

V3128

**1999 Toyota Tacoma
into a Flat Frontal Barrier
TRC Test Number: 990305**

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Section 1.0

Purpose and Test Procedure

Purpose and Test Summary

This 30 mph flat frontal barrier impact test has 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 Toyota Tacoma that impacted a flat frontal barrier. The test vehicle contained two instrumented Hybrid III 50th percentile adult male dummies.

Section 2.0

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. The vehicle's specified impact velocity range was 47.5 to 49.1 kph. The vehicle impacted a flat frontal barrier.

The test vehicle contained two (2) Hybrid III 50th percentile adult male 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 thirty-eight (38) 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 dummy and vehicle data plots. Appendix C contains the dummy calibration information.

Test Results Summary

This flat frontal barrier test was conducted at TRC on March 5, 1999.

The test vehicle, a 1999 Toyota Tacoma, was equipped with airbags at the driver's and right front passenger's seating positions. The vehicle's test weight was 1505.4 kilograms. The vehicle's impact speed was 48.0 kph. The vehicle's maximum static crush was 388 millimeters.

The driver's 15-millisecond HIC was 177 and the 36-millisecond HIC was 301. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 43.7 g. The driver's chest deflection was 48.4 millimeters. The driver's left and right femur maximum compressive forces were 8840 N and 5346 N, respectively.

The right front passenger's 15-millisecond HIC was 174 and the 36-millisecond HIC was 219. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 35.6 g. The passenger's chest deflection was 23.5 millimeters. The right front passenger's left and right femur maximum compressive forces were 4959 N and 6372 N, respectively.

Table 1 Crash Test Summary

Test type:	Frontal barrier impact
Test date:	03/05/99
Test time:	1134
Ambient temperature at impact area:	22° C
Vehicle year/make/ model/body style:	1999/Toyota/Tacoma/Pickup Truck
Vehicle test weight:	1505.4 kg
Impact angle ¹ :	0°
Impact velocity ² :	
Primary:	48.0 kph
Secondary:	48.0 kph
Maximum static crush:	388 mm
Average rebound:	76 mm
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 #169</u>	<u>Passenger #168</u>
Type:	Hybrid III 50 th percentile adult male	Hybrid III 50th percentile adult male
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, Windshield	Airbag
Chest:	Airbag	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/Toyota/Tacoma/Pickup Truck

Color: White

VIN: 4TANL42N4X2409956

Engine data:

 Placement: Inline

 Cylinders: 4

 Displacement: 2.4 liters

Transmission data: 5 speed, X manual, ___ automatic, ___ overdrive

Final drive: ___ fwd, X rwd, ___ 4wd

Date vehicle received: N/A

Odometer reading: 158

Dealer's name and address: N/A

Accessories:

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

Certification data from vehicle's label:

Vehicle manufactured by: TABC Inc.

Date of manufacture: 08/98

VIN: 4TANL42N4X2409956

GVWR: 1927.8 kg

GAWR: Front: 998.0 kg

 Rear: 1134.0 kg

Table 2 Test Vehicle Information, Cont'd.

Size of tires on vehicle:	P195/75R14
Spare tire:	P195/75R14
Type of front seats:	Bench, manually adjustable

Tire & capacity data from vehicle's label:

Recommended tire size:	P195/75R14
Recommended cold tire pressure:	
Front:	200 kPa
Rear:	241 kPa
Designated Seating Capacity:	
Front	3
Rear	0
Total	3
Vehicle Cargo Weight:	136.1 kg

Test vehicle attitudes:

Delivered attitude:	LF: 708 mm	RF: 720 mm	LR: 720 mm	RR: 780 mm
Fully loaded attitude:	LF: 681 mm	RF: 690 mm	LR: 718 mm	RR: 730 mm
Pre-test attitude:	LF: 695 mm	RF: 699 mm	LR: 715 mm	RR: 719 mm
Post-test attitude:	LF: 670 mm	RF: 705 mm	LR: 718 mm	RR: 740 mm

Table 2 Test Vehicle Information, Cont'd.

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

Right front	343.8 kg	Right rear	251.7 kg
Left front	362.0 kg	Left rear	265.4 kg
Total front weight	705.8 kg	(57.7% of total vehicle weight)	
Total rear weight	517.1 kg	(42.3% of total vehicle weight)	
Total delivered weight	1222.9 kg		

Calculation of test vehicle's target test weight:

RCLW¹ = Rated Cargo and Luggage Weight

UDW = Unloaded Delivered Weight (1222.9 kg)

DSC² = Designated Seating Capacity (3)

RCLW¹ = 136.1 kg

Target test weight = UDW + RCLW + (number of Hybrid III Dummies x 75.7 kg per dummy)

Target test weight = 1222.9 + 136.1 + 151.4 = 1510.4 kg

Weight of test vehicle with required dummies and 131.1 kg of cargo weight:

Right front	383.3 kg	Right rear	370.1 kg
Left front	368.3 kg	Left rear	383.7 kg
Total front weight	751.6 kg	(49.9% of total vehicle weight)	
Total rear weight	753.8 kg	(50.1% of total vehicle weight)	
Total test weight	1505.4 kg	(0.35% under target test weight)	

Weight of ballast secured in vehicle: 39.5 kg steel plate in trunk

Components removed to meet target test weight: None

CG rearward of front wheel centerline: 1317.2 mm

Vehicle Wheelbase: 2630 mm

¹ Cargo weight for multi-purpose passenger vehicles, trucks, and buses is the vehicle's calculated cargo and luggage weight or 136.1 kg, whichever is less.

² The designated seating capacity is determined by counting the number of seat belts installed in the vehicle.

Table 3 Post-Impact Data

Test number: 990305
Test date: 03/05/99
Test time: 1134
Test type: Frontal barrier impact
Impact angle: 0°
Ambient temperature
at impact area: 22° C
Temperature in
occupant compartment: 21° C
Impact velocity:
Primary: 48.0 kph
Secondary 48.0 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:

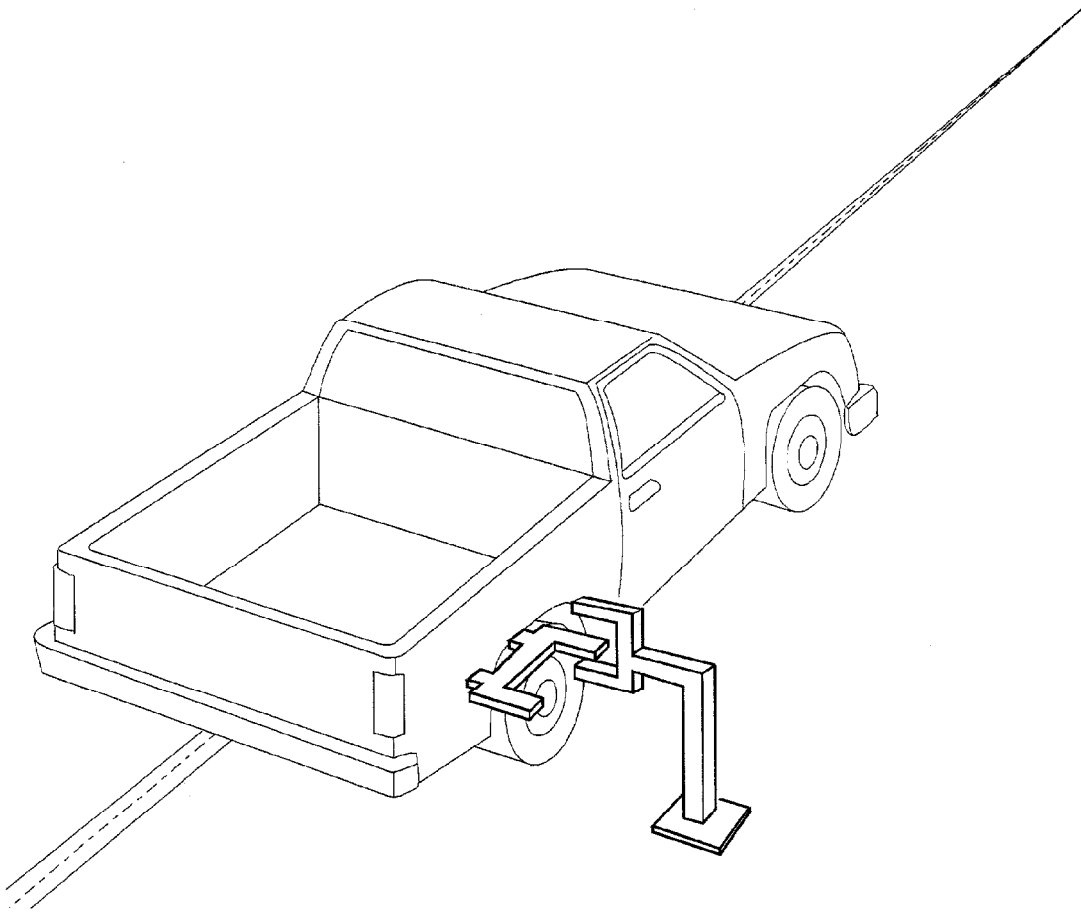
Pre-test:	L: 4635 mm	C: 4750 mm	R: 4638 mm
Post-test:	L: 4311 mm	C: 4362 mm	R: 4332 mm
Total crush:	L: 324 mm	C: 388 mm	R: 306 mm
Average crush:	339 mm		

Test vehicle rebound from flat barrier:

Distance from test vehicle to barrier:

Post-test:	L: 85 mm	C: N/A mm	R: 67 mm
Average rebound:	76 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.

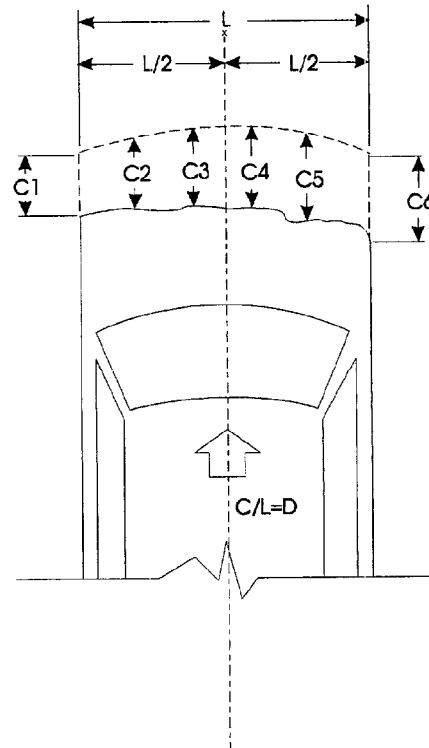
Figure 2 Accident Investigation Division Data for 30 mph Frontal Barrier Impact

Test date: 03/05/99
 Vehicle year/make/model/body style: 1999/Toyota/Tacoma/Pickup Truck
 VIN: 4TANL42N4X2409956
 Build date: 08/98
 Test weight: 1505.4 kg
 Vehicle wheelbase: 2630 mm
 Maximum width: 1640 mm
 Front overhang: 828 mm

Collision Deformation
 Classification (CDC) Code: 12FDEW2

Crush depth measurements:

C1:	324 mm
C2:	380 mm
C3:	385 mm
C4:	384 mm
C5:	374 mm
C6:	306 mm



Midpoint of damage: D: Vehicle Longitudinal Centerline

Length of damaged region: L: 1525 mm

Figure 3 Vehicle Accelerometer Placement

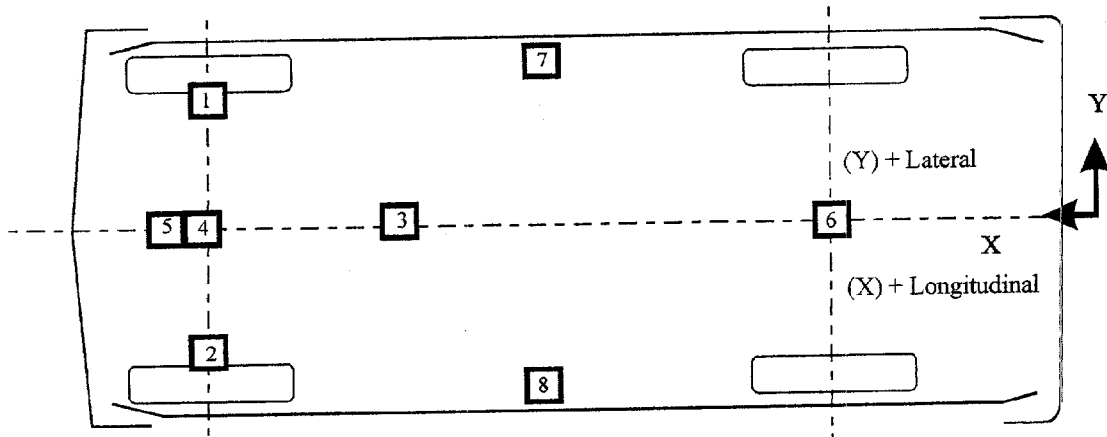
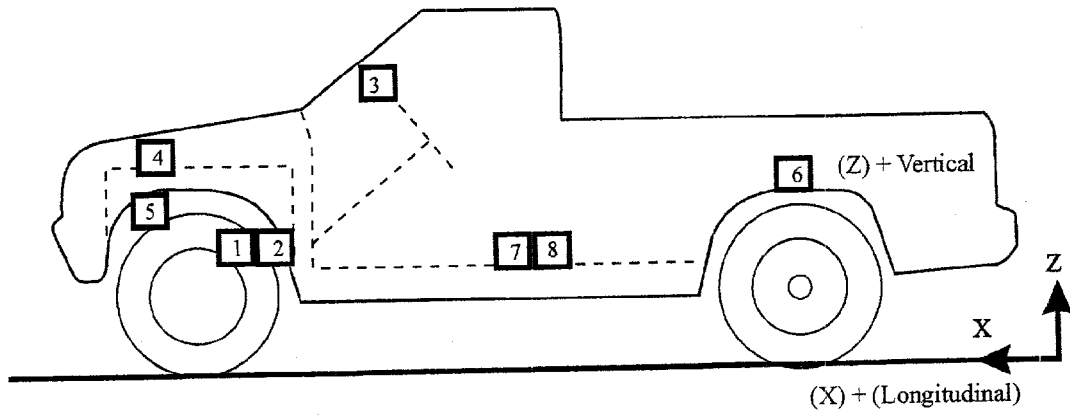


Table 4 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 990305 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 LEFT BRAKE CALIPER	PRE 3780 mm POST 3770 mm	602 mm 600 mm	340 mm 290 mm		
LONGITUDINAL			42.1 g	@ 62.7 ms	@ 43.1 ms
2 RIGHT BRAKE CALIPER	PRE 3780 mm POST 3750 mm	-602 mm -583 mm	333 mm 290 mm		
LONGITUDINAL			24.4 g	@ 77.5 ms	@ 47.4 ms
3 INSTRUMENT PANEL CENTER	PRE 3273 mm POST 3272 mm	-50 mm -42 mm	1103 mm 1105 mm		
LONGITUDINAL			41.6 g	@ 48.1 ms	@ 32.1 ms
4 ENGINE TOP	PRE 4173 mm POST 4087 mm	-41 mm -70 mm	846 mm 860 mm		
LONGITUDINAL			22.1 g	@ 50.3 ms	@ 34.9 ms
5 ENGINE BOTTOM	PRE 4030 mm POST 3995 mm	35 mm 0 mm	133 mm 220 mm		
LONGITUDINAL			15.8 g	@ 50.6 ms	@ 35.7 ms

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

TEST NUMBER: 990305		X		Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
No. LOCATION							
6	REAR VEHICLE	PRE	318 mm	0 mm	611 mm		
	CENTERLINE VERTICAL	POST	315 mm	0 mm	689 mm	18.3 g @ 87.7 ms	23.2 g @ 10.4 ms
7	LEFT REAR SEAT	PRE	2337 mm	570 mm	400 mm		
	LONGITUDINAL	POST	2344 mm	570 mm	392 mm	3.2 g @ 207.0 ms	48.6 g @ 18.5 ms
8	RIGHT REAR SEAT	PRE	2345 mm	-590 mm	412 mm		
	LONGITUDINAL	POST	2355 mm	-590 mm	404 mm	3.2 g @ 25.8 ms	52.9 g @ 18.4 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	-58.4 g	10.4 g	-35.4 g	62.9 g	-45.1 g	-6.5 g	-9.8 g
Passenger	-34.6 g	28.2 g	36.3 g	45.0 g	-32.5 g	4.1 g	-18.4 g

Maximum Femur Compressive Force

	Left Femur	Right Femur
Driver	8840 N	5346 N
Passenger	4959 N	6372 N

15-Millisecond Head Injury Criteria¹

	HIC	Time t_1	Time t_2
Driver	177	64.6 ms	79.6 ms
Passenger	174	67.7 ms	82.8 ms

36-Millisecond Head Injury Criteria¹

	HIC	Time t_1	Time t_2
Driver	301	59.6 ms	95.6 ms
Passenger	219	59.7 ms	85.9 ms

Chest Maximum Resultant Acceleration²

	Acceleration	Time t_1	Time t_2
Driver	43.7 g	63.2 ms	66.2 ms
Passenger	35.6 g	72.9 ms	76.0 ms

Maximum Chest Deflection

Driver	48.4 mm
Passenger	23.5 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. The top of the dummy's head impacted the windshield. The dummy rebounded rearward into the seat, and came to rest seated upright in the driver's seat.

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, and the dummy started to slide under the airbag. The dummy's torso rebounded rearward into the seat, the back of the dummy's head impacting the seatback below the headrest. The dummy came to rest with his knees impacting the instrument panel and his buttocks on the leading (front) edge of the seat. He was leaning towards the driver's seat, with his shoulders touching the seat back and his back at approximately 45° to the floor of the truck.

Section 4.0

Vehicle, Occupant, and Camera Measurements

Figure 4 Pre-test and Post-test Measurement Points

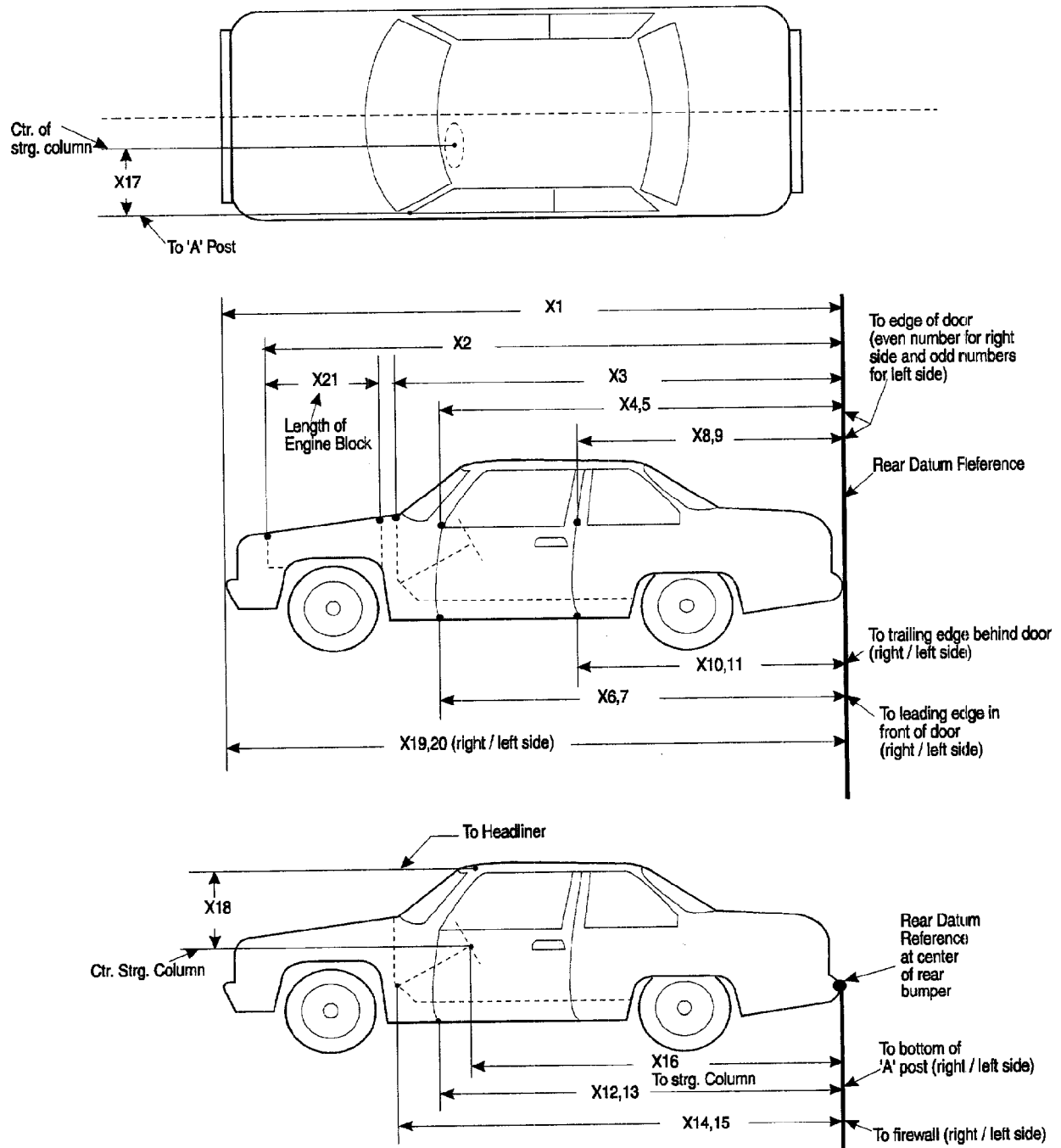


Table 6 Impacted Vehicle Measurements

Vehicle year/make/model/body style: 1999/Toyota/Tacoma/Pickup Truck

Test Number: 990305

No.	Type of measurement	Pre-Test	Post-Test	Difference
X1	Total Length of Veh. at Centerline	4750	4362	388
X2	Rear Surface of Veh. to Front of Engine Block	4220	4147	73
X3	Rear Surface of Veh. to Firewall	3660	3652	8
X4	Rear Surface of Veh. to Upper Leading Edge of Right Door	3376	3357	19
X5	Rear Surface of Veh. to Upper Leading Edge of Left Door	3368	3356	12
X6	Rear Surface of Veh. to Lower Leading Edge of Right Door	3347	3352	-5
X7	Rear Surface of Veh. to Lower Leading Edge of Left Door	3341	3351	-10
X8	Rear Surface of Veh. to Upper Trailing Edge of Right Door	2311	2293	18
X9	Rear Surface of Veh. to Upper Trailing Edge of Left Door	2304	2292	12
X10	Rear Surface of Veh. to Lower Trailing Edge of Right Door	2308	2309	-1
X11	Rear Surface of Veh. to Lower Trailing Edge of Left Door	2299	2309	-10
X12	Rear Surface of Veh. to Bottom of " A " Post on Right Side	3375	3356	19
X13	Rear Surface of Veh. to Bottom of " A " Post on Left Side	3365	3357	8
X14	Rear Surface of Veh. to Firewall--Right Side	3648	3638	10
X15	Rear Surface of Vehicle to Firewall --Left Side	3640	3623	17
X16	Rear Surface of Veh. to Steering Wheel Center	2995	3038	-43
X17	Center of Steering Column to " A " Post	265	287	-22
X18	Center of Steering Column to Headliner	410	400	10
X19	Rear Surface of Veh. to Right Side of Front Bumper	4638	4332	306
X20	Rear Surface of Veh. to Left Side of Front Bumper	4635	4311	324
X21	Length of Engine Block	500	500	0

Figure 5 Vehicle Target Locations

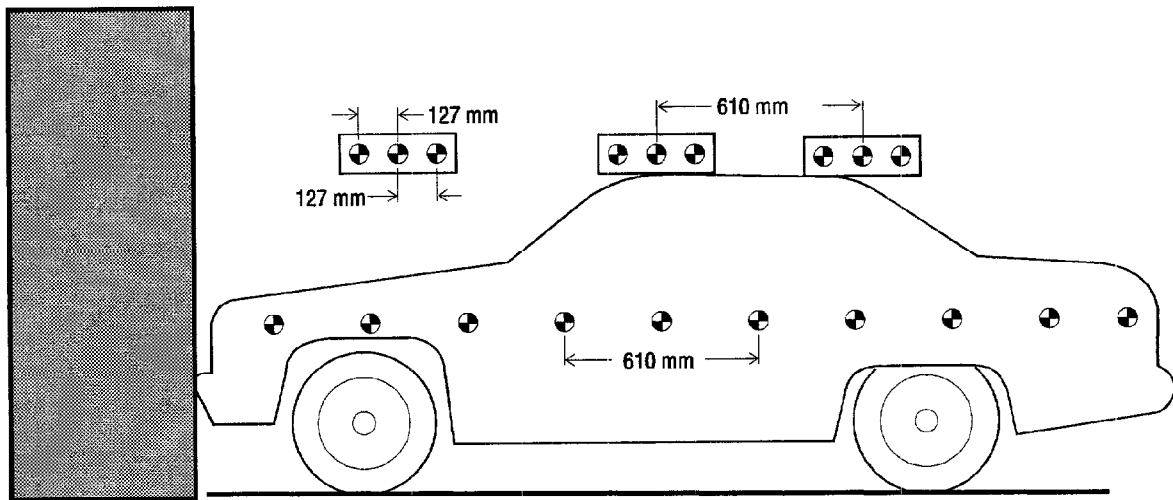


Figure 6 Dummy Measurement Locations for Front Seat Occupants

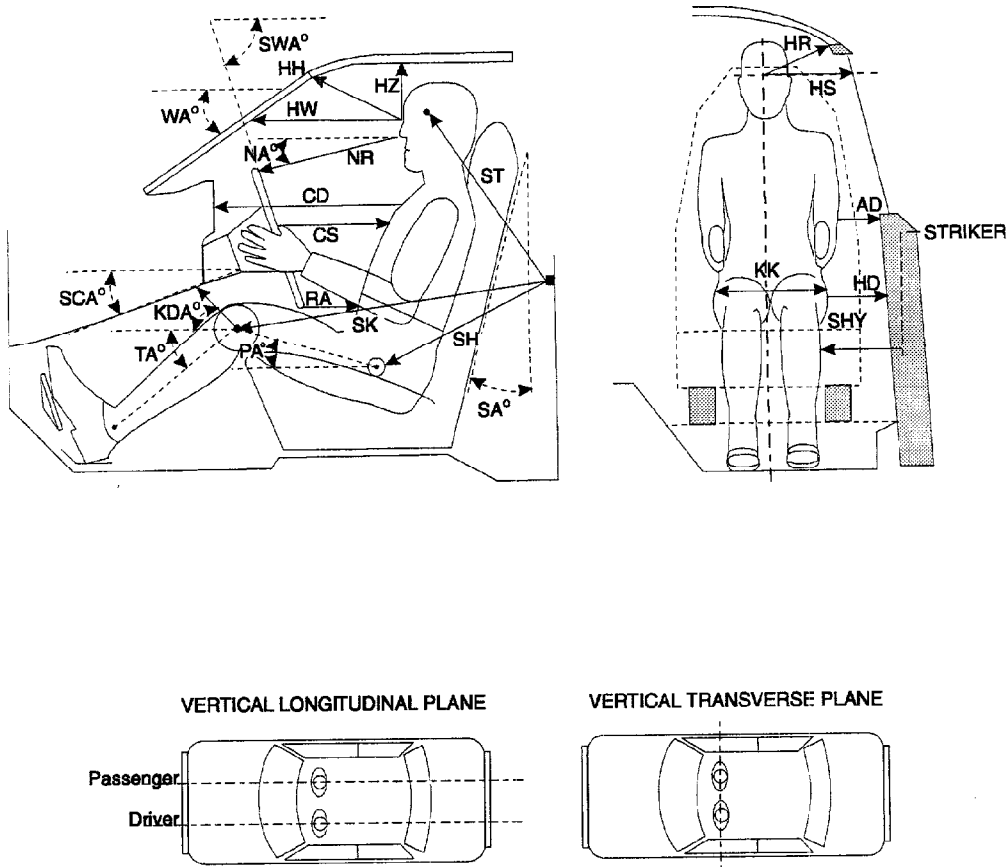


Table 7 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #169)	Passenger (Serial #168)
WA	Windshield angle	39.9°	39.9°
SWA	Steering wheel angle	60.6°	NA
SCA	Steering column angle	29.4°	NA
SA	Seat back angle	20.4°	20.4°
HZ	Head to roof	198 mm	187 mm
HH	Head to header	411 mm	408 mm
HW	Head to windshield	522 mm	532 mm
HR	Head to side header	245 mm	252 mm
NR	Nose to rim	435 mm	N/A
NA	Nose to rim angle	11.3°	N/A
CD	Chest to dash	562 mm	539 mm
CS	Steering wheel to chest	338 mm	N/A
RA	Rim to abdomen	198 mm	N/A
KDL	Left knee to dash	193 mm	182 mm
KDR	Right knee to dash	206 mm	180 mm
KDA	Outboard knee to dash angle	20.3°	23.8°
PA	Pelvic angle	22.1°	20.3°
TA	Tibial angle	38.3°	32.9°
KK	Knee to knee	320 mm	275 mm
ST ¹	Striker to head	554 mm	567 mm
	Striker to head angle	-67.4°	-66.9°
SK	Striker to knee	716 mm	705 mm
	Striker to knee angle	-0.1°	-1.4°
SH ¹	Striker to H-point	369 mm	345 mm
	Striker to H-point angle	20.5°	19.5°
SHY	Striker to H-point (Y dir.)	209 mm	224 mm
HS	Head to side window	310 mm	292 mm
HD	H-point to door	185 mm	167 mm
AD	Arm to door	97 mm	101 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

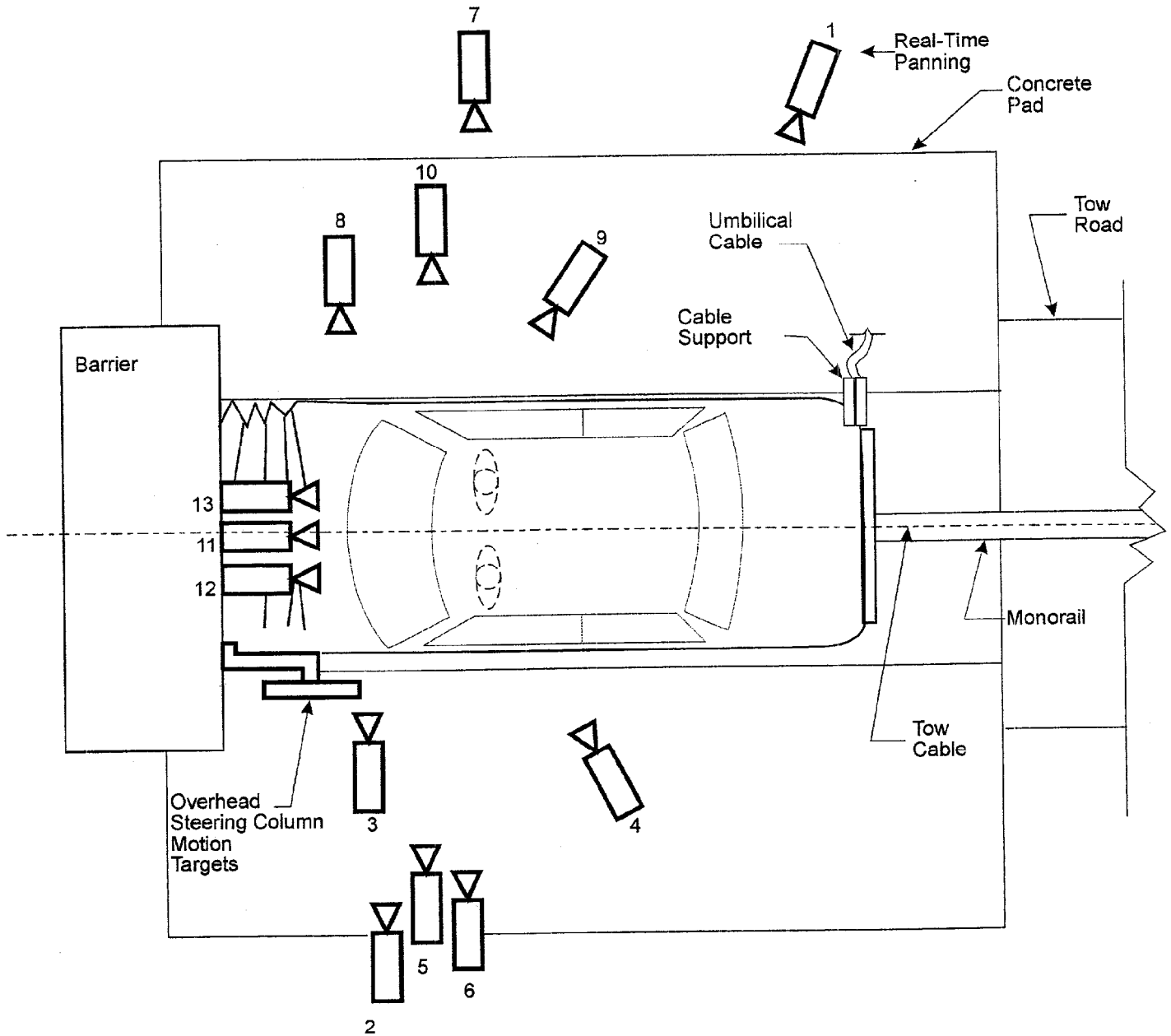


Figure 7 Camera Positions, Cont'd.

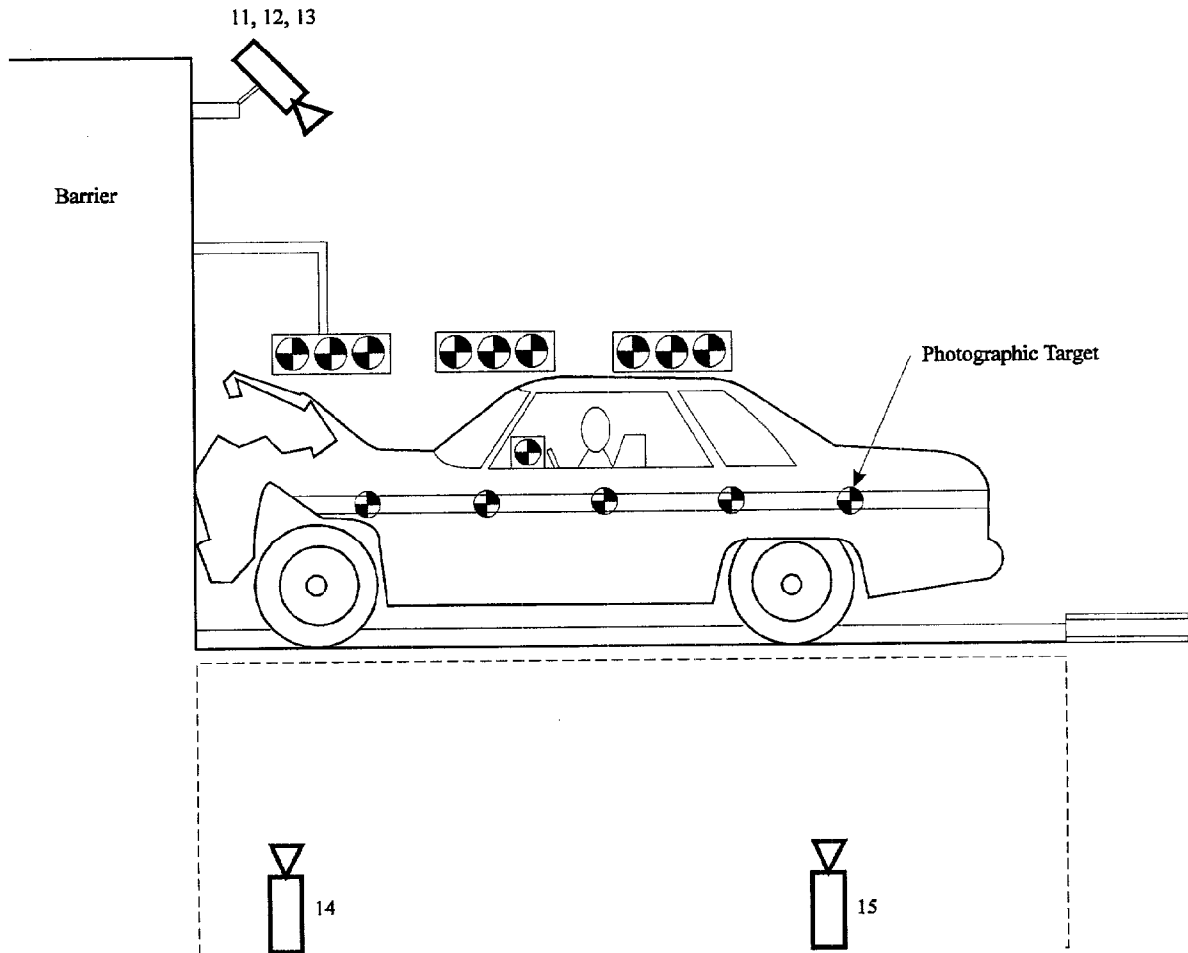


Table 8 Motion Picture Camera Locations

Vehicle year/make/model/body style: 1999/Toyota/Tacoma/Pickup Truck

Test number: 990305

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	-1054 mm	7493 mm	1118 mm	0°	6920 mm	25 mm	1002 frames/s
3	Left windshield intrusion	-906 mm	7984 mm	1530 mm	0°	7315 mm	50 mm	1008 frames/s
4	Driver kinematics	-3995 mm	2946 mm	2210 mm	6°	3060 mm	25 mm	992 frames/s
5	Steering column motion	-2775 mm	7264 mm	2930 mm	11°	6810 mm	25 mm	998 frames/s
6	Steering column motion	-2775 mm	7264 mm	1908 mm	4°	6810 mm	25 mm	998 frames/s
7	Right overall	-2065 mm	-6767 mm	1120 mm	0°	6525 mm	13 mm	1018 frames/s
8	Right windshield intrusion	-906 mm	-7984 mm	1530 mm	0°	7452 mm	50 mm	1002 frames/s
9	Passenger kinematics	-3863 mm	-2946 mm	2210 mm	8°	3090 mm	25 mm	1005 frames/s
10	Passenger kinematics	-986 mm	-7442 mm	1340 mm	0°	6874 mm	25 mm	1000 frames/s
11	Windshield front view	-440 mm	0 mm	2350 mm	69°	NA	8.5 mm	1002 frames/s
12	Driver - front view	-440 mm	375 mm	2350 mm	53°	NA	13 mm	990 frames/s
13	Passenger - front view	-440 mm	-325 mm	2350 mm	60°	NA	13 mm	968 frames/s
14	Pit - front position	-340 mm	0 mm	-3320 mm	90°	NA	13 mm	1005 frames/s
15	Pit - rear position	-1260 mm	0 mm	-3320 mm	90°	NA	13 mm	1008 frames/s
	Real-time documentation	NA	NA	NA	NA	NA	12-120 mm	24 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

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

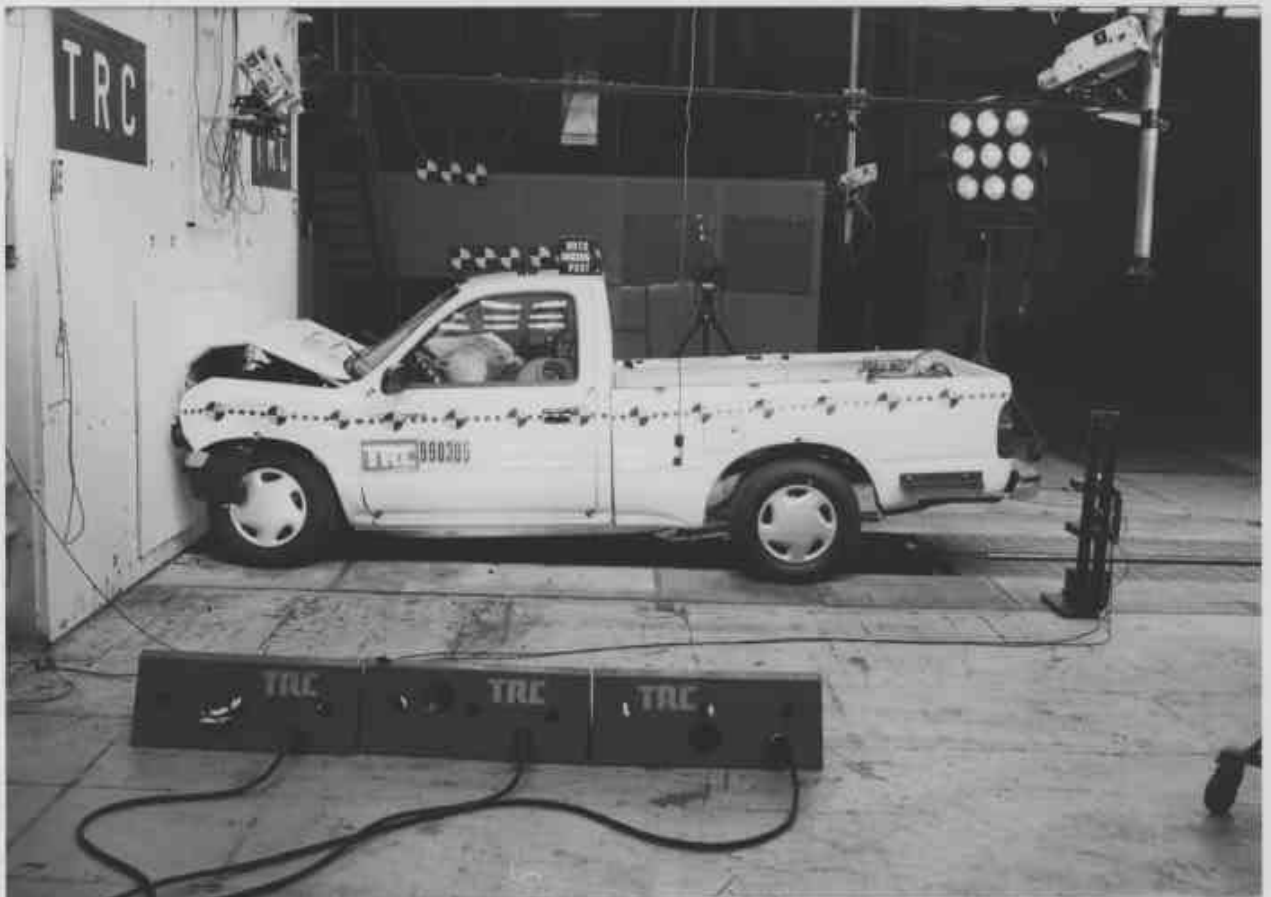


Figure A-4 Post-Test Left Side View



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

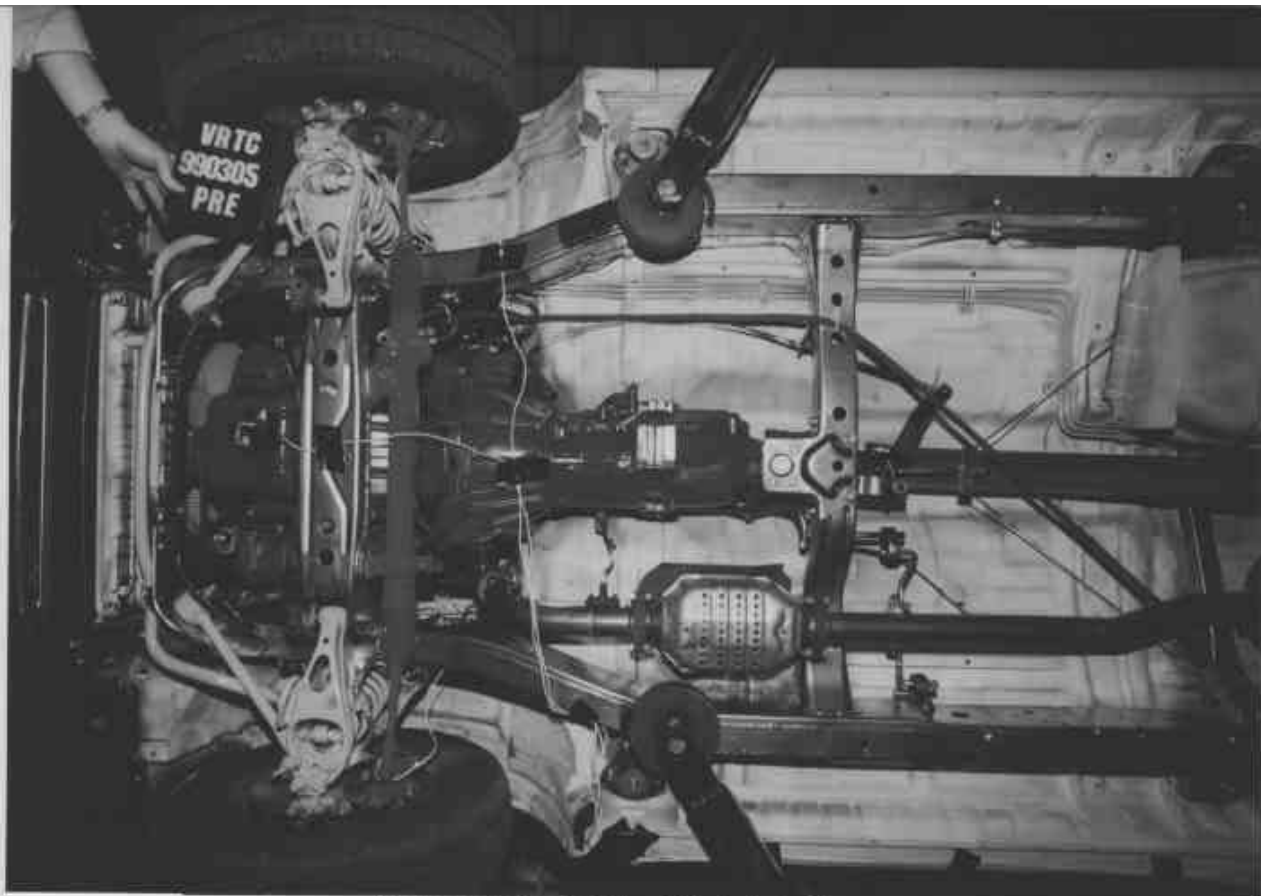


Figure A-13 Pre-Test Front Underbody View

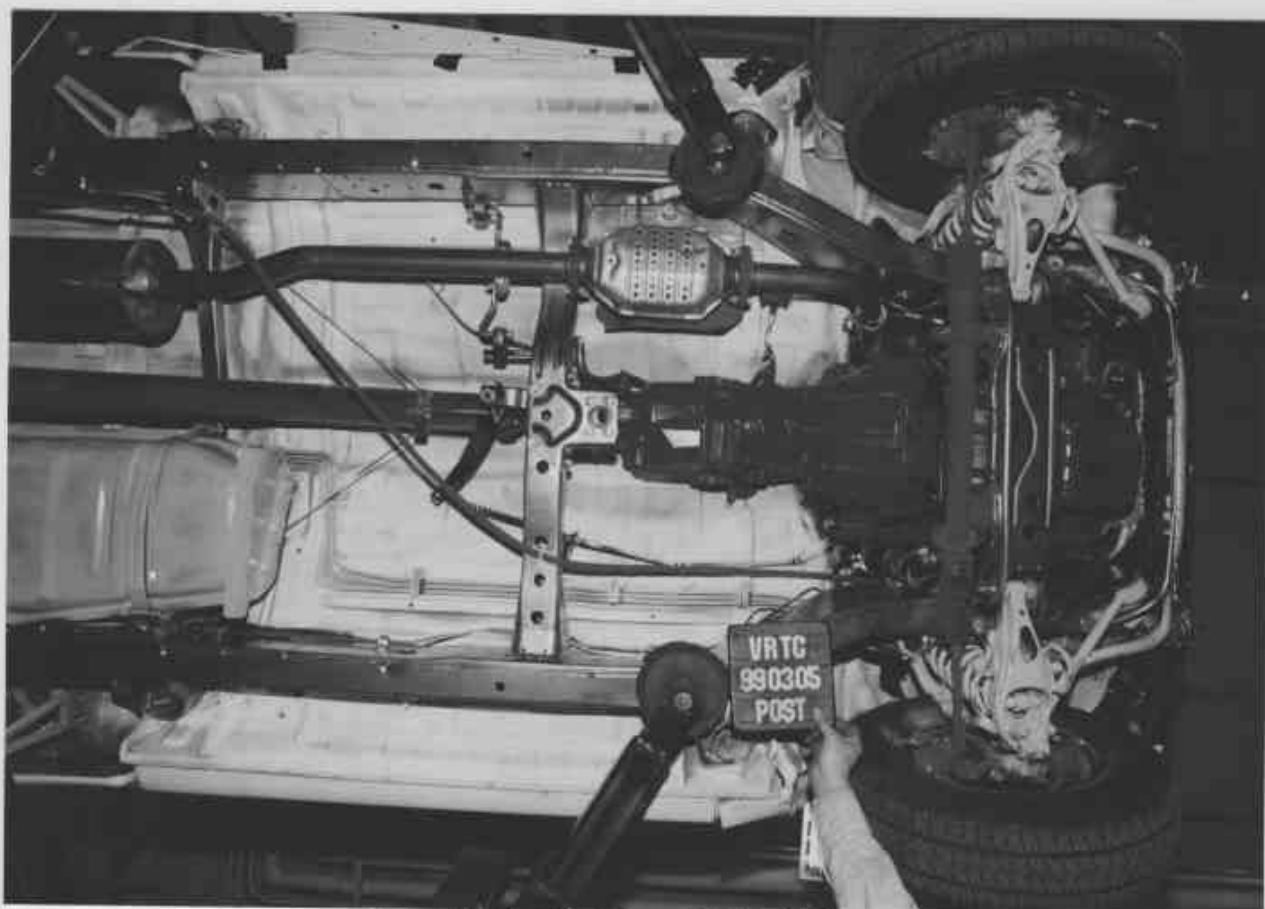


Figure A-14 Post-Test Front Underbody View

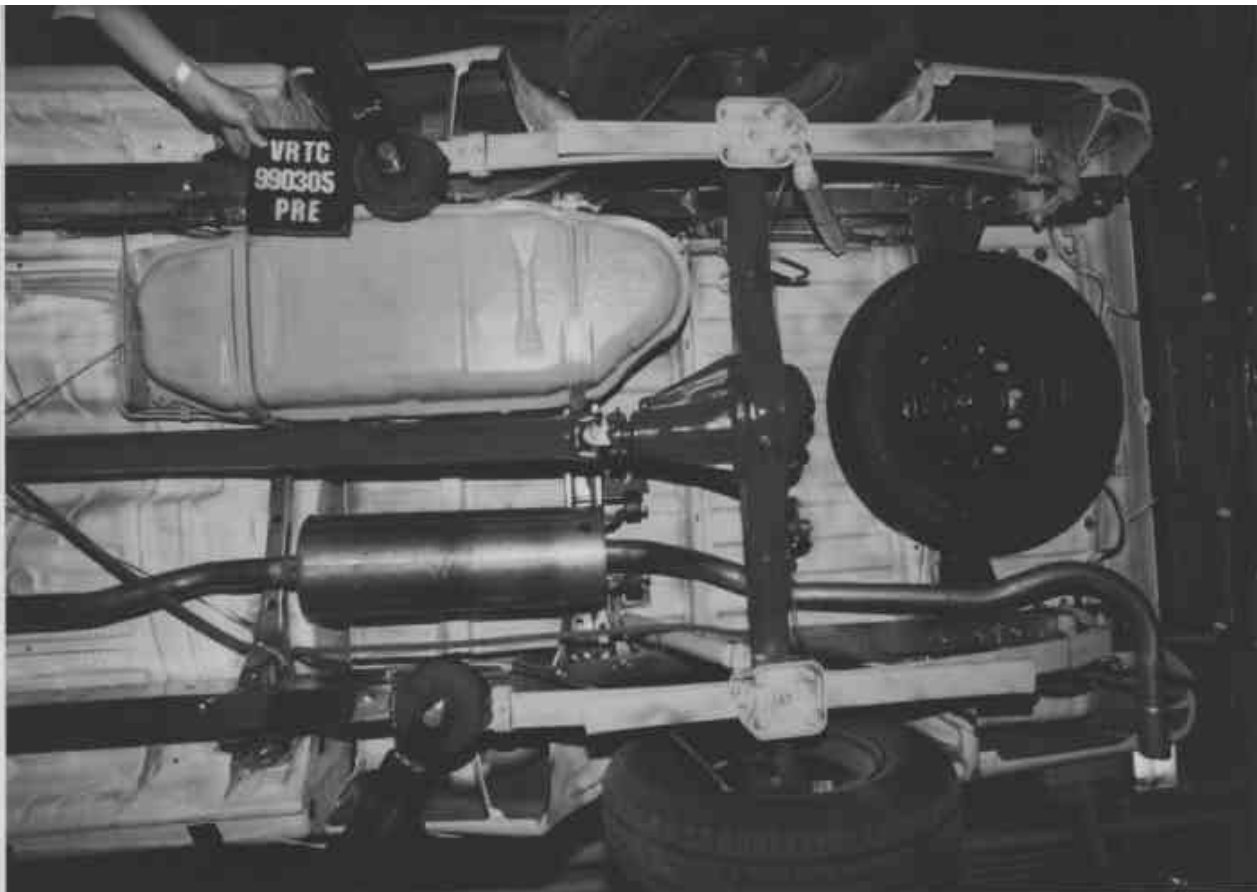


Figure A-15 Pre-Test Rear Underbody View

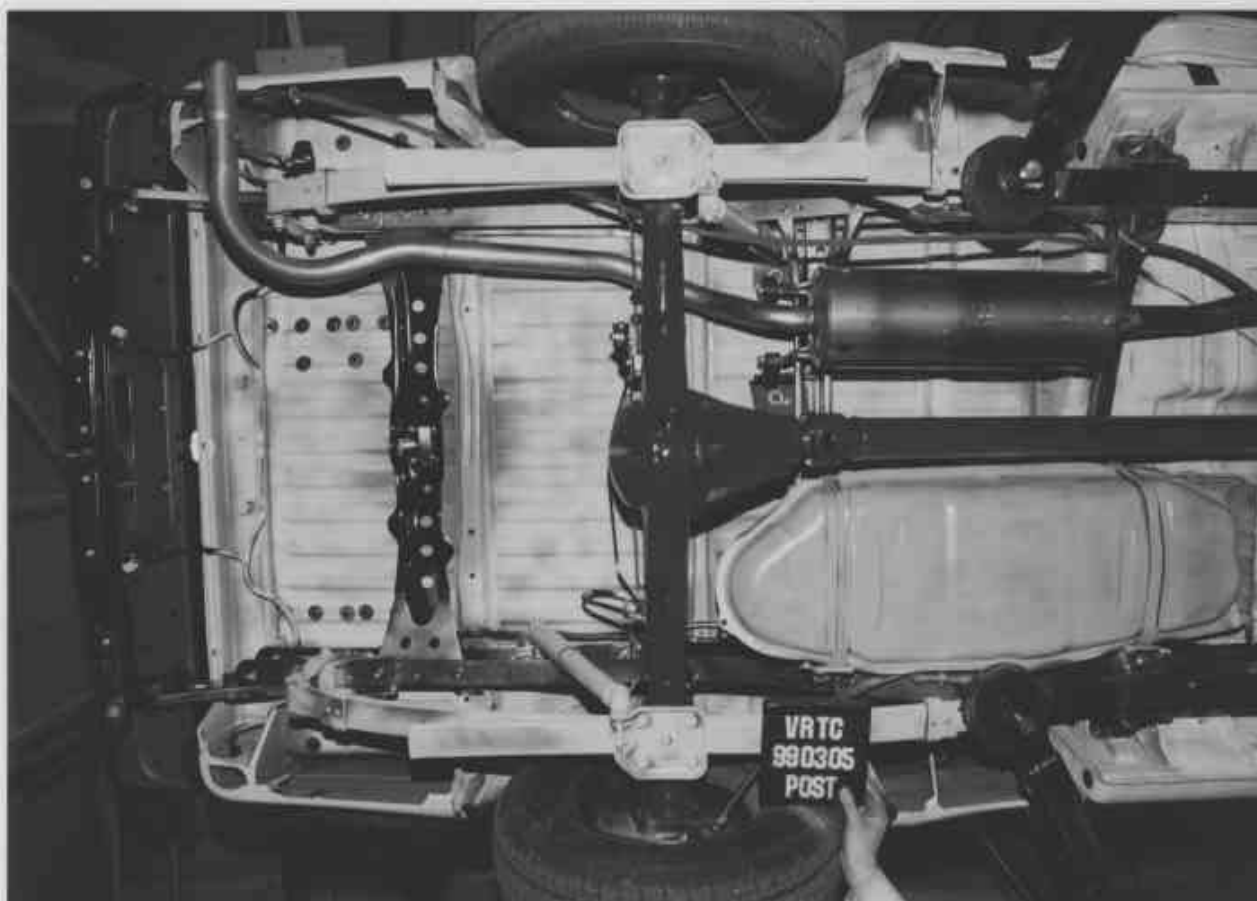


Figure A-16 Post-Test Rear Underbody View



Figure A-17 Pre-Test Engine Compartment View



Figure A-18 Post-Test Engine Compartment View



Figure A-19 Pre-Test Windshield View



Figure A-20 Post-Test Windshield View



Figure A-21 Pre-Test Windshield/Airbag View



Figure A-22 Post-Test Windshield/Airbag View



Figure A-23 Pre-Test Driver Dummy Windshield View



Figure A-24 Post-Test Driver Dummy Windshield View



Figure A-25 Pre-Test Passenger Dummy Windshield View



Figure A-26 Post-Test Passenger Dummy Windshield View



Figure A-27 Pre-Test Driver Dummy Position - View 1



Figure A-28 Post-Test Driver Dummy Position - View 1



Figure A-29 Pre-Test Driver Dummy Position -View 2



Figure A-30 Post-Test Driver Dummy Position - View 2



Figure A-31 Pre-Test Driver Dummy Position -View 3



Figure A-32 Post-Test Driver Dummy Position - View 3



Figure A-33 Pre-Test Passenger Dummy Position - View 1



Figure A-34 Post-Test Passenger Dummy Position - View 1



Figure A-35 Pre-Test Passenger Dummy Position - View 2



Figure A-36 Post-Test Passenger Dummy Position - View 2



Figure A-37 Pre-Test Passenger Dummy Position - View 3



Figure A-38 Post-Test Passenger Dummy Position - View 3



Figure A-39 Post-Test Driver Dummy View



Figure A-40 Post-Test Driver Dummy Head Contact - View 1



Figure A-41 Post-Test Driver Dummy Head Contact - View 2



Figure A-42 Post-Test Driver Dummy Head Contact - View 3



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



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



Figure A-45 Post-Test Driver Footwell Deformation View



Figure A-46 Post-Test Passenger Dummy View



Figure A-47 Post-Test Passenger Dummy Head Contact - View 1



Figure A-48 Post-Test Passenger Dummy Head Contact - View 2



Figure A-49 Post-Test Passenger Dummy Head Contact - View 3



Figure A-50 Post-Test Passenger Dummy Knee Contact View



Figure A-52 Pre-Test Ballast Location View



Figure A-53 Pre-Test Vehicle Certification/Tire Load Label View



Figure A-54 Impact Event

Appendix B

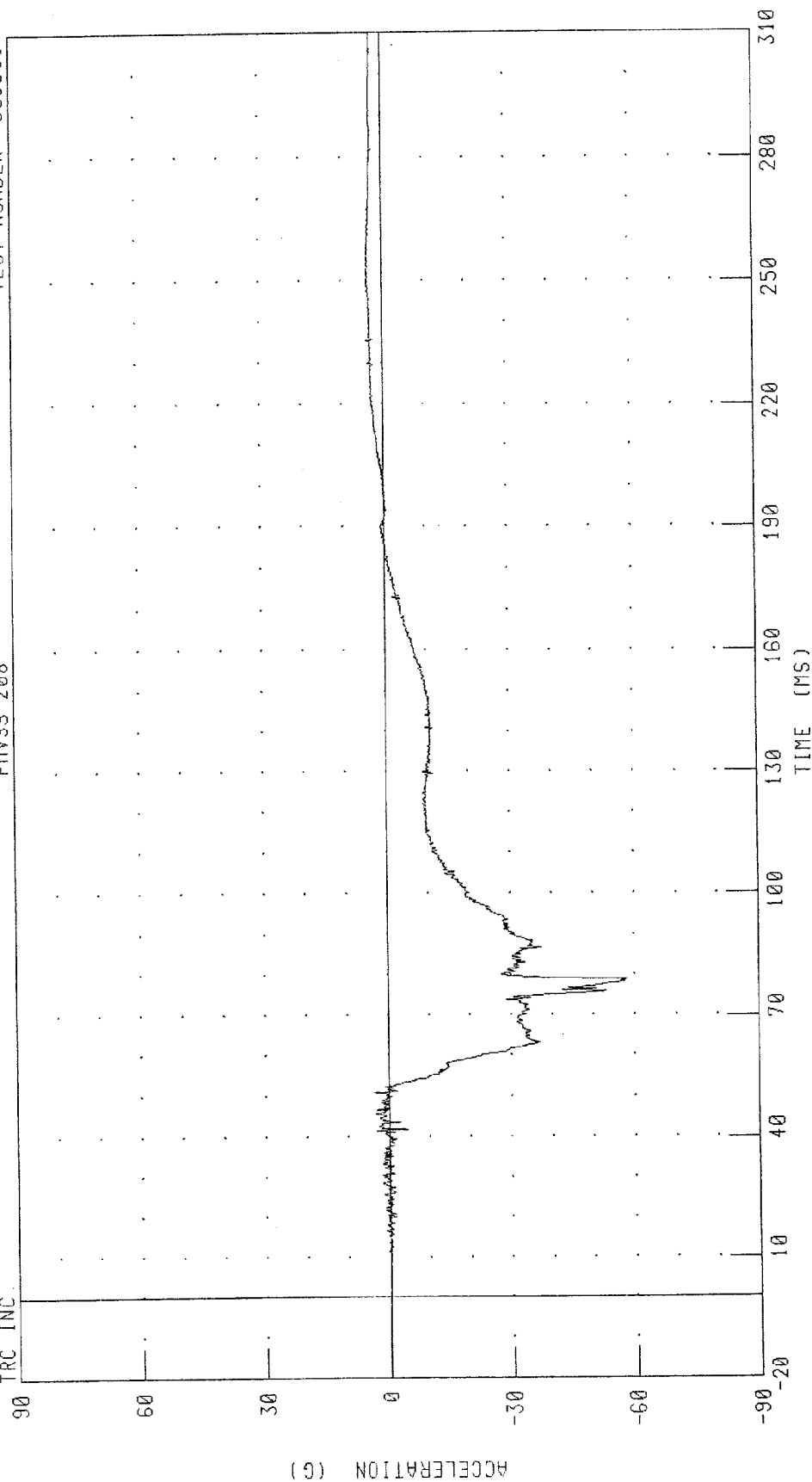
Data Plots

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER HEAD X-AXIS ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC



CHANNEL: HEDXC1 FILTER: CH. CLASS 1000

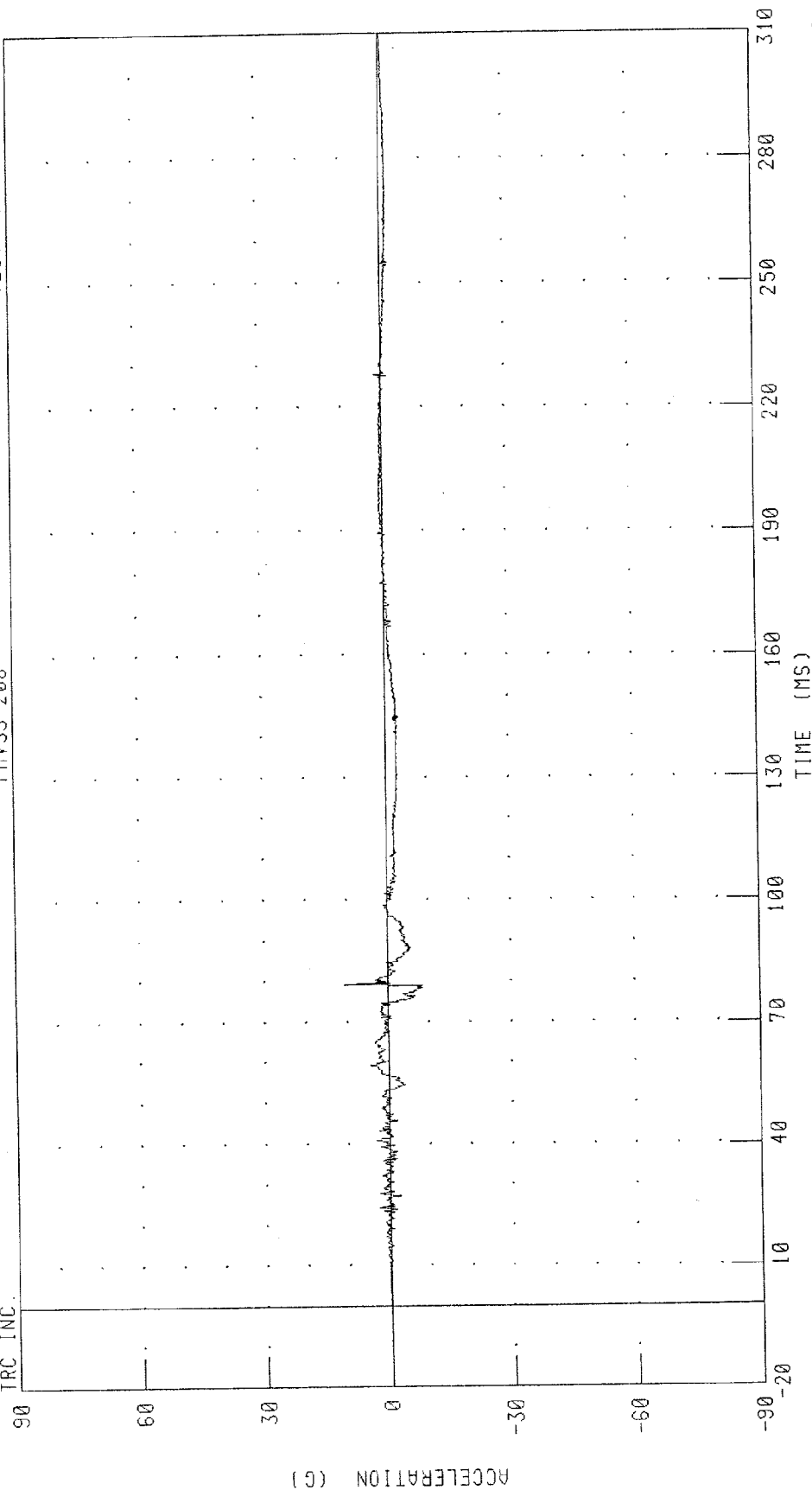
PEAK DATA: 3.84 G @ 235.44 MS, -58.43 G @ 78.96 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC.

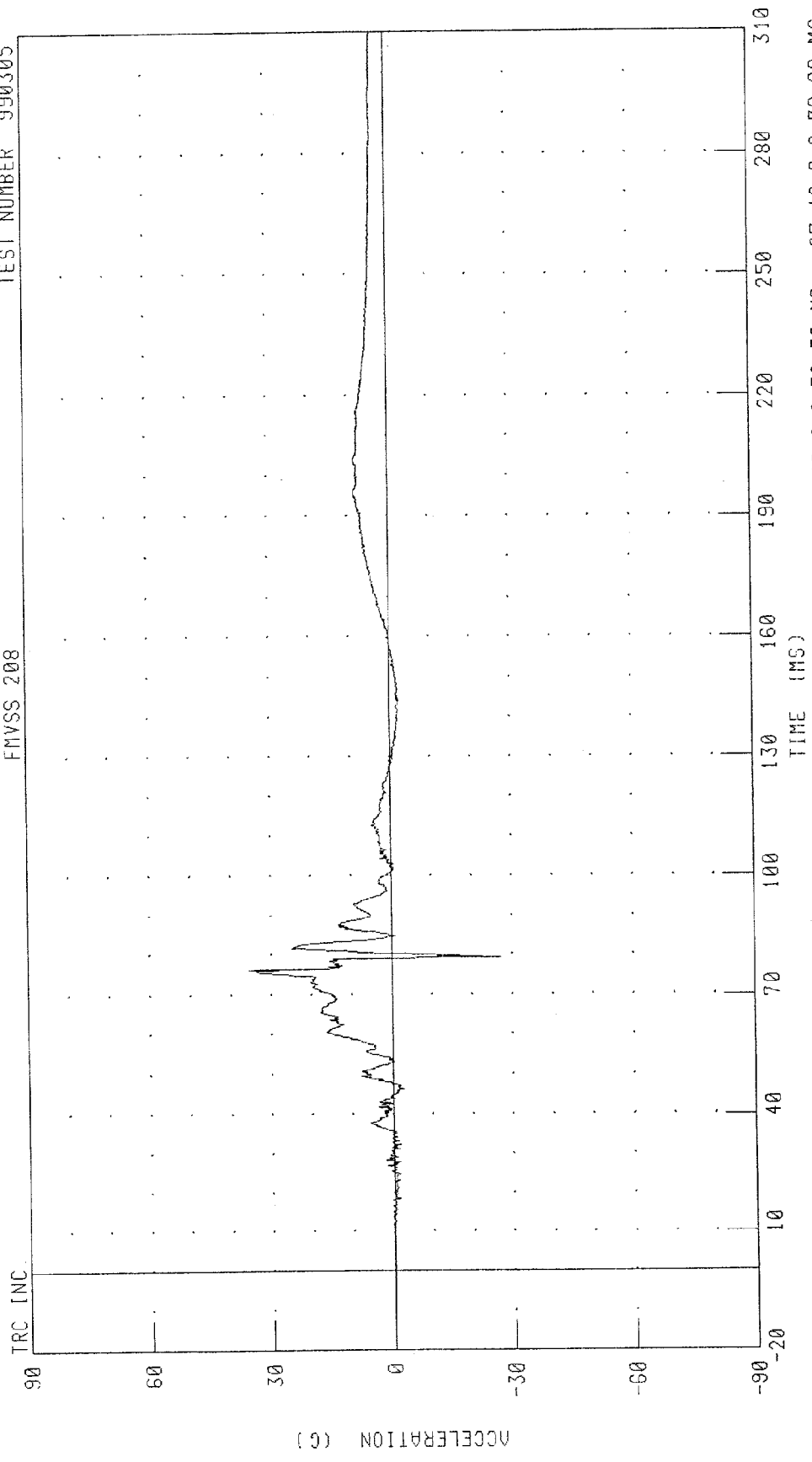


PEAK DATA: 10.48 G @ 79.28 MS; -8.56 G @ 78.48 MS

CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER HEAD Z-AXIS ACCELERATION
FMVSS 208

TEST NUMBER 990305



PEAK DATA: 35.42 G @ 76.32 MS; -27.19 G @ 79.28 MS

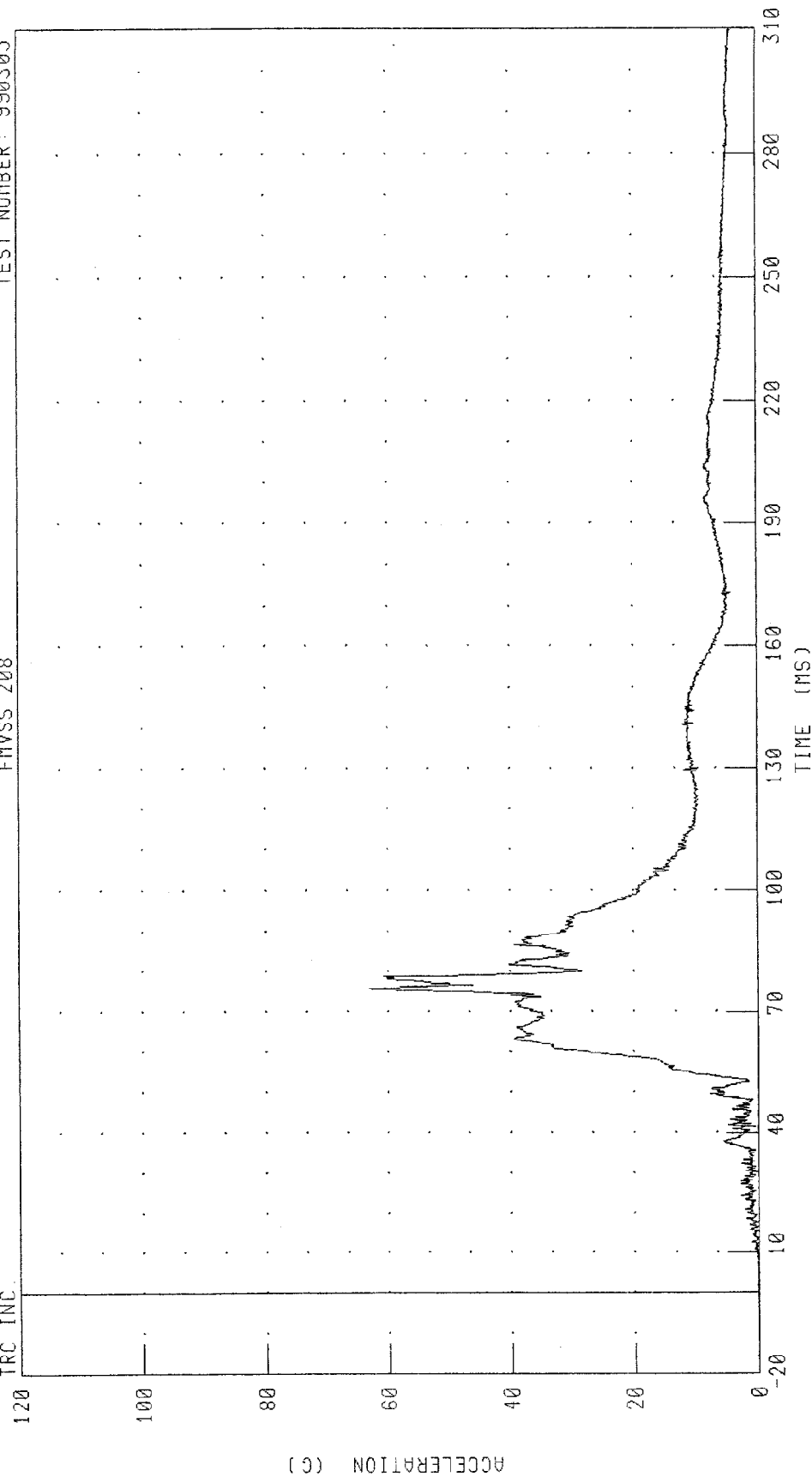
CHANNEL: HEDZG1 FILTER: CH. CLASS 1000

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER HEAD RESULTANT ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC.



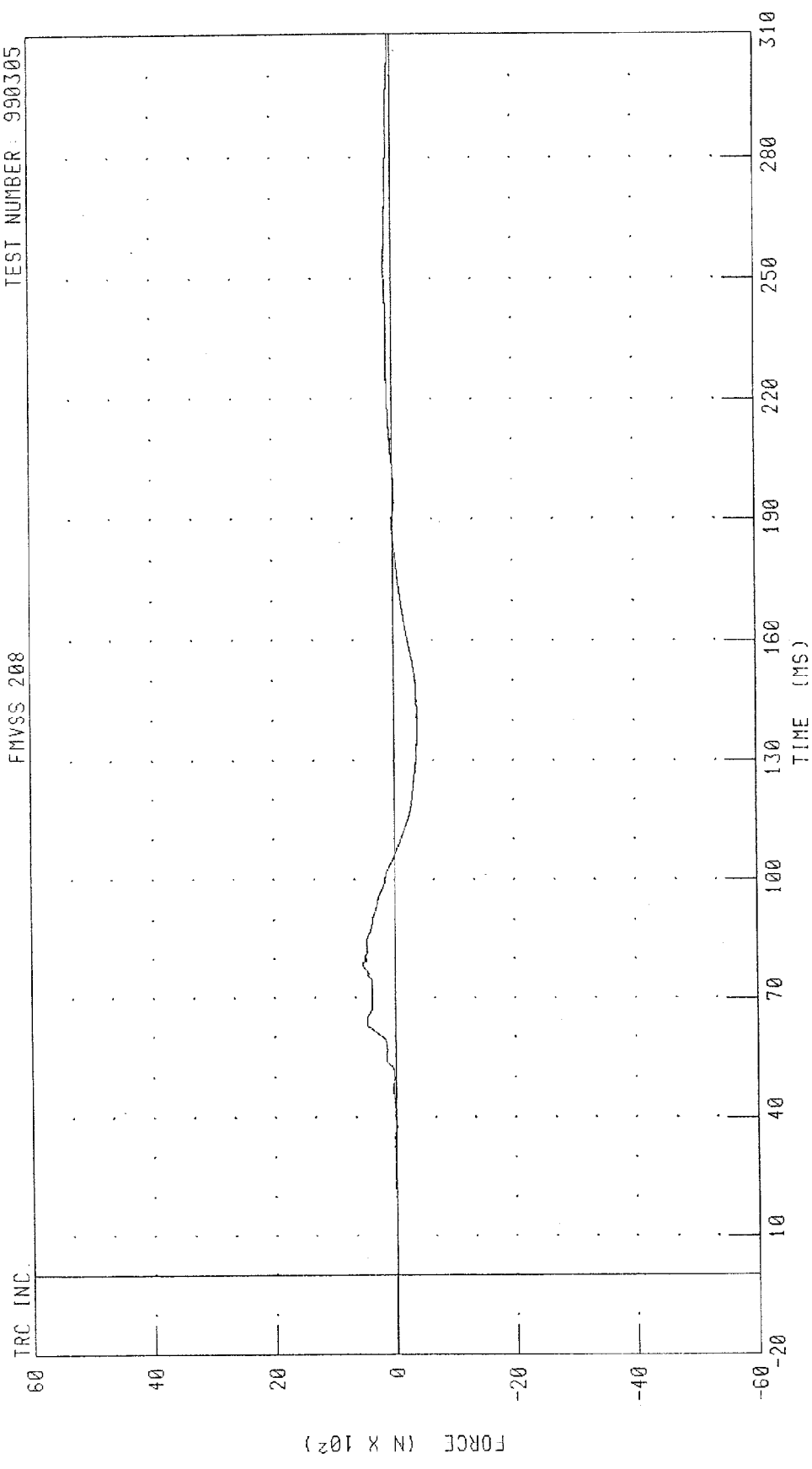
CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

PEAK DATA: 62.93 G @ 76.00 MS, 0.09 G @ -7.52 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER NECK X-AXIS SHEAR FORCE

TEST NUMBER: 990305

FMVSS 208



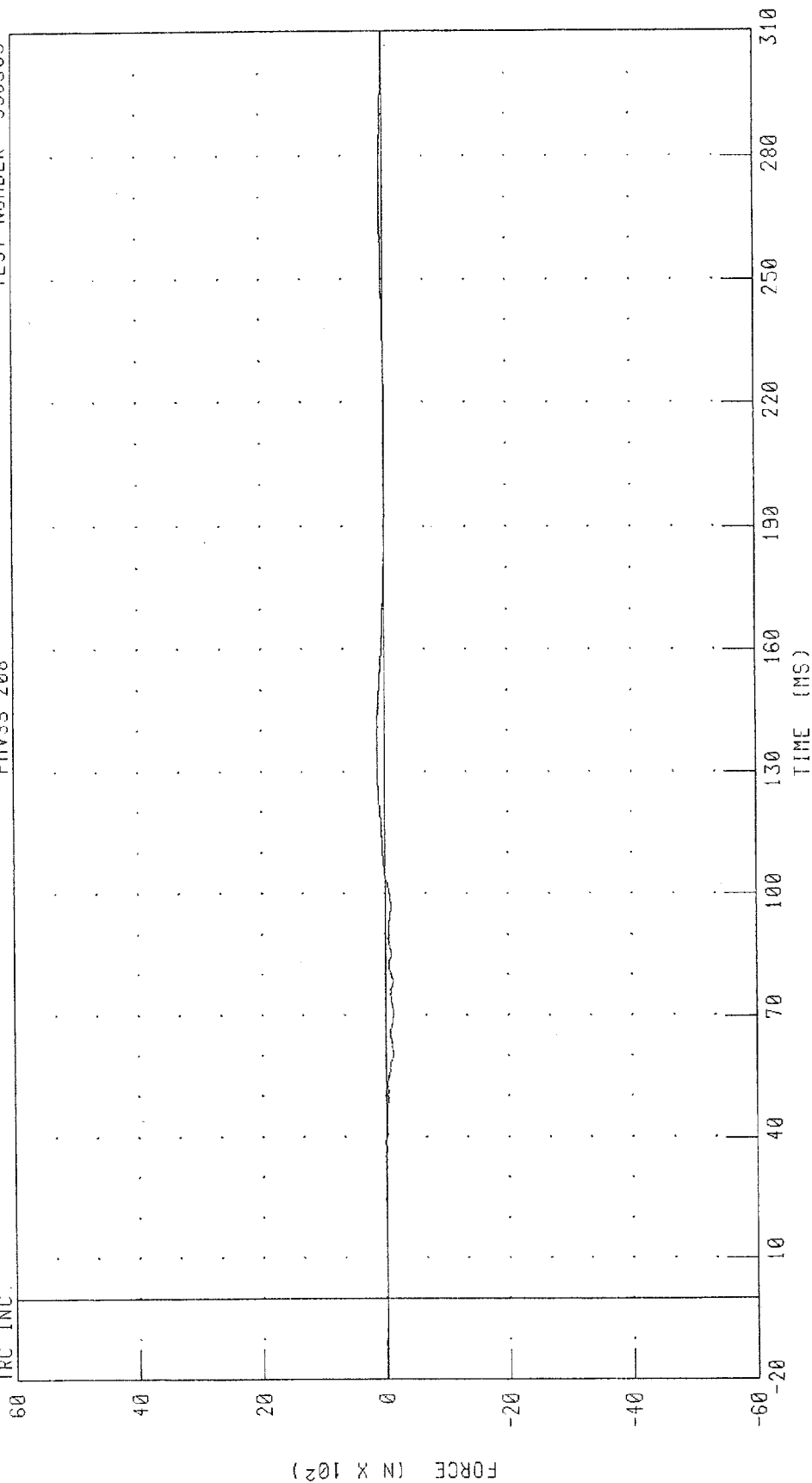
CHANNEL: NEKXF1 FILTER: CH. CLASS 1000
PEAK DATA: 540.60 N @ 78.96 MS, -410.12 N @ 140.80 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER NECK Y-AXIS SHEAR FORCE

TEST NUMBER: 990305

FMVSS 208

TRC INC.

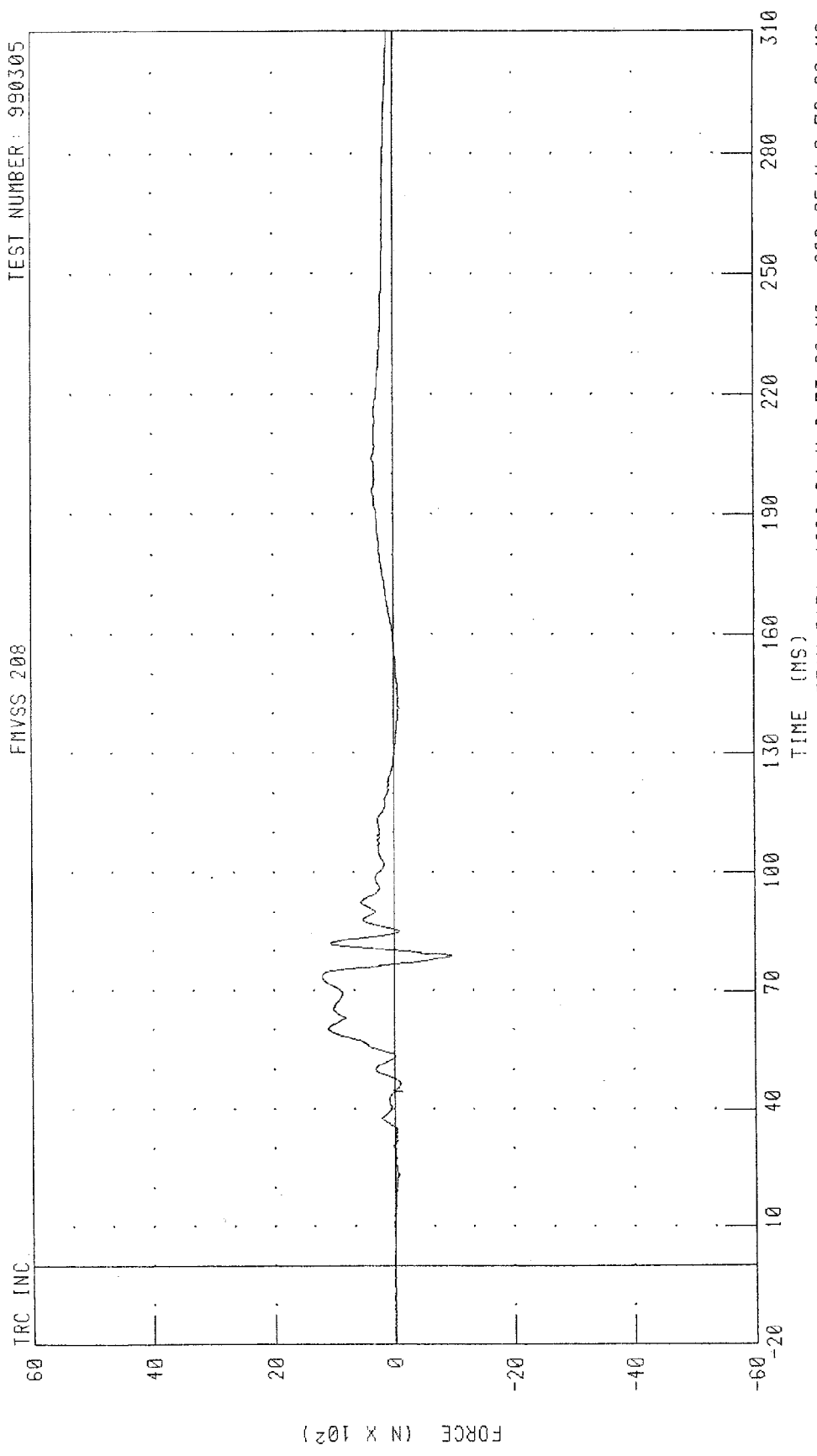


PEAK DATA: 116.42 N @ 134.48 MS; -131.37 N @ 70.80 MS

CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER NECK Z-AXIS AXIAL FORCE
FMVSS 208

TEST NUMBER: 990305



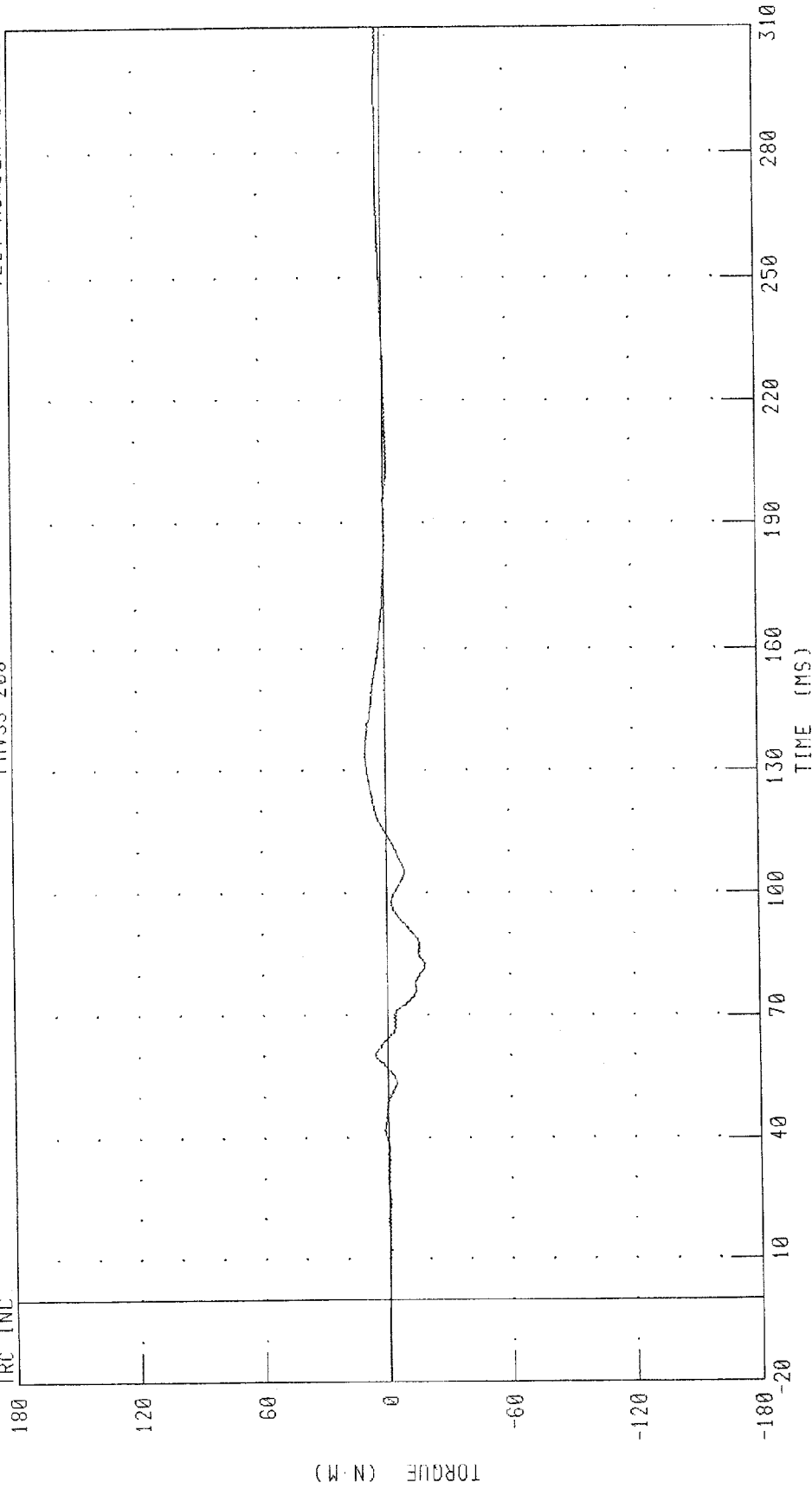
CHANNEL: NEKZF1 FILTER: CH. CLASS 1000
PEAK DATA: 1202.64 N @ 73.28 MS; -980.65 N @ 78.96 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER NECK MOMENT ABOUT X AXIS

TEST NUMBER: 990305

FMVSS 208

TRC INC



PEAK DATA: 9.74 N·M @ 133.28 MS; -18.80 N·M @ 82.80 MS

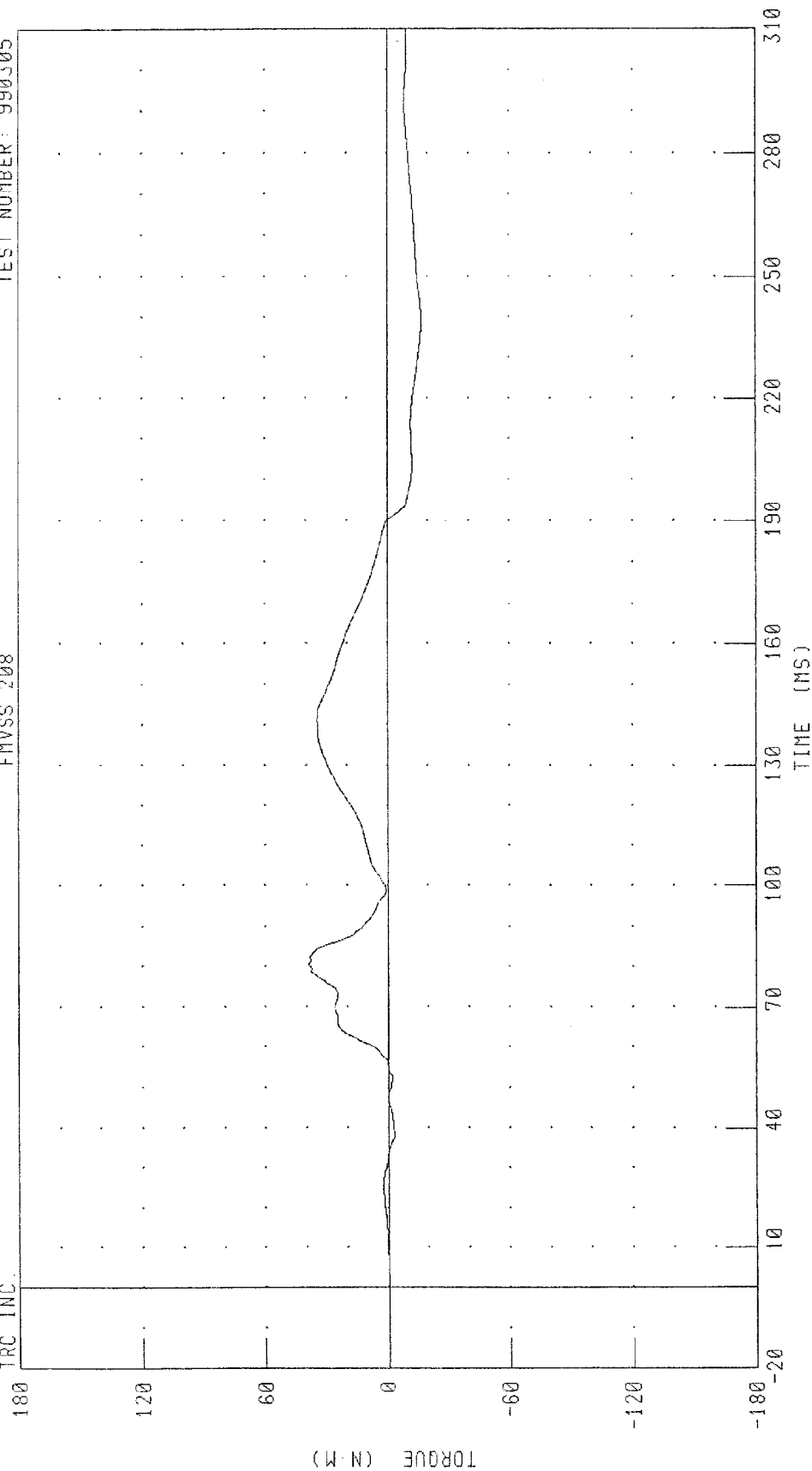
CHANNEL: NEKXN1 FILTIER: CH. CLASS 600

1999 TOYOTA IACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER NECK MOMENT ABOUT Y AXIS

TEST NUMBER: 990305

FMVSS 208

TRC INC.



