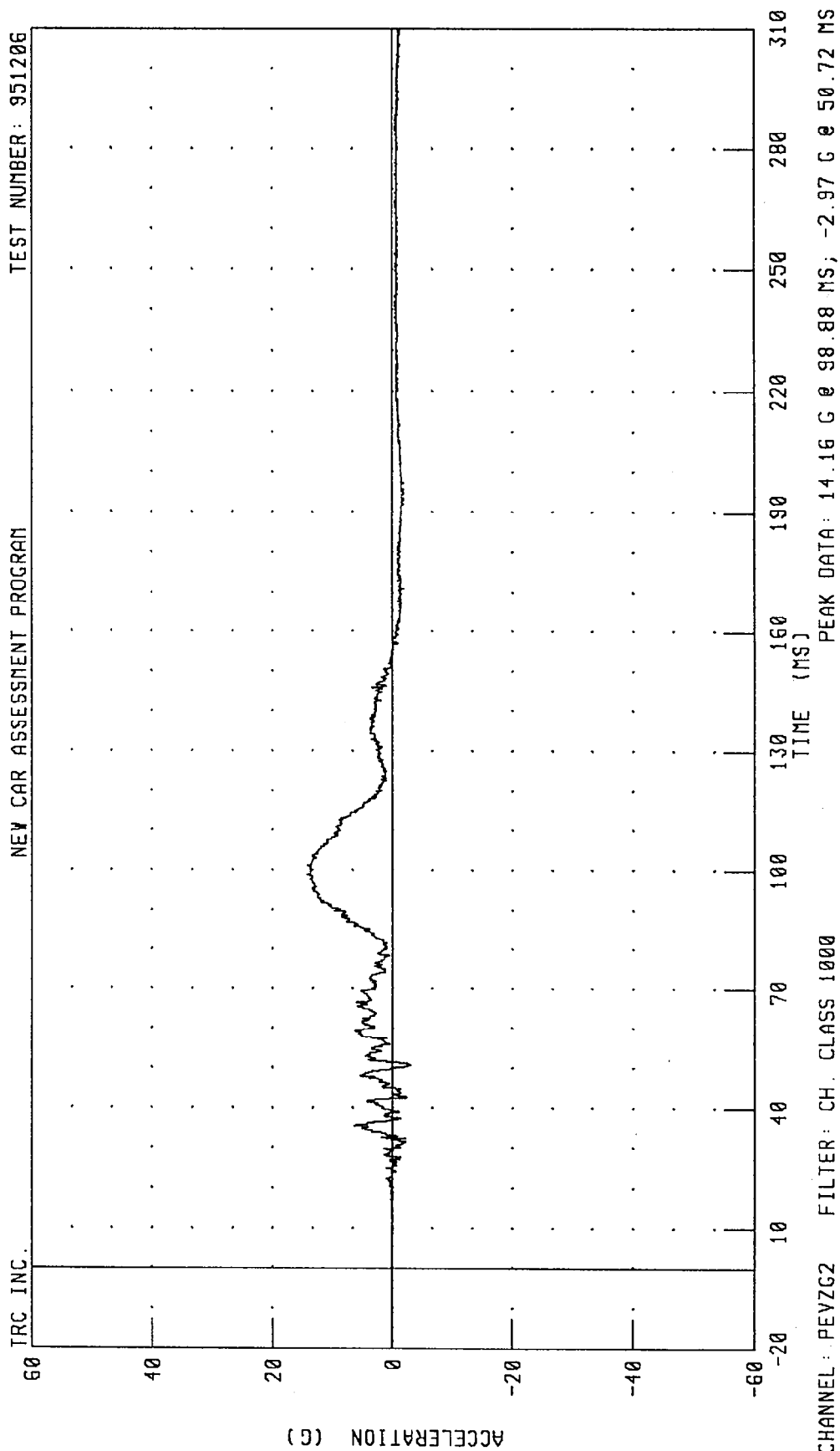


CHANNEL: PEVYG2 FILTER: CH. CLASS 1000 PEAK DATA: 8.87 G @ 50.80 MS; -4.75 G @ 37.44 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS Z-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

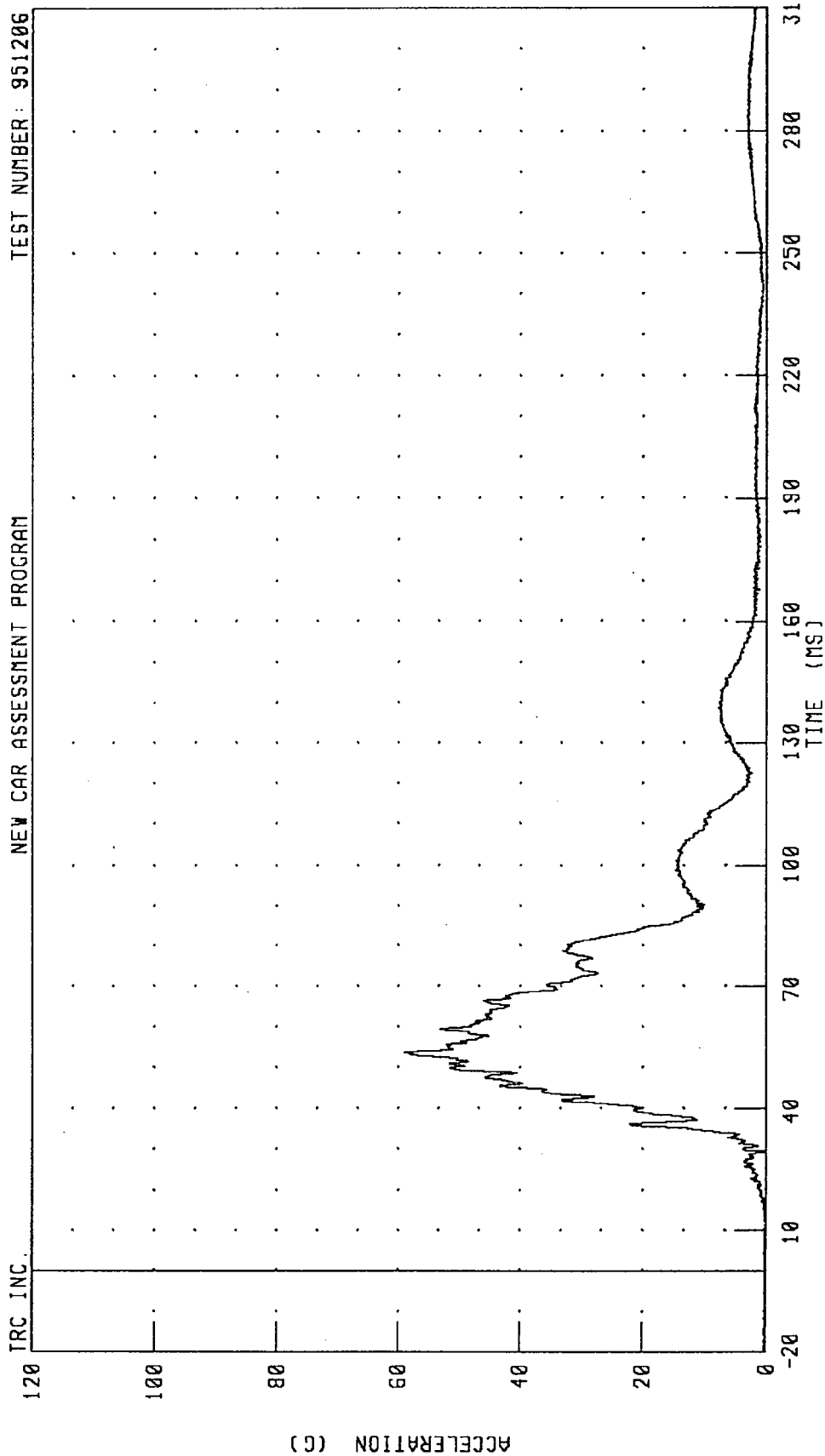


CHANNEL: PEVZG2 FILTER: CH. CLASS 1000

PEAK DATA: 14.16 G @ 98.88 MS; -2.97 G @ 50.72 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS RESULTANT ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



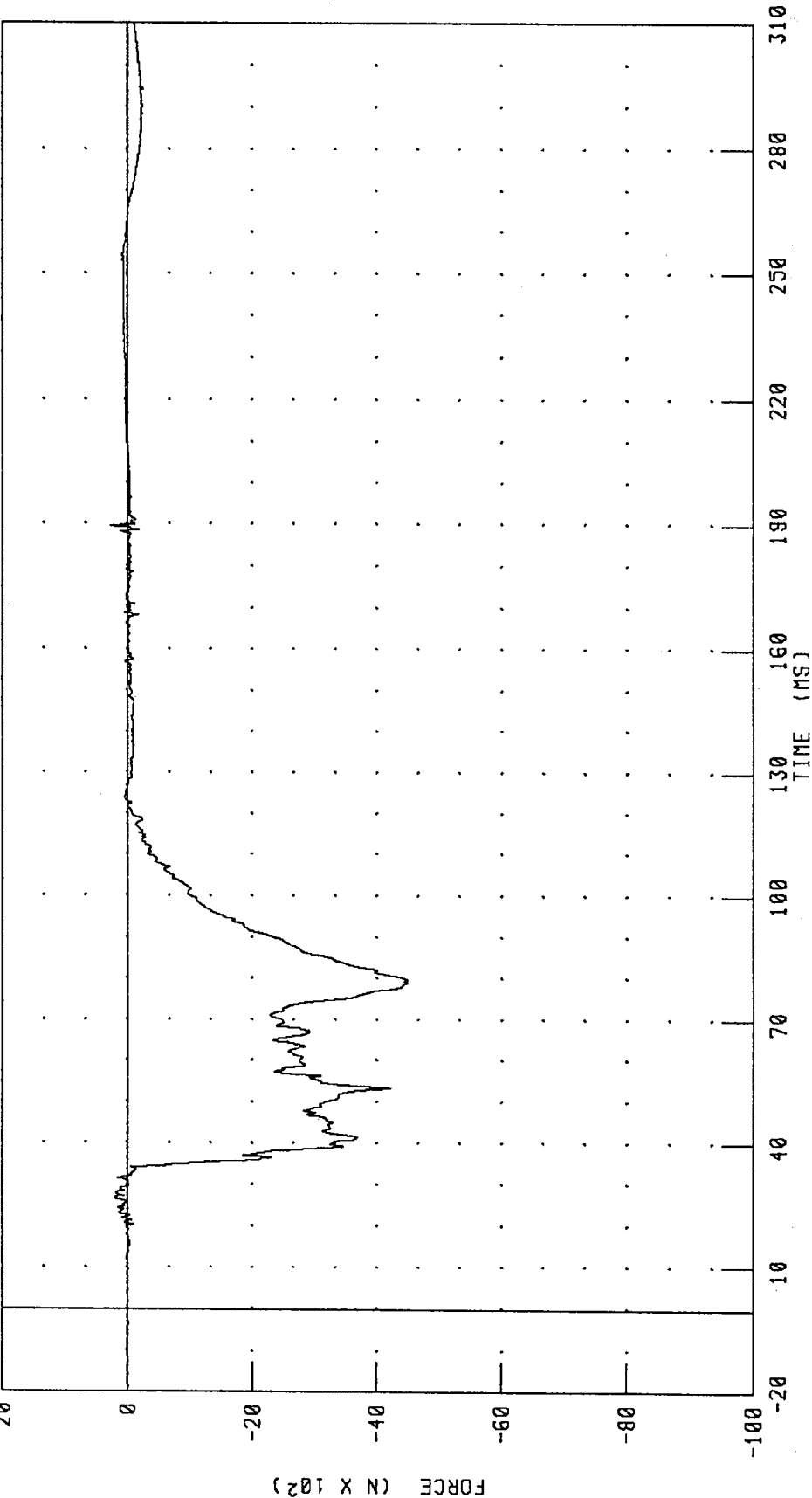
CHANNEL: PEVRG2 FILTER: CH. CLASS 1000

PEAK DATA: 58.96 G @ 53.60 MS; 0.05 G @ -19.76 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FEMUR FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



CHANNEL: LFMF2 FILTER: CH. CLASS 600

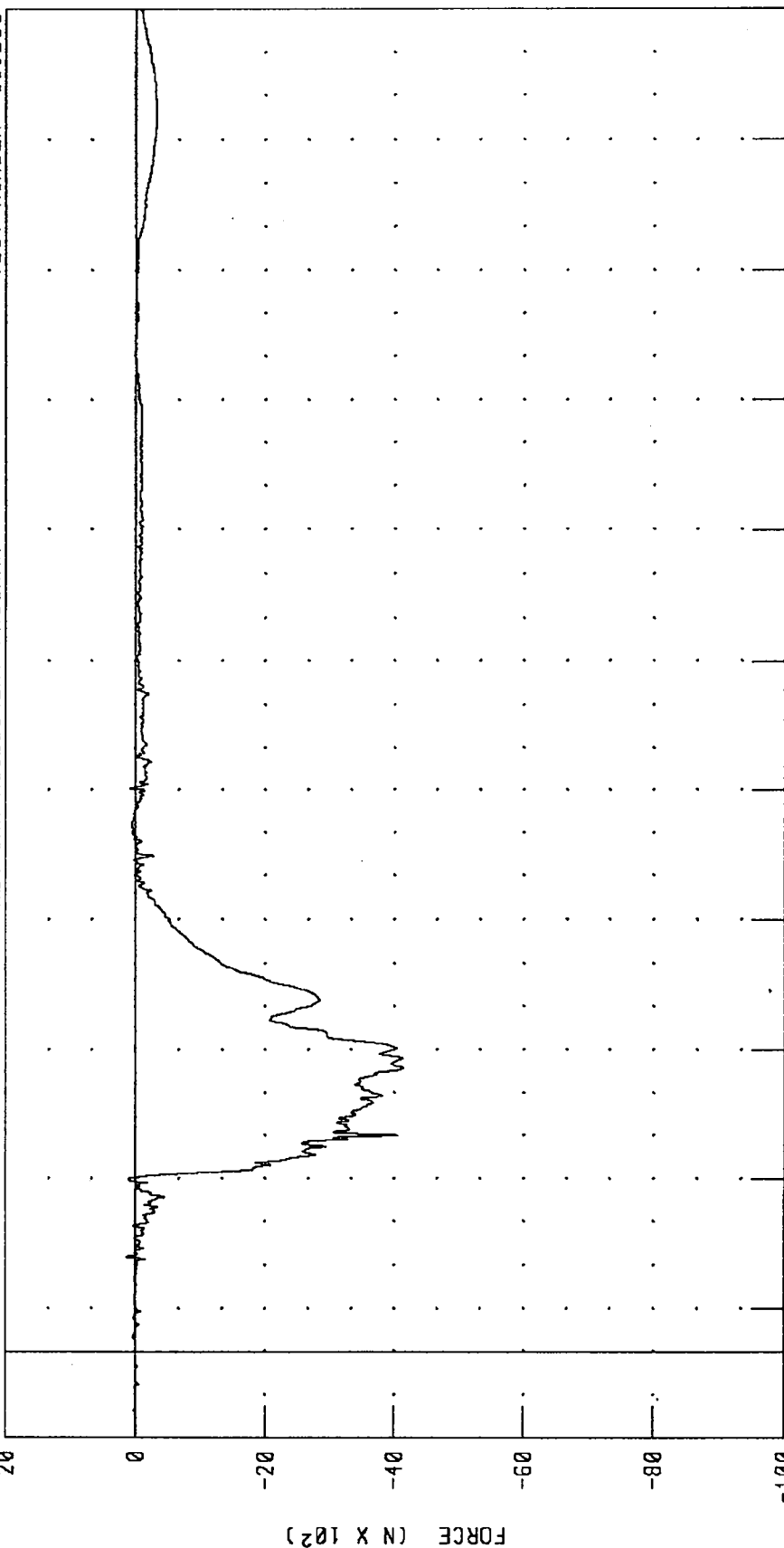
PEAK DATA: 271.52 N @ 189.60 MS, -4492.00 N @ 79.76 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FEMUR FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

IRC INC.

20



PEAK DATA: 140.79 N @ 21.92 MS; -4128.98 N @ 65.76 MS

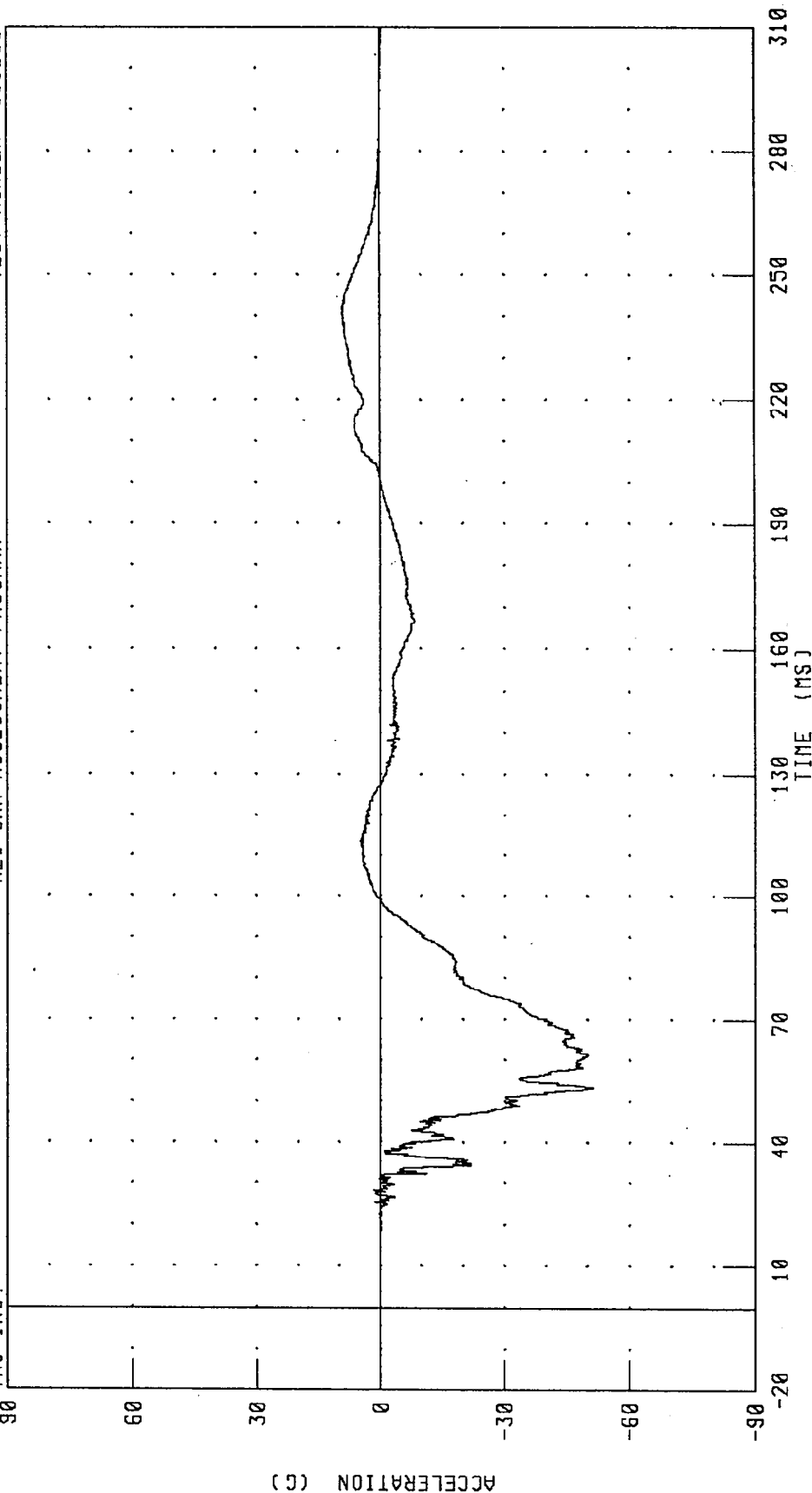
CHANNEL: RFMF2 FILTER: CH. CLASS 600

951206

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION - REDUNDANT
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



CHANNEL: HEDXR2 FILTER: CH. CLASS 1000

PEAK DATA: 9.13 G @ 239.44 MS; -51.22 G @ 53.28 MS

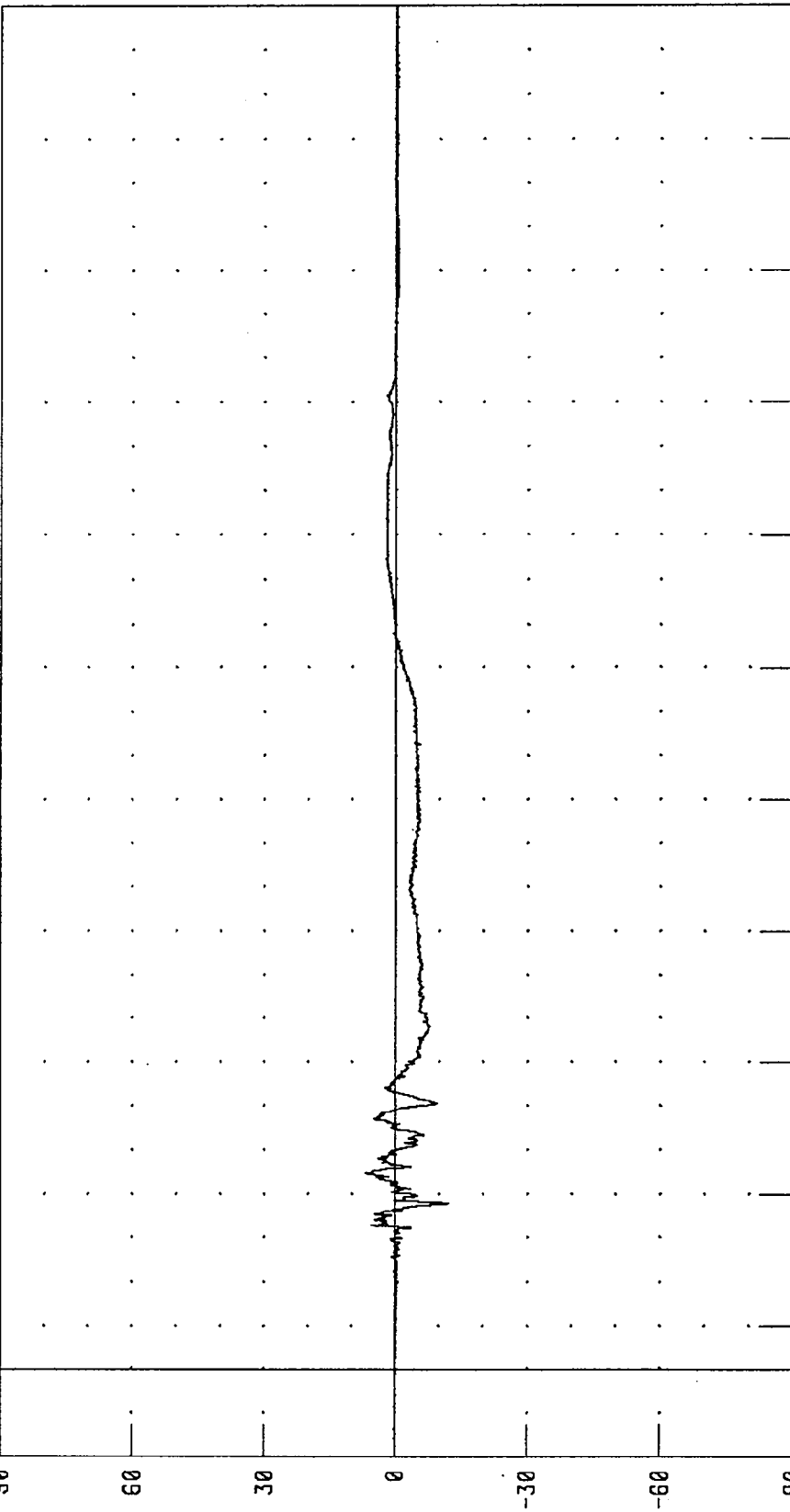
1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

IRC INC.

90



ACCELERATION (G)

90
60
30
0
-30
-60
-90

TIME (MS)

20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 310

CHANNEL: HEDYR2 FILTER: CH. CLASS 1000

PEAK DATA: 6.82 G @ 44.80 MS; -12.13 G @ 37.92 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90

60

30

ACCELERATION (G)

B-70

-30

-60

-90

TIME (MS) 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 310
CHANNEL: HEDZR2 FILTER: CH. CLASS 1000
PEAK DATA: 26.87 G @ 78.96 MS; -24.07 G @ 48.48 MS

951206

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 951206

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

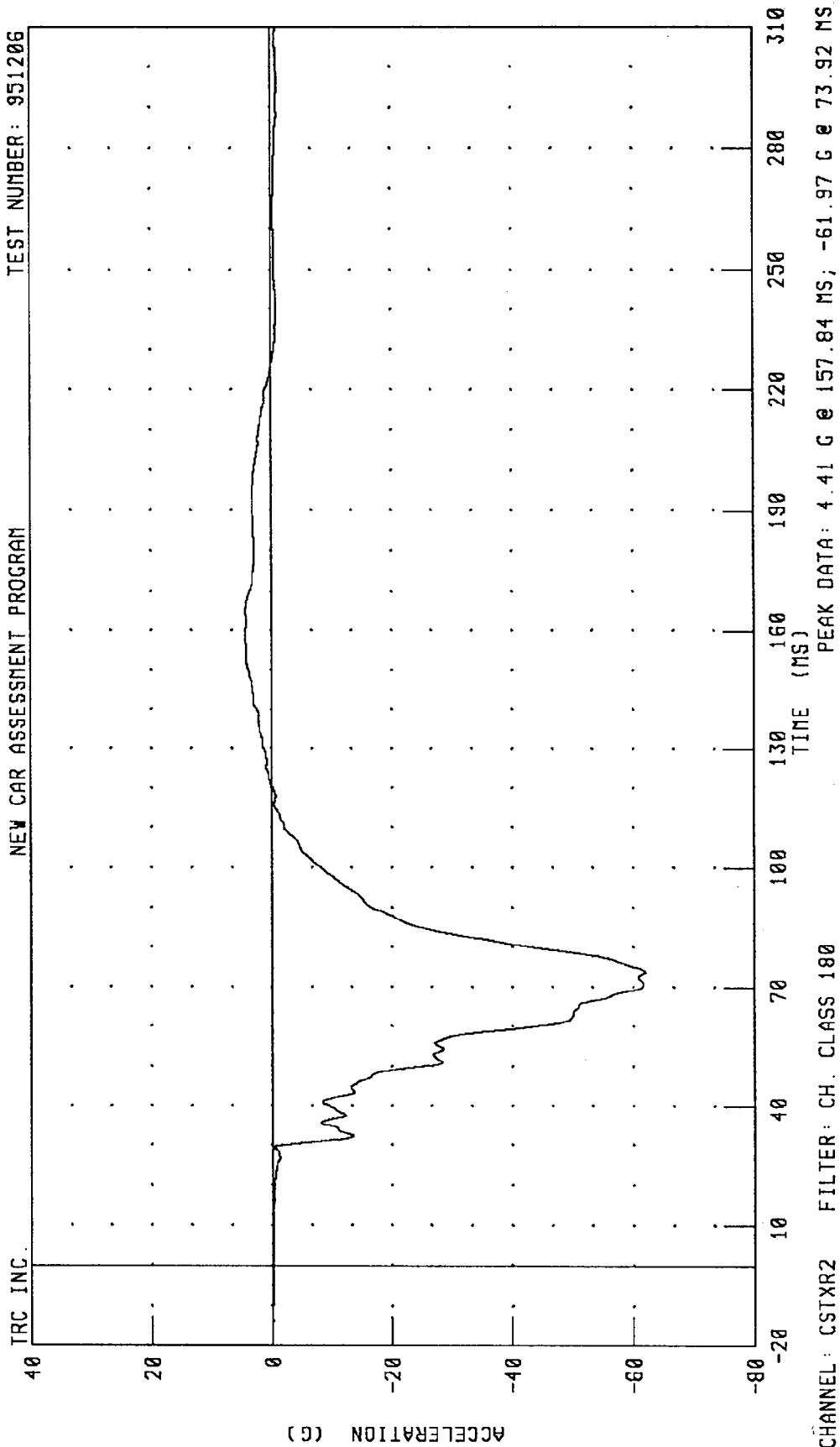
-20

CHANNEL: HEDRR2 FILTER: CH. CLASS 1000

PEAK DATA: 54.02 G @ 53.36 MS; 0.06 G @ -19.84 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION - REDUNDANT
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



CHANNEL: CSTXR2 FILTER: CH. CLASS 180

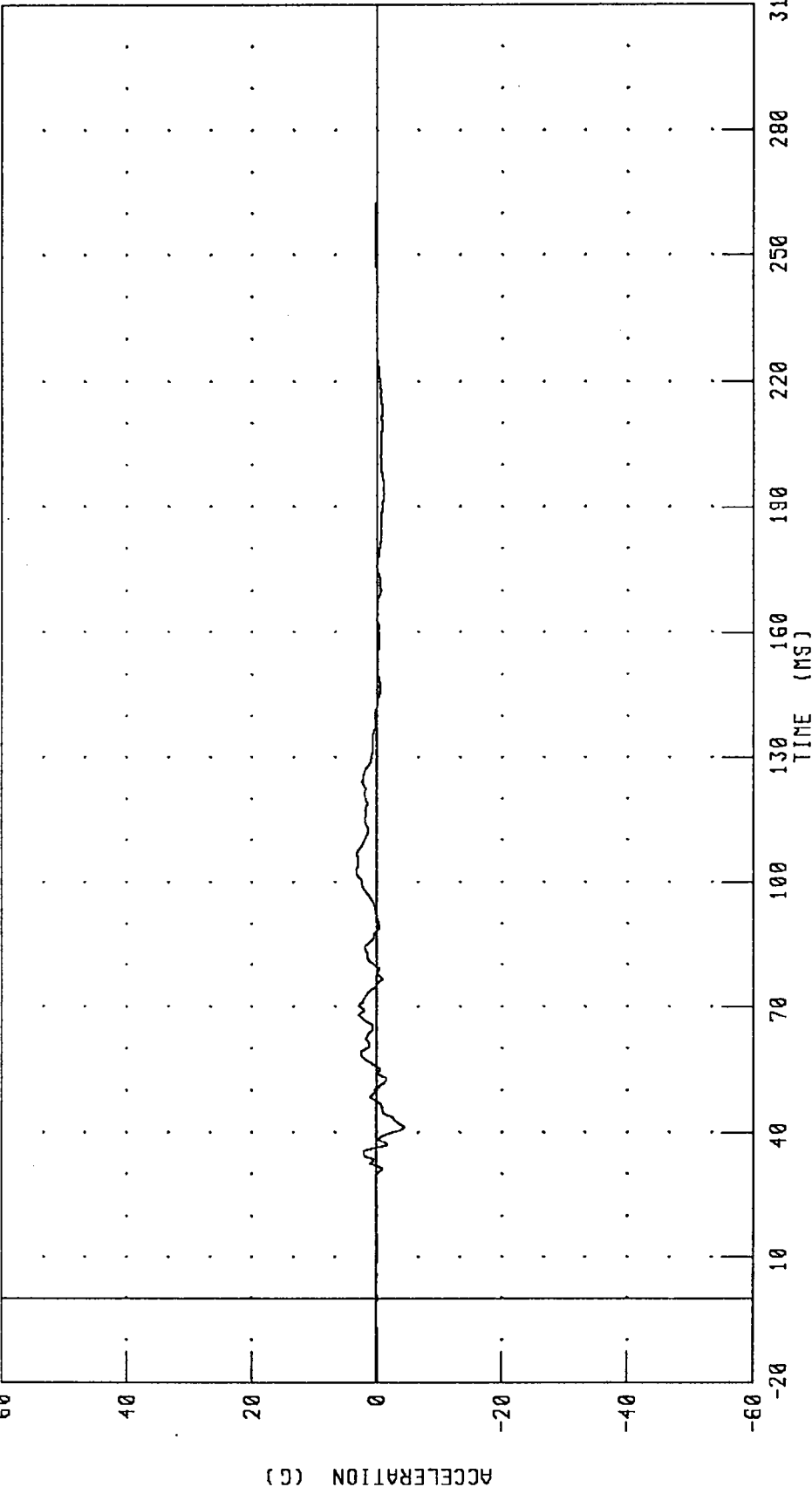
1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Y-AXIS ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

60



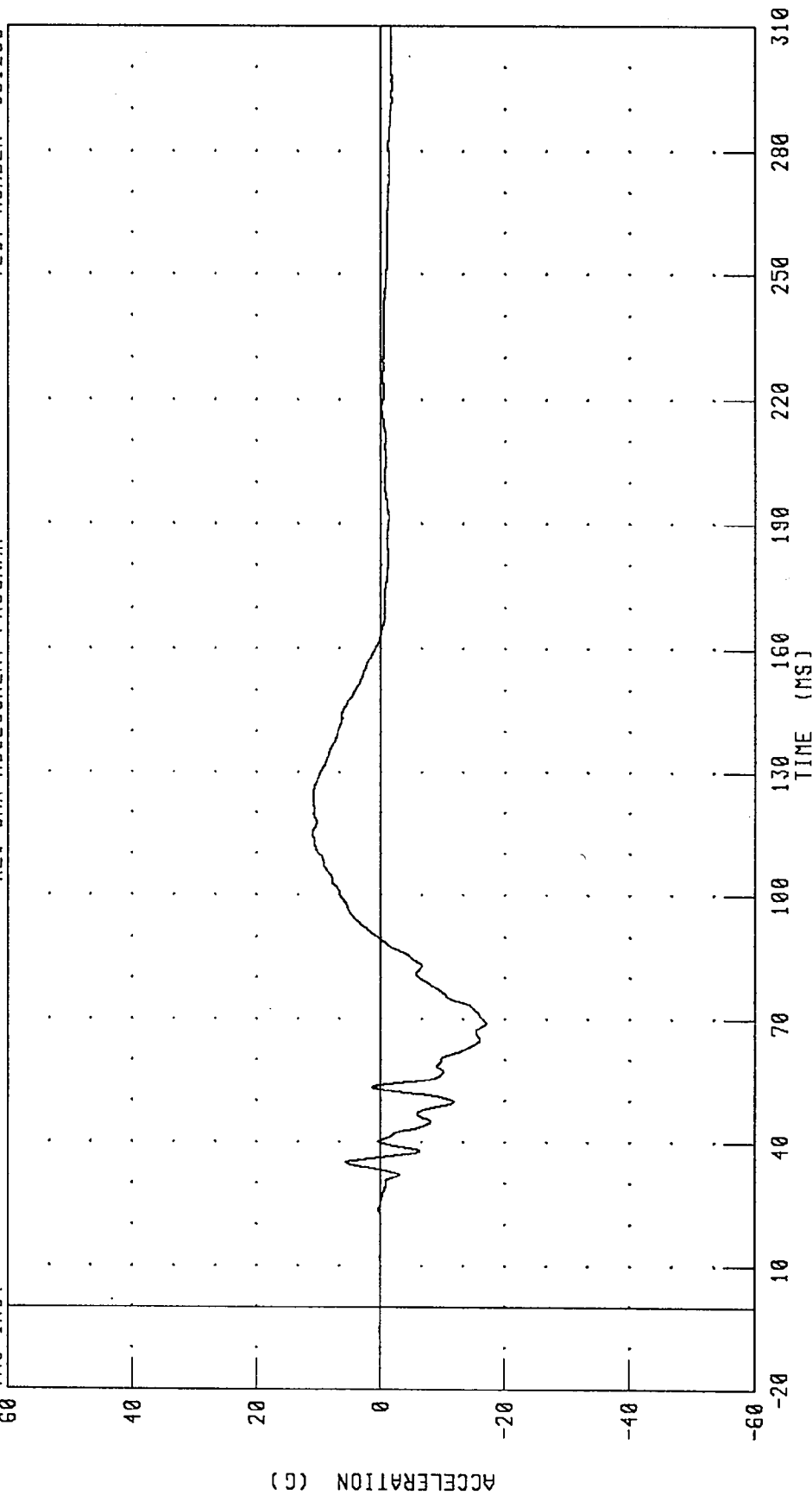
CHANNEL: CSTYR2 FILTER: CH. CLASS 180

PEAK DATA: 3.23 G @ 102.88 MS; -4.39 G @ 41.36 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION - REDUNDANT
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



CHANNEL: CSTZR2 FILTER: CH. CLASS 180

PEAK DATA: 11.09 G @ 114.96 MS, -17.02 G @ 69.04 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST RESULTANT ACCELERATION - REDUNDANT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

120

100

80

60

40

20

0

ACCELERATION (G)

310

280

250

220

190

160

130

100

70

40

10

-20

TIME (MS)

CHANNEL: CSTRR2 FILTER: CH. CLASS 180

PEAK DATA: 63.77 G @ 70.24 MS; 0.01 G @ -20.00 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

60

30

ACCELERATION (G)

-30

-60

-90

-120

-20

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

PEAK DATA: 9.29 G @ 55.84 MS; -110.69 G @ 45.12 MS

CHANNEL: FTLXG2 FILTER: CH. CLASS 1000

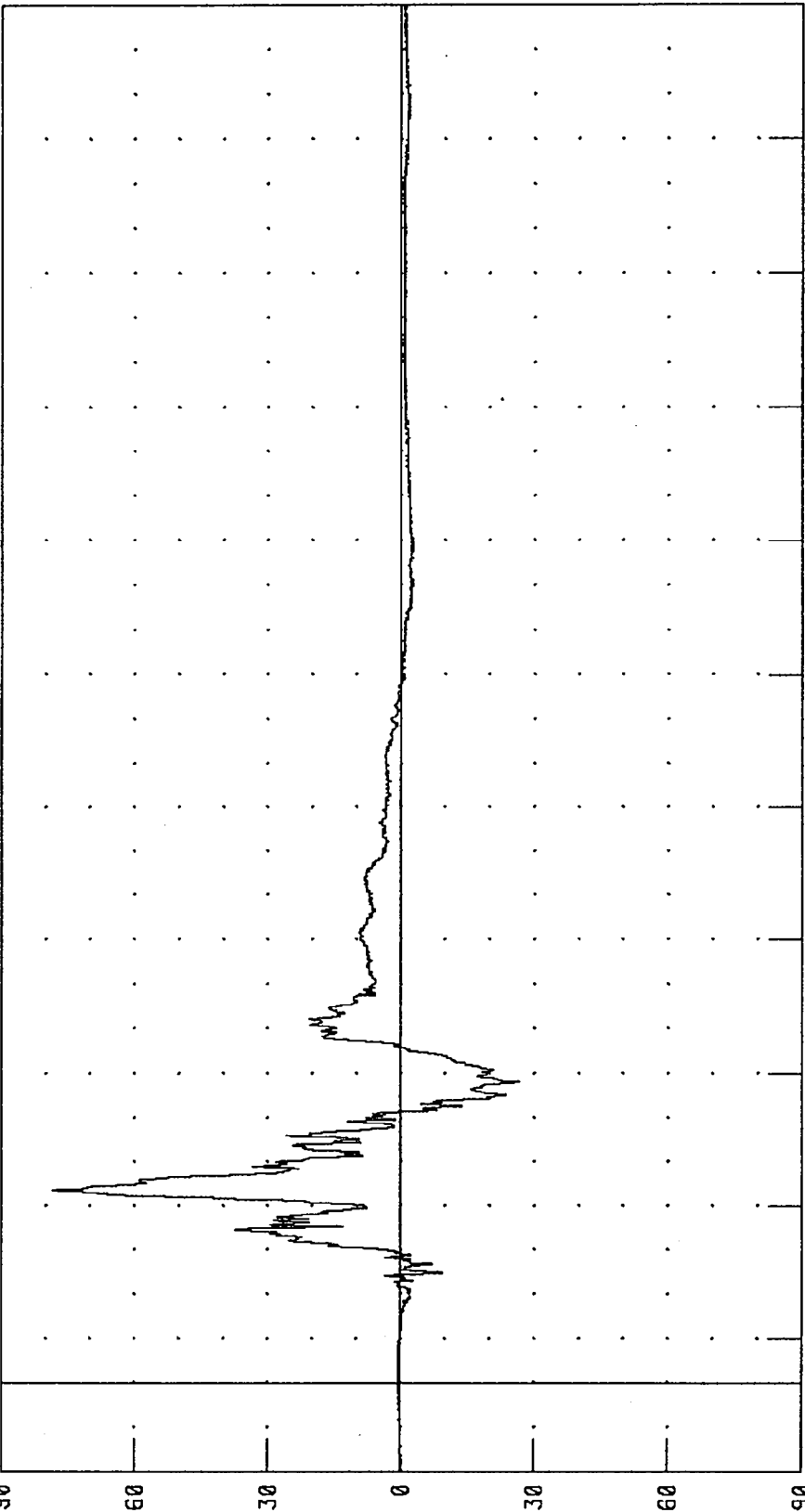
1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

90



ACCELERATION (G)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

-30

-60

CHANNEL: FTLZH2 FILTER: CH. CLASS 1000

PEAK DATA: 78.60 G @ 43.60 MS, -26.62 G @ 68.24 MS

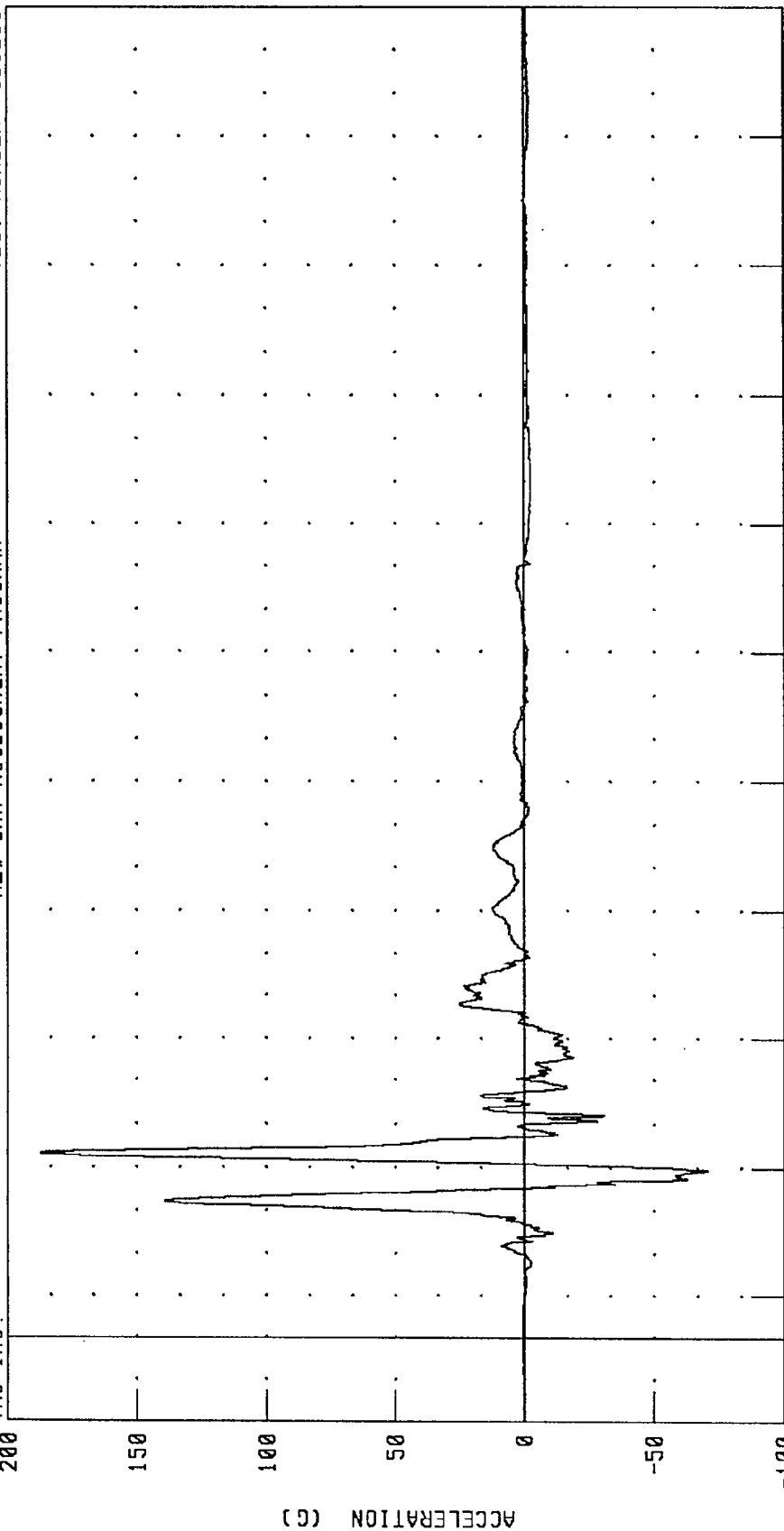
1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

200



PEAK DATA: 187.33 G @ 43.20 MS; -70.64 G @ 39.52 MS

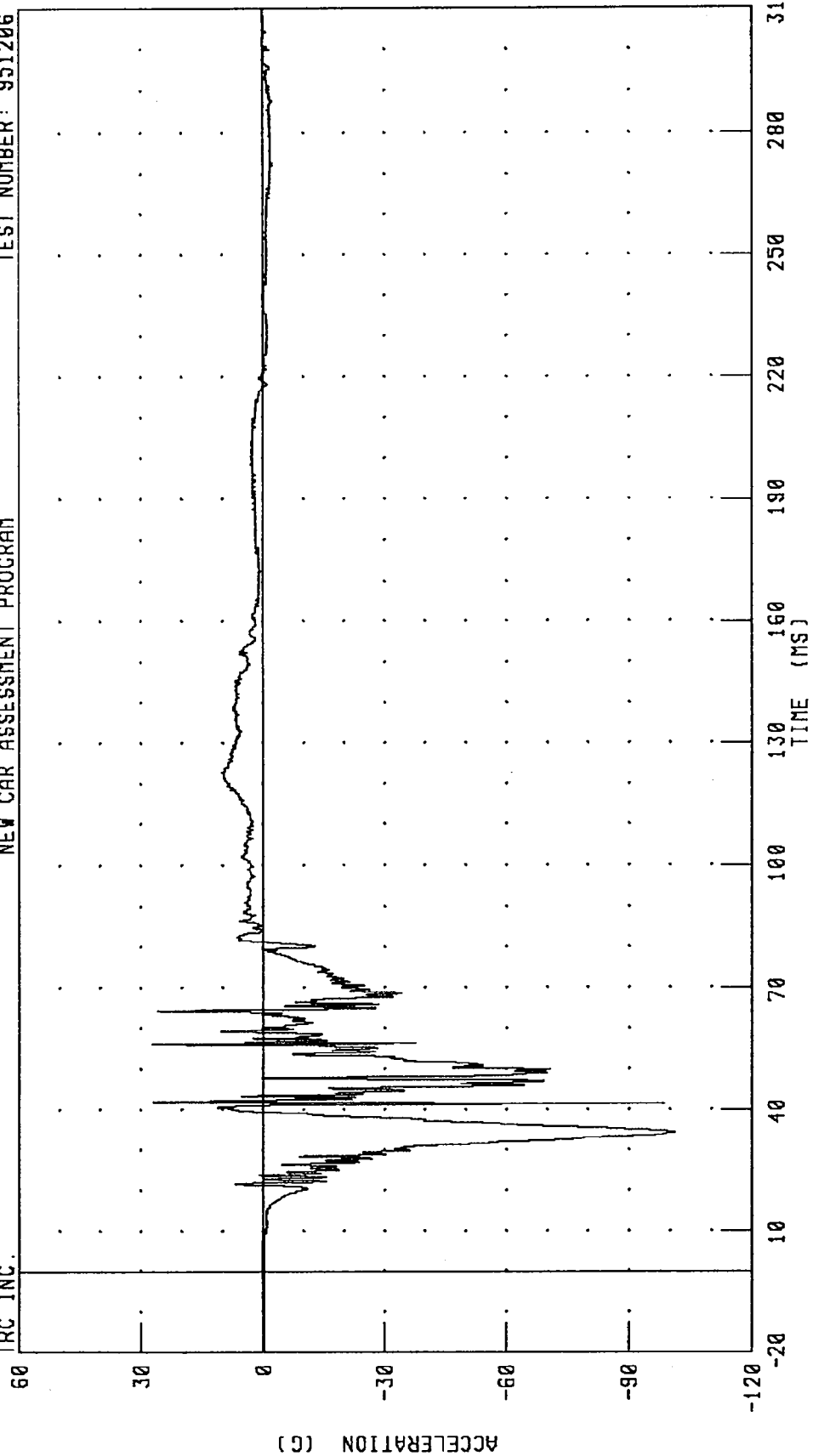
CHANNEL: FILZT2 FILTER: CH. CLASS 1000

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT X-AXIS ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: FTRXC2 FILTER: CH. CLASS 1000

PEAK DATA: 27.21 G @ 55.92 MS; -100.98 G @ 34.56 MS

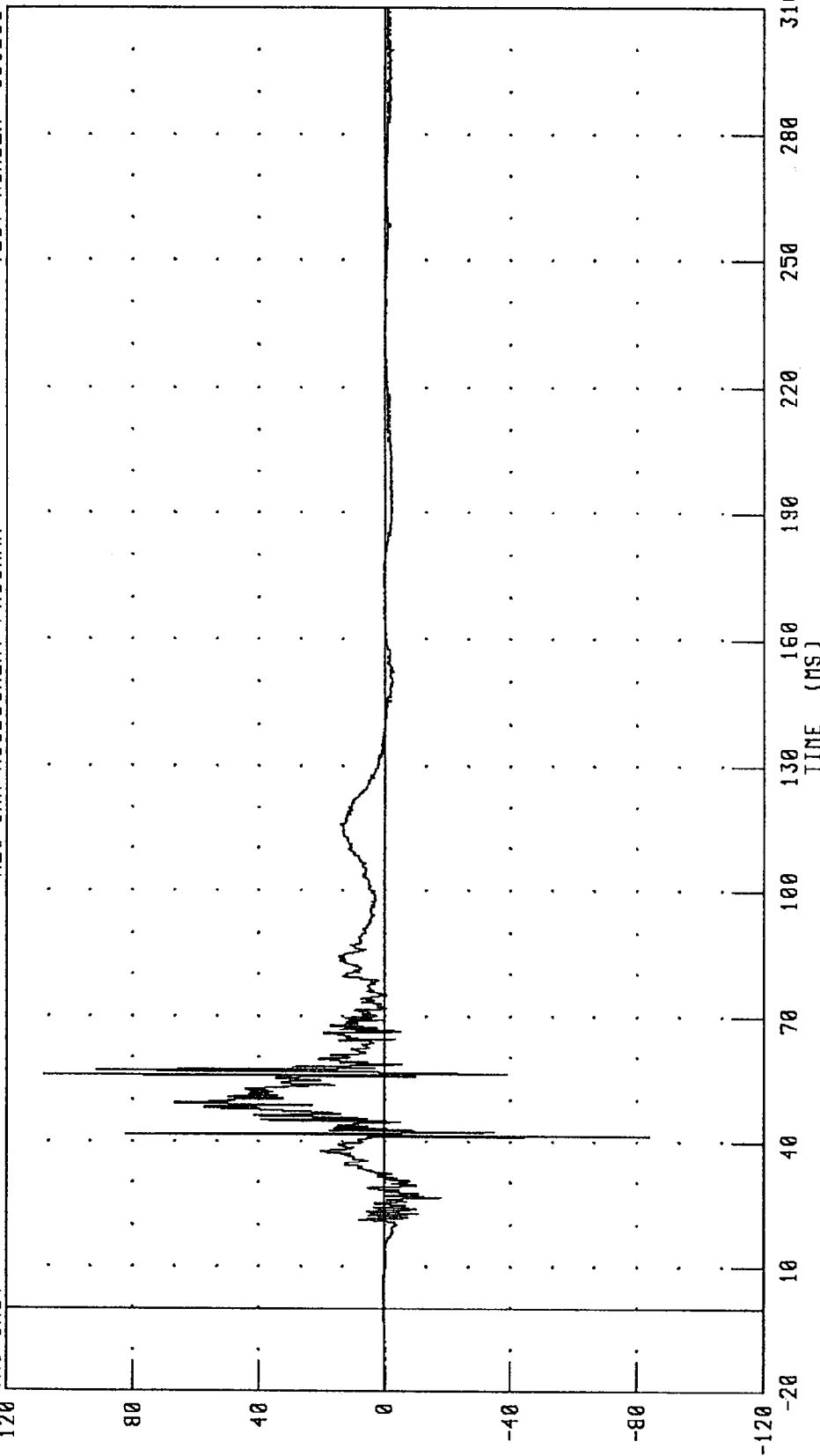
1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT Z-AXIS ACCELERATION AT HEEL

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

IRC INC.

