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**1999 Dodge Intrepid
into a 30° Left Angled Barrier
TRC Test Number: 990604-2**

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Section 1.0

Purpose and Test Procedure

Purpose and Test Summary

This 30 mph 30° left angled barrier impact test has as the main objective to investigate both vehicle and occupant dynamics during a 30° left angled barrier test. A secondary objective is to gather information on depowered airbags.

This test was conducted with a 1999 Dodge Intrepid that impacted a 30° left angled barrier. The test vehicle contained two instrumented Hybrid III 5th percentile adult female dummies.

Section 2.0

30° Left Angled Barrier Impact Test Summary

Test Procedure

This test was conducted per VRTC personnel's instructions. Data was obtained relative to FMVSS 208, "Occupant Crash Protection," performance.

The test vehicle was instrumented with eight (8) accelerometers to measure longitudinal, lateral, and vertical axis accelerations and two (2) inductive pickup switches to measure the driver and passenger airbag fire times. The vehicle's specified impact velocity range was 47.5 to 49.1 kph. The vehicle impacted a 30° left angled barrier.

The test vehicle contained two (2) Hybrid III 5th percentile adult female anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the FMVSS 208 laboratory seating procedure.

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

The forty (40) data channels were digitally sampled at 12,500 samples per second and processed per Sections 11.13 through 11.15 of the Laboratory Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and fourteen (14) high-speed motion picture cameras. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera.

The vehicle and occupant data are summarized in Section 2.0. The FMVSS 208 data are presented in Section 3.0. The vehicle, occupant, and camera measurements are presented in Section 4.0. Appendix A contains the still photographic prints. Appendix B contains the data plots. Appendix C contains the dummy certification data. Appendix D contains the miscellaneous test information.

Test Results Summary

This 30° left angled barrier test was conducted at TRC on June 4, 1999.

The test vehicle, a 1999 Dodge Intrepid, was equipped with airbags at the driver's and right front passenger's seating positions. The vehicle's test weight was 1671.0 kilograms. The vehicle's impact speed was 48.3 kph. The vehicle's maximum static crush was 490 millimeters.

The driver's 15-millisecond HIC was 87 and its 36-millisecond HIC was 180. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.6 g. The driver's chest deflection was 27.6 millimeters. The driver's left and right femur maximum compressive forces were 3928 N and 4249 N, respectively.

The right front passenger's 15-millisecond HIC and its 36-millisecond HIC data was lost¹. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 51.1 g. The passenger's chest deflection was 5.8 millimeters. The right front passenger's left and right femur maximum compressive forces were 5397 N and 4192 N, respectively.

¹See Data Acquisition Explanations

Data Acquisition Explanations

The driver neck moment about the X-axis channel, NEKXM1, recorded a data spike at approximately 10 milliseconds.

The passenger head Z-axis accelerometer channel, HEDZG2, recorded invalid data throughout the event. This invalid data affected the passenger head resultant channel, HEDRG2. This invalid data consequently resulted in invalid values for the passenger 15 and 36 millisecond HIC values.

The left brake caliper X-axis accelerometer, BCLXG1, exceeded its full scale capacity at approximately 45 ms and recorded invalid data after that time.

Table 1 Crash Test Summary

Test type:	30° left angled barrier impact
Test date:	June 4, 1999
Test time:	1515
Ambient temperature at impact area:	21° C
Vehicle year/make/ model/body style:	1999/Dodge/Intrepid/Sedan
Vehicle test weight:	1671.0 kg
Impact angle ¹ :	330°
Impact velocity ² :	
Primary:	48.3 kph
Secondary:	48.3 kph
Maximum static crush:	490 mm
Average rebound:	N/A
Number of cameras:	
Real-time:	1
High-speed:	14
Door opening data:	
Left-front:	Easy
Right-front:	Easy

¹ With respect to tow track centerline.

² Speed trap measurement ($\pm .08$ km/h accuracy)

Table 1 Crash Test Summary, Cont'd.

Dummies:	<u>Driver #289</u>	<u>Passenger #369</u>
Type:	Hybrid III 5 th percentile adult female	Hybrid III 5 th percentile adult female
Location:	Left front	Right front
Restraint:	Airbag	Airbag
Number of data channels:	15	15
Front seat data:		
Seat track failure:	None	None
Seat back failure:	None	None
Visible dummy contact points:		
Head:	Airbag, A-pillar	Airbag, Instrument panel
Chest:	Airbag, Steering wheel	Airbag
Abdomen:	None	None
Left knee:	Instrument panel	Instrument panel
Right knee:	Instrument panel	Instrument panel

Table 2 Test Vehicle Information

Vehicle year/make/
model/body style: 1999/Dodge/Intrepid/Sedan

Color:

VIN: 2B3HD46R4XH706898

Engine data:

Placement: Transverse

Cylinders: 6

Displacement: 2.7 Liters

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

Final drive: X fwd, rwd, 4wd

Date vehicle received: N/A

Odometer reading: N/A

Dealer's name and address: Nelson Auto Group
1751 South Main St.
Bellefontaine, OH 43311-1997

Accessories:

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

Certification data from vehicle's label:

Vehicle manufactured by: Chrysler Corp.

Date of manufacture: 02/99

VIN: 2B3HD46R4XH706898

GVWR: 4529 lb.

GAWR: Front: 2567 lb.

Rear: 2012 lb.

Table 2 Test Vehicle Information, Cont'd.

Size of tires on vehicle: P205/70R15
Spare tire: Space saver
Type of front seats: Bucket

Tire & capacity data from vehicle's label:

Recommended tire size: P205/70R15
Recommended cold tire pressure:
Front: 32 psi
Rear: 32 psi
Designated Seating Capacity:
Front 2
Rear 3
Total 5
Vehicle Cargo Weight: 865 lb.

Test vehicle attitudes:

Delivered attitude:	LF: 732 mm	RF: 738 mm	LR: 740 mm	RR: 747 mm
Fully loaded attitude:	LF: 712 mm	RF: 721 mm	LR: 711 mm	RR: 720 mm
Pre-test attitude:	LF: 718 mm	RF: 718 mm	LR: 722 mm	RR: 713 mm
Post-test attitude ¹ :	LF: 814 mm	RF: 755 mm	LR: 678 mm	RR: 744 mm
Post-test attitude ² :	LF: 900 mm	RF: 746 mm	LR: 740 mm	RR: 718 mm

¹After impacting the barrier, the vehicle's left front tire fell into the monorail opening. Attitudes were taken where it lay.

²After moving the vehicle out of the rail opening, attitudes were measured again.

Table 2 Test Vehicle Information, Cont'd.

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

Right front	495.3 kg	Right rear	275.3 kg
Left front	490.3 kg	Left rear	280.4 kg
Total front weight	985.6 kg	(63.9% of total vehicle weight)	
Total rear weight	555.7 kg	(36.1% of total vehicle weight)	
Total delivered weight	1541.3 kg		

Calculation of test vehicle's target test weight:

RCLW = Rated Cargo and Luggage Weight

UDW = Unloaded Delivered Weight (1541.3 kg)

DSC¹ = Designated Seating Capacity (5)

RCLW² = 52.2 kg

Target test weight = UDW + RCLW + (number of Hybrid III Dummies x 47.6 kg per dummy)

Target test weight = 1541.3 + 52.2 + 95.2 = 1688.7 kg

Weight of test vehicle with required dummies:

Right front	513.9 kg	Right rear	318.9 kg
Left front	516.2 kg	Left rear	322.0 kg
Total front weight	1030.1 kg	(61.6% of total vehicle weight)	
Total rear weight	640.9 kg	(38.4% of total vehicle weight)	
Total test weight	1671.0 kg	(1.05% under target test weight)	

Weight of ballast secured in vehicle: N/A

Components removed to meet target test weight: Rear bumper facia, Muffler,
Floor mats (both), Rear seat and seat back

CG rearward of front wheel centerline: 1106 mm

Vehicle Wheelbase: 2884 mm

¹ The designated seating capacity is determined by counting the number of seat belts installed in the vehicle.

² From vehicle's tire label.

Table 3 Post-Impact Data

Test number: 990604-2
Test date: June 4, 1999
Test time: 1515
Test type: 30° left angled barrier impact
Impact angle: 330°
Ambient temperature
at impact area: 22° C
Temperature in
occupant compartment: 21° C
Impact velocity:
Primary: 48.3 kph
Secondary: 48.3 kph
Specified range: 47.5 to 49.1 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:

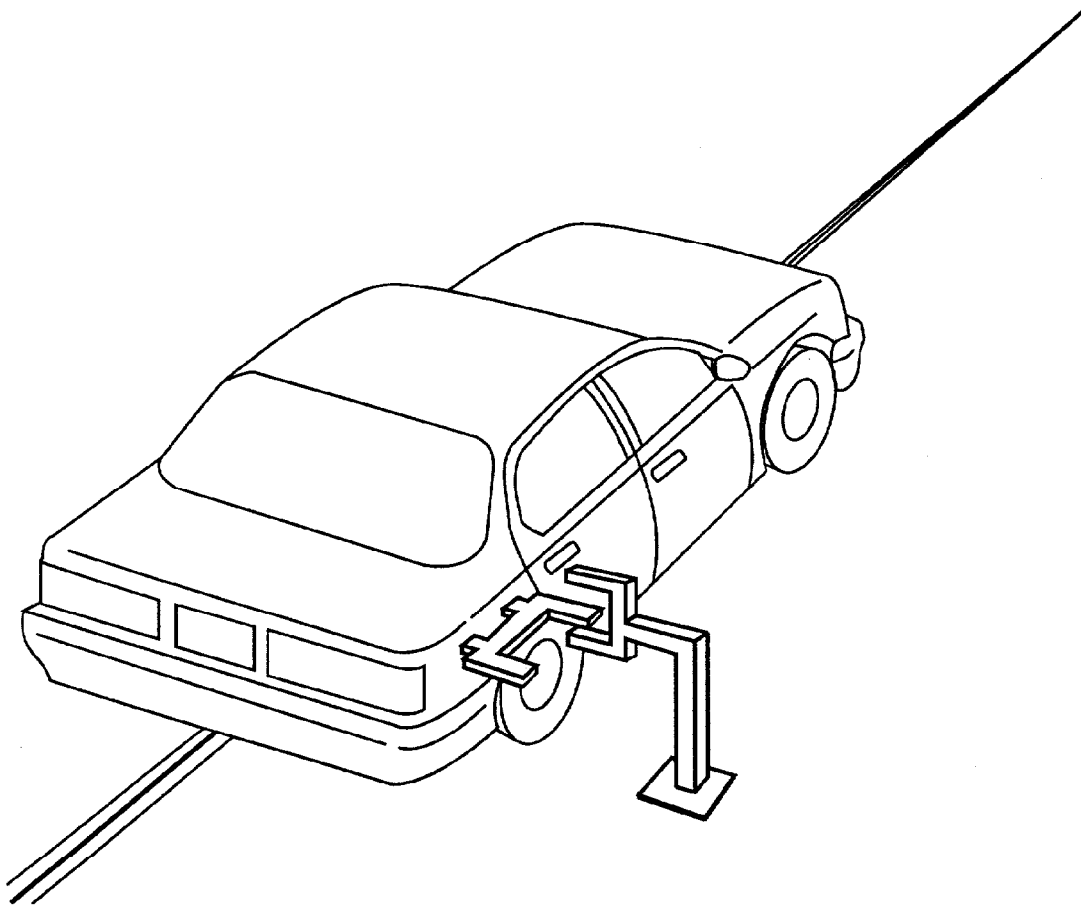
Pre-test:	L: 5005 mm	C: 5175 mm	R: 5000 mm
Post-test:	L: 4515 mm	C: 4905 mm	R: 5090 mm
Total crush:	L: 490 mm	C: 270 mm	R: -90 mm
Average crush:	223 mm		

Test vehicle rebound from 30° left angled barrier:

Distance from test vehicle to barrier:

Post-test:	L: N/A	C: N/A	R: N/A
Average rebound:	N/A		

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 30 mph 30° Left Angled Barrier Impact

Test date: June 4, 1999
 Vehicle year/make/model/body style: 1999/Dodge/Intrepid/Sedan
 VIN: 2B3HD46R4XH706898
 Build date: 02/99
 Test weight: 1671.0 kg
 Vehicle wheelbase: 2884 mm
 Maximum width: 1902 mm
 Front overhang: 1068 mm

Collision Deformation
 Classification (CDC) Code: 12FDEW3

Crush depth measurements:

C1:	490 mm
C2:	461 mm
C3:	325 mm
C4:	225 mm
C5:	98 mm
C6:	-90 mm

Midpoint of damage: D: Vehicle Longitudinal Centerline

Length of damaged region: L: 1525 mm

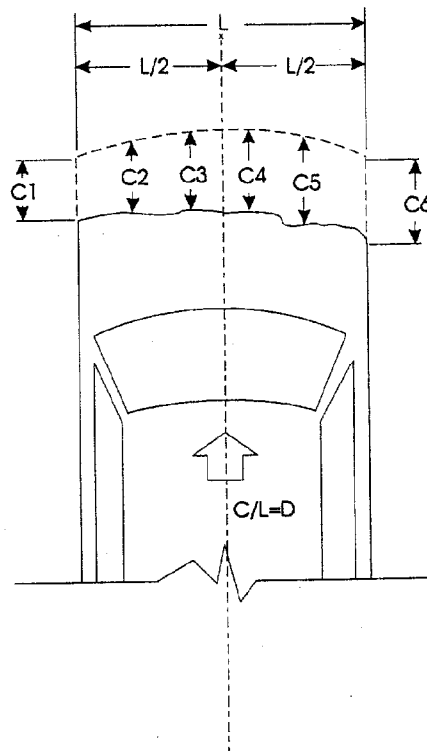


Figure 3 Vehicle Accelerometer Placement

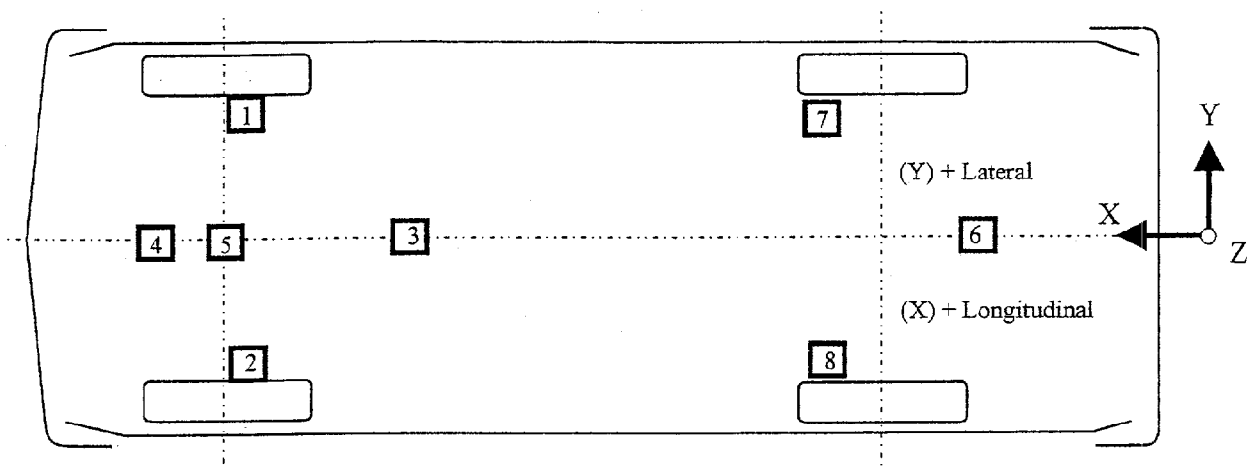
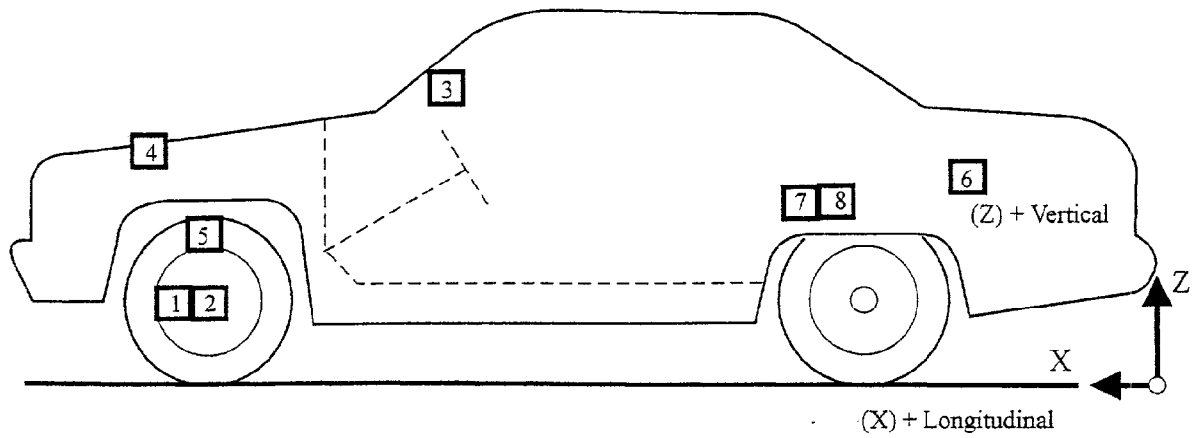


Table 4 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 990604-2							POSITIVE	Negative
No. LOCATION	X	Y	Z	DIRECTION	DIRECTION			
1 LEFT BRAKE CALIPER	PRE 4255 mm	730 mm	295 mm					
	POST 4150 mm	700 mm	NA					
LONGITUDINAL ¹				11.7 g	@ 29.3 ms	90.2 g	@ 45.0 ms	
2 RIGHT BRAKE CALIPER	PRE 4255 mm	-730 mm	308 mm					
	POST 4265 mm	-751 mm	290 mm					
LONGITUDINAL				10.7 g	@ 152.3 ms	67.3 g	@ 56.2 ms	
3 INSTRUMENT PANEL CENTER	PRE 3405 mm	0 mm	885 mm					
	POST 3395 mm	0 mm	876 mm					
LONGITUDINAL				16.9 g	@ 136.0 ms	55.7 g	@ 55.4 ms	
4 ENGINE TOP	PRE 4630 mm	-145 mm	781 mm					
	POST 4513 mm	140 mm	775 mm					
LONGITUDINAL				22.7 g	@ 55.2 ms	82.2 g	@ 40.6 ms	
5 ENGINE BOTTOM	PRE 4530 mm	18 mm	163 mm					
	POST 4265 mm	31 mm	211 mm					
LONGITUDINAL				14.1 g	@ 53.9 ms	68.8 g	@ 39.7 ms	

Table 4 Vehicle Accelerometer Locations and Data Summary, Cont'd.

TEST NUMBER: 990604-2								
No.	LOCATION	X	Y	Z	POSITIVE DIRECTION		NEGATIVE DIRECTION	
6	REAR VEHICLE	PRE 283 mm	0 mm	498 mm	18.0 g	@ 116.8 ms	16.1 g	@ 78.1 ms
	CENTERLINE VERTICAL	POST 283 mm	0 mm	495 mm				
7	LEFT REAR SEAT	PRE 2180 mm	450 mm	215 mm	1.9 g	@ 132.9 ms	28.1 g	@ 70.6 ms
	LONGITUDINAL	POST 2180 mm	450 mm	328 mm				
8	RIGHT REAR SEAT	PRE 2180 mm	-470 mm	215 mm	1.6 g	@ 118.6 ms	27.7 g	@ 69.9 ms
	LONGITUDINAL	POST 22180 mm	-450 mm	328 mm				

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

¹See DATA ACQUISITION EXPLANATIONS

Section 3.0

FMVSS 208 Data

Table 5 Dummy Injury Criteria

	<u>Maximum Acceleration</u>						
	Head				Chest		
	X	Y	Z	R	X	Y	Z
Driver	-36.6 g	27.3 g	18.2 g	36.9 g	-45.6 g	14.4 g	-6.0 g
Passenger	-39.5 g	27.9 g	N/A ³	N/A ³	-50.0 g	22.9 g	-18.8 g

Maximum Femur Compressive Force

	Left Femur	Right Femur
Driver	3928 N	4249 N
Passenger	5397 N	4192 N

15-millisecond Head Injury Criteria¹

	HIC	Time t ₁	Time t ₂
Driver	87	63.5 ms	78.6 ms
Passenger ³	N/A	N/A	N/A

36-millisecond Head Injury Criteria¹

	HIC	Time t ₁	Time t ₂
Driver	180	58.9 ms	94.9 ms
Passenger ³	N/A	N/A	N/A

Chest Maximum Resultant Acceleration²

	Acceleration	Time t ₁	Time t ₂
Driver	44.6 g	85.1 ms	88.2 ms
Passenger	51.1 g	103.6 ms	106.6 ms

Maximum Chest Deflection

Driver	27.6 mm
Passenger	5.8 mm

¹ As defined in FMVSS No. 208

² Defined as equal to or exceeding 0.003 sec. duration

³ See Data Acquisition Explanations

Dummy Kinematic Summary

Driver Dummy

Upon impact, the driver dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head and chest impacted the airbag. As the dummy translated forward, the dummy's chest impacted the steering wheel. The dummy's head rotated clockwise and the top and front of the dummy's head contacted the A-pillar. The dummy's head rebounded from the A-pillar and the back of the dummy's head translated outside of the open driver's door window. The dummy rebounded into the driver's seat and came to rest seated upright and leaning to the left.

Right Front Passenger Dummy

Upon impact, the passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head and chest impacted the airbag. The dummy's torso rotated clockwise and translated forward and to the left. As the dummy continued to translate, the top of the dummy's head impacted the instrument panel. The dummy rebounded back into the passenger seat and came to rest seated in the passenger seat. The dummy's torso was rotated to the right, bent slightly forward from the waist, and leaning to the left.

Section 4.0

Vehicle, Occupant, and Camera Measurements

Figure 4 Pre-test and Post-test Measurement Points

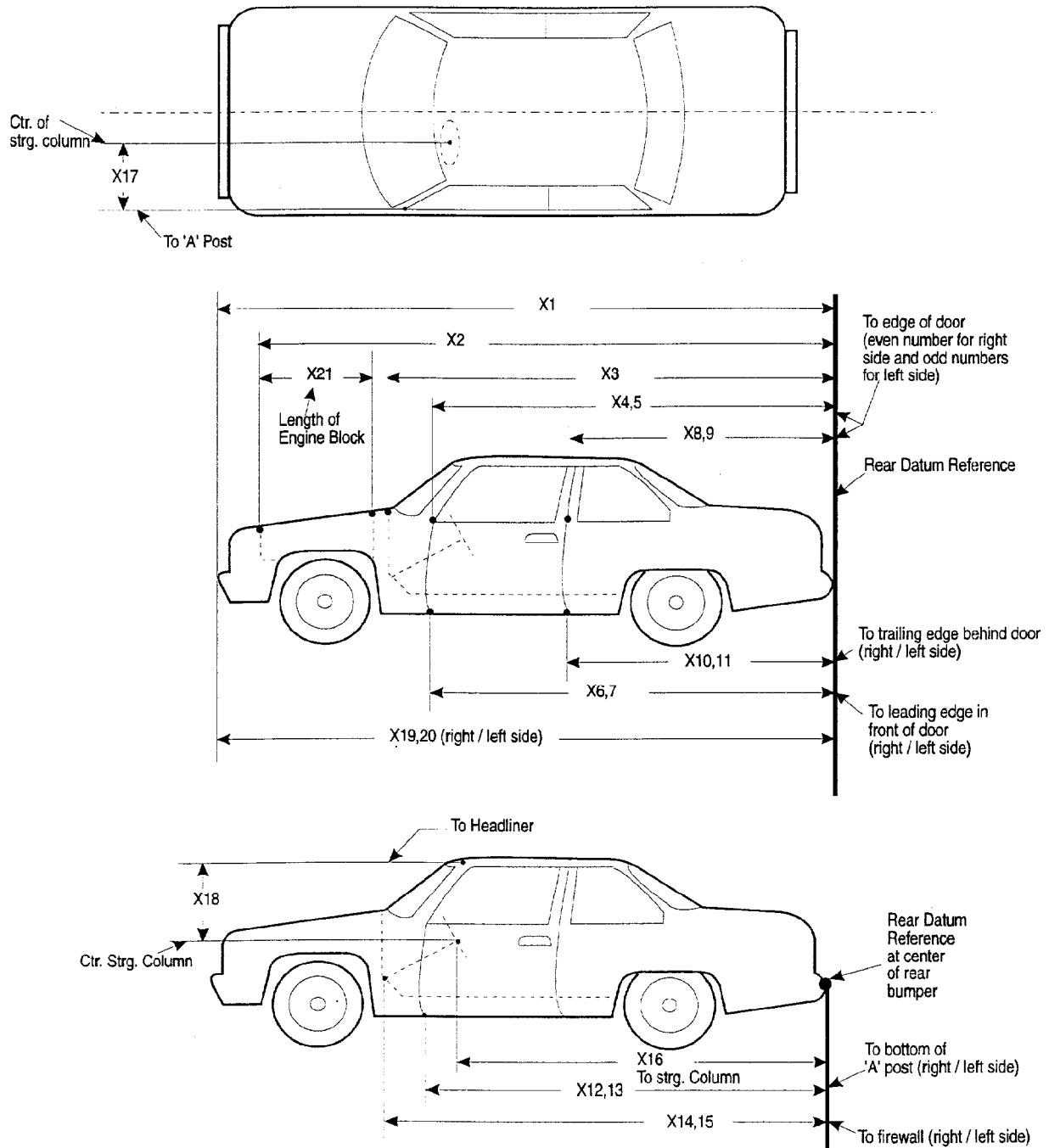


Table 6 Impacted Vehicle Measurements

Vehicle year/make/model/body style: 1999/Dodge/Intrepid/Sedan

Test Number: 990604-2

No.	Type of measurement	Pre-Test	Post-Test	Difference
X1	Total Length of Veh. at Centerline	5175	4905	270
X2	Rear Surface of Veh. to Front of Engine Block	4620	4580	40
X3	Rear Surface of Veh. to Firewall	4212	4190	22
X4	Rear Surface of Veh. to Upper Leading Edge of Right Door	3652	3653	-1
X5	Rear Surface of Veh. to Upper Leading Edge of Left Door	3660	3660	0
X6	Rear Surface of Veh. to Lower Leading Edge of Right Door	3596	3594	2
X7	Rear Surface of Veh. to Lower Leading Edge of Left Door	3608	3604	4
X8	Rear Surface of Veh. to Upper Trailing Edge of Right Door	2554	2556	-2
X9	Rear Surface of Veh. to Upper Trailing Edge of Left Door	2568	2568	0
X10	Rear Surface of Veh. to Lower Trailing Edge of Right Door	2555	2554	1
X11	Rear Surface of Veh. to Lower Trailing Edge of Left Door	2570	2565	5
X12	Rear Surface of Veh. to Bottom of " A " Post on Right Side	3582	3570	12
X13	Rear Surface of Veh. to Bottom of " A " Post on Left Side	3578	3570	8
X14	Rear Surface of Veh. to Firewall--Right Side	4228	4247	-19
X15	Rear Surface of Vehicle to Firewall --Left Side	4238	4198	40
X16	Rear Surface of Veh. to Steering Wheel Center	3112	3155	-43
X17	Center of Steering Column to " A " Post	318	295	23
X18	Center of Steering Column to Headliner	225	395	-170
X19	Rear Surface of Veh. to Right Side of Front Bumper	5000	5090	-90
X20	Rear Surface of Veh. to Left Side of Front Bumper	5005	4515	490
X21	Length of Engine Block	510	510	0

Figure 5 Vehicle Target Locations

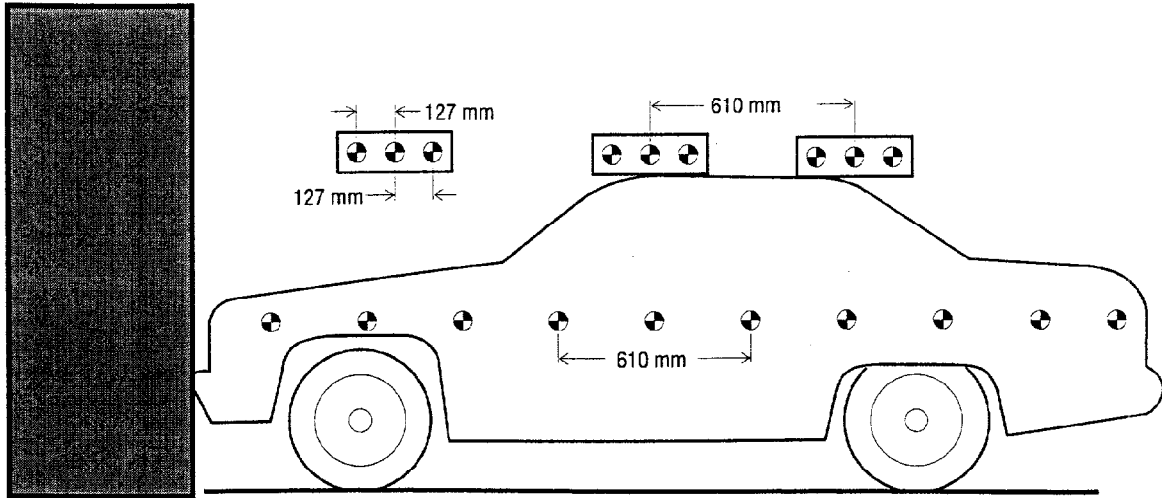


Figure 6 Dummy Measurement Locations for Front Seat Occupants

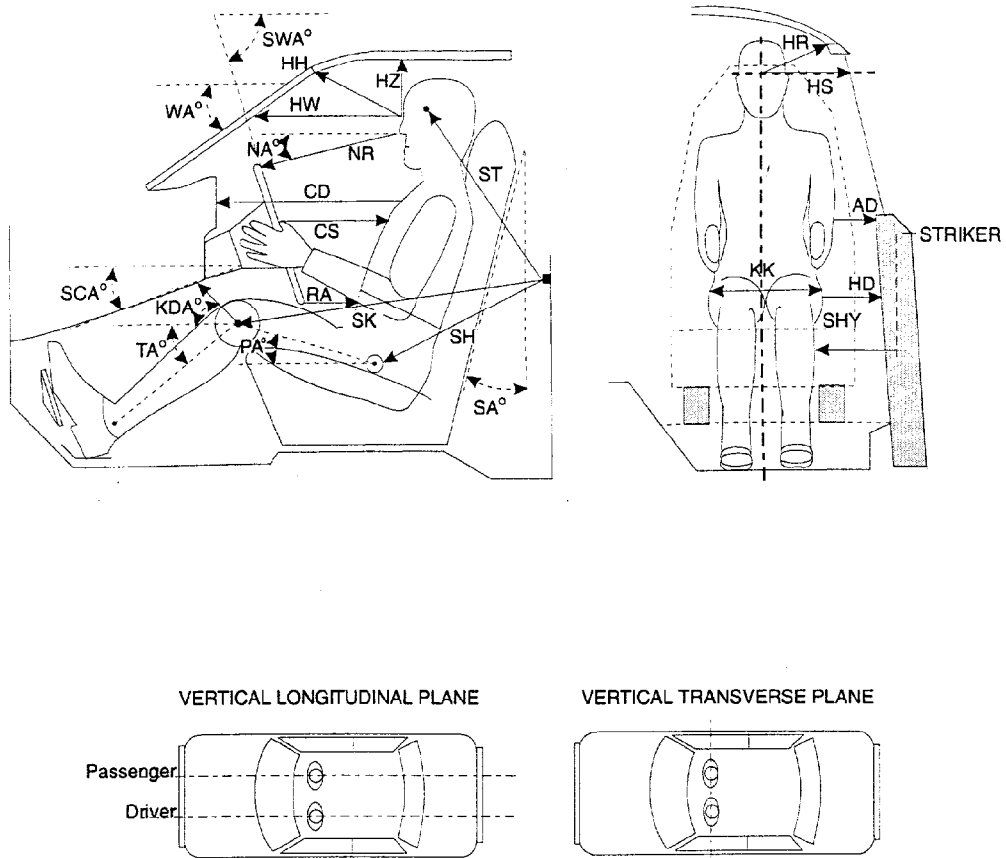


Table 7 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #289)	Passenger (Serial #369)
WA	Windshield angle	22.8°	22.8°
SWA	Steering wheel angle	70.0°	N/A
SCA	Steering column angle	20.0°	N/A
SA	Seat back angle	N/A	N/A
HZ	Head to roof	196 mm	200 mm
HH	Head to header	272 mm	278 mm
HW	Head to windshield	643 mm	647 mm
HR	Head to side header	220 mm	245 mm
NR	Nose to rim	238 mm	N/A
NA	Nose to rim angle	3.6°	N/A
CD	Chest to dash	433 mm	424 mm
CS	Steering wheel to chest	174 mm	N/A
RA	Rim to abdomen	86 mm	N/A
KDL	Left knee to dash	100 mm	140 mm
KDR	Right knee to dash	121 mm	117 mm
KDA	Outboard knee to dash angle	55.1°	49.6°
PA	Pelvic angle	19.5°	18.2°
TA	Tibial angle	58.1°	46.8°
KK	Knee to knee	260 mm	230 mm
ST ¹	Striker to head	477 mm	477 mm
	Striker to head angle	-67.5°	-70.0°
SK	Striker to knee	643 mm	634 mm
	Striker to knee angle	3.0°	-0.1°
SH ¹	Striker to H-point	344 mm	344 mm
	Striker to H-point angle	20.3°	17.5°
SHY	Striker to H-point (Y dir.)	272 mm	310 mm
HS	Head to side window	375 mm	380 mm
HD	H-point to door	222 mm	234 mm
AD	Arm to door	181 mm	175 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 7 Camera Positions

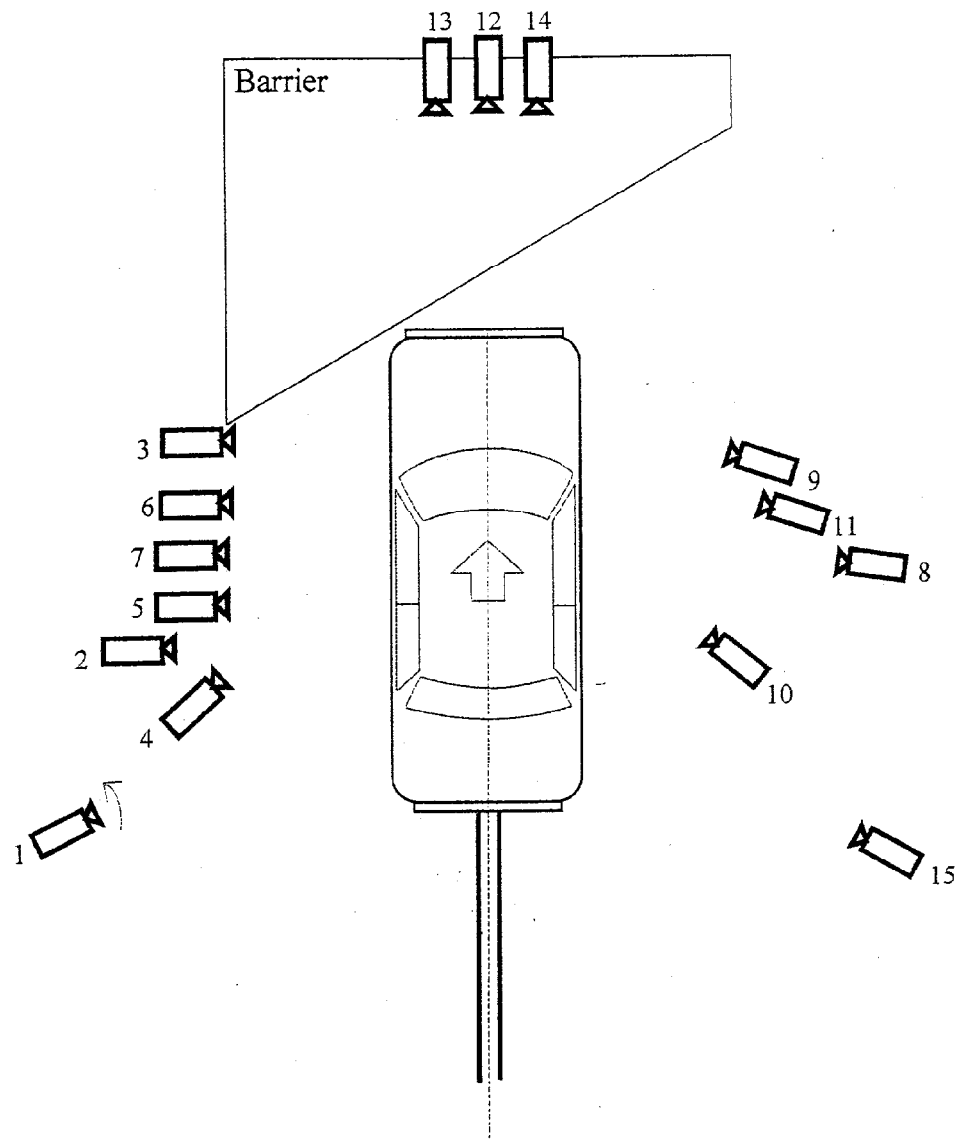


Table 8 Motion Picture Camera Locations

Vehicle year/make/model/body style: 1999/Dodge/Intrepid/Sedan

Test number: 990604-2

Camera Number	View	Camera Positions ¹			Camera Angle ²	Film Plane to Head Target	Camera Lens	Film Speed
		X	Y	Z				
1	Real-time panning	NA	NA	NA	NA	NA	Zoom	24 frames/s
2	Left wide	6134 mm	6655 mm	1092 mm	2°	7417 mm	13 mm	1000 frames/s
3	Left windshield intrusion	4432 mm	5486 mm	1067 mm	1°	6325 mm	50 mm	1002 frames/s
4	Left angle	7049 mm	991 mm	1905 mm	27°	2235 mm	25 mm	997 frames/s
5	Driver kinematics	5144 mm	6096 mm	1461 mm	6°	6934 mm	25 mm	1012 frames/s
6	Upper steering column motion	4813 mm	6096 mm	2540 mm	15°	6934 mm	25 mm	997 frames/s
7	Lower steering column motion	4813 mm	6096 mm	1588 mm	7°	6833 mm	25 mm	1000 frames/s
8	Right wide	6033 mm	-7391 mm	1118 mm	0°	8153 mm	13 mm	1000 frames/s
9	Right windshield intrusion	4509 mm	-5486 mm	1067 mm	1°	6325 mm	50 mm	N/A ³
10	Passenger kinematics	7150 mm	-1067 mm	1905 mm	26°	2362 mm	25 mm	1002 frames/s
11	Passenger kinematics	5118 mm	-6426 mm	1473 mm	5°	7290 mm	25 mm	1000 frames/s
12	Windshield front view	-1499 mm	0 mm	2311 mm	32°	3962 mm	13 mm	1002 frames/s
13	Driver - front view	-1499 mm	381 mm	2311 mm	32°	3962 mm	25 mm	1002 frames/s
14	Passenger - front view	-1499 mm	-343 mm	2311 mm	32°	3962 mm	25 mm	997 frames/s
15	Wide right angle	7963 mm	-5182 mm	1118 mm	0°	6325 mm	13 mm	997 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 The camera did not run during the impact event.