PEAK DATA: 38.98 N-M @ 80.56 MS; -16.89 N-M @ 238.24 MS

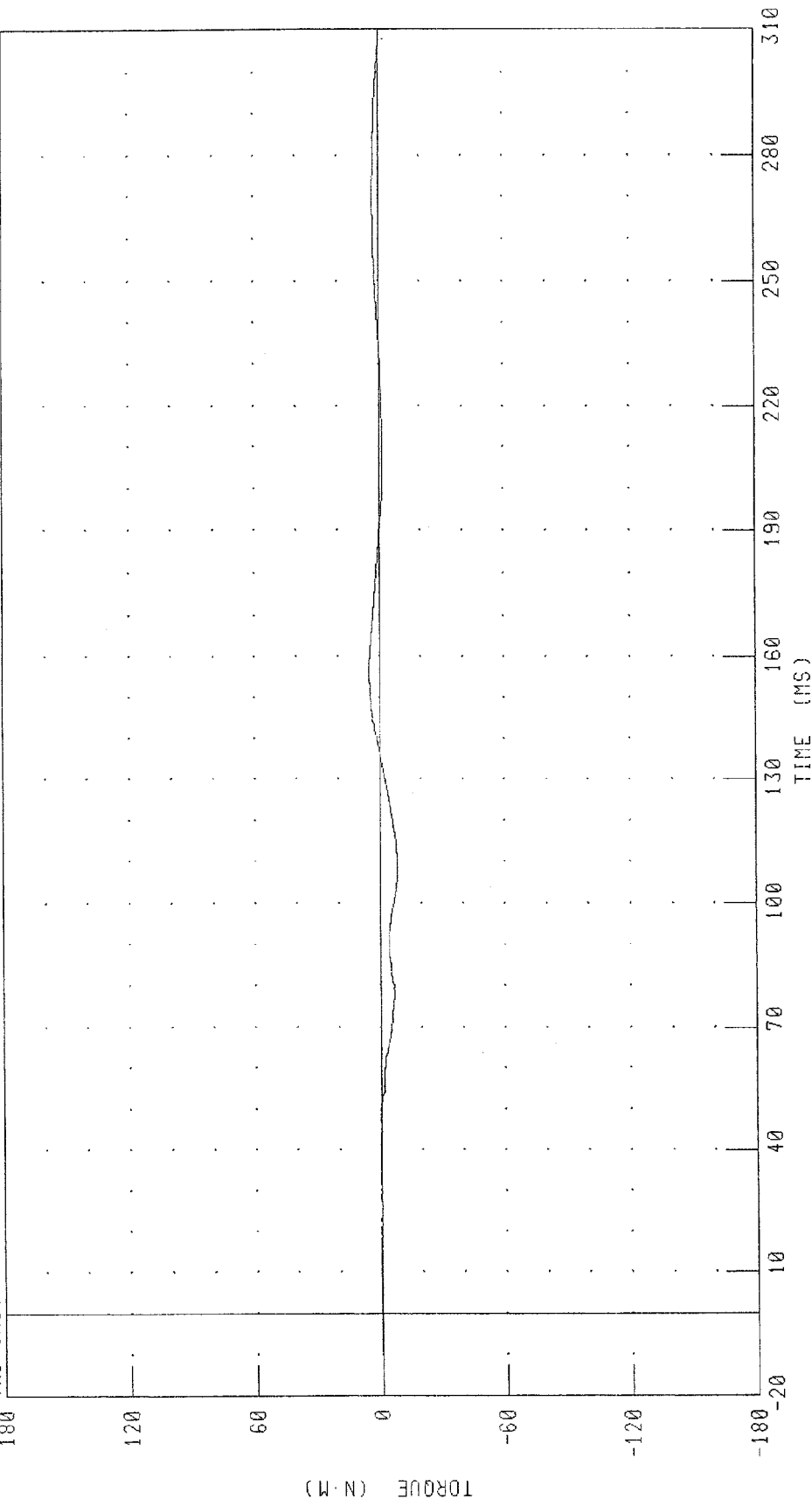
CHANNEL: NEKYM1 FILTER: CH. CLASS 600

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 990305

FMVSS 208

TRC INC.



PEAK DATA: 4.69 N.M @ 156.88 MS; -8.48 N.M @ 109.12 MS

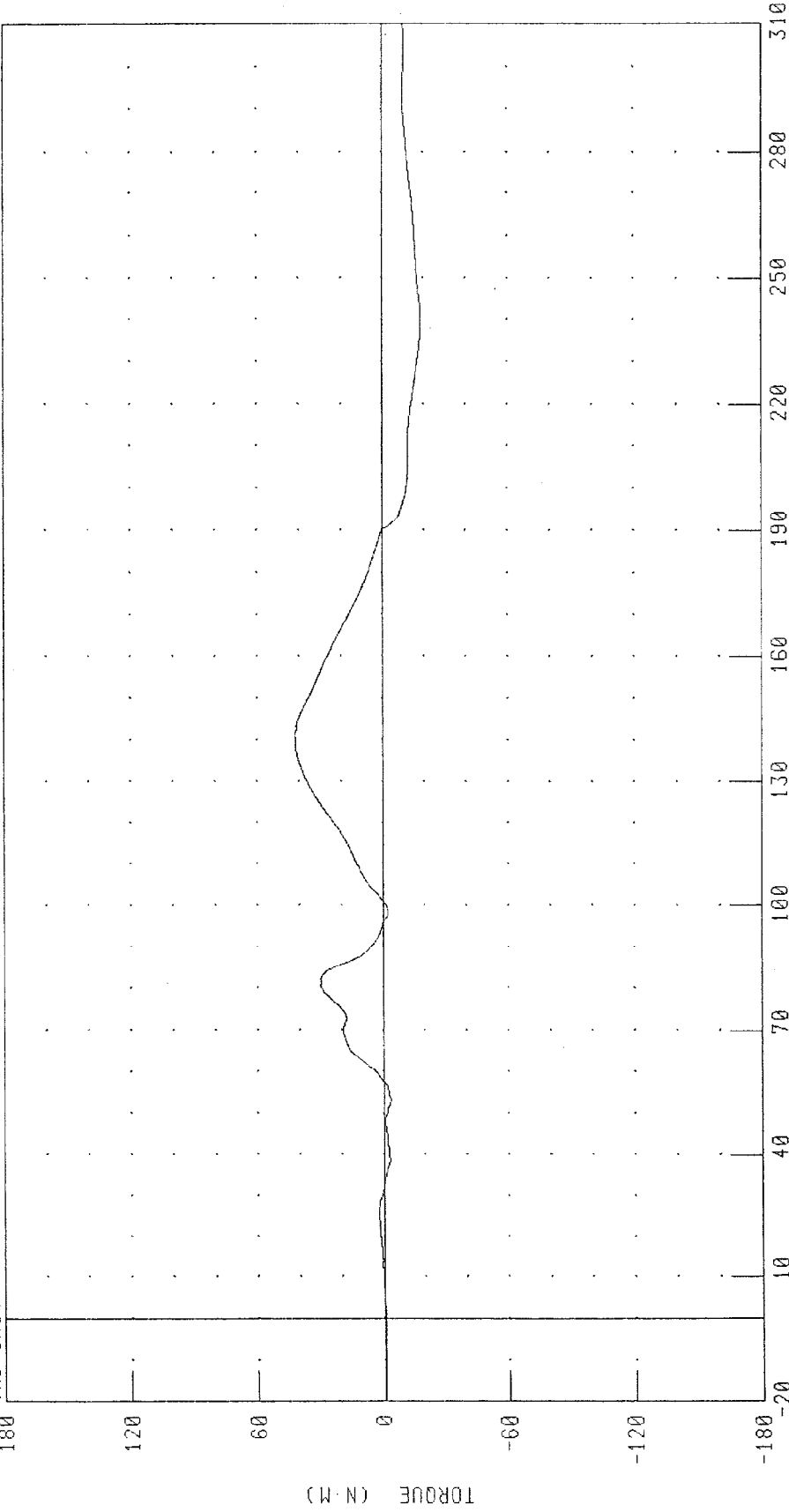
CHANNEL: NEKZM1 FILTER: CH. CLASS 600

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER NECK OCCIPITAL CONDYLE

TEST NUMBER: 990305

FMVSS 208

TRC INC.



PEAK DATA: 42.00 N·M @ 141.12 MS; -18.64 N·M @ 240.64 MS

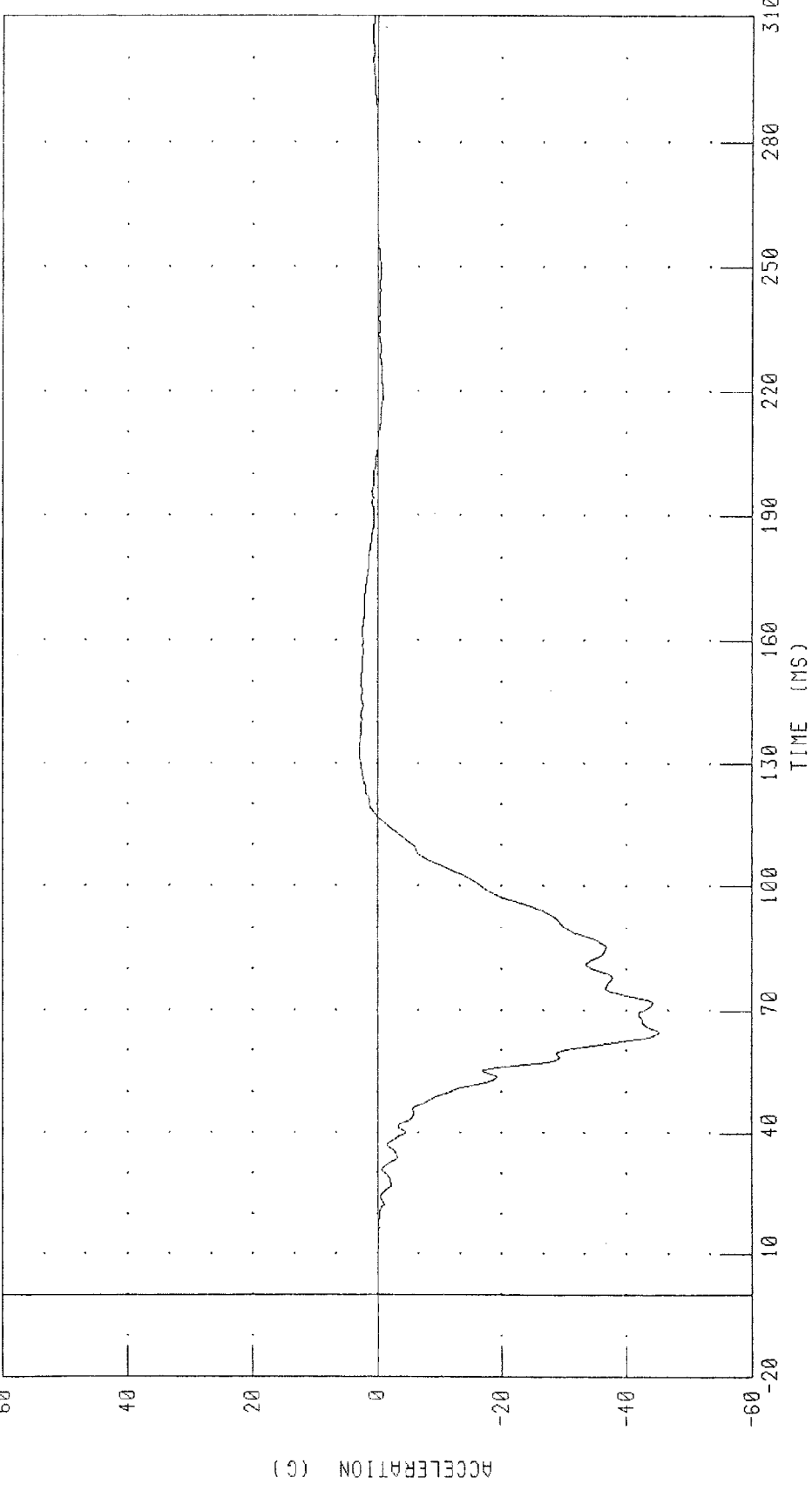
CHANNEL: NEK0N1 FILTER: CH CLASS 600

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER CHEST X-AXIS ACCELERATION

TEST NUMBER: 990305

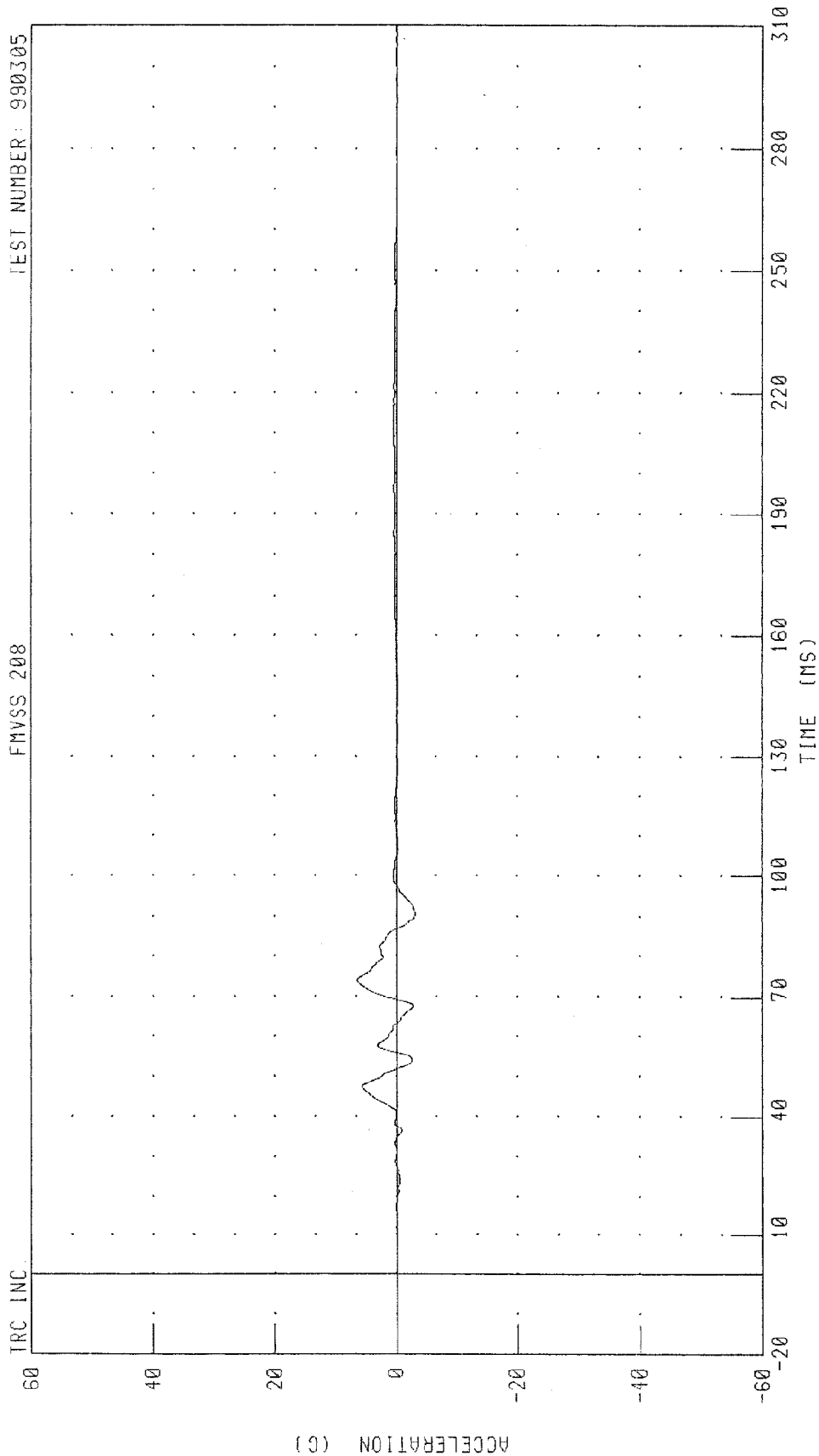
FMVSS 208

TRC INC.



CHANNEL: CSTXG1 FILTER: CH. CLASS 190 PEAK DATA: 3 03 G @ 134.24 MS; -45.14 G @ 64.64 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER CHEST Y-AXIS ACCELERATION



CHANNEL: CSTYG1 FILTER: CH. CLASS 180

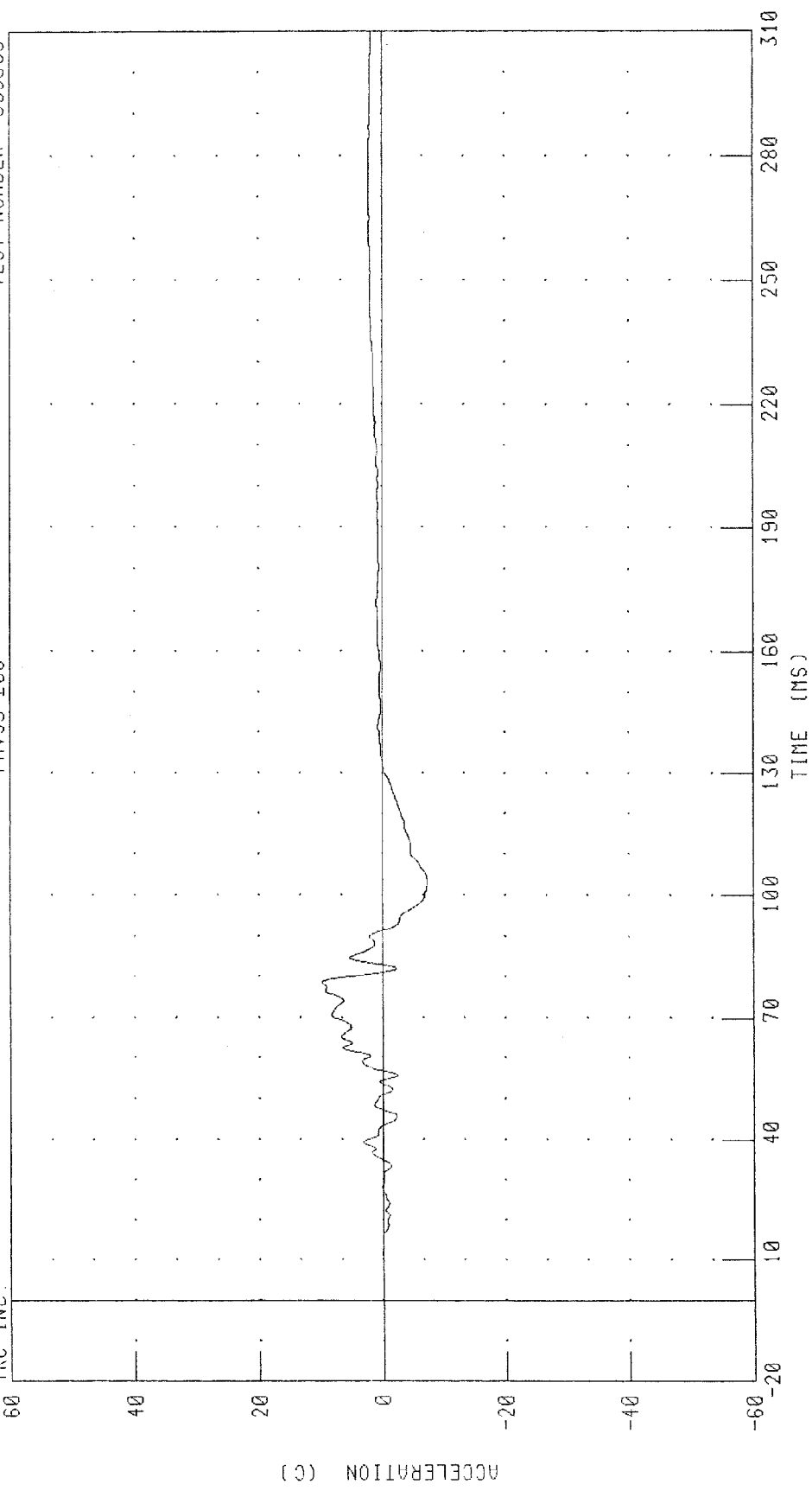
PEAK DATA: 6.49 G @ 74.08 MS; -3.11 G @ 90.56 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER CHEST Z-AXIS ACCELERATION

TEST NUMBER 990305

FMVSS 208

TRC INC.



CHANNEL : CSTZG1 FILTER : CH. CLASS 180

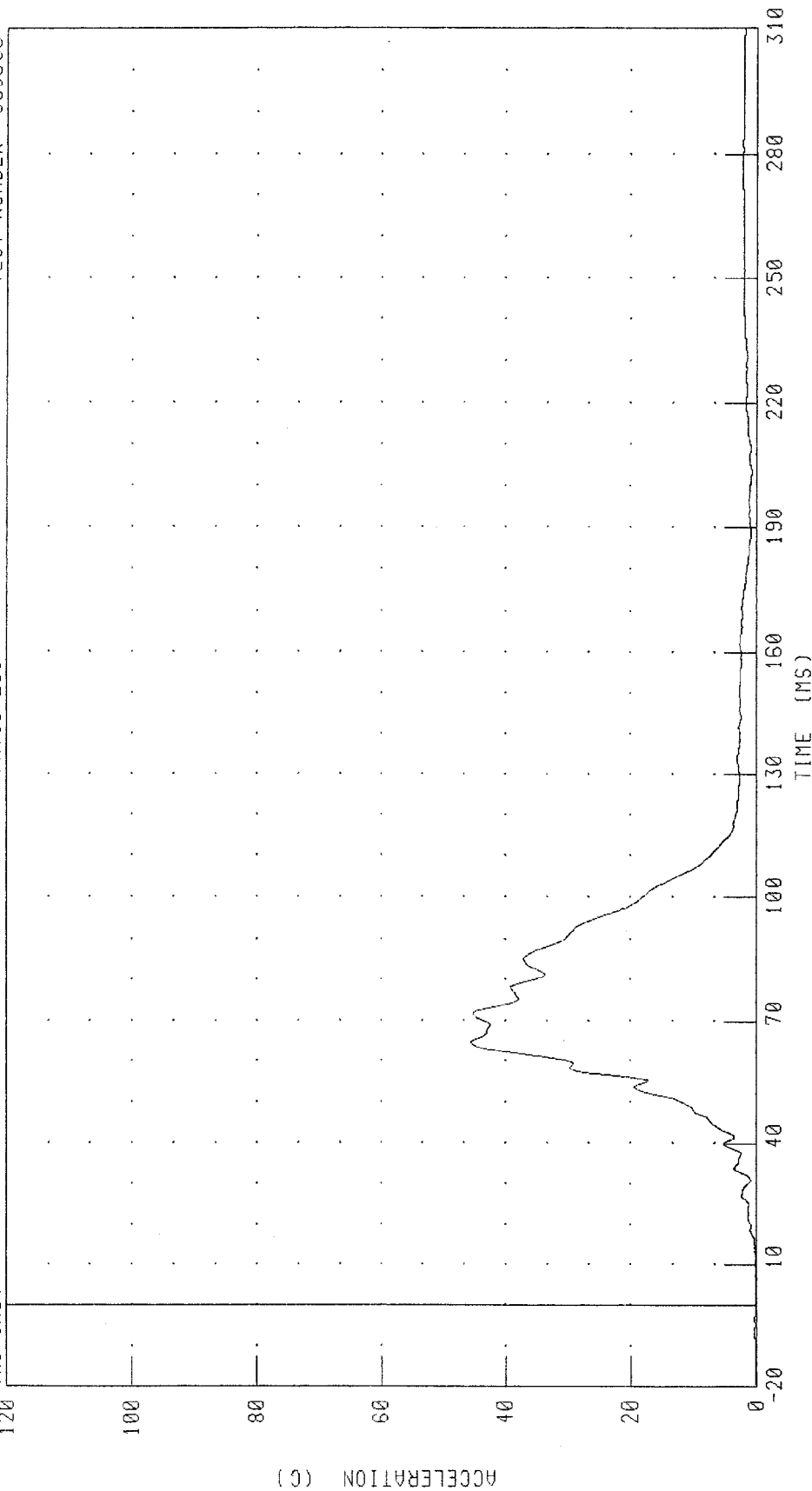
PEAK DATA: 9.81 G @ 78.64 MS; -7.42 G @ 103.04 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER CHEST RESULTANT ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC.



CHANNEL: CSTRG1 FILTER: CH. CLASS 180

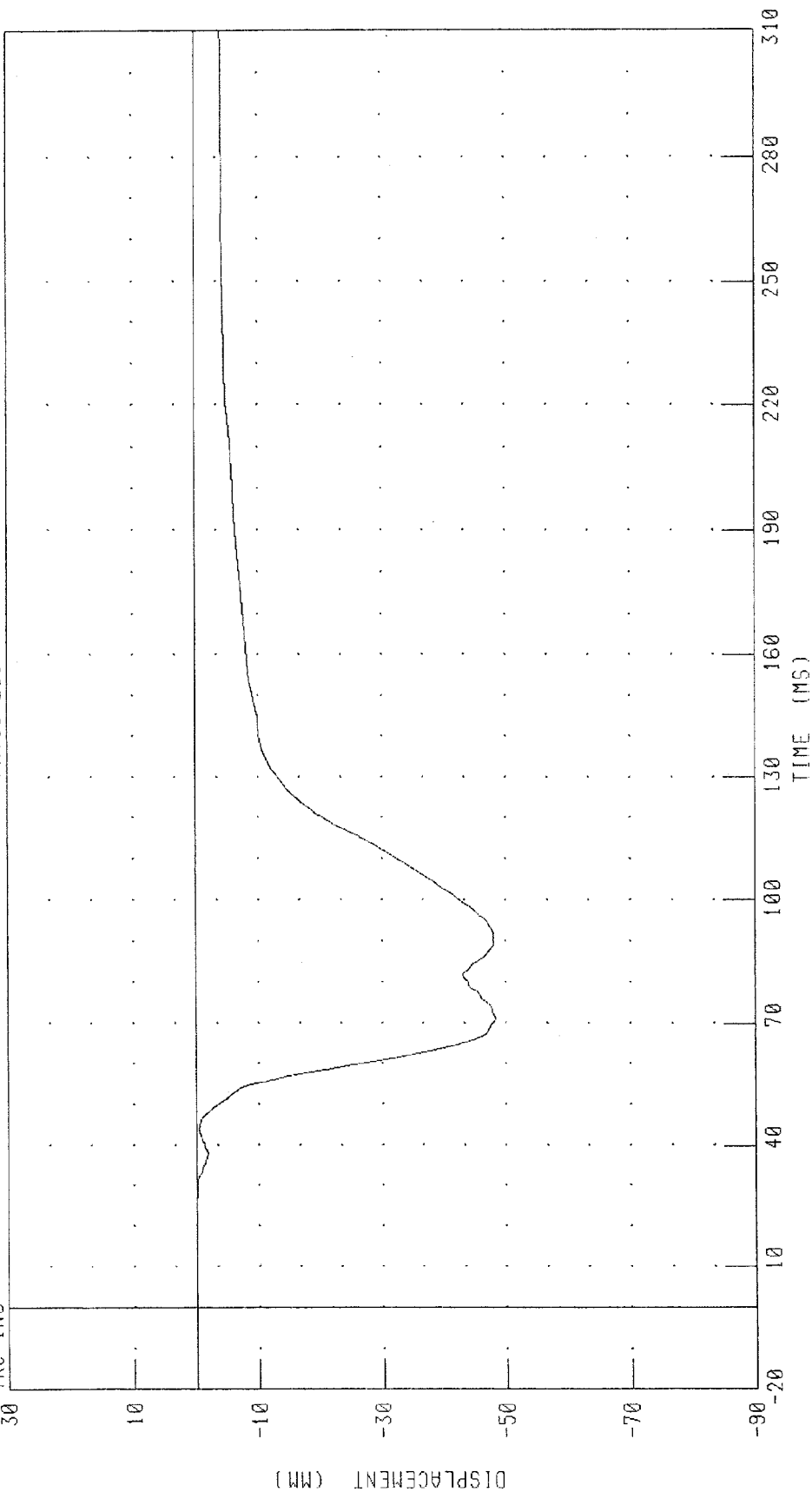
PEAK DATA: 45.56 G @ 64.72 MS; 0.01 G @ -20.00 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER CHEST DEFLECTION

TEST NUMBER: 990305

ENVSS 208

TRC INC



CHANNEL: CSTXD1 FILTER: CH. CLASS 180

PEAK DATA: 0.05 MM @ 24.48 MS; -48.35 MM @ 71.20 MS

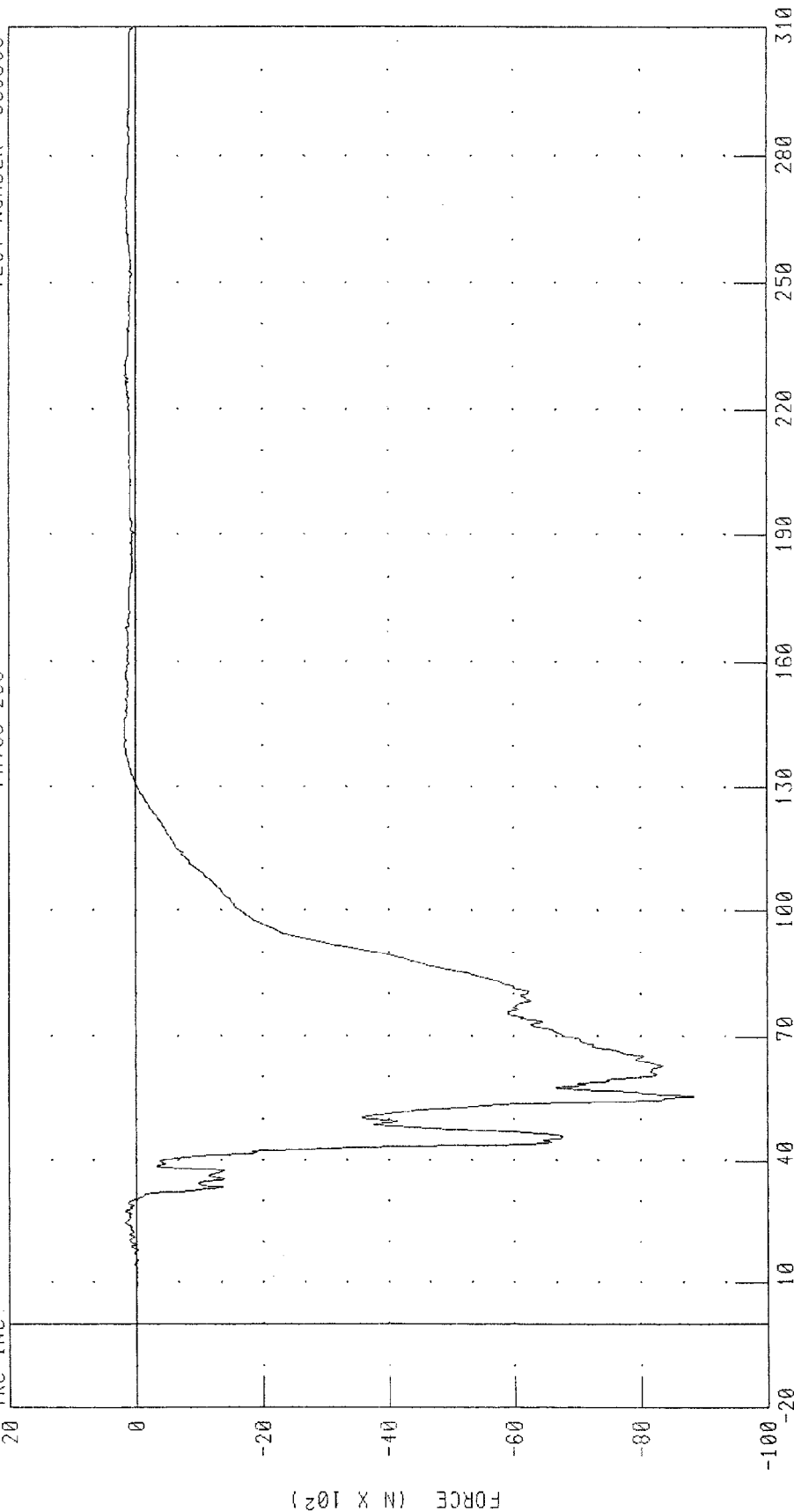
1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER LEFT FEMUR FORCE

TEST NUMBER: 990305

FMVSS 208

TRC INC.

20



TIME (MS)

PEAK DATA: 179.86 N @ 143.60 MS; -8839.66 N @ 55.60 MS

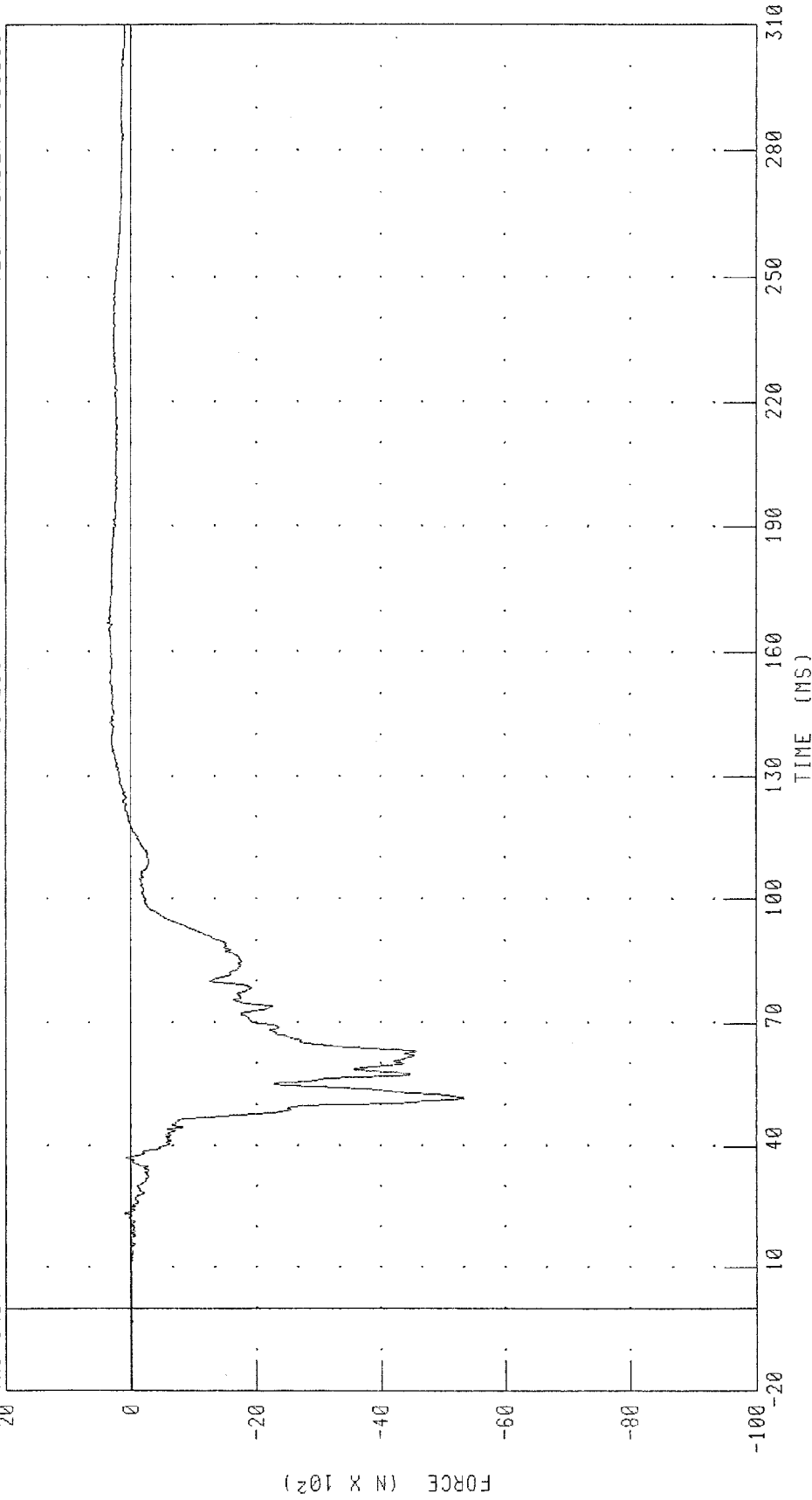
CHANNEL: LFMF1 FILTER: CH. CLASS 600

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DRIVER RIGHT FEMUR FORCE

TEST NUMBER: 990305

FMVSS 208

TRC INC.



CHANNEL: RFMF1 FILTER: CH. CLASS 600

PEAK DATA: 373.14 N @ 166.96 MS; -5346.03 N @ 51.68 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC.

90

60

30

ACCELERATION (G)

0

-30

-60

-90

-20

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

CHANNEL: HEDXC2 FILTER: CH. CLASS 1000

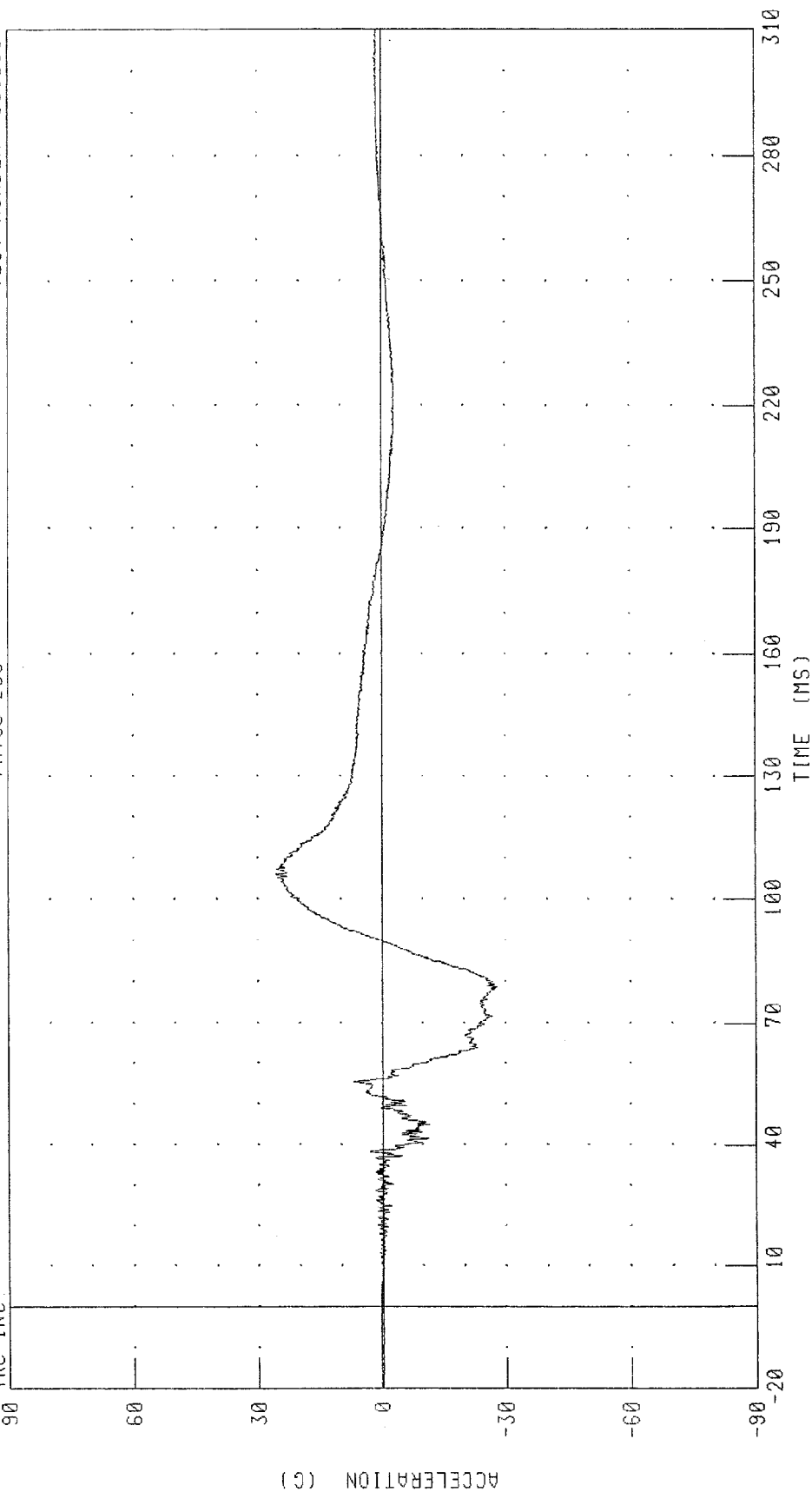
PEAK DATA: 10.69 G @ 111.04 MS, -34.65 G @ 76.72 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC.



CHANNEL: HEDYG2 FILTER: CH. CLASS 1000

PEAK DATA: 25.83 G @ 106.08 MS, -28.17 G @ 78.72 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC.

90

60

30

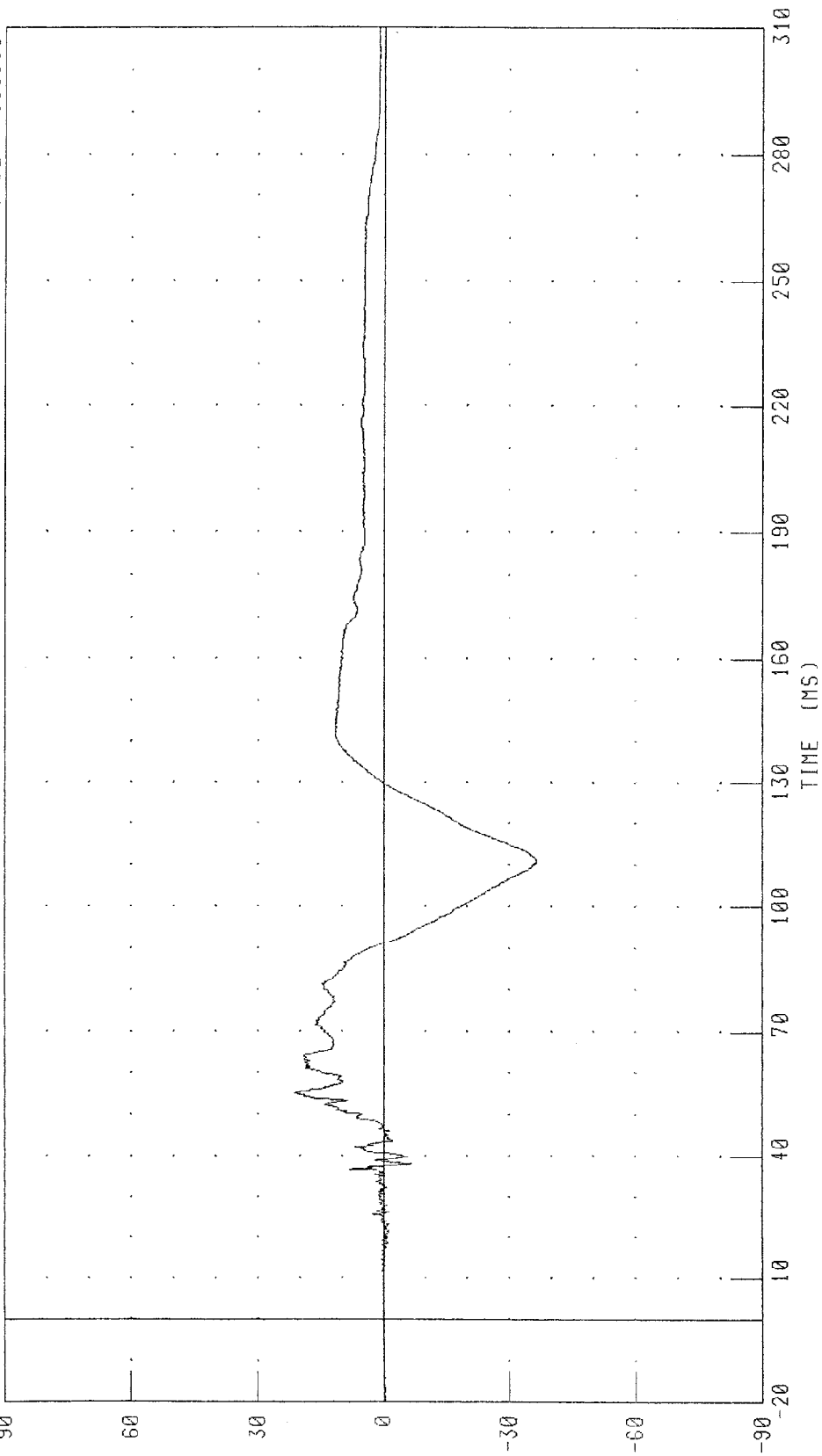
0

-30

-60

-90

ACCELERATION (G)



CHANNEL: HEDZG2 FILTER: CH CLASS 1000

PEAK DATA: 21.47 G @ 55.12 MS; -36.33 G @ 110.64 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC.

120

100

80

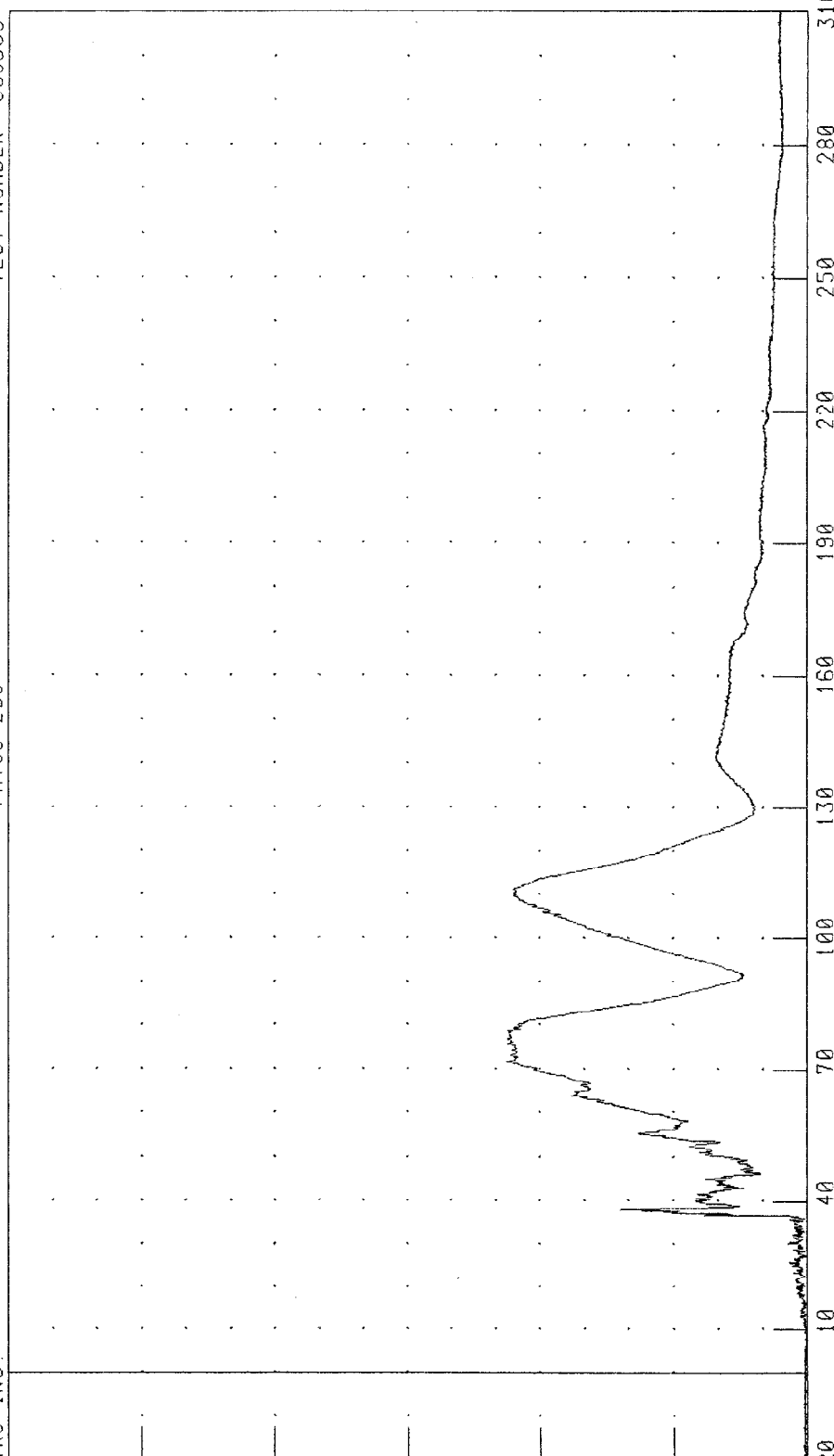
60

40

20

0

ACCELERATION (G)



TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

CHANNEL: HEDRC2 FILTER: CH. CLASS 1000

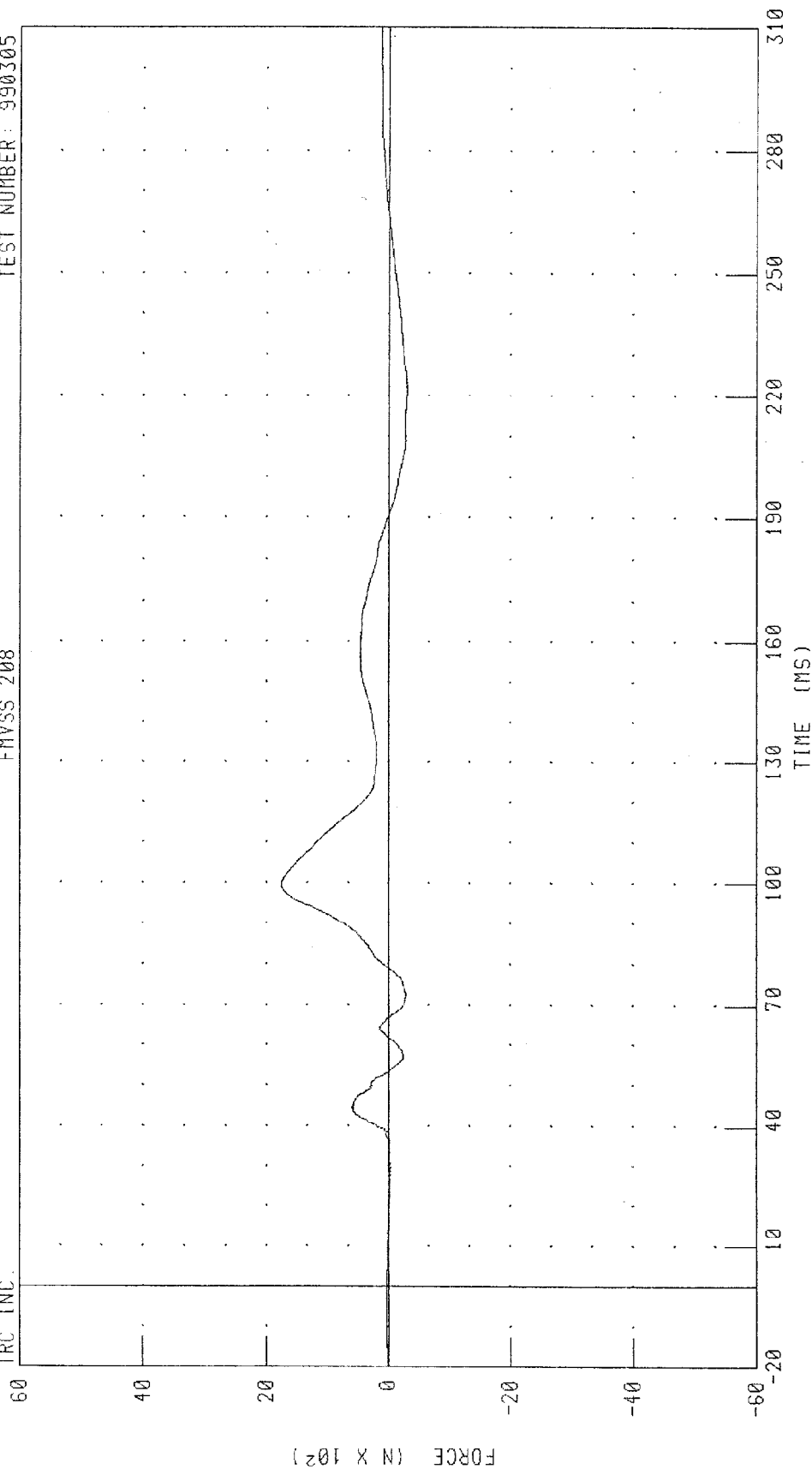
PEAK DATA: 44.99 G @ 71.68 MS, 0.13 G @ 9.60 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK X-AXIS SHEAR FORCE

TEST NUMBER: 990305

FMVSS 208

TRC INC.



PEAK DATA: 1760.67 N @ 99.76 MS, -306.86 N @ 220.24 MS

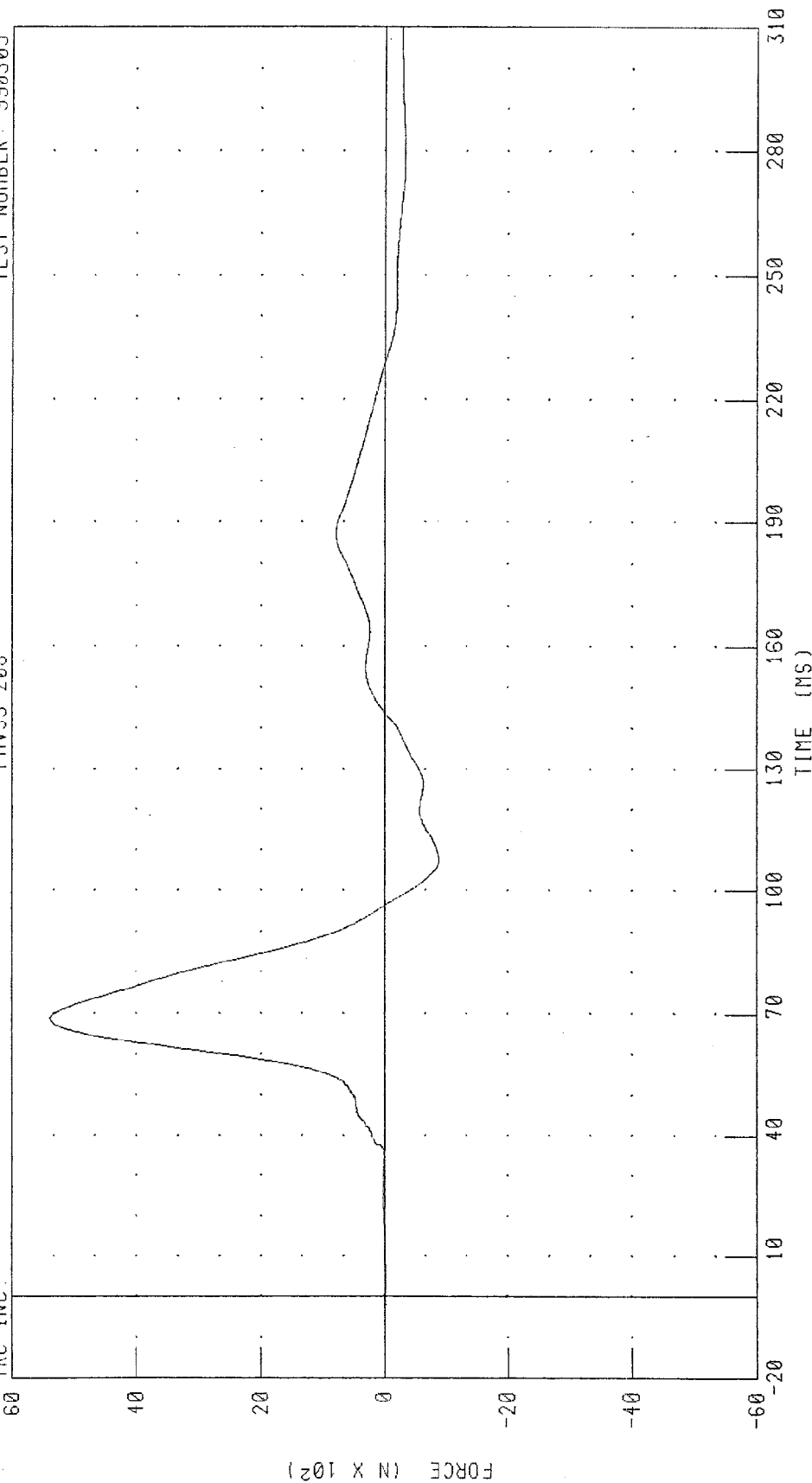
CHANNEL: NEKXF2 FILTER: CH. CLASS 1000

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK Y-AXIS SHEAR FORCE

TEST NUMBER: 990305

FMVSS 208

TRC INC.



CHANNEL: NEKYF2 FILTER: CH. CLASS 1000

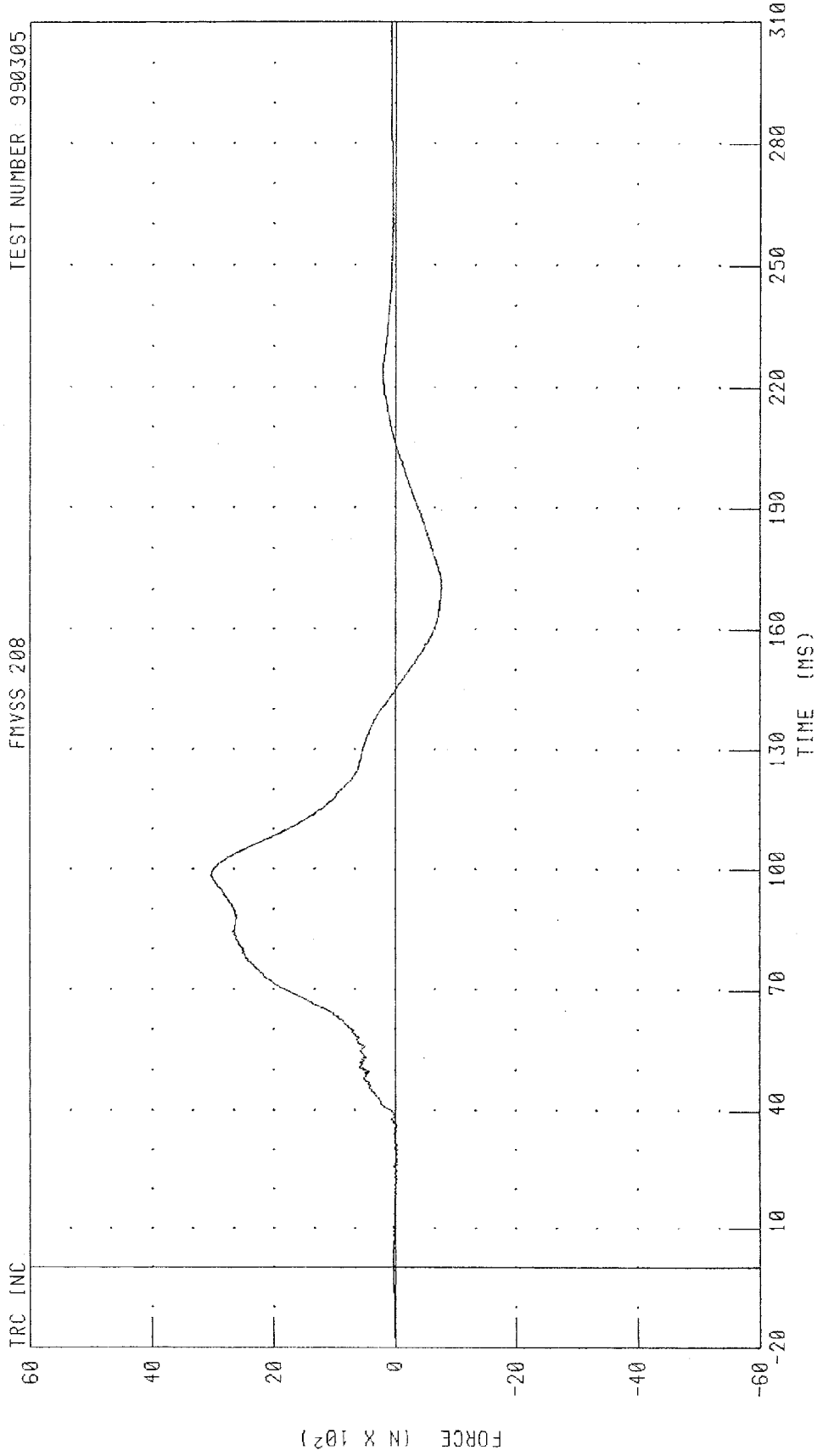
PEAK DATA: 5389.39 N @ 68.56 MS; -886.87 N @ 107.28 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE

TEST NUMBER: 990305

FMVSS 208

TRC INC



CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

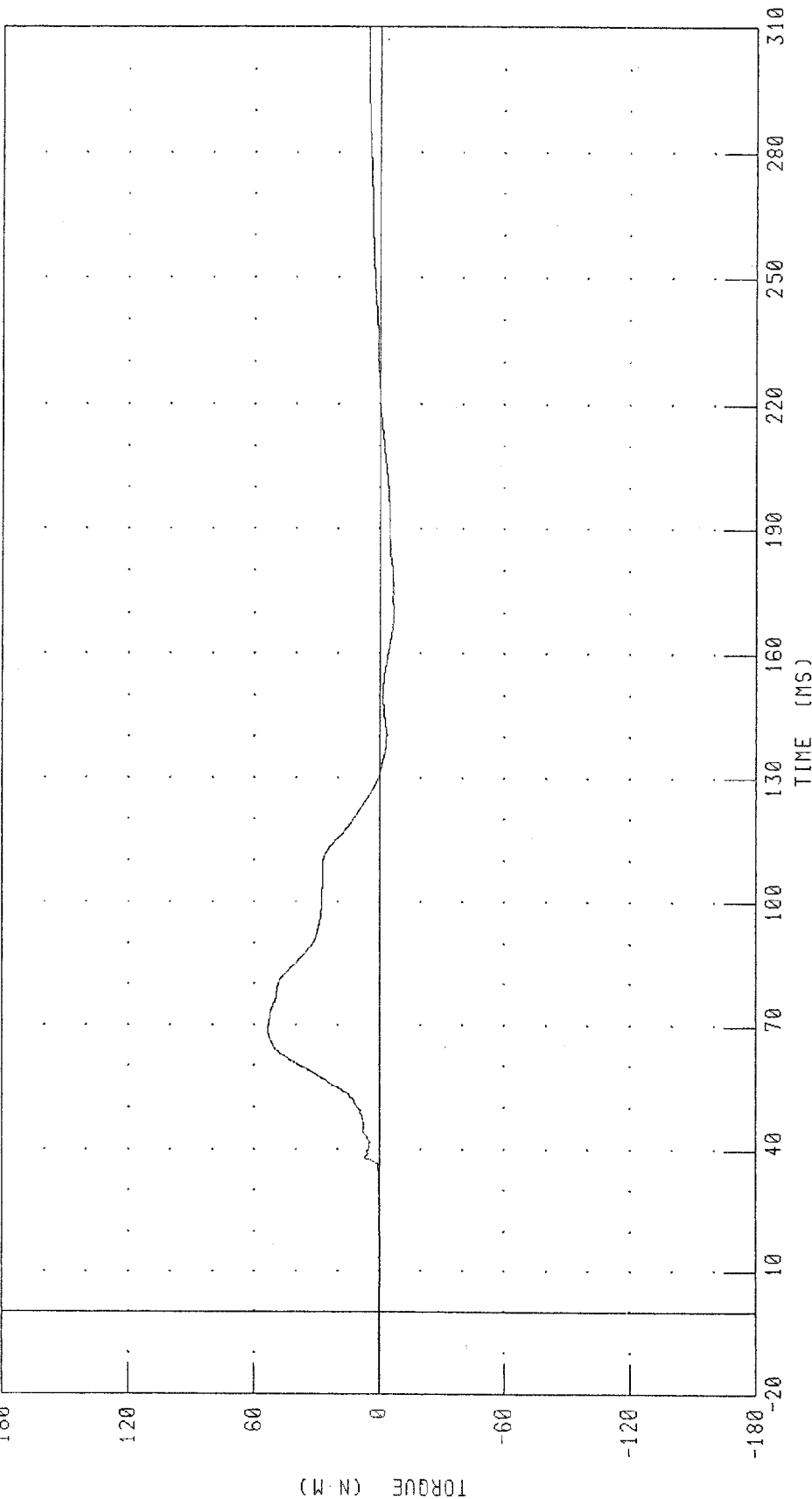
PEAK DATA: 3037.59 N @ 98.32 MS; -765.95 N @ 170.32 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS

TEST NUMBER: 990305

FMVSS 208

TRC INC.



CHANNEL: NEKX12 FILTER: CH. CLASS 600

PEAK DATA: 53.70 N-M @ 69.36 MS; -6.78 N-M @ 170.24 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS

TEST NUMBER: 990305

FMVSS 208

TRC INC.

180

120

60

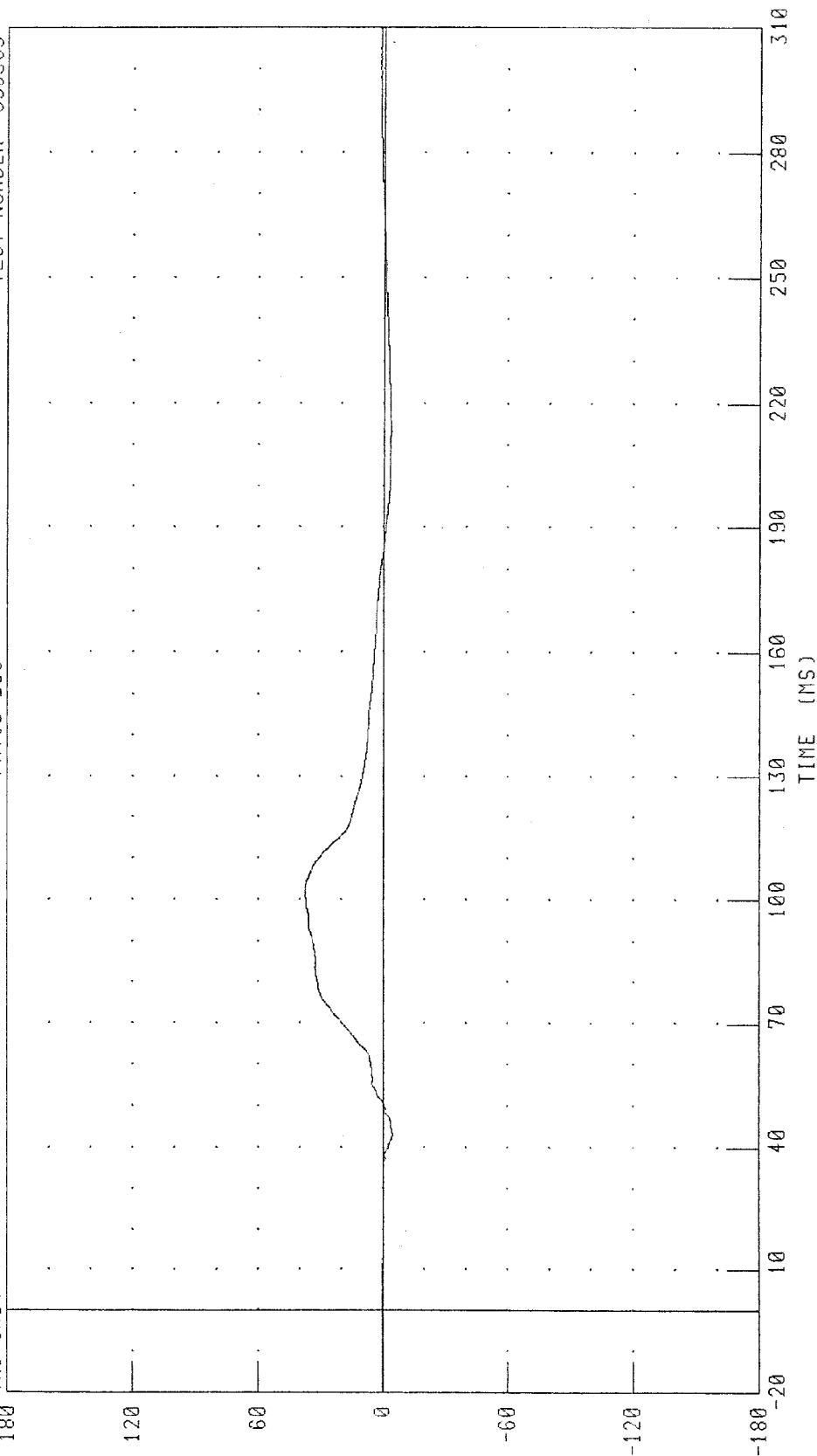
0

-60

-120

-180

TORQUE (N·M)



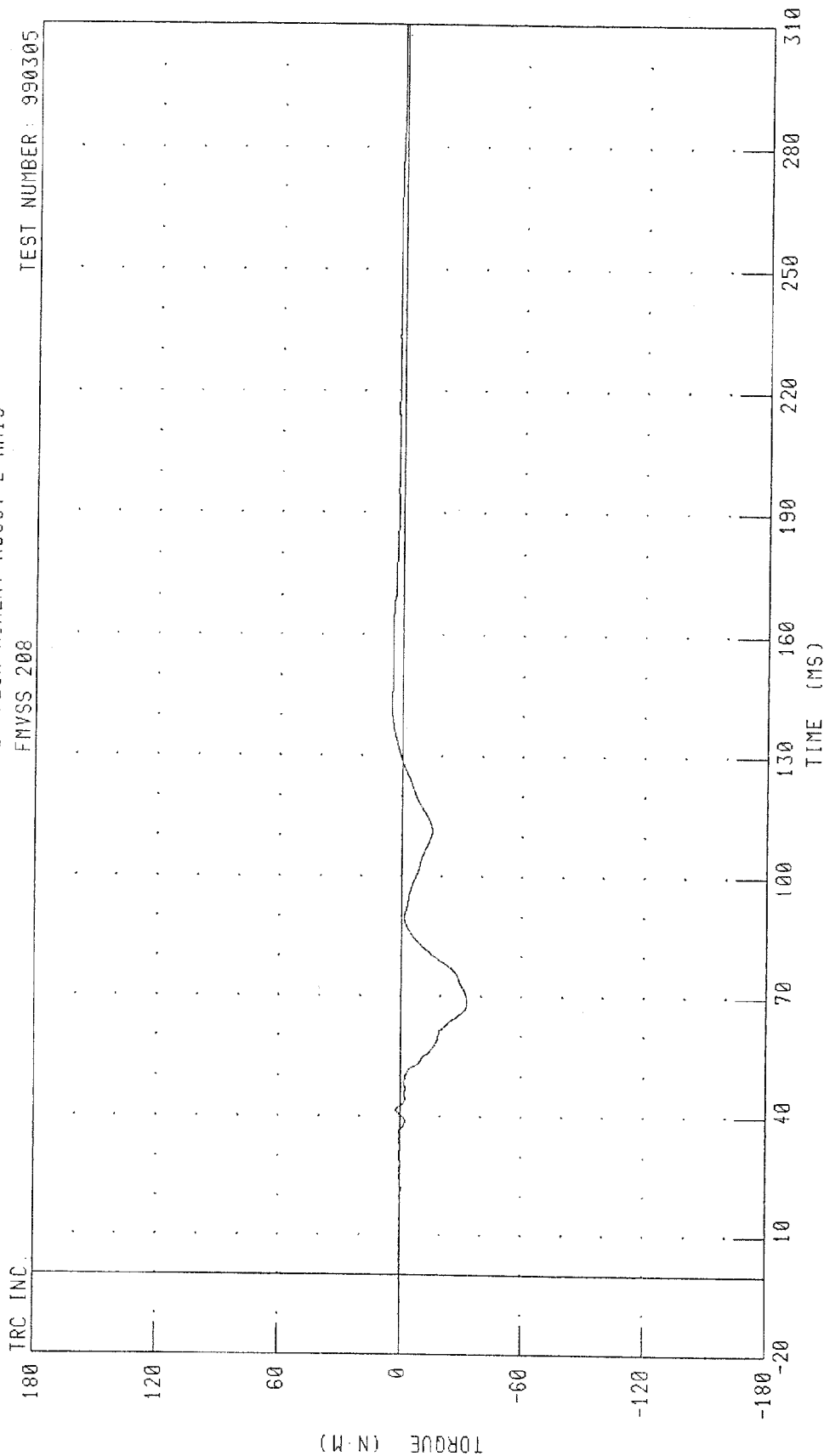
TIME (MS)

PEAK DATA: 37.60 N·M @ 101.84 MS; -4.62 N·M @ 43.12 MS

CHANNEL: NEKYM2 FILTER: CH. CLASS 600

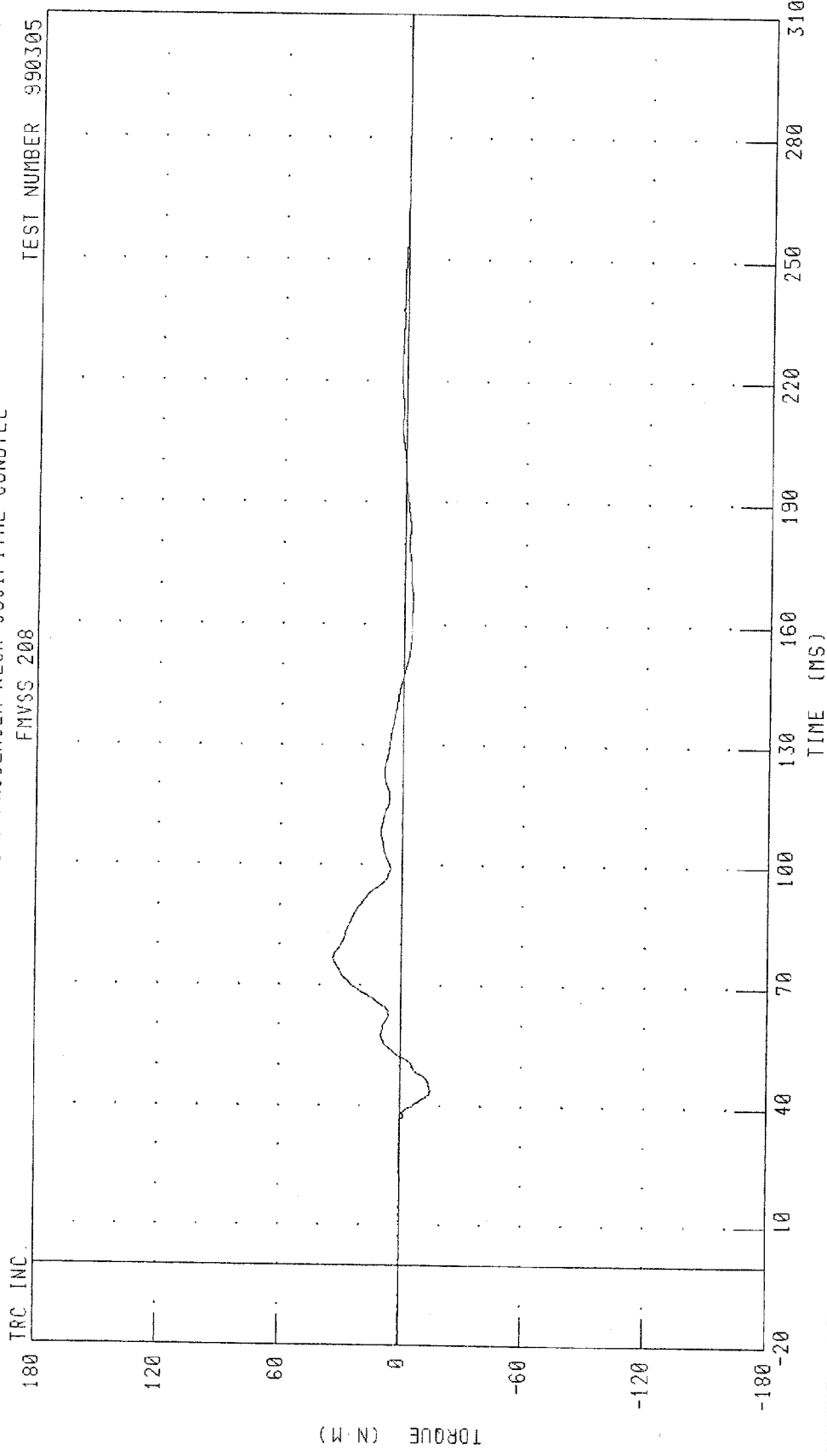
1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Z AXIS

TRC INC.
FNVSS 208
TEST NUMBER: 990305



CHANNEL: NEKZM2 FILTER: CH. CLASS 600
PEAK DATA: 5.33 N-M @ 142.08 MS; -32.99 N-M @ 68.72 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK OCCIPITAL CONDYLE

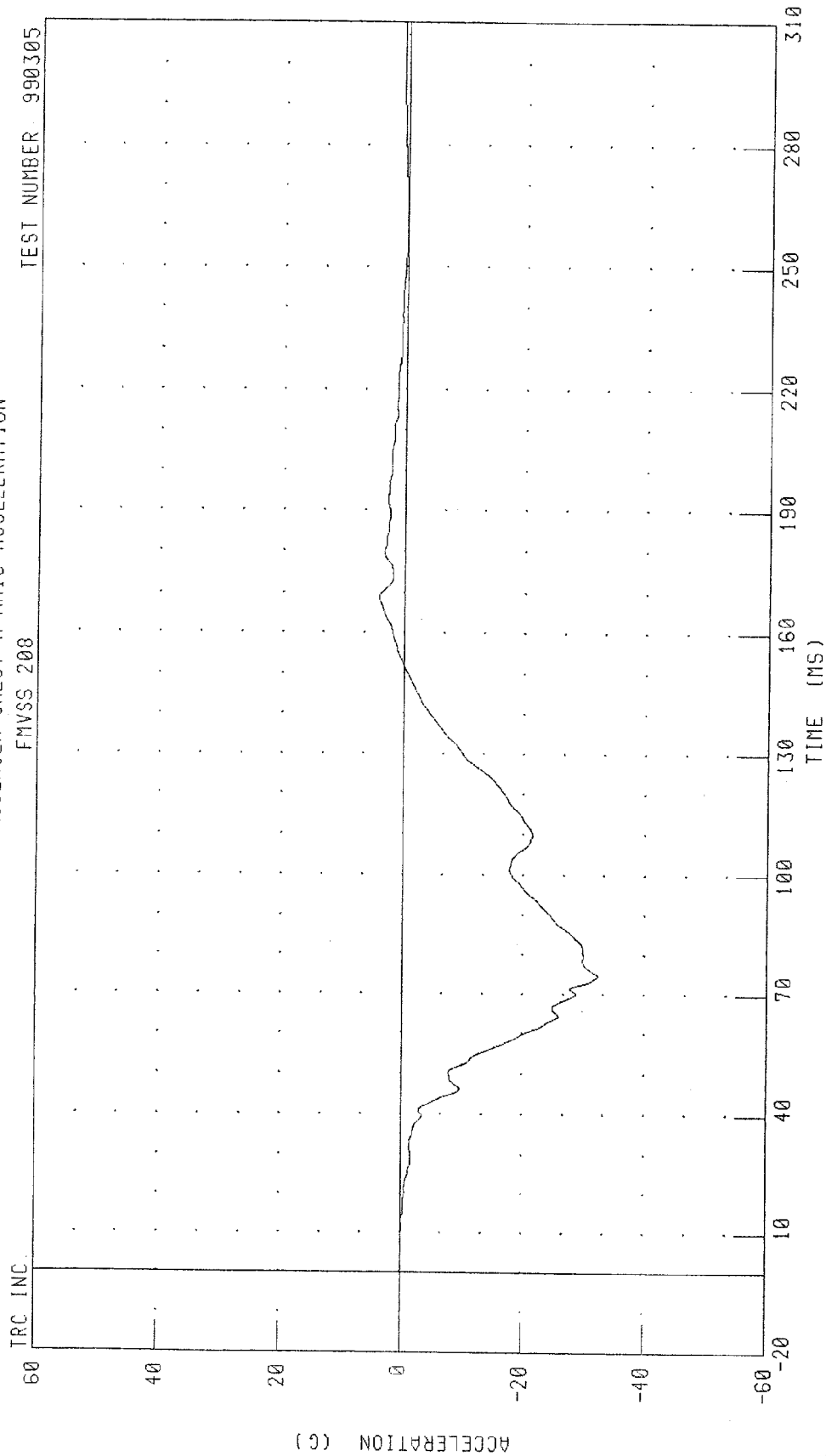


CHANNEL: NEKOM2 FILTER: CH. CLASS 600

PEAK DATA: 33.65 N-M @ 76.80 MS; -14.83 N-M @ 43.84 MS

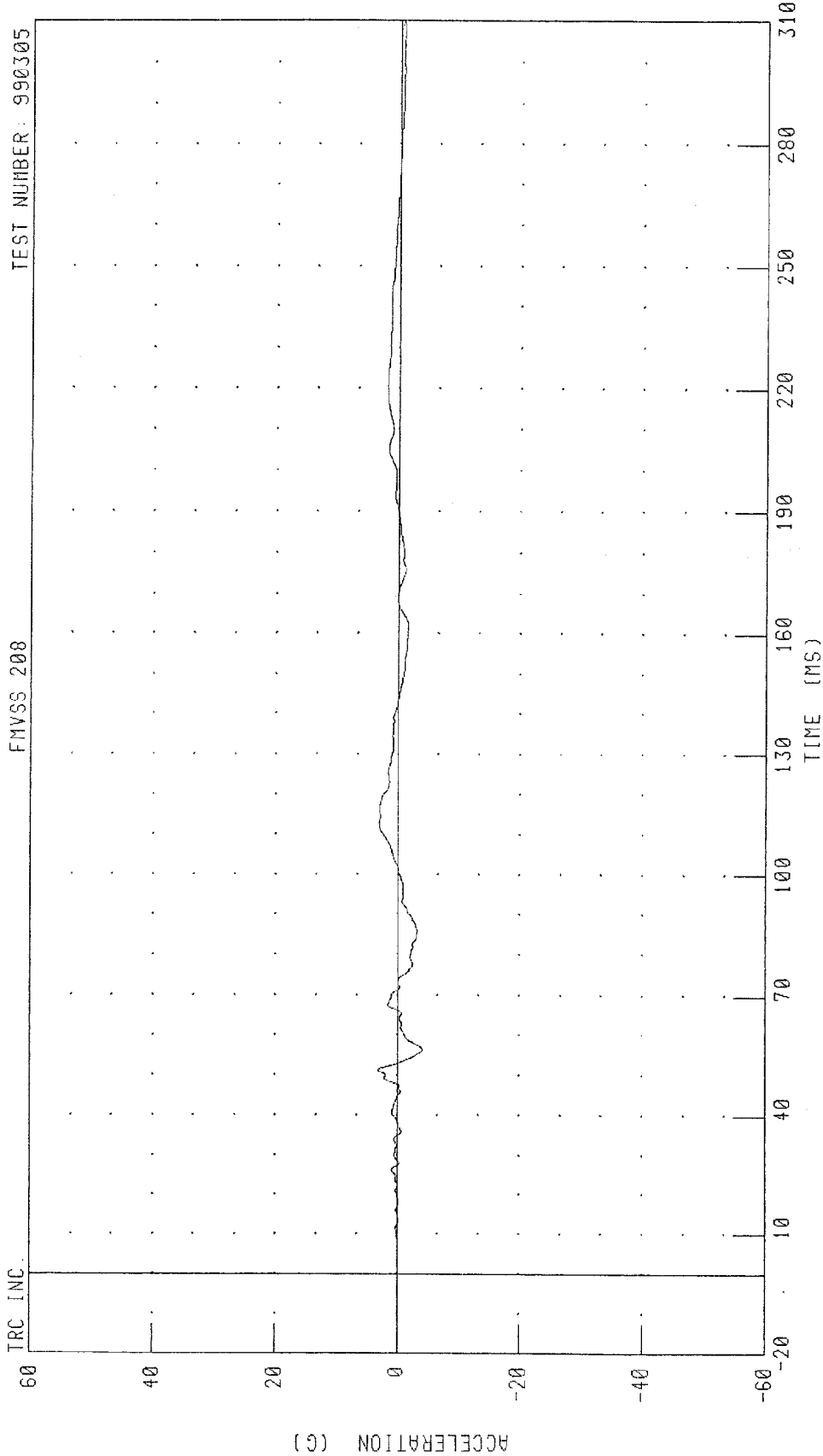
1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

TRC INC. FMVSS 208 TEST NUMBER 990305



CHANNEL: CSTXC2 FILTER: CH. CLASS 180 PEAK DATA: 4.17 G @ 168.96 MS, -32.47 G @ 74.72 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION



CHANNEL: CSTYG2 FILTER: CH. CLASS 180

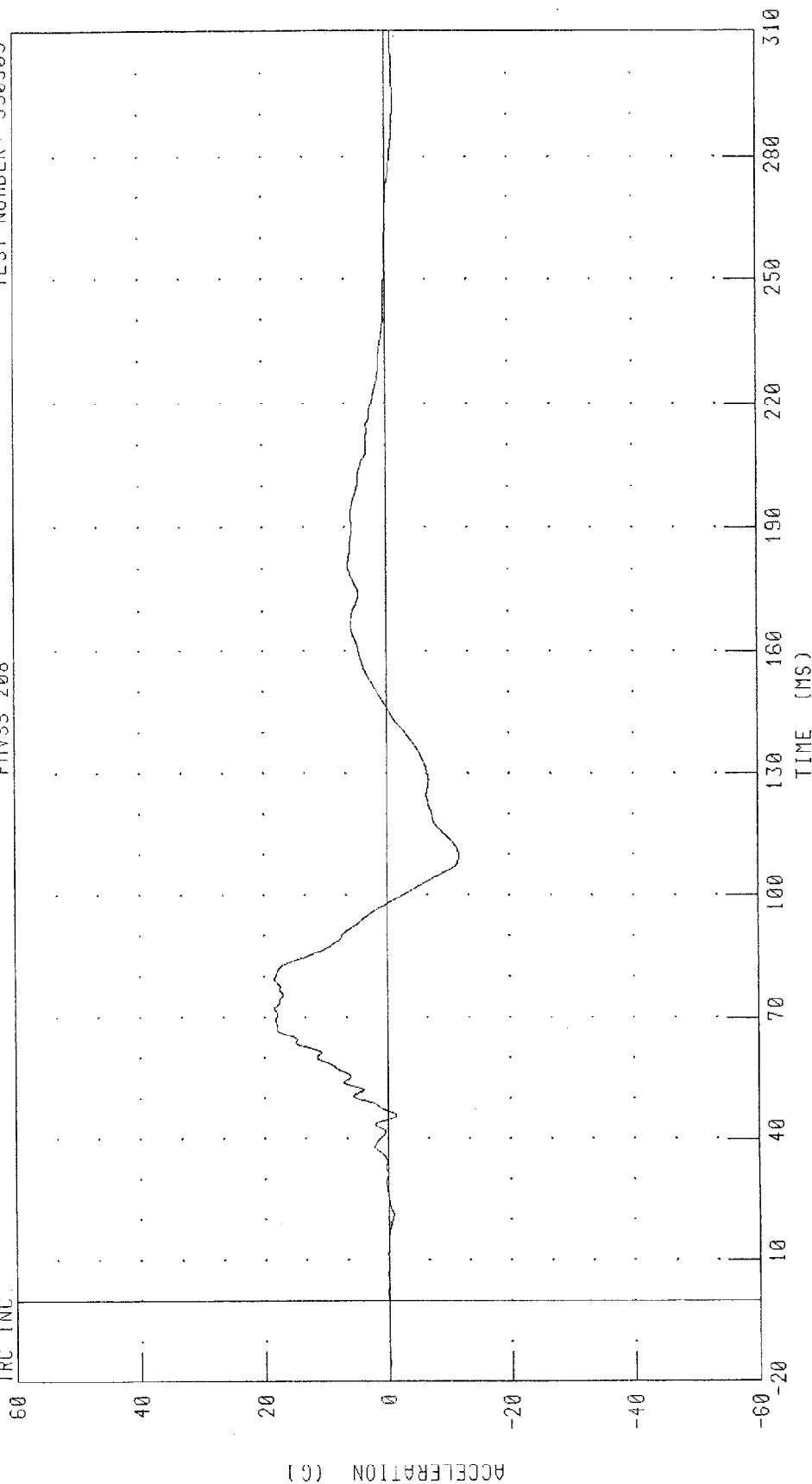
PEAK DATA: 3.20 G @ 51.28 MS, -4.11 G @ 56.32 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

TEST NUMBER: 990305

FMYSS 208

TRC INC.



CHANNEL: CSTZC2 FILTER: CH. CLASS 180

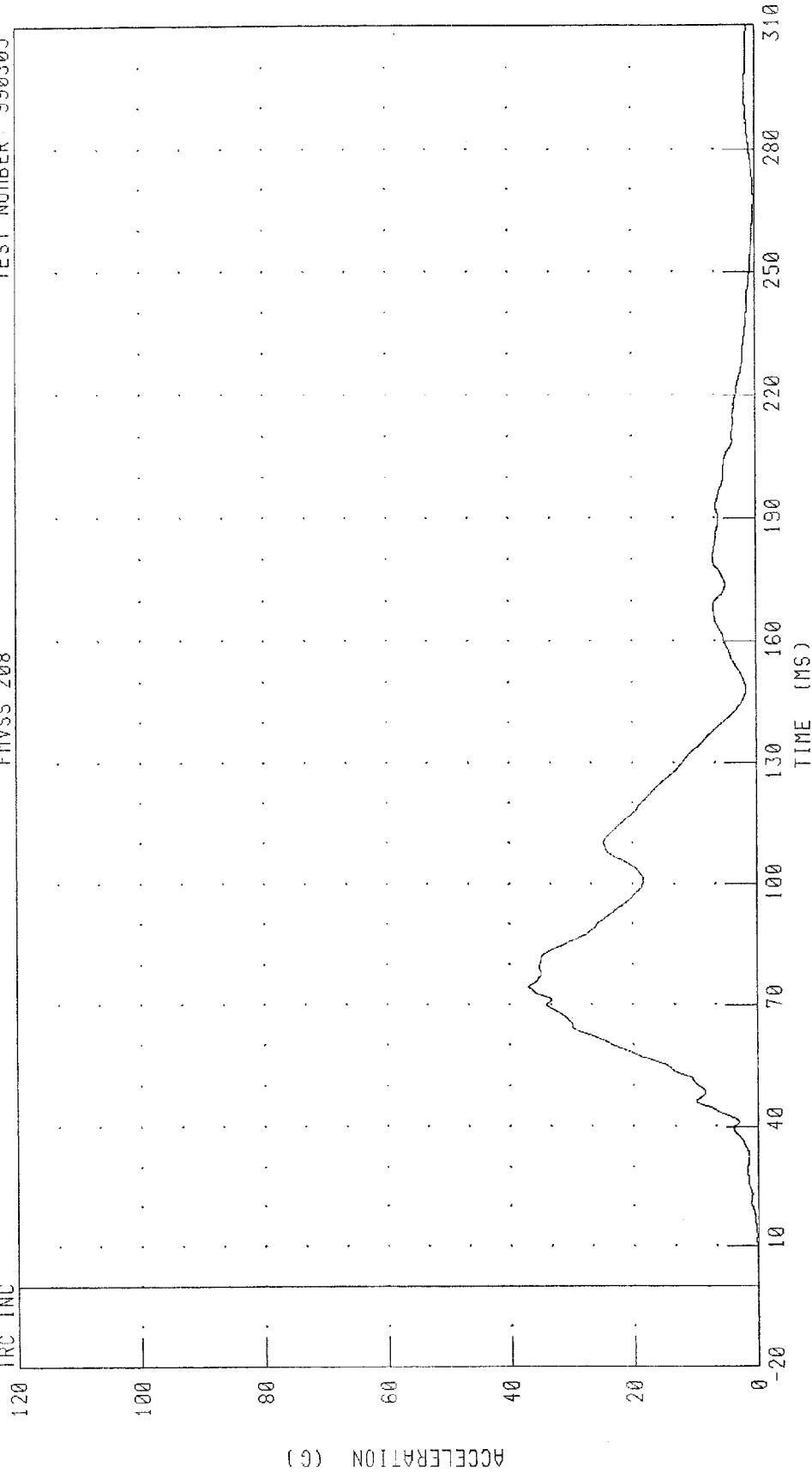
PEAK DATA: 18.39 G @ 79.36 MS; -11.74 G @ 110.32 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC



PEAK DATA: 36.85 G @ 74.64 MS, 0.01 G @ -20.00 MS

CHANNEL: CSTRG2 FILTER: CH. CLASS 180

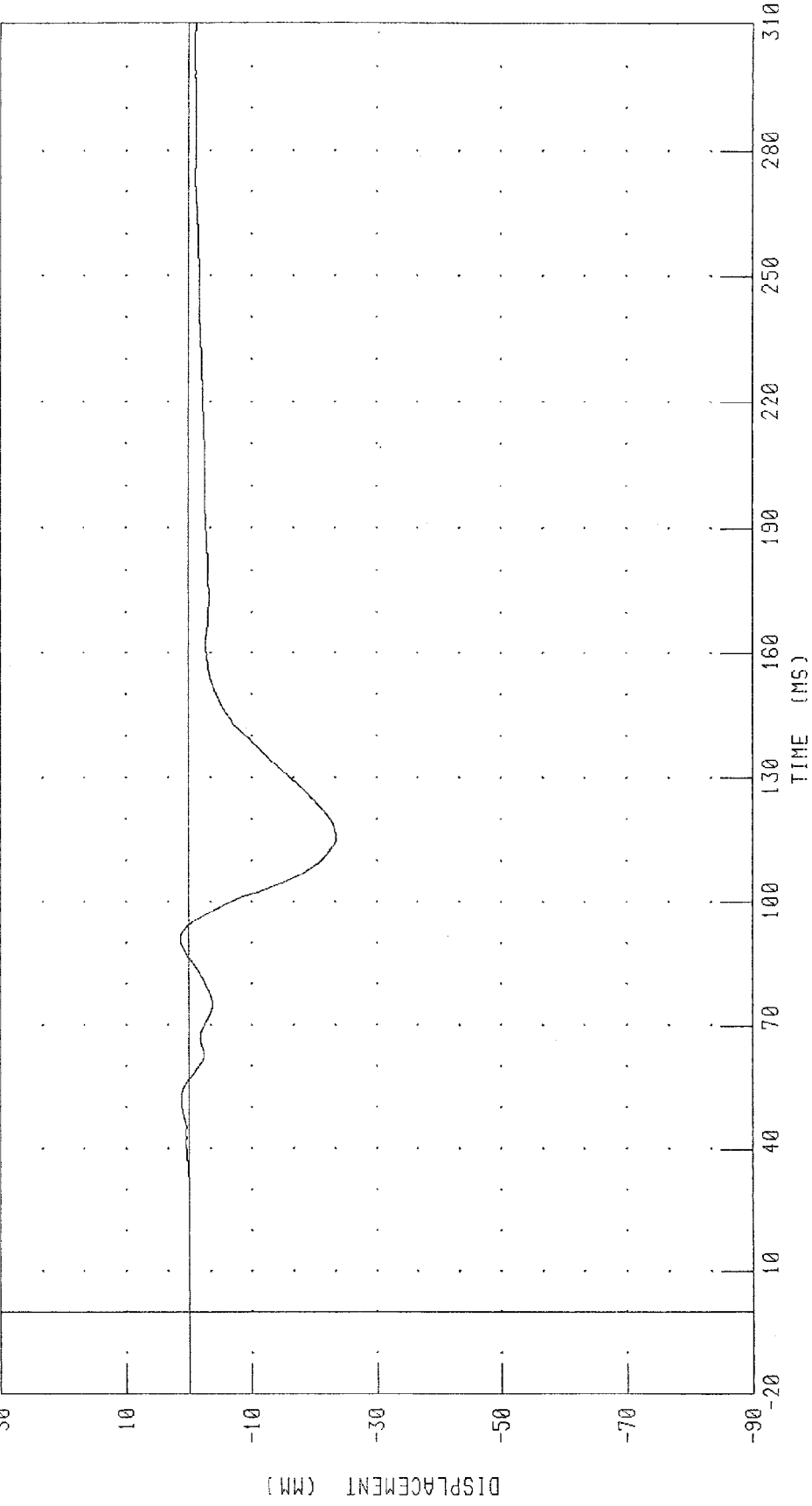
1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH

RIGHT FRONT PASSENGER CHEST DEFLECTION

TEST NUMBER: 990305

FMVSS 208

TRC INC.