120



PEAK DATA: 108.21 G @ 55.92 MS; -83.88 G @ 41.52 MS

CHANNEL: FTRZH2 FILTER: CH. CLASS 1000

ACCELERATION (G)

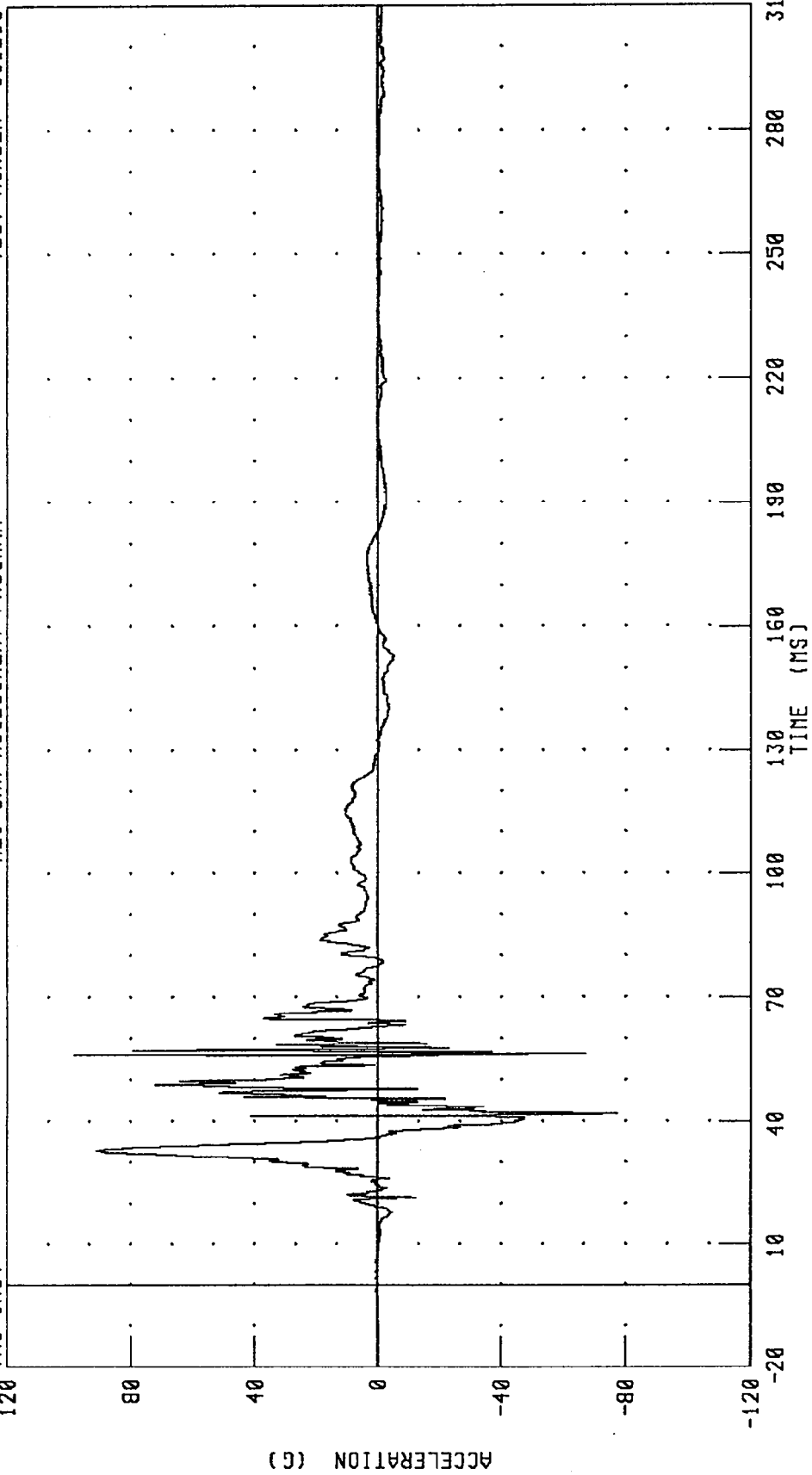
TIME (MS)

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT Z-AXIS ACCELERATION AT TOE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: FTRZT2 FILTER: CH. CLASS 1000

PEAK DATA: 98.19 G @ 55.92 MS; -77.26 G @ 42.00 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
DRIVER LAP BELT OUTBOARD FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

100

80

FORCE (N X 10²)

60

40

20

0

-20

-20

0

20

40

60

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

TIME (MS)

CHANNEL: LBOFI

FILTER: CH. CLASS 60

PEAK DATA: 5503.58 N @ 55.28 MS; -10.92 N @ 13.60 MS

951206

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

100

80

60

40

20

0

-20

FORCE (N X 10²)

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

PEAK DATA: 7764.52 N @ 74.16 MS; -11.20 N @ 240.48 MS

FILTER: CH. CLASS 60

CHANNEL: SHBF1

951206

8-83

951206

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT DISPLACEMENT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

150

120

90

60

30

0

-30

DISPLACEMENT (MM)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

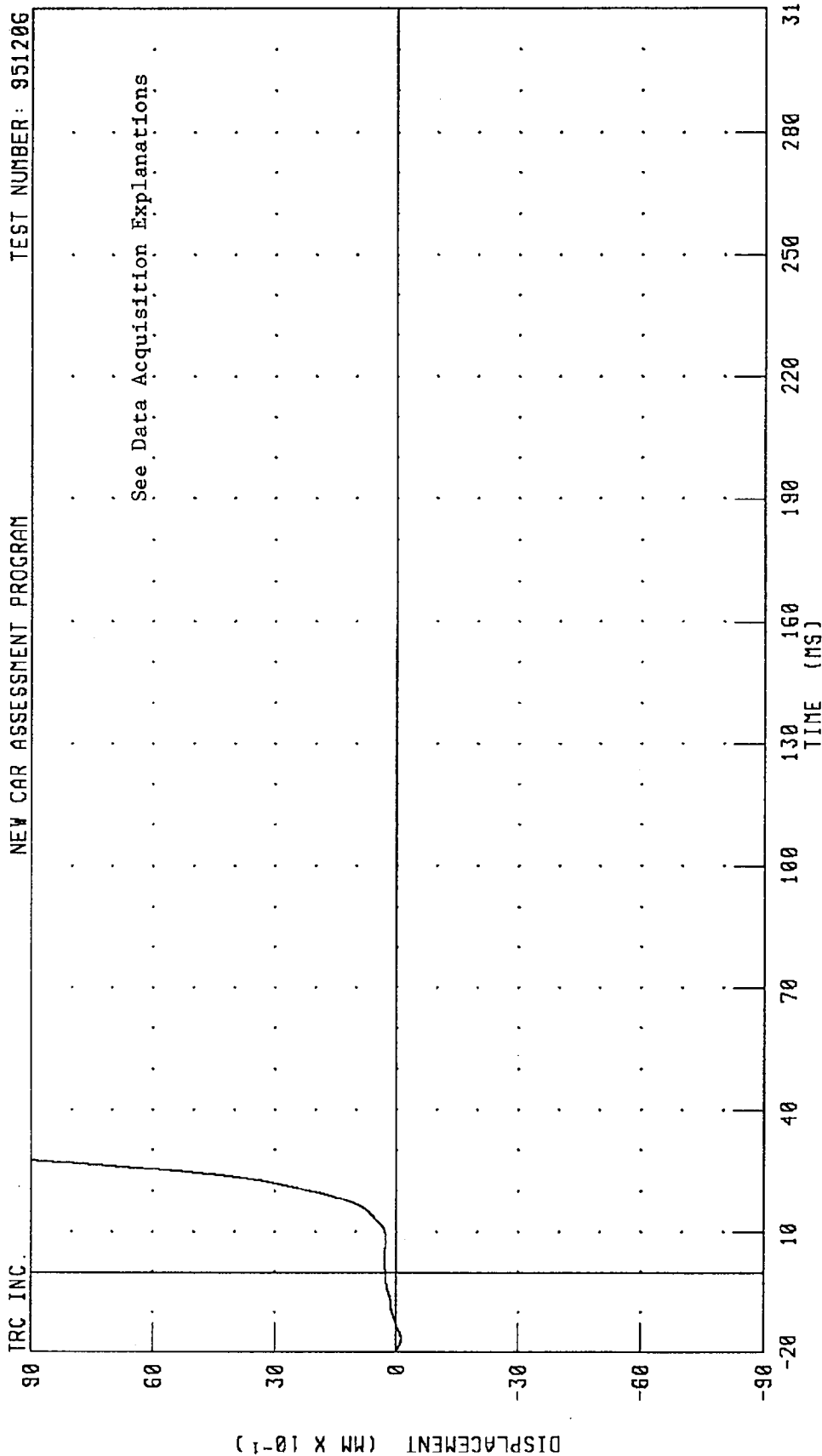
CHANNEL: SHBD1

FILTER: CH. CLASS 60

PEAK DATA: 85.31 MM @ 76.80 MS; -0.05 MM @ -6.00 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 DRIVER SEAT BELT EXTENSION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



PEAK DATA: 90.47 MM @ 75.84 MS; -0.13 MM @ -16.48 MS

CHANNEL: SBED1 FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER LAP BELT OUTBOARD FORCE

TEST NUMBER: 951206

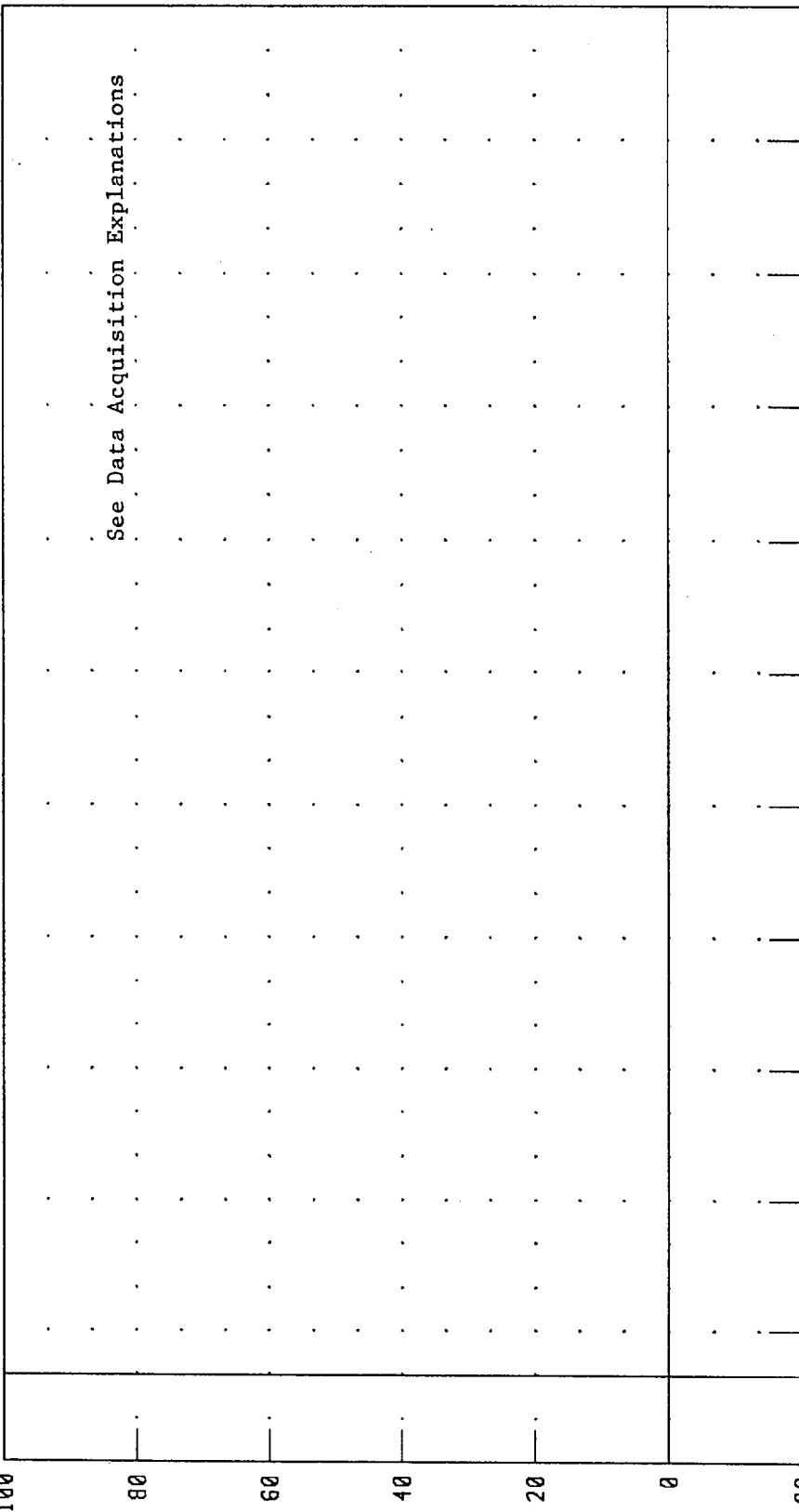
NEW CAR ASSESSMENT PROGRAM

TRC INC.

100

See Data Acquisition Explanations

FORCE (N X 10²)

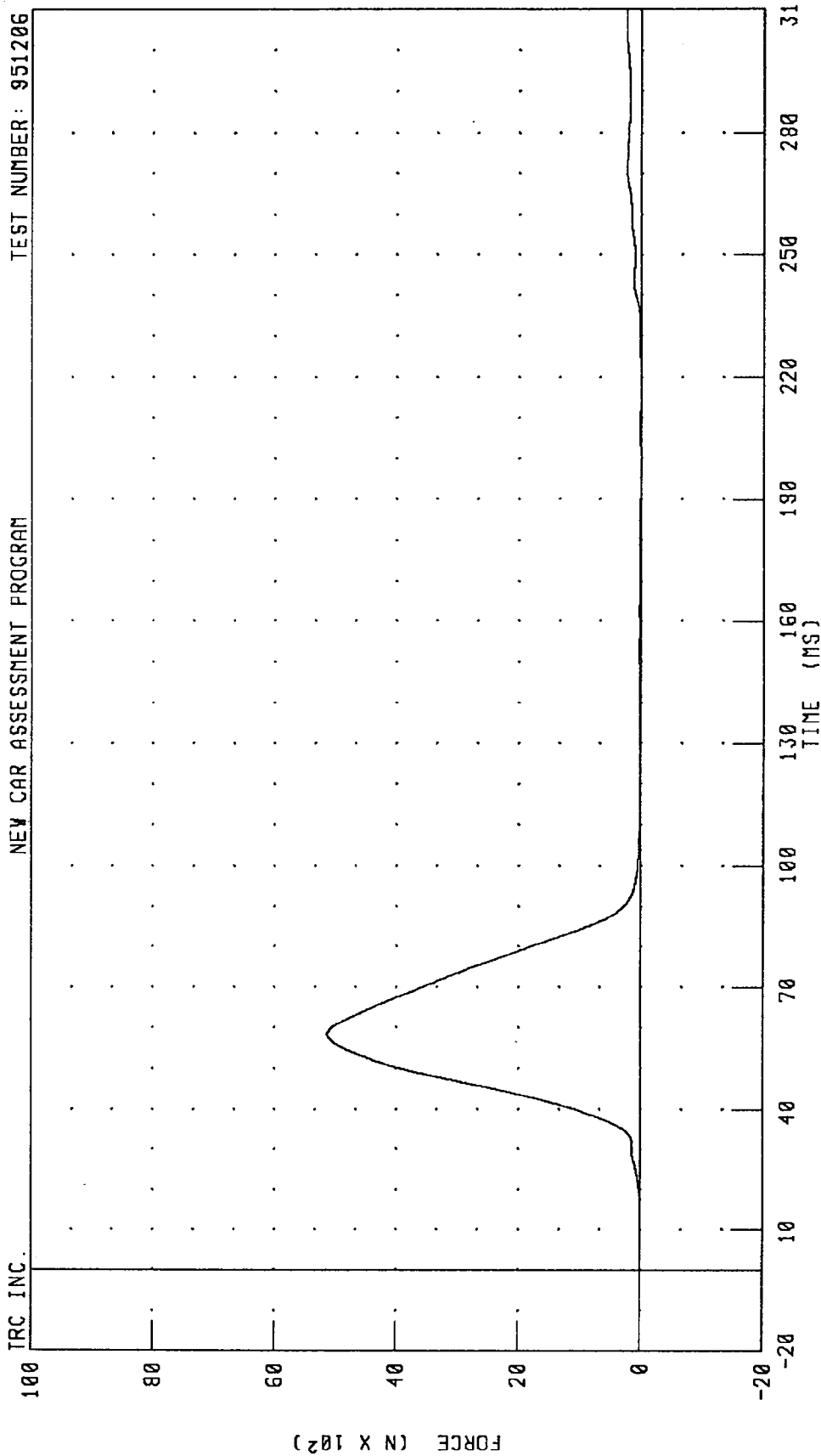


PEAK DATA: 0.00 N @ 247.60 MS; 0.00 N @ 272.56 MS

CHANNEL: LBOF2 FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT FORCE
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



CHANNEL: SHBF2 FILTER: CH. CLASS 60

PEAK DATA: 5129.44 N @ 58.40 MS; -3.55 N @ 13.04 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT DISPLACEMENT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

150

See Data Acquisition Explanations

120

90

60

30

0

-30

DISPLACEMENT (MM)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

-20

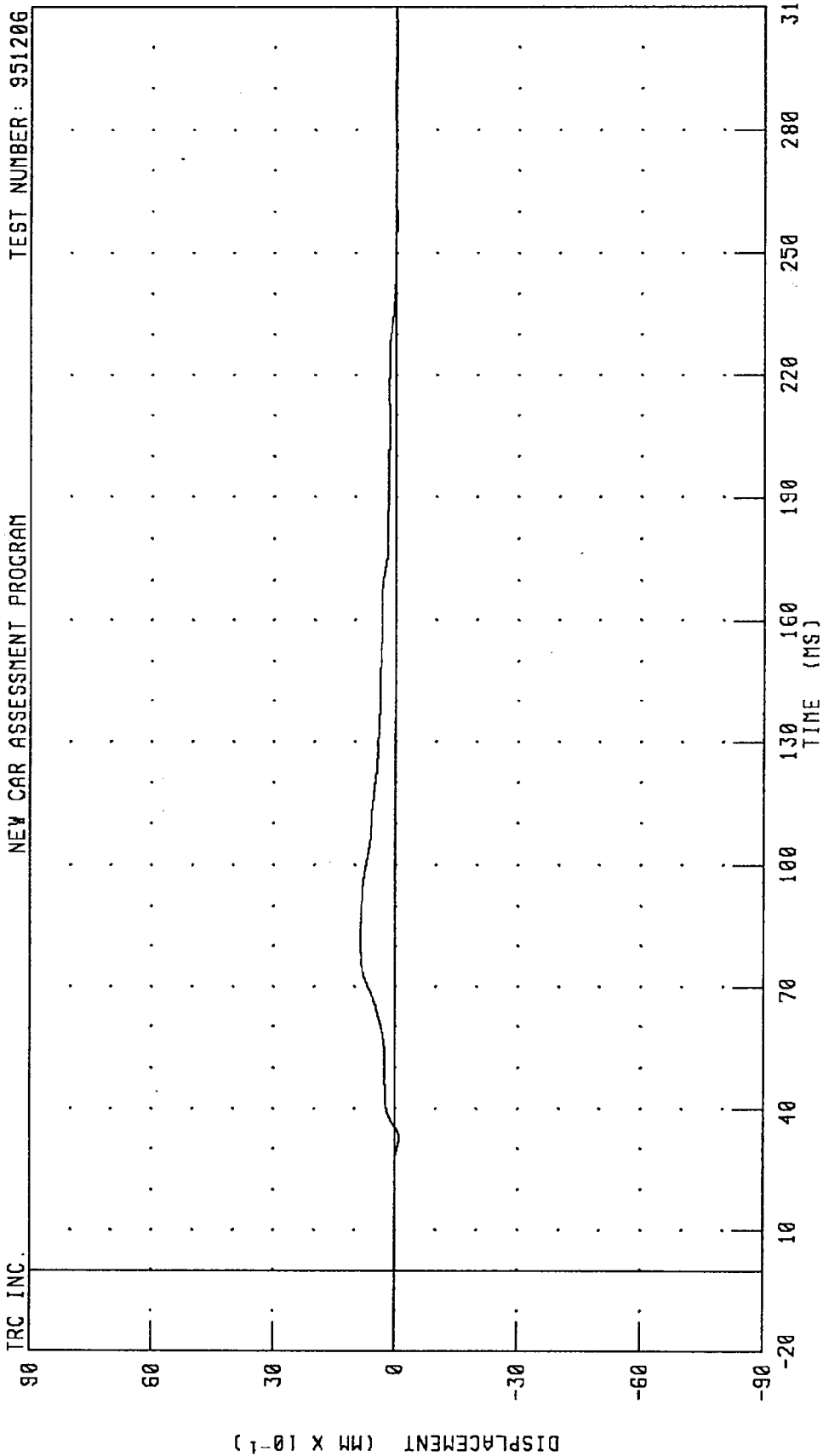
PEAK DATA: 40624.01 MM @ 75.76 MS; -91.48 MM @ 136.40 MS

FILTER: CH. CLASS 60

CHANNEL: SHBD2

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
PASSENGER SEAT BELT EXTENSION
NEW CAR ASSESSMENT PROGRAM

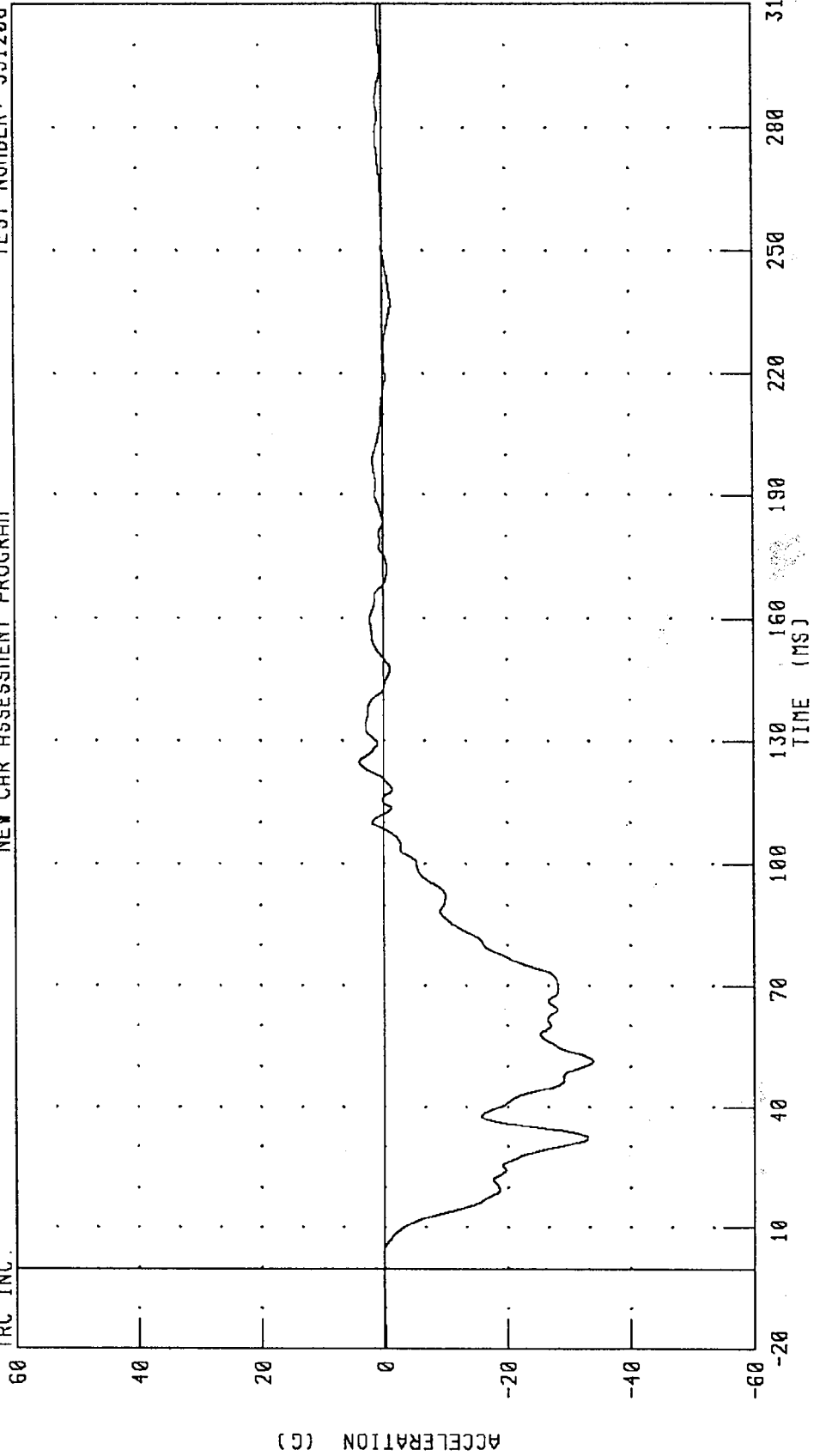
TEST NUMBER: 951206



1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

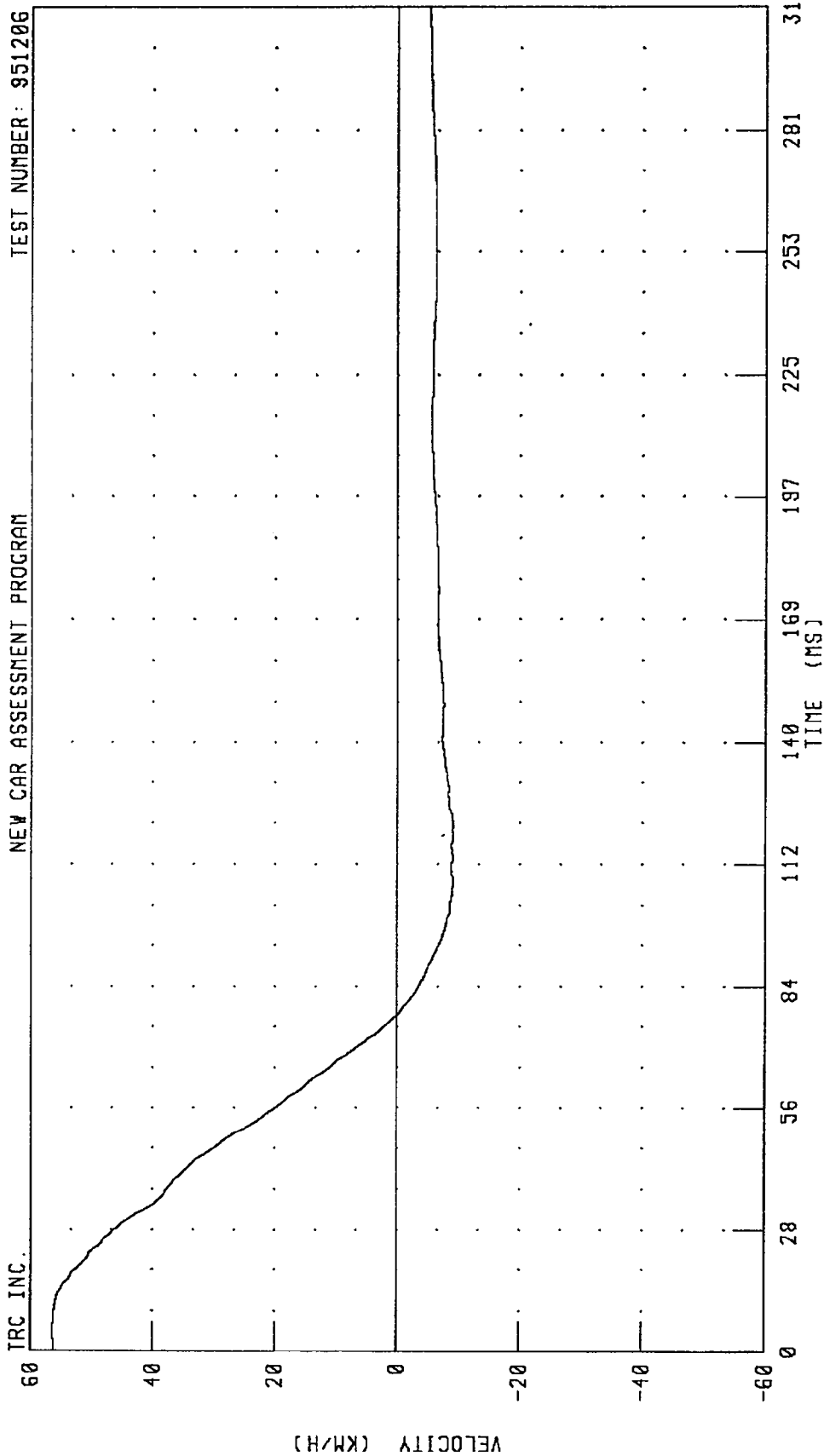


CHANNEL: TLRXG1 FILTER: CH. CLASS 60

PEAK DATA: 4.00 G @ 124.88 MS; -33.98 G @ 51.28 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LEFT REAR SEAT X-AXIS VELOCITY
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



PEAK DATA: 56.33 KM/H @ 5.44 MS; -9.20 KM/H @ 109.28 MS

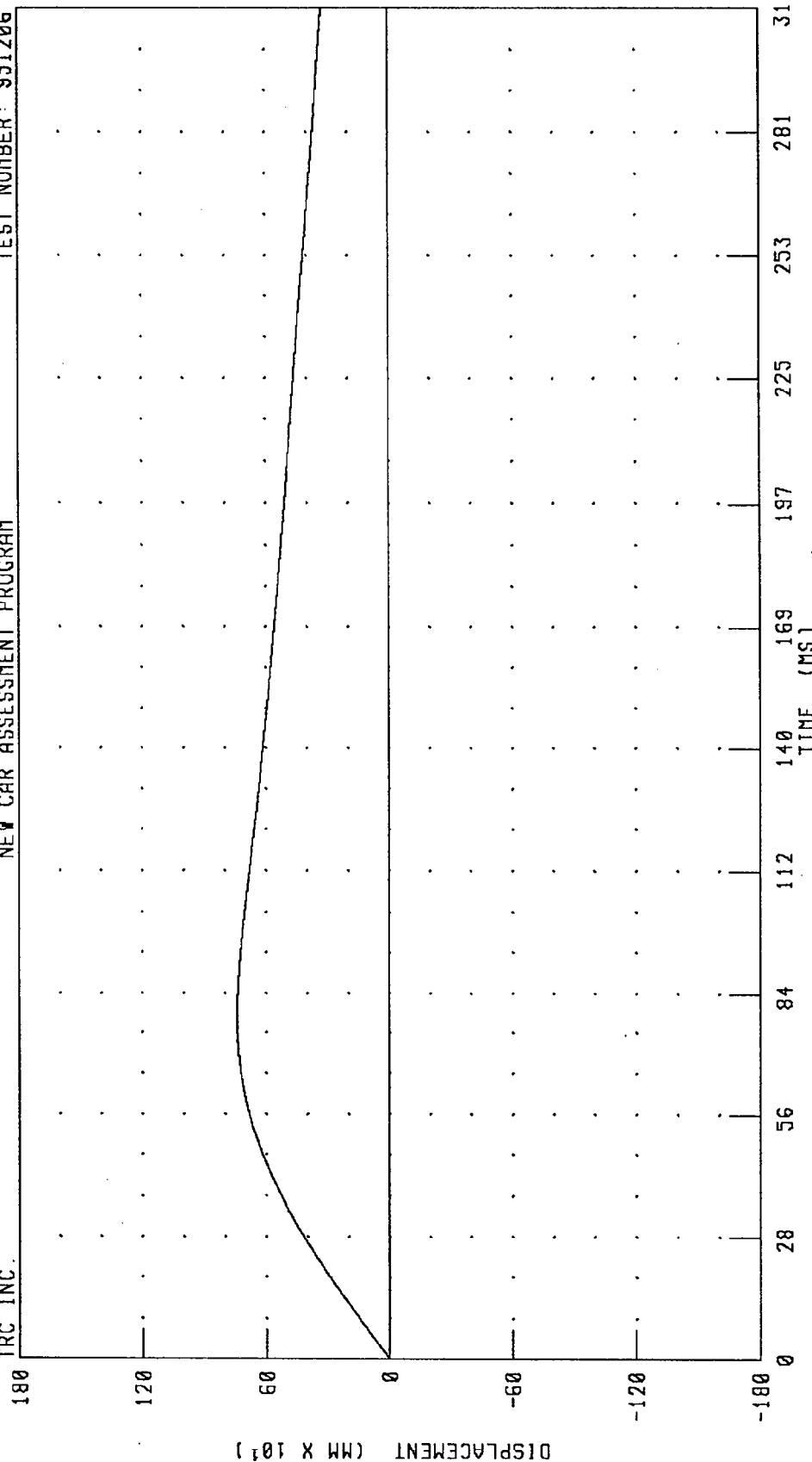
CHANNEL: TLRXV1 FILTER: CH. CLASS 180

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS DISPLACEMENT

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

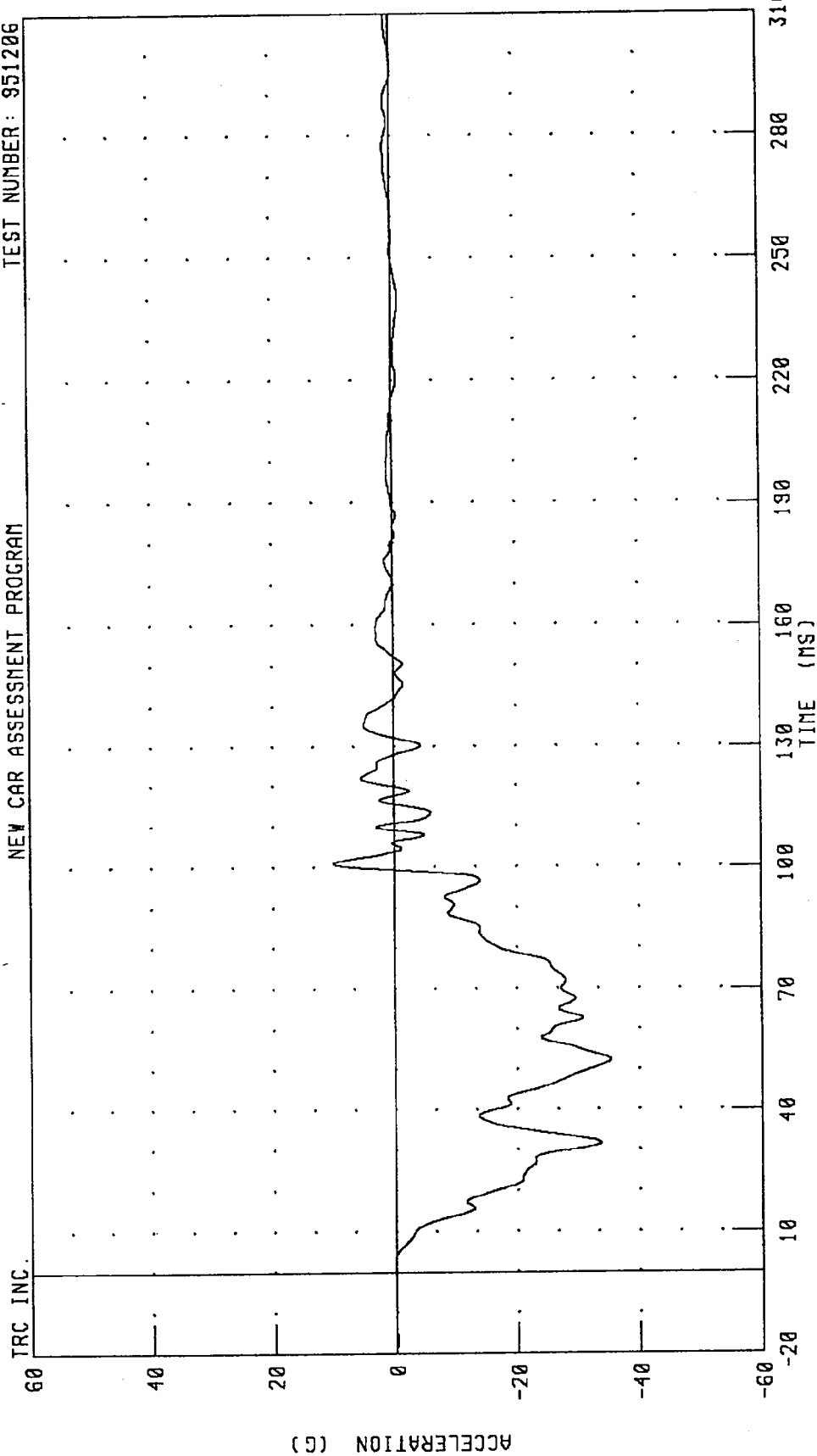


PEAK DATA: 742.44 MM @ 78.08 MS; 0.00 MM @ 0.00 MS

CHANNEL: TLRXD1 FILTER: CH. CLASS 180

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



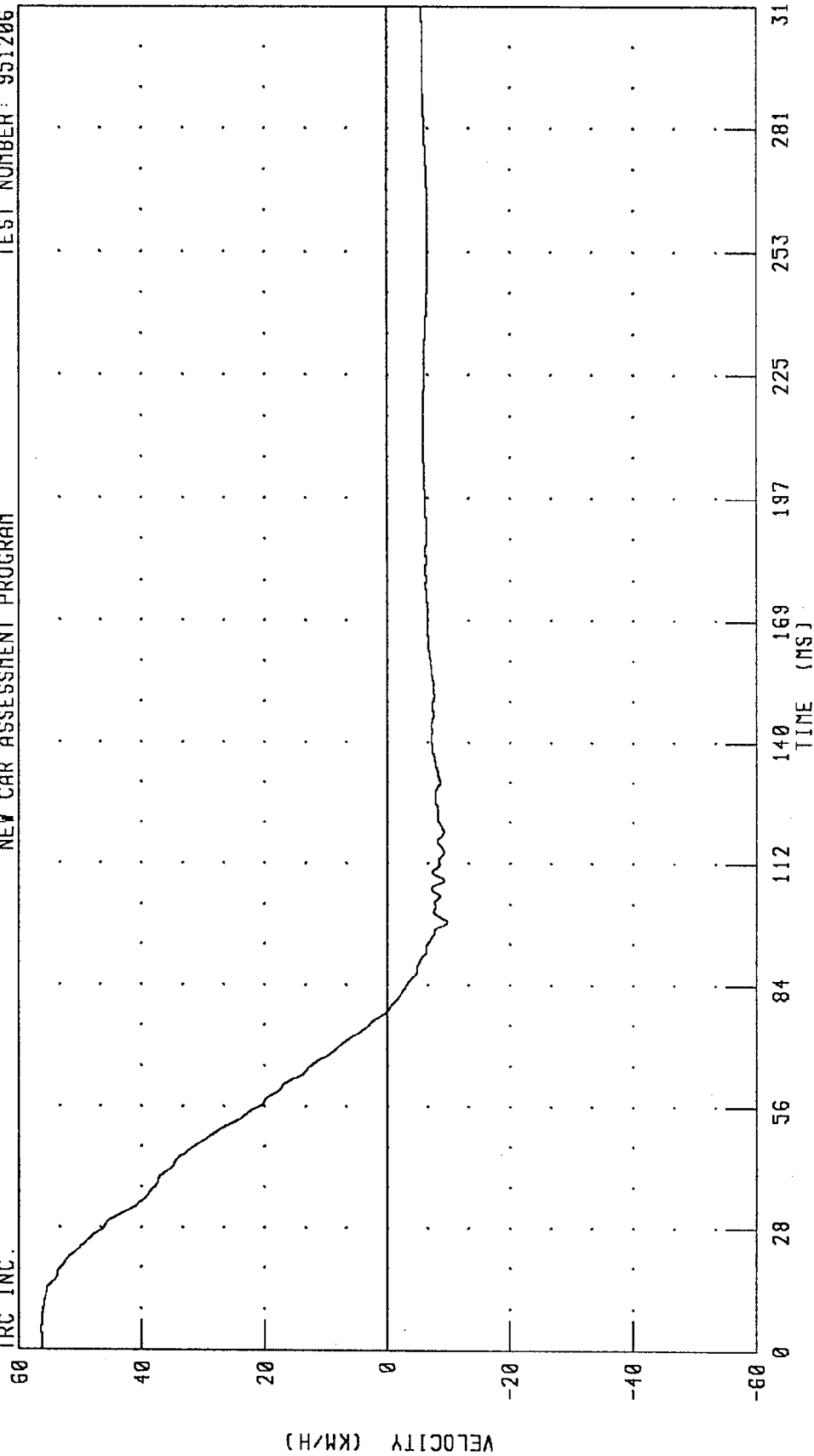
CHANNEL: TRRXG1 FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS VELOCITY

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

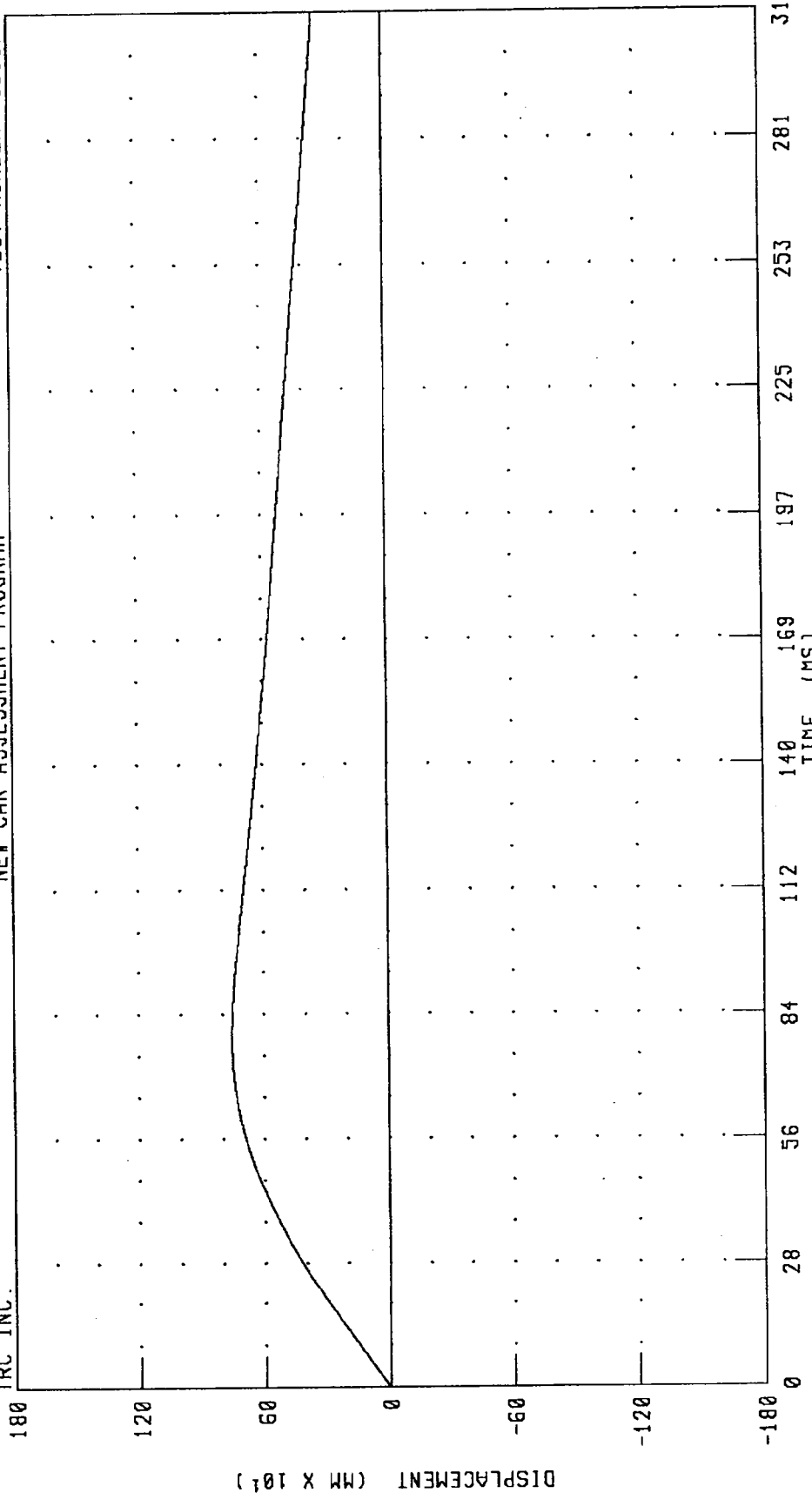


CHANNEL: TRRXV1 FILTER: CH. CLASS 180

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS DISPLACEMENT
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



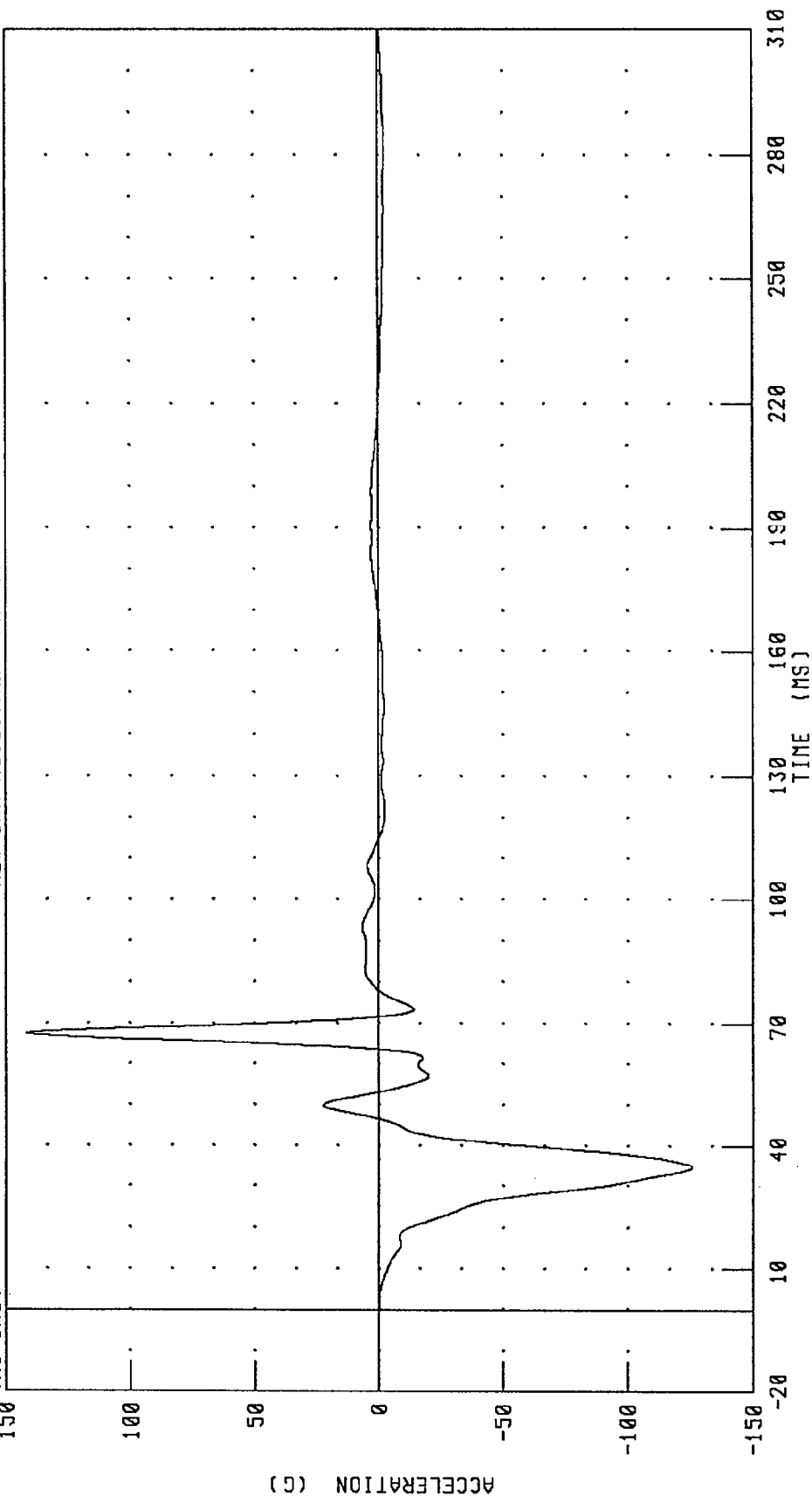
PEAK DATA: 755.51 MM @ 78.40 MS; 0.00 MM @ 0.00 MS

CHANNEL: TRRX01 FILTER: CH. CLASS 180

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
ENGINE TOP X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



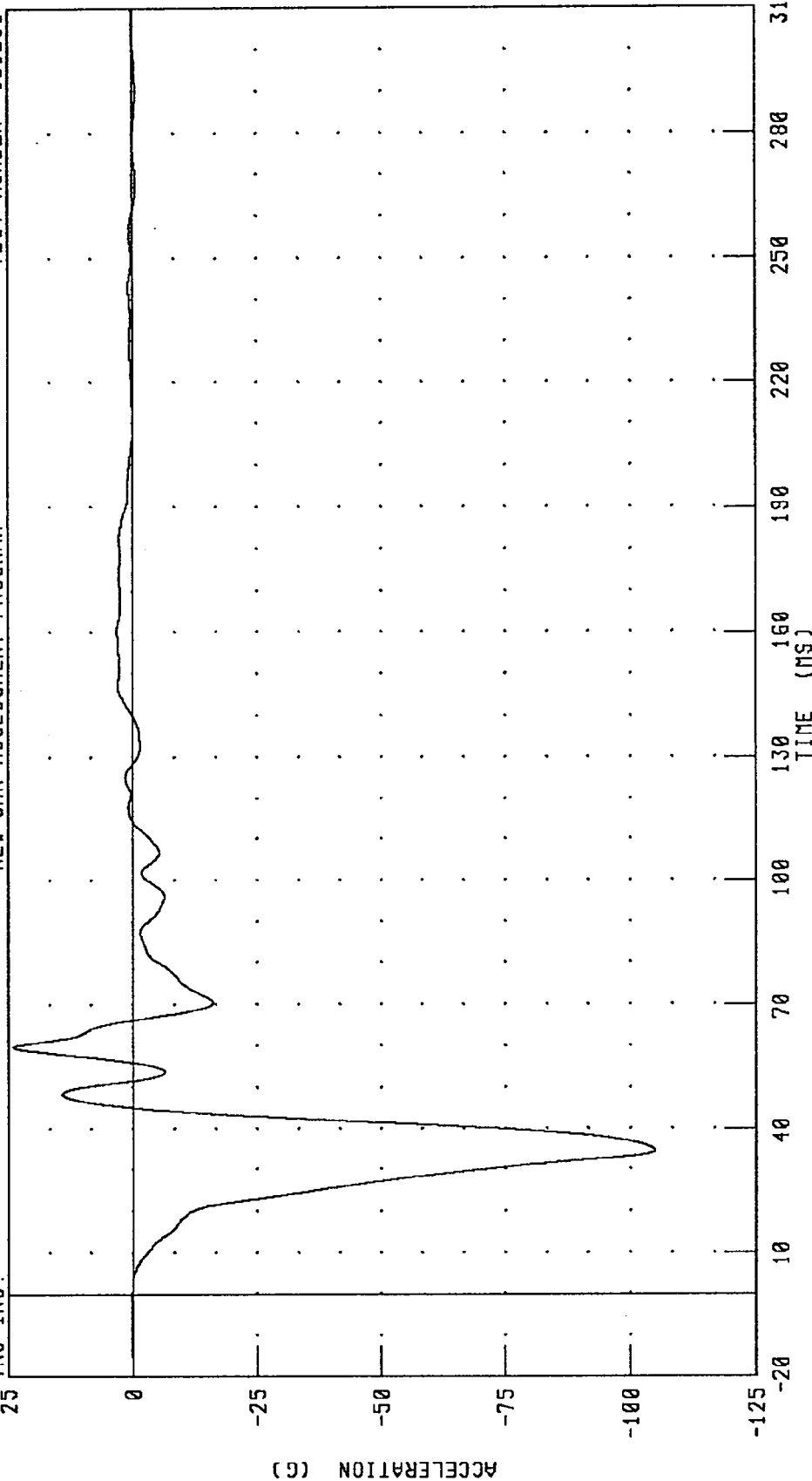
CHANNEL: ENGXG1 FILTER: CH. CLASS 60

PEAK DATA: 141.63 G @ 67.60 MS; -125.84 G @ 34.72 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 ENGINE BOTTOM X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



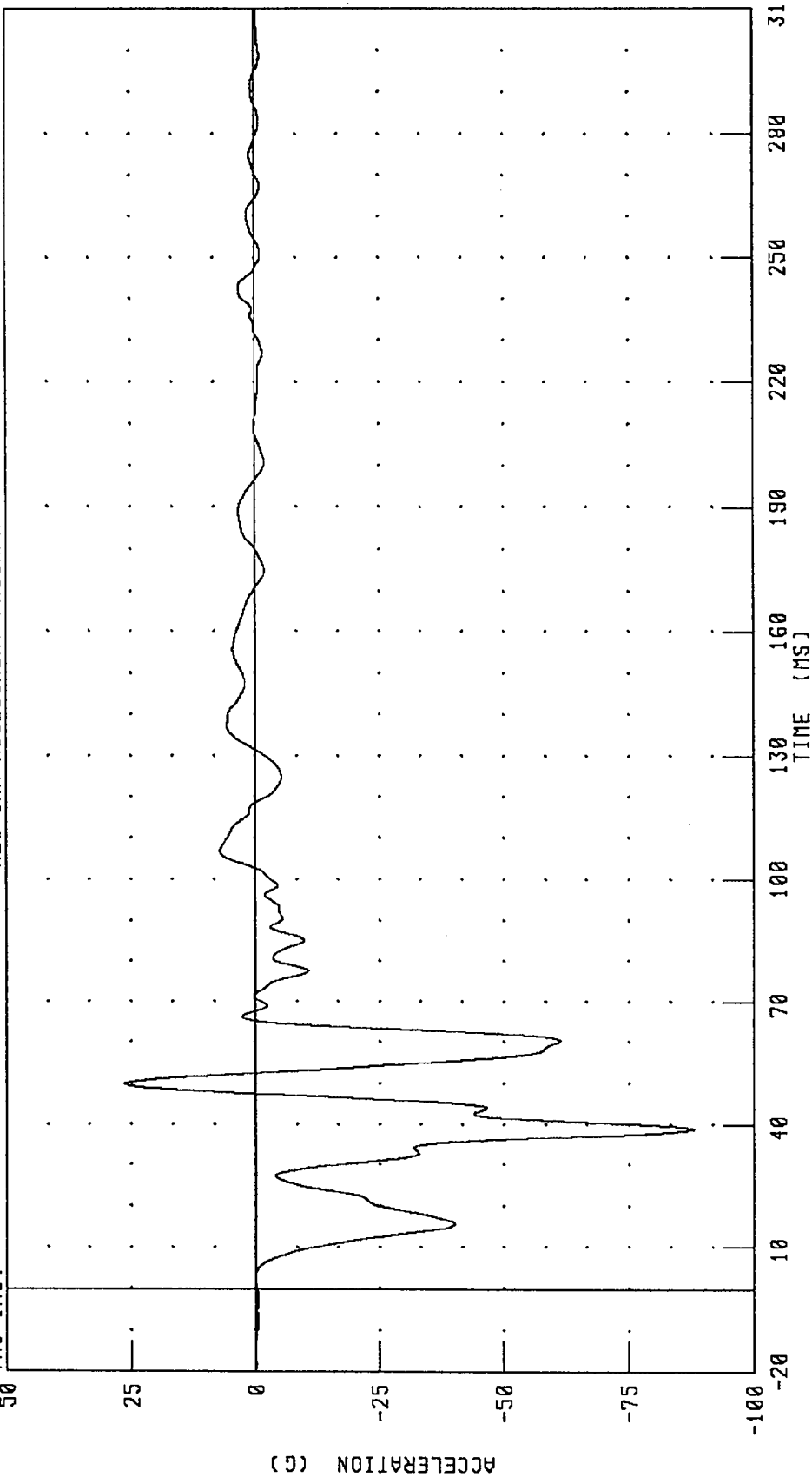
CHANNEL: ENGXC2 FILTER: CH. CLASS 60

PEAK DATA: 24.00 G @ 59.76 MS; -104.90 G @ 34.64 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 RIGHT BRAKE CALIPER X-AXIS ACCELERATION
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

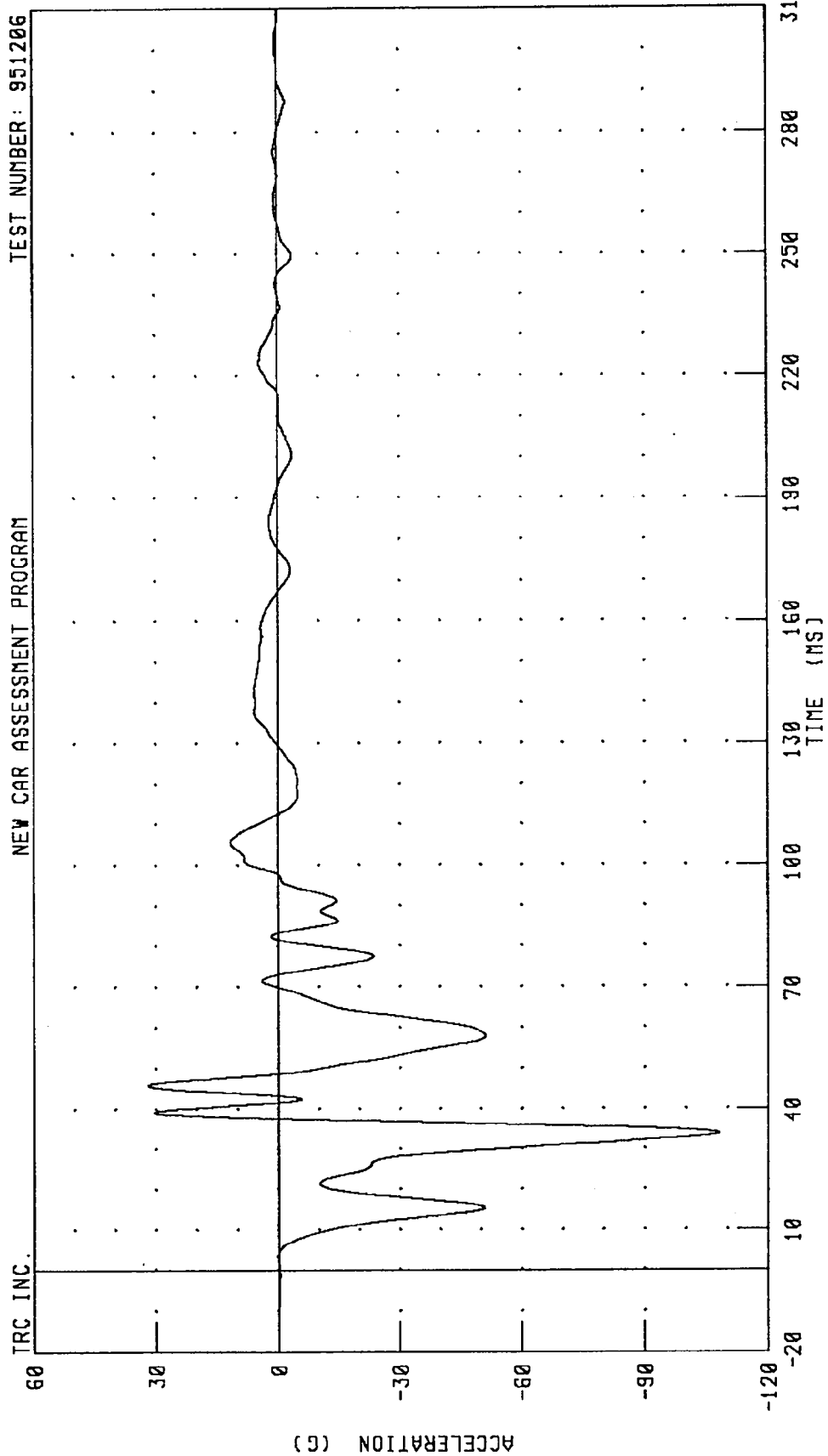


PEAK DATA: 26.38 G @ 49.92 MS; -87.97 G @ 38.96 MS

CHANNEL: BCRXG1 FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



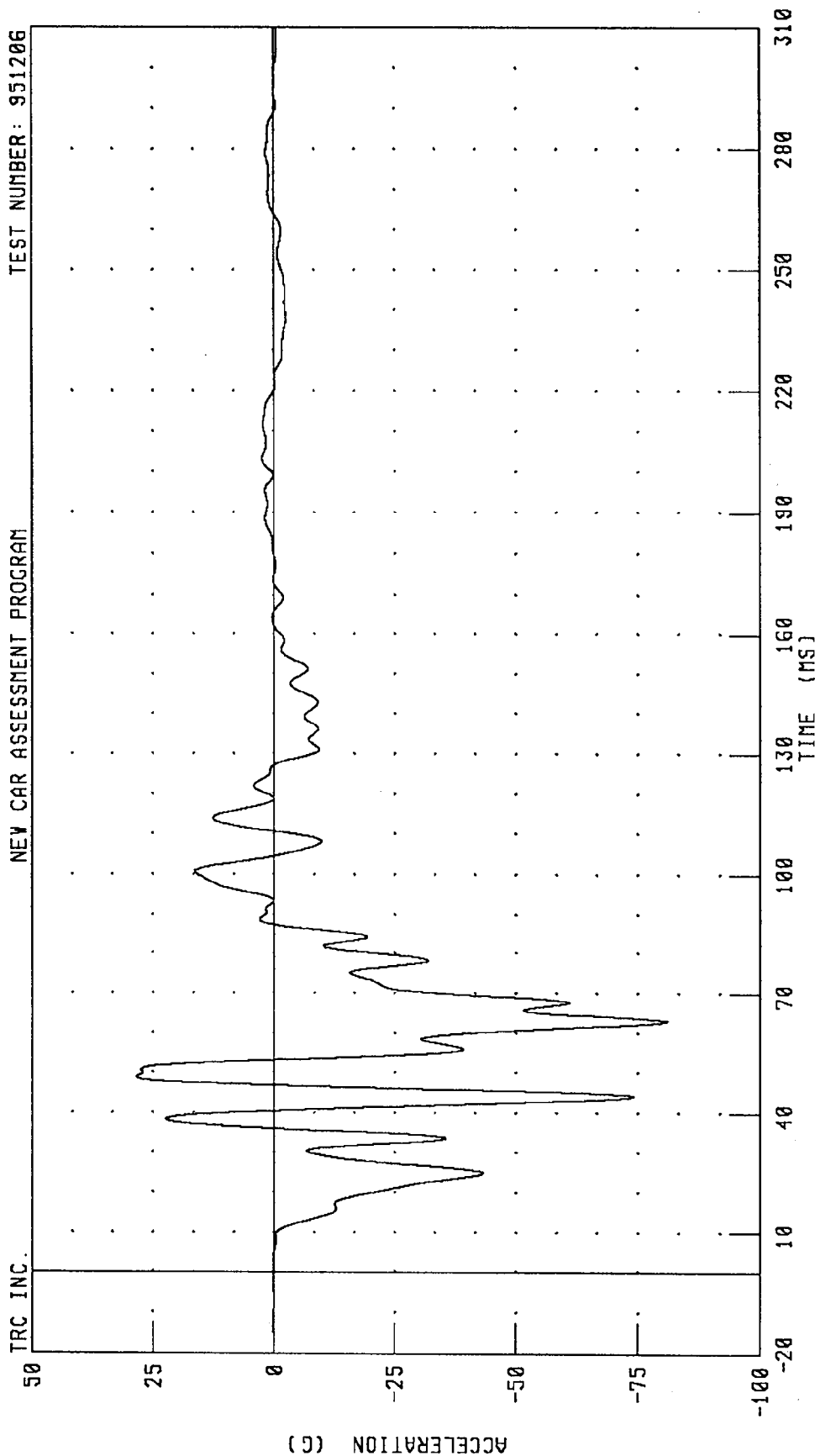
PEAK DATA: 32.07 G @ 45.92 MS; -107.97 G @ 34.08 MS

CHANNEL: BCLXG1 FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION
NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



CHANNEL: DPCXG1 FILTER: CH. CLASS 60

PEAK DATA: 28.41 G @ 48.64 MS; -81.09 G @ 63.12 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

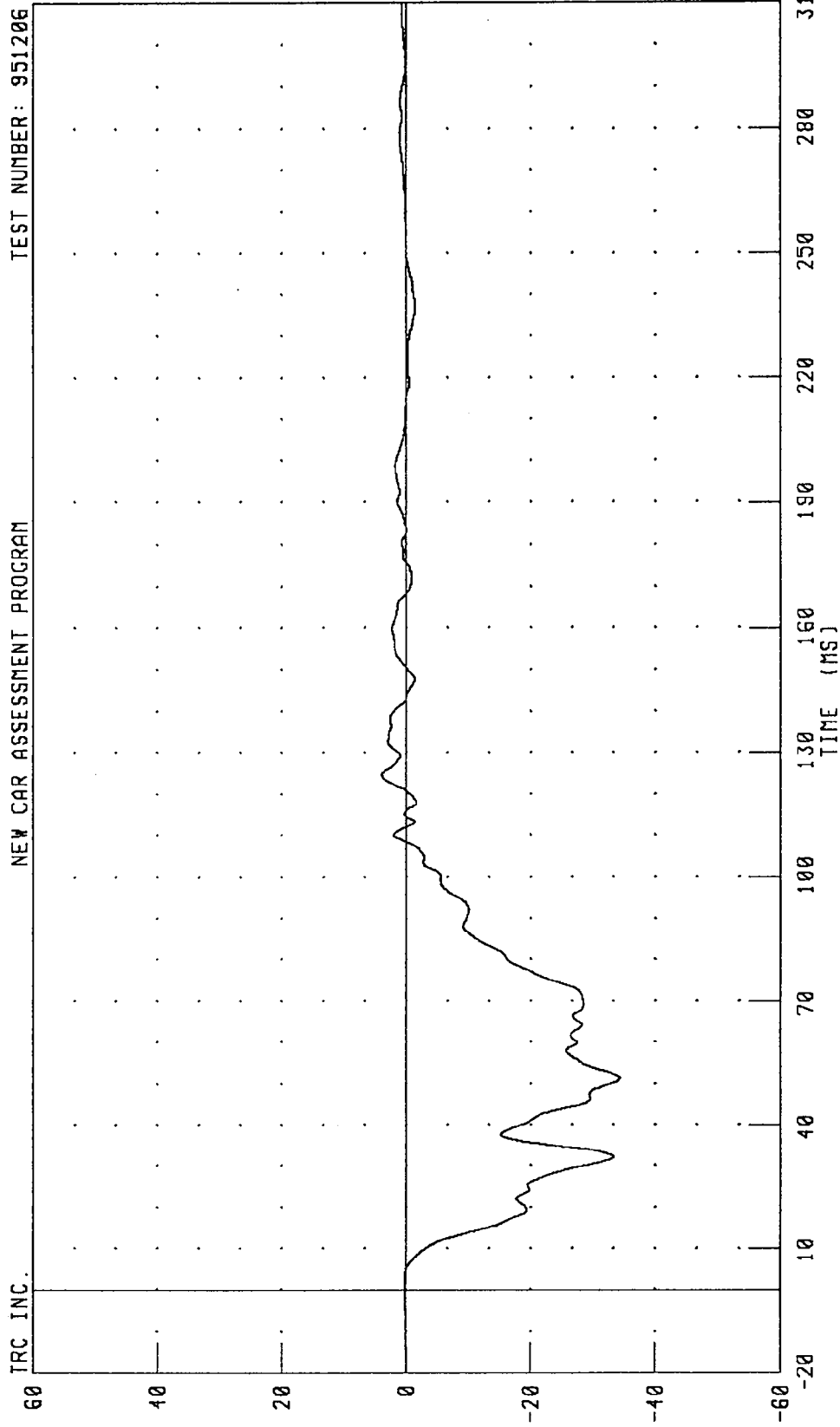
TRC INC.