Appendix A

Photographs

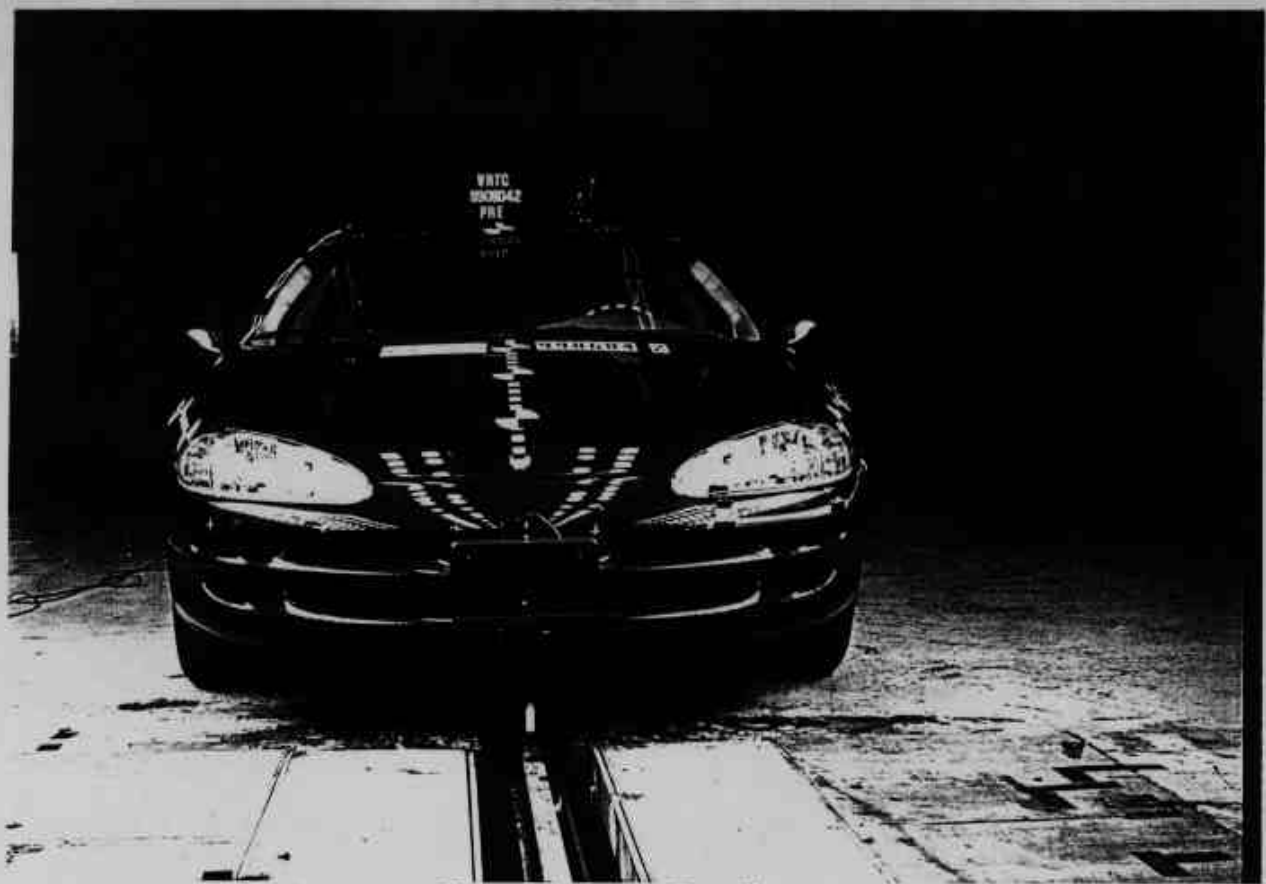


Figure A-1 Pre-Test Front View



Figure A-2 Post-Test Front View



Figure A-3 Pre-Test Left Side View



Figure A-4 Post-Test Left Side View



Figure A-5 Pre-Test Left Rear Three-Quarter View



Figure A-6 Post-Test Left Rear Three-Quarter View

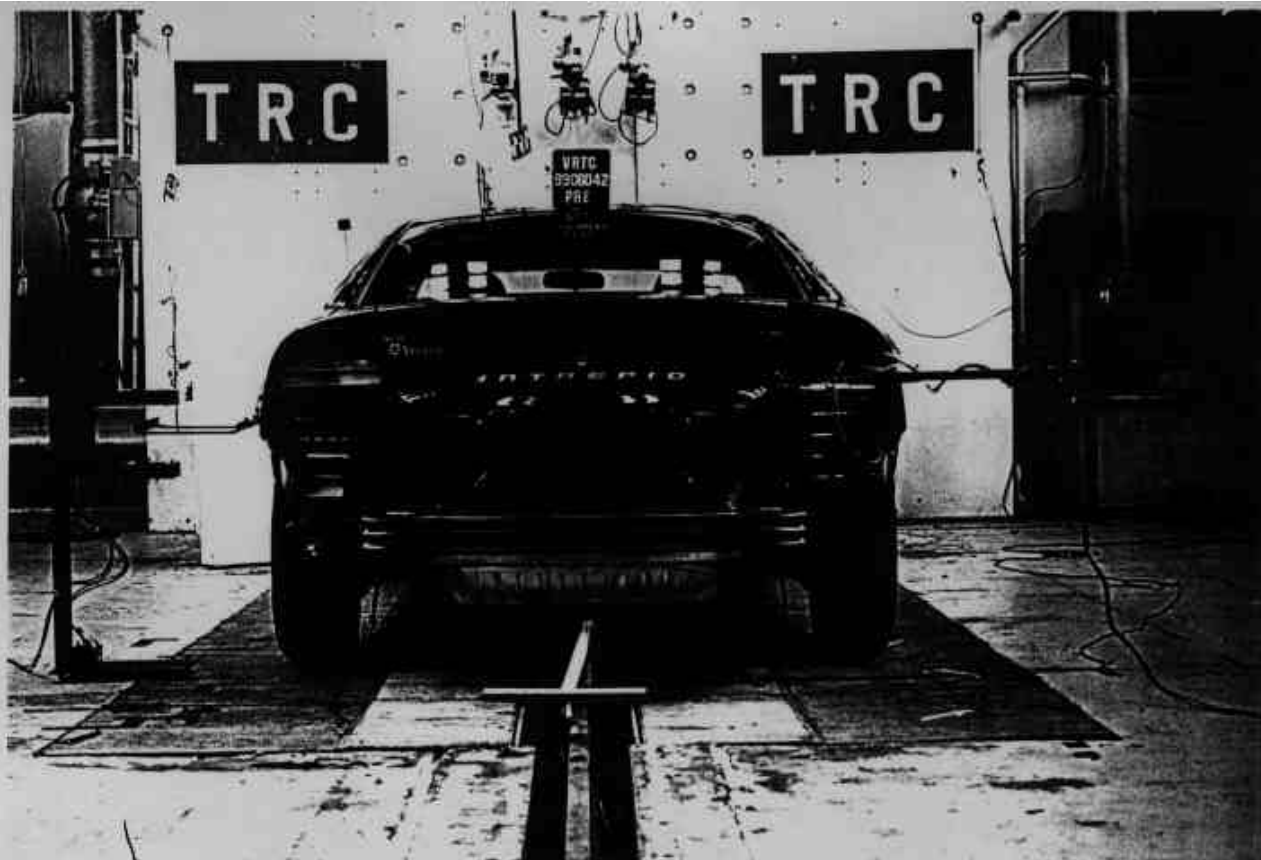


Figure A-7 Pre-Test Rear View



Figure A-8 Post-Test Rear View



Figure A-9 Pre-Test Right Side View



Figure A-10 Post-Test Right Side View



Figure A-11 Pre-Test Right Front Three-Quarter View



Figure A-12 Post-Test Right Front Three-Quarter View



Figure A-13 Post-Test Left Front Three-Quarter View

Intentionally Left Blank

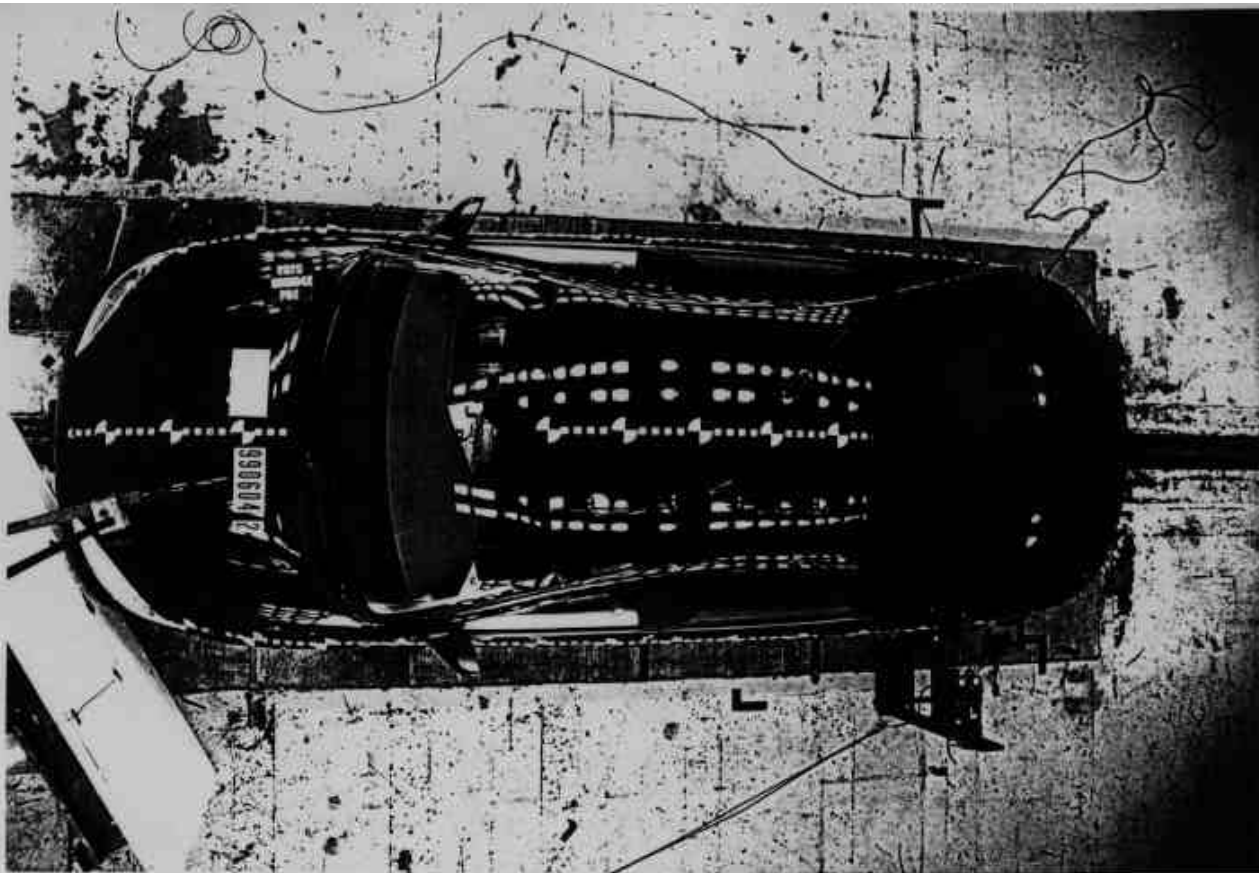


Figure A-14 Pre-Test Overhead View

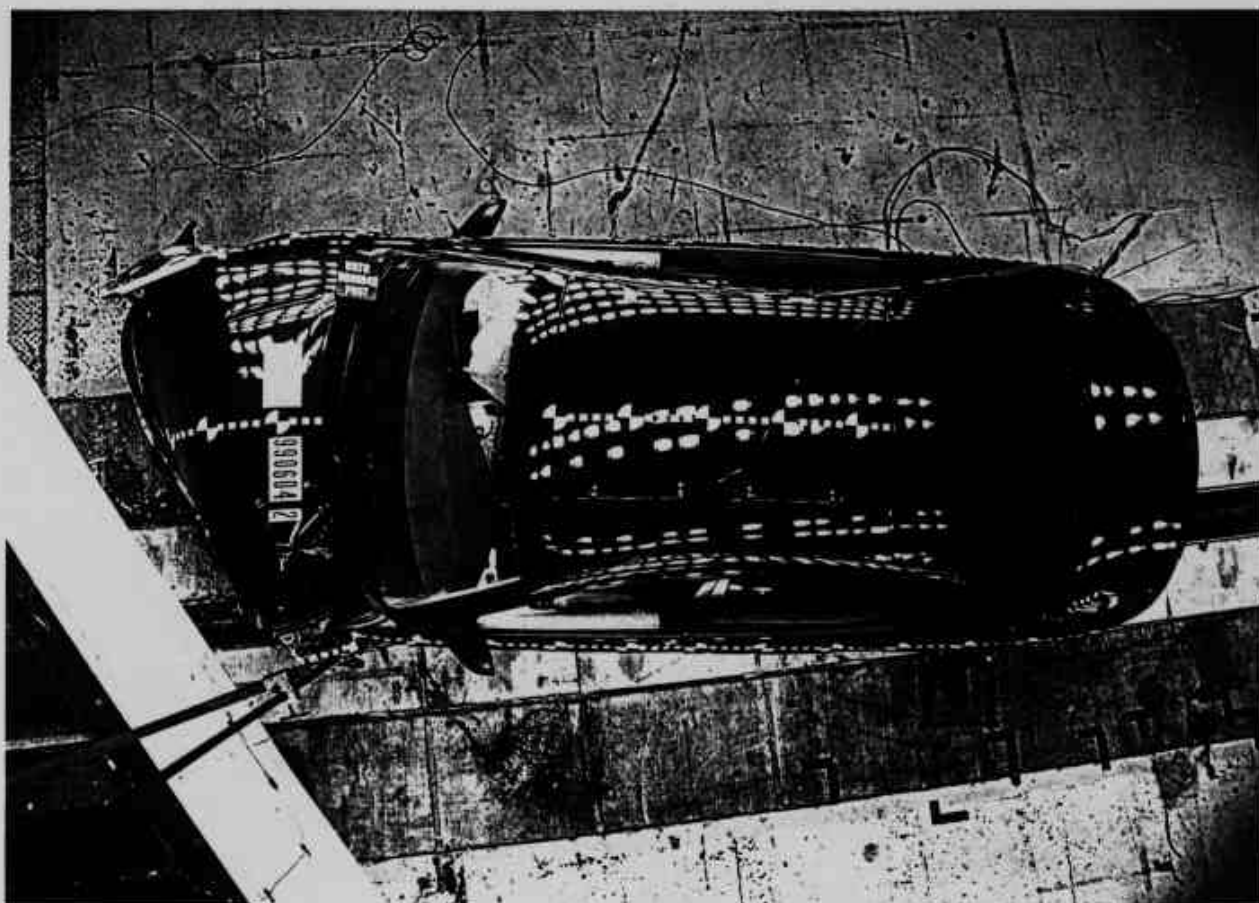


Figure A-15 Post-Test Overhead View



Figure A-16 Pre-Test Overhead Close-Up View

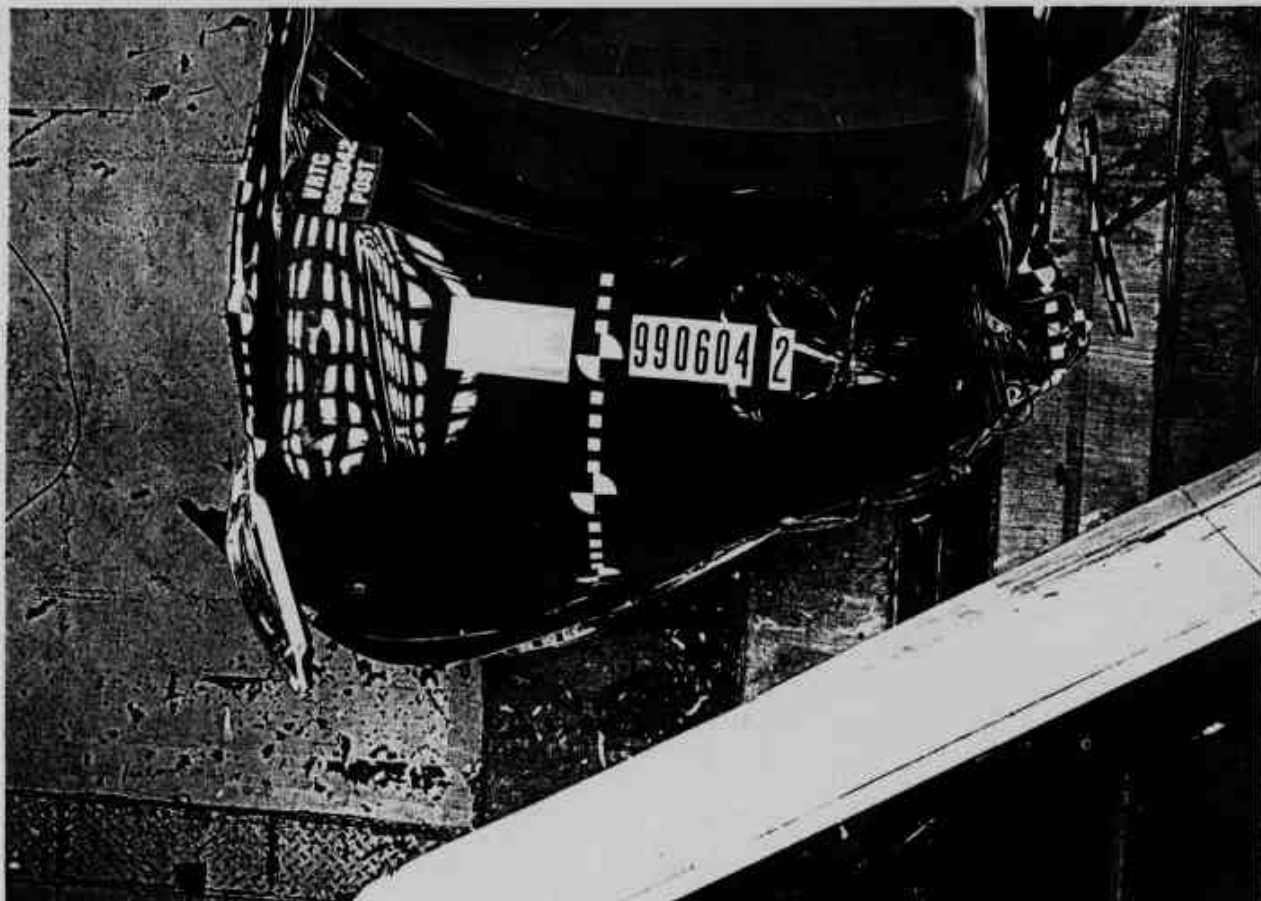


Figure A-17 Post-Test Overhead Close-Up View

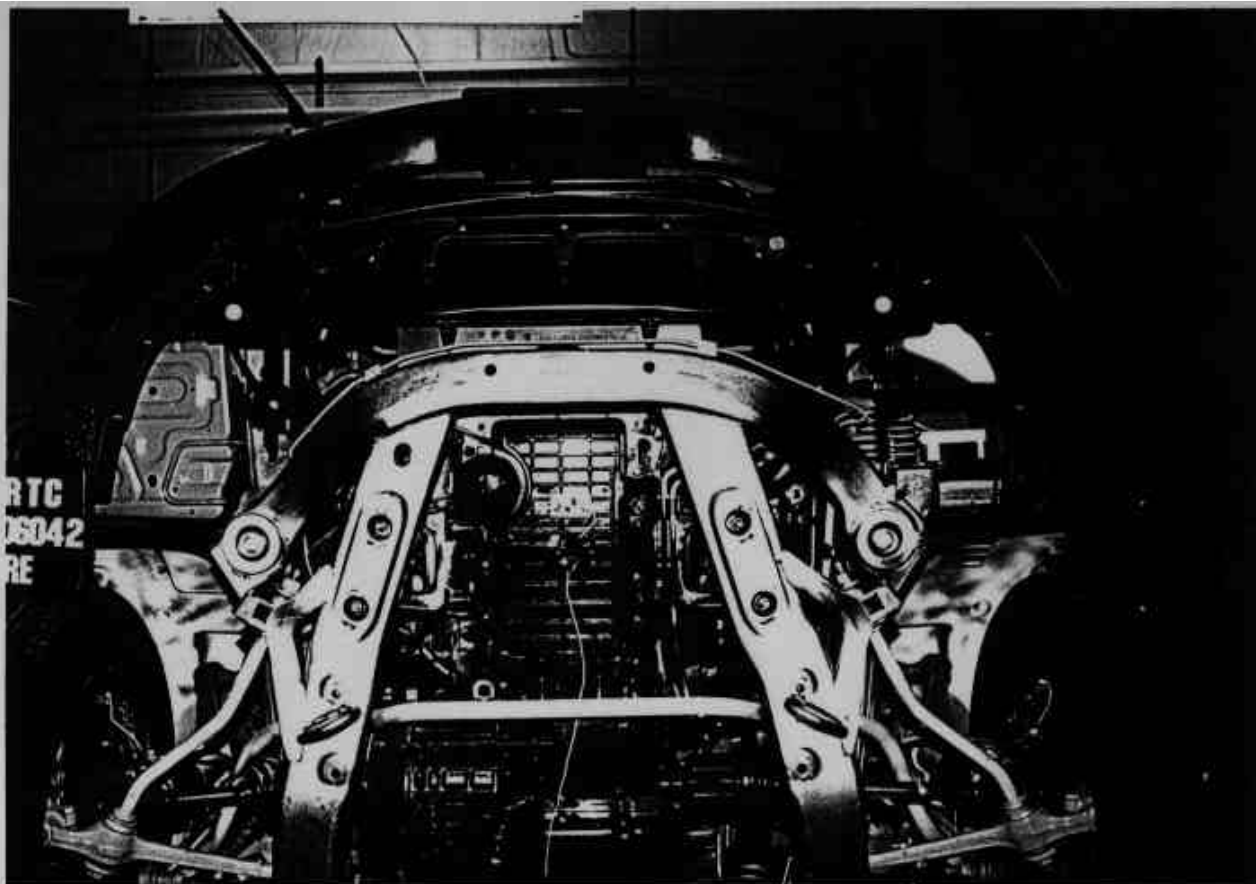


Figure A-18 Pre-Test Underbody - View 1

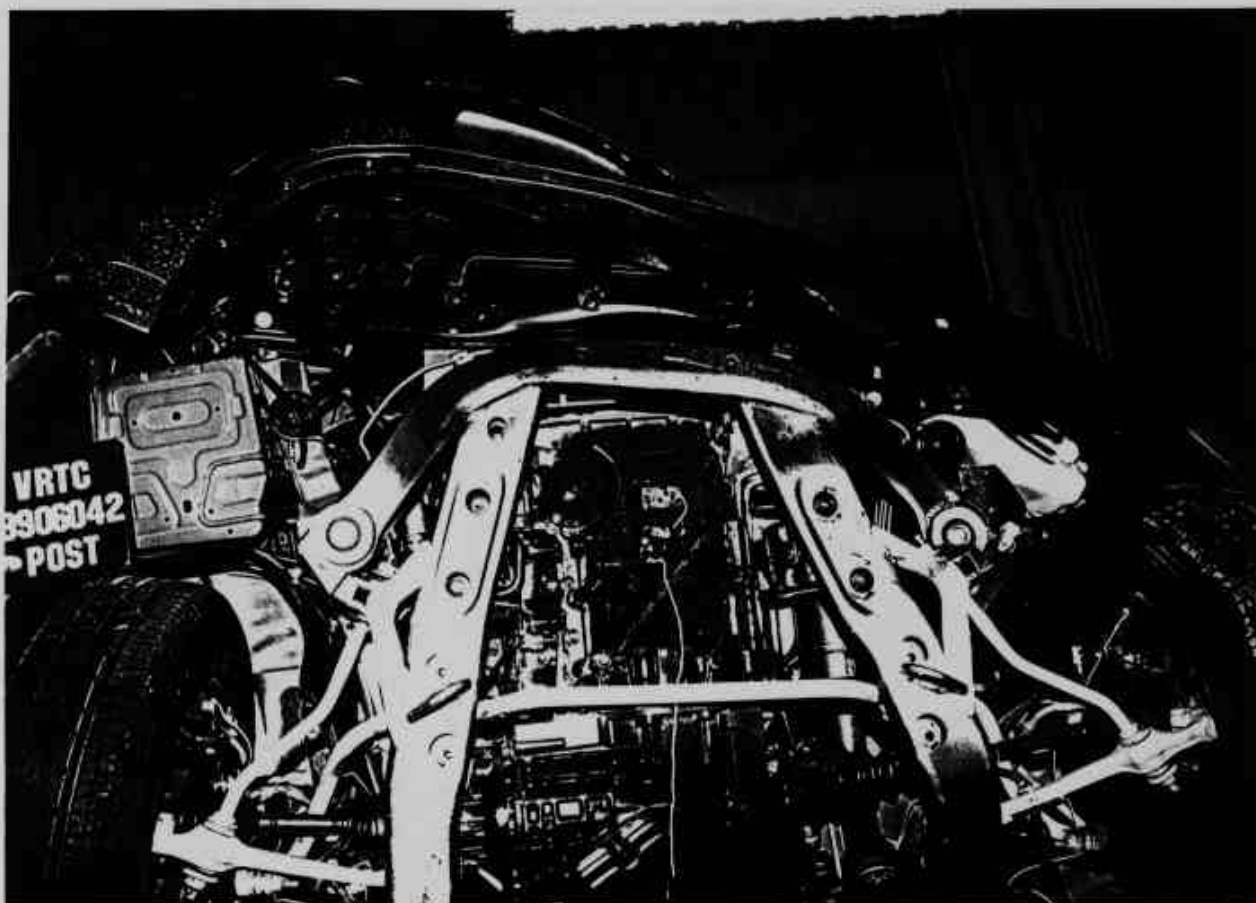


Figure A-19 Post-Test Underbody - View 1



Figure A-20 Pre-Test Underbody - View 2

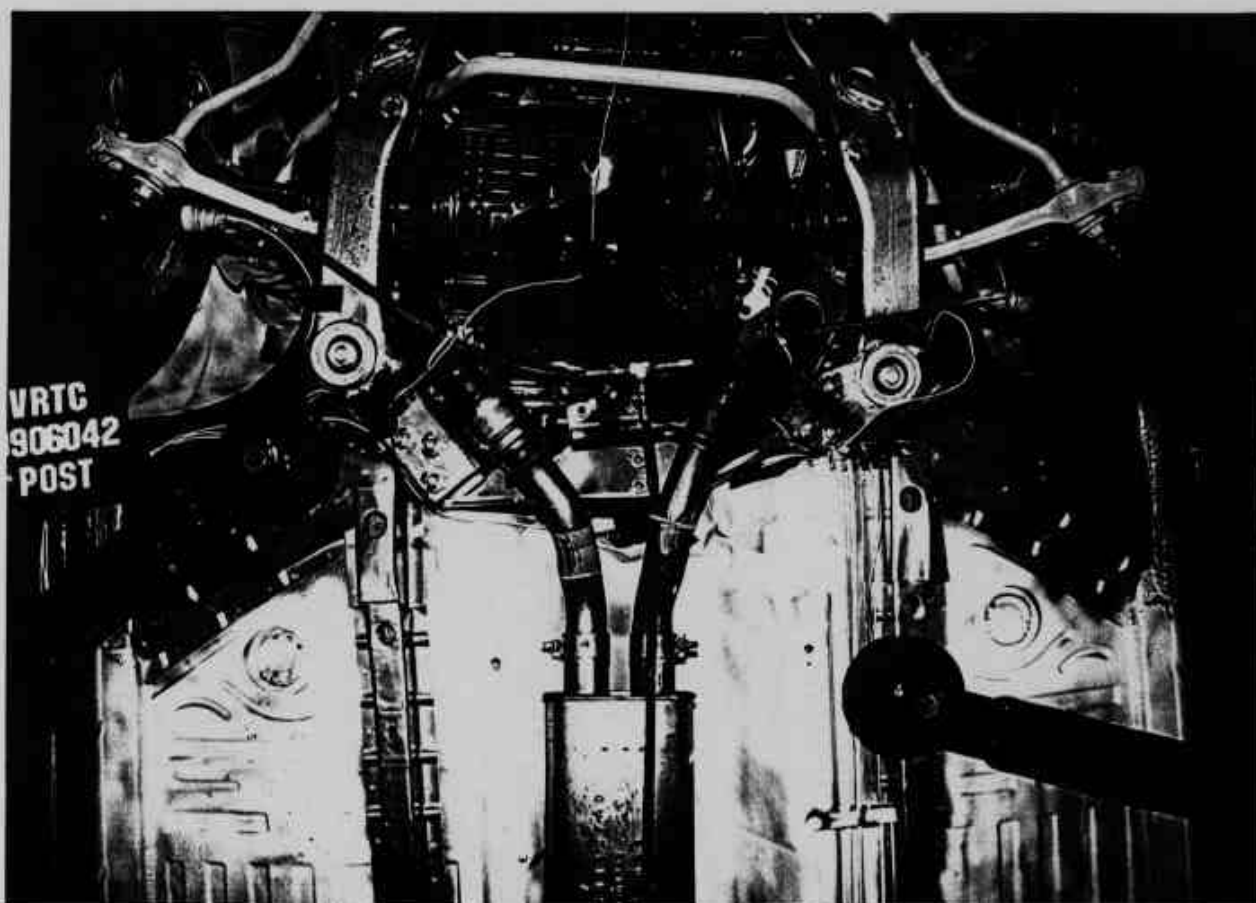


Figure A-21 Post-Test Underbody - View 2



Figure A-22 Pre-Test Underbody - View 3



Figure A-23 Post-Test Underbody - View 3

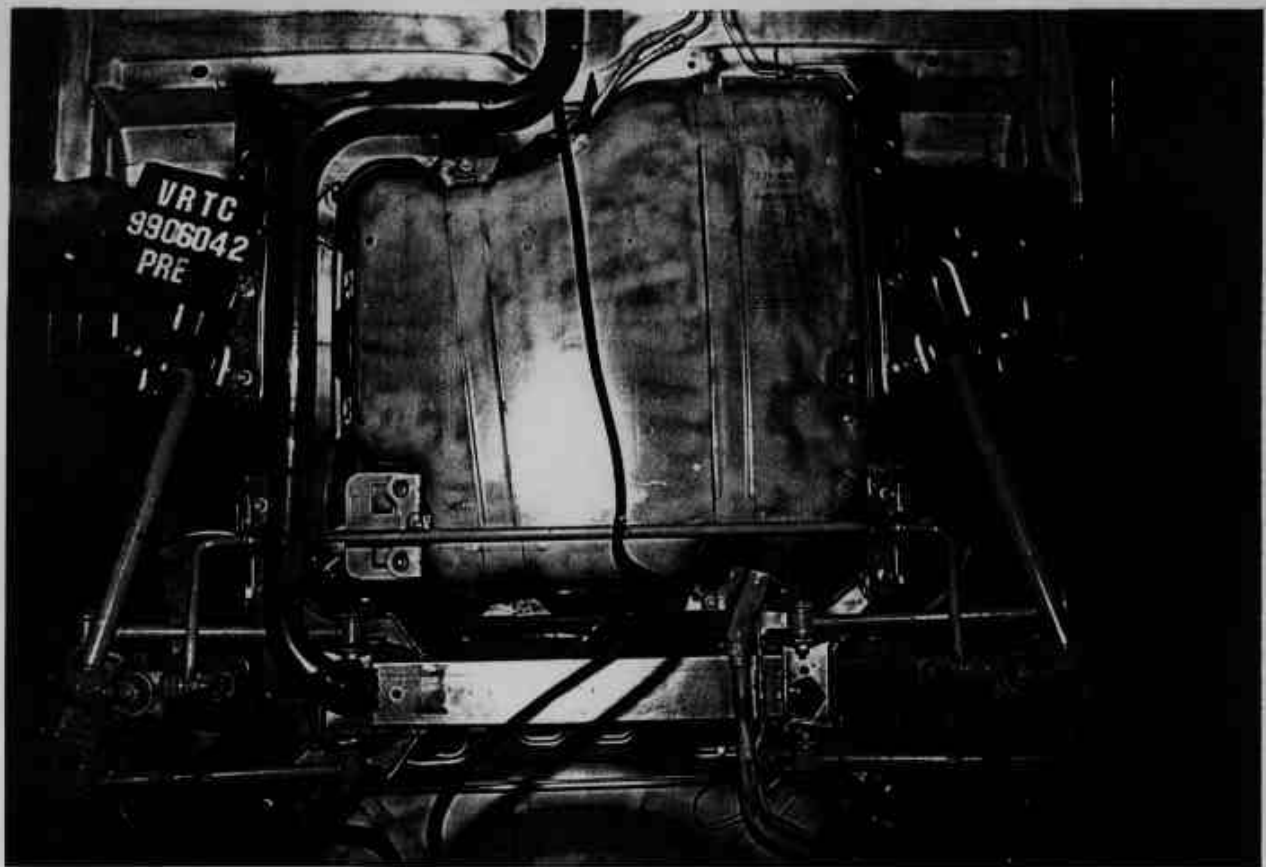


Figure A-24 Pre-Test Underbody - View 4

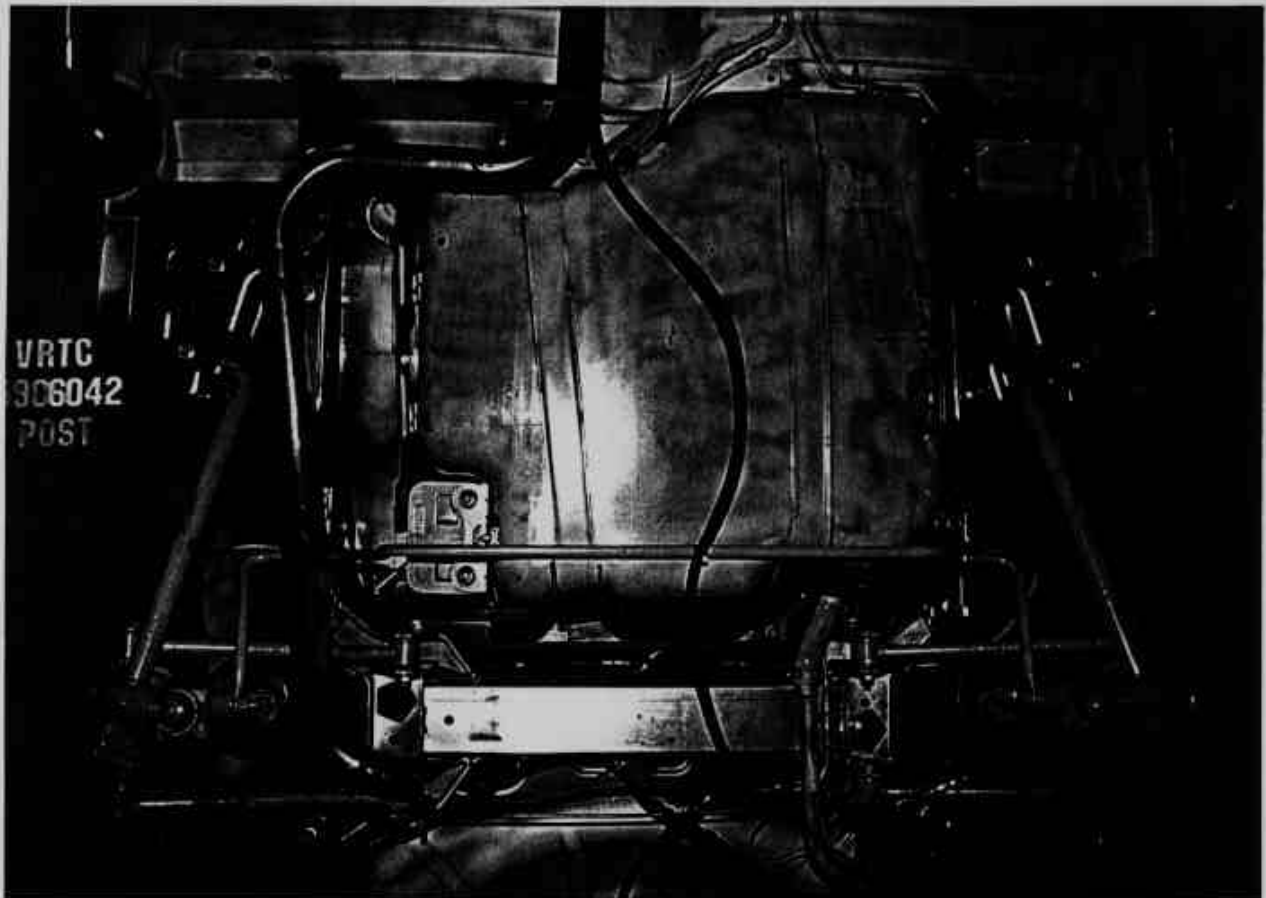


Figure A-25 Post-Test Underbody - View 4



Figure A-26 Pre-Test Underbody - View 5

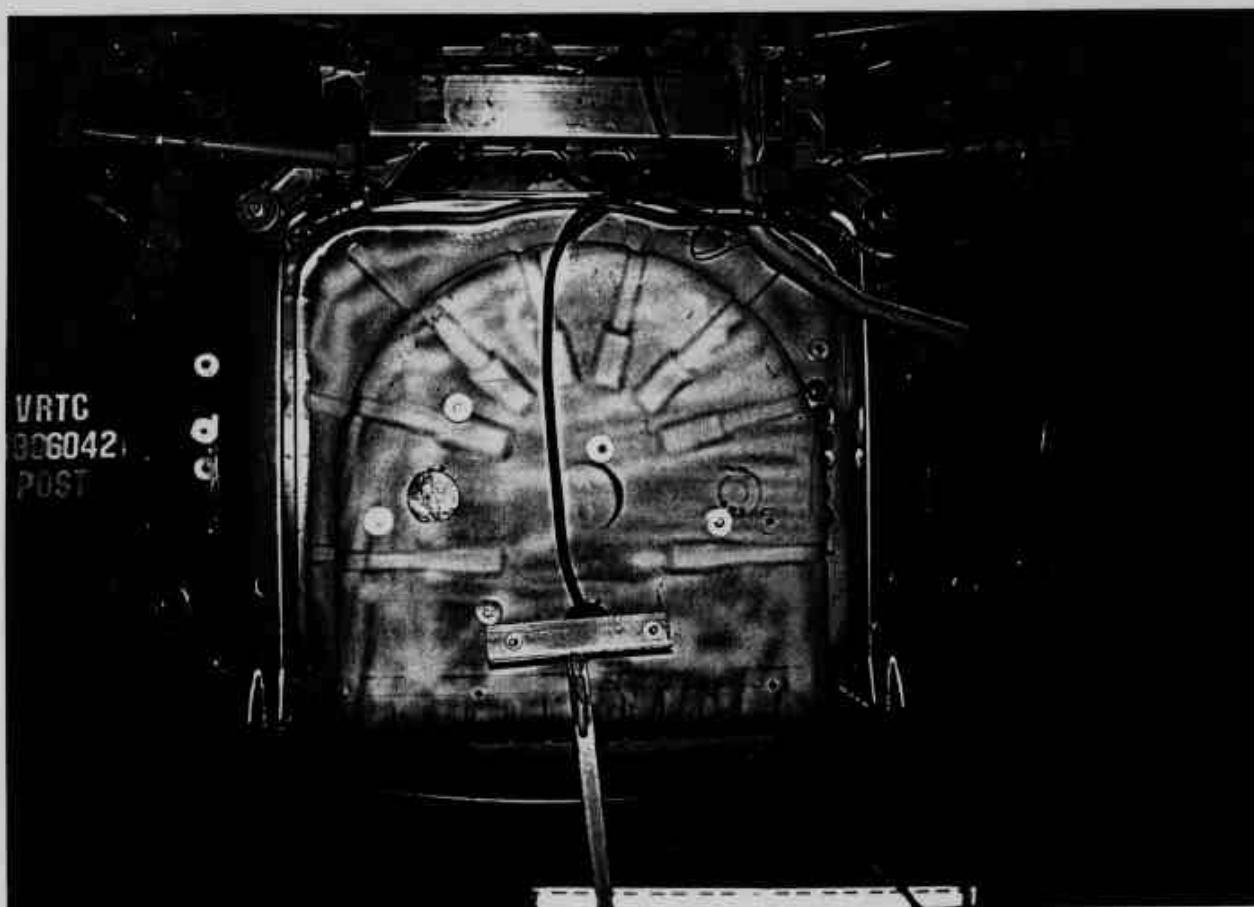


Figure A-27 Post-Test Underbody - View 5



Figure A-28 Pre-Test Engine Compartment View

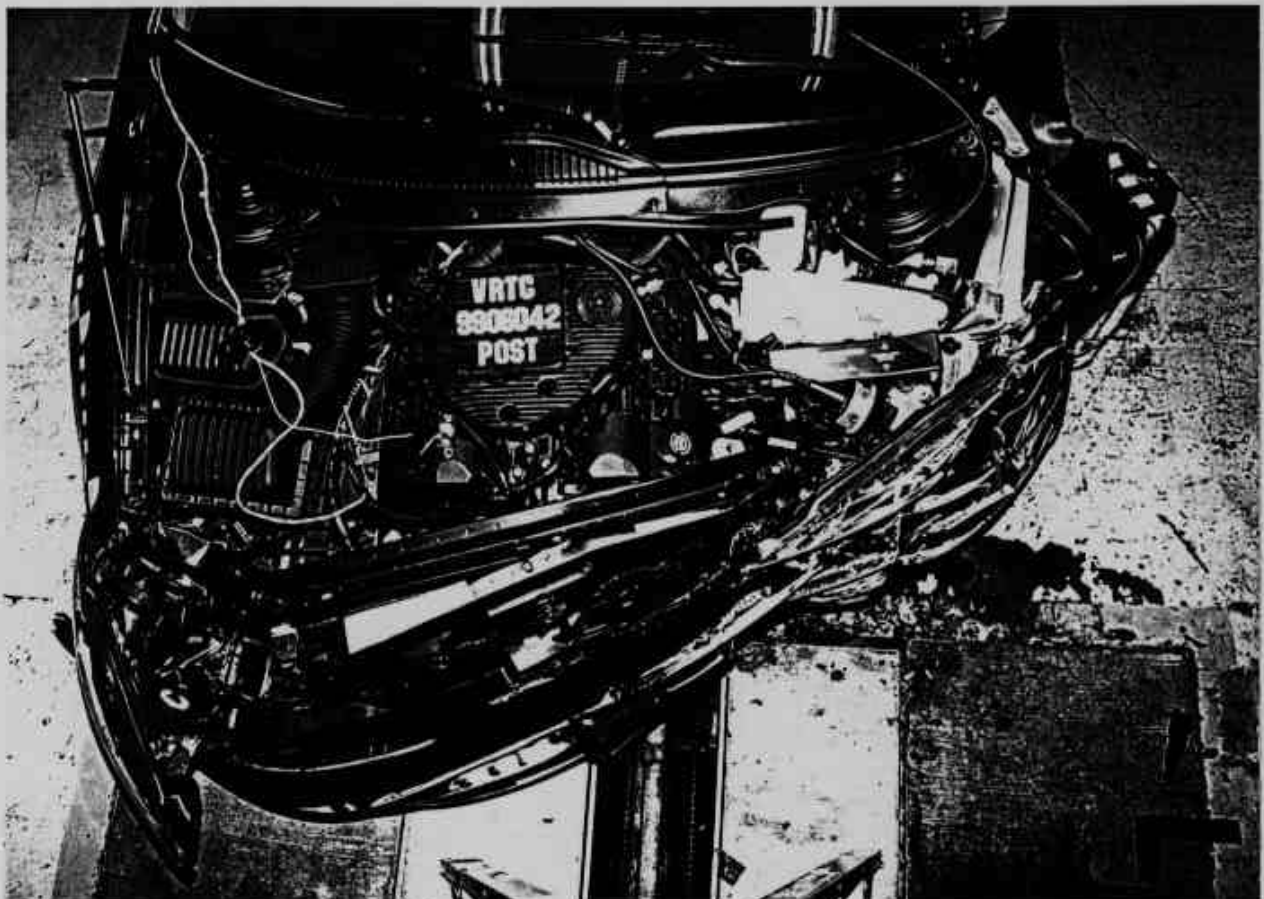


Figure A-29 Post-Test Engine Compartment View



Figure A-30 Pre-Test Windshield - View 1



Figure A-31 Post-Test Windshield - View 1

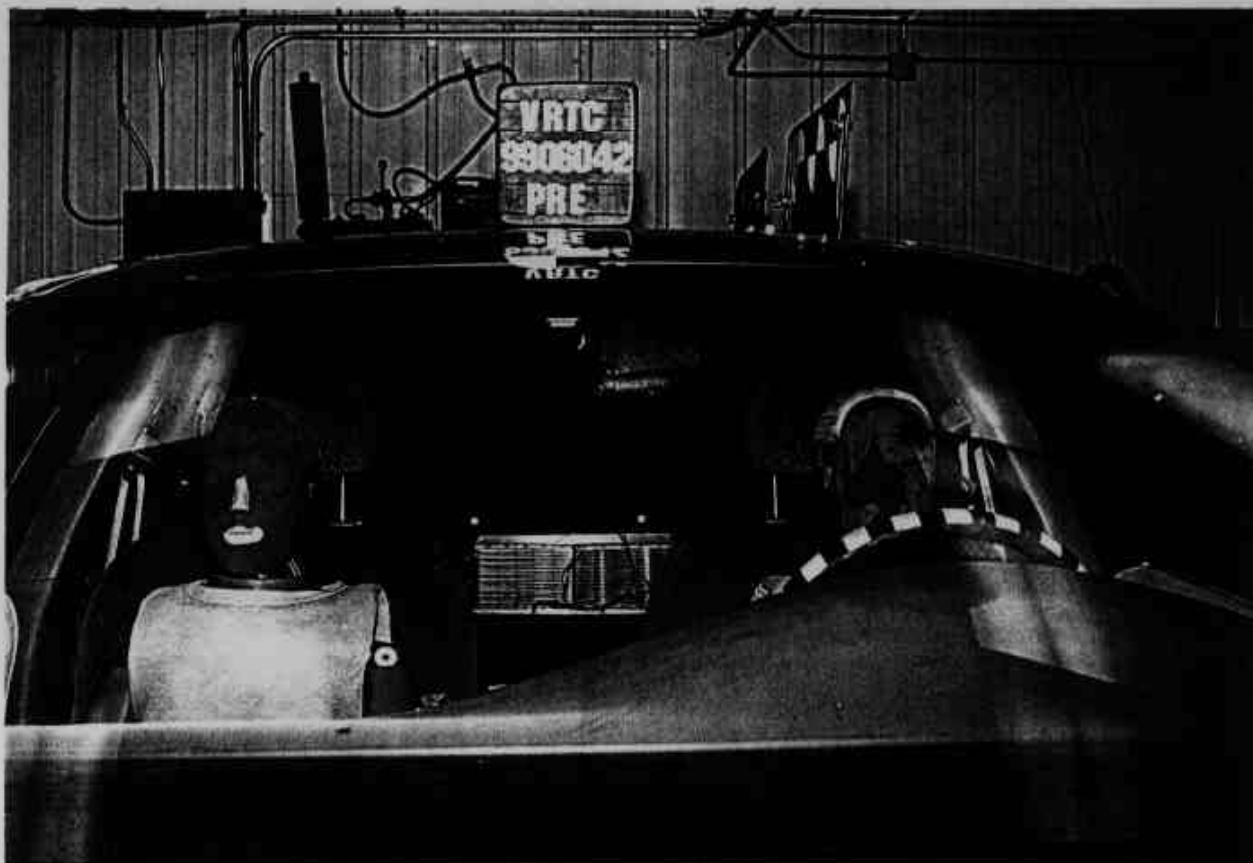


Figure A-32 Pre-Test Windshield - View 2

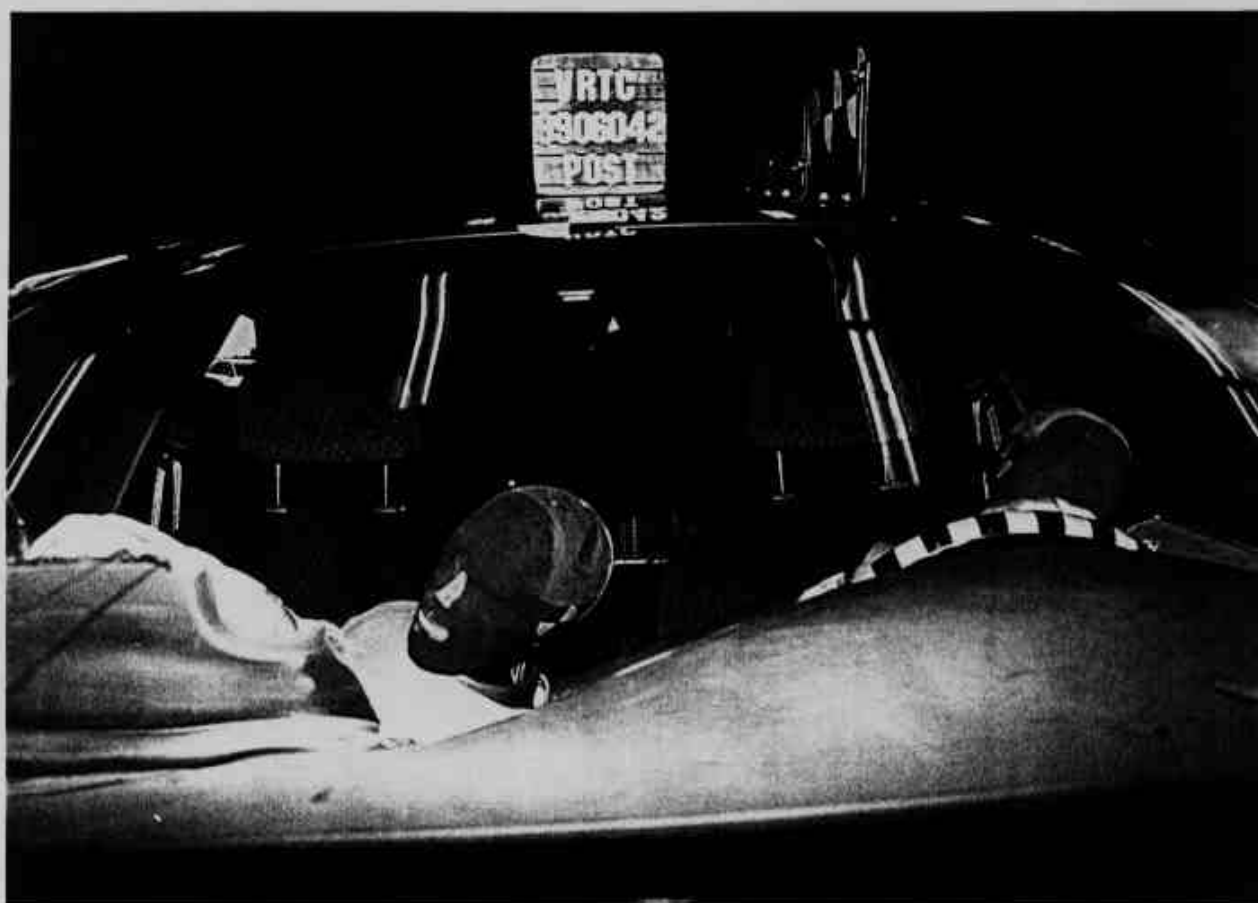


Figure A-33 Post-Test Windshield - View 2



Figure A-34 Pre-Test Driver Dummy Windshield View



Figure A-35 Post-Test Driver Dummy Windshield View



Figure A-36 Pre-Test Passenger Dummy Windshield View

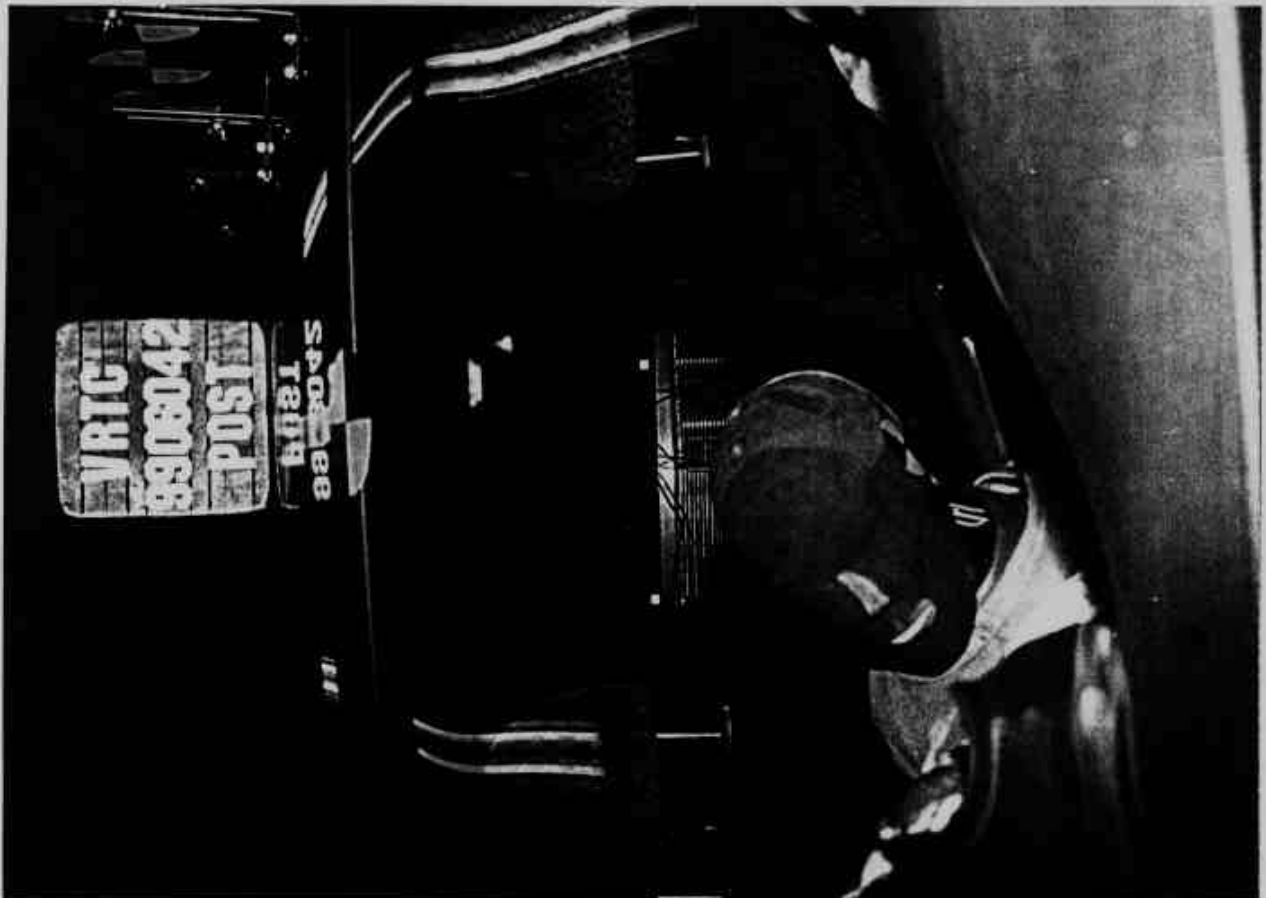


Figure A-37 Post-Test Passenger Dummy Windshield View



Figure A-38 Pre-Test Driver Dummy Position - View 1



Figure A-39 Post-Test Driver Dummy Position - View 1



Figure A-40 Pre-Test Driver Dummy Position -View 2



Figure A-41 Post-Test Driver Dummy Position - View 2



Figure A-42 Pre-Test Driver Dummy Position -View 3



Figure A-43 Post-Test Driver Dummy Position - View 3

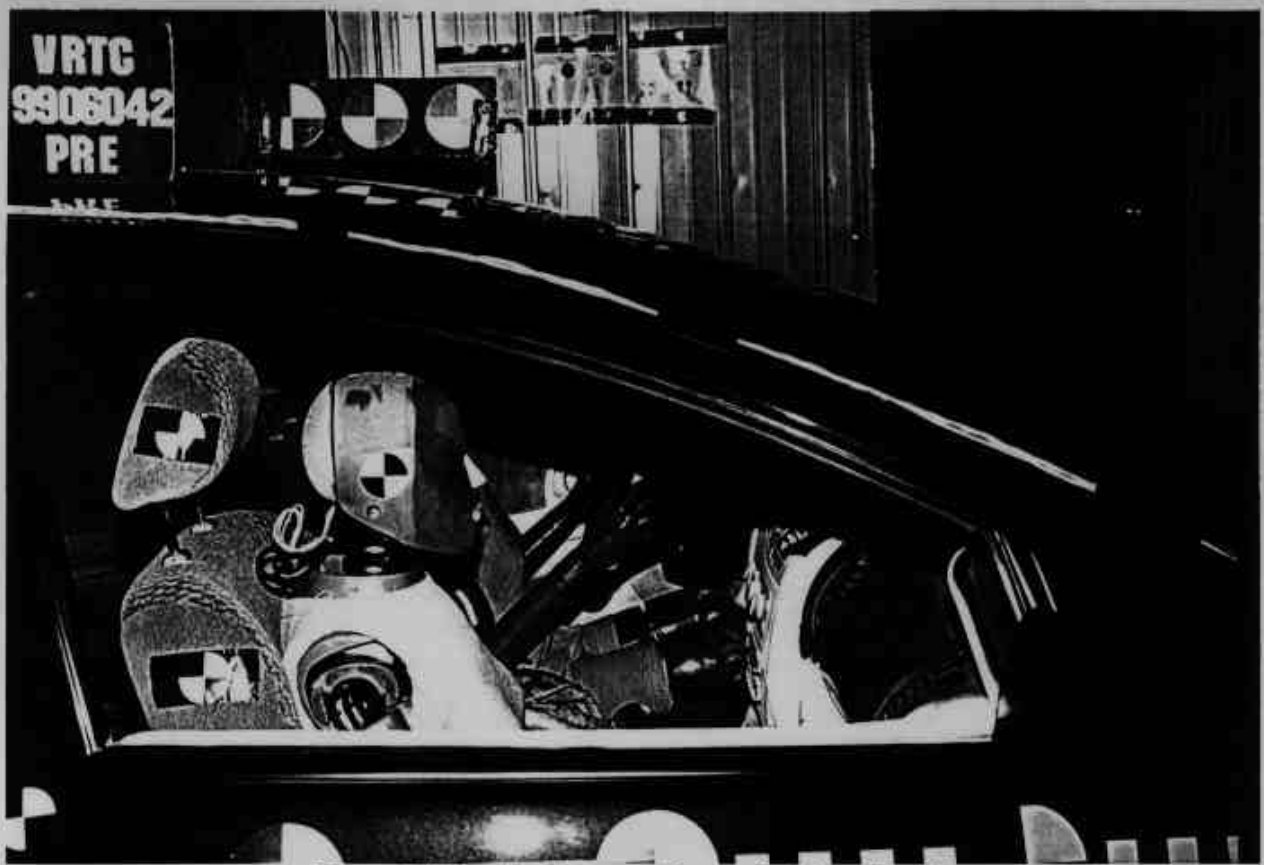


Figure A-44 Pre-Test Passenger Dummy Position - View 1



Figure A-45 Post-Test Passenger Dummy Position - View 1



Figure A-46 Pre-Test Passenger Dummy Position - View 2



Figure A-47 Post-Test Passenger Dummy Position - View 2



Figure A-48 Pre-Test Passenger Dummy Position - View 3



Figure A-49 Post-Test Passenger Dummy Position - View 3



Figure A-50 Post-Test Driver Dummy View



Figure A-51 Post-Test Driver Dummy Head Contact - View 1



Figure A-52 Post-Test Driver Dummy Head Contact - View 2



Figure A-53 Post-Test Driver Dummy Head Contact - View 3



Figure A-54 Post-Test Driver Dummy Knee Contact - View 1



Figure A-55 Post-Test Driver Dummy Knee Contact - View 2



Figure A-56 Post-Test Driver Dummy Knee Contact - View 3



Figure A-57 Post-Test Driver Footwell Deformation View

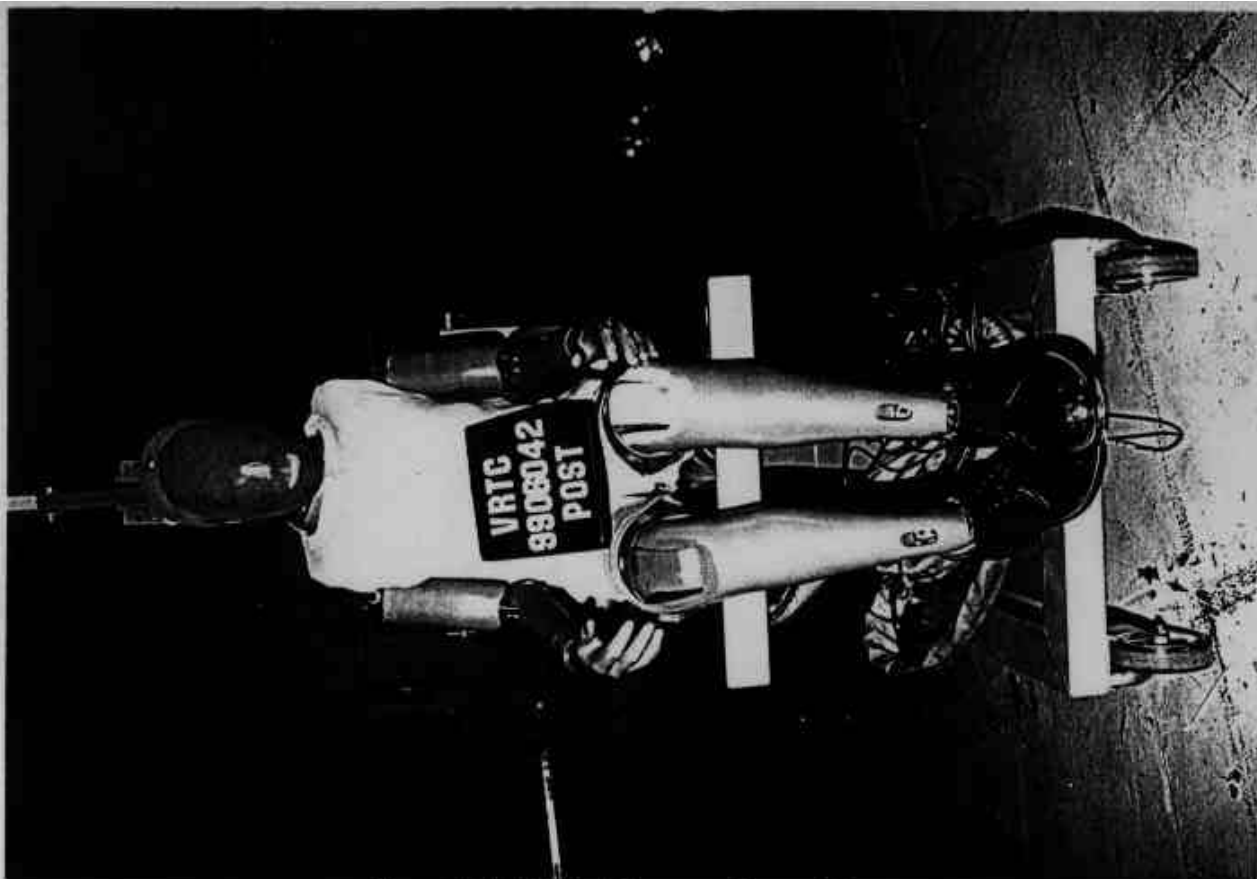


Figure A-58 Post-Test Passenger Dummy View



Figure A-59 Post-Test Passenger Dummy Head Contact - View 1



Figure A-60 Post-Test Passenger Dummy Head Contact - View 2



Figure A-61 Post-Test Passenger Dummy Head Contact - View 3



Figure A-62 Post-Test Passenger Dummy Knee Contact - View 1



Figure A-63 Post-Test Passenger Dummy Knee Contact - View 2



Figure A-64 Post-Test Passenger Footwell Deformation View



Figure A-65 Pre-Test Fuel Cap View



Figure A-66 Post-Test Fuel Cap View

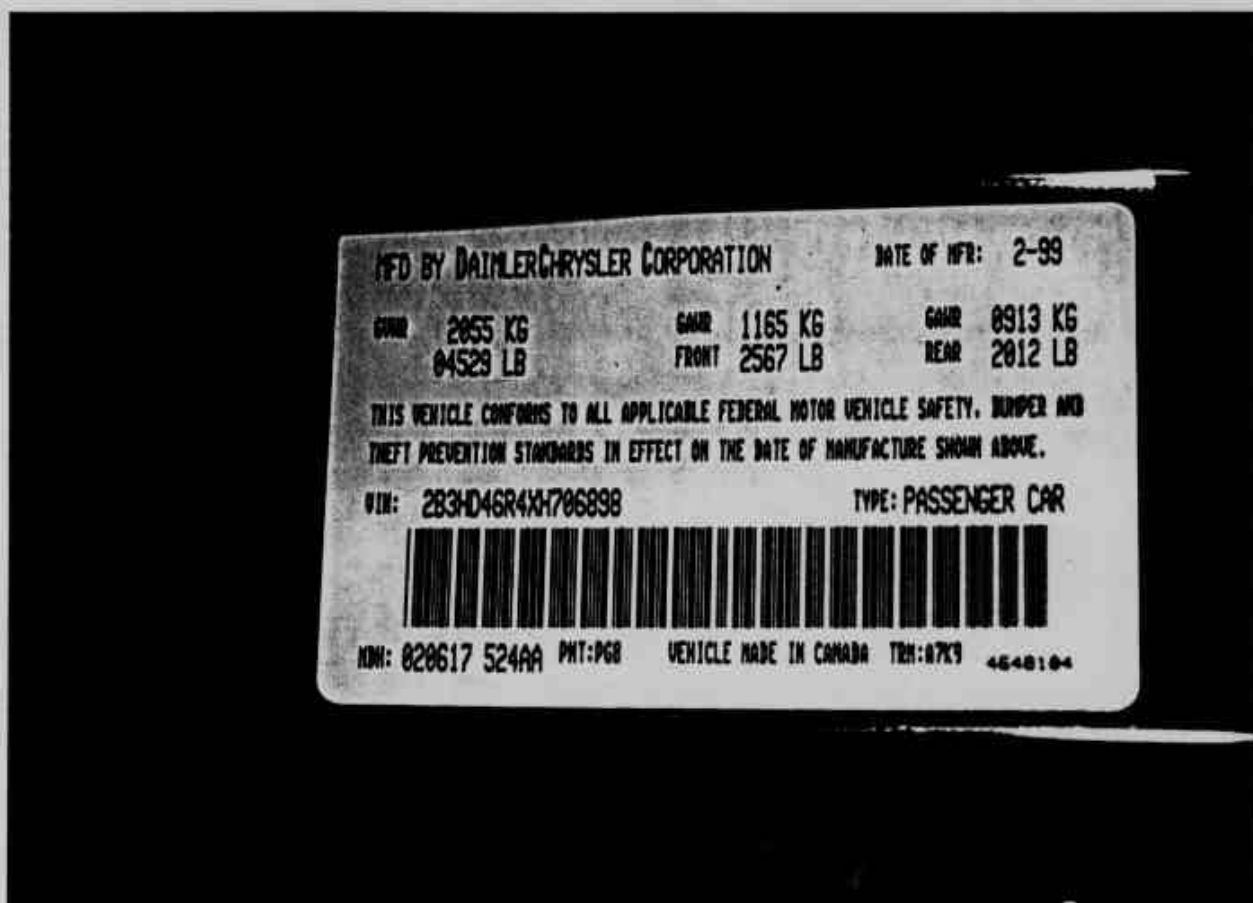


Figure A-67 Pre-Test Vehicle Certification Label View

	VEHICLE CAPACITY OR LESS	
1ST SEAT	• 3 PASS	
2ND SEAT	3 PASS	
LUGGAGE	115 LBS-52 kg	
TOTAL	• 6 PASS	
TOTAL WEIGHT	• 1015 LBS-461 kg	
TIRE PRESSURE COLD	32 PSI 220 kPa	
FRONT AND REAR		
* REDUCE VEHICLE CAPACITY TO 2 PASSENGERS IN 1ST SEAT- (865 LBS-392 kg-5 PASS. TOTAL) WHEN EQUIPPED WITH BUCKET SEATS WITHOUT CENTER SEAT		
MINIMUM TIRE SIZE		
P205/70R15 95T STANDARD LOAD		
SEE OWNERS MANUAL FOR ADDITIONAL DATA		
PRINTED IN USA 04774382		

Figure A-68 Pre-Test Vehicle Tire Information Label View

Appendix B

Data Plots

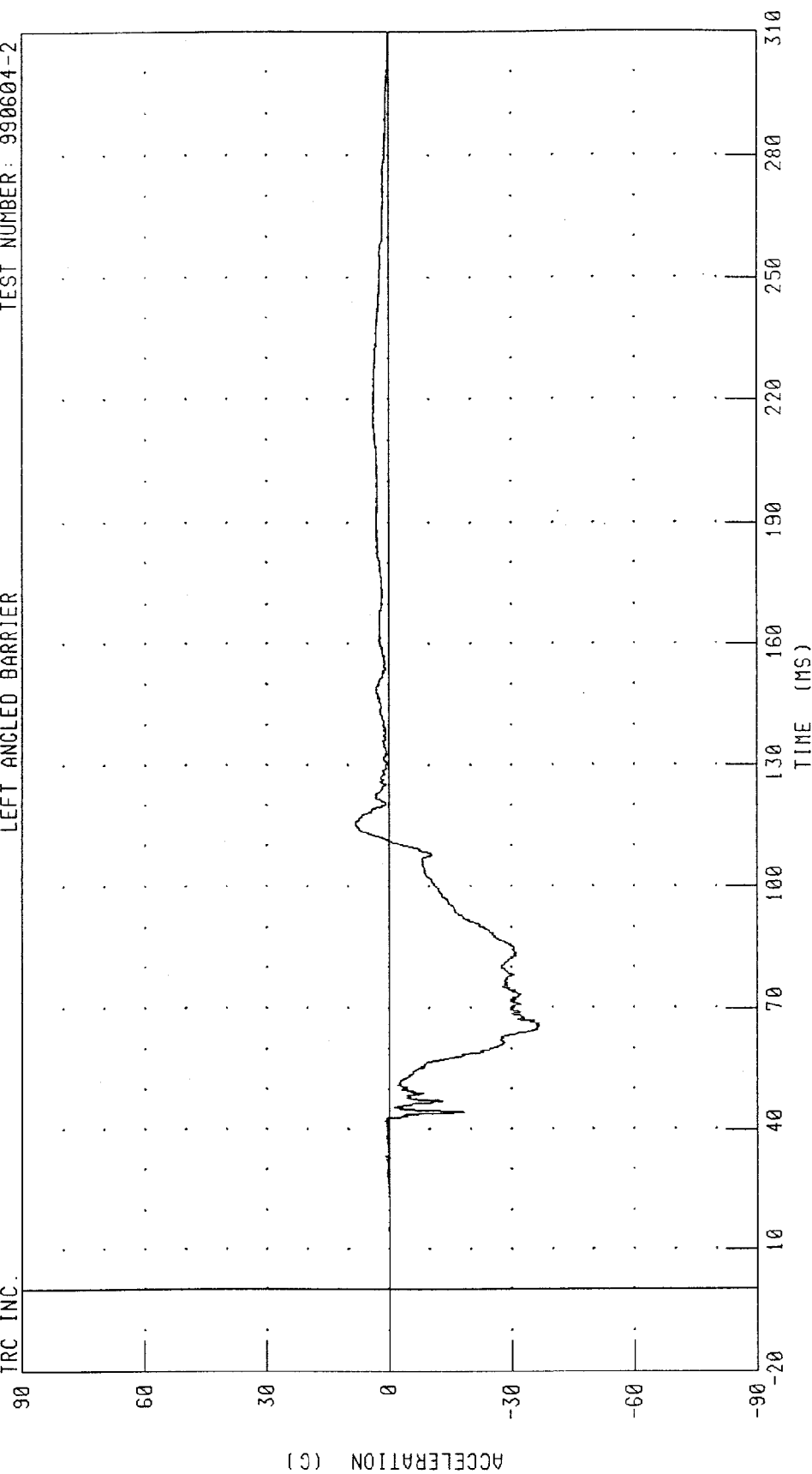
1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH

CURVE # 1 DRIVER HEAD X-AXIS ACCELERATION

LEFT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



CHANNEL: HEDXC1 FILTER: CH. CLASS 1000

PEAK DATA: 8.14 G @ 115.52 MS, -36.56 G @ 65.52 MS

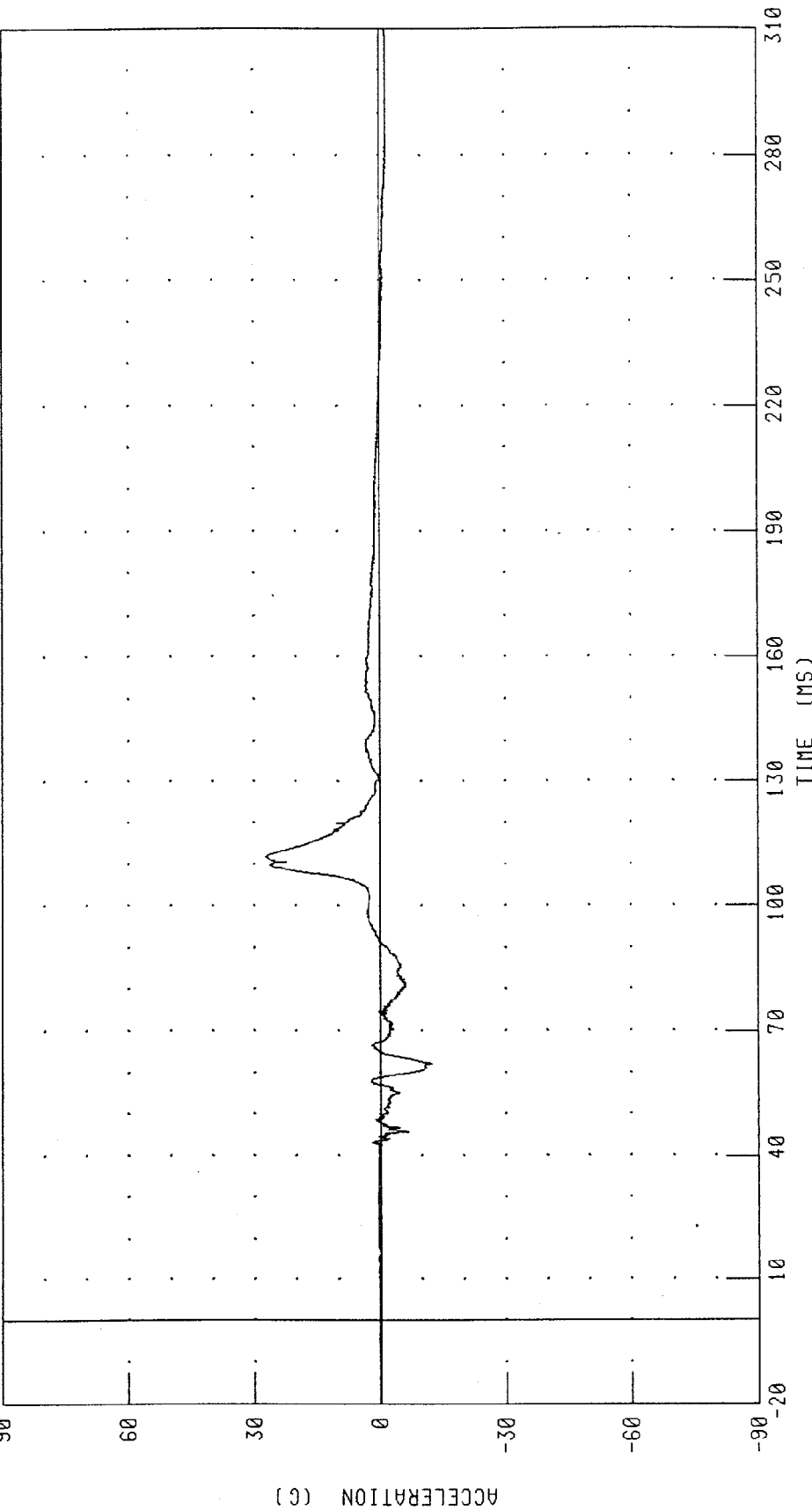
1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH

CURVE # 2 DRIVER HEAD Y-AXIS ACCELERATION

LEFT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



CHANNEL: HEDYC1 FILTER: CH. CLASS 1000

PEAK DATA: 27.29 G @ 111.92 MS, -12.25 G @ 122.24 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER HEAD Z-AXIS ACCELERATION

30 DEG LT ANGLED BARRIER

TEST NUMBER: 990604-2

IRC INC.

90

60

30

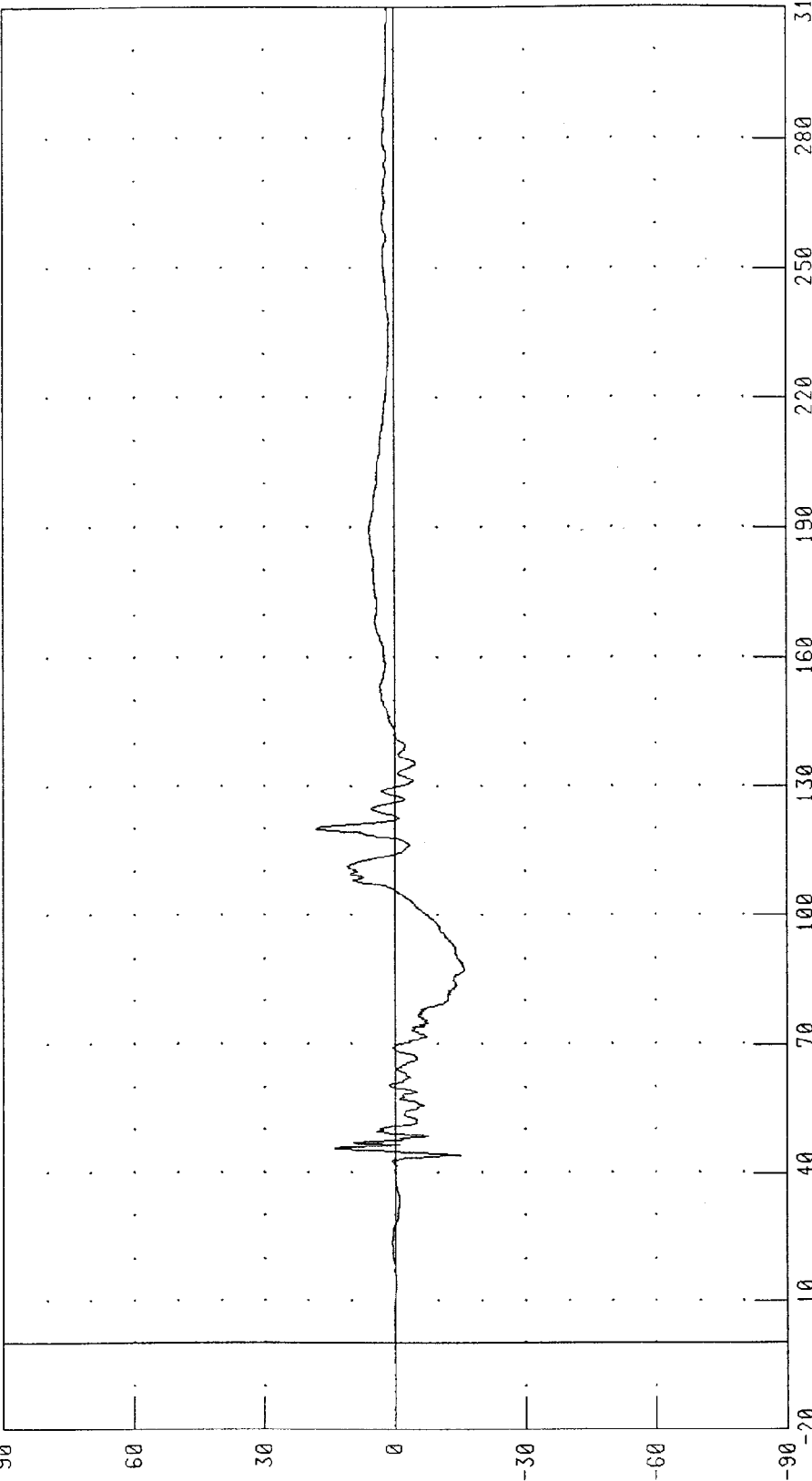
0

-30

-60

-90

ACCELERATION (G)



TIME (MS)

PEAK DATA: 18.16 G @ 120.00 MS; -16.10 G @ 87.36 MS

CHANNEL: HEDZG1 FILTER: CH. CLASS 1000

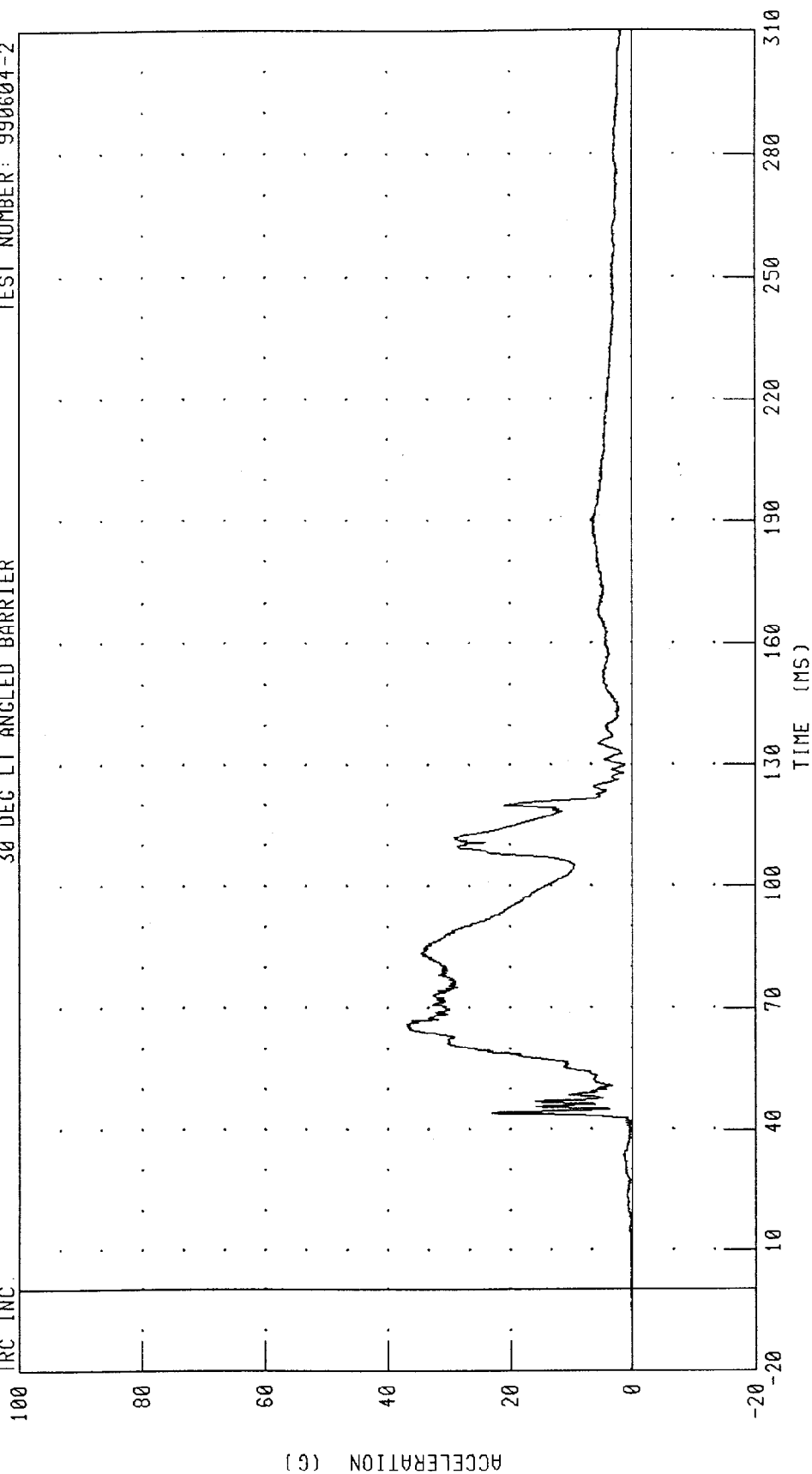
1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH

DRIVER HEAD RESULTANT ACCELERATION

30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



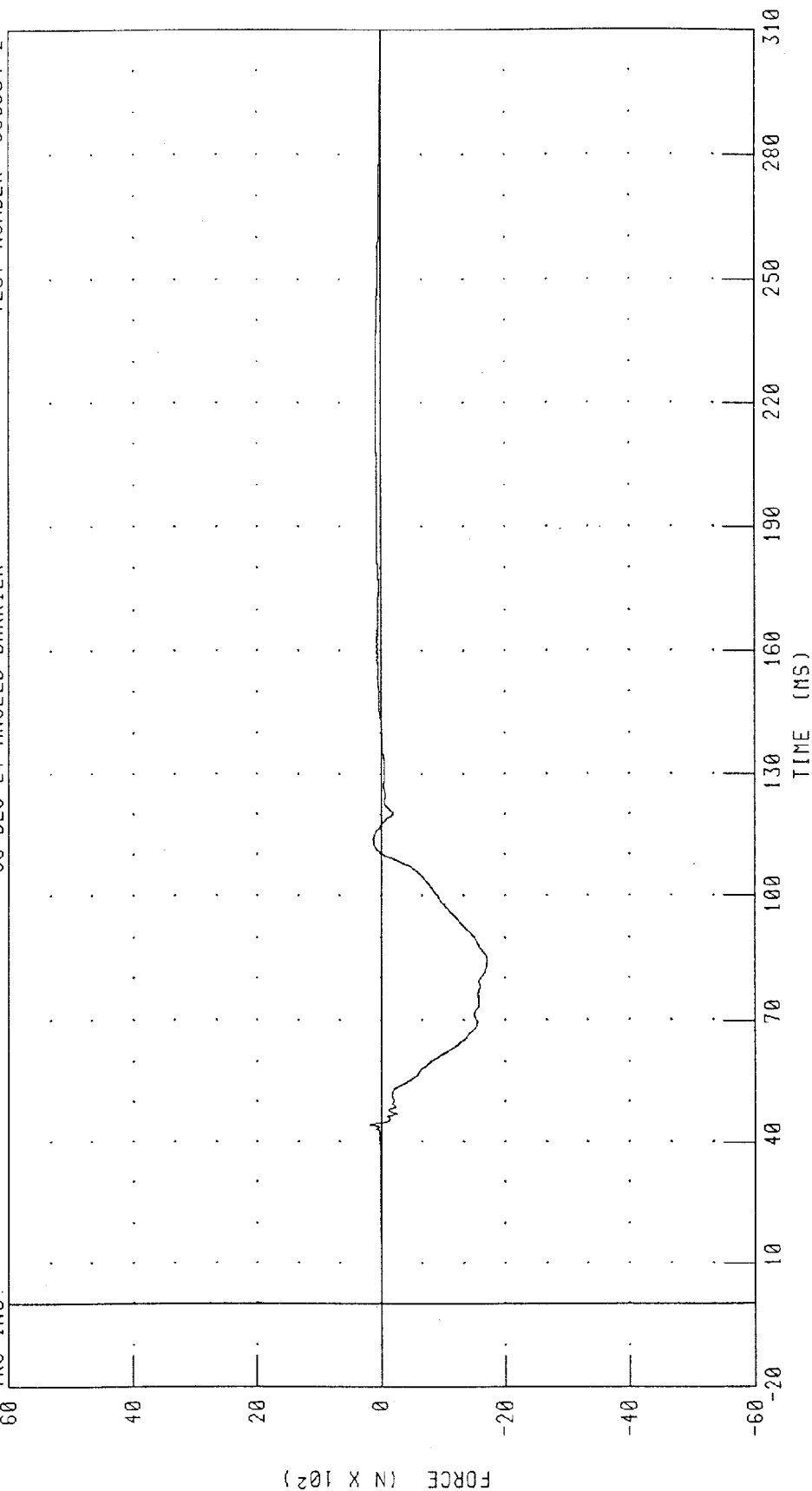
CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

PEAK DATA: 36.86 G @ 66.24 MS; 0.08 G @ -20.00 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER NECK X-AXIS SHEAR FORCE
30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



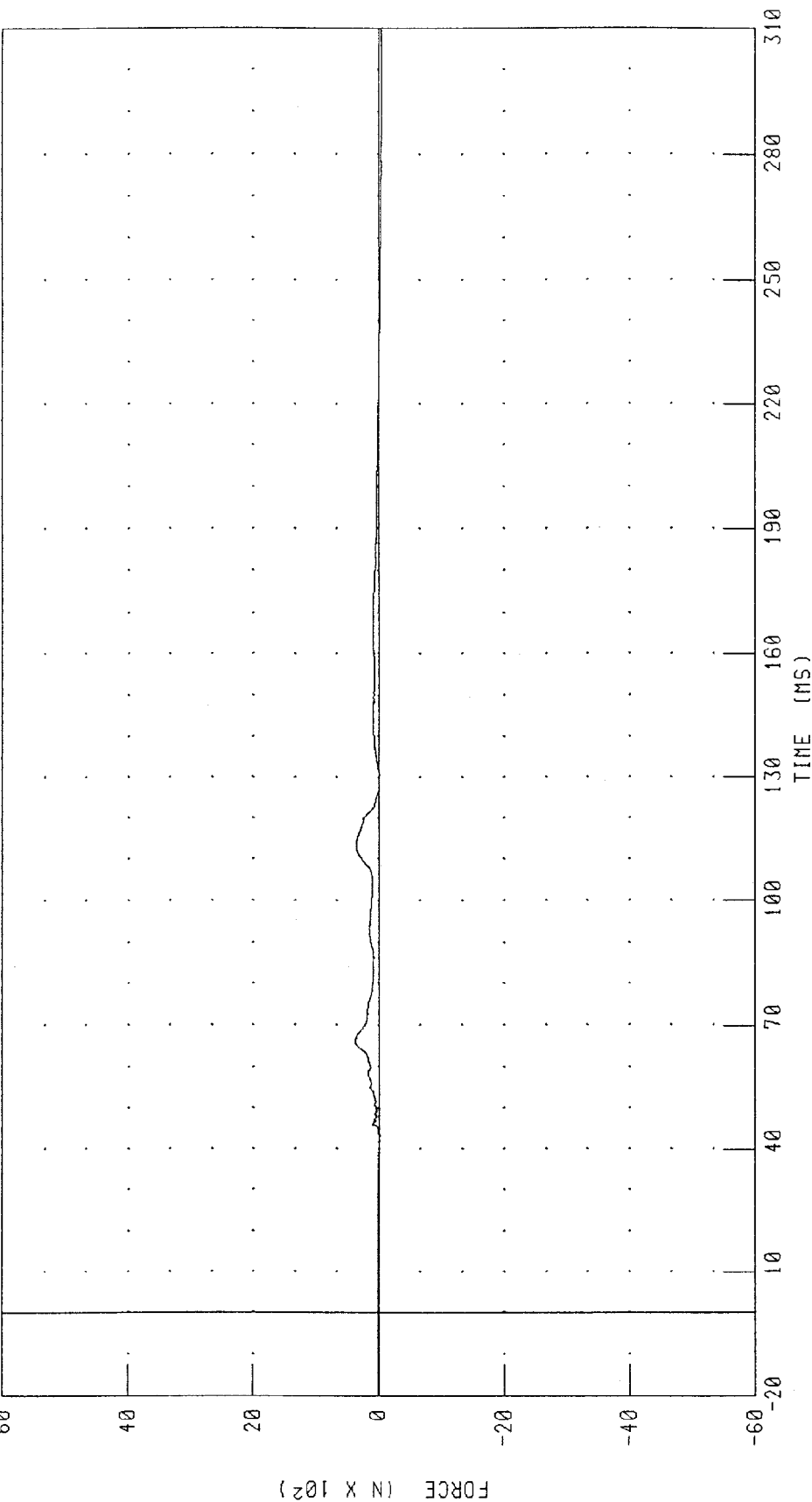
PEAK DATA: 172.49 N @ 44.32 MS; -1719.30 N @ 84.24 MS

CHANNEL: NEKXF1 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER NECK Y-AXIS SHEAR FORCE
30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.