CHANNEL: CSTXD2 FILTER: CH. CLASS 180

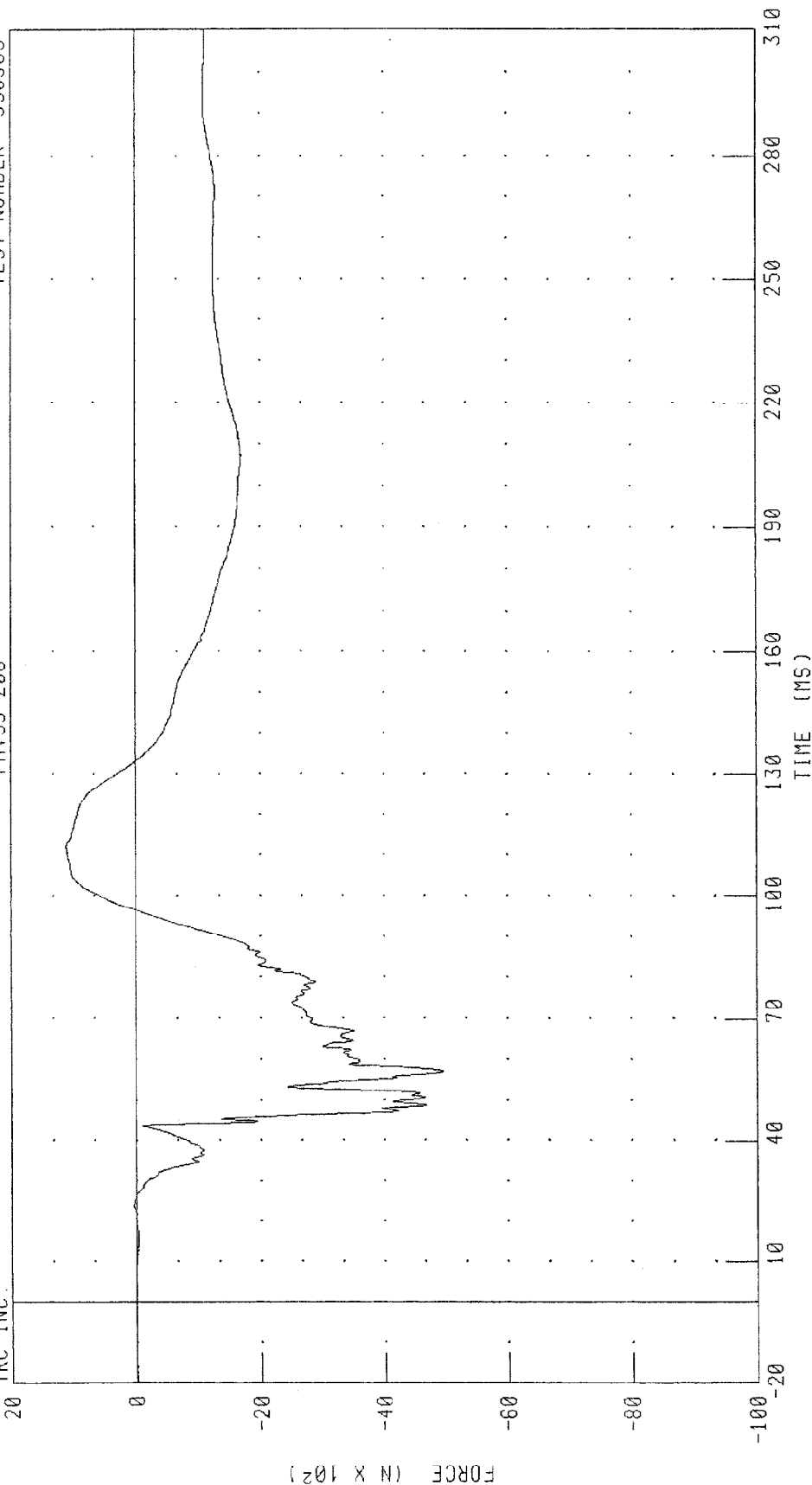
PEAK DATA: 1.47 MM @ 91.12 MS; -23.51 MM @ 115.28 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER LEFT FEMUR FORCE

TEST NUMBER: 990305

FMVSS 208

TRC INC.



CHANNEL: LFMF2 FILTER: CH. CLASS 600 PEAK DATA: 1116.34 N @ 112.08 MS; -4959.09 N @ 57.04 MS

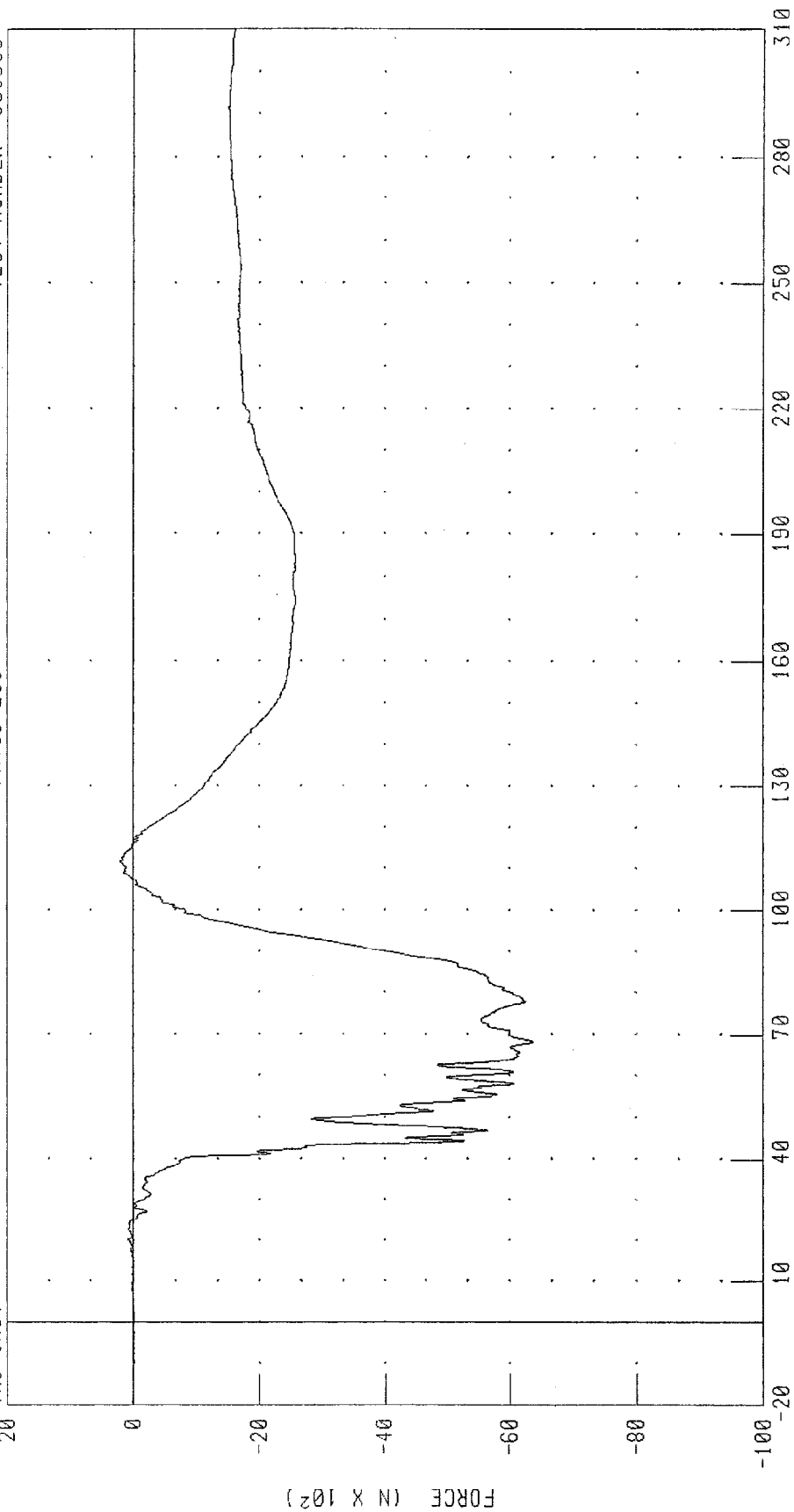
1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

TEST NUMBER: 990305

FMVSS 208

TRC INC.

20



TIME (MS)

PEAK DATA: 204.72 N @ 111.60 MS; -6372.44 N @ 68.24 MS

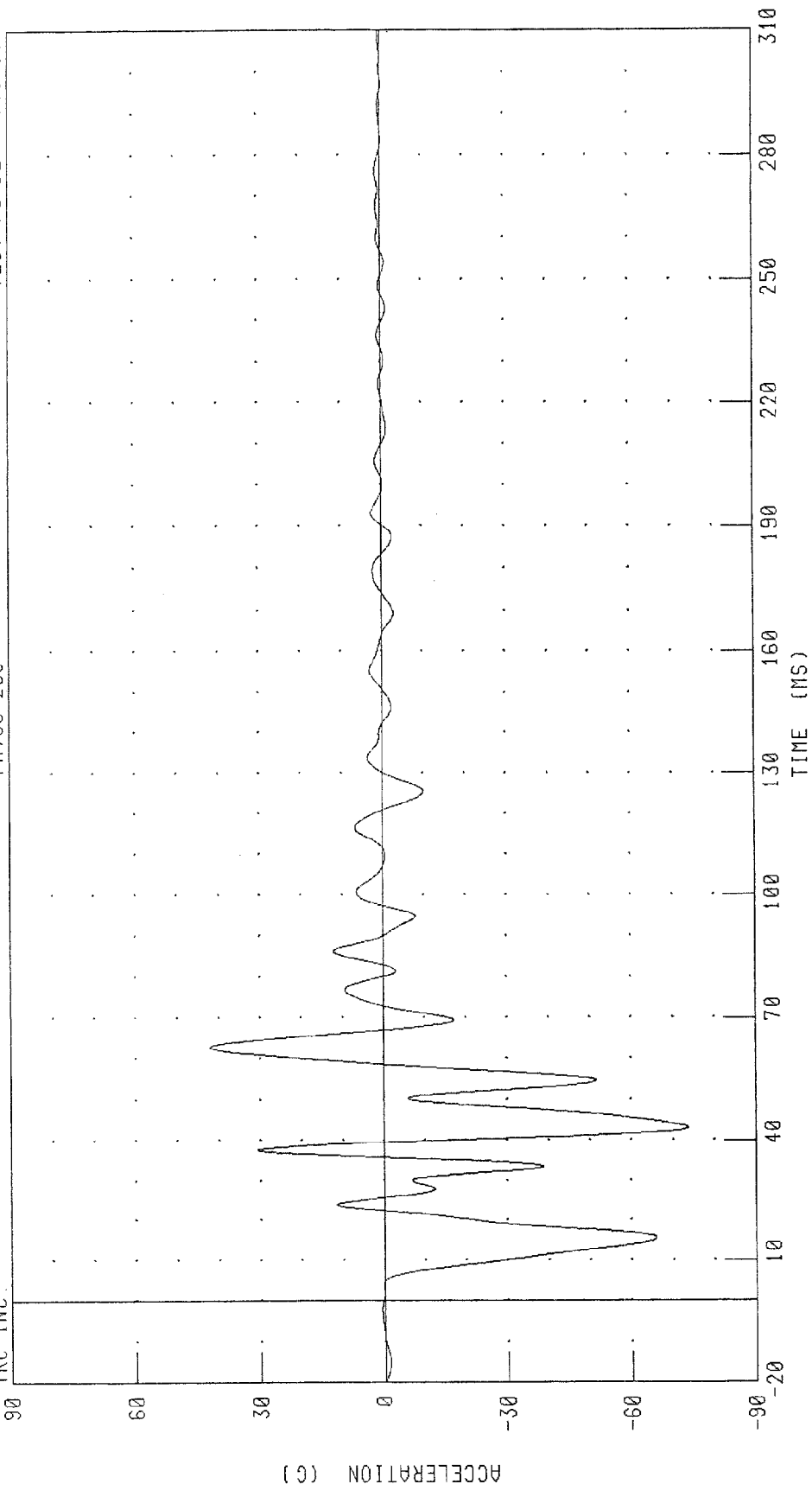
CHANNEL: RFMF2 FILTER: CH. CLASS 600

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TEST NUMBER: 990305

FMVSS 208

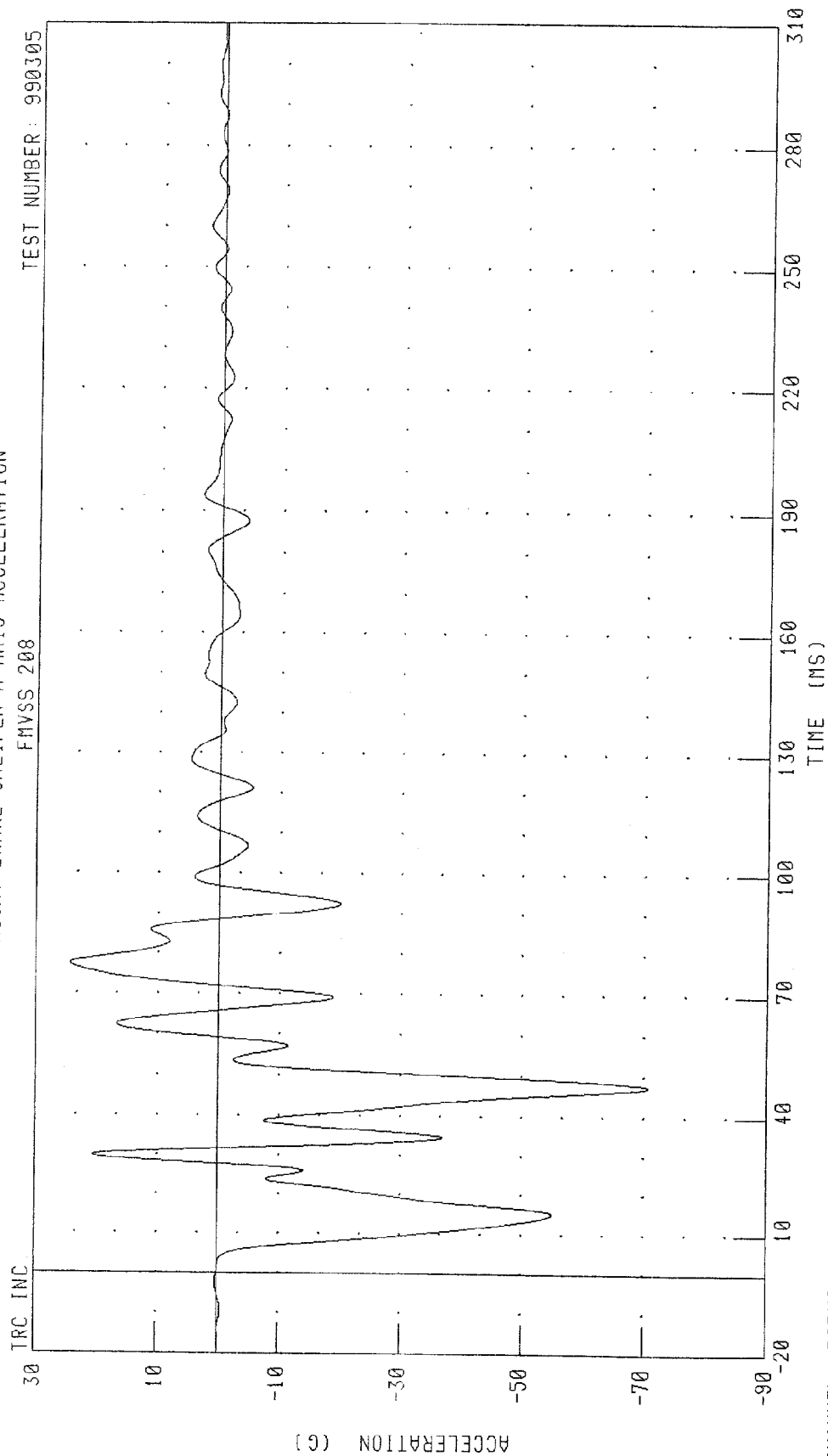
TRC INC.



CHANNEL: BCLXG1 FILTER: CH. CLASS 60 PEAK DATA: 42.11 G @ 62.72 MS; -73.72 G @ 43.12 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT BRAKE CALIPER X-AXIS ACCELERATION
FMVSS 208

TEST NUMBER: 990305



CHANNEL: BCRXG1 FILTER: CH CLASS 60

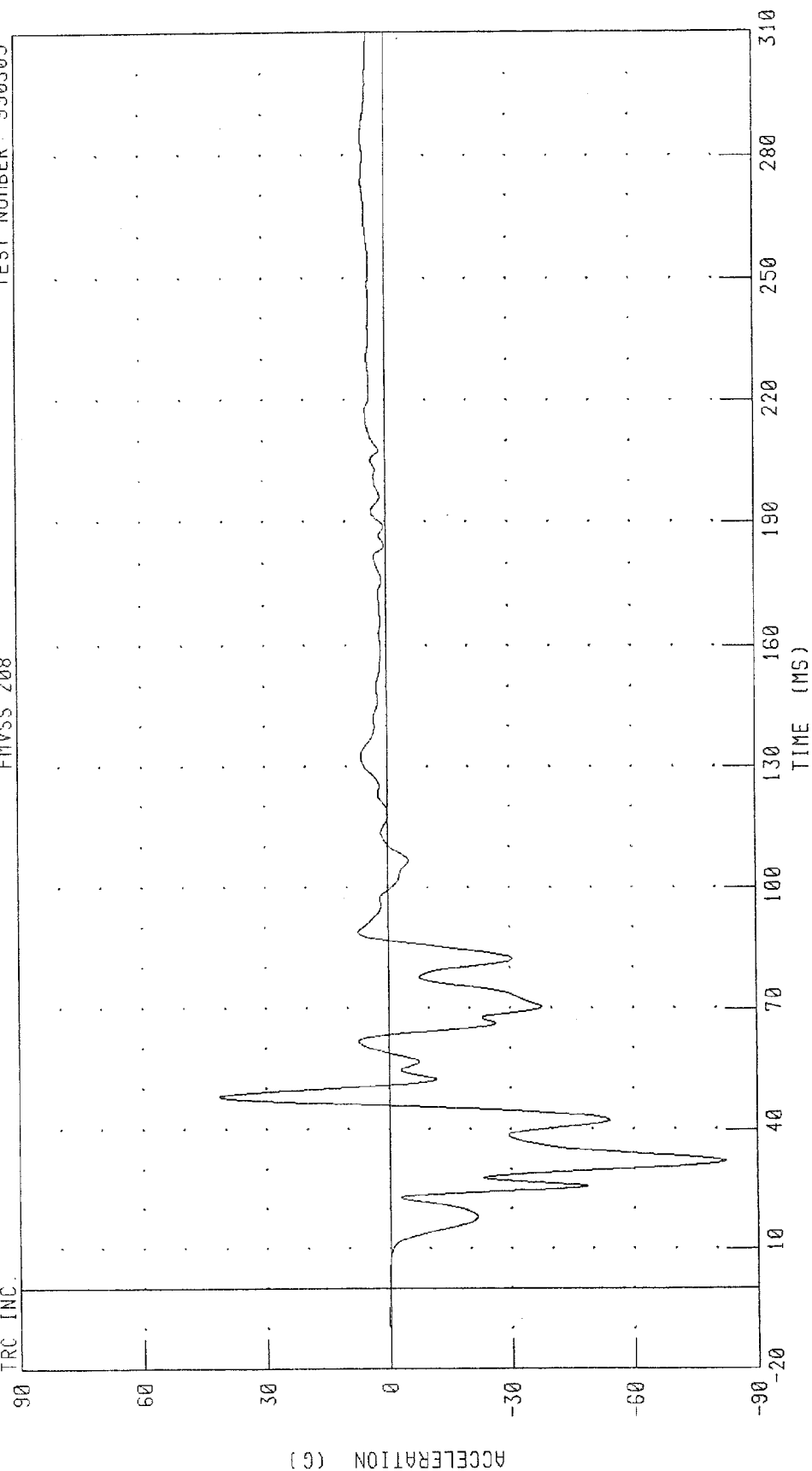
PEAK DATA: 24.43 G @ 77.52 MS; -70.75 G @ 47.44 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
DASH PANEL CENTER X-AXIS ACCELERATION

TEST NUMBER: 990305

FMVSS 208

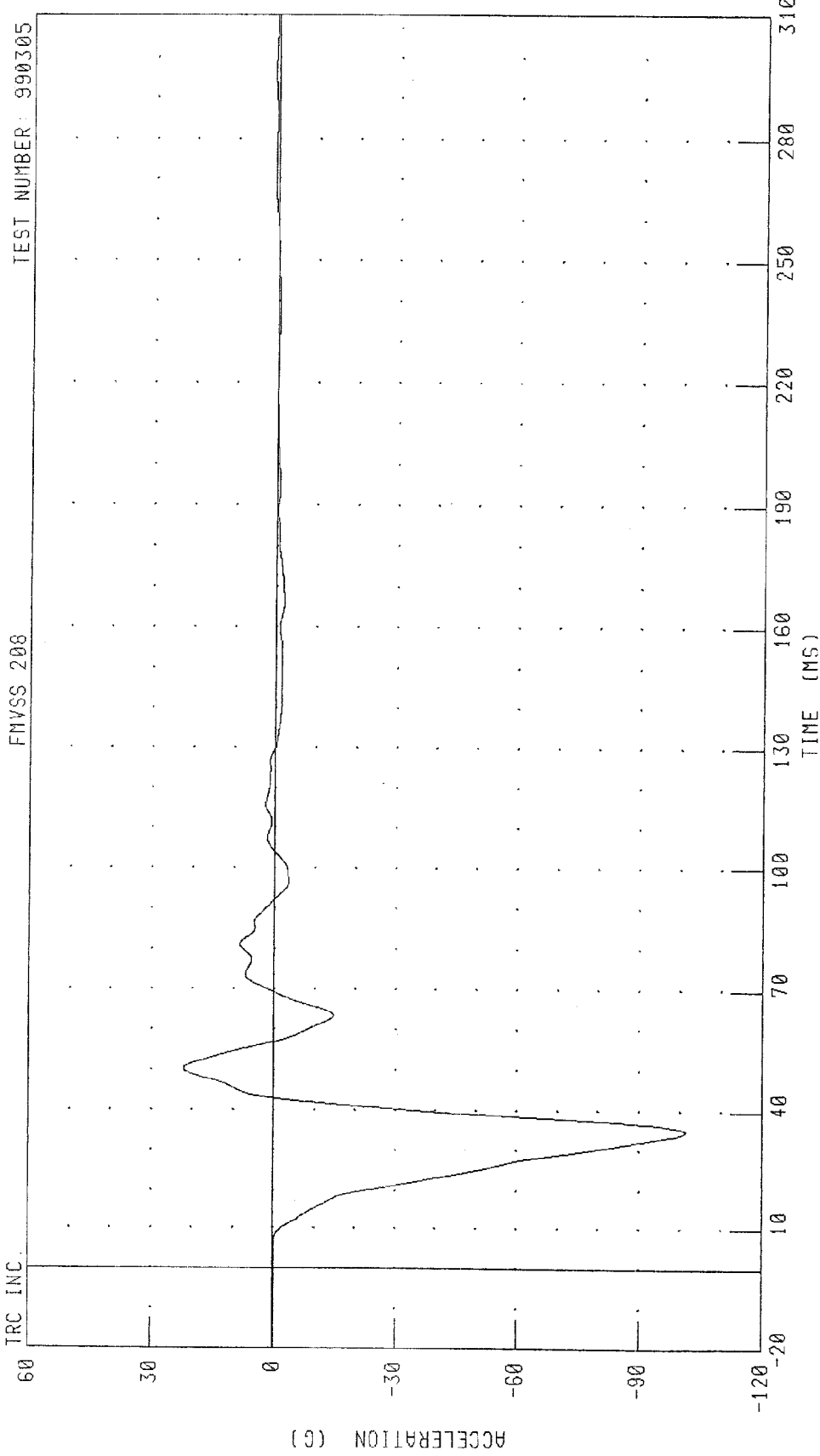
TRC INC.



PEAK DATA: 41.55 G @ 48.08 MS; -82.42 G @ 52.08 MS

CHANNEL: DPCXG1 FILTER: CH. CLASS 60

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
ENGINE TOP X-AXIS ACCELERATION



CHANNEL: ENGXC1 FILTER: CH. CLASS 60

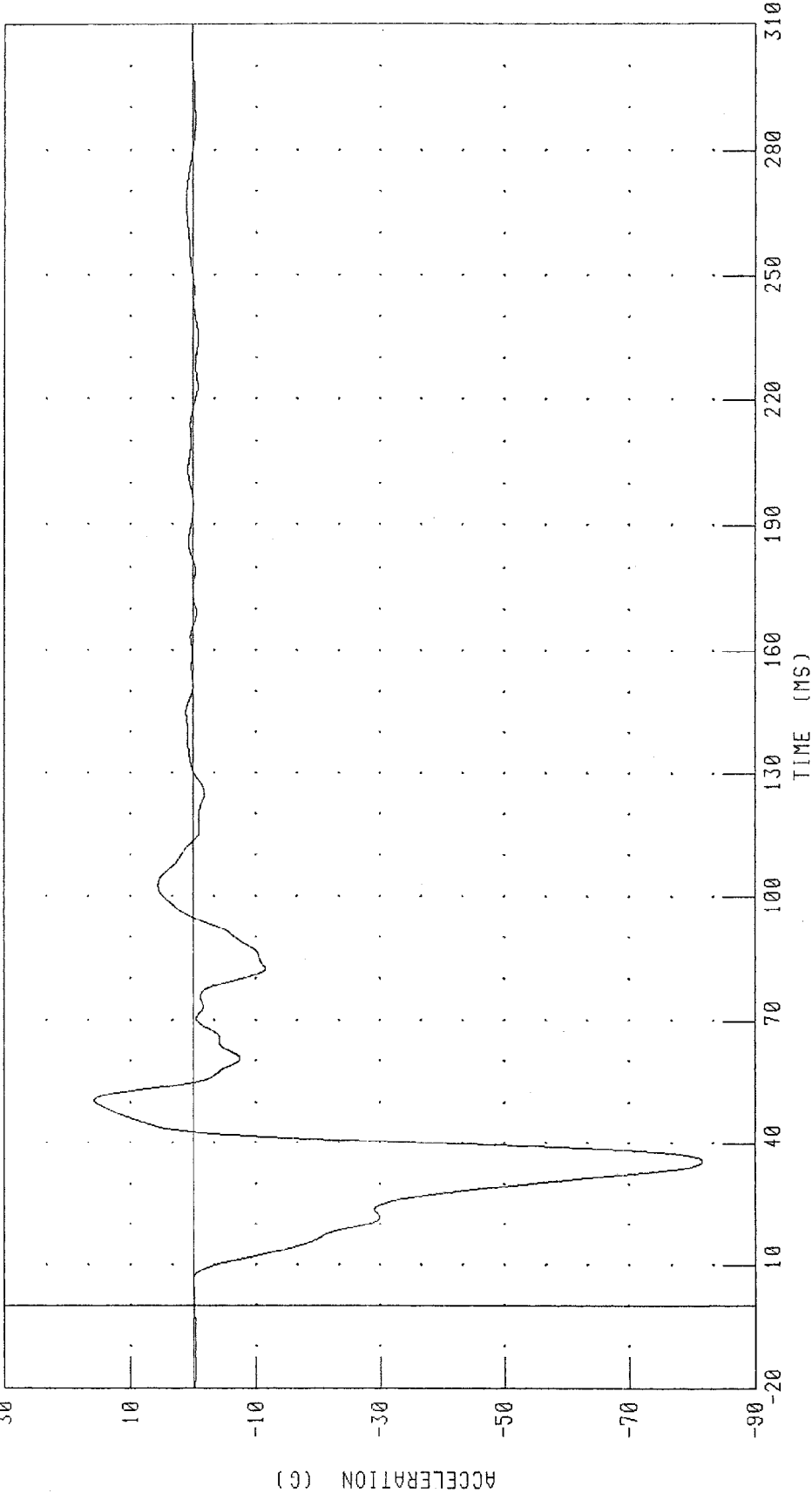
PEAK DATA: 22.07 G @ 50.32 MS, -101.41 G @ 34.88 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
ENGINE BOTTOM X-AXIS ACCELERATION

TEST NUMBER: 990305

FMVSS 208

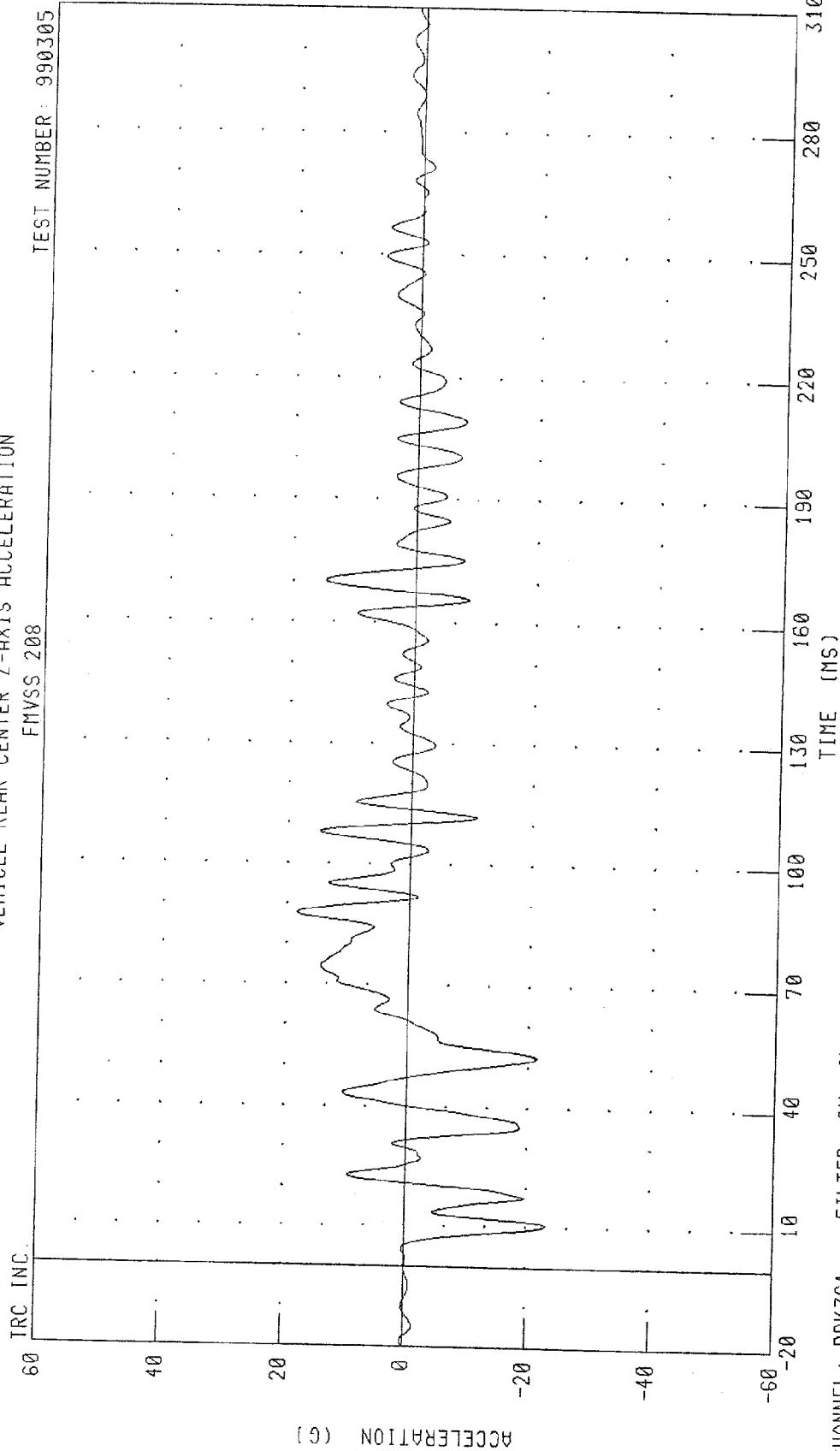
TRC INC.



CHANNEL: ENCXC2 FILTER: CH. CLASS 60

PEAK DATA: 15.77 G @ 50.56 MS, -81.63 G @ 35.68 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
VEHICLE REAR CENTER Z-AXIS ACCELERATION



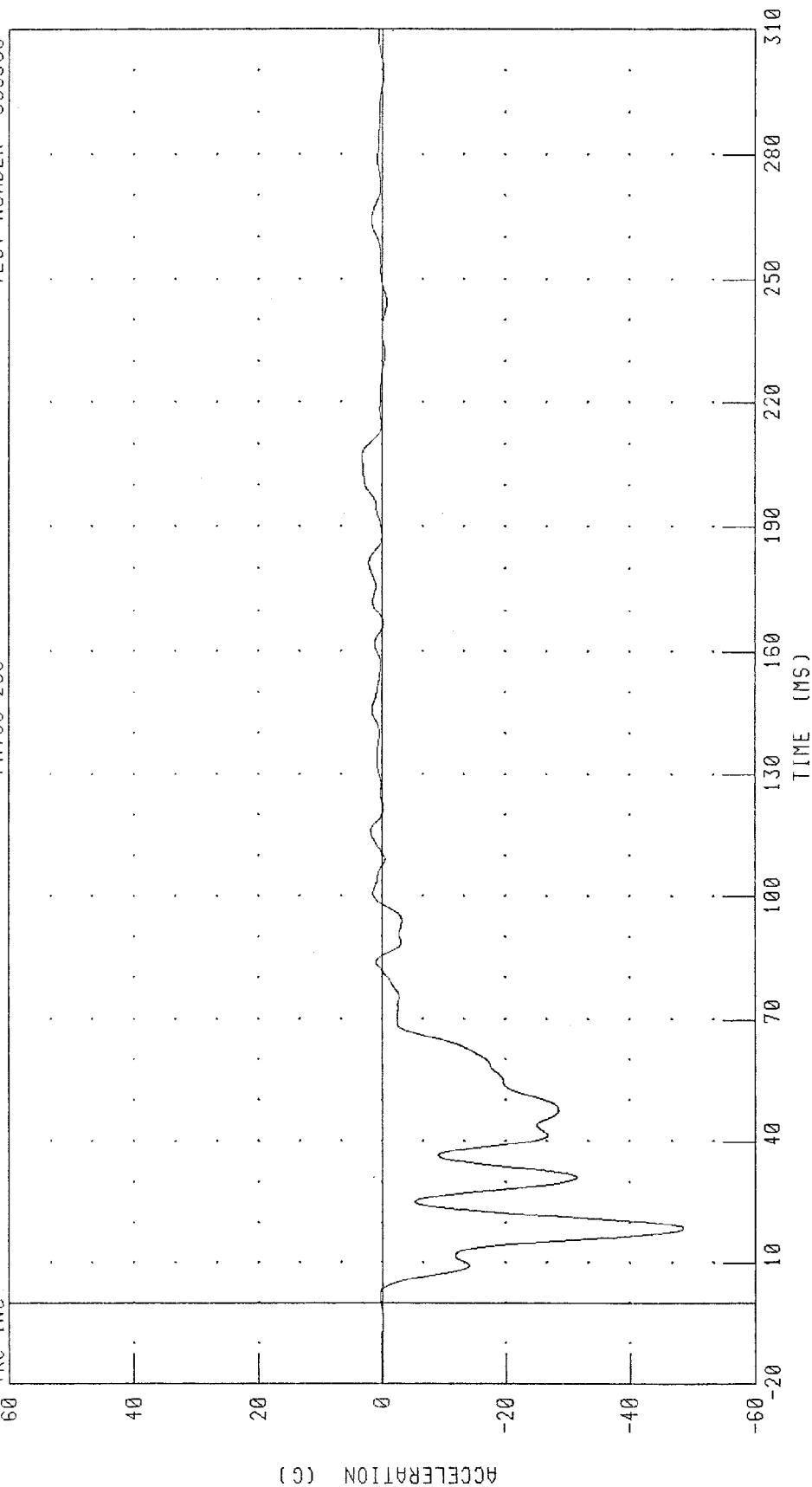
PEAK DATA: 18.30 G @ 87.68 MS; -23.20 G @ 10.40 MS

1999 TOYOTA TACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
LEFT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC



PEAK DATA: 3.18 G @ 206.96 MS, -48.56 G @ 18.48 MS

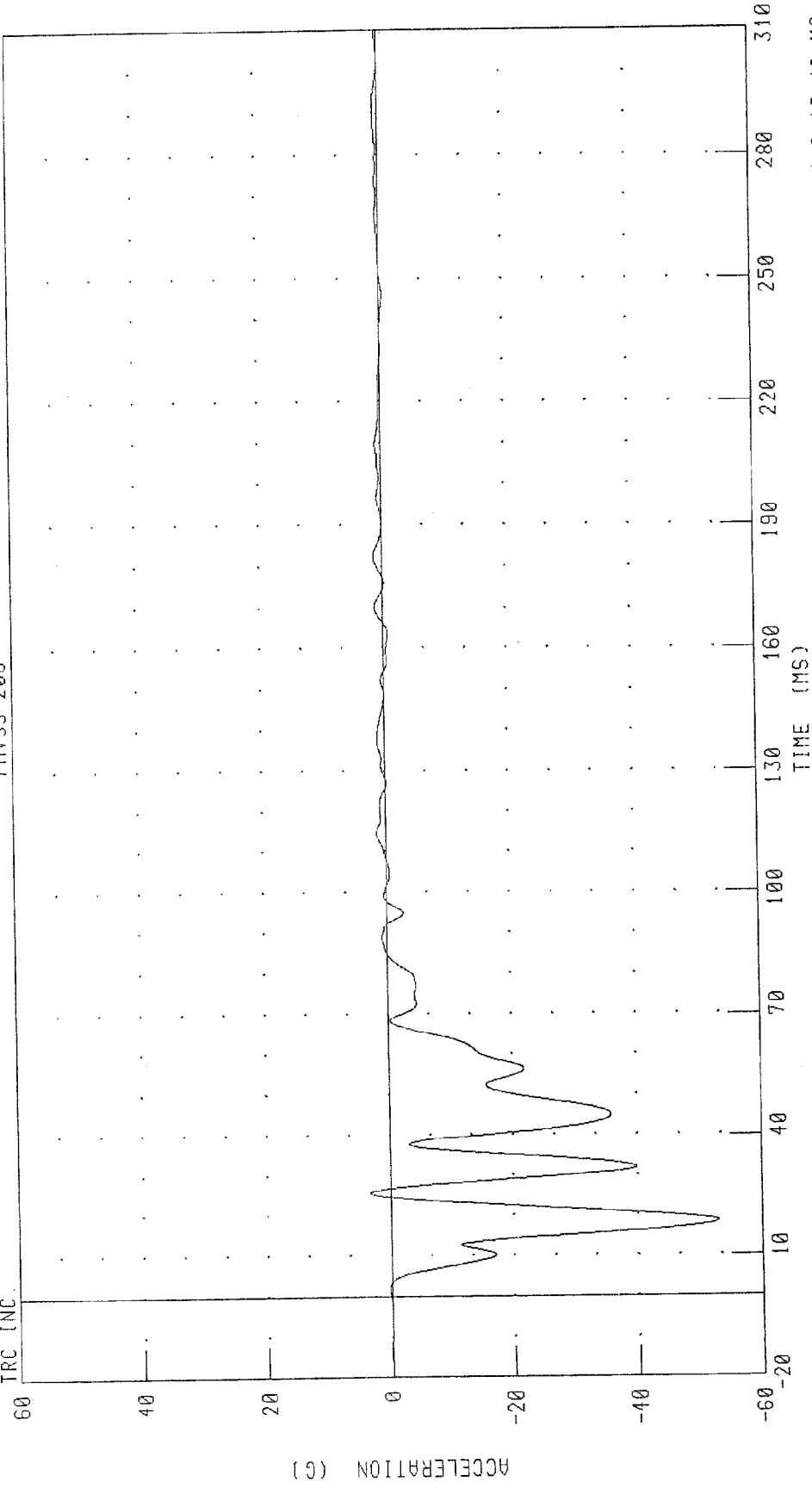
CHANNEL: TLRXG1 FILTER: CH. CLASS 60

1999 TOYOTA IACOMA INTO A FLAT FRONTAL BARRIER AT 30 MPH
RIGHT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 990305

FMVSS 208

TRC INC.



PEAK DATA: 3.25 G @ 25.84 MS, -52.91 G @ 18.40 MS

FILTER: CH. CLASS 60

CHANNEL: TRRXG1

Appendix C

Dummy Certification

Pre-Test Dummy Certification

Driver Dummy S/N 169

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III 50th

03-MAR-99

TRC INC.

TEST NO: 169C6HD1

572E SN169 HEAD DROP CAL 06

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	250.14 G
PEAK LATERAL ACCELERATION	15 G MAX	1.66 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

By Calt

RUN NUMBER: 030399.1014;1

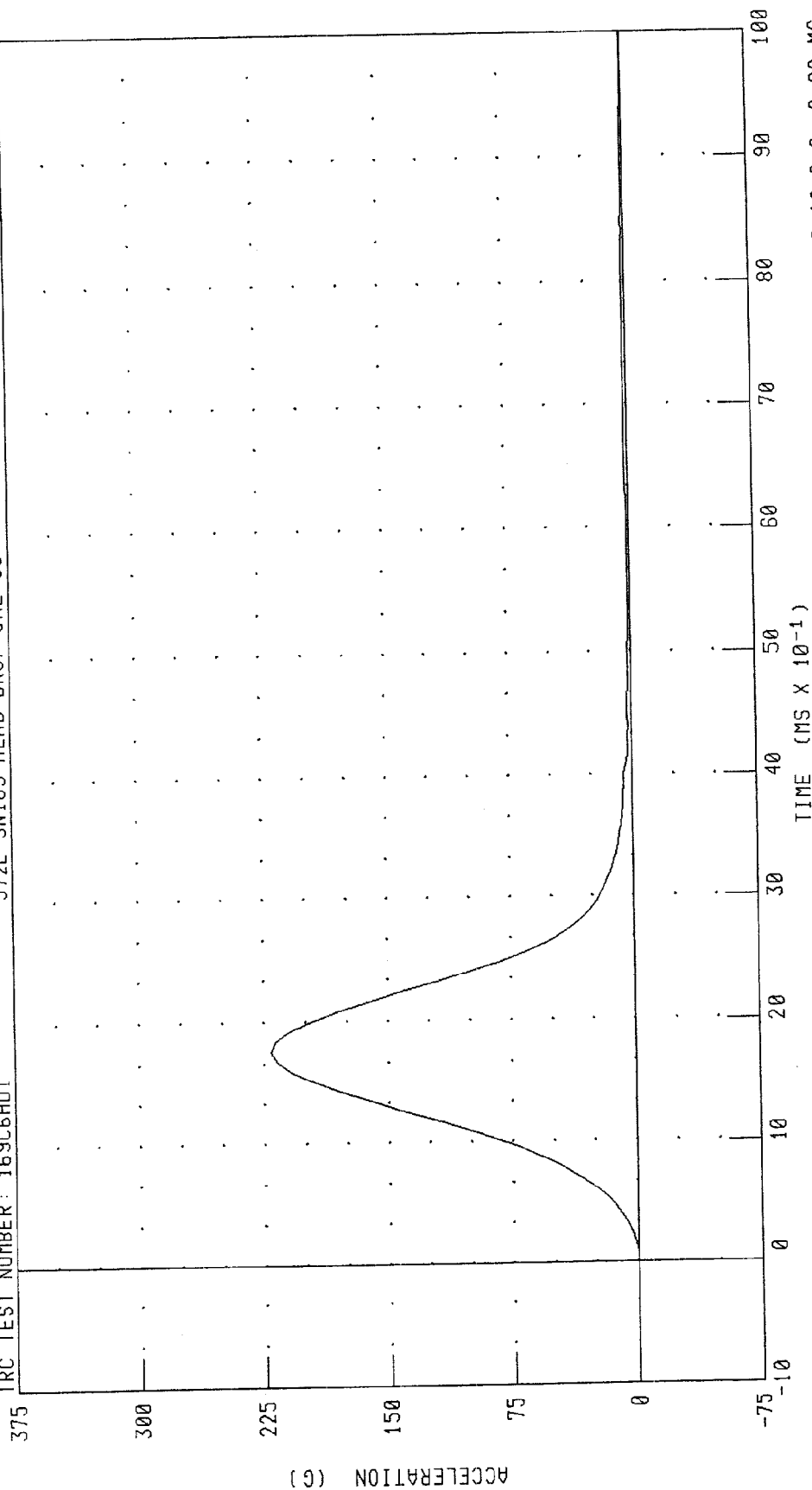
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

RUN NUMBER: 030699.0836;1

TRC TEST NUMBER: 169C6HD1

572E SN169 HEAD DROP CAL 06



PEAK DATA: 220.53 G @ 1.76 MS; -0.10 G @ -0.96 MS

CHANNEL: HEDXC FILTER: CH. CLASS 1000

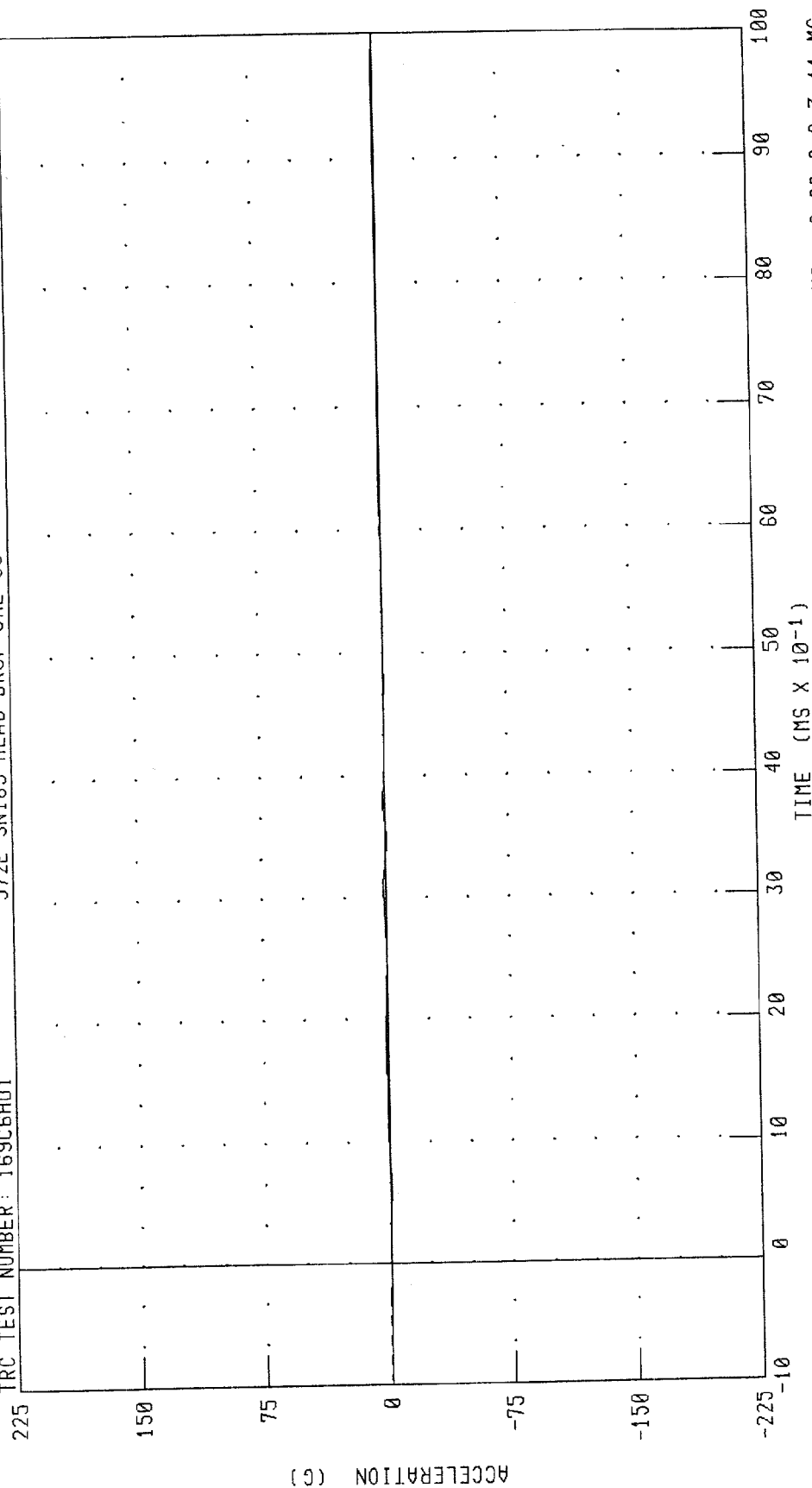
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

TRC TEST NUMBER: 169C6HD1

572E SN169 HEAD DROP CAL 06

RUN NUMBER: 030699.0836;1



CHANNEL: HEDYC FILTER: CH. CLASS 1000

PEAK DATA: 1.67 G @ 3.04 MS; -0.88 G @ 3.44 MS

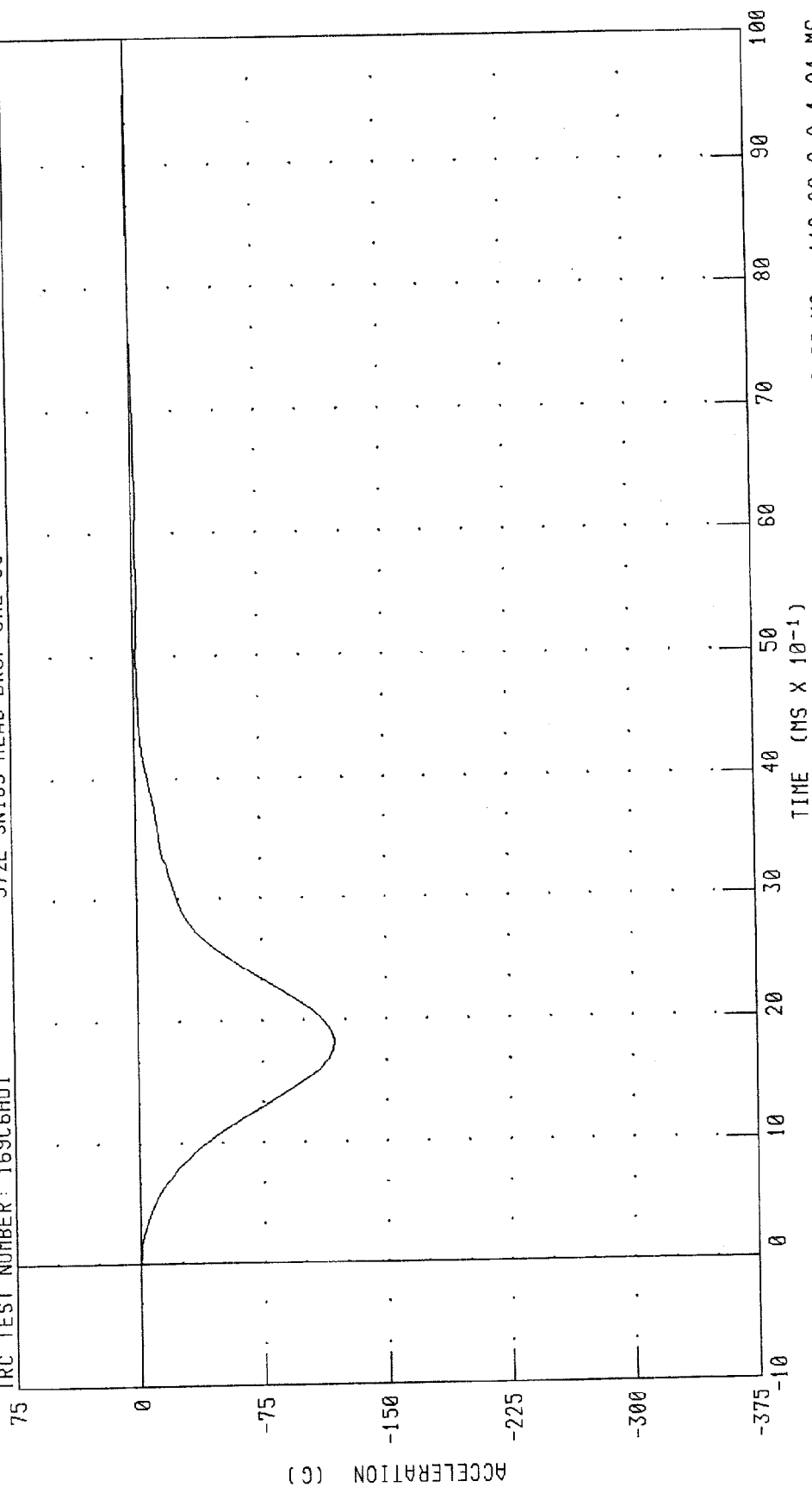
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Z AXIS

RUN NUMBER: 030699.0836;1

572E SN169 HEAD DROP CAL 06

TRC TEST NUMBER: 169C6HD1



CHANNEL: HEDZG FILTER: CH. CLASS 1000

PEAK DATA: 0.93 G @ 8.88 MS, -118.66 G @ 1.84 MS

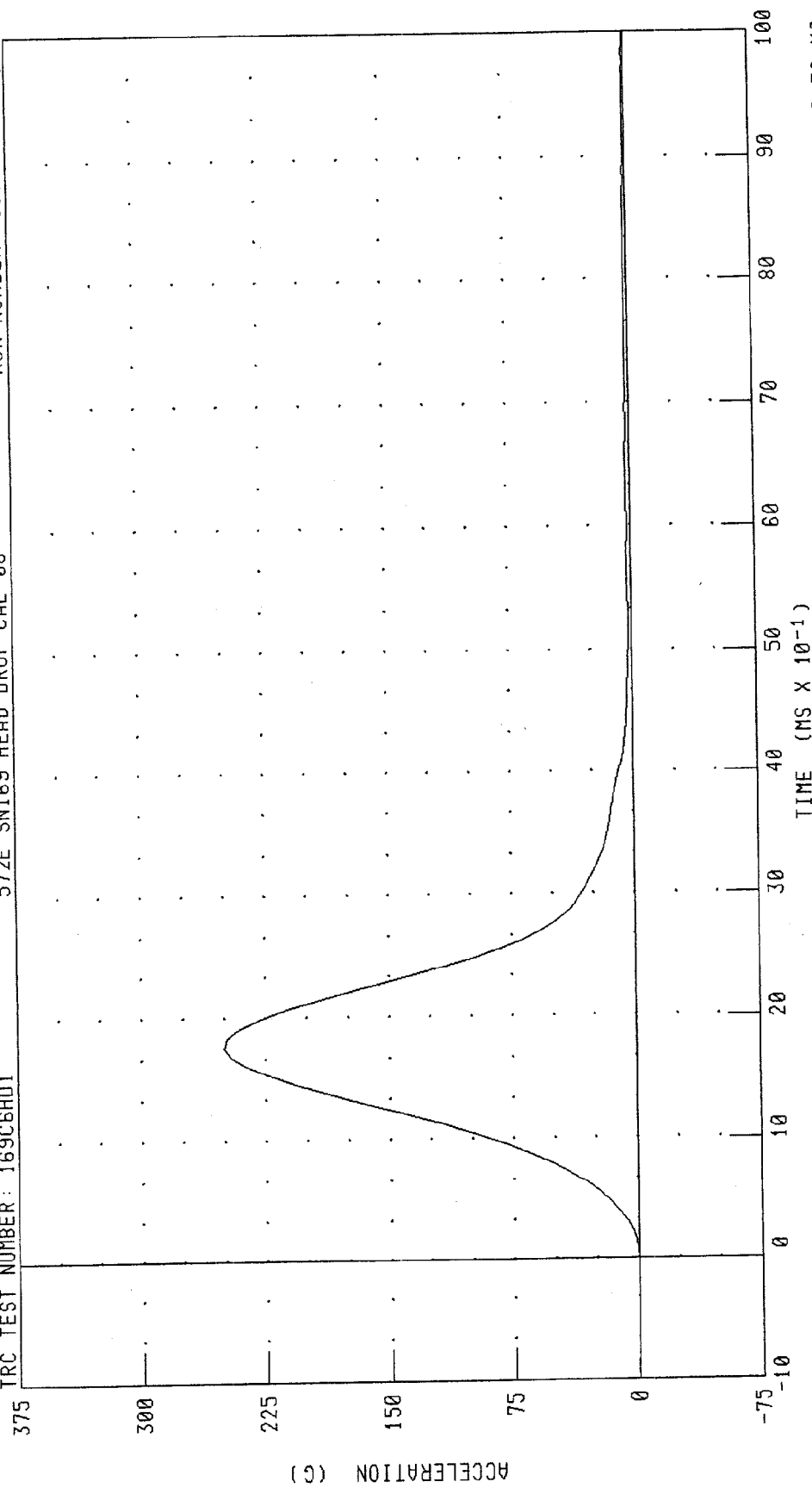
PART 572-E HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

572E SN169 HEAD DROP CAL 06

RUN NUMBER: 030699.0836;1

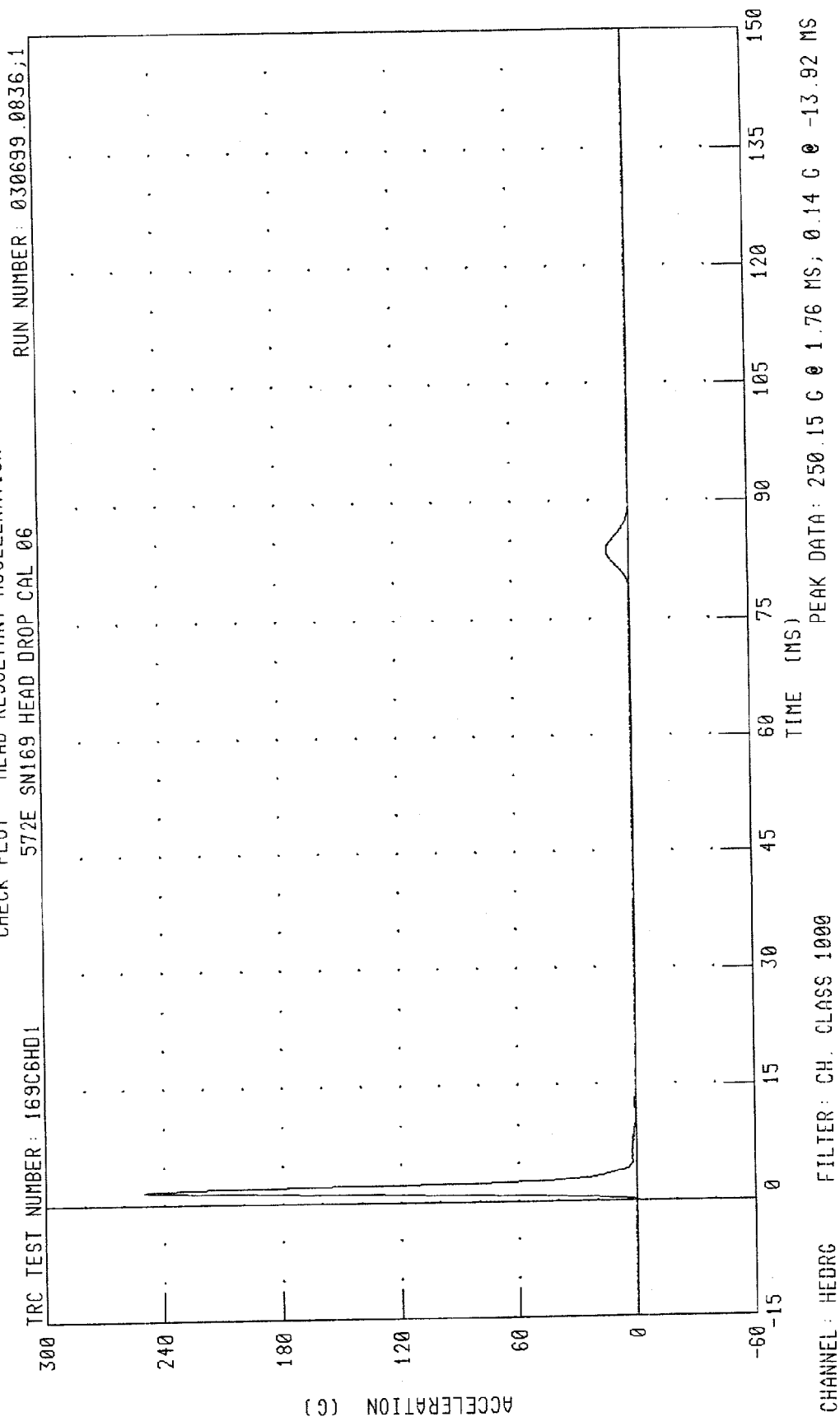
TRC TEST NUMBER: 169C6HD1



PEAK DATA: 250.15 G @ 1.76 MS; 0.14 G @ -0.72 MS

CHANNEL: HEDRC FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
CHECK PLOT - HEAD RESULTANT ACCELERATION



TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

03-MAR-99

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 169C6NF1 572E SN169 NECK FLEXION CAL6

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.93 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	24.22 G
	20 MS	17.60 - 22.60 G	20.62 G
	30 MS	12.50 - 18.50 G	15.18 G
MAX PENDULUM G		29 G MAX	24.78 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	15.14 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	40.00 MS
D PLANE	MAX	64 - 78 DEG.	71.43 DEG.
ROTATION	TIME	57 - 64 MS	61.60 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	92.55 NM
	TIME	47 - 58 MS	53.44 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	118.00 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	105.60 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

RUN NUMBER: 030399.1052;1

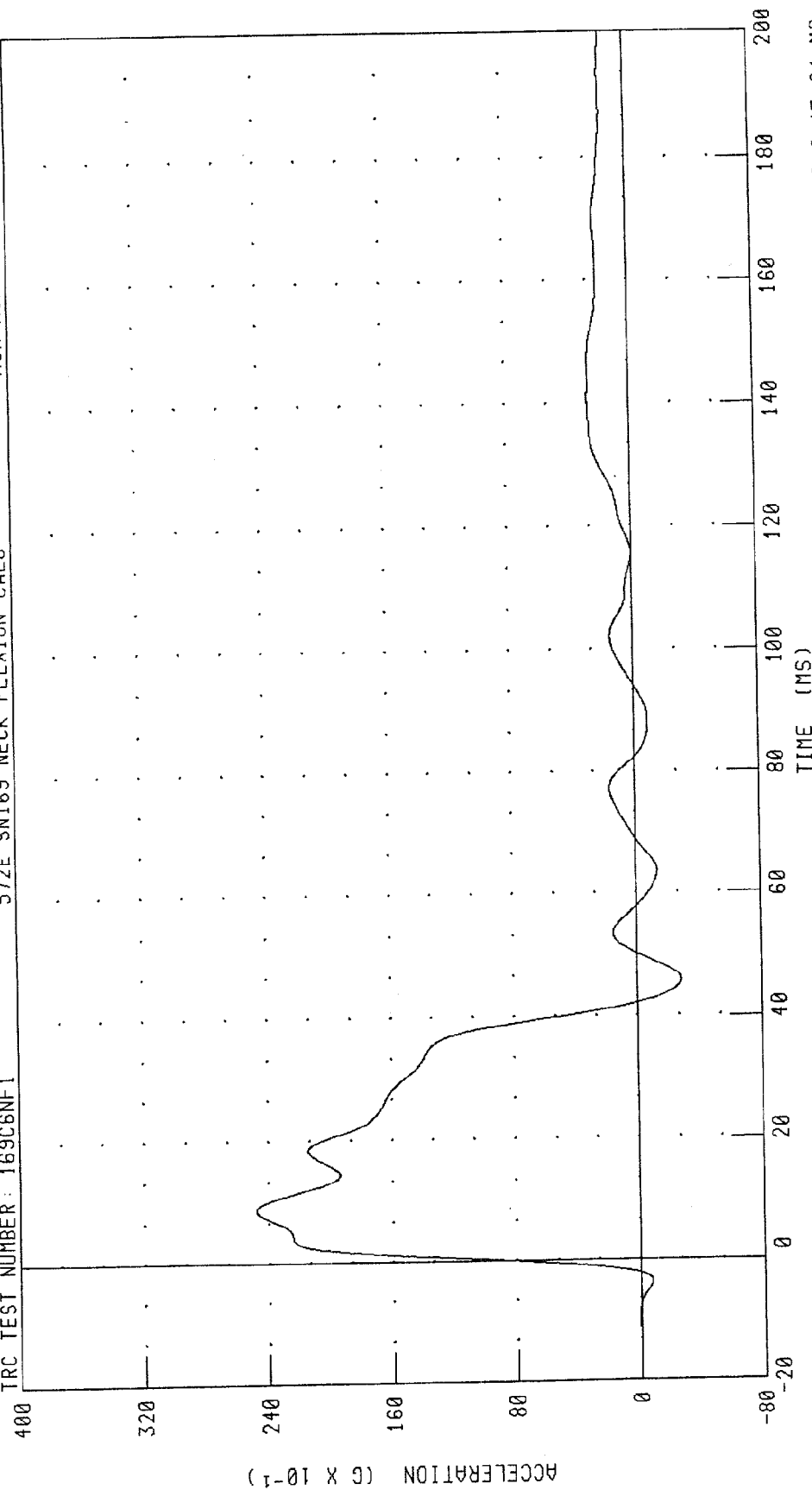
PART 572-E HYBRID III NECK FLEXION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 169C6NF1

572E SN169 NECK FLEXION CAL6

RUN NUMBER: 030399.1052;1



PEAK DATA: 24.79 G @ 8.80 MS; -2.83 G @ 45.84 MS

CHANNEL: PENXC FILTER: CH. CLASS 60

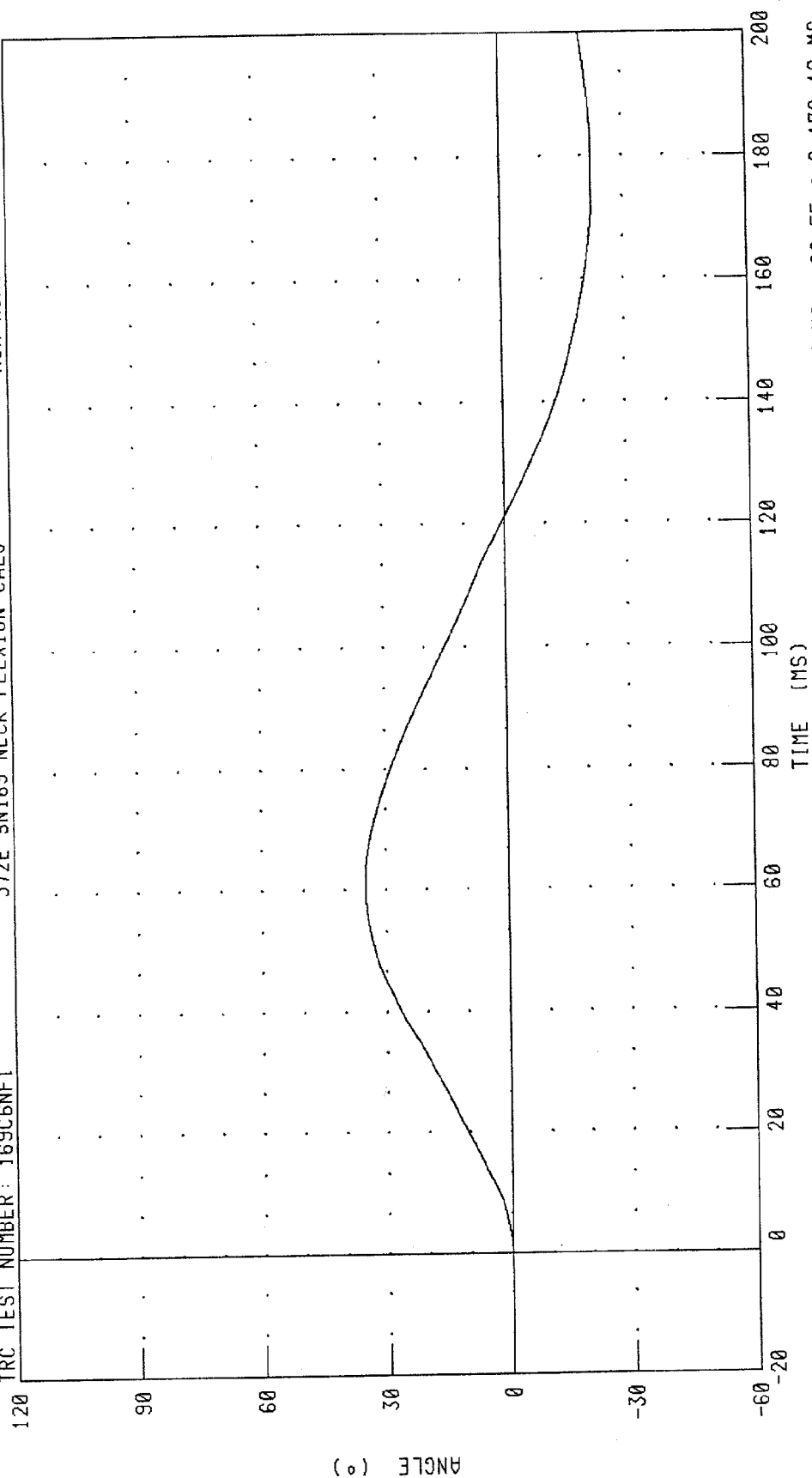
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN169 NECK FLEXION CAL6

TRC TEST NUMBER: 169C6NF1

RUN NUMBER: 030399.1052;1



CHANNEL: BETA

FILTER: CH CLASS 60

PEAK DATA:

35.02 ° @ 61.20 MS; -22.55 ° @ 178.16 MS

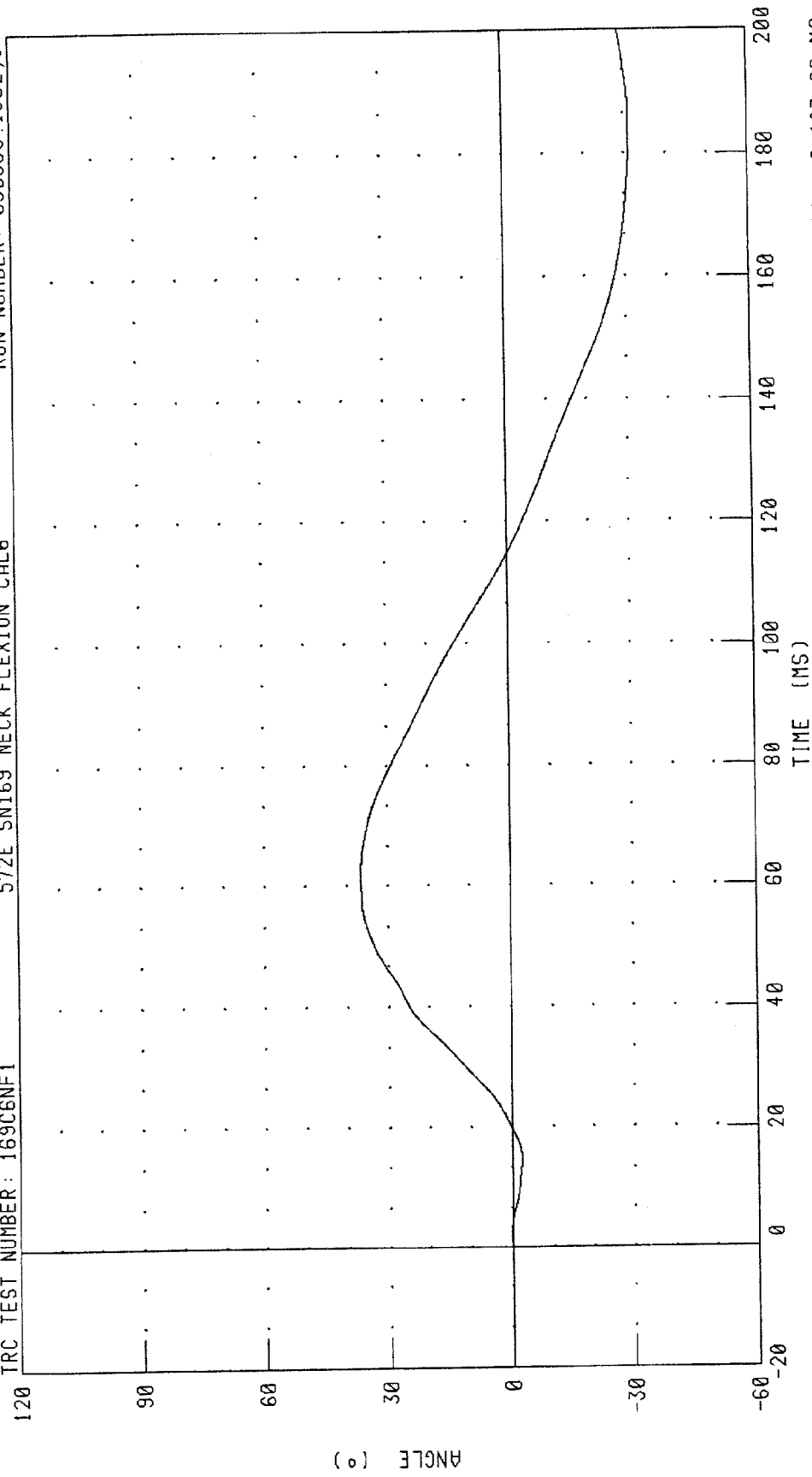
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 169C6NF1

572E SN169 NECK FLEXION CAL6

RUN NUMBER: 030399.1052;1



PEAK DATA: 36.42 ° @ 62.16 MS; -31.14 ° @ 183.28 MS

CHANNEL: THETA FILTER: CH. CLASS 60

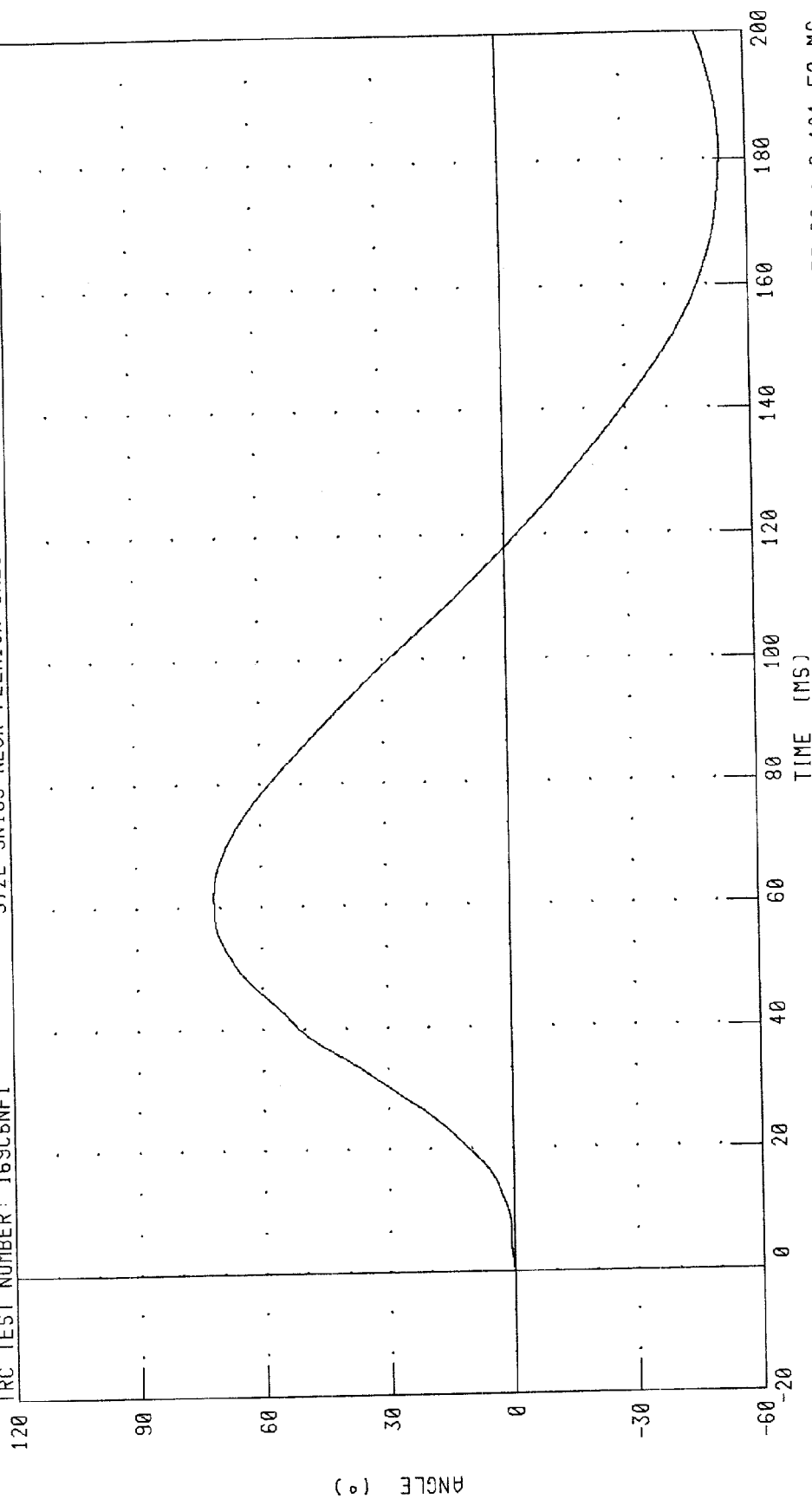
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

RUN NUMBER: 030399.1052;1

572E SN169 NECK FLEXION CAL6

TRC TEST NUMBER: 169CSNF1



PEAK DATA: 71.44 ° @ 61.60 MS, -53.62 ° @ 181.52 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

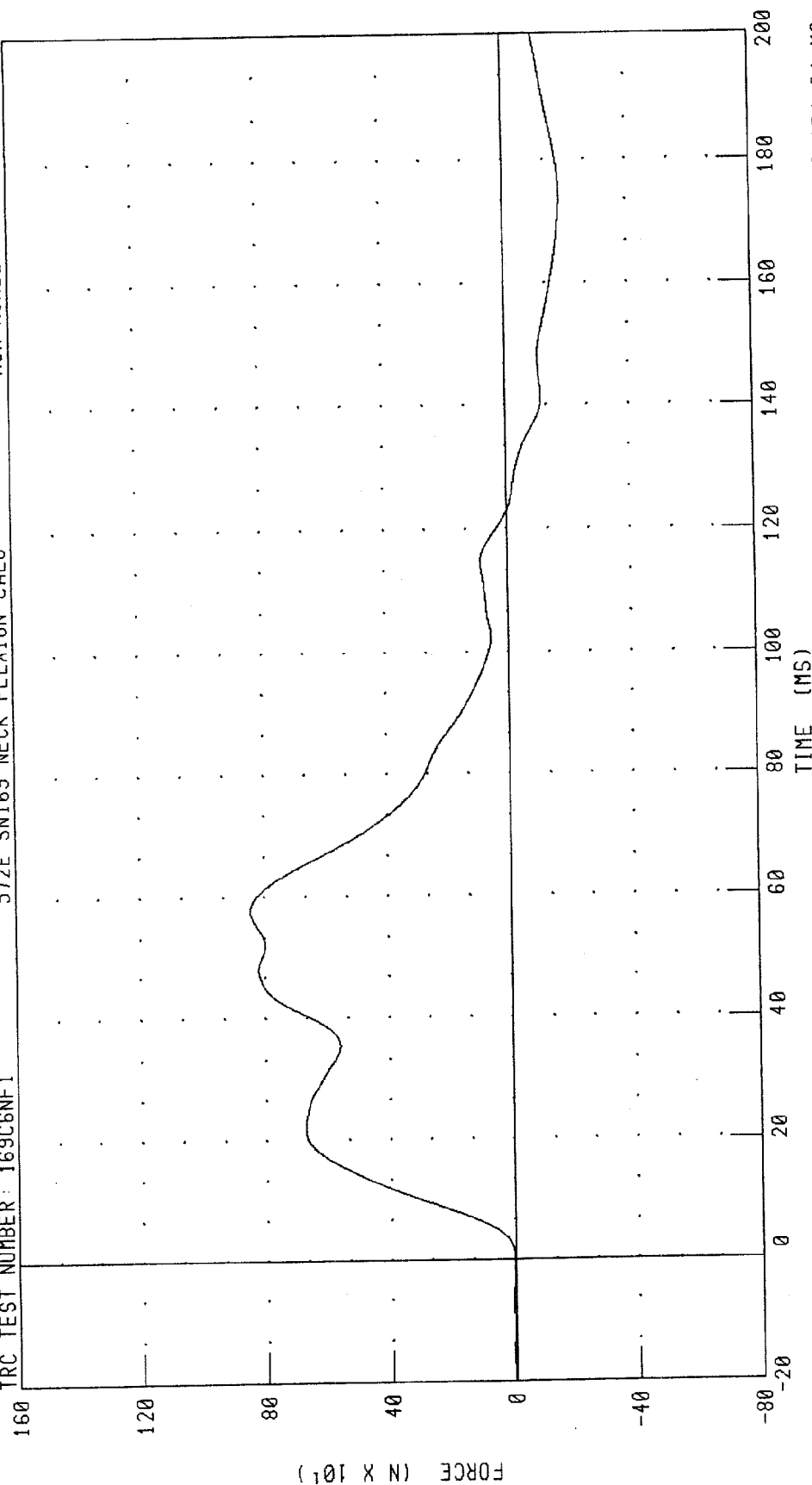
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

RUN NUMBER: 030399.1052;1

TRC TEST NUMBER: 169C6NF1

572E SN169 NECK FLEXION CAL6



PEAK DATA: 845.37 N @ 57.76 MS; -183.26 N @ 174.64 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

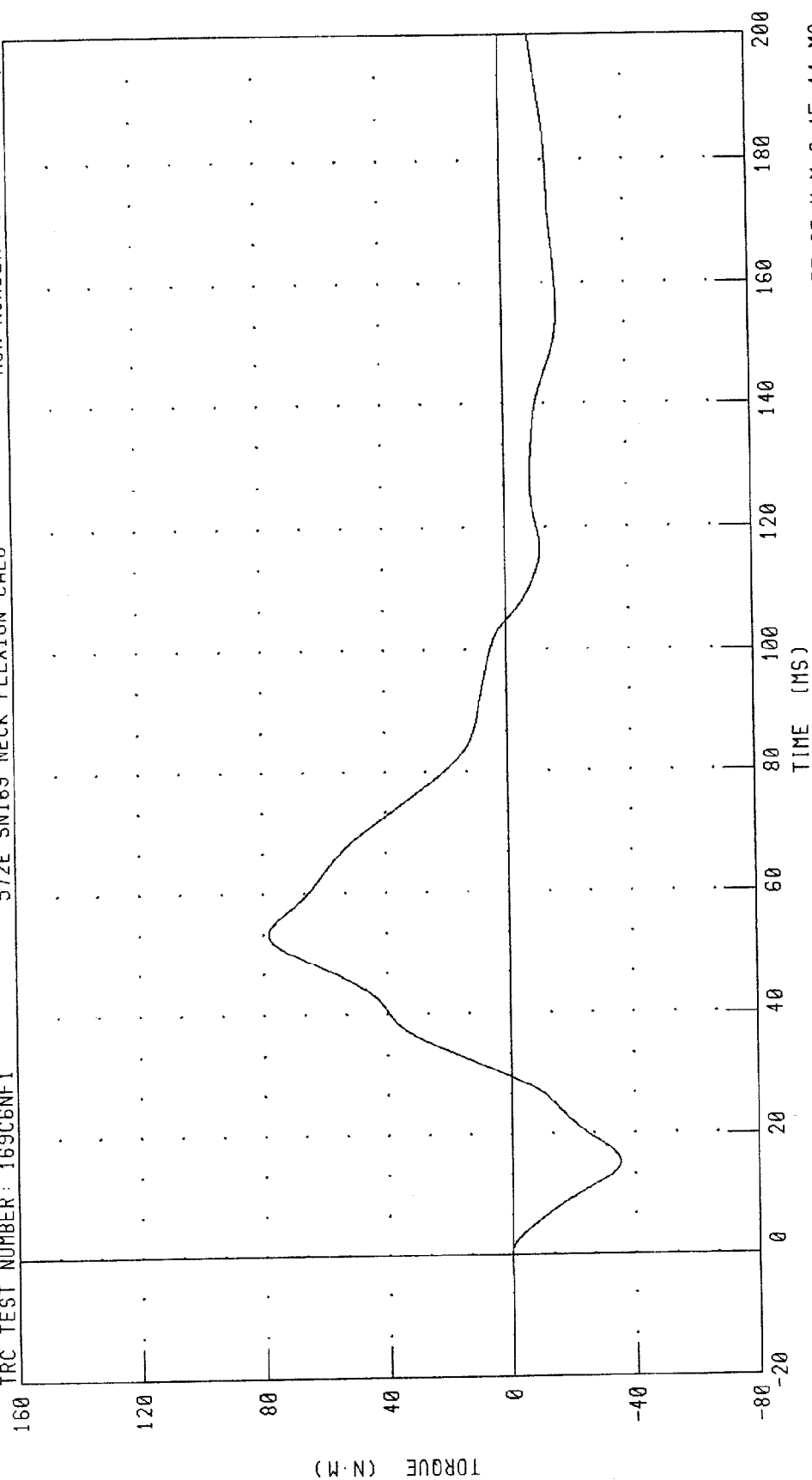
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

RUN NUMBER: 030399.1052;1

TRC TEST NUMBER: 169C6NF1

572E SN169 NECK FLEXION CAL6



CHANNEL: NEKYM

FILTER: CH. CLASS 60

TIME (MS)

PEAK DATA: 78.25 N-M @ 53.36 MS, -35.25 N-M @ 15.44 MS

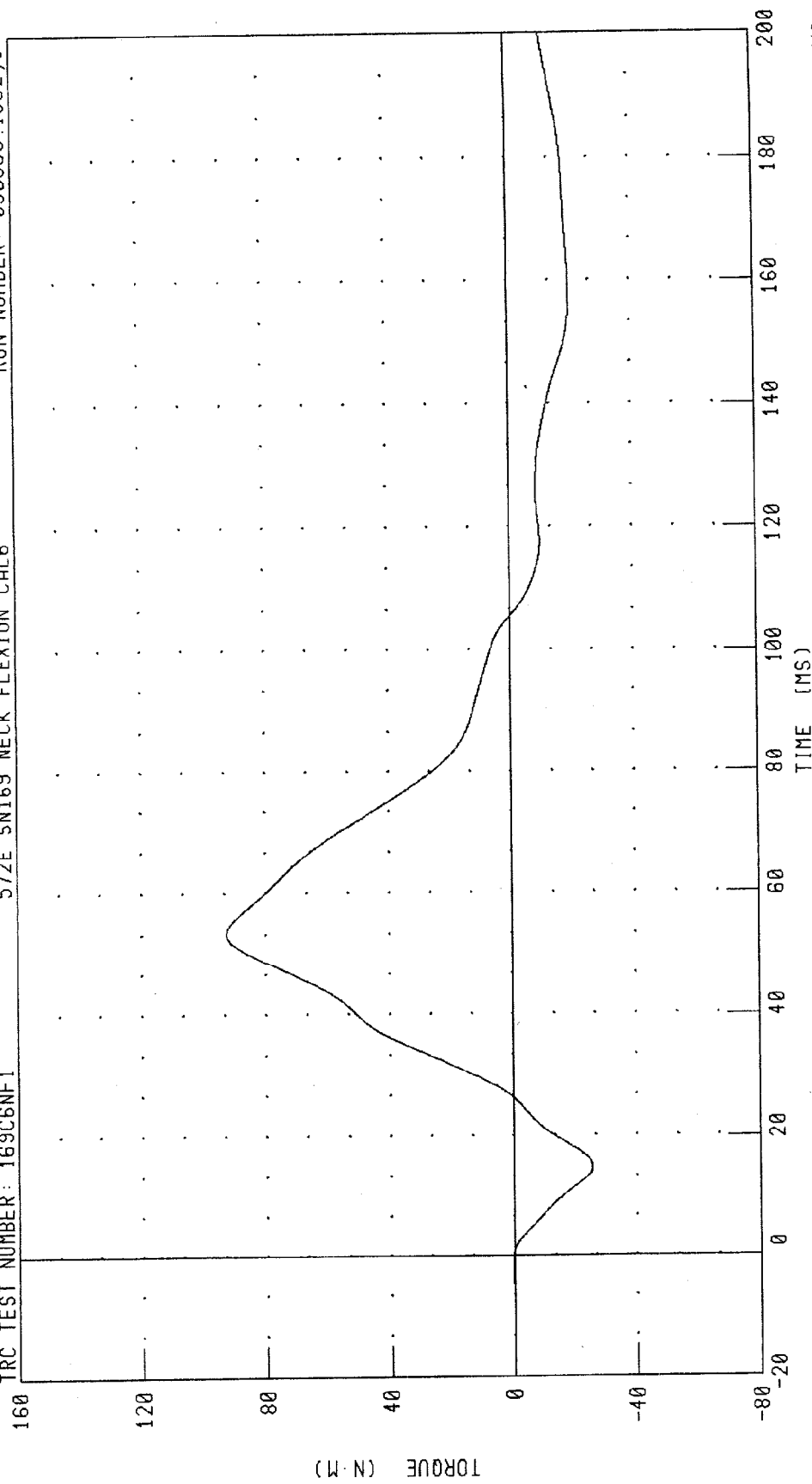
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

RUN NUMBER: 030399.1052;1

TRC TEST NUMBER: 169C6NF1

572E SN169 NECK FLEXION CAL6



CHANNEL: NEKOM

FILTER: CH. CLASS 60

PEAK DATA: 92.55 N·M @ 53.44 MS, -25.64 N·M @ 14.88 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

03-MAR-99

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 169C6NE1 572E SN 169 NECK EXT CAL6

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.00 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	18.52 G
	20 MS	14.00 - 19.00 G	17.40 G
	30 MS	11.00 - 16.00 G	14.19 G
MAX PENDULUM G		22 G MAX	18.65 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	14.13 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	41.04 MS
D PLANE	MAX	81 - 106 DEG.	98.30 DEG.
ROTATION	TIME	72 - 82 MS	78.88 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-67.31 NM
	TIME	65 - 79 MS	71.84 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	158.08 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	147.52 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 030399.1223;1

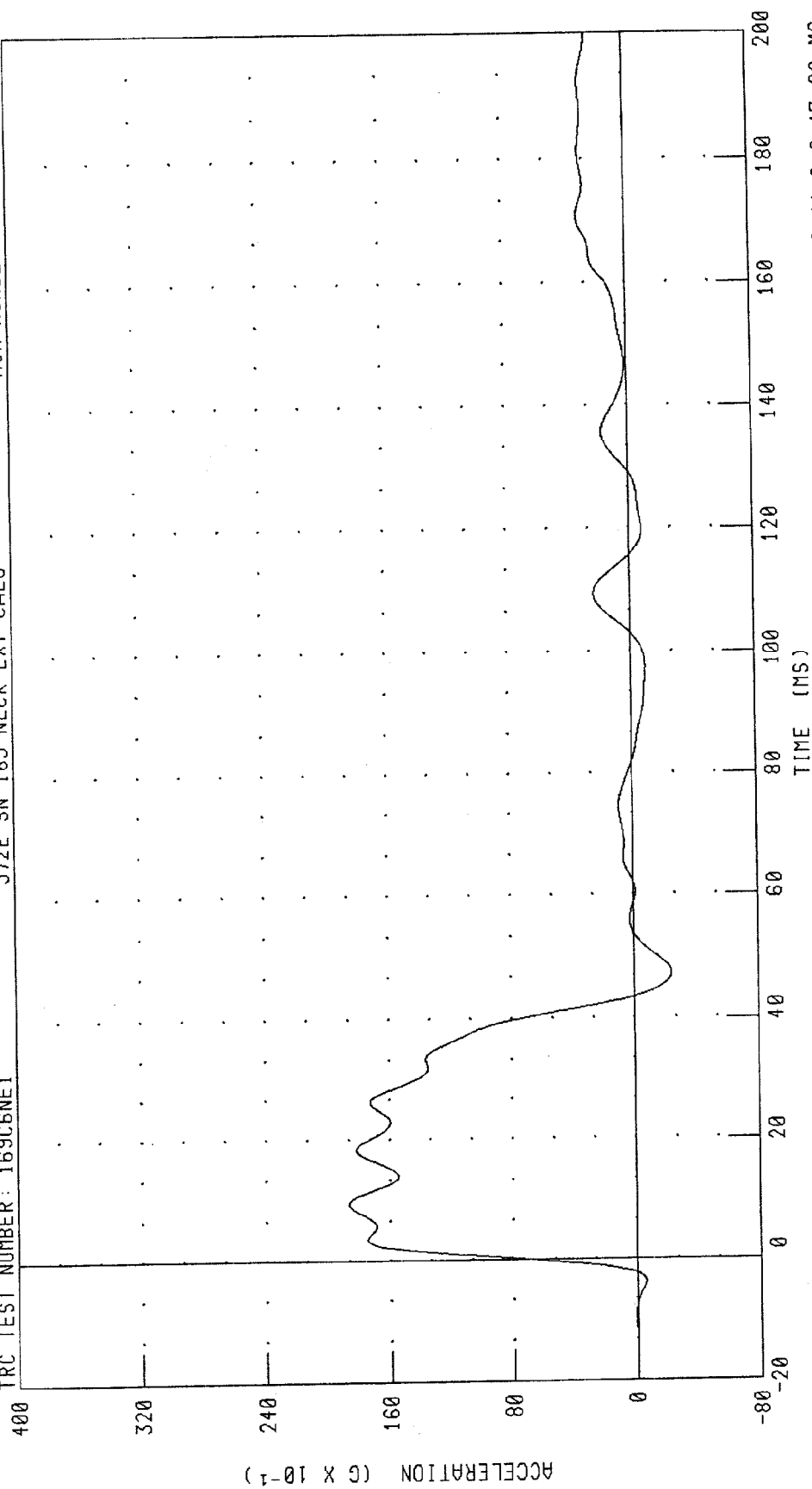
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

RUN NUMBER: 030399.1223;1

TRC TEST NUMBER: 169C6NE1

572E SN 169 NECK EXT CAL6



PEAK DATA: 18.66 G @ 9.44 MS, -2.41 G @ 47.28 MS

CHANNEL: PENXC FILTER: CH. CLASS 60

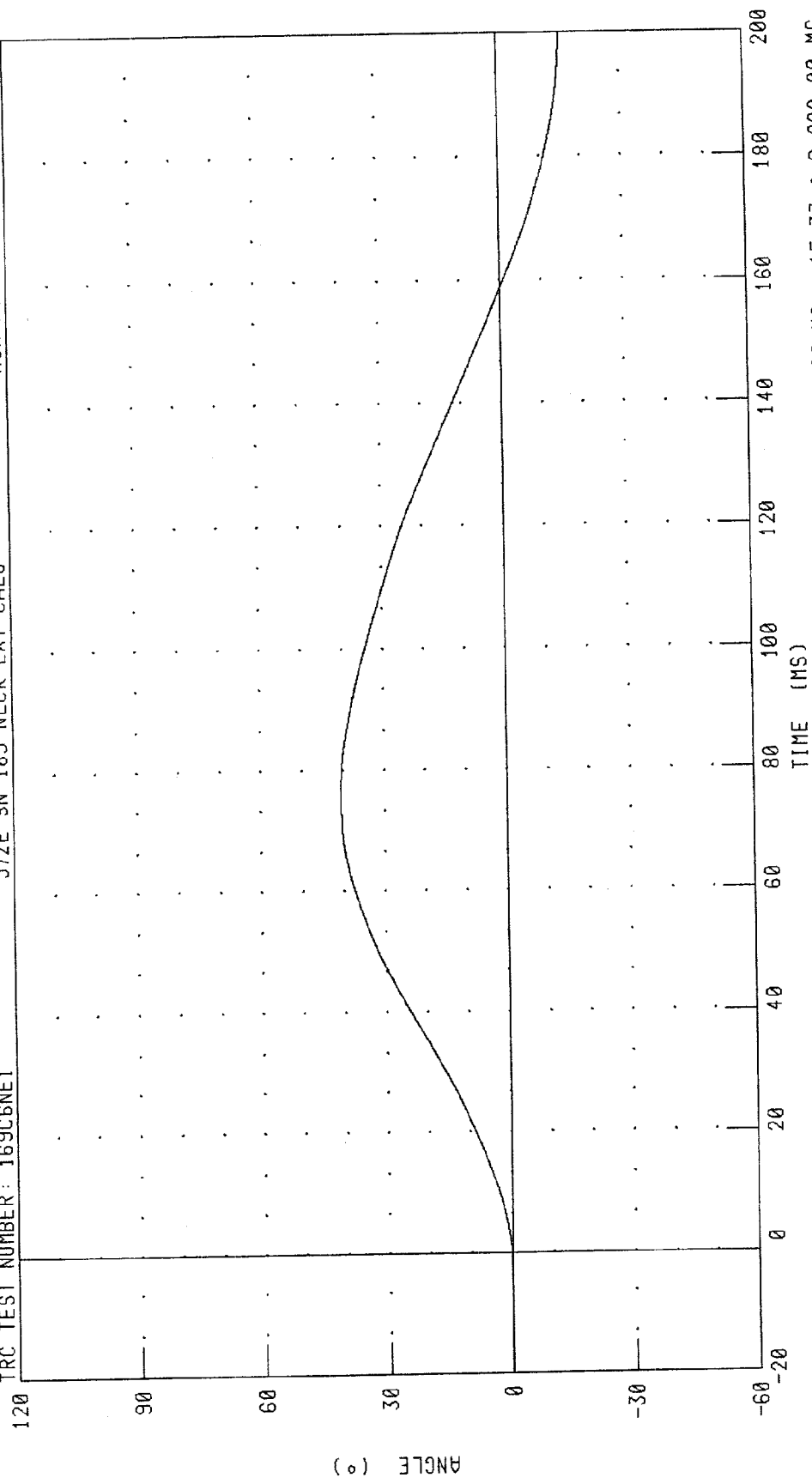
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

