

3122

V3122

**1999 Dodge Intrepid
into a Flat Frontal Barrier
TRC Test Number: 990628-1**

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Section 1.0

Purpose and Test Procedure

Purpose and Test Summary

This 25 mph flat frontal barrier impact test has as the main objective to investigate both vehicle and occupant dynamics during a flat frontal barrier test. A secondary objective is to gather information on depowered airbags.

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

Section 2.0

Flat Frontal 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 39.4 to 41.0 kph. The vehicle impacted a flat frontal 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.

One (1) real-time panning motion picture camera and fourteen (14) high-speed motion picture cameras recorded the crash event. 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 dummy and vehicle data plots. Appendix C contains the post-test dummy certification. Appendix D contains the miscellaneous test information.

Test Results Summary

This flat frontal barrier test was conducted at TRC on June 28, 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 1691.4 kilograms. The vehicle's impact speed was 40.4 kph. The vehicle's maximum static crush was 390 millimeters.

The driver's 15-millisecond HIC was 99 and its 36-millisecond HIC was 168. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 40.6 g. The driver's chest deflection was 32.1 millimeters. The driver's left and right femur maximum compressive forces were 3269 N and 4674 N, respectively.

The right front passenger's 15-millisecond HIC was 121 and its 36-millisecond HIC was 164. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 35.2 g. The passenger's chest deflection was 4.6 millimeters. The right front passenger's left and right femur maximum compressive forces were 3997 N and 4324 N, respectively.

Table 1 Crash Test Summary

Test type:	Flat frontal barrier impact
Test date:	June 28, 1999
Test time:	1318
Ambient temperature at impact area:	21° C
Vehicle year/make/ model/body style:	1999/Dodge/Intrepid/Sedan
Vehicle test weight:	1691.4 kg
Impact angle ¹ :	0°
Impact velocity ² :	
Primary:	40.4 kph
Secondary:	40.5 kph
Maximum static crush:	390 mm
Average rebound:	1865 mm
Number of cameras:	
Real-time:	1
High-speed:	14
Door opening data:	
Left-front:	N/A
Right-front:	N/A

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 #369</u>	<u>Passenger #289</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, Headrest	Airbag Rearview mirror
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: Deep cranberry

VIN: 2B3HD46R3XH643504

Engine data:

Placement: Transverse

Cylinders: 6

Displacement: 2.7 liters

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

Final drive: X fwd, rwd, 4wd

Date vehicle received: N/A

Odometer reading: N/A

Dealer's name and address: Bob Caldwell Dodge Country Inc.
1889 Morse Road
Columbus, OH 43229-6603

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
Power door locks	Yes	Other:	None

Certification data from vehicle's label:

Vehicle manufactured by: Daimler Chrysler Corp.

Date of manufacture: 11/98

VIN: 2B3HD46R3XH643504

GVWR: 4551 lb.

GAWR: Front: 2595 lb.

Rear: 2031 lb.

Table 2 Test Vehicle Information, Cont'd.

Size of tires on vehicle:	P225/60R16
Spare tire:	Space saver
Type of front seats:	Bench

Tire & capacity data from vehicle's label:

Recommended tire size:	P225/60R16
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: 736 mm	RF: 732 mm	LR: 756 mm	RR: 754 mm
Fully loaded attitude:	LF: 728 mm	RF: 728 mm	LR: 730 mm	RR: 731 mm
Pre-test attitude:	LF: 727 mm	RF: 721 mm	LR: 724 mm	RR: 720 mm
Post-test attitude:	LF: 722 mm	RF: 750 mm	LR: 710 mm	RR: 723 mm

Table 2 Test Vehicle Information, Cont'd.

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

Right front	480.8 kg	Right rear	294.4 kg
Left front	502.6 kg	Left rear	271.7 kg
Total front weight	983.4 kg	(63.5% of total vehicle weight)	
Total rear weight	566.1 kg	(36.5% of total vehicle weight)	
Total delivered weight	1549.5 kg		

Calculation of test vehicle's target test weight:

RCLW = Rated Cargo and Luggage Weight

UDW = Unloaded Delivered Weight (1549.5 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 = 1549.5 + 52.2 + 95.2 = 1696.9 kg

Weight of test vehicle with required dummies:

Right front	503.0 kg	Right rear	337.9 kg
Left front	526.6 kg	Left rear	323.9 kg
Total front weight	1029.6 kg	(60.9% of total vehicle weight)	
Total rear weight	661.8 kg	(39.1% of total vehicle weight)	
Total test weight	1691.4 kg	(0.32% under target test weight)	

Weight of ballast secured in vehicle: N/A

Components removed to meet target test weight: Rear seat, Muffler, Resonator,
Rear door seals, C-pillar covers

CG rearward of front wheel centerline: 1125 mm

Vehicle Wheelbase: 2875 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: 990628-1
Test date: June 28, 1999
Test time: 1318
Test type: Flat frontal barrier impact
Impact angle: 0°
Ambient temperature
at impact area: 22° C
Temperature in
occupant compartment: 21° C
Impact velocity:
Primary: 40.4 kph
Secondary: 40.5 kph
Specified range: 39.4 to 41.0 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:

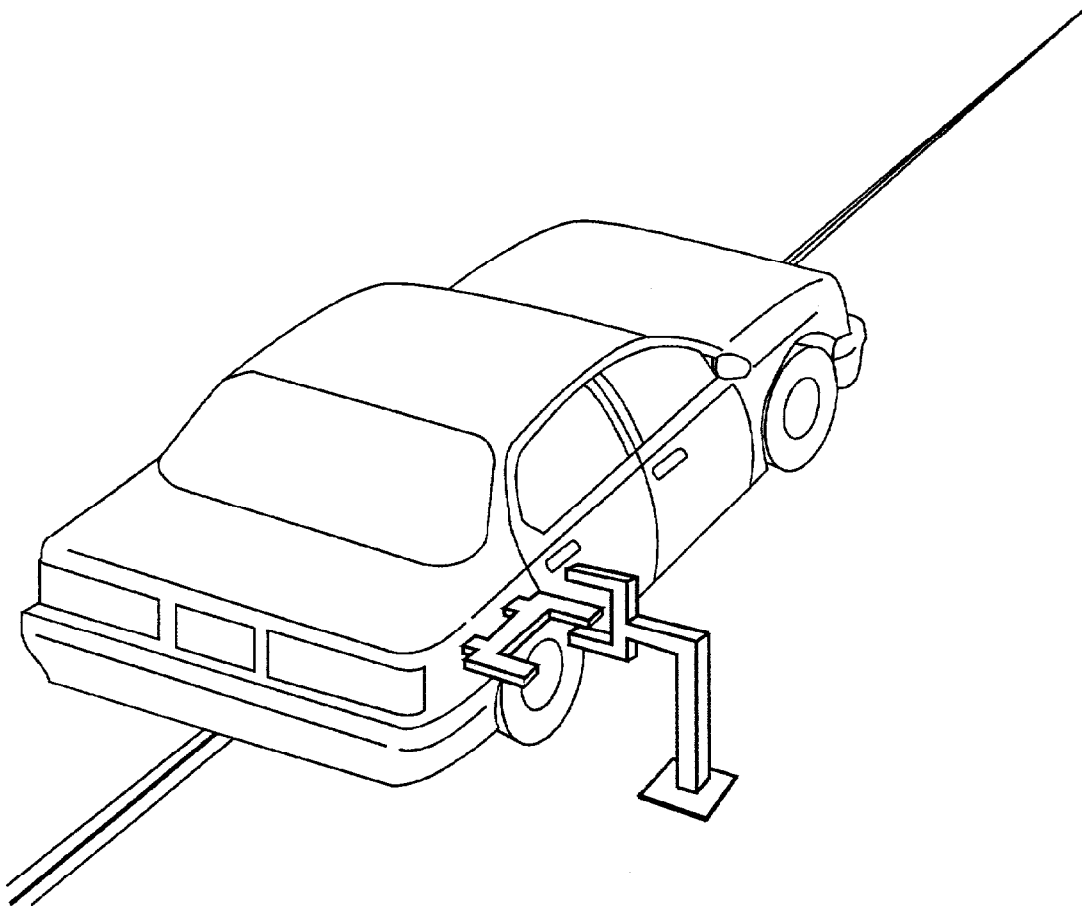
Pre-test:	L: 5017 mm	C: 5249 mm	R: 5014 mm
Post-test:	L: 4857 mm	C: 4859 mm	R: 4948 mm
Total crush:	L: 160 mm	C: 390 mm	R: 66 mm
Average crush:	205 mm		

Test vehicle rebound from flat frontal barrier:

Distance from test vehicle to barrier:

Post-test:	L: 1892 mm	C: 1820 mm	R: 1883 mm
Average rebound:	1865 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 25 mph Flat Frontal Barrier Impact

Test date: June 28, 1999
Vehicle year/make/
model/body style: 1999/Dodge/Intrepid/Sedan
VIN: 2B3HD46R3XH643504
Build date: 11/98
Test weight: 1691.4 kg
Vehicle wheelbase: 2875 mm
Maximum width: 1905 mm
Front overhang: 1097 mm

Collision Deformation
Classification (CDC) Code: 12FDEW2

Crush depth
measurements: C1: 160 mm
C2: 192 mm
C3: 367 mm
C4: 318 mm
C5: 255 mm
C6: 66 mm

Midpoint of damage: D: Vehicle Longitudinal Centerline

Length of damaged
region: L: 1525 mm

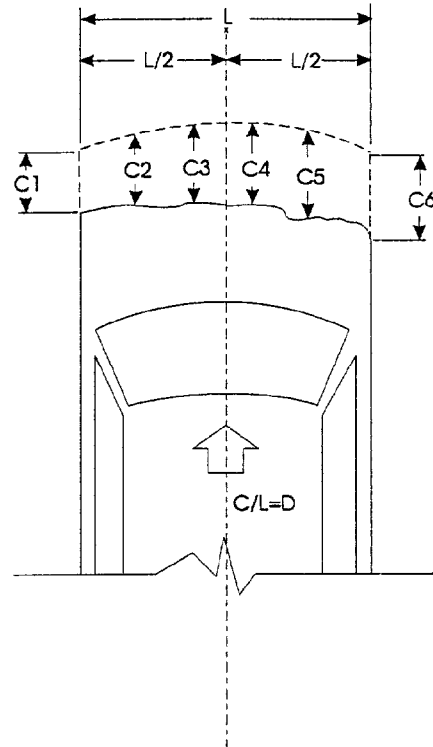


Figure 3 Vehicle Accelerometer Placement

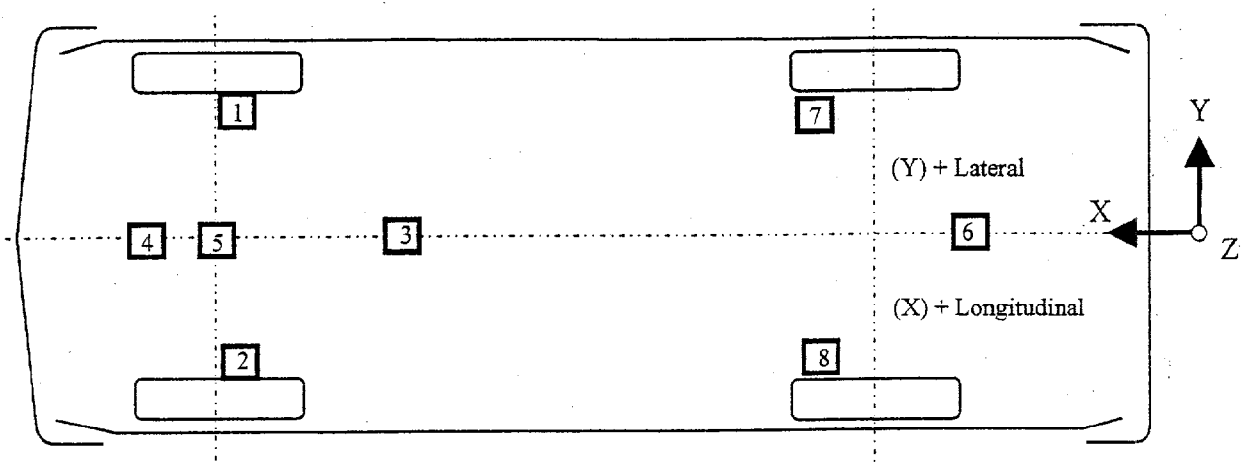
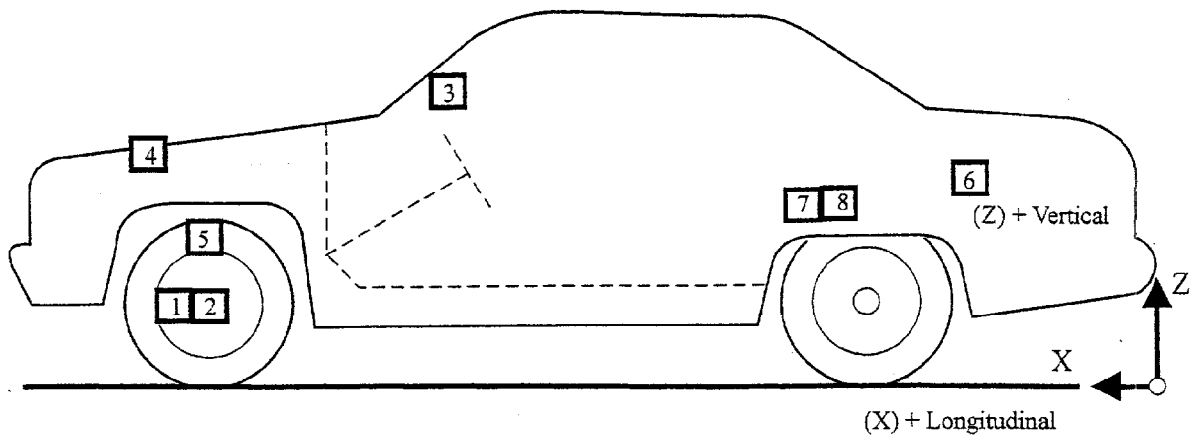


Table 4 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 990628-1 No. LOCATION		X		Y		Z		POSITIVE DIRECTION	NEGATIVE DIRECTION
1 LEFT BRAKE CALIPER LONGITUDINAL	PRE	4225 mm		687 mm		299 mm			
	POST	4215 mm		687 mm		293 mm		3.5 g @ 87.1 ms	53.1 g @ 27.8 ms
2 RIGHT BRAKE CALIPER LONGITUDINAL	PRE	4225 mm		-687 mm		298 mm			
	POST	4220 mm		-660 mm		282 mm		9.9 g @ 80.3 ms	54.9 g @ 29.8 ms
3 INSTRUMENT PANEL CENTER LONGITUDINAL	PRE	3467 mm		0 mm		885 mm			
	POST	3467 mm		0 mm		896 mm		21.0 g @ 93.2 ms	49.0 g @ 63.8 ms
4 ENGINE TOP LONGITUDINAL	PRE	4696 mm		-145 mm		792 mm			
	POST	4573 mm		-130 mm		819 mm		31.3 g @ 53.8 ms	95.0 g @ 36.9 ms
5 ENGINE BOTTOM LONGITUDINAL	PRE	4580 mm		-35 mm		181 mm			
	POST	4457 mm		-20 mm		211 mm		31.0 g @ 51.0 ms	69.9 g @ 37.5 ms

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

TEST NUMBER: 990628-1 No. LOCATION	X			Y		Z		POSITIVE DIRECTION		NEGATIVE DIRECTION	
	PRE	POST	265 mm	0 mm	0 mm	507 mm	492 mm	11.1 g	@ 85.4 ms	15.7 g	@ 23.8 ms
6 REAR VEHICLE CENTERLINE VERTICAL											
7 LEFT REAR SEAT LONGITUDINAL	PRE	2155 mm	610 mm	384 mm							
	POST	2155 mm	610 mm	388 mm				1.7 g	@ 109.4 ms	22.8 g	@ 55.7 ms
8 RIGHT REAR SEAT LONGITUDINAL	PRE	2155 mm	-600 mm	382 mm							
	POST	2155 mm	-600 mm	386 mm				1.2 g	@ 106.7 ms	25.1 g	@ 49.4 ms

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

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	-37.2 g	17.4 g	-13.0 g	39.1 g	-42.3 g	3.6 g	-6.4 g
Passenger	-40.0 g	-10.8 g	-15.2 g	40.8 g	-33.8 g	3.8 g	12.5 g

Maximum Femur Compressive Force

	Left Femur	Right Femur
Driver	3269 N	4674 N
Passenger	3997 N	4324 N

15-millisecond Head Injury Criteria¹

	HIC	Time t_1	Time t_2
Driver	99	60.4 ms	75.4 ms
Passenger	121	74.1 ms	89.1 ms

36-millisecond Head Injury Criteria¹

	HIC	Time t_1	Time t_2
Driver	168	58.5 ms	94.5 ms
Passenger	164	64.2 ms	100.2 ms

Chest Maximum Resultant Acceleration²

	Acceleration	Time t_1	Time t_2
Driver	40.6 g	86.9 ms	89.9 ms
Passenger	35.2 g	82.5 ms	85.4 ms

Maximum Chest Deflection

Driver	32.1 mm
Passenger	4.6 mm

¹ As defined in FMVSS No. 208

² Defined as equal to or exceeding 0.003 sec. duration

Dummy Kinematic Summary

Driver Dummy

Upon impact, the driver dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head and chest impacted the airbag. As the dummy translated forward, the dummy's chest impacted the steering wheel. As the dummy rebounded rearward into the seat, the dummy hit the back of its head against the headrest. The dummy came to rest seated upright in the driver's seat and leaning forward.

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. Upon impacting the airbag, the dummy translated to the left. As the dummy rebounded into the seat, the dummy hit the top of its head on the rearview mirror. The dummy came to rest seated upright in the passenger's seat leaning forward and to the left.

Section 4.0

Vehicle, Occupant, and Camera Measurements

Figure 4 Pre-test and Post-test Measurement Points

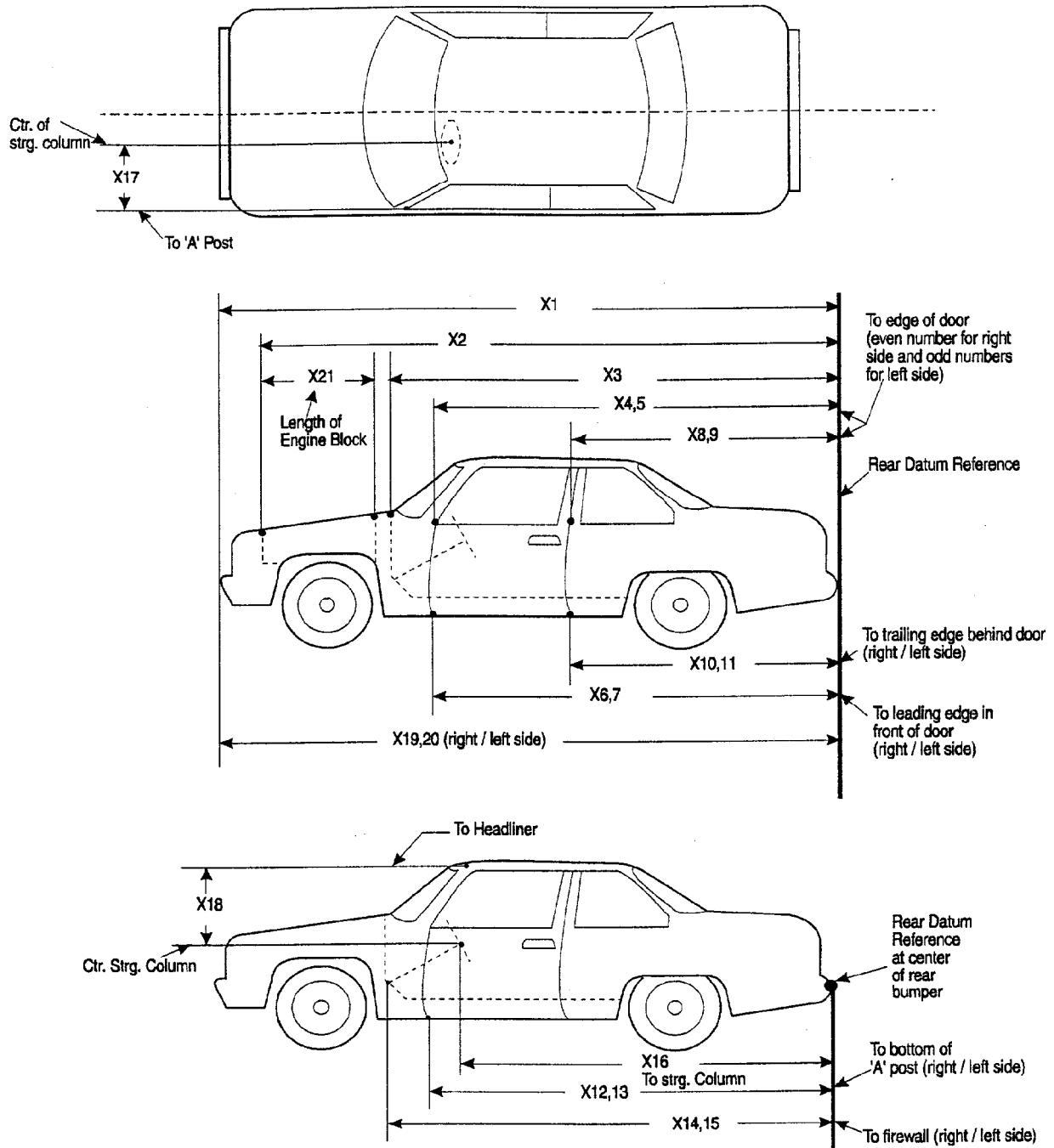


Table 6 Impacted Vehicle Measurements

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

Test Number: 990628-1

No.	Type of measurement	Pre-Test	Post-Test	Difference
X1	Total Length of Veh. at Centerline	5249	4859	390
X2	Rear Surface of Veh. to Front of Engine Block	4725	4615	110
X3	Rear Surface of Veh. to Firewall	4281	4282	-1
X4	Rear Surface of Veh. to Upper Leading Edge of Right Door	3702	3698	4
X5	Rear Surface of Veh. to Upper Leading Edge of Left Door	3705	3698	7
X6	Rear Surface of Veh. to Lower Leading Edge of Right Door	3650	3646	4
X7	Rear Surface of Veh. to Lower Leading Edge of Left Door	3658	3650	8
X8	Rear Surface of Veh. to Upper Trailing Edge of Right Door	2604	2600	4
X9	Rear Surface of Veh. to Upper Trailing Edge of Left Door	2614	2606	8
X10	Rear Surface of Veh. to Lower Trailing Edge of Right Door	2606	2600	6
X11	Rear Surface of Veh. to Lower Trailing Edge of Left Door	2619	2608	11
X12	Rear Surface of Veh. to Bottom of " A " Post on Right Side	3599	3610	-11
X13	Rear Surface of Veh. to Bottom of " A " Post on Left Side	3610	3616	-6
X14	Rear Surface of Veh. to Firewall--Right Side	4277	4277	0
X15	Rear Surface of Vehicle to Firewall --Left Side	4289	4265	24
X16	Rear Surface of Veh. to Steering Wheel Center	3200	3239	-39
X17	Center of Steering Column to " A " Post	300	325	-25
X18	Center of Steering Column to Headliner	370	410	-40
X19	Rear Surface of Veh. to Right Side of Front Bumper	5014	4948	66
X20	Rear Surface of Veh. to Left Side of Front Bumper	5017	4857	160
X21	Length of Engine Block	500	500	0

Figure 5 Vehicle Target Locations

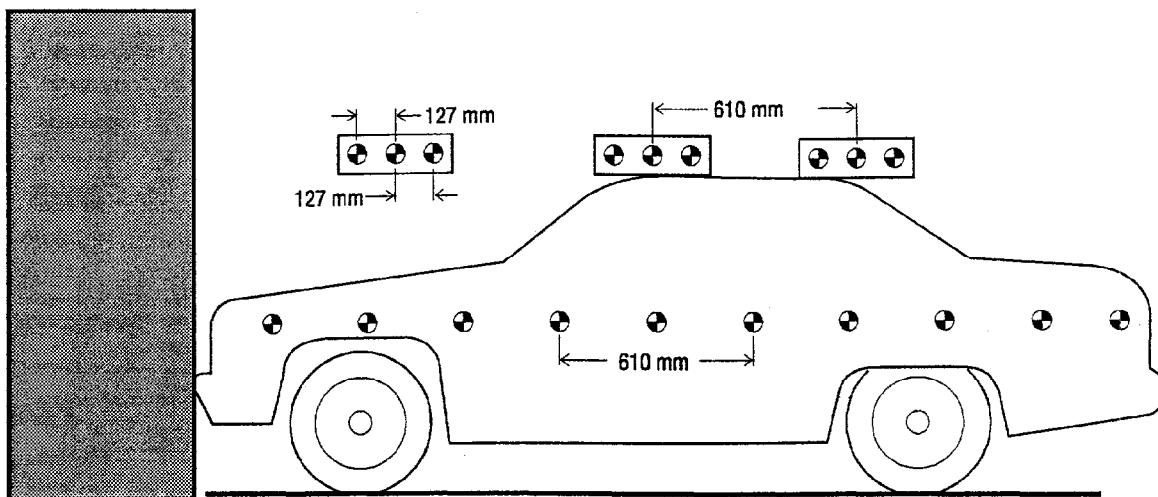


Figure 6 Dummy Measurement Locations for Front Seat Occupants

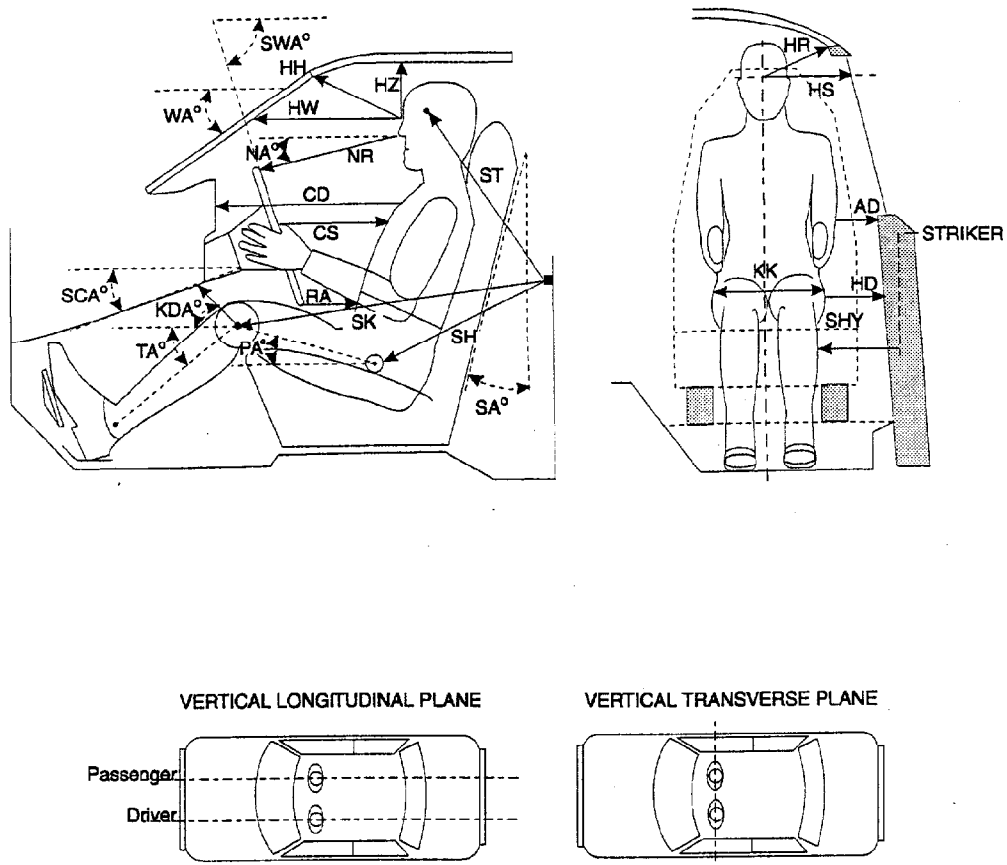


Table 7 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #369)	Passenger (Serial #289)
WA	Windshield angle	22.9°	N/A
SWA	Steering wheel angle	68.4°	N/A
SCA	Steering column angle	21.6°	N/A
SA	Seat back angle	23.4°	17.5°
HZ	Head to roof	225 mm	185 mm
HH	Head to header	300 mm	284 mm
HW	Head to windshield	644 mm	656 mm
HR	Head to side header	265 mm	232 mm
NR	Nose to rim	267 mm	N/A
NA	Nose to rim angle	4°	N/A
CD	Chest to dash	461 mm	419 mm
CS	Steering wheel to chest	212 mm	N/A
RA	Rim to abdomen	119 mm	N/A
KDL	Left knee to dash	137 mm	123 mm
KDR	Right knee to dash	144 mm	110 mm
KDA	Outboard knee to dash angle	41°	30°
PA	Pelvic angle	19.7°	20.5°
TA	Tibial angle	43.8°	45.7°
KK	Knee to knee	238 mm	232 mm
ST ¹	Striker to head	459 mm	498 mm
	Striker to head angle	-72.6°	-69.5°
SK ¹	Striker to knee	633 mm	645 mm
	Striker to knee angle	3.8°	1°
SH ¹	Striker to H-point	330 mm	343 mm
	Striker to H-point angle	21.9°	17.2°
SHY	Striker to H-point (Y dir.)	278 mm	281 mm
HS	Head to side window	372 mm	368 mm
HD	H-point to door	254 mm	248 mm
AD	Arm to door	190 mm	183 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

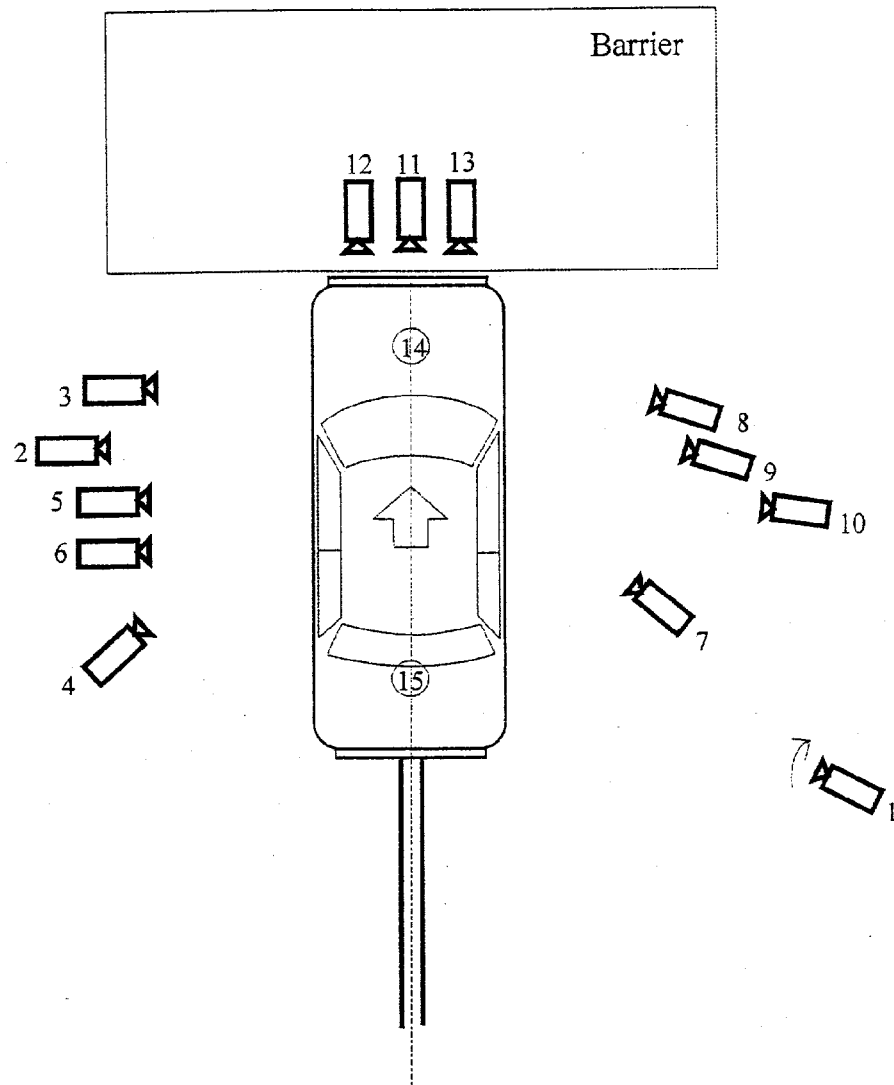


Figure 7 Camera Positions, Cont'd.

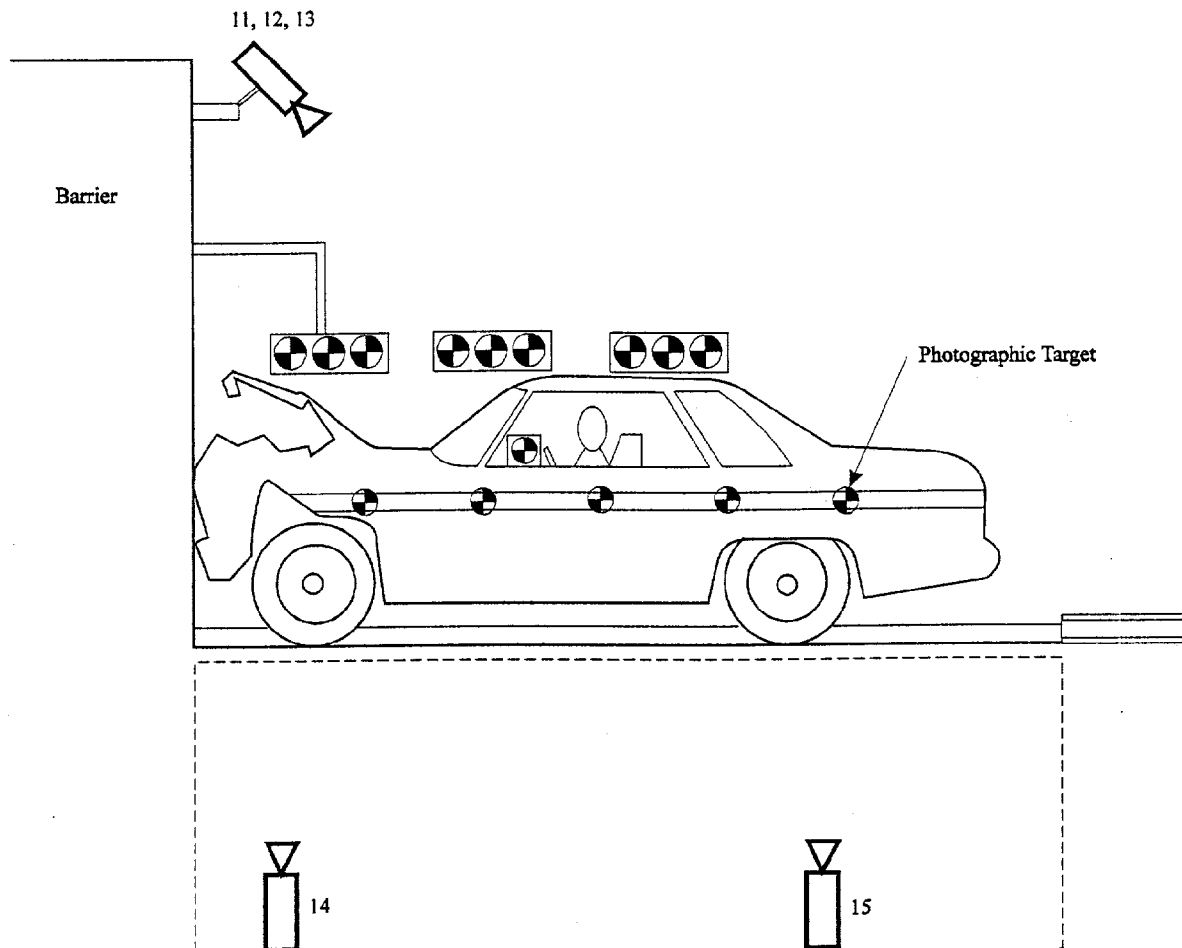


Table 8 Motion Picture Camera Locations

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

Test number: 990628-1

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	16 mm	24 frames/s
2	Left vehicle crush	1499 mm	7925 mm	1003 mm	0°	8738 mm	25 mm	1017 frames/s
3	Left windshield intrusion	1041 mm	5639 mm	1130 mm	0°	7137 mm	50 mm	N/A ³
4	Driver kinematics	3886 mm	1753 mm	2007 mm	-17°	2870 mm	25 mm	987 frames/s
5	Steering column motion	2692 mm	5283 mm	2921 mm	-16°	6934 mm	25 mm	1000 frames/s
6	Steering column motion	2692 mm	5410 mm	1905 mm	-8°	6858 mm	25 mm	1005 frames/s
7	Right overall	2794 mm	-6706 mm	813 mm	0°	7468 mm	25 mm	1010 frames/s
8	Right windshield intrusion	940 mm	-6579 mm	1118 mm	0°	7417 mm	50 mm	1007 frames/s
9	Passenger kinematics	2667 mm	-5537 mm	1473 mm	-4°	6299 mm	25 mm	1012 frames/s
10	Passenger kinematics	3861 mm	-1600 mm	2032 mm	-20°	2845 mm	25 mm	995 frames/s
11	Windshield front view	381 mm	0 mm	2413 mm	-59°	2362 mm	13 mm	1000 frames/s
12	Driver - front view	381 mm	305 mm	2413 mm	-48°	2362 mm	17 mm	997 frames/s
13	Passenger - front view	381 mm	-305 mm	2413 mm	-49°	2362 mm	17 mm	1000 frames/s
14	Pit - front position	3048 mm	0 mm	3048 mm	90°	NA	13 mm	1005 frames/s
15	Pit - rear position	2946 mm	0 mm	2946 mm	90°	NA	13 mm	1000 frames/s

¹ +X: Film plane forward of barrier face

+Y: Film plane to left of monorail centerline

+Z: Film plane above ground level

² +Angle: Film plane angled upward from horizontal plane

³ The camera did not run during the impact event.



