

2923

**Vehicle Research and Test Center
1998 Chevrolet S10 into Left Front of
1997 Honda Accord Oblique 30°
TRC Test Number 980619**

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**Prepared for:
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Section 1.0

Purpose and Test Procedure

Purpose

This 56 kph 30° oblique vehicle-to-vehicle impact test was conducted for National Highway Transportation and Safety Administration (NHTSA) and Vehicle Research and Test Center (VRTC) by Transportation Research Center Inc. (TRC). The purpose of this test was to determine the response of the subject vehicle, a 1997 Honda Accord in the 56 kph 30° oblique vehicle-to-vehicle impact mode.

Test Procedure

This test was conducted per NHTSA and VRTC instructions. Data was obtained relative to FMVSS 208, "Occupant Protection."

The target vehicle was instrumented with nine (9) longitudinal axis accelerometers and its specified impact velocity range was 55.5 to 57.1 km/h.

The bullet vehicle was instrumented with nine (9) vertical axis accelerometers and its specified impact velocity range was 55.5 to 57.1 kph.

The bullet vehicle's left edge was aligned with the target vehicle's impact point, which is the vehicle's centerline. The impact angle was 30°.

One (1) 50th percentile adult male Hybrid III dummy and one (1) 5th percentile adult female dummy was placed in the target vehicle's left front and right front designated seating positions, respectively. Each dummy had accelerometers in the head, chest, and pelvis to measure longitudinal, lateral, and vertical accelerations; 6-axis upper neck load cells to measure forces and moments in the neck; and a potentiometer in the chest to measure chest deflection. Additionally, the driver dummy was instrumented with enhanced lower legs to measure forces and moments in the upper and lower tibias; additionally the passenger dummy was instrumented with femur load cells to measure uniaxial forces in the femurs. Each dummy was restrained with a 3-point unbelt.

One (1) 50th percentile adult male Hybrid III dummy and one (1) 5th percentile adult female dummy was placed in the bullet vehicle's left front and right front designated seating positions, respectively. Each dummy had accelerometers in the head, chest, and pelvis to measure longitudinal, lateral, and vertical accelerations; 6-axis upper neck load cells to measure forces and moments in the neck; and a potentiometer in the chest to measure chest deflection. Additionally, the driver dummy was instrumented with enhanced lower legs to measure forces and moments in the upper and lower tibias; additionally the passenger dummy was instrumented

with spine and sternum accelerometers to measure longitudinal axis accelerations; and femur load cells to measure uniaxial forces in the femurs. Each dummy was restrained with a 3-point unbelt.

The one hundred-twenty-nine (129) data channels were digitally sampled and recorded at 12,500 samples per second and processed per SAE J211 October 1988.

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

The vehicle data are summarized in Section 2.0. The FMVSS 208 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 vehicle data plots. Appendix C contains dummy calibration information. Appendix D contains miscellaneous test information.

Section 2.0

Left Front Oblique Impact Test Summary

Test Results Summary

This 56 kph 30° left front oblique vehicle-to-vehicle impact test was conducted at TRC on June 19, 1998.

The target test vehicle, a 1997 Honda Accord, was equipped with a 4-cylinder, transverse engine, automatic transmission, power steering, and power brakes. The target vehicle's test weight was 1522.2 kg and its impact speed was 56.0 km/h. The bullet vehicle, a 1998 Chevrolet S10 pickup truck, was equipped with a 4-cylinder, longitudinal engine, automatic transmission, power steering, and power brakes. The bullet vehicle's test weight was 1652.1 kg and its impact speed was 53.6 kph. The target vehicle's maximum static crush was 389 millimeters. The bullet vehicle's maximum crush was 927 millimeters.

The target vehicle driver dummy's Head Injury Criteria (HIC) was 194. The target vehicle driver dummy's chest maximum resultant acceleration with three (3) milliseocnds minimum duration was 40.8 g. The target vehicle driver dummy's chest deflection was 19 mm.

The target vehicle right front passenger dummy's HIC was 126. The target vehicle right front passenger dummy's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 42.2 g. The target vehicle right front passenger dummy's chest deflection was 32 mm. The target vehicle's right front passenger dummy's left and right femur forces were 453 N and 886 N, respectively.

The bullet vehicle driver dummy's HIC was 363. The bullet vehicle driver dummy's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 38.2 g. The bullet vehicle driver dummy's chest deflection was 39 mm.

The bullet vehicle passenger dummy's HIC was 78. The bullet vehicle right front passenger dummy's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 39.0 g. The bullet vehicle right front passenger dummy's chest deflection was 30 mm. The bullet vehicle passenger dummy's left and right femur forces were 409 N and 112 N, respectively.

Data Acquisition Explanation

The target vehicle's engine bottom X-axis acceleration data channel, ENGXF4, recorded questionable data throughout the event.

The target vehicle's left brake caliper X-axis acceleration data channel, BCLXF2, lost data after approximately 118 milliseconds.

The bullet vehicle's left brake caliper X-axis acceleration data channel, BCLXF1, recorded questionable data throughout the event.

Table 1 Crash Test Summary

Test type:	Left Front Oblique Impact	
Test date:	06/19/98	
Test time:	1917	
Ambient temperature:	26° C	
Target vehicle:	1997 Honda Accord	
Target vehicle test weight:	1522.2 kg	
Bullet vehicle:	1998 Chevrolet S10	
Bullet vehicle test weight:	1652.1 kg	
Impact angle: ¹	30°	
Impact velocity: ²	Target vehicle = 56.0 kph Bullet vehicle = 53.6 kph	
Target vehicle's maximum static crush:	389 mm	
Bullet vehicle's maximum static crush:	927 mm	
Target vehicle dummies:	Driver #45	Passenger #283
Type:	572 E (50% male)	Hybrid III (5% female)
Location:	Left front	Right front
Restraint:	3-point unbelt	3-point unbelt
Bullet vehicle dummies:	Driver #168	Passenger #289
Type:	572 E(50% Male)	Hybrid III (5% female)
Location:	Left front	Right front
Restraint:	3-point unbelt/airbag	3-point unbelt/airbag
Total number of data channels:	129	
Number of cameras:		
High-speed	14	
Real-time	1	

¹ With respect to tow track centerline.

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

Table 2 Target Test Vehicle Information

Vehicle manufacturer:	Honda of America, Mfg.		
Make/model:	Honda/Accord		
VIN:	1HGCDS633VA002229		
Model year:	1997		
Body style:	4-door		
Color:	Blue		
Engine data:			
Type:	Transverse		
Cylinders:	4		
Displacement:	2.2		
Transmission data:	<u>4</u> Speed, <u> </u> Manual, <u>X</u> Automatic, <u>X</u> FWD, <u> </u> RWD, <u> </u> 4WD		
Date vehicle received:	05/26/98		
Odometer reading:	32,000		
Dealer's name and address:	NA		
<u>Accessories:</u>			
Power steering	Yes	Automatic transmission	Yes
Power brakes	Yes	Automatic speed control	No
Power seats	No	Tilting steering wheel	Yes
Power windows	Yes	Telescoping steering wheel	No
Tinted glass	Yes	Air conditioning	Yes
Radio	Yes	Anti-skid brake	No
Clock	Yes	Rear window defroster	Yes
Other	None		

Certification data from vehicle's label:

Vehicle manufactured by:	Honda of America Mfg., Inc.
Date of manufacture:	09/96
VIN:	1HGCDS633VA002229
VWR:	3915 lbs.
GAWR: Front:	2140 lbs.
Rear:	1810 lbs.

Table 2 Target Test Vehicle Information, Cont'd.

Tires on vehicle (mfr., line, size): P185/65R15

Tire pressure with maximum capacity vehicle load: Front: 241 kPa
Rear: 241 kPa

Spare tire (mfr., line, size): T115/70D14

Type of seats: Front: Bucket
Rear: Bench

Type of front seat backs: Manually adjustable

Maximum width: 1780 mm

Wheelbase: 2730 mm

Location of "Recommended Tire Pressure" label:

The label was located on the driver B-pillar.

Data from vehicle's "Recommended Tire Pressure" label:

Recommended tire size: P185/65R15

Recommended cold tire pressure: Front: 32 psi
Rear: 32 psi

Seating capacity: Front: 2
Rear: 3
Total: 5

Vehicle capacity weight: 850 lbs.

Test vehicle attitude:

Delivered attitude:	LF 687 mm;	RF 685 mm;	LR 680 mm;	RR 680 mm
Fully load attitude:	LF 677 mm;	RF 675 mm;	LR 655 mm;	RR 653 mm
Pre-test attitude:	LF 675 mm;	RF 671 mm;	LR 652 mm;	RR 646 mm
Post-test attitude:	LF 732 mm;	RF 568 mm;	LR 623 mm;	RR 702 mm

Table 2 Target Test Vehicle Information, Cont'd.

Delivered Weight:

Right Front:	421.8 kg	Right Rear:	258.5 kg
Left Front:	412.8 kg	Left Rear:	249.5 kg
Total Front Weight:	834.6 kg	(62.2% of total vehicle weight)	
Total Rear Weight:	508.0 kg	(37.8% of total vehicle weight)	
Total Delivered Weight:	1342.6 kg		

Calculation of test vehicle's target test weight:

RCLW = Rated cargo and luggage weight

UDW = Unloaded delivered weight (1342.6 kg)

VCW = Vehicle capacity weight (385.6 kg)

DSC = Designated seating capacity (5)

RCLW = VCW - 68.0 (5) = 45.6 kg

Target test weight = UDW + RCLW + (No. of Hybrid III dummies x 75.8 kg
+ No. of Hybrid III dummies x 47.6 kg)

Target test weight = 1342.6 + 45.6 kg + 75.8 kg + 47.6 kg)

Target test weight = 1511.6 kg

Weight of test vehicle with required dummies and 38 kg cargo weight:

Right front	446.8 kg	Right rear	321.1 kg
Left front	447.2 kg	Left rear	307.1 kg
Total front weight	894.0 kg	(58.7% of total vehicle weight)	
Total rear weight	628.2 kg	(41.3% of total vehicle weight)	
Total test weight	1522.2 kg		

Weight of ballast secured in cargo area: None

Components removed to meet target test weight: Muffler, taillights, trunk trim, trunk lid,
rear bumper, and rear window glass

CG rearward of front wheel centerline: 1127 mm

Table 3 Bullet Test Vehicle Information

Vehicle manufacturer:	General Motors Company		
Make/model:	Chevrolet/S10		
VIN:	1GCCS1443WK216061		
Model year:	1998		
Body style:	Pickup truck		
Color:	Red		
Engine data:			
Type:	Longitudinal		
Cylinders:	4		
Displacement:	2.2 liter		
Transmission data:	<u>4</u> Speed, <u> </u> Manual, <u> X</u> Automatic, <u> </u> FWD, <u> X</u> RWD, <u> </u> 4WD		
Date vehicle received:	N/A		
Odometer reading:	4		
Dealer's name and address:	N/A		
<u>Accessories:</u>			
Power steering	Yes	Automatic transmission	Yes
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	No	Anti-skid brake	Yes
Clock	No	Rear window defroster	No
Other	None		

Certification data from vehicle's label:

Vehicle manufactured by:	General Motors Company
Date of manufacture:	04/98
VIN:	1GCCS1443WK216061
GVWR:	4200 lbs.
GAWR: Front:	2500 lbs.
Rear:	2300 lbs.

Table 3 Bullet Test Vehicle Information, Cont'd.

Tires on vehicle (mfr., line, size): Uniroyal, Tiger Paw, P205/75R15

Tire pressure with maximum capacity vehicle load: Front: 35 psi
Rear: 35 psi

Spare tire (mfr., line, size): P205/75R15

Type of seats: Front: Bench
Rear: N/A

Type of front seat backs: Manually adjustable

Maximum width: 1685 mm

Wheelbase: 2750 mm

Location of "Recommended Tire Pressure" label:

The label was located on the driver's door.

Data from vehicle's "Recommended Tire Pressure" label:

Recommended tire size: P205/75R15

Recommended cold tire pressure: Front: 35 psi
Rear: 35 psi

Seating capacity: Front: 3
Rear: N/A
Total: 3

Vehicle cargo load: N/A

Test vehicle attitude:

Delivered attitude: LF 775 mm; RF 790 mm; LR 799 mm; RR 809 mm

Fully loaded attitude: LF 768 mm; RF 783 mm; LR 758 mm; RR 770 mm

Pre-test attitude: LF 758 mm; RF 779 mm; LR 748 mm; RR 764 mm

Post-test attitude: LF 773 mm; RF 710 mm; LR 689 mm; RR 832 mm

Table 3 Bullet Test Vehicle Information, Cont'd.

Delivered Weight:

Right Front:	403.7 kg	Right Rear:	281.2 kg
Left Front:	430.9 kg	Left Rear:	276.7 kg
Total Front Weight:	834.6 kg	(59.9% of total vehicle weight)	
Total Rear Weight:	557.9 kg	(40.1% of total vehicle weight)	
Total Delivered Weight:	1392.5 kg		

Calculation of test vehicle's target test weight:

RCLW¹ = Rated cargo and luggage weight

GVWR = Gross vehicle weight rating (1905.1 kg)

UDW = Unloaded delivered weight (1392.5 kg)

VCW = Vehicle capacity weight = GVWR - UDW = 1905.1 - 1392.5 = 512.6 kg

DSC = Designated seating capacity (3)

RCLW = GVWR - UDW - 68.0(3) = 1905.1 - 1392.5 - 68.0(3) = 308.6 kg

Target test weight = UDW + RCLW + (No. of Hybrid III dummies x 75.8 kg +
No. of Hybrid III dummies x 47.6 kg)

Target test weight = 1392.5 + 136.1 + 75.8 + 47.6

Target test weight = 1652.0 kg

Weight of test vehicle with required dummies

Right front	425.5 kg	Right rear	382.4 kg
Left front	461.8 kg	Left rear	382.4 kg
Total front weight	887.3 kg	(53.7% of total vehicle weight)	
Total rear weight	764.8 kg	(46.3% of total vehicle weight)	
Total test weight	1652.1 kg		

Weight of ballast secured in cargo area: None

Components removed to meet target test weight: Rear exhaust, spare tire, tail gate

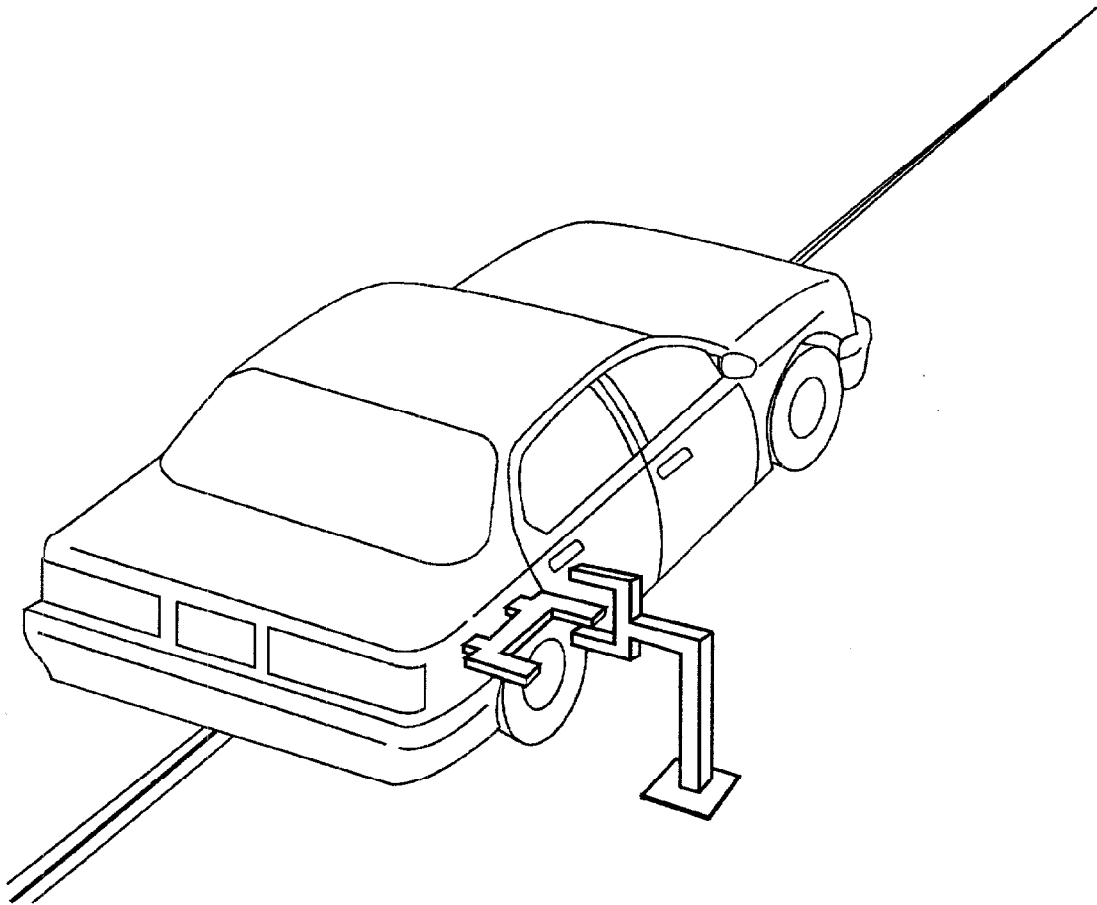
CG rearward of front wheel centerline: 1273 mm

¹ Cargo weight for multi-purpose vehicles, trucks, and buses is the vehicle's calculated cargo and luggage weight or 300 pounds (136.1 kg), whichever is less.

Table 4 Post-Impact Data

Test number:	980619
Date of test:	06/19/98
Time of test:	1917
Type of test:	Left Front Oblique Impact
Impact angle:	30°
Ambient temperature at impact area:	26° C
Impact velocity:	
Target vehicle:	56.0 kph
Bullet vehicle:	53.6 kph
	(Specified range = 55.5 to 57.1 kph)
Distance from vehicle to vehicle:	
Entering trap	610 mm
Exiting trap	51 mm

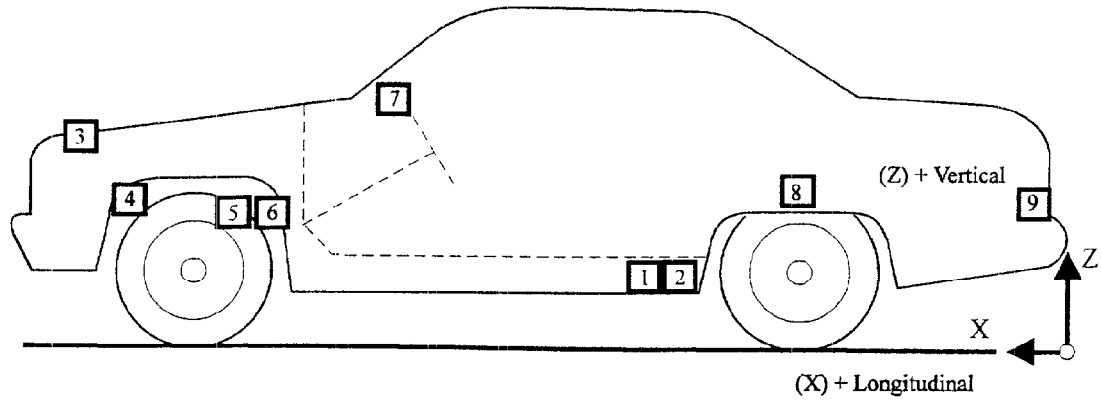
Figure 1 Impact Velocity Measurement System



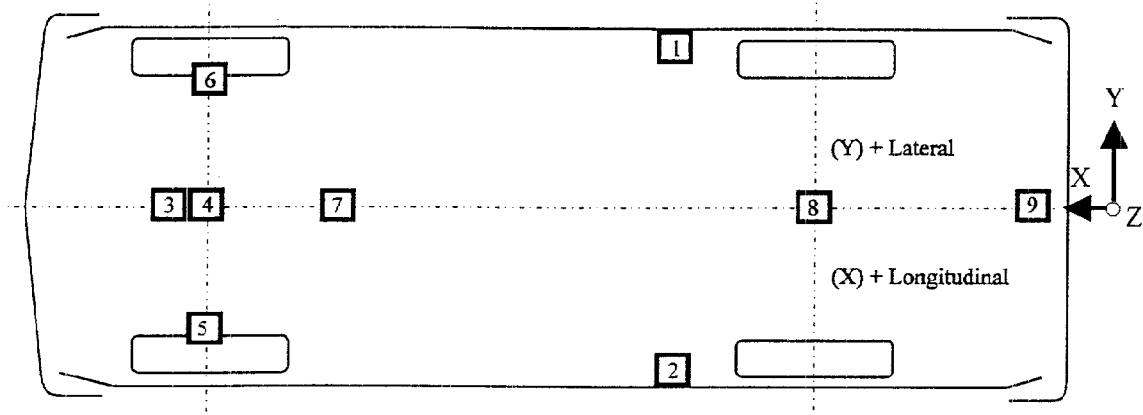
The final vane clears the final emitter/receiver pair 51 millimeters before impact.

The vanes have 610-millimeter spacing.

Figure 2 Target Vehicle Accelerometer Placement



Side View



Bottom View

Table 5 Target Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 980619											
No. LOCATION		X	Y	Z	POSITIVE DIRECTION		NEGATIVE DIRECTION				
1	LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE 1980 mm	490 mm	275 mm	1.0 g	@ 246.4 ms	15.4 g	@ 50.1 ms			
		POST 1940 mm	490 mm	179 mm							
2	RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE 1989 mm	-445 mm	275 mm	3.2 g	@ 226.9 ms	23.7 g	@ 46.5 ms			
		POST 1952 mm	-445 mm	241 mm							
3	ENGINE TOP LONGITUDINAL	PRE 4080 mm	35 mm	732 mm	2.7 g	@ 309.5 ms	44.0 g	@ 28.5 ms			
		POST 3906 mm	18 mm	723 mm							
4	ENGINE BOTTOM LONGITUDINAL	PRE 4033 mm	285 mm	160 mm	---	---	---	---			
		POST 3992 mm	290 mm	191 mm							
5	RIGHT BRAKE CALIPER LONGITUDINAL	PRE 3795 mm	-665 mm	277 mm	17.4 g	@ 36.0 ms	41.9 g	@ 41.3 ms			
		POST 4000 mm	-620 mm	NA							

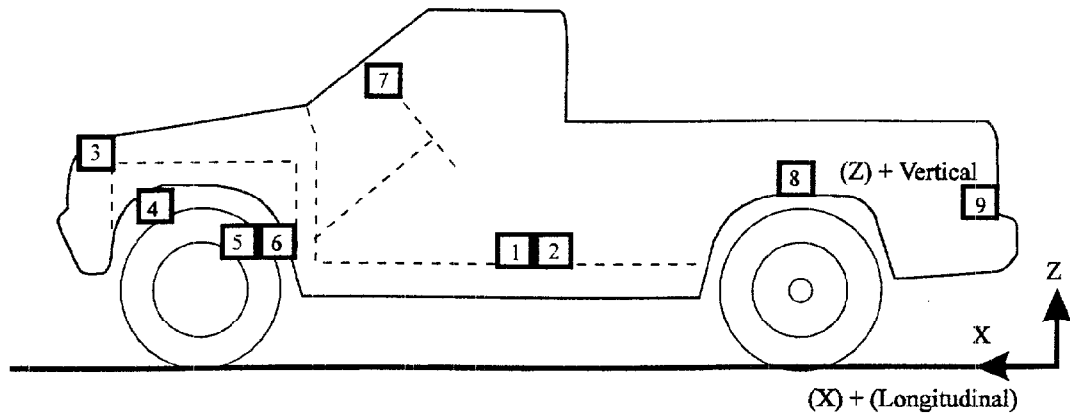
Table 5 Target Vehicle Accelerometer Locations and Data Summary, Cont'd.

TEST NUMBER: 980619 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
6 LEFT BRAKE CALIPER	PRE 3795 mm POST 3662 mm	665 mm 690 mm	277 mm NA		
LONGITUDINAL ¹				---	---
7 INSTRUMENT PANEL CENTER	PRE 3240 mm POST 3131 mm	55 mm 0 mm	874 mm 790 mm		
LONGITUDINAL				29.6 g @ 28.2 ms	35.2 g @ 44.3 ms
8 REAR AXLE	PRE 375 mm POST 339 mm	0 mm 0 mm	472 mm 543 mm		
LONGITUDINAL				0.9 g @ 196.8 ms	21.8 g @ 47.9 ms
9 VEHICLE REAR CENTER	PRE 375 mm POST 339 mm	0 mm 0 mm	472 mm 543 mm		
VERTICAL				8.8 g @ 117.2 ms	9.5 g @ 59.9 ms

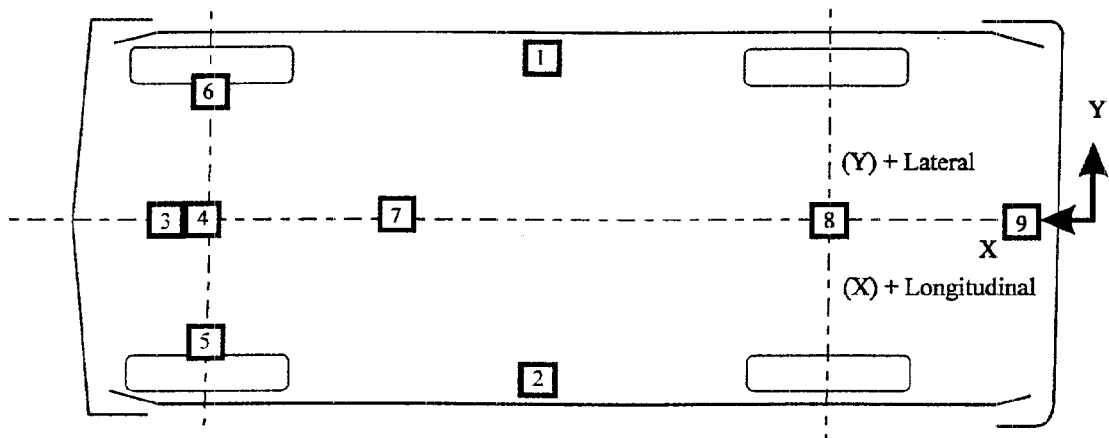
REFERENCE: X: + FORWARD ACCELERATION
Y: + LEFT FROM VEHICLE CENTERLINE
Z: + UP FROM GROUND LEVEL

¹ See DATA ACQUISITION EXPLANATIONS

Figure 3 Bullet Vehicle Accelerometer Placement



Side View



Bottom View

Table 6 Bullet Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 980619		X		Y	Z	POSITIVE DIRECTION		NEGATIVE DIRECTION	
No. LOCATION									
1	LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE	2250 mm	535 mm	508 mm	1.7 g	@ 225.0 ms	21.5 g	@ 48.7 ms
		POST	2180 mm	535 mm	414 mm				
2	RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	PRE	2250 mm	-540 mm	508 mm	3.1 g	@ 81.4 ms	40.1 g	@ 46.3 ms
		POST	2215 mm	-540 mm	494 mm				
3	ENGINE TOP LONGITUDINAL	PRE	4010 mm	-210 mm	990 mm	11.7 g	@ 90.6 ms	32.8 g	@ 47.4 ms
		POST	3880 mm	-240 mm	970 mm				
4	ENGINE BOTTOM LONGITUDINAL	PRE	3840 mm	-10 mm	257 mm	0.9 g	@ 271.8 ms	25.5 g	@ 44.7 ms
		POST	3720 mm	-30 mm	226 mm				
5	RIGHT BRAKE CALIPER LONGITUDINAL	PRE	3850 mm	-562 mm	350 mm	36.1 g	@ 51.3 ms	25.9 g	@ 90.6 ms
		POST	3830 mm	-610 mm	345 mm				

Table 6. Bullet Vehicle Accelerometer Locations and Data Summary, Cont'd.

TEST NUMBER: 980619						
No. LOCATION						
X	Y	Z	POSITIVE DIRECTION		NEGATIVE DIRECTION	
6 LEFT BRAKE CALIPER	PRE	3850 mm	350 mm			
	POST	3490 mm	251 mm			
LONGITUDINAL ¹						
7 INSTRUMENT PANEL CENTER	PRE	3228 mm	1162 mm			
	POST	3170 mm	1127 mm			
LONGITUDINAL			114.5 g	@ 130.7 ms	48.4 g	@ 48.1 ms
8 REAR AXLE	PRE	1095 mm	NA			
	POST	1005 mm	315 mm			
LONGITUDINAL			10.0 g	@ 241.9 ms	45.6 g	@ 63.2 ms
9 VEHICLE REAR CENTER	PRE	292 mm	650 mm			
	POST	248 mm	730 mm			
VERTICAL			11.3 g	@ 70.6 ms	11.8 g	@ 125.9 ms

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

¹See DATA ACQUISITION EXPLANATIONS

Section 3.0

Summary of FMVSS 208 Data

Table 7 Target Vehicle Dummy Injury Criteria

	<u>Maximum Acceleration</u>						
	Head				Chest		
	X	Y	Z	R	X	Y	Z
Driver	-24.3 g	-94.7 g	-57.6 g	112.5 g	31.4 g	-30.9 g	16.0 g
Passenger	29.3 g	-35.2 g	-37.6 g	58.0 g	-40.2 g	-15.9 g	-9.1 g

Maximum Femur Compressive Force

	Left Femur	Right Femur
Driver	N/A	N/A
Passenger	453 N	886 N

Head Injury Criteria¹

	HIC	Time t ₁	Time t ₂
Driver	194	73.2 ms	109.2 ms
Passenger	126	97.8 ms	133.8 ms

Chest Maximum Resultant Acceleration²

	Acceleration	Time t ₁	Time t ₂
Driver	40.8 g	83.4 ms	86.5 ms
Passenger	42.2 g	66.6 ms	69.6 ms

Maximum Chest Deflection

Driver	19 mm
Passenger	32 mm

¹ As defined in FMVSS No. 208

² Defined as equal to or exceeding 0.003 sec. duration

Table 8 Bullet Vehicle Dummy Injury Criteria

<u>Maximum Acceleration</u>							
	<u>Head</u>				<u>Chest</u>		
	X	Y	Z	R	X	Y	Z
Driver	-50.6 g	-18.6 g	-17.0 g	55.7 g	-38.8 g	-10.4 g	-8.8 g
Passenger	-35.9 g	13.5 g	-18.3 g	41.3 g	-43.4 g	-17.0 g	8.6 g

<u>Maximum Femur Compressive Force</u>		
	<u>Left Femur</u>	<u>Right Femur</u>
Driver	N/A	N/A
Passenger	409 N	112 N

<u>Head Injury Criteria¹</u>			
	<u>HIC</u>	<u>Time t₁</u>	<u>Time t₂</u>
Driver	363	67.8 ms	101.8 ms
Passenger	78	71.7 ms	107.7 ms

<u>Chest Maximum Resultant Acceleration²</u>			
	<u>Acceleration</u>	<u>Time t₁</u>	<u>Time t₂</u>
Driver	38.2 g	68.7 ms	71.7 ms
Passenger	39.0 g	88.9 ms	91.9 ms

<u>Maximum Chest Deflection</u>	
Driver	39 mm
Passenger	30 mm

¹ As defined in FMVSS No. 208

² Defined as equal to or exceeding 0.003 sec. duration

Table 9 Target Vehicle Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	<u>Driver</u>	<u>Passenger</u>
Head	Airbag	Airbag/headrest
Chest	Airbag	Airbag
Abdomen	None	None
Left knee	Instrument panel	Instrument panel
Right knee	Instrument panel	Instrument panel

Door opening:

	<u>Left</u>	<u>Right</u>
Front	Difficult, need tools	Opened during impact
Rear	Difficult, need tools	Easy

Seat movement:

	<u>Seat back failure</u>	<u>Seat shift</u>
Front	None	None
Rear	None	None

Glazing damage: The entire windshield was destroyed.

Other notable impact effects: The right front door opened during impact.

Table 10 Bullet Vehicle Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	<u>Driver</u>	<u>Passenger</u>
Head	Airbag/head rest	Airbag/door/head rest
Chest	Airbag	Airbag
Abdomen	None	None
Left knee	Instrument panel	Instrument panel
Right knee	Instrument panel	Instrument panel

Door opening:

	<u>Left</u>	<u>Right</u>
Front	Needed tools	Easy
Rear	N/A	N/A

Seat movement:

	<u>Seat back failure</u>	<u>Seat shift</u>
Front	None	None
Rear	NA	NA

Glazing damage: There was damage to the lower driver side portion of the windshield.

Other notable impact effects: None

Section 4.0

Vehicle, Occupant, and Camera Measurements

Target Vehicle 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 dummy's head and chest were restrained by the airbag. The dummy's head and upper torso rotated rearward as the dummy rebounded into the seat back. The driver dummy came to rest seated 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. The dummy's head and chest were restrained by the airbag. The dummy's head and upper torso rotated rearward as the dummy rebounded into the seat back. The dummy's head contacted the head restraint. The passenger dummy came to rest seated in the passenger's seat.

Bullet Vehicle 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 dummy's head and chest were restrained by the airbag. The dummy's head and upper torso rotated rearward as the dummy rebounded into the seat back. The dummy's head contacted the head restraint. The driver dummy came to rest seated 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. The dummy's head and chest were restrained by the airbag. The dummy's head and upper torso rotated rearward as the dummy rebounded into the seat back. The dummy's head contacted the door and then the head restraint. The passenger dummy came to rest seated in the passenger's seat.

Figure 4 Target Vehicle Dummy Measurement Locations for Front Seat Occupants

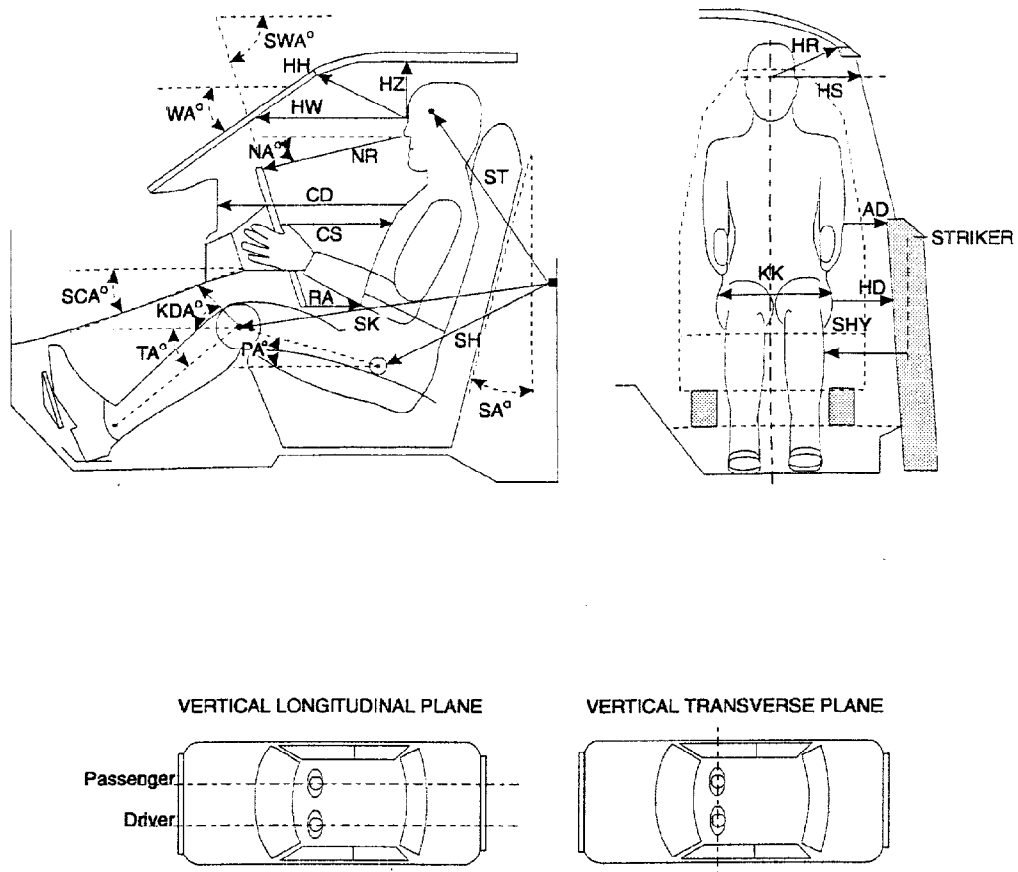


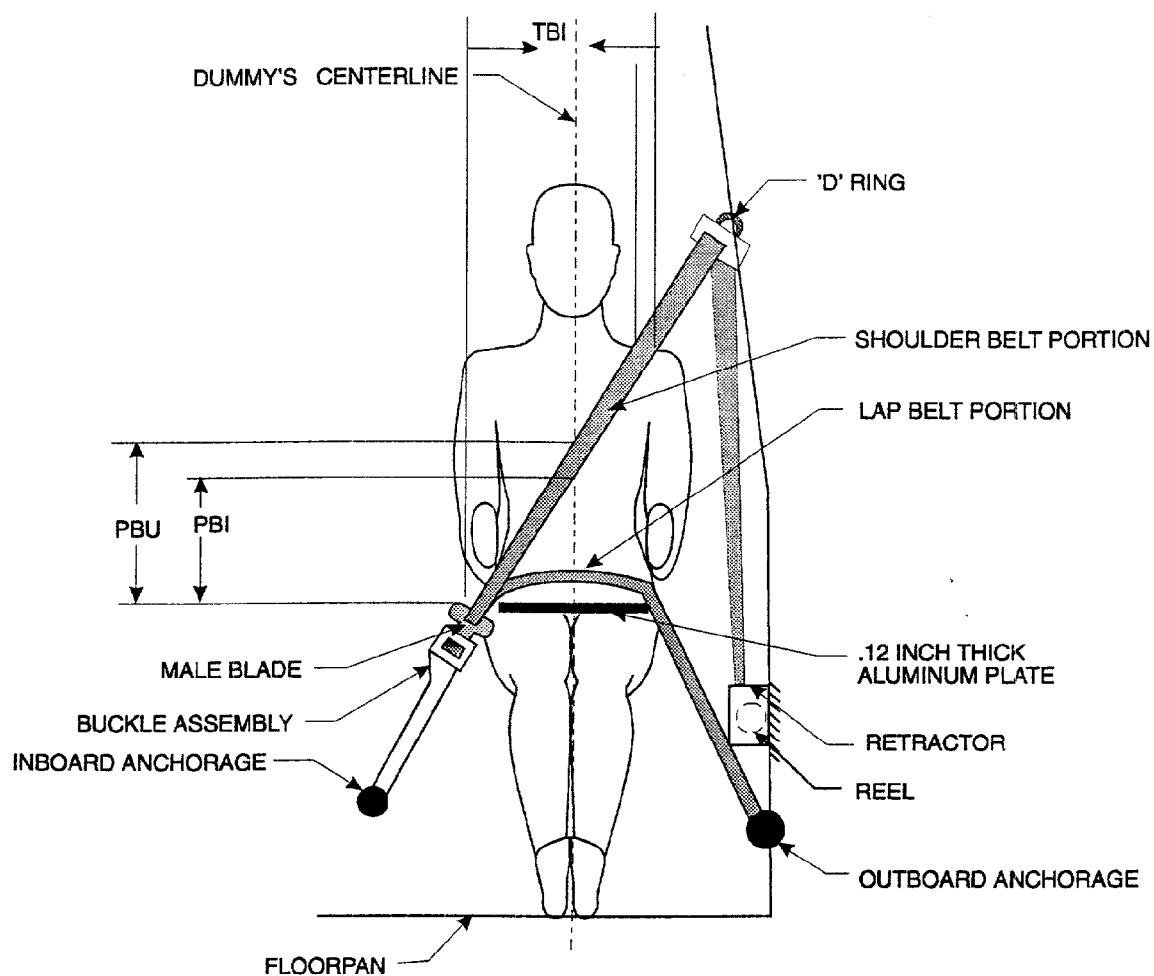
Table 11 Target Vehicle Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #045)	Passenger (Serial #283)
WA	Windshield angle	27°	27°
SWA	Steering wheel angle	65°	NA
SCA	Steering column angle	25°	NA
SA	Seat back angle	20°	15°
HZ	Head to roof	144 mm	182 mm
HH	Head to header	321 mm	267 mm
HW	Head to windshield	674 mm	620 mm
HR	Head to side header	214 mm	248 mm
NR	Nose to rim	441 mm	NA
NA	Nose to rim angle	10°	NA
CD	Chest to dash	580 mm	451 mm
CS	Steering wheel to chest	347 mm	NA
RA	Rim to abdomen	239 mm	NA
KDL	Left knee to dash	222 mm	154 mm
KDR	Right knee to dash	231 mm	147 mm
KDA	Outboard knee to dash angle	28°	36°
PA	Pelvic angle	25°	21°
TA	Tibial angle	32°	45°
KK	Knee to knee	306 mm	211 mm
ST ¹	Striker to head	460 mm	415 mm
	Striker to head angle	-90°	-75°
SK ¹	Striker to knee	530 mm	632 mm
	Striker to knee angle	2°	8°
SH	Striker to H-point	215 mm	335 mm
	Striker to H-point angle	43°	32°
SHY	Striker to H-point (Y dir.)	238 mm	294 mm
HS	Head to side window	300 mm	320 mm
HD	H-point to door	167 mm	136 mm
AD	Arm to door	114 mm	67 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 5 Target Vehicle Seat Belt Positioning Data



	Driver Dummy	Passenger Dummy
PBU - Top surface of aluminum plate to belt upper edge	373 mm	269 mm
PBI - Top surface of aluminum plate to belt lower edge	280 mm	180 mm
TBI - Dummy centerline to intersection of upper torso belt and lap belt	265 mm	265 mm

Figure 6 Bullet Vehicle Dummy Measurement Locations for Front Seat Occupants

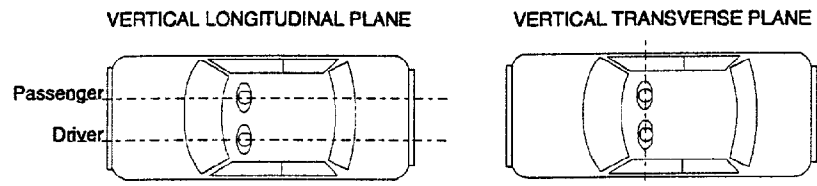
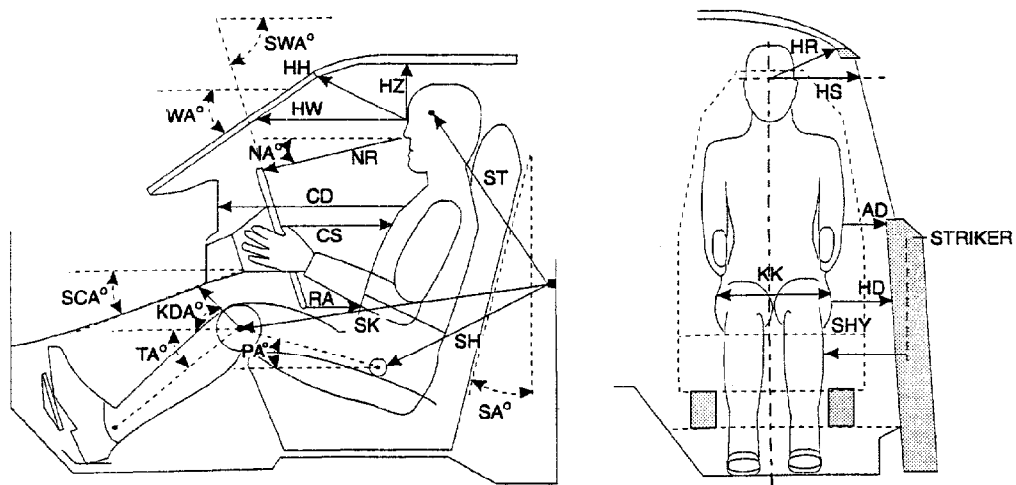


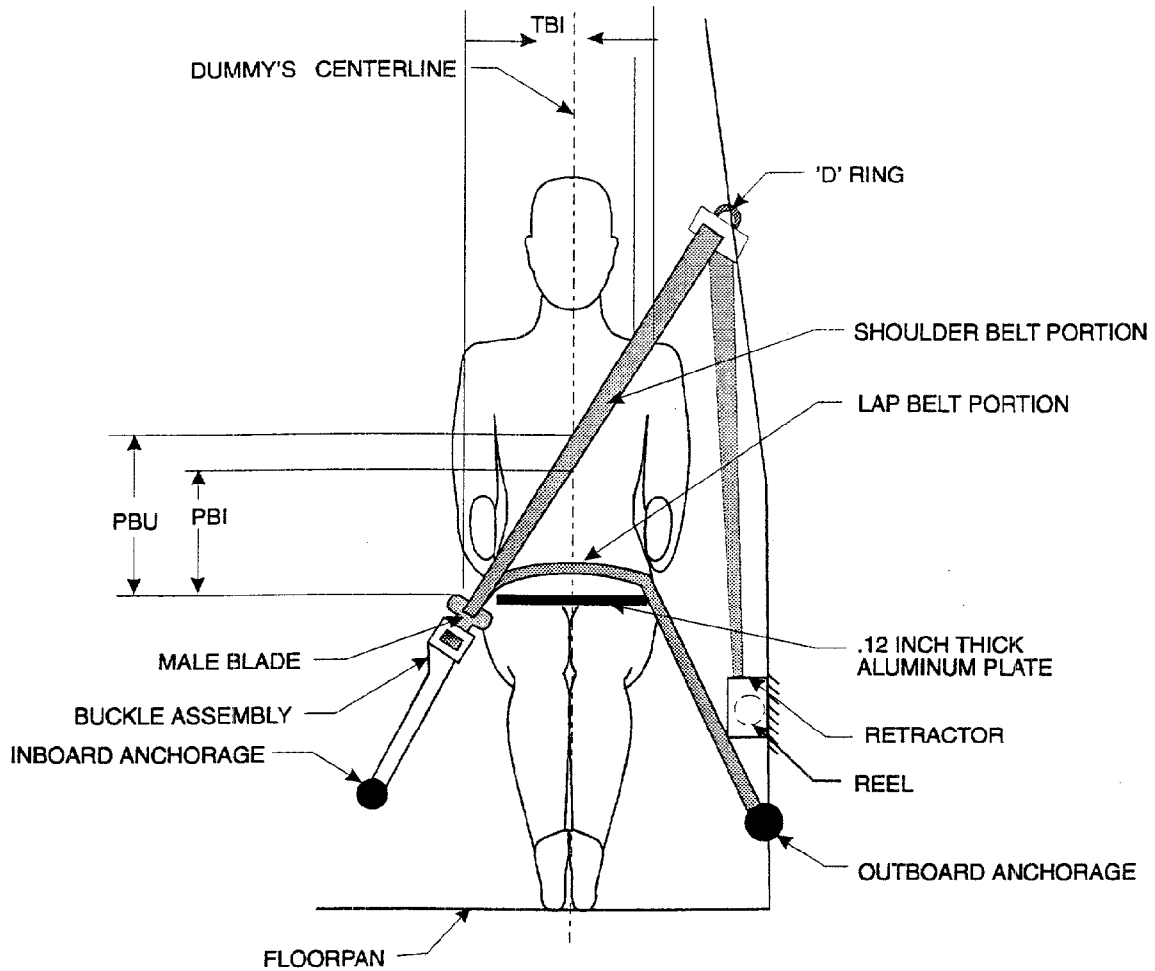
Table 12 Bullet Vehicle Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #168)	Passenger (Serial #289)
WA	Windshield angle	34°	34°
SWA	Steering wheel angle	70°	NA
SCA	Steering column angle	20°	NA
SA	Seat back angle	32°	32°
HZ	Head to roof	187 mm	221 mm
HH	Head to header	424 mm	460 mm
HW	Head to windshield	608 mm	760 mm
HR	Head to side header	237 mm	327 mm
NR	Nose to rim	371 mm	NA
NA	Nose to rim angle	17°	NA
CD	Chest to dash	529 mm	488 mm
CS	Steering wheel to chest	327 mm	NA
RA	Rim to abdomen	158 mm	NA
KDL	Left knee to dash	184 mm	226 mm
KDR	Right knee to dash	179 mm	204 mm
KDA	Outboard knee to dash angle	28°	48°
PA	Pelvic angle	24°	22°
TA	Tibial angle	37°	52°
KK	Knee to knee	297 mm	212 mm
ST ¹	Striker to head	568 mm	490 mm
	Striker to head angle	-69°	-61°
SK	Striker to knee	700 mm	118 mm
	Striker to knee angle	4°	5°
SH	Striker to H-point	334 mm	388 mm
	Striker to H-point angle	23°	20°
SHY	Striker to H-point (Y dir.)	218 mm	230 mm
HS	Head to side window	322 mm	380 mm
HD	H-point to door	127 mm	167 mm
AD	Arm to door	93 mm	65 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 Bullet Vehicle Seat Belt Positioning Data



		Driver Dummy	Passenger Dummy
PBU	- Top surface of aluminum plate to belt upper edge	382 mm	275 mm
PBI	- Top surface of aluminum plate to belt lower edge	297 mm	175 mm
TBI	- Dummy centerline to intersection of upper torso belt and lap belt	240 mm	180 mm

Vehicle: 1997 Honda Accord

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Figure 9 Target Vehicle Pre-test and Post-test Measurement Points

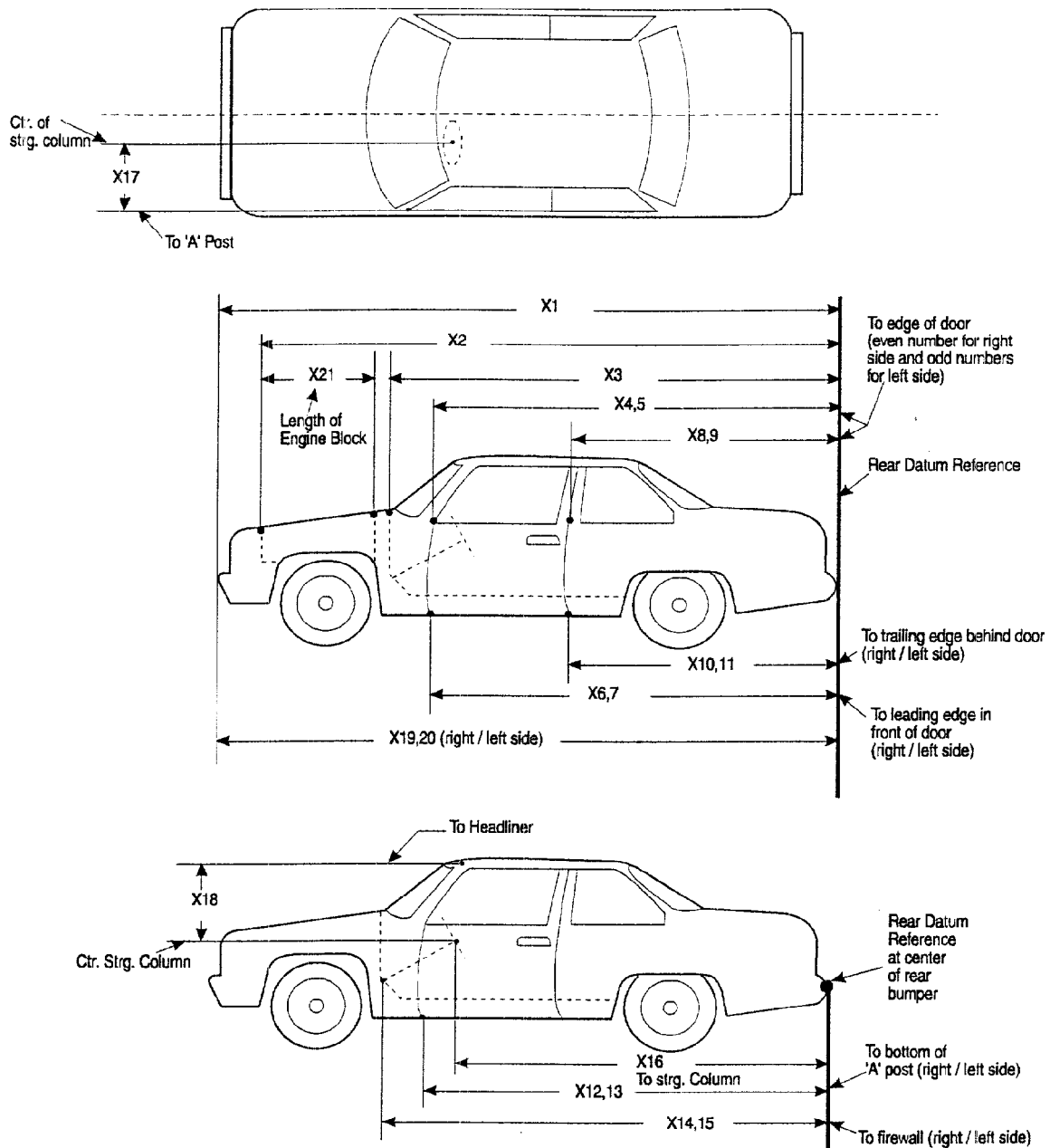


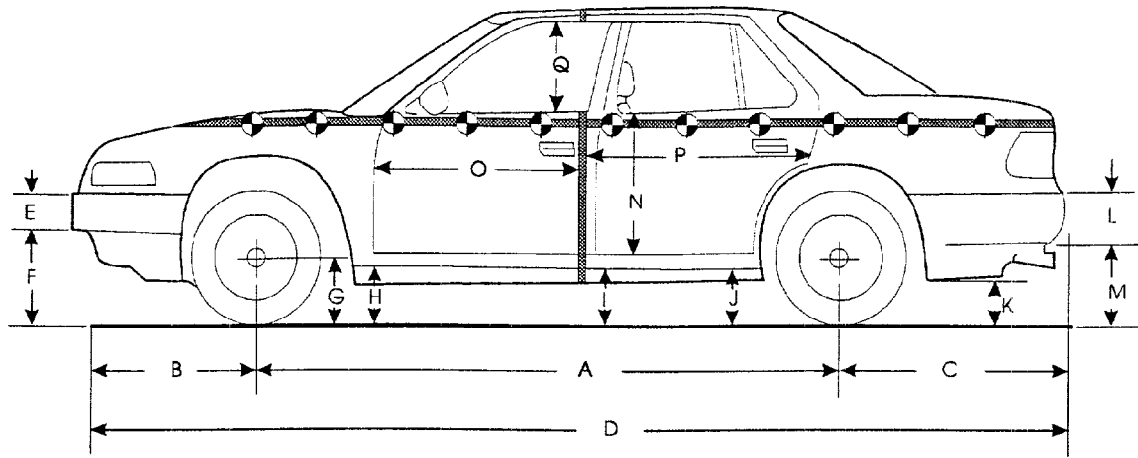
Table 13 Target Vehicle Measurements

Vehicle Make/Model: Honda Accord

Test Number: 980619

No.	Type of measurement	Pre-test	Post-test	Difference
X1	Total length of vehicle at centerline	4810 mm	4666 mm	144 mm
X2	Rear surface of vehicle to front of engine block	4108 mm	3926 mm	182 mm
X3	Rear surface of vehicle to firewall	3680 mm	3556 mm	124 mm
X4	Rear surface of vehicle to upper leading edge of right door	3327 mm	3325 mm	2 mm
X5	Rear surface of vehicle to upper leading edge of left door	3322 mm	3145 mm	177 mm
X6	Rear surface of vehicle to lower leading edge of right door	3345 mm	3316 mm	29 mm
X7	Rear surface of vehicle to lower leading edge of left door	3337 mm	3170 mm	167 mm
X8	Rear surface of vehicle to upper trailing edge of right door	2277 mm	2274 mm	3 mm
X9	Rear surface of vehicle to upper trailing edge of left door	2277 mm	2105 mm	172 mm
X10	Rear surface of vehicle to lower trailing edge of right door	2290 mm	2273 mm	17 mm
X11	Rear surface of vehicle to lower trailing edge of left door	2285 mm	2176 mm	109 mm
X12	Rear surface of vehicle to bottom of "A" post on right side	3244 mm	3235 mm	9 mm
X13	Rear surface of vehicle to bottom of "A" post on left side	3260 mm	3030 mm	230 mm
X14	Rear surface of vehicle to firewall - right side	3523 mm	3563 mm	-40 mm
X15	Rear surface of vehicle to firewall - left side	3500 mm	3461 mm	39 mm
X16	Rear surface of vehicle to steering wheel center	2825 mm	2705 mm	120 mm
X17	Center of steering column to "A" post	297 mm	290 mm	7 mm
X18	Center of steering column to headliner	480 mm	493 mm	-13 mm
X19	Rear surface of vehicle to right side of front bumper	4615 mm	4685 mm	-70 mm
X20	Rear surface of vehicle to left side of front bumper	4614 mm	4225 mm	389 mm
X21	Length of engine block	420 mm	420 mm	0 mm

Figure 10 Target Vehicle Side Measurements



LEFT SIDE VIEW

Note: All dimensions are in millimeters with tolerance of ± 3 mm

	Pre-Test (as delivered)	Pre-Test (as tested)	Post-Test (as tested)	Change
A	2730	2730	2526	204
B	935	935	741	194
C	1010	1010	N/A	N/A
D	4675	4675	N/A	N/A
E	165	165	169	-4
F	212	203	310	-107
G	277	280	258	22
H	189	250	133	117
I	195	245	136	109
J1	192	156	47	109
J2	180	152	115	37
K	297	N/A	N/A	N/A
L	163	163	N/A	N/A
M	297	N/A	N/A	N/A
N	678	678	658	20
O	N/A	N/A	999	N/A
P	N/A	N/A	942	N/A
Q	417	417	382	35
R	4446	4446	N/A	N/A
S	4446	4446	N/A	N/A
T	1090	1090	1096	-6

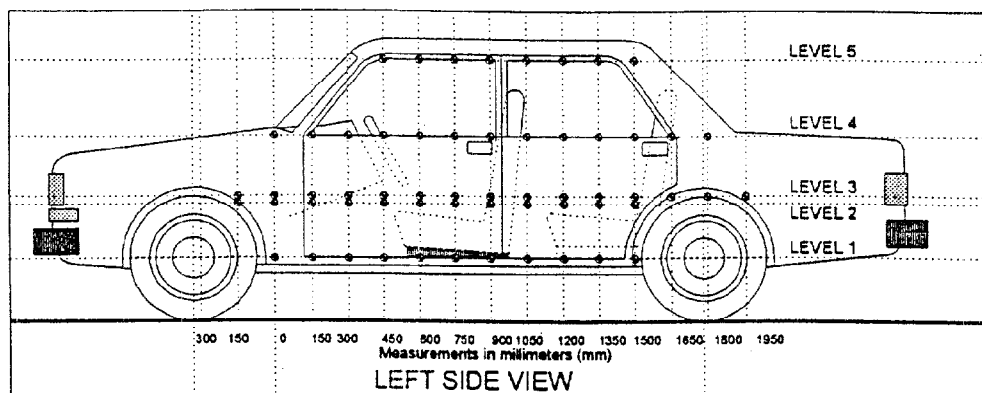
D = Length at centerline
T = Width at B-pillar

E&L = Bumper Thickness
J1 = To Pinch Weld

R = Right Side Length
J2 = To Sill

S = Left Side Length

Figure 10 Target Vehicle Side Measurements, Cont'd.



LEVEL 5 - WINDOW TOP

LEVEL 4 - WINDOW SILL

LEVEL 3 - MID-DOOR

LEVEL 2 - OCCUPANT H-POINT

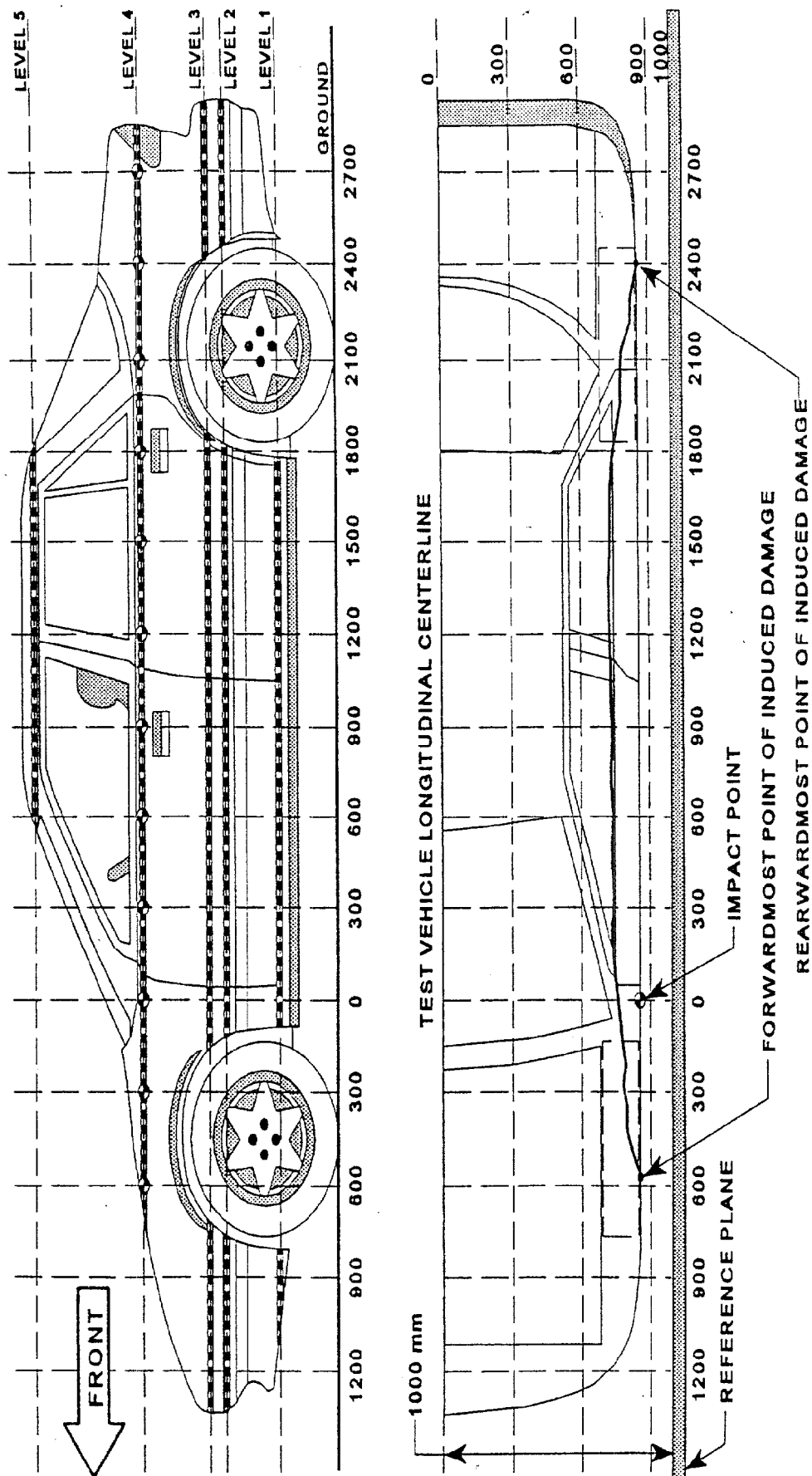
LEVEL 1 - AXLE CENTERLINE HEIGHT OR SILL TOP HEIGHT

MEASUREMENTS ARE TAKEN WHEN THE VEHICLE IS IN THE "AS TESTED" CONFIGURATION

Measurements along the vertical 750 mm line shown above:

Level 5 @ Window Top	=	1345	millimeters
Level 4 @ Window Sill	=	832	millimeters
Level 3 @ Mid Door	=	600	millimeters
Level 2 @ Occupant H-Point	=	520	millimeters
Level 1 @ Axle Centerline Height	=	270	millimeters
(or Sill Top Height)			

Figure 11 Target Vehicle Exterior Crush Profile Measurement Points



NOTE: All measurements are in millimeters (mm)

Table 14 Target Vehicle Exterior Crush Profiles - All Levels

Location	Height	(mm) From Impact Point														
		-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750		
Level 1 Side Sill	Pre	404	372	X	X	X	X	X	383	390	389	385	385	386		
	Post	466	418	X	X	X	X	X	441	477	462	466	456	448		
	Crush	-62	-46	X	X	X	X	X	-58	-87	-73	-81	-71	-62		
Level 2 H-Point	Pre	386	360	349	X	X	X	X	335	330	330	321	323	321		
	Post	532	528	535	X	X	X	X	500	X	536	574	546	490		
	Crush	-146	-168	-186	X	X	X	X	-165	X	-206	-253	-223	-169		
Level 3 Mid-Door	Pre	X	392	360	X	X	X	333	336	342	343	339	342	338		
	Post	X	795	761	X	X	X	589	513	530	562	557	535	503		
	Crush	X	-403	-401	X	X	X	-256	-177	-188	-219	-218	-193	-165		
Level 4 Window Sill	Pre	502	474	451	435	410	405	400	393	392	396	388	390	383		
	Post	X	X	679	626	587	588	526	505	507	500	482	463	432		
	Crush	X	X	-228	-191	-177	-183	-126	-112	-115	-104	-94	-73	-49		
Level 5 Window Top	Pre	X	X	X	X	X	X	X	X	X	X	X	X	685		
	Post	X	X	X	X	X	X	X	X	X	X	X	X	814		
	Crush	X	X	X	X	X	X	X	X	X	X	X	X	-129		

*Column readings are front to rear from left to right.

**Reference plane is parallel to and 1200 mm from the vehicle's longitudinal centerline.

All measurements are in millimeters

Table 14 Target Vehicle Exterior Crush Profiles - All Levels, Cont'd.

Location	Height	(mm) From Impact Point													
		900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	
Level 1 Side Sill	Pre	389	391	389	391	395	396	400	X	X	X	X	X	402	
	Post	436	437	440	442	442	442	444	X	X	X	X	X	X	
	Crush	47	46	51	51	47	46	44	X	X	X	X	X	X	
Level 2 H-Point	Pre	323	328	321	330	333	333	333	345	X	X	X	X	374	
	Post	416	350	383	377	373	368	365	382	X	X	X	X	X	
	Crush	93	22	62	47	40	35	32	37	X	X	X	X	X	
Level 3 Mid-Door	Pre	336	342	333	338	342	342	345	342	388	369	X	362	379	
	Post	455	367	398	401	387	383	378	366	X	X	X	X	X	
	Crush	119	25	65	63	45	41	33	24	X	X	X	X	X	
Level 4 Window Sill	Pre	383	387	379	379	381	375	383	373	375	400	395	405	418	
	Post	425	382	515	472	459	445	440	427	416	418	420	425	436	
	Crush	42	5	136	93	78	70	57	49	41	18	25	20	18	
Level 5 Window Top	Pre	680	682	678	677	690	694	701	701	X	X	X	X	X	
	Post	815	851	820	810	803	803	817	792	X	X	X	X	X	
	Crush	135	169	142	133	113	109	46	91	X	X	X	X	X	

*Column readings are front to rear from left to right.

**Reference plane is parallel to and 1200 mm from the vehicle's longitudinal centerline

All measurements are in millimeters

Vehicle: 1998 Chevrolet S10

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Figure 13 Bullet Vehicle Pre-test and Post-test Measurement Points

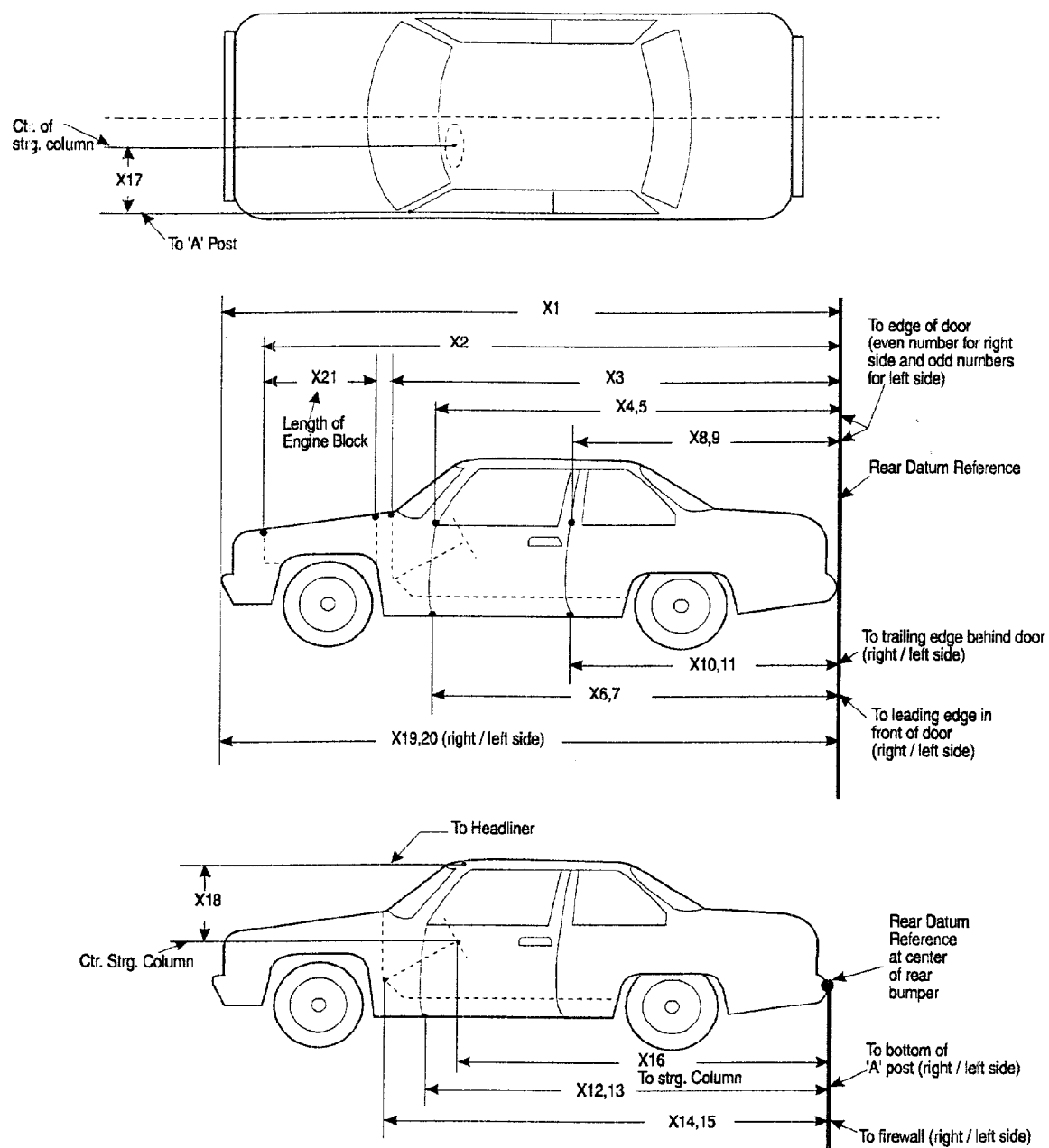


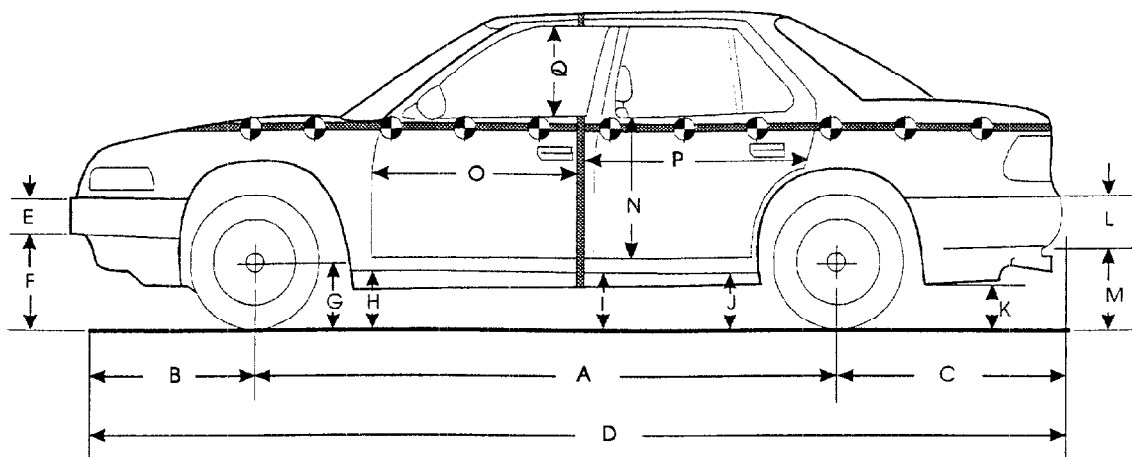
Table 15 Bullet Vehicle Measurements

Vehicle Make/Model: Chevrolet S10

Test Number: 980619

No.	Type of measurement	Pre-test	Post-test	Difference
X1	Total length of vehicle at centerline	4818 mm	4081 mm	737 mm
X2	Rear surface of vehicle to front of engine block	4174 mm	3949 mm	225 mm
X3	Rear surface of vehicle to firewall	3710 mm	3351 mm	359 mm
X4	Rear surface of vehicle to upper leading edge of right door	3423 mm	3374 mm	49 mm
X5	Rear surface of vehicle to upper leading edge of left door	3423 mm	3309 mm	114 mm
X6	Rear surface of vehicle to lower leading edge of right door	3397 mm	3340 mm	57 mm
X7	Rear surface of vehicle to lower leading edge of left door	3386 mm	3279 mm	107 mm
X8	Rear surface of vehicle to upper trailing edge of right door	2319 mm	2263 mm	56 mm
X9	Rear surface of vehicle to upper trailing edge of left door	2342 mm	2208 mm	134 mm
X10	Rear surface of vehicle to lower trailing edge of right door	2319 mm	2266 mm	53 mm
X11	Rear surface of vehicle to lower trailing edge of left door	2315 mm	2194 mm	121 mm
X12	Rear surface of vehicle to bottom of "A" post on right side	3370 mm	3311 mm	59 mm
X13	Rear surface of vehicle to bottom of "A" post on left side	3370 mm	3222 mm	148 mm
X14	Rear surface of vehicle to firewall - right side	3619 mm	3503 mm	116 mm
X15	Rear surface of vehicle to firewall - left side	3654 mm	3467 mm	187 mm
X16	Rear surface of vehicle to steering wheel center	2928 mm	2855 mm	73 mm
X17	Center of steering column to "A" post	290 mm	320 mm	-30 mm
X18	Center of steering column to headliner	495 mm	460 mm	35 mm
X19	Rear surface of vehicle to right side of front bumper	4647 mm	4520 mm	127 mm
X20	Rear surface of vehicle to left side of front bumper	4640 mm	3713 mm	927 mm
X21	Length of engine block	535 mm	535 mm	0 mm

Figure 14 Bullet Vehicle Side Measurements



LEFT SIDE VIEW

Note: All dimensions are in millimeters with tolerance of ± 3 mm

	Pre-Test (as delivered)	Pre-Test (as tested)	Post-Test (as tested)	Change
A	2750	2750	2340	410
B	535	535	585	-50
C	1533	1533	970	563
D	4818	4818	4081	737
E	130	130	135	-5
F	243	310	460	-150
G	249	325	205	120
H	332	360	264	96
I	333	350	266	84
J1	N/A	304	223	81
J2	333	293	210	83
K	349	300	288	12
L	185	185	N/A	N/A
M	408	N/A	N/A	N/A
N	N/A	N/A	N/A	N/A
O	1176	1176	N/A	N/A
P	N/A	N/A	N/A	N/A
Q	435	435	437	-2
R	4497	4497	4520	-23
S	4490	4490	3713	777
T	1425	1425	1380	45

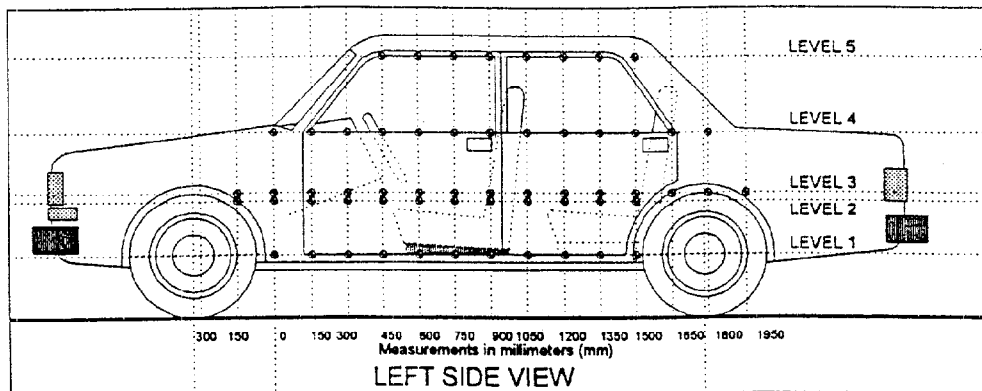
D = Length at centerline
T = Width at B-pillar

E&L = Bumper Thickness
J1 = To Pinch Weld

R = Right Side Length
J2 = To Sill

S = Left Side Length

Figure 14 Bullet Vehicle Side Measurements, Cont'd.



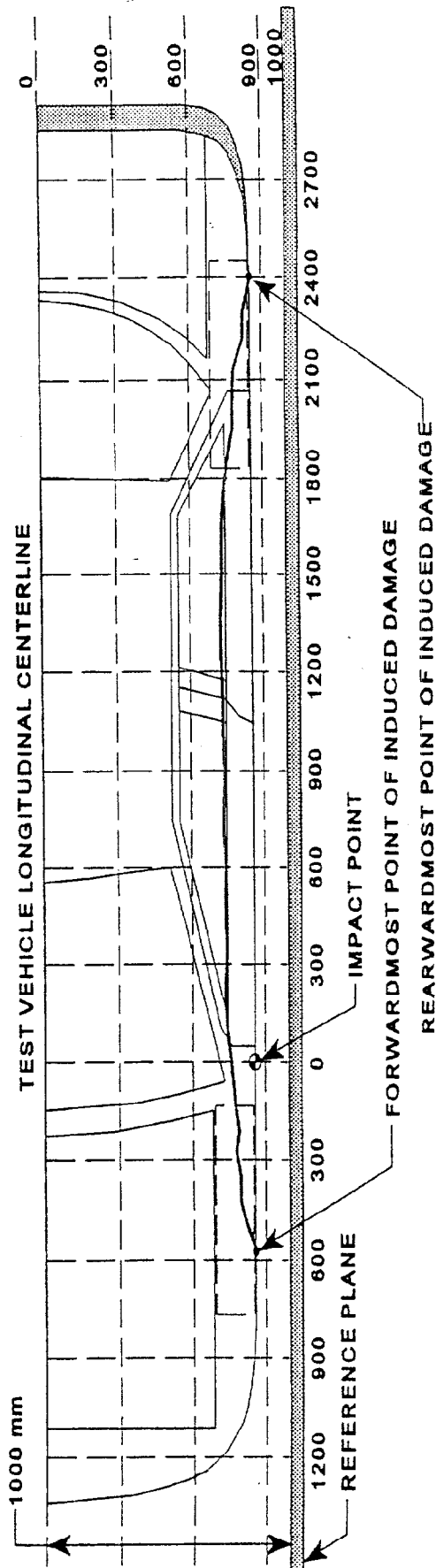
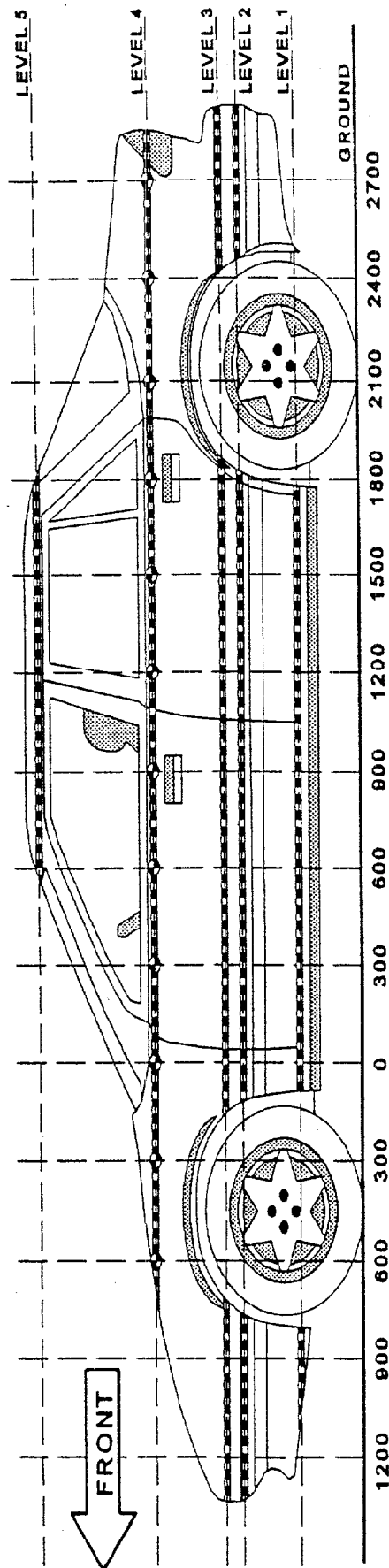
- LEVEL 5 - WINDOW TOP
- LEVEL 4 - WINDOW SILL
- LEVEL 3 - MID-DOOR
- LEVEL 2 - OCCUPANT H-POINT
- LEVEL 1 - AXLE CENTERLINE HEIGHT OR SILL TOP HEIGHT

MEASUREMENTS ARE TAKEN WHEN THE VEHICLE IS IN THE "AS TESTED" CONFIGURATION

Measurements along the vertical 750 mm line shown above:

Level 5 @ Window Top	=	<u>1555</u>	millimeters
Level 4 @ Window Sill	=	<u>1015</u>	millimeters
Level 3 @ Mid Door	=	<u>734</u>	millimeters
Level 2 @ Occupant H-Point	=	<u>715</u>	millimeters
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>351</u>	millimeters

Figure 15 Bullet Vehicle Exterior Crush Profile Measurement Points



NOTE: All measurements are in millimeters (mm)

Table 16 Bullet Vehicle Exterior Crush Profiles - All Levels

Location	Height	(mm) From Impact Point														
		-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750		
Level 1 Side Sill	Pre	470	432	X	X	X	X	X	383	456	453	452	451	449		
	Post	X	X	X	X	X	X	X	441	567	540	540	540	538		
	Crush	X	X	X	X	X	X	X	-58	-111	-87	-88	-89	-89		
Level 2 H-Point	Pre	484	440	409	X	X	X	X	335	393	392	391	391	386		
	Post	X	X	327	X	X	X	X	500	442	436	441	442	437		
	Crush	X	X	82	X	X	X	X	-165	-49	-44	-50	-51	-51		
Level 3 Mid-Door	Pre	489	442	400	X	X	X	378	336	391	391	391	387	382		
	Post	X	X	317	X	X	X	457	513	440	430	433	435	431		
	Crush	X	X	83	X	X	X	-79	-177	-49	-39	-42	-48	-49		
Level 4 Window Sill	Pre	X	520	481	461	451	431	418	393	402	405	399	400	392		
	Post	X	292	250	260	284	353	350	505	415	405	404	400	390		
	Crush	X	228	231	201	167	78	68	-112	-13	0	-5	0	2		
Level 5 Window Top	Pre	X	X	X	X	X	X	X	X	X	X	X	669	662		
	Post	X	X	X	X	X	X	X	X	X	X	X	677	686		
	Crush	X	X	X	X	X	X	X	X	X	X	X	22	-24		

*Column readings are front to rear from left to right.

**Reference plane is parallel to and 1200 mm from the vehicle's longitudinal centerline.

All measurements are in millimeters

Table 16 Bullet Vehicle Exterior Crush Profiles - All Levels, Cont'd.

Location	Height	(mm) From Impact Point														
		900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700		
Level 1 Side Sill	351	Pre	449	444	444	442	449	449	453	X	X	X	X	X	X	
		Post	538	538	539	441	407	405	418	X	X	X	X	X	X	
		Crush	-89	-94	-95	1	42	44	35	X	X	X	X	X	X	
Level 2 H-Point	715	Pre	385	382	381	381	386	385	385	375	X	X	X	X	385	
		Post	440	440	433	469	323	314	324	314	X	X	X	X	358	
		Crush	-55	-58	-52	-88	63	71	61	61	X	X	X	X	27	
Level 3 Mid-Door	734	Pre	383	381	378	379	386	384	381	389	X	X	X	X	394	
		Post	435	430	429	463	319	310	320	323	X	X	X	X	357	
		Crush	-52	-49	-51	-84	67	74	61	66	60	X	X	X	37	
Level 4 Window Sill	1015	Pre	392	392	384	392	395	392	391	394	398	402	402	402	402	
		Post	390	385	384	457	310	297	310	310	318	330	338	347	347	
		Crush	2	7	0	-65	85	95	81	94	80	72	64	55		
Level 5 Window Top	1555	Pre	662	669	662	X	X	X	X	701	X	X	X	X	X	
		Post	680	695	695	X	X	X	X	792	X	X	X	X	X	
		Crush	-18	-26	-33	X	X	X	X	-91	X	X	X	X	X	

*Column readings are front to rear from left to right.

**Reference plane is parallel to and 1200 mm from the vehicle's longitudinal centerline.

All measurements are in millimeters

Figure 16 Camera Positions

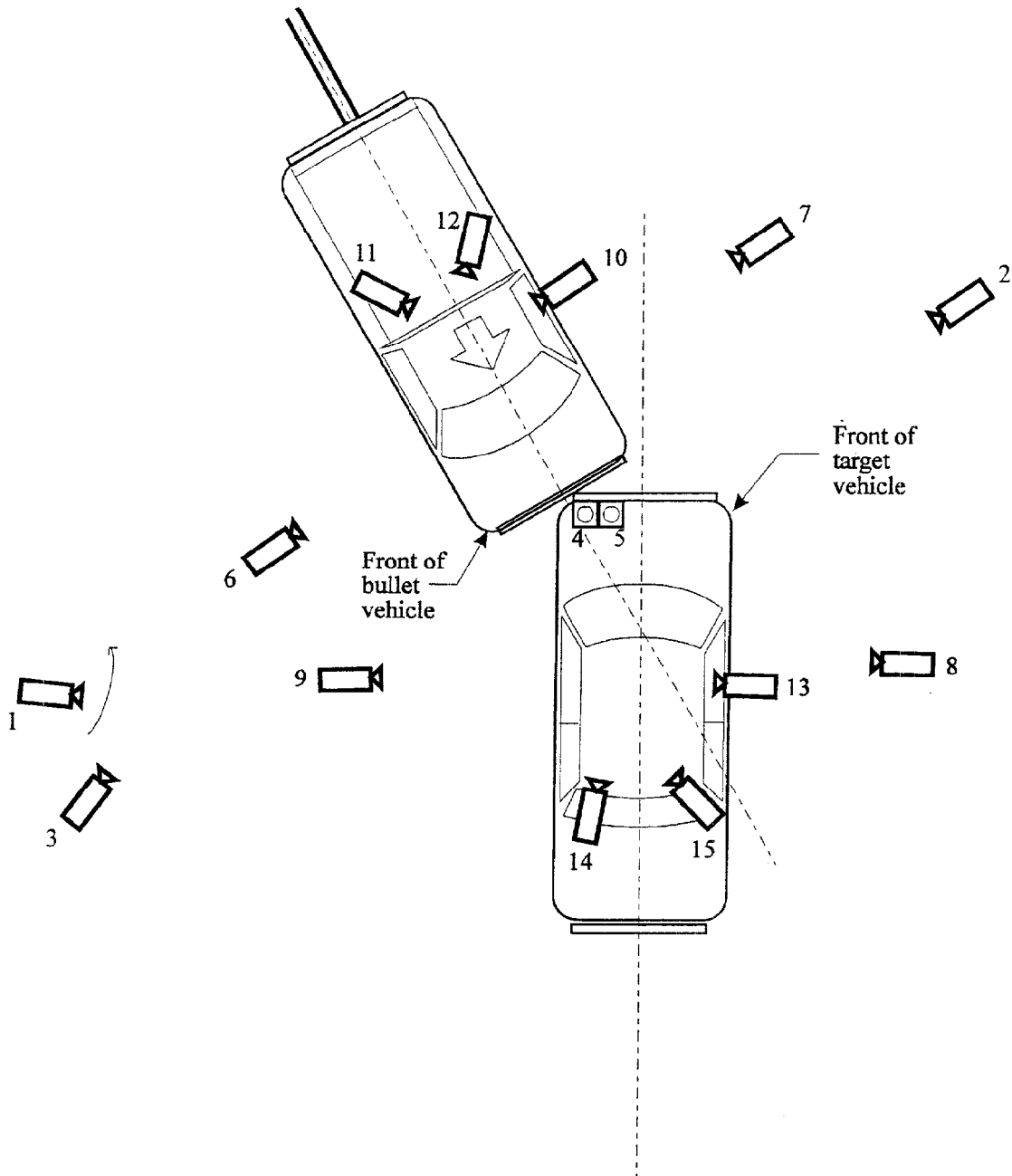


Table 17 Camera Information

Camera Number	Location	Type	Lens (mm)	Speed (fps)	Purpose of camera data
1	Panning	Bolex	16	24	Vehicle dynamics
2	Right wide	Photosonic	13	1000	Vehicle dynamics
3	Left wide	Photosonic	13	995	Vehicle dynamics
4	Overhead wide	Photosonic	8	992	Vehicle crush
5	Overhead tight	Photosonic	25	992	Impact point
6	Bullet vehicle right medium tight	Stalex	25	955	Dummy kinematics
7	Bullet vehicle left medium tight	Stalex	25	1022	Dummy kinematics
8	Target vehicle right medium tight	Stalex	25	1027	Dummy kinematics
9	Target vehicle left medium tight	Stalex	25	1022	Dummy kinematics
10	Onboard bullet vehicle (side)	Photosonic	8	1005	Dummy kinematics
11	Onboard bullet vehicle - driver	Photosonic	8	998	Dummy kinematics
12	Onboard bullet vehicle - passenger	Photosonic	8	1000	Dummy kinematics
13	Onboard target vehicle (side)	Photosonic	8	1002	Dummy kinematics
14	Onboard target vehicle - driver	Photosonic	8	1002	Dummy kinematics
15	Onboard target vehicle - passenger	Photosonic	8	995	Dummy kinematics

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.