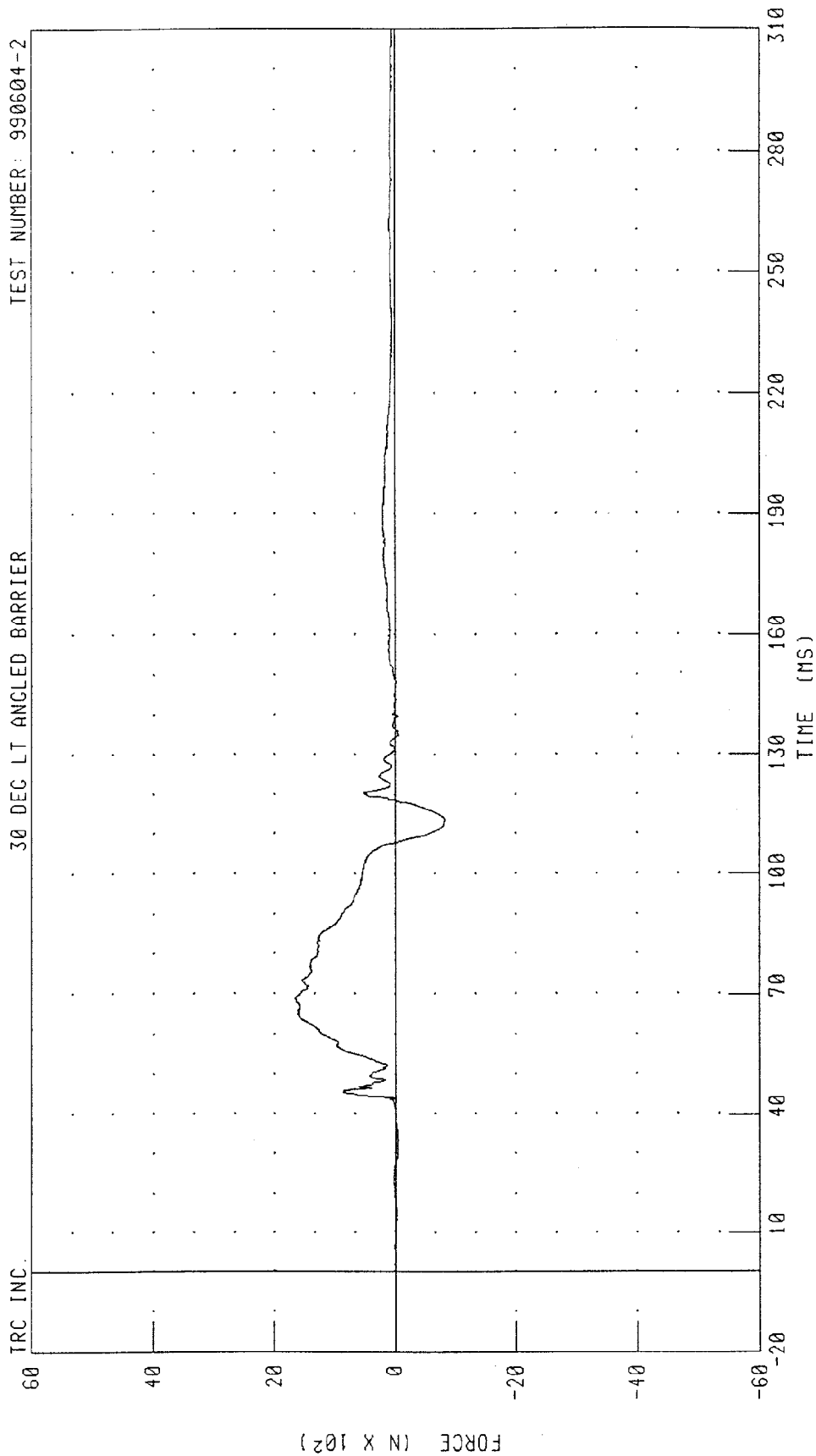


PEAK DATA: 366.80 N @ 65.92 MS; -58.63 N @ 299.60 MS

CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER NECK Z-AXIS AXIAL FORCE
30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2



CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

PEAK DATA: 1660.99 N @ 68.80 MS; -833.77 N @ 113.28 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER NECK MOMENT ABOUT X AXIS

TEST NUMBER: 990604-2

30 DEG LT ANGLED BARRIER

TRC INC.

180

See Data Acquisition Explanations

120

60

TORQUE (N·M)

0

-60

-120

-180

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

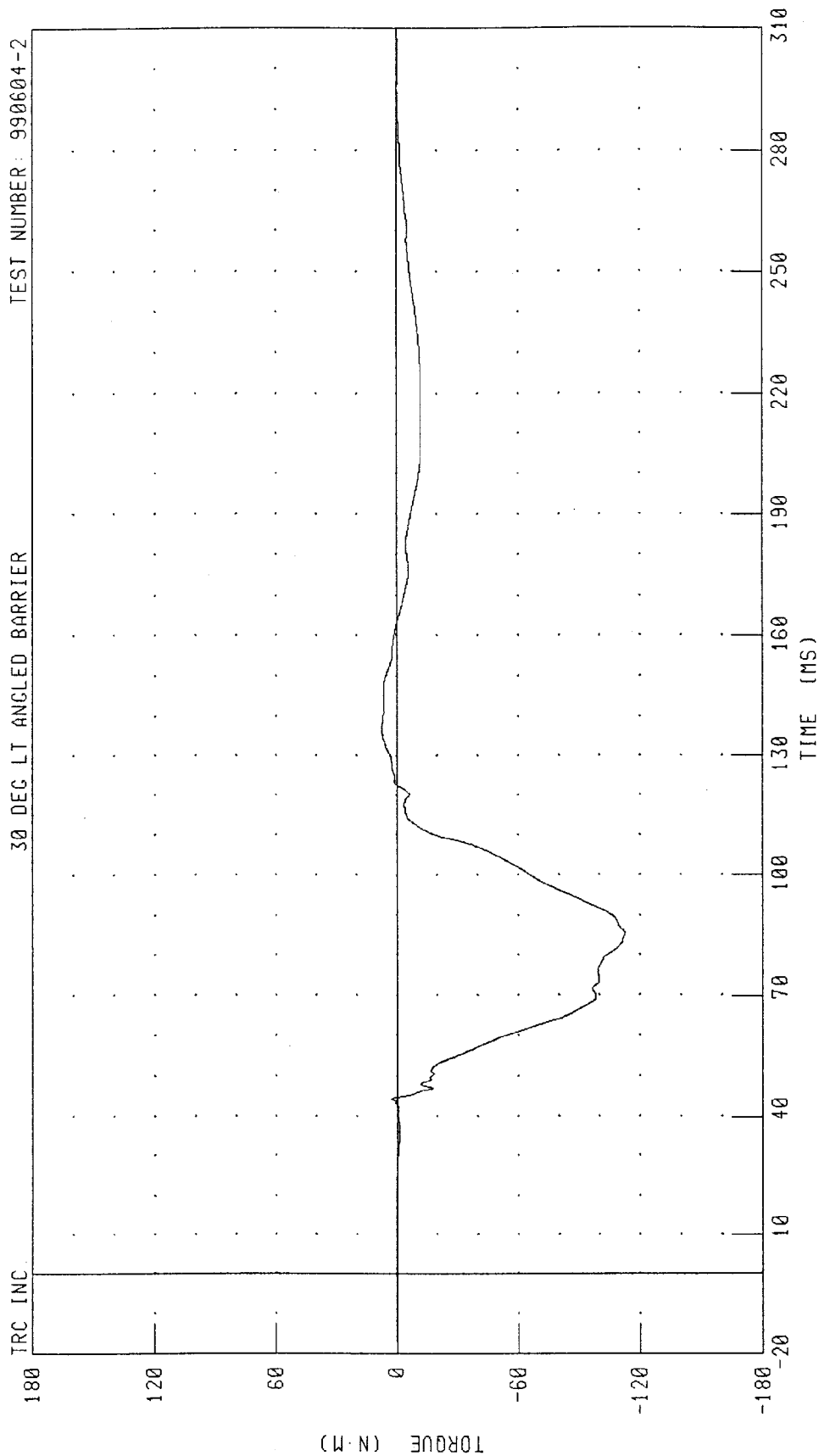
-20

CHANNEL: NEXXM1 FILTER: CH. CLASS 600

PEAK DATA: 15.39 N·M @ 12.00 MS; -99.23 N·M @ 7.84 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER NECK MOMENT ABOUT Y AXIS
30 DEG LT ANGLED BARRIER

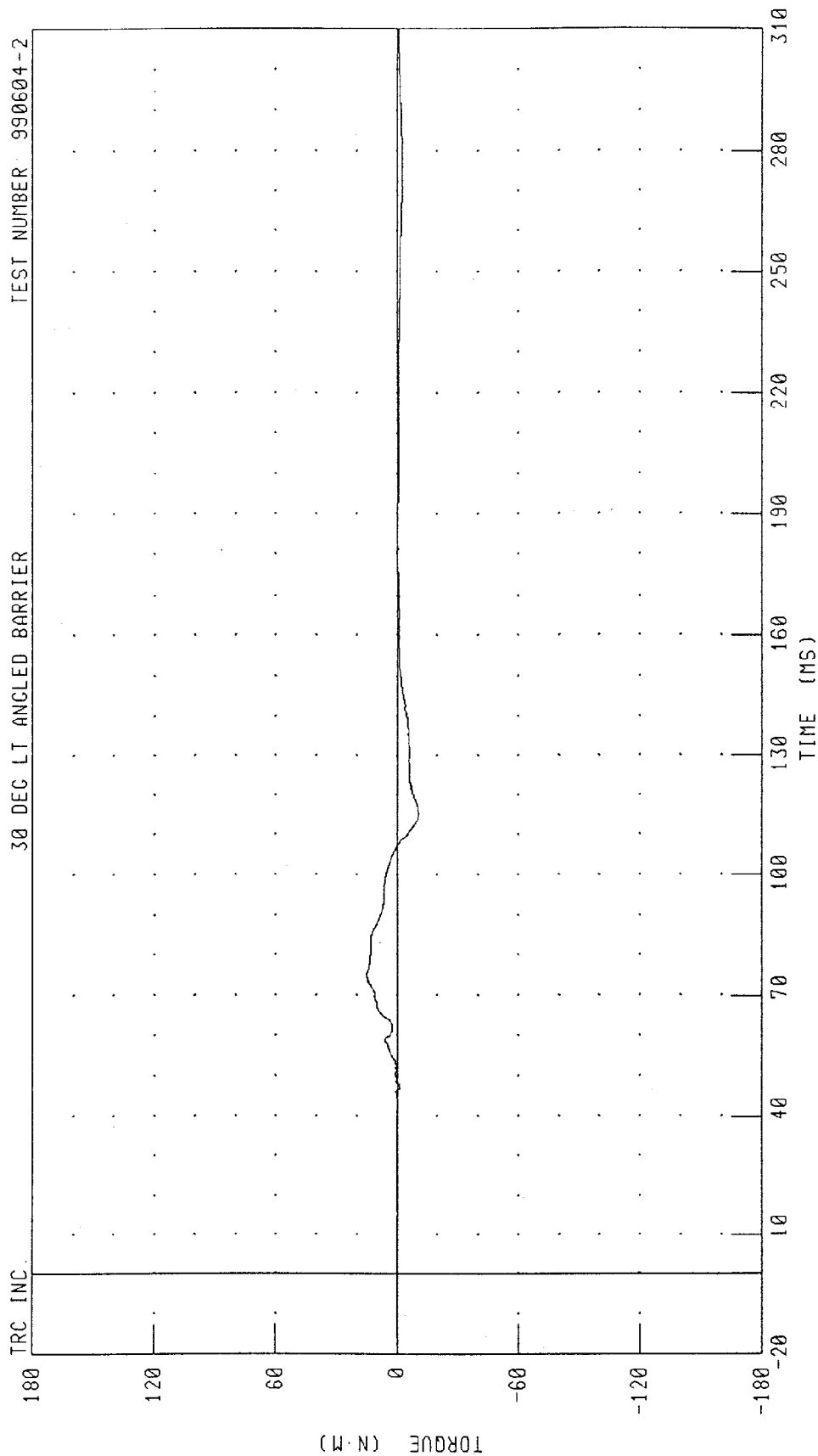
TEST NUMBER: 990604-2



CHANNEL: NEKYM1 FILTER: CH. CLASS 600

PEAK DATA: 7.62 N·m @ 136.16 ms; -112.46 N·m @ 85.20 ms

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER NECK MOMENT ABOUT Z AXIS



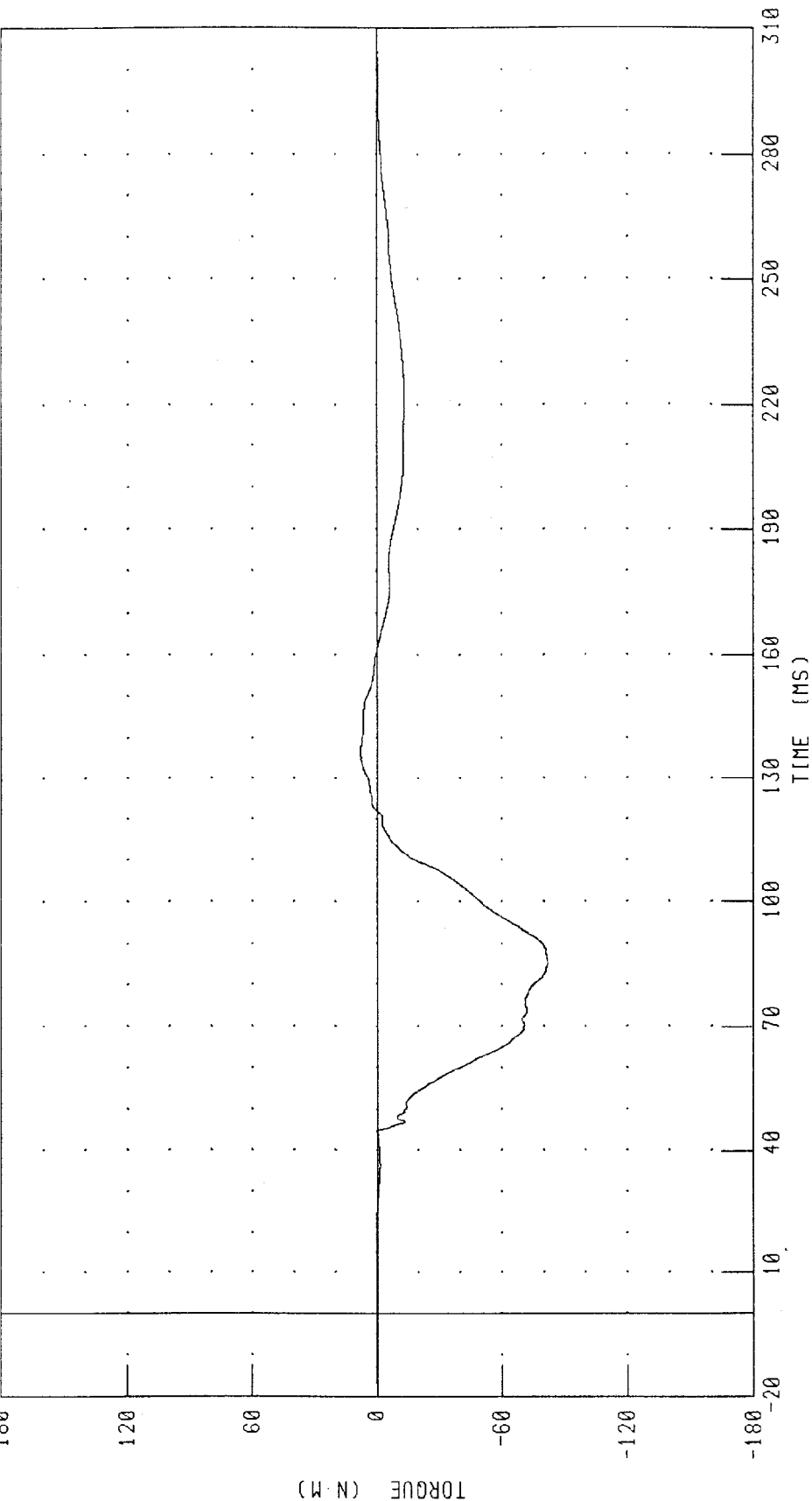
CHANNEL: NEKZM1 FILTER: CH. CLASS 600

PEAK DATA: 14.93 N·M @ 74.88 MS; -10.91 N·M @ 115.52 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER NECK OCCIPITAL CONDYLE
30 DEC LT ANGLED BARRIER

TEST NUMBER: 990504-2

TRC INC



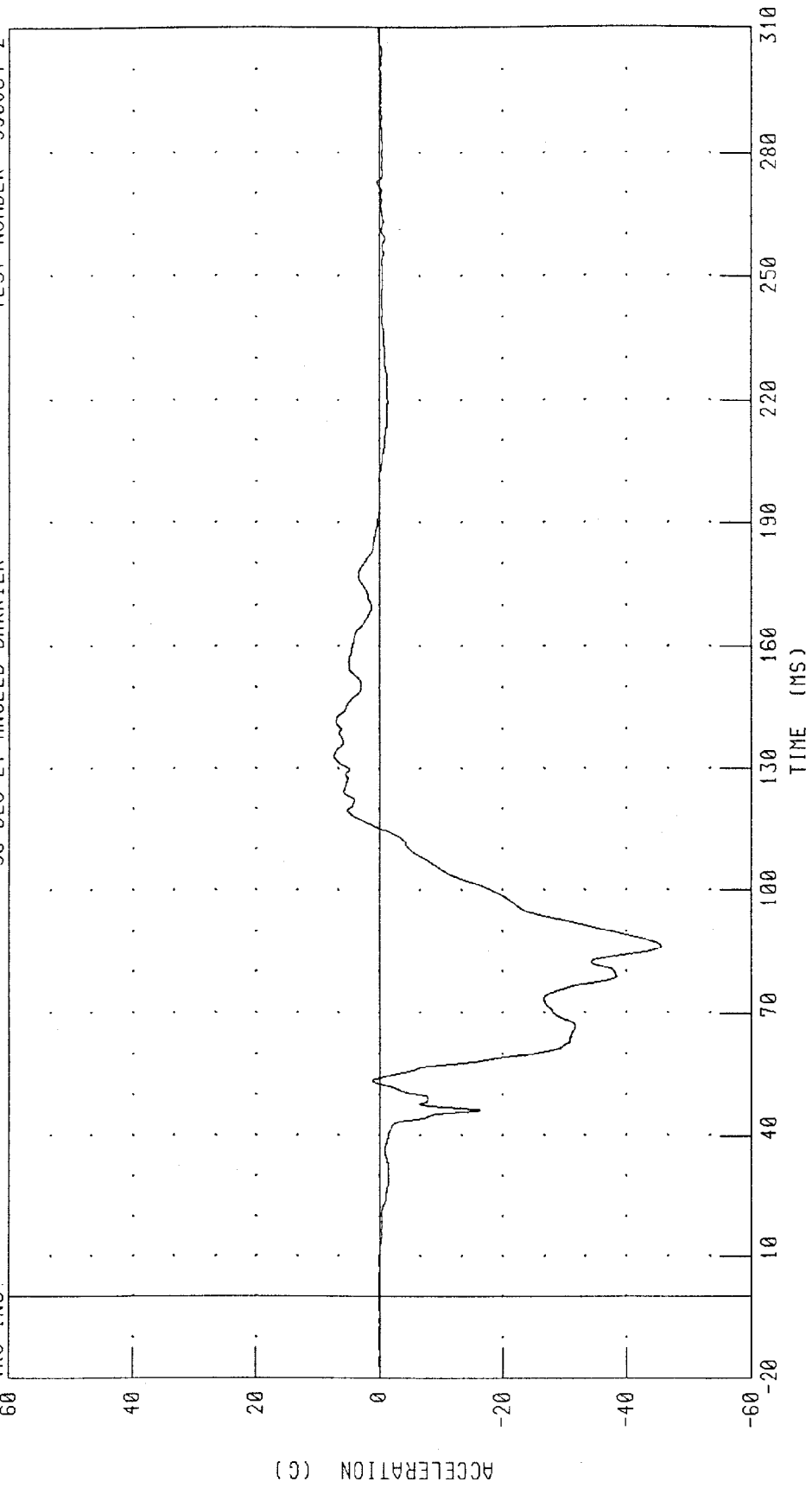
PEAK DATA: 8.11 N-M @ 136.16 MS; -82.08 N-M @ 85.52 MS

CHANNEL: NEKOM1 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER CHEST X-AXIS ACCELERATION
30 DEG LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



CHANNEL: CSTXG1 FILTER: CH CLASS 180

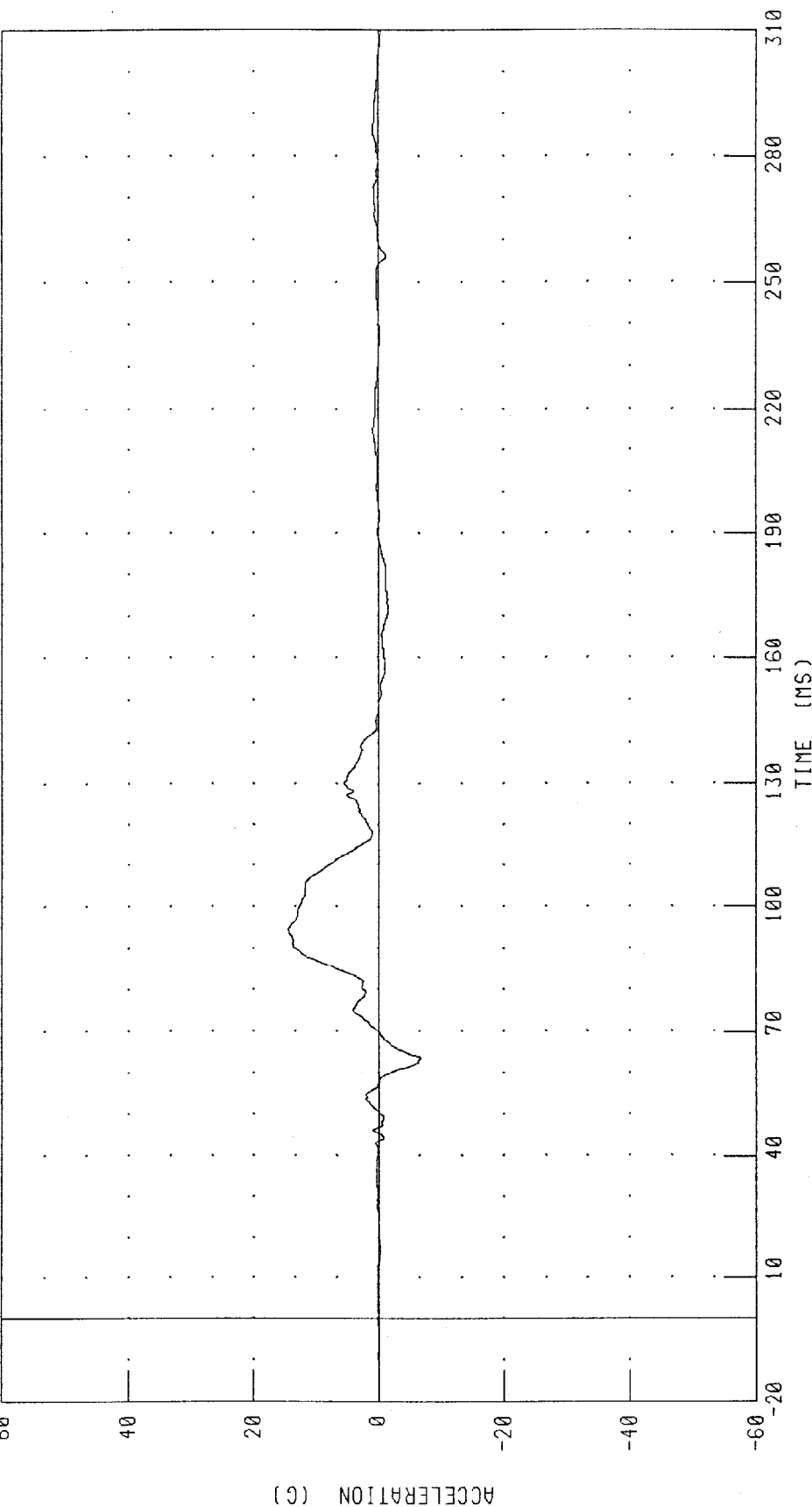
PEAK DATA: 7.39 G @ 133.20 MS; -45.60 G @ 86.32 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER CHEST Y-AXIS ACCELERATION

30 DEG LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



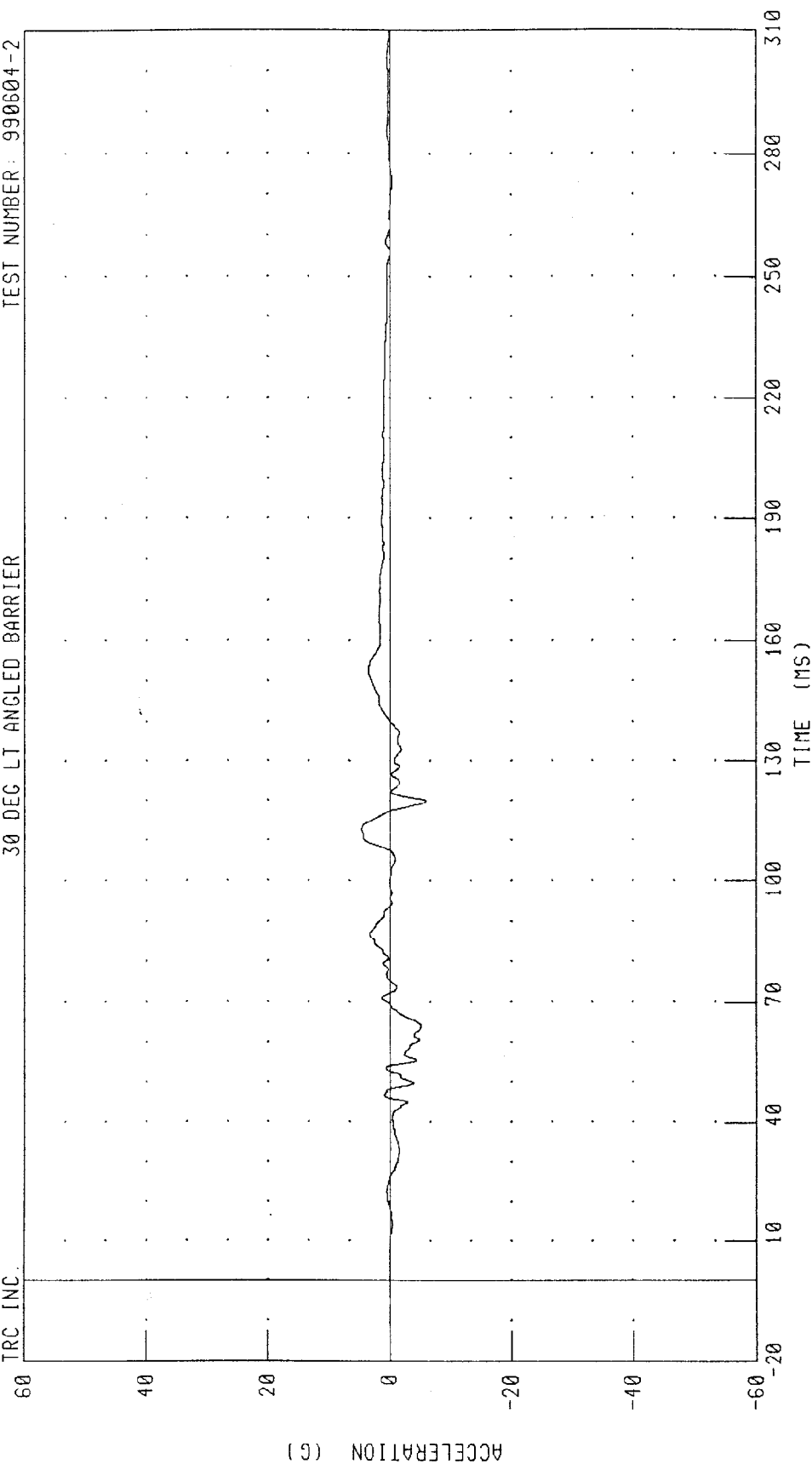
CHANNEL: CSTYG1 FILTER: CH. CLASS 180

PEAK DATA: 14.43 G @ 94.48 MS; -6.81 G @ 63.68 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER CHEST Z-AXIS ACCELERATION
30 DEG LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.

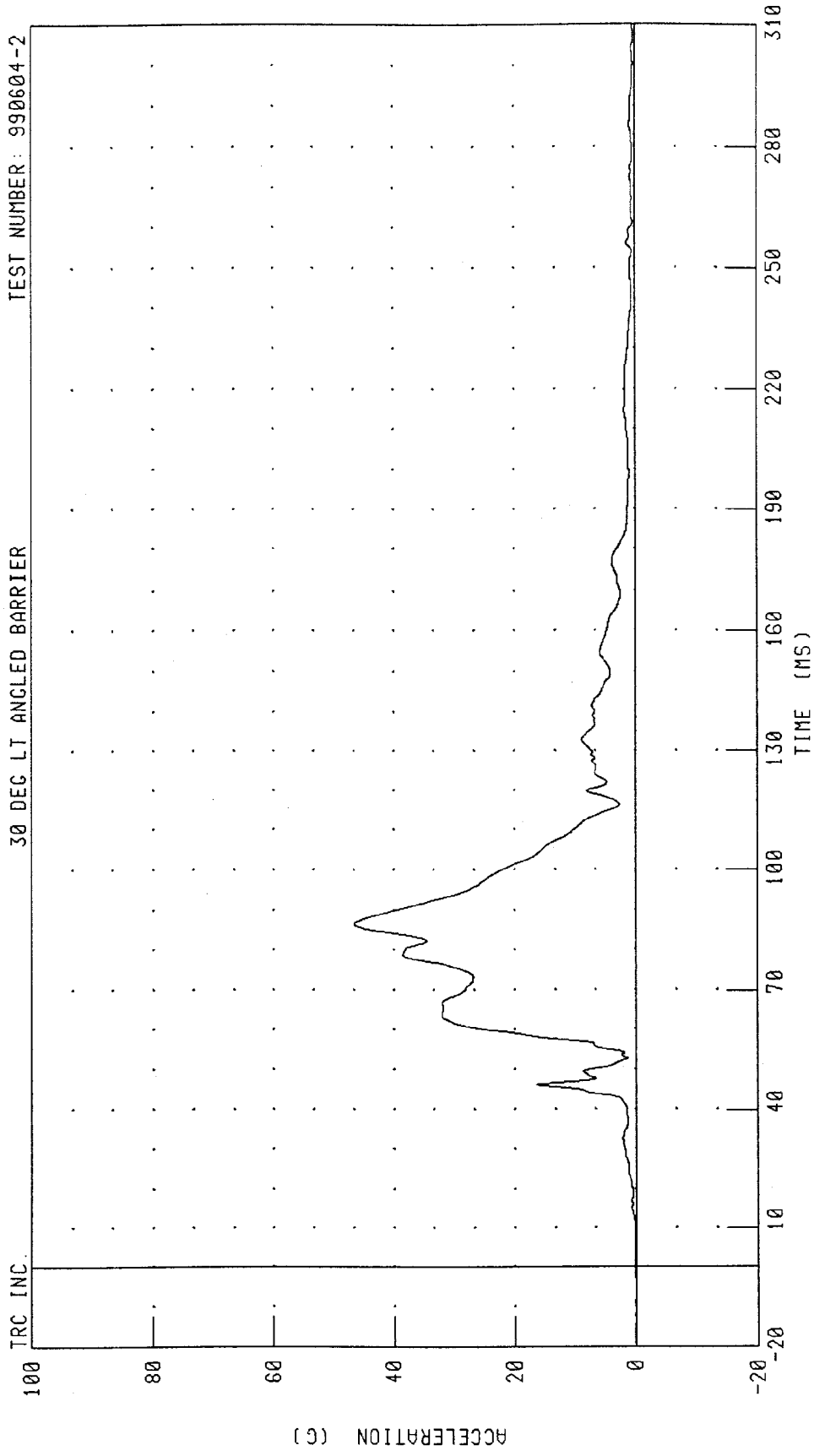


CHANNEL: CSTZG1 FILTER: CH. CLASS 180

PEAK DATA: 4.65 G @ 112.96 MS; -5.98 G @ 120.00 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER CHEST RESULTANT ACCELERATION
30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2



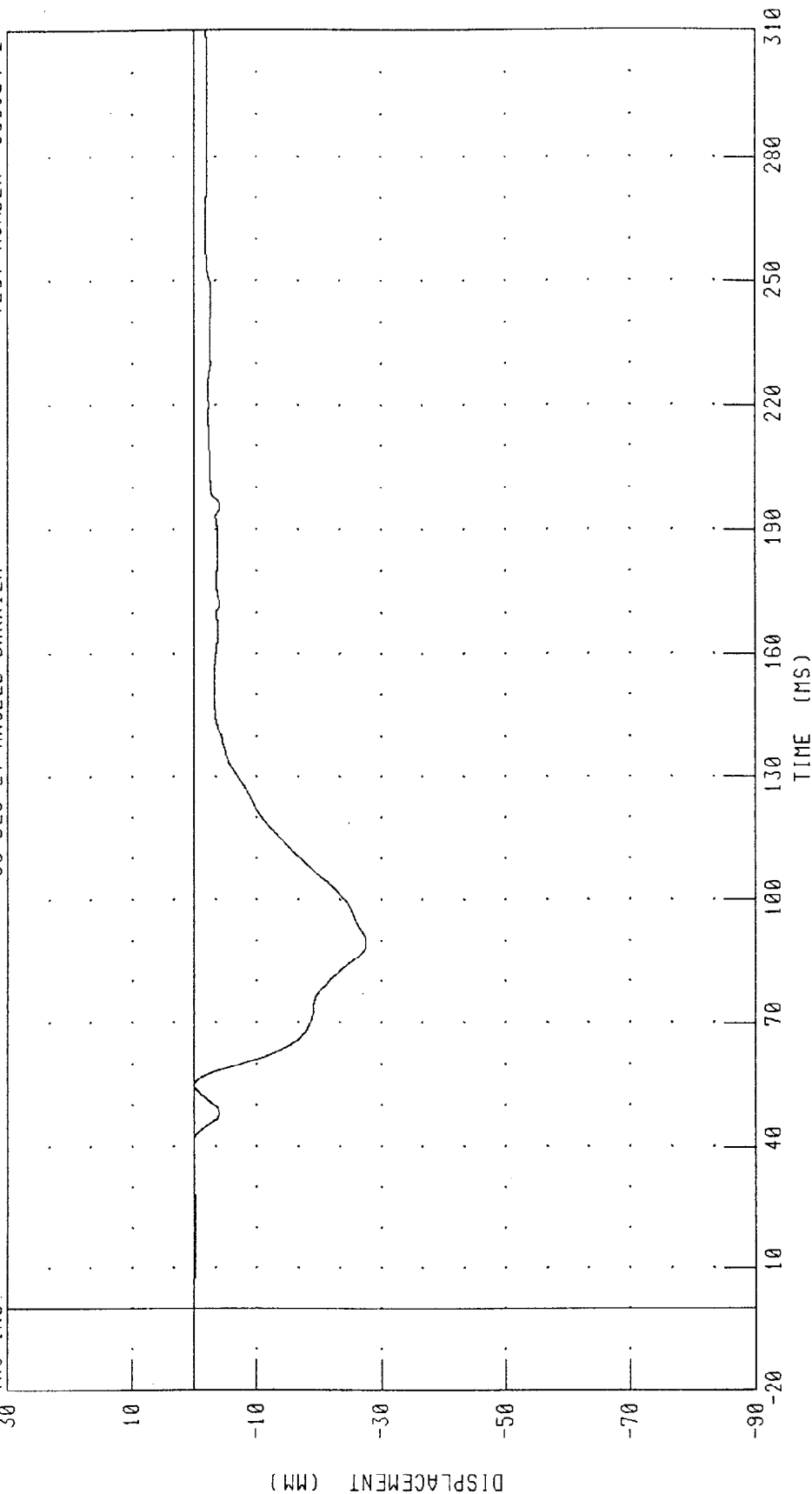
PEAK DATA: 46.58 G @ 86.48 MS; 0.00 G @ -20.00 MS

CHANNEL: CSTRG1 FILTER: CH. CLASS 180

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER CHEST DEFLECTION
30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



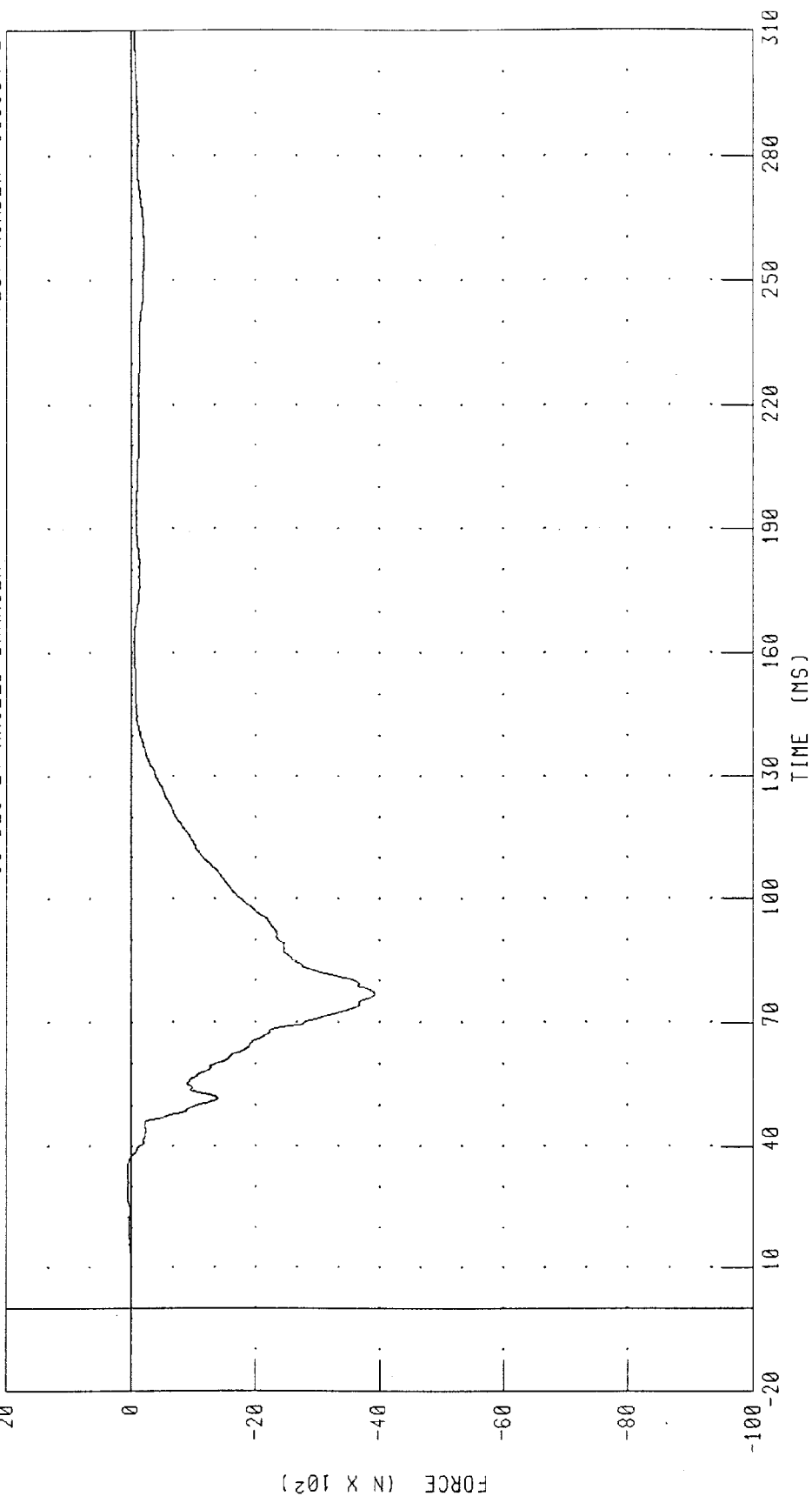
CHANNEL: CSTXD1 FILTER: CH. CLASS 180

PEAK DATA: 0.08 MM @ 54.80 MS; -27.60 MM @ 89.52 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER LEFT FEMUR FORCE
30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



CHANNEL: LFMF1 FILTER: CH. CLASS 600

PEAK DATA: 58.98 N @ 30.32 MS, -3928.19 N @ 76.88 MS

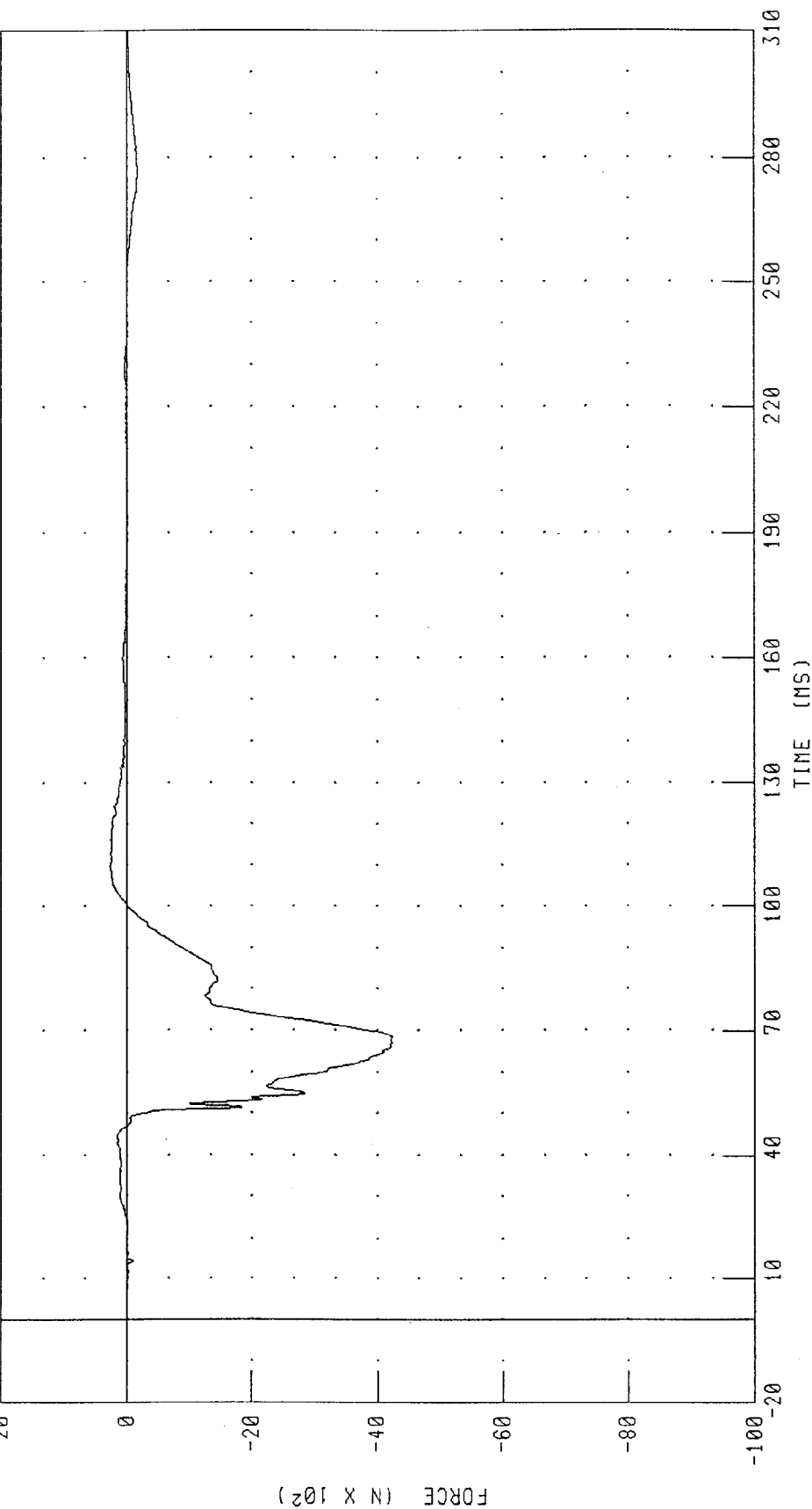
1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH

DRIVER RIGHT FEMUR FORCE

30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

IRC INC.



CHANNEL: RFMF1 FILTER: CH. CLASS 600

PEAK DATA: 272.19 N @ 109.76 MS; -4249.29 N @ 68.48 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION

TEST NUMBER: 990604-2

30 DEG LT ANGLED BARRIER

TRC INC.

90

60

30

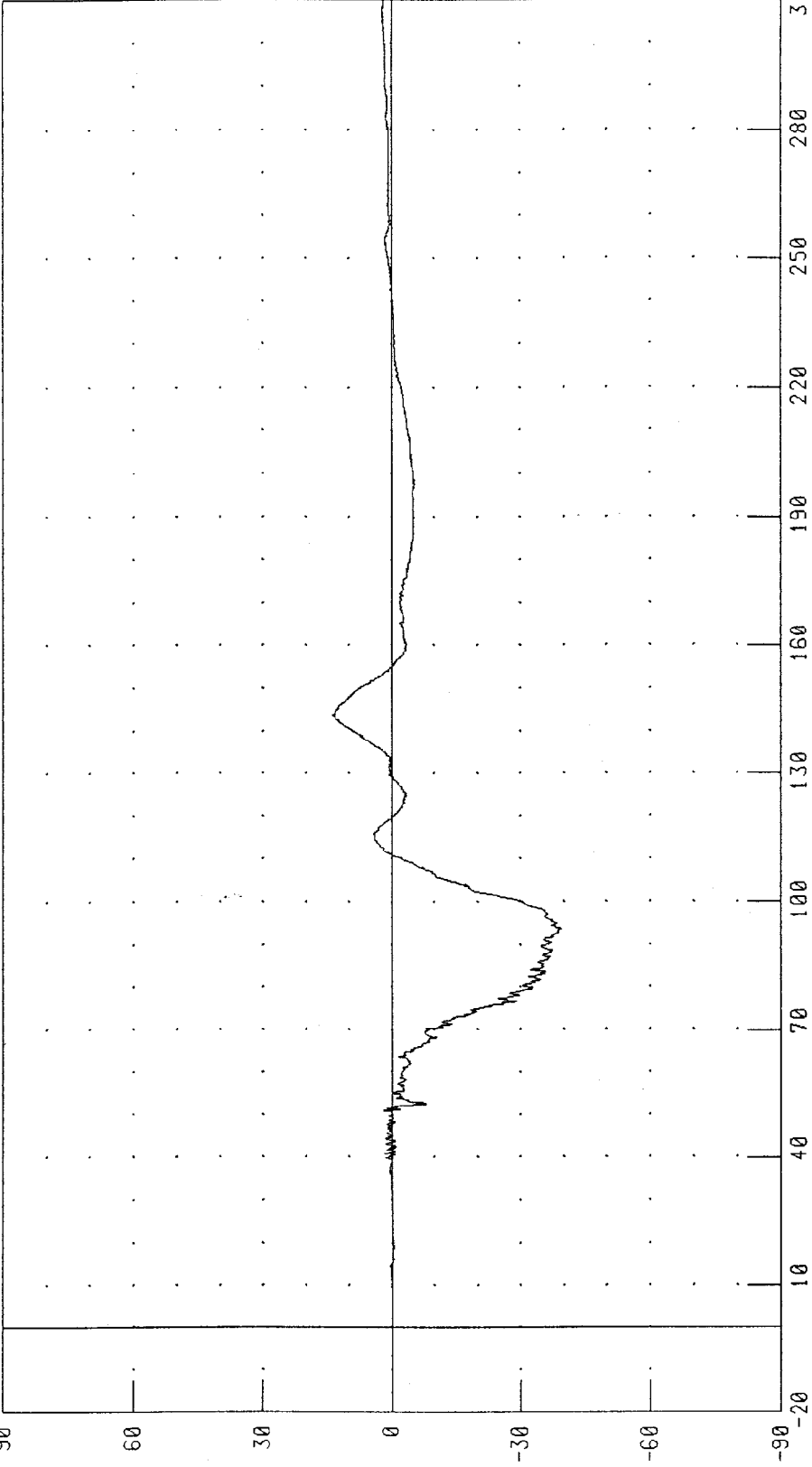
0

-30

-60

-90

ACCELERATION (G)



TIME (MS)

PEAK DATA: 13.83 G @ 143.68 MS; -39.47 G @ 176 MS

CHANNEL: HEDXC2 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 990604-2

30 DEC LT ANGLED BARRIER

TRC INC

90

60

30

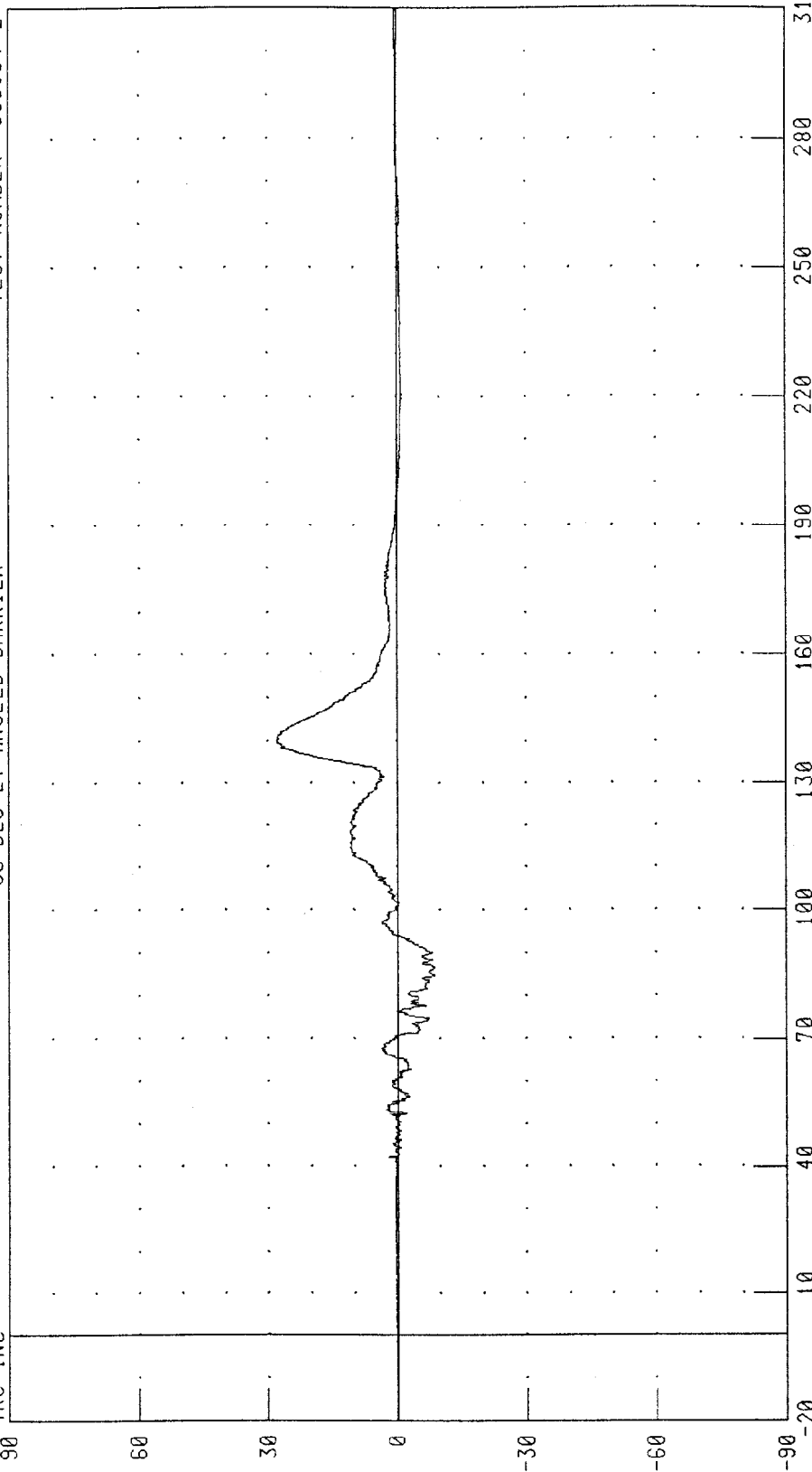
0

-30

-60

-90

ACCELERATION (G)

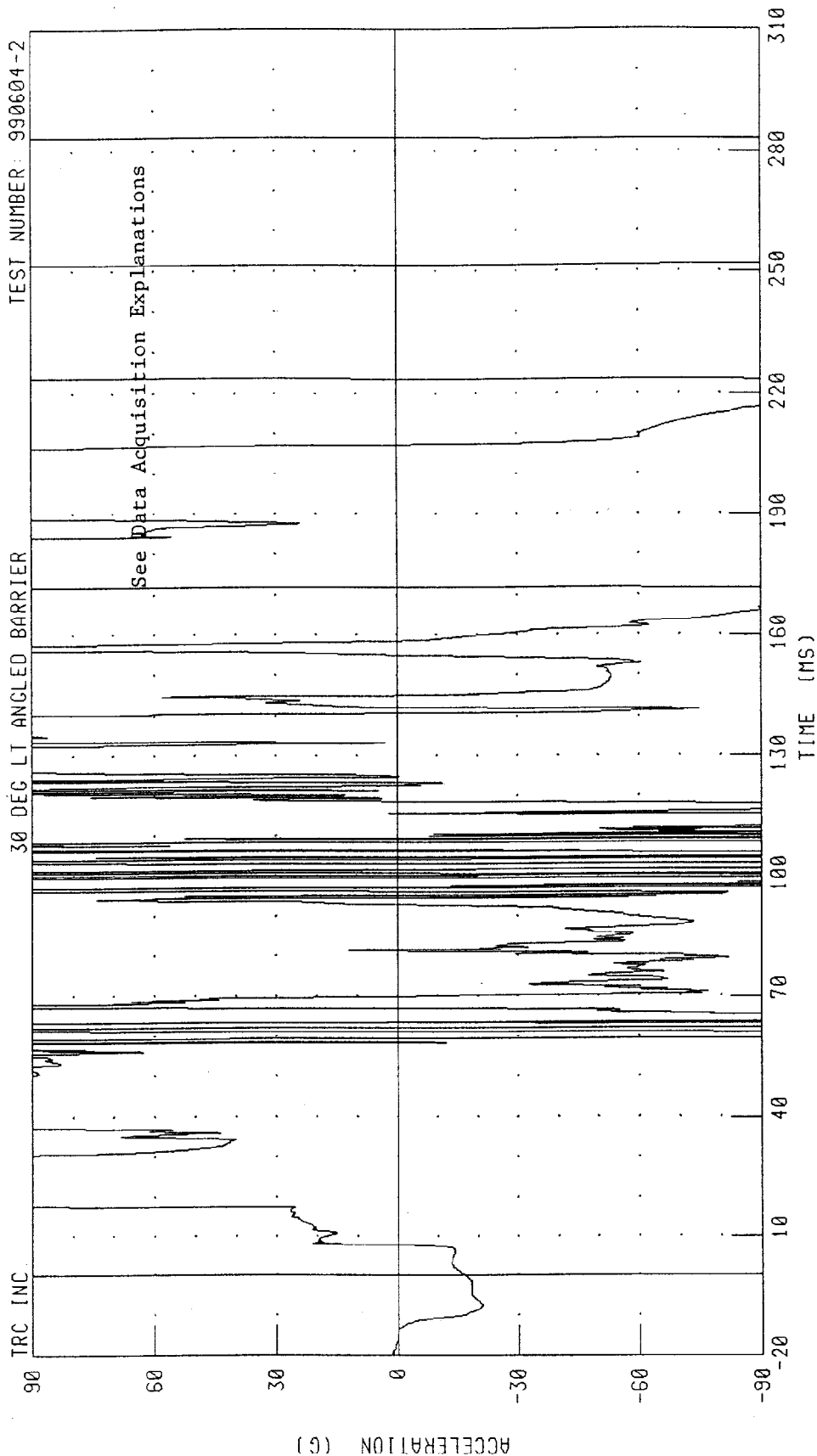


TIME (MS)

PEAK DATA: 27.89 G @ 140.16 MS; -8.75 G @ 84.64 MS

CHANNEL: HEDYC2 FILTER: CH. CLASS 1000

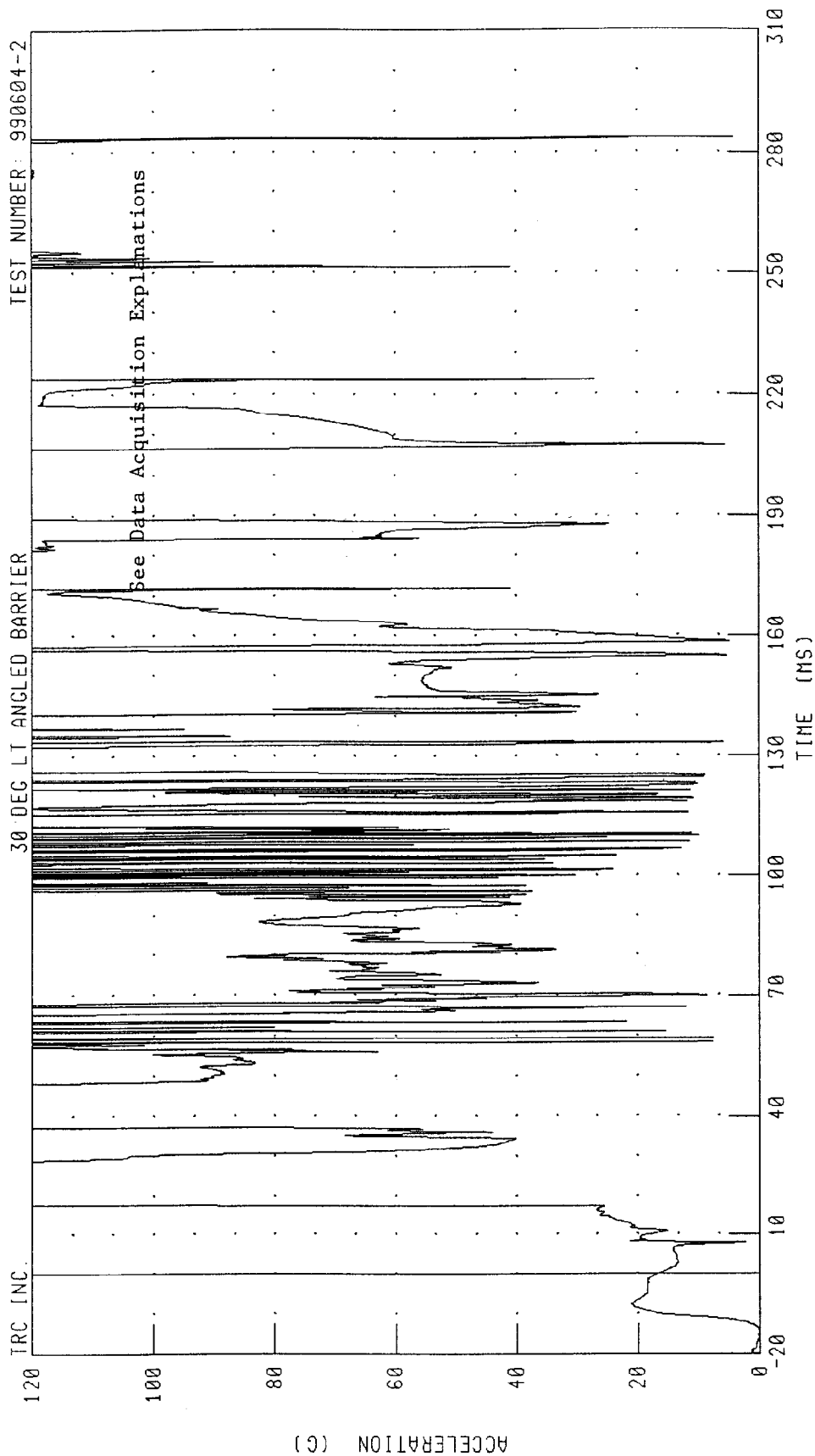
1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION



CHANNEL: HEDZG2 FILTER: CH. CLASS 1000

PEAK DATA: 379.84 G @ 134.00 MS; -417.52 G @ 59.84 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION



PEAK DATA: 419.11 G @ 97.20 MS; 0.11 G @ -15.92 MS

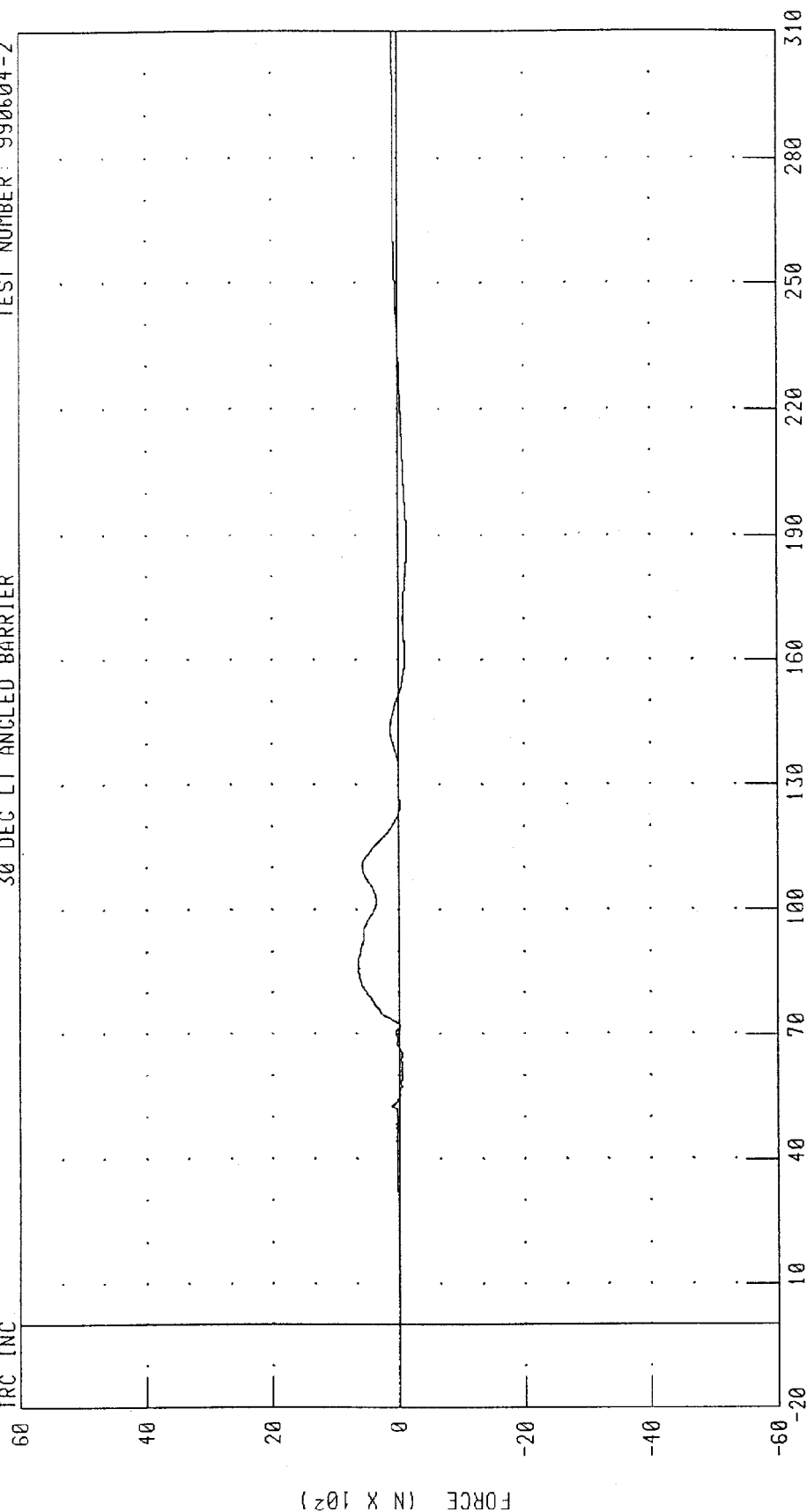
CHANNEL: HEDRC2 FILTER: CH CLASS 1000

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK X-AXIS SHEAR FORCE

TEST NUMBER: 990604-2

30 DEC LT ANGLED BARRIER

IRC INC

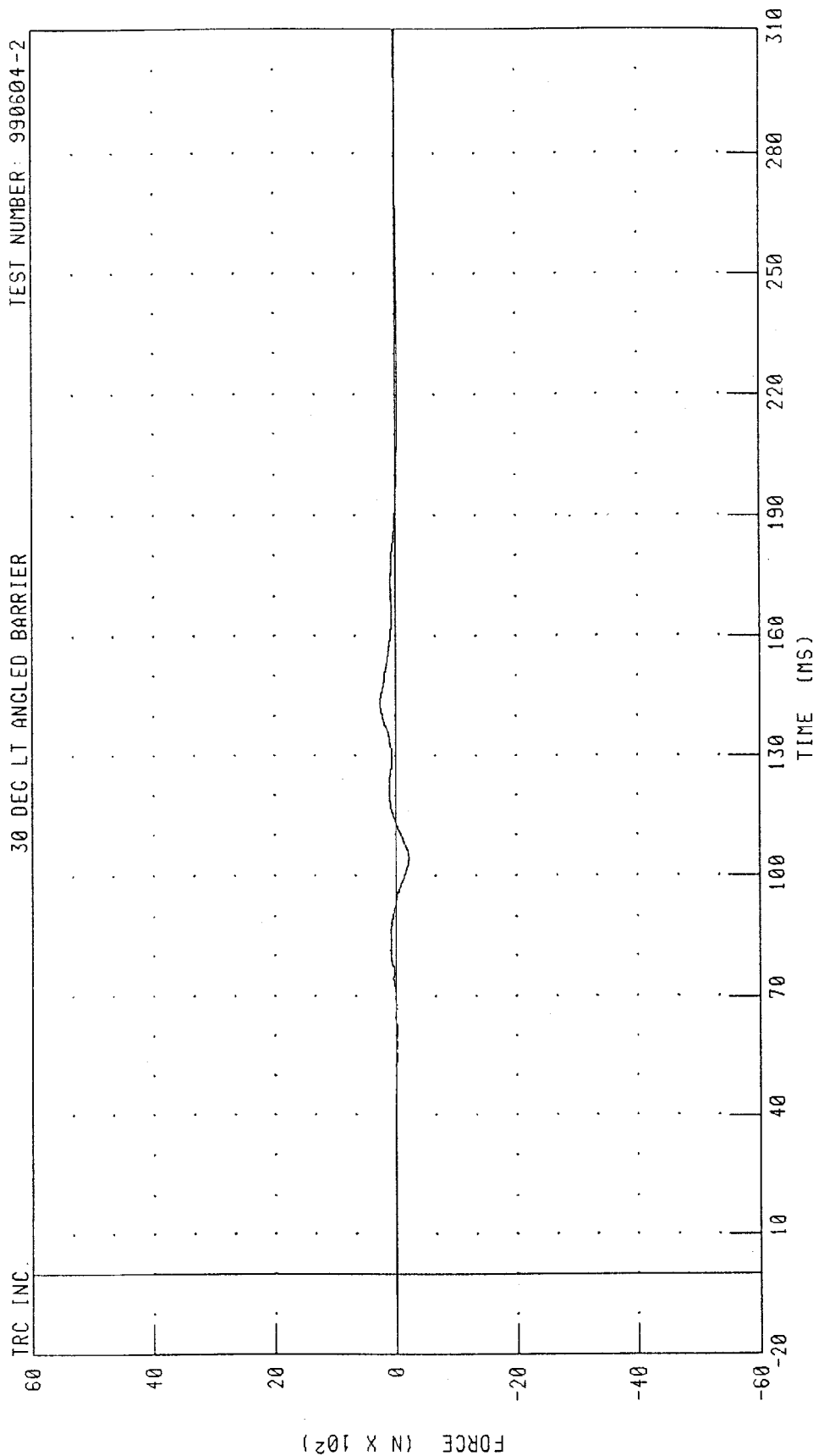


TIME (MS)

PEAK DATA: 644.37 N @ 85.36 MS, -145.87 N @ 185.28 MS

CHANNEL: NEKXF2 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK Y-AXIS SHEAR FORCE



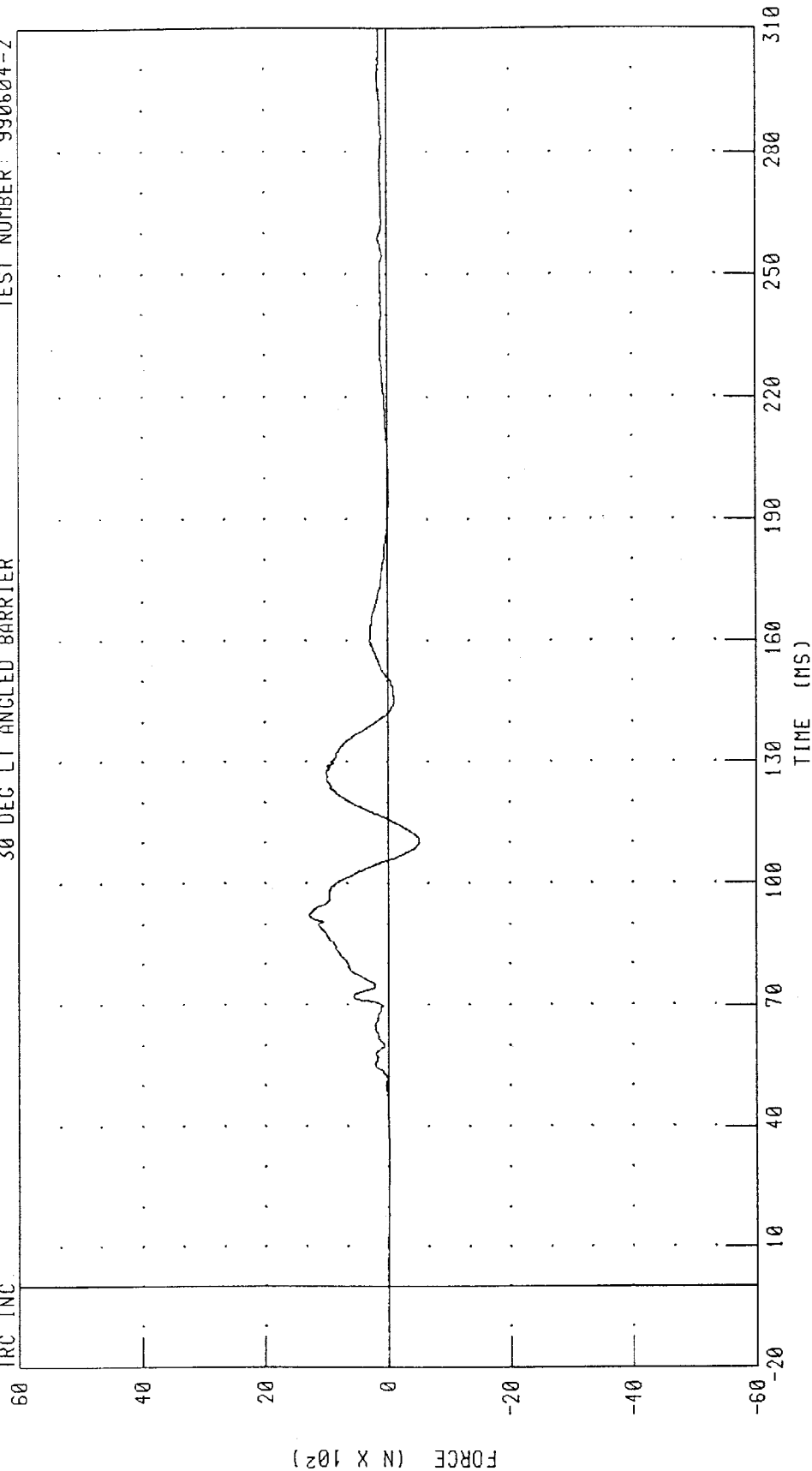
CHANNEL: NEKYF2 FILTER: CH. CLASS 1000 PEAK DATA: 243.49 N @ 143.04 MS; -225.87 N @ 104.32 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE

TEST NUMBER: 930604-2

30 DEC LT ANGLED BARRIER

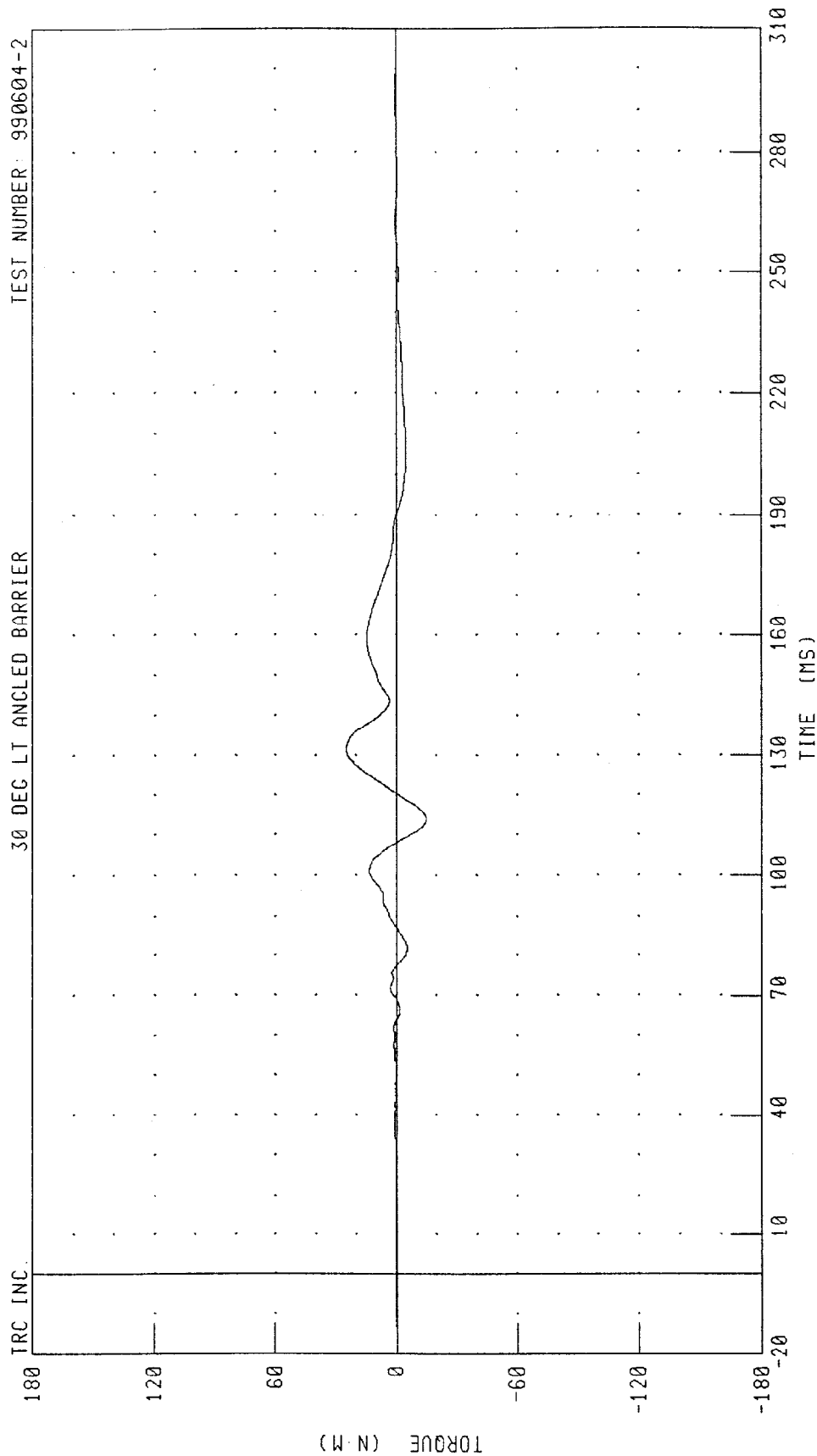
TRC INC



CHANNEL: NEKZF2 FILTER: CH CLASS 1000

PEAK DATA: 1283.90 N @ 92.24 MS; -513.97 N @ 109.84 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS



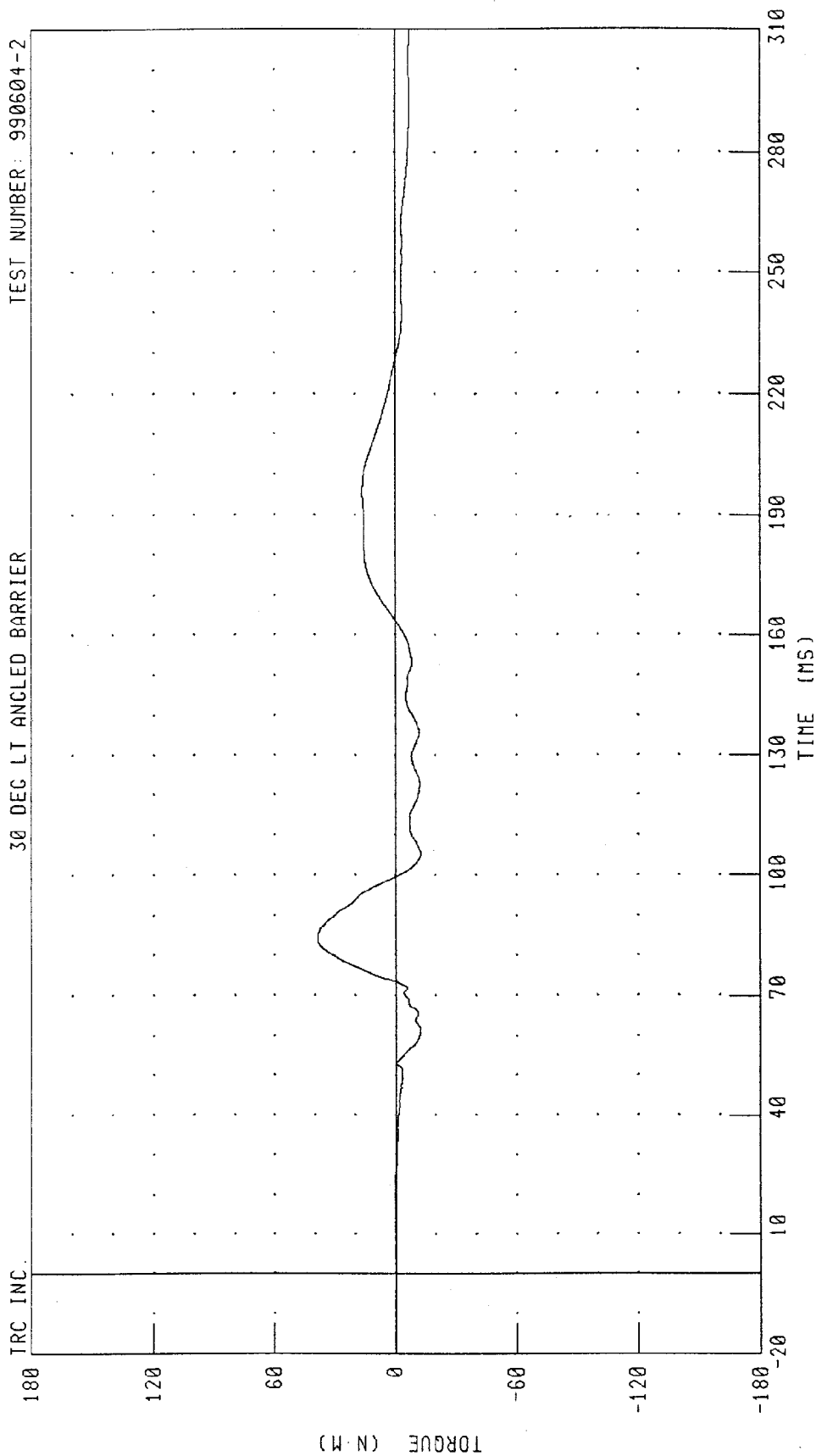
CHANNEL: NEKX12 FILTER: CH. CLASS 600

PEAK DATA: 24.70 N·M @ 131.76 MS; -15.07 N·M @ 114.08 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS

30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2



PEAK DATA: 38.60 N-M @ 84.72 MS; -12.78 N-M @ 105.28 MS

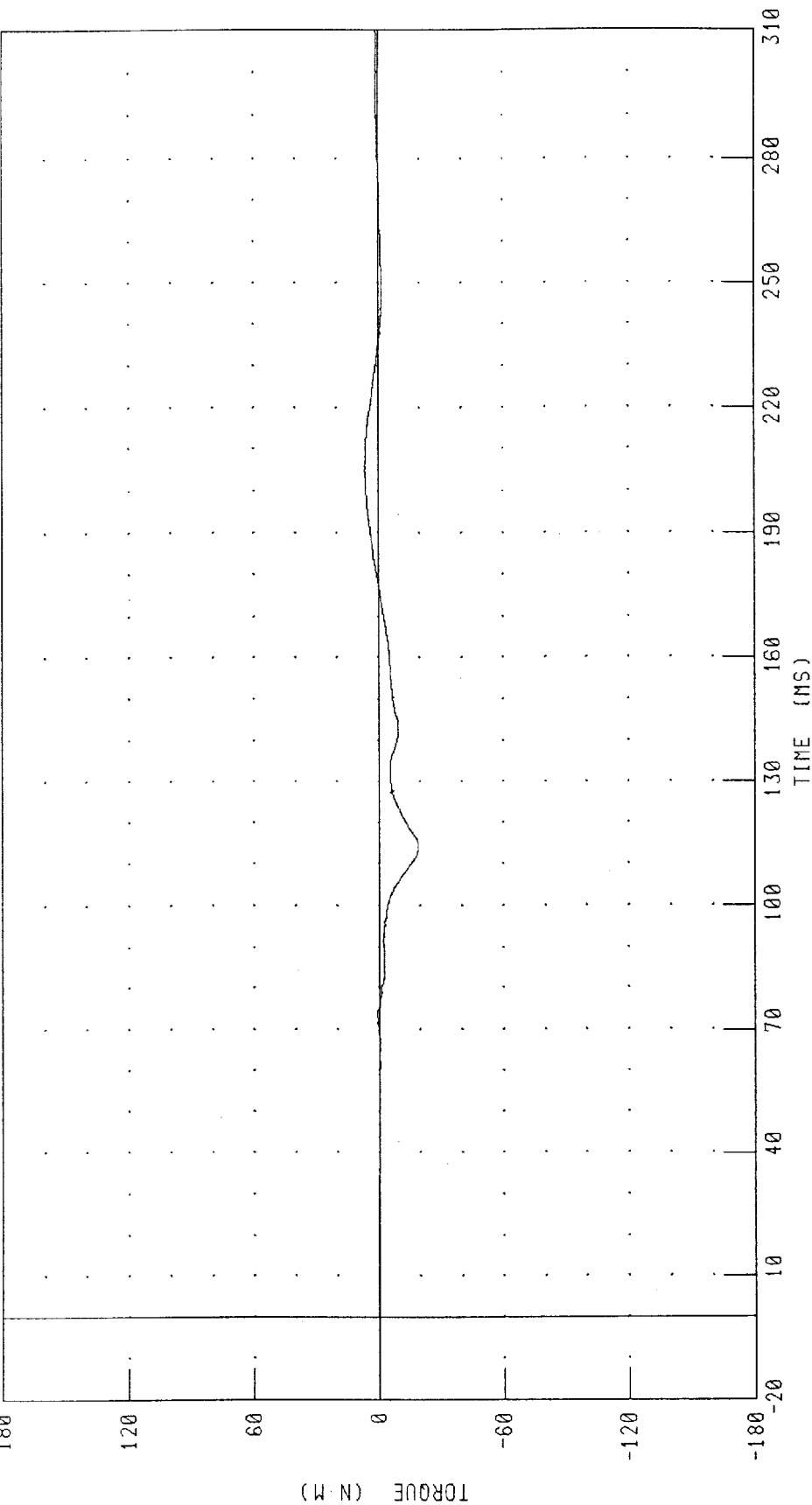
CHANNEL: NEKYM2 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Z AXIS

30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

IRC INC.



CHANNEL: NEKZM2 FILTER: CH. CLASS 600

PEAK DATA: 6.27 N-M @ 204.88 MS; -19.09 N-M @ 114.24 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK OCCIPITAL CONDYLE

TEST NUMBER: 990604-2

30 DEC LT ANGLED BARRIER

IRC INC.

180

120

60

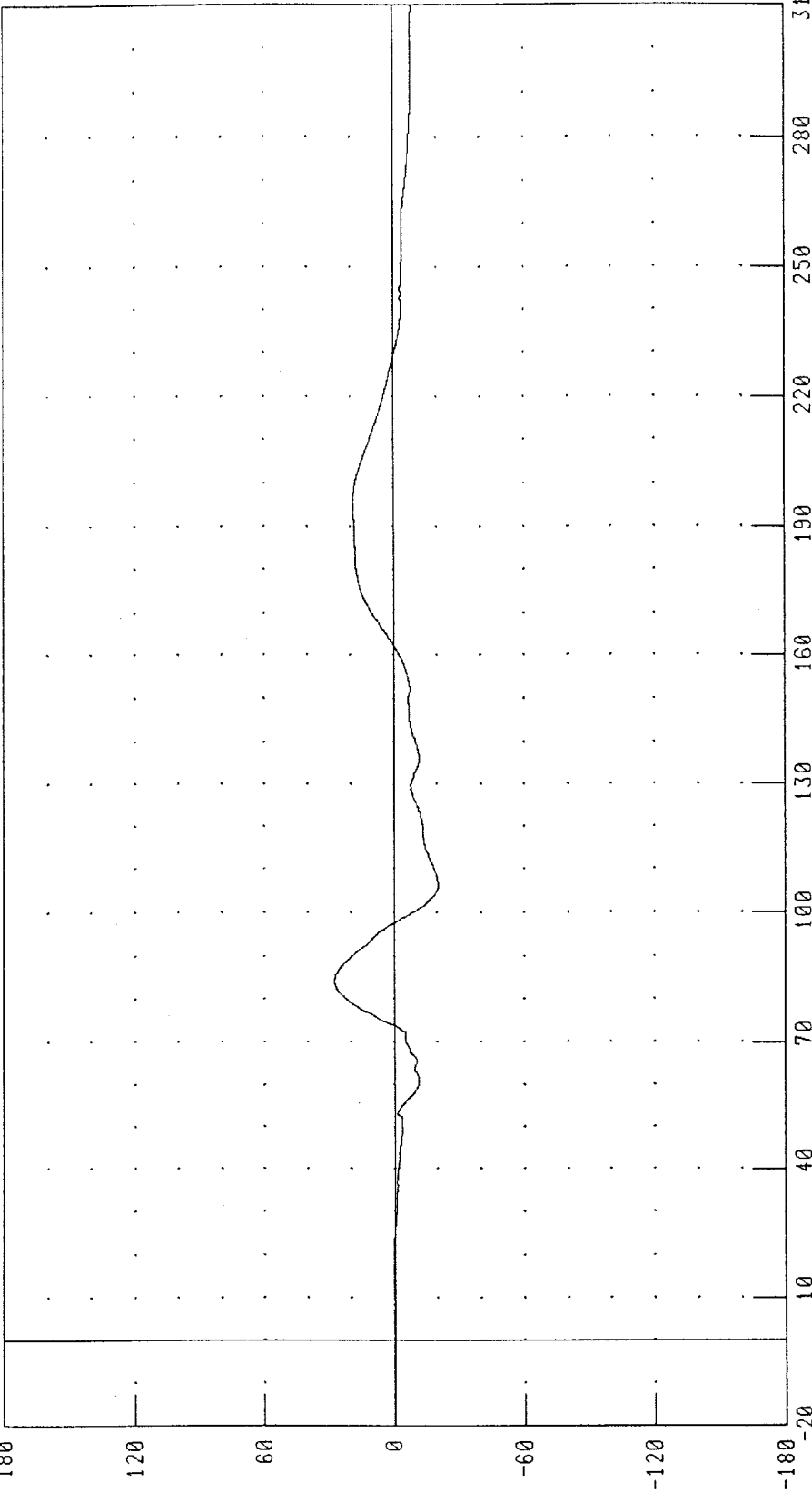
0

-60

-120

-180

TORQUE (N·M)



TIME (MS)

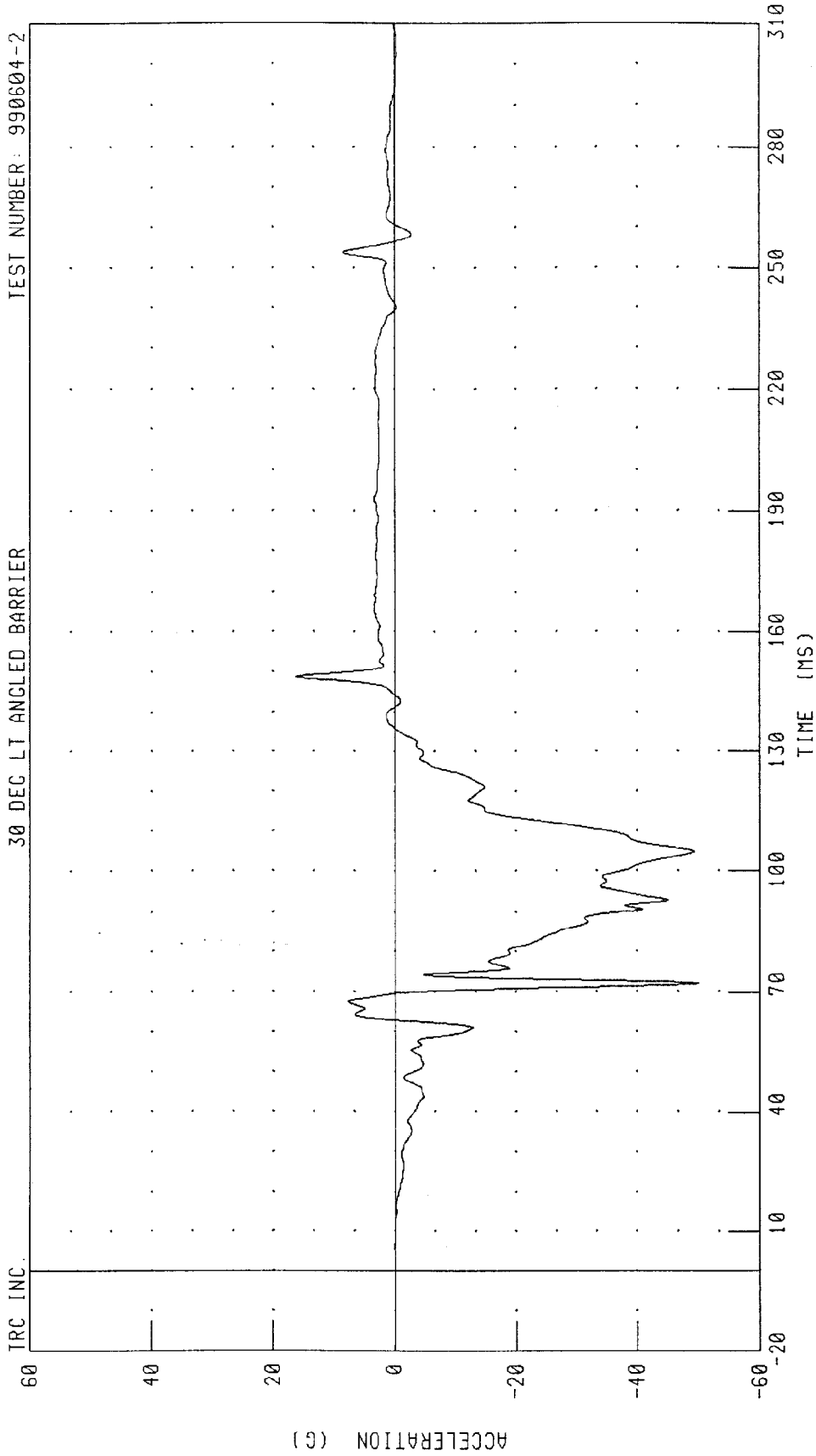
PEAK DATA: 27.53 N·M @ 83.84 MS; -20.36 N·M @ 106.00 MS

CHANNEL: NEKOM2 FILTER: CH CLASS 600

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2



CHANNEL: CSTXG2 FILTER: CH. CLASS 180

PEAK DATA: 16.30 G @ 148.88 MS; -49.99 G @ 72.16 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

TEST NUMBER: 990604-2

30 DEG LT ANGLED BARRIER

TRC INC.

60

40

20

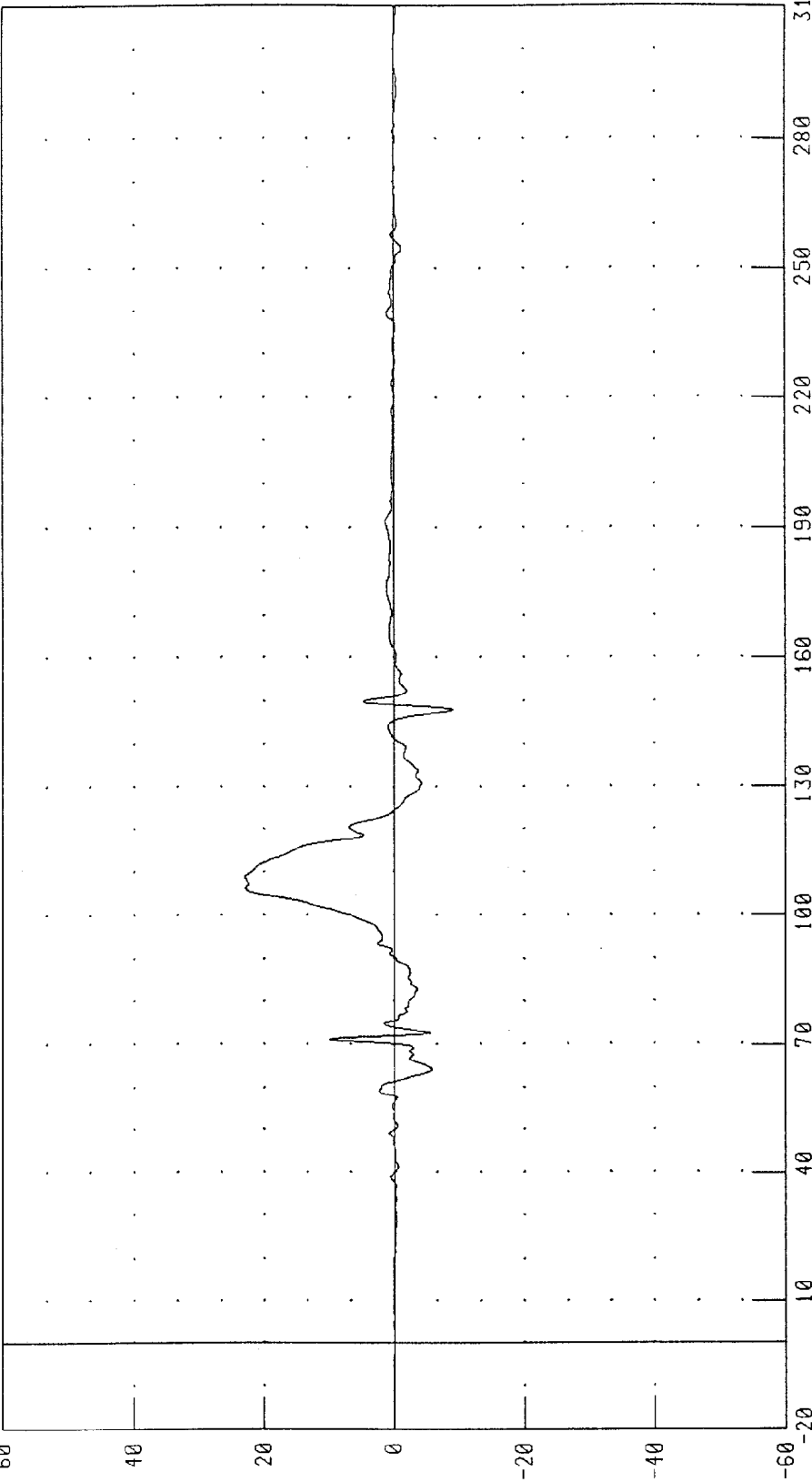
0

-20

-40

-60

ACCELERATION (G)



TIME (MS)

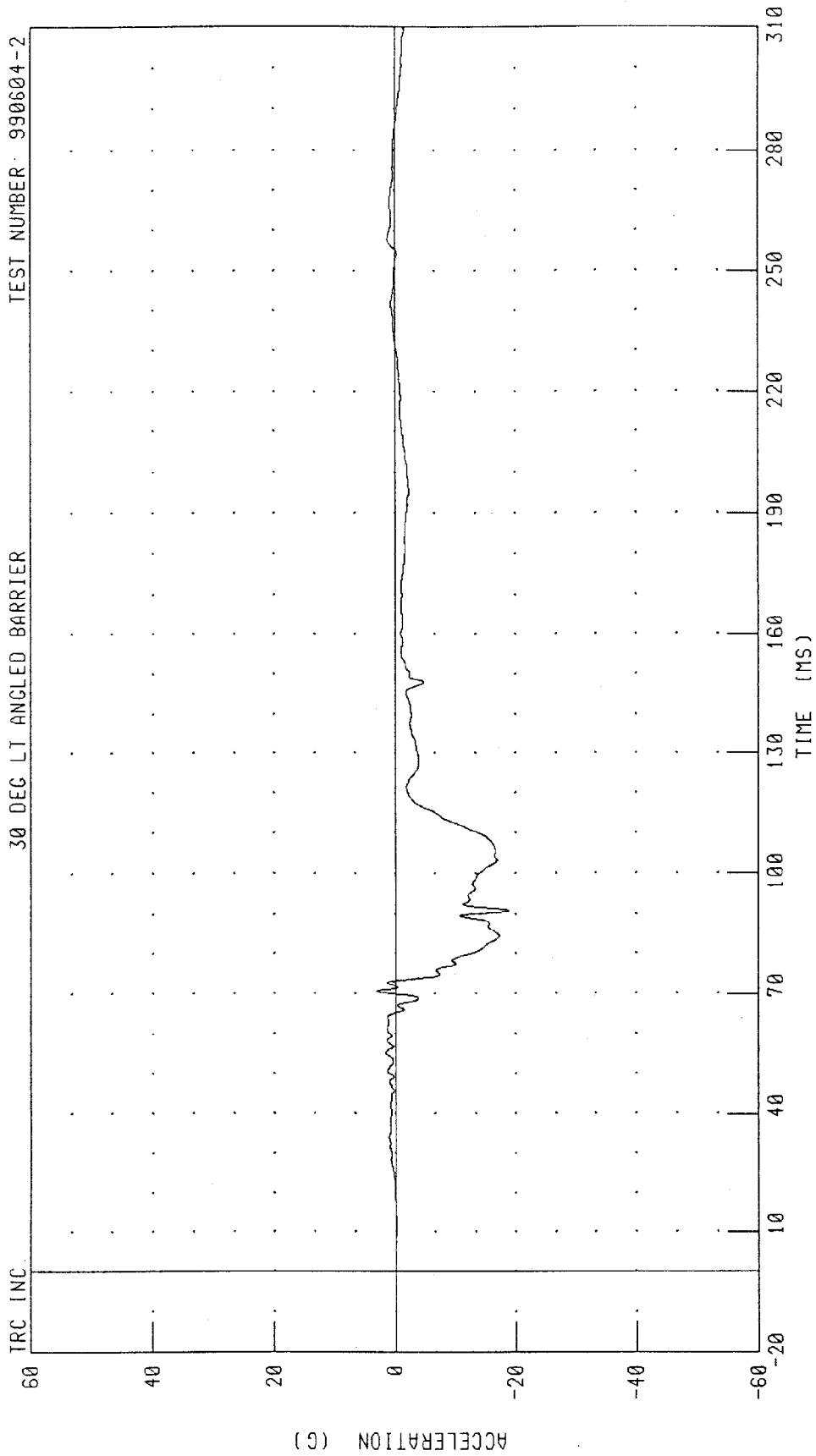
CHANNEL: CSTYC2 FILTER: CH. CLASS 180

PEAK DATA: 22.93 G @ 108.88 MS; -9.14 G @ 148.08 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2



CHANNEL: CSTZG2 FILTER: CH CLASS 180

PEAK DATA: 3.07 G @ 70.72 MS; -18.84 G @ 90.96 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

TEST NUMBER: 990604-2

30 DEG LT ANGLED BARRIER

TRC INC.

100

80

60

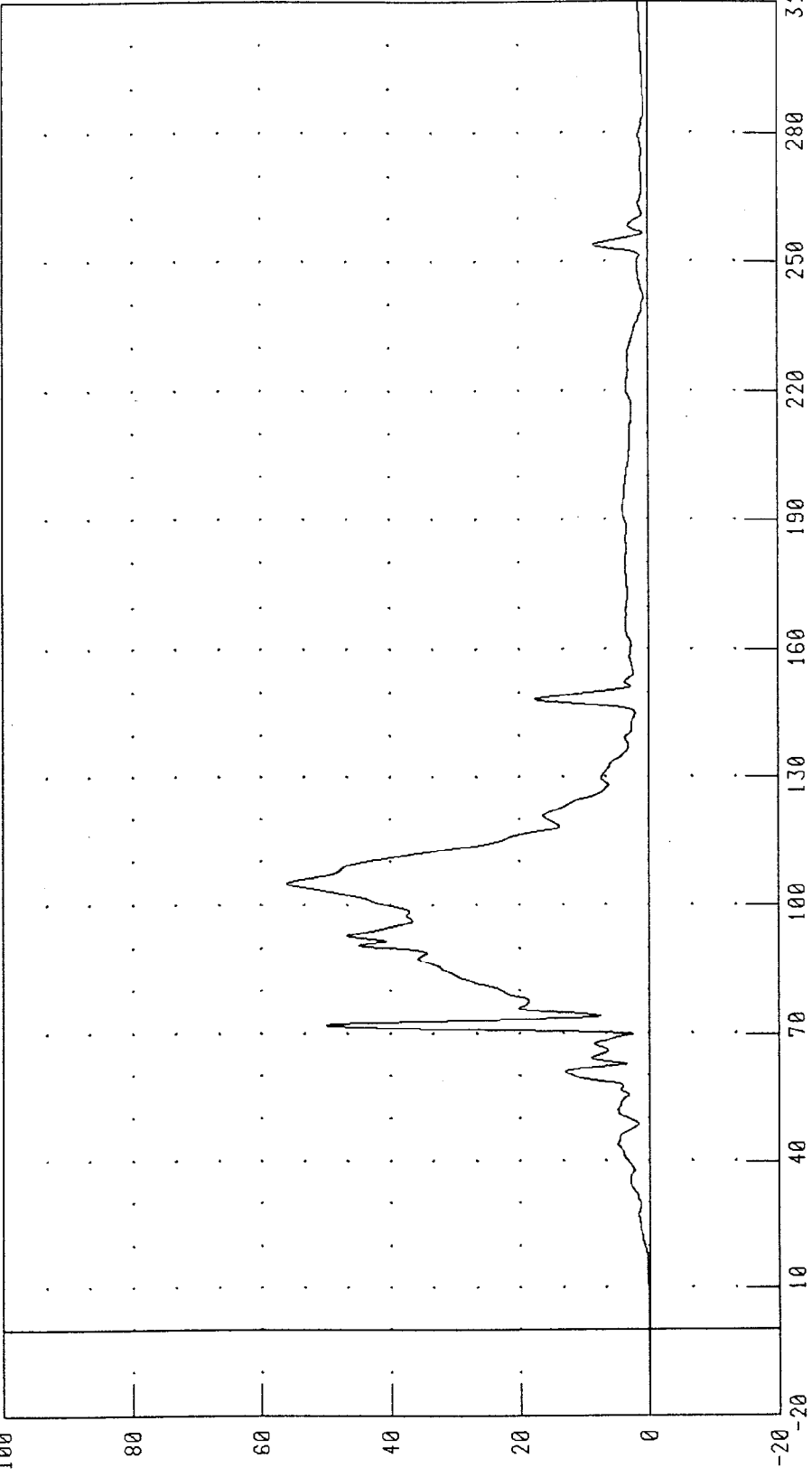
40

20

0

-20

ACCELERATION (G)



TIME (MS)

CHANNEL: CSTRG2 FILTER: CH CLASS 180

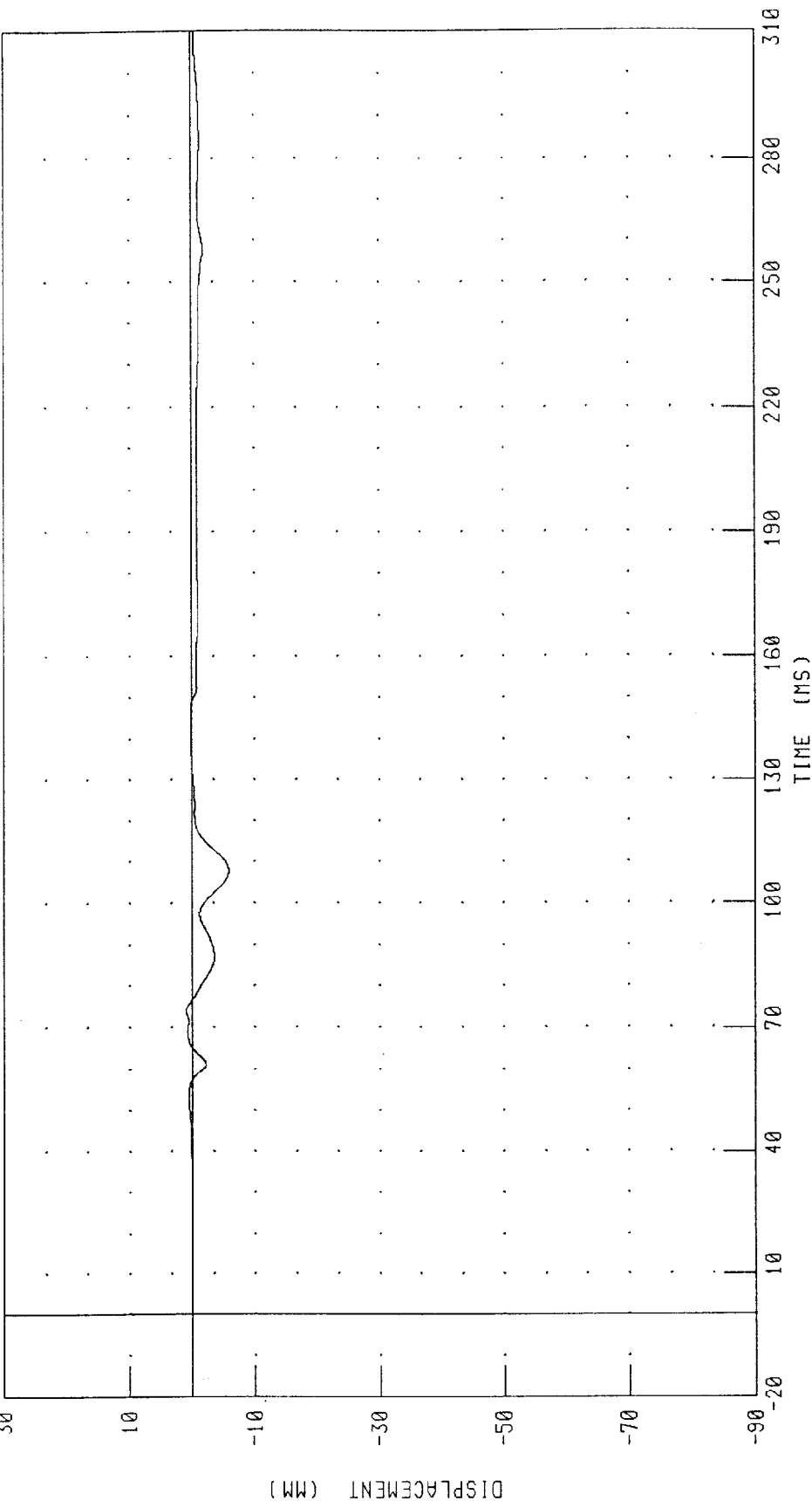
PEAK DATA: 55.96 G @ 105.04 MS; 0.01 G @ -20.00 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST DEFLECTION

TEST NUMBER: 990604-2

30 DEC LT ANGLED BARRIER

TRC INC.



CHANNEL: CSTXD2 FILTER: CH. CLASS 180

PEAK DATA: 1.08 MM @ 74.00 MS; -5.82 MM @ 107.84 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER LEFT FEMUR FORCE
30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.

20

0

-20

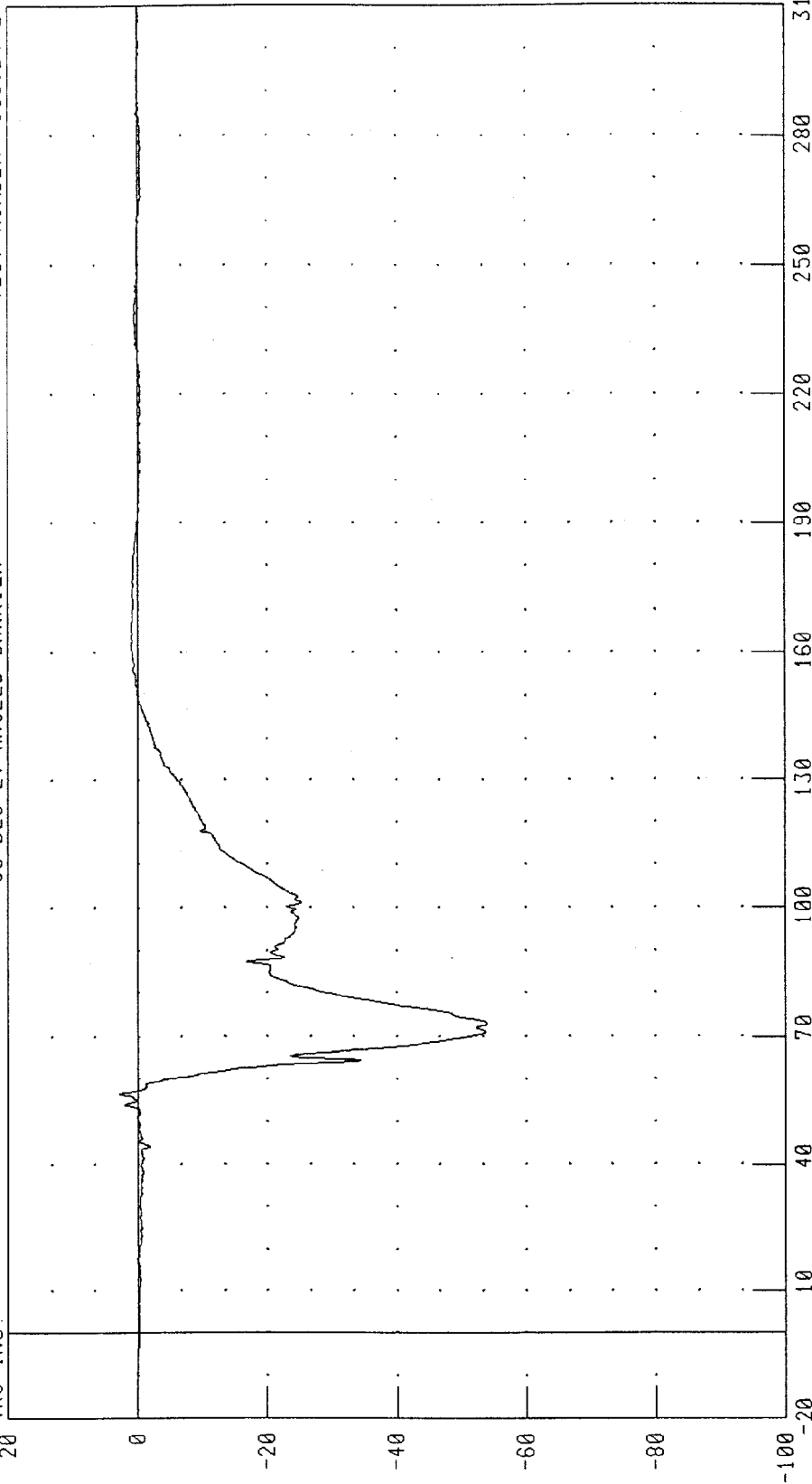
-40

-60

-80

-100

FORCE (N X 10²)



TIME (MS)

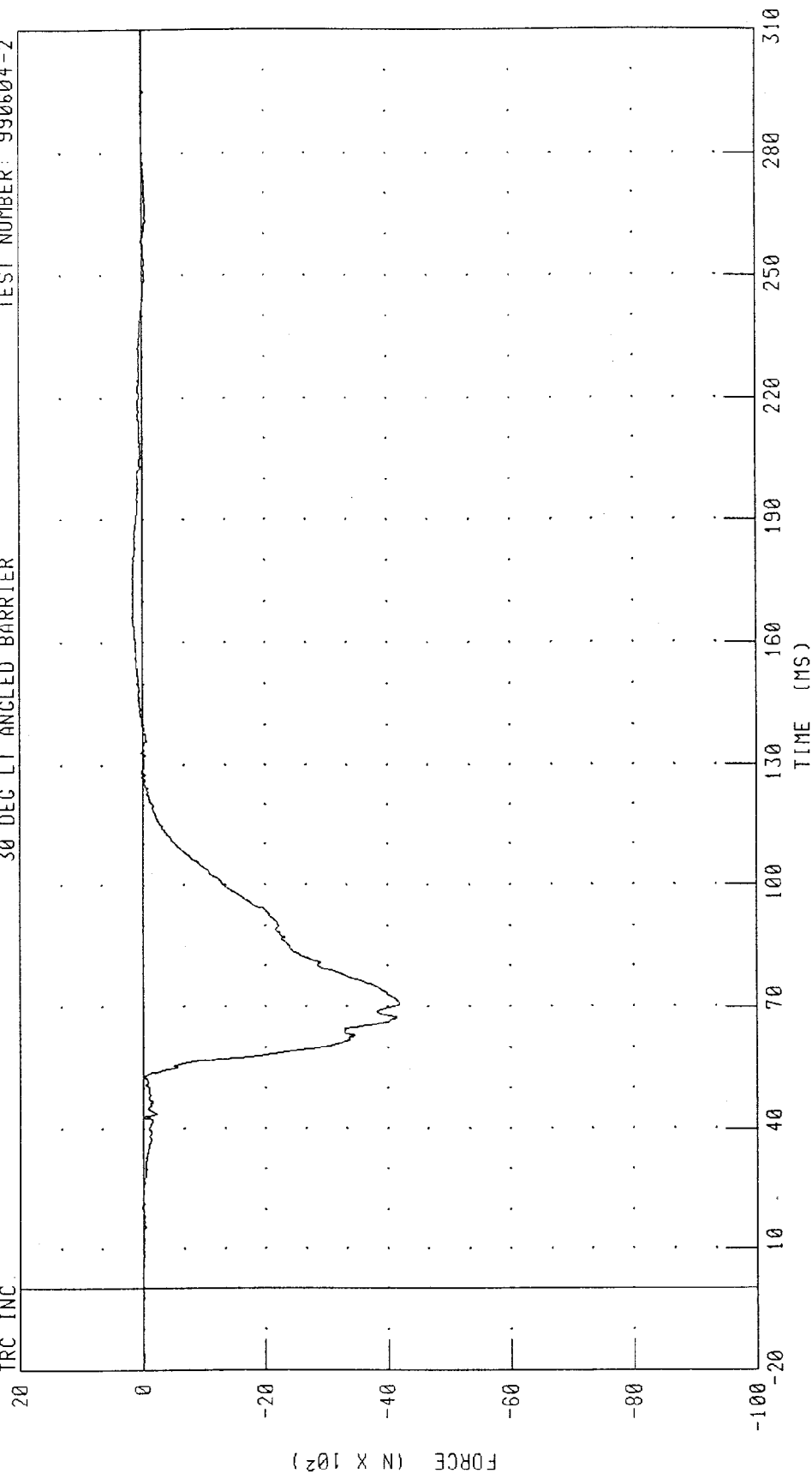
PEAK DATA: 296.35 N @ 56.56 MS; -5396.55 N @ 73.12 MS

CHANNEL: LFMF2 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

30 DEC LT ANGLED BARRIER TEST NUMBER: 990604-2

TRC INC.



PEAK DATA: 169.85 N @ 166.24 MS, -4191.75 N @ 70.80 MS

FILTER: CH. CLASS 600

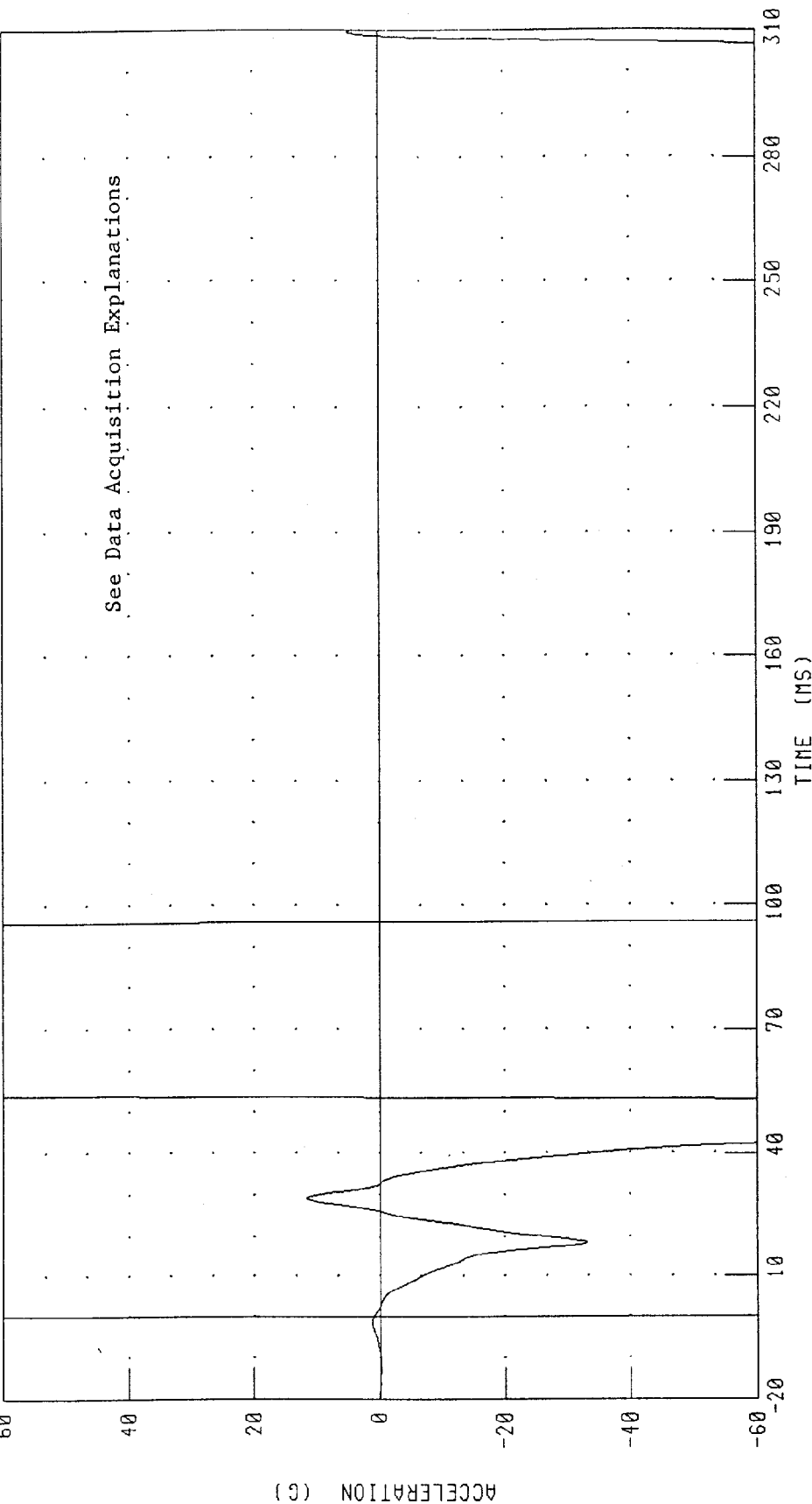
CHANNEL: RFMF2

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
LEFT BRAKE CALIPER X-AXIS ACCELERATION

30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



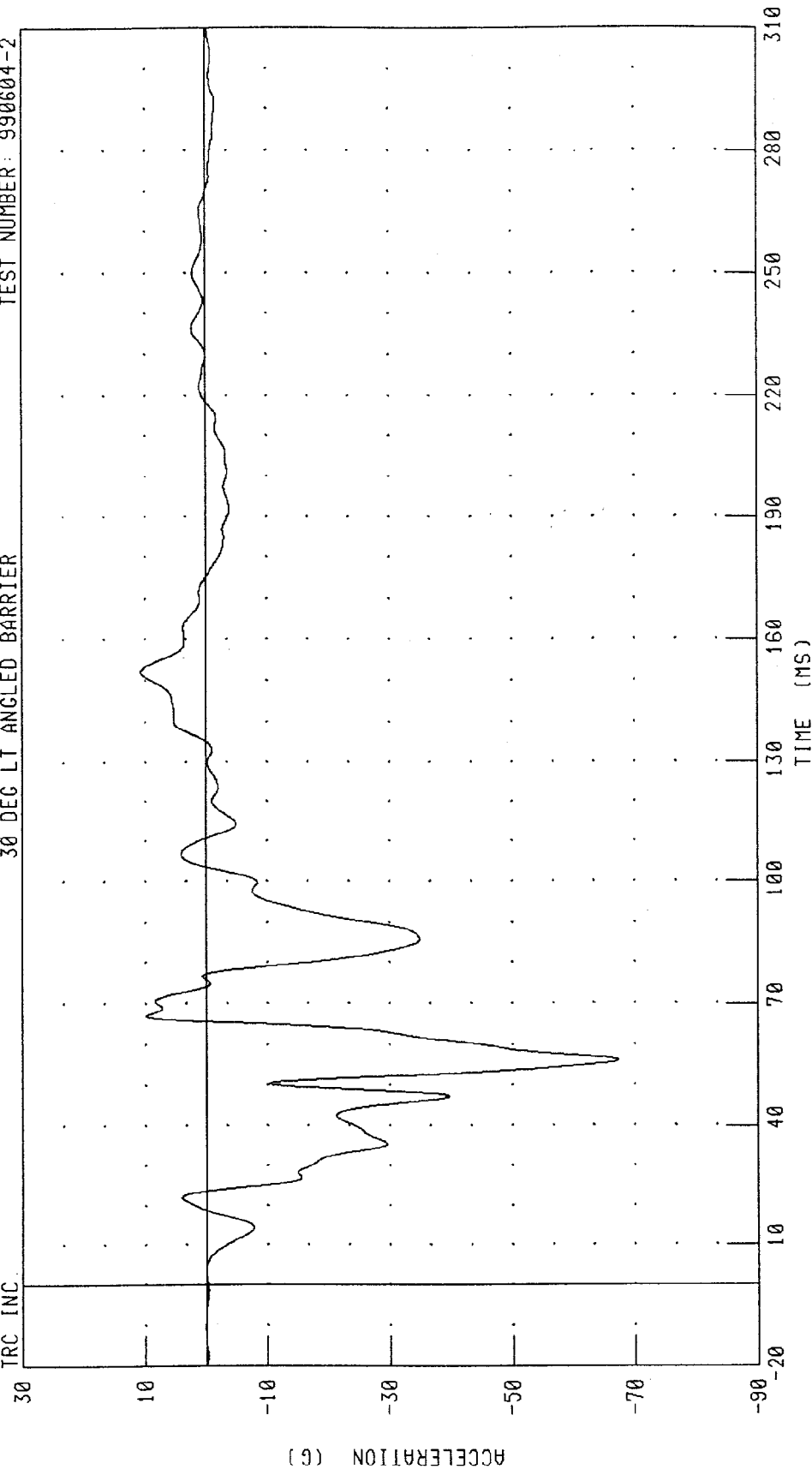
CHANNEL: BCLXC1 FILTER: CH. CLASS 60

PEAK DATA: 1046.58 G @ 91.20 MS; -1044.60 G @ 100.72 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT BRAKE CALIPER X-AXIS ACCELERATION
30 DEG LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



CHANNEL: BCRXG1 FILTER: CH. CLASS 60

PEAK DATA: 10.70 G @ 152.32 MS; -67.25 G @ 56.16 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DASH PANEL CENTER X-AXIS ACCELERATION

30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.