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

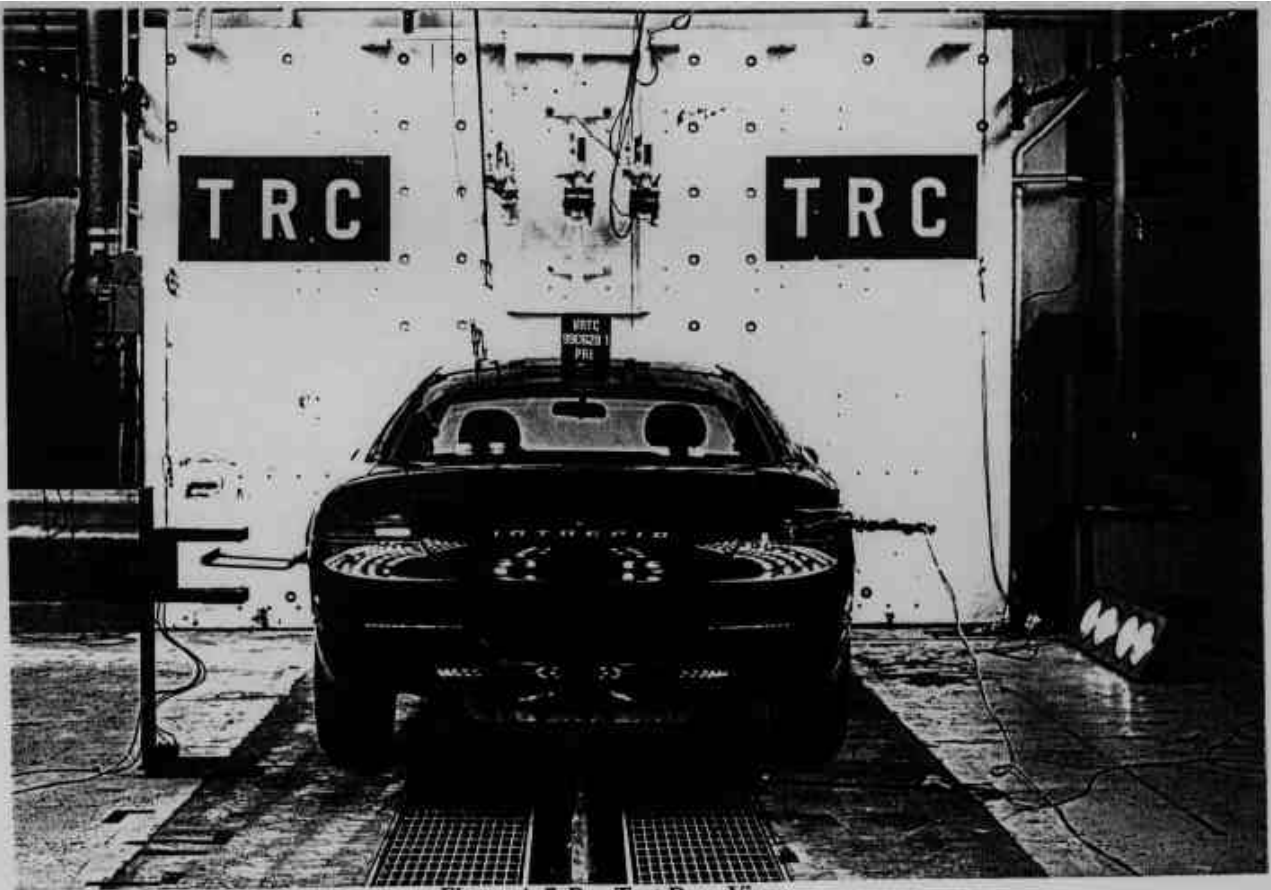


Figure A-7 Pre-Test Rear View



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

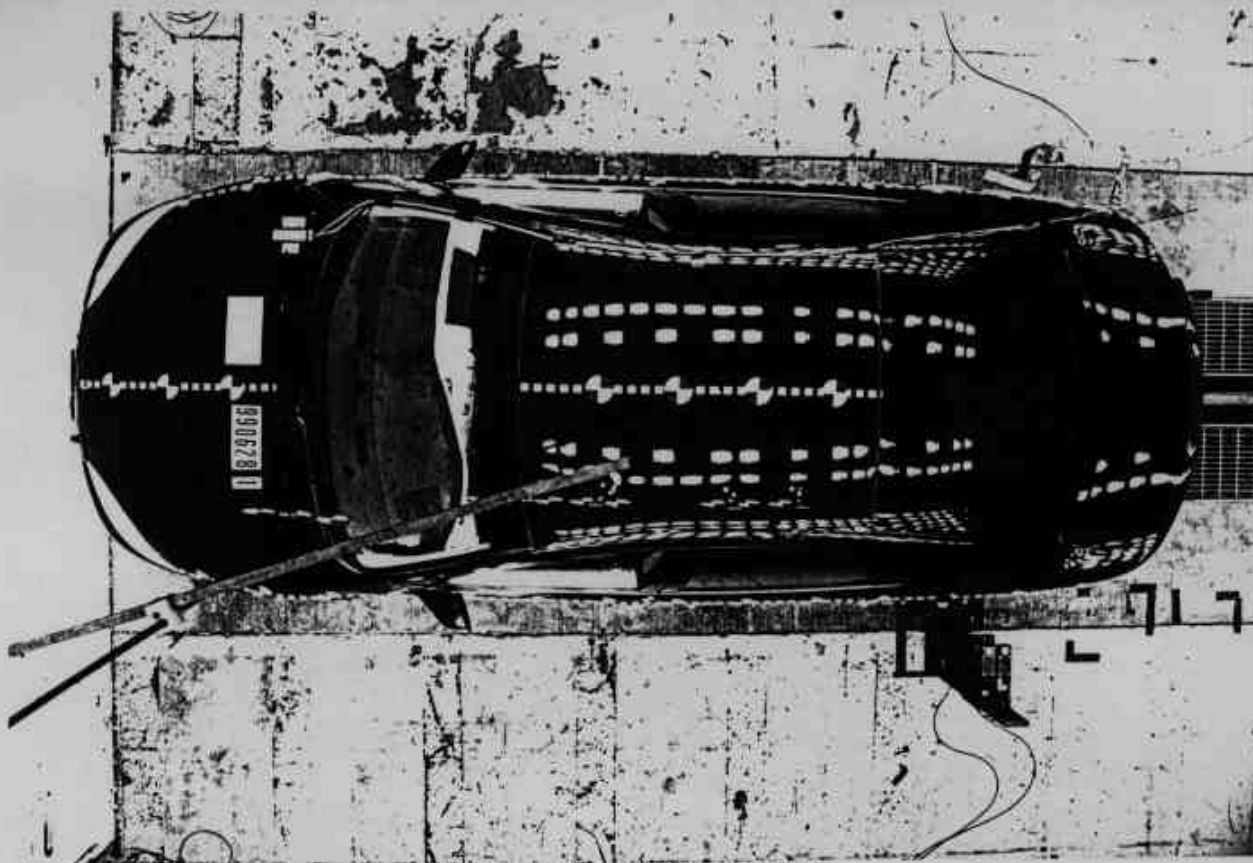


Figure A-13 Pre-Test Overhead View

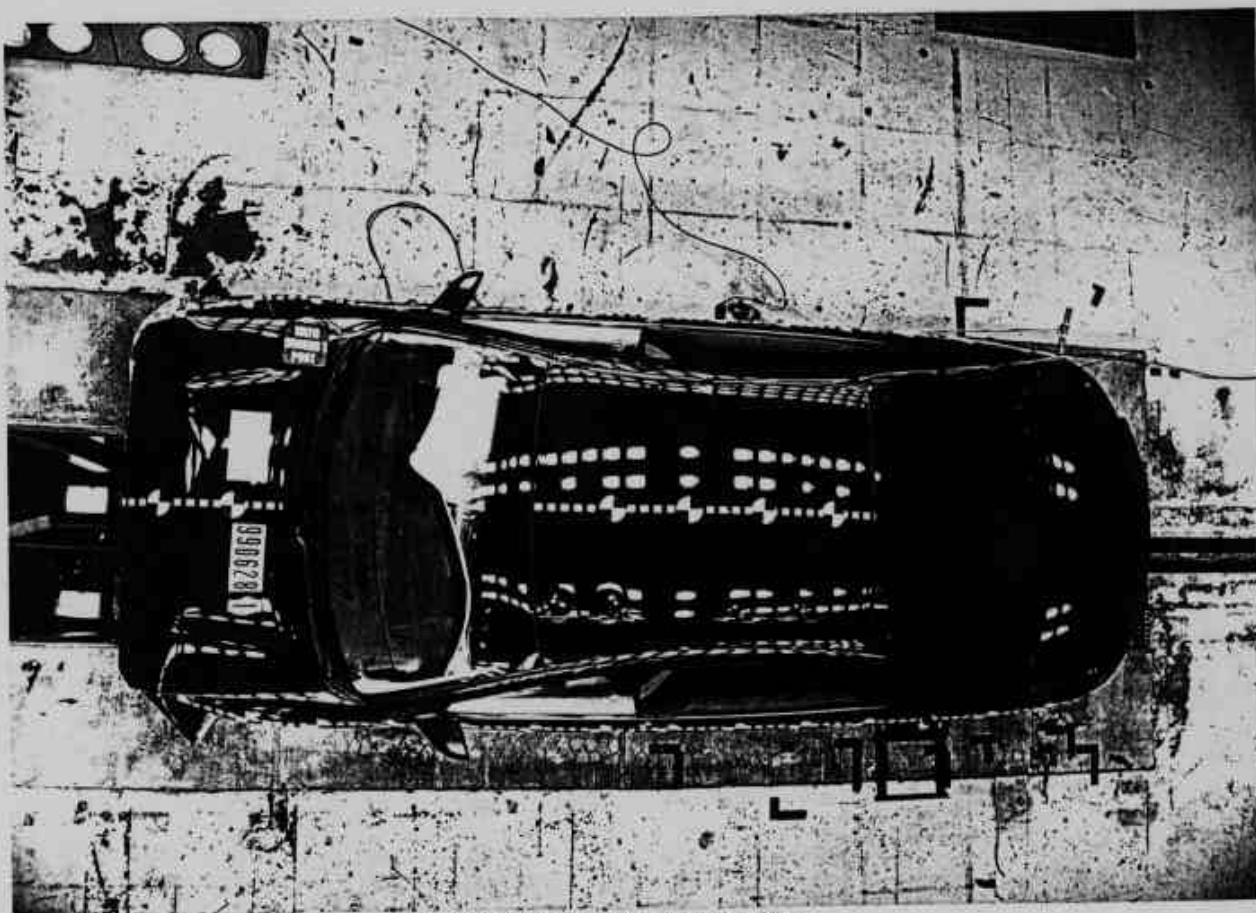


Figure A-14 Post-Test Overhead View

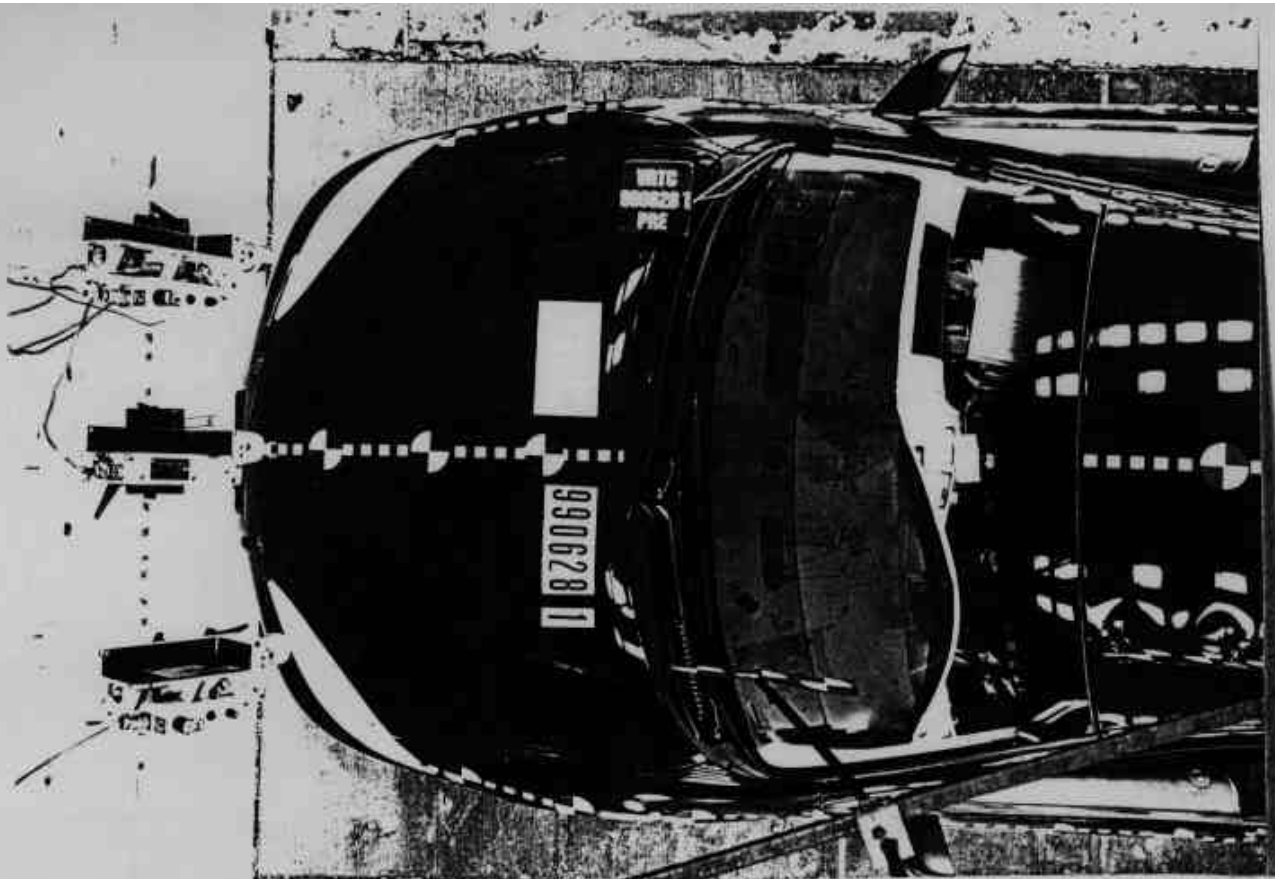


Figure A-15 Pre-Test Overhead Close-Up View

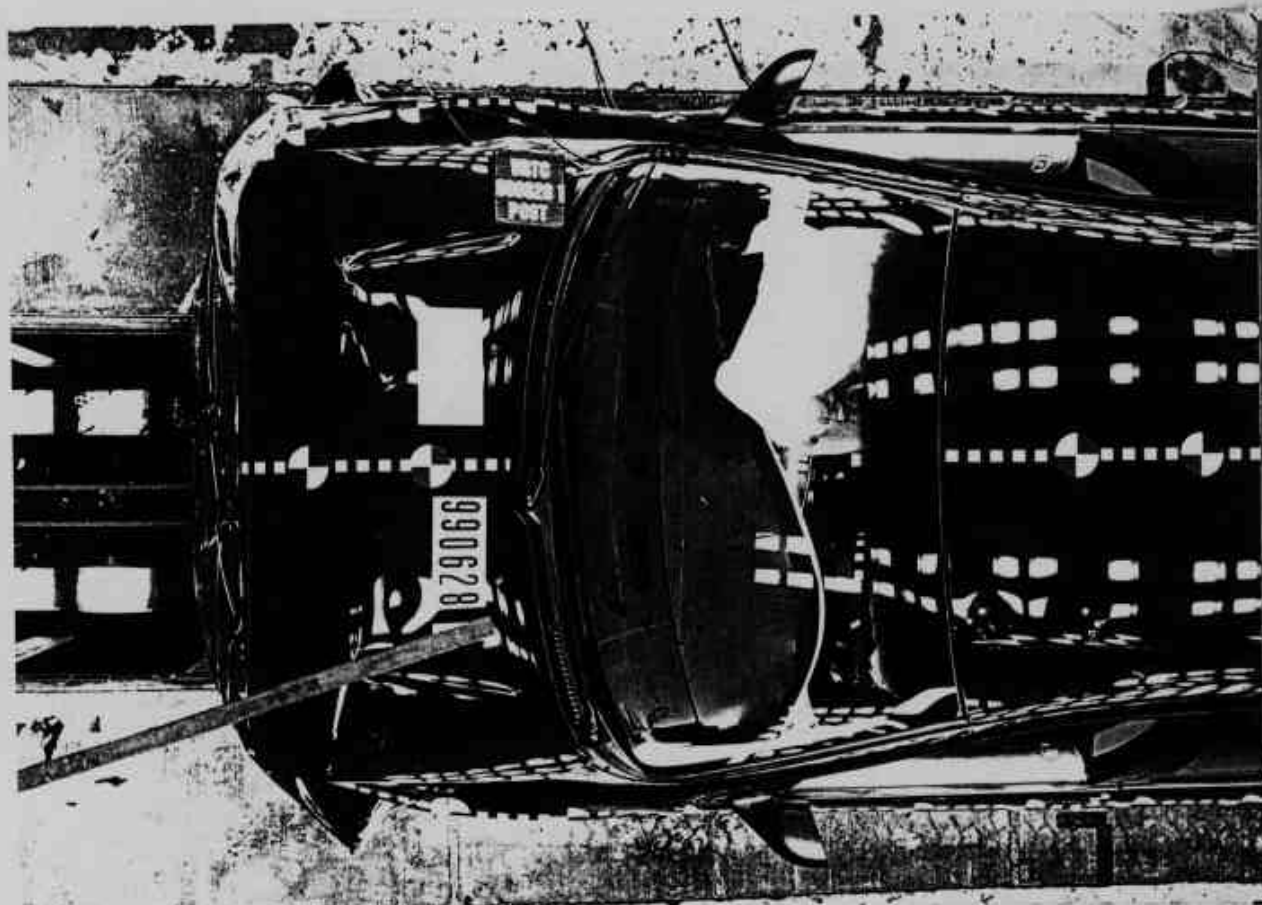


Figure A-16 Post-Test Overhead Close-Up View

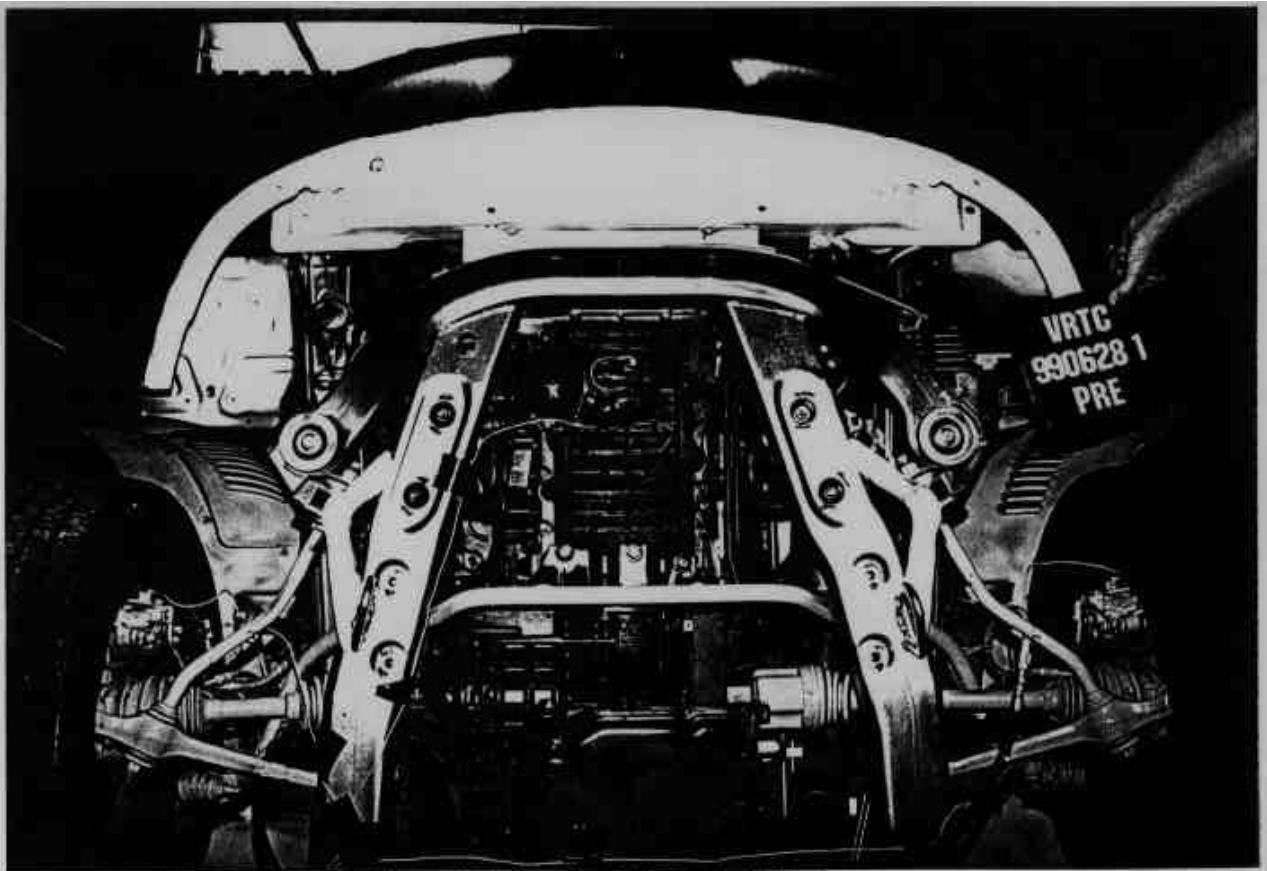


Figure A-17 Pre-Test Underbody - View 1

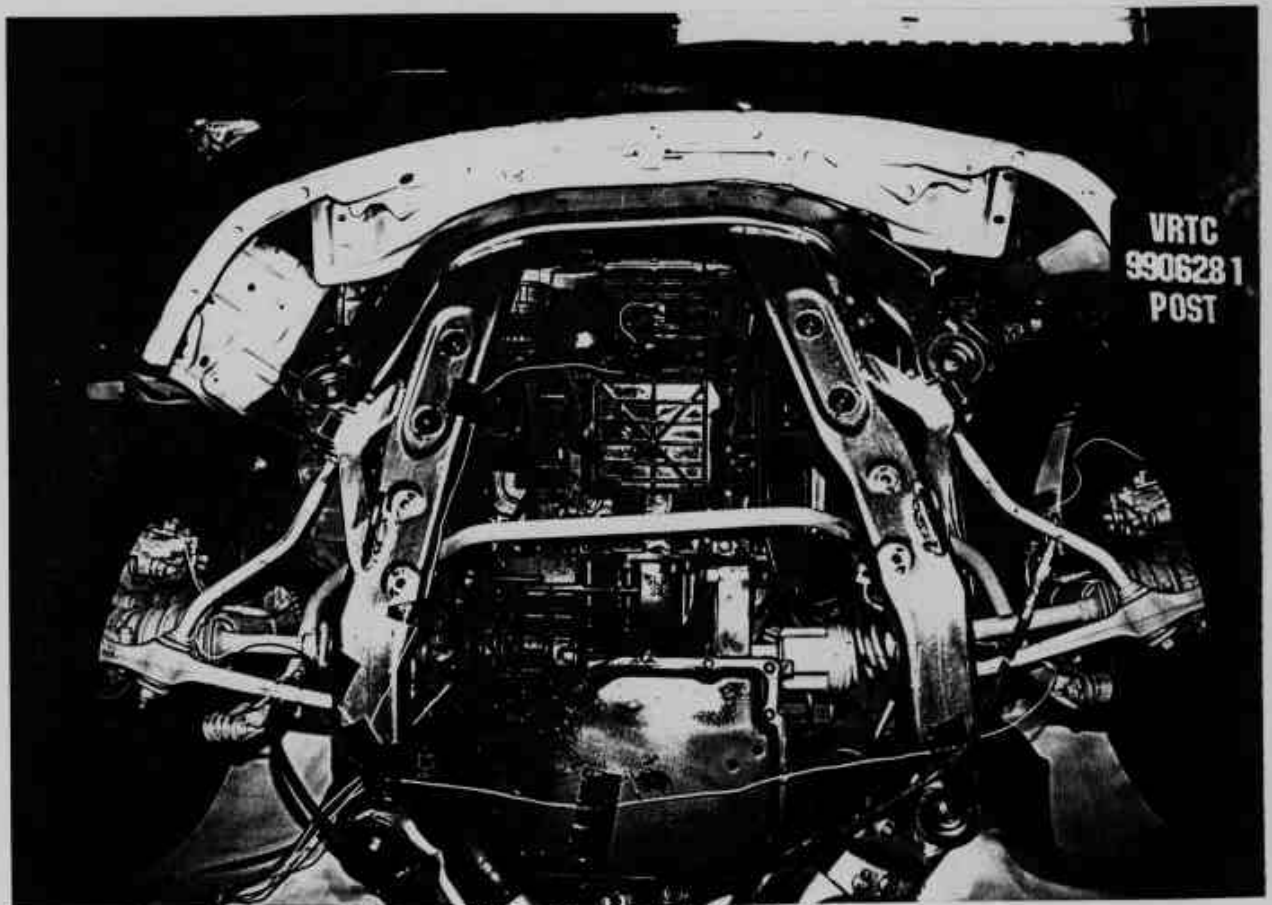


Figure A-18 Post-Test Underbody - View 1

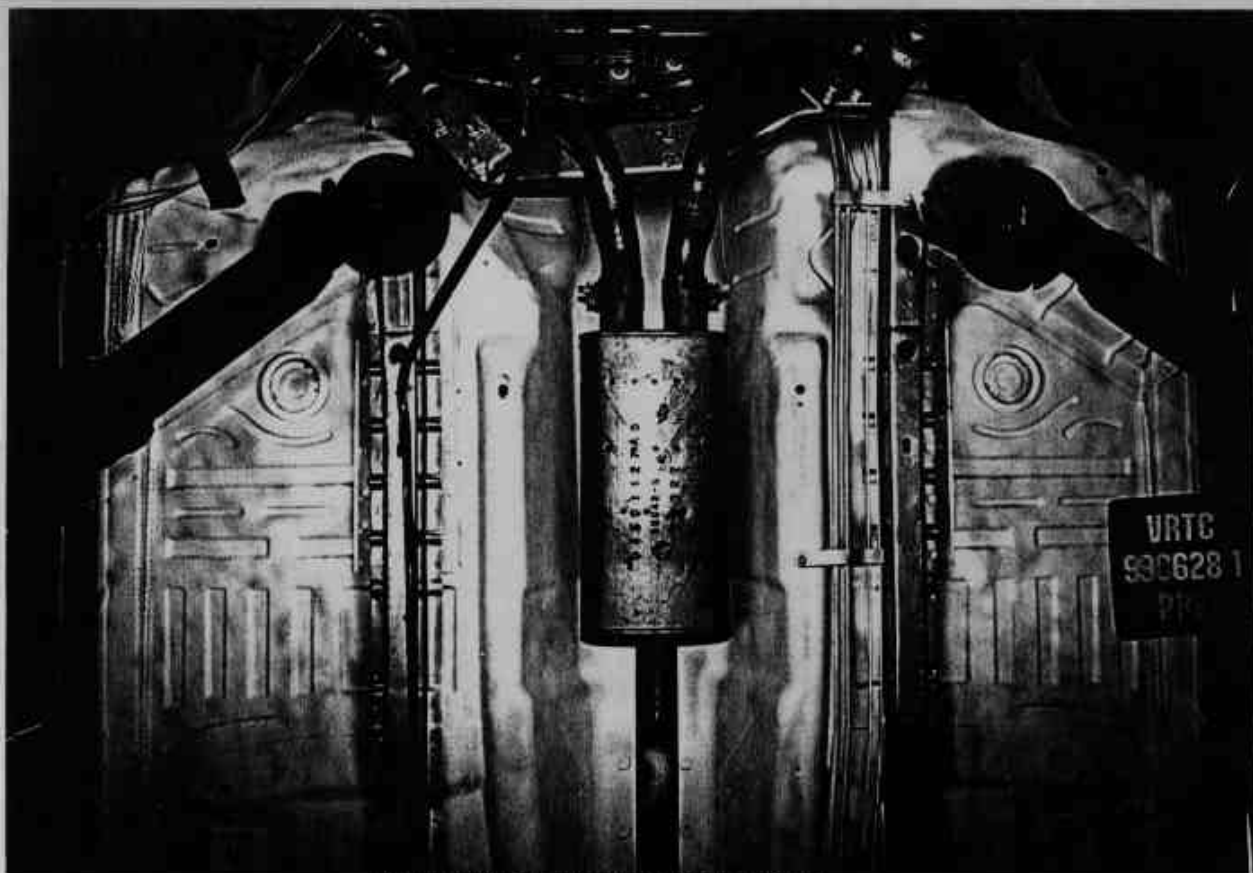


Figure A-19 Pre-Test Underbody - View 2



Figure A-20 Post-Test Underbody - View 2



Figure A-21 Pre-Test Underbody - View 3



Figure A-22 Post-Test Underbody - View 3

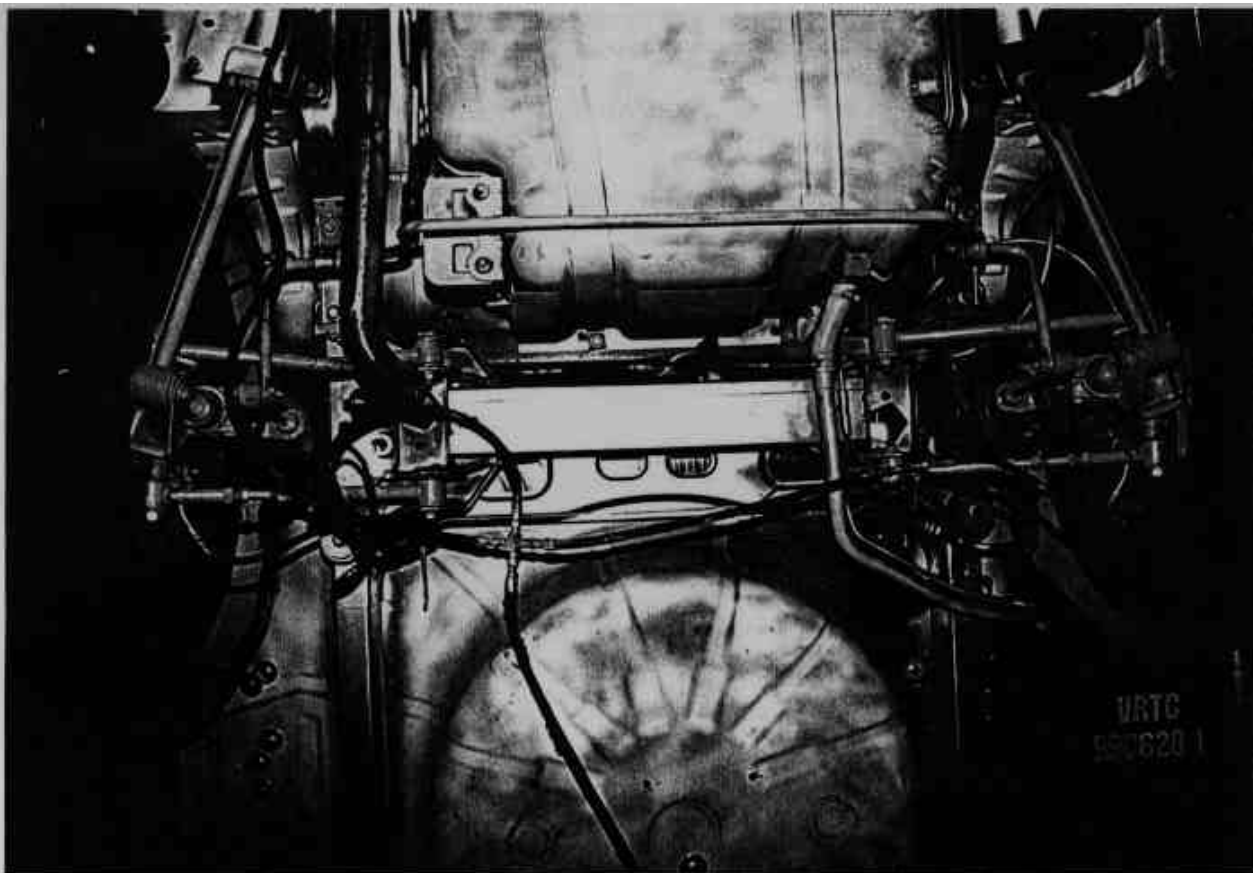


Figure A-23 Pre-Test Underbody - View 4



Figure A-24 Post-Test Underbody - View 4

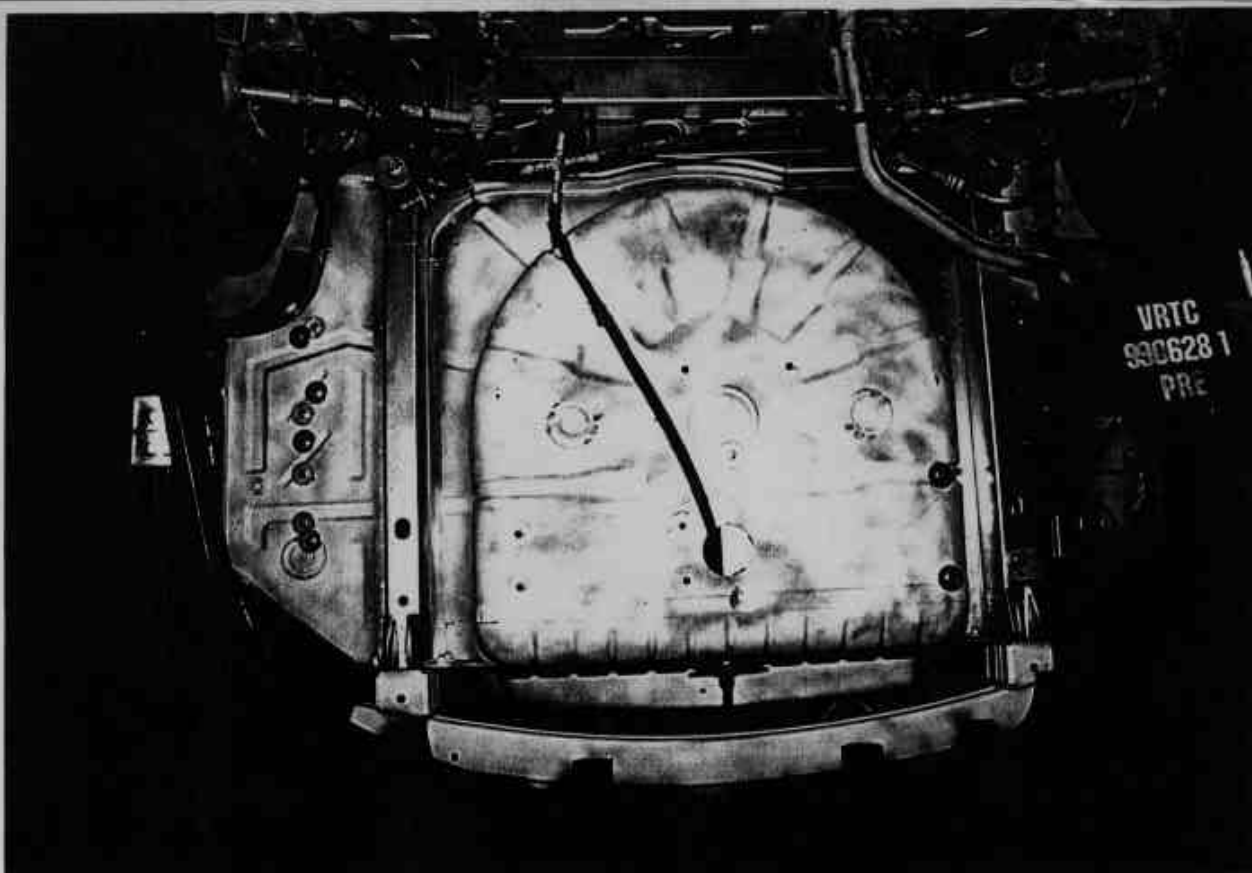


Figure A-25 Pre-Test Underbody - View 5



Figure A-26 Post-Test Underbody - View 5



Figure A-27 Pre-Test Engine Compartment View

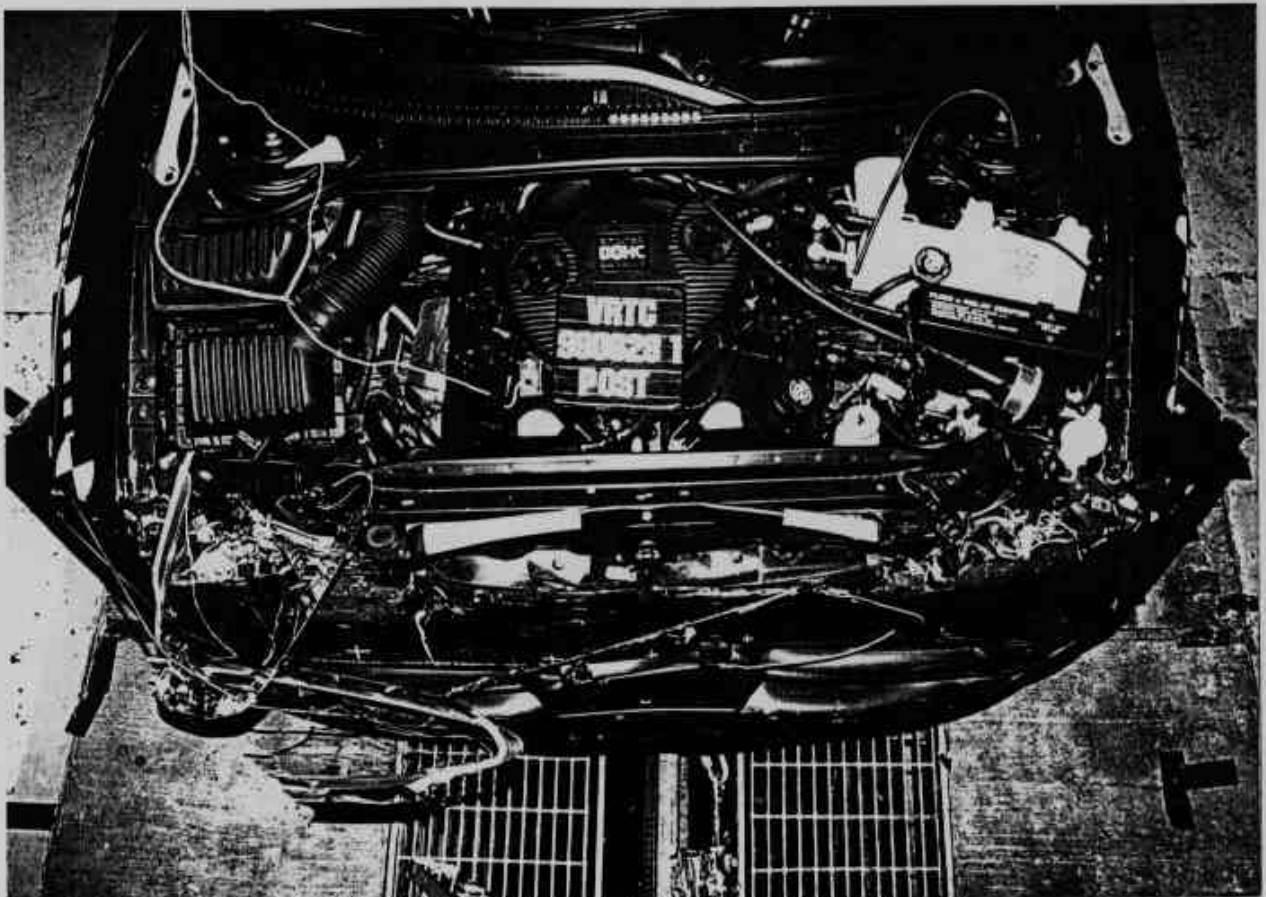


Figure A-28 Post-Test Engine Compartment View



Figure A-29 Pre-Test Windshield - View 1



Figure A-30 Post-Test Windshield - View 1

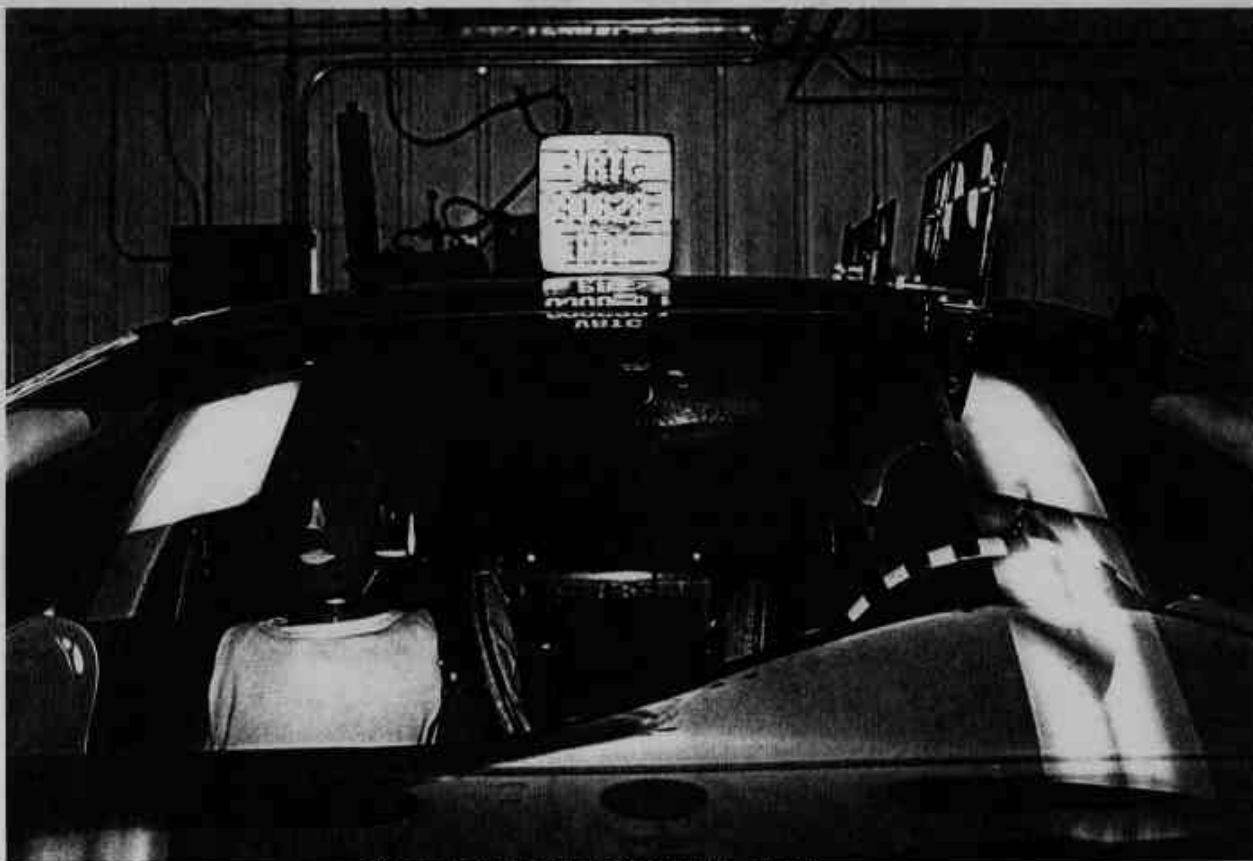


Figure A-31 Pre-Test Windshield - View 2

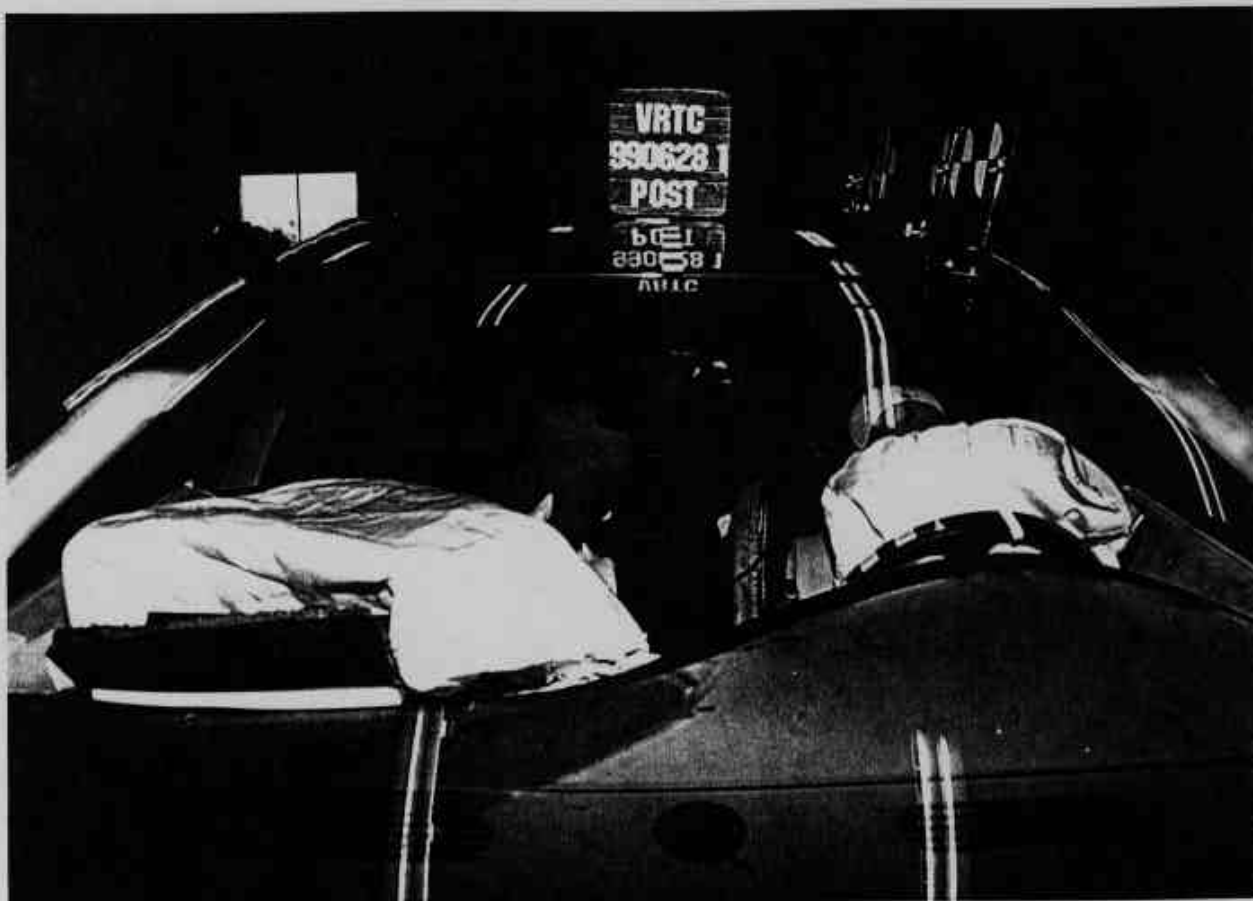


Figure A-32 Post-Test Windshield - View 2

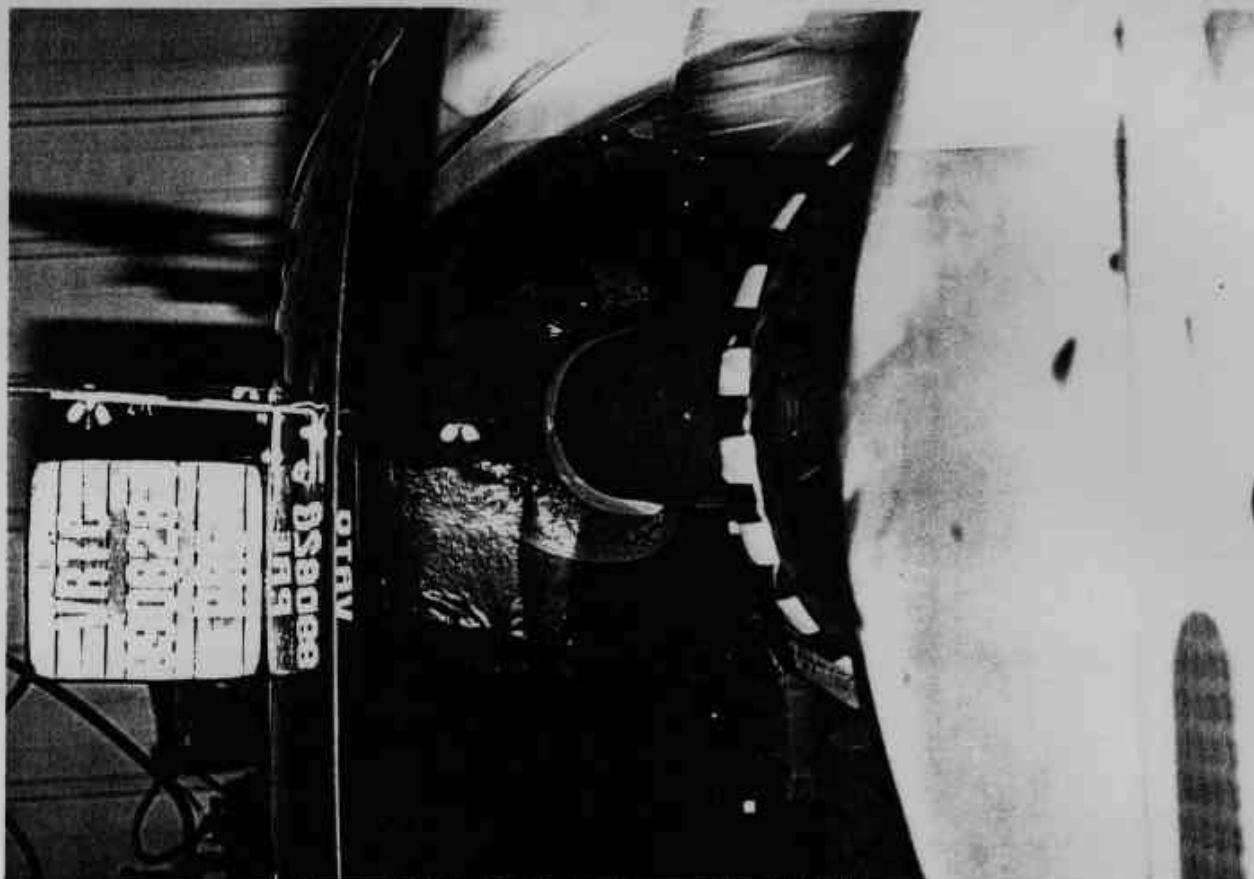


Figure A-33 Pre-Test Driver Dummy Windshield View



Figure A-34 Post-Test Driver Dummy Windshield View

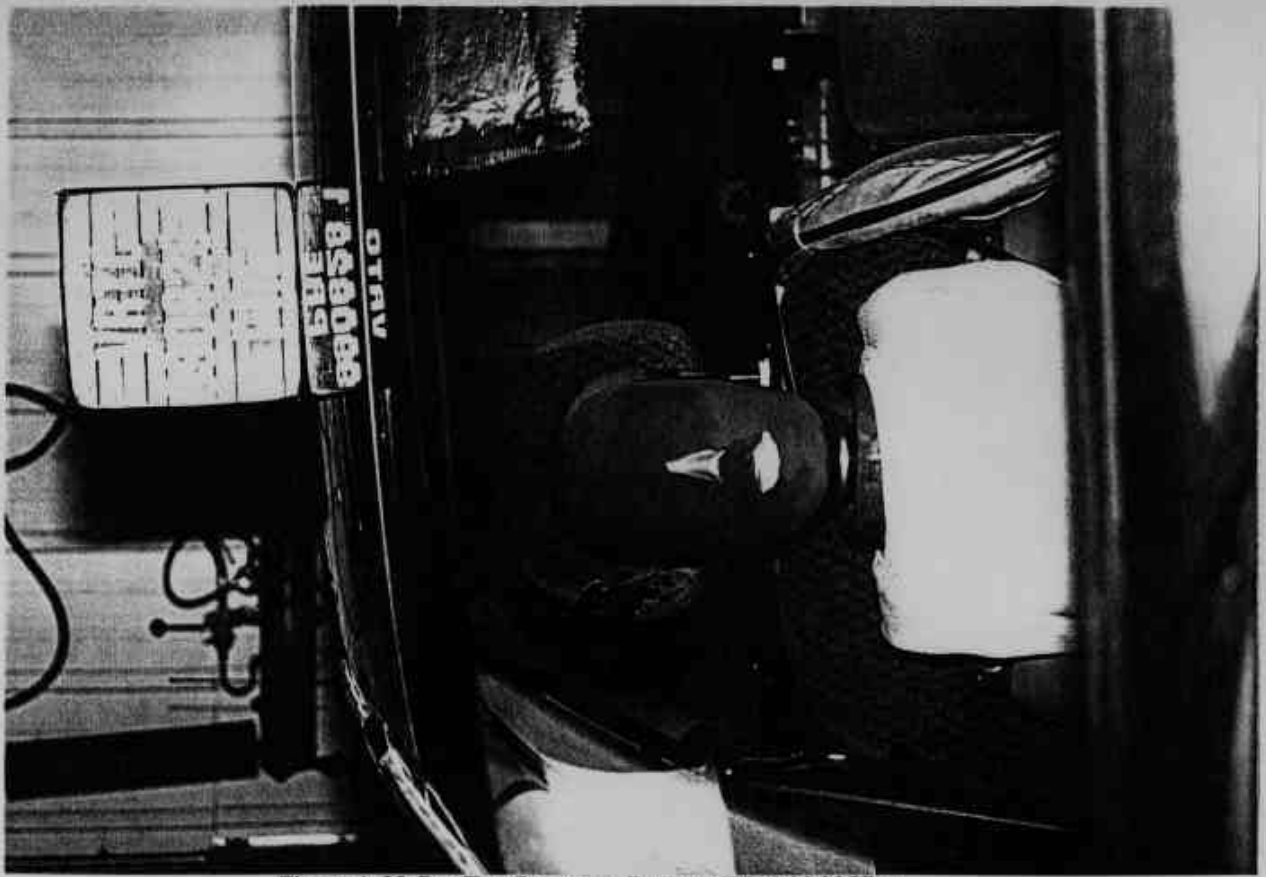


Figure A-35 Pre-Test Passenger Dummy Windshield View

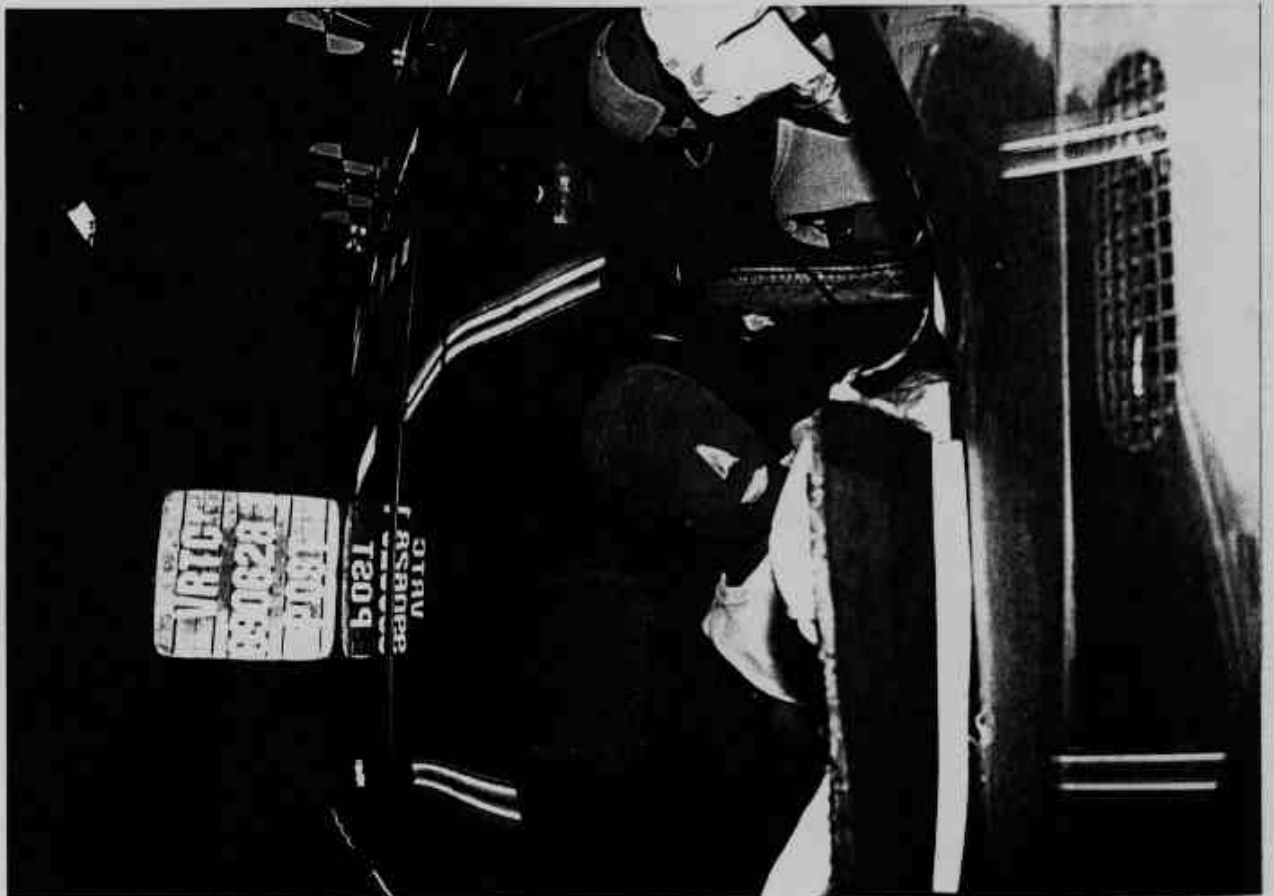


Figure A-36 Post-Test Passenger Dummy Windshield View

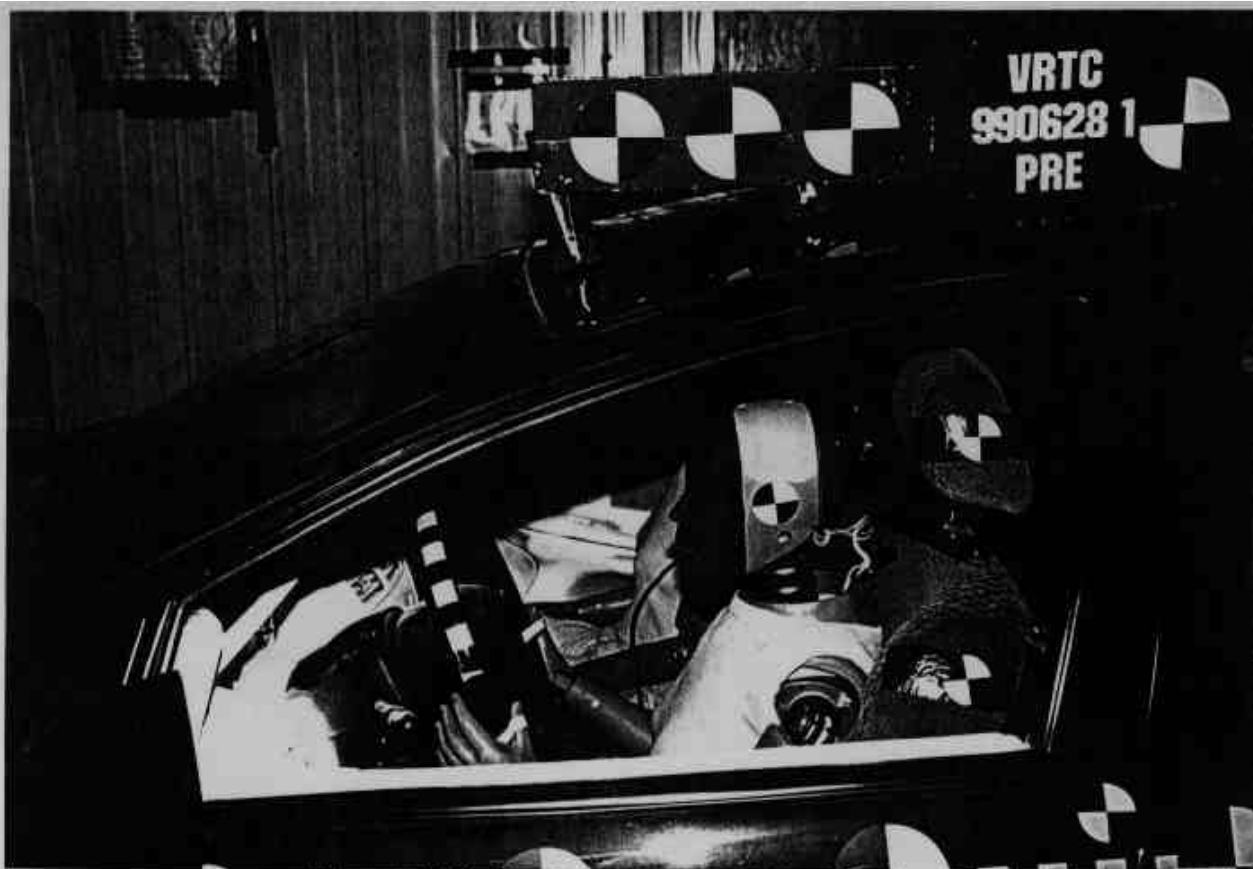


Figure A-37 Pre-Test Driver Dummy Position - View 1



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



Figure A-39 Pre-Test Driver Dummy Position -View 2



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



Figure A-41 Pre-Test Driver Dummy Position -View 3

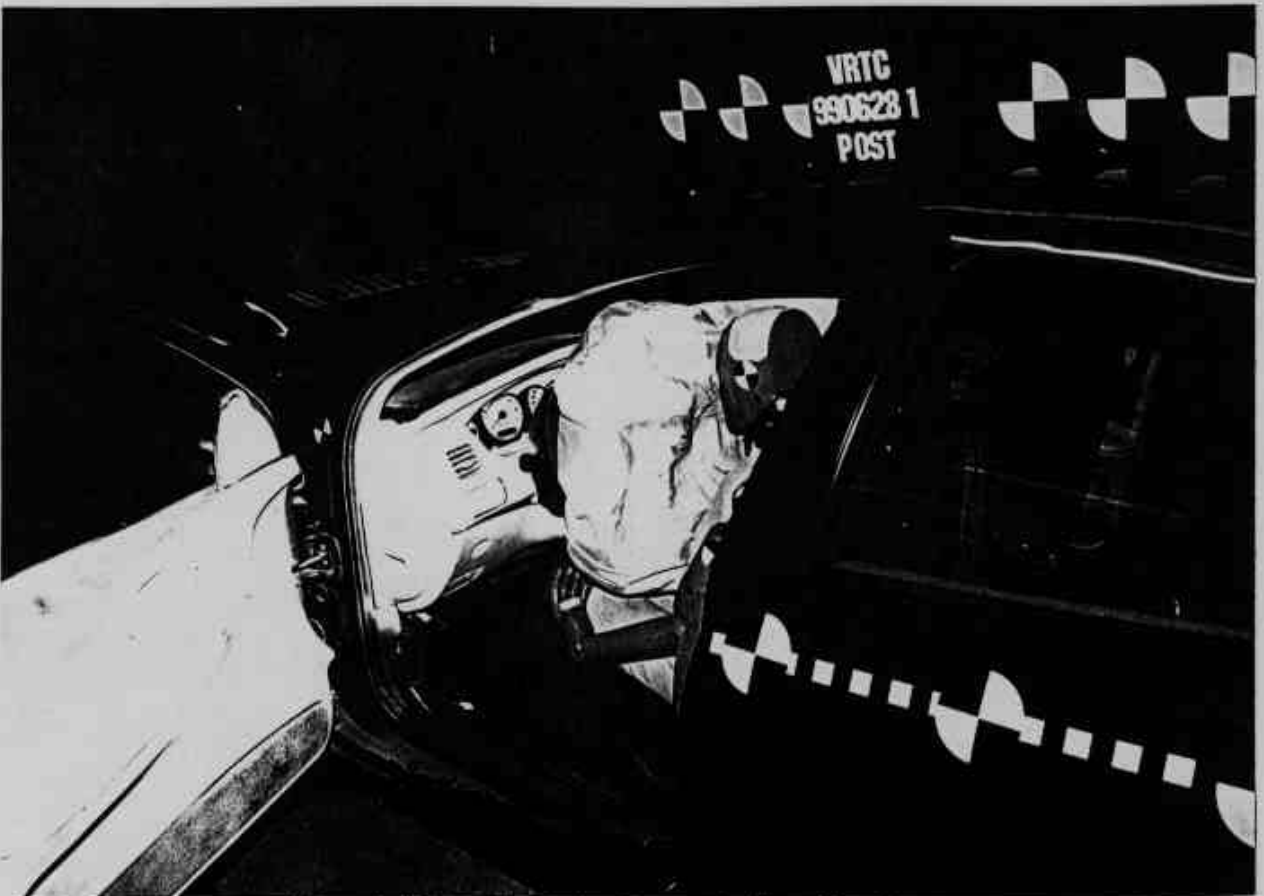


Figure A-42 Post-Test Driver Dummy Position - View 3

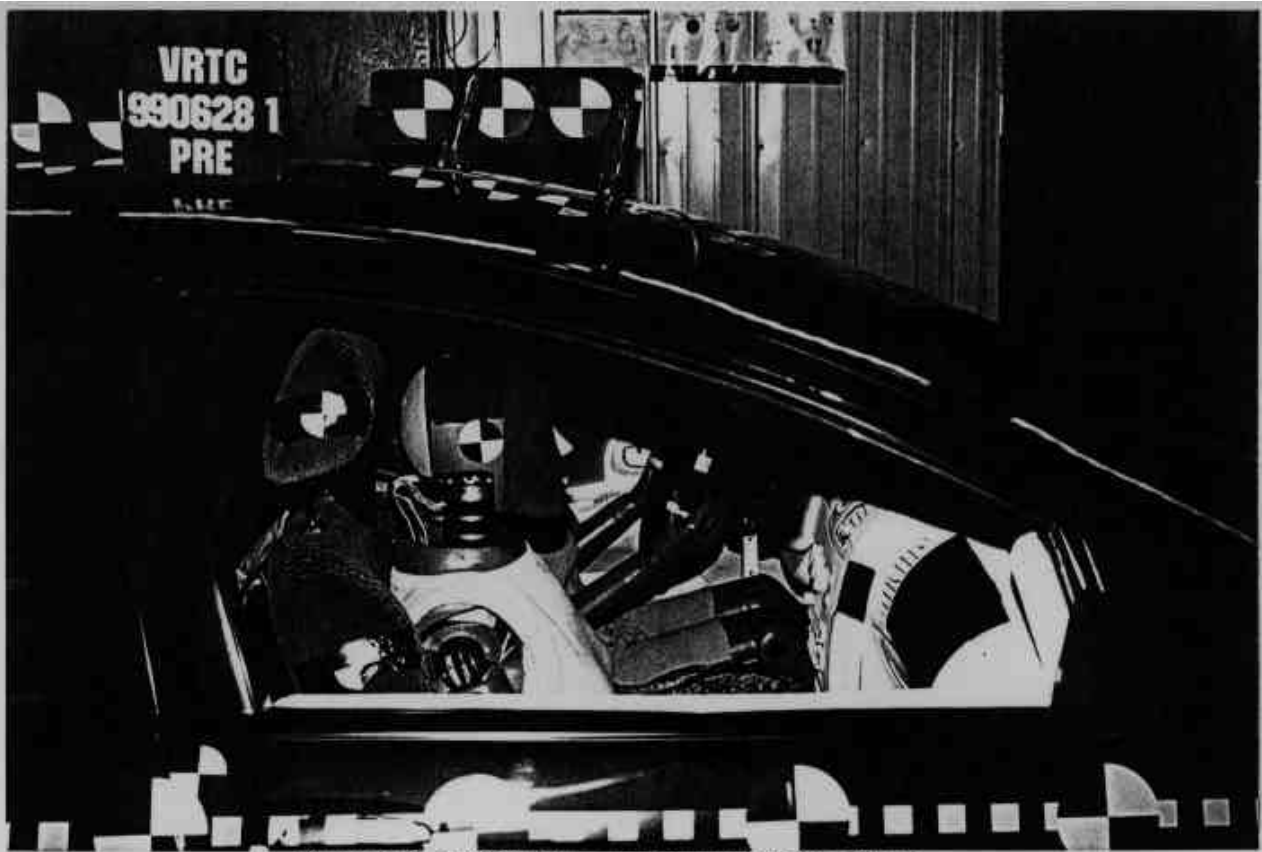


Figure A-43 Pre-Test Passenger Dummy Position - View 1



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



Figure A-45 Pre-Test Passenger Dummy Position - View 2



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

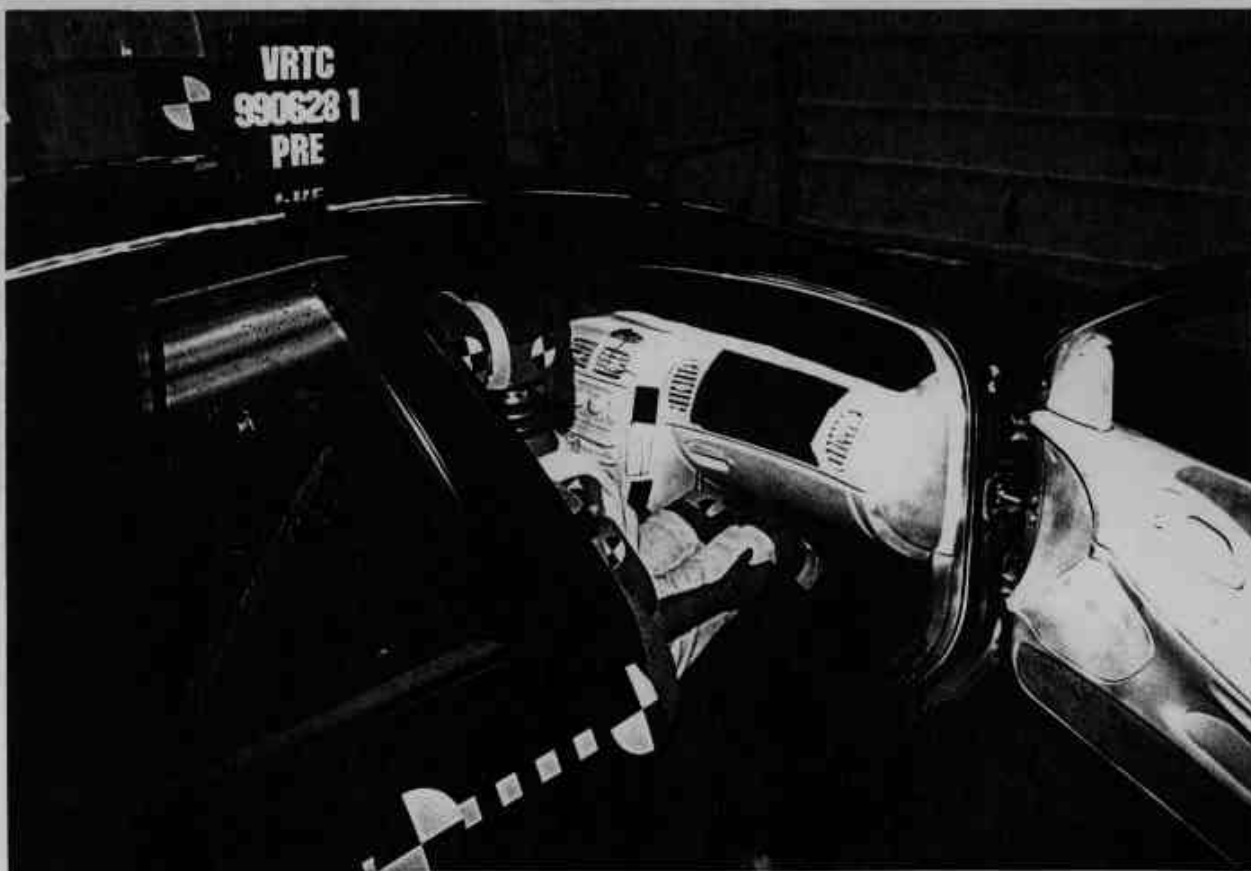


Figure A-47 Pre-Test Passenger Dummy Position - View 3

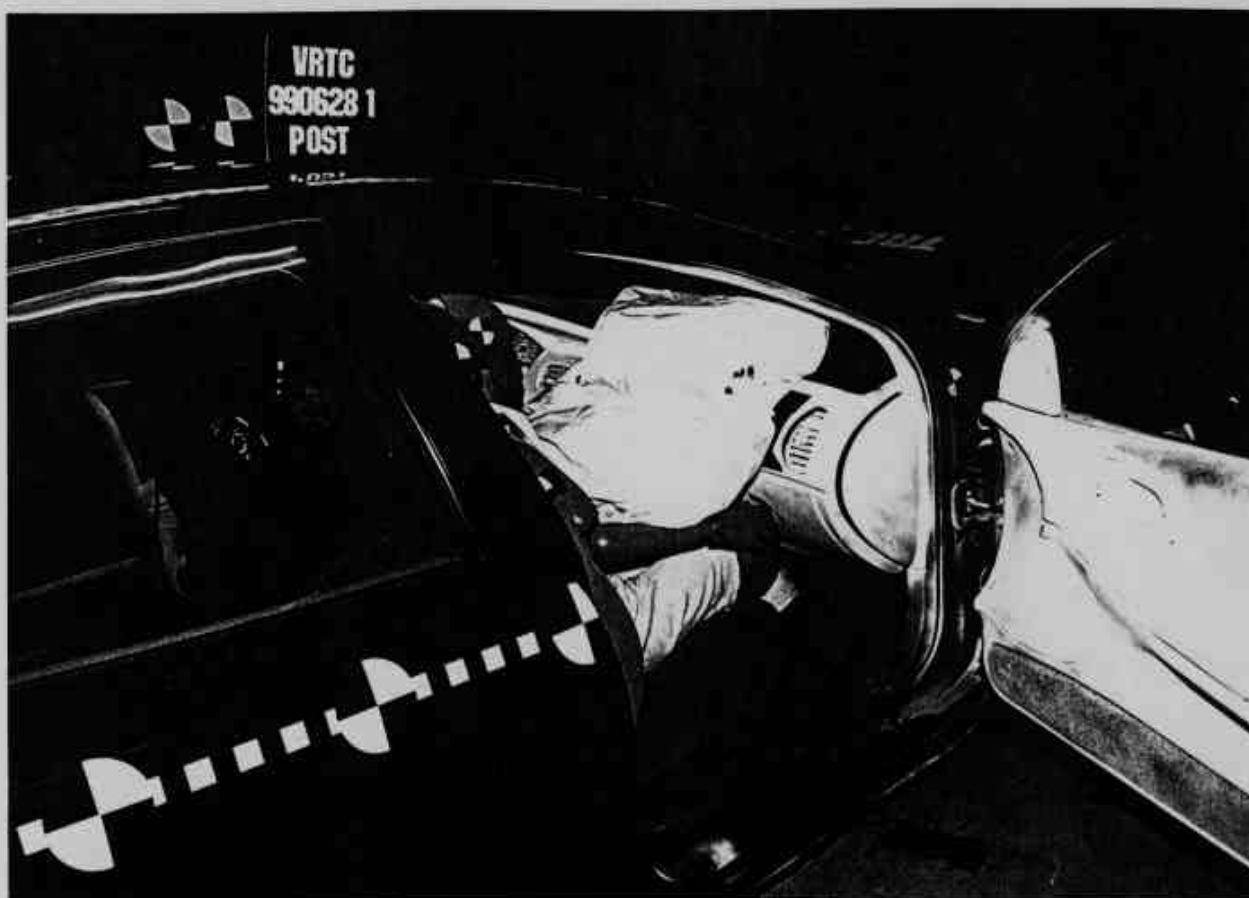


Figure A-48 Post-Test Passenger Dummy Position - View 3

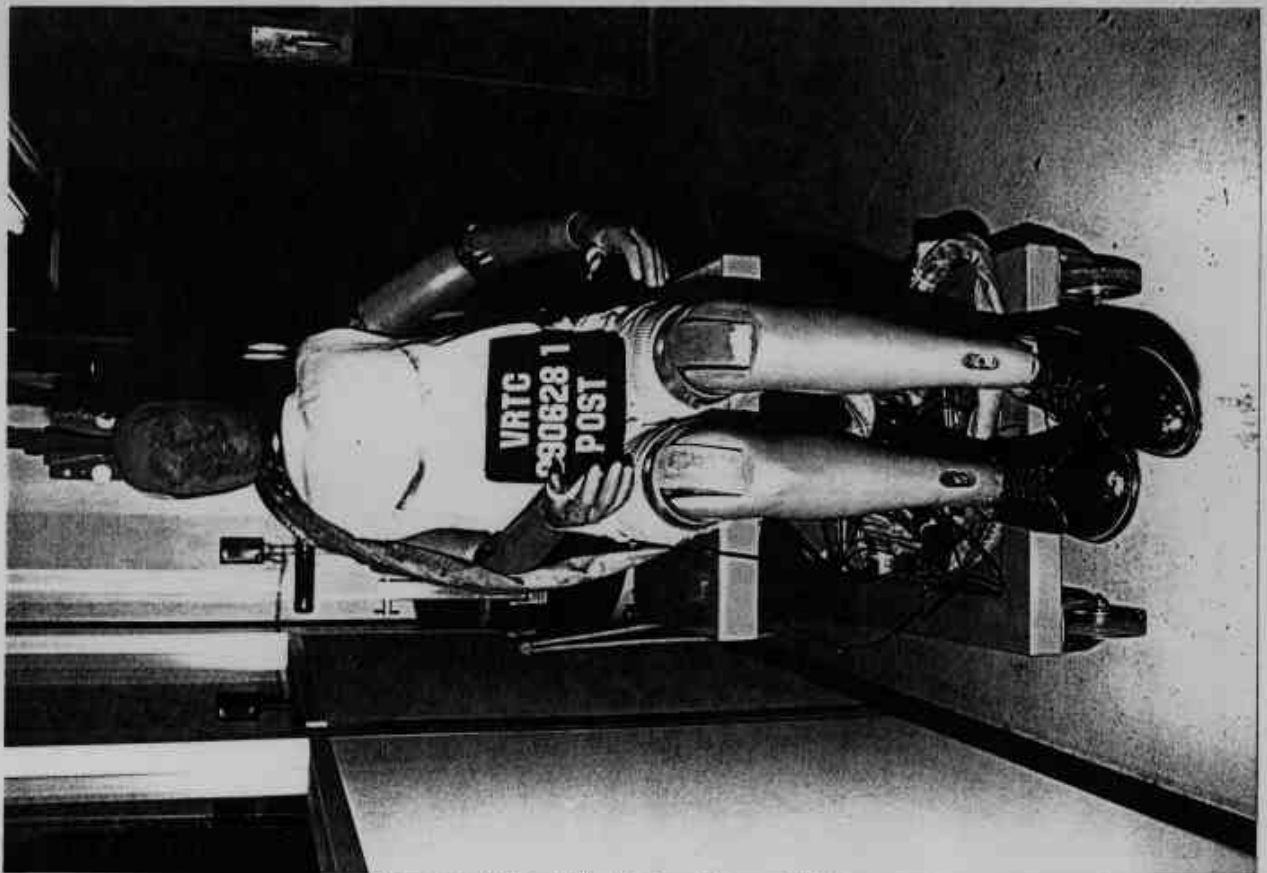


Figure A-49 Post-Test Driver Dummy View



Figure A-50 Post-Test Driver Dummy Head Contact - View 1



Figure A-51 Post-Test Driver Dummy Head Contact - View 2



Figure A-52 Post-Test Driver Dummy Head Contact - View 3



Figure A-53 Post-Test Driver Dummy Knee Contact - View 1



Figure A-54 Post-Test Driver Dummy Knee Contact - View 2



Figure A-55 Post-Test Driver Dummy Knee Contact - View 3



Figure A-56 Post-Test Driver Footwell Deformation View

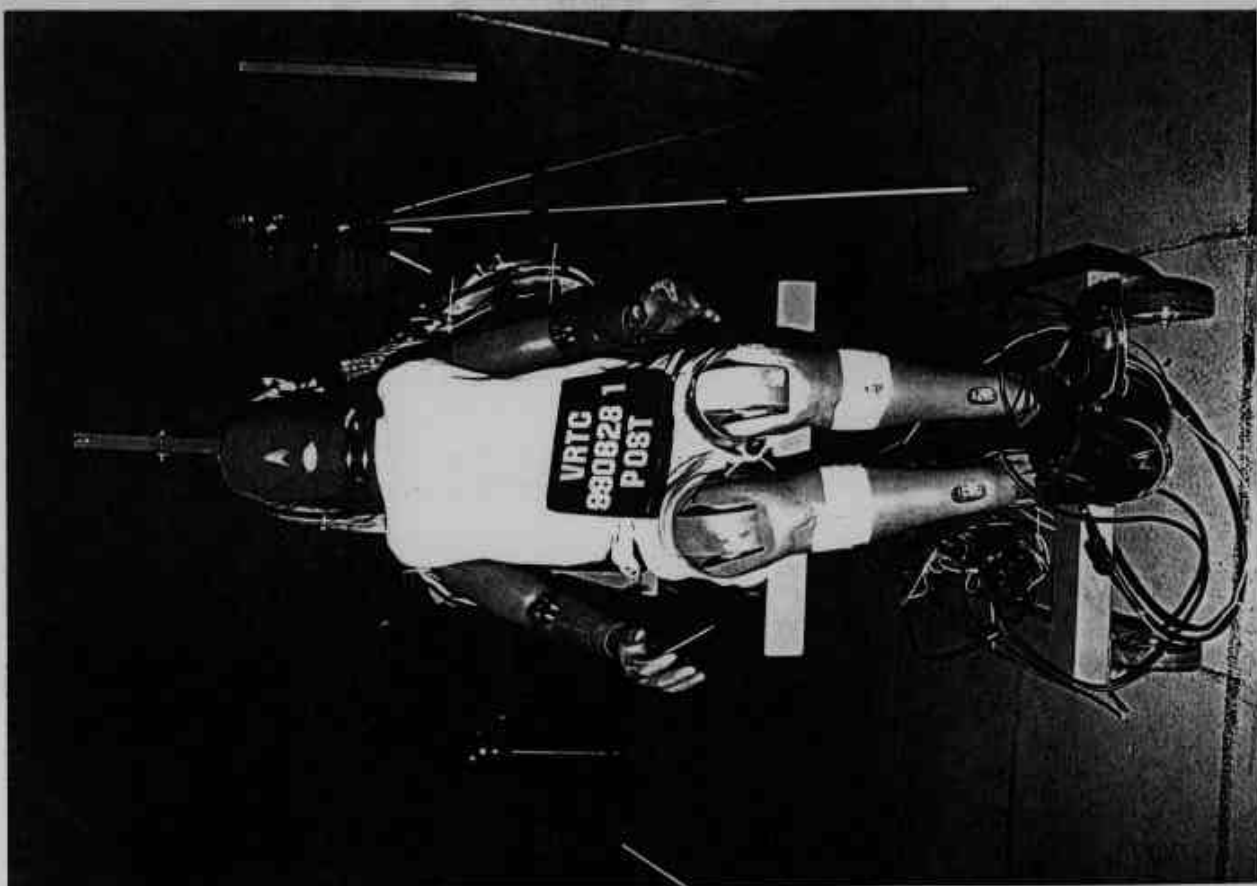


Figure A-57 Post-Test Passenger Dummy View



Figure A-58 Post-Test Passenger Dummy Head Contact - View 1



Figure A-59 Post-Test Passenger Dummy Head Contact - View 2



Figure A-60 Post-Test Passenger Dummy Head Contact - View 3



Figure A-61 Post-Test Passenger Dummy Knee Contact - View 1



Figure A-62 Post-Test Passenger Dummy Knee Contact - View 2



Figure A-63 Post-Test Passenger Footwell Deformation View



Figure A-64 Pre-Test Fuel Cap View

MFD BY CHRYSLER CORPORATION

DATE OF MFR: 11-98

GAWR	2065 KG	GAWR	1178 KG	GAWR	8922 KG
	4551 LB	FRONT	2595 LB	REAR	2831 LB

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

VIN: 2B3MD46R3XH643504

TYPE: PASSENGER CAR



MDH: 112423 524AA PNT:PNT VEHICLE MADE IN CANADA TRM:AFDS 4648104

Figure A-65 Pre-Test Vehicle Certification Label View

VEHICLE CAPACITY OR LESS	
1ST SEAT	2 PASS
2ND SEAT	3 PASS
LUGGAGE	115 LBS-52 kg
TOTAL	5 PASS
TOTAL WEIGHT	865 LBS-392 kg
TIRE PRESSURE COLD	32 PSI
	220 kPa
	FRONT AND REAR

MINIMUM TIRE SIZE
P225/60R16 97T
STANDARD LOAD

SEE OWNERS MANUAL FOR ADDITIONAL DATA

PRINTED IN USA 04782251AA

Figure A-66 Pre-Test Vehicle Tire Information Label View

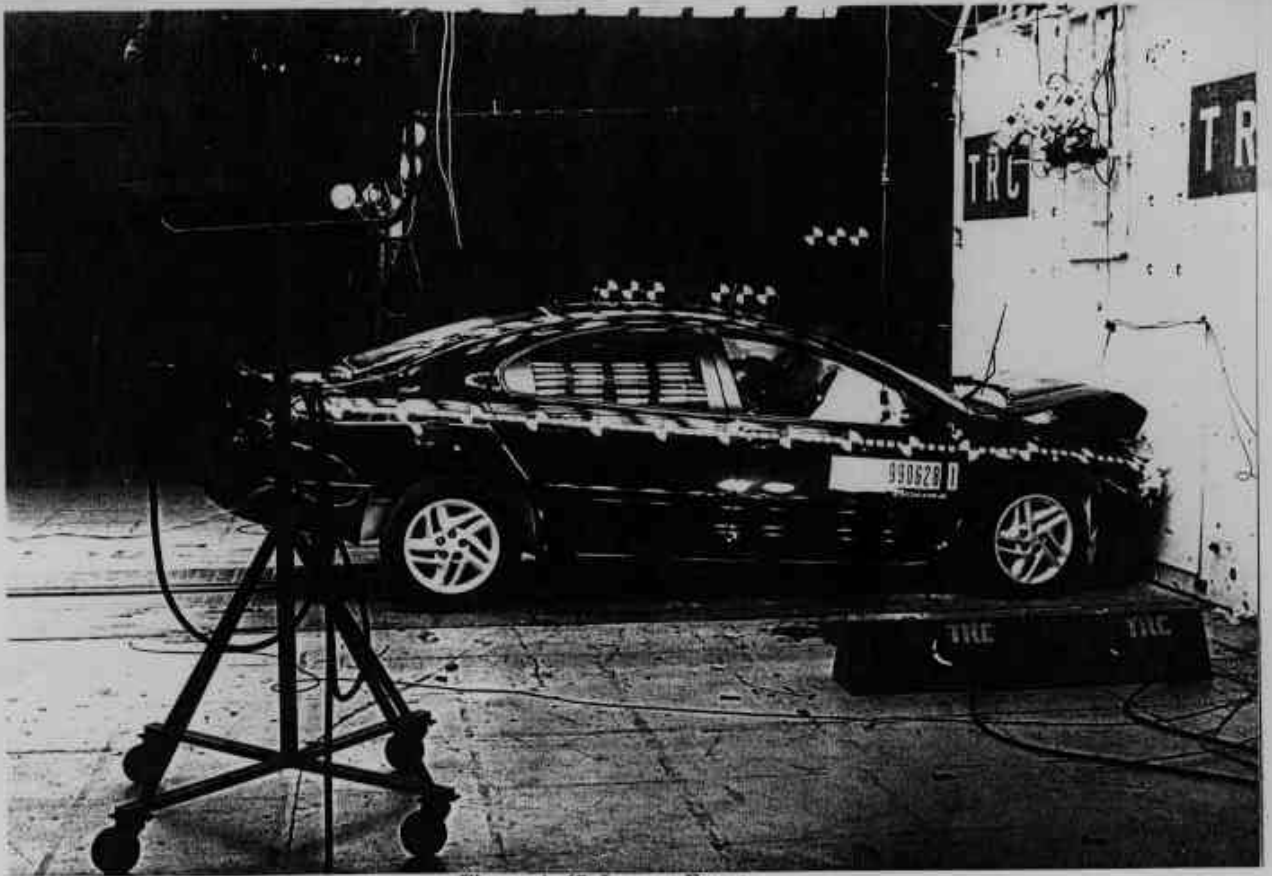
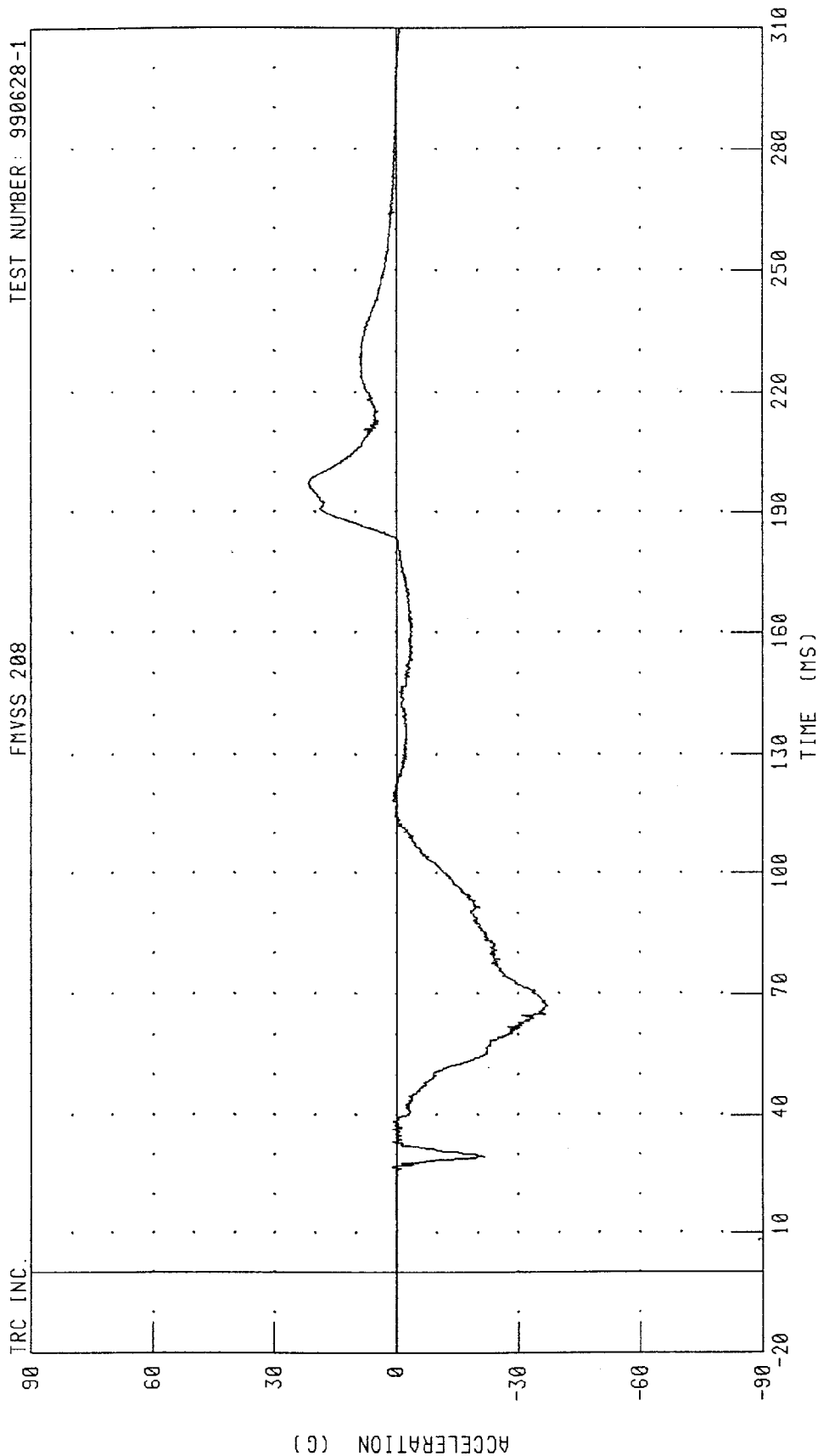


Figure A-67 Impact Event

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD X-AXIS ACCELERATION



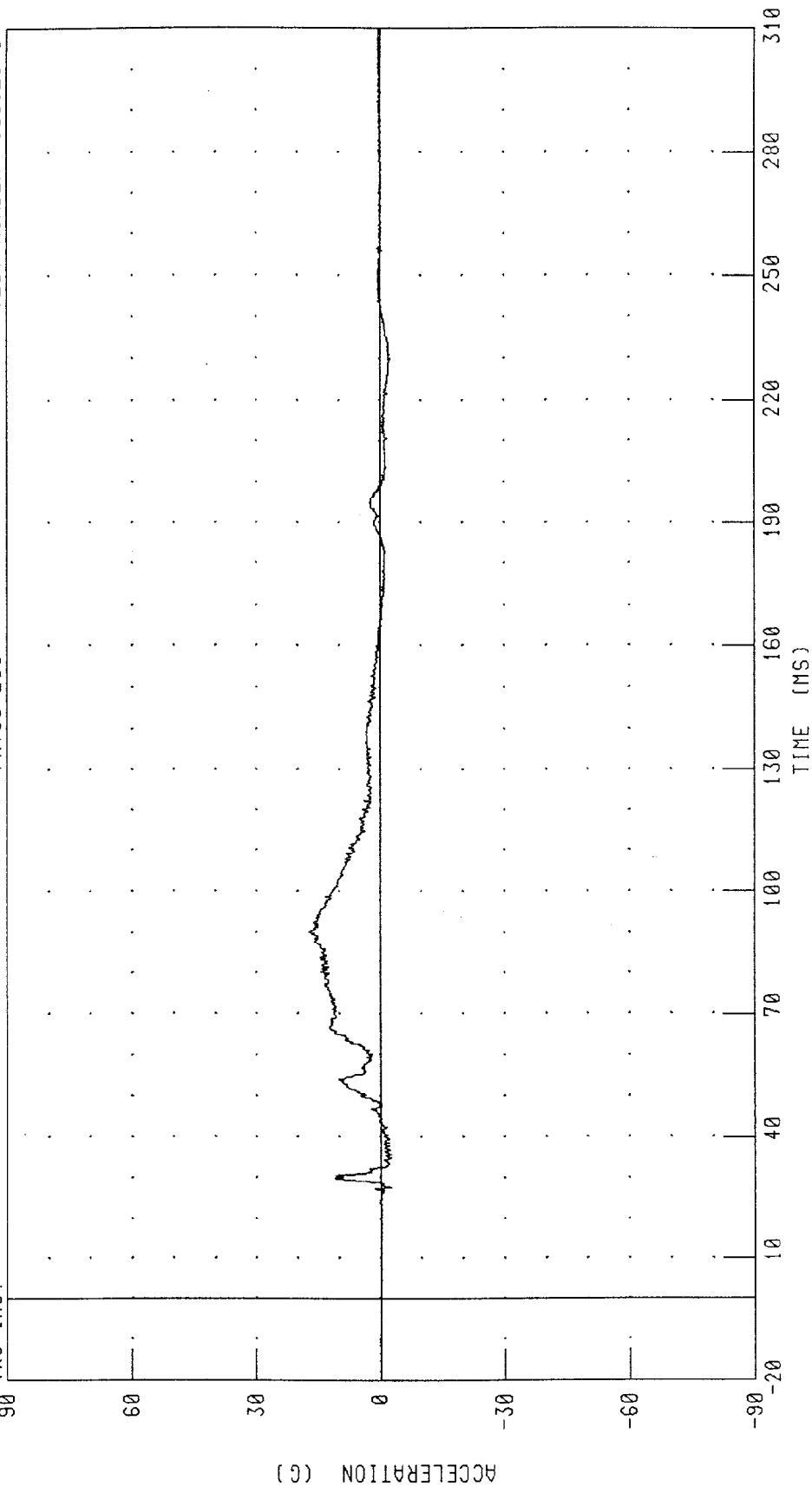
CHANNEL: HEDXG1 FILTER: CH. CLASS 1000 PEAK DATA: 21.72 G @ 197.04 MS; -37.20 G @ 67.04 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

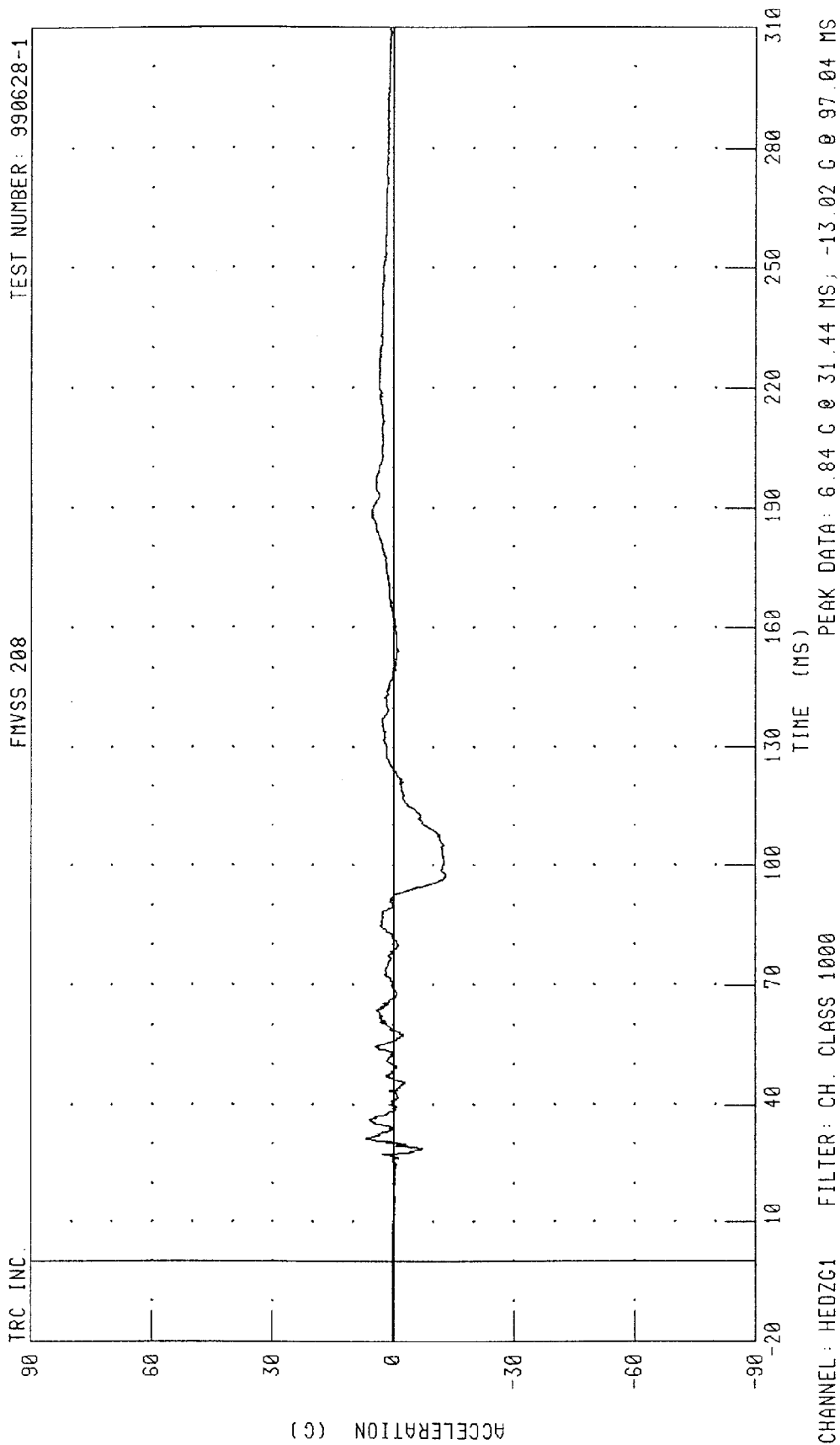
TRC INC.