RUN NUMBER: 030399.1223,1

TRC TEST NUMBER: 169C6NE1

572E SN 169 NECK EXT CAL6



PEAK DATA: 40.50 ° @ 75.68 MS; -15.33 ° @ 200.00 MS

FILTER: CH. CLASS 60

CHANNEL: BETA

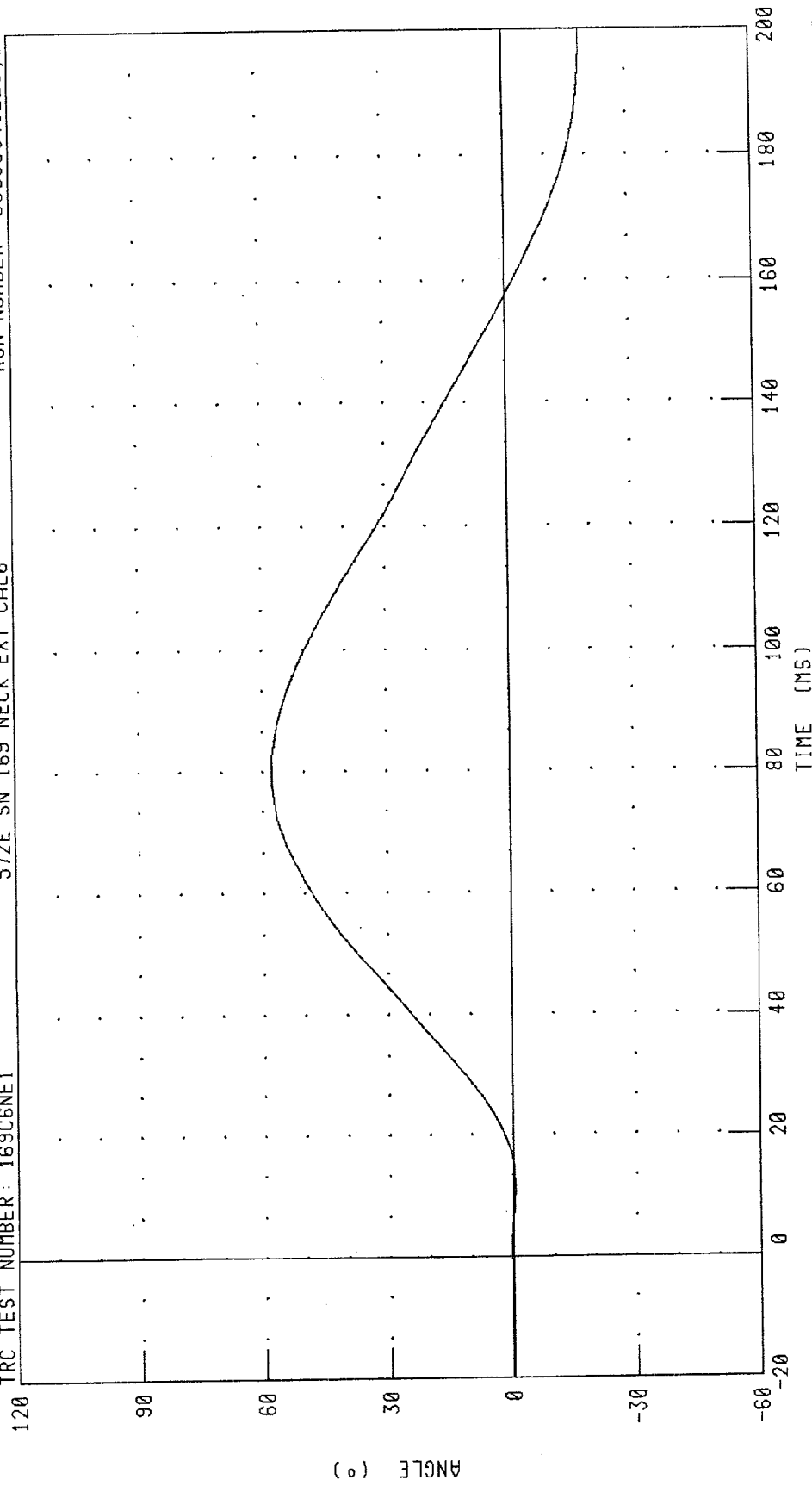
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 169C6NE1

572E SN 169 NECK EXT CAL6

RUN NUMBER: 030399.1223,1



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 57.92 ° @ 80.00 MS; -18.85 ° @ 200.00 MS

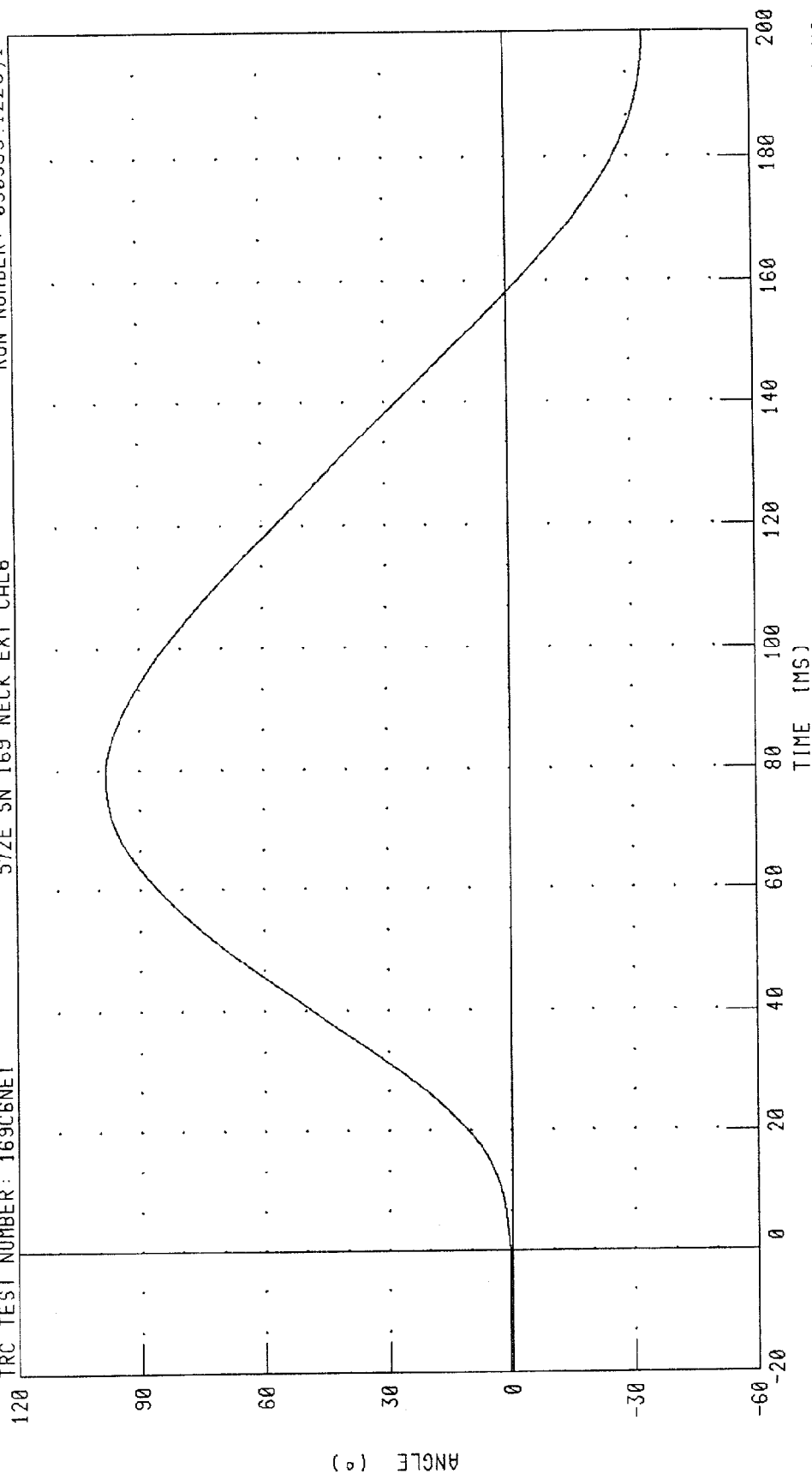
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 169C6NE1

572E SN 169 NECK EXT CAL6

RUN NUMBER: 030399.1223,1



CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 98.31 ° @ 78.88 MS; -34.17 ° @ 200.00 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

RUN NUMBER: 030399.1223,1

572E SN 169 NECK EXT CAL6

TRC TEST NUMBER: 169C6NE1

80

40

0

FORCE (N X 10¹)

-40

-80

-120

-160

-20

TIME (MS)

80

100

120

140

160

180

200

220

240

260

280

300

320

340

360

380

400

420

440

460

480

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520

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660

680

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720

740

760

780

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820

840

860

880

900

920

940

960

980

1000

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1040

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1080

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4080

4100

4120

4140

4160

4180

4200

4220

4240

4260

4280

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5100

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5140

5160

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5200

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5240

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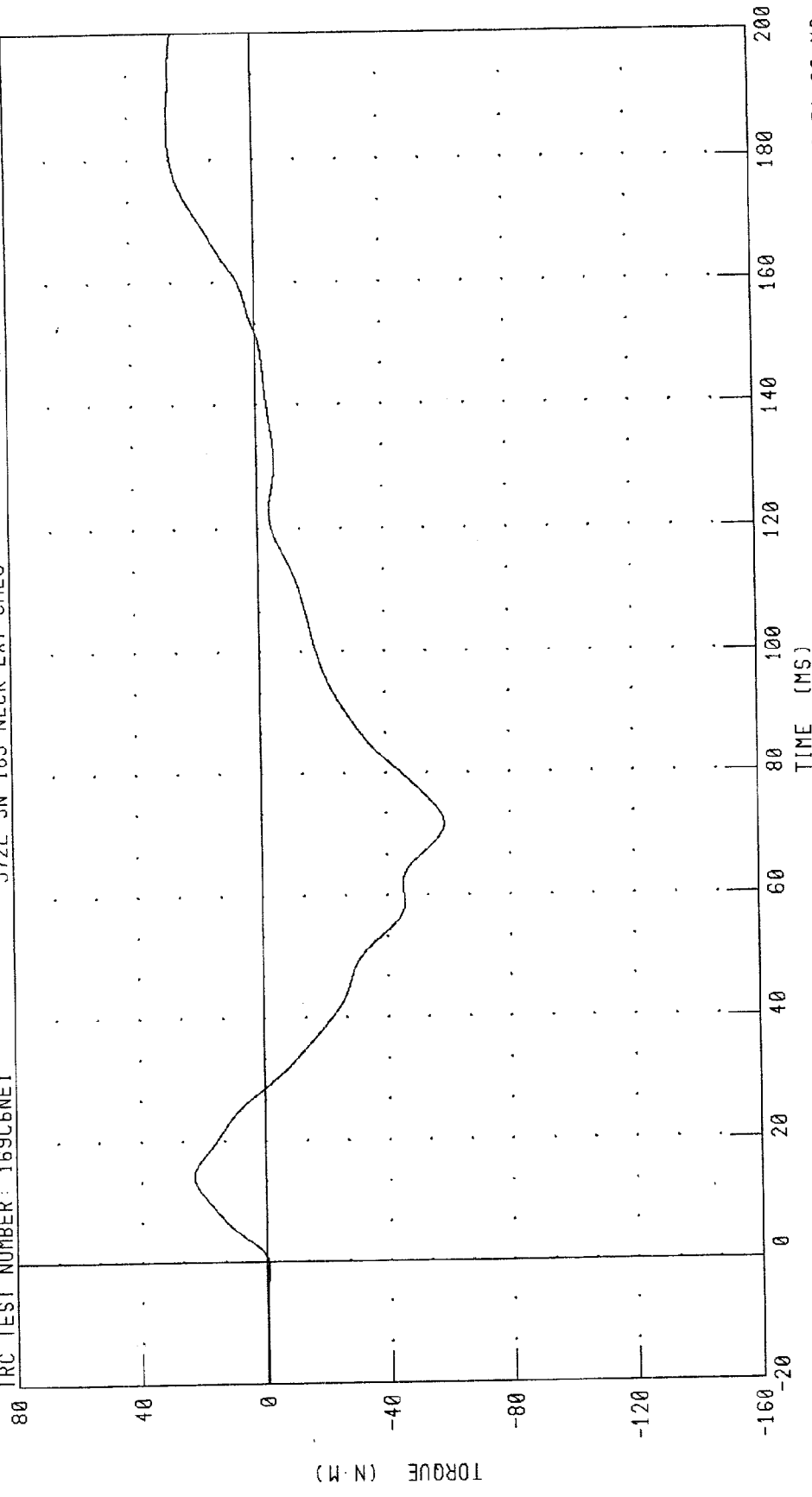
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

RUN NUMBER: 030399.1223;1

572E SN 169 NECK EXT CAL6

TRC TEST NUMBER: 169C6NE1



PEAK DATA: 27.36 N·M @ 185.04 MS; -58.69 N·M @ 71.68 MS

CHANNEL: NEKYM FILTER: CH. CLASS 60

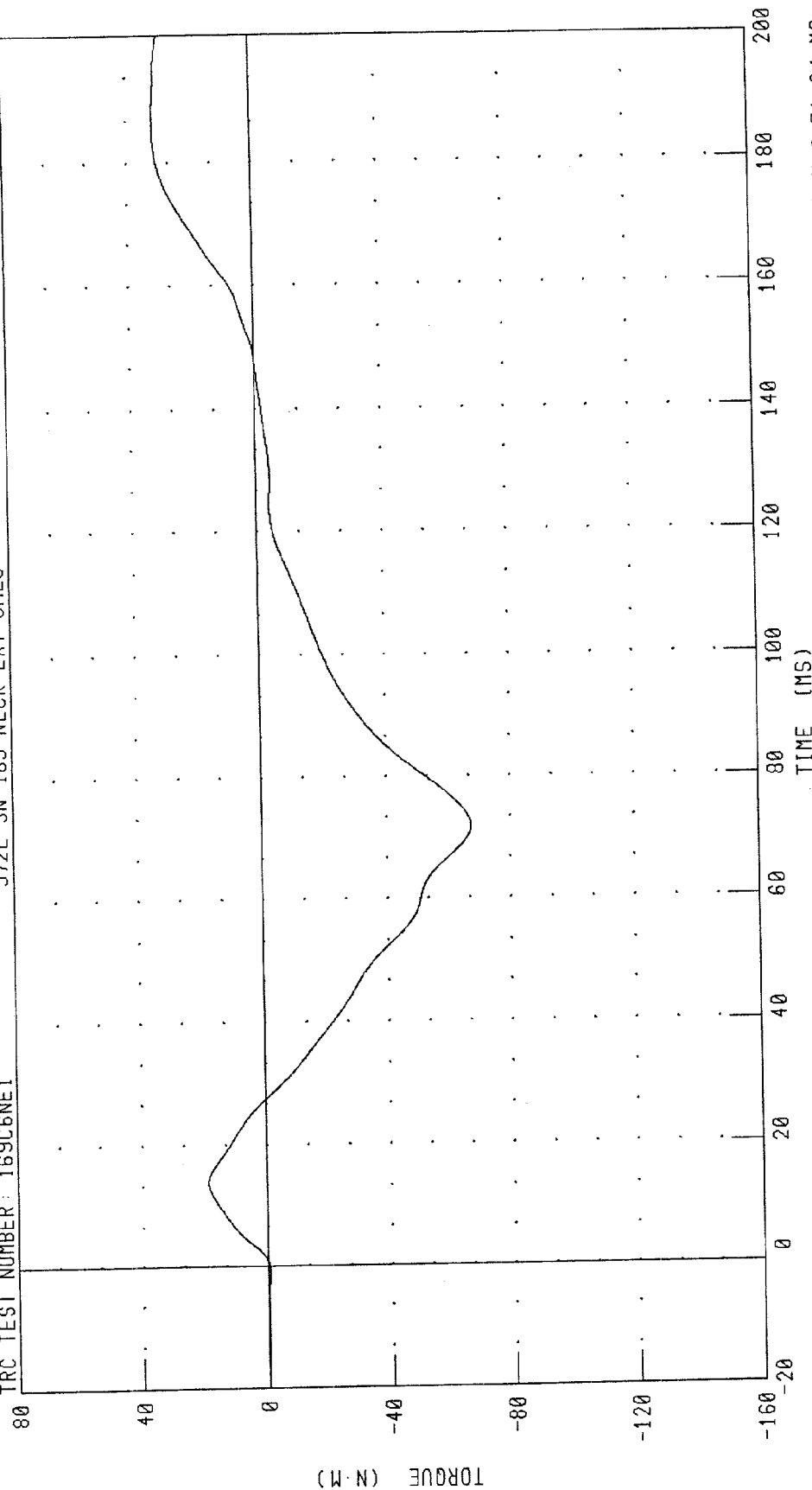
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

RUN NUMBER: 030399.1223;1

572E SN 169 NECK EXT CAL6

TRC TEST NUMBER: 169C6NE1



PEAK DATA: 31.73 N·M @ 186.08 MS, -67.31 N·M @ 71.84 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III 50th

04-MAR-99

TRC INC.

TEST NO: 169C6TH1

572E SN169 H.S.THORAX CAL06

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.59 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	66.2 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5489. N
INTERNAL HYSTERESIS	69% - 85%	73.7%

TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

RUN NUMBER: 030499.0746;6

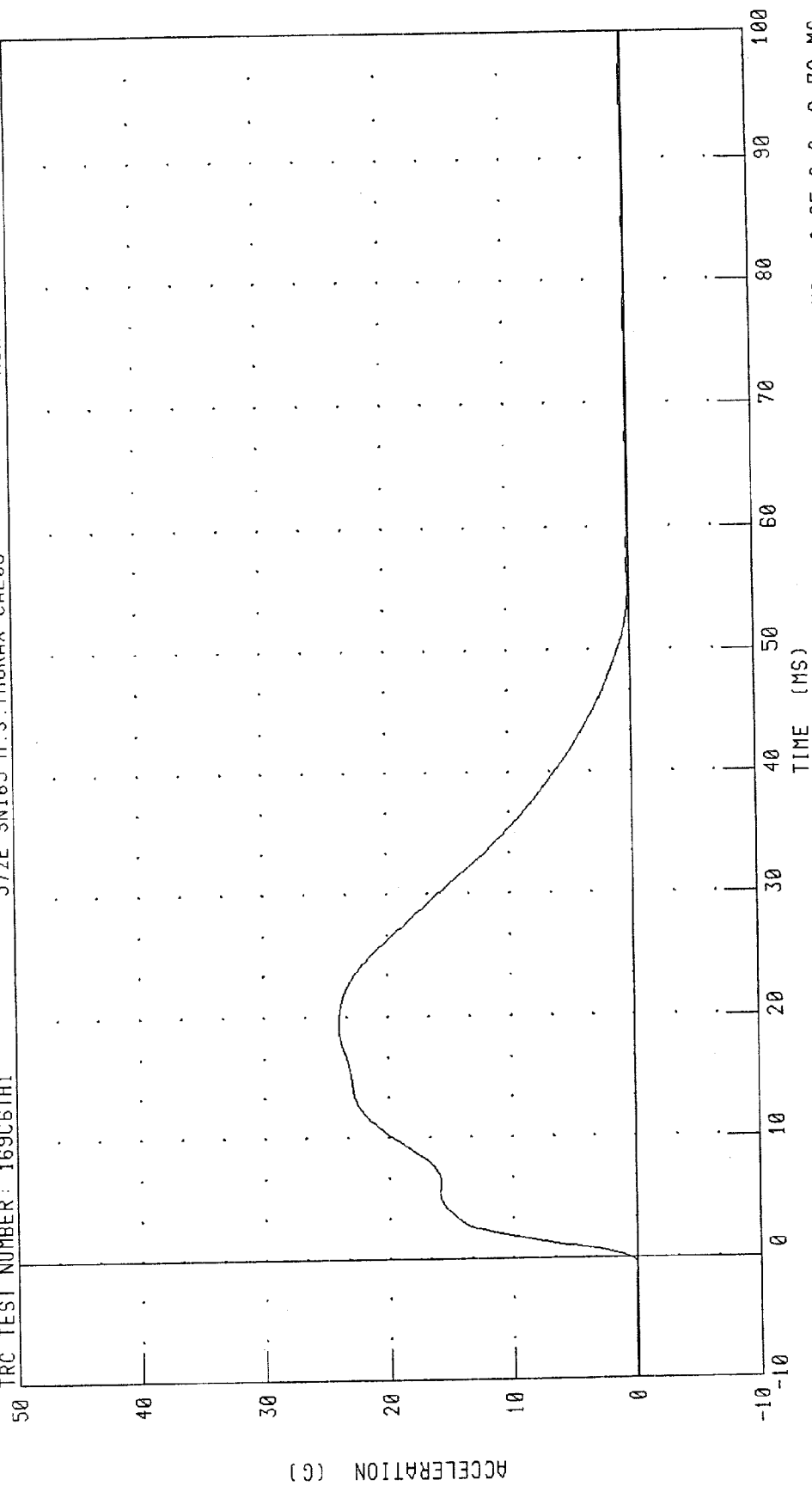
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM DECELERATION

RUN NUMBER: 030499.0746,6

572E SN169 H.S.THORAX CAL06

TRC TEST NUMBER: 169C6TH1



PEAK DATA: 23.96 G @ 19.44 MS, -0.05 G @ -0.72 MS

CHANNEL: PENXC FILTER: CH. CLASS 180

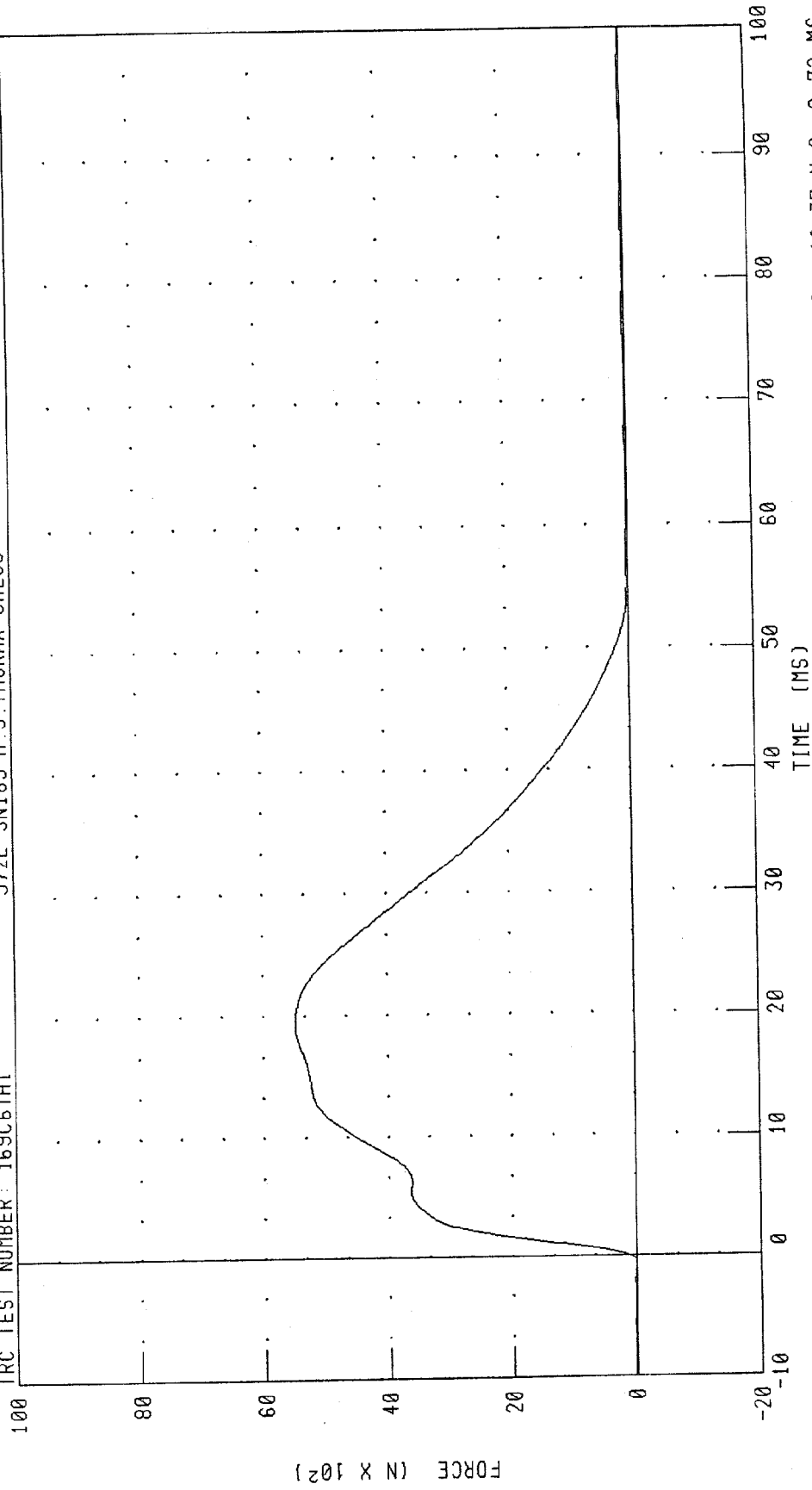
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

RUN NUMBER: 030499.0746,6

572E SN169 H.S. THORAX CAL06

TRC TEST NUMBER: 169C6TH1



PEAK DATA: 5489.43 N @ 19.44 MS; -10.37 N @ -0.72 MS

CHANNEL: PENXF FILTER: CH. CLASS 180

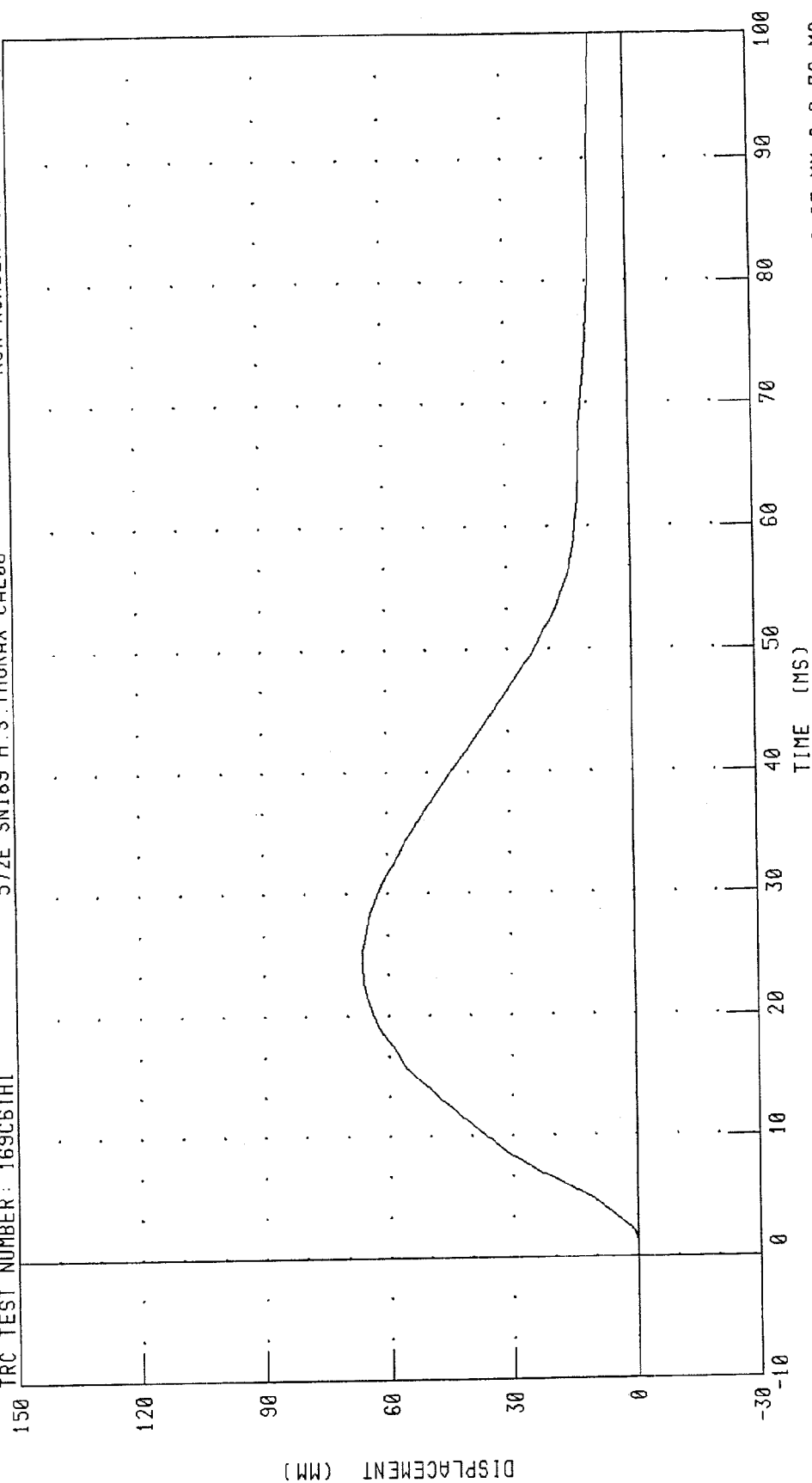
PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

TRC TEST NUMBER: 169C6TH1

572E SN169 H.S. THORAX CAL06

RUN NUMBER: 030499 0746,6



CHANNEL: CSTXD FILTER: CH. CLASS 180

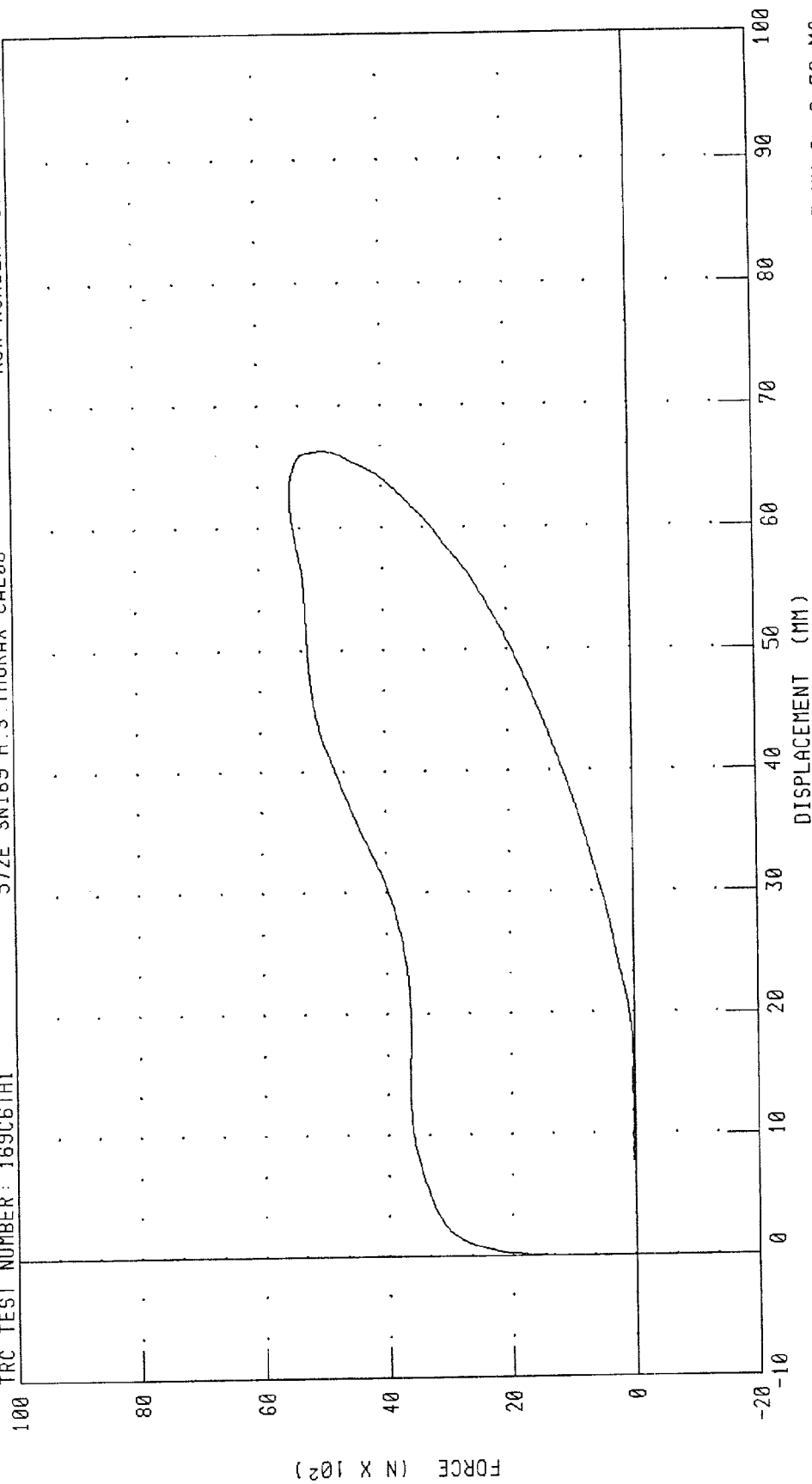
PEAK DATA: 66.25 MM @ 24.80 MS; -0.05 MM @ 0.72 MS

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

RUN NUMBER: 030499.0746.6

TRC TEST NUMBER: 169C6TH1

572E SN169 H.S. THORAX CAL06



CHANNEL: CSTXD
PENXF

FILTER: CH CLASS 180
CH CLASS 180

PEAK DATA:

66.25 MM @ 24.80 MS;
5489.43 N @ 19.44 MS;
-0.05 MM @ 0.72 MS;
-10.37 N @ -0.72 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT HIP JOINT FEMUR FLEXION TEST

HYBRID III PART 572E

03-MAR-99

TRC INC.

TEST NO: 169C6HR1

572E SN 169 HIPFLEX CAL 06

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	66.7 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	45.8 deg.

TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

RUN NUMBER: 030399.1026;1

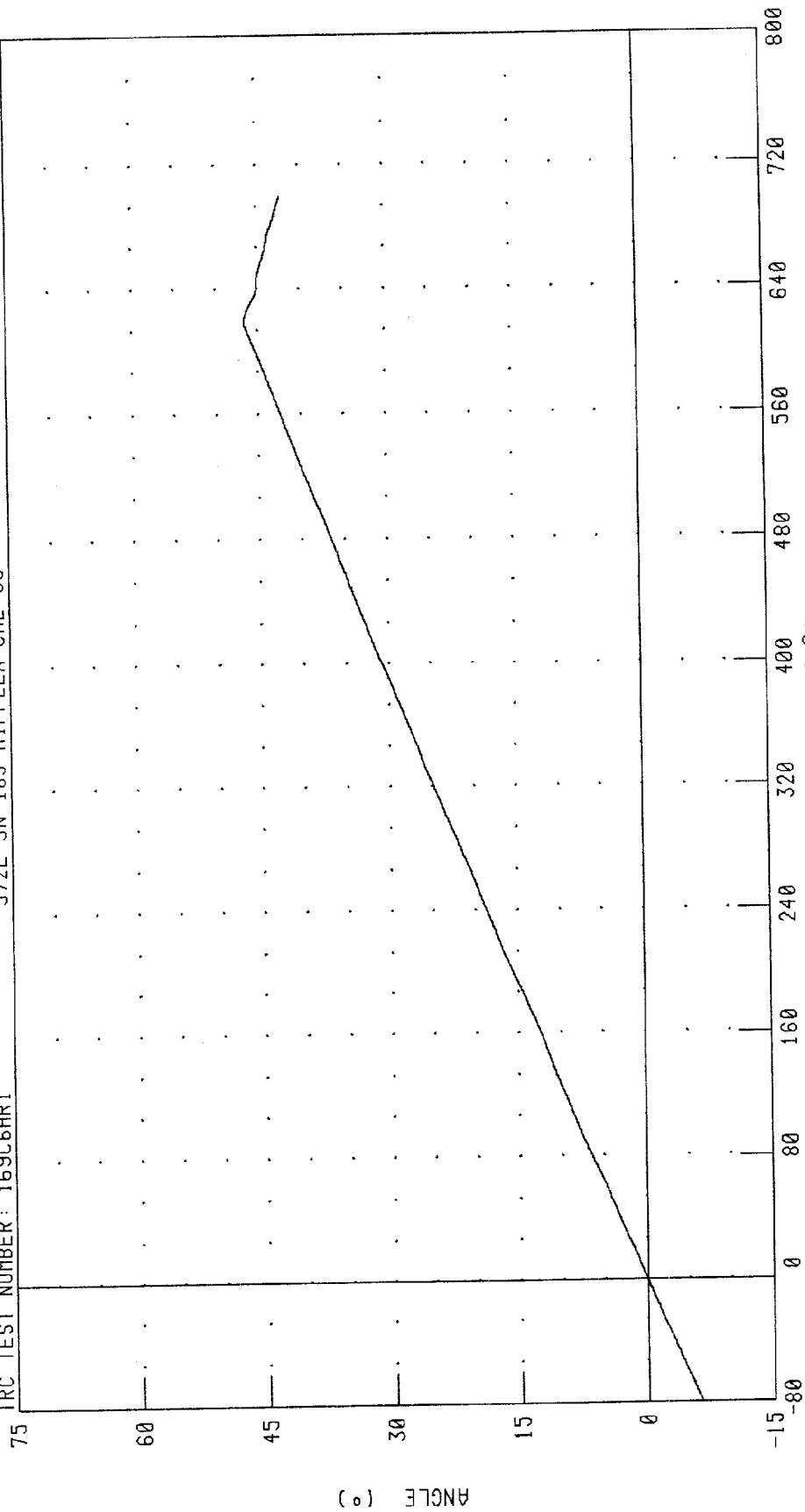
HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

RIGHT HIP FLEXION ROTATION

572E SN 169 HIPFLEX CAL 06

RUN NUMBER: 030399.1026,1

TRC TEST NUMBER: 169C6HR1



TIME (S X 10⁻²)

PEAK DATA: 46.58 ° @ 6.21 S; -9.40 ° @ -1.00 S

CHANNEL: RHPXD FILTER: CH. CLASS 60

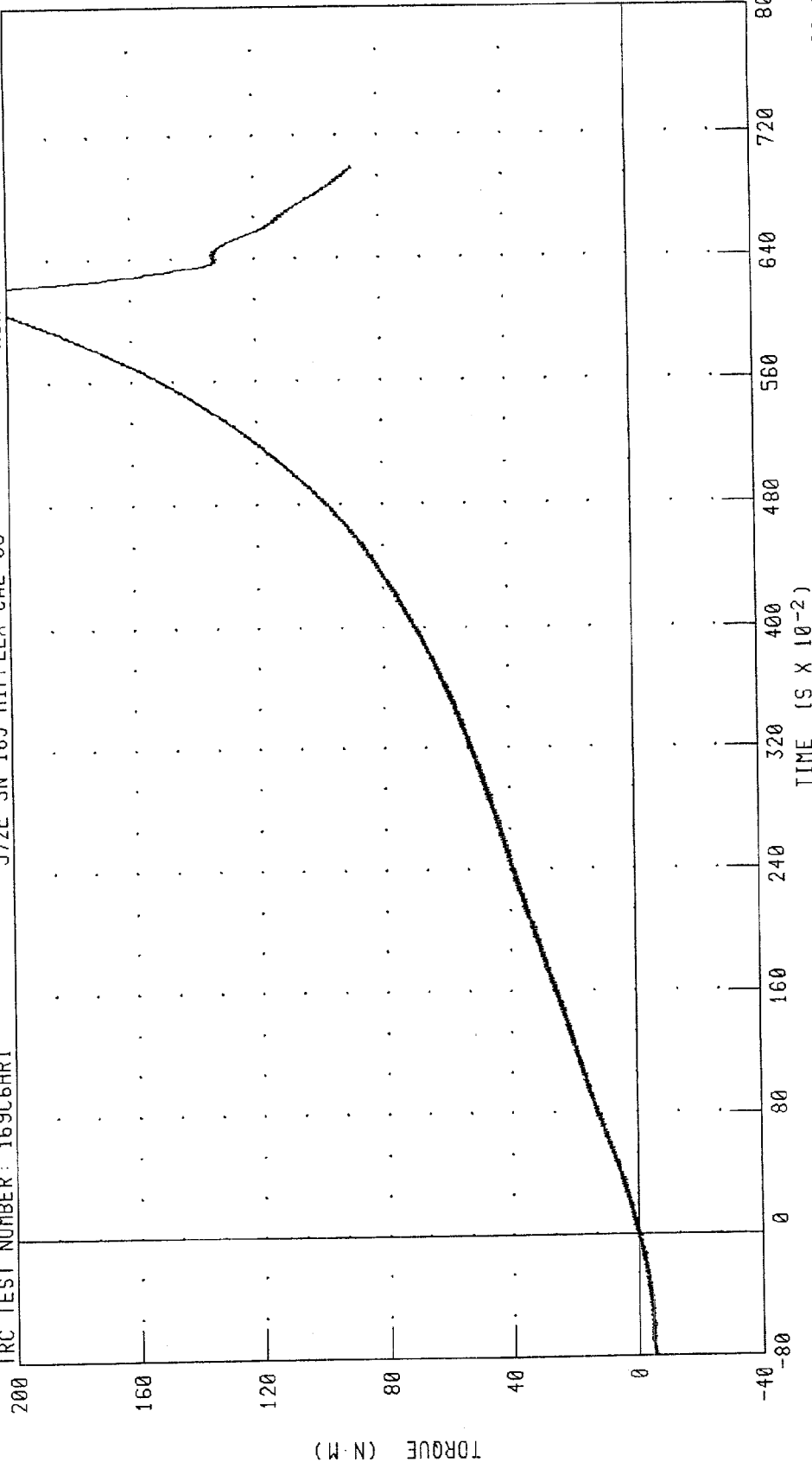
HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

RIGHT HIP FLEXION MOMENT

572E SN 169 HIPFLEX CAL 06

RUN NUMBER: 030399.1026;1

TRC TEST NUMBER: 169C6HR1



CHANNEL: RHPYM

FILTER: CH. CLASS 60

TIME (S X 10⁻²)

PEAK DATA: 217.33 N-M @ 6.17 S; -9.84 N-M @ -1.00 S

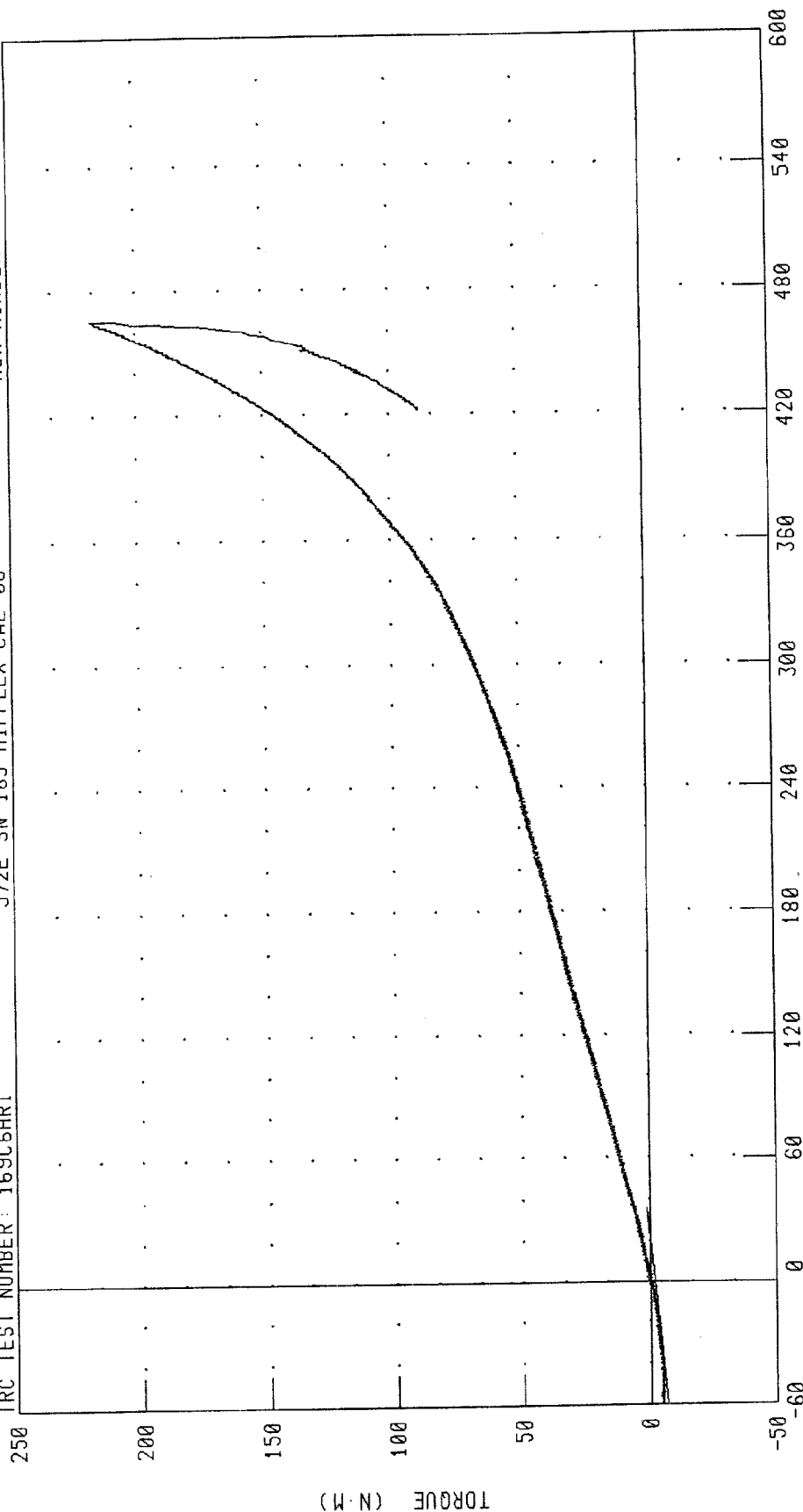
HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

RIGHT HIP FLEXION MOMENT VS ROTATION ANGLE

RUN NUMBER: 030399.1026,1

572E SN 169 HIPFLEX CAL 06

TRC TEST NUMBER: 169CSHR1



PEAK DATA: 46.58 ° 0 6.21 S; -9.40 ° 0 -1.00 S
217.33 N·M 0 6.17 S; -9.04 N·M 0 -1.00 S

CHANNEL: RHPXD RHPYH
FILTER: CH CLASS 60
CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

LEFT HIP JOINT FEMUR FLEXION TEST

HYBRID III PART 572E

03-MAR-99

TRC INC.

TEST NO: 169C6HL1

572E SN 169 HIPFLEX CAL 06

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	59.8 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	46.0 deg.

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 030399.1028;1

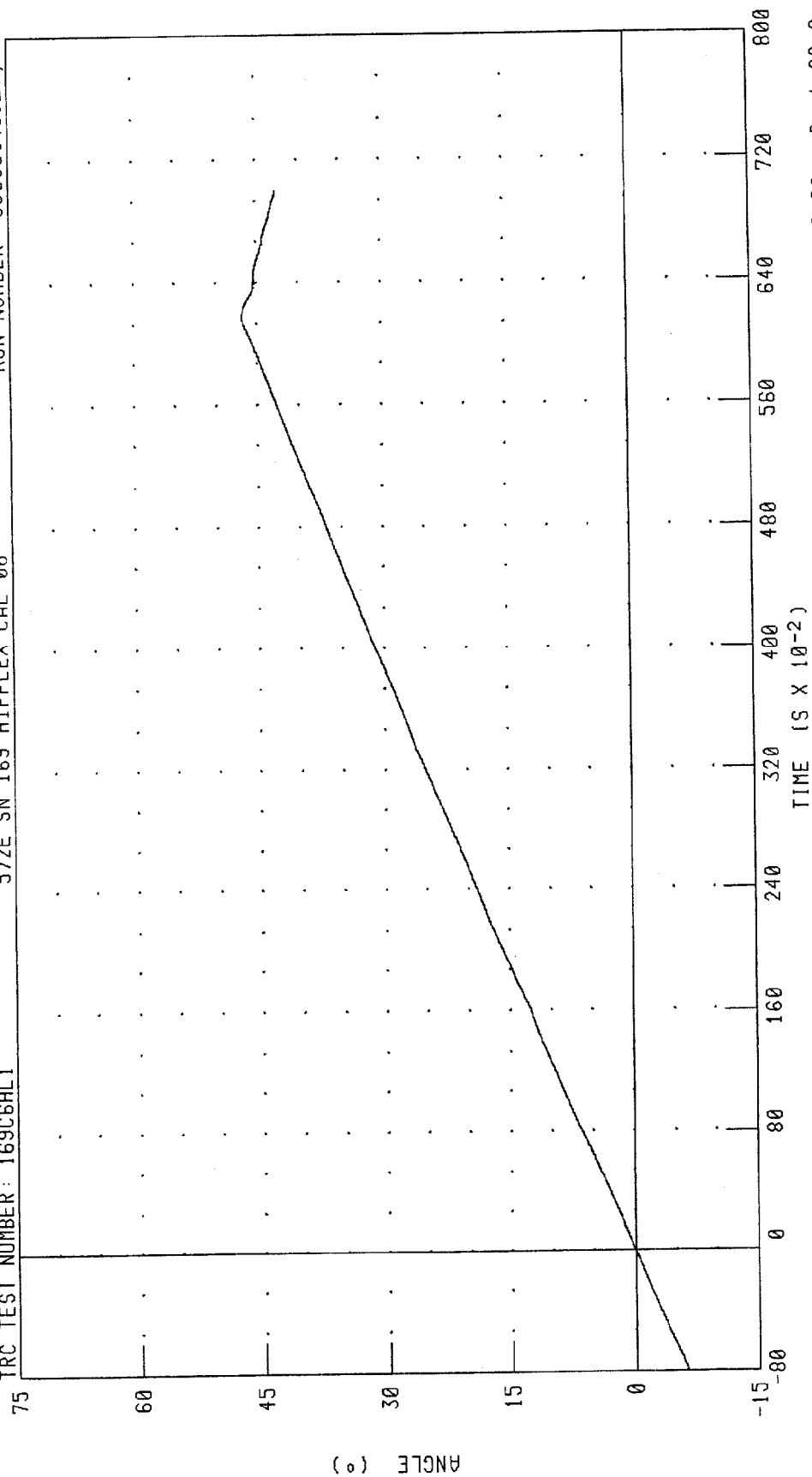
HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

LEFT HIP FLEXION ROTATION

572E SN 169 HIPFLEX CAL 06

TRC TEST NUMBER: 169C6HL1

RUN NUMBER: 030399.1028;1



CHANNEL: LHPXD FILTER: CH. CLASS 60

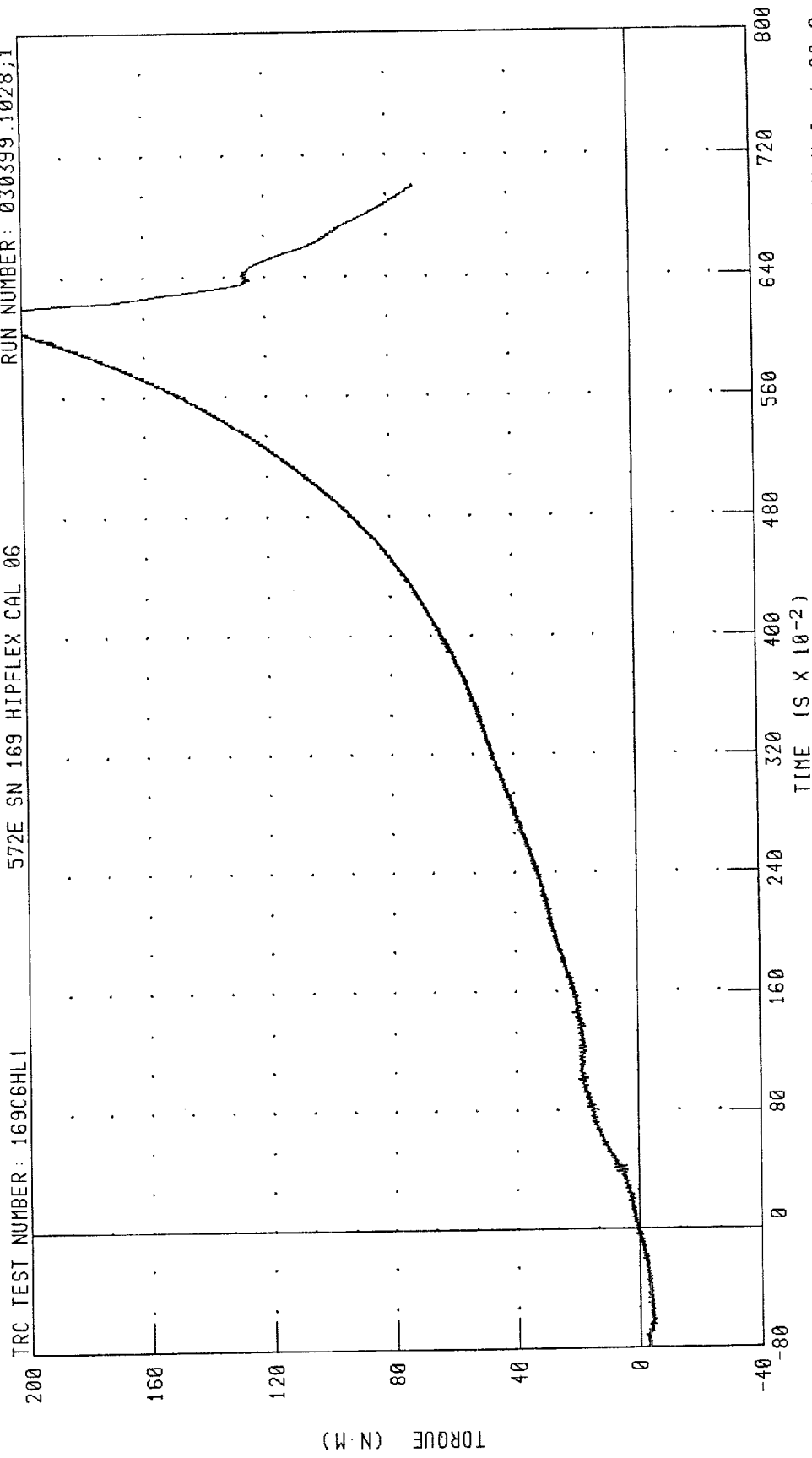
PEAK DATA: 46.85 ° @ 6.18 S; -9.26 ° @ -1.00 S

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

LEFT HIP FLEXION MOMENT

572E SN 169 HIPFLEX CAL 06

RUN NUMBER: 030399.1028;1



PEAK DATA: 221.50 N·M @ 6.15 S; -5.72 N·M @ -1.00 S

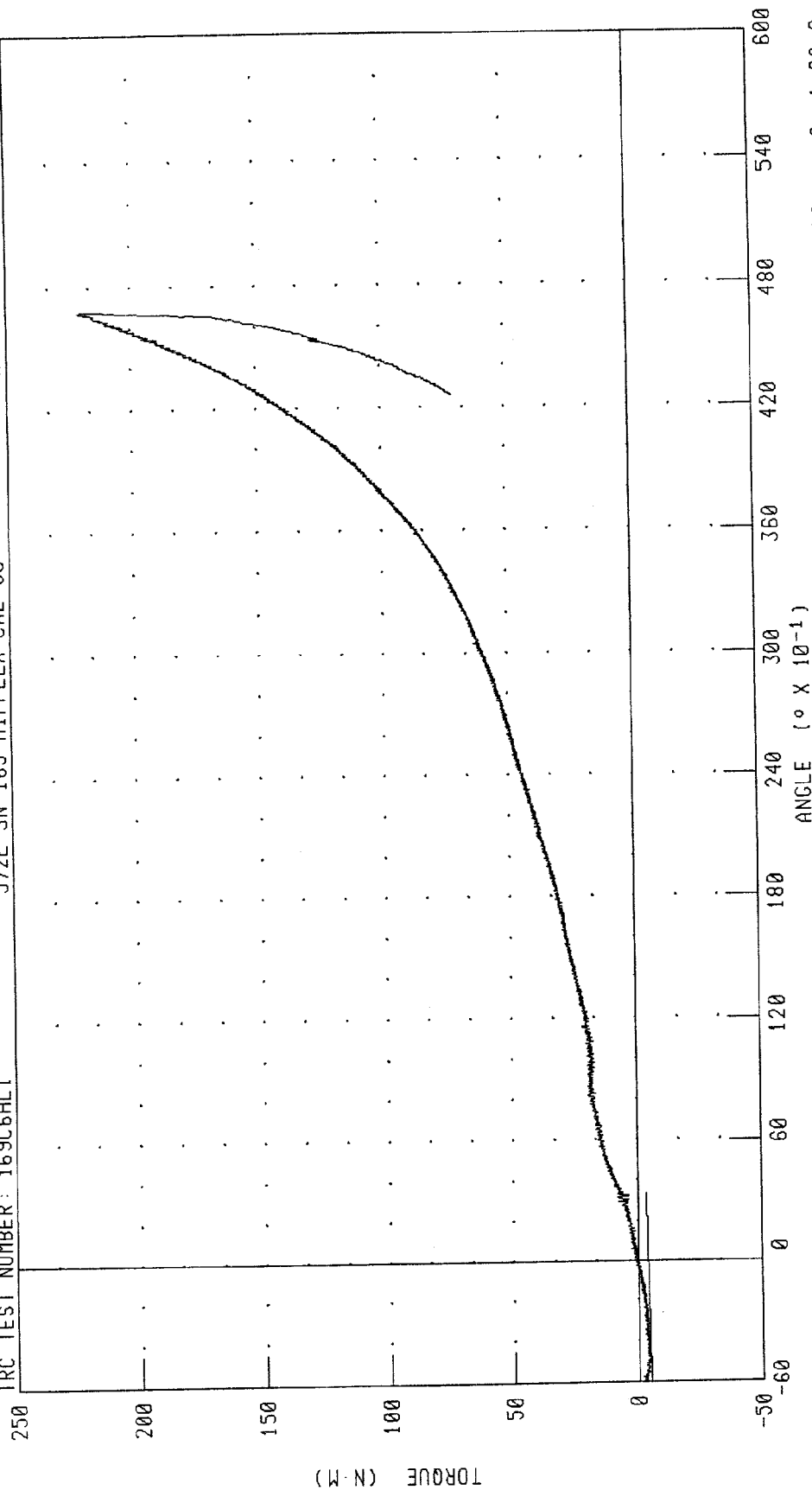
CHANNEL: LHPYM FILTER: CH. CLASS 60

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES LEFT HIP FLEXION MOMENT VS ROTATION ANGLE

TRC TEST NUMBER: 169C6HL1

572E SN 169 HIPFLEX CAL 06

RUN NUMBER: 030399.1028,1



CHANNEL: LHPXD FILTER: CH: CLASS 60
LHPYH CH: CLASS 60

PEAK DATA:

46.85 ° 0 6.18 S; -9.26 ° 0 -1.00 S
221.50 N·M 0 6.15 S; -5.72 N·M 0 -1.00 S

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 50th

03-MAR-99

TRC INC.

TEST NO: 169C6RK1

572E SN169 RIGHT KNEE CAL 6

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5177.3 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

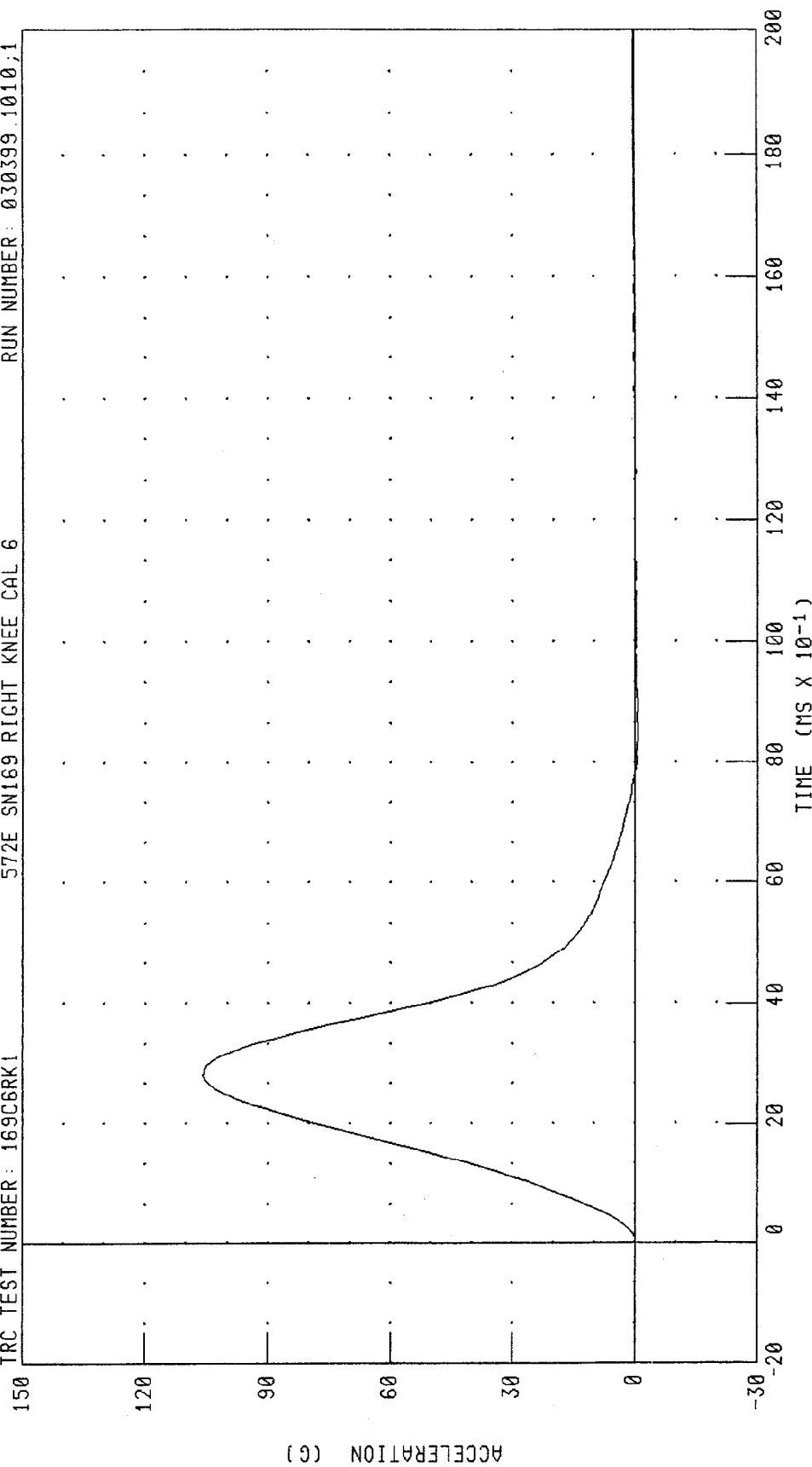
RUN NUMBER: 030399.1009;1

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

TRC TEST NUMBER: 169C6RK1

572E SN169 RIGHT KNEE CAL 6

RUN NUMBER: 030399.1010;1



CHANNEL: PENXG FILTER: CH. CLASS 600

PEAK DATA: 105.82 G @ 2.80 MS; -0.91 G @ 8.48 MS

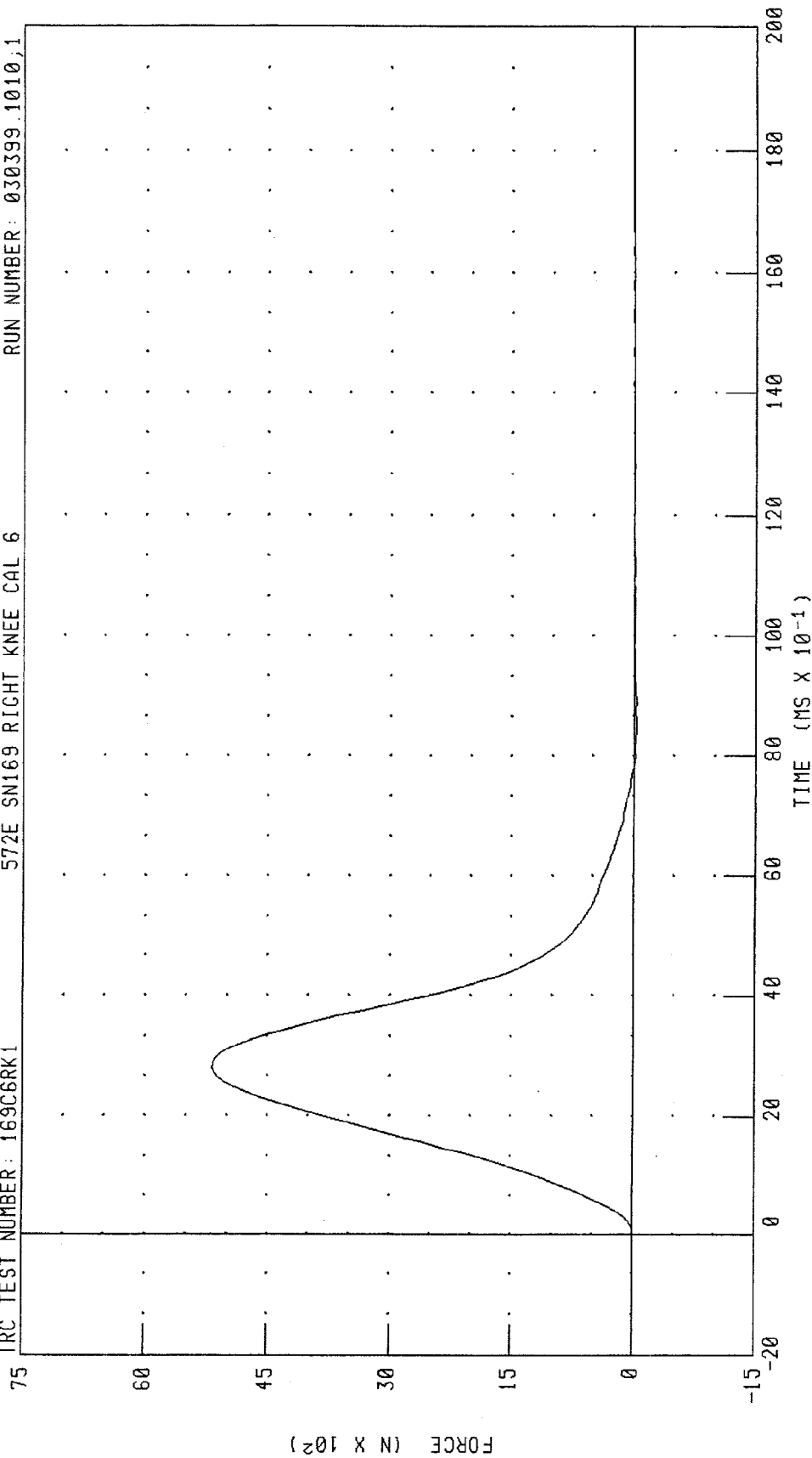
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KC PEND.)

572E SN169 RIGHT KNEE CAL 6

RUN NUMBER: 030399.1010,1

TRC TEST NUMBER: 169C6RK1



CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 5177.34 N @ 2.80 MS; -44.29 N @ 8.48 MS

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 50th

03-MAR-99

TRC INC.

TEST NO: 169C6LK1

572E SN169 LEFT KNEE CAL 6

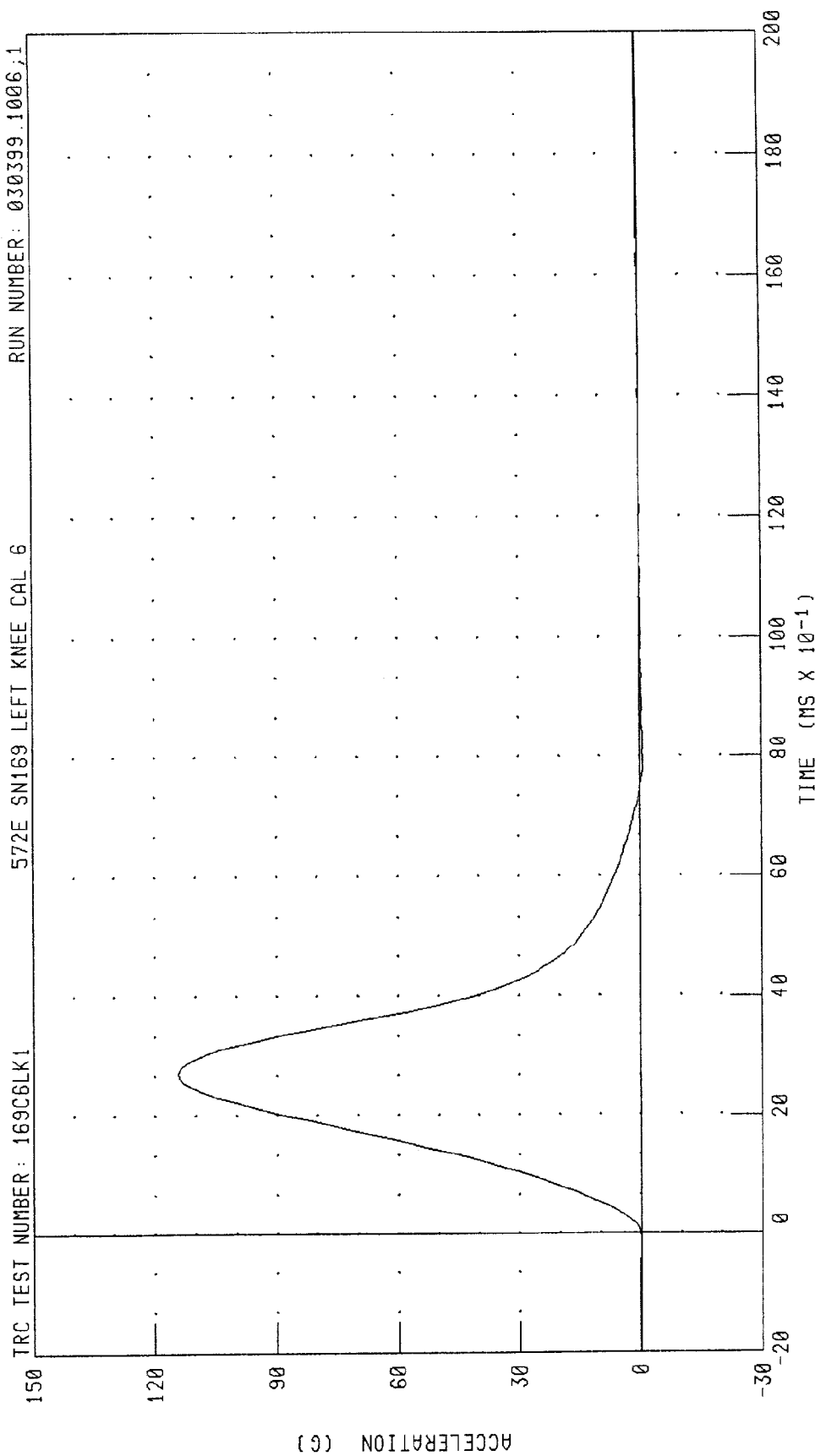
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5586.8 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 030399.0927;1

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



CHANNEL: PENXG FILTER: CH. CLASS 600 PEAK DATA: 114.18 G @ 2.72 MS; -0.85 G @ 8.32 MS

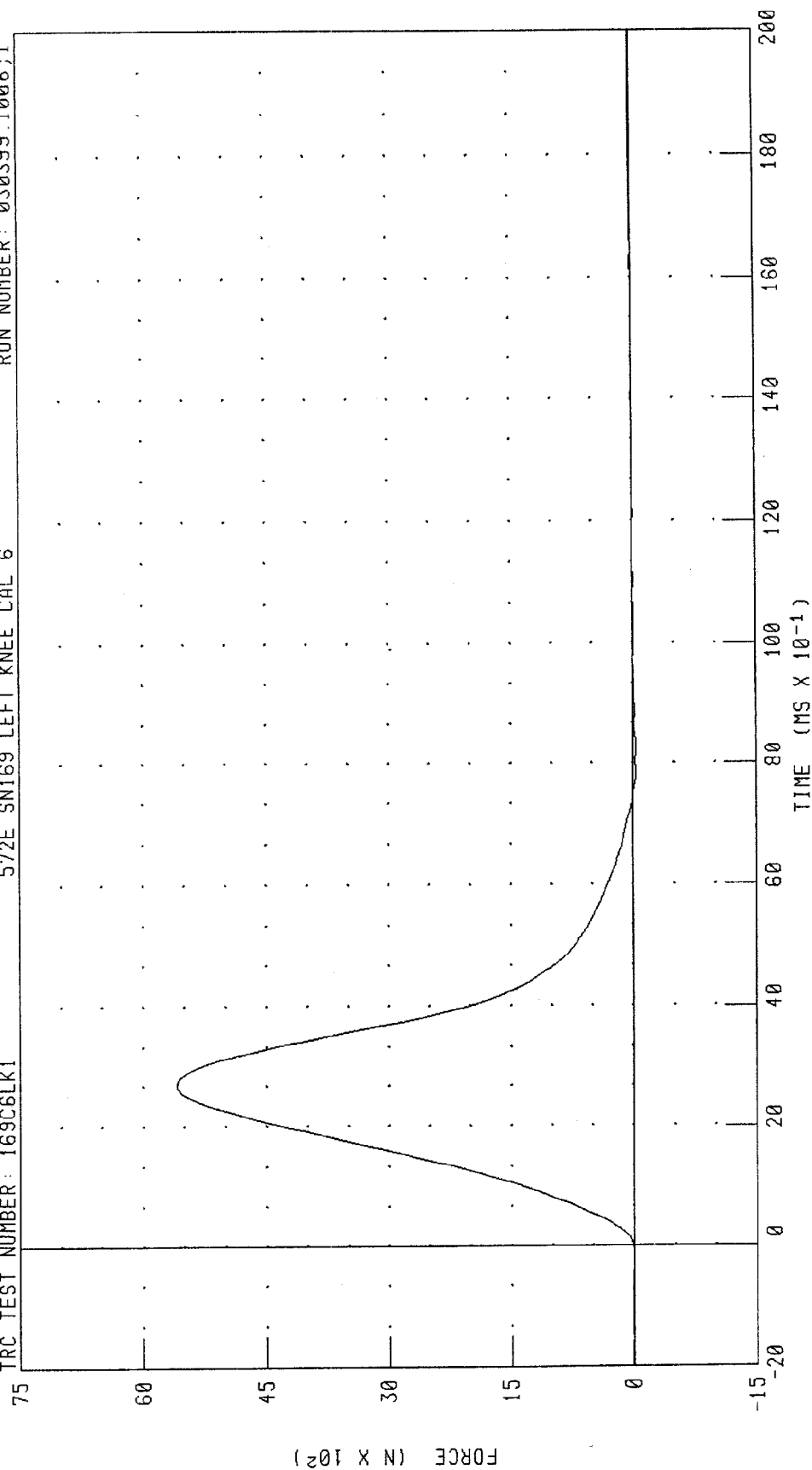
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 169C6LK1

572E SN169 LEFT KNEE CAL 6

RUN NUMBER: 030399.1006;1



CHANNEL: PENXF

FILTER: CH CLASS 600

PEAK DATA: 5586.83 N @ 2.72 MS; -41.52 N @ 8.32 MS

Pre-Test Dummy Certification

Passenger Dummy S/N 168

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III 50th

03-MAR-99

TRC INC.

TEST NO: 168C8HD1

572E SN168 HEAD DROP CAL 08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	264.44 G
PEAK LATERAL ACCELERATION	15 G MAX	-2.33 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

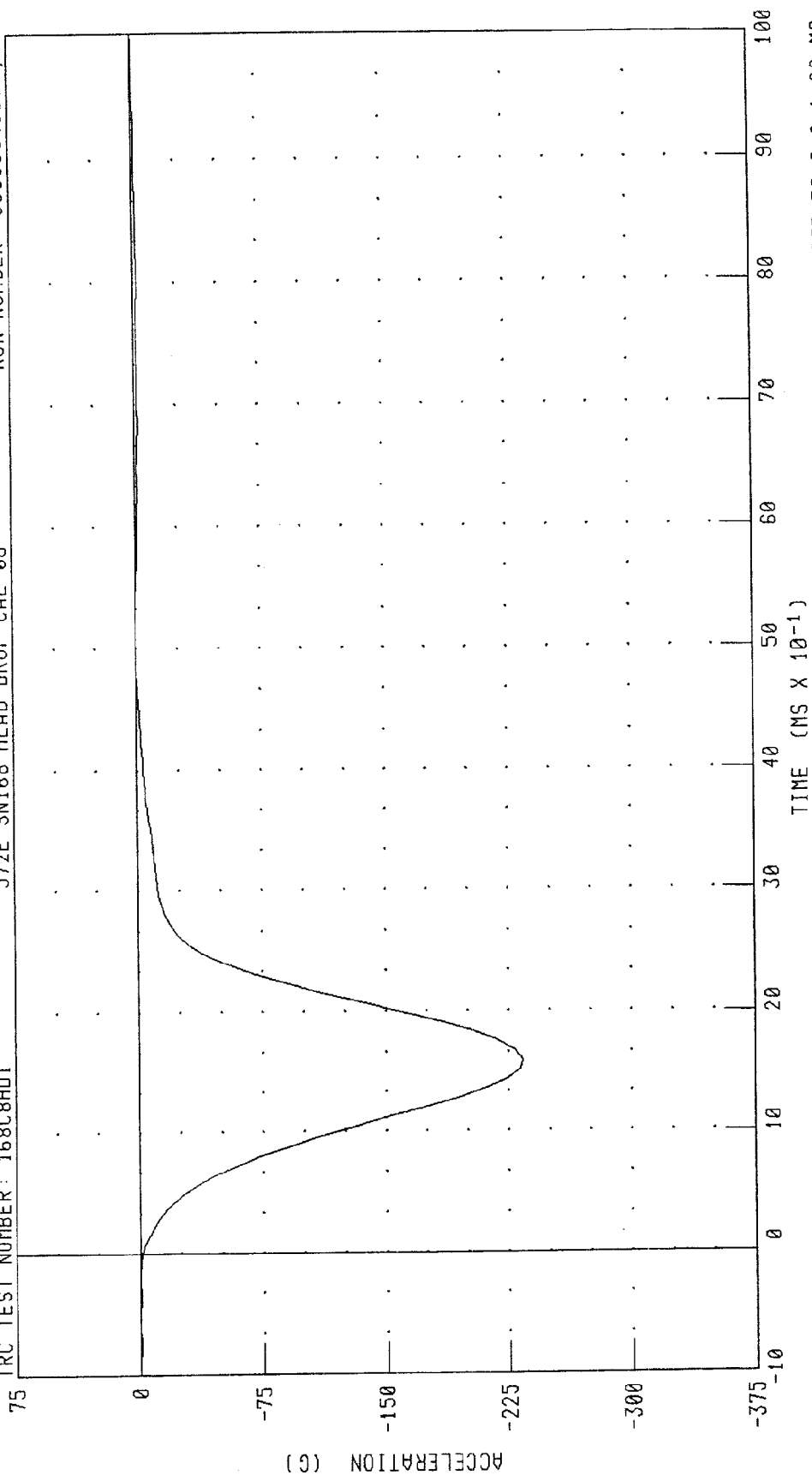
RUN NUMBER: 030399.1507;1

PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

572E SN168 HEAD DROP CAL 08 RUN NUMBER: 030399.1507;1

TRC TEST NUMBER: 168C8HD1



CHANNEL: HEDXC FILTER: CH. CLASS 1000

PEAK DATA: 0.41 G @ 4.96 MS, -233.70 G @ 1.60 MS

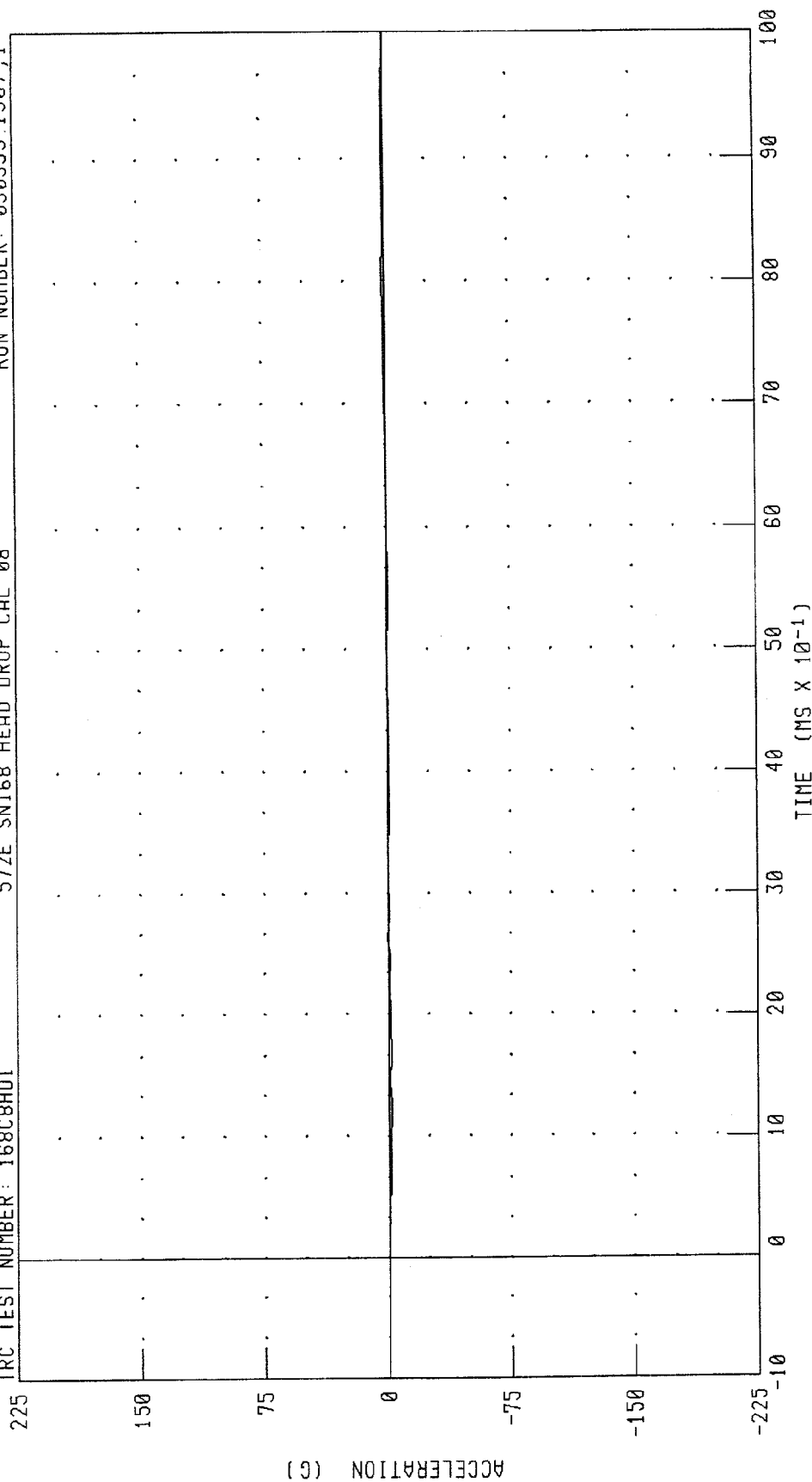
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

572E SN168 HEAD DROP CAL 08

RUN NUMBER: 030399.1507,1

TRC TEST NUMBER: 168C8H01



PEAK DATA: 1.58 G @ 8.00 MS; -2.34 G @ 1.68 MS

CHANNEL: HEDYC FILTER: CH. CLASS 1000

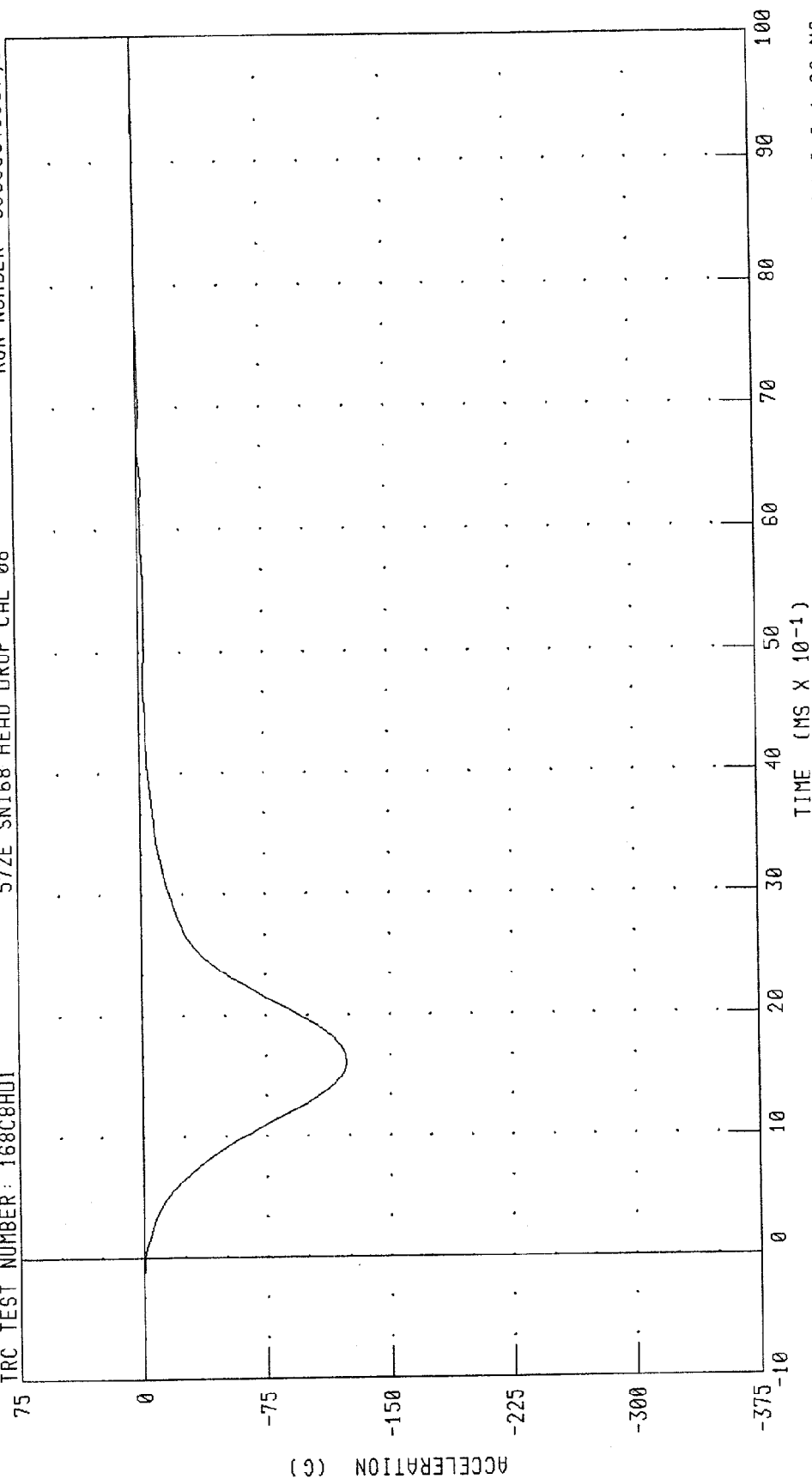
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Z AXIS

RUN NUMBER: 030399.1507,1

TRC TEST NUMBER: 168C8HD1

572E SN168 HEAD DROP CAL 08



PEAK DATA: 0.57 G @ 9.28 MS; -123.74 G @ 1.60 MS

CHANNEL: HED7G FILTER: CH. CLASS 1000

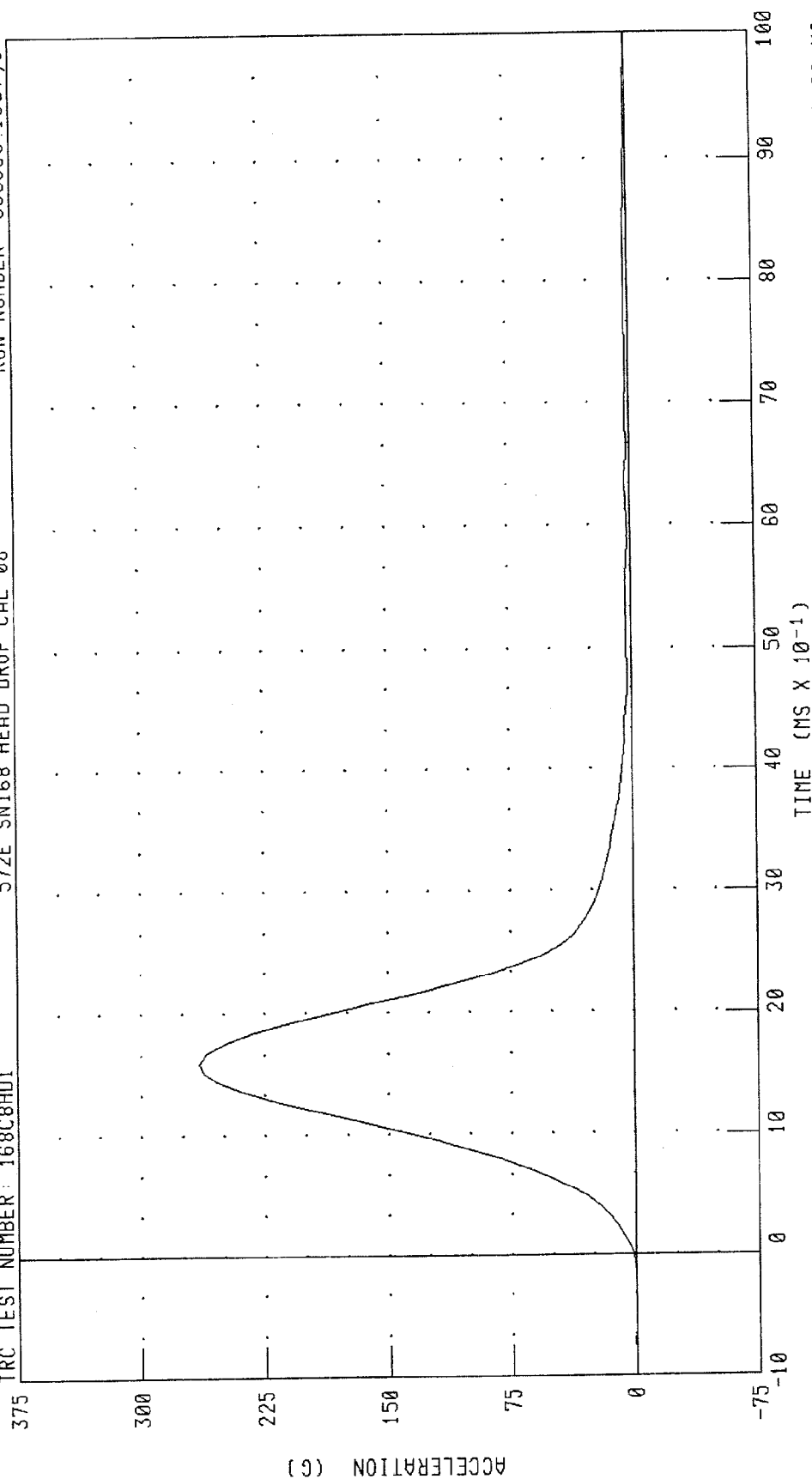
PART 572-E HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

572E SN168 HEAD DROP CAL 08

TRC TEST NUMBER: 168C8HD1

RUN NUMBER: 030399.1507;1



PEAK DATA: 264.45 G @ 1.60 MS; 0.03 G @ -0.96 MS

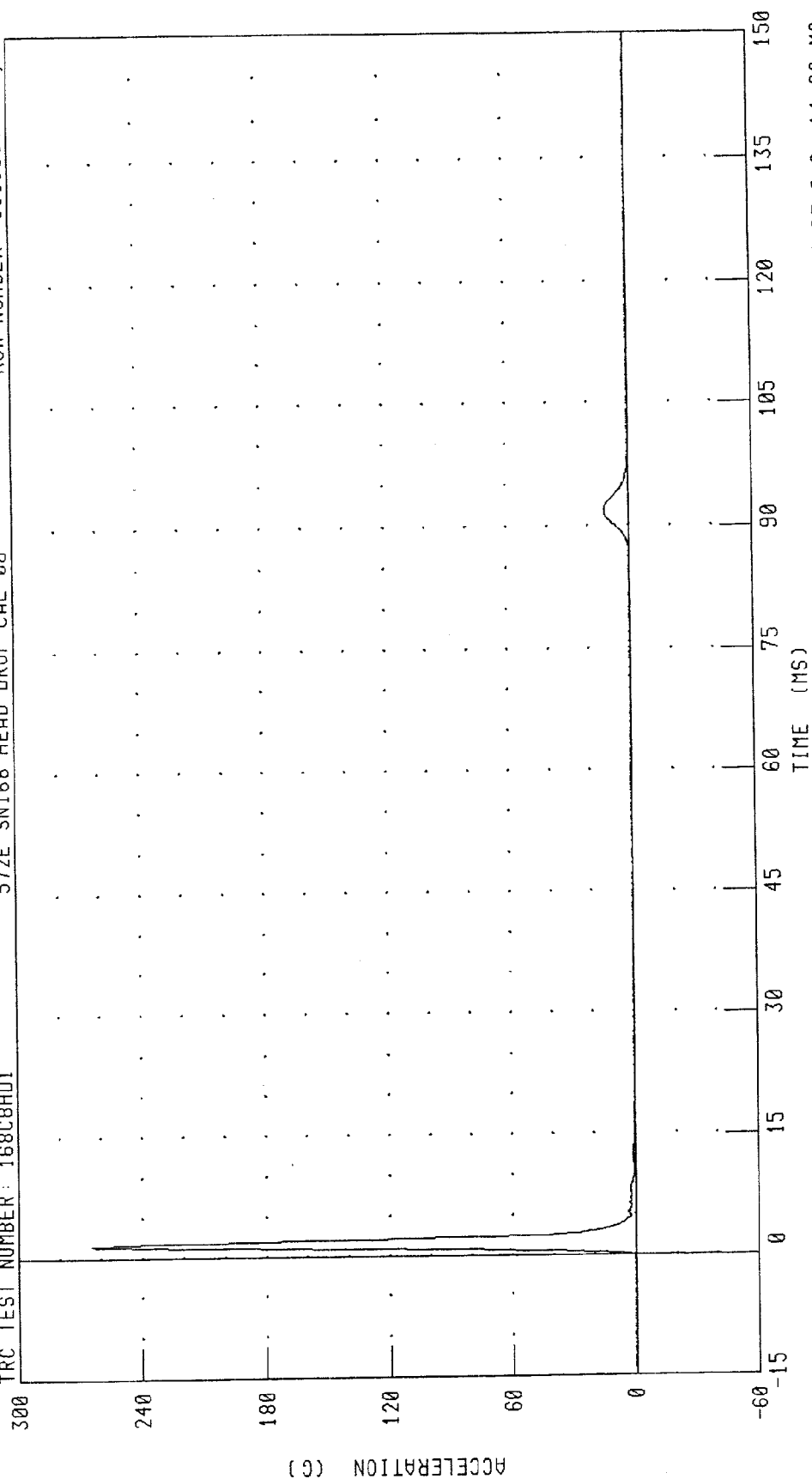
CHANNEL: HEDRG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
CHECK PLOT - HEAD RESULTANT ACCELERATION

RUN NUMBER: 030399.1507,1

TRC TEST NUMBER: 168C8HD1

572E SN168 HEAD DROP CAL 08



CHANNEL: HEDRG FILTER: CH CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

03-MAR-99

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 168C8NF1 572E SN168 NECK FLEXION CAL08