60

ACCELERATION (G)

B-101

951206



PEAK DATA: 3.99 G @ 124.80 MS; -34.30 G @ 51.20 MS

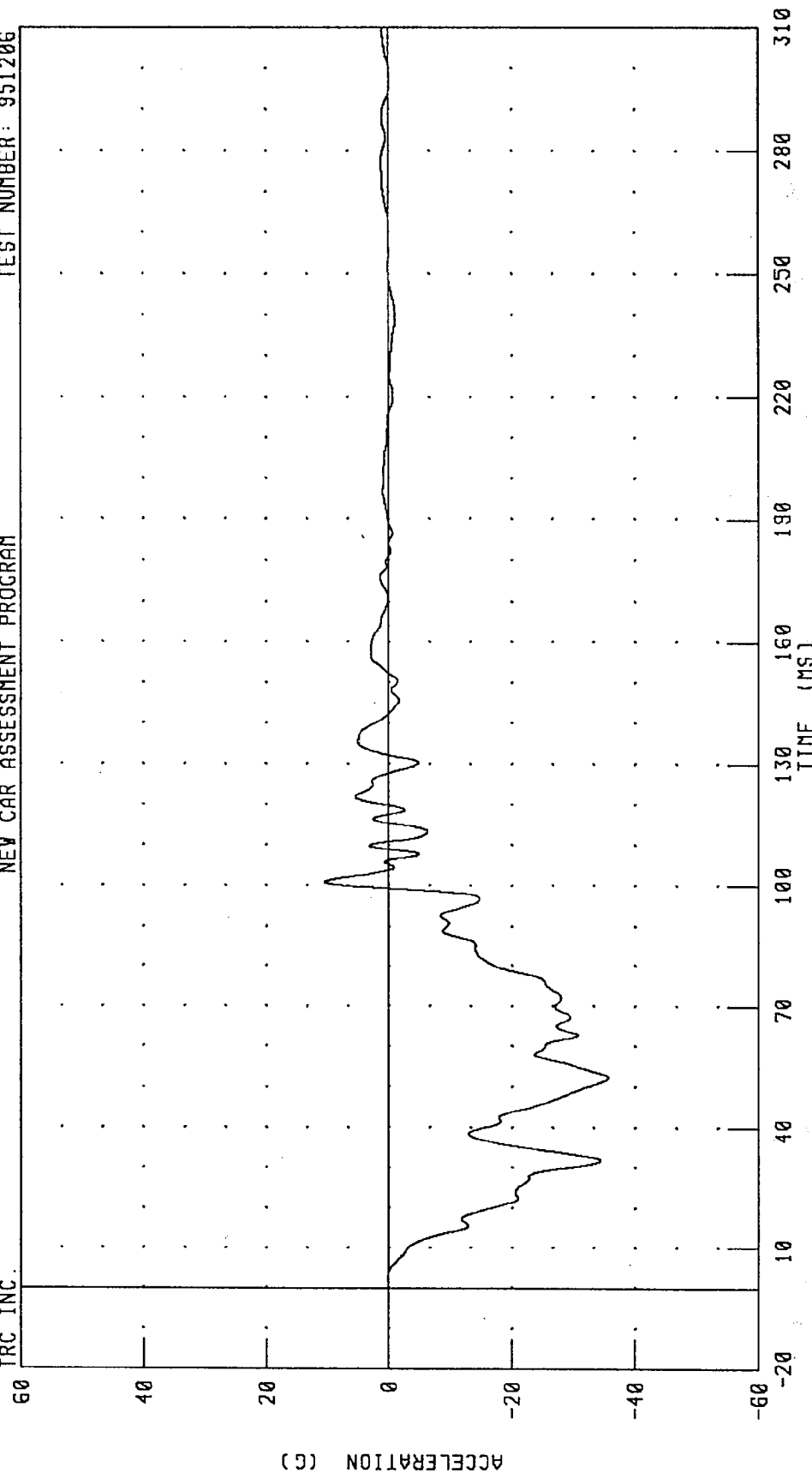
CHANNEL: TLRXGA FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



CHANNEL: TRRXGA FILTER: CH. CLASS 60

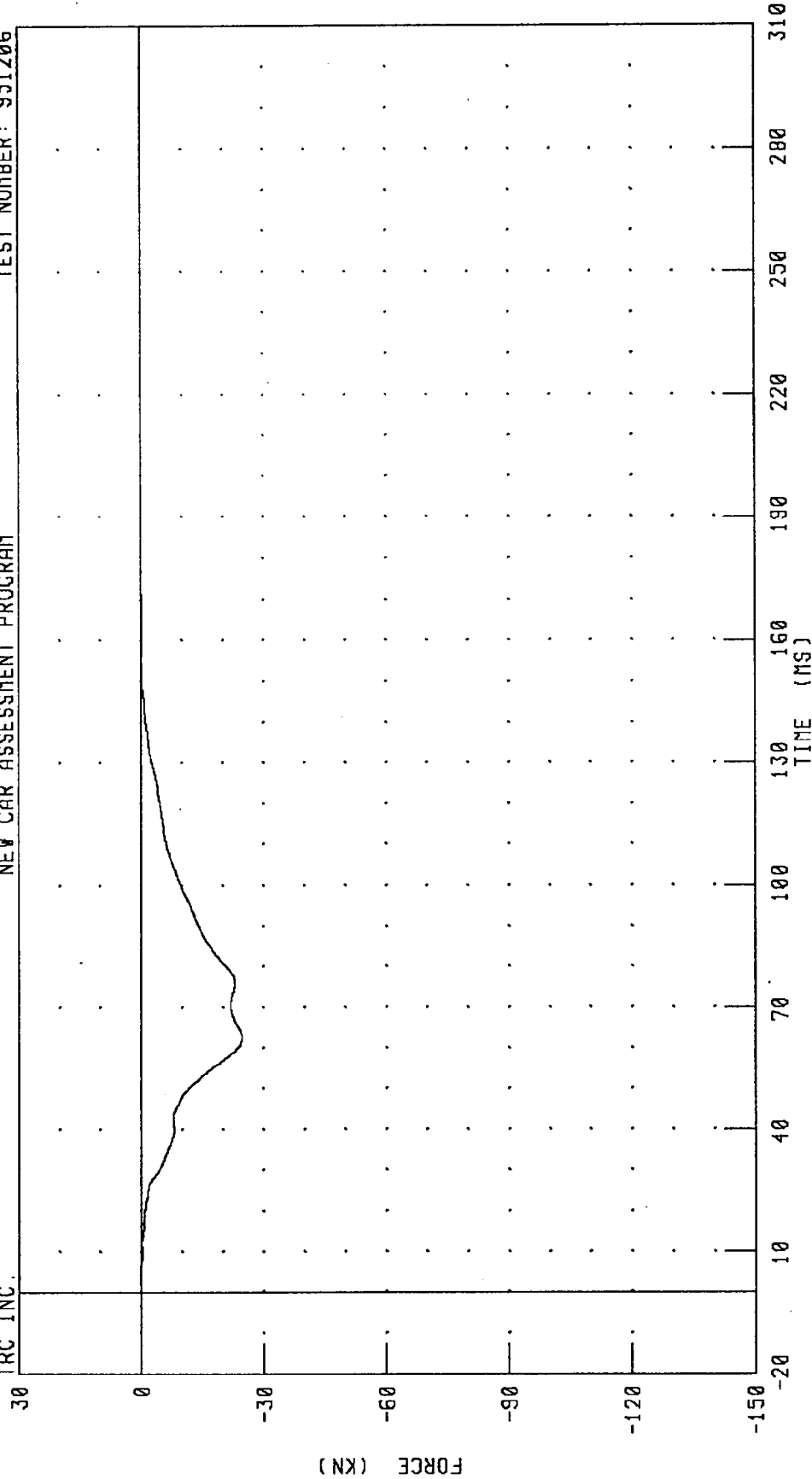
PEAK DATA: 10.47 G @ 100.88 MS, -35.67 G @ 52.32 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B2 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.25 KN @ 4.48 MS; -24.62 KN @ 62.56 MS

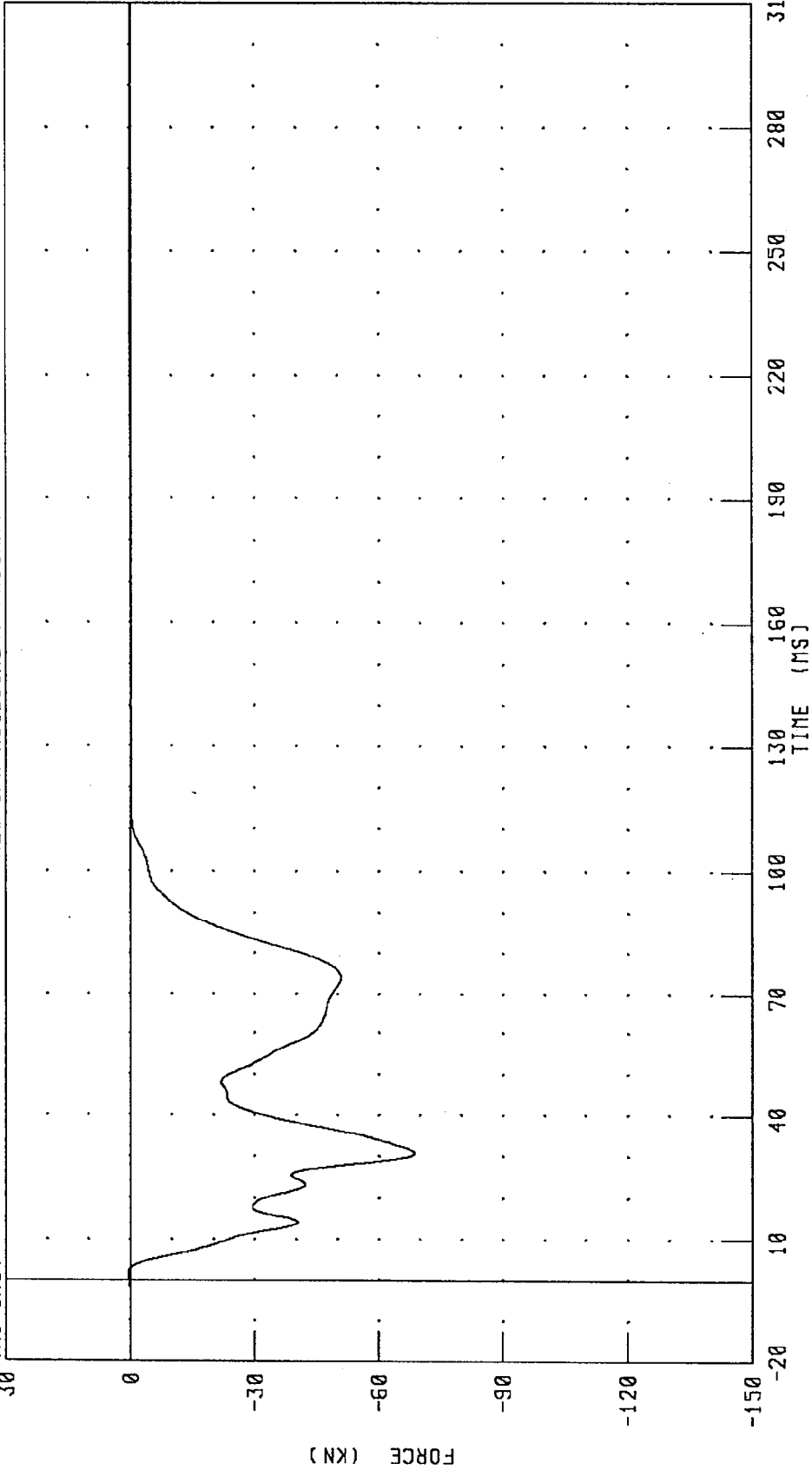
FILTER: CH. CLASS 60

CHANNEL: BB2F

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B3 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



PEAK DATA: 0.53 KN @ 1.36 MS; -68.64 KN @ 30.88 MS

FILTER: CH. CLASS 60

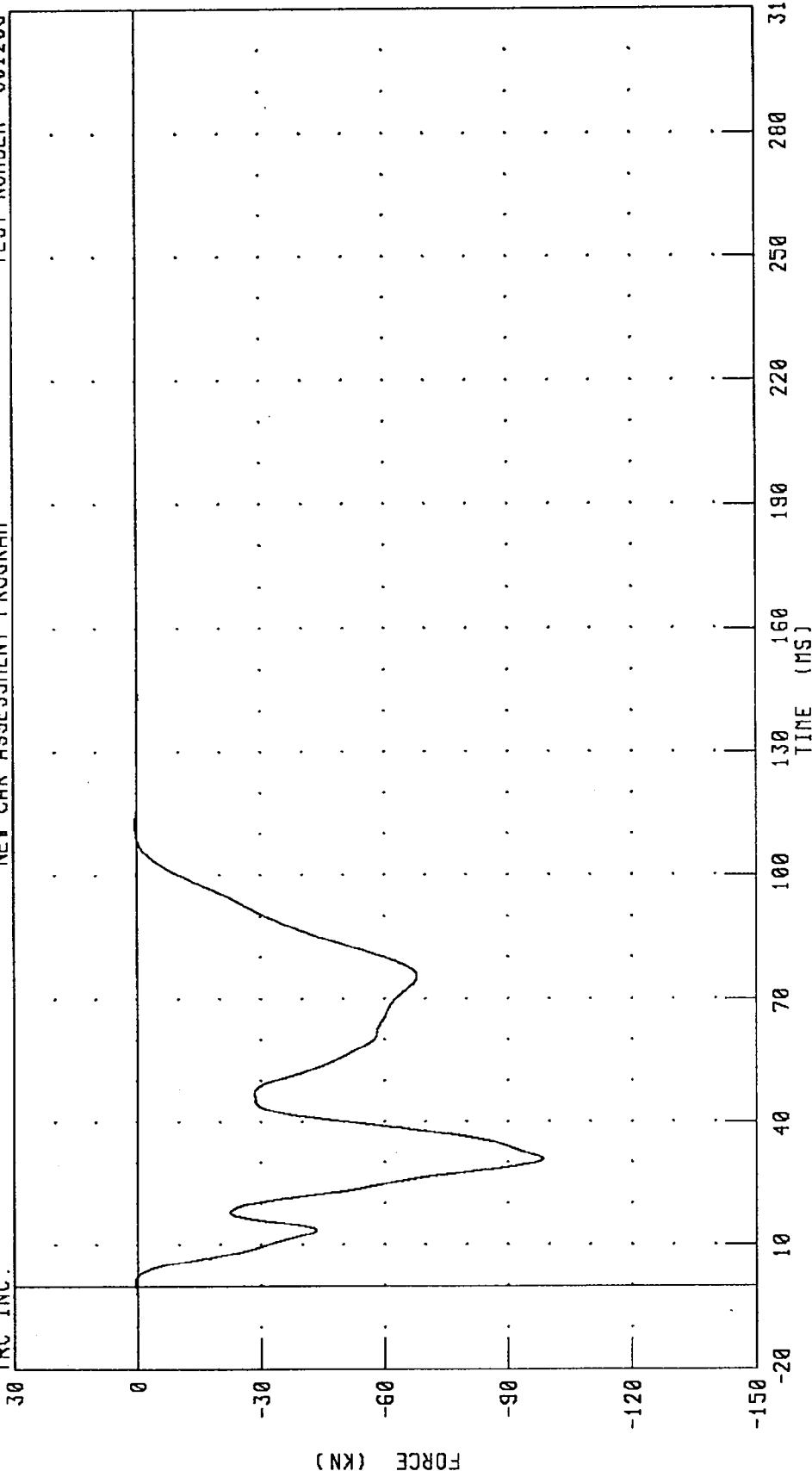
CHANNEL: 883F

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B4 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

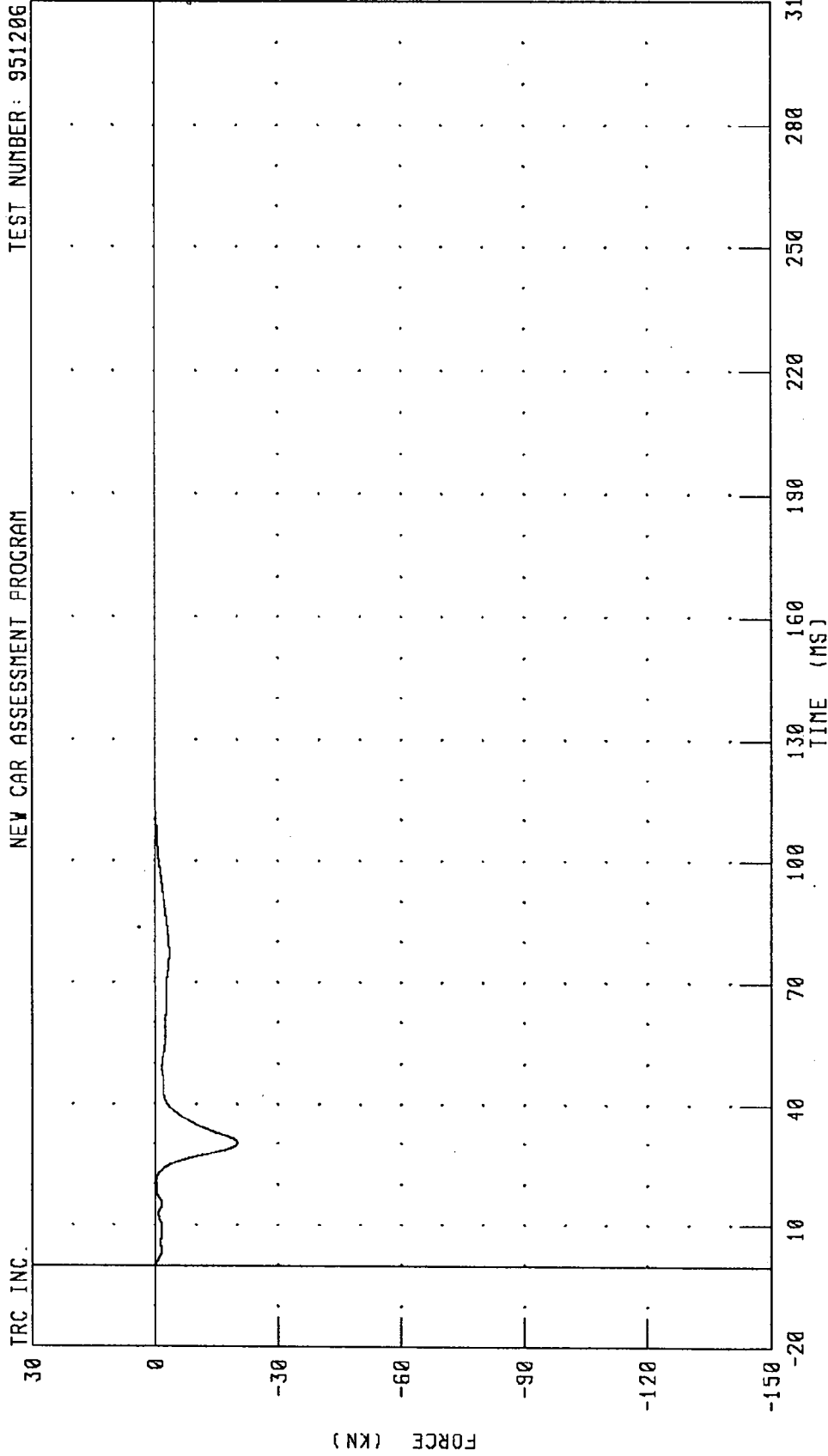


PEAK DATA: 0.47 KN @ 0.88 MS; -98.47 KN @ 30.96 MS

CHANNEL: BB4F FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B5 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



PEAK DATA: 0.05 KN @ -2.32 MS; -20.18 KN @ 30.16 MS

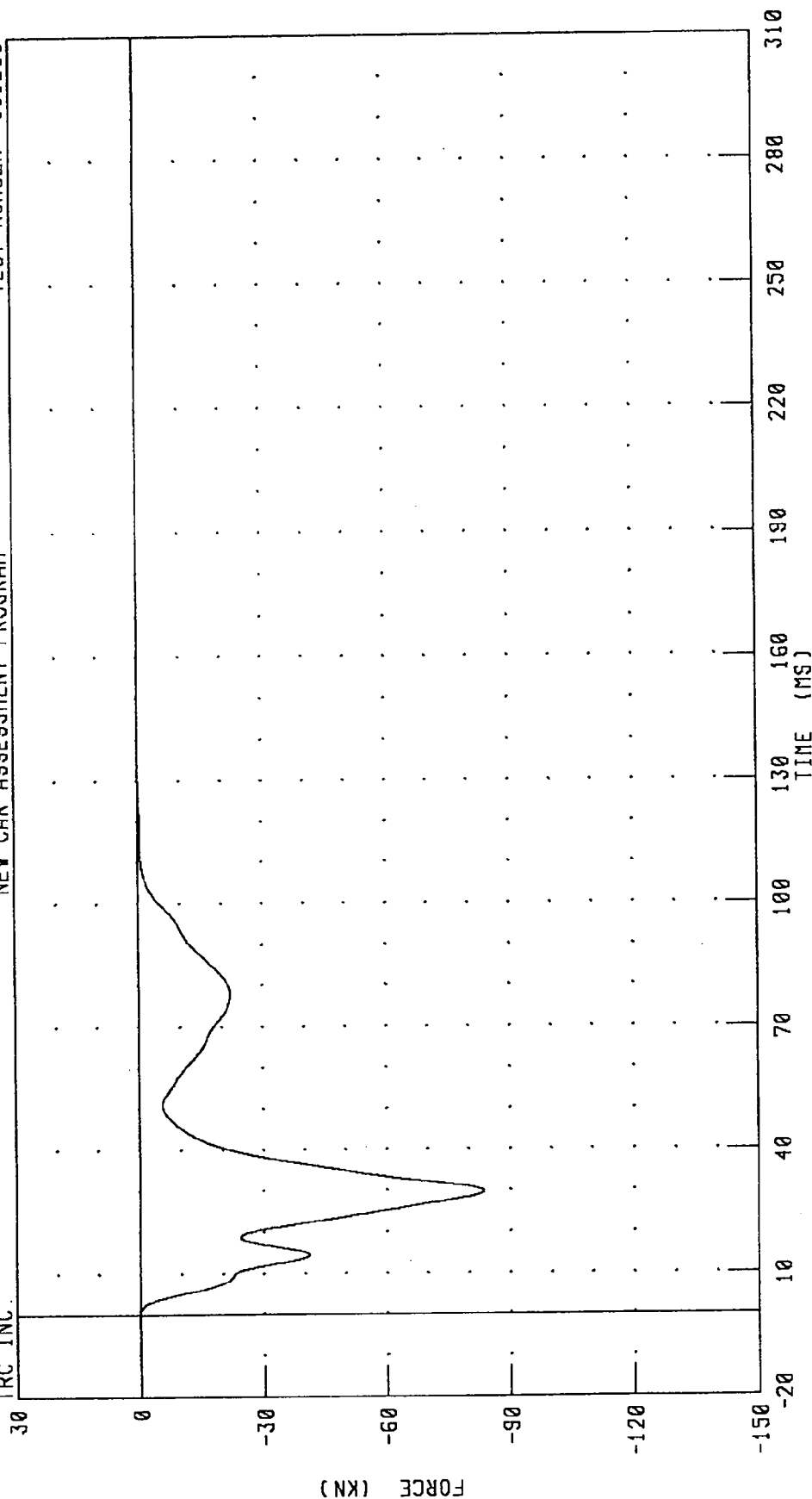
CHANNEL: BB5F FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B6 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.32 KN @ -0.48 MS; -83.72 KN @ 29.76 MS

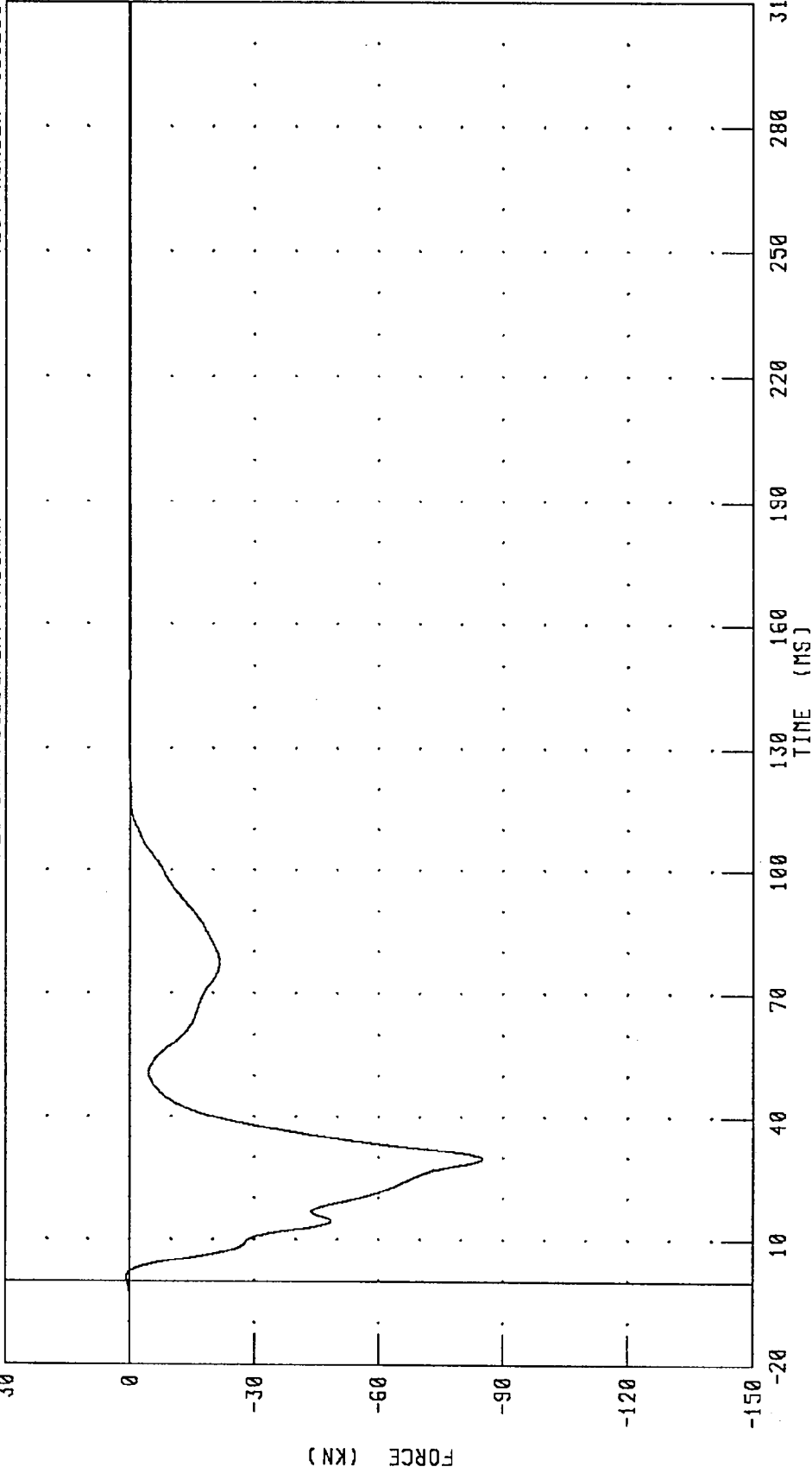
FILTER: CH. CLASS 60

CHANNEL: BB6F

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B7 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



PEAK DATA: 0.74 KN @ 0.80 MS, -85.17 KN @ 29.84 MS

FILTER: CH. CLASS 60

CHANNEL: BB7F

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B8 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

30

0

-30

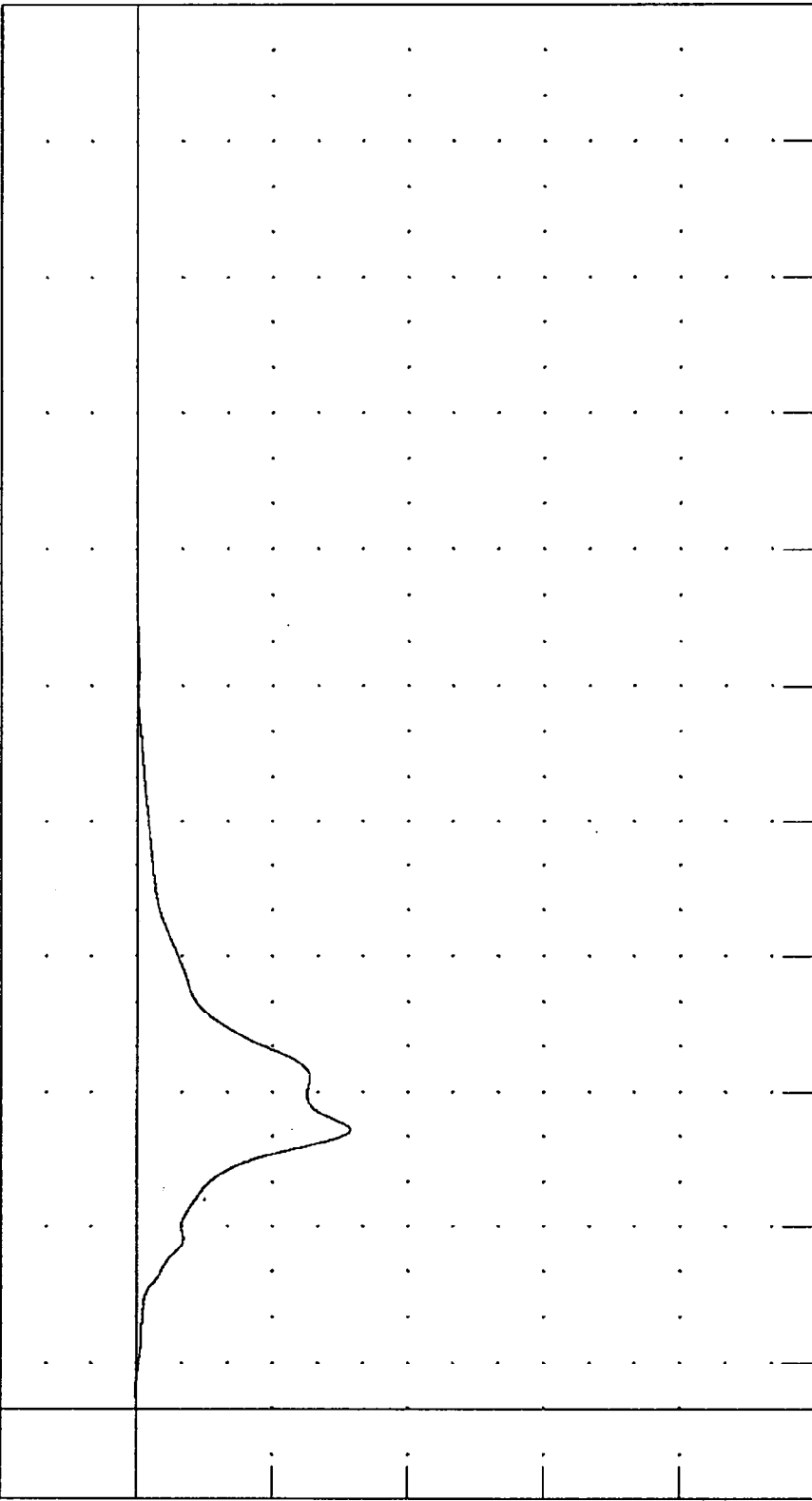
-60

-90

-120

-150

FORCE (KN)



-20

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

CHANNEL: 888F

FILTER: CH. CLASS 60

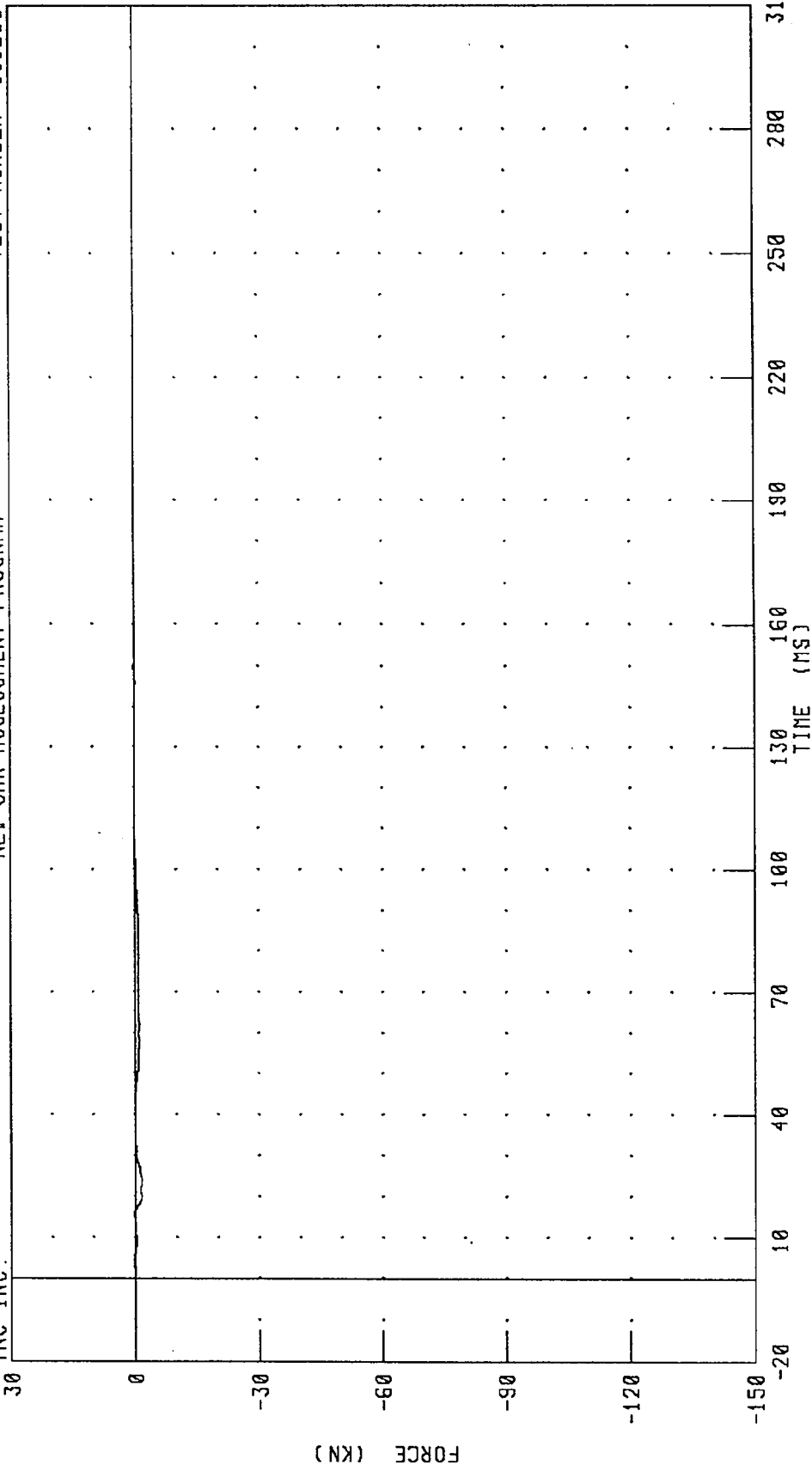
PEAK DATA: 0.12 KN @ 4.00 MS; -47.27 KN @ 61.60 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C1 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



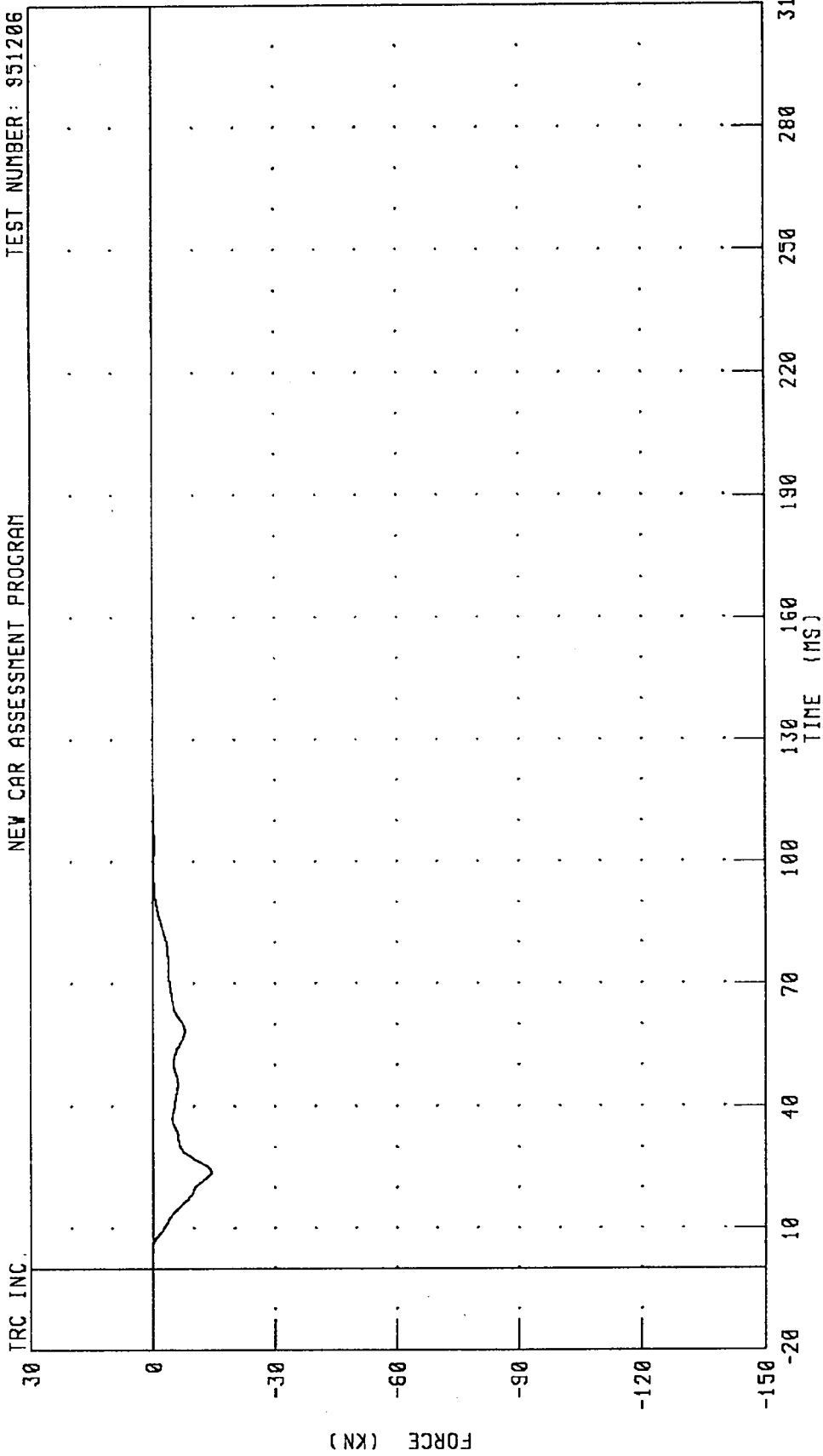
PEAK DATA: 0.18 KN @ 4.40 MS, -1.56 KN @ 23.60 MS

FILTER: CH. CLASS 60

CHANNEL: BC1F

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C2 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



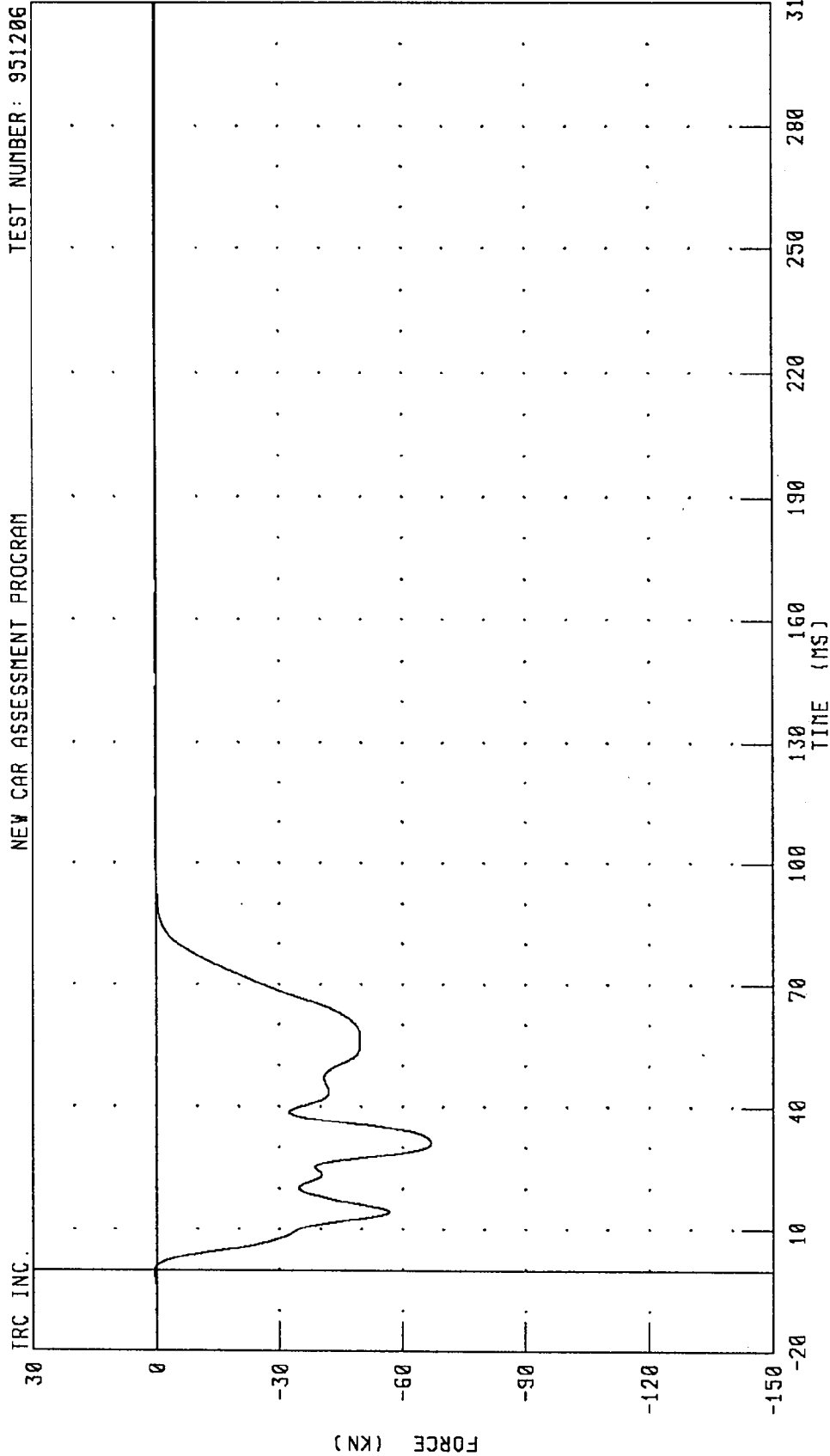
PEAK DATA: 0.26 KN @ 4.00 MS; -14.24 KN @ 23.92 MS

FILTER: CH. CLASS 60

CHANNEL: BC2F

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C3 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



PEAK DATA: 0.54 KN @ -0.48 MS; -66.98 KN @ 31.12 MS

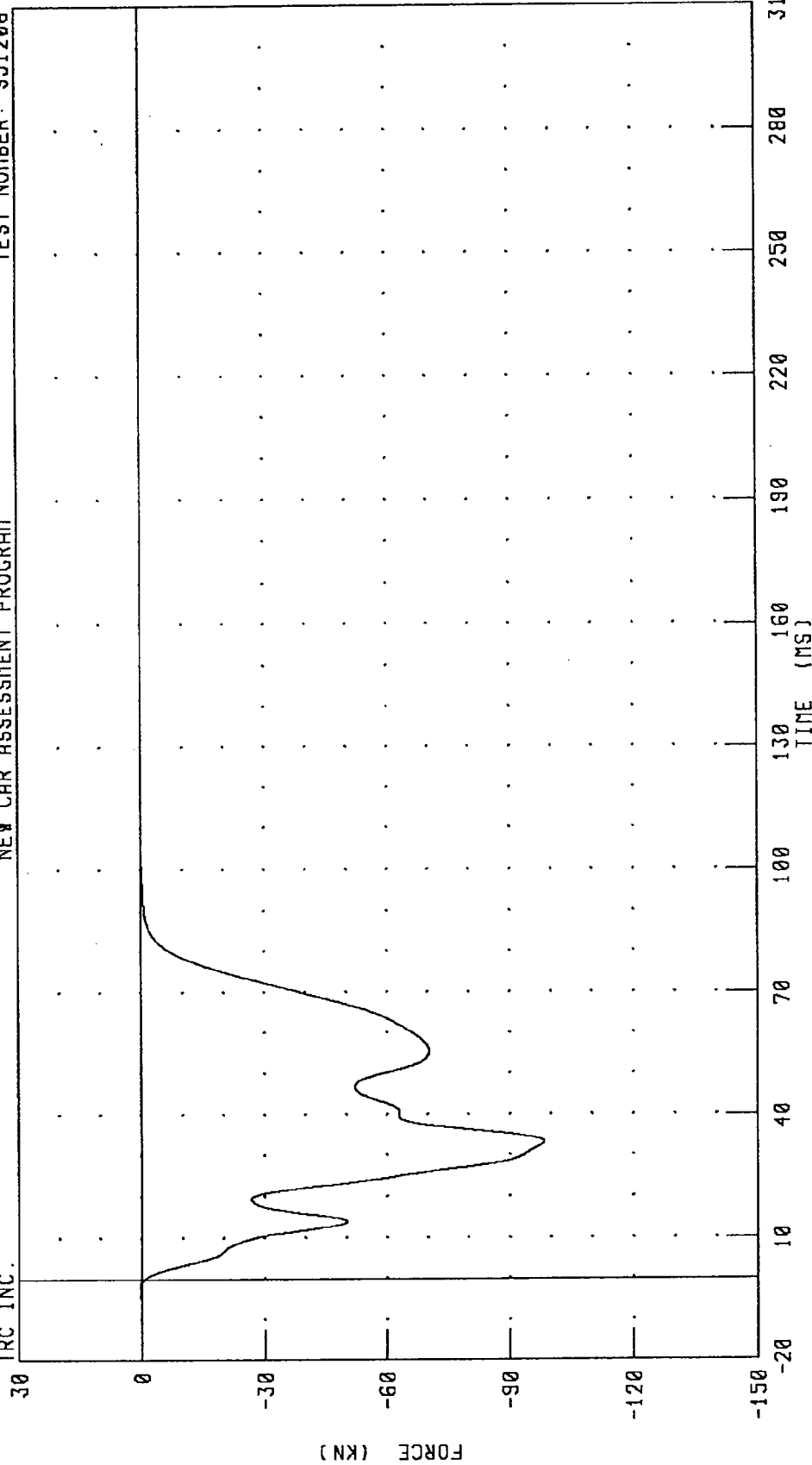
CHANNEL: BC3F FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C4 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.33 KN @ -2.24 MS; -98.44 KN @ 33.20 MS

FILTER: CH. CLASS 60

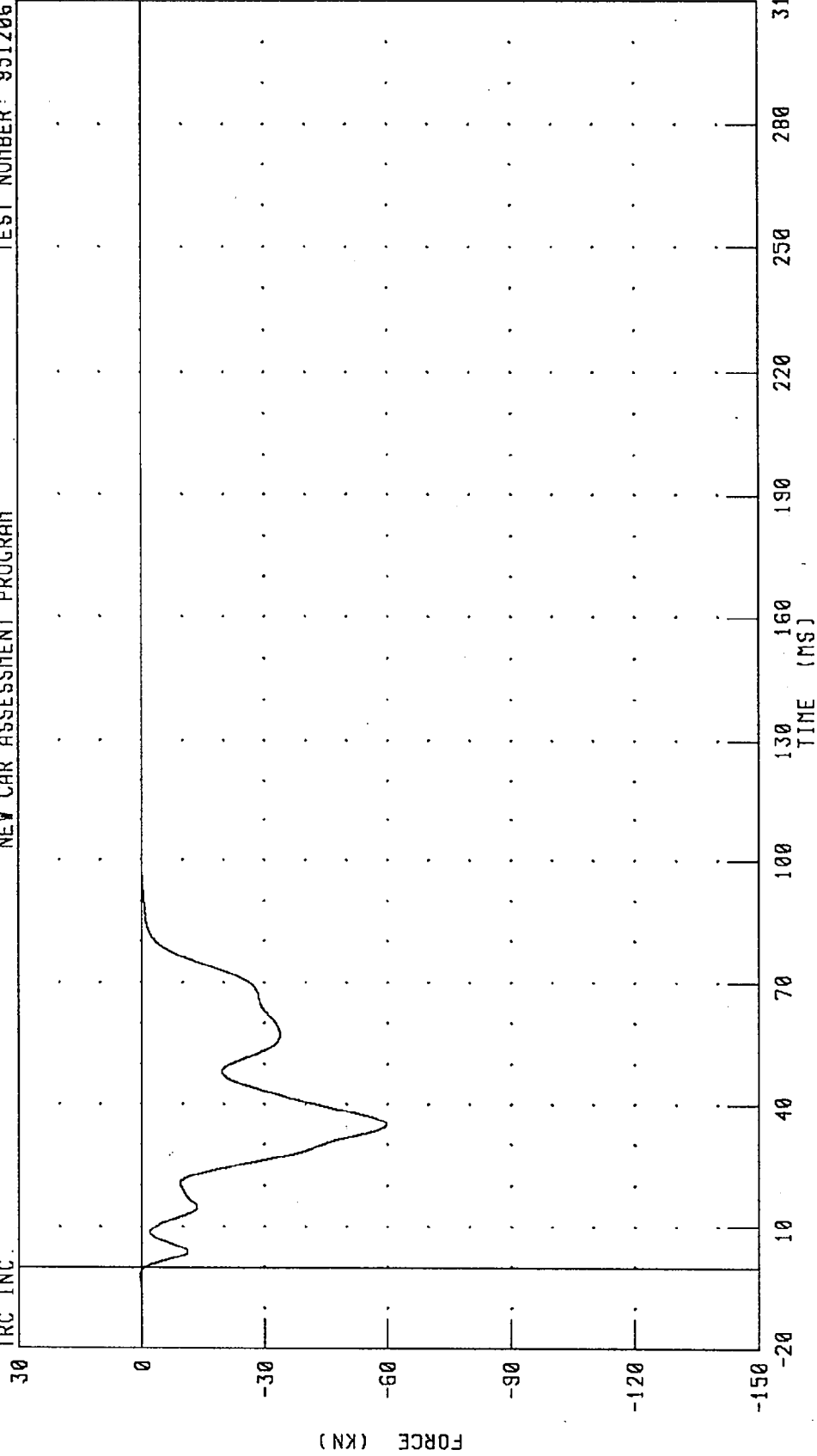
CHANNEL: BC4F

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C5 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.46 KN @ -2.16 MS; -59.74 KN @ 34.96 MS

FILTER: CH. CLASS 60

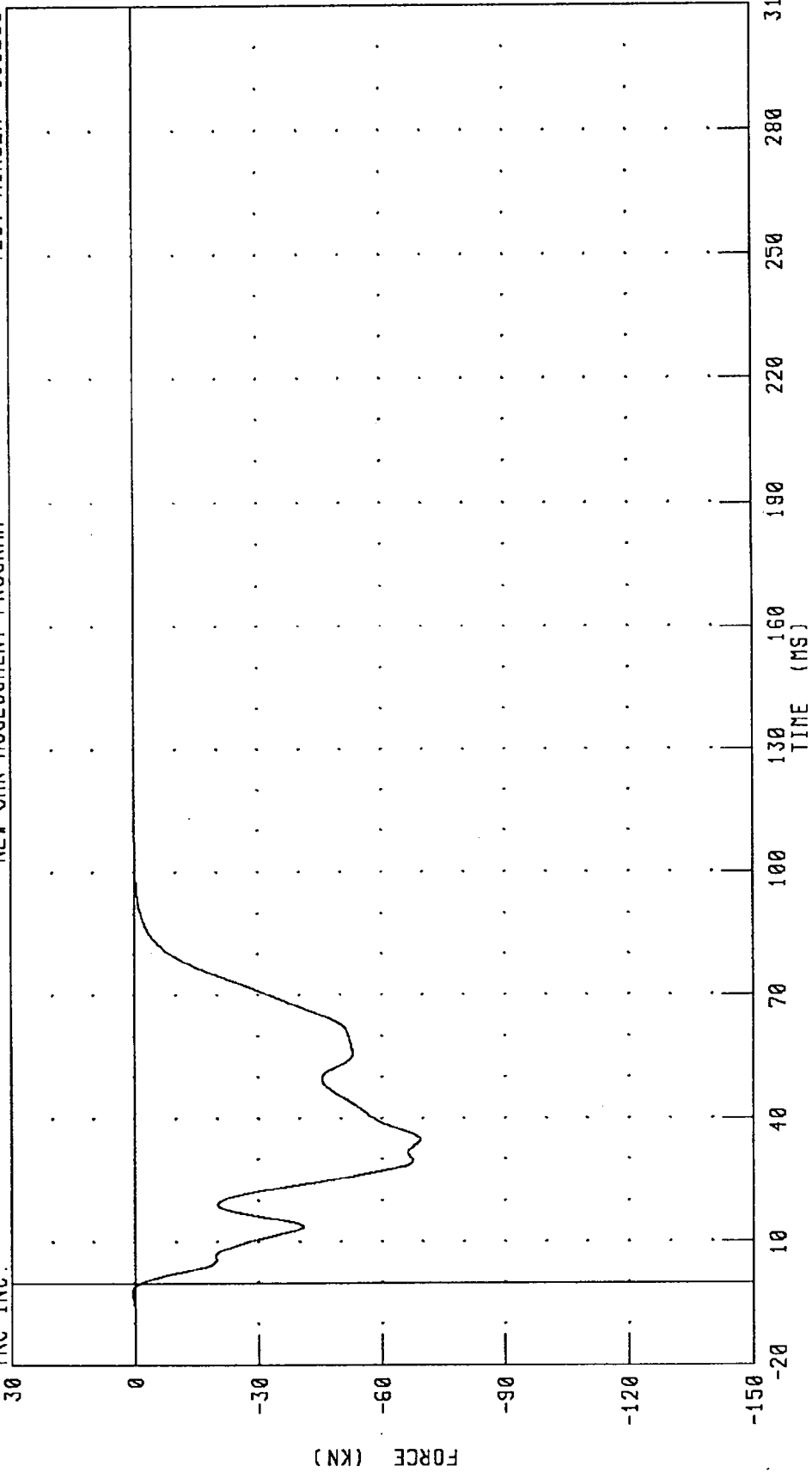
CHANNEL: BC5F

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C6 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.47 KN @ -2.56 MS; -69.33 KN @ 35.04 MS