60

40

20

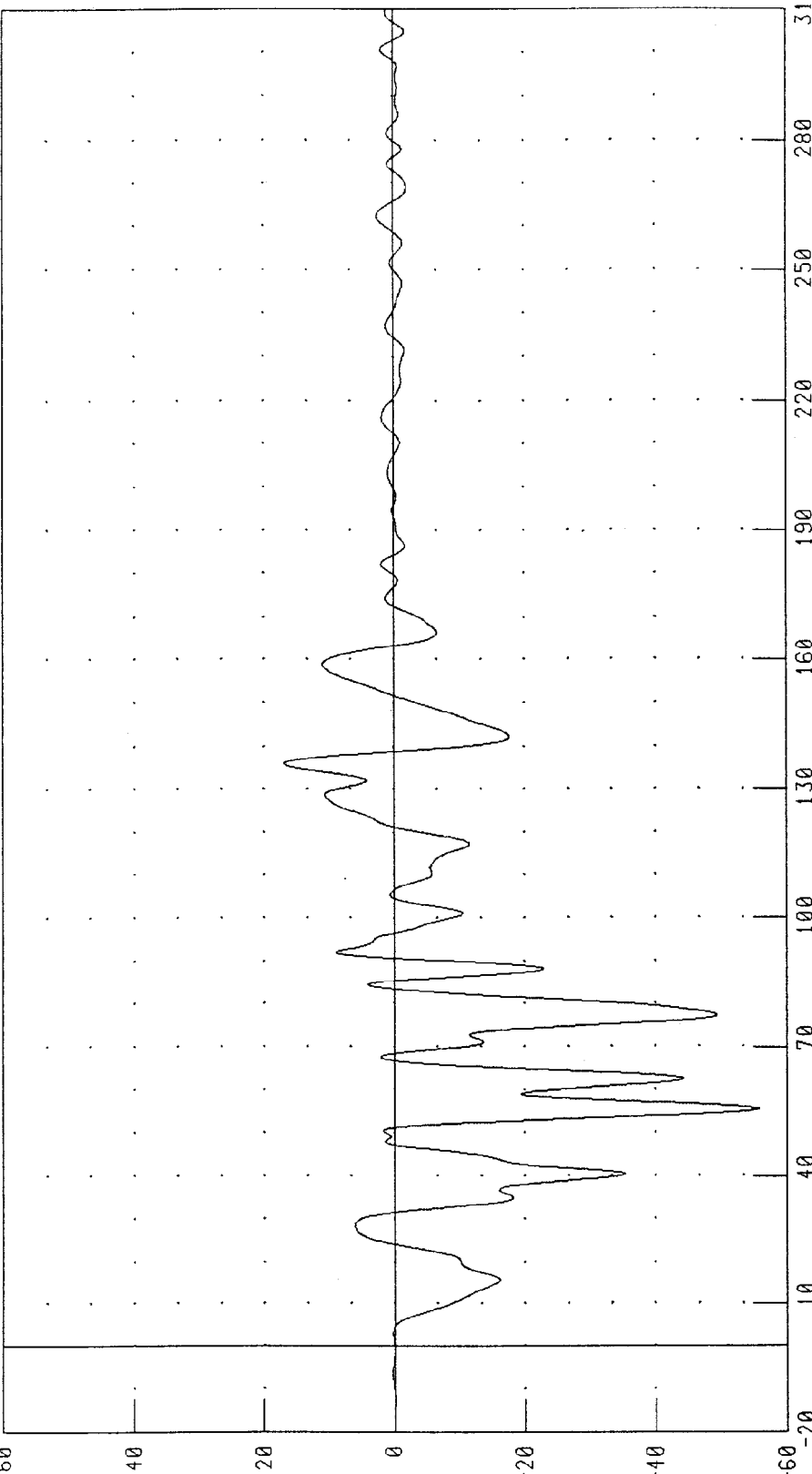
0

-20

-40

-60

ACCELERATION (G)



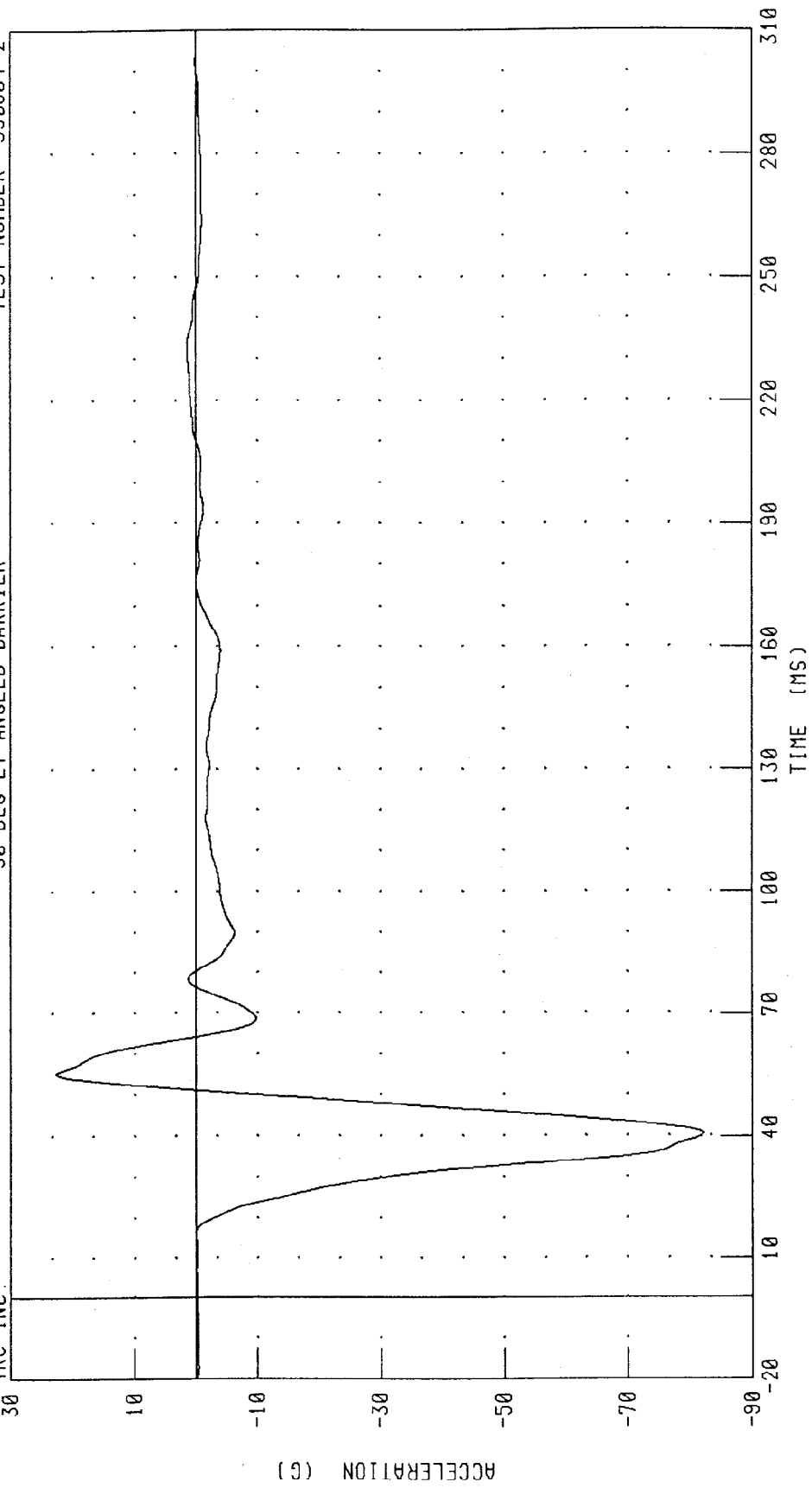
CHANNEL: DPCXG1 FILTER: CH. CLASS 60

PEAK DATA: 16.86 G @ 136.00 MS; -55.72 G @ 55.44 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
ENGINE TOP X-AXIS ACCELERATION
30 DEG LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



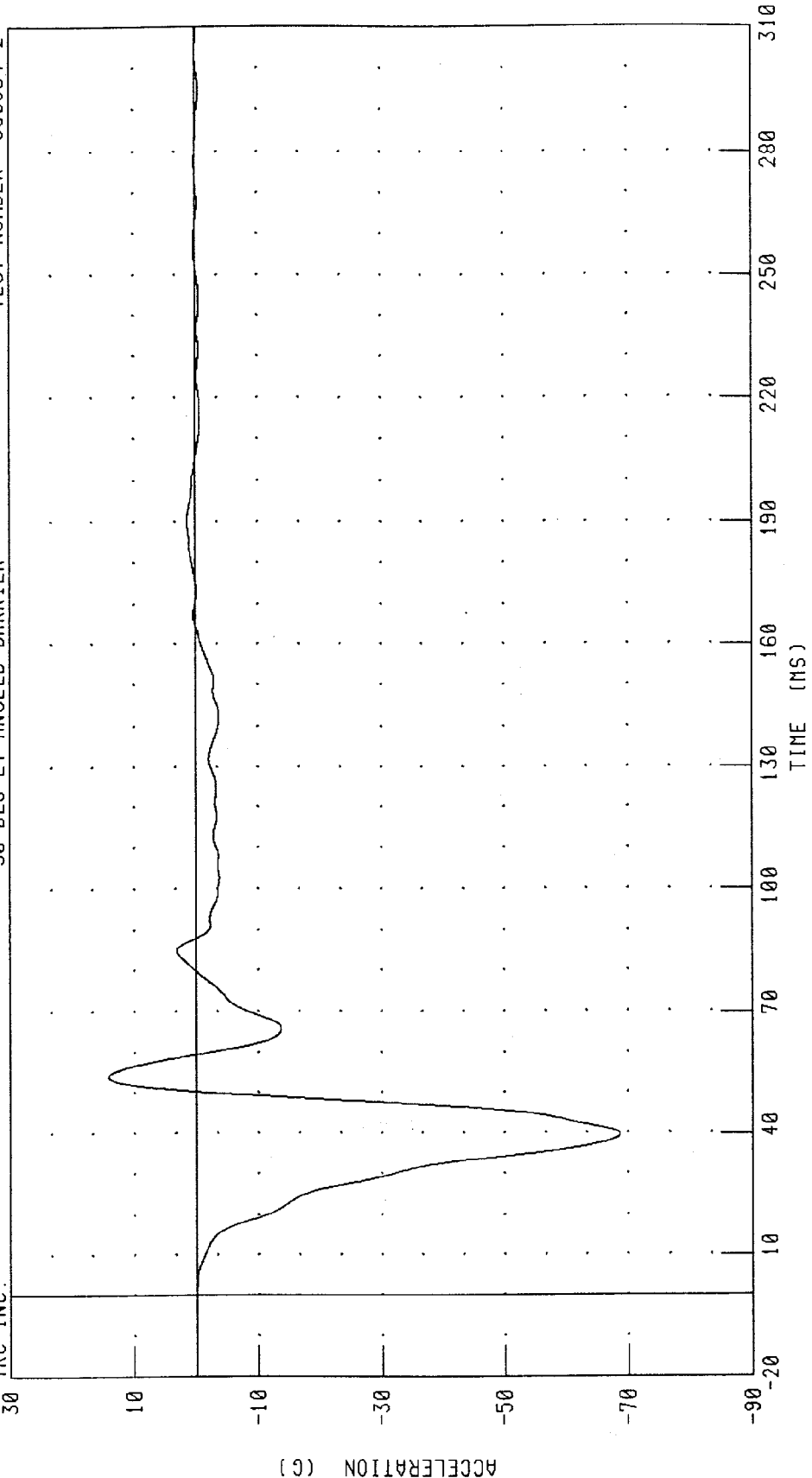
CHANNEL: ENGCG1 FILTER: CH. CLASS 60

PEAK DATA: 22.73 G @ 55.20 MS; -82.15 G @ 40.64 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
ENGINE BOTTOM X-AXIS ACCELERATION
30 DEG LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



CHANNEL: ENGXC2 FILTER: CH. CLASS 60

PEAK DATA: 14.14 G @ 53.92 MS; -68.76 G @ 39.68 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
VEHICLE REAR CENTER Z-AXIS ACCELERATION

TEST NUMBER: 990604-2

30 DEC LT ANGLED BARRIER

TRC INC.

60

40

20

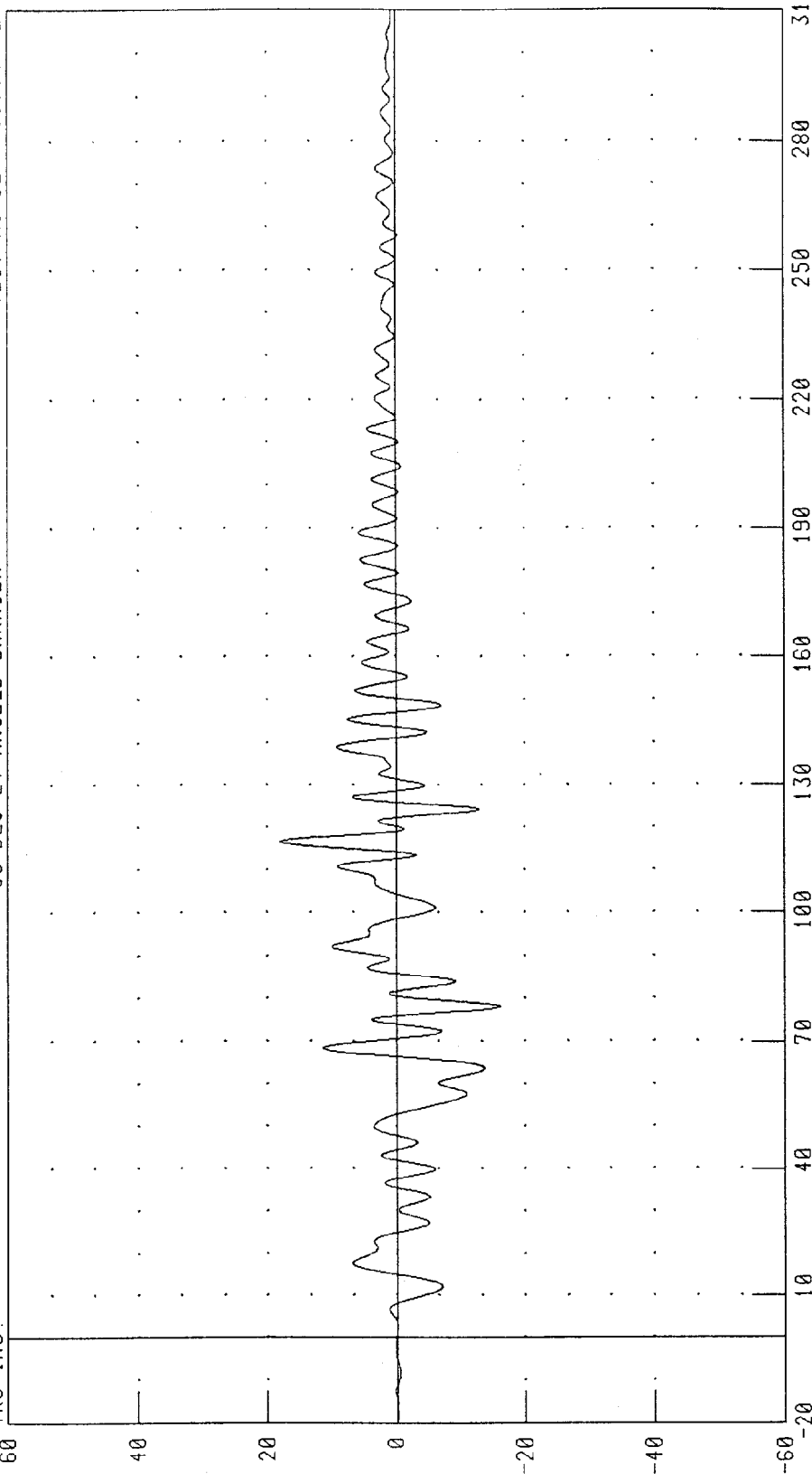
0

-20

-40

-60

ACCELERATION (G)

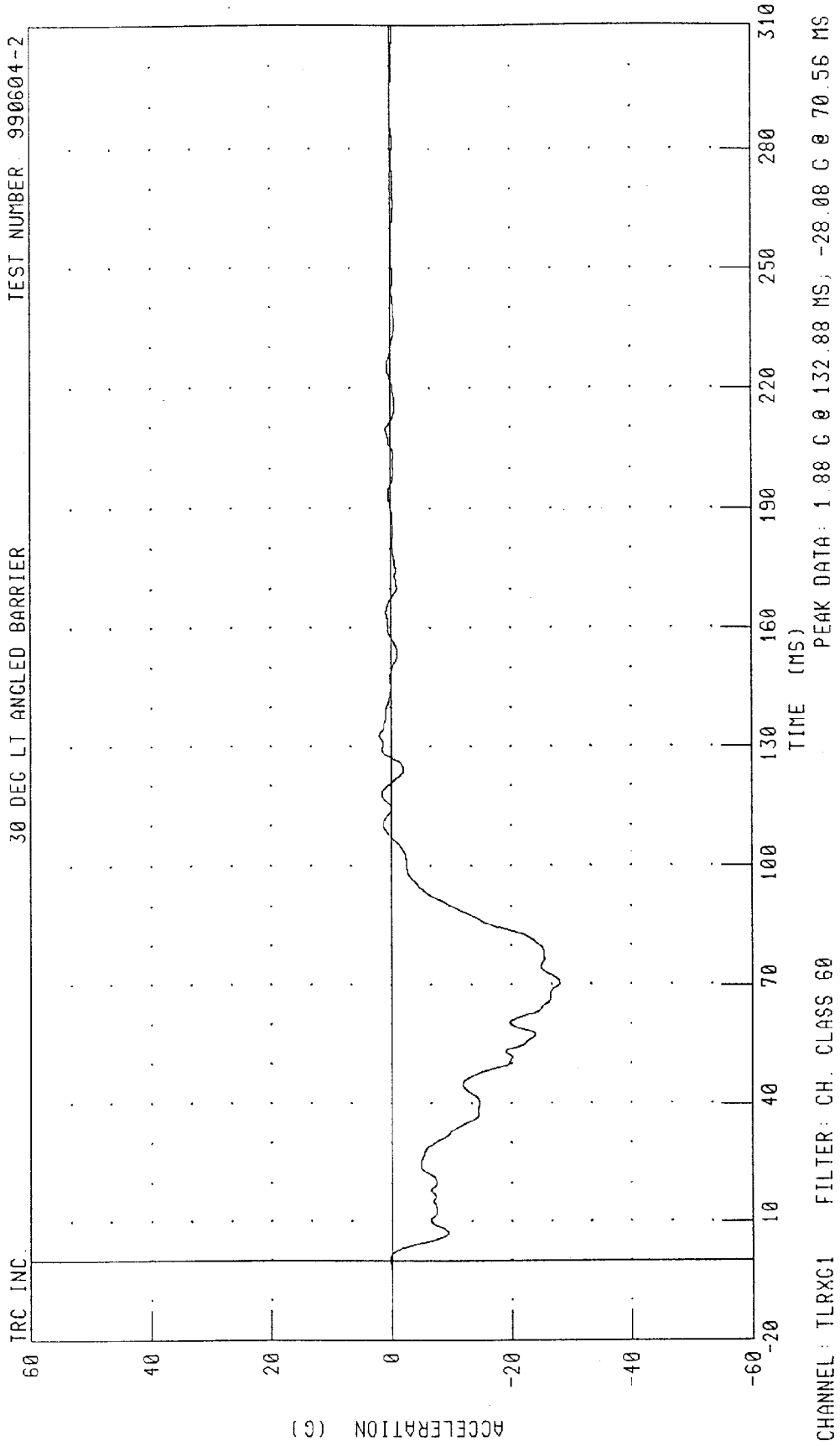


TIME (MS)

PEAK DATA: 17.99 G @ 116.80 MS; -16.09 G @ 78.08 MS

CHANNEL: RDKZG1 FILTER: CH. CLASS 60

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
LEFT REAR SEAT X-AXIS ACCELERATION



1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
RIGHT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 990604-2

30 DEG LT ANGLED BARRIER

TRC INC.

60

40

20

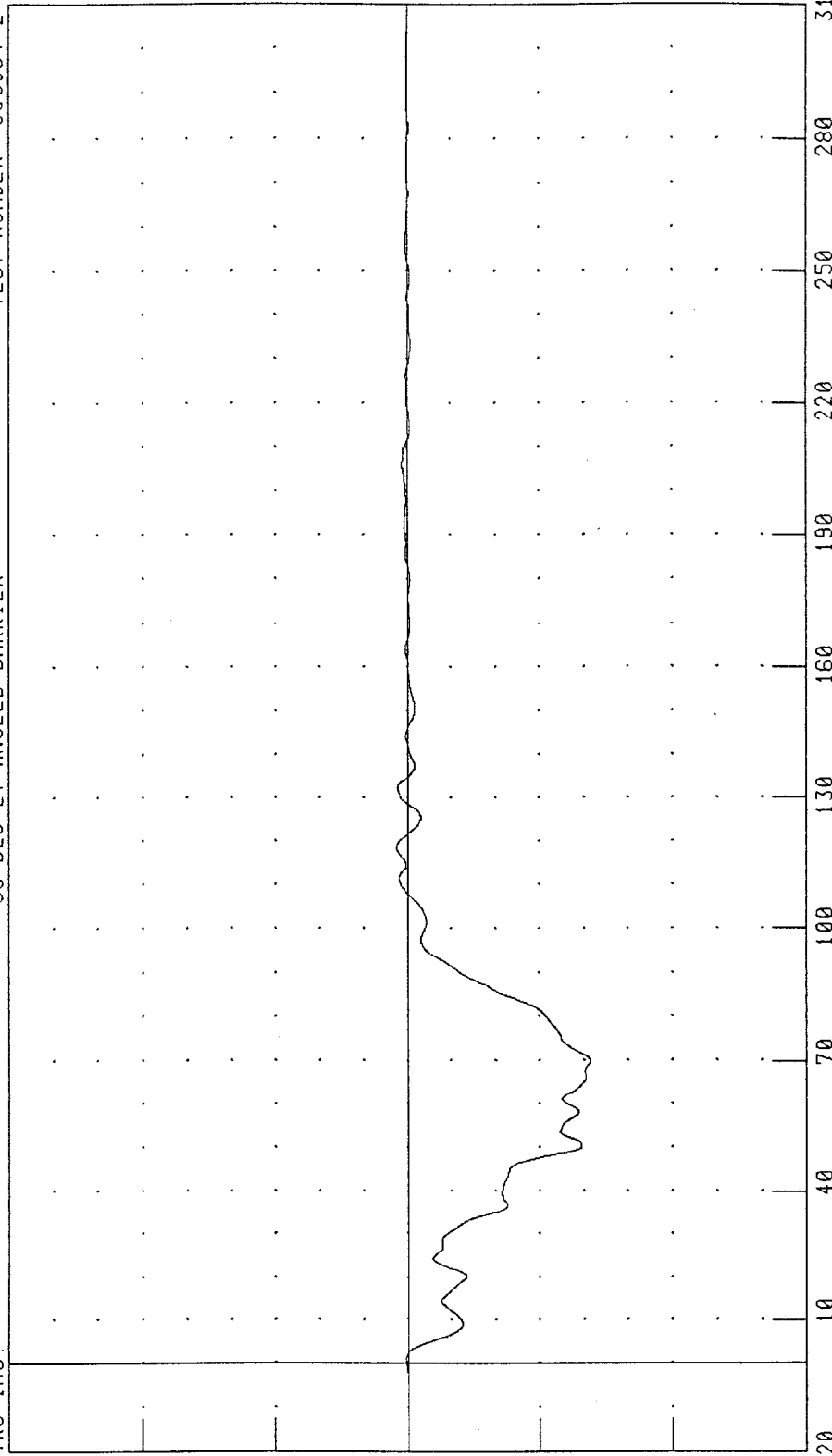
0

-20

-40

-60

ACCELERATION (G)



TIME (MS)

CHANNEL: TRRXG1 FILTER: CH. CLASS 60

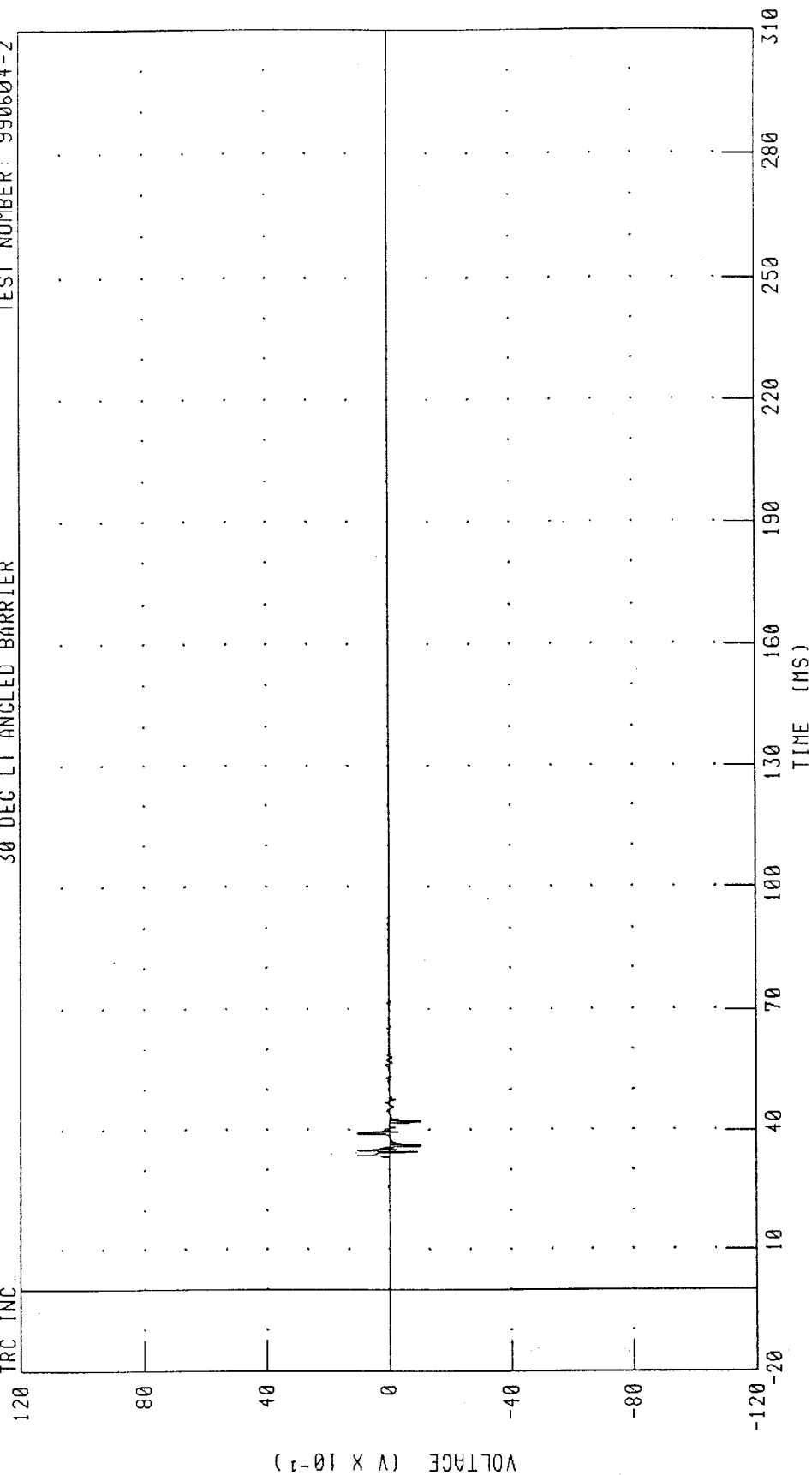
PEAK DATA: 1.64 G @ 118.56 MS, -27.69 G @ 69.92 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
DRIVER SIDE INDUCTIVE AIRBAG FIRE PICKUP

30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



CHANNEL: ABS01 FILTER: CH. CLASS 1000

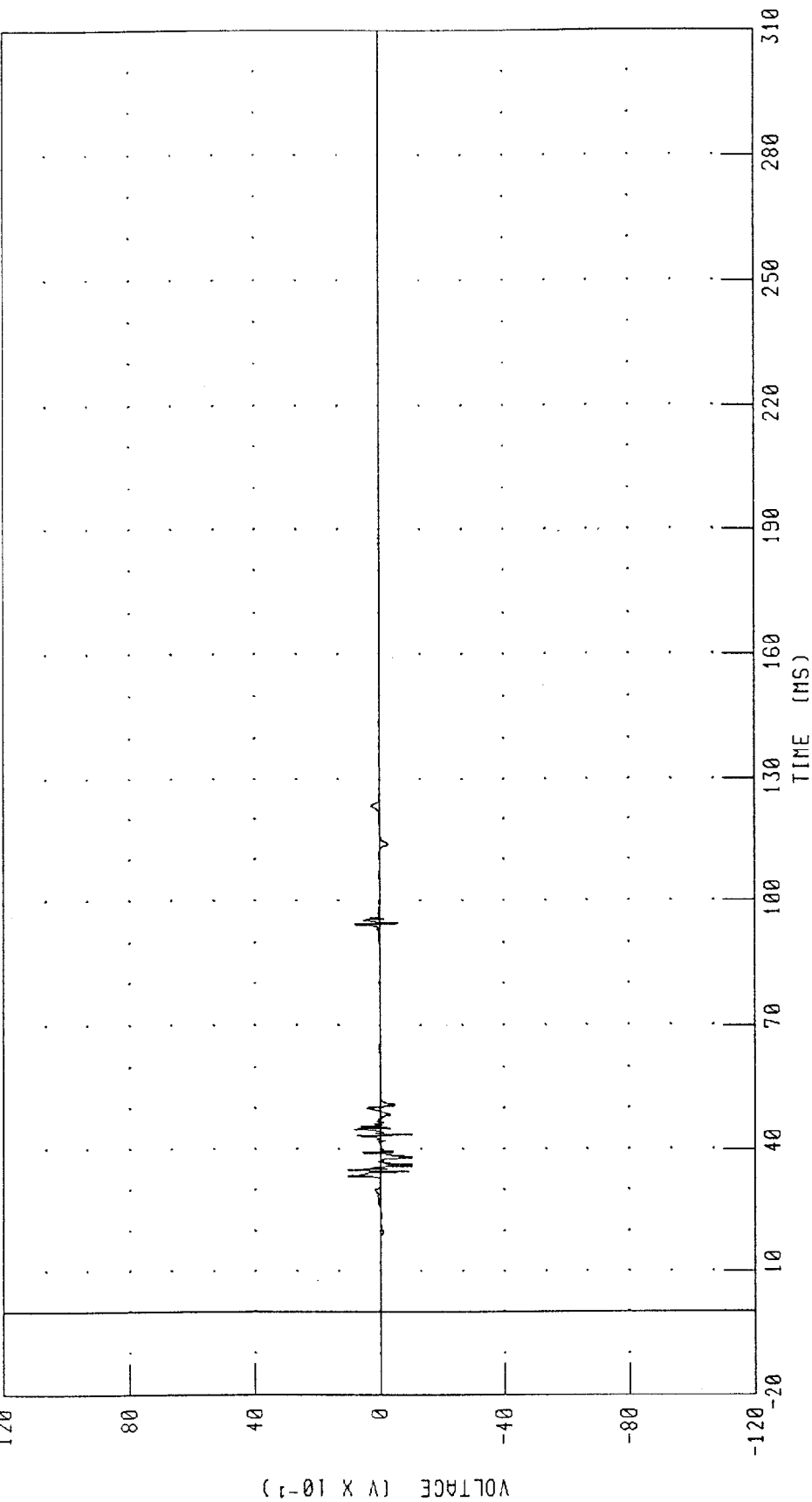
PEAK DATA: 1.02 V @ 33.52 MS, -1.02 V @ 36.16 MS

1999 DODGE INTREPID INTO 30 DEGREE LEFT ANGLED BARRIER AT 30 MPH
PASSENGER SIDE INDUCTIVE AIRBAG FIRE PICKUP

30 DEC LT ANGLED BARRIER

TEST NUMBER: 990604-2

TRC INC.



CHANNEL: ABS02 FILTER: CH. CLASS 1000

PEAK DATA: 1.02 V @ 33.52 MS; -1.02 V @ 36.16 MS

Appendix C

Dummy Certification

Pre-Test Dummy Certification

Driver Dummy S/N 289

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III SMALL FEMALE

01-JUN-99

TRC INC.

TEST NO: 289C6HD1

S.FEMALE SN289 HEAD DROP CAL6

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PEAK RESULTANT ACCELERATION	250 - 300 G	277.40 G
PEAK LATERAL ACCELERATION	15 G MAX	-4.42 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

Carl Rife

RUN NUMBER: 060199.1503;1

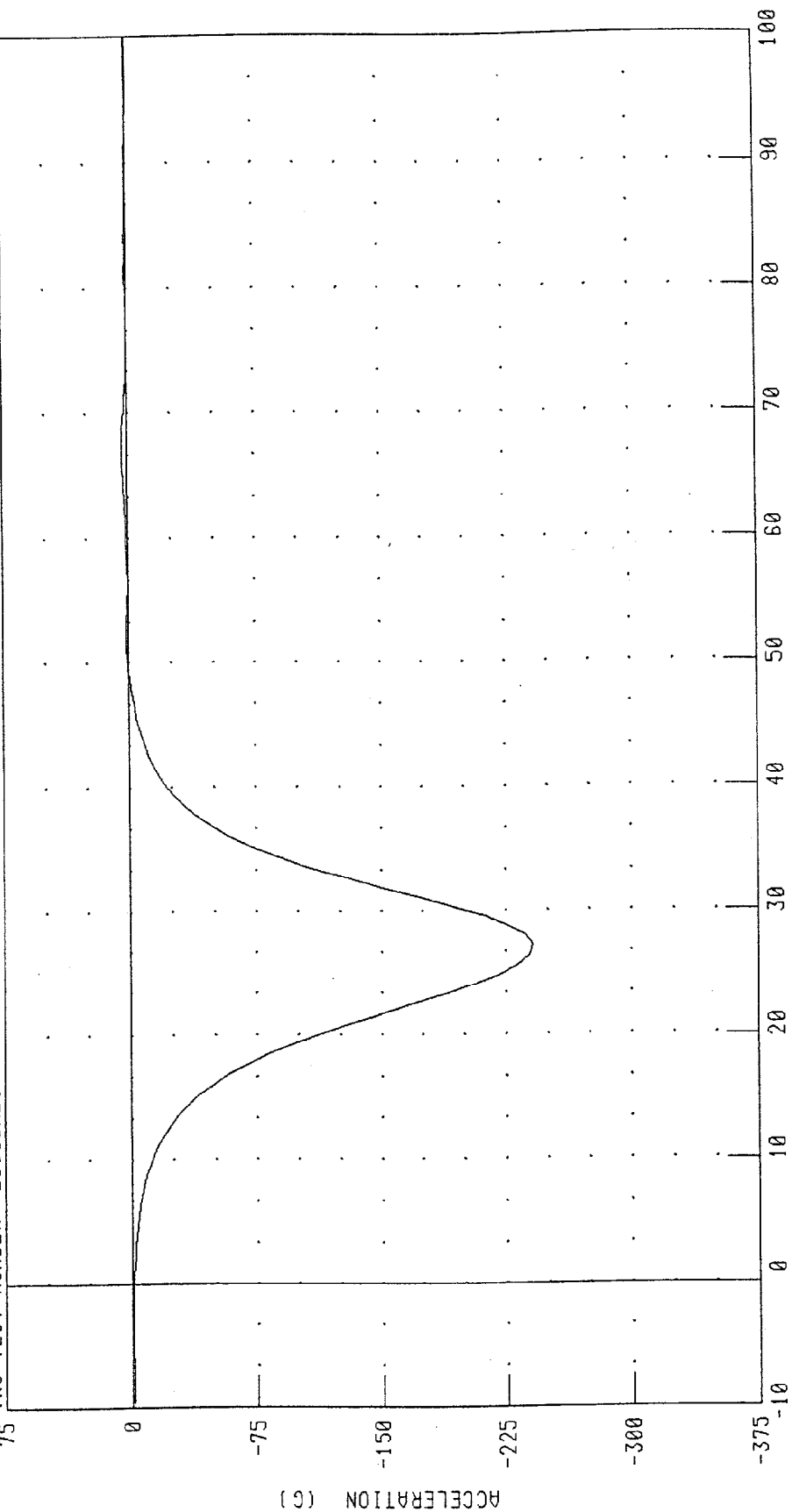
SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

TRC TEST NUMBER: 289C6HD1

S. FEMALE SN289 HEAD DROP CAL6

RUN NUMBER: 060199.1518;1



CHANNEL: HEDXC

FILTER: CH. CLASS 1000

PEAK DATA: 3.37 G @ 6.64 MS; -241.29 G @ 2.72 MS

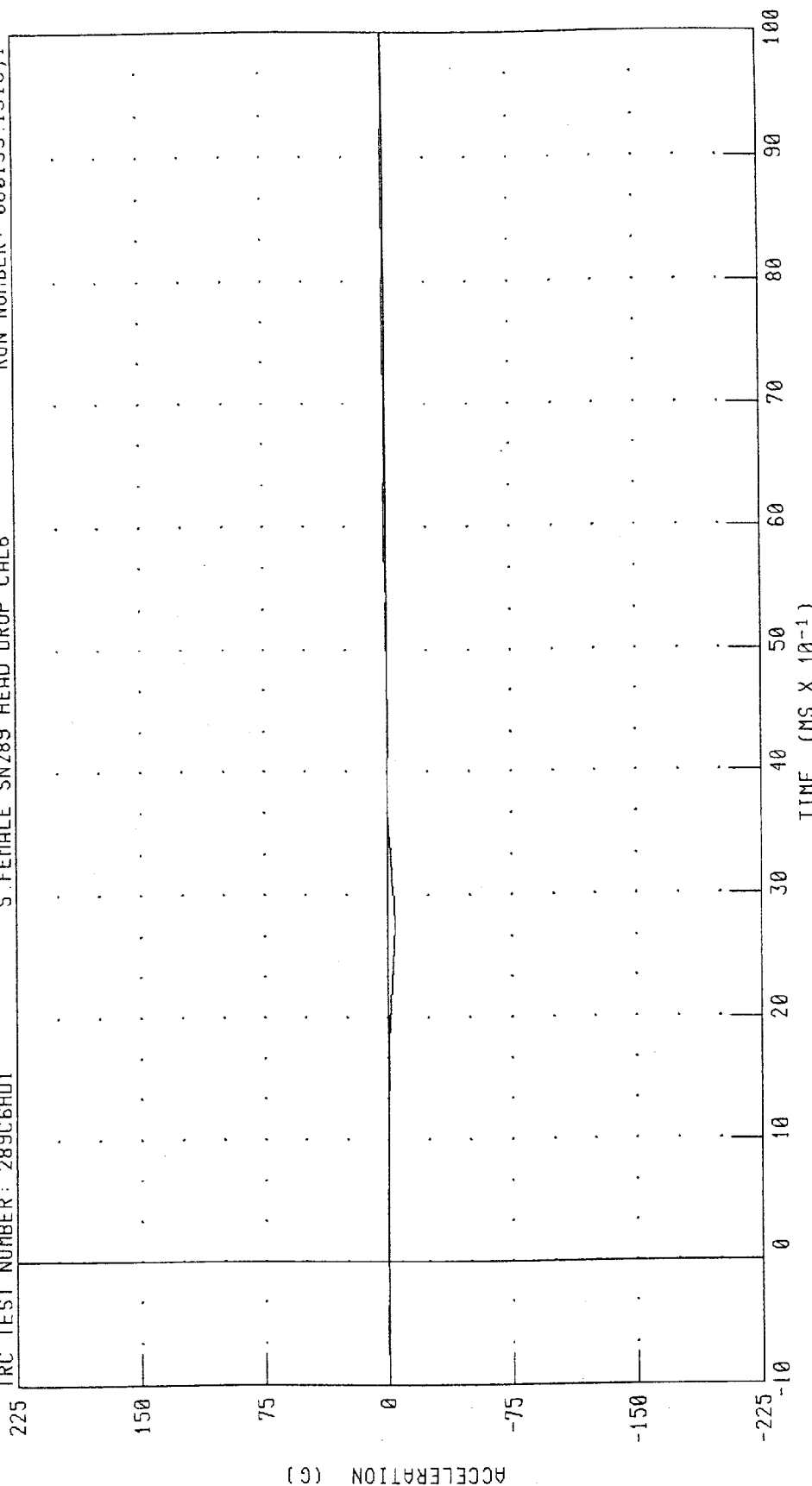
SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

S. FEMALE SN289 HEAD DROP CAL6

TRC TEST NUMBER: 289C6HD1

RUN NUMBER: 060199.1518;1



TIME (MS X 10⁻¹)

PEAK DATA: 1.01 G @ 6.00 MS; -4.43 G @ 2.72 MS

CHANNEL: HEDYC FILTER: CH. CLASS 1000

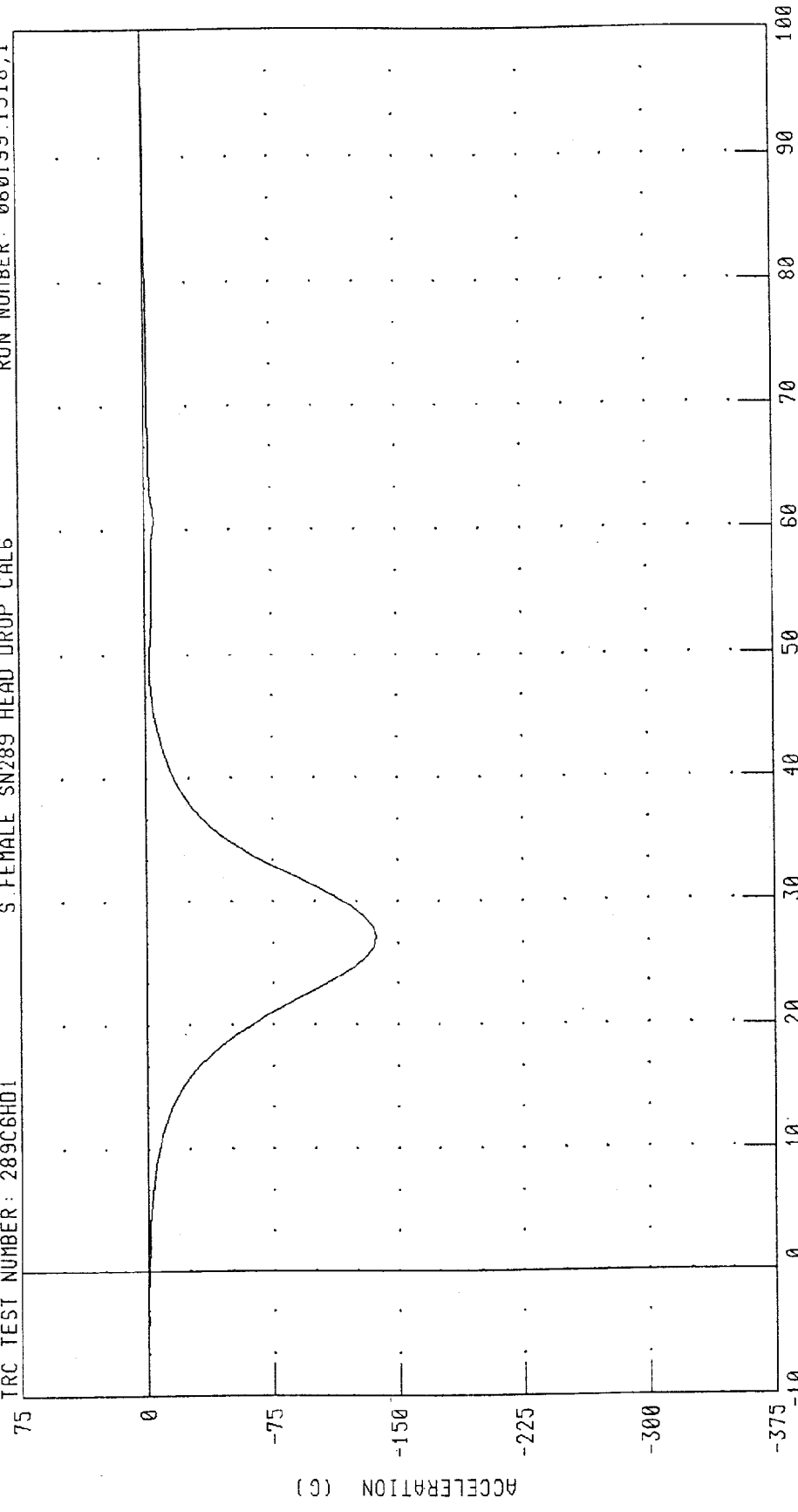
SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Z AXIS

S. FEMALE SN289 HEAD DROP CALG

RUN NUMBER: 060199.1518;1

TRC TEST NUMBER: 289C6HD1



TIME (MS X 10⁻¹)

PEAK DATA: 0.33 G @ 10.00 MS, -136.80 G @ 2.72 MS

CHANNEL: HEDZC FILTER: CH. CLASS 1000

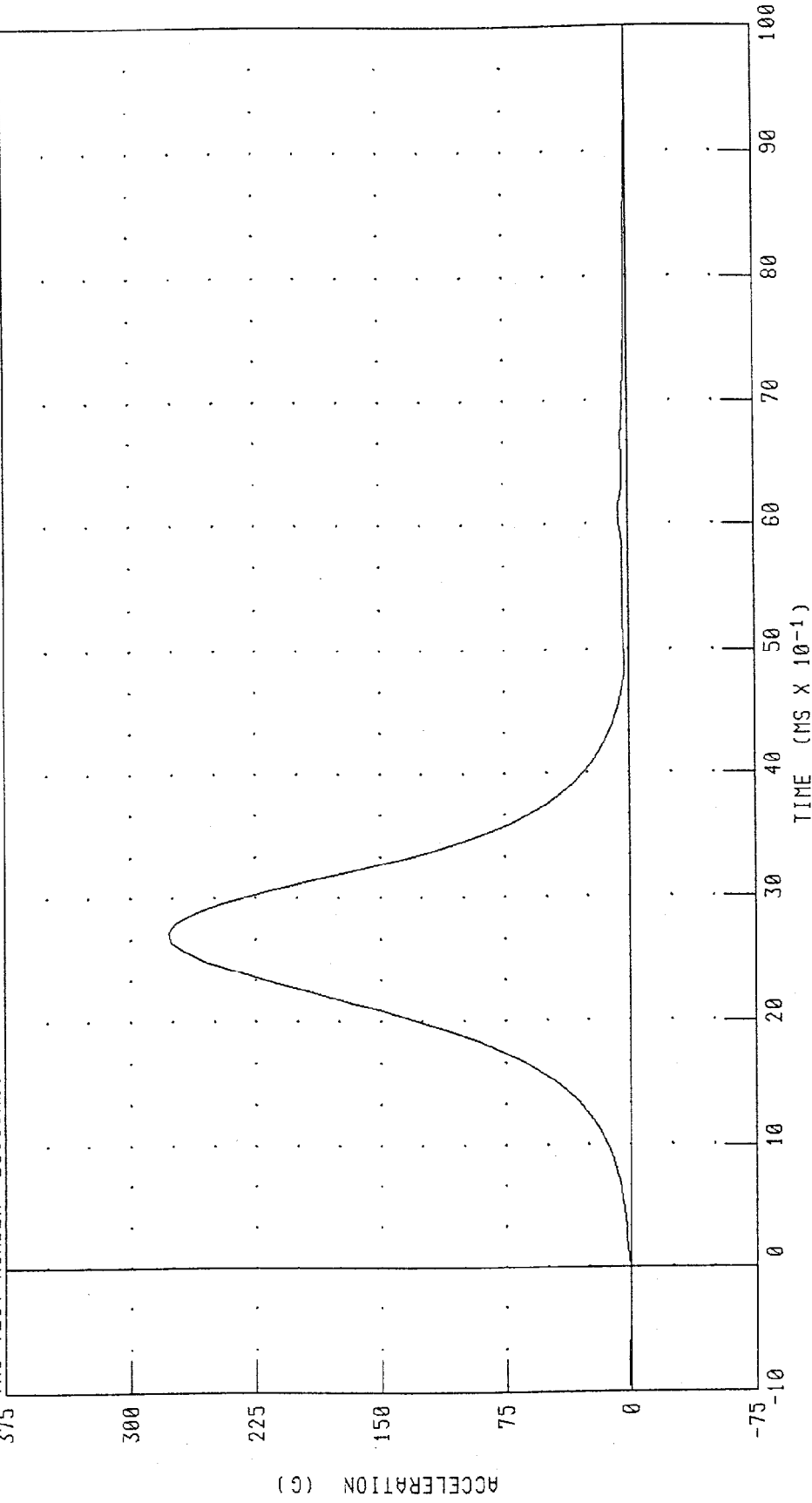
SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

S.FEMALE SN289 HEAD DROP CALS

TRC TEST NUMBER: 289C6HD1

RUN NUMBER: 060199.1518;1



PEAK DATA: 277.40 G @ 2.72 MS; 0.26 G @ -0.24 MS

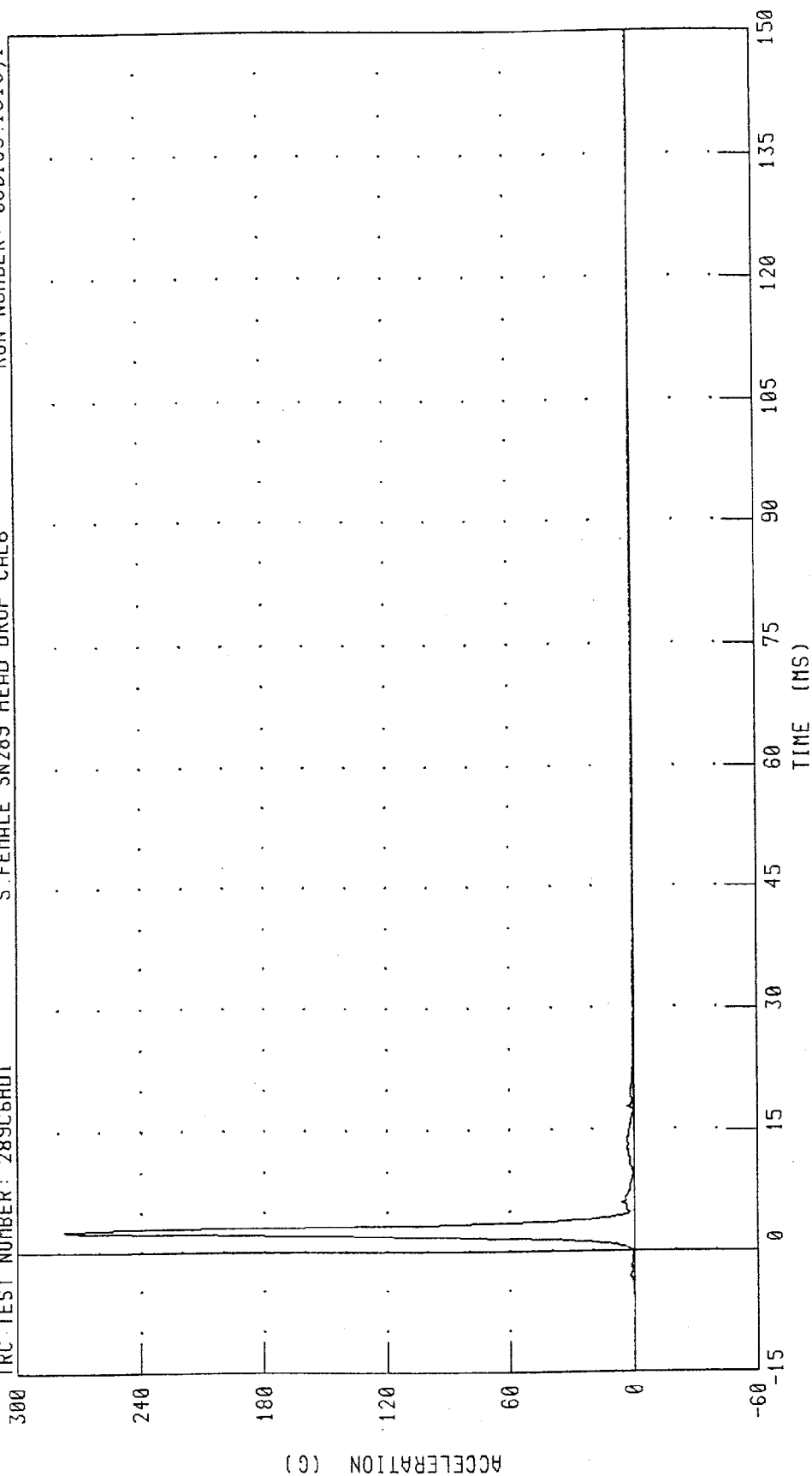
CHANNEL: HEDRC FILTER: CH. CLASS 1000

SMALL FEMALE HYBRID III HEAD CALIBRATION
CHECK PLOT - HEAD RESULTANT ACCELERATION

TRC TEST NUMBER: 289C6HD1

S. FEMALE SN289 HEAD DROP CAL6

RUN NUMBER: 060199.1518;1



CHANNEL: HEDRC FILTER: CH. CLASS 1000

PEAK DATA: 277.40 G @ 2.72 MS, 0.09 C @ -14.96 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

02-JUN-99

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 289C6NF1 S.FEMALE SN289 NECK FLEX. CAL6

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	44.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.12 M/S
INTEGRATED PENDULUM VELOCITY	10 MS	2.1 - 2.5 M/S	2.33 M/S
	20 MS	4.0 - 5.0 M/S	4.64 M/S
	30 MS	5.8 - 7.0 M/S	6.77 M/S
PEAK D-PLANE ROTATION		80 - 92 DEG.	91.53 DEG.
PEAK MOMENT ABOUT OCCIPITAL CONDYLE DURING ROTATION INT		69 - 83 NM	73.92 NM
POSITIVE MOMENT DECAY TIME FROM TO TO 10 NM		80 - 100 MS	89.28 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chad Rife

RUN NUMBER: 060299.0925;1

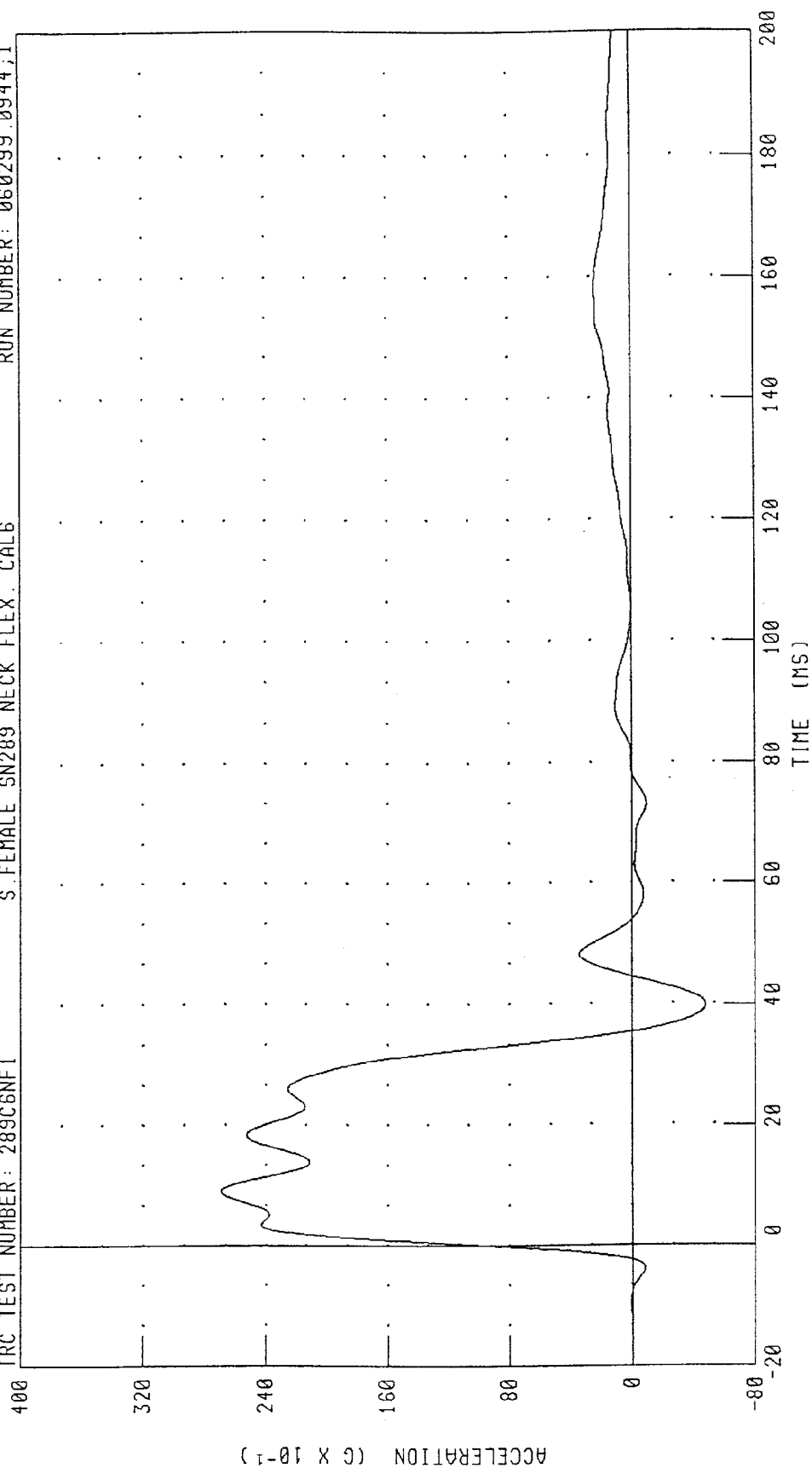
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 289C6NF1

S. FEMALE SN289 NECK FLEX. CAL6

RUN NUMBER: 060299.0944;1



CHANNEL: PENXC FILTER: CH. CLASS 60

PEAK DATA: 26.94 G @ 9.04 MS, -4.79 G @ 39.84 MS

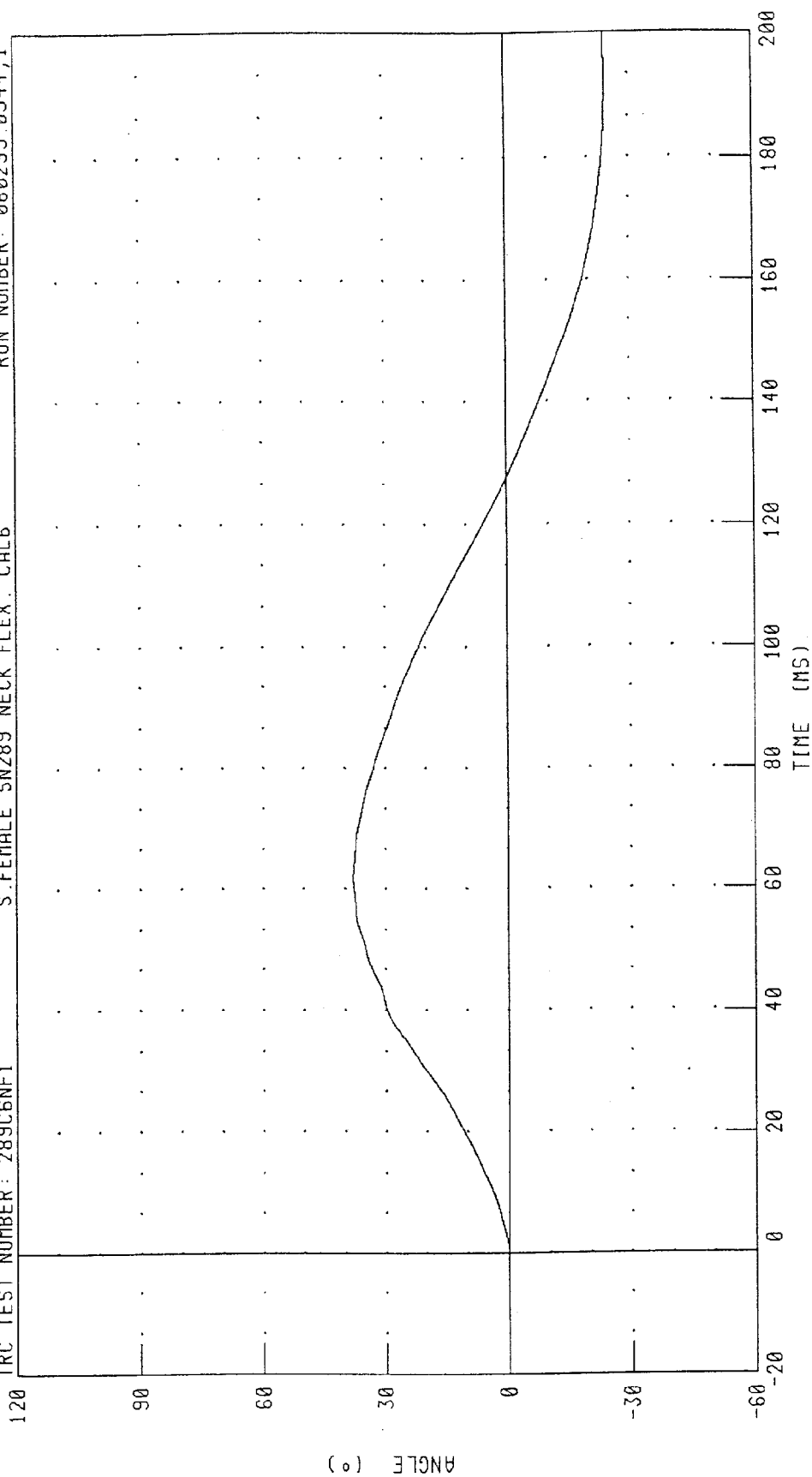
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER : 289C6NF1

S.FEMALE SN289 NECK FLEX. CAL6

RUN NUMBER : 060299.0944;1



CHANNEL : BETA

FILTER : CH. CLASS 60

PEAK DATA : 37.93 ° @ 61.84 MS, -24.38 ° @ 192.48 MS

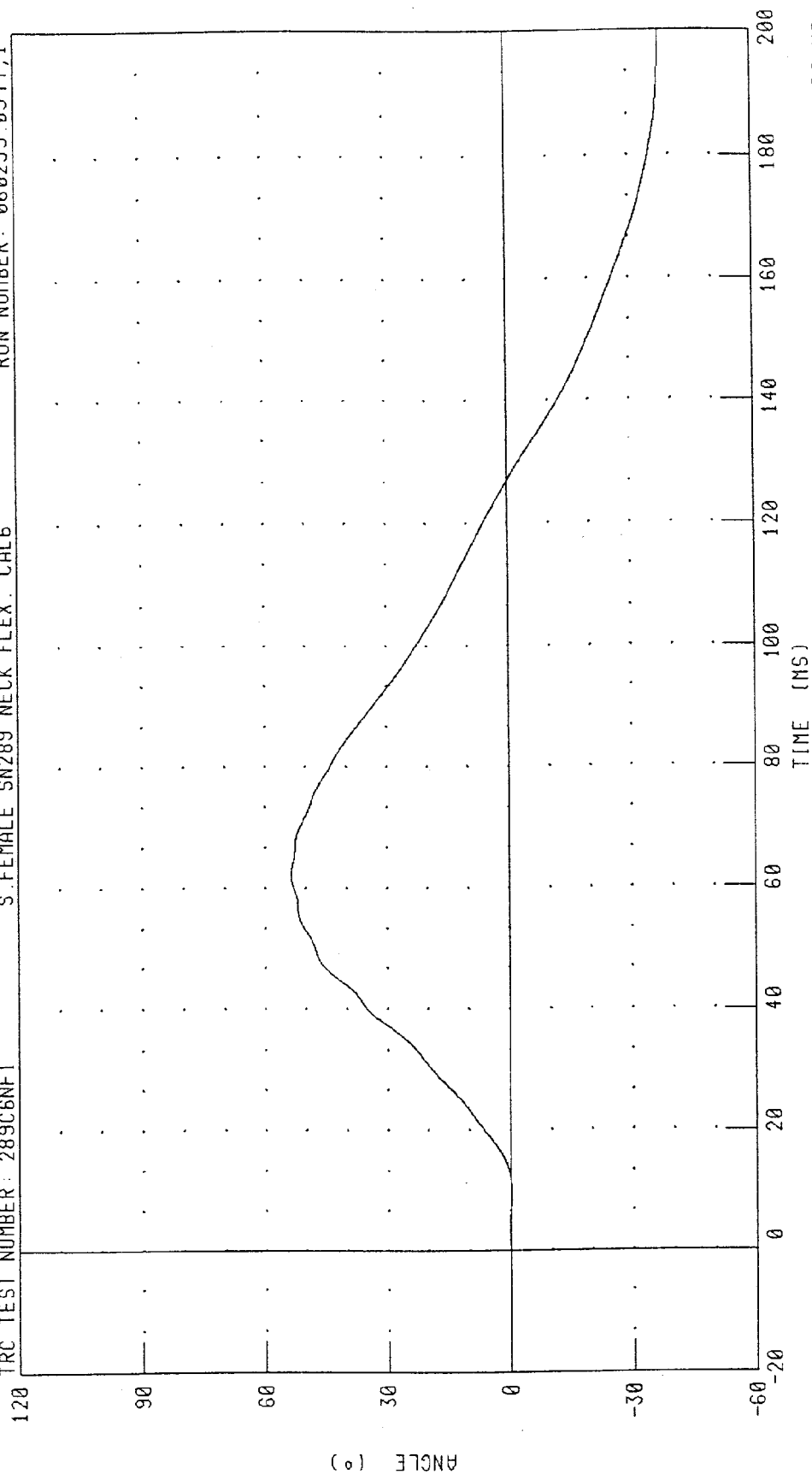
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 289C6NF1

S. FEMALE SN289 NECK FLEX. CAL6

RUN NUMBER: 060299.0944,1



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 53.61 ° @ 62.16 MS; -37.70 ° @ 197.76 MS

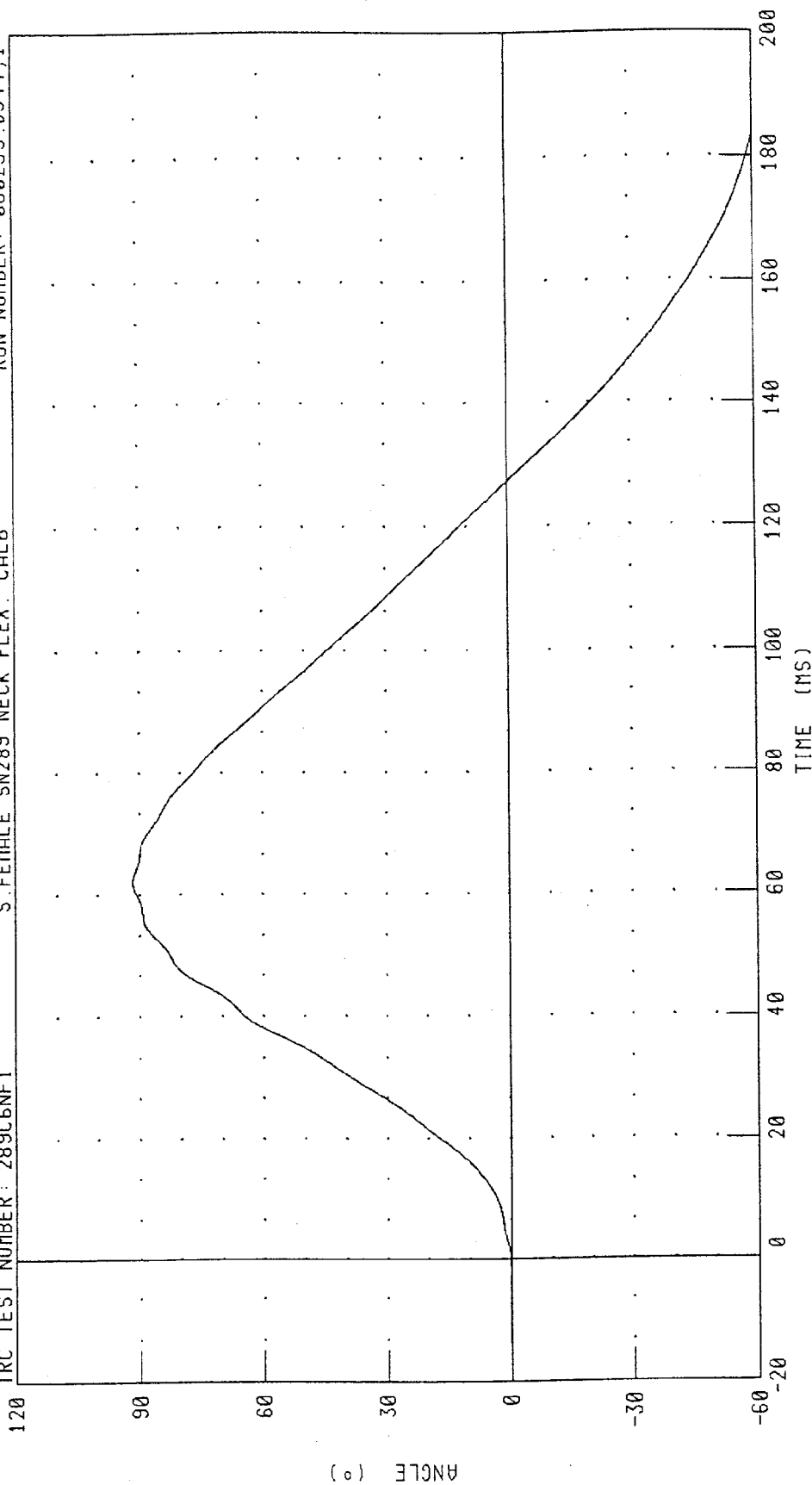
SMALL FEMALE HYBRID JII NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 289C6NF1