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.99 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.62 G
	20 MS	17.60 - 22.60 G	22.02 G
	30 MS	12.50 - 18.50 G	12.80 G
MAX PENDULUM G		29 G MAX	24.34 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	12.73 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	41.60 MS
D PLANE	MAX	64 - 78 DEG.	70.19 DEG.
ROTATION	TIME	57 - 64 MS	60.08 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	91.65 NM
	TIME	47 - 58 MS	54.48 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	116.88 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	103.44 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

RUN NUMBER: 030399.1520;1

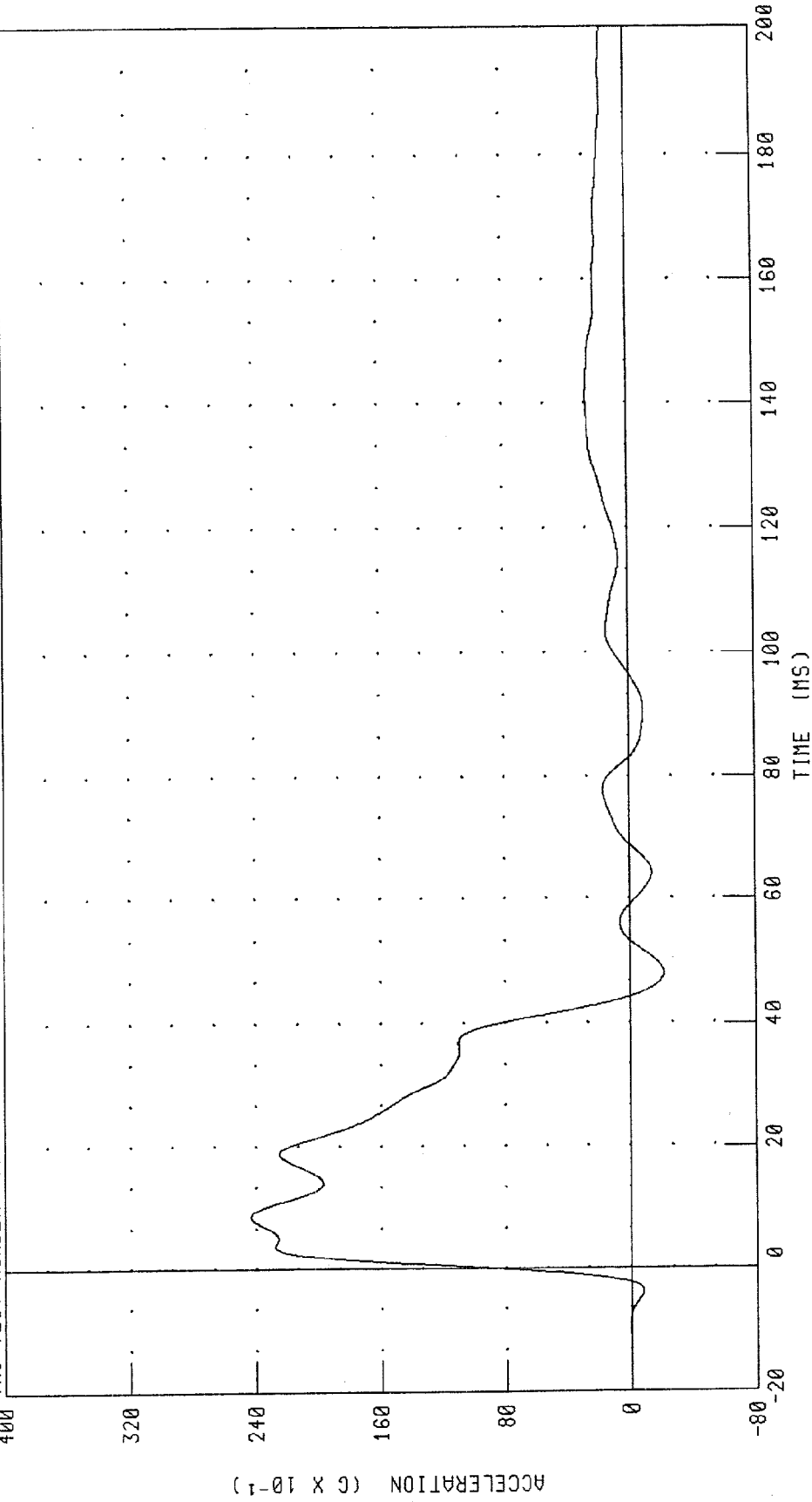
PART 572-E HYBRID III NECK FLEXION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 168C8NF1

572E SN168 NECK FLEXION CAL08

RUN NUMBER: 030399.1521;1



CHANNEL: PENXC FILTER: CH. CLASS 60

PEAK DATA: 24.35 G @ 8.72 MS; -2.19 G @ 48.08 MS

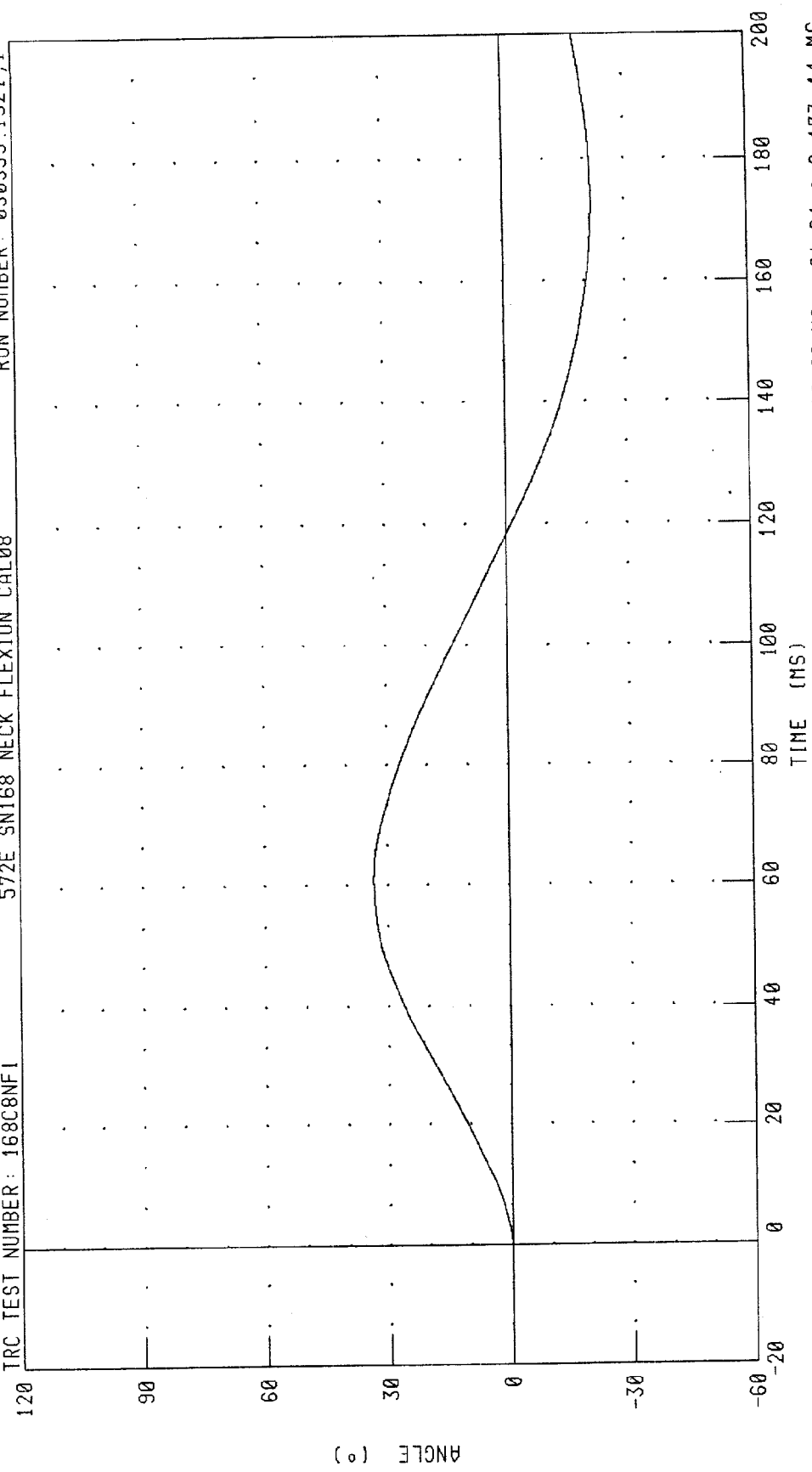
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

RUN NUMBER: 030399.1521;1

TRC TEST NUMBER: 168C8NF1

572E SN168 NECK FLEXION CAL08



PEAK DATA: 33.33 ° @ 60.88 MS; -21.84 ° @ 173.44 MS

FILTER: CH. CLASS 60

CHANNEL: BETA

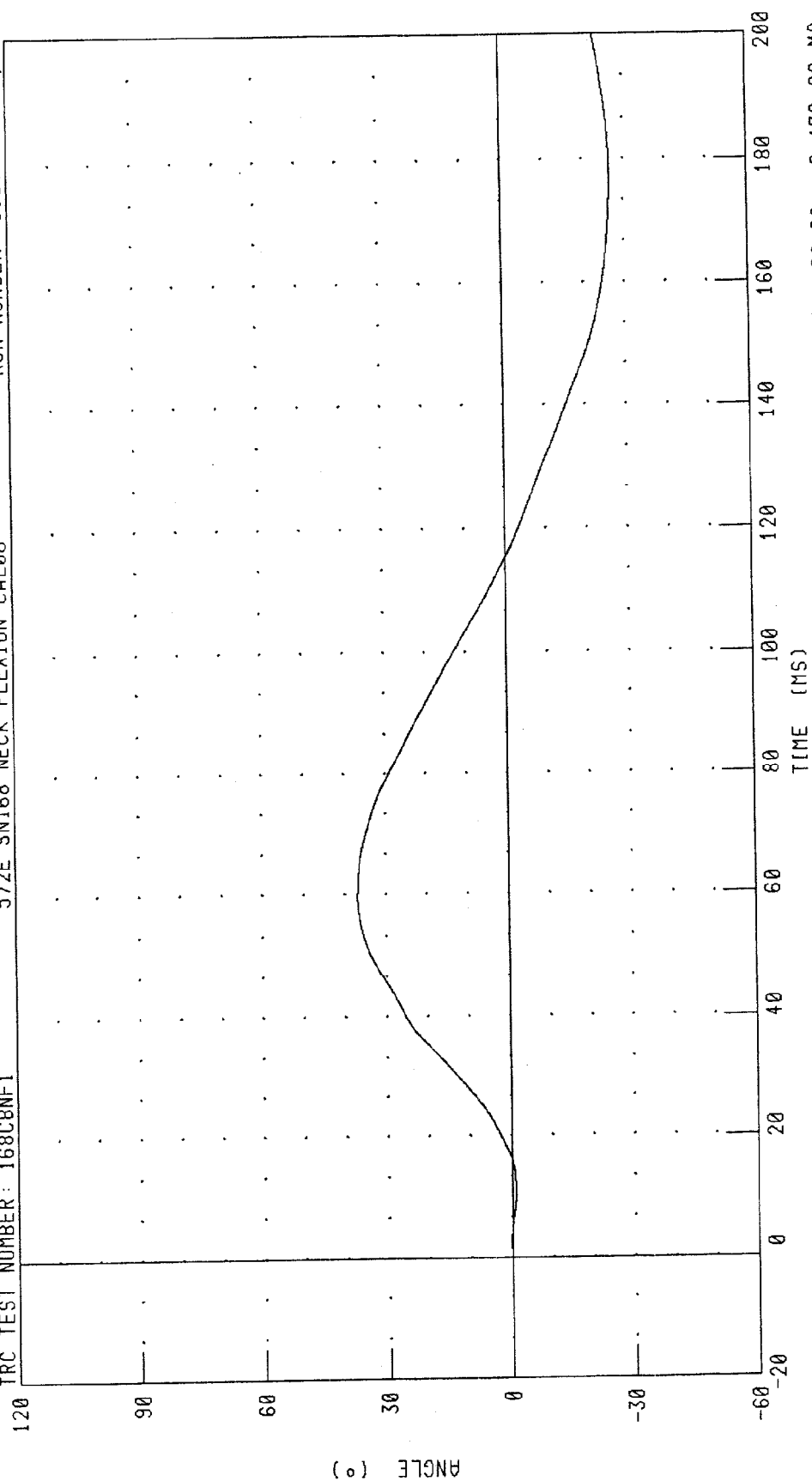
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

RUN NUMBER: 030399.1521;1

TRC TEST NUMBER: 168C8NF1

572E SN168 NECK FLEXION CAL08



CHANNEL: THETA FILTER: CH CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

RUN NUMBER: 030399.1521,1

572E SN168 NECK FLEXION CAL08

TRC TEST NUMBER: 168C8NF1

120

90

60

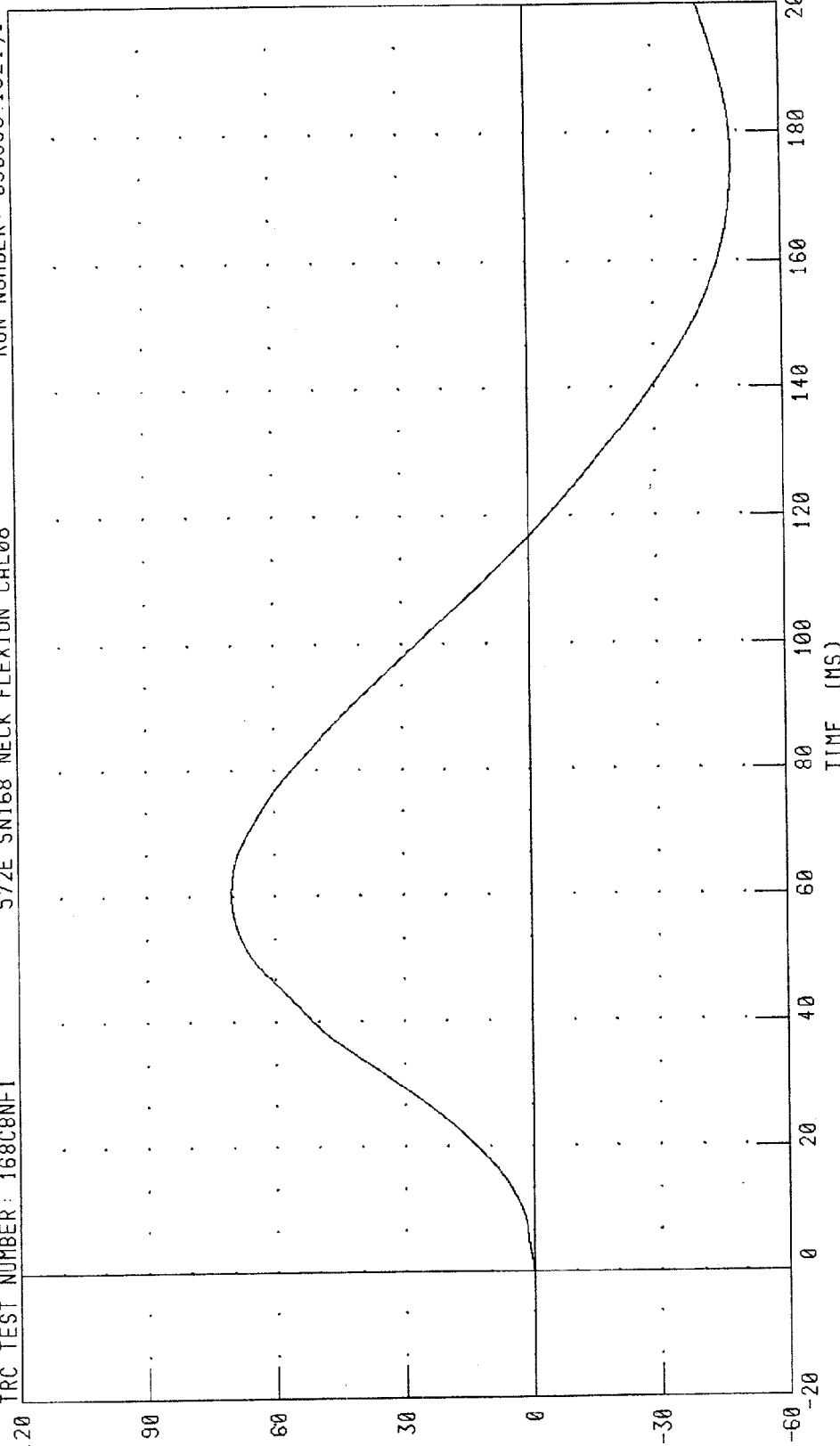
30

0

-30

-60

ANGLE (°)



TIME (MS)

PEAK DATA: 70.20 ° @ 60.08 MS; -48.55 ° @ 176.16 MS

CHANNEL: TOTAL FILTER: CH. CLASS 60

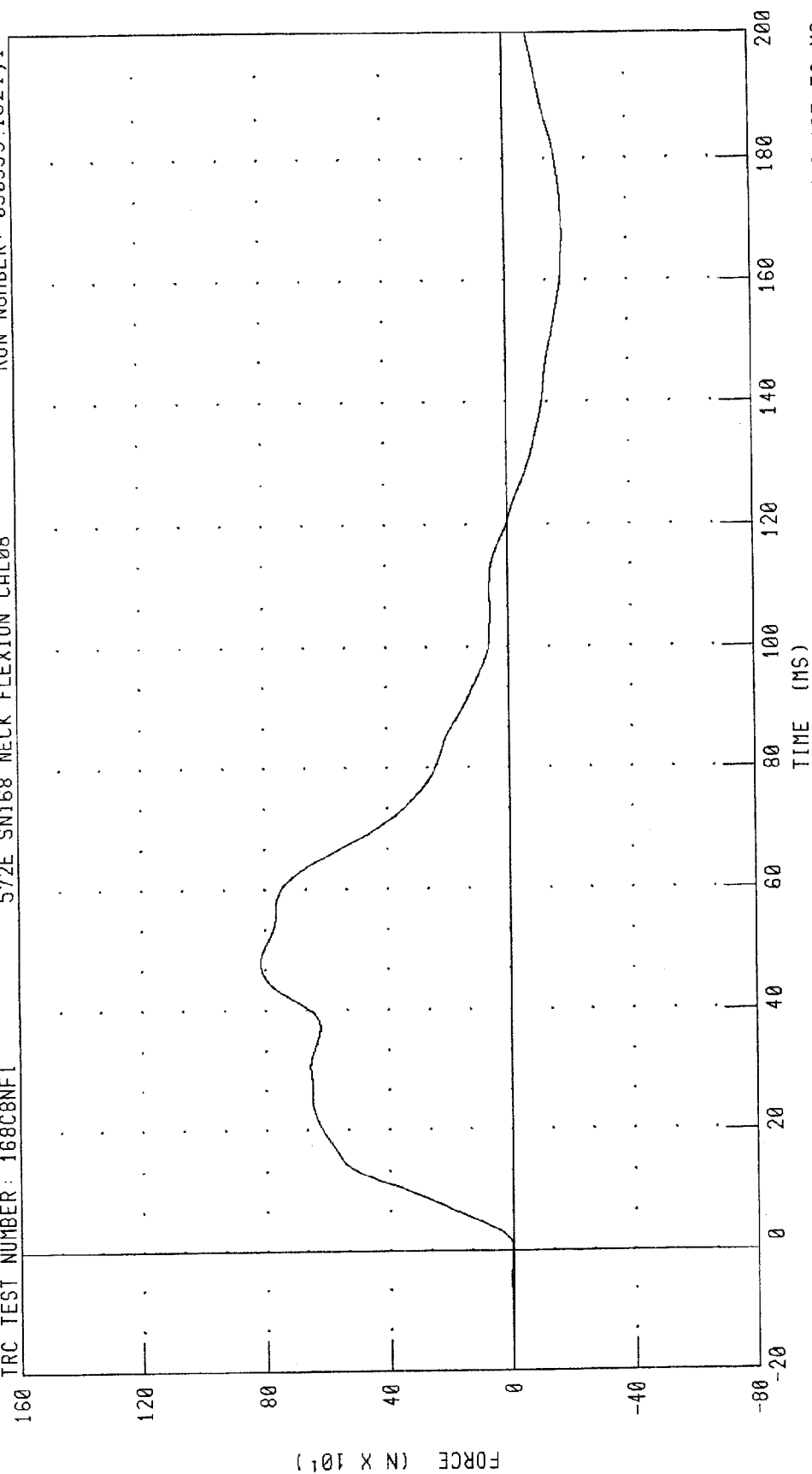
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 168C8NF1

572E SN168 NECK FLEXION CAL08

RUN NUMBER: 030399.1521;1



PEAK DATA: 815.61 N @ 47.92 MS; -189.56 N @ 167.36 MS

CHANNEL: NEKXF FILTER: CH CLASS 60

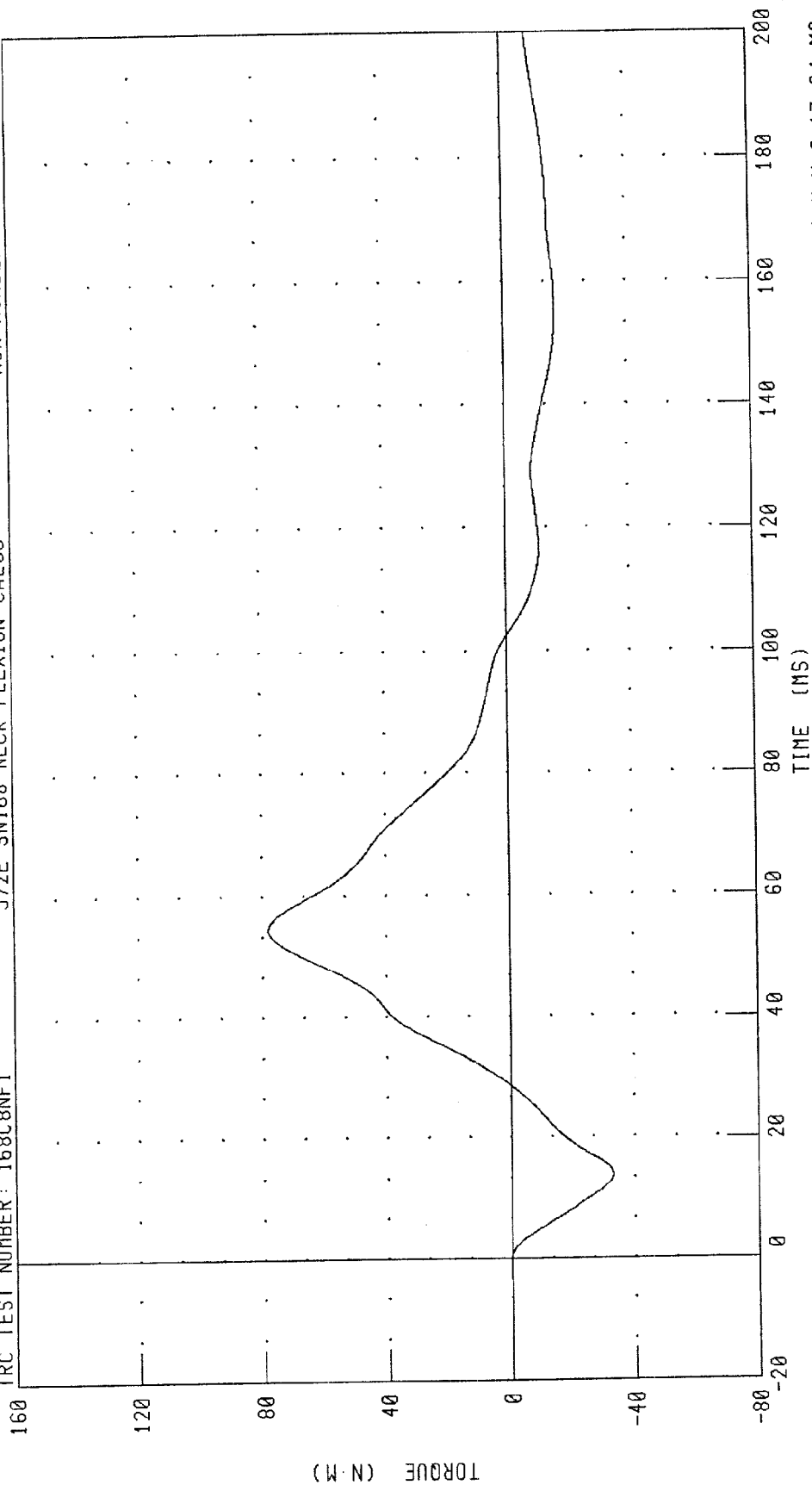
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

RUN NUMBER: 030399.1521;1

TRC TEST NUMBER: 168C8NF1

572E SN168 NECK FLEXION CAL08



PEAK DATA: 78.02 N·M @ 54.56 MS; -32.88 N·M @ 13.84 MS

FILTER: CH. CLASS 60

CHANNEL: NEKYM

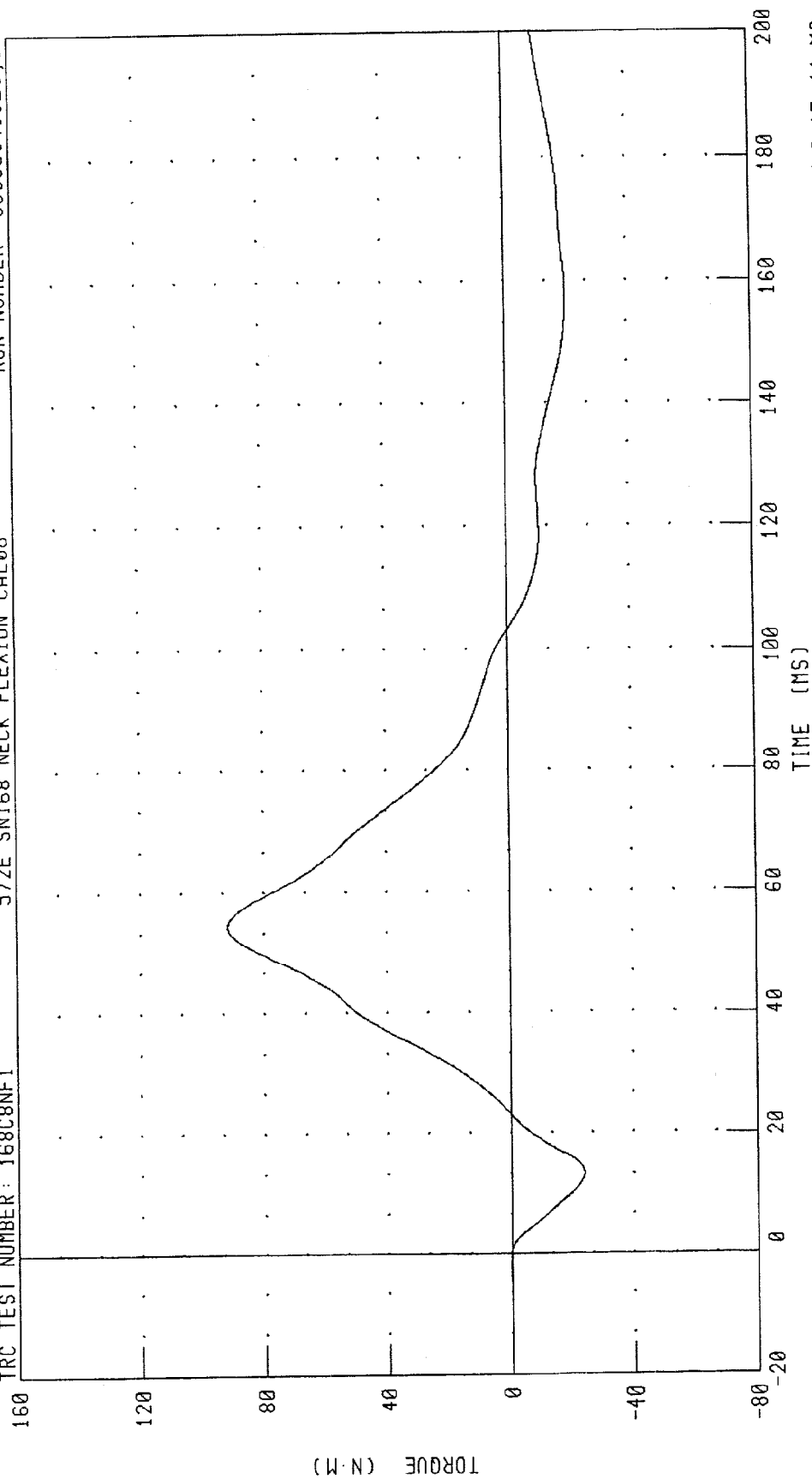
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

572E SN168 NECK FLEXION CAL08

TRC TEST NUMBER: 168C8NF1

RUN NUMBER: 030399.1521,1



PEAK DATA: 91.65 N·M @ 54.48 MS; -23.71 N·M @ 13.44 MS

FILTER: CH: CLASS 60

CHANNEL: NEKOM

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

04-MAR-99

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 168C8NE1 572E SN168 NECK EXT CAL08

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	18.34 G
	20 MS	14.00 - 19.00 G	17.37 G
	30 MS	11.00 - 16.00 G	15.43 G
MAX PENDULUM G		22 G MAX	18.75 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	15.37 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	39.52 MS
D PLANE	MAX	81 - 106 DEG.	94.94 DEG.
ROTATION	TIME	72 - 82 MS	76.16 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-64.58 NM
	TIME	65 - 79 MS	70.48 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	156.72 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	141.84 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

RUN NUMBER: 030499.0804;1

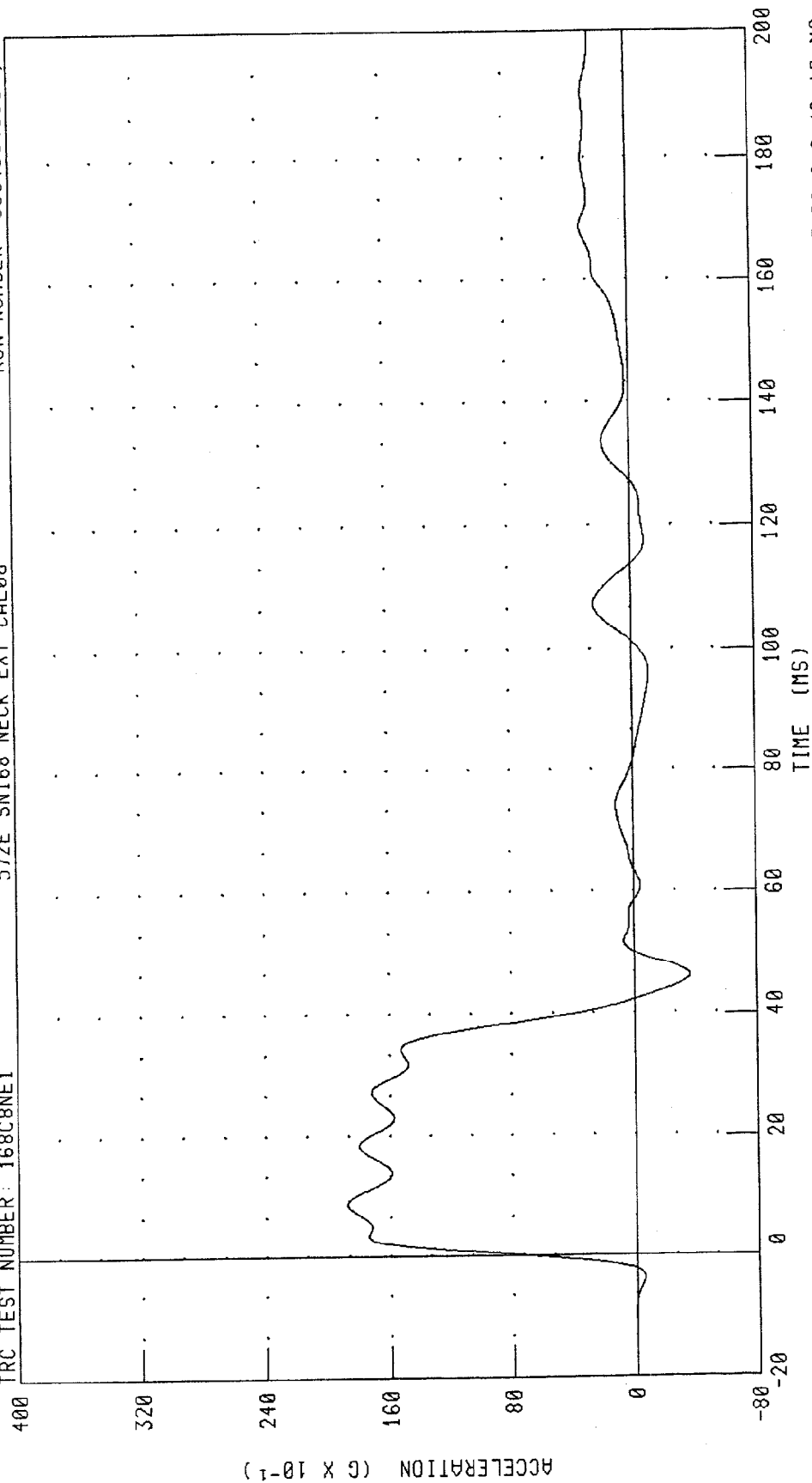
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

IRC TEST NUMBER: 168C8NE1

572E SN168 NECK EXT CAL08

RUN NUMBER: 030499 0804,1



CHANNEL: PENXC FILTER: CH. CLASS 60

PEAK DATA: 18.75 G @ 8.80 MS; -3.68 G @ 46.16 MS

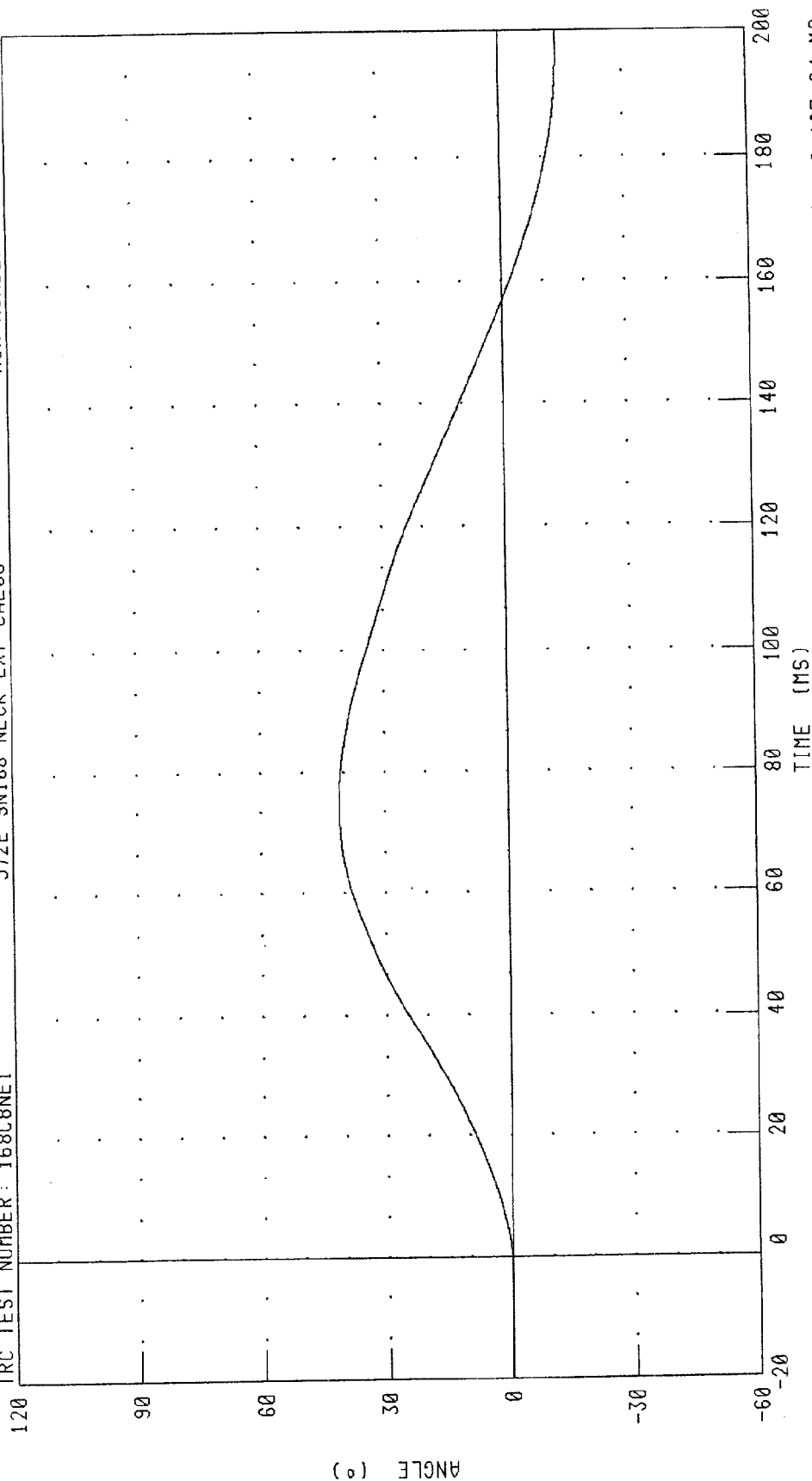
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

RUN NUMBER: 030499.0804,1

TRC TEST NUMBER: 168C8NE1

572E SN168 NECK EXT CAL08



PEAK DATA: 41.14 ° @ 74.88 MS, -14.03 ° @ 197.84 MS

CHANNEL: BETA FILTER: CH. CLASS 60

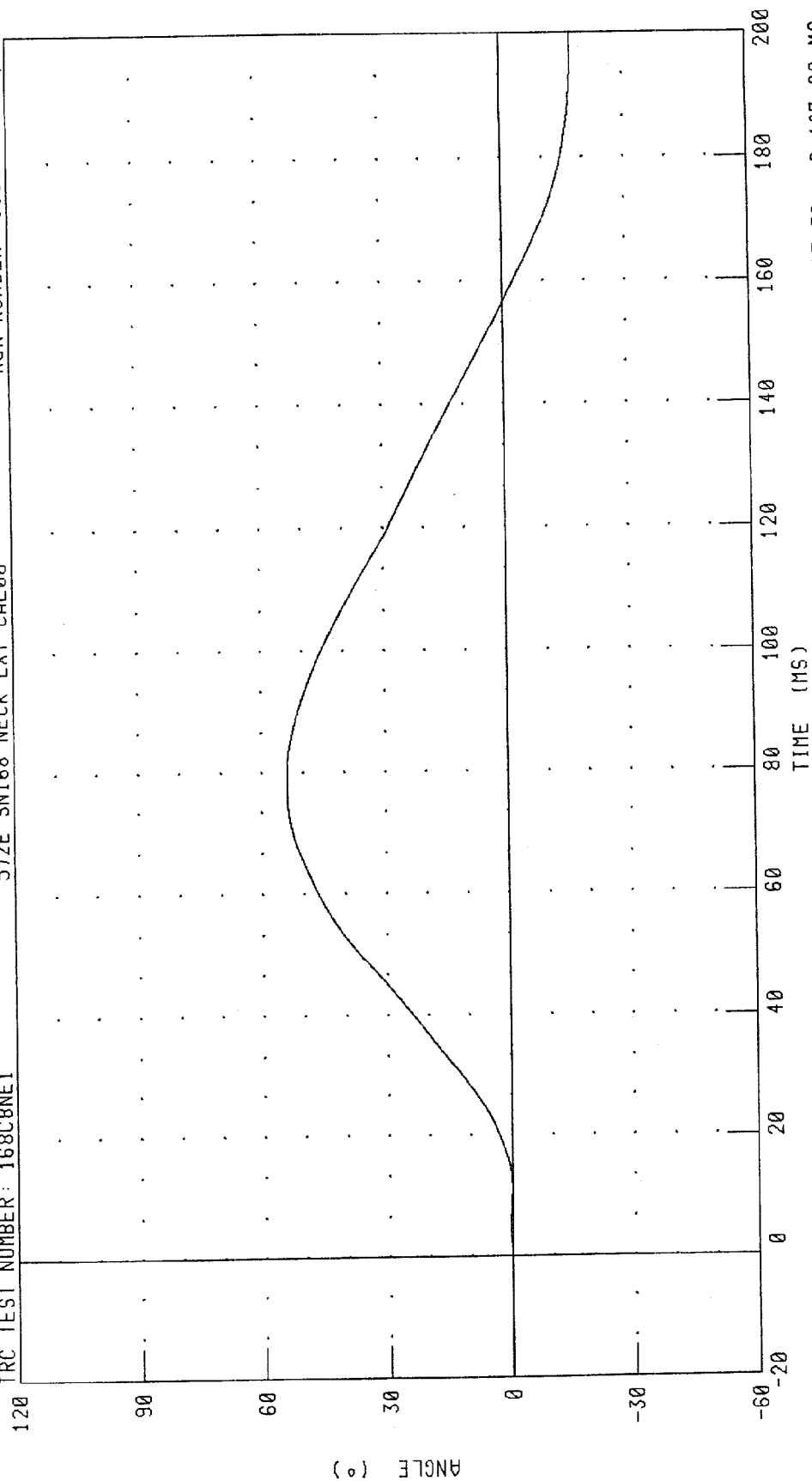
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

RUN NUMBER: 030499.0804;1

TRC TEST NUMBER: 168C8NE1

572E SN168 NECK EXT CAL08



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 53.85 ° @ 78.48 MS, -17.36 ° @ 197.92 MS

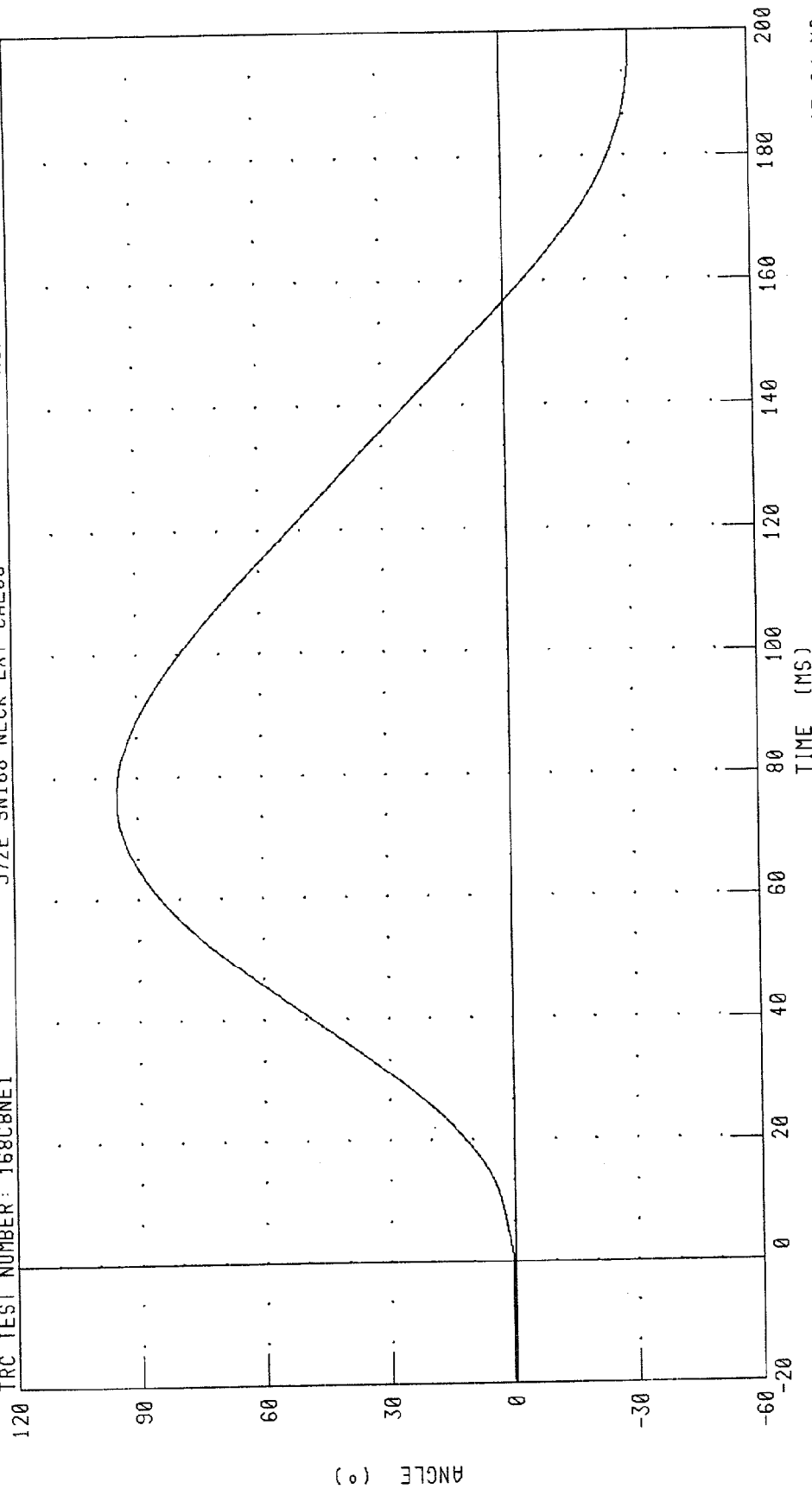
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

RUN NUMBER: 030499 0804;1

572E SN168 NECK EXT CAL08

TRC TEST NUMBER: 168C8NE1



PEAK DATA: 94.94 ° @ 76.16 MS; -31.39 ° @ 197.84 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

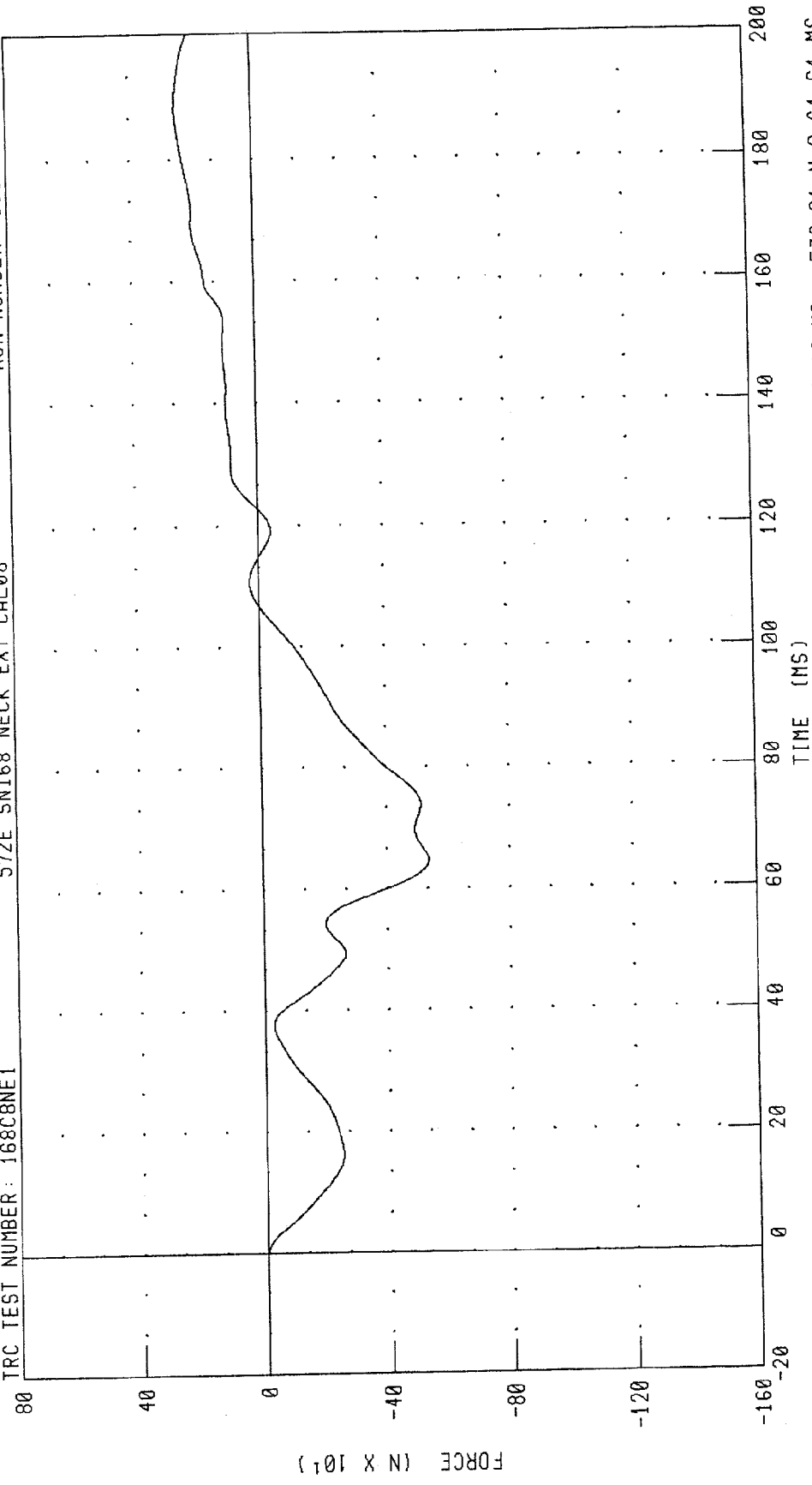
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

RUN NUMBER: 030499.0804;1

TRC TEST NUMBER: 168C8NE1

572E SN168 NECK EXT CAL08



CHANNEL: NEKXF

FILTER: CH. CLASS 60

PEAK DATA: 250.51 N @ 188.16 MS; -536.81 N @ 64.64 MS

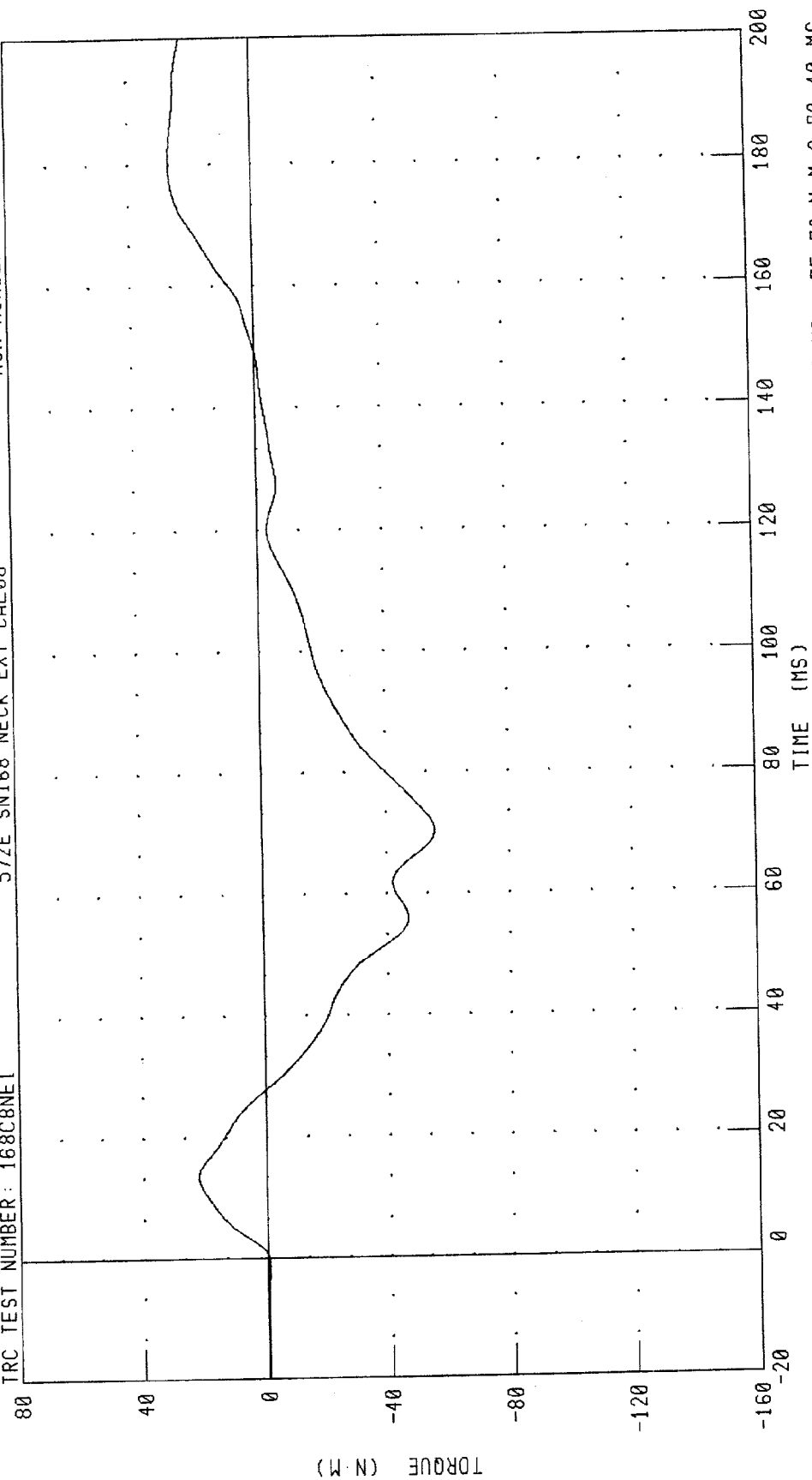
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

RUN NUMBER: 030499.0804,1

572E SN168 NECK EXT CAL08

TRC TEST NUMBER: 168C8NE1



CHANNEL: NEKYM

FILTER: CH. CLASS 60

TIME (MS)

PEAK DATA: 26.92 N·M @ 180.40 MS; -55.79 N·M @ 70.40 MS

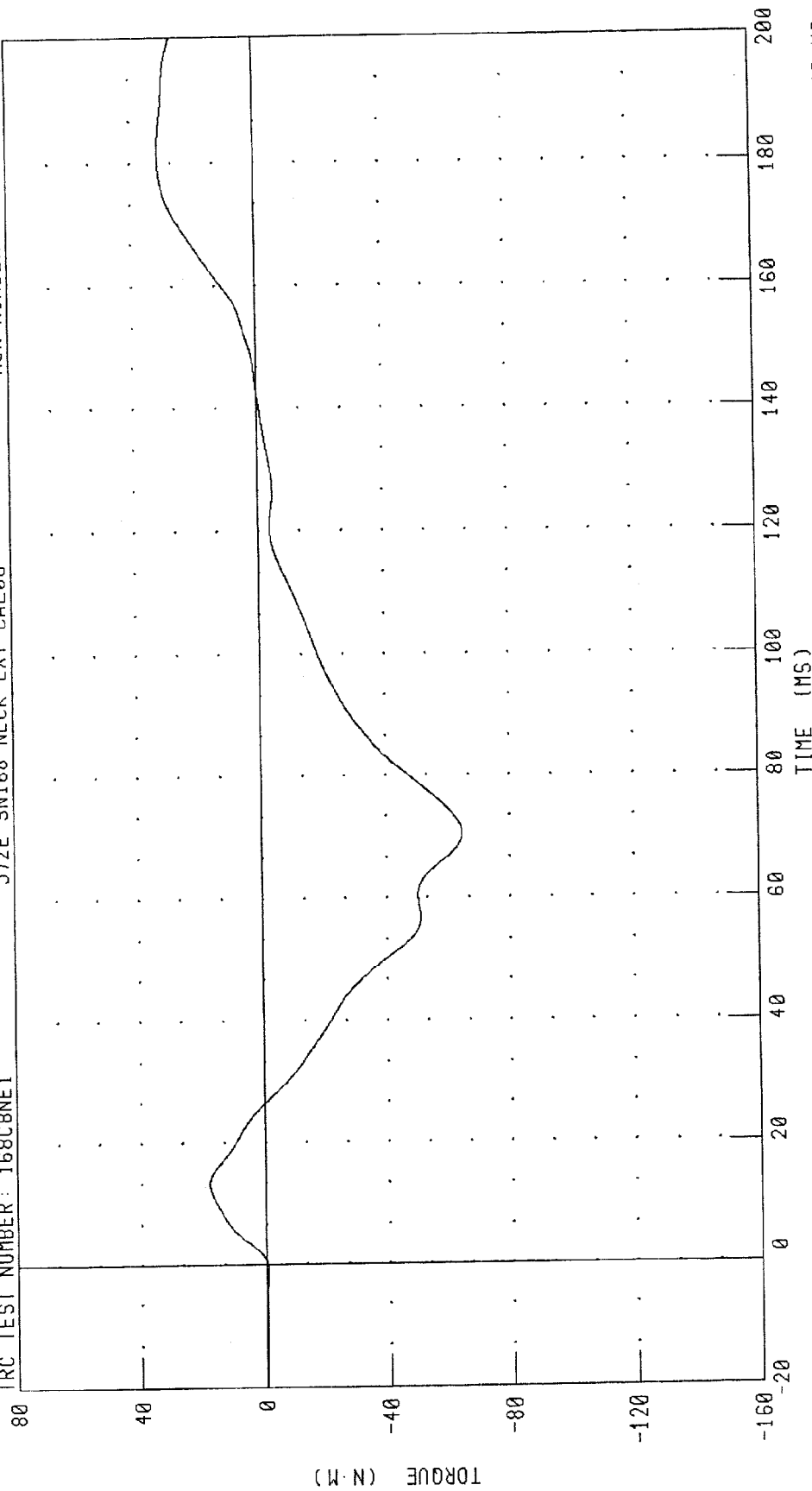
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

RUN NUMBER: 030499.0804;1

572E SN168 NECK EXT CAL08

TRC TEST NUMBER: 168C8NE1



PEAK DATA: 31.03 N·M @ 181.28 MS; -64.58 N·M @ 70.48 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III 50th

04-MAR-99

TRC INC.

TEST NO: 168C8TH2

572E SN168 H.S.THORAX CAL08

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.59 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	64.7 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5864. N
INTERNAL HYSTERESIS	69% - 85%	69.6%

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 030499.1313;1

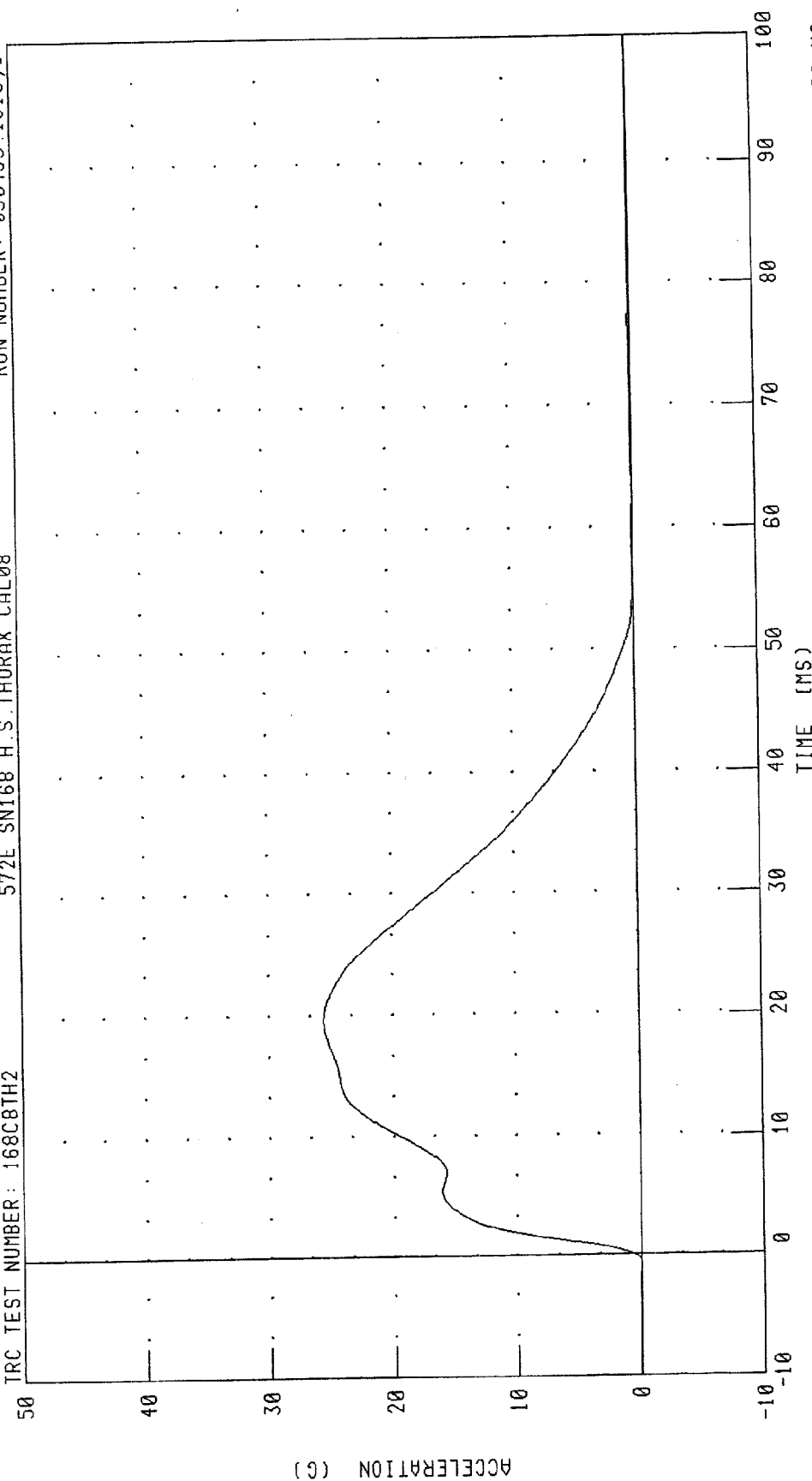
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM DECELERATION

RUN NUMBER: 030499.1313;1

TRC TEST NUMBER: 168C8TH2

572E SN168 H.S. THORAX CAL08



PEAK DATA: 25.60 G @ 19.60 MS; -0.05 G @ -0.88 MS

CHANNEL: PENXC FILTER: CH. CLASS 180

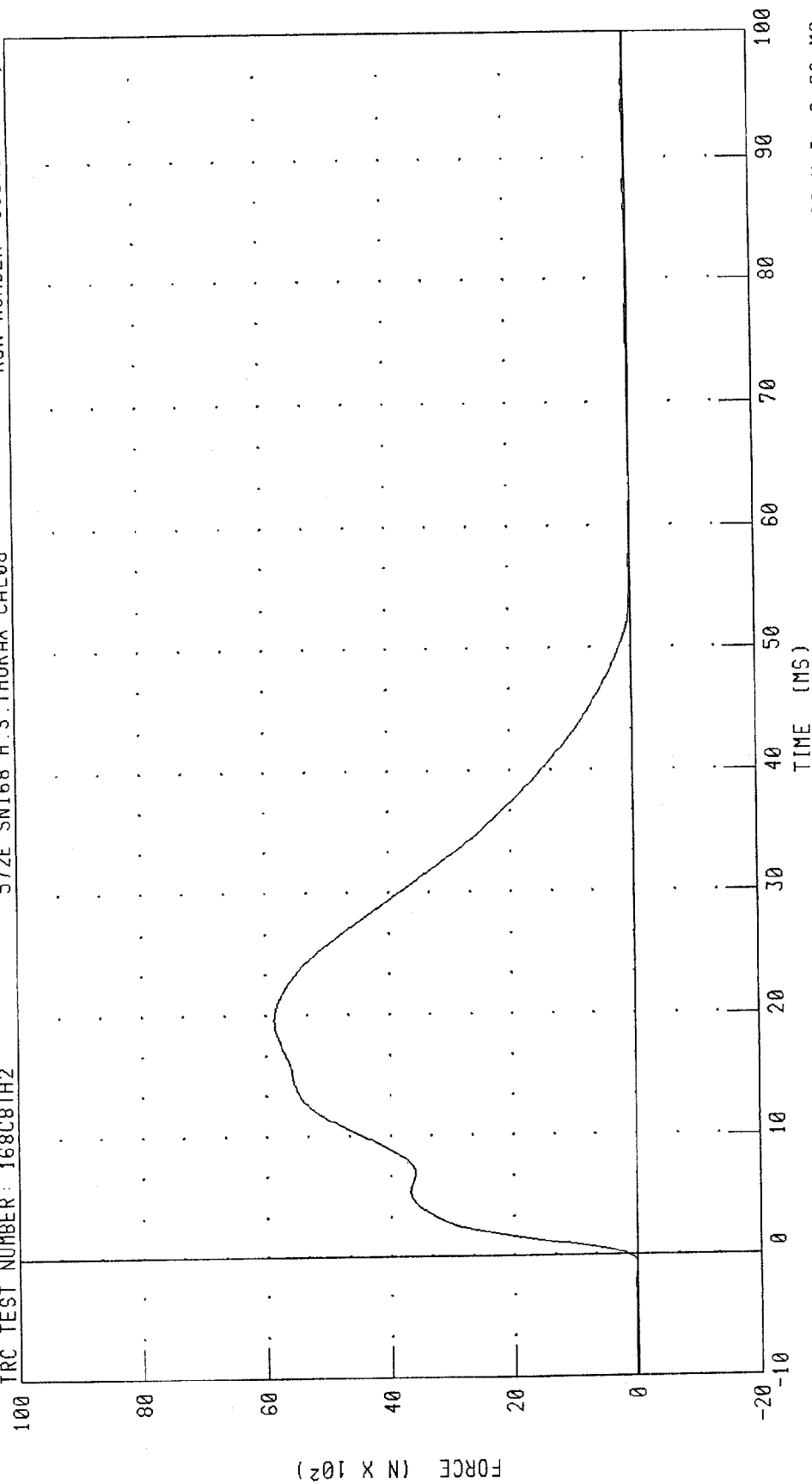
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

RUN NUMBER: 030499.1313.1

IRC TEST NUMBER: 168C8TH2

572E SN168 H.S. THORAX CAL08



CHANNEL: PENXF

FILTER: CH. CLASS 180

TIME (MS)

PEAK DATA: 5864.53 N @ 19.60 MS; -10.69 N @ -0.88 MS

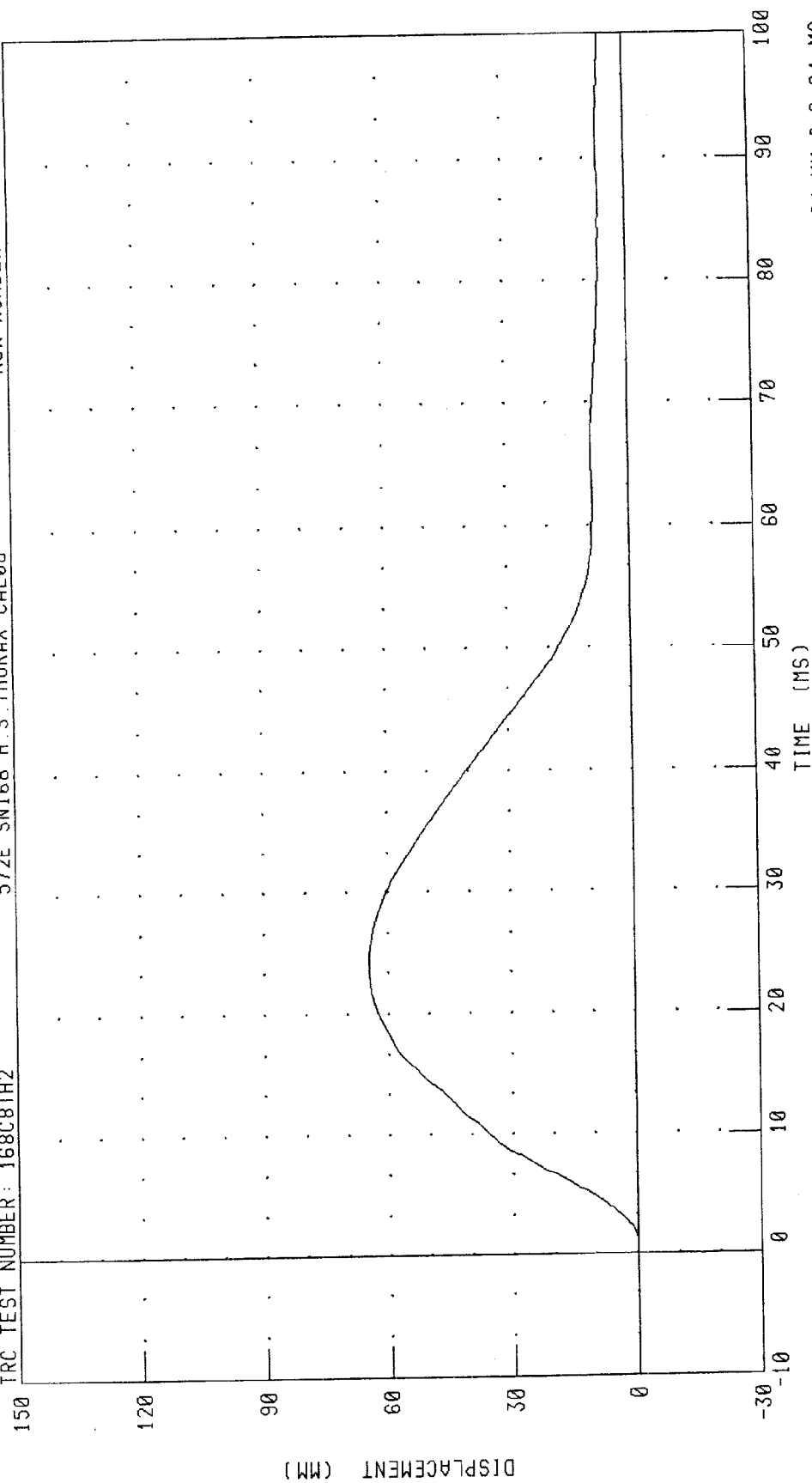
PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

RUN NUMBER: 030499.1313,1

TRC TEST NUMBER: 168C8TH2

572E SN168 H.S. THORAX CAL08



PEAK DATA: 64.77 MM @ 24.24 MS; -0.04 MM @ 0.64 MS

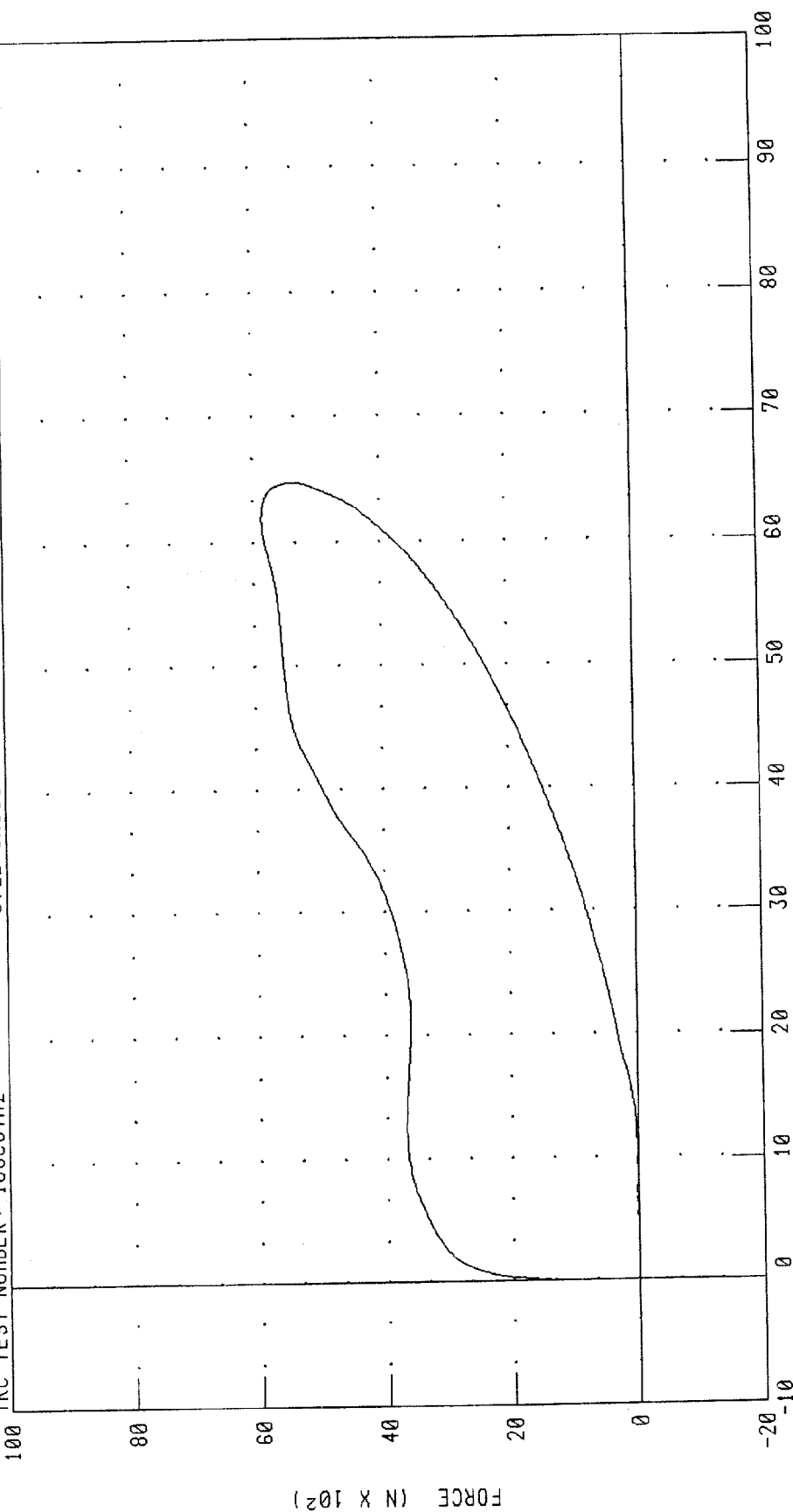
CHANNEL: CSTXD FILTER: CH. CLASS 180

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

TRC TEST NUMBER: 168C8TH2

572E SN168 H.S. THORAX CAL08

RUN NUMBER: 030499.1313.1



PEAK DATA:

64.77 MM @ 24.24 MS; -0.04 MM @ 0.64 MS
5864.53 N @ 19.60 MS; -10.69 N @ -0.88 MS

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

TRANSPORTATION RESEARCH CENTER INC.

RIGHT HIP JOINT FEMUR FLEXION TEST

HYBRID III PART 572E

03-MAR-99

TRC 3NC.

TEST NO: 168C8HR1

572E SN 168 HIPFLEX CAL 08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	64.6 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	46.8 deg.

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 030399.1454;1

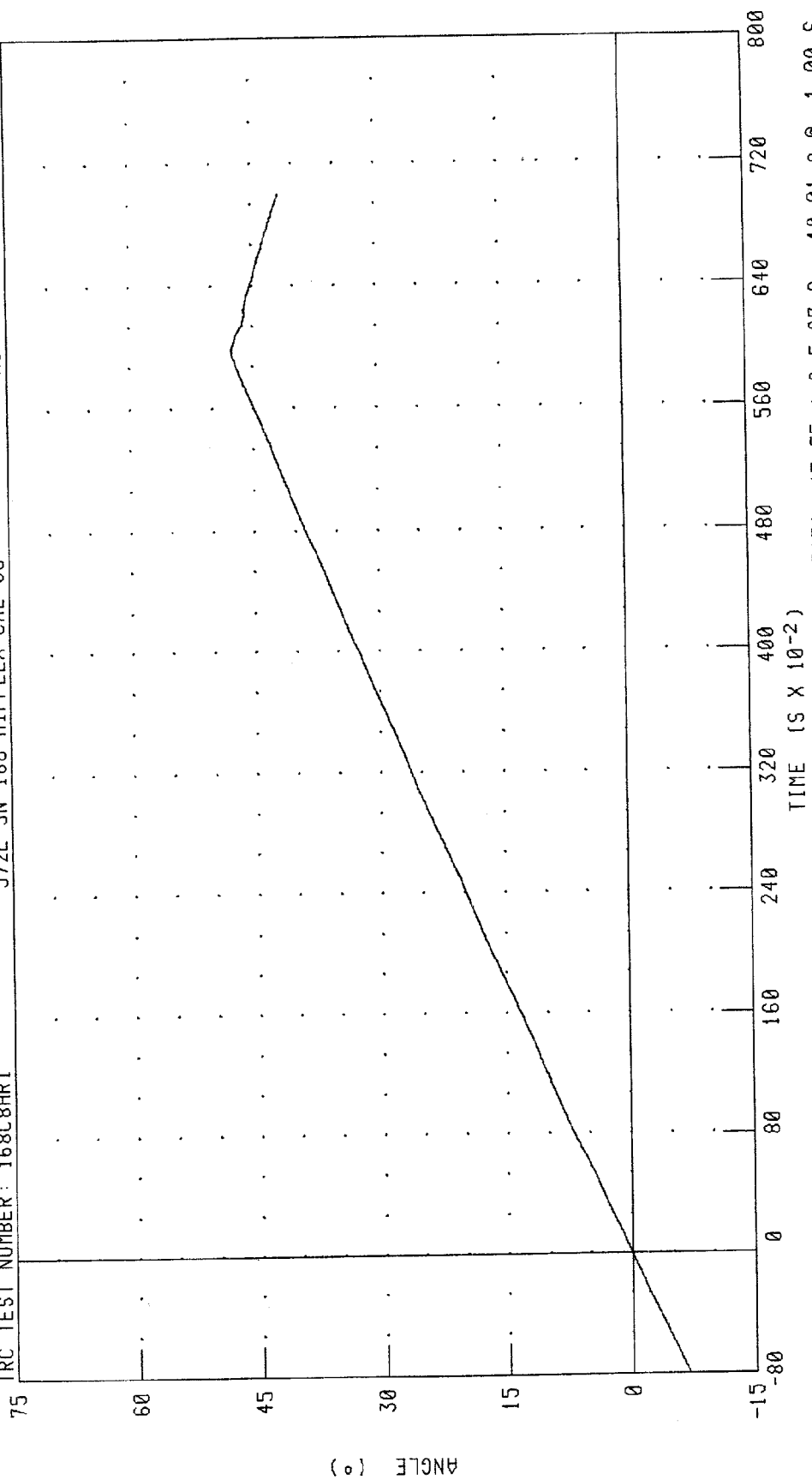
HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

RIGHT HIP FLEXION ROTATION

RUN NUMBER: 030399.1454;1

TRC TEST NUMBER: 168C8HR1

572E SN 168 HIPFLEX CAL 08



CHANNEL: RHPXD FILTER: CH. CLASS 60

PEAK DATA: 47.55 ° @ 5.97 S; -10.01 ° @ -1.00 S

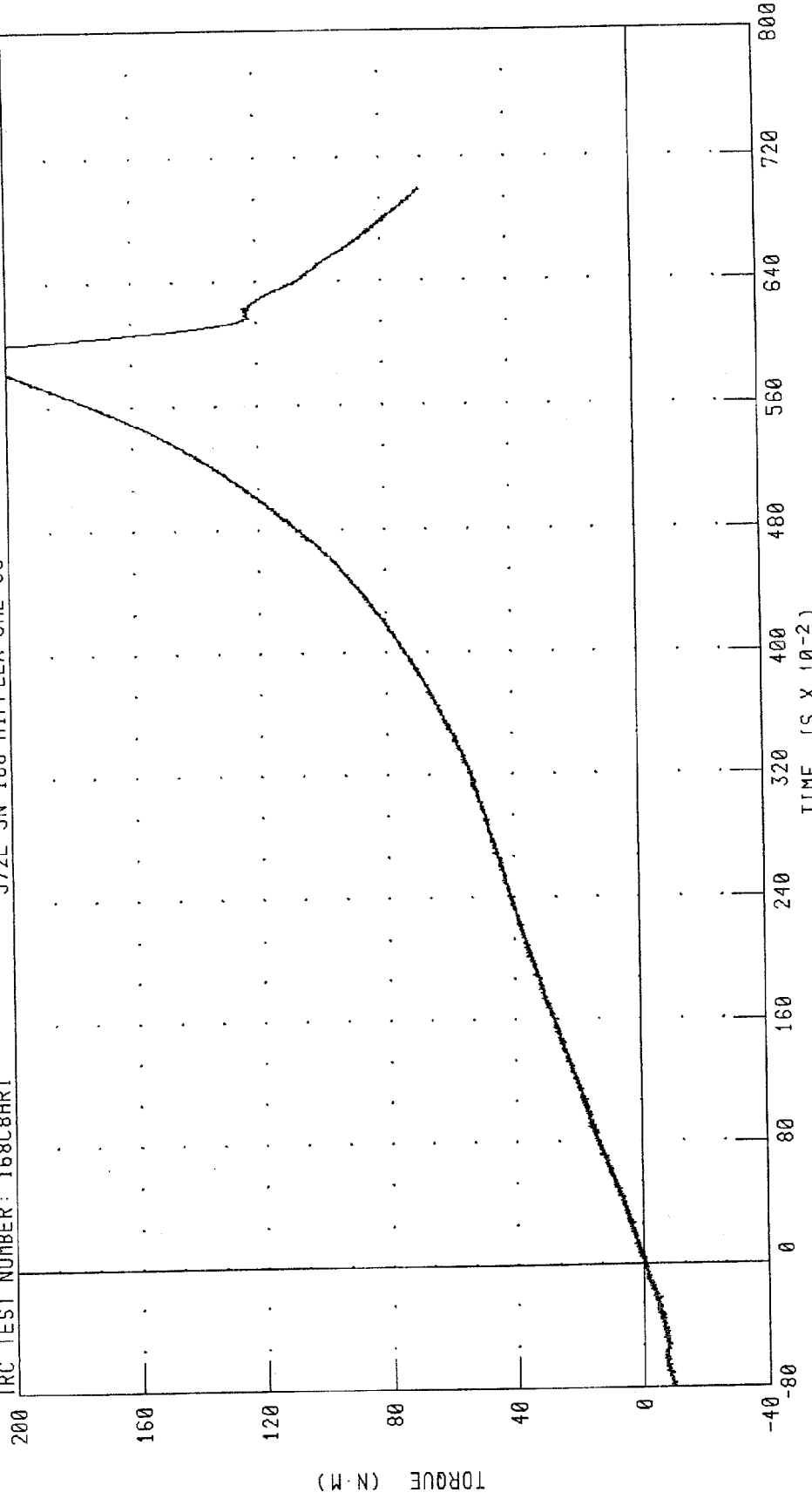
HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

RIGHT HIP FLEXION MOMENT

RUN NUMBER: 030399.1454;1

572E SN 168 HIPFLEX CAL 08

TRC TEST NUMBER: 168C8HR1



TIME (S X 10⁻²)

PEAK DATA: 216.20 N·M @ 5.94 S; -13.84 N·M @ -0.99 S

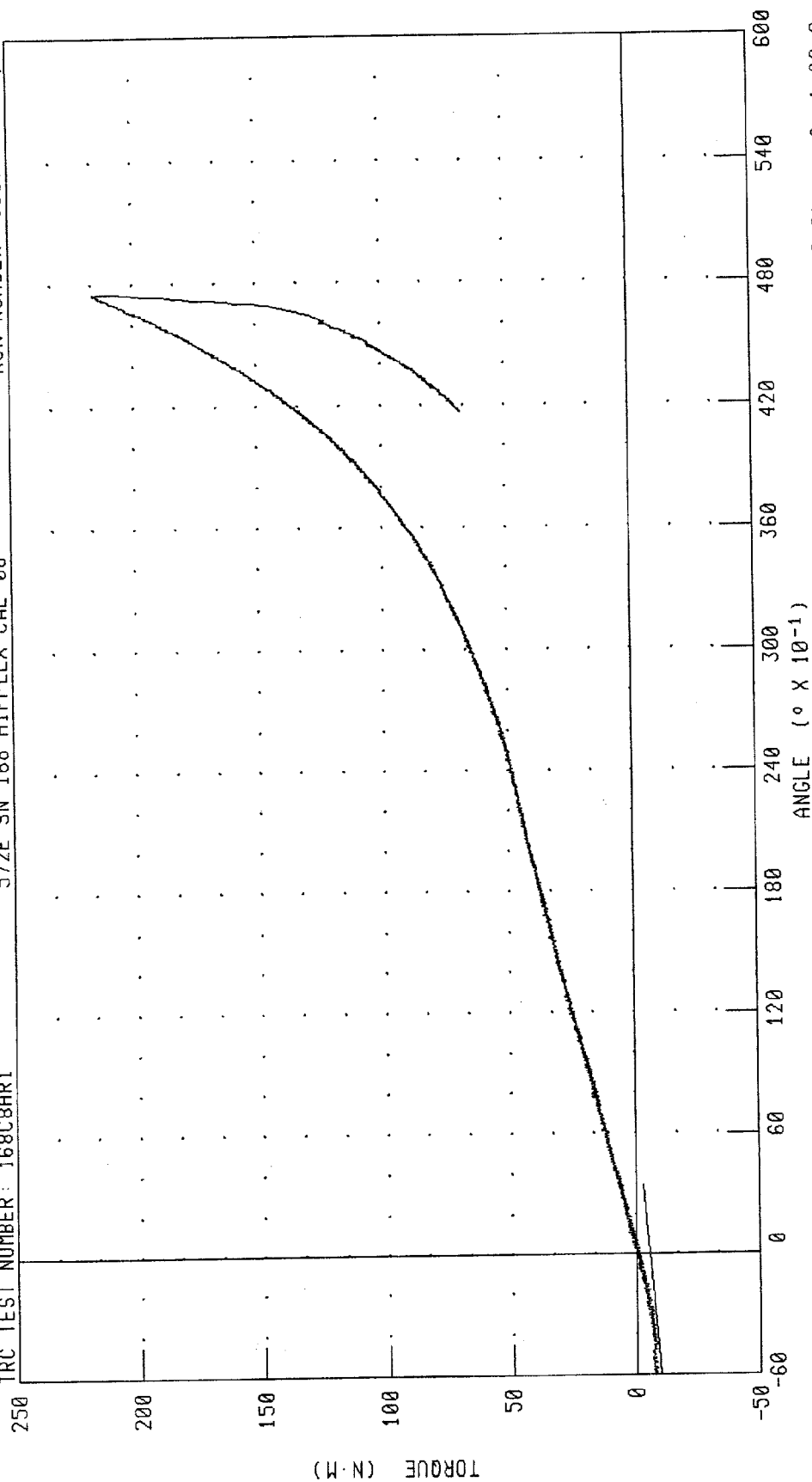
CHANNEL: RHPVH FILTER: CH. CLASS 60

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
RIGHT HIP FLEXION MOMENT VS ROTATION ANGLE

TRC TEST NUMBER: 168C8HR1

572E SN 168 HIPFLEX CAL 08

RUN NUMBER: 030399.1454.1



CHANNEL: RHPXD
RHPYM

FILTER: CH. CLASS 60
CH. CLASS 60

ANGLE (° x 10⁻¹)

PEAK DATA:

47.55 ° 0 5.97 S; -10.01 ° 0 -1.00 S
216.20 N·M 0 5.94 S; -13.84 N·M 0 -0.99 S

TRANSPORTATION RESEARCH CENTER INC.

LEFT HIP JOINT FEMUR FLEXION TEST

HYBRID III PART 572E

03-MAR-99

TRC INC.

TEST NO: 168C8HL1

572E SN 168 HIPFLEX CAL 08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	64.7 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	45.0 deg.

TEST MEETS SPECIFICATIONS.

TECHNICIAN

Kevin Watkins

RUN NUMBER: 030399.1446;1

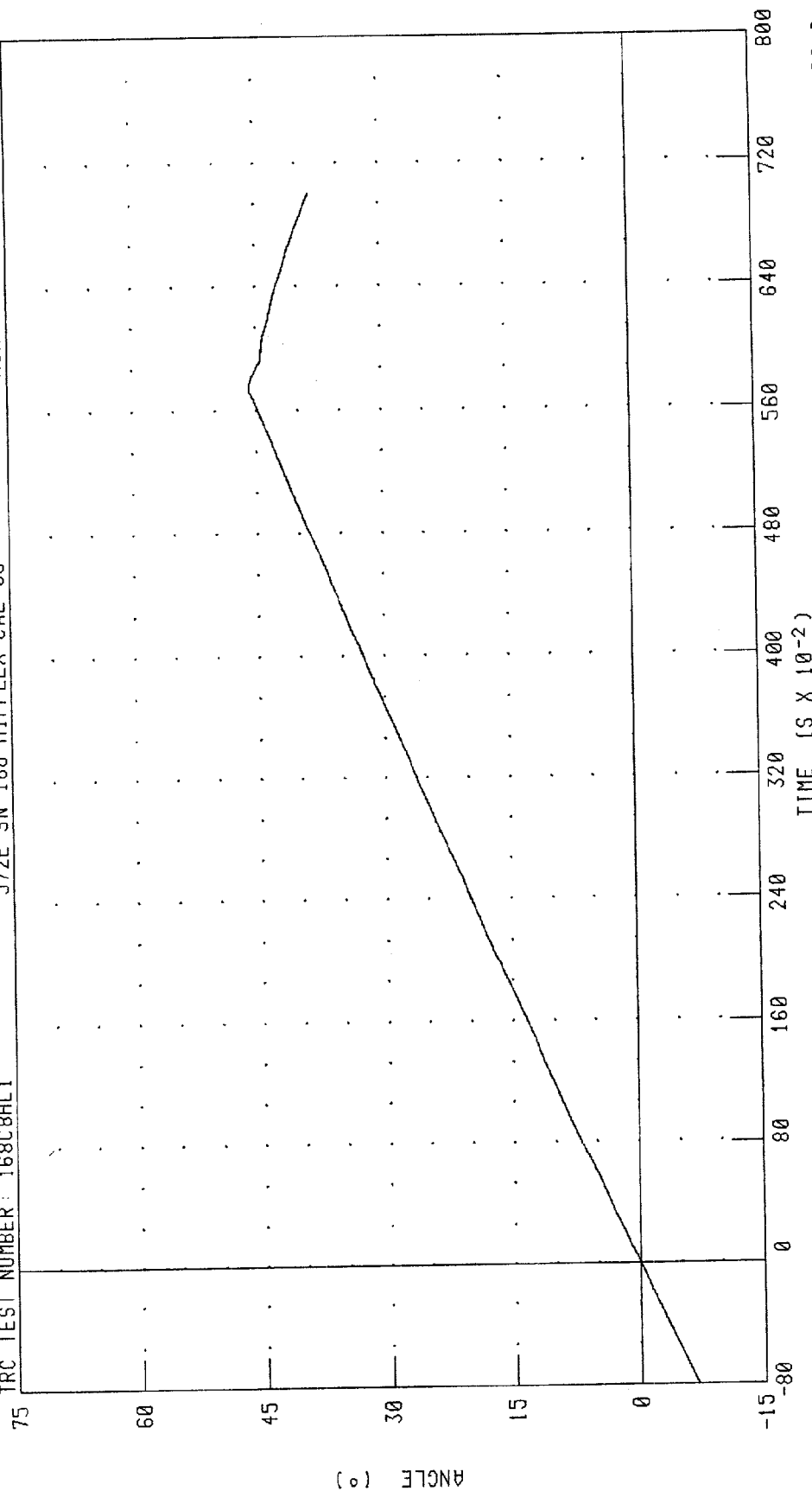
HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

LEFT HIP FLEXION ROTATION

TRC TEST NUMBER: 168C8HL1

572E SN 168 HIPFLEX CAL 08

RUN NUMBER: 030399.1446;1



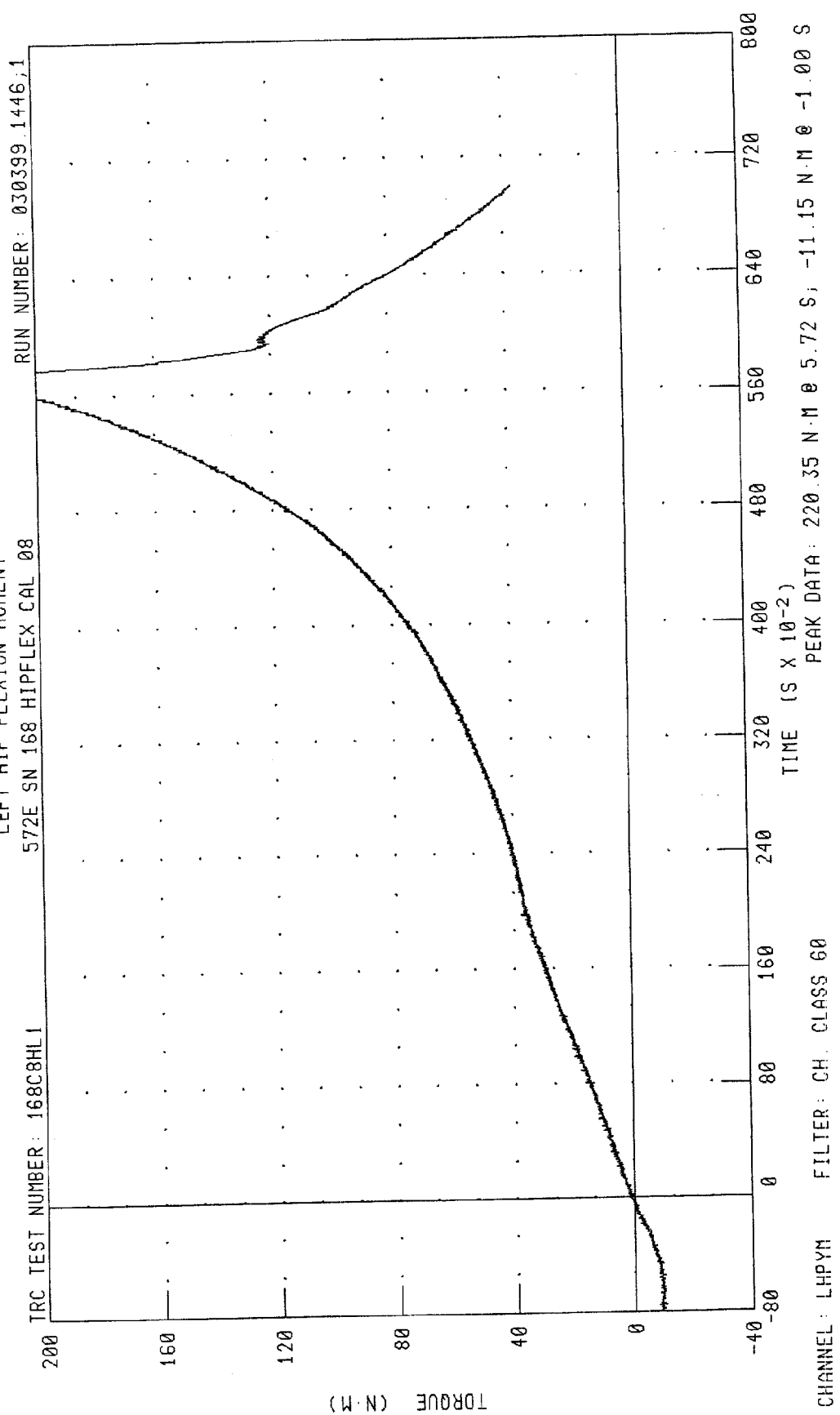
CHANNEL: LHPXD

FILTER: CH. CLASS 60

PEAK DATA: 45.87 ° @ 5.73 S, -10.13 ° @ -1.00 S

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

LEFT HIP FLEXION MOMENT

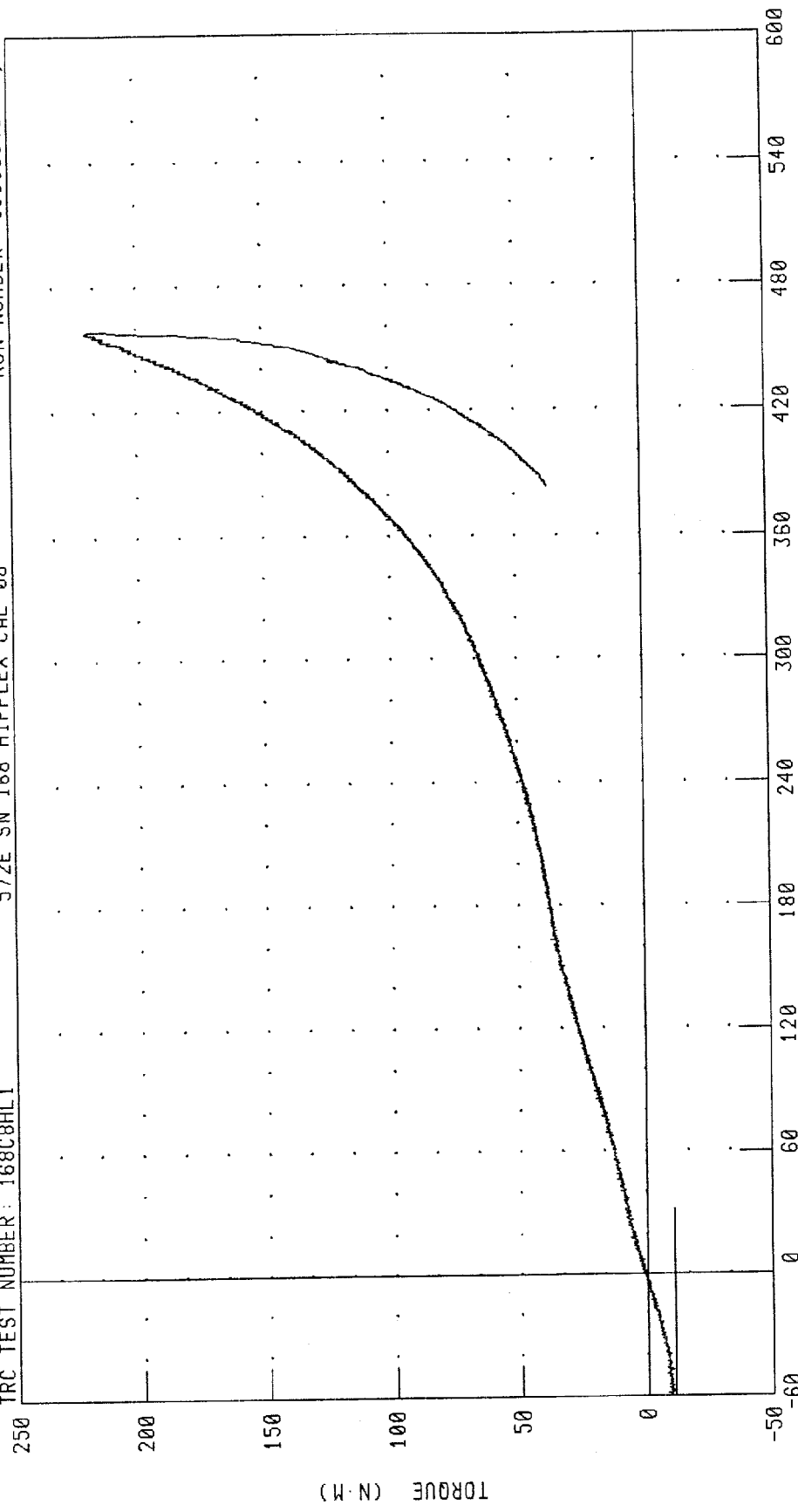


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
 LEFT HIP FLEXION MOMENT VS ROTATION ANGLE

TRC TEST NUMBER: 168C8HL1

572E SN 168 HIPFLEX CAL 08

RUN NUMBER: 030399.1446;1



CHANNEL: LHPXD
 LHPYH
 FILTER: CH. CLASS 60
 CH. CLASS 60
 PEAK DATA: 45.87 ° 0 5.73 S; -10.13 ° 0 -1.00 S
 220.35 N·M 0 5.72 S; -11.15 N·M 0 -1.00 S

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 50th

03-MAR-99

TRC INC.