PEAK DATA: 17.39 G @ 90.16 MS; -2.62 G @ 27.76 MS

CHANNEL: HEDY61 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD Z-AXIS ACCELERATION

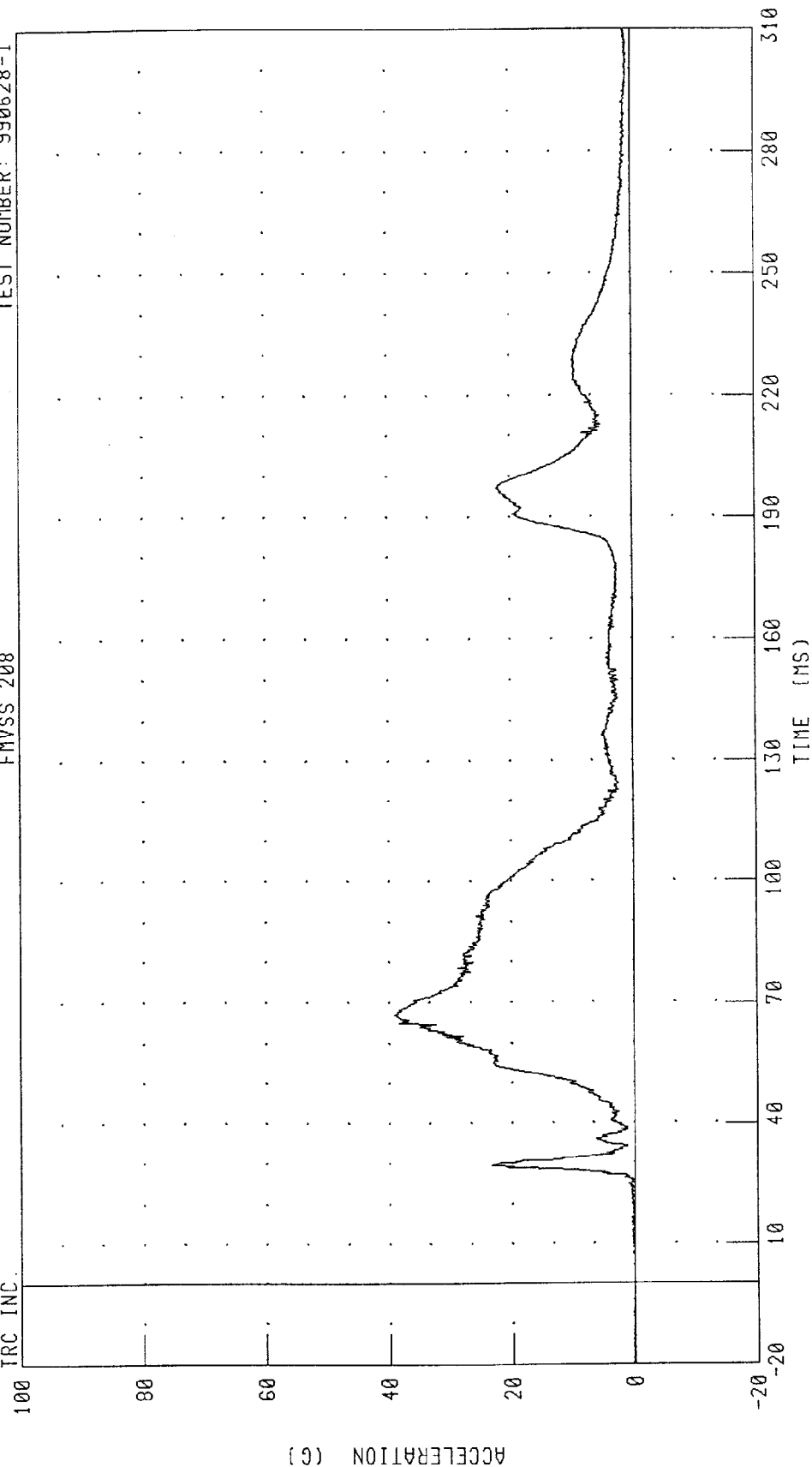


1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD RESULTANT ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

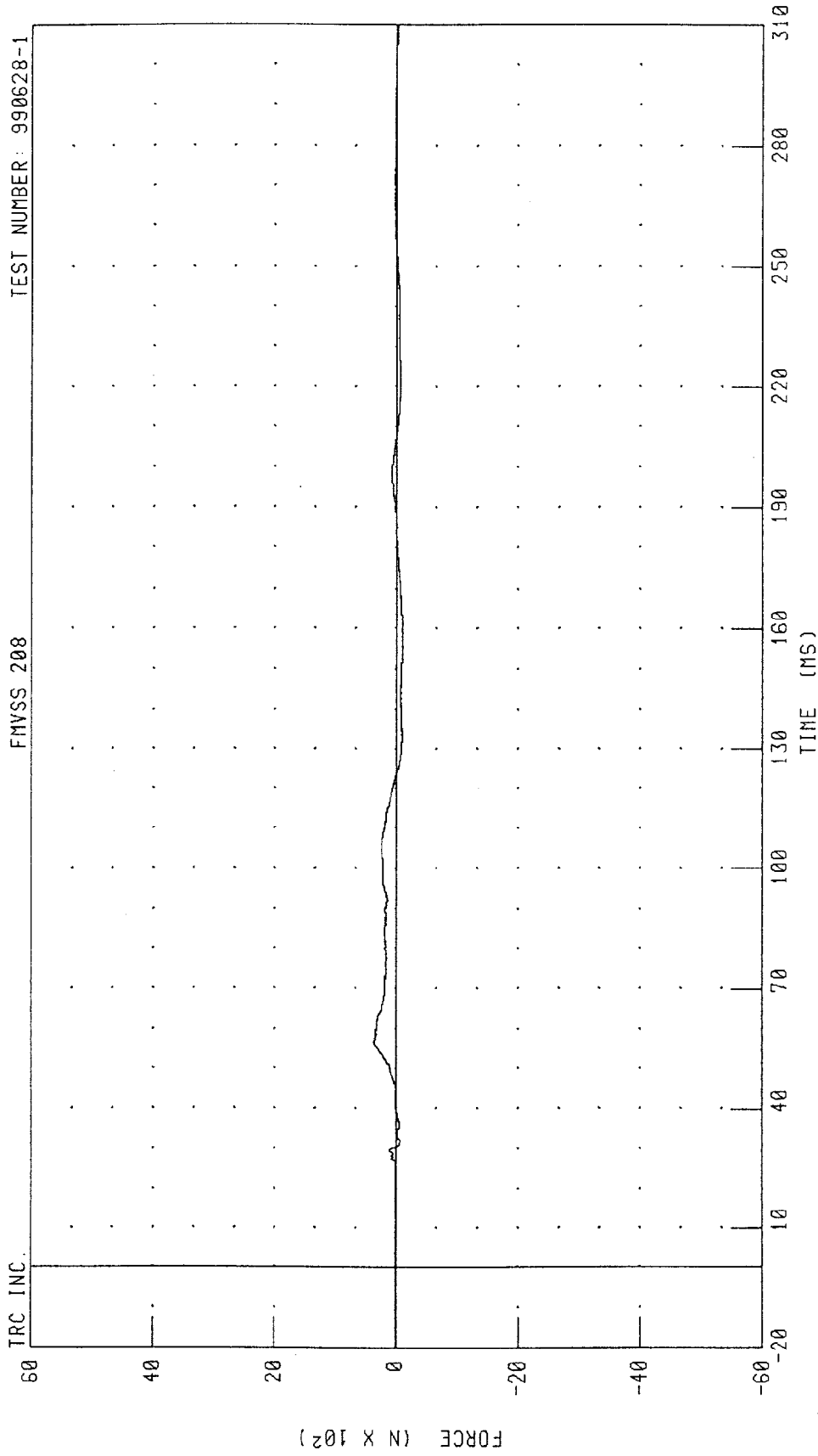
TRC INC.



CHANNEL: HEDRC1 FILTER: CH. CLASS 1000

PEAK DATA: 39.06 G @ 67.04 MS, 0.09 G @ -19.92 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK X-AXIS SHEAR FORCE



CHANNEL: NEKXF1 FILTER: CH. CLASS 1000

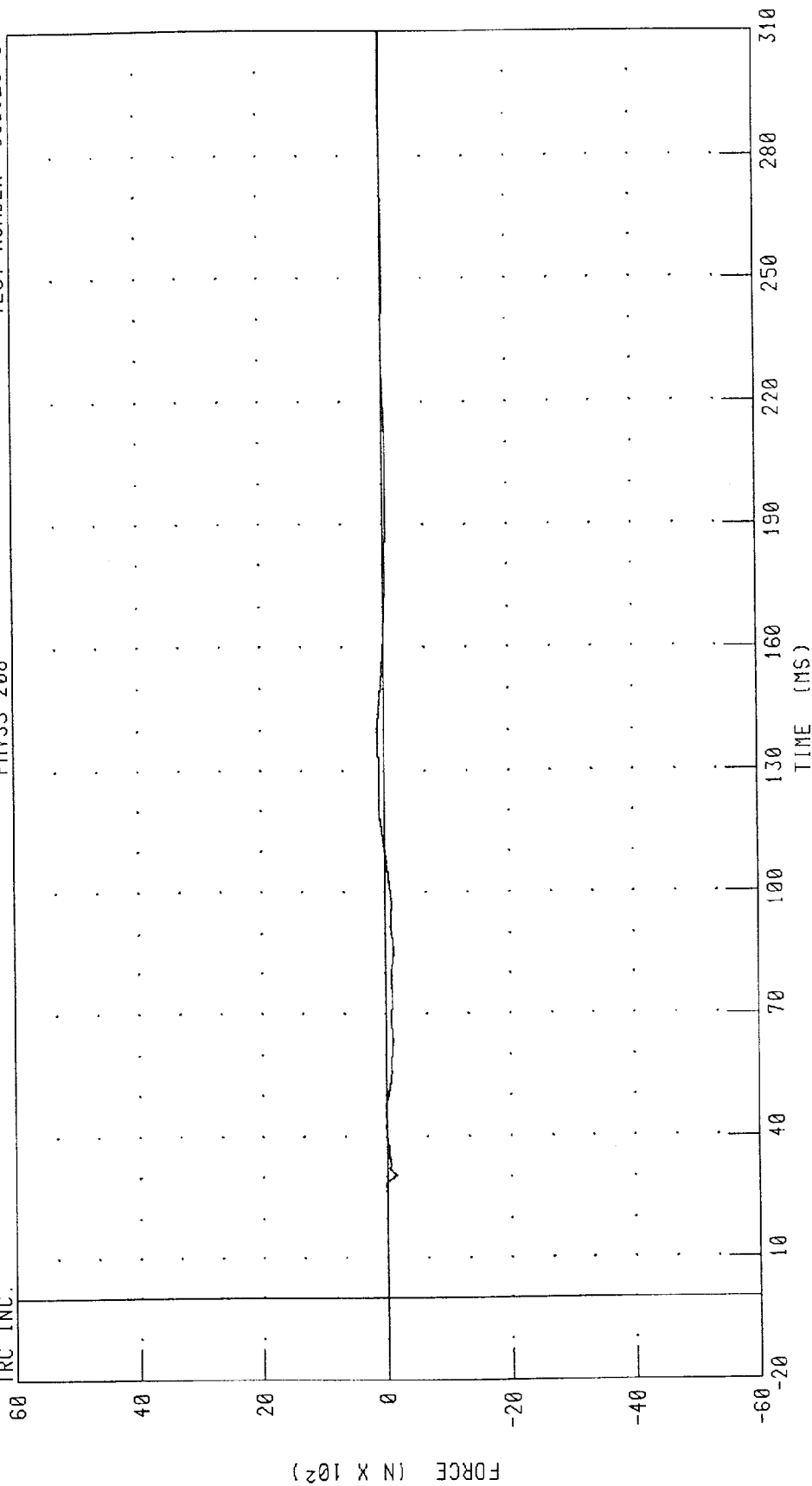
PEAK DATA: 362.22 N @ 56.48 MS; -115.39 N @ 157.52 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK Y-AXIS SHEAR FORCE

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



PEAK DATA: 103.75 N @ 139.76 MS; -161.35 N @ 30.56 MS

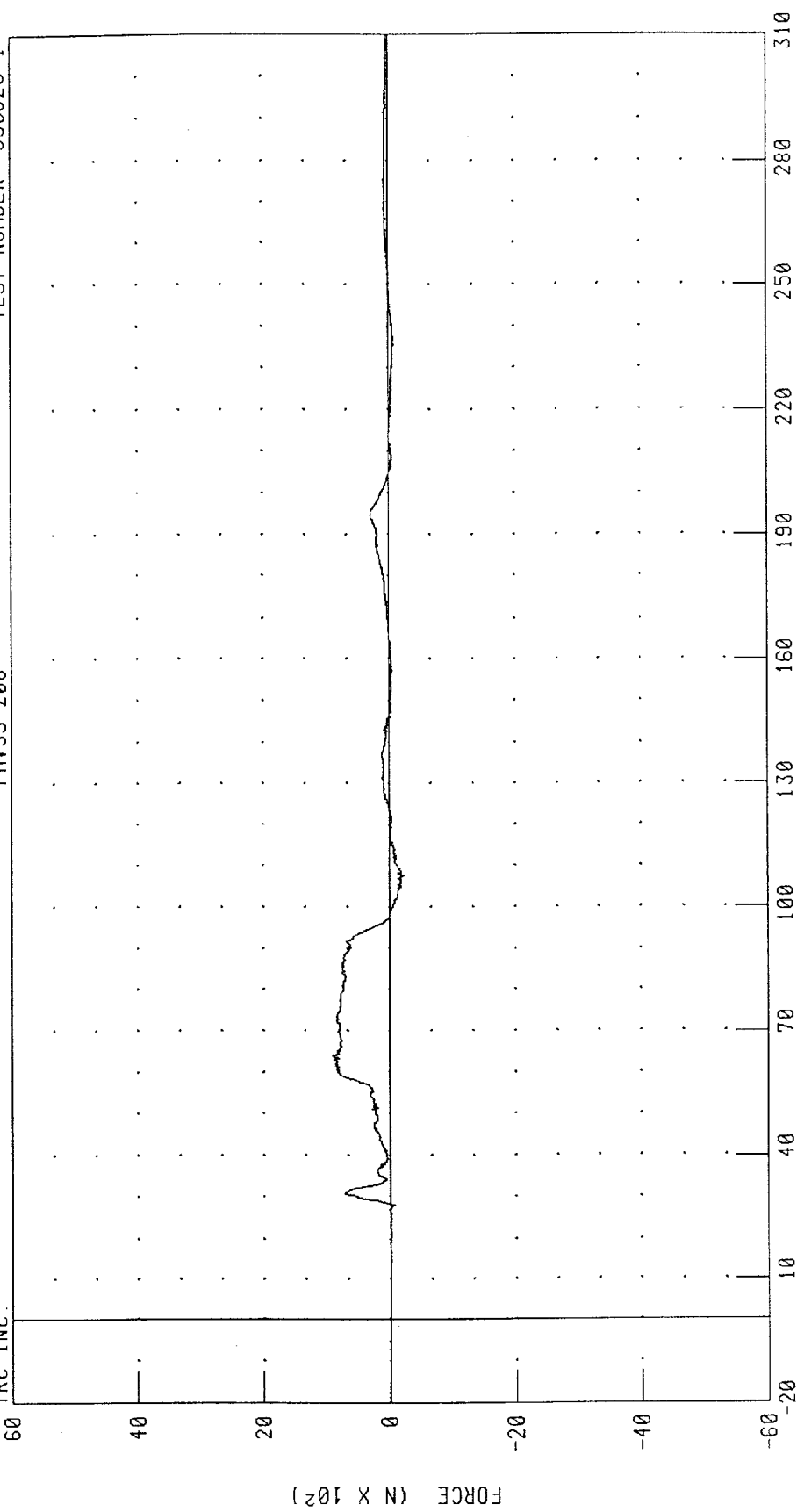
CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK Z-AXIS AXIAL FORCE

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



TIME (MS)

PEAK DATA: 899.75 N @ 64.08 MS; -227.18 N @ 107.60 MS

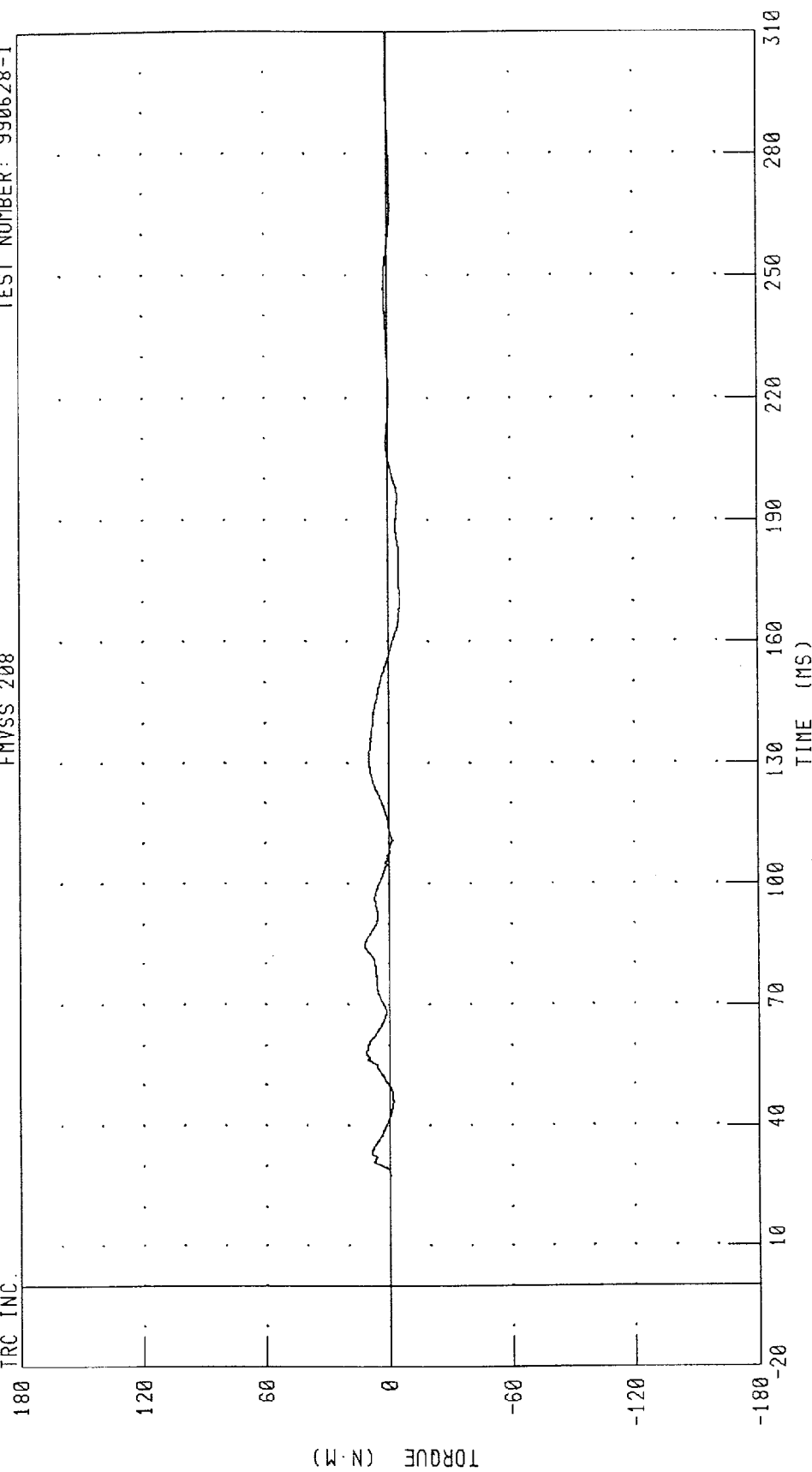
CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK MOMENT ABOUT X AXIS

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



PEAK DATA: 11.70 N·m @ 84.88 ms; -5.67 N·m @ 171.68 ms

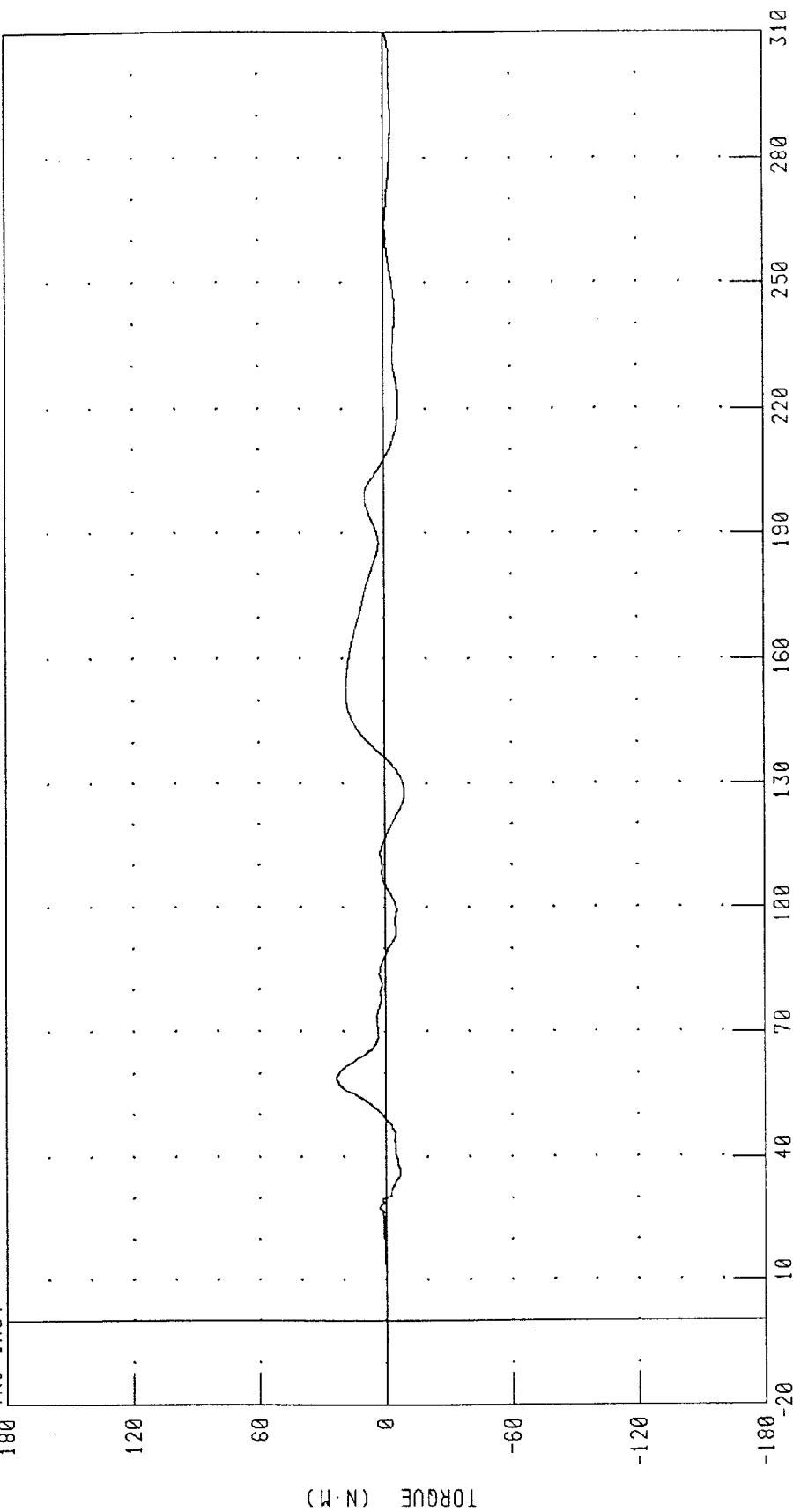
CHANNEL: NEKX11 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A FLAT. FRONTAL BARRIER AT 25 MPH
DRIVER NECK MOMENT ABOUT Y AXIS

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.

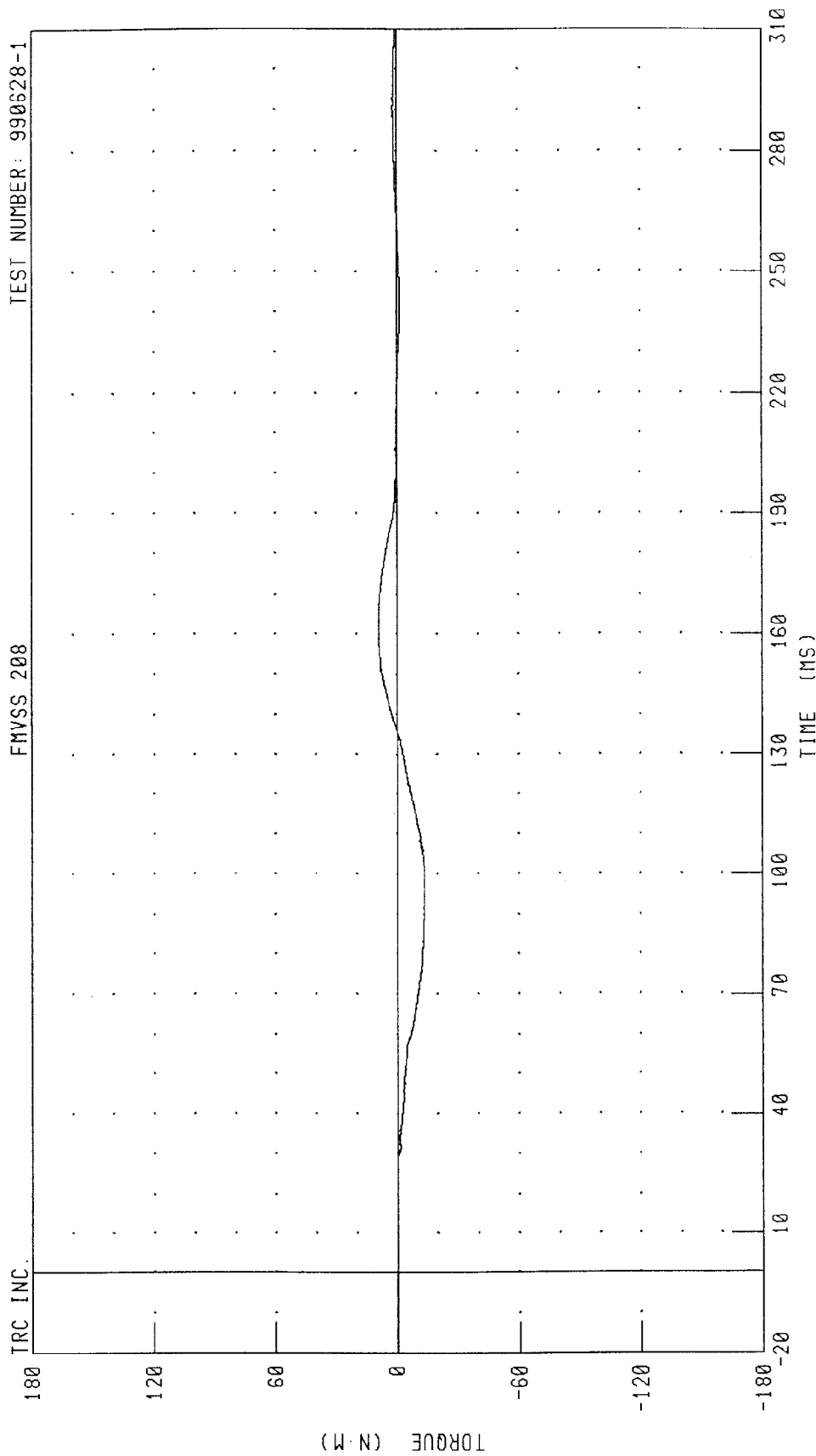


TIME (MS)

PEAK DATA: 22.97 N-M @ 59.12 MS, -9.57 N-M @ 128.00 MS

CHANNEL: NEKYM1 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK MOMENT ABOUT Z AXIS



CHANNEL: NEKZM1 FILTER: CH. CLASS 600

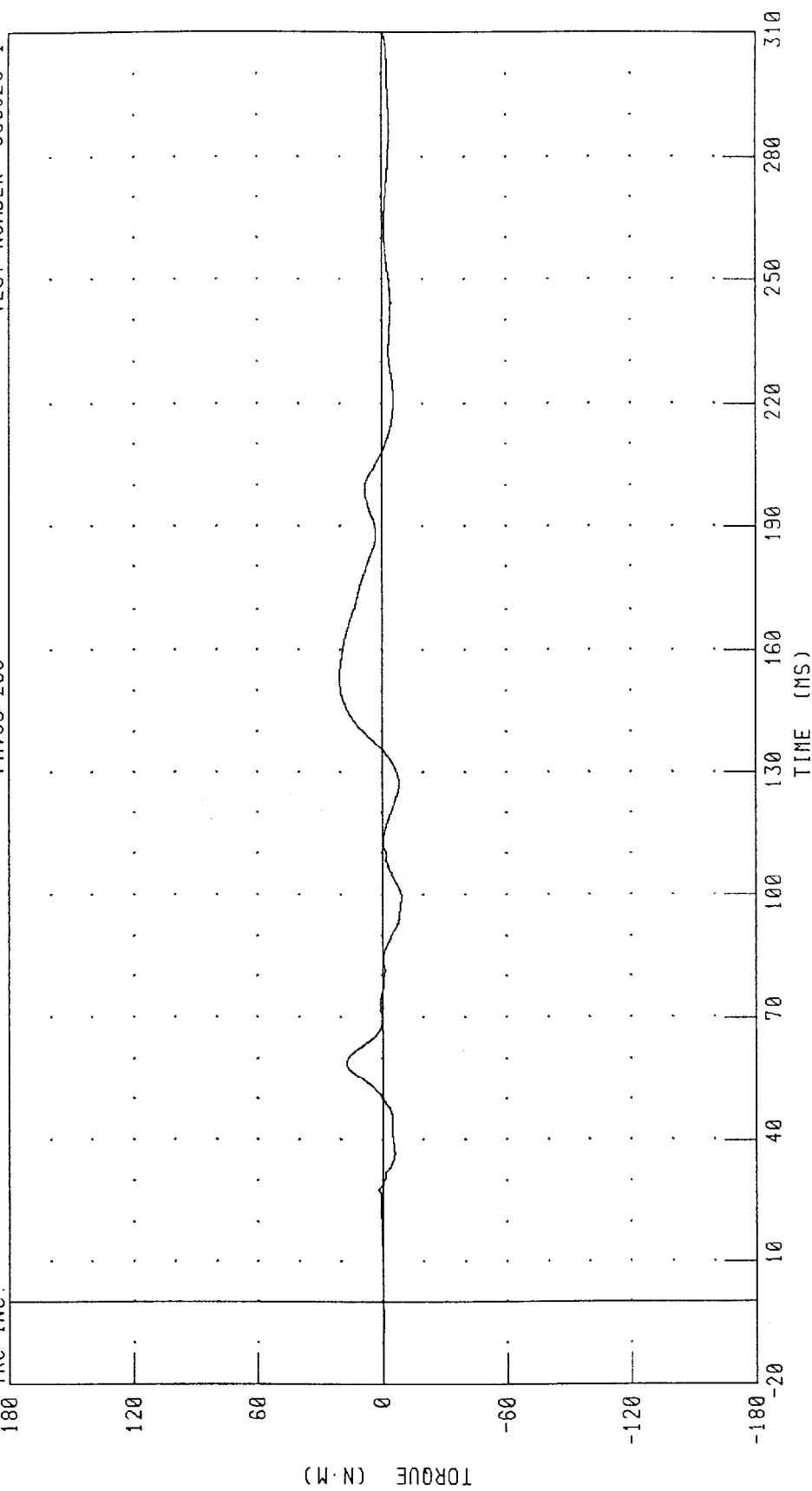
PEAK DATA: 9 15 N·m @ 162.88 ms; -13.59 N·m @ 93.28 ms

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK OCCIPITAL CONDYLE

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



PEAK DATA: 20.14 N·M @ 152.96 MS; -9.30 N·M @ 99.28 MS

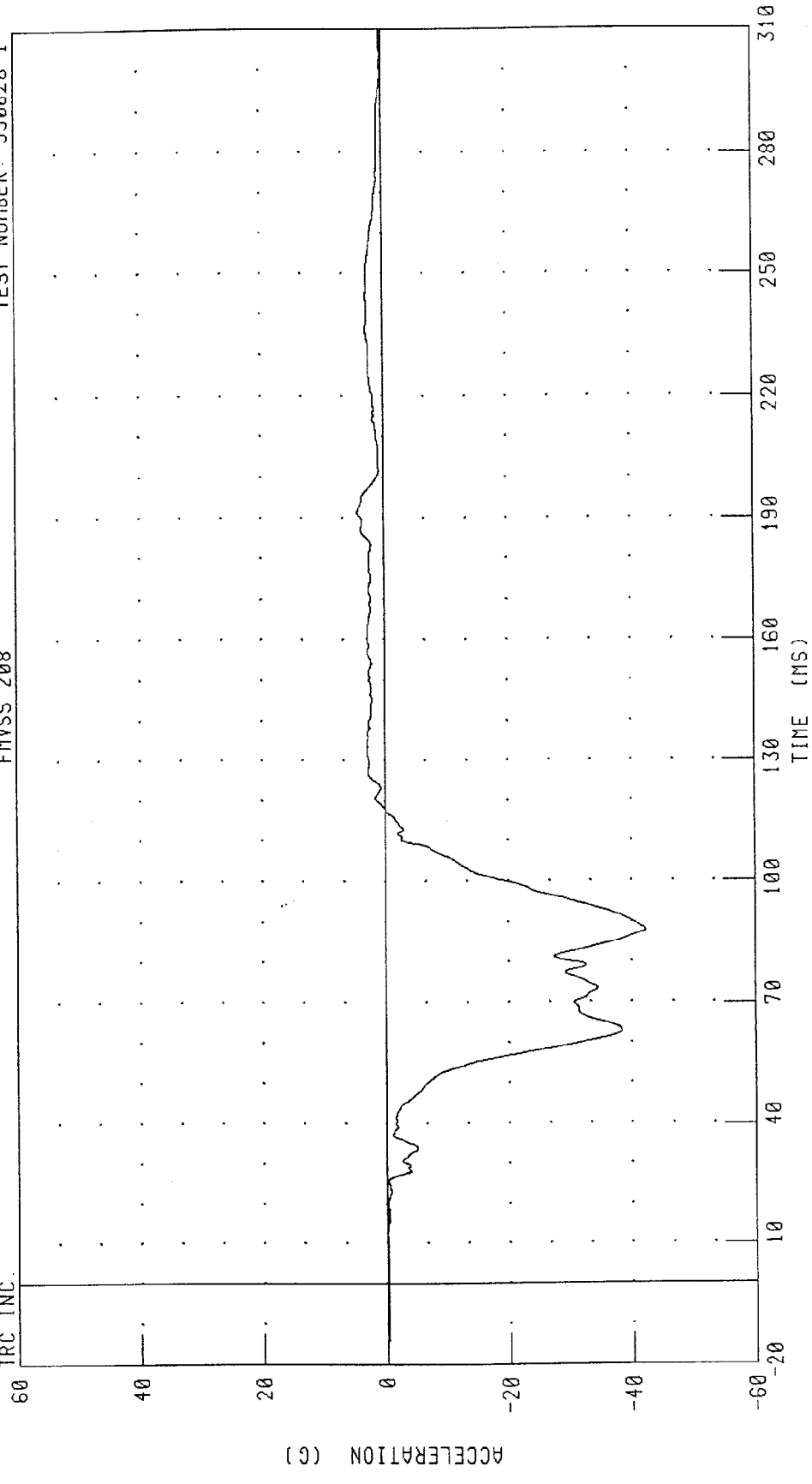
CHANNEL: NEKOM1 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST X-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

IRC INC.

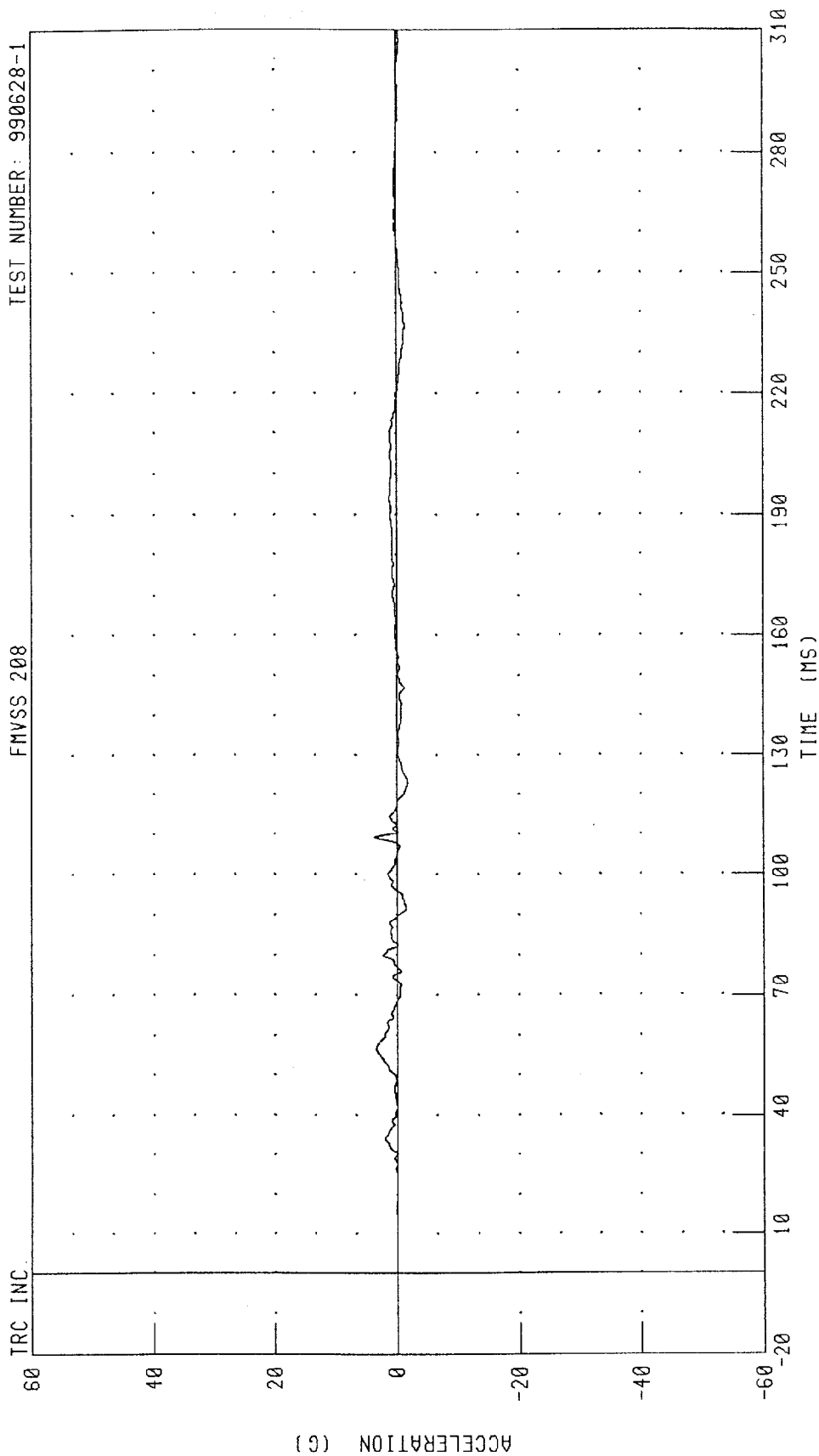


PEAK DATA: 4.29 G @ 191.60 MS; -42.26 G @ 88.00 MS

FILTER: CH. CLASS 180

CHANNEL: CSTXG1

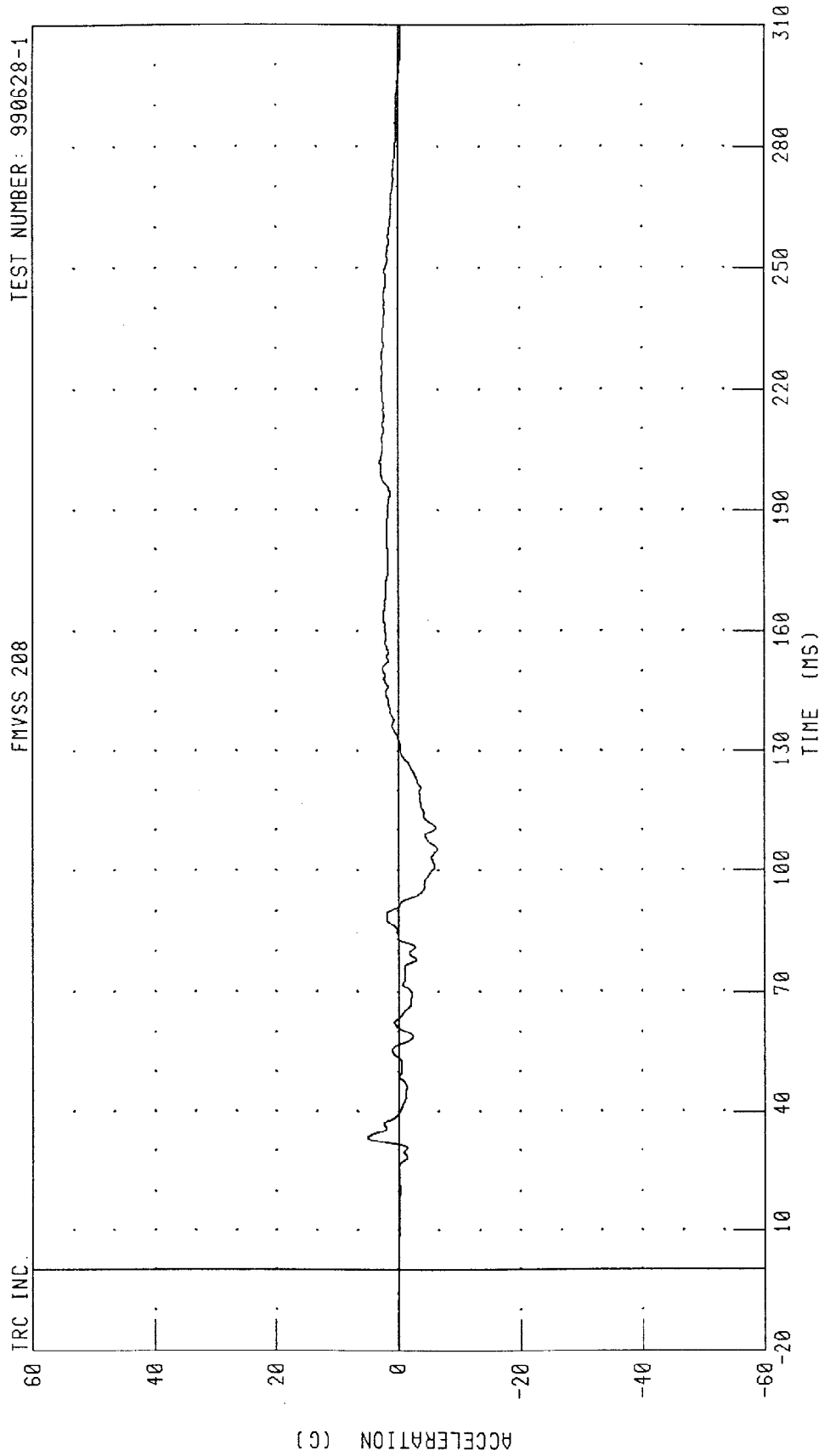
1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST Y-AXIS ACCELERATION



CHANNEL: CSTYG1 FILTER: CH. CLASS 180

PEAK DATA: 3.62 G @ 109.28 MS; -1.86 G @ 122.96 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST Z-AXIS ACCELERATION



CHANNEL: CSTZG1 FILTER: CH. CLASS 180

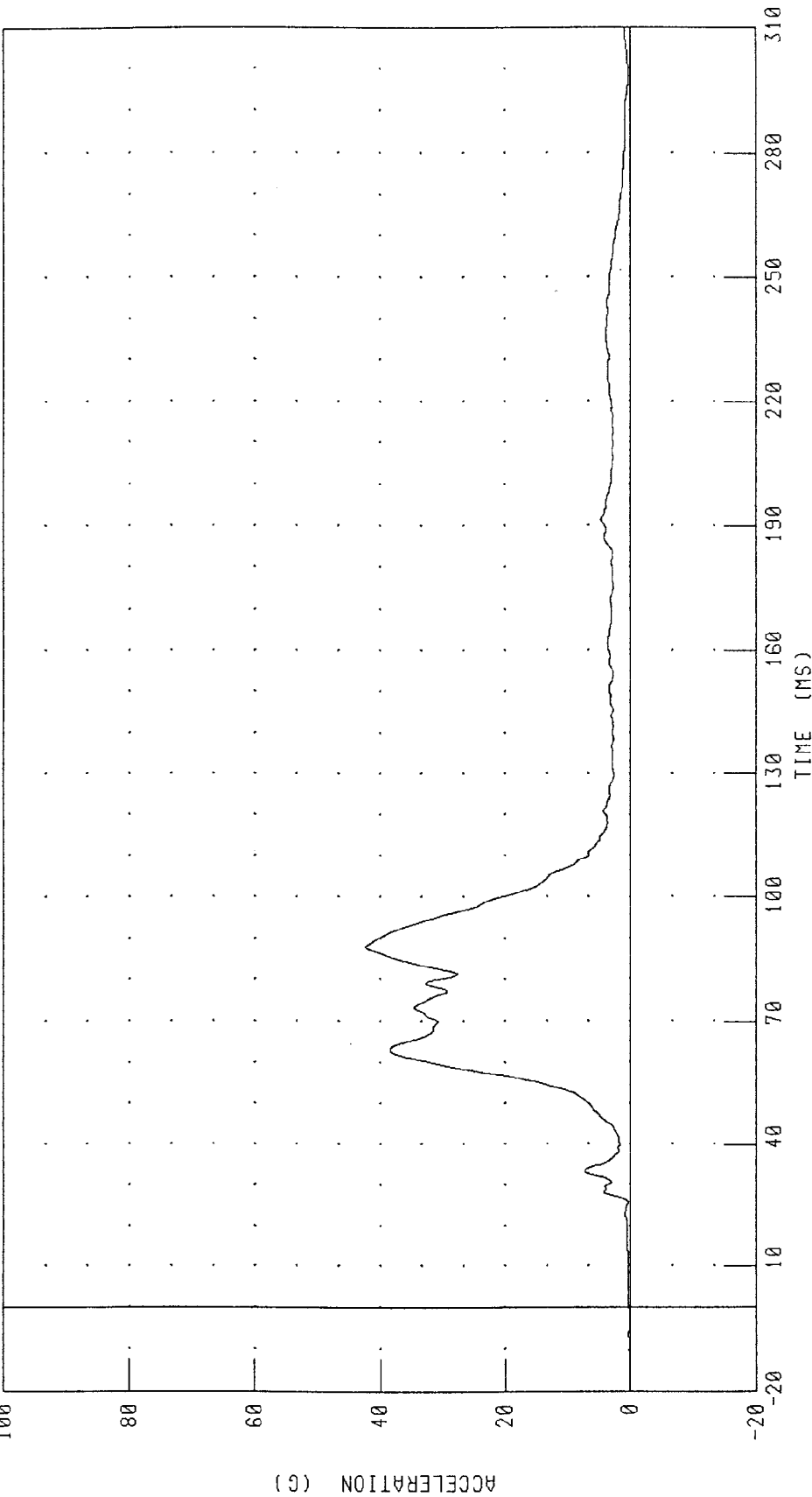
PEAK DATA: 4.98 G @ 33.52 MS; -6.44 G @ 105.36 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST RESULTANT ACCELERATION

TRC INC.

ENVSS 208

TEST NUMBER: 990628-1



CHANNEL: CSTRG1 FILTER: CH. CLASS 180

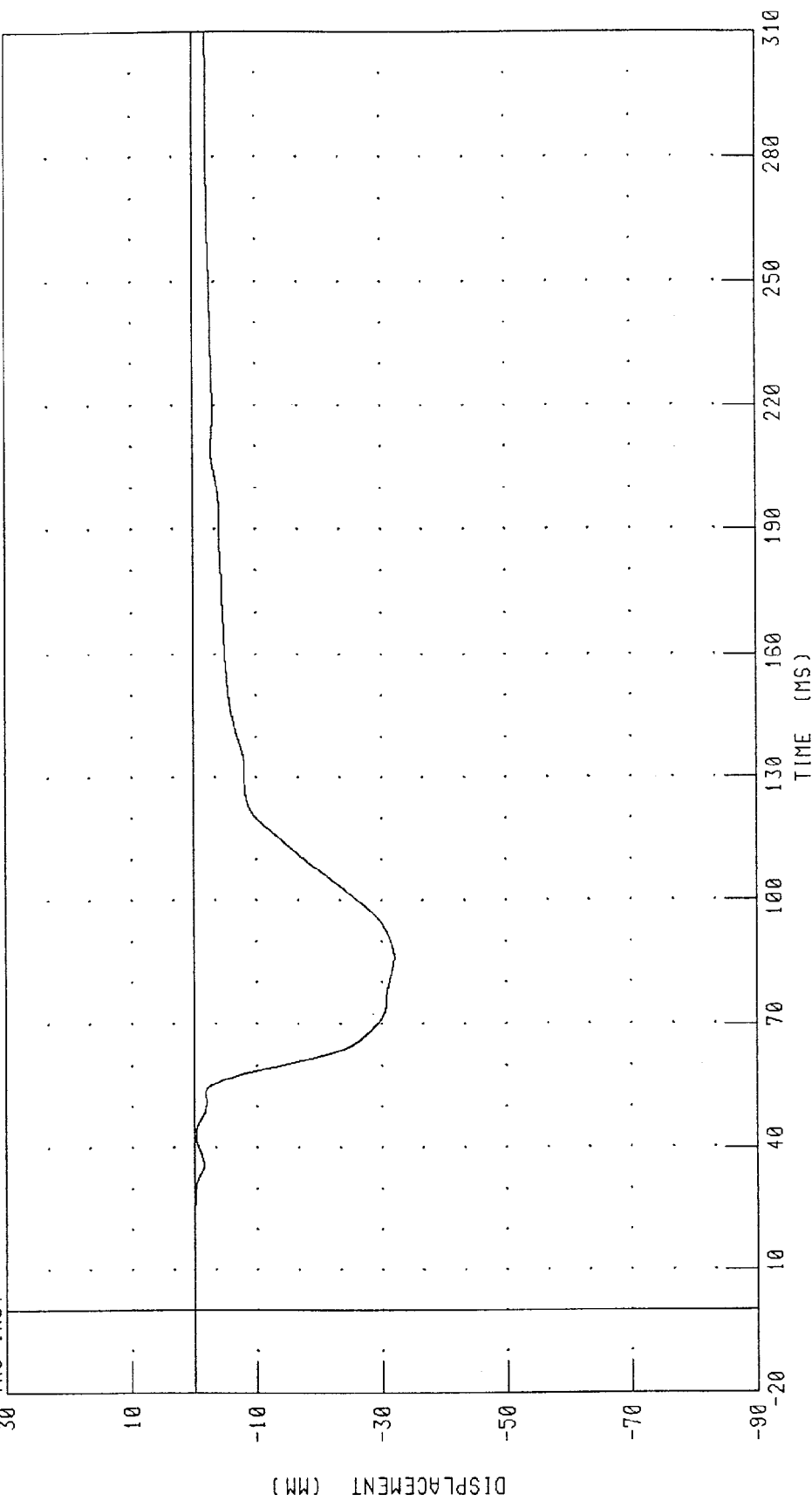
PEAK DATA: 42.31 G @ 88.00 MS; 0.01 G @ -20.00 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST DEFLECTION

TEST NUMBER: 990628-1

FMVSS 208

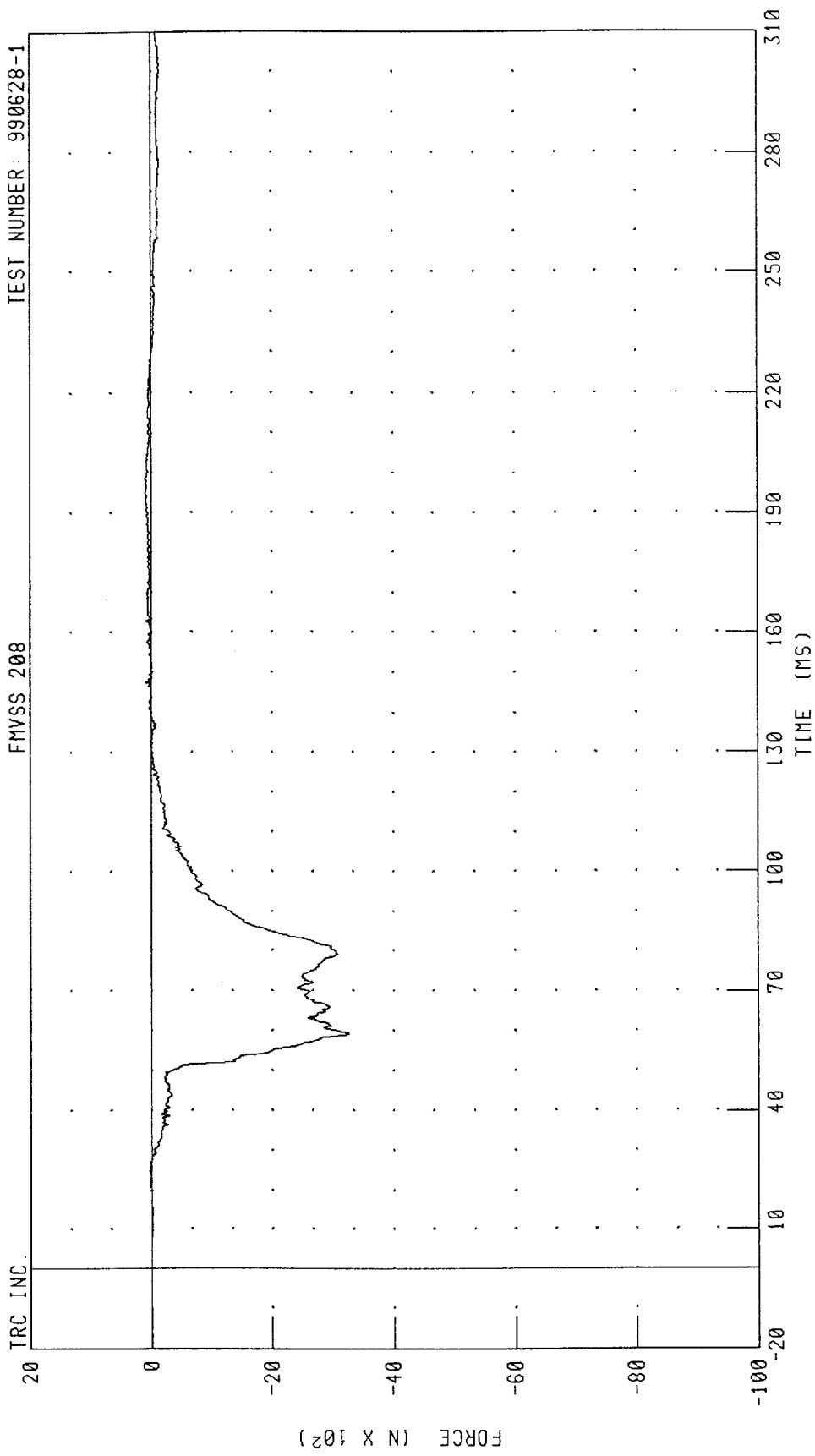
TRC INC.