S. FEMALE SN289 NECK FLEX. CAL6

RUN NUMBER: 060299.0944,1



CHANNEL: TOTAL

FILTER: CH. CLASS 60

PEAK DATA: 91.54 ° @ 62.08 MS, -62.00 ° @ 196.24 MS

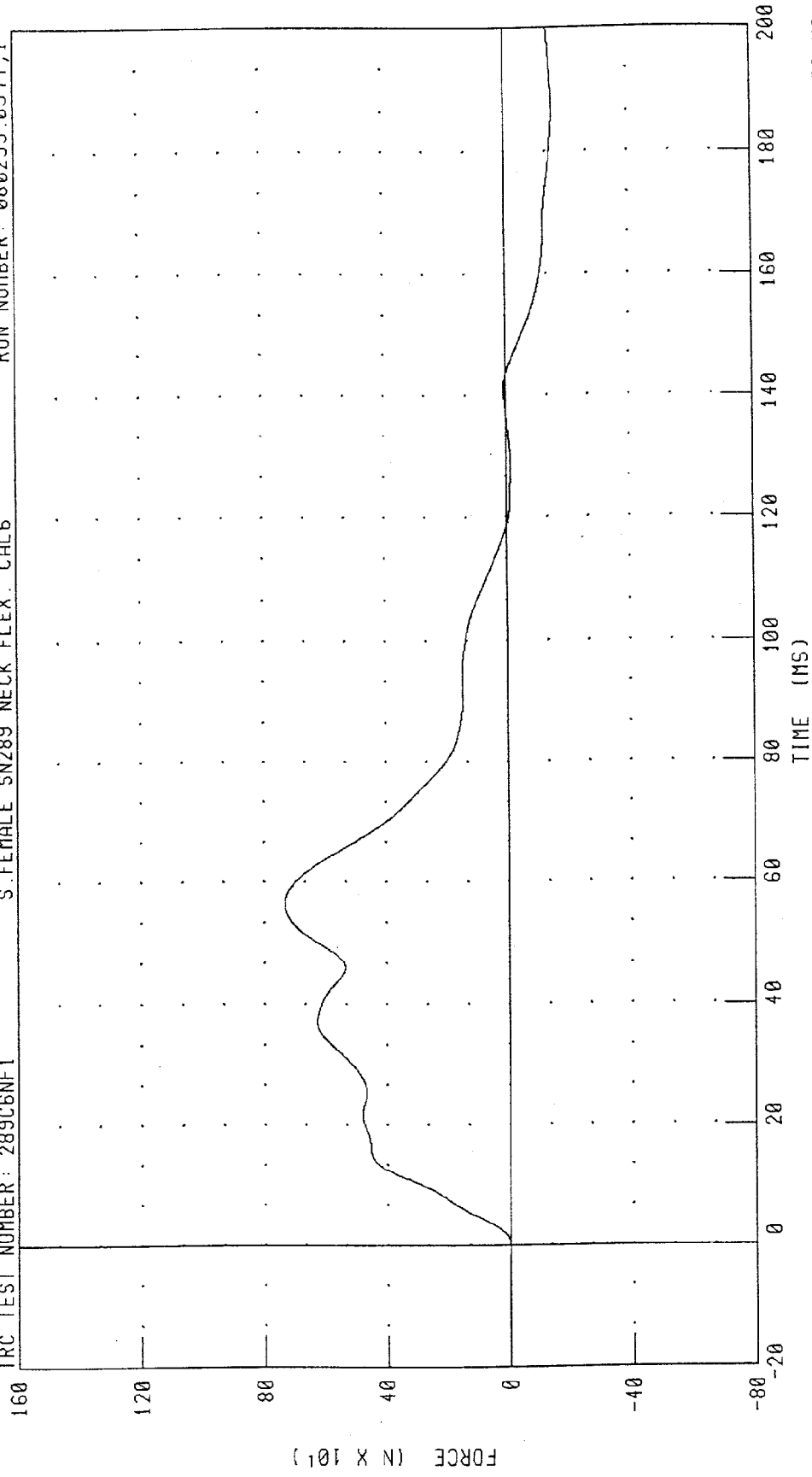
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 28906NF1

S.FEMALE SN289 NECK FLEX. CALS

RUN NUMBER: 060299.0944;1



CHANNEL: NEKXF FILTER: CH. CLASS 60

PEAK DATA: 731.74 N @ 56.56 MS; -156.75 N @ 187.52 MS

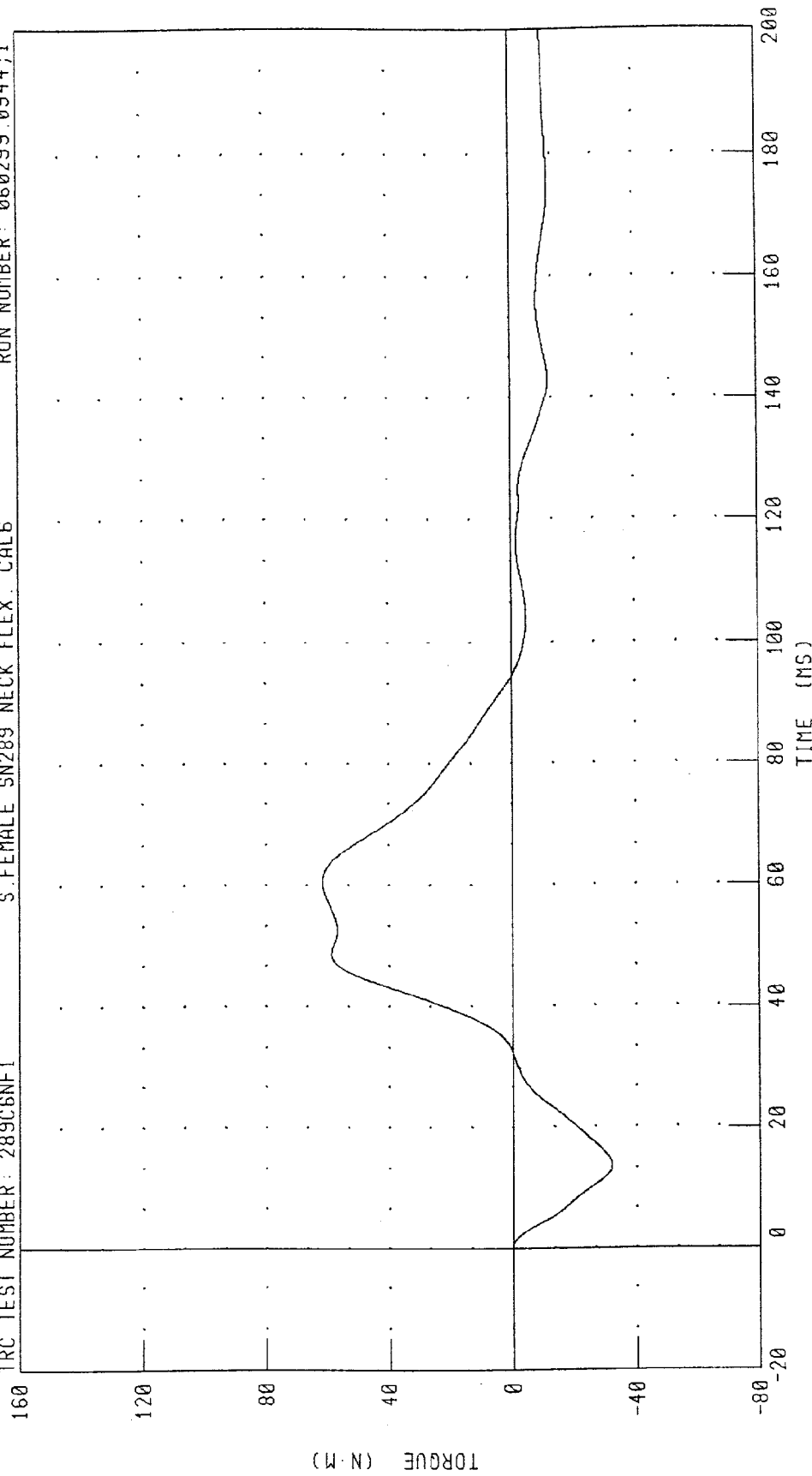
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 28906NF1

S. FEMALE SN289 NECK FLEX. CAL6

RUN NUMBER: 060299.0944;1



CHANNEL: NEKYM

FILTER: CH. CLASS 60

PEAK DATA: 61.55 N·M @ 60.56 MS; -32.09 N·M @ 13.68 MS

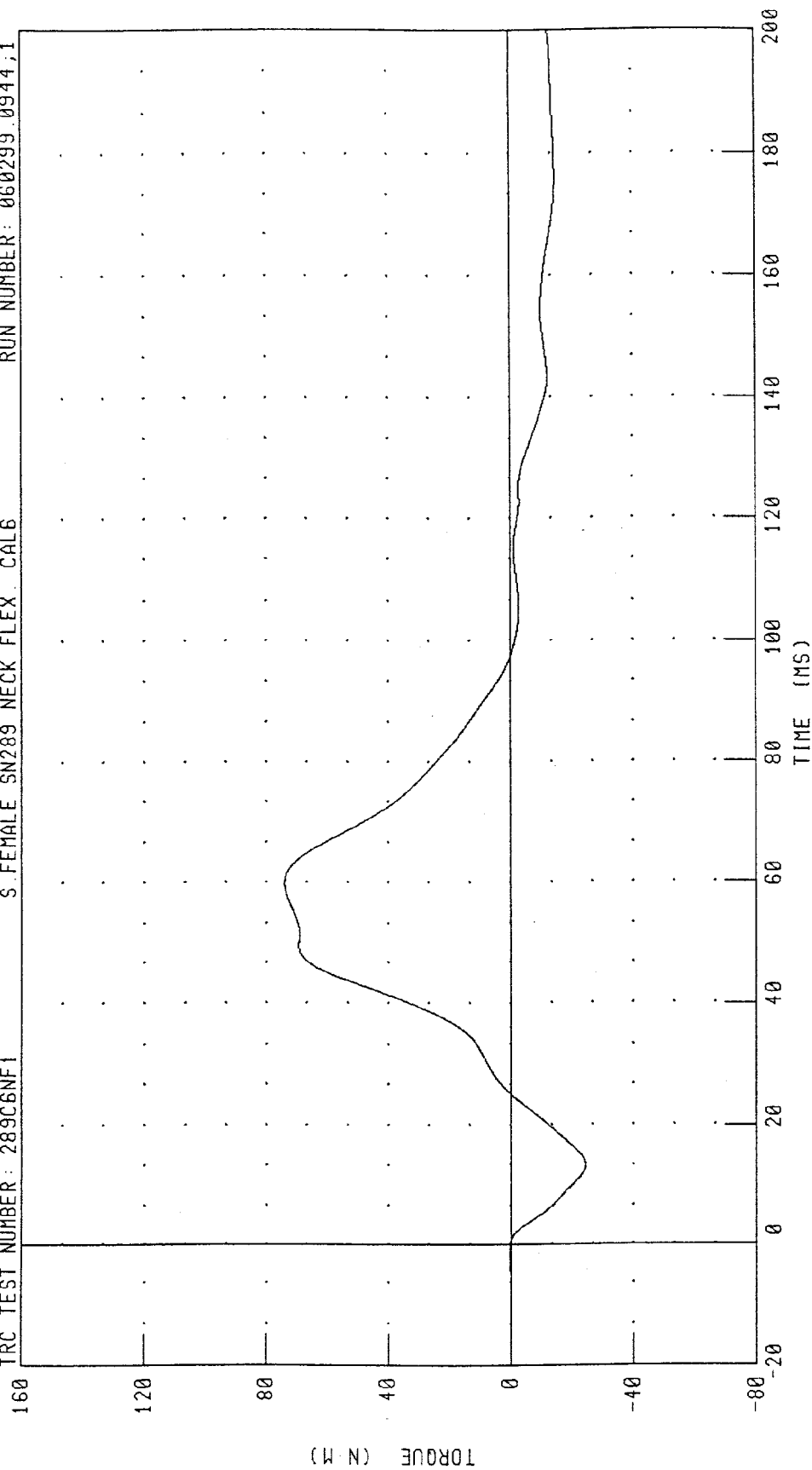
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

S. FEMALE SN289 NECK FLEX. CAL6

TRC TEST NUMBER: 289C6NF1

RUN NUMBER: 060299.0944;1



CHANNEL: NEKOM FILTER: CH. CLASS 60

PEAK DATA: 73.92 N-M @ 59.76 MS; -24.45 N-M @ 13.36 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

02-JUN-99

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 289C6NE1 S.FEMALE SN289 NECK EXT. CAL6

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
IMPACT VELOCITY	5.95 - 6.19 M/S	6.10 M/S
INTEGRATED PENDULUM VELOCITY	10 MS 1.5 - 1.9 M/S	1.75 M/S
	20 MS 3.1 - 3.9 M/S	3.54 M/S
	30 MS 4.6 - 5.6 M/S	5.30 M/S
PEAK D-PLANE ROTATION	97 - 109 DEG.	104.00 DEG.
PEAK MOMENT ABOUT OCCIPITAL CONDYLE DURING ROTATION INT	55 - 69 NM	-64.77 NM
NEGATIVE MOMENT DECAY TIME FROM TO TO -10 NM LEVEL	94 - 114 MS	103.68 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Chad Nye

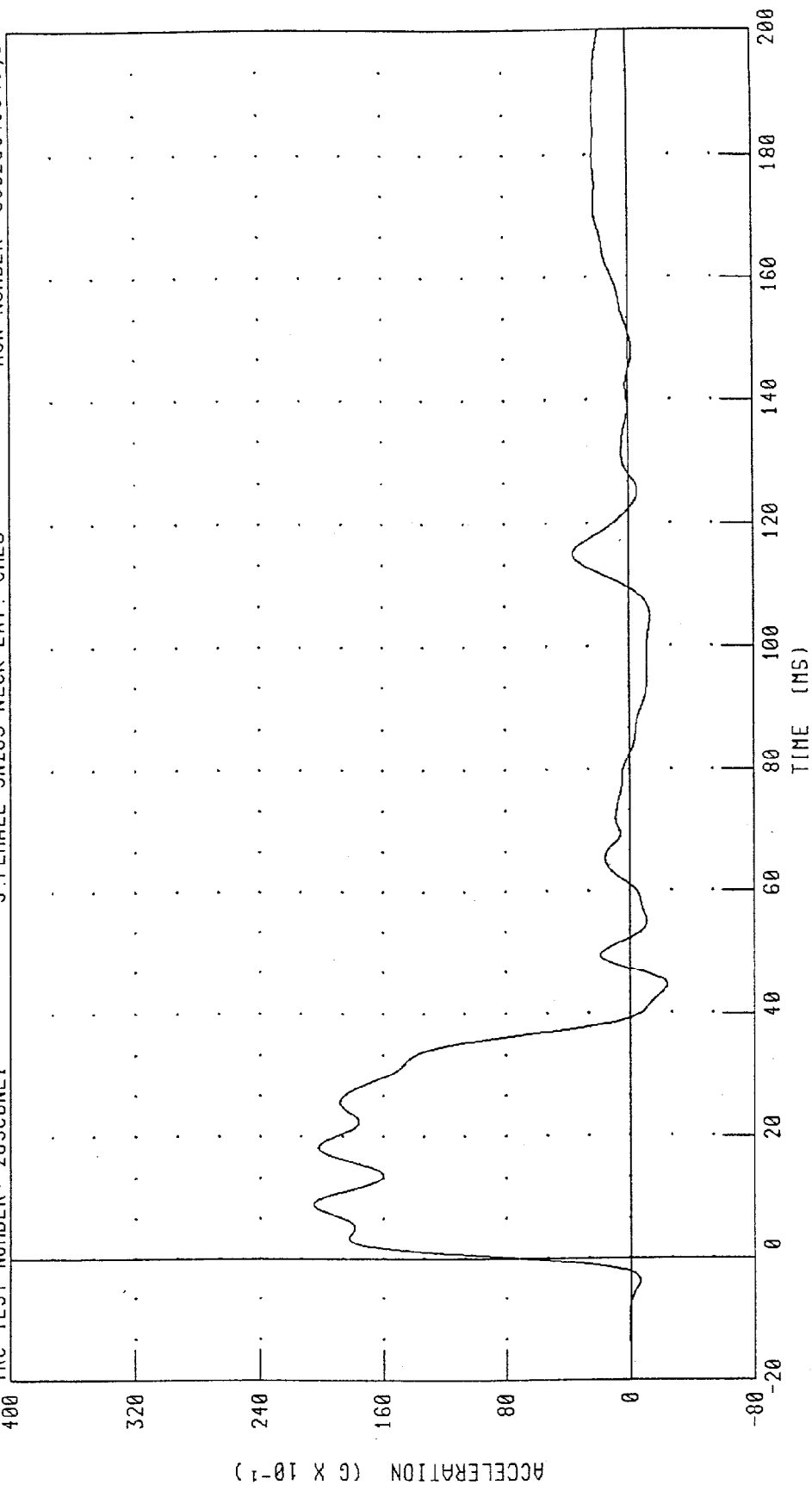
RUN NUMBER: 060299.1010;1

SMALL FEMALE NECK EXTENSION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 289CGNE1

S. FEMALE SN289 NECK EXT. CALS

RUN NUMBER: 060299.1041;1



CHANNEL: PENXG FILTER: CH. CLASS 60

PEAK DATA: 20.54 G @ 9.04 MS; -2.40 G @ 44.56 MS

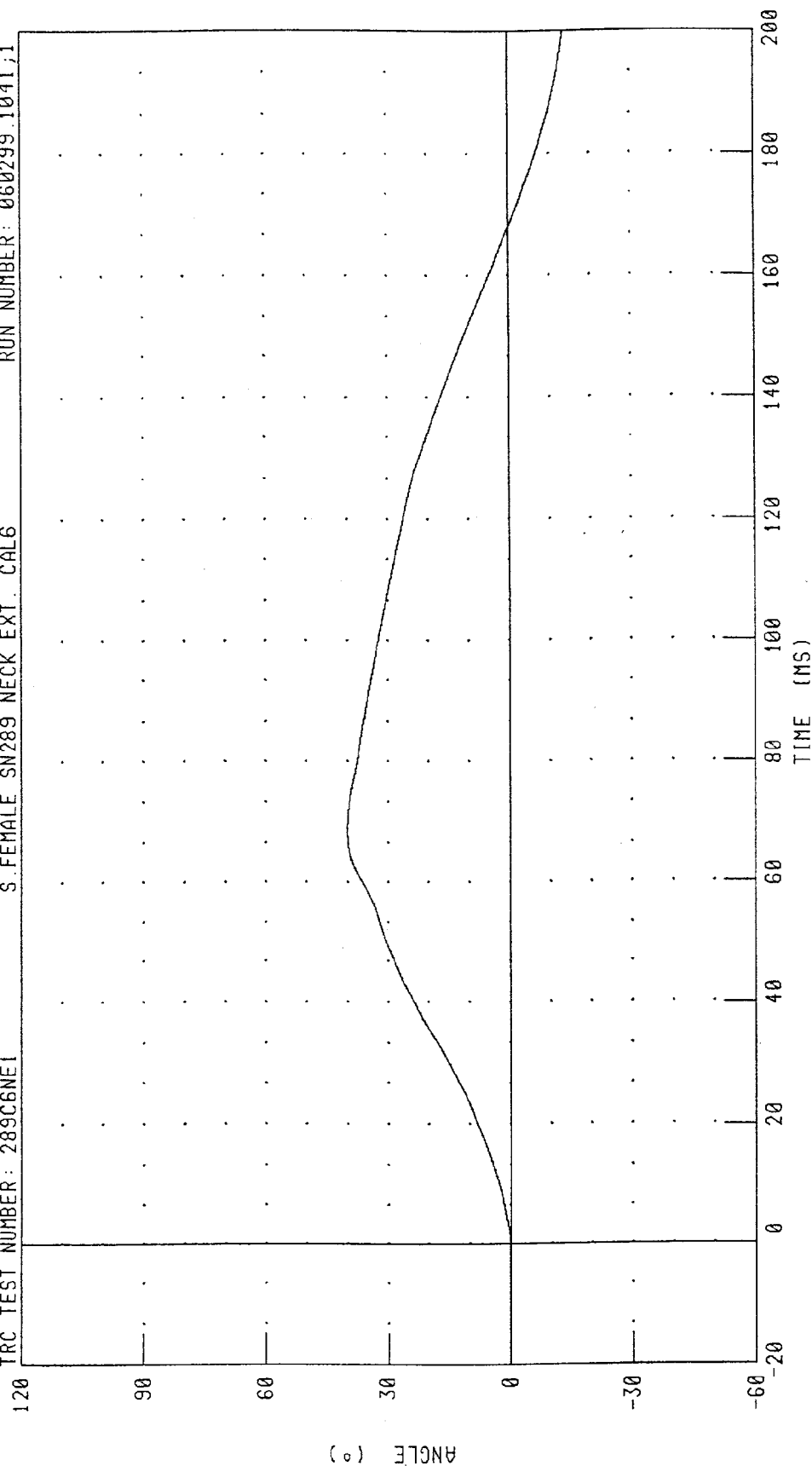
SMALL FEMALE NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 289CGNE1

S. FEMALE SN289 NECK EXT. CAL6

RUN NUMBER: 060299.1041,1



PEAK DATA: 39.94 ° @ 68.72 MS, -13.66 ° @ 200.00 MS

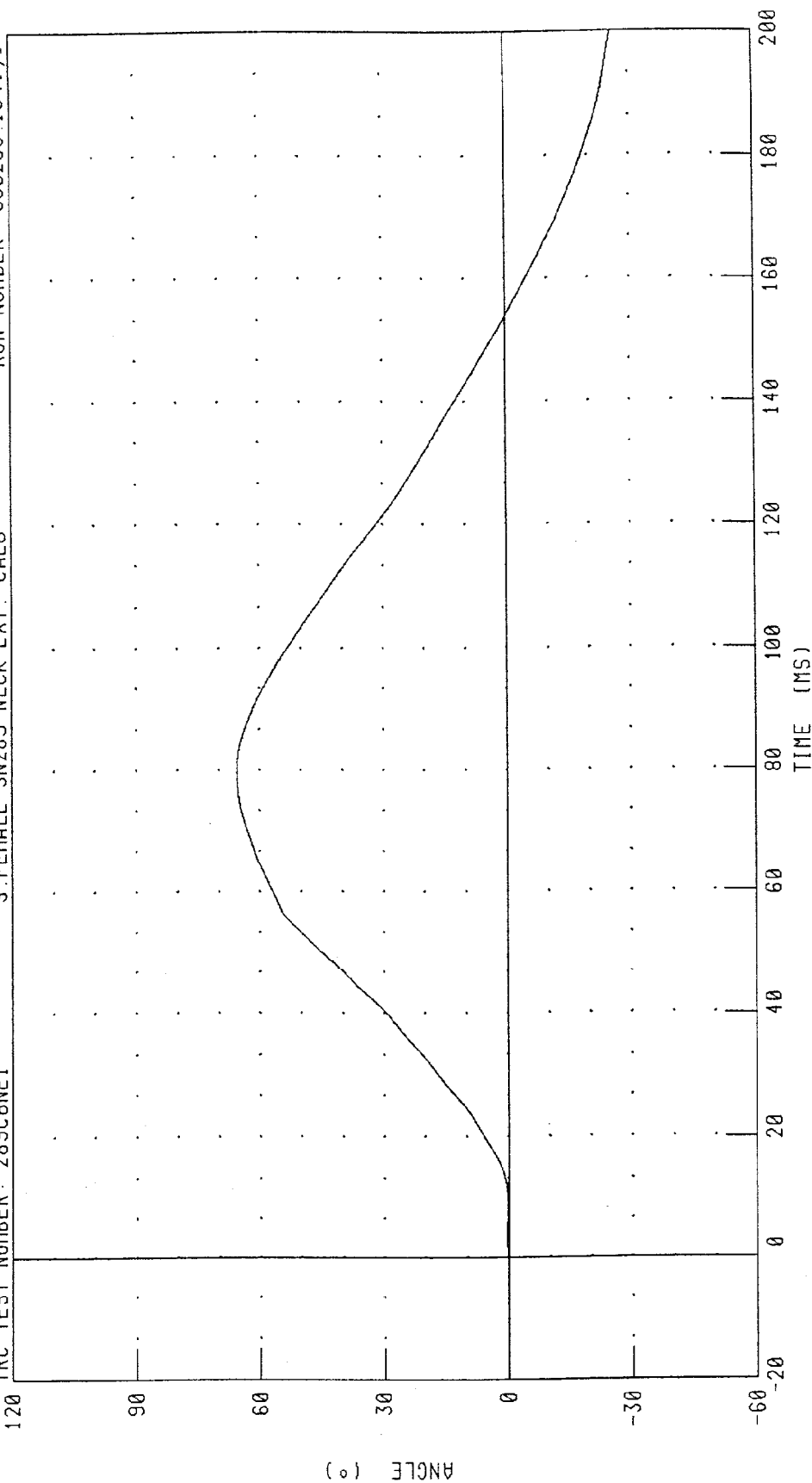
CHANNEL: BETA FILTER: CH. CLASS 60

SMALL FEMALE NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

IRC TEST NUMBER: 289C6NE1

S.FEMALE SN289 NECK EXT. CAL6

RUN NUMBER: 060299.1041.1



PEAK DATA: 65.43 ° @ 79.84 MS; -25.80 ° @ 200.00 MS

CHANNEL: THETA FILTER: CH. CLASS 60

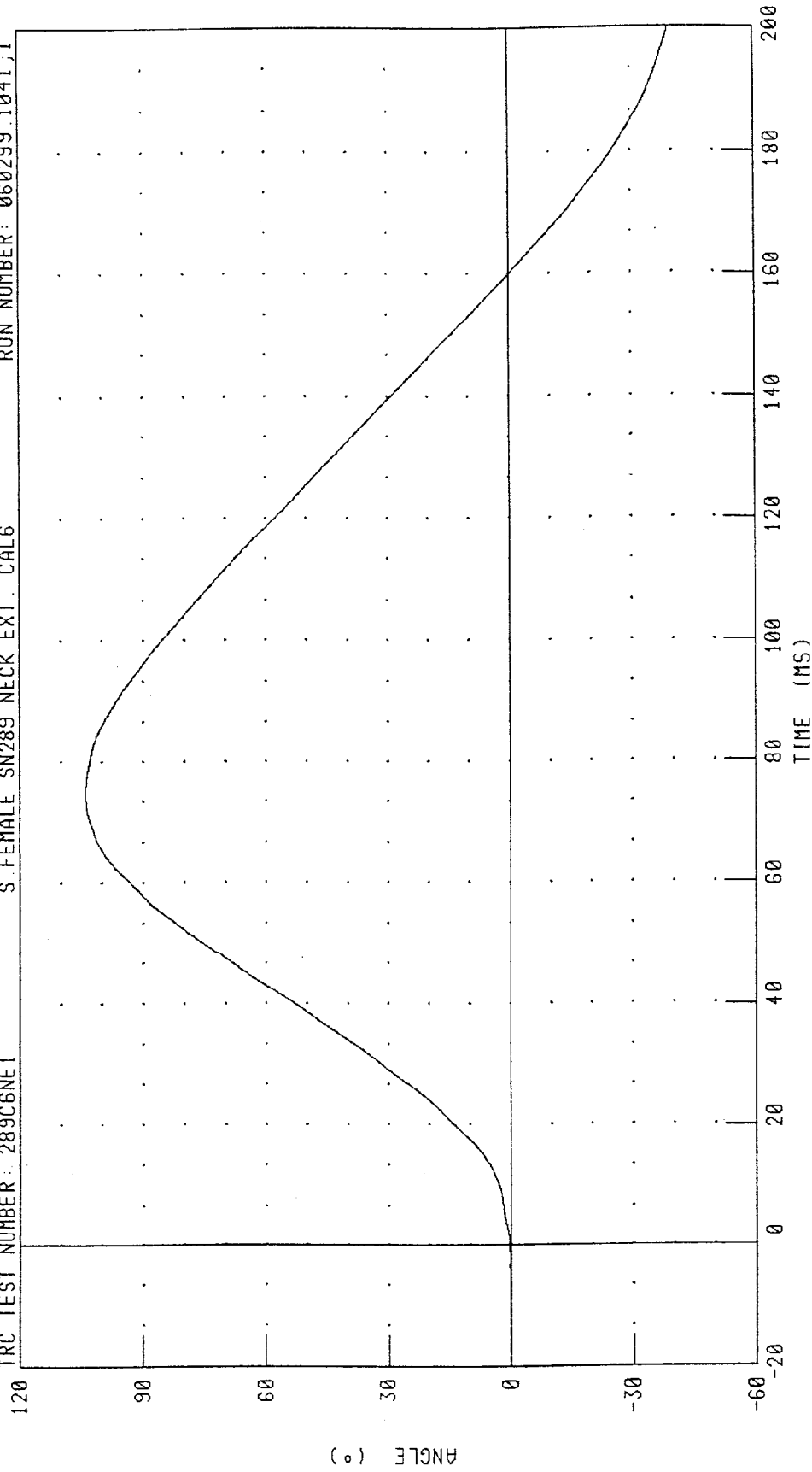
SMALL FEMALE NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 289C6NE1

S. FEMALE SN289 NECK EXT. CAL6

RUN NUMBER: 060299.1041;1



PEAK DATA: 104.01 ° @ 74.80 MS; -39.46 ° @ 200.00 MS

CHANNEL: TOTAL FILTER: CH. CLASS 60

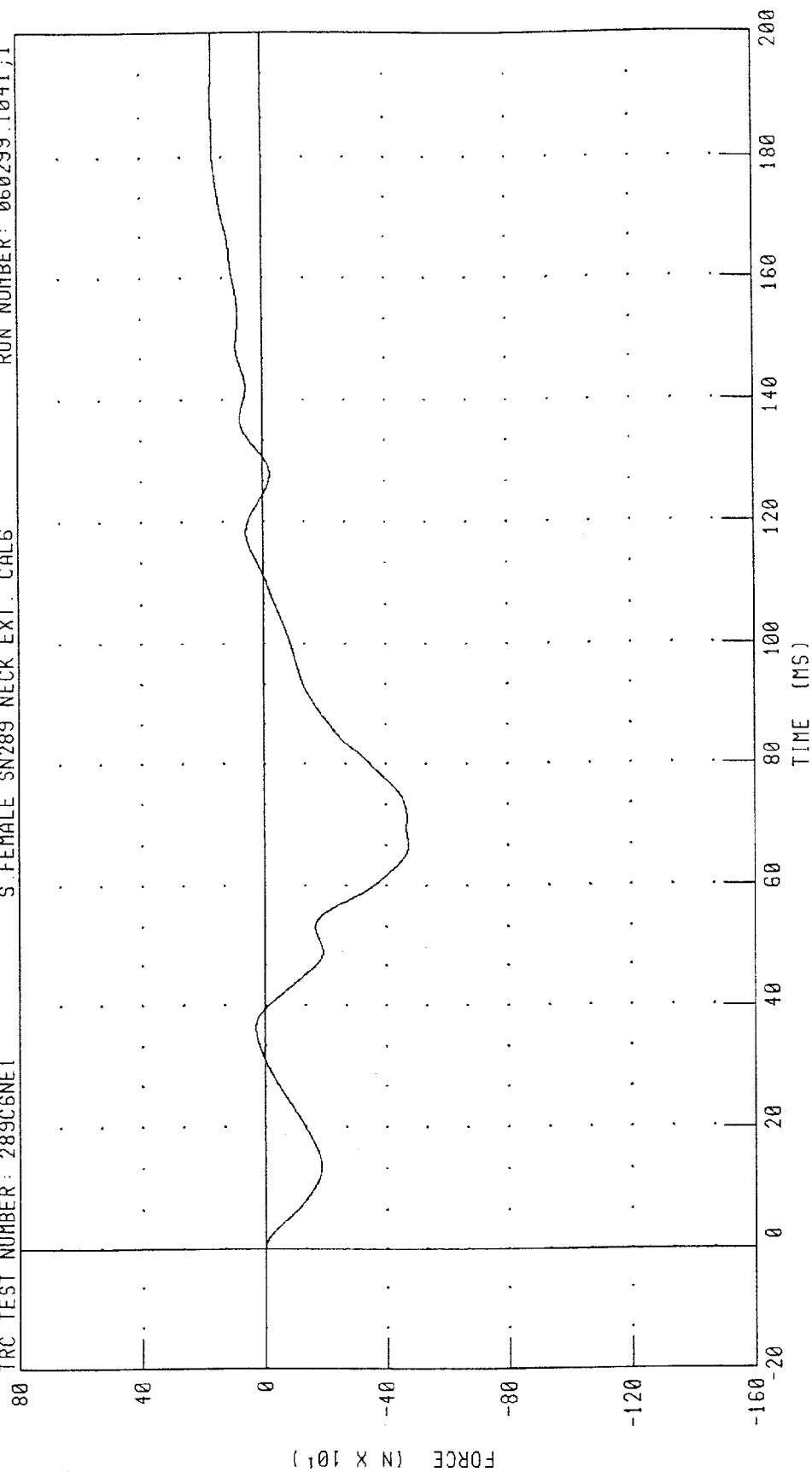
SMALL FEMALE NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 289C6NE1

S. FEMALE SN289 NECK EXT. CALS

RUN NUMBER: 060299.1041;1



PEAK DATA: 166.81 N @ 188.88 MS, -472.95 N @ 66.80 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

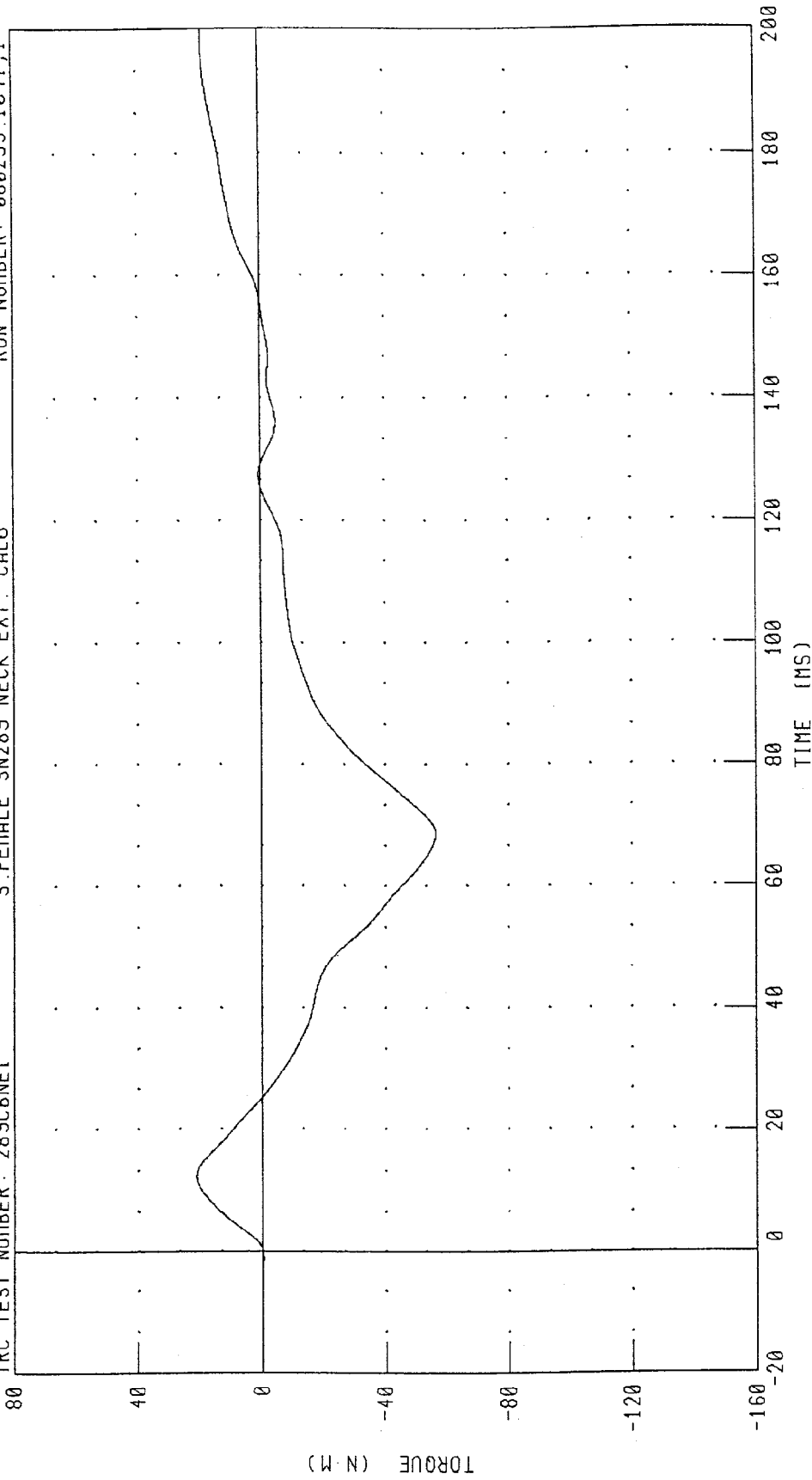
SMALL FEMALE NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 289C6NE1

S.FEMALE SN289 NECK EXT. CALG

RUN NUMBER: 060299.1041;1



CHANNEL: NEKYM FILTER: CH. CLASS 60

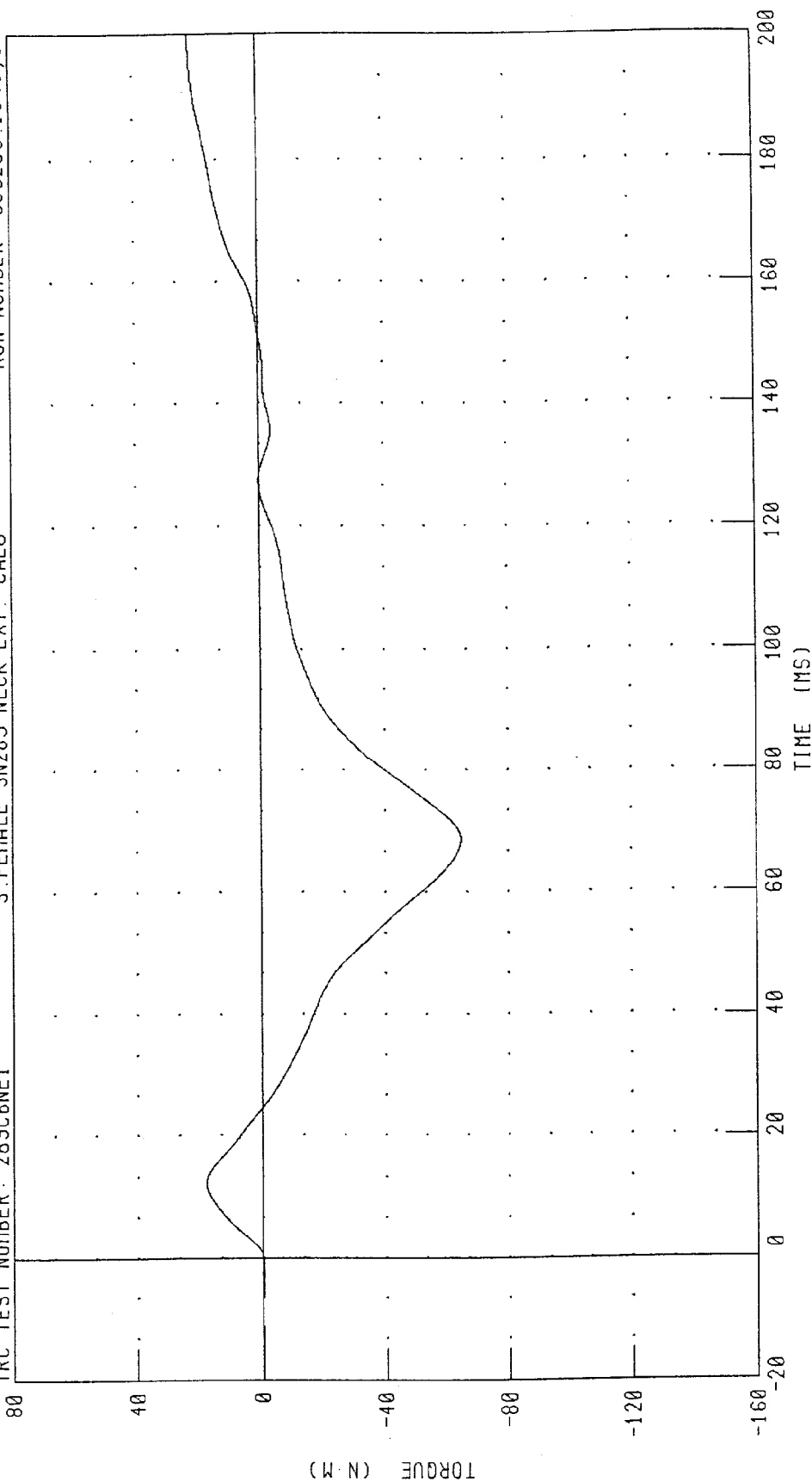
PEAK DATA: 21.36 N-M @ 12.40 MS, -56.45 N-M @ 68.72 MS

SMALL FEMALE NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 289C6NE1

S.FEMALE SN289 NECK EXT. CAL6

RUN NUMBER: 060299.1041,1



PEAK DATA: 21.70 N M @ 198.64 MS, -64.77 N M @ 68.64 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III SMALL FEMALE

03-JUN-99

TRC INC.

TEST NO: 289C6TH1

S.FEMALE SN289 THORAX CAL06

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.65 M/S
MAXIMUM DEFLECTION	48 - 55 MM	48.0 MM
MAXIMUM FORCE WITHIN COORR.	3900 - 4400 N	4298. N
INTERNAL HYSTERESIS	69% - 85%	76.1%

TEST MEETS SPECIFICATIONS

TECHNICIAN

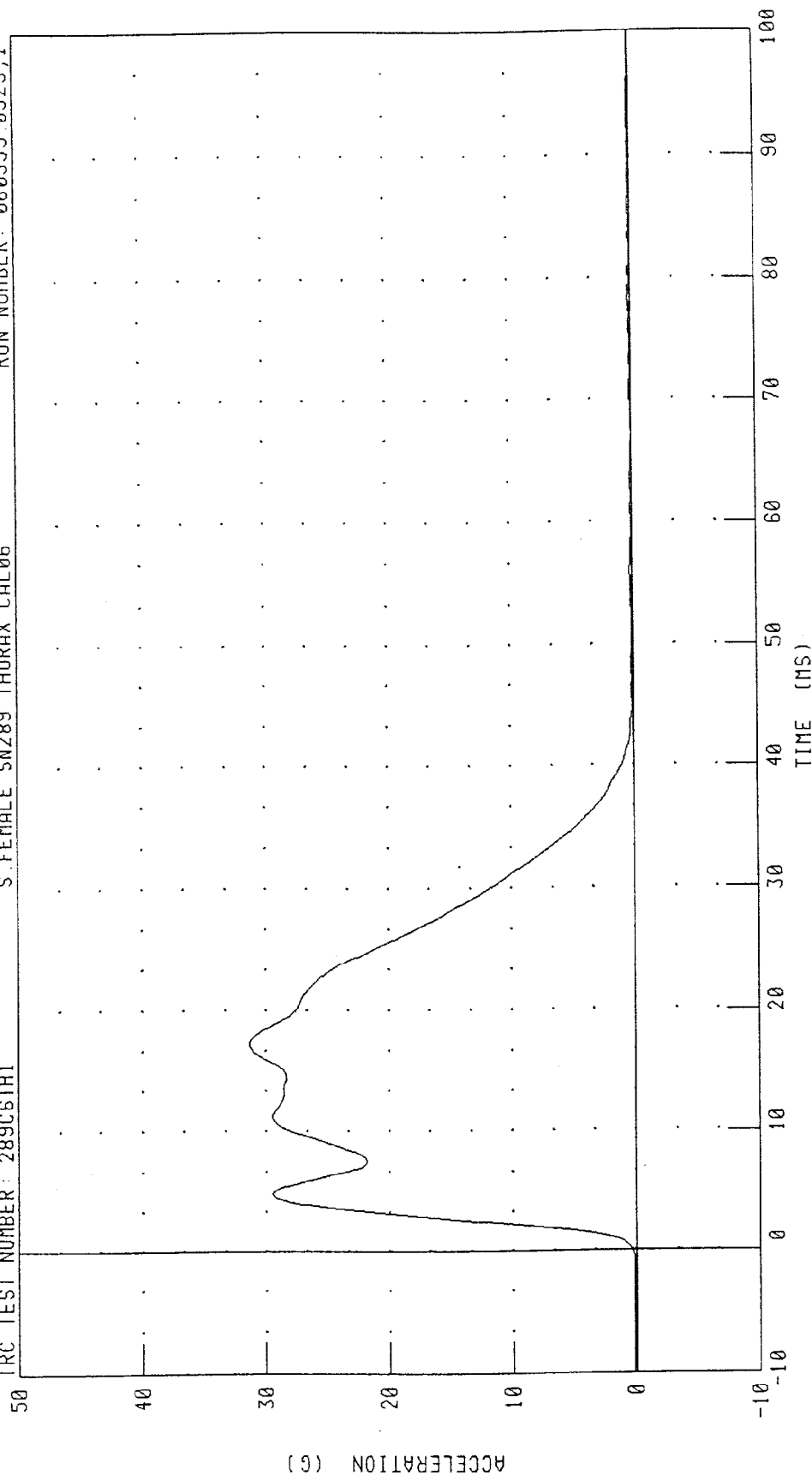
C. Rad. A. B.

RUN NUMBER: 060399.0912;1

SMALL FEMALE THORAX CALIBRATION
PENDULUM DECELERATION
S. FEMALE SN289 THORAX CAL06

TRC TEST NUMBER: 289C5TH1

RUN NUMBER: 060399 0923,1



CHANNEL: PENXG FILTER: CH. CLASS 180

PEAK DATA: 31.33 G @ 17.20 MS; 0.01 G @ 66.96 MS

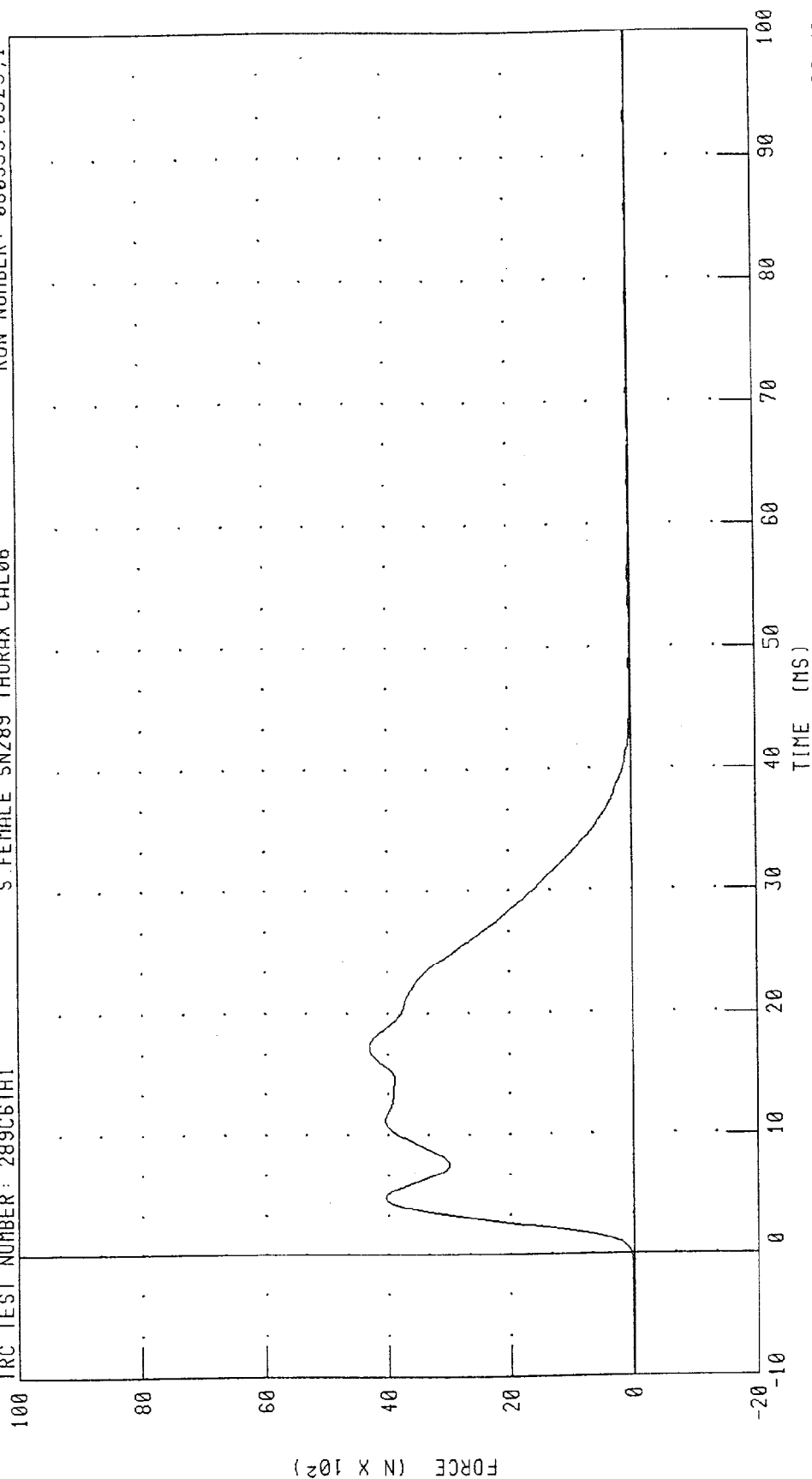
SMALL FEMALE THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER: 289C6TH1

S FEMALE SN289 THORAX CAL06

RUN NUMBER: 060359.0923;1



CHANNEL: PENXF FILTER: CH. CLASS 180

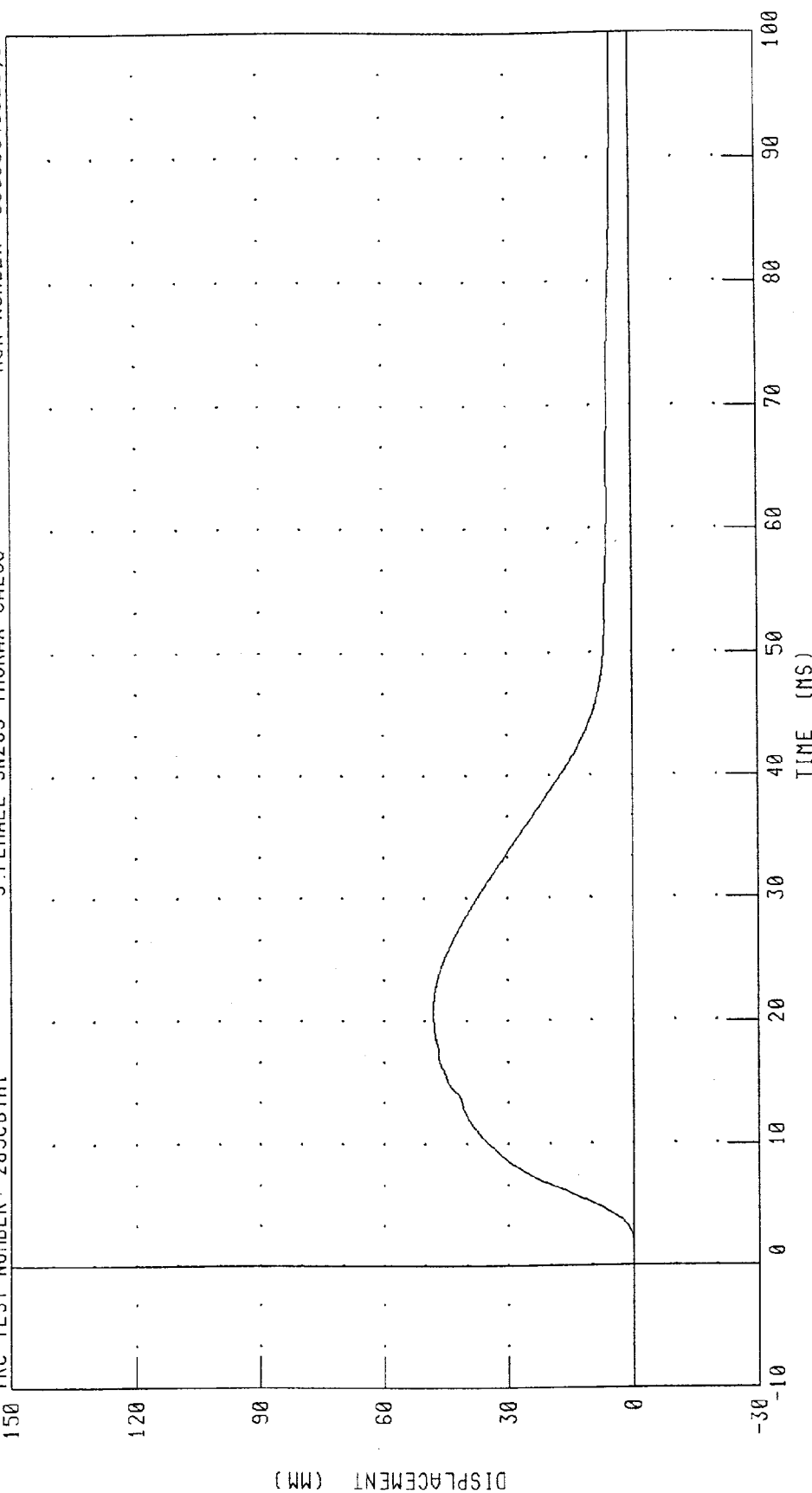
PEAK DATA: 4298.85 N @ 17.20 MS; 0.71 N @ 66.96 MS

SMALL FEMALE THORAX CALIBRATION
STERNUM DISPLACEMENT

TRC TEST NUMBER: 289C6TH1

S. FEMALE SN289 THORAX CAL06

RUN NUMBER: 060399 0923,1



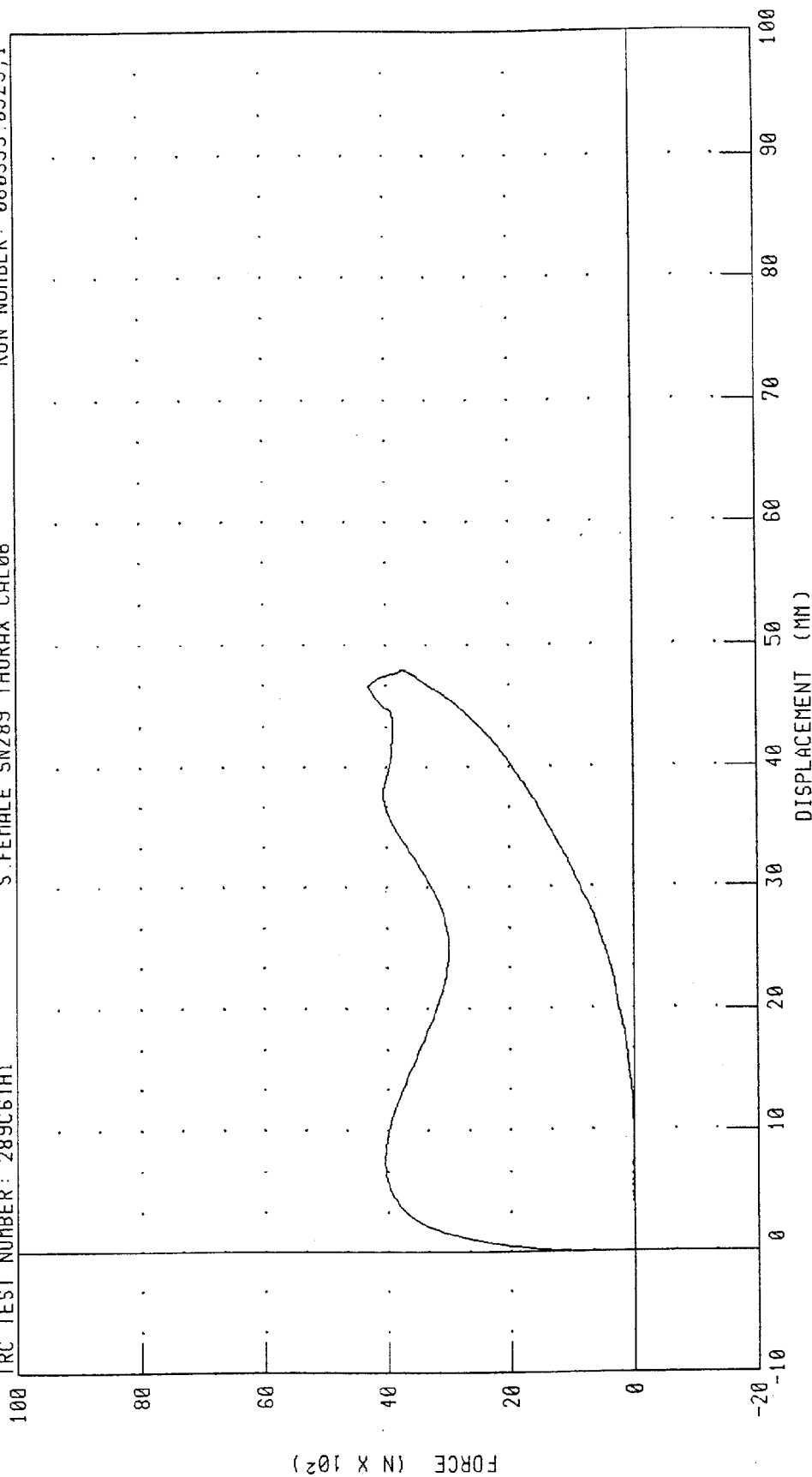
PEAK DATA: 48.01 MM @ 20.88 MS; -0.03 MM @ 1.44 MS

CHANNEL: CSTXD FILTER: CH. CLASS 180

SMALL FEMALE THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE
S. FEMALE SN289 THORAX CAL06

TRC TEST NUMBER: 289C6TH1

RUN NUMBER: 060399.0923,1



CHANNEL: CSTXD
PENXF
FILTER: CH. CLASS 180
CH. CLASS 180
PEAK DATA: 48.01 MM @ 20.88 MS; -0.03 MM @ 1.44 MS
4298.85 N @ 17.20 MS; 0.71 N @ 66.96 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

01-JUN-99

TRC INC.

TEST NO: 289C6RK1

S.FEMALE SN289 R.KNEE CAL6

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.12 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3360 - 4080 N	4177.8 N

TEST MEETS SPECIFICATIONS

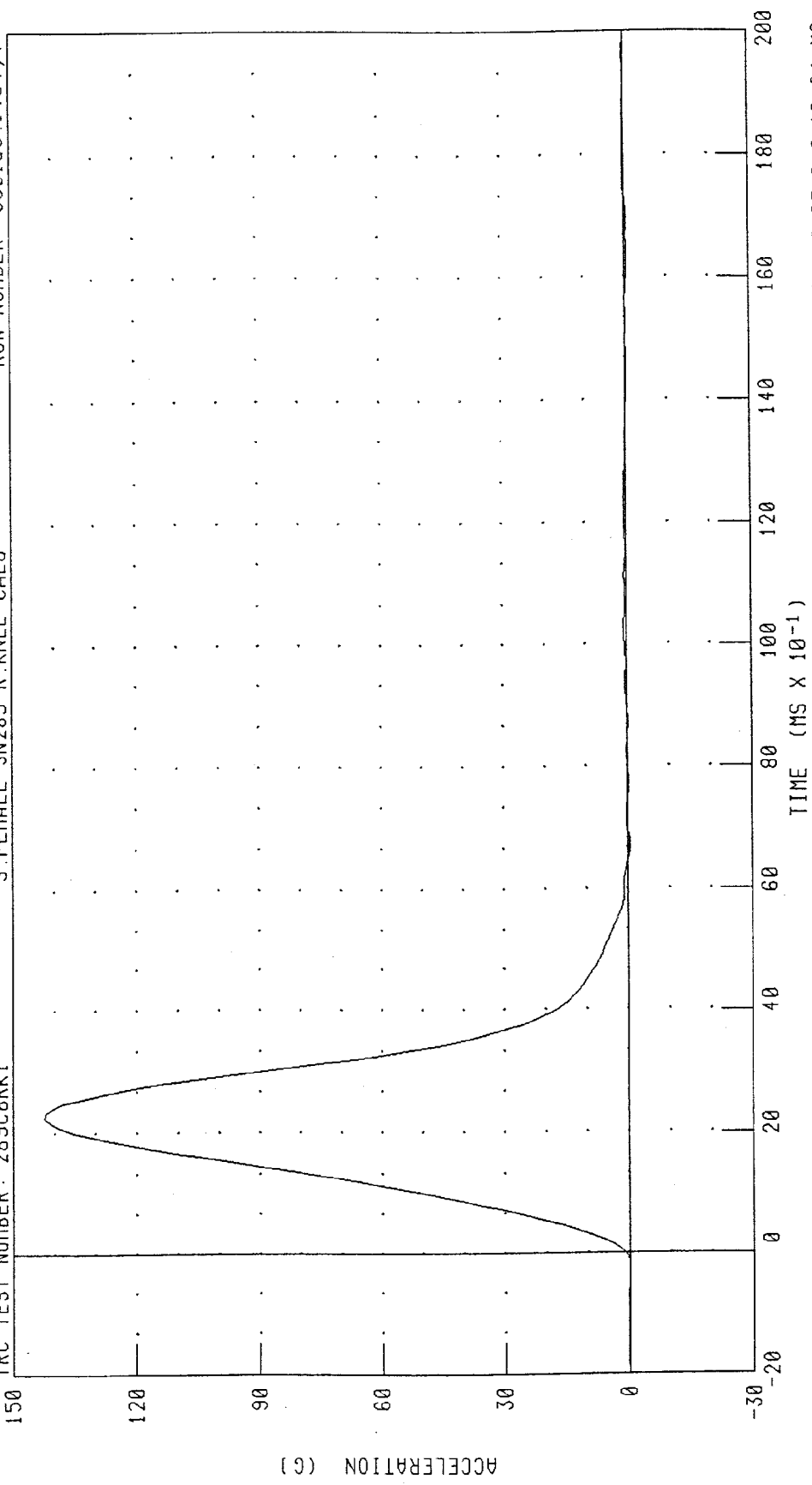
TECHNICIAN

Chad Aife

RUN NUMBER: 060199.1433;4

SMALL FEMALE HYBRID III RIGHT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)

TRC TEST NUMBER: 289C6RK1 S. FEMALE SN289 R. KNEE CAL6 RUN NUMBER: 060199.1434;4



CHANNEL: PENXC FILTER: CH. CLASS 600 PEAK DATA: 142.31 G @ 2.24 MS; -0.65 G @ 16.24 MS

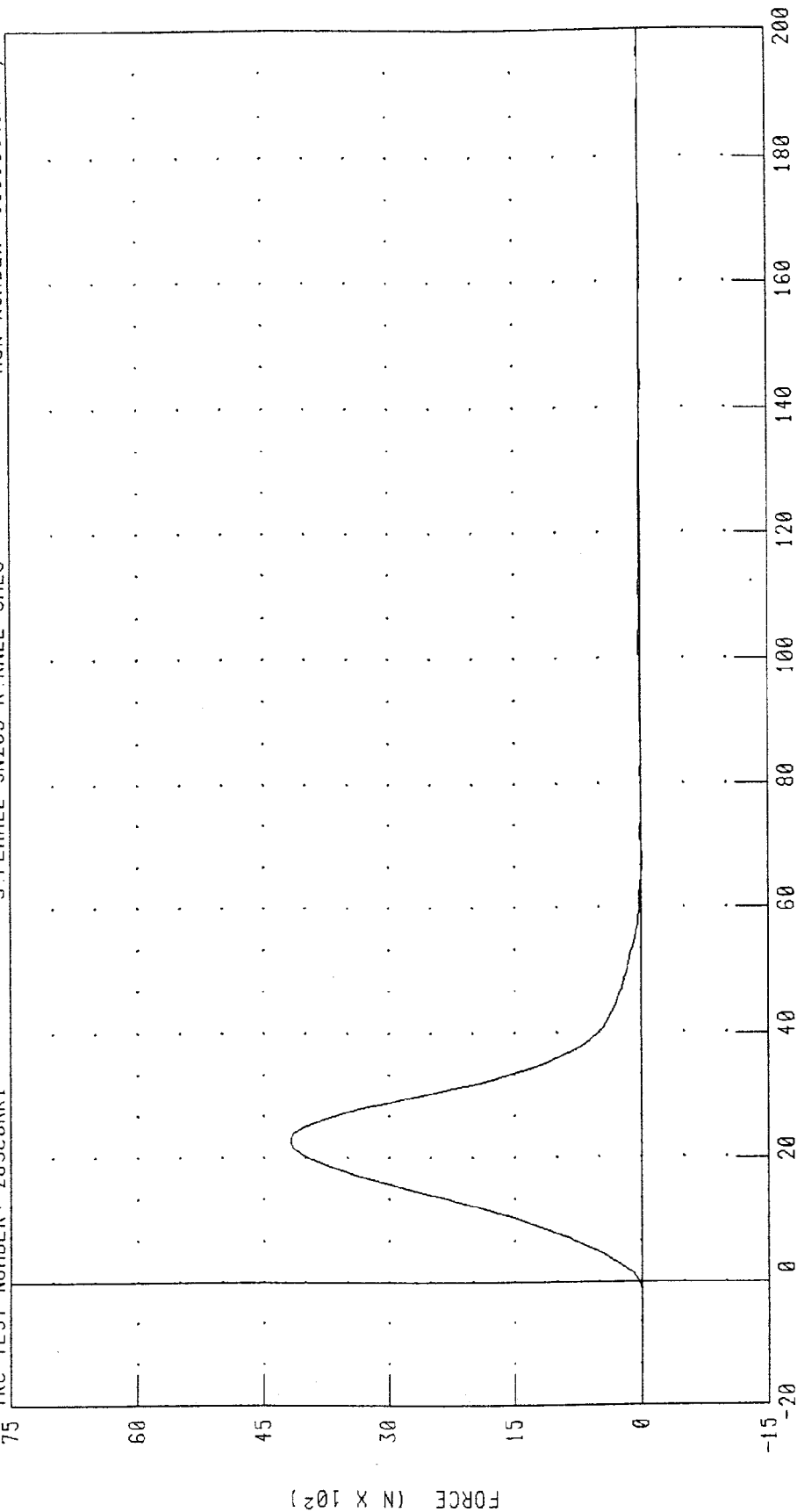
SMALL FEMALE HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 289C6RK1

S. FEMALE SN289 R. KNEE CAL6

RUN NUMBER: 060199.1434,4



CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 4177.81 N @ 2.24 MS; -19.07 N @ 16.24 MS

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

01-JUN-99

TRC INC.