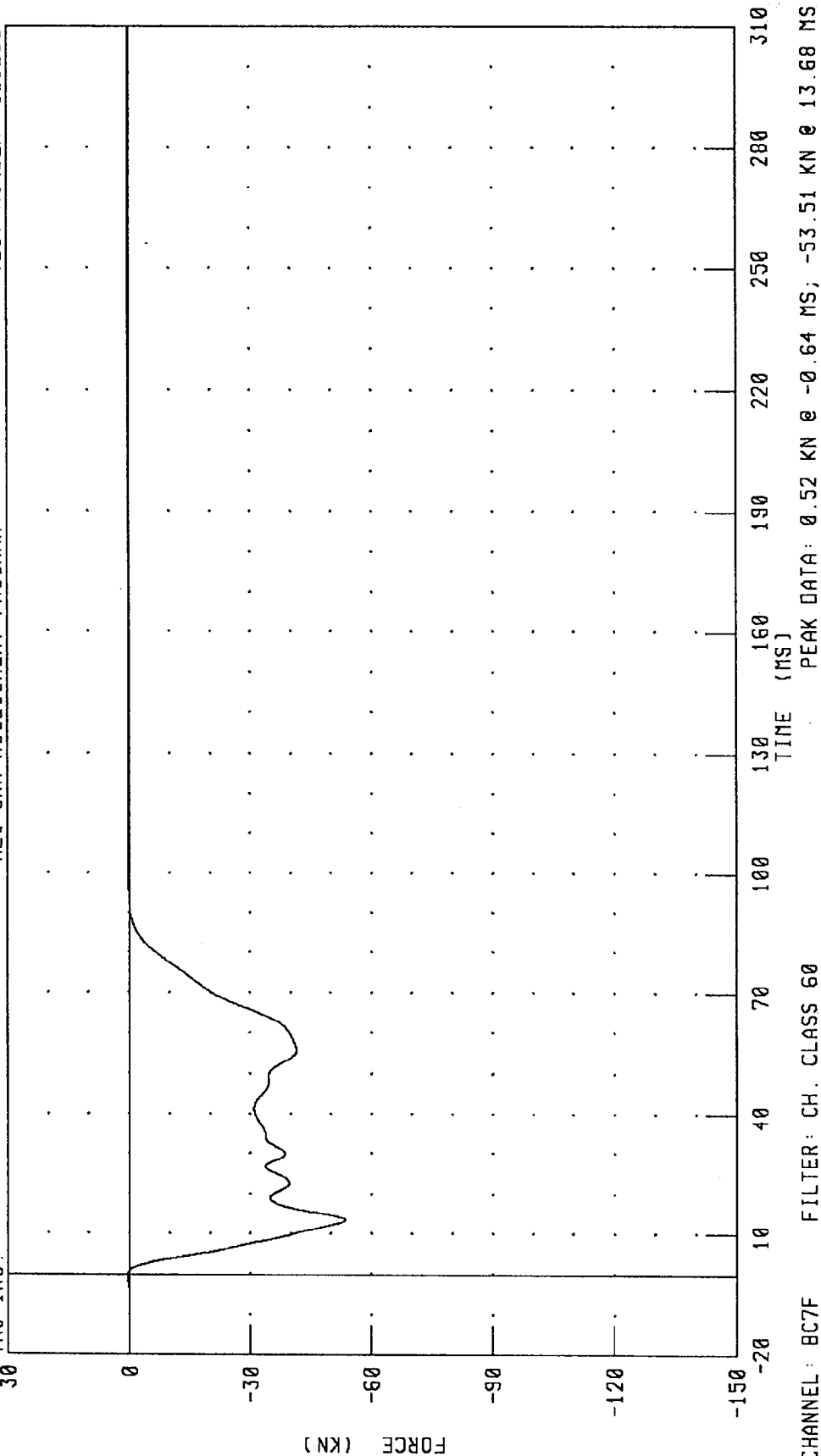
CHANNEL: BC6F FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C7 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.52 KN @ -0.64 MS; -53.51 KN @ 13.68 MS

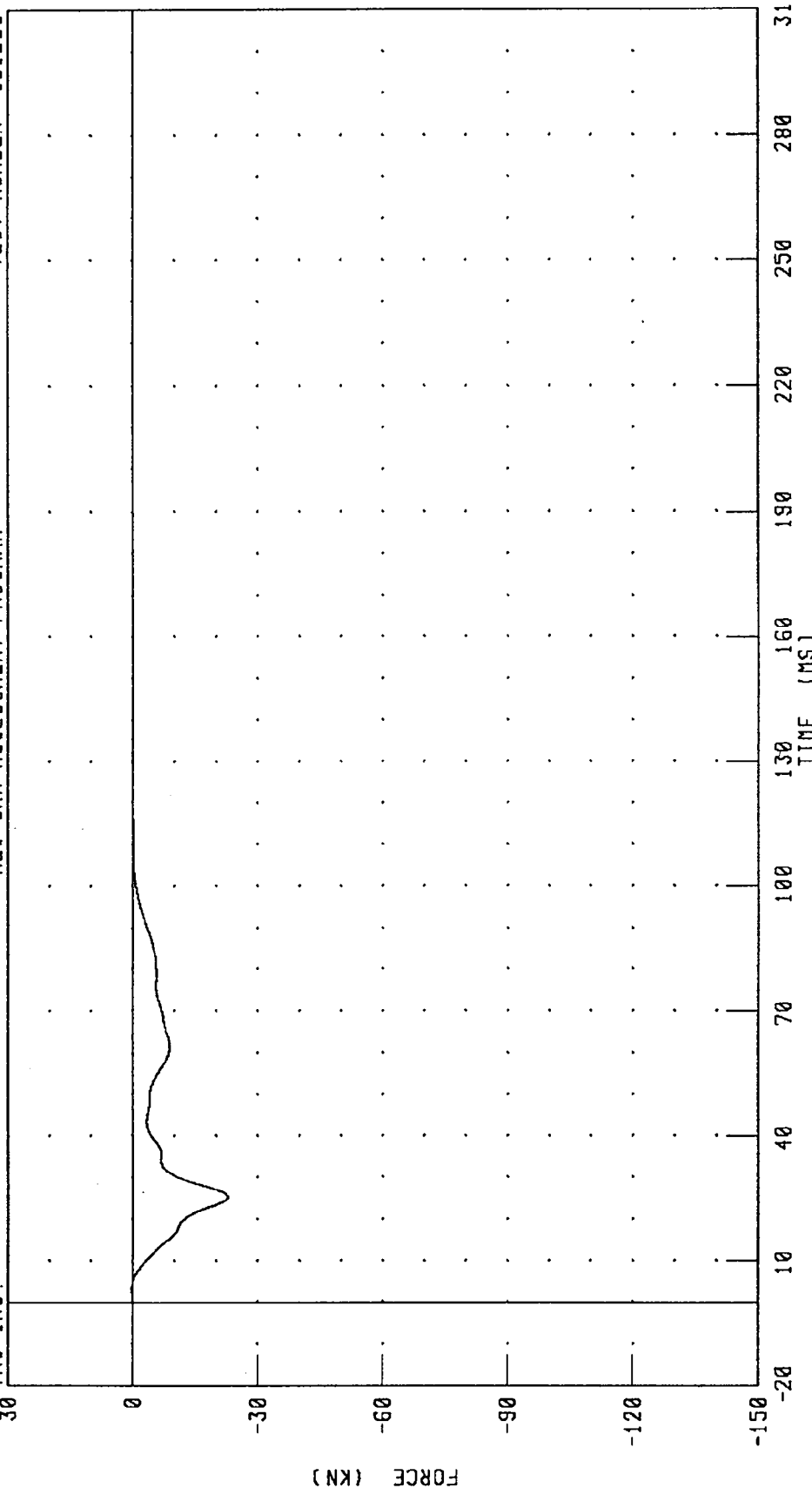
FILTER: CH. CLASS 60

CHANNEL: BC7F

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C8 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



CHANNEL: BC8F

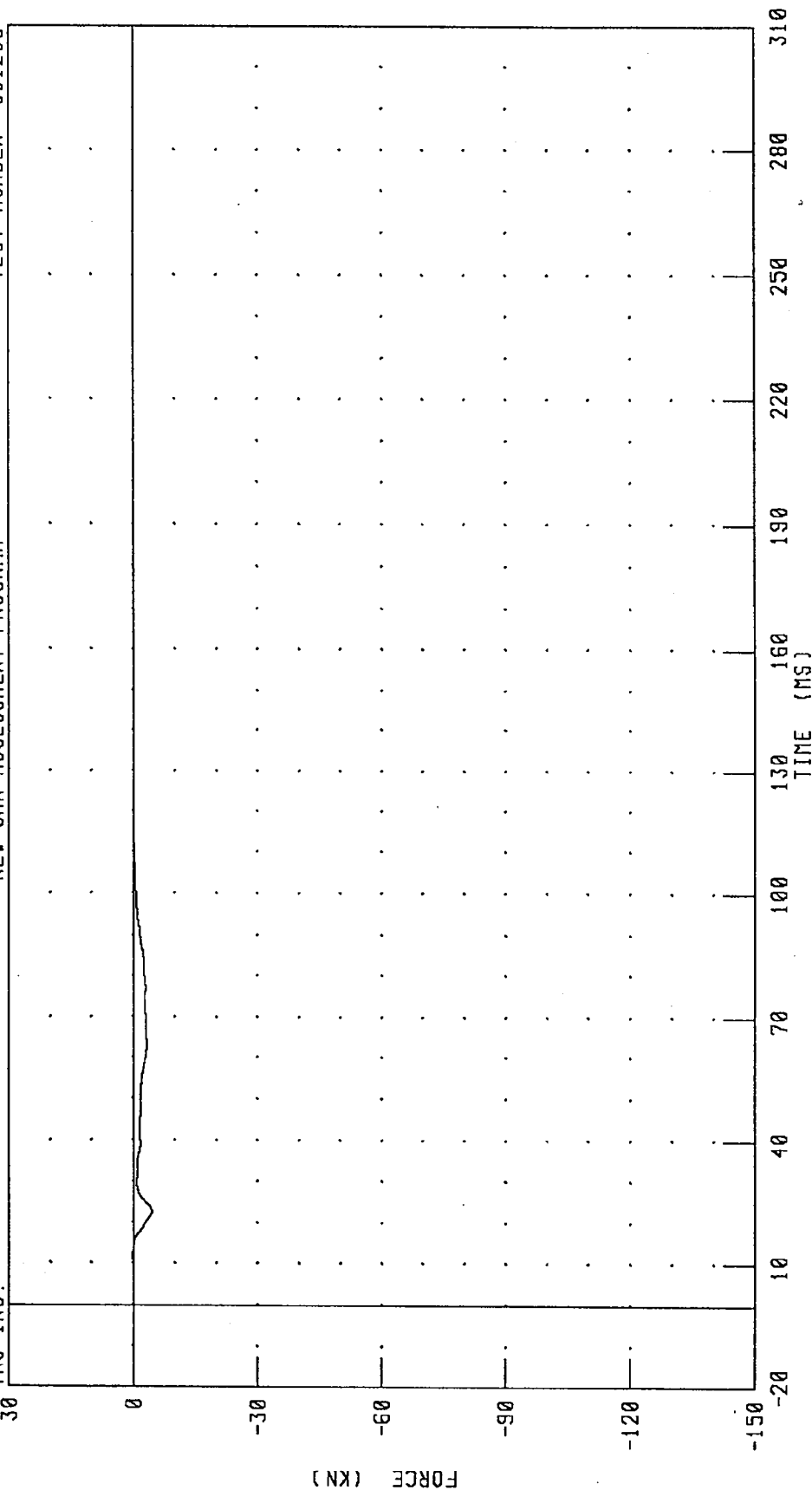
FILTER: CH. CLASS 60

PEAK DATA: 0.10 KN @ 3.04 MS; -22.89 KN @ 25.28 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C9 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



PEAK DATA: 0.14 KN @ 11.92 MS; -4.51 KN @ 22.80 MS

FILTER: CH. CLASS 60

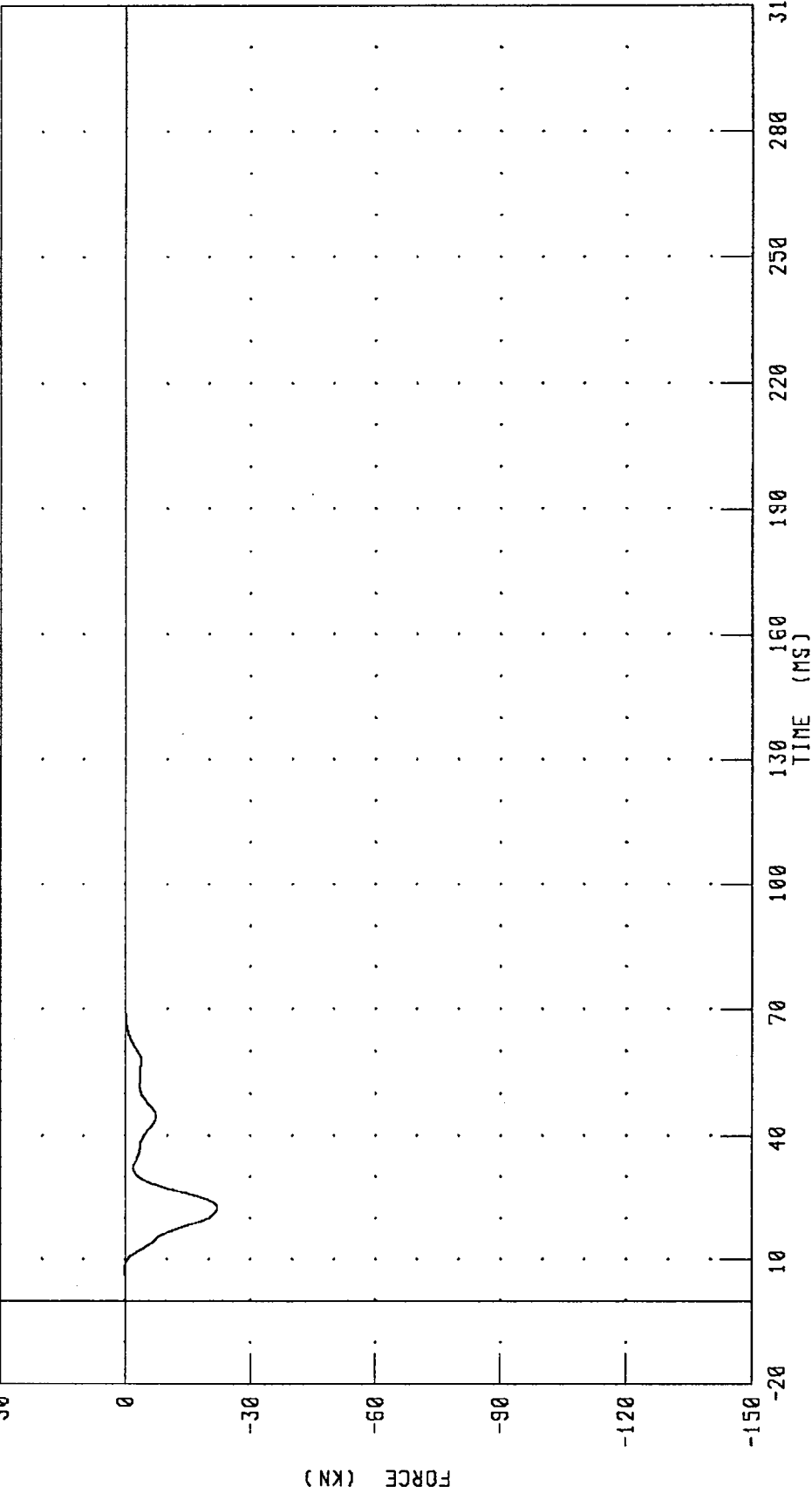
CHANNEL: BC9F

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D2 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

IRC INC.



CHANNEL: BD2F FILTER: CH. CLASS 60

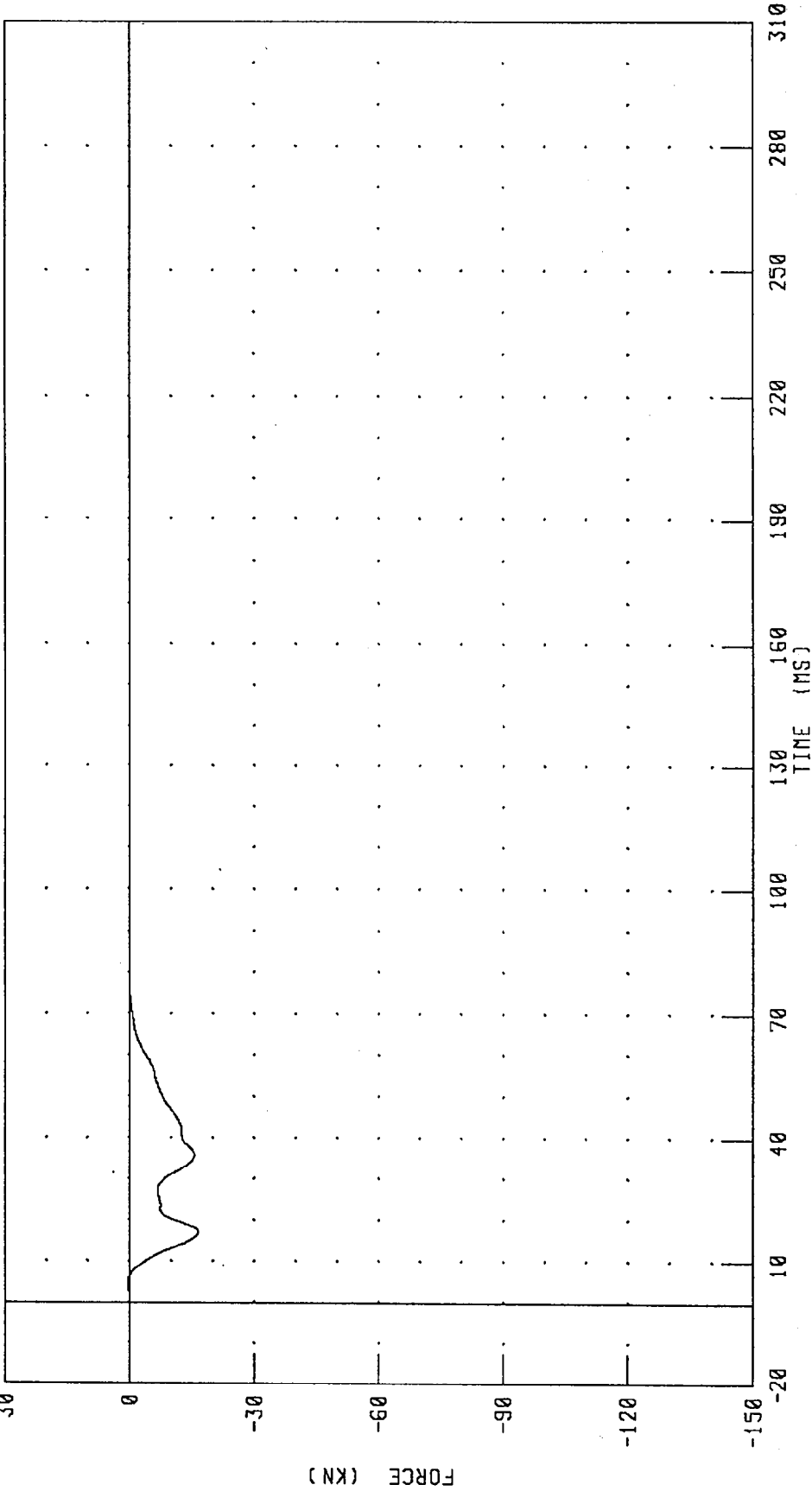
PEAK DATA: 0.16 KN @ 7.52 MS; -21.93 KN @ 22.56 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D3 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



PEAK DATA: 0.17 KN @ 4.56 MS; -16.66 KN @ 17.04 MS

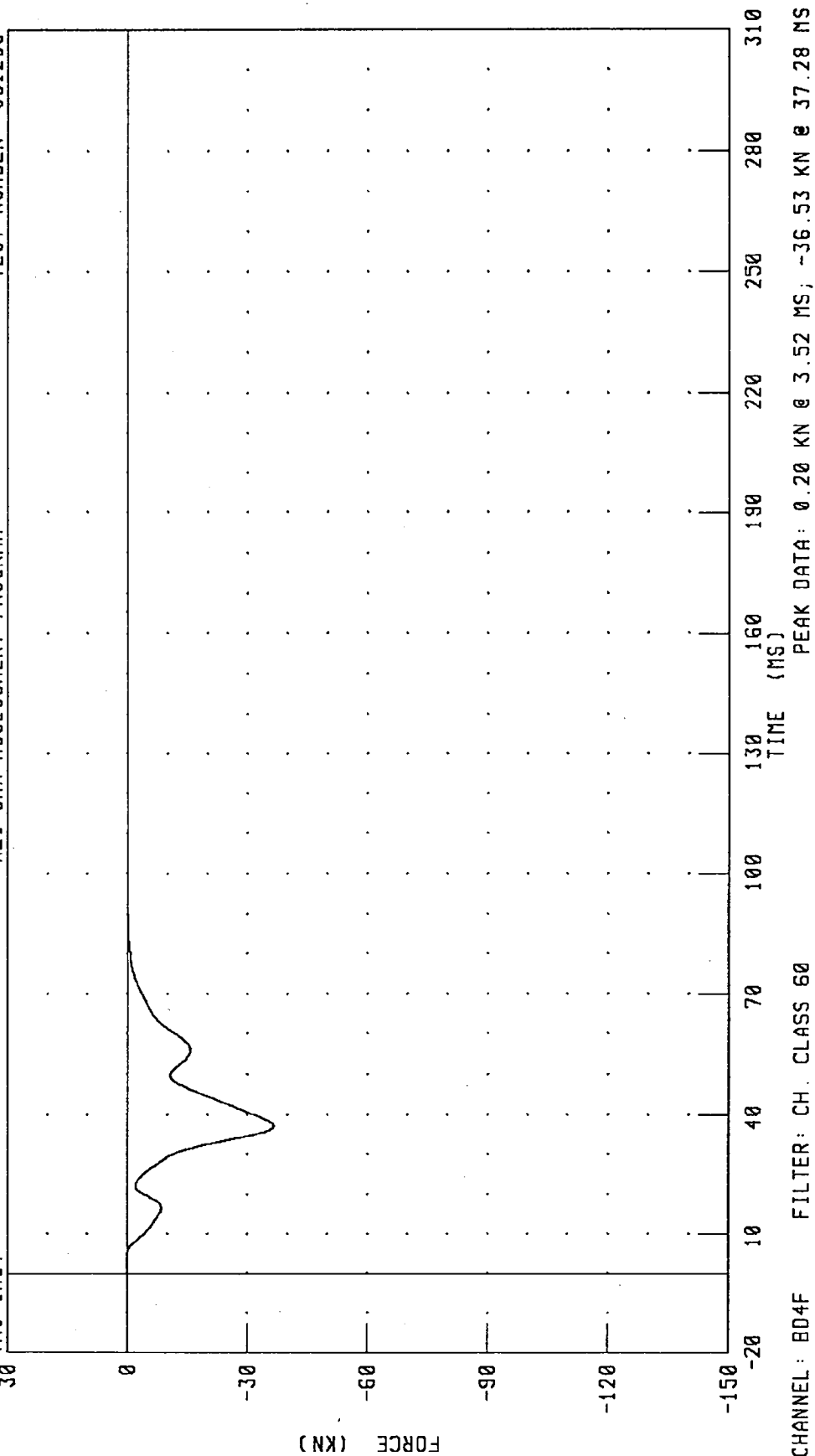
CHANNEL: BD3F FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D4 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

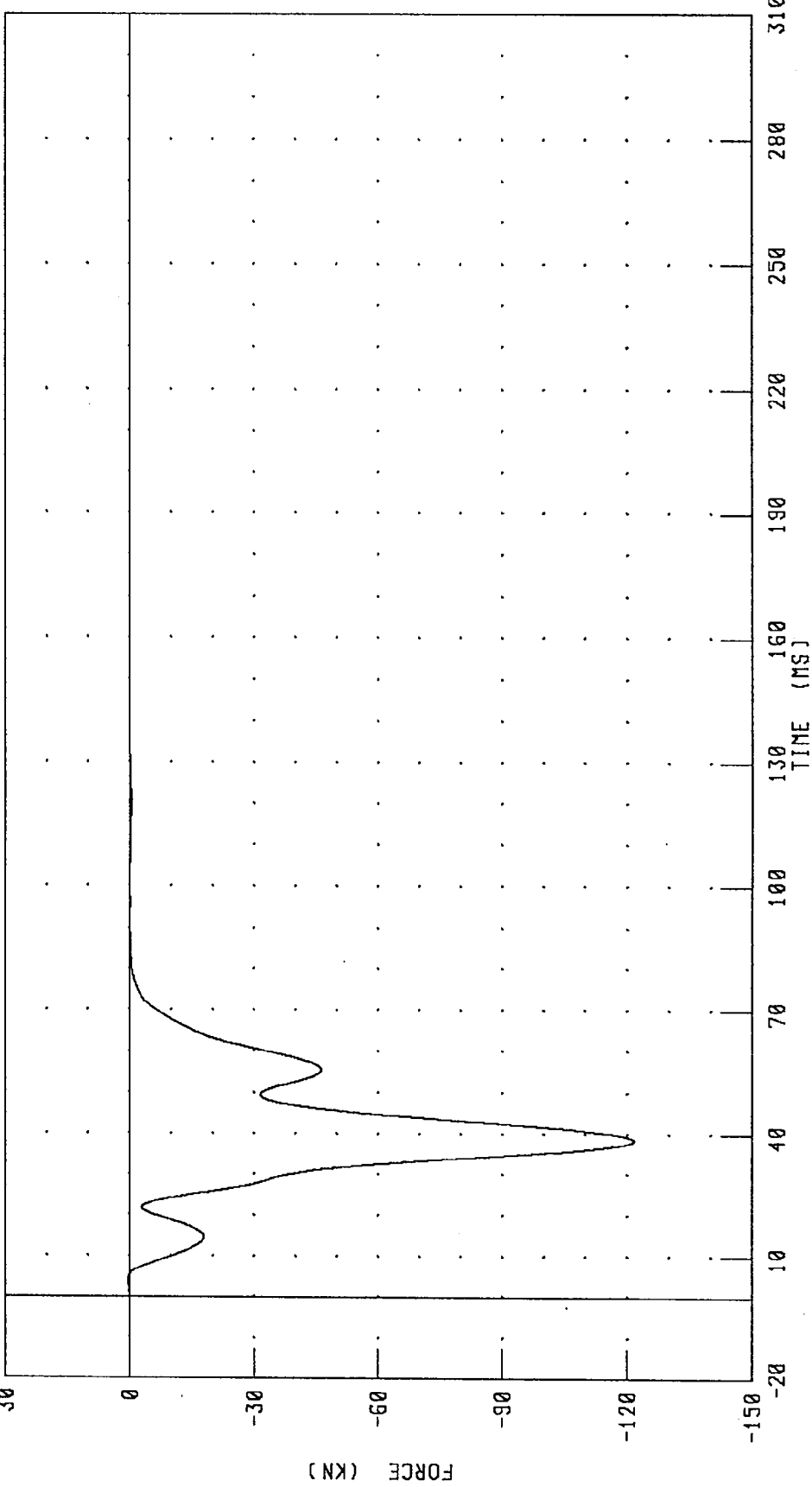


CHANNEL: BD4F FILTER: CH. CLASS 60 PEAK DATA: 0.20 KN @ 3.52 MS; -36.53 KN @ 37.28 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D5 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

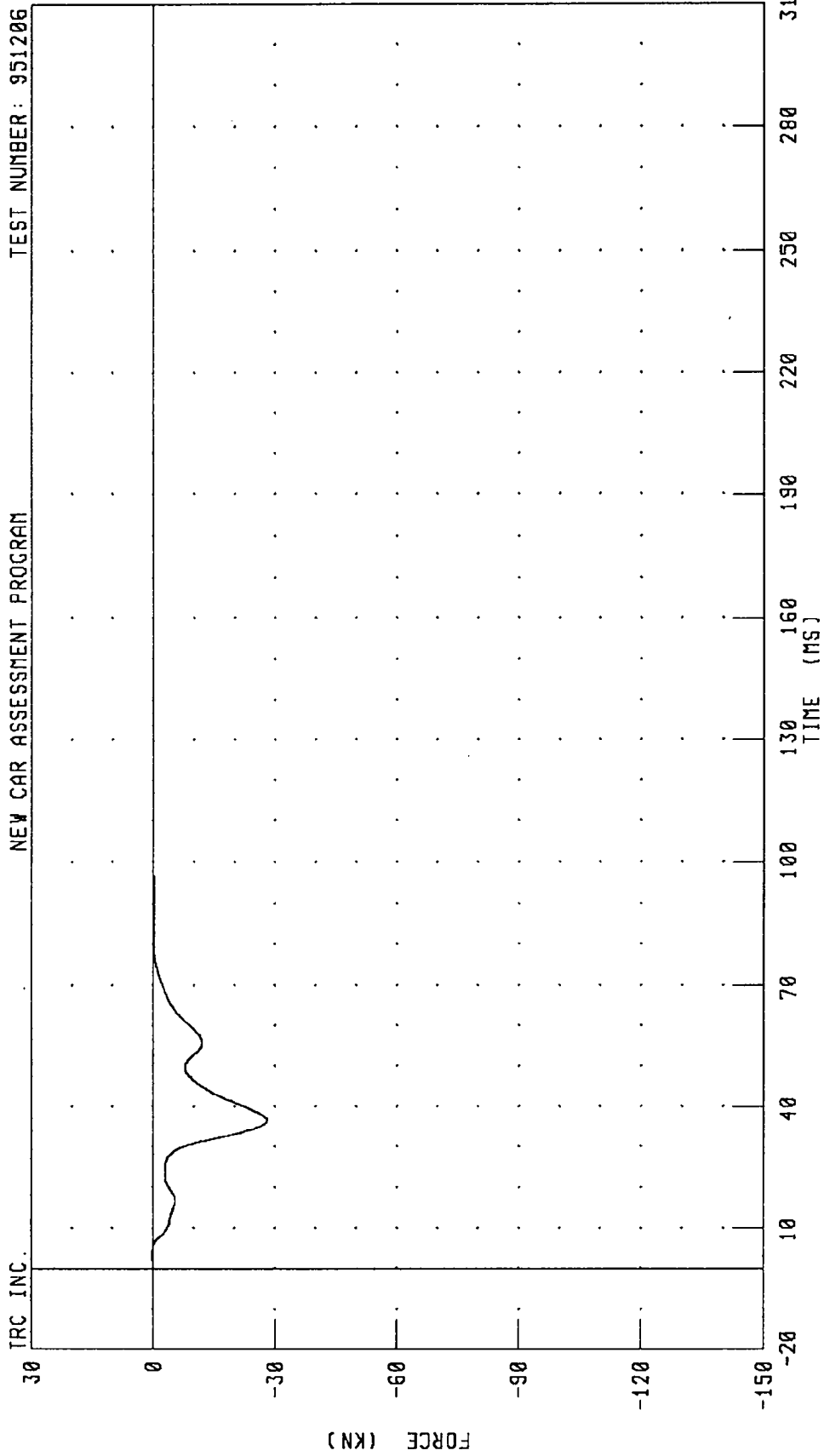


PEAK DATA: 0.38 KN @ 3.76 MS; -121.63 KN @ 38.56 MS

CHANNEL: BDSF FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D6 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



PEAK DATA: 0.15 KN @ 3.36 MS; -27.99 KN @ 36.64 MS

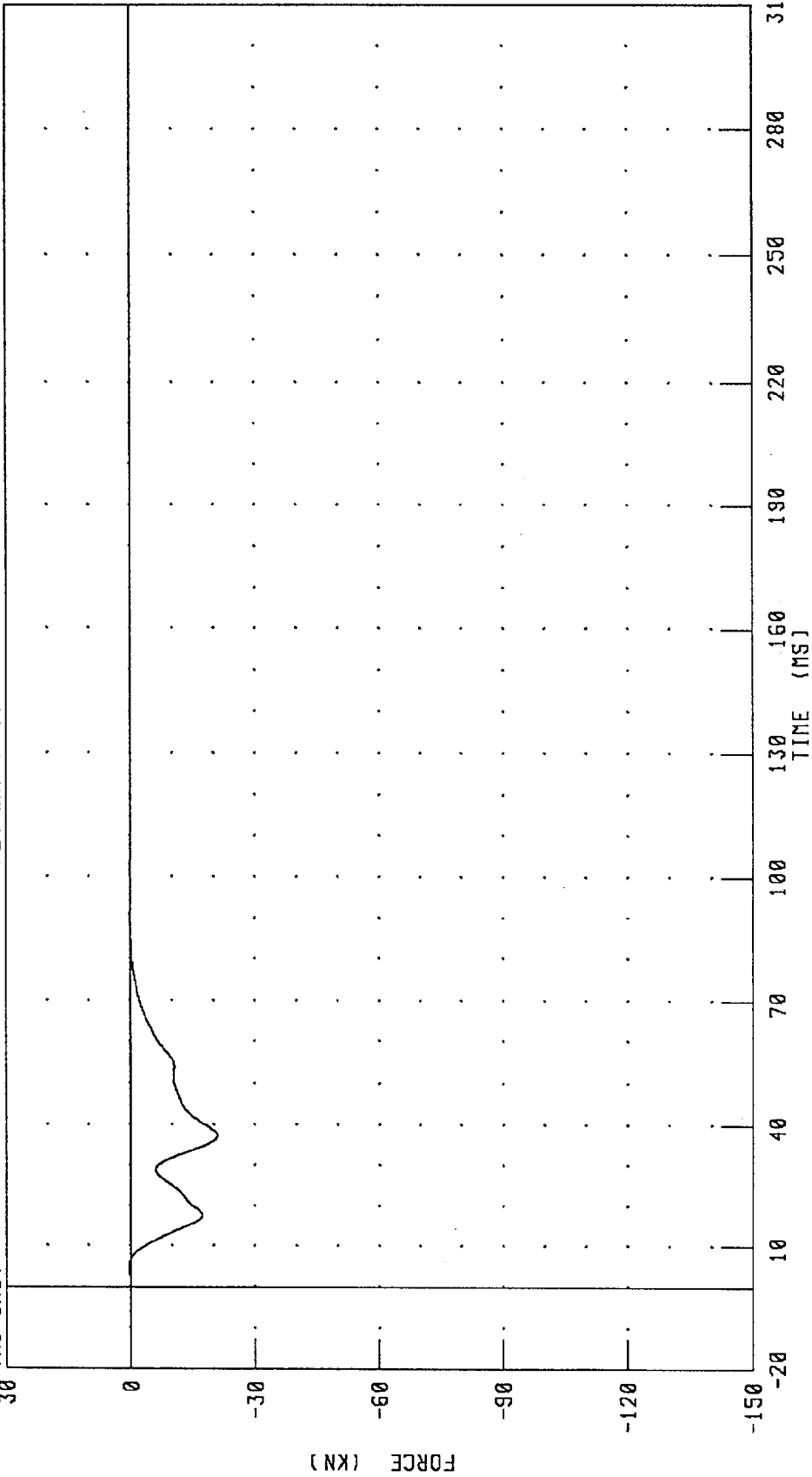
CHANNEL: BD6F FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D7 FORCE

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

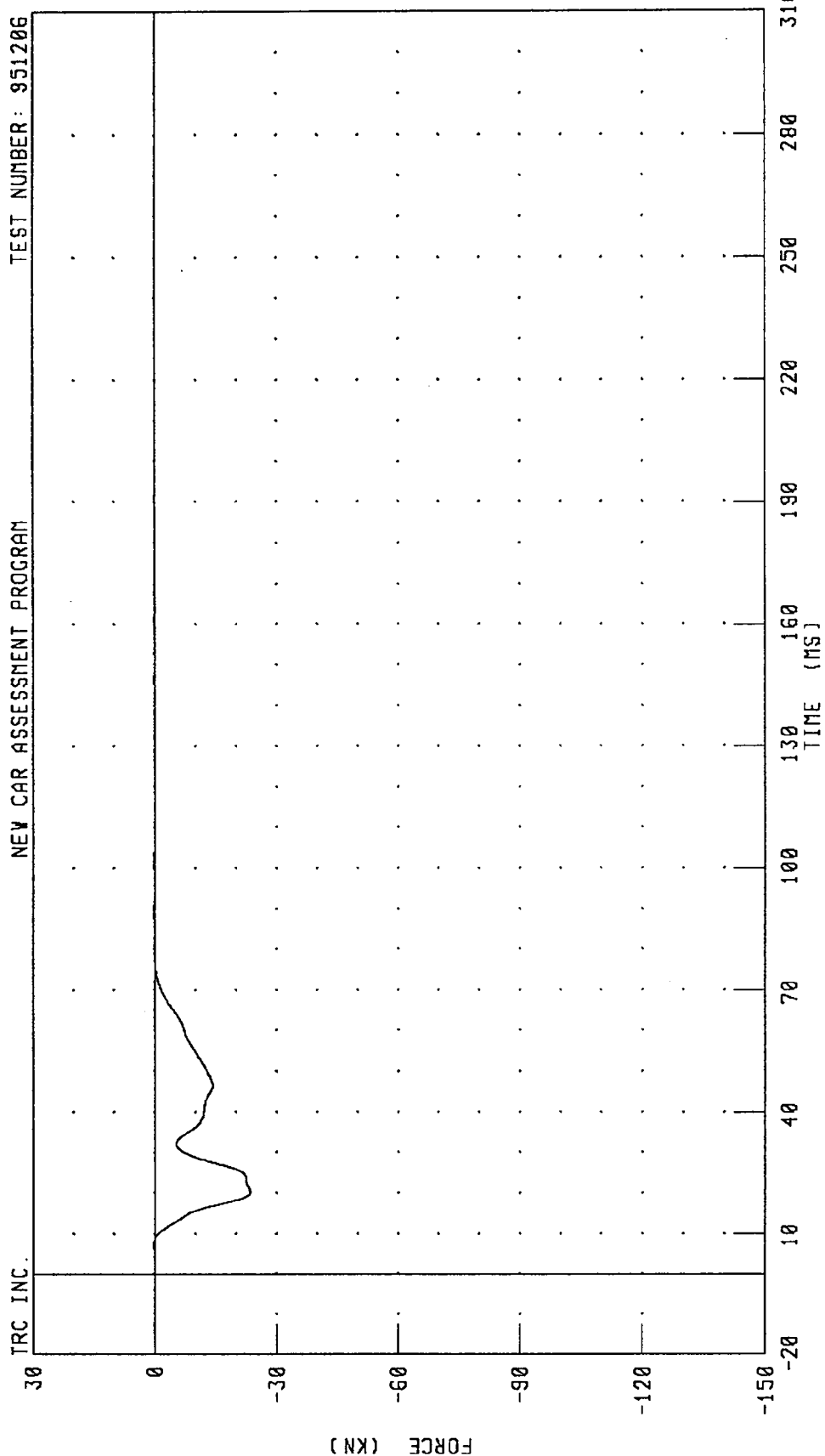


PEAK DATA: 0.18 KN @ 5.36 MS; -20.78 KN @ 37.28 MS

CHANNEL: B07F FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D8 FORCE
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206



PEAK DATA: 0.20 KN @ 102.24 MS; -23.57 KN @ 20.32 MS

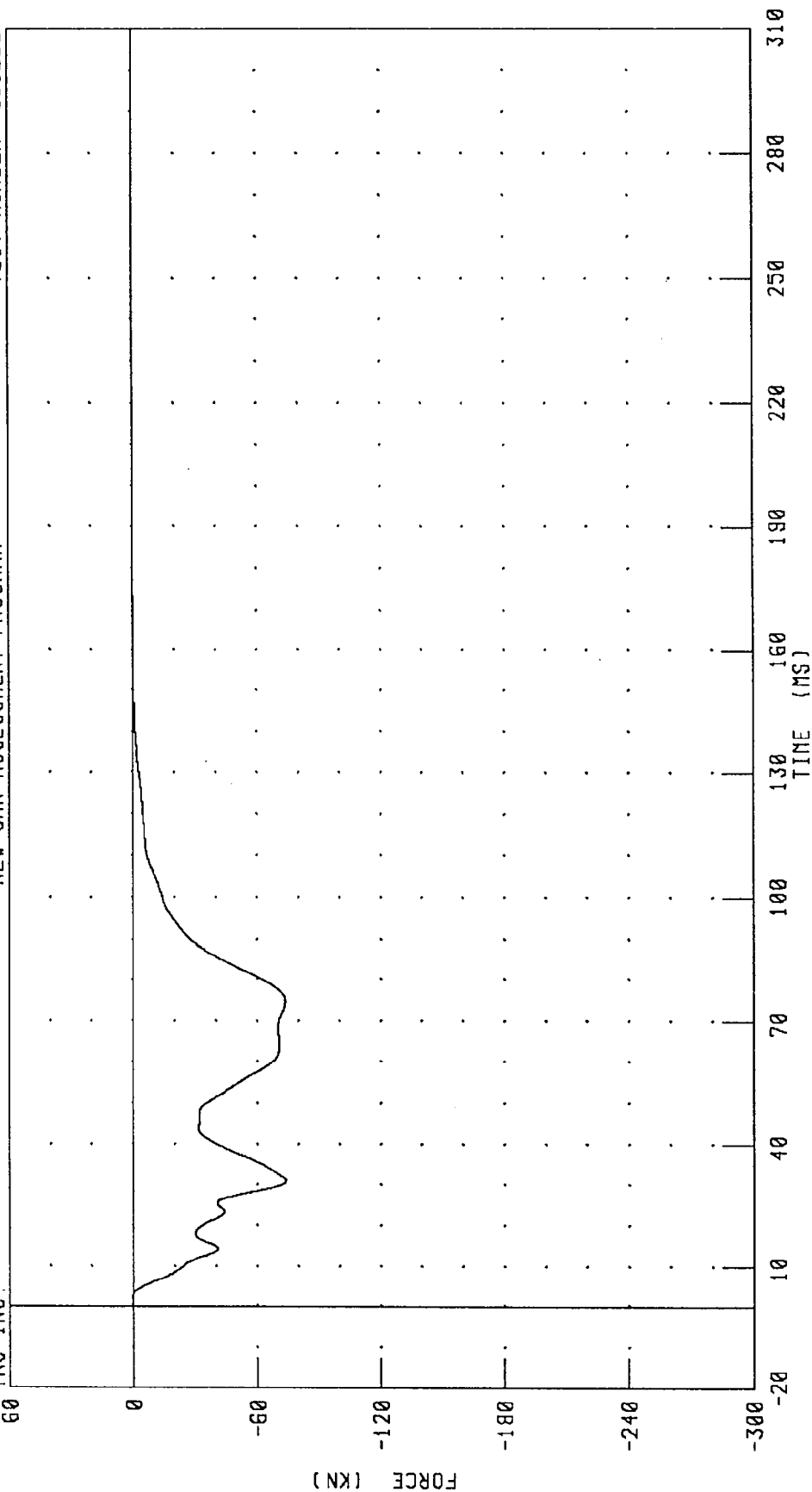
CHANNEL: B08F FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 1 FORCE TOTAL

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.

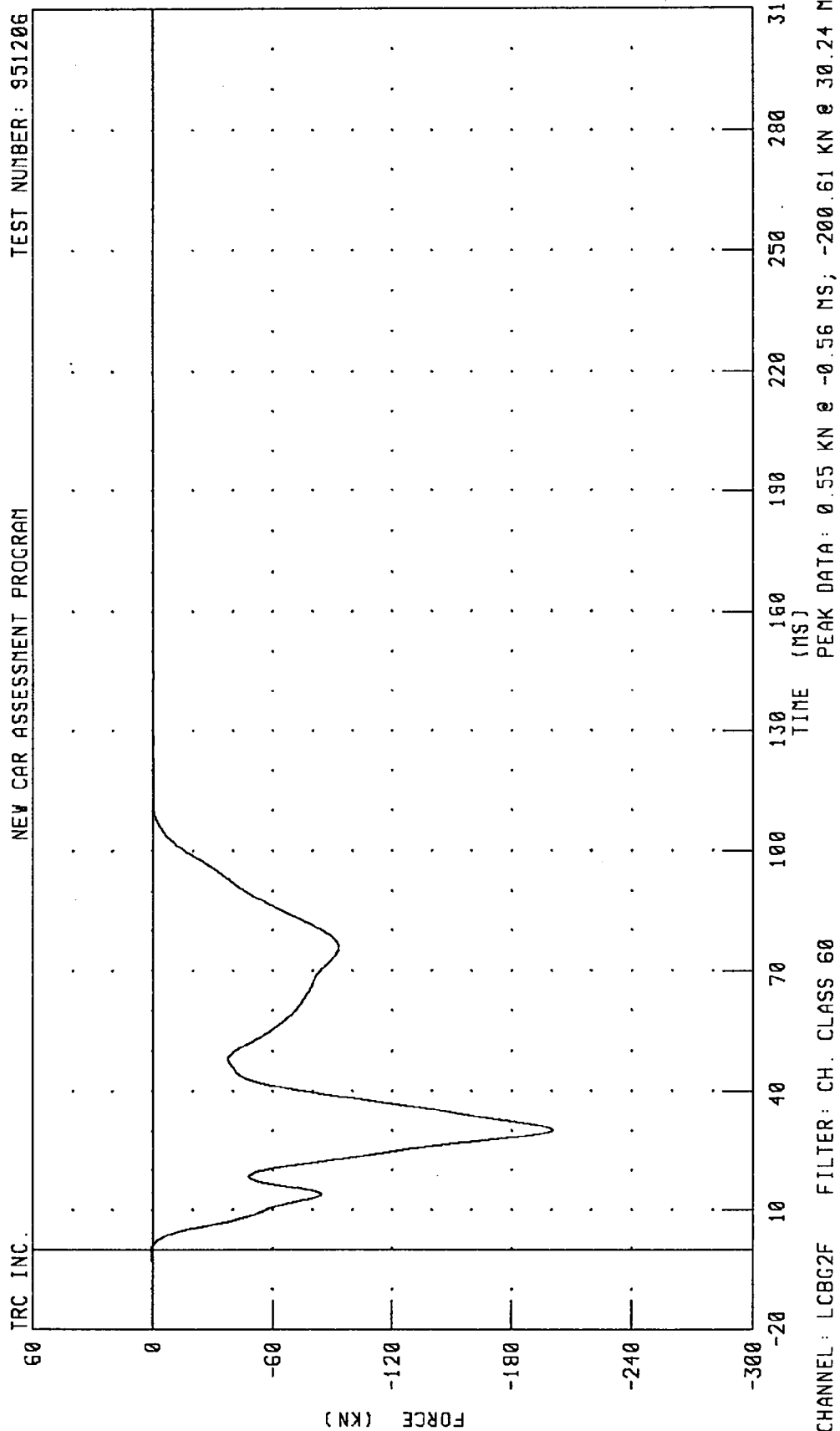


PEAK DATA: 0.59 KN @ 1.52 MS; -73.60 KN @ 31.04 MS

CHANNEL: LCBGIF FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 2 FORCE TOTAL
 NEW CAR ASSESSMENT PROGRAM

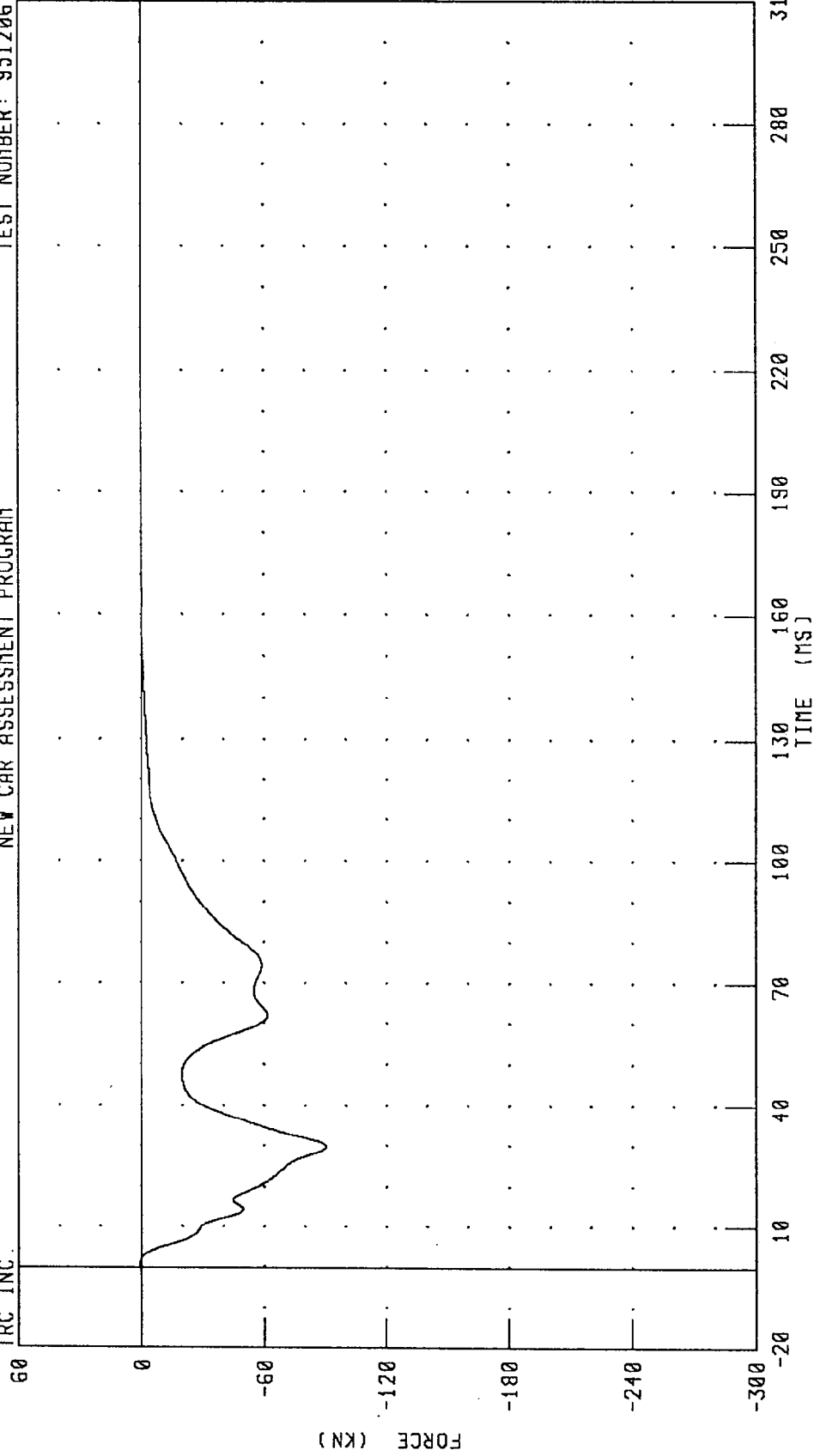
TEST NUMBER: 951206



1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 3 FORCE TOTAL
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



PEAK DATA: 0.77 KN @ 0.88 MS; -90.51 KN @ 29.92 MS

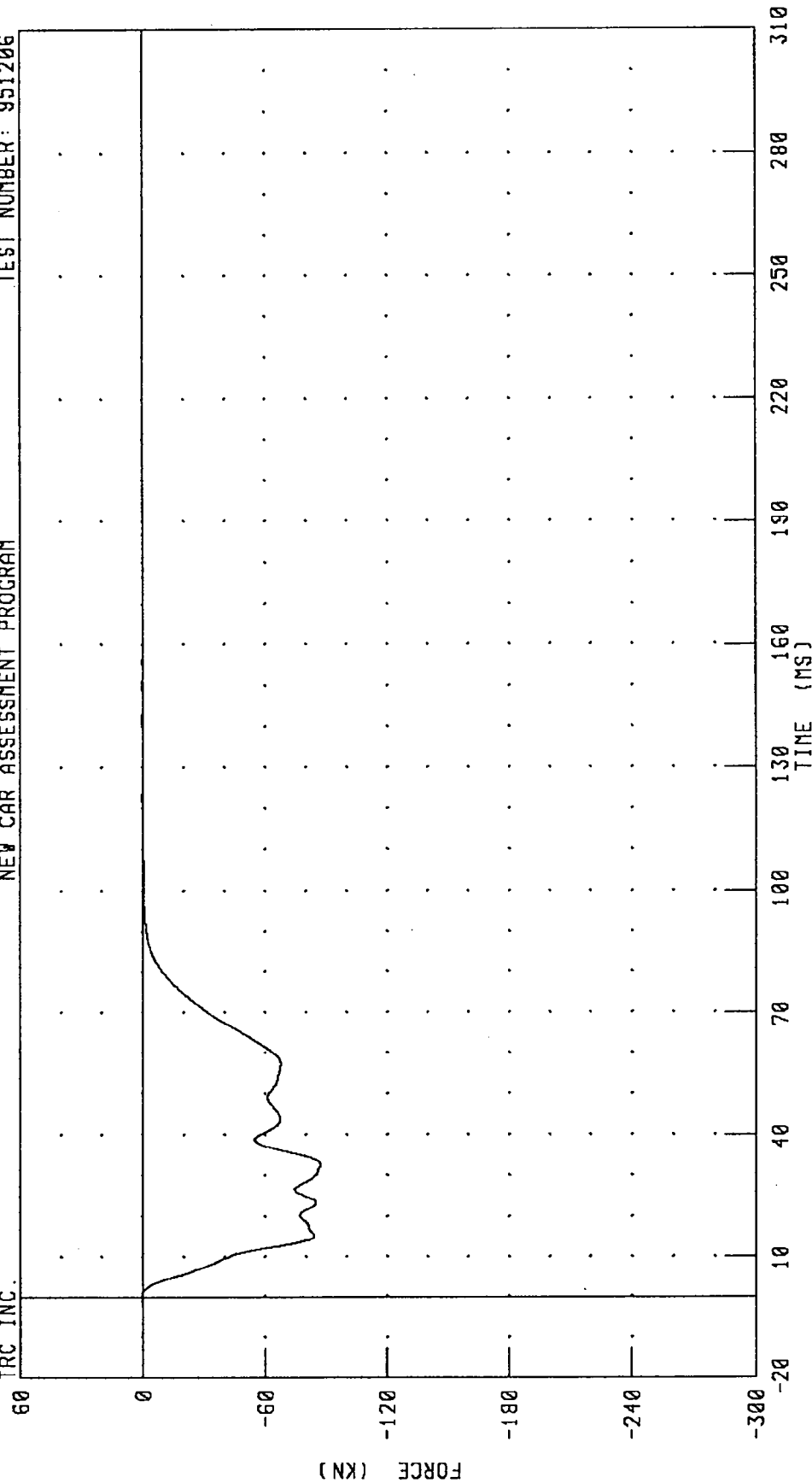
CHANNEL: LCBG3F FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 4 FORCE TOTAL

TEST NUMBER: 951206

NEW CAR ASSESSMENT PROGRAM

TRC INC.



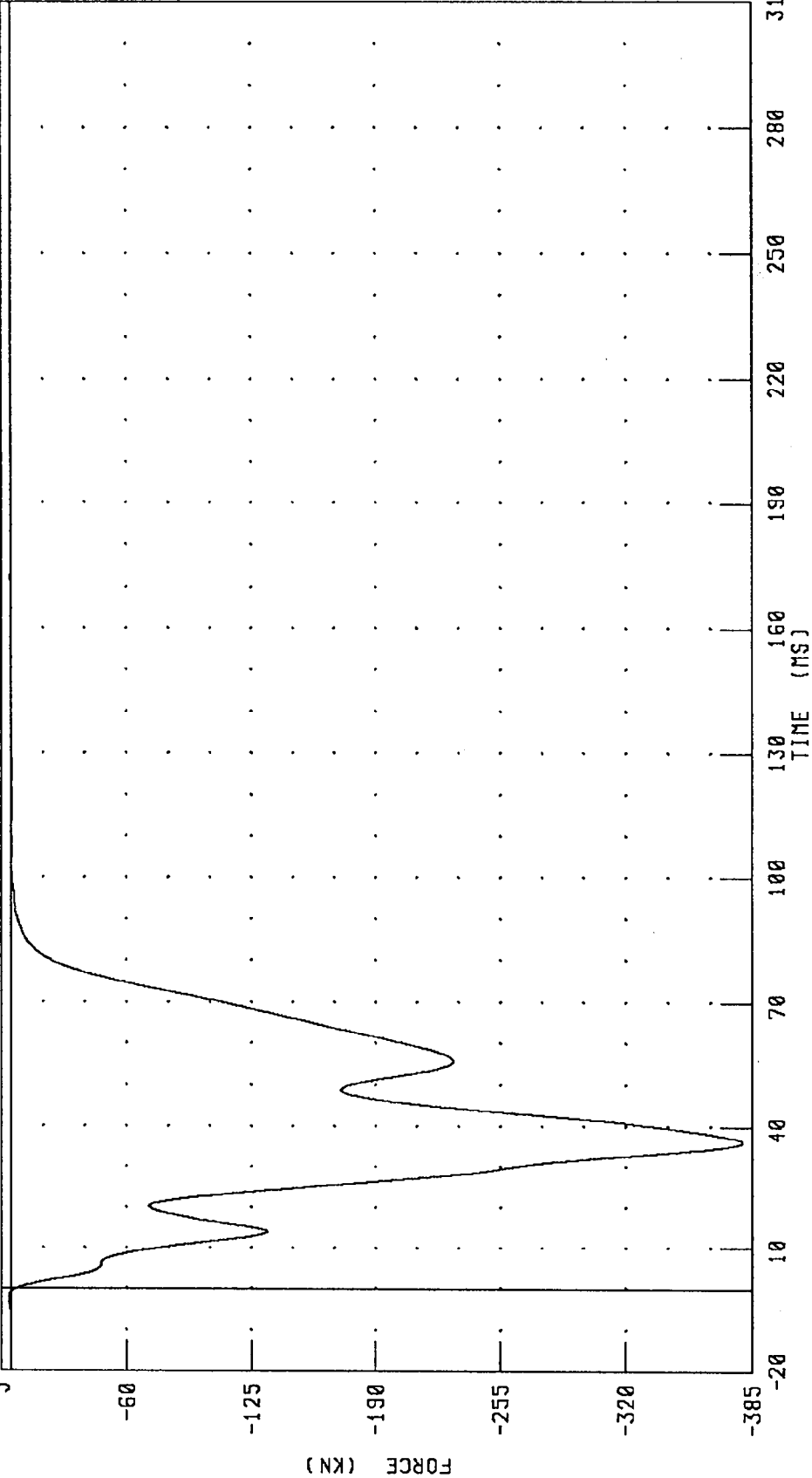
PEAK DATA: 0.47 KN @ -0.32 MS; -86.89 KN @ 32.72 MS

CHANNEL: LCBG4F FILTER: CH. CLASS 60

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 5 FORCE TOTAL
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



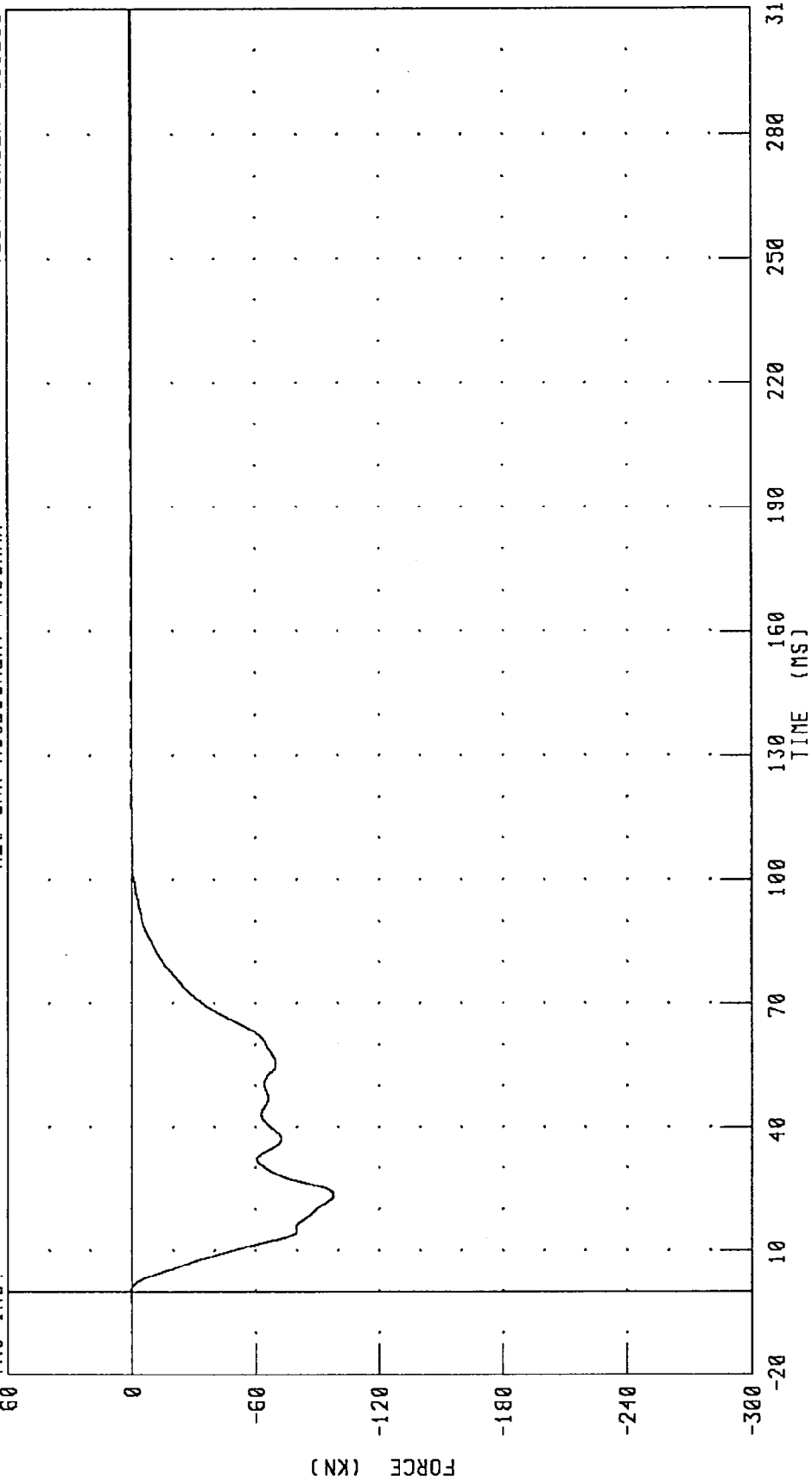
CHANNEL: LCBG5F FILTER: CH. CLASS 60

PEAK DATA: 1.16 KN @ -2.32 MS; -380.06 KN @ 36.16 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 6 FORCE TOTAL
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



CHANNEL: LCBG6F FILTER: CH. CLASS 60

PEAK DATA: 0.48 KN @ -0.56 MS; -97.86 KN @ 23.52 MS

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER

TOTAL LOAD CELL BARRIER FORCE

NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.