CHANNEL: CSTXD1 FILTER: CH. CLASS 180

PEAK DATA: 0.00 MM @ 24.32 MS; -32.05 MM @ 86.24 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT FEMUR FORCE



CHANNEL: LFMF1 FILTER: CH. CLASS 600

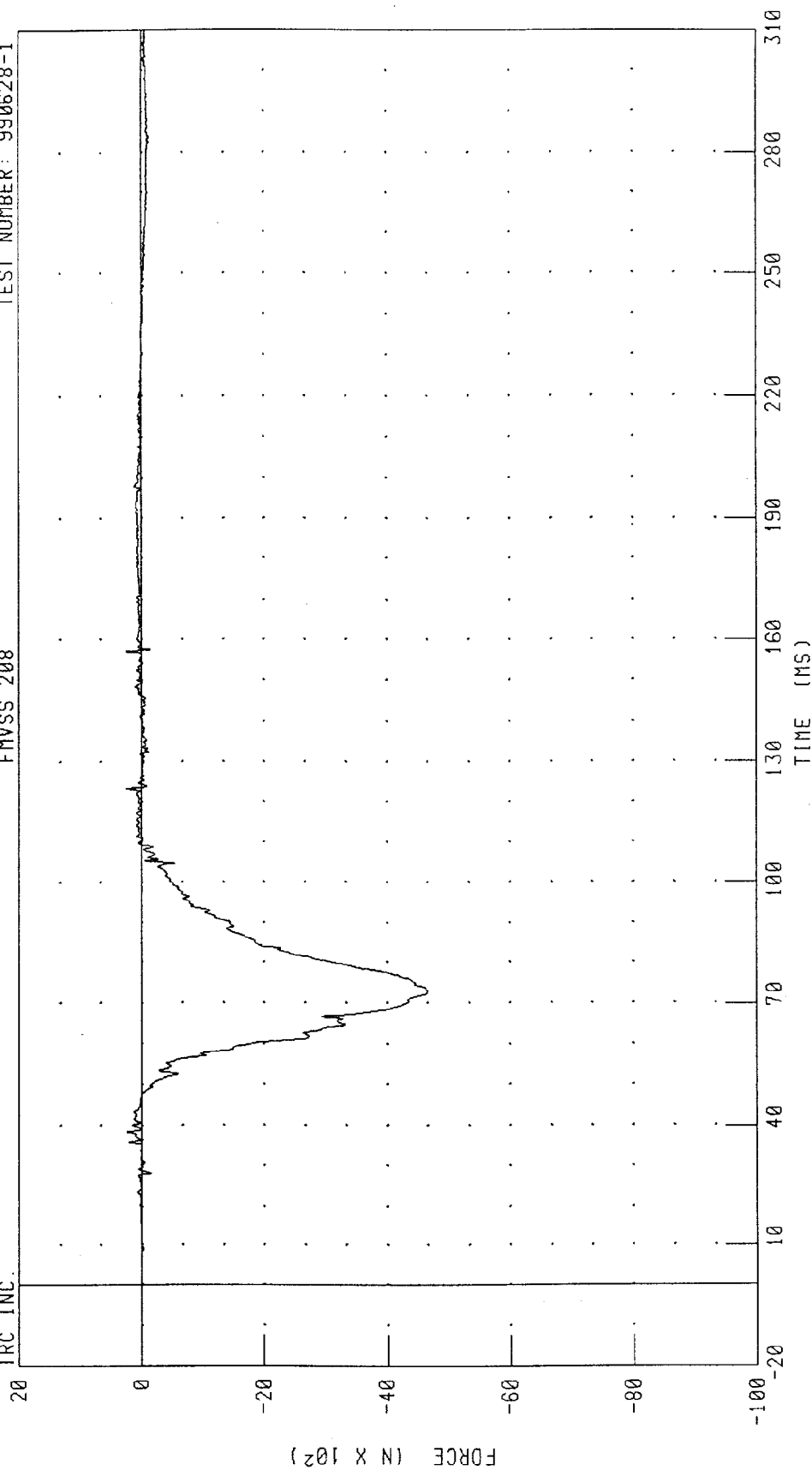
PEAK DATA: 101.87 N @ 198.64 MS; -3269.16 N @ 59.28 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT FEMUR FORCE

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



PEAK DATA: 258.04 N @ 157.20 MS; -4674.34 N @ 73.04 MS

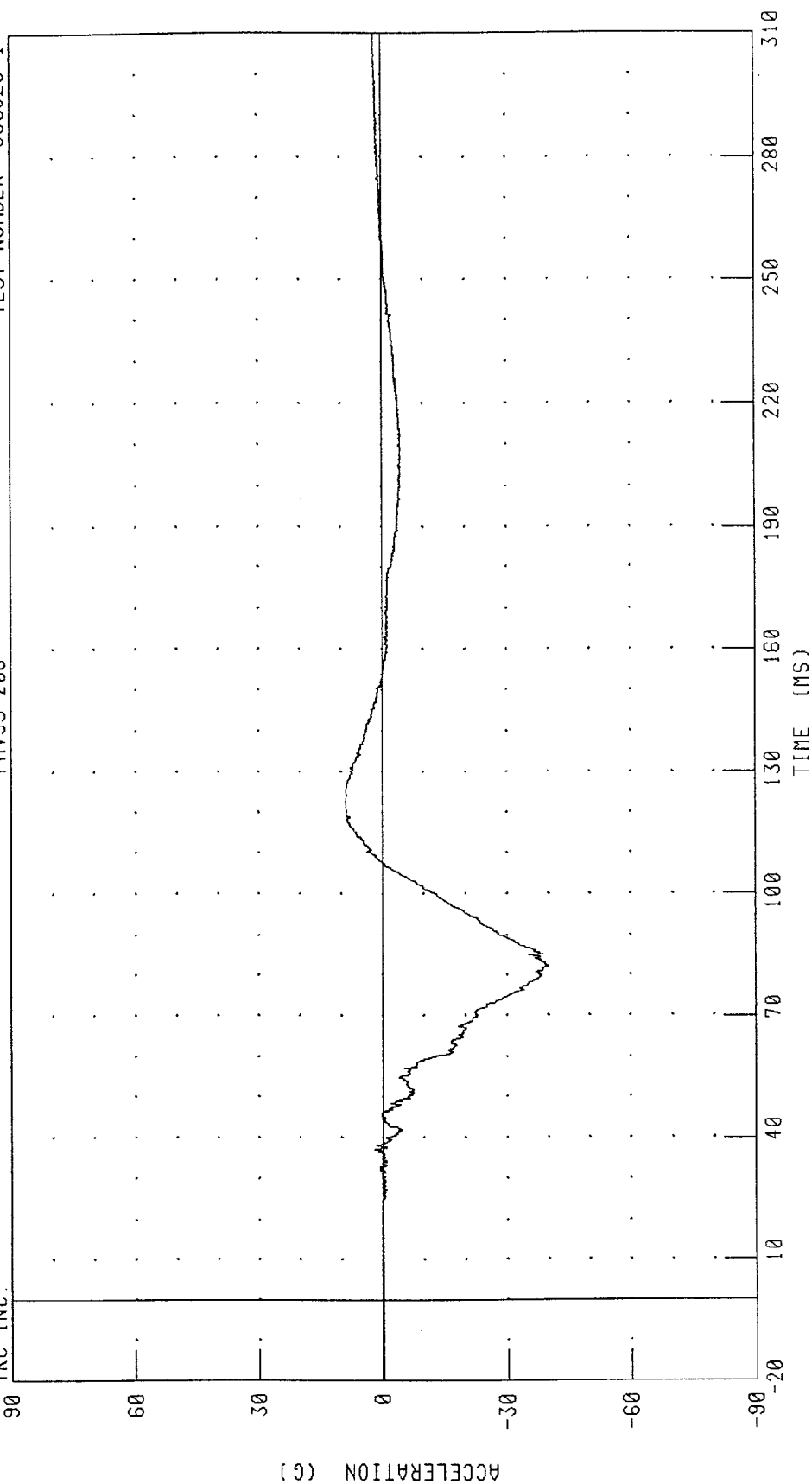
CHANNEL: RFMF1 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



CHANNEL: HEDXC2 FILTER: CH. CLASS 1000

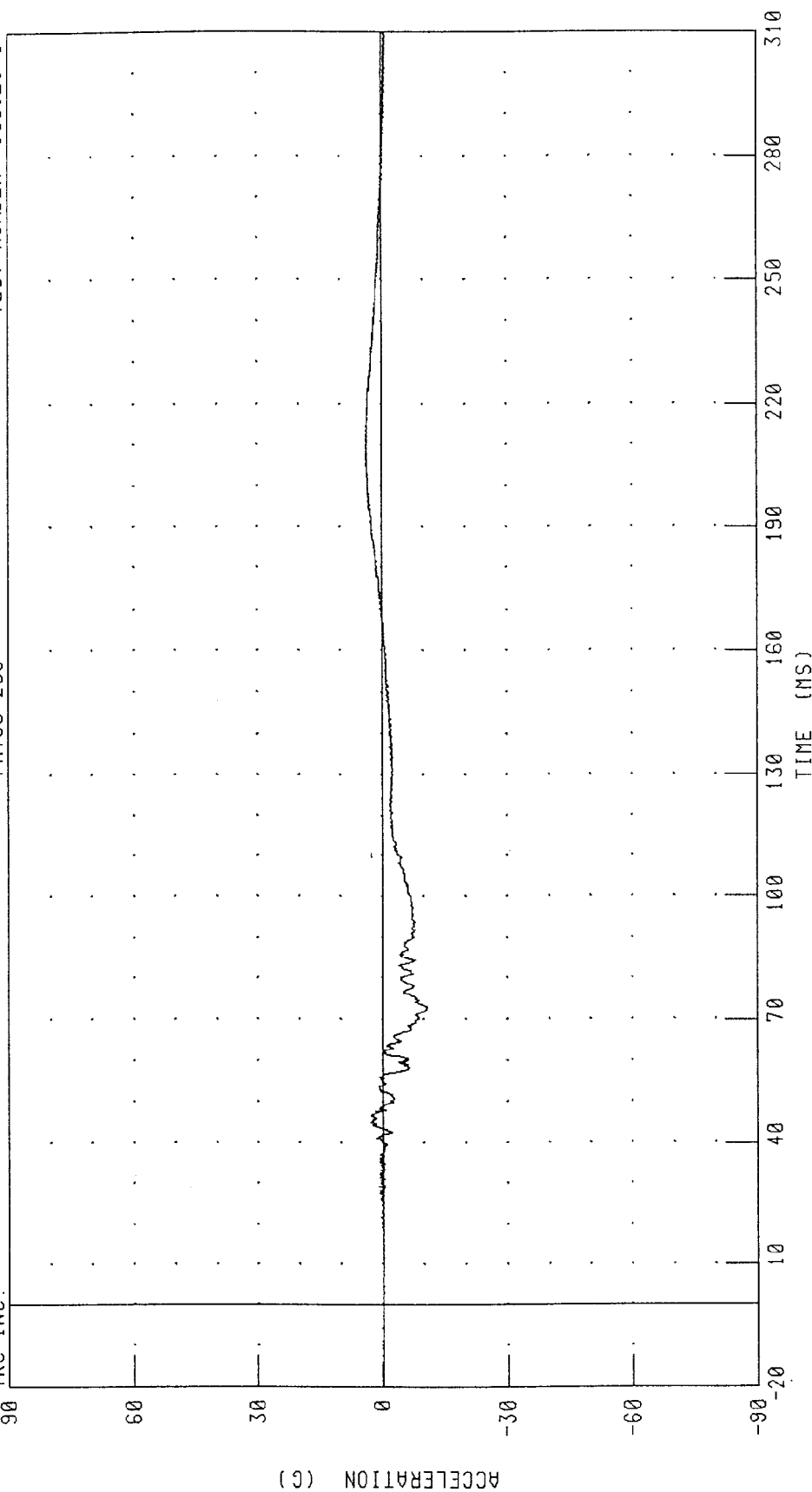
PEAK DATA: 9.06 G @ 122.80 MS; -39.99 G @ 82.16 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



CHANNEL: HEDYC2 FILTER: CH. CLASS 1000

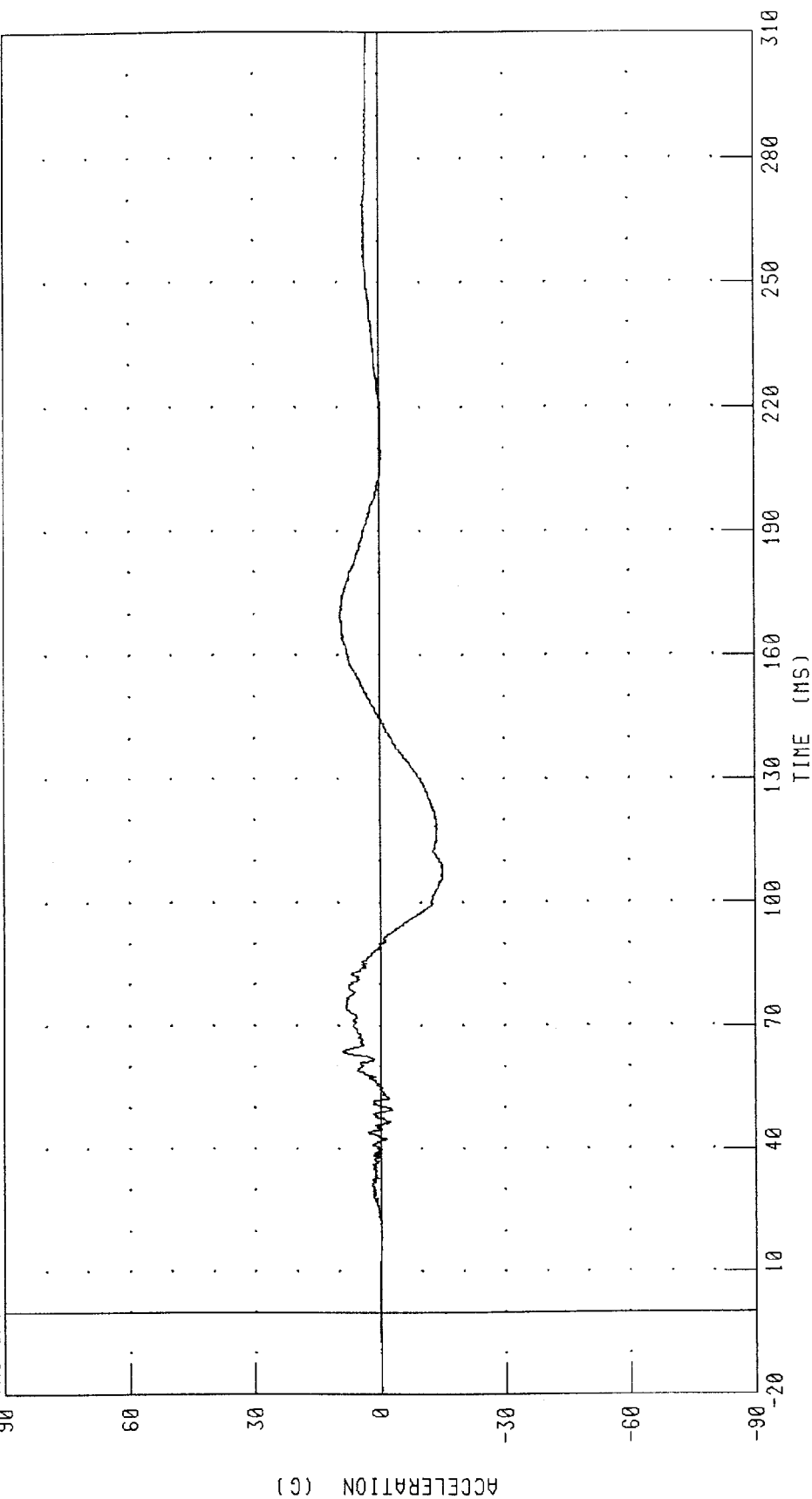
PEAK DATA: 3.67 G @ 204.72 MS; -10.81 G @ 72.48 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

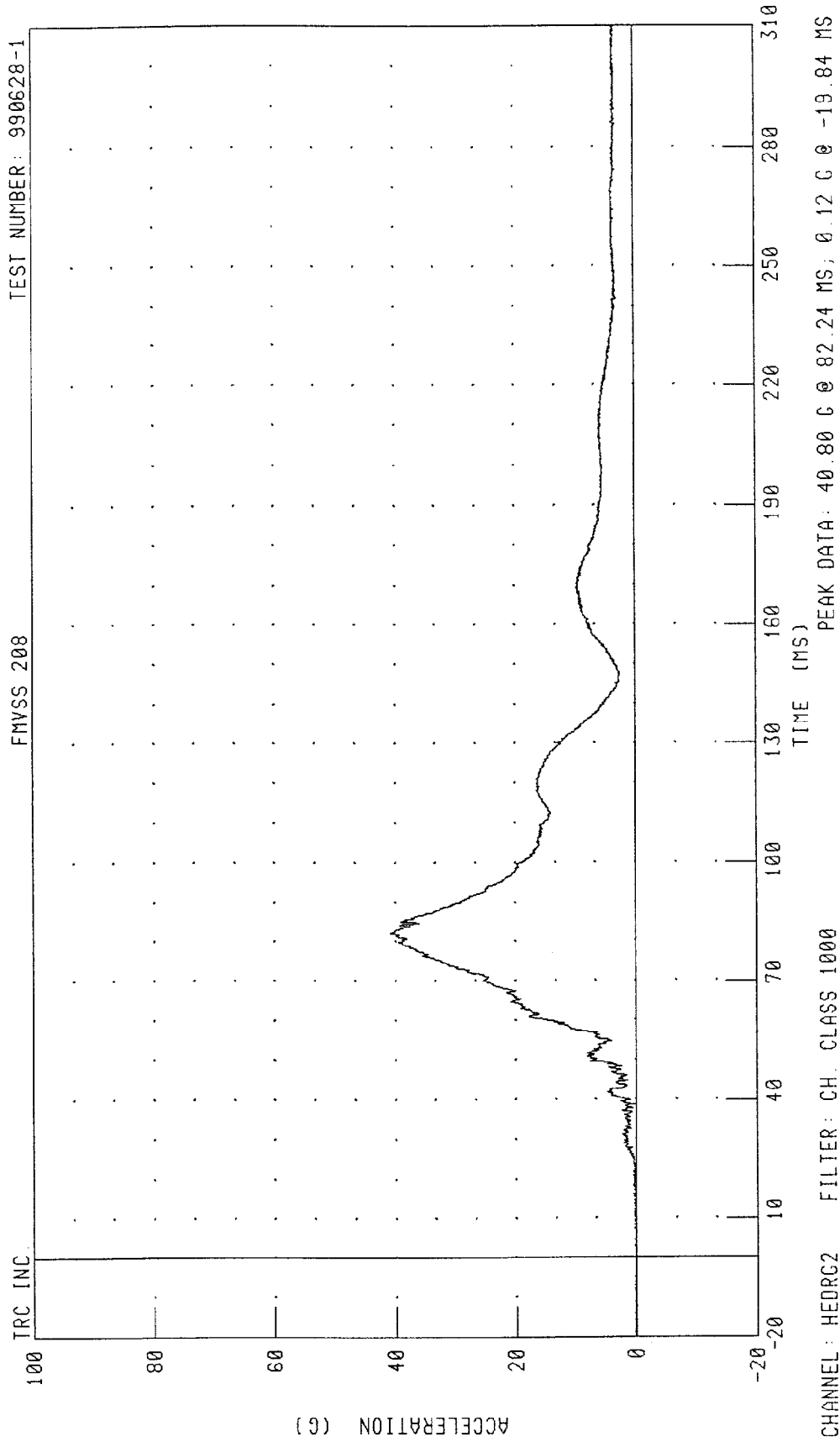
TRC INC.



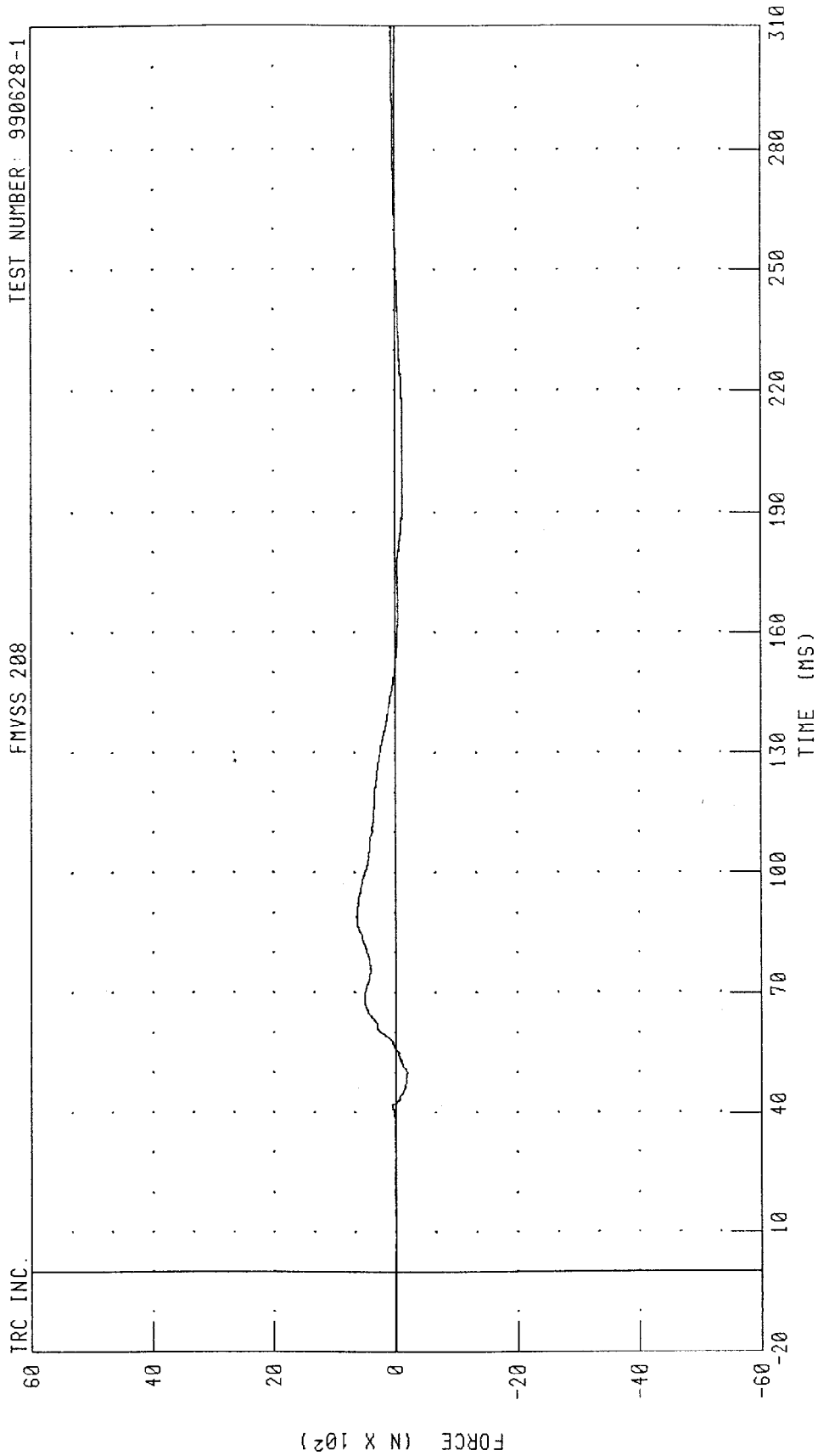
PEAK DATA: 9.52 G @ 169.12 MS; -15.19 G @ 106.24 MS

CHANNEL: HEDZG2 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION



1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER NECK X-AXIS SHEAR FORCE



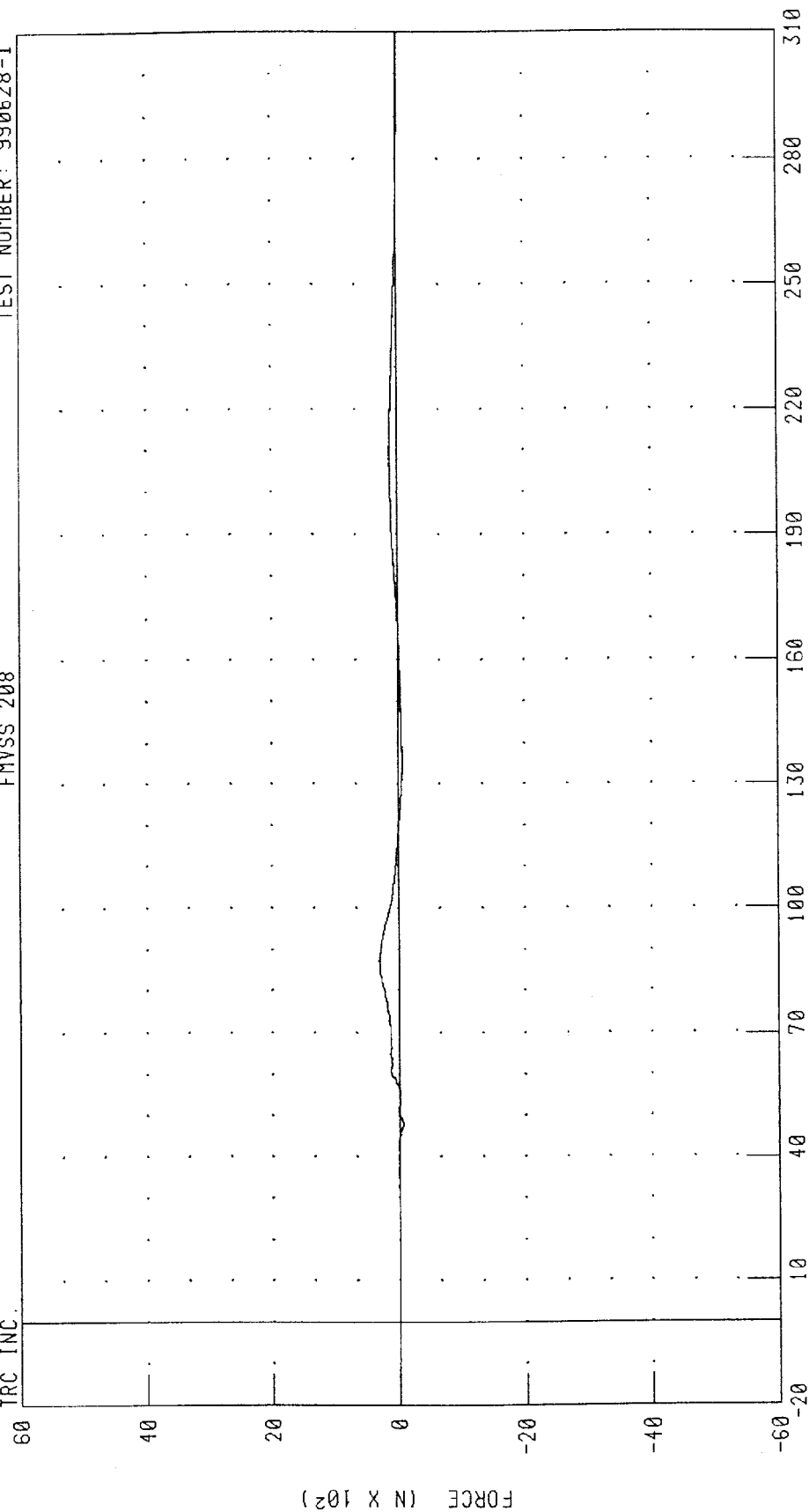
CHANNEL: NEKXF2 FILTER: CH. CLASS 1000 PEAK DATA: 629.20 N @ 88.96 MS; -209.66 N @ 50.08 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER NECK Y-AXIS SHEAR FORCE

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



TIME (MS)

PEAK DATA: 306.37 N @ 87.52 MS; -79.99 N @ 47.76 MS

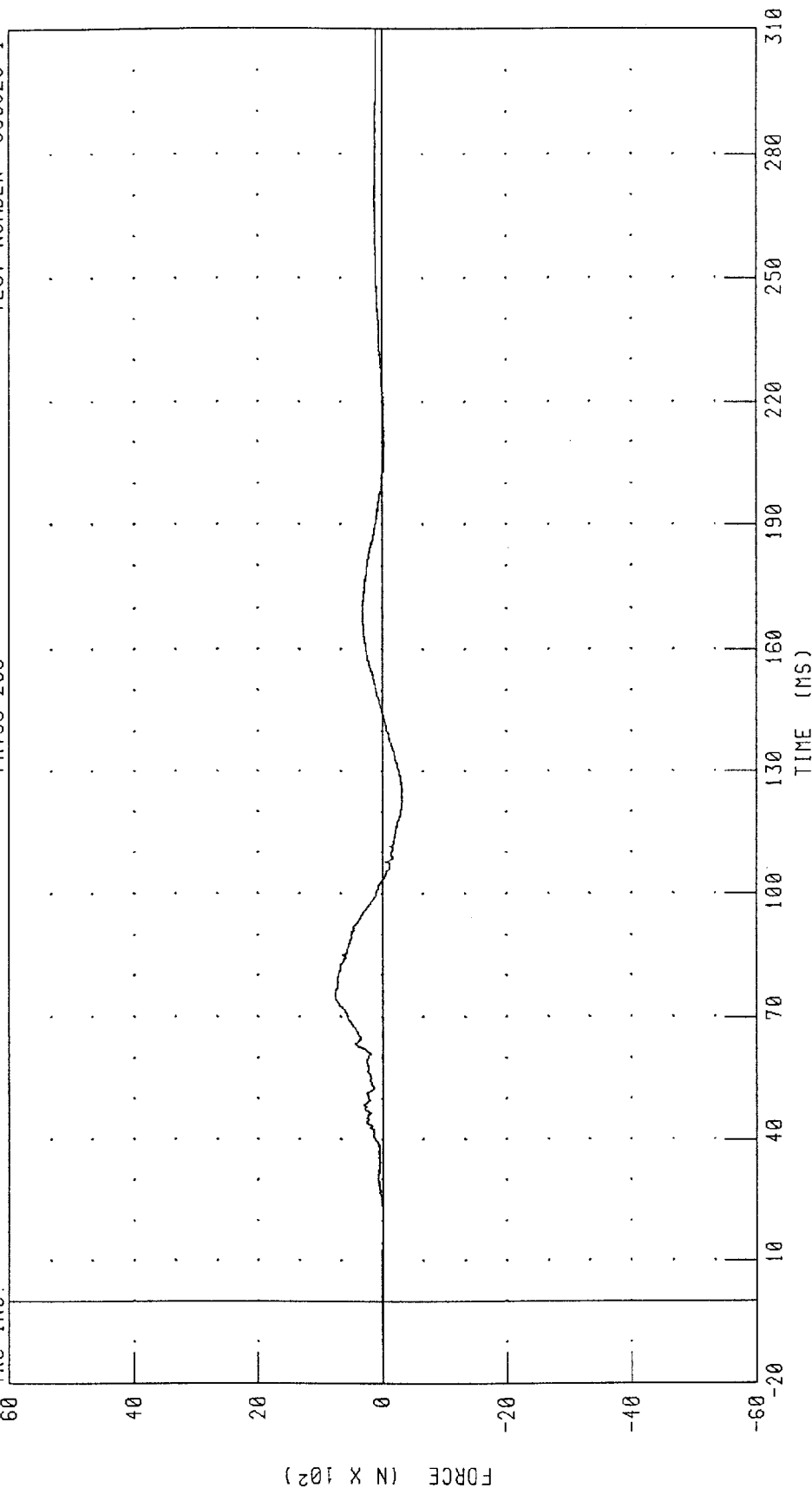
CHANNEL: NEKYF2 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE

TEST NUMBER: 990628-1

FNVS 208

TRC INC.



PEAK DATA: 759.49 N @ 75.20 MS; -322.49 N @ 122.64 MS

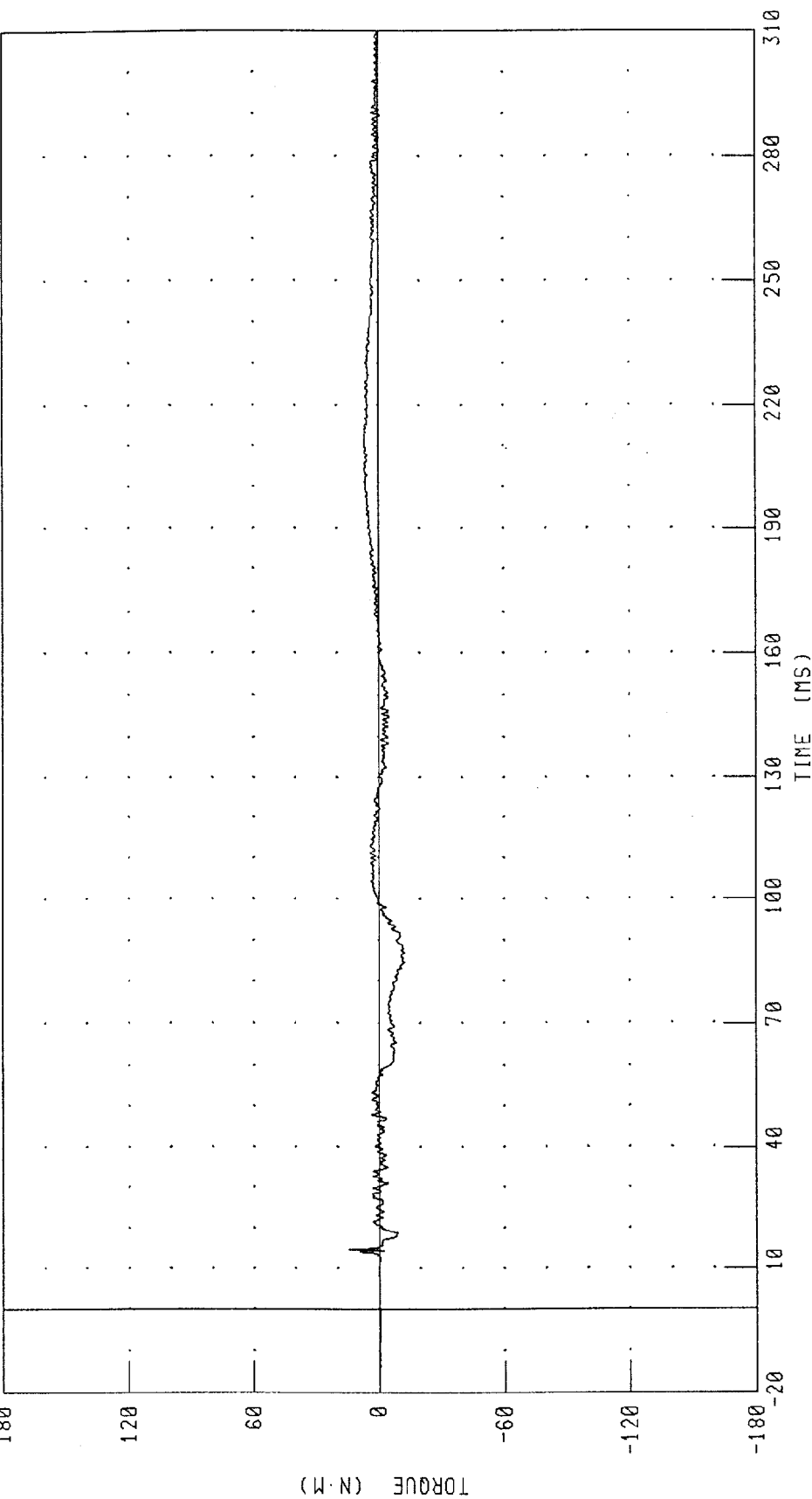
CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS

TEST NUMBER: 990628-1

FMVSS 208

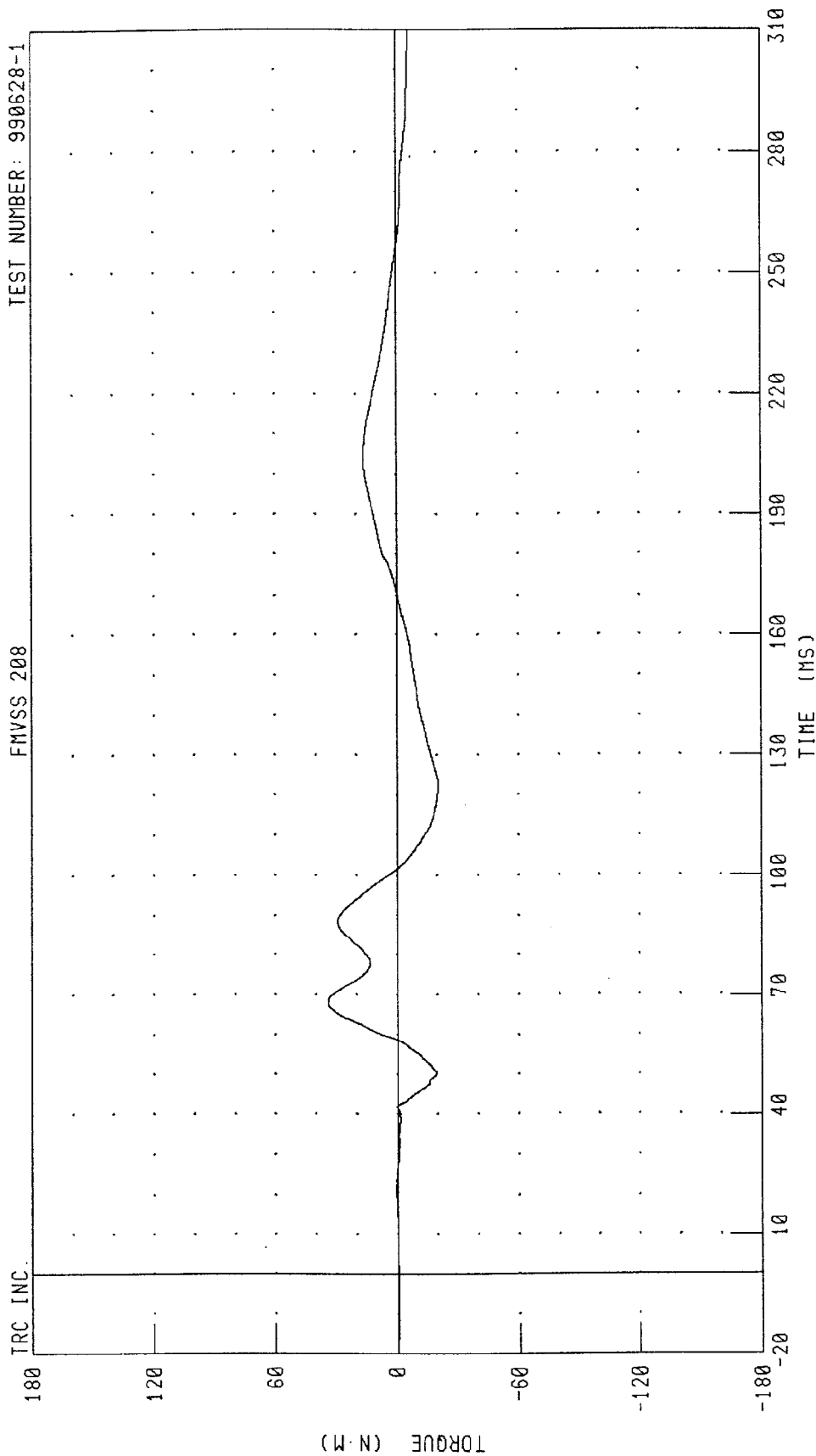
TRC INC.



PEAK DATA: 14.62 N.M @ 14.96 MS; -12.37 N.M @ 84.72 MS

CHANNEL: NEKX12 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS



CHANNEL: NEKYM2 FILTER: CH. CLASS 600

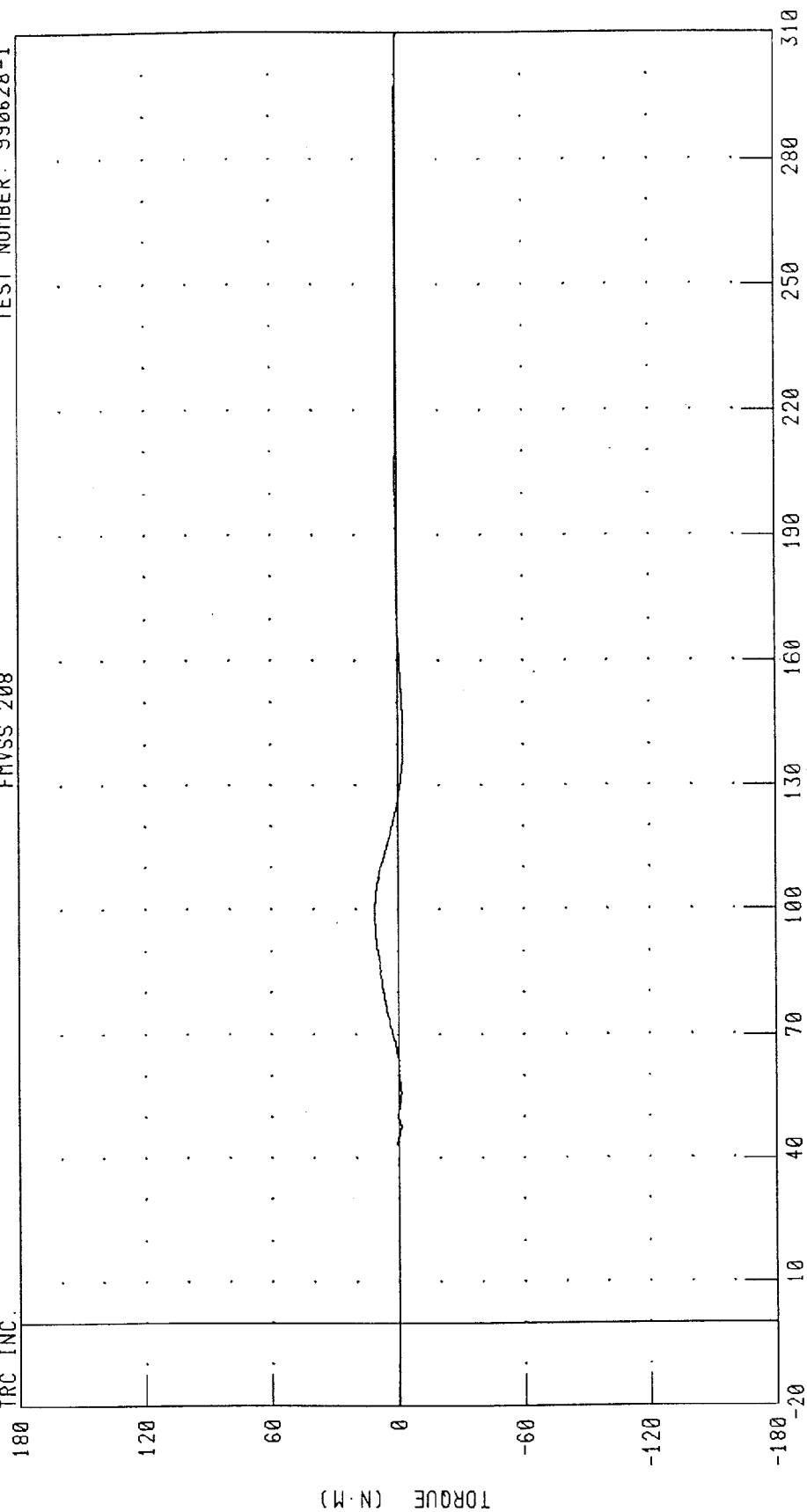
PEAK DATA: 34.00 N·M @ 68.08 MS; -20.59 N·M @ 122.48 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.

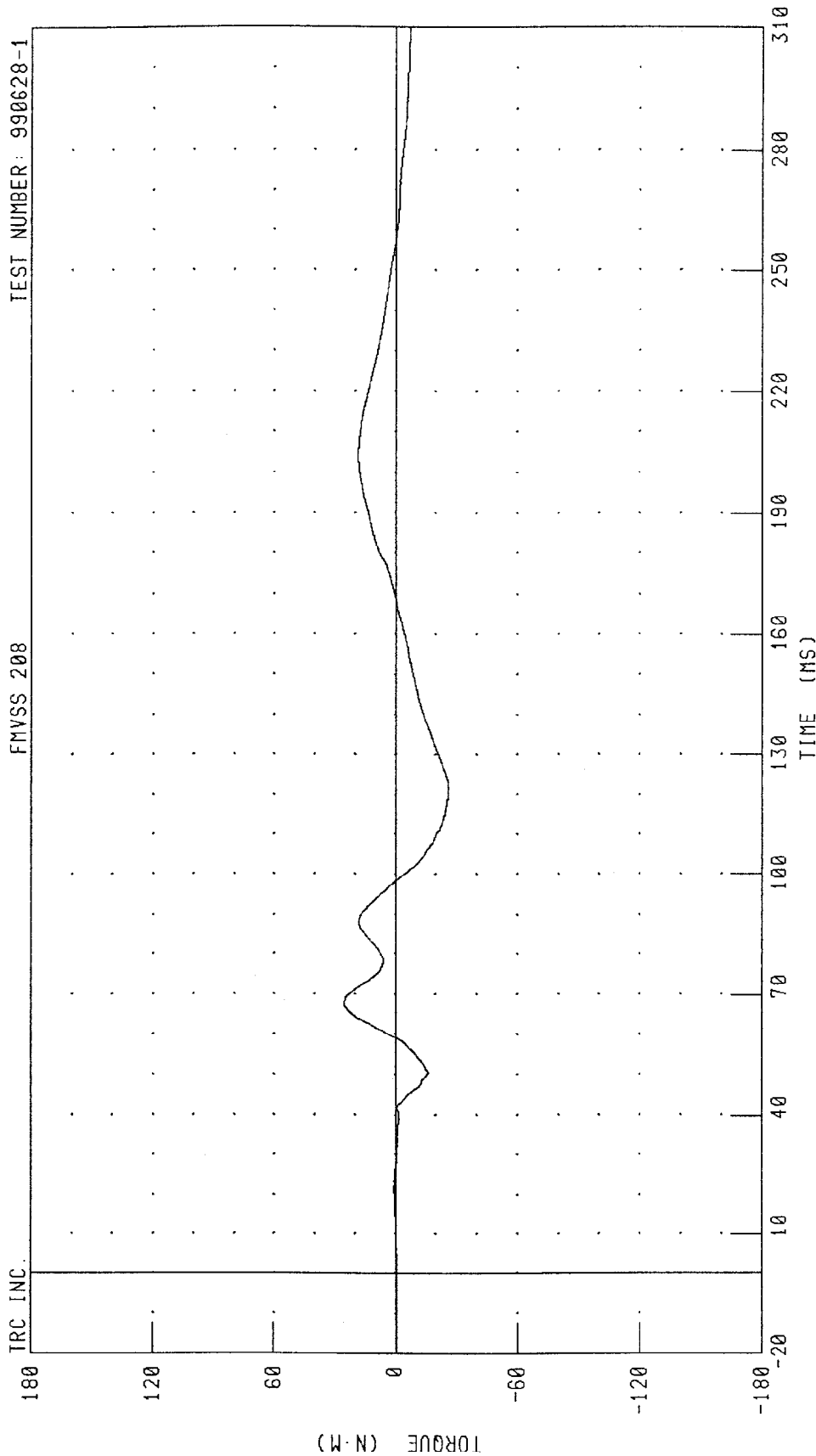


TIME (MS)

PEAK DATA: 10.97 N-M @ 98.96 MS; -2.99 N-M @ 140.56 MS

CHANNEL: NEKZM2 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER NECK OCCIPITAL CONDYLE



CHANNEL: NEKOM2 FILTER: CH. CLASS 600

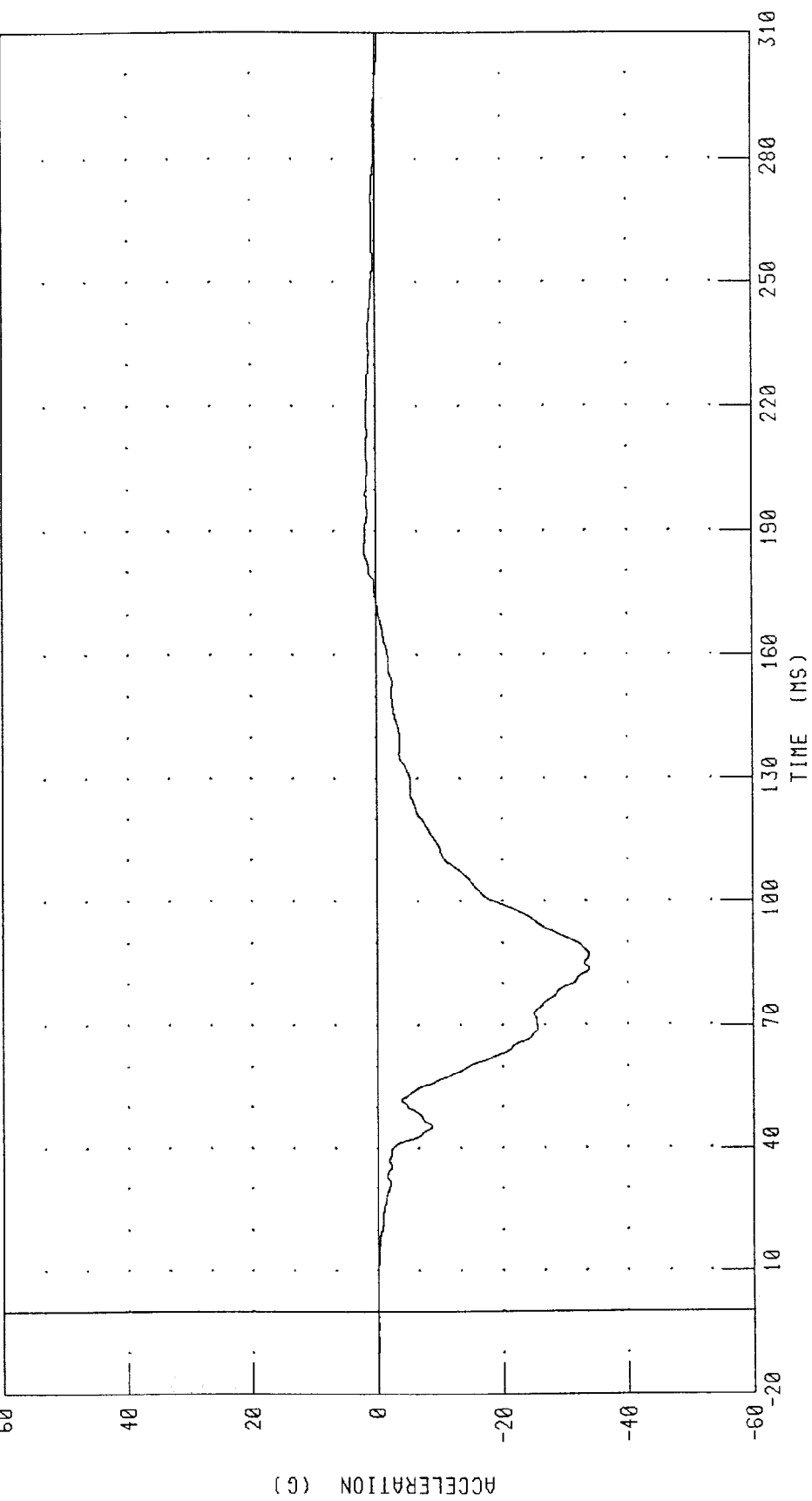
PEAK DATA: 25.19 N·M @ 68.00 MS; -26.23 N·M @ 120.96 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

TEST NUMBER: 990628-1

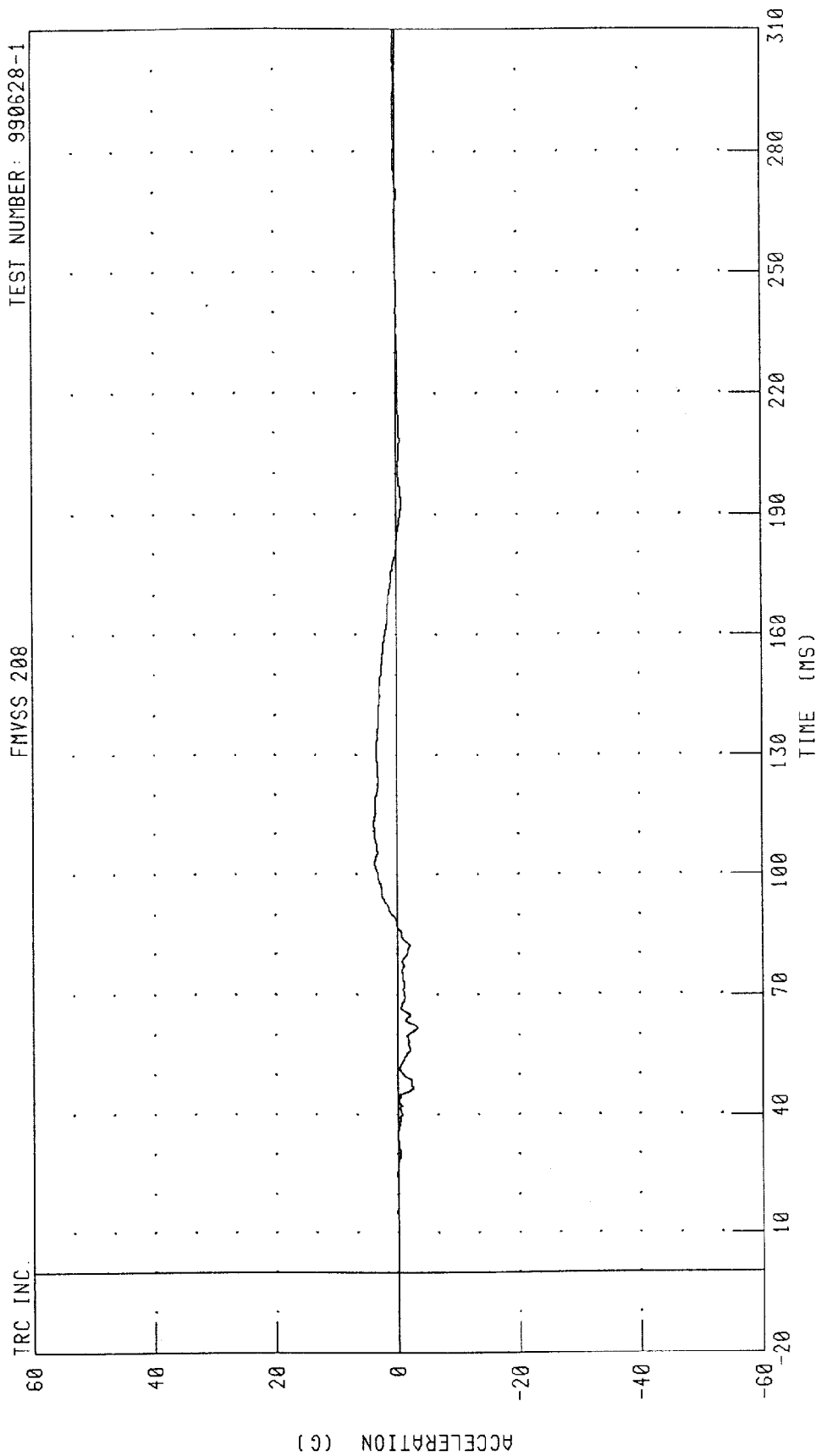
FMVSS 208

TRC INC.



CHANNEL: CSTXC2 FILTER: CH. CLASS 180 PEAK DATA: 1.77 G @ 184.96 MS; -33.82 G @ 83.60 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION



CHANNEL: CSTYG2 FILTER: CH. CLASS 180

PEAK DATA: 3.78 G @ 113.12 MS; -3.26 G @ 61.92 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.

60

40

20

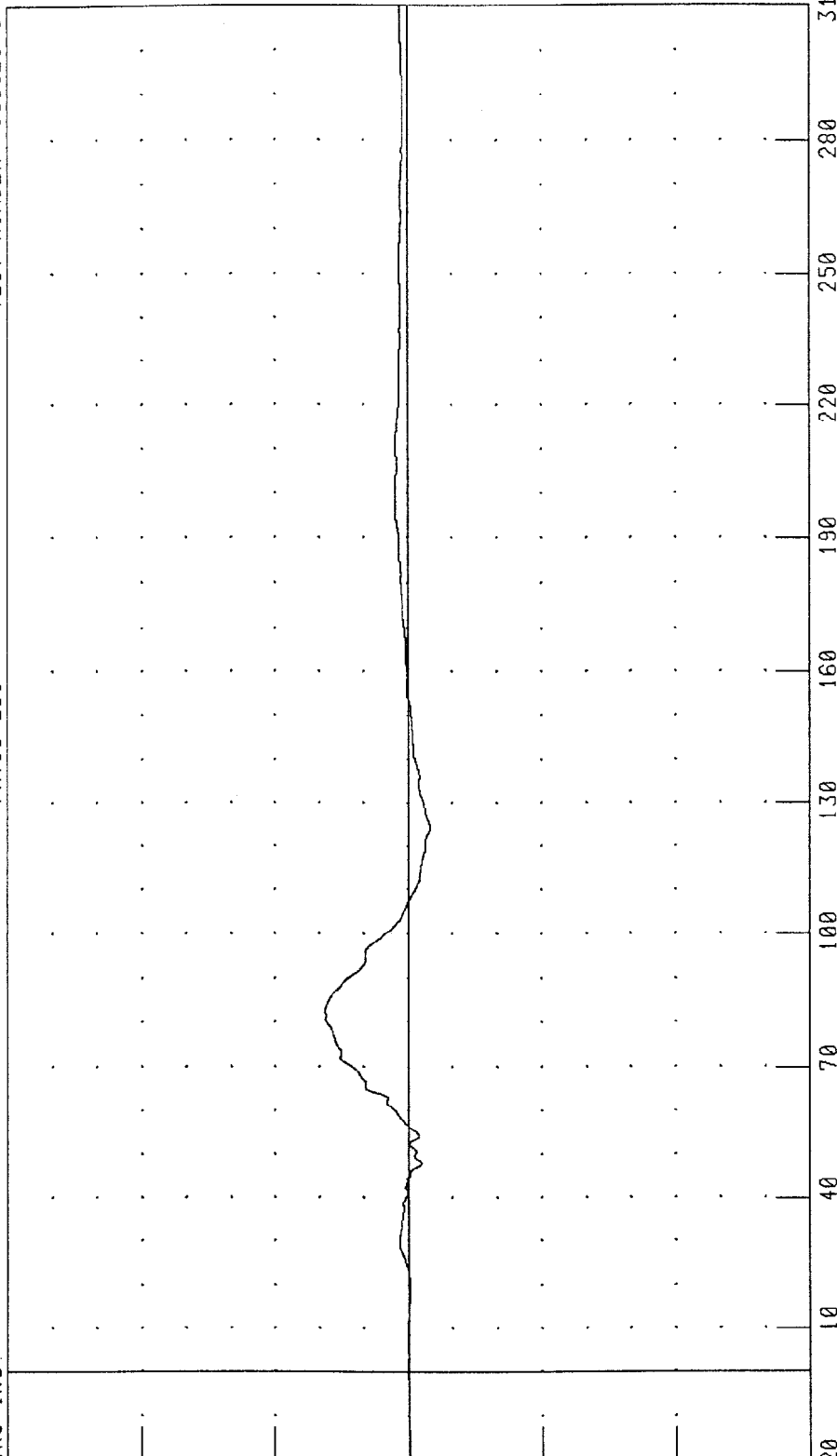
0

-20

-40

-60

ACCELERATION (G)



TIME (MS)

CHANNEL: CSTZG2 FILTER: CH. CLASS 180

PEAK DATA: 12.49 G @ 82.80 MS, -3.27 G @ 124.32 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.

100

80

60

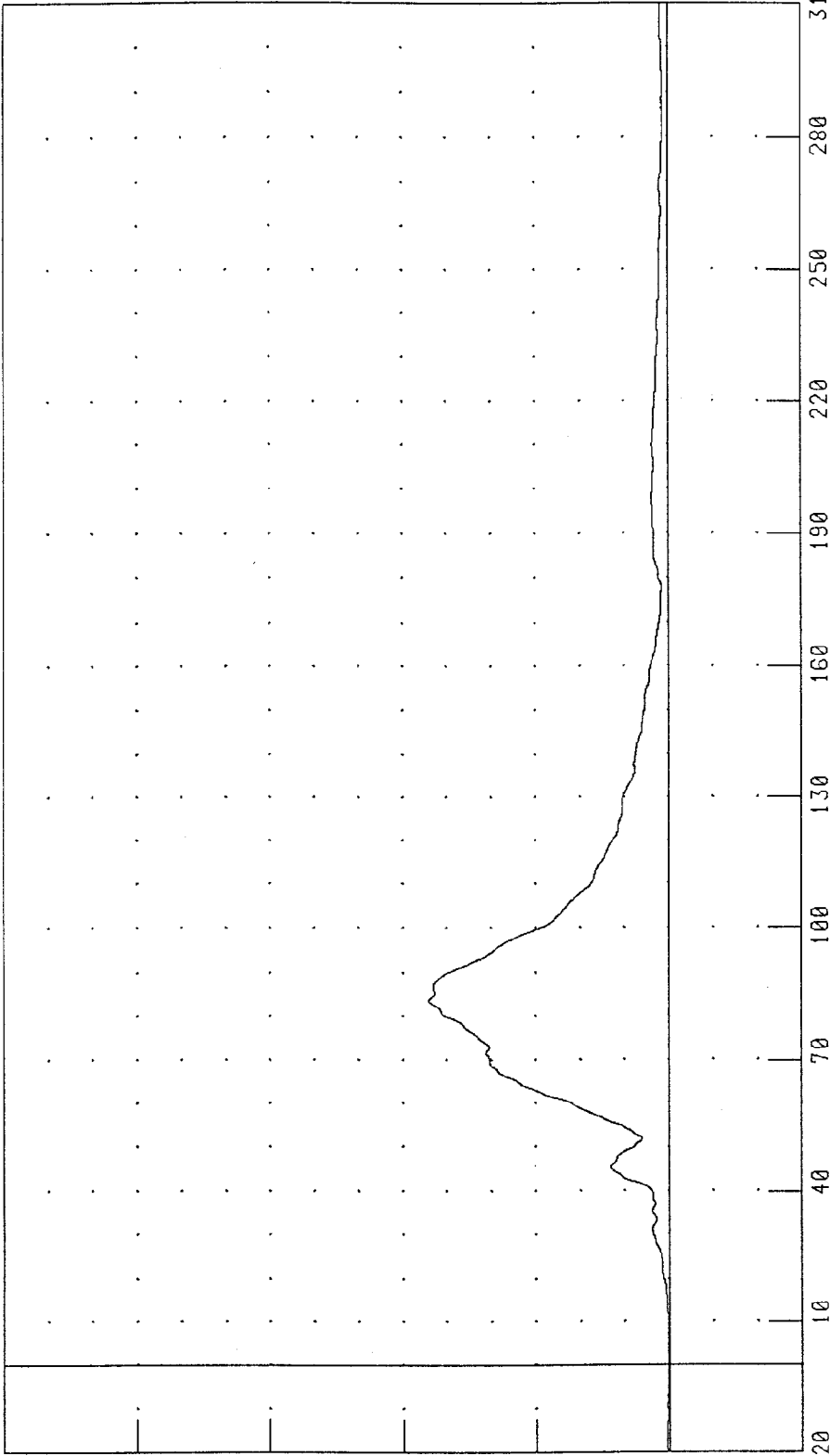
40

20

0

-20
-20

ACCELERATION (G)



TIME (MS)

CHANNEL: CSTRG2 FILTER: CH. CLASS 180

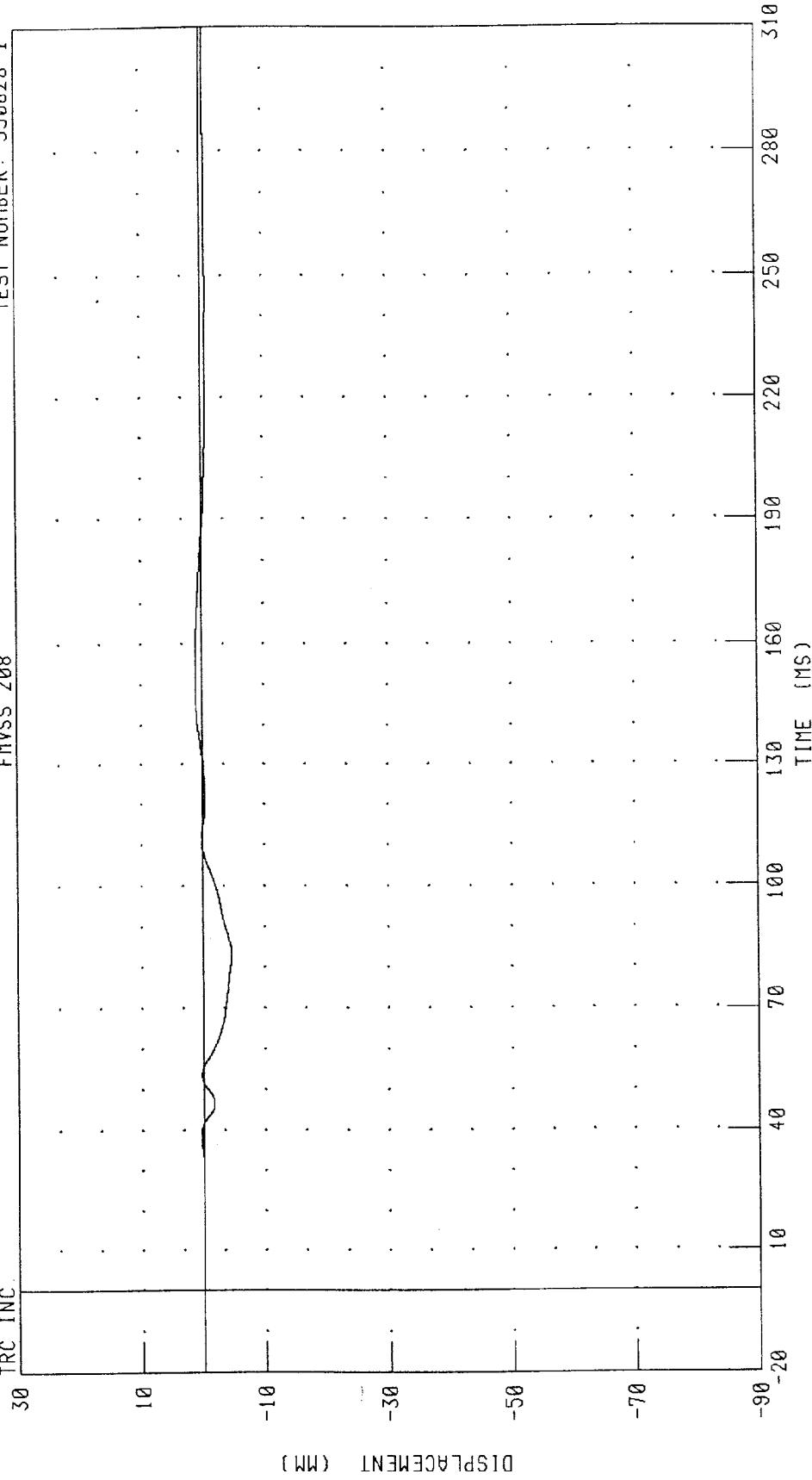
PEAK DATA: 36.01 G @ 83.52 MS; 0.02 G @ -20.00 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER CHEST DEFLECTION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



PEAK DATA: 1.16 MM @ 149.28 MS; -4.56 MM @ 83.04 MS

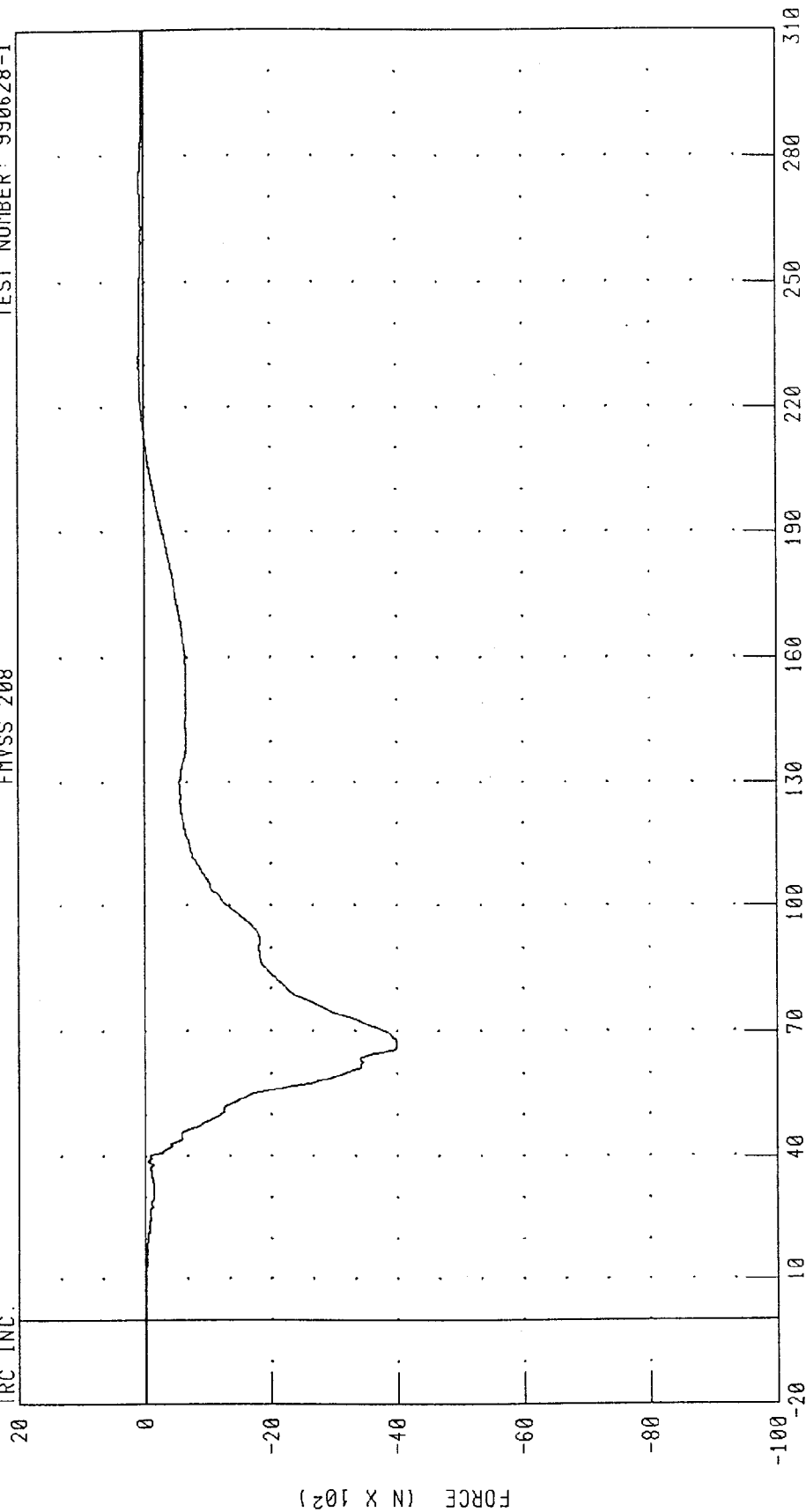
CHANNEL: CSTXD2 FILTER: CH. CLASS 180

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER LEFT FEMUR FORCE

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



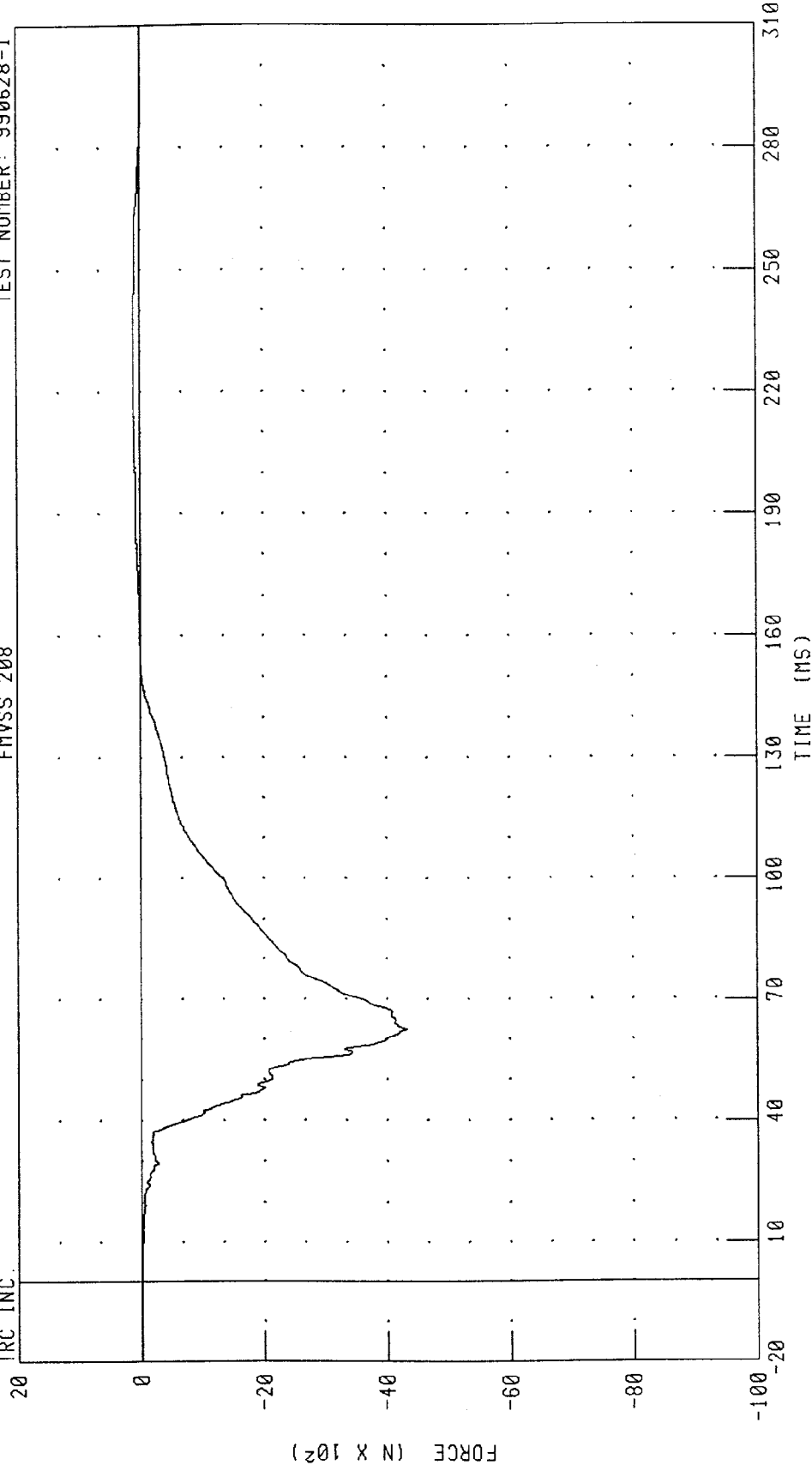
CHANNEL: LFMF2 FILTER: CH. CLASS 600 PEAK DATA: 85.47 N @ 229.60 MS; -3996.69 N @ 67.60 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