TEST NO: 289C6LK1

S.FEMALE SN289 LEFT KNEE CAL6

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.13 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3360 - 4080 N	3890.5 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

Rad Rife

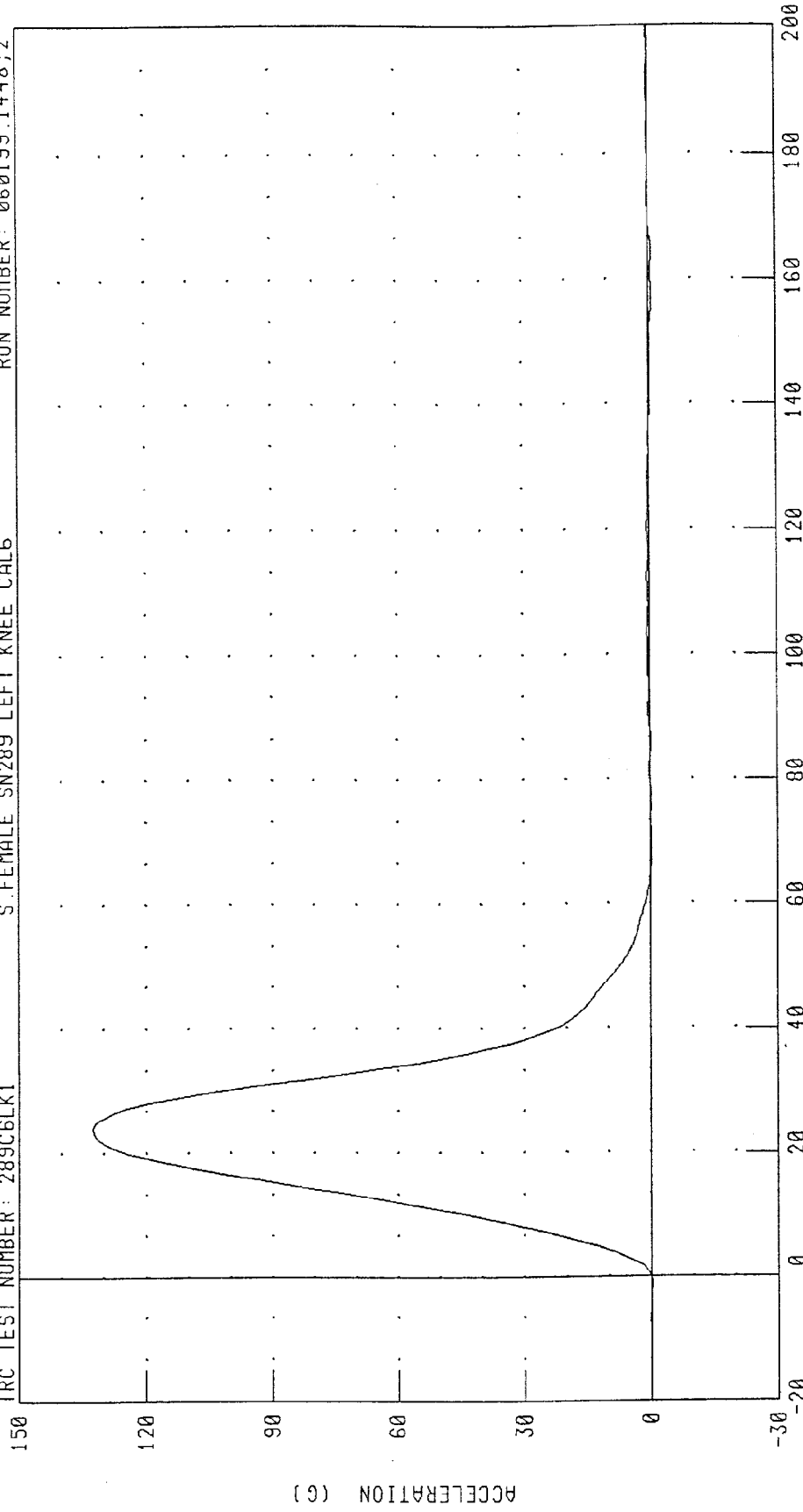
RUN NUMBER: 060199.1447;2

SMALL FEMALE HYBRID III LEFT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)

TRC TEST NUMBER: 289C6LK1

S. FEMALE SN289 LEFT KNEE CALG

RUN NUMBER: 060199.1448;2



PEAK DATA: 132.53 G @ 2.40 MS, -0.92 G @ 15.68 MS

CHANNEL: PENXC FILTER: CH. CLASS 600

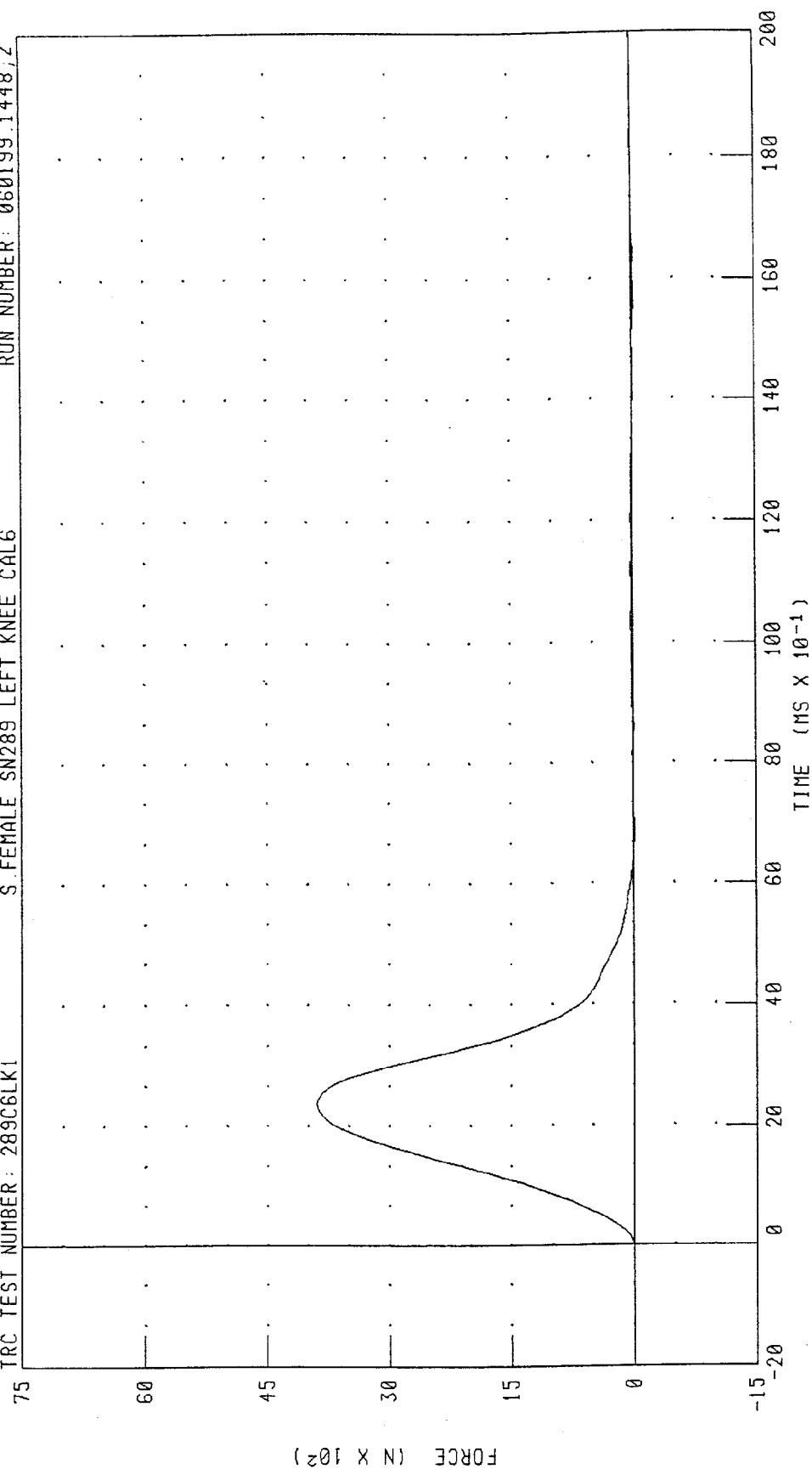
SMALL FEMALE HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

S. FEMALE SN289 LEFT KNEE CAL6

RUN NUMBER: 060199.1448,2

TRC TEST NUMBER: 289C6LK1



PEAK DATA: 3890.57 N @ 2.40 MS, -27.04 N @ 15.68 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

Pre-Test Dummy Certification

Passenger Dummy S/N 369

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III SMALL FEMALE

02-JUN-99

TRC INC.

TEST NO: 369C1HD1

S.FEMALE SN369 HEAD DROP CAL1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PEAK RESULTANT ACCELERATION	250 - 300 G	273.16 G
PEAK LATERAL ACCELERATION	15 G MAX	-4.83 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 060299.0832;1

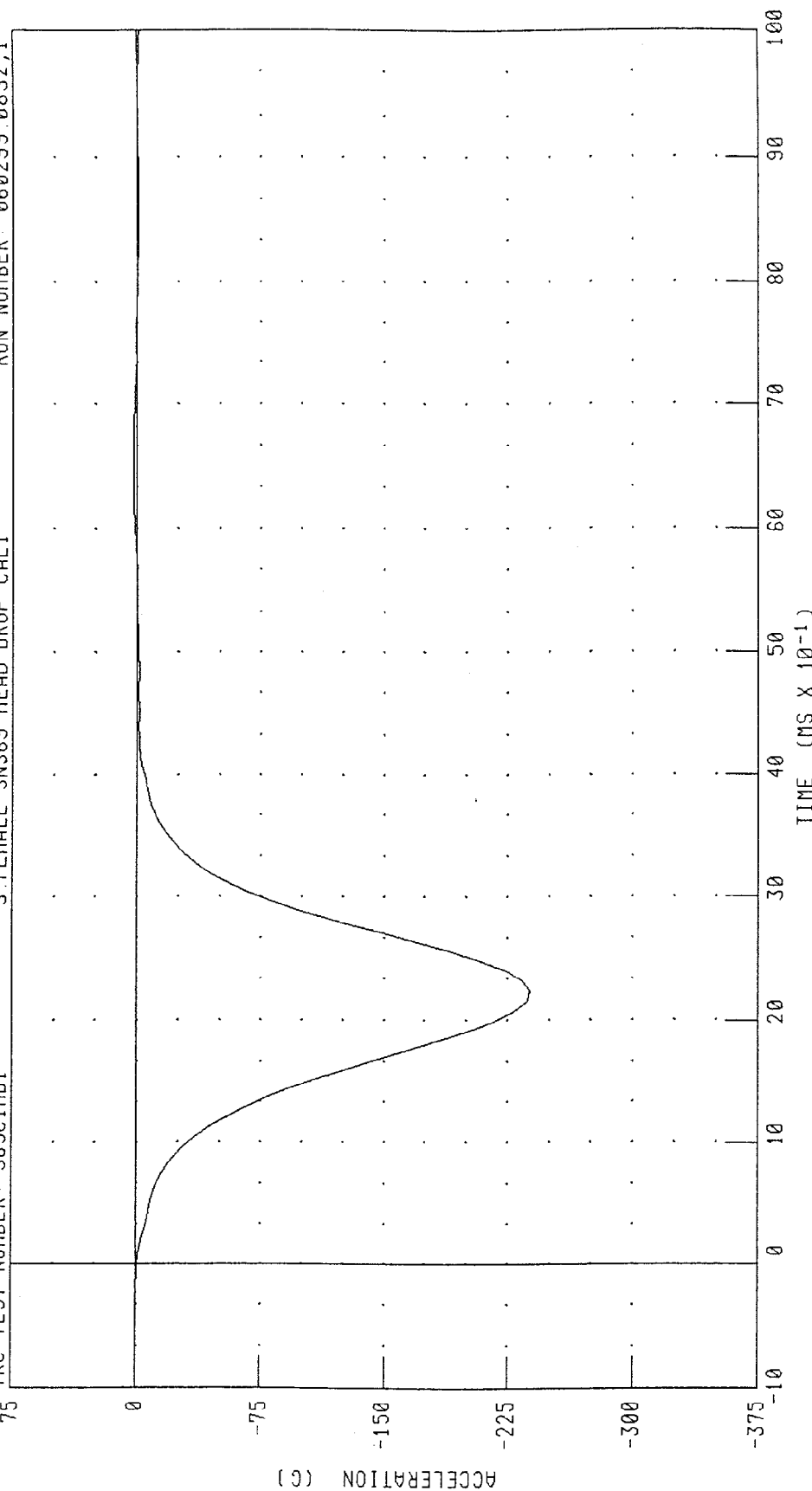
SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

TRC TEST NUMBER: 369C1HD1

S. FEMALE SN369 HEAD DROP CAL1

RUN NUMBER: 060299.0832;1



CHANNEL: HEDXC FILTER: CH. CLASS 1000

PEAK DATA: 2.22 G @ 6.40 MS;

-238.61 G @ 2.24 MS

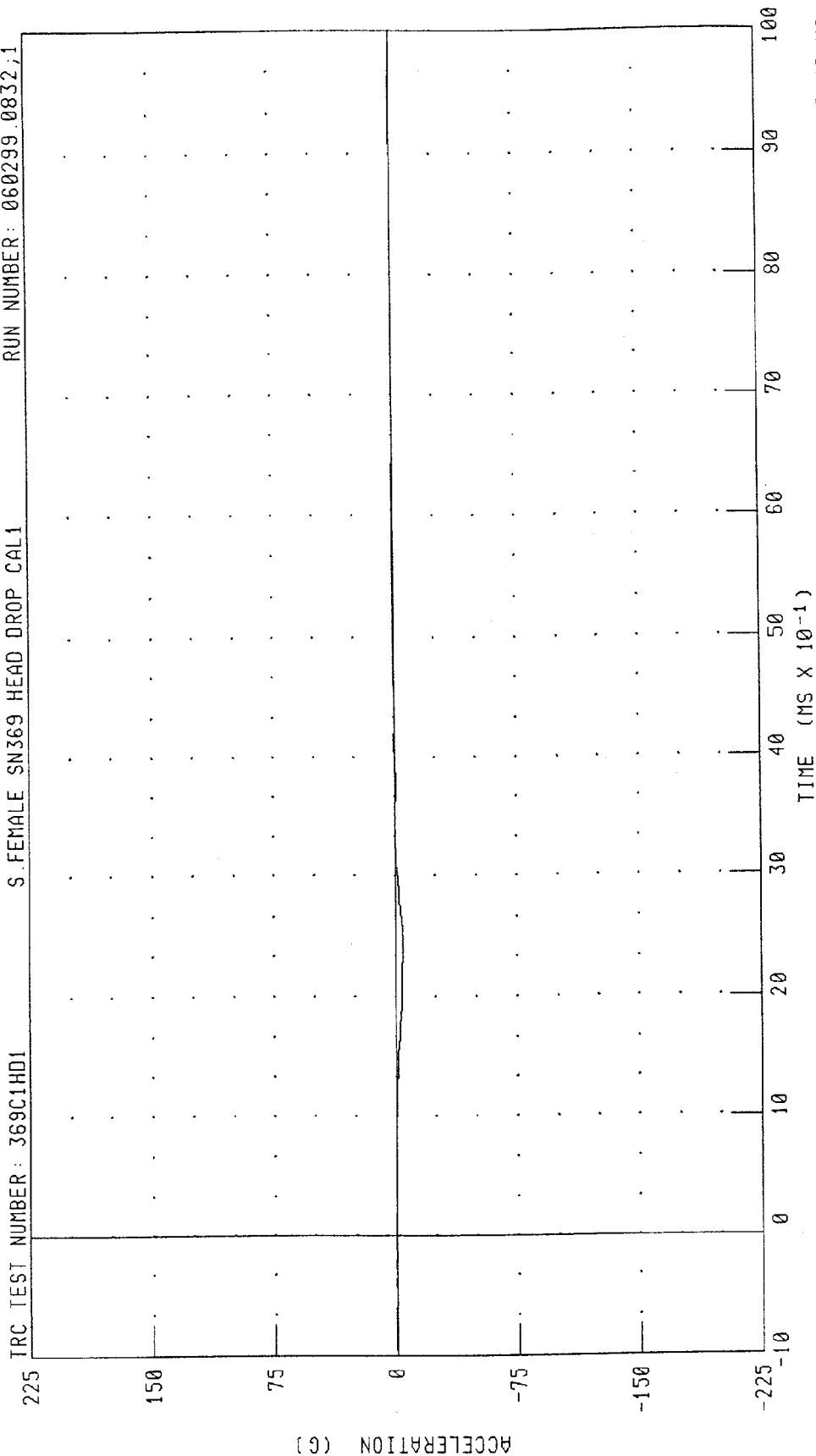
SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

S. FEMALE SN369 HEAD DROP CAL1

TRC TEST NUMBER: 369C1HDI

RUN NUMBER: 060299.0832;1



PEAK DATA: 0.60 G @ 4.80 MS; -4.83 G @ 2.40 MS

FILTER: CH. CLASS 1000

CHANNEL: HEDYG

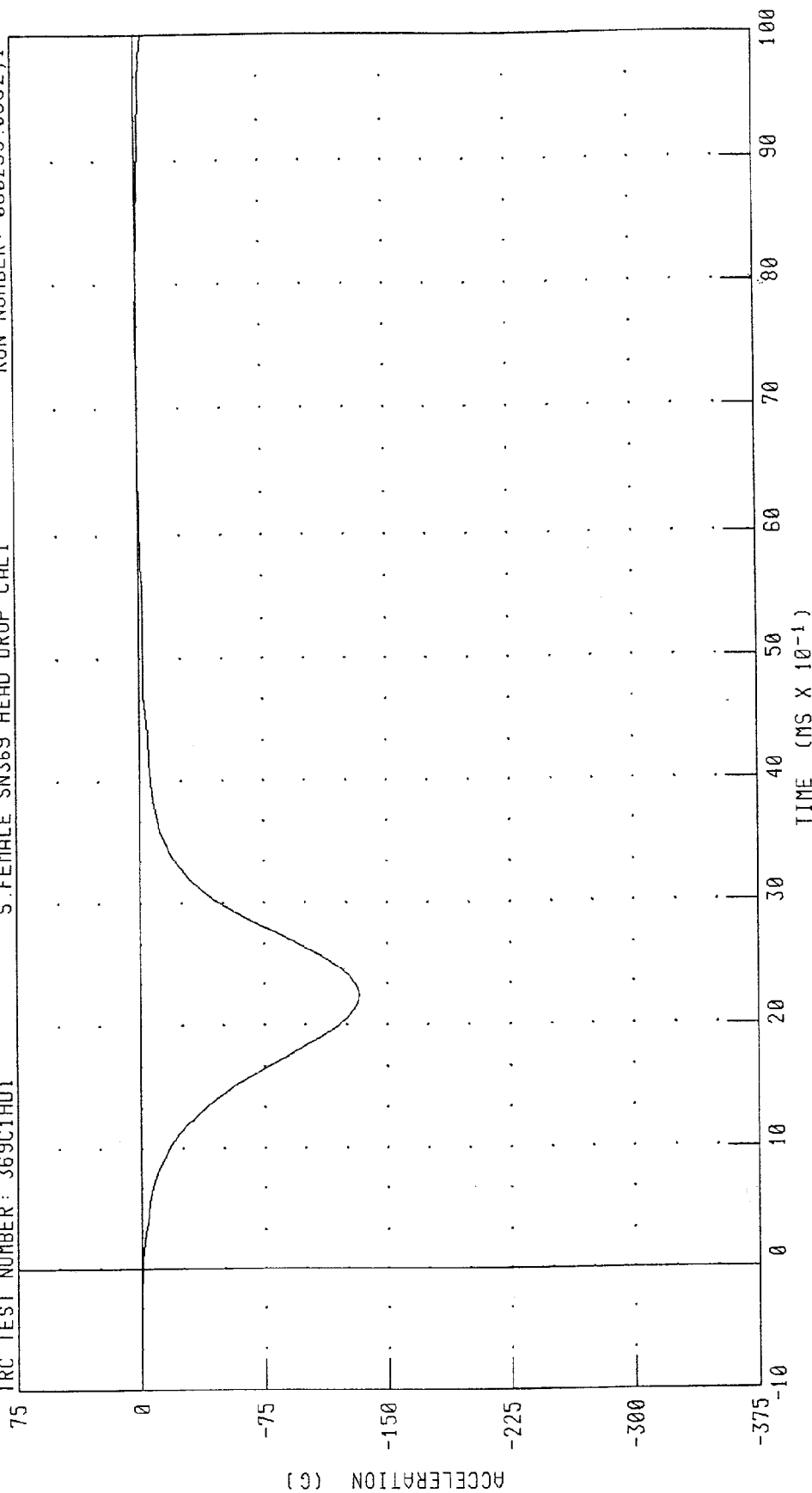
SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Z AXIS

TRC TEST NUMBER: 369CIHD1

S. FEMALE SN369 HEAD DROP CAL1

RUN NUMBER: 060299.0832;1



PEAK DATA: 0.58 G @ 7.44 MS; -132.91 G @ 2.24 MS

CHANNEL: HEDZG FILTER: CH. CLASS 1000

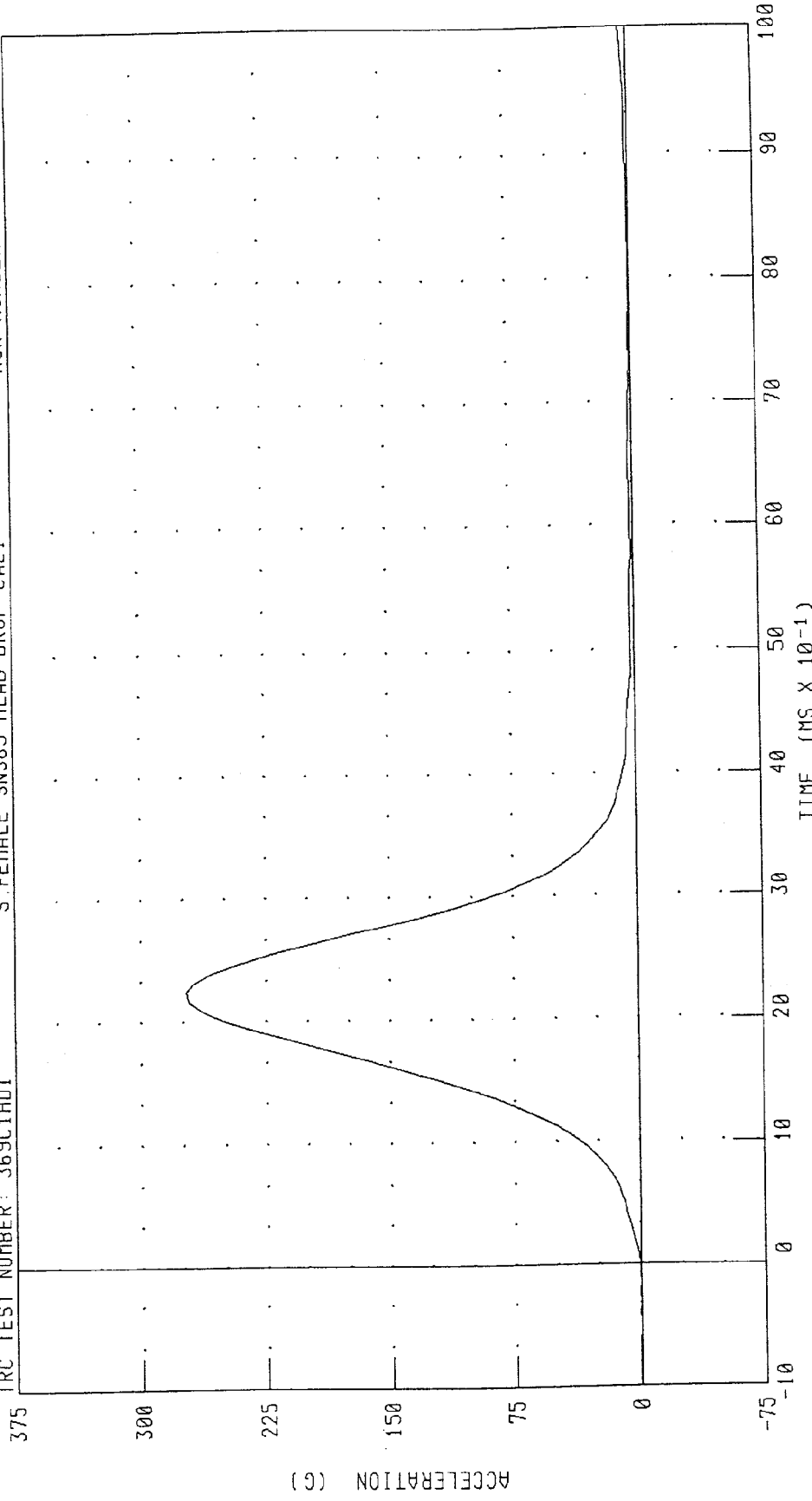
SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

S. FEMALE SN369 HEAD DROP CAL1

RUN NUMBER: 060299 0832;1

TRC TEST NUMBER: 369C1HD1



PEAK DATA: 273.16 G @ 2.24 MS; 0.02 G @ -0.56 MS

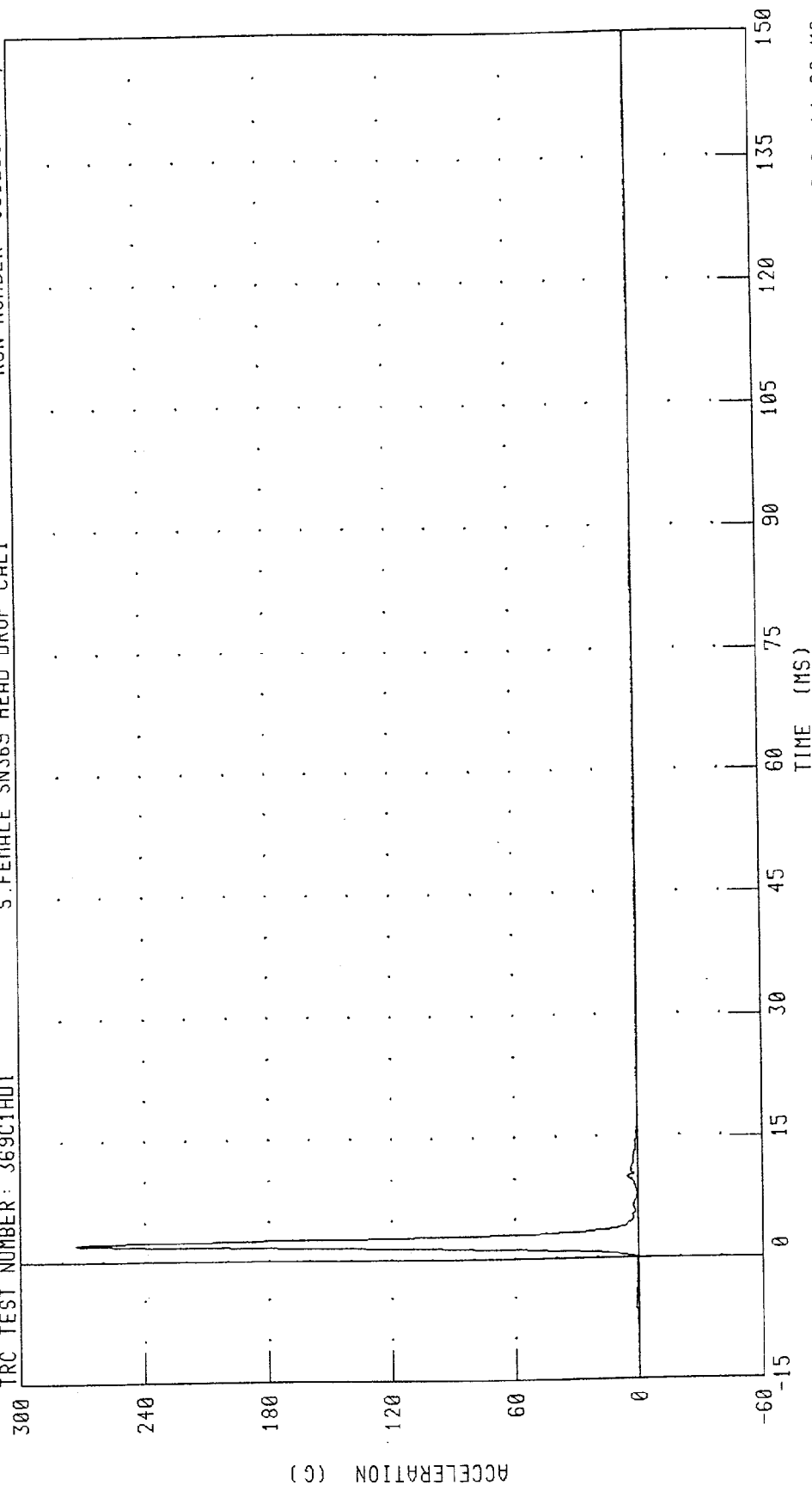
CHANNEL: HEDRC FILTER: CH. CLASS 1000

SMALL FEMALE HYBRID III HEAD CALIBRATION
CHECK PLOT - HEAD RESULTANT ACCELERATION

TRC TEST NUMBER: 369C1HD1

S. FEMALE SN369 HEAD DROP CALI

RUN NUMBER: 060299.0832;1



CHANNEL: HEDRG FILTER: CH. CLASS 1000

PEAK DATA: 273.16 G @ 2.24 MS; 0.02 G @ -14.96 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

02-JUN-99

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 369C1NF1 S.FEMALE SN369 NECK FLEX. CAL1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
IMPACT VELOCITY	6.89 - 7.13 M/S	7.06 M/S
INTEGRATED PENDULUM VELOCITY	10 MS 2.1 - 2.5 M/S	2.33 M/S
	20 MS 4.0 - 5.0 M/S	4.62 M/S
	30 MS 5.8 - 7.0 M/S	6.71 M/S
PEAK D-PLANE ROTATION	80 - 92 DEG.	89.70
PEAK MOMENT ABOUT OCCIPITAL CONDYLE DURING ROTATION INT	69 - 83 NM	75.72 NM
POSITIVE MOMENT DECAY TIME FROM TO TO 10 NM	80 - 100 MS	86.72 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 060299.1307;1

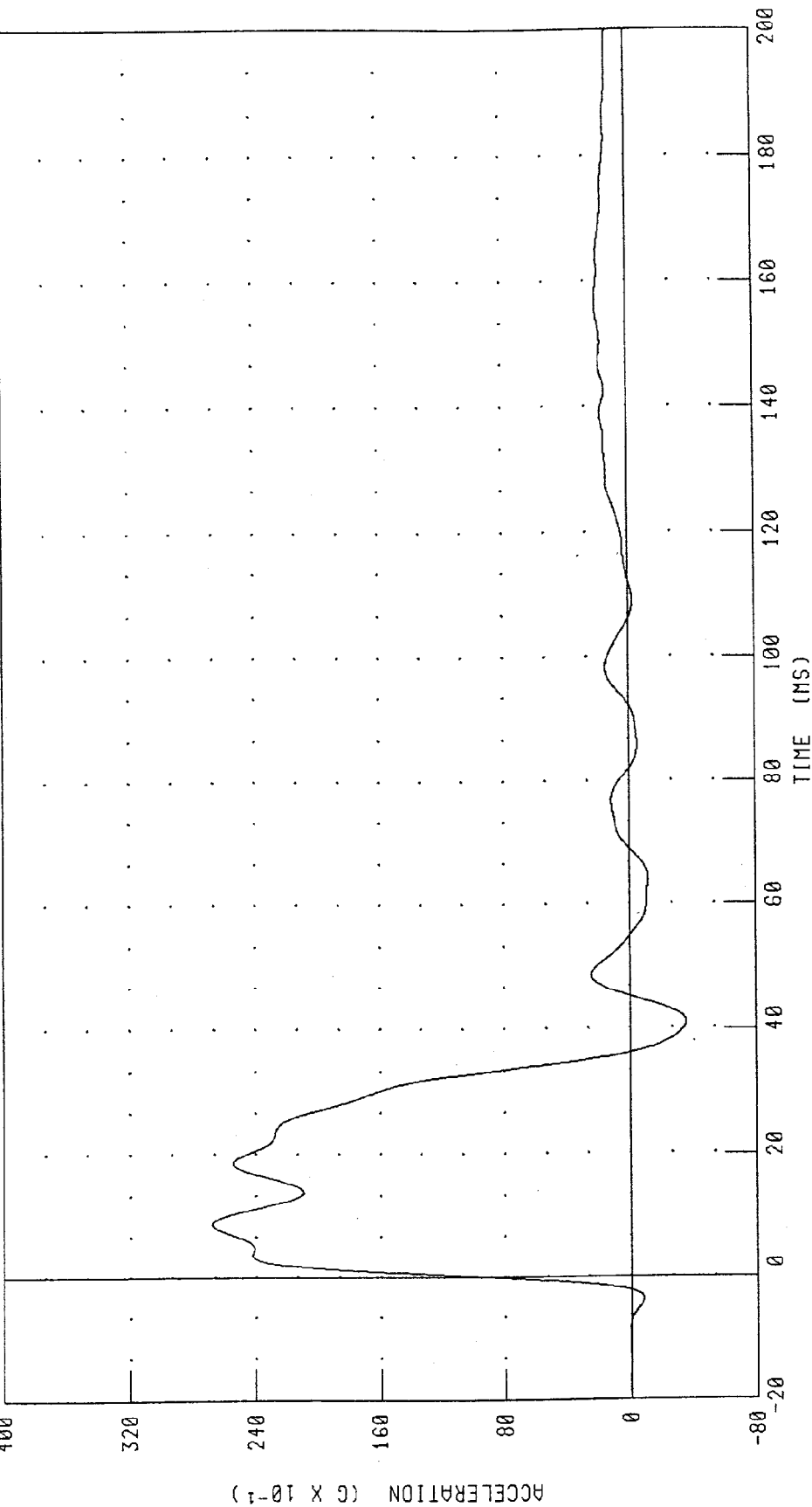
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 369C1NF1

S. FEMALE SN369 NECK FLEX. CAL1

RUN NUMBER: 060299.1310;1



CHANNEL: PENXC FILTER: CH. CLASS 60

PEAK DATA: 26.77 G @ 8.80 MS; -3.56 G @ 40.96 MS

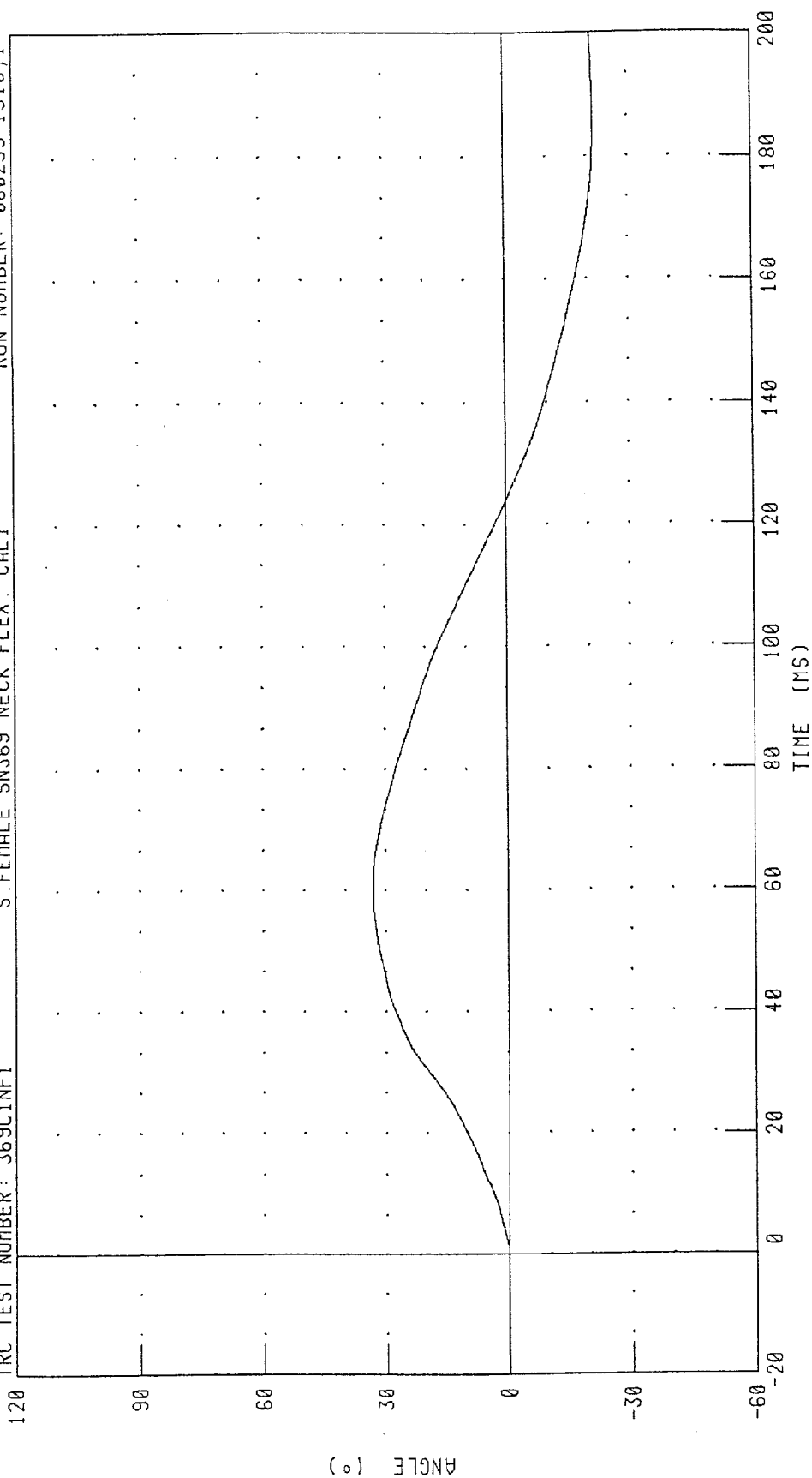
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 369C1NF1

S. FEMALE SN369 NECK FLEX. CAL1

RUN NUMBER: 060299.1310;1



PEAK DATA: 33.06 ° @ 59.44 MS; -21.67 ° @ 185.92 MS

CHANNEL: BETA FILTER: CH. CLASS 60

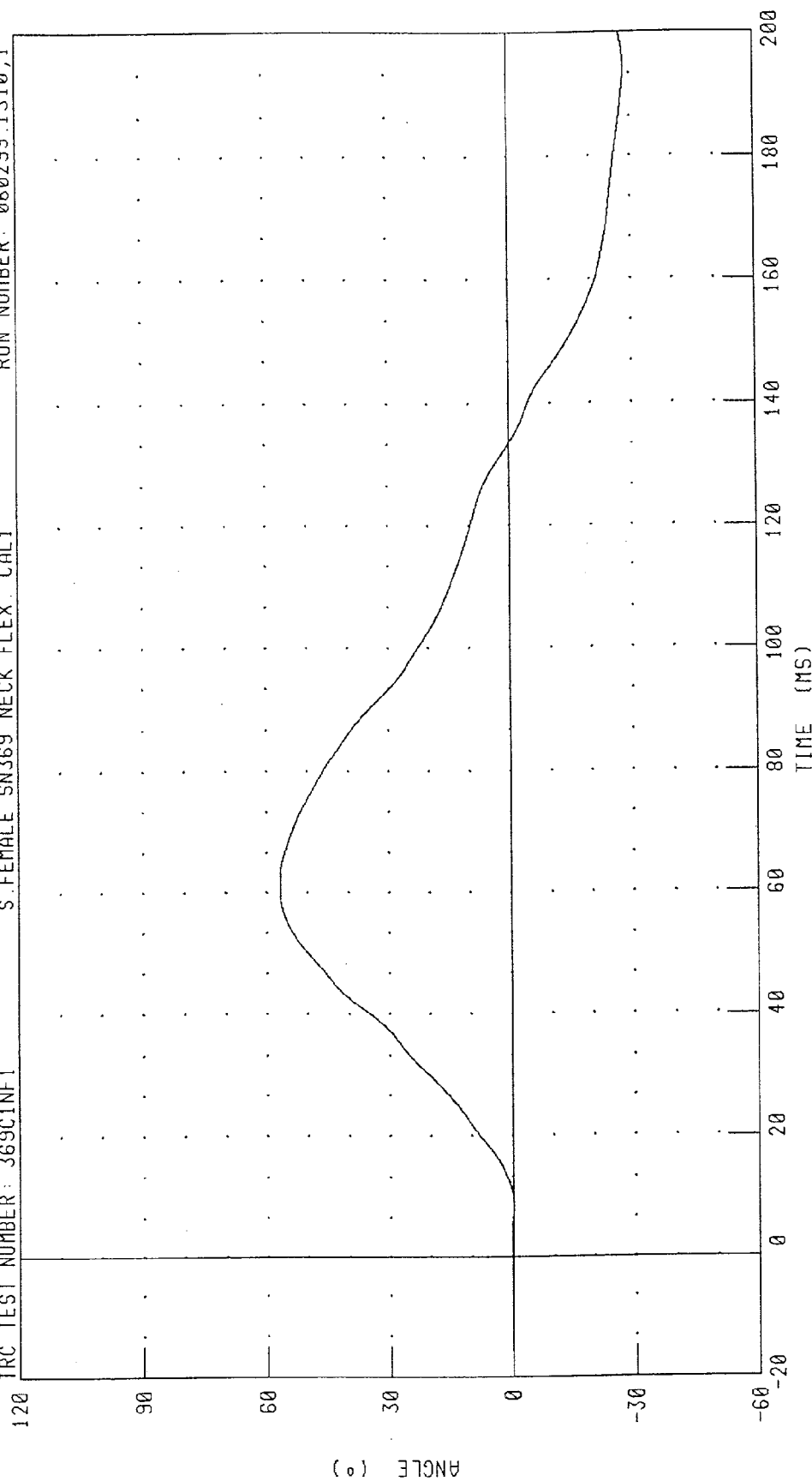
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 369C1NF1

S. FEMALE SN369 NECK FLEX. CAL1

RUN NUMBER: 060299.1310;1



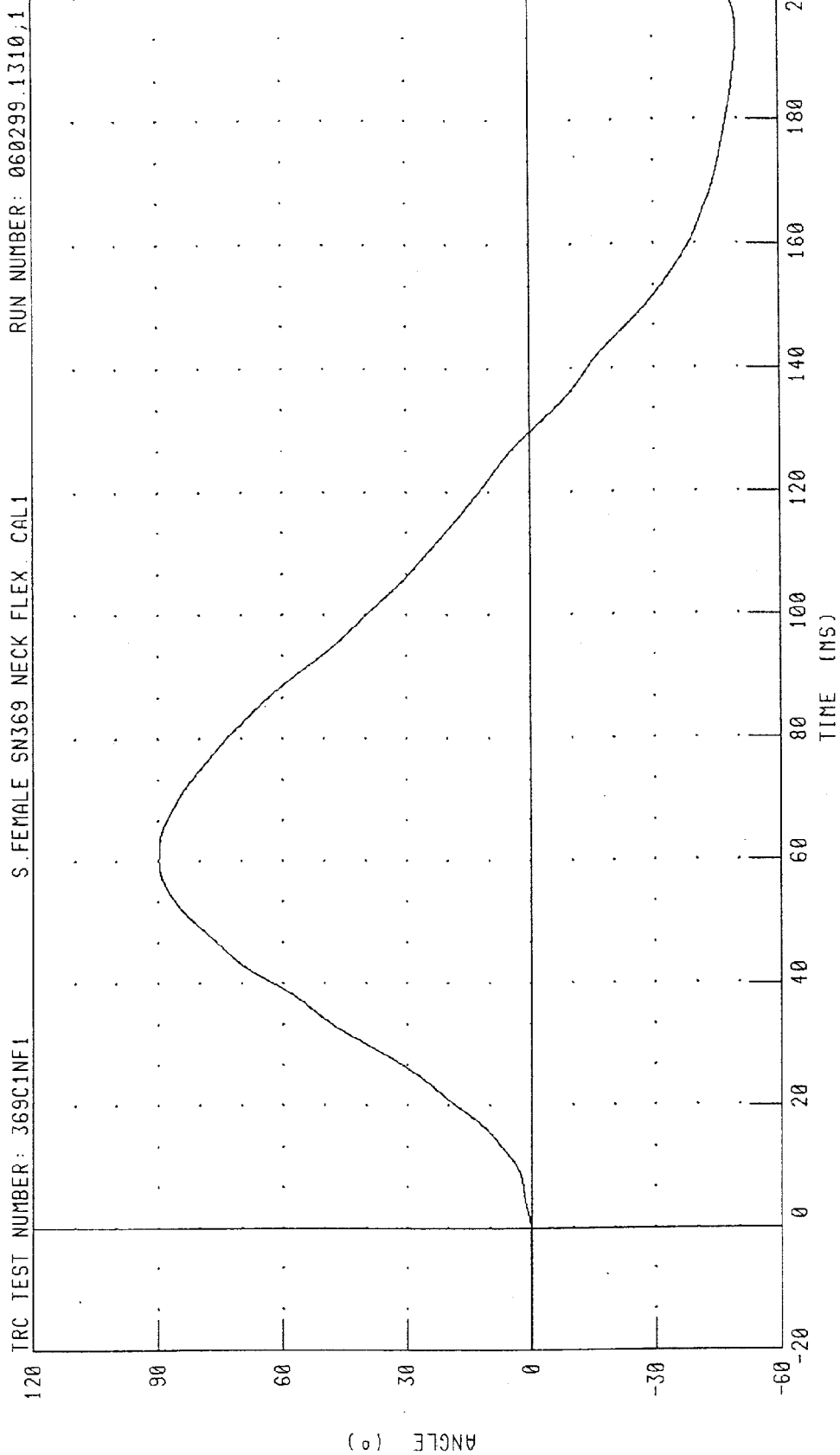
PEAK DATA: 56.67 ° @ 60.64 MS; -28.52 ° @ 194.64 MS

CHANNEL: THETA FILTER: CH. CLASS 60

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 369C1NF1 S. FEMALE SN369 NECK FLEX CAL1 RUN NUMBER: 060299.1310.1



CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 89.71 ° @ 60.24 MS; -49.96 ° @ 193.92 MS

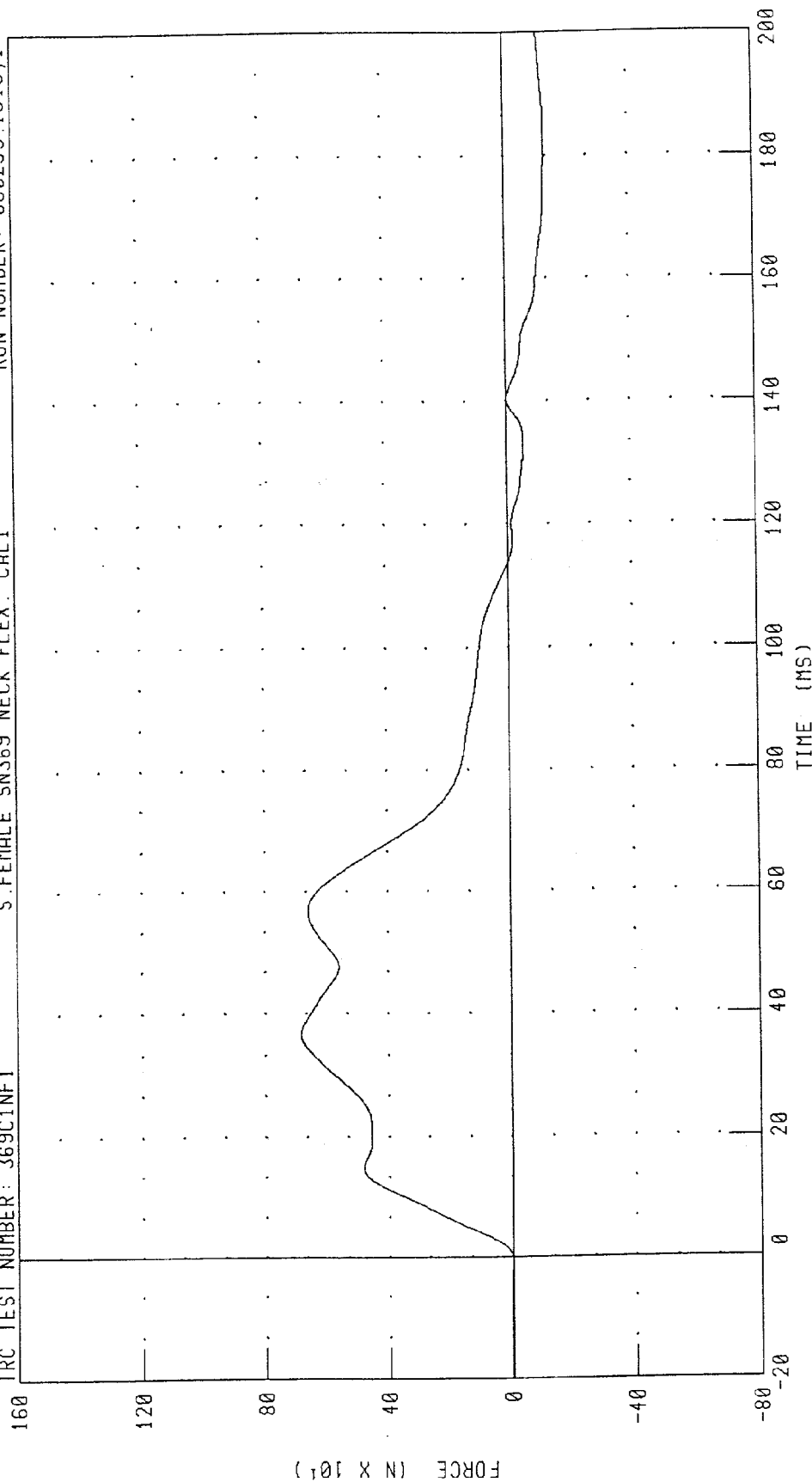
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

RUN NUMBER: 060299.1310;1

TRC TEST NUMBER: 369C1NF1

S.FEMALE SN389 NECK FLEX. CAL1



PEAK DATA: 683.43 N @ 36.72 MS, -129.75 N @ 182.32 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

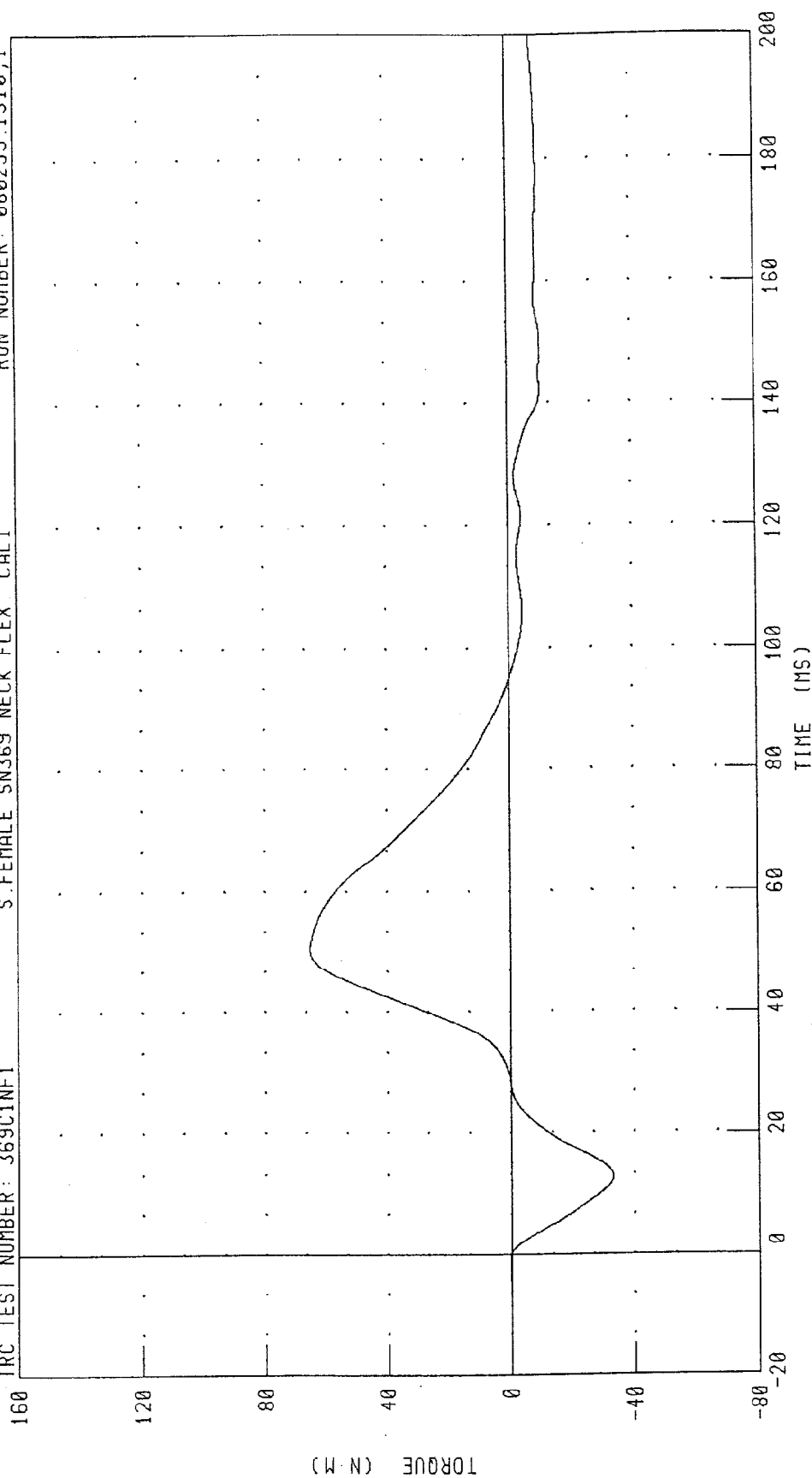
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 369CINF1

S. FEMALE SN369 NECK FLEX CAL1

RUN NUMBER: 060299.1310.1



PEAK DATA: 65.16 N-M @ 50.48 MS, -33.01 N-M @ 12.80 MS

CHANNEL: NEKYM FILTER: CH. CLASS 60

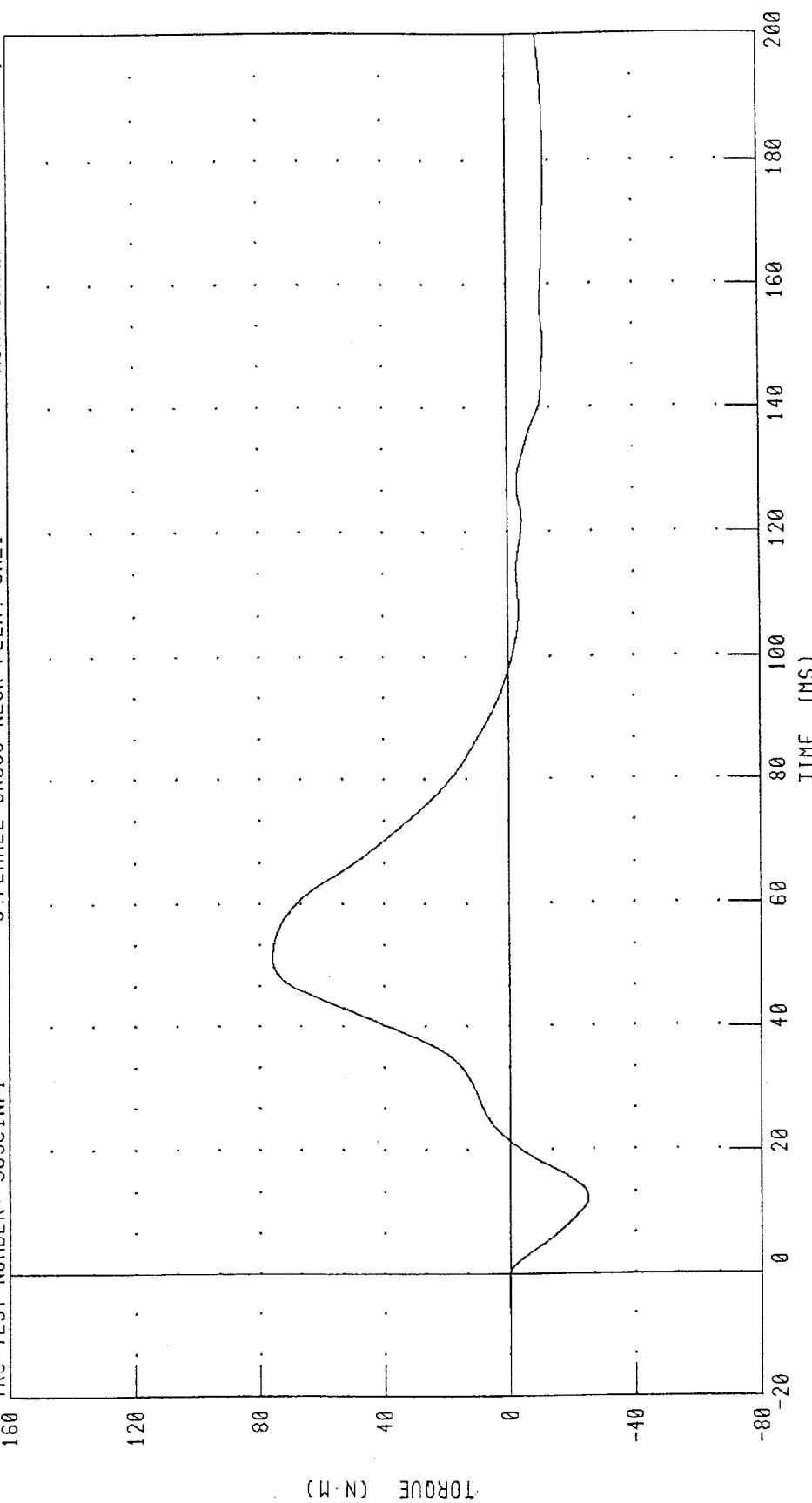
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 369C1NF1

S. FEMALE SN369 NECK FLEX. CAL1

RUN NUMBER: 060299.1310;1



PEAK DATA: 75.72 N·M @ 51.36 MS; -24.97 N·M @ 12.40 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

03-JUN-99

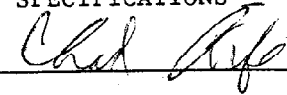
NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 369C1NE5 S.FEMALE SN369 NECK EXT. CAL1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
IMPACT VELOCITY	5.95 - 6.19 M/S	6.05 M/S
INTEGRATED PENDULUM VELOCITY	10 MS 1.5 - 1.9 M/S	1.81 M/S
	20 MS 3.1 - 3.9 M/S	3.69 M/S
	30 MS 4.6 - 5.6 M/S	5.43 M/S
PEAK D-PLANE ROTATION	97 - 109 DEG.	103.81 DEG.
PEAK MOMENT ABOUT OCCIPITAL CONDYLE DURING ROTATION INT	54 - 69 NM	-66.94 NM
NEGATIVE MOMENT DECAY TIME FROM 10 TO 10 NM LEVEL	94 - 114 MS	102.64 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 060399.0851;1

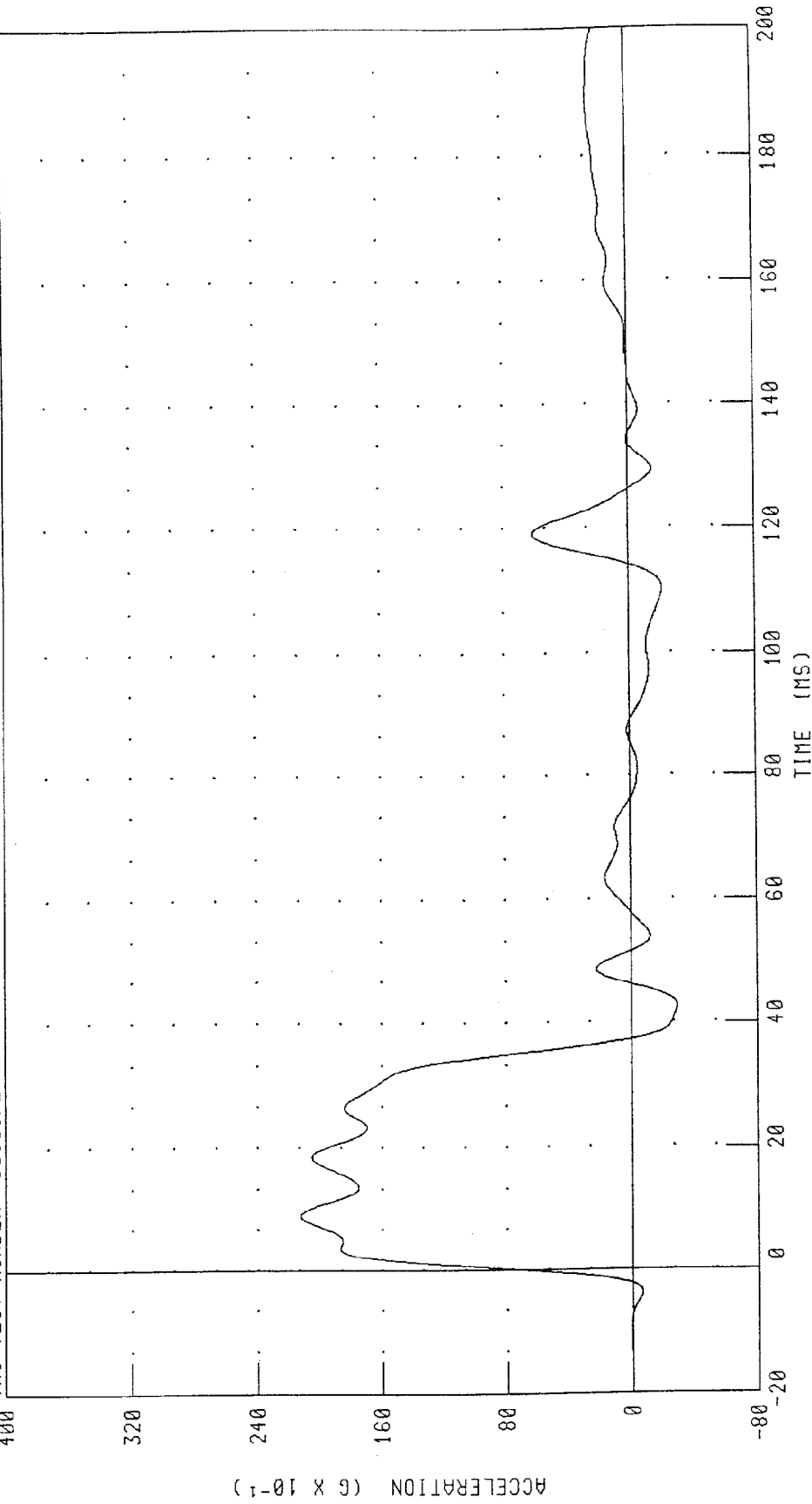
SMALL FEMALE NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 369CINE5