Appendix A

Photographs



Figure A-1 Pre-Test Target Vehicle Front View



Figure A-2 Post-Test Target Vehicle Front View



Figure A-3 Post-Test Target Vehicle Left Front Three-Quarter View

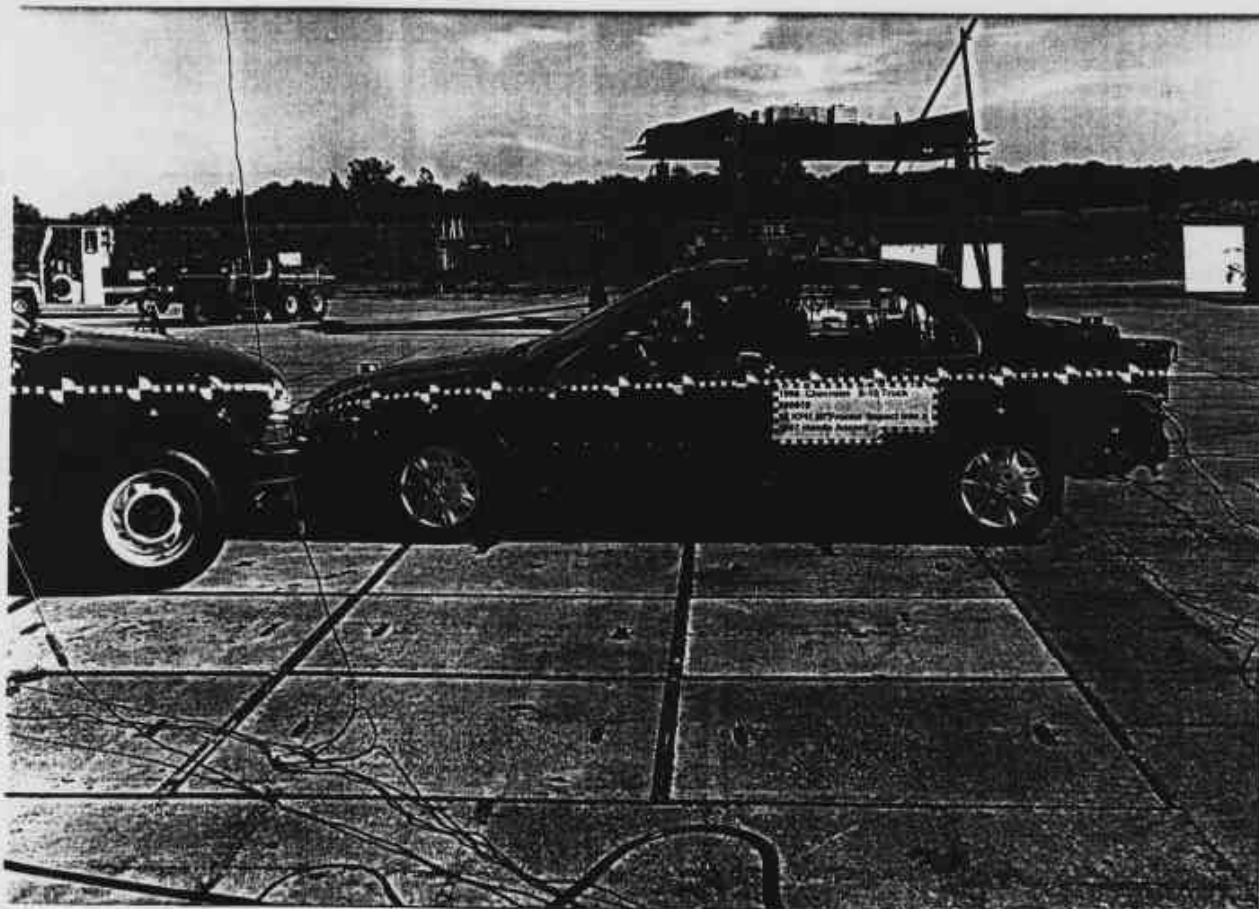


Figure A-4 Pre-Test Target Vehicle Left Side View

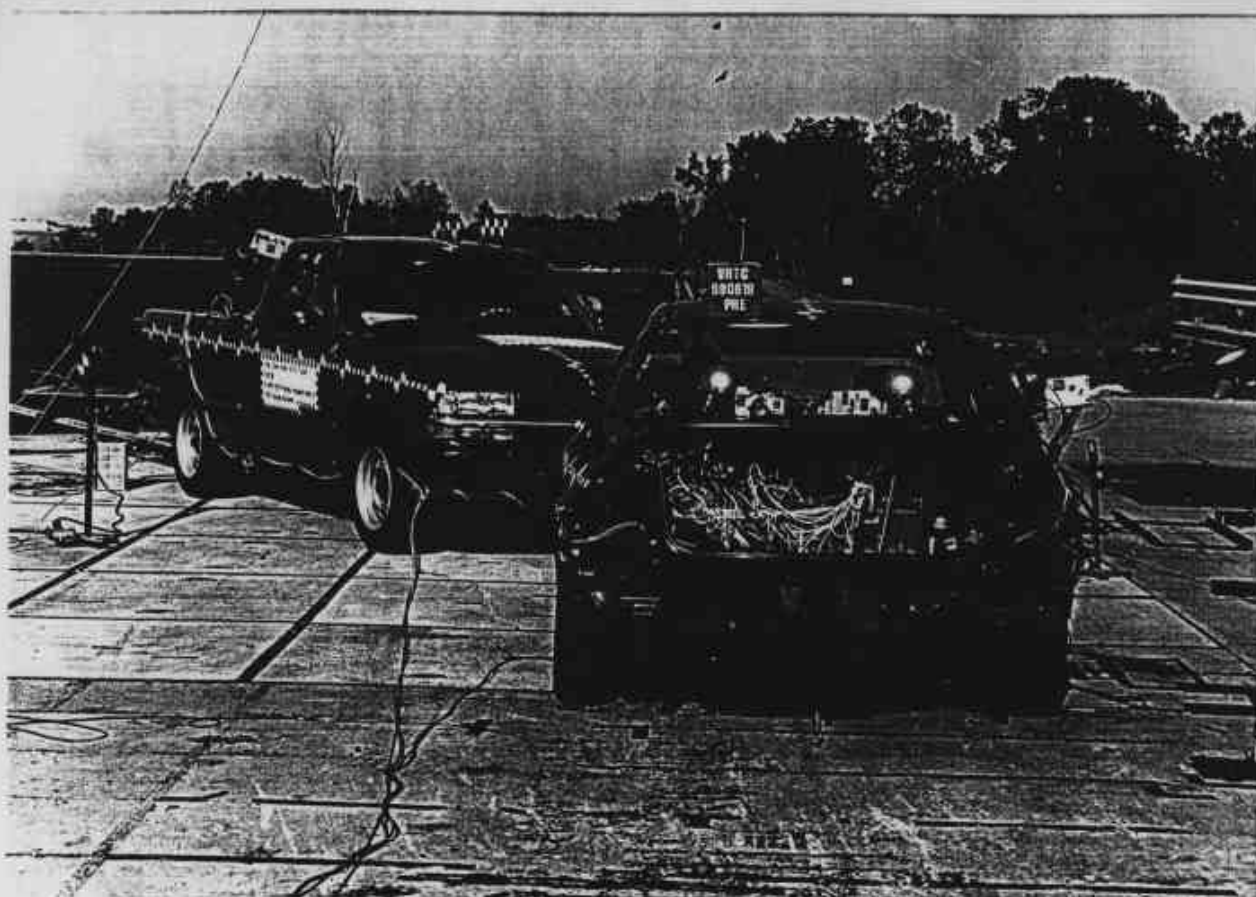


Figure A-5 Pre-Test Target Vehicle Rear View



Figure A-6 Post-Test Target Vehicle Rear View

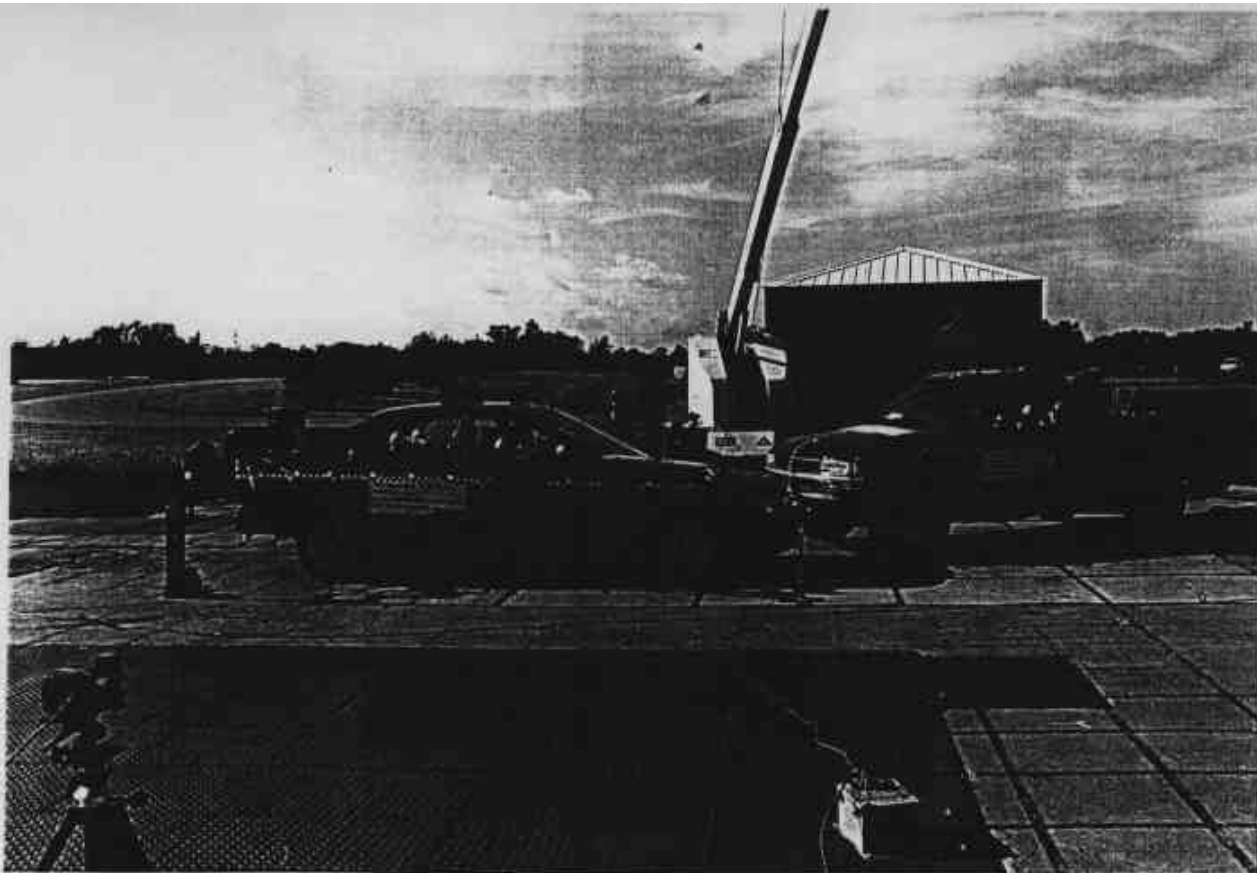


Figure A-7 Pre-Test Target Vehicle Right Side View



Figure A-8 Post-Test Target Vehicle Right Side View

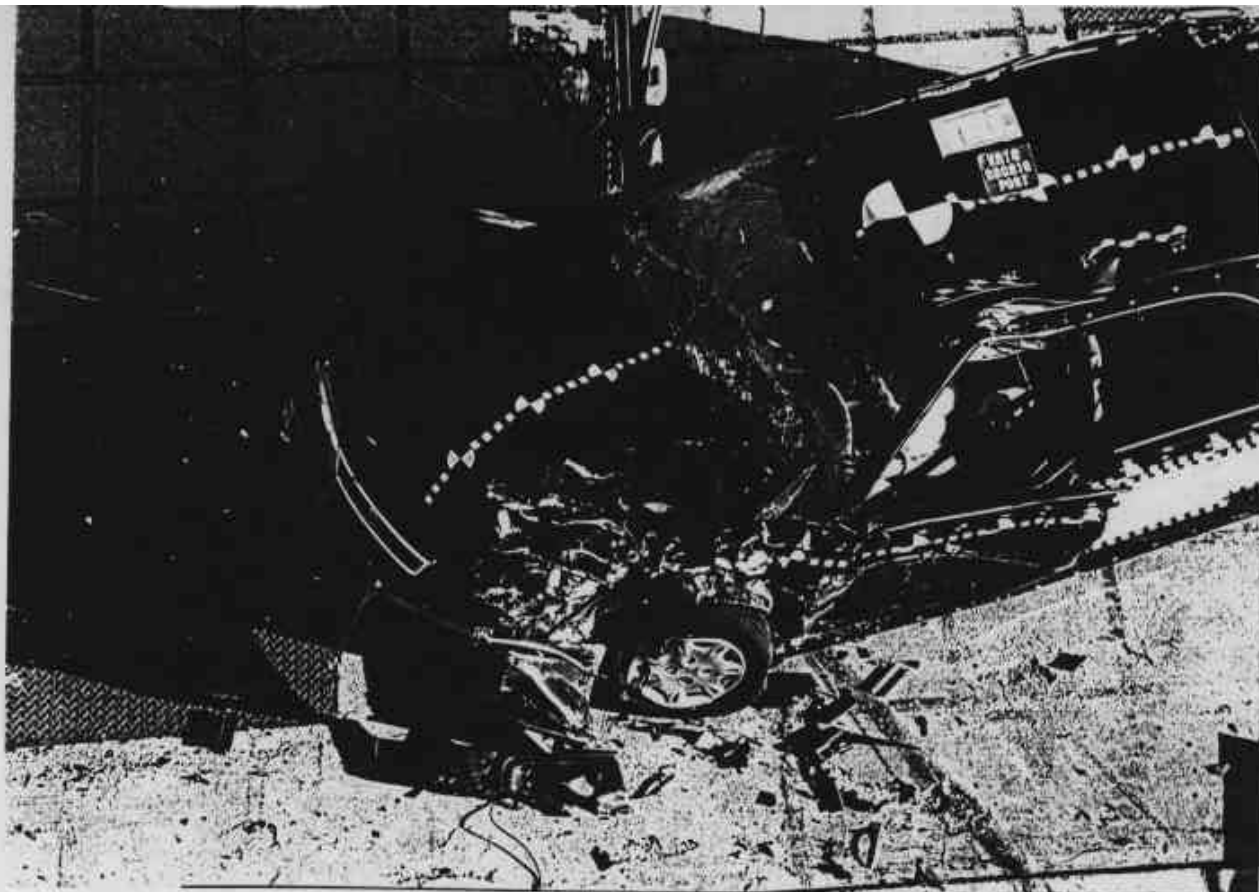


Figure A-9 Post-Test Target Vehicle Overhead View



Figure A-10 Pre-Test Target Vehicle Engine Compartment View

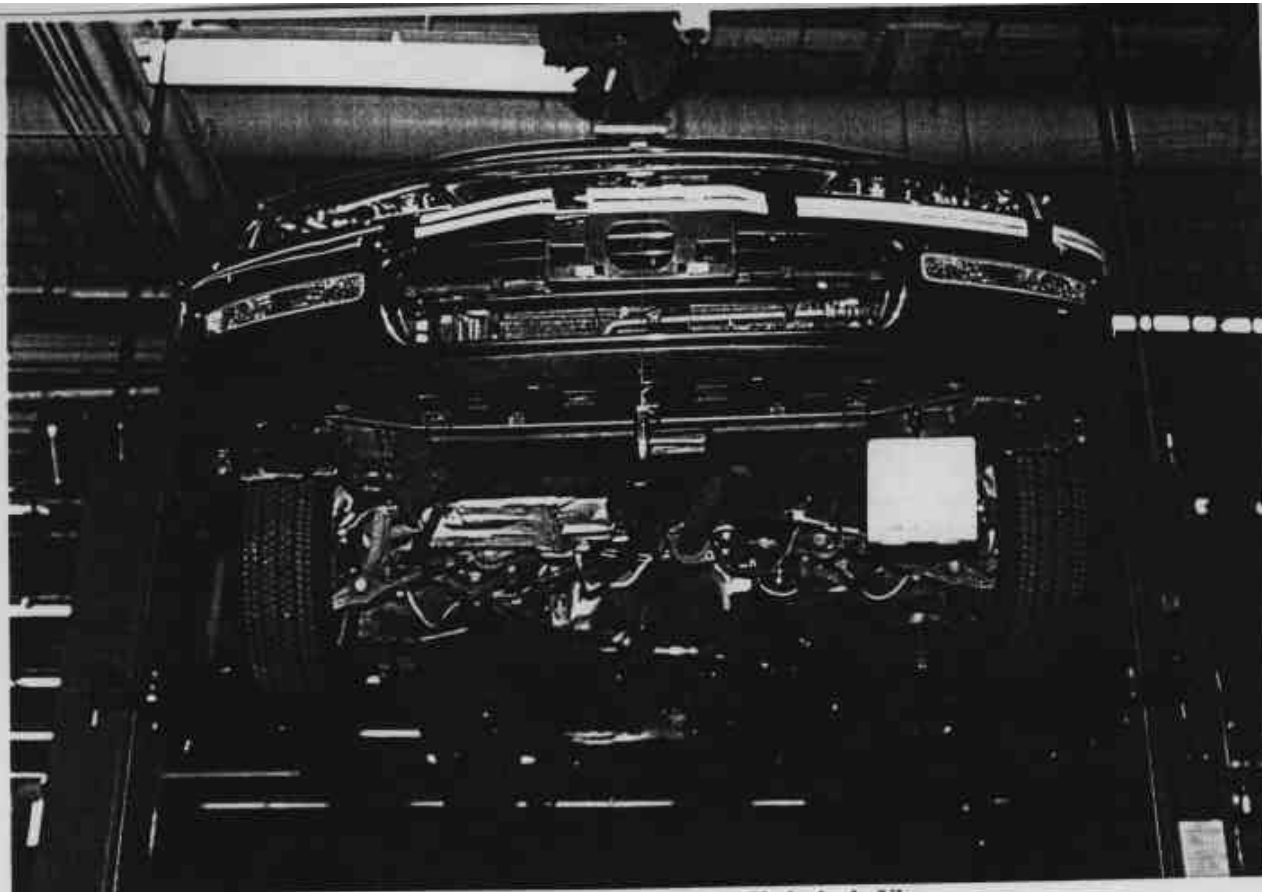


Figure A-11 Pre-Test Target Vehicle Front Underbody View

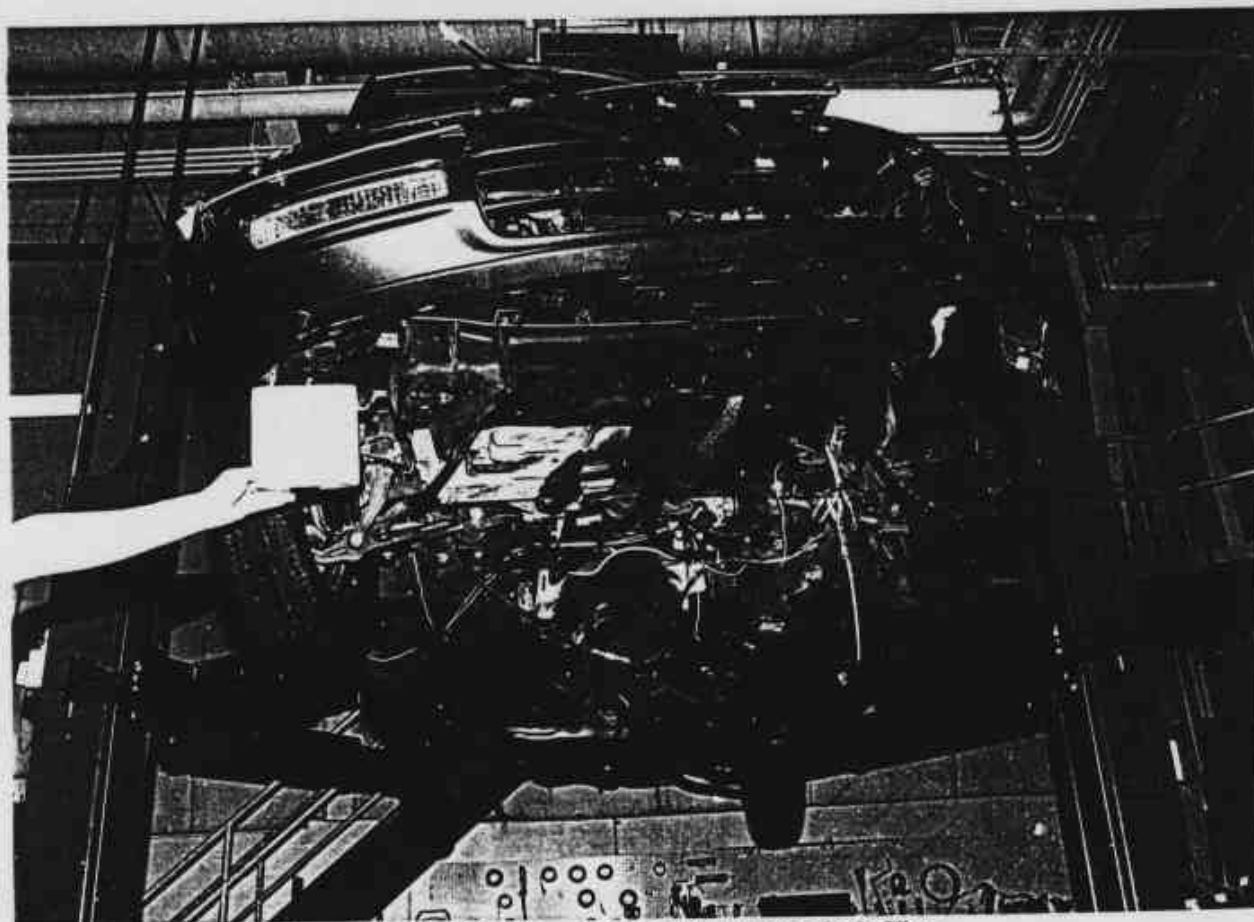


Figure A-12 Post-Test Target Vehicle Front Underbody View

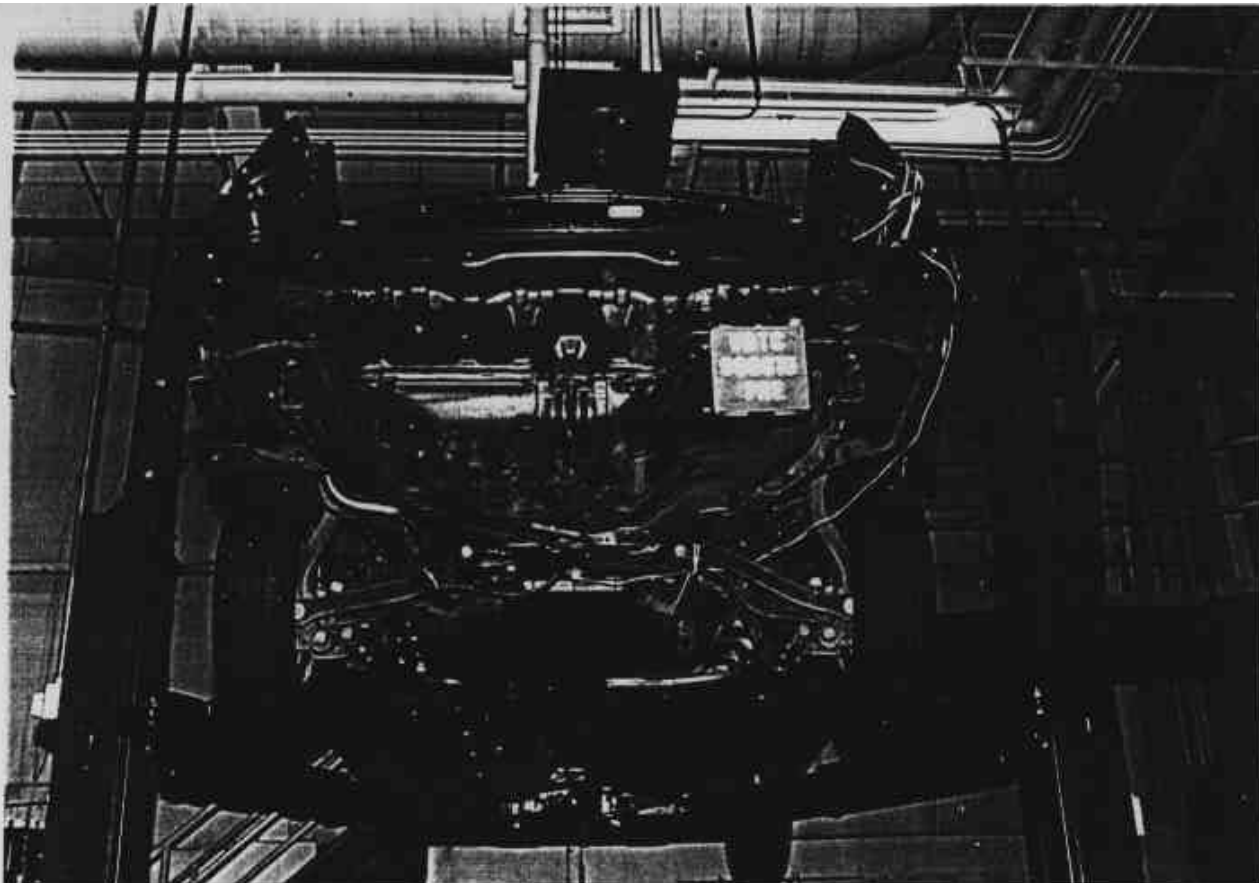


Figure A-13 Pre-Test Target Vehicle Rear Underbody View



Figure A-14 Post-Test Target Vehicle Rear Underbody View



Figure A-15 Pre-Test Bullet Vehicle Front View



Figure A-16 Post-Test Bullet Vehicle Front View



Figure A-17 Post-Test Bullet Vehicle Left Side View



Figure A-18 Post-Test Bullet Vehicle Right Side View



Figure A-19 Pre-Test Bullet Vehicle Rear View

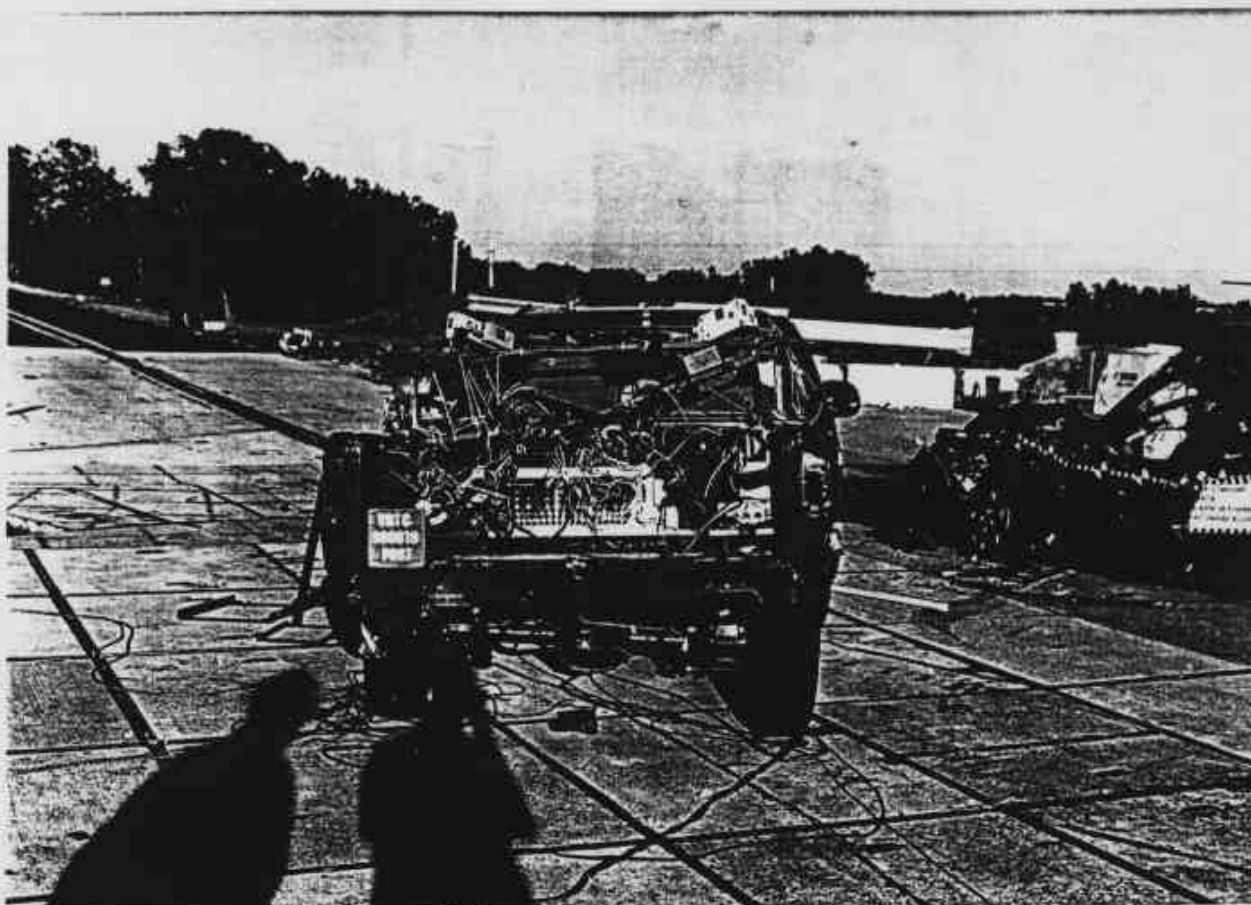


Figure A-20 Post-Test Bullet Vehicle Rear View

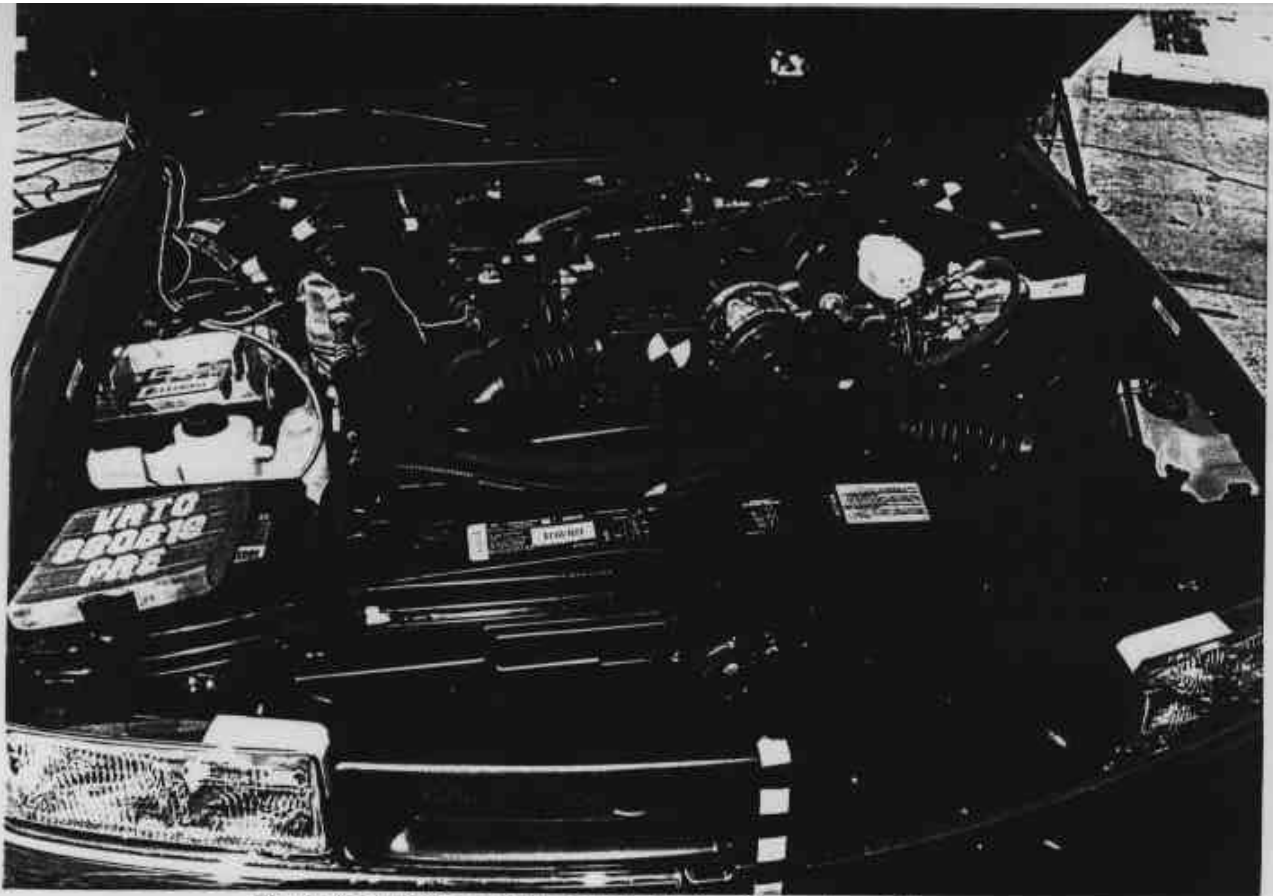


Figure A-21 Pre-Test Bullet Vehicle Engine Compartment View

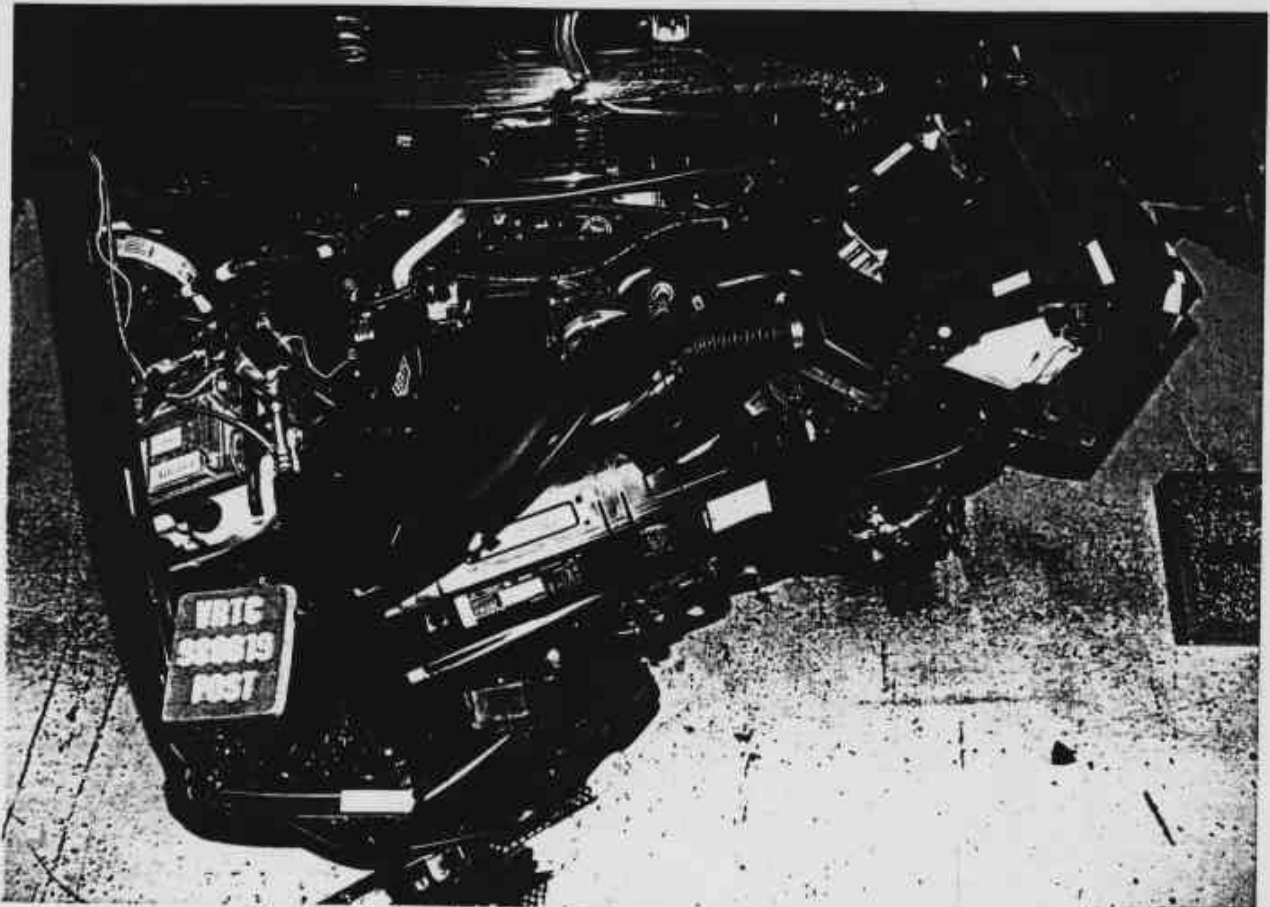


Figure A-22 Post-Test Bullet Vehicle Engine Compartment View

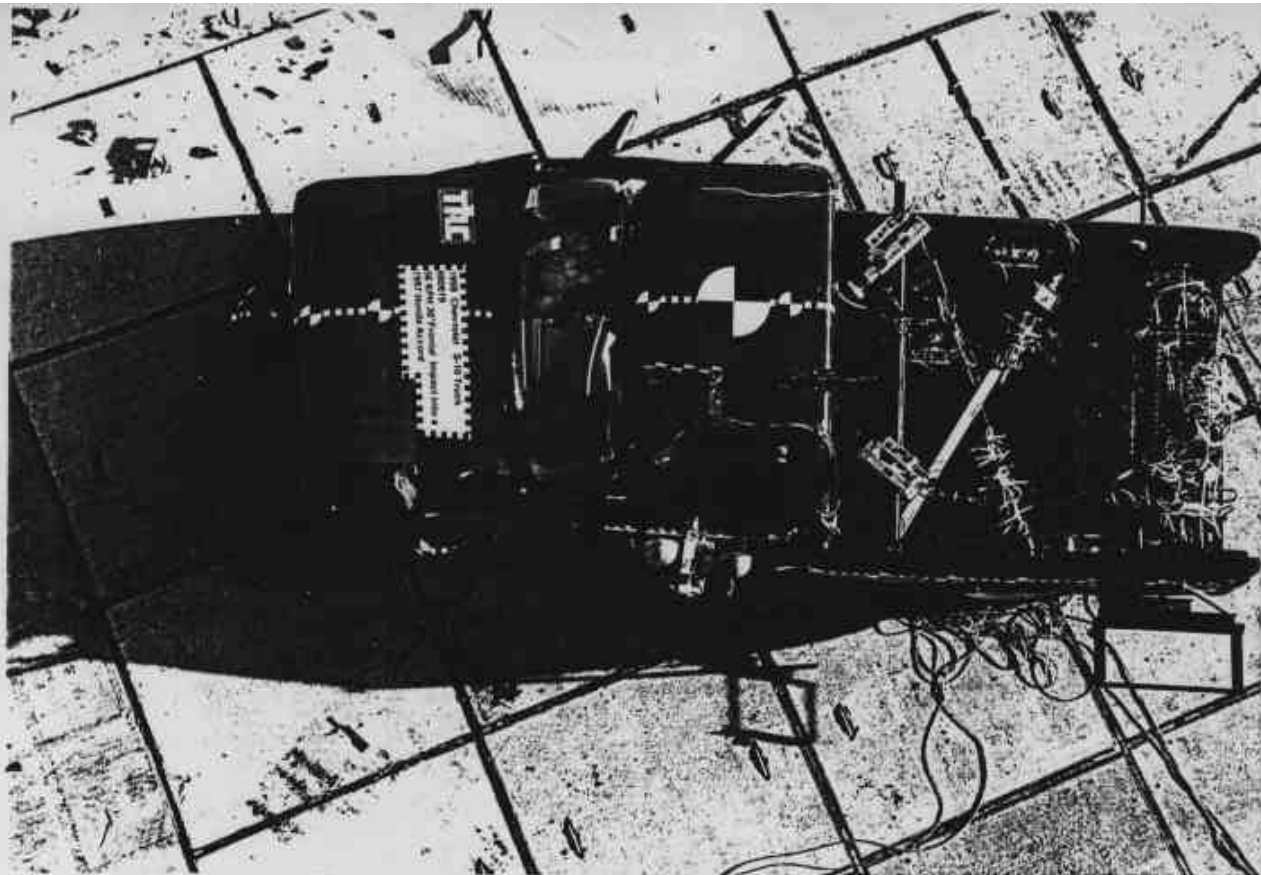


Figure A-23 Pre-Test Bullet Vehicle Overhead View

Intentionally Left Blank



Figure A-24 Pre-Test Bullet Vehicle Front Underbody View

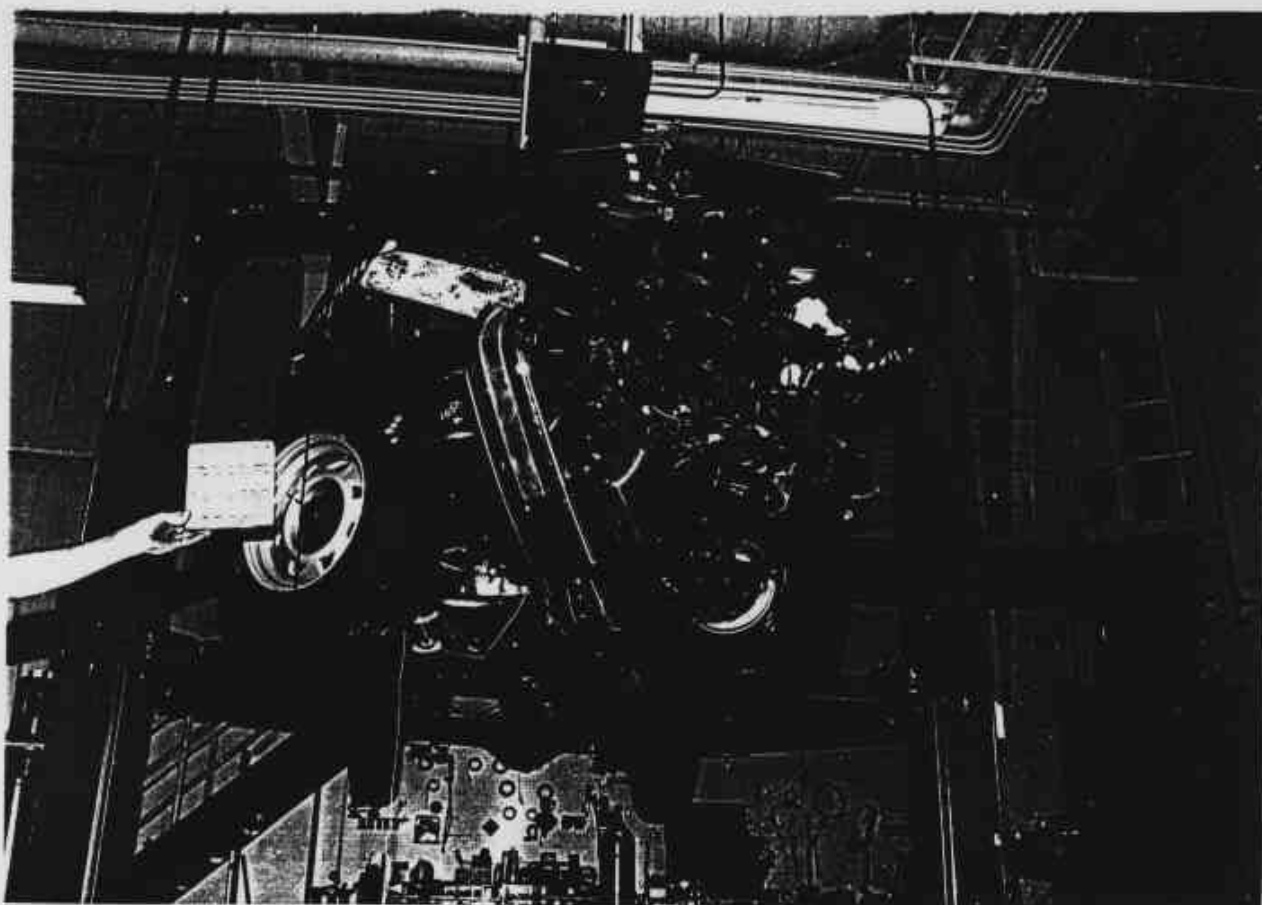


Figure A-25 Post-Test Bullet Vehicle Front Underbody View

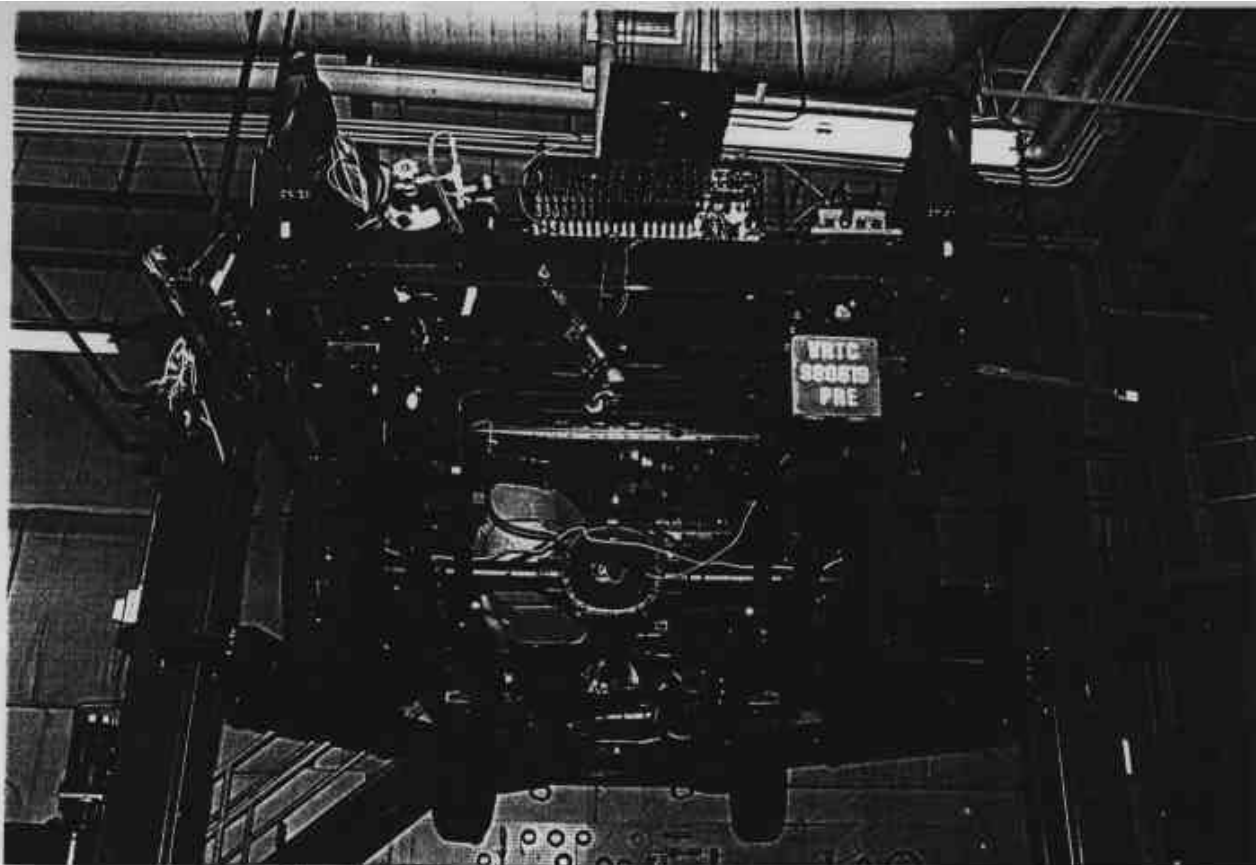


Figure A-26 Pre-Test Bullet Vehicle Rear Underbody View

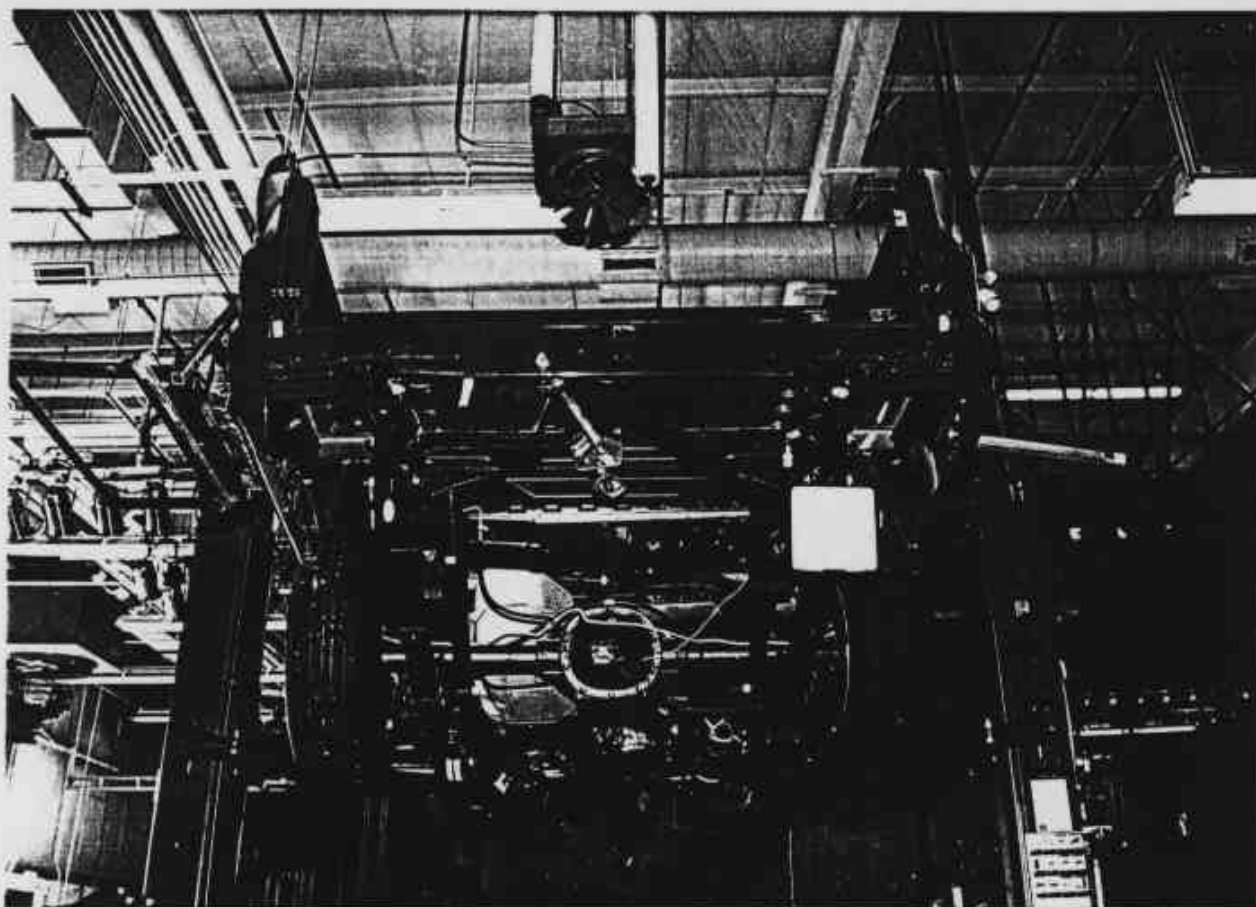


Figure A-27 Post-Test Bullet Vehicle Rear Underbody View



Figure A-28 Pre-Test Right Side Wide View



Figure A-29 Pre-Test Left Side Wide View

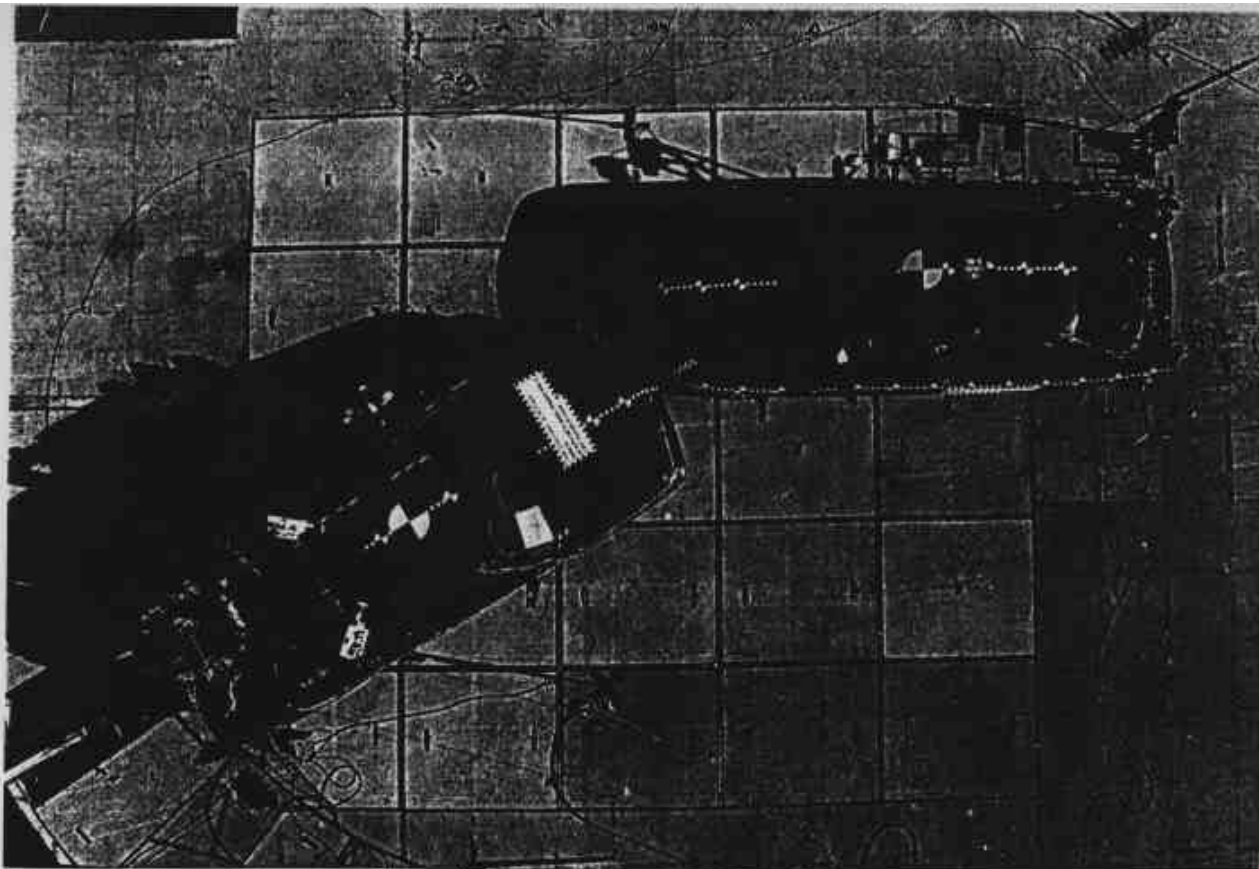


Figure A-30 Pre-Test Overhead Wide View



Figure A-31 Post-Test Overhead Wide View

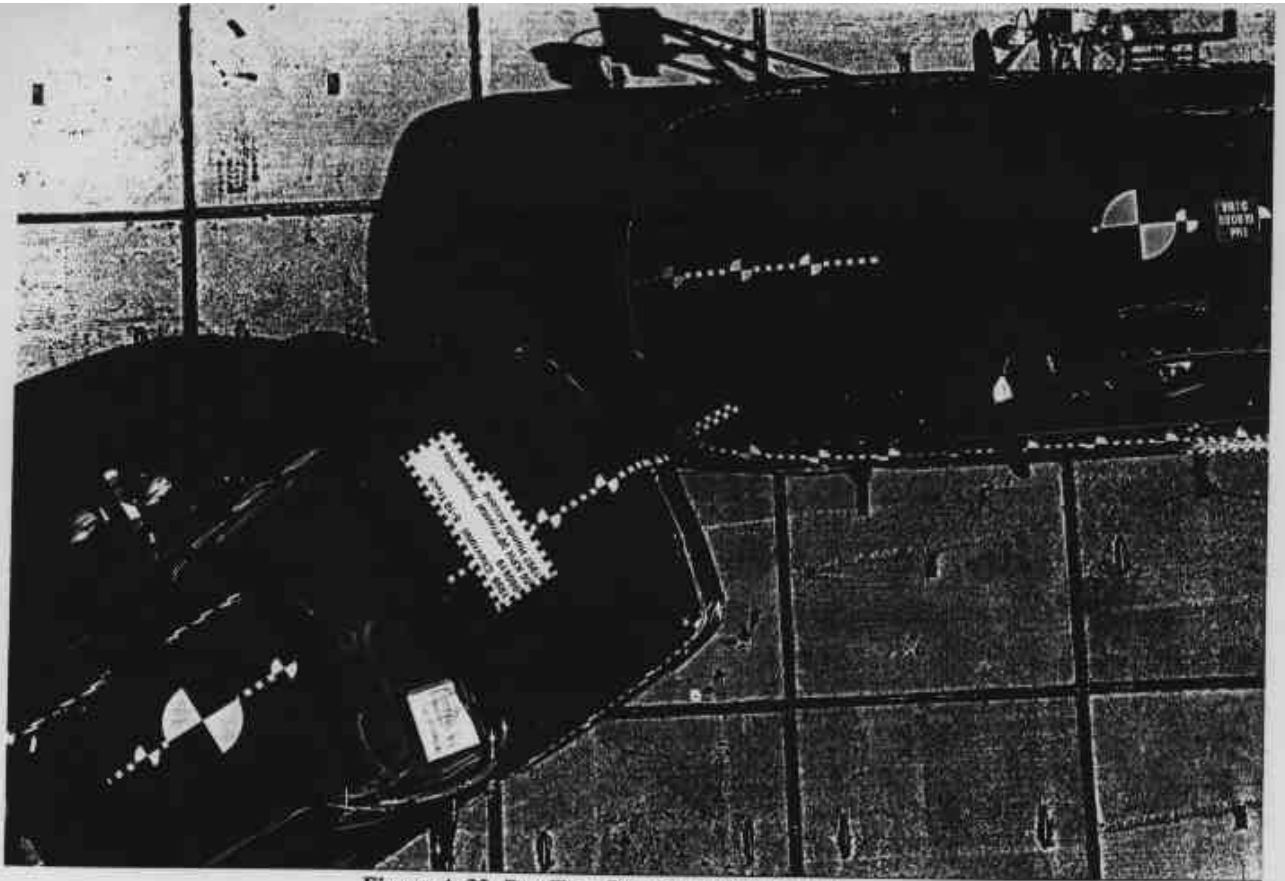


Figure A-32 Pre-Test Overhead Tight View

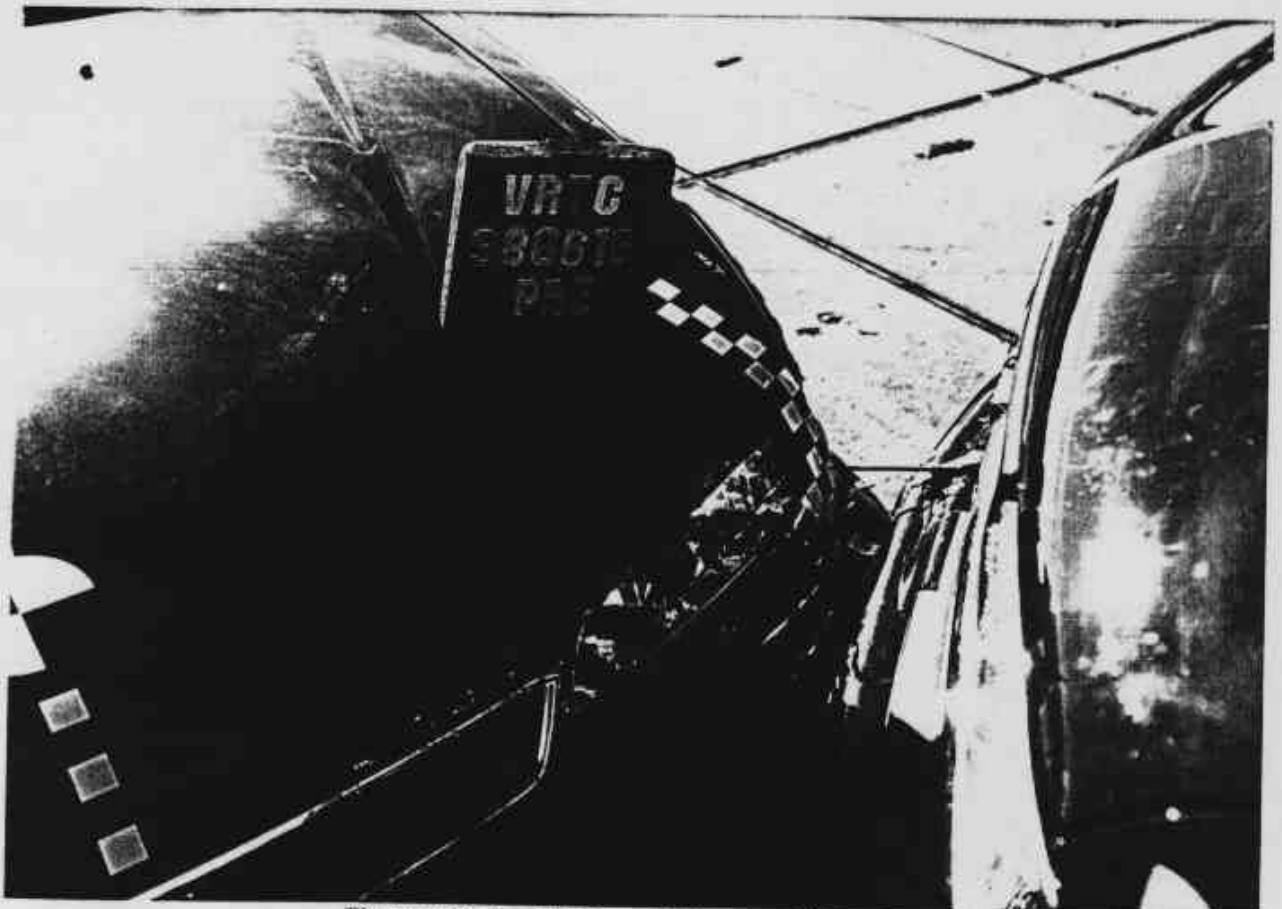


Figure A-33 Pre-Test Impact Alignment View



Figure A-34 Pre-Test Target Vehicle Driver Dummy - View 1



Figure A-35 Post-Test Target Vehicle Driver Dummy - View 1

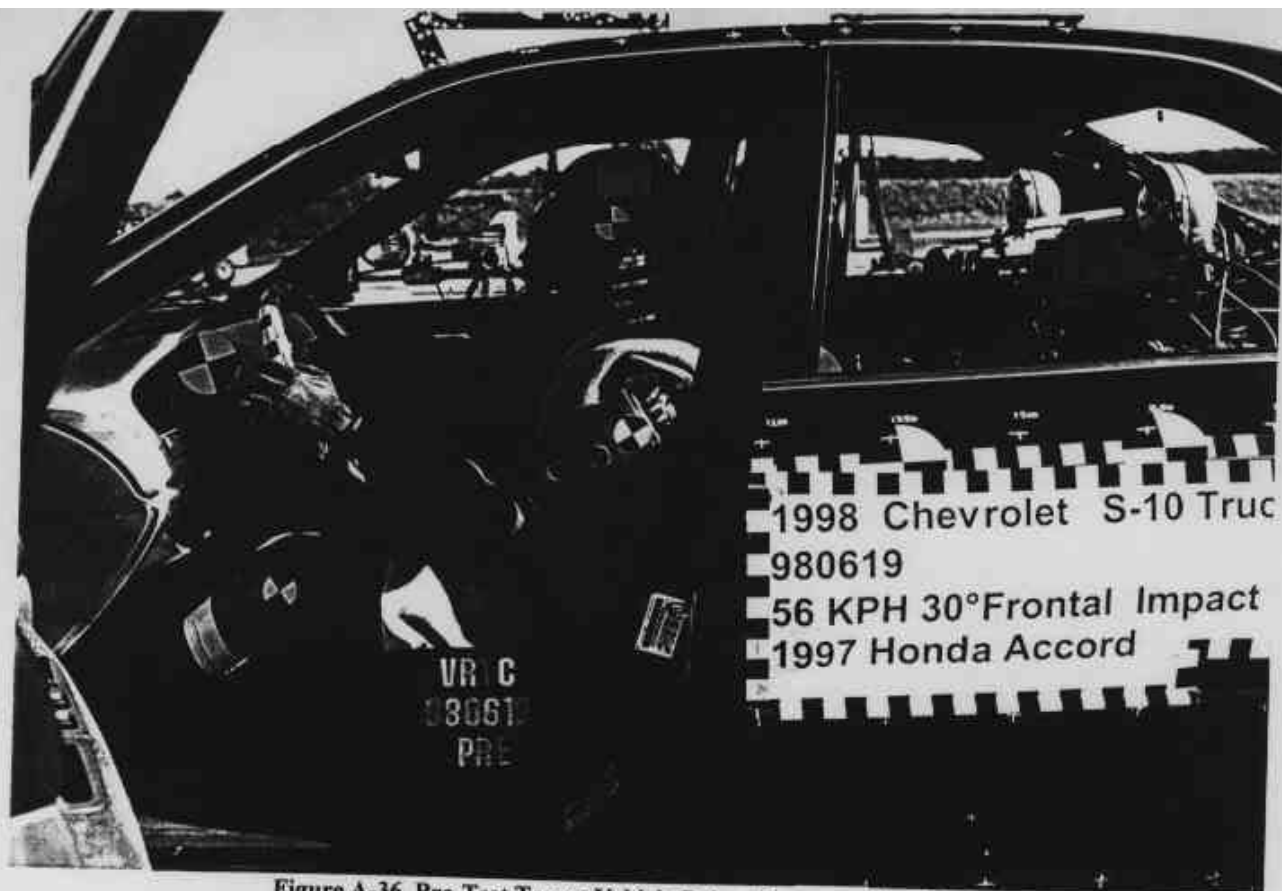


Figure A-36 Pre-Test Target Vehicle Driver Dummy - View 2



Figure A-37 Pre-Test Target Vehicle Driver Dummy - View 3

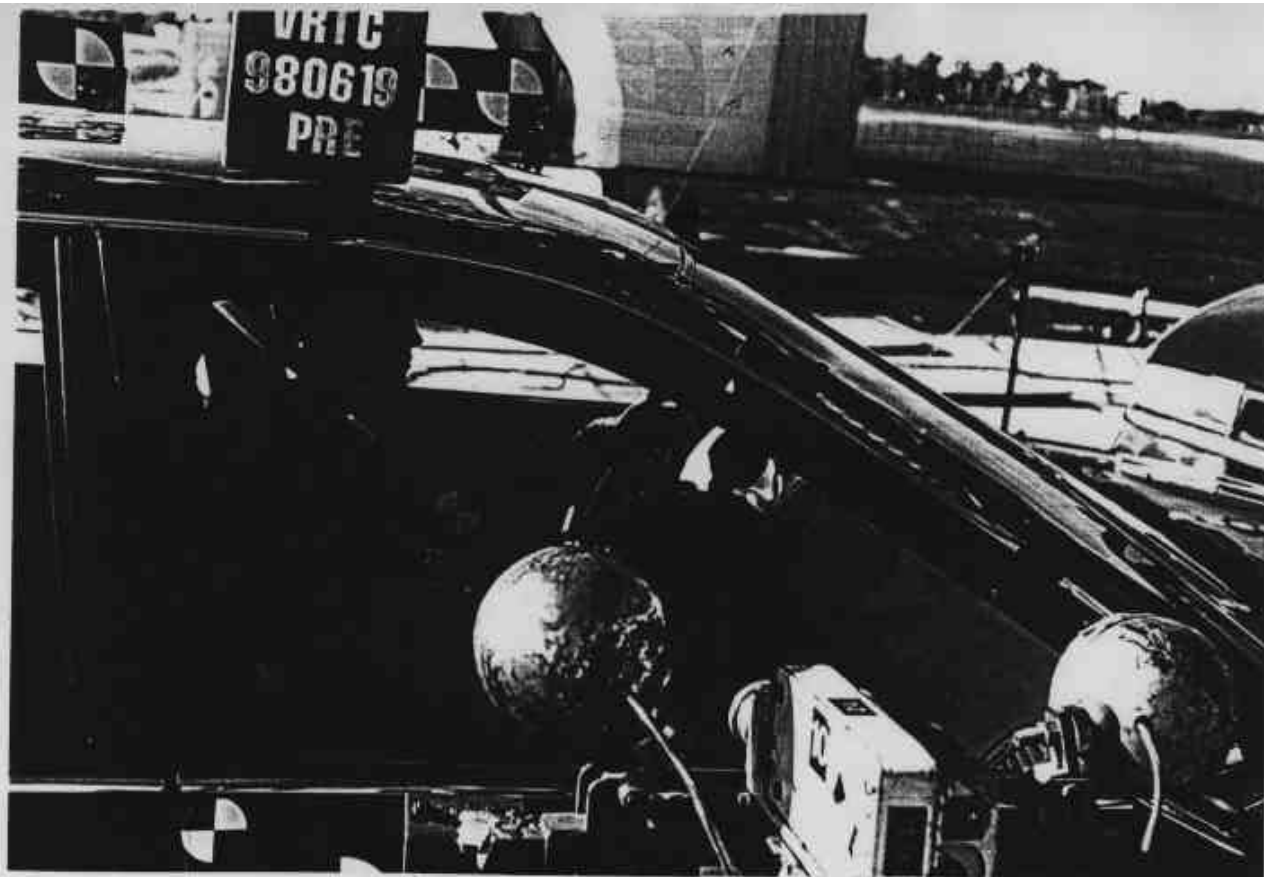


Figure A-38 Pre-Test Target Vehicle Passenger Dummy - View 1

Intentionally Left Blank

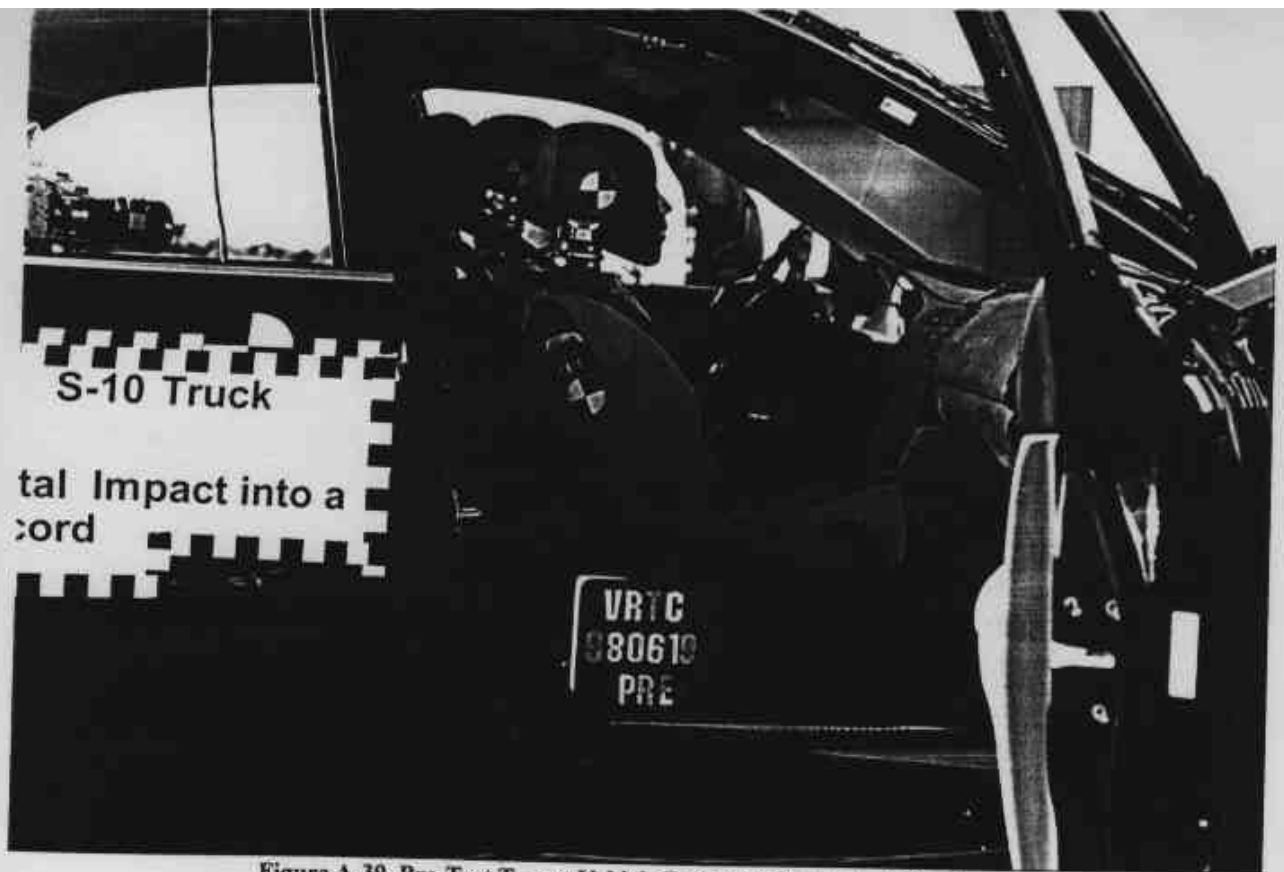


Figure A-39 Pre-Test Target Vehicle Passenger Dummy - View 2



Figure A-40 Post-Test Target Vehicle Passenger Dummy - View 2



Figure A-41 Pre-Test Target Vehicle Passenger Dummy - View 3



Figure A-42 Post-Test Target Vehicle Passenger Dummy - View 3



Figure A-43 Pre-Test Bullet Vehicle Driver Dummy - View 1



Figure A-44 Post-Test Bullet Vehicle Driver Dummy - View 1



Figure A-45 Pre-Test Bullet Vehicle Driver Dummy - View 2



Figure A-46 Pre-Test Bullet Vehicle Driver Dummy - View 3



Figure A-47 Pre-Test Bullet Vehicle Passenger Dummy - View 1



Figure A-48 Post-Test Bullet Vehicle Passenger Dummy - View 1



Figure A-49 Pre-Test Bullet Vehicle Passenger Dummy - View 2



Figure A-50 Post-Test Bullet Vehicle Passenger Dummy - View 2



Figure A-51 Pre-Test Bullet Vehicle Passenger Dummy - View 3



Figure A-52 Post-Test Bullet Vehicle Passenger Dummy - View 3

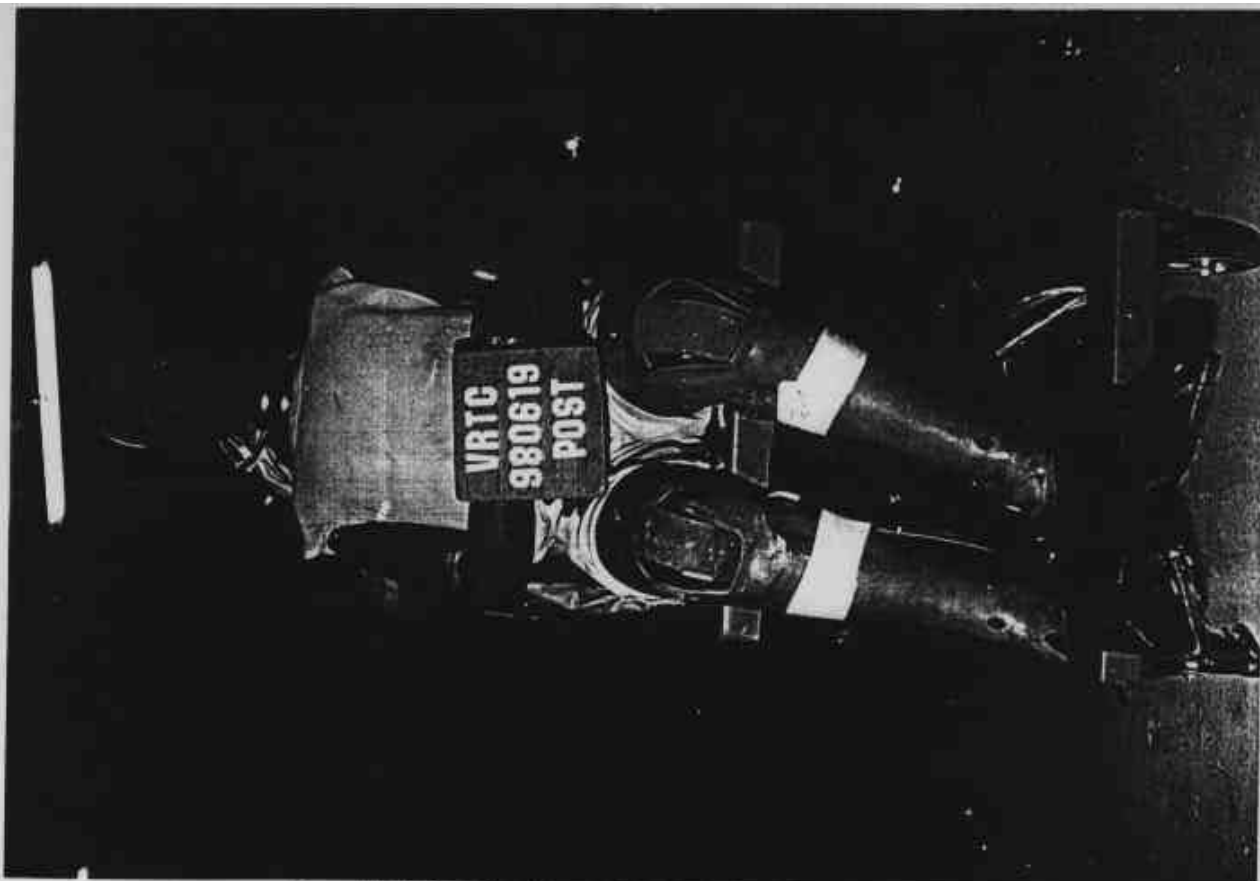


Figure A-53 Post-Test Target Vehicle Driver Dummy View



Figure A-54 Post-Test Target Vehicle Driver Dummy Head Contact - View 1



Figure A-55 Post-Test Target Vehicle Driver Dummy Head Contact - View 2

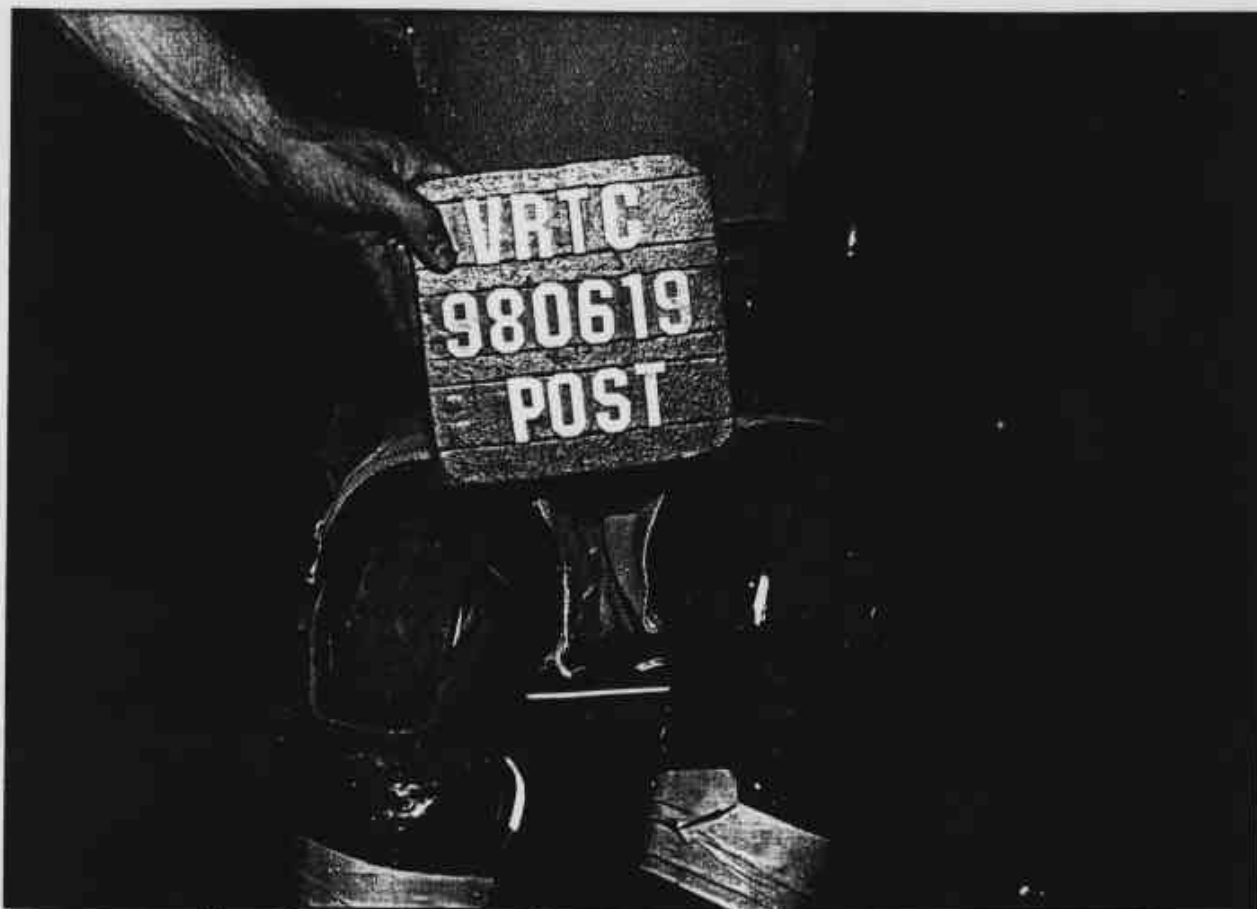


Figure A-56 Post-Test Target Vehicle Driver Dummy Knee Contact - View 1



Figure A-57 Post-Test Target Vehicle Driver Dummy Knee Contact - View 2



Figure A-58 Post-Test Target Vehicle Passenger Dummy View



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



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



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



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



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

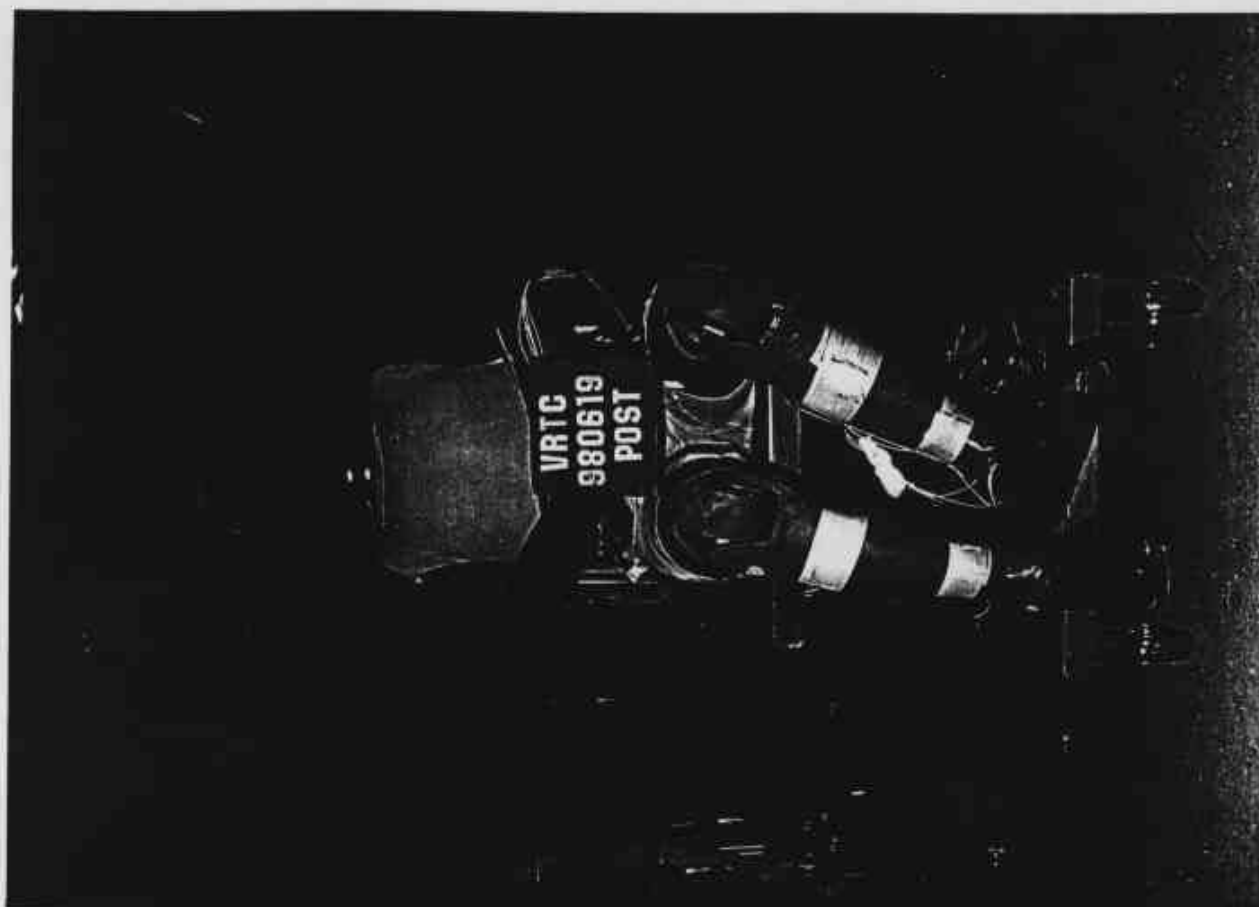


Figure A-64 Post-Test Bullet Vehicle Driver Dummy View



Figure A-65 Post-Test Bullet Vehicle Driver Dummy Head Contact - View 1



Figure A-66 Post-Test Bullet Vehicle Driver Dummy Head Contact - View 2



Figure A-67 Post-Test Bullet Vehicle Driver Dummy Head Contact - View 3



Figure A-68 Post-Test Bullet Vehicle Driver Dummy Leg Contact - View 1



Figure A-69 Post-Test Bullet Vehicle Driver Dummy Leg Contact - View 2



Figure A-70 Post-Test Bullet Vehicle Driver Dummy Leg Contact - View 3

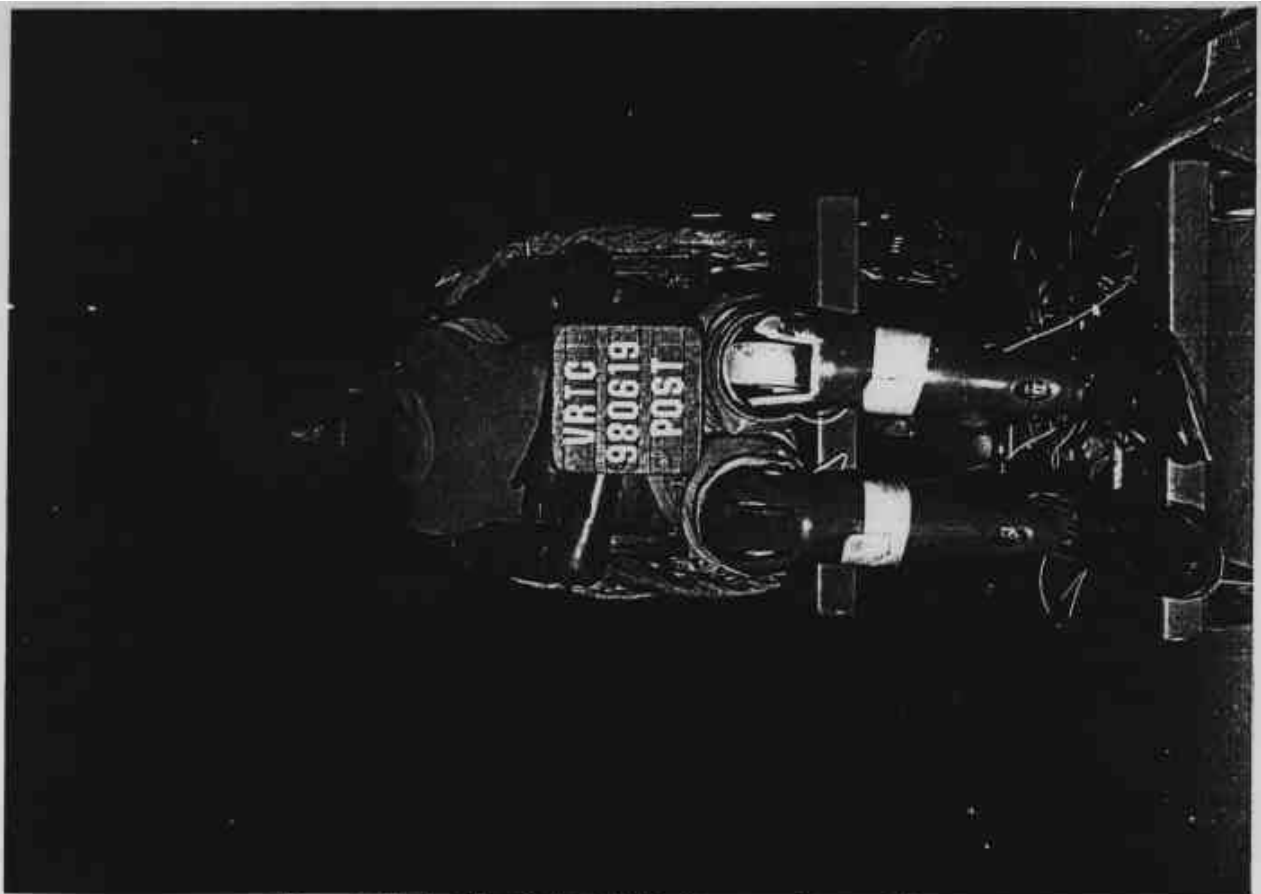


Figure A-71 Post-Test Bullet Vehicle Passenger Dummy View



Figure A-72 Post-Test Bullet Vehicle Passenger Dummy Head Contact - View 1



Figure A-73 Post-Test Bullet Vehicle Passenger Dummy Head Contact - View 2



Figure A-74 Post-Test Bullet Vehicle Passenger Dummy Head Contact - View 3



Figure A-75 Post-Test Bullet Vehicle Passenger Dummy Leg Contact - View 1



Figure A-76 Post-Test Bullet Vehicle Passenger Dummy Leg Contact - View 2

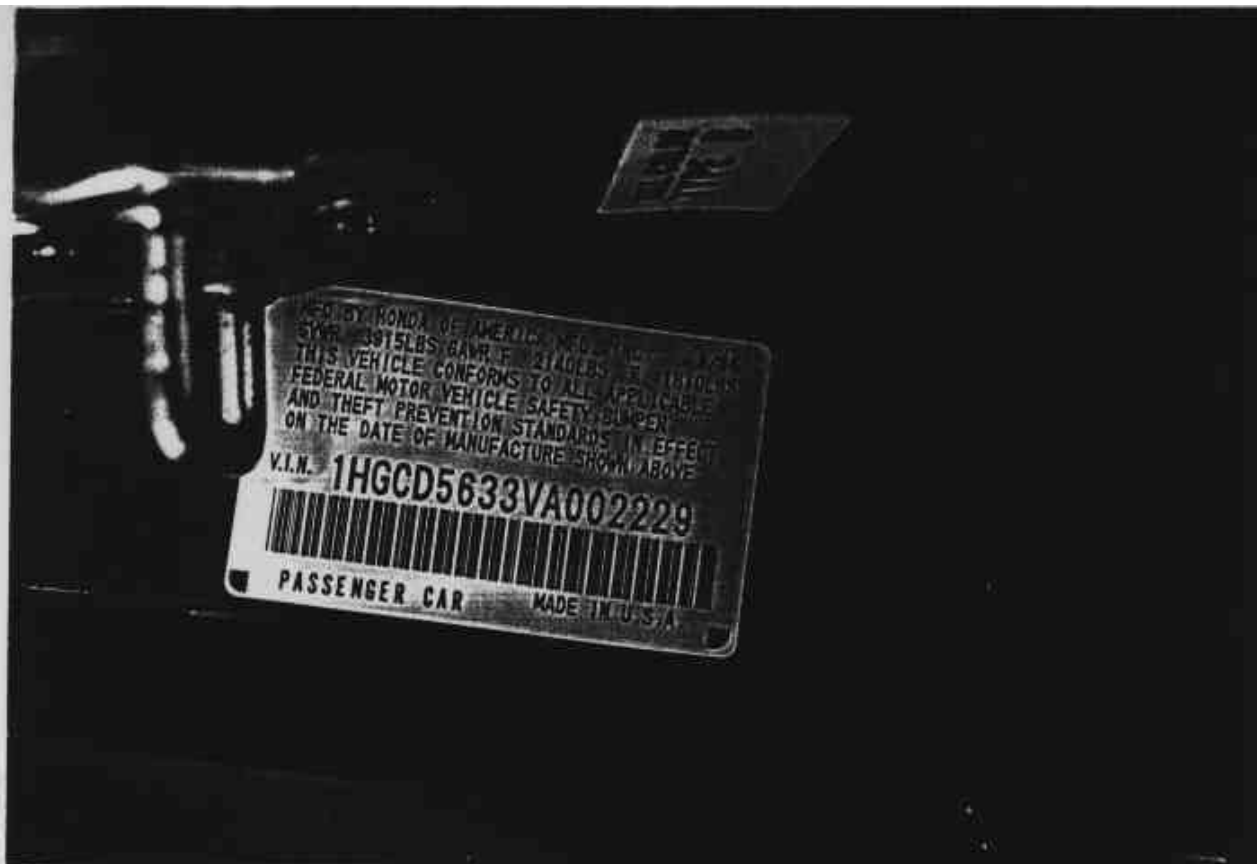
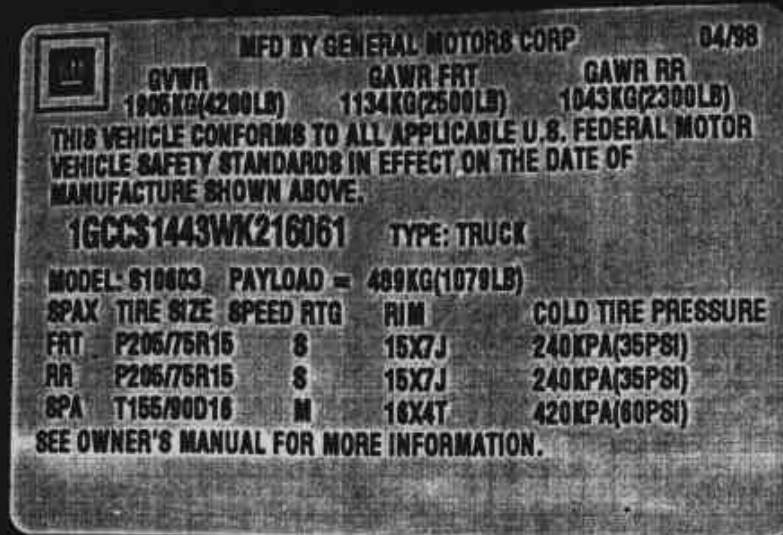


Figure A-77 Target Vehicle Certification Label



Figure A-78 Target Vehicle Tire Load Label



Employees
 GM

Figure A-79 Bullet Vehicle Certification Label

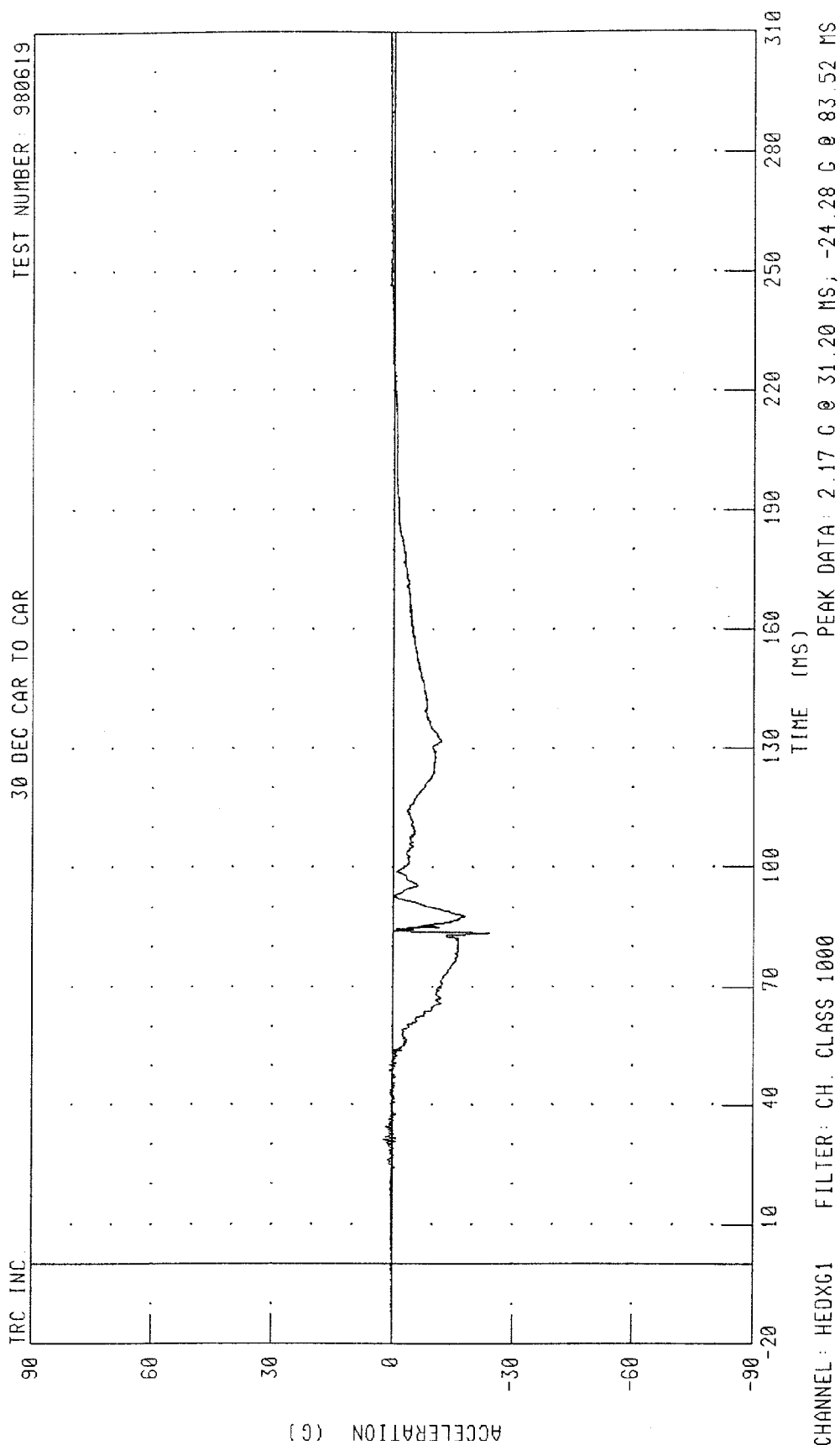


Figure A-80 Impact Event

Appendix B

Data Plots

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER HEAD X-AXIS ACCELERATION

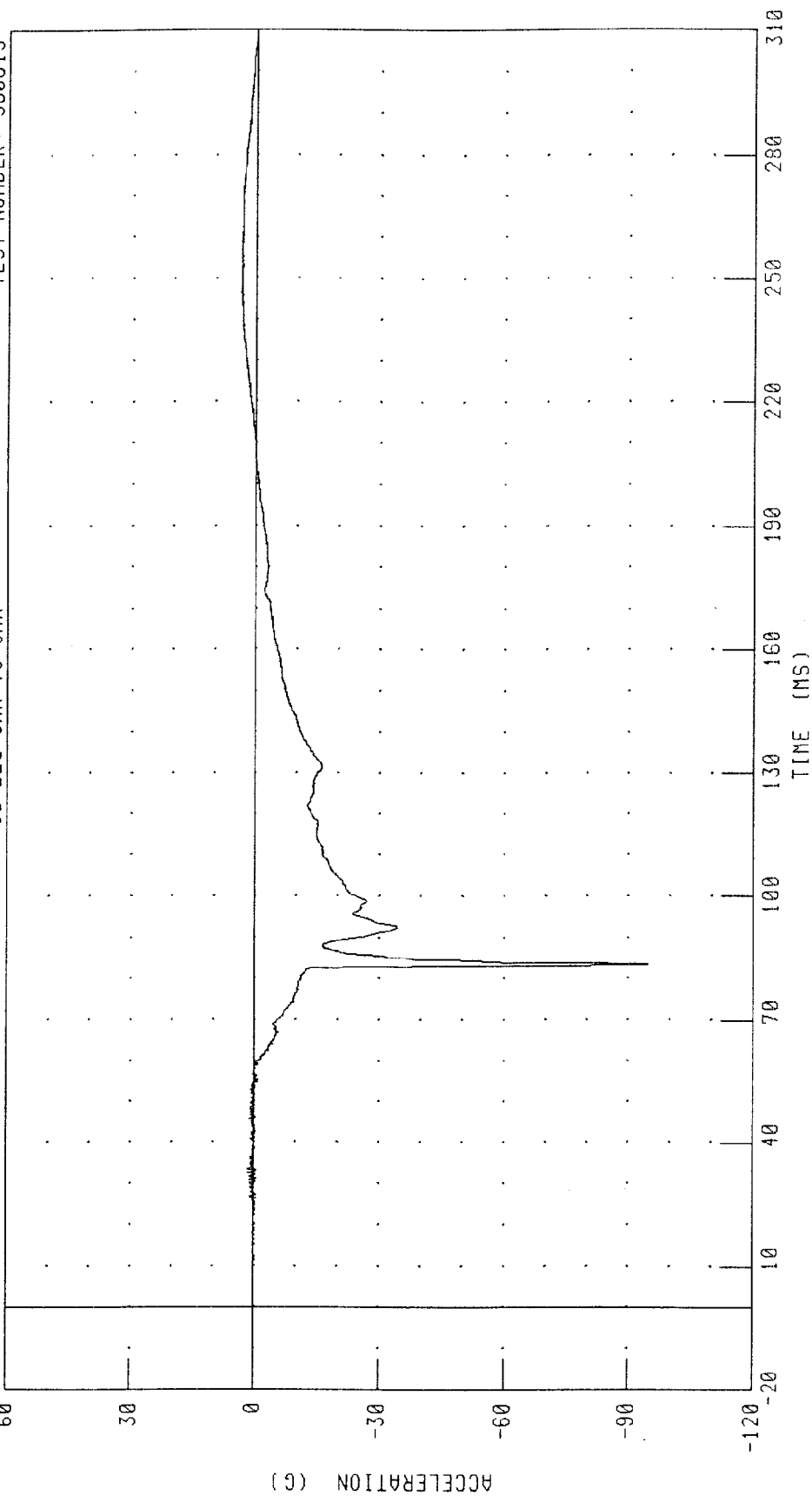


1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER HEAD Y-AXIS ACCELERATION

TRC INC.

30 DEC CAR TO CAR

TEST NUMBER: 980619



CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

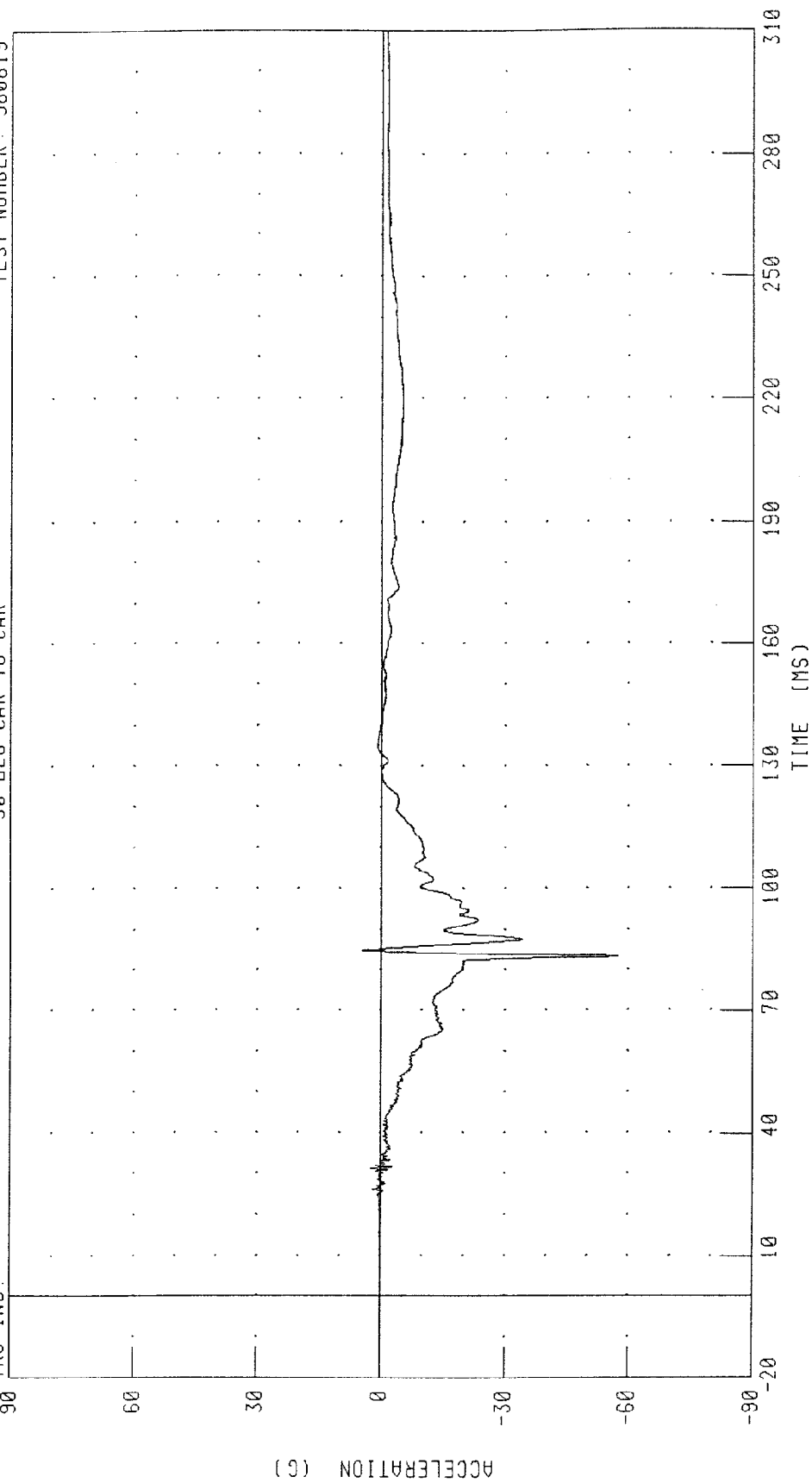
PEAK DATA: 3.94 G @ 246.40 MS; -94.67 G @ 83.44 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER HEAD Z-AXIS ACCELERATION

TRC INC.

TEST NUMBER: 980619

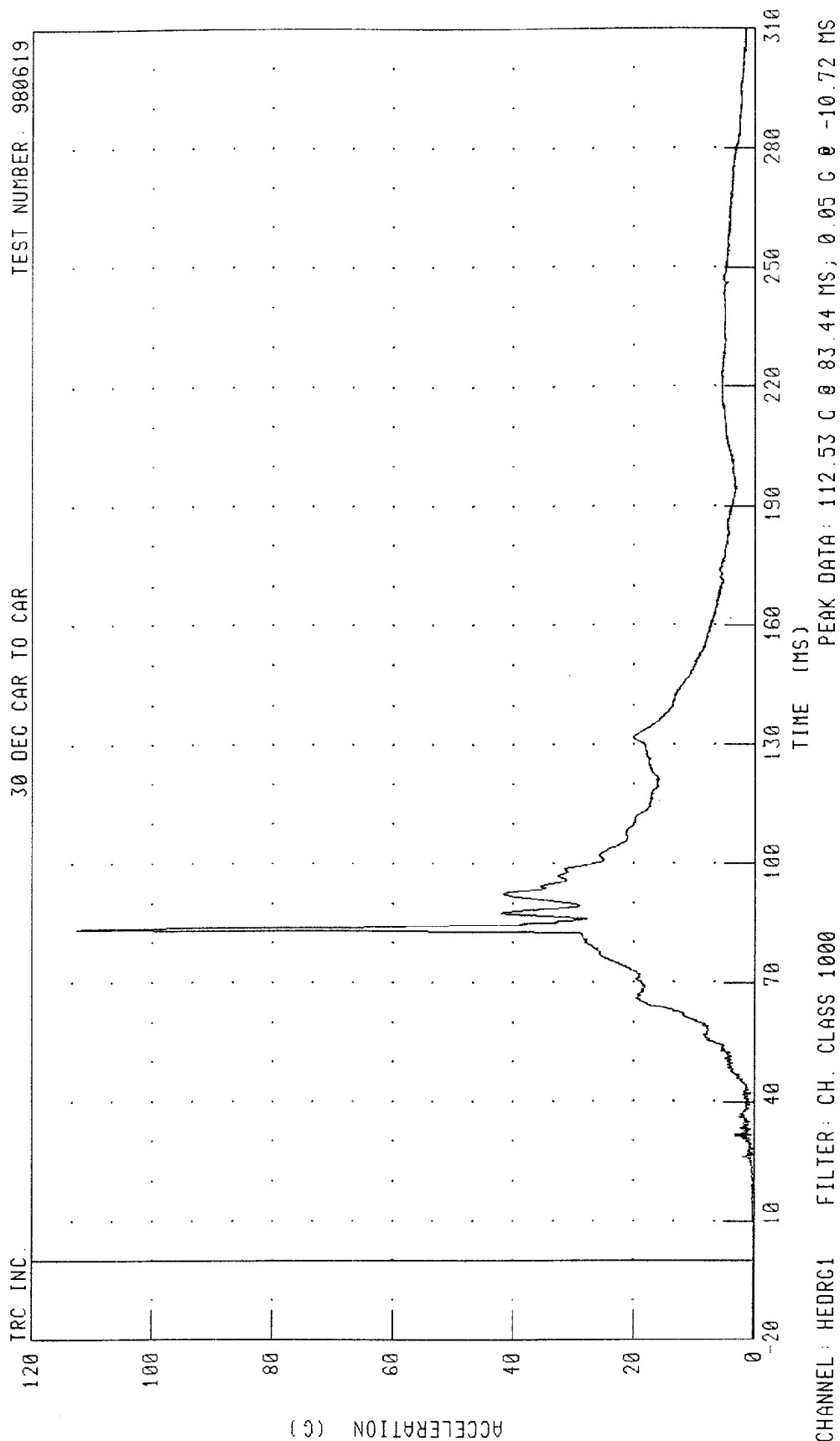
30 DEC CAR TO CAR



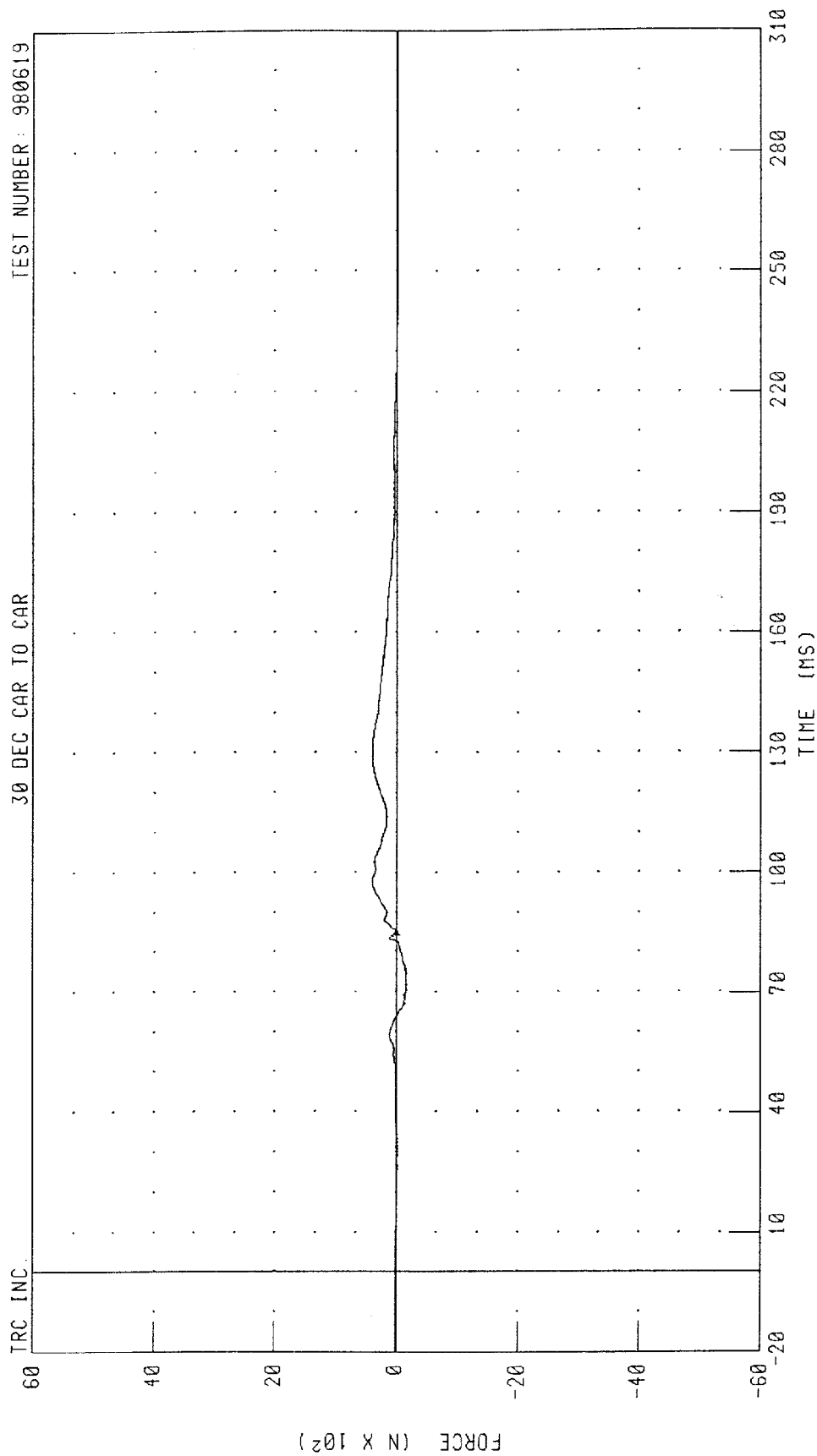
CHANNEL: HEDZG1 FILTER: CH. CLASS 1000

PEAK DATA: 4 54 G @ 84 96 MS, -57 57 G @ 83 36 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER HEAD RESULTANT ACCELERATION

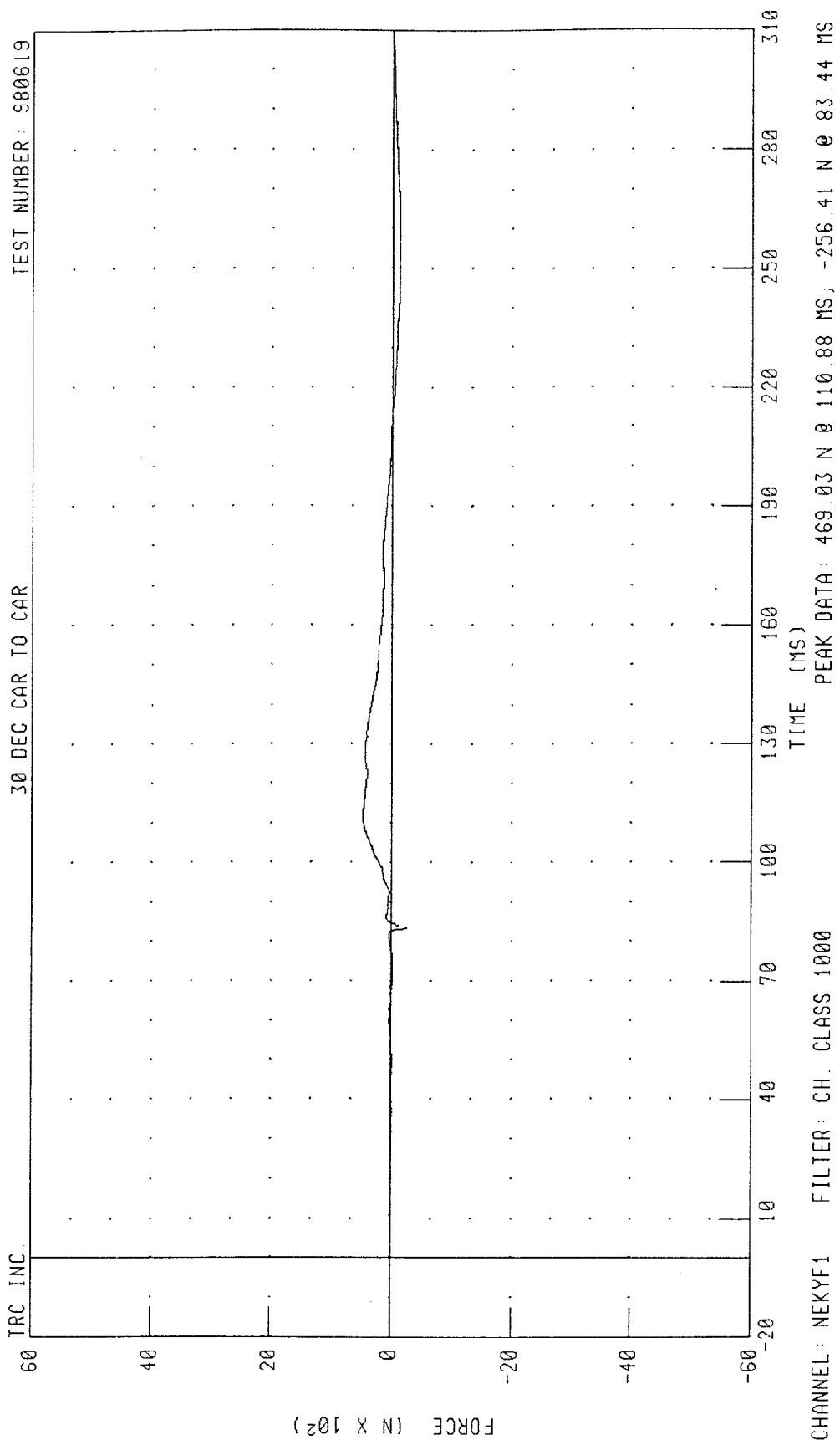


1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER NECK X-AXIS SHEAR FORCE

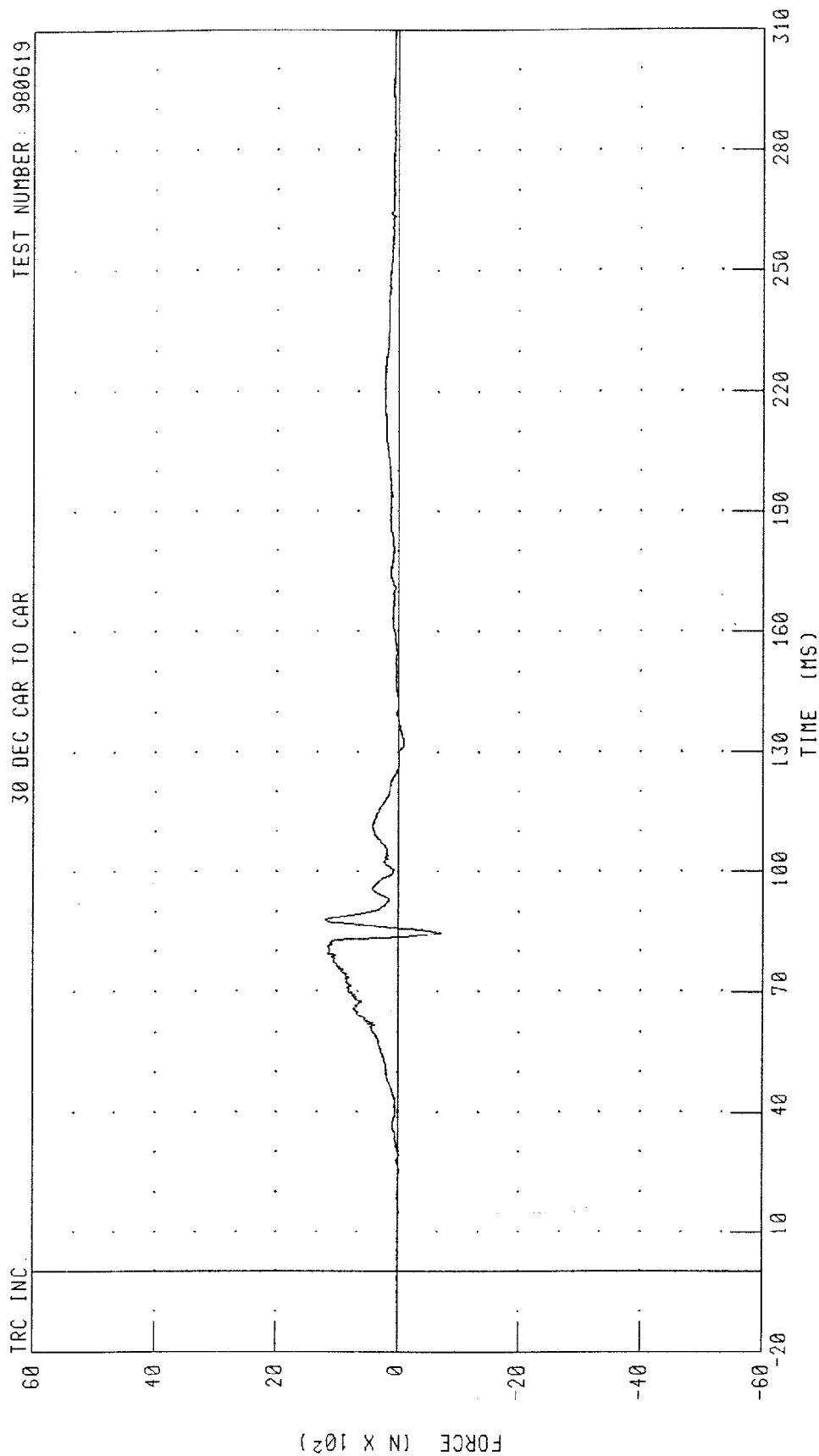


CHANNEL: NEKXF1 FILTER: CH. CLASS 1000 PEAK DATA: 385.33 N @ 96.88 MS, -171.04 N @ 70.72 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER NECK Y-AXIS SHEAR FORCE



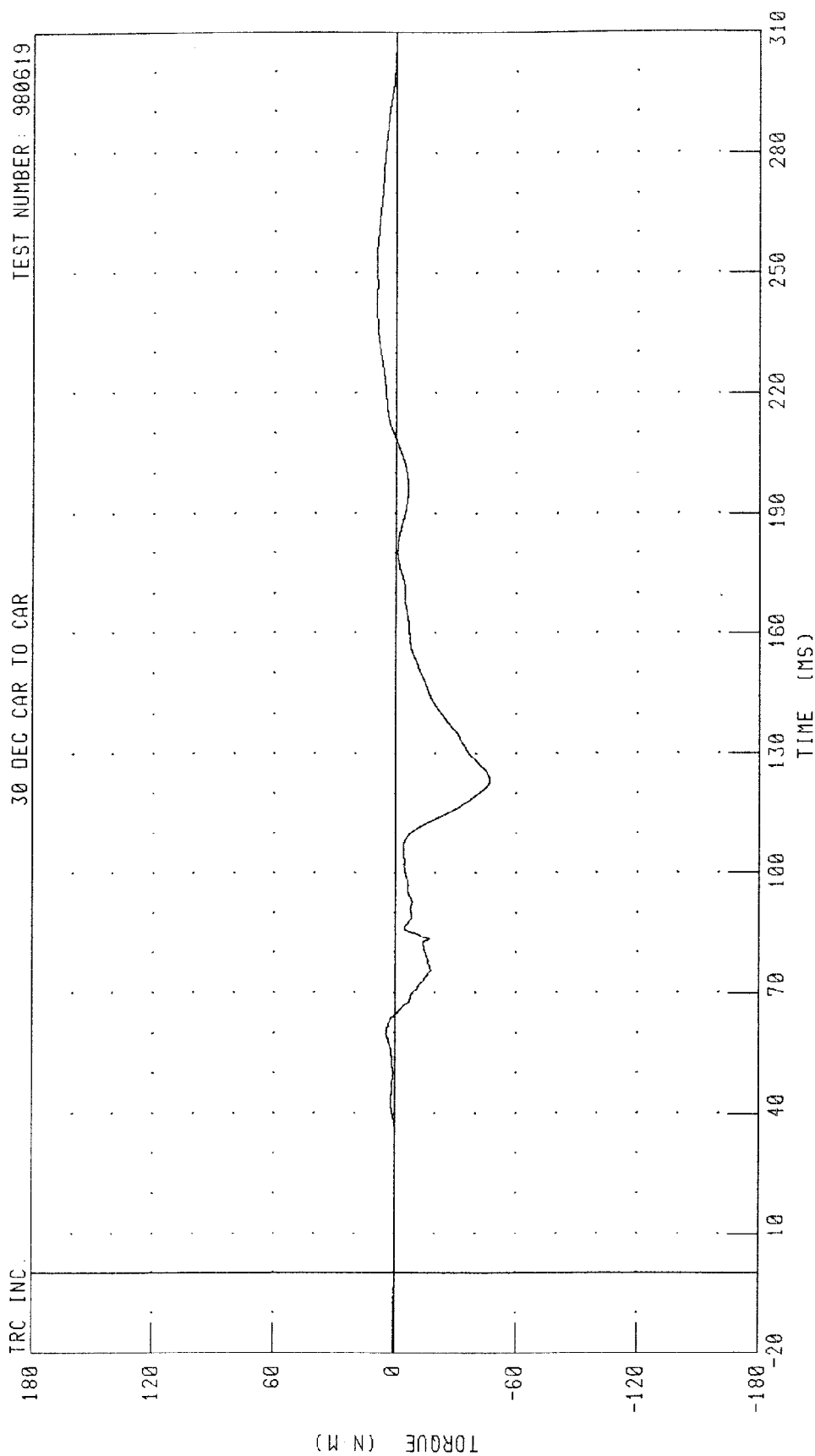
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER NECK Z-AXIS AXIAL FORCE



CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

PEAK DATA: 1192.05 N @ 88.00 MS, -717.21 N @ 84.80 MS

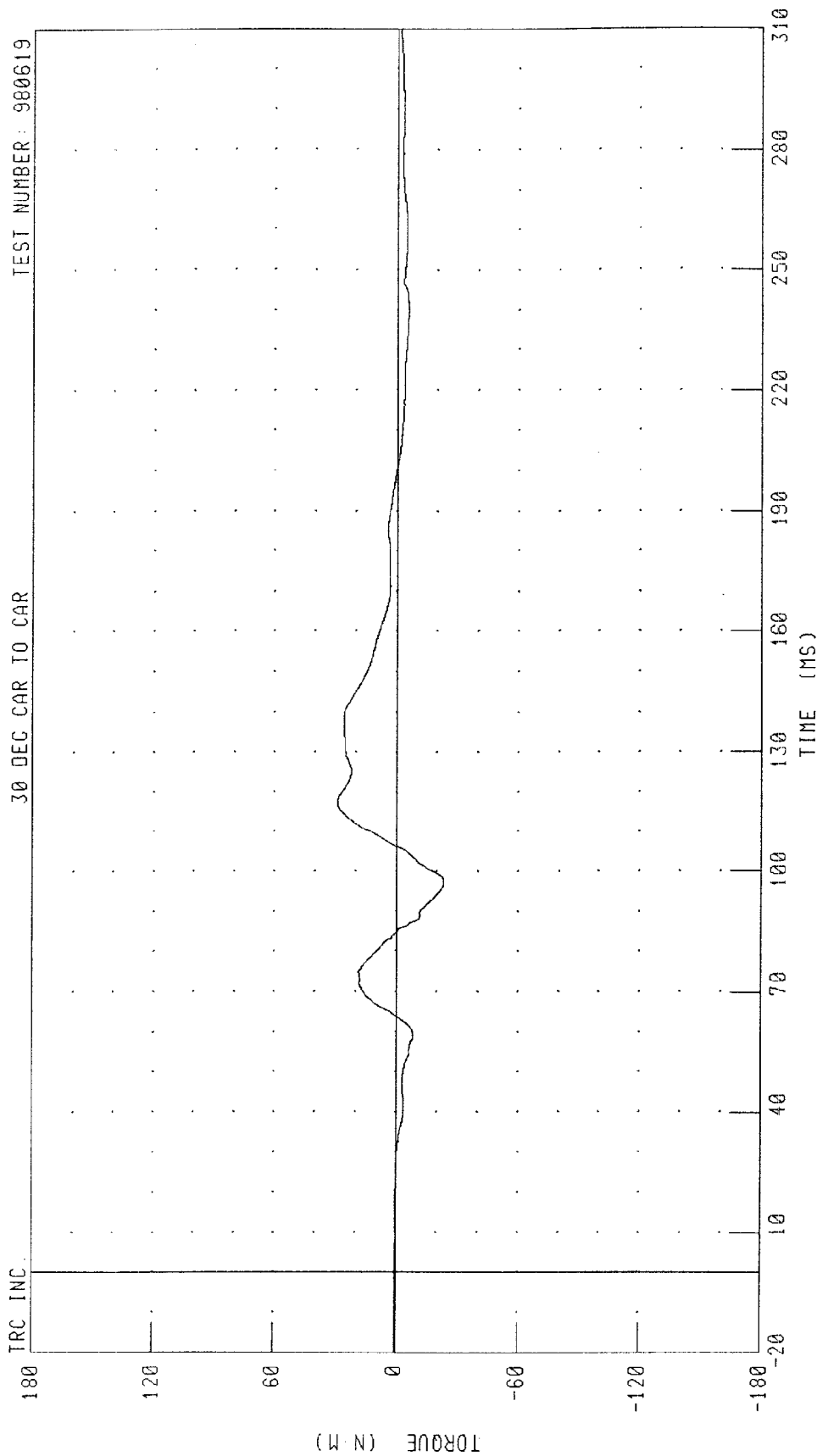
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
 TARGET DRIVER NECK MOMENT ABOUT X AXIS



PEAK DATA: 9.49 N.M @ 253.92 MS, -47.06 N.M @ 123.60 MS

CHANNEL: NEXXM1 FILTER: CH. CLASS 600

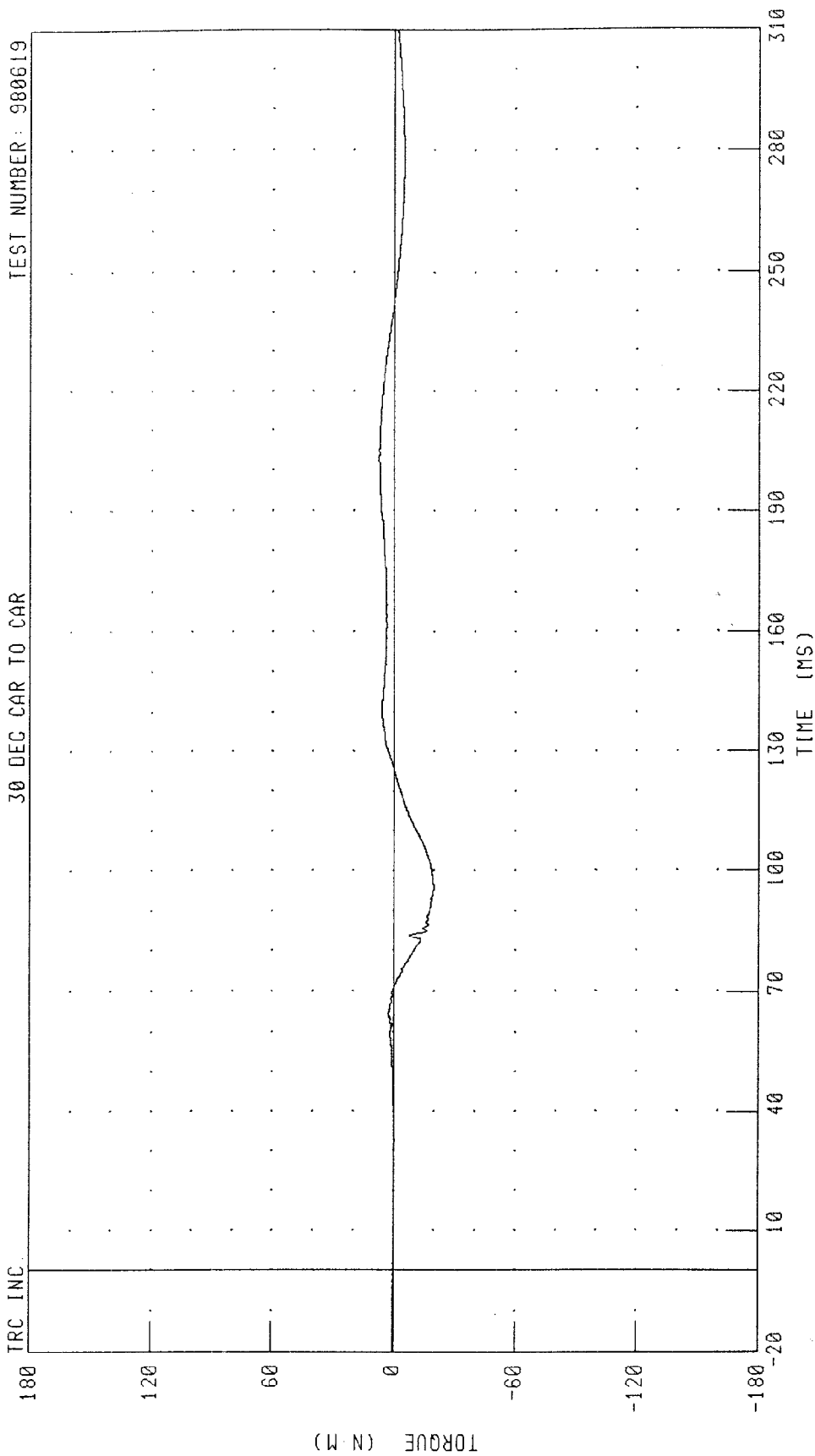
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
 TARGET DRIVER NECK MOMENT ABOUT Y AXIS



CHANNEL: NEKYM1 FILTER: CH. CLASS 600

PEAK DATA: 28.80 N·m @ 117.36 ms, -23.27 N·m @ 97.36 ms

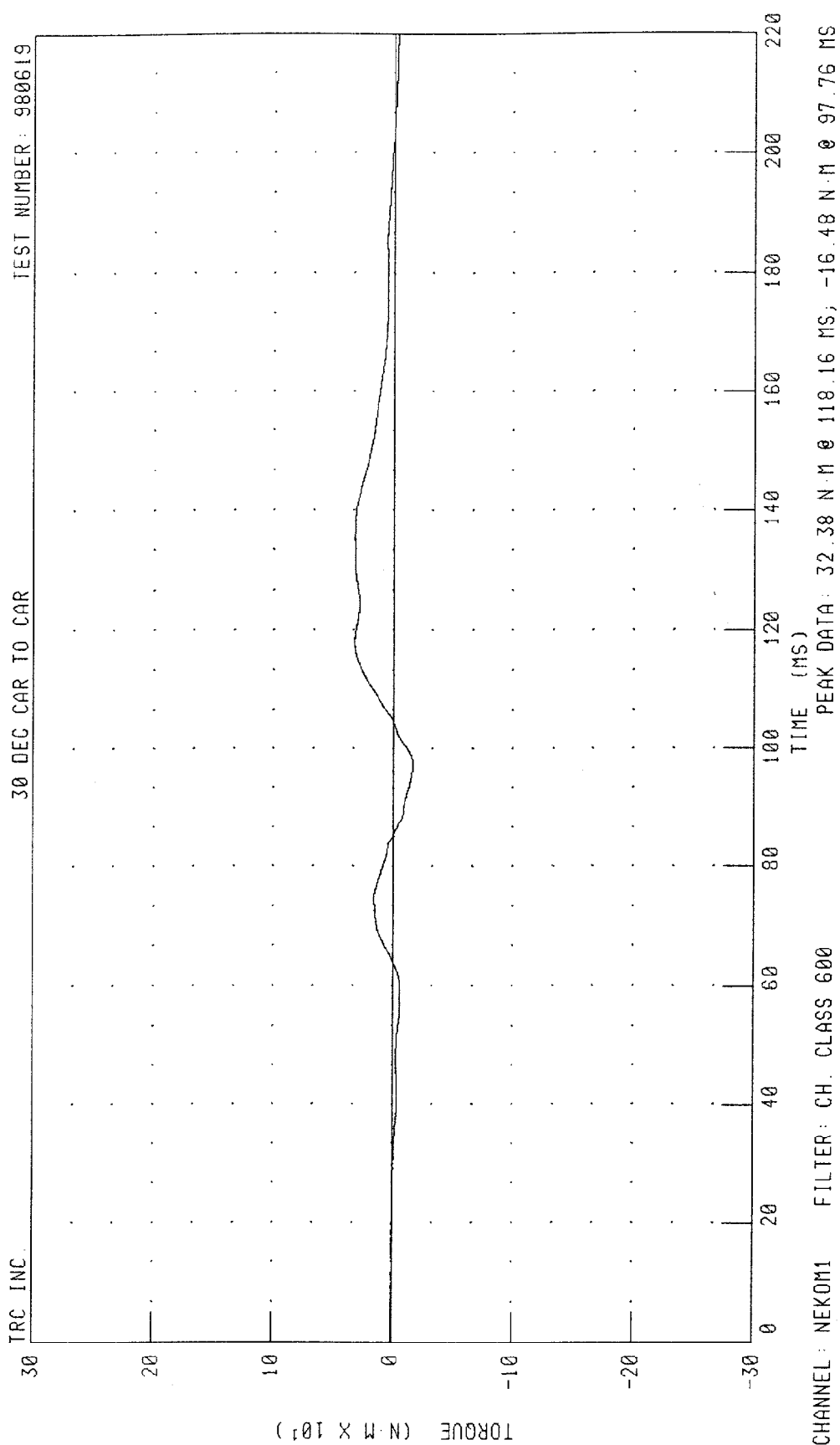
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER NECK MOMENT ABOUT Z AXIS



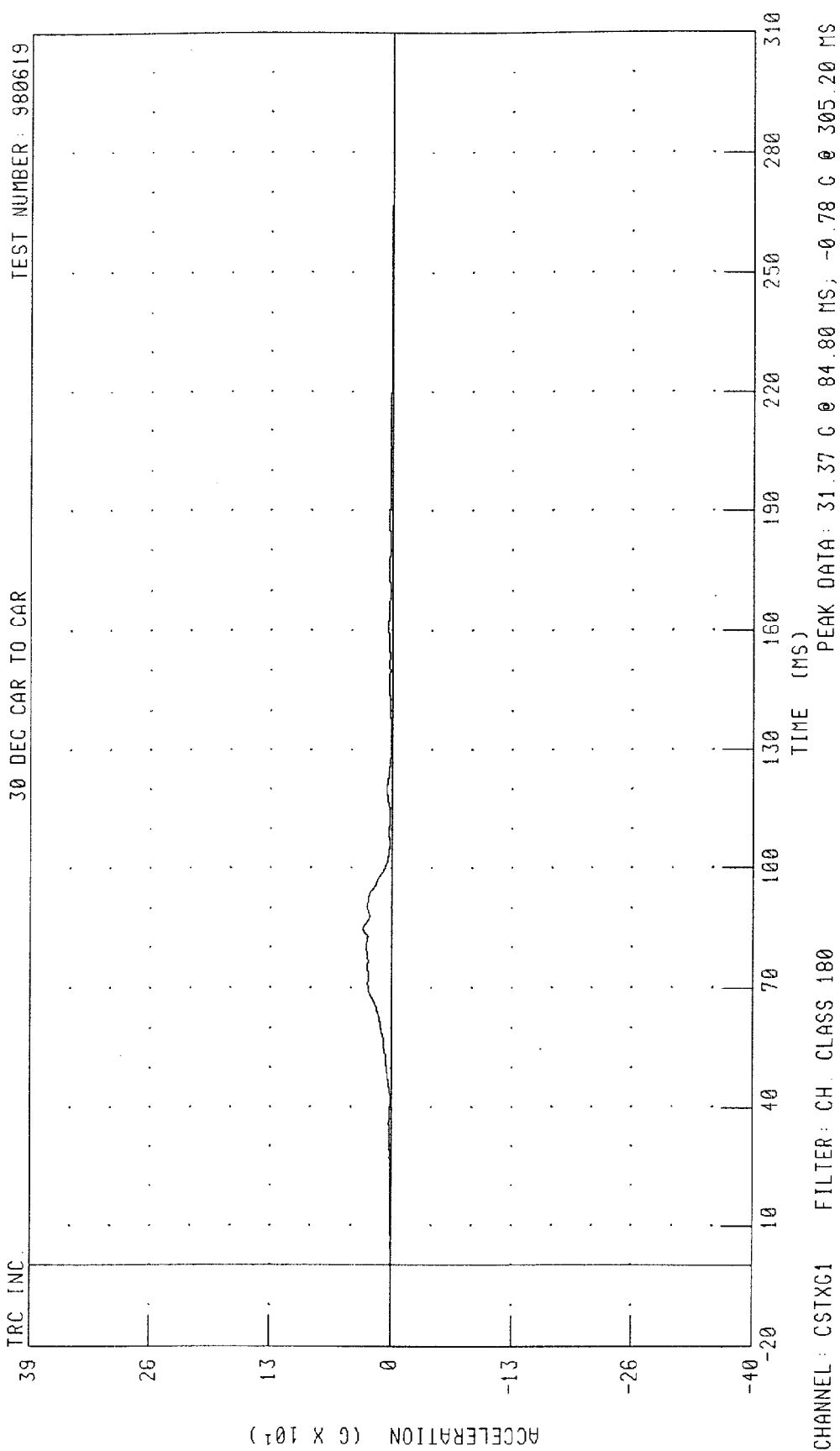
CHANNEL: NEKZM1 FILTER: CH. CLASS 600

PEAK DATA: 7.26 N M @ 202.56 MS, -19.94 N M @ 95.92 MS

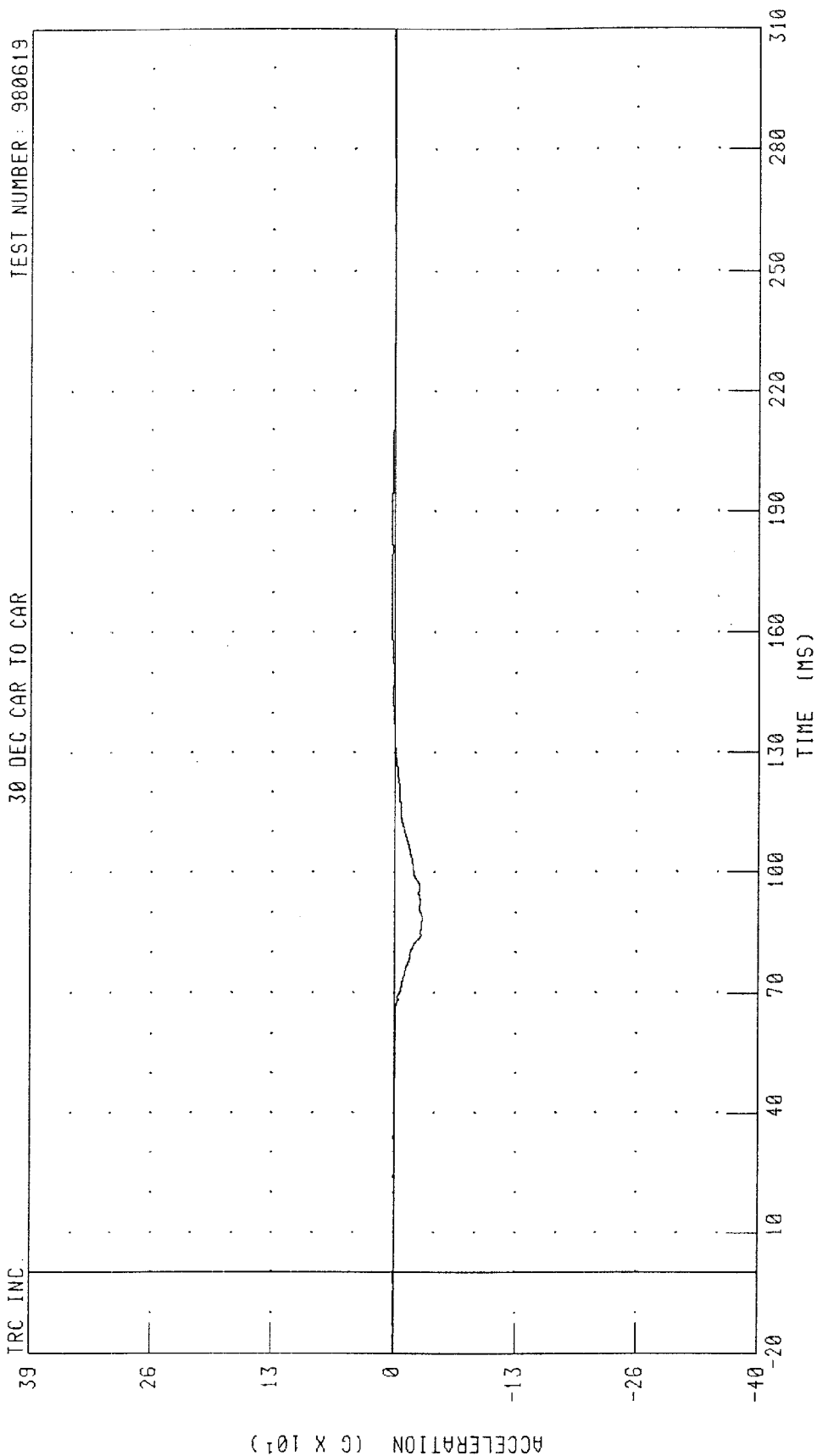
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER NECK OCCIPITAL CONDYLE ABOUT Y AXIS



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER CHEST X-AXIS ACCELERATION - PRIMARY

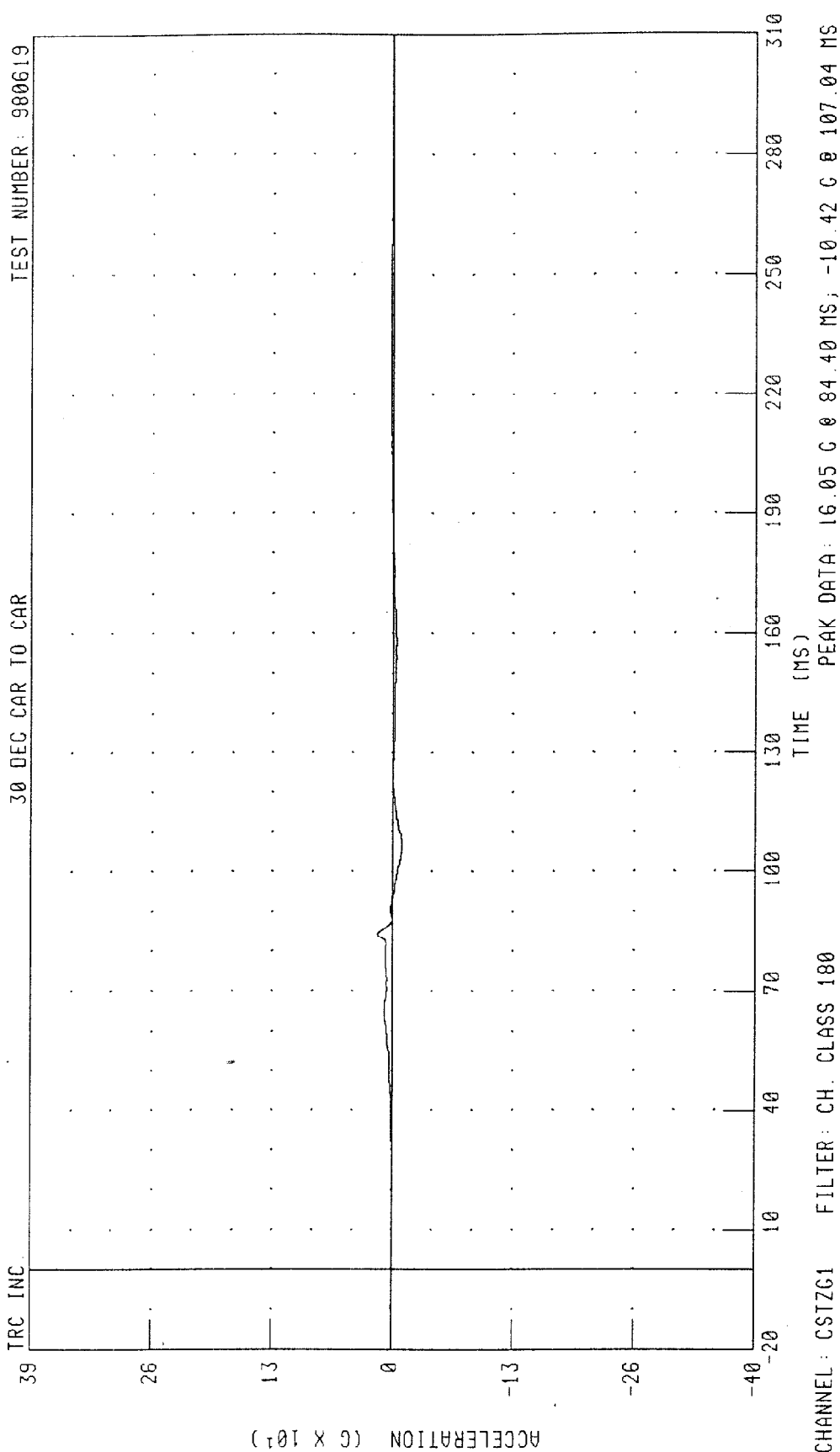


1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER CHEST Y-AXIS ACCELERATION - PRIMARY

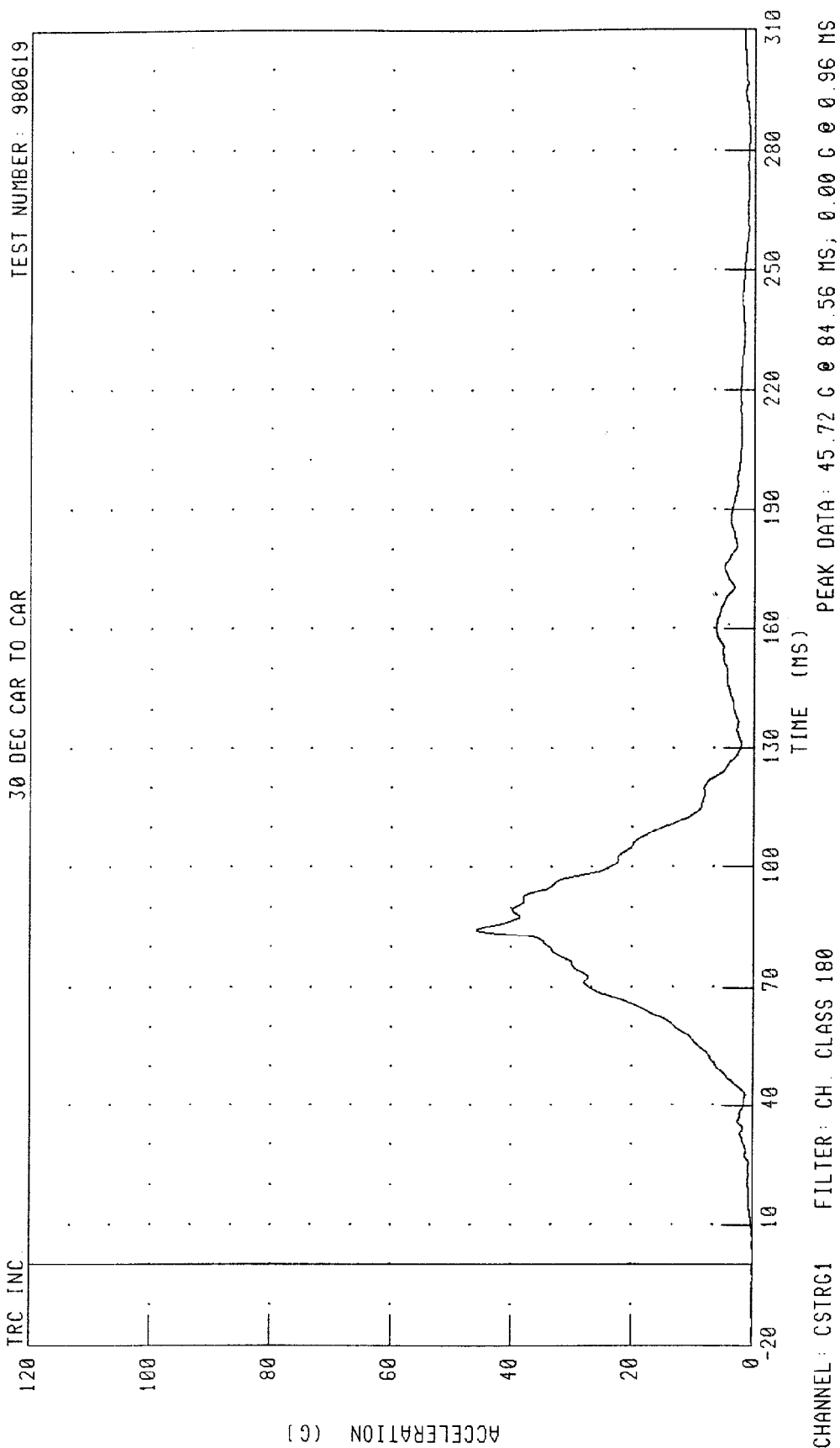


CHANNEL: CSTYG1 FILTER: CH. CLASS 180 PEAK DATA: 3.12 G @ 161.36 MS, -30.85 G @ 88.72 MS

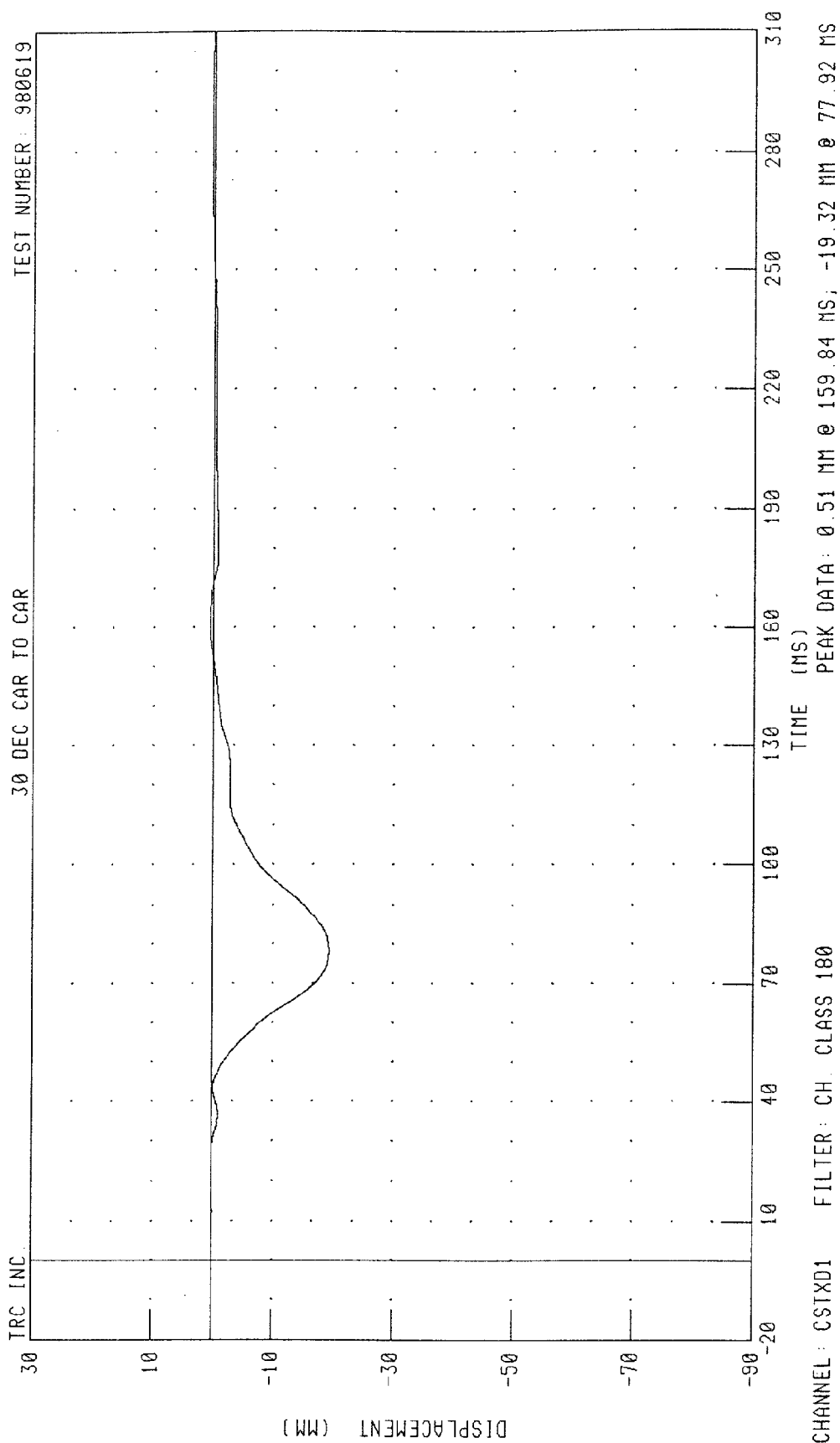
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER CHEST Z-AXIS ACCELERATION - PRIMARY



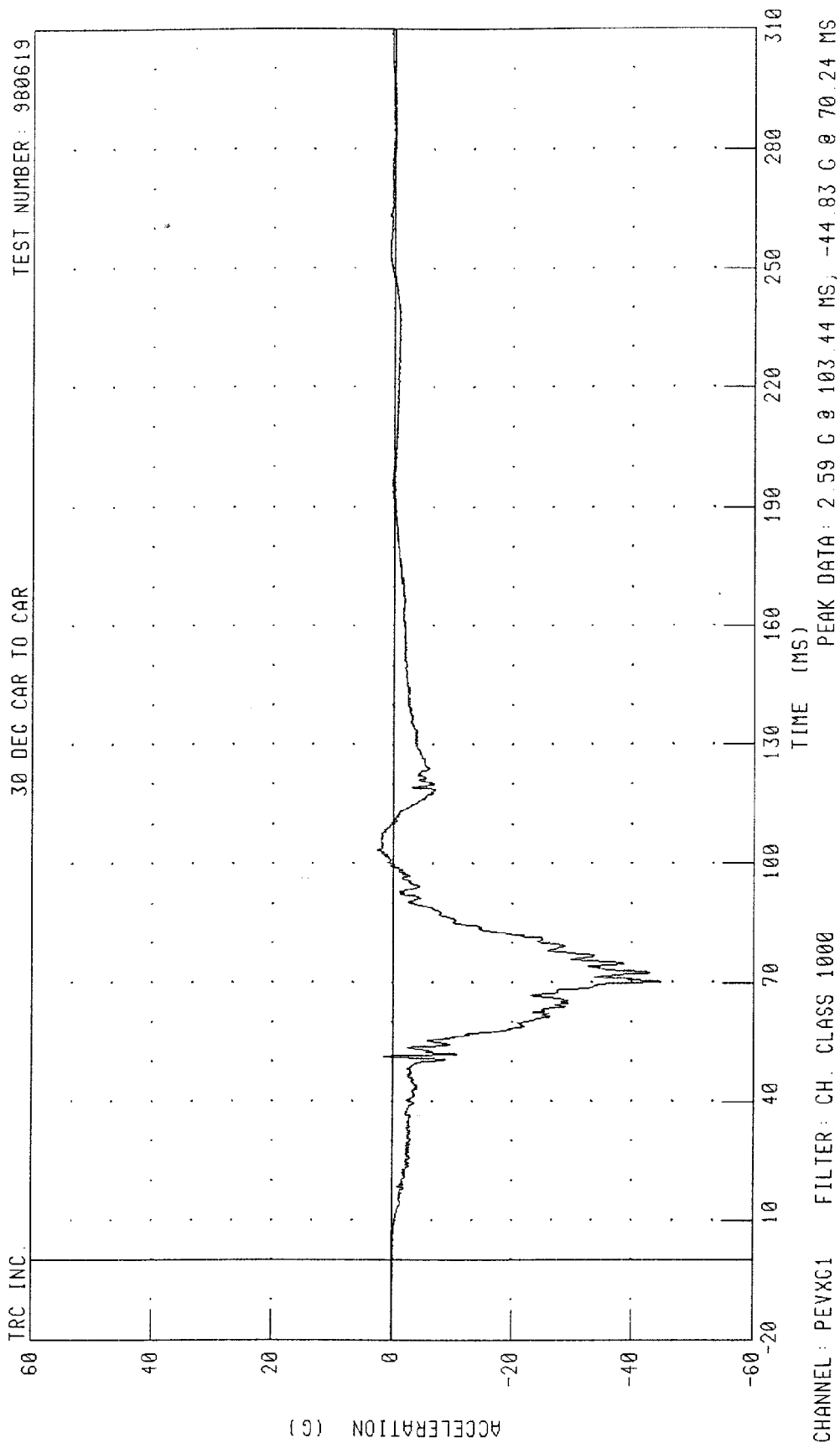
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER CHEST RESULTANT ACCELERATION



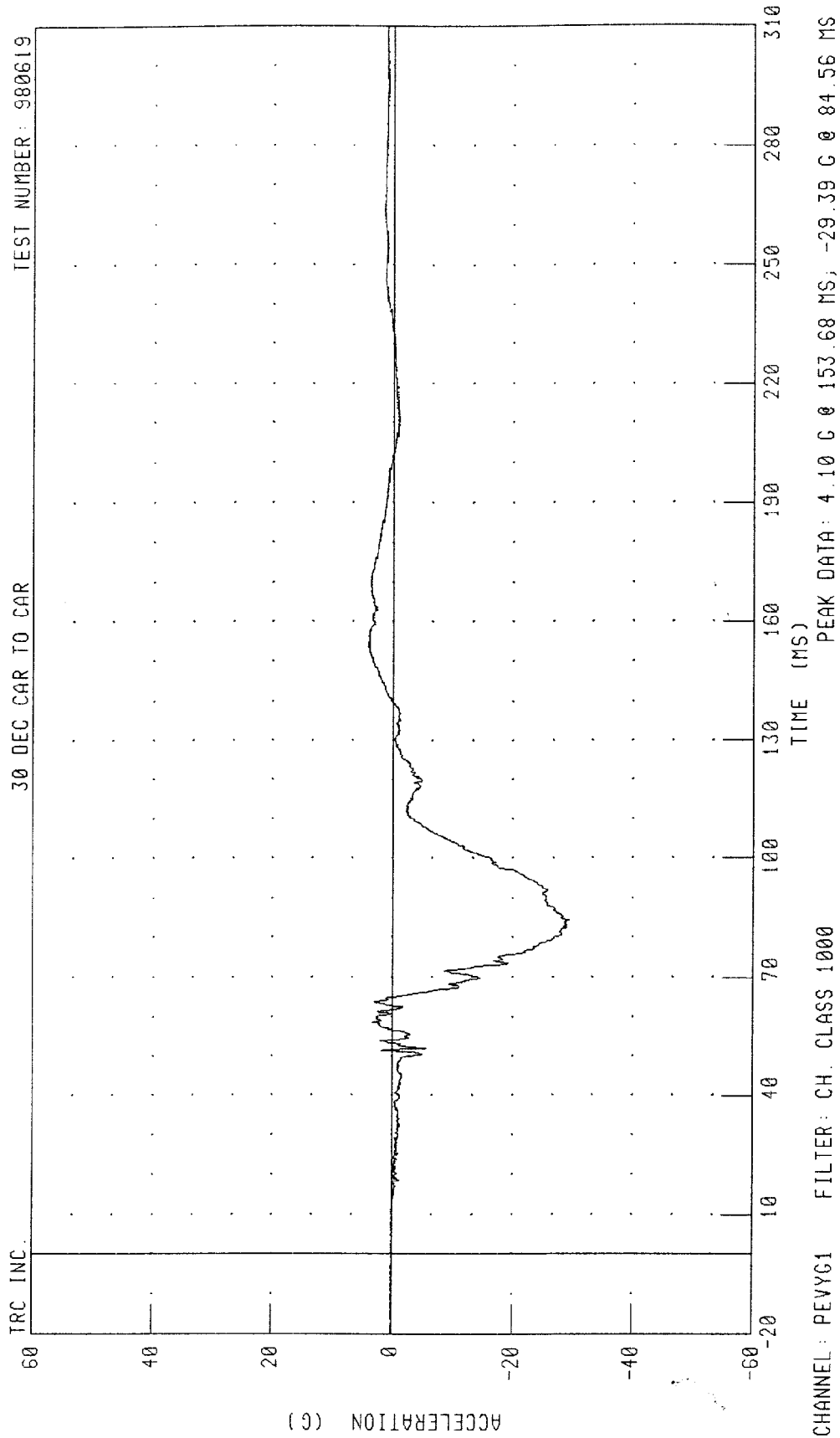
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER CHEST DEFLECTION



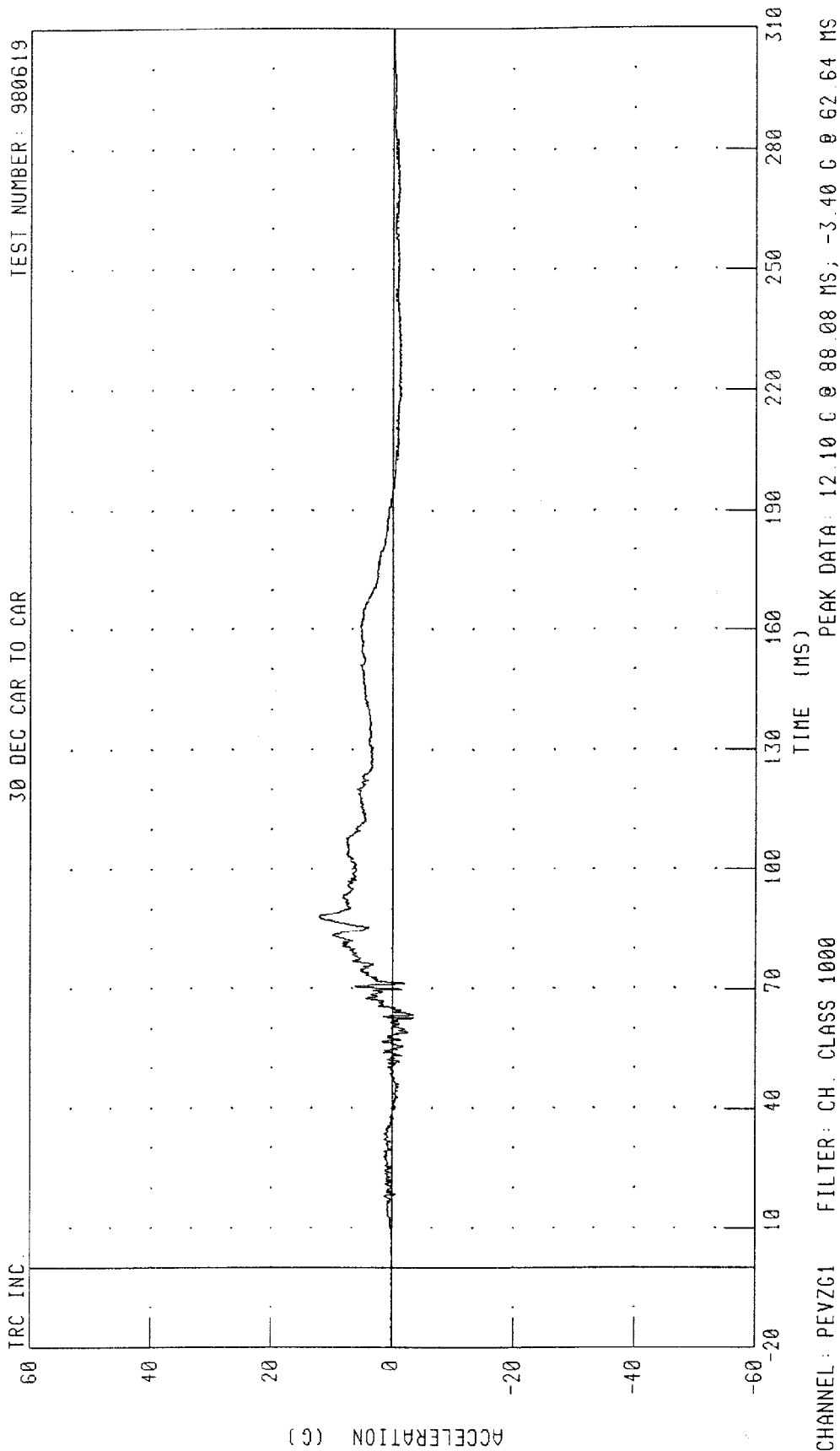
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER PELVIS X-AXIS ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER PELVIS Y-AXIS ACCELERATION



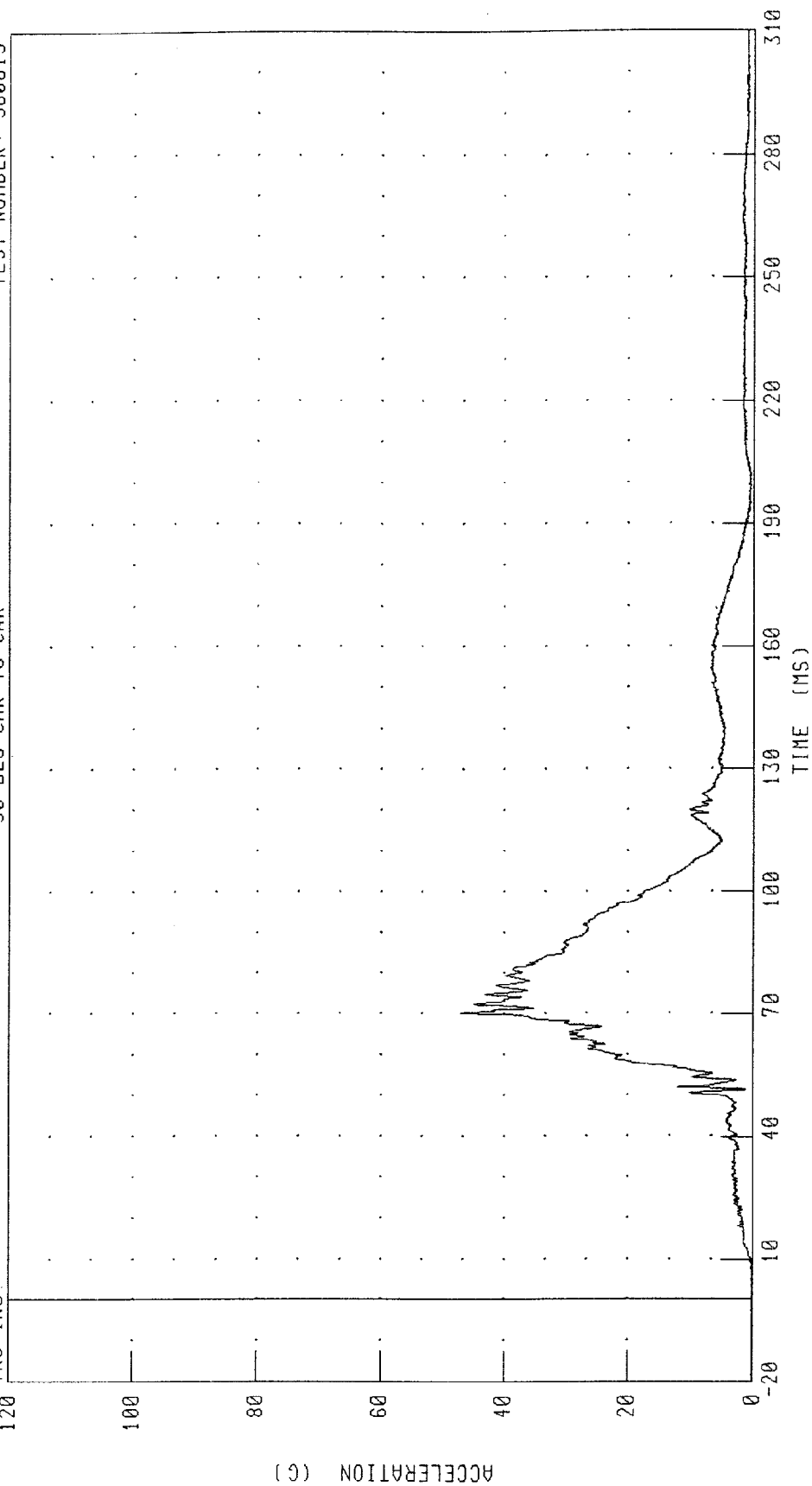
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
 TARGET DRIVER PELVIS Z-AXIS ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER PELVIS RESULTANT
30 DEG CAR TO CAR

TRC INC.

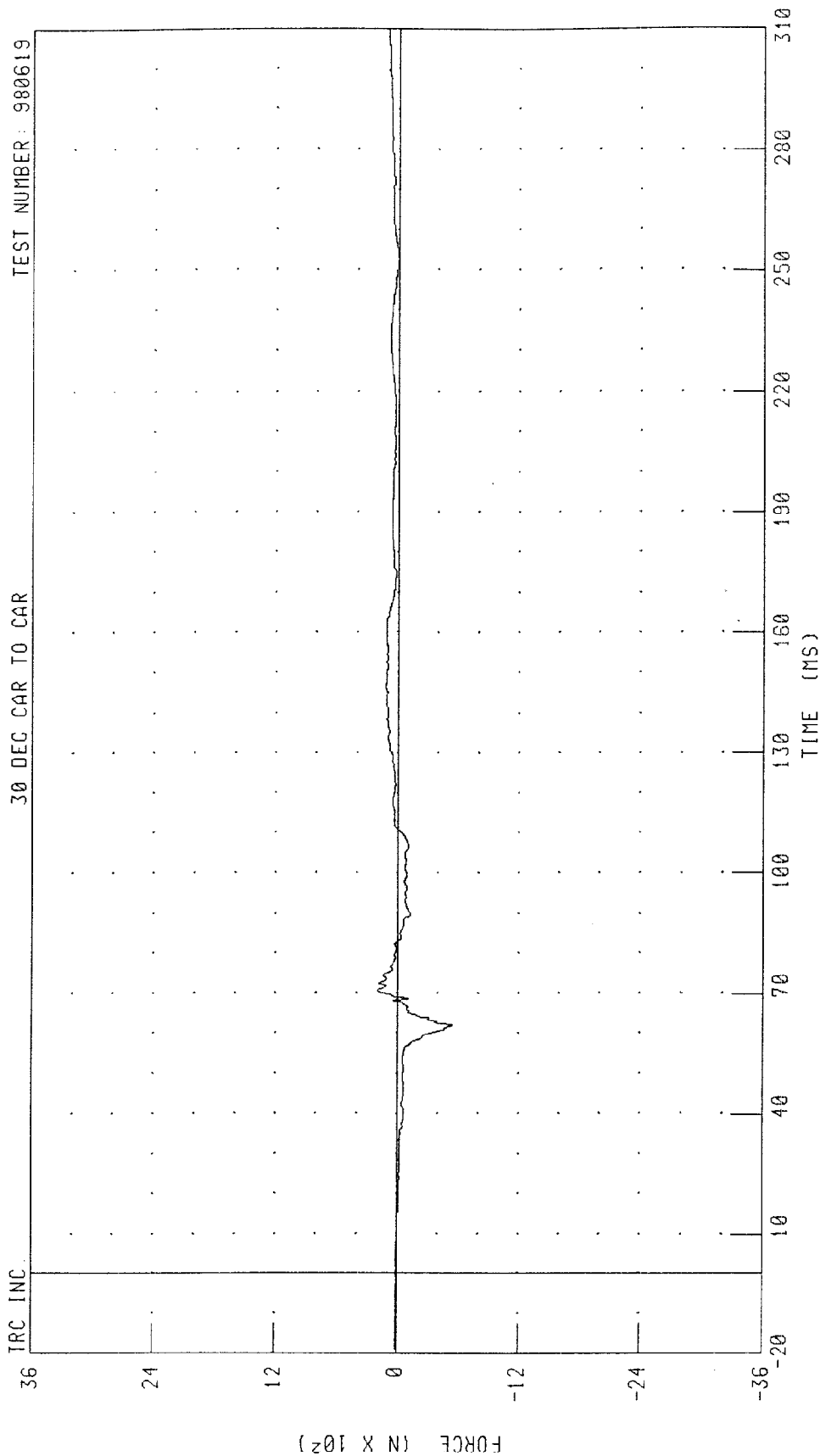
TEST NUMBER: 980619



CHANNEL: PEVRG1 FILTER: CH. CLASS 1000

PEAK DATA: 47.11 G @ 70.24 MS; 0.10 G @ -19.92 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER RIGHT UPPER TIBIA X-AXIS FORCE



CHANNEL: TBRXF1 FILTER: CH. CLASS 600

PEAK DATA: 185.83 N @ 70.88 MS; -543.29 N @ 62.08 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER RIGHT UPPER TIBIA Z-AXIS FORCE

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.

12

-2

-16

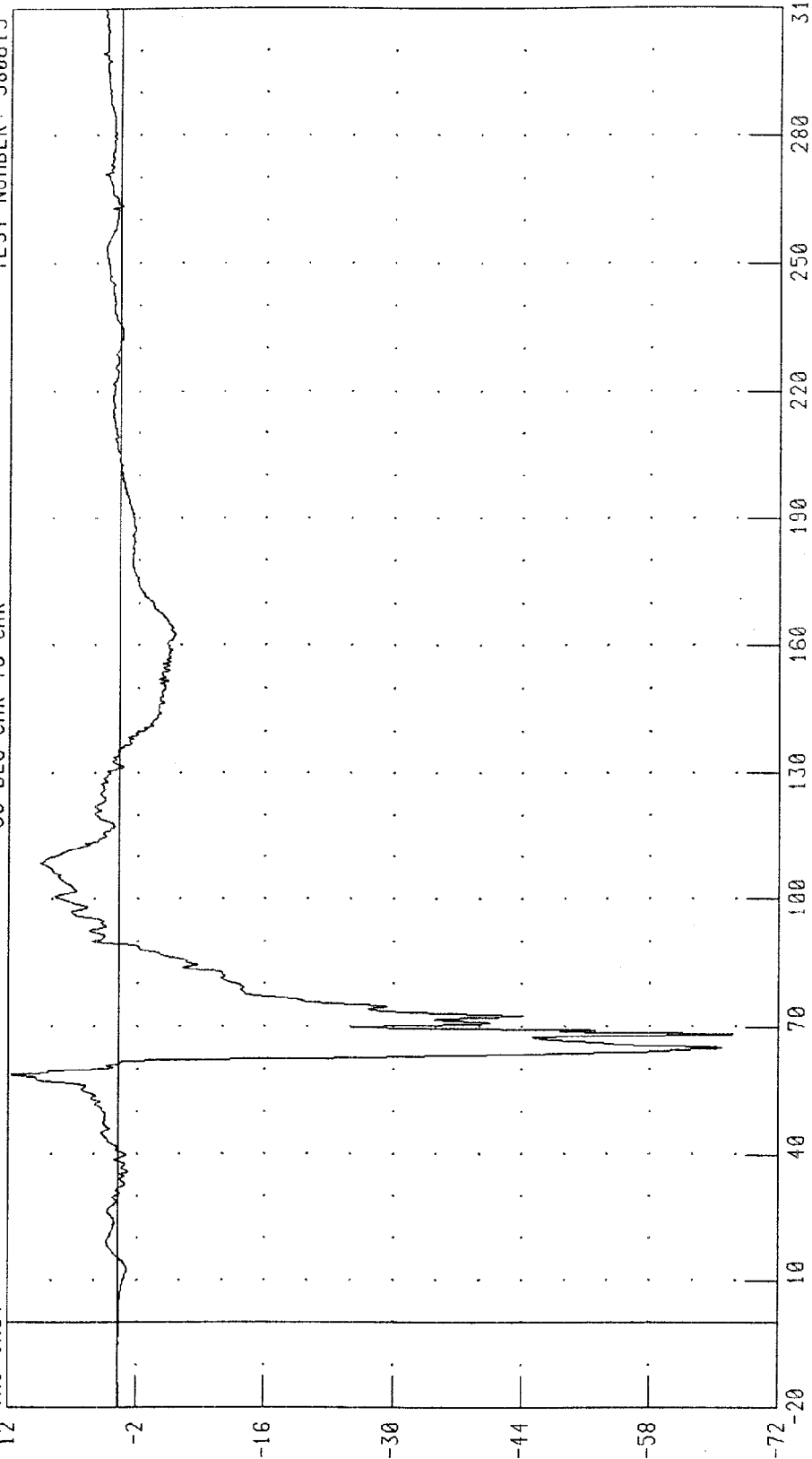
-30

-44

-58

-72

FORCE (N X 10²)



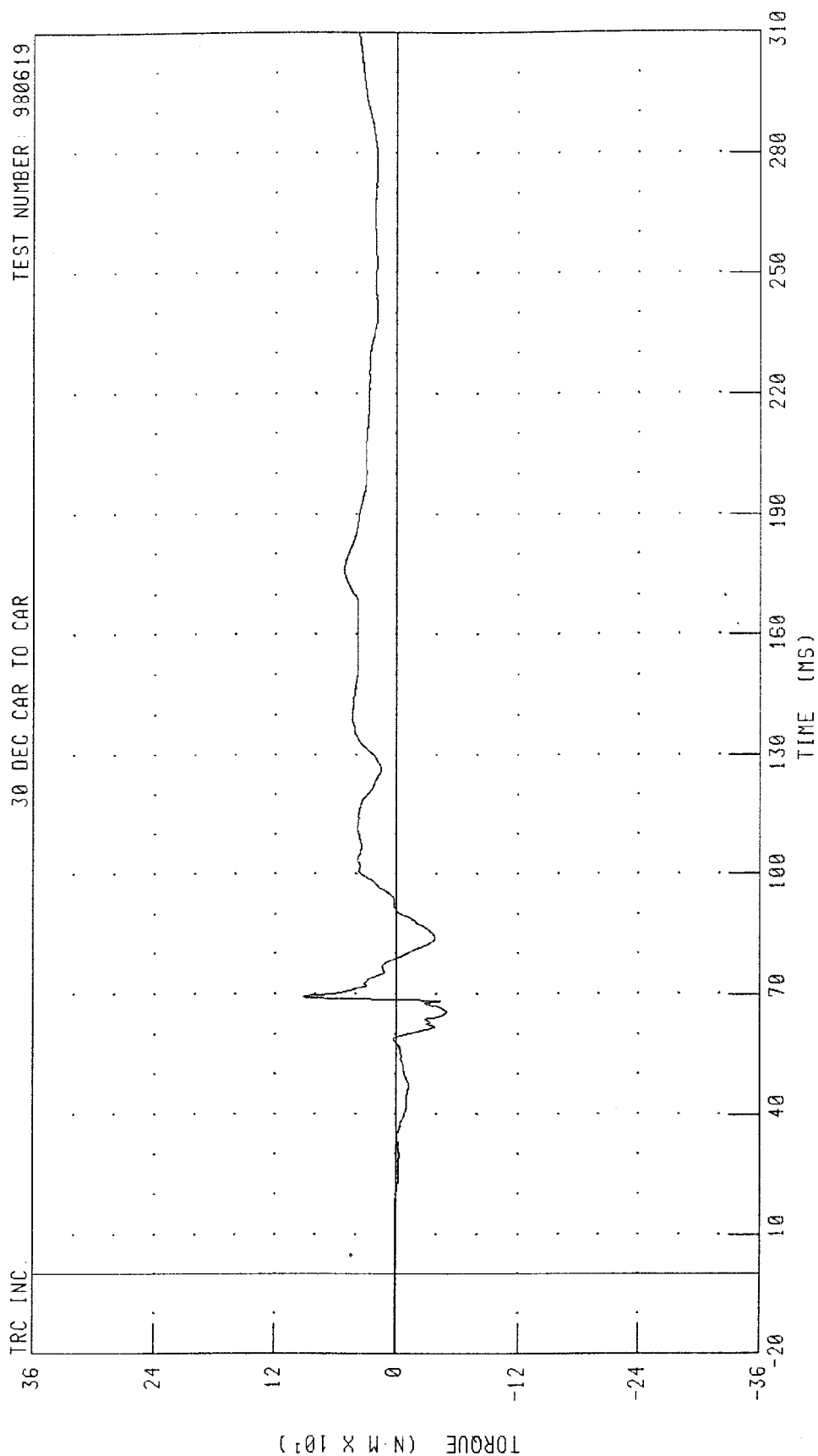
TIME (MS)

CHANNEL: TBRZF1 FILTER: CH. CLASS 600

PEAK DATA: 1165.40 N @ 58.64 MS; -6698.51 N @ 68.24 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS
30 DEC CAR TO CAR

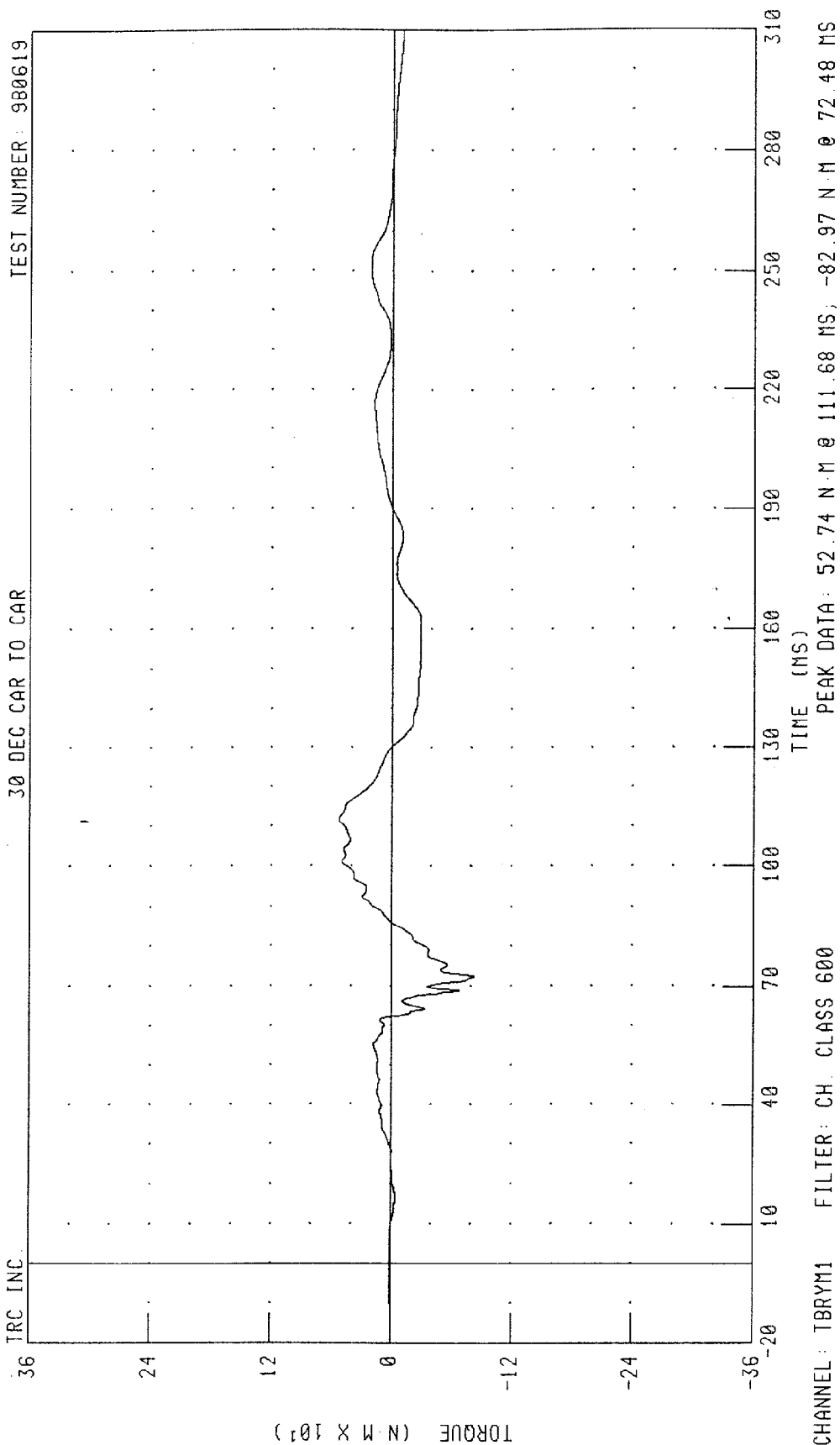
TEST NUMBER: 980619



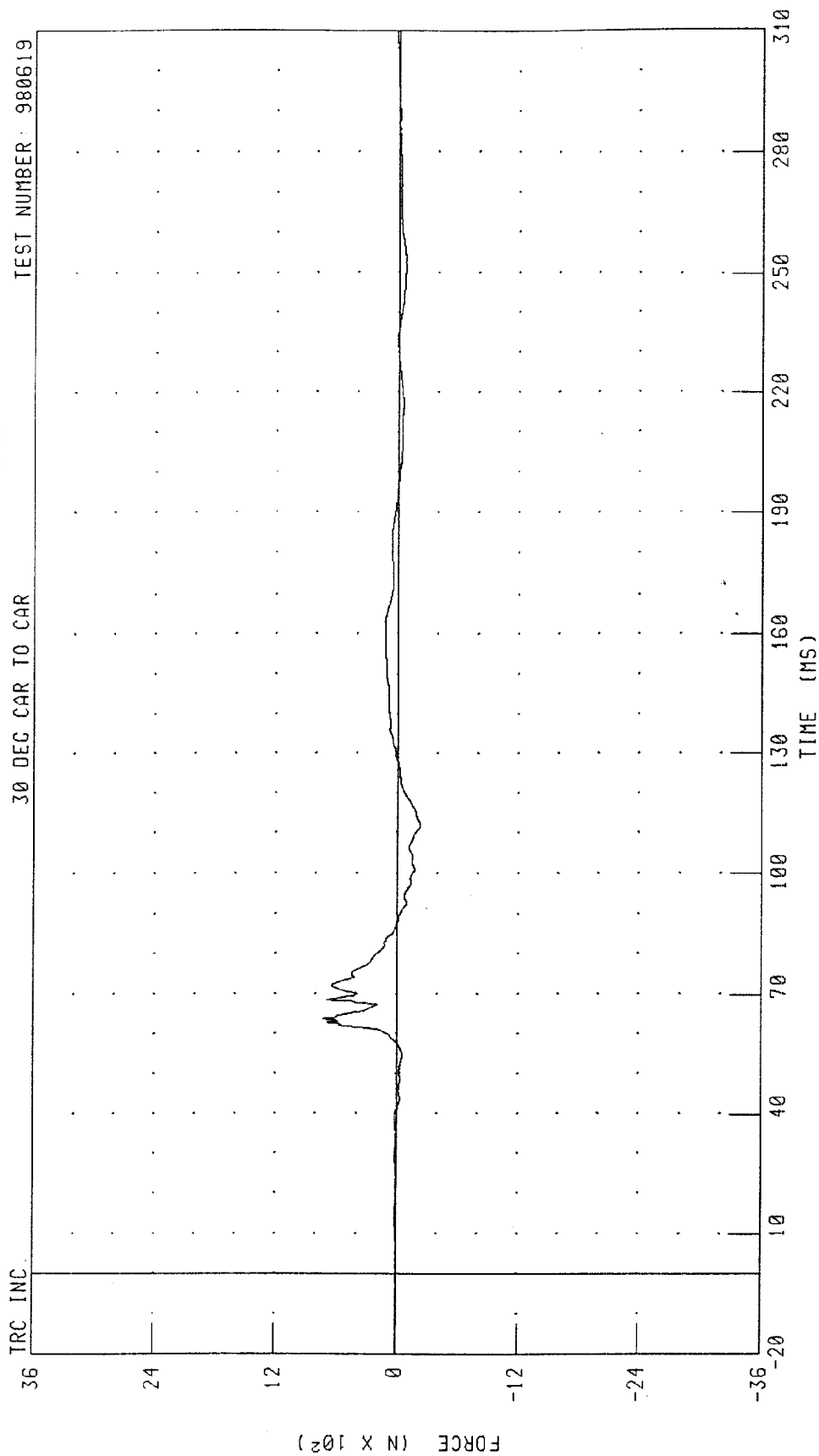
CHANNEL: TBRXM1 FILTER: CH. CLASS 600

PEAK DATA: 92.34 N·m @ 69.36 MS, -50.10 N·m @ 65.60 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS



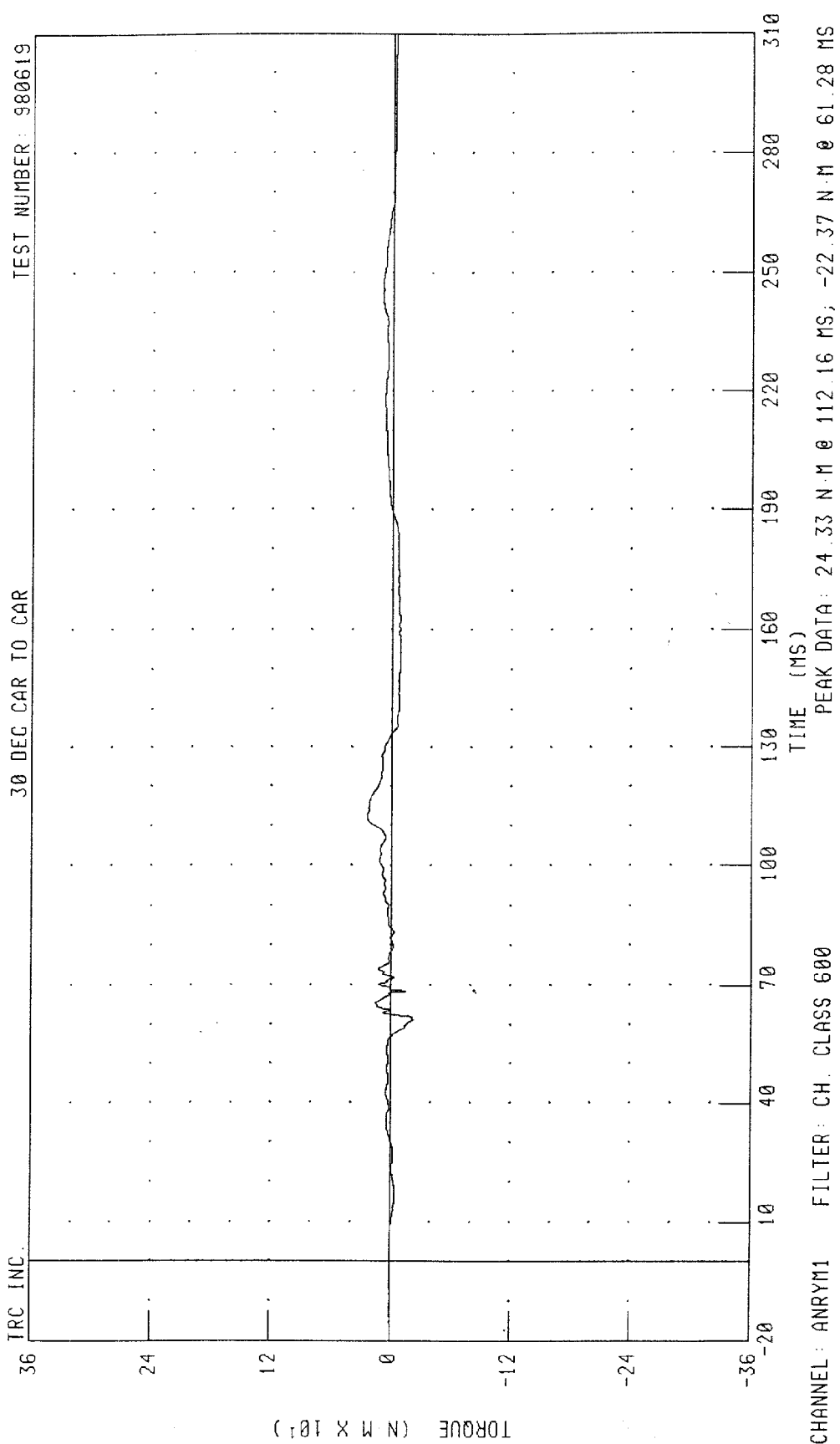
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER RIGHT LOWER TIBIA X-AXIS FORCE



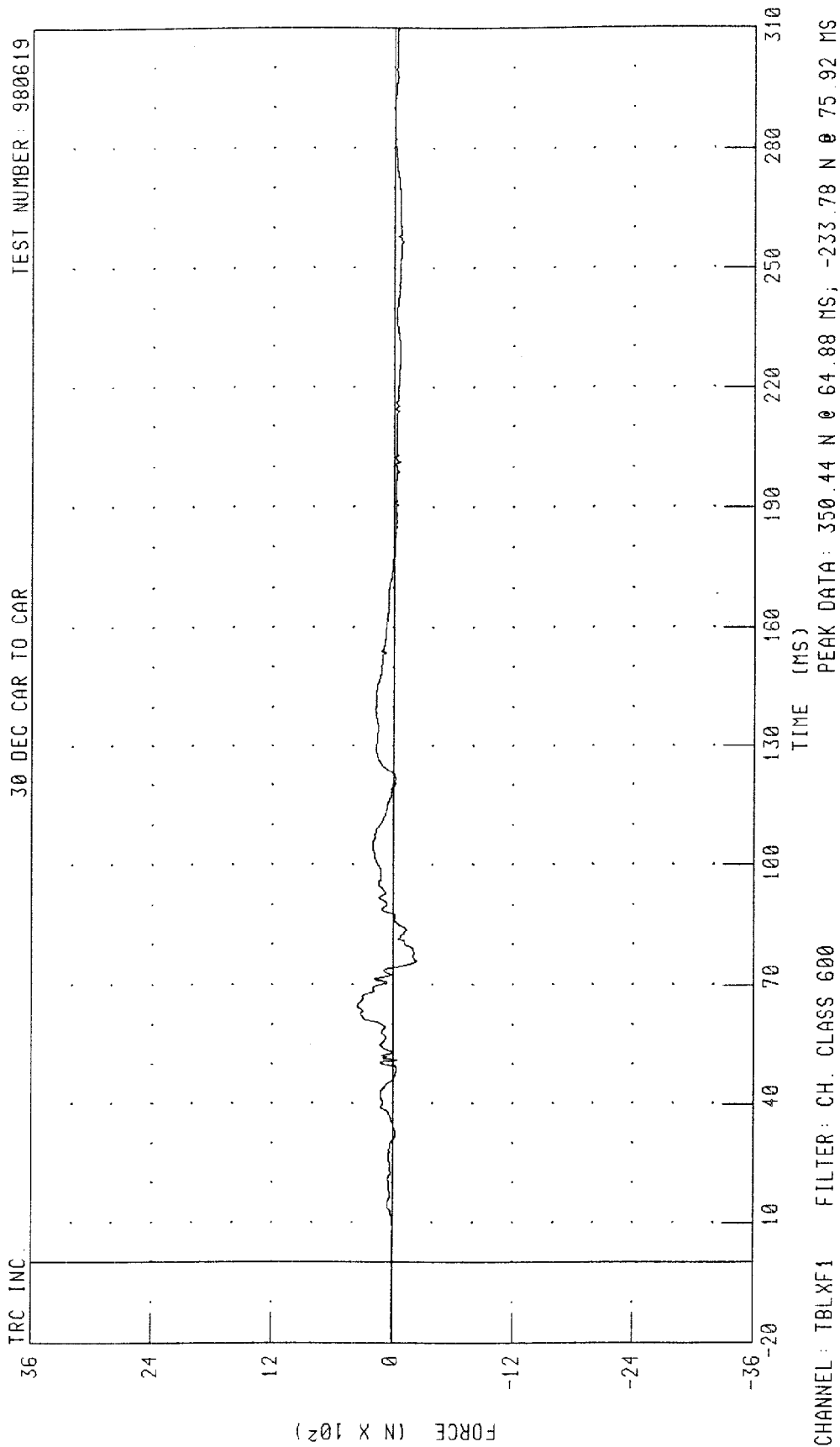
CHANNEL: ANRXF1 FILTER: CH. CLASS 600

PEAK DATA: 725.73 N @ 63.84 MS, -228.13 N @ 112.00 MS

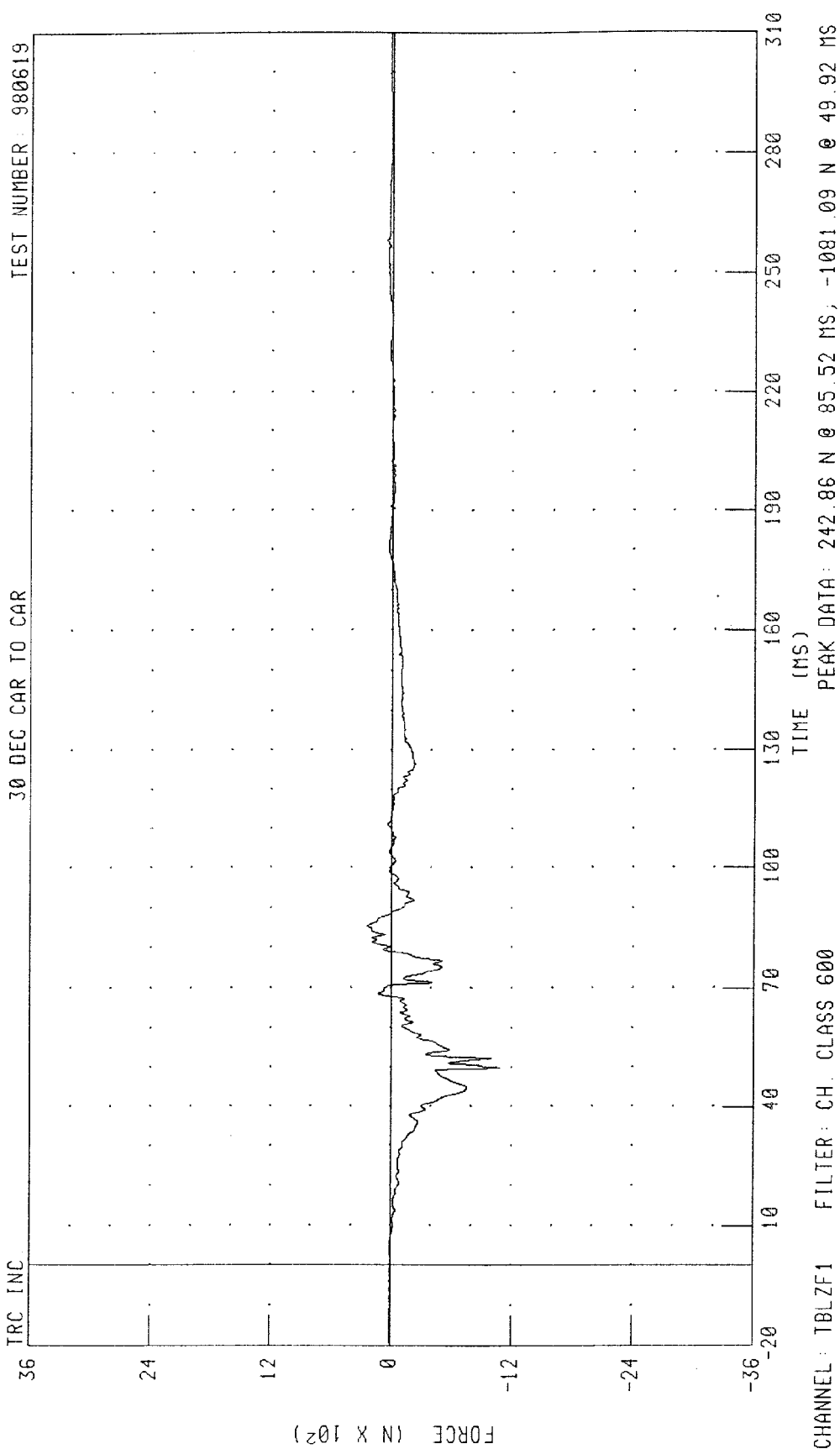
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS



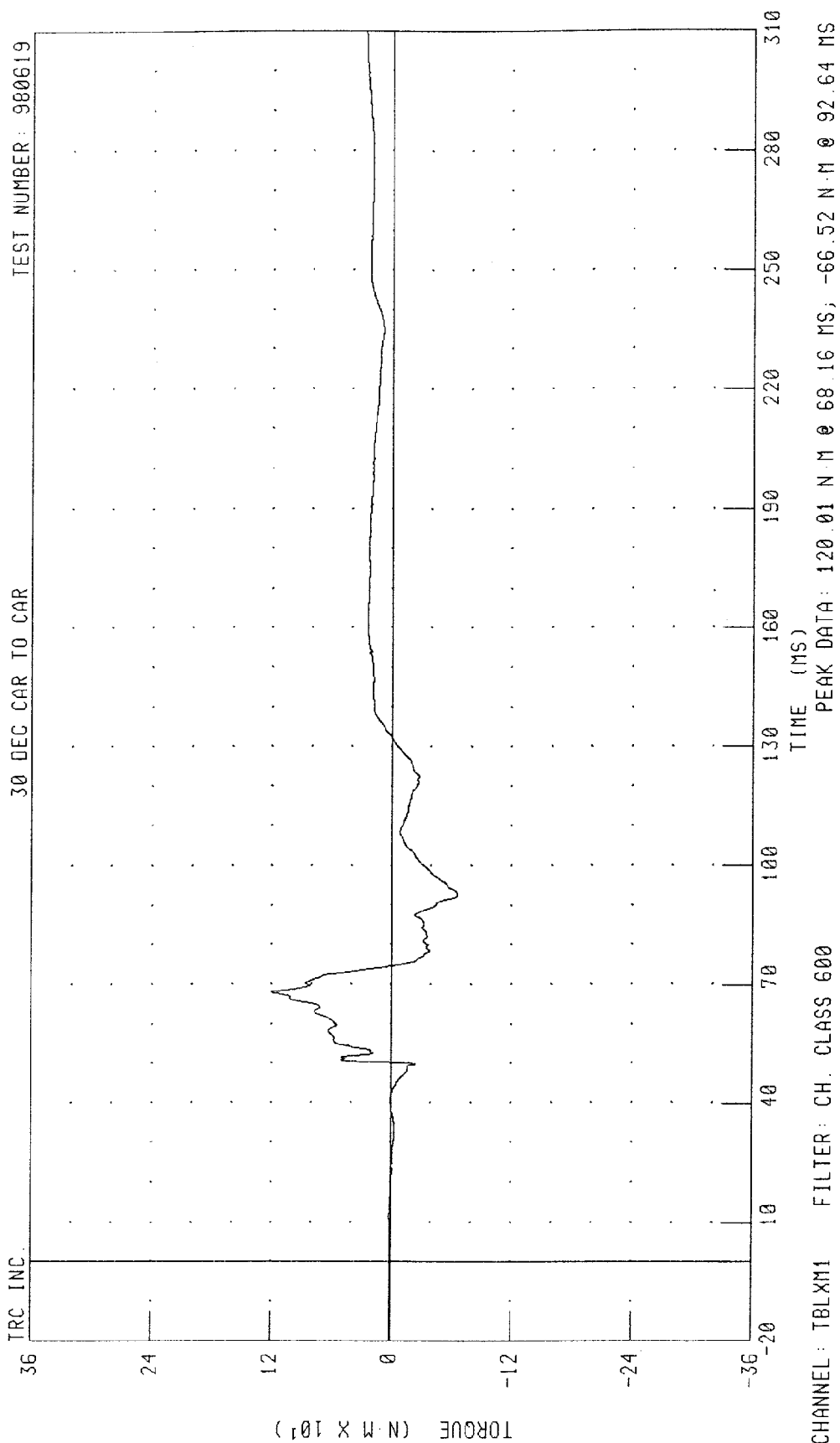
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER LEFT UPPER TIBIA X-AXIS FORCE



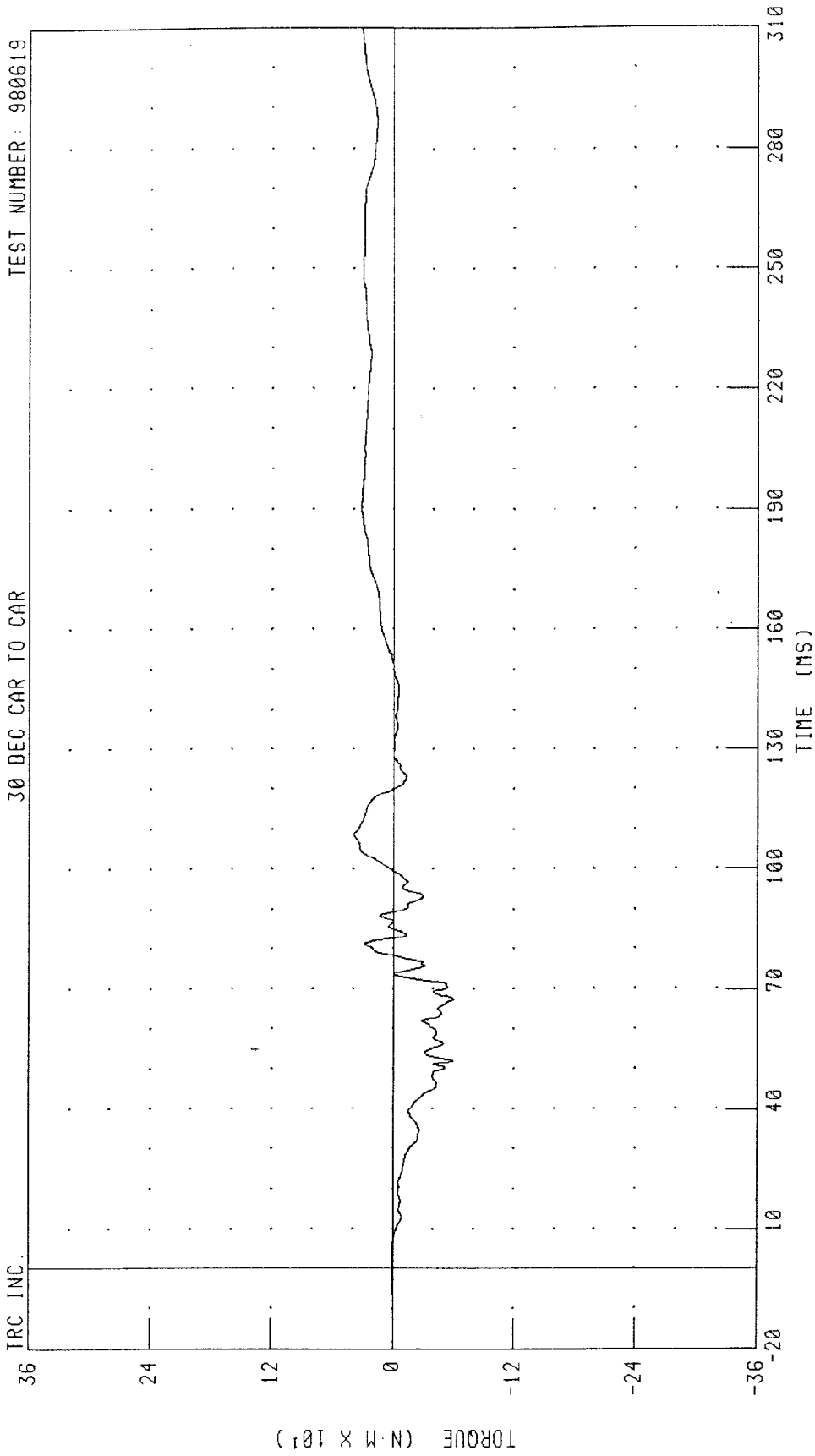
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER LEFT UPPER TIBIA Z-AXIS FORCE



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER LEFT UPPER TIBIA MOMENT ABOUT X AXIS

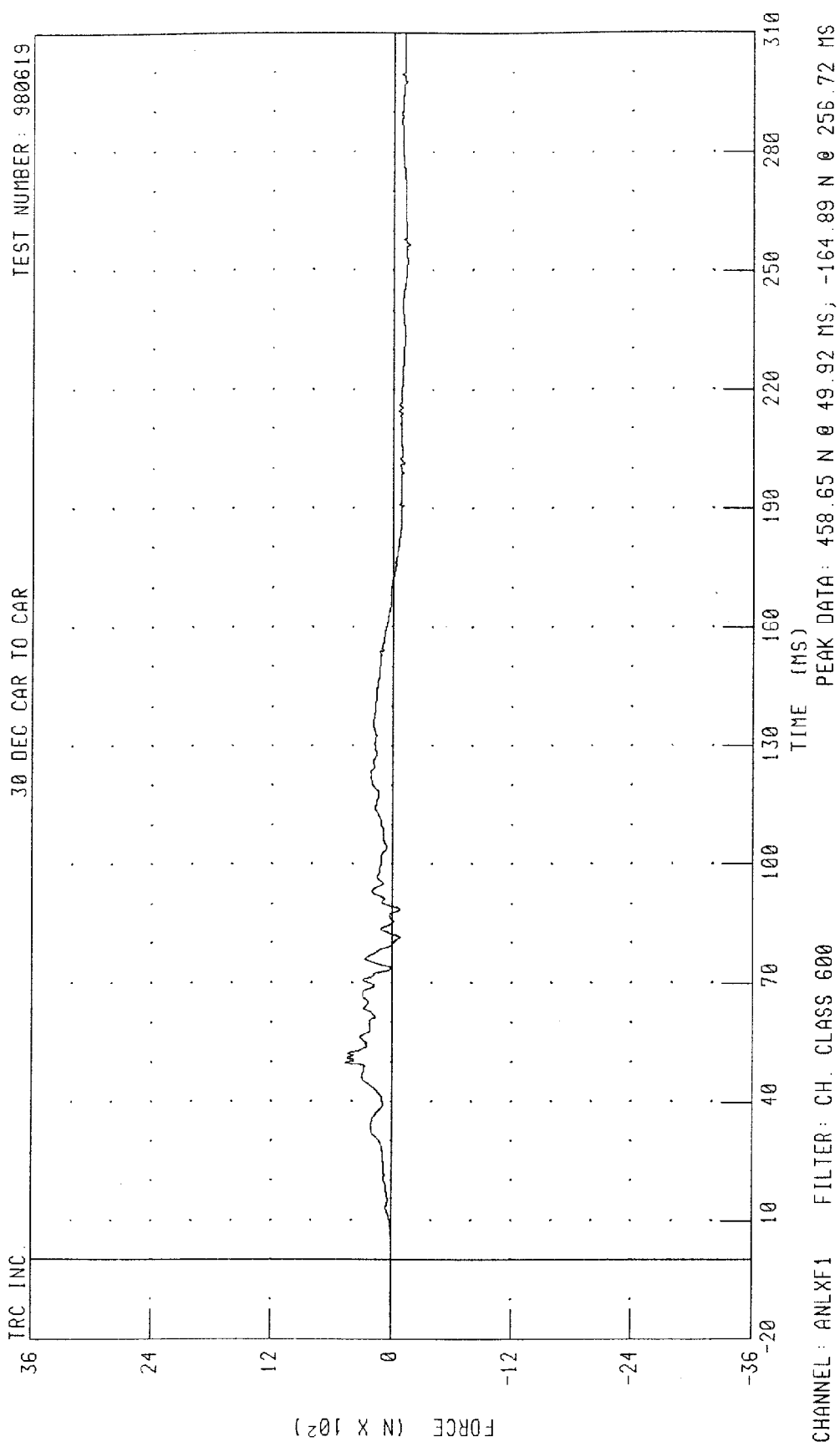


1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS

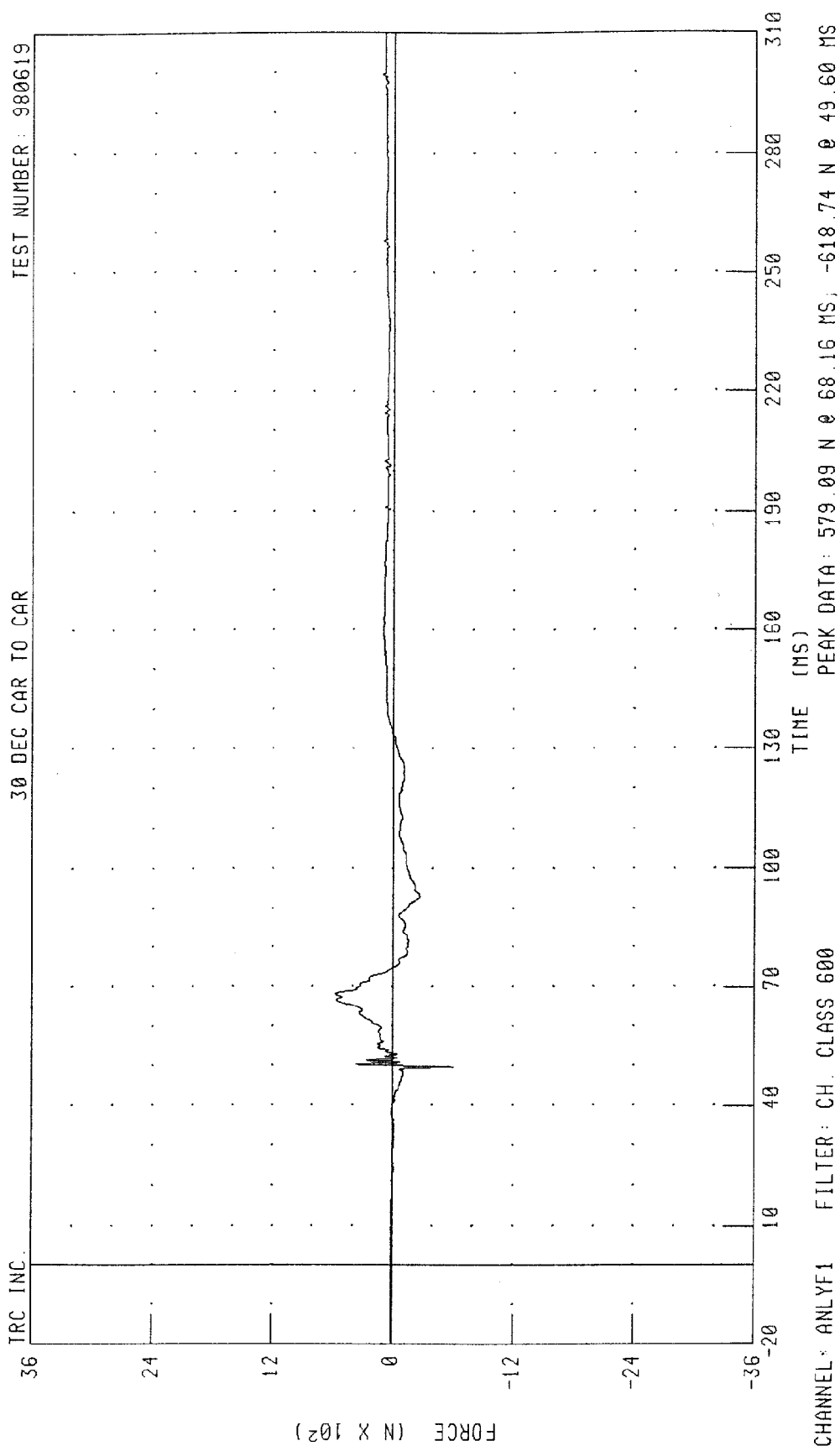


CHANNEL: TBLYM1 FILTER: CH. CLASS 600 PEAK DATA: 39.17 N·M @ 108.48 MS; -60.48 N·M @ 67.52 MS

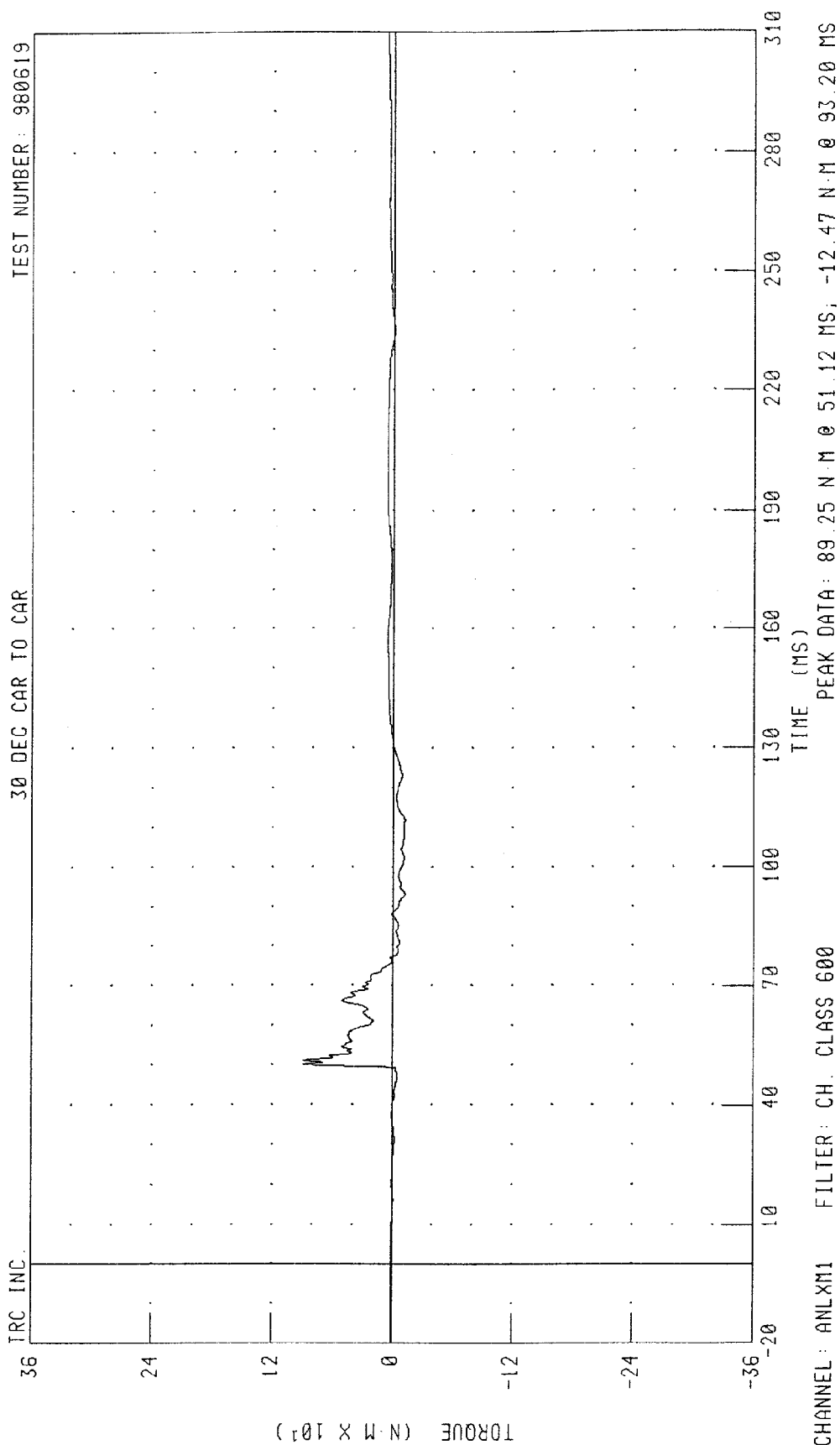
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER LEFT LOWER TIBIA X-AXIS FORCE



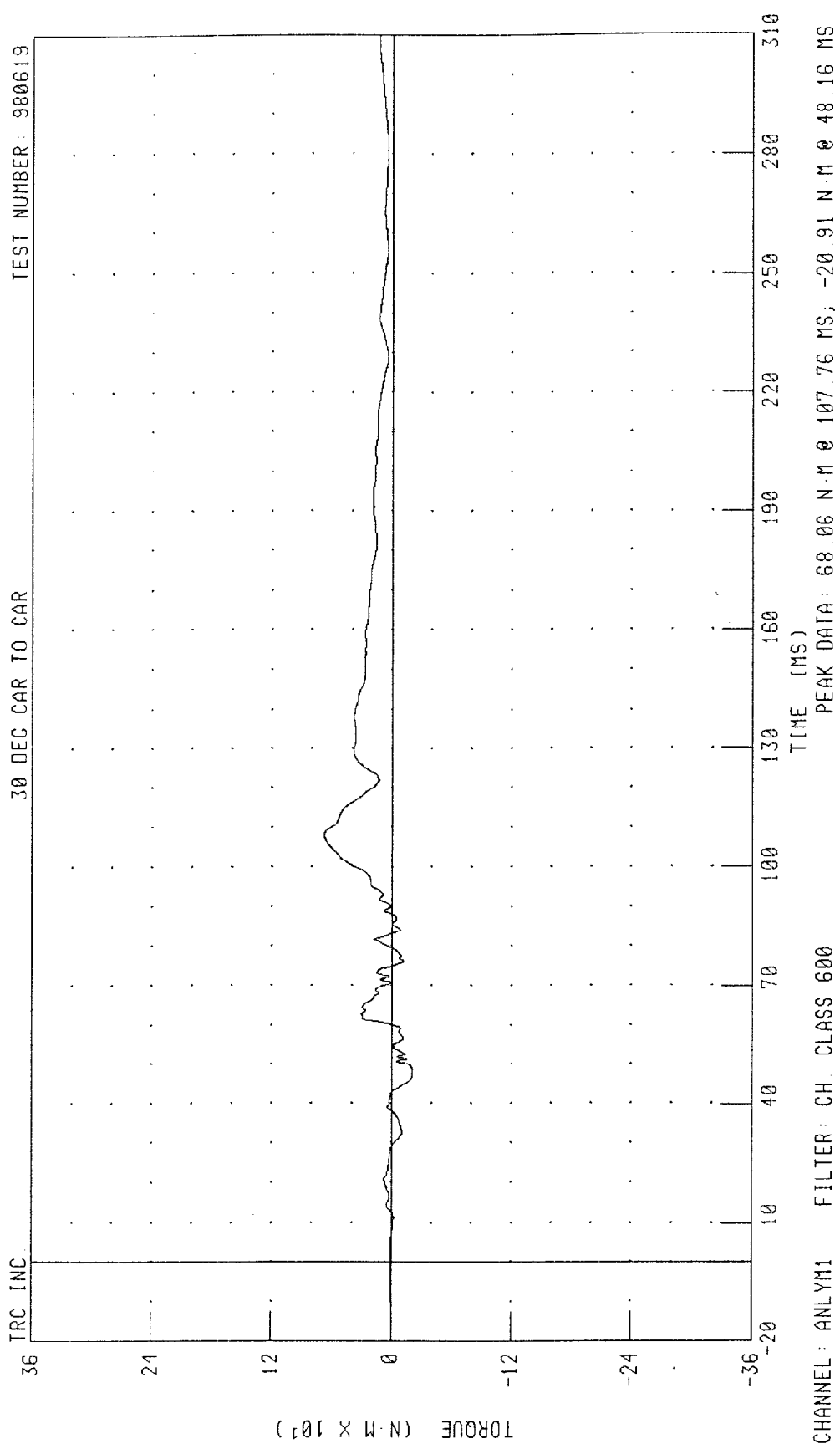
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER LEFT LOWER TIBIA Y-AXIS FORCE



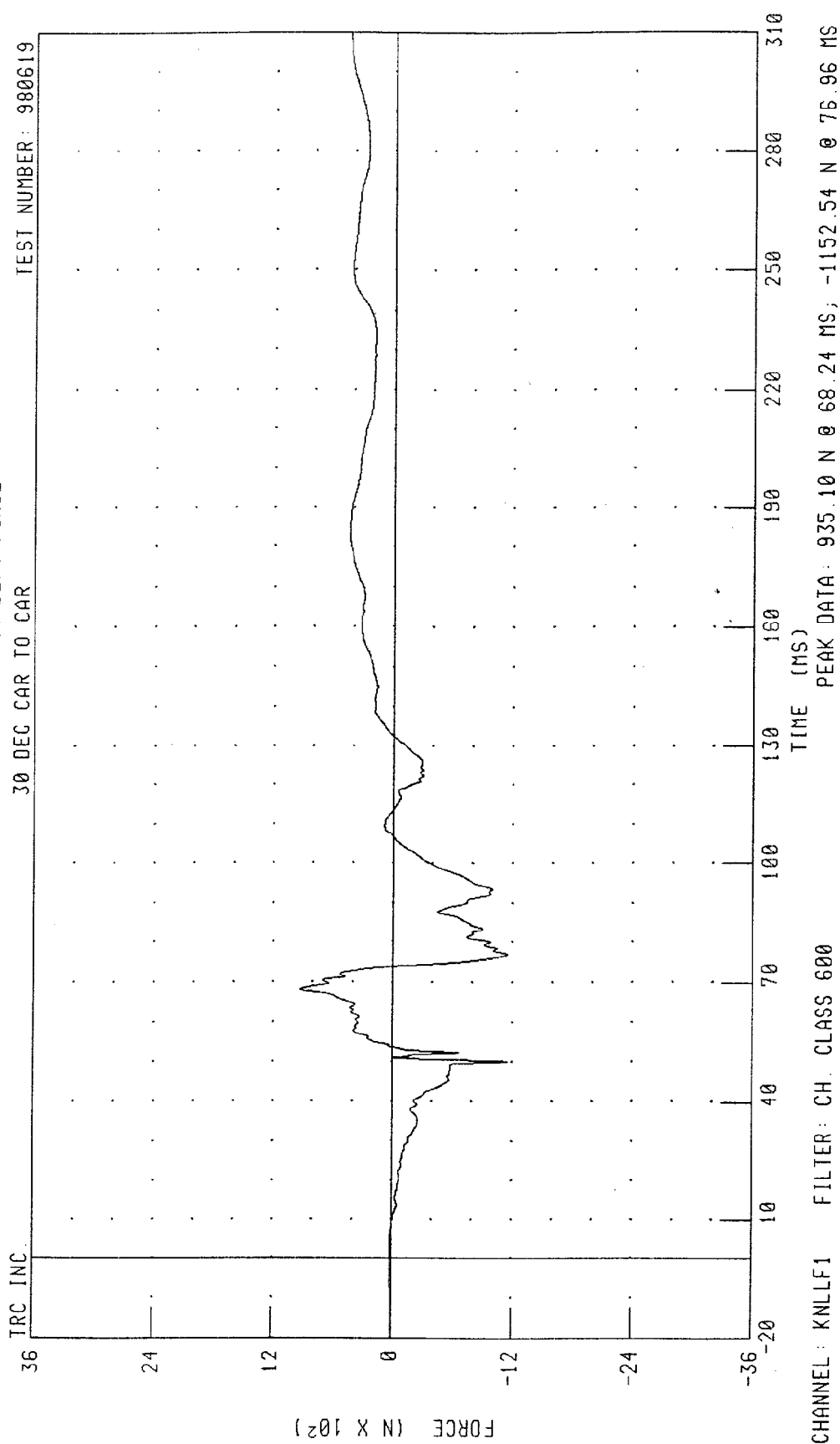
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER LEFT LOWER TIBIA MOMENT ABOUT X AXIS



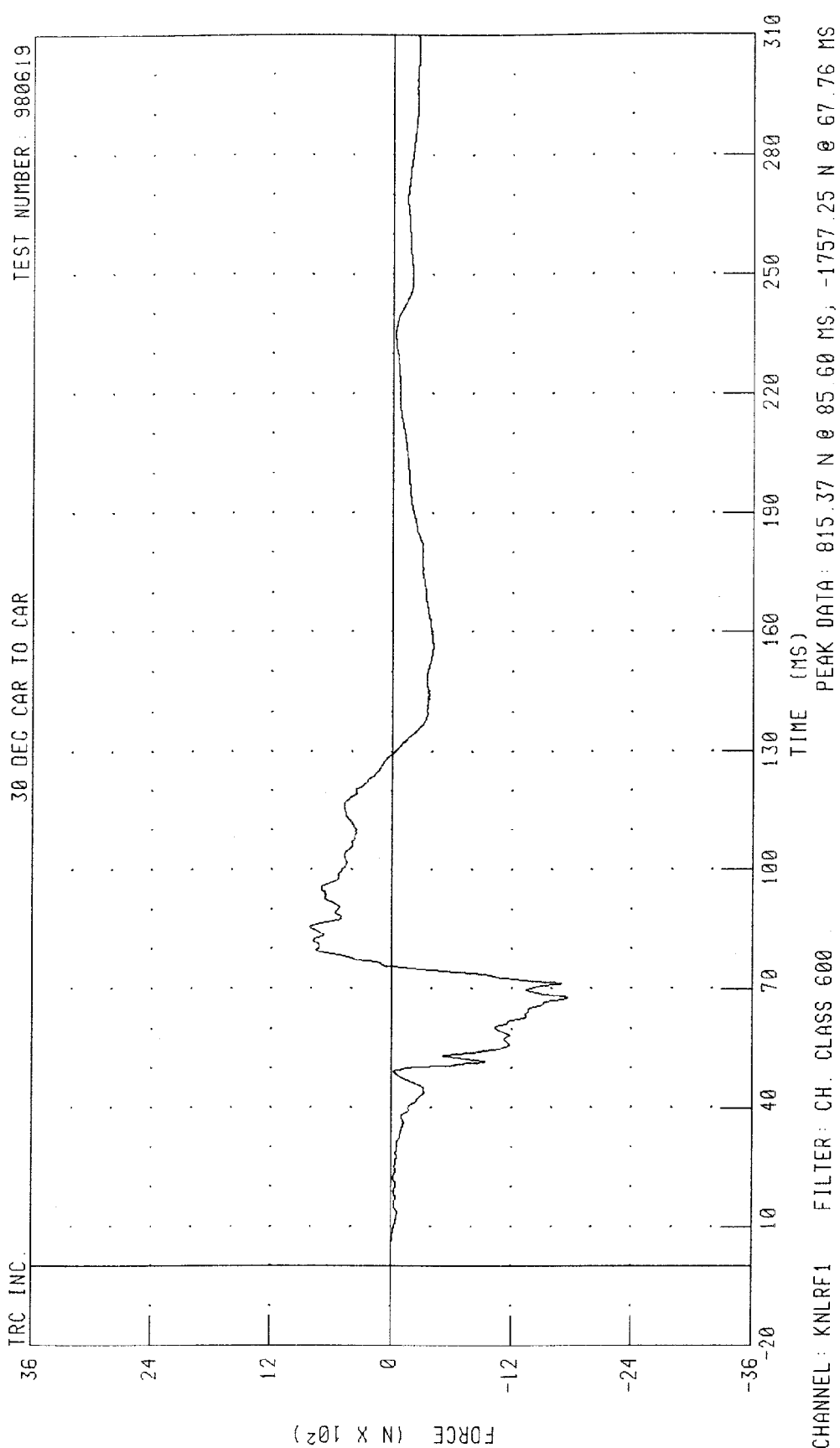
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS



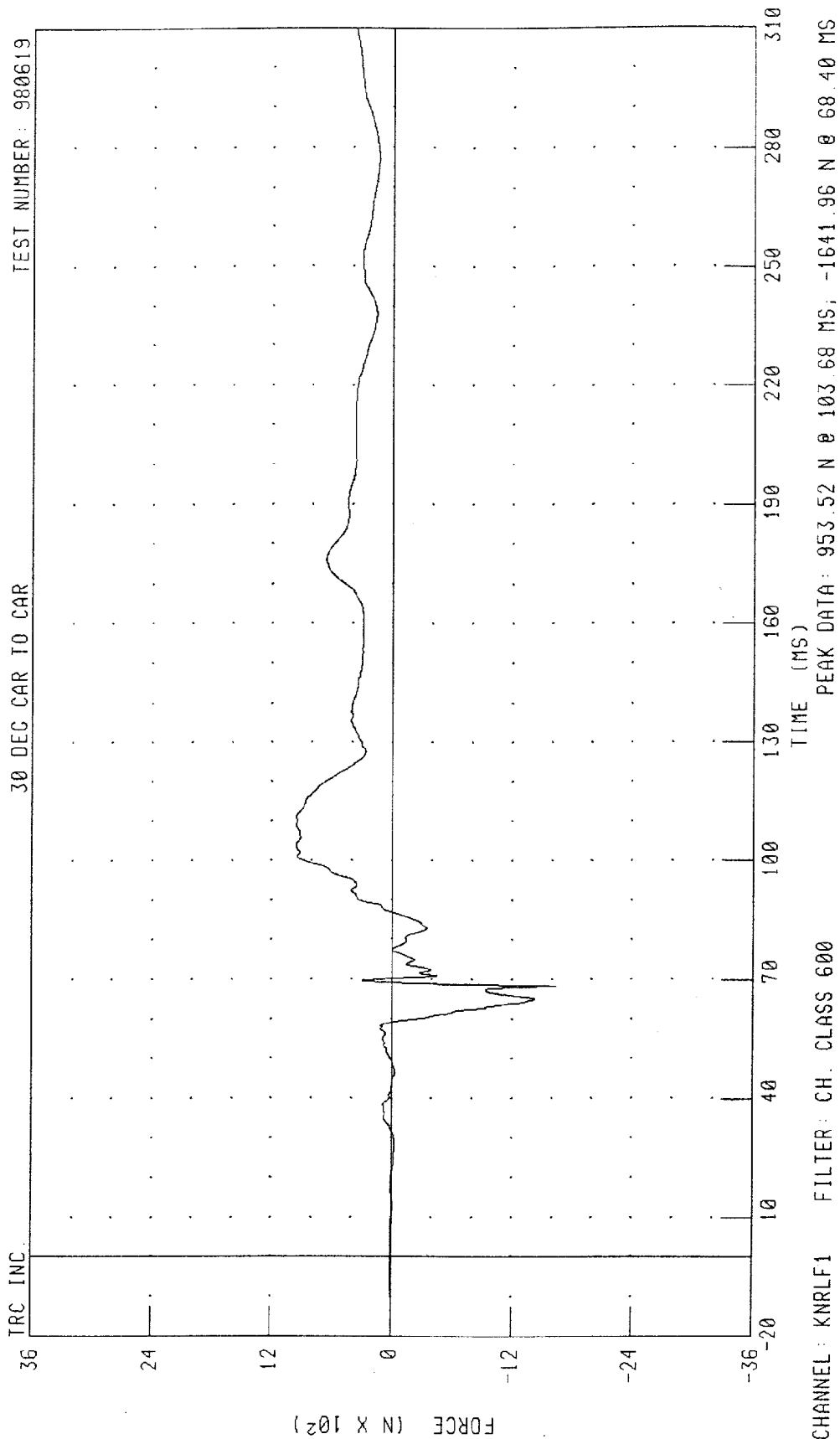
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER LEFT KNEE LEFT FORCE



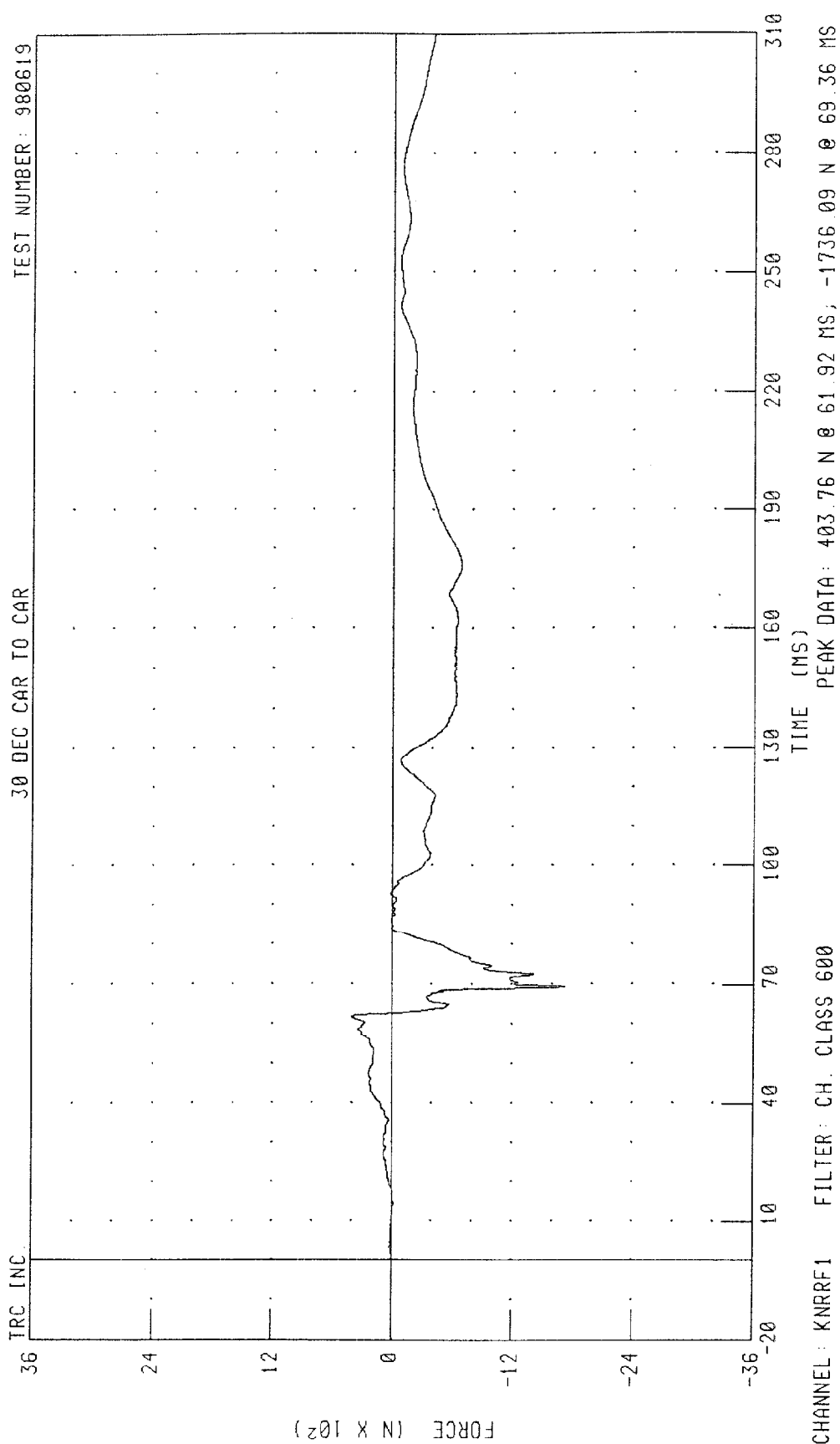
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER LEFT KNEE RIGHT FORCE



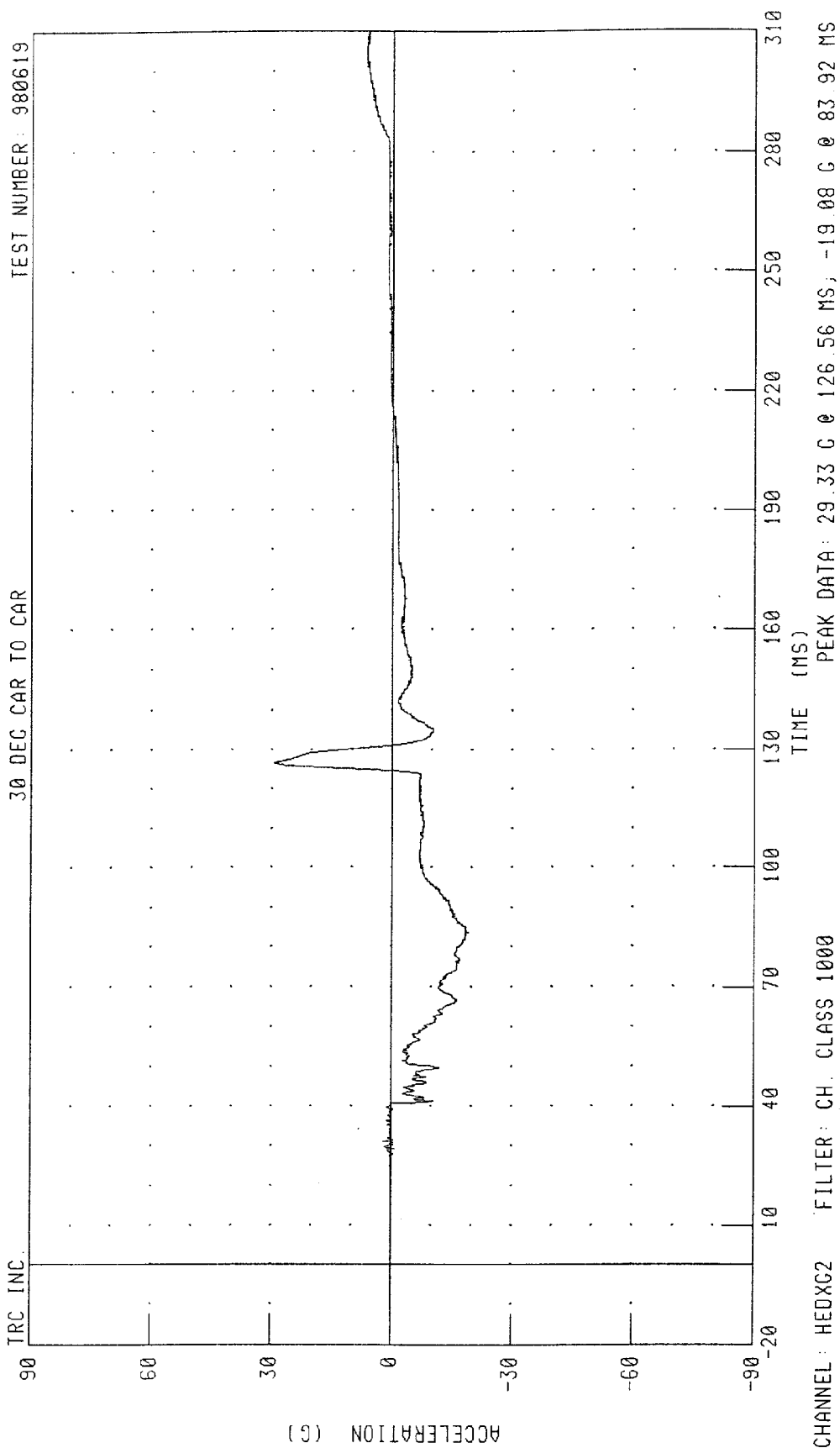
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER RIGHT KNEE LEFT FORCE



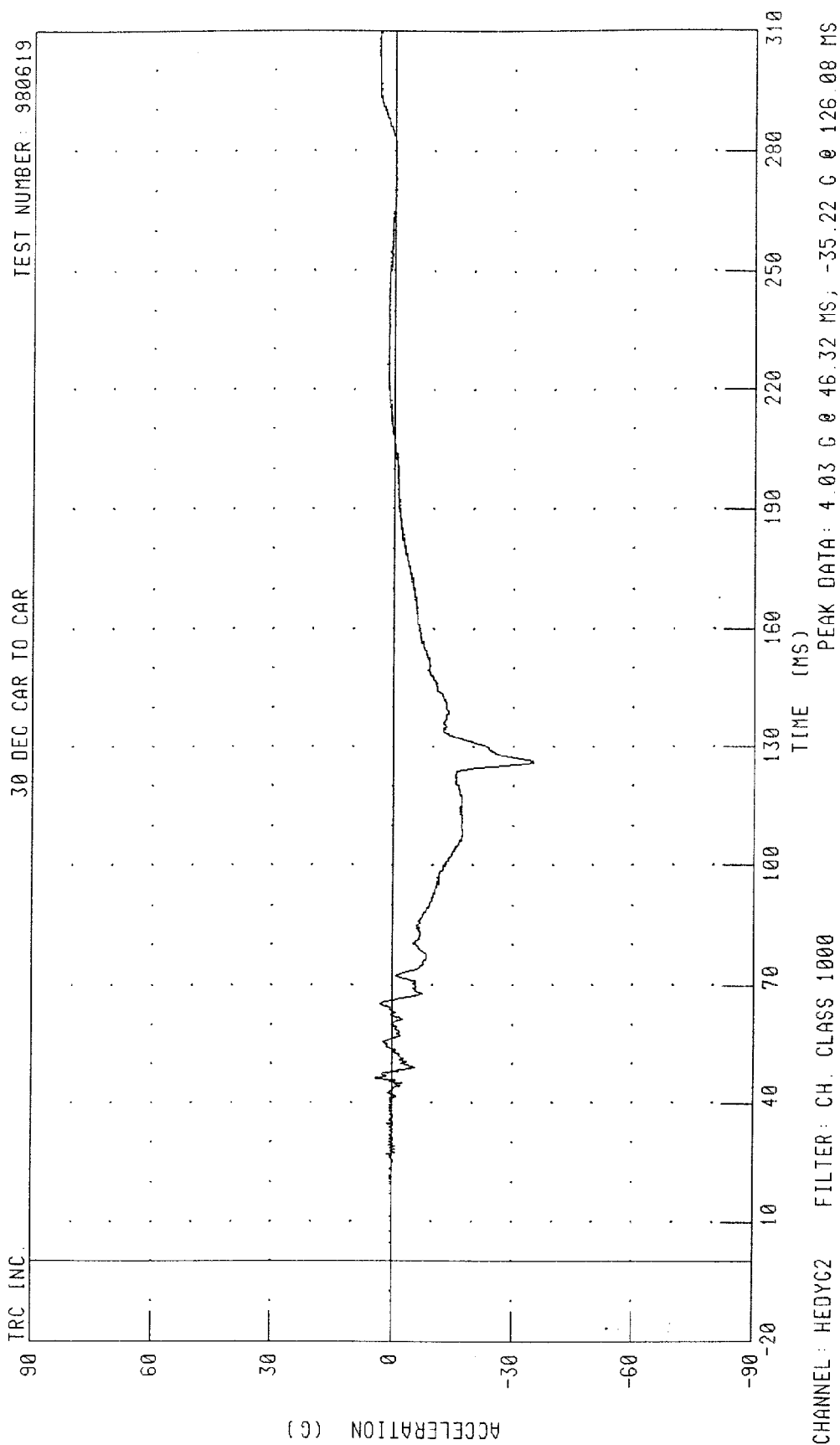
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET DRIVER RIGHT KNEE RIGHT FORCE



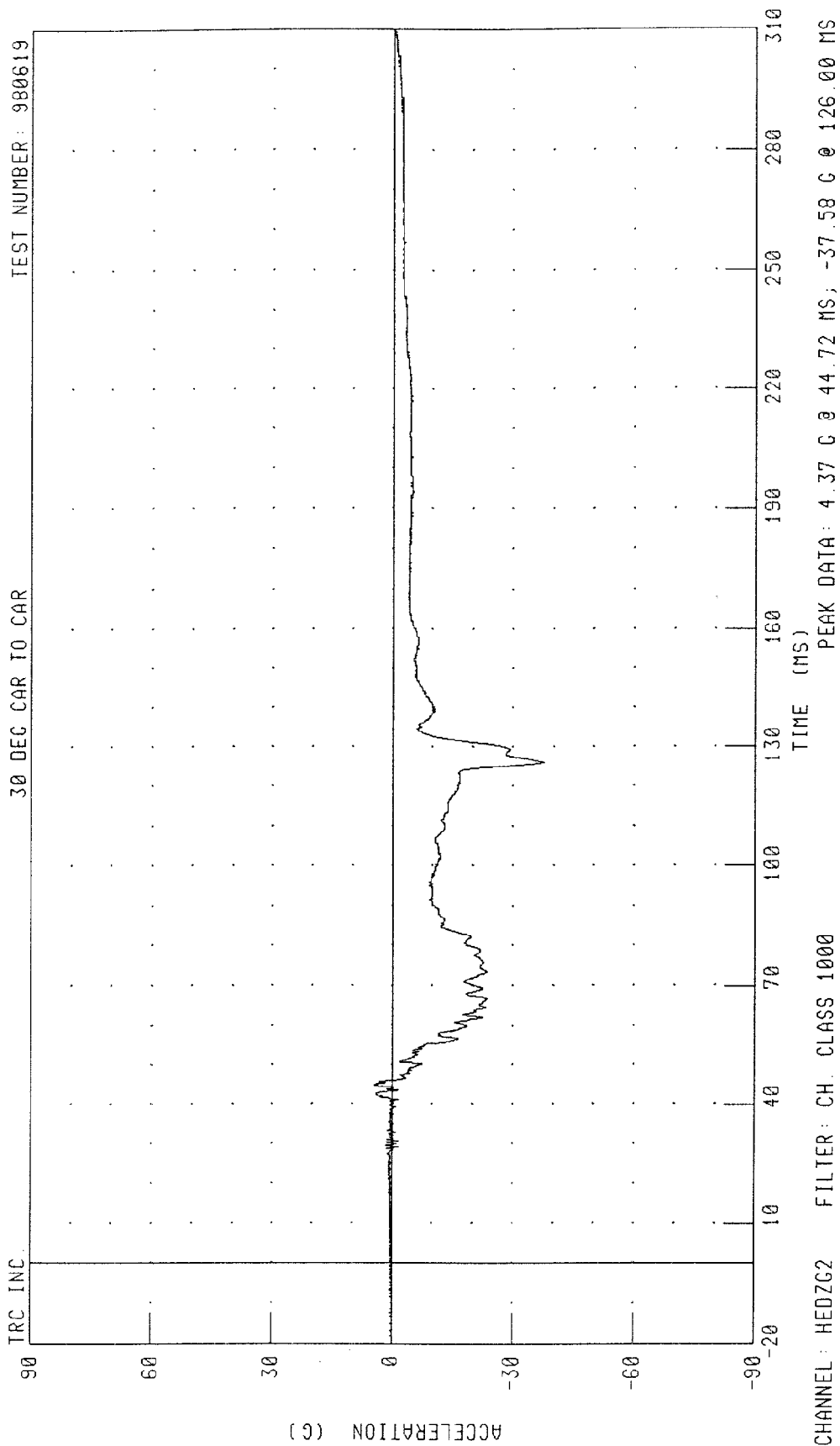
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER HEAD X-AXIS ACCELERATION



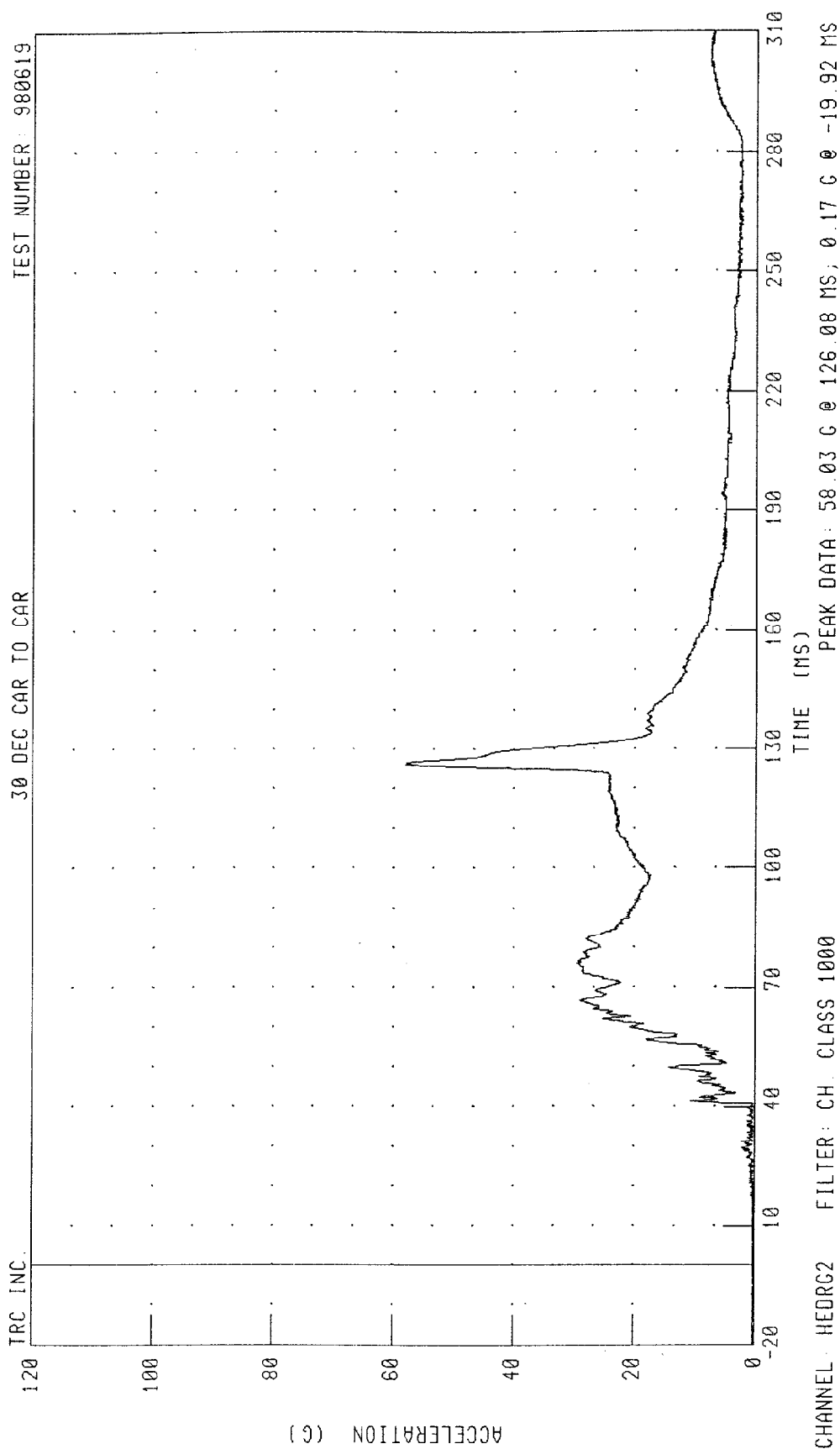
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER HEAD Y-AXIS ACCELERATION



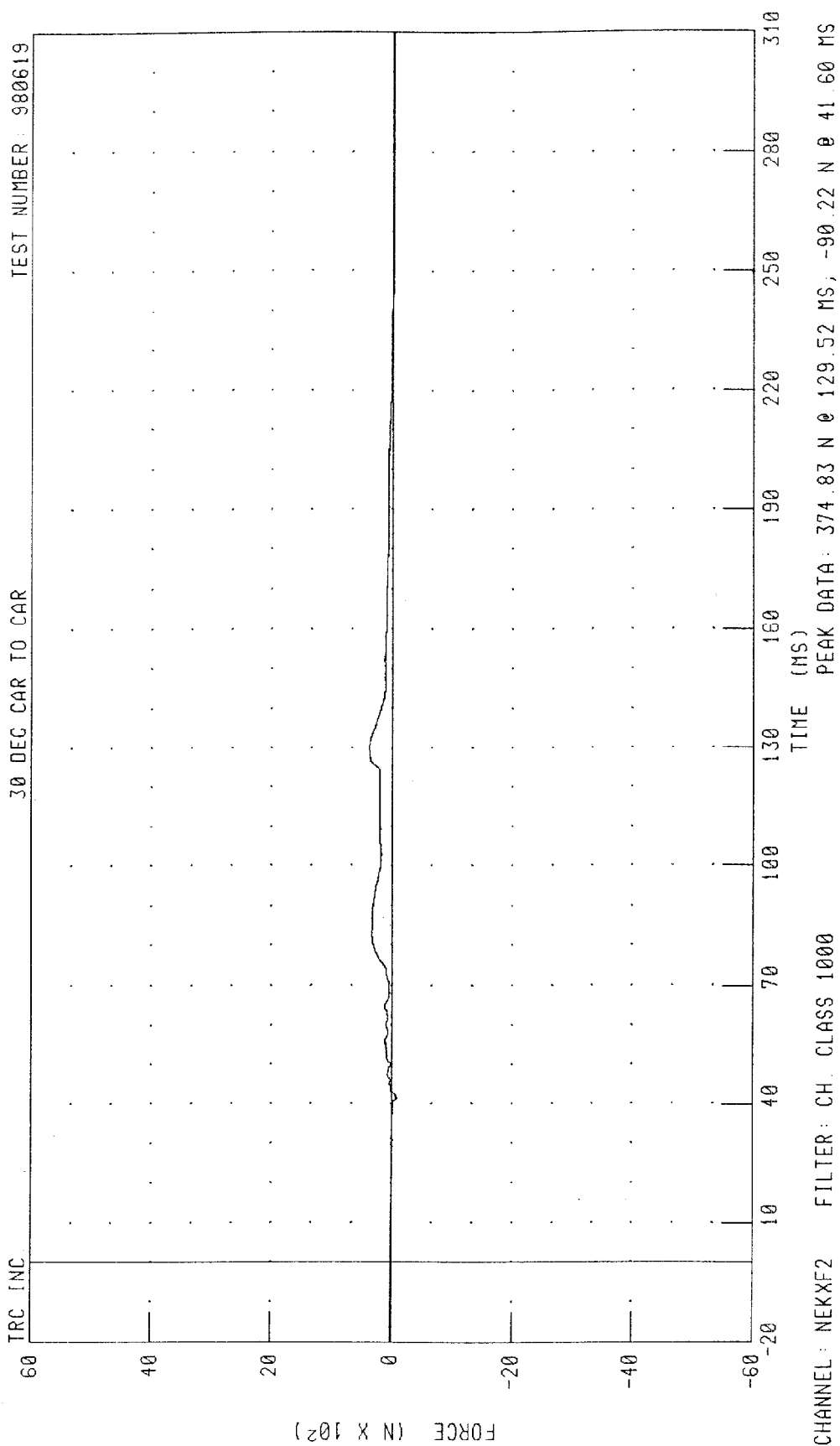
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER HEAD Z-AXIS ACCELERATION



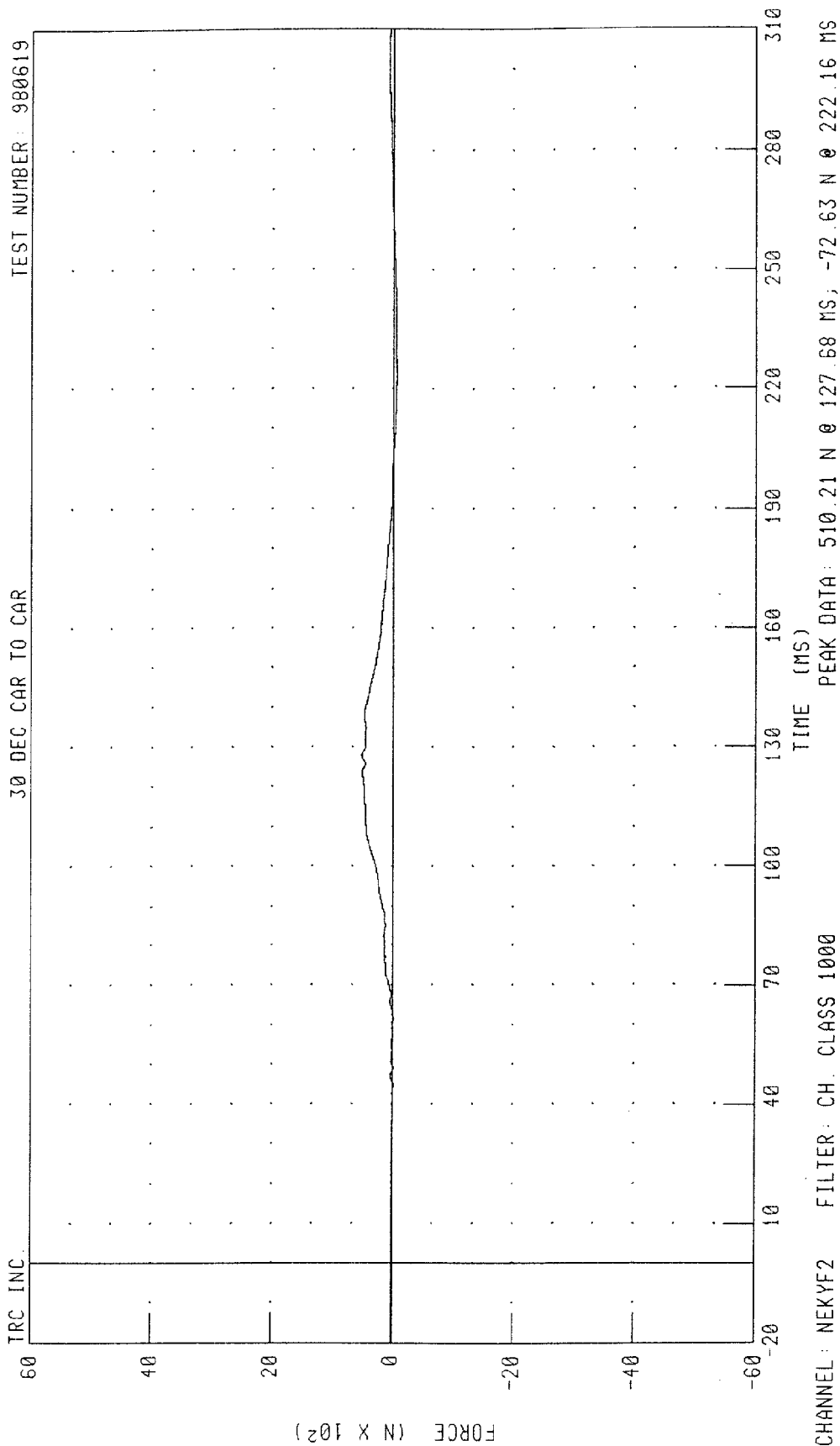
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER HEAD RESULTANT ACCELERATION



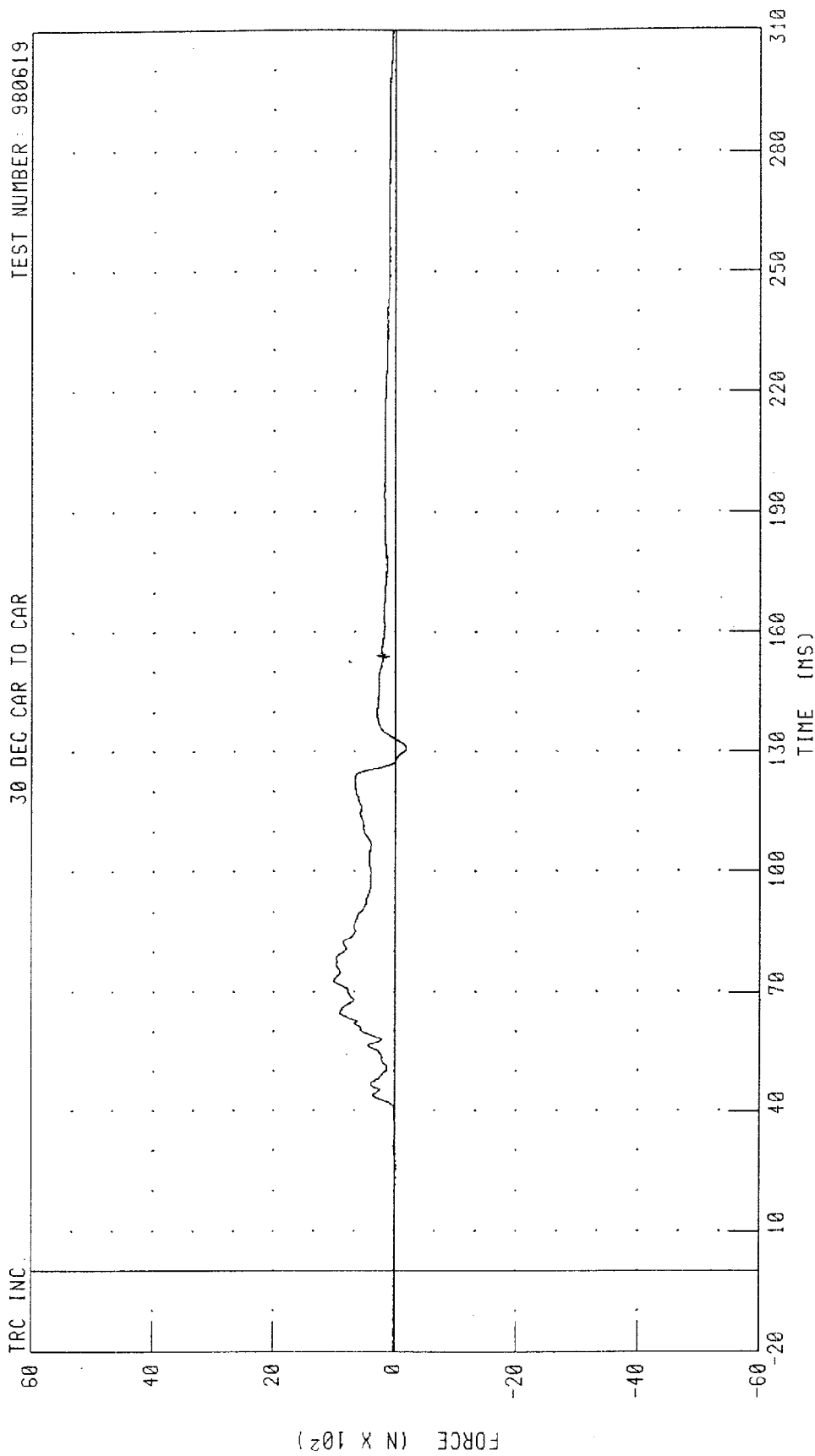
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER NECK X-AXIS SHEAR FORCE



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER NECK Y-AXIS SHEAR FORCE



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER NECK Z-AXIS AXIAL FORCE



CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

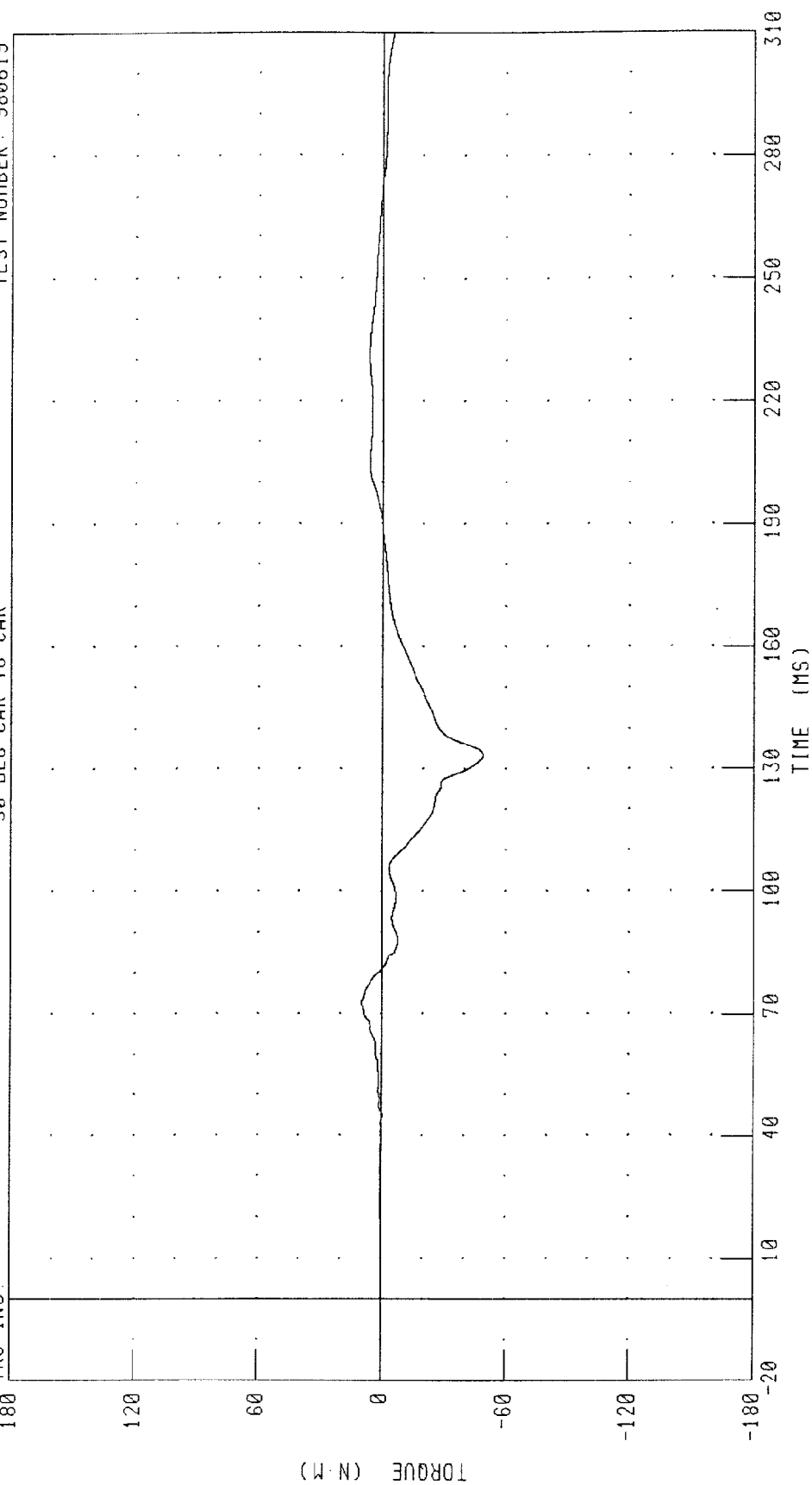
PEAK DATA: 1014.26 N @ 73.04 MS; -184.51 N @ 130.72 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER NECK MOMENT ABOUT X AXIS

TRC INC.

30 DEC CAR TO CAR

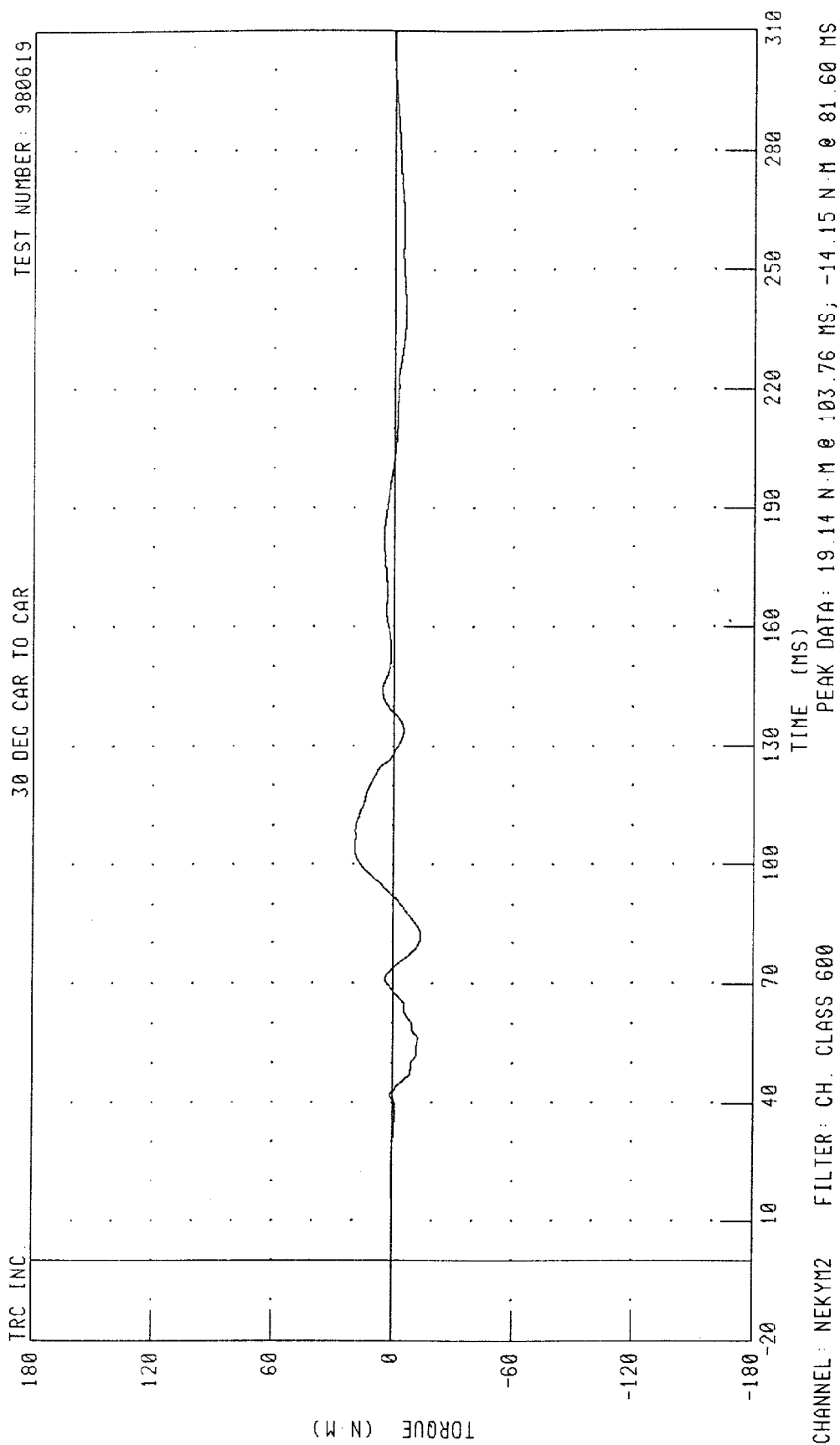
TEST NUMBER: 980619



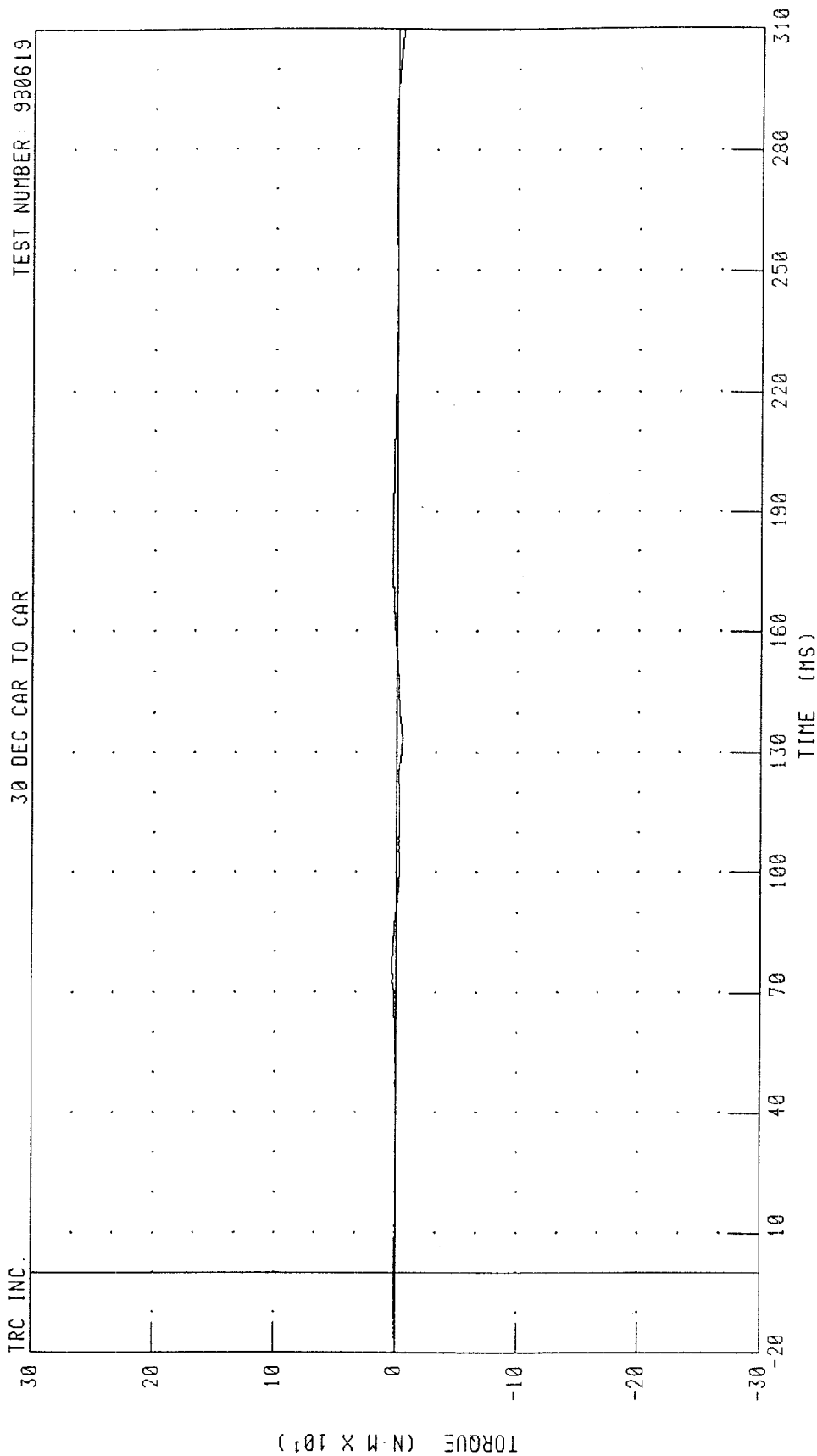
CHANNEL: NEXXM2 FILTER: CH. CLASS 600

PEAK DATA: 9.59 N.M @ 72.72 MS, -49.06 N.M @ 133.52 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER NECK MOMENT ABOUT Y AXIS



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
 TARGET PASSENGER NECK MOMENT ABOUT Z AXIS

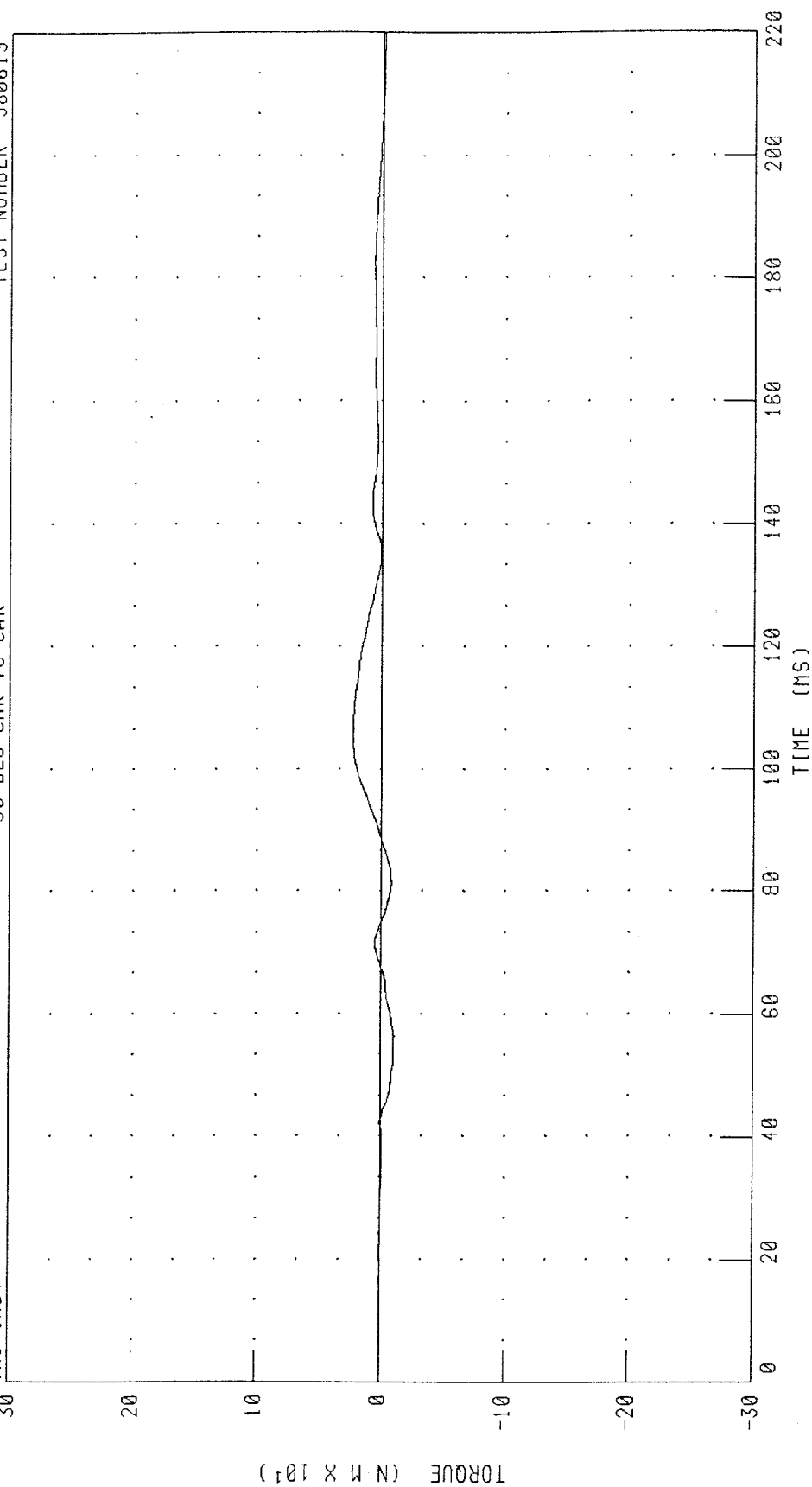


CHANNEL: NEKZM2 FILTER: CH CLASS 600 PEAK DATA: 3.12 N.M @ 182.40 MS, -5.12 N.M @ 133.92 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER NECK OCCIPITAL CONDYLE ABOUT Y AXIS
30 DEG CAR TO CAR

TRC INC.

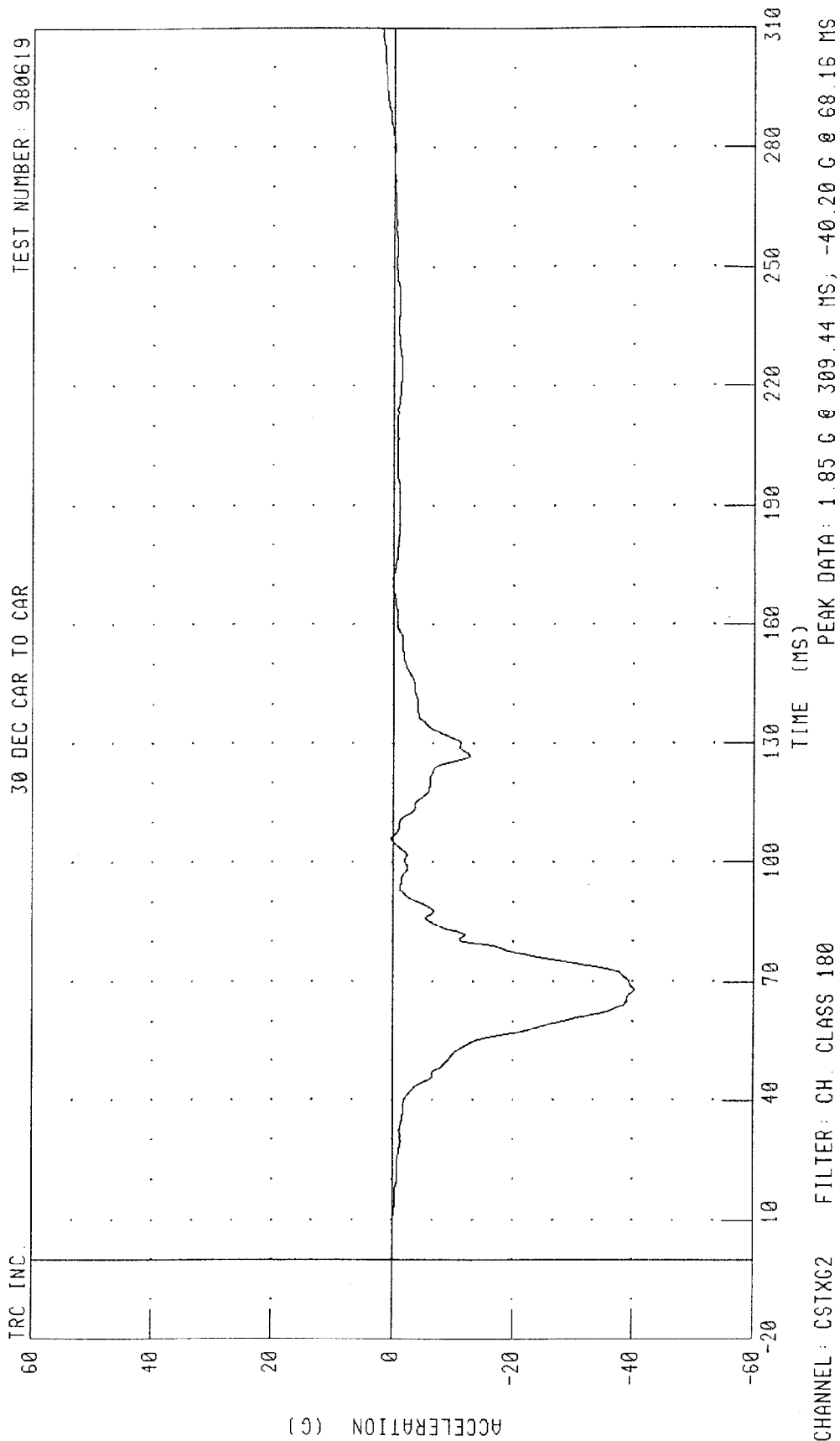
TEST NUMBER 980619



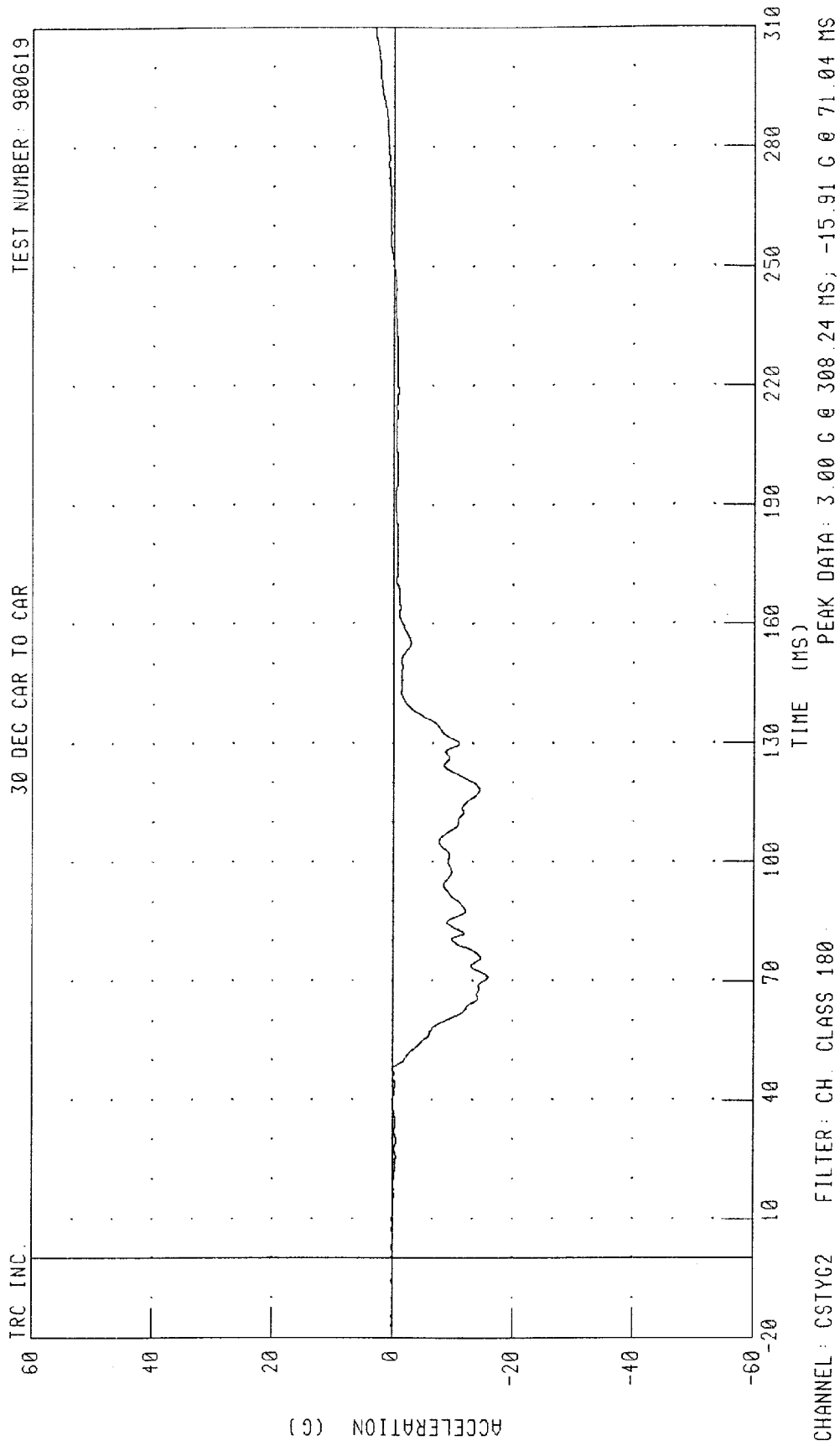
CHANNEL: NEKOM2 FILTER: CH. CLASS 600

PEAK DATA: 22.35 N M @ 104.72 MS, -10.96 N M @ 56.32 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER CHEST X-AXIS ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER CHEST Y-AXIS ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER CHEST Z-AXIS ACCELERATION

TEST NUMBER: 980619

30 DEC CAR TO CAR

IRC INC.

60

40

20

0

-20

-40

-60

ACCELERATION (G)

TIME (MS)

310

280

250

220

190

160

130

100

70

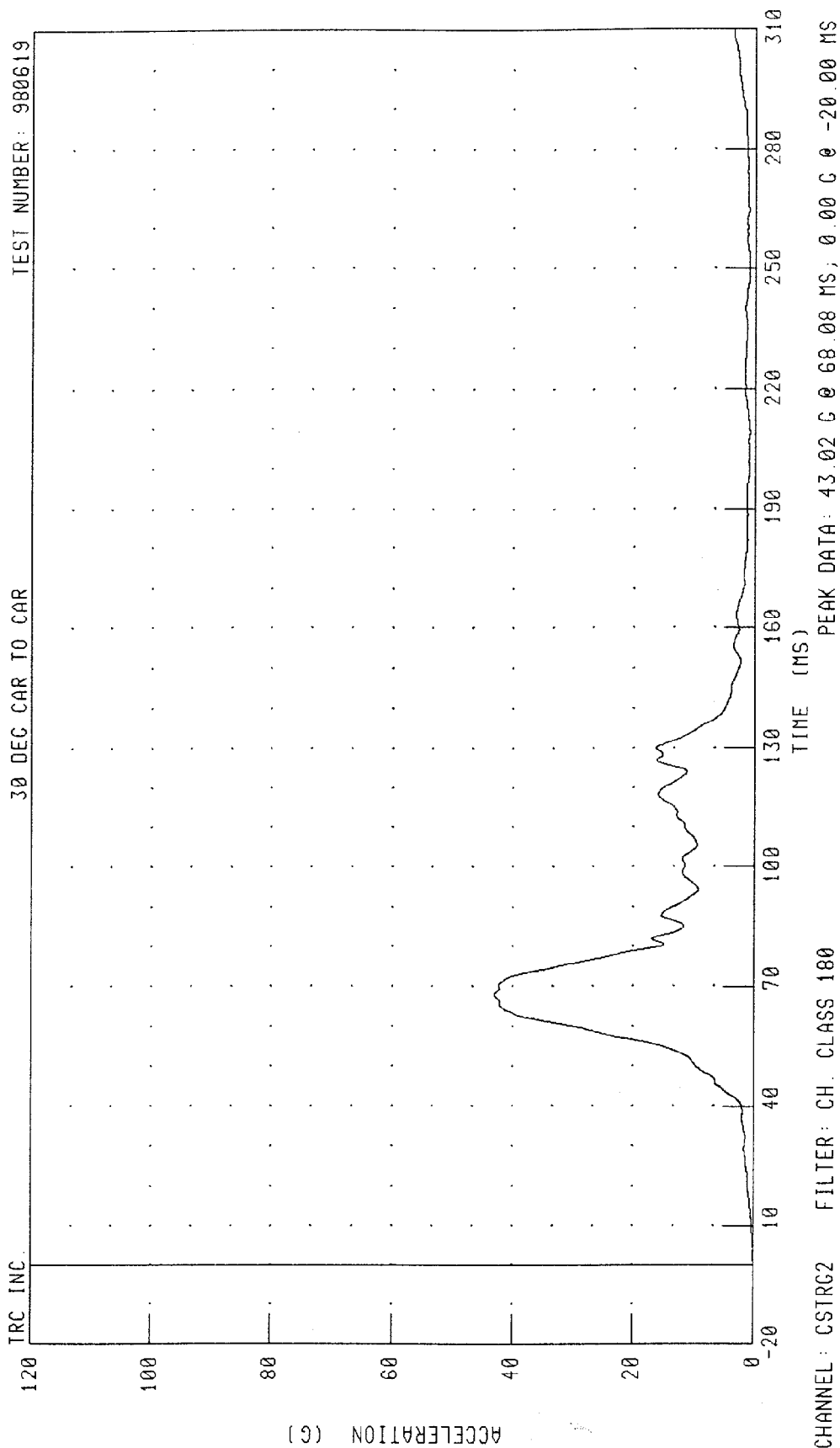
40

10

CHANNEL: CSTZG2 FILTER: CH CLASS 180

PEAK DATA: 6.88 G @ 89.20 MS; -9.14 G @ 62.96 MS

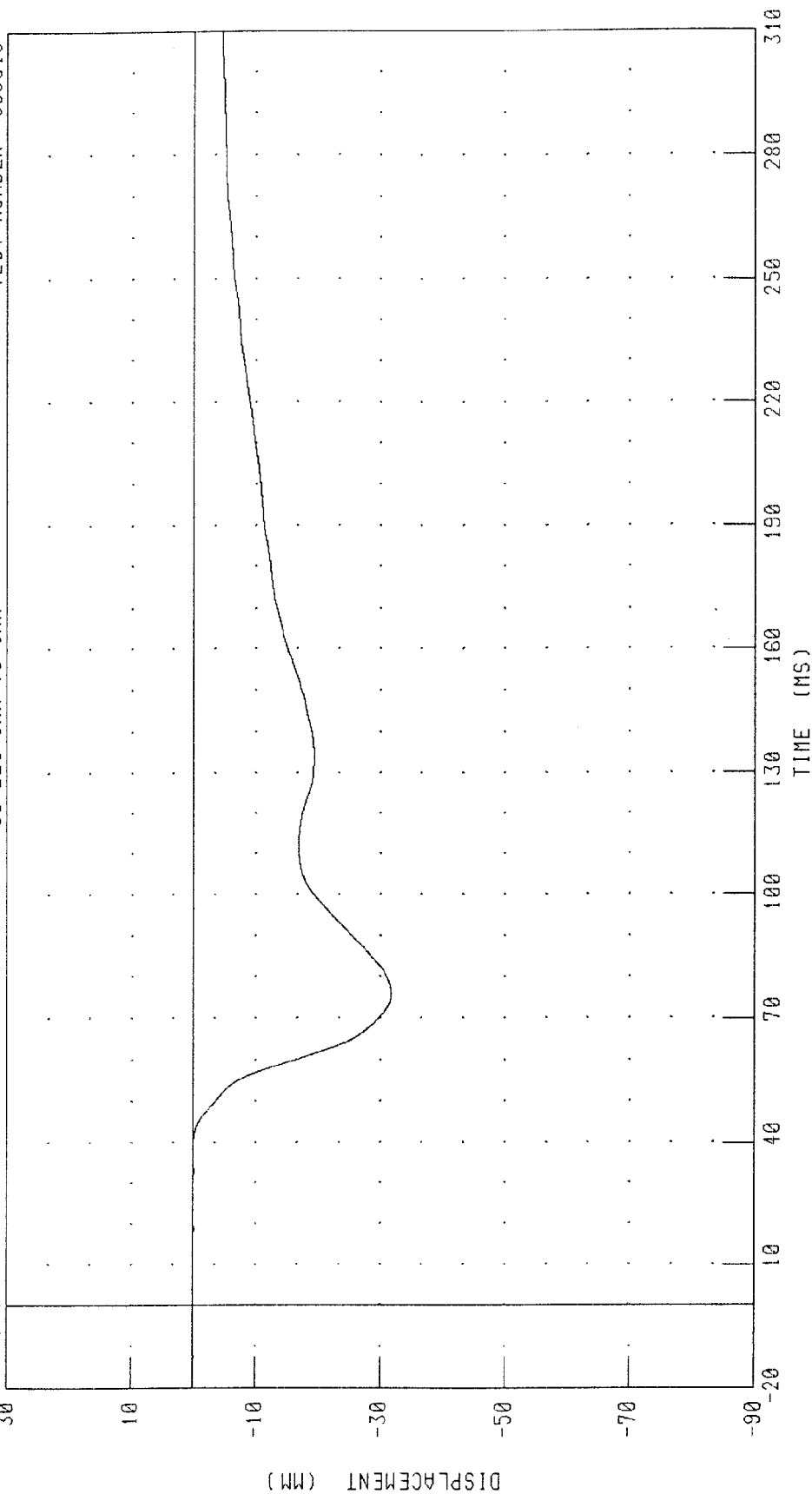
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER CHEST RESULTANT ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER CHEST DEFLECTION
30 DEC CAR TO CAR

TEST NUMBER: 980619

TRC INC.



CHANNEL: CSTXD2 FILTER: CH. CLASS 180

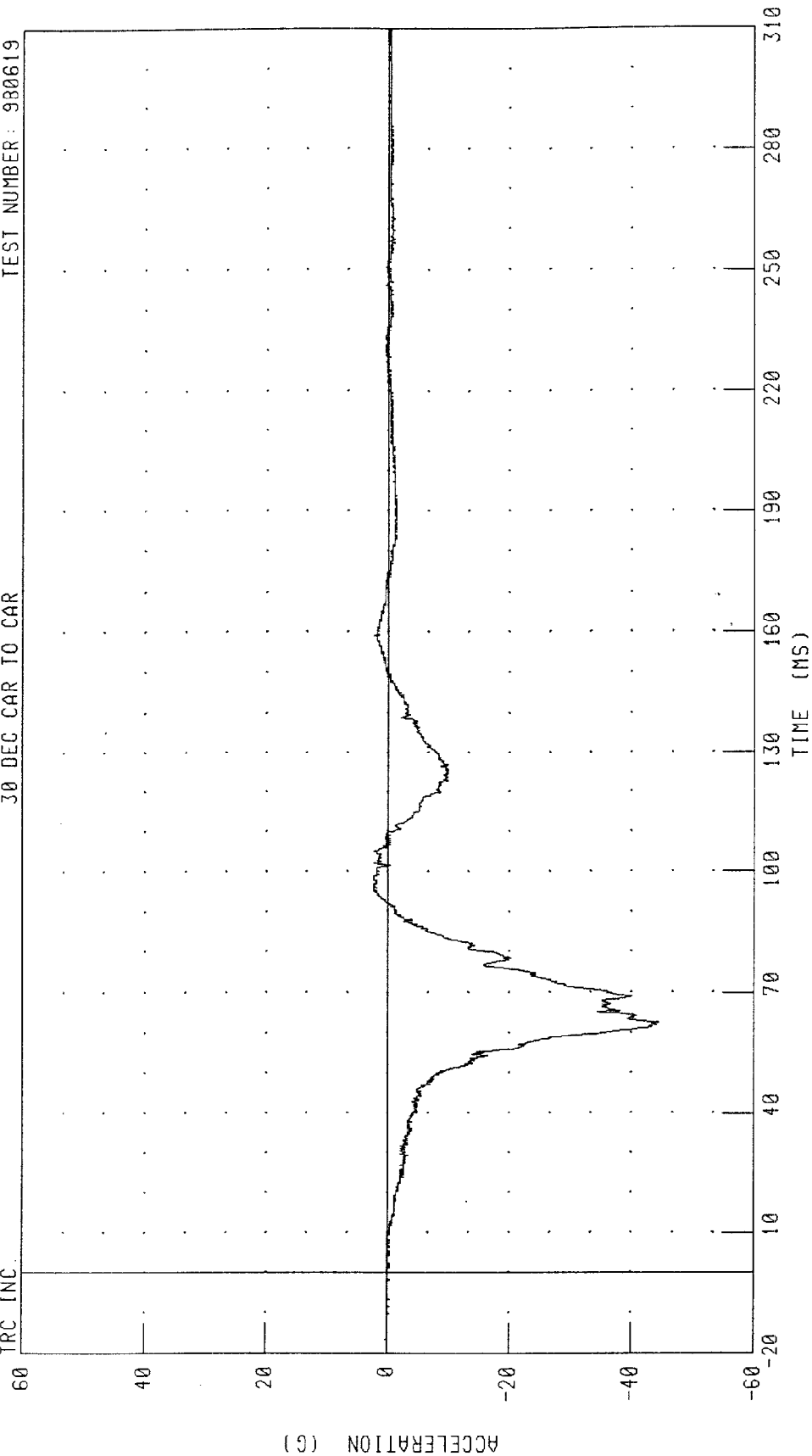
PEAK DATA: 0.04 MM @ 38.64 MS; -31.76 MM @ 76.00 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER PELVIS X-AXIS ACCELERATION

TEST NUMBER: 980619

30 DEC CAR TO CAR

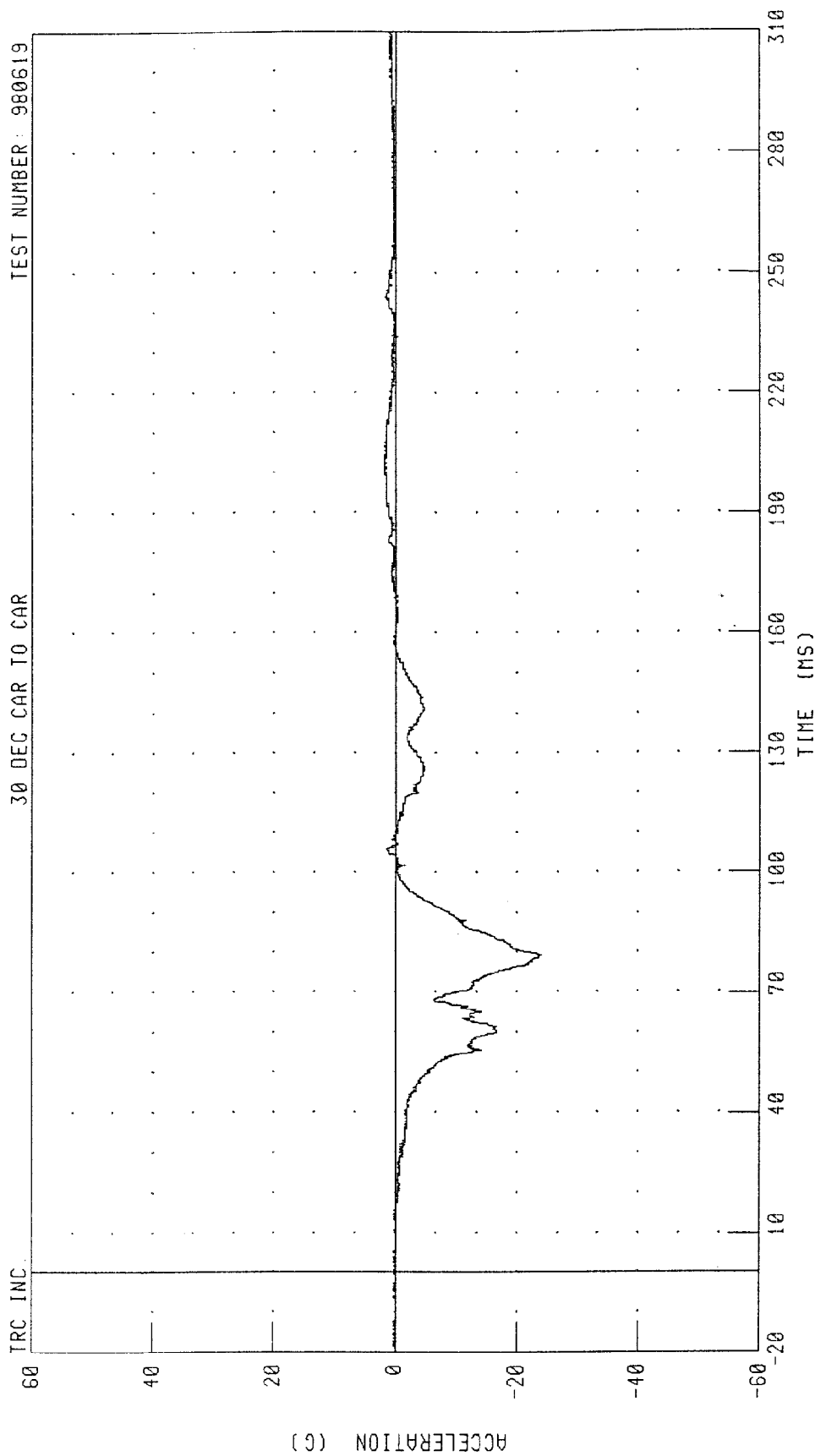
TRC INC.



CHANNEL: PEVXG2 FILTER: CH. CLASS 1000

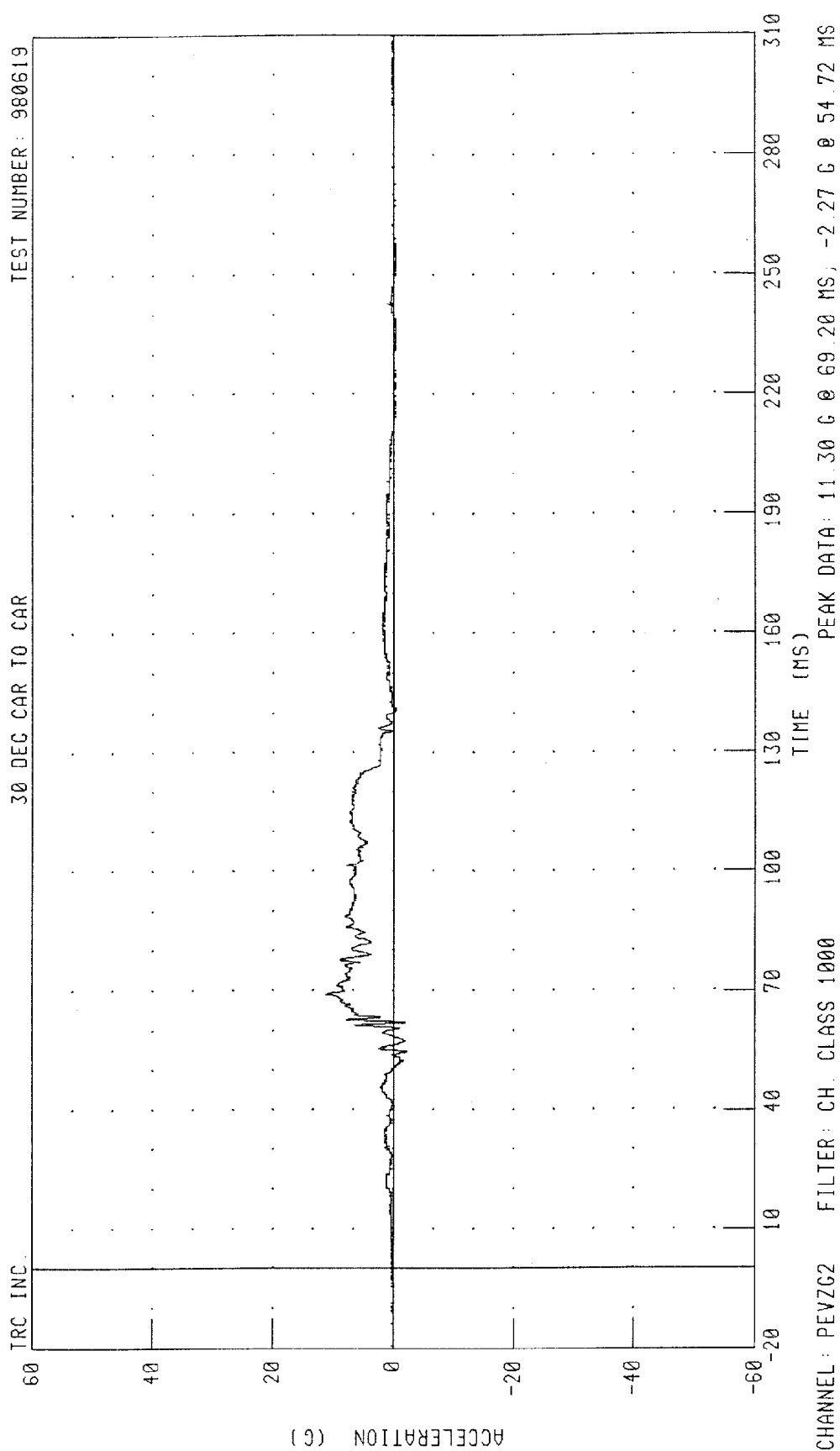
PEAK DATA: 2.23 G @ 94.96 MS; -44.43 G @ 62.48 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER PELVIS Y-AXIS ACCELERATION

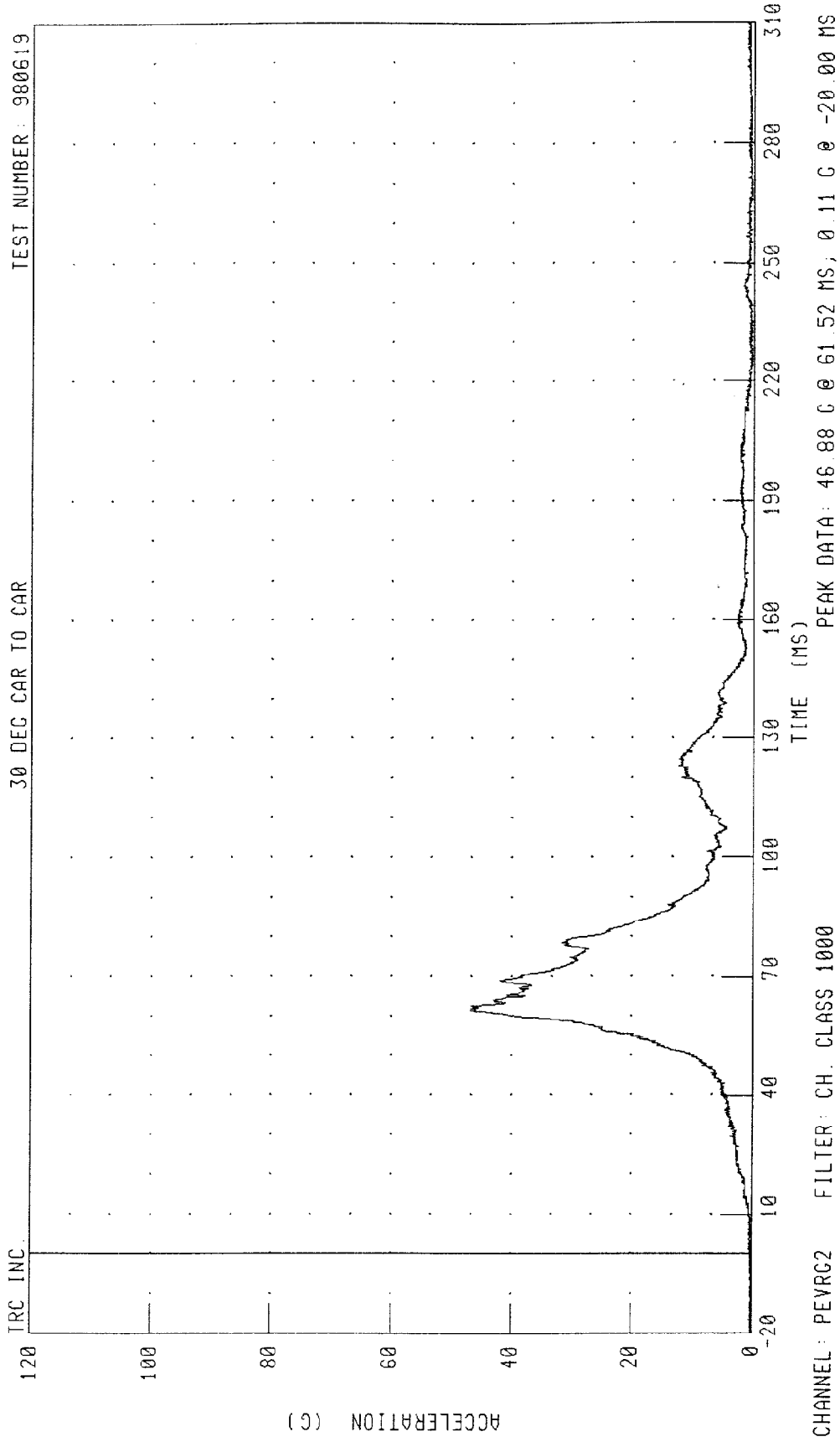


CHANNEL: PEVYC2 FILTER: CH. CLASS 1000 PEAK DATA: 1.77 G @ 199.44 MS, -24.05 G @ 79.20 MS

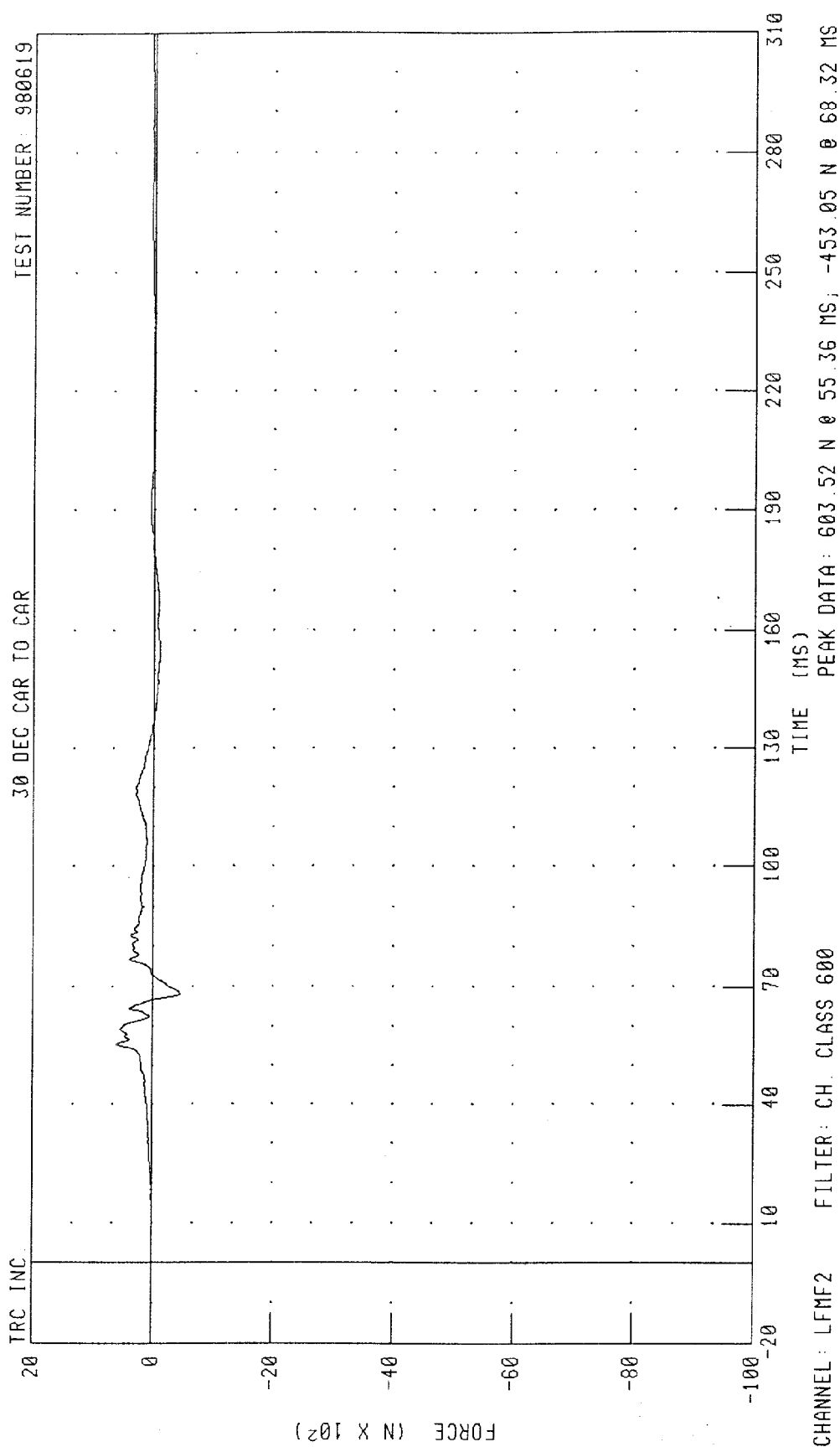
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER PELVIS Z-AXIS ACCELERATION



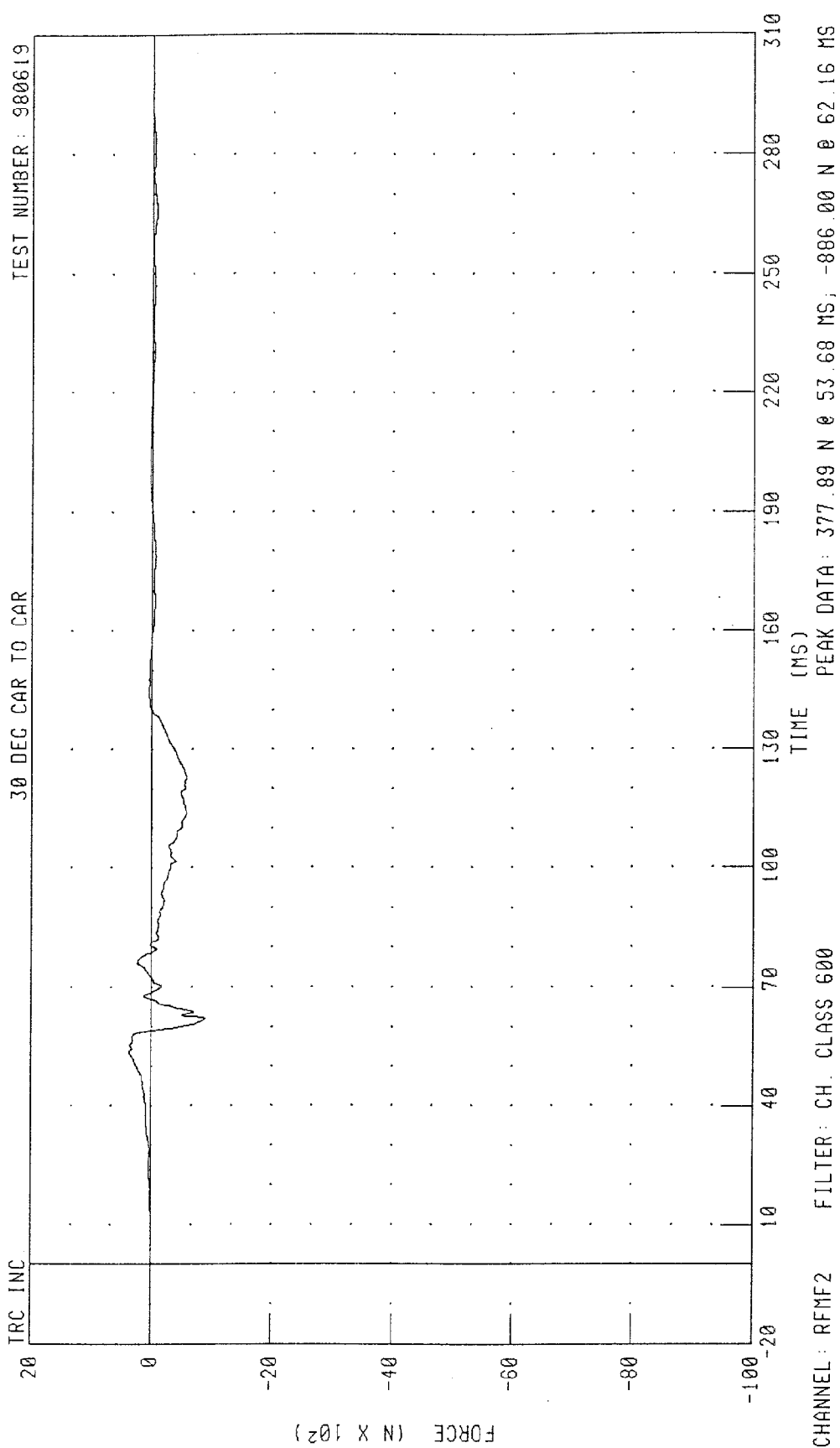
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER PELVIS RESULTANT



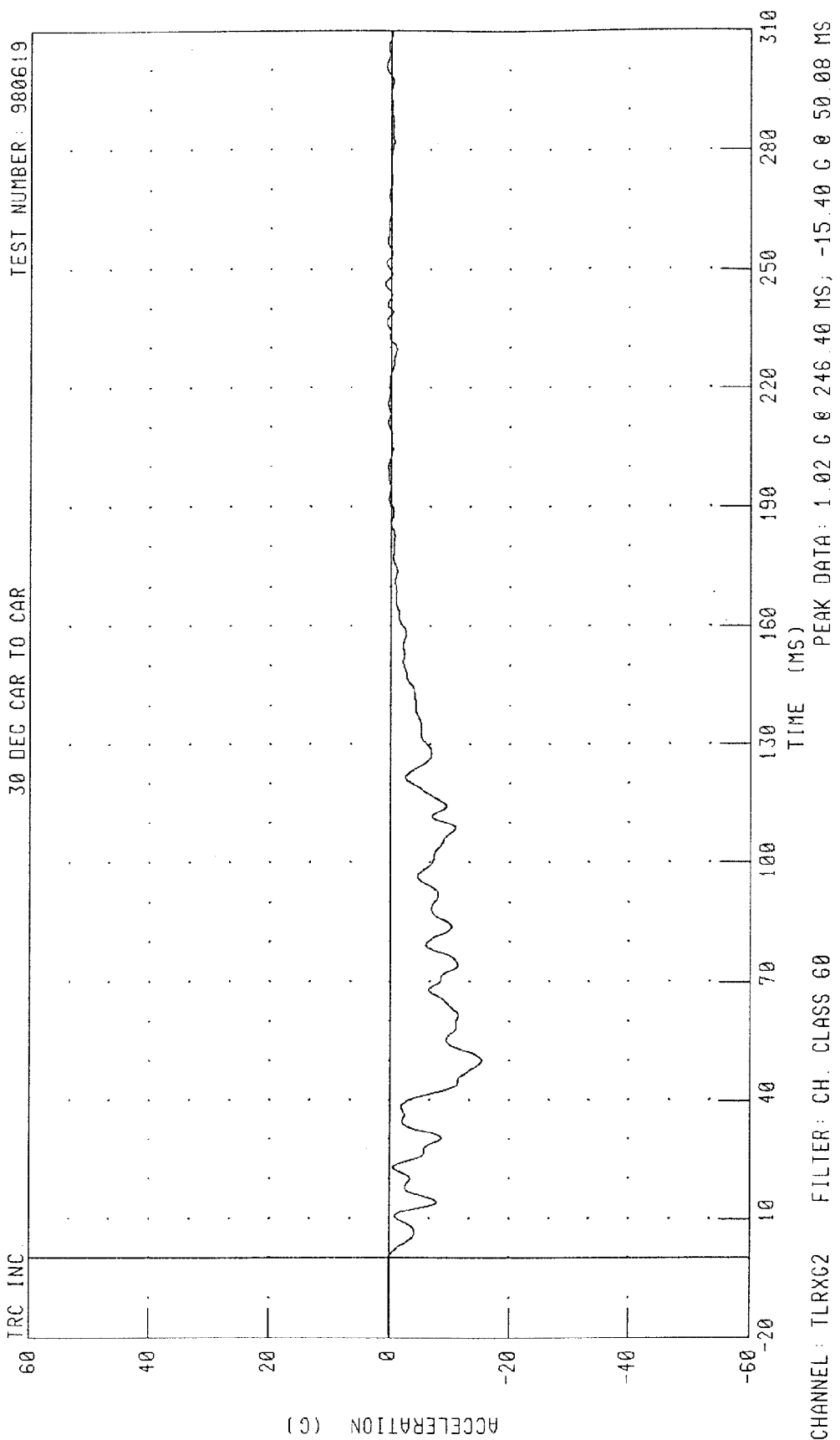
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER LEFT FEMUR FORCE



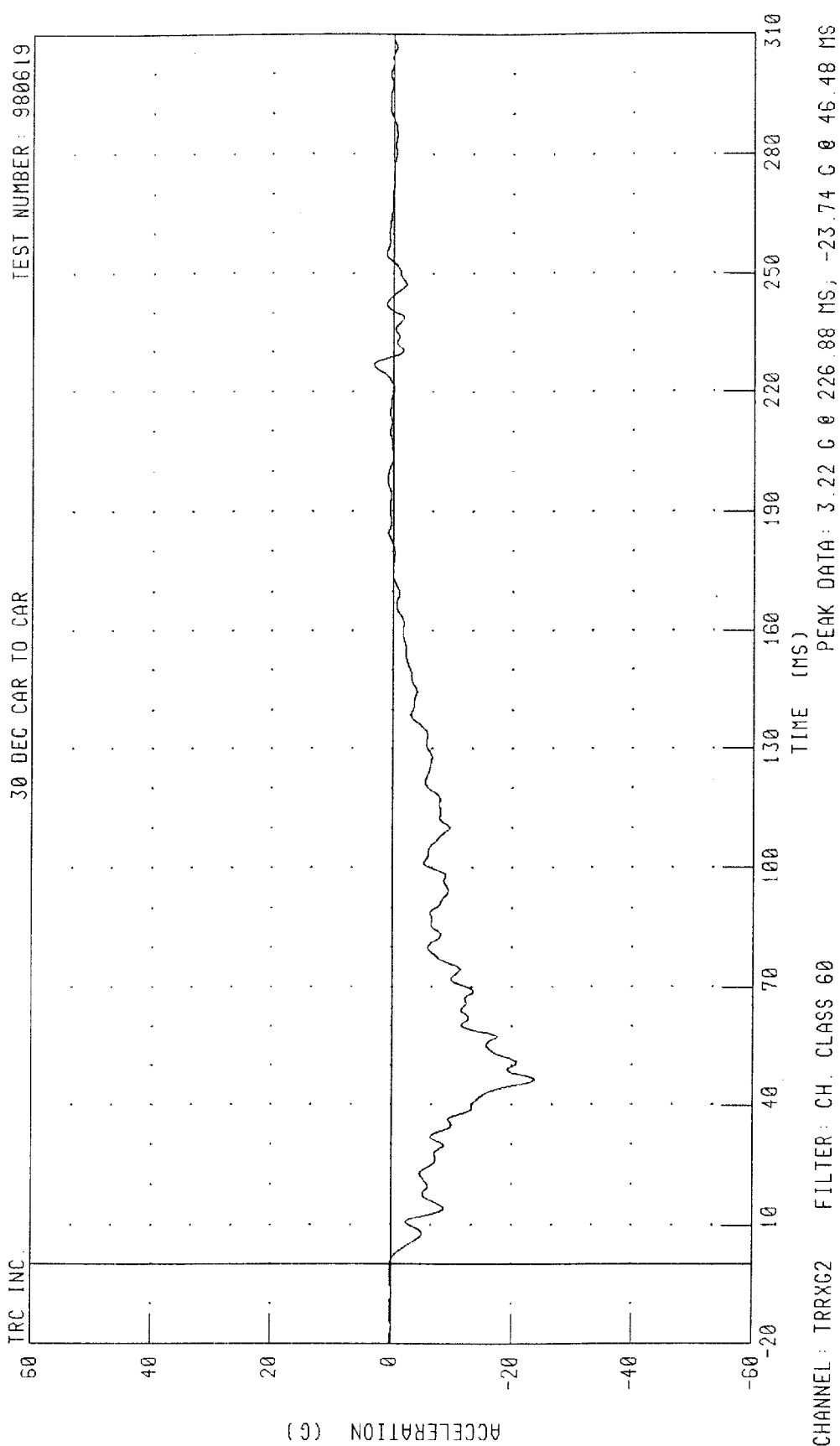
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET PASSENGER RIGHT FEMUR FORCE



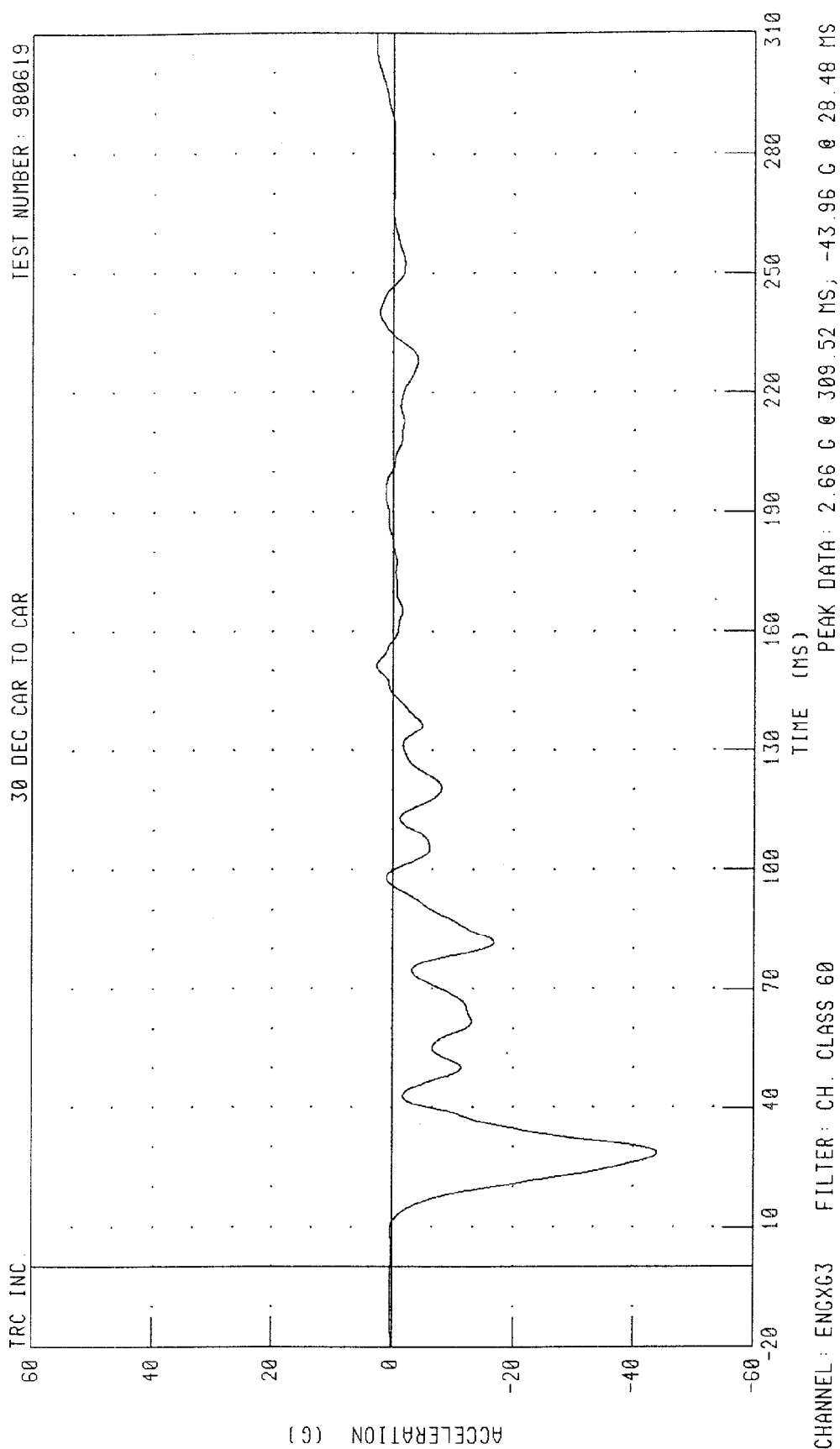
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET LEFT REAR SEAT X-AXIS ACCELERATION



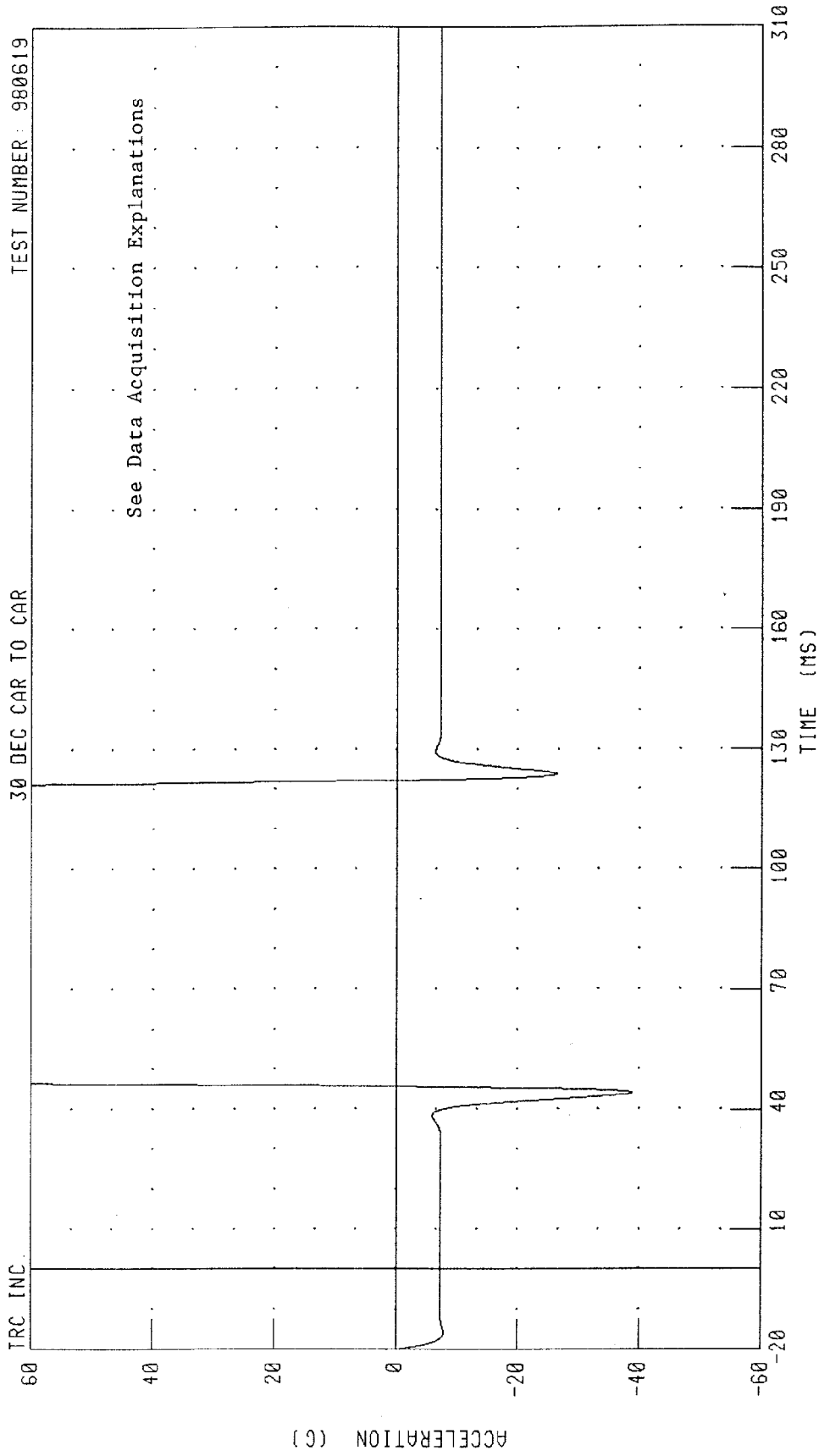
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET RIGHT REAR SEAT X-AXIS ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET ENGINE TOP X-AXIS ACCELERATION



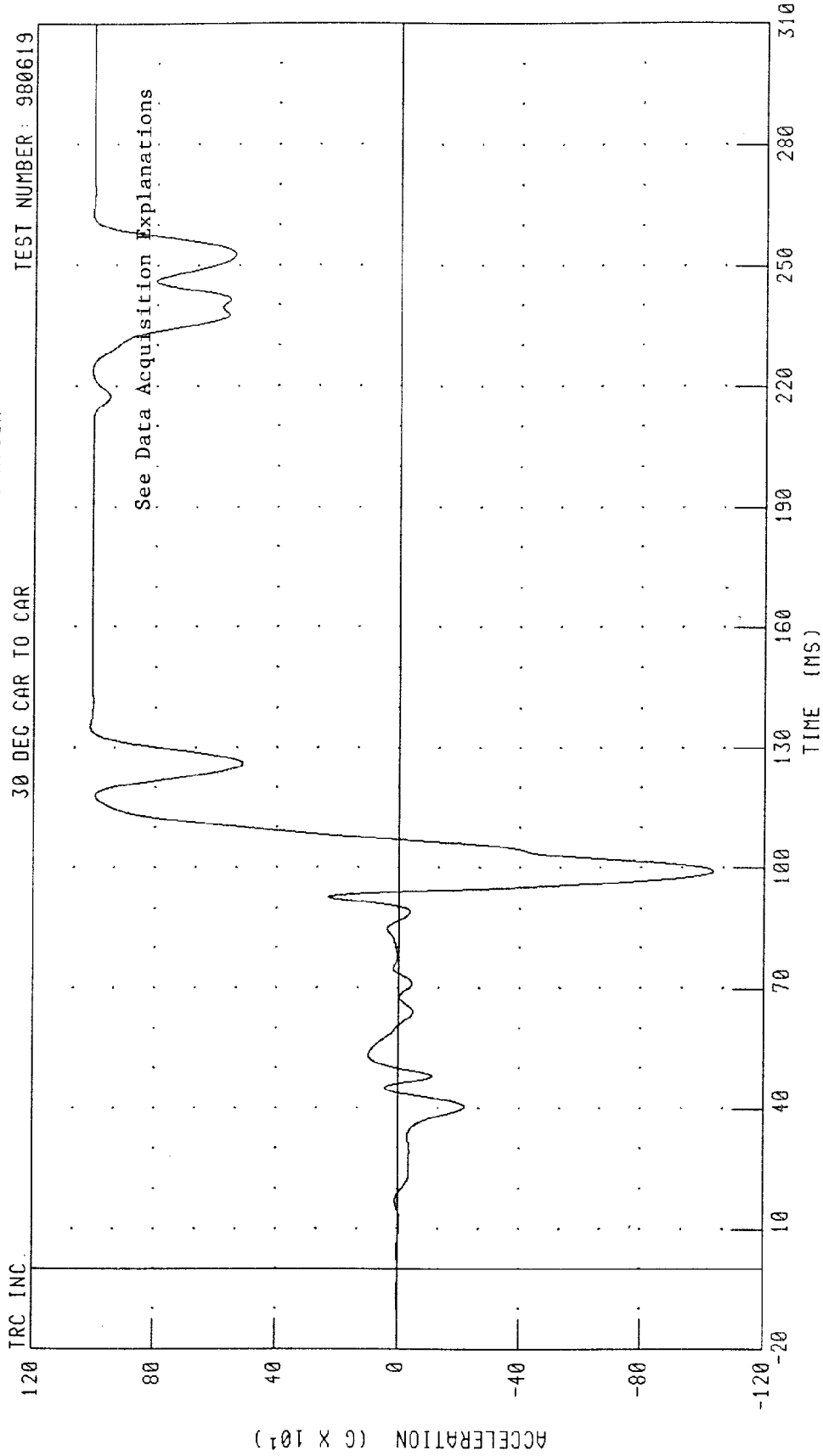
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
 TARGET ENGINE BOTTOM X-AXIS ACCELERATION



PEAK DATA: 2061.38 G @ 100.88 MS, -38.93 G @ 44.16 MS

CHANNEL: ENXC64 FILTER: CH. CLASS 60

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET LEFT BRAKE CALIPER X-AXIS ACCELERATION



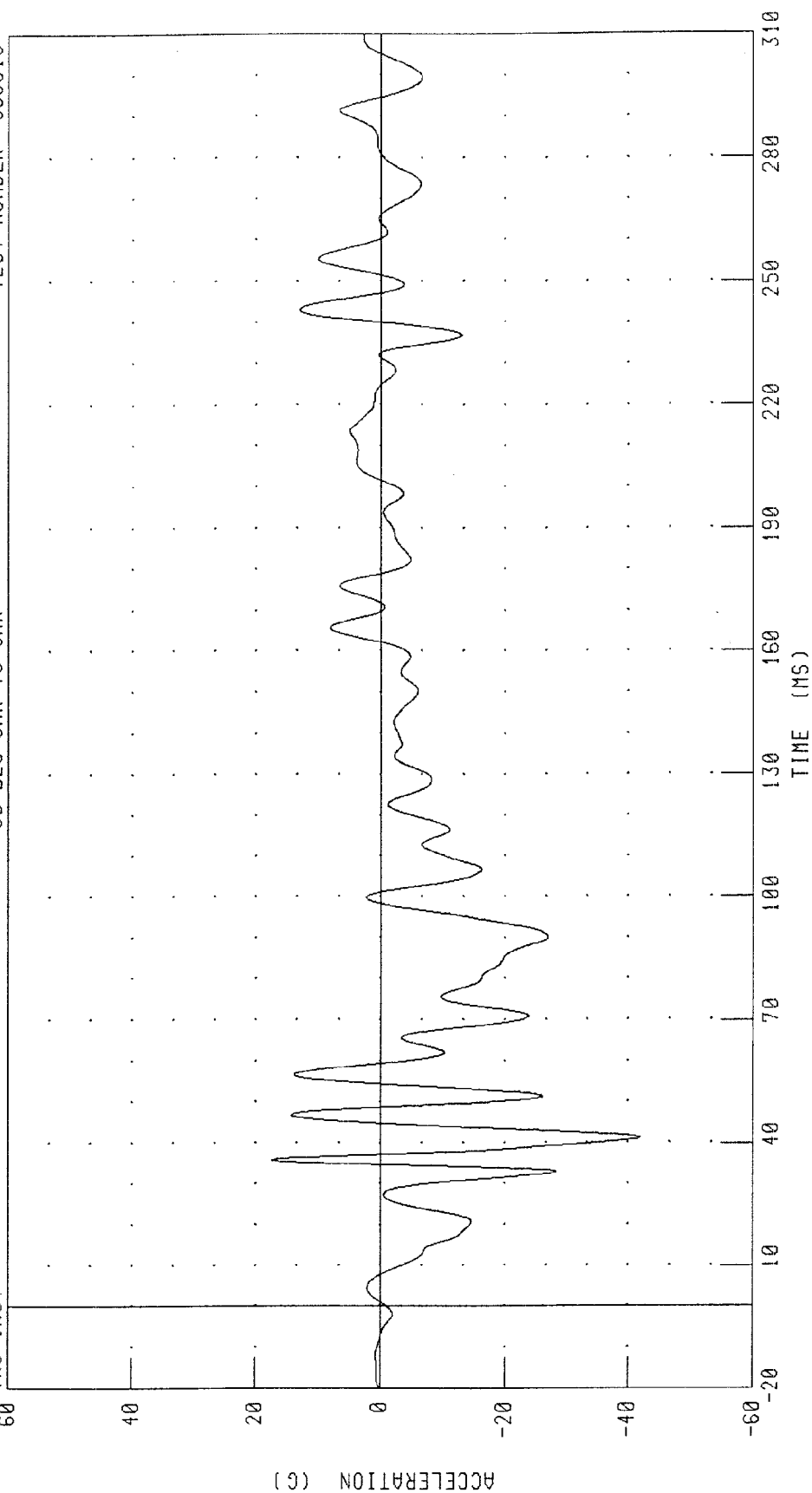
CHANNEL: BCLXC2 FILTER: CH. CLASS 60 PEAK DATA: 1013.51 G @ 135.36 MS, -1034.93 G @ 99.20 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET RIGHT BRAKE CALIPER X-AXIS ACCELERATION

TRC INC.