PEAK DATA: 105.77 N @ 233.04 MS; -4324.19 N @ 62.72 MS

FILTER: CH. CLASS 600

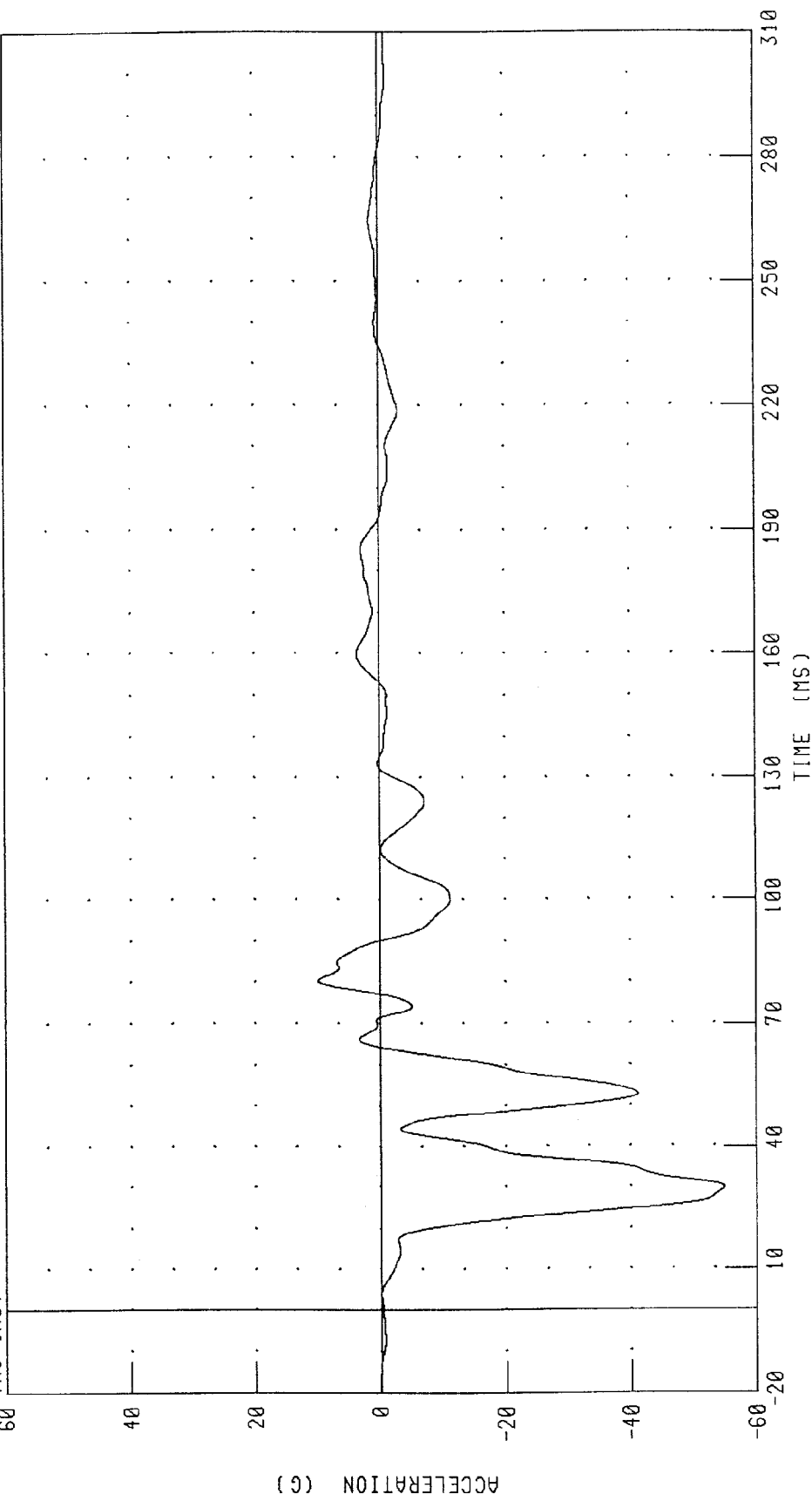
CHANNEL: RFHF2

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



CHANNEL: BCRXG1 FILTER: CH. CLASS 60

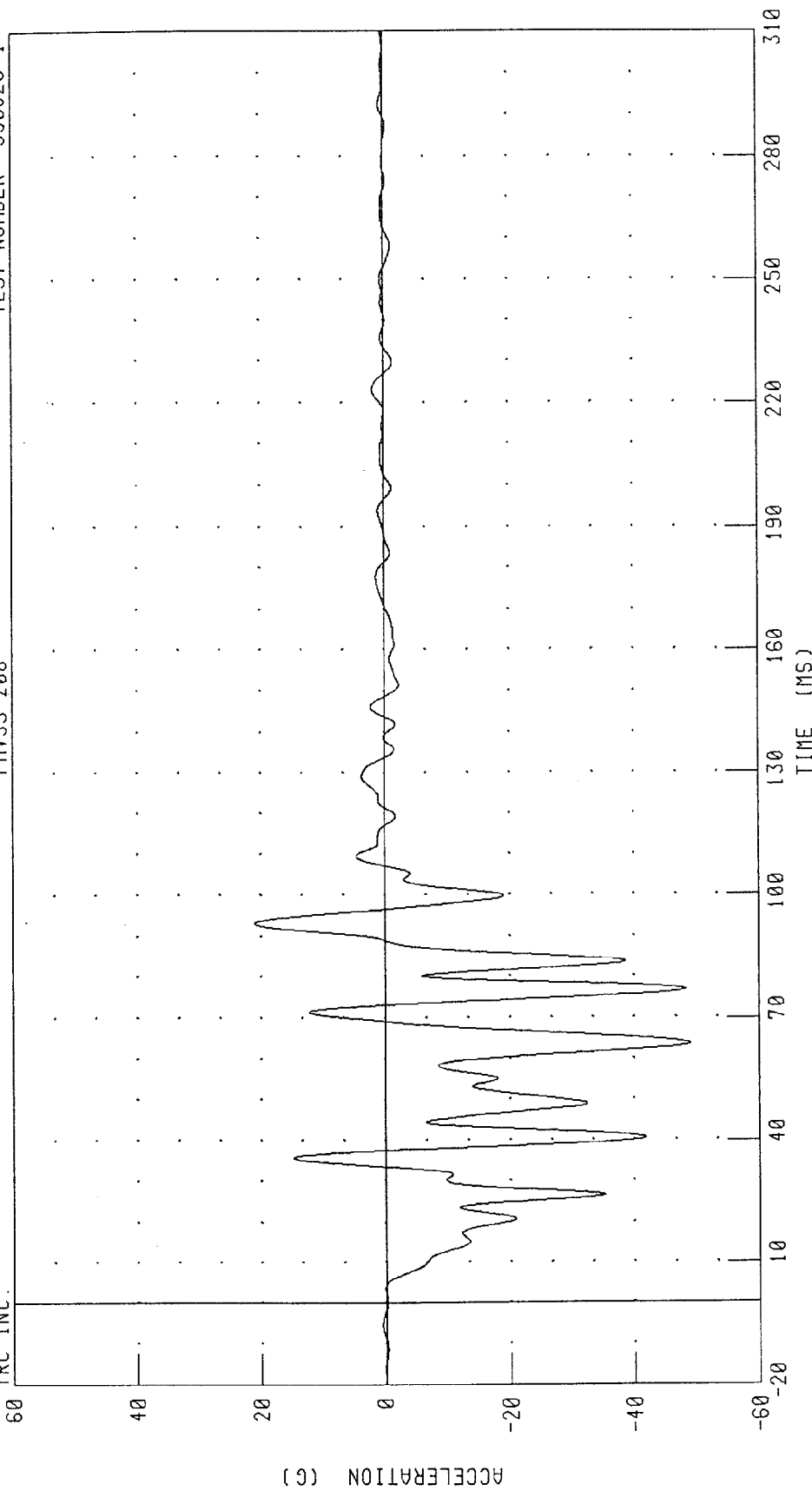
PEAK DATA: 9.88 G @ 80.32 MS; -54.89 G @ 29.84 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DASH PANEL CENTER X-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



CHANNEL: DPCXG1 FILTER: CH. CLASS 60

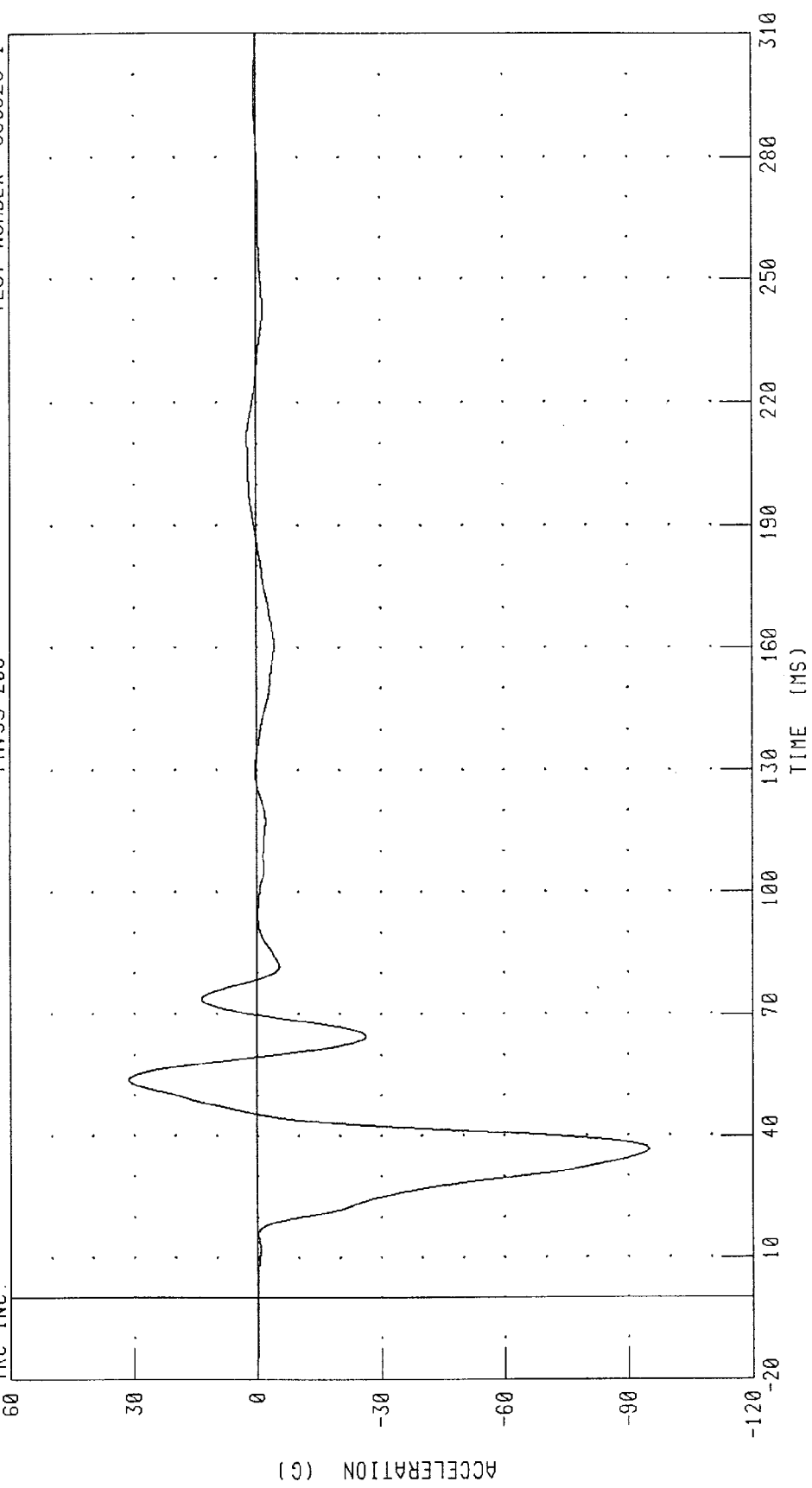
PEAK DATA: 21.01 G @ 93.20 MS; -49.01 G @ 63.76 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
ENGINE TOP X-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



CHANNEL: ENGXC1 FILTER: CH. CLASS 60

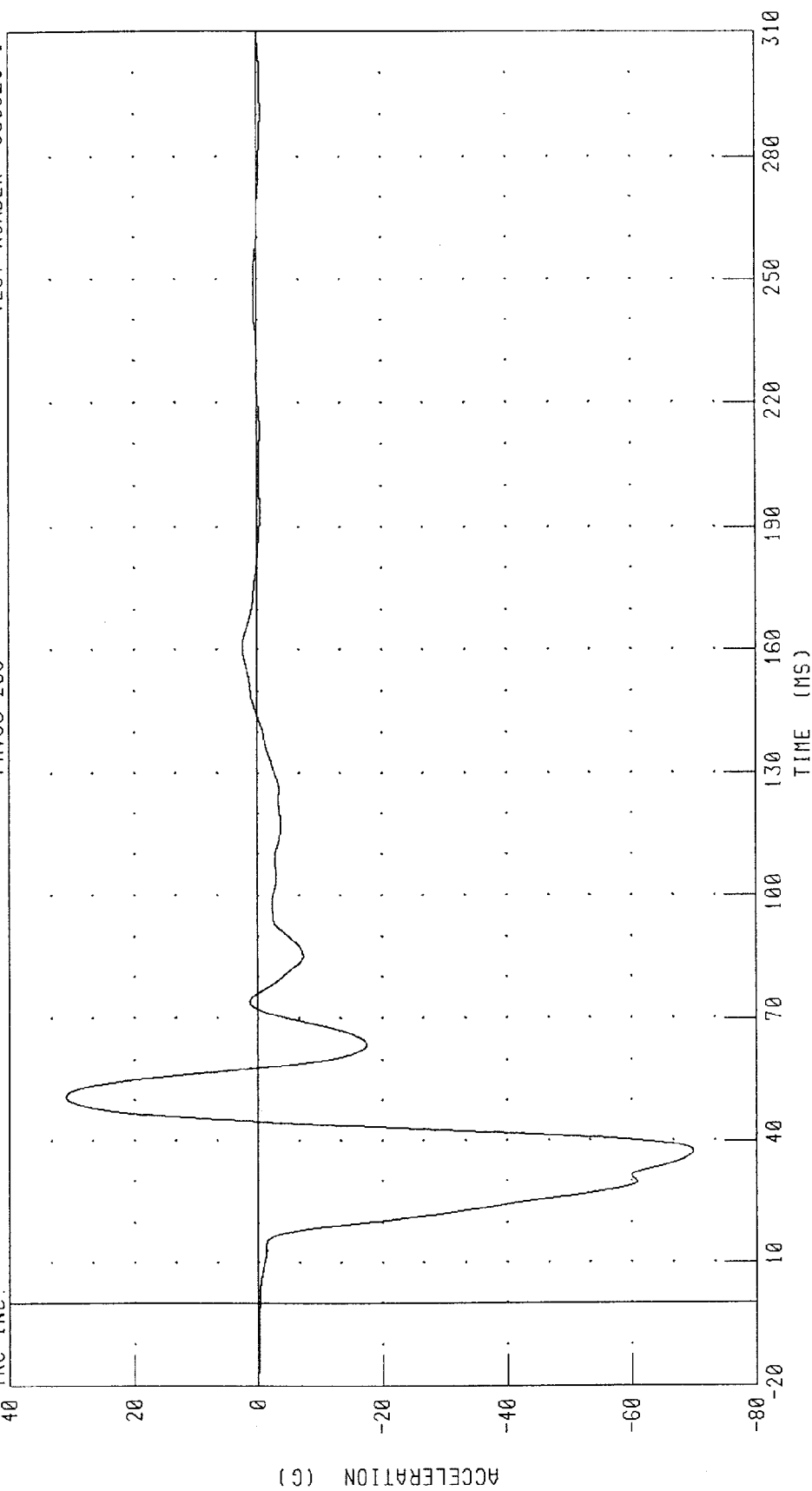
PEAK DATA: 31.34 G @ 53.76 MS; -95.01 G @ 36.88 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
ENGINE BOTTOM X-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



PEAK DATA: 31.01 G @ 50.96 MS; -69.91 G @ 37.52 MS

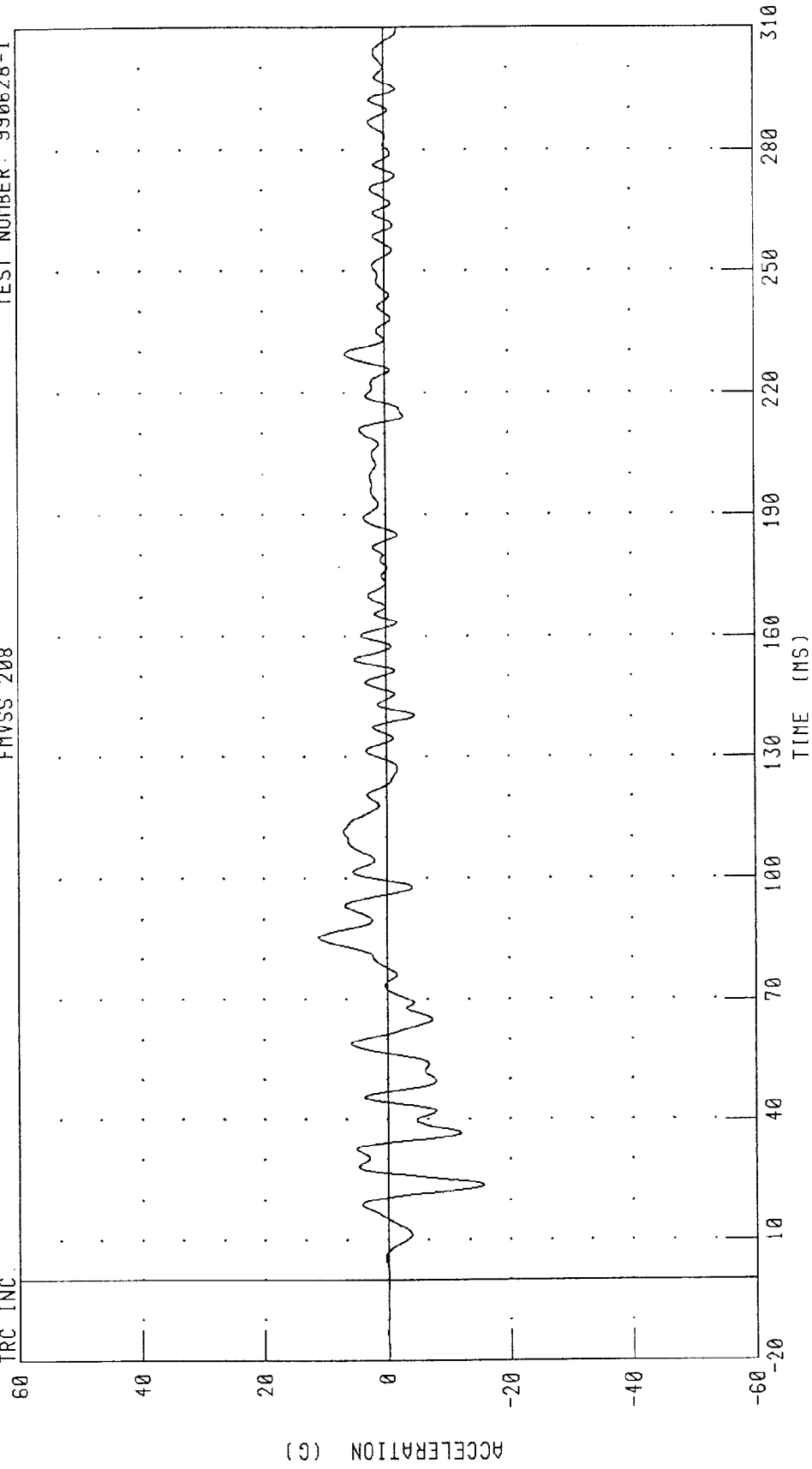
CHANNEL: ENCXC2 FILTER: CH. CLASS 60

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
VEHICLE REAR CENTER Z-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



CHANNEL: RDKZG1 FILTER: CH. CLASS 60

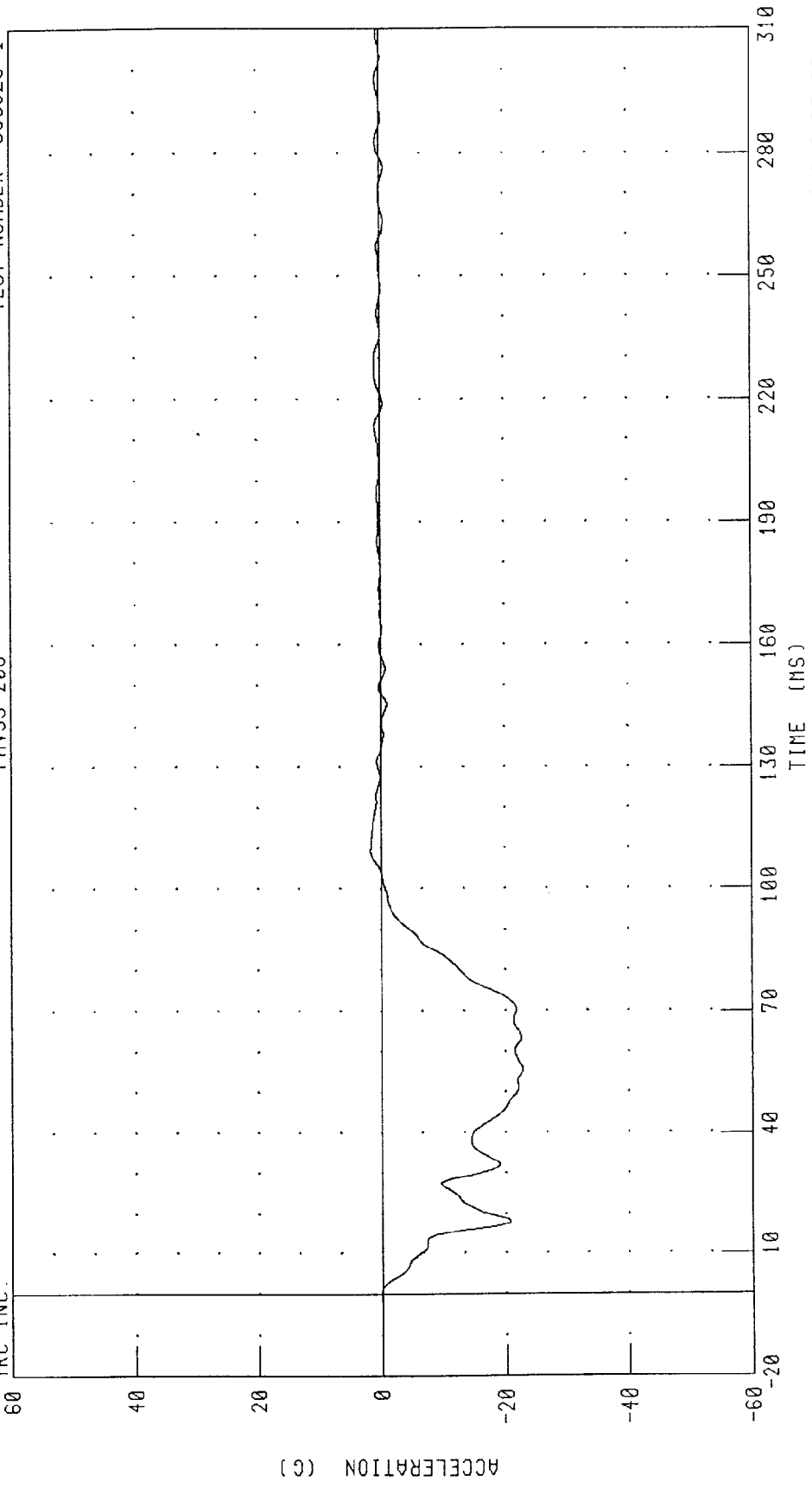
PEAK DATA: 11.06 G @ 85.44 MS, -15.69 G @ 23.84 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
LEFT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



PEAK DATA: 1.72 G @ 109.36 MS; -22.82 G @ 55.68 MS

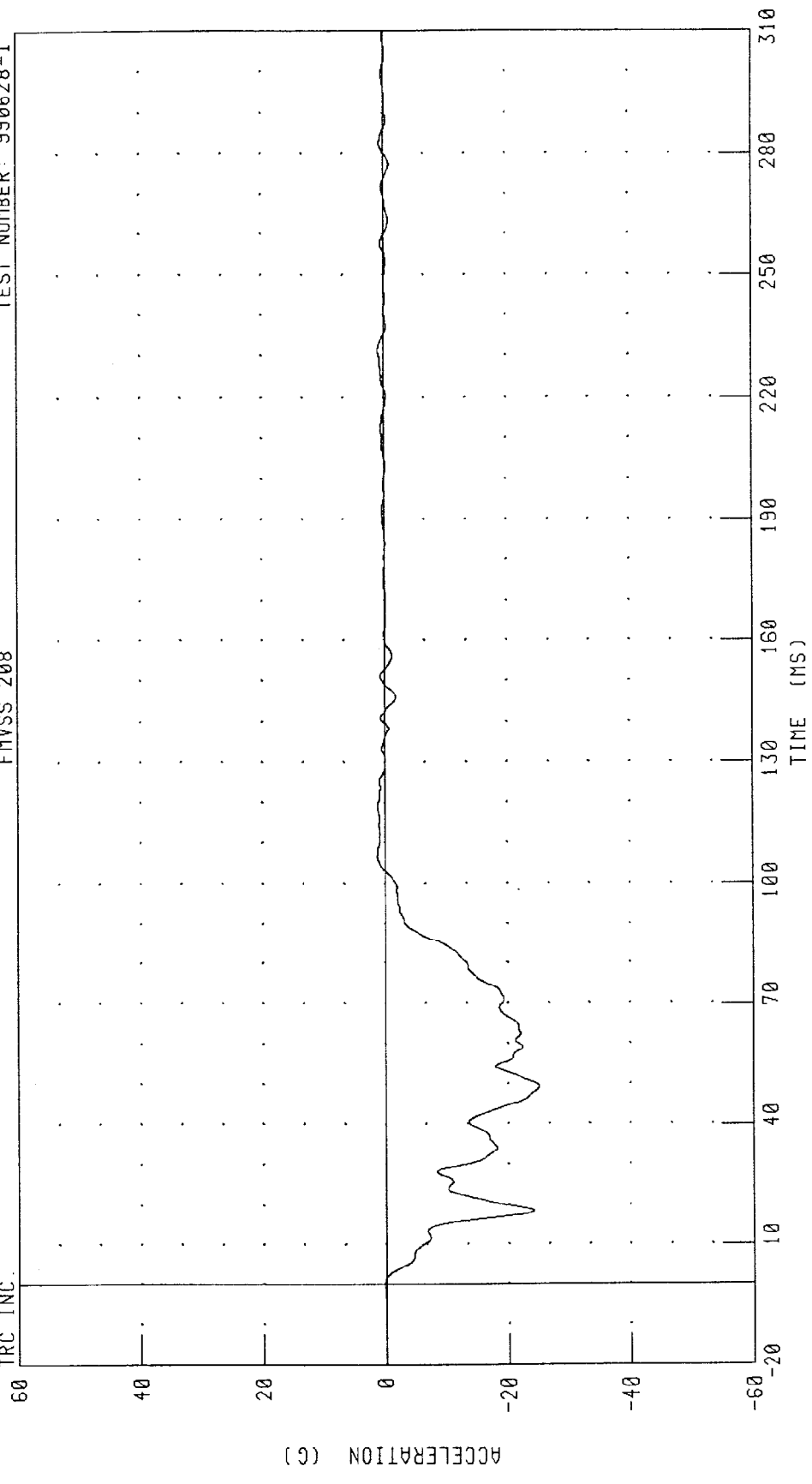
CHANNEL: TLRXG1 FILTER: CH. CLASS 60

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
RIGHT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



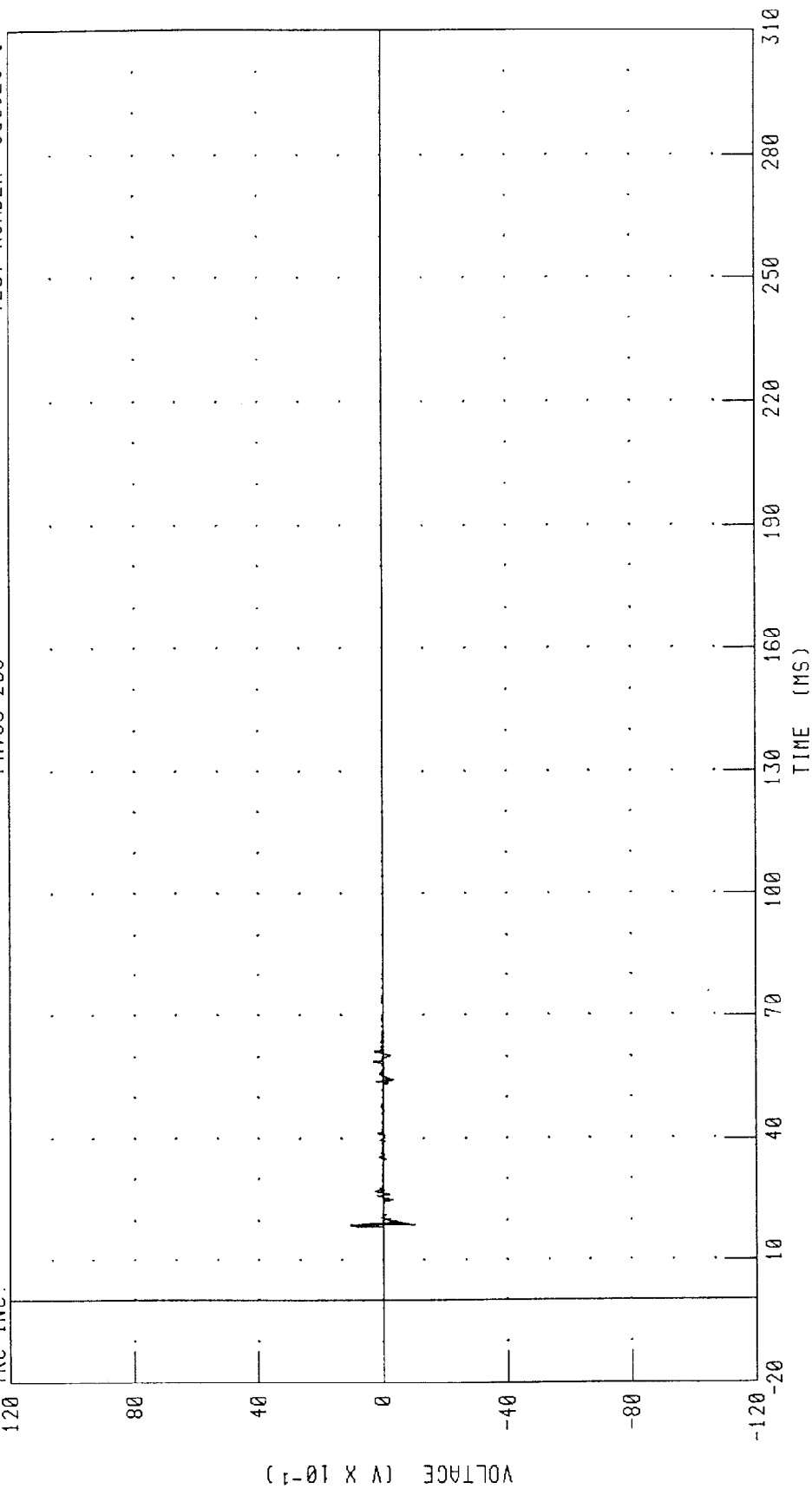
CHANNEL: TRRXG1 FILTER: CH. CLASS 60 PEAK DATA: 1.20 G @ 106.72 MS; -25.07 G @ 49.36 MS

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
DRIVER SIDE INDUCTIVE AIRBAG FIRE PICKUP

TEST NUMBER: 990628-1

FMVSS 208

TRC INC.



PEAK DATA: 1.02 V @ 18.72 MS; -1.02 V @ 19.12 MS

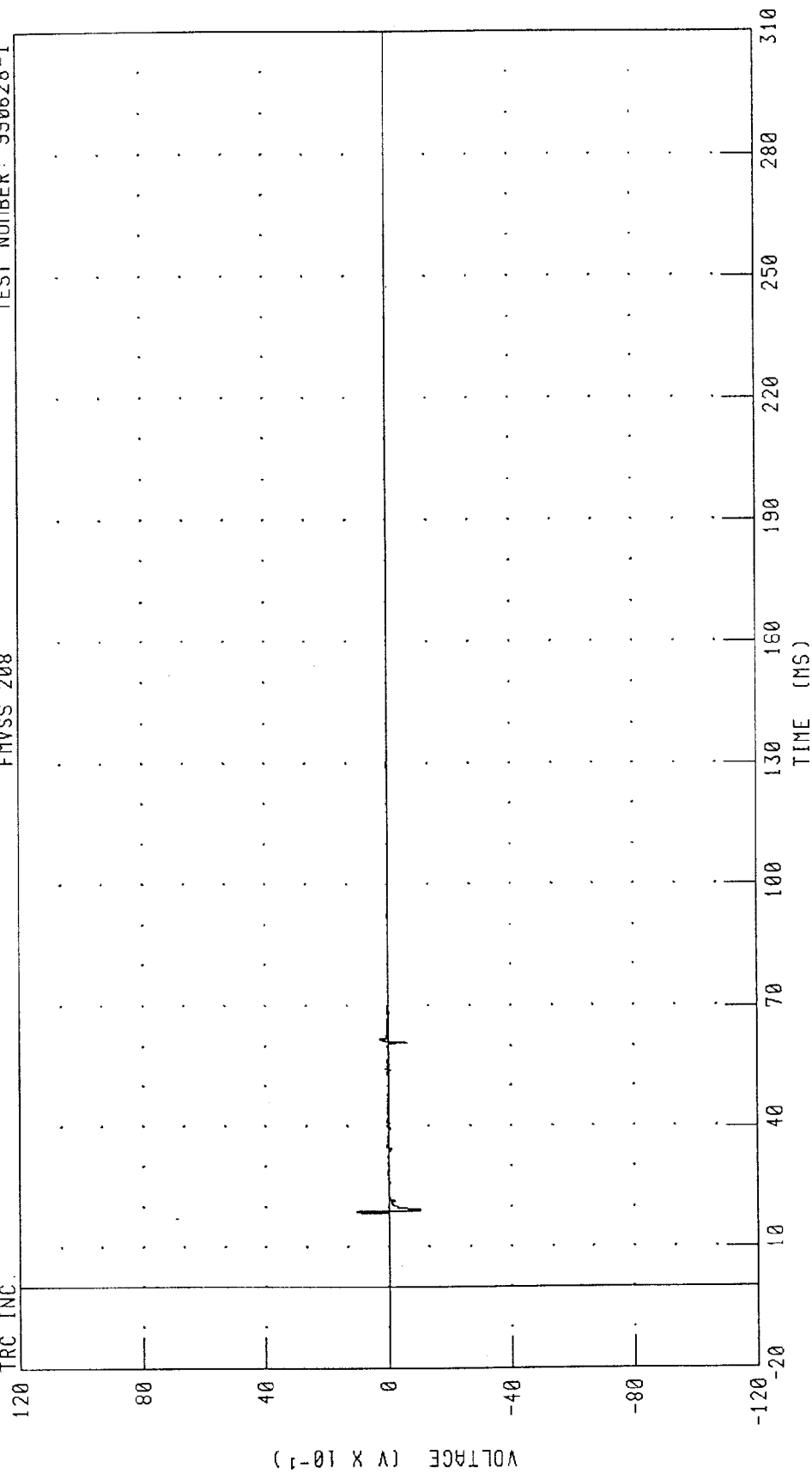
CHANNEL: ABS01 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO A FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER SIDE INDUCTIVE AIRBAG FIRE PICKUP

TEST NUMBER: 990628-1

FMYSS 208

TRC INC.



PEAK DATA: 1.02 V @ 18.72 MS; -1.02 V @ 19.20 MS

CHANNEL: ABS02 FILTER: CH. CLASS 1000

Appendix C

Dummy Certification

Post-Test Dummy Certification

Driver Dummy S/N 369

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III SMALL FEMALE

12-JUL-99

TRC INC.

TEST NO: 369C3HD1

S.FEMALE SN369 HEAD DROP CAL3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PEAK RESULTANT ACCELERATION	250 - 300 G	279.45 G
PEAK LATERAL ACCELERATION	15 G MAX	-8.67 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS NHTSA SPECIFICATIONS

TECHNICIAN

Kevin Watkins

RUN NUMBER: 071299.0923;1

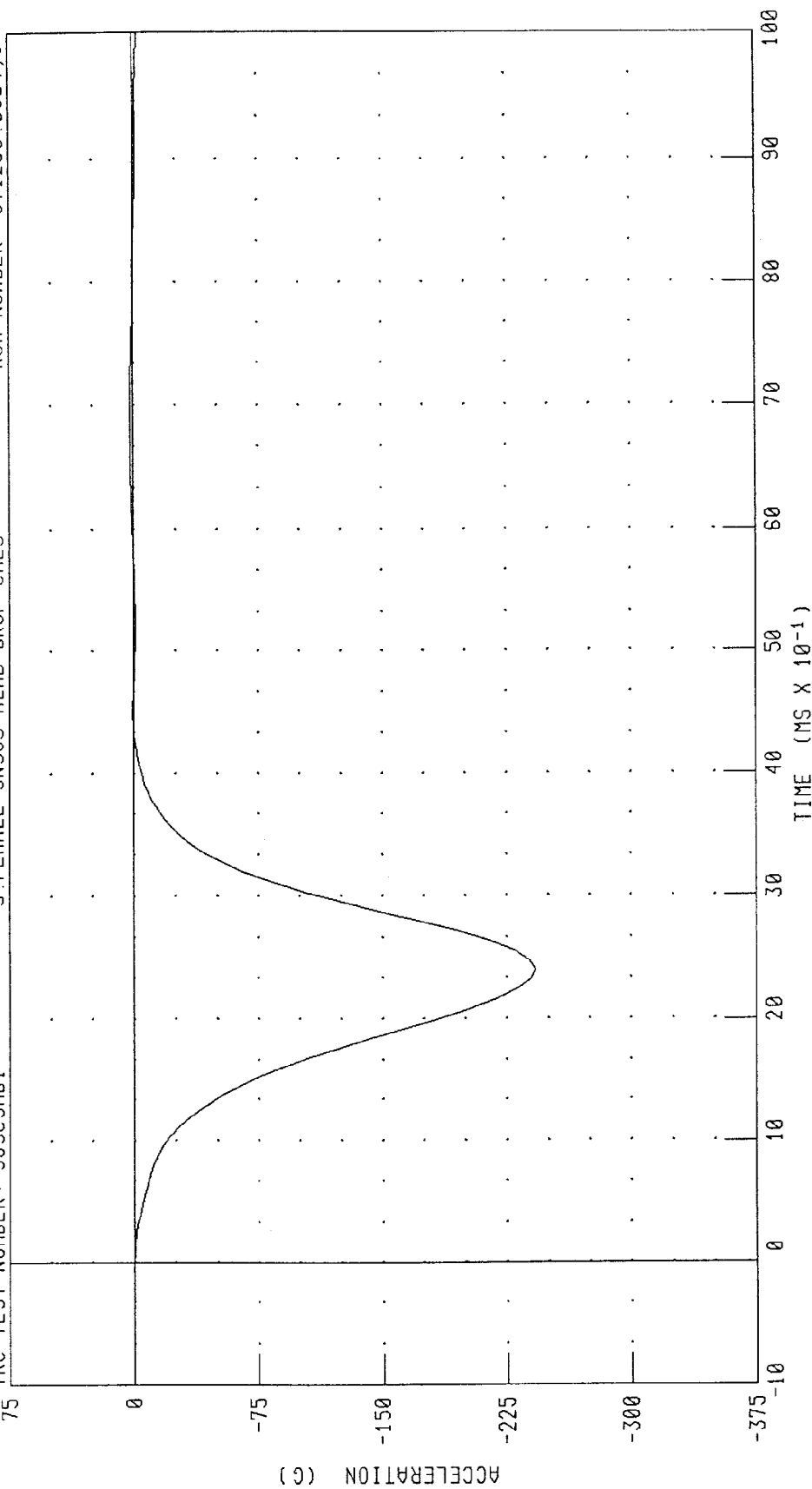
SMALL FEMALE HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS

TRC TEST NUMBER: 369C3HD1

S.FEMALE SN369 HEAD DROP CAL3

RUN NUMBER: 071299.0924,1

75



PEAK DATA: 2.43 G @ 6.80 MS, -242.03 G @ 2.40 MS

CHANNEL: HEDXC FILTER: CH. CLASS 1000

SMALL FEMALE HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Y AXIS

TRC TEST NUMBER: 369C3HD1

S. FEMALE SN369 HEAD DROP CAL3

RUN NUMBER: 071299 0924;1

225

150

75

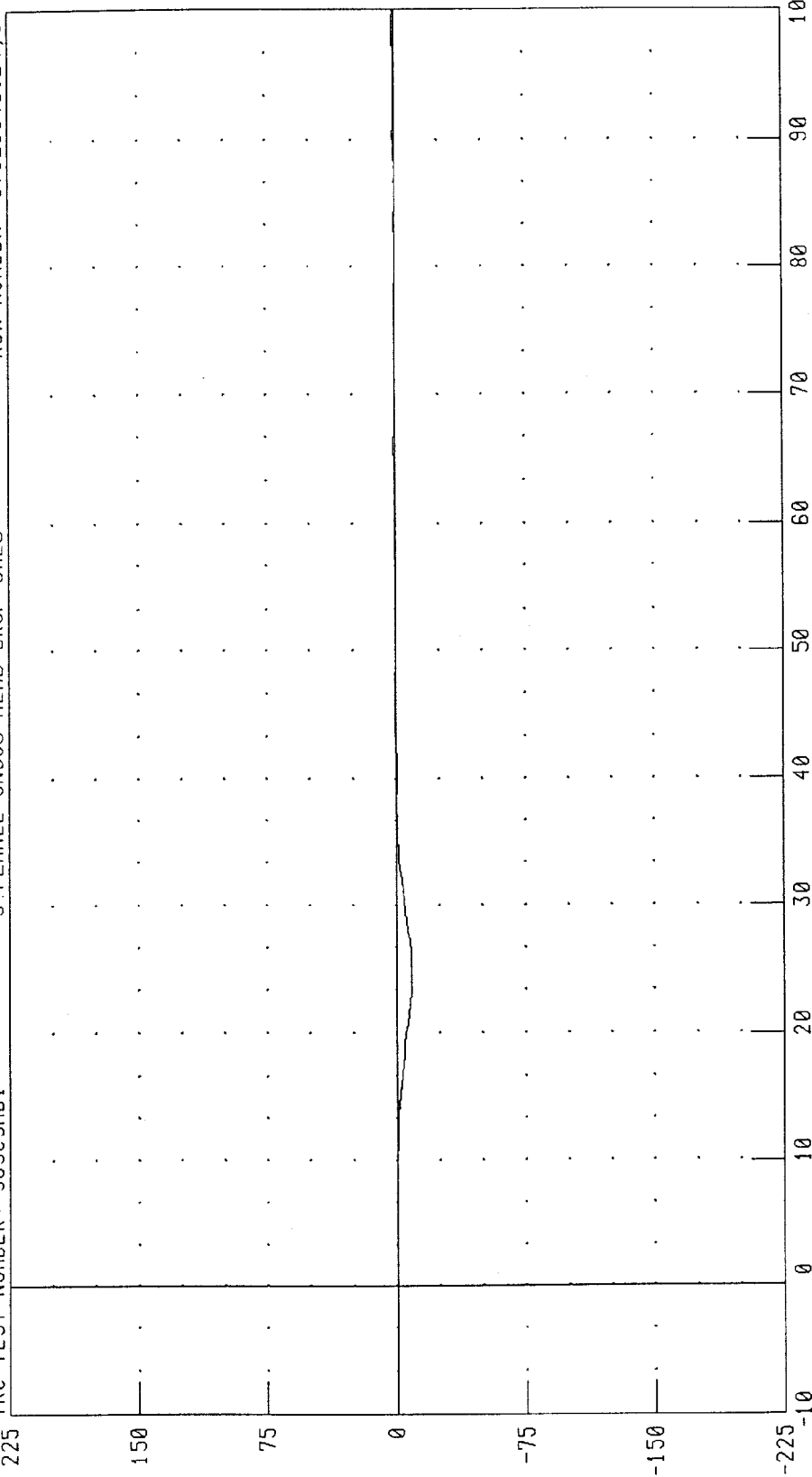
0

-75

-150

-225

ACCELERATION (G)



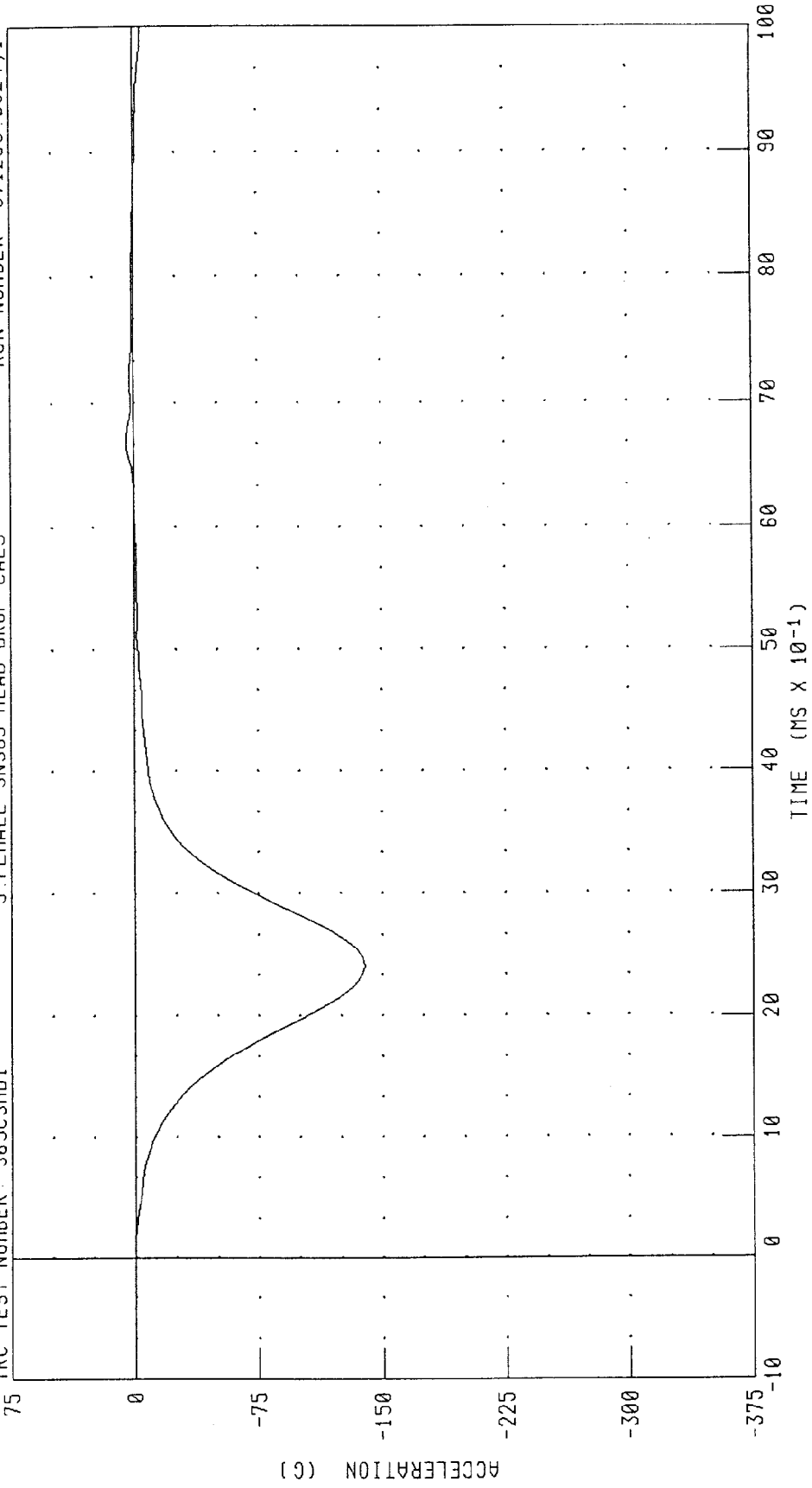
TIME (MS X 10⁻¹)

PEAK DATA: 0.80 G @ 6.56 MS; -8.67 G @ 2.48 MS

CHANNEL: HEDYC FILTER: CH. CLASS 1000

SMALL FEMALE HYBRID III HEAD CALIBRATION
 HEAD ACCELERATION Z AXIS
 S. FEMALE SN369 HEAD DROP CAL3

TRC TEST NUMBER: 369C3HD1 RUN NUMBER: 071299.0924;1

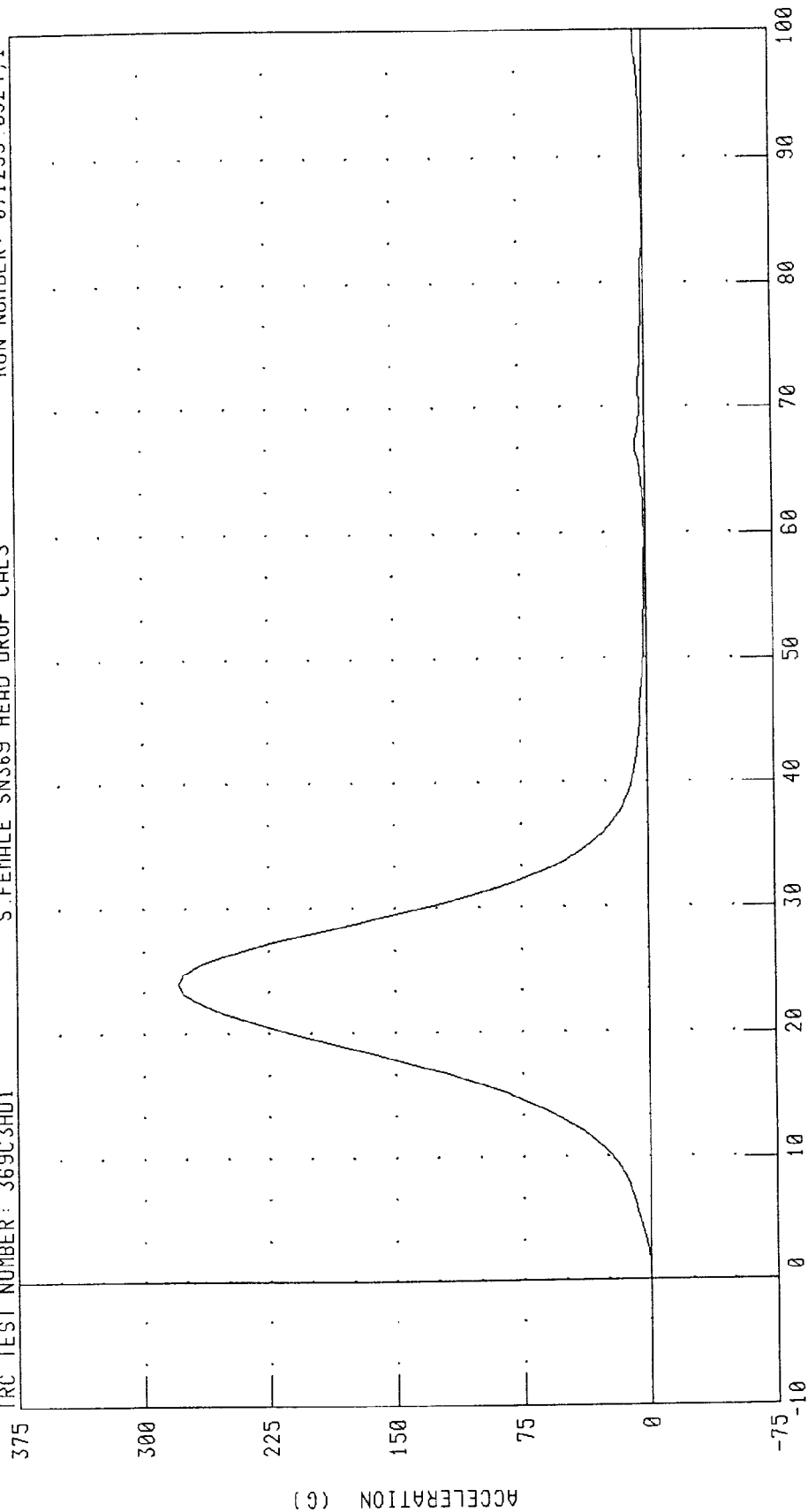


CHANNEL: HEDZG FILTER: CH. CLASS 1000 PEAK DATA: 4.75 G @ 6.64 MS; -139.43 G @ 2.40 MS

SMALL FEMALE HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION
S. FEMALE SN369 HEAD DROP CAL3

RUN NUMBER: 071299 0924,1

TRC TEST NUMBER: 369C3HD1



PEAK DATA: 279.45 G @ 2.40 MS; 0.09 G @ -0.88 MS

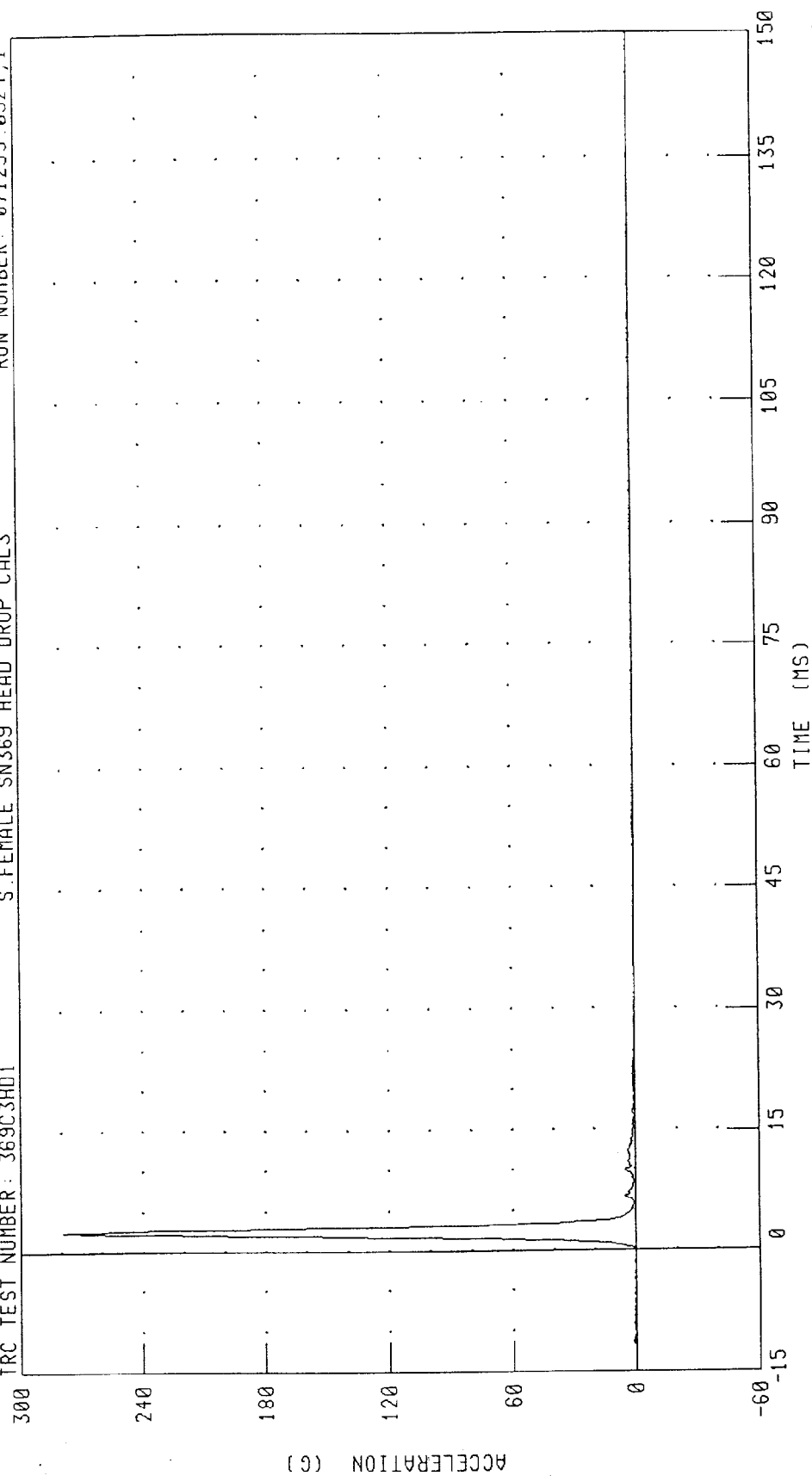
CHANNEL: HEDRG FILTER: CH. CLASS 1000

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

TRC TEST NUMBER: 369C3HD1

S.FEMALE SN369 HEAD DROP CAL3

RUN NUMBER: 071299.0924.1



CHANNEL: HEDRG FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

12-JUL-99

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 369C3NF1 S.FEMALE SN369 NECK FLEX. CAL3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.7 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	2.29 M/S
	20 MS 4.0 - 5.0 M/S	4.48 M/S
	30 MS 5.8 - 7.0 M/S	6.49 M/S
PEAK D-PLANE ROTATION	80 - 92 DEG.	82.51 DEG.
PEAK MOMENT ABOUT OCCIPITAL CONDYLE DURING ROTATION INT	69 - 83 NM	73.72 NM
POSITIVE MOMENT DECAY TIME FROM TO TO 10 NM	80 - 100 MS	86.88 MS

TEST MEETS NHTSA SPECIFICATIONS

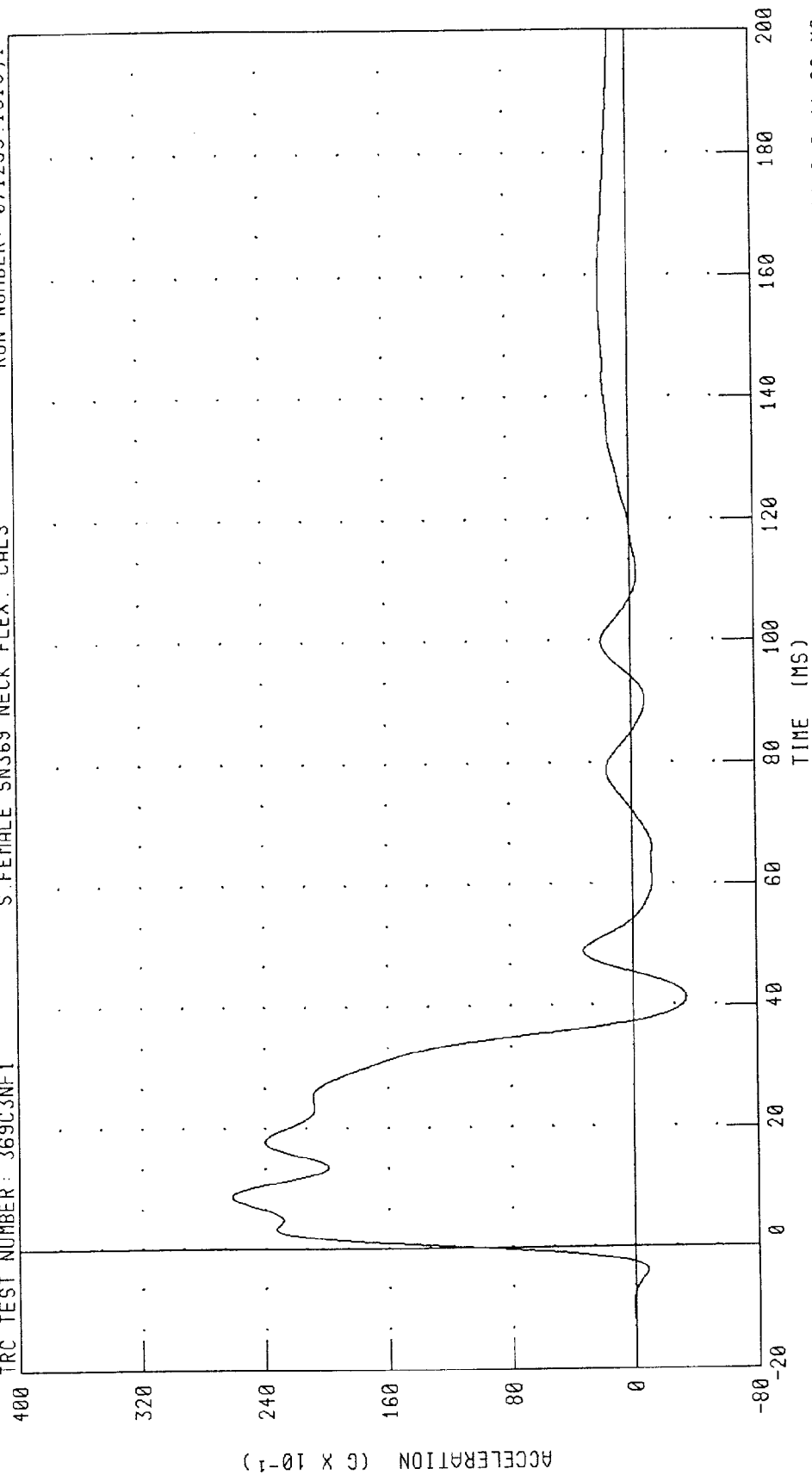
TECHNICIAN

Kevin Watkins

RUN NUMBER: 071299.1244;1

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 36903NF1 S. FEMALE SN369 NECK FLEX. CAL3 RUN NUMBER: 071299.1313.1



CHANNEL: PENXG FILTER: CH. CLASS 60 PEAK DATA: 26.14 G @ 8.88 MS; -3.44 G @ 41.20 MS

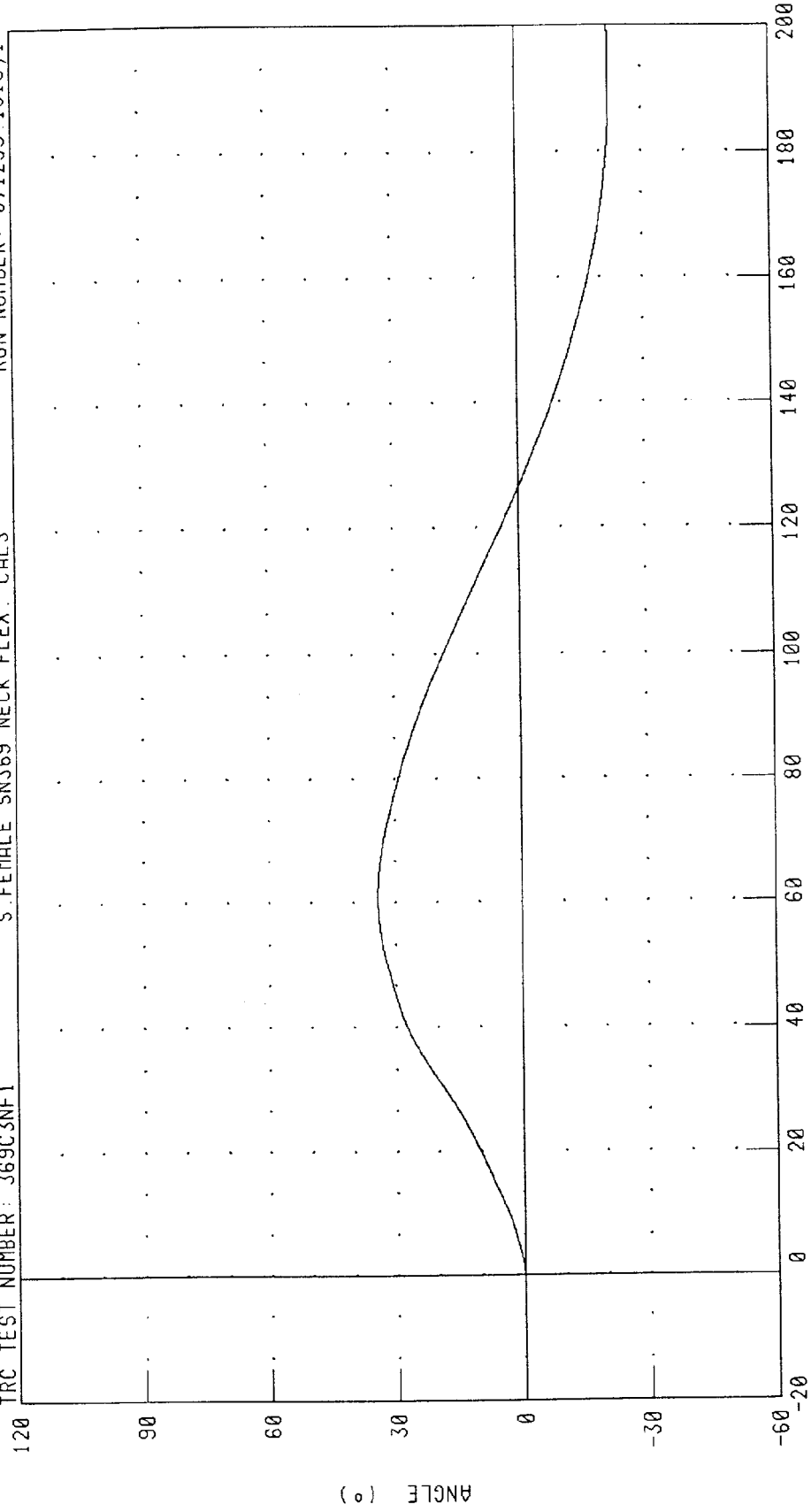
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