TEST NO: 168C8RK1

572E SN168 RIGHT KNEE CAL 08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5437.6 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

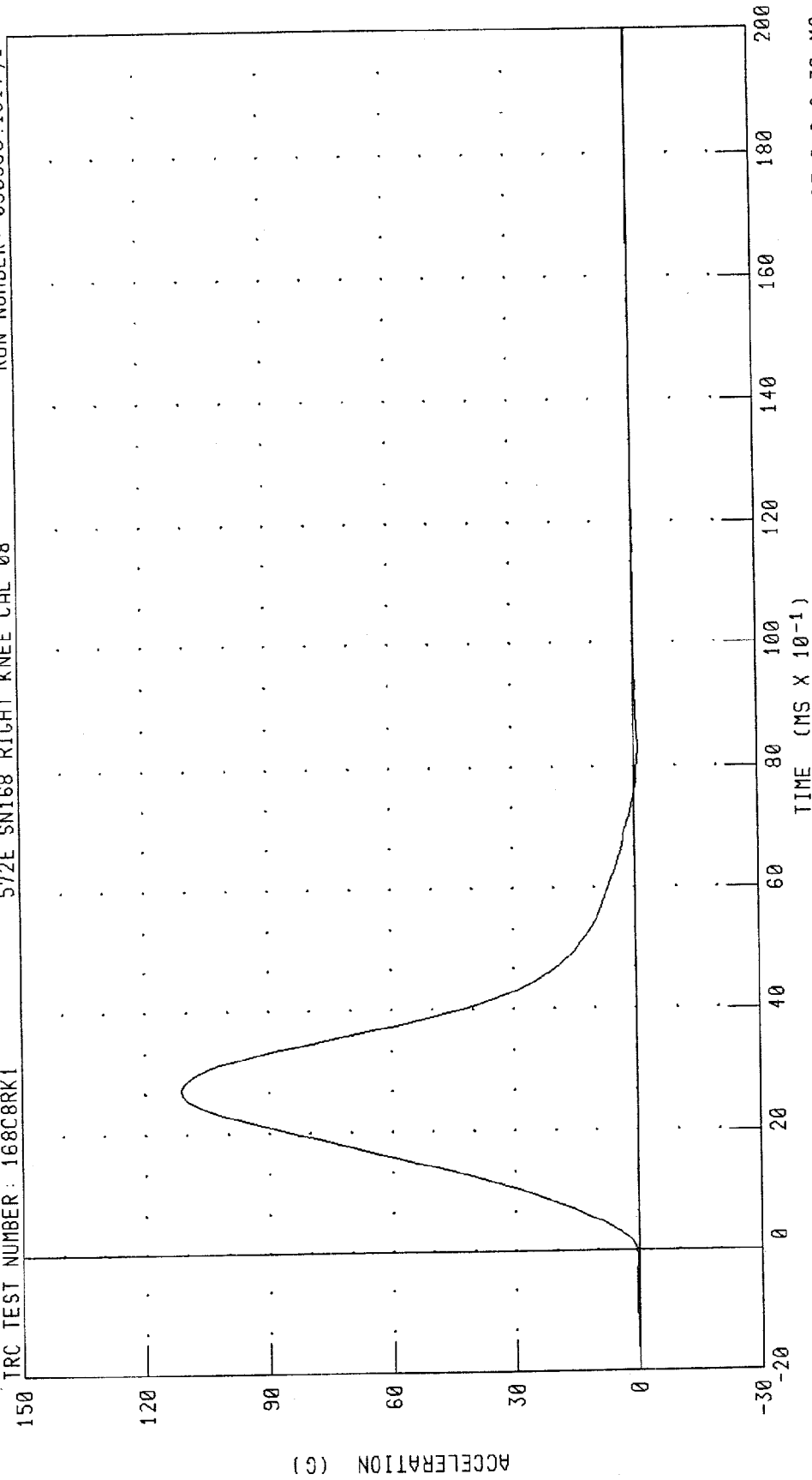
RUN NUMBER: 030399.1016;1

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

TRC TEST NUMBER: 168C8RK1

572E SN168 RIGHT KNEE CAL 08

RUN NUMBER: 030399.1017;1



CHANNEL: PENXC

FILTER: CH. CLASS 600

PEAK DATA: 111.13 G @ 2.72 MS; -1.07 G @ 8.32 MS

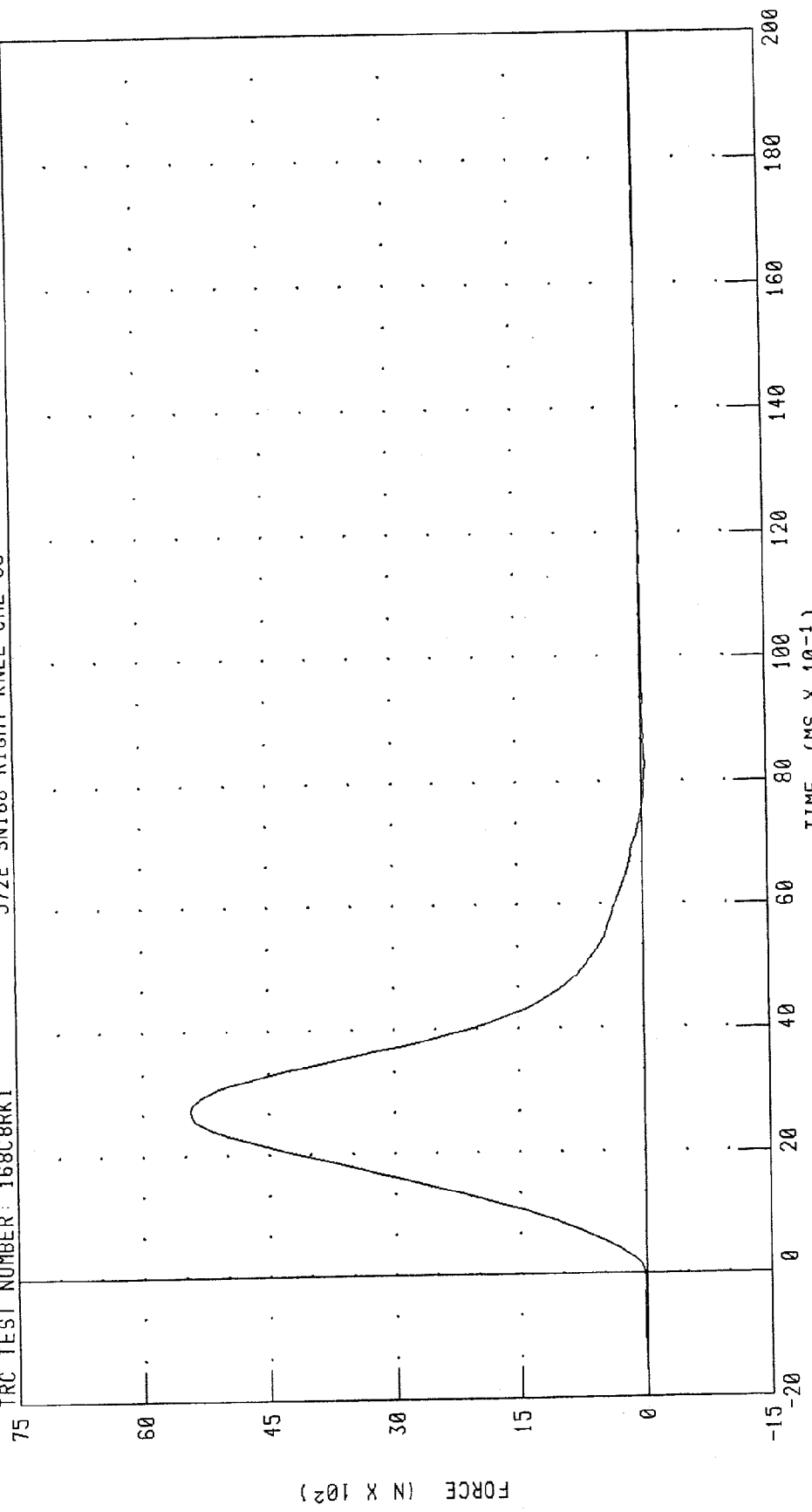
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

572E SN168 RIGHT KNEE CAL 08

RUN NUMBER: 030399.1017,1

TRC TEST NUMBER: 168C8RK1



PEAK DATA: 5437.61 N @ 2.72 MS; -52.33 N @ 8.32 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 50th

03-MAR-99

TRC INC.

TEST NO: 168C8LK1

572E SN168 LEFT KNEE CAL 08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	4839.0 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

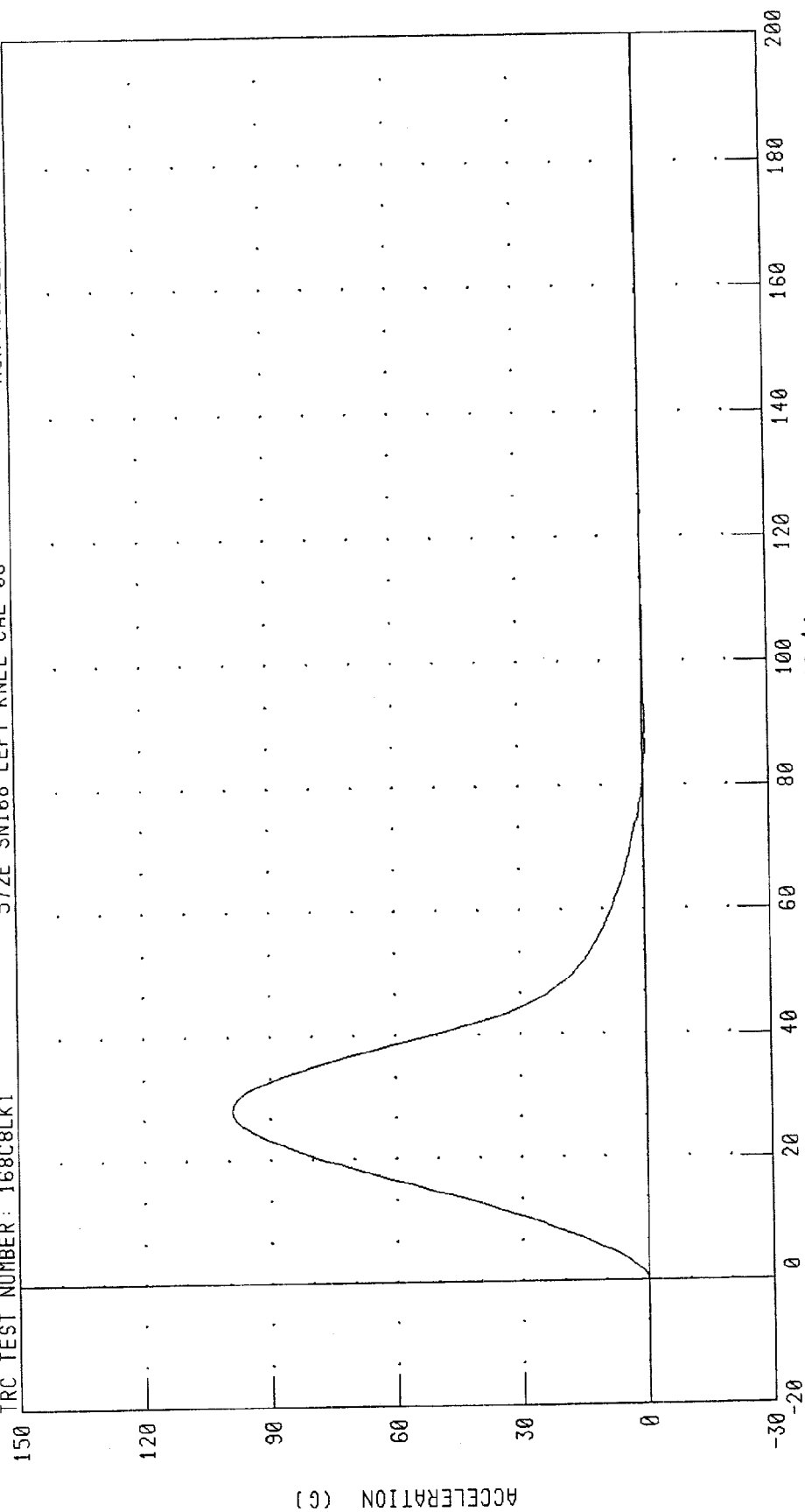
RUN NUMBER: 030399.1012;1

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

TRC TEST NUMBER: 168C8LK1

572E SN168 LEFT KNEE CAL 08

RUN NUMBER: 030399.1012,1



CHANNEL: PENXC

FILTER: CH. CLASS 600

PEAK DATA: 98.90 G @ 2.80 MS; -0.66 G @ 9.12 MS

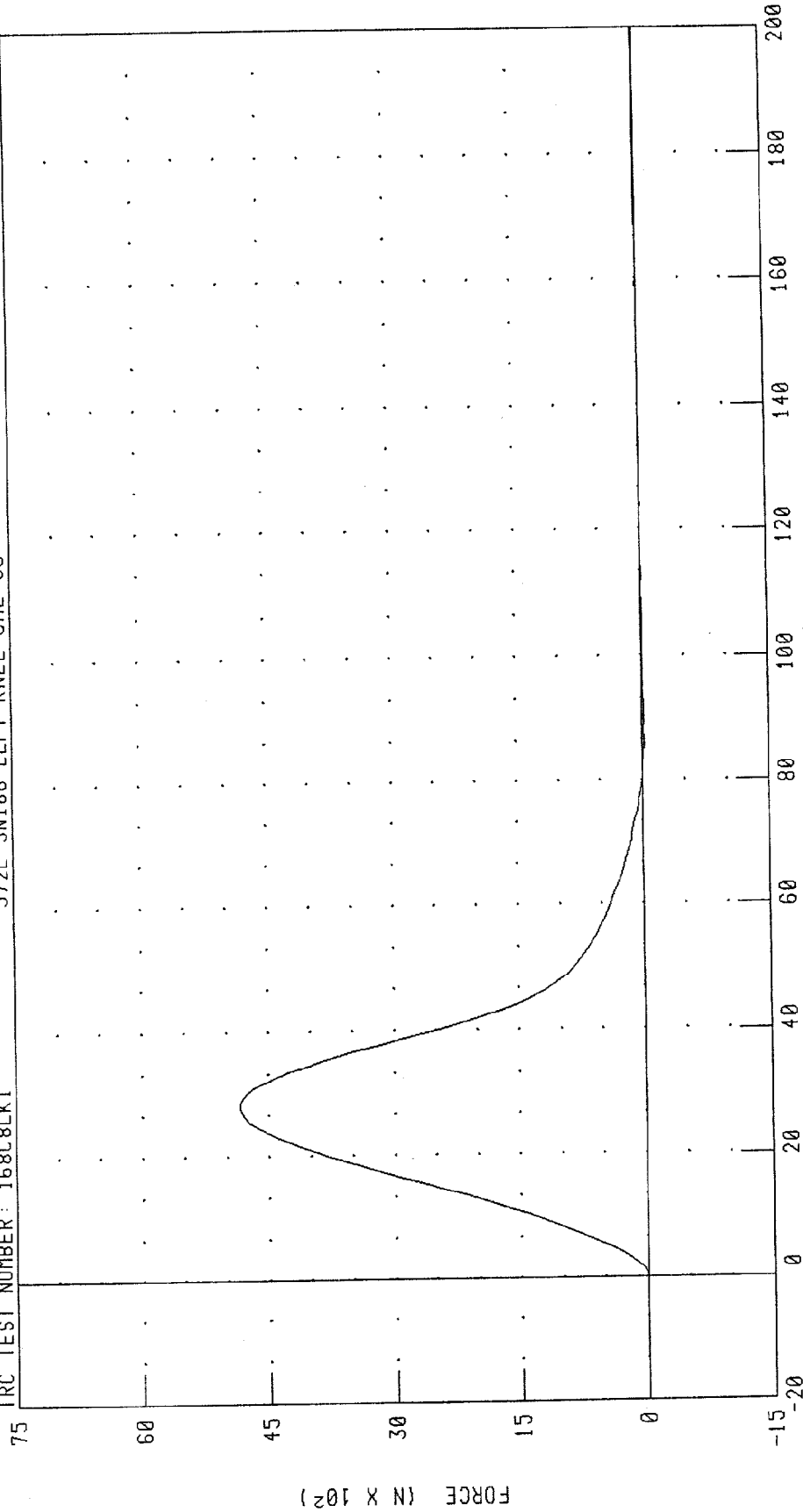
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

572E SN168 LEFT KNEE CAL 08

RUN NUMBER: 030399.1012.1

TRC TEST NUMBER: 168C8LK1



PEAK DATA: 4839.09 N @ 2.80 MS; -32.32 N @ 9.12 MS

FILTER: CH. CLASS 600

CHANNEL: PENXF

Post-Test Dummy Certification

Driver Dummy S/N 169

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III 50th

12-MAR-99

TRC INC.

TEST NO: 169C7HD1

572E SN169 HEAD DROP CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	248.63 G
PEAK LATERAL ACCELERATION	15 G MAX	5.61 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

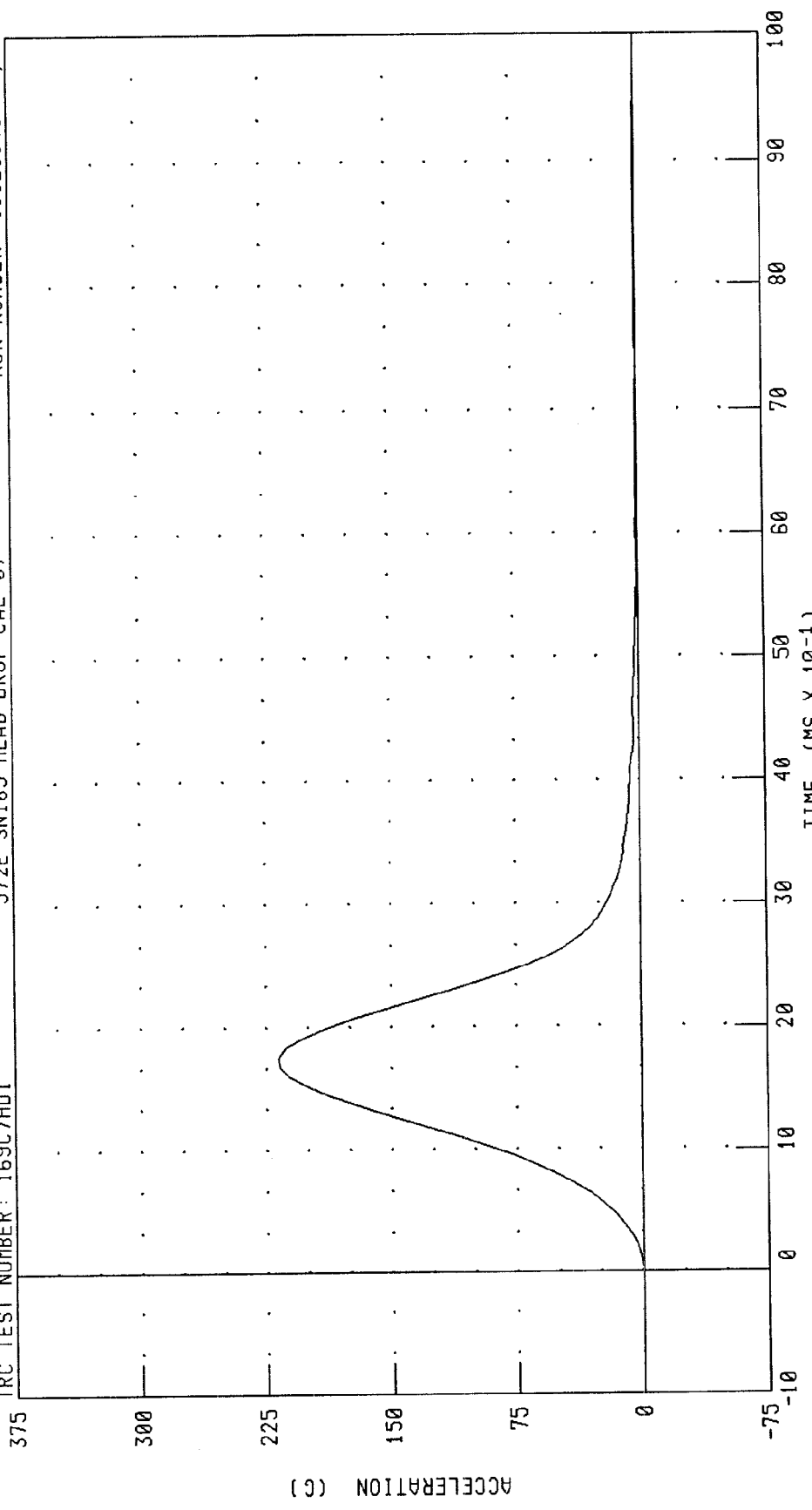
TEST MEETS SPECIFICATIONS

TECHNICIAN By Calt

RUN NUMBER: 031299.0910;1

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

TRC TEST NUMBER: 169C7HD1 572E SN169 HEAD DROP CAL 07 RUN NUMBER: 031299 0910;1



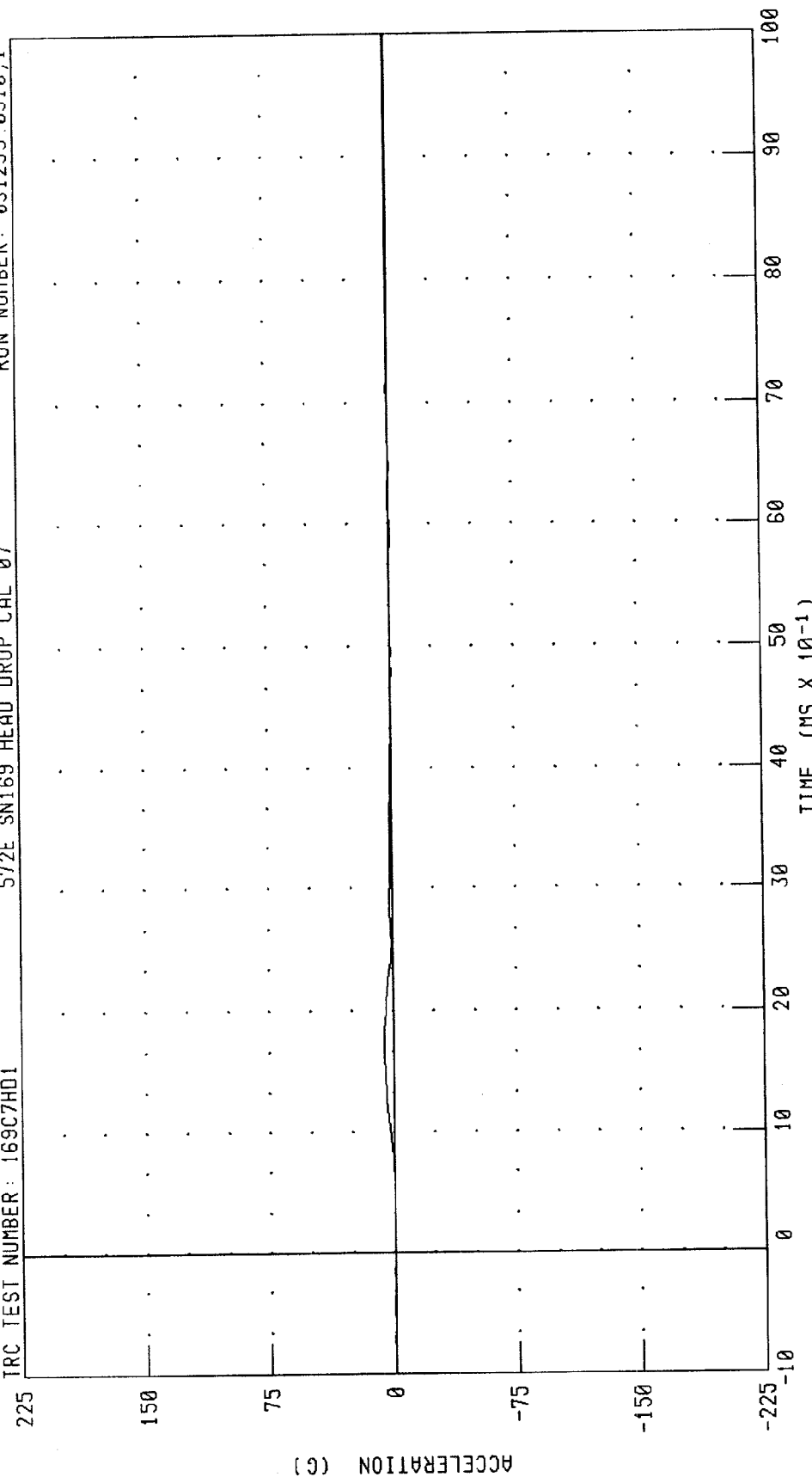
CHANNEL: HEDXC FILTER: CH. CLASS 1000 PEAK DATA: 217.92 G @ 1.76 MS; -0.37 G @ 10.00 MS

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

572E SN169 HEAD DROP CAL 07

TRC TEST NUMBER: 169C7HD1

RUN NUMBER: 031299.0910,1



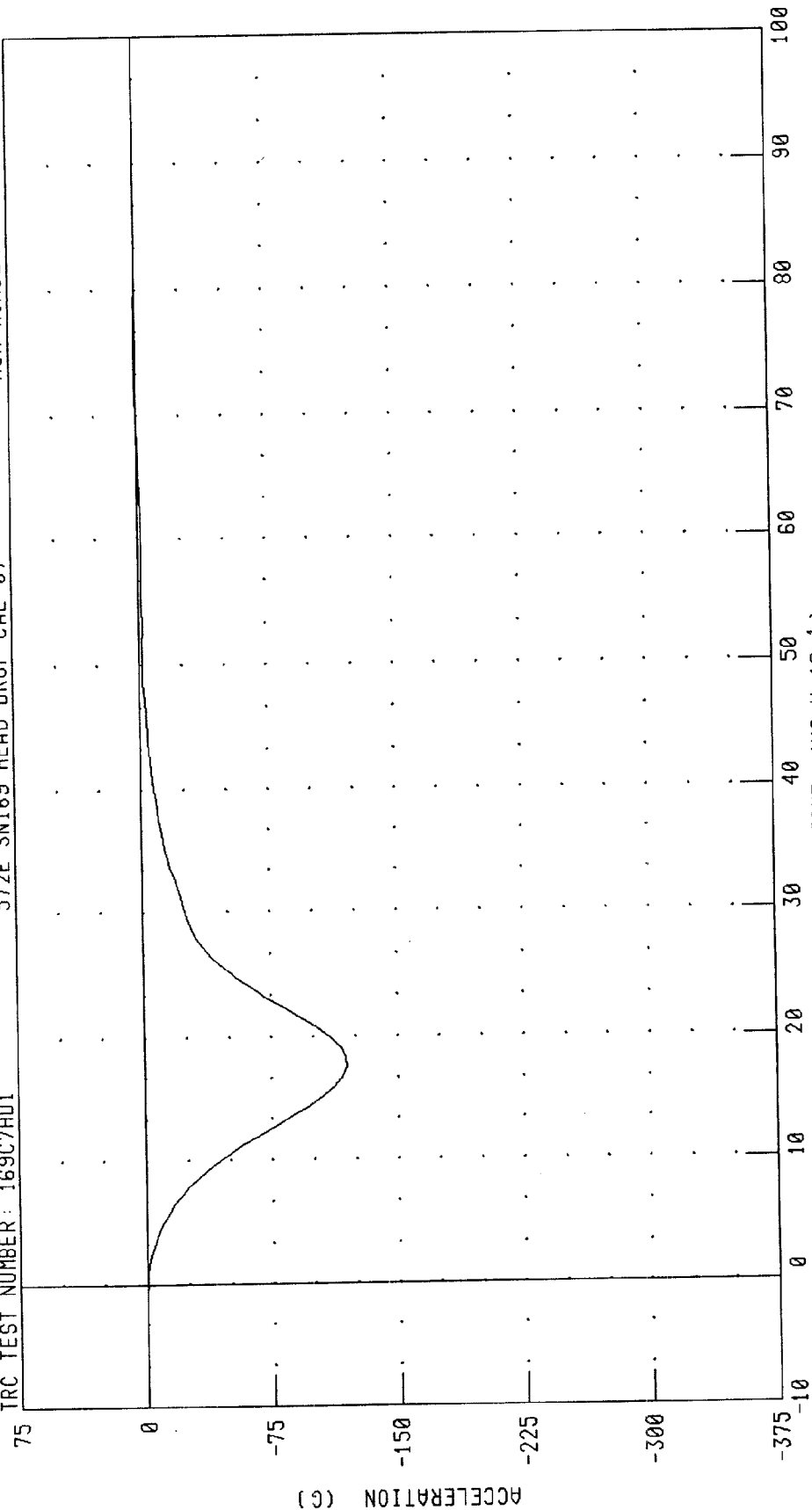
PEAK DATA: 5.62 G @ 1.76 MS, -0.84 G @ 5.92 MS

CHANNEL: HEDYG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS
572E SN169 HEAD DROP CAL 07

RUN NUMBER: 031299.0910;1

TRC TEST NUMBER: 169C7HD1



PEAK DATA: 0.78 G @ 7.36 MS; -119.60 G @ 1.76 MS

CHANNEL: HEDZG FILTER: CH. CLASS 1000

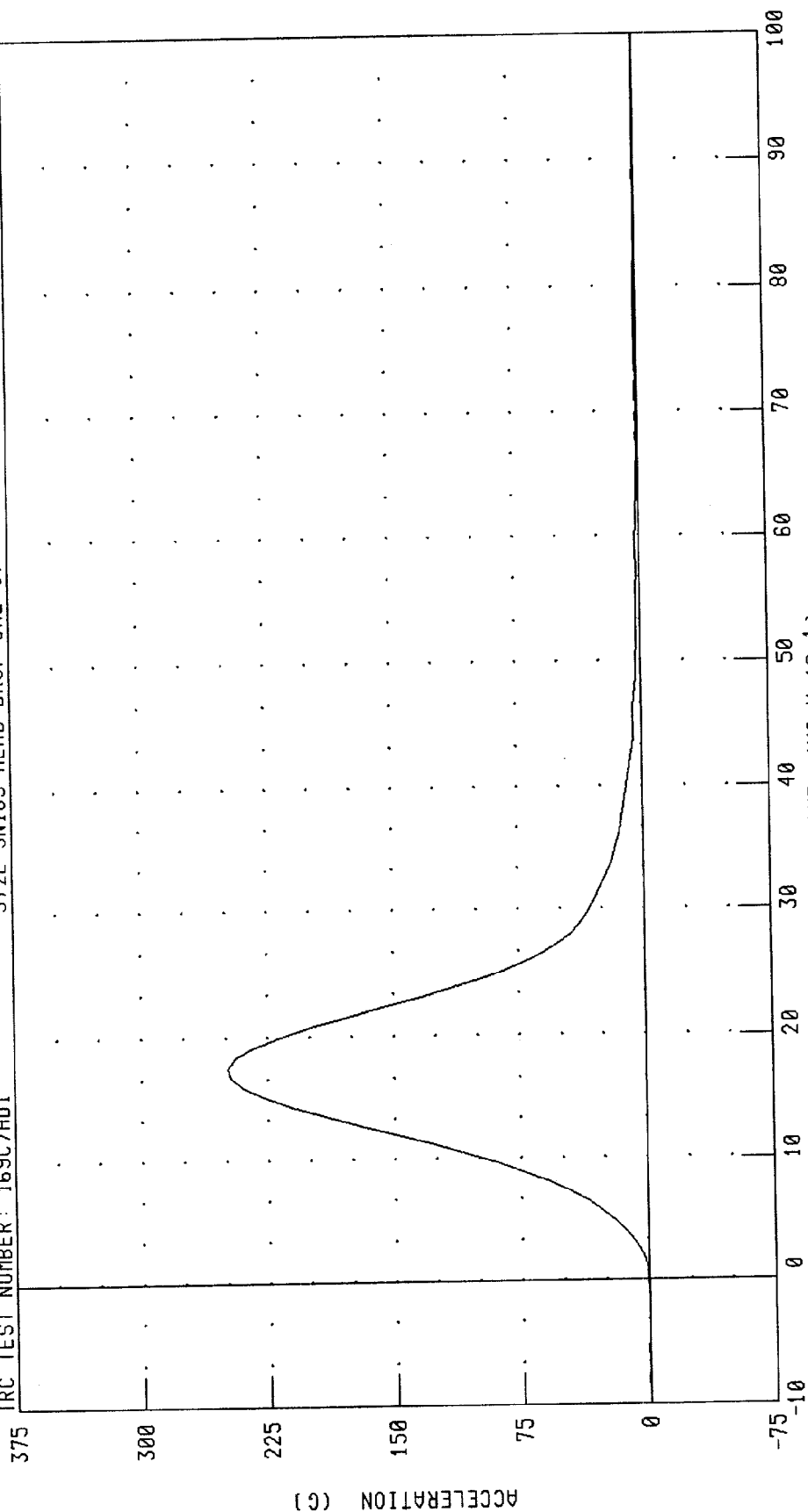
PART 572-E HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

572E SN169 HEAD DROP CAL 07

RUN NUMBER: 031299.0910;1

TRC TEST NUMBER: 169C7HD1



TIME (MS X 10⁻¹)

PEAK DATA: 248.64 G @ 1.76 MS; 0.06 G @ -0.96 MS

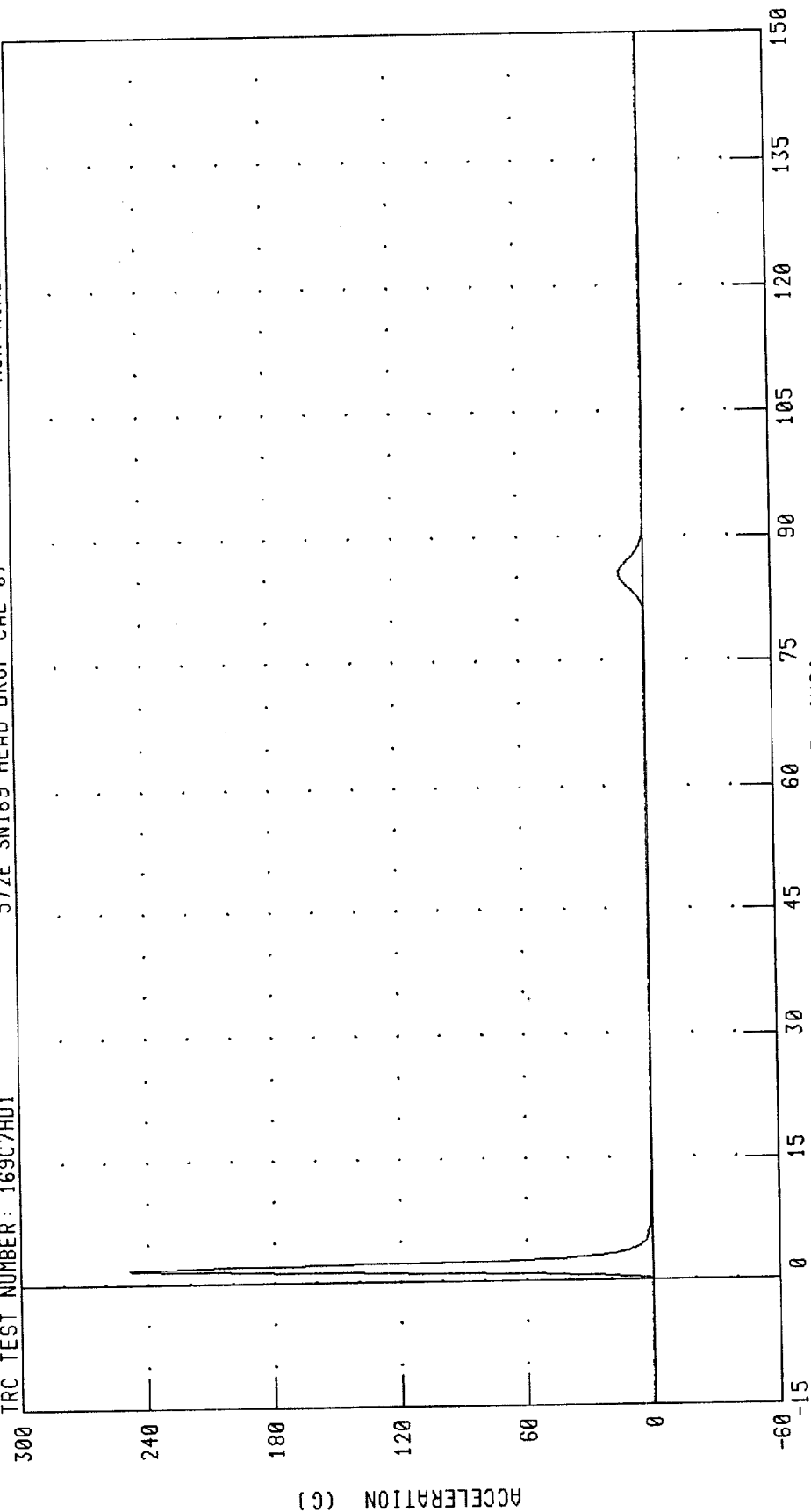
CHANNEL: HEDRG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
CHECK PLOT - HEAD RESULTANT ACCELERATION

RUN NUMBER: 031299.0910;1

TRC TEST NUMBER: 169C7HD1

572E SN169 HEAD DROP CAL 07



PEAK DATA: 248.64 G @ 1.76 MS; 0.06 G @ -14.96 MS

CHANNEL: HEDRG FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

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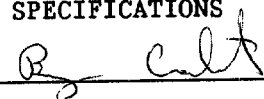
NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 169C7NF2 572E SN169 NECK FLEXION CAL7

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.99 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.24 G
	20 MS	17.60 - 22.60 G	20.32 G
	30 MS	12.50 - 18.50 G	15.99 G
MAX PENDULUM G		29 G MAX	23.98 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	15.93 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	39.84 MS
D PLANE	MAX	64 - 78 DEG.	71.66 DEG.
ROTATION	TIME	57 - 64 MS	60.40 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	96.59 NM
	TIME	47 - 58 MS	52.80 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	116.16 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	105.52 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



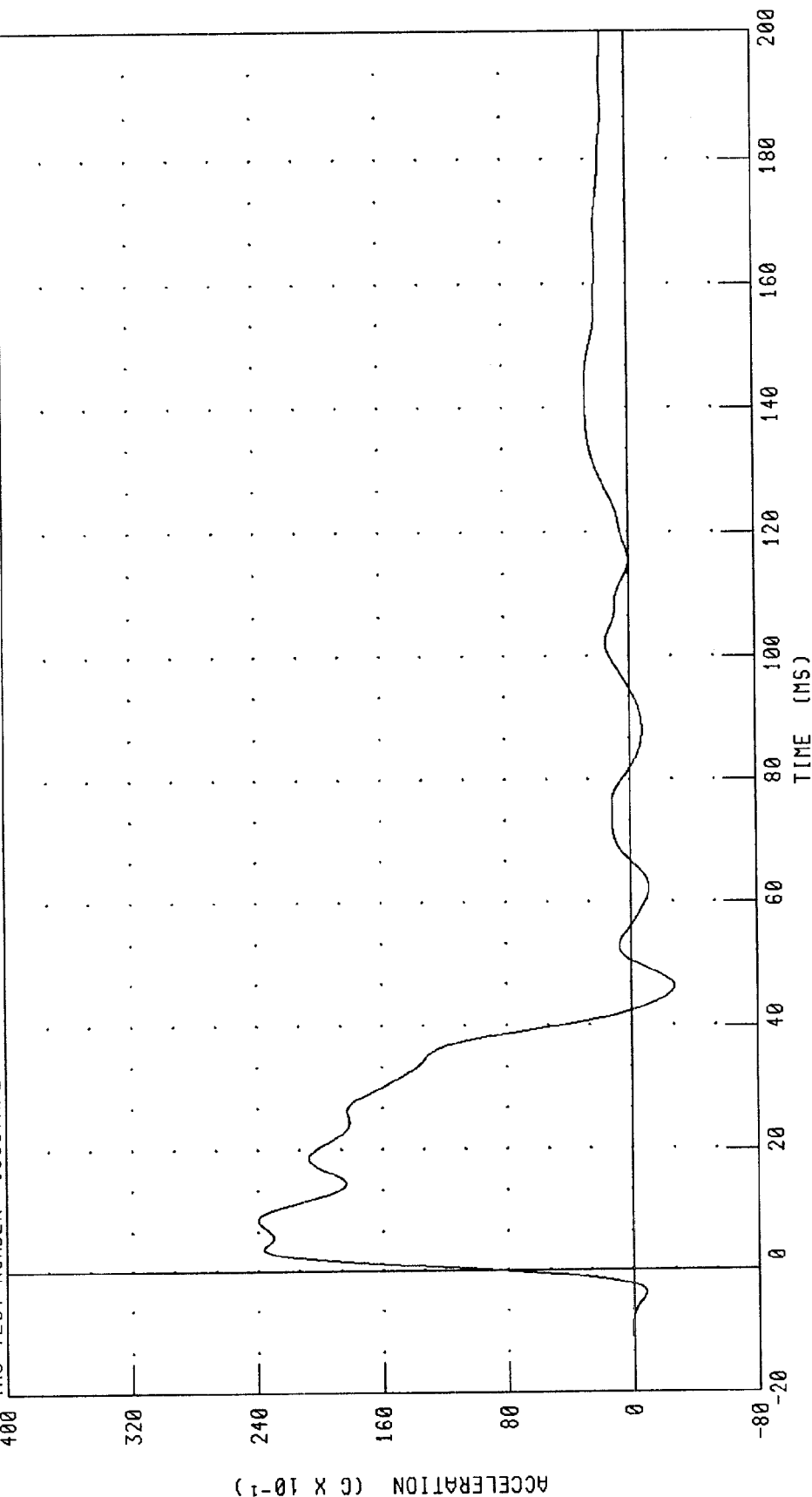
RUN NUMBER: 031299.1103;1

PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 169C7NF2

572E SN169 NECK FLEXION CAL7

RUN NUMBER: 031299.1104.1



PEAK DATA: 23.99 G @ 8.64 MS; -2.74 G @ 46.24 MS

CHANNEL: PENXC FILTER: CH. CLASS 60

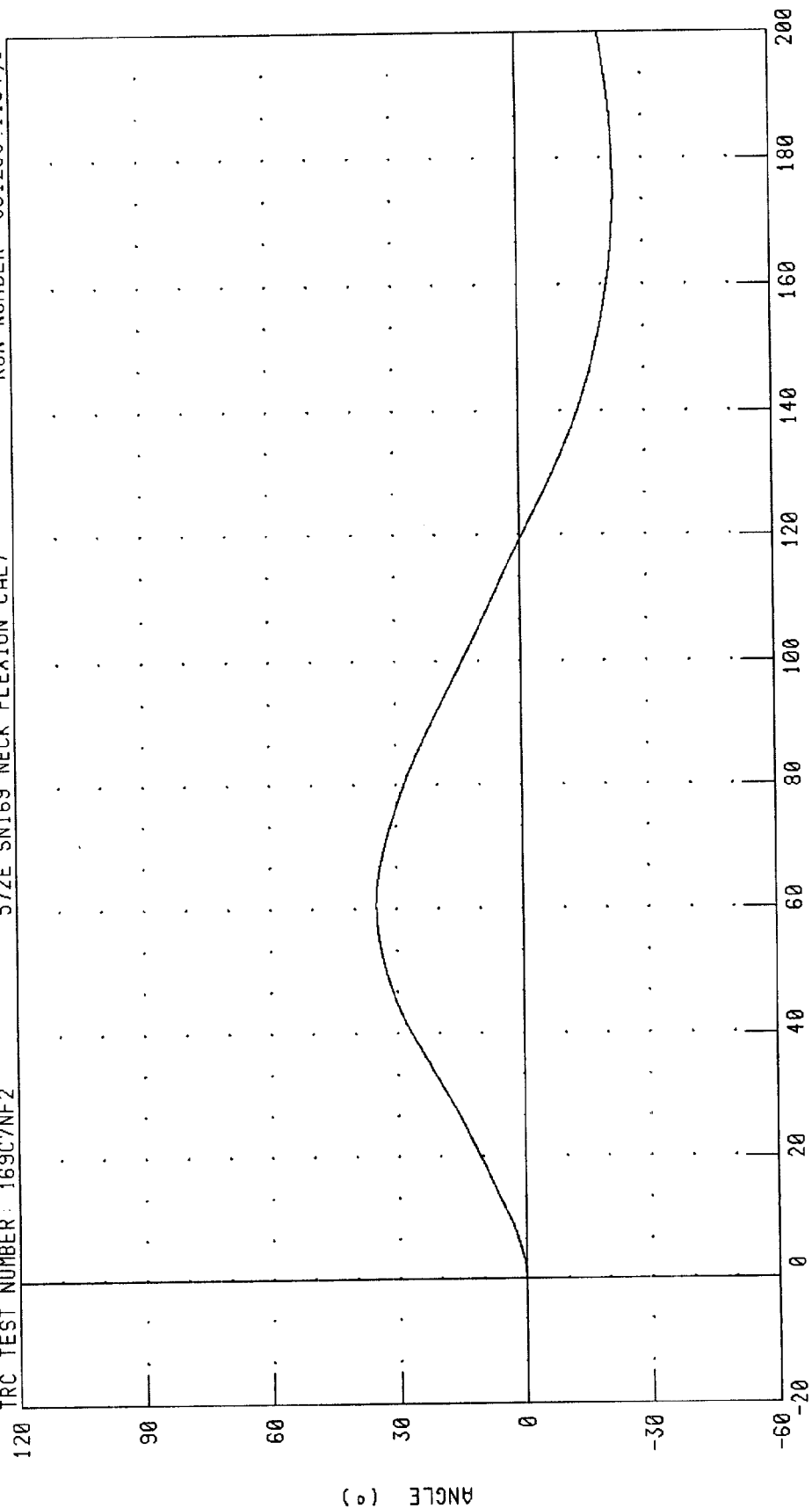
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN169 NECK FLEXION CAL7

TRC TEST NUMBER: 169C7NF2

RUN NUMBER: 031299.1104;1



PEAK DATA: 34.85 ° @ 60.64 MS; -23.09 ° @ 175.52 MS

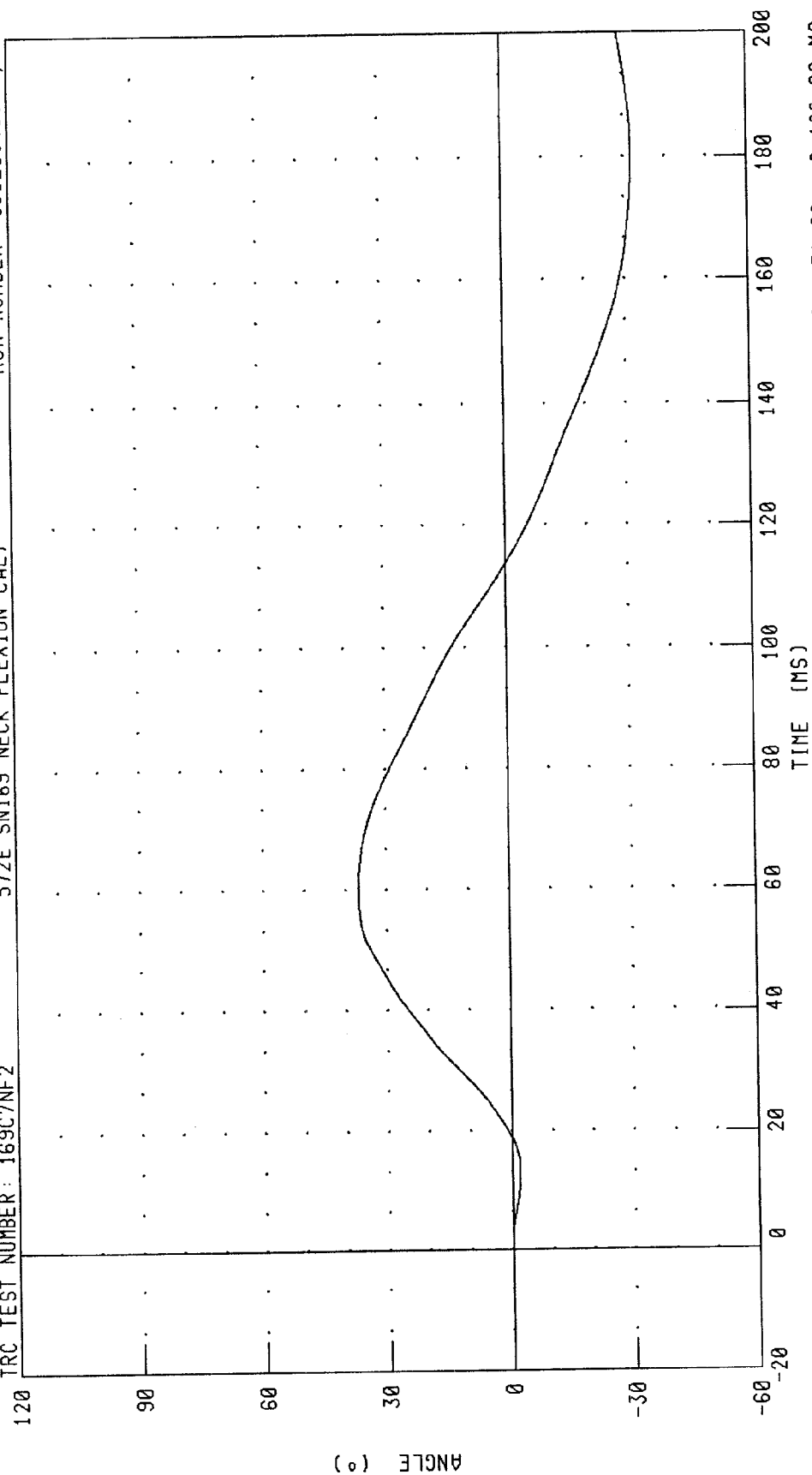
FILTER: CH. CLASS 60

CHANNEL: BETA

PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE
572E SN169 NECK FLEXION CAL7

RUN NUMBER: 031299.1104;1

TRC TEST NUMBER: 169C7NF2



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 36.82 ° @ 60.00 MS; -31.88 ° @ 180.96 MS

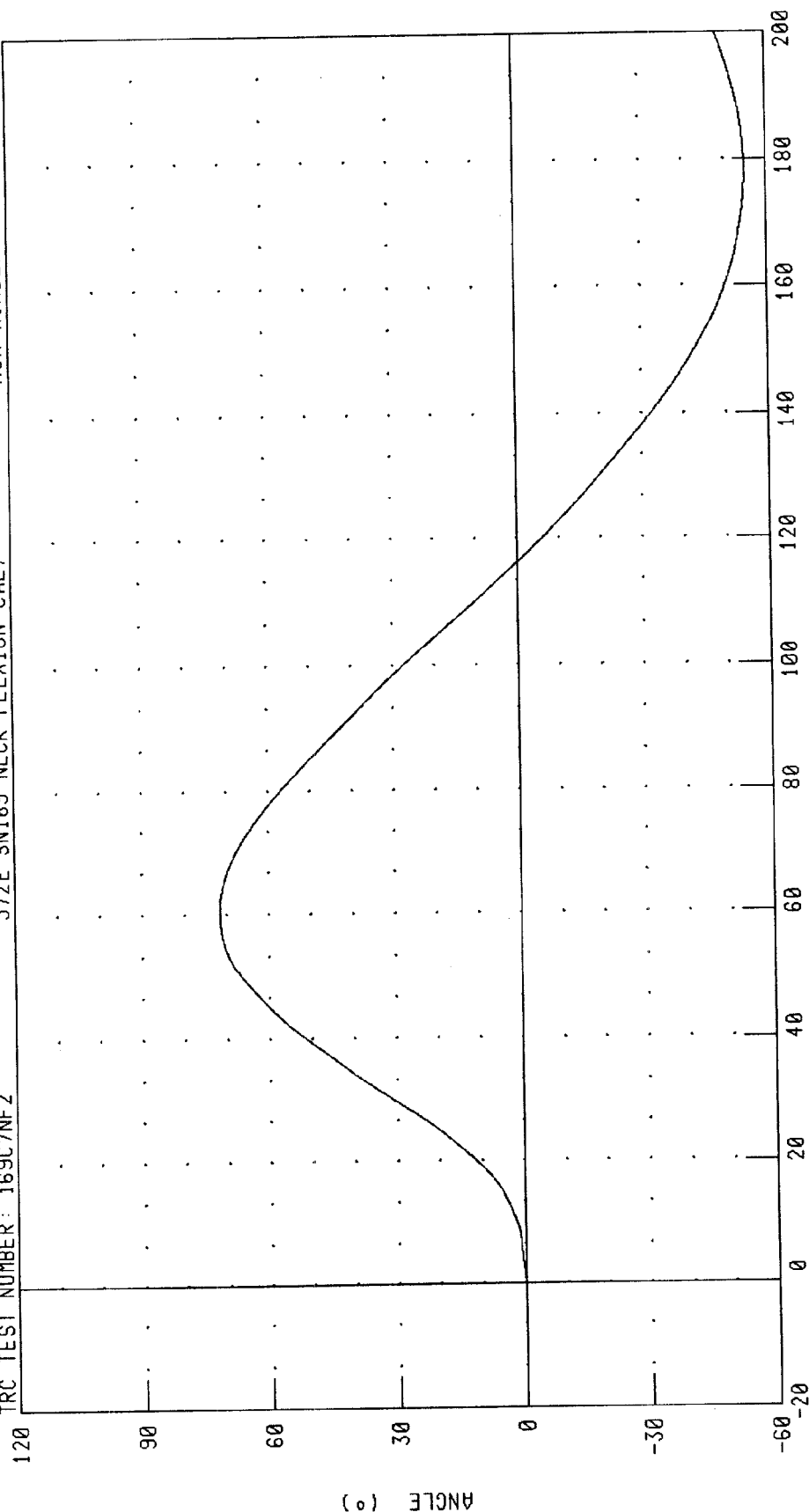
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

RUN NUMBER: 031299.1104;1

572E SN169 NECK FLEXION CAL7

TRC TEST NUMBER: 169C7NF2



PEAK DATA: 71.67 ° @ 60.40 MS; -54.90 ° @ 170.48 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

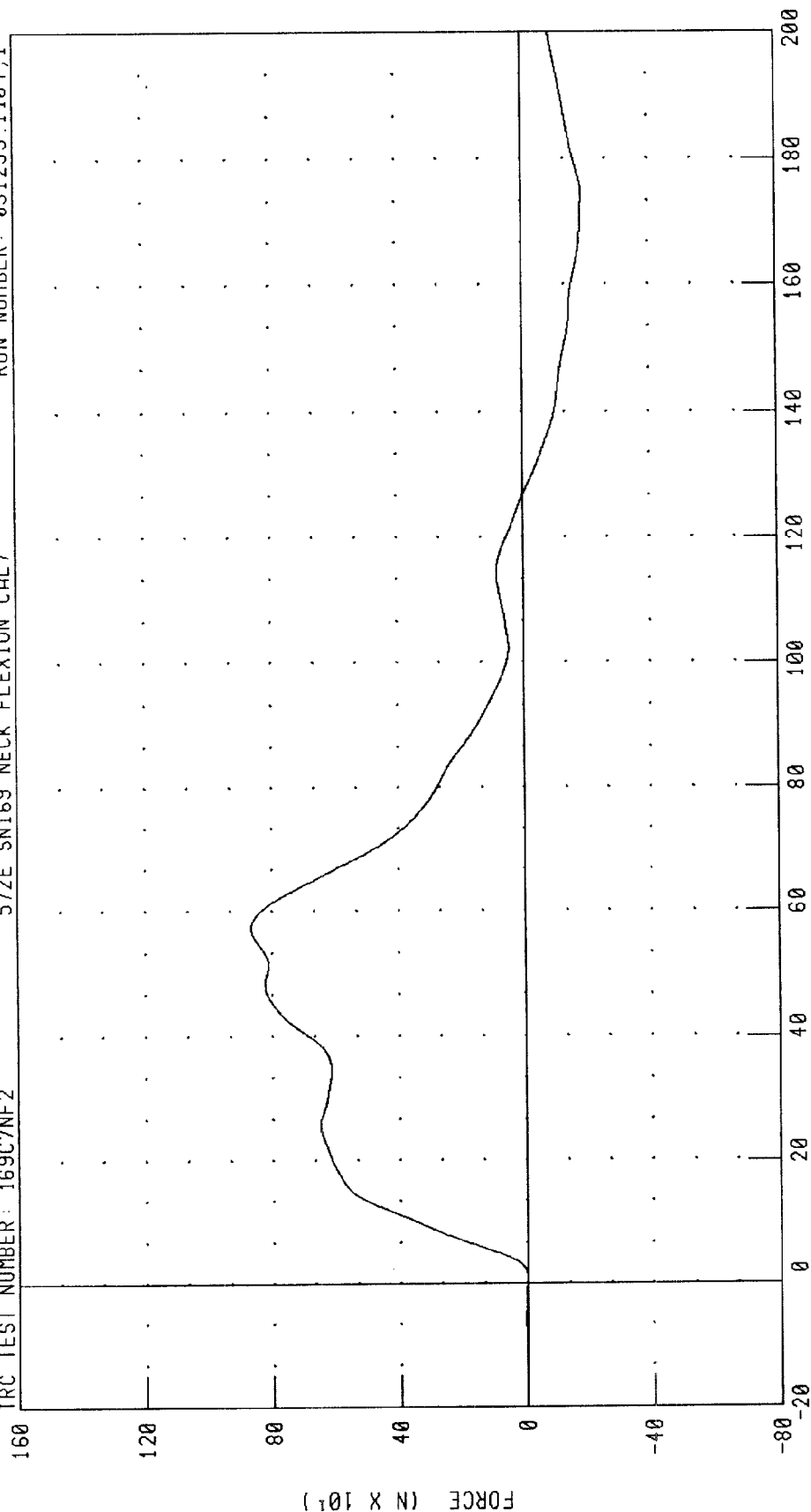
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 169C7NF2

572E SN169 NECK FLEXION CAL7

RUN NUMBER: 031299.1104.1



PEAK DATA: 865.63 N @ 57.36 MS; -191.35 N @ 174.56 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

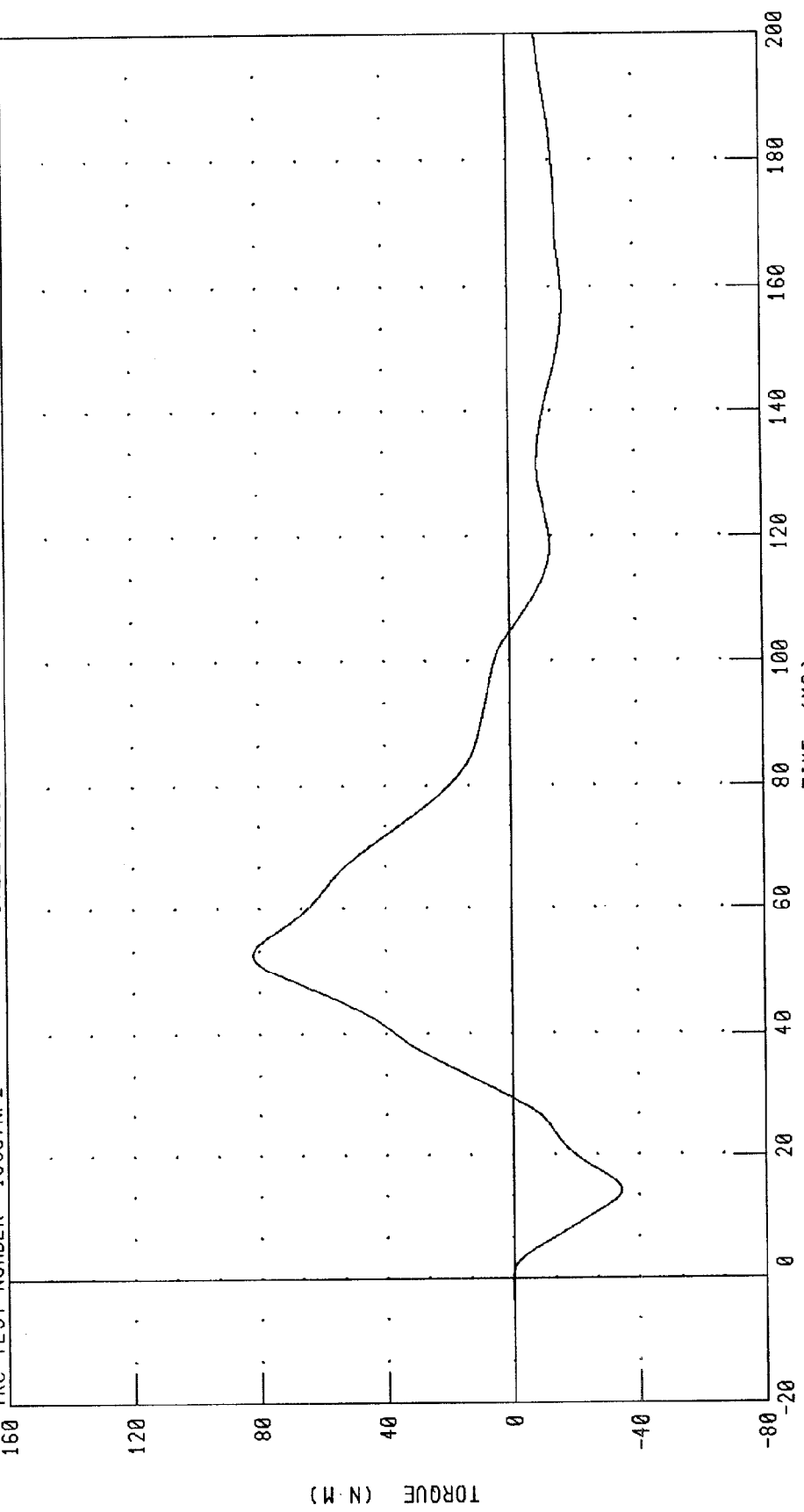
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

RUN NUMBER: 031299.1104;1

572E SN169 NECK FLEXION CAL7

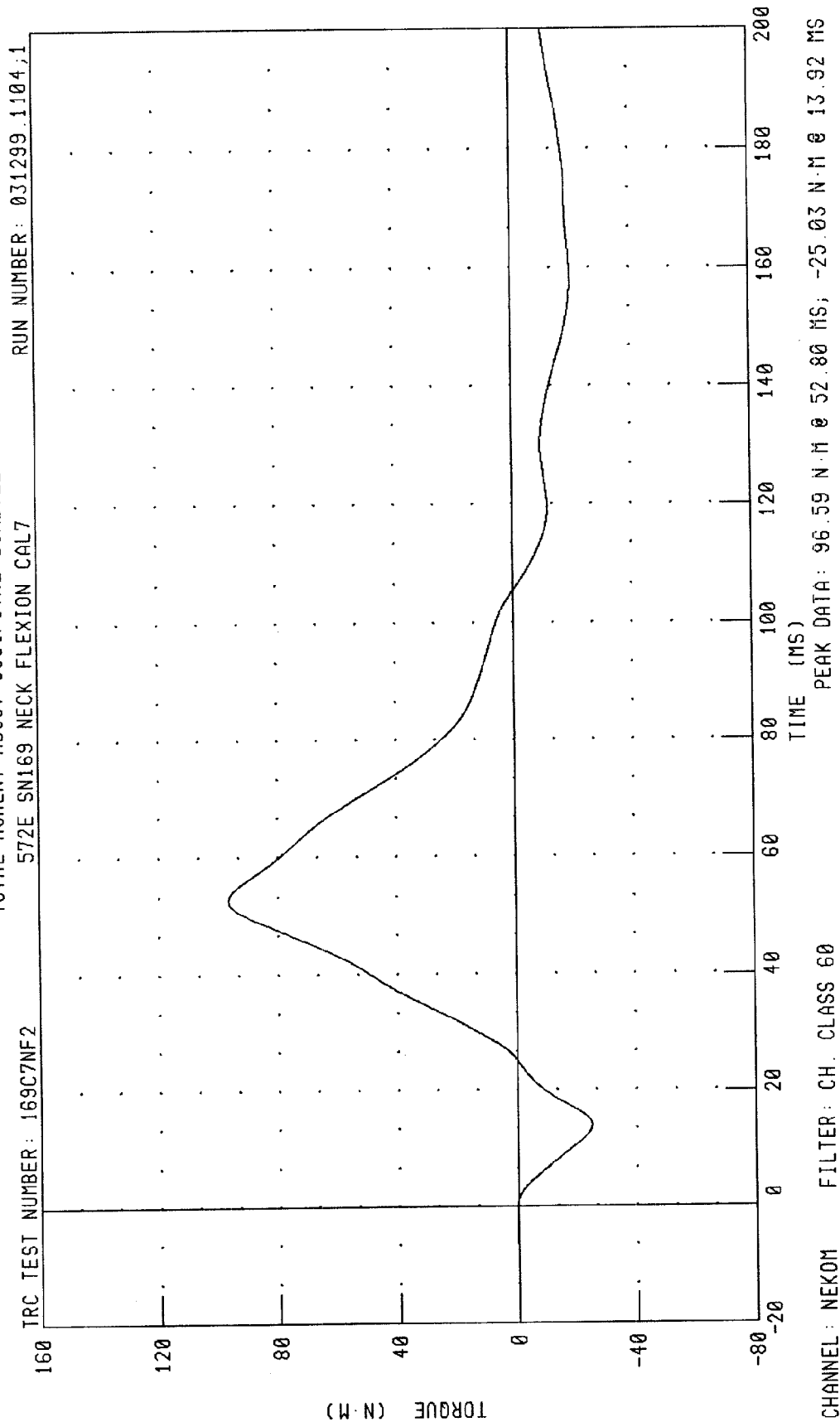
TRC TEST NUMBER: 169C7NF2



PEAK DATA: 82.06 N·M @ 52.72 MS, -34.46 N·M @ 142.24 MS

CHANNEL: NEKYM FILTER: CH. CLASS 60

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



TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

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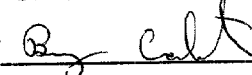
NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 169C7NE1 572E SN 169 NECK EXT CAL7

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	17.62 G
	20 MS	14.00 - 19.00 G	18.07 G
	30 MS	11.00 - 16.00 G	14.05 G
MAX PENDULUM G		22 G MAX	18.39 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	13.96 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	43.04 MS
D PLANE	MAX	81 - 106 DEG.	99.42 DEG.
ROTATION	TIME	72 - 82 MS	78.16 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-67.30 NM
	TIME	65 - 79 MS	72.80 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	158.56 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	146.80 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 031299.1207;1

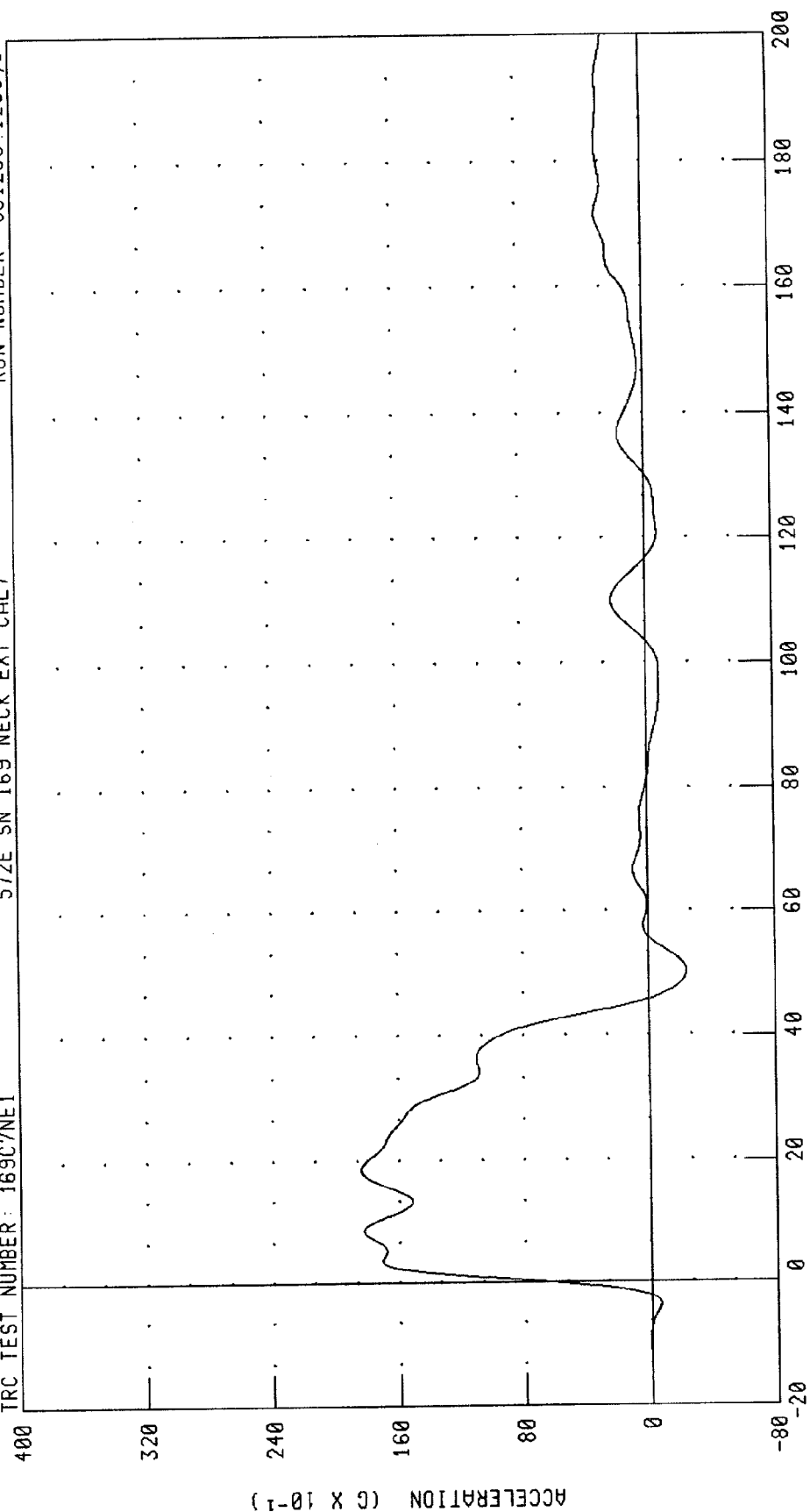
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 169C7NE1

572E SN 169 NECK EXT CAL7

RUN NUMBER: 031299.1208;1



PEAK DATA: 18.39 G @ 18.72 MS, -2.42 G @ 50.24 MS

CHANNEL: PENXC FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

RUN NUMBER: 031299.1208;1

572E SN 169 NECK EXT CAL7

TRC TEST NUMBER: 169C7NE1

120

90

60

30

0

-30

-60

ANGLE (°)

TIME (MS)

200

180

160

140

120

100

80

60

40

20

0

-20

PEAK DATA: 40.82 ° @ 75.92 MS, -15.20 ° @ 200.00 MS

FILTER: CH. CLASS 60

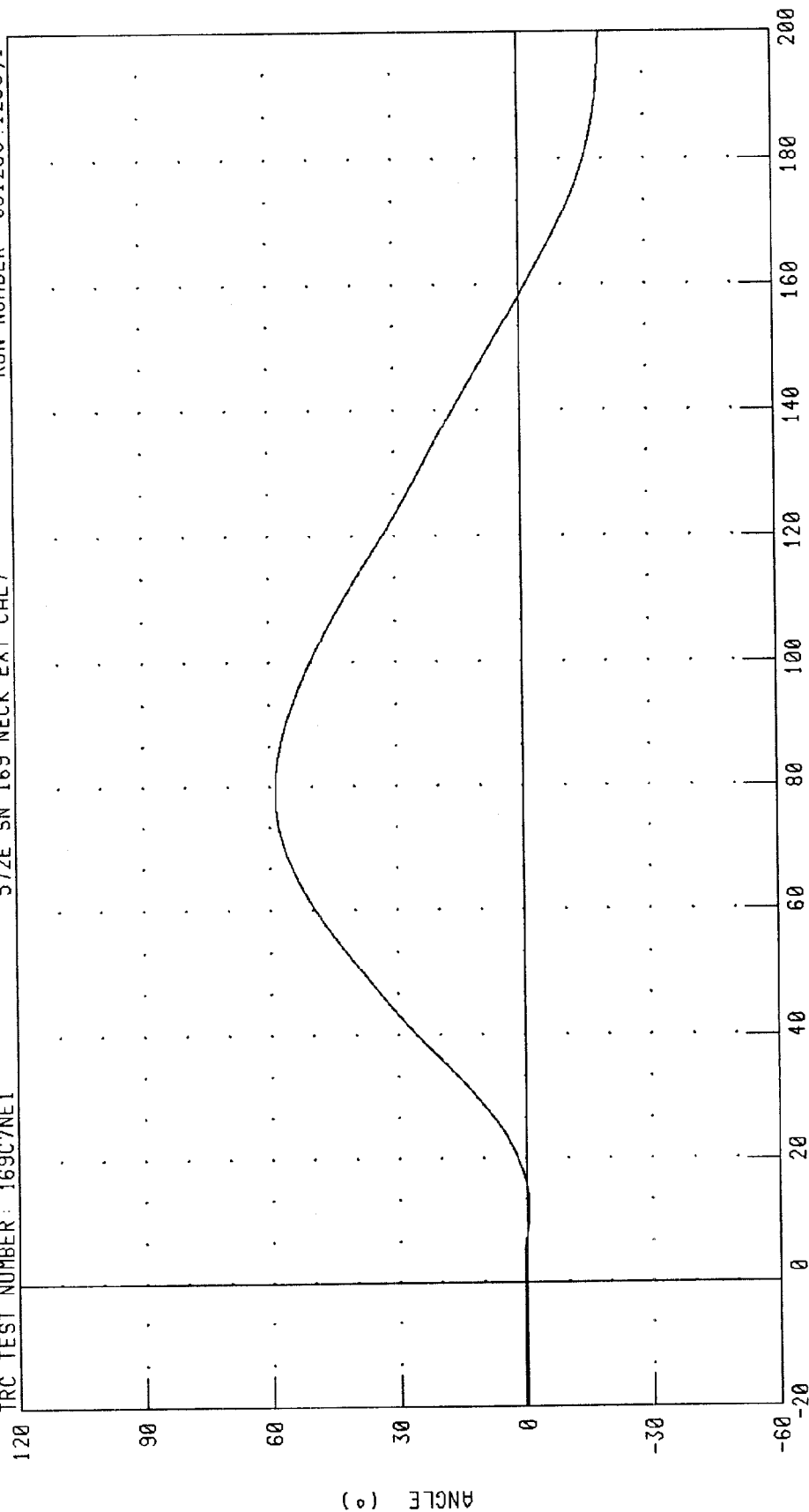
CHANNEL: BETA

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

RUN NUMBER: 031299.1208;1

572E SN 169 NECK EXT CAL7

TRC TEST NUMBER: 169C7NE1



PEAK DATA: 58.70 ° @ 79.52 MS; -19.53 ° @ 200.00 MS

CHANNEL: THETA FILTER: CH. CLASS 60

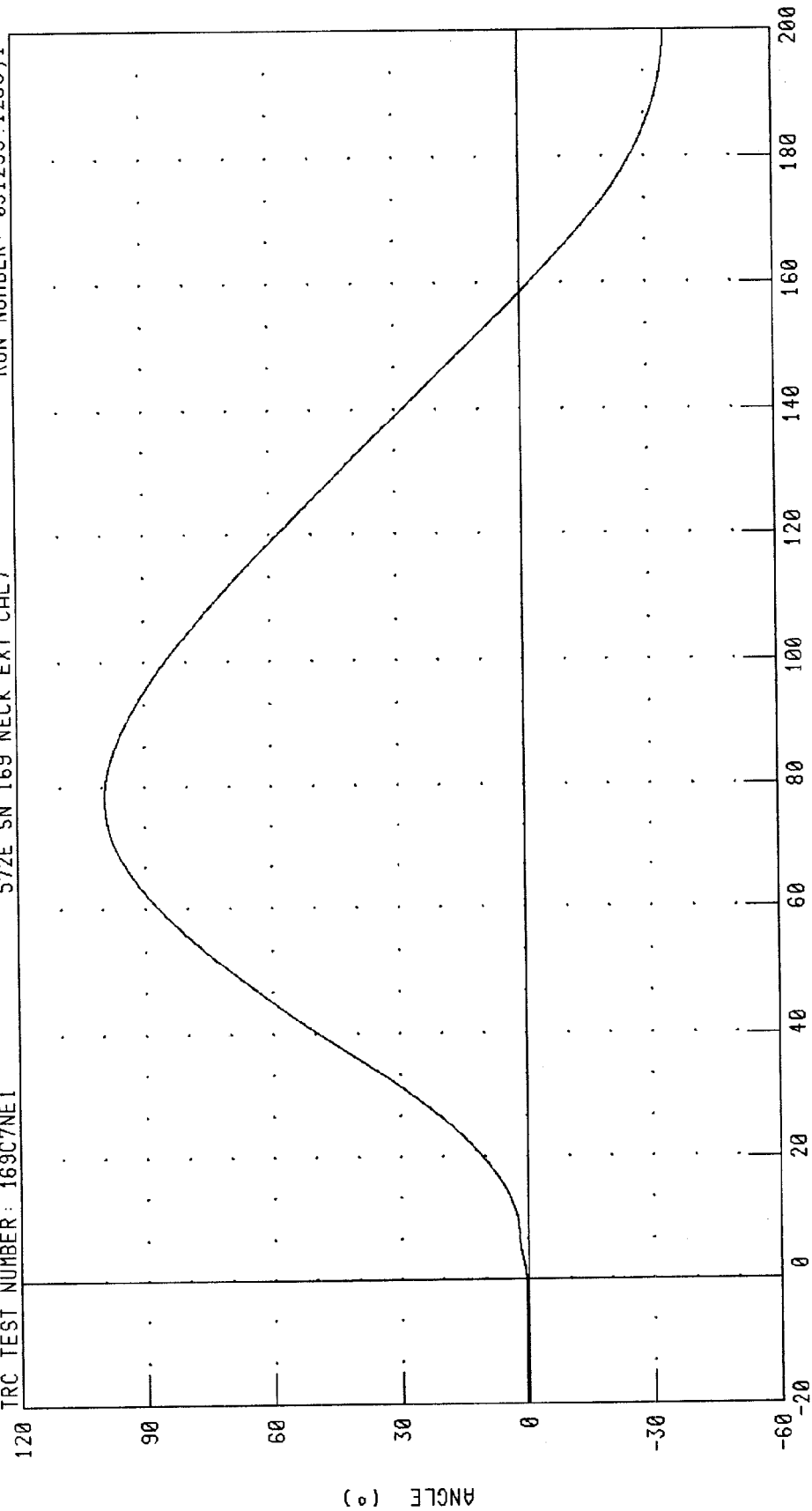
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

RUN NUMBER: 031299.1208;1

572E SN 169 NECK EXT CAL7

TRC TEST NUMBER: 169C7NE1



PEAK DATA: 99.43 ° @ 78.16 MS; -34.73 ° @ 200.00 MS

FILTER: CH. CLASS 60

CHANNEL: TOTAN

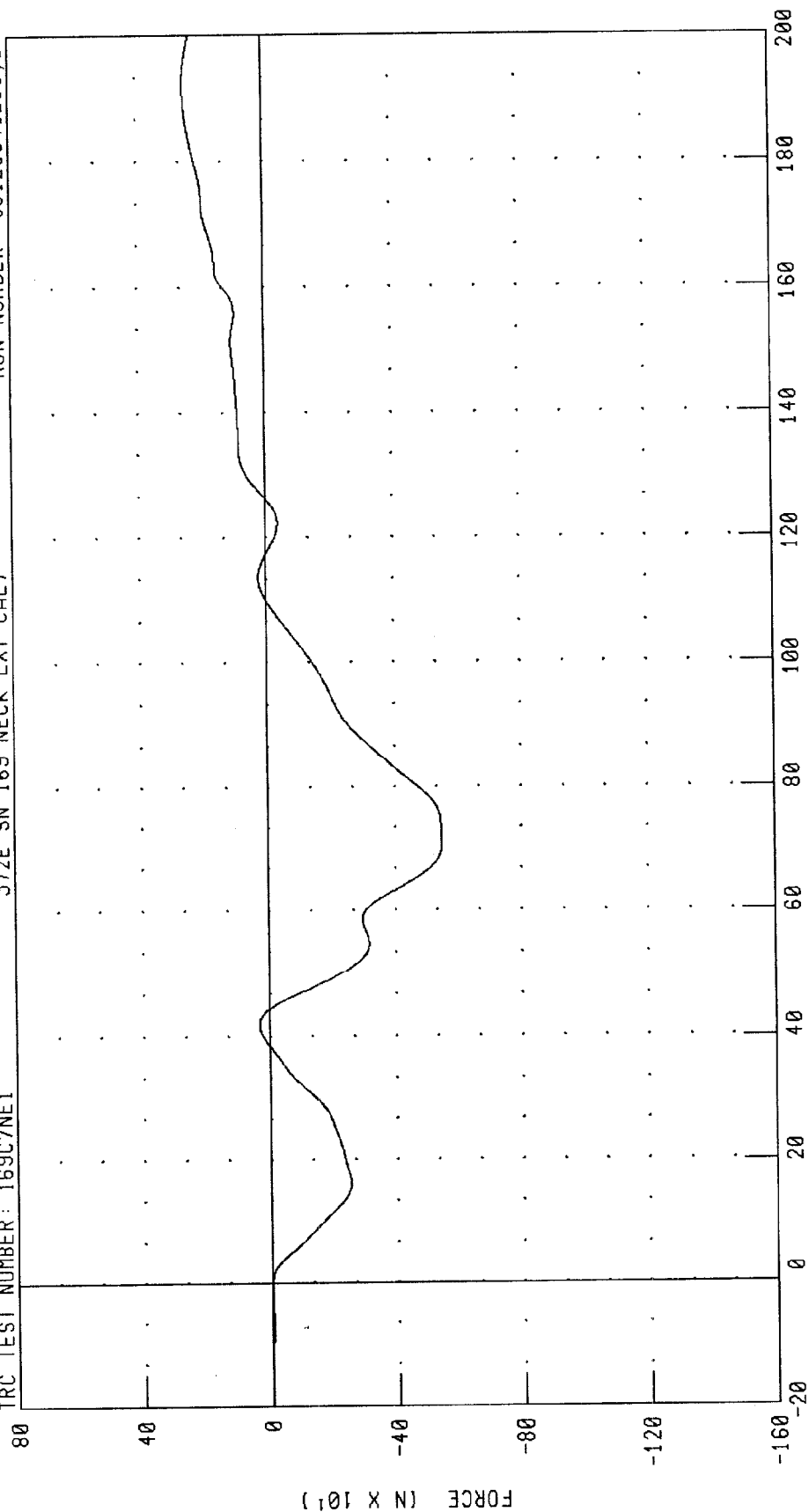
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

RUN NUMBER: 031299.1208;1

572E SN 169 NECK EXT CAL7

TRC TEST NUMBER: 169C7NE1



PEAK DATA: 251.06 N @ 192.40 MS; -548.14 N @ 71.04 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

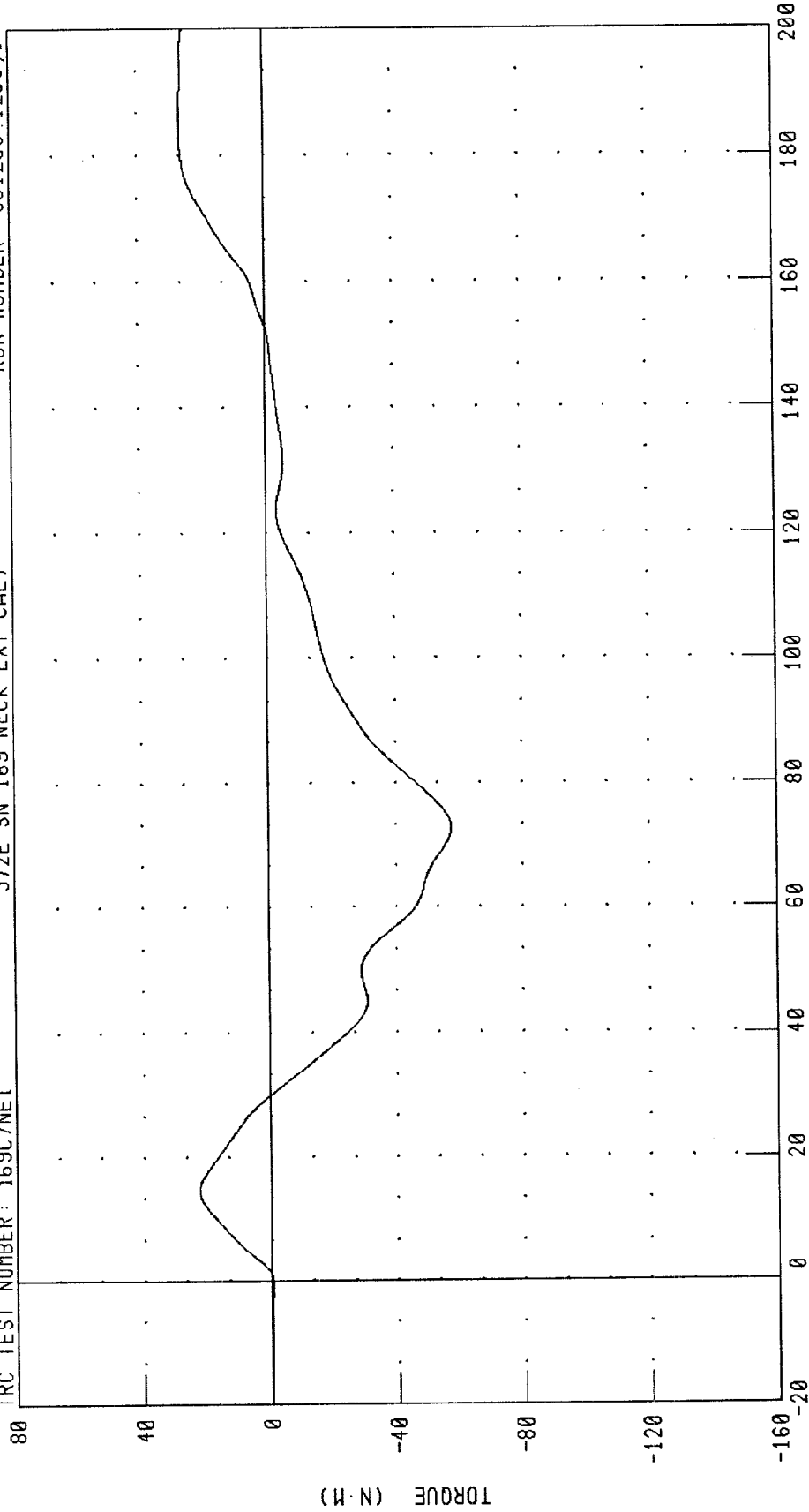
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 169C7NE1

572E SN 169 NECK EXT CAL7

RUN NUMBER: 031299.1208;1



PEAK DATA: 26.73 N·M @ 185.20 MS; -57.58 N·M @ 72.88 MS

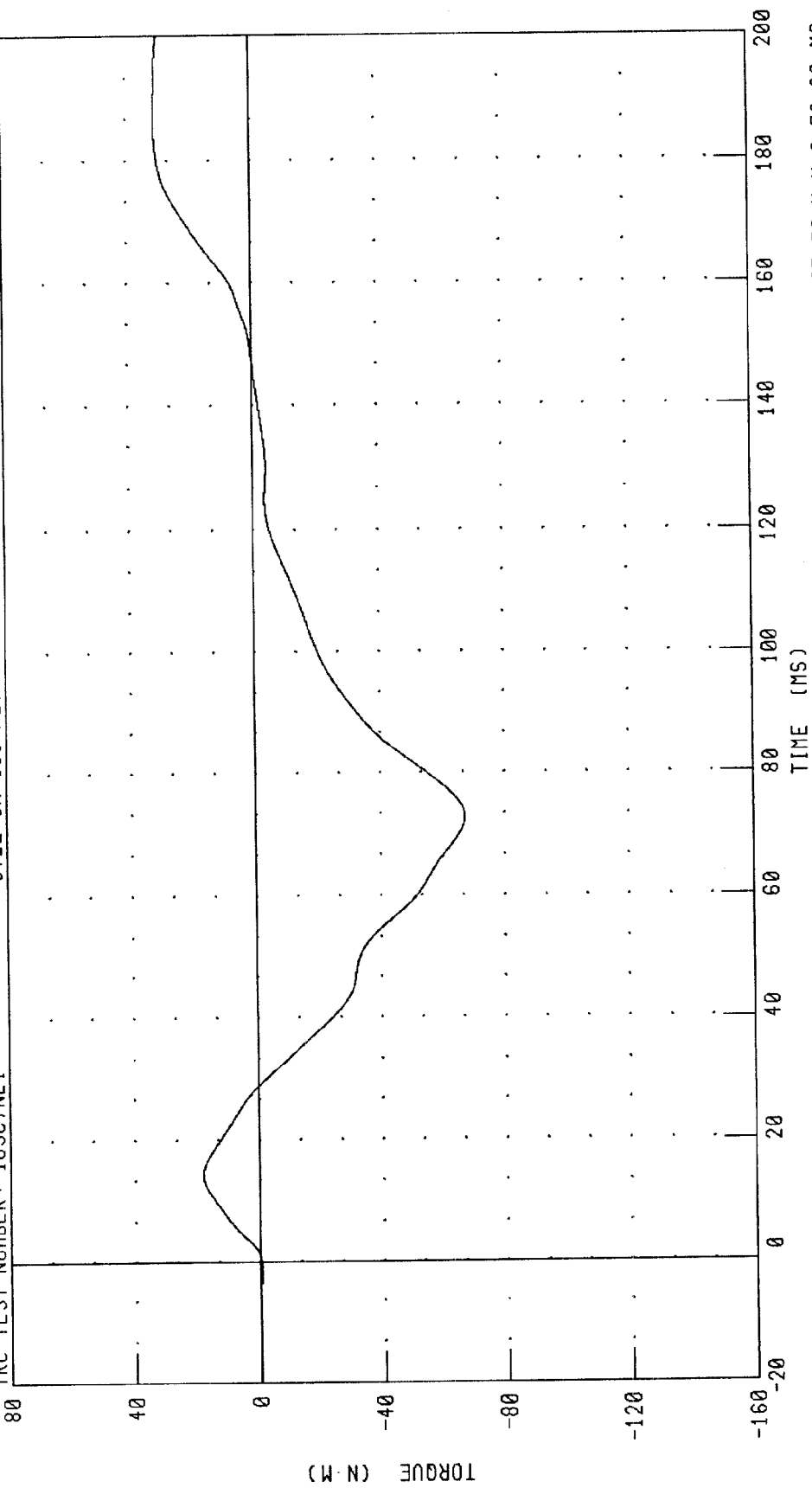
CHANNEL: NEKYM FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 169C7NE1

572E SN 169 NECK EXT CAL7

RUN NUMBER: 031299.1208;1



PEAK DATA: 31.02 N-M @ 186.80 MS; -67.30 N-M @ 72.80 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III 50th

12-MAR-99

TRC INC.