30 DEG CAR TO CAR

TEST NUMBER: 980619



CHANNEL: BCRXG2 FILTER: CH. CLASS 60

PEAK DATA: 17.44 G @ 36.00 MS; -41.86 G @ 41.28 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET INSTRUMENT PANEL CENTER X-AXIS ACCELERATION

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.

60

40

20

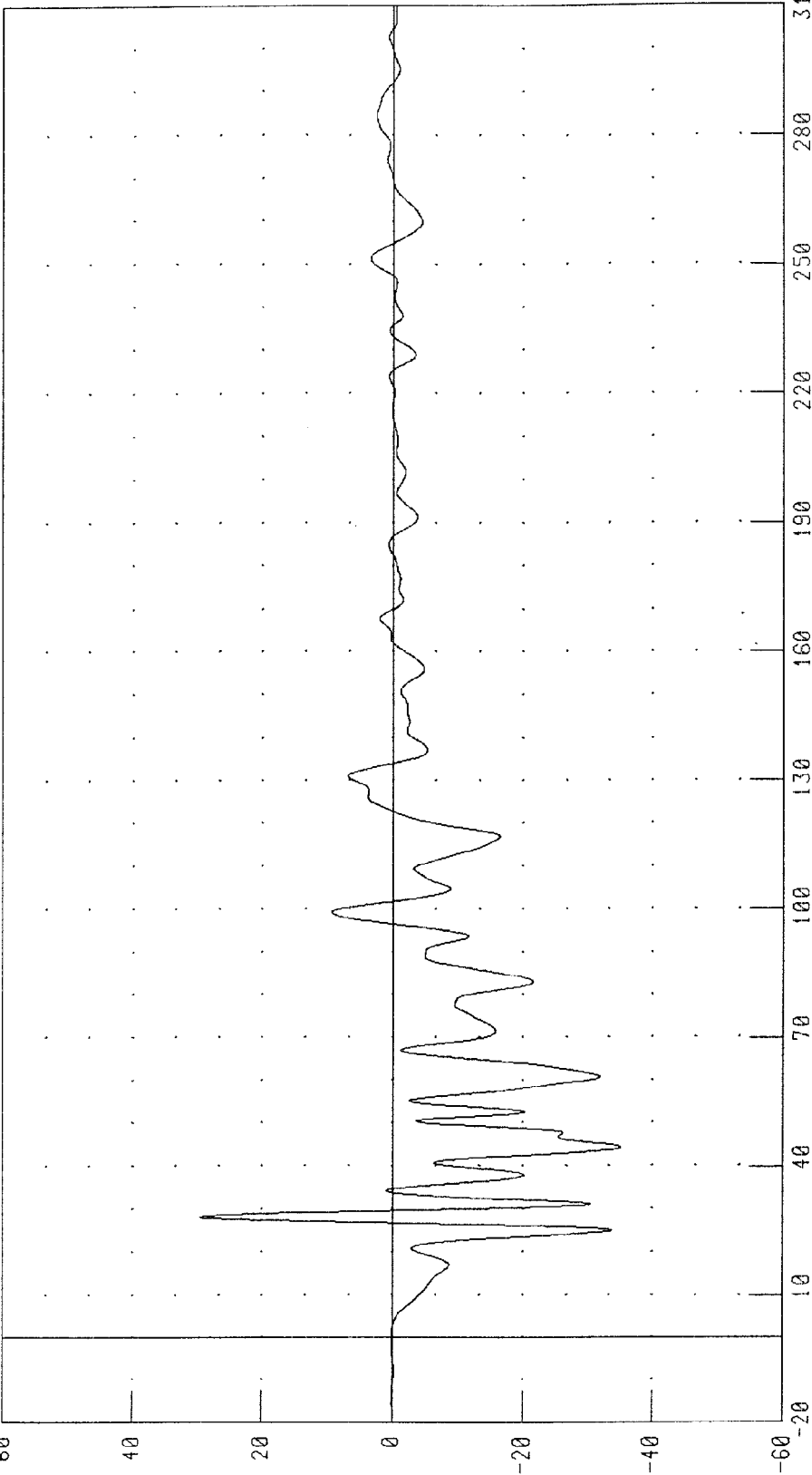
0

-20

-40

-60

ACCELERATION (G)



TIME (MS)

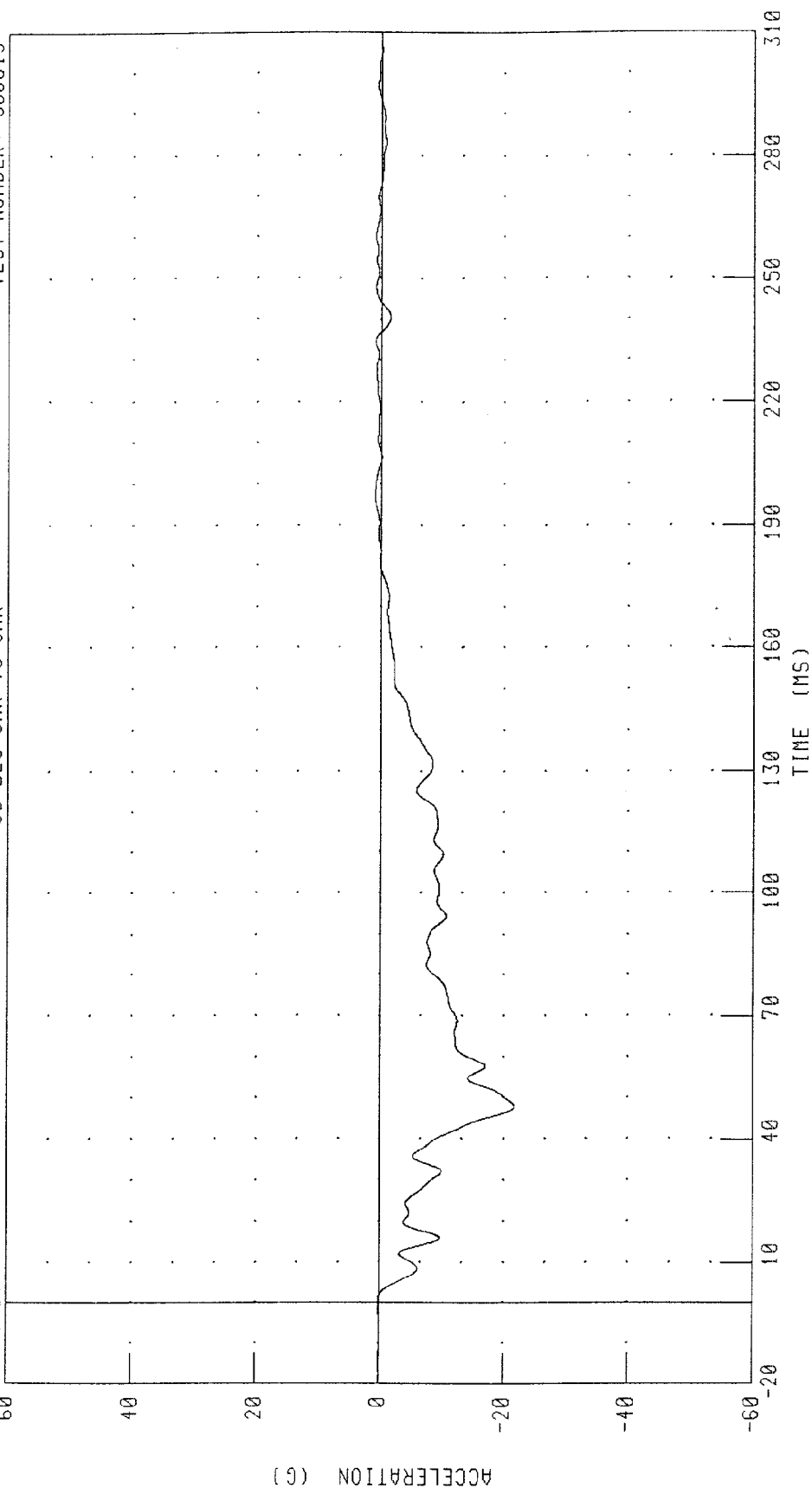
CHANNEL: DPCXG2 FILTER: CH. CLASS 60

PEAK DATA: 29.58 G @ 28.24 MS; -35.18 G @ 44.32 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET REAR AXLE X-AXIS ACCELERATION
30 DEC CAR TO CAR

TEST NUMBER: 980619

TRC INC.



CHANNEL: RAXXC2 FILTER: CH. CLASS 60

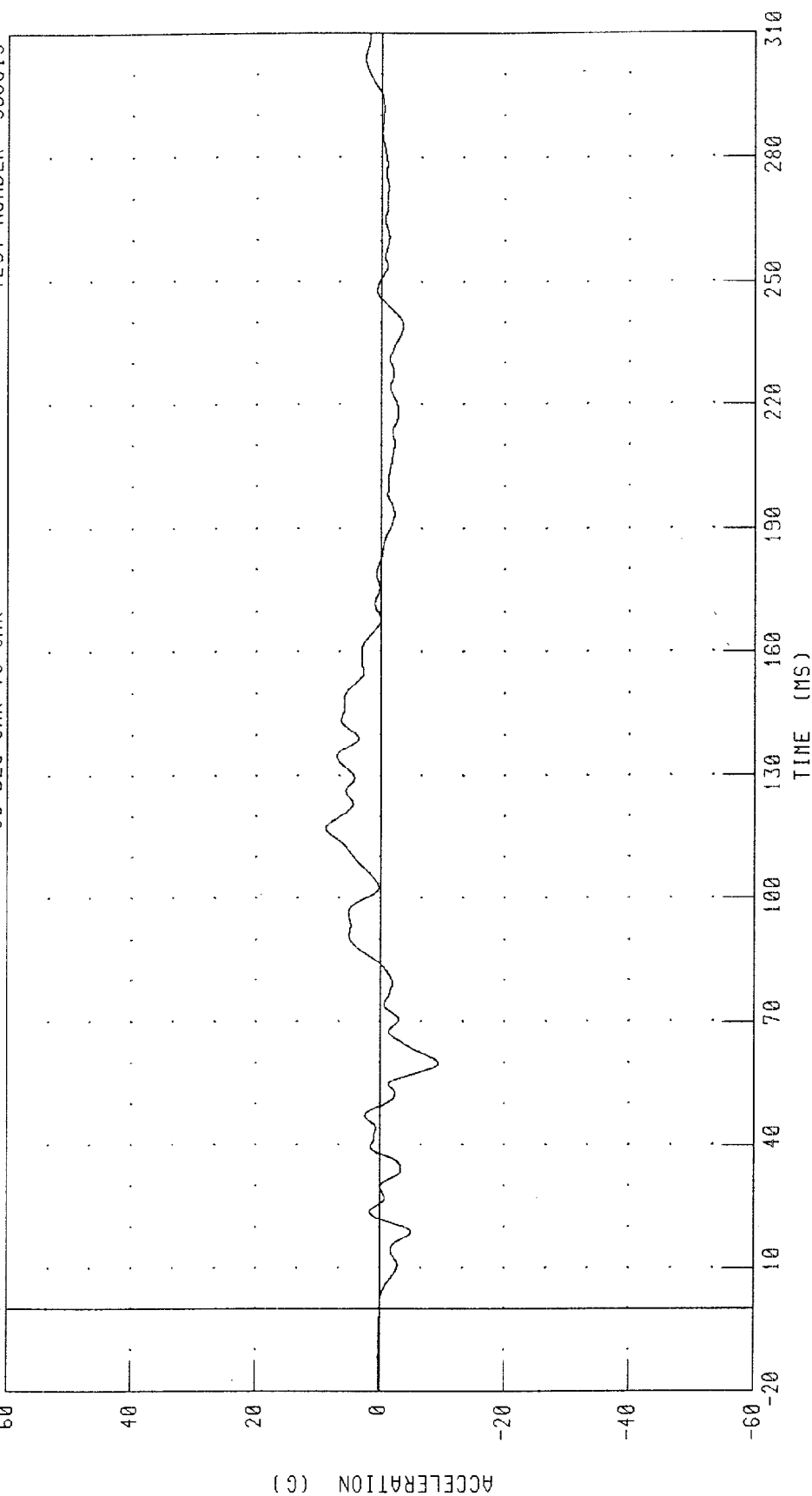
PEAK DATA: 0.95 G @ 196.80 MS, -21.80 G @ 47.92 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
TARGET VEHICLE REAR CENTER Z-AXIS ACCELERATION

TRC INC.

30 DEC CAR TO CAR

TEST NUMBER: 980619



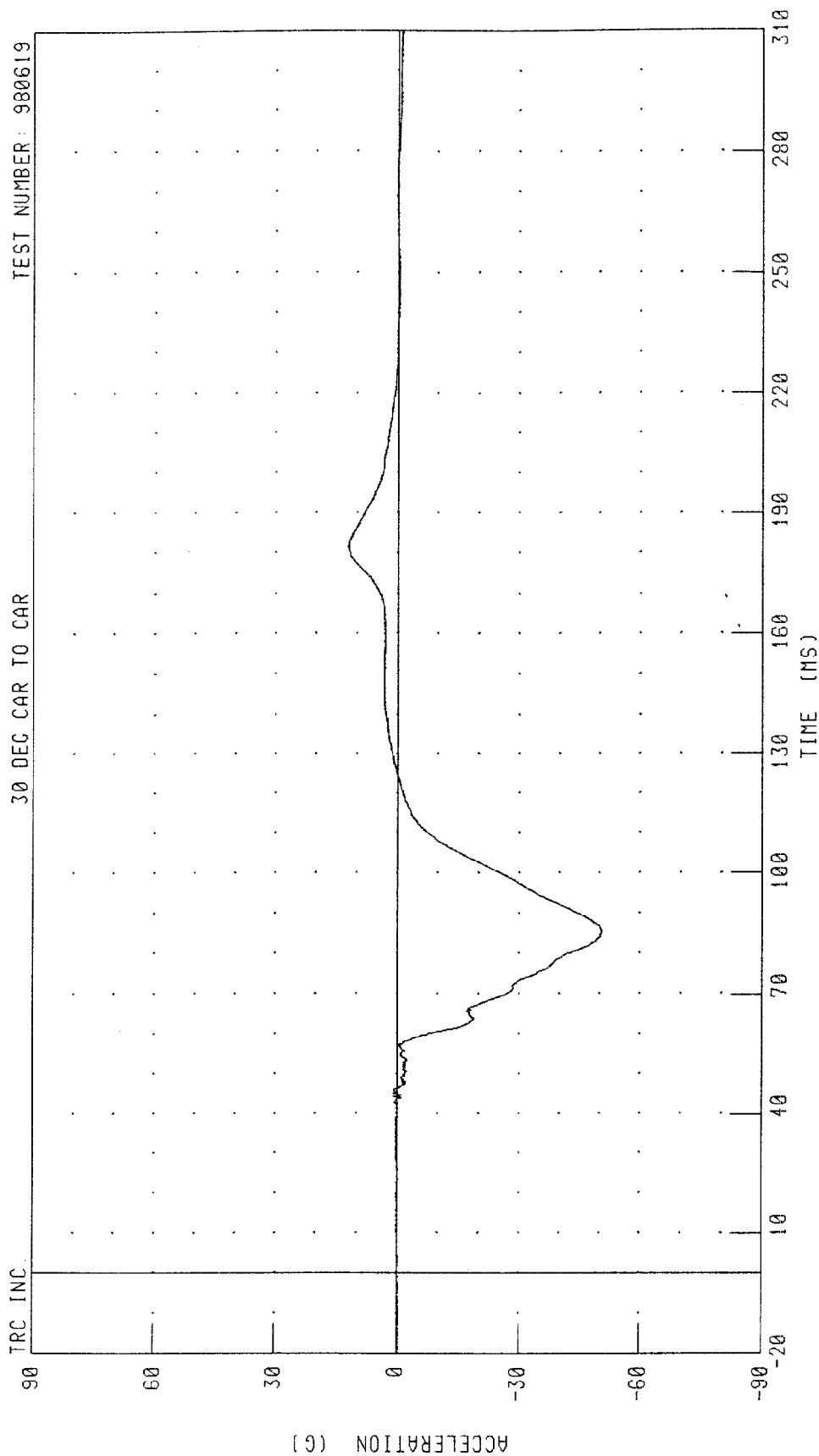
CHANNEL: TFCZG2 FILTER: CH. CLASS 60

PEAK DATA: 8.78 G @ 117.20 MS; -9.45 G @ 59.92 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER HEAD X-AXIS ACCELERATION
30 DEC CAR TO CAR

TEST NUMBER: 980619

TRC INC.

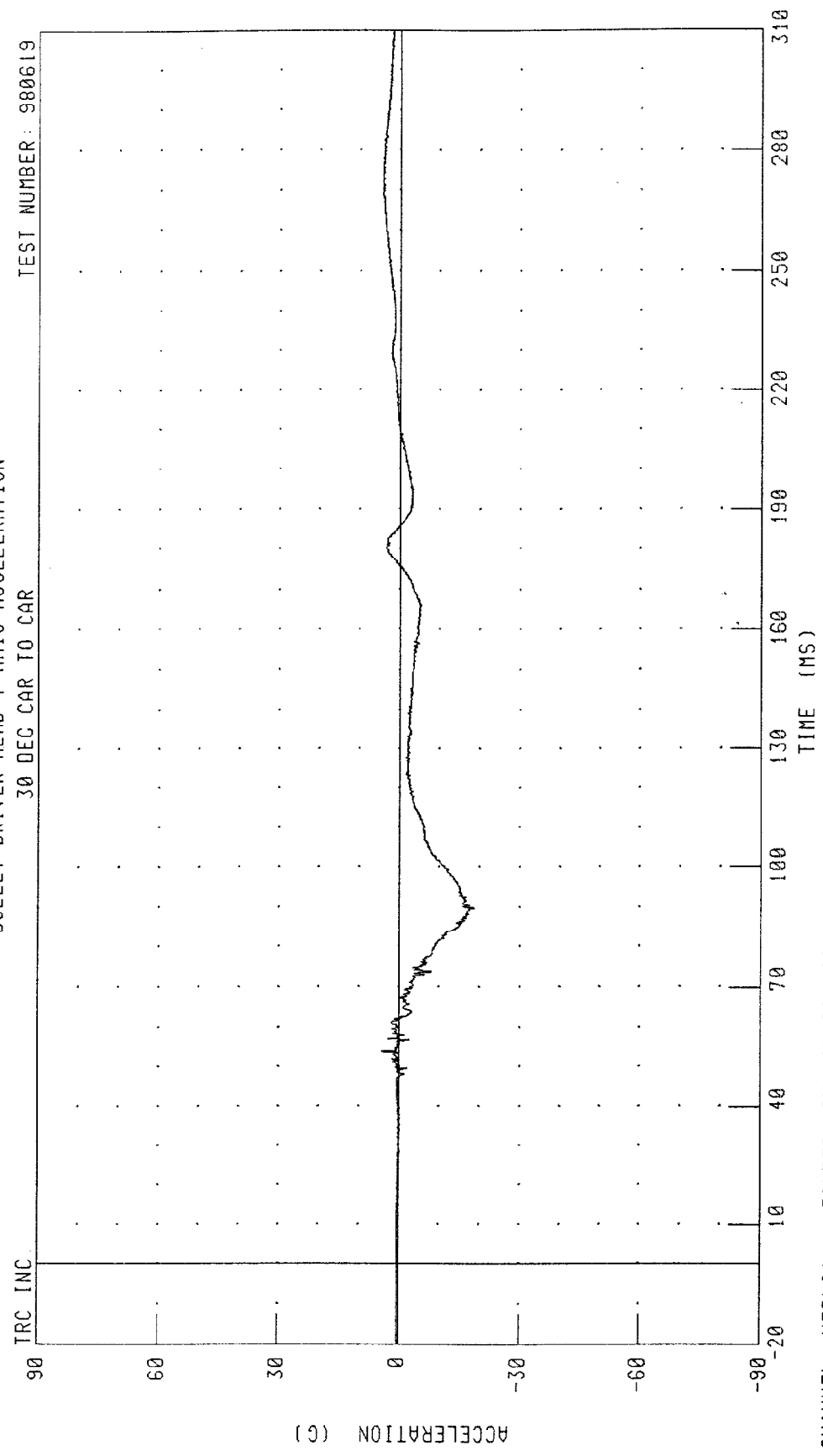


CHANNEL: HEDXG1 FILTER: CH. CLASS 1000

PEAK DATA: 12.10 G @ 181.04 MS; -50.64 G @ 85.04 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER HEAD Y-AXIS ACCELERATION
30 DEC CAR TO CAR

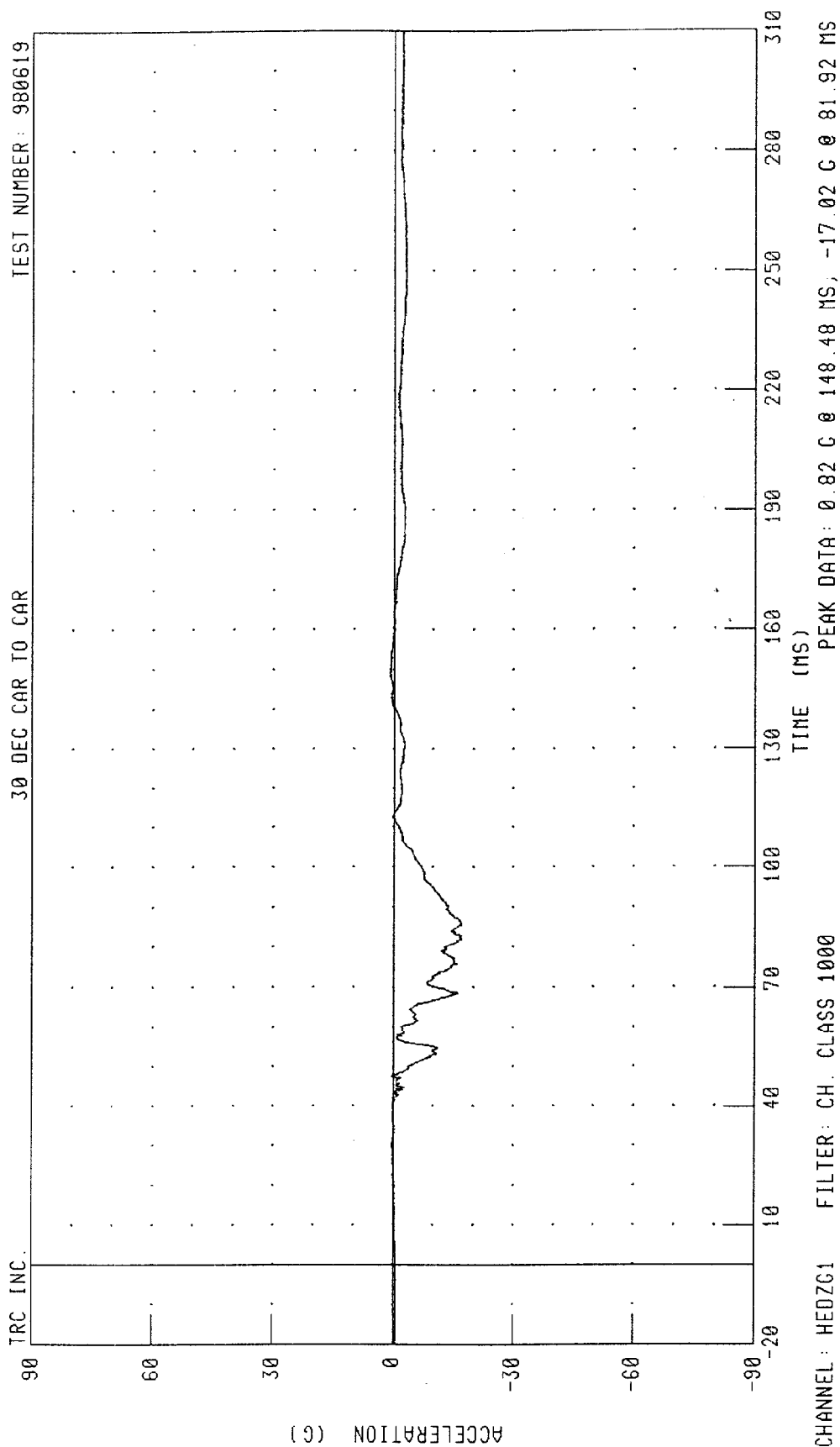
TEST NUMBER: 980619



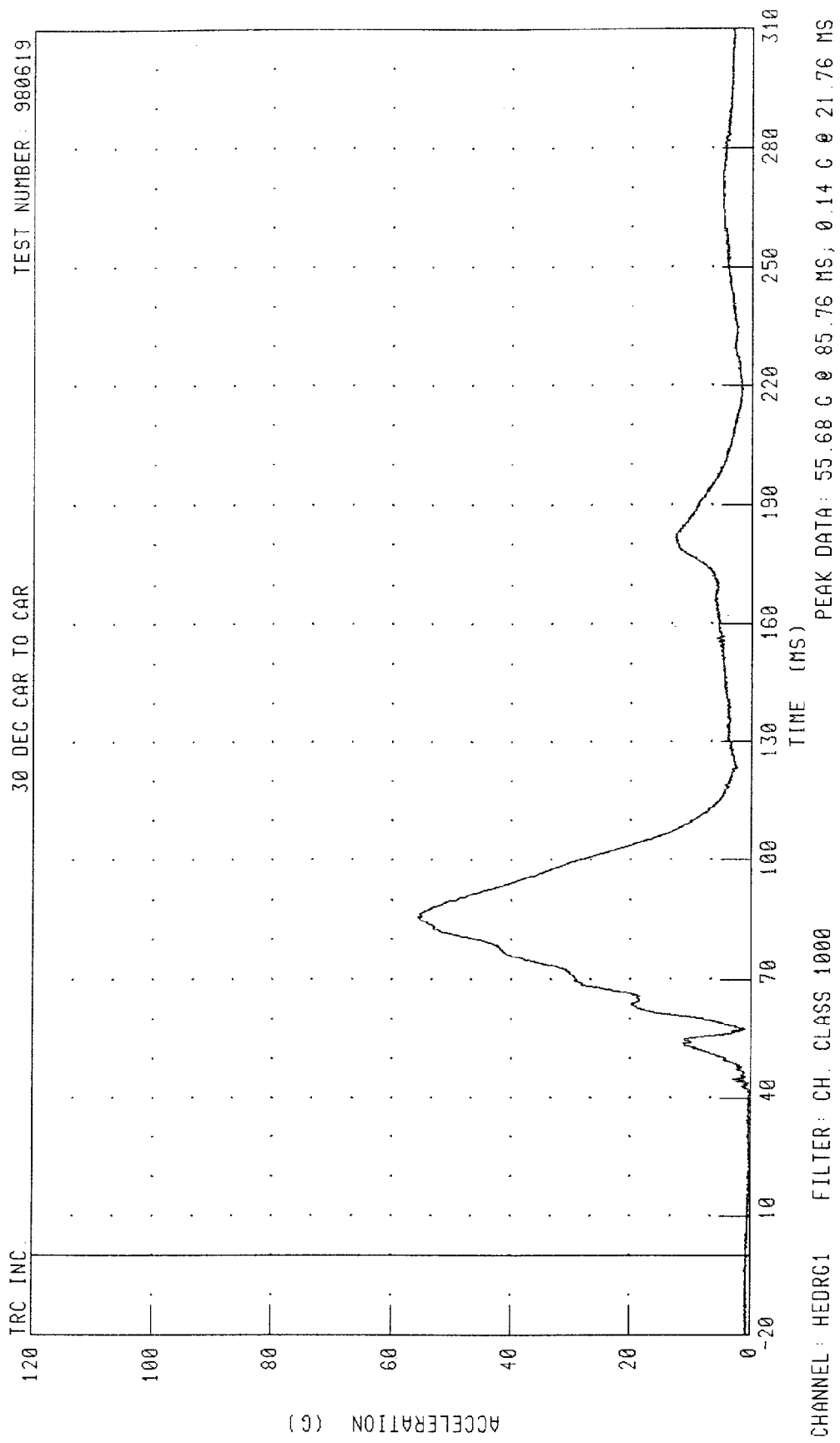
CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

PEAK DATA: 4.20 G @ 53.76 MS; -18.63 G @ 89.76 MS

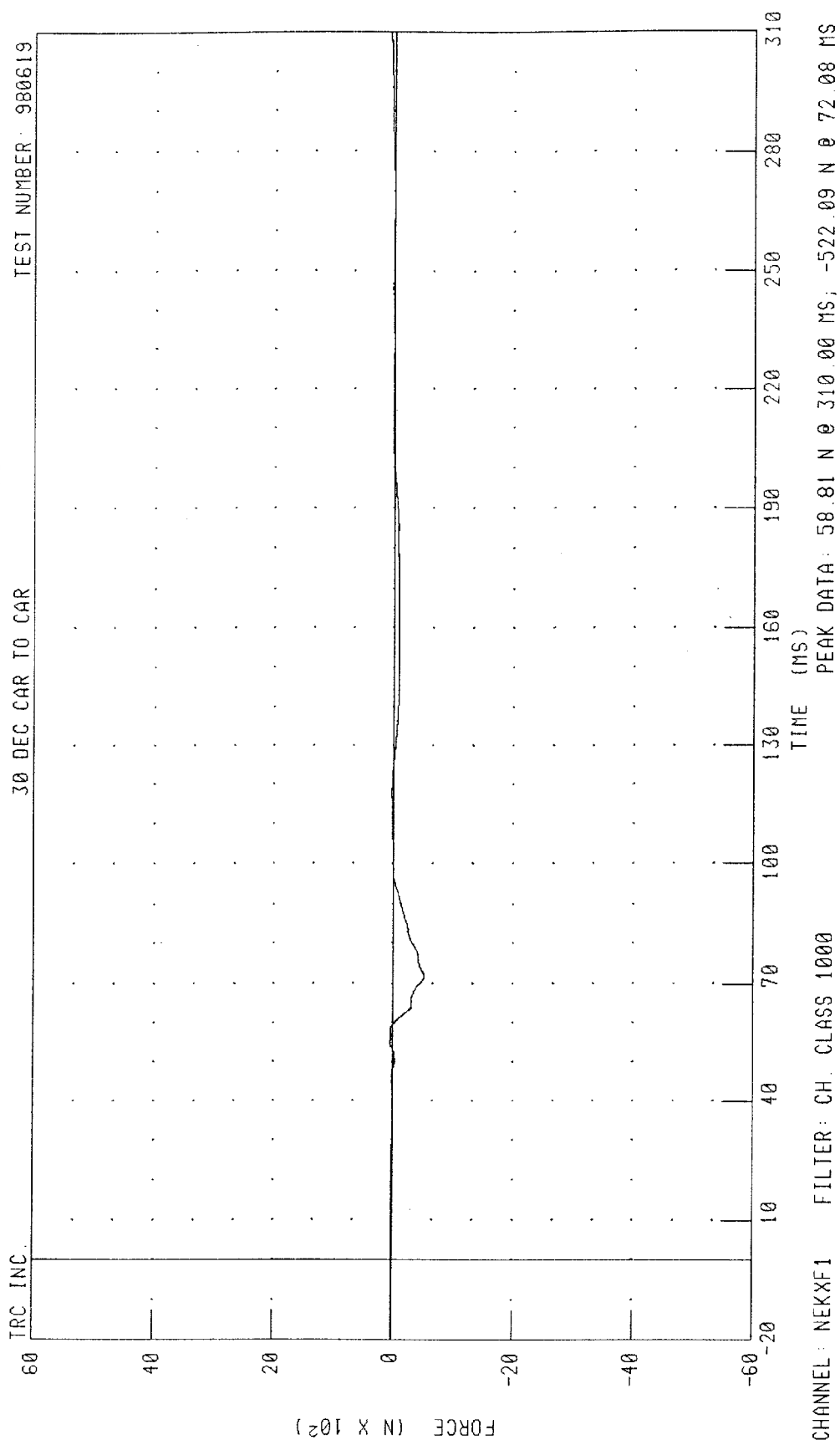
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER HEAD Z-AXIS ACCELERATION



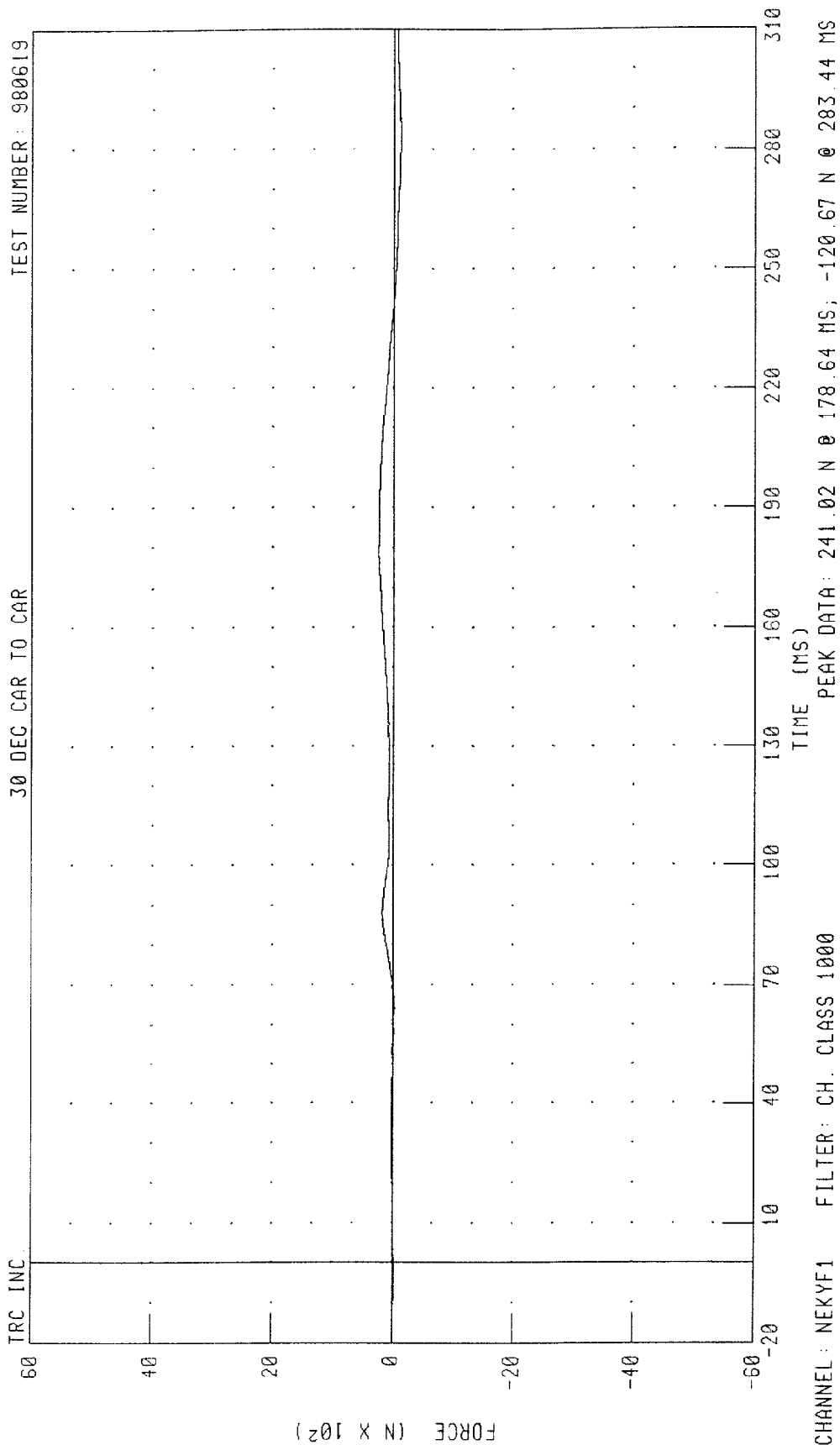
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER HEAD RESULTANT ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER NECK X-AXIS SHEAR FORCE



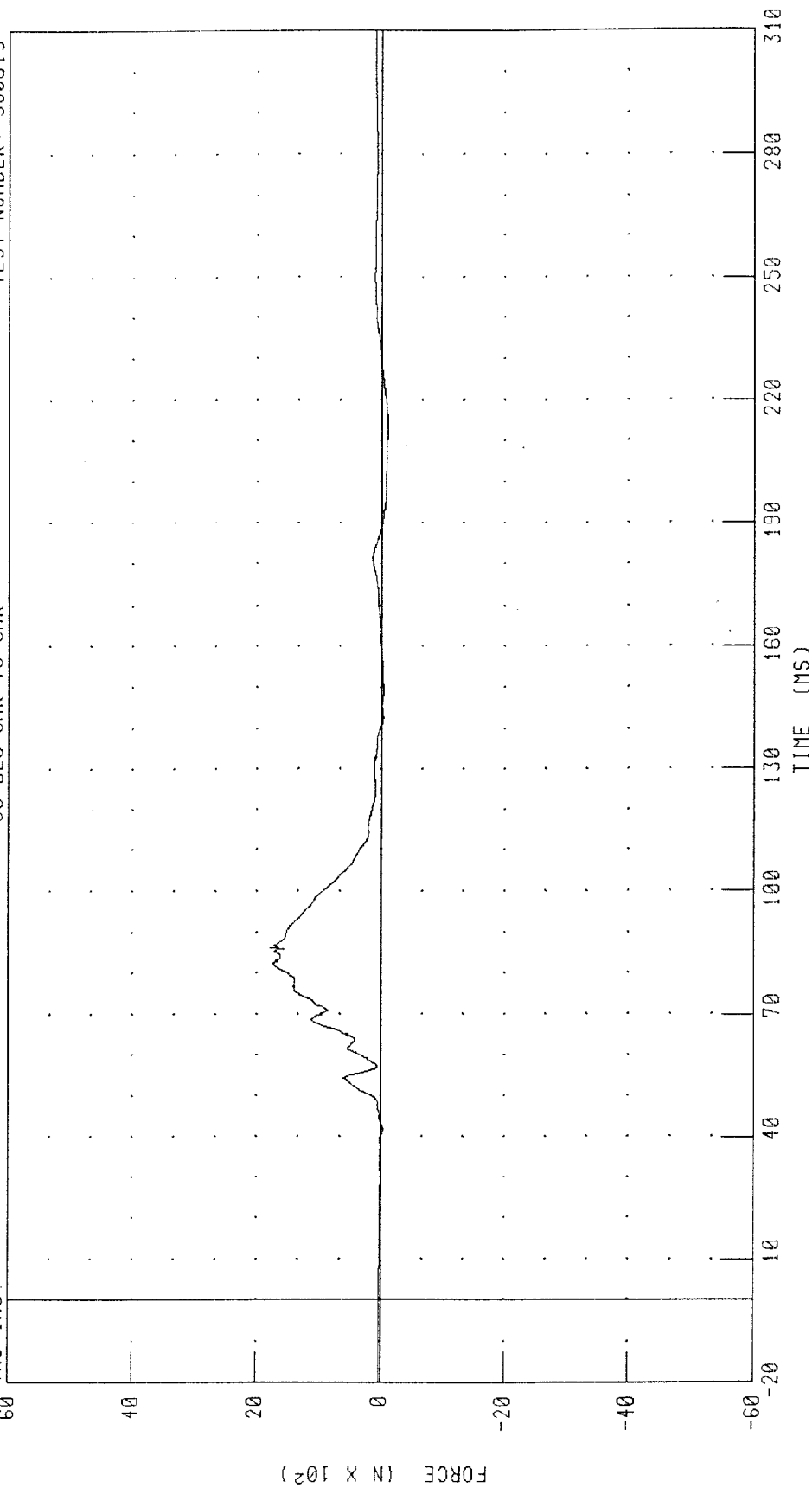
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER NECK Y-AXIS SHEAR FORCE



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER NECK Z-AXIS AXIAL FORCE
30 DEG CAR TO CAR

TEST NUMBER: 980619

TRC INC.



CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

PEAK DATA: 1787.31 N @ 86.24 MS; -104.13 N @ 211.76 MS

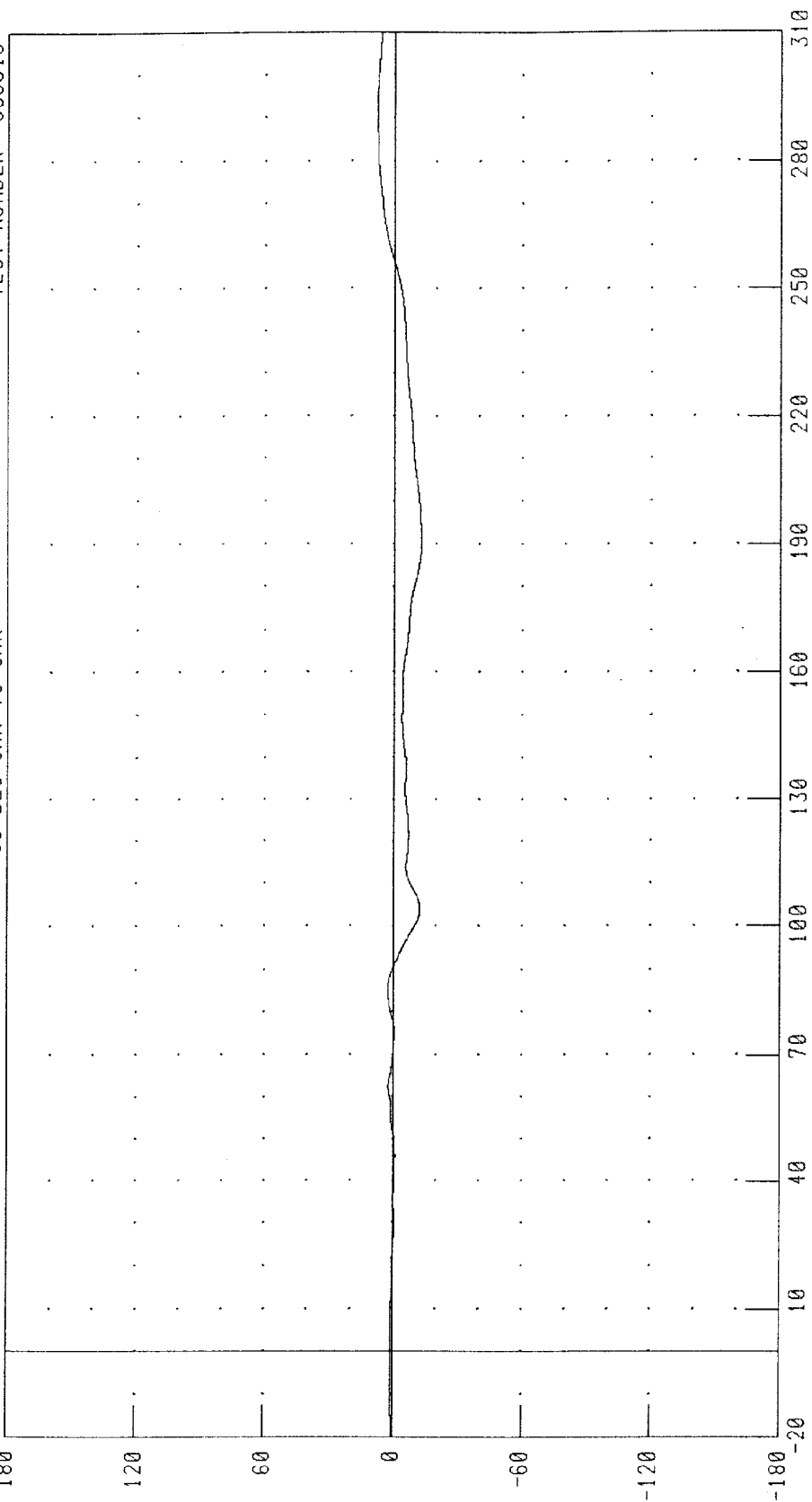
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER NECK MOMENT ABOUT X AXIS

TRC INC

30 DEC CAR TO CAR

TEST NUMBER: 980619

TORQUE (N·M)



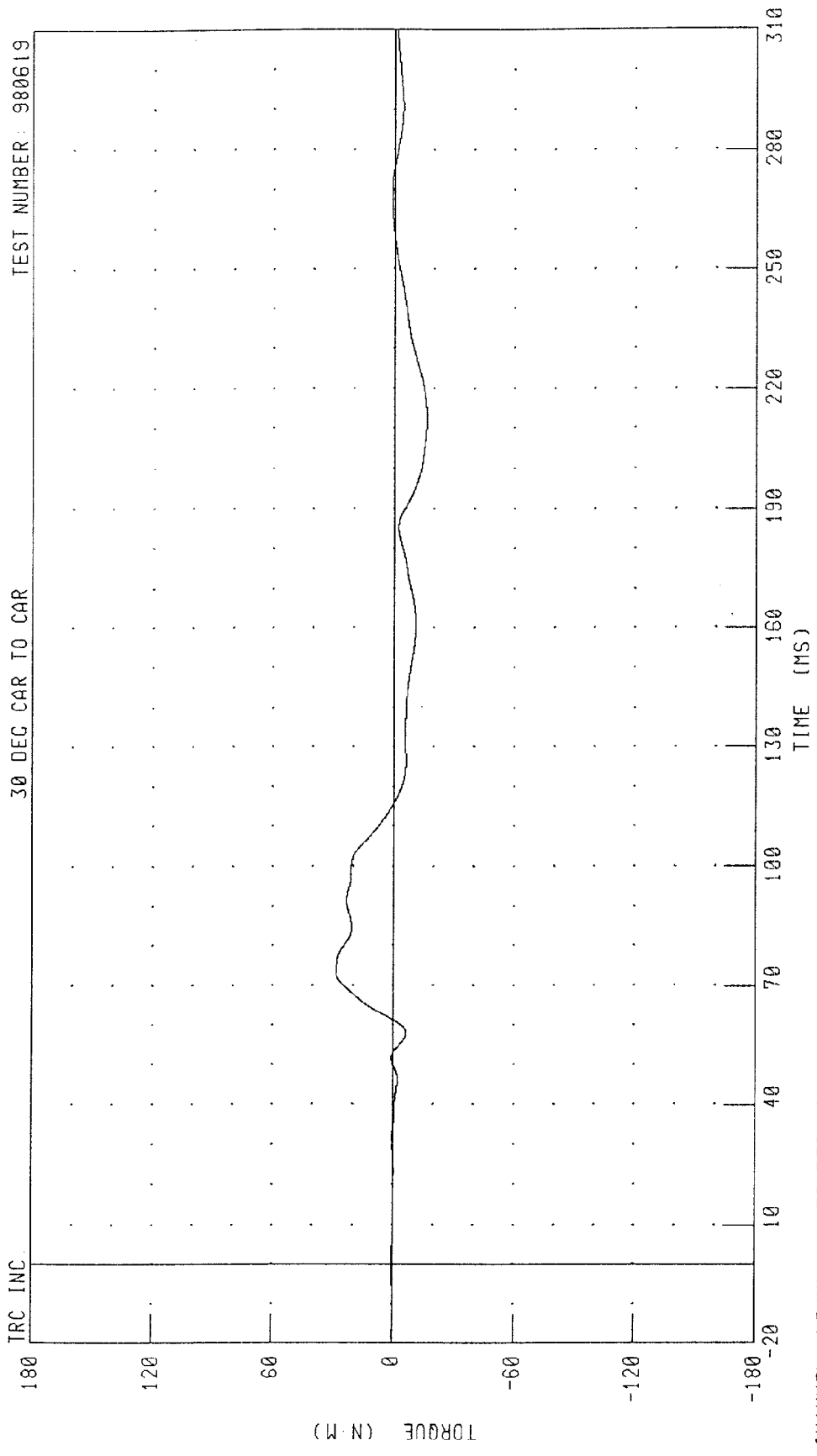
TIME (MS)

CHANNEL: NEXXM1 FILTER: CH. CLASS 60

PEAK DATA: 7.88 N·M @ 292.80 MS, -12.96 N·M @ 190.48 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER NECK MOMENT ABOUT Y AXIS

TRC INC. 30 DEG CAR TO CAR TEST NUMBER: 980619



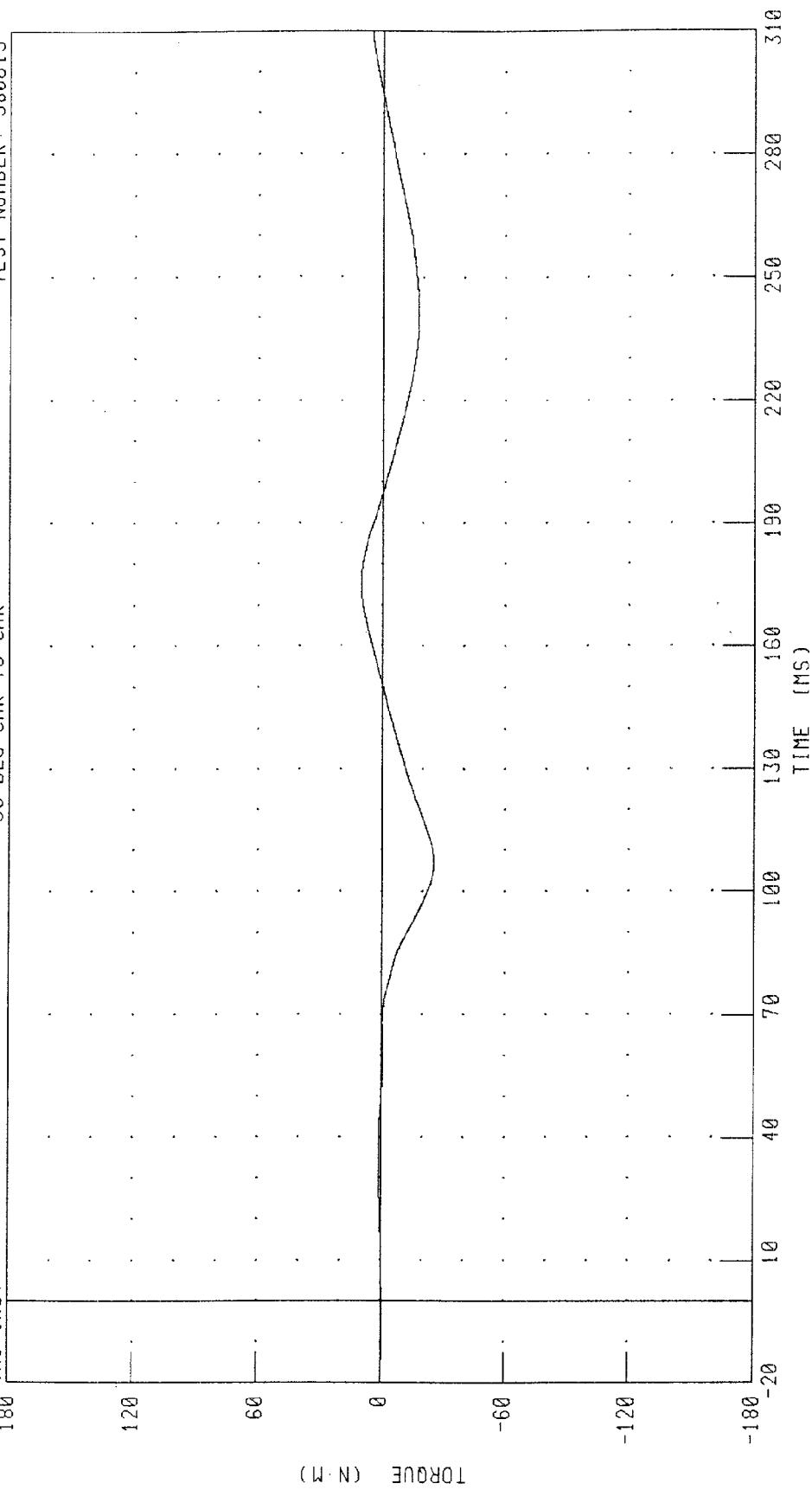
CHANNEL: NEKYM1 FILTER: CH. CLASS 60 PEAK DATA: 28.27 N.M @ 73.60 MS; -16.42 N.M @ 212.40 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER NECK MOMENT ABOUT Z AXIS

TRC INC.

30 DEC CAR TO CAR

TEST NUMBER: 980619

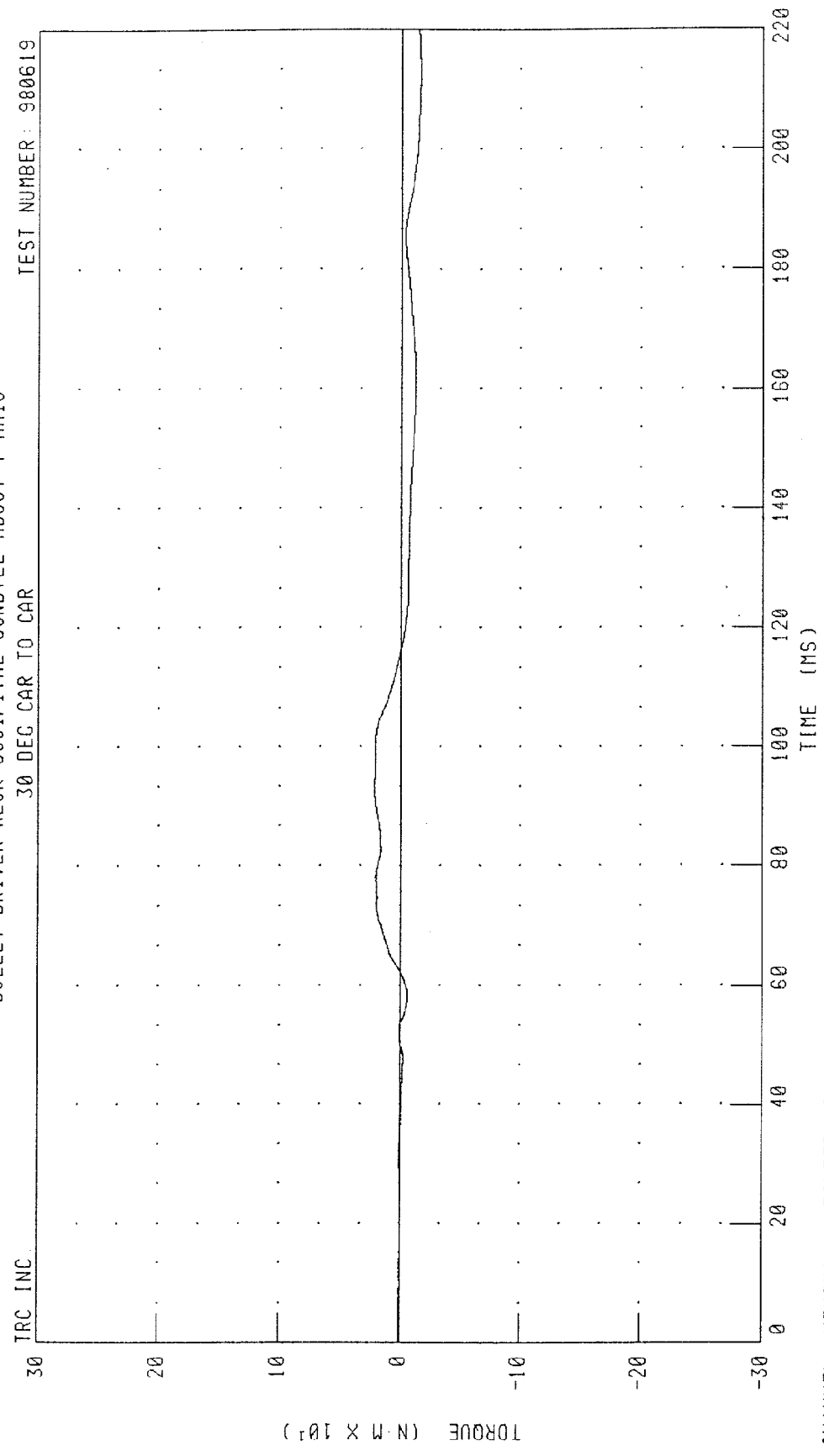


CHANNEL: NEKZM1 FILTER: CH. CLASS 60

PEAK DATA: 10.11 N.M @ 175.28 MS; -25.63 N.M @ 107.12 MS

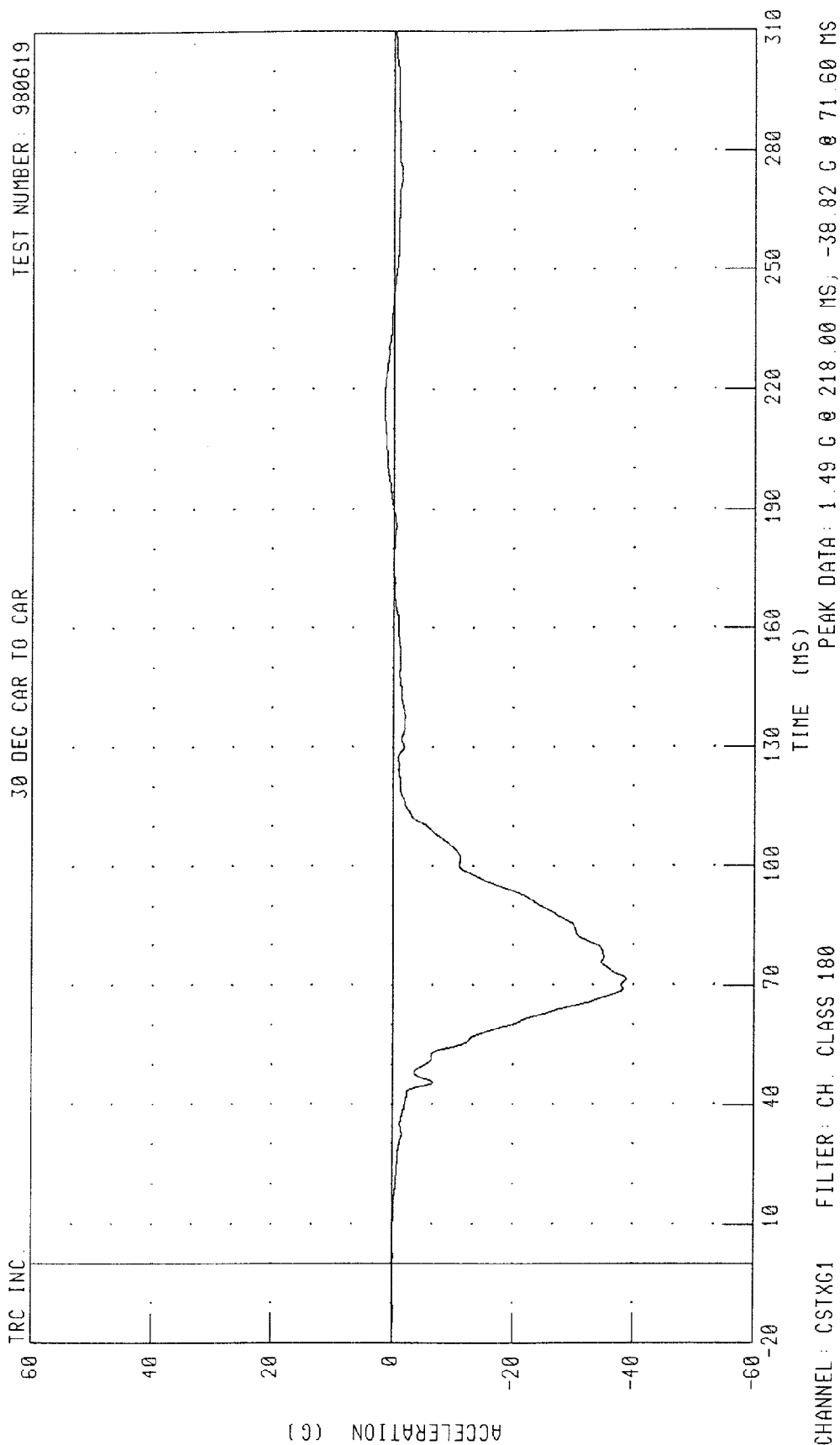
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER NECK OCCIPITAL CONDYLE ABOUT Y AXIS
30 DEC CAR TO CAR

TEST NUMBER: 980619



CHANNEL: NEKOM1 FILTER: CH. CLASS 600 PEAK DATA: 21.59 N·M @ 92.96 MS, -16.18 N·M @ 213.28 MS

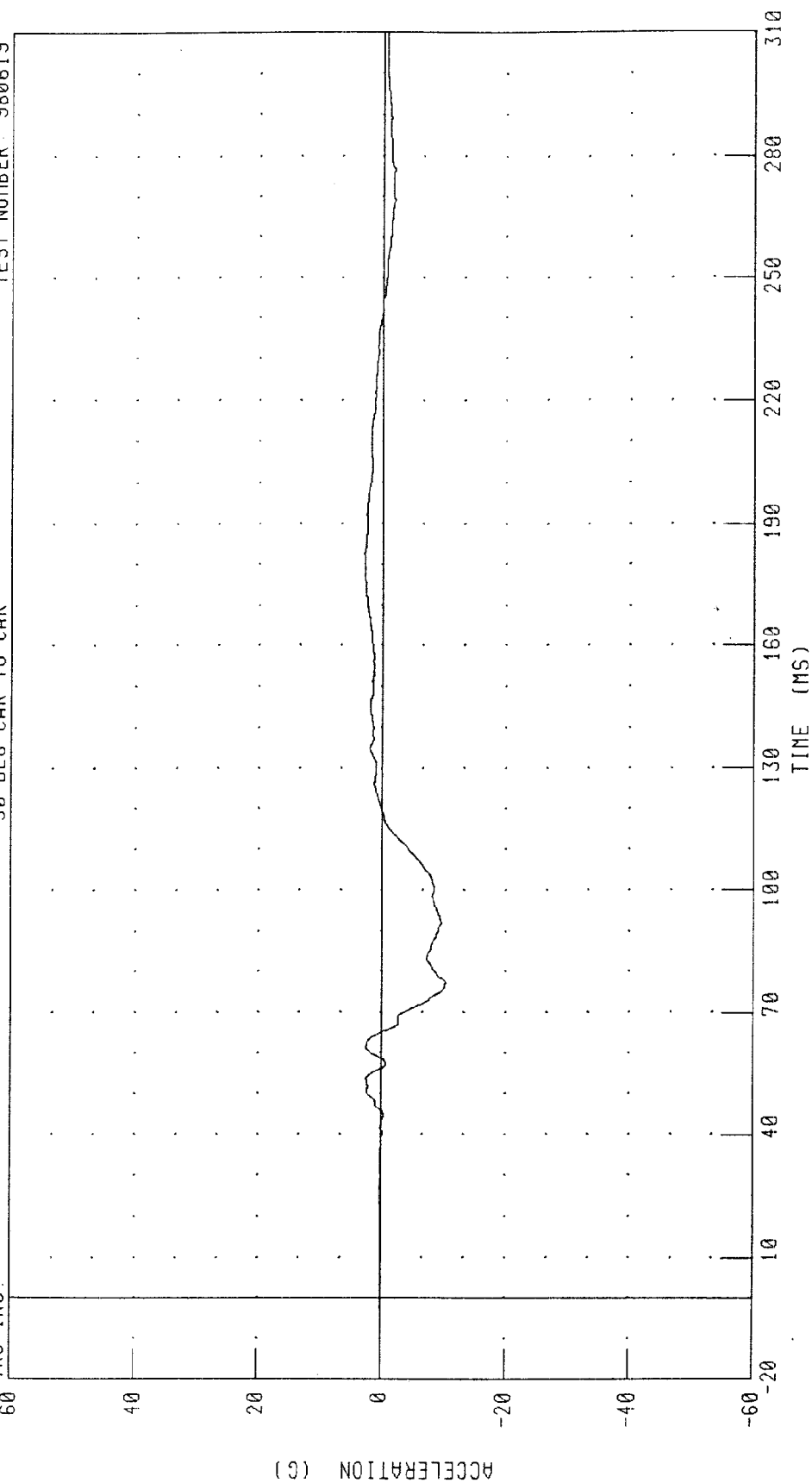
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER CHEST X-AXIS ACCELERATION - PRIMARY



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER CHEST Y-AXIS ACCELERATION - PRIMARY
30 DEG CAR TO CAR

TEST NUMBER: 980619

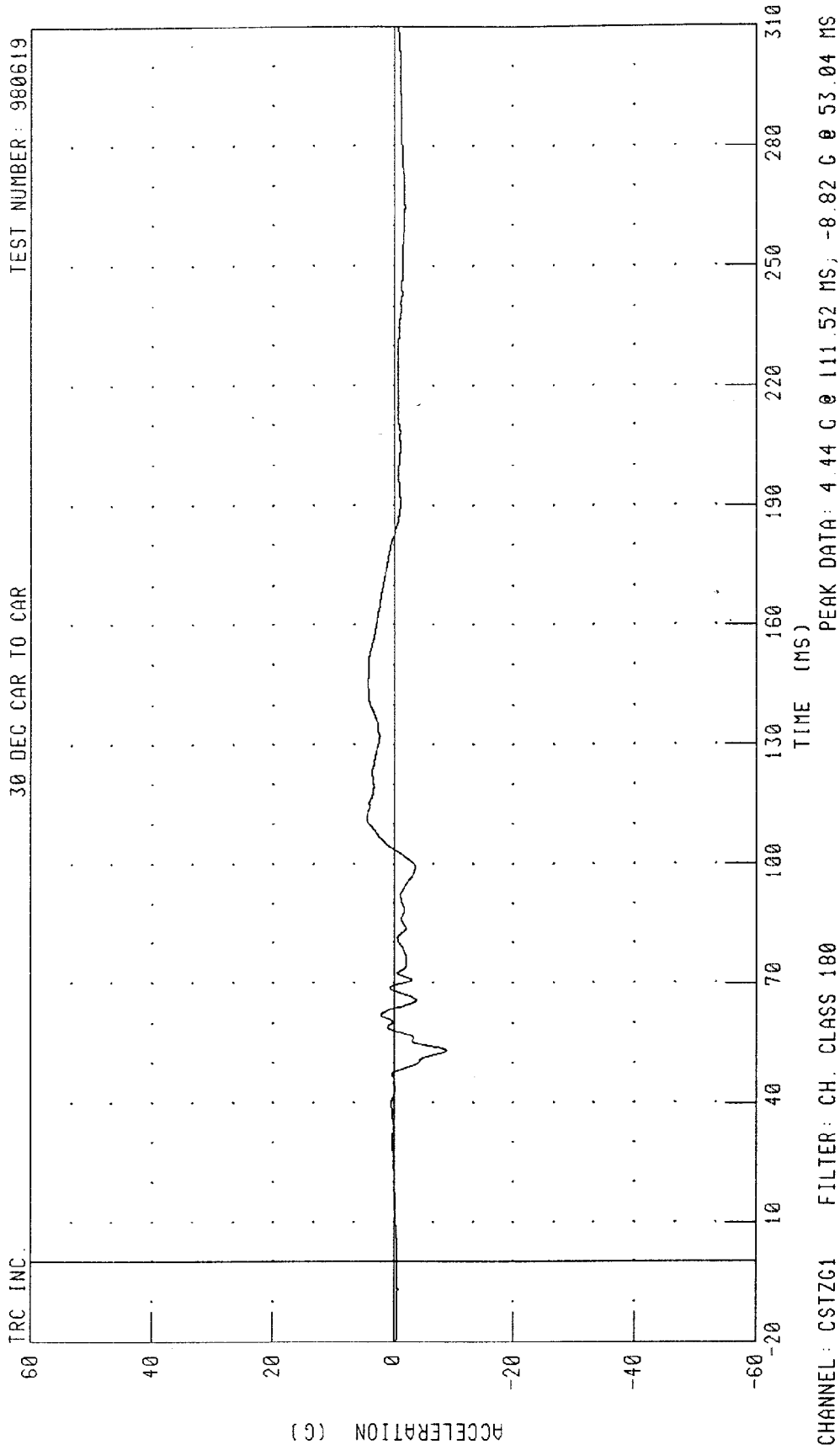
IRC INC.



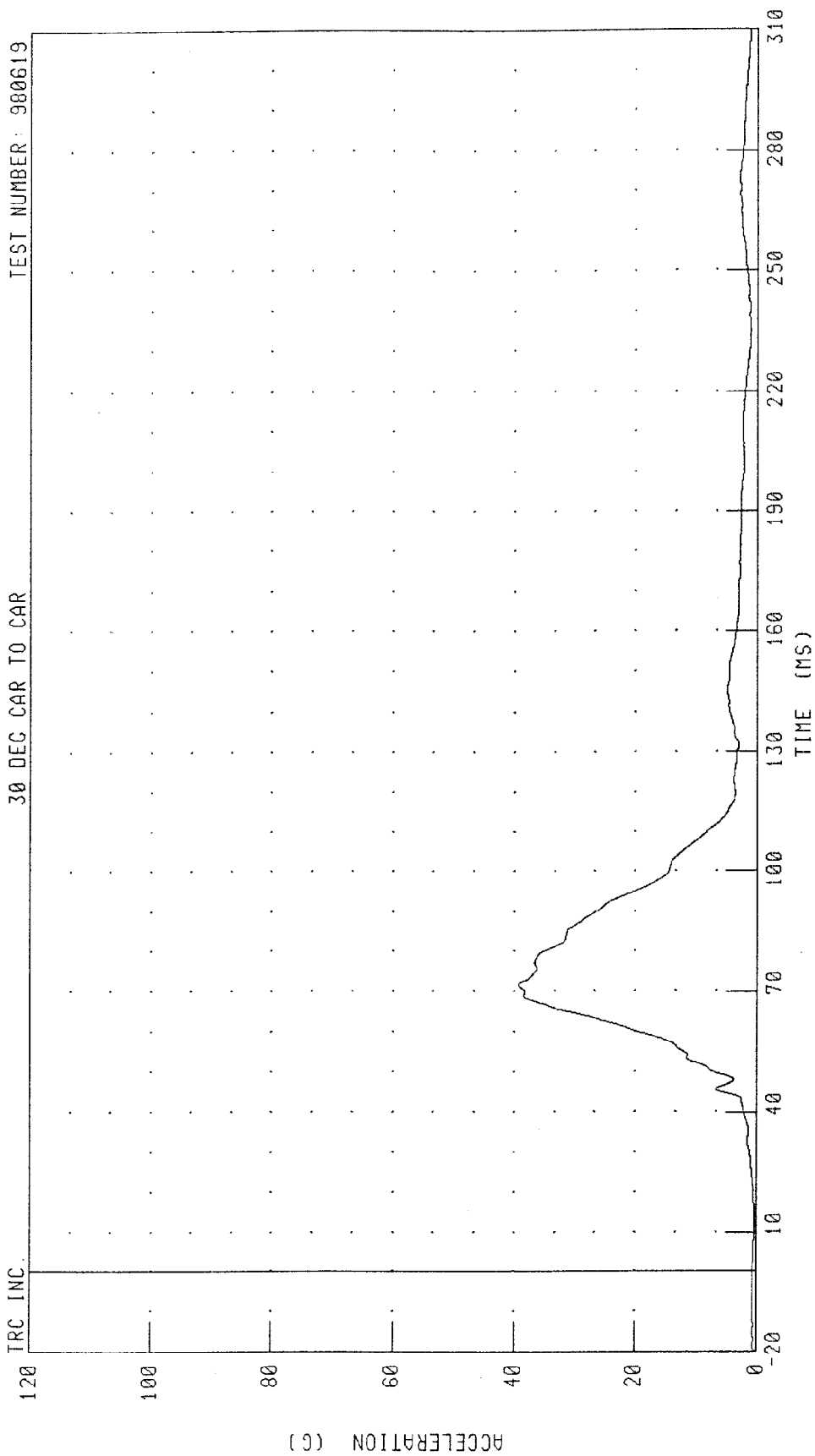
CHANNEL: CSTYG1 FILTER: CH. CLASS 180

PEAK DATA: 2.89 G @ 182.48 MS; -10.36 G @ 77.36 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
 BULLET DRIVER CHEST Z-AXIS ACCELERATION - PRIMARY



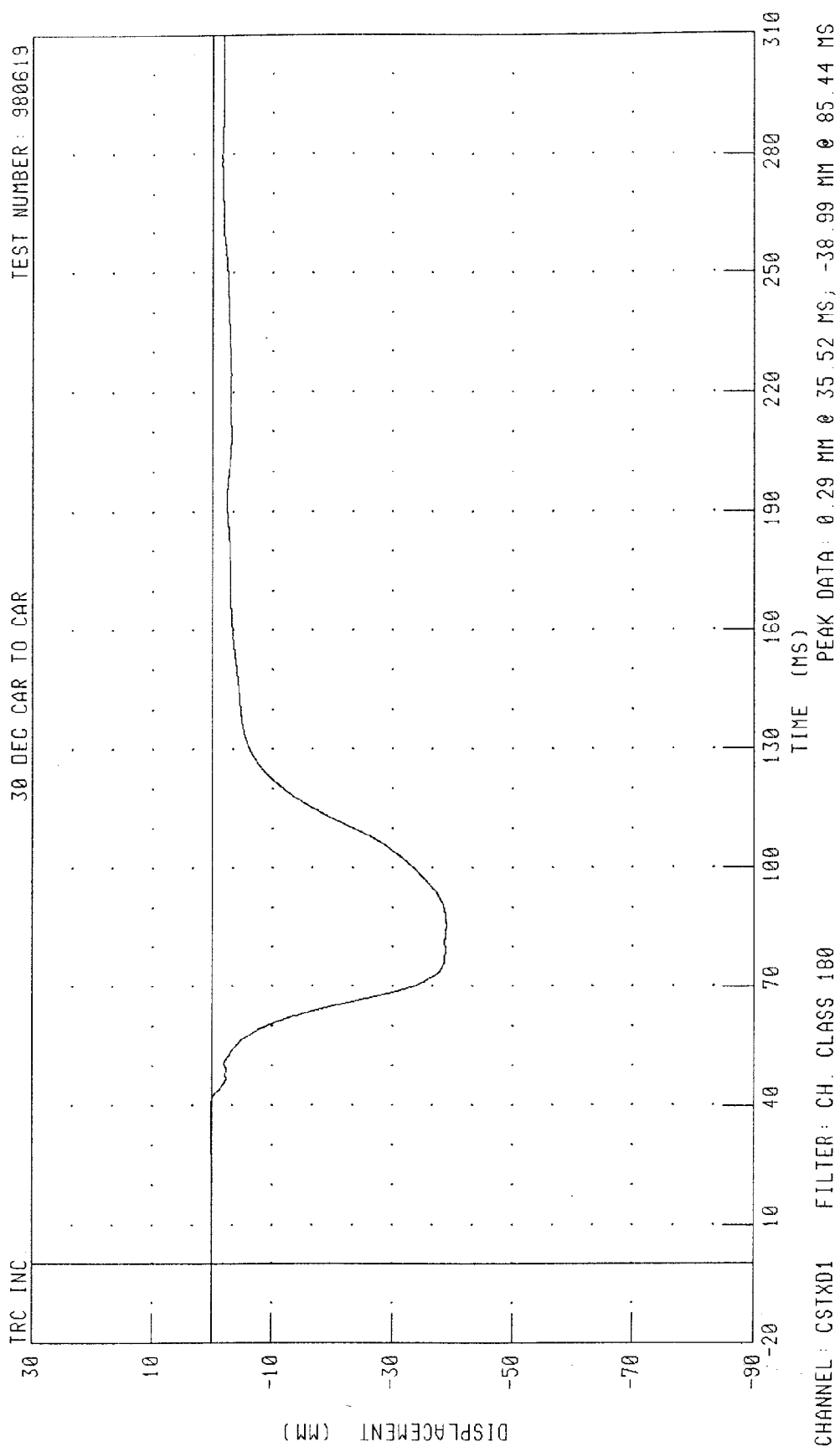
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER CHEST RESULTANT ACCELERATION



CHANNEL: CSTRG1 FILTER: CH. CLASS 180

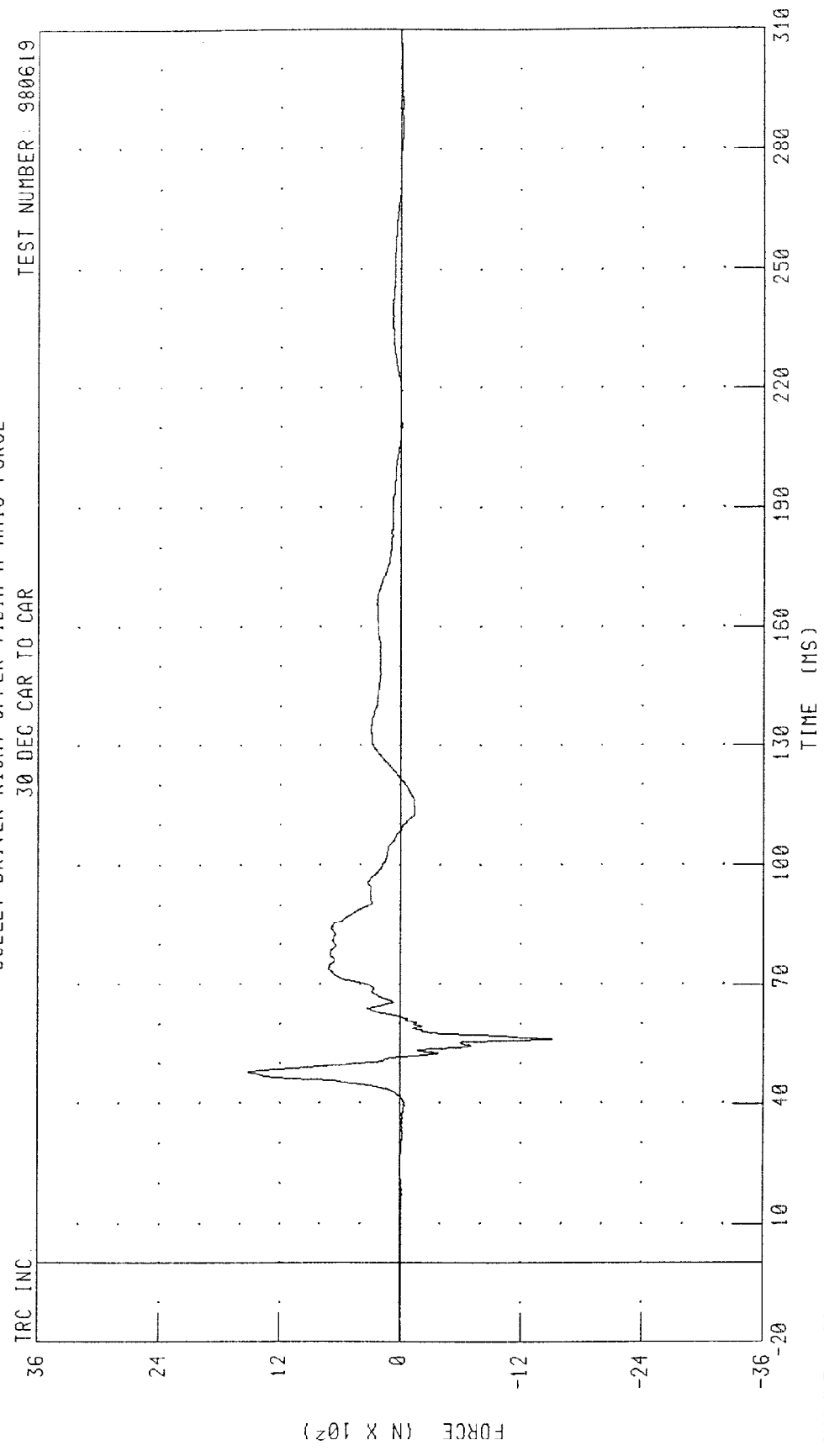
PEAK DATA: 39.28 G @ 71.68 MS; 0.04 G @ -20.00 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER CHEST DEFLECTION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER RIGHT UPPER TIBIA X-AXIS FORCE
30 DEC CAR TO CAR

TEST NUMBER: 980619



CHANNEL: TBRXF1 FILTER: CH CLASS 600

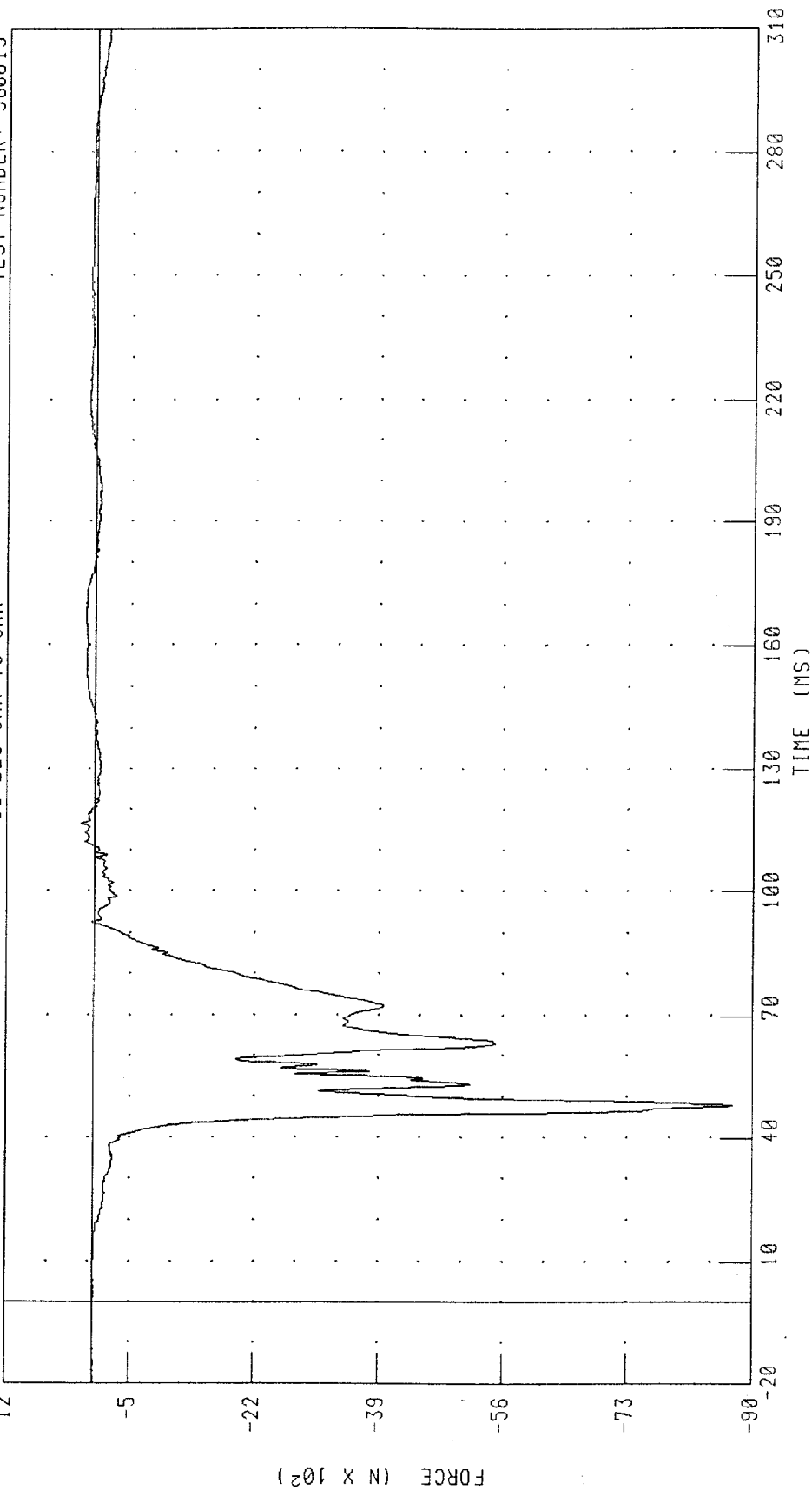
PEAK DATA: 1518.99 N @ 47.84 MS, -1512.67 N @ 56.08 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER RIGHT UPPER TIBIA Z-AXIS FORCE

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.



CHANNEL: TBRZF1 FILTER: CH. CLASS 600

PEAK DATA: 182.67 N @ 116.80 MS, -8730.03 N @ 48.00 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.

36

24

12

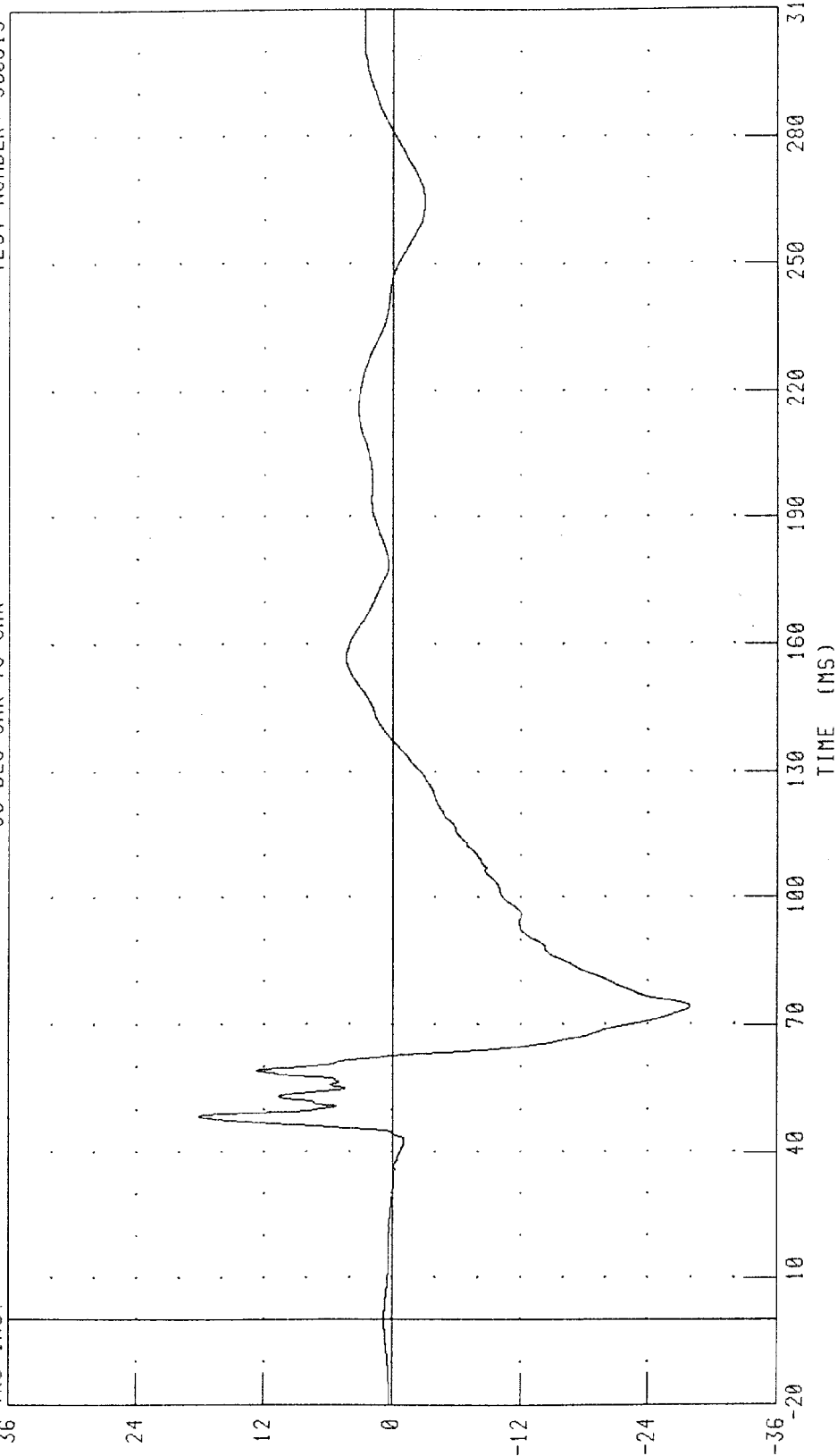
0

-12

-24

-36

TORQUE (N·M × 10³)

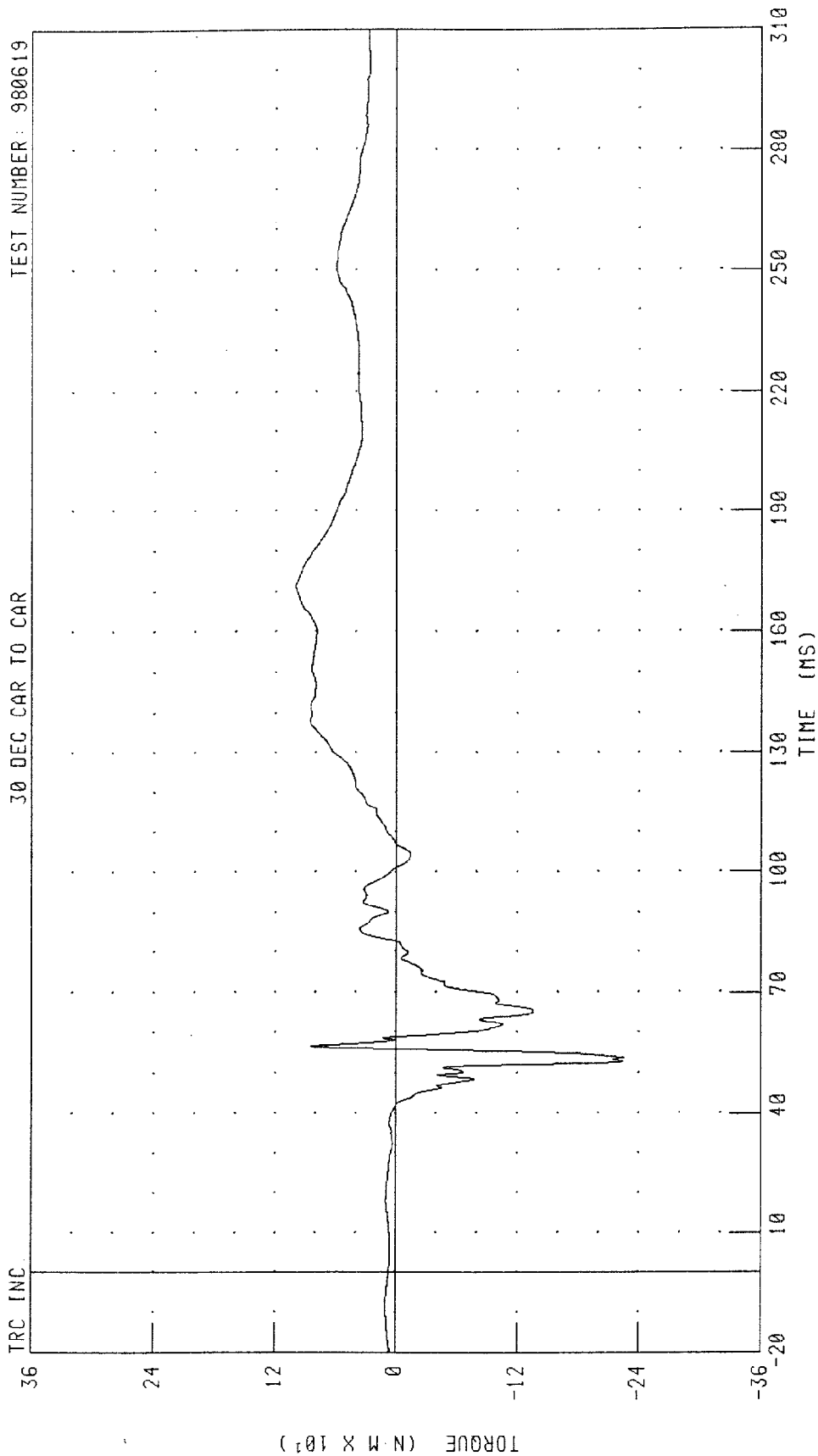


CHANNEL: TBRXM1 FILTER: CH. CLASS 600

PEAK DATA: 181.39 N·M @ 48.48 MS; -279.10 N·M @ 74.24 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS

30 DEG CAR TO CAR TEST NUMBER: 980619



CHANNEL: TBRYM1 FILTER: CH. CLASS 600

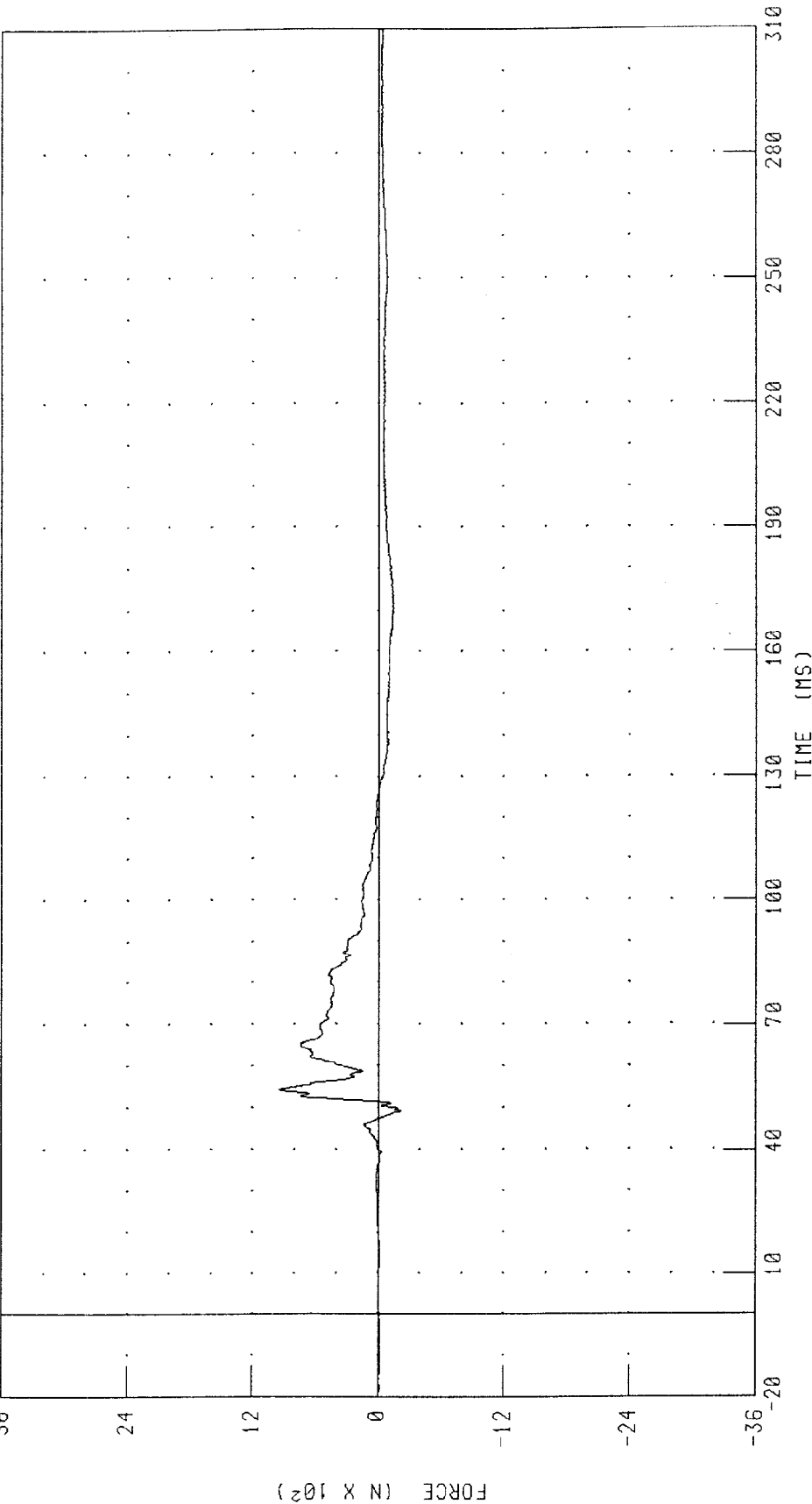
PEAK DATA: 99.87 N M @ 171.44 MS, -225.20 N M @ 53.76 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER RIGHT LOWER TIBIA X-AXIS FORCE

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.



CHANNEL: ANRXF1 FILTER: CH. CLASS 600

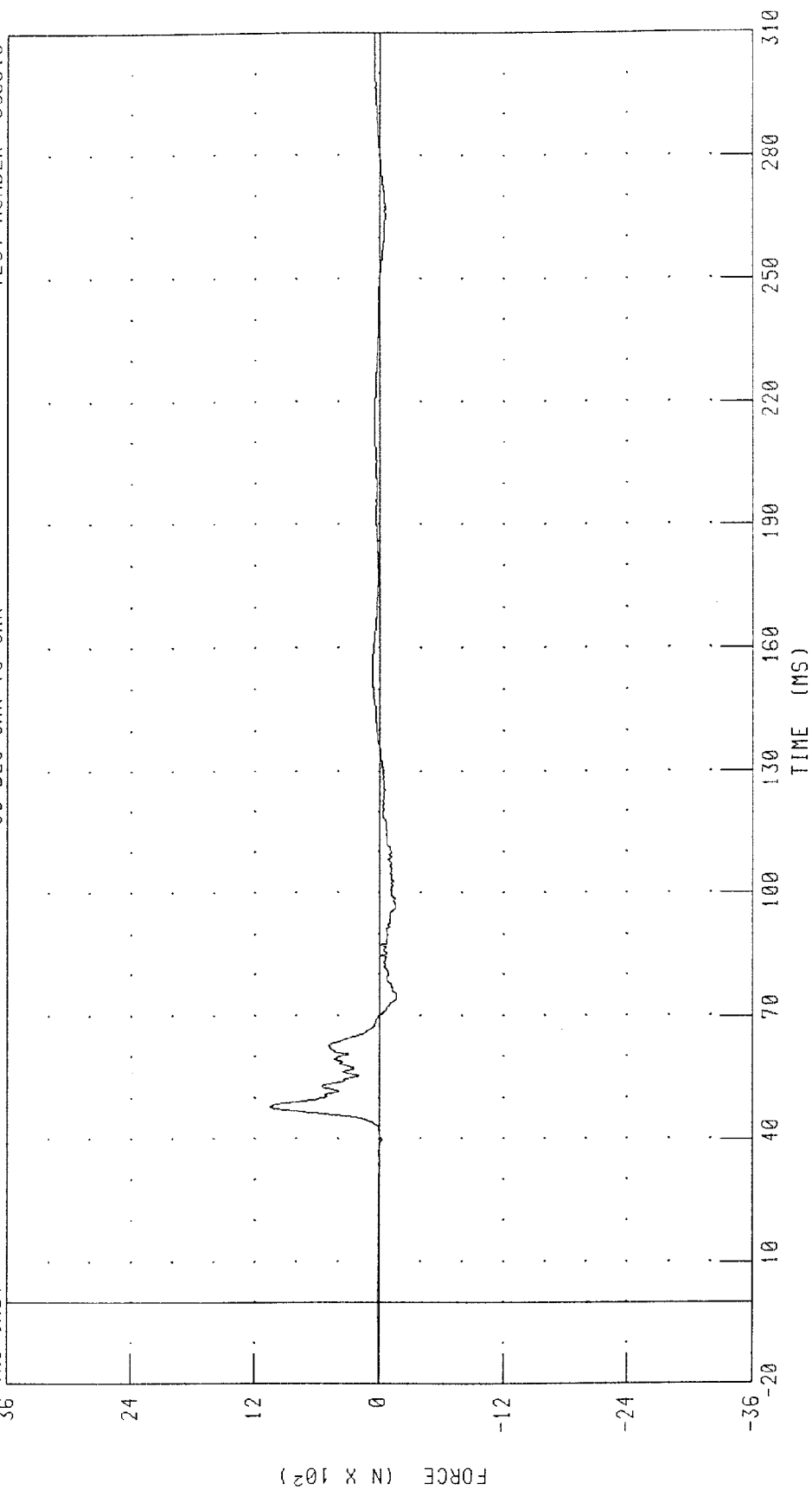
PEAK DATA: 947.86 N @ 54.40 MS, -215.86 N @ 49.28 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER RIGHT LOWER TIBIA Y-AXIS FORCE

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.



CHANNEL: ANRYF1 FILTER: CH. CLASS 600

PEAK DATA: 1048.34 N @ 47.92 MS, -171.69 N @ 74.56 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER RIGHT LOWER TIBIA MOMENT ABOUT X AXIS
30 DEC CAR TO CAR

TEST NUMBER: 980619

TRC INC.

36

24

12

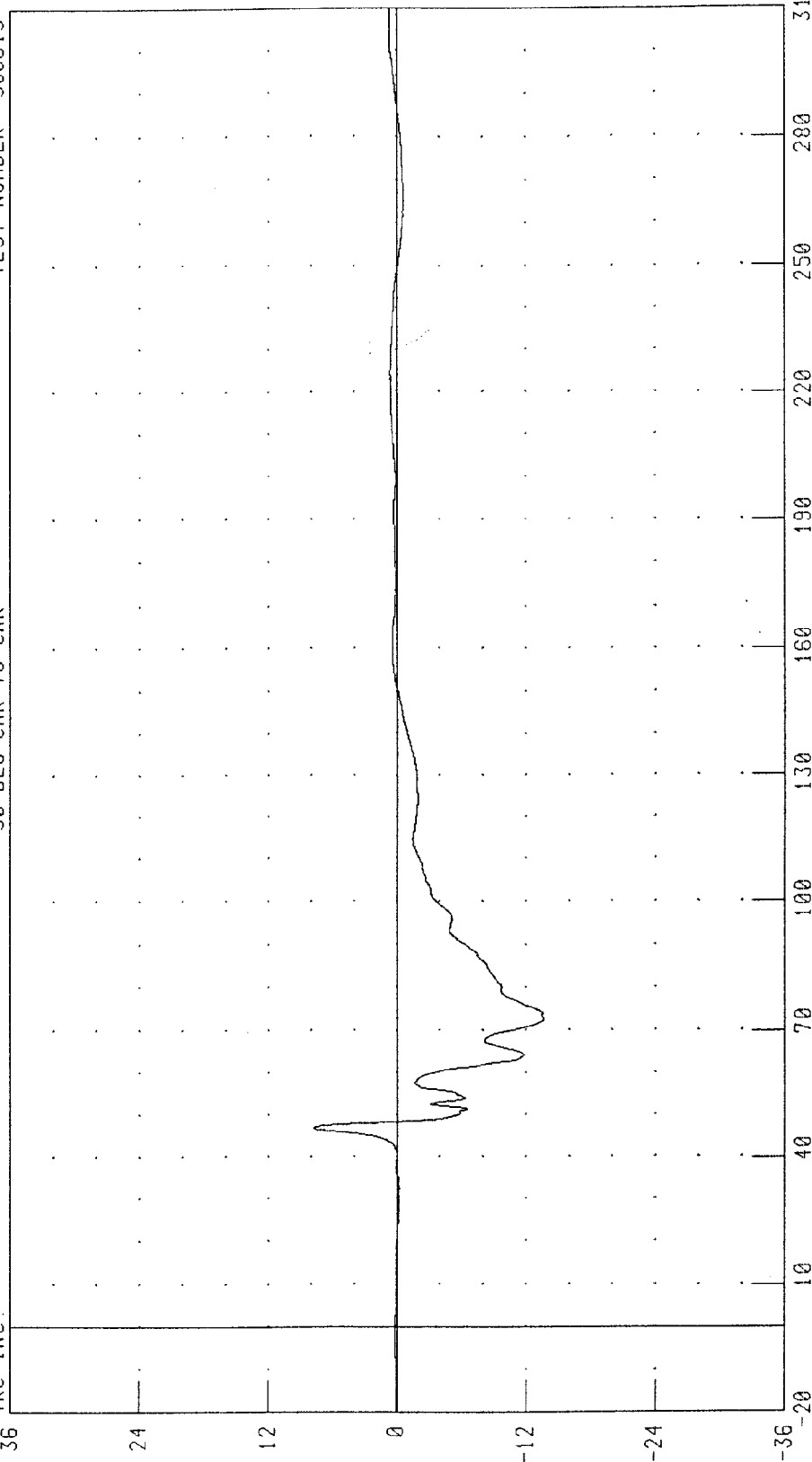
0

-12

-24

-36

TORQUE (N·M × 10³)



TIME (MS)

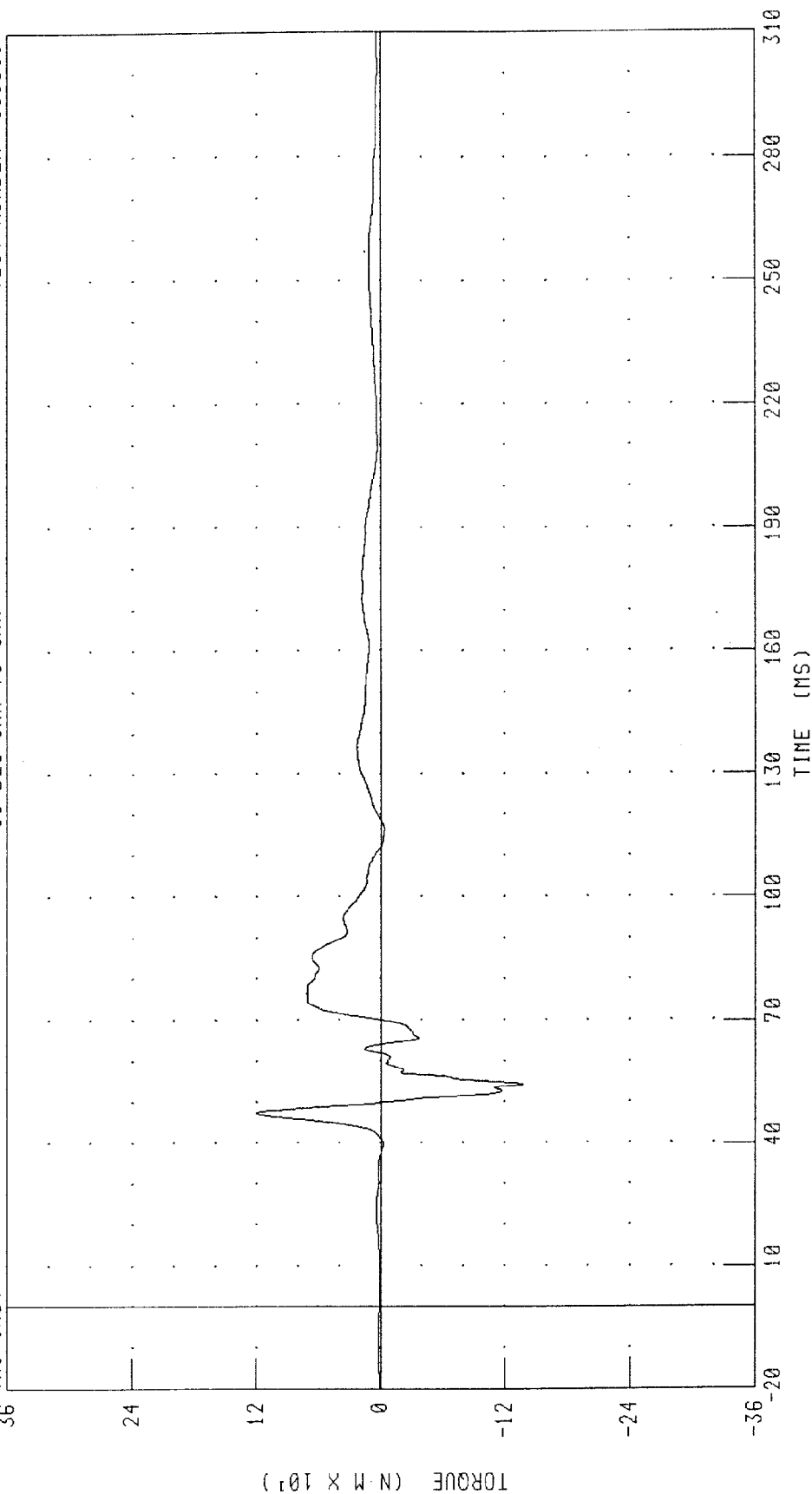
PEAK DATA: 77.98 N·M @ 47.04 MS; -136.87 N·M @ 72.64 MS

CHANNEL: ANRXM1 FILTER: CH. CLASS 600

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS
30 DEC CAR TO CAR

TEST NUMBER: 980619

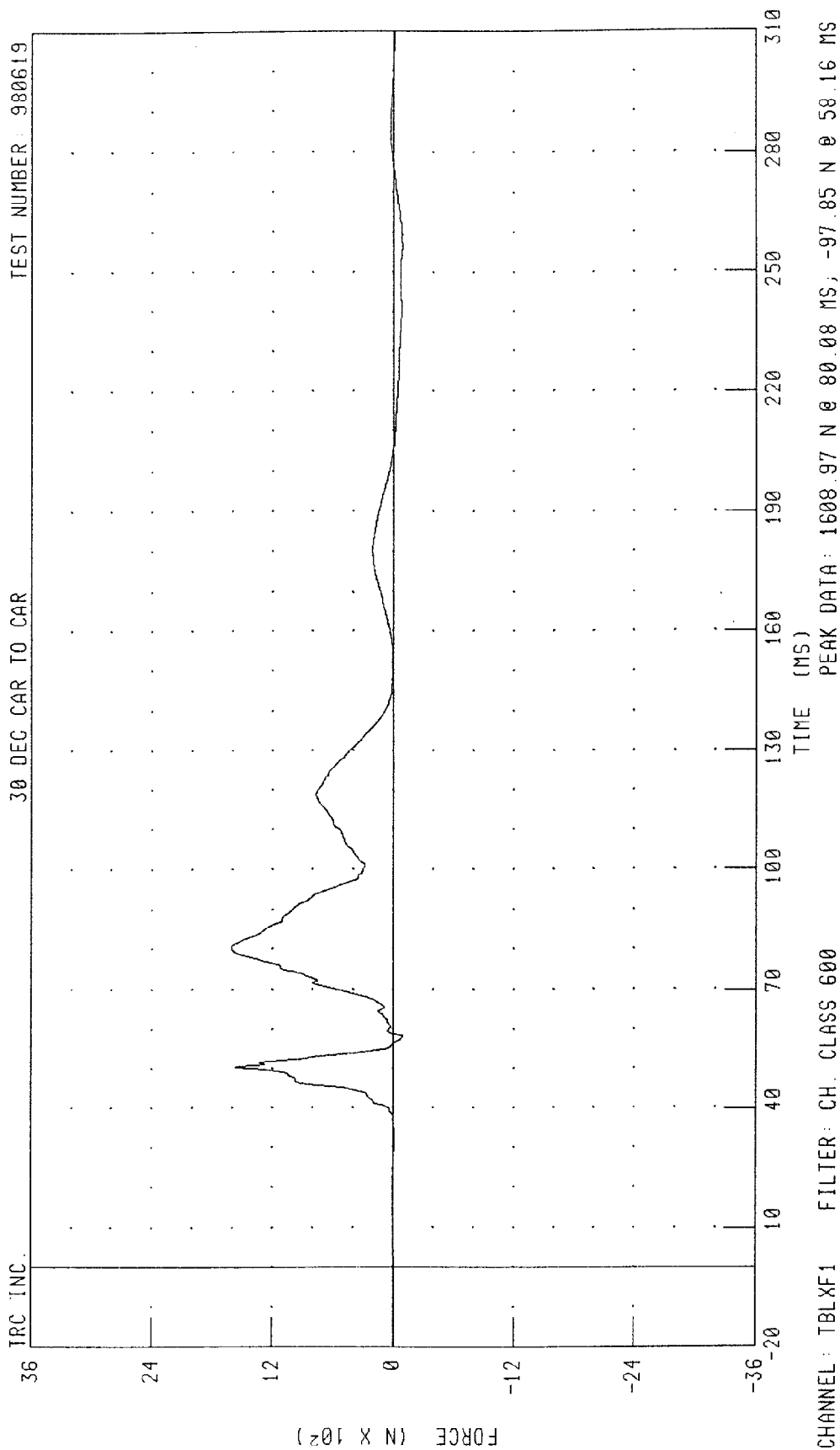
TRC INC.



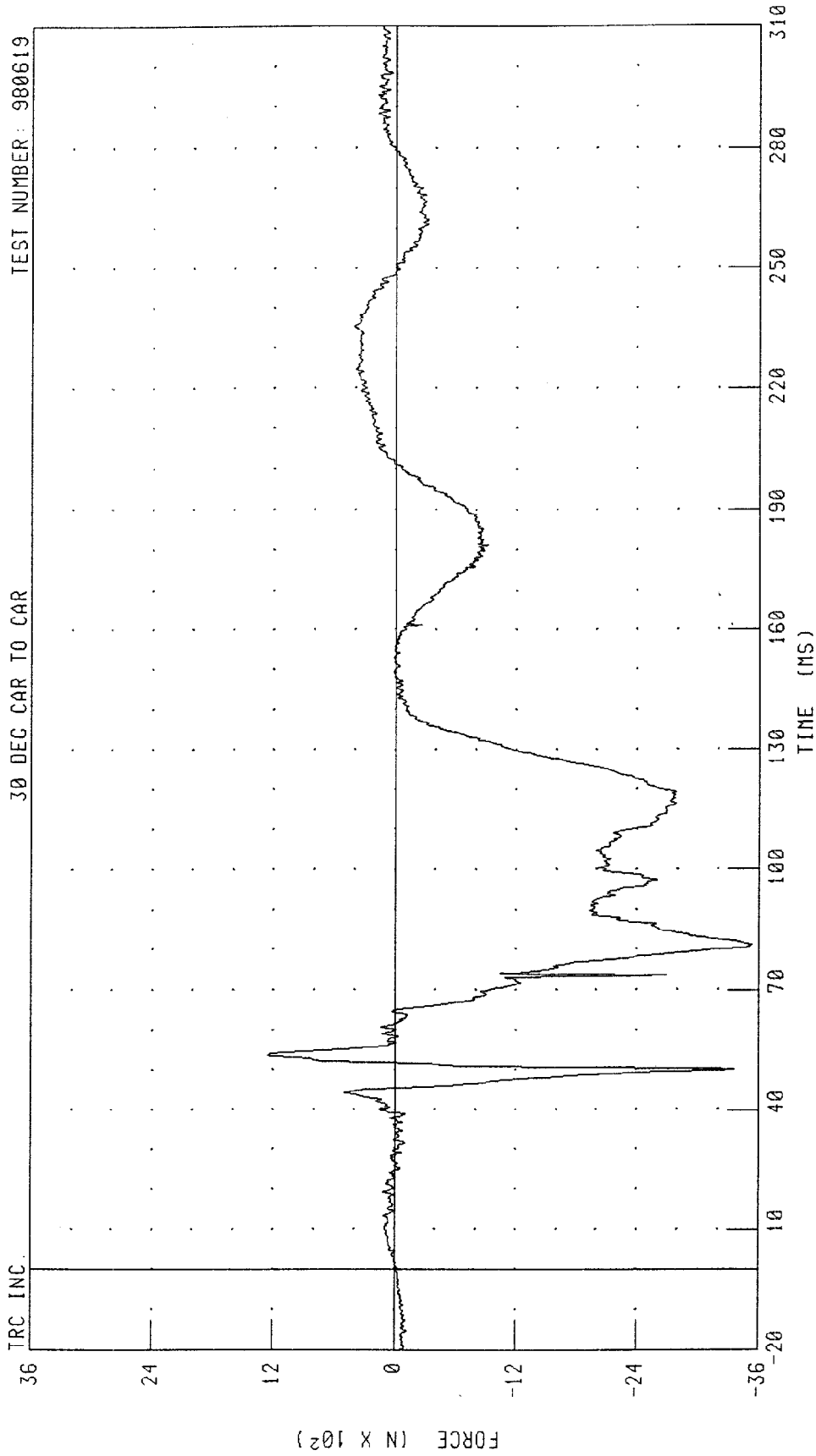
CHANNEL: ANRYM1 FILTER: CH. CLASS 600

PEAK DATA: 120.90 N-M @ 47.44 MS; -137.74 N-M @ 54.32 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER LEFT UPPER TIBIA X-AXIS FORCE



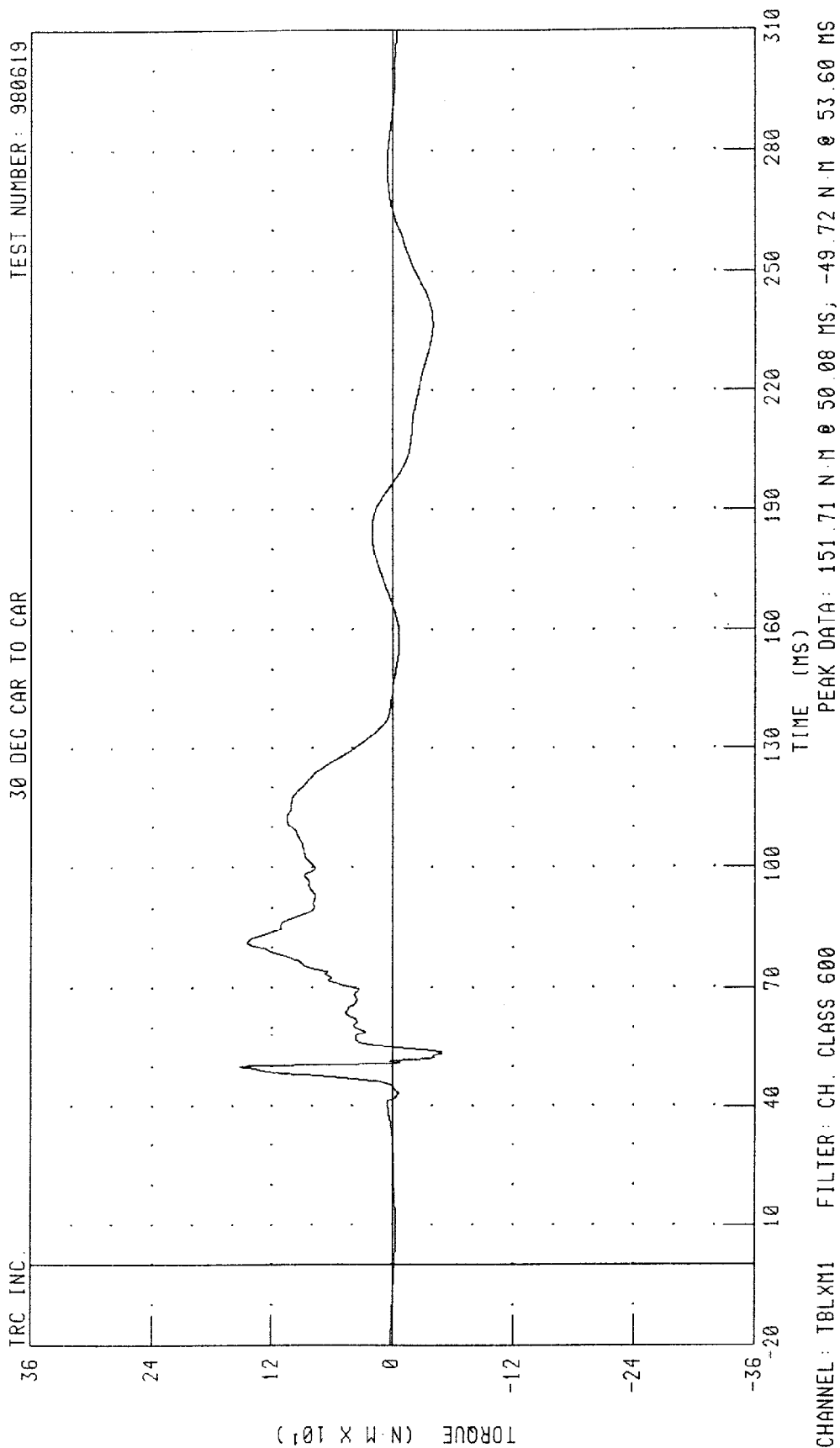
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER LEFT UPPER TIBIA Z-AXIS FORCE



CHANNEL: TBLZF1 FILTER: CH. CLASS 600

PEAK DATA: 1259.61 N @ 53.60 MS; -3526.82 N @ 80.96 MS

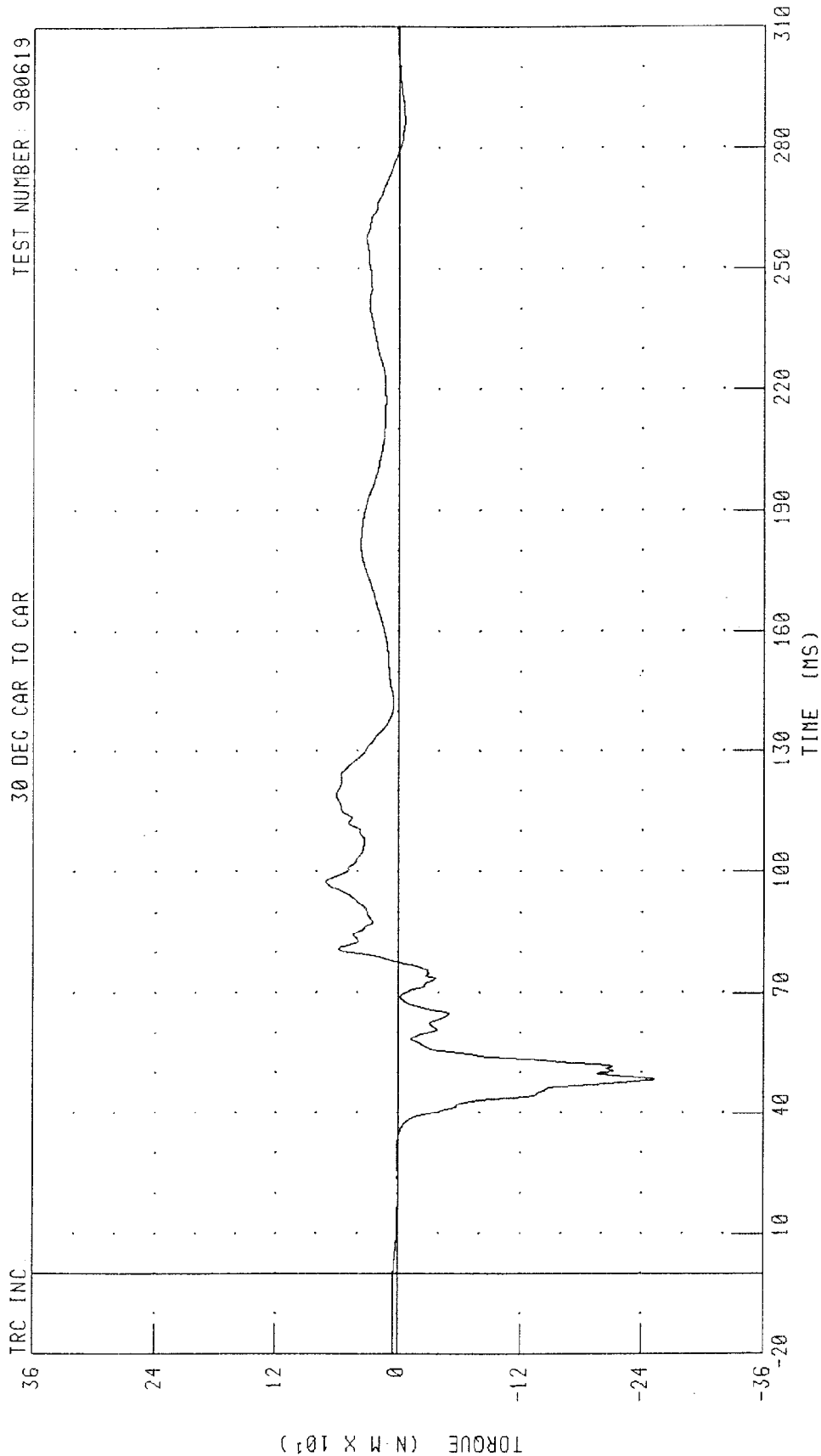
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER LEFT UPPER TIBIA MOMENT ABOUT X AXIS



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS
30 DEC CAR TO CAR

TEST NUMBER: 980619

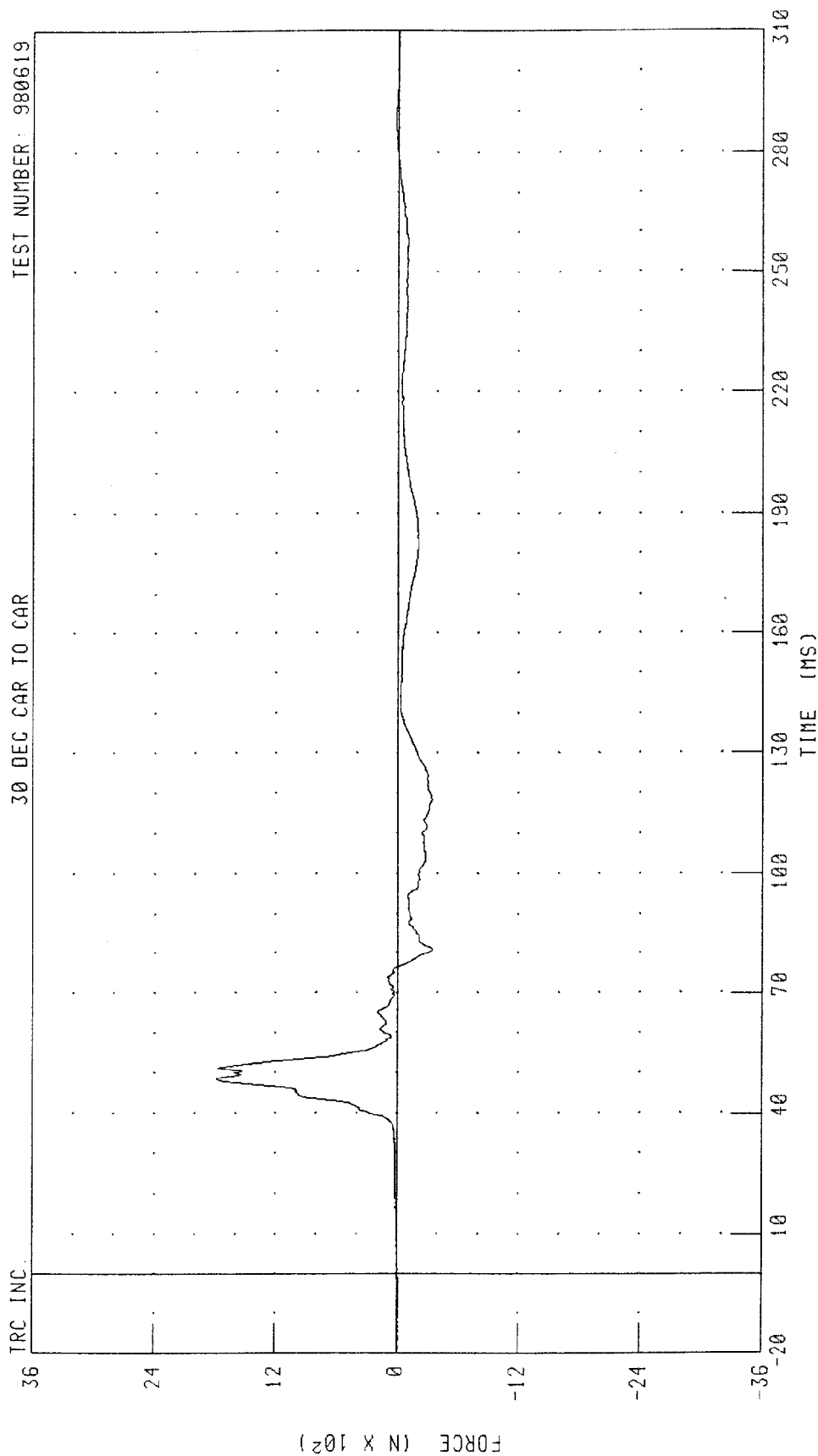
TRC INC



CHANNEL: TBLYM1 FILTER: CH. CLASS 600

PEAK DATA: 70.83 N-M @ 97.60 MS, -251.92 N-M @ 48.32 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER LEFT LOWER TIBIA X-AXIS FORCE



CHANNEL: ANLXF1 FILTER: CH. CLASS 600

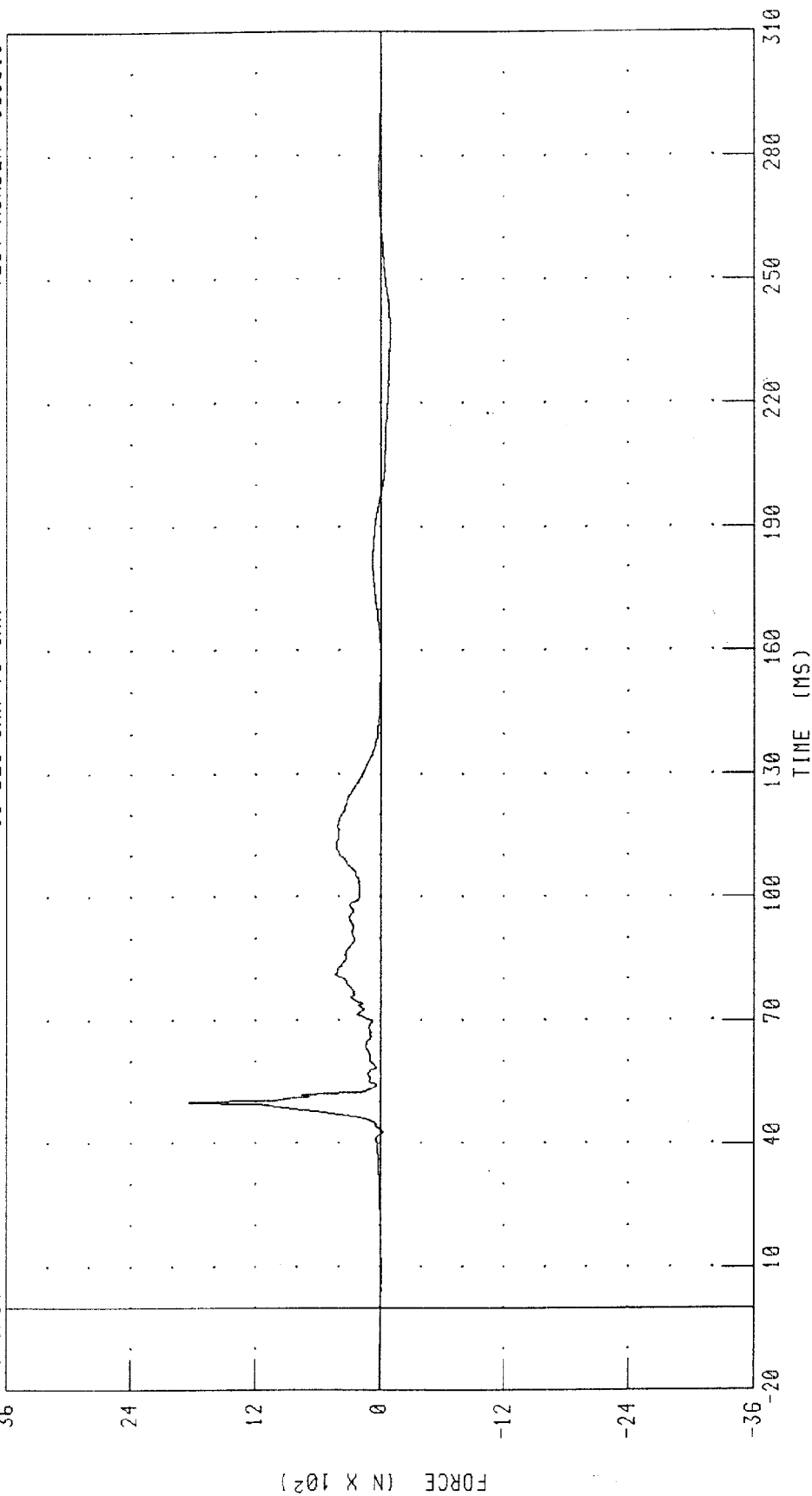
PEAK DATA: 1784.66 N @ 48.40 MS; -352.33 N @ 80.88 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER LEFT LOWER TIBIA Y-AXIS FORCE

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.