S. FEMALE SN369 NECK FLEX. CAL3

RUN NUMBER: 071299.1313;1

TRC TEST NUMBER: 369C3NF1



TIME (MS)

PEAK DATA: 34.13 ° @ 60.72 MS, -22.29 ° @ 191.12 MS

FILTER: CH. CLASS 60

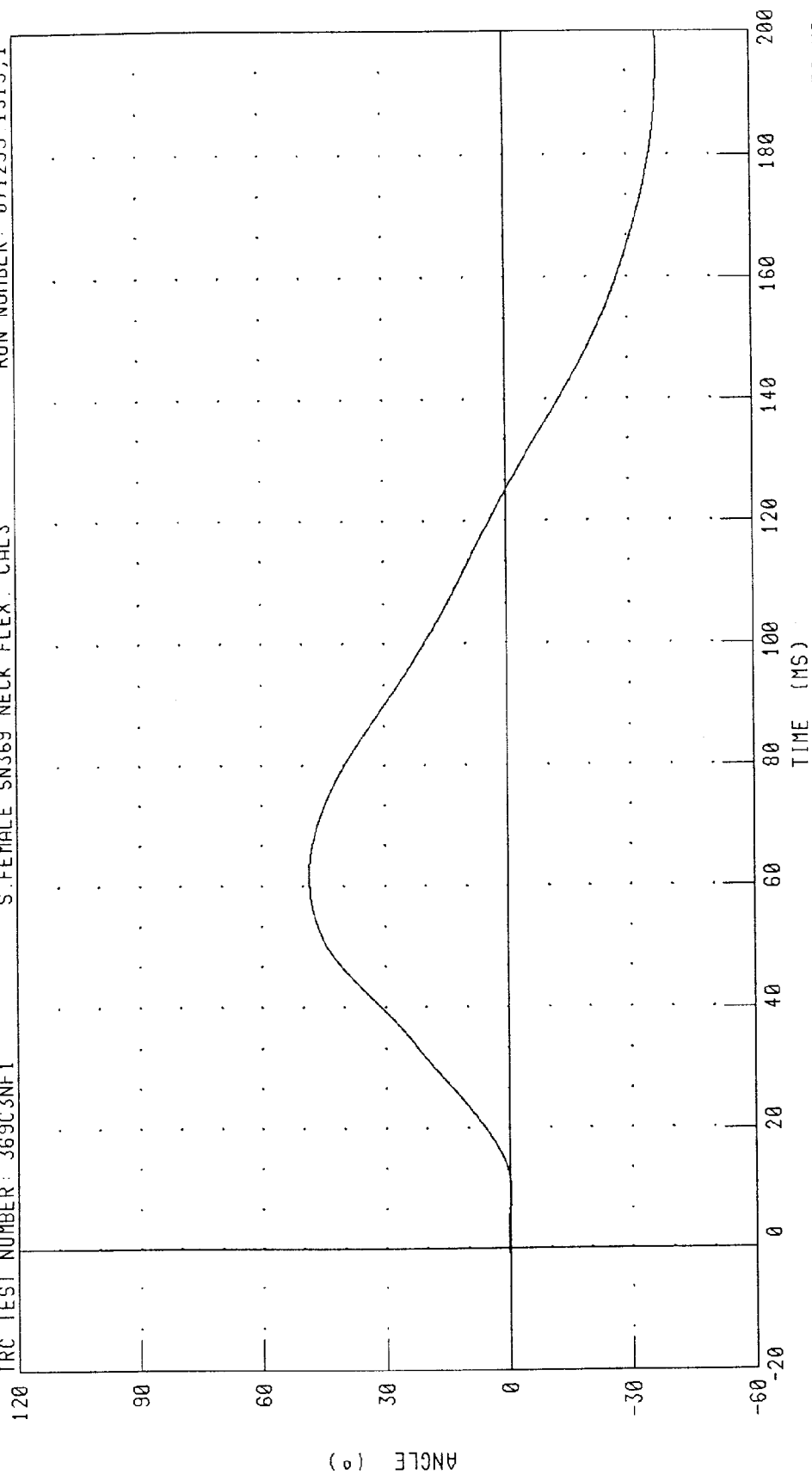
CHANNEL: BETA

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 369C3NF1

S. FEMALE SN369 NECK FLEX. CAL3

RUN NUMBER: 071299 1313;1



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 48.40 ° @ 62.08 MS; -37.37 ° @ 195.36 MS

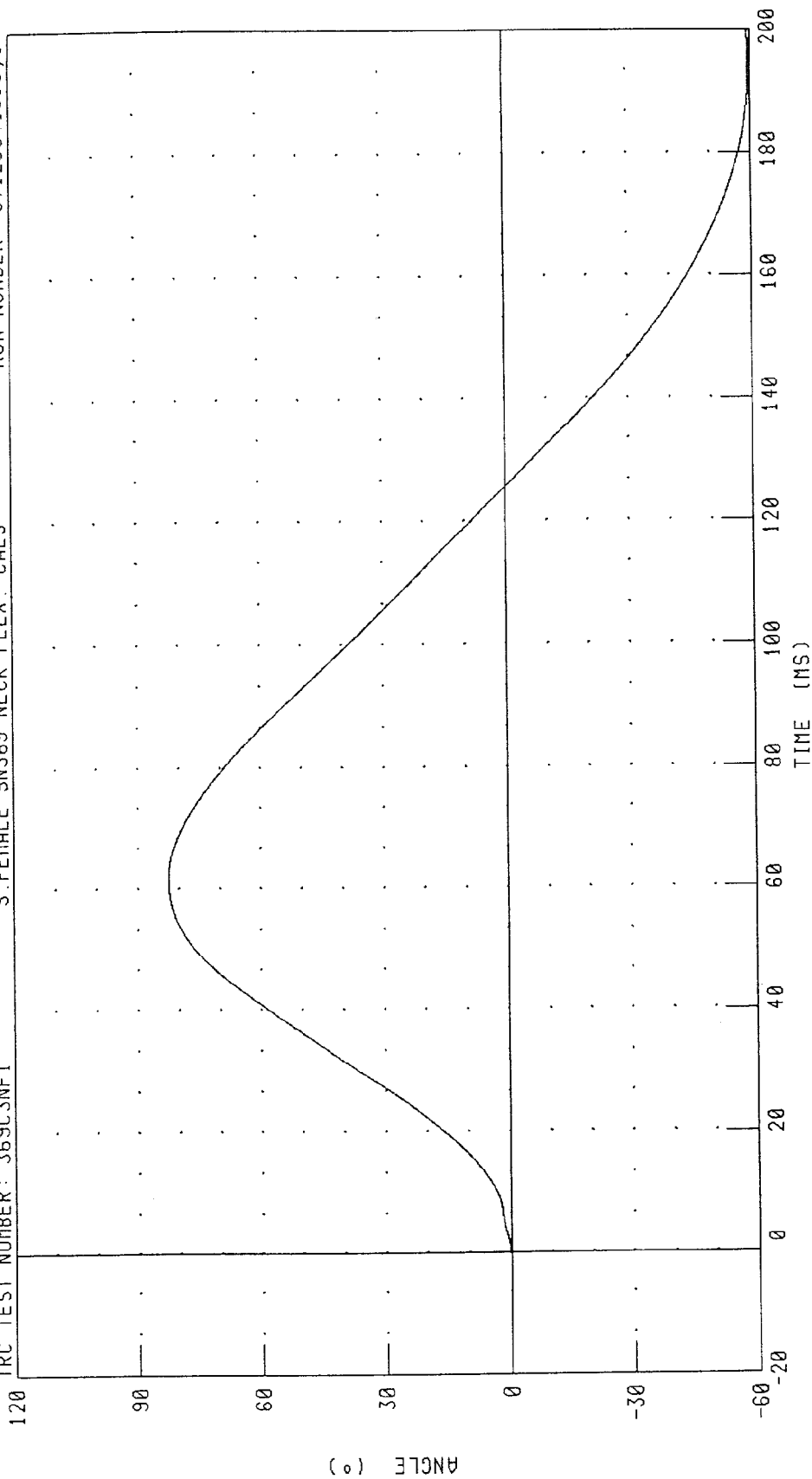
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 369C3NF1

S.FEMALE SN369 NECK FLEX. CAL3

RUN NUMBER: 071299 1313;1



CHANNEL: TOTAN

FILTER: CH. CLASS 60

PEAK DATA: 82.51 ° @ 61.44 MS; -59.62 ° @ 194.00 MS

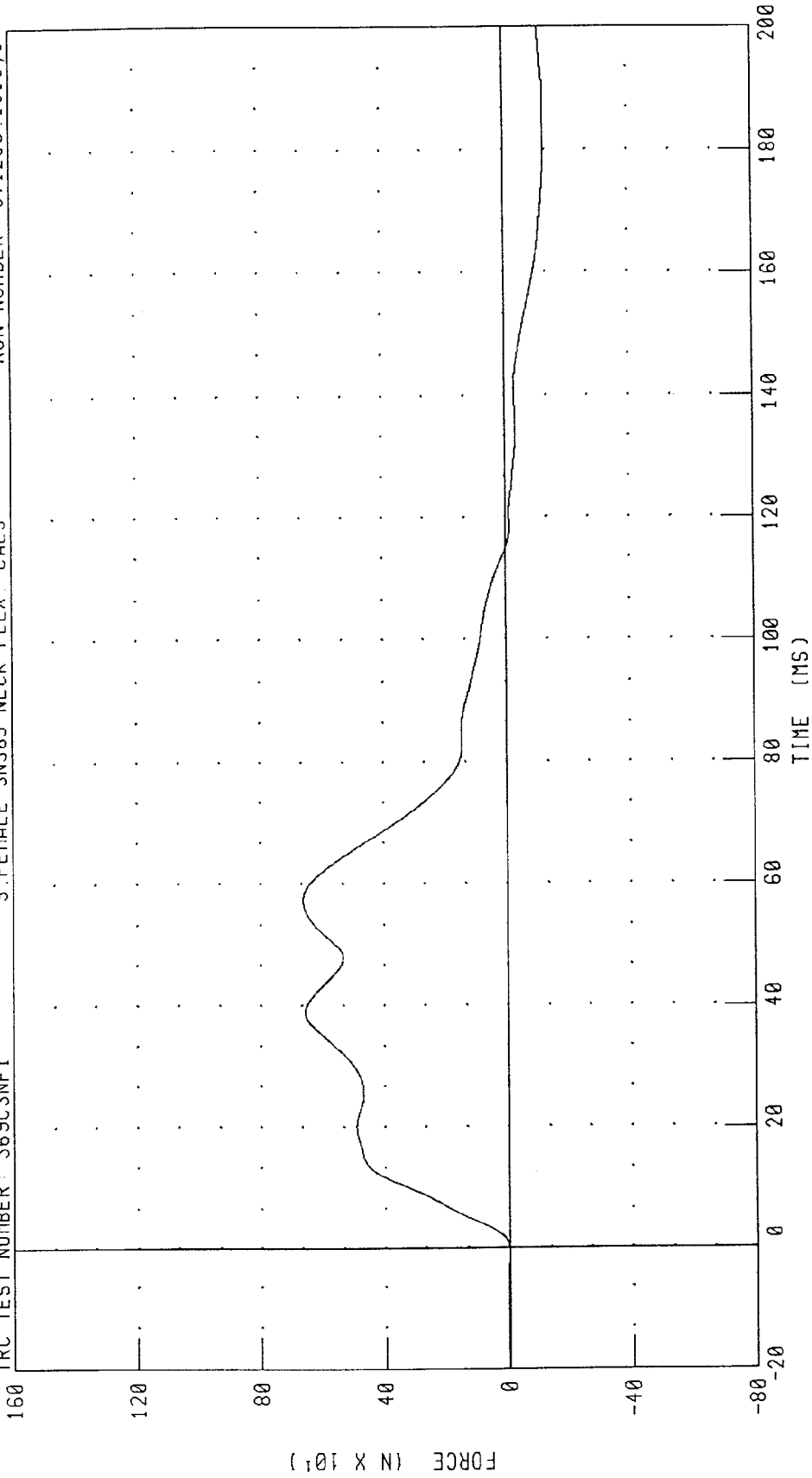
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 369C3NF1

S. FEMALE SN369 NECK FLEX CAL3

RUN NUMBER: 071299.1313;1



PEAK DATA: 661.62 N @ 57.36 MS; -131.09 N @ 186.96 MS

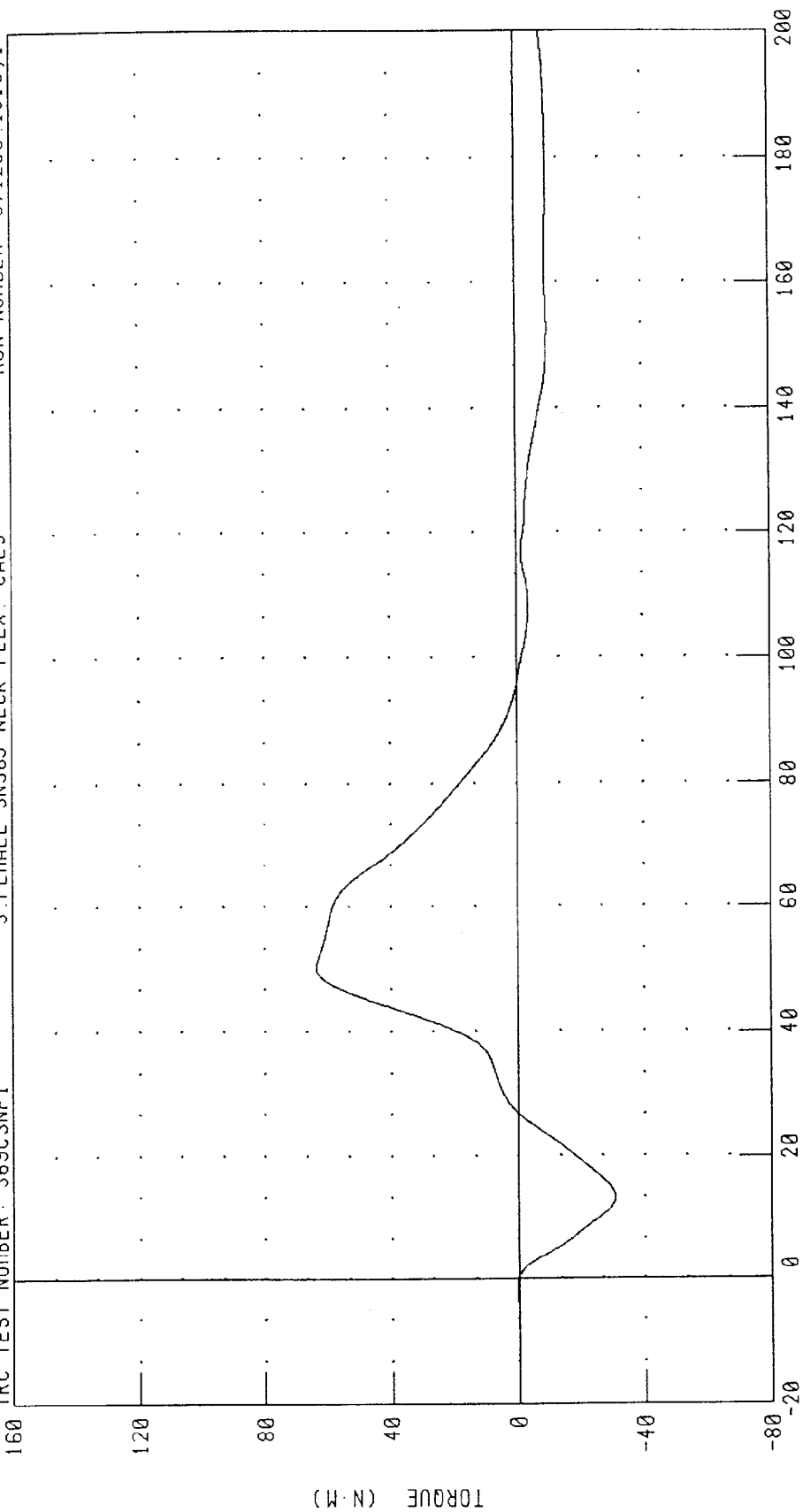
CHANNEL: NEKXF FILTER: CH. CLASS 60

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS

TRC TEST NUMBER: 369C3NF1

S. FEMALE SN369 NECK FLEX. CAL3

RUN NUMBER: 071299.1313.1



PEAK DATA: 63.61 N·M @ 50.32 MS, -30.67 N·M @ 13.28 MS

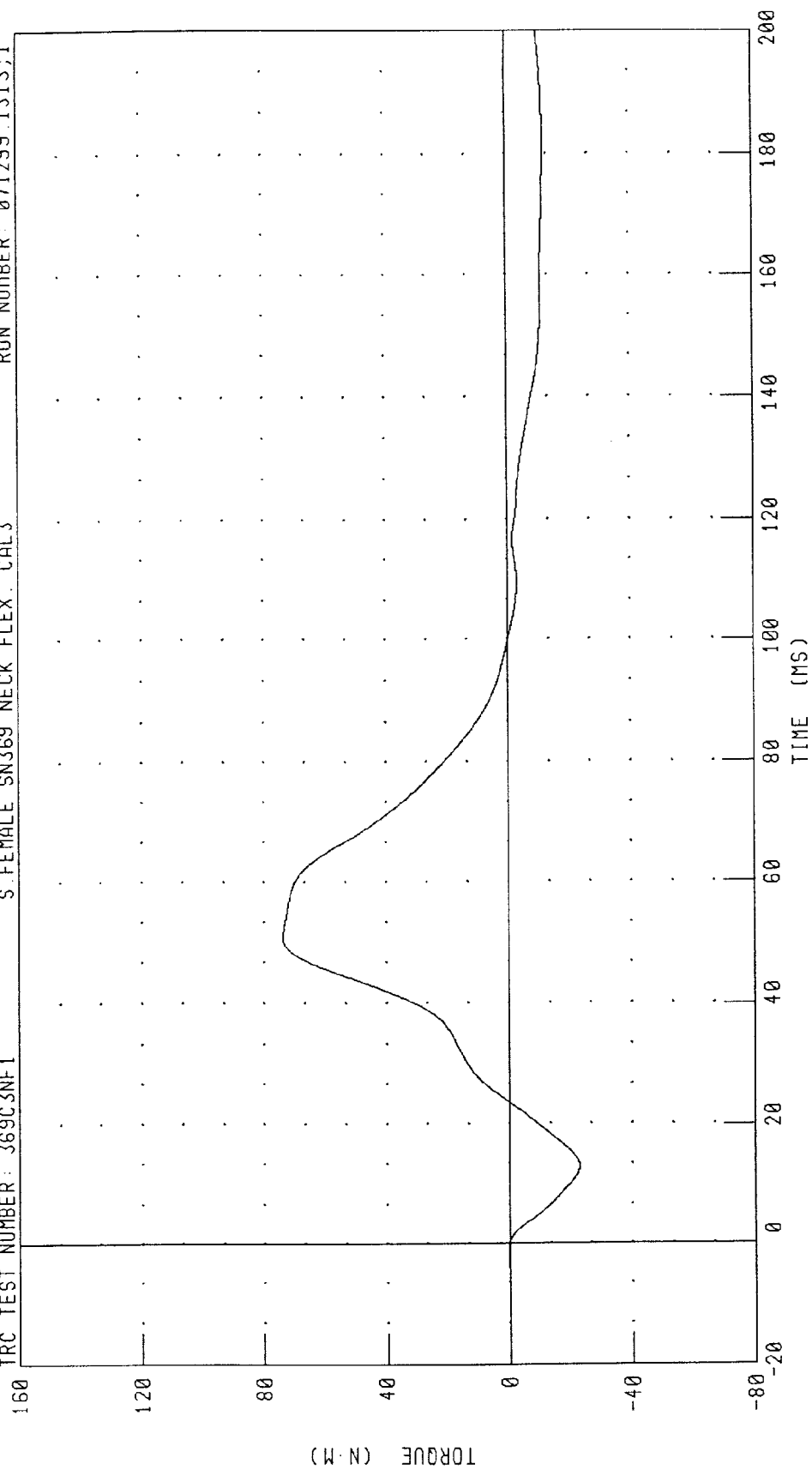
CHANNEL: NEKYM FILTER: CH. CLASS 60

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 369C3NFI

S. FEMALE SN369 NECK FLEX. CAL3

RUN NUMBER: 071299.1313;1



PEAK DATA: 73.72 N·M @ 50.96 MS; -22.80 N·M @ 12.88 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

12-JUL-99

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 369C3NE1 S.FEMALE SN369 NECK EXT. CAL3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6 - 22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
IMPACT VELOCITY	5.95 - 6.19 M/S	6.00 M/S
INTEGRATED PENDULUM VELOCITY	10 MS	1.5 - 1.9 M/S
	20 MS	3.1 - 3.9 M/S
	30 MS	4.6 - 5.6 M/S
PEAK D-PLANE ROTATION	97 - 109 DEG.	113.04 DEG. *
PEAK MOMENT ABOUT OCCIPITAL CONDYLE DURING ROTATION INT	-55 / -69 NM	-59.12 NM
NEGATIVE MOMENT DECAY TIME FROM TO TO -10 NM LEVEL	94 - 114 MS	106.40 MS

* TEST DOES NOT MEET NHTSA SPECIFICATIONS

TECHNICIAN

Kevin Watkins

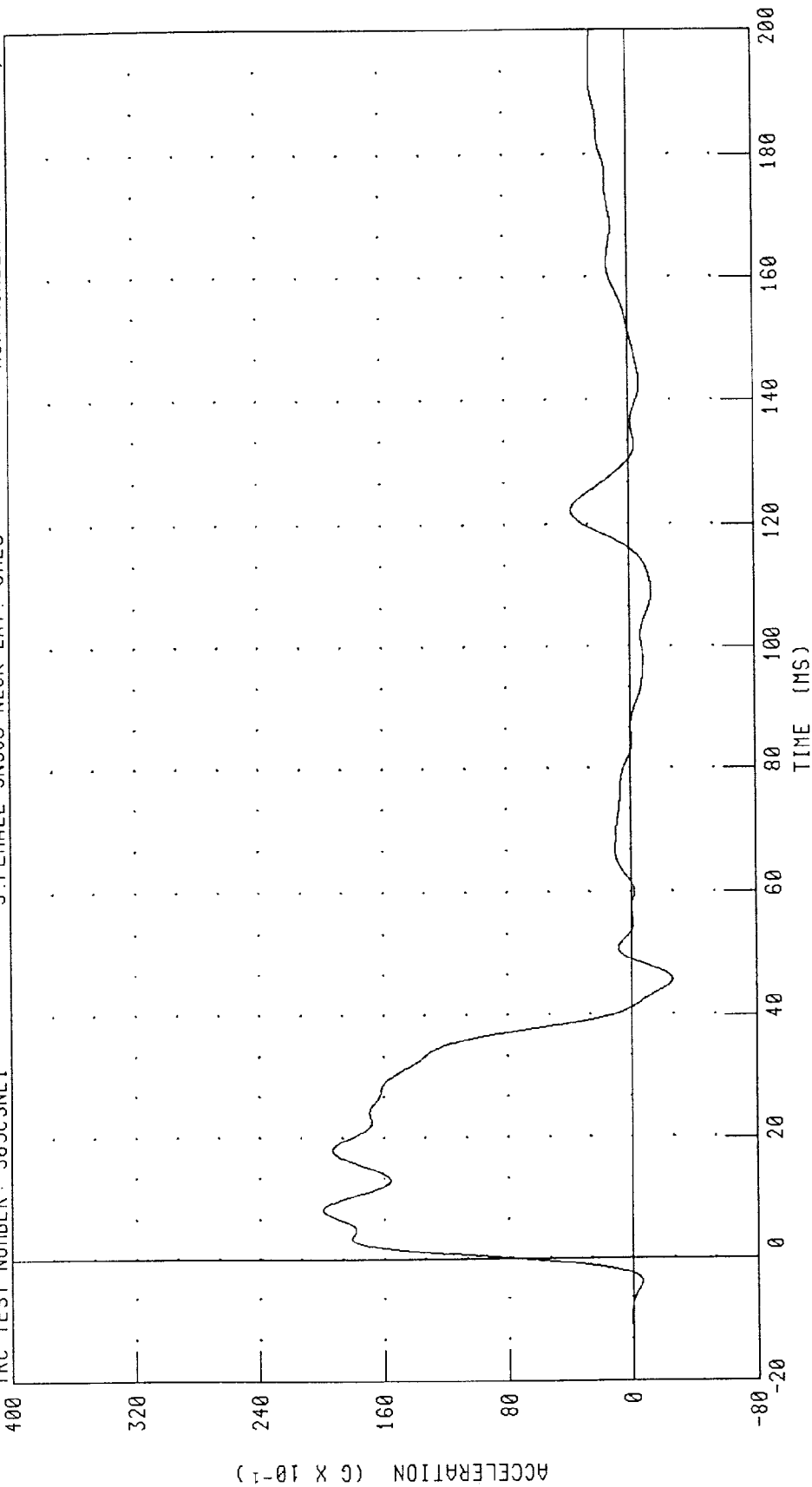
RUN NUMBER: 071299.1324;1

SMALL FEMALE NECK EXTENSION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 369C3NE1

S.FEMALE SN369 NECK EXT. CAL3

RUN NUMBER: 071299 1609;1



PEAK DATA: 19.91 G @ 8.32 MS; -2.63 G @ 45.84 MS

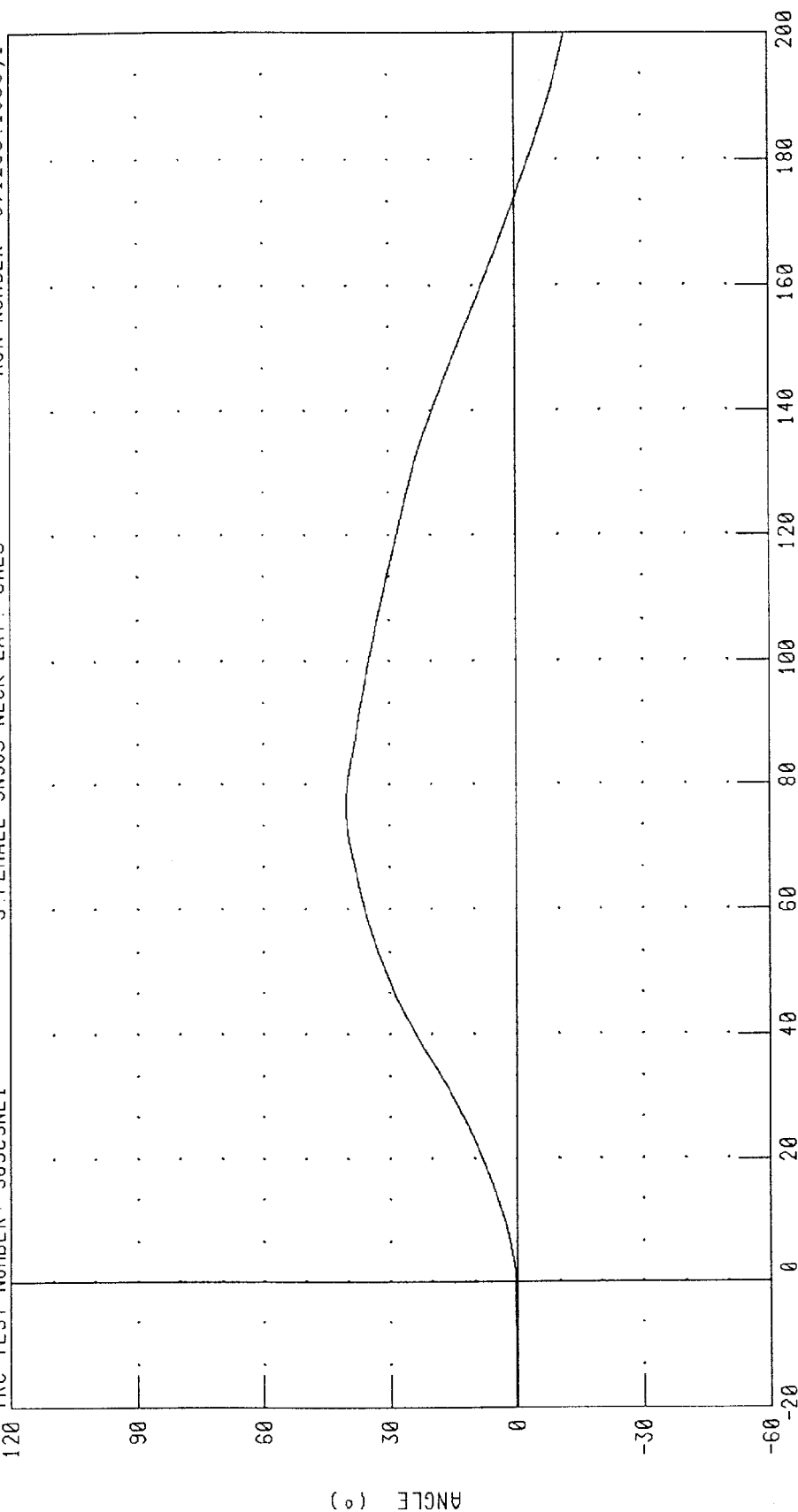
CHANNEL: PENXC FILTER: CH. CLASS 60

SMALL FEMALE NECK EXTENSION CALIBRATION ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 369C3NE1

S. FEMALE SN369 NECK EXT. CAL3

RUN NUMBER: 071299.1609;1



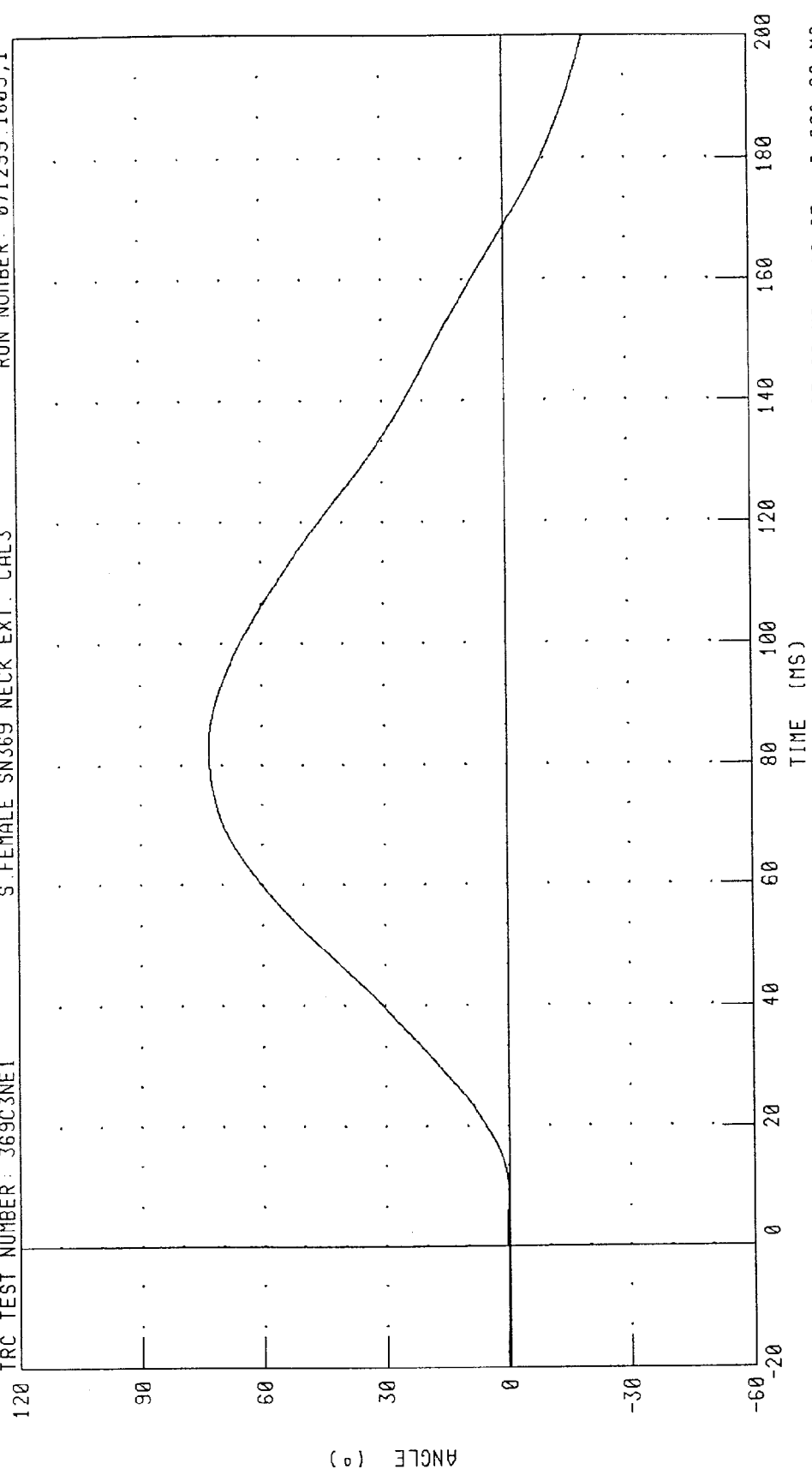
PEAK DATA: 40.31 ° @ 76.56 MS, -11.86 ° @ 200.00 MS

CHANNEL: BETA FILTER: CH. CLASS 60

SMALL FEMALE NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE
S. FEMALE SN369 NECK EXT. CAL3

TRC TEST NUMBER: 369C3NE1

RUN NUMBER: 071299 1609;1



PEAK DATA: 73.05 ° @ 83.92 MS; -19.85 ° @ 200.00 MS

CHANNEL: THETA FILTER: CH. CLASS 60

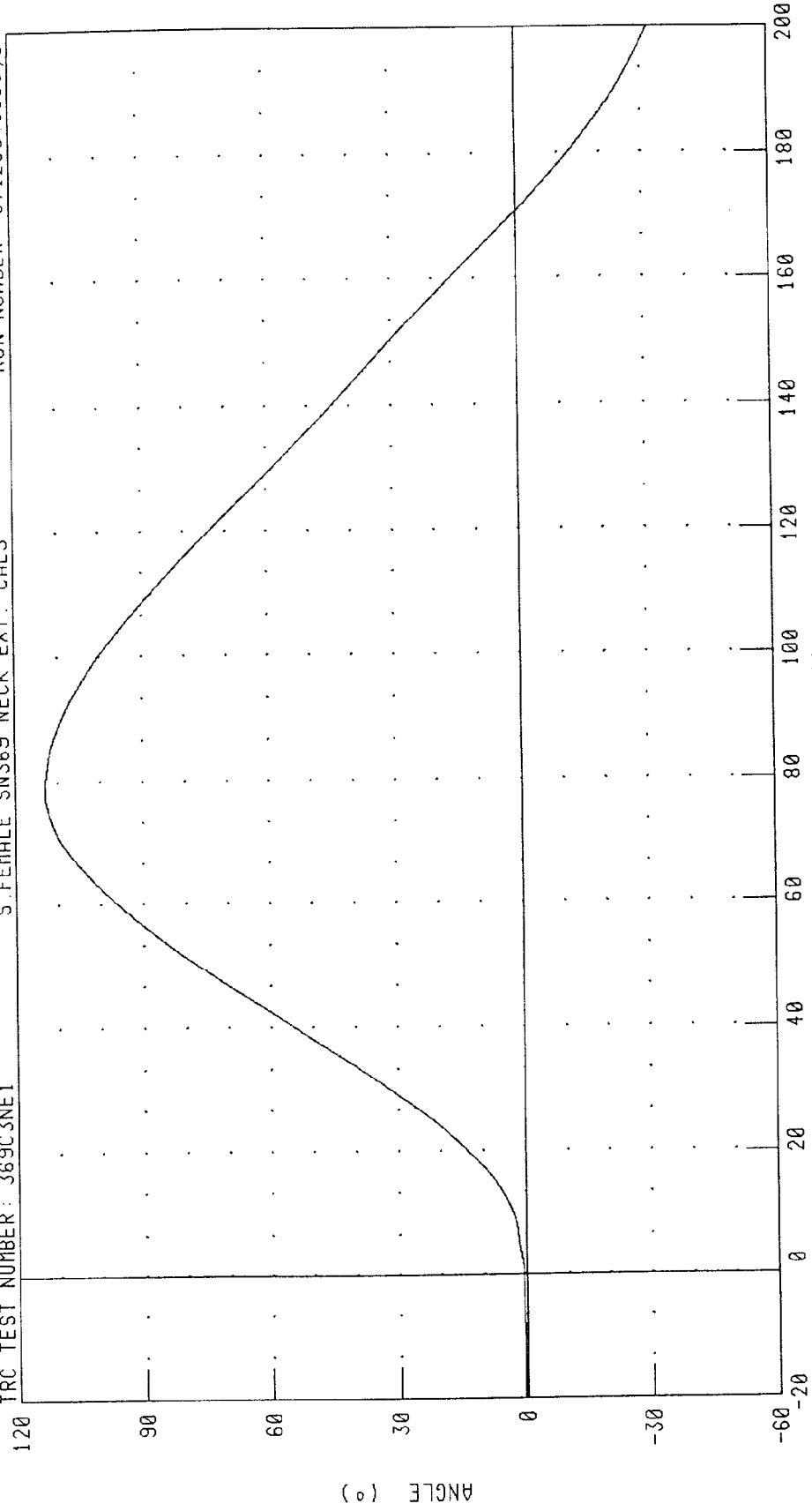
SMALL FEMALE NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 369C3NE1

S. FEMALE SN369 NECK EXT. CAL3

RUN NUMBER: 071299 1609.1



CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 113.04 ° @ 78.72 MS, -31.72 ° @ 200.00 MS

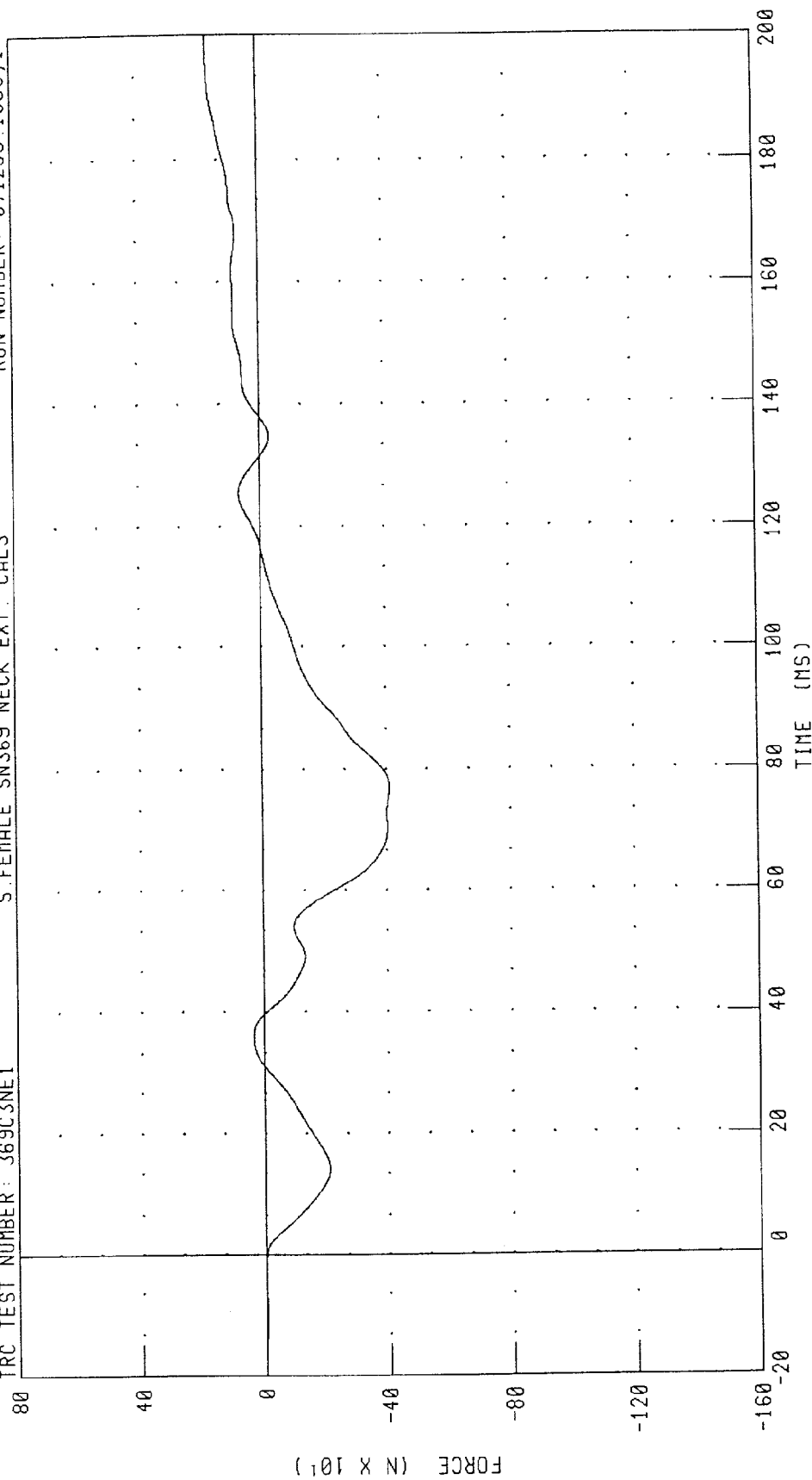
SMALL FEMALE NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 369C3NE1

S. FEMALE SN369 NECK EXT. CAL3

RUN NUMBER: 071299.1609,1



PEAK DATA: 166.54 N @ 197.84 MS, -411.83 N @ 77.04 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

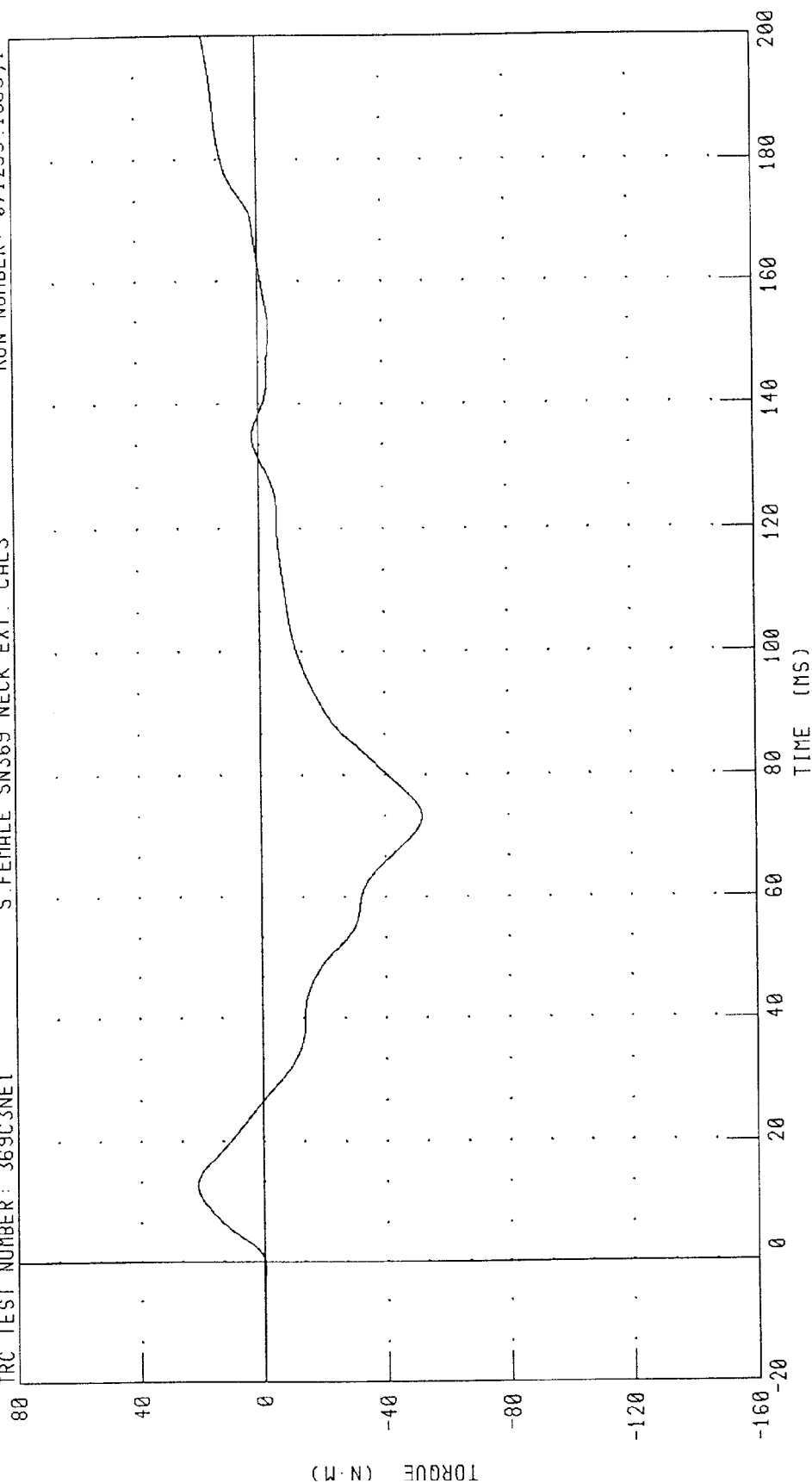
SMALL FEMALE NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 369C3NE1

S. FEMALE SN369 NECK EXT. CAL3

RUN NUMBER: 071299.1609,1



PEAK DATA: 21.56 N.M @ 12.80 MS; -51.97 N.M @ 73.36 MS

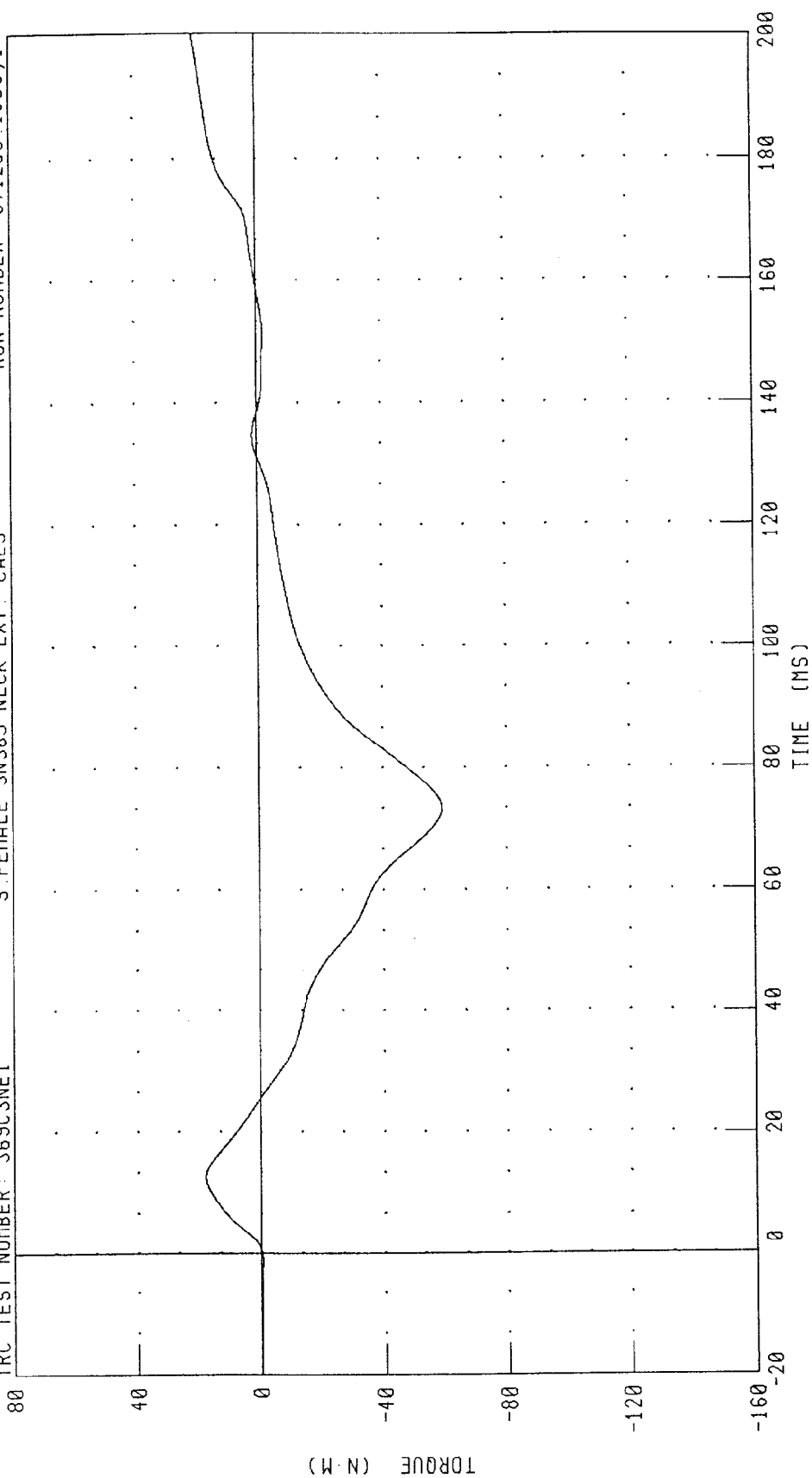
CHANNEL: NEKYM FILTER: CH. CLASS 60

SMALL FEMALE NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 369C3NE1

S. FEMALE SN369 NECK EXT. CAL3

RUN NUMBER: 071299.1609;1



PEAK DATA: 20.72 N·M @ 200.00 MS; -59.12 N·M @ 73.36 MS

CHANNEL: NECKM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III SMALL FEMALE

13-JUL-99

TRC INC.

TEST NO: 369C3TH1

S.FEMALE SN369 THORAX CAL03

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	51.8 MM
MAXIMUM RESISTIVE FORCE WITHIN DEFLECTION CORRIDOR	3900 - 4400 N	4244. N
INTERNAL HYSTERESIS	69% - 85%	73.1%

TEST MEETS NHTSA SPECIFICATIONS

TECHNICIAN Kevin Watkins

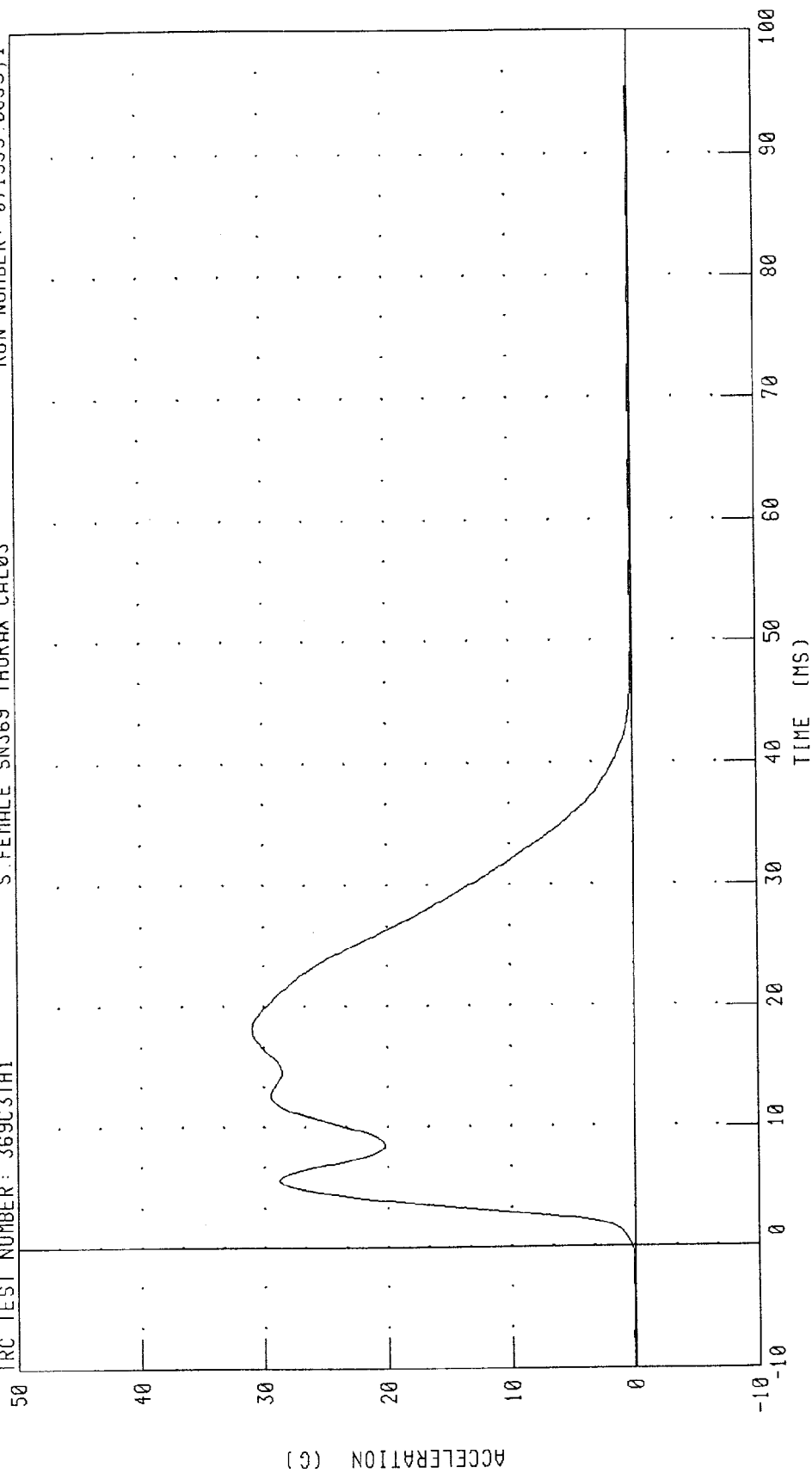
RUN NUMBER: 071399.0823;1

SMALL FEMALE THORAX CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 369C3TH1

S. FEMALE SN369 THORAX CAL03

RUN NUMBER: 071399.0833;1



PEAK DATA: 30.93 G @ 18.24 MS; 0.05 G @ 74.32 MS

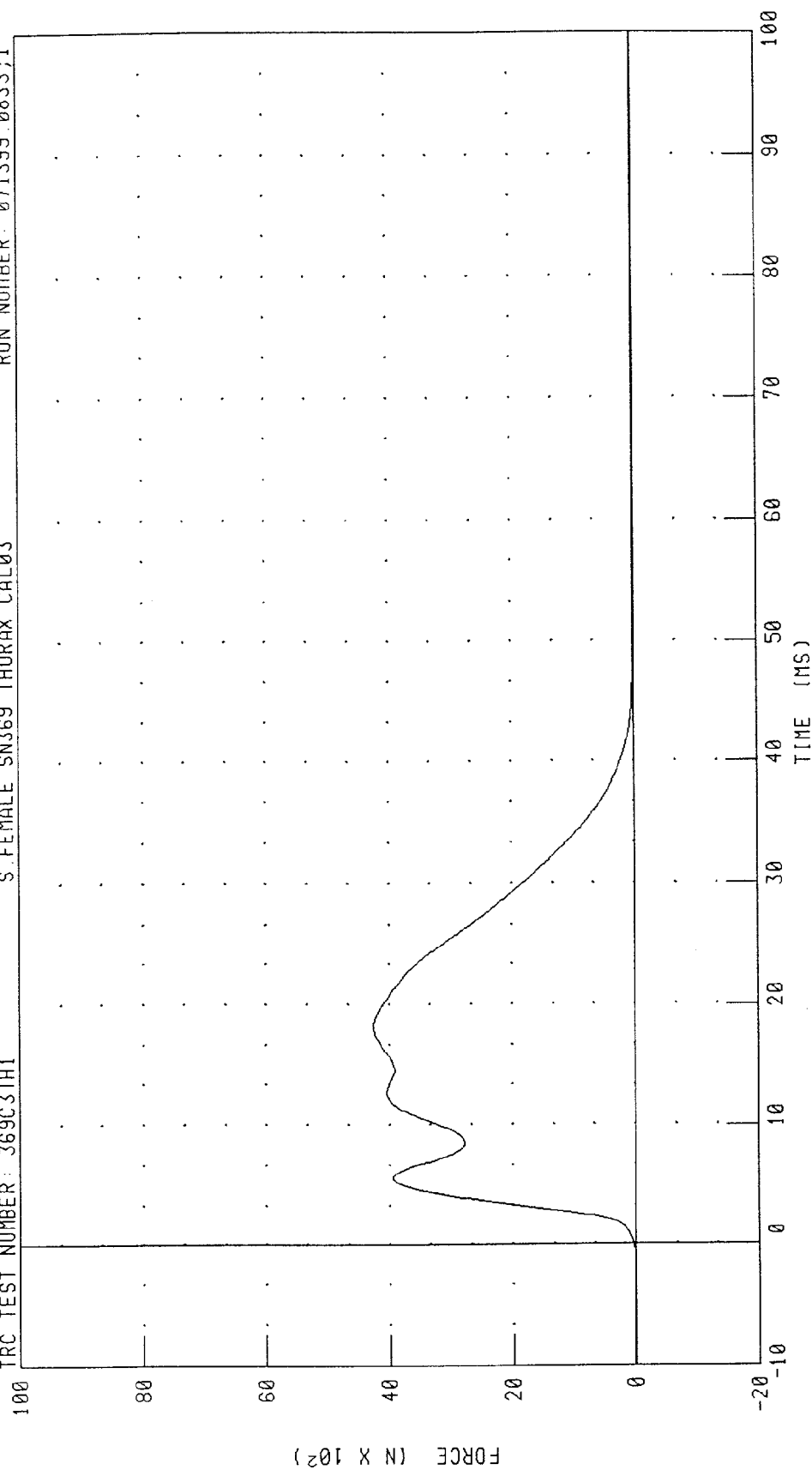
CHANNEL: PENXG FILTER: CH. CLASS 180

SMALL FEMALE THORAX CALIBRATION
PENDULUM FORCE

TRC TEST NUMBER: 369C3TH1

S. FEMALE SN369 THORAX CAL03

RUN NUMBER: 071399.0833;1



CHANNEL: PENXF FILTER: CH. CLASS 180

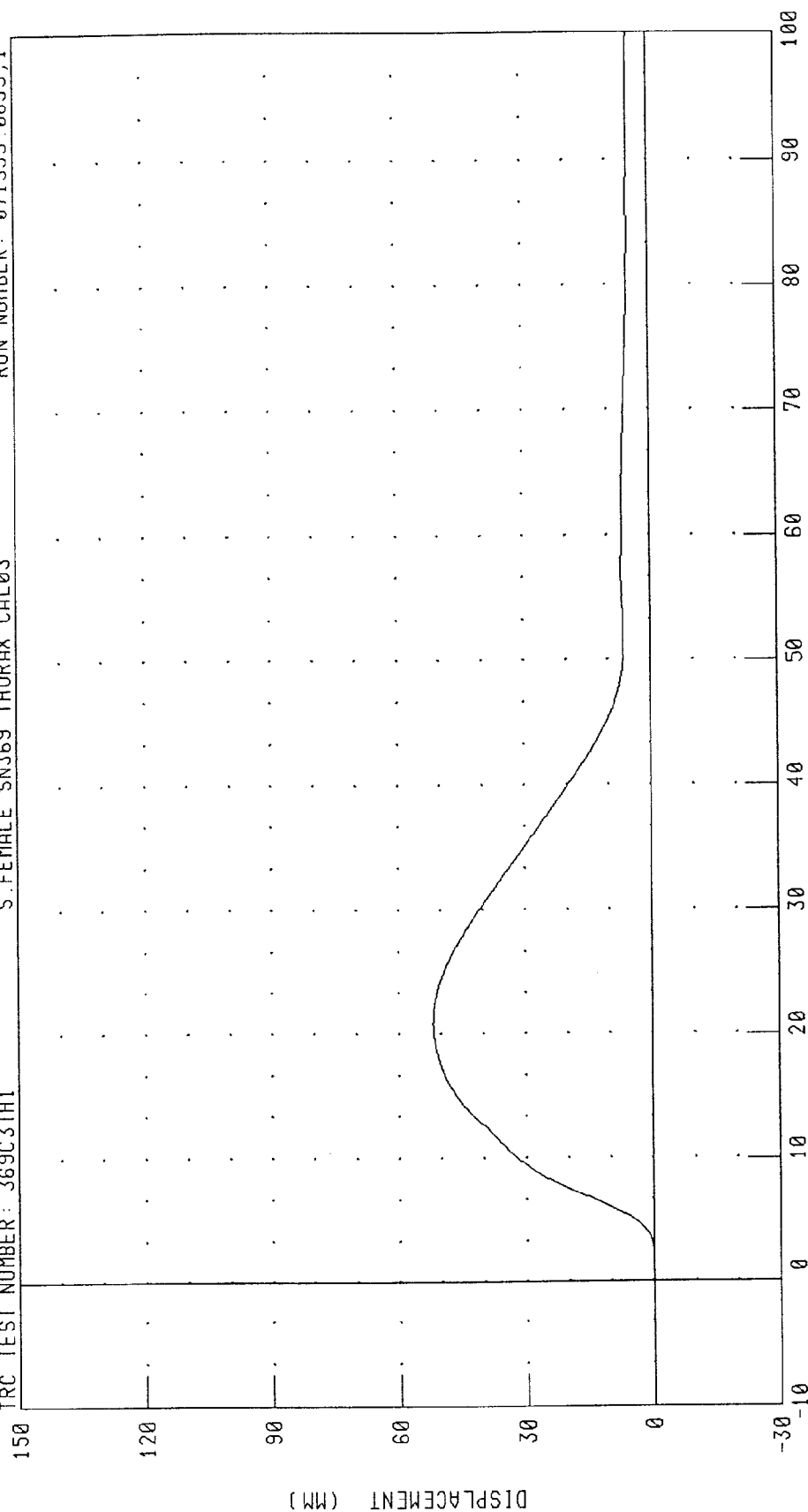
PEAK DATA: 4244.53 N @ 18.24 MS; 6.28 N @ 74.32 MS

SMALL FEMALE THORAX CALIBRATION
STERNUM DISPLACEMENT

TRC TEST NUMBER: 369C3TH1

S. FEMALE SN369 THORAX CAL03

RUN NUMBER: 071399.0833;1



CHANNEL: CSTXD FILTER: CH. CLASS 180

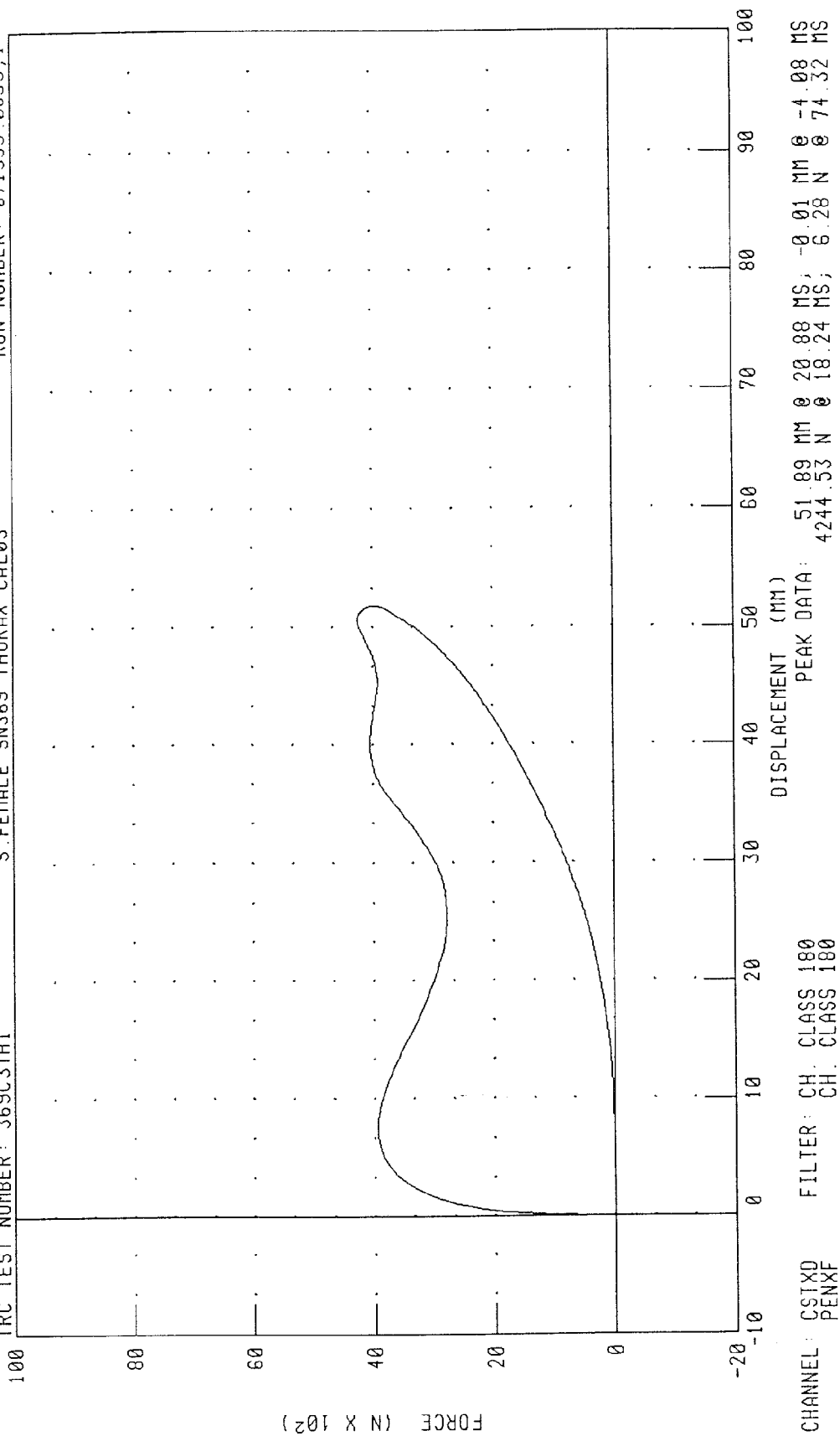
PEAK DATA: 51.89 MM @ 20.88 MS; -0.01 MM @ -4.08 MS

SMALL FEMALE THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE

TRC TEST NUMBER: 369C3TH1

S. FEMALE SN369 THORAX CAL03

RUN NUMBER: 071399.0833;1



TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

12-JUL-99

TRC INC.