S. FEMALE SN369 NECK EXT. CAL1

RUN NUMBER: 060399.0858,1



PEAK DATA: 21.27 G @ 8.96 MS, -2.91 G @ 42.64 MS

CHANNEL: PENXC FILTER: CH. CLASS 60

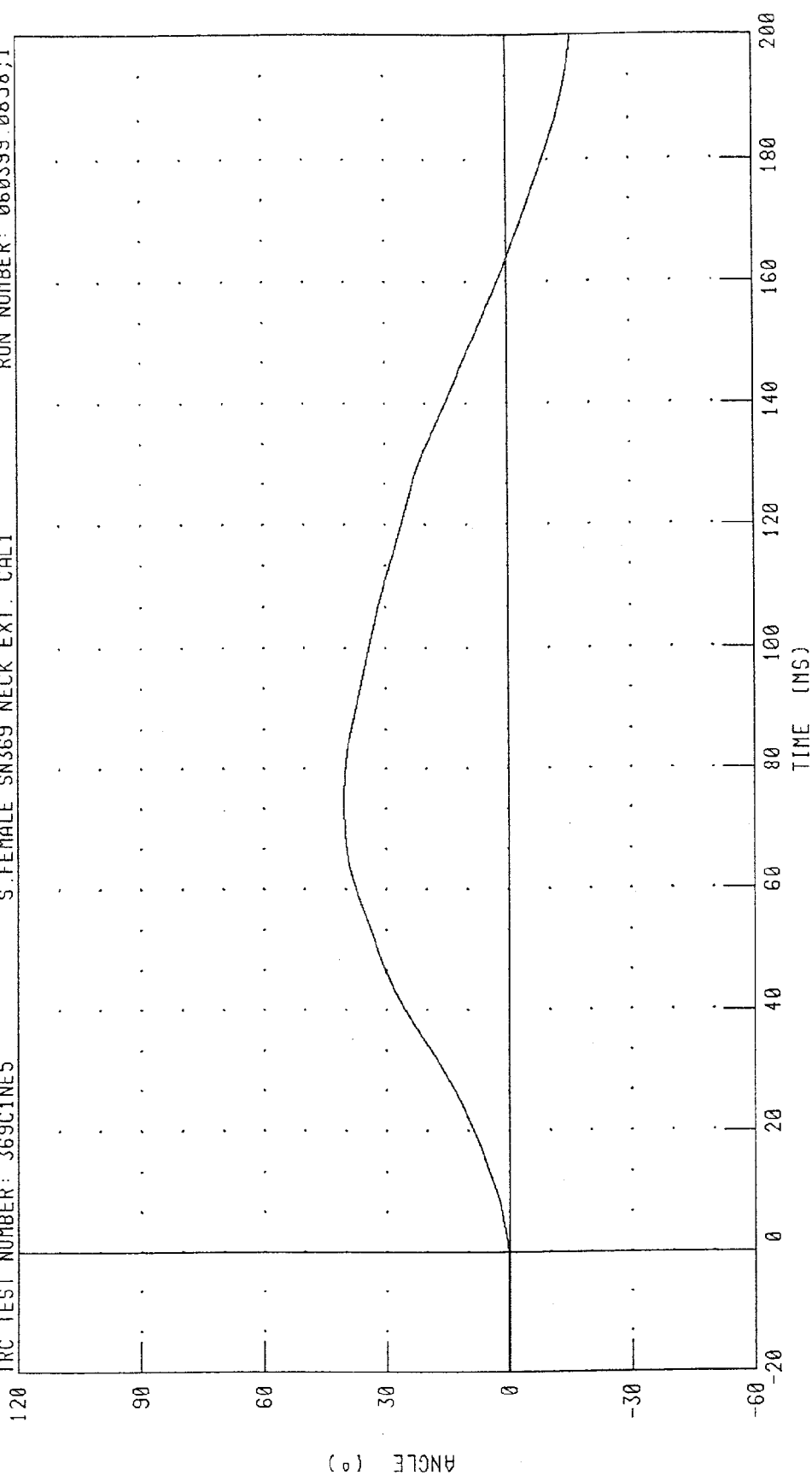
SMALL FEMALE NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

S. FEMALE SN369 NECK EXT. CAL1

TRC TEST NUMBER: 369C1NE5

RUN NUMBER: 060399.0858;1



PEAK DATA: 40.27 ° @ 74.80 MS; -15.87 ° @ 200.00 MS

CHANNEL: BETA FILTER: CH. CLASS 60

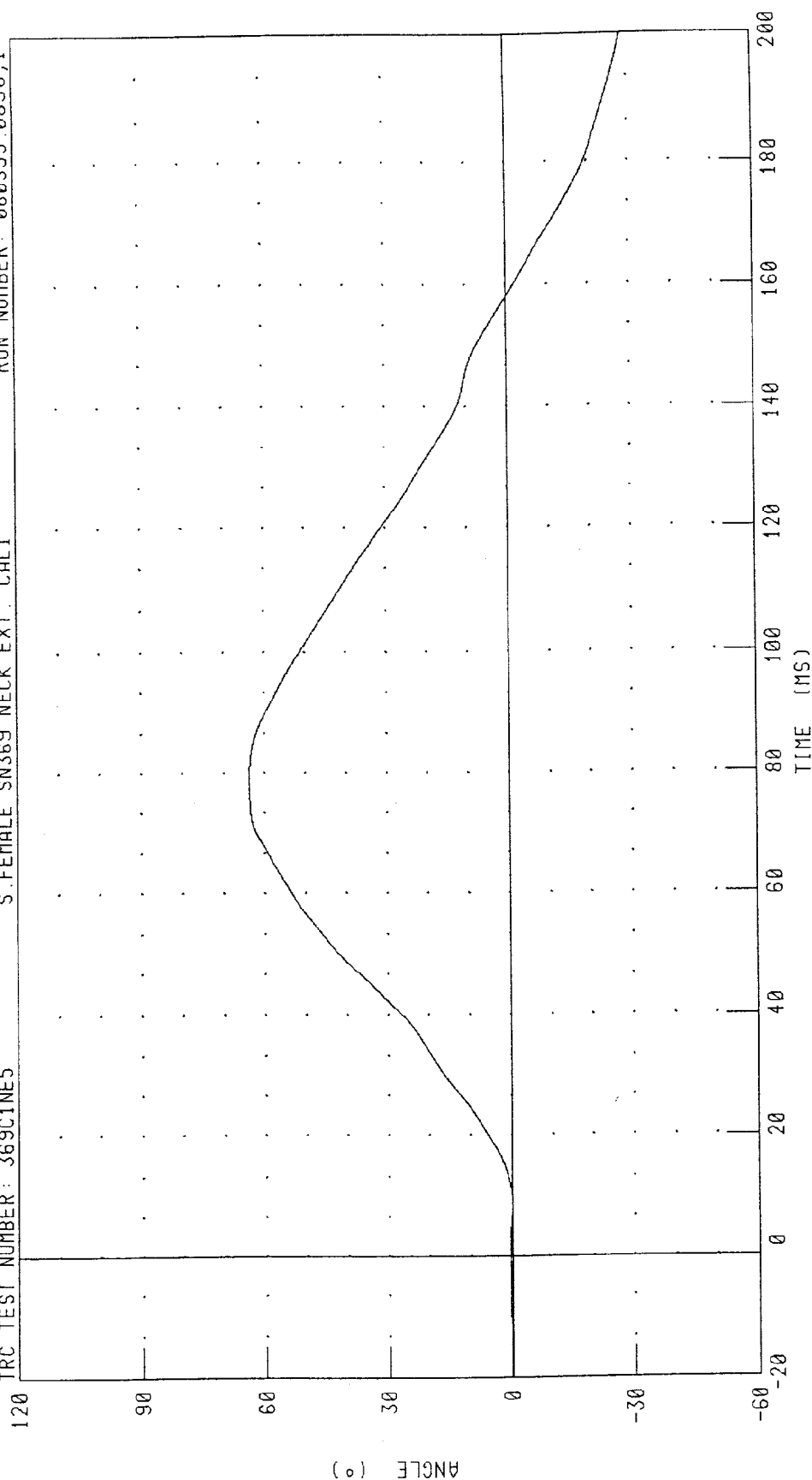
SMALL FEMALE NECK EXTENSION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

S.FEMALE SN369 NECK EXT. CAL1

RUN NUMBER: 060399.0858;1

TRC TEST NUMBER: 369C1NE5



PEAK DATA: 63.57 ° @ 77.36 MS, -28.53 ° @ 200.00 MS

CHANNEL: THETA FILTER: CH. CLASS 60

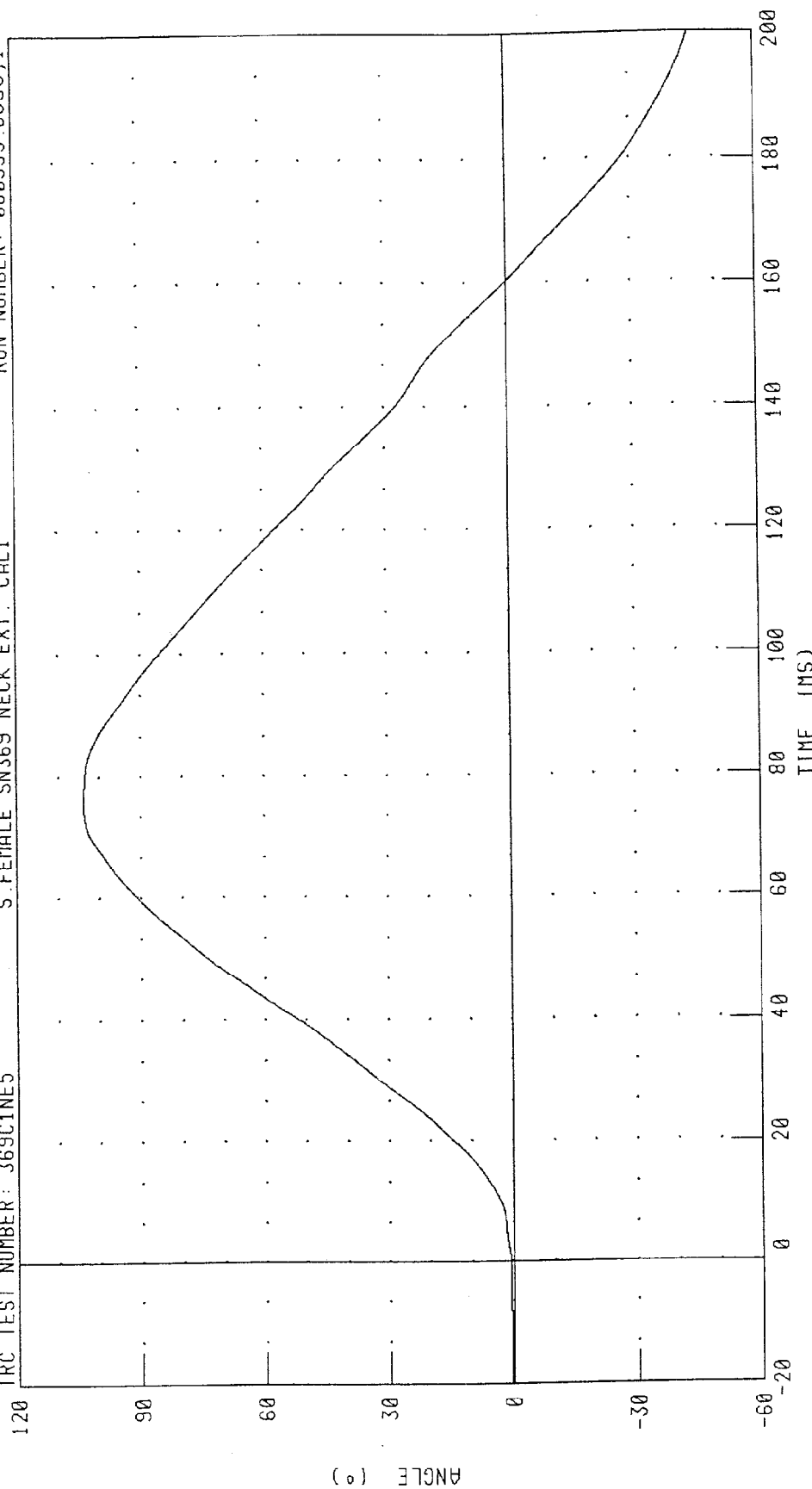
SMALL FEMALE NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 369CINE5

S. FEMALE SN369 NECK EXT. CAL1

RUN NUMBER: 060399.0858,1



PEAK DATA: 103.82 ° @ 75.68 MS; -44.40 ° @ 200.00 MS

CHANNEL: TOTAL FILTER: CH. CLASS 60

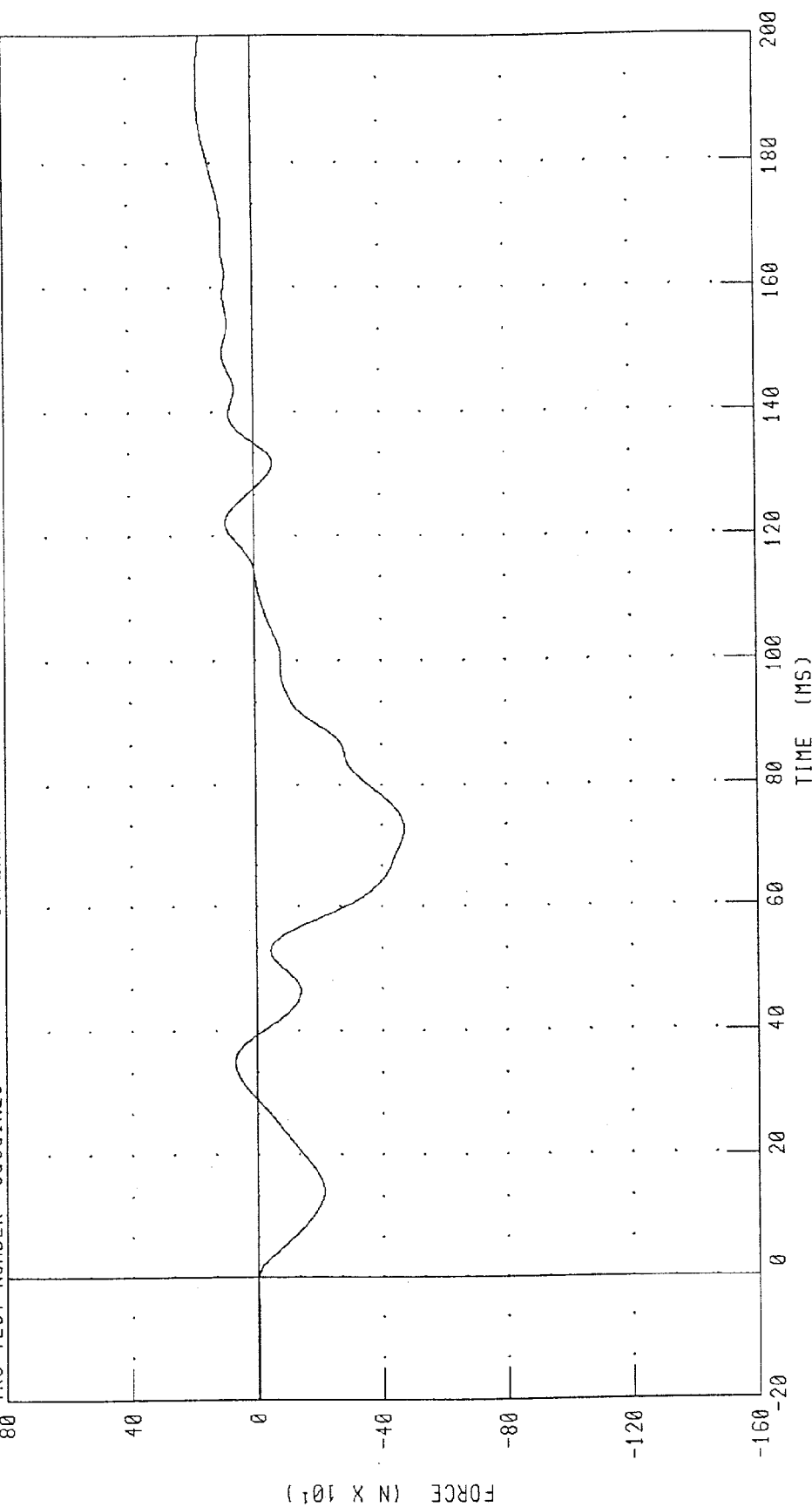
SMALL FEMALE NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 369C1NE5

S. FEMALE SN369 NECK EXT. CAL1

RUN NUMBER: 060399.0858;1



PEAK DATA: 175.30 N @ 192.48 MS; -473.18 N @ 72.80 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

SMALL FEMALE NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 369C1NE5

S. FEMALE SN369 NECK EXT. CAL1

RUN NUMBER: 060399.0858;1

80

40

0

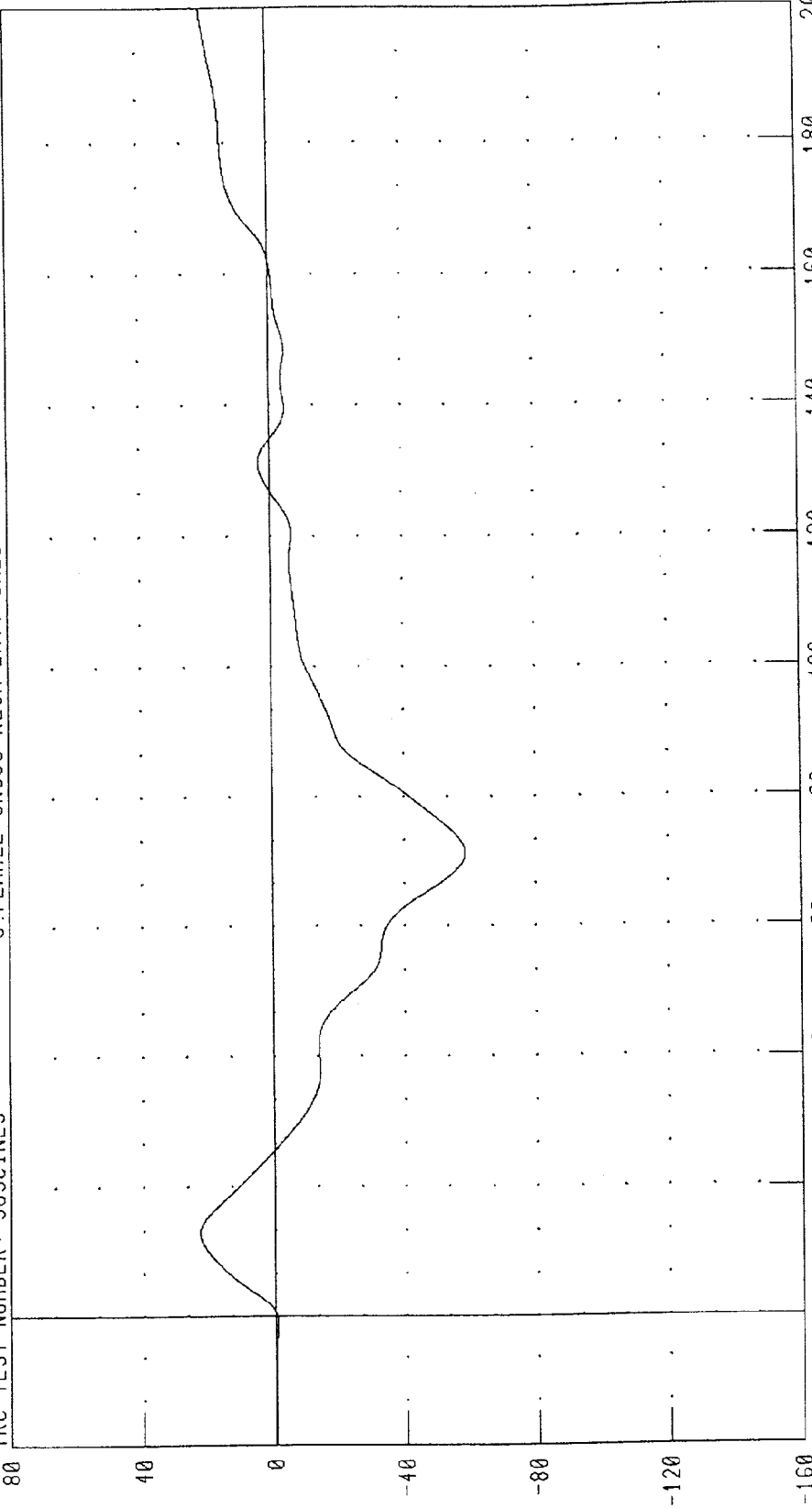
-40

-80

-120

-160

TORQUE (N·M)



TIME (MS)

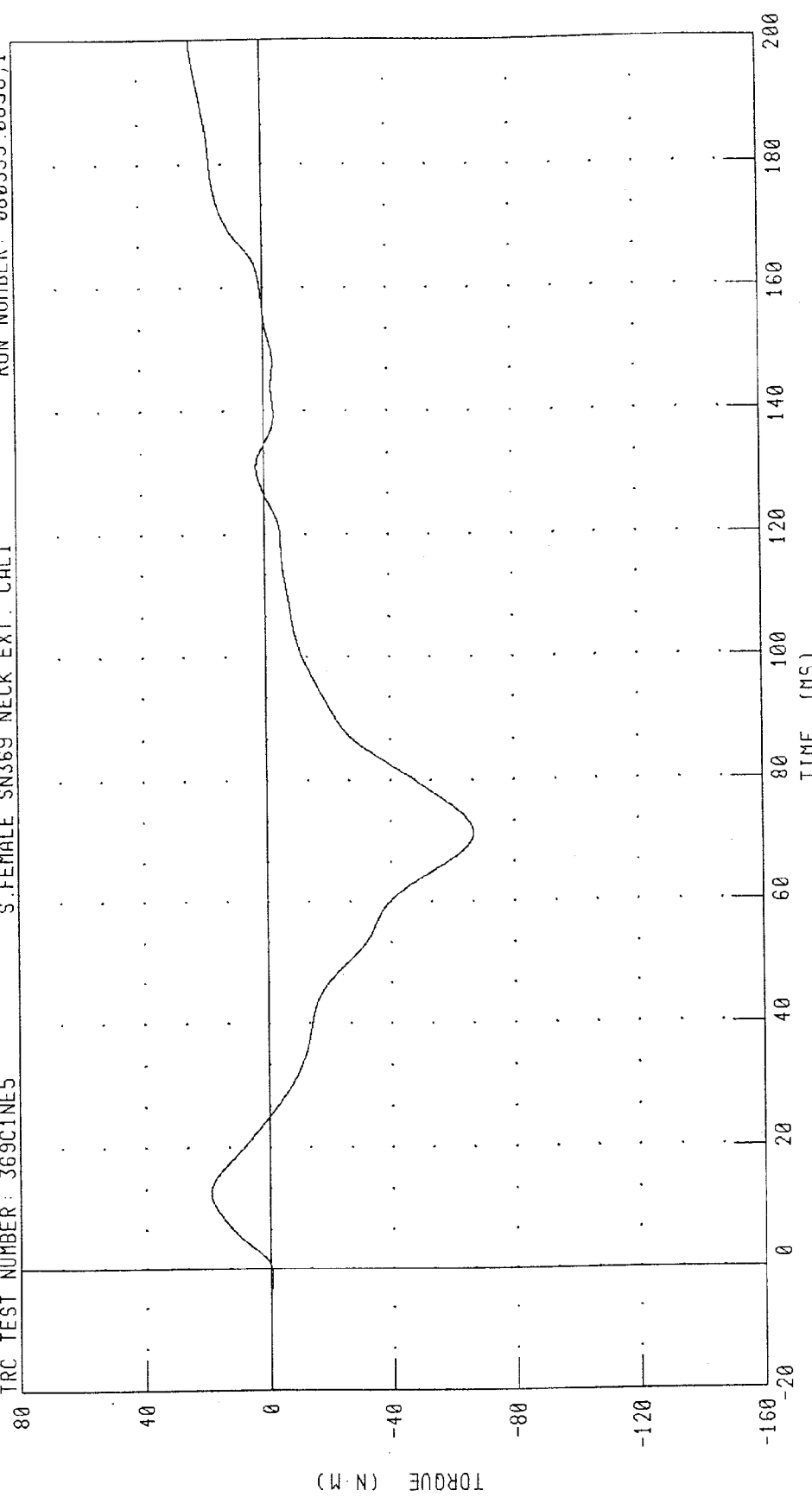
PEAK DATA: 22.90 N·M @ 12.88 MS; -58.60 N·M @ 71.44 MS

CHANNEL: NEKYH

FILTER: CH. CLASS 60

SMALL FEMALE NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE
S. FEMALE SN369 NECK EXT. CAL1

TRC TEST NUMBER: 369C1NE5
RUN NUMBER: 060399.0858;1



PEAK DATA: 23.38 N·M @ 200.00 MS, -66.94 N·M @ 71.52 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III SMALL FEMALE

04-JUN-99

TRC INC.

TEST NO: 369C1TH1

S.FEMALE SN369 THORAX CAL01

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.65 M/S
MAXIMUM DEFLECTION	48 - 55 MM	51.9 MM
MAXIMUM RESISTIVE FORCE	3900 - 4400 N	4227. N
INTERNAL HYSTERESIS	69% - 85%	73.6%

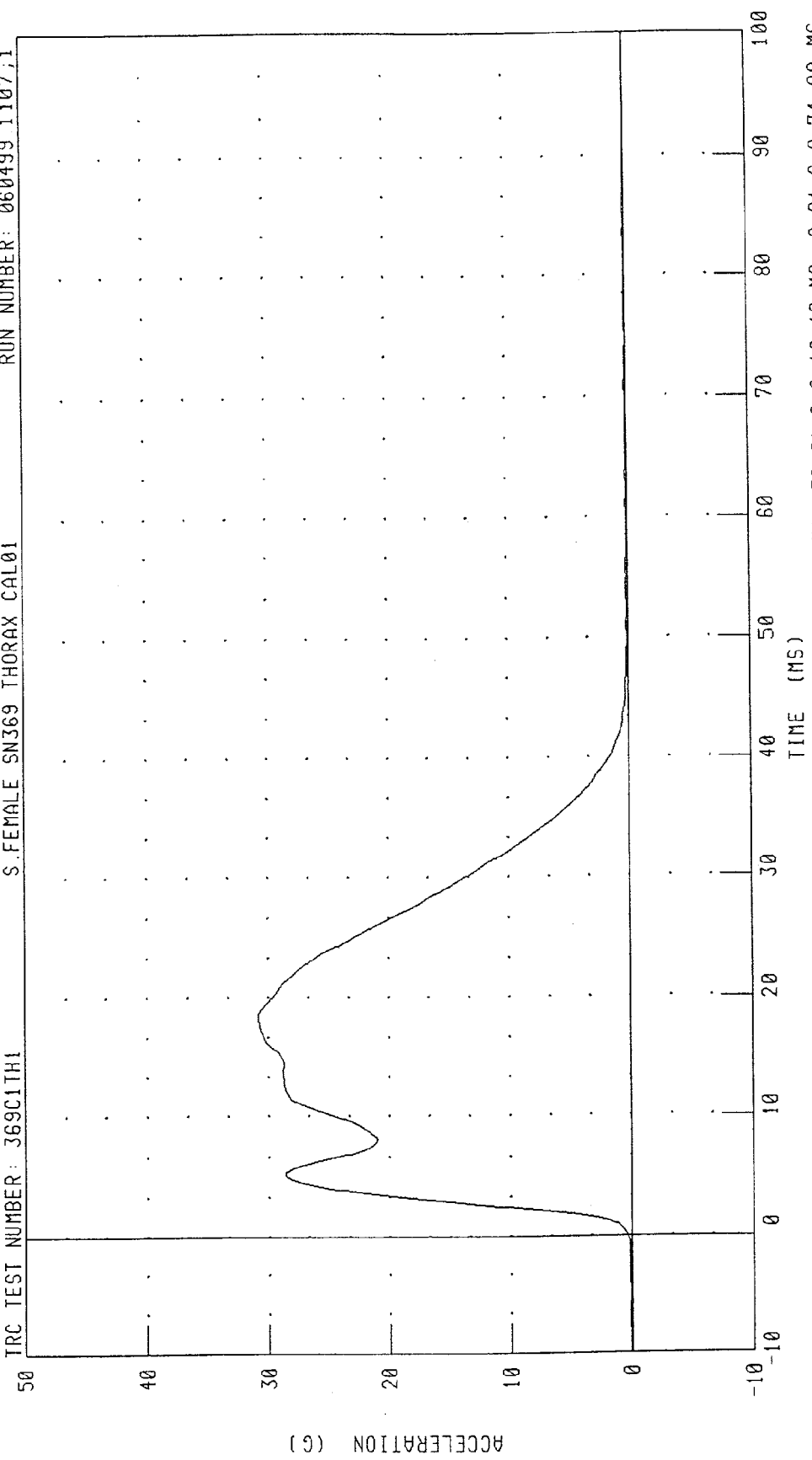
TEST MEETS SPECIFICATIONS

TECHNICIAN Chad Rife

RUN NUMBER: 060499.1105;1

SMALL FEMALE THORAX CALIBRATION
PENDULUM DECELERATION
S.FEMALE SN369 THORAX CAL01

TRC TEST NUMBER: 369C1TH1
RUN NUMBER: 060499 1107,1



CHANNEL: PENXC FILTER: CH. CLASS 180

PEAK DATA: 30.81 G @ 18.40 MS; 0.01 G @ 74.88 MS

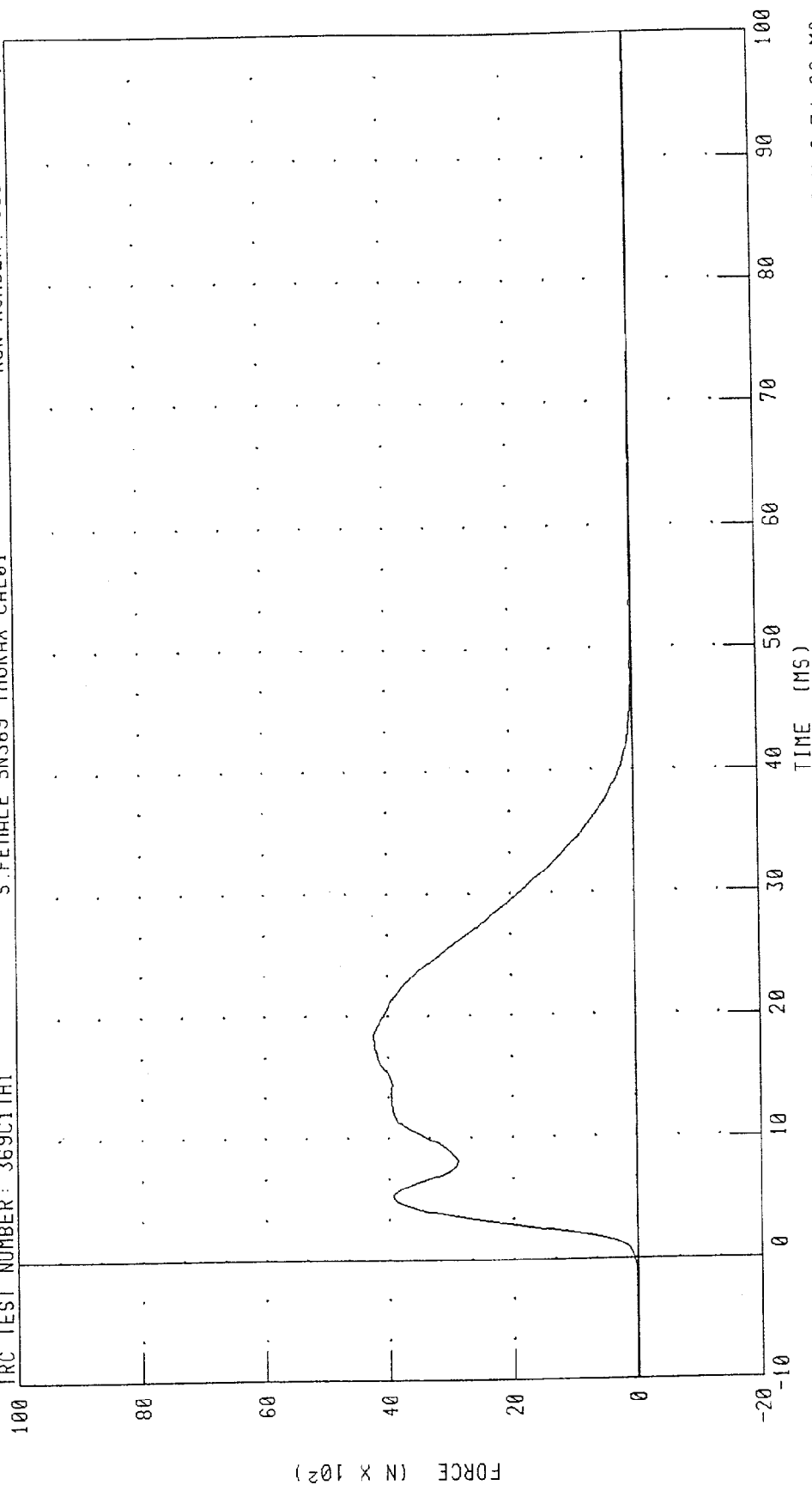
SMALL FEMALE THORAX CALIBRATION

PENDULUM FORCE

RUN NUMBER: 060499.1107.1

TRC TEST NUMBER: 369C1TH1

S.FEMALE SN369 THORAX CAL01



PEAK DATA: 4228.00 N @ 18.40 MS; 1.07 N @ 74.88 MS

CHANNEL: PENXF FILTER: CH. CLASS 180

SMALL FEMALE THORAX CALIBRATION

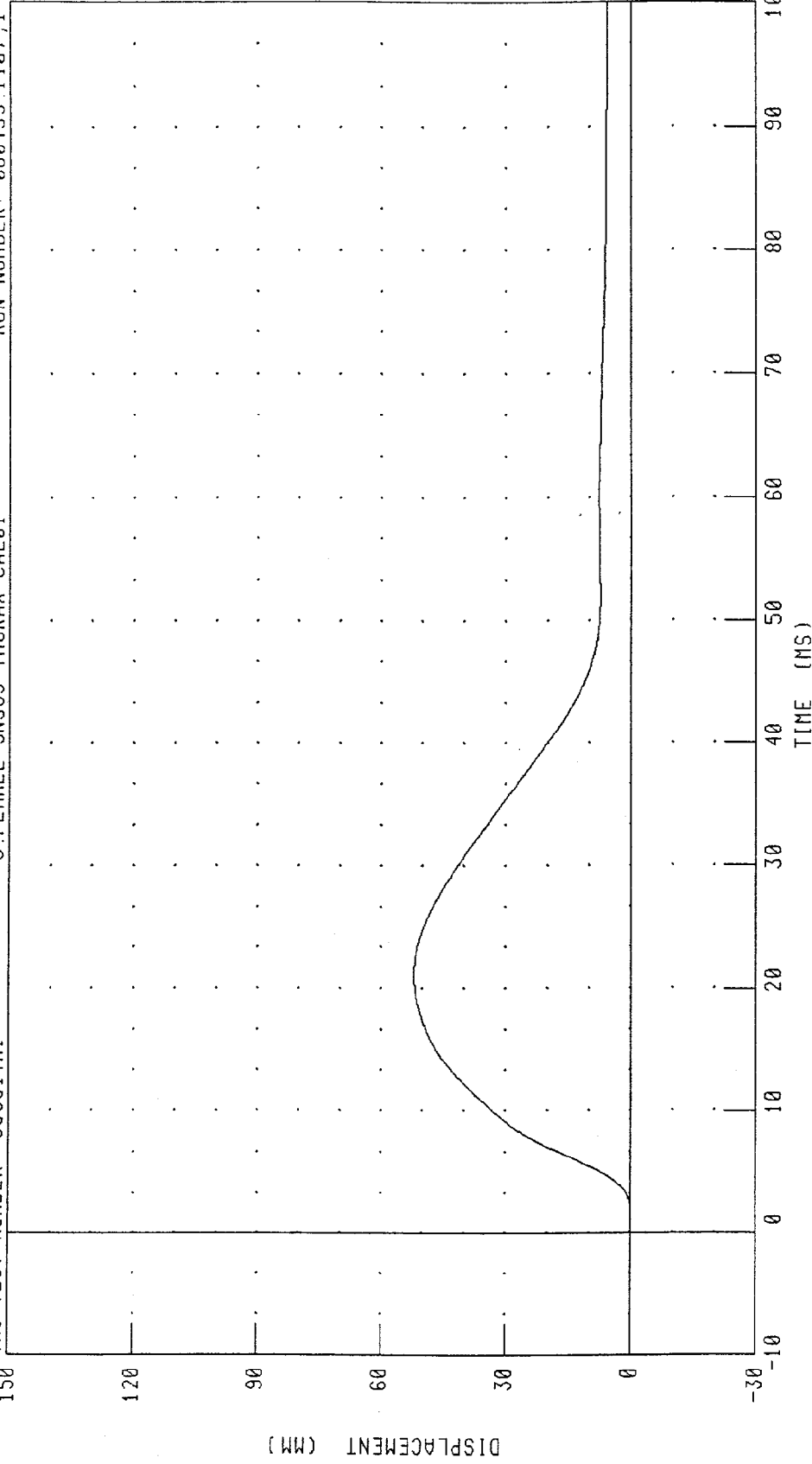
STERNUM DISPLACEMENT

TRC TEST NUMBER: 369C1TH1

S.FEMALE SN369 THORAX CAL01

RUN NUMBER: 060499.1107,1

150



CHANNEL: CSTXD FILTER: CH. CLASS 180

PEAK DATA: 51.97 MM @ 21.12 MS; -0.03 MM @ 1.68 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

01-JUN-99

TRC INC.

TEST NO: 369C1RK1

S.FEMALE SN369 R.KNEE CAL1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.13 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3360 - 4080 N	3791.7 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

Chad Rife

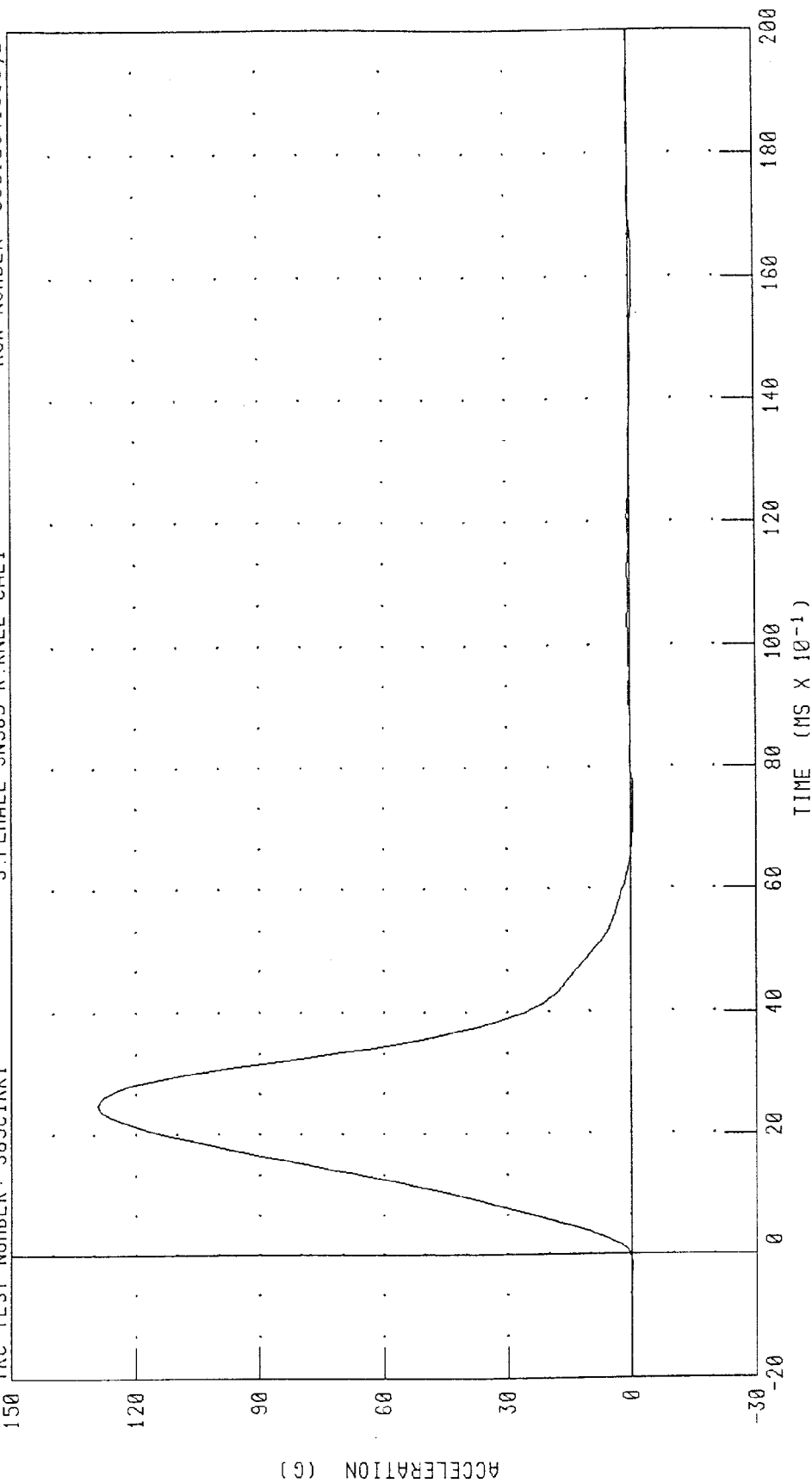
RUN NUMBER: 060199.1513;2

SMALL FEMALE HYBRID III RIGHT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)

TRC TEST NUMBER: 369C1RK1

S. FEMALE SN369 R. KNEE CAL1

RUN NUMBER: 060199.1513.2



CHANNEL: PENXC FILTER: CH. CLASS 600

PEAK DATA: 129.16 G @ 2.48 MS; -0.94 G @ 15.76 MS

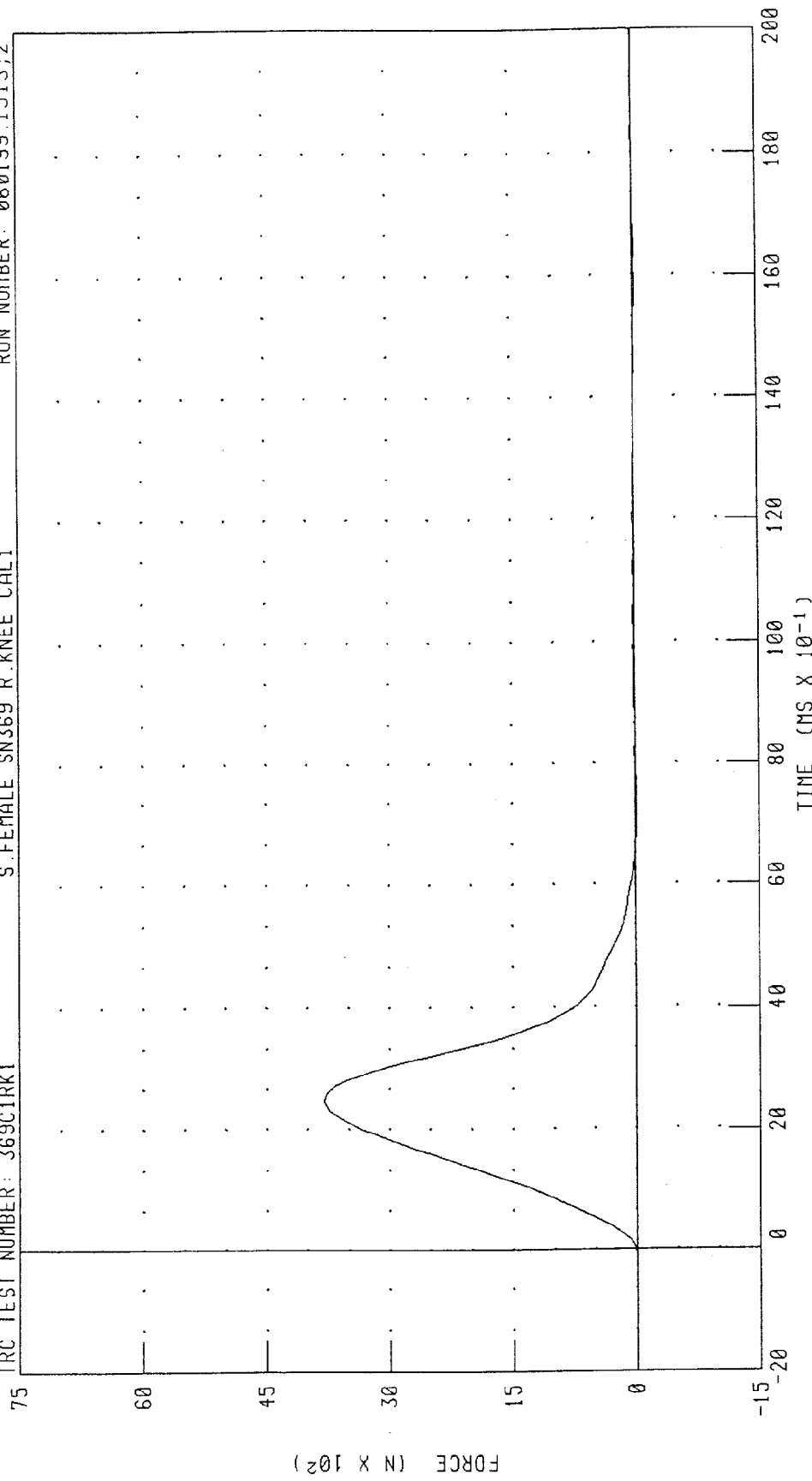
SMALL FEMALE HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

S. FEMALE SN369 R. KNEE CAL1

TRC TEST NUMBER: 369C1RK1

RUN NUMBER: 080199.1513;2



PEAK DATA: 3791.75 N @ 2.48 MS; -27.71 N @ 15.76 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

01-JUN-99

TRC INC.

TEST NO: 369C1LK1

S.FEMALE SN369 LEFT KNEE CAL1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.13 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3360 - 4080 N	3664.8 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Chad Rife

RUN NUMBER: 060199.1509;2

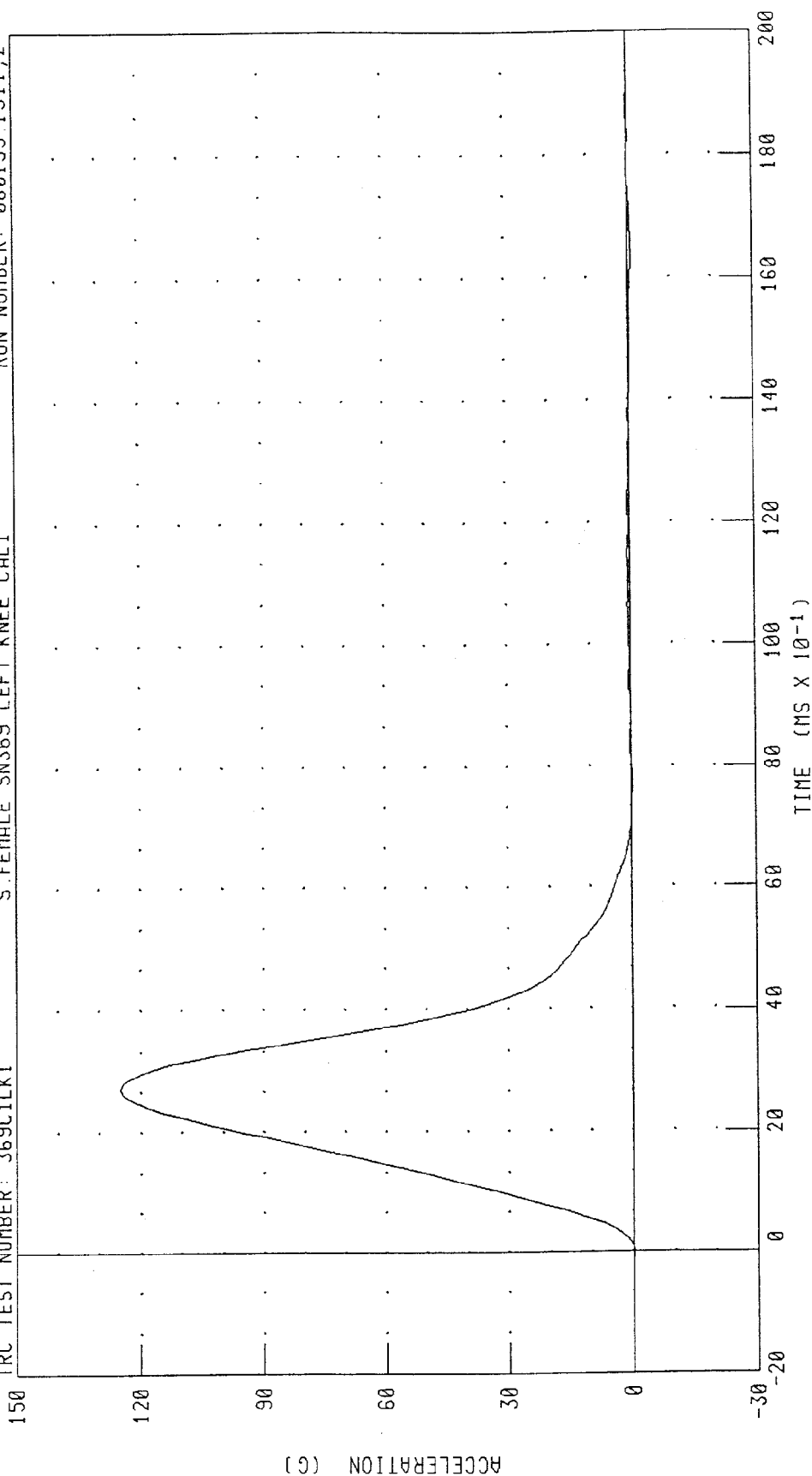
SMALL FEMALE HYBRID III LEFT KNEE CALIBRATION

PENDULUM DECELERATION (5 KG PEND.)

S. FEMALE SN369 LEFT KNEE CAL1

TRC TEST NUMBER: 369C1LK1

RUN NUMBER: 060199 1511;2



PEAK DATA: 124.84 G @ 2.72 MS; -0.78 G @ 16.56 MS

CHANNEL: PENXC FILTER: CH. CLASS 600

SMALL FEMALE HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 369C1LK1

S. FEMALE SN369 LEFT KNEE CAL1

RUN NUMBER: 060199.1511.2

75

60

45

30

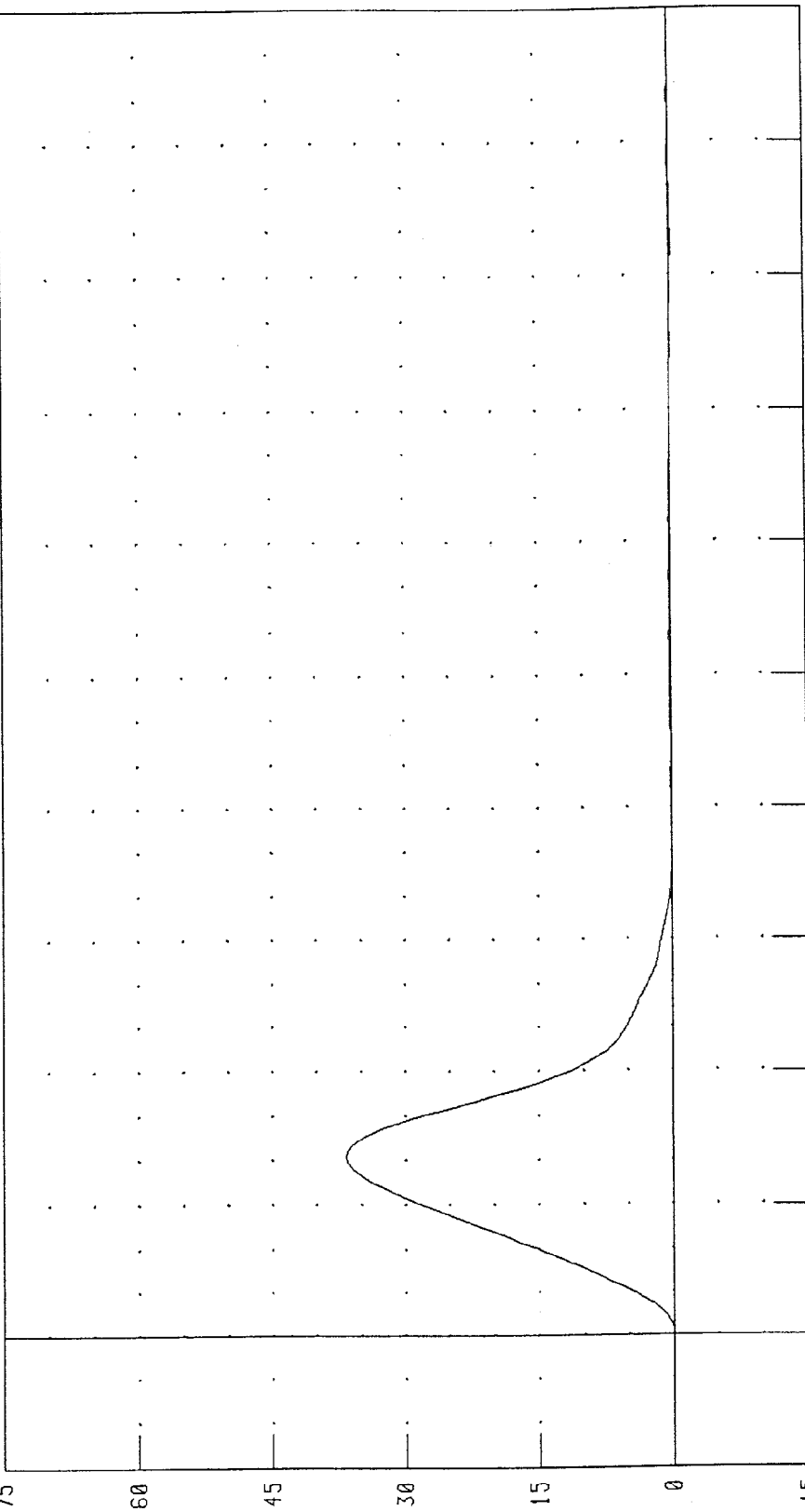
15

0

-15

-20

FORCE (N X 10²)



TIME (MS X 10⁻¹)

PEAK DATA: 3664.82 N @ 2.72 MS; -22.90 N @ 16.56 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

Appendix D

Miscellaneous Test Information

Dummy Sign Convention

Accelerometers:

+X: Forward
+Y: Rightward
+Z: Downward

Potentiometers:

+Chest longitudinal deflection: Outward

Load cells:

+Femur force: Tension

Neck load cells:

+X force: Head rearward
+Y force: Head leftward
+Z force: Head upward (tension on neck)
+X moment: Left ear rotating toward left shoulder
+Y moment: Chin rotating toward chest
+Z moment: Chin rotating toward left shoulder

Filtering Data

J211 MAR95

Load Cell Barrier Forces Class 60

Vehicle Structural Accelerations Class 60

Occupant

Head Accelerometer Class 1000

Neck Class 60

Chest Accelerometer Class 180

Chest Deflection Class 180

Femur Force Class 600

Sternum Accelerometer Class 180

Lower Leg Class 600

Vehicle Instrumentation Placement

Vehicle year/make/model/body style: 1999/Dodge/Intrepid/Sedan

Test number: 990604-2

Number	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
1	Left Brake Caliper	X	Endevco	7264-2000T	J27949	Forward
2	Right Brake Caliper	X	Endevco	7264-2000T	J27868	Forward
3	Instrument Panel Center	X	Endevco	7264-2000T	J26511	Forward
4	Engine Top	X	Endevco	7264-2000T	J27892	Forward
5	Engine Bottom	X	Endevco	7264-2000T	J25018	Forward
6	Vehicle Rear Center	Z	Endevco	7264-2000T	J28466	Up
7	Left Rear Seat Crossmember	X	Endevco	7264-2000T	J20036	Forward
8	Right Rear Seat Crossmember	X	Endevco	7264-2000T	J27800	Forward
9	Driver Airbag	N/A	Fluke	Y8101A	IP1	N/A
10	Passenger Airbag	N/A	Fluke	Y8101A	IP2	N/A

Description Of Timing Marks On TRC High-Speed Film

All TRC high-speed cameras are equipped with red LEDs which put timing marks on the right edge of the film. TRC uses a single timing generator to generate the timing for all cameras. This allows the timing marks to be common to all cameras. The timing marks can be used to measure camera speed (frames per second) or to locate a point in time before or after the time-zero event.

The timing marks appear on the film as small red marks on the right edge of the film. Round marks are left by the Photo-Sonics and Stalex cameras while horizontal bars are left by the Hycam, Locam, and Fastax II cameras.

The timing generator puts out a pulse for every millisecond plus it generates additional pulses for hundredths and tenths of seconds. To explain this further, we can use an example of a camera running at 1000 frames per second.

1. Every frame will have **one** led appear in it. This indicates a *millisecond* pulse.
2. Every ten frames will have **two** LEDs appear in it. These indicate a *millisecond* pulse plus a *hundredth of a second* pulse.
3. Every one hundred frames will have **three** LEDs appear in it. These indicate a *millisecond* pulse, a *hundredth of a second* pulse, and a *tenth of a second* pulse.

TRANSDUCER INFORMATION

5th Female HYBRID III DUMMY SERIAL NO.: 369t; MFR.: ; SEATING POSITION: PASS

PROJECT-SEGMENT NO.: 096017 1312; ENGINEER: PG; TEST DATE: 6-4-99

MNEMONIC PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NO.	SERIAL NO.	MFR.	SENSITIVITY	CAL DUE DATE	FULL SCALE (ENGR. UNITS) DESIRED ACTUAL	DIRECTION OF POSITIVE POLARITY	CABLE NO.
HEDXG HAP	HEAD X-AXIS ACCEL.	7264	A20FJ	End.	.2563 mv/g at 10 volts	12-2- 1999	400 g	Rear	A20FJ
HEDYG HLR	HEAD Y-AXIS ACCEL.	"	A31FJ	"	.2683 mv/g at 10 volts	"	400 g	Left	A31FJ
HEDZG HIS	HEAD Z-AXIS ACCEL.	"	CL95H	"	.2822 mv/g at 10 volts	"	400 g	Up	CL95H
NEKXF NFX	NECK X-AXIS SHEAR FORCE	1716A	0534	DEN	1.7247 mv/v at 2000 lbs.	12-2- 1999	2,000 lbs. 9,000 N		FX
NEKYF NFY	NECK Y-AXIS SHEAR FORCE	"	"	"	1.6643 mv/v at 2000 lbs.	"	2,000 lbs. 9,000 N		FY
NEKZF NFZ	NECK Z-AXIS AXIAL FORCE	"	"	"	1.1561 mv/v at 3000 lbs.	"	3,000 lbs. 13,500 N		FZ
NEKXM NMX	NECK MOMENT ABOUT X AXIS	"	"	"	1.6355 mv/v at 2500 in. lbs.	"	200 ft-lbs 275 N-m		MX
NEKYM NMY	NECK MOMENT ABOUT Y AXIS	"	"	"	1.6430 mv/v at 2500 in. lbs.	"	200 ft-lbs 275 N-m		MY
NEKZM NMZ	NECK MOMENT ABOUT Z AXIS	"	"	"	2.3186 mv/v at 2500 in. lbs.	"	200 ft-lbs 275 N-m		MZ

TRANSDUCER INFORMATION

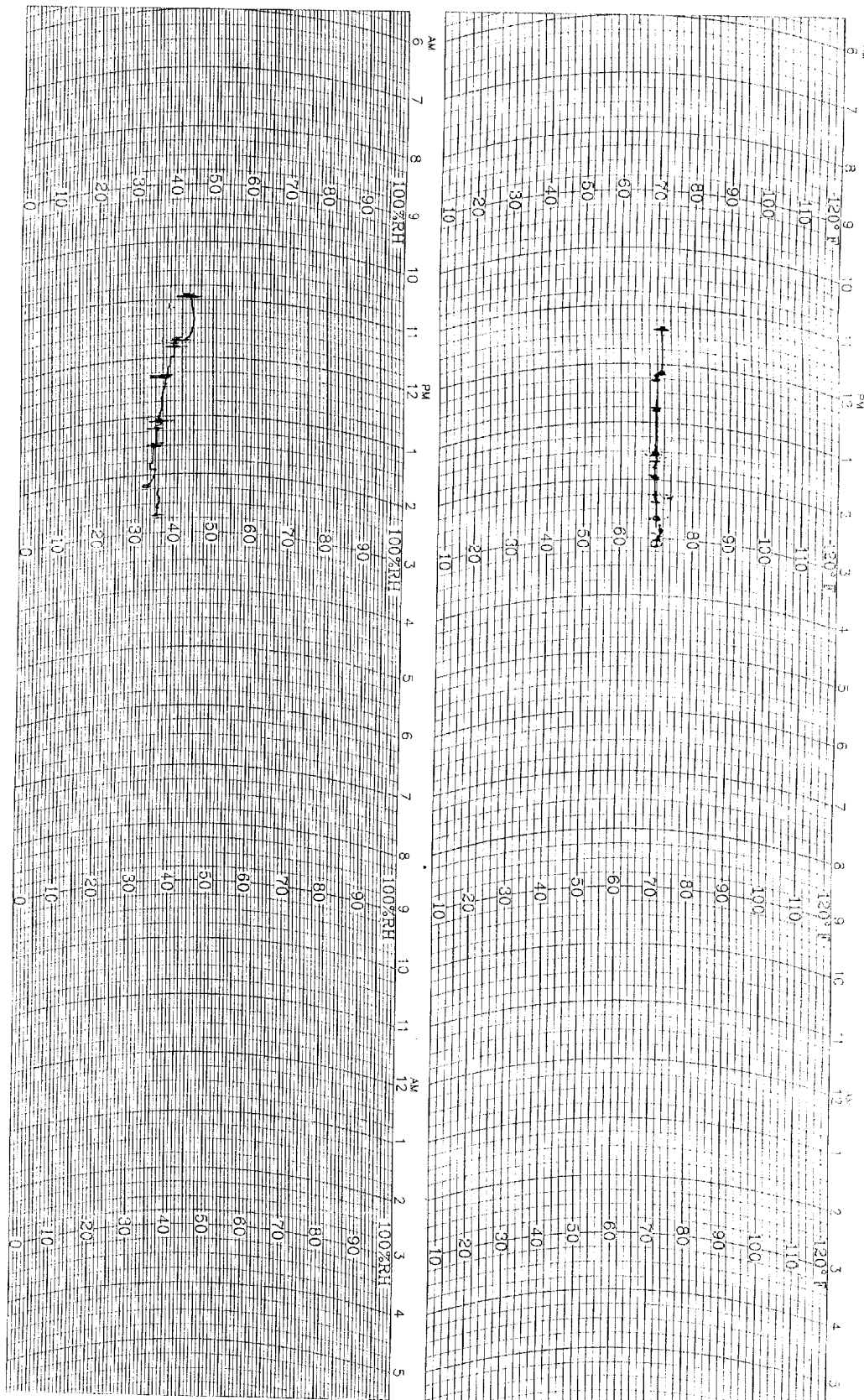
5th Female HYBRID III DUMMY SERIAL NO.: 369t ; MFR.: ; SEATING POSITION: PASS

PROJECT-SEGMENT NO.: 096017 1312 ; ENGINEER: PG ; TEST DATE: 6-4-99

MNEMONIC PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NO.	SERIAL NO.	MFR.	SENSITIVITY	CAL DUE DATE	FULL SCALE (ENGR. UNITS) DESIRED	ACTUAL	DIRECTION OF POSITIVE POLARITY	CABLE NO.
CSTXG CAP	CHEST X-AXIS ACCEL.	7264	A72JJ	End.	.2773 mv/g at 10 volts	12-2- 1999	400 g		Forward	A72JJ
CSTYG CLR	CHEST Y-AXIS ACCEL.	"	A69JJ	"	.2702 mv/g at 10 volts	"	400 g		Left	A69JJ
CSTZG CIS	CHEST Z-AXIS ACCEL.	"	A34FJ	"	.2565 mv/g at 10 volts	"	400 g		Down	A34FJ
CSTXD CAPD	CHEST DEFLECTION	14CB1- 2897	289	Bourn	mv/v/in 2.5	"	6 inch 150 mm			S39
PEVXG PAP	PELVIS X-AXIS ACCEL.	7264	CY31H	End.	.2031 mv/g at 10 volts	"	400 g		Rear	C14981
PEVYG PLR	PELVIS Y-AXIS ACCEL.	"	A51JJ	"	.2917 mv/g at 10 volts	"	400 g		Left	C15183
PEVZG PIS	PELVIS Z-AXIS ACCEL.	"	A75JJ	"	.2695 mv/g at 10 volts	"	400 g		Up	C15184
LFMF LF	LEFT FEMUR FORCE	2430	1006	DEN	0.9459 mv/v at 3000 lbs.	12-2- 1999	1300 Kg 3,000 lbs. 13,500 N			1518
RFMF RF	RIGHT FEMUR FORCE	"	1007	"	0.9114 mv/v at 3000 lbs.	"	1300 Kg 3,000 lbs. 13,500 N			71

ACCELEROMETER INFORMATION

ENGINEER: Rhule
TEST DATE: Feb-98
DUMMY SN: 289
TYPE: 5th female



WeatherMeasure
WEATHERtronics
Division of QUALIMETRICS, Inc.

P.O. BOX 41039
SACRAMENTO, CA 95841
PHONE: (916) 923-0055

HYGROTHERMOGRAPH
1 DAY

CHART NO. M699123
C311-D-HF
ECN 2/17
6-9-87

STATION 75-91-2

DATE ON 6-4-99

DATE OFF CR