18

0

-18

-36

-54

-72

-90

FORCE (KN X 10¹)

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

190

200

210

220

230

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970

980

990

1000

1010

1020

1030

1040

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1060

1070

1080

1090

1100

1110

1120

1130

1140

1150

1160

1170

1180

1190

1200

1210

1220

1230

1240

1250

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2110

2120

2130

2140

2150

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2200

2210

2220

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2250

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2270

2280

2290

2300

2310

2320

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2500

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2520

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2570

2580

2590

2600

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2620

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2650

2660

2670

2680

2690

2700

2710

2720

2730

2740

2750

2760

2770

2780

2790

2800

2810

2820

2830

2840

2850

2860

2870

2880

2890

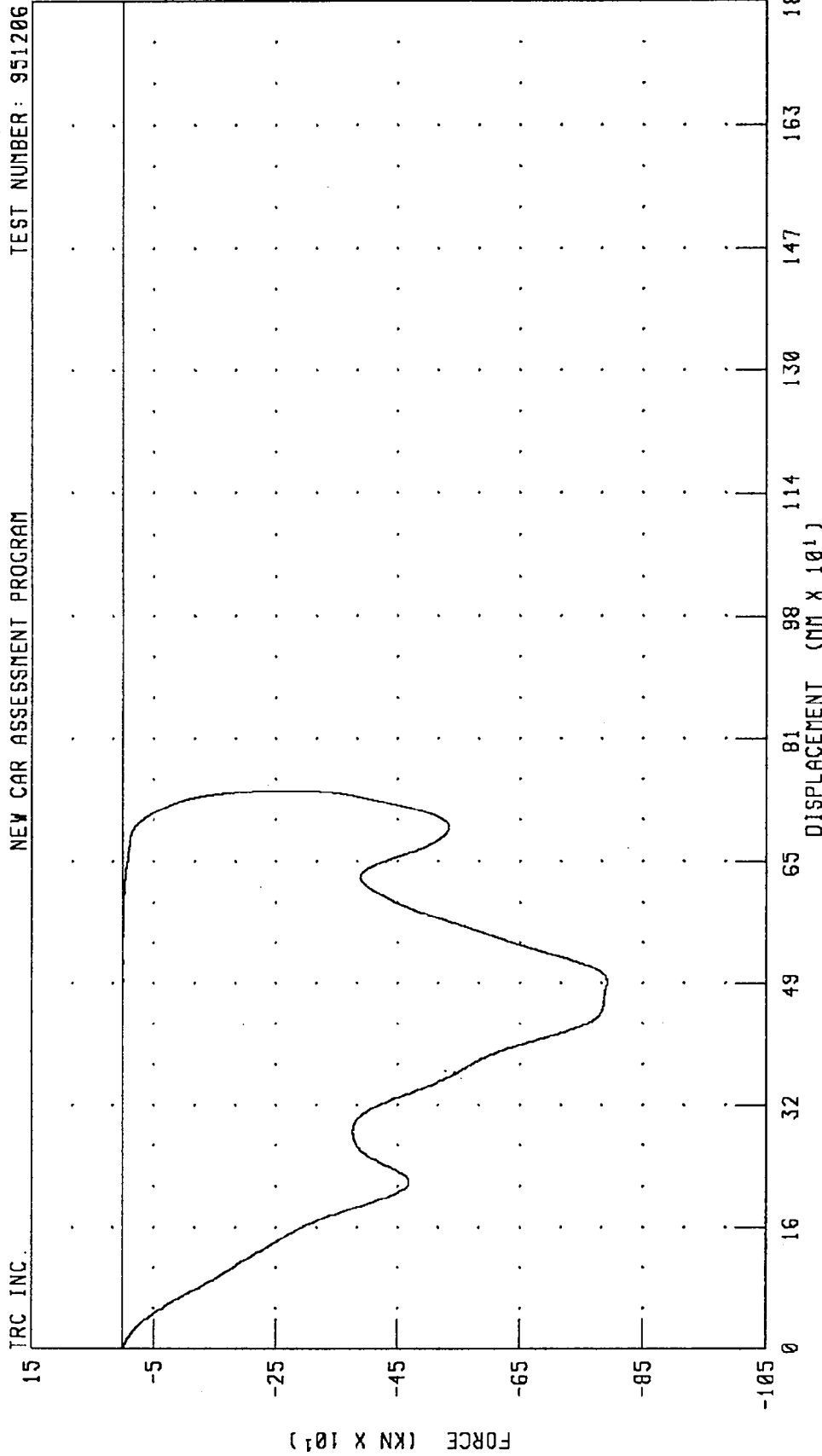
2900

2910

1996 LAND ROVER DISCOVERY INTO FRONTAL LOAD CELL BARRIER
 TOTAL LOAD CELL BARRIER FORCE VS AVERAGE VEHICLE X-AXIS DISPLACEMENT
 NEW CAR ASSESSMENT PROGRAM

TEST NUMBER: 951206

TRC INC.



CHANNEL: QTHXD FILTER: CH. CLASS 180
 LCBGT CH. CLASS 60
 PEAK DATA: 748.97 MM @ 78.24 MS; 0.00 NM @ 0.00 MS
 0.25 KN @ 199.28 MS; -791.69 KN @ 34.16 MS

Appendix C

Dummy Certification Data

Pre-test Certification Data

Driver Dummy S/N: 142

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS

SN 142 HUMANOID

04-DEC-95

TRC INC. TEST NO: 142C30ED1

572E SN142 EXT.DIMENSION CAL30

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. Middel

RUN NUMBER: 011096.1459

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III

05-DEC-95

TRC INC.

TEST NO: 142C30HD2

572E SN142 HEAD DROP CAL 30

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	20.6 DEG. C
RELATIVE HUMIDITY	10 - 70 %	34.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	258.10 G
PEAK LATERAL ACCELERATION	15 G MAX	-5.60 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. Hiddle

RUN NUMBER: 120595.1107;2

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

TRC TEST NUMBER: 142C30HD2

572E SN142 HEAD DROP CAL 30

RUN NUMBER: 011096.1516;2

75

0

-75

-150

-225

-300

-375

ACCELERATION (G)

TIME (MS X 10⁻¹)

30

20

10

0

-10

-100

100

PEAK DATA: 0.40 G @ -0.08 MS, -226.17 G @ 1.84 MS

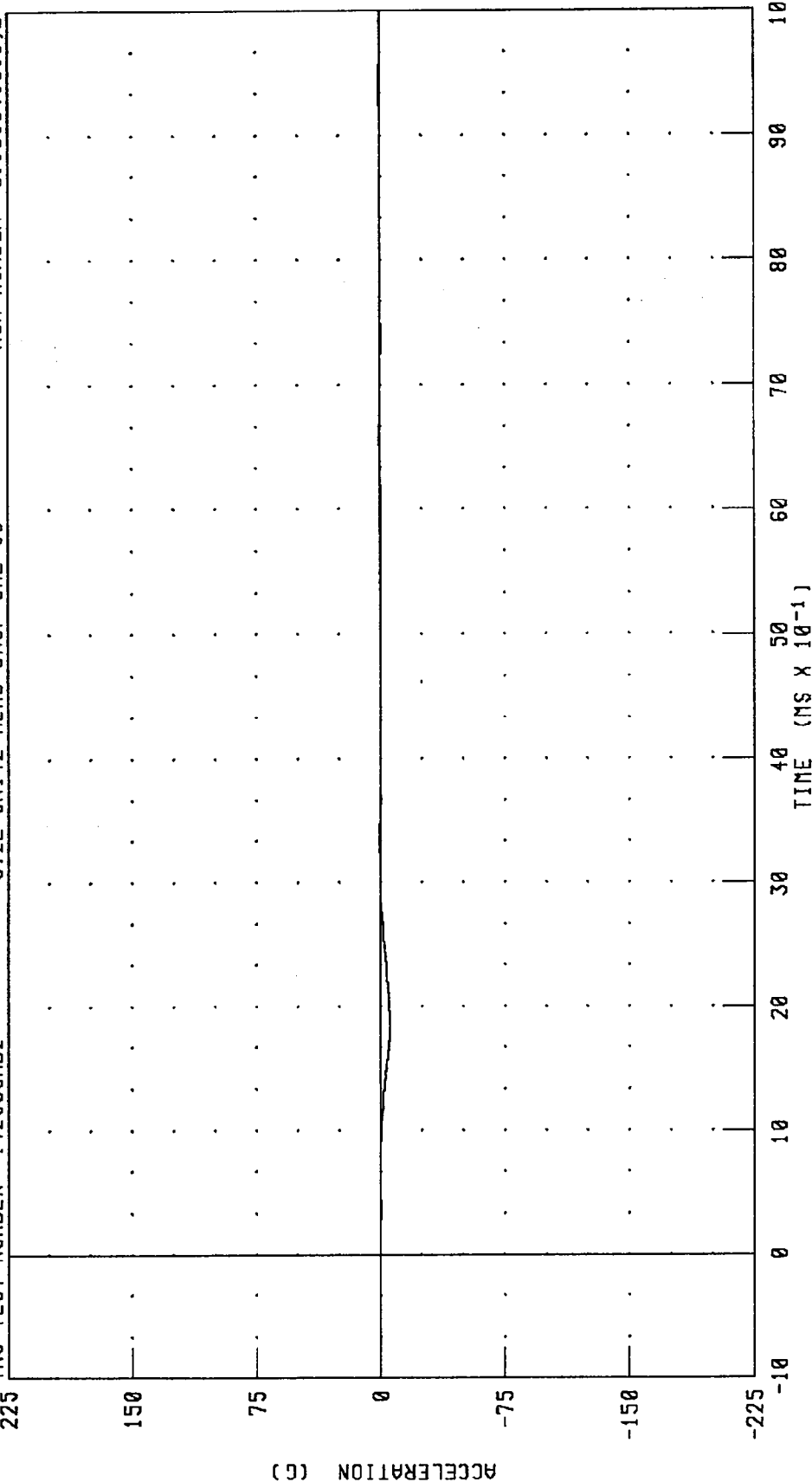
CHANNEL: HEDXG FILTER: CH. CLASS 1000

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

TRC TEST NUMBER: 142C30HD2

572E SN142 HEAD DROP CAL 30

RUN NUMBER: 011096.1516;2



PEAK DATA: 0.74 G @ 3.36 MS; -5.60 G @ 1.84 MS

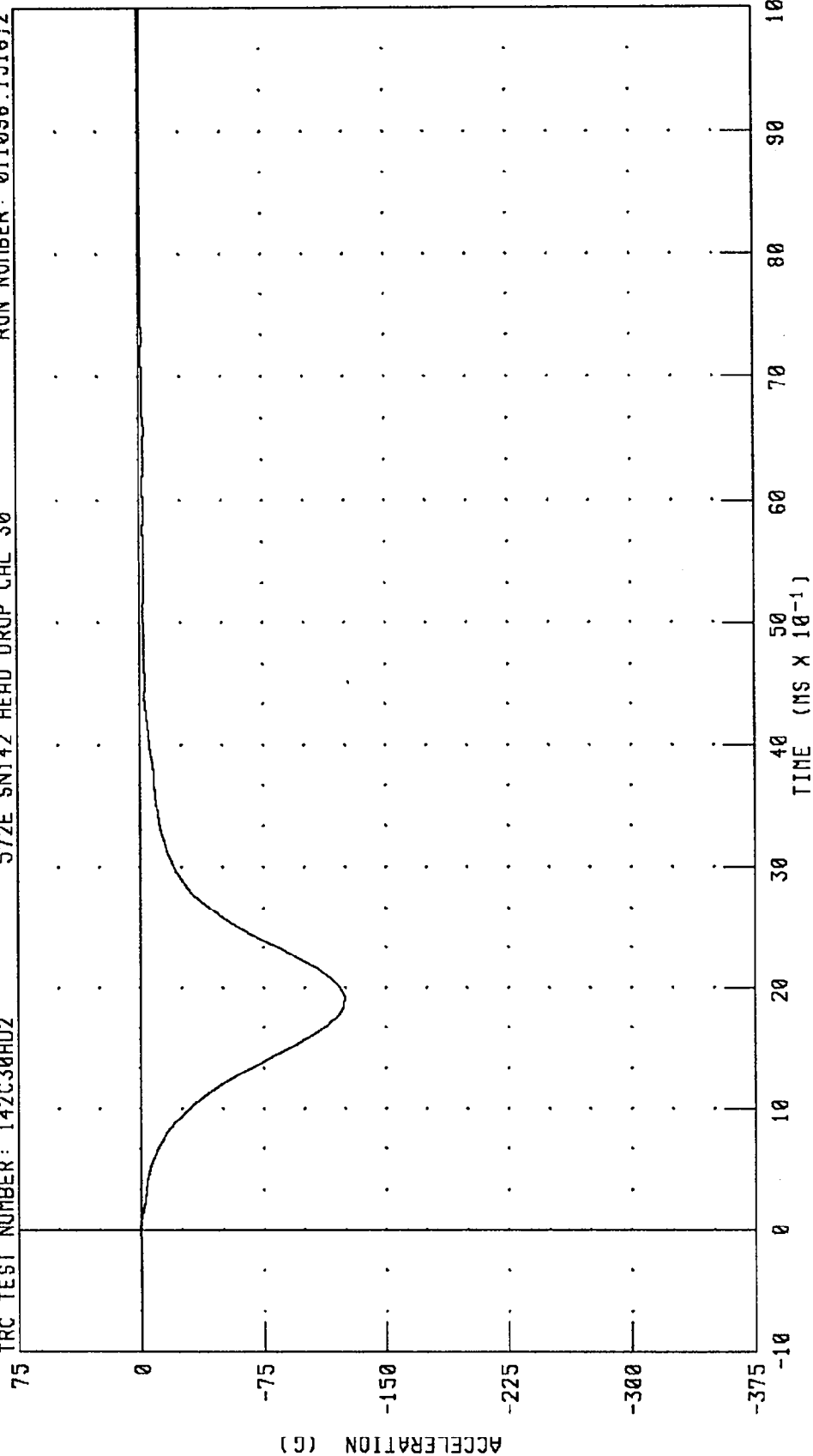
CHANNEL: HEDYC FILTER: CH. CLASS 1000

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

TRC TEST NUMBER: 142C30HD2

572E SN142 HEAD DROP CAL 30

RUN NUMBER: 011096.1516j2



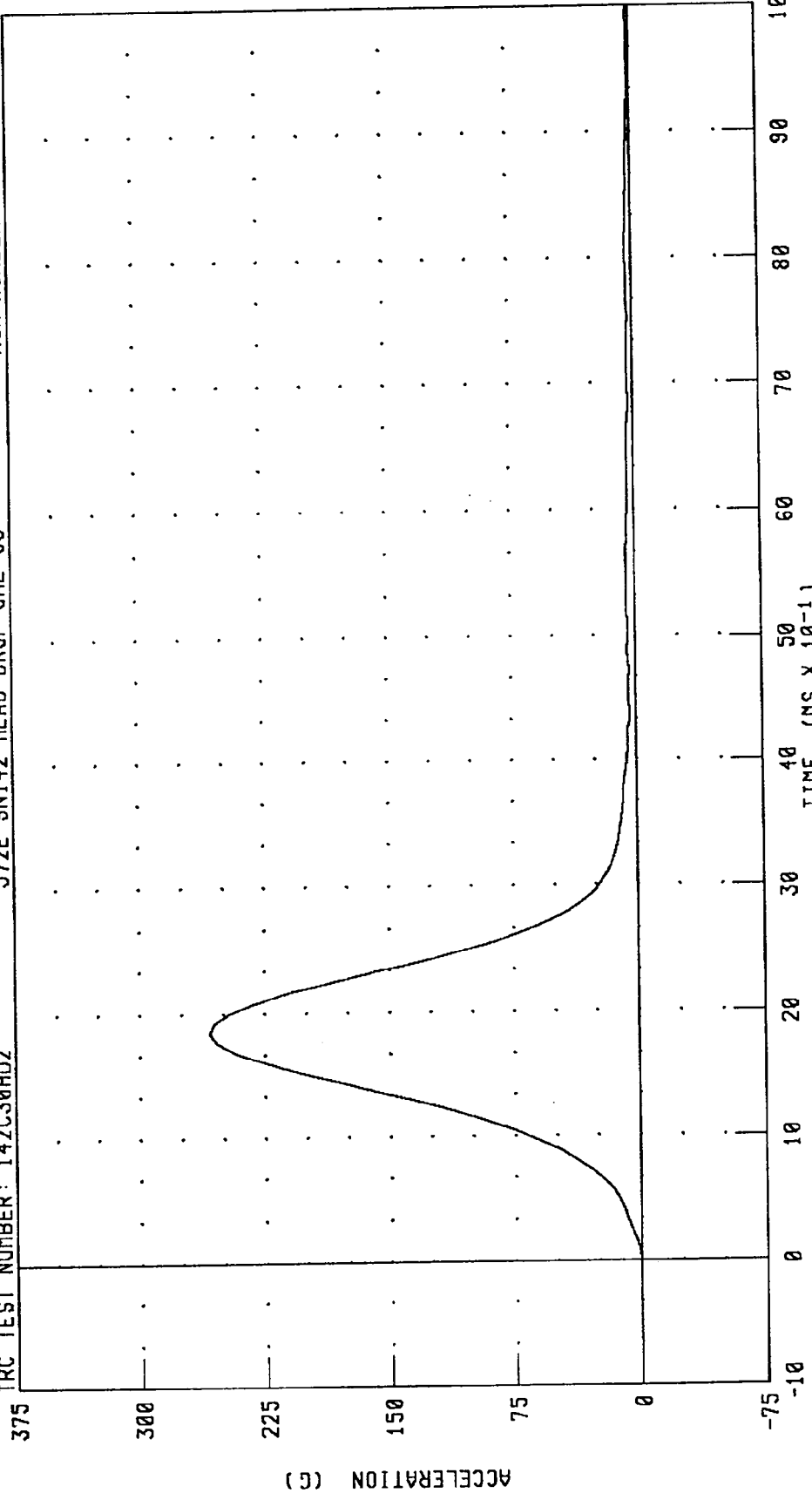
PEAK DATA: 0.27 G @ 0.00 MS; -124.75 G @ 1.92 MS

CHANNEL: HEDZG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
 HEAD RESULTANT ACCELERATION
 572E SN142 HEAD DROP CAL 30

RUN NUMBER: 011096.151612

TRC TEST NUMBER: 142C30HD2



PEAK DATA: 258.10 G @ 1.84 MS; 0.28 G @ -0.24 NS

CHANNEL: HEDRG FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

05-DEC-95

TRC INC. TEST NO: 142C30NF1 572E SN142 NECK FLEXION CAL30

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	20.6 DEG. C
RELATIVE HUMIDITY		10 - 70 %	34.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.12 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.19 G
	20 MS	17.60 - 22.60 G	22.19 G
	30 MS	12.50 - 18.50 G	18.10 G
MAX PENDULUM G		29 G MAX	23.92 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	18.03 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	38.72 MS
D PLANE	MAX	64 - 78 DEG.	74.93 DEG.
ROTATION	TIME	57 - 64 MS	60.16 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	98.87 NM
	TIME	47 - 58 MS	52.32 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	116.72 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	104.00 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chas. H. Hildt

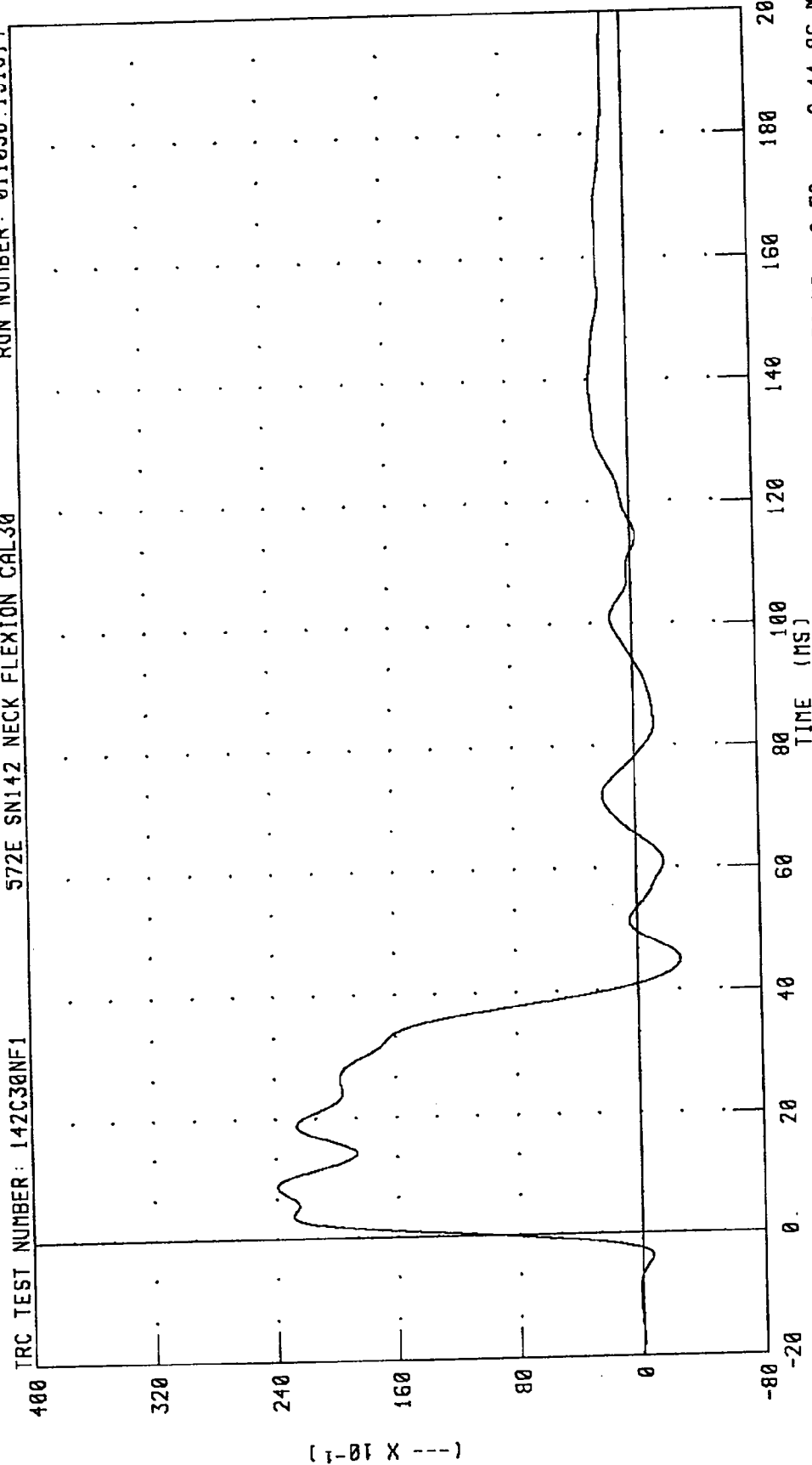
RUN NUMBER: 120595.1317;4

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 PENDULUM DECELERATION

RUN NUMBER: 011096.1516,4

572E SN142 NECK FLEXION CAL30

TRC TEST NUMBER: 142C30NF1



PEAK DATA: 23.92 --- @ 8.72 MS; -2.78 --- @ 44.96 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

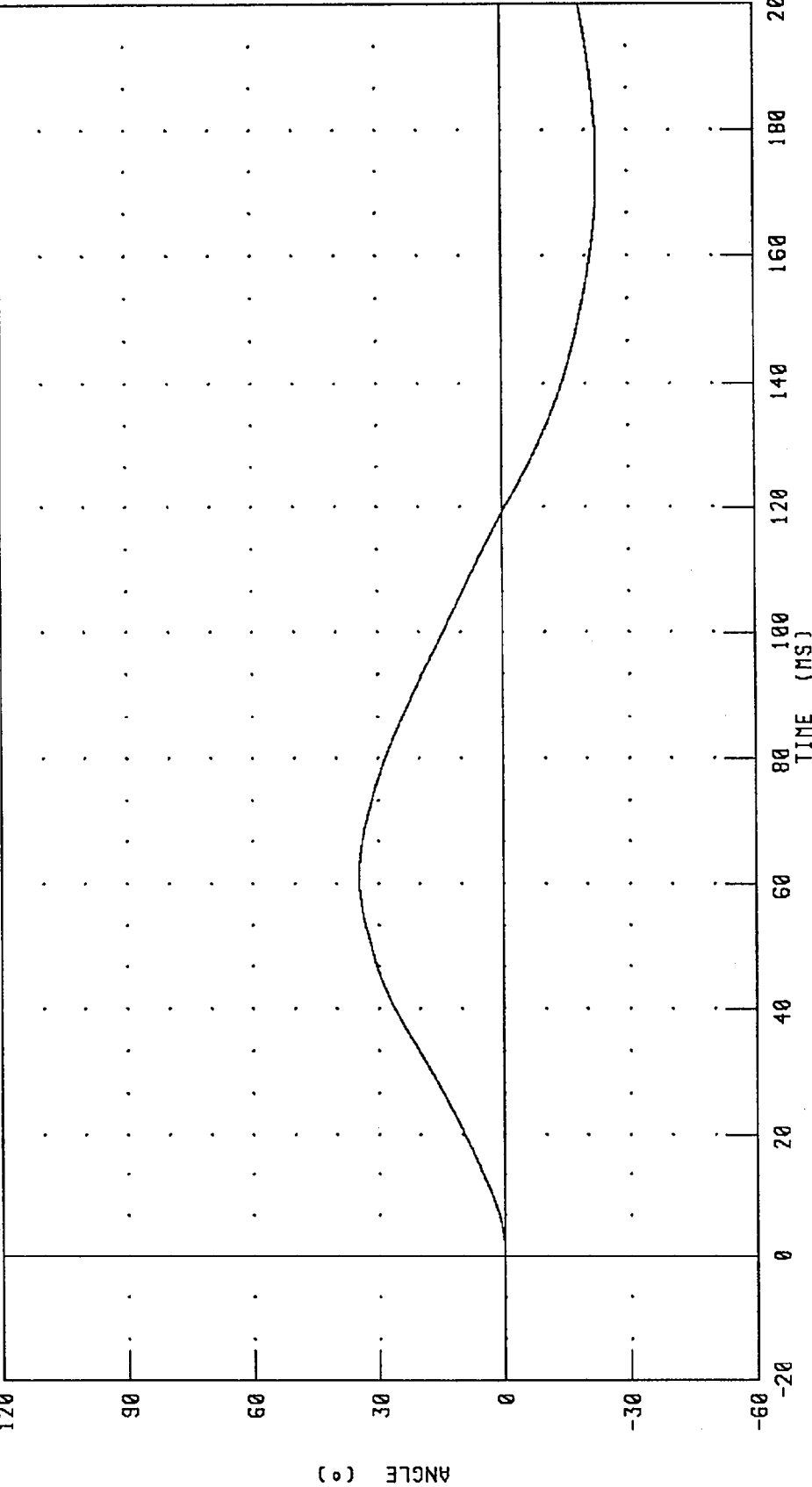
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 142C30NF1

572E SN142 NECK FLEXION CAL30

RUN NUMBER: 011096.1516;4



PEAK DATA: 34.63 ° @ 61.28 MS; -22.60 ° @ 170.64 MS

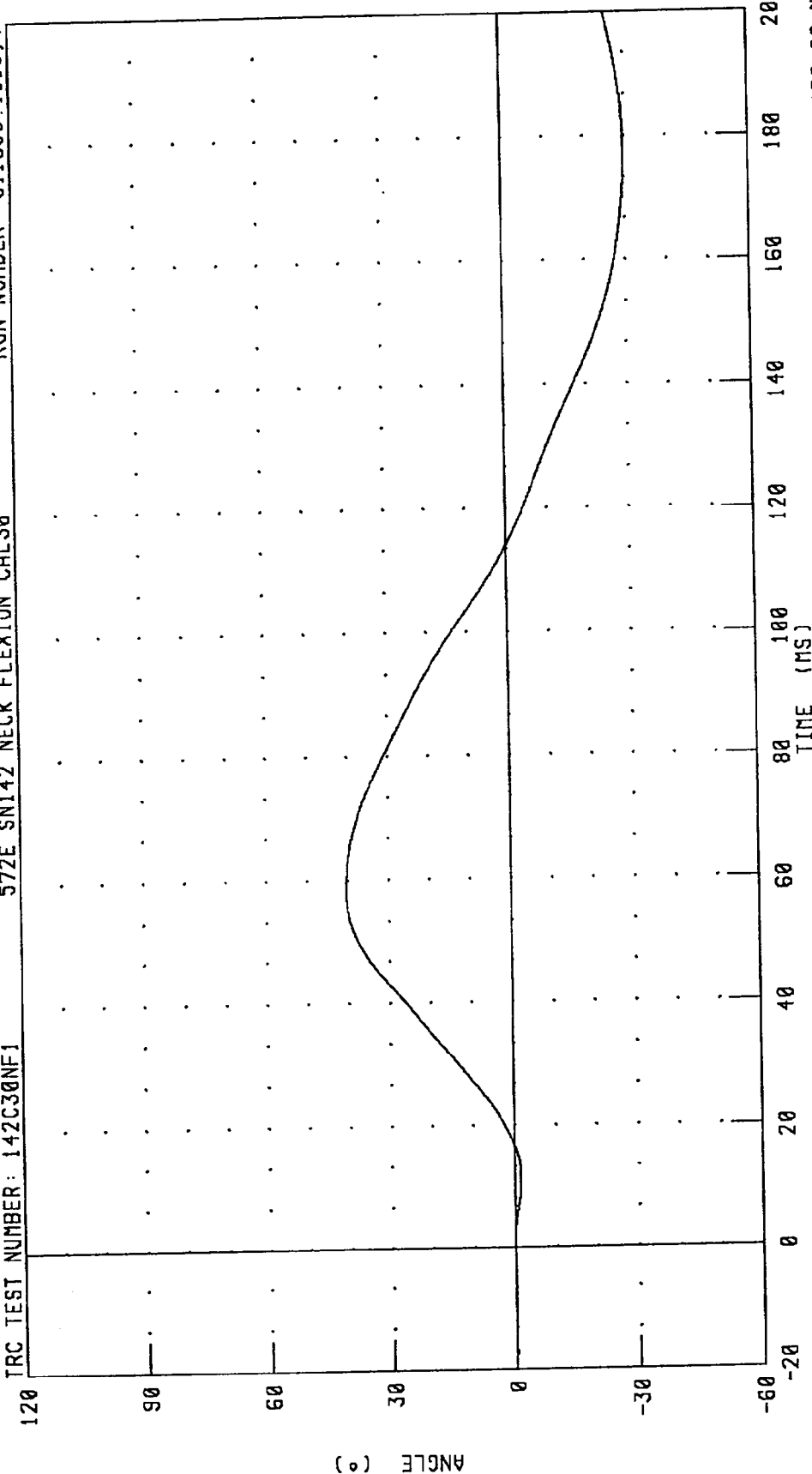
CHANNEL: BETA FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 142C30NF1

572E SN142 NECK FLEXION CAL30

RUN NUMBER: 011096.1516;4



PEAK DATA: 40.39 ° @ 58.72 MS; -29.57 ° @ 178.08 MS

CHANNEL: THETA FILTER: CH. CLASS 60

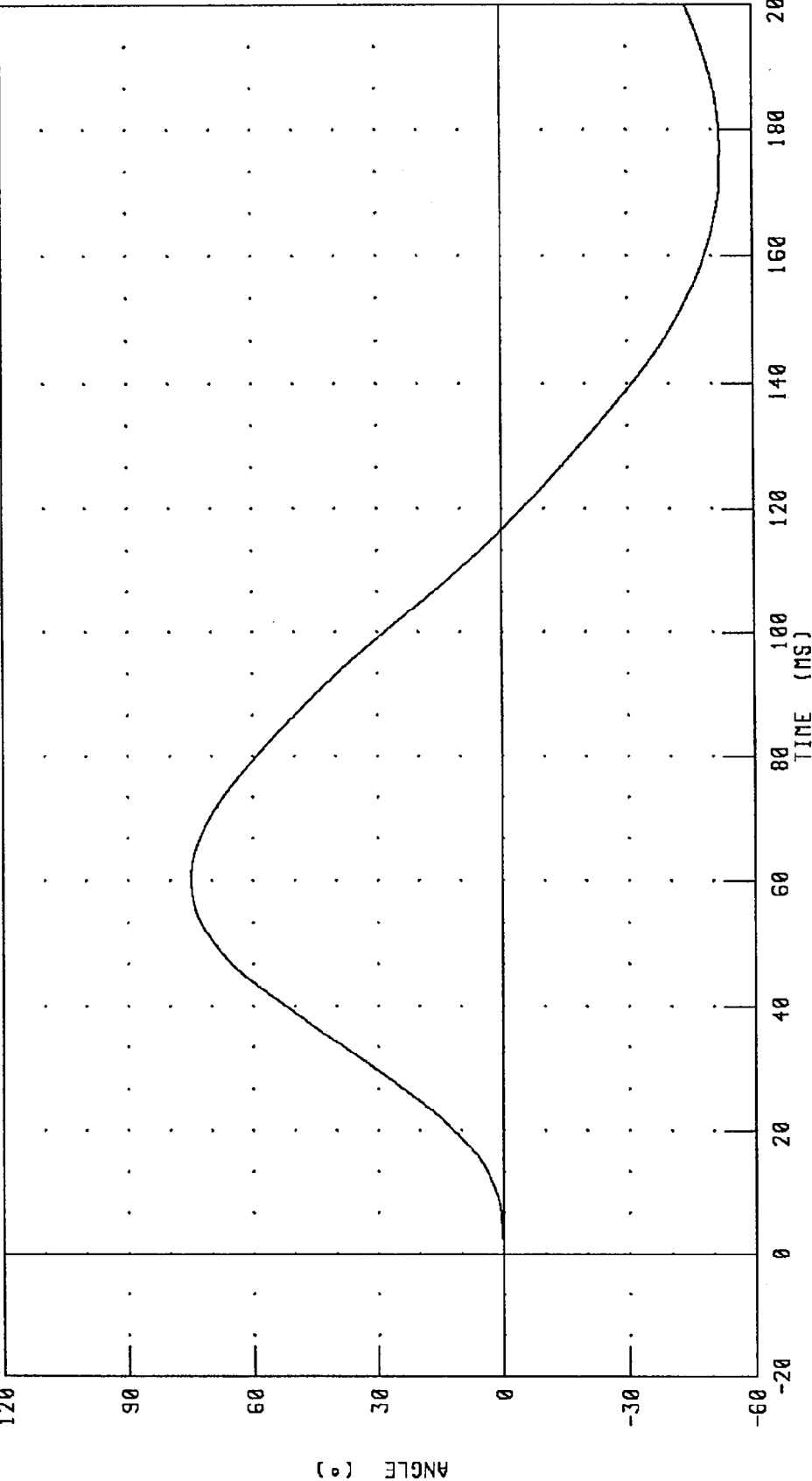
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 142C30NF1

572E SN142 NECK FLEXION CAL30

RUN NUMBER: 011096.1516;4



PEAK DATA: 74.93 ° @ 60.16 MS; -52.17 ° @ 177.44 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

ANGLE (°)

TIME (MS)

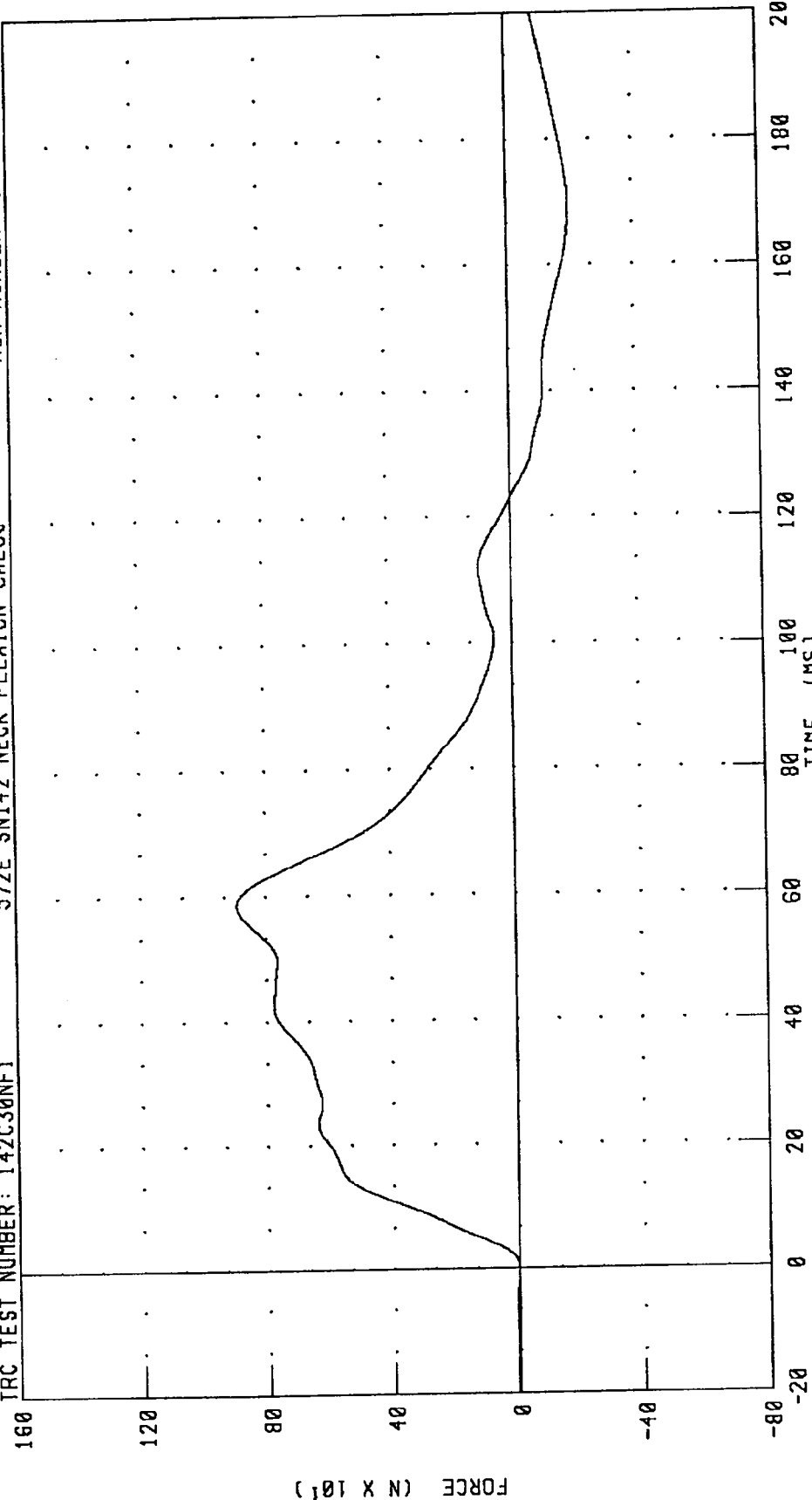
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

RUN NUMBER: 011096.1516;4

572E SN142 NECK FLEXION CAL30

TRC TEST NUMBER: 142C30NF1



PEAK DATA: 893.48 N @ 58.56 MS; -197.18 N @ 169.76 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

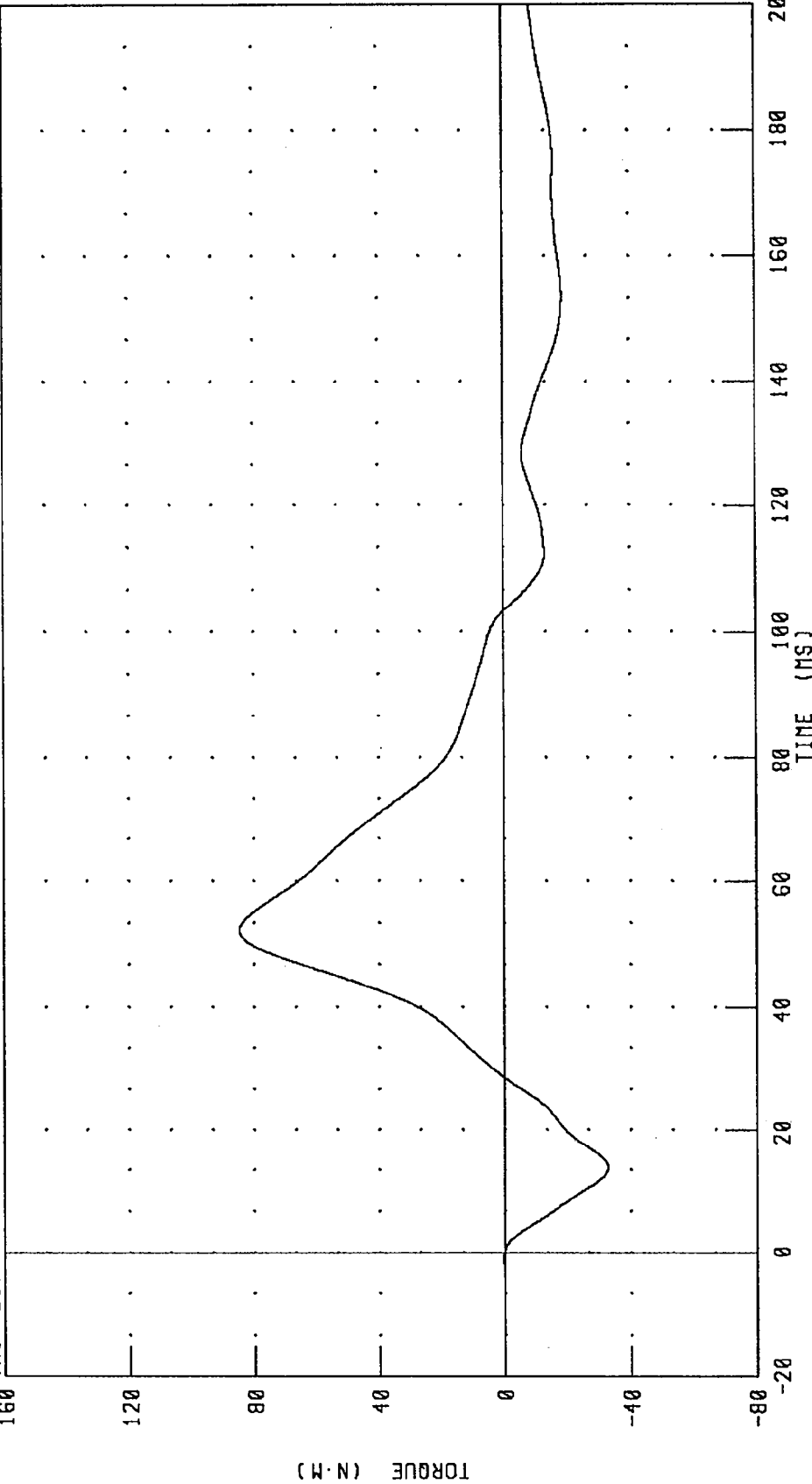
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 142C30NF1

572E SN142 NECK FLEXION CAL30

RUN NUMBER: 011096.1516;4



PEAK DATA: 84.89 N.M @ 52.08 MS; -32.72 N.M @ 13.76 MS

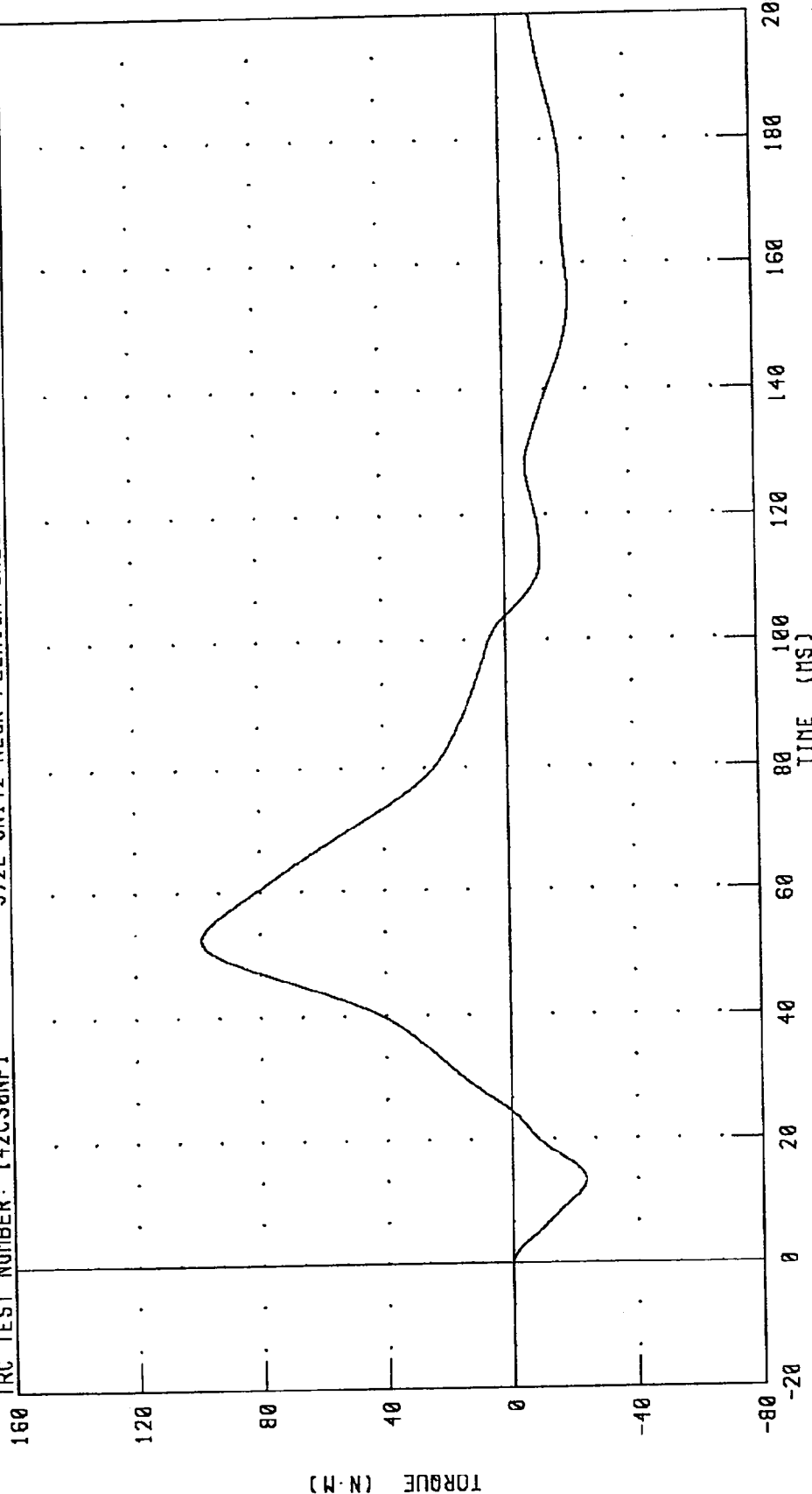
CHANNEL: NEKYM FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 142C30NF1

572E SN142 NECK FLEXION CAL30

RUN NUMBER: 011096.1516;4



PEAK DATA: 98.87 N·M @ 52.32 MS; -23.51 N·M @ 13.36 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

06-DEC-95

TRC INC. TEST NO: 142C3ONE1 572E SN142 NECK EXT. CAL30

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.19 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	18.27 G
	20 MS	14.00 - 19.00 G	17.09 G
	30 MS	11.00 - 16.00 G	14.23 G
MAX PENDULUM G		22 G MAX	19.08 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	14.20 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	43.36 MS
D PLANE	MAX	81 - 106 DEG.	97.44 DEG.
ROTATION	TIME	72 - 82 MS	75.52 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-76.22 NM
	TIME	65 - 79 MS	70.80 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	152.72 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	137.28 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. H. Hilt

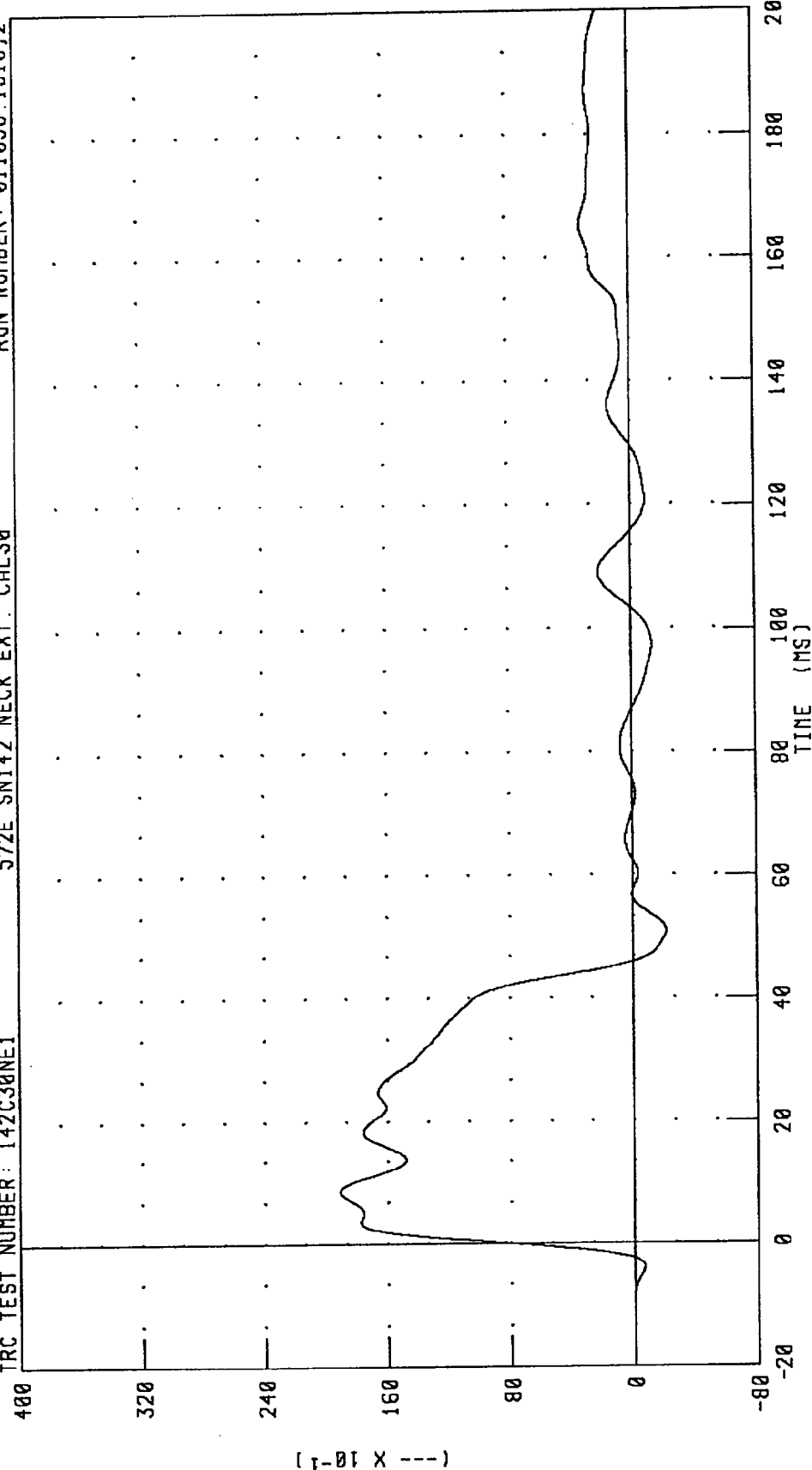
RUN NUMBER: 120695.0850;2

PART 572-E HYBRID III NECK EXTENSION CALIBRATION PENDULUM DECELERATION

TRC TEST NUMBER: 142C30NE1

572E SN142 NECK EXT. CAL30

RUN NUMBER: 011096.1516;2



CHANNEL: PENXG FILTER: CH. CLASS 60

PEAK DATA: 19.09 --- @ 8.48 MS; -2.13 --- @ 50.96 MS

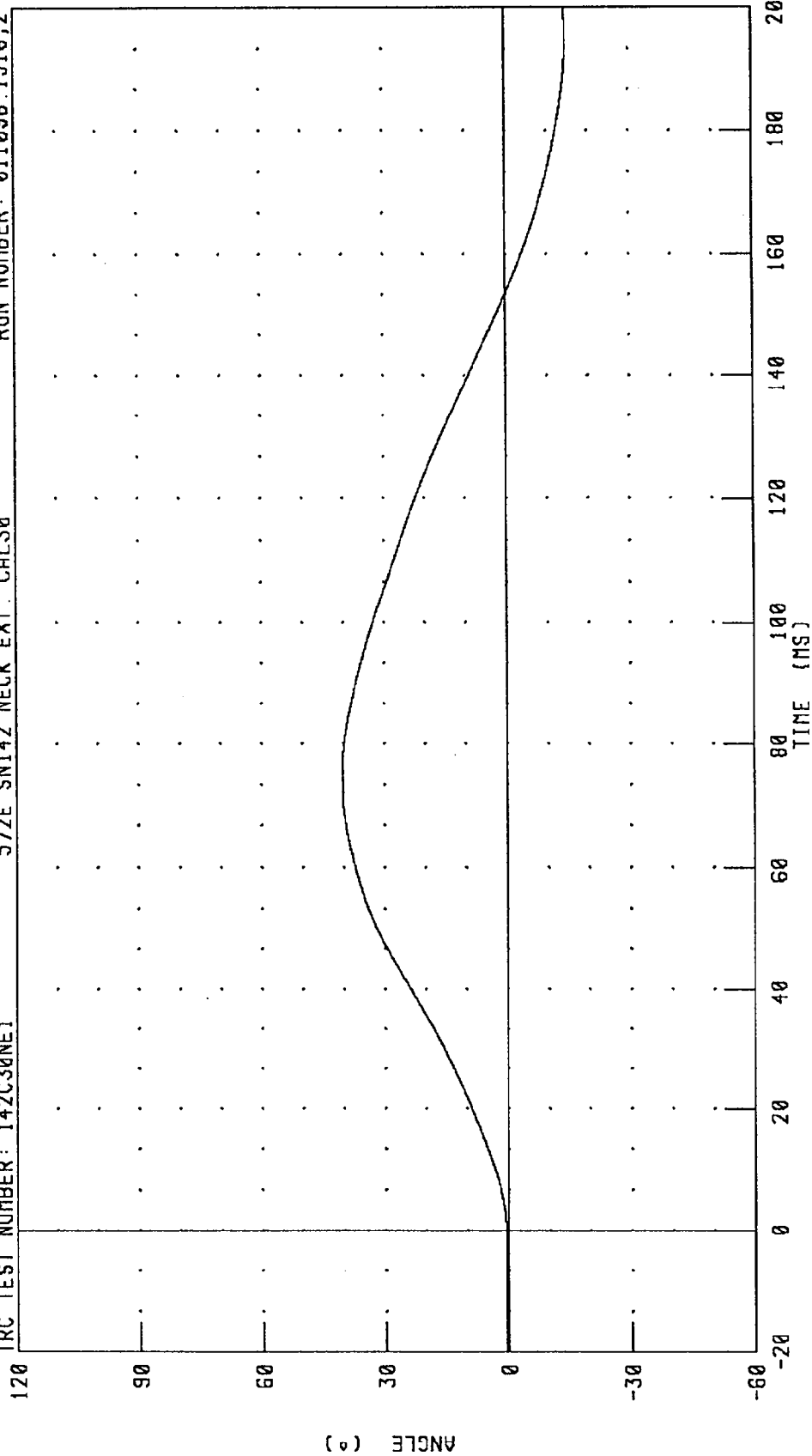
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 142C30NE1