TEST NO: 369C3RK1

S.FEMALE SN369 R.KNEE CAL3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.07 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3360 - 4080 N	3780.7 N

TEST MEETS NHTSA SPECIFICATIONS

TECHNICIAN

Kevin Watkins

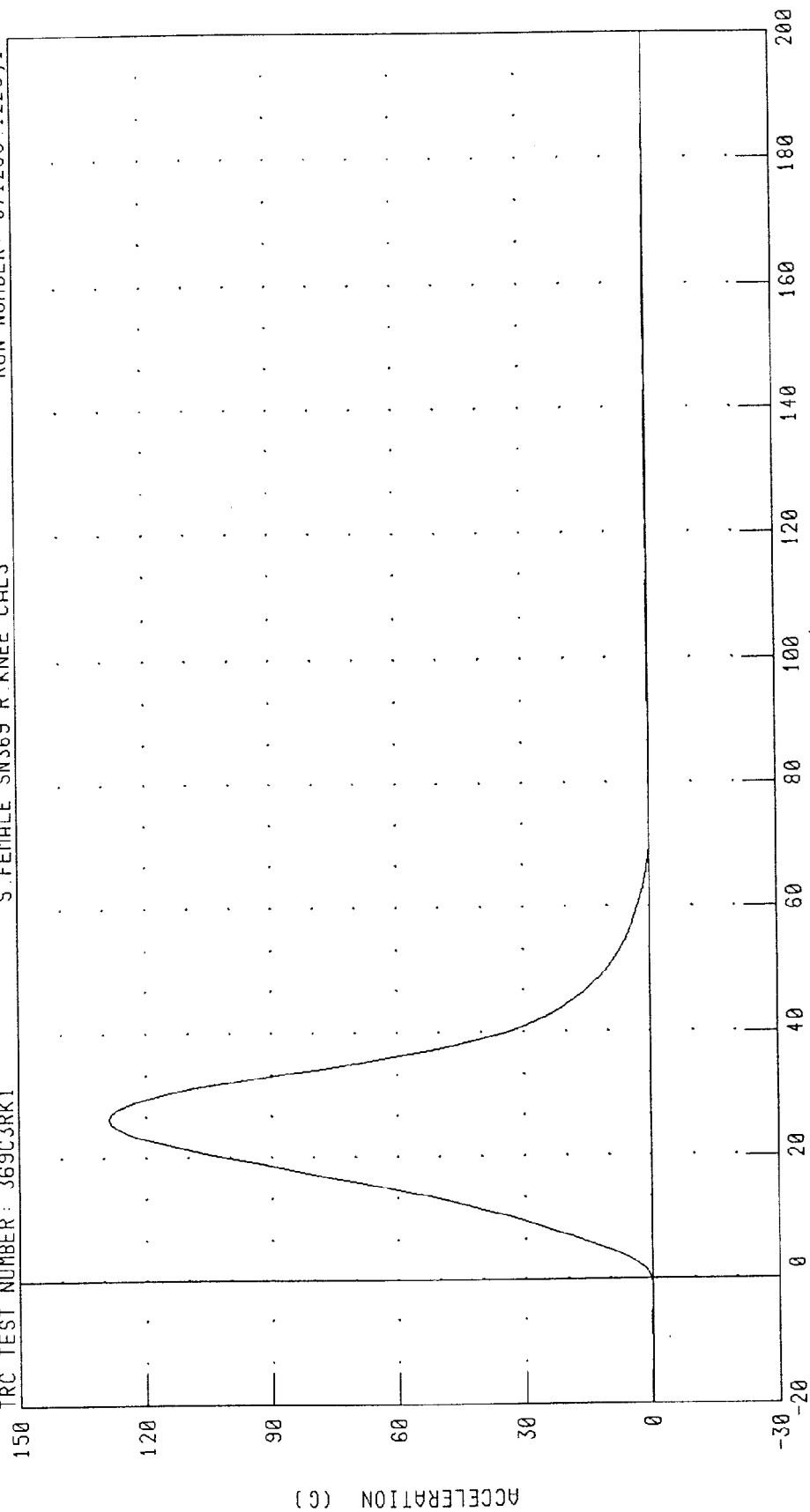
RUN NUMBER: 071299.1224;1

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

TRC TEST NUMBER: 369C3RK1

S. FEMALE SN369 R. KNEE CAL3

RUN NUMBER: 071299 1225;1



CHANNEL: PENXG

FILTER: CH. CLASS 600

PEAK DATA: 128.79 G @ 2.64 MS; -0.16 G @ -0.16 MS

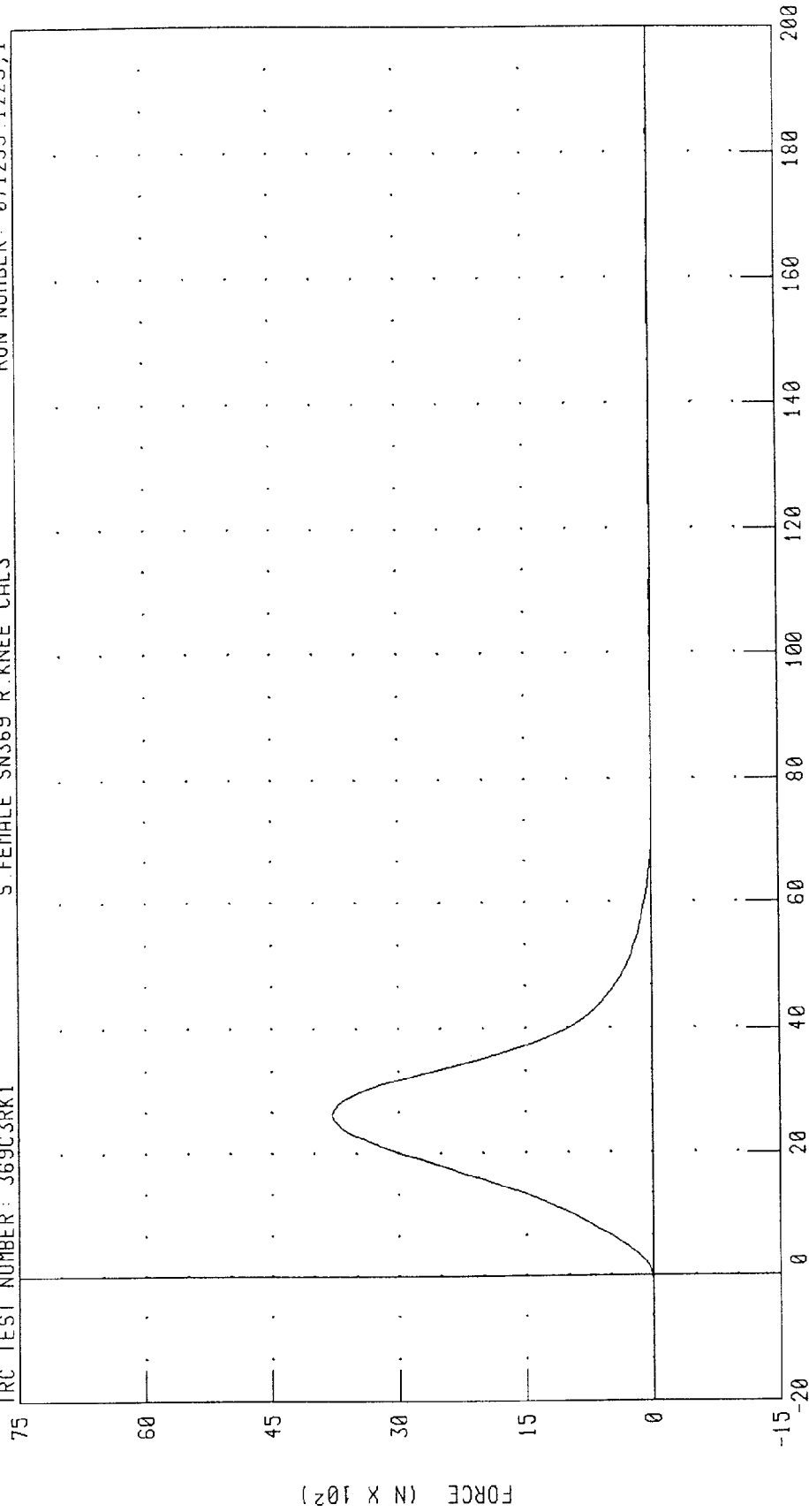
SMALL FEMALE HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

RUN NUMBER: 071299.1225;1

TRC TEST NUMBER: 369C3RK1

S. FEMALE SN369 R. KNEE CAL3



CHANNEL: PENXF FILTER: CH. CLASS 600

TIME (MS X 10⁻¹)

PEAK DATA: 3780.77 N @ 2.64 MS; -4.66 N @ -0.16 MS

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

12-JUL-99

TRC INC.

TEST NO: 369C3LK1

S.FEMALE SN369 LEFT KNEE CAL3

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.07 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3360 - 4080 N	3581.6 N

TEST MEETS NHTSA SPECIFICATIONS

TECHNICIAN Elvin Watkins

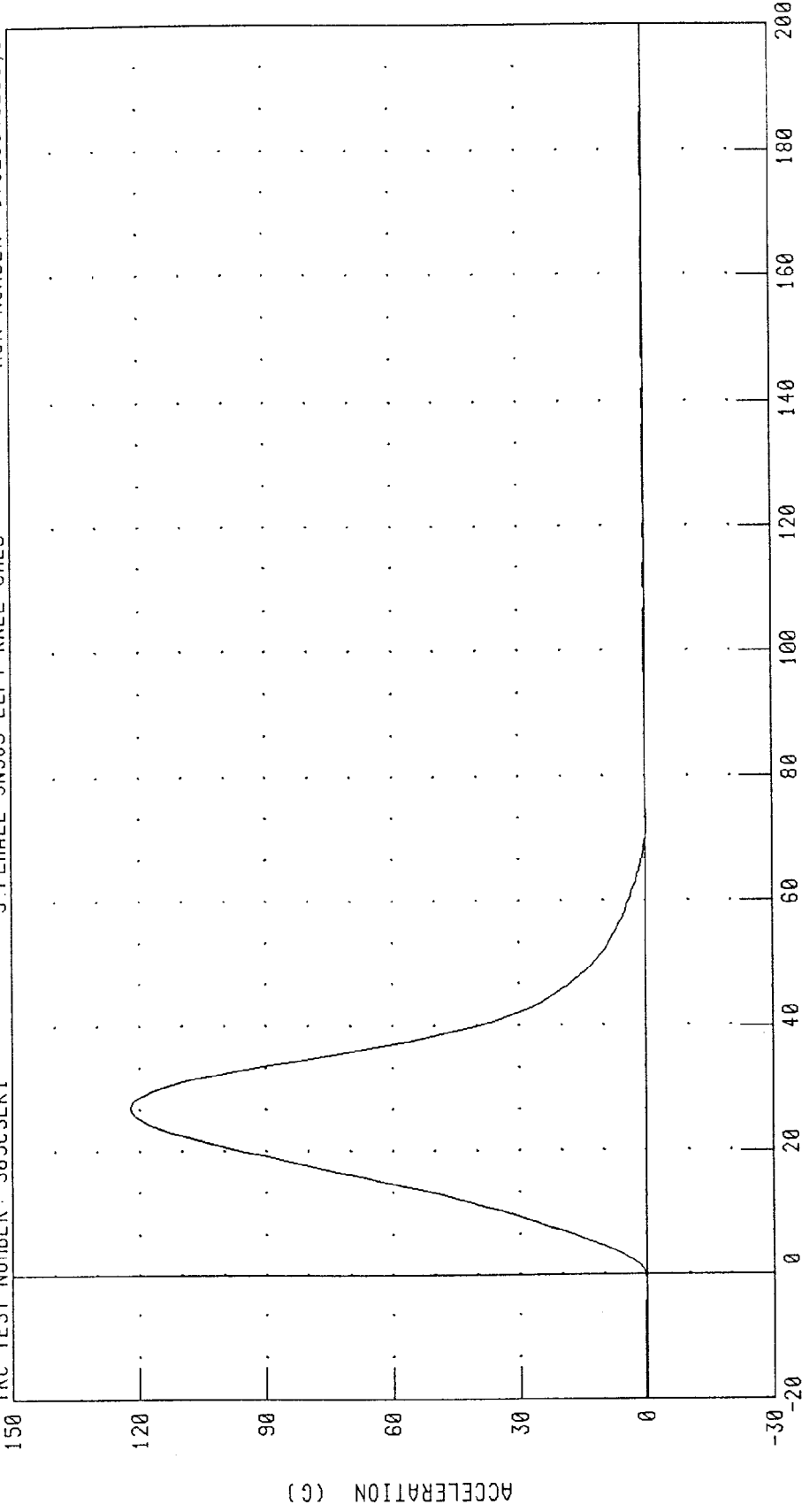
RUN NUMBER: 071299.1214;1

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

TRC TEST NUMBER: 369C3LK1

S. FEMALE SN369 LEFT KNEE CAL3

RUN NUMBER: 071299.1215;1



CHANNEL: PENXC FILTER: CH. CLASS 600

PEAK DATA: 122.01 G @ 2.72 MS; -0.36 G @ 7.28 MS

Post-Test Dummy Certification

Passenger Dummy S/N 289

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III SMALL FEMALE

12-JUL-99

TRC INC.

TEST NO: 289C8HD1

S.FEMALE SN289 HEAD DROP CAL8

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PEAK RESULTANT ACCELERATION	250 - 300 G	291.83 G
PEAK LATERAL ACCELERATION	15 G MAX	-3.64 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS NHTSA SPECIFICATIONS

TECHNICIAN Levin Watkins

RUN NUMBER: 071299.1053;1

Accelerometer Information

Engineer:	Rhule
Test Date:	Feb-98
Dummy S/N:	289
Type:	Hybrid III 5 th percentile

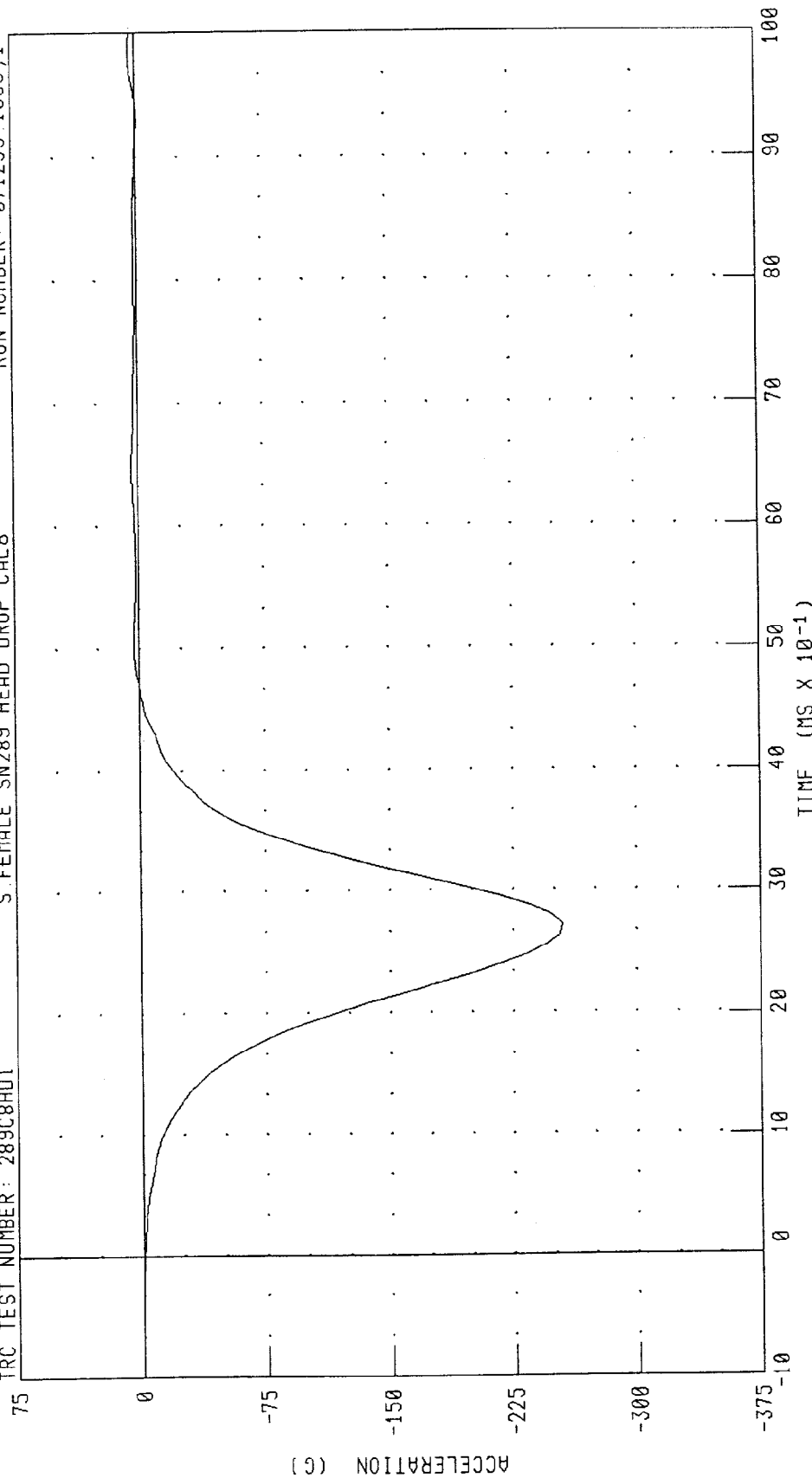
[illegible]

SMALL FEMALE HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS

TRC TEST NUMBER: 289C8HD1

S. FEMALE SN289 HEAD DROP CAL8

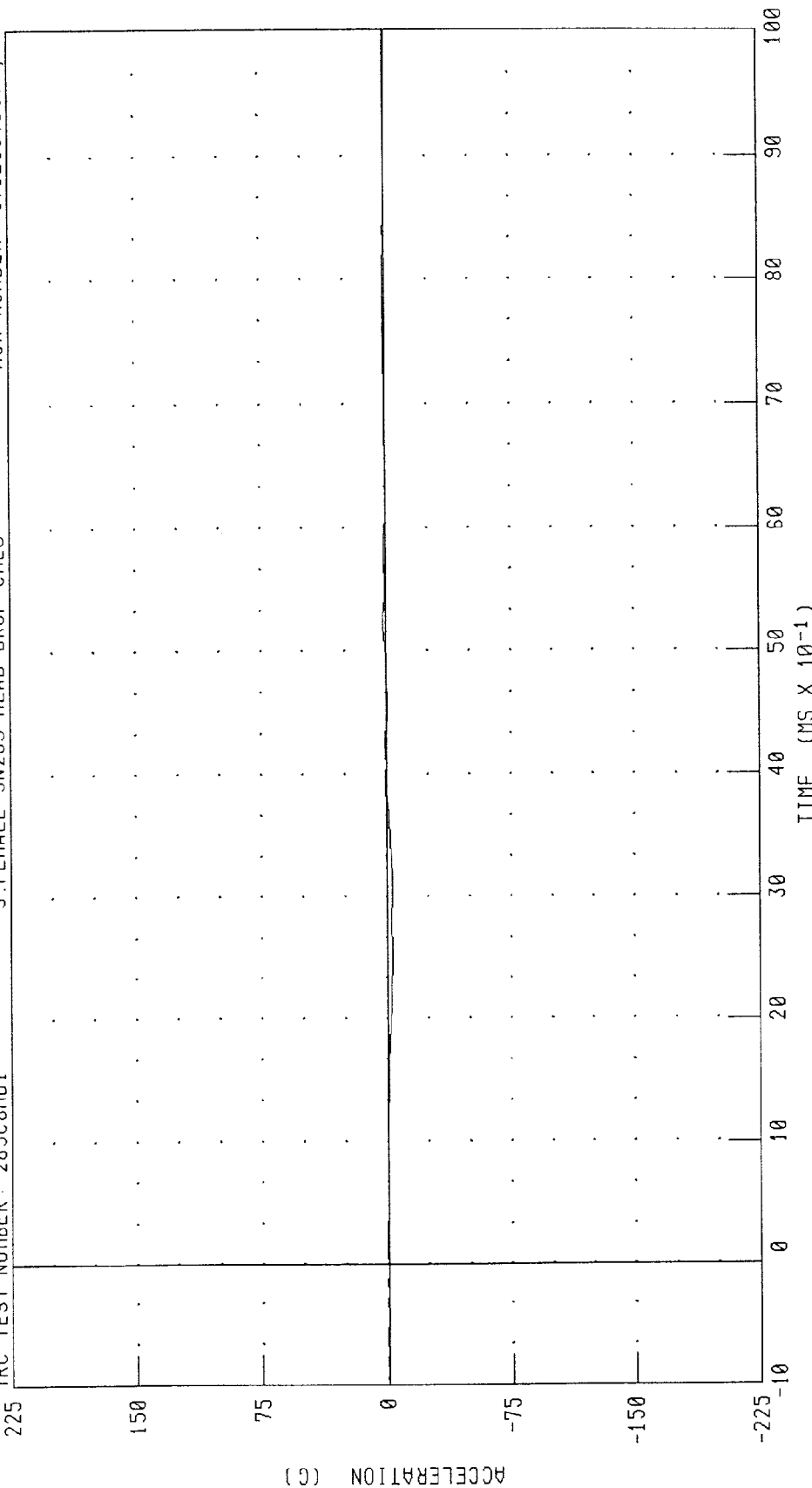
RUN NUMBER: 071299.1055;1



CHANNEL: HEDXC FILTER: CH. CLASS 1000

SMALL FEMALE HYBRID III HEAD CALIBRATION HEAD ACCELERATION Y AXIS

TRC TEST NUMBER: 289C8HD1 S.FEMALE SN289 HEAD DROP CAL8 RUN NUMBER: 071299.1055,1



PEAK DATA: 1.59 G @ 5.20 MS; -3.64 G @ 2.48 MS

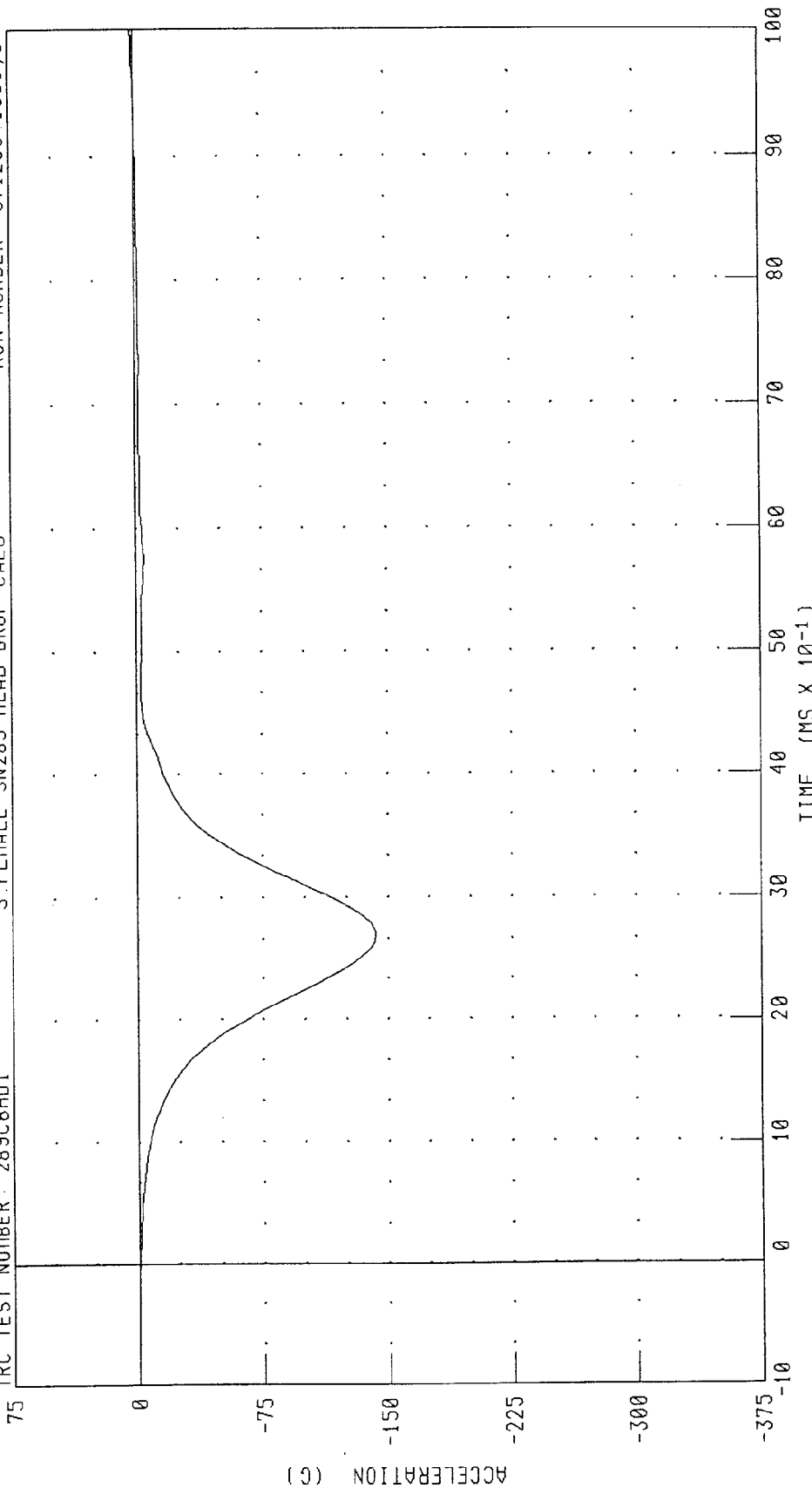
CHANNEL: HEDYC FILTER: CH. CLASS 1000

SMALL FEMALE HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS

TRC TEST NUMBER: 289C8HD1

S. FEMALE SN289 HEAD DROP CAL8

RUN NUMBER: 071299.1055;1



PEAK DATA: 1.82 G @ 10.00 MS; -142.37 G @ 2.72 MS

CHANNEL: HEDZG FILTER: CH. CLASS 1000

SMALL FEMALE HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION
S. FEMALE SN289 HEAD DROP CAL8

RUN NUMBER: 071299.1055,1

TRC TEST NUMBER: 289C8HD1

375

300

225

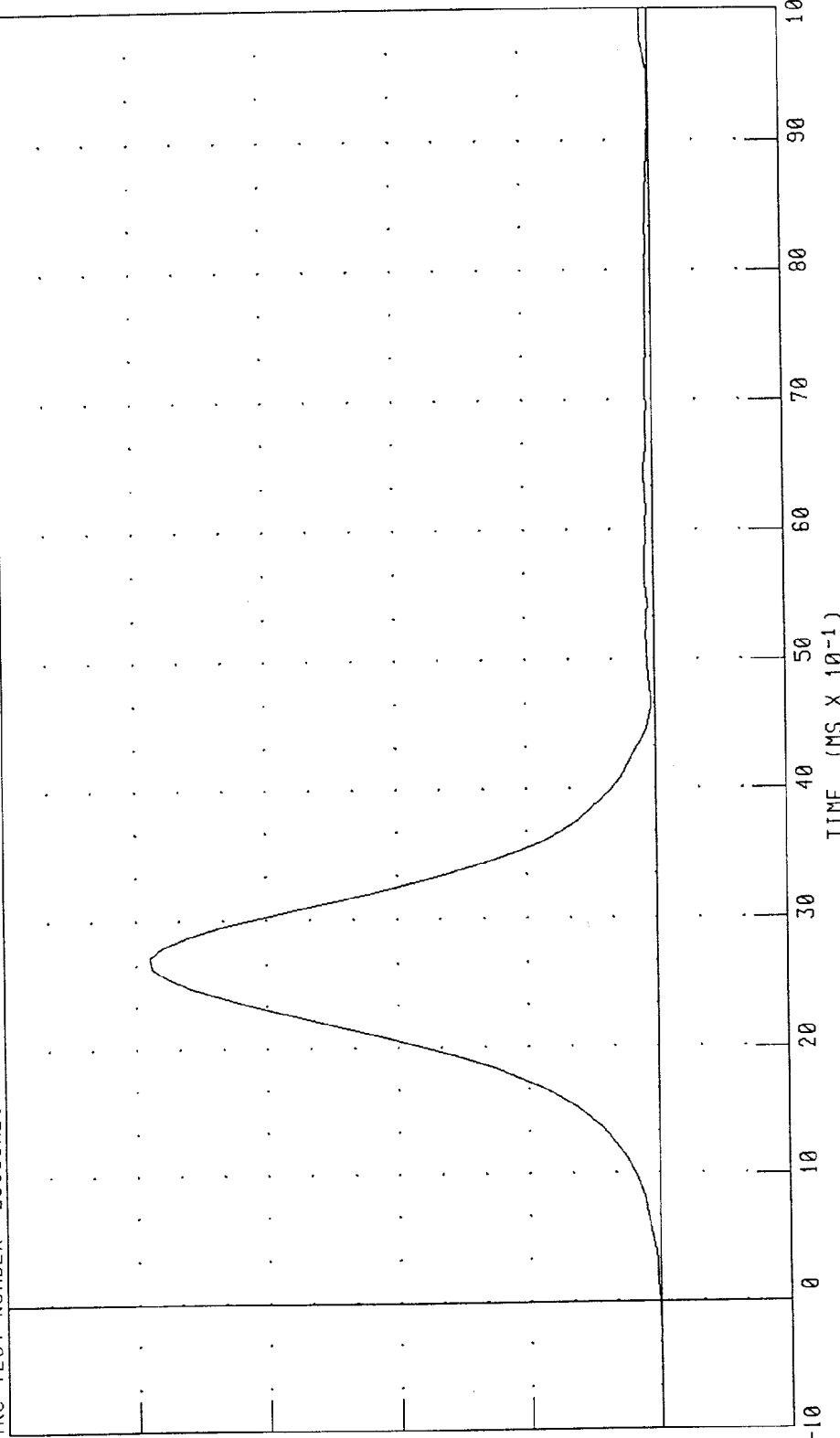
150

75

0

-75

ACCELERATION (G)



TIME (MS $\times 10^{-1}$)

PEAK DATA: 291.83 G @ 2.72 MS; 0.02 G @ -0.88 MS

FILTER: CH. CLASS 1000

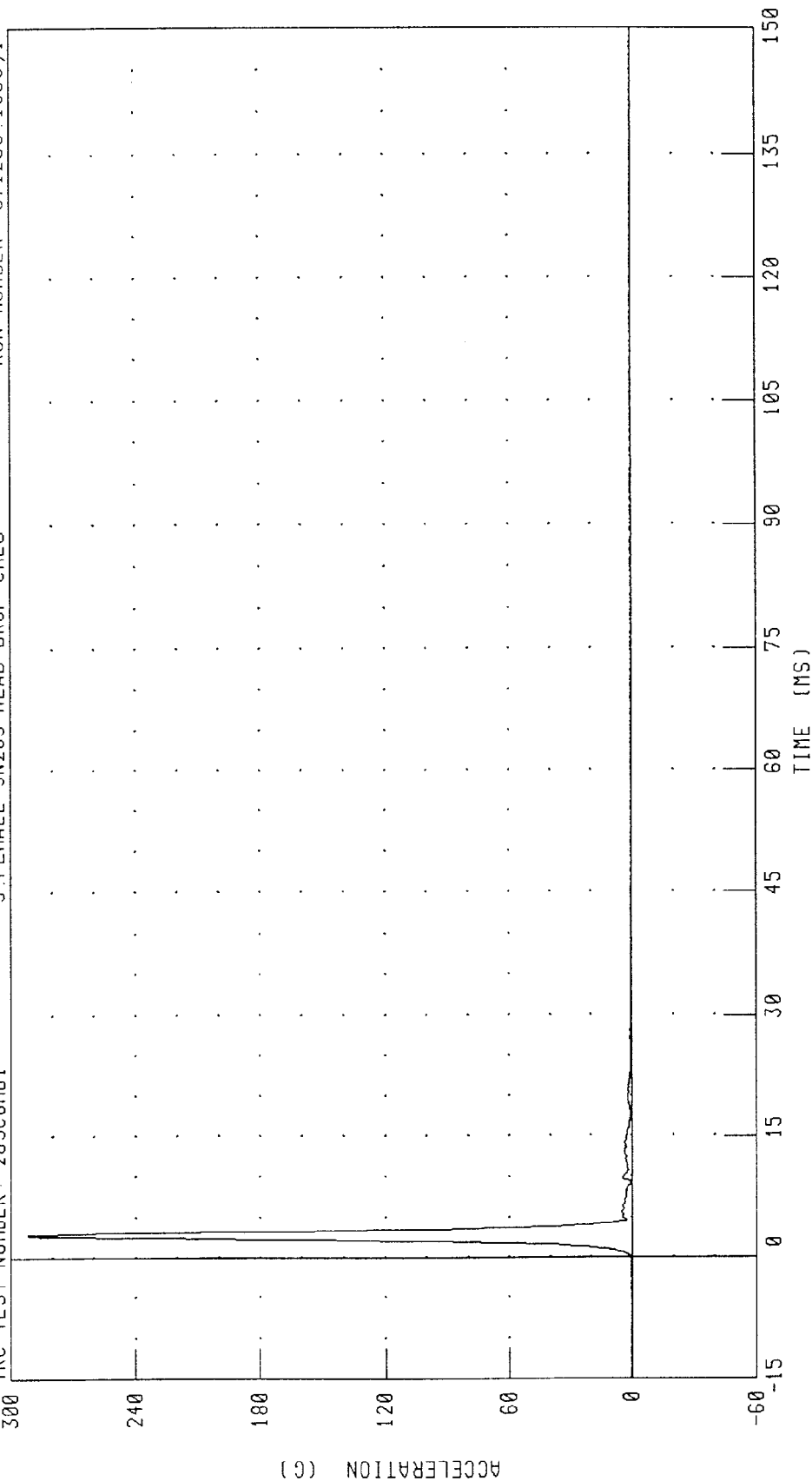
CHANNEL: HEDRG

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

TRC TEST NUMBER: 289C8HD1

S. FEMALE SN289 HEAD DROP CAL8

RUN NUMBER: 071299.1055;1



PEAK DATA: 291.83 G @ 2.72 MS; 0.02 G @ -13.60 MS

CHANNEL: HEDRG FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

12-JUL-99

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 289C8NF1 S.FEMALE SN289 NECK FLEX. CAL8

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.7 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	2.23 M/S
	20 MS	4.0 - 5.0 M/S	4.54 M/S
	30 MS	5.8 - 7.0 M/S	6.61 M/S
PEAK D-PLANE ROTATION		80 - 92 DEG.	87.02 DEG.
PEAK MOMENT ABOUT OCCIPITAL CONDYLE DURING ROTATION INT		69 - 83 NM	72.03 NM
POSITIVE MOMENT DECAY TIME FROM TO TO 10 NM		80 - 100 MS	94.40 MS

TEST MEETS NHTSA SPECIFICATIONS

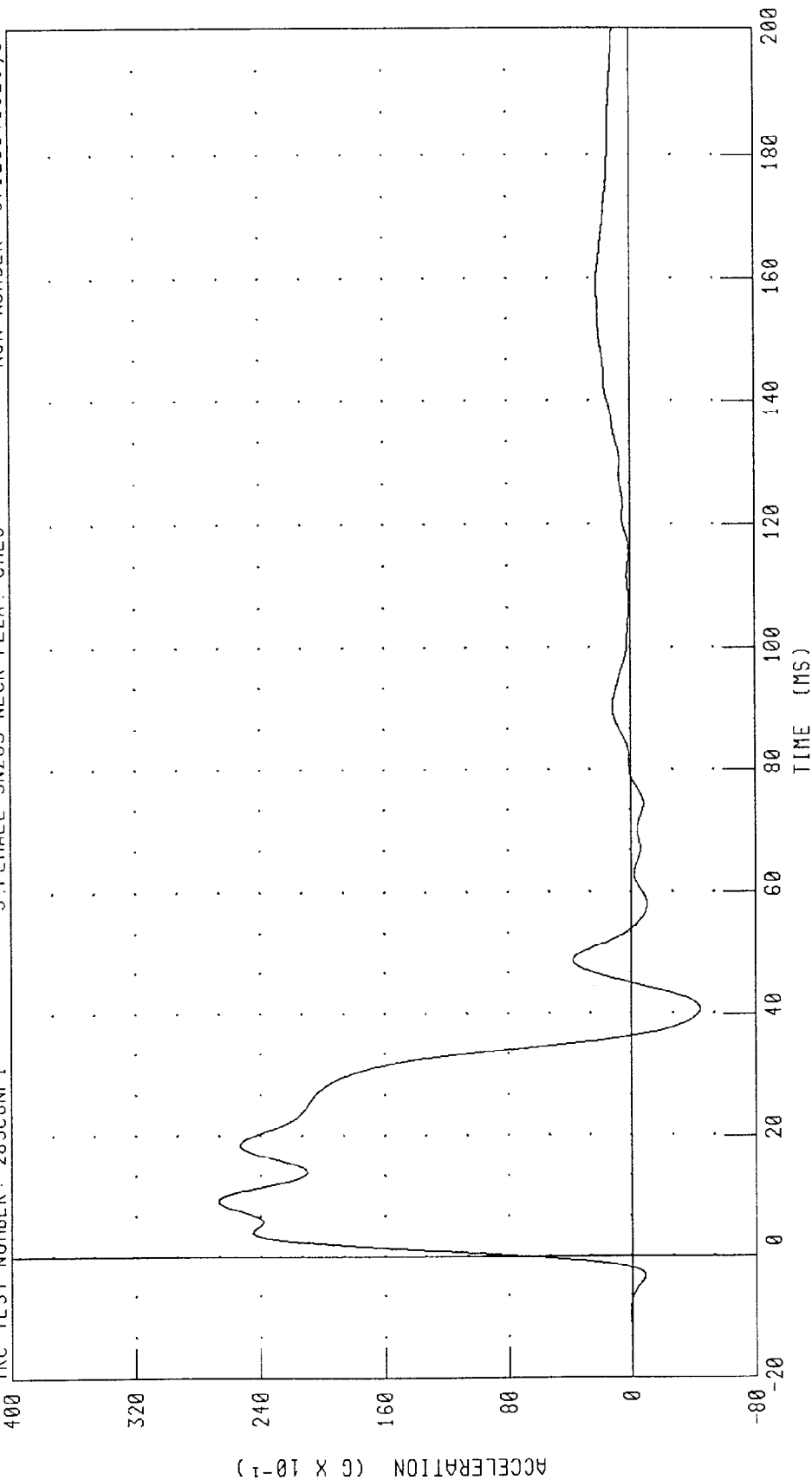
TECHNICIAN

Kevin Watkins

RUN NUMBER: 071299.1600;5

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 289C8NF1 S. FEMALE SN289 NECK FLEX. CAL8 RUN NUMBER: 071299.1621,5



PEAK DATA: 26.70 G @ 9.28 MS; -4.43 G @ 40.80 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

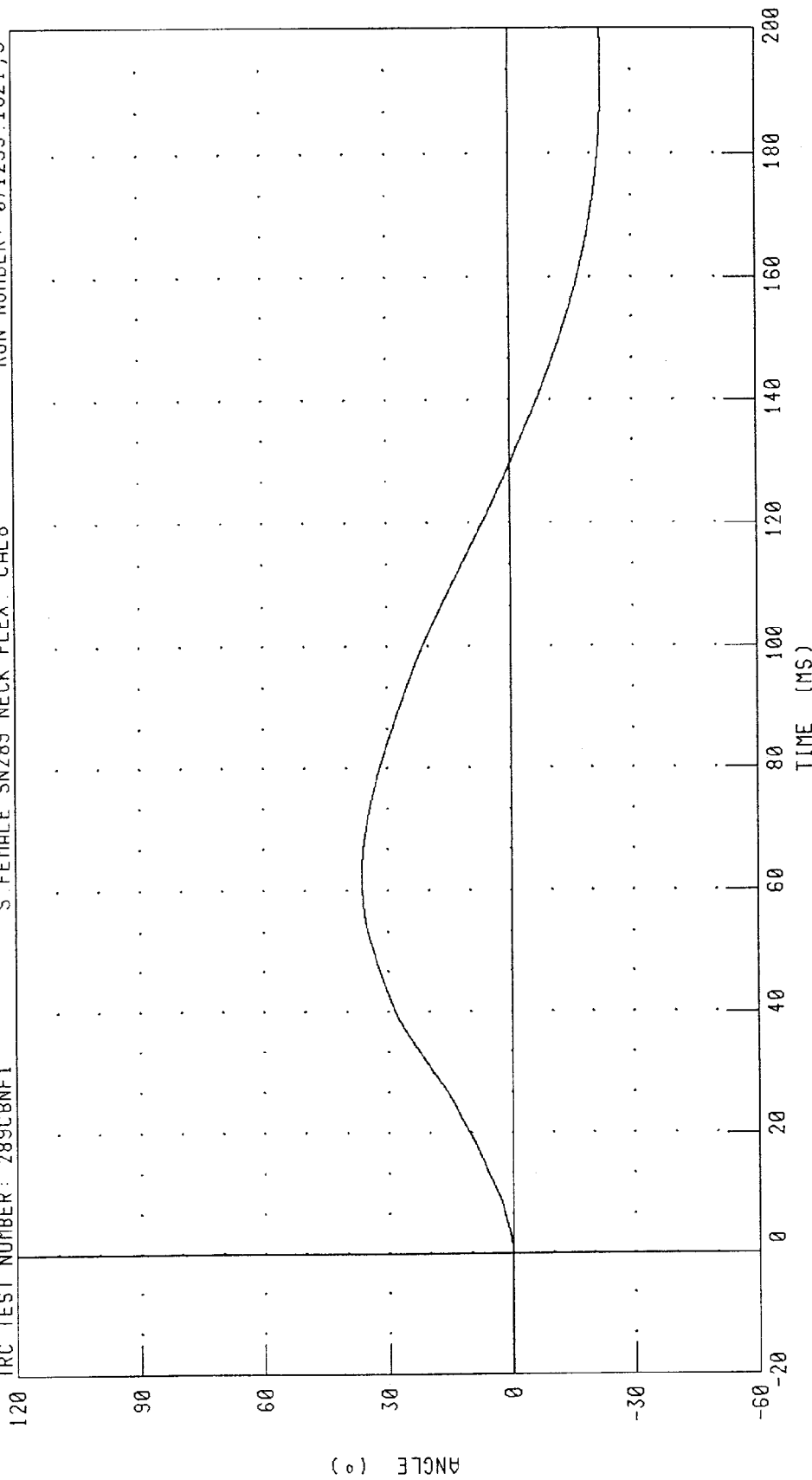
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 289C8NF1

S. FEMALE SN289 NECK FLEX. CAL8

RUN NUMBER: 071299.1621;5



CHANNEL: BETA

FILTER: CH. CLASS 60

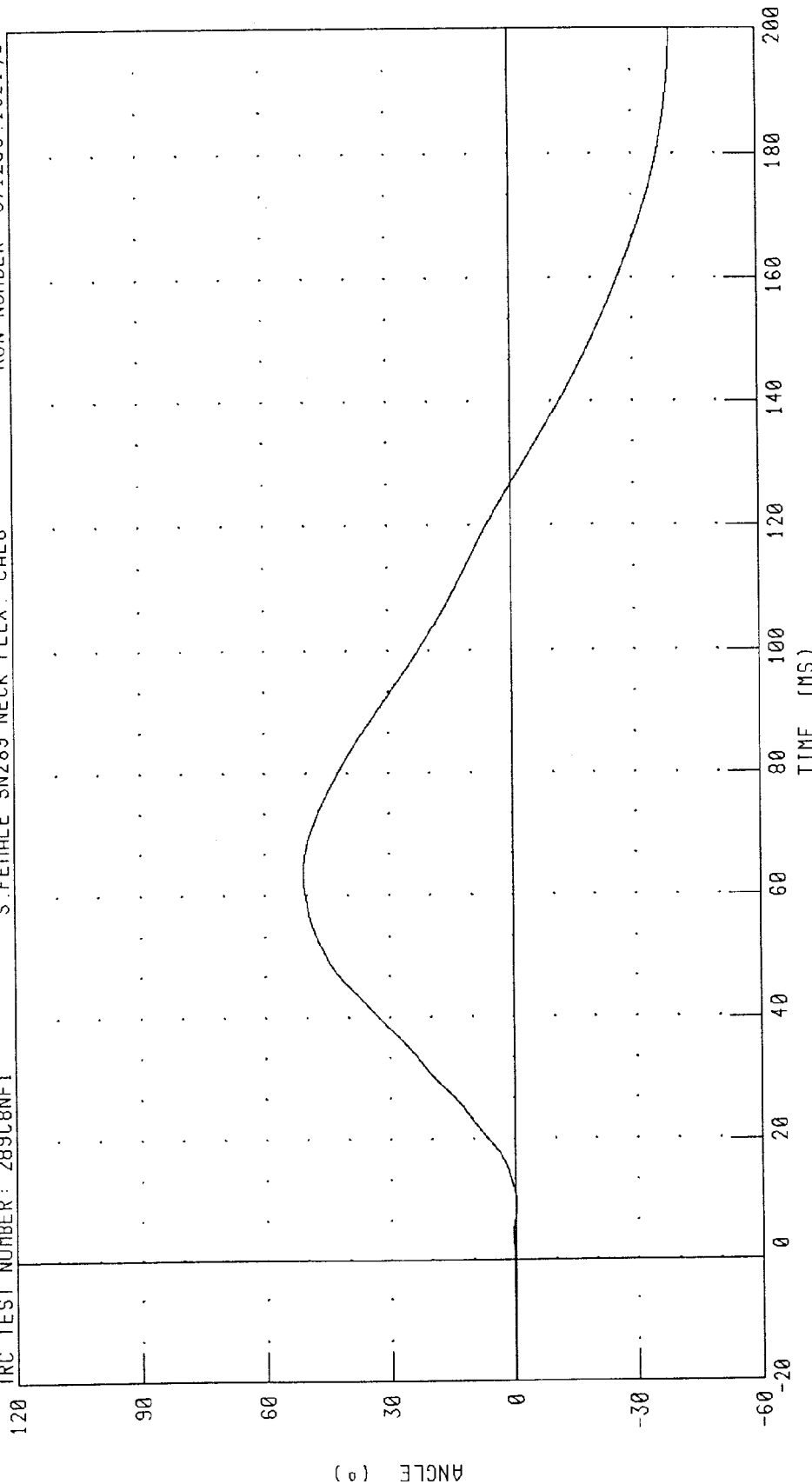
PEAK DATA: 36.26 ° @ 62.32 MS; -22.67 ° @ 192.16 MS

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 289C8NF1

S. FEMALE SN289 NECK FLEX. CAL8

RUN NUMBER: 071299.1621;5



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 50.78 ° @ 63.36 MS; -39.11 ° @ 198.72 MS

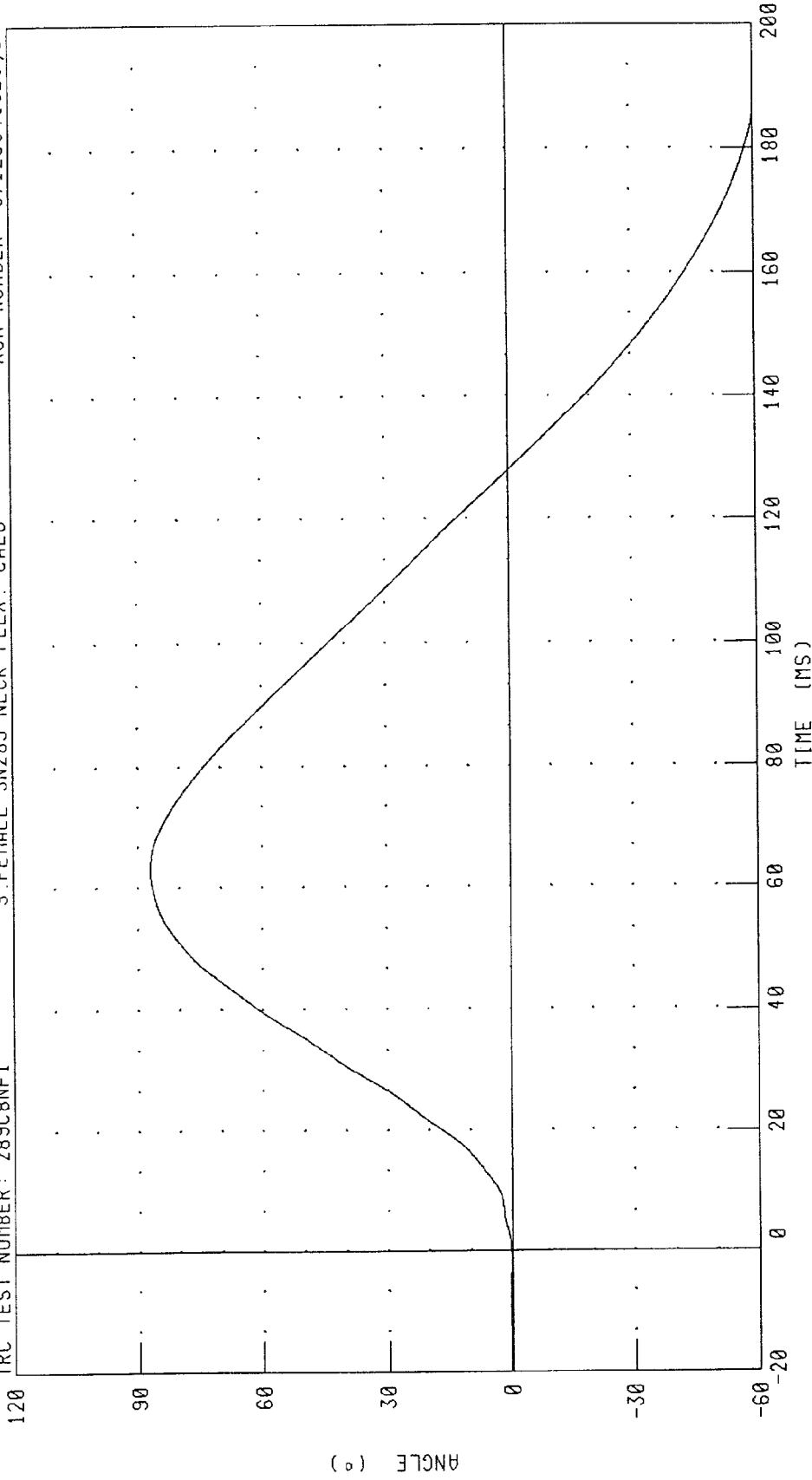
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 289C8NF1

S. FEMALE SN289 NECK FLEX. CALB

RUN NUMBER: 071299.1621,5



PEAK DATA: 87.02 ° @ 63.04 MS; -61.68 ° @ 197.60 MS

CHANNEL: TOTAL FILTER: CH. CLASS 60

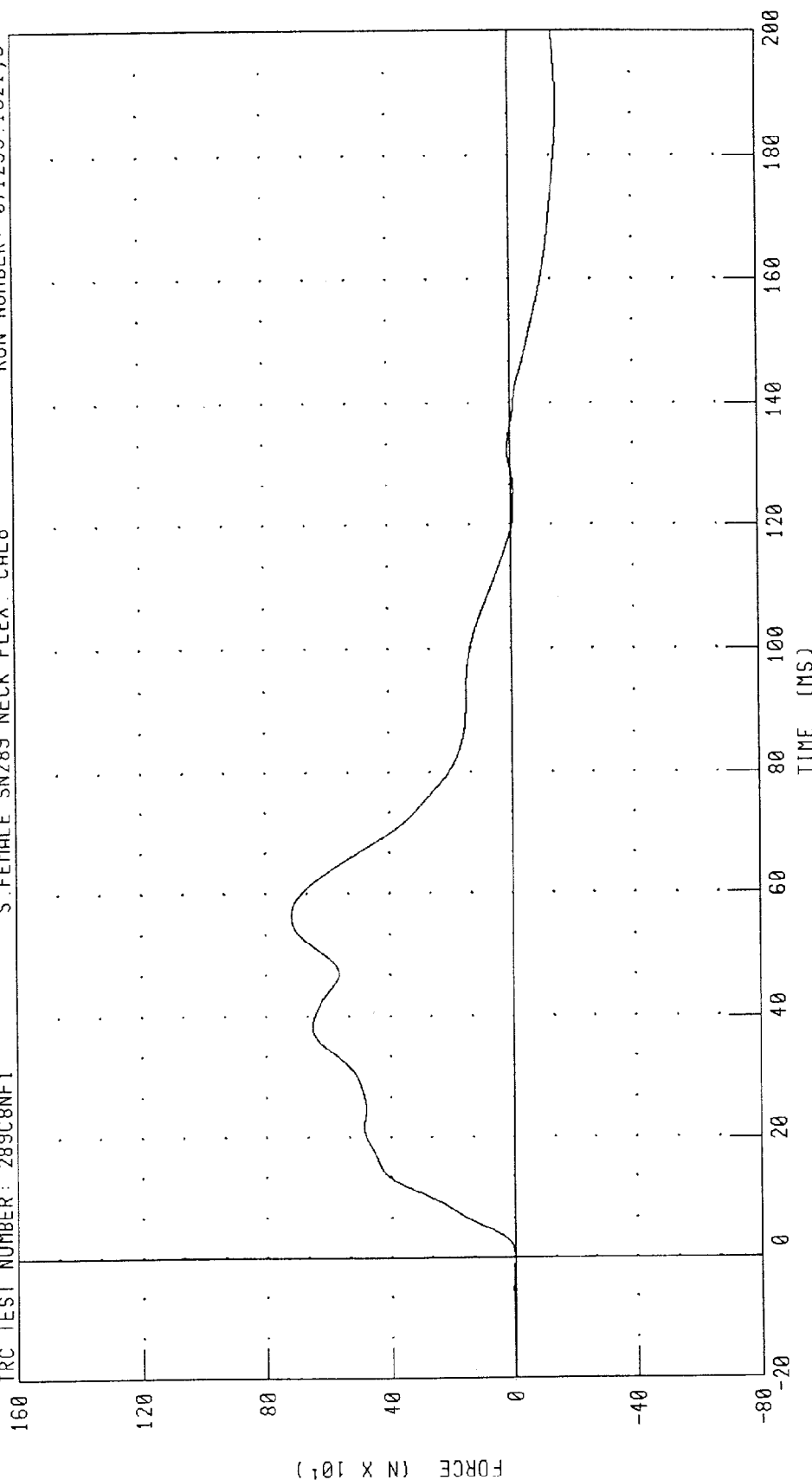
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 289C8NF1

S. FEMALE SN289 NECK FLEX. CAL8

RUN NUMBER: 071299.1621,5



PEAK DATA: 718.36 N @ 56.48 MS; -157.80 N @ 188.16 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

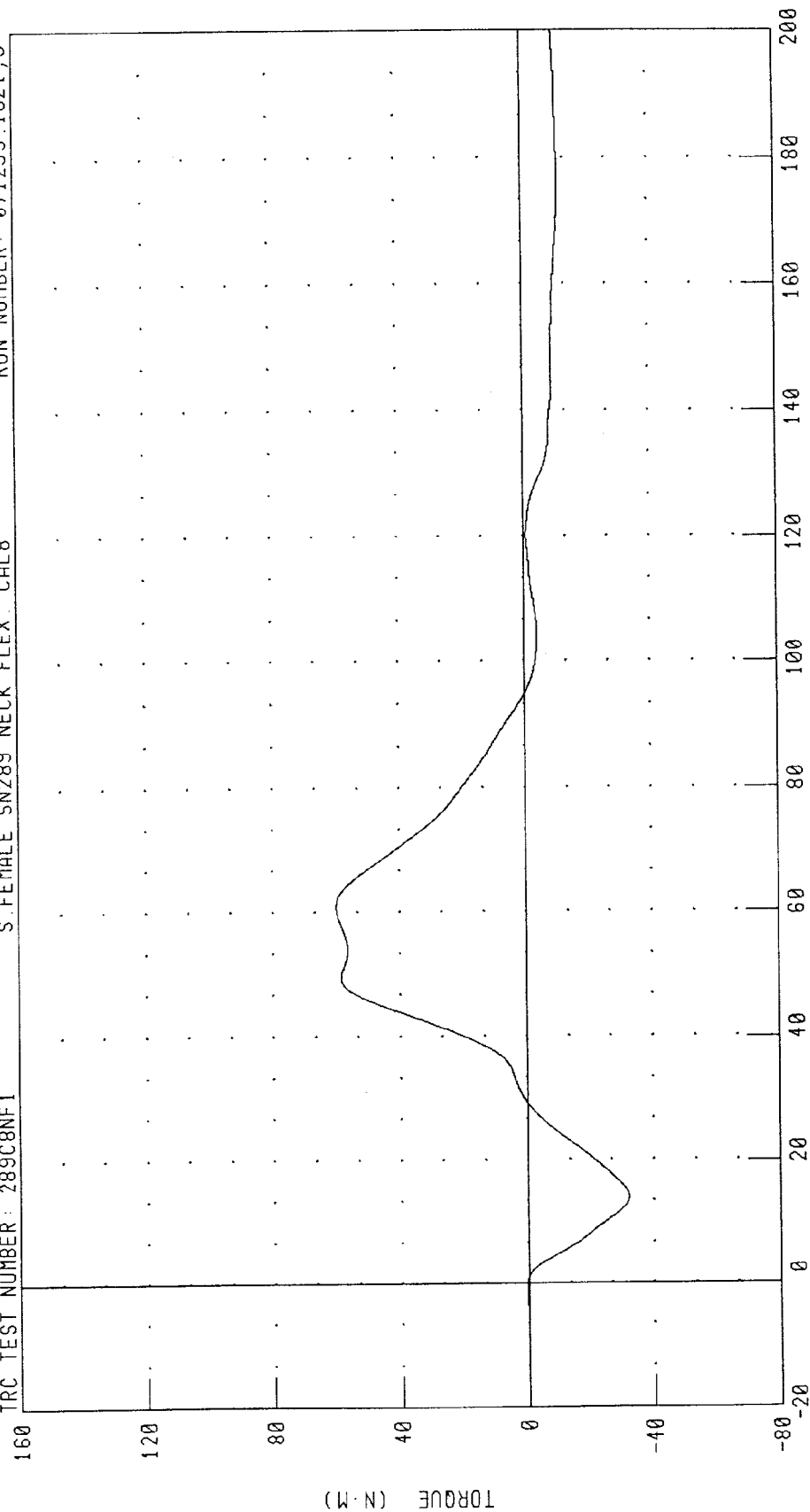
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 289C8NF1

S. FEMALE SN289 NECK FLEX. CAL8

RUN NUMBER: 071299.1621;5



PEAK DATA: 60.04 N·M @ 60.88 MS; -32.17 N·M @ 13.92 MS

CHANNEL: NEKYM FILTER: CH. CLASS 60

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 289C8NF1

S. FEMALE SN289 NECK FLEX. CAL8

RUN NUMBER: 071299.1621,5

160

120

80

40

0

-40

-80

TORQUE (N·M)

TIME (MS)

0 20 40 60 80 100 120 140 160 180 200

PEAK DATA: 72.03 N·M @ 60.16 MS; -24.82 N·M @ 13.52 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

12-JUL-99

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 289C8NE1 S.FEMALE SN289 NECK EXT. CAL8

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6 - 22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
IMPACT VELOCITY	5.95 - 6.19 M/S	6.14 M/S
INTEGRATED PENDULUM VELOCITY	10 MS 1.5 - 1.9 M/S	1.83 M/S
	20 MS 3.1 - 3.9 M/S	3.63 M/S
	30 MS 4.6 - 5.6 M/S	5.29 M/S
PEAK D-PLANE ROTATION	97 - 109 DEG.	106.53 DEG.
PEAK MOMENT ABOUT OCCIPITAL CONDYLE DURING ROTATION INT	-55 / -69 NM	-67.39 NM
NEGATIVE MOMENT DECAY TIME FROM TO TO -10 NM LEVEL	94 - 114 MS	103.76 MS

TEST MEETS NHTSA SPECIFICATIONS

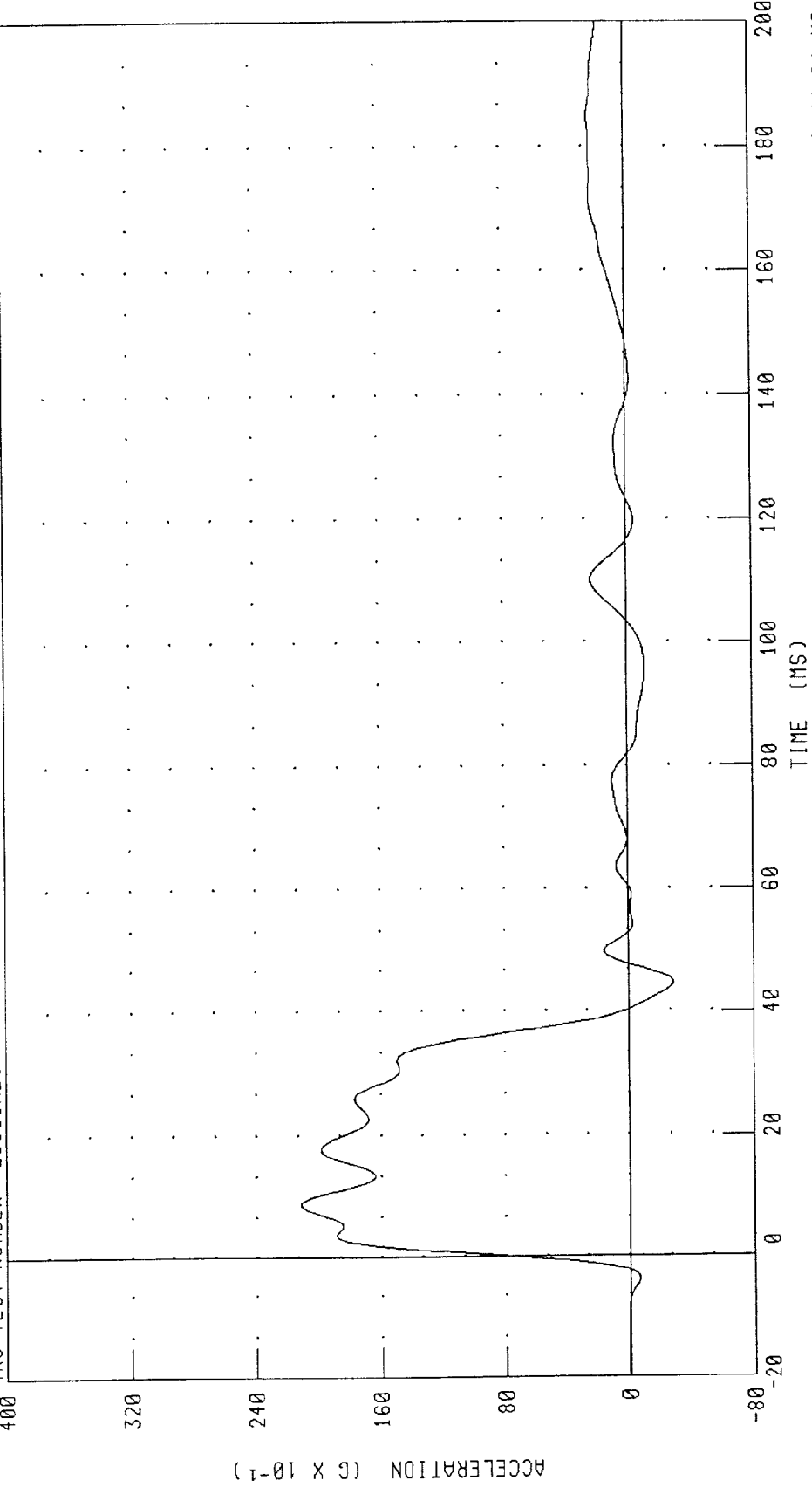
TECHNICIAN

Kevin Watkins

RUN NUMBER: 071299.1643;1

SMALL FEMALE NECK EXTENSION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 289C8NE1 S. FEMALE SN289 NECK EXT. CAL8 RUN NUMBER: 071299 1651;1