TEST NO: 169C7TH1

572E SN169 H.S.THORAX CAL07

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.59 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	67.8 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5533. N
INTERNAL HYSTERESIS	69% - 85%	72.5%

TEST MEETS SPECIFICATIONS

TECHNICIAN

By Cult

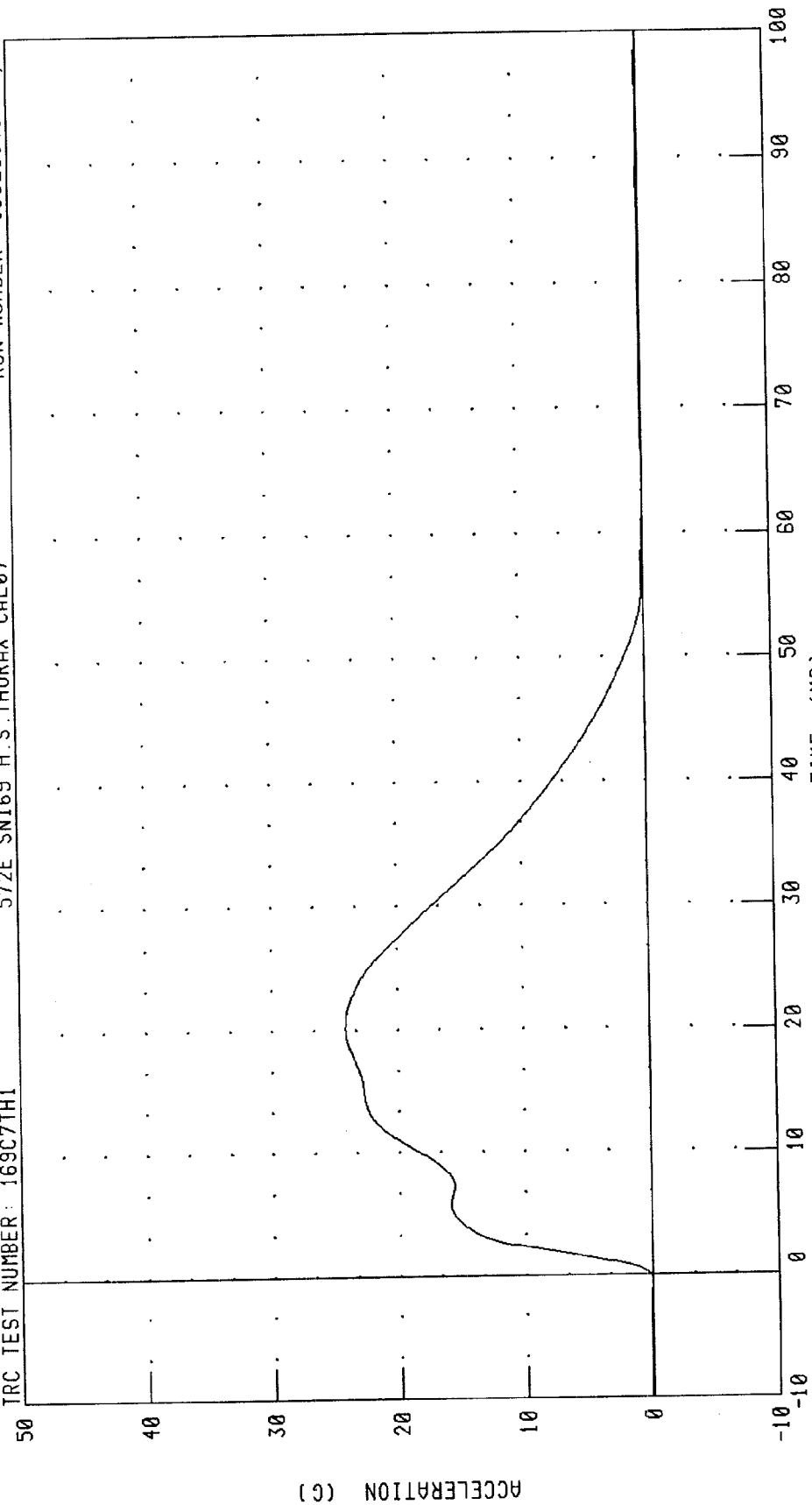
RUN NUMBER: 031299.1314;1

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM DECELERATION

RUN NUMBER: 031299.1314;1

572E SN169 H.S. THORAX CAL07

TRC TEST NUMBER: 169C7TH1



PEAK DATA: 24.16 G @ 20.24 MS; -0.04 G @ -0.56 MS

CHANNEL: PENXG FILTER: CH. CLASS 180

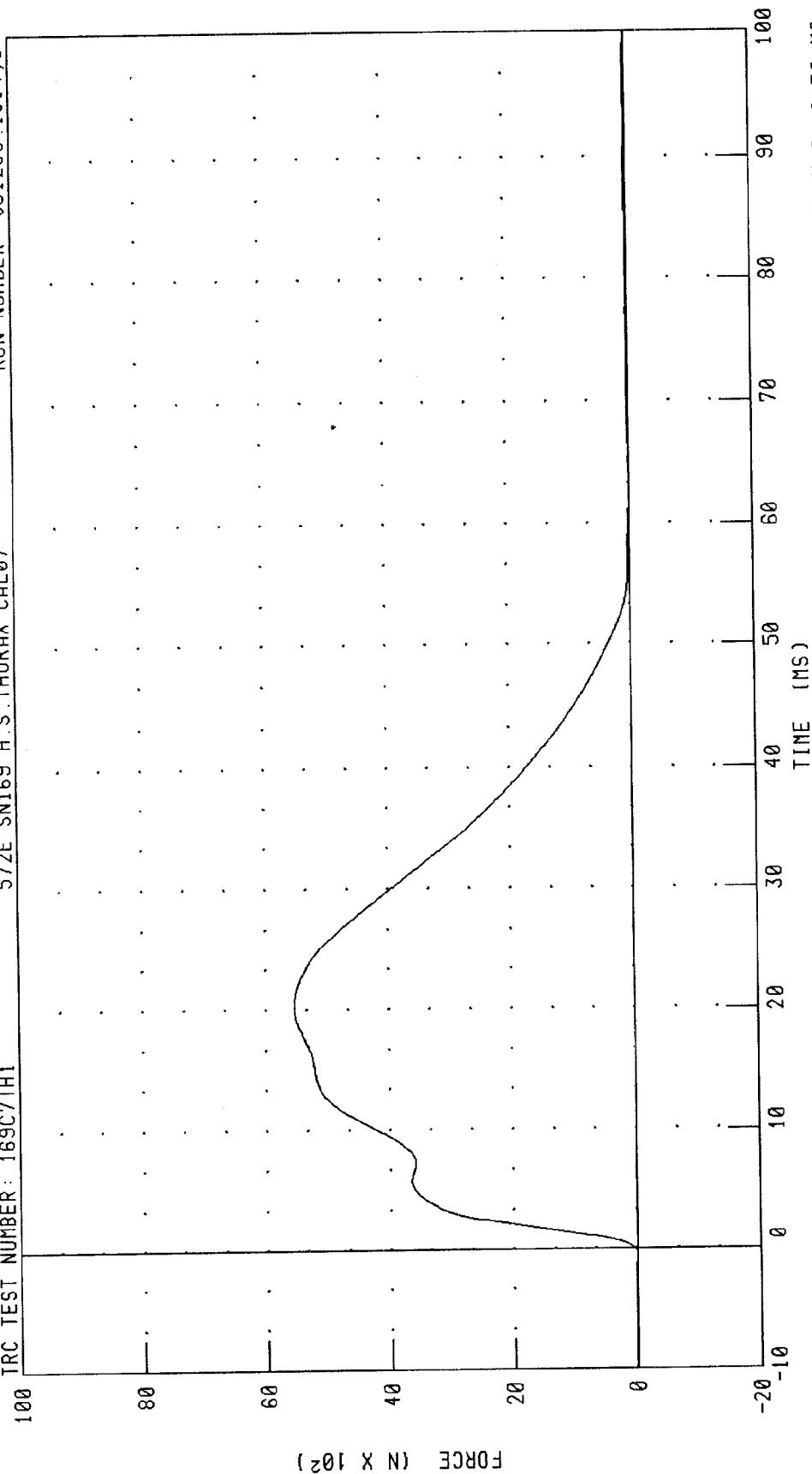
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER: 169C7TH1

572E SN169 H.S. THORAX CAL07

RUN NUMBER: 031299.1314;1



CHANNEL: PENXF FILTER: CH. CLASS 180

PEAK DATA: 5533.84 N @ 20.24 MS; -8.04 N @ -0.56 MS

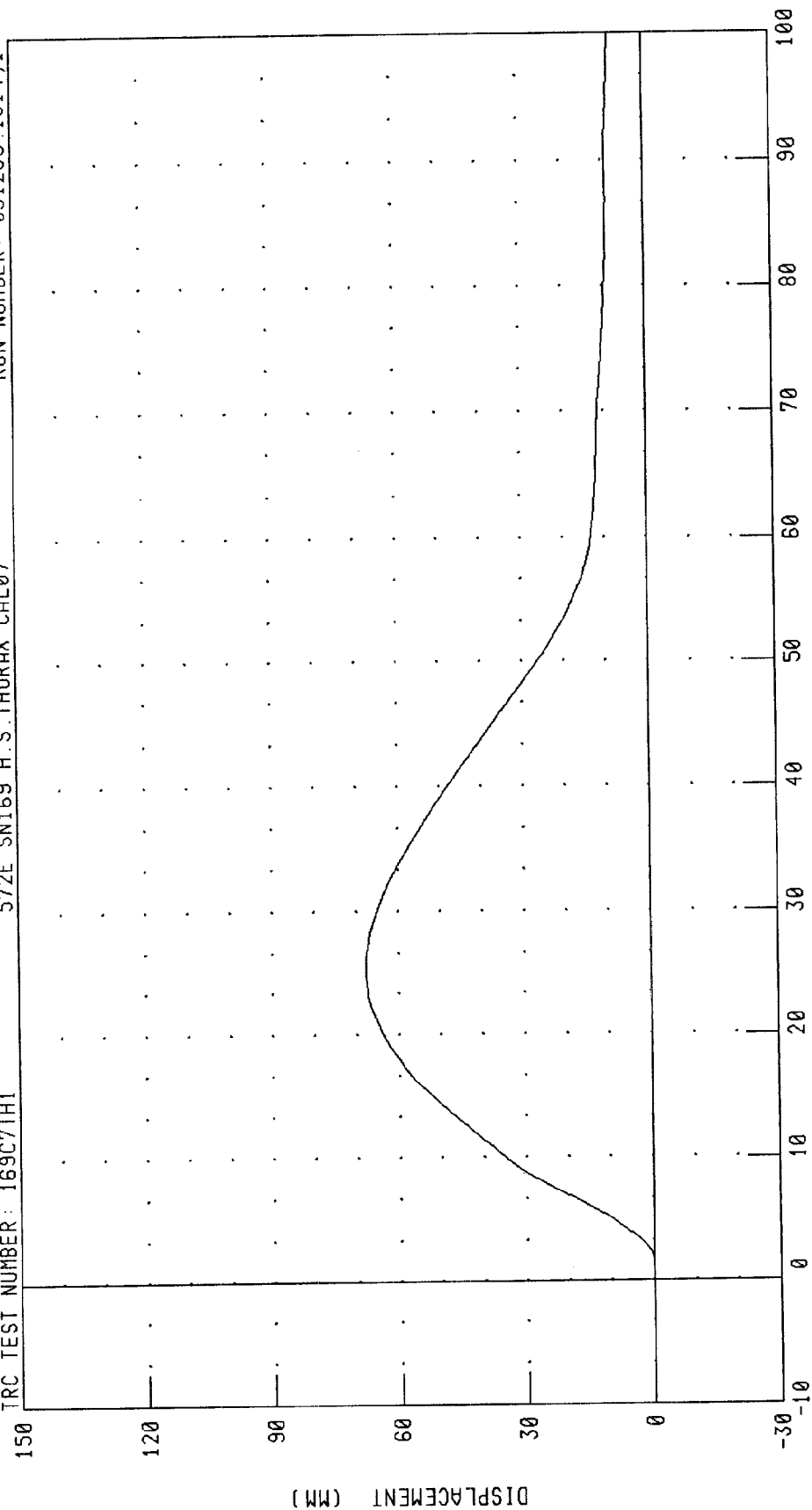
PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

TRC TEST NUMBER: 169C7TH1

572E SN169 H.S. THORAX CAL07

RUN NUMBER: 031299.1314;1



PEAK DATA: 67.88 MM @ 25.52 MS; -0.05 MM @ 1.12 MS

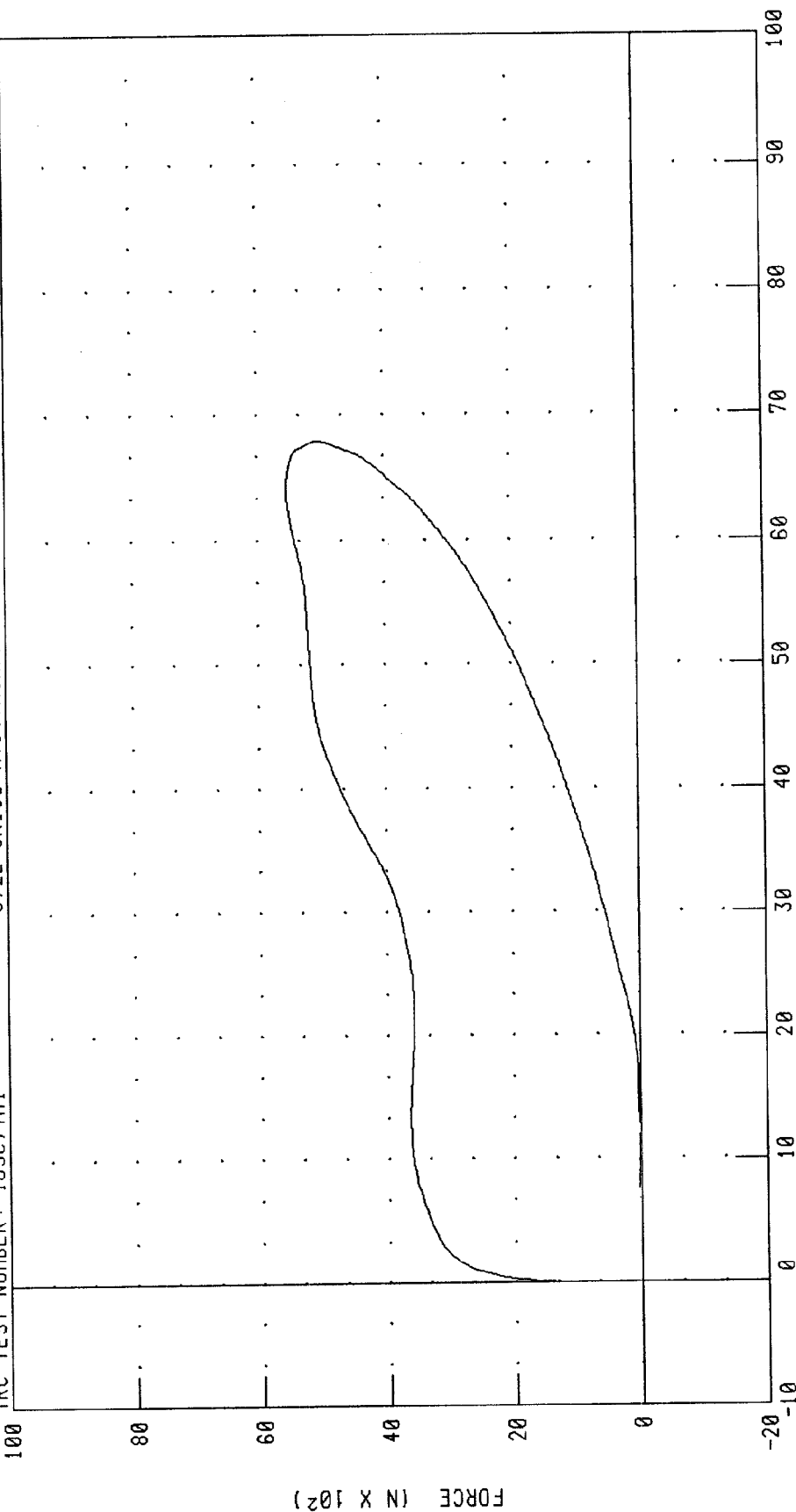
CHANNEL: CSTXD FILTER: CH. CLASS 180

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

TRC TEST NUMBER: 169C7TH1

572E SN169 H.S. THORAX CAL07

RUN NUMBER: 031299.1314;1



CHANNEL: CSTXD
PENXF

FILTER: CH. CLASS 180
CH. CLASS 180

PEAK DATA: 67.88 mm @ 25.52 ms; -8.05 mm @ 1.12 ms
5533.84 N @ 20.24 ms; -8.04 N @ -0.56 ms

TRANSPORTATION RESEARCH CENTER INC.

RIGHT HIP JOINT FEMUR FLEXION TEST

HYBRID III PART 572E

12-MAR-99

TRC INC.

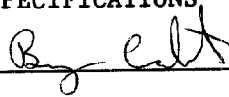
TEST NO: 169C7HR1

572E SN 169 HIPFLEX CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	67.7 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	45.9 deg.

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 031299.0919;1

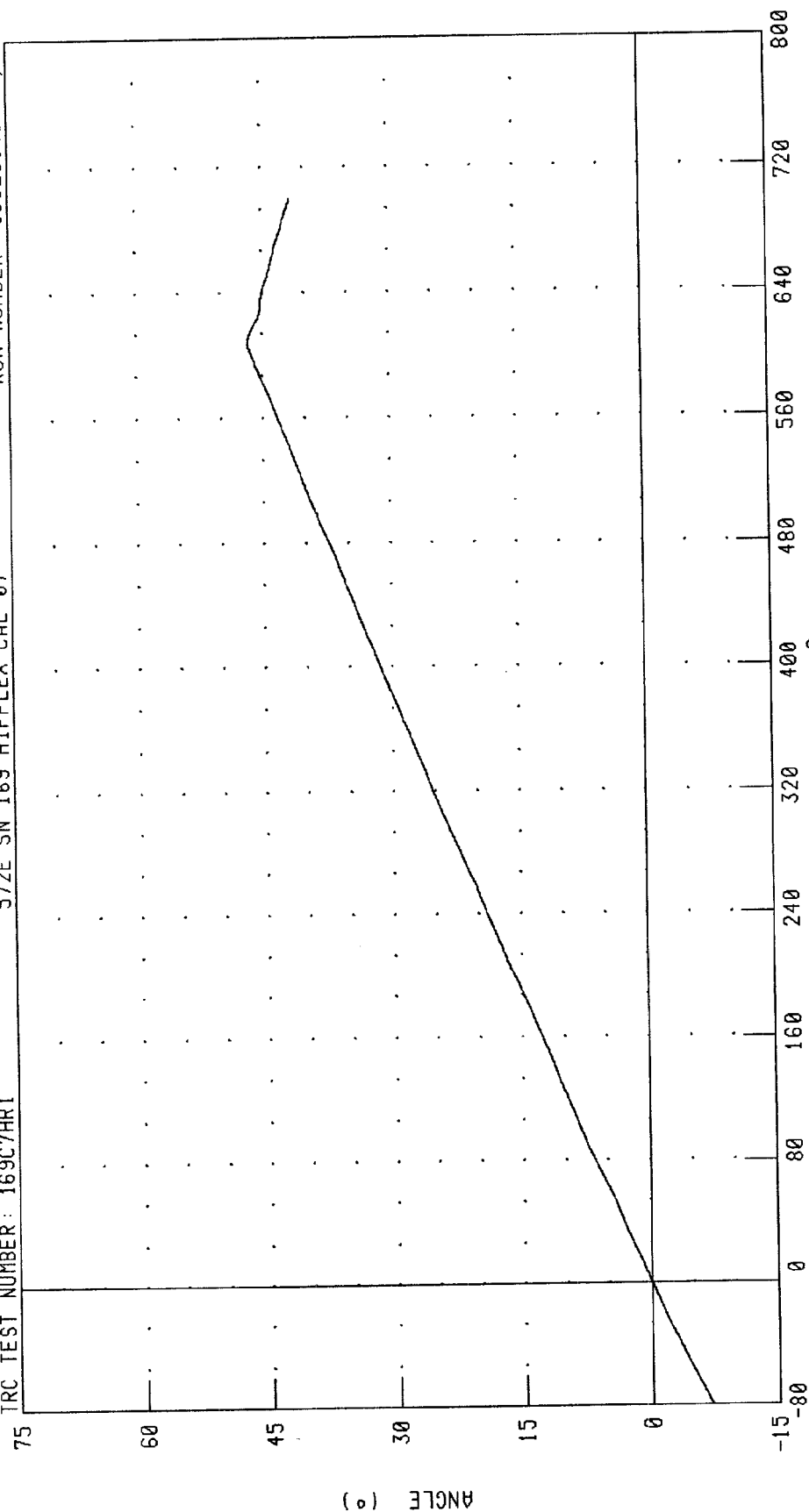
HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

RIGHT HIP FLEXION ROTATION

572E SN 169 HIPELEX CAL 07

RUN NUMBER: 031299.0920;1

TRC TEST NUMBER: 169C7HR1



PEAK DATA: 46.71 ° @ 6.07 S; -10.18 ° @ -1.00 S

CHANNEL: RHPXD FILTER: CH. CLASS 60

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

RIGHT HIP FLEXION MOMENT

572E SN 169 HIPFLEX CAL 07

RUN NUMBER: 031299.0920;1

TRC TEST NUMBER: 169C7HR1

200

160

120

80

40

0

-40

TORQUE (N·M)

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 217.97 N·M @ 6.06 S; -9.86 N·M @ -1.00 S

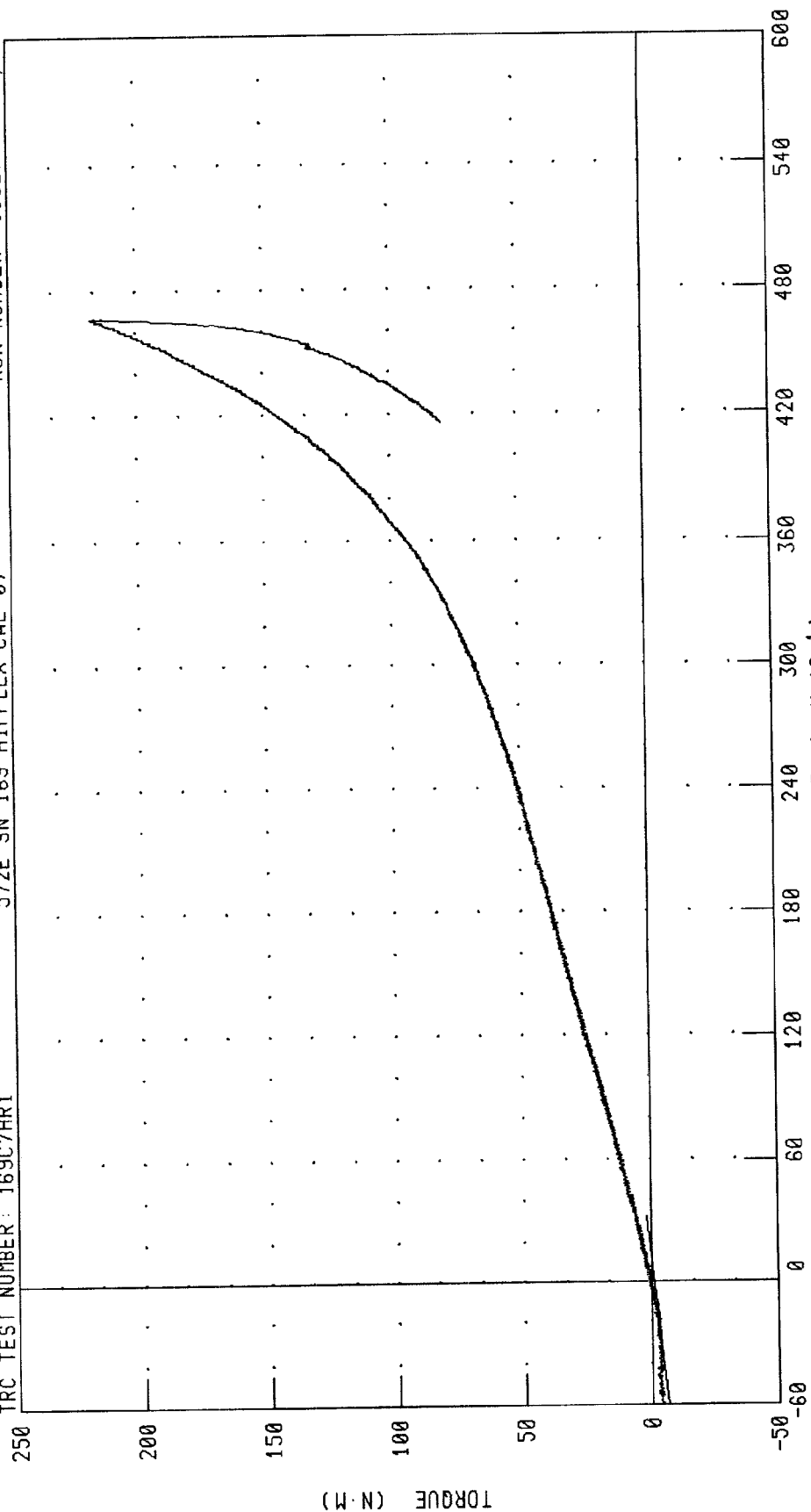
CHANNEL: RHPYM FILTER: CH. CLASS 60

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
 RIGHT HIP FLEXION MOMENT VS ROTATION ANGLE

TRC TEST NUMBER: 169C7HR1

572E SN 169 HIPFLEX CAL 07

RUN NUMBER: 031299.0920;1



CHANNEL: RHPXD
 RHPYM

FILTER: CH. CLASS 60
 CH. CLASS 60

PEAK DATA: 46.71 ° @ 6.07 S; -10.18 ° @ -1.00 S
 217.97 N·M @ 6.06 S; -9.86 N·M @ -1.00 S

TRANSPORTATION RESEARCH CENTER INC.

LEFT HIP JOINT FEMUR FLEXION TEST

HYBRID III PART 572E

12-MAR-99

TRC INC.

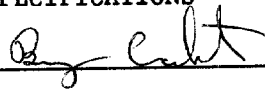
TEST NO: 169C7HL1

572E SN 169 HIPFLEX CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	57.2 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	46.0 deg.

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 031299.0917;1

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

LEFT HIP FLEXION ROTATION

572E SN 169 HIPFLEX CAL 07

TRC TEST NUMBER: 169C7HL1

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

400

480

560

640

720

800

TIME (S X 10⁻²)

PEAK DATA: 46.83 ° @ 6.25 S; -9.27 ° @ -1.00 S

CHANNEL: LHPXD FILTER: CH. CLASS 60

RUN NUMBER: 031299.0917,1

ANGLE (°)

75

60

45

30

15

0

-15

-80

0

80

160

240

320

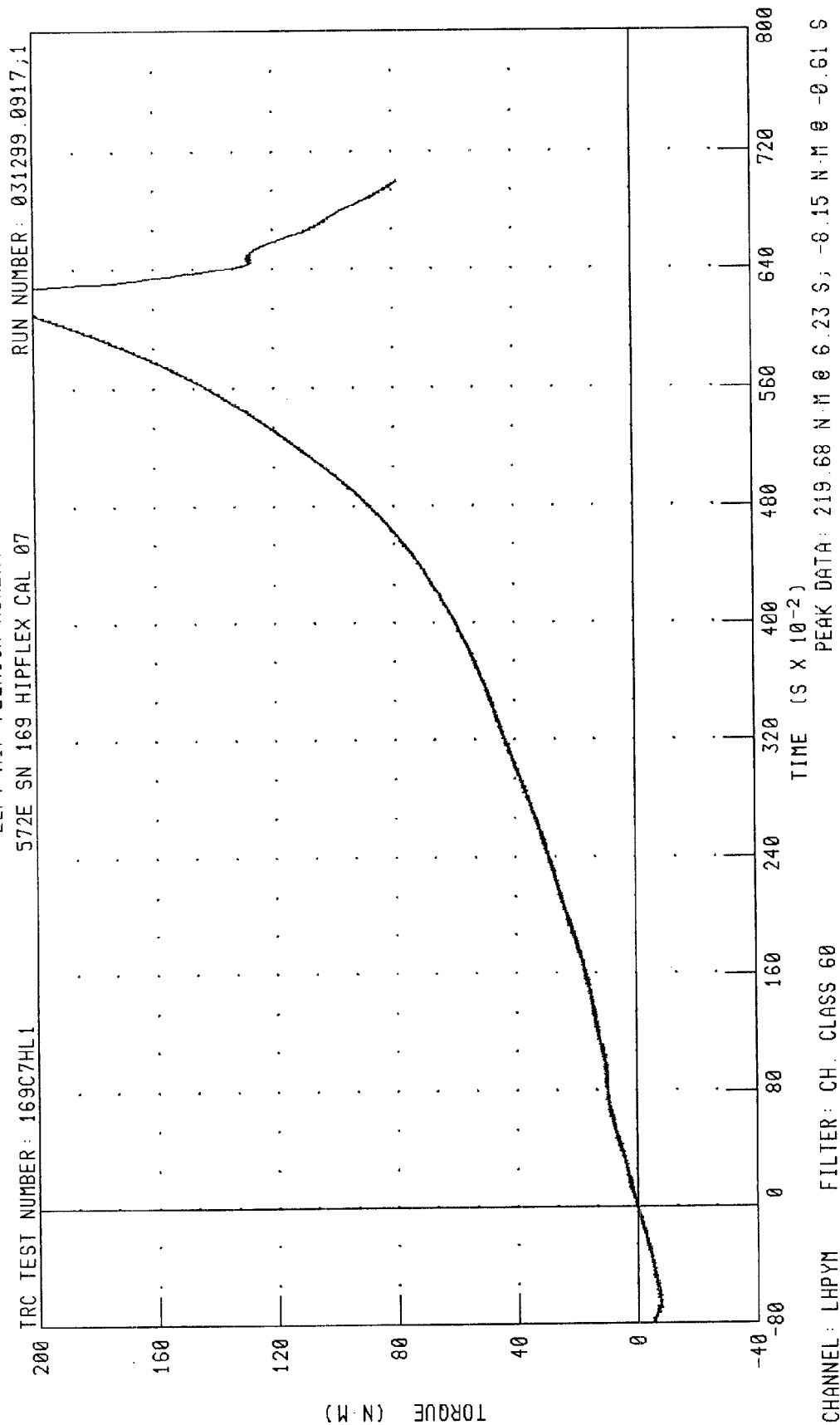
400

480

560

640

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
LEFT HIP FLEXION MOMENT

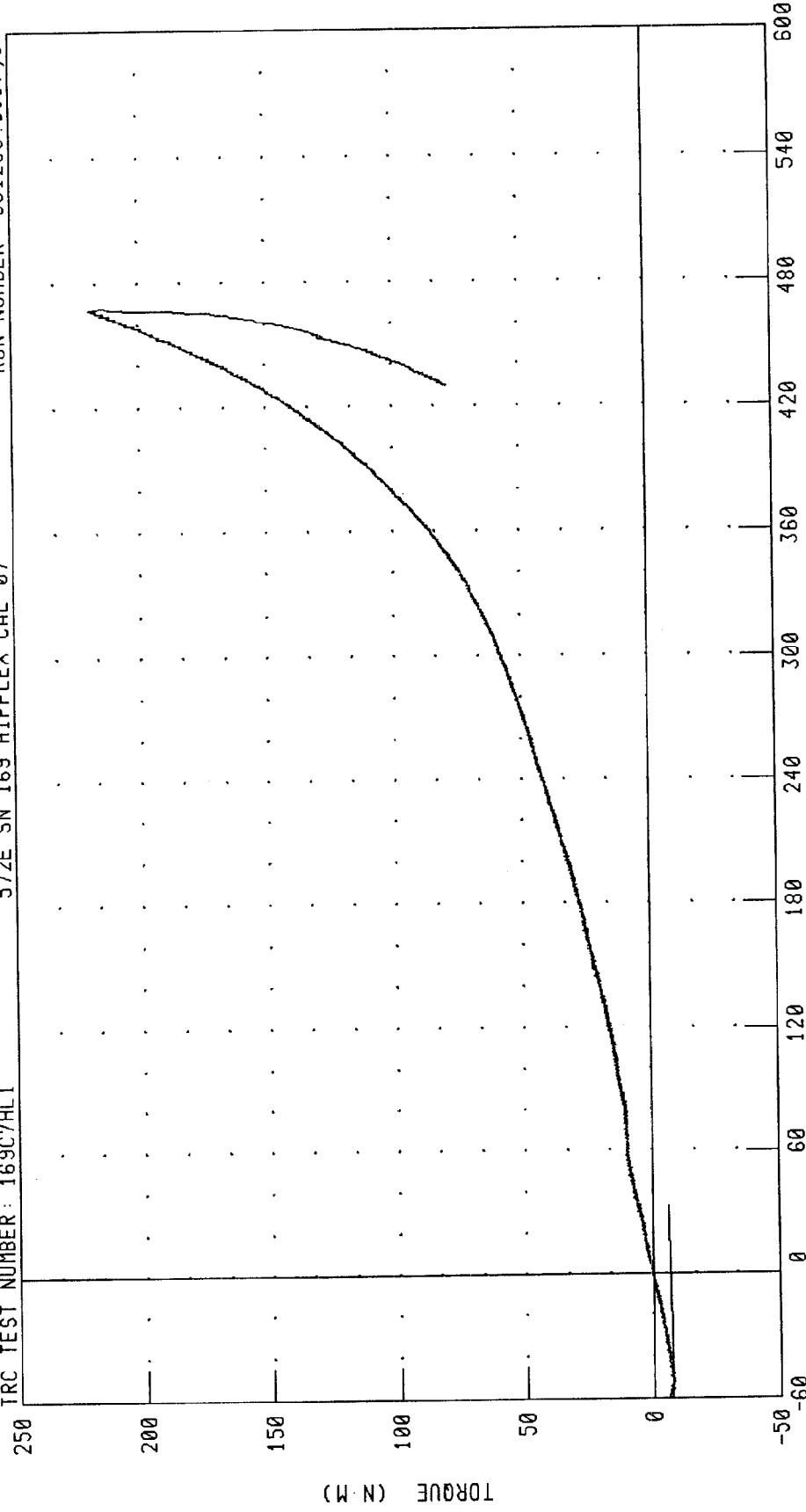


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
LEFT HIP FLEXION MOMENT VS ROTATION ANGLE

TRC TEST NUMBER: 169C7HL1

572E SN 169 HIPFLEX CAL 07

RUN NUMBER: 031299.0917;1



CHANNEL: LHPXD
LHPYM

FILTER: CH. CLASS 60
CH. CLASS 60

PEAK DATA: 45.83 ° @ 6.25 S; -9.27 ° @ -1.00 S
219.68 N·M @ 6.23 S; -8.15 N·M @ -0.61 S

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 50th

12-MAR-99

TRC INC.

TEST NO: 169C7RK1

572E SN169 RIGHT KNEE CAL 7

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5213.7 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Ryelt

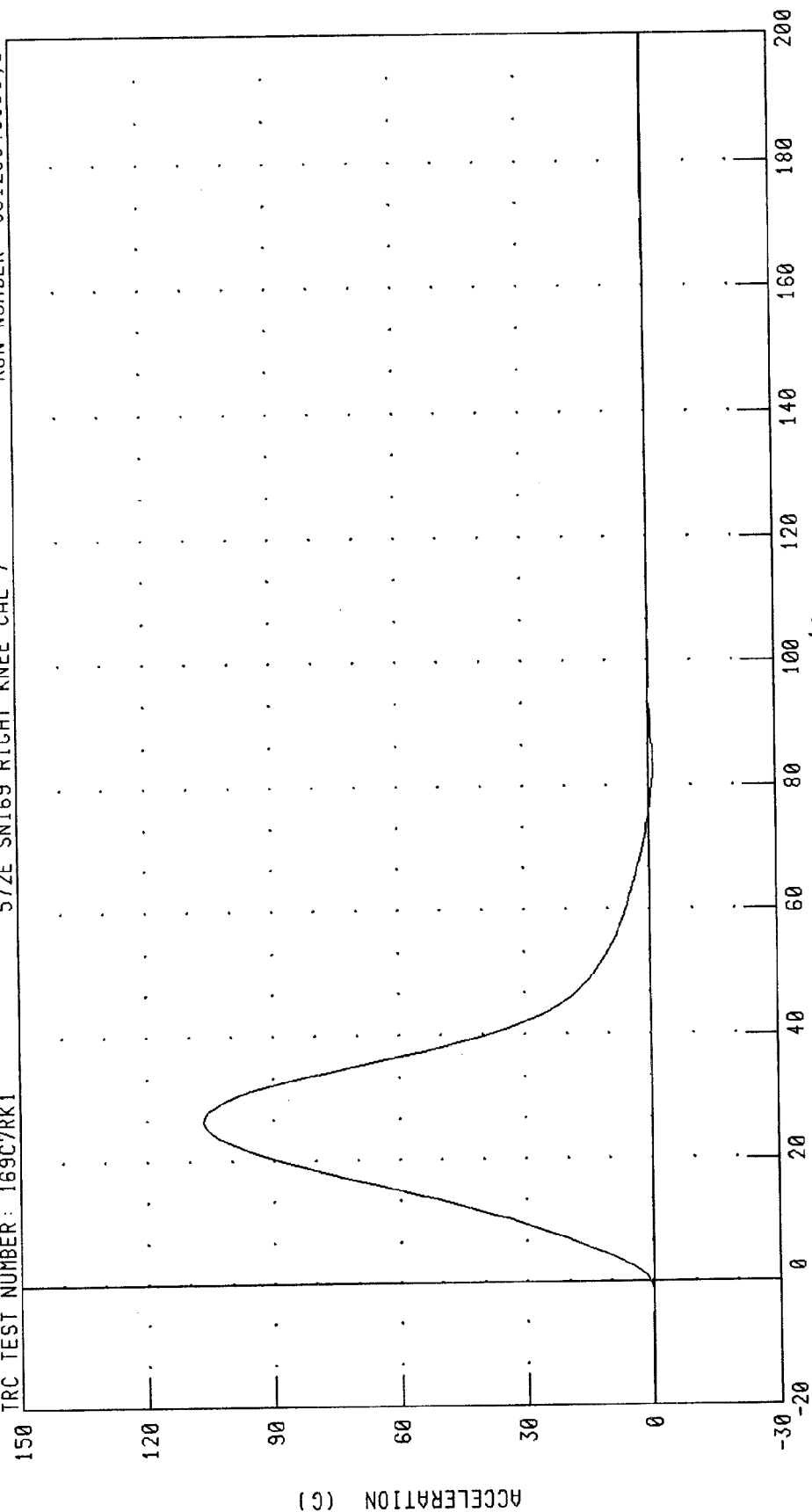
RUN NUMBER: 031299.0915;1

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

RUN NUMBER: 031299.0915;1

572E SN169 RIGHT KNEE CAL 7

TRC TEST NUMBER: 169C7RK1



PEAK DATA: 106.56 G @ 2.64 MS; -1.04 G @ 8.56 MS

CHANNEL: PENXC FILTER: CH. CLASS 600

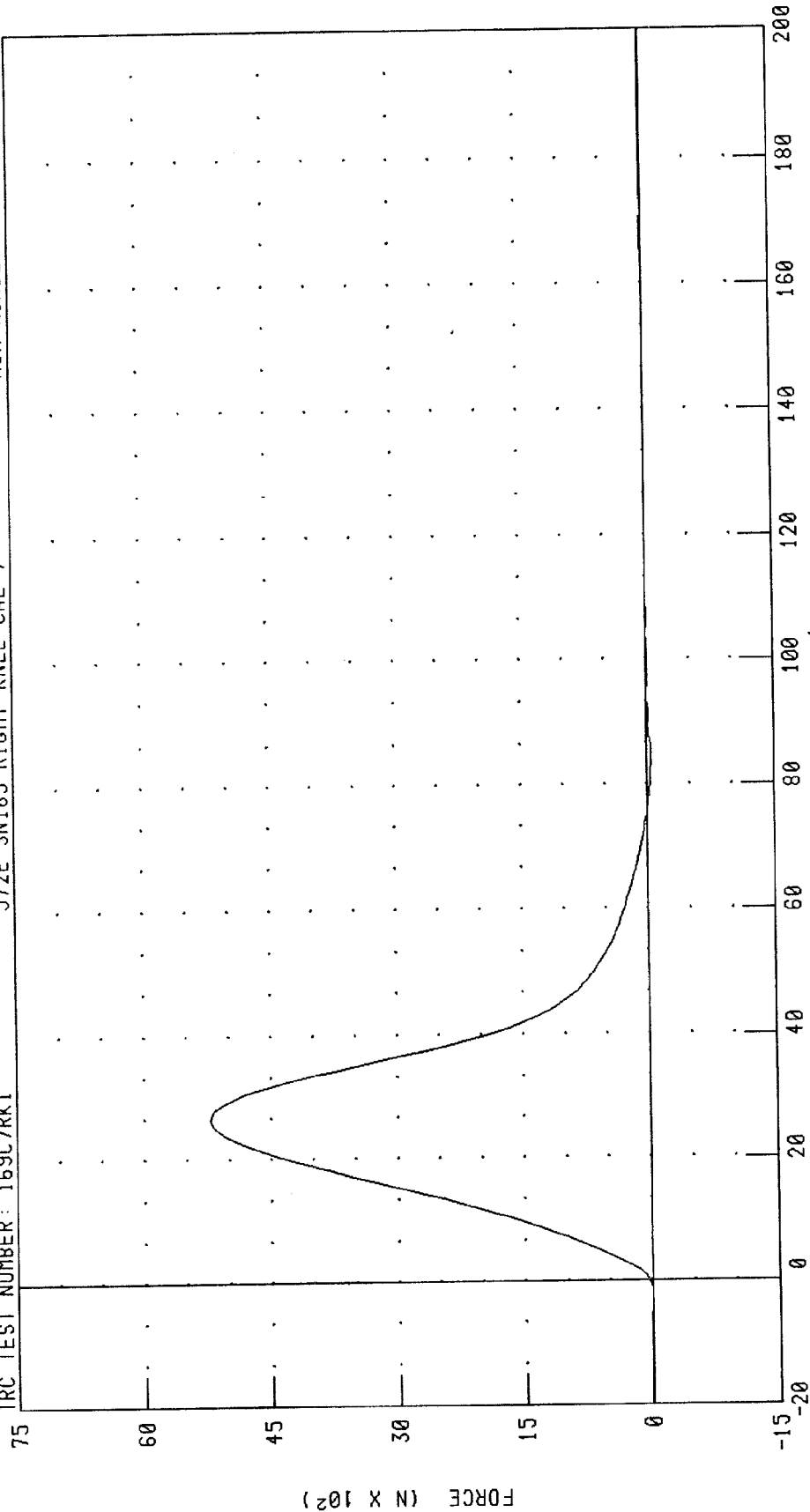
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

RUN NUMBER: 031299.0915;1

TRC TEST NUMBER: 169C7RK1

572E SN169 RIGHT KNEE CAL 7



TIME (MS X 10⁻¹)

PEAK DATA: 5213.78 N @ 2.64 MS, -50.83 N @ 0.56 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 50th

12-MAR-99

TRC INC.

TEST NO: 169C7LK1

572E SN169 LEFT KNEE CAL 7

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5751.0 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

B. Calt

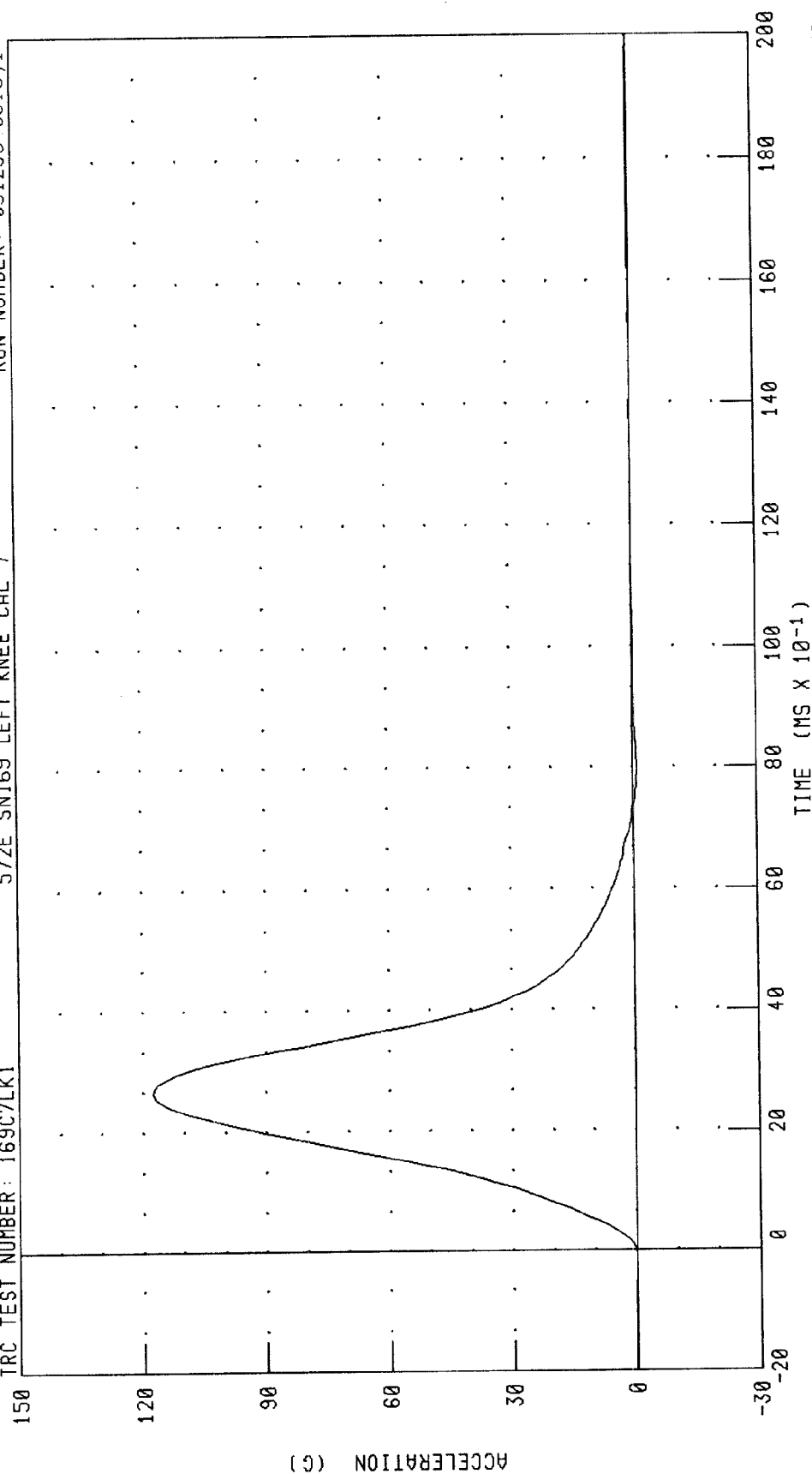
RUN NUMBER: 031299.0913;1

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

572E SN169 LEFT KNEE CAL 7

TRC TEST NUMBER: 169C7LK1

RUN NUMBER: 031299 0913;1



PEAK DATA: 117.54 G @ 2.64 MS; -1.01 G @ 8.00 MS

CHANNEL: PENXC FILTER: CH. CLASS 600

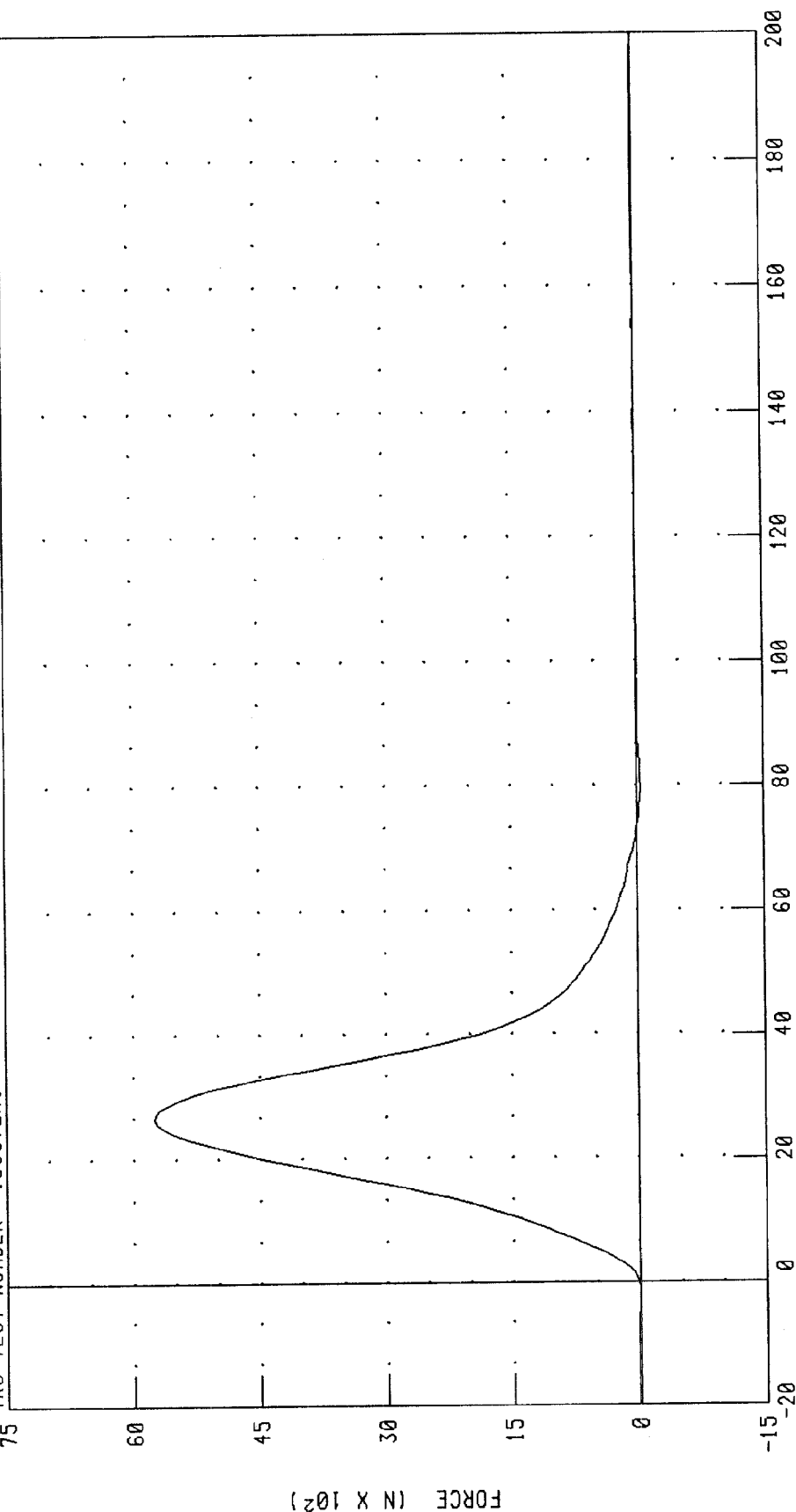
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

572E SN169 LEFT KNEE CAL 7

TRC TEST NUMBER: 169C7LK1

RUN NUMBER: 031299.0913;1



PEAK DATA: 5751.09 N @ 2.64 MS; -49.36 N @ 8.00 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

Post-Test Dummy Certification

Passenger Dummy S/N 168

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III 50th

12-MAR-99

TRC INC.

TEST NO: 168C9HD1

572E SN168 HEAD DROP CAL 09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	264.25 G
PEAK LATERAL ACCELERATION	15 G MAX	-3.02 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

B. cult

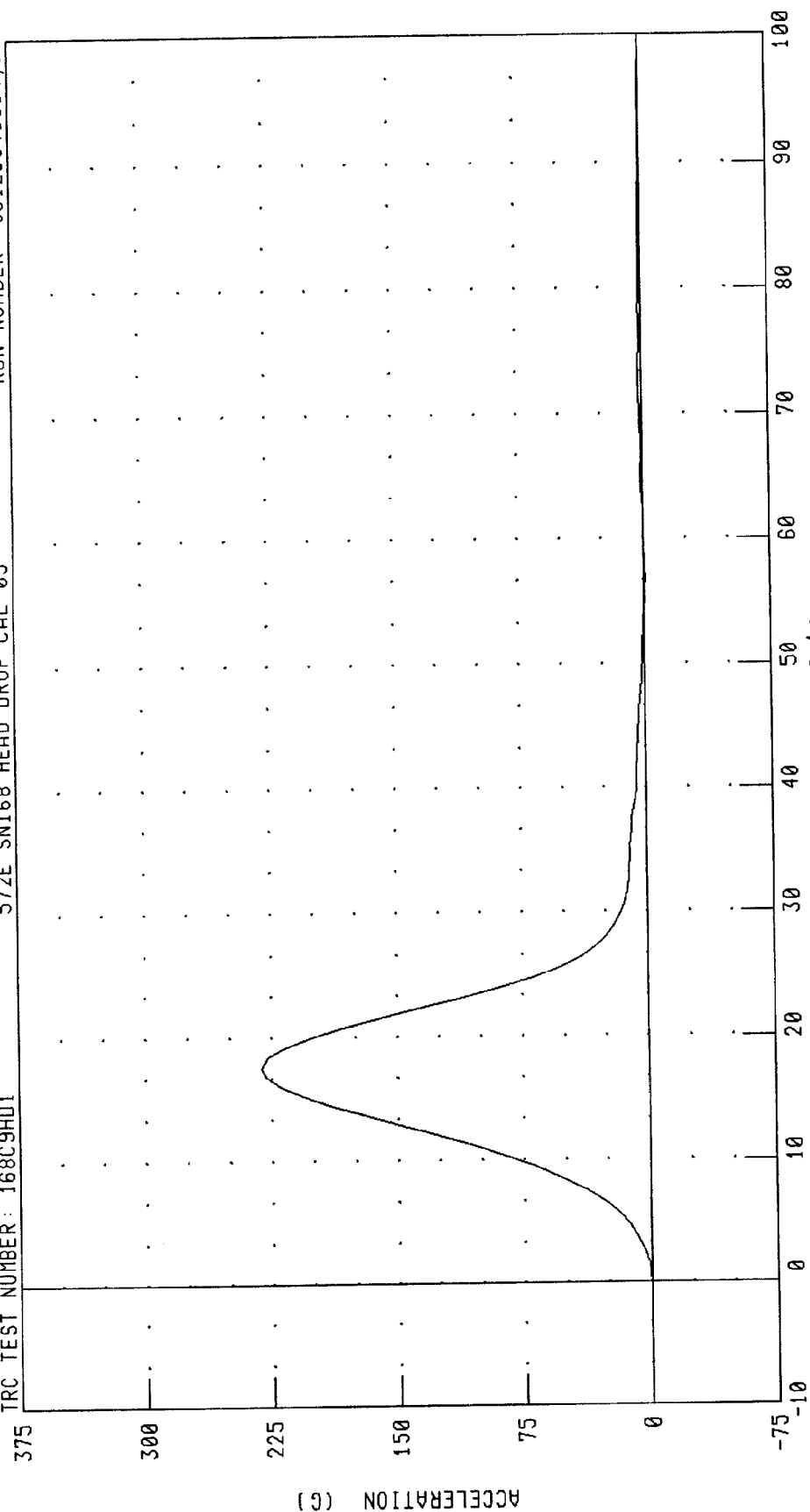
RUN NUMBER: 031299.1034;1

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

RUN NUMBER: 031299.1034;1

572E SN168 HEAD DROP CAL 09

TRC TEST NUMBER: 168C9HD1



PEAK DATA: 230.82 G @ 1.76 MS, -1.14 G @ 5.68 MS

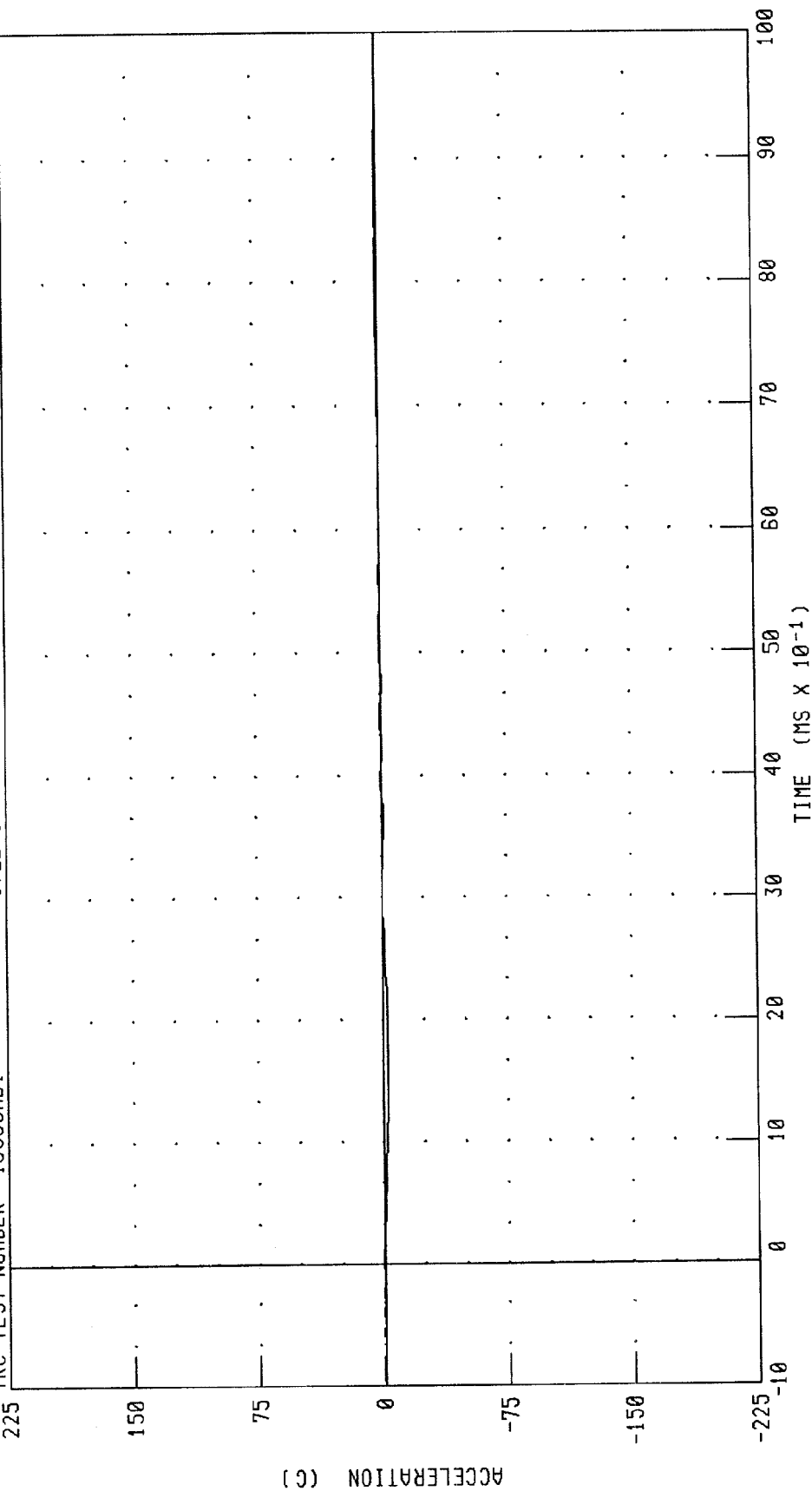
CHANNEL: HEDXC FILTER: CH. CLASS 1000

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

TRC TEST NUMBER: 168C9HD1

572E SN168 HEAD DROP CAL 09

RUN NUMBER: 031299.1034;1



CHANNEL: HEDYG FILTER: CH. CLASS 1000

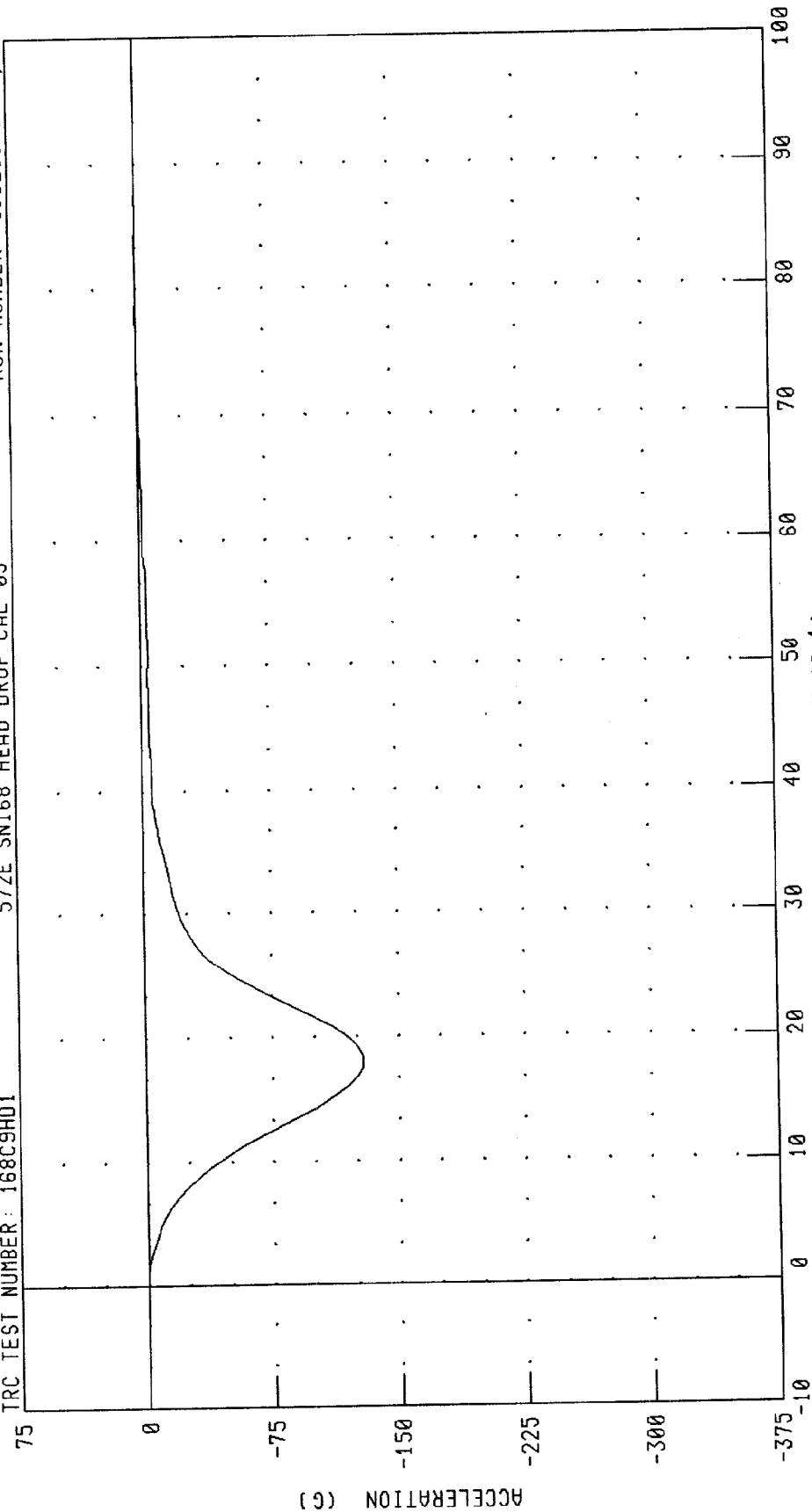
PEAK DATA: 0.89 G @ 7.92 MS; -3.02 G @ 1.44 MS

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

572E SN168 HEAD DROP CAL 09

TRC TEST NUMBER: 168C9HD1

RUN NUMBER: 031299.1034.1



PEAK DATA: 0.59 G @ 7.76 MS, -128.82 G @ 1.84 MS

CHANNEL: HEDZC FILTER: CH. CLASS 1000

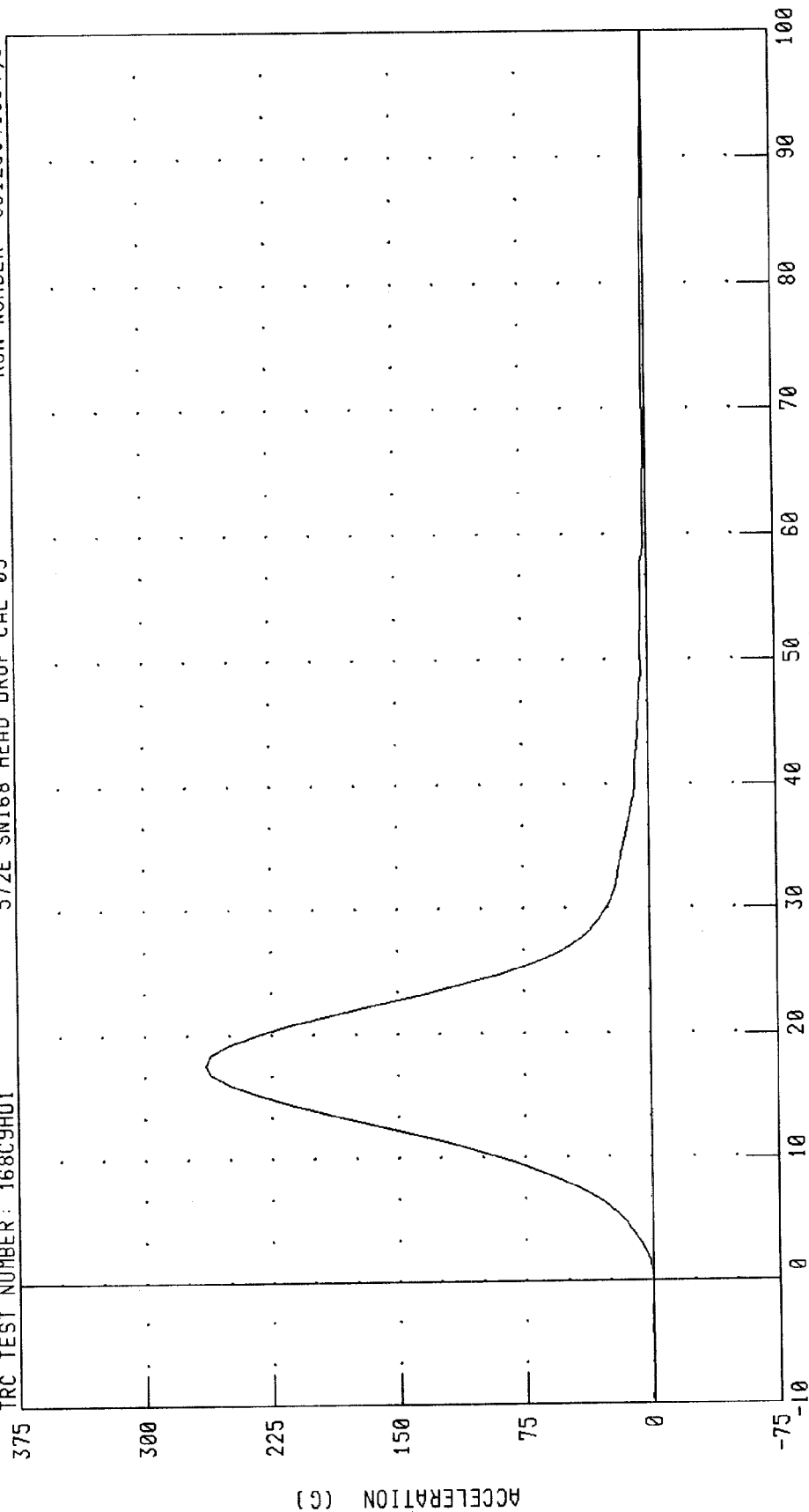
PART 572-E HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

572E SN168 HEAD DROP CAL 09

RUN NUMBER: 031299.1034;1

TRC TEST NUMBER: 168C9HD1



PEAK DATA: 264.26 G @ 1.76 MS; 0.09 G @ -0.72 MS

CHANNEL: HEDRC FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
CHECK PLOT - HEAD RESULTANT ACCELERATION

RUN NUMBER: 031299.1034;1

572E SN168 HEAD DROP CAL 09

TRC TEST NUMBER: 168C9HD1

300

240

180

120

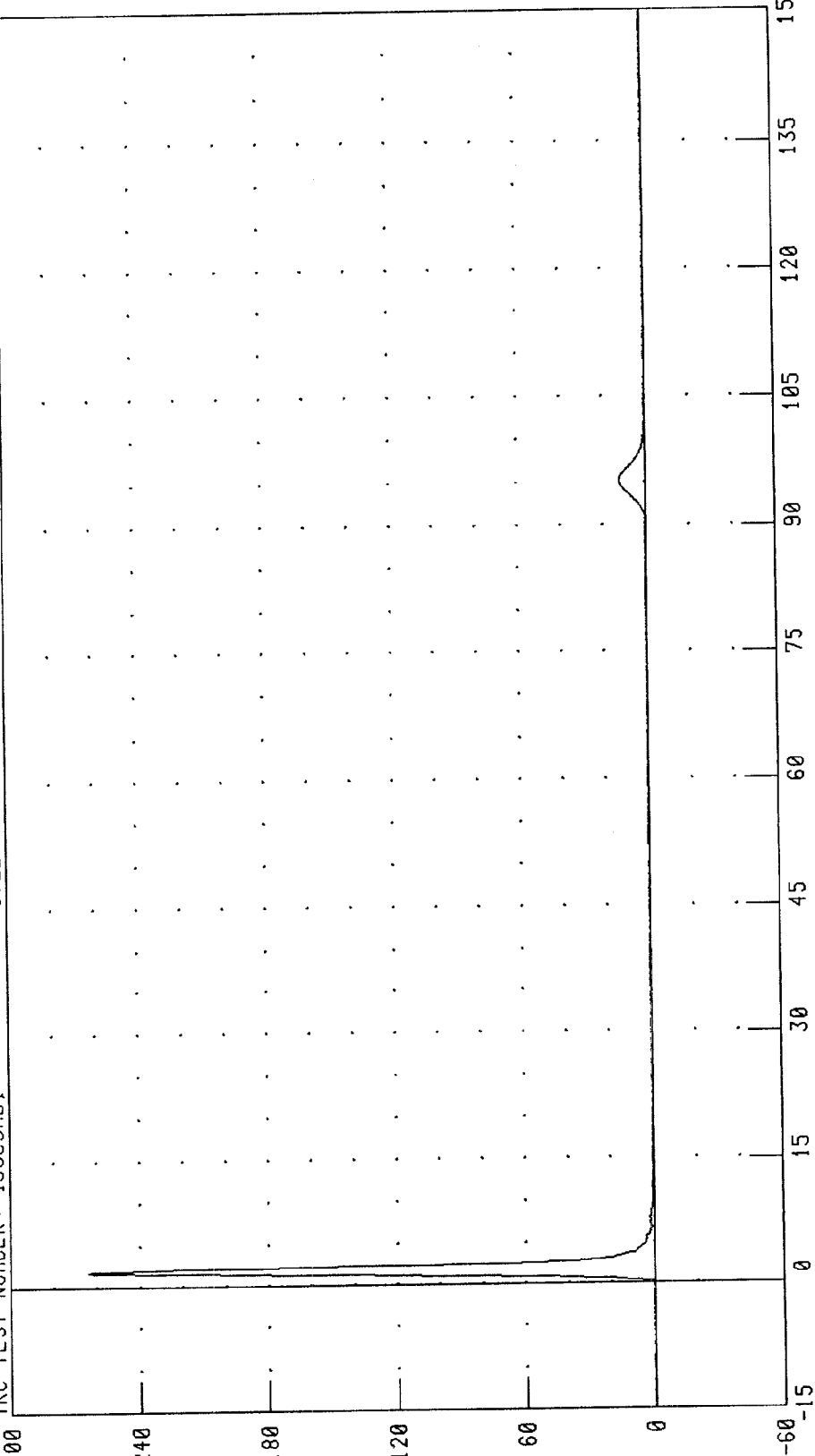
60

0

-60

-15

ACCELERATION (G)



TIME (MS)

PEAK DATA: 264.26 G @ 1.76 MS; 0.09 G @ -14.72 MS

CHANNEL: HEDRC FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

12-MAR-99

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 168C9NF1 572E SN168 NECK FLEXION CAL09

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.93 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.57 G
	20 MS	17.60 - 22.60 G	21.45 G
	30 MS	12.50 - 18.50 G	17.60 G
MAX PENDULUM G		29 G MAX	24.05 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	17.54 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	37.68 MS
D PLANE	MAX	64 - 78 DEG.	71.00 DEG.
ROTATION	TIME	57 - 64 MS	59.52 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	95.96 NM
	TIME	47 - 58 MS	50.32 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	115.36 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	103.04 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

By cult

RUN NUMBER: 031299.1242;1

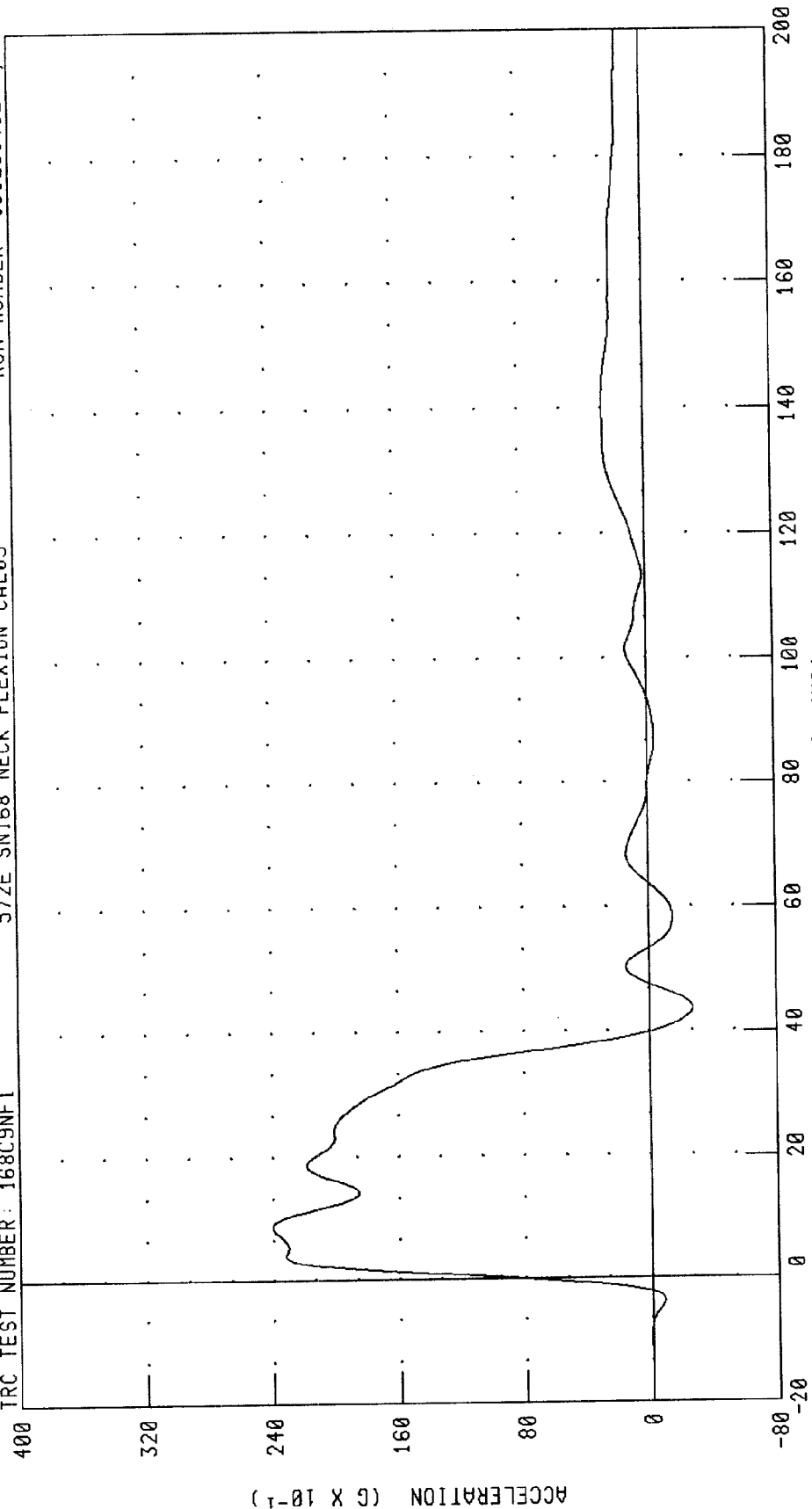
PART 572-E HYBRID III NECK FLEXION CALIBRATION

PENDULUM DECELERATION

RUN NUMBER: 031299.1242;1

572E SN168 NECK FLEXION CAL09

TRC TEST NUMBER: 168C9NF1



PEAK DATA: 24.06 G @ 8.88 MS, -2.72 G @ 43.68 MS

CHANNEL: PENXC FILTER: CH. CLASS 60

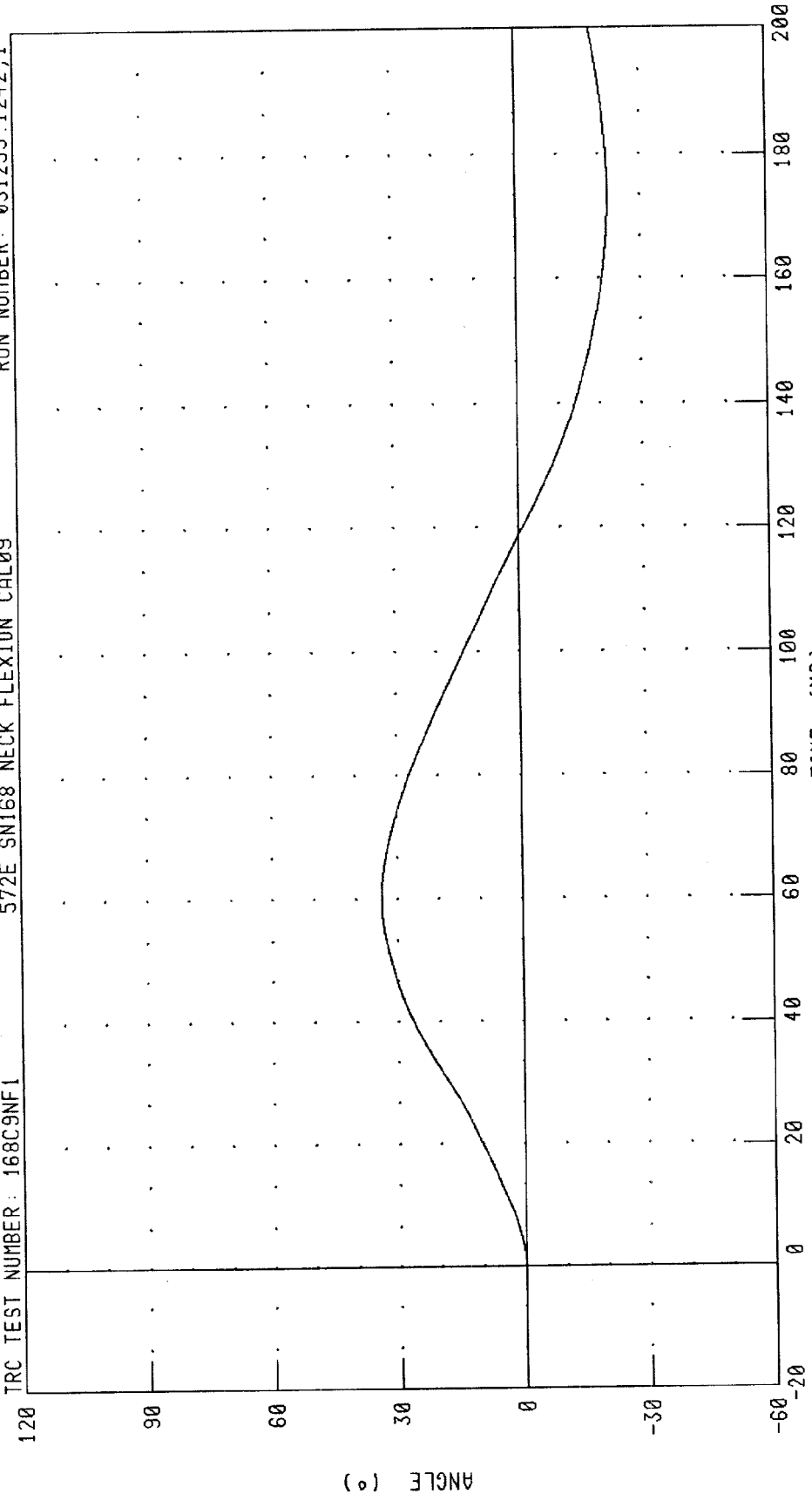
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN168 NECK FLEXION CAL09

RUN NUMBER: 031299.1242;1

TRC TEST NUMBER: 168C9NF1



PEAK DATA: 33.77 ° @ 59.92 MS; -22.14 ° @ 173.52 MS

FILTER: CH. CLASS 60

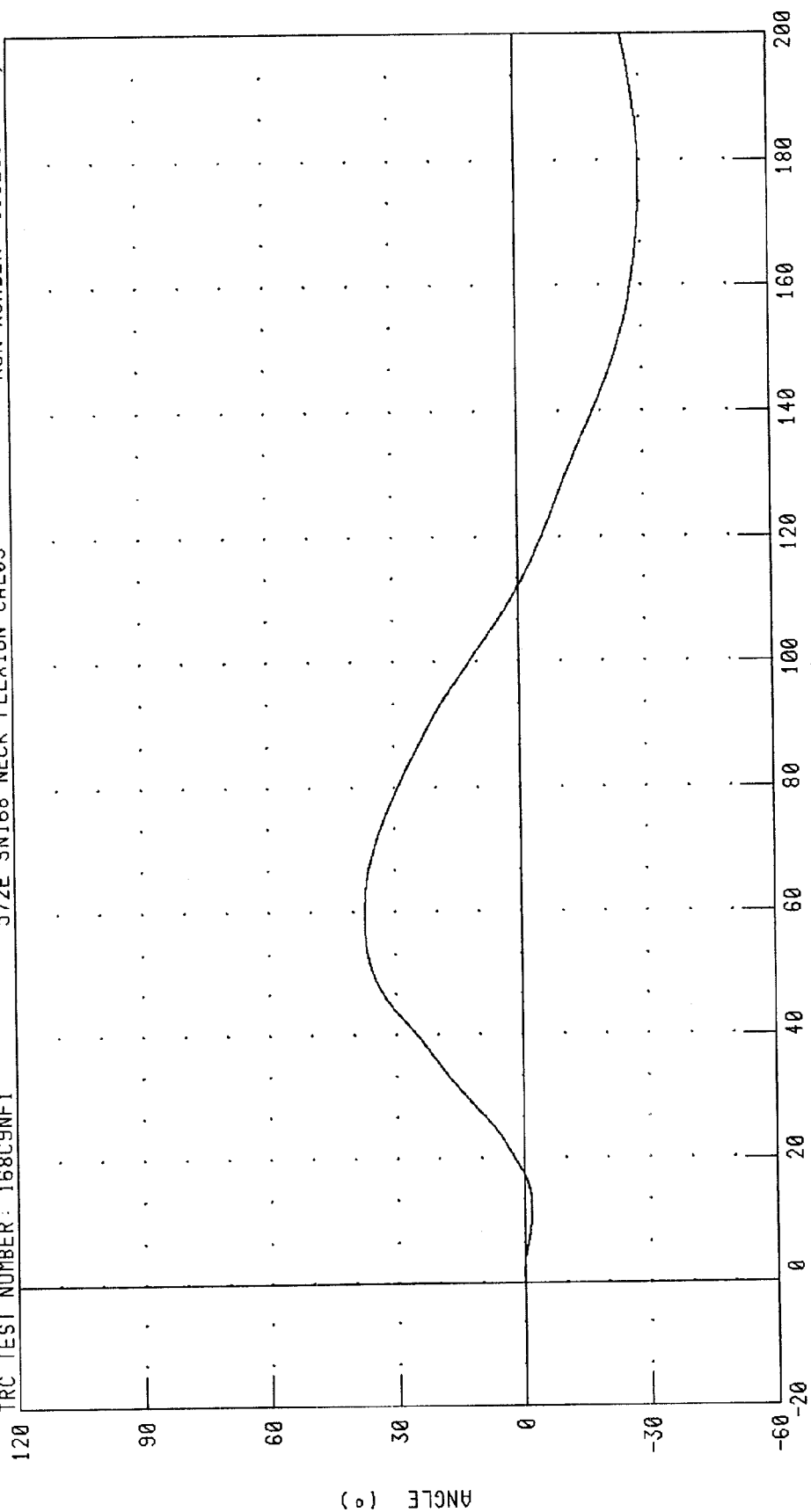
CHANNEL: BETA

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

TRC TEST NUMBER: 168C9NF1

572E SN168 NECK FLEXION CAL09

RUN NUMBER: 031299.1242;1



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 37.24 ° @ 59.12 MS, -29.63 ° @ 176.96 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

RUN NUMBER: 031299.1242;1

572E SN168 NECK FLEXION CAL09

TRC TEST NUMBER: 168C9NF1

120

90

60

30

0

-30

-60

-20

ANGLE (°)

TIME (MS)

200

180

160

140

120

100

80

60

40

20

0

PEAK DATA: 71.00 ° @ 59.52 MS; -51.73 ° @ 175.84 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

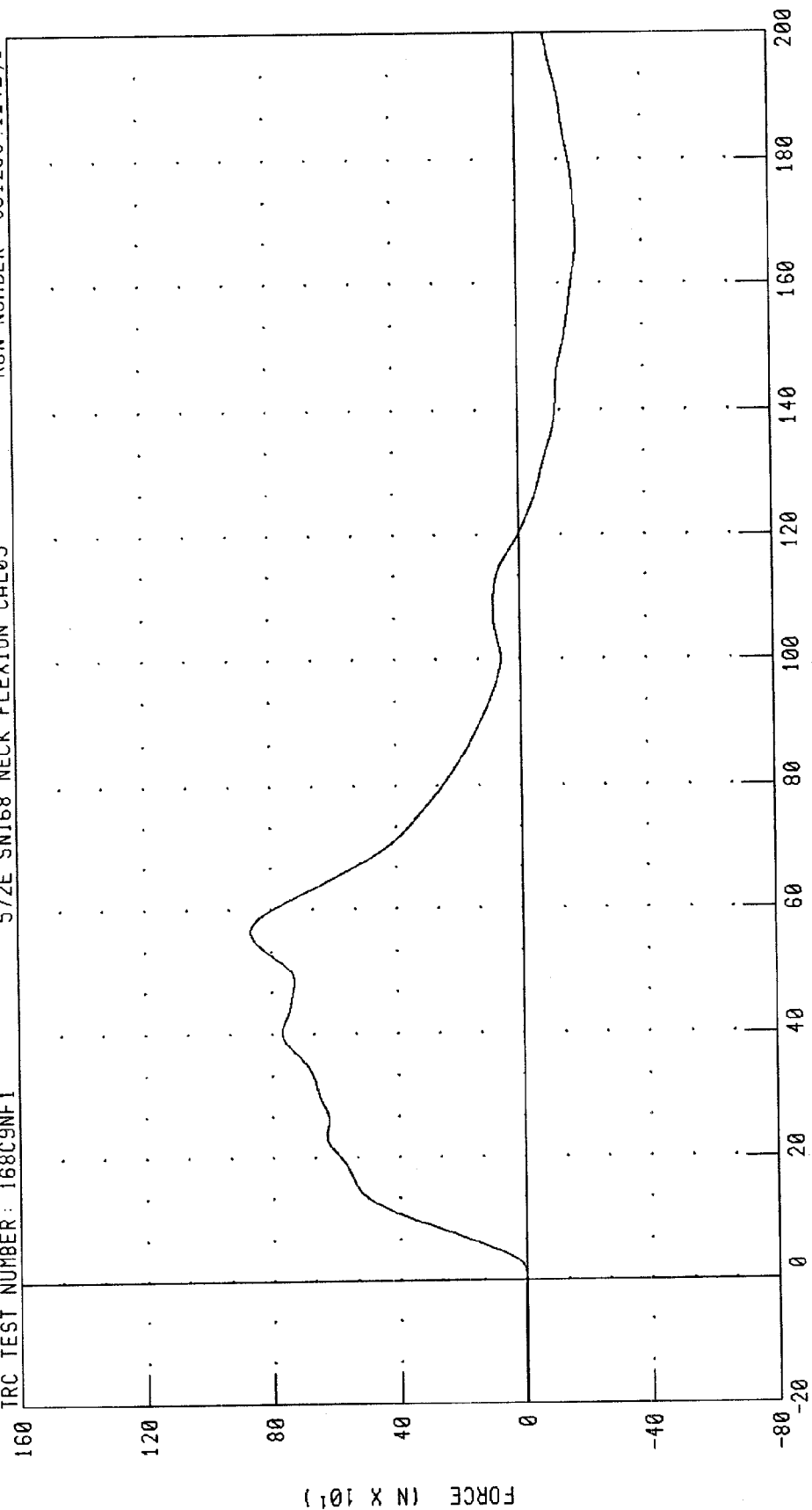
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

RUN NUMBER: 031299.1242;1

572E SN168 NECK FLEXION CAL09

TRC TEST NUMBER: 168C9NF1



PEAK DATA: 865.08 N @ 56.48 MS, -192.14 N @ 167.68 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

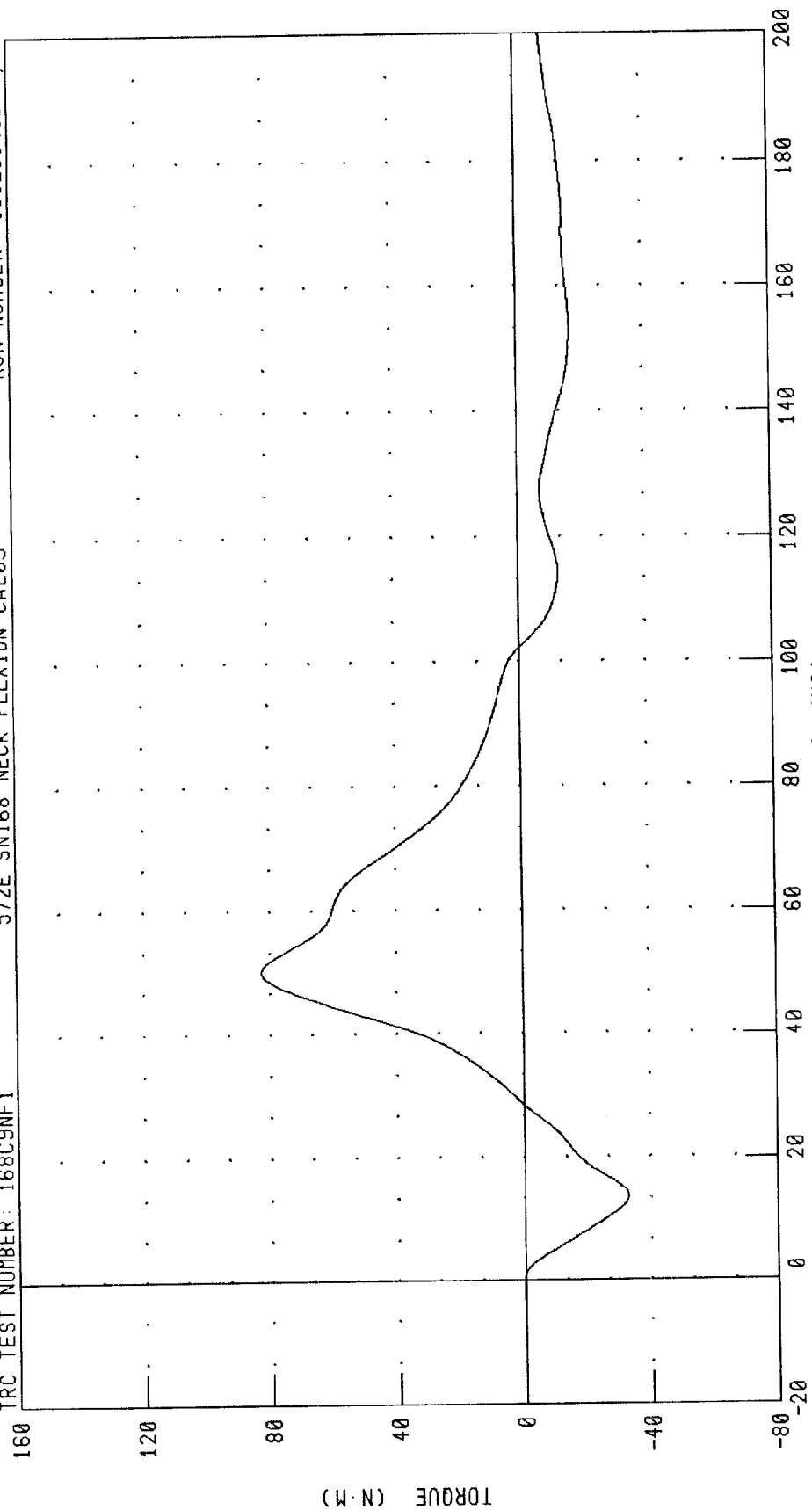
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

RUN NUMBER: 031299.1242;1

572E SN168 NECK FLEXION CAL09

TRC TEST NUMBER: 168C9NF1



PEAK DATA: 82.79 N·M @ 50.16 MS, -32.93 N·M @ 13.68 MS

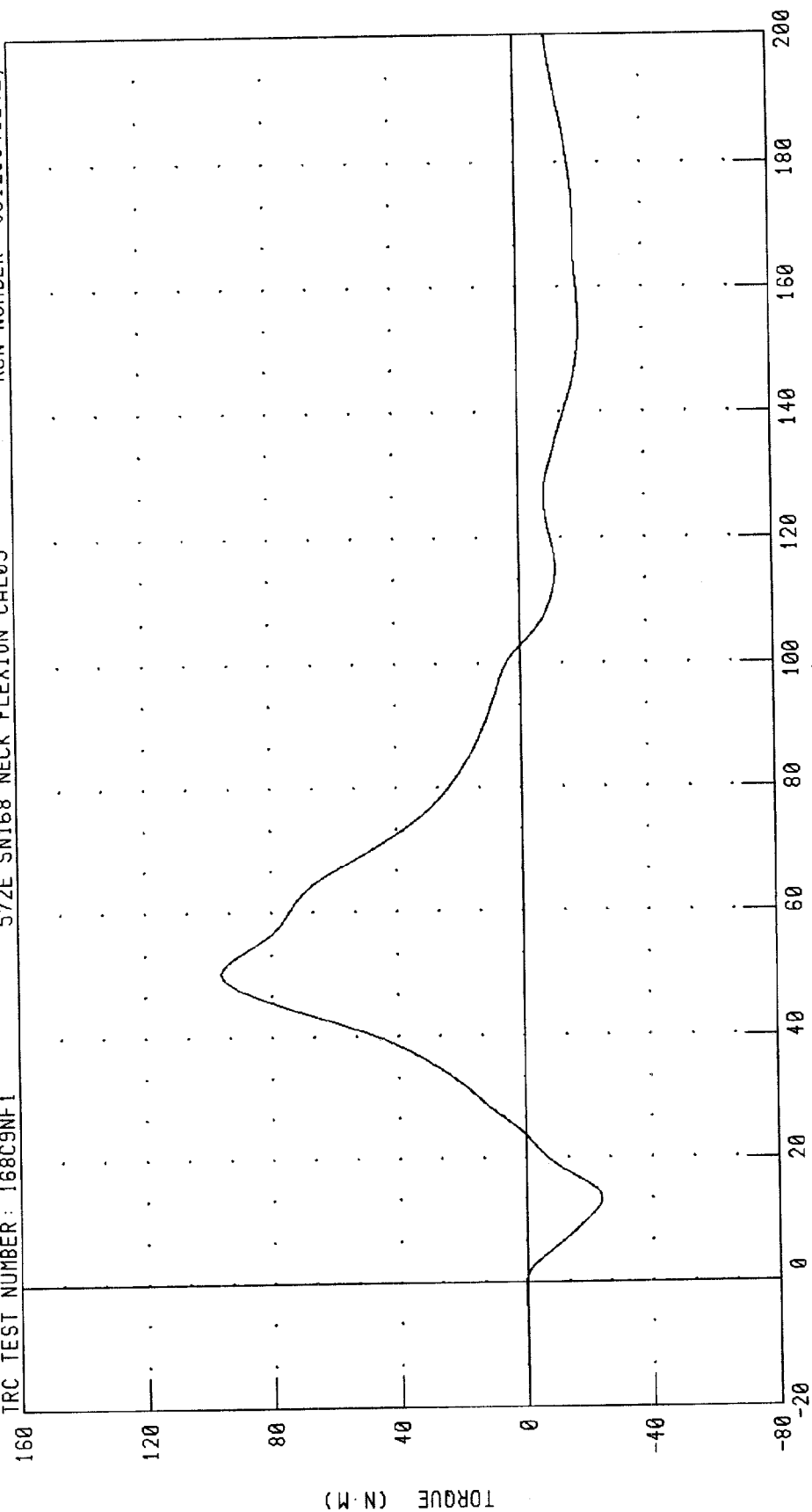
CHANNEL: NEKYM FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 168C9NF1

572E SN168 NECK FLEXION CAL09

RUN NUMBER: 031299.1242,1



PEAK DATA: 95.96 N·M @ 50.32 MS, -23.97 N·M @ 13.36 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

12-MAR-99

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 168C9NE1 572E SN168 NECK EXT CAL09

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	22.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.00 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	19.46 G
	20 MS	14.00 - 19.00 G	16.63 G
	30 MS	11.00 - 16.00 G	14.76 G
MAX PENDULUM G		22 G MAX	19.89 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	14.72 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	40.72 MS
D PLANE	MAX	81 - 106 DEG.	98.72 DEG.
ROTATION	TIME	72 - 82 MS	77.04 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-66.28 NM
	TIME	65 - 79 MS	71.60 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	156.80 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	144.40 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