572E SN142 NECK EXT. CAL30

RUN NUMBER: 011096.1516;2

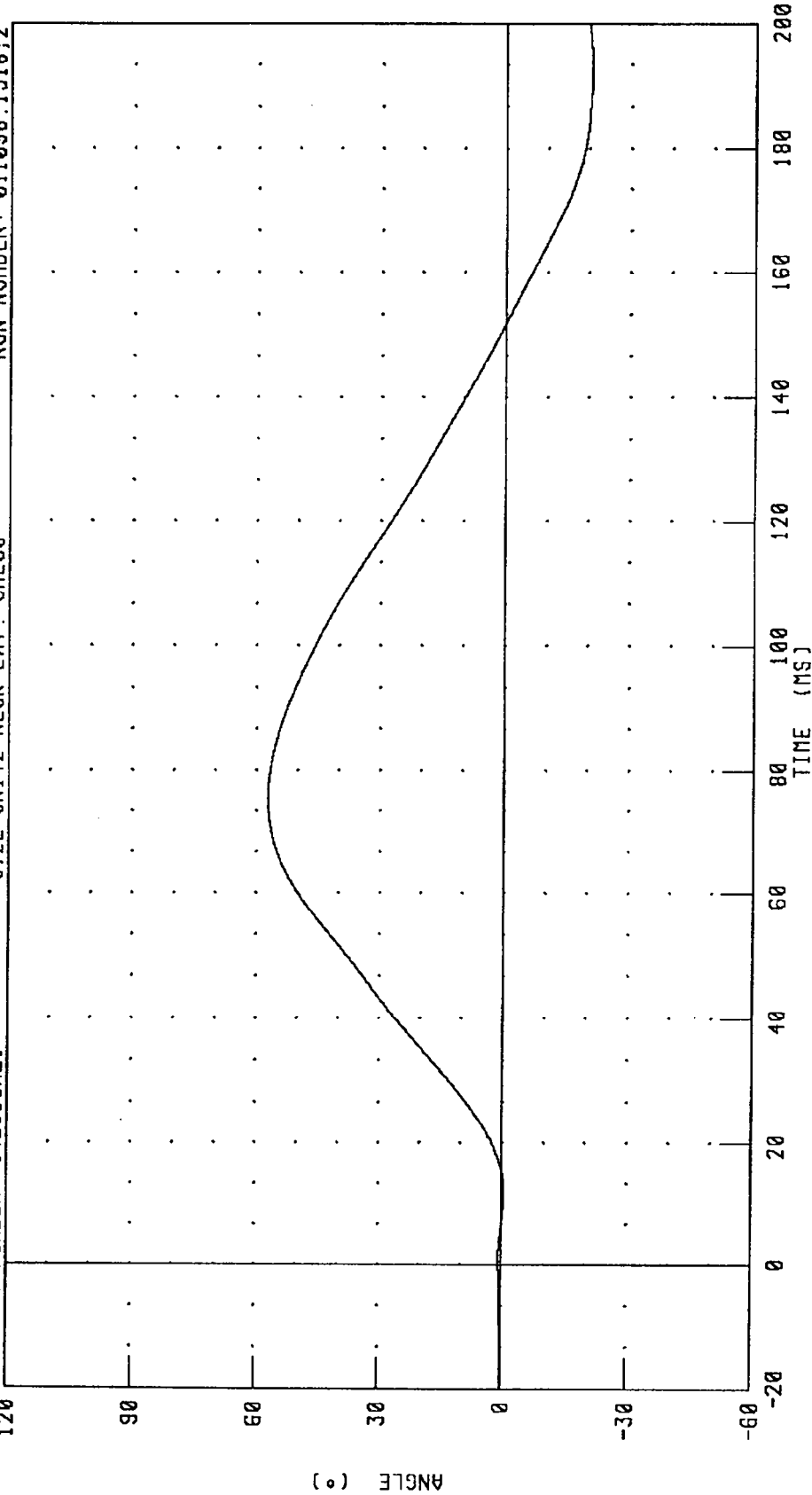


CHANNEL: BETA FILTER: CH. CLASS 60

PEAK DATA: 40.19 ° @ 72.48 MS; -14.60 ° @ 195.68 MS

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

TRC TEST NUMBER: 142C30NE1 572E SN142 NECK EXT. CAL30 RUN NUMBER: 011096.1516;2



CHANNEL: THETA FILTER: CH. CLASS 60
 PEAK DATA: 57.26 ° @ 75.52 MS; -20.61 ° @ 192.56 MS

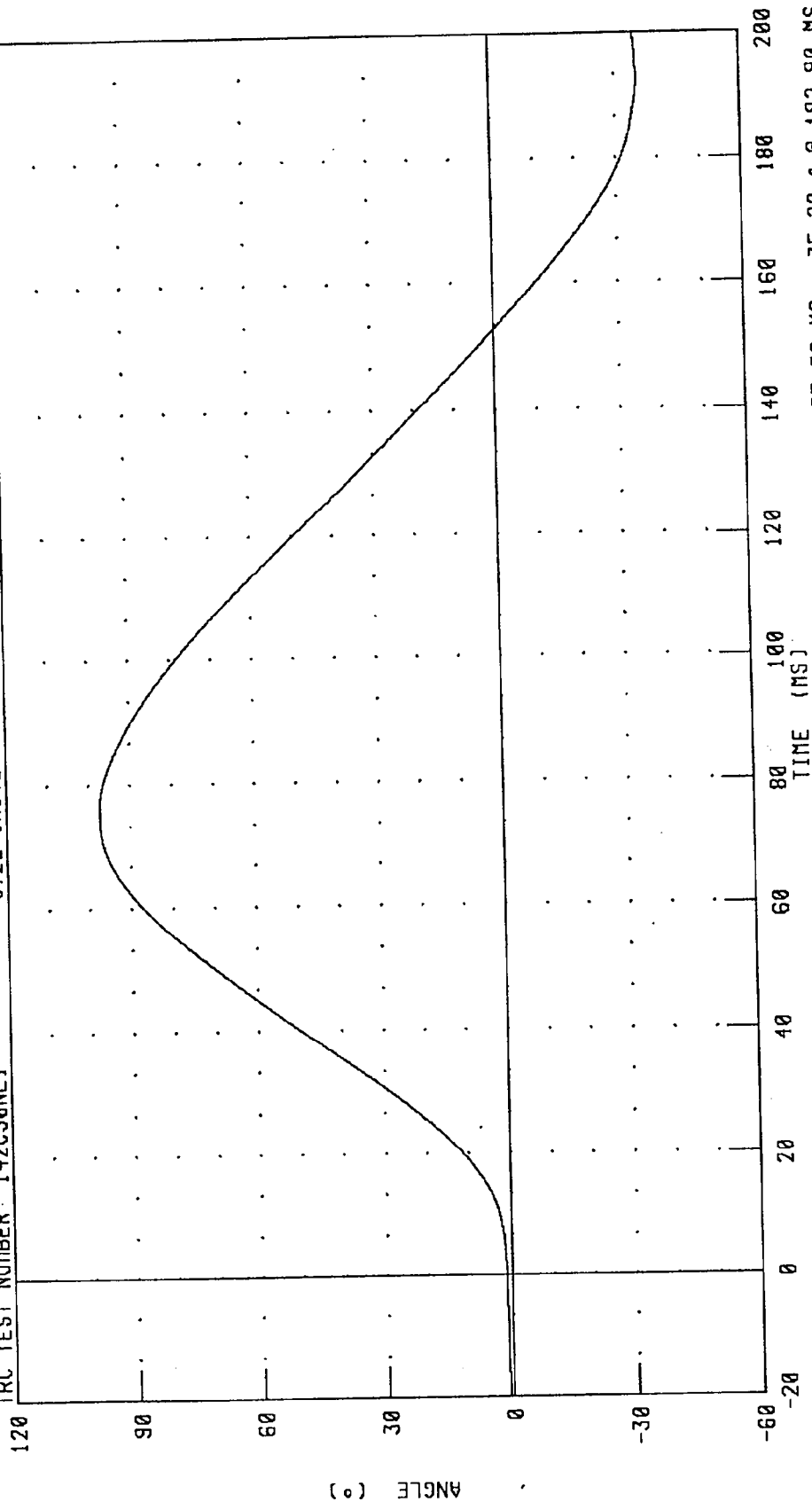
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

RUN NUMBER: 011096.1516;2

572E SN142 NECK EXT. CAL30

TRC TEST NUMBER: 142C30NE1

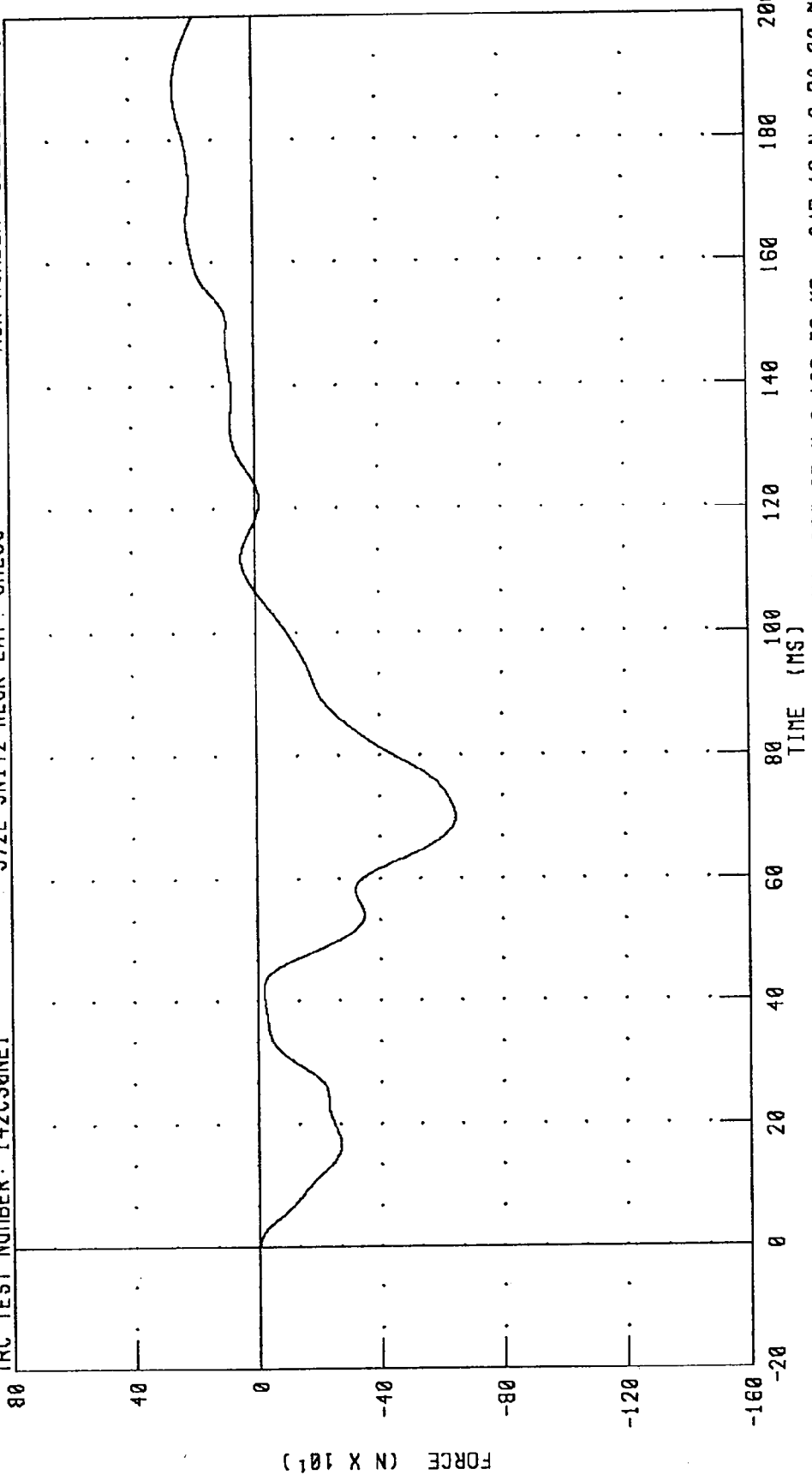


PEAK DATA: 97.44 ° @ 75.52 MS; -35.20 ° @ 192.80 MS

CHANNEL: TOTAL FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 142C30NE1 572E SN142 NECK EXT. CAL30 RUN NUMBER: 011096.1516;2



PEAK DATA: 258.27 N @ 188.32 MS; -647.16 N @ 70.00 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

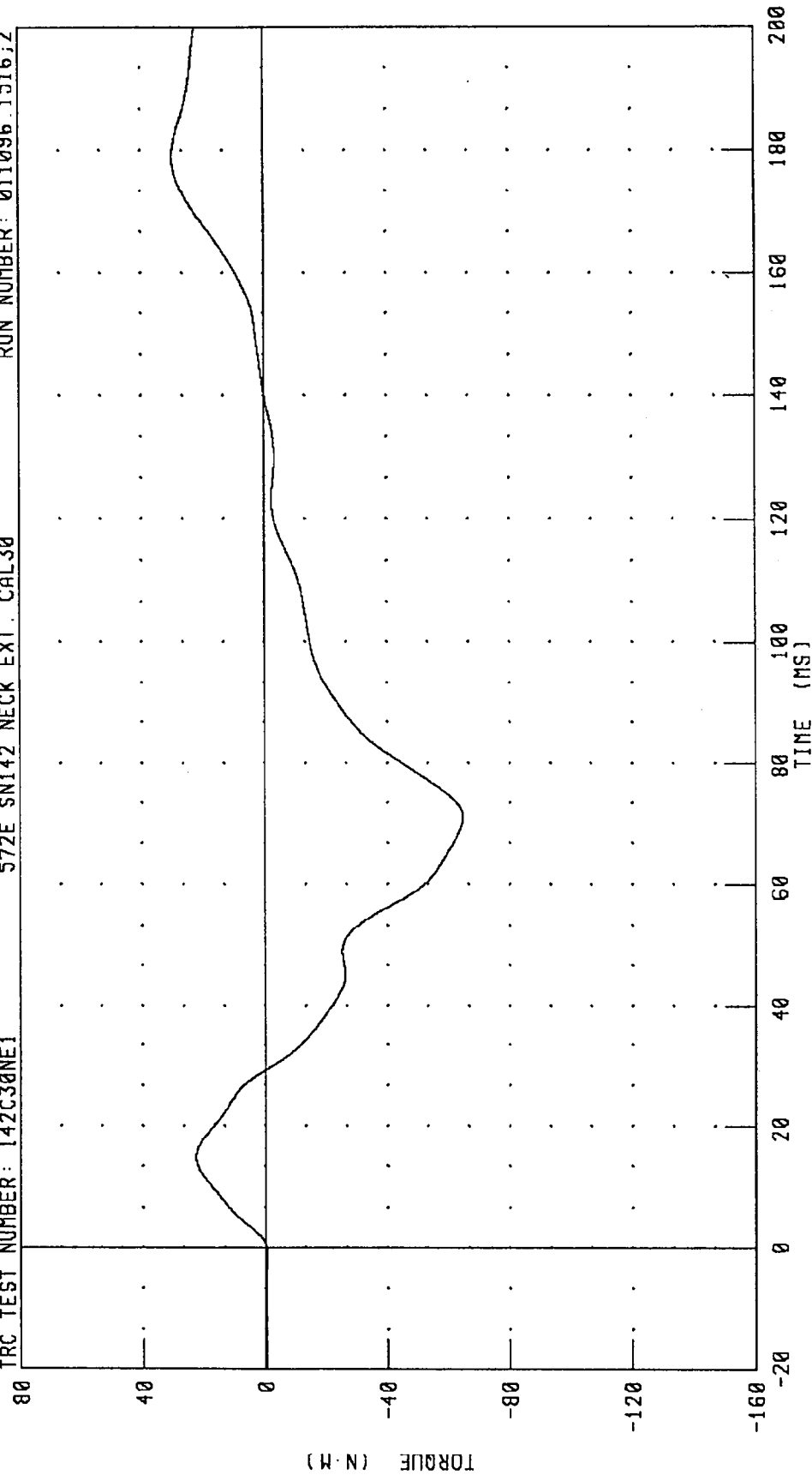
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 142C30NE1

572E SN142 NECK EXT. CAL30

RUN NUMBER: 011096.1516;2



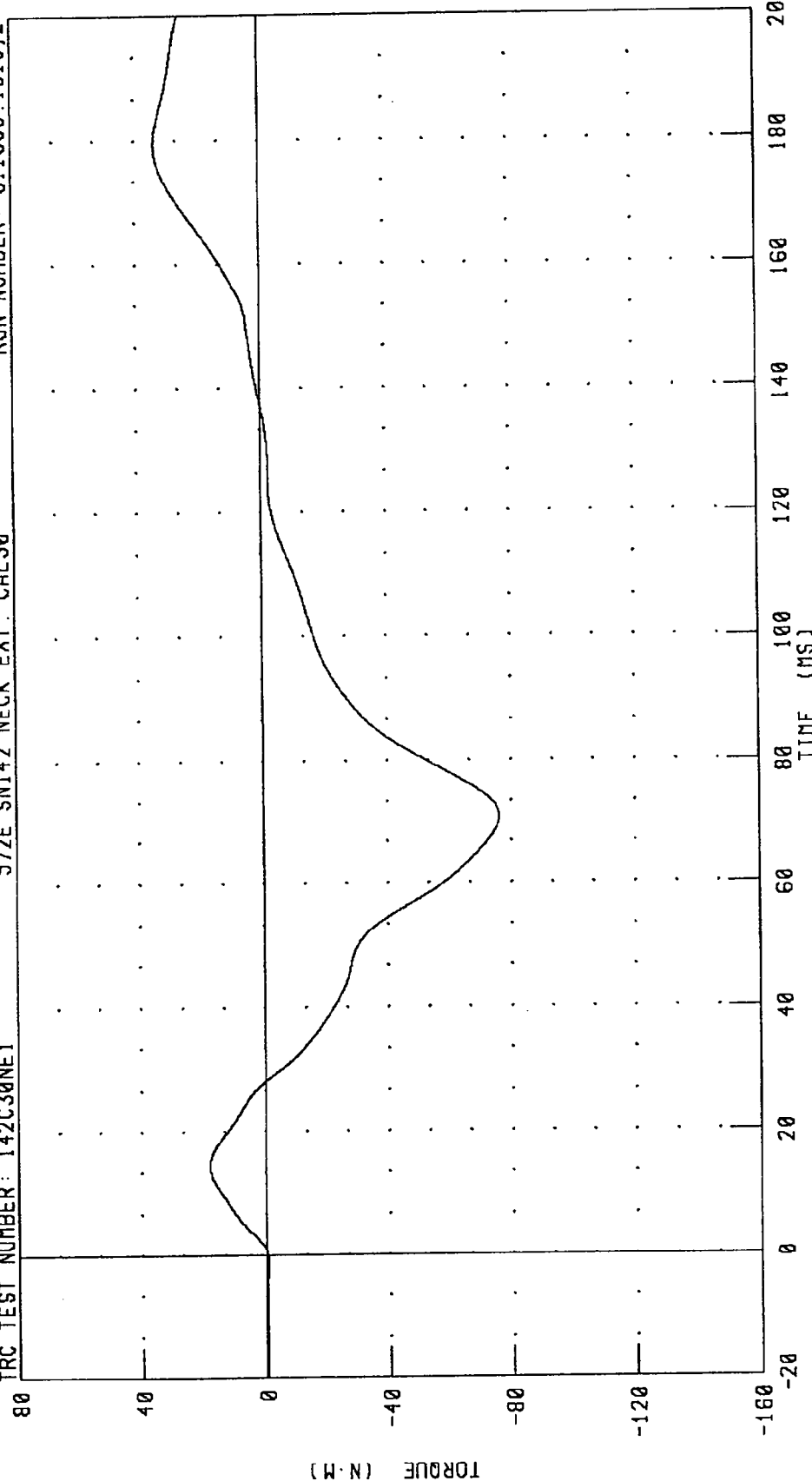
PEAK DATA: 29.76 N·M @ 178.96 MS; -64.76 N·M @ 70.96 MS

CHANNEL: NEKYM FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 142C30NE1 RUN NUMBER: 011096.1516;2

572E SN142 NECK EXT. CAL30



PEAK DATA: 33.69 N·M @ 179.36 MS; -76.22 N·M @ 70.80 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III

06-DEC-95

TRC INC.

TEST NO: 142C30TH1

572E SN142 H.S.THORAX CAL30

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.62 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	71.6 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5698. N
INTERNAL HYSTERESIS	69% - 85%	72.2%

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas M. Holt

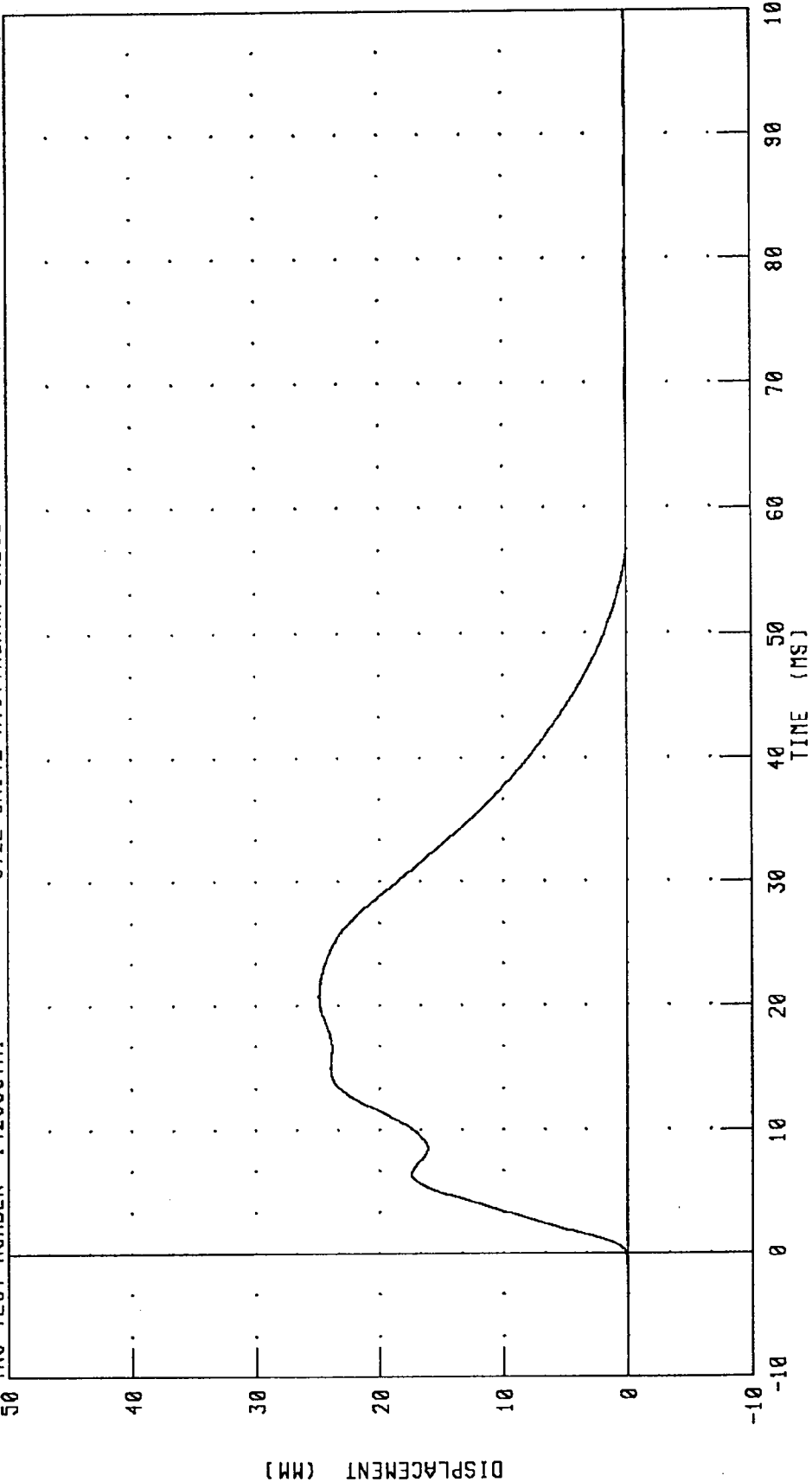
RUN NUMBER: 011096.1320;8

PART 572-E HYBRID III THORAX CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 142C30TH1

572E SN142 H.S. THORAX CAL30

RUN NUMBER: 011096.1516.8



PEAK DATA: 24.87 MM @ 20.72 MS; -0.01 MM @ 57.28 MS

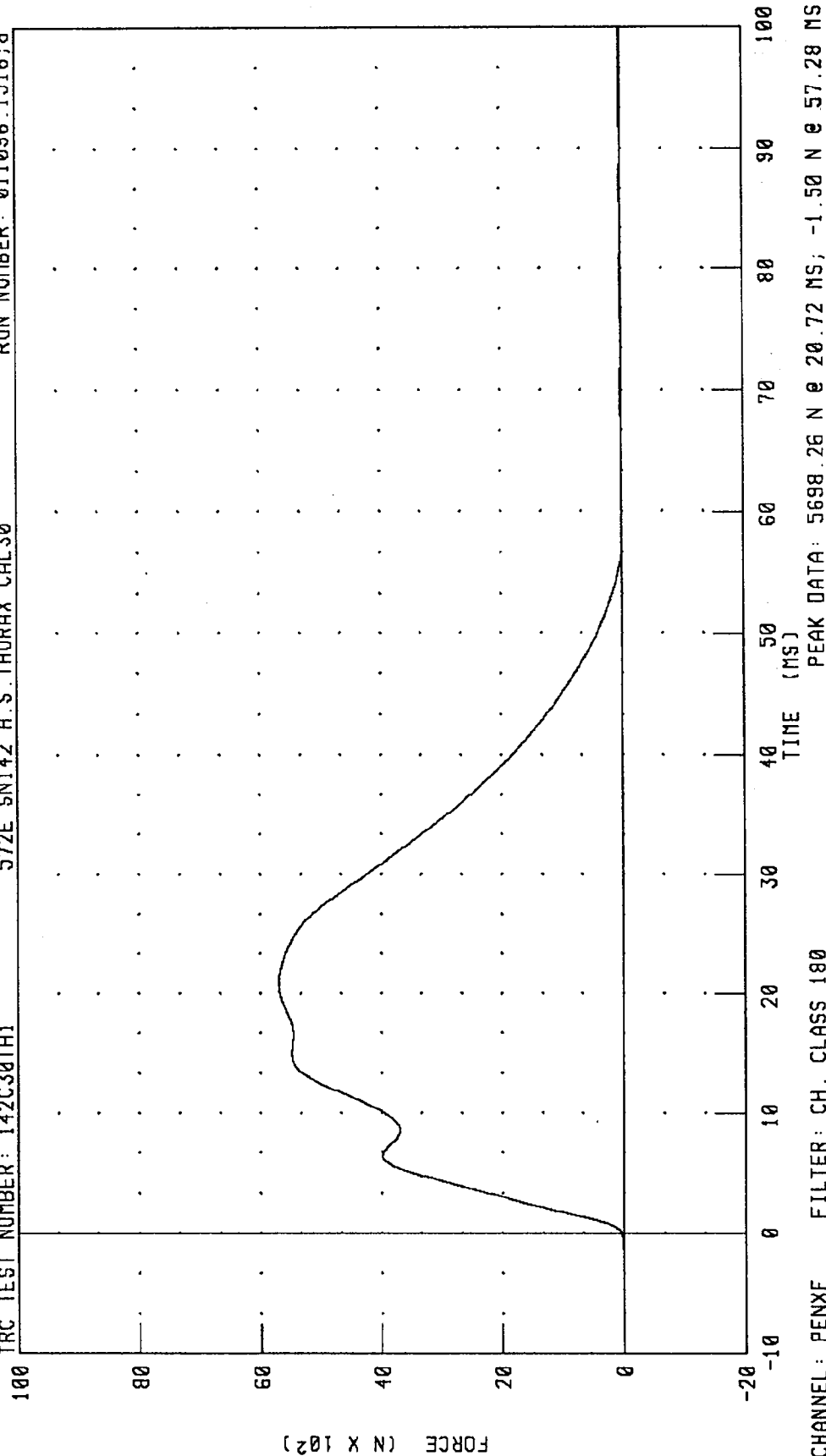
CHANNEL: PENXG FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION PENDULUM FORCE

TRC TEST NUMBER: 142C30TH1

572E SN142 H.S. THORAX CAL30

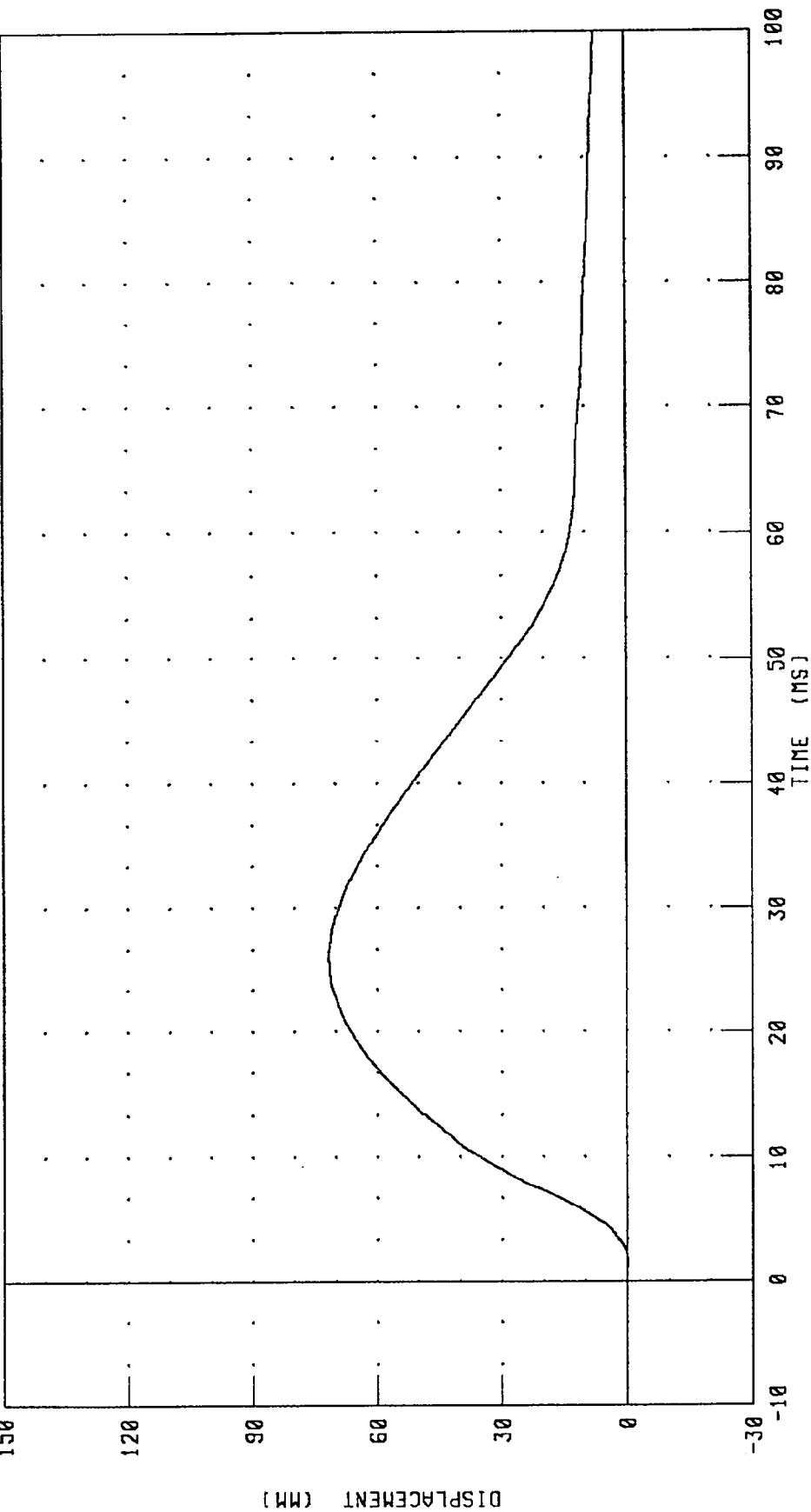
RUN NUMBER: 011096.1516;8



CHANNEL: PENXF FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION STERNUM DISPLACEMENT

TRC TEST NUMBER: 142C30TH1 572E SN142 H.S. THORAX CAL30 RUN NUMBER: 011096.1516;8



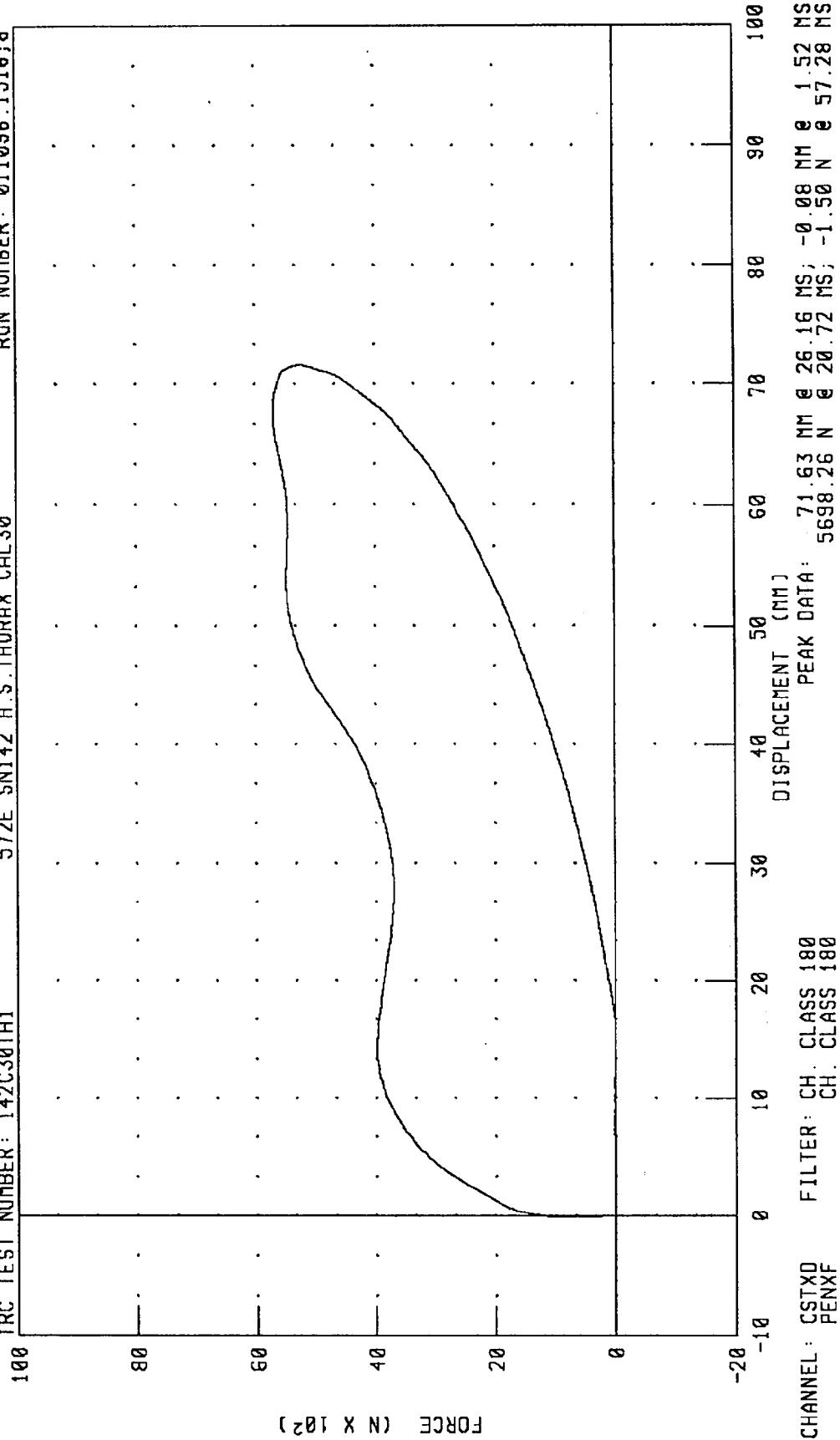
CHANNEL: CSTXD FILTER: CH. CLASS 180 PEAK DATA: 71.63 MM @ 26.16 MS; -0.08 MM @ 1.52 NS

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

TRC TEST NUMBER: 142C30TH1

572E SN142 H.S. THORAX CAL30

RUN NUMBER: 011096.1516.8



TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III

05-DEC-95

TRC INC.

TEST NO: 142C30RK2

572E SN142 RIGHT KNEE CAL 30

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	20.6 DEG. C
RELATIVE HUMIDITY	10 - 70 %	34.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.12 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	4858.3 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chris Middleton

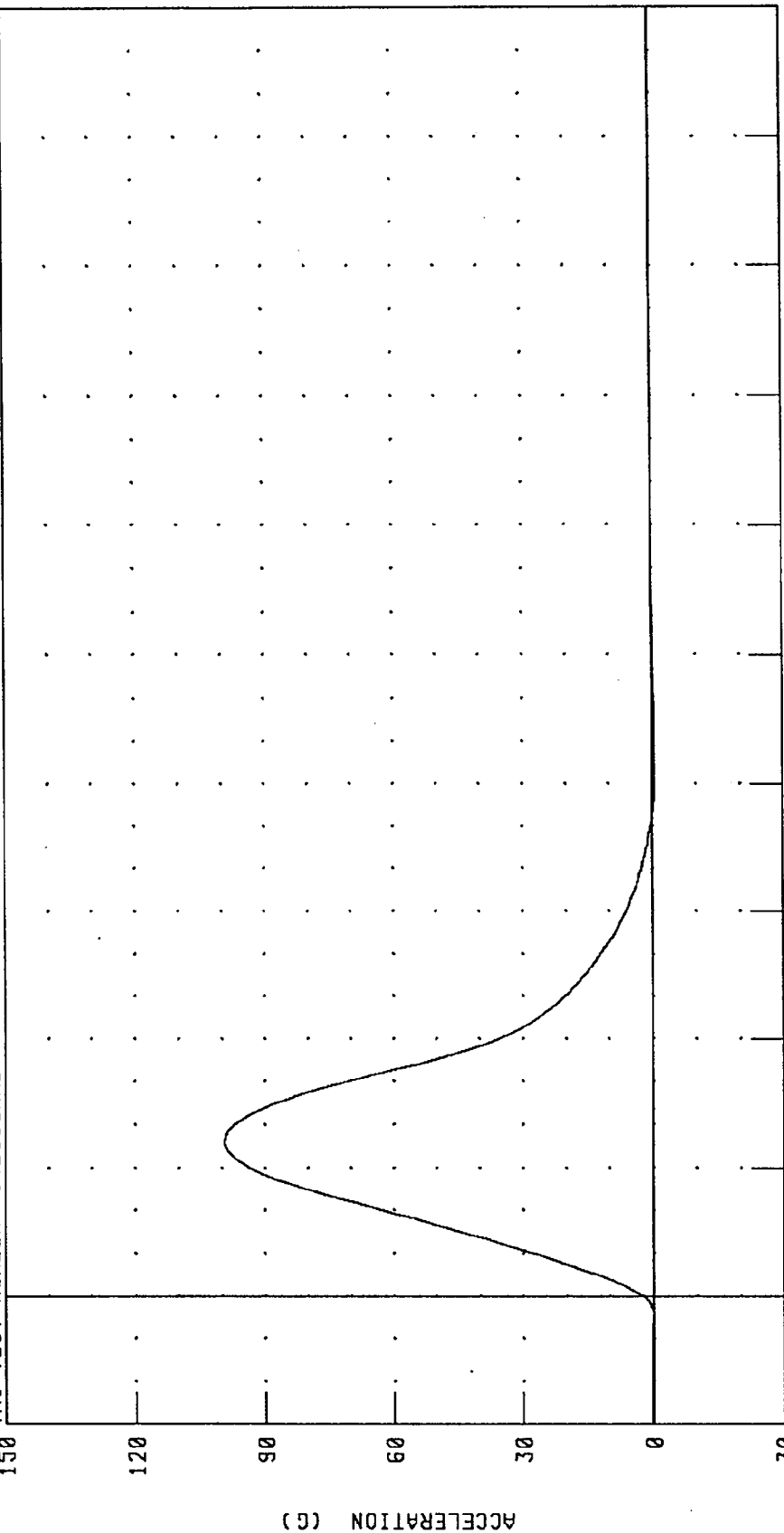
RUN NUMBER: 120595.1102;1

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

TRC TEST NUMBER: 142C30RK2

572E SN142 RIGHT KNEE CAL 30

RUN NUMBER: 011096.1516;1



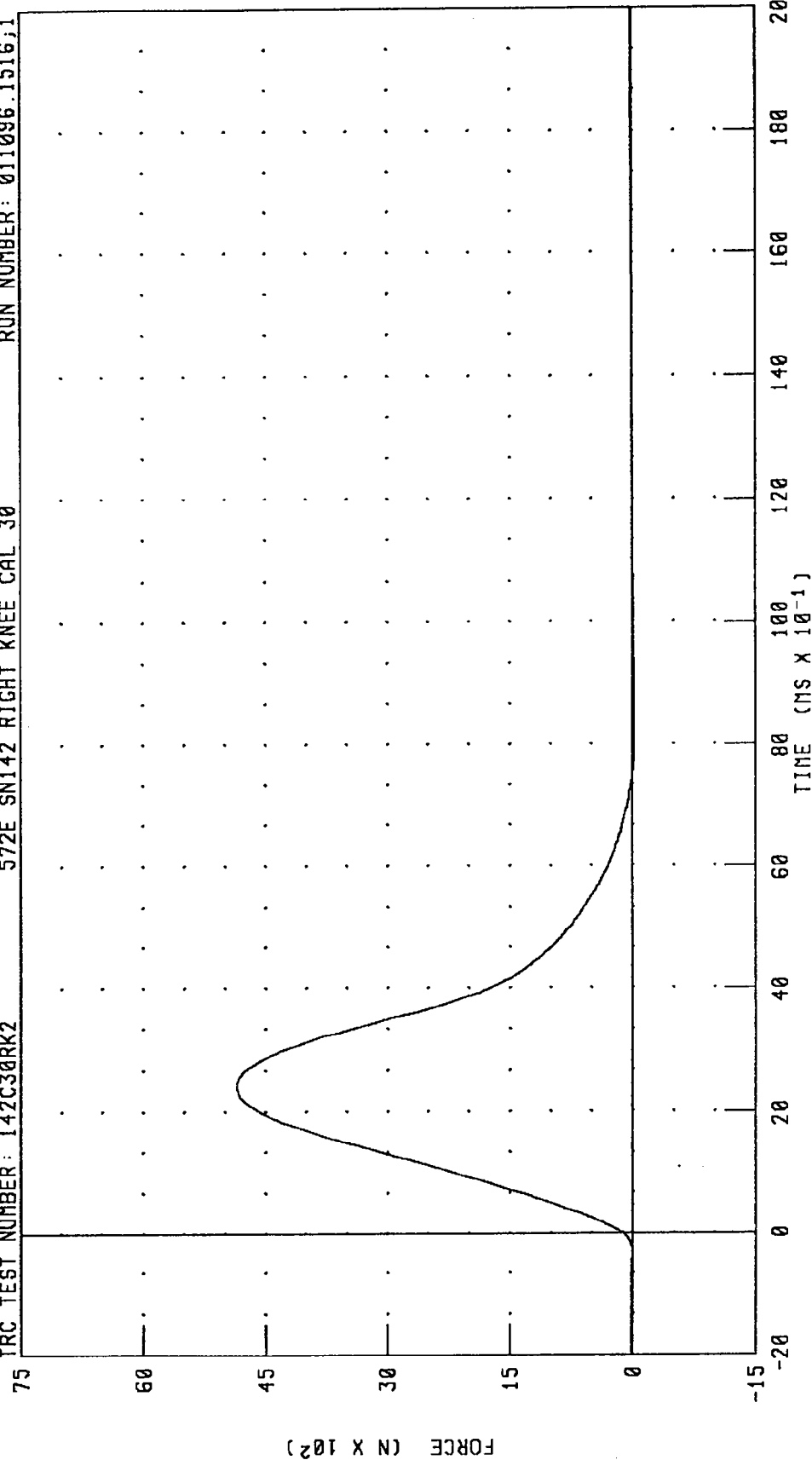
PEAK DATA: 99.29 G @ 2.40 MS; -0.48 G @ 8.08 MS

CHANNEL: PENXG FILTER: CH. CLASS 600

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

TRC TEST NUMBER: 142C30RK2 RUN NUMBER: 011096.1516;1

572E SN142 RIGHT KNEE CAL 30



PEAK DATA: 4858.30 N @ 2.40 MS; -23.44 N @ 8.08 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III

05-DEC-95

TRC INC.

TEST NO: 142C30LK1

572E SN142 LEFT KNEE CAL 30

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	20.6 DEG. C
RELATIVE HUMIDITY	10 - 70 %	35.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.12 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5353.3 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. Middle

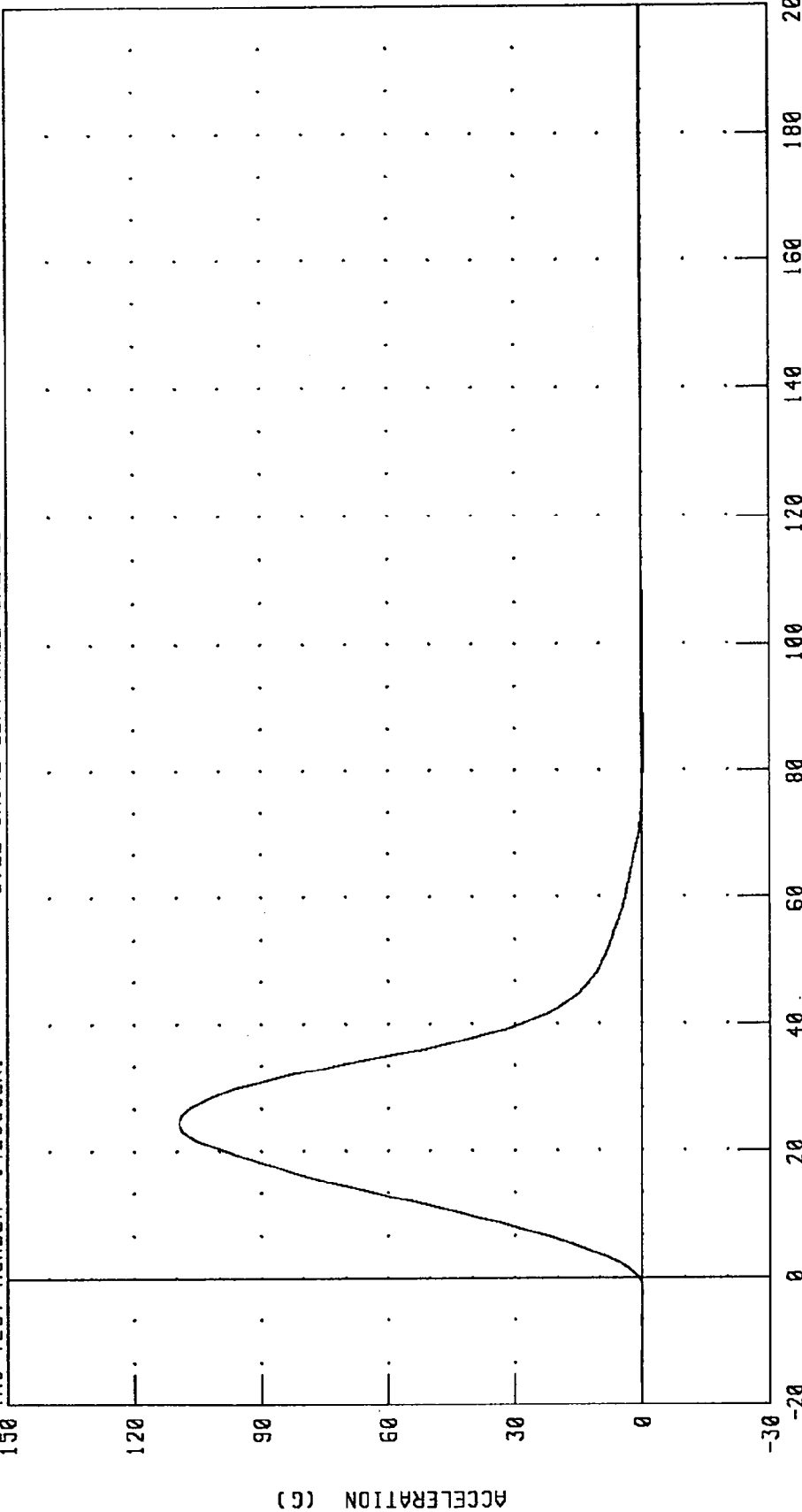
RUN NUMBER: 120595.0851;1

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

TRC TEST NUMBER: 142C30LK1

572E SN142 LEFT KNEE CAL 30

RUN NUMBER: 011096.1516;1



PEAK DATA: 109.41 G @ 2.40 MS; -0.49 G @ 8.40 MS

CHANNEL: PENXG FILTER: CH. CLASS 600

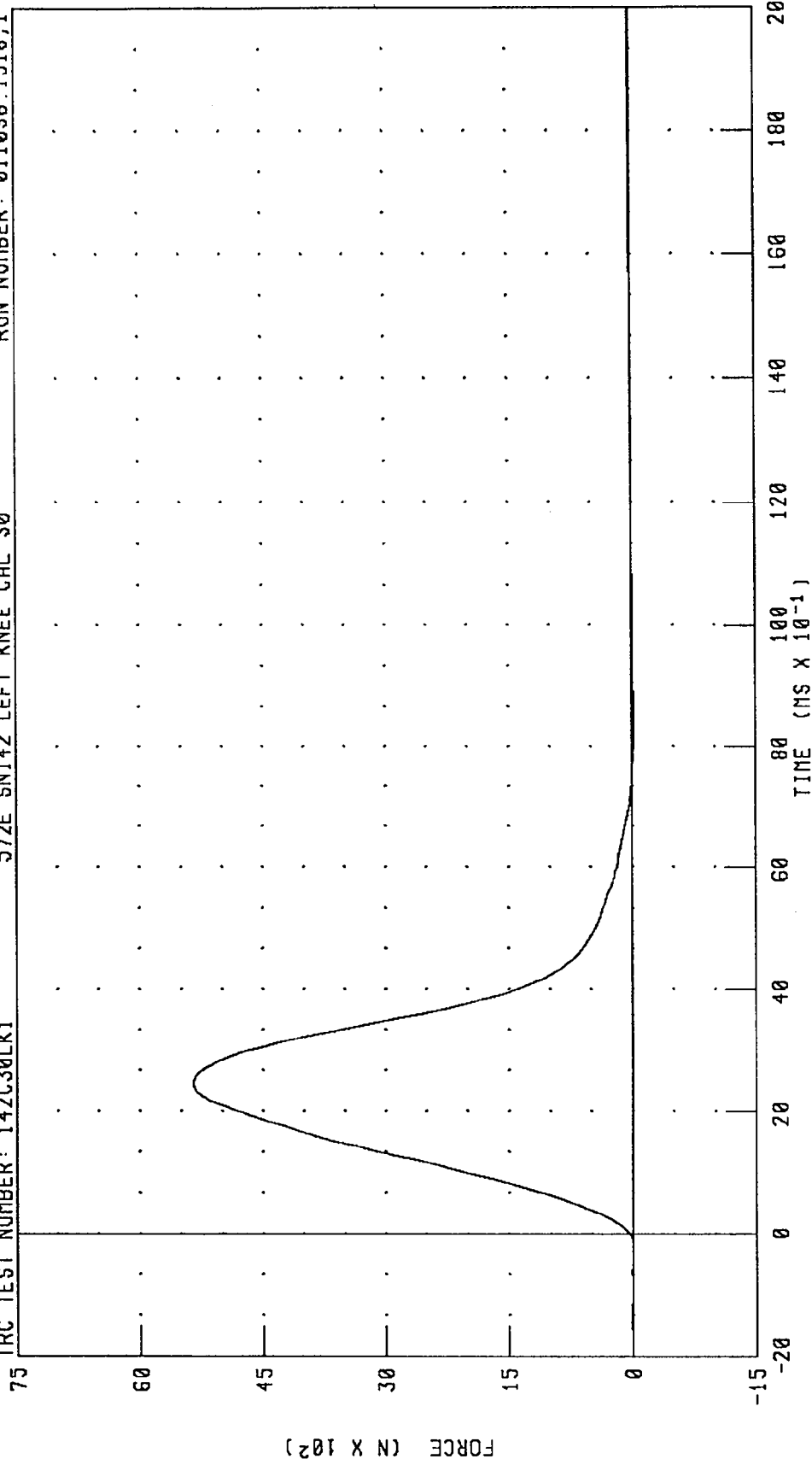
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 142C30LK1

572E SN142 LEFT KNEE CAL 30

RUN NUMBER: 011096.1516;1



CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 5353.33 N @ 2.40 MS; -23.86 N @ 8.40 MS

Pre-test Certification Data

Passenger Dummy S/N: 192

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III EXTERNAL DIMENSIONS

SN 192 ALDERSON

04-DEC-95

TRC INC.

TEST NO: 192C29ED1

572E SN192 EXT.DIMENSION CAL29

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

Chas. Muddlet

RUN NUMBER: 011096.1504

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III

04-DEC-95

TRC INC.