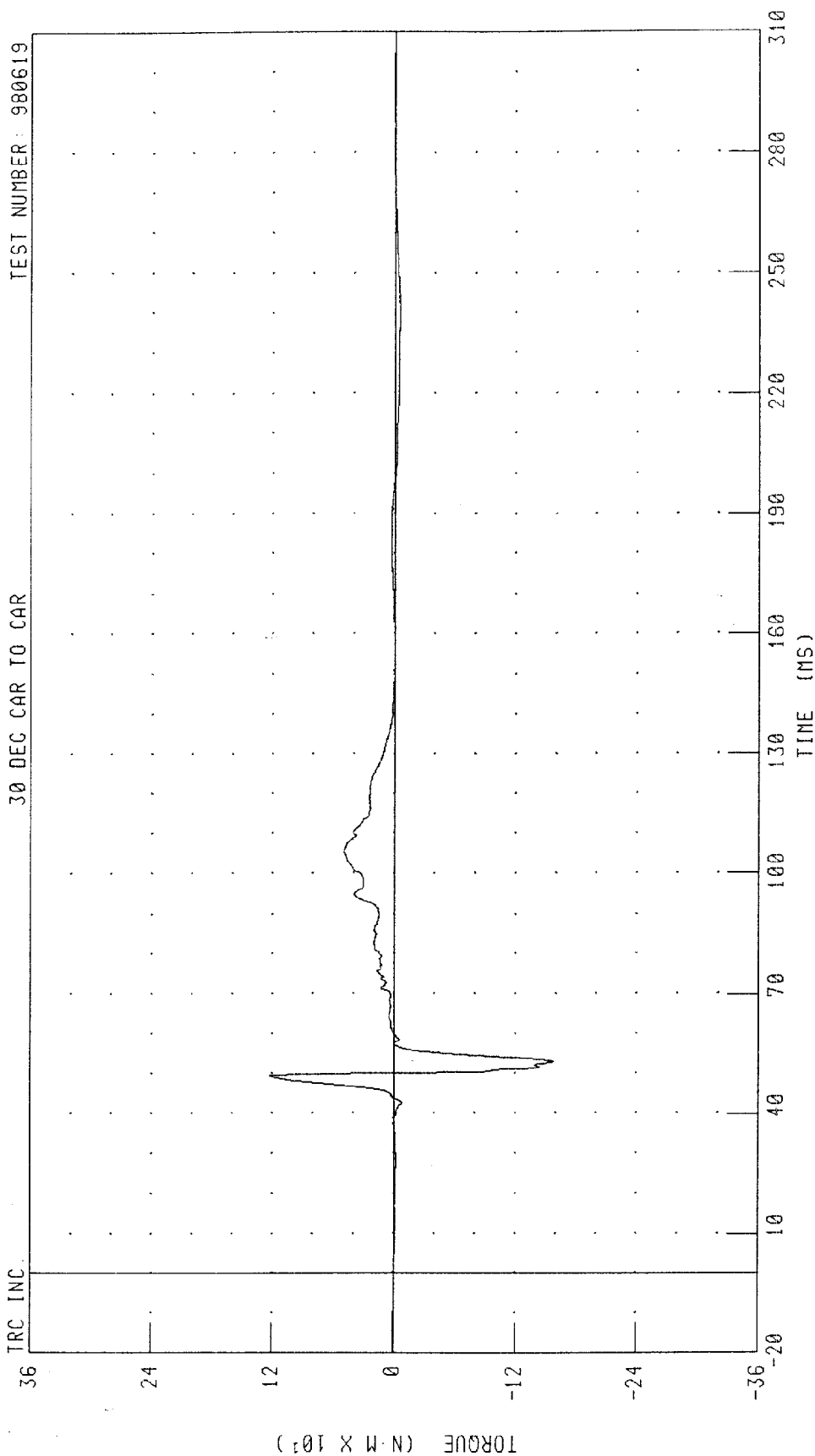


CHANNEL: ANLYF1 FILTER: CH. CLASS 600

PEAK DATA: 1841.68 N @ 49.92 MS; -95.85 N @ 238.00 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER LEFT LOWER TIBIA MOMENT ABOUT X AXIS

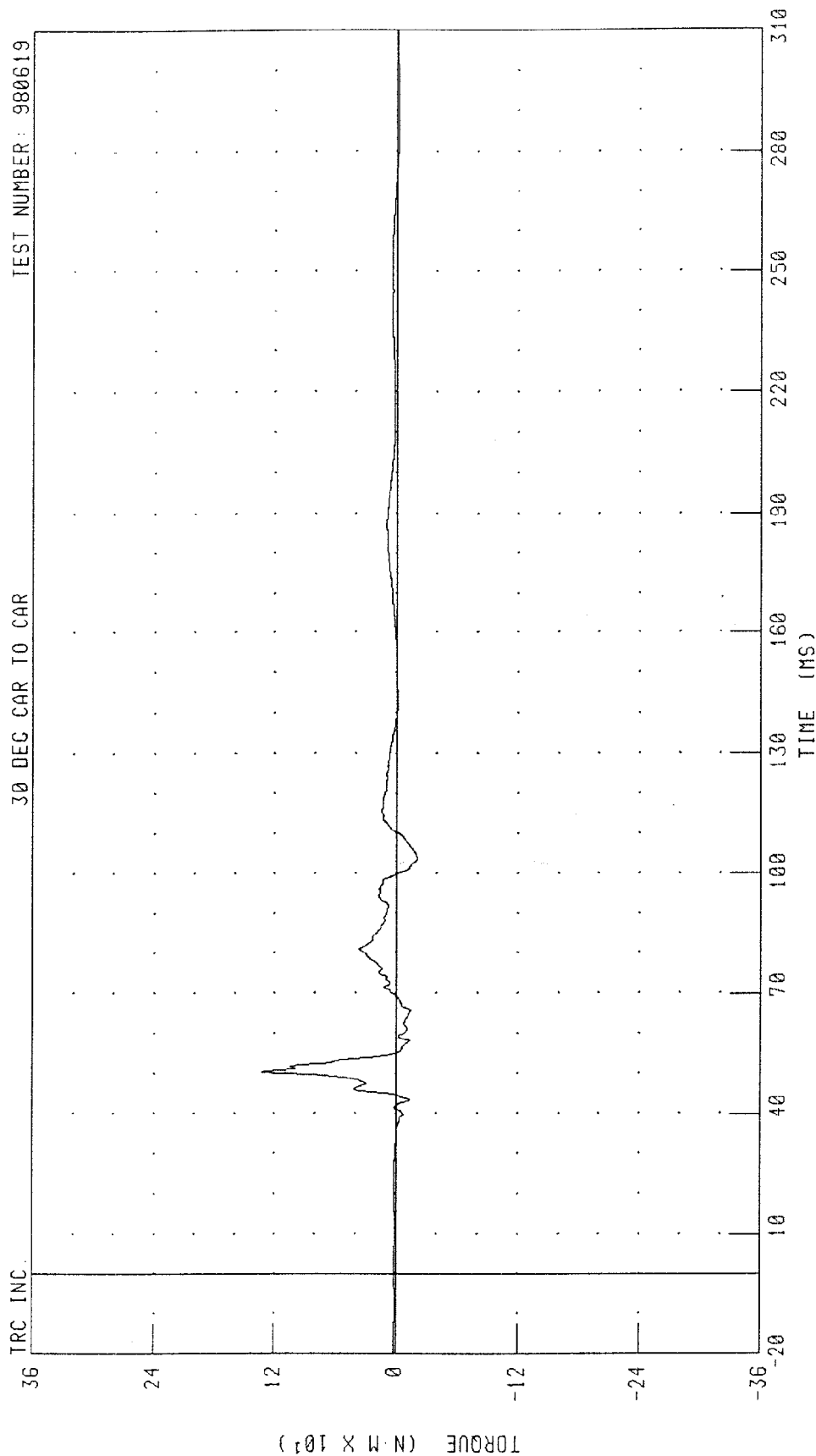
30 DEC CAR TO CAR TEST NUMBER: 980619



CHANNEL: ANLXM1 FILTER: CH. CLASS 600

PEAK DATA: 122.39 N·M @ 49.44 MS; -157.80 N·M @ 52.88 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS

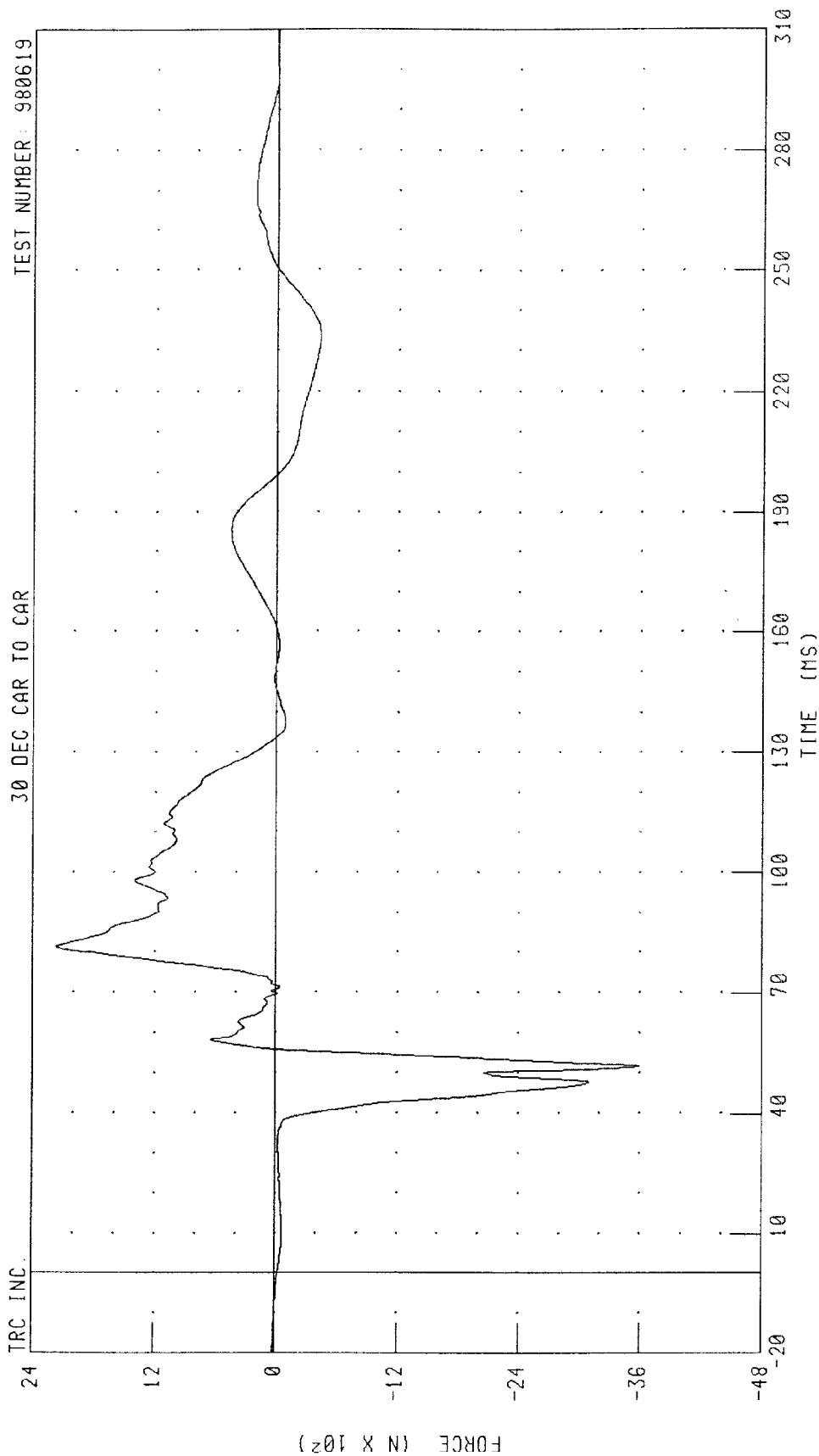


CHANNEL: ANLYM1 FILTER: CH. CLASS 600

PEAK DATA: 132.14 N·M @ 50.40 MS, -20.73 N·M @ 103.76 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER LEFT KNEE LEFT FORCE
30 DEC CAR TO CAR

TEST NUMBER: 980619

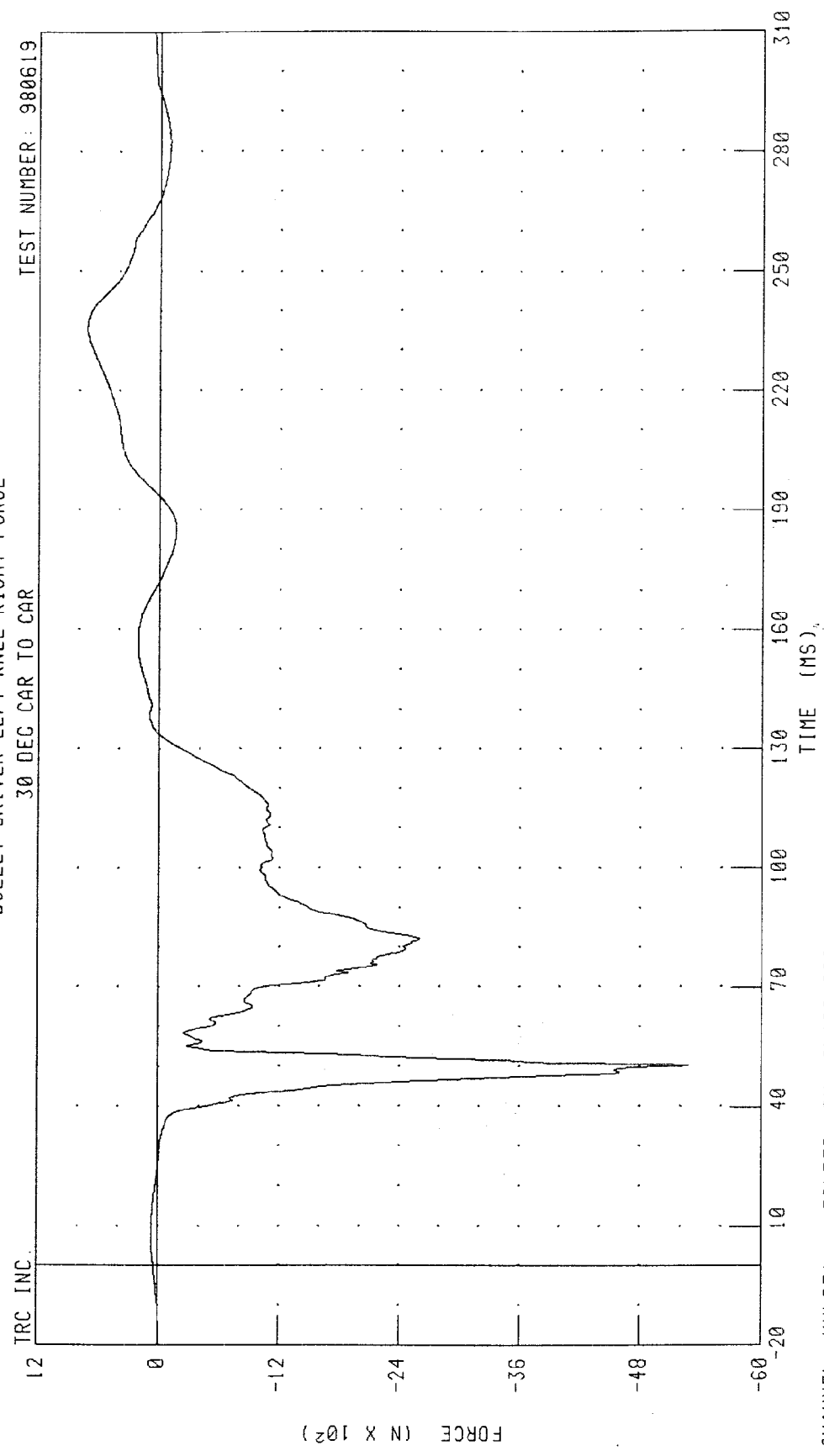


CHANNEL: KN1LF1 FILTER: CH. CLASS 600

PEAK DATA: 2171.91 N @ 81.36 MS, -3593.32 N @ 51.68 MS

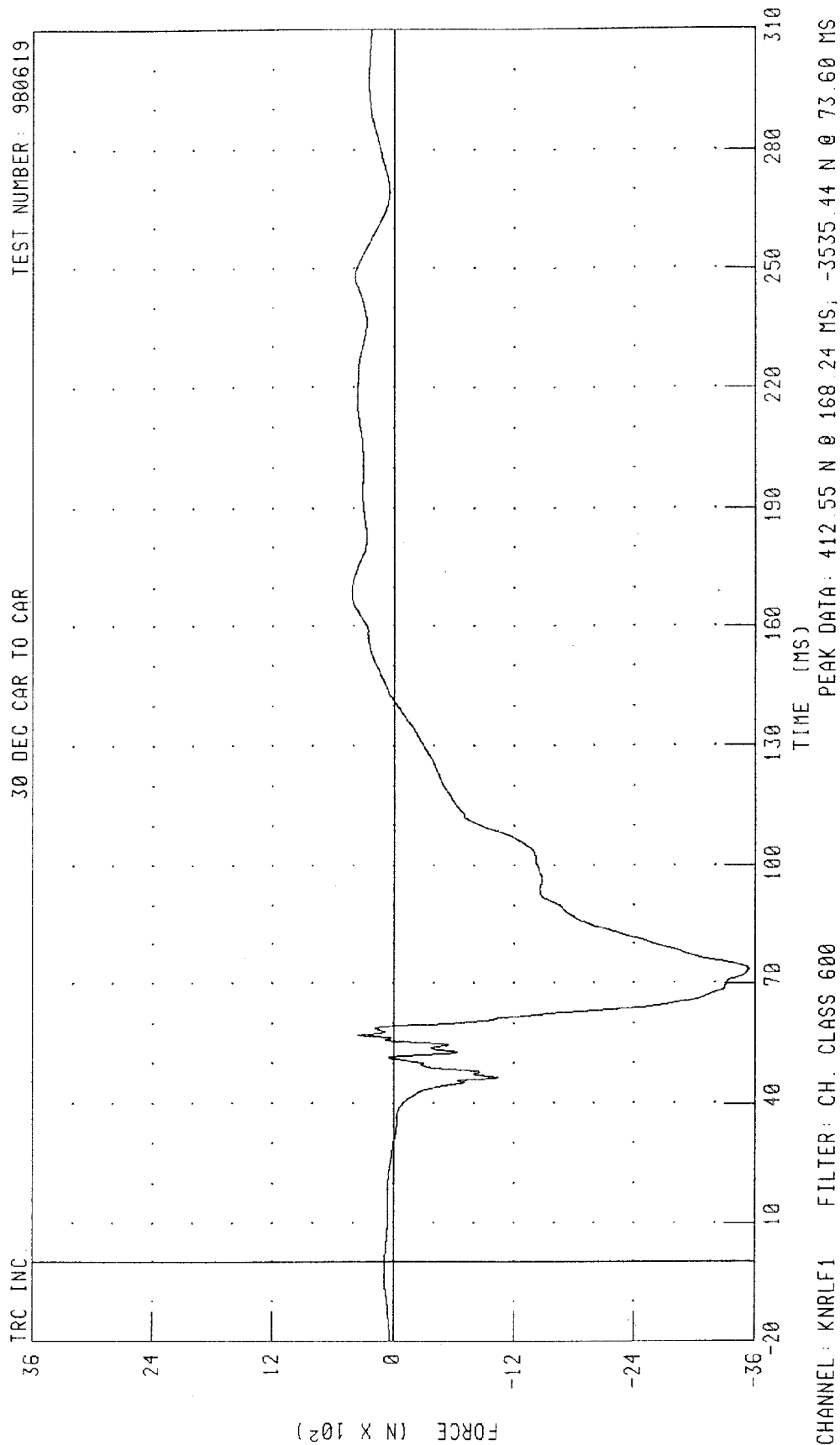
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER LEFT KNEE RIGHT FORCE
30 DEC CAR TO CAR

TEST NUMBER: 980619

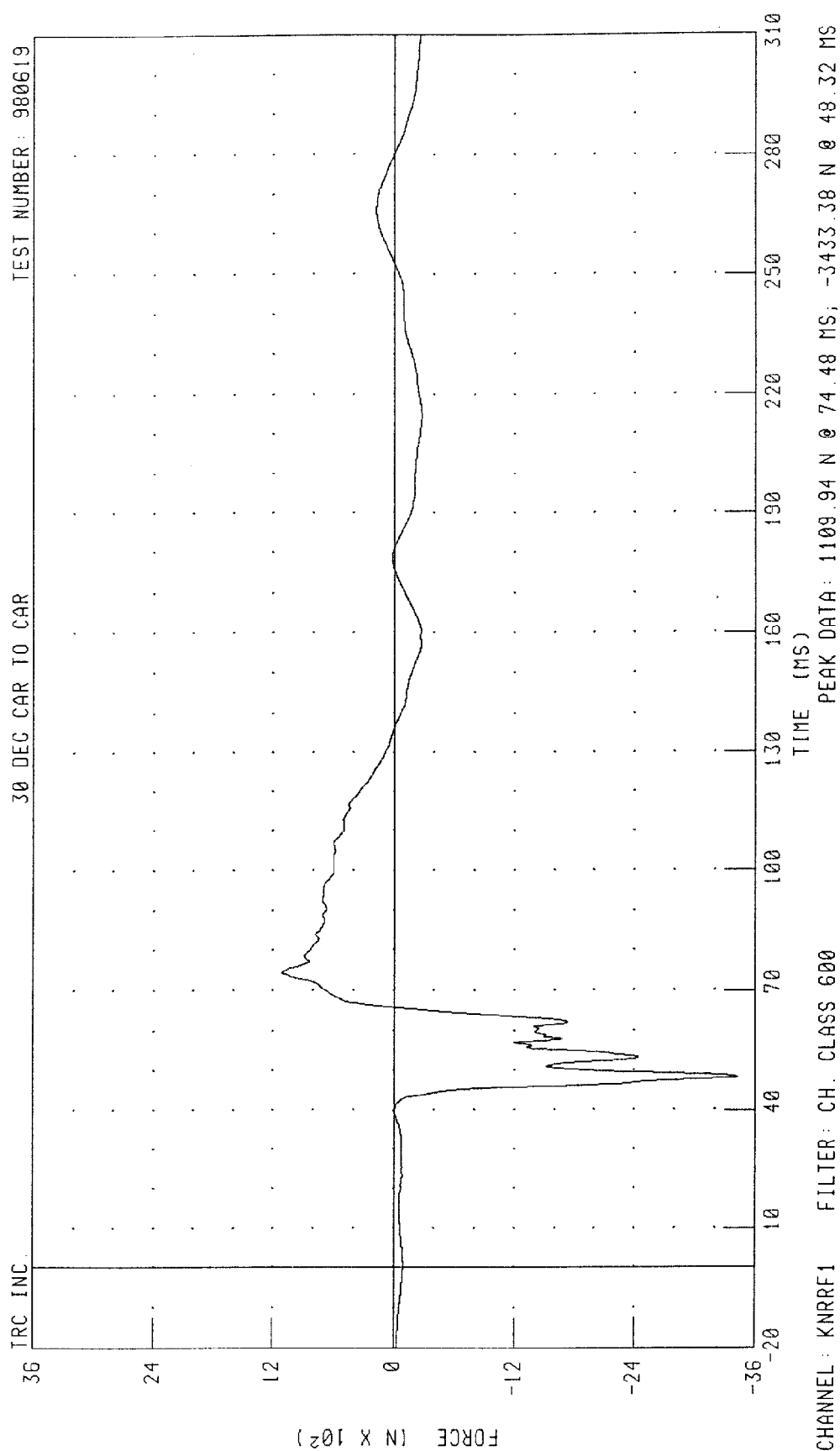


CHANNEL: KNLRF1 FILTER: CH. CLASS 600 PEAK DATA: 721.33 N @ 235.20 MS; -5279.91 N @ 50.32 MS

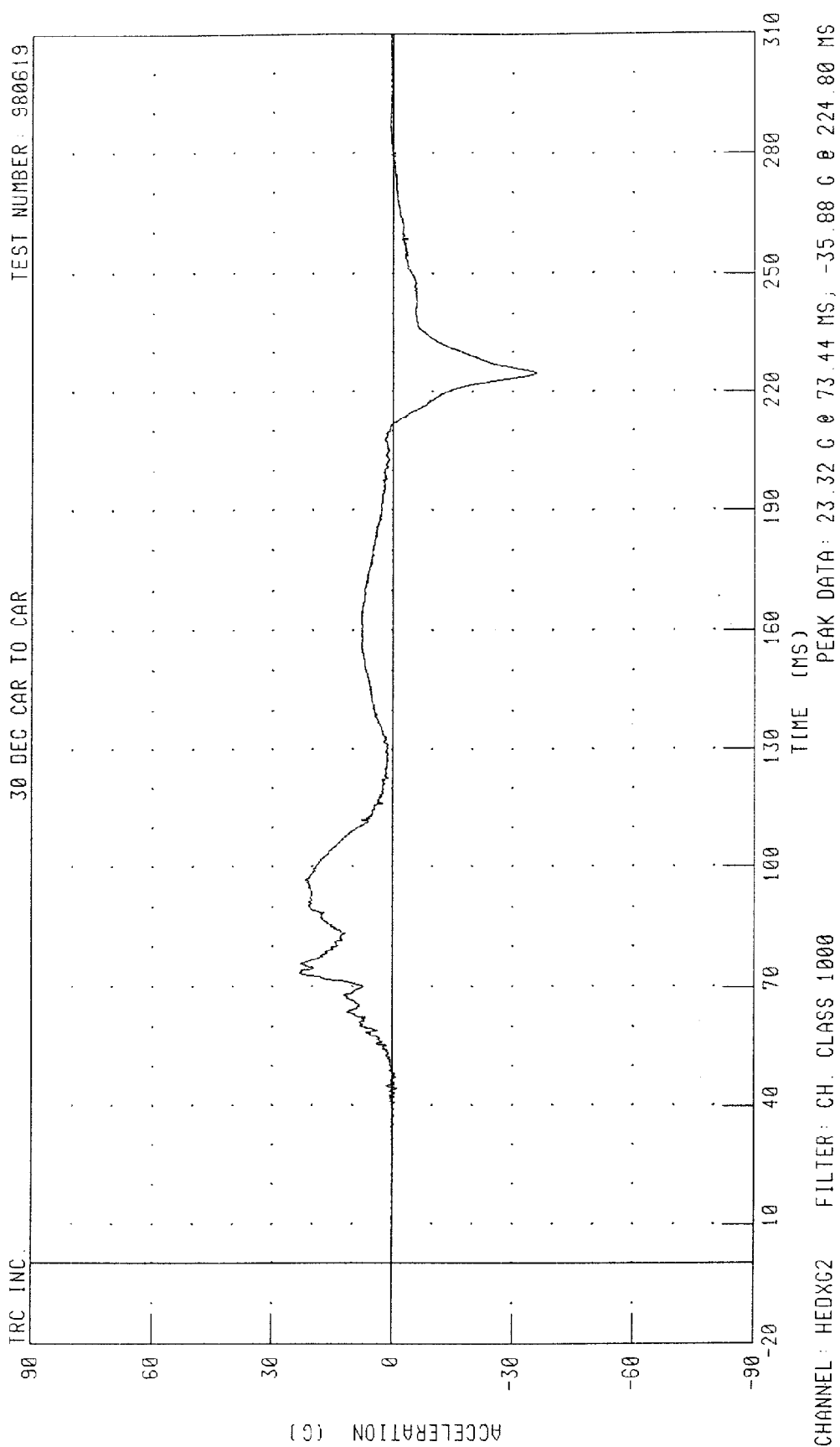
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER RIGHT KNEE LEFT FORCE



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET DRIVER RIGHT KNEE RIGHT FORCE



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION
30 DEC CAR TO CAR

TEST NUMBER: 980619

TRC INC.

90

60

30

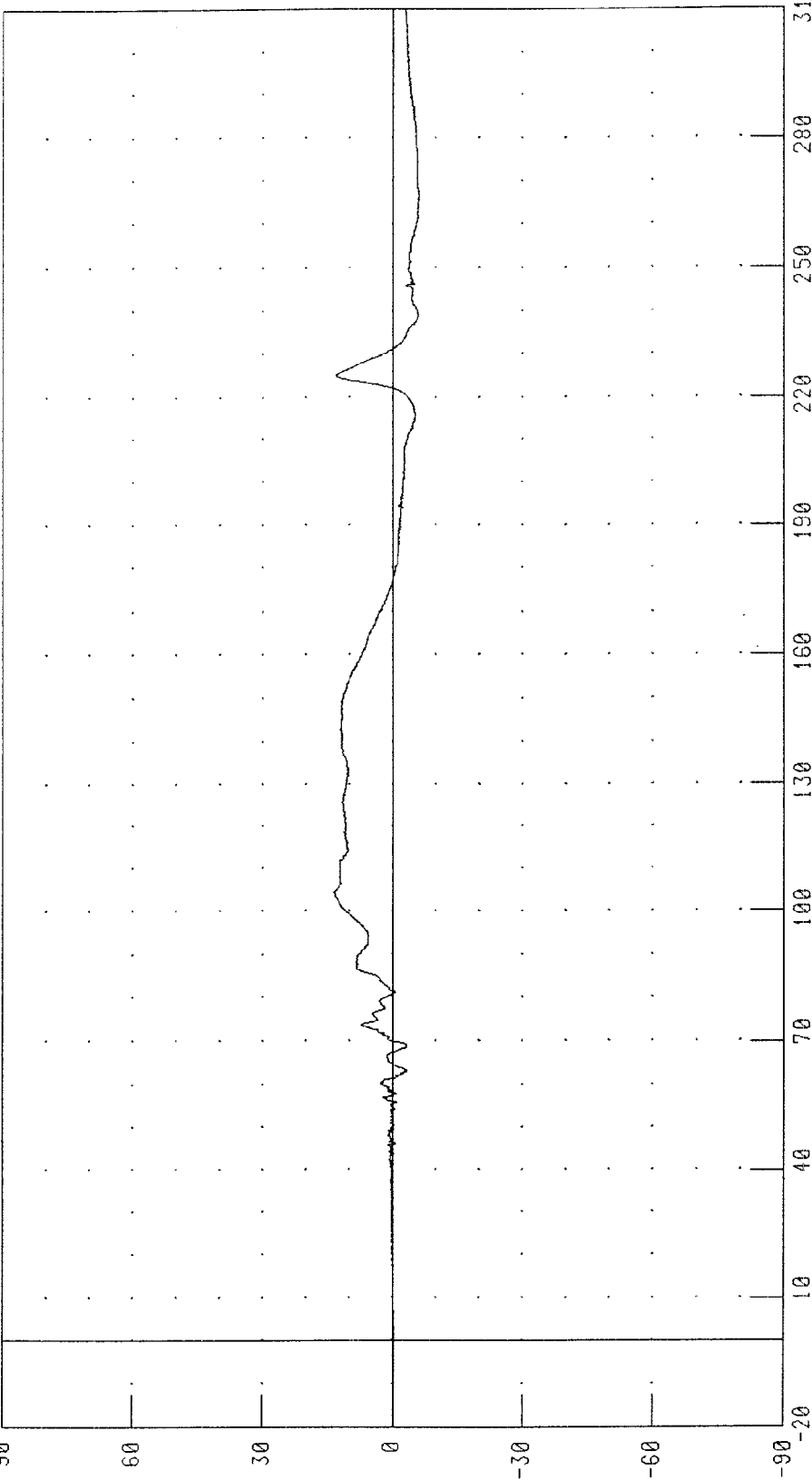
0

-30

-60

-90

ACCELERATION (G)



TIME (MS)

PEAK DATA: 13.48 G @ 104.48 MS; -6.10 G @ 265.36 MS

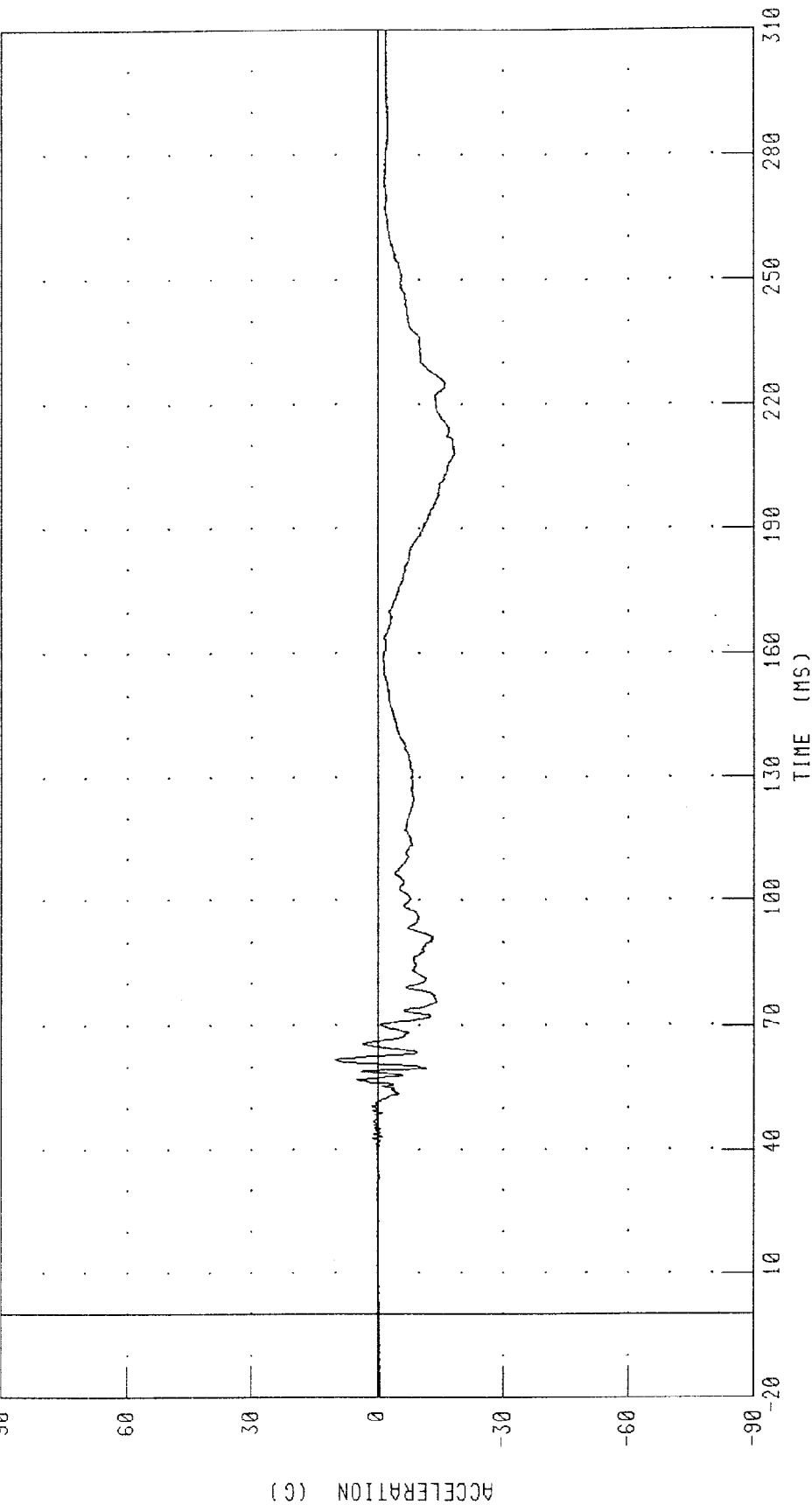
CHANNEL: HEDYC2 FILTER: CH. CLASS 1000

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION

TRC INC.

30 DEC CAR TO CAR

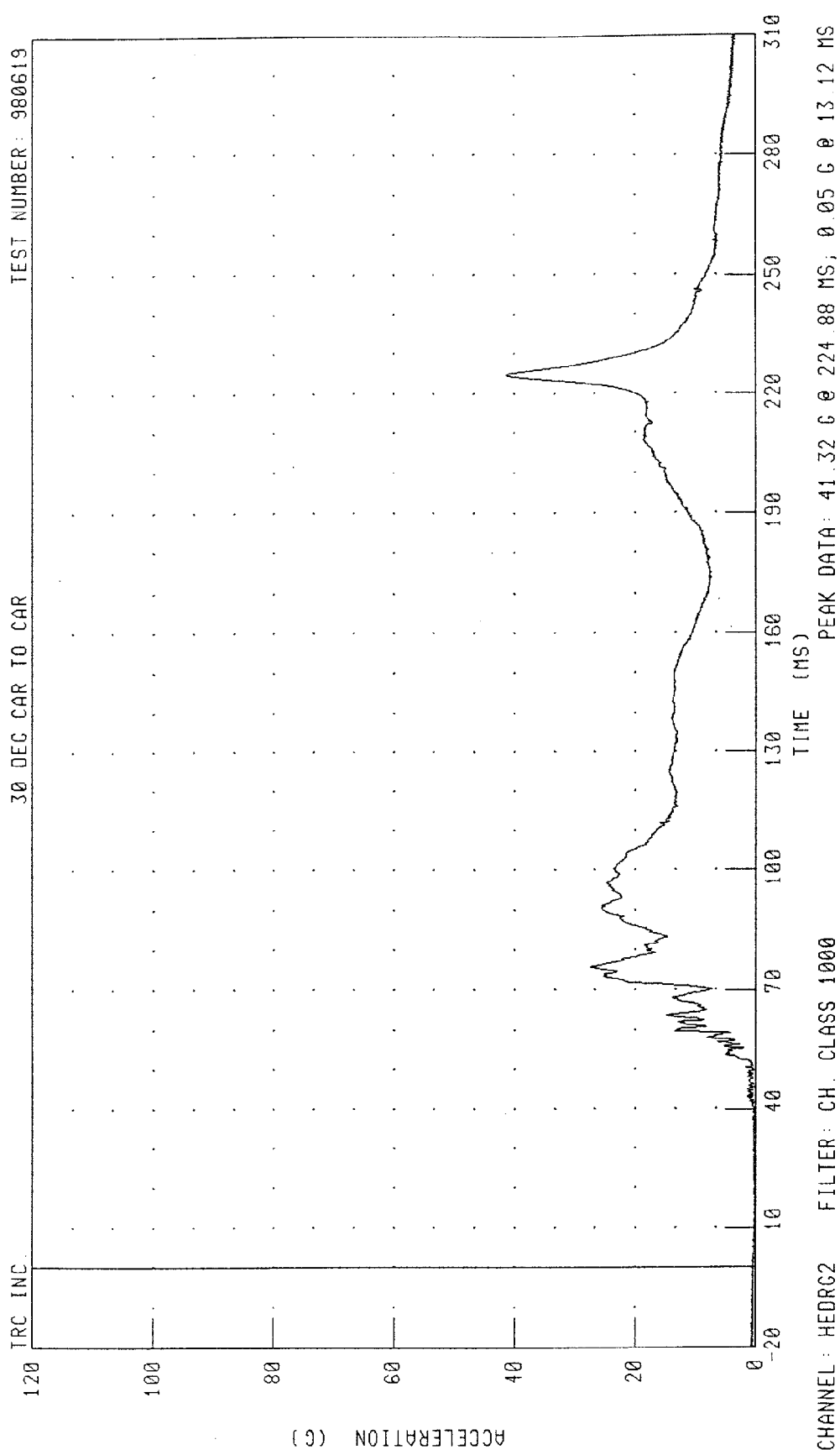
TEST NUMBER: 980619



CHANNEL: HEDZG2 FILTER: CH. CLASS 1000

PEAK DATA: 10.43 G @ 62.00 MS, -18.30 G @ 208.00 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER NECK X-AXIS SHEAR FORCE

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.

60

40

20

0

-20

-40

-60

FORCE (N X 10²)

TIME (MS)

310

280

250

220

190

160

130

100

70

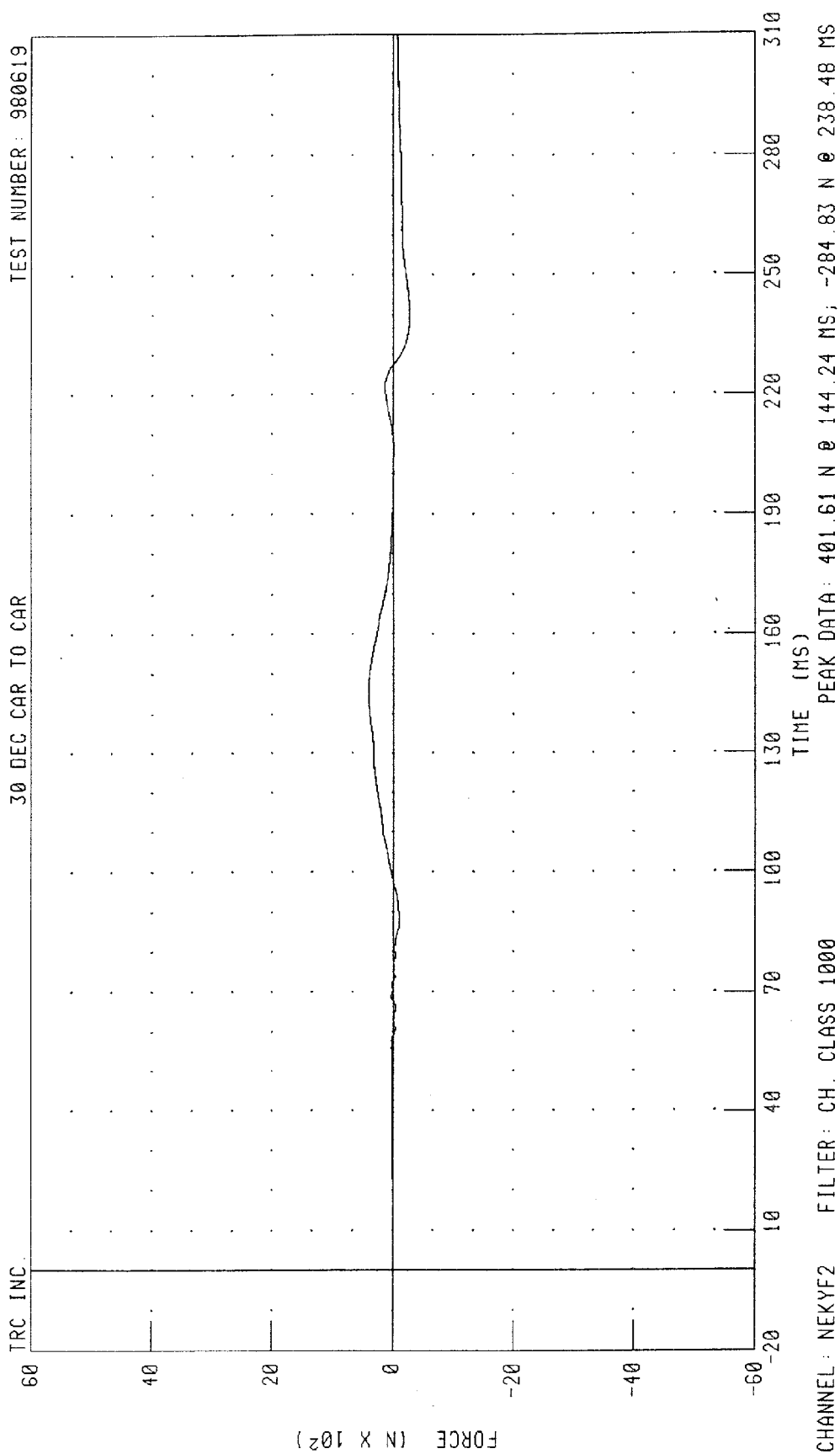
40

10

PEAK DATA: 315.82 N @ 67.68 MS, -136.49 N @ 93.20 MS

CHANNEL: NEKXF2 FILTER: CH. CLASS 1000

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER NECK Y-AXIS SHEAR FORCE

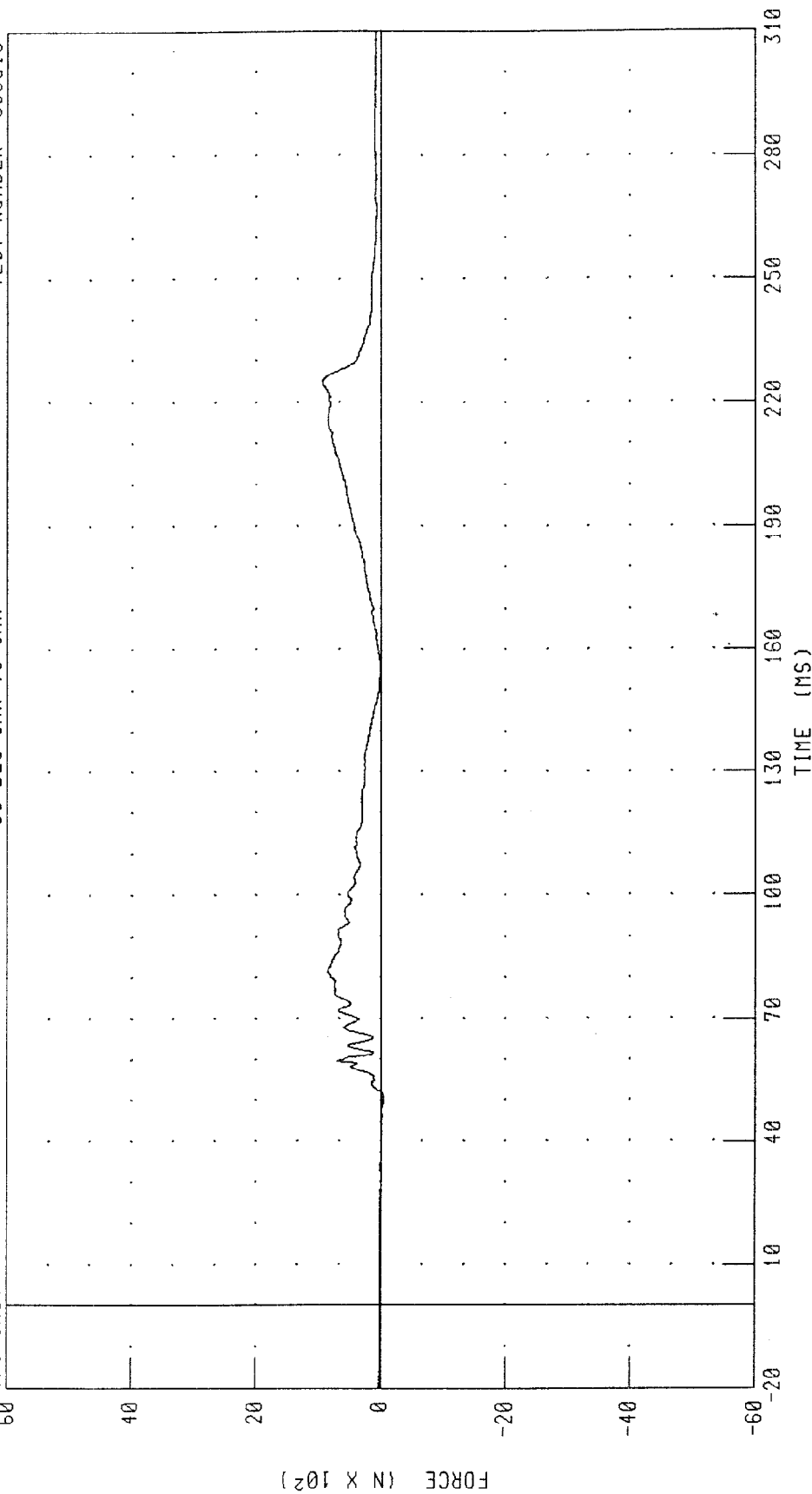


1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE

TEST NUMBER: 980619

30 DEC CAR TO CAR

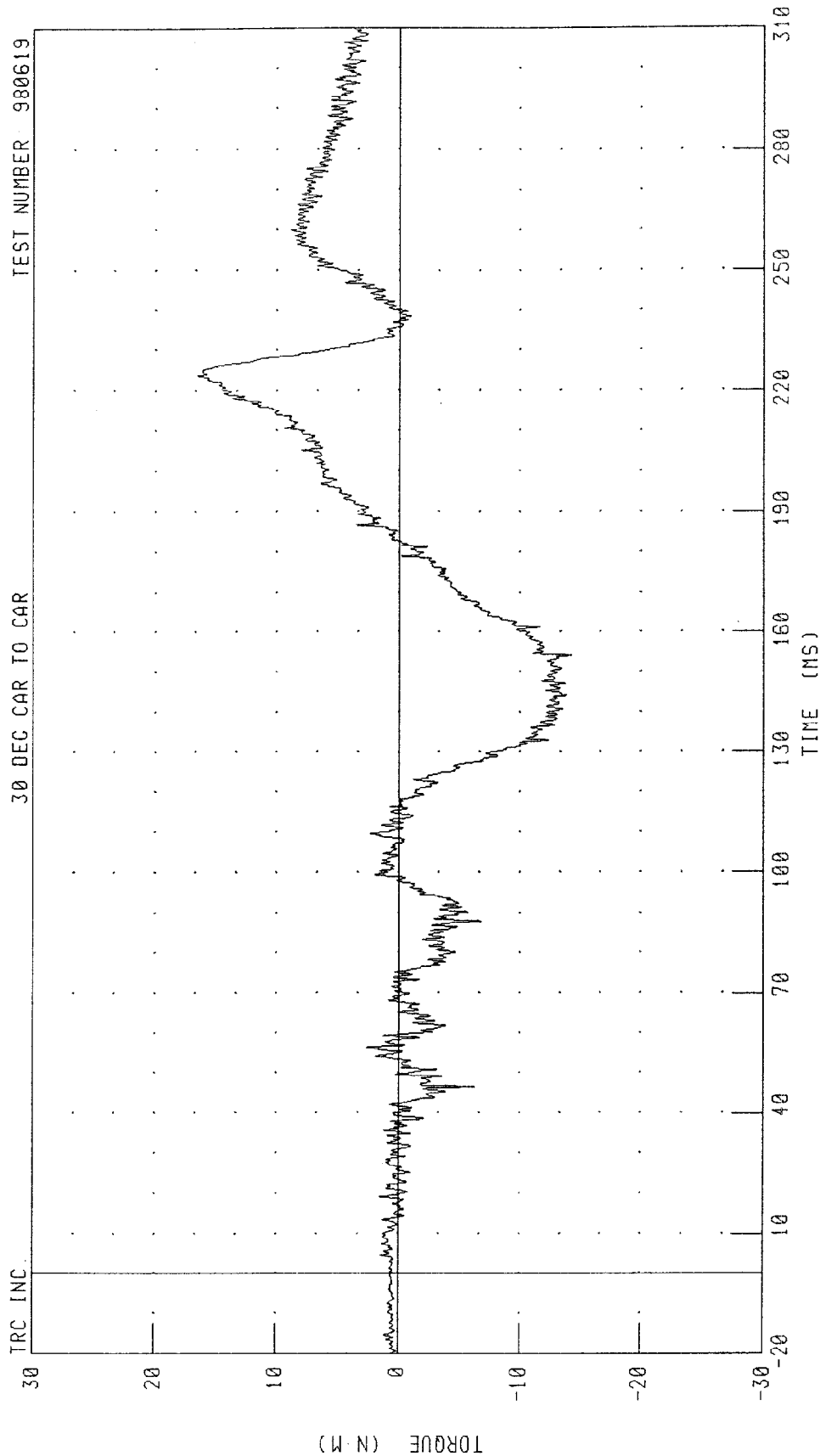
TRC INC.



PEAK DATA: 935.10 N @ 225.04 MS, -49.12 N @ 50.16 MS

CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS



CHANNEL: NEKXM2 FILTER: CH. CLASS 600

PEAK DATA: 16.56 N-M @ 223.68 MS; -14.28 N-M @ 154.24 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS
30 DEC CAR TO CAR

TEST NUMBER: 980619

TRC INC.

30

20

10

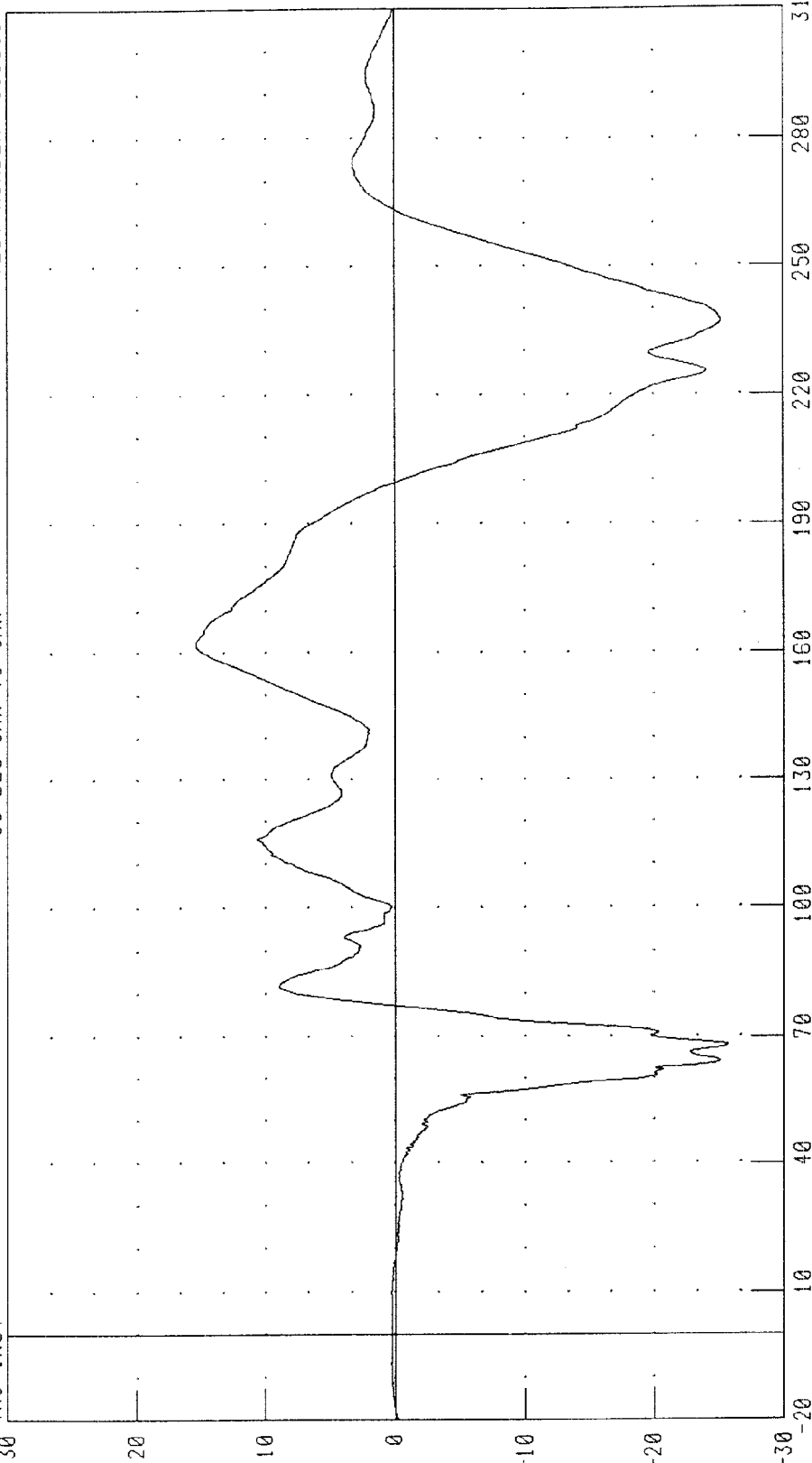
0

-10

-20

-30

TORQUE (N·M)



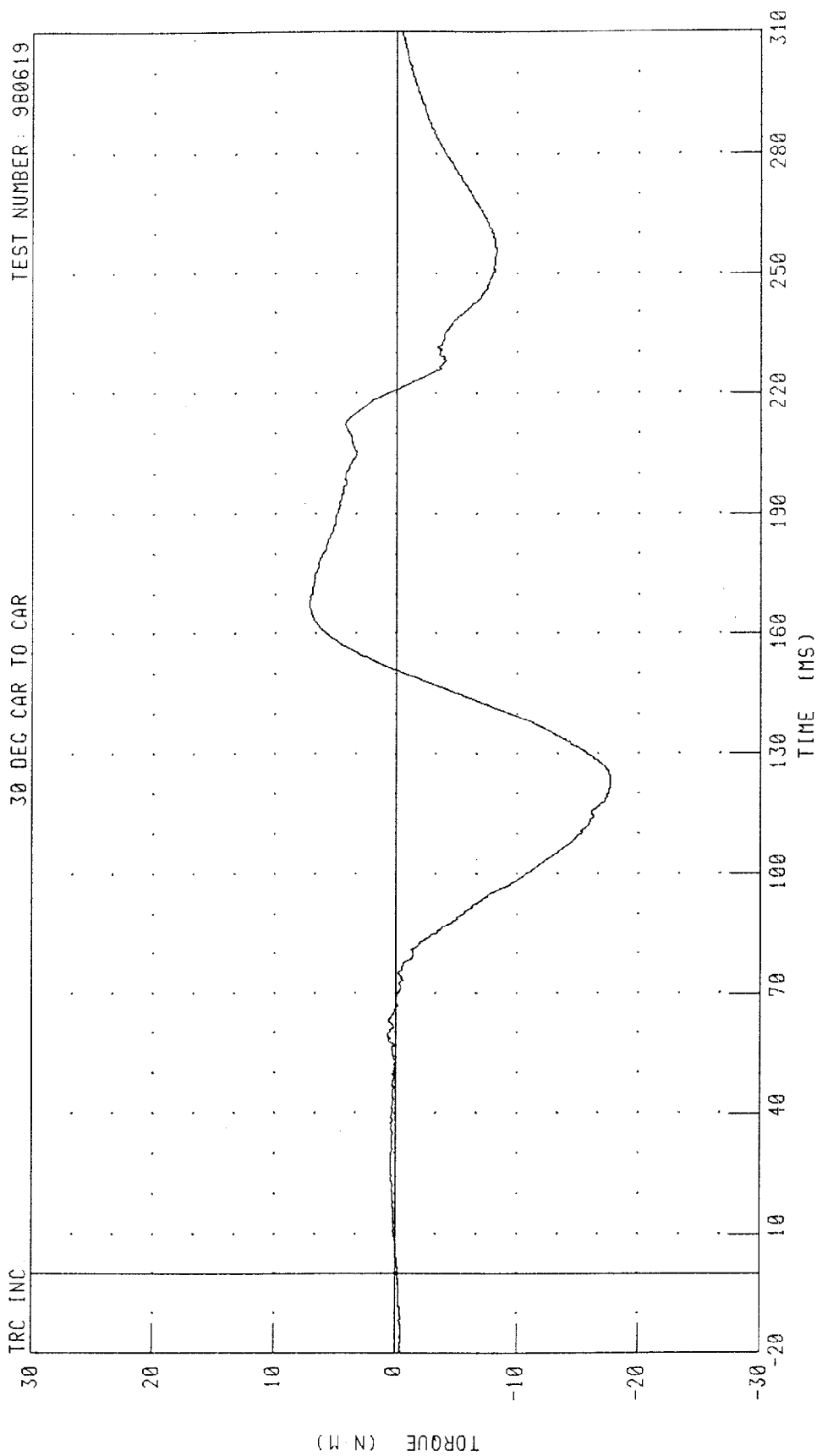
TIME (MS)

PEAK DATA: 15.48 N·M @ 162.40 MS, -25.71 N·M @ 67.92 MS

CHANNEL: NEKYM2 FILTER: CH. CLASS 600

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER NECK MOMENT ABOUT Z AXIS

30 DEG CAR TO CAR TEST NUMBER: 980619



CHANNEL: NEKZM2 FILTER: CH. CLASS 600

PEAK DATA: 7.15 N·m @ 167.12 ms; -17.69 N·m @ 121.92 ms

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER NECK OCCIPITAL CONDYLE ABOUT Y AXIS
30 DEG CAR TO CAR

TEST NUMBER: 980619

TRC INC

30

20

10

0

-10

-20

-30

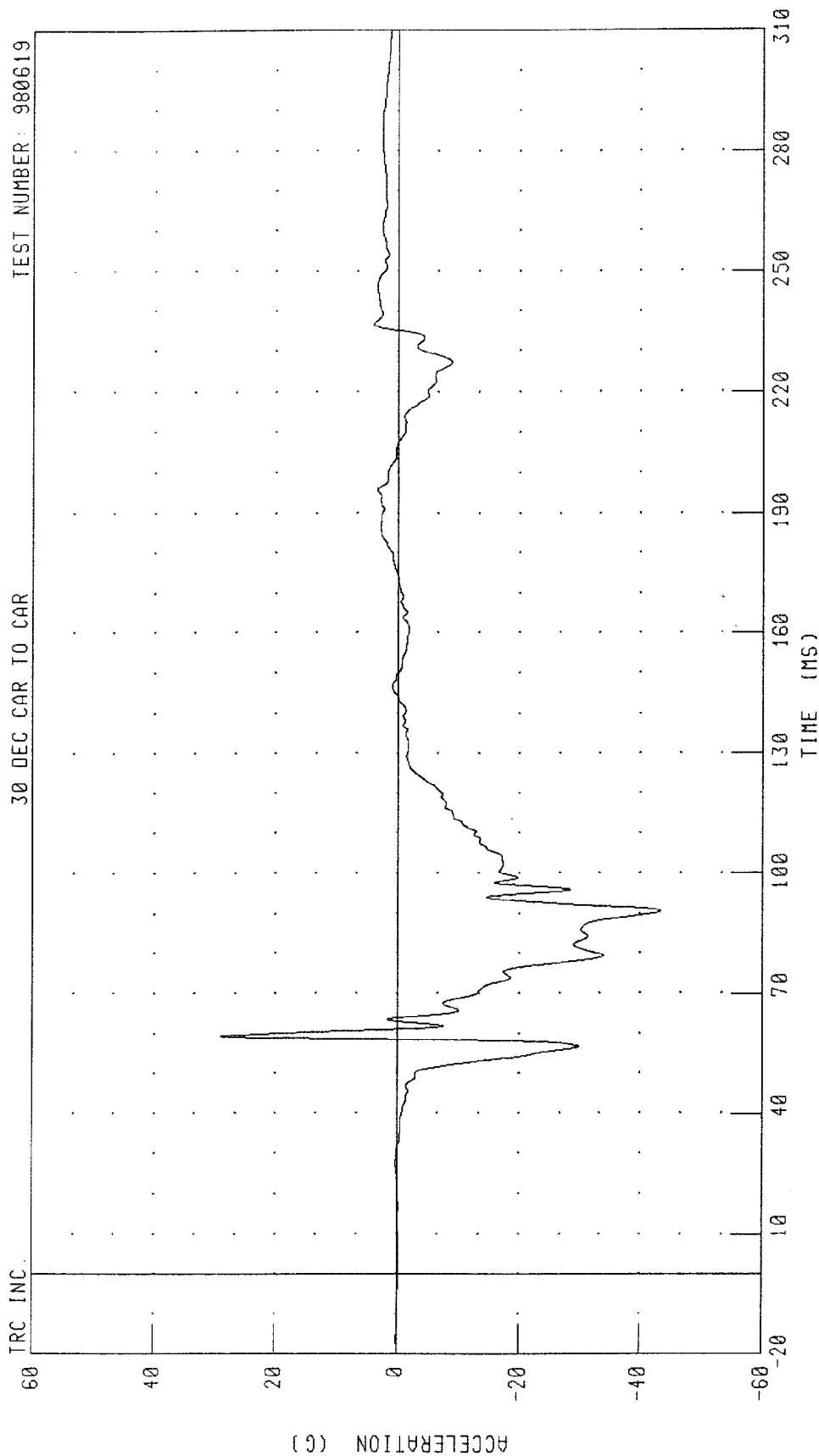
TORQUE (N·M X 10³)

TIME (MS)

PEAK DATA: 18.74 N·M @ 161.36 MS; -20.15 N·M @ 64.08 MS

CHANNEL: NEKOM2 FILTER: CH. CLASS 600

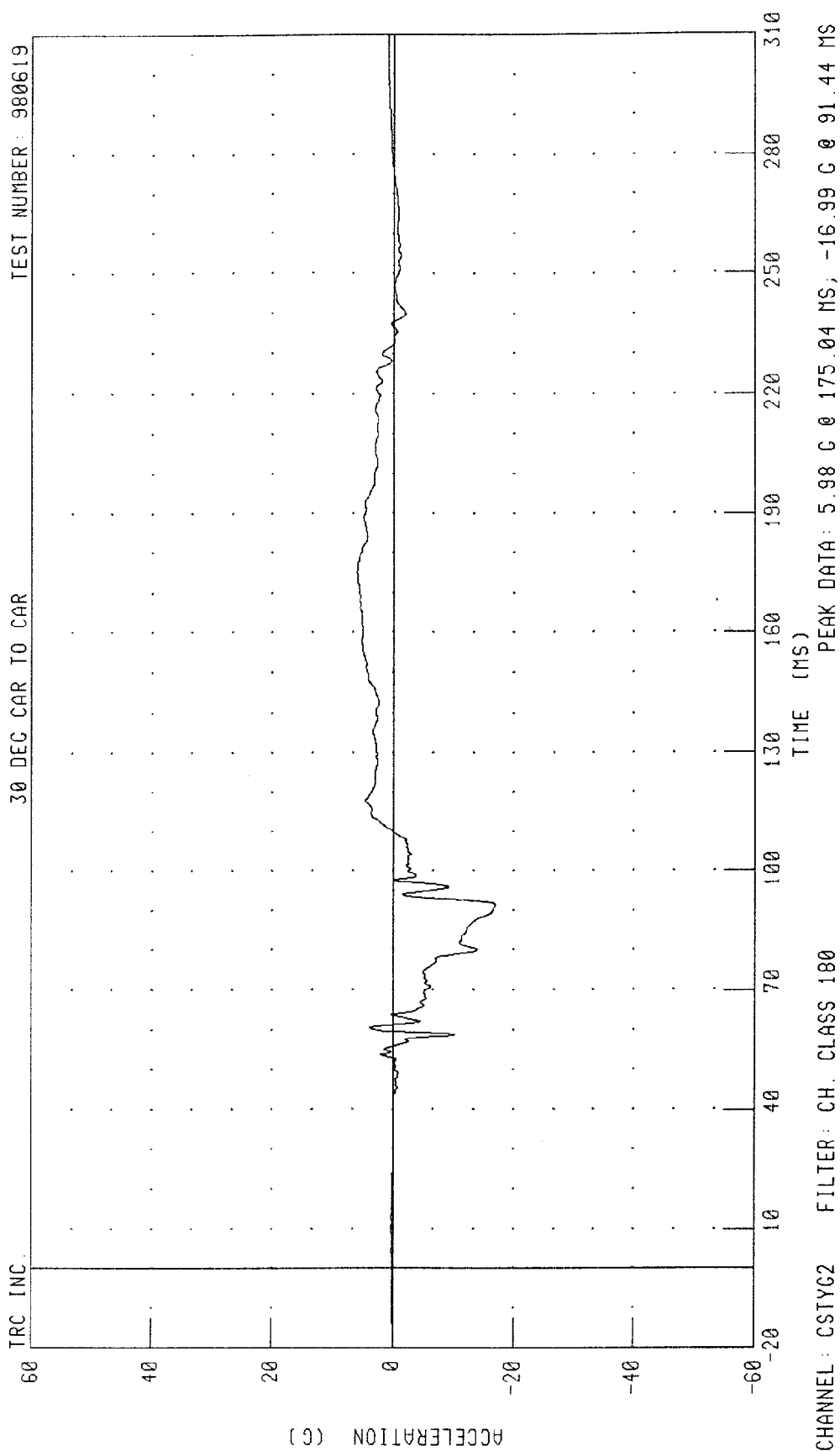
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION



CHANNEL: CSTXC2 FILTER: CH. CLASS 180

PEAK DATA: 29.11 G @ 59.36 MS, -43.37 G @ 90.72 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.

60

40

20

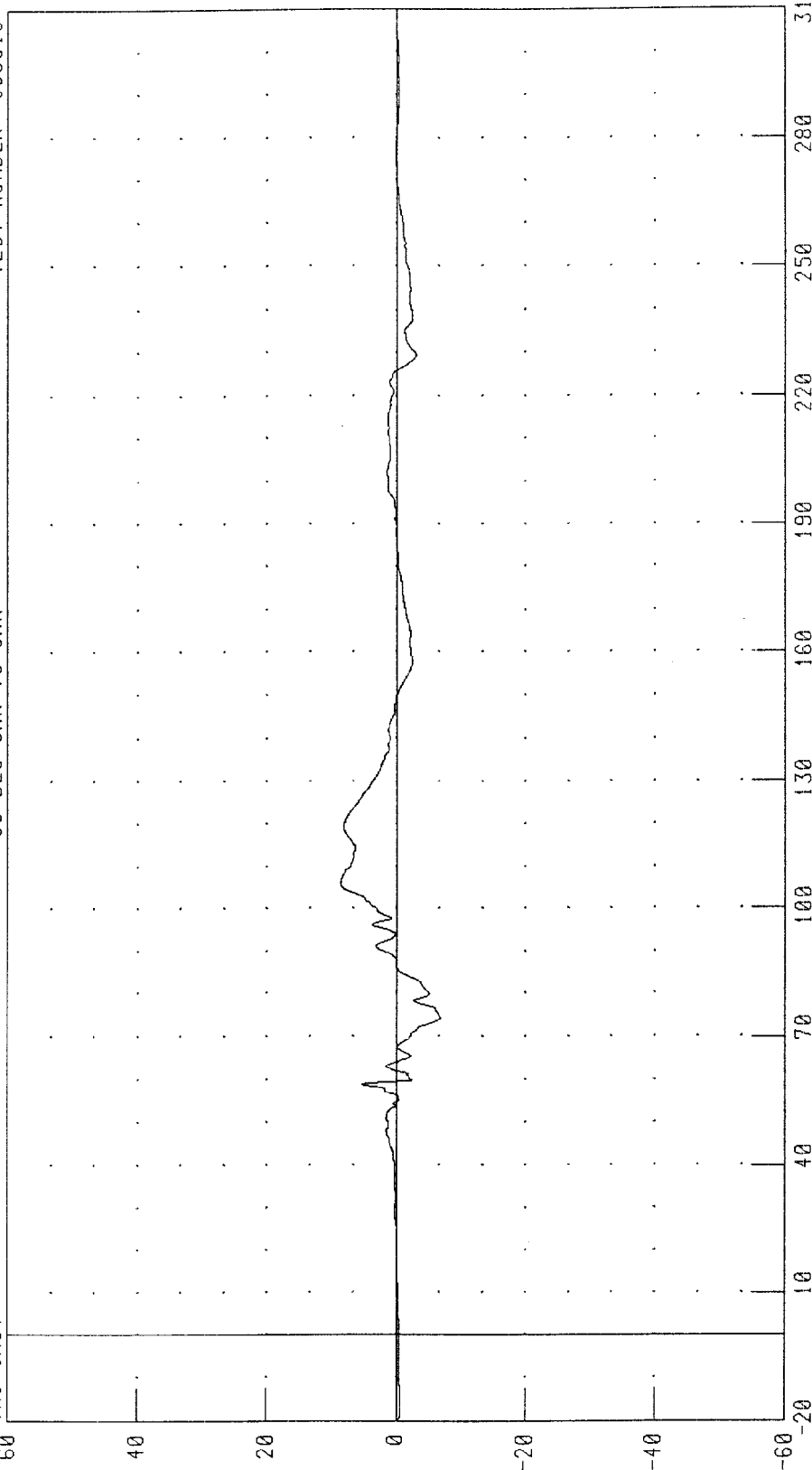
0

-20

-40

-60

ACCELERATION (G)

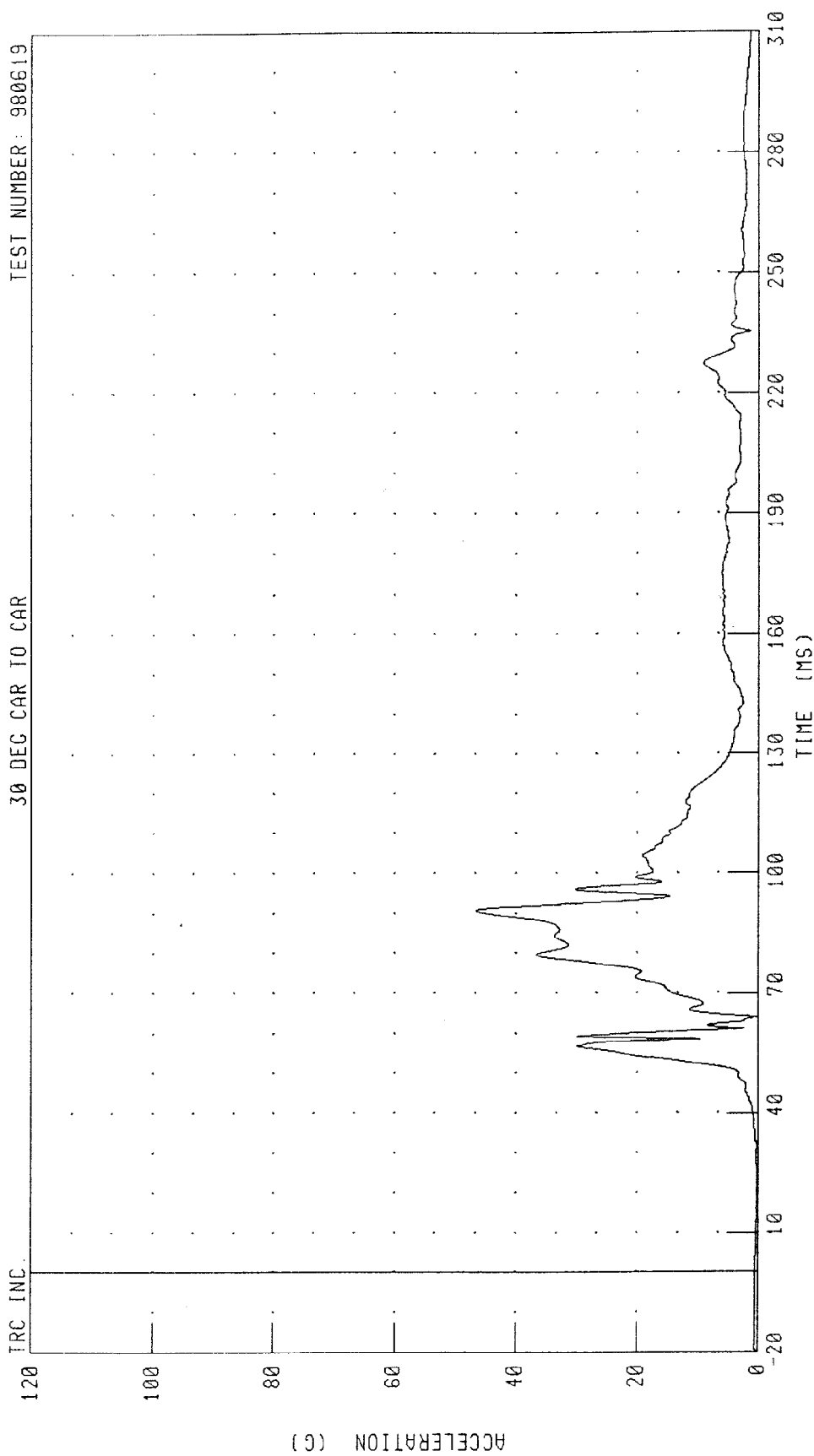


TIME (MS)

CHANNEL: CSTZG2 FILTER: CH. CLASS 180

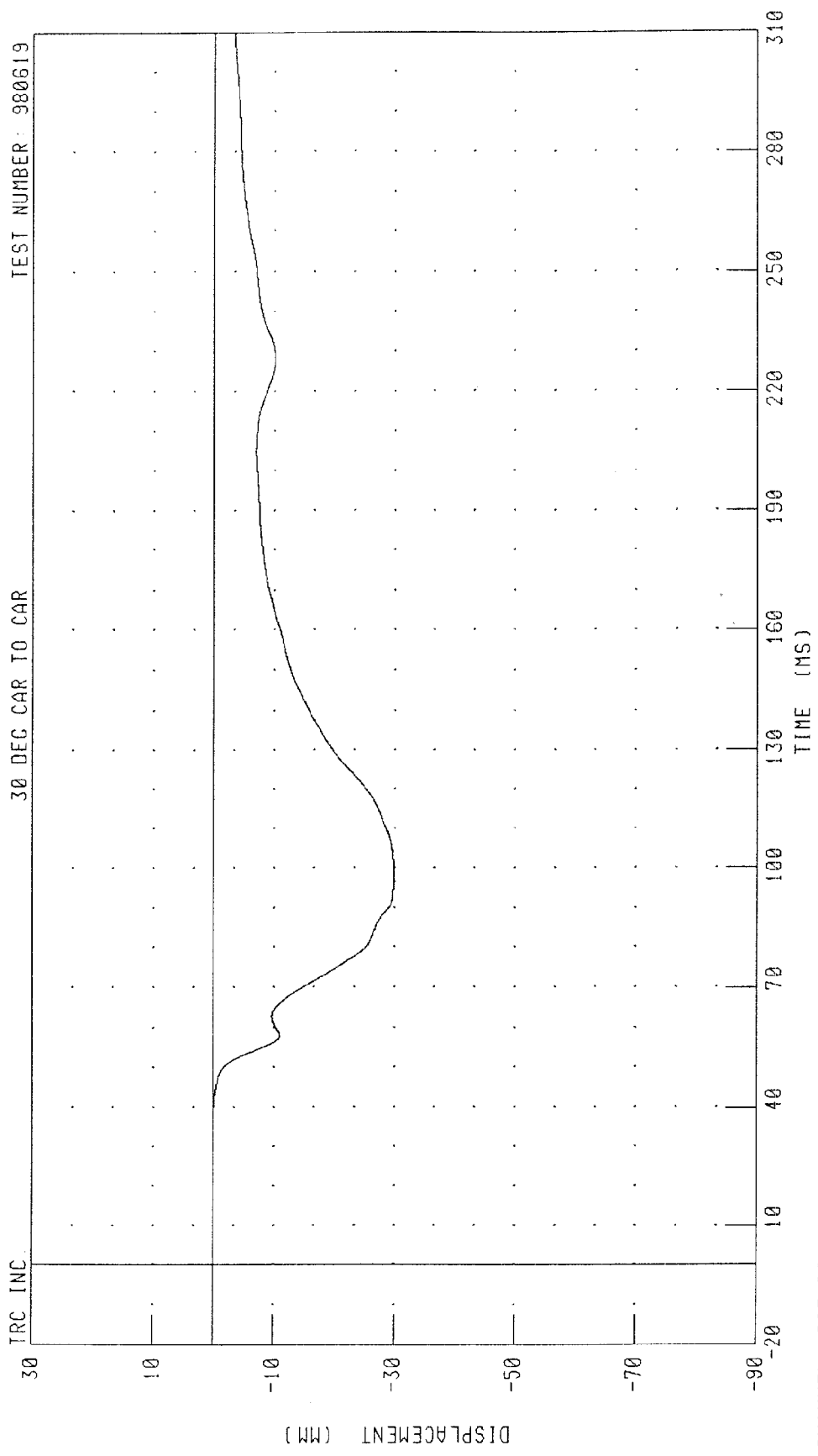
PEAK DATA: 8.64 G @ 105.52 MS; -6.79 G @ 164.48 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
 BULLET VEHICLE RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION



CHANNEL: CSTRG2 FILTER: CH. CLASS 180 PEAK DATA: 46.59 G @ 90.80 MS, 0.04 G @ -20.00 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER CHEST DEFLECTION

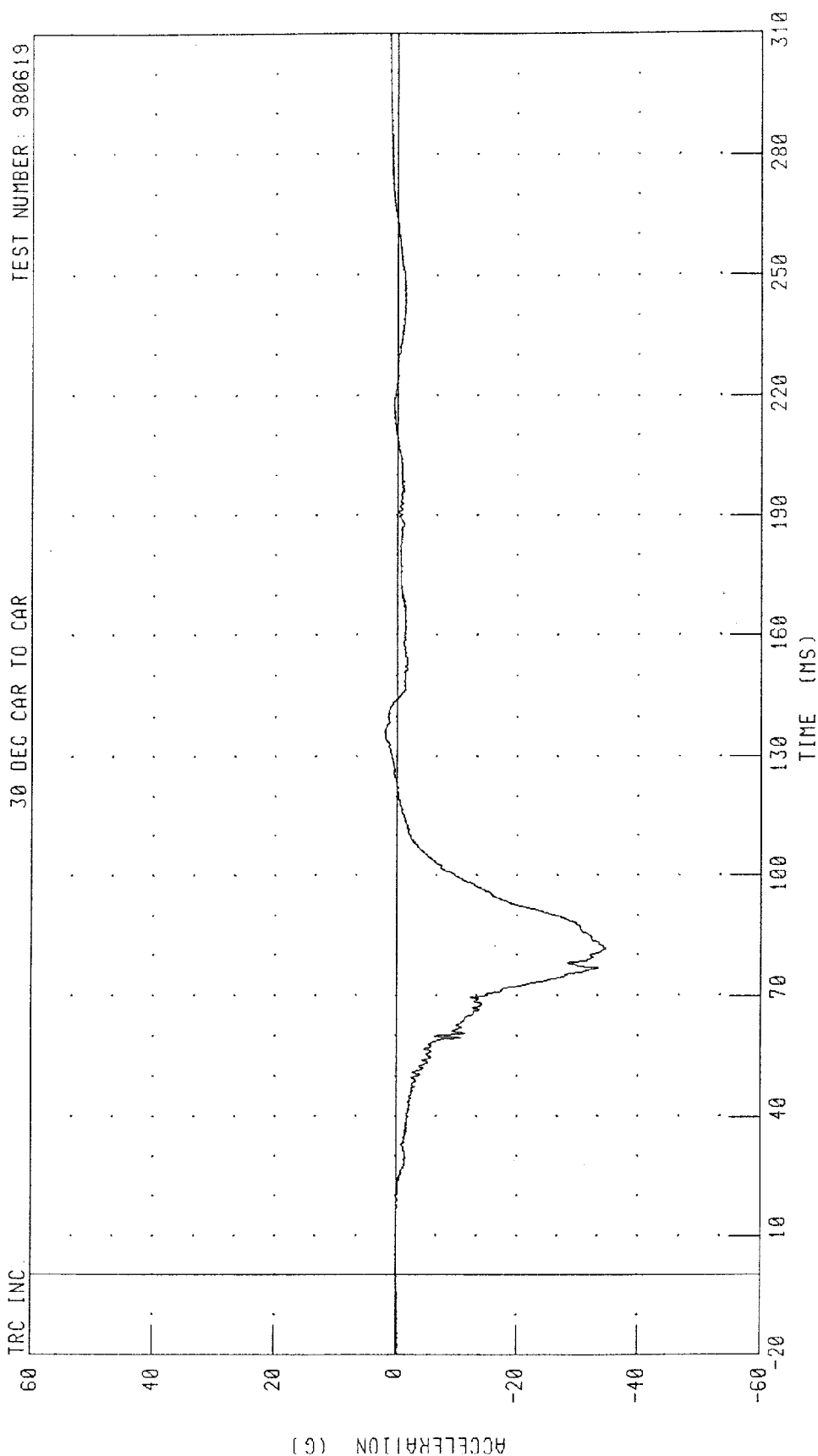


CHANNEL: CSTXD2 FILTER: CH. CLASS 180 PEAK DATA: 0.01 MM @ -17.60 MS, -29.99 MM @ 96.48 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER PELVIS X-AXIS ACCELERATION
30 DEC CAR TO CAR

TEST NUMBER: 980619

TRC INC.



CHANNEL: PEVXC2 FILTER: CH. CLASS 1000

PEAK DATA: 1.94 G @ 135.44 MS; -34.54 G @ 81.52 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER PELVIS Y-AXIS ACCELERATION

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.

60

40

20

0

-20

-40

-60

ACCELERATION (G)

TIME (MS)

310

280

250

220

190

160

130

100

70

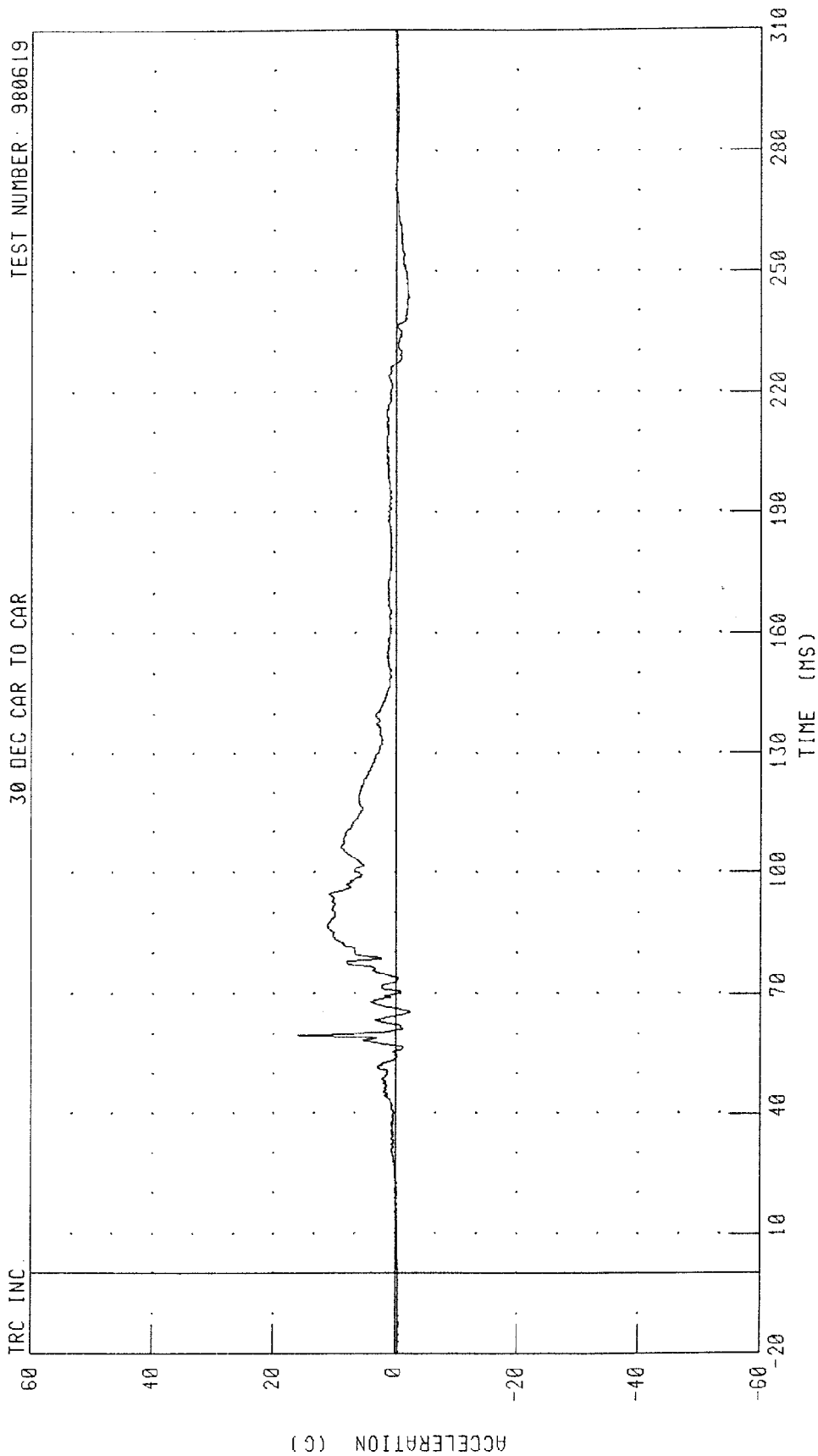
40

10

PEAK DATA: 12.66 G @ 108.40 MS, -10.47 G @ 77.20 MS

CHANNEL: PEVYC2 FILTER: CH. CLASS 1000

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER PELVIS Z-AXIS ACCELERATION



CHANNEL: PEV702 FILTER: CH. CLASS 1000

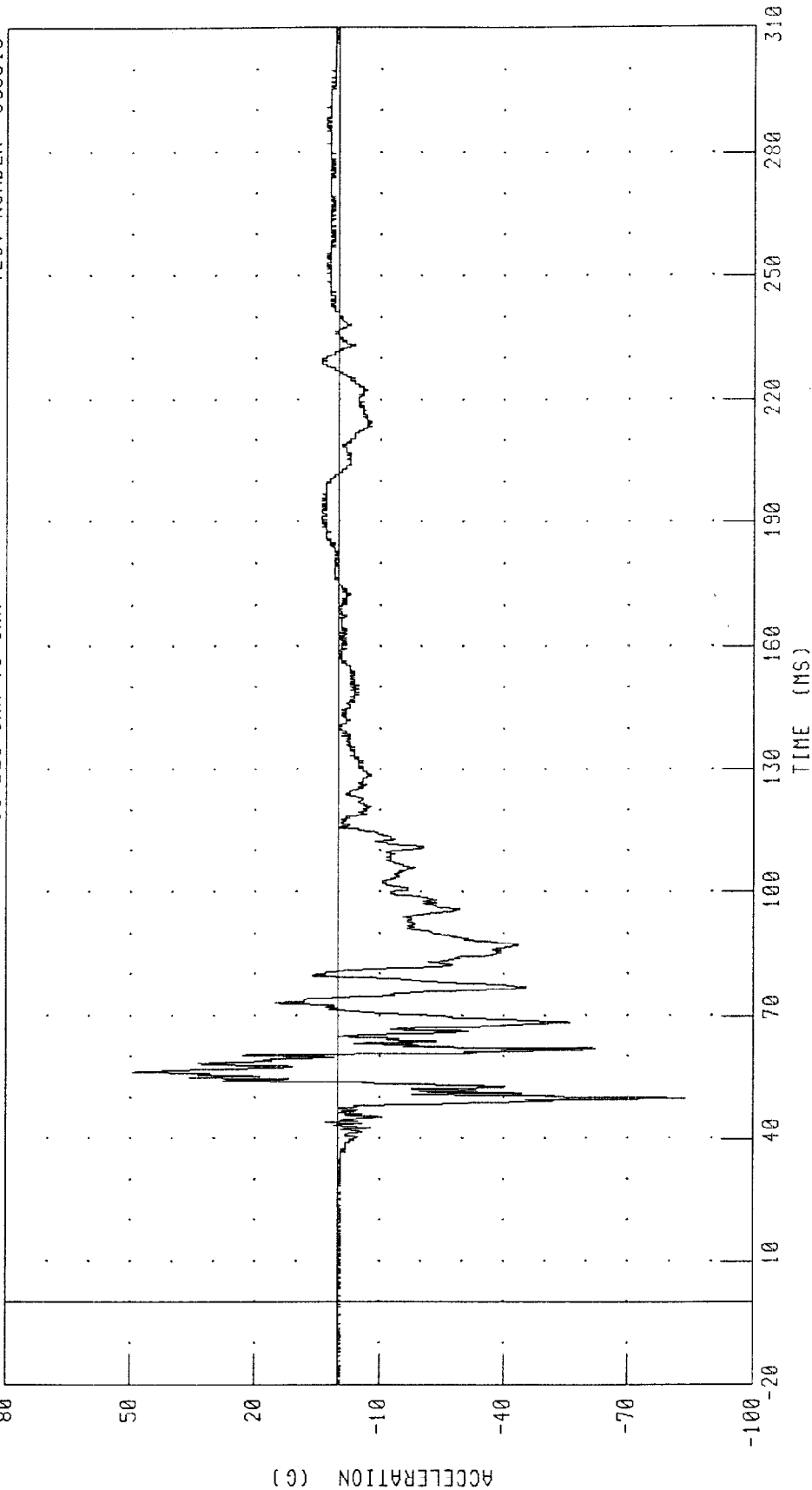
PEAK DATA: 16.06 G @ 59.60 MS; -2.41 G @ 65.52 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER STERNUM TOP X-AXIS ACCELERATION

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.



CHANNEL: STTXG2 FILTER: CH CLASS 1000

PEAK DATA: 49.60 G @ 56.24 MS, -83.86 G @ 49.84 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER STERNUM MIDDLE X-AXIS ACCELERATION

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.

60

40

20

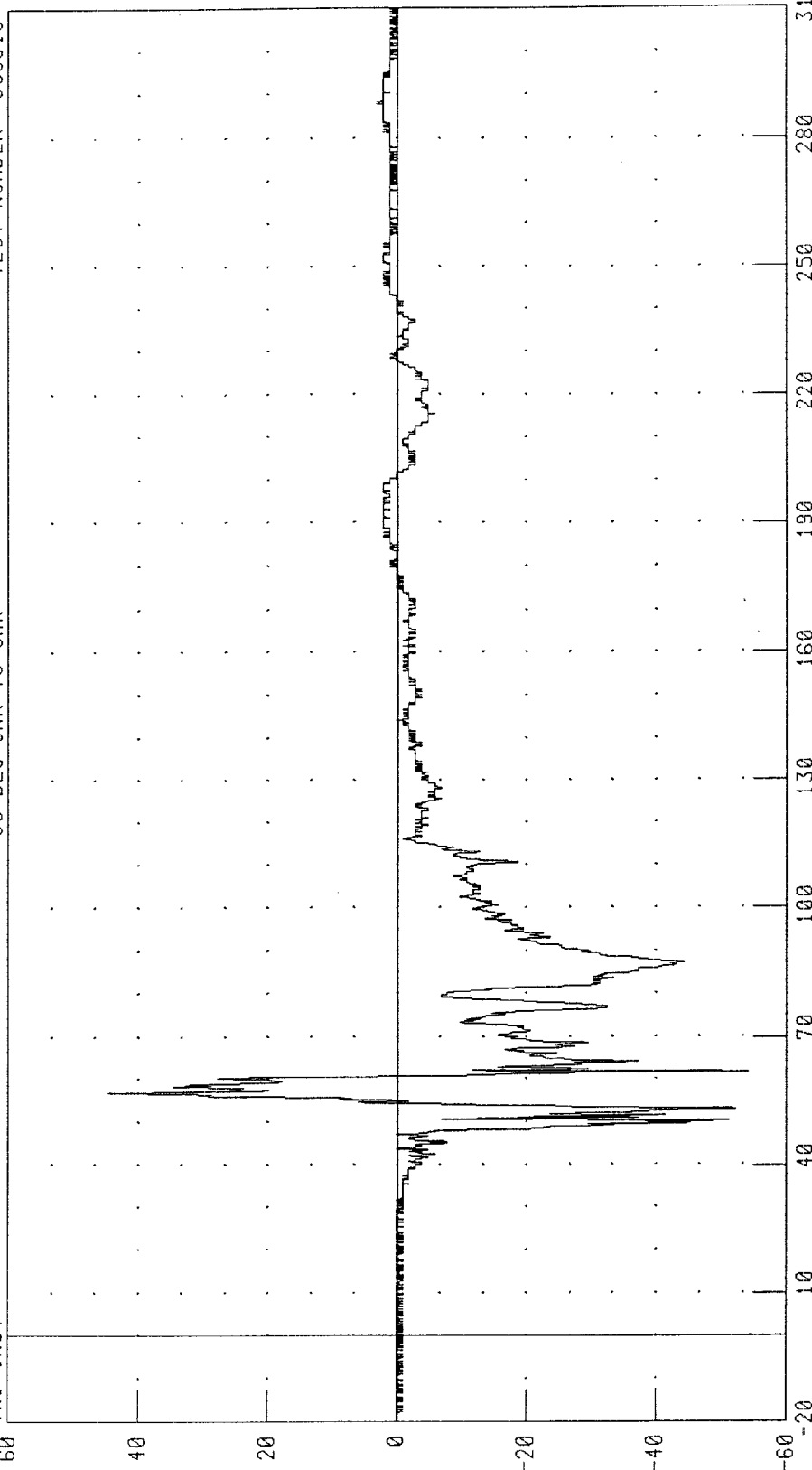
0

-20

-40

-60

ACCELERATION (G)



TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

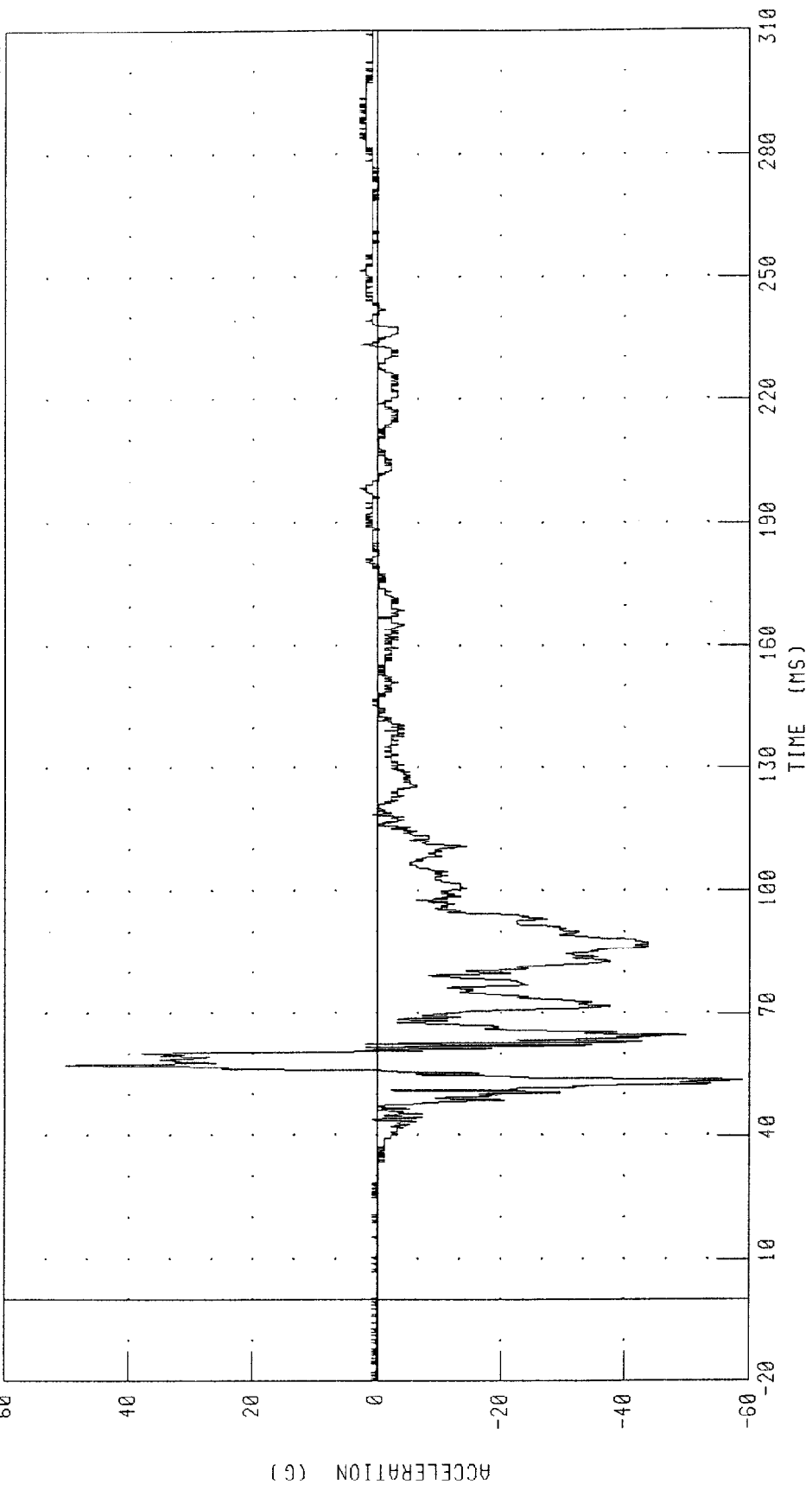
CHANNEL: STMXC2 FILTER: CH. CLASS 1000

PEAK DATA: 44.57 G @ 56.88 MS, -54.16 G @ 61.84 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER STERNUM BOTTOM X-AXIS ACCELERATION
30 DEC CAR TO CAR

TEST NUMBER 980619

TRC INC



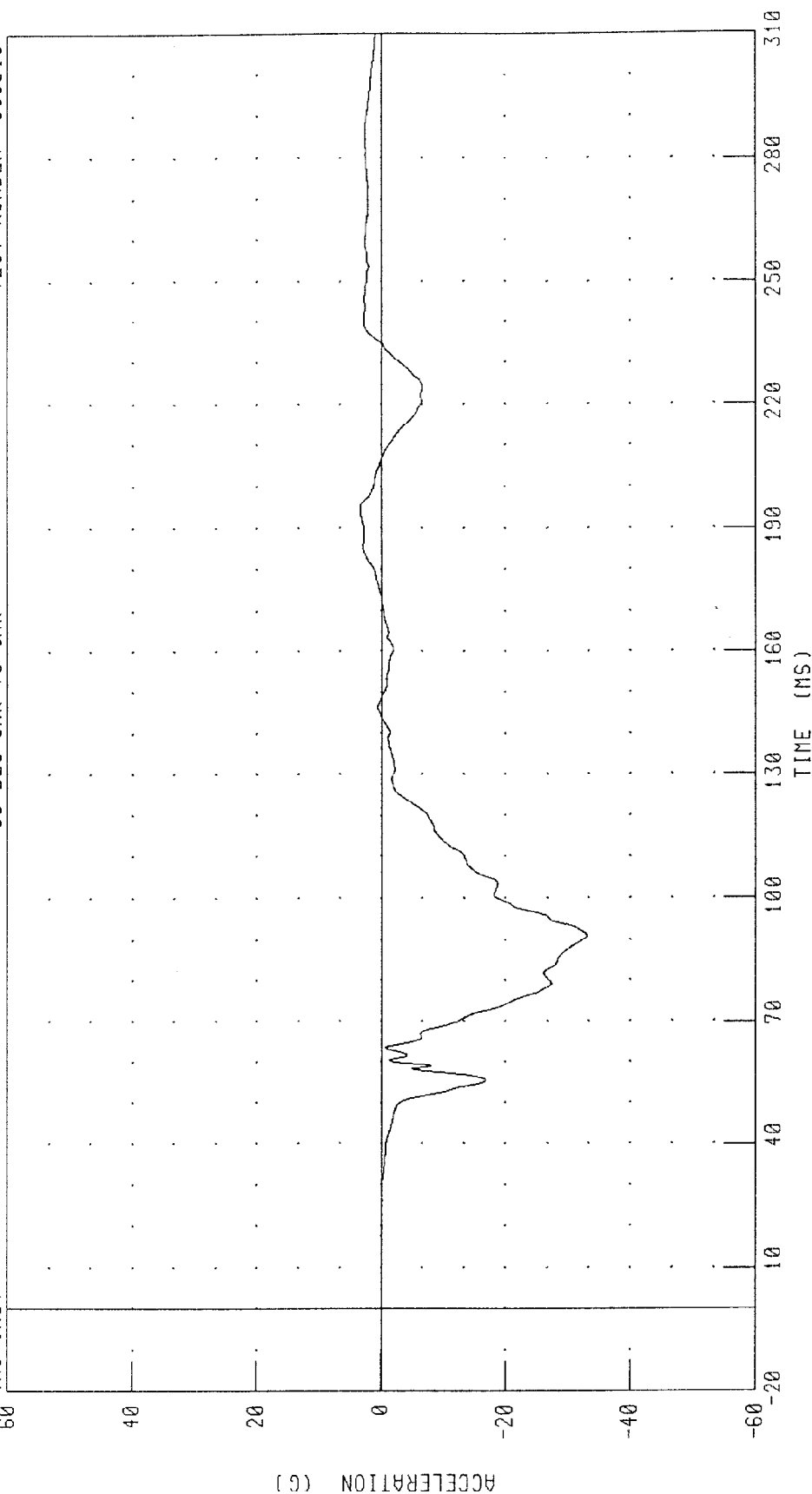
CHANNEL: STBXC2 FILTER: CH. CLASS 1000 PEAK DATA: 50.18 G @ 57.20 MS; -58.86 G @ 53.36 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER SPINE TOP X-AXIS ACCELERATION

TEST NUMBER: 980619

30 DEC CAR TO CAR

TRC INC.



CHANNEL: SPTXC2 FILTER: CH. CLASS 180

PEAK DATA: 3.39 G @ 195.28 MS; -33.04 G @ 90.96 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER SPINE MIDDLE X-AXIS ACCELERATION
30 DEC CAR TO CAR

TEST NUMBER: 980619

TRC INC

60

40

20

0

-20

-40

-60

ACCELERATION (G)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

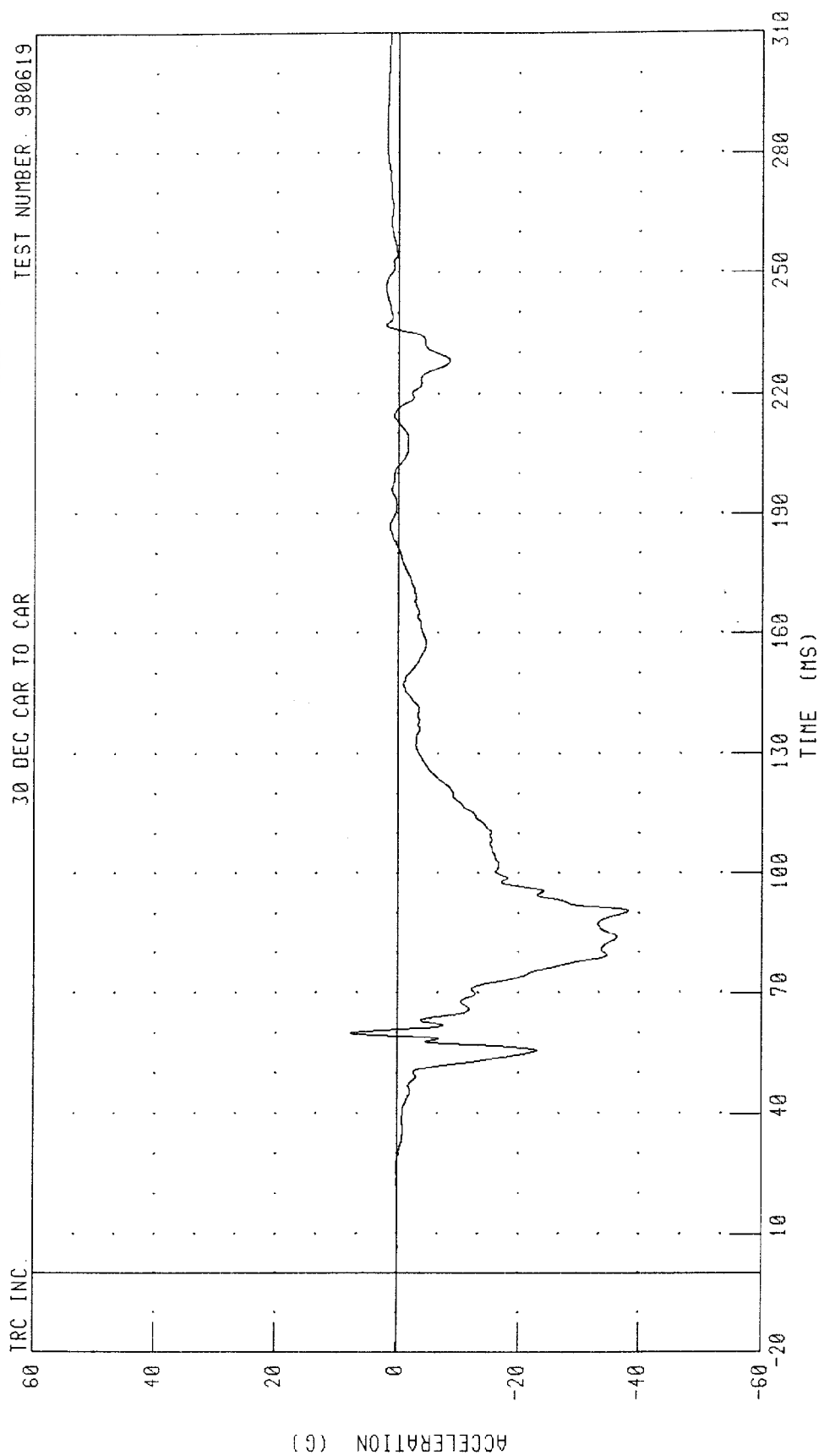
10

CHANNEL: SPHXC2 FILTER: CH. CLASS 180

PEAK DATA: 5.51 G @ 60.32 MS; -35.26 G @ 90.56 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER SPINE BOTTOM X-AXIS ACCELERATION

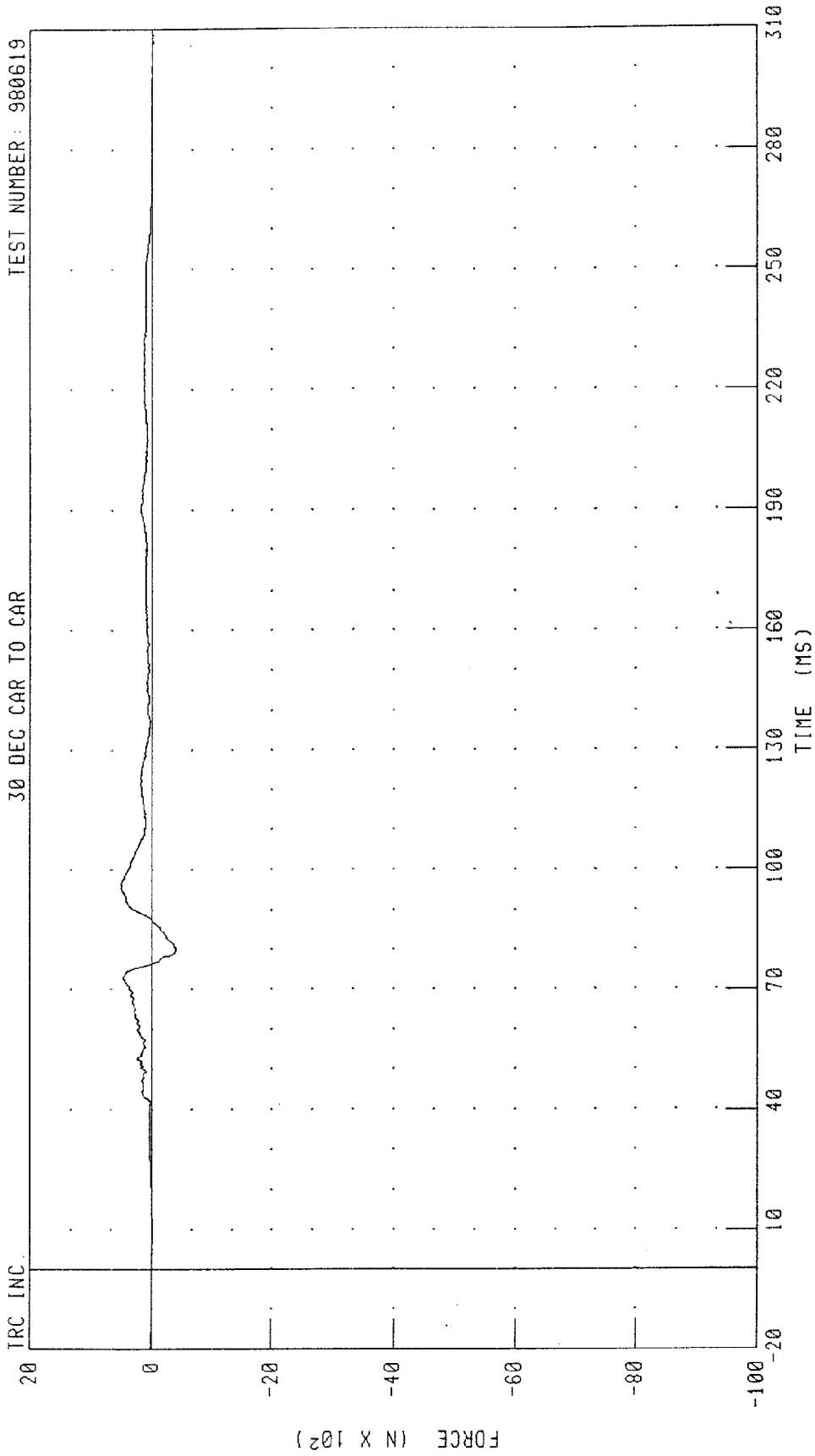
30 DEC CAR TO CAR TEST NUMBER 980619



CHANNEL: SPBXC2 FILTER: CH. CLASS 180

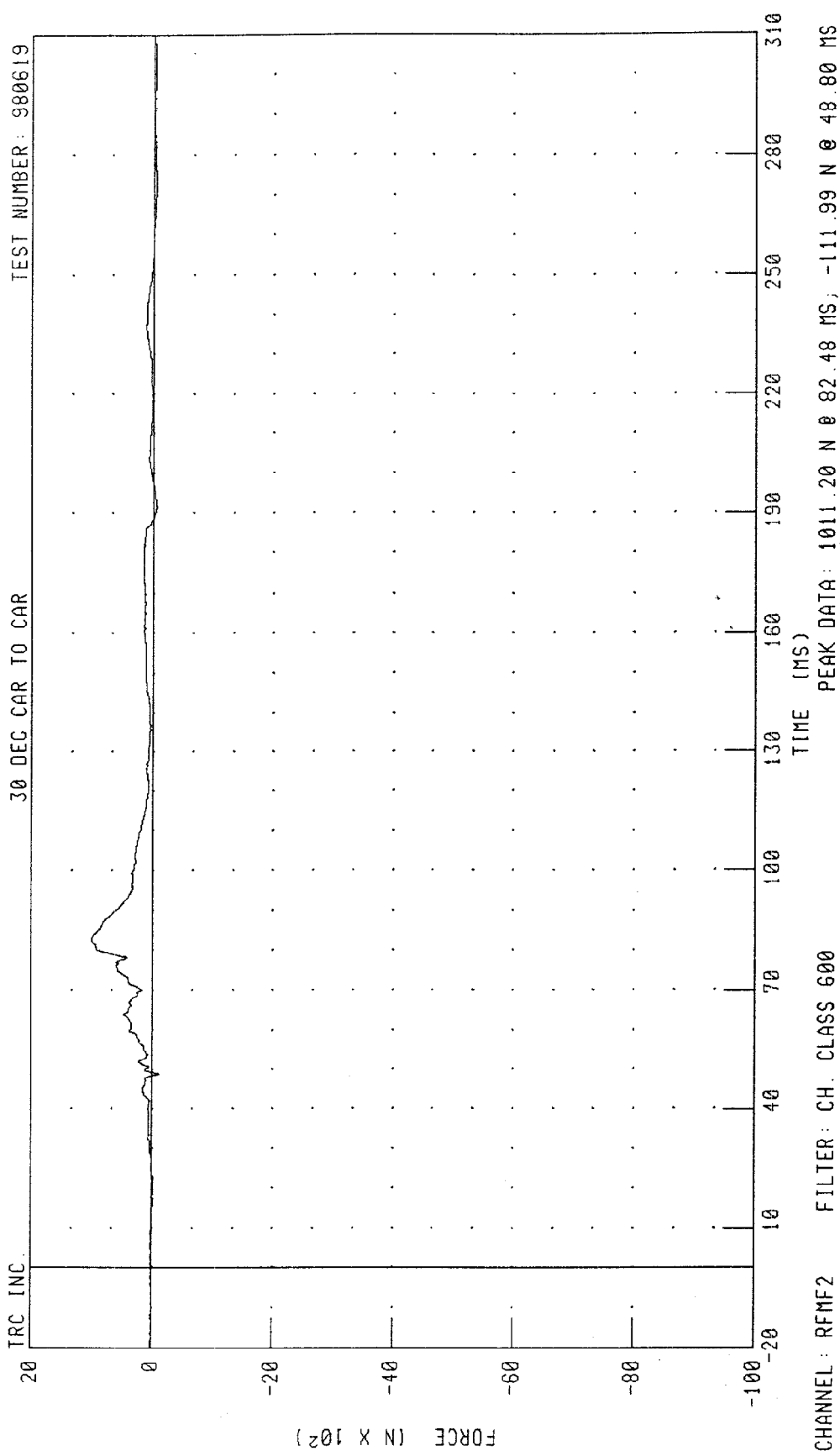
PEAK DATA: 7.72 G @ 60.00 MS, -38.25 G @ 90.64 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER LEFT FEMUR FORCE

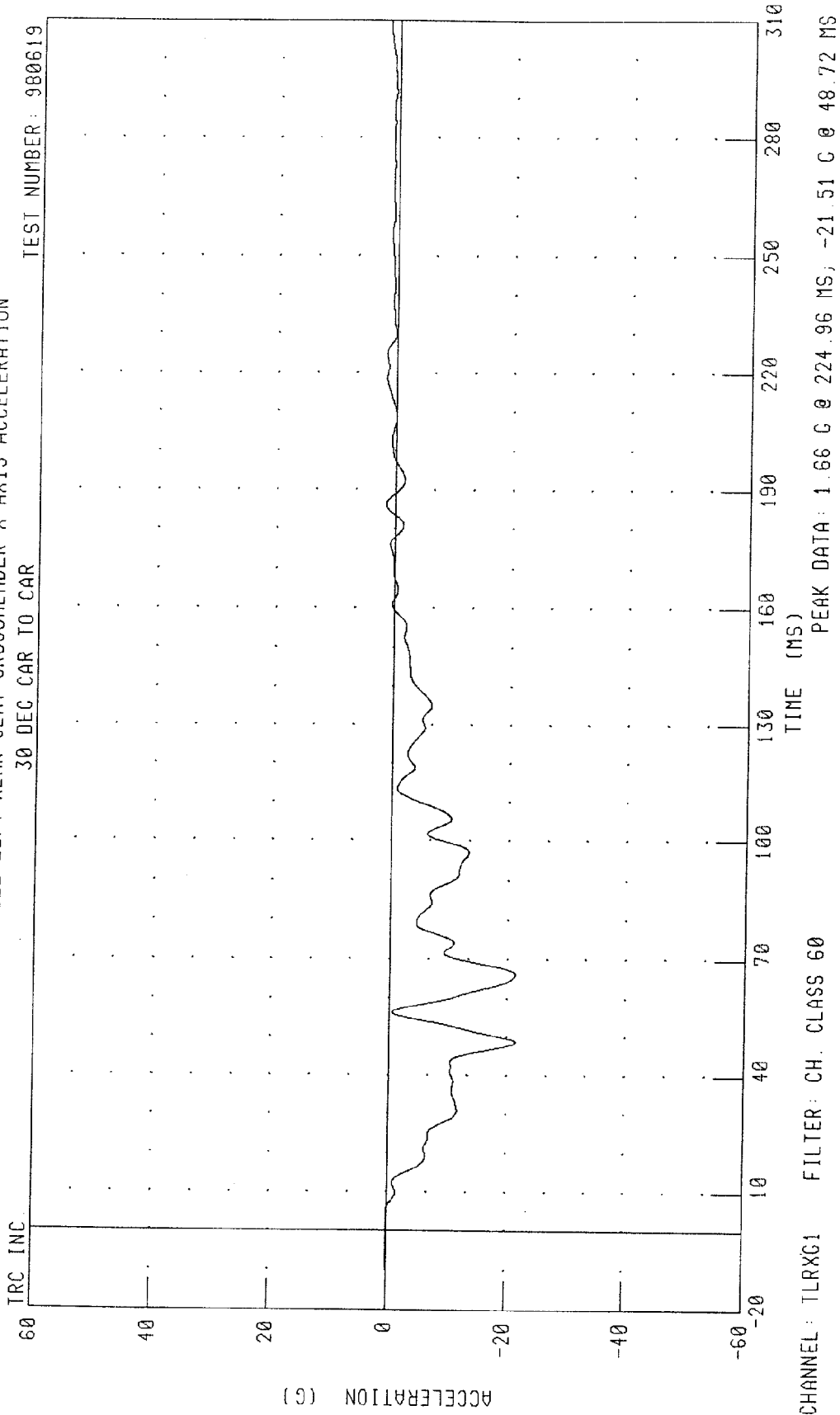


CHANNEL: LFMF2 FILTER: CH. CLASS 600 PEAK DATA: 519.33 N @ 96.64 MS, -409.20 N @ 80.08 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT FRONT PASSENGER RIGHT FEMUR FORCE



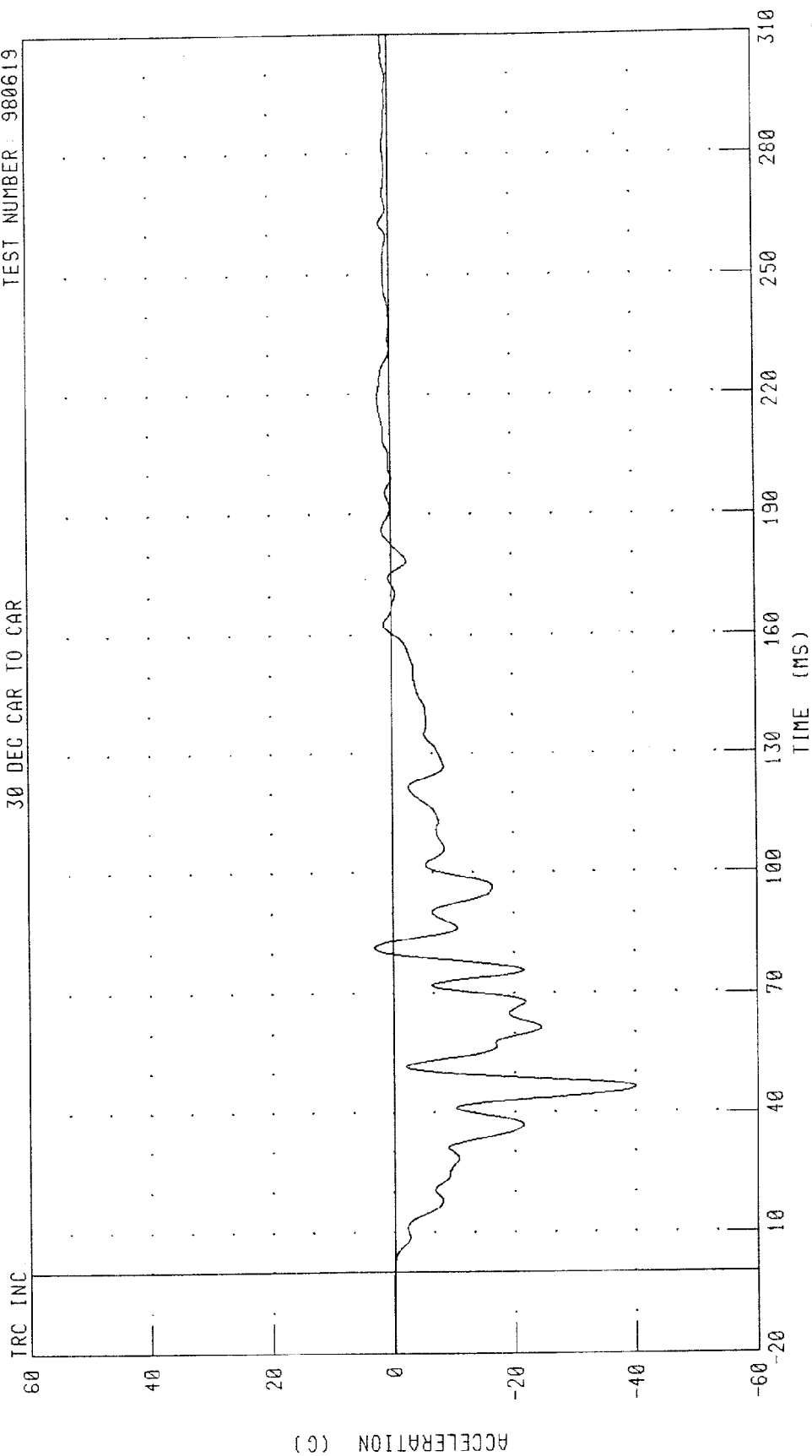
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE LEFT REAR SEAT CROSSMEMBER X-AXIS ACCELERATION



1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT REAR SEAT CROSSMEMBER X-AXIS ACCELERATION

TEST NUMBER: 980619

30 DEG CAR TO CAR



CHANNEL: TRRXG1 FILTER: CH. CLASS 60

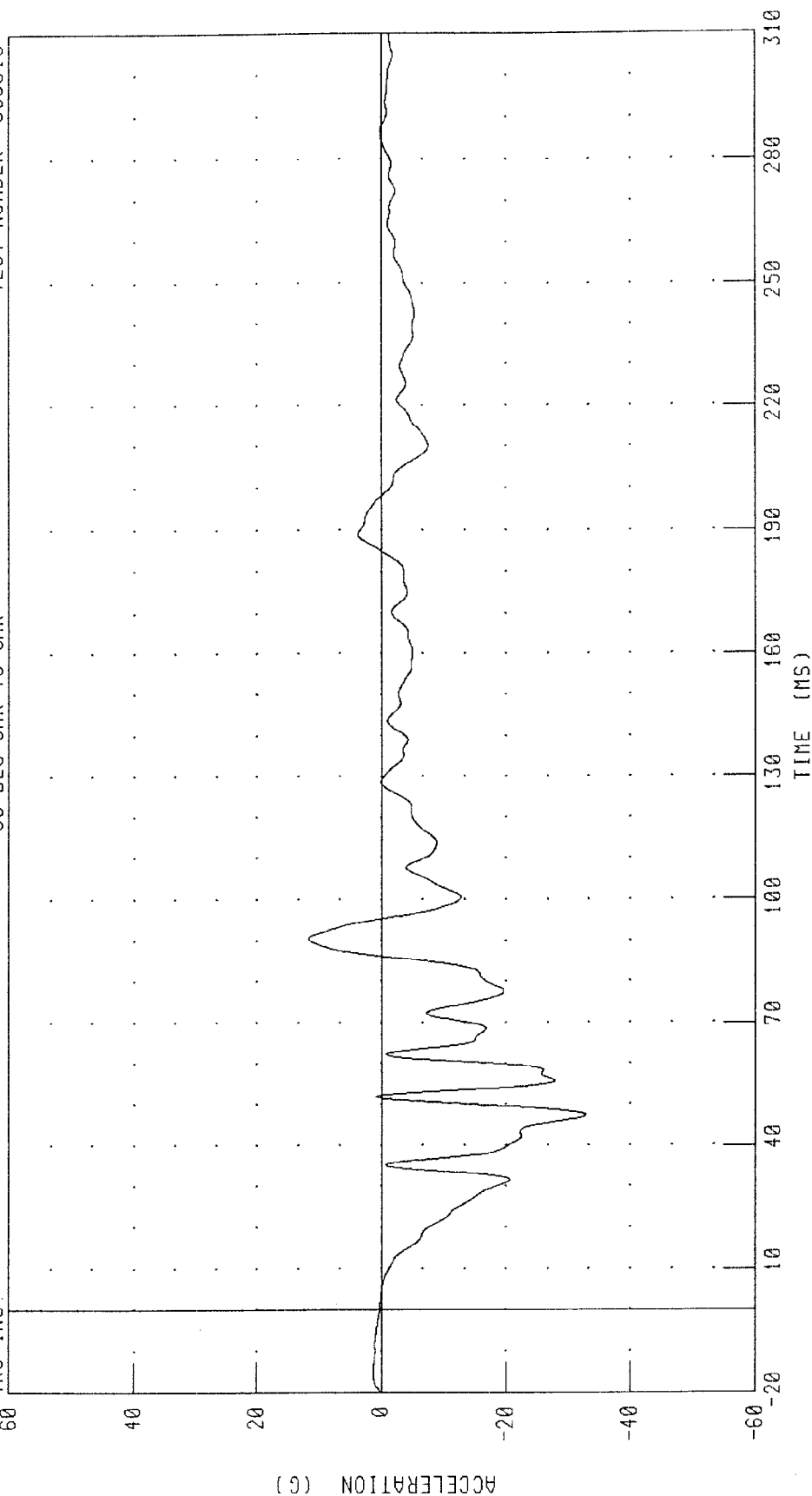
PEAK DATA: 3.06 G @ 81.44 MS, -40.09 G @ 46.32 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE ENGINE TOP X-AXIS ACCELERATION

TRC INC.

30 DEC CAR TO CAR

TEST NUMBER: 980619

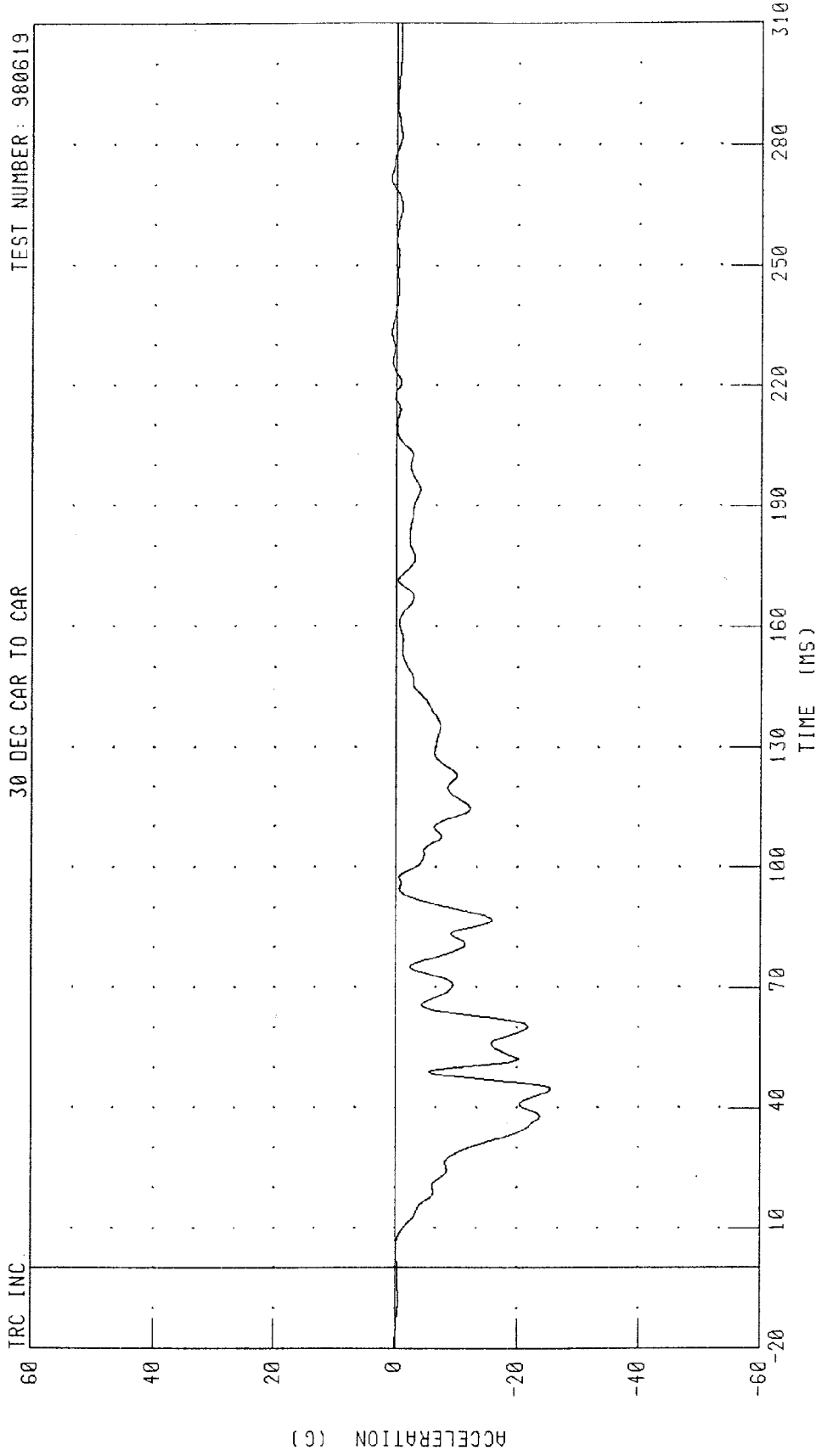


CHANNEL: ENGXC1 FILTER: CH. CLASS 60

PEAK DATA: 11.65 G @ 90.56 MS; -32.82 G @ 47.44 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE ENGINE BOTTOM X-AXIS ACCELERATION
30 DEG CAR TO CAR

TEST NUMBER: 980619



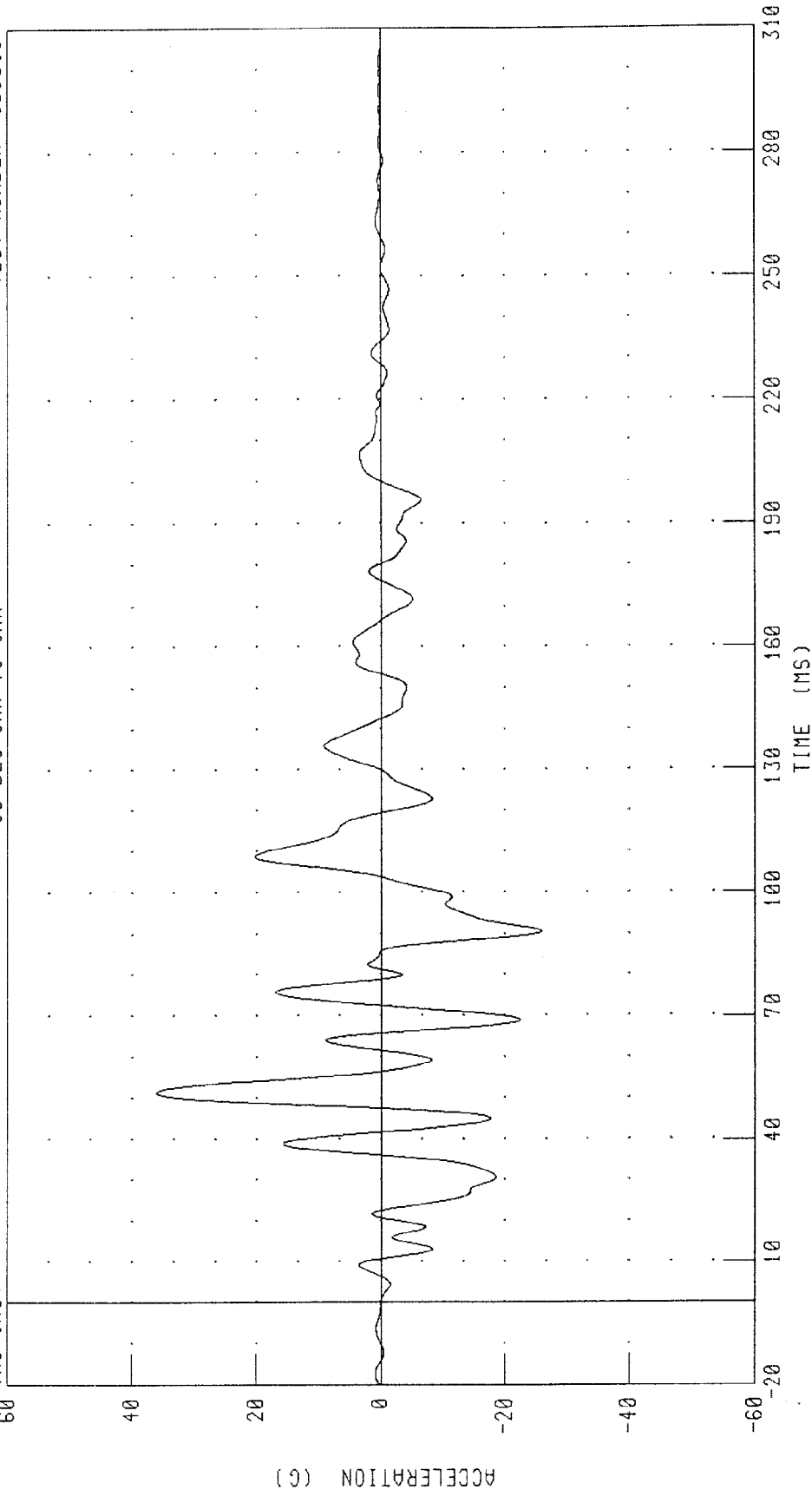
CHANNEL: ENCXC2 FILTER: CH. CLASS 60

PEAK DATA: 0.85 G @ 271.76 MS; -25.50 G @ 44.72 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE RIGHT BRAKE CALIPER X-AXIS ACCELERATION
30 DEC CAR TO CAR

TEST NUMBER: 980619

TRC INC



CHANNEL: BCRXC1 FILTER: CH. CLASS 60

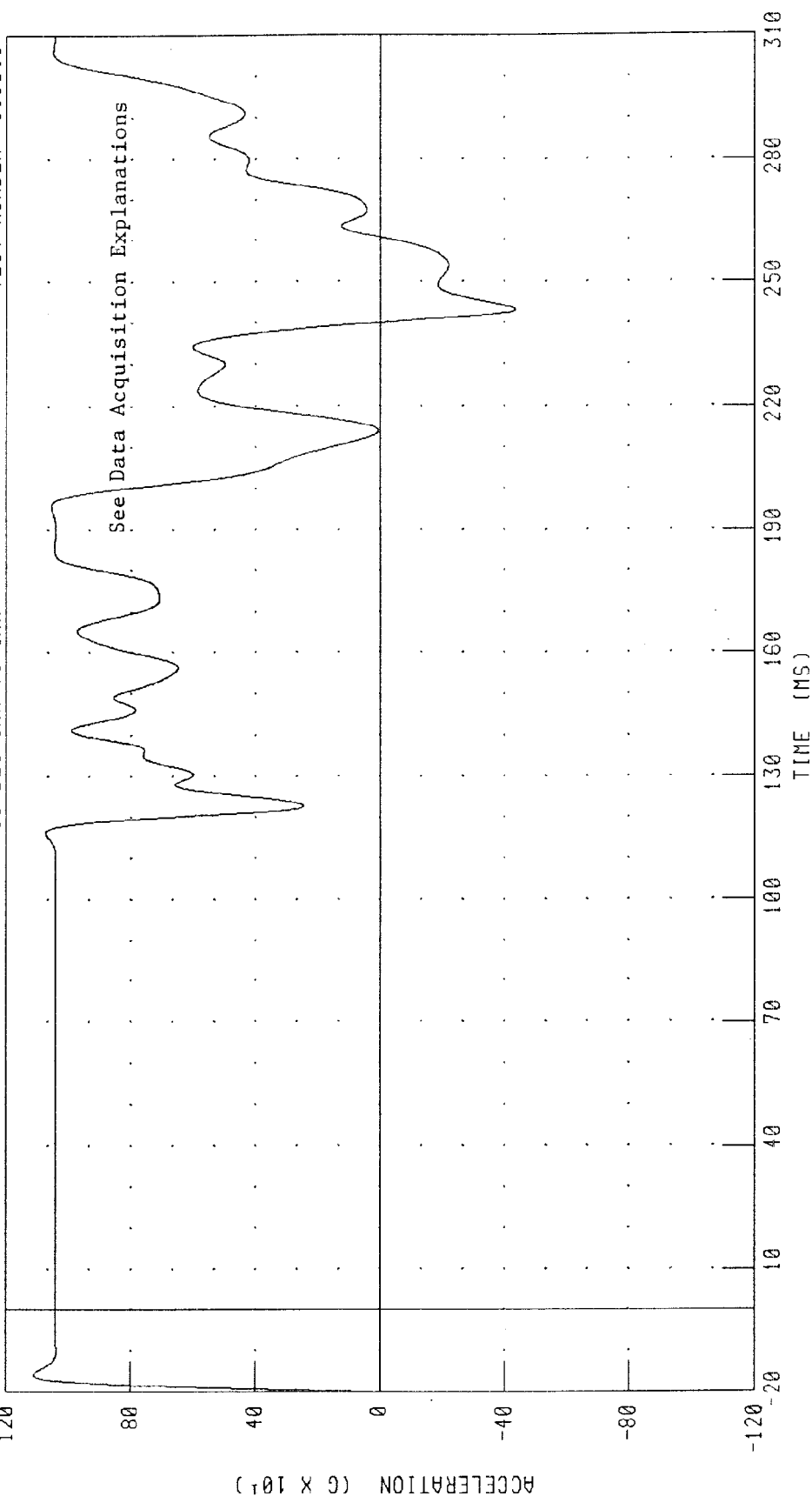
PEAK DATA: 36.15 G @ 51.28 MS; -25.93 G @ 90.64 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE LEFT BRAKE CALIPER X-AXIS ACCELERATION

TEST NUMBER: 980619

30 DEC CAR TO CAR

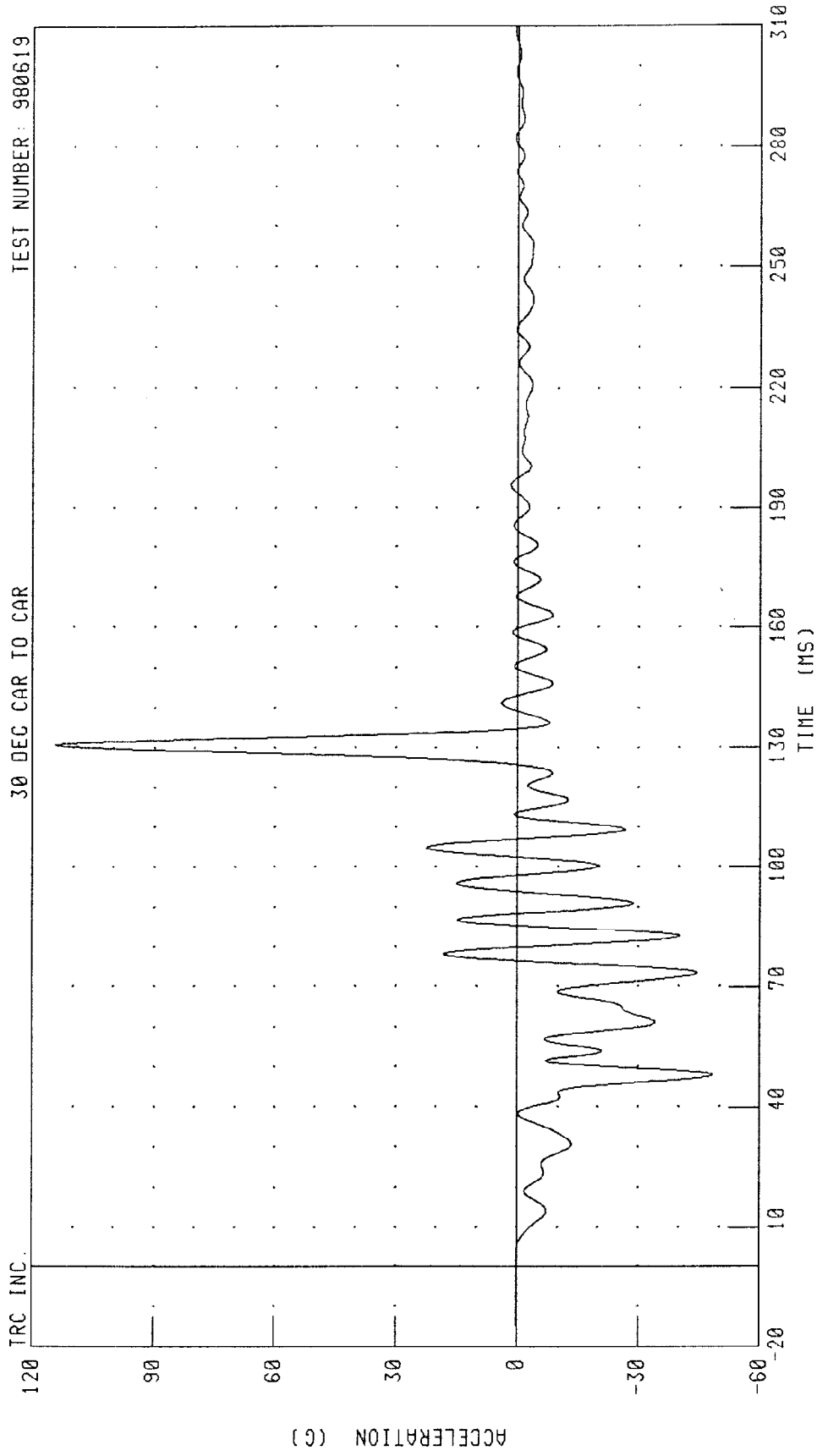
TRC INC.



PEAK DATA: 1112.15 G @ -15.76 MS; -436.11 G @ 243.36 MS

CHANNEL: BCLXG1 FILTER: CH CLASS 60

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE INSTRUMENT PANEL X-AXIS ACCELERATION

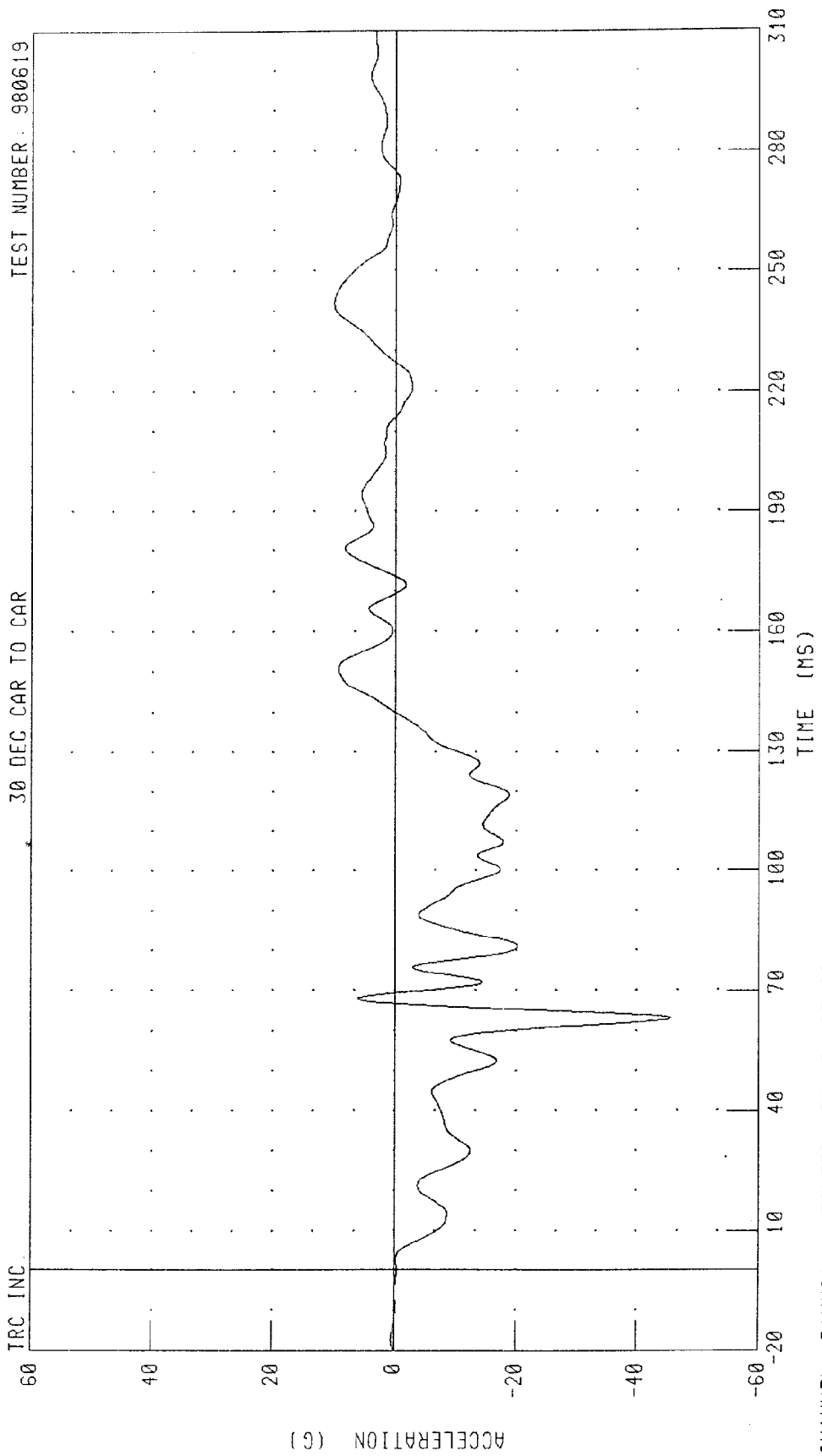


CHANNEL: DPCXG1 FILTER: CH. CLASS 60

PEAK DATA: 114.47 G @ 130.72 MS; -48.44 G @ 48.08 MS

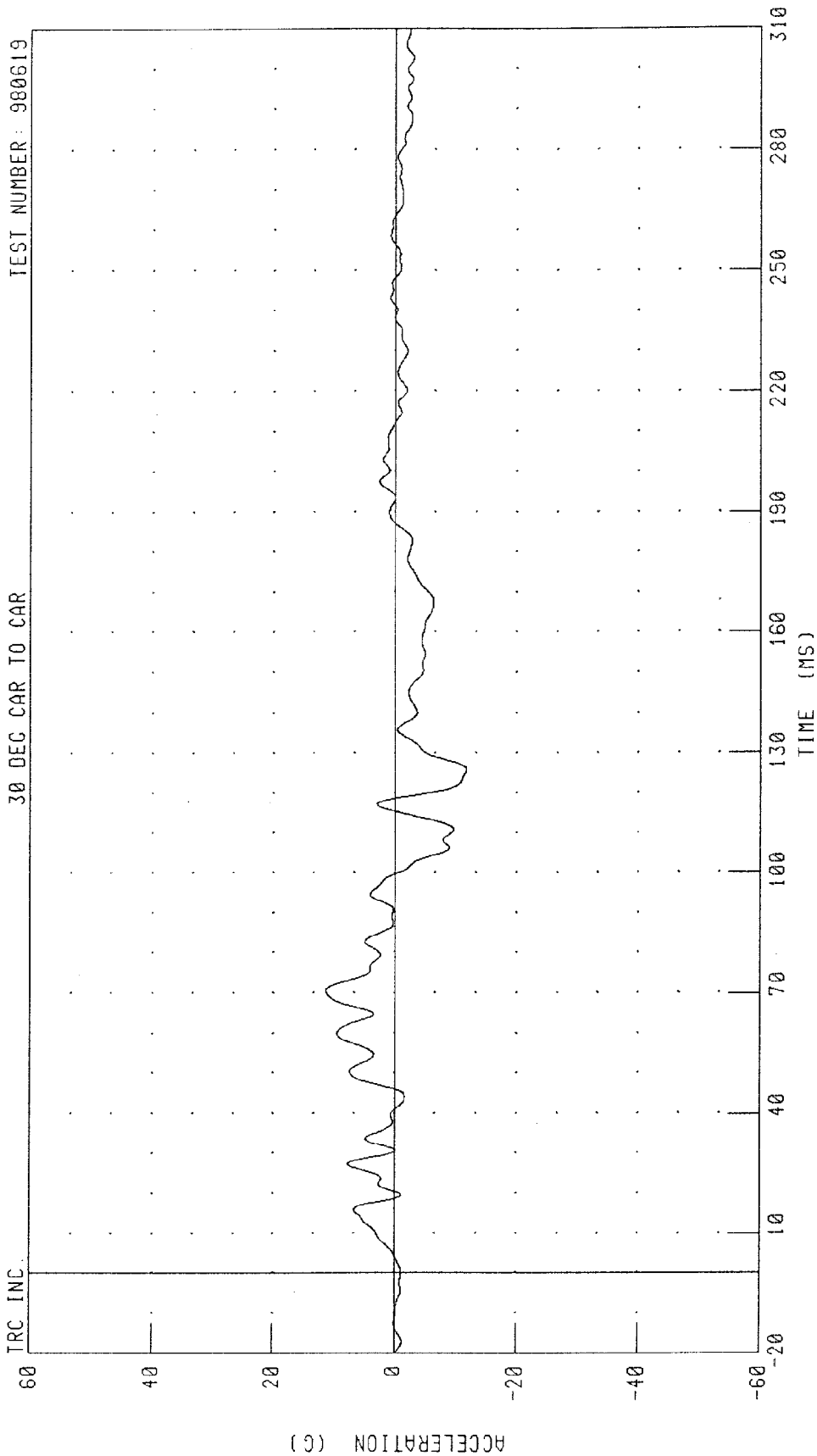
1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE REAR AXLE X-AXIS ACCELERATION

TRC INC. 30 DEC CAR TO CAR TEST NUMBER: 980619



CHANNEL: RAXXG1 FILTER: CH. CLASS 60 PEAK DATA: 10.01 G @ 241.92 MS, -45.56 G @ 63.20 MS

1998 CHEVROLET S10 INTO LEFT FRONT OF 1997 HONDA ACCORD OBLIQUE 30 DEGREES
BULLET VEHICLE REAR AXLE Z-AXIS ACCELERATION



CHANNEL: TFCZG1 FILTER: CH. CLASS 60

PEAK DATA: 11.27 G @ 70.64 MS, -11.83 G @ 125.92 MS

Appendix C

Dummy Certification Data

Pre-Test Calibration

Target Vehicle Driver Dummy S/N 045

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III 50th

29-MAY-98

TRC INC.