By Calt

RUN NUMBER: 031299.1310;1

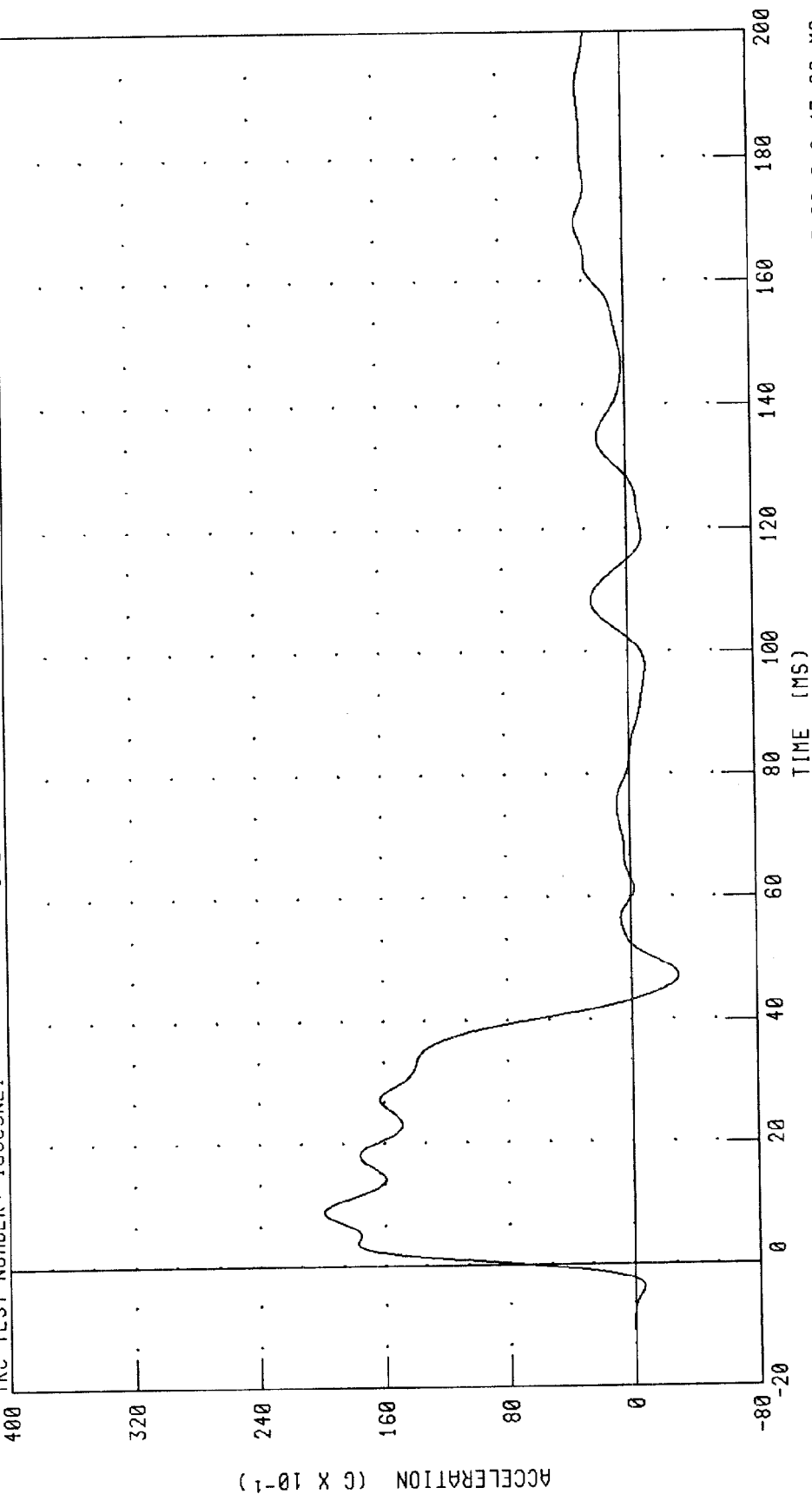
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 168C9NE1

572E SN168 NECK EXT CAL09

RUN NUMBER: 031299.1310.1



PEAK DATA: 19.89 G @ 8.96 MS, -3.02 G @ 47.28 MS

CHANNEL: PENXC FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN168 NECK EXT CAL09

RUN NUMBER: 031299.1310;1

TRC TEST NUMBER: 168C9NE1

120

90

60

30

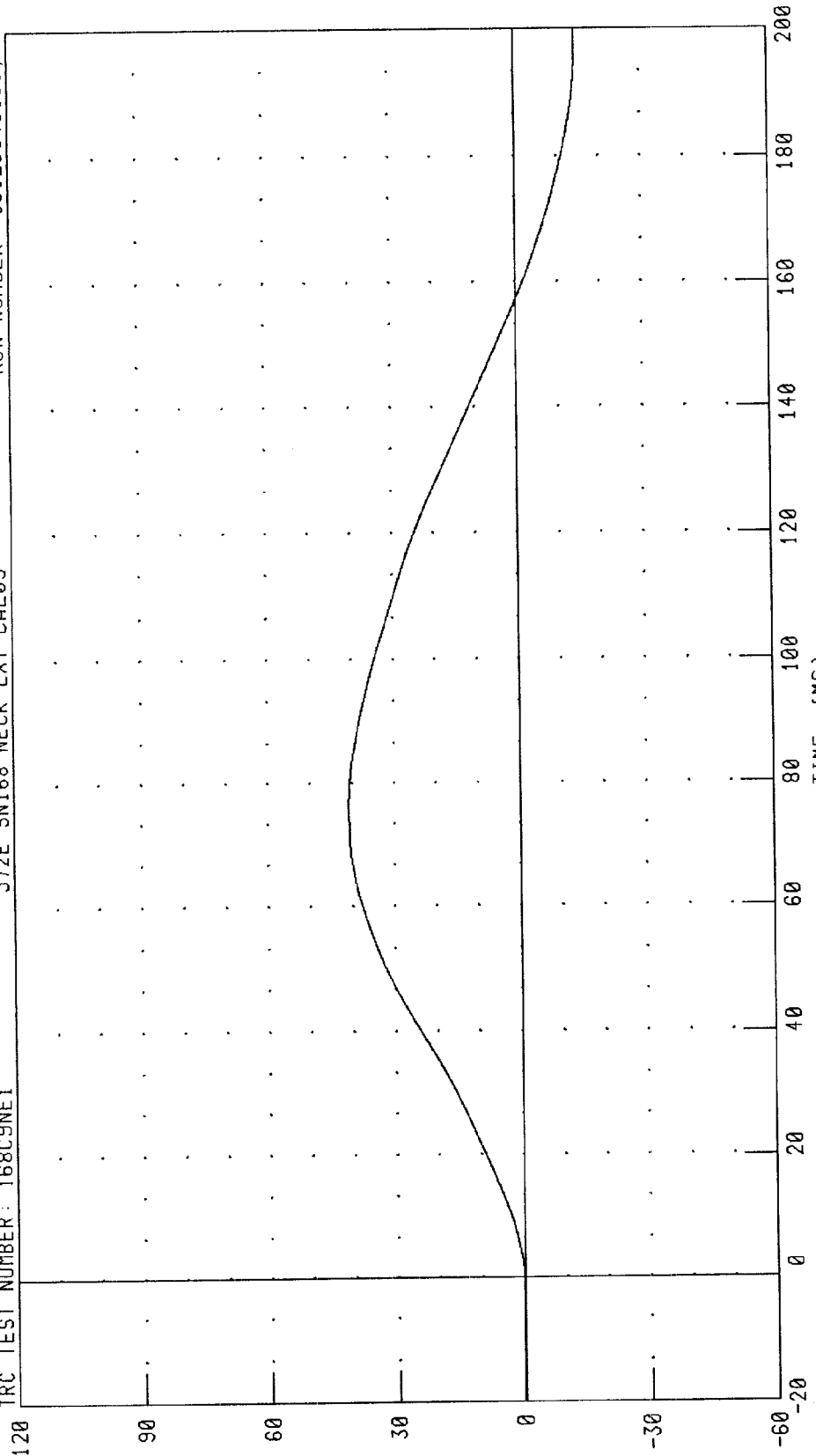
0

-30

-60

-20

ANGLE (°)



TIME (MS)

PEAK DATA: 40.71 ° @ 75.76 MS; -14.58 ° @ 199.44 MS

FILTER: CH. CLASS 60

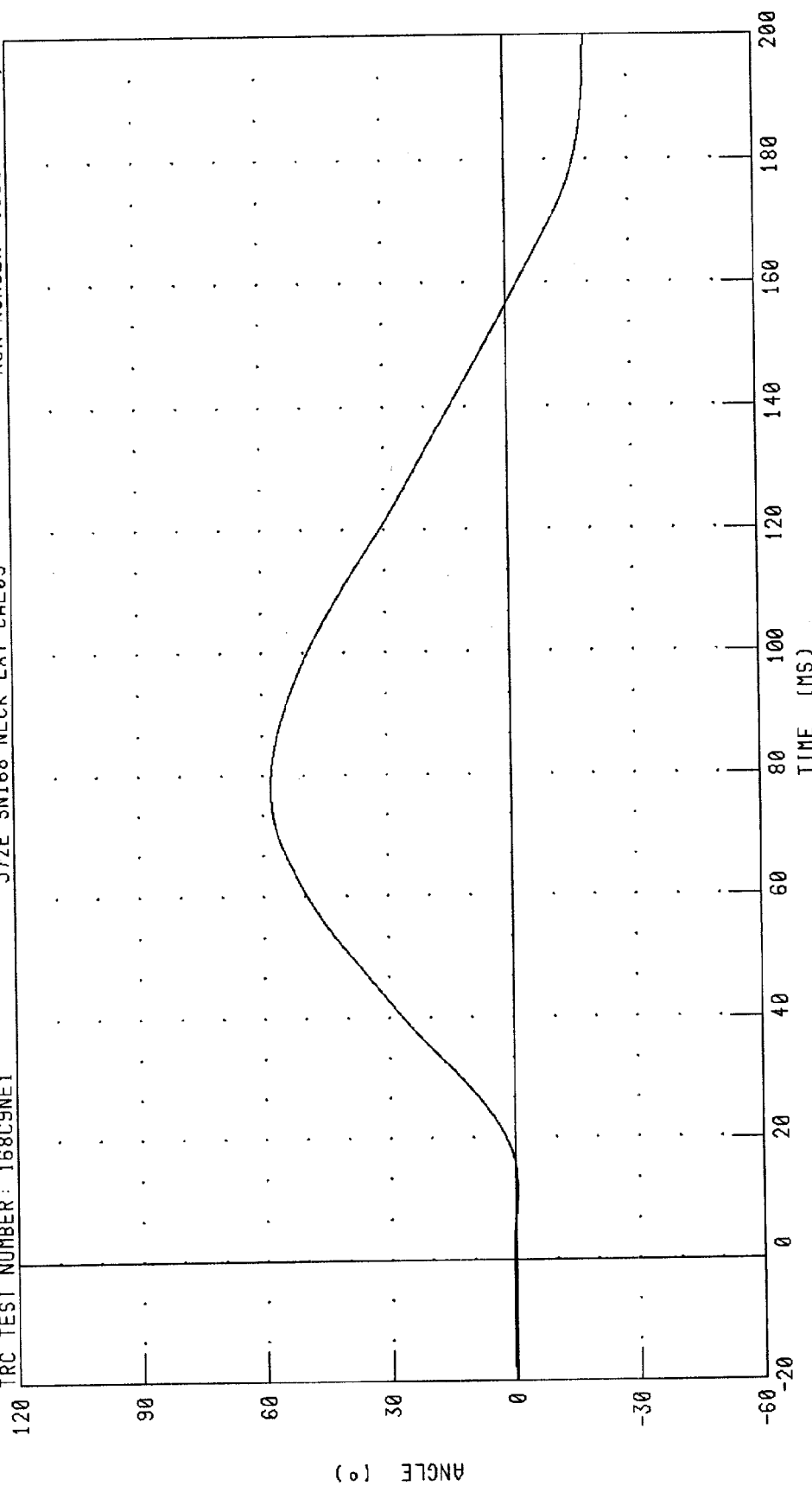
CHANNEL: BETA

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

TRC TEST NUMBER: 168C9NE1

572E SN168 NECK EXT CAL09

RUN NUMBER: 031299.1310.1



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 58.04 ° @ 77.84 MS, -19.52 ° @ 200.00 MS

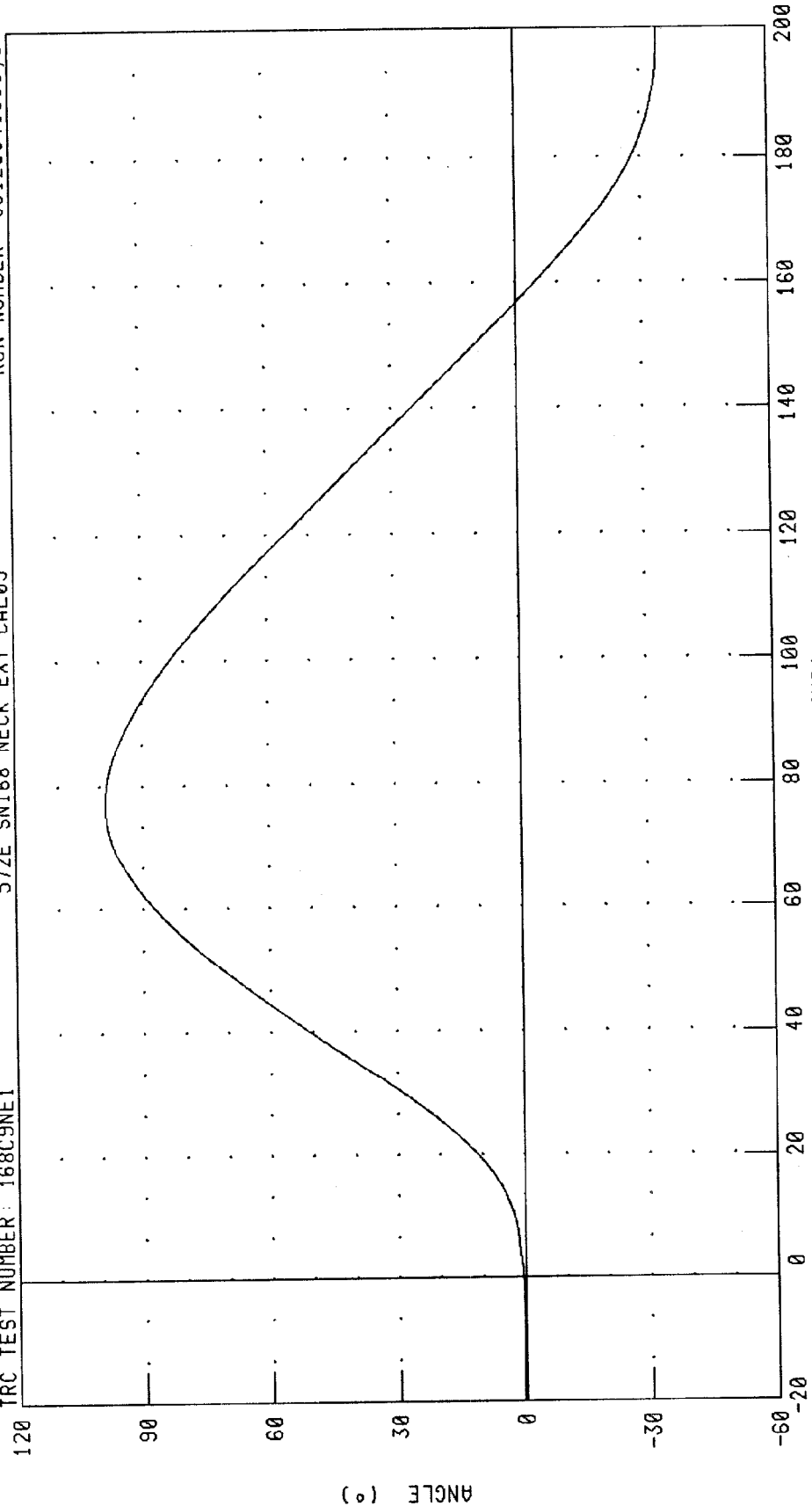
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

RUN NUMBER: 031299.1310;1

572E SN168 NECK EXT CAL09

TRC TEST NUMBER: 168C9NE1



PEAK DATA: 98.72 ° @ 77.04 MS; -34.10 ° @ 199.76 MS

CHANNEL: TOTAL FILTER: CH. CLASS 60

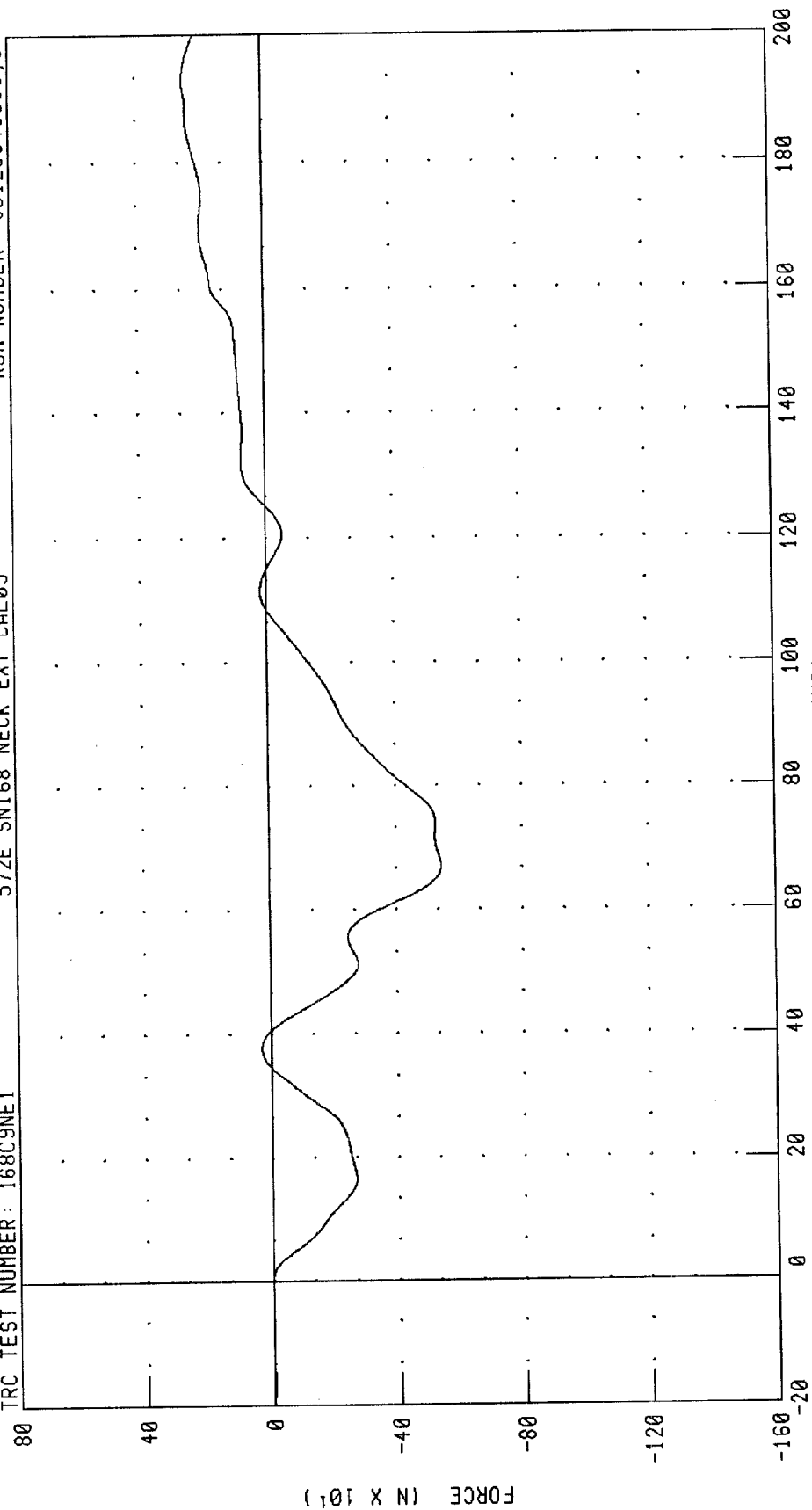
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

RUN NUMBER: 031299.1310;1

572E SN168 NECK EXT CAL09

TRC TEST NUMBER: 168C9NE1



PEAK DATA: 252.04 N @ 192.96 MS; -543.10 N @ 67.04 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

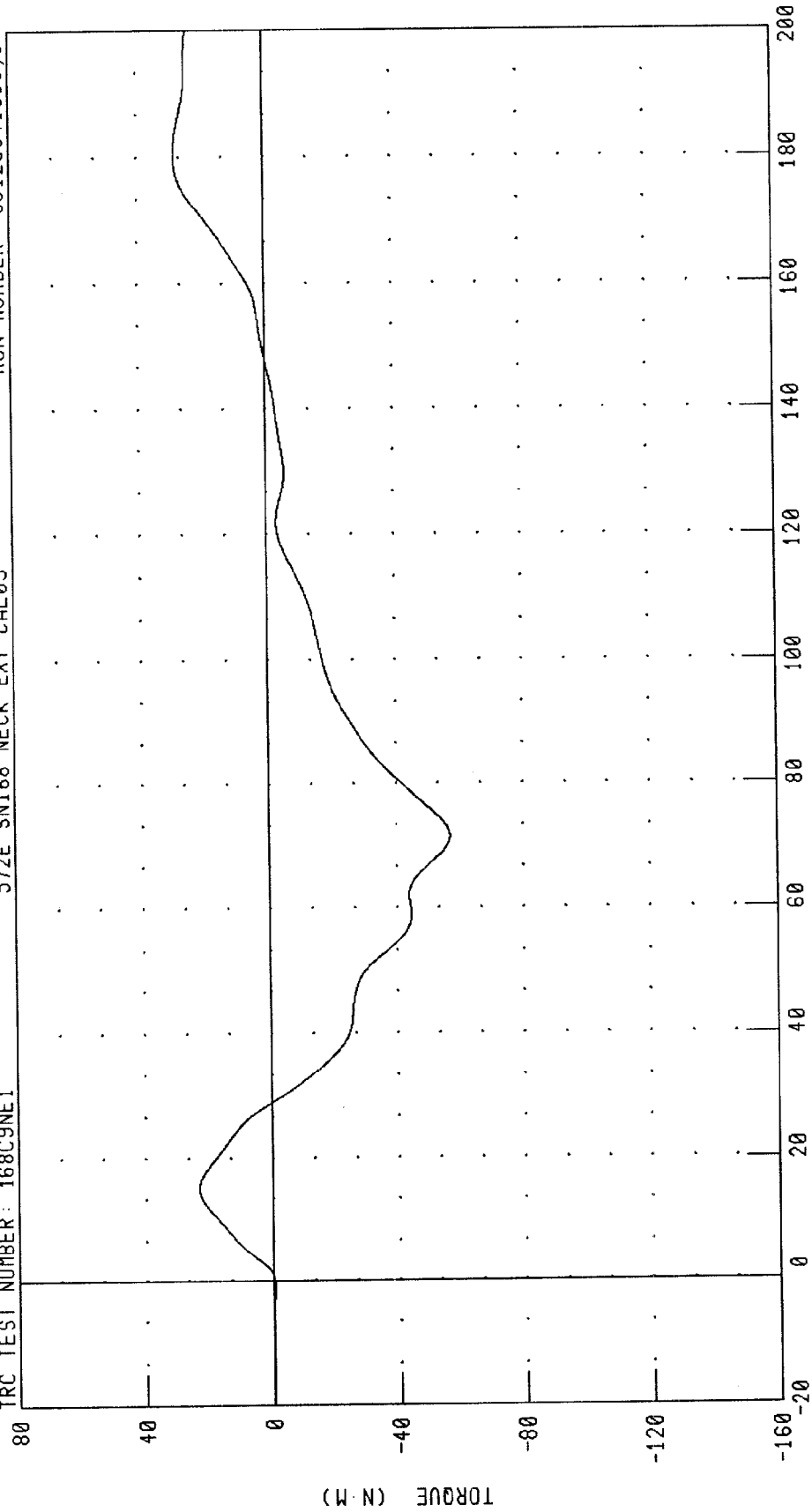
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 168C9NE1

572E SN168 NECK EXT CAL09

RUN NUMBER: 031299.1310;1



PEAK DATA: 28.34 N·M @ 180.56 MS; -56.95 N·M @ 71.60 MS

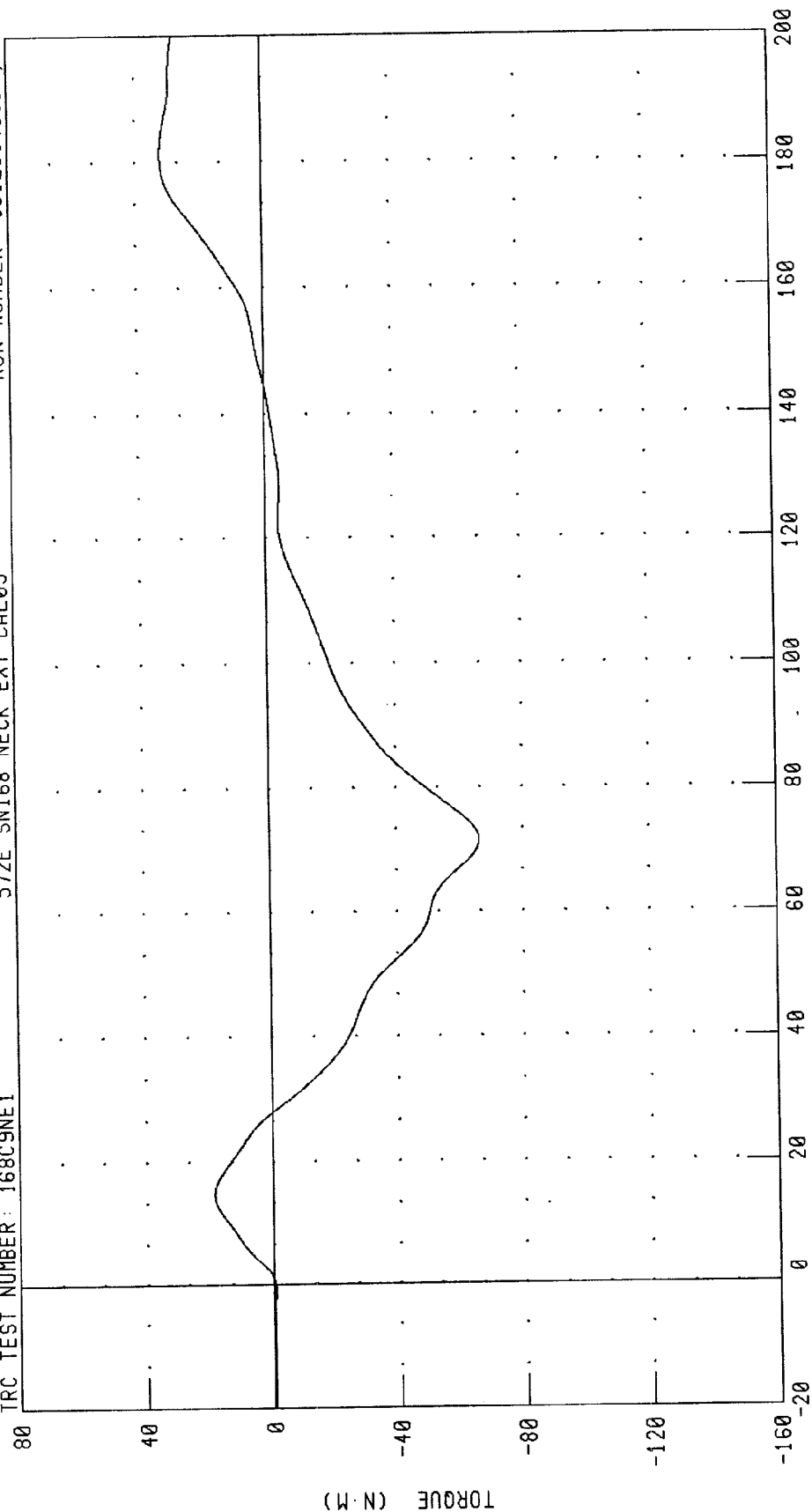
CHANNEL: NEKYM FILTER: CH. CLASS 60

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

RUN NUMBER: 031299.1310;1

572E SN168 NECK EXT CAL09

TRC TEST NUMBER: 168C9NE1



TIME (MS)

PEAK DATA: 32.22 N·M @ 181.36 MS; -66.28 N·M @ 71.60 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III 50th

12-MAR-99

TRC INC.

TEST NO: 168C9TH1

572E SN168 H.S.THORAX CAL09

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.62 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	68.9 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5831. N
INTERNAL HYSTERESIS	69% - 85%	69.3%

TEST MEETS SPECIFICATIONS

TECHNICIAN

Bjelt

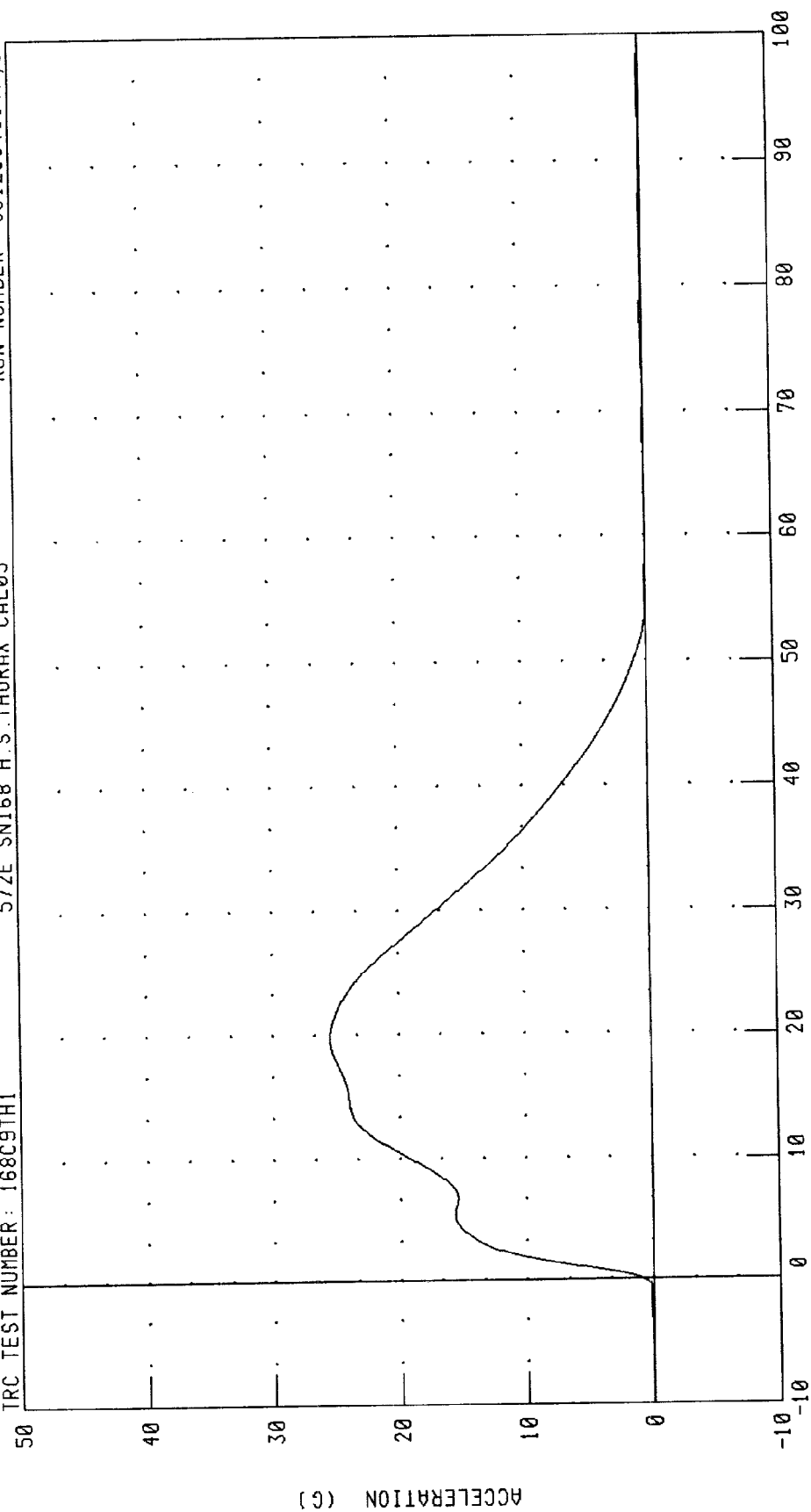
RUN NUMBER: 031299.1347;1

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM DECELERATION

RUN NUMBER: 031299.1347,1

572E SN168 H.S. THORAX CAL09

TRC TEST NUMBER: 168C9TH1



PEAK DATA: 25.45 G @ 19.84 MS, -0.04 G @ 64.80 MS

CHANNEL: PENXC FILTER: CH. CLASS 180

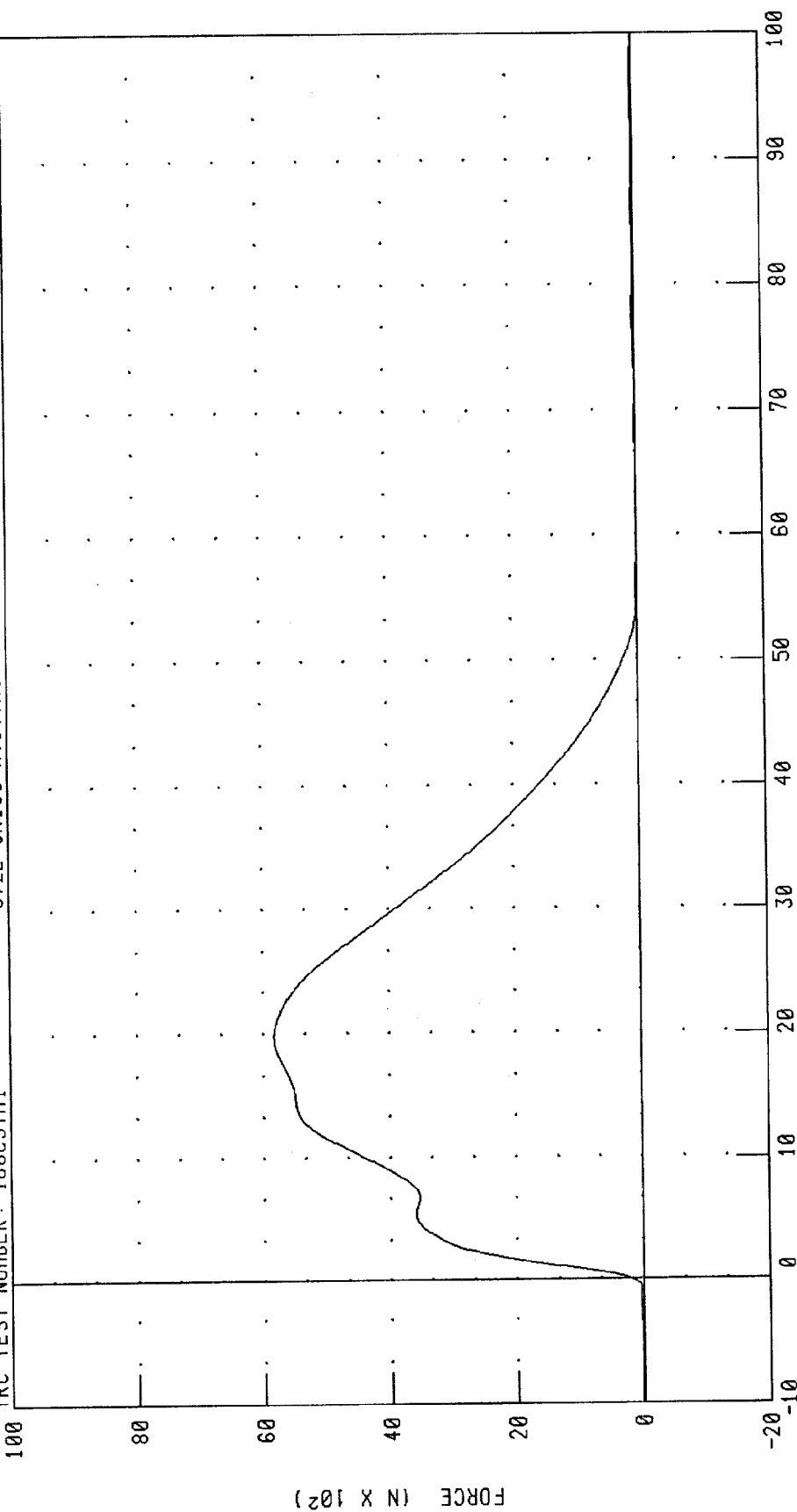
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER: 168C9TH1

572E SN168 H.S. THORAX CAL09

RUN NUMBER: 031299.1347;1



CHANNEL: PENXF FILTER: CH. CLASS 180

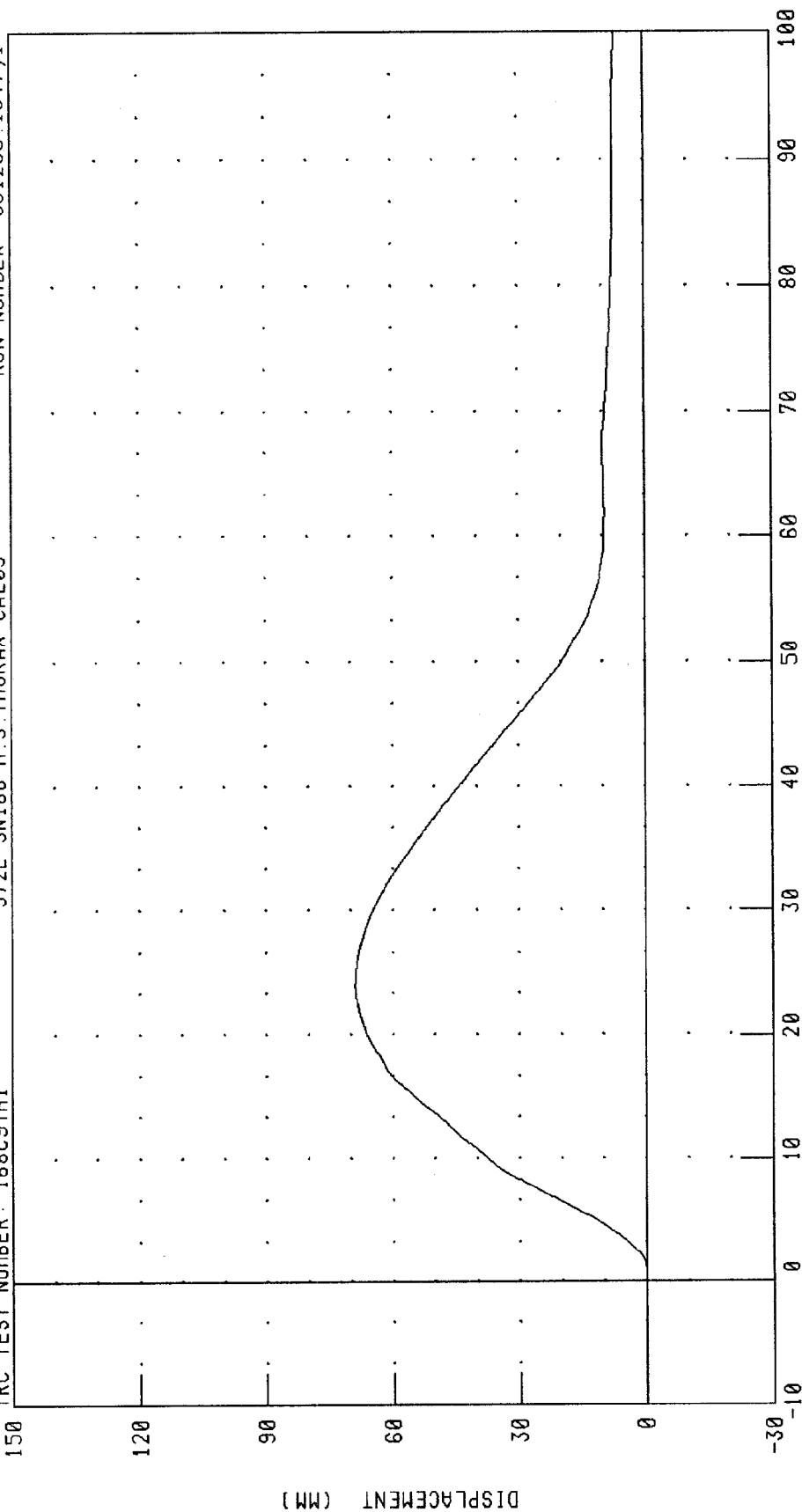
PEAK DATA: 5831.05 N @ 19.84 MS, -10.19 N @ 64.80 MS

PART 572-E HYBRID III THORAX CALIBRATION
STERNUM DISPLACEMENT

TRC TEST NUMBER: 168C9TH1

572E SN168 H.S. THORAX CAL09

RUN NUMBER: 031299.1347;1



CHANNEL: CSTXD FILTER: CH. CLASS 180

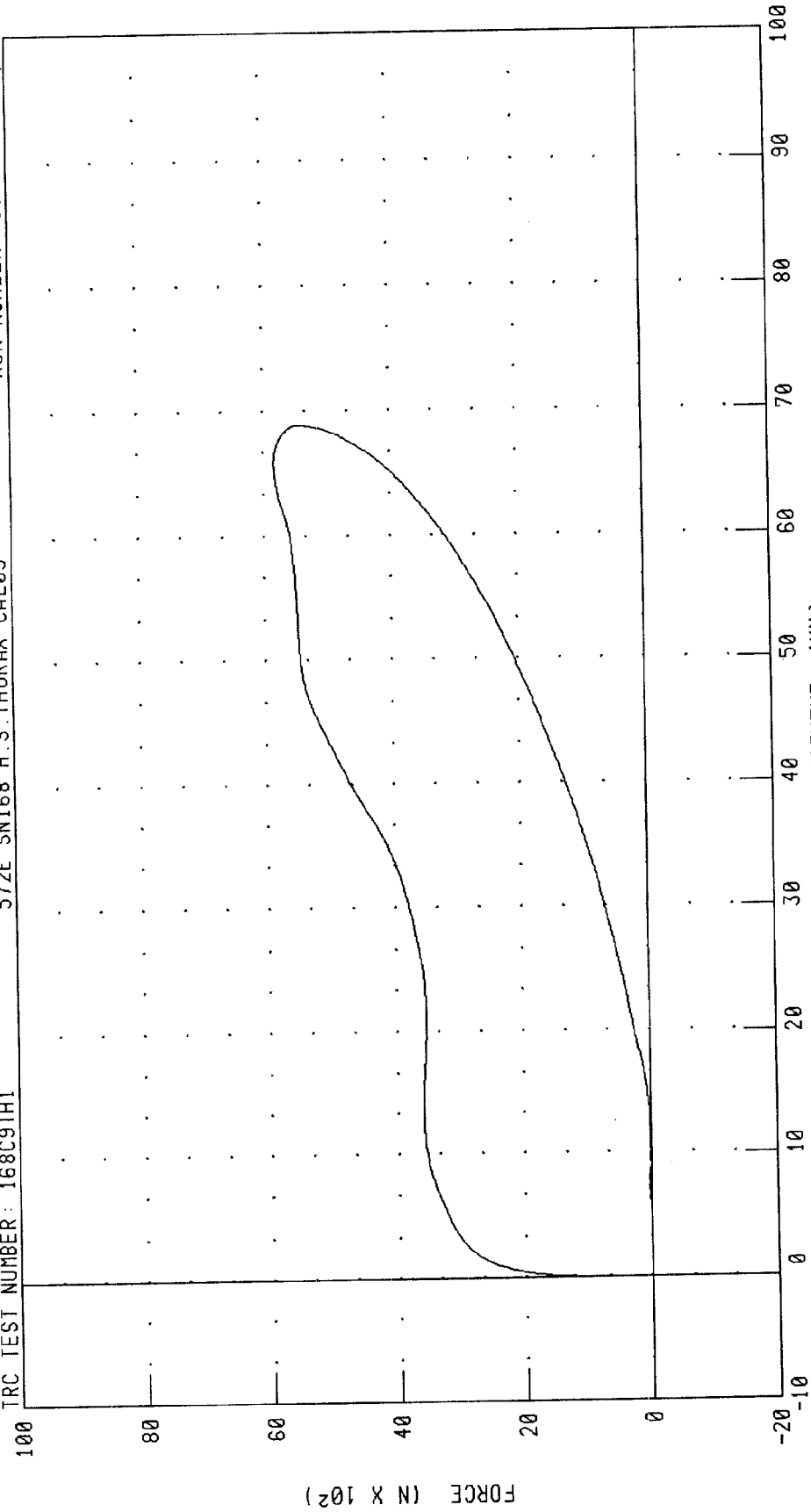
PEAK DATA: 68.91 MM @ 23.92 MS; -0.03 MM @ 0.48 MS

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

TRC TEST NUMBER: 168C9TH1

572E SN168 H.S. THORAX CAL09

RUN NUMBER: 031299.1347;1



CHANNEL: CSTXD
PENXF

FILTER: CH. CLASS 180
CH. CLASS 180

PEAK DATA: 68.91 MM @ 23.92 MS; -0.03 MM @ 0.48 MS
5831.05 N @ 19.84 MS; -10.19 N @ 64.80 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT HIP JOINT FEMUR FLEXION TEST

HYBRID III PART 572E

12-MAR-99

TRC INC.

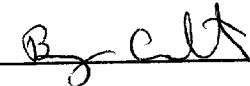
TEST NO: 168C9HR1

572E SN 168 HIPFLEX CAL 09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	65.4 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	46.8 deg.

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 031299.1039;1

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

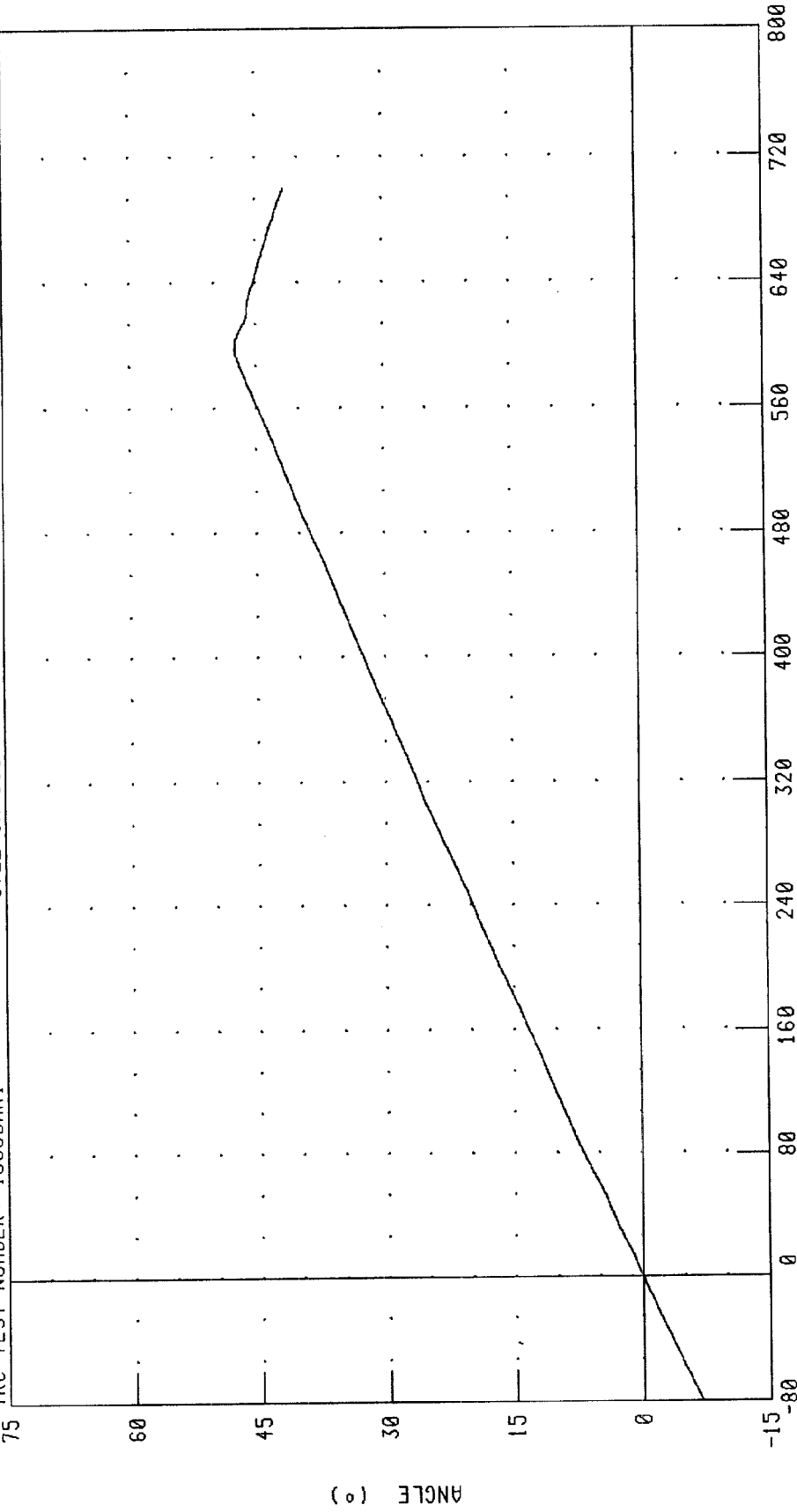
RIGHT HIP FLEXION ROTATION

572E SN 168 HIPFLEX CAL 09

TRC TEST NUMBER: 168C9HR1

75

RUN NUMBER: 031299 1039;1



PEAK DATA: 47.56 ° @ 5.98 S; -10.03 ° @ -1.00 S

CHANNEL: RHPXD FILTER: CH. CLASS 60

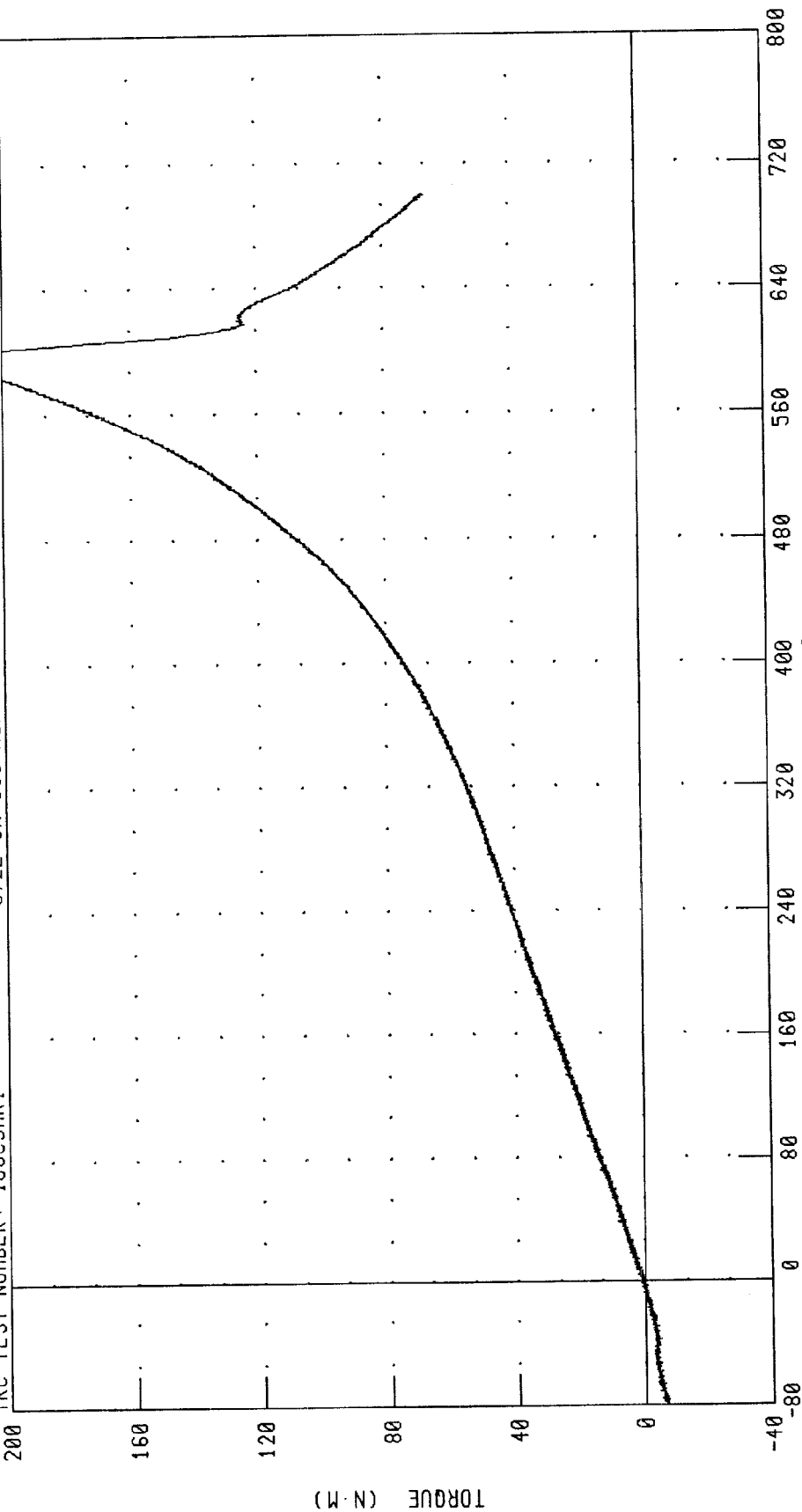
HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

RIGHT HIP FLEXION MOMENT

572E SN 168 HIPFLEX CAL 09

TRC TEST NUMBER: 168C9HR1

RUN NUMBER: 031299 1039;1



PEAK DATA: 219.41 N·M @ 5.96 S; -11.47 N·M @ -0.99 S

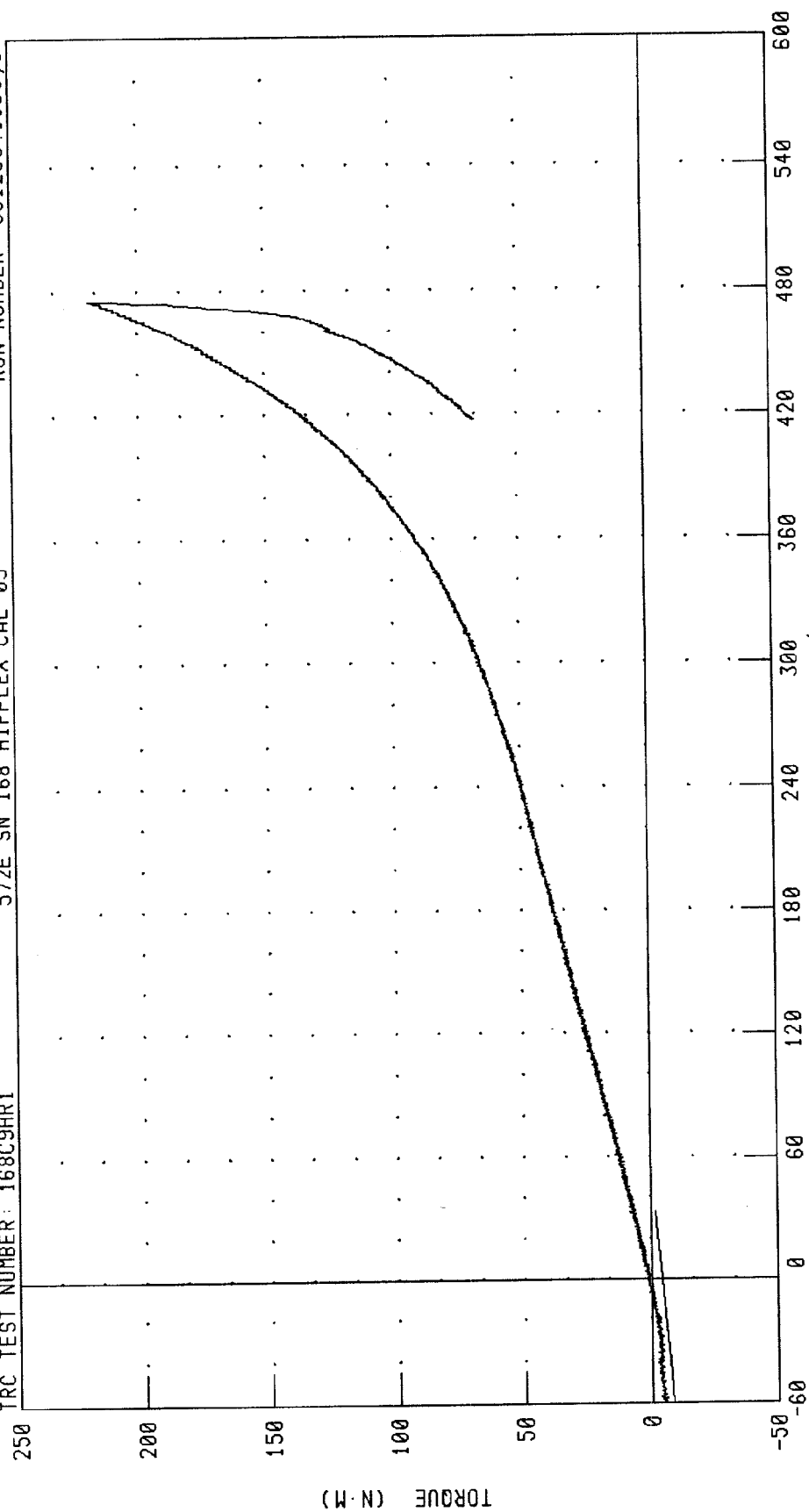
CHANNEL: RHPYM FILTER: CH. CLASS 60

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
RIGHT HIP FLEXION MOMENT VS ROTATION ANGLE

TRC TEST NUMBER: 168C9HR1

572E SN 168 HIPFLEX CAL 09

RUN NUMBER: 031299.1039;1



ANGLE (° X 10⁻¹)

CHANNEL: RHPXD
RHPYM
FILTER: CH: CLASS 60
CH: CLASS 60
PEAK DATA: 47.56 ° @ 5.98 S; -10.03 ° @ -1.00 S
219.41 N·m @ 5.96 S; -11.47 N·m @ -0.99 S

TRANSPORTATION RESEARCH CENTER INC.

LEFT HIP JOINT FEMUR FLEXION TEST

HYBRID III PART 572E

12-MAR-99

TRC INC.

TEST NO: 168C9HL1

572E SN 168 HIPFLEX CAL 09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	66.5 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	45.2 deg.

TEST MEETS SPECIFICATIONS

TECHNICIAN



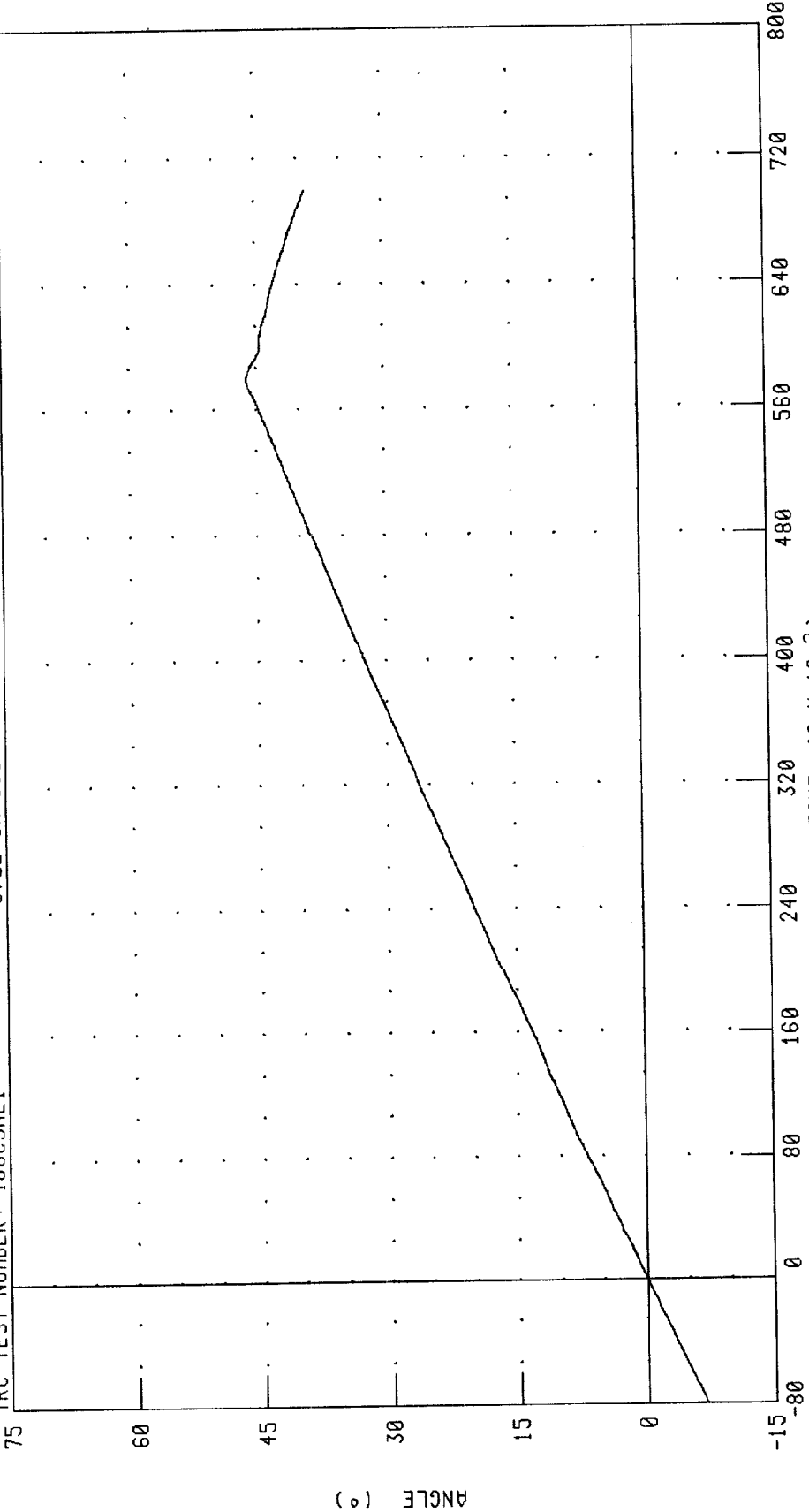
RUN NUMBER: 031299.1036;1

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
LEFT HIP FLEXION ROTATION

TRC TEST NUMBER: 168C9HL1

572E SN 168 HIPFLEX CAL 09

RUN NUMBER: 031299.1037,1



CHANNEL: LHPXD FILTER: CH. CLASS 60
PEAK DATA: 46.15 ° @ 5.81 S, -10.09 ° @ -1.00 S

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES

LEFT HIP FLEXION MOMENT

RUN NUMBER: 031299.1037;1

572E SN 168 HIPFLEX CAL 09

TRC TEST NUMBER: 168C9HL1

200

160

120

80

40

0

-40

-80

TORQUE (N·M)

0 80 160 240 320 400 480 560 640 720 800

TIME (S X 10⁻²)

PEAK DATA: 220.19 N·M @ 5.77 S; -10.64 N·M @ -1.00 S

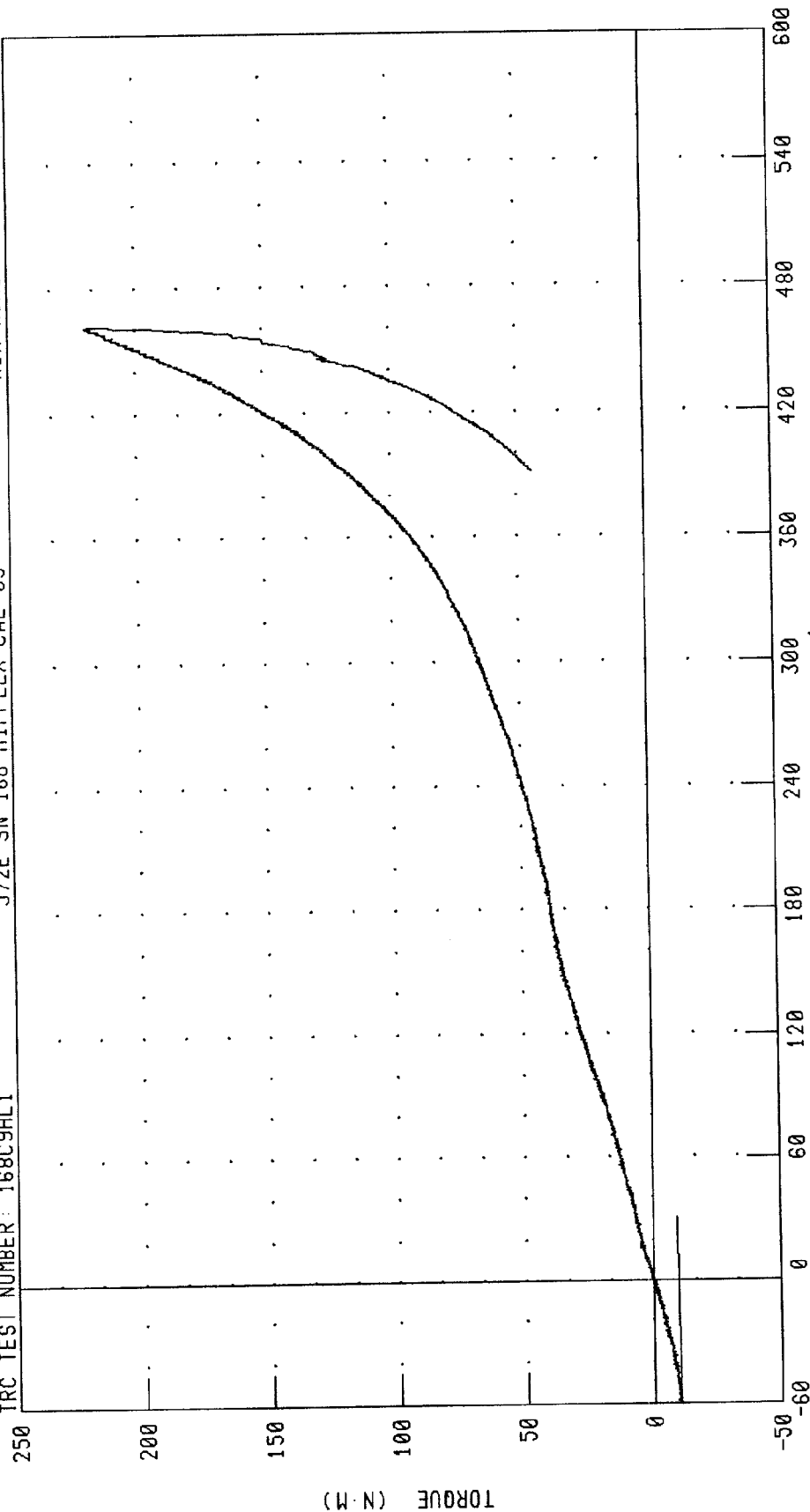
CHANNEL: LHPYM FILTER: CH. CLASS 60

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
LEFT HIP FLEXION MOMENT VS ROTATION ANGLE

TRC TEST NUMBER: 168C9HL1

572E SN 168 HIPFLEX CAL 09

RUN NUMBER: 031299.1037,1



PEAK DATA: 46.15 ° @ 5.81 S; -10.09 ° @ -1.00 S

220.19 N·M @ 5.77 S; -10.64 N·M @ -1.00 S

CHANNEL: LHPXD
LHPYM

FILTER: CH. CLASS 60
CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 50th

12-MAR-99

TRC INC.

TEST NO: 168C9RK1

572E SN168 RIGHT KNEE CAL 09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5724.3 N

TEST MEETS SPECIFICATIONS

TECHNICIAN B. C. L.

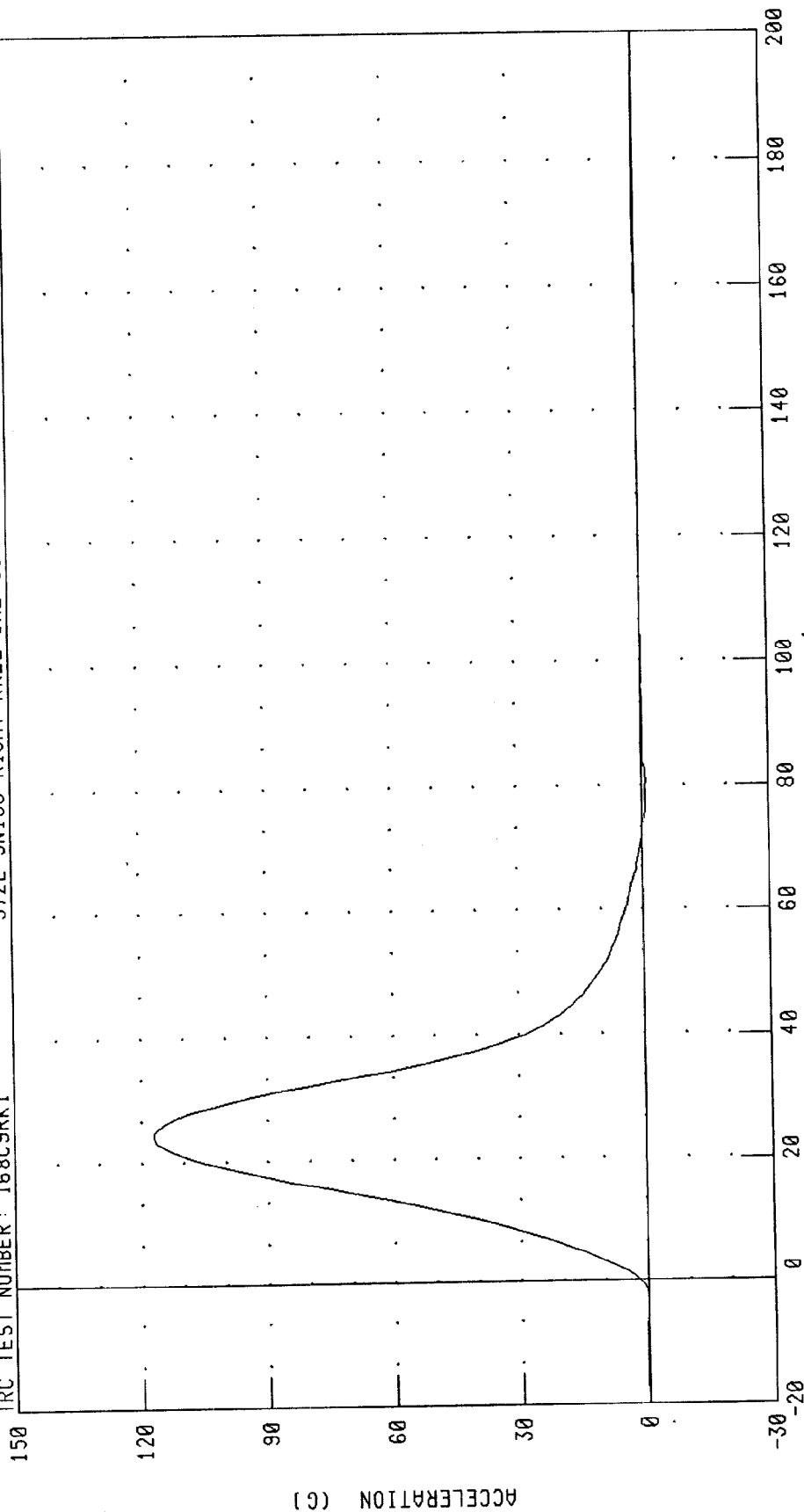
RUN NUMBER: 031299.0925;1

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

RUN NUMBER: 031299.0925;1

572E SN168 RIGHT KNEE CAL 09

TRC TEST NUMBER: 168C9RK1



PEAK DATA: 117.00 G @ 2.40 MS; -0.95 G @ 8.08 MS

CHANNEL: PENXG FILTER: CH. CLASS 600

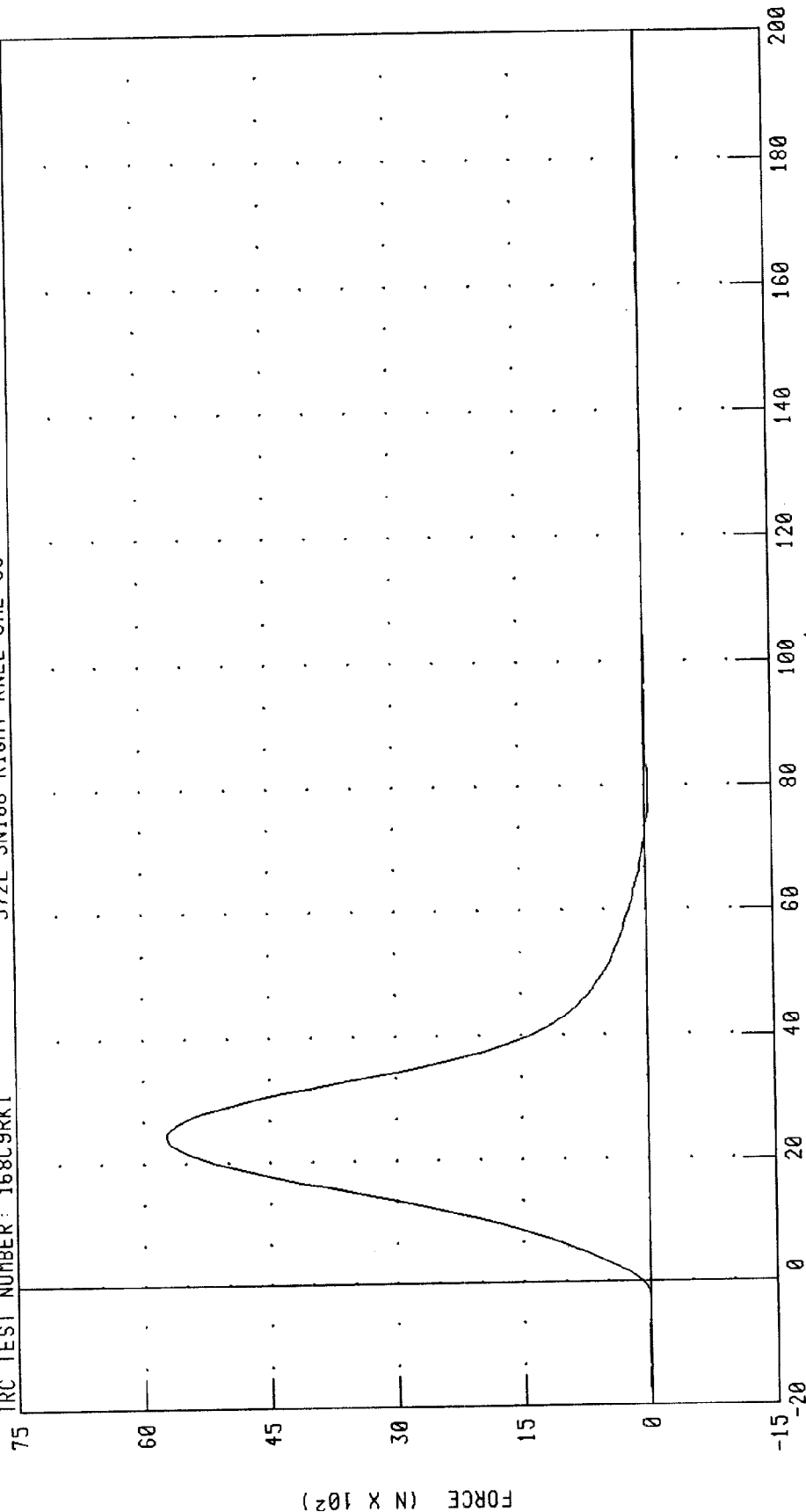
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

572E SN168 RIGHT KNEE CAL 09

RUN NUMBER: 031299.0925;1

TRC TEST NUMBER: 168C9RK1



PEAK DATA: 5724.35 N @ 2.40 MS; -46.59 N @ 8.08 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 50th

12-MAR-99

TRC INC.

TEST NO: 168C9LK1

572E SN168 LEFT KNEE CAL 09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	4962.2 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

B. C. L. T.

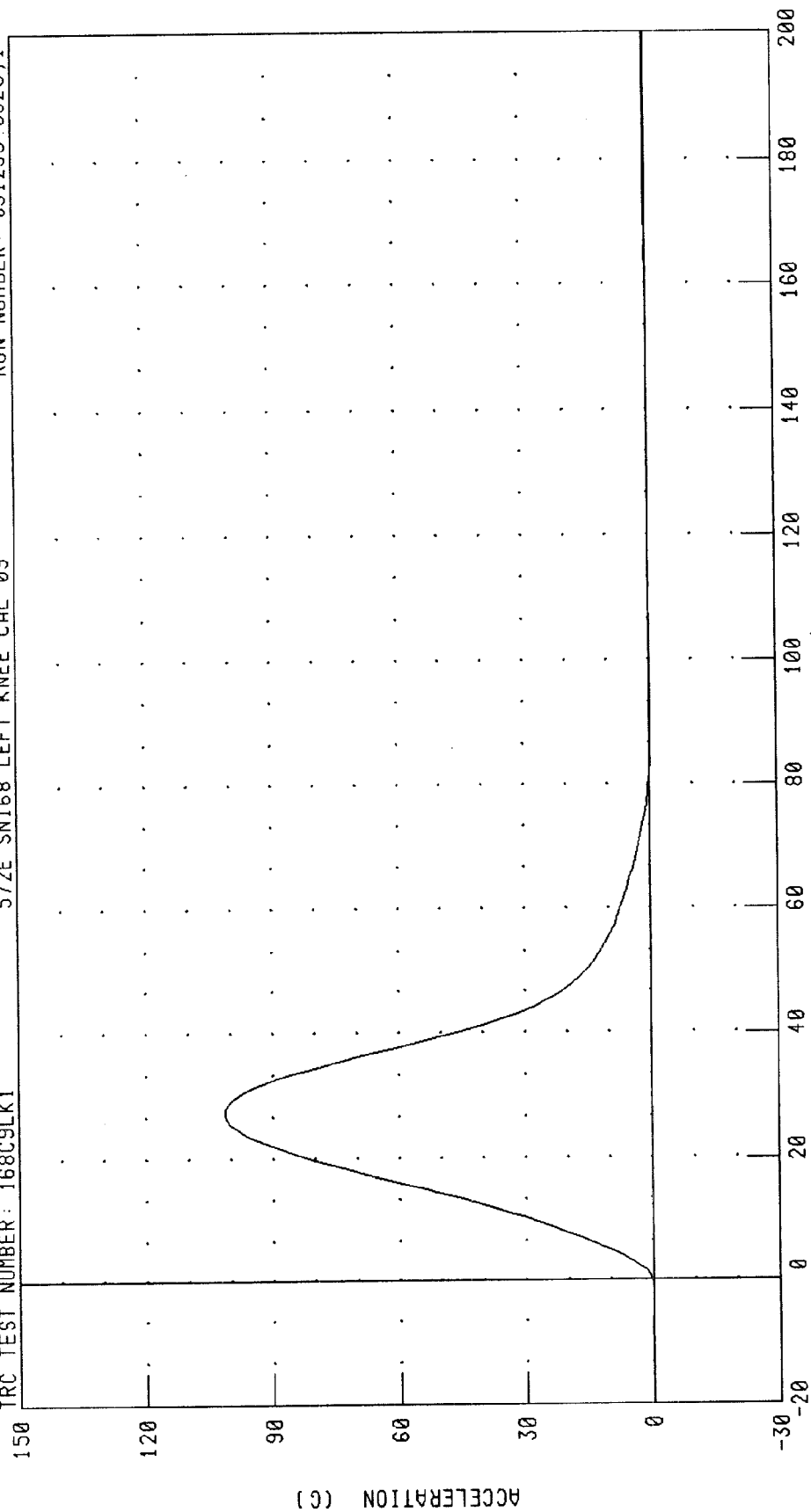
RUN NUMBER: 031299.0923;1

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

TRC TEST NUMBER: 168C9LK1

572E SN168 LEFT KNEE CAL 09

RUN NUMBER: 031299 0923;1



CHANNEL: PENXC FILTER: CH. CLASS 600 PEAK DATA: 101.42 G @ 2.72 MS; -0.43 G @ 9.04 MS

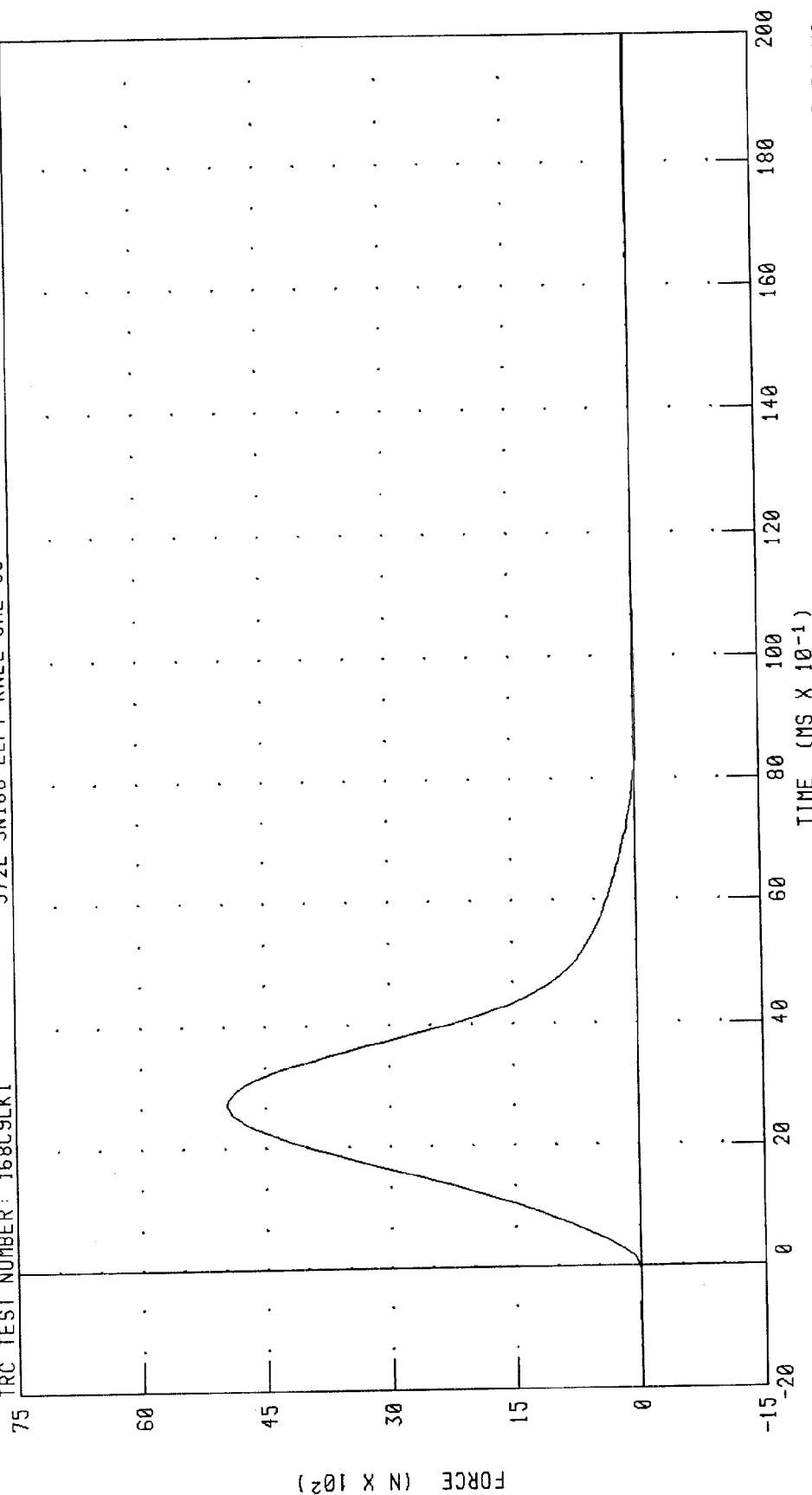
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

RUN NUMBER: 031299.0923,1

TRC TEST NUMBER: 168C9LK1

572E SN168 LEFT KNEE CAL 09



PEAK DATA: 4962.30 N @ 2.72 MS; -21.09 N @ 9.04 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

Test Number 990305

<u>Number</u>	<u>Location</u>	<u>Axis</u>	<u>Manufacturer</u>	<u>Model</u>	<u>S/N</u>	<u>Orientation (+ Sensing)</u>
1	Left Brake Caliper	X	Entran	EGE-73BQE0-200	99A28-Z06	Rearward
2	Right Brake Caliper	X	Entran	EGE-73BQE0-200	99A28-Z22	Forward
3	Instrument Panel Center	X	Entran	EGE-73BQE0-200	99A28-Z17	Forward
4	Engine Top	X	Entran	EGE-73BQE0-200	99A28-Z08	Forward
5	Engine Bottom	X	Entran	EGE-73BQE0-200	99A28-Z09	Forward
6	Vehicle Rear Center	Z	Entran	EGE-73BQE0-200	99A28-Z18	Up
7	Left Rear Seat Crossmember	X	Entran	EGE-73BQE0-200	99A28-Z25	Forward
8	Right Rear Seat Crossmember	X	Entran	EGE-73BQE0-200	99A28-Z23	Forward

Transducer Information

Hybrid III Dummy Serial No.: 169v

Manufacturer: Humanoid

Seating Position: Driver

Project/Segment No.: 096017-5640

Engineer: P. Garland

Test Date: March 5, 1999

MNEMONIC PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NO.	SERIAL NO.	MFR.	SENSITIVITY	CAL DUE DATE	FULL SCALE (ENGR. UNITS)		DIRECTION OF POSITIVE POLARITY	CABLE NO.
							DESIRED	ACTUAL		
HEDXG HAP	HEAD X-AXIS ACCEL.	7264	J19535	End.	.2649 mv/g at 10 volts	8-3- 1999	400 g		Rear	J19535
HEDYG HLR	HEAD Y-AXIS ACCEL.	"	J19548	"	.2192 mv/g at 10 volts	"	400 g		Left	J19548
HEDZG HIS	HEAD Z-AXIS ACCEL.	"	J20026	"	.2527 mv/g at 10 volts	"	400 g		Up	J20026
NEKXF NFX*	NECK X-AXIS SHEAR FORCE	1716A	0853	Dento n.	1.7387 MV/V @ 2000 LBS	"	900 Kg 2,000 lbs. 9,000 N			FX
NEKYF NFY*	NECK Y-AXIS SHEAR FORCE	"	"	"	1.6587 MV/V @2000 LBS	"	900 Kg 2,000 lbs. 9,000 N			FY
NEKZF NFZ*	NECK Z-AXIS AXIAL FORCE	"	"	"	1.2806 MV/V @3000 LBS	"	1300 Kg 3,000 lbs. 13,500 N			FZ
NEKXM NMX*	NECK MOMENT ABOUT X AXIS	"	"	"	1.6595 MV/V @2500 IN-LBS	"	30 Kgm 200 ft-lbs 275 N-m			MX
NEKYM NMY*	NECK MOMENT ABOUT Y AXIS	"	"	"	1.6596 MV/V @2500 IN-LBS	"	30 Kgm 200 ft-lbs 275 N-m			MY
NEKZM NMZ*	NECK MOMENT ABOUT Z AXIS	"	"	"	2.3663 MV/V @2500 IN-LBS	"	30 Kgm 200 ft-lbs 275 N-m			MZ

Transducer Information

Hybrid III Dummy Serial No.: 169v

Manufacturer: Humanoid

Seating Position: Driver

Project/Segment No.: 096017-5640

Engineer: P. Garland

Test Date: March 5, 1999

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	J20011	End.	.2324 mv/g at 10 volts	8-3- 1999	400 g		Forward	J20011
CSTYG CLR	CHEST Y-AXIS ACCEL.	"	J20001	"	.2709 mv/g at 10 volts	"	400 g		Left	J20001
CSTZG CIS	CHEST Z-AXIS ACCEL.	"	J20438	"	.2313 mv/g at 10 volts	"	400 g		Up	J20438
CSTXD CAPD	CHEST DEFLECTION	14CB1- 2847	168	SERV	27.89 mv/v /in	8-3- 1999	6 inch 150 mm			168
PEVXG PAP	PELVIS X-AXIS ACCEL.						400 g			
PEVYG PLR	PELVIS Y-AXIS ACCEL.						400 g			
PEVZG PIS	PELVIS Z-AXIS ACCEL.						400 g			
LFMF LF	LEFT FEMUR FORCE	2430	726	DENT	0.9495 mv/v at 3000 lbs.	8-3- 1999	1300 Kg 3,000 lbs. 13,500 N			726
RFMF RF	RIGHT FEMUR FORCE	"	741	"	0.9030 mv/v at 3000 lbs.	"	1300 Kg 3,000 lbs. 13,500 N			741

Transducer Information

Hybrid III Dummy Serial No.: 168v

Manufacturer: Humanoid

Seating Position: Passenger

Project/Segment No.: 096017-5630

Engineer: P. Garland

Test Date: March 5, 1999

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	J21935	End.	.2409 mv/g at 10 volts	8-3- 1999	400 g		Rear	J21935
HEDYG HLR	HEAD Y-AXIS ACCEL.	"	J23912	"	.2827 mv/g at 10 volts	"	400 g		Left	J23912
HEDZG HIS	HEAD Z-AXIS ACCEL.	"	J23810	"	.2826 mv/g at 10 volts	"	400 g		Up	J23810
NEKXF NFX*	NECK X-AXIS SHEAR FORCE	1716	0106	Dento n.	1.7167 MV/V @ 2000 LBS	8-3- 1999	900 Kg 2,000 lbs. 9,000 N			FX
NEKYF NFY*	NECK Y-AXIS SHEAR FORCE	"	"	"	1.6802 MV/V @ 2000 LBS	"	900 Kg 2,000 lbs. 9,000 N			FY
NEKZF NFZ*	NECK Z-AXIS AXIAL FORCE	"	"	"	1.2943 MV/V @ 3000 LBS	"	1300 Kg 3,000 lbs. 13,500 N			FZ
NEKXM NMX*	NECK MOMENT ABOUT X AXIS	"	"	"	1.6148 MV/V @ 2500 IN-LBS	"	30 Kgm 200 ft-lbs 275 N-m			MX
NEKYM NMY*	NECK MOMENT ABOUT Y AXIS	"	"	"	1.6205 MV/V @ 2500 IN-LBS	"	30 Kgm 200 ft-lbs 275 N-m			MY
NEKZM NMZ*	NECK MOMENT ABOUT Z AXIS	"	"	"	2.2982 MV/V @ 2500 IN-LBS	"	30 Kgm 200 ft-lbs 275 N-m			MZ

Transducer Information

Hybrid III Dummy Serial No.: 168v
Project/Segment No.: 096017-5630

Manufacturer: Humanoid
Engineer: P. Garland

Seating Position: Passenger
Test Date: March 5, 1999

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	J23914	End.	.2528 mv/g at 10 volts	8-3- 1999	400 g		Forward	J23914
CSTYG CLR	CHEST Y-AXIS ACCEL.	"	J23808	"	.2843 mv/g at 10 volts	"	400 g		Left	J23808
CSTZG CIS	CHEST Z-AXIS ACCEL.	"	J23774	"	.2405 mv/g at 10 volts	"	400 g		Up	J23774
CSTXD CAPD	CHEST DEFLECTION	14CB1- 2847	169	SERV	28.26 mv/v /in	8-3- 1999	6 inch 150 mm			169
PEVXG PAP	PELVIS X-AXIS ACCEL.						400 g			
PEVYG PLR	PELVIS Y-AXIS ACCEL.						400 g			
PEVZG PIS	PELVIS Z-AXIS ACCEL.						400 g			
LFMF LF	LEFT FEMUR FORCE	2430	96661	GSE	0.8816 mv/v at 3000 lbs.	8-3- 1999	1300 Kg 3,000 lbs. 13,500 N			D105
RFMF RF	RIGHT FEMUR FORCE	"	96662	"	0.8605 mv/v at 3000 lbs.	"	1300 Kg 3,000 lbs. 13,500 N			709

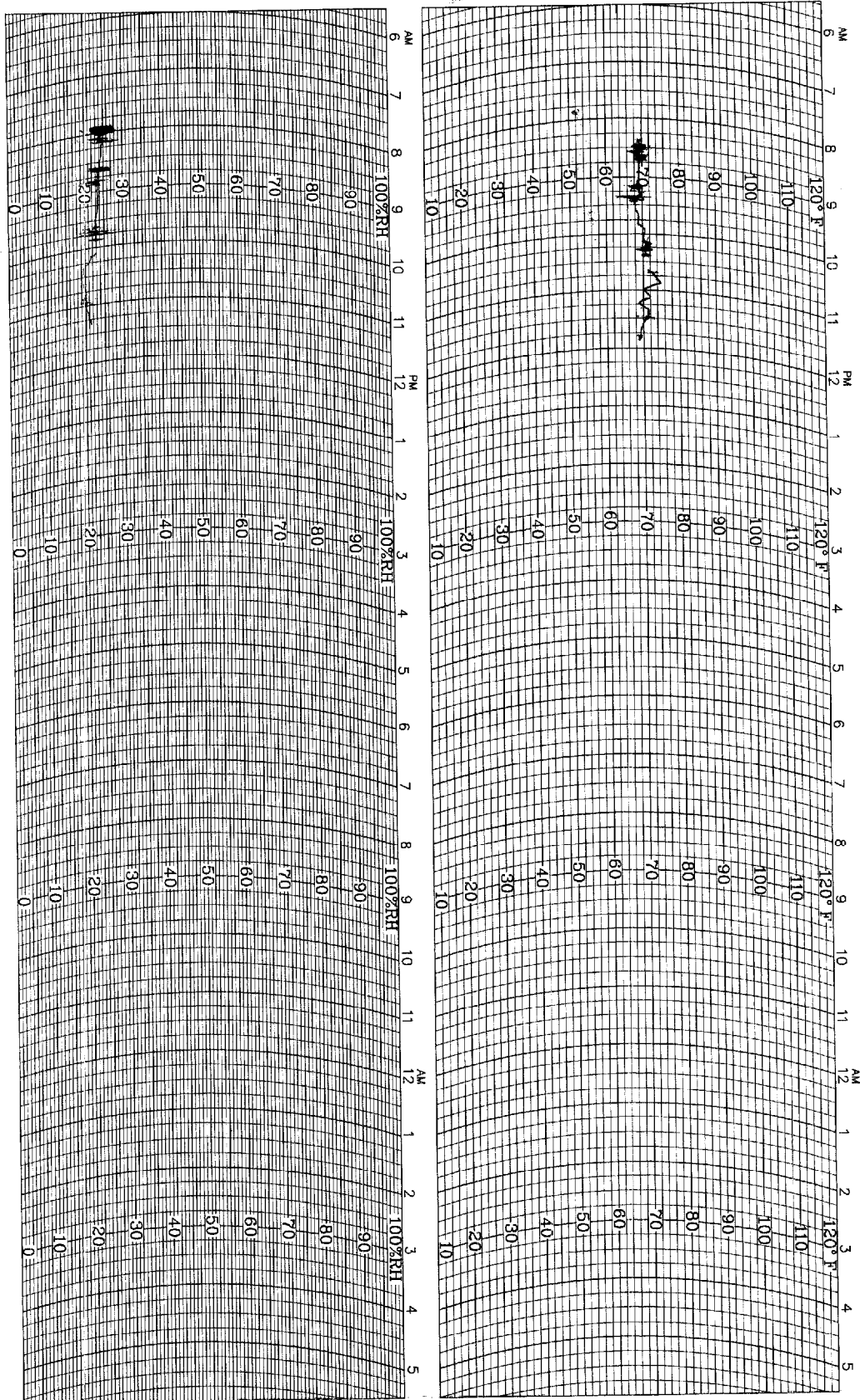
Description Of Timing Marks On TRC High-Speed Film

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.



WeatherMeasure
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HYGROTHERMOGRAPH
 1 DAY

CHART NO. M699123
 C311-D-HF
 ECN 2717
 6-9-87

03-05-99 V.0.

STATION _____ DATE ON _____ DATE OFF _____