TEST NO: 192C29HD1

572E SN192 HEAD DROP CAL 29

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	34.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	258.55 G
PEAK LATERAL ACCELERATION	15 G MAX	-7.51 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chas. M. Holt

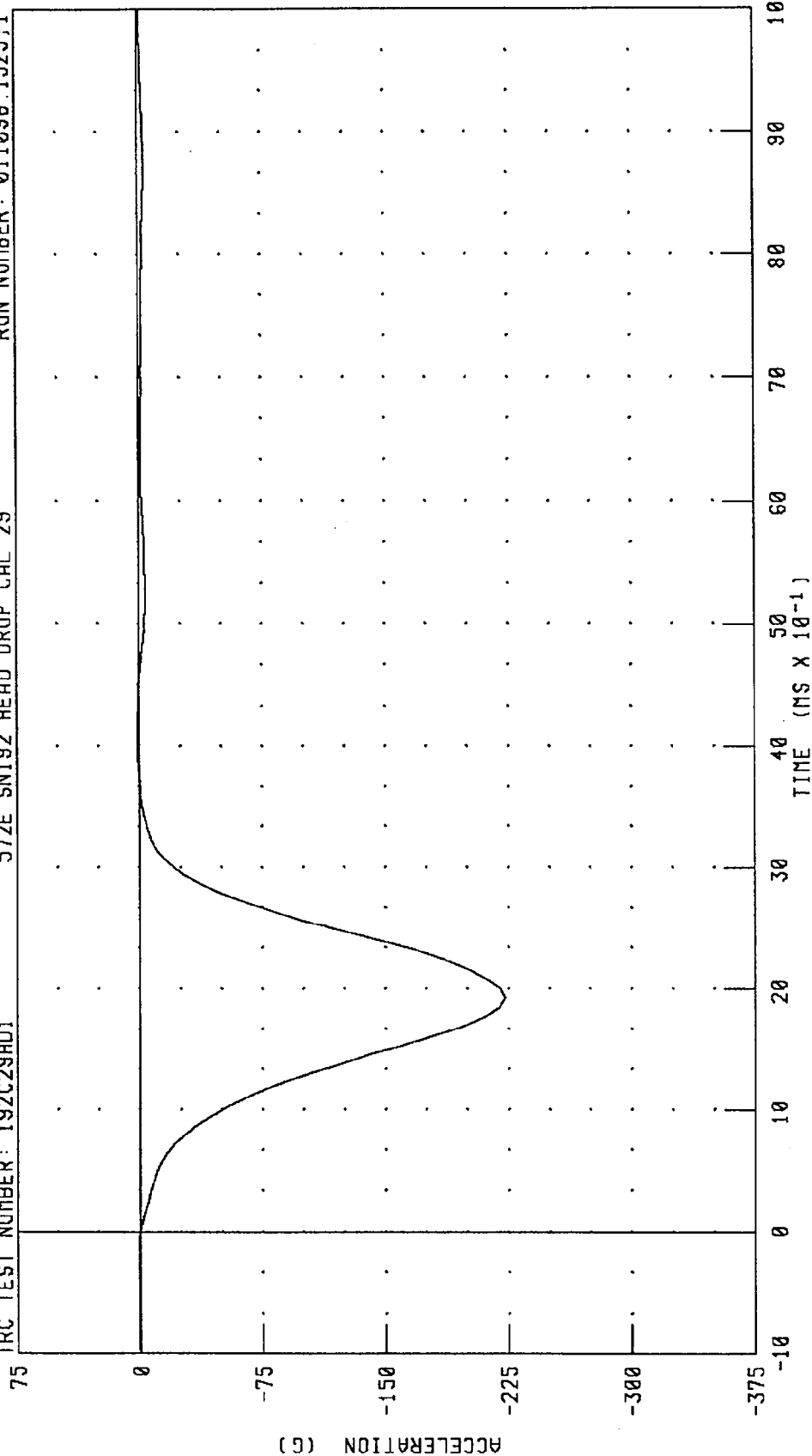
RUN NUMBER: 120495.1351;1

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

TRC TEST NUMBER: 192C29HD1

572E SN192 HEAD DROP CAL 29

RUN NUMBER: 011096.1525;1



PEAK DATA: 1.24 G @ 4.16 MS; -222.77 G @ 1.92 MS

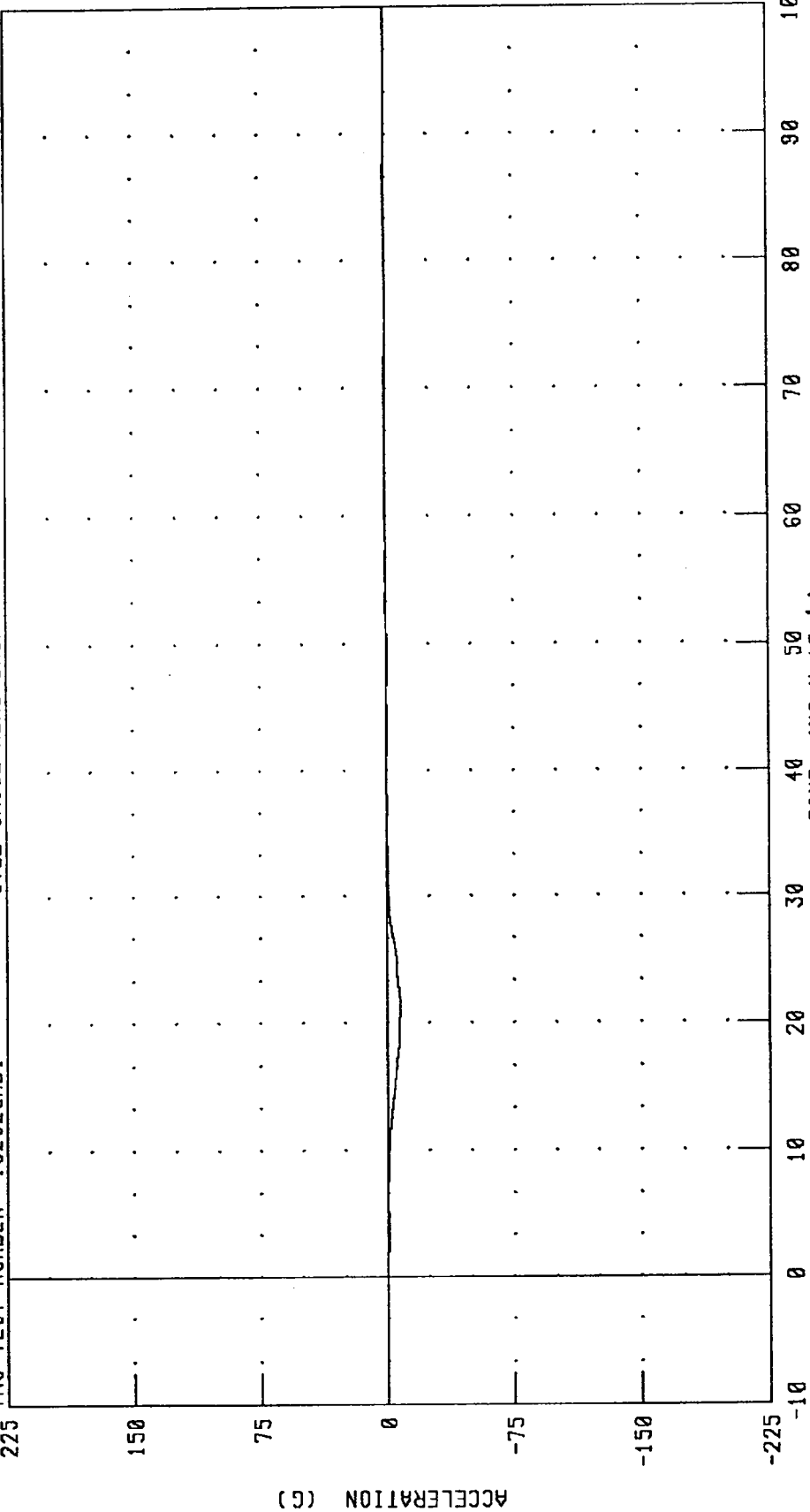
CHANNEL: HEDXG FILTER: CH. CLASS 1000

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

TRC TEST NUMBER: 192C29HD1

572E SN192 HEAD DROP CAL 29

RUN NUMBER: 011096.1525;1

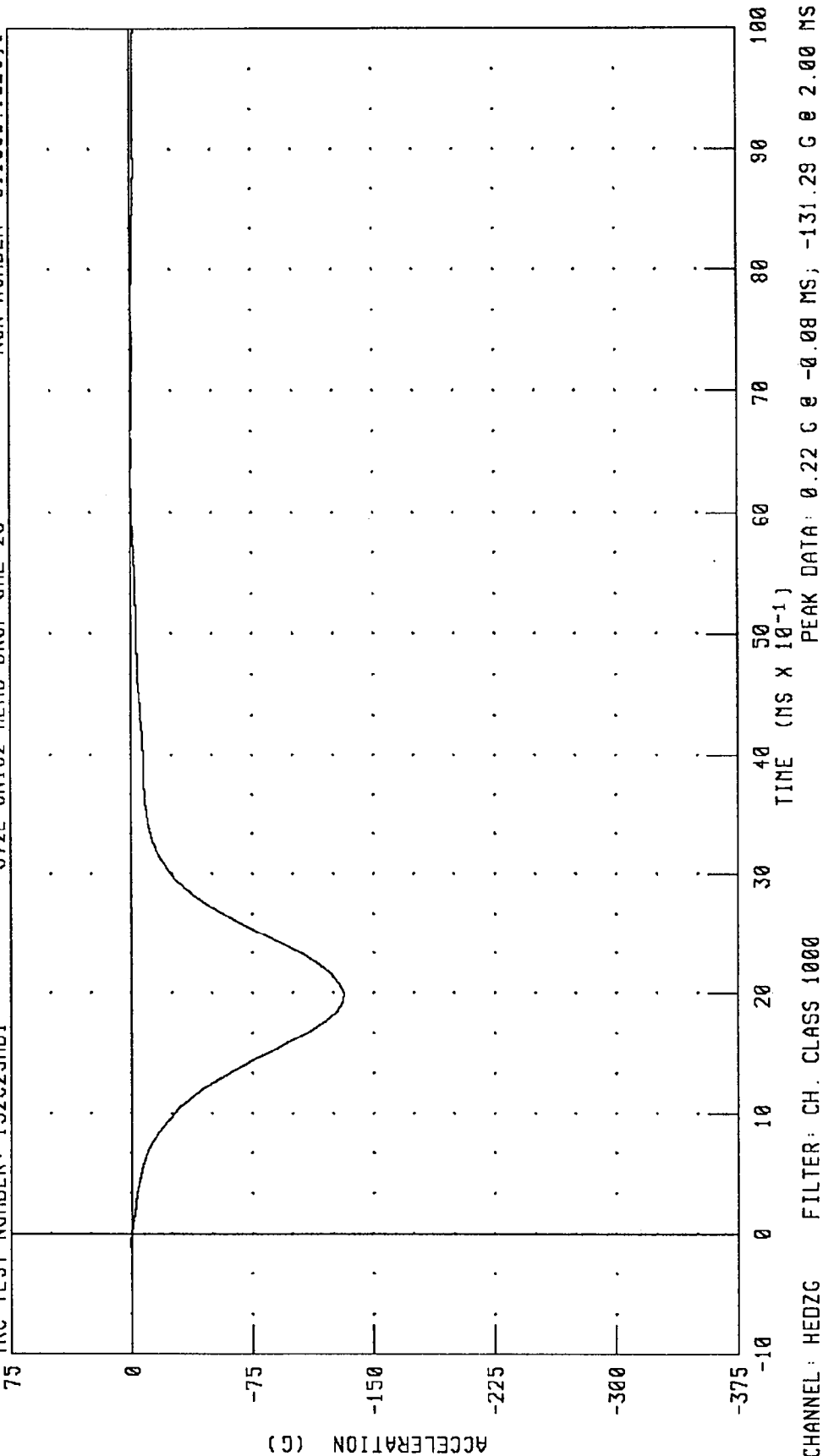


PEAK DATA: 0.88 G @ 6.64 MS; -7.51 G @ 2.16 MS

CHANNEL: HEDYG FILTER: CH. CLASS 1000

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

TRC TEST NUMBER: 192C29HD1 572E SN192 HEAD DROP CAL 29 RUN NUMBER: 011086.1525;1

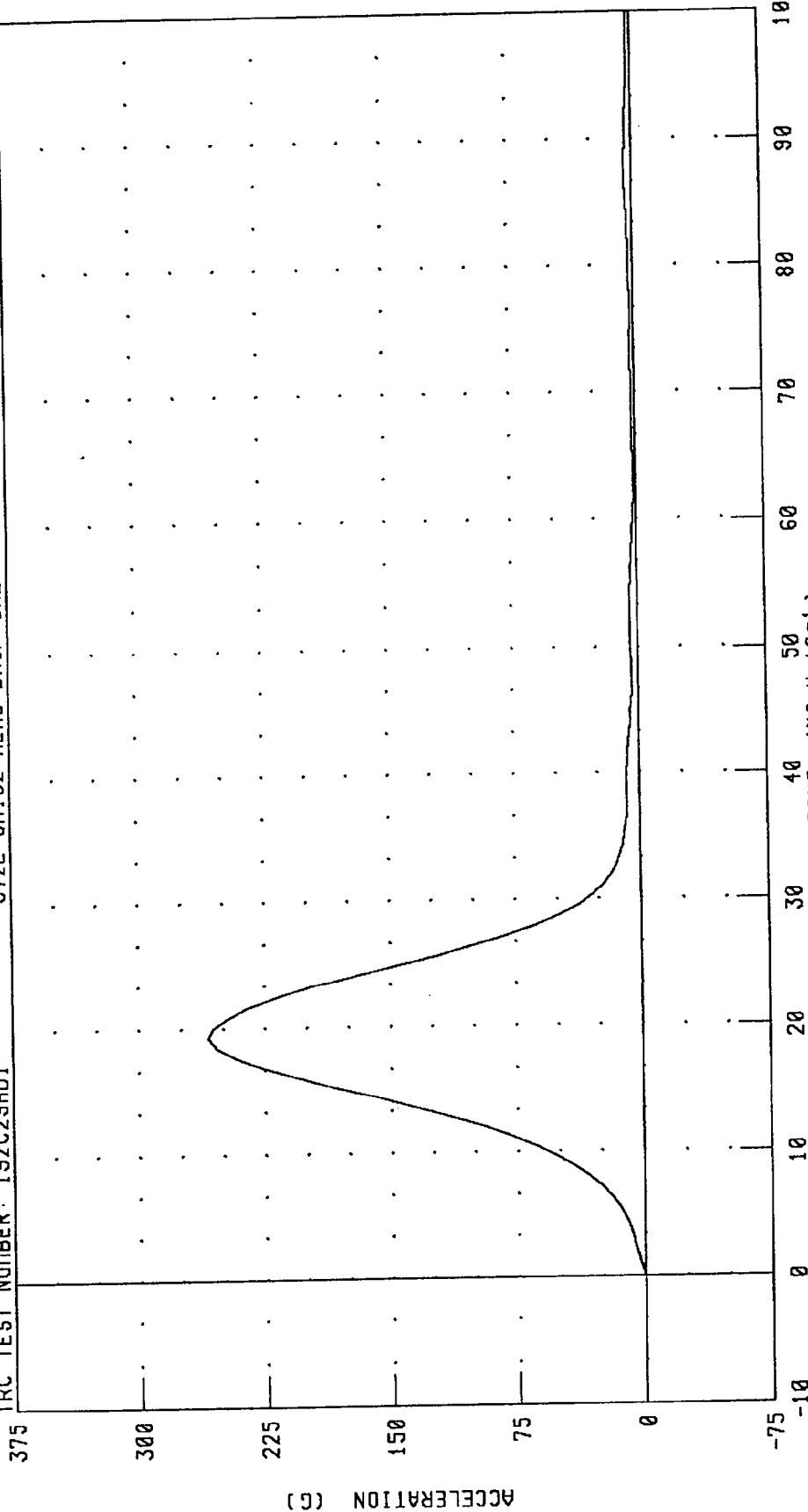


CHANNEL: HEDZG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
 HEAD RESULTANT ACCELERATION
 572E SN192 HEAD DROP CAL 29

RUN NUMBER: 011096.1525;1

TRC TEST NUMBER: 192C29HD1



PEAK DATA: 258.56 G @ 1.92 MS; 0.28 G @ -0.24 MS

CHANNEL: HEDRG FILTER: CH. CLASS 1000

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

HYBRID III

05-DEC-95

TRC INC. TEST NO: 192C29NF1 572E SN192 NECK FLEXION CAL29

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	20.6 DEG. C
RELATIVE HUMIDITY		10 - 70 %	34.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.93 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	24.01 G
	20 MS	17.60 - 22.60 G	22.06 G
	30 MS	12.50 - 18.50 G	18.18 G
MAX PENDULUM G		29 G MAX	25.07 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	18.13 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	36.88 MS
D PLANE	MAX	64 - 78 DEG.	77.35 DEG.
ROTATION	TIME	57 - 64 MS	60.80 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	98.46 NM
	TIME	47 - 58 MS	51.20 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	121.12 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	101.76 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. M. Hight

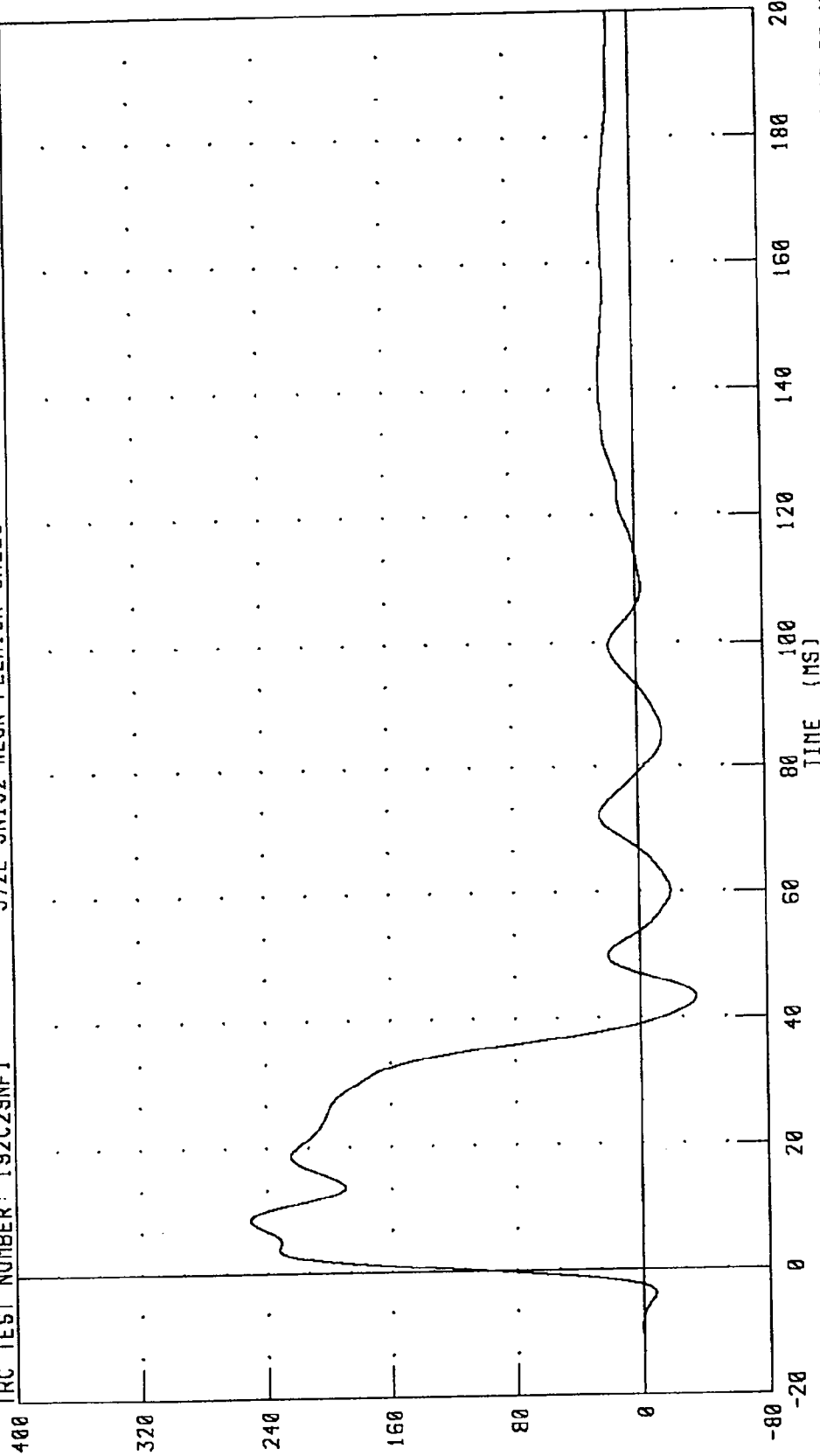
RUN NUMBER: 120595.1043;3

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 192C29NF1

572E SN192 NECK FLEXION CAL29

RUN NUMBER: 011096.1525;3



PEAK DATA: 25.08 --- @ 8.56 MS; -3.53 --- @ 43.20 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

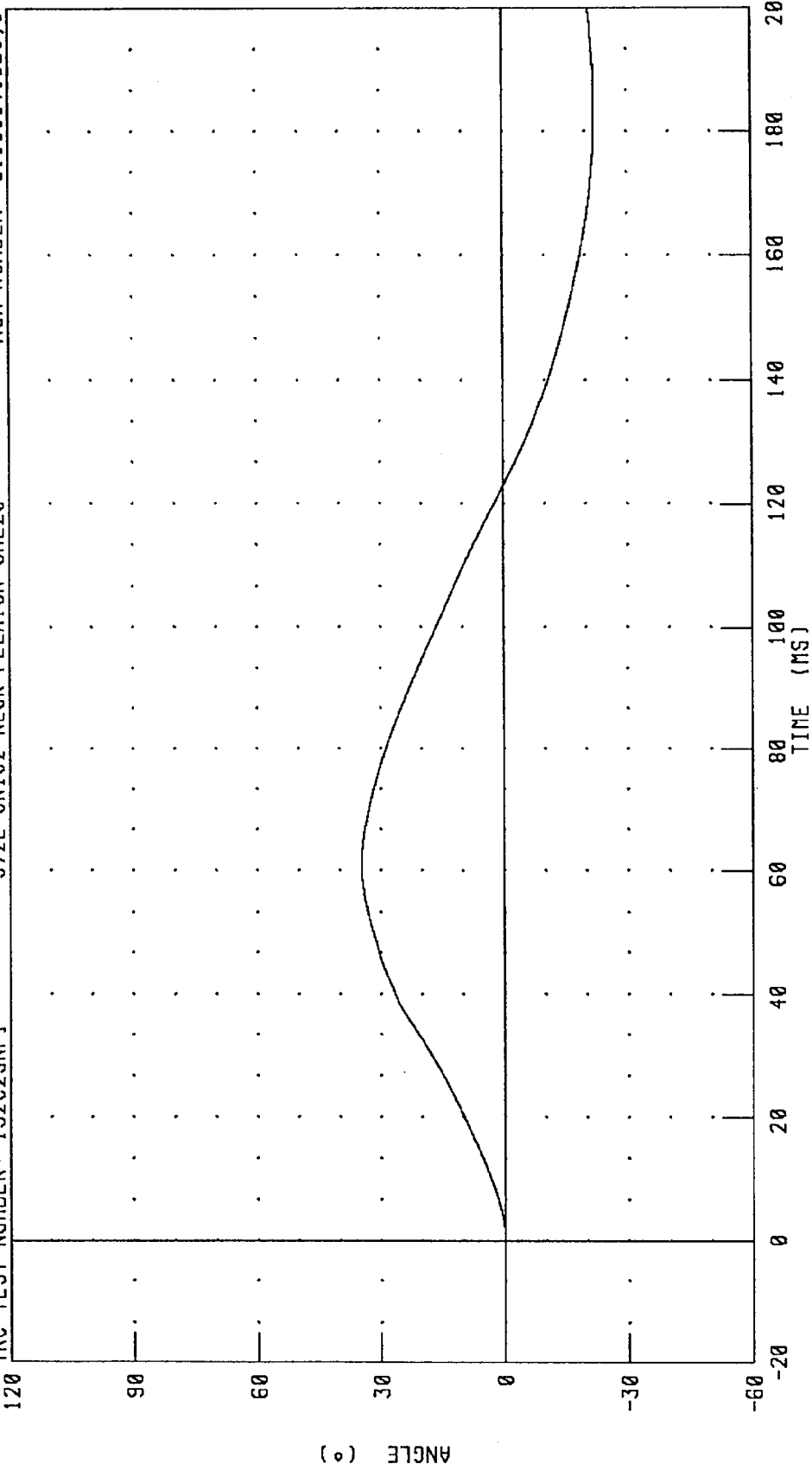
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 192C29NF1

572E SN192 NECK FLEXION CAL29

RUN NUMBER: 011096.1525;3



PEAK DATA: 34.62 ° @ 60.88 MS; -22.03 ° @ 178.96 MS

CHANNEL: BETA FILTER: CH. CLASS 60

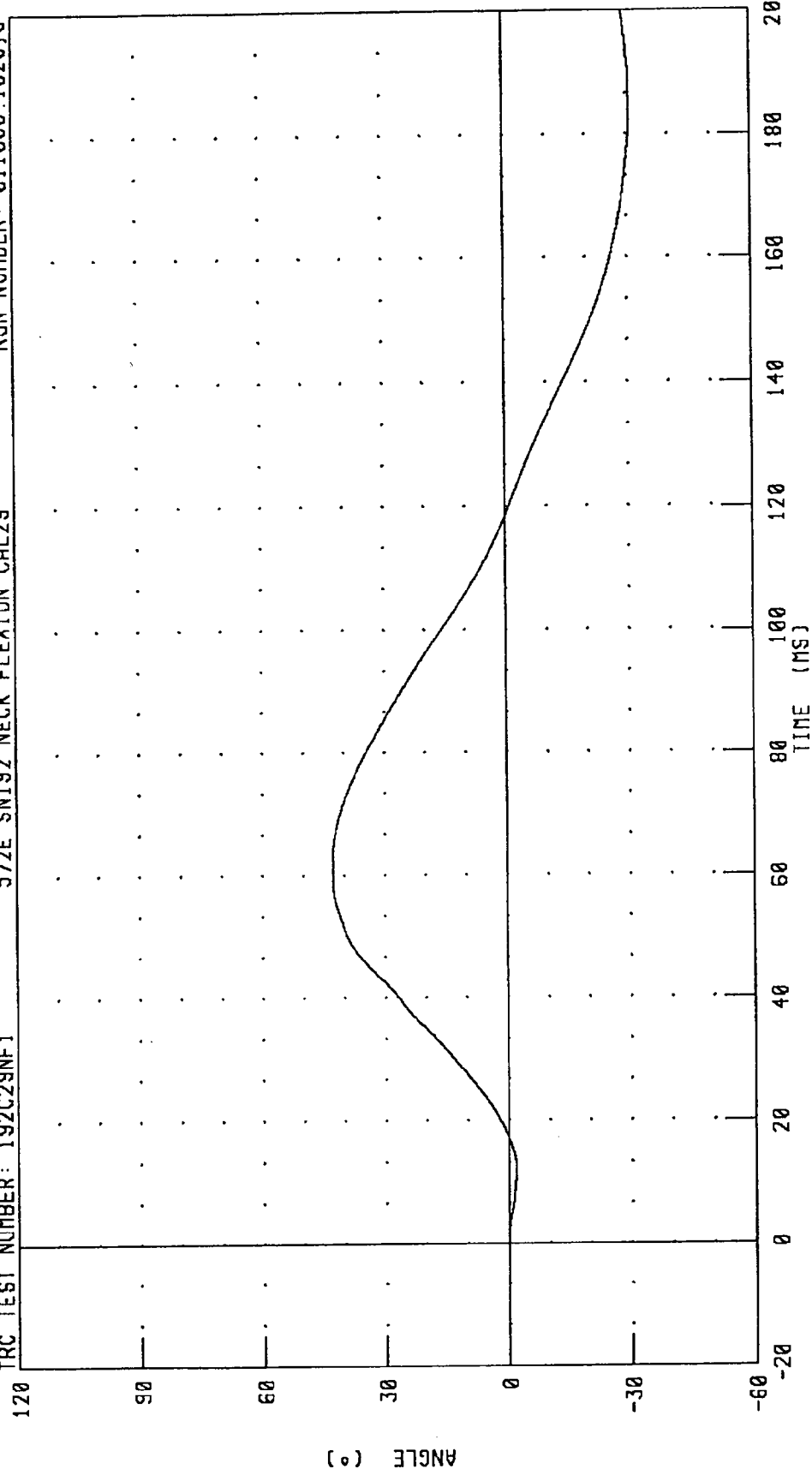
ANGLE (°)

TIME (MS)

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

TRC TEST NUMBER: 192C29NF1 RUN NUMBER: 011096.1525;3

572E SN192 NECK FLEXION CAL29



PEAK DATA: 42.74 ° @ 60.00 MS; -30.78 ° @ 183.28 MS

CHANNEL: THETA FILTER: CH. CLASS 60

ANGLE (°)

TIME (MS)

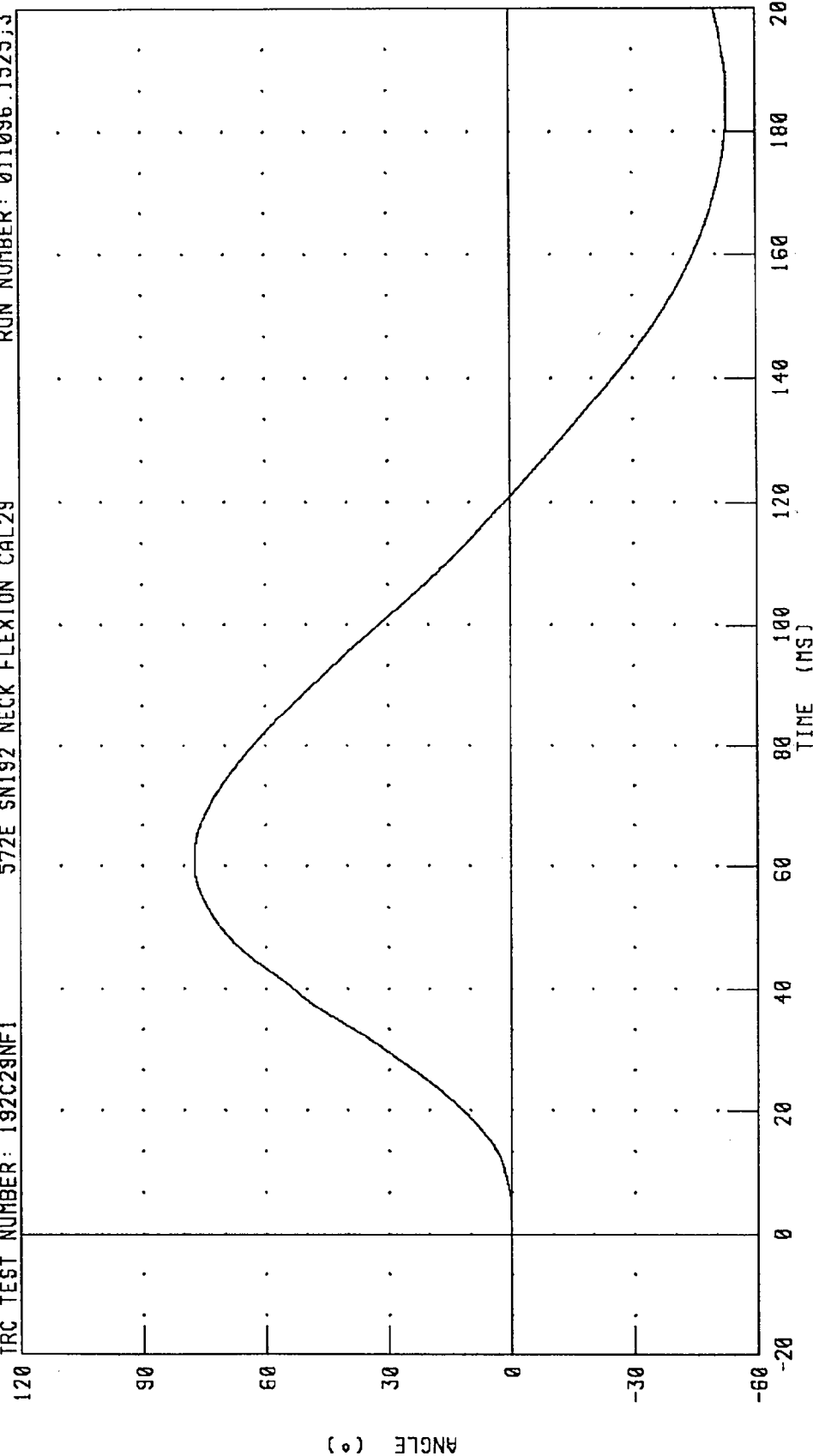
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 192C29NF1

572E SN192 NECK FLEXION CAL29

RUN NUMBER: 011096.1525;3



CHANNEL: TOTAL FILTER: CH. CLASS 60

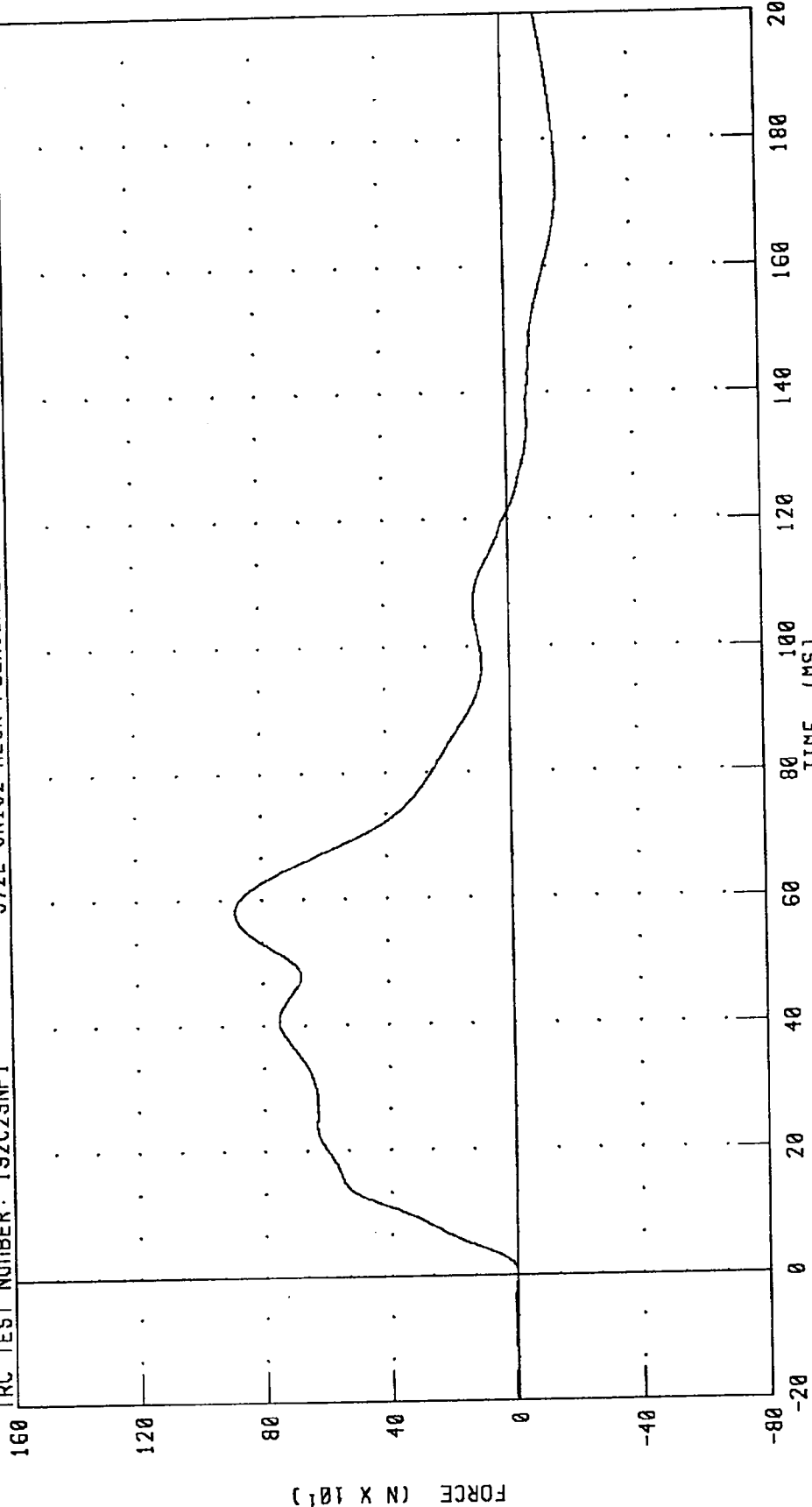
PEAK DATA: 77.35 ° @ 60.80 MS; -52.78 ° @ 187.44 MS

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

TRC TEST NUMBER: 192C29NF1

572E SN192 NECK FLEXION CAL29

RUN NUMBER: 011096.1525;3



PEAK DATA: 887.02 N @ 58.08 MS; -169.09 N @ 173.84 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

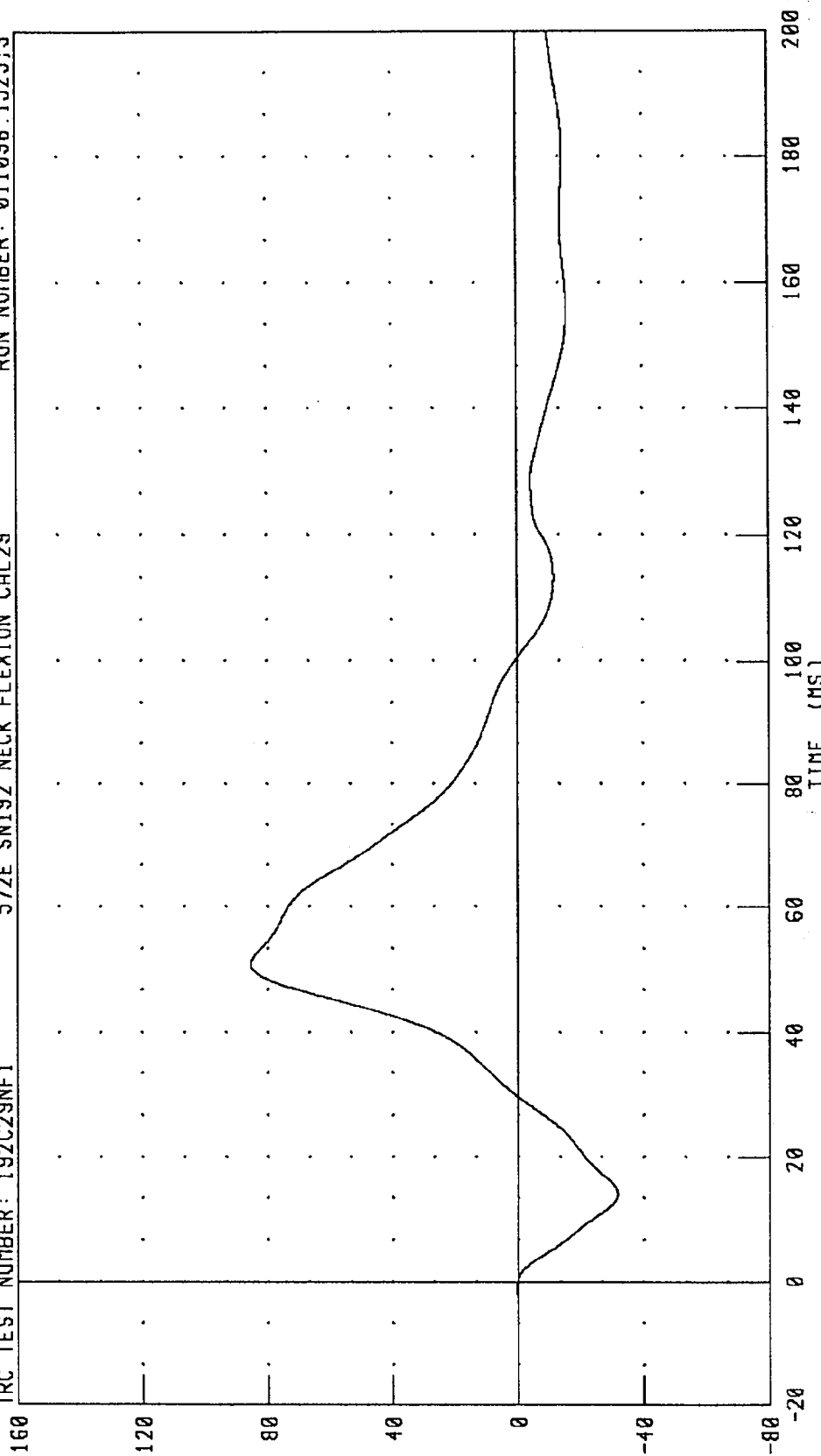
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 192C29NF1

572E SN192 NECK FLEXION CAL29

RUN NUMBER: 011096.1525.3



PEAK DATA: 85.46 N·M @ 50.80 MS; -31.65 N·M @ 14.00 MS

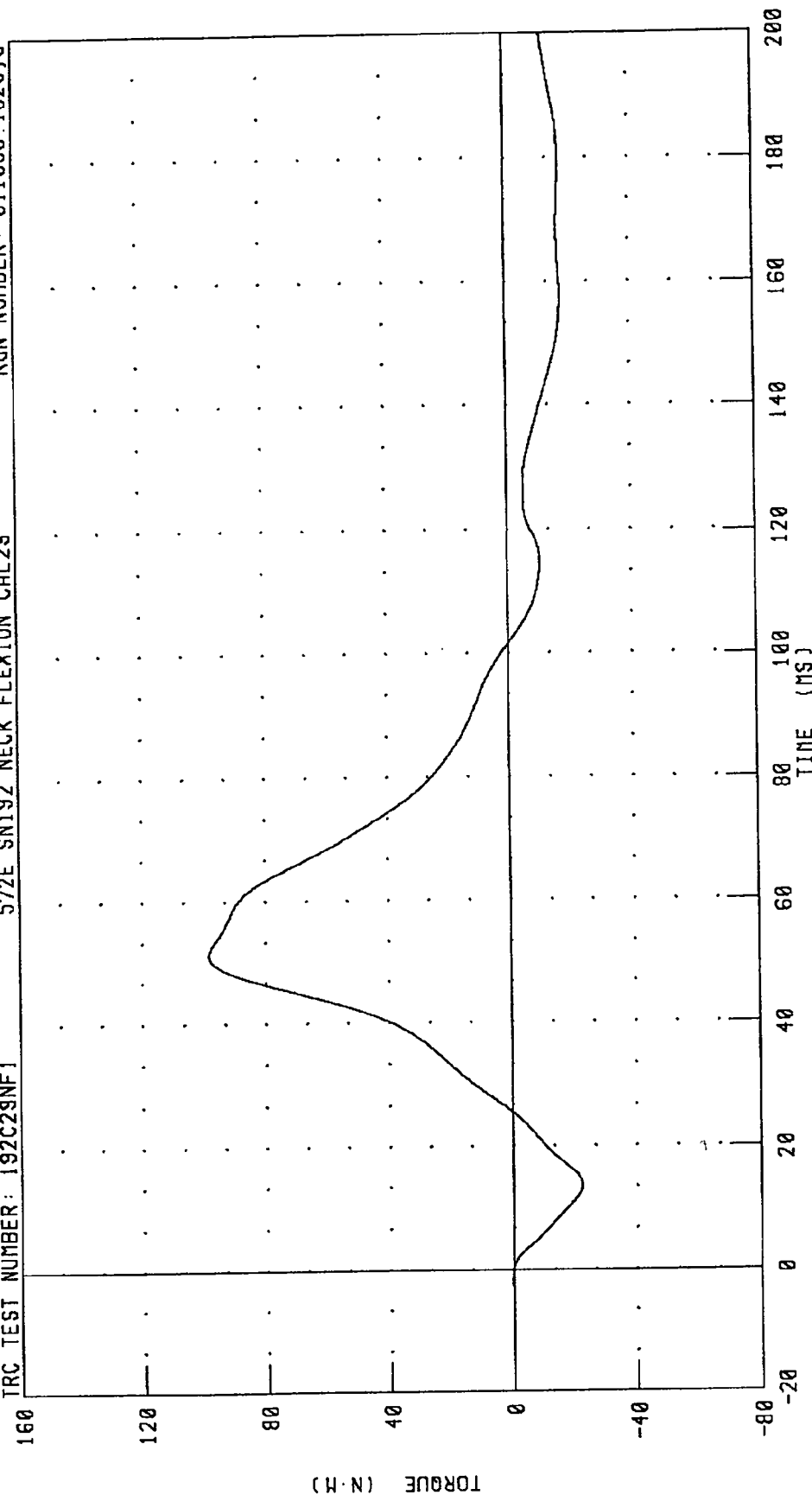
CHANNEL: NEKYM FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 192C29NF1

572E SN192 NECK FLEXION CAL28

RUN NUMBER: 011096.1525;3



PEAK DATA: 98.46 N·M @ 51.20 MS; -22.33 N·M @ 13.60 MS

CHANNEL: NEQDM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

05-DEC-95

TRC INC. TEST NO: 192C29NE1 572E SN192 NECK EXT. CAL29

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	20.6 DEG. C
RELATIVE HUMIDITY		10 - 70 %	34.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.00 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	18.88 G
	20 MS	14.00 - 19.00 G	17.33 G
	30 MS	11.00 - 16.00 G	15.15 G
MAX PENDULUM G		22 G MAX	19.18 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	15.13 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	40.48 MS
D PLANE	MAX	81 - 106 DEG.	101.44 DEG.
ROTATION	TIME	72 - 82 MS	78.16 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-75.16 NM
	TIME	65 - 79 MS	72.32 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	162.80 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	139.92 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. M. Miller

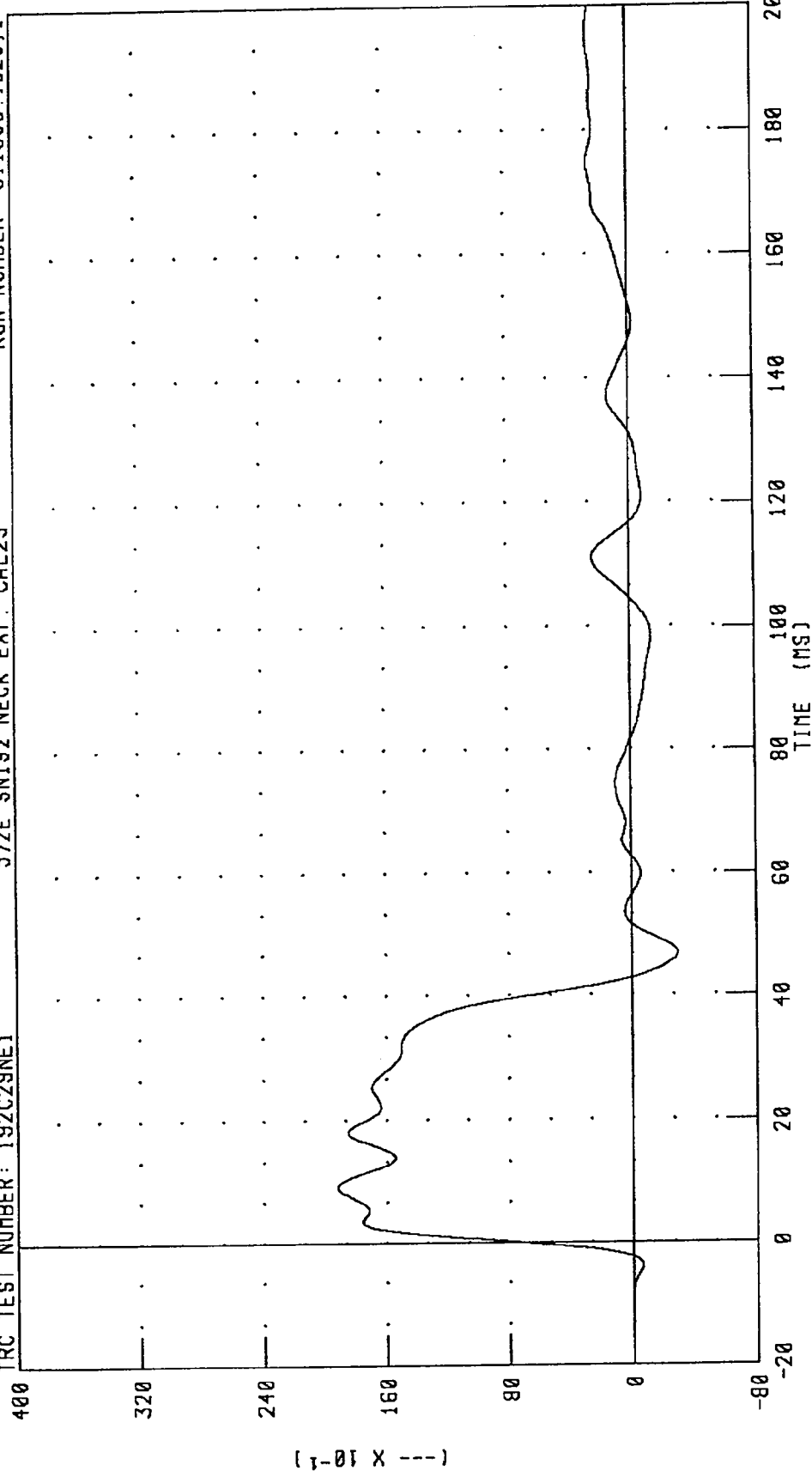
RUN NUMBER: 120595.1109;1

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 192C29NE1

572E SN192 NECK EXT. CAL29

RUN NUMBER: 011096.1525;1



CHANNEL: PENXG FILTER: CH. CLASS 60

PEAK DATA: 19.19 --- 0 9.12 MS; -2.95 --- 0 46.80 MS

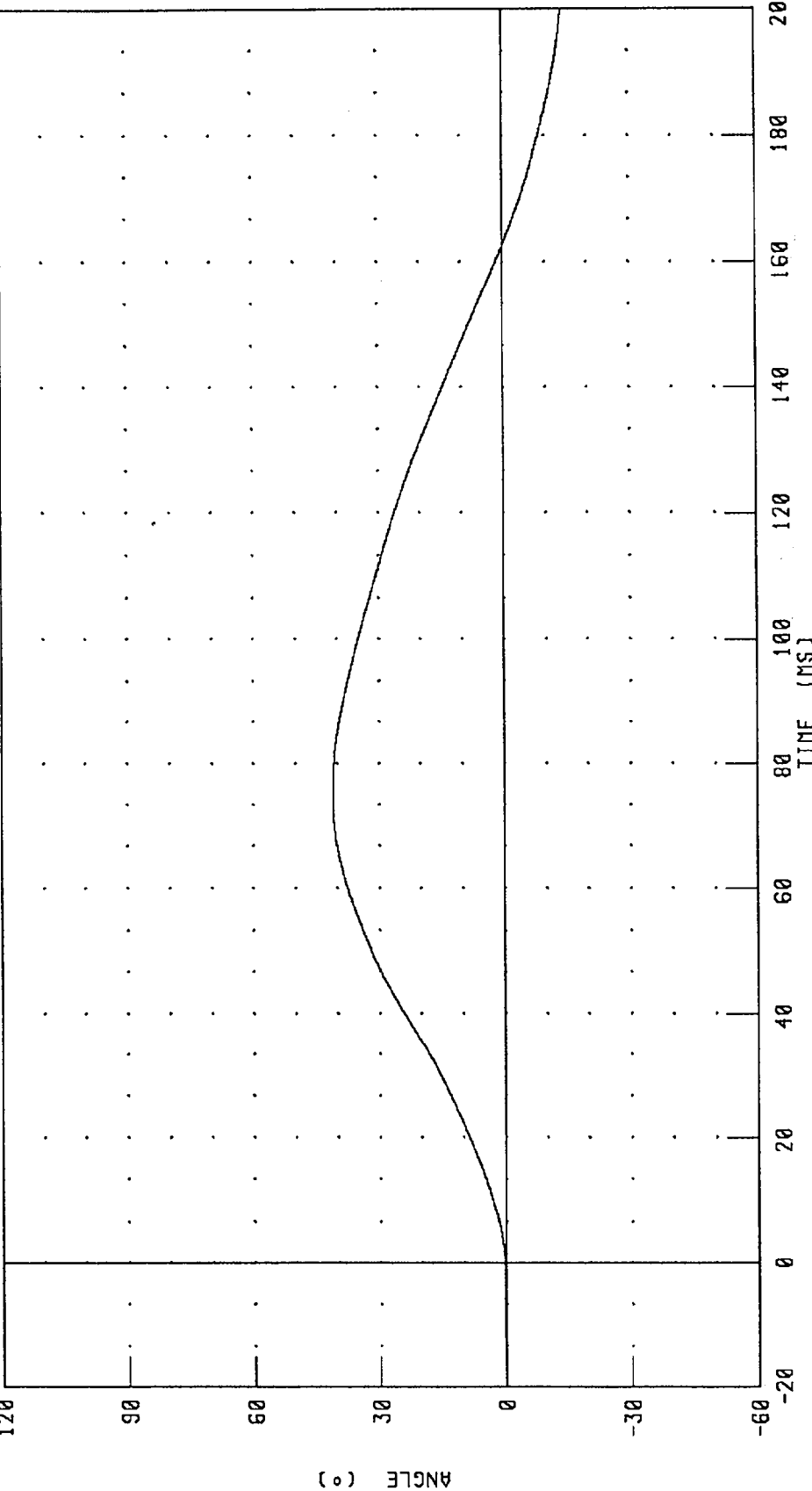
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN192 NECK EXT. CAL29

TRC TEST NUMBER: 192C29NE1

RUN NUMBER: 011096.1525;1



PEAK DATA: 40.86 ° @ 72.48 MS; -14.19 ° @ 200.00 MS

FILTER: CH. CLASS 60

CHANNEL: BETA

ANGLE (°)

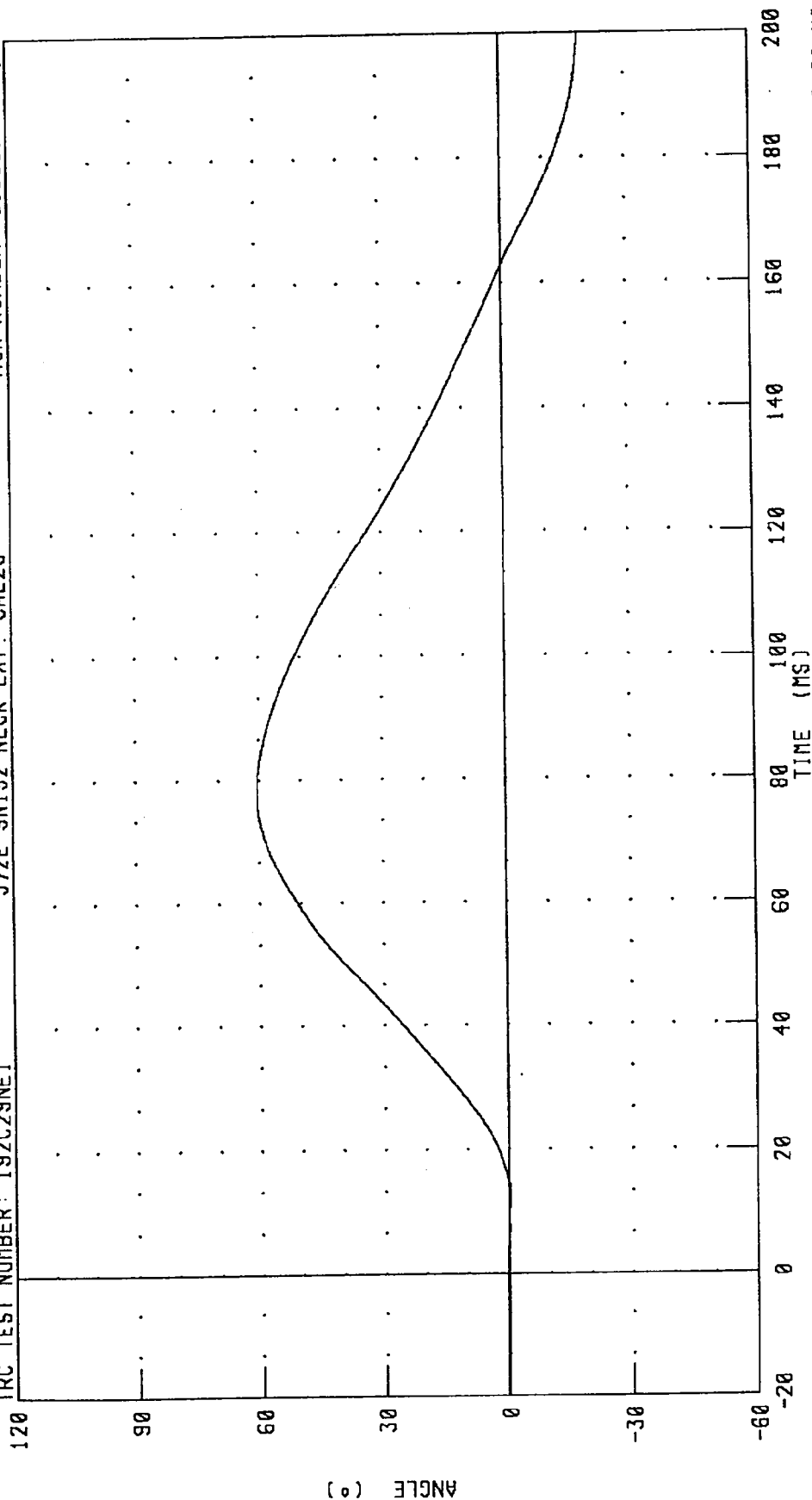
TIME (MS)

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

572E SN192 NECK EXT. CAL29

TRC TEST NUMBER: 192C29NE1

RUN NUMBER: 011096.1525,1



PEAK DATA: 60.60 ° @ 78.08 MS; -19.09 ° @ 200.00 MS

CHANNEL: THETA FILTER: CH. CLASS 60

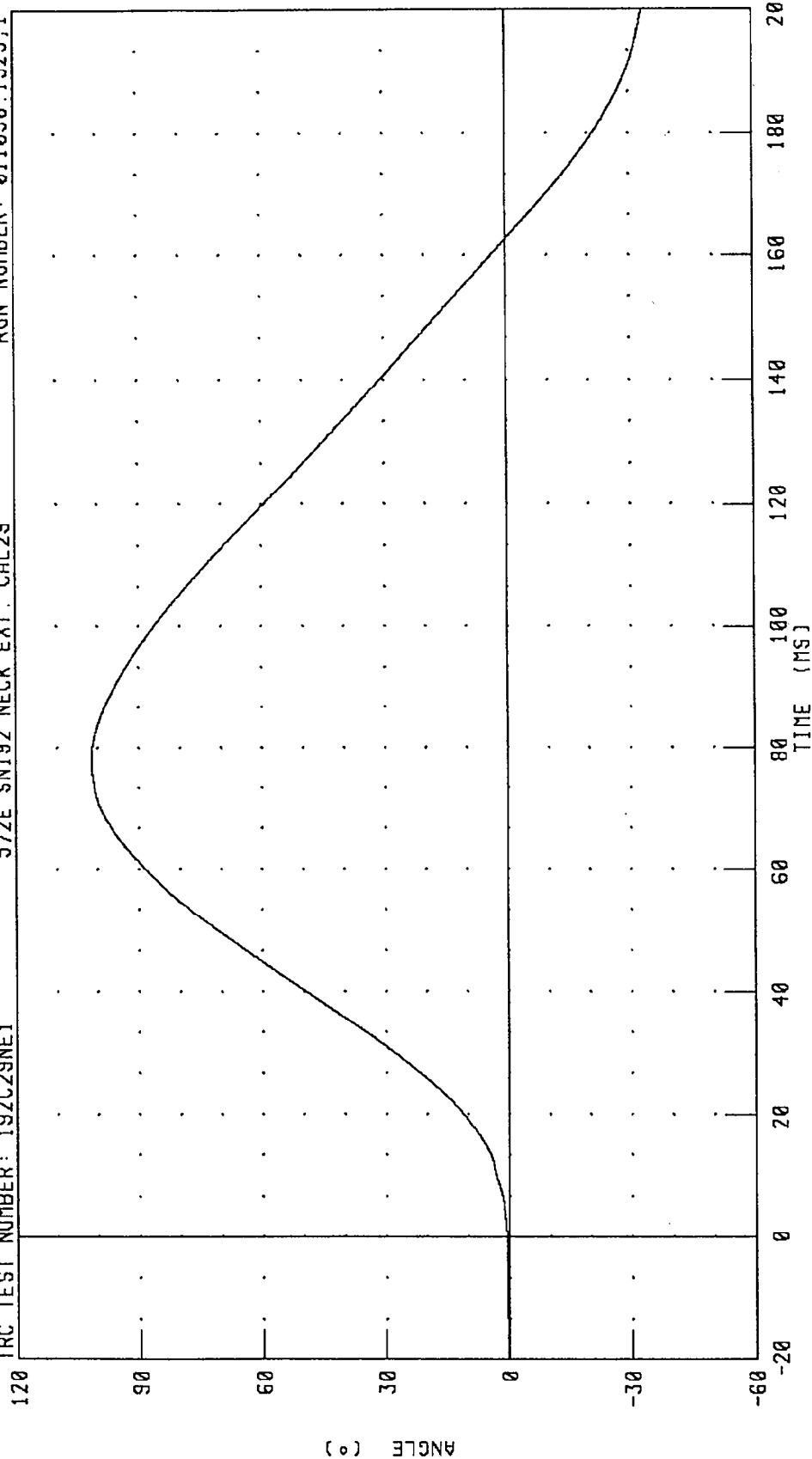
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

RUN NUMBER: 011096.1525;1

572E SN192 NECK EXT. CAL2S

TRC TEST NUMBER: 192C29NE1



PEAK DATA: 101.45 ° @ 78.16 MS; -33.27 ° @ 200.00 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

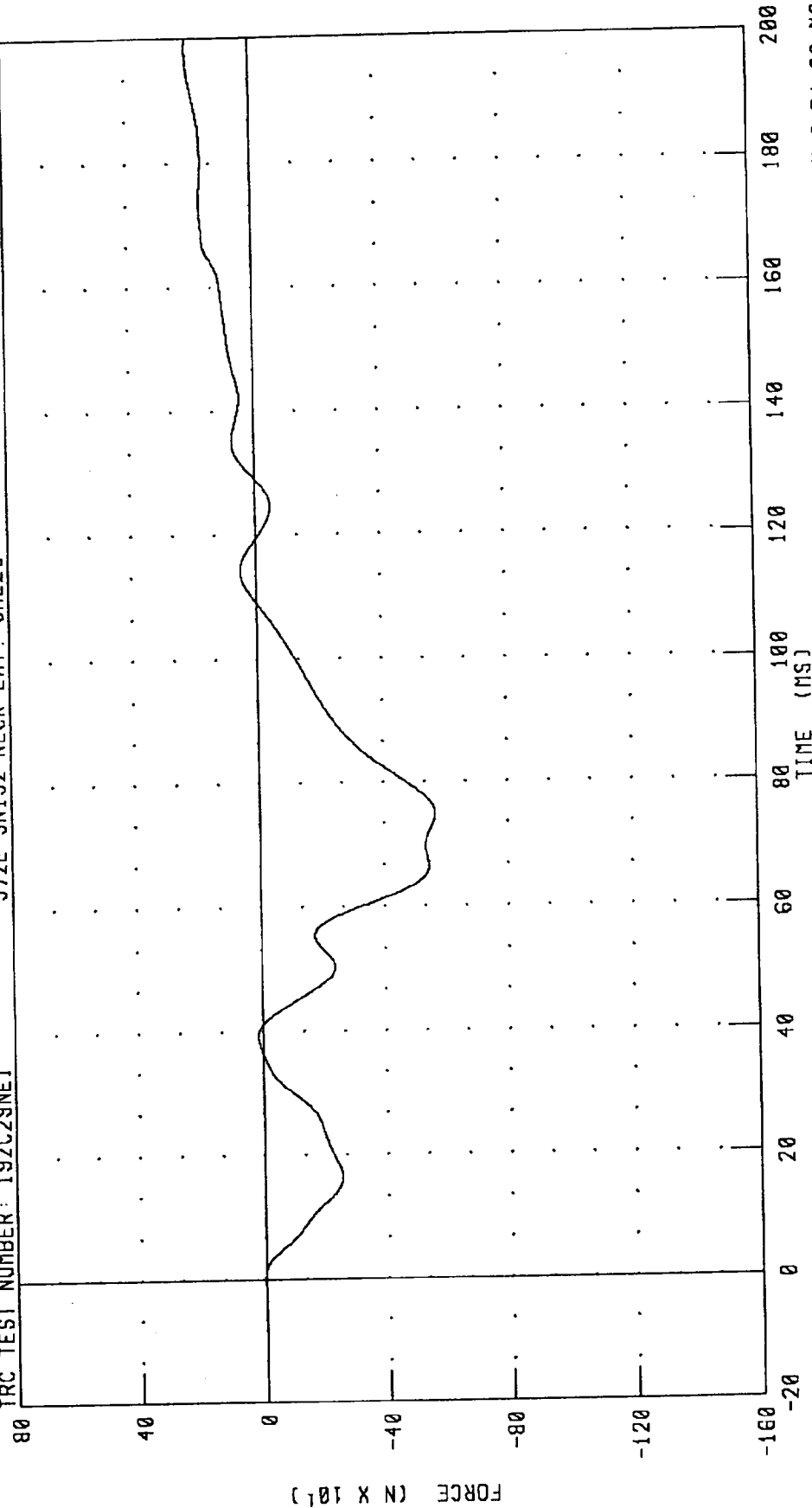
ANGLE (°)

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

RUN NUMBER: 011096.1525;1

572E SN192 NECK EXT. CAL29

IRC TEST NUMBER: 192C29NE1



PEAK DATA: 204.89 N @ 198.24 MS; -567.22 N @ 74.88 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

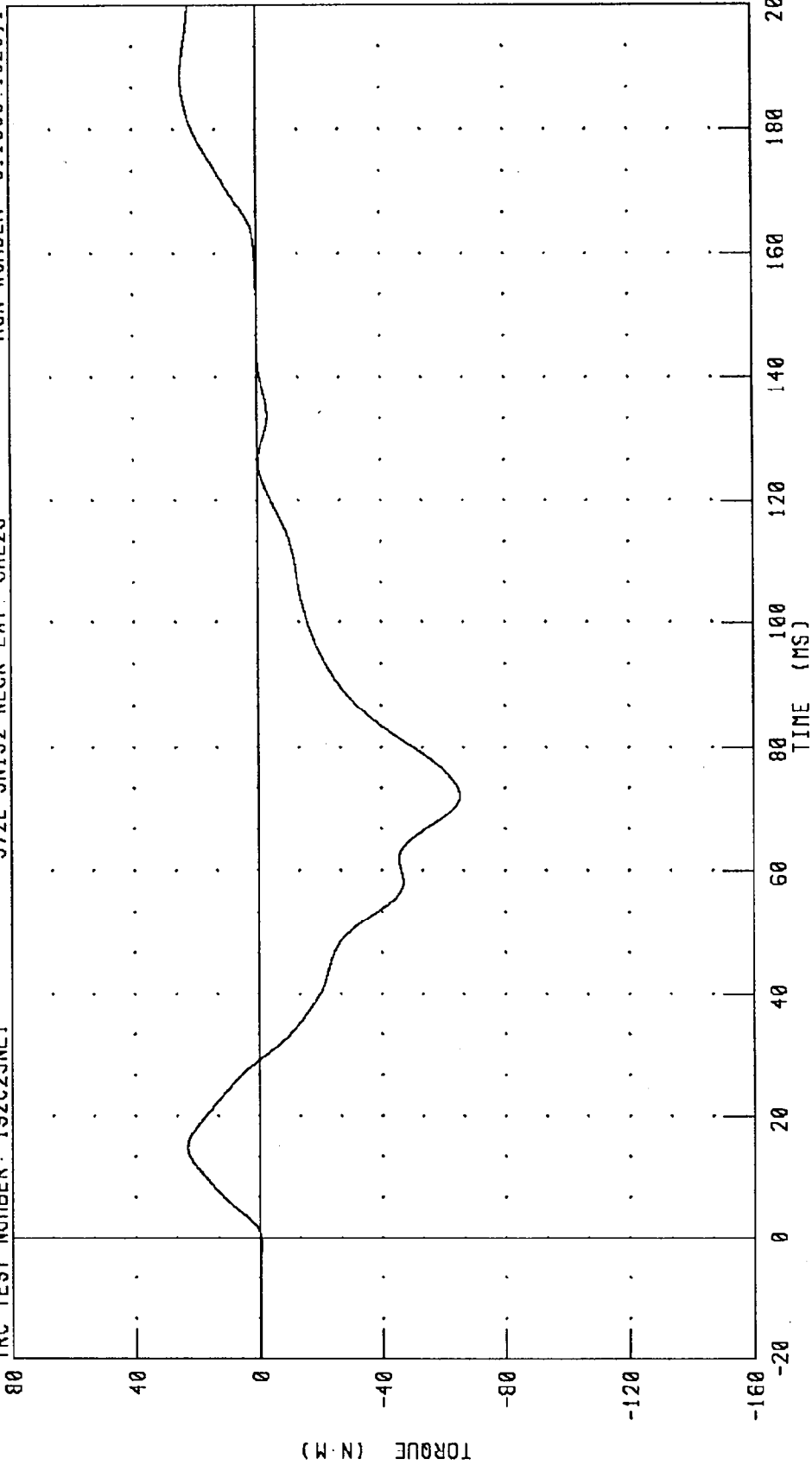
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 192C29NE1

572E SN192 NECK EXT. CAL29

RUN NUMBER: 011096.1525;1



PEAK DATA: 24.33 N-M @ 188.64 MS; -65.38 N-M @ 72.16 MS

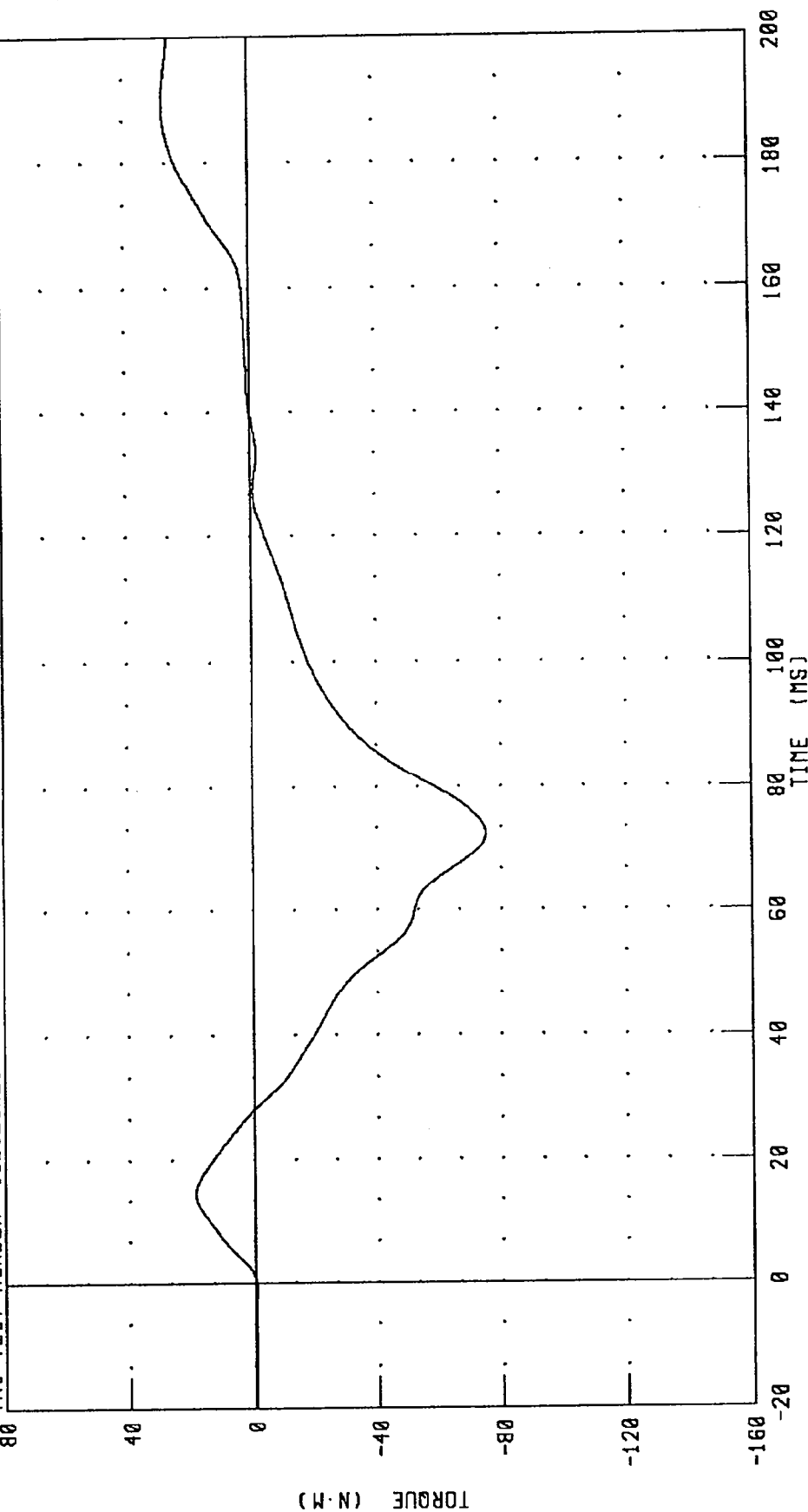
CHANNEL: NEKYM FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 192C29NE1

572E SN192 NECK EXT. CAL28

RUN NUMBER: 011096.1525;1



PEAK DATA: 27.50 N-M @ 189.44 MS; -75.16 N-M @ 72.32 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III

06-DEC-95

TRC INC.