PEAK DATA: 21.13 G @ 8.88 MS; -2.90 G @ 44.64 MS

CHANNEL: PENXC FILTER: CH. CLASS 60

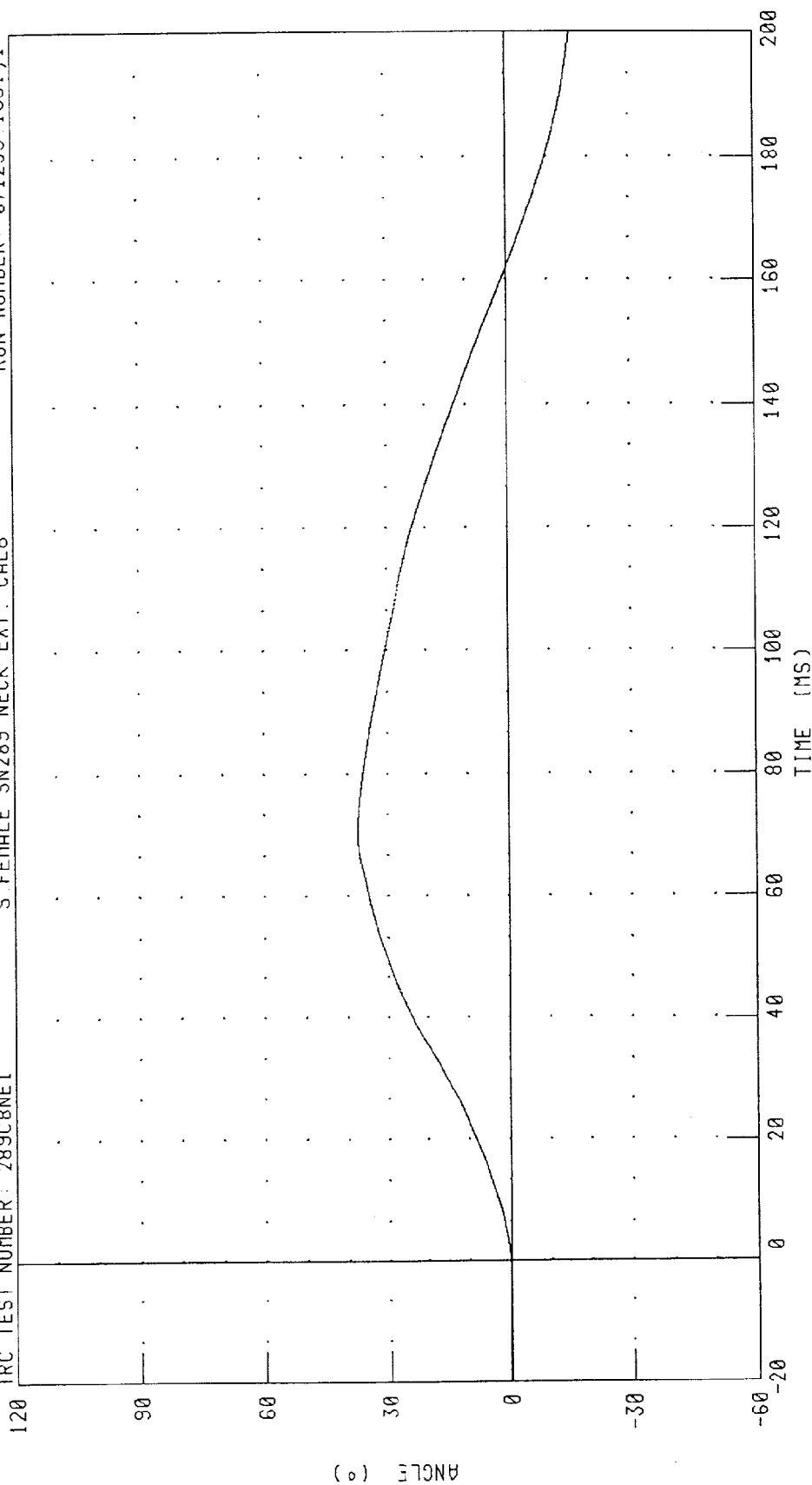
SMALL FEMALE NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

S. FEMALE SN289 NECK EXT. CAL8

TRC TEST NUMBER: 289C8NE1

RUN NUMBER: 071299 1651.1



PEAK DATA: 37.51 ° @ 70.48 MS; -15.81 ° @ 200.00 MS

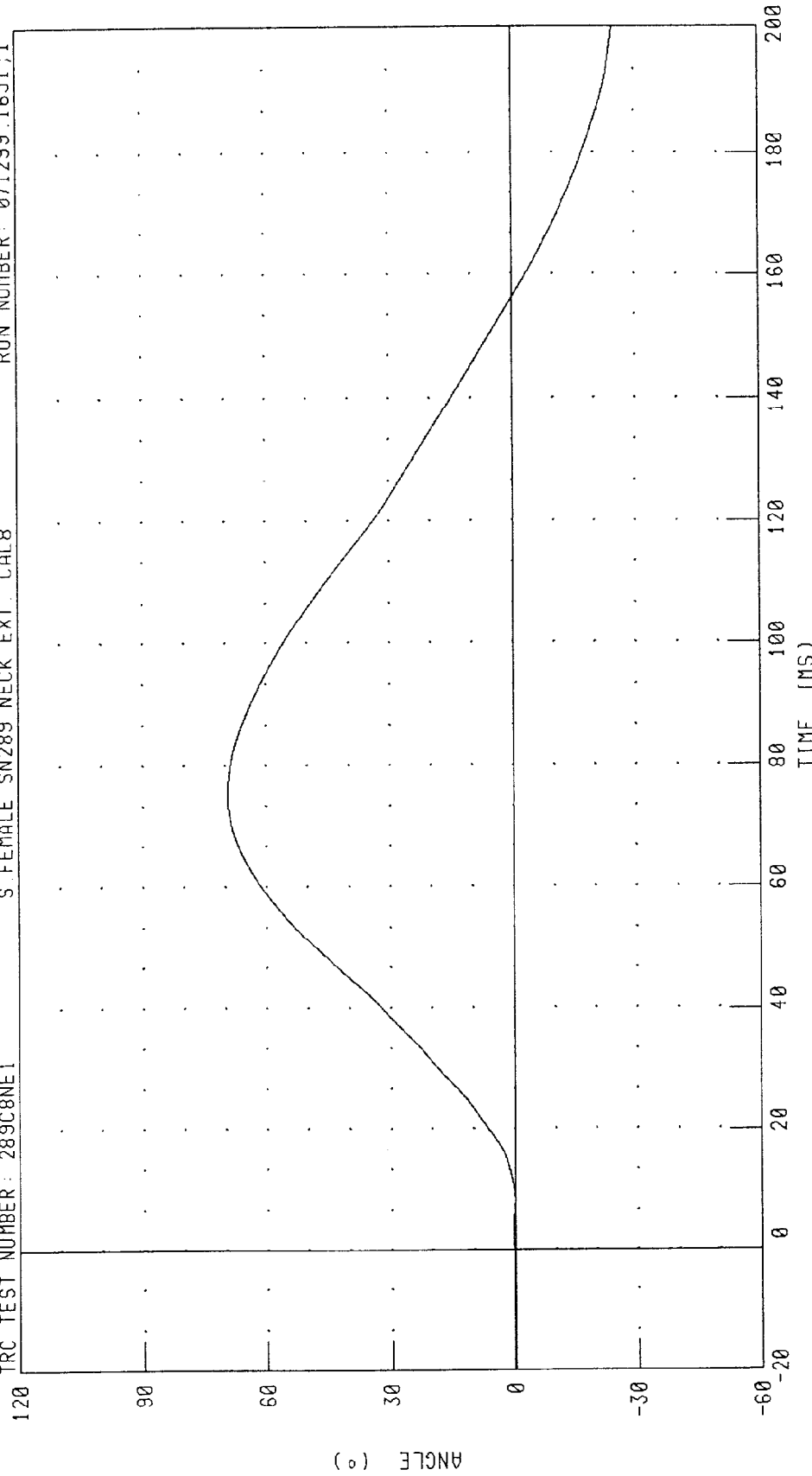
CHANNEL: BETA FILTER: CH. CLASS 60

SMALL FEMALE NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 289C8NE1

S. FEMALE SN289 NECK EXT. CAL8

RUN NUMBER: 071299.1651,1



PEAK DATA: 69.33 ° @ 75.12 MS, -24.70 ° @ 200.00 MS

FILTER: CH. CLASS 60

CHANNEL: THETA

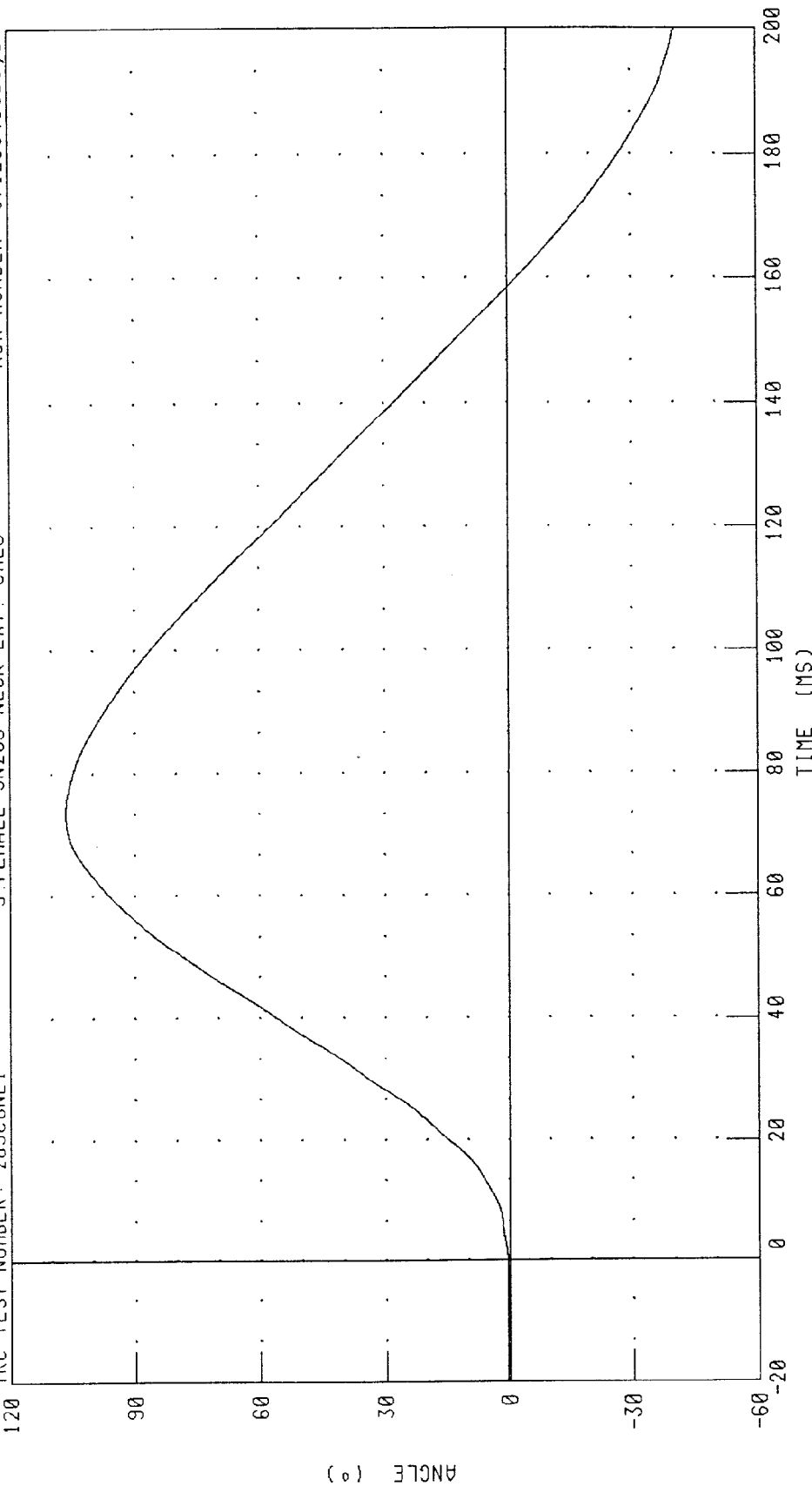
SMALL FEMALE NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 289C8NE1

S. FEMALE SN289 NECK EXT. CAL8

RUN NUMBER: 071299.1651;1



PEAK DATA: 106.53 ° @ 73.60 MS; -40.51 ° @ 200.00 MS

CHANNEL: TOTAN

FILTER: CH. CLASS 60

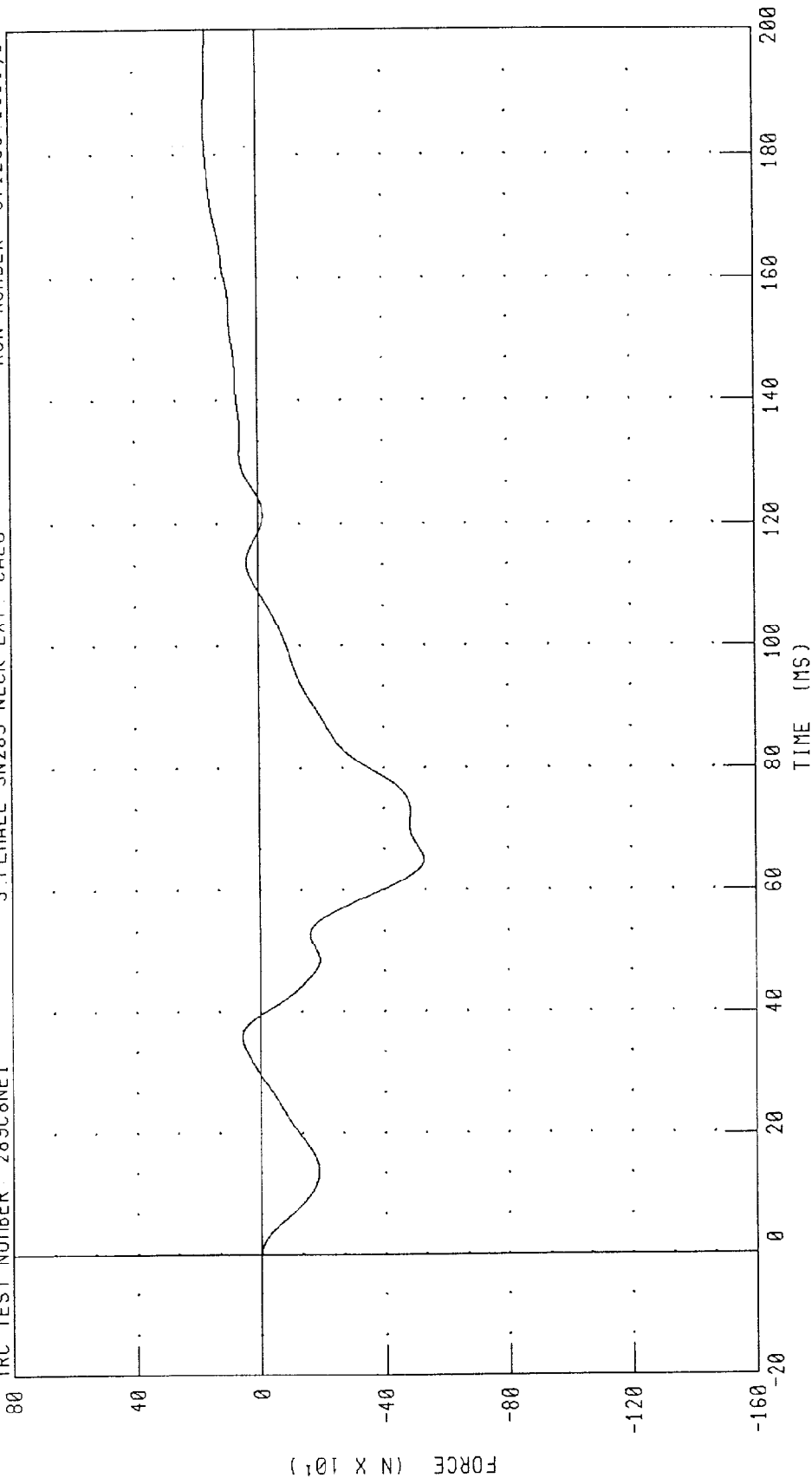
SMALL FEMALE NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 289C8NE1

S. FEMALE SN289 NECK EXT. CAL8

RUN NUMBER: 071299.1651;1



PEAK DATA: 170.68 N @ 185.92 MS; -527.53 N @ 64.96 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

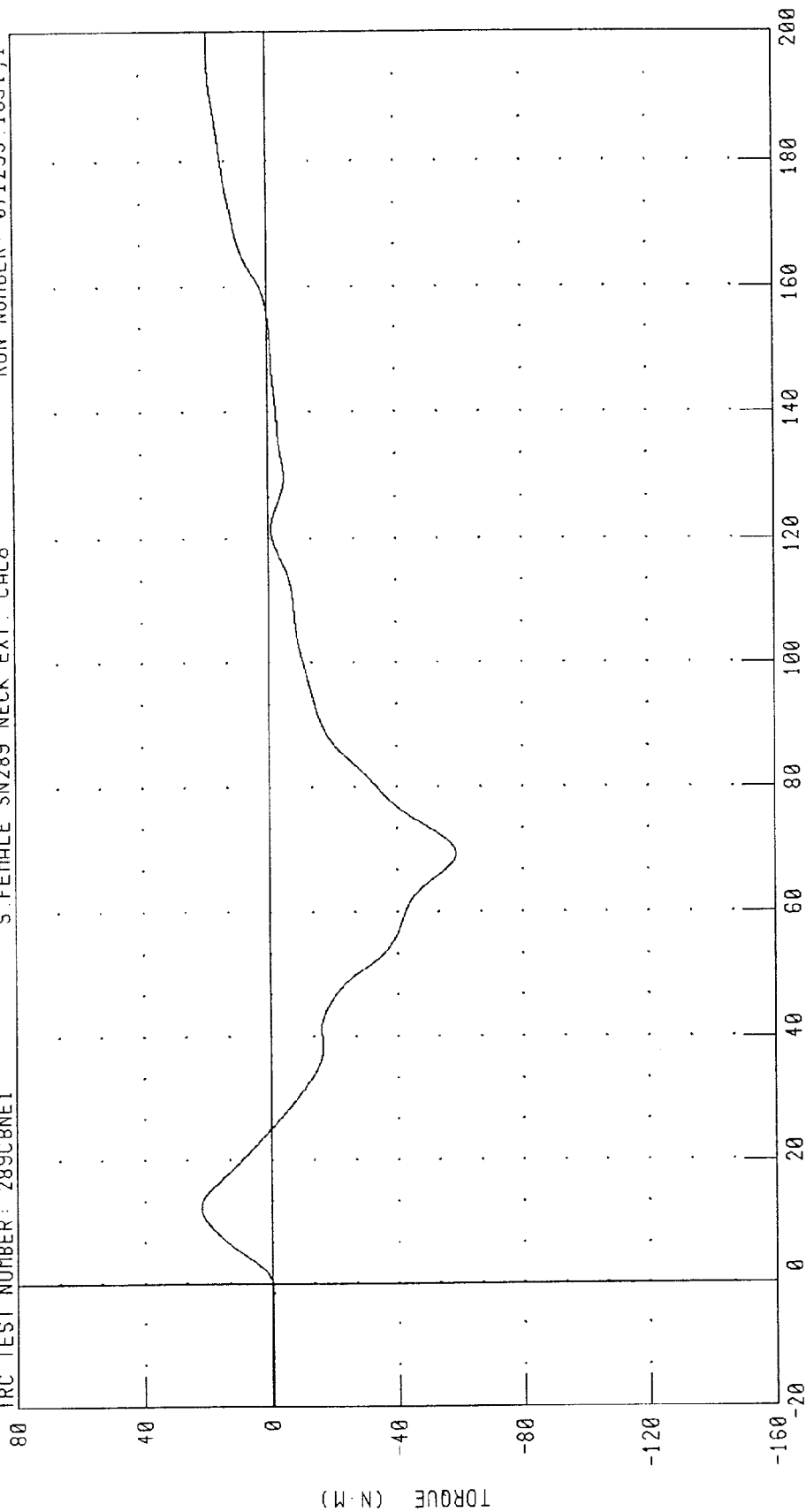
SMALL FEMALE NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

IRC TEST NUMBER: 289CBNE1

S. FEMALE SN289 NECK EXT. CAL8

RUN NUMBER 071299.1651,1



TIME (MS)

PEAK DATA: 22.24 N·M @ 12.32 MS; -58.73 N·M @ 69.36 MS

FILTER: CH. CLASS 60

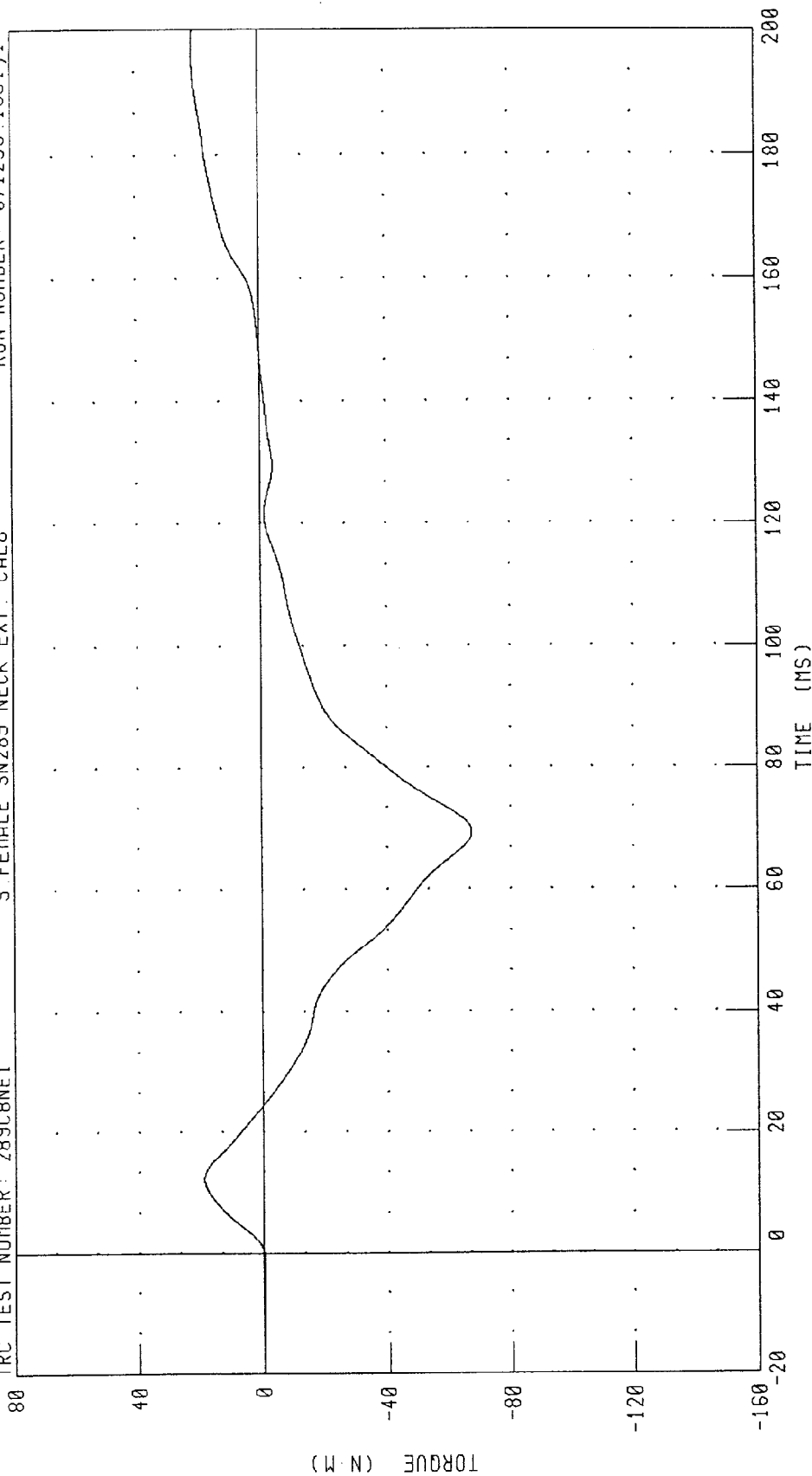
CHANNEL: NEKYM

SMALL FEMALE NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 289C8NE1

S FEMALE SN289 NECK EXT. CAL8

RUN NUMBER: 071299.1651.1



PEAK DATA: 21.52 N-M @ 196.88 MS; -67.39 N-M @ 69.28 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III SMALL FEMALE

13-JUL-99

TRC INC.

TEST NO: 289C8TH8

S.FEMALE SN289 THORAX CAL08

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	22.2 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	54.2 MM
MAXIMUM RESISTIVE FORCE WITHIN DEFLECTION CORRIDOR	3900 - 4400 N	4377. N
INTERNAL HYSTERESIS	69% - 85%	72.0%

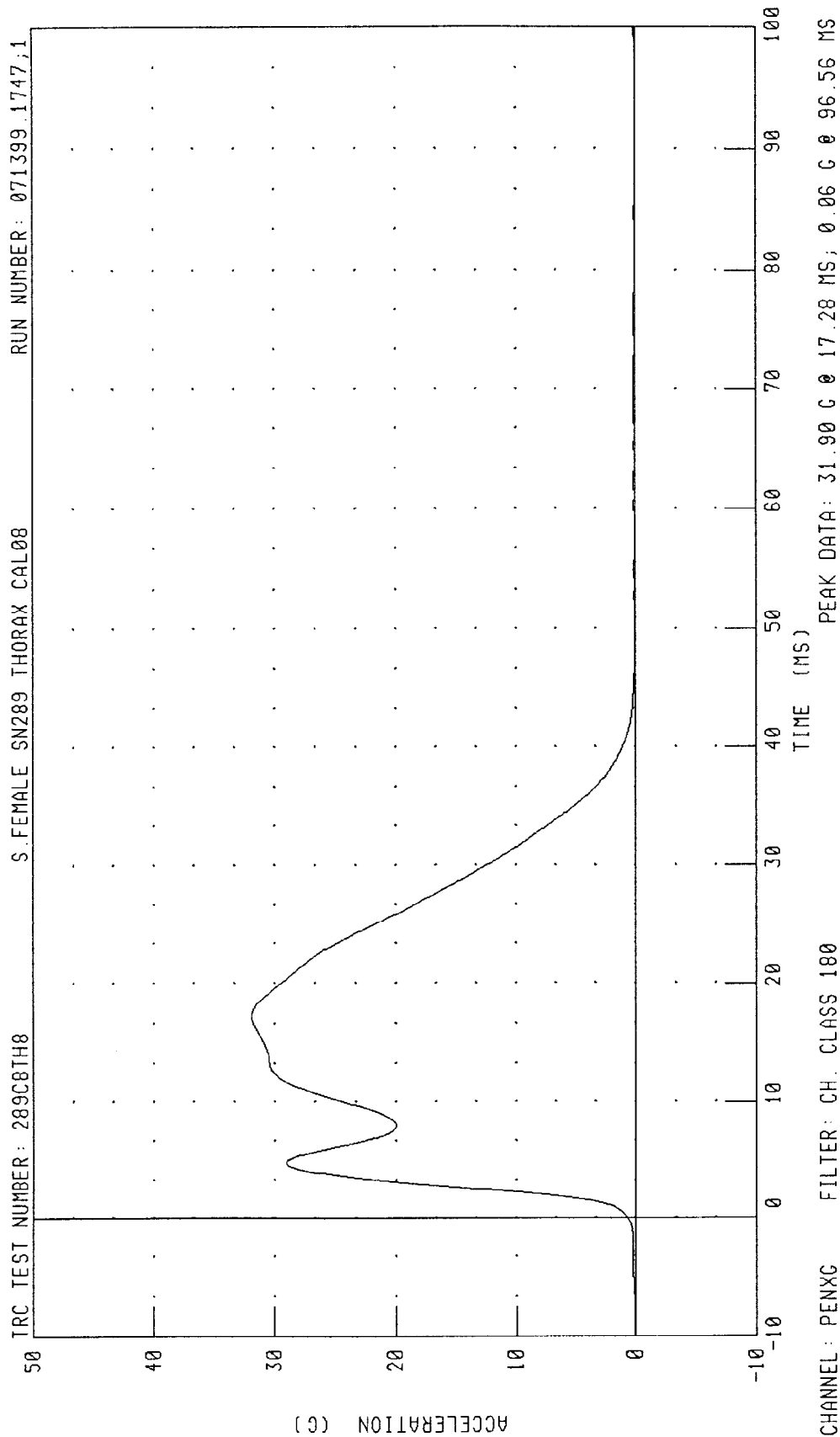
TEST MEETS NHTSA SPECIFICATIONS

TECHNICIAN

Kevin Watkins

RUN NUMBER: 071399.1745;1

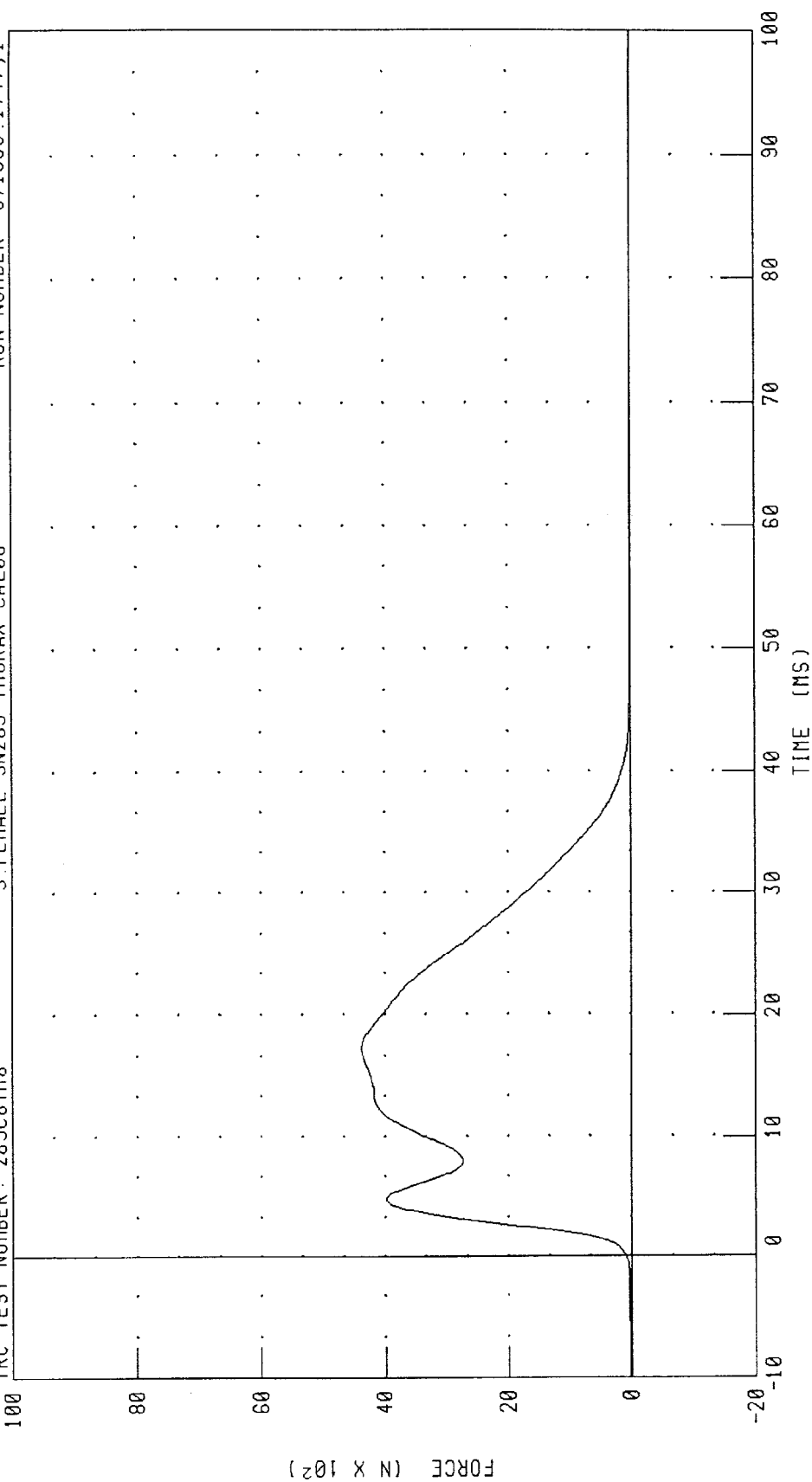
SMALL FEMALE THORAX CALIBRATION
PENDULUM DECELERATION



SMALL FEMALE THORAX CALIBRATION

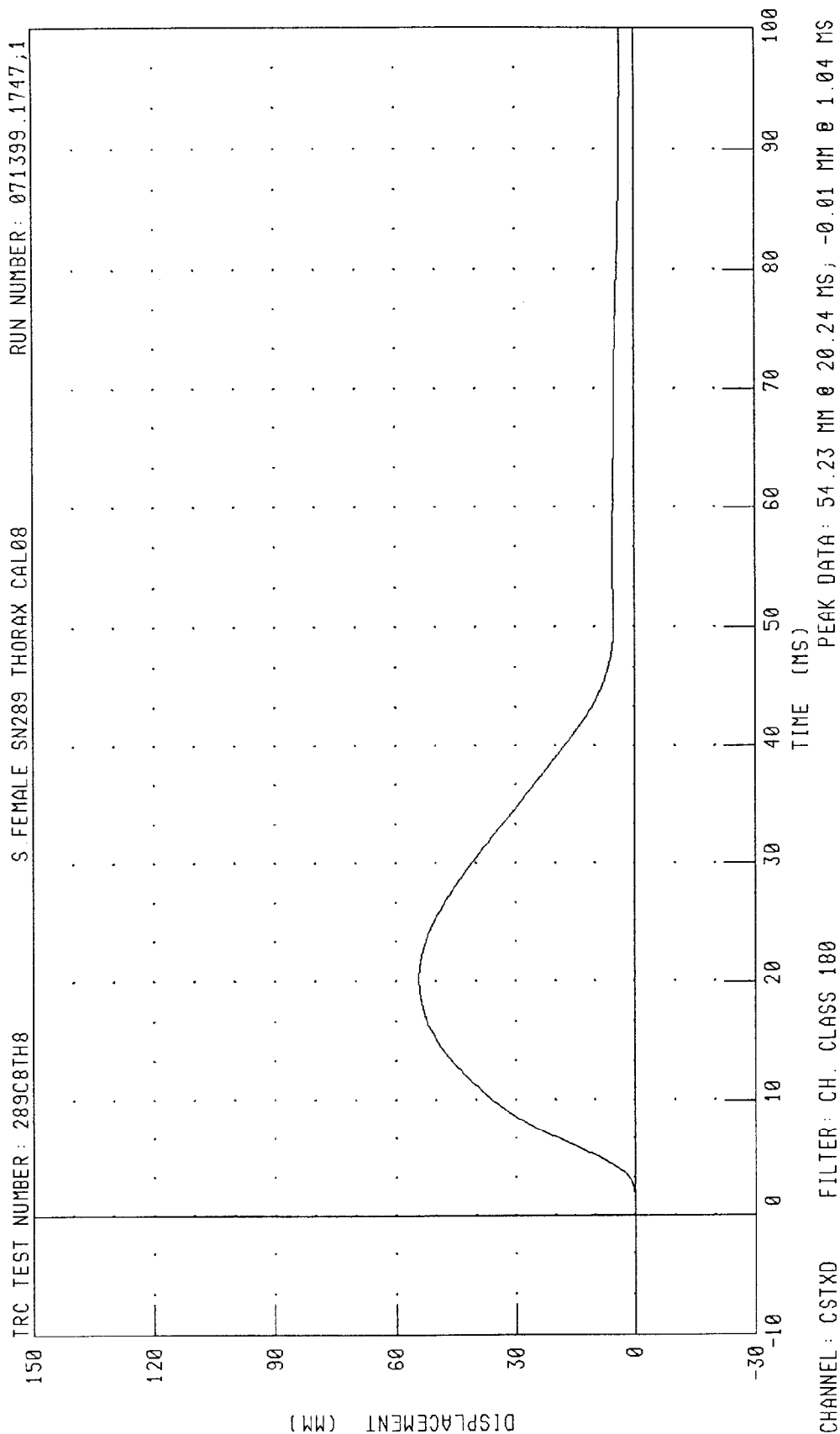
PENDULUM FORCE

TRC TEST NUMBER: 289C8TH8 S. FEMALE SN289 THORAX CAL08 RUN NUMBER: 071399.1747,1



CHANNEL: PENXF FILTER: CH. CLASS 180 PEAK DATA: 4377.96 N @ 17.28 MS; 7.93 N @ 96.56 MS

SMALL FEMALE THORAX CALIBRATION
STERNUM DISPLACEMENT

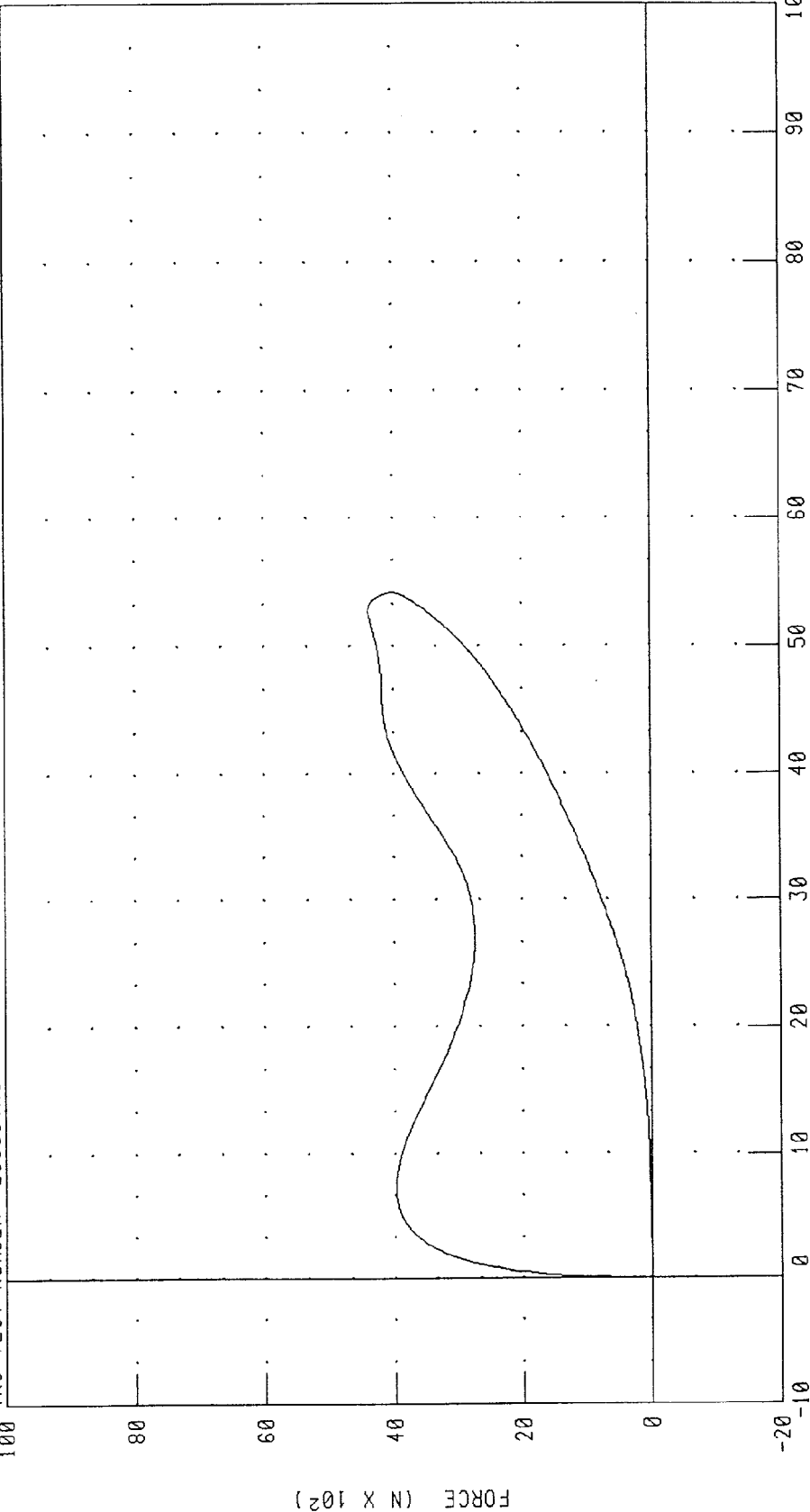


SMALL FEMALE THORAX CALIBRATION CHEST DISPLACEMENT VS PENDULUM FORCE

TRC TEST NUMBER: 289C8TH8

S. FEMALE SN289 THORAX CAL08

RUN NUMBER: 071399.1747,1



CHANNEL: CSTXD
PENXF

FILTER: CH. CLASS 180
CH. CLASS 180

PEAK DATA: 54.23 MM @ 20.24 MS; -0.01 MM @ 1.04 MS
4377.96 N @ 17.28 MS; 7.93 N @ 96.56 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

12-JUL-99

TRC INC.

TEST NO: 289C8RK3

S.FEMALE SN289 R.KNEE CAL8

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.07 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3360 - 4080 N	3552.7 N

TEST MEETS NHTSA SPECIFICATIONS

TECHNICIAN

Kevin Watkins

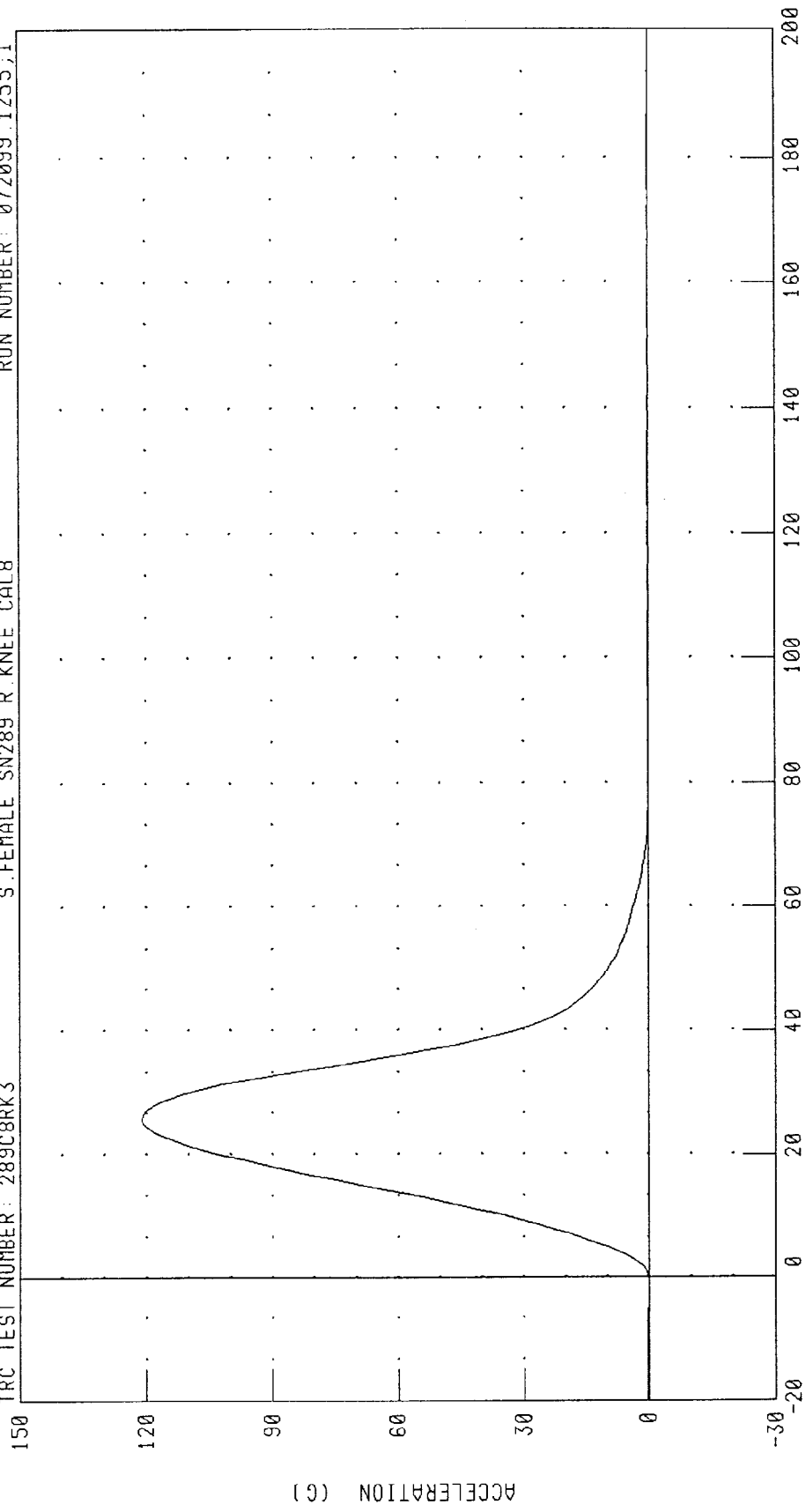
RUN NUMBER: 071299.1232;1

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

TRC TEST NUMBER: 289C8RK3

S. FEMALE SN289 R. KNEE CAL8

RUN NUMBER: 072099.1255;1



CHANNEL: PENXG FILTER: CH. CLASS 600 PEAK DATA: 121.02 G @ 2.56 MS; -0.15 G @ 8.72 MS

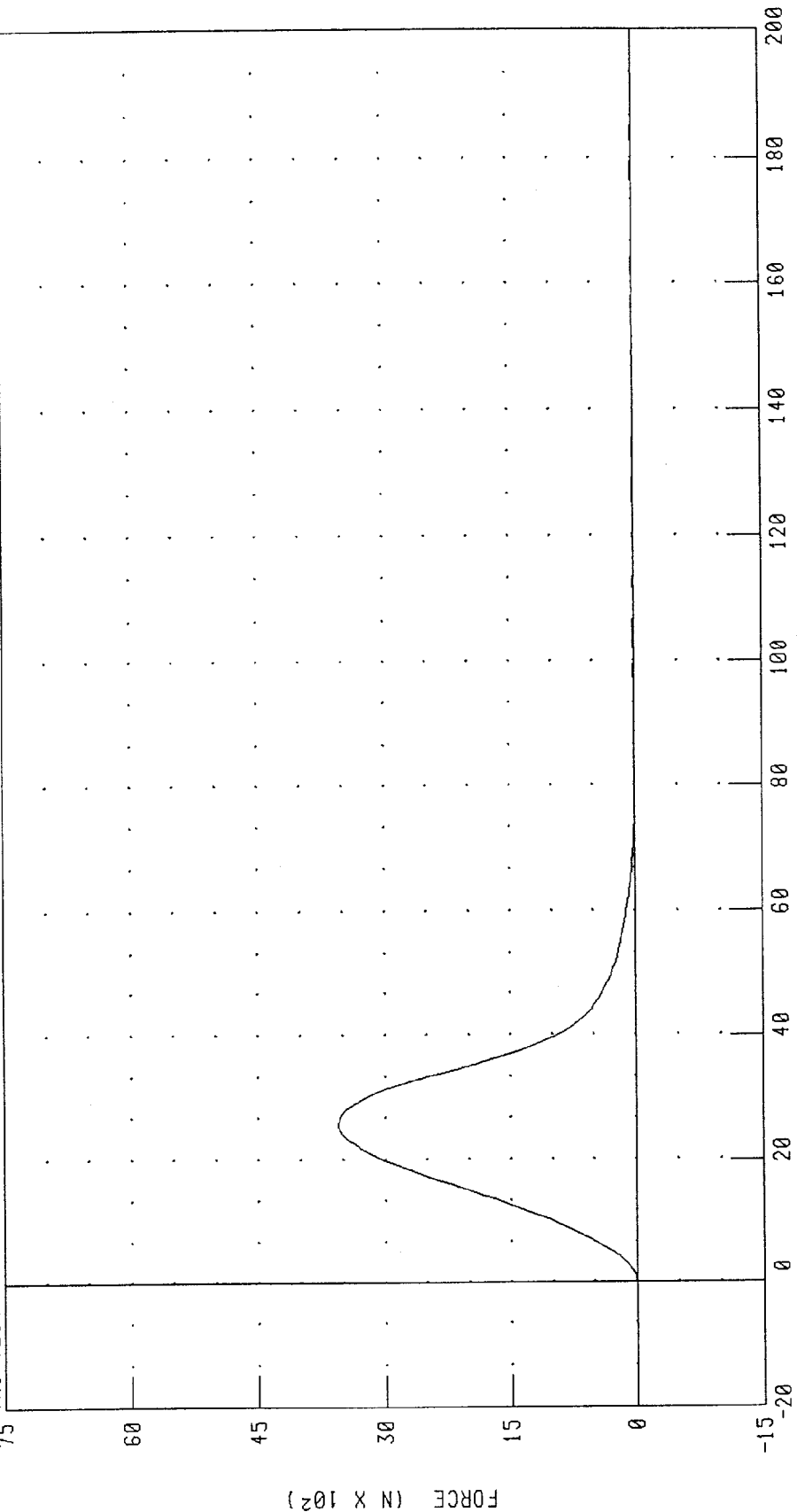
SMALL FEMALE HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

S. FEMALE SN289 R. KNEE CAL8

RUN NUMBER: 072099.1255;1

TRC TEST NUMBER: 289C8RK3



PEAK DATA: 3552.76 N @ 2.56 MS; -4.32 N @ 8.72 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

12-JUL-99

TRC INC.

TEST NO: 289C8LK2

S.FEMALE SN289 LEFT KNEE CAL8

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	44.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.07 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3360 - 4080 N	3836.4 N

TEST MEETS NHTSA SPECIFICATIONS

TECHNICIAN Kevin Watkins

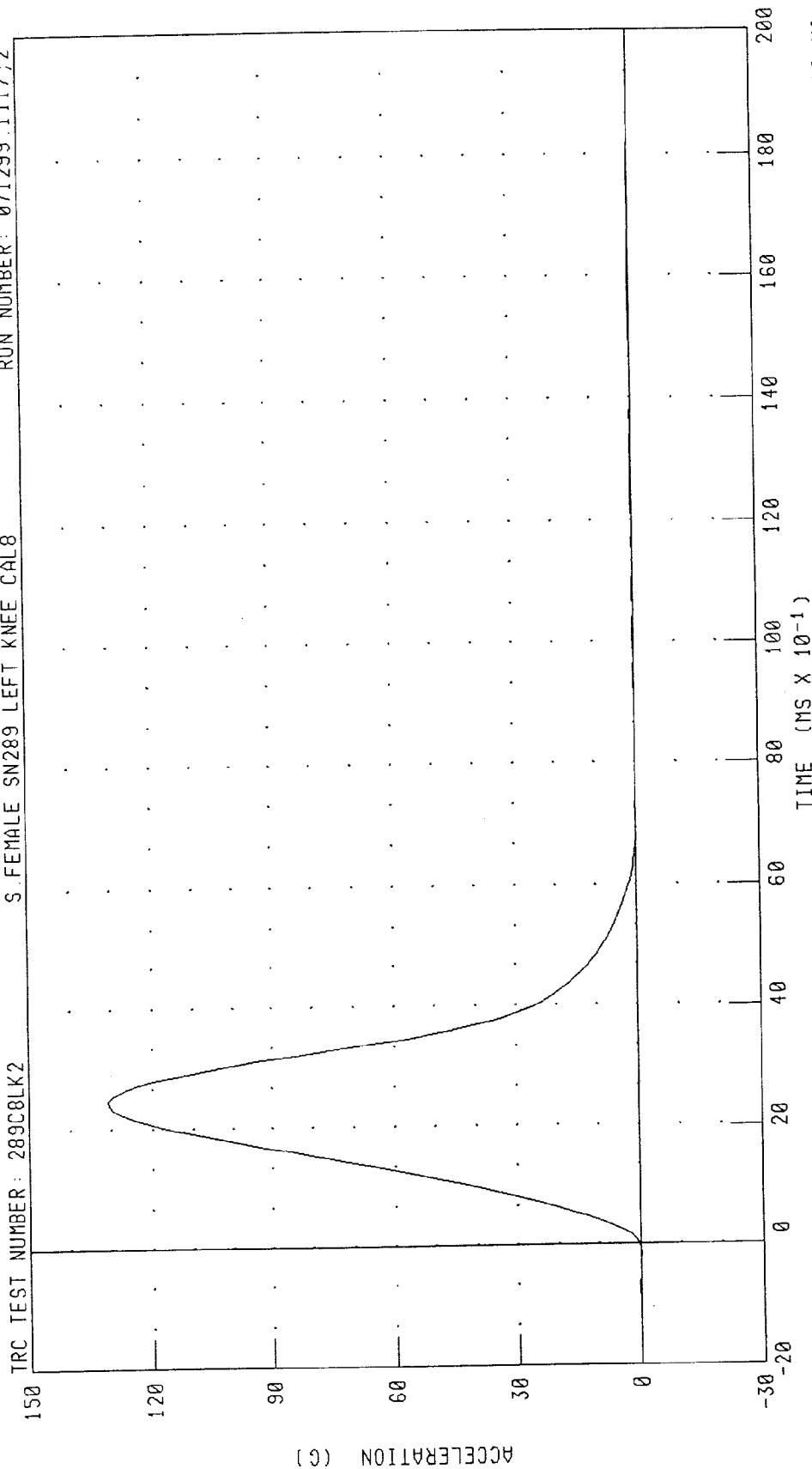
RUN NUMBER: 071299.1116;2

SMALL FEMALE HYBRID 111 LEFT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)

TRC TEST NUMBER: 289C8LK2

S. FEMALE SN289 LEFT KNEE CAL8

RUN NUMBER: 071299.1117;2



PEAK DATA: 130.68 G @ 2.48 MS; -0.22 G @ -0.16 MS

CHANNEL: PENXC FILTER: CH. CLASS 600

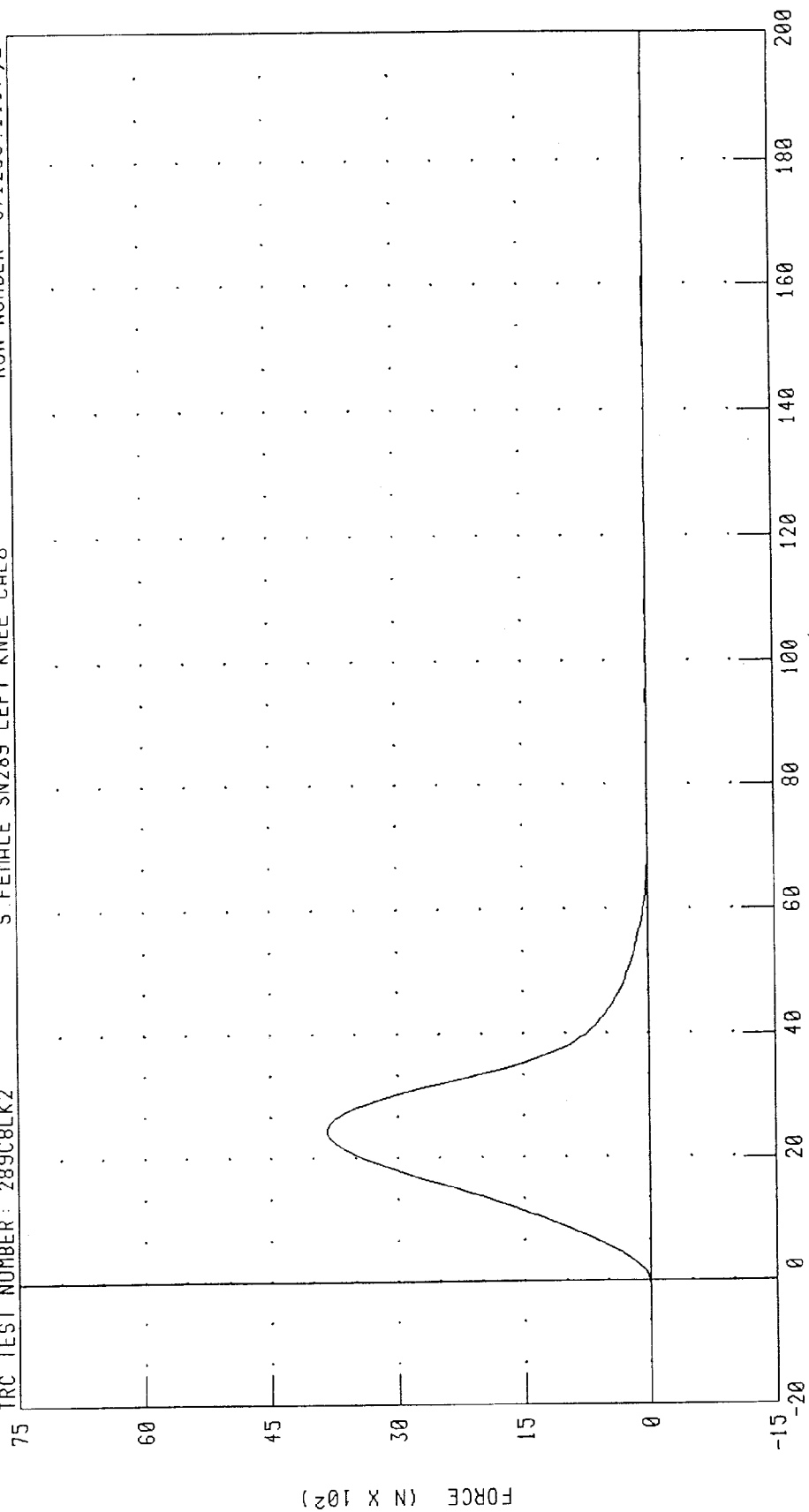
SMALL FEMALE HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

S. FEMALE SN289 LEFT KNEE CAL8

RUN NUMBER: 071299.1117;2

TRC TEST NUMBER: 289C8LK2



PEAK DATA: 3836.49 N @ 2.48 MS; -6.48 N @ -0.16 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: 990628-1

Number	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
1	Left Brake Caliper	X	Endevco	7264-2000T	J27341	Forward
2	Right Brake Caliper	X	Endevco	7264-2000T	J27949	Forward
3	Instrument Panel Center	X	Endevco	7264-2000T	J27791	Forward
4	Engine Top	X	Endevco	7264-2000T	J27939	Forward
5	Engine Bottom	X	Endevco	7264-2000T	J26493	Forward
6	Vehicle Rear Center	Z	Endevco	7264-2000T	J27657	Up
7	Left Rear Seat Crossmember	X	Endevco	7264-2000T	J20036	Rearward
8	Right Rear Seat Crossmember	X	Endevco	7264-2000T	J26525	Rearward
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: DR
 PROJECT-SEGMENT NO.: 097360 4101 ; ENGINEER: PG ; TEST DATE: 6-23-99

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.: 3694; MFR.: _____; SEATING POSITION: DR
 PROJECT-SEGMENT NO.: 097360 4101; ENGINEER: PG; TEST DATE: 6-23-99

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	Up	A34FJ
CSTXD CAPD	CHEST DEFLECTION	14CB1- 2897	309 1108	Bourn	43.6 mv/v/in	"	6 inch 150 mm		S30
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

5th Female HYBRID III DUMMY SERIAL NO.: 369t; MFR.: ; SEATING POSITION: DR
PROJECT-SEGMENT NO.: 097360 4101; ENGINEER: PG; TEST DATE: 6-23-99

[illegible]

Accelerometer Information

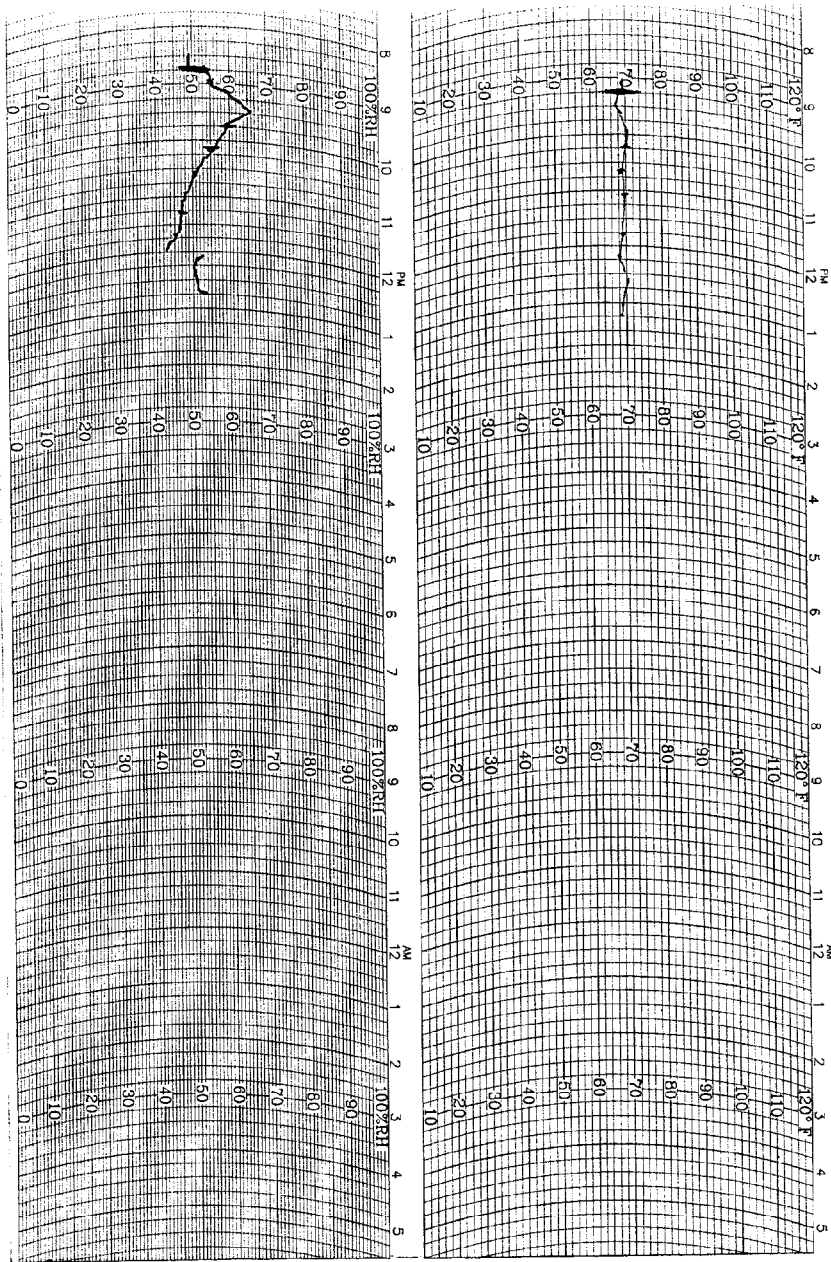
Engineer: Rhule
 Test Date: Feb-98
 Dummy S/N: 289
 Type: 5th female

Mnemonic Parameter Being Measured	Description	Model Number	Serial Number	Mfr.	Sensitivity Mv/g @100 Hz	Cal Due Date	Full- Scale Desired G	Direction Of Positive Polarity
CSTXG	Chest X	7264	J20599	Endevco	0.2054	10/07/99	200	FWD
CSTYG	Chest Y	7264	J20580	Endevco	0.2237	10/07/99	200	LEFT
CSTZG	Chest Z	7264	EH88J	Endevco	0.2833	10/07/99	200	UP
STTXG	Sternum top X	7264	J20569	Endevco	0.2179	10/07/99	2000	FWD
STMXG	Sternum middle X	7264	J20064	Endevco	0.2279	10/07/99	2000	FWD
STBXG	Sternum bottom X	7264	J20570	Endevco	0.2230	10/07/99	2000	FWD
SPTXG	Spine top X	7264	J19872	Endevco	0.2406	10/07/99	200	REAR
SPMXG	Spine middle X	7264	J19877	Endevco	0.2472	10/07/99	200	REAR
SPBXG	Spine bottom X	7264	J19890	Endevco	0.2267	10/07/99	200	REAR
HEDXG	Head X	7264	J20165	Endevco	0.2225	10/07/99	200	REAR
HEDYG	Head Y	7264	J19865	Endevco	0.2129	10/07/99	200	LEFT
HEDZG	Head Z	7264	J19934	Endevco	0.2452	10/07/99	200	UP
PEVXG	Pelvis X	7264	CY06H	Endevco	0.3020	10/07/99	200	REAR
PEVYG	Pelvis Y	7264	AGAC4	Endevco	0.2385	10/07/99	200	LEFT
PEVZG	Pelvis Z	7264	BF65J	Endevco	0.3357	10/07/99	200	UP
PEVYGA	Pelvis Y	7264	J20218	Endevco	0.2473	10/27/99	200	RIGHT

Accelerometer Information

Engineer: Rhule
 Test Date: Feb-98
 Dummy S/N: 289
 Type: Hybrid III 5th percentile

Mnemonic Parameter Being Measured	Description	Model Number	Serial Number	Sensitivity (mV/V)	Cal Due Date	Full-Scale Desired G	Direction Of Positive Polarity
	Neck Load Cell						
NEKXF	Neck X-force	1716	425	1.6944 @ 2,000 lbs	10/07/99	2000	Head forward/chest rearward
NEKYF	Neck Y-force	1716	425	1.6421 @ 2,000 lbs	10/07/99	2000	Head left/chest right
NEKZF	Neck Z-force	1716	425	1.1515 @ 3,000 lbs	10/07/99	3000	Head up/chest down
NEKXM	Neck X-moment	1716	425	1.5817 @ 2500 in-lbs	10/07/99	2500	Right ear to right shoulder
NEKYM	Neck Y-moment	1716	425	1.6308 @ 2500 in-lbs	10/07/99	2500	Chin forward to sternum
NEKZM	Neck Z-moment	1716	425	2.2688 @ 2500 in-lbs	10/07/99	2500	Chin to left shoulder
	Femur Load Cells						
	Left femur						
LFMXF	Left femur X-force	1914	0259	1.9091 @ 3000 lbs	10/07/99	3000	Knee upward/upper femur down
LFMYF	Left femur Y-force	1914	0259	1.9105 @ 3000 lbs	10/07/99	3000	Knee left/upper femur right
LFMZf	Left femur Z-force	1914	0259	1.1840 @ 5000 lbs	10/07/99	5000	Knee forward/pelvis rearward
LFMXM	Left femur X-moment	1914	0259	1.4989 @ 3000 in-lbs	10/07/99	3000	Knee left, hold upper femur in place
LFMYM	Left femur Y-moment	1914	0259	1.5040 @ 3000 in-lbs	10/07/99	3000	Knee up, hold upper femur in place
LFMZM	Left femur Z-moment	1914	0259	2.6742 @ 3000 in-lbs	10/07/99	3000	Twist knee to right, hold up femur
	Right femur						
RFMXF	Right femur X-force	1914	0257	1.9130 @ 3000 lbs	10/07/99	3000	Knee upward/upper femur down
RFMYF	Right femur Y-force	1914	0257	1.9299 @ 3000 lbs	10/07/99	3000	Knee left/upper femur right
RFMZf	Right femur Z-force	1914	0257	1.1926 @ 5000 lbs	10/07/99	5000	Knee forward/pelvis rearward
RFMXM	Right femur X-moment	1914	0257	1.4705 @ 3000 in-lbs	10/07/99	3000	Knee left, hold upper femur in place
RFMYM	Right femur Y-moment	1914	0257	1.5124 @ 3000 in-lbs	10/07/99	3000	Knee up, hold upper femur in place
RFMZM	Right femur Z-moment	1914	0257	2.5006 @ 3000 in-lbs	10/07/99	3000	Twist knee to right, hold up femur



Weathermeasure
WEATHERtronics
Division of QUALMETRICS, Inc.

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SACRAMENTO, CA 95841
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HYGROTHERMOGRAPH
1 DAY 990628 A
CHART NO. M699123
C311-0-HF
ECN 2717
6-9-87

VRTC 208 Flat Frontal V.O.