TEST NO: 45C37HD2

572E SN045 HEAD DROP CAL 37

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	246.68 G
PEAK LATERAL ACCELERATION	15 G MAX	-4.71 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN By cult

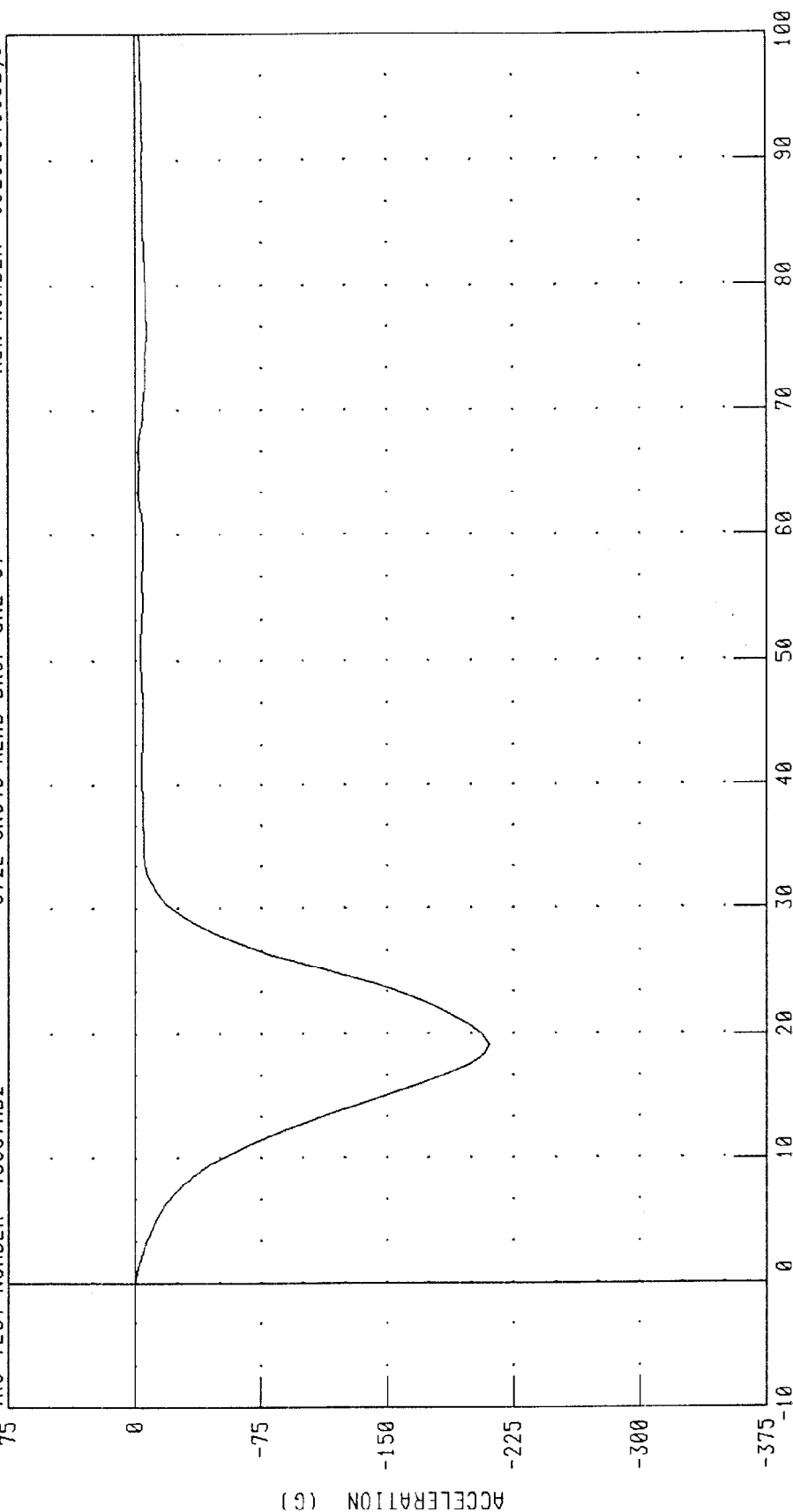
RUN NUMBER: 052998.1351;1

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

TRC TEST NUMBER: 45C37HD2

572E SN045 HEAD DROP CAL 37

RUN NUMBER: 052998.1352;1

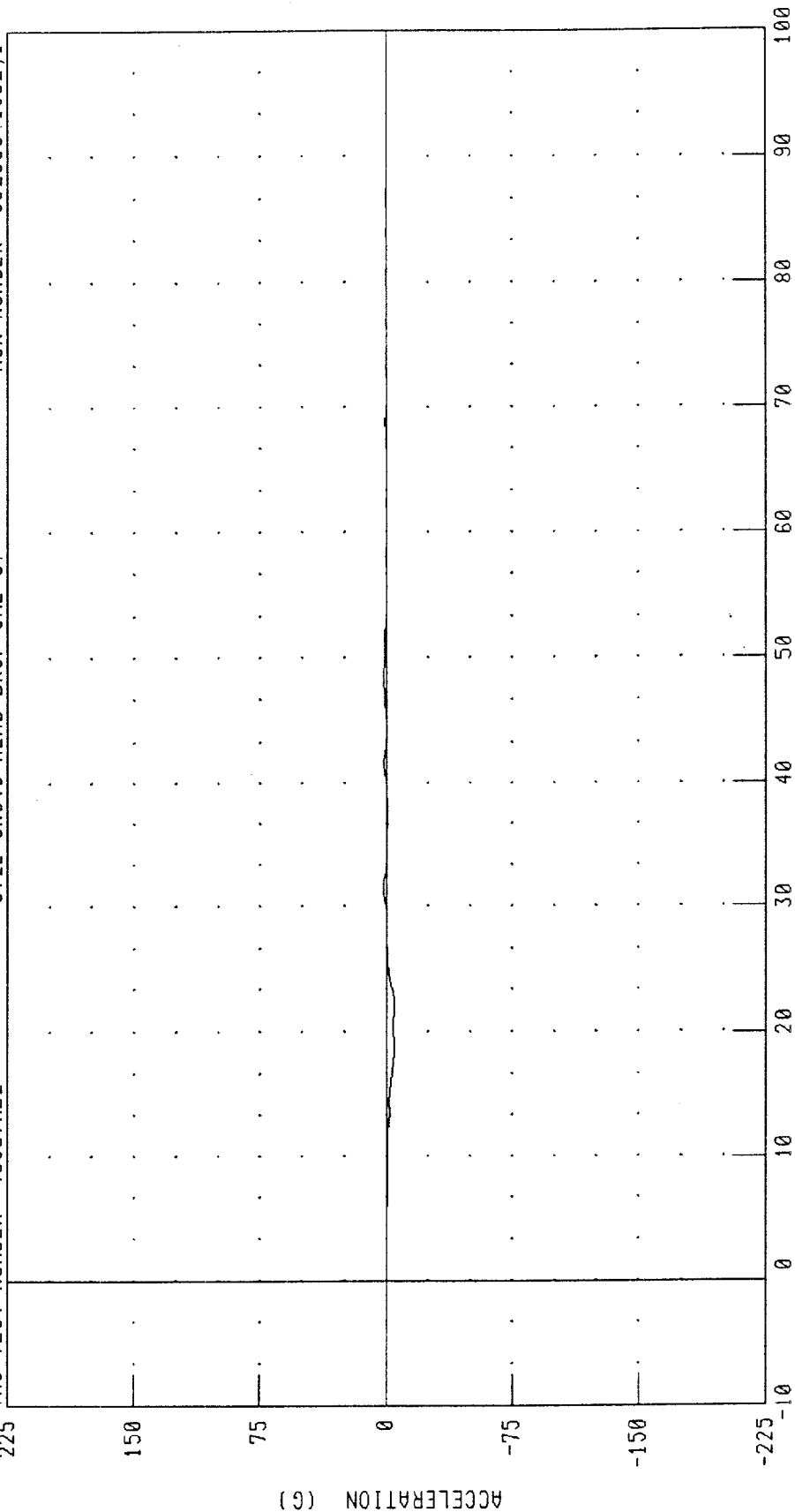


CHANNEL: HEDXC FILTER: CH. CLASS 1000

PEAK DATA: 0.00 G @ -0.96 MS; -210.64 G @ 1.92 MS

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

TRC TEST NUMBER: 45C37HD2 572E SN045 HEAD DROP CAL 37 RUN NUMBER: 052998.1352,1

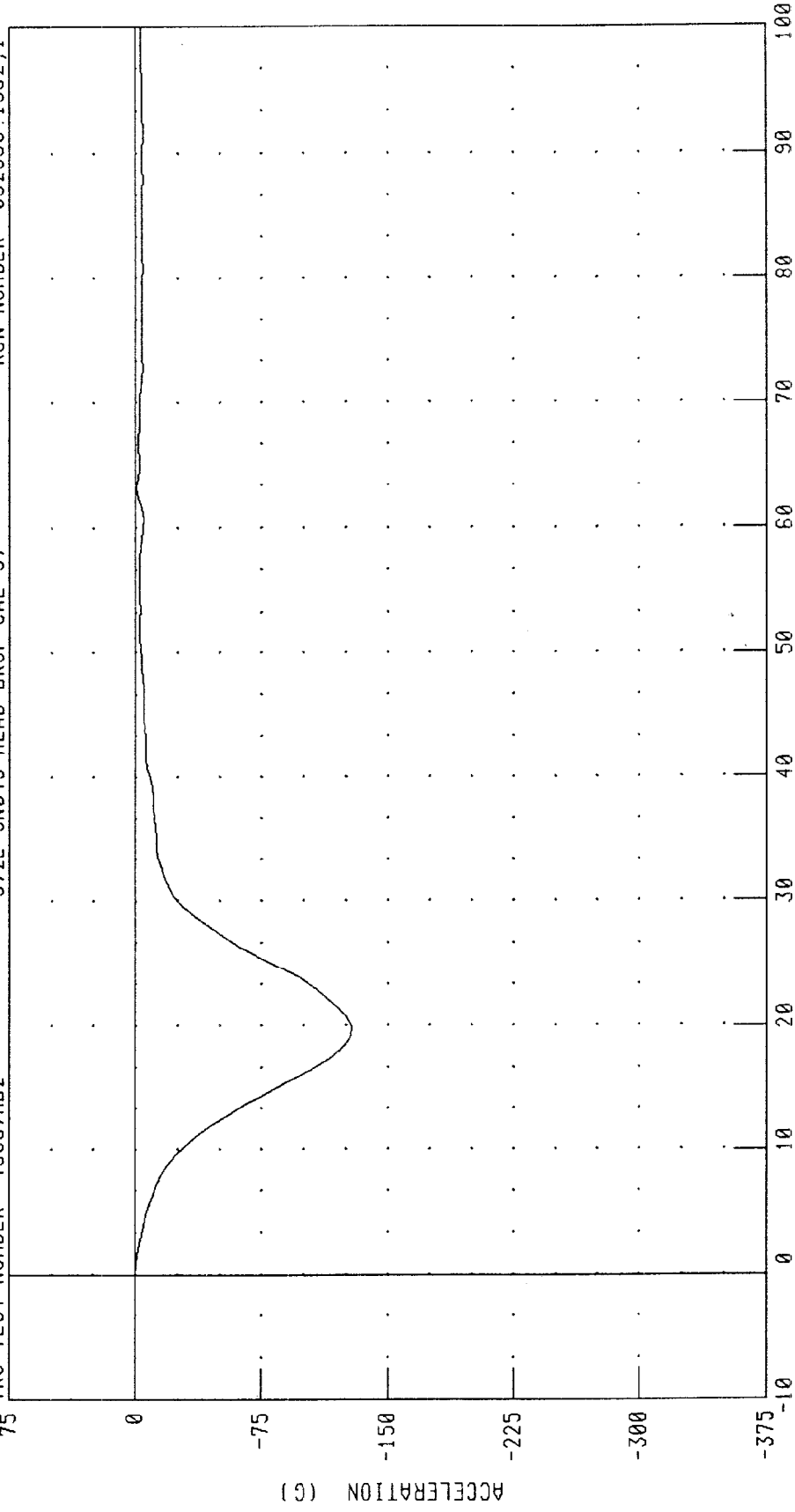


CHANNEL: HEDYC FILTER: CH. CLASS 1000

PEAK DATA: 1.79 G @ 3.12 MS, -4.72 G @ 2.24 MS

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

TRC TEST NUMBER : 45C37HD2 572E SN045 HEAD DROP CAL 37 RUN NUMBER : 052998.1352.1



CHANNEL : HEDZG FILTER : CH. CLASS 1000

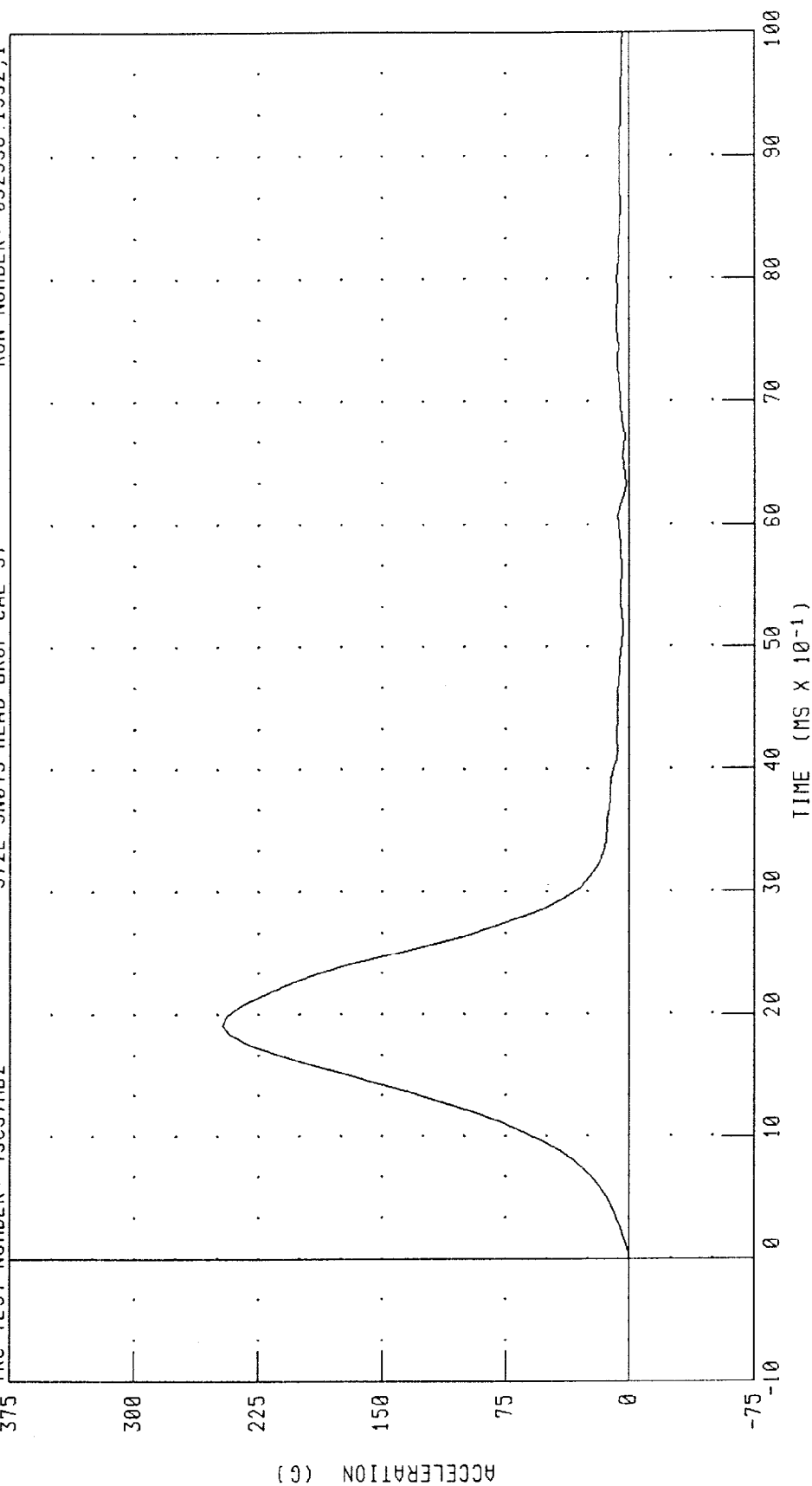
TIME (MS X 10⁻¹)

PEAK DATA : 0.16 G @ -0.88 MS; -128.51 G @ 2.00 MS

PART 572-E HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION
572E SN045 HEAD DROP CAL 37

TRC TEST NUMBER: 45C37HD2

RUN NUMBER: 052998.1352,1



CHANNEL: HEDRC FILTER: CH. CLASS 1000

PEAK DATA: 246.68 G @ 1.92 MS; 0.04 G @ -0.96 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

29-MAY-98

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 45C37NF1 572E SN045 NECK FLEXION CAL37

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	56.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.06 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	24.43 G
	20 MS	17.60 - 22.60 G	22.57 G
	30 MS	12.50 - 18.50 G	18.22 G
MAX PENDULUM G		29 G MAX	25.76 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	18.17 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	35.44 MS
D PLANE	MAX	64 - 78 DEG.	76.86 DEG.
ROTATION	TIME	57 - 64 MS	58.48 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	97.06 NM
	TIME	47 - 58 MS	49.36 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	99.04 MS

TEST MEETS SPECIFICATIONS

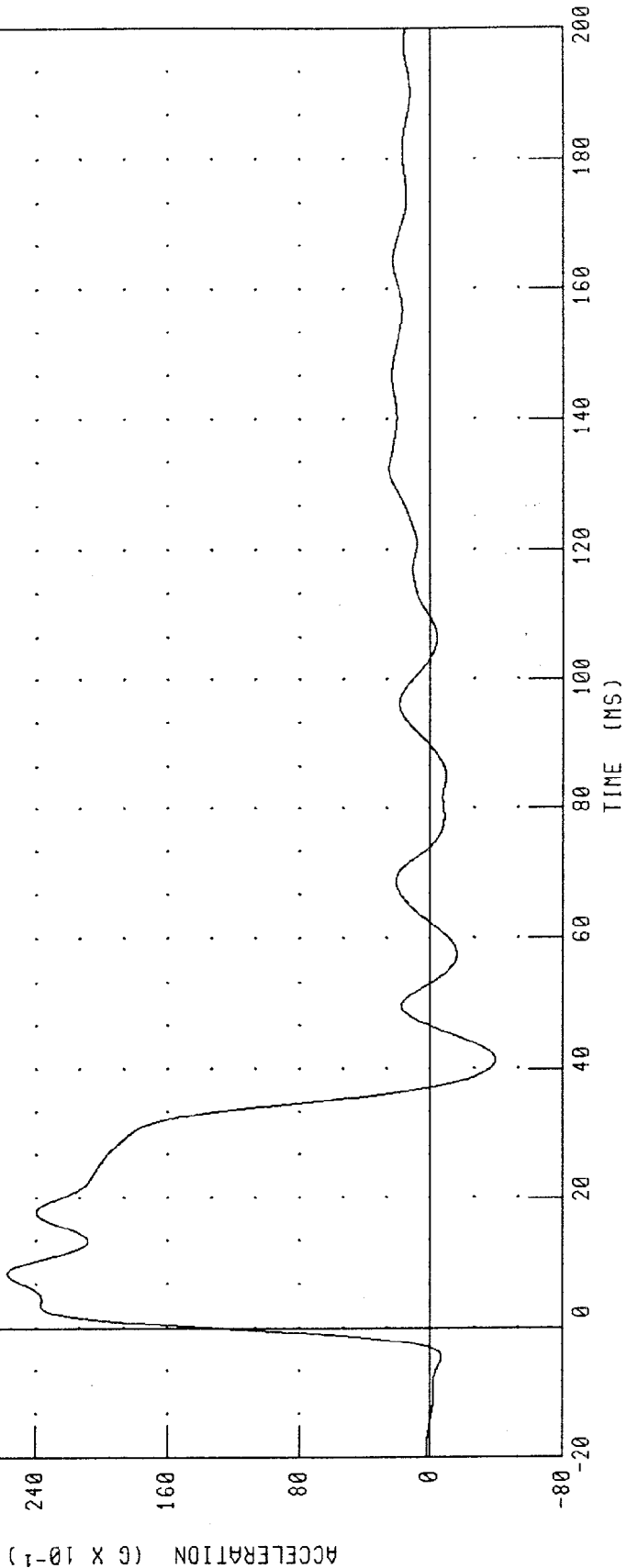
TECHNICIAN

By cult

RUN NUMBER: 052998.1255;2

PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 45C37NF1 572E SN045 NECK FLEXION CAL37 RUN NUMBER: 052998 1255;2



CHANNEL: PENXC FILTER: CH. CLASS 60

PEAK DATA: 25.76 G @ 8.32 MS, -3.97 G @ 41.36 MS

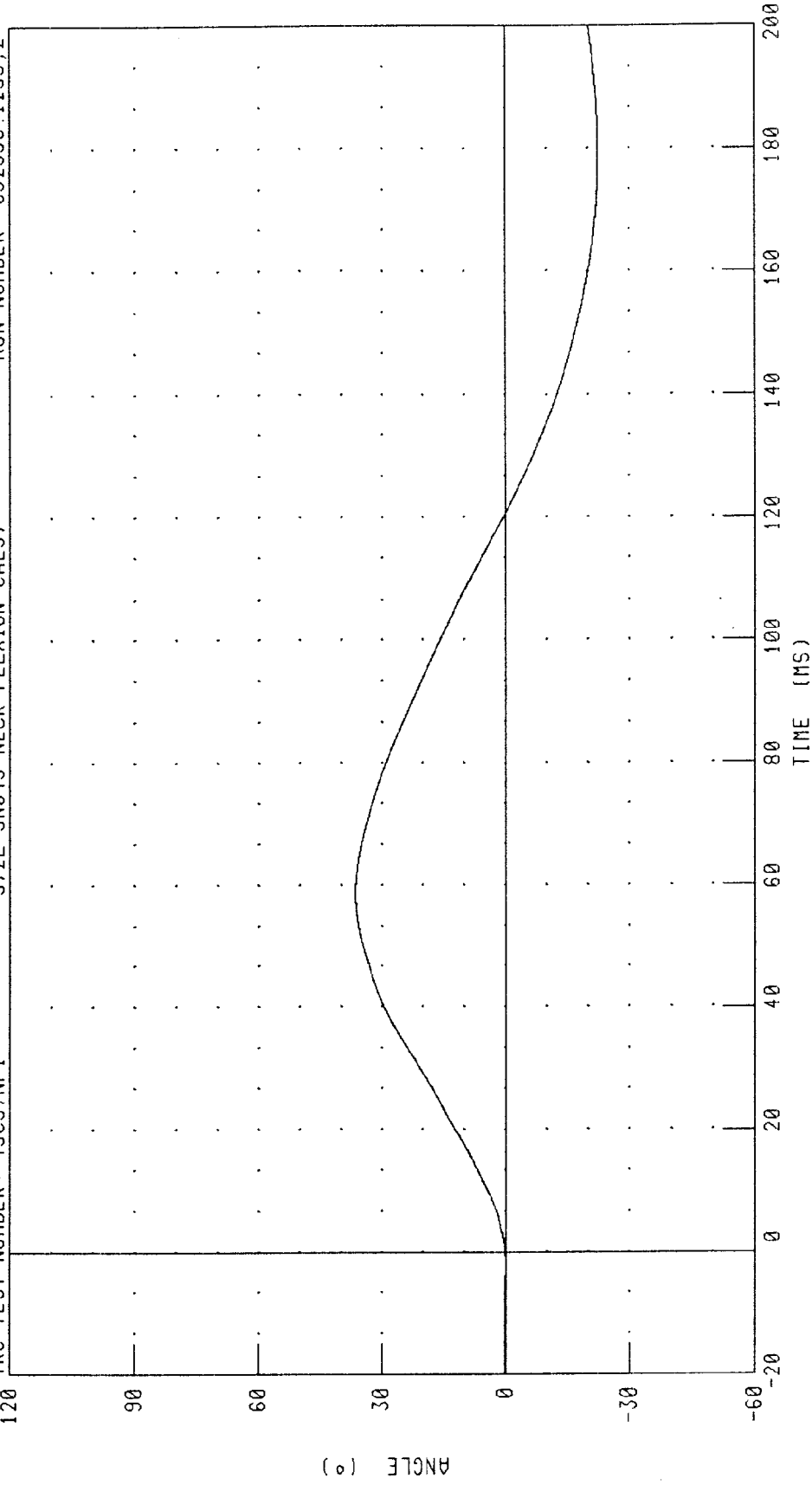
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 45C37NF1

572E SN045 NECK FLEXION CAL37

RUN NUMBER: 052998.1255;2



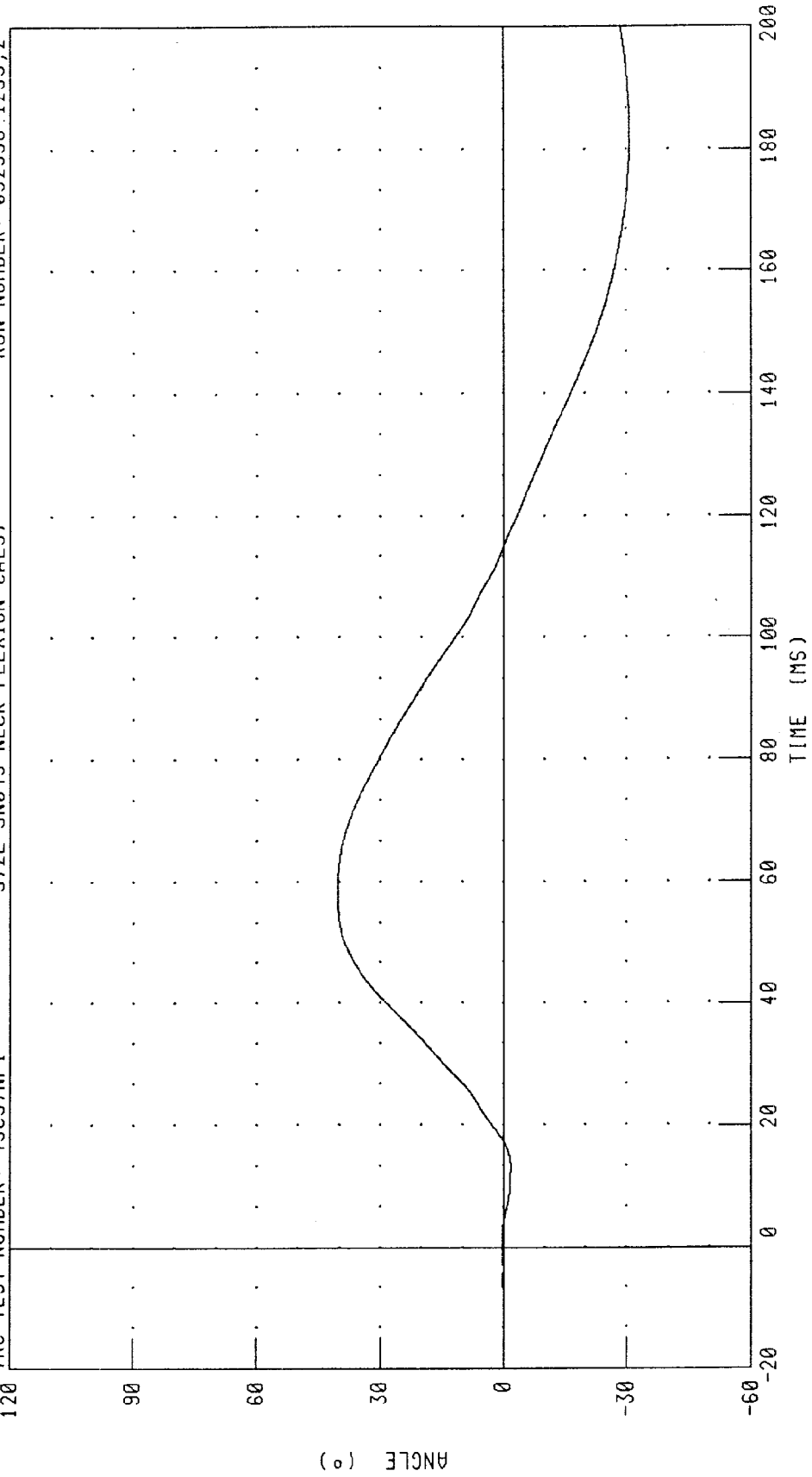
CHANNEL: BETA

FILTER: CH. CLASS 60

PEAK DATA: 36.44 ° @ 58.64 MS, -22.52 ° @ 178.96 MS

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

TRC TEST NUMBER: 45C37NF1 572E SN045 NECK FLEXION CAL37 RUN NUMBER: 052998.1255;2

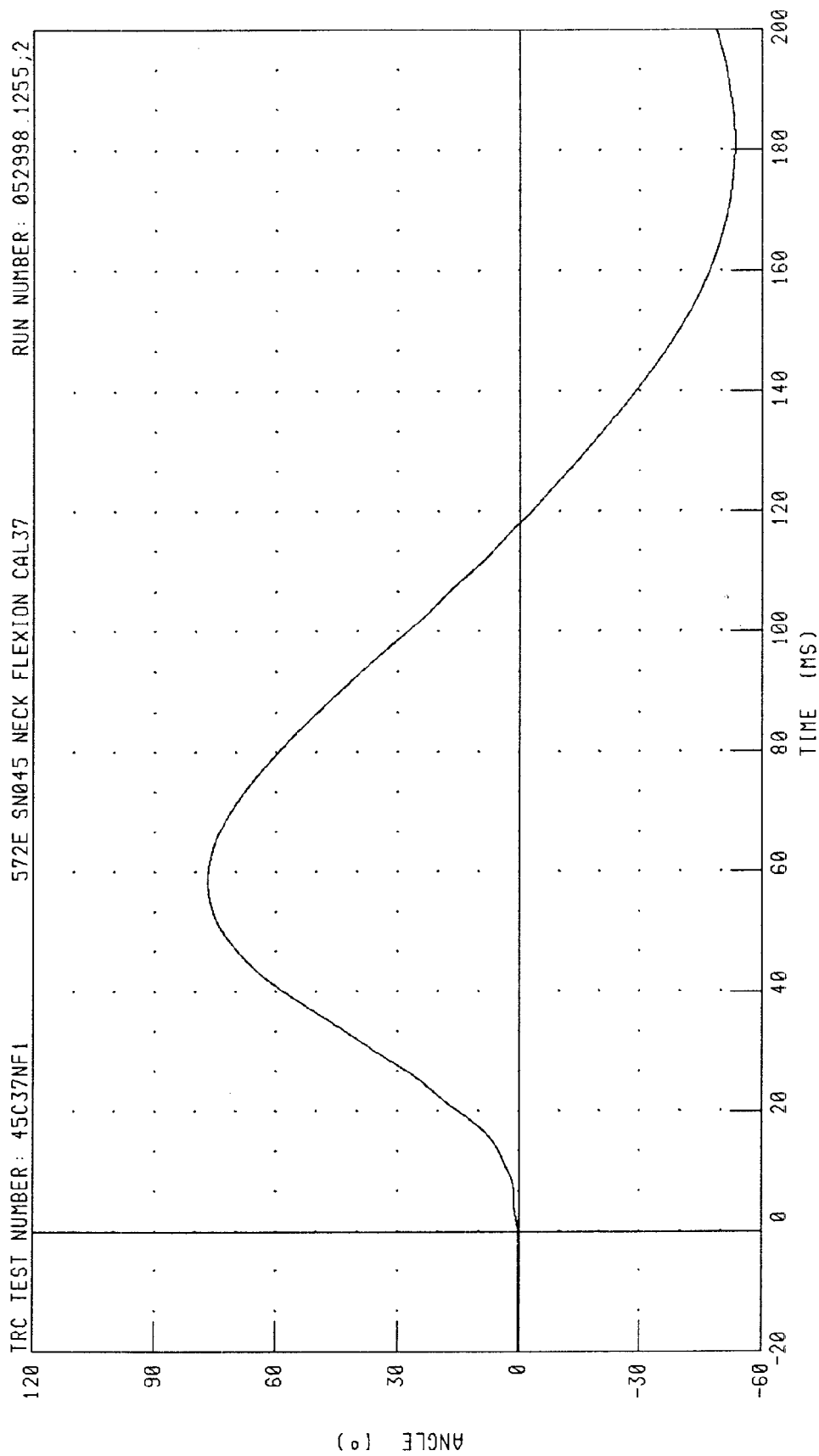


CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 40.42 ° @ 58.32 MS, -30.88 ° @ 182.00 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION



CHANNEL: TOTAN FILTER: CH. CLASS 60

PEAK DATA: 76.86 ° @ 58.48 MS, -53.37 ° @ 181.04 MS

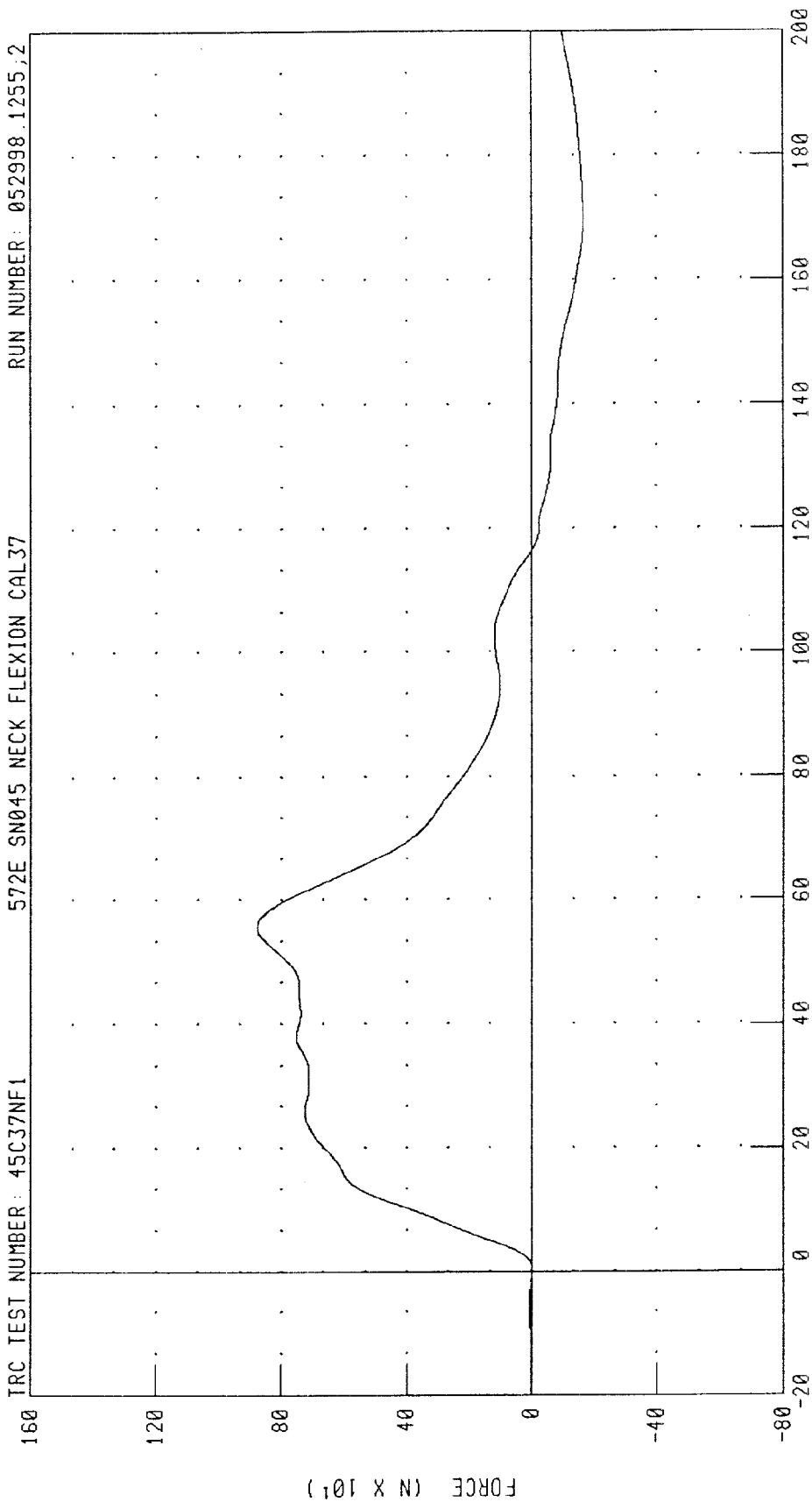
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 45C37NF1

572E SN045 NECK FLEXION CAL37

RUN NUMBER: 052998.1255;2



CHANNEL: NEKXF

FILTER: CH. CLASS 60

TIME (MS)

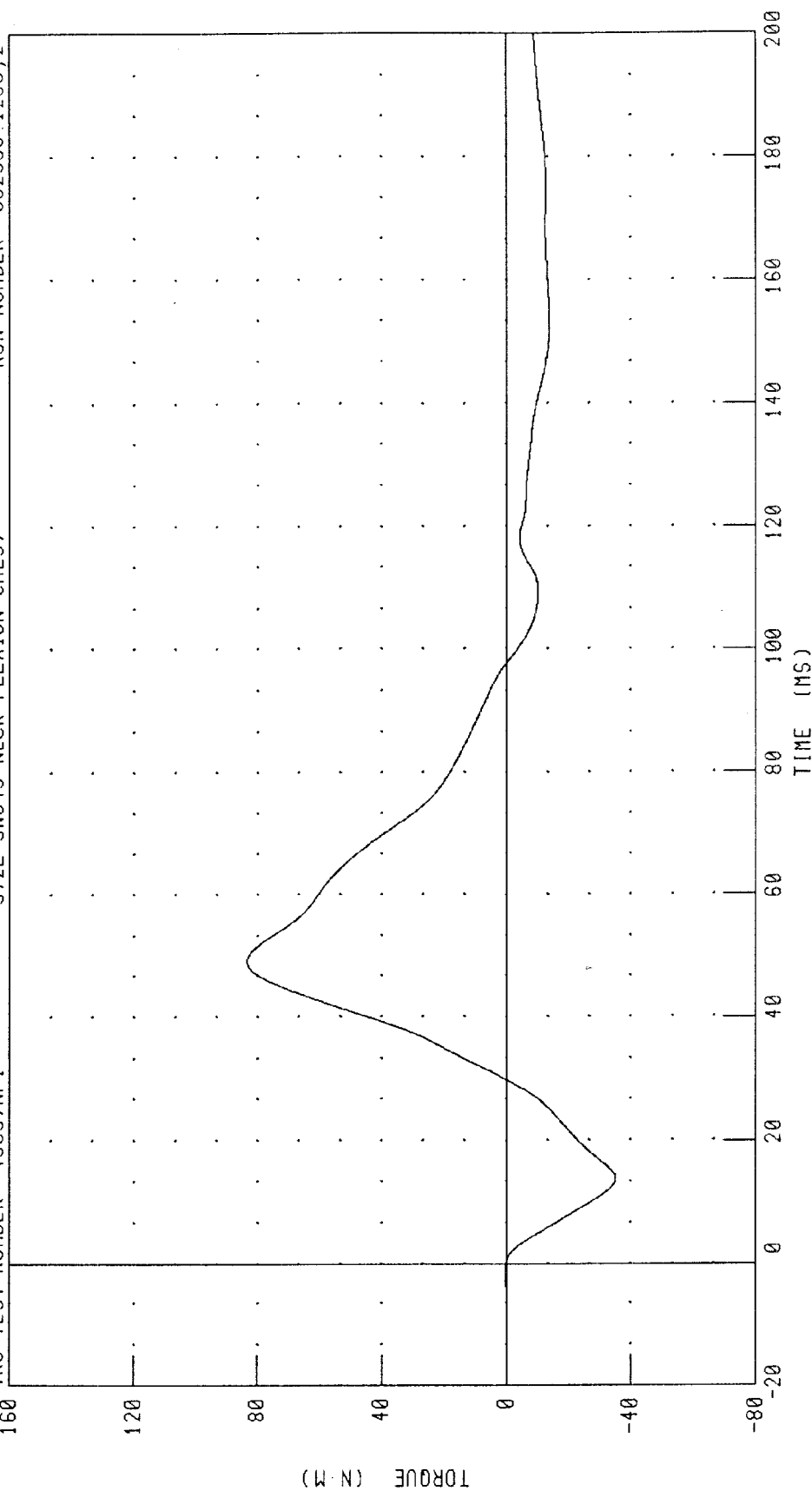
PEAK DATA: 877.28 N @ 55.68 MS, -167.00 N @ 170.08 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS

TRC TEST NUMBER: 45C37NF1

572E SN045 NECK FLEXION CAL37

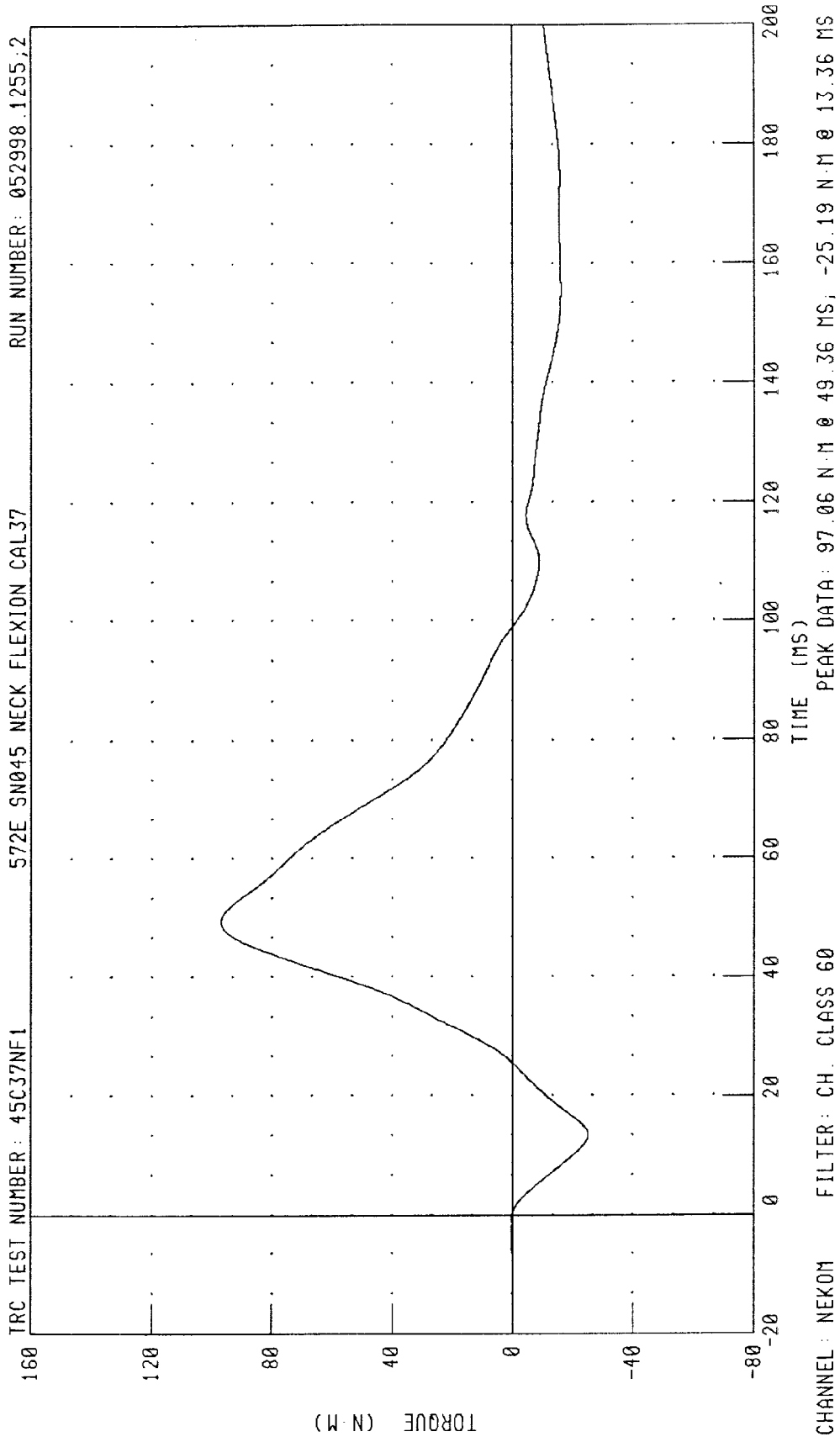
RUN NUMBER: 052998.1255;2



CHANNEL: NEKYM FILTER: CH. CLASS 60

PEAK DATA: 83.44 N·M @ 49.12 MS, -35.15 N·M @ 13.76 MS

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



CHANNEL : NEKOM FILTER : CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

29-MAY-98

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 45C37NE1 572E SN045 NECK EXT CAL37

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	56.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	19.26 G
	20 MS	14.00 - 19.00 G	16.26 G
	30 MS	11.00 - 16.00 G	14.74 G
MAX PENDULUM G		22 G MAX	19.77 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	14.67 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	41.28 MS
D PLANE	MAX	81 - 106 DEG.	101.06 DEG.
ROTATION	TIME	72 - 82 MS	76.32 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-70.51 NM
	TIME	65 - 79 MS	70.88 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	159.44 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	145.44 MS

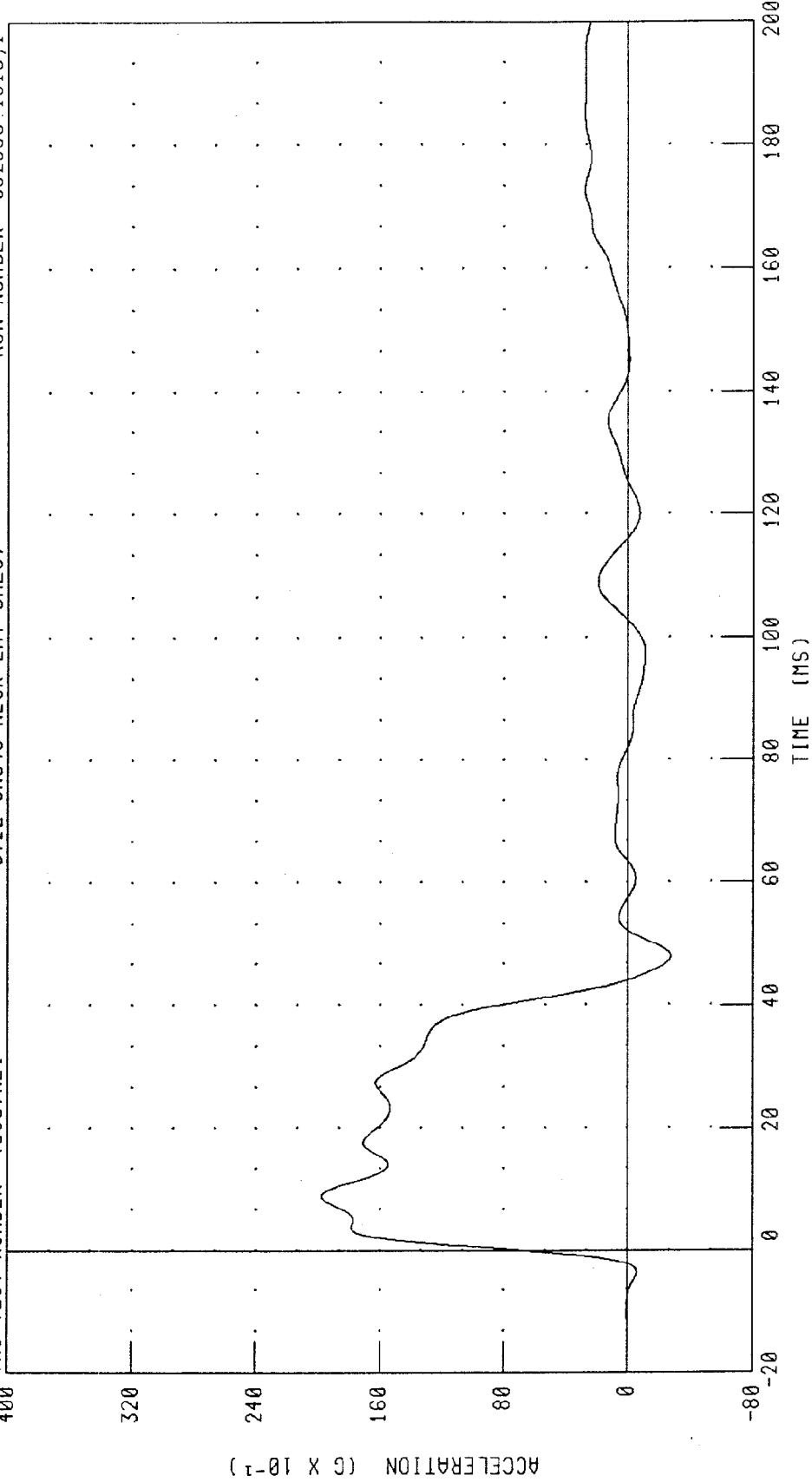
TEST MEETS SPECIFICATIONS

TECHNICIAN By Calt

RUN NUMBER: 052998.1319;1

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 45C37NE1 572E SN045 NECK EXT CAL37 RUN NUMBER: 052998.1319,1

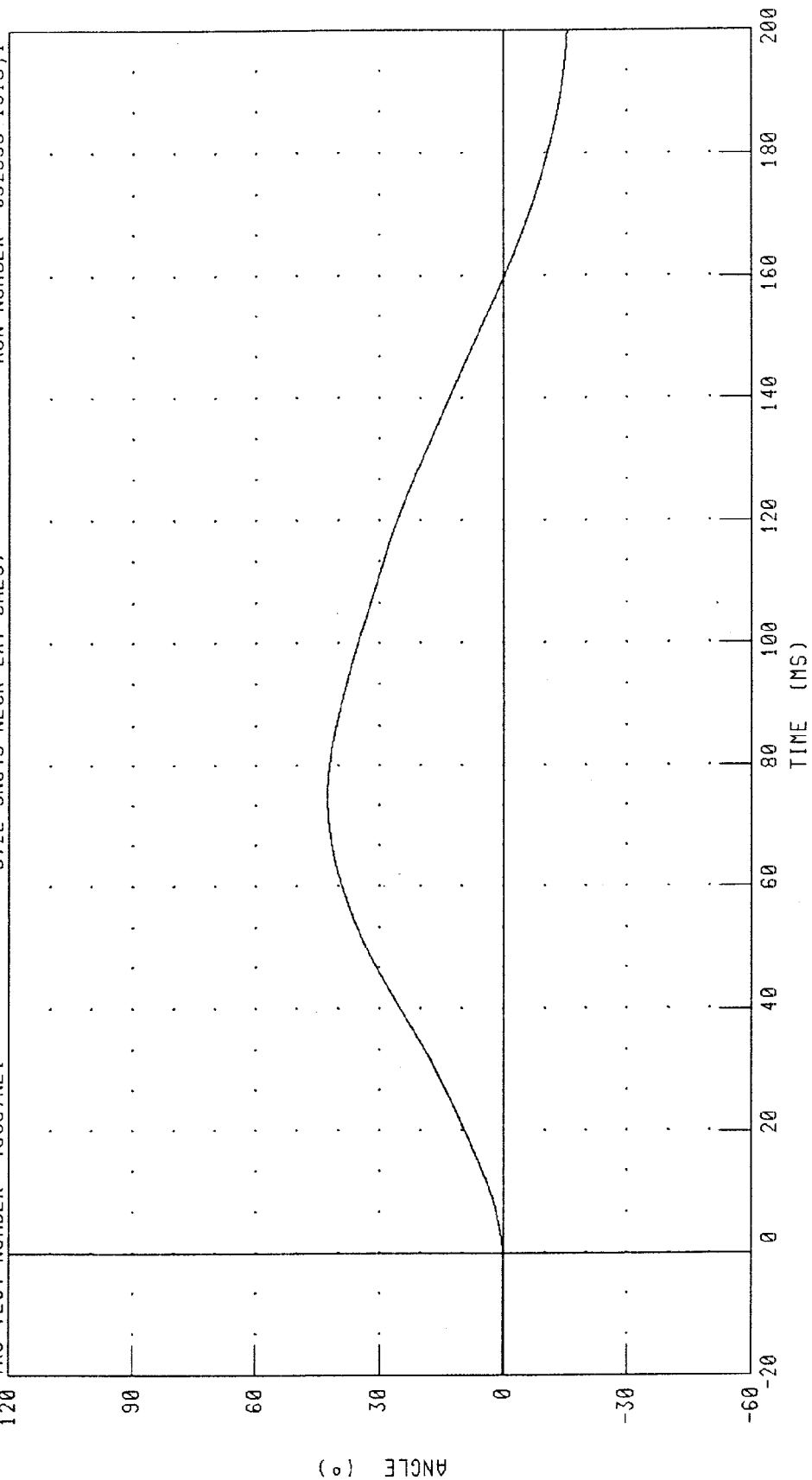


CHANNEL: PENXC FILTER: CH. CLASS 60

PEAK DATA: 19.77 G @ 8.88 MS, -2.77 G @ 47.92 MS

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

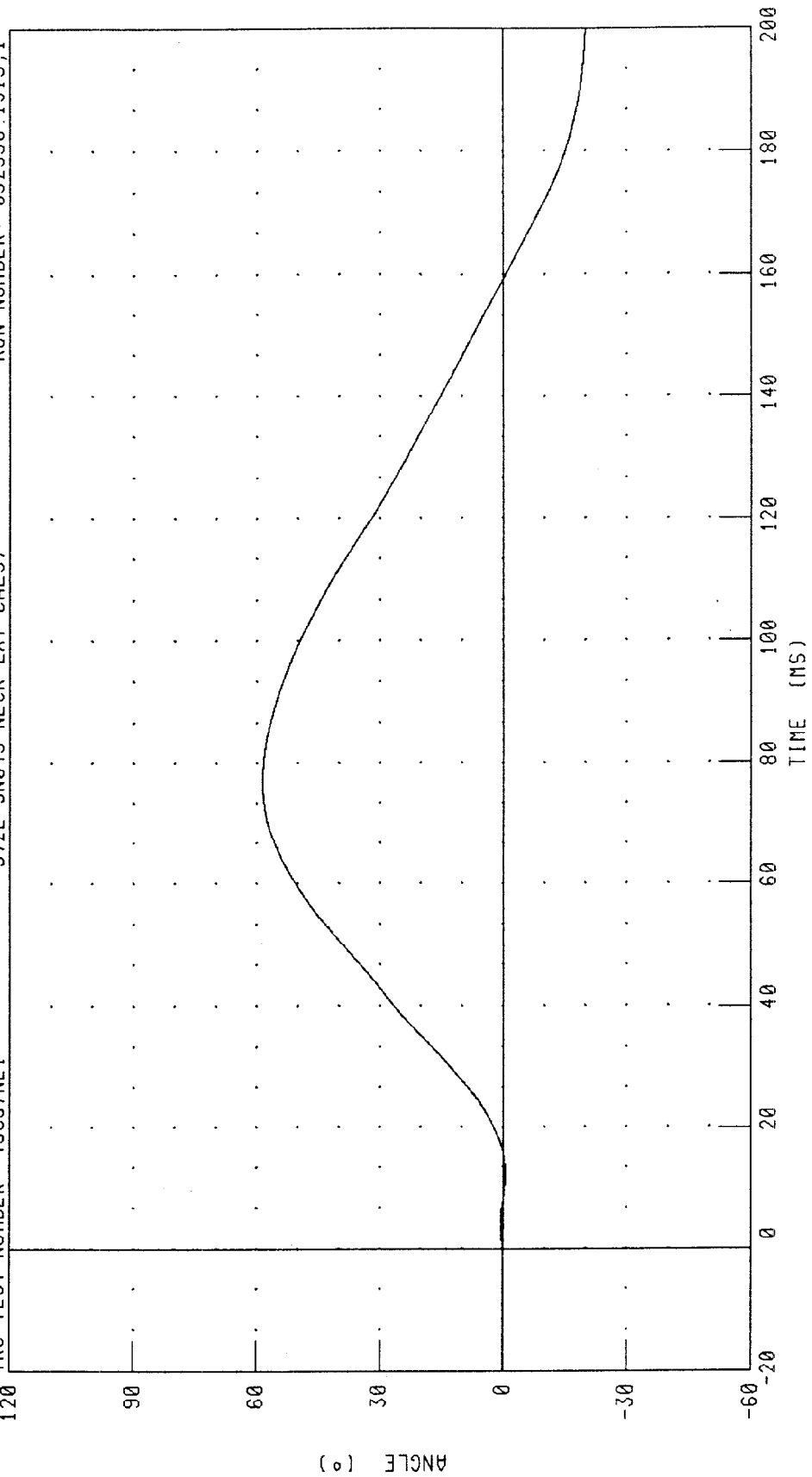
TRC TEST NUMBER: 45C37NE1 572E SN045 NECK EXT CAL37 RUN NUMBER: 052998 1319,1



CHANNEL: BETA FILTER: CH. CLASS 60 PEAK DATA: 42.53 ° @ 74.88 MS, -15.49 ° @ 200.00 MS

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

TRC TEST NUMBER: 45C37NE1 572E SN045 NECK EXT CAL37 RUN NUMBER: 052998.1319;1



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 58.59 ° @ 77.04 MS, -20.08 ° @ 200.00 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

572E SN045 NECK EXT CAL37

IRC TEST NUMBER: 45C37NE1

120

90

60

30

0

-30

-60

ANGLE (°)

0

20

40

60

80

100

120

140

160

180

200

TIME (MS)

PEAK DATA: 101.07 ° @ 76.32 MS; -35.57 ° @ 200.00 MS

CHANNEL: TOTAL

FILTER: CH. CLASS 60

RUN NUMBER: 052998.1319,1

1

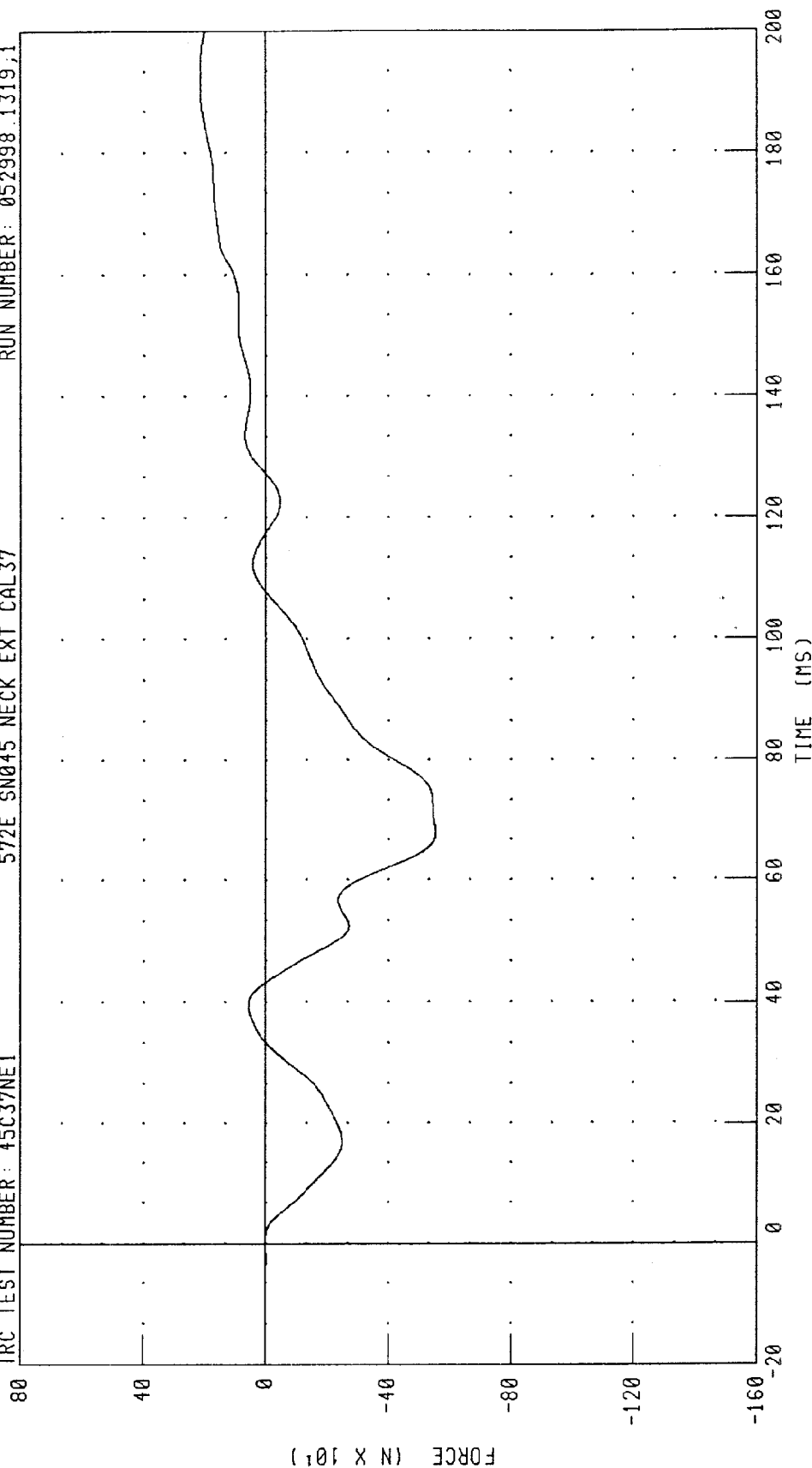
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 45C37NE1

572E SN045 NECK EXT CAL37

RUN NUMBER: 052998.1319.1

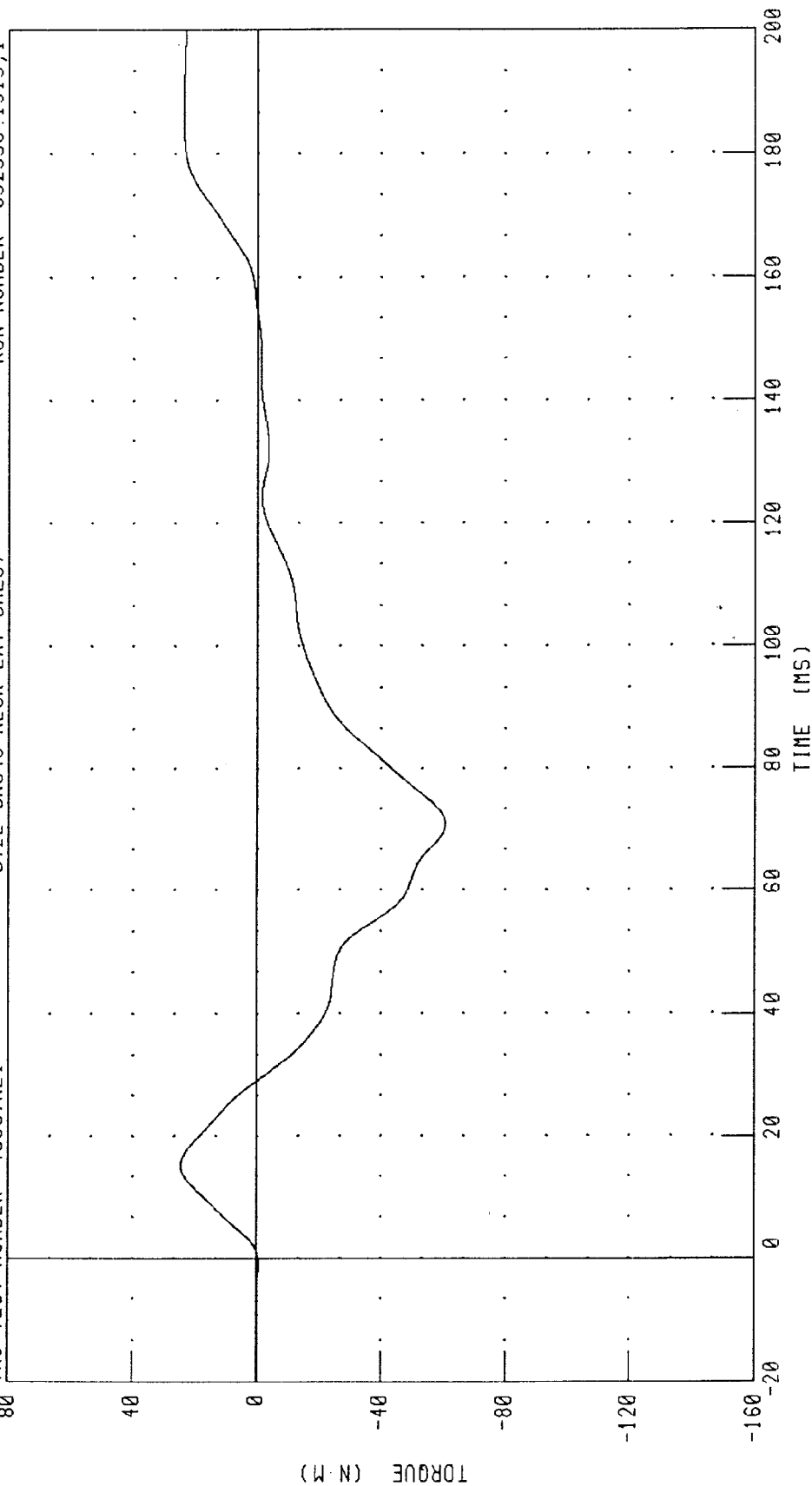


CHANNEL: NEKXF FILTER: CH. CLASS 60

PEAK DATA: 216.36 N @ 192.64 MS, -555.31 N @ 67.84 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS

TRC TEST NUMBER: 45C37NE1 572E SN045 NECK EXT CAL37 RUN NUMBER: 052998.1319;1



CHANNEL: NEKYM FILTER: CH. CLASS 60

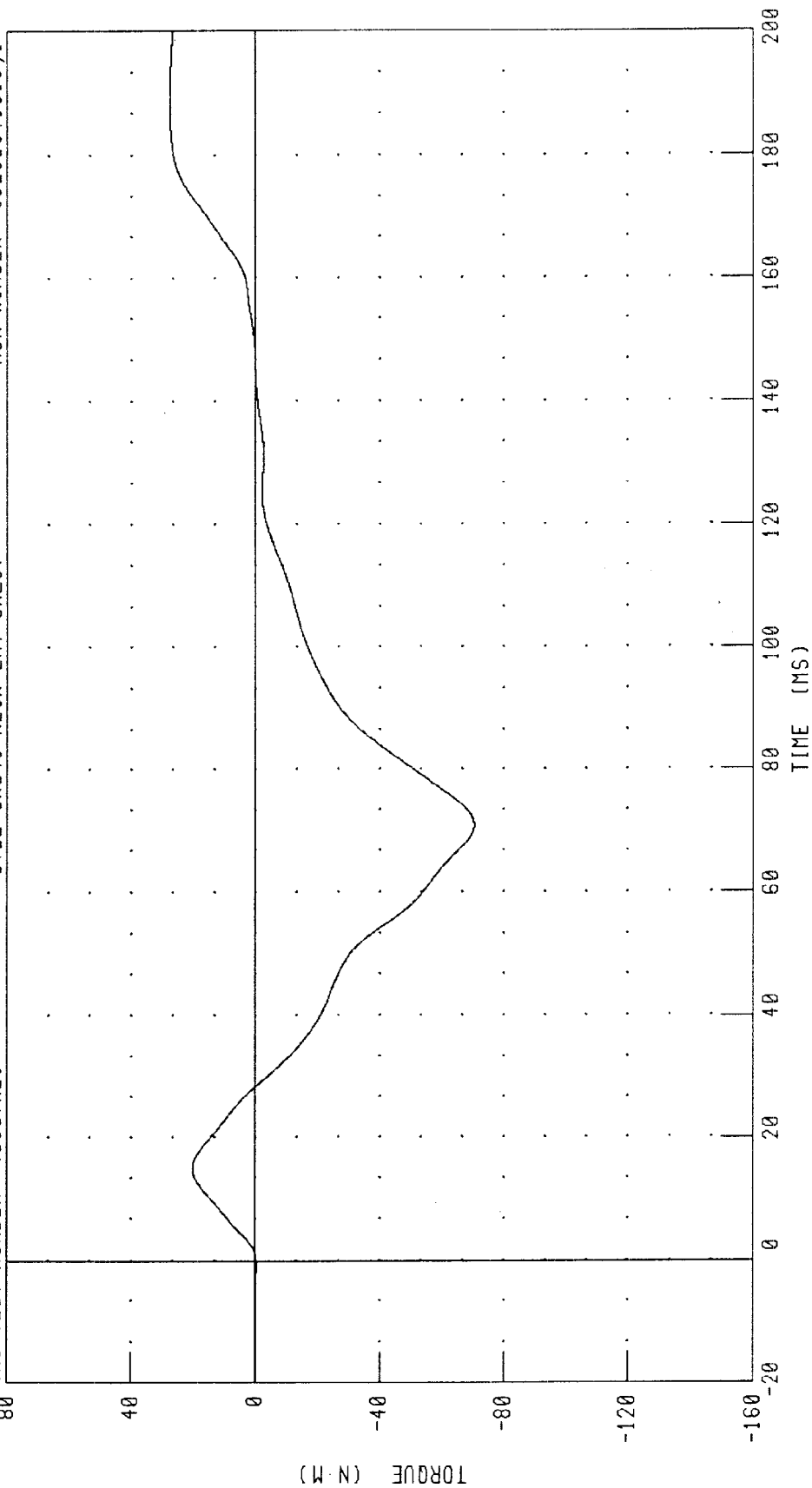
PEAK DATA: 24.53 N-M @ 15.20 MS; -60.78 N-M @ 70.88 MS

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

TRC TEST NUMBER: 45C37NE1

572E SN045 NECK EXT CAL37

RUN NUMBER: 052998.1319;1



PEAK DATA: 27.74 N-M @ 188.72 MS; -70.51 N-M @ 70.88 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III 50th

01-JUN-98

TRC INC.

TEST NO: 45C37TH1

572E SN045 H.S.THORAX CAL37

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	55.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.71 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	68.1 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5745. N
INTERNAL HYSTERESIS	69% - 85%	72.7%

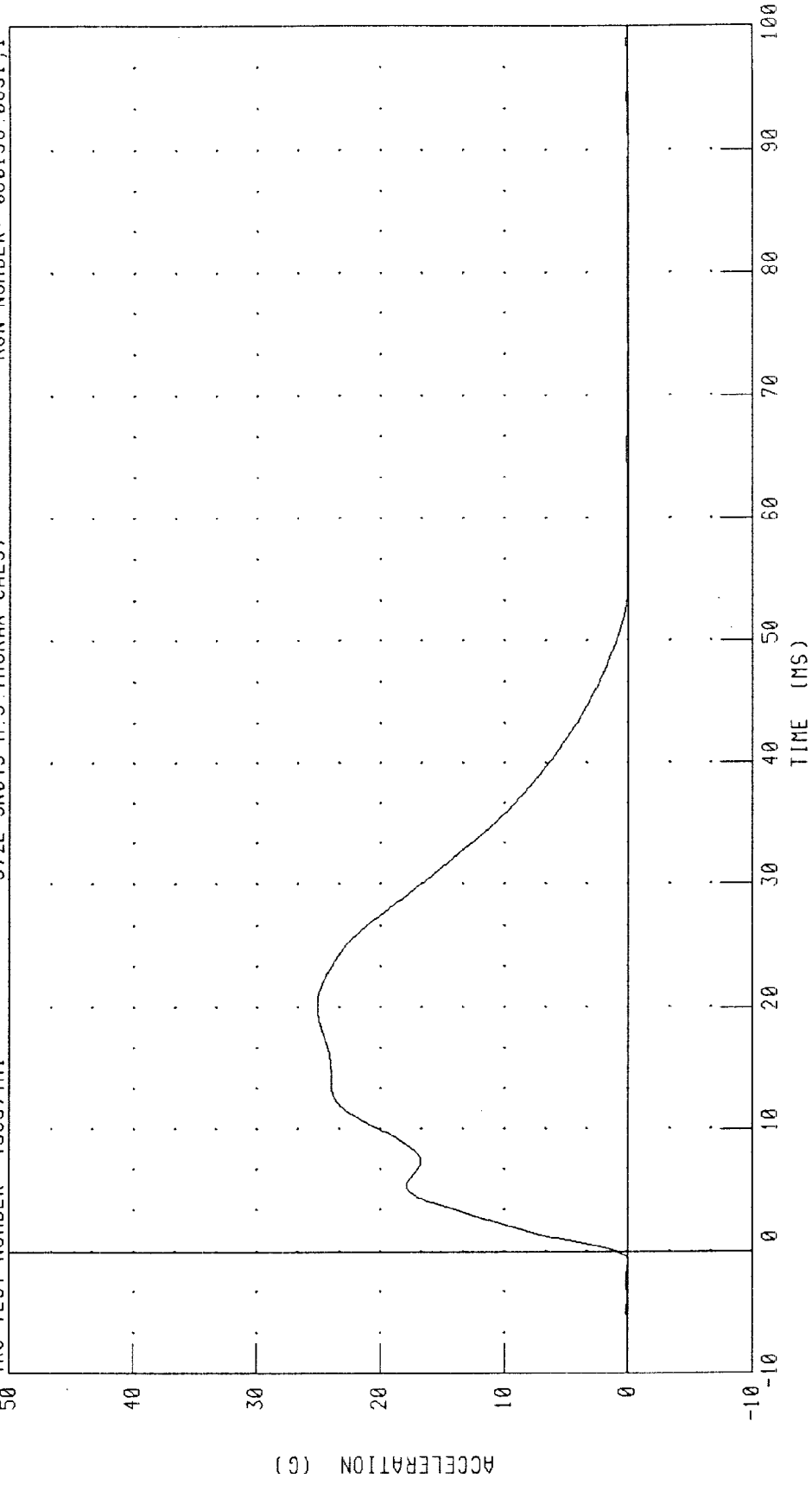
TEST MEETS SPECIFICATIONS

TECHNICIAN By Calt

RUN NUMBER: 060198.0851;1

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM DECELERATION

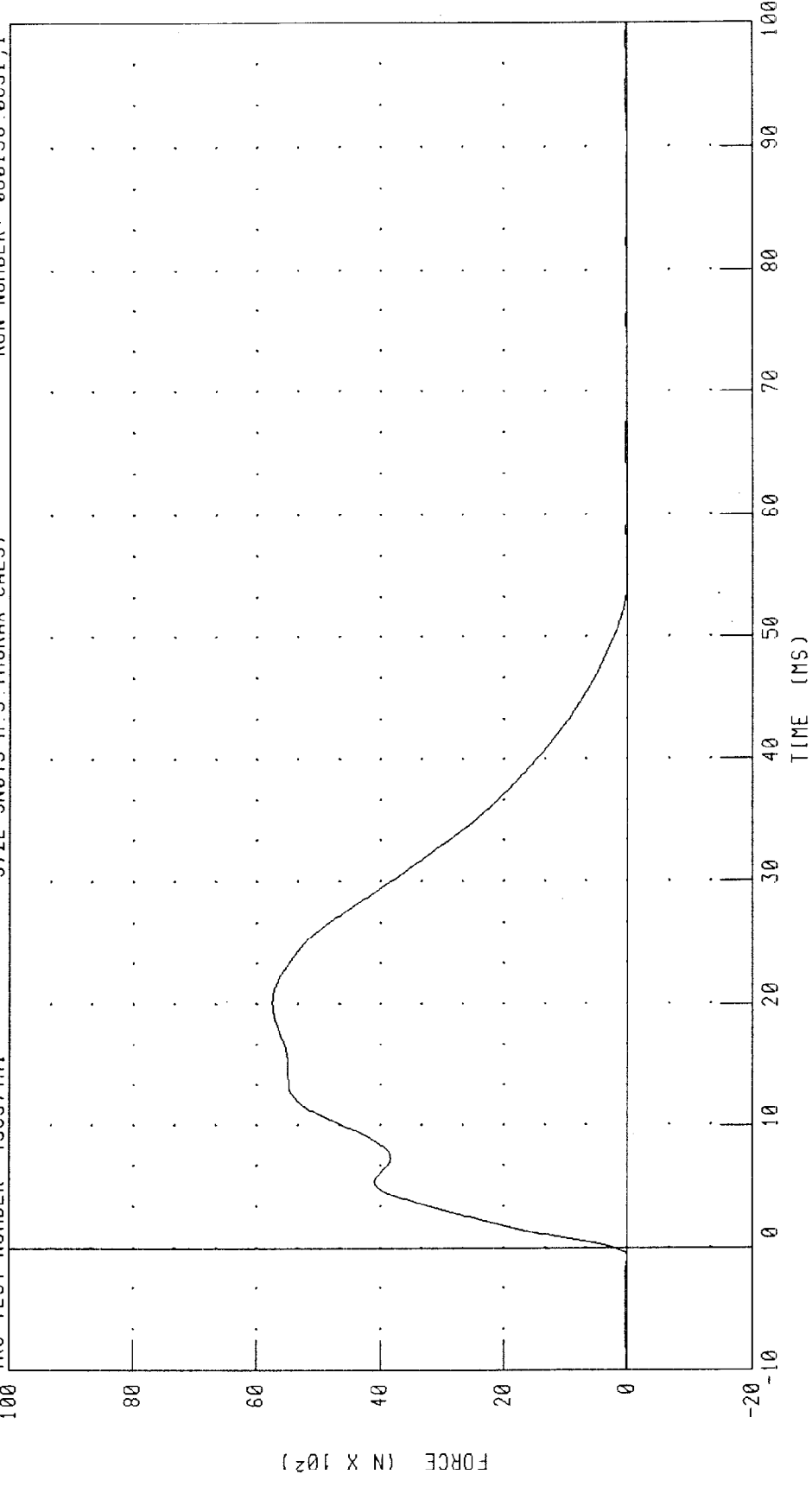
IRC TEST NUMBER: 45037TH1 572E SN045 H.S.THORAX CAL37 RUN NUMBER: 060198.0851,1



CHANNEL: PENXC FILTER: CH. CLASS 180 PEAK DATA: 25.08 G @ 20.24 MS, -0.01 G @ 90.56 MS

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE

TRC TEST NUMBER: 45C37TH1 572E SN045 H.S.THORAX CAL37 RUN NUMBER: 060198.0851,1

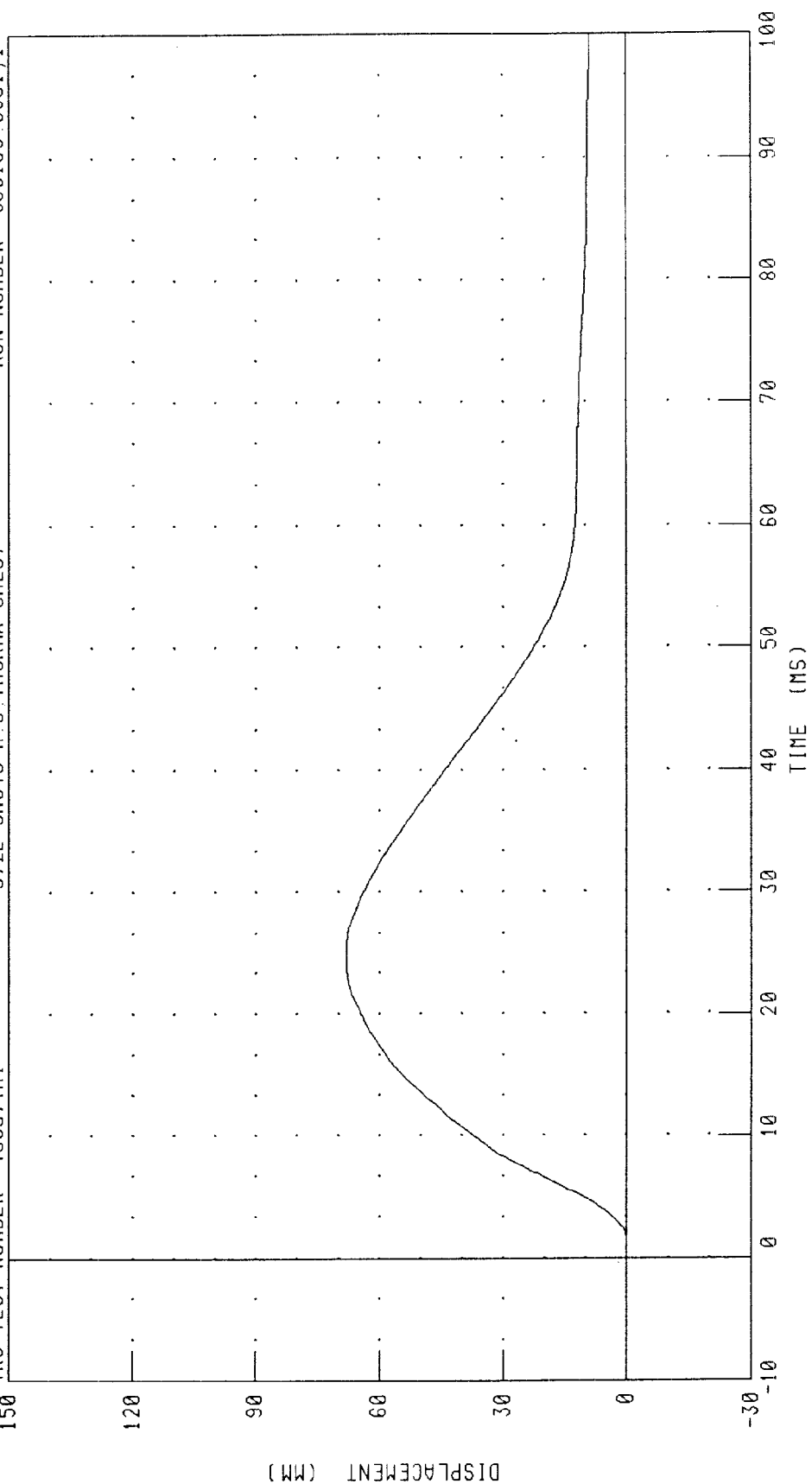


CHANNEL: PENXF FILTER: CH. CLASS 180

PEAK DATA: 5745.90 N @ 20.24 MS, -2.92 N @ 90.56 MS

PART 572-E HYBRID III THORAX CALIBRATION
STERNUM DISPLACEMENT

TRC TEST NUMBER: 45C37TH1 572E SN045 H.S. THORAX CAL37 RUN NUMBER: 060198.0851;1

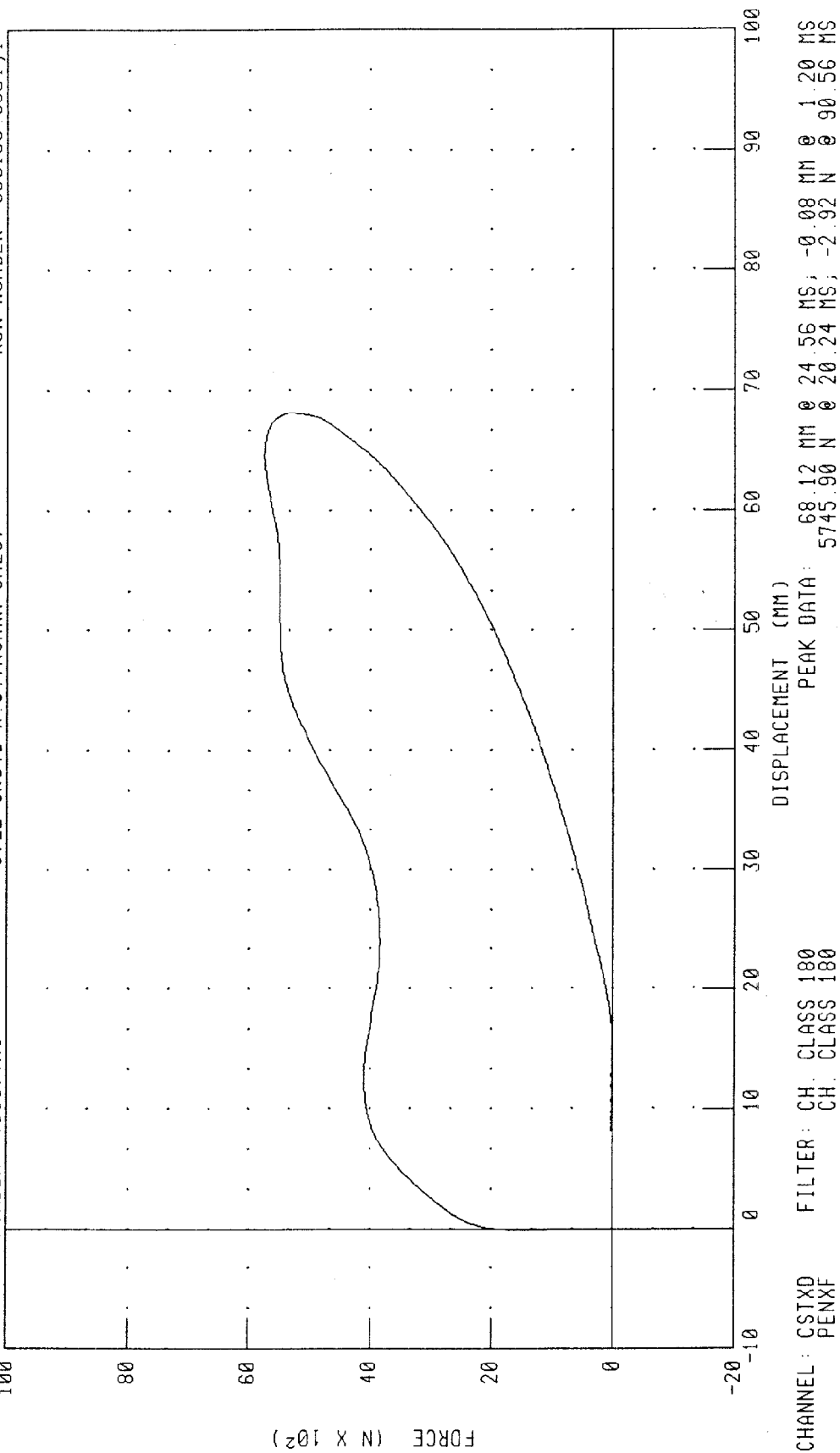


CHANNEL: CSTXD FILTER: CH. CLASS 180

PEAK DATA: 68.12 MM @ 24.56 MS; -0.08 MM @ 1.20 MS

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

TRC TEST NUMBER: 45C37TH1 572E SN045 H.S. THORAX CAL37 RUN NUMBER: 060198 0851;1



TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 50th

29-MAY-98

TRC INC.

TEST NO: 45C37RK1

572E SN045 RIGHT KNEE CAL 37

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5193.4 N

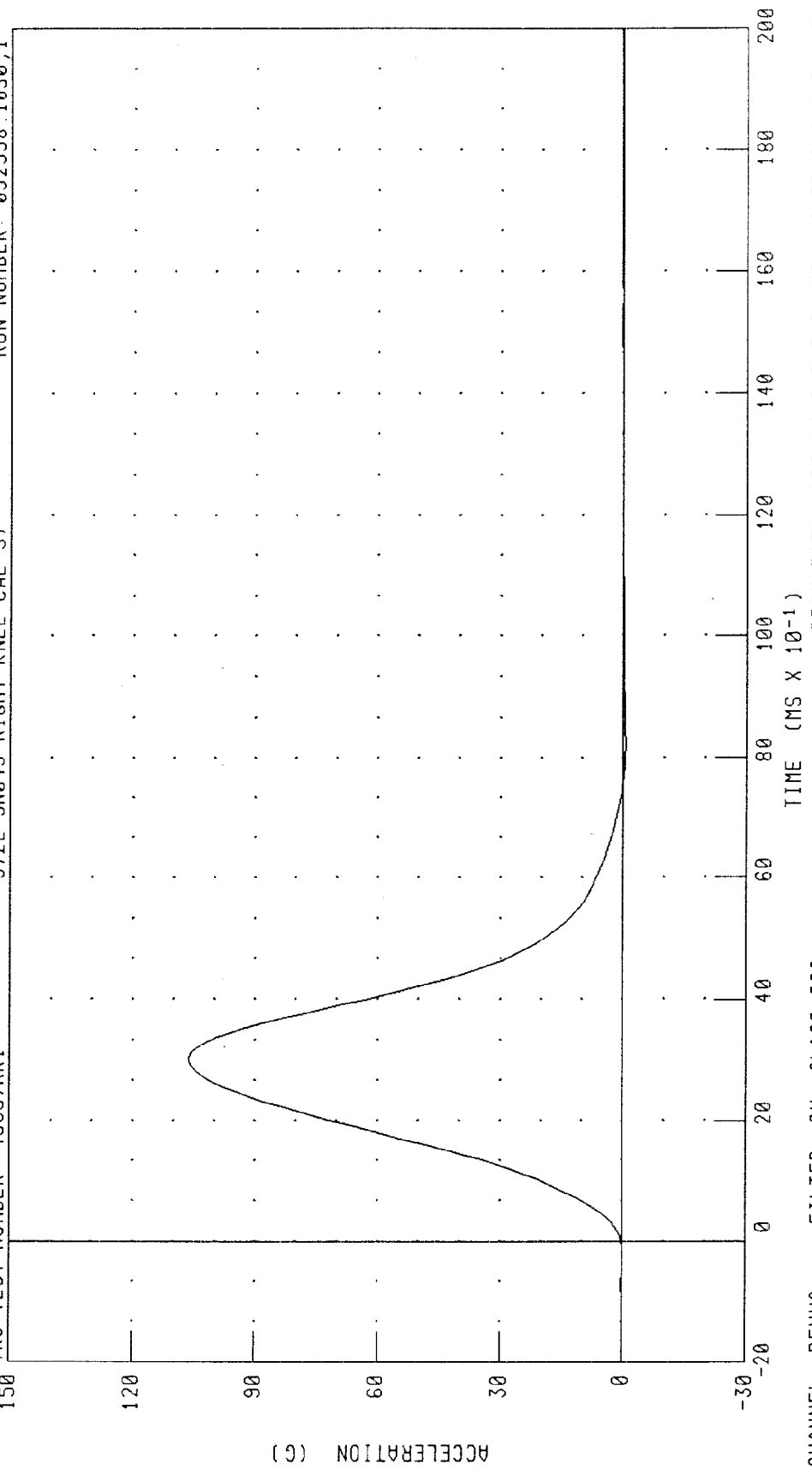
TEST MEETS SPECIFICATIONS

TECHNICIAN _____

RUN NUMBER: 052998.1029;1

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

TRC TEST NUMBER: 45C37RK1 572E SN045 RIGHT KNEE CAL 37 RUN NUMBER: 052998.1030;1



CHANNEL: PENXC FILTER: CH. CLASS 600 PEAK DATA: 106.14 G @ 3.04 MS, -0.70 G @ 8.24 MS

PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)
572E SN045 RIGHT KNEE CAL 37

TRC TEST NUMBER: 45C37RK1

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TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 50th

29-MAY-98

TRC INC.

TEST NO: 45C37LK1

572E SN045 LEFT KNEE CAL 37

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5318.2 N

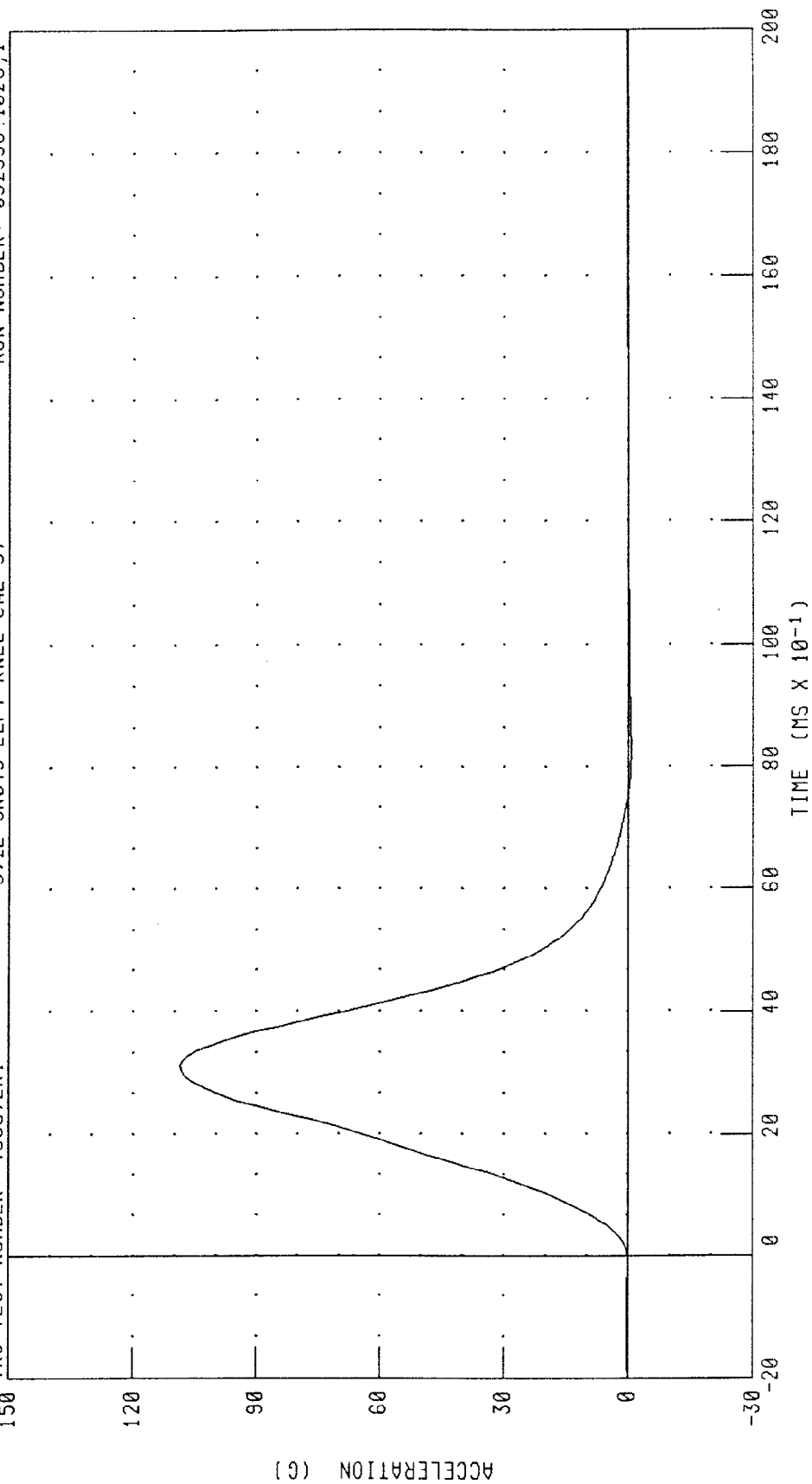
TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 052998.1027;1

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

TRC TEST NUMBER: 45C37LK1 572E SN045 LEFT KNEE CAL 37 RUN NUMBER: 052998.1028,1



CHANNEL: PENXC FILTER: CH. CLASS 600 PEAK DATA: 108.70 G @ 3.12 MS, -0.76 G @ 8.32 MS

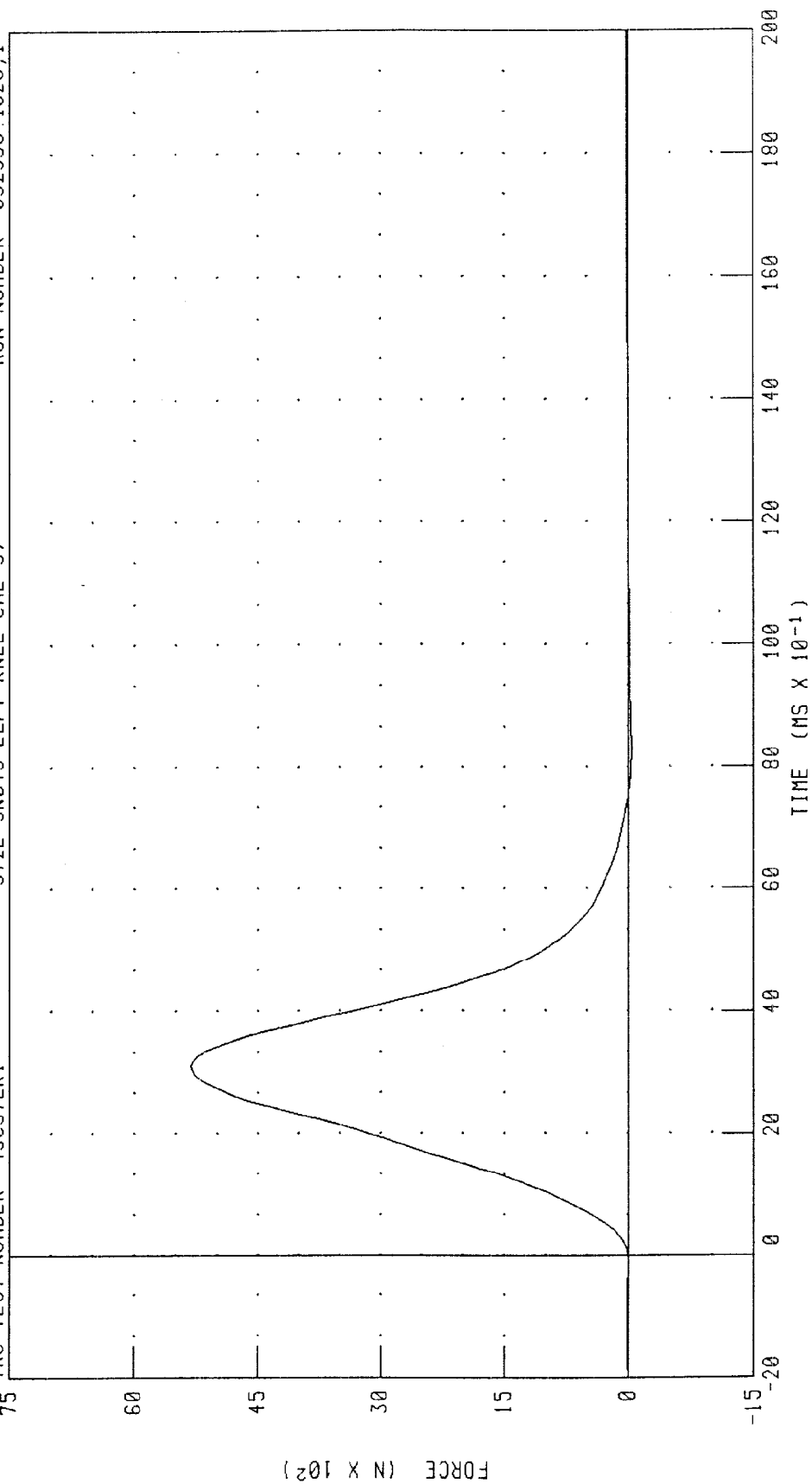
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 45C37LK1

572E SN045 LEFT KNEE CAL 37

RUN NUMBER: 052998.1028,1



CHANNEL: PENXF

FILTER: CH. CLASS 600

TIME (MS X 10⁻¹)

PEAK DATA: 5318.24 N @ 3.12 MS, -37.28 N @ 8.32 MS

Pre-Test Calibration

Target Vehicle Passenger Dummy S/N 283

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III SMALL FEMALE

01-JUN-98

TRC INC.

TEST NO: 283C2HD1

S.FEMALE SN283 HEAD DROP CAL2

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	52.0 %
PEAK RESULTANT ACCELERATION	240 - 295 G	278.19 G
PEAK LATERAL ACCELERATION	15 G MAX	-2.81 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

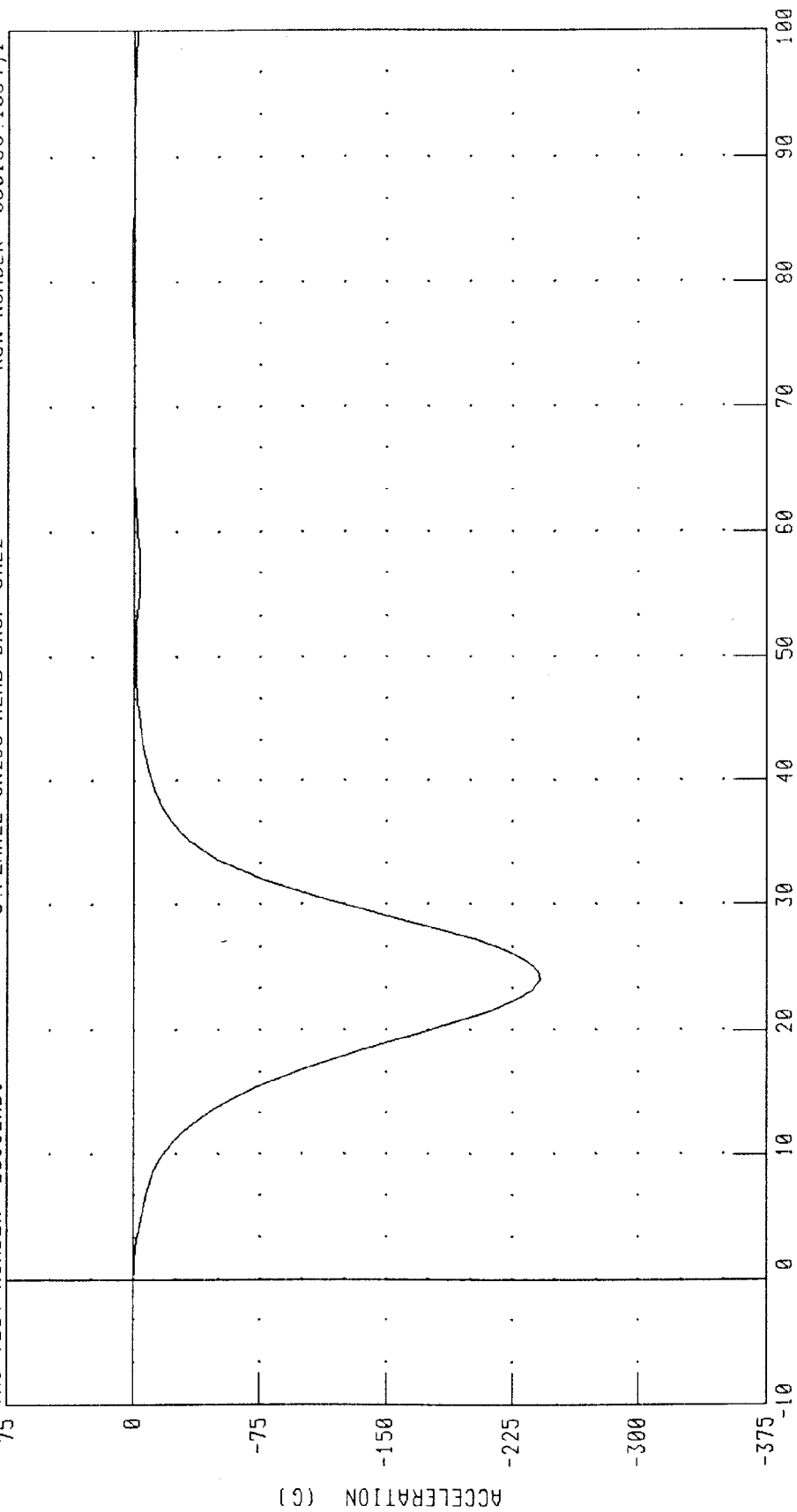
TEST MEETS SPECIFICATIONS

TECHNICIAN By C. H. T.

RUN NUMBER: 060198.1053;1

SMALL FEMALE HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS

TRC TEST NUMBER: 283C2HD1 S. FEMALE SN283 HEAD DROP CAL2 RUN NUMBER: 060198.1054,1



CHANNEL: HEDXG FILTER: CH. CLASS 1000

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

PEAK DATA: 1.66 G @ 8.00 MS, -241.52 G @ 2.40 MS

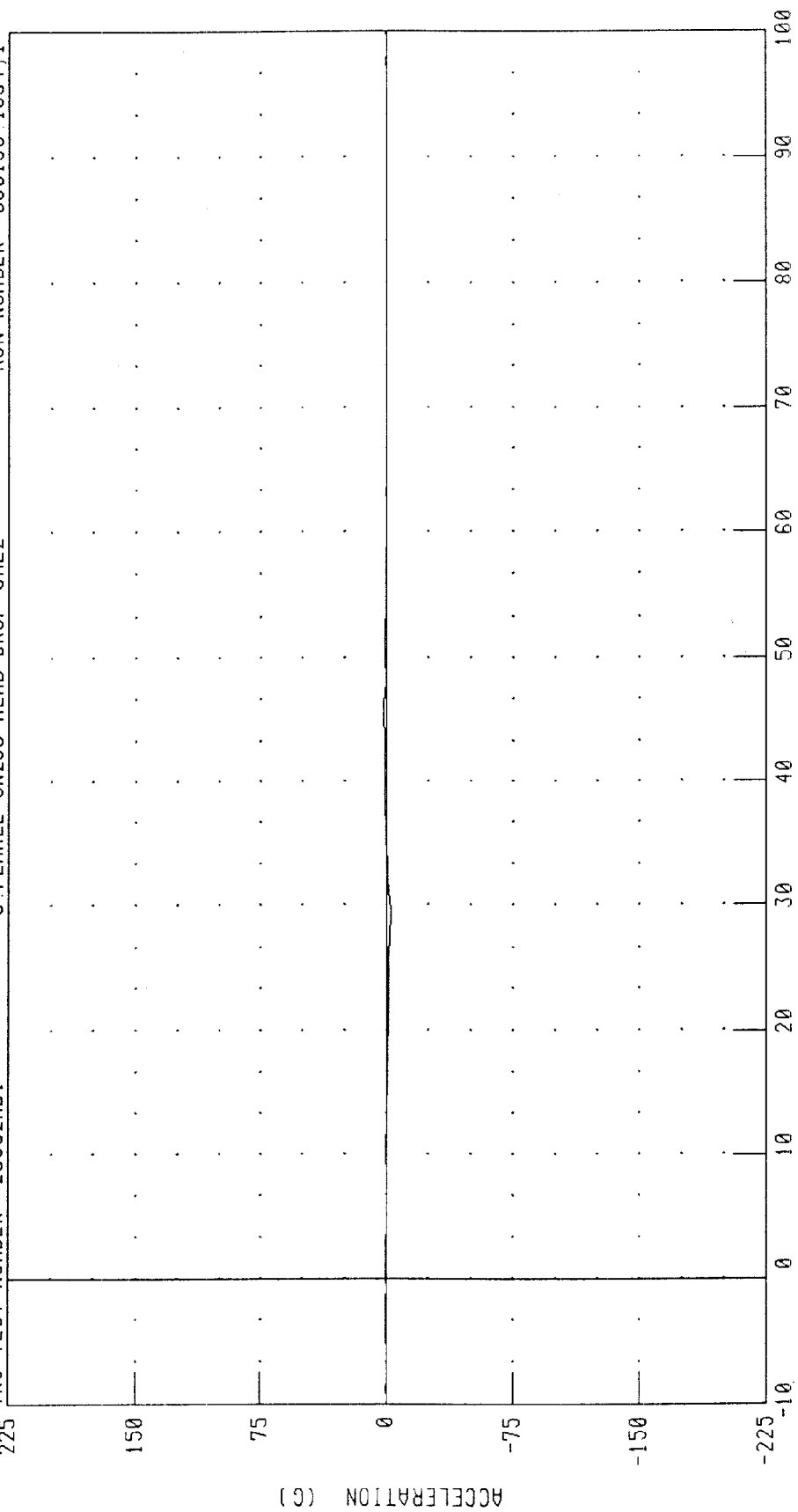
SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

S. FEMALE SN283 HEAD DROP CAL2

TRC TEST NUMBER: 283C2HD1

RUN NUMBER: 060198 1054, 1



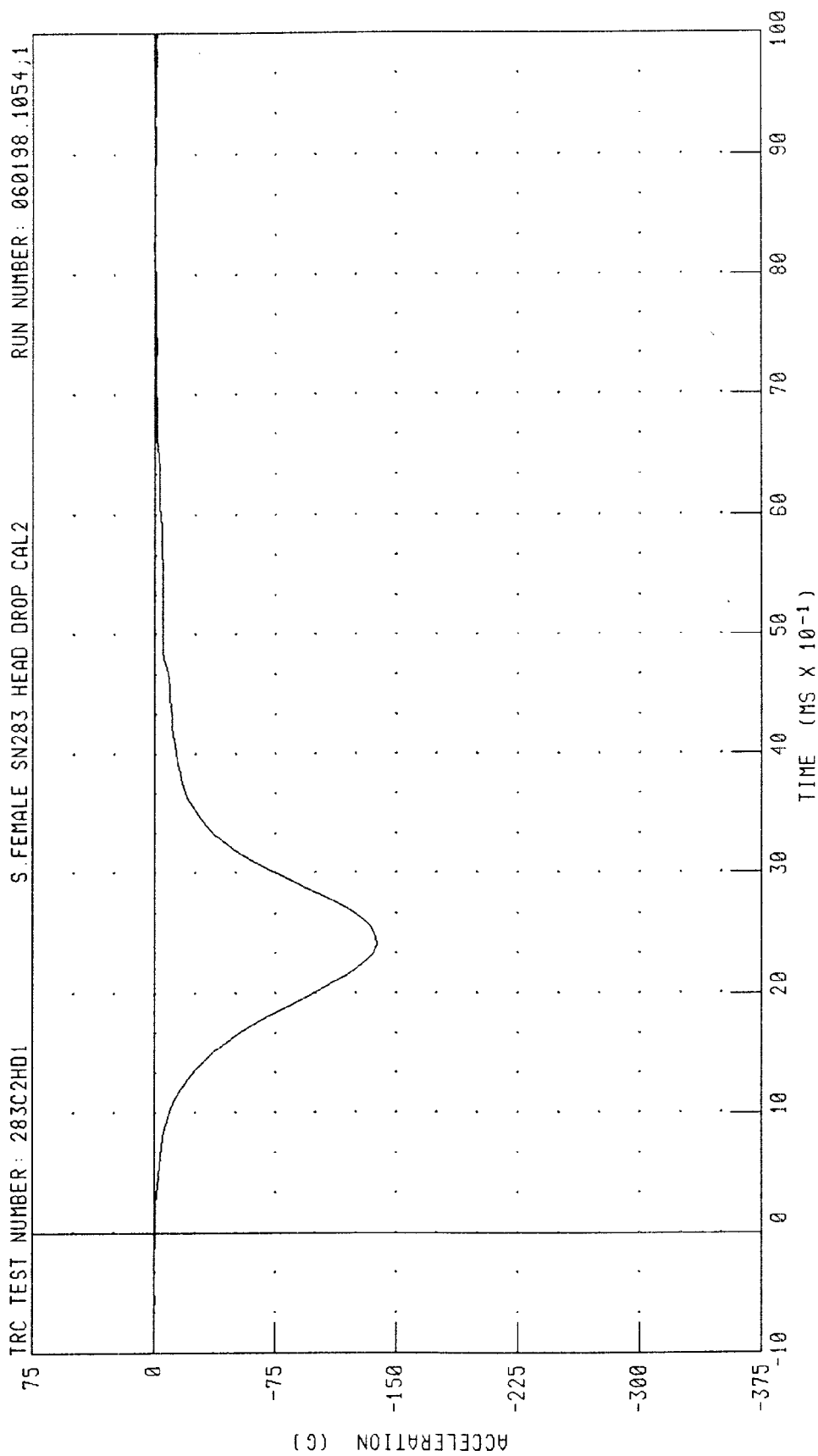
TIME (MS X 10⁻¹)

PEAK DATA: 1.87 G @ 4.56 MS; -2.82 G @ 2.96 MS

CHANNEL: HEDYG FILTER: CH. CLASS 1000

SMALL FEMALE HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS

TRC TEST NUMBER: 283C2HD1 S.FEMALE SN283 HEAD DROP CAL2 RUN NUMBER: 060198.1054;1



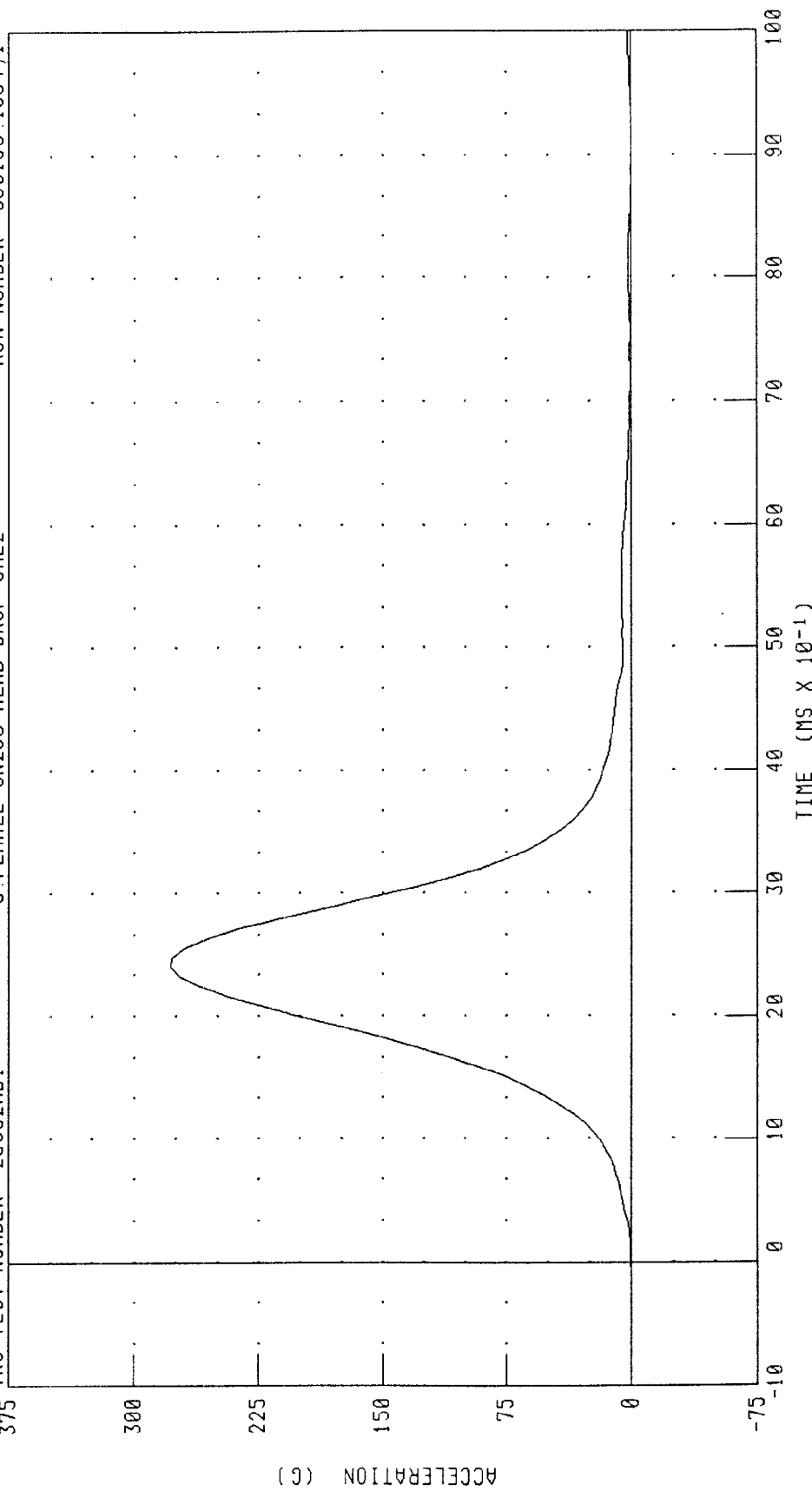
CHANNEL: HEDZG FILTER: CH. CLASS 1000

PEAK DATA: 0.65 G @ 8.24 MS; -138.06 G @ 2.40 MS

SMALL FEMALE HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION
S.FEMALE SN283 HEAD DROP CAL2

TRC TEST NUMBER: 283C2HD1

RUN NUMBER: 060198.1054,1



CHANNEL: HEDRC

FILTER: CH. CLASS 1000

PEAK DATA: 278.20 G @ 2.40 MS; 0.14 G @ -0.80 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

01-JUN-98

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 283C2NF2 S.FEMALE SN283 NECK FLEX. CAL2

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	52.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.12 M/S
INTEGRATED PENDULUM VELOCITY	10 MS	2.1 - 2.5 M/S	2.31 M/S
	20 MS	4.0 - 5.0 M/S	4.55 M/S
	30 MS	5.8 - 7.0 M/S	6.30 M/S
PEAK D-PLANE ROTATION		78 - 96 DEG.	81.60 DEG.
ROTATION ANGLE DECAY TIME FROM PEAK TO ZERO		57 - 69 MS	63.52 MS
PEAK MOMENT ABOUT OCCIPITAL CONDYLE		69 - 84 NM	74.85 NM
POSITIVE MOMENT DECAY TIME FROM PEAK TO ZERO		41 - 50 MS	44.80 MS
TIME OF PEAK ROTATION AFTER PEAK MOMENT		2 - 12 MS	8.72 MS

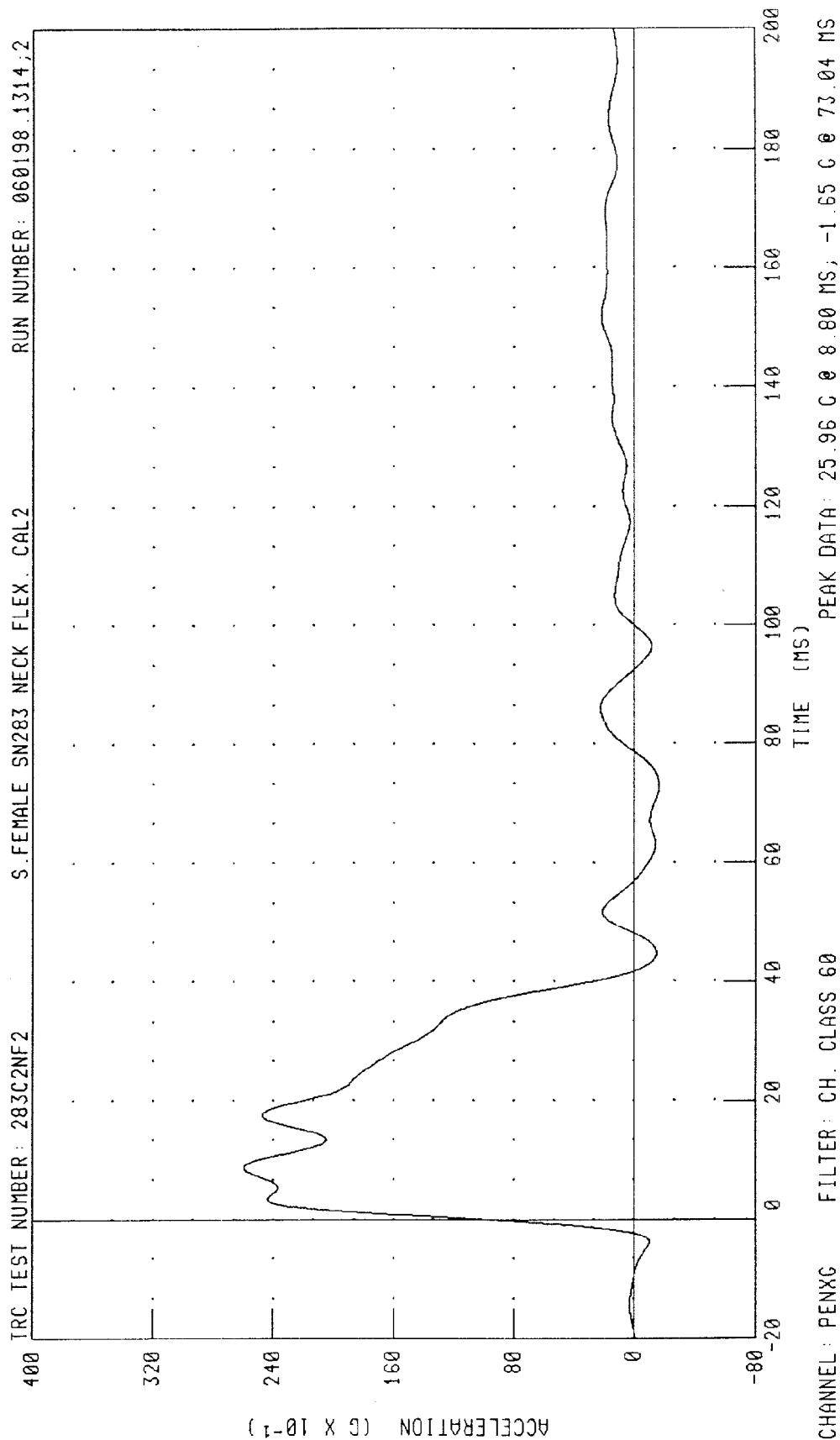
TEST MEETS SPECIFICATIONS

TECHNICIAN

B. G. Cult

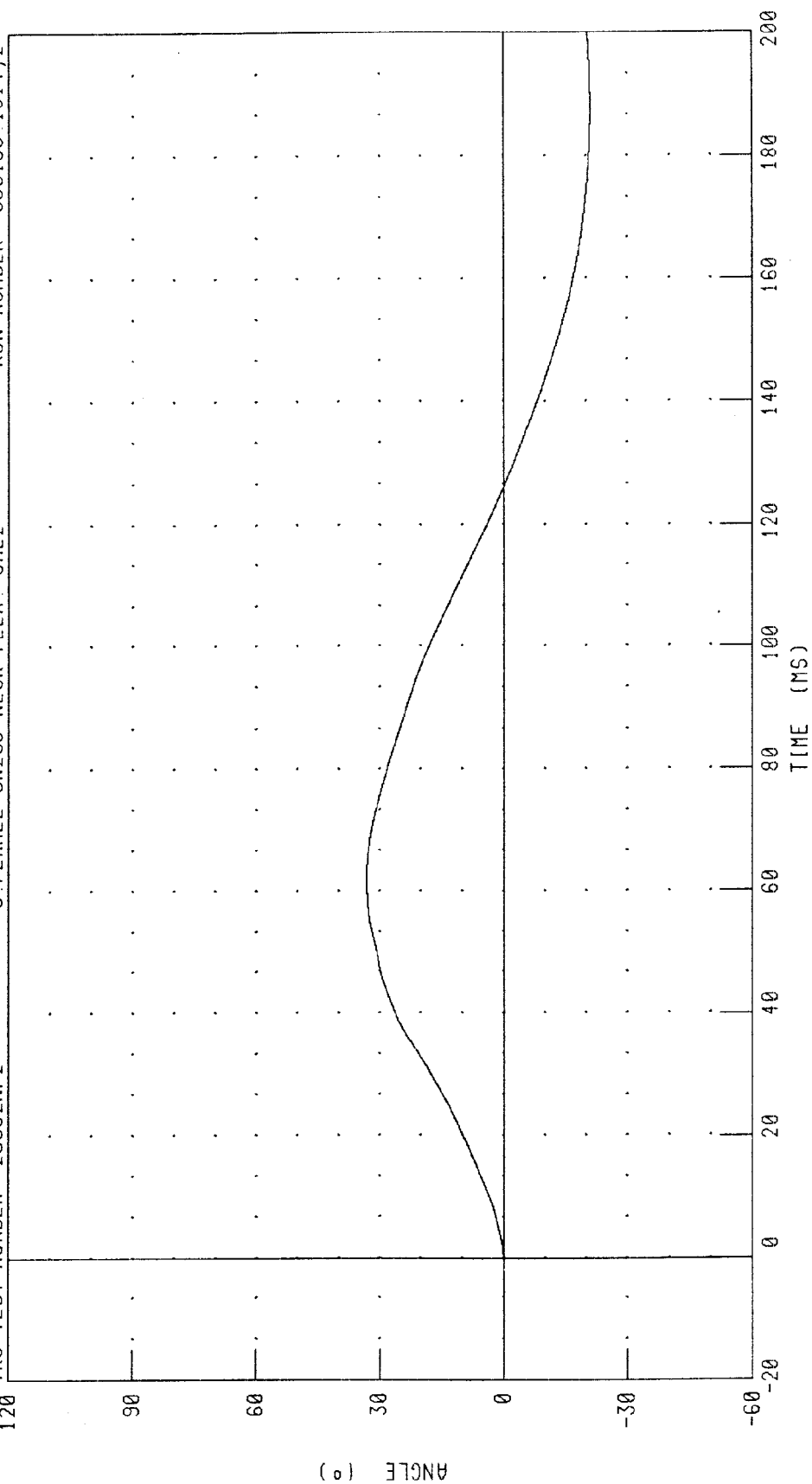
RUN NUMBER: 060198.1313;2

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION



SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 283C2NF2 S.FEMALE SN283 NECK FLEX. CAL2 RUN NUMBER: 060198.1314;2



CHANNEL: BETA FILTER: CH. CLASS 60 PEAK DATA: 33.19 ° @ 62.00 MS, -21.08 ° @ 187.60 MS

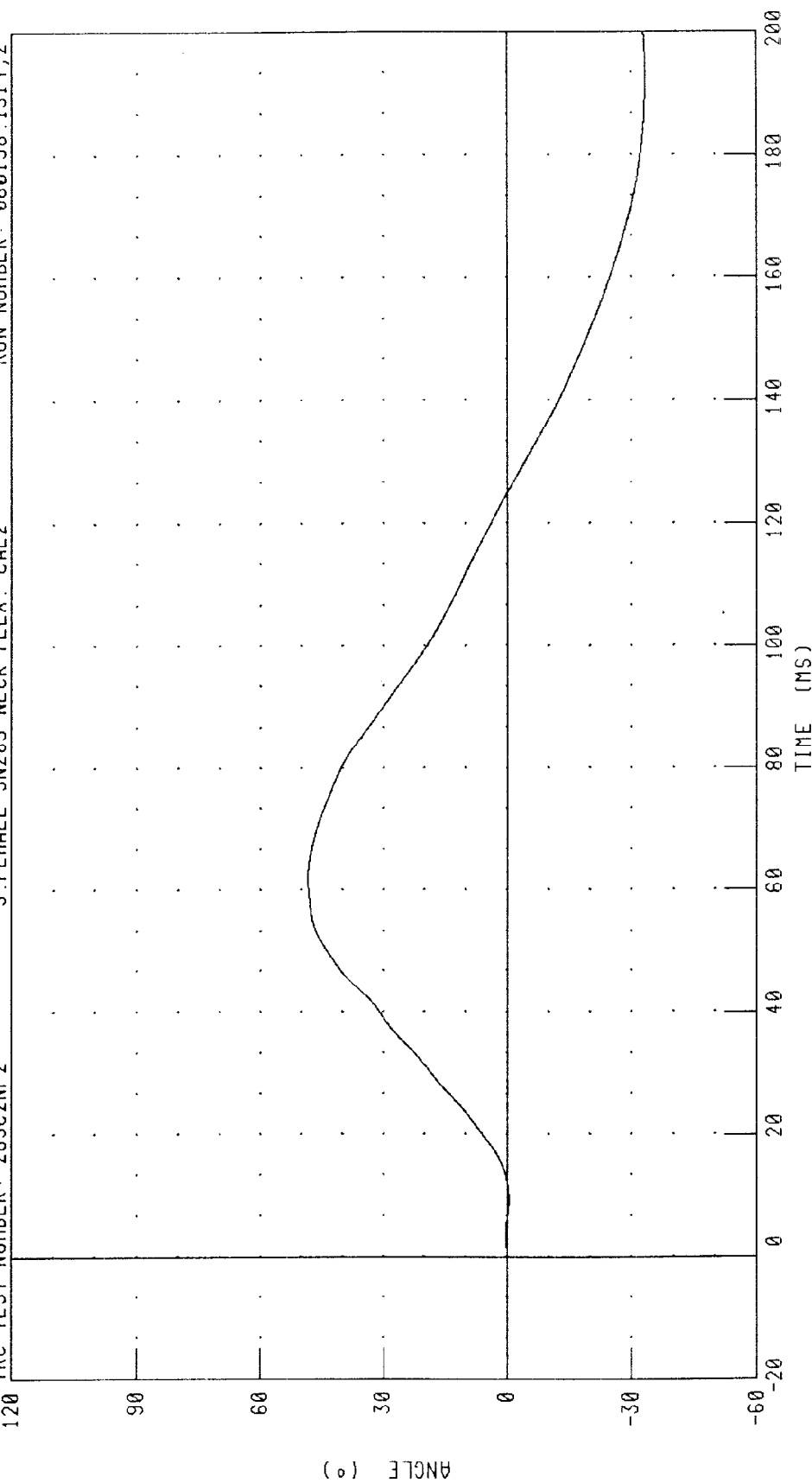
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

S. FEMALE SN283 NECK FLEX. CAL2

TRC TEST NUMBER: 283C2NF2

RUN NUMBER: 060198.1314,2



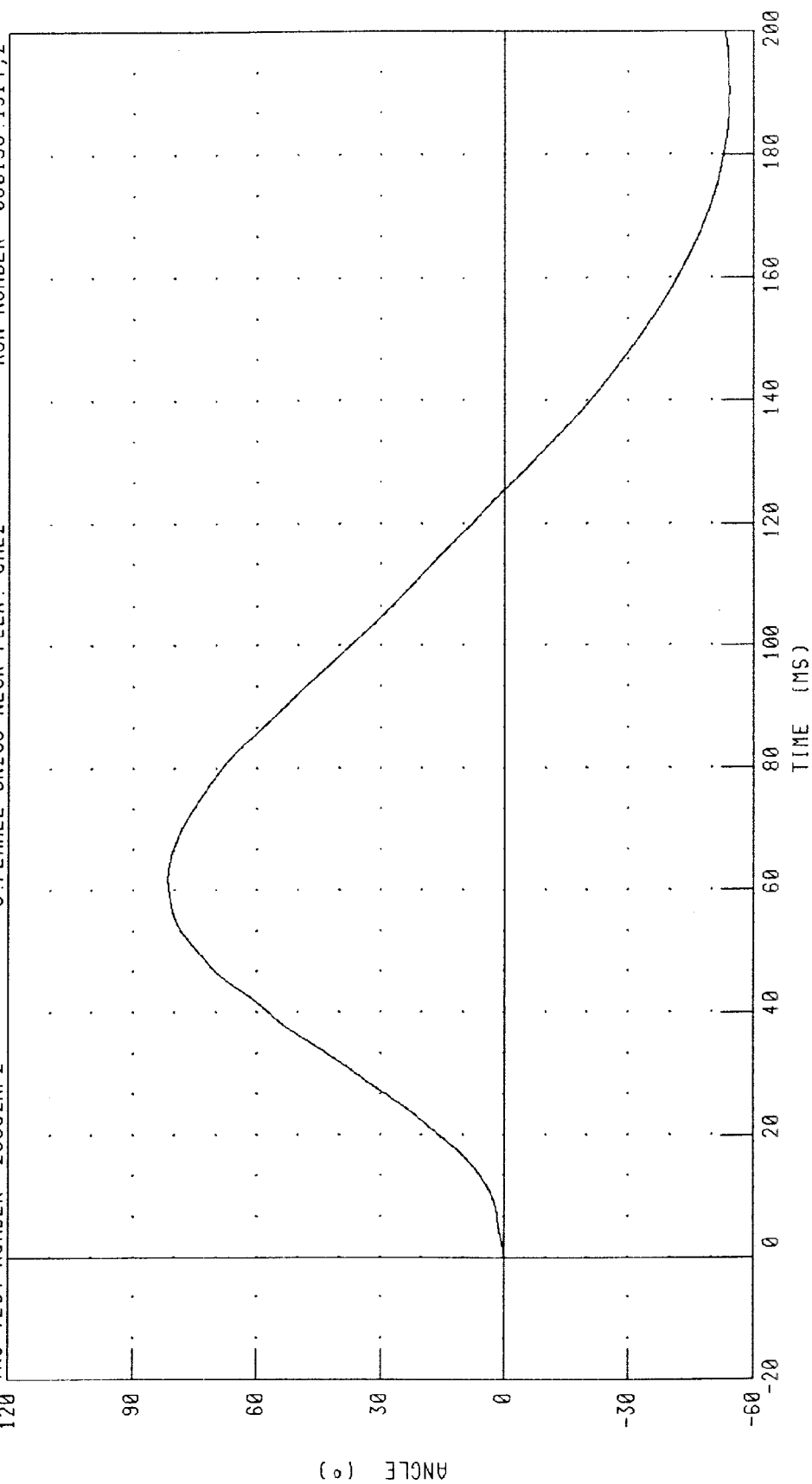
CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 48.41 ° @ 61.84 MS, -33.32 ° @ 192.88 MS

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 283C2NF2 S.FEMALE SN283 NECK FLEX. CAL2 RUN NUMBER: 060198.1314;2



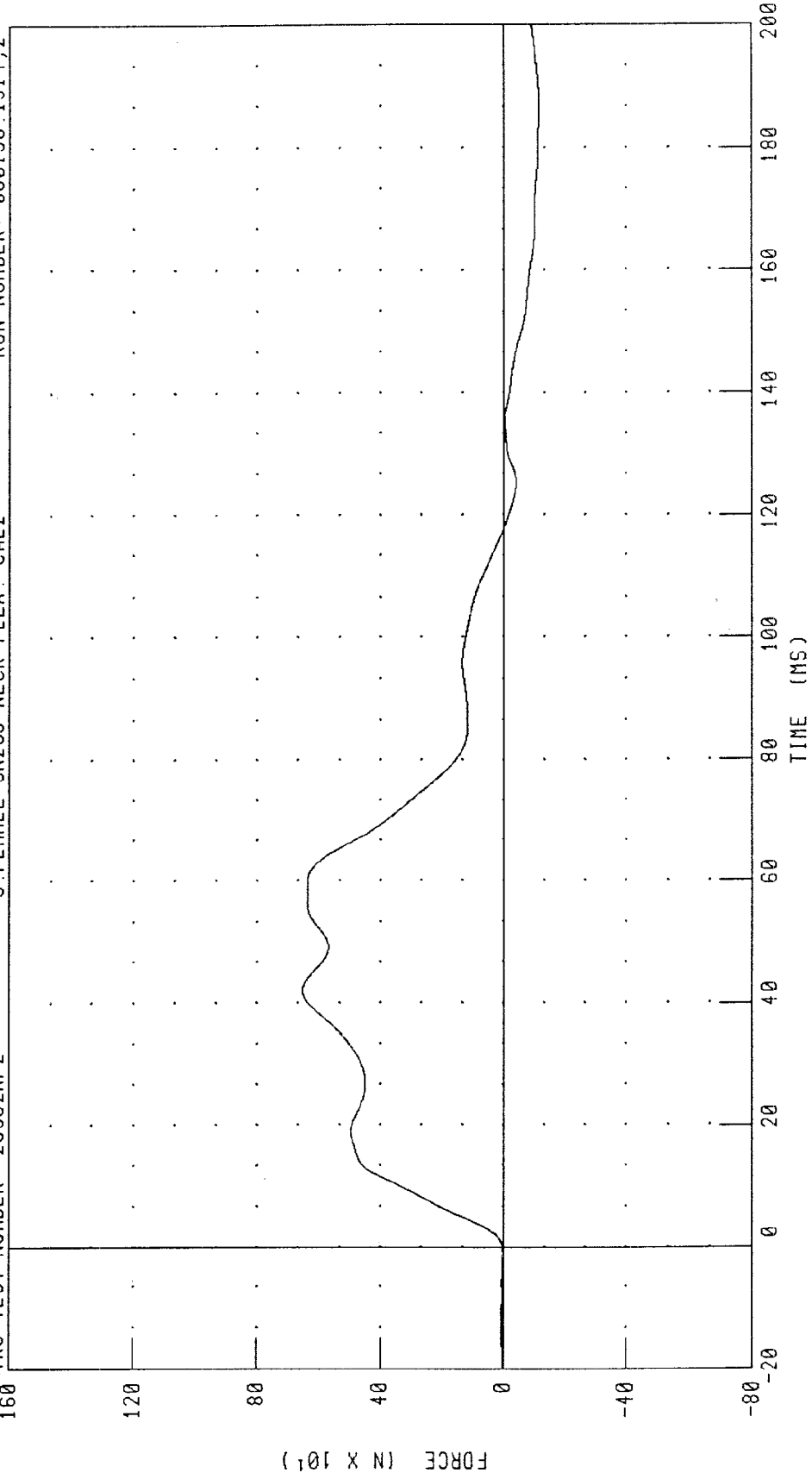
CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 81.60 ° @ 61.92 MS; -54.32 ° @ 190.40 MS

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 283C2NF2 S.FEMALE SN283 NECK FLEX. CAL2 RUN NUMBER: 060198.1314;2

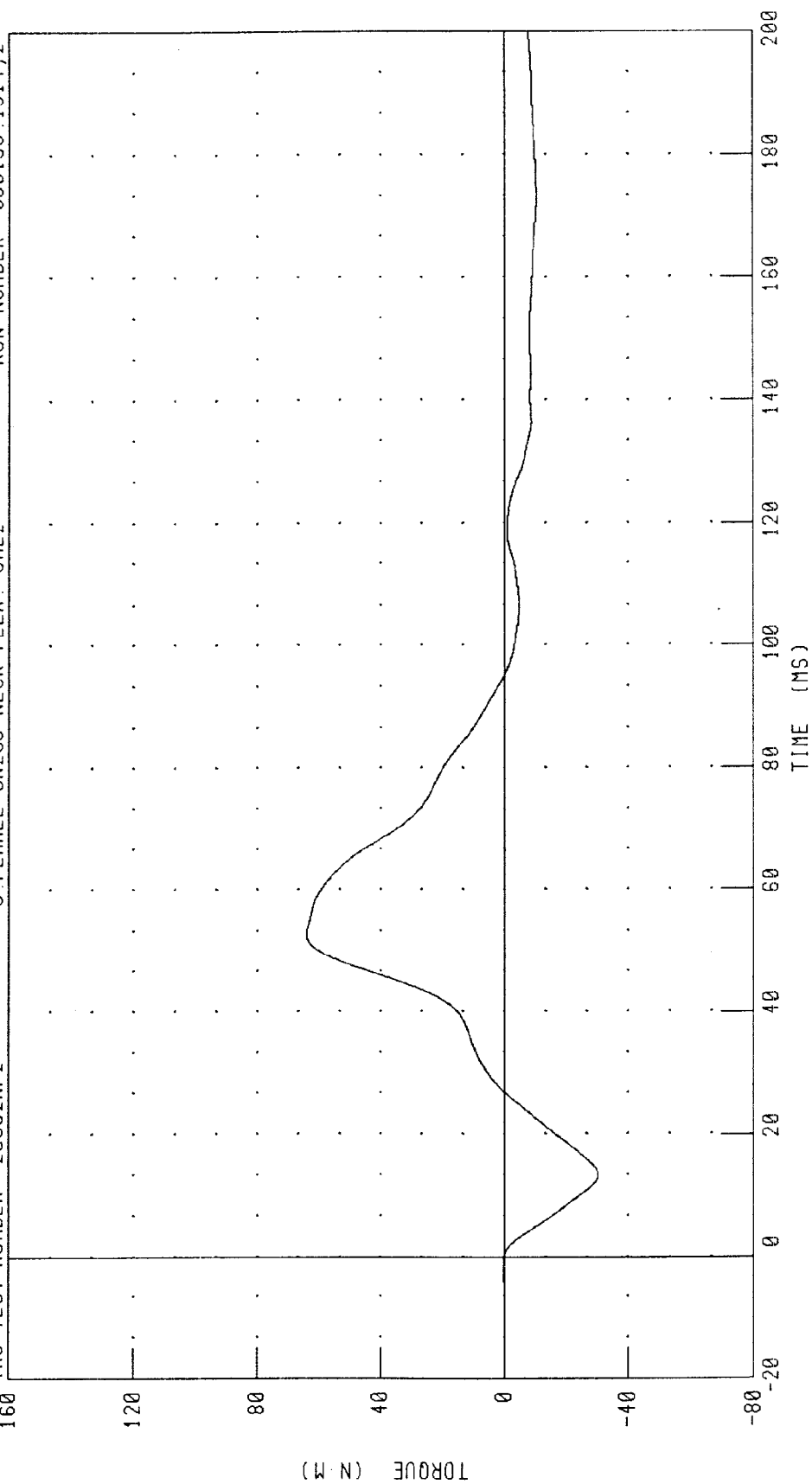


PEAK DATA: 652.26 N @ 42.00 MS, -116.68 N @ 186.64 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS

TRC TEST NUMBER: 283C2NF2 S.FEMALE SN283 NECK FLEX. CAL2 RUN NUMBER: 060198.1314;2



PEAK DATA: 63.98 N·M @ 52.80 MS, -30.32 N·M @ 13.28 MS

CHANNEL: NEKYM FILTER: CH. CLASS 60

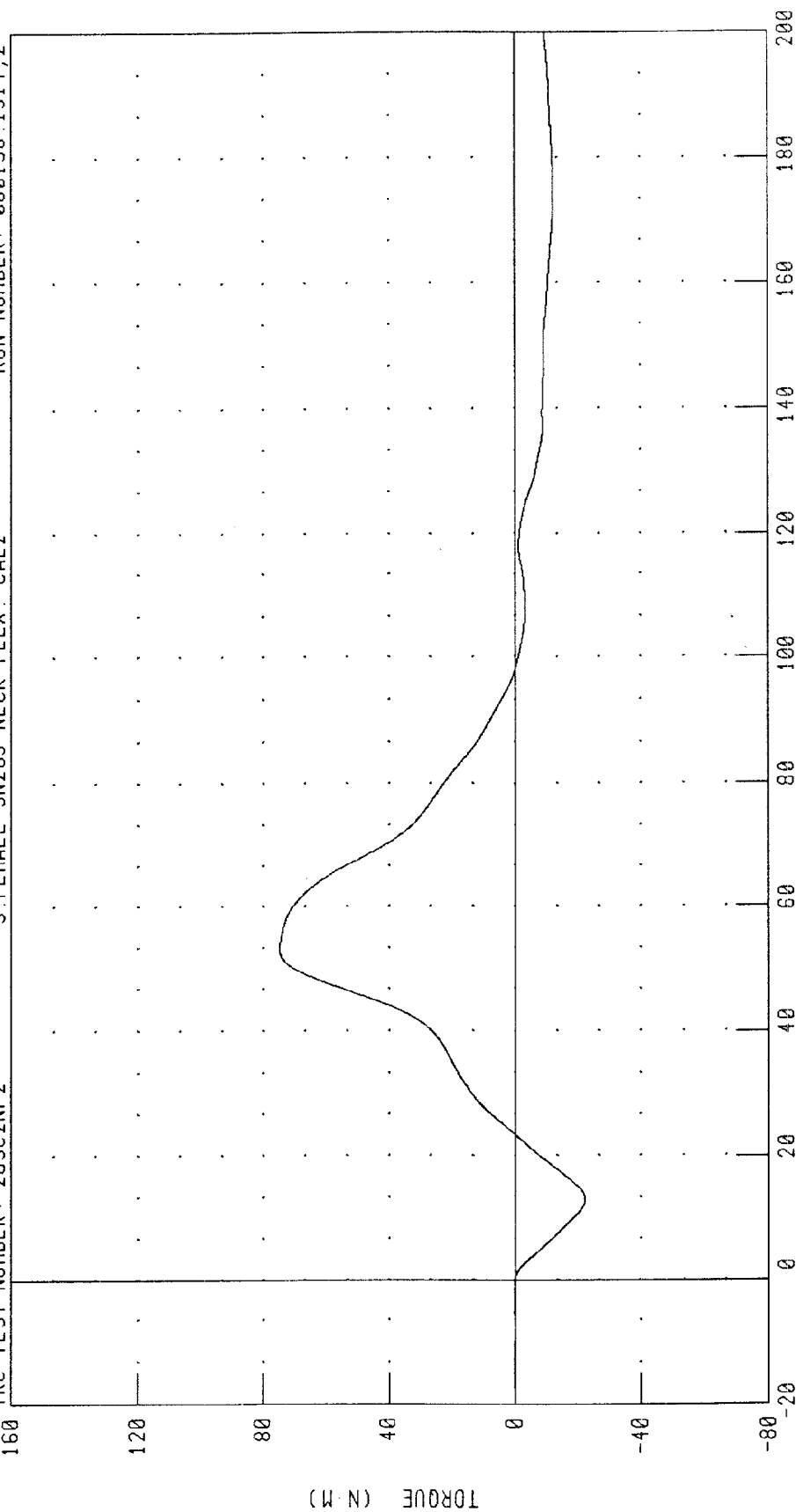
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 283C2NF2

S. FEMALE SN283 NECK FLEX. CAL2

RUN NUMBER: 060198.1314;2

160



PEAK DATA: 74.85 N-M @ 53.20 MS, -22.26 N-M @ 12.96 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

01-JUN-98

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 283C2NE2 S.FEMALE SN283 NECK EXT. CAL2

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	52.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.10 M/S
INTEGRATED PENDULUM VELOCITY	10 MS	1.5 - 1.9 M/S	1.69 M/S
	20 MS	3.1 - 3.9 M/S	3.42 M/S
	30 MS	4.6 - 5.6 M/S	5.05 M/S
PEAK D-PLANE ROTATION		97 - 119 DEG.	110.66 DEG.
ROTATION ANGLE DECAY AT THE 10 NM MOMENT LEVEL		80 - 96 DEG.	87.88 DEG.
PEAK MOMENT ABOUT OCCIPITAL CONDYLE		54 - 67 NM	-54.74 NM
NEGATIVE MOMENT DECAY TIME FROM PEAK TO 10 NM LEVEL		28 - 38 MS	33.76 MS
TIME OF PEAK ROTATION AFTER PEAK MOMENT		0 - 10 MS	5.20 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN By cult

RUN NUMBER: 060198.1435;1

SMALL FEMALE NECK EXTENSION CALIBRATION

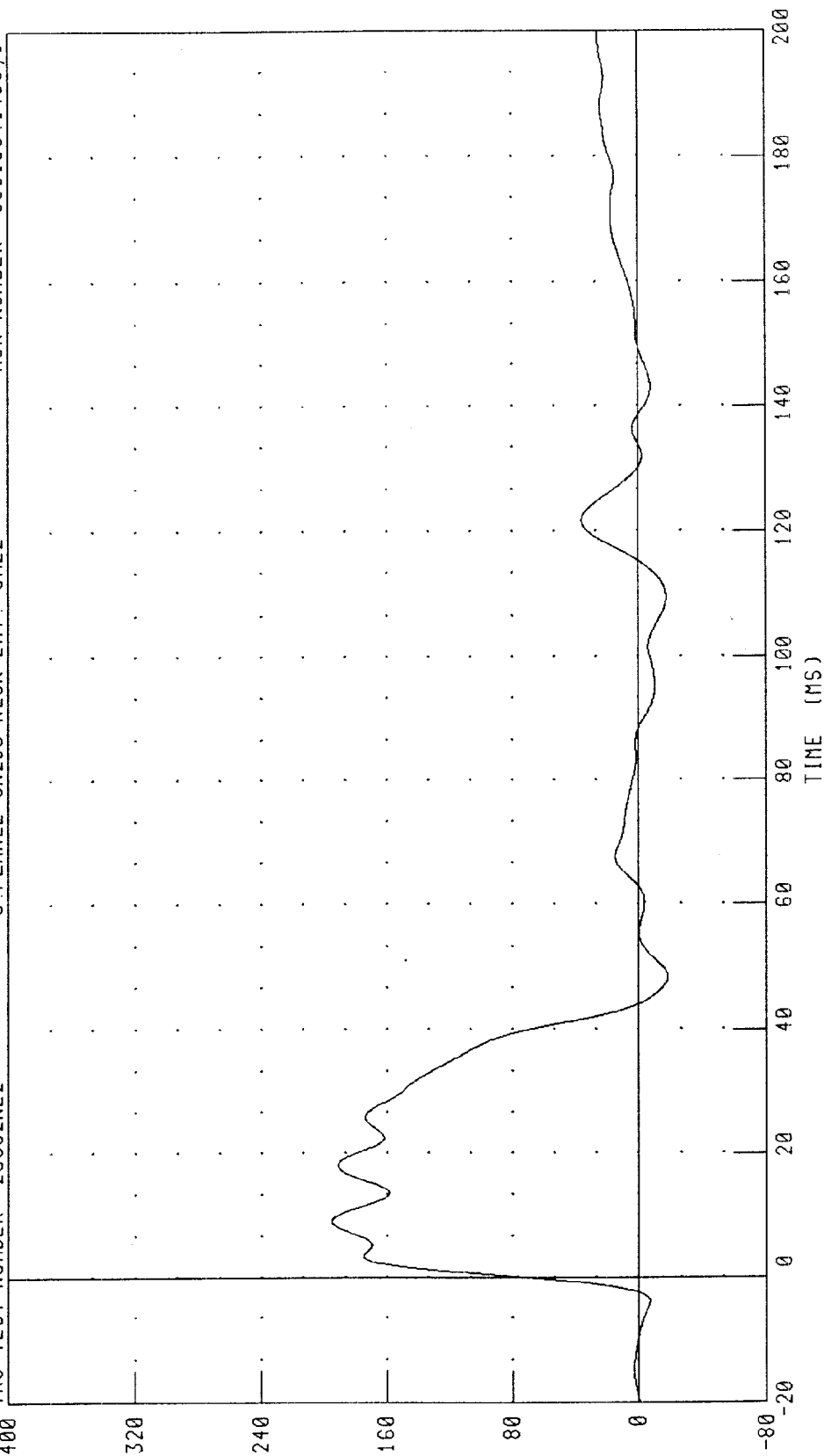
PENDULUM DECELERATION

TRC TEST NUMBER : 283C2NE2

S. FEMALE SN283 NECK EXT. CAL2

RUN NUMBER : 060198.1436,1

ACCELERATION (G X 10⁻¹)



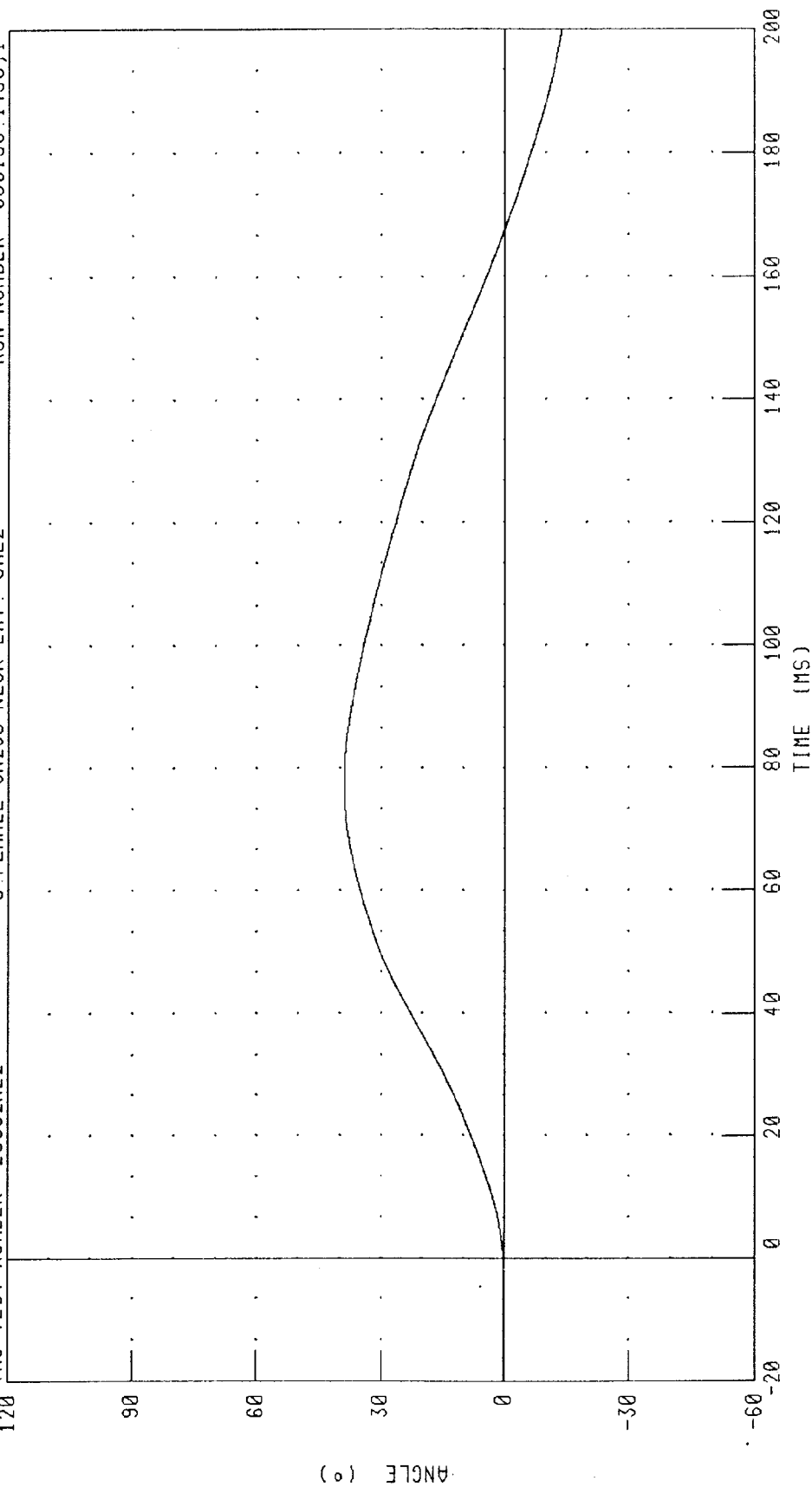
CHANNEL : PENXC

FILTER : CH. CLASS 60

PEAK DATA : 19.52 G 9.12 MS, -1.87 G 48.48 MS

SMALL FEMALE NECK EXTENSION CALIBRATION ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 283C2NE2 S. FEMALE SN283 NECK EXT. CAL2 RUN NUMBER: 060198.1436;1