TEST NO: 192C29TH2

572E SN192 H.S.THORAX CAL29

TEST PARAMETER	HIGH SPEED TEST	
	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.65 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	65.5 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5887. N
INTERNAL HYSTERESIS	69% - 85%	75.0%

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. M. Middel

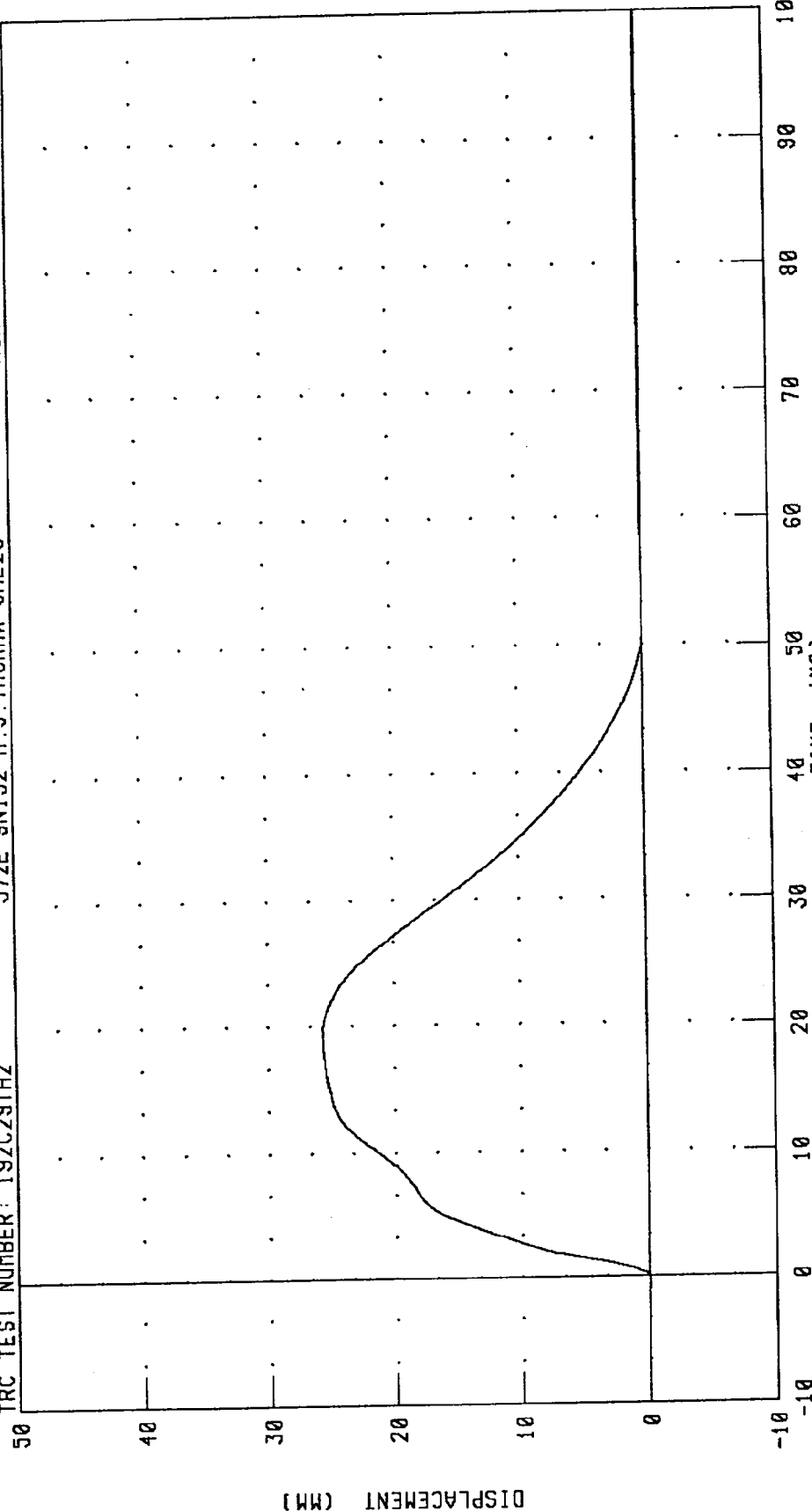
RUN NUMBER: 120695.1103;2

PART 572-E HYBRID III THORAX CALIBRATION
 PENDULUM DECELERATION

RUN NUMBER: 011096.1525;2

572E SN192 H.S. THORAX CAL29

TRC TEST NUMBER: 192C29TH2



PEAK DATA: 25.70 MM @ 19.12 MS; -0.08 MM @ -0.48 MS

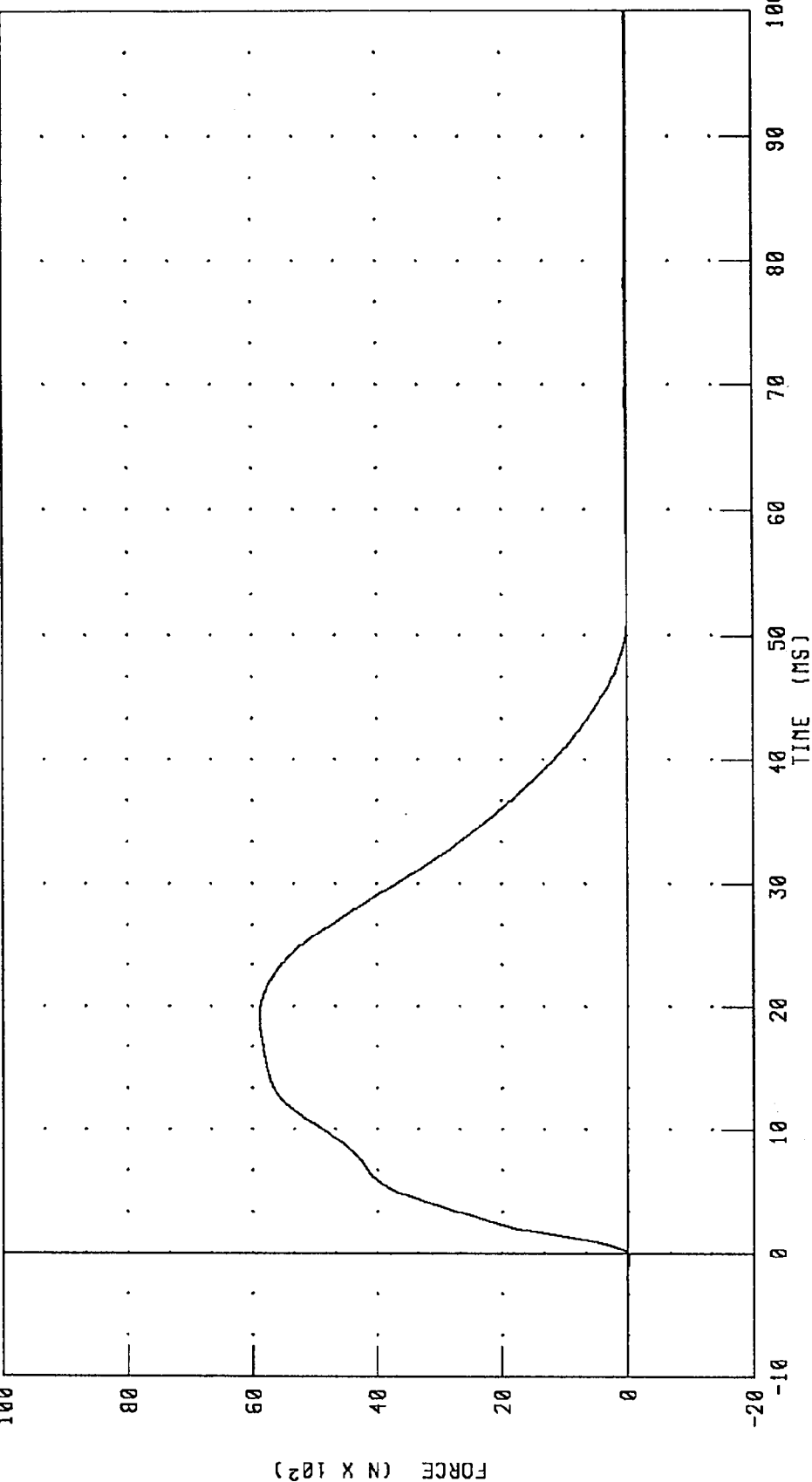
CHANNEL: PENXG FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION PENDULUM FORCE

TRC TEST NUMBER: 192C29TH2

572E SN192 H.S. THORAX CAL29

RUN NUMBER: 011096.1525;2



PEAK DATA: 5887.48 N @ 19.12 MS; -18.55 N @ -0.48 MS

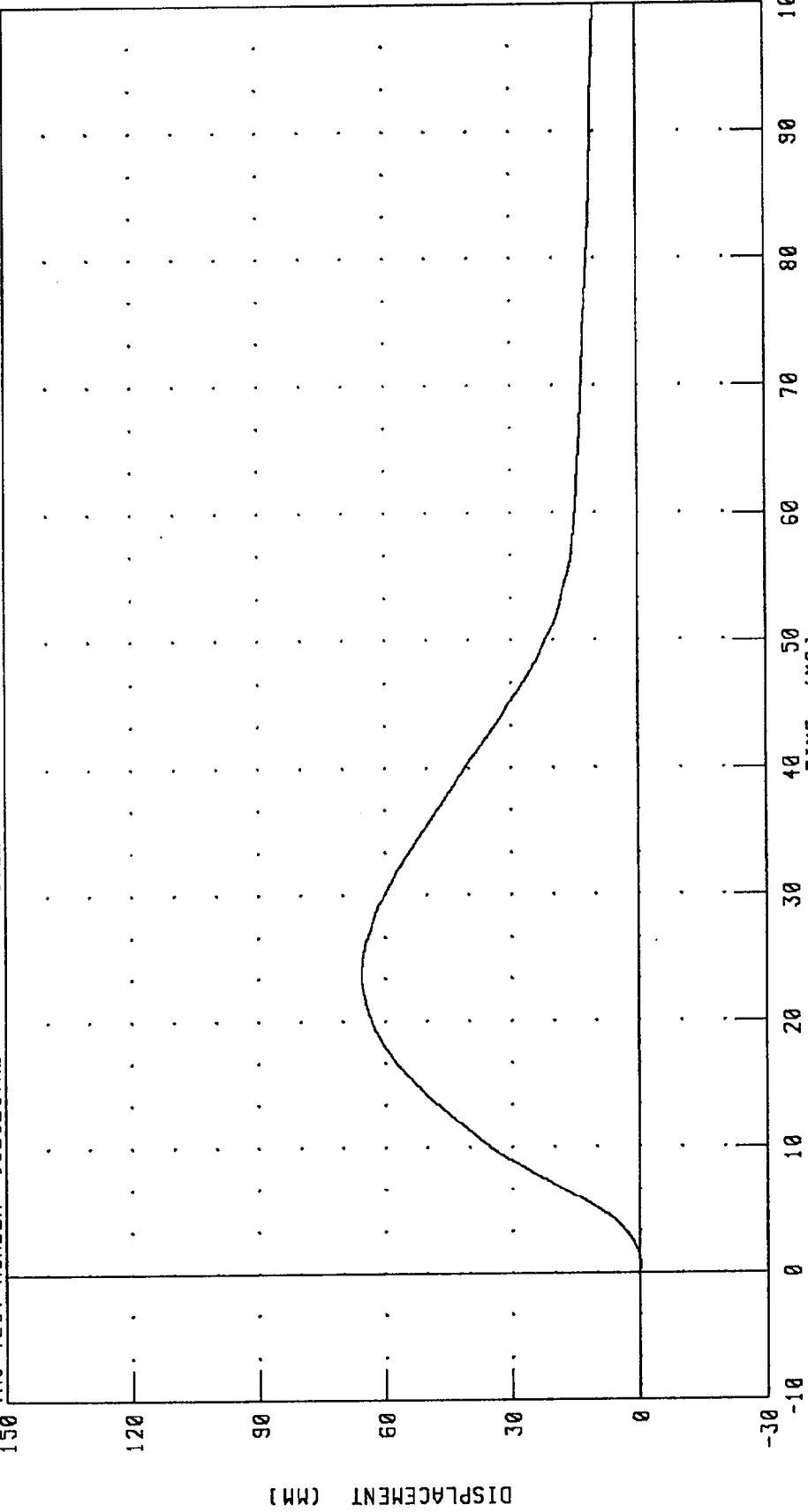
CHANNEL: PENXF FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION
STERNUM DISPLACEMENT

572E SN192 H.S. THORAX CAL29

IRC TEST NUMBER: 192C29TH2

RUN NUMBER: 011096.1525;2



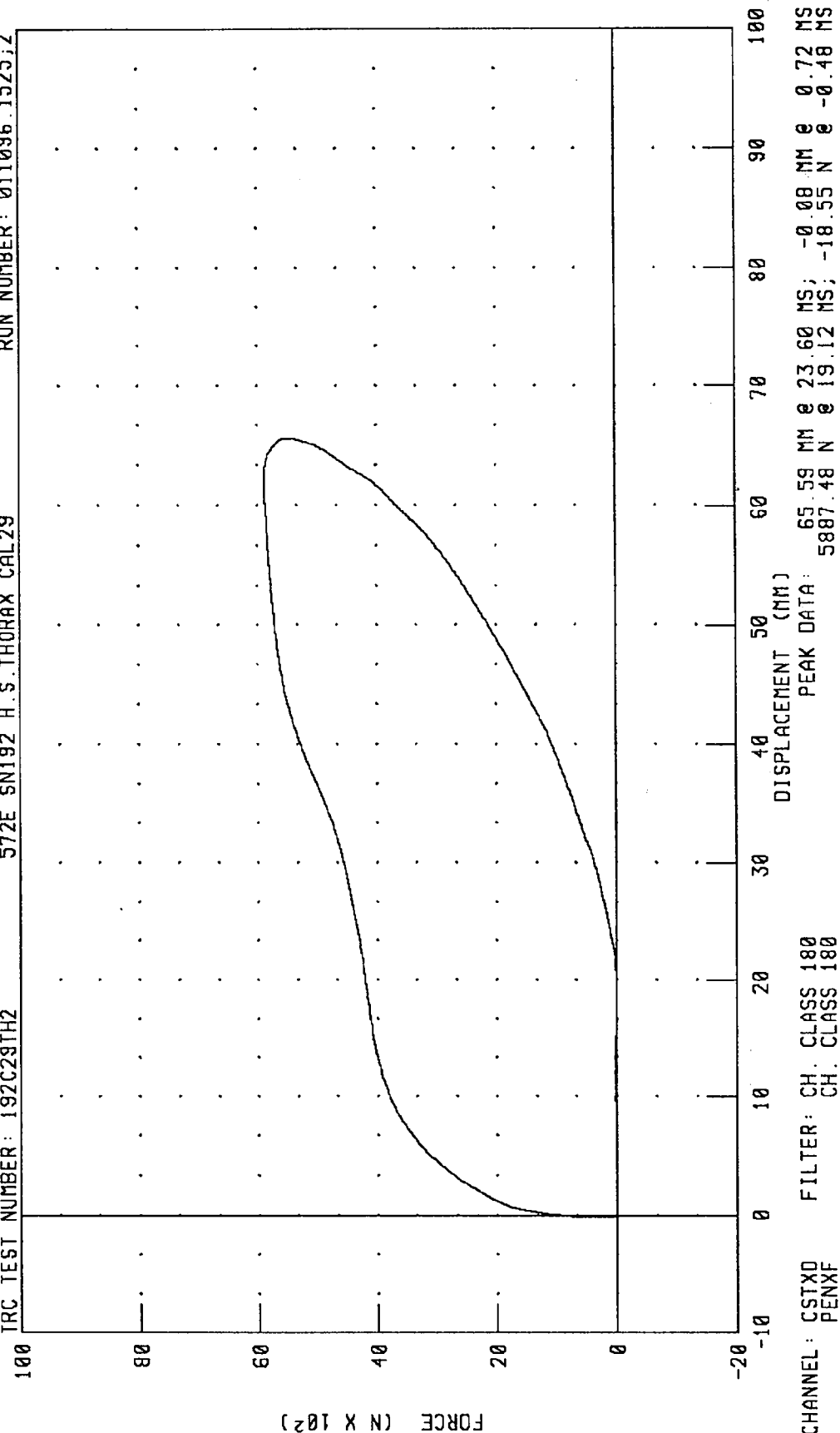
PEAK DATA: 65.59 MM @ 23.60 MS; -0.08 MM @ 0.72 MS

CHANNEL: CSTXD FILTER: CH. CLASS 180

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

TRC TEST NUMBER: 192C29TH2 RUN NUMBER: 011096.1525;2

572E SN192 H.S. THORAX CAL29



TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III

05-DEC-95

TRC INC.

TEST NO: 192C29RK1

572E SN192 RIGHT KNEE CAL 29

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	20.6 DEG. C
RELATIVE HUMIDITY	10 - 70 %	35.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.12 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5564.2 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. M. Middle

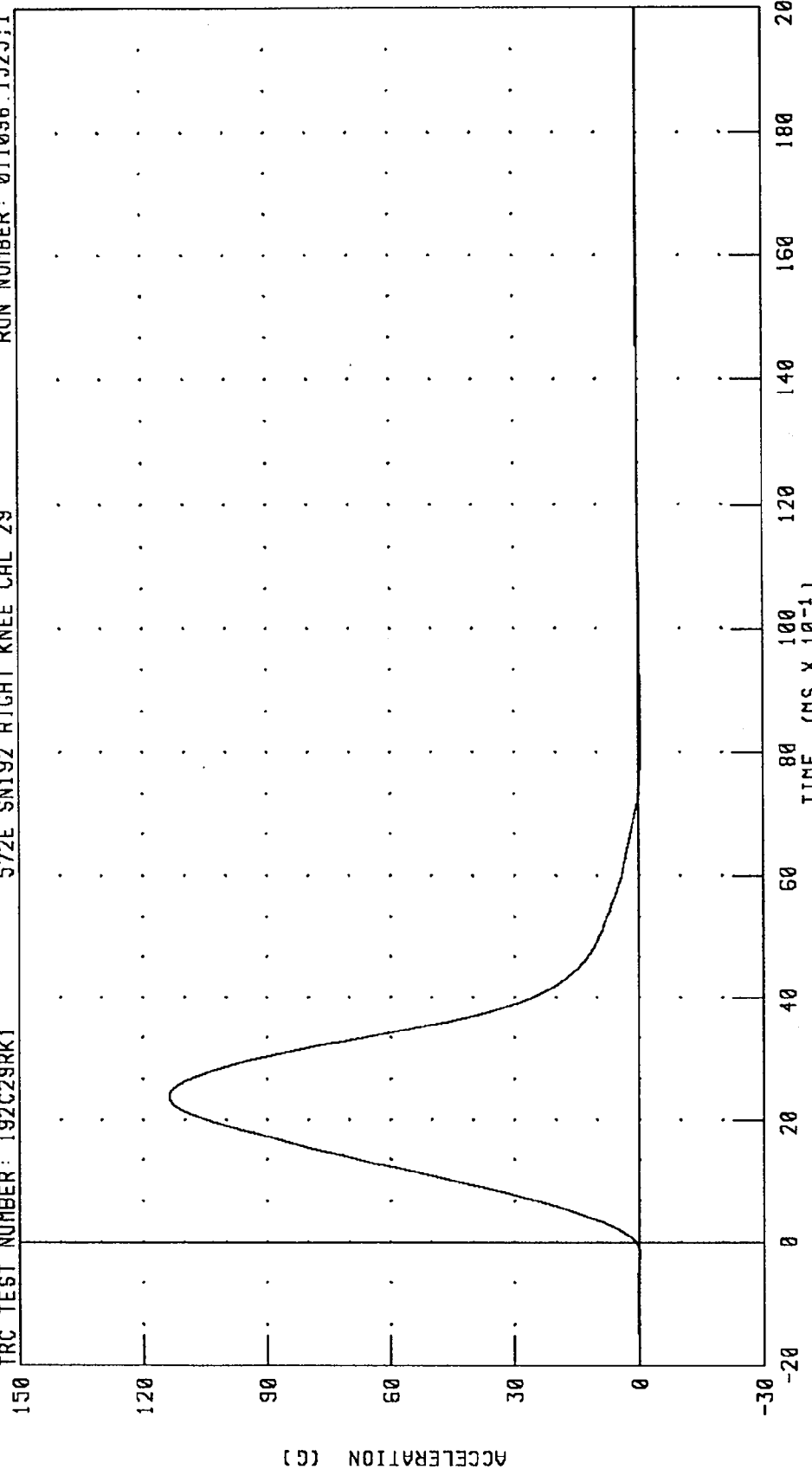
RUN NUMBER: 120595.0908;1

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

TRC TEST NUMBER: 192C29RK1

572E SN192 RIGHT KNEE CAL 29

RUN NUMBER: 011096.1525;1



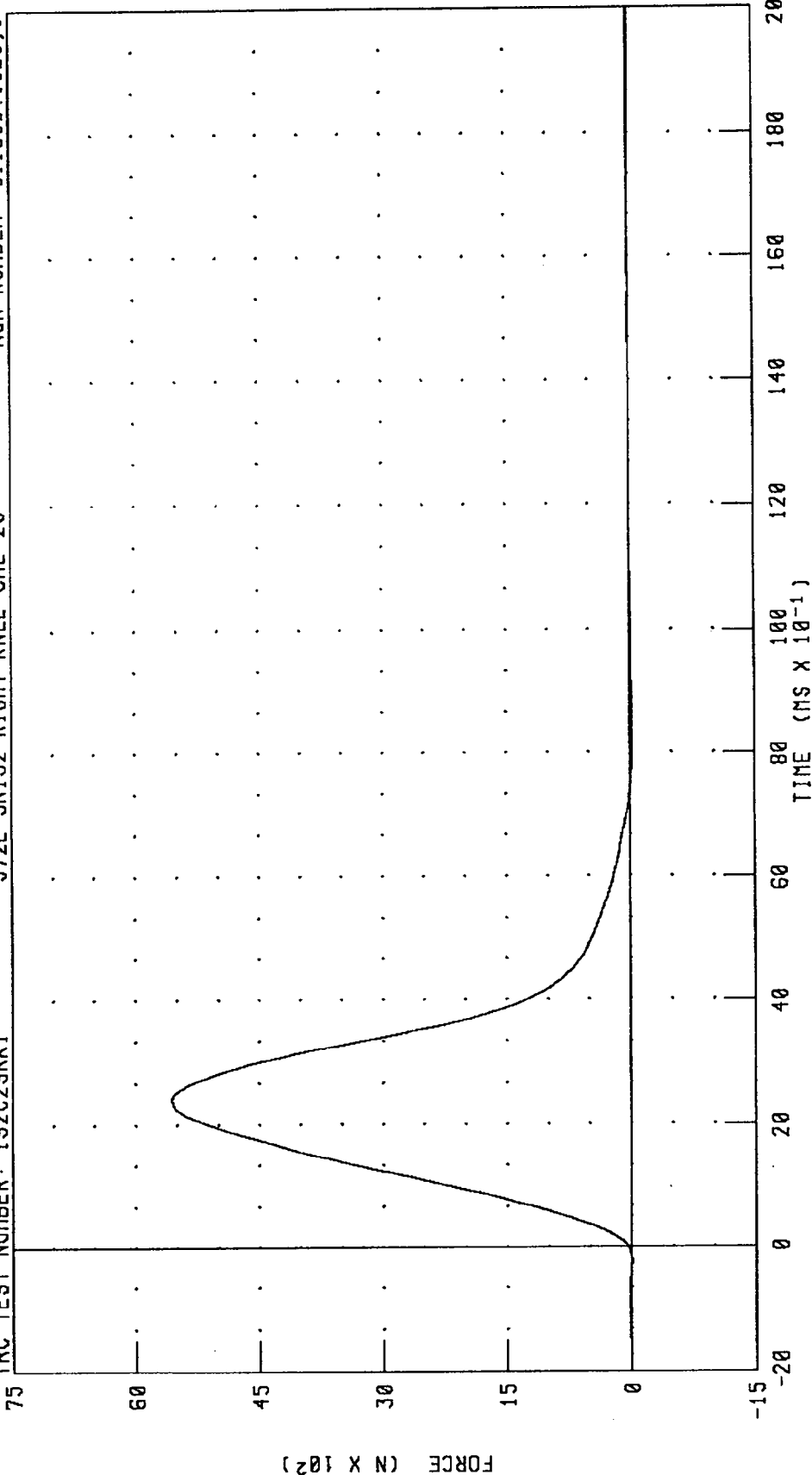
CHANNEL: PENXG FILTER: CH. CLASS 600

PEAK DATA: 113.72 G @ 2.40 MS; -0.45 G @ 8.16 MS

PART 572-E HYBRID III RIGHT KNEE CALIBRATION
 PENDULUM FORCE (5 KC PEND.)
 572E SN192 RIGHT KNEE CAL 29

TRC TEST NUMBER: 192C29RK1

RUN NUMBER: 011096.1525;1



CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III

05-DEC-95

TRC INC.

TEST NO: 192C29LK2

572E SN192 LEFT KNEE CAL 29

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	20.6 DEG. C
RELATIVE HUMIDITY	10 - 70 %	34.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.12 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	4953.9 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Chas. M. Edlert

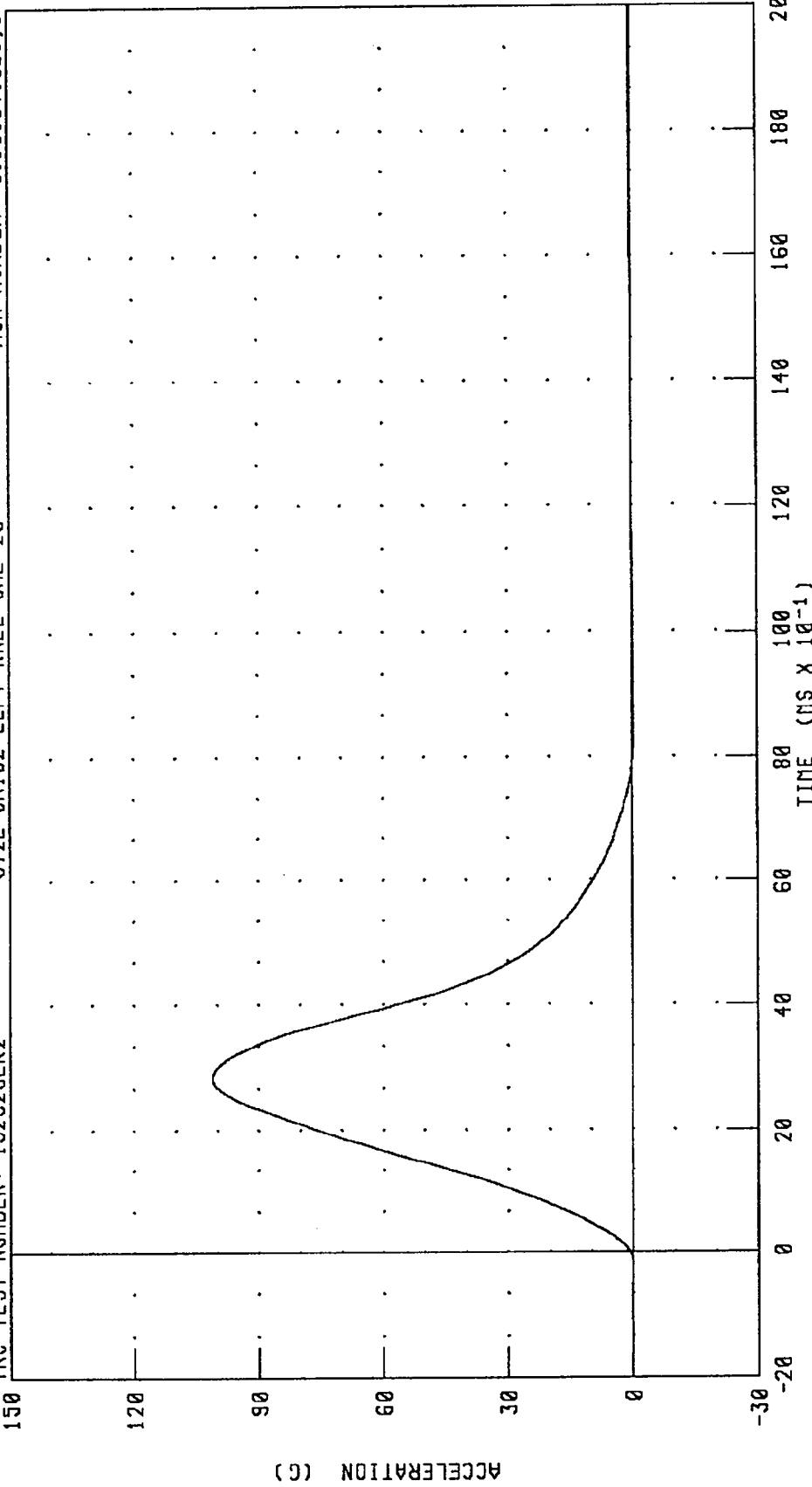
RUN NUMBER: 120595.1113;1

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

TRC TEST NUMBER: 192C29LK2

572E SN192 LEFT KNEE CAL 29

RUN NUMBER: 011096.1525;1



PEAK DATA: 101.25 G @ 2.80 MS; -0.57 G @ 8.64 MS

CHANNEL: PENXG FILTER: CH. CLASS 600

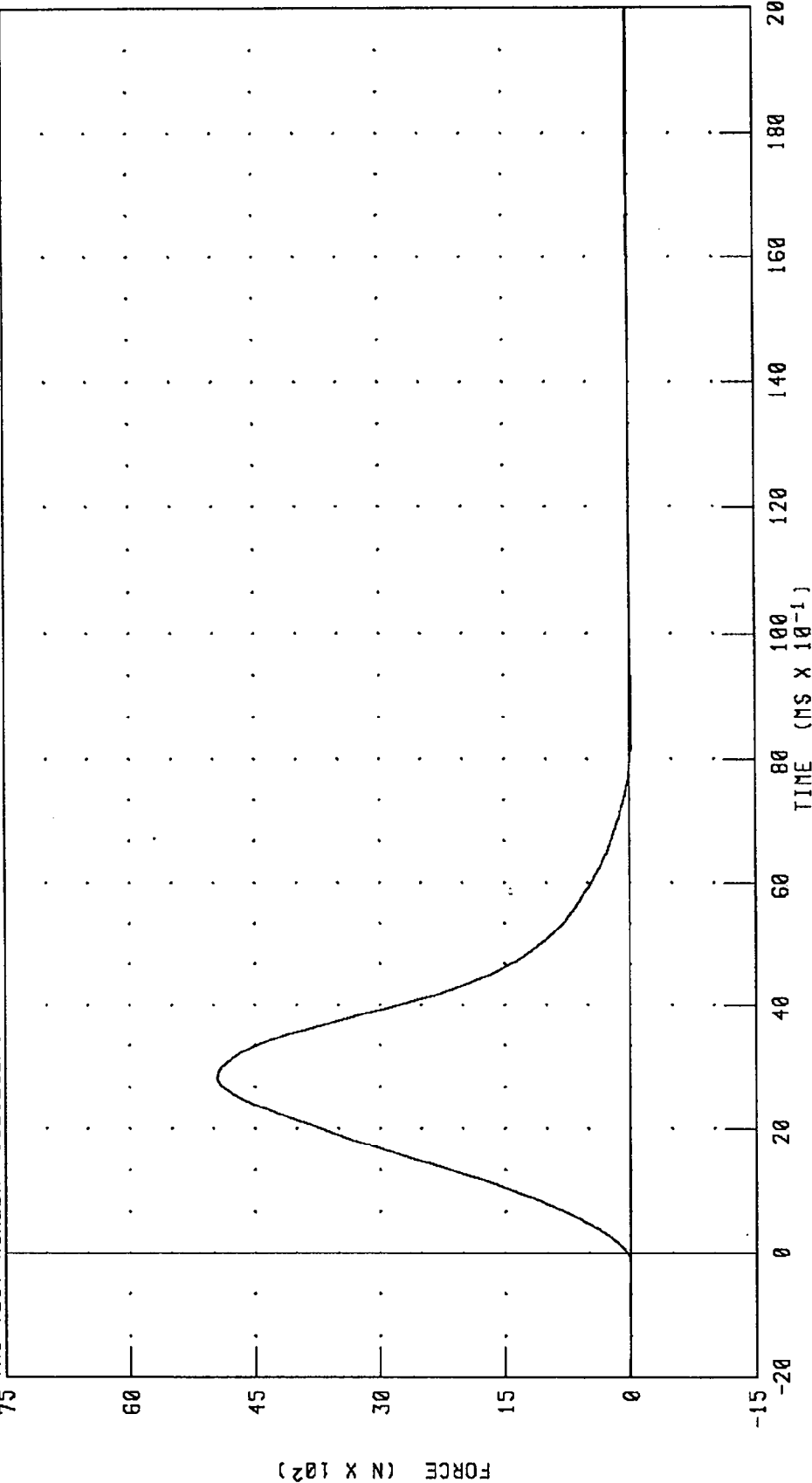
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 192C29LK2

572E SN192 LEFT KNEE CAL 29

RUN NUMBER: 011096.1525;1



CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 4953.94 N @ 2.80 MS; -27.73 N @ 8.64 MS

Appendix D

Miscellaneous Test Information

Dummy Instrument Calibrations
Driver 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	236	3419	Lebow	07/14/95	01/14/96
Shoulder belt force load cell	616	3419	Lebow	07/14/95	01/14/96

¹ Hybrid III use only.

Dummy Instrument Calibrations
Driver 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

Dummy Instrument Calibrations
Right Front Passenger 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	07/14/95	01/14/96
Shoulder belt force load cell	612	3419	Lebow	07/14/95	01/14/96

¹ Hybrid III use only.

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

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
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

Vehicle and Calibration Laboratory Instrument Calibrations

Vehicle Accelerometers

	Serial Number	Model Number	Manufacturer	Calibration Date	
				Last	Due
Left rear seat crossmember X-axis	10233	7264	Endevco	10/31/95	04/31/96
Left rear seat crossmember X-axis redundant	CL55H	7264	Endevco	09/20/95	03/20/96
Right rear seat crossmember X-axis	10081	7264	Endevco	10/17/95	04/17/96
Right rear seat crossmember X-axis redundant	DA99H	7264	Endevco	11/02/95	05/02/96
Engine top X-axis	FG17J	7264	Endevco	11/20/95	05/20/96
Engine bottom X-axis	DW12J	7264	Endevco	11/10/95	05/10/96
Right brake caliper X-axis	FH45J	7264	Endevco	11/20/95	05/20/96
Left brake caliper X-axis	AJ7A3	7264	Endevco	12/04/95	06/04/96
Instrument panel center X-axis	AGR75	7264	Endevco	12/04/95	06/04/96

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

<u>Accelerometers:</u>	+X: Forward	
	+Y: Leftward	
	+Z: Upward	
<u>Potentiometers:</u>	+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)
<u>Load cells:</u>	+Femur force:	Tension
	+Seat belt force:	Tension
	+Barrier force:	Tension
<u>Neck load cells:</u>	+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
<u>Tibia load cells:</u>	+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

Typical Test Measurements

Channel Class

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

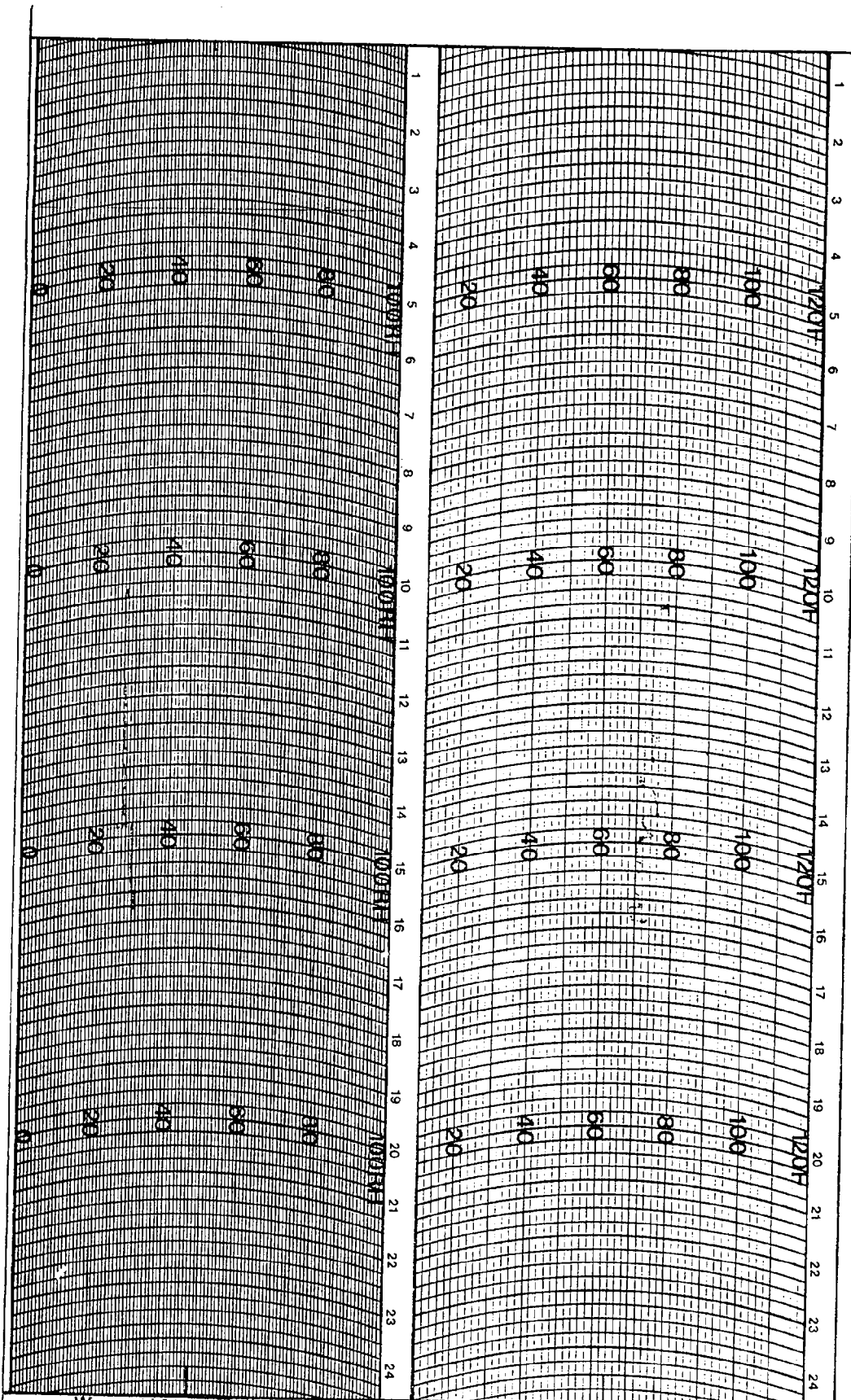
Moments 600

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 _____

Seat belts

SEAT BELT SAFETY

WARNING

Seat belts are life saving equipment. In a collision unrestrained passengers can be thrown around inside the vehicle or possibly thrown out of the vehicle, resulting in greater injury to themselves and to other occupants. Don't take chances!

- *DO make sure ALL occupants are securely strapped in at all times - even for the shortest journeys.*
- *ALWAYS adjust seat belts to eliminate any slack in the webbing, and to ensure that the diagonal belt passes across the shoulder without slipping off or pressing on the neck and fit the lap strap as low on the hips as possible (never across the abdomen). An improperly worn seat belt can result in serious injury or death.*
- *ALWAYS check to be certain the seat belt is not twisted or obstructed in any way that could impede smooth operation.*
- *DO have seat belts checked if the vehicle is involved in an accident.*
- *ALWAYS ensure that any adjustable seat back is never reclined more than 15 degrees when the vehicle is in motion. Seat belts are only effective when they are properly positioned on the body. A reclined seat could allow a passenger to slip under either the shoulder or lap belt.*

WARNING

DO NOT fit more than one person into a belt.

- *DO NOT allow foreign matter (particularly sugary food and drink particles to enter the seat belt locks - such substances can render the locks inoperative.*

NOTE: Pregnant women should ask a doctor for advice about the safest way to wear seat belts.

Seat belts



J434

WARNING

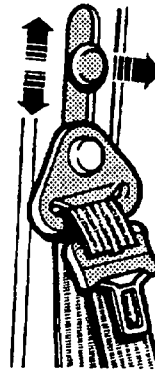
At all times, occupants should wear a seat belt for their protection in the event of a collision or sudden stop.

In some circumstances, perhaps due to the vehicle being on a slope, the automatic mechanism may engage, preventing the initial extension of a belt. This is not a fault - ease the belt free and use it.

Fastening the inertia reel belts
Draw the belt over the shoulder and across the chest, and then insert the metal tongue plate into the lock nearest the wearer - a 'CLICK' indicates that the belt is securely locked.

WARNING

Seat belts are designed to bear upon the bony structure of the body (pelvis, chest and shoulders) and can only be worn safely with the seats in a normal upright position.



J433

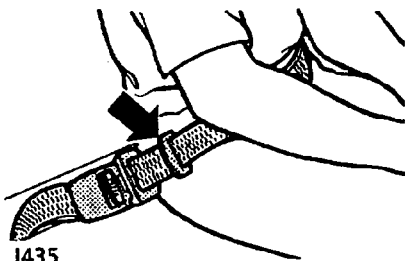
Upper anchorage adjustment (front seats)

The height of the seat belt upper anchorage can be adjusted for comfort AND safety. Pull the button out to raise or lower. For safety, the seat belt should always be worn with the webbing crossing the shoulder midway between the neck and the edge of the shoulder.

WARNING

Ensure that the anchorage is correctly located in one of the height positions before driving.

Seat belts



Lap belts

The rear central and inward facing seating positions are fitted with lap belts only. To adjust, pull the slider along the belt and feed the webbing through the buckle until the belt is comfortably tight. Fit the belt low on the hips, never on the abdomen.

Infant and child restraints

All infant and child restraint systems are designed to be secured in vehicle seats by means of a lap belt or the lap belt portion of a lap/shoulder belt.

When installing and using any infant or child restraint system always follow the instructions provided by the manufacturer concerning the installation and use. The locking clip provided by the child seat manufacturer must be used for proper installation of the child seat. Failure to properly secure the child restraint system in the vehicle can endanger the child in a collision or a sudden stop and cause injury to other passengers.

Locking mechanism

Vehicles manufactured after September 1, 1995 as required by federal law will have the following seat belt feature.

The seat belts fitted to the front passengers seat and the two outer rear seats, have a special locking mechanism to aid in securing child restraint systems. The mechanism is used to secure a child restraint as follows:

1. Attach the seat belt to the child restraint in accordance with the manufacturer's instructions.
2. Insert the metal tongue of the seat belt into the lock ensuring that it engages with a 'click'.
3. Pull on the shoulder section of the belt until it is fully extended.
4. Allow the belt to retract. A 'clicking' sound will confirm that the mechanism has engaged.
5. Remove all slack from the mechanism, by pulling upwards on the shoulder belt, immediately above the child restraint.
6. Ensure that the child restraint is held securely in place; if not, unlatch the belt and repeat steps 1 to 6.

The centre rear seating position is fitted with a lap belt which can be manually tightened to secure the infant or child restraint system. Older children should use the lap/shoulder belt fitted to the outer seating positions.

Never leave a child unattended in your vehicle.

Seat belts

WARNING

Infants and small children too small for seat belts should be restrained in a child safety seat or restraint system appropriate to their age and/or size, and which is approved for use in your vehicle. Always ensure that the manufacturers fitting instructions are followed exactly.

- *DO NOT allow a baby or infant to be carried on the lap. The force of a crash can increase effective body weight by as much as 30 times, making it impossible to hold on to the child.*
- *DO NOT use a child seat that 'hooks' over a seat back, it is not secure!*
- *Accident statistics show that children are safer when properly restrained in the rear seating positions than in the front. Wherever possible ensure that children travel in the rear of the vehicle. However, if it is necessary for a child to travel in the front, set the seat fully rearwards and use an approved FORWARD FACING child seat - DO NOT INSTALL REARWARD FACING CHILD SEATS IN ANY FRONT PASSENGER SEAT POSITION.*

Caring for seat belts

Regularly inspect the belt webbing for signs of wear, paying particular attention to the fixing points and adjusters. Always replace a seat belt that has withstood the strain of an impact or shows signs of fraying.

DO NOT bleach or dye the webbing. Clean the webbing using warm water and non-detergent soap only - allow to dry naturally and DO NOT retract the belt until completely dry.

Testing inertia reel belts

From time to time, carry out the following tests:

1. With the seat belt fastened, give the webbing near the buckle a quick upward pull. The buckle must remain securely locked.
2. With the seat belt fastened, sit back in the seat and ensure any slack has been rewound. Then, move the upper body sharply forward from the hips - the safety mechanism must lock automatically and prevent any further unreeling of the belt.
3. With the seat belt unfastened, unreel the webbing to the limit of its travel. Check that unreeling is free from snatches and snags.

SRS/Airbag



The airbag supplementary restraint system (SRS) provides additional protection for the driver and front seat passenger, in the event of a collision resulting in severe frontal impact on the vehicle.

Always remember; the SRS/airbags are a supplementary restraint system providing ADDITIONAL protection in certain types of frontal impact collision only - they do NOT replace the need to wear a seat belt. For maximum safety protection in all crash situations, seat belts must be worn!

How the SRS/airbag works

The airbag supplementary restraint system (SRS), includes twin airbag modules (shown in illustration) for both the driver and the front seat passenger.

In the event of a collision involving a frontal impact, the airbag diagnostic control unit and crash sensors monitor the speed of deceleration caused by the impact, to determine whether the SRS/airbag should be activated.

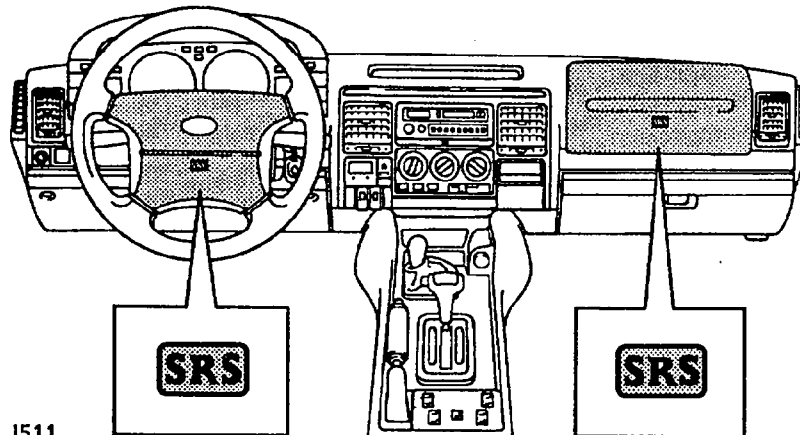
If there is sufficient deceleration, the system causes each airbag to inflate. Inflation is instantaneous and accompanied by a loud noise. Also evident are traces of smoke and powder, which do not indicate a malfunction of the airbag.

After inflation, an airbag will immediately deflate, thereby ensuring that the driver's visibility is not impaired.

NOTE: Not all frontal collisions will activate the system. This does not indicate that there is a fault with the SRS/airbag system.

WARNING

Following inflation, some SRS/airbag components are hot - DO NOT touch until they have cooled.



J511

SRS/Airbag

WARNING

Even with SRS/airbag equipment fitted, seat belts must ALWAYS be worn because:

- *An airbag will only inflate in certain types of frontal collisions. NO protection is afforded against the effects of side or rear impacts, roll over accidents, or minor frontal impacts.*
- *Inflation and deflation take place instantaneously and will not provide protection against the effects of secondary impacts that can occur during multiple vehicle collisions.*

CHILD SEATS

WARNING

Accident statistics show that children are safer when properly restrained in the rear seating positions than in the front. If a forward facing child seat, suitable for the size of the child is available and it is necessary for a child to travel in the front, set the seat fully rearwards and use an approved FORWARD FACING child seat. DO NOT INSTALL REARWARD FACING CHILD SEATS IN ANY FRONT PASSENGER SEAT POSITION - the inflating airbag could impact with the seat, causing injury to the child.

WARNING

Both front seating positions are equipped with knee bolsters to provide knee protection in the event of an impact. DO NOT modify the knee bolsters, or mount any after market equipment on or behind them.

WARNING

The airbag module inflates with considerable speed and force. For your safety:

- *NEVER attach accessory items to an airbag module cover, or place items of hand luggage or any objects on the top of a module cover; these could interfere with the inflation of the airbag, or if the airbag inflates, be propelled inside the vehicle causing injury to the occupants.*
- *DO NOT allow occupants to obstruct the operation of the airbag modules by placing their feet, knees or any part of their person in contact with, or in close proximity to, an airbag module while the vehicle is in motion.*
- *Activation of an airbag creates dust, causing possible breathing difficulties for asthma sufferers or other people with respiratory problems. If an airbag is activated, any occupant who suffers from breathing difficulties should; either leave the vehicle as quickly as possible, or obtain fresh air by fully opening the windows or doors.*

SRS/Airbag

SRS/airbag warning light

Whenever the starter switch is turned to position 'II', the diagnostic control unit monitors the readiness of the system's electrical circuits. The elements of the system being monitored include:

- Crash sensors
- SRS warning light
- Rotary coupler
- Airbag modules
- Airbag diagnostic control unit
- Airbag wiring harness

A warning light mounted on the instrument panel will alert you to any malfunction of the SRS/airbag. The system should always be checked by a dealer if:

- The warning light fails to illuminate when the starter switch is turned to position 'II'.
- The warning light fails to extinguish within approximately eight seconds after the starter switch is turned to position 'II'.
- The warning light illuminates and/or flashes while the vehicle is being driven.

Service information

Certain components of the SRS/airbag must be replaced by a Land Rover dealer after 10 years from the date of manufacture (shown on the certification plate on the rear face of the left hand front door).

ALWAYS contact your dealer if:

- an airbag inflates.
- the front of the vehicle is damaged, even if the airbag has not inflated.
- any part of an SRS/airbag module cover (the steering wheel centre pad or the passenger side fascia panel) shows signs of cracking or damage.

WARNING

DO NOT attempt to service, repair, replace, or modify any part of the SRS/airbag; tampering could cause inadvertent activation of the system, resulting in personal injury.

SRS/Airbag

WARNING

The components that make up the SRS/airbag are sensitive to electrical or physical interference, either of which could easily damage the system and cause inadvertent operation or a malfunction of the airbag module. ALWAYS seek the assistance of a Land Rover dealer to carry out any of the following:

- *Removal or repair of any wiring or component in the vicinity of any of the SRS/airbag components (yellow wiring harness), including; the steering wheel, steering column, instrument and fascia panels.*
- *Installation of electronic equipment such as a mobile telephone, two-way radio or audio system.*
- *Modification to the front of the vehicle, including the bumper and chassis.*
- *Attachment of accessories to the front of the vehicle, such as a winch or brush bar.*
- *Scrapping a vehicle with an uninflated airbag. Uninflated airbags are potentially dangerous and must be safely deployed before a vehicle is scrapped.*
- *See your Land Rover Dealer or Centre for advice on safe deployment of SRS/airbags.*