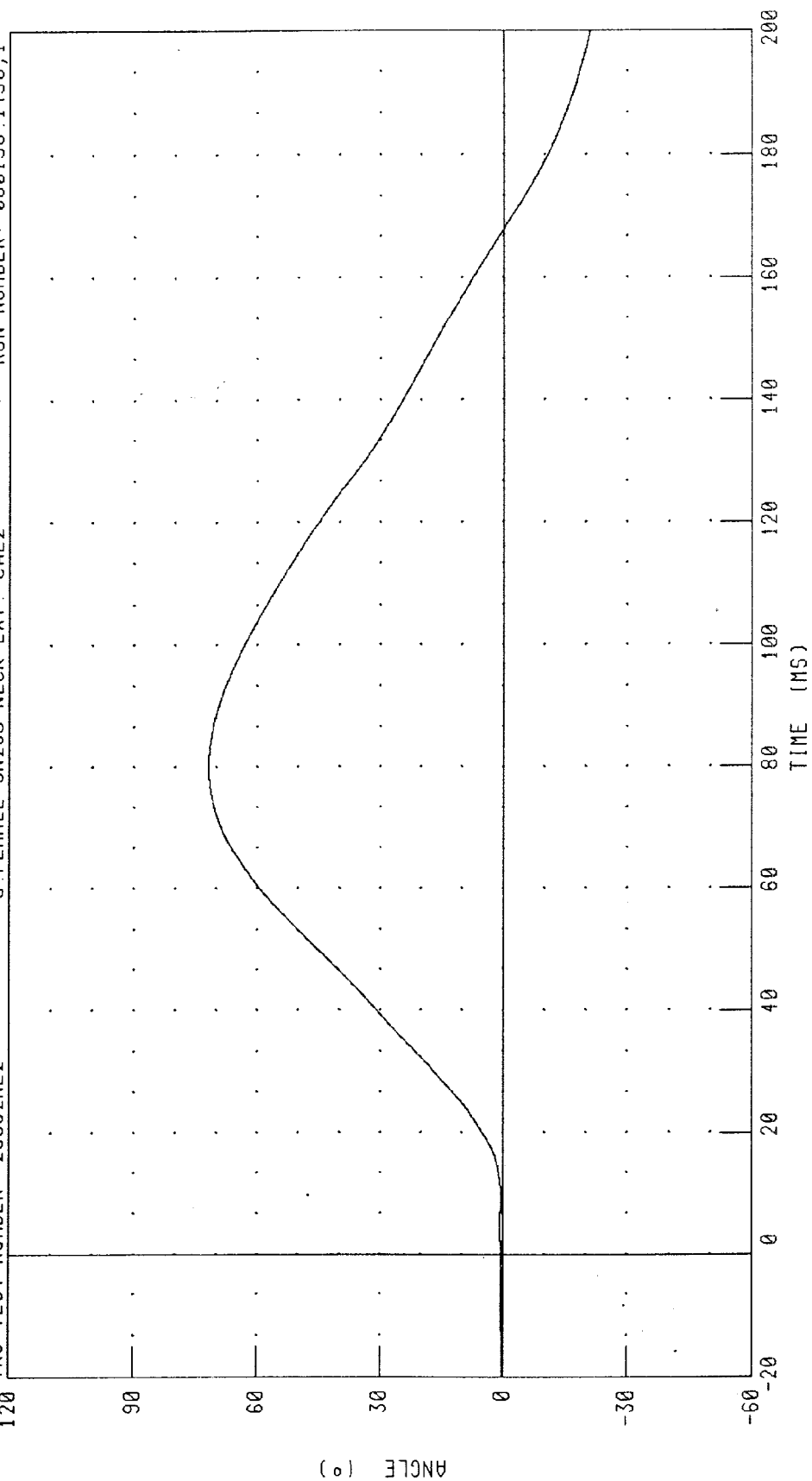


PEAK DATA: 38.90 ° @ 78.08 MS, -13.93 ° @ 200.00 MS

CHANNEL: BETA FILTER: CH. CLASS 60

SMALL FEMALE NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 283C2NE2 S. FEMALE SN283 NECK EXT. CAL2 RUN NUMBER: 060198.1436;1

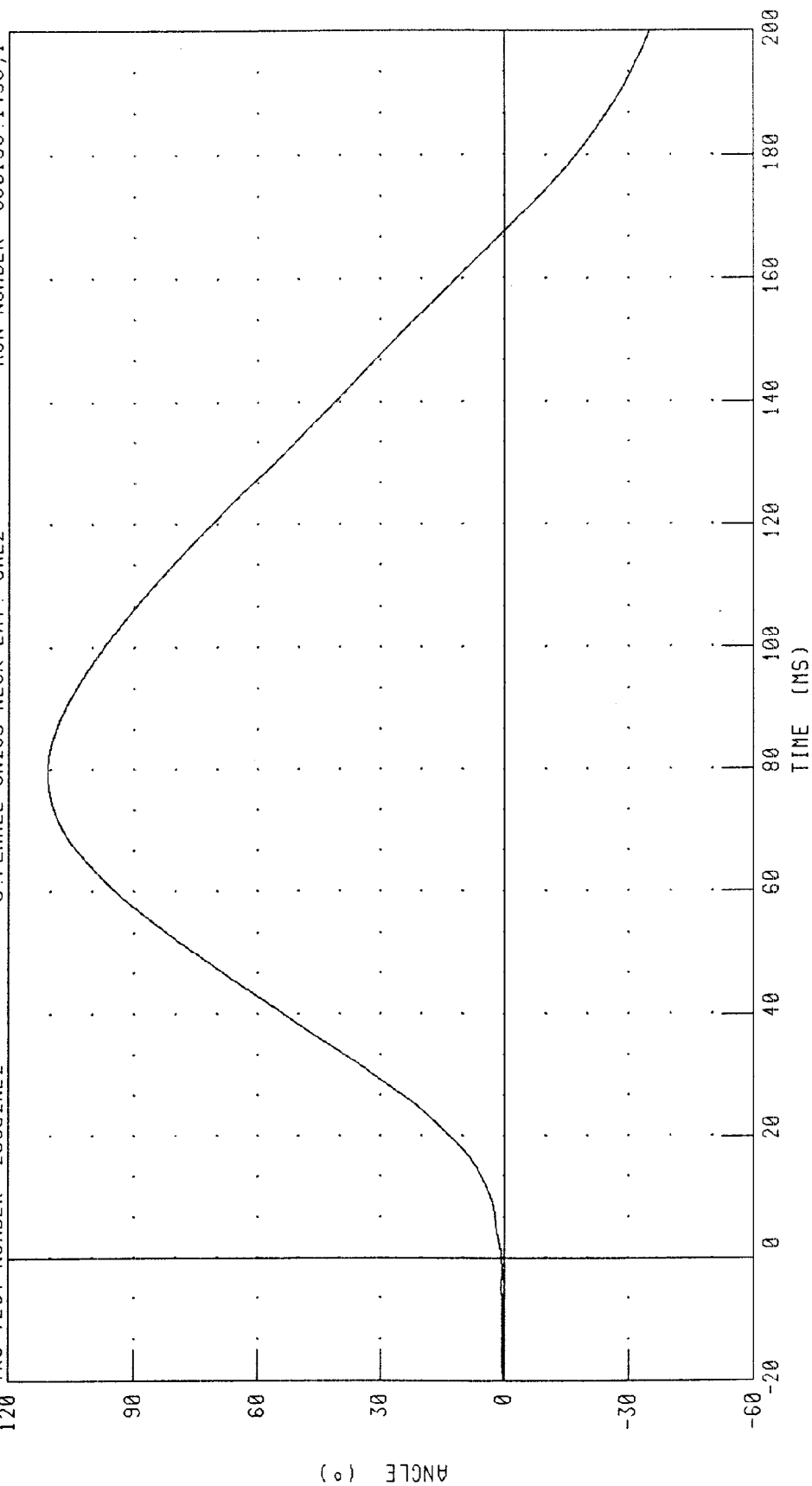


PEAK DATA: 71.79 ° @ 80.00 MS; -21.10 ° @ 200.00 MS

CHANNEL: THETA FILTER: CH. CLASS 60

SMALL FEMALE NECK EXTENSION CALIBRATION
TOTAL ROTATION

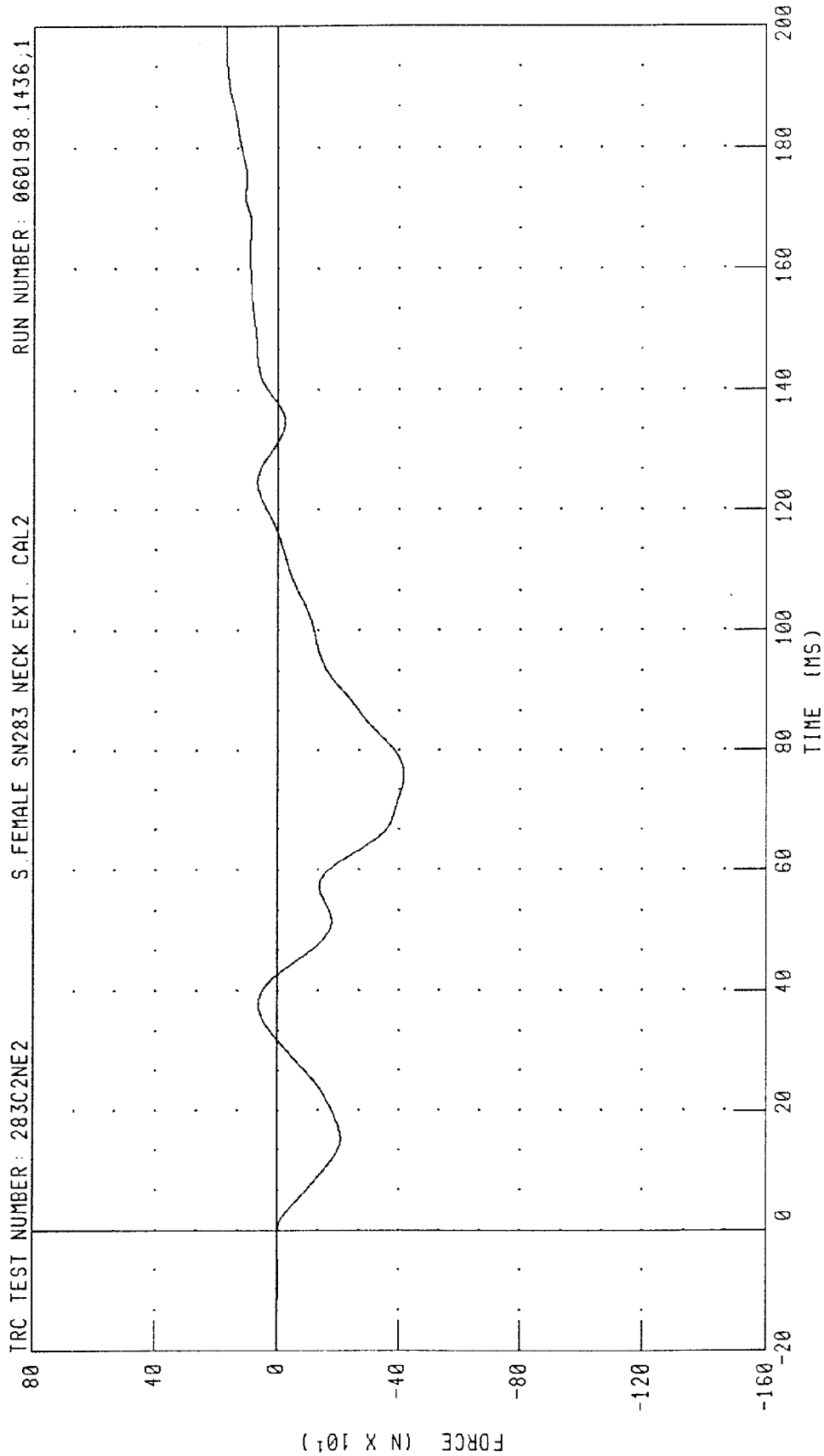
TRC TEST NUMBER: 283C2NE2 S.FEMALE SN283 NECK EXT. CAL2 RUN NUMBER: 060198.1436;1



PEAK DATA: 110.66 ° @ 79.52 MS, -35.03 ° @ 200.00 MS

CHANNEL: TOTAL FILTER: CH. CLASS 60

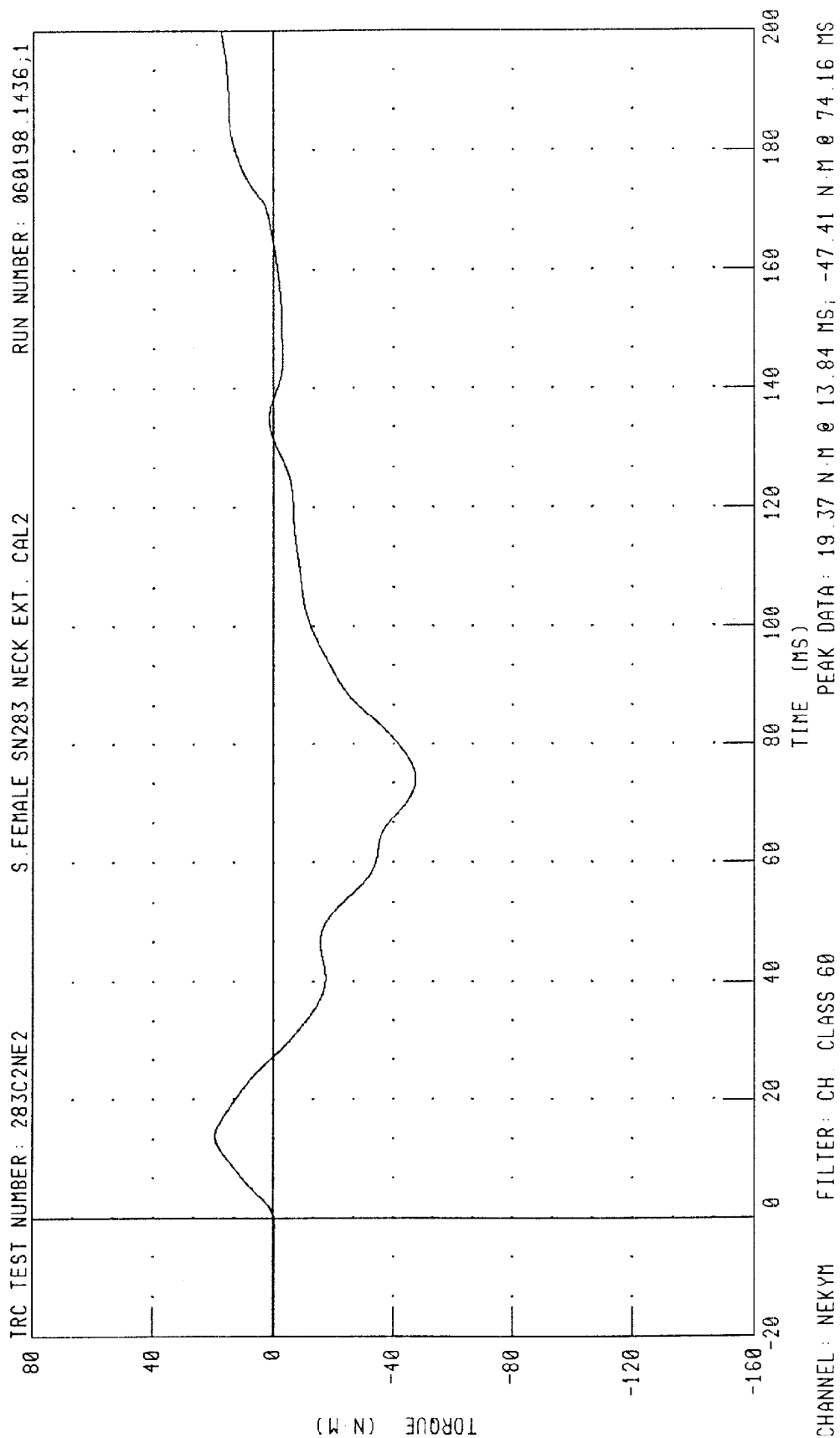
SMALL FEMALE NECK EXTENSION CALIBRATION
NECK FORCE X AXIS



CHANNEL: NEKXF FILTER: CH. CLASS 60

PEAK DATA: 169.09 N @ 196.96 MS; -416.14 N @ 75.84 MS

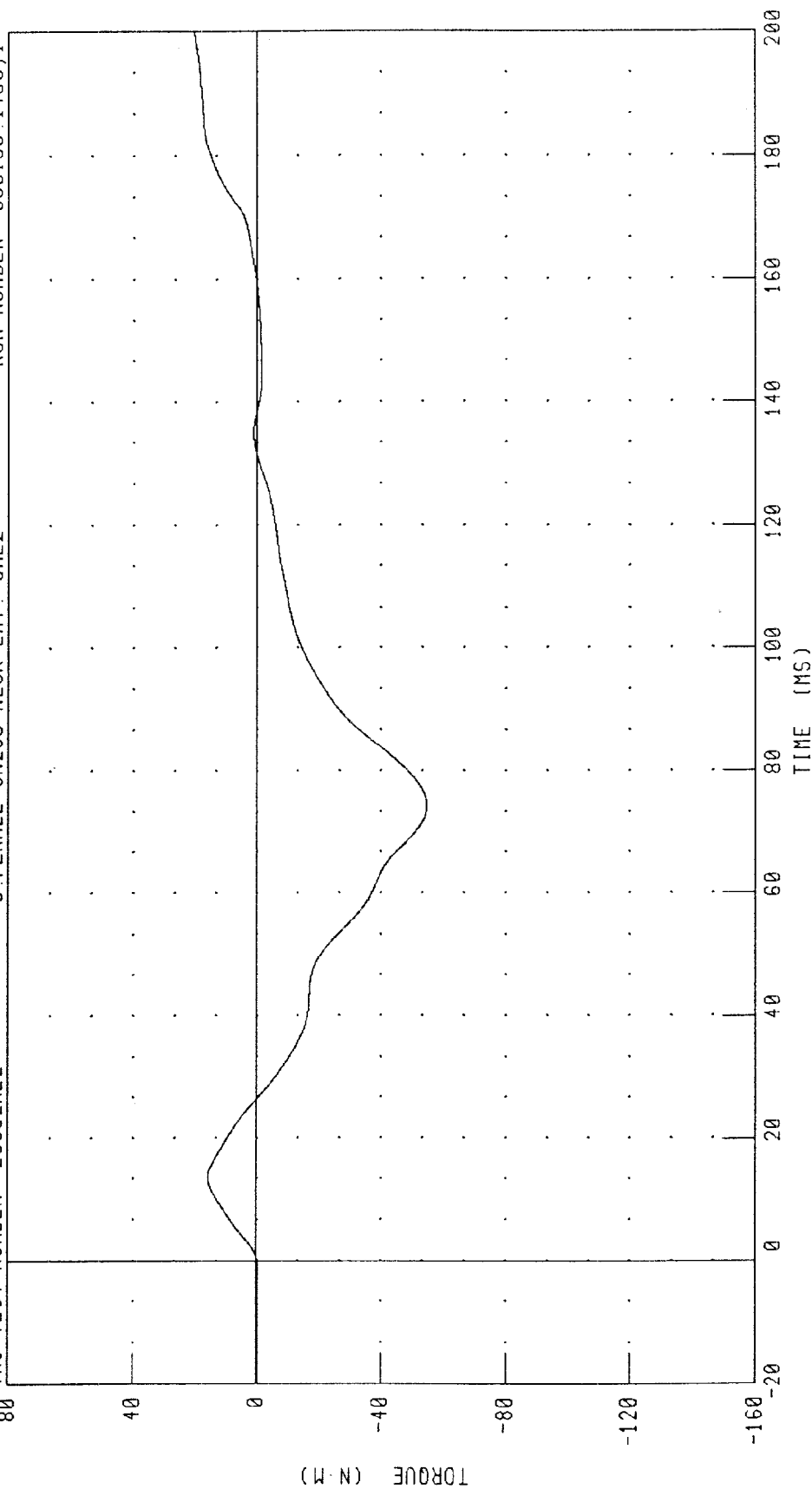
SMALL FEMALE NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS



SMALL FEMALE NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE
S. FEMALE SN283 NECK EXT. CAL2

IRC TEST NUMBER: 283C2NE2

RUN NUMBER: 060198.1436;1



PEAK DATA: 20.55 N-M @ 200.00 MS; -54.74 N-M @ 74.32 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III SMALL FEMALE

02-JUN-98

TRC INC.

TEST NO: 283C2TH2

S.FEMALE SN283 THORAX CAL2

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	22.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	54.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.83 M/S
MAXIMUM DEFLECTION	51 - 58 MM	51.7 MM
MAXIMUM RESISTIVE FORCE @ MAXIMUM DEFLECTION	3300 - 3800 N	3927. N *
INTERNAL HYSTERESIS	69% - 85%	77.9%

* TEST DOES NOT MEET SPECIFICATIONS

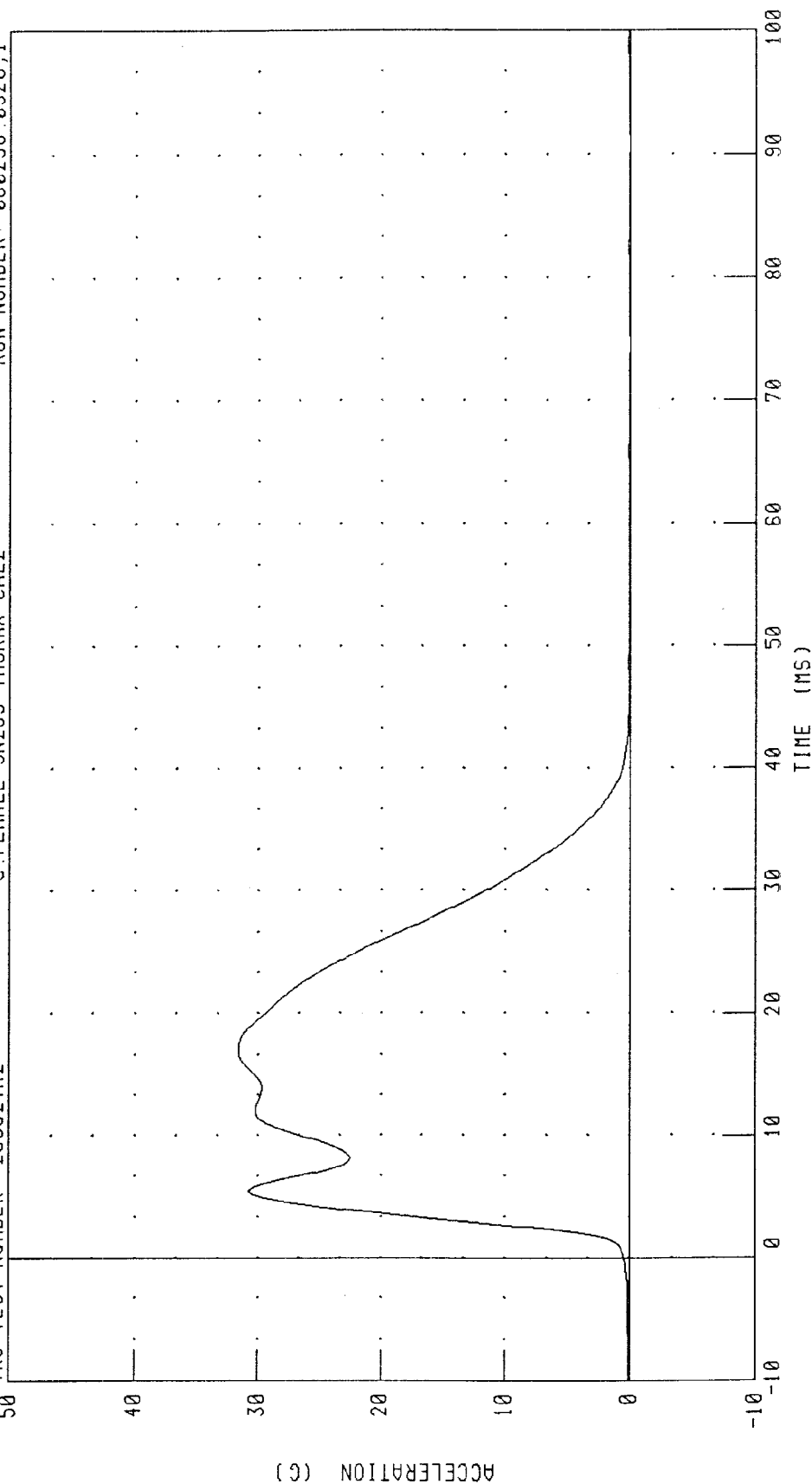
TECHNICIAN

Kevin Watkins

RUN NUMBER: 060298.0925;1

SMALL FEMALE THORAX CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 283C2TH2 S. FEMALE SN283 THORAX CAL2 RUN NUMBER: 060298 0926;1

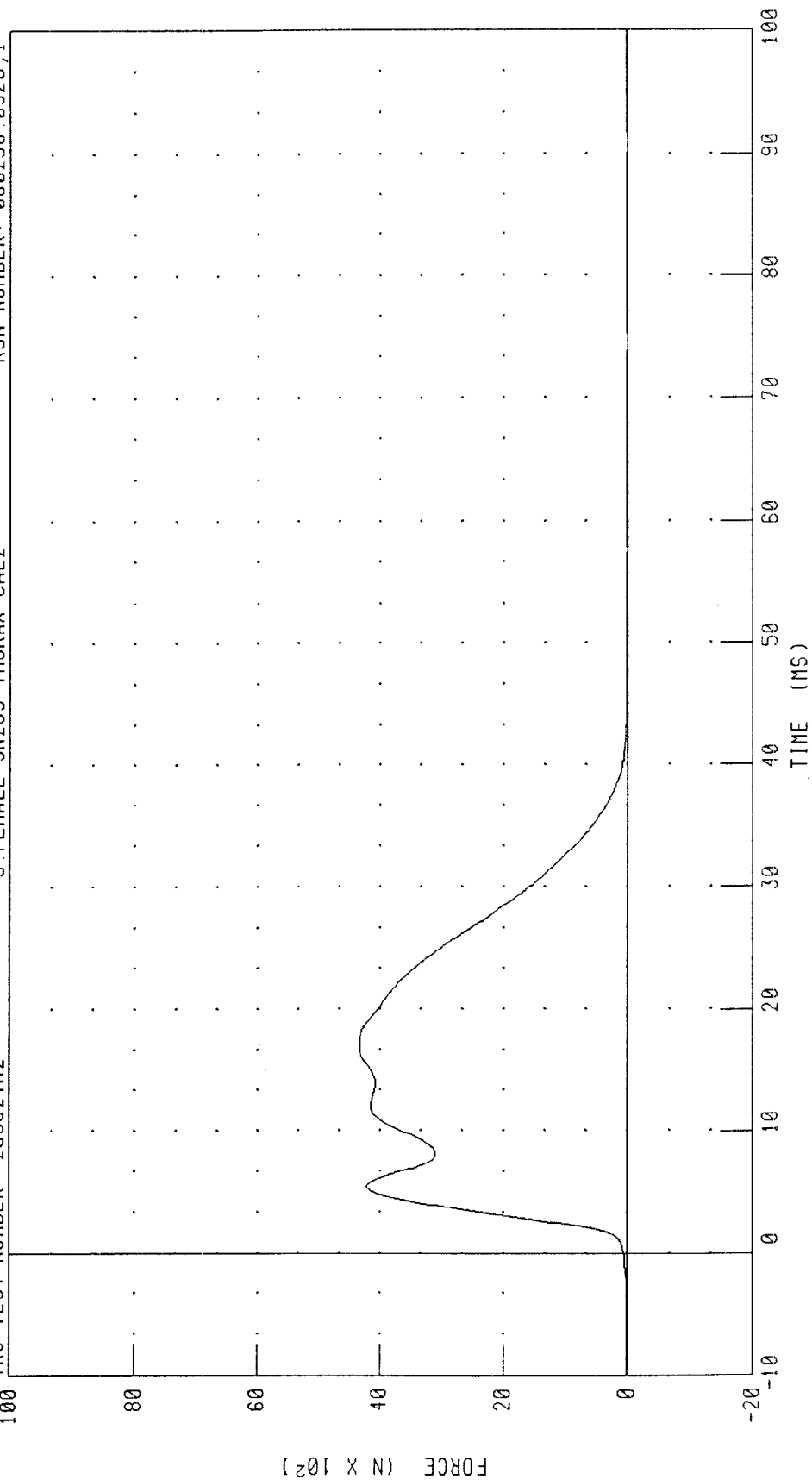


CHANNEL: PENXC FILTER: CH. CLASS 180 PEAK DATA: 31.60 G @ 17.04 MS, -0.01 G @ 74.48 MS

SMALL FEMALE THORAX CALIBRATION

PENDULUM FORCE

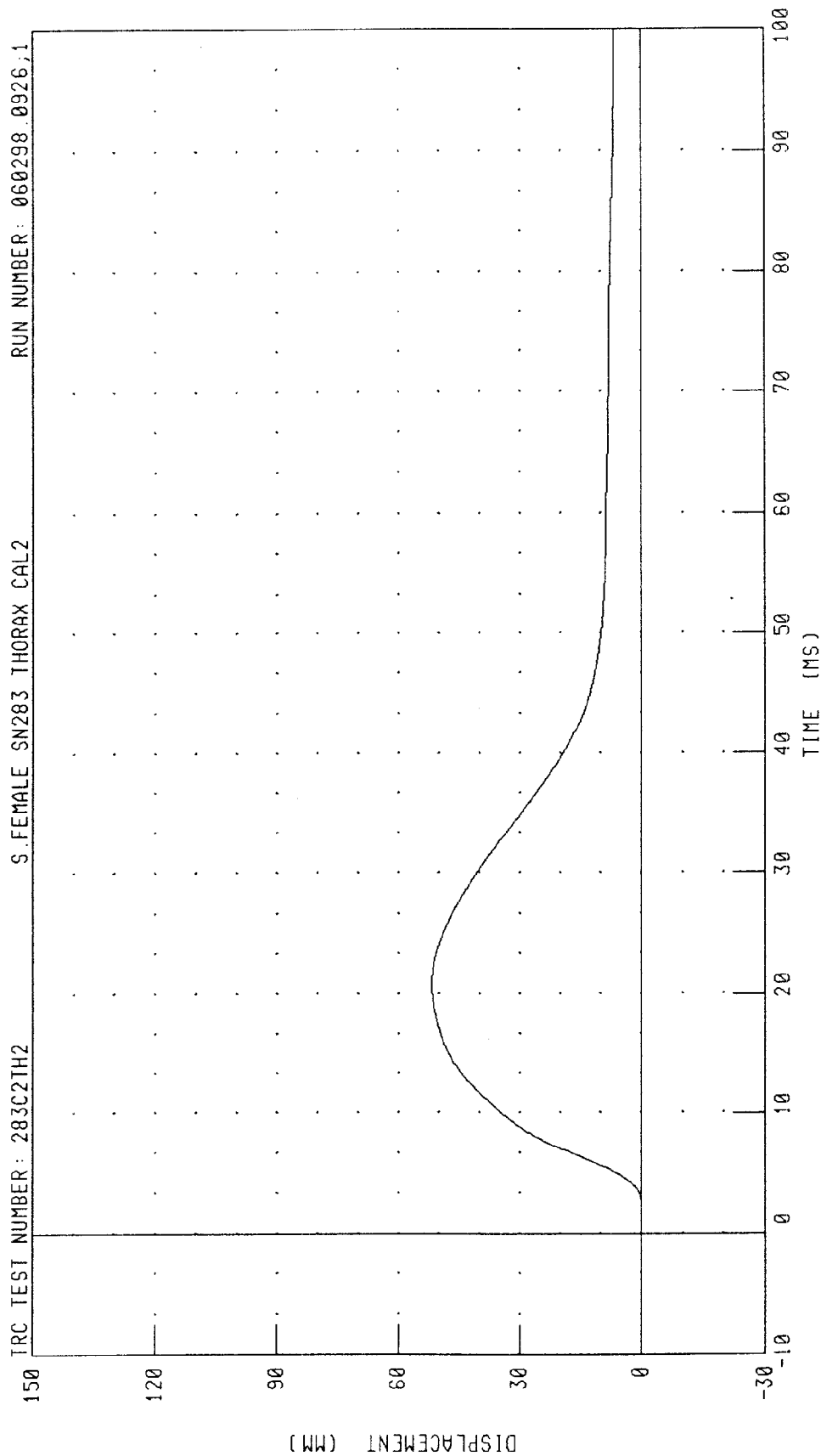
TRC TEST NUMBER: 283C2TH2 S.FEMALE SN283 THORAX CAL2 RUN NUMBER: 060298.0926;1



CHANNEL: PENXF FILTER: CH. CLASS 180

PEAK DATA: 4336.39 N @ 17.04 MS, -1.94 N @ 74.48 MS

SMALL FEMALE THORAX CALIBRATION
STERNUM DISPLACEMENT

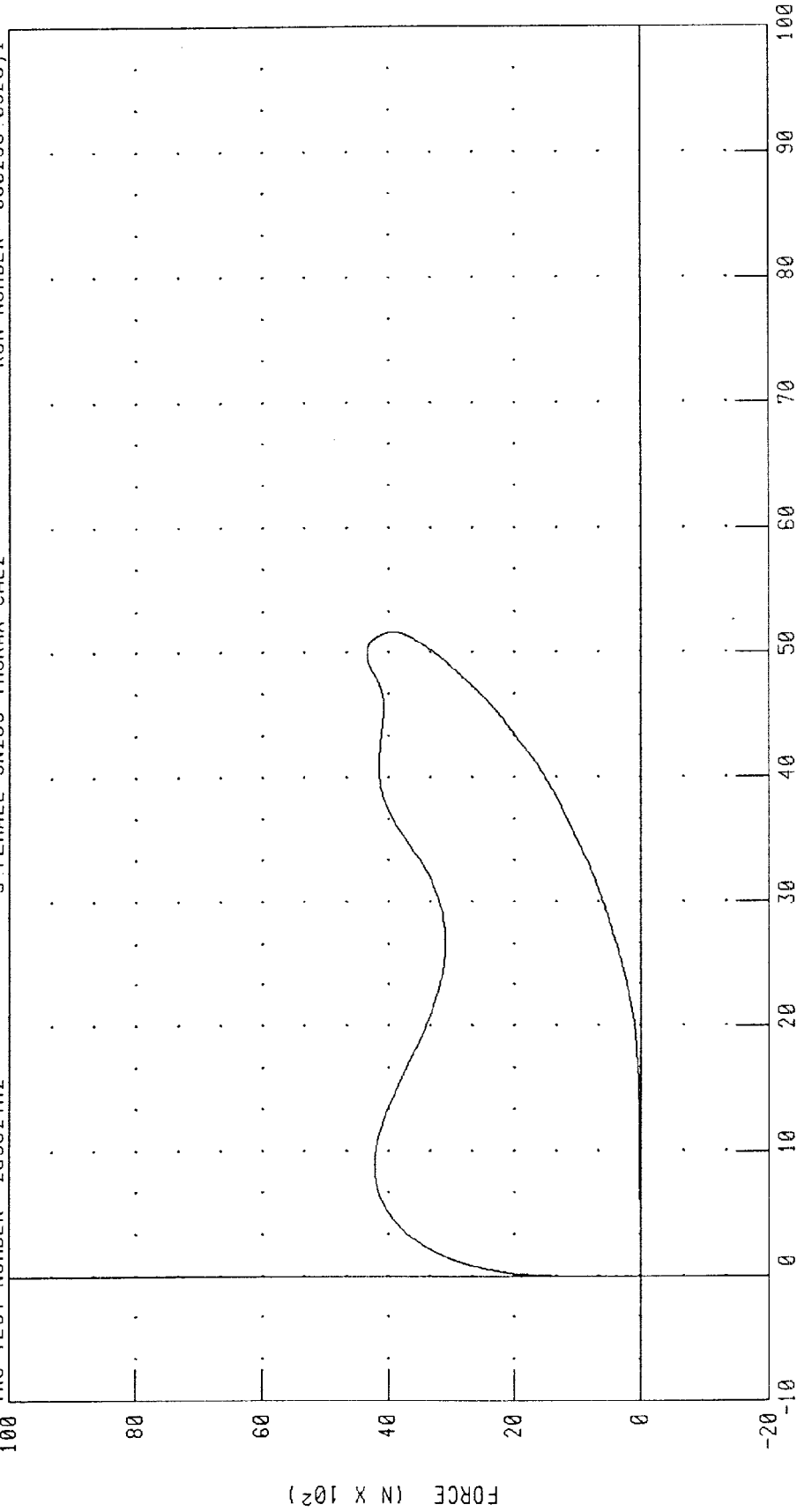


CHANNEL: CSTXD FILTER: CH. CLASS 180 PEAK DATA: 51.73 MM @ 20.80 MS, -0.04 MM @ 2.16 MS

SMALL FEMALE THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE
S. FEMALE SN283 THORAX CAL2

IRC TEST NUMBER: 283C2TH2

RUN NUMBER: 060298.0926;1



CHANNEL: CSTXD FILTER: CH: CLASS 180
PENXF CH: CLASS 180
PEAK DATA: 51.73 MM @ 20.80 MS; -0.04 MM @ 2.16 MS
436.39 N @ 17.04 MS; -1.94 N @ 74.48 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

01-JUN-98

TRC INC.

TEST NO: 283C2RK1

S.FEMALE SN283 R.KNEE CAL2

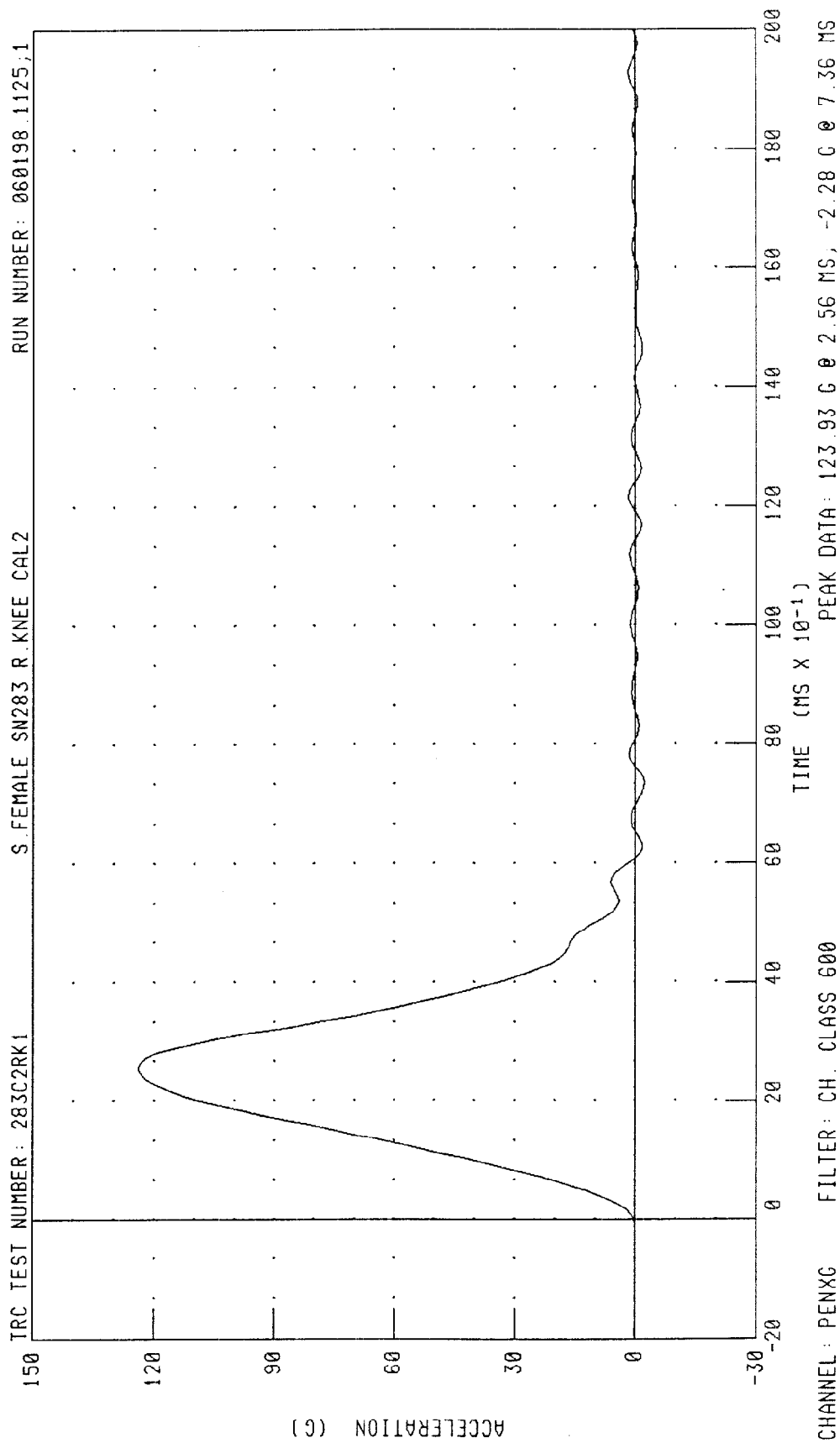
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	52.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.13 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3400 - 4200 N	3638.2 N

TEST MEETS SPECIFICATIONS

TECHNICIAN By *elt*

RUN NUMBER: 060198.1124;1

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



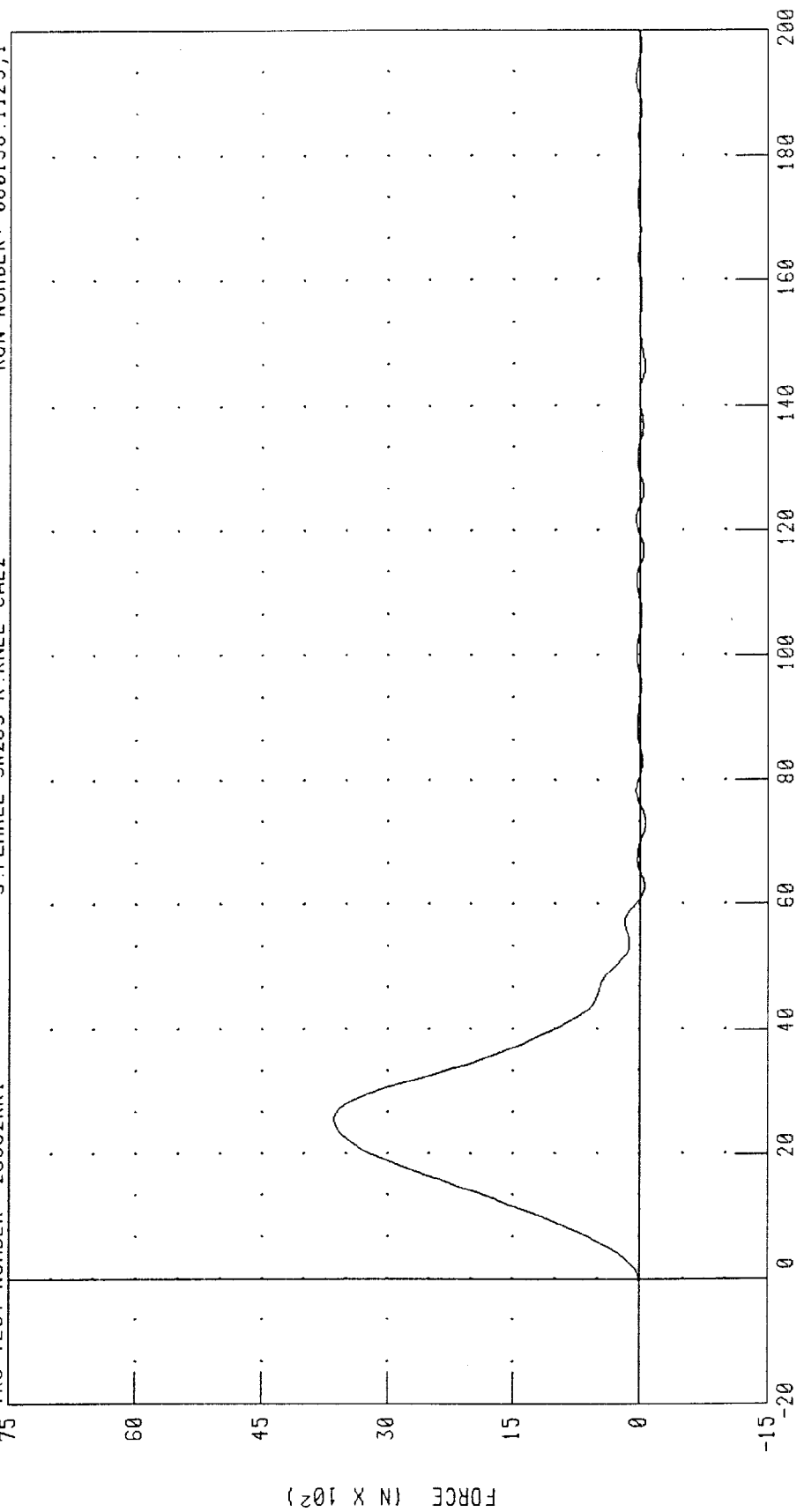
SMALL FEMALE HYBRID III RIGHT KNEE CALIBRATION
 PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 283C2RK1

S.FEMALE SN283 R.KNEE CAL2

RUN NUMBER: 060198.1125.1

75



TIME (MS X 10⁻¹)

CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 3638.24 N @ 2.56 MS, -66.95 N @ 7.36 MS

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

01-JUN-98

TRC INC.

TEST NO: 283C2LK2

S.FEMALE SN283 LEFT KNEE CAL2

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	52.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.12 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3400 - 4200 N	4082.5 N

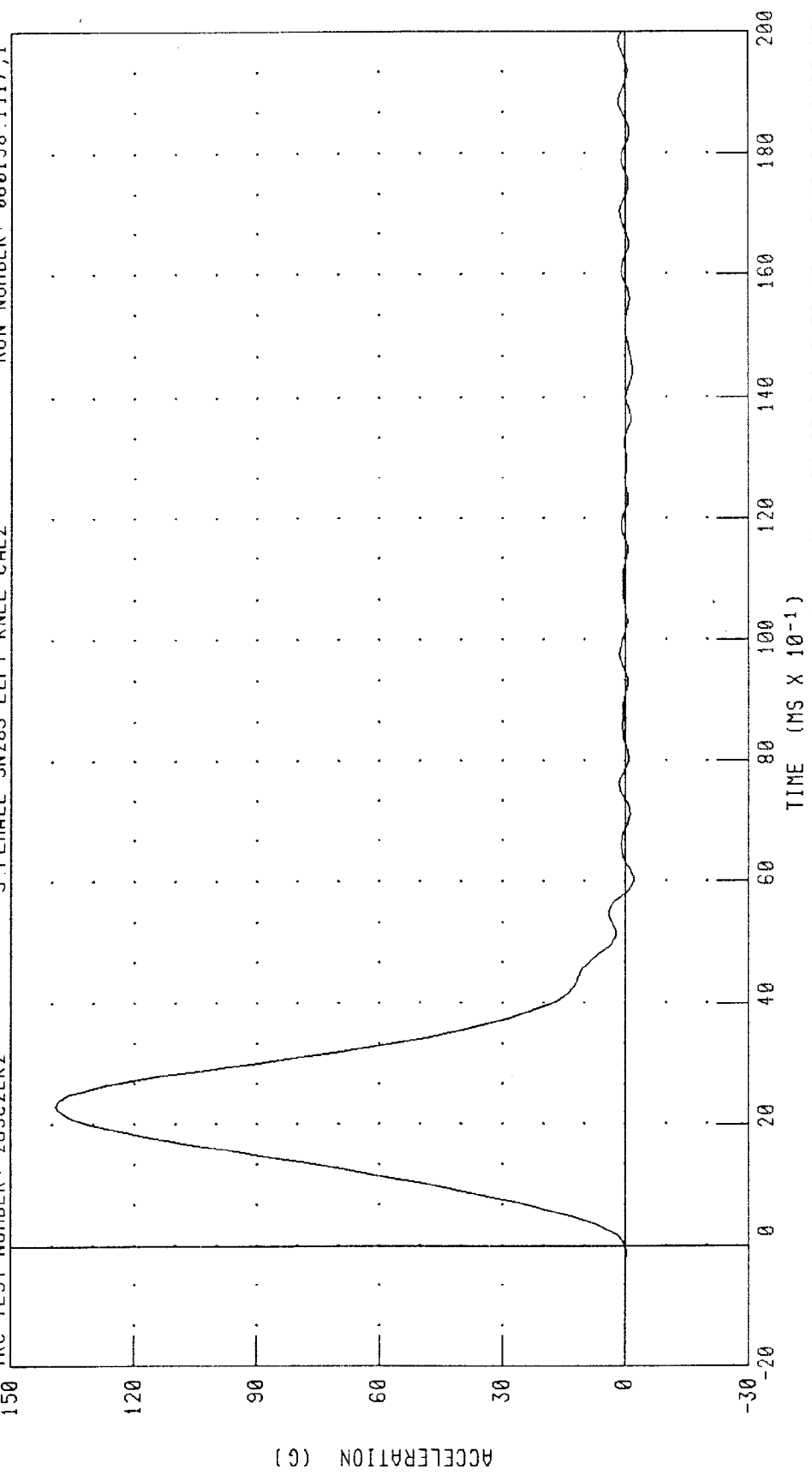
TEST MEETS SPECIFICATIONS

TECHNICIAN Bj Calt

RUN NUMBER: 060198.1117;1

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

TRC TEST NUMBER: 283C2LK2 S.FEMALE SN283 LEFT KNEE CAL2 RUN NUMBER: 060198.1117,1



CHANNEL: PENXC FILTER: CH CLASS 600 PEAK DATA: 139.07 G @ 2.32 MS, -2.12 G @ 6.00 MS

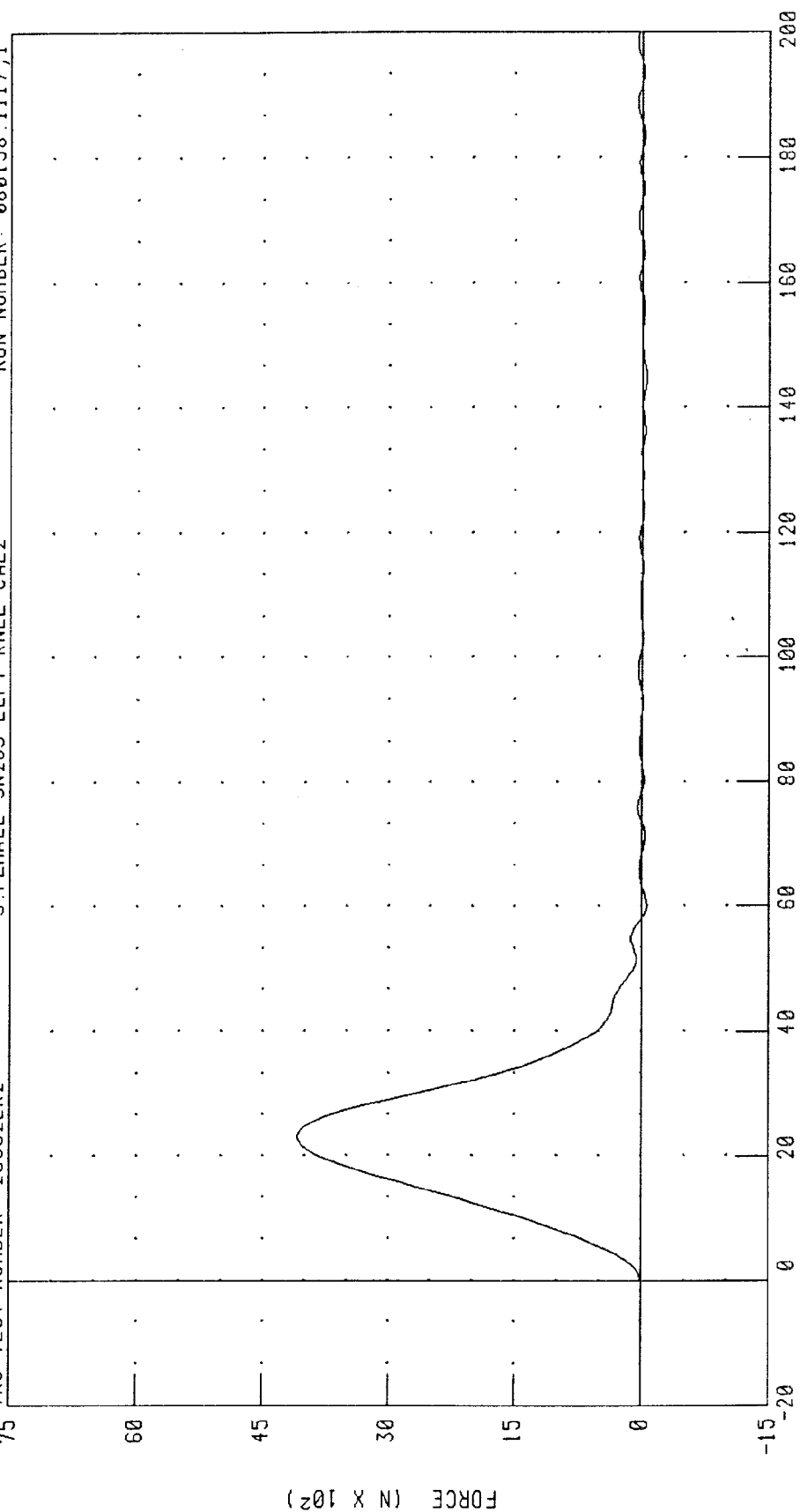
SMALL FEMALE HYBRID III LEFT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 283C2LK2

S.FEMALE SN283 LEFT KNEE CAL2

RUN NUMBER: 060198.1117;1

75



CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 4082.59 N @ 2.32 MS; -62.14 N @ 6.00 MS

Pre-Test Calibration

Bullet Vehicle Driver Dummy S/N 168

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III 50th

29-MAY-98

TRC INC.

TEST NO: 168C5HD1

572E SN168 HEAD DROP CAL 05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	254.77 G
PEAK LATERAL ACCELERATION	15 G MAX	-4.11 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

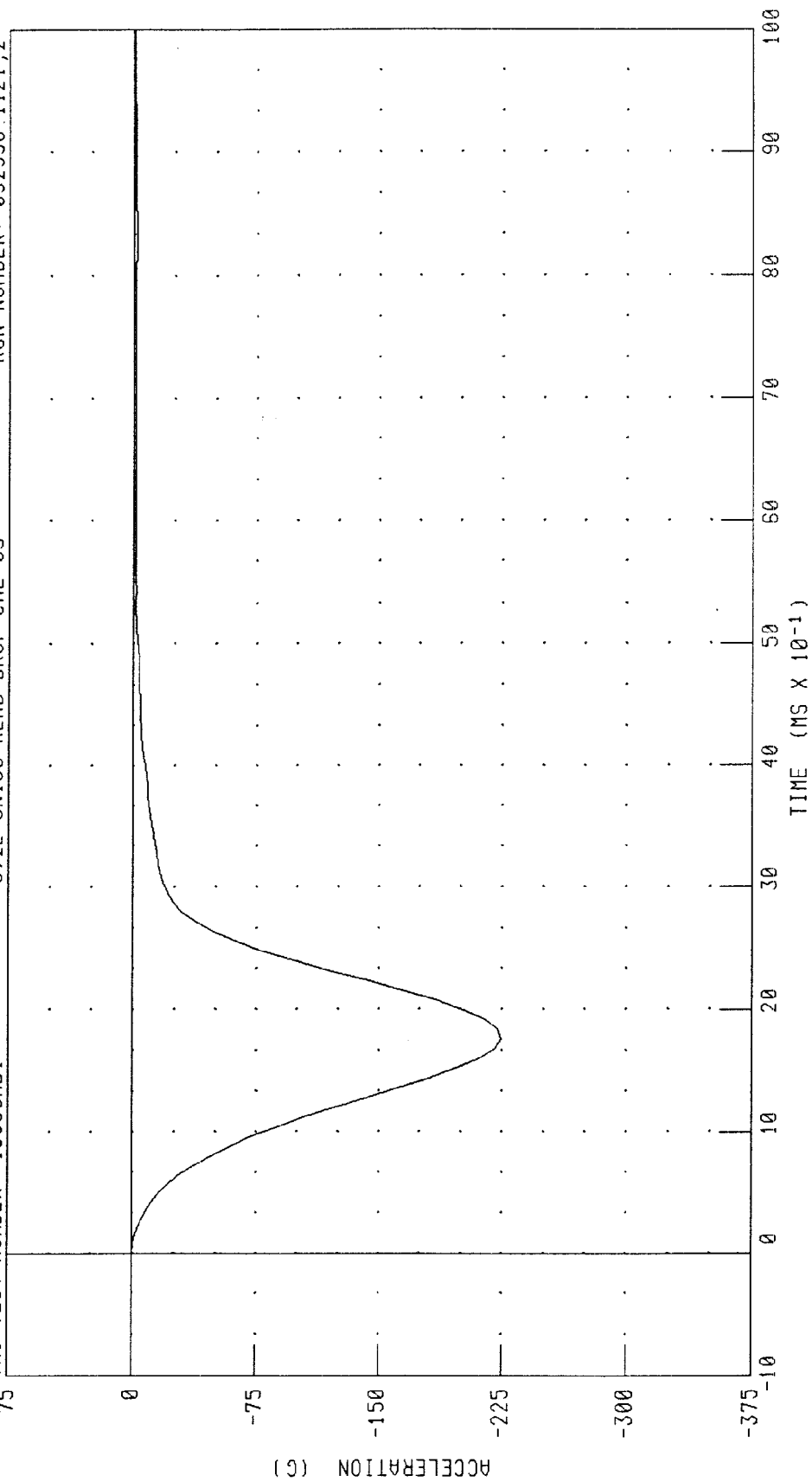
TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 052998.1054;1

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

TRC TEST NUMBER: 168C5HD1 572E SN168 HEAD DROP CAL 05 RUN NUMBER: 052998.1121;2

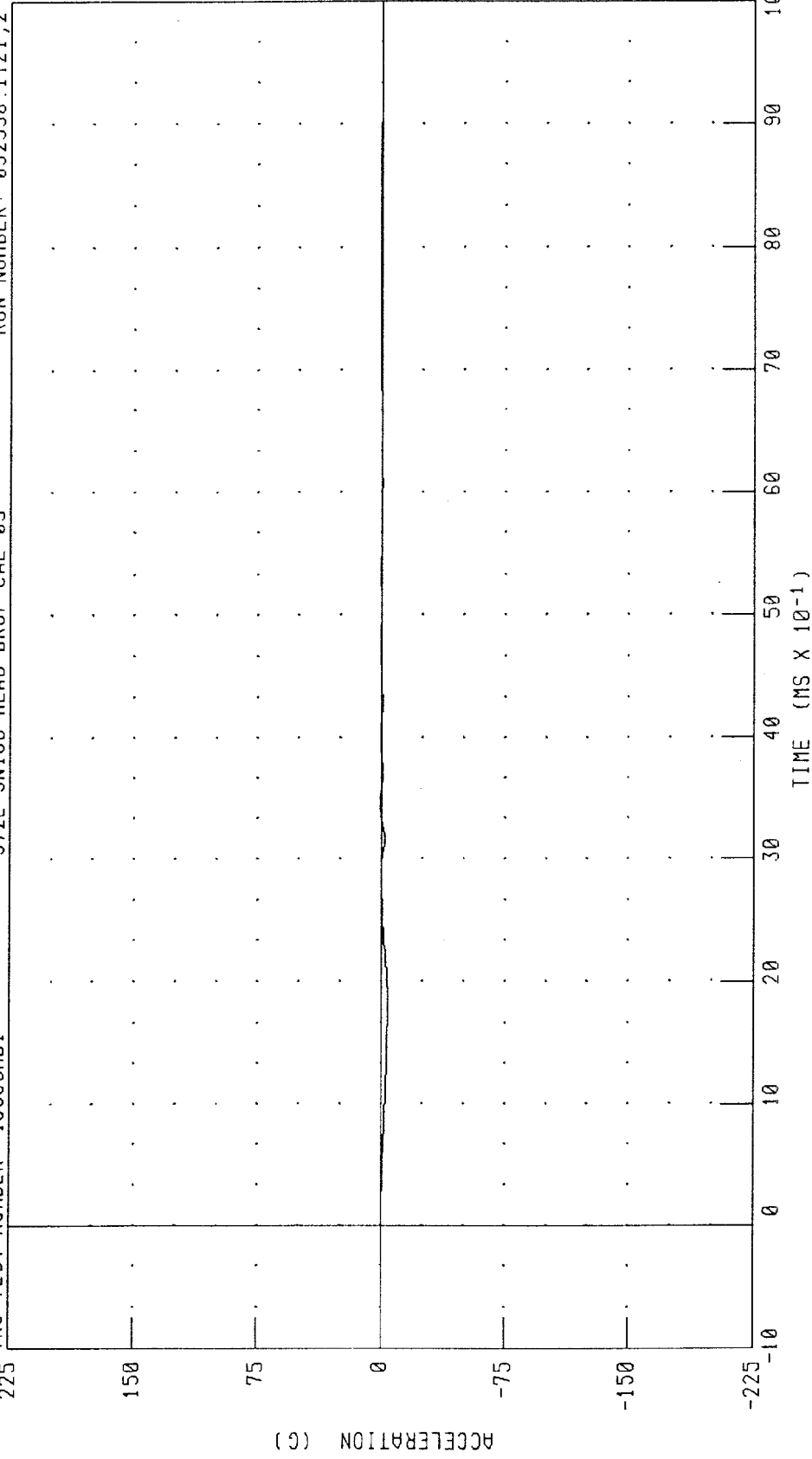


CHANNEL: HEDXC FILTER: CH. CLASS 1000

PEAK DATA: 0.00 G @ -0.96 MS, -224.42 G @ 1.76 MS

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

TRC TEST NUMBER: 168C5HD1 572E SN168 HEAD DROP CAL 05 RUN NUMBER: 052998.1121,2



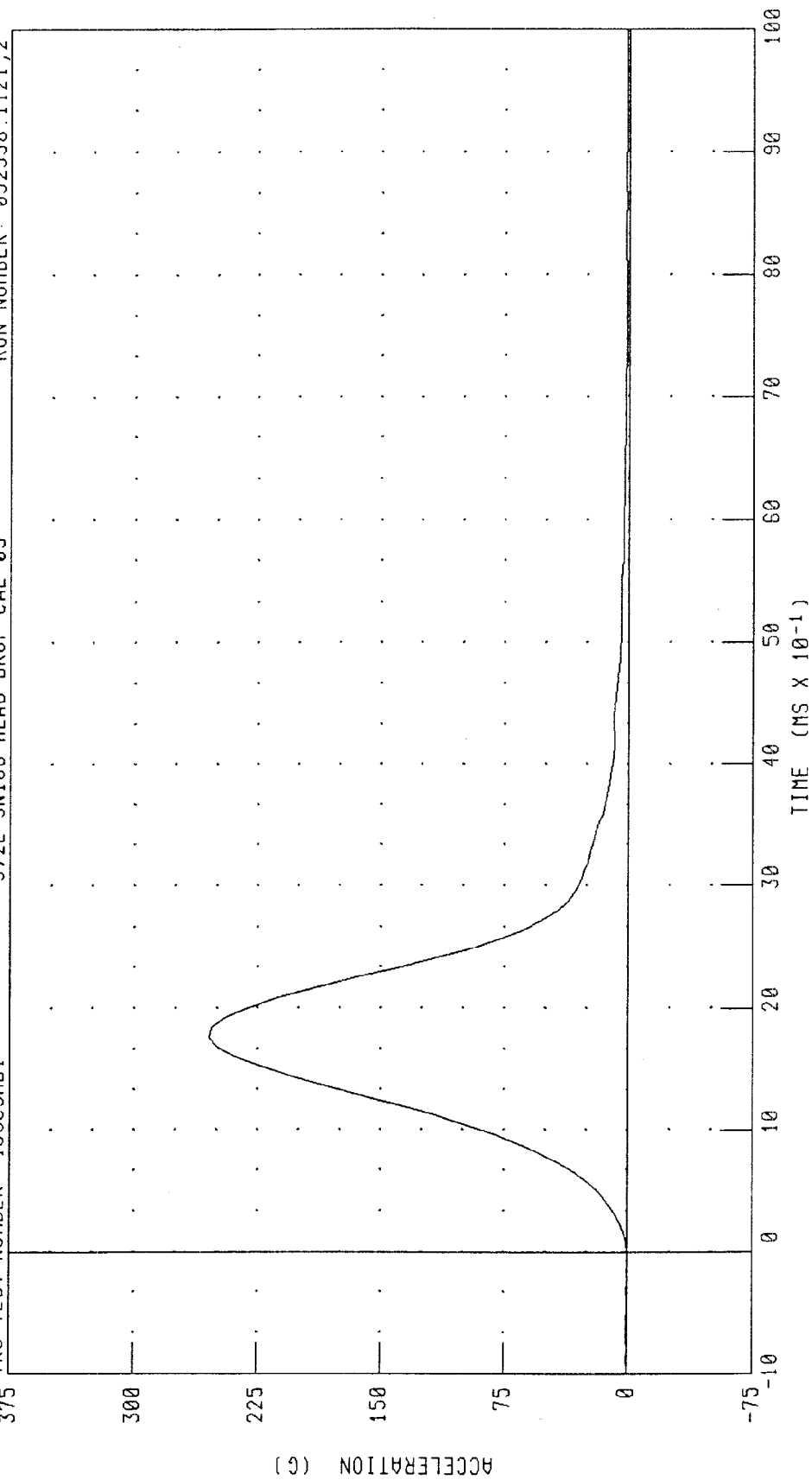
PEAK DATA: 1.21 G @ 3.44 MS; -4.12 G @ 1.76 MS

CHANNEL: HEDYG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION
572E SN168 HEAD DROP CAL 05

IRC TEST NUMBER: 168C5HD1

RUN NUMBER: 052998.1121;2



CHANNEL: HEDRG FILTER: CH. CLASS 1000

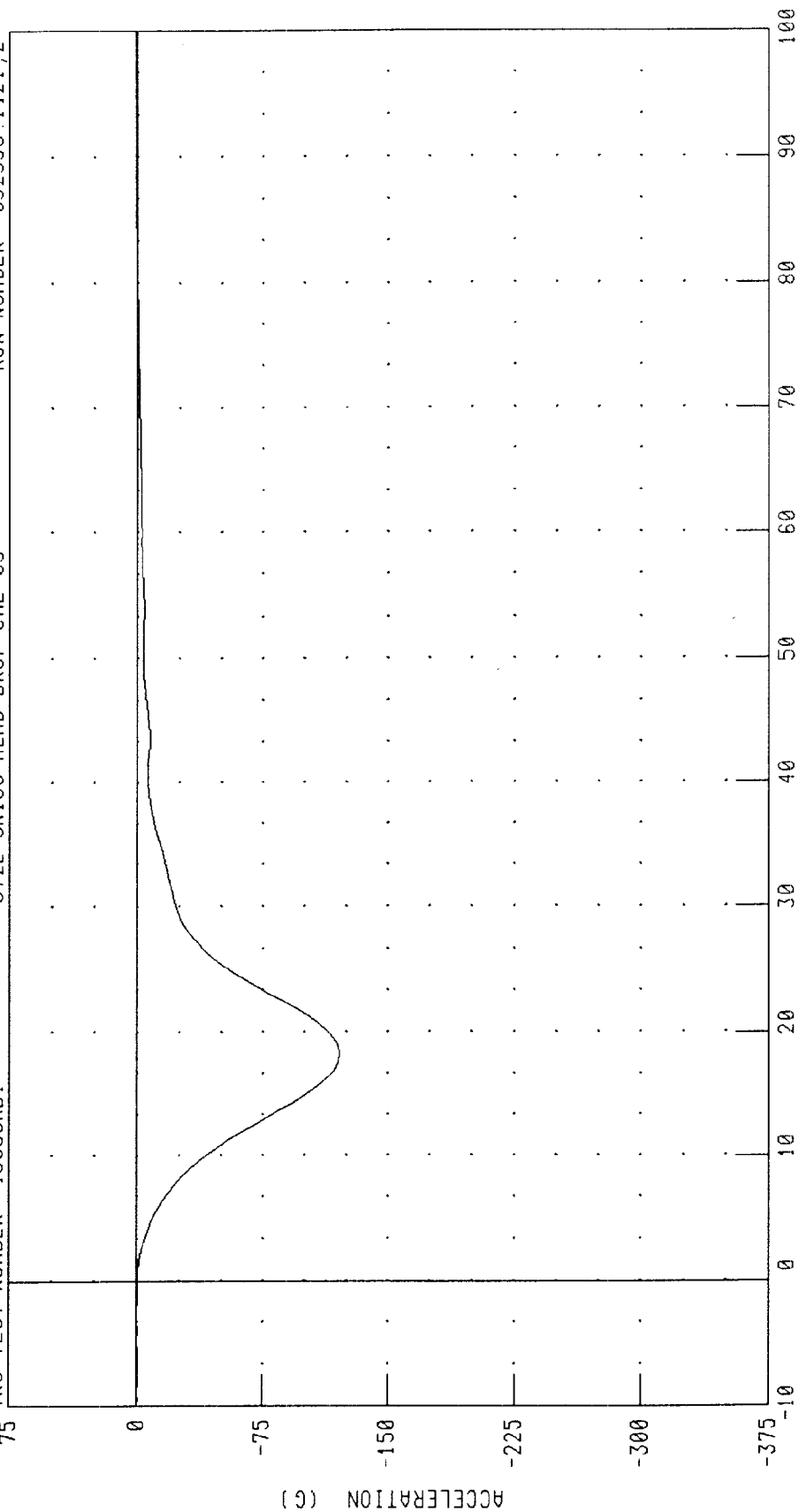
PEAK DATA: 254.78 G @ 1.76 MS; 0.08 G @ -0.48 MS

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

TRC TEST NUMBER: 168C5H01

572E SN168 HEAD DROP CAL 05

RUN NUMBER: 052998.1121,2



CHANNEL: HEDZG FILTER: CH. CLASS 1000

PEAK DATA: 0.86 G @ 10.00 MS, -121.14 G @ 1.84 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

29-MAY-98

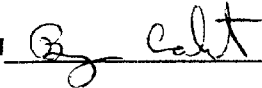
NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 168C5NF1 572E SN168 NECK FLEXION CAL05

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	56.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.06 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.61 G
	20 MS	17.60 - 22.60 G	21.78 G
	30 MS	12.50 - 18.50 G	15.21 G
MAX PENDULUM G		29 G MAX	24.33 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	15.13 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	39.84 MS
D PLANE	MAX	64 - 78 DEG.	72.96 DEG.
ROTATION	TIME	57 - 64 MS	57.92 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	92.22 NM
	TIME	47 - 58 MS	52.72 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	115.84 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	101.92 MS

TEST MEETS SPECIFICATIONS

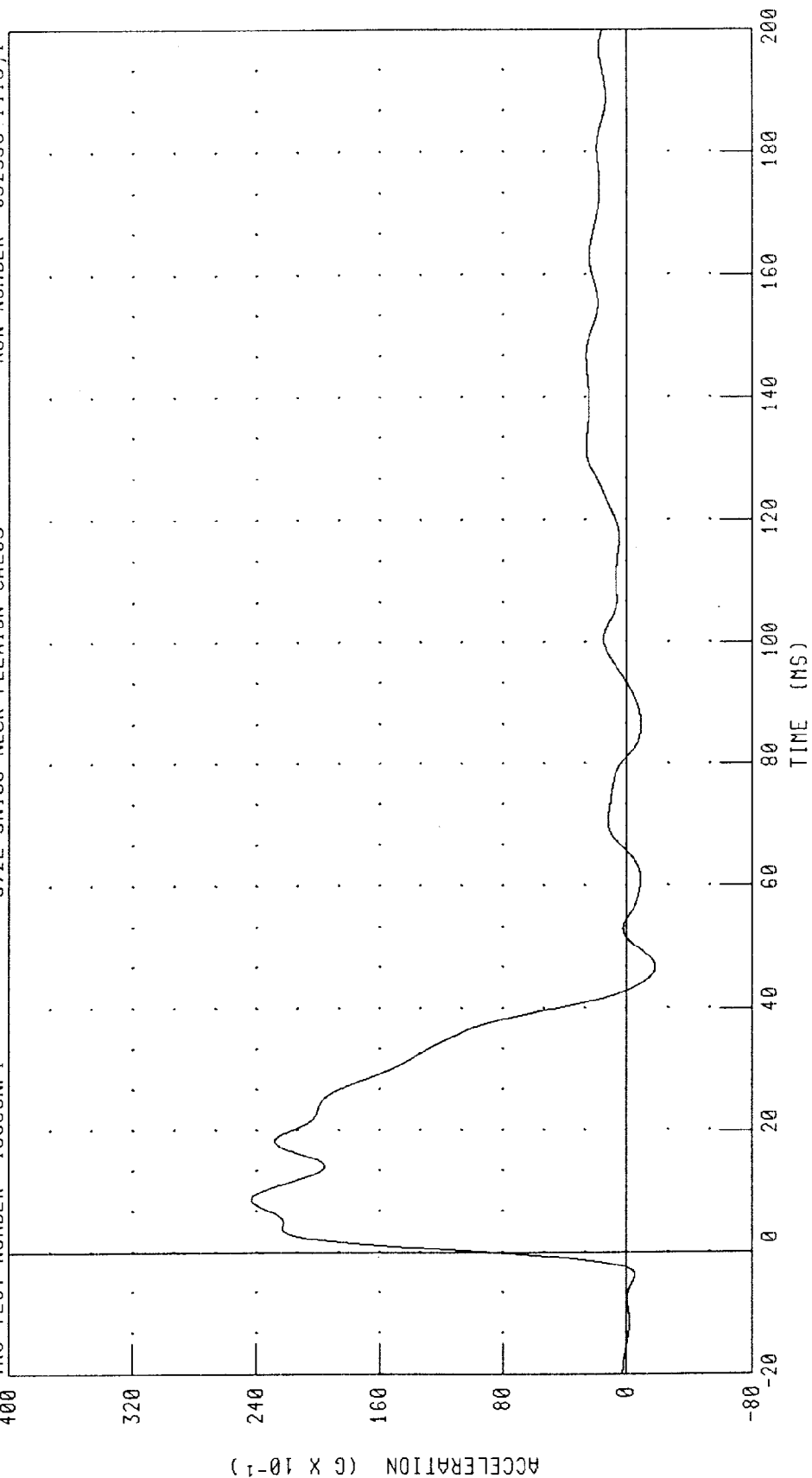
TECHNICIAN



RUN NUMBER: 052998.1118;1

PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 168C5NF1 572E SN168 NECK FLEXION CAL05 RUN NUMBER: 052998 1118,1



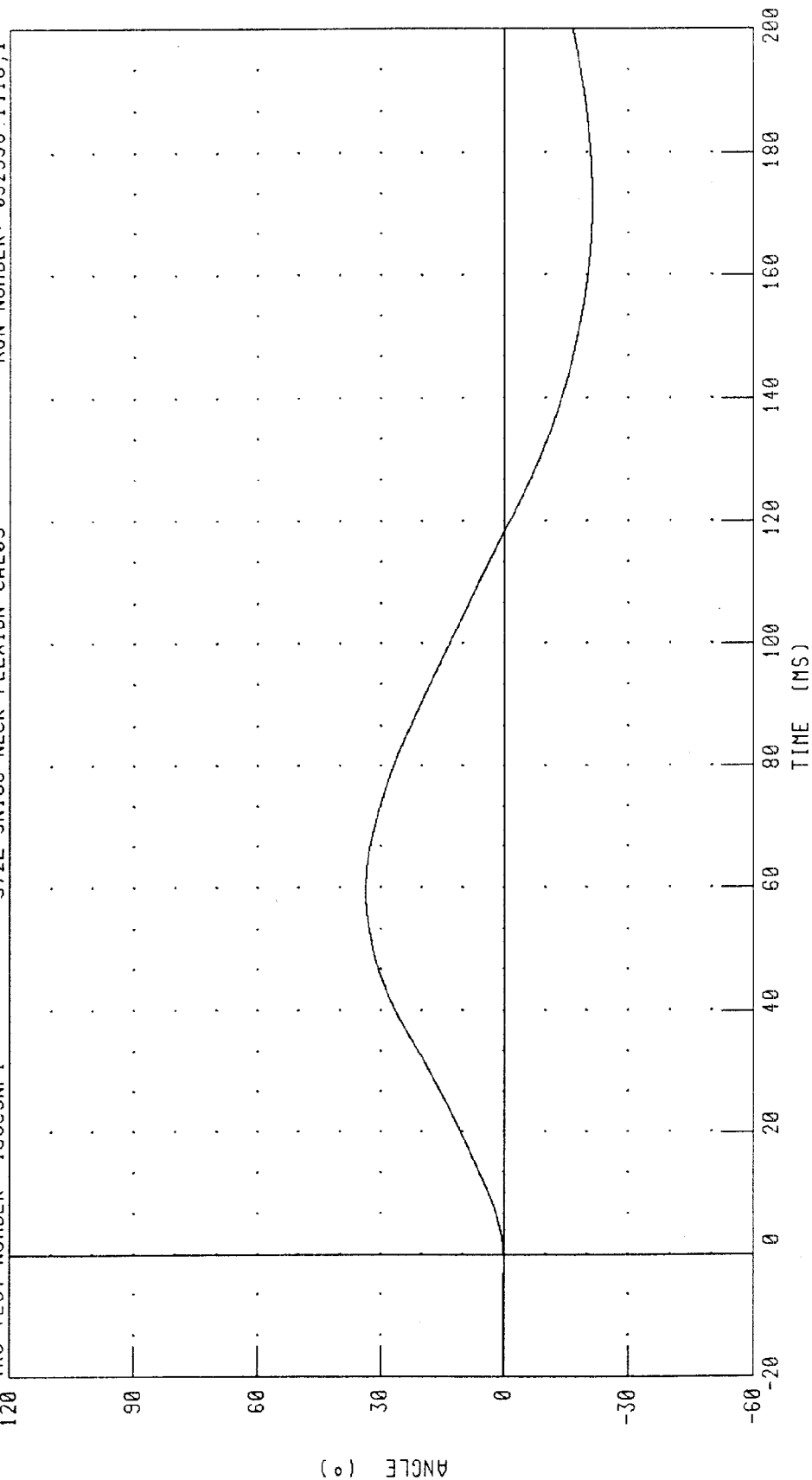
CHANNEL: PENXC FILTER: CH. CLASS 60 PEAK DATA: 24.33 G @ 8.64 MS; -1.88 G @ 46.72 MS

PART 572-E HYBRID [I] NECK FLEXION CALIBRATION
ROTATION ABOUT BASE OF NECK

IRC TEST NUMBER: 168C5NF1

572E SN168 NECK FLEXION CAL05

RUN NUMBER: 052998.1118;1

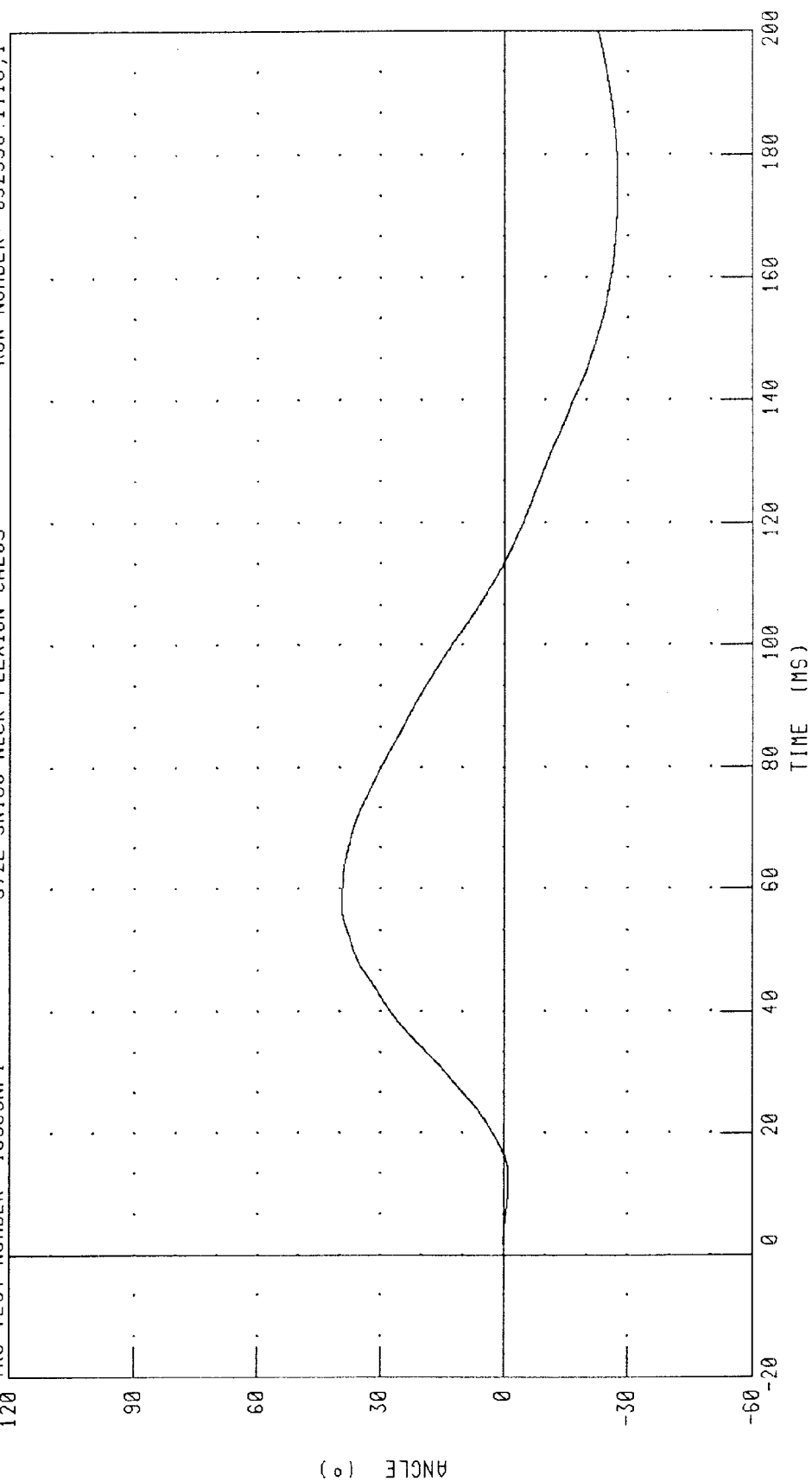


PEAK DATA: 33.64 ° @ 59.20 MS; -21.37 ° @ 171.68 MS

CHANNEL: BETA FILTER: CH. CLASS 60

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

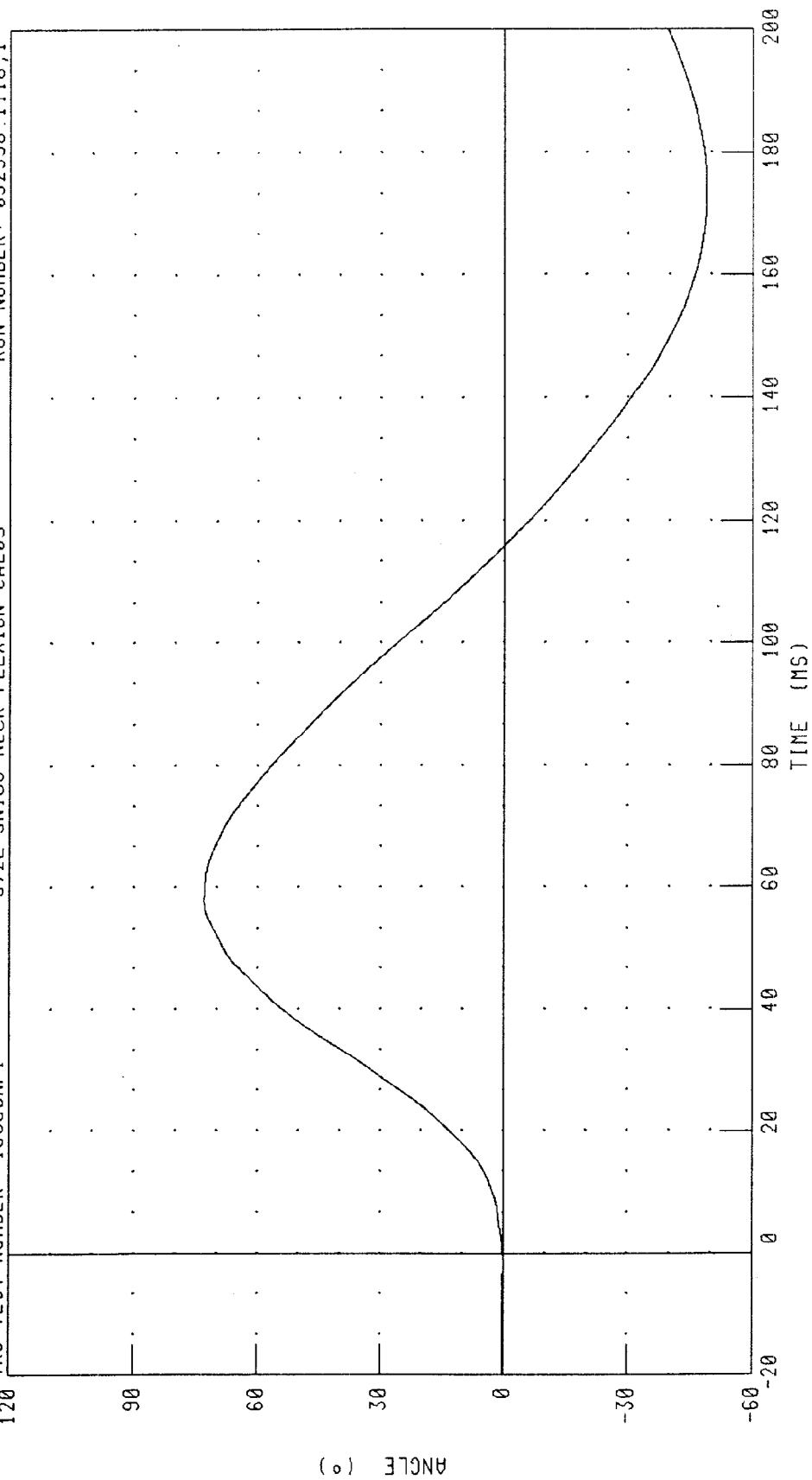
TRC TEST NUMBER: 168C5NF1 572E SN168 NECK FLEXION CAL05 RUN NUMBER: 052998.1118;1



CHANNEL: THETA FILTER: CH. CLASS 60 PEAK DATA: 39.37 ° @ 57.44 MS; -27.60 ° @ 174.56 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL ROTATION

TRC TEST NUMBER: 168C5NF1 572E SN168 NECK FLEXION CAL05 RUN NUMBER: 052398.1118;1

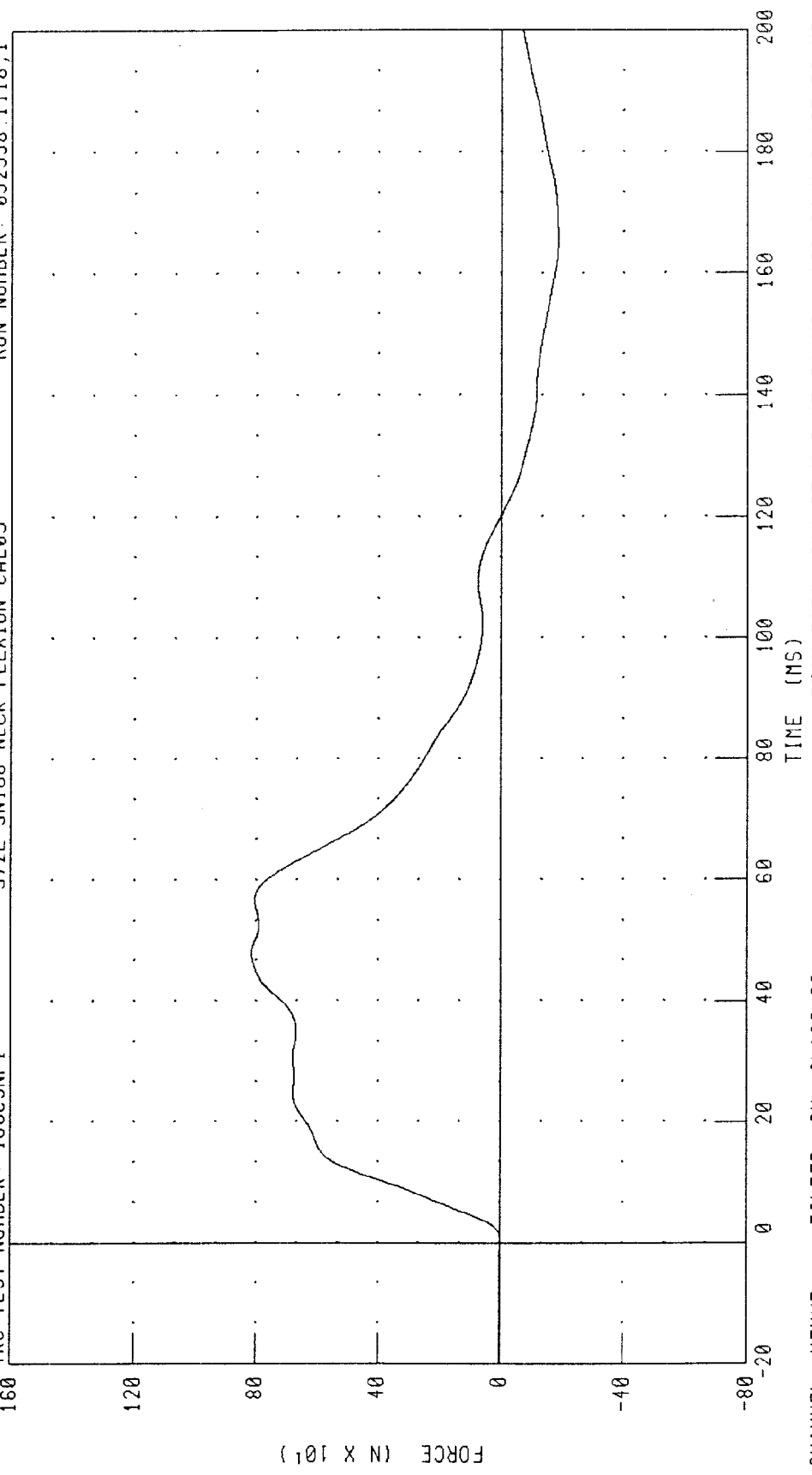


CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 72.97 ° @ 57.92 MS, -48.95 ° @ 173.52 MS

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

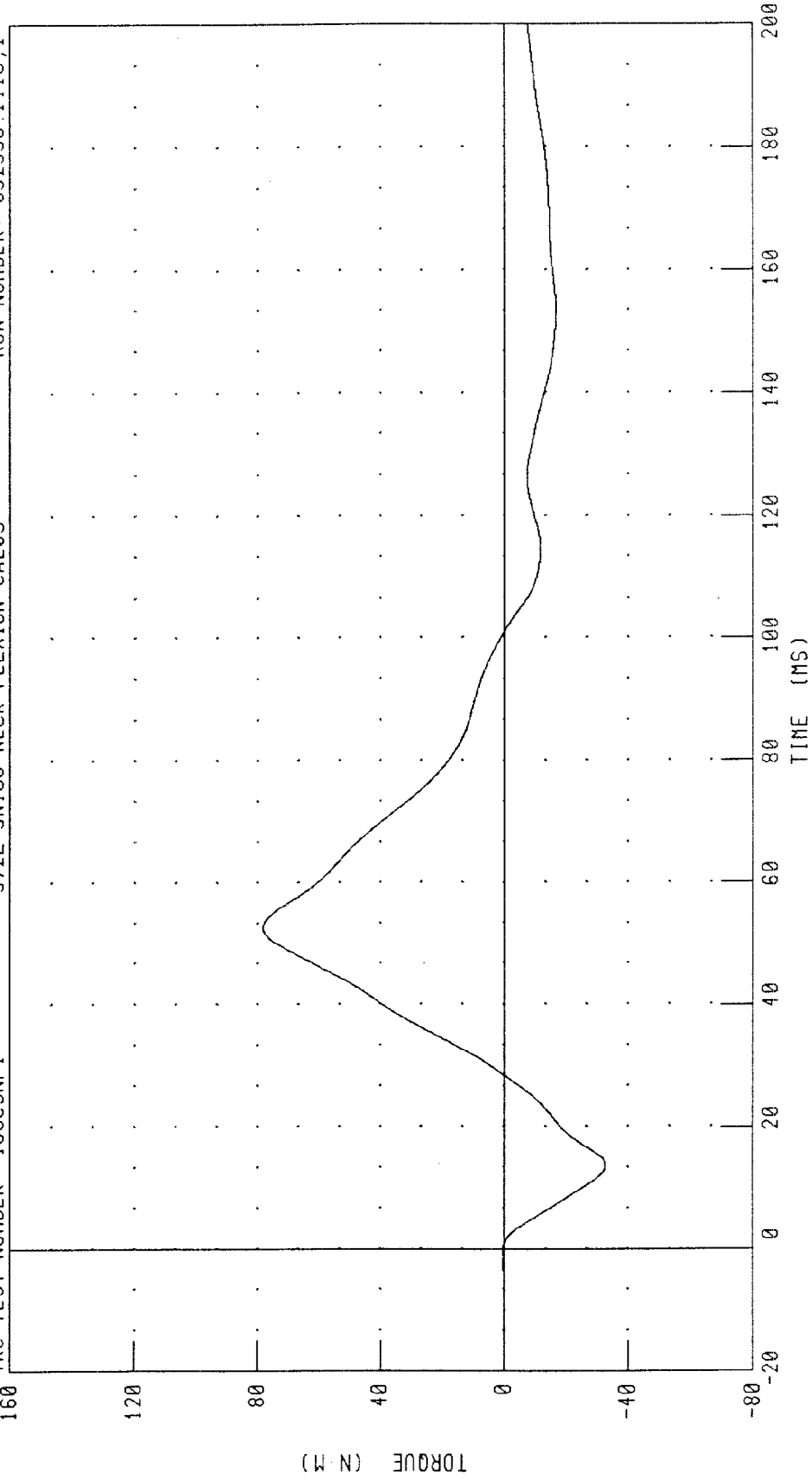
TRC TEST NUMBER: 168C5NF1 572E SN168 NECK FLEXION CAL05 RUN NUMBER: 052998.1118;1



CHANNEL: NEKXF FILTER: CH. CLASS 60 PEAK DATA: 814.87 N @ 47.84 MS, -186.24 N @ 165.52 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS

TRC TEST NUMBER: 168C5NF1 572E SN168 NECK FLEXION CAL05 RUN NUMBER: 052998.1118;1



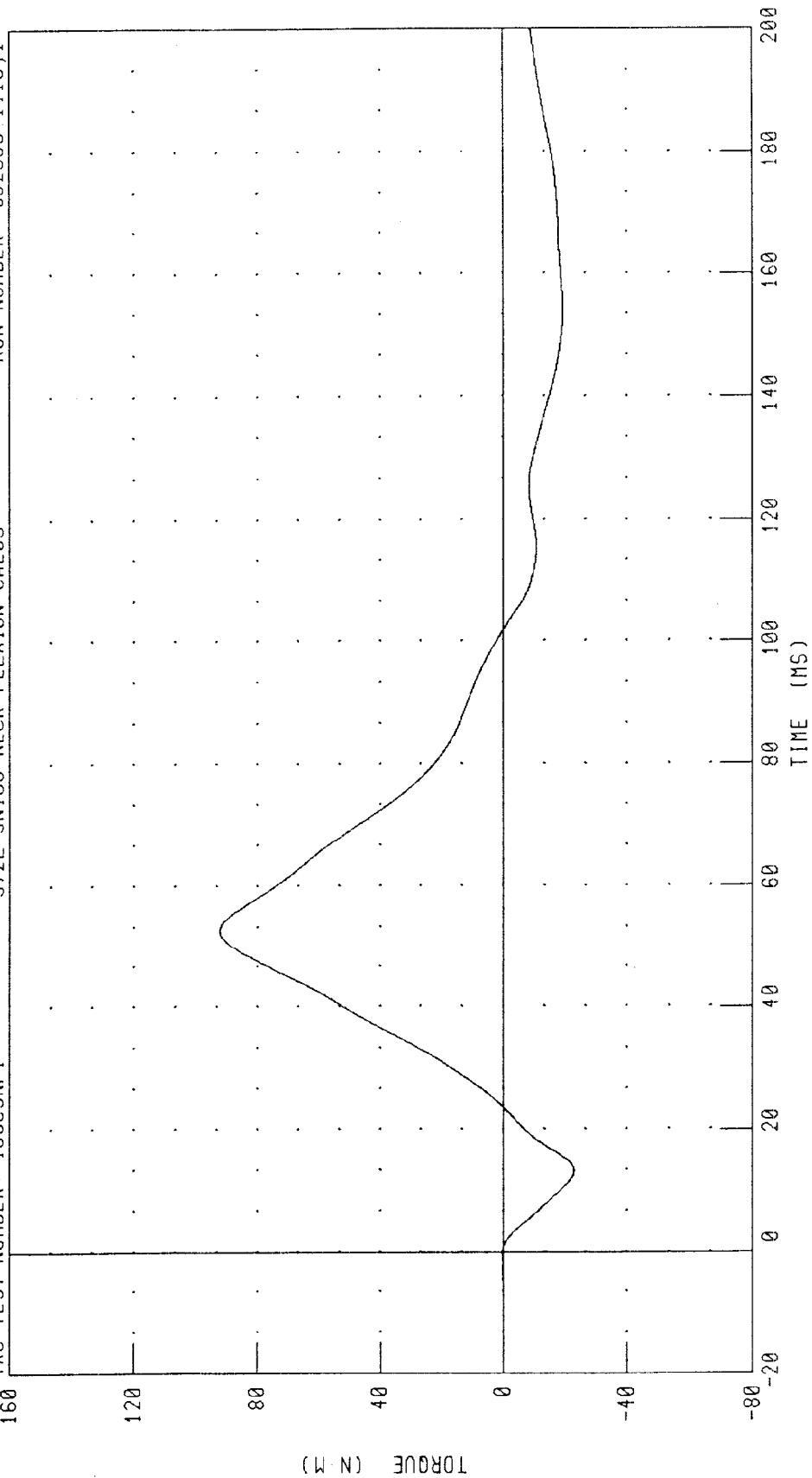
PEAK DATA: 78.15 N·M @ 52.64 MS, -32.78 N·M @ 13.68 MS

FILTER: CH. CLASS 60

CHANNEL: NEKYM

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

TRC TEST NUMBER: 168C5NF1 572E SN168 NECK FLEXION CAL05 RUN NUMBER: 052998 1118,1



PEAK DATA: 92.22 N·M @ 52.72 MS; -22.97 N·M @ 13.28 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

29-MAY-98

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 168C5NE1 572E SN168 NECK EXT CAL05

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	56.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	19.02 G
	20 MS	14.00 - 19.00 G	16.90 G
	30 MS	11.00 - 16.00 G	15.14 G
MAX PENDULUM G		22 G MAX	19.56 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	15.10 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	41.60 MS
D PLANE	MAX	81 - 106 DEG.	97.33 DEG.
ROTATION	TIME	72 - 82 MS	76.88 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-62.62 NM
	TIME	65 - 79 MS	71.44 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	157.60 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	143.28 MS

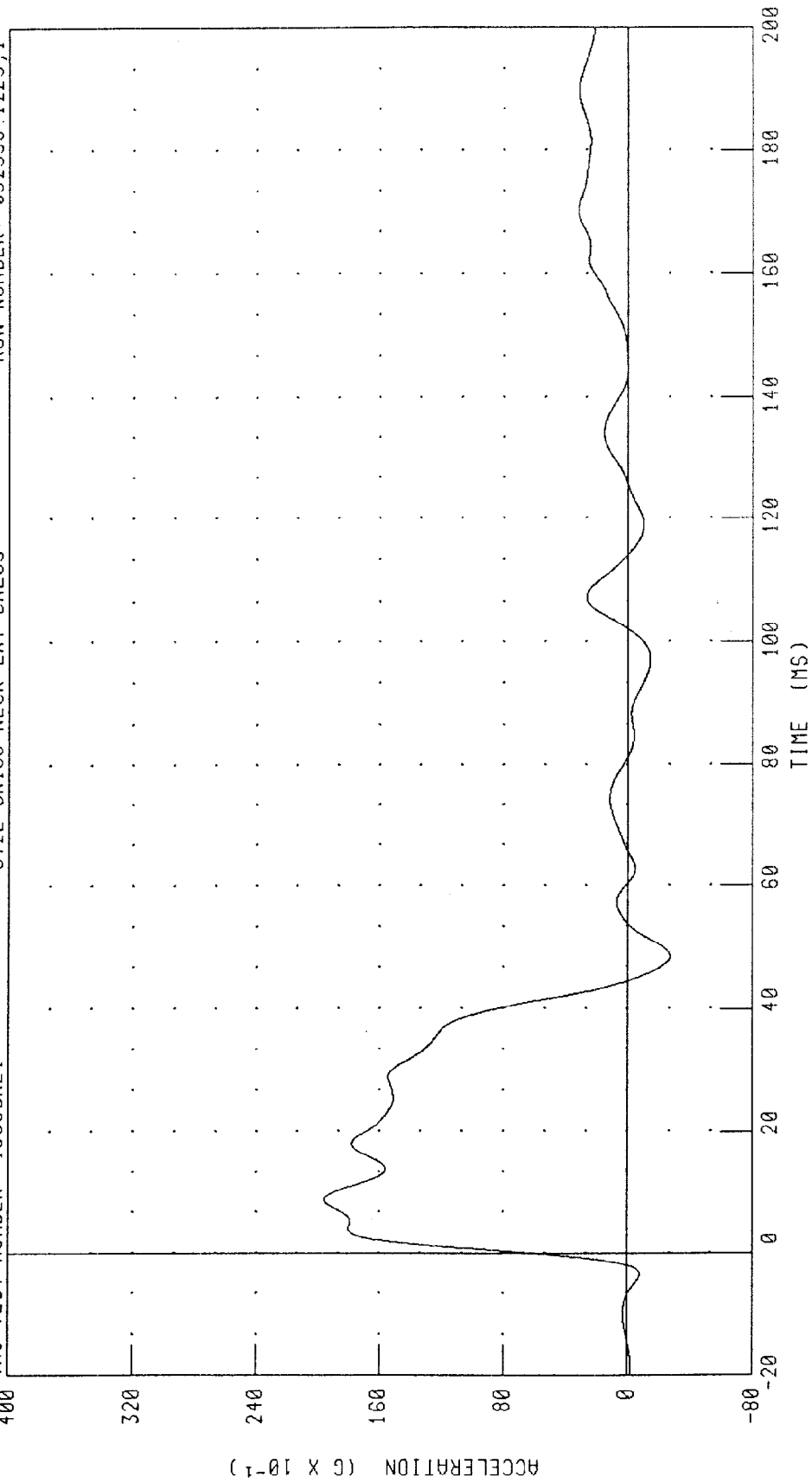
TEST MEETS SPECIFICATIONS

TECHNICIAN By Calh

RUN NUMBER: 052998.1223;1

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
PENDULUM DECELERATION

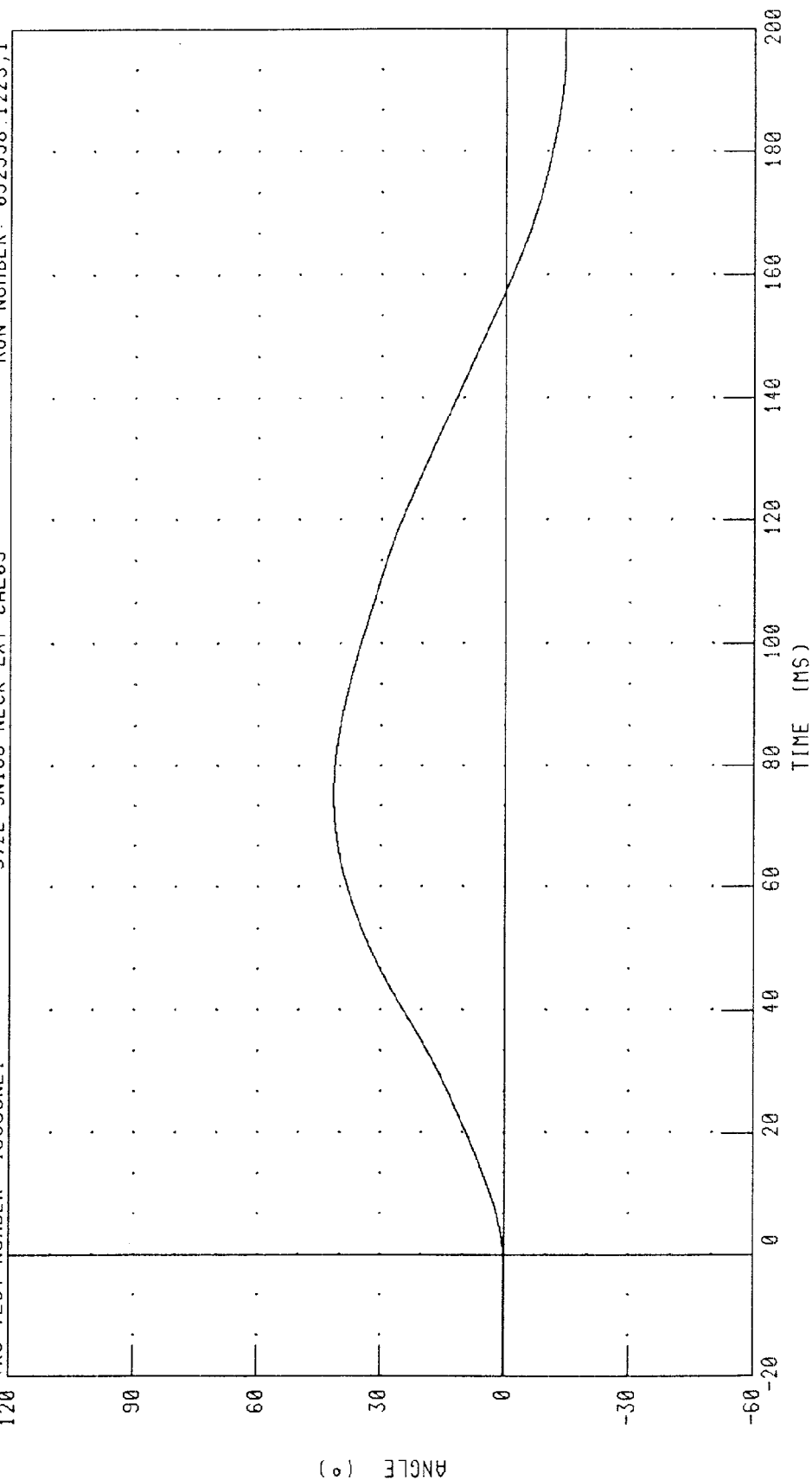
TRC TEST NUMBER: 168C5NE1 572E SN168 NECK EXT CAL05 RUN NUMBER: 052998.1223;1



CHANNEL: PENXC FILTER: CH. CLASS 60 PEAK DATA: 19.56 G @ 8.80 MS, -2.73 G @ 48.40 MS

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

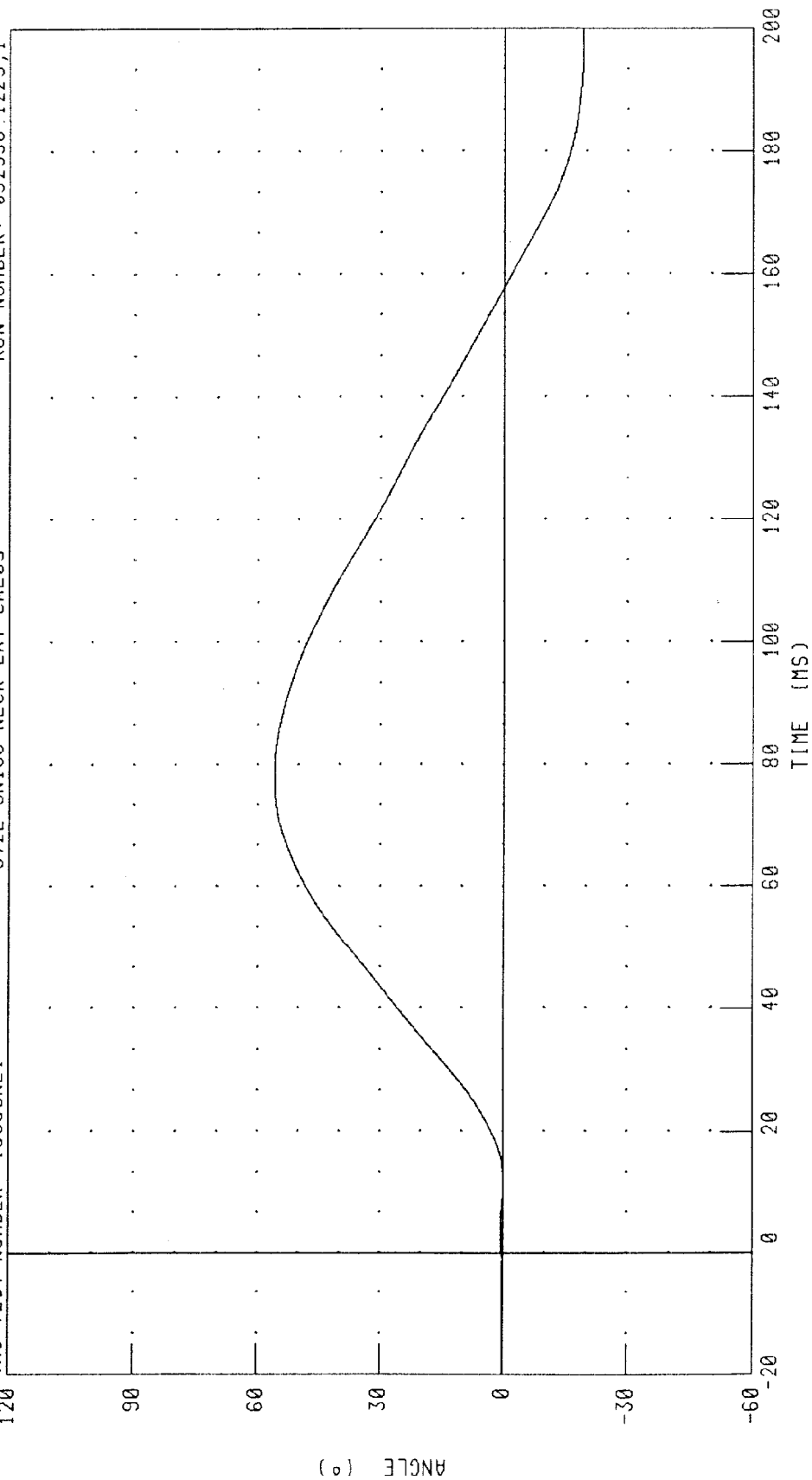
TRC TEST NUMBER: 168C5NE1 572E SN168 NECK EXT CAL05 RUN NUMBER: 052998.1223;1



CHANNEL: BETA FILTER: CH. CLASS 60 PEAK DATA: 41.50 ° @ 75.12 MS; -14.38 ° @ 197.60 MS

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

TRC TEST NUMBER: 168C5NE1 572E SN168 NECK EXT CAL05 RUN NUMBER: 052998.1223,1



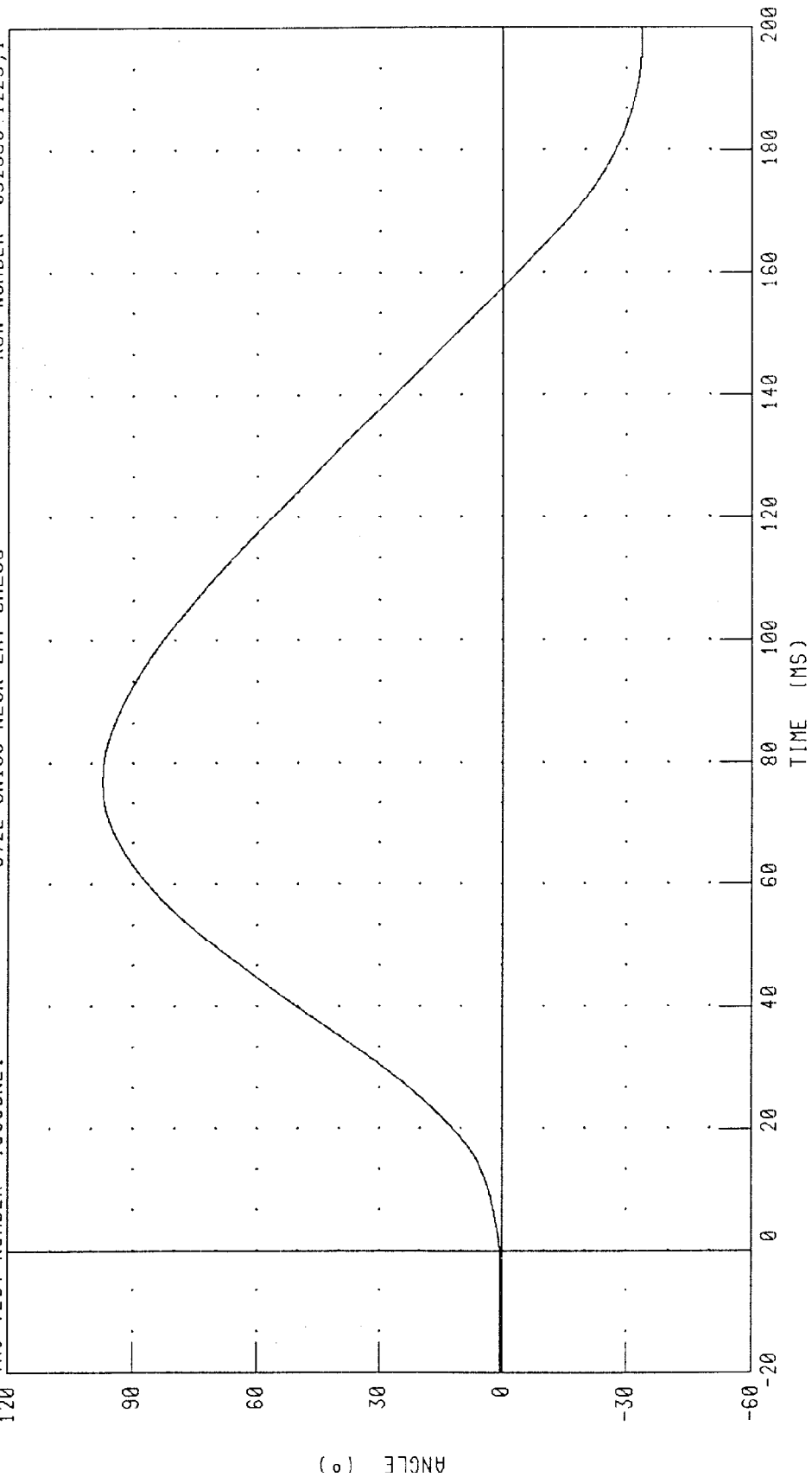
CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 55.91 ° @ 78.40 MS, -19.22 ° @ 199.28 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 168C5NE1 572E SN168 NECK EXT CAL05 RUN NUMBER: 052998 1223,1

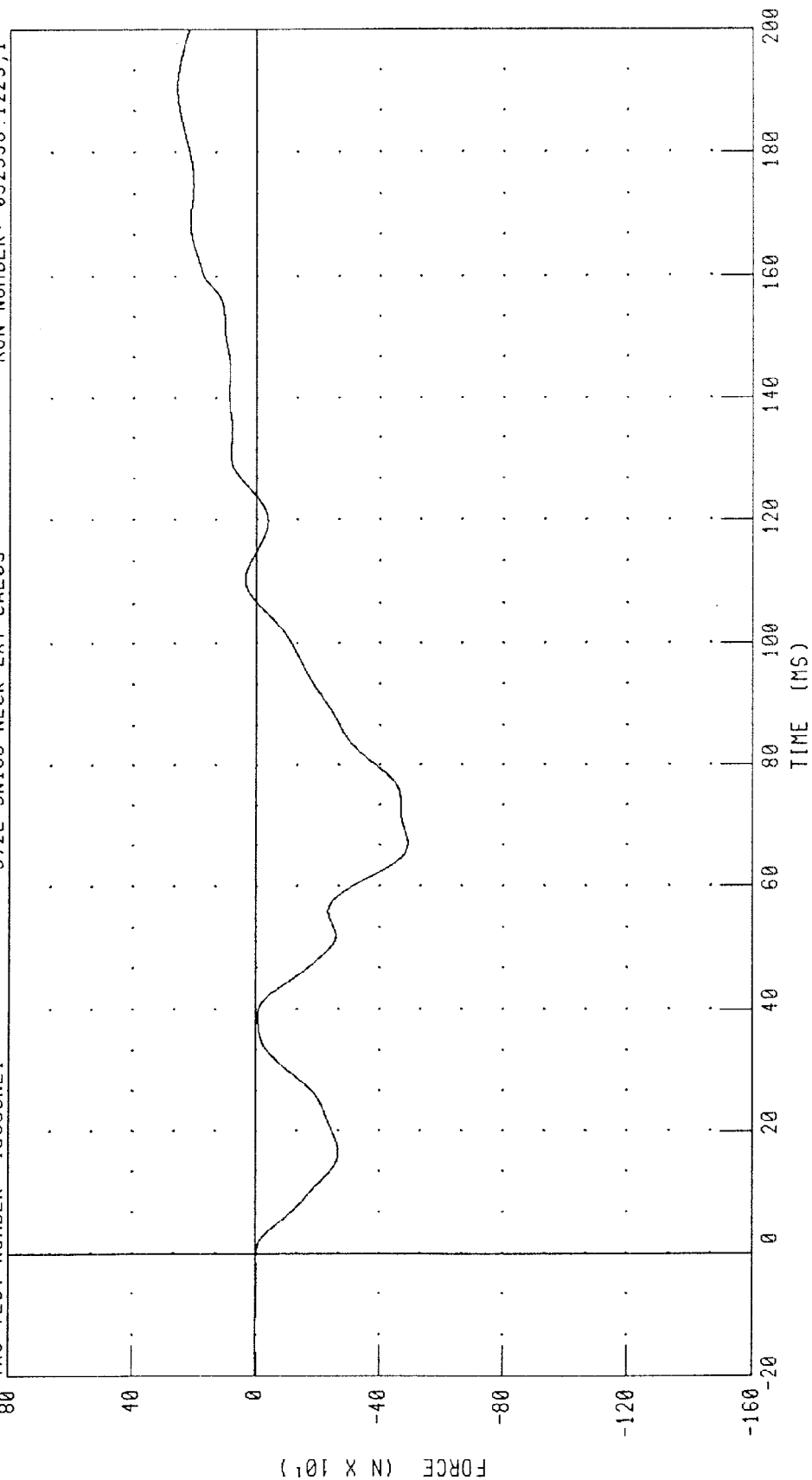


CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 97.34 ° @ 76.88 MS; -33.59 ° @ 197.76 MS

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

TRC TEST NUMBER: 168C5NE1 572E SN168 NECK EXT CAL05 RUN NUMBER: 052998.1223,1



CHANNEL: NEKXF FILTER: CH CLASS 60 PEAK DATA: 258.11 N @ 190.56 MS, -491.75 N @ 67.04 MS

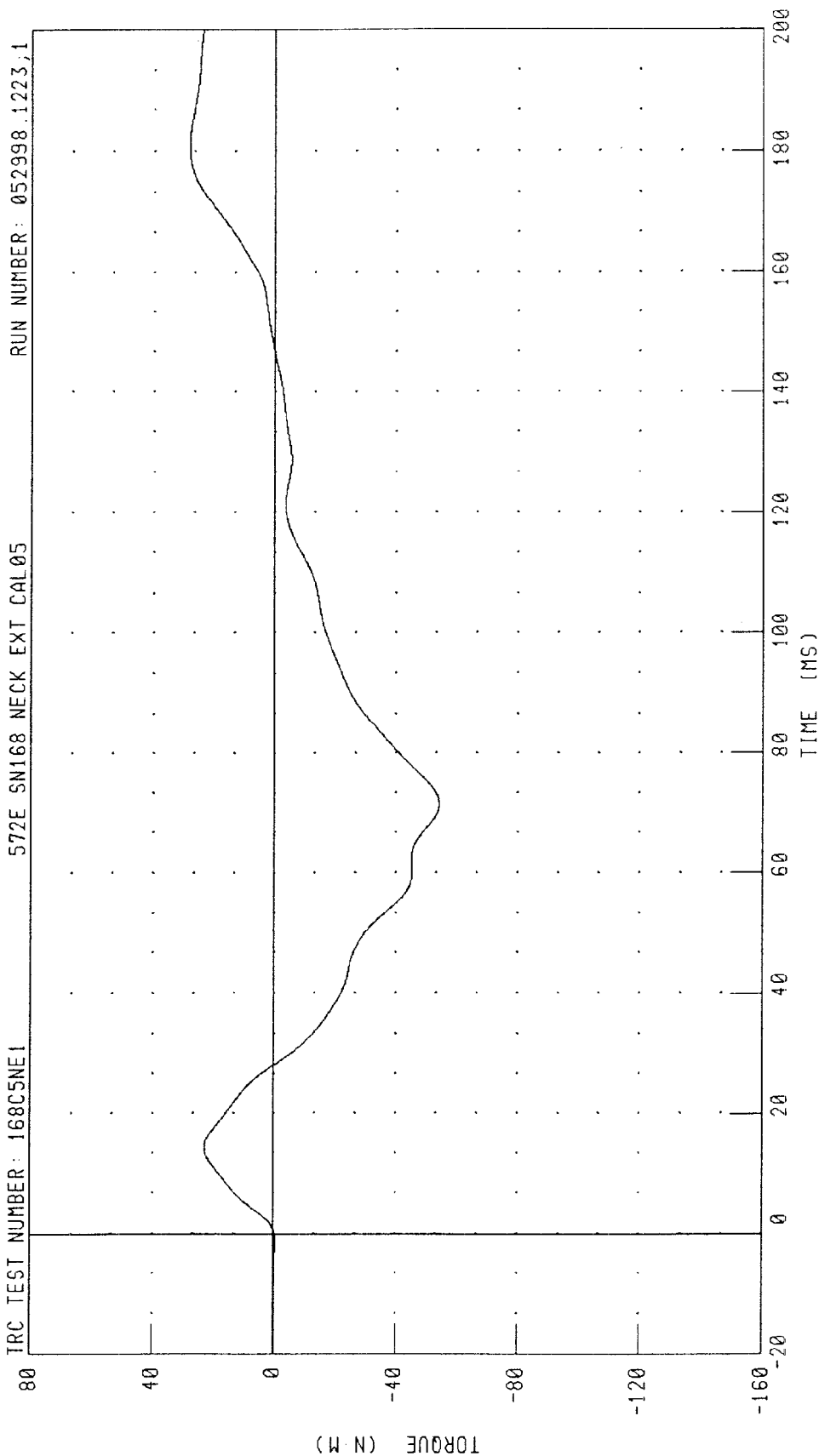
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

572E SN168 NECK EXT CAL05

IRC TEST NUMBER: 16805NE1

RUN NUMBER: 052998.1223,1

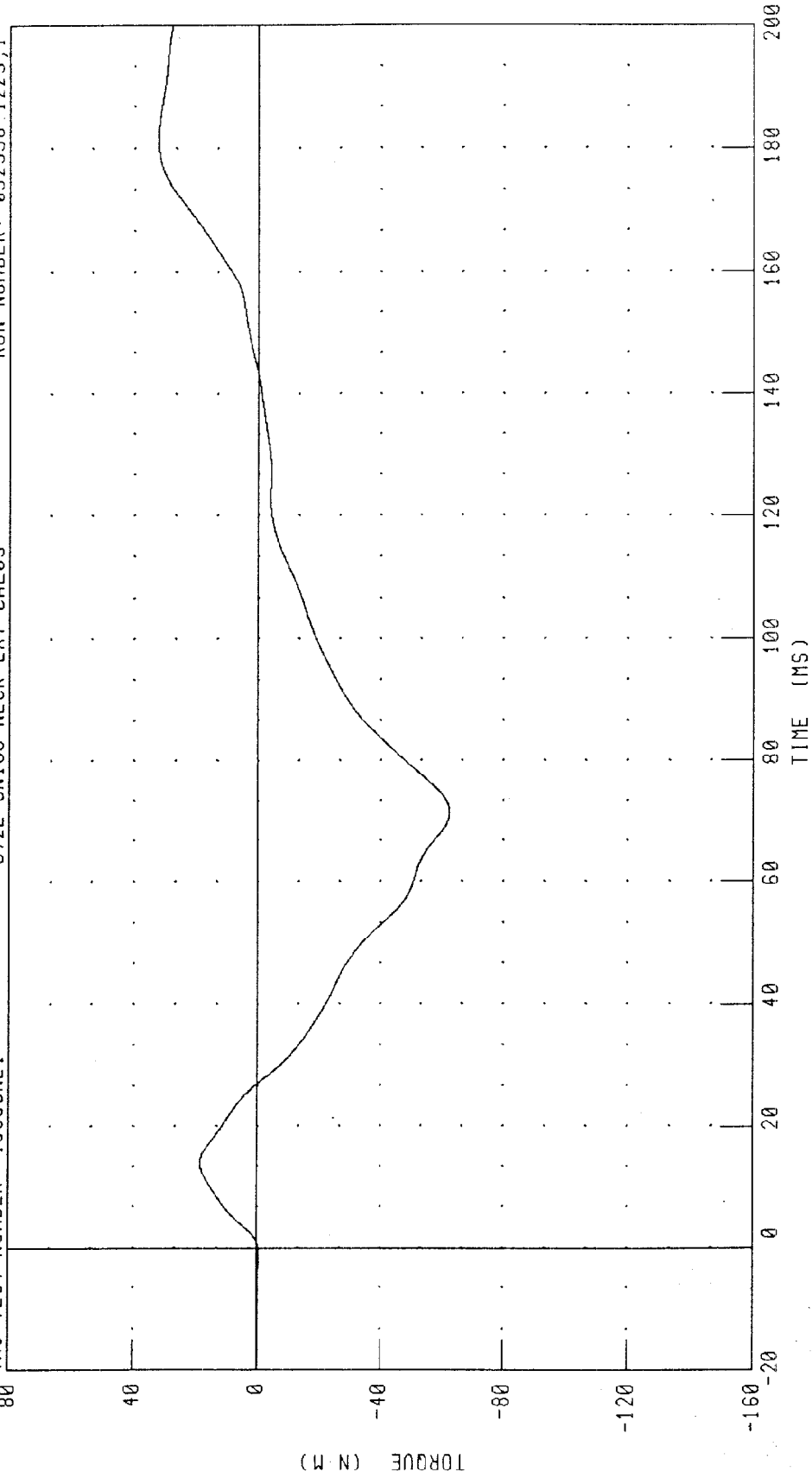


CHANNEL: NEKYM FILTER: CH. CLASS 60

PEAK DATA: 28.43 N·m @ 180.80 ms; -54.26 N·m @ 71.52 ms

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

TRC TEST NUMBER: 168C5NE1 572E SN168 NECK EXT CAL05 RUN NUMBER: 052998 1223,1



CHANNEL: NEXOM FILTER: CH. CLASS 60 PEAK DATA: 32.41 N M @ 181.52 MS; -62.62 N M @ 71.44 MS

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III 50th

01-JUN-98

TRC INC.

TEST NO: 168C5TH3

572E SN168 H.S.THORAX CAL05

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	55.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.62 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	65.7 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5808. N
INTERNAL HYSTERESIS	69% - 85%	70.9%

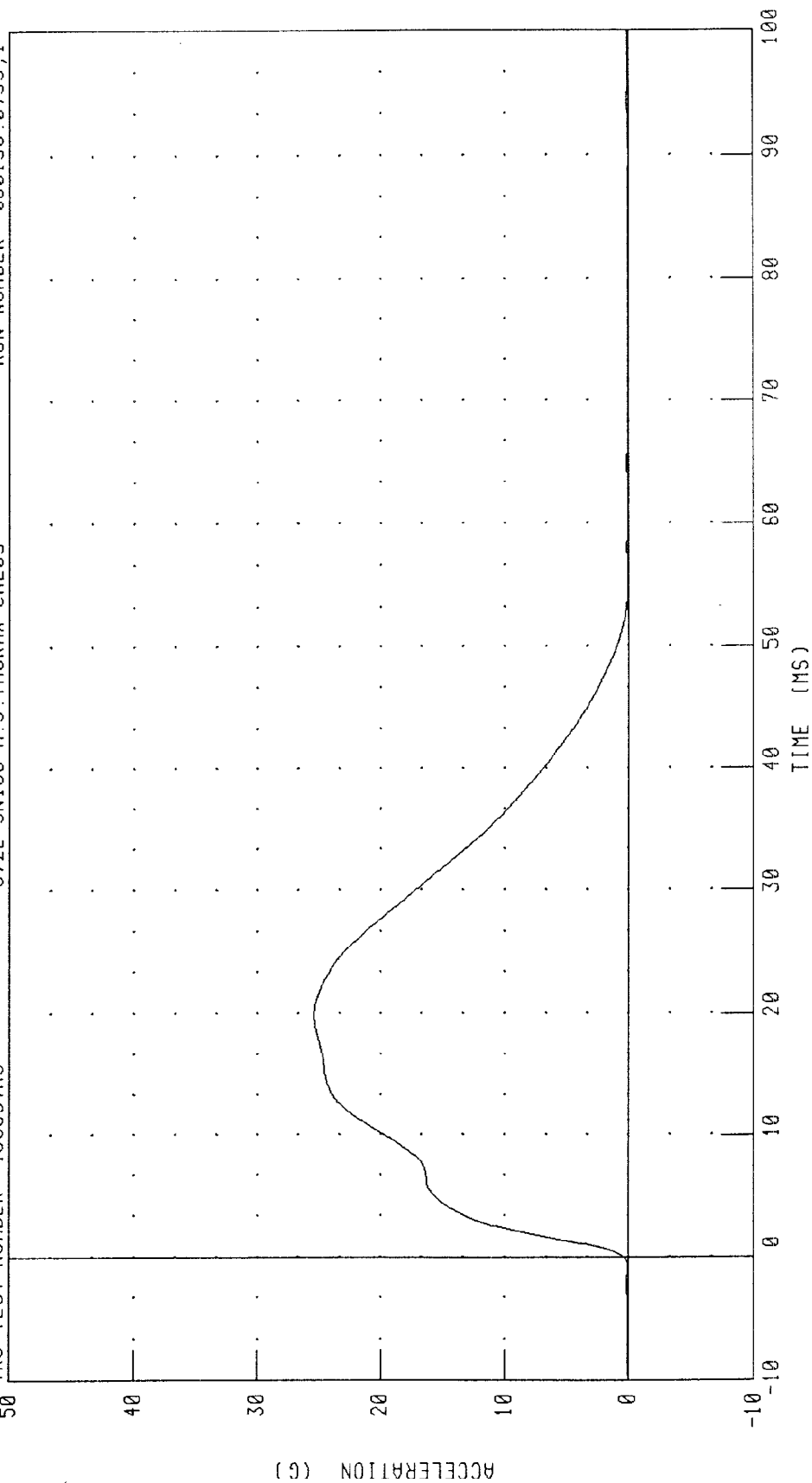
TEST MEETS SPECIFICATIONS

TECHNICIAN B. Calt

RUN NUMBER: 060198.0753;1

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM DECELERATION

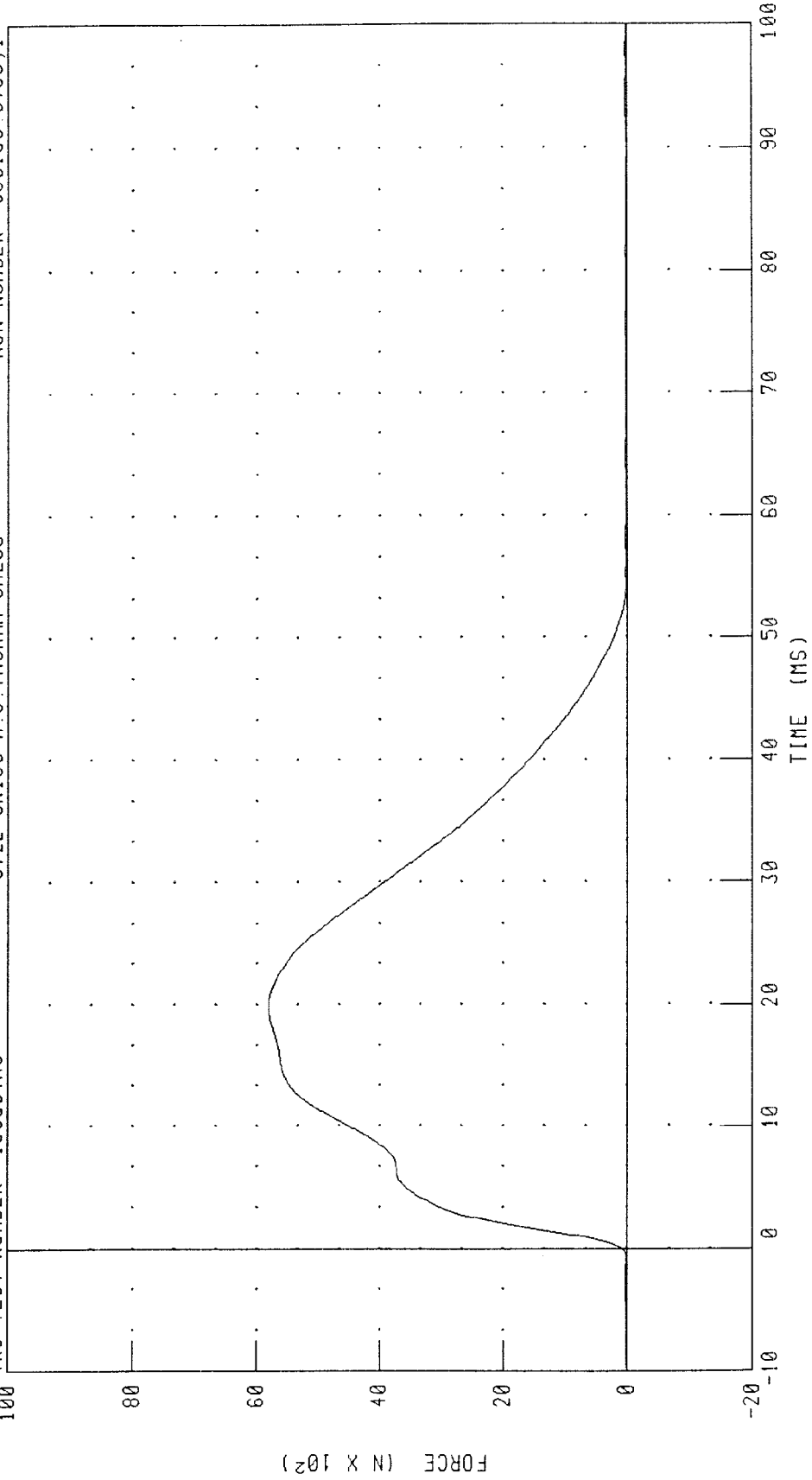
TRC TEST NUMBER: 168C5TH3 572E SN168 H.S.THORAX CAL05 RUN NUMBER: 060198.0753,1



CHANNEL: PENXC FILTER: CH. CLASS 180 PEAK DATA: 25.36 G @ 19.84 MS, 0.01 G @ 89.92 MS

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE

IRC TEST NUMBER: 168C5TH3 572E SN168 H.S. THORAX CAL05 RUN NUMBER: 060198 0753,1



CHANNEL: PENXF FILTER: CH. CLASS 180 PEAK DATA: 5808.94 N @ 19.84 MS, 1.50 N @ 89.92 MS

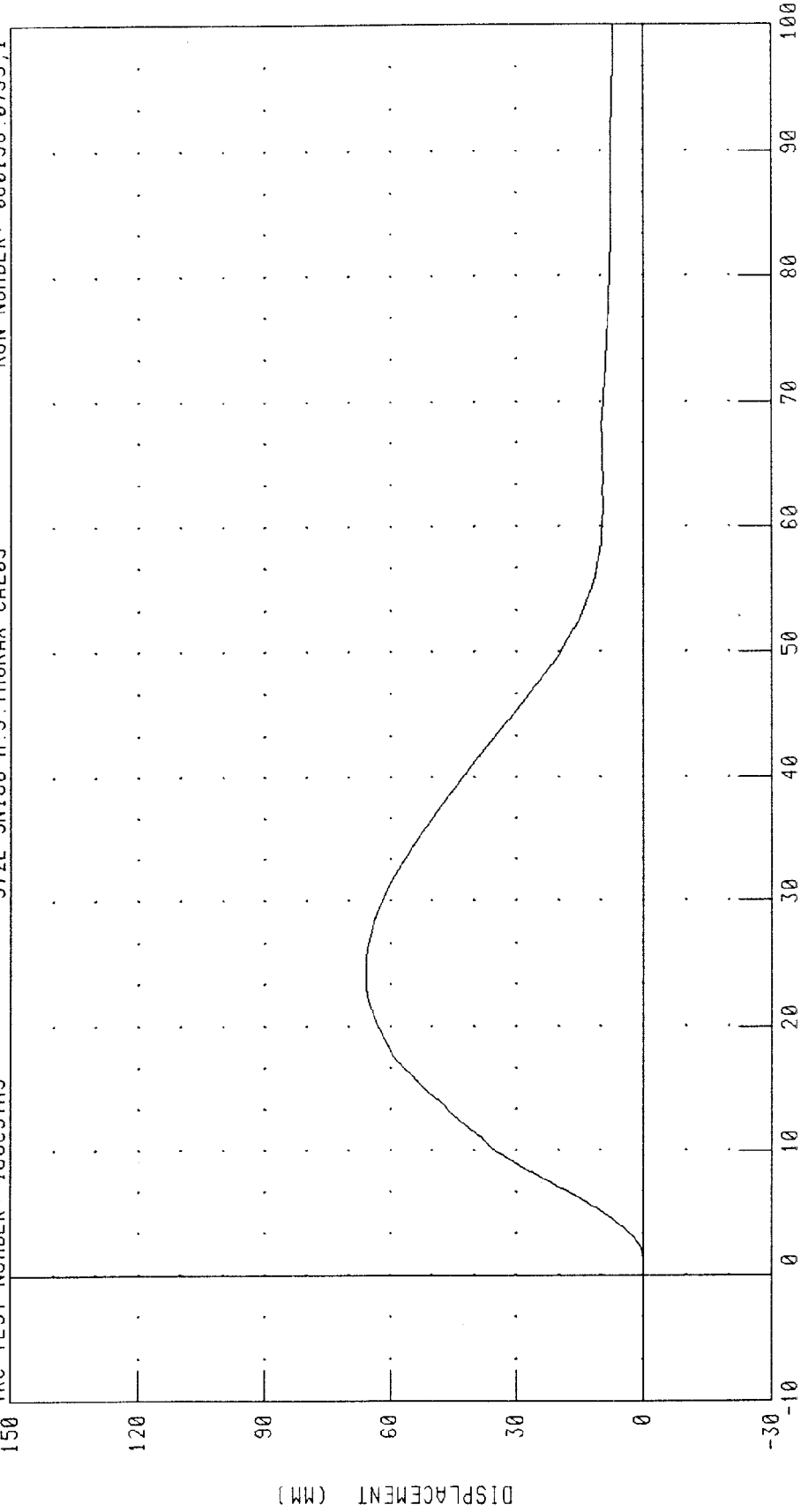
PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

TRC TEST NUMBER: 168C5TH3

572E SN168 H.S. THORAX CAL05

RUN NUMBER: 060198.0753;1



CHANNEL: CSTXD FILTER: CH. CLASS 180

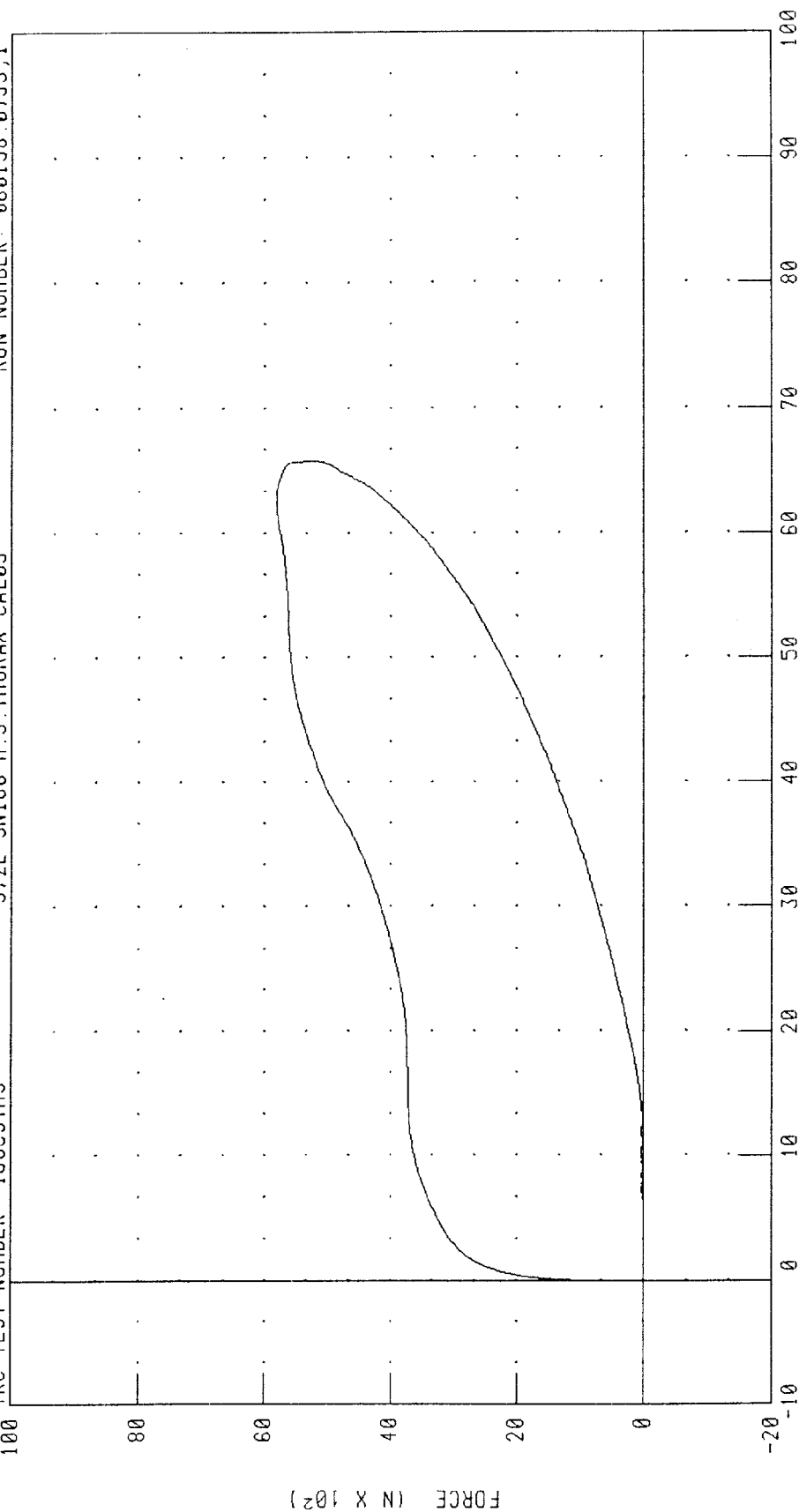
PEAK DATA: 65.78 MM @ 25.04 MS; -0.01 MM @ 0.72 MS

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

TRC TEST NUMBER: 168C5TH3

572E SN168 H.S. THORAX CAL05

RUN NUMBER: 060198 0753.1



DISPLACEMENT (MM)

CHANNEL: CSTXD
PENXF

PEAK DATA:

65.78 MM @ 25.04 MS;
5808.94 N @ 19.84 MS;
-0.01 MM @ 0.72 MS;
1.50 N @ 89.92 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 50th

29-MAY-98

TRC INC.

TEST NO: 168C5RK2

572E SN168 RIGHT KNEE CAL 05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	4872.7 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

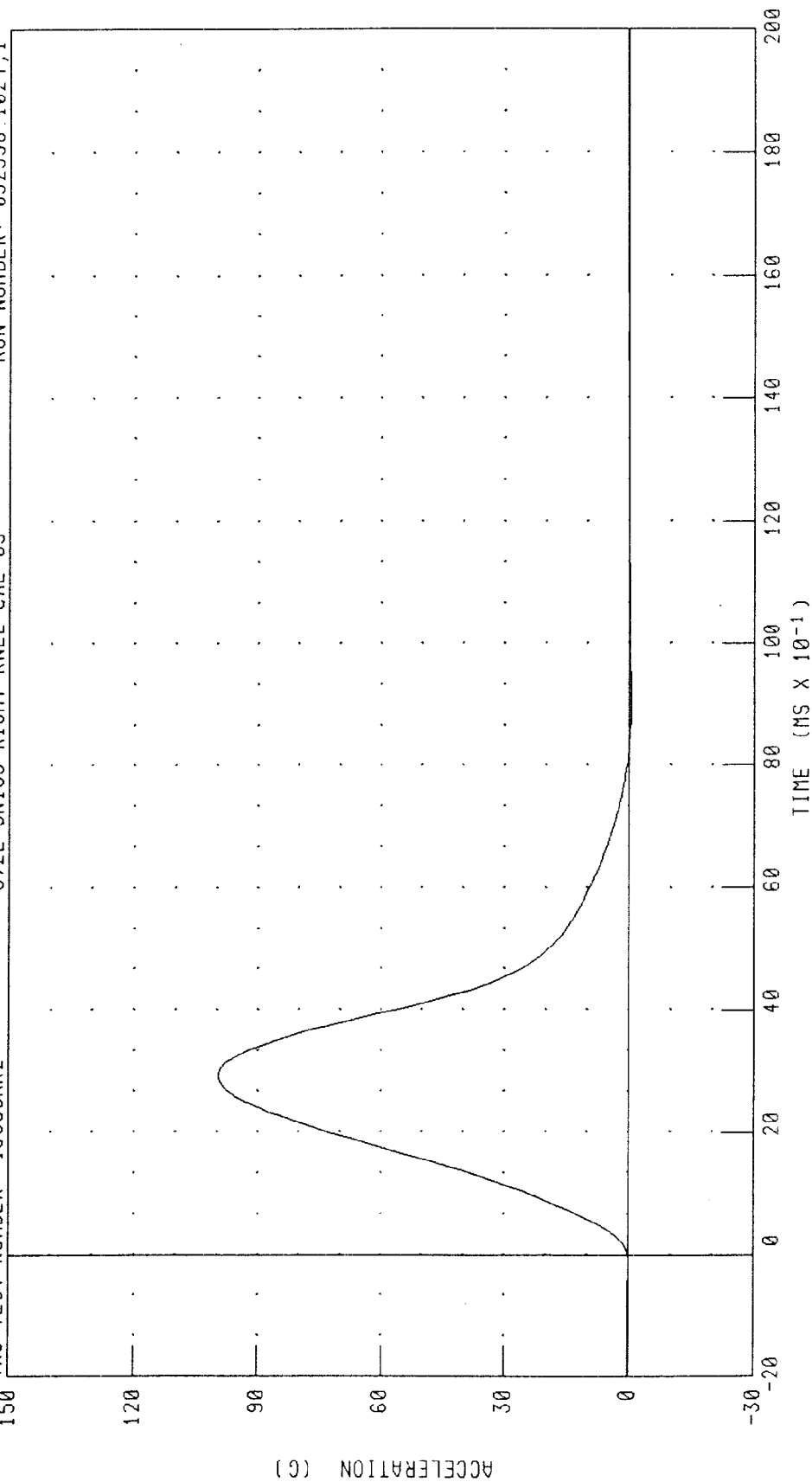
RUN NUMBER: 052998.1023;1

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

TRC TEST NUMBER: 168C5RK2

572E SN168 RIGHT KNEE CAL 05

RUN NUMBER: 052998.1024;1

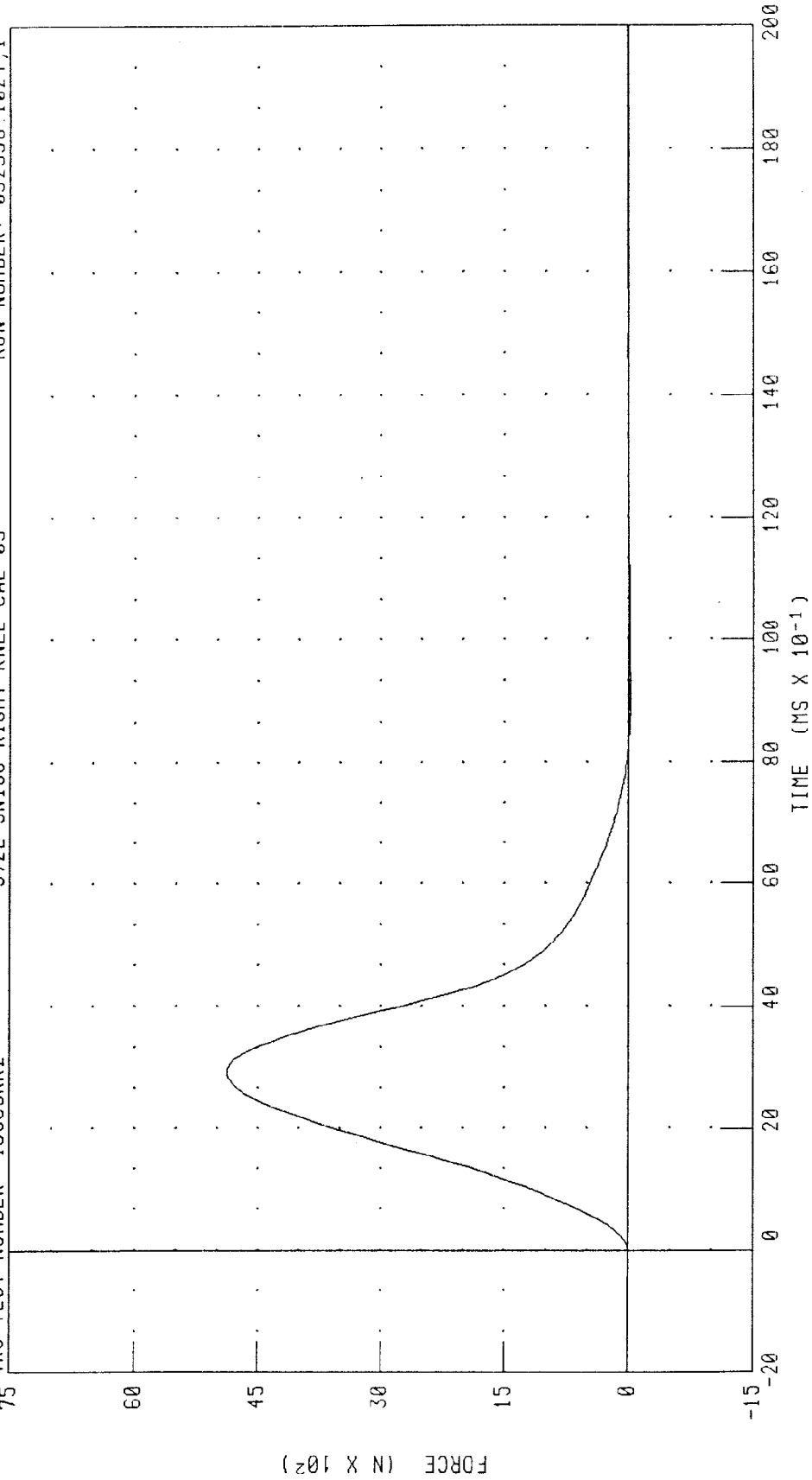


CHANNEL: PENXC FILTER: CH. CLASS 600

PEAK DATA: 99.59 G @ 2.88 MS; -0.51 G @ 9.04 MS

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

IRC TEST NUMBER: 168C5RK2 572E SN168 RIGHT KNEE CAL 05 RUN NUMBER: 052998 1024,1



CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 4872.74 N @ 2.88 MS, -24.98 N @ 9.04 MS

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 50th

29-MAY-98

TRC INC.

TEST NO: 168C5LK2

572E SN168 LEFT KNEE CAL 05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	56.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	4782.1 N

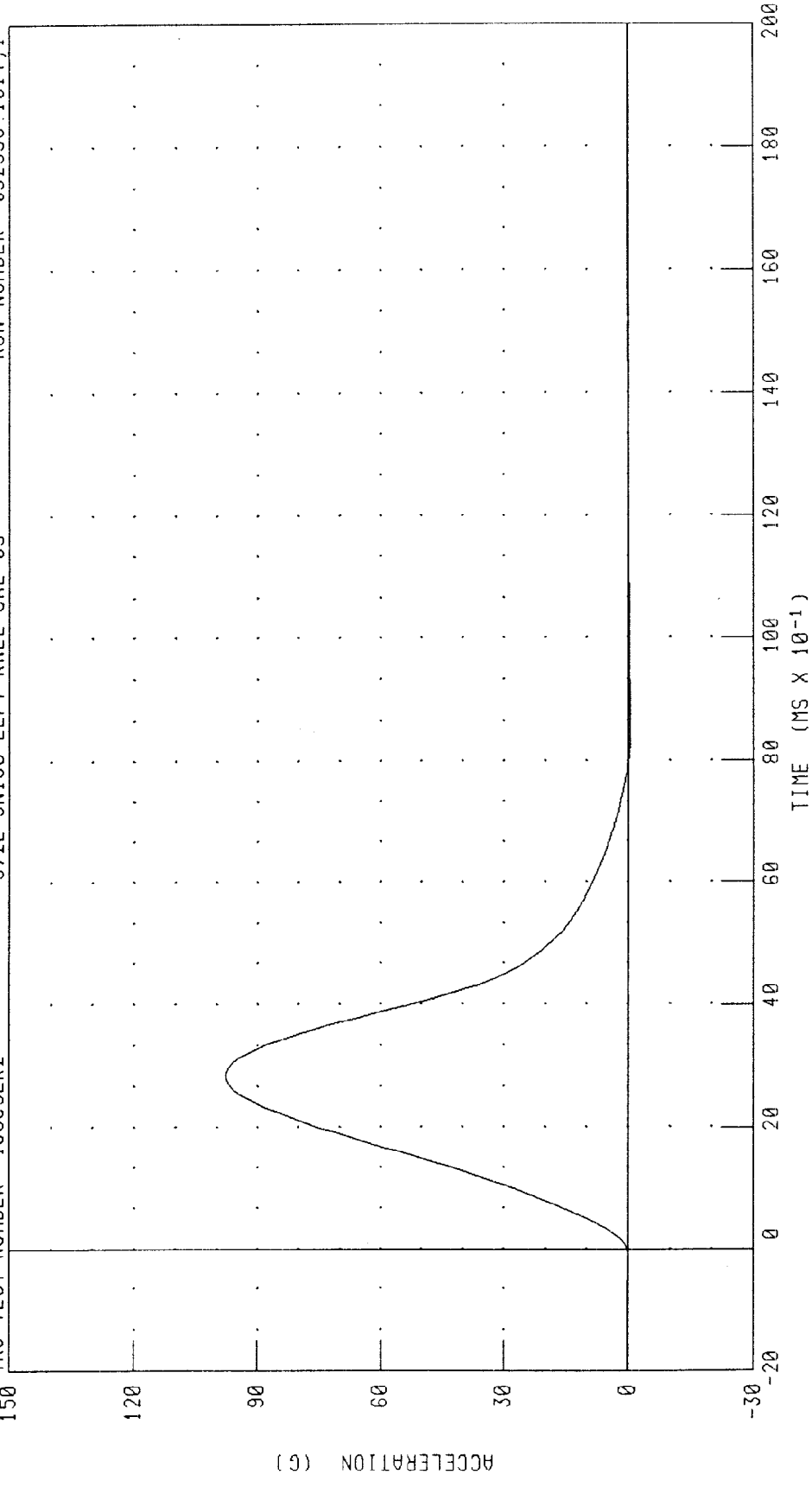
TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 052998.1014;1

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

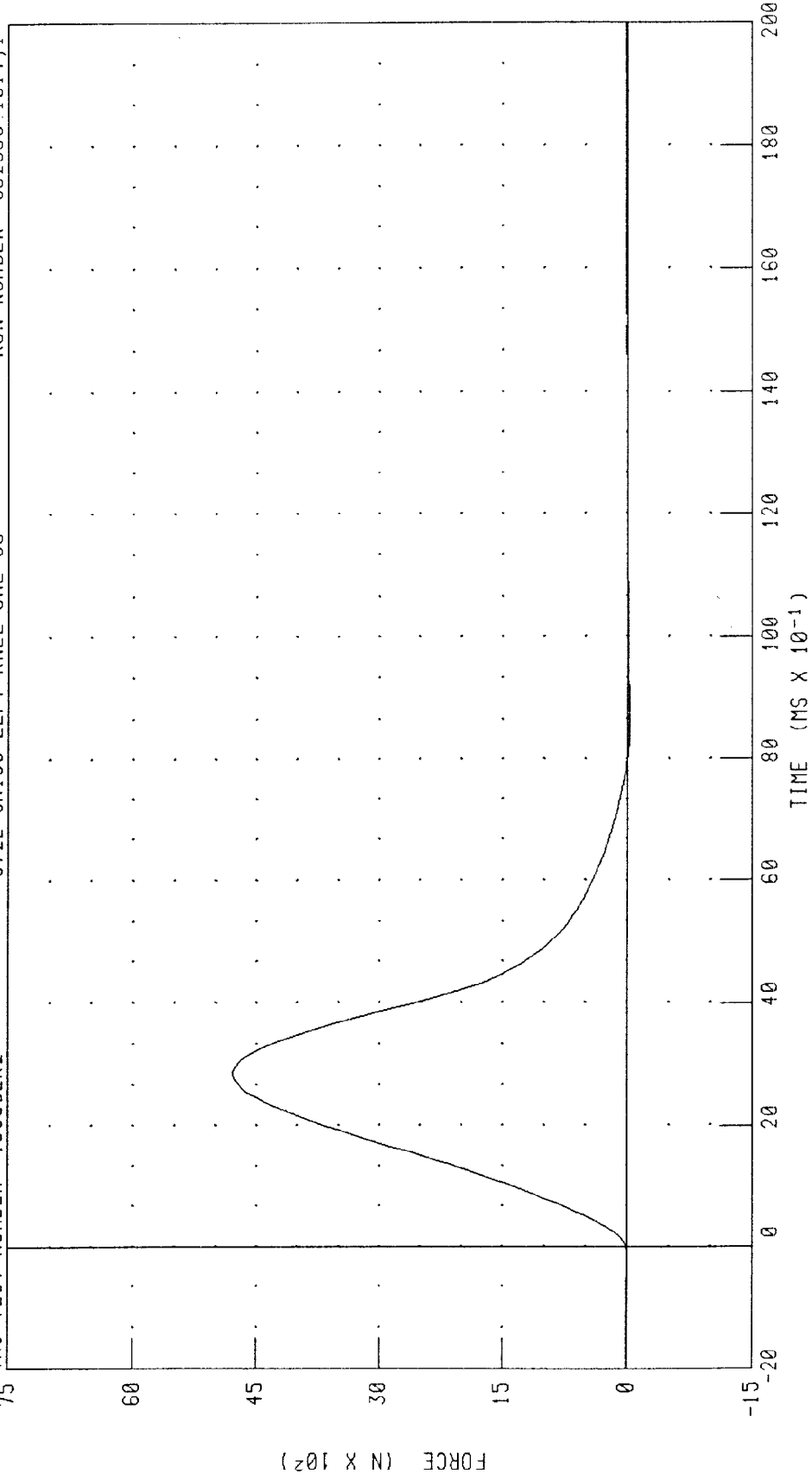
TRC TEST NUMBER: 168C5LK2 572E SN168 LEFT KNEE CAL 05 RUN NUMBER: 052998.1014.1



CHANNEL: PENXC FILTER: CH. CLASS 600 PEAK DATA: 97.74 G @ 2.88 MS, -0.69 G @ 8.56 MS

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

TRC TEST NUMBER: 168C5LK2 572E SN168 LEFT KNEE CAL 05 RUN NUMBER: 052998.1014.1



CHANNEL: PENXF FILTER: CH. CLASS 600 PEAK DATA: 4782.20 N @ 2.88 MS; -33.54 N @ 8.56 MS

Pre-Test Calibration

Bullet Vehicle Passenger Dummy S/N 289

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III SMALL FEMALE

18-MAY-98

TRC INC.

TEST NO: 289C4HD1

S.FEMALE SN289 HEAD DROP CAL4

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	40.0 %
PEAK RESULTANT ACCELERATION	240 - 295 G	277.30 G
PEAK LATERAL ACCELERATION	15 G MAX	-5.98 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN By Calt

RUN NUMBER: 051898.1228;1

SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

S.FEMALE SN289 HEAD DROP CAL4

RUN NUMBER: 051898.1231,1

TRC TEST NUMBER: 289C4HD1

75

0

-75

-150

-225

-300

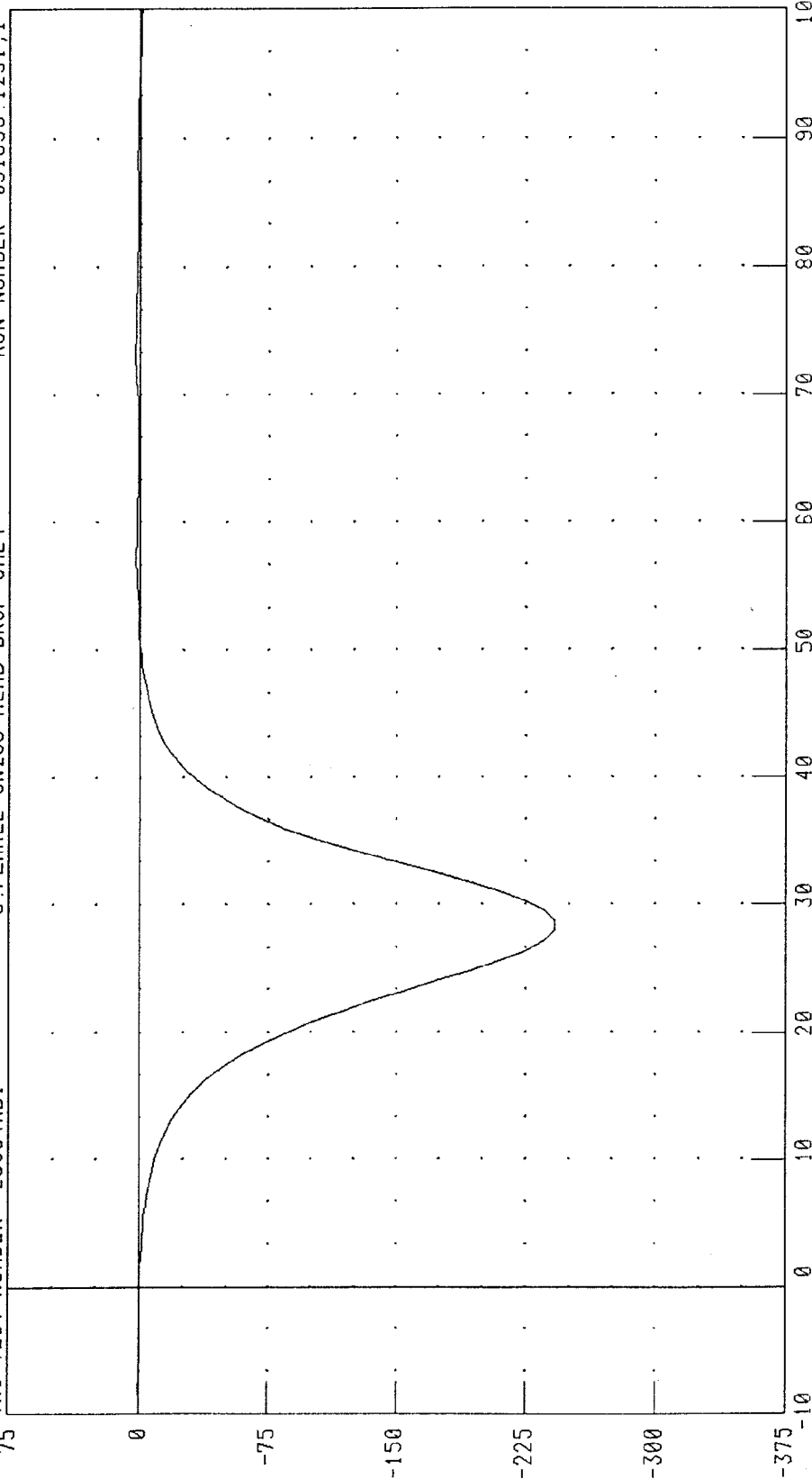
-375

ACCELERATION (G)

TIME (MS X 10⁻¹)

CHANNEL: HEDXC FILTER: CH CLASS 1000

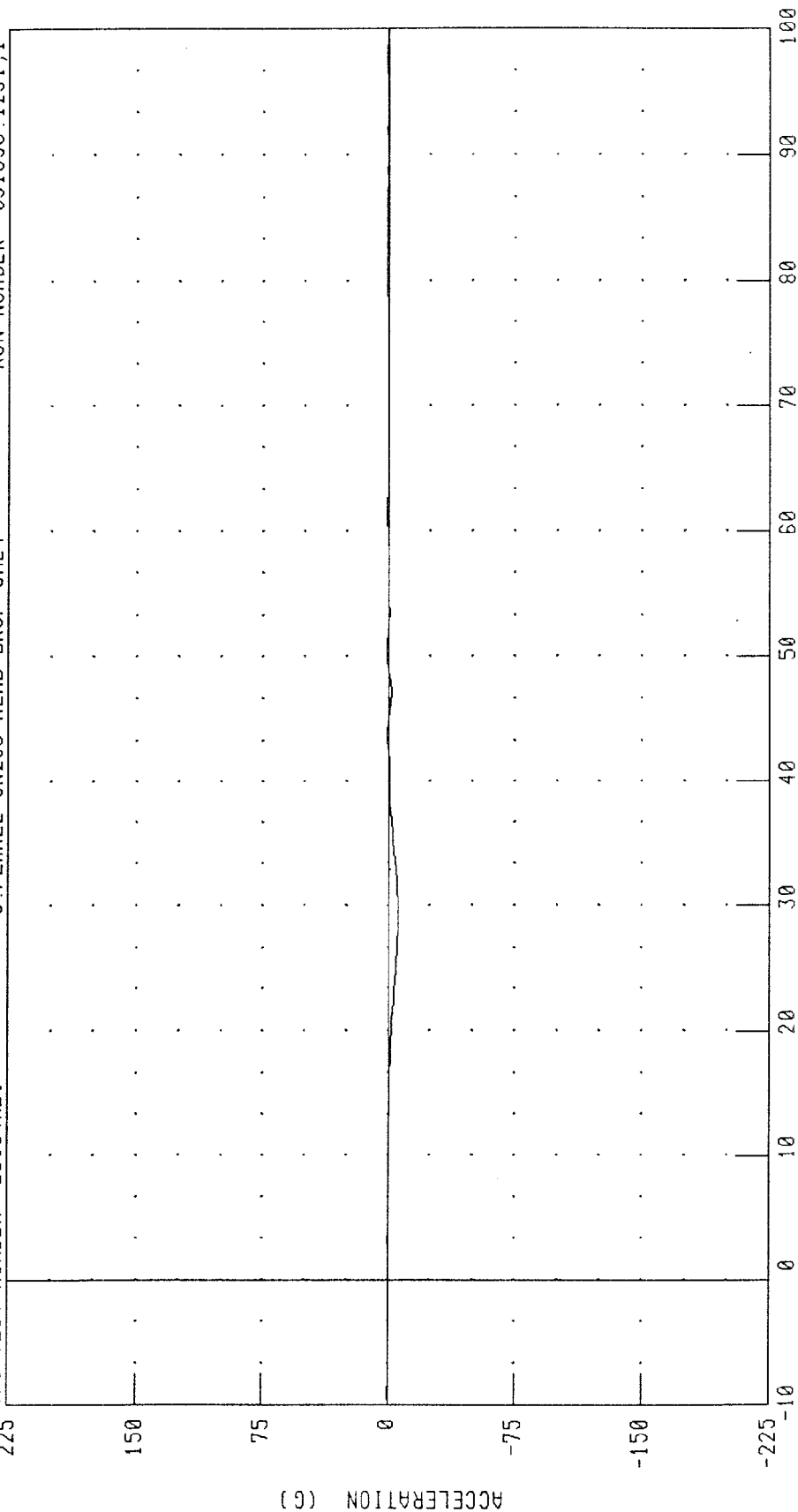
PEAK DATA: 3.20 G @ 7.28 MS, -241.69 G @ 2.80 MS



SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

TRC TEST NUMBER: 289C4HD1 S.FEMALE SN289 HEAD DROP CAL4 RUN NUMBER: 051898.1231,1



CHANNEL: HEDYC FILTER: CH CLASS 1000

PEAK DATA: 1.11 G @ 5.04 MS; -5.98 G @ 2.88 MS

SMALL FEMALE HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Z AXIS

S.FEMALE SN289 HEAD DROP CAL4

RUN NUMBER: 051898.1231;1

TRC TEST NUMBER: 289C4HD1

75

0

-75

-150

-225

-300

-375

ACCELERATION (G)

TIME (MS X 10⁻¹)

100

90

80

70

60

50

40

30

20

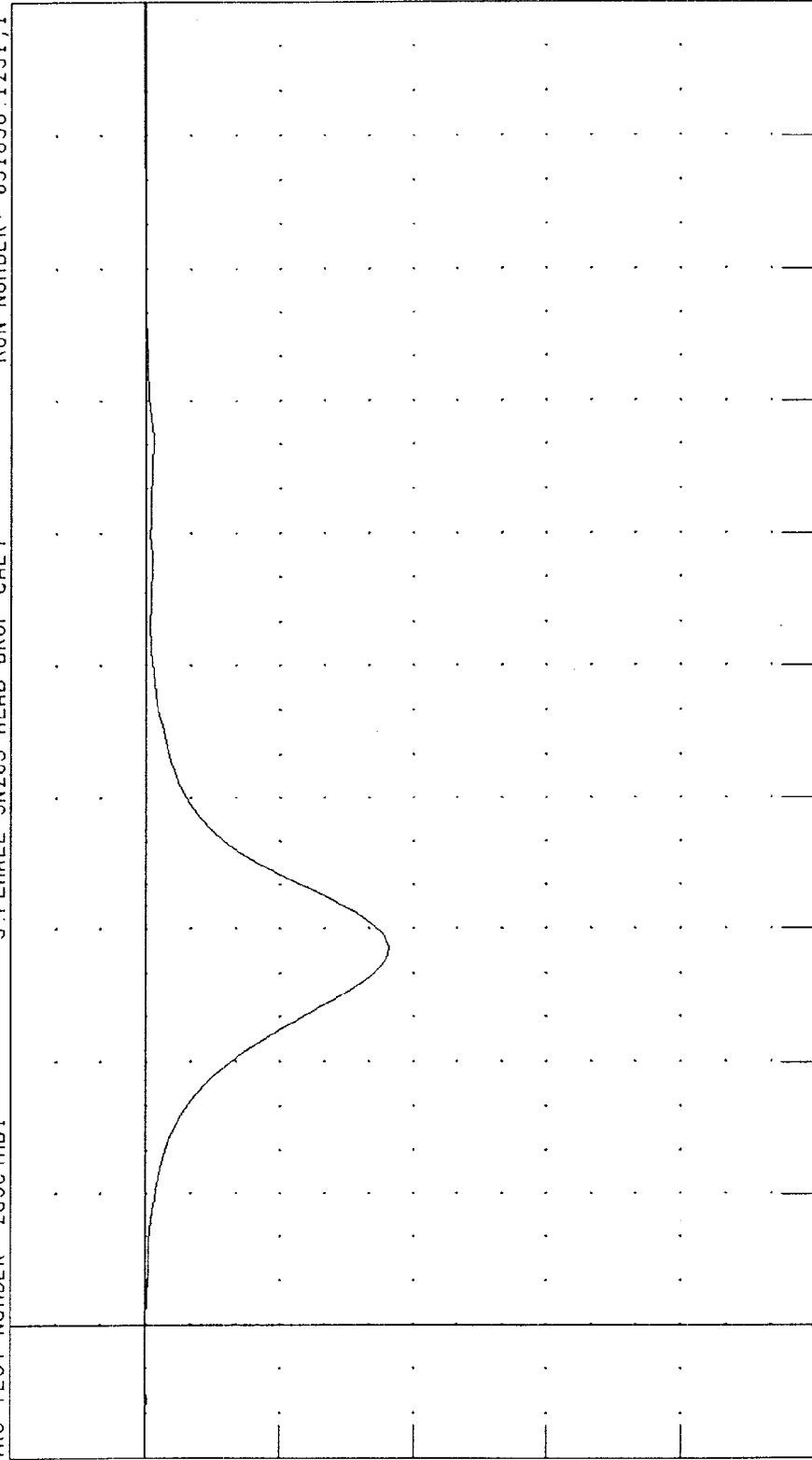
10

0

-10

CHANNEL: HEDZG FILTER: CH. CLASS 1000

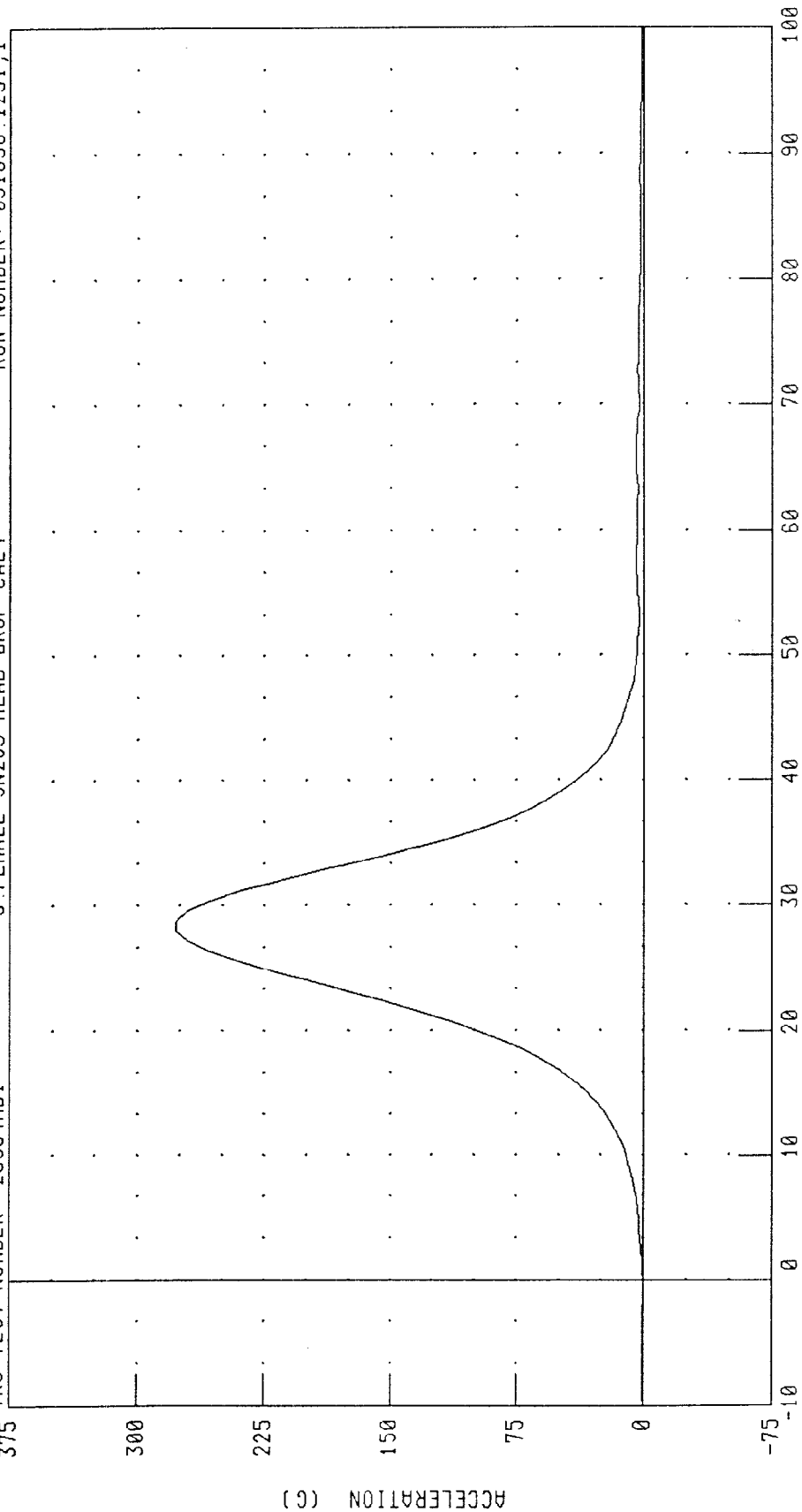
PEAK DATA: 1.11 G @ 9.20 MS, -136.17 G @ 2.88 MS



SMALL FEMALE HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION
S. FEMALE SN289 HEAD DROP CAL4

TRC TEST NUMBER: 289C4HD1

RUN NUMBER: 051898 1231,1



CHANNEL: HEDRC

FILTER: CH. CLASS 1000

PEAK DATA: 277.31 G @ 2.88 MS; 0.18 G @ -0.16 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

18-MAY-98

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 289C4NF2 S.FEMALE SN289 NECK FLEX. CAL4

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	40.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.12 M/S
INTEGRATED PENDULUM VELOCITY	10 MS	2.1 - 2.5 M/S	2.36 M/S
	20 MS	4.0 - 5.0 M/S	4.67 M/S
	30 MS	5.8 - 7.0 M/S	6.53 M/S
PEAK D-PLANE ROTATION		78 - 96 DEG.	87.11 DEG.
ROTATION ANGLE DECAY TIME FROM PEAK TO ZERO		57 - 69 MS	65.60 MS
PEAK MOMENT ABOUT OCCIPITAL CONDYLE		69 - 84 NM	71.59 NM
POSITIVE MOMENT DECAY TIME FROM PEAK TO ZERO		41 - 50 MS	45.76 MS
TIME OF PEAK ROTATION AFTER PEAK MOMENT		2 - 12 MS	11.12 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

Bj alt

RUN NUMBER: 051898.1517;1

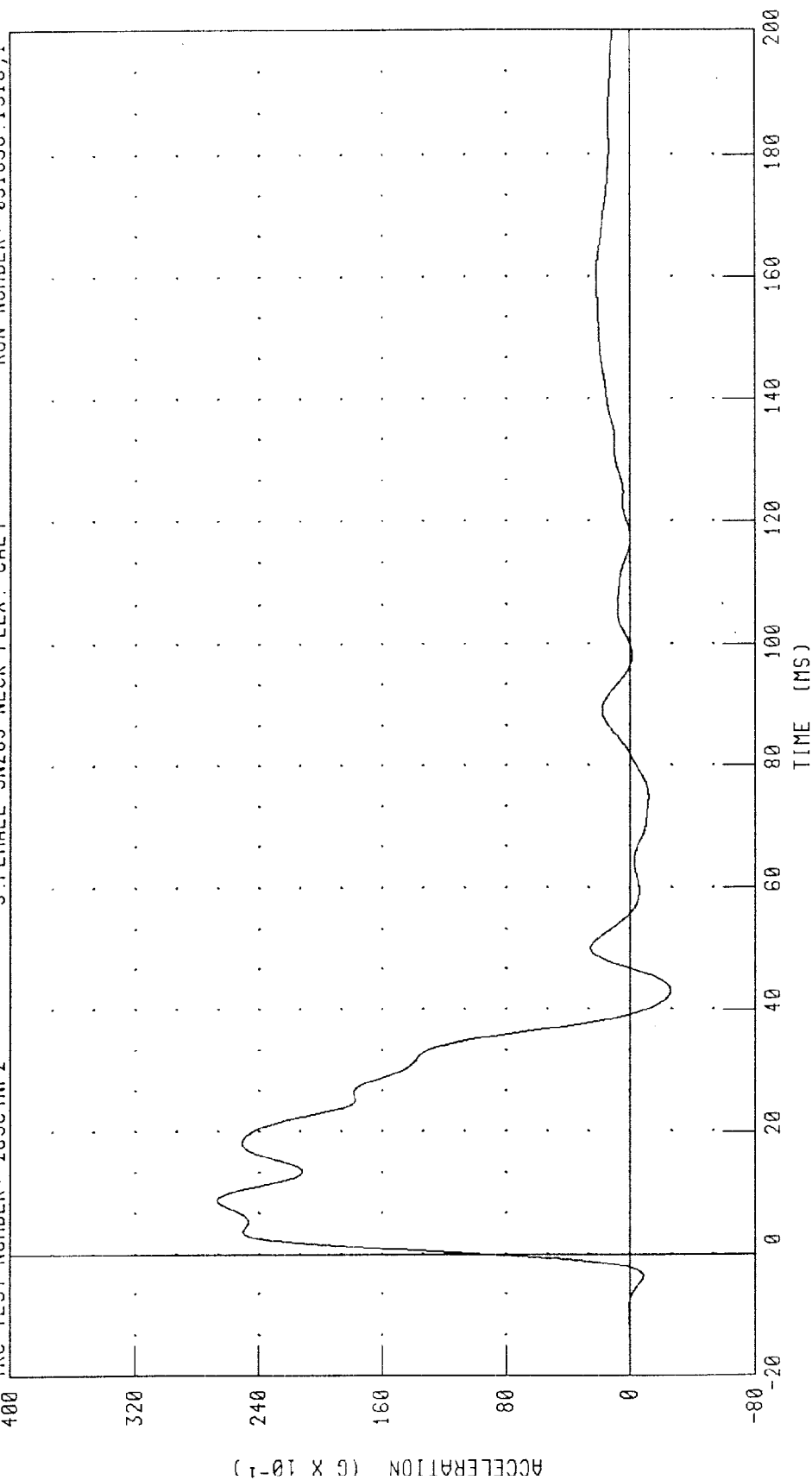
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 289C4NF2

S.FEMALE SN289 NECK FLEX. CAL4

RUN NUMBER: 051898.1518;1



CHANNEL: PENXC FILTER: CH CLASS 60

PEAK DATA: 26.72 G @ 8.88 MS, -2.61 G @ 43.04 MS

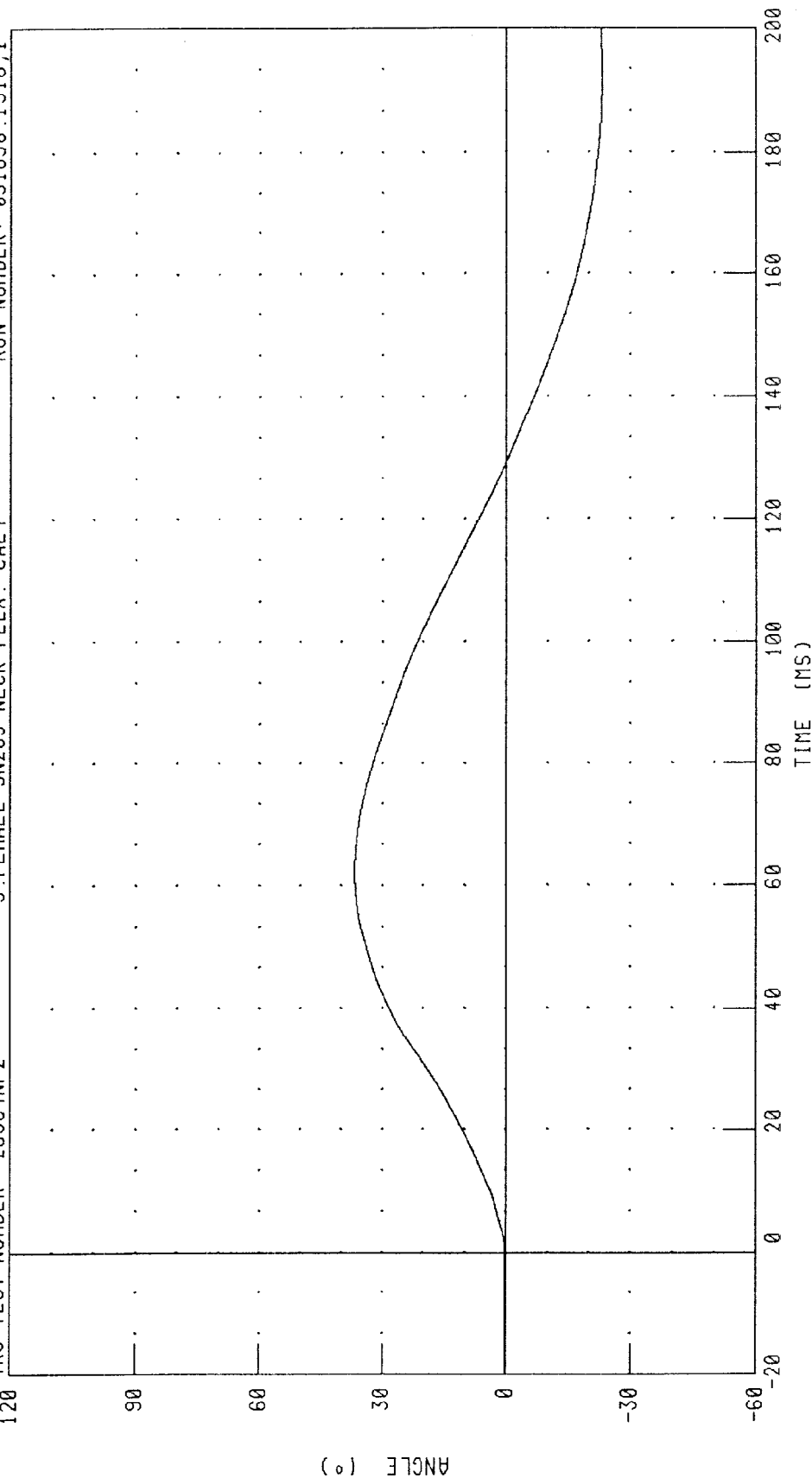
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 289C4NF2

S. FEMALE SN289 NECK FLEX. CAL 4

RUN NUMBER: 051898.1518,1



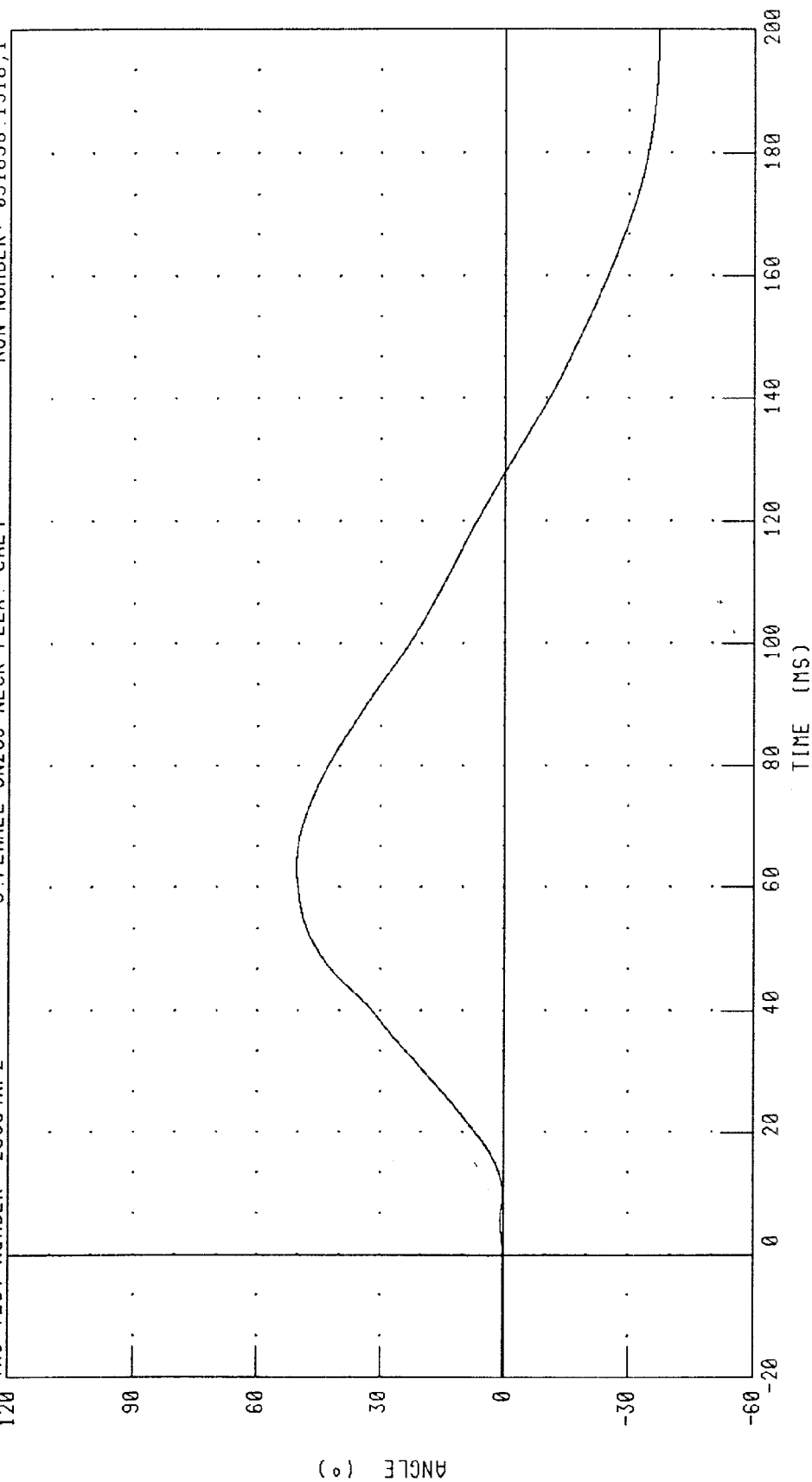
CHANNEL: BETA

FILTER: CH. CLASS 60

PEAK DATA: 36.69 ° @ 62.32 MS, -23.11 ° @ 192.72 MS

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER : 289C4NF2 S. FEMALE SN289 NECK FLEX. CAL4 RUN NUMBER : 051898.1518;1



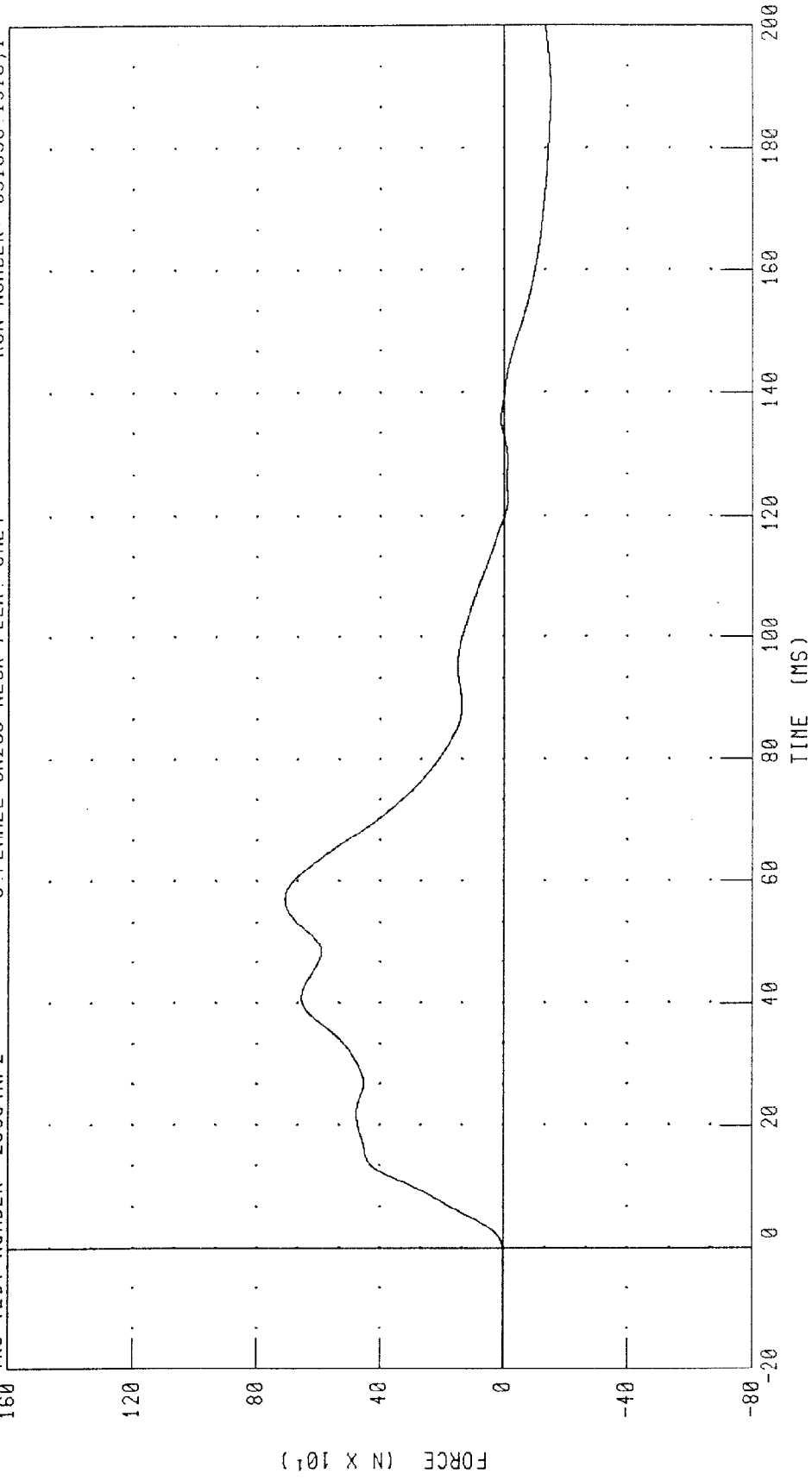
CHANNEL : THETA FILTER : CH. CLASS 60

PEAK DATA: 50.43 ° @ 63.12 MS; -37.10 ° @ 197.36 MS

SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 289C4NF2 S. FEMALE SN289 NECK FLEX. CAL4 RUN NUMBER: 051898 1518;1



PEAK DATA: 708.45 N @ 57.12 MS, -152.61 N @ 189.76 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

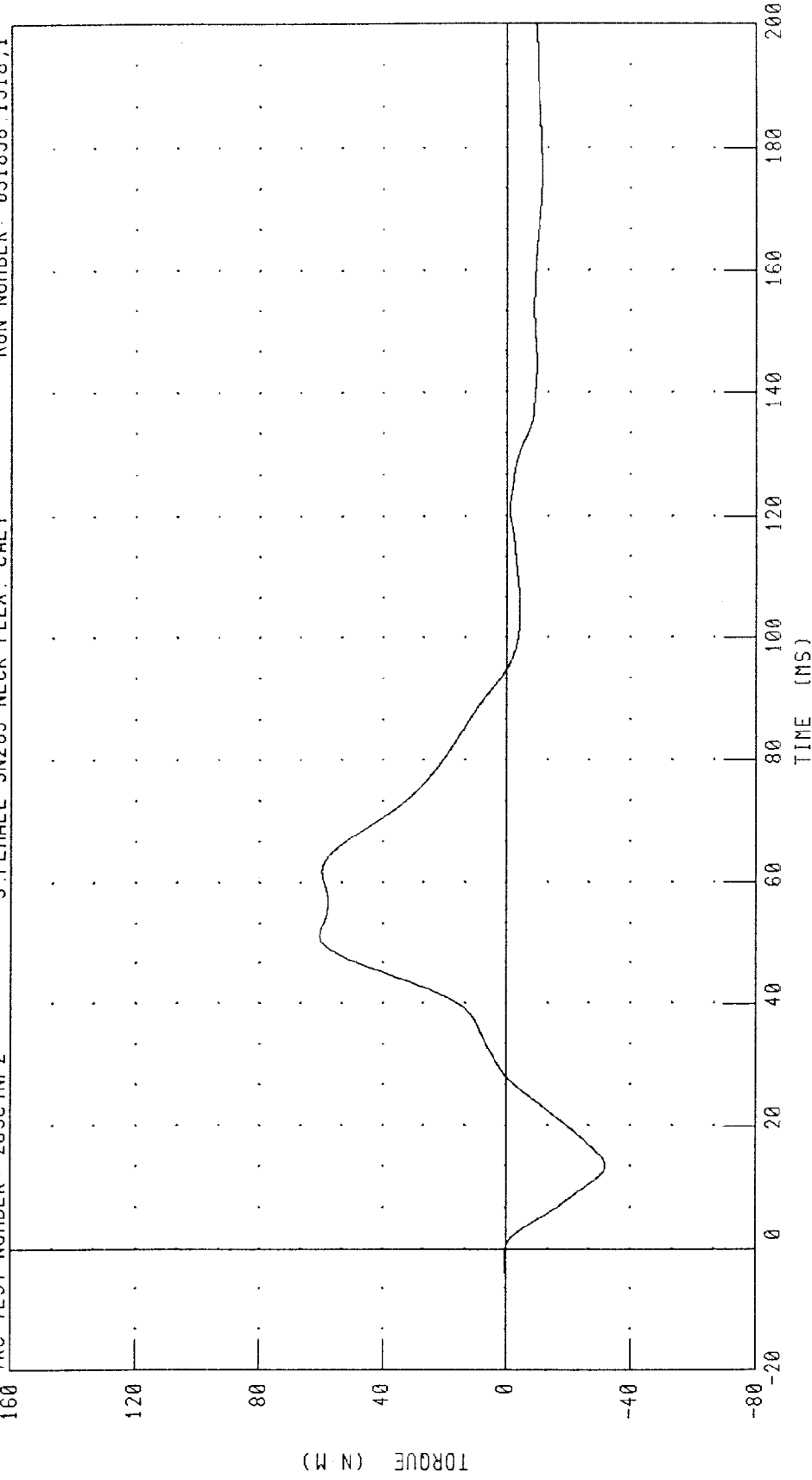
SMALL FEMALE HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER : 289C4NF2

S. FEMALE SN289 NECK FLEX. CAL4

RUN NUMBER : 051898 1518,1



CHANNEL : NEKYM FILTER : CH. CLASS 60

PEAK DATA : 60.43 N·M @ 51.28 MS, -31.97 N·M @ 13.44 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

19-MAY-98

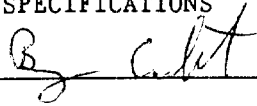
NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 289C4NE1 S.FEMALE SN289 NECK EXT. CAL4

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	40.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.10 M/S
INTEGRATED PENDULUM VELOCITY	10 MS	1.5 - 1.9 M/S	1.83 M/S
	20 MS	3.1 - 3.9 M/S	3.69 M/S
	30 MS	4.6 - 5.6 M/S	5.49 M/S
PEAK D-PLANE ROTATION		97 - 119 DEG.	105.05 DEG.
ROTATION ANGLE DECAY AT THE 10 NM MOMENT LEVEL		80 - 96 DEG.	80.78 DEG.
PEAK MOMENT ABOUT OCCIPITAL CONDYLE		54 - 67 NM	-65.79 NM
NEGATIVE MOMENT DECAY TIME FROM PEAK TO 10 NM LEVEL		28 - 38 MS	34.16 MS
TIME OF PEAK ROTATION AFTER PEAK MOMENT		0 - 10 MS	4.96 MS

TEST MEETS SPECIFICATIONS

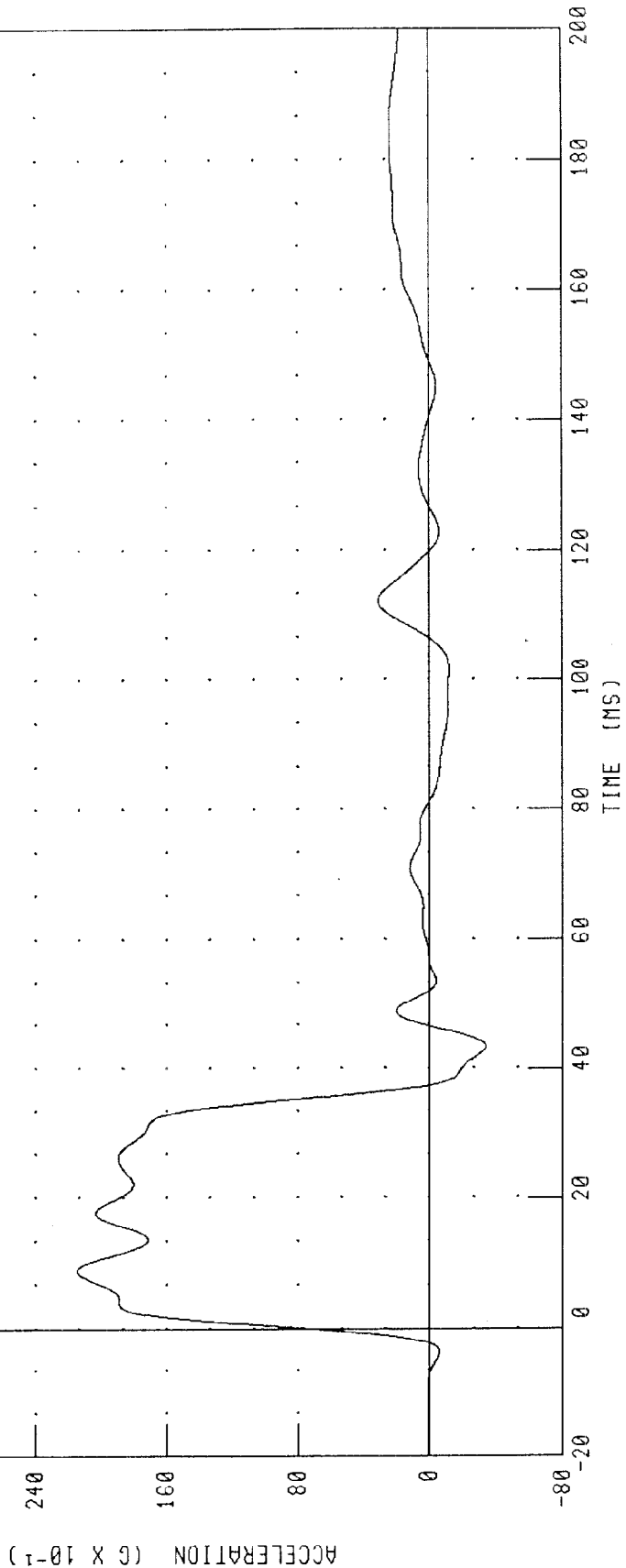
TECHNICIAN



RUN NUMBER: 051998.0907;2

SMALL FEMALE NECK EXTENSION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 289C4NE1 S.FEMALE SN289 NECK EXT. CAL4 RUN NUMBER: 051998.0907,2



CHANNEL: PENXC FILTER: CH. CLASS 60 PEAK DATA: 21.46 G @ 8.88 MS, -3.40 G @ 43.28 MS

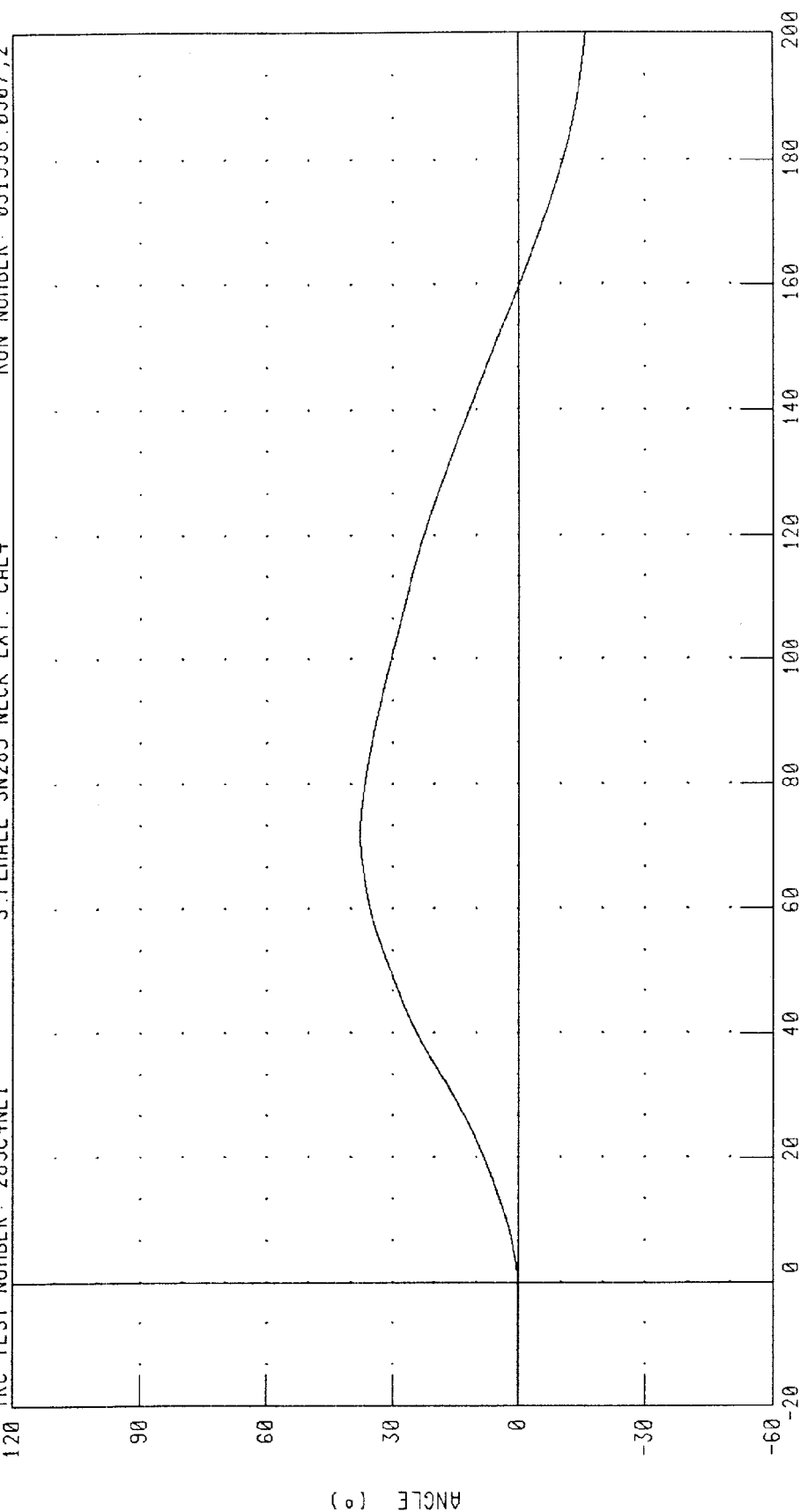
SMALL FEMALE NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

S. FEMALE SN289 NECK EXT. CAL4

RUN NUMBER: 051998.0907,2

TRC TEST NUMBER: 289C4NE1



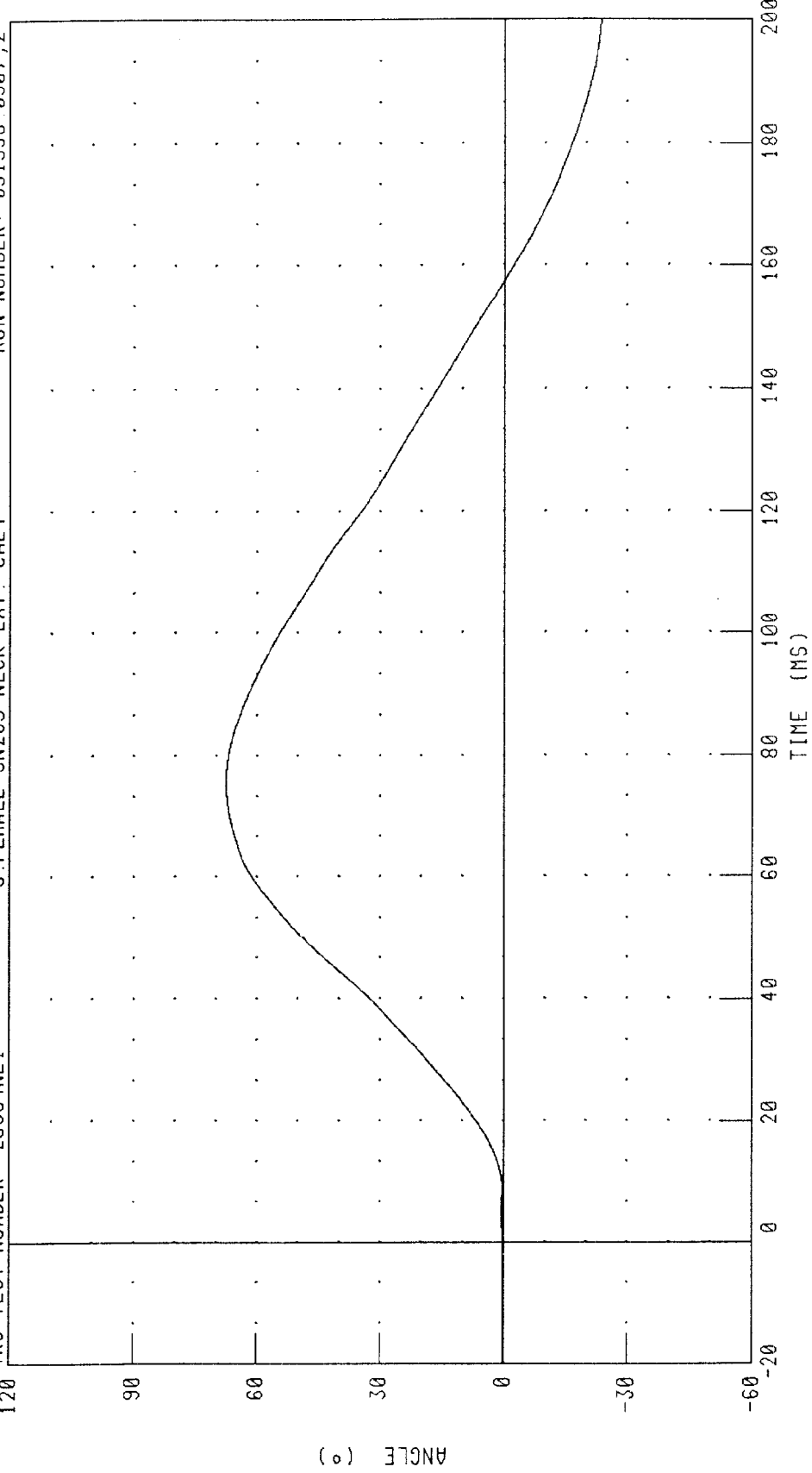
TIME (MS)

PEAK DATA: 37.73 ° @ 72.16 MS, -16.03 ° @ 200.00 MS

CHANNEL: BETA FILTER: CH. CLASS 60

SMALL FEMALE NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 289C4NE1 S.FEMALE SN289 NECK EXT. CAL4 RUN NUMBER: 051998 0907;2



PEAK DATA: 67.48 ° @ 75.76 MS; -23.71 ° @ 200.00 MS

CHANNEL: THETA FILTER: CH. CLASS 60

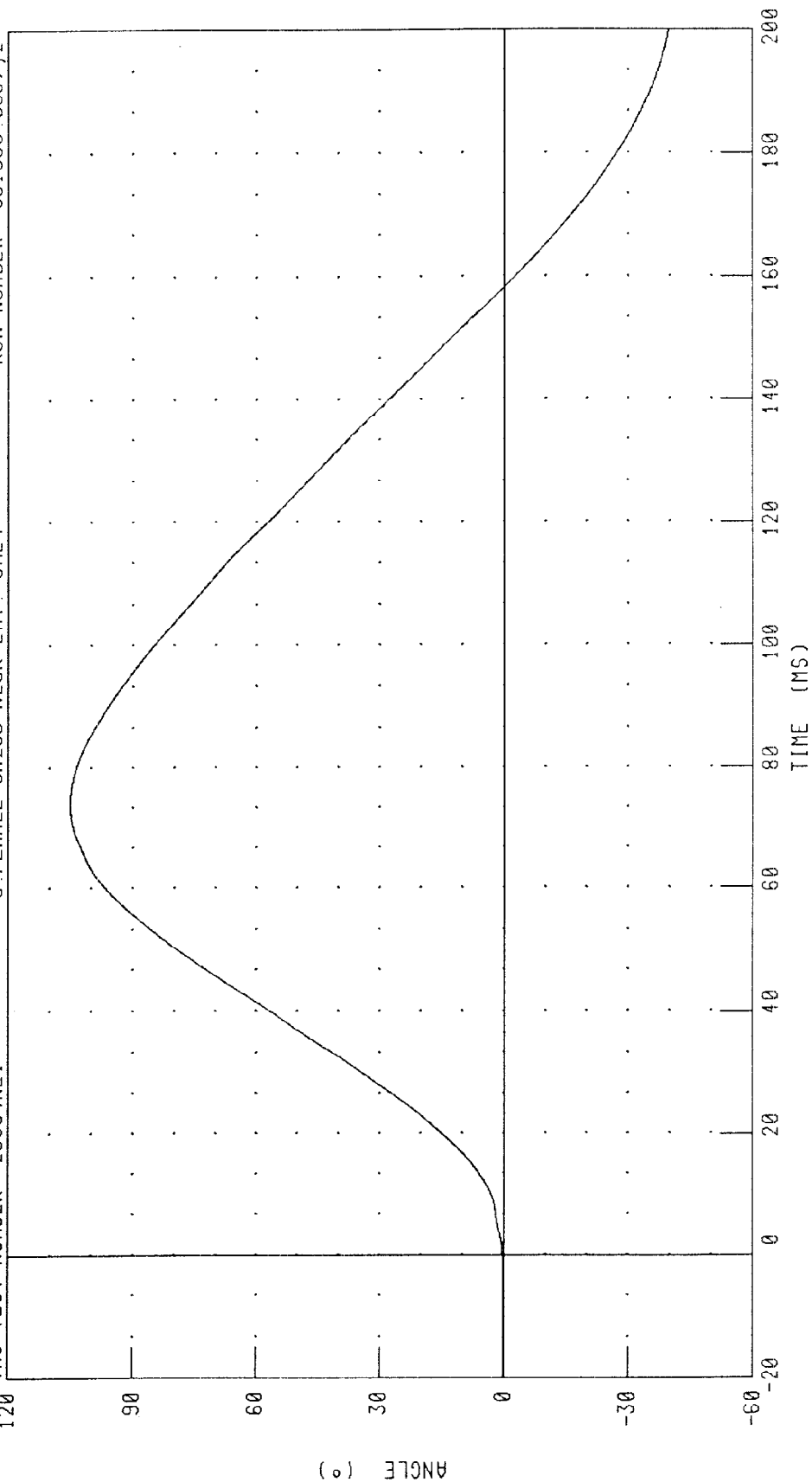
SMALL FEMALE NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 289C4NE1

S.FEMALE SN289 NECK EXT. CAL4

RUN NUMBER: 051998.0907,2



PEAK DATA: 105.05 ° @ 74.00 MS, -39.74 ° @ 200.00 MS

CHANNEL: TOTAL FILTER: CH. CLASS 60

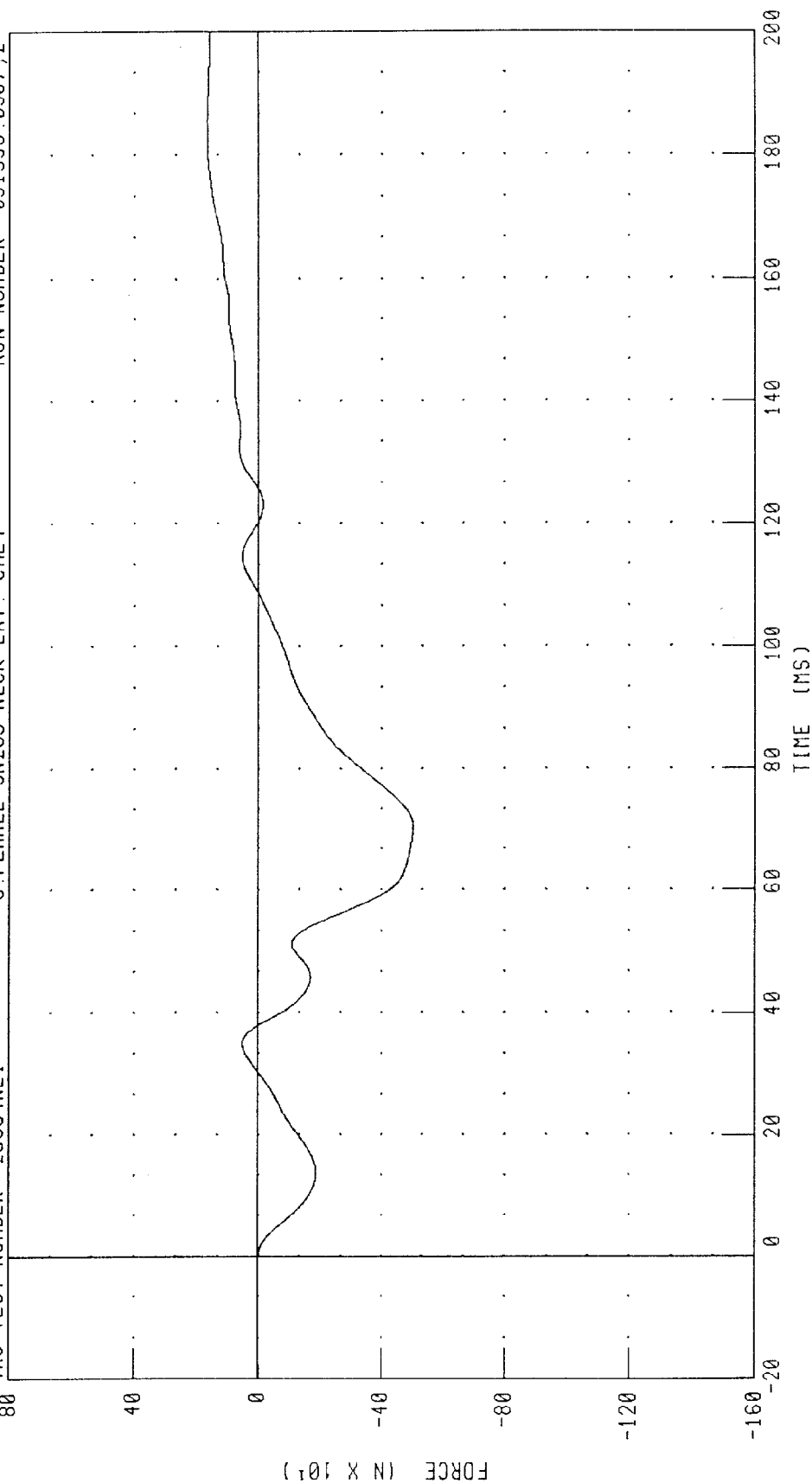
SMALL FEMALE NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 289C4NE1

S.FEMALE SN289 NECK EXT. CAL4

RUN NUMBER: 051998.0907;2



PEAK DATA: 165.80 N @ 185.52 MS, -503.74 N @ 70.32 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

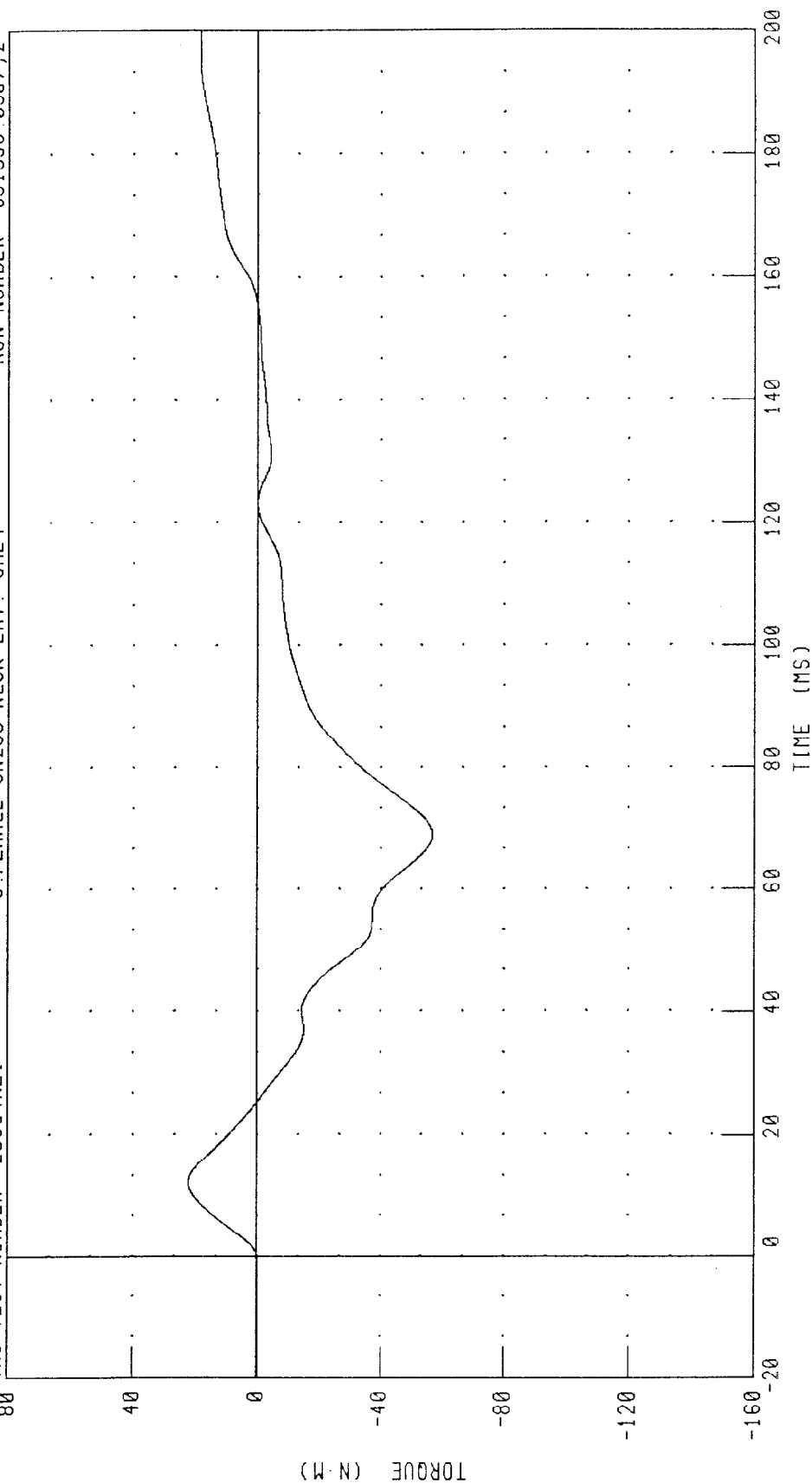
SMALL FEMALE NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 289C4NE1

S.FEMALE SN289 NECK EXT. CAL4

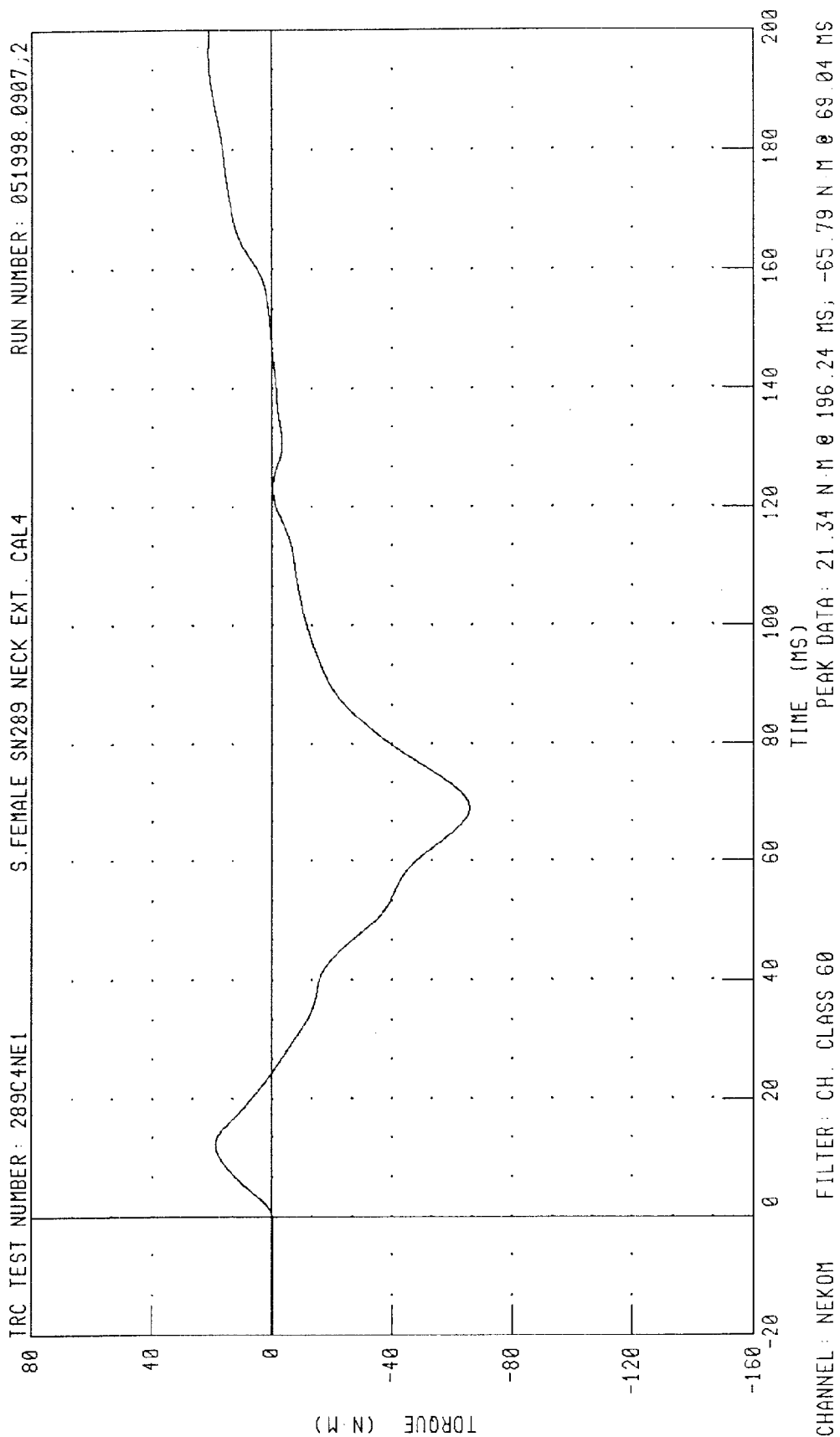
RUN NUMBER: 051998 0907,2



CHANNEL: NEKYM FILTER: CH. CLASS 60

PEAK DATA: 22.14 N·M @ 12.24 MS, -56.87 N·M @ 68.96 MS

SMALL FEMALE NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE



TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III SMALL FEMALE

19-MAY-98

TRC INC.

TEST NO: 289C4TH1

S.FEMALE SN289 THORAX CAL4

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.3 DEG. C
RELATIVE HUMIDITY	10 - 70 %	40.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.77 M/S
MAXIMUM DEFLECTION	51 - 58 MM	52.9 MM
MAXIMUM RESISTIVE FORCE <i>BY Peak Deflection</i>	3300 - 3800 N	3992.8 N *
INTERNAL HYSTERESIS	69% - 85%	74.9%

* TEST DOES NOT MEET SPECIFICATIONS

TECHNICIAN B. Calt

RUN NUMBER: 051998.1045;1

SMALL FEMALE THORAX CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 289C4TH1

S.FEMALE SN289 THORAX CAL4

RUN NUMBER: 051998.1046;1

50

40

30

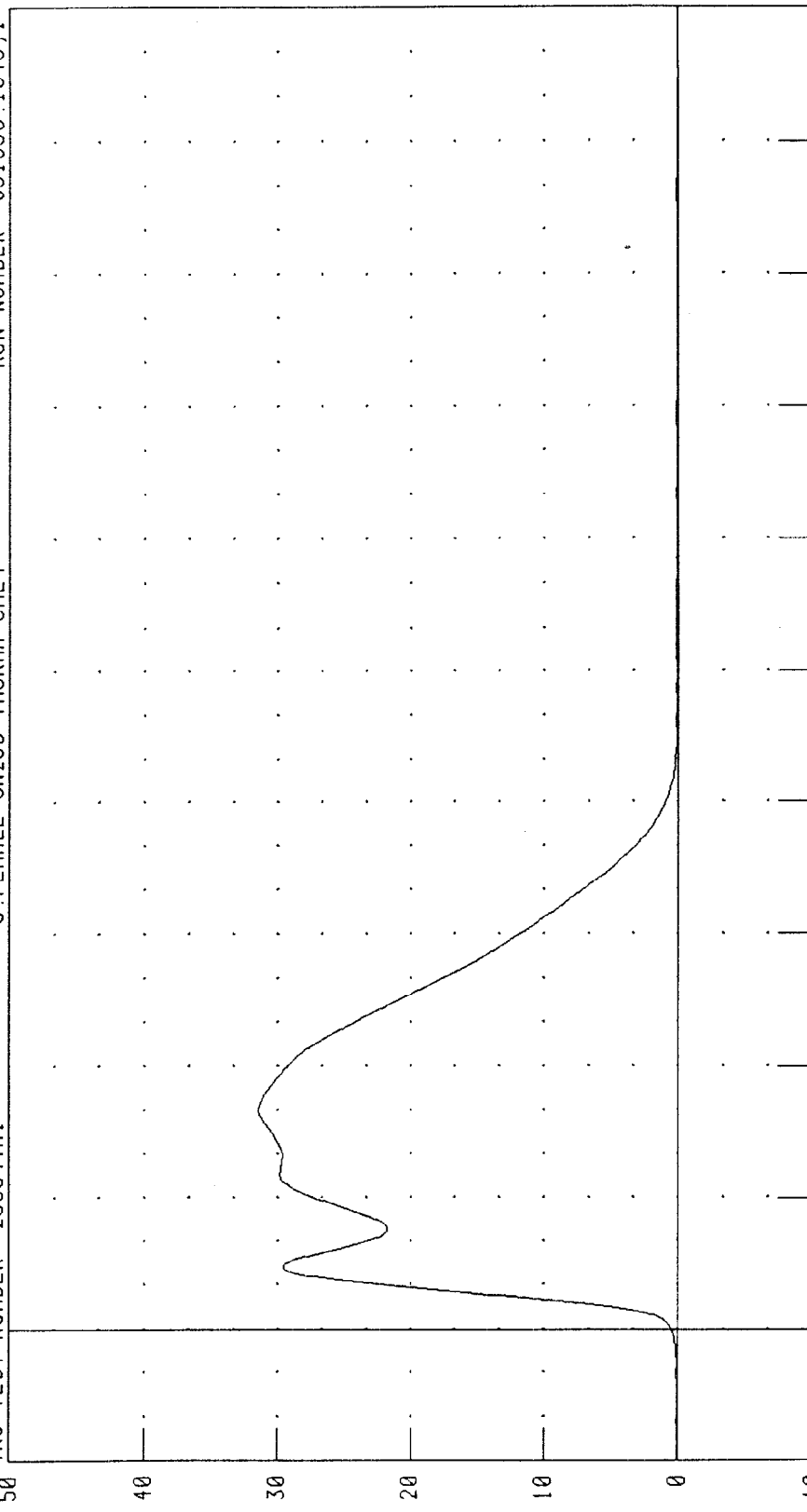
20

10

0

-10

ACCELERATION (G)



TIME (MS)

CHANNEL: PENXC FILTER: CH. CLASS 180

PEAK DATA: 31.47 G @ 16.64 MS; 0.02 G @ 95.04 MS

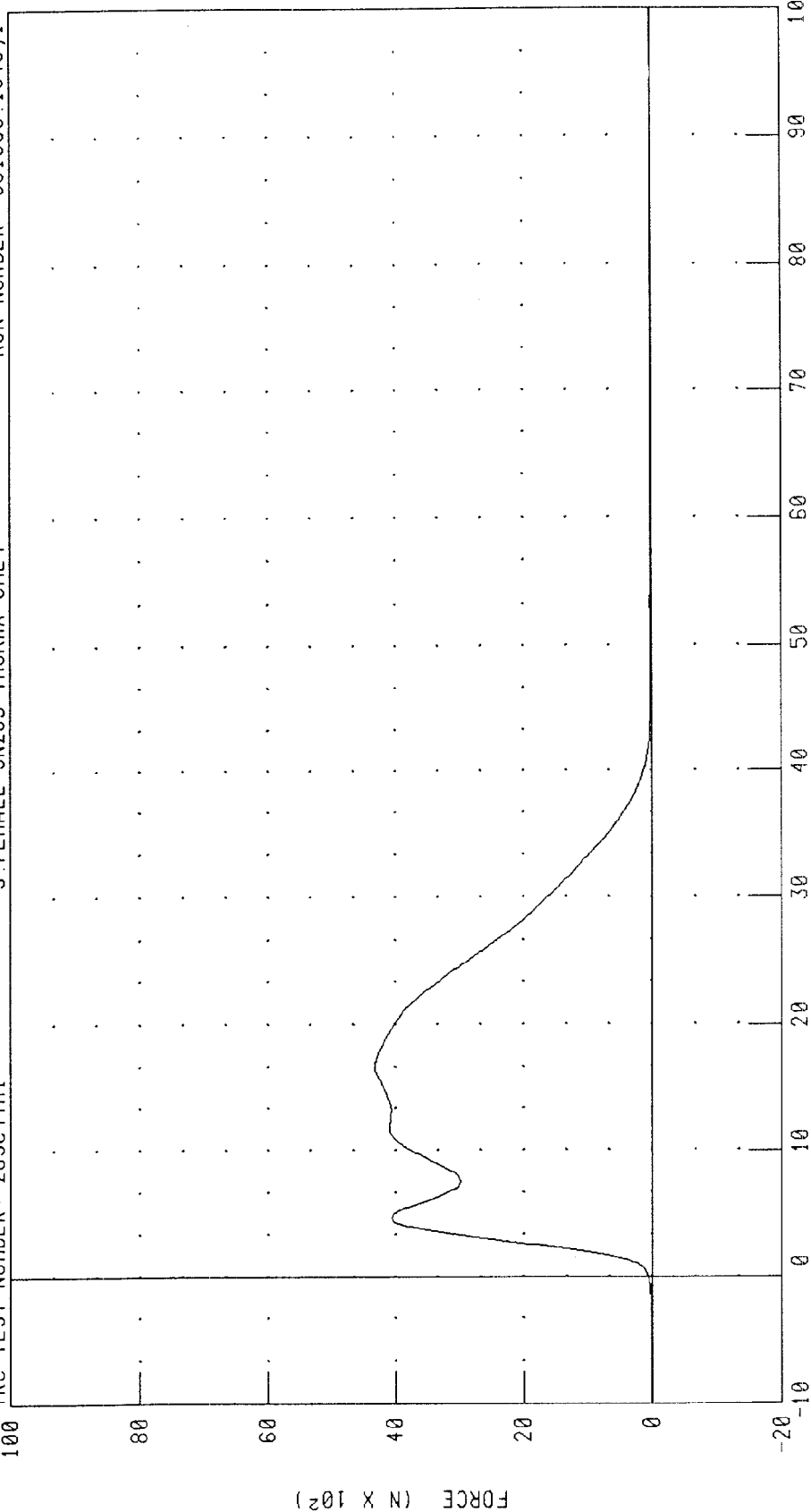
SMALL FEMALE THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER: 289C4TH1

S. FEMALE SN289 THORAX CAL4

RUN NUMBER: 051998.1046;1



PEAK DATA: 4317.92 N @ 16.64 MS; 2.50 N @ 95.04 MS

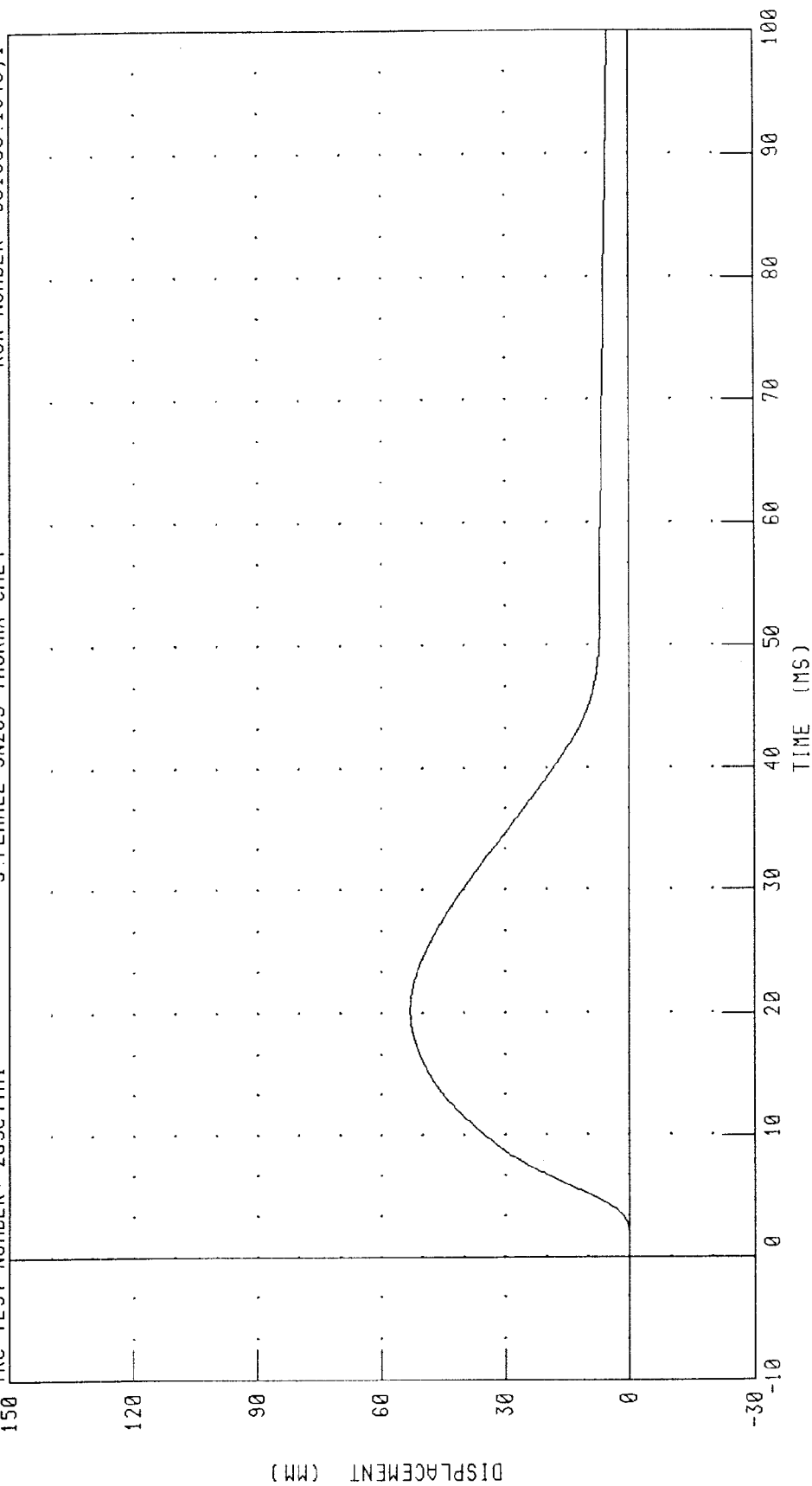
CHANNEL: PENXF FILTER: CH. CLASS 180

SMALL FEMALE THORAX CALIBRATION
STERNUM DISPLACEMENT

TRC TEST NUMBER: 289C4TH1

S. FEMALE SN289 THORAX CAL4

RUN NUMBER: 051998.1046;1



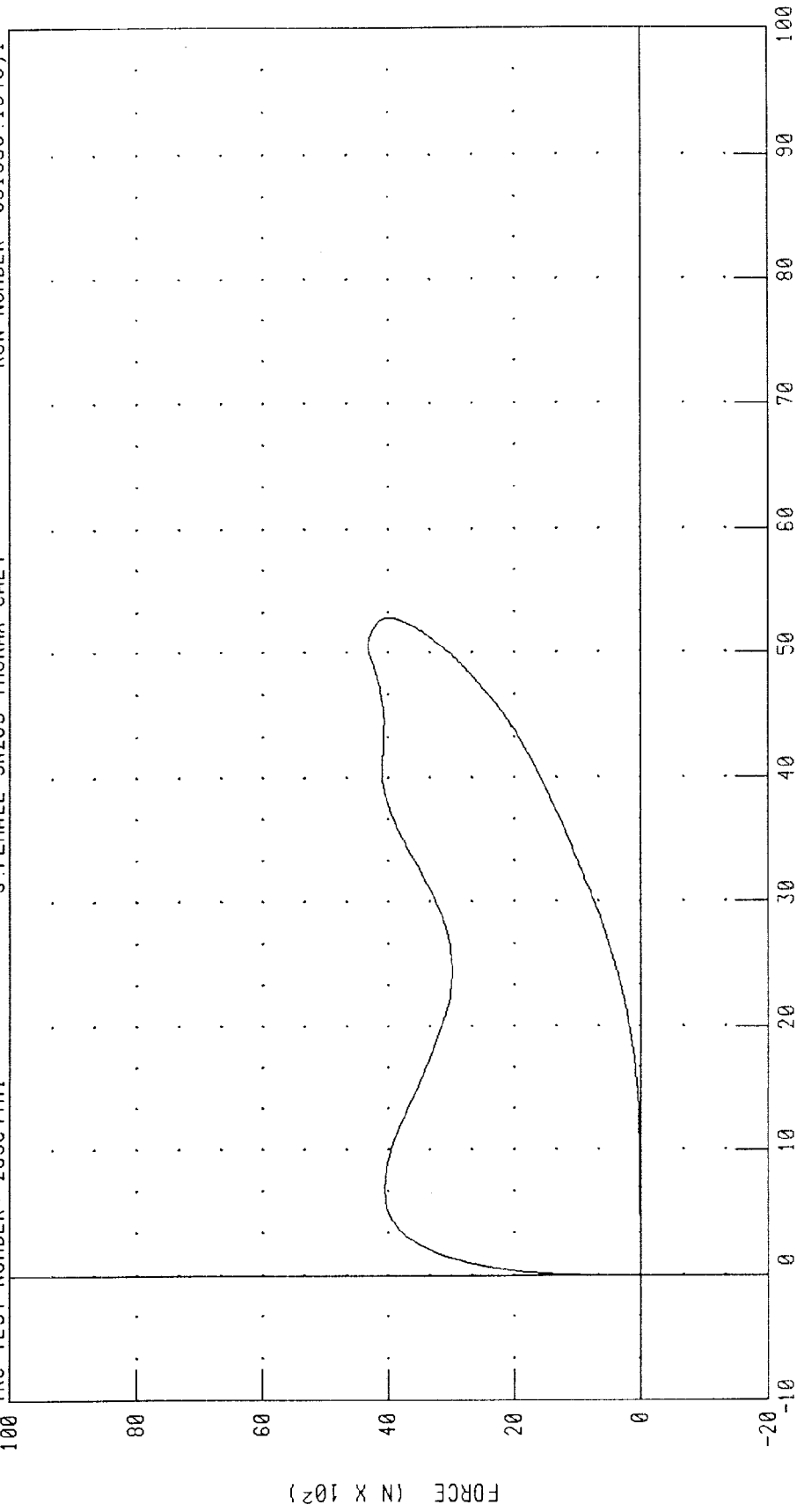
CHANNEL: CSTXD FILTER: CH. CLASS 180

PEAK DATA: 52.93 MM @ 20.24 MS, -0.02 MM @ 1.28 MS

SMALL FEMALE THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE
S.FEMALE SN289 THORAX CAL4

TRC TEST NUMBER : 289C4TH1

RUN NUMBER: 051998.1046,1



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

DISPLACEMENT (MM)
PEAK DATA:

52.93 MM @ 20.24 MS, -0.02 MM @ 1.28 MS
4317.92 N @ 16.64 MS, 2.50 N @ 95.04 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

18-MAY-98

TRC INC.

TEST NO: 289C4RK1

S.FEMALE SN289 R.KNEE CAL4

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	40.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.13 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3400 - 4200 N	4034.6 N

TEST MEETS SPECIFICATIONS

TECHNICIAN By Calt

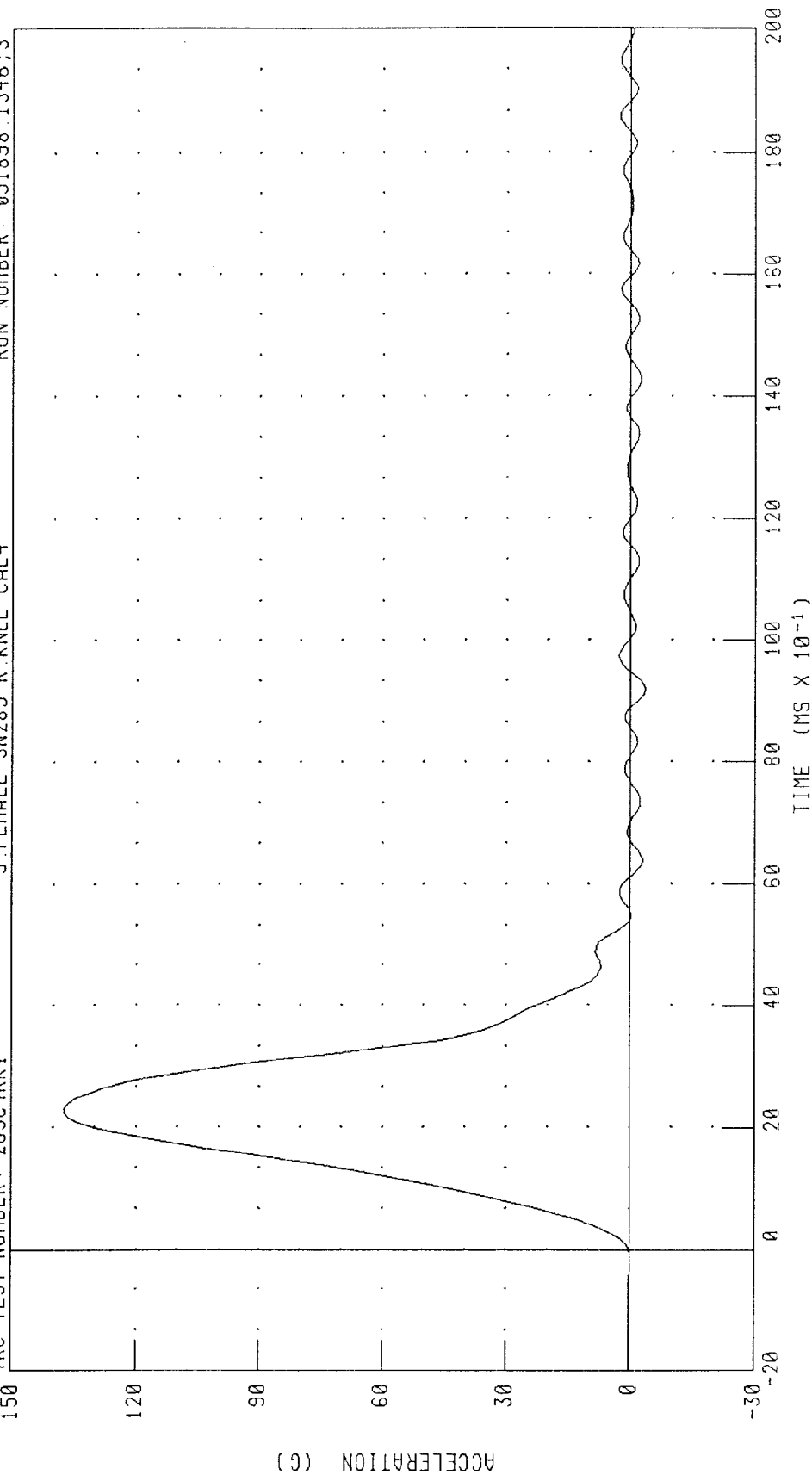
RUN NUMBER: 051898.1346;3

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

TRC TEST NUMBER: 289C4RK1

S.FEMALE SN289 R.KNEE CAL4

RUN NUMBER: 051898.1346,3



CHANNEL: PENXC

FILTER: CH. CLASS 600

TIME (MS X 10⁻¹)

PEAK DATA: 137.44 G @ 2.32 MS; -3.73 G @ 9.20 MS

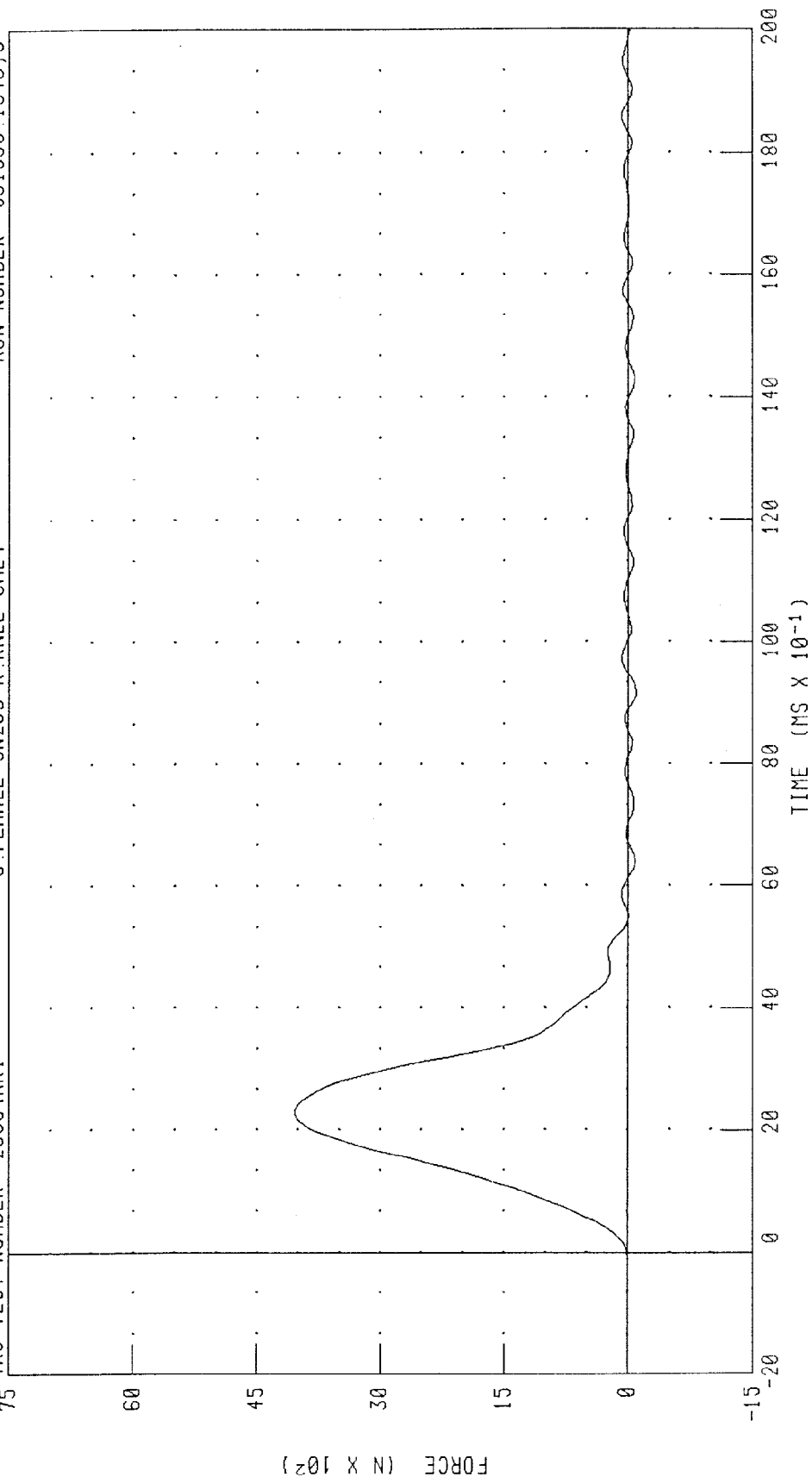
SMALL FEMALE HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KC PEND.)

TRC TEST NUMBER: 289C4RK1

S. FEMALE SN289 R. KNEE CAL4

RUN NUMBER: 051898.1346,3



CHANNEL: PENXF

FILTER: CH. CLASS 600

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

PEAK DATA: 4034.70 N @ 2.32 MS; -109.52 N @ 9.20 MS

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

18-MAY-98

TRC INC.

TEST NO: 289C4LK1

S.FEMALE SN289 LEFT KNEE CAL4

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	40.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.13 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3400 - 4200 N	3659.2 N

TEST MEETS SPECIFICATIONS

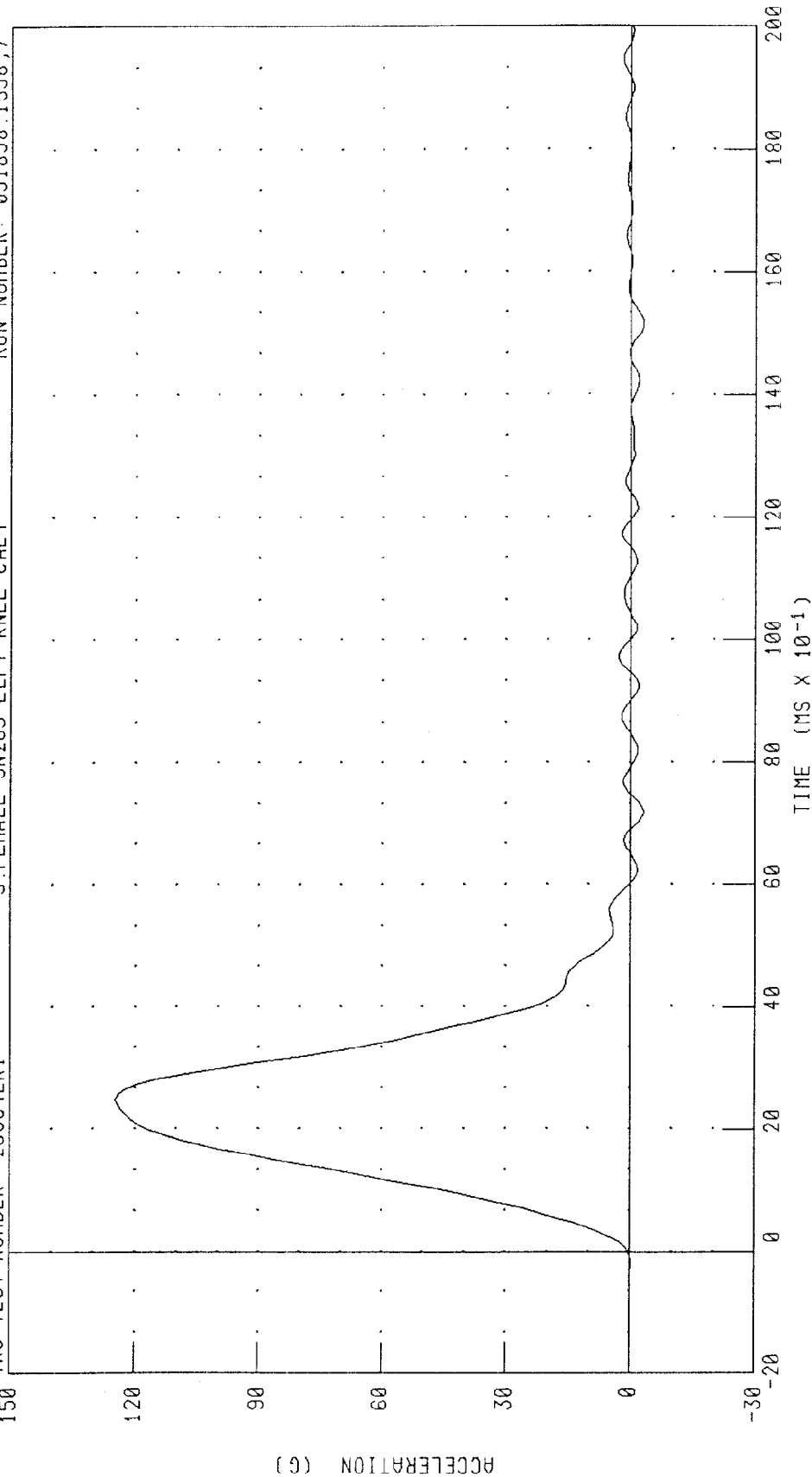
TECHNICIAN

B. Calt

RUN NUMBER: 051898.1356;7

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

TRC TEST NUMBER: 289C4LK1 S. FEMALE SN289 LEFT KNEE CAL4 RUN NUMBER: 051898.1356,7

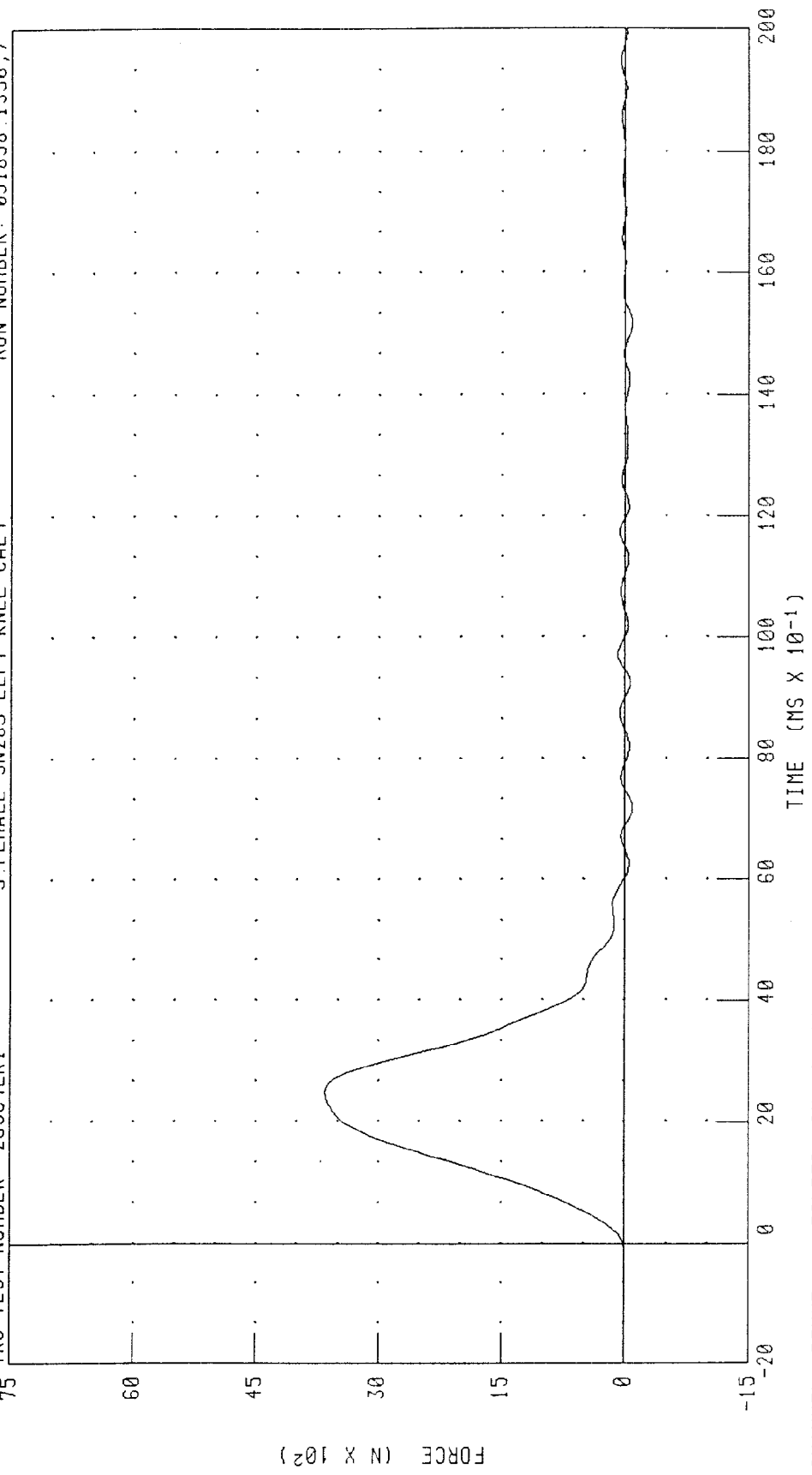


CHANNEL: PENXC FILTER: CH. CLASS 600

PEAK DATA: 124.65 G @ 2.48 MS; -3.28 G @ 7.20 MS

SMALL FEMALE HYBRID III LEFT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)
S. FEMALE SN289 LEFT KNEE CAL4

TRC TEST NUMBER: 289C4LK1 RUN NUMBER: 051898.1356;7



CHANNEL: PENXF FILTER: CH. CLASS 600 PEAK DATA: 3659 23 N @ 2.48 MS; -96.34 N @ 7.20 MS

Appendix D

Miscellaneous Test Information

Dummy Sign Convention

Accelerometers:

+X: Forward
+Y: Leftward
+Z: Upward

Potentiometers:

+Chest longitudinal deflection: Inward

Load cells:

+Femur force: Compression

Neck load cells:

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

Filtering Data

J211 OCT88

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

Target Vehicle Dummy Instrumentation Placement

Dummy Manufacturer and S/N: Alderson Research Laboratories/045

Seating position: Driver

Mnemonic	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
HEDXG1	Head	X	Endevco	7264	EH75J	Rear
HEDYG1	Head	Y	Endevco	7264	FJ66J	Left
HEDZG1	Head	Z	Endevco	7264	EY99J	Up
NEKXF1 ¹	Neck	X	Denton	1716	0452FX	N/A
NEKYF1 ¹	Neck	Y	Denton	1716	0452FY	N/A
NEKZF1 ¹	Neck	Z	Denton	1716	0452FZ	N/A
NEKXM1 ¹	Neck	X	Denton	1716	0452MX	N/A
NEKYM1 ¹	Neck	Y	Denton	1716	0452MY	N/A
NEKZM1 ¹	Neck	Z	Denton	1716	0452MZ	N/A
CSTXG1	Chest	X	Endevco	7264	J20218	Forward
CSTYG1	Chest	Y	Endevco	7264	AJ507	Left
CSTZG1	Chest	Z	Endevco	7264	AC9F9	Up
CSTXD1	Chest	X	Vernitech	N/A	86696-1	Inward
PEVXG1	Pelvis	X	Endevco	7264	J17988	Rear
PEVYG1	Pelvis	Y	Endevco	7264	J18037	Left
PEVZG1	Pelvis	Z	Endevco	7264	AJ4R3	Up
TBRYM1	Upper tibia	Y	Denton	3115	0410MY	N/A
TBRZF1	Upper tibia	Z	Denton	3115	0410FZ	Compression
ANLXF1	Lower tibia	X	Denton	3114	289FX	Compression
ANLYF1	Lower tibia	Y	Denton	3114	289FY	Compression
ANLXM1	Lower tibia	X	Denton	3114	289MX	N/A
ANLYM1	Lower tibia	Y	Denton	3114	289MY	N/A
ANRXF1	Lower tibia	X	Denton	3114	290FX	Compression
ANRYF1	Lower tibia	Y	Denton	3114	290FY	Compression
ANRXM1	Lower tibia	X	Denton	3114	290MX	N/A
ANRYM1	Lower tibia	Y	Denton	3114	290MY	N/A
KNLLF1	Left knee	X	Denton	1587	864-left	Compression
KNLLF1	Left knee	X	Denton	1587	864-right	Compression

Target Vehicle Dummy Instrumentation Placement, Cont'd.

Dummy Manufacturer and S/N: Alderson Research Laboratories/045

Seating position: Driver

Mnemonic	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
KNRLF1	Right knee	X	Denton	1587	865-left	Compression
KNRLF1	Right knee	X	Denton	1587	865-right	Compression
TBLXF1	Upper tibia	X	Denton	3115	0409FX	N/A
TBLXM1	Upper tibia	X	Denton	3115	0409MX	N/A
TBLYM1	Upper tibia	Y	Denton	3115	0409MY	N/A
TBLZF1	Upper tibia	Z	Denton	3115	0409FZ	Compression
TBRXF1	Upper tibia	X	Denton	3115	0410FX	Compression
TBRXM1	Upper tibia	X	Denton	3115	0410FX	N/A

¹ See dummy sign convention sheet for polarity

Target Vehicle Dummy Instrumentation Placement, Cont'd.

Dummy Manufacturer and S/N: Alderson Research Laboratories/045

Seating position: Driver

<u>Mnemonic</u>	<u>Location</u>	<u>Axis</u>	<u>Manufacturer</u>	<u>Model</u>	<u>S/N</u>	<u>Orientation (+ Sensing)</u>
KNRLF1	Right knee	X	Denton	1587	865-left	Compression
KNRLF1	Right knee	X	Denton	1587	865-right	Compression
TBLXF1	Upper tibia	X	Denton	3115	0409FX	N/A
TBLXM1	Upper tibia	X	Denton	3115	0409MX	N/A
TBLYM1	Upper tibia	Y	Denton	3115	0409MY	N/A
TBLZF1	Upper tibia	Z	Denton	3115	0409FZ	Compression
TBRXF1	Upper tibia	X	Denton	3115	0410FX	Compression
TBRXM1	Upper tibia	X	Denton	3115	0410FX	N/A

Target Vehicle Dummy Instrumentation Placement

Dummy Manufacturer and S/N: Applied Safety Technologies/283

Seating position: Passenger

Mnemonic	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
HEDXG2	Head	X	Endevco	7264	AH5C9	Rear
HEDYG2	Head	Y	Endevco	7264	A15E	Left
HEDZG2	Head	Z	Endevco	7264	A52F	Up
NEKXF2 ¹	Neck	X	Denton	1716	0235FX	N/A
NEKYF2 ¹	Neck	Y	Denton	1716	0235FY	N/A
NEKZF2 ¹	Neck	Z	Denton	1716	0235FZ	N/A
NEKXM2 ¹	Neck	X	Denton	1716	0235MX	N/A
NEKYM2 ¹	Neck	Y	Denton	1716	0235MY	N/A
NEKZM2 ¹	Neck	Z	Denton	1716	0235MZ	N/A
CSTXG2	Chest	X	Endevco	7264	A11K	Forward
CSTYG2	Chest	Y	Endevco	7264	A03C	Left
CSTZG2	Chest	Z	Endevco	7264	A89D	dOWN
CSTXD2	Chest	X	Bourne	14CB1-2897	283	Inward
PEVXG2	Pelvis	X	Endevco	7264	AN319	Rearward
PEVYG2	Pelvis	Y	Endevco	7264	APED5	Left
PEVZG2	Pelvis	Z	Endevco	7264	AE8G2	Up
LFMF2	Left femur	Z	Denton	1914	0169	Compression
RFMF2	Left femur	Z	Denton	1914	0170	Compression

¹ See Dummy Sign Convention sheet for polarity

Bullet Vehicle Dummy Instrumentation Placement

Dummy Manufacturer and S/N: Applied Safety Technologies/168

Seating position: Driver

Mnemonic	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
HEDXG1	Head	X	Endevco	7264	J19535	Rear
HEDYG1	Head	Y	Endevco	7264	J19548	Left
HEDZG1	Head	Z	Endevco	7264	J20026	Up
NEKXF1 ¹	Neck	X	Denton	1716	0853FX	N/A
NEKYF1 ¹	Neck	Y	Denton	1716	0853FY	N/A
NEKZF1 ¹	Neck	Z	Denton	1716	0853FZ	N/A
NEKXM1 ¹	Neck	X	Denton	1716	0853MX	N/A
NEKYM1 ¹	Neck	Y	Denton	1716	0853MY	N/A
NEKZM1 ¹	Neck	Z	Denton	1716	0853MZ	N/A
CSTXG1	Chest	X	Endevco	7264	J20011	Forward
CSTYG1	Chest	Y	Endevco	7264	J20001	Left
CSTZG1	Chest	Z	Endevco	7264	J20438	Up
CSTXD1	Chest	X	Servo	14CB1-2897	168	Inward
TBRXM1	Right upper tibia	X	Denton	3115	0261MX	N/A
TBRYM1	Right upper tibia	Y	Denton	3115	0261MY	N/A
TBRZF1	Right upper tibia	Z	Denton	3115	0261FZ	Compression
ANLXF1	Left lower tibia	X	Denton	3114	211FX	Compression
ANLYF1	Left lower tibia	Y	Denton	3114	211FY	Compression
ANLXM1	Left lower tibia	X	Denton	3114	211MX	N/A
ANLYM1	Left lower tibia	Y	Denton	3114	211MY	N/A
ANRXF1	Right lower tibia	X	Denton	3114	198FX	Compression
ANRYF1	Right lower tibia	Y	Denton	3114	198FY	Compression
ANRXM1	Right lower tibia	X	Denton	3114	198MX	N/A
ANRYM1	Right lower tibia	Y	Denton	3114	198MY	N/A
KNLLF1	Left knee	X	Denton	1587	760-left	Compression
KNLLF1	Left knee	X	Denton	1587	760-right	Compression
KNRLF1	Right knee	X	Denton	1587	775-left	Compression
KNRLF1	Right knee	X	Denton	1587	775-right	Compression
TBLXF1	Left upper tibia	X	Denton	3115	0262FX	Compression
TBLXM1	Left upper tibia	X	Denton	3115	0262MX	N/A
TBLYM1	Left upper tibia	Y	Denton	3115	0262MY	N/A
TBLZF1	Left upper tibia	Z	Denton	3115	0262FZ	Compression
TBRXF1	Right upper tibia	X	Denton	3115	0261FX	Compression

Bullet Vehicle Dummy Instrumentation Placement

Dummy Manufacturer and S/N: Applied Safety Technologies/289

Seating position: Passenger

Mnemonic	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
HEDXG2	Head	X	Endevco	7264	J20165	Rear
HEDYG2	Head	Y	Endevco	7264	J19865	Left
HEDZG2	Head	Z	Endevco	7264	J19934	Up
NEKXF2 ¹	Neck	X	Denton	1716	0425FX	N/A
NEKYF2 ¹	Neck	Y	Denton	1716	0425FY	N/A
NEKZF2 ¹	Neck	Z	Denton	1716	0425FZ	N/A
NEKXM2 ¹	Neck	X	Denton	1716	0425MX	N/A
NEKYM2 ¹	Neck	Y	Denton	1716	0425MY	N/A
NEKZM2 ¹	Neck	Z	Denton	1716	0425MZ	N/A
CSTXG2	Chest	X	Endevco	7264	J20599	Forward
CSTYG2	Chest	Y	Endevco	7264	J20580	Left
CSTZG2	Chest	Z	Endevco	7264	EH88J	Up
CSTXD2	Chest	X	Denton	019	289	Inward
PEVXG2	Pelvis	X	Endevco	7264	CY06H	Rearward
PEVYG2	Pelvis	Y	Endevco	7264	AGAC4	Left
PEVZG2	Pelvis	Z	Endevco	7264	BF65J	Up
LFMF2	Left femur	Z	Denton	1914	259	Compression
RFMF2	Right femur	Z	Denton	1914	257	Compression
STTXG2	Sternum top	X	Endevco	7264	J20569	Forward
STMXG2	Sternum middle	X	Endevco	7264	J20064	Forward
STBXG2	Sternum bottom	X	Endevco	7264	J20570	Forward
SPTXG2	Spine top	X	Endevco	7264	J19872	Rear
SPMXG2	Spine middle	X	Endevco	7264	J19877	Rear
SPBXG2	Spine bottom	X	Endevco	7264	J19890	Rear

¹ See Dummy Sign Convention sheet for polarity

Target Vehicle Instrumentation Placement

Number	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
1	Left rear seat crossmember	X	Endevco	7264	J20085	Forward
2	Right rear seat crossmember	X	Endevco	7264	J19905	Forward
3	Engine top	X	Endevco	7264	J20294	Forward
4	Engine bottom	X	Endevco	7264	DM66J	Rearward
5	Right brake caliper	X	Endevco	7264	J19562	Forward
6	Left brake caliper	X	Endevco	7264	J19884	Rearward
7	Instrument panel center	X	Endevco	7264	J20015	Forward
8	Rear axle	X	Endevco	7264	J20625	Forward
9	Vehicle rear center	Z	Endevco	7264	J19547	Down

Bullet Vehicle Instrumentation Placement

Number	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
1	Left rear seat crossmember	X	Endevco	7264	J20329	Rearward
2	Right rear seat crossmember	X	Endevco	7264	J19885	Rearward
3	Engine top	X	Endevco	7264	J20582	Rearward
4	Engine bottom	X	Endevco	7264	J20124	Rearward
5	Right brake caliper	X	Endevco	7264	J19897	Forward
6	Left brake caliper	X	Endevco	7264	J19847	Forward
7	Instrument panel center	X	Endevco	7264	J19639	Forward
8	Vehicle center of gravity	X	Endevco	7264	J19694	Rearward
9	Vehicle rear center	Z	Endevco	7264	J20158	Up

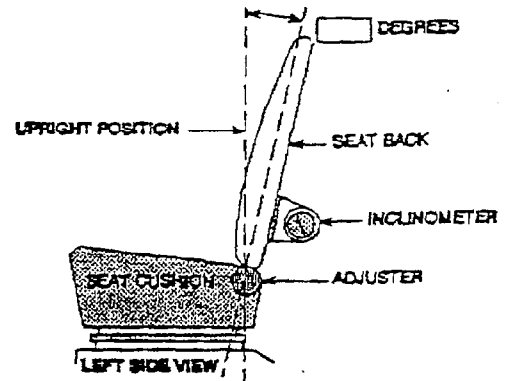
Figure 1

TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 1994 Vehicle Model: Honda Accord DX Body Style : 4-door sedan

1. Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat : -

Measurement instructions : Seat back adjusted to 5th latch position from first locking position (zero). 0-4

Seat back angle for passenger's seat : -

Measurement instructions : Same as driver seating position.

2. Seat Fore and Aft Positioning

Positioning of the driver's seat : Seat set at 10th (mid) position from foremost locking position (zero). There are 21 total detents.

Positioning of the passenger's seat (if applicable) : Same as driver seating position.

3. Fuel Tank Capacity Data

A. "Usable Capacity" of the standard equipment fuel tank is 17.0 gallons

B. "Usable Capacity" of the optional equipment fuel tank is N/A gallons

4. Steering Column Position :

Steering column set at mid-position.

5. Other:

None

TEST VEHICLE INFORMATION

Vehicle Model Year & Make: 1998 Dodge Caravan

Vehicle Model & Body Style: Minivan

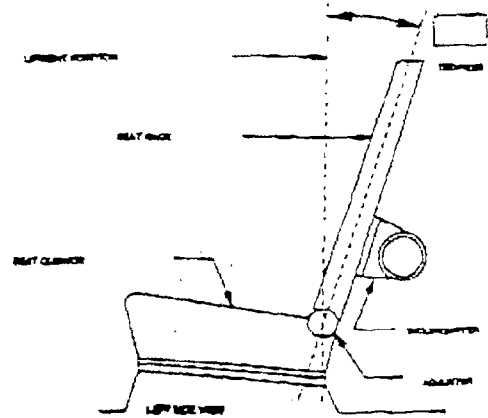
1. NOMINAL DESIGN RIDING POSITION --

For adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent if applicable. Indicate, if applicable, how the detents are numbered (Is the first detent "0" or "1"?). Indicate if the seat back angle is measured with the dummy in the seat.

Seat back angle for driver's seat = X degrees.

Measurement Instructions:

Set seatback without dummy in seat. Fully incline seatback. Hold inclinometer against frame of seatback approximately 55 mm above pivot point. Recline seat four degrees.



Seat back angle for passenger's seat = X degrees.

Measurement Instructions:

Same as driver

2. SEAT FORE & AFT POSITIONS - -

Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, indicate how the detents are numbered (Is the first detent "0" or "1"?). Provide information to locate the detent in which the seat track is to be locked.

Positioning of the driver's seat

Ensure seat is completely lowered. Only power seat has vertical adjustment. Locate full-forward and full-rear positions. Mark the seat at those positions. Distance should be 200 mm. Place seat mid-way between forward and rear. — or — For seat with manual adjuster, front latched position is number one. Move seat rearward ten clicks to eleventh latched position.

Positioning of the passenger's seat (if applicable):

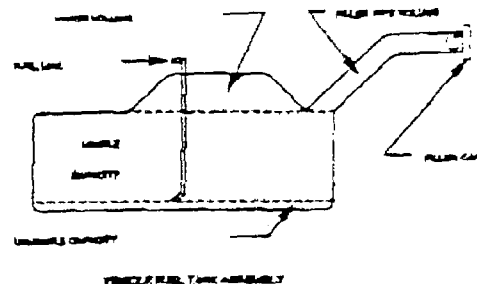
Same as driver seat.

3. FUEL TANK CAPACITY DATA --

3.1 A. "Usable Capacity" of standard equipment fuel tank = 20.0 gallons.

B. "Usable Capacity" of optional equipment fuel tank = N/A gallons.

C. "Usable Capacity" of vehicle(s) used for certification testing to requirements of FMVSS 301 - 20.0 gallons.



Operational Instructions:

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 19.0 gallons

Continued

VEHICLE INFORMATION

Vehicle equipped with electric fuel pump? ☒ YES ☐ NOIf YES, does pump normally operate when vehicle's electrical system is activated? ☒ YES ☐ NO

Turn key in Ignition. Turn key to "run" position. Fuel pump will operate briefly, pressurizing fuel lines.

ADJUSTABLE UPPER ANCHORAGE POSITION:

Highest latched position is one. Lower turning loop two clicks to position number three. Verify it is securely latched.

8. STEERING COLUMN ADJUSTMENTS..

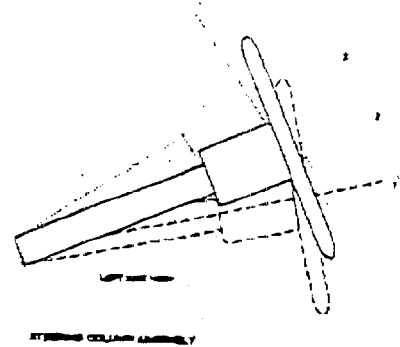
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions.

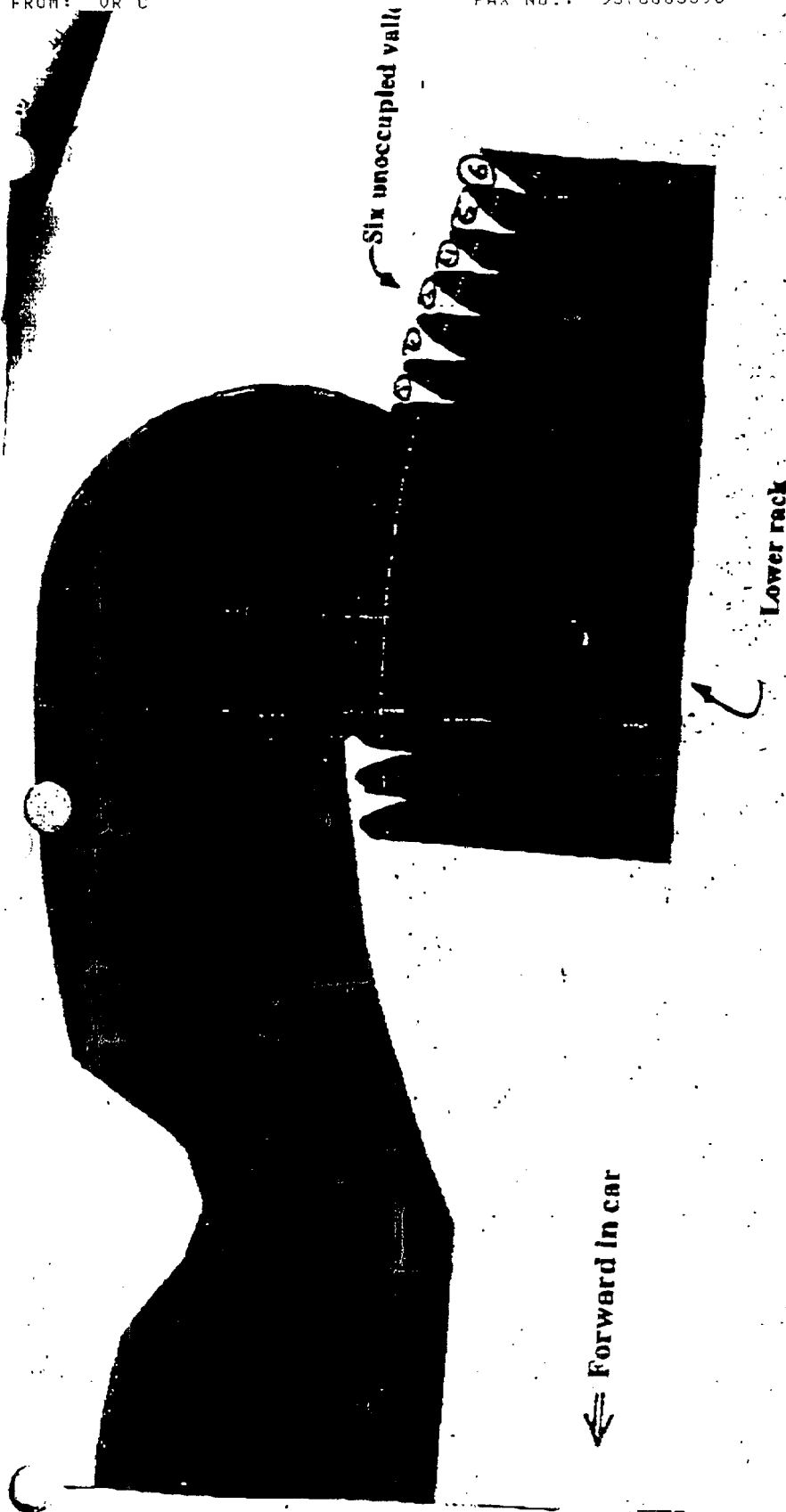
If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions:

Place tilt column in highest locked position. Verify tilt mechanism is engaged. This is position one. Lower steering wheel five clicks to position number six.

- or - Remove steering column shrouds to expose the tilt mechanism. A tilt pawl (pivots on fixed portion of column) engages a lower rack (resides on non-fixed portion of column). When column is correctly placed in "neutral" six unoccupied valleys are visible in the lower rack, rearward-in-car of the tilt pawl. See attachment.





Left Side View

NS-Body Tilt Steering Column: Proper Position for Impact

Achieve proper tilt head position for impact by:

- Locking tilt head in the full-up position. Ensure teeth are engaged.
- Lower tilt head (5) clicks.

This is also achieved by removing the shroud and visually inspecting the tilt mechanism. There should be six unoccupied valleys in the lower rack.

MWC

6/20/97

FORM NO. 1

TEST VEHICLE INFORMATION

Vehicle Model Year & Make: 1996 Dodge
 Vehicle Model & Body Style: Caravan (MPV)

1. NOMINAL DESIGN RIDING POSITION - -

For adjustable driver and passenger seat backs.
 Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent if applicable.

Seat back angle for driver's seat = 18.0 degrees.

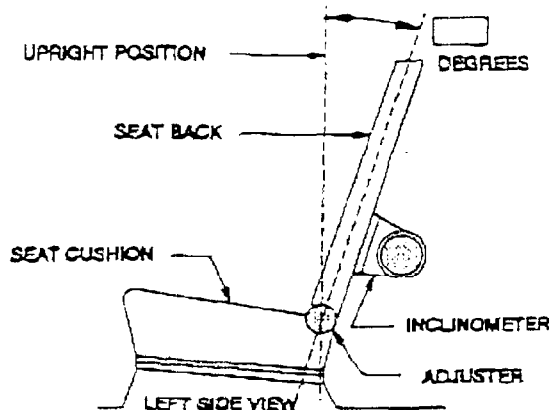
Measurement Instructions:

Adjust the seat back to full upright position (which is 14 degrees from full upright). Utilizing an inclinometer recline seat back 4 degrees.

Seat back angle for passenger's seat = degrees.

Measurement Instructions:

Same as above



2. SEAT FORE & AFT POSITIONS - -

Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, provide information to locate the detent in which the seat track is to be locked.

Positioning of the driver's seat:

Adjust seat to full forward and down position, move seat rearward to full rearmost locking position and measure travel of the seat assembly. Travel should be 200 mm, move seat 100 mm or to the center of the travel of the seat on the track.

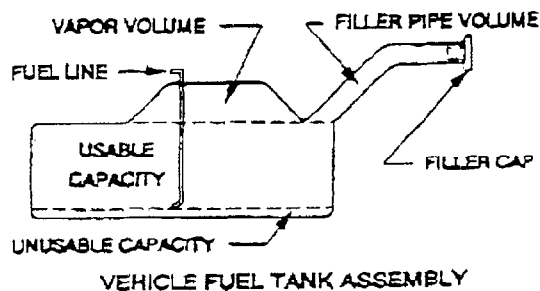
Positioning of the passenger's seat (if applicable):

See above

3. FUEL TANK CAPACITY DATA - -

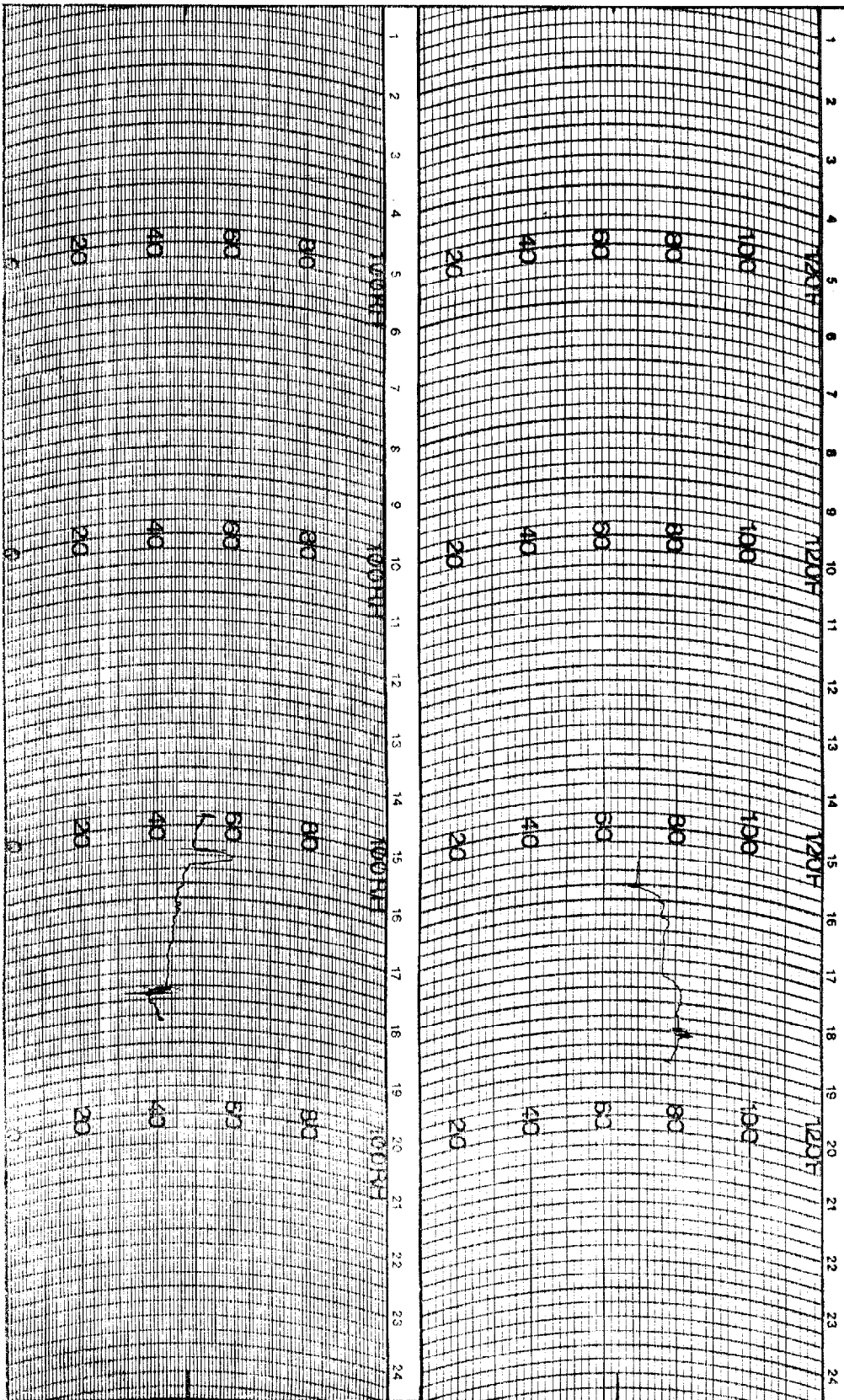
- 3.1 A. "Usable Capacity" of standard equipment fuel tank = 20.0 gallons.
 B. "Usable Capacity" of optional equipment fuel tank = N/A gallons.
 C. Capacity used when certification testing to requirements of FMVSS 301 = 19.0 gallons.

Operational Instructions:



3.2 Amount of Stoddard solvent added to vehicle for certification test = 19.0 gallons

3.3 Is vehicle equipped with electric fuel pump? x YES NO
 If YES, does pump normally operate when vehicle's electrical system is activated? x YES NO



WEATHER MEASURE
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SACRAMENTO, CA. 95841
PHONE (916) 481-7565

HYGROTHERMOGRAPH
1 DAY

CHART # C311 U HF
PART # 699123

STATION _____ DATE ON _____ DATE OFF _____