

2905

**1998 Ford Taurus
into a Load Cell Barrier
Test No. 980421-1**

**Prepared by:
Transportation Research Center Inc.
10820 State Route 347
East Liberty, OH 43319**

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**Prepared For:
Vehicle Research and Test Center
P. O. Box 37
East Liberty, OH 43319**

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Table of Contents

<u>Section</u>	<u>Description</u>	<u>Page</u>
1.0	Purpose and Test Procedure	1-1
2.0	Frontal Barrier Impact Test Summary	2-1
3.0	FMVSS 208 Data	3-1
4.0	Vehicle, Occupant, and Camera Measurements	4-1
Appendix A	Photographs	A-1
Appendix B	Data Plots	B-1
Appendix C	Dummy Certification	C-1
Appendix D	Miscellaneous Test Information	D-1

List of Tables

<u>Number</u>	<u>Description</u>	<u>Page</u>
1	Crash Test Summary	2-5
2	Test Vehicle Information	2-7
3	Post-Impact Data	2-10
4	Vehicle Accelerometer Locations and Data Summary	2-14
5	Load Cell Barrier Data Summary	2-17
6	Dummy Injury Criteria	3-2
7	Impacted Vehicle Measurements	4-3
8	Dummy Measurement Data for Front Seat Occupants	4-6
9	Motion Picture Camera Locations	4-9

List of Figures

<u>Number</u>	<u>Description</u>	<u>Page</u>
1	Impact Velocity Measurement System	2-11
2	Vehicle Crush	2-12
3	Vehicle Accelerometer Placement	2-13
4	Load Cell Barrier Configuration	2-16
5	Pre-test and Post-test Measurement Points	4-2
6	Vehicle Target Locations	4-4
7	Dummy Measurement Locations for Front Seat Occupants	4-5
8	Camera Positions	4-7

List of Photographs

<u>Description</u>	<u>Figure</u>
Pre-Test Front View	A-1
Post-Test Front View	A-2
Pre-Test Left Side View	A-3
Post-Test Left Side View	A-4
Pre-Test Left Rear Three-Quarter View	A-5
Post-Test Left Rear Three-Quarter View	A-6
Pre-Test Rear View	A-7
Post-Test Rear View	A-8
Pre-Test Right Side View	A-9
Post-Test Right Side View	A-10
Pre-Test Right Front Three-Quarter View	A-11
Post-Test Right Front Three-Quarter View	A-12
Pre-Test Front Underbody View	A-13
Post-Test Front Underbody View	A-14
Pre-Test Rear Underbody View	A-15
Post-Test Rear Underbody View	A-16
Pre-Test Engine Compartment View	A-17
Post-Test Engine Compartment View	A-18
Pre-Test Windshield View	A-19
Post-Test Windshield - View 1	A-20
Post-Test Windshield - View 2	A-21
Pre-Test Fuel Filler Cap View	A-22
Post-Test Fuel Filler Cap View	A-23
Pre-Test Fuel Filler Neck View	A-24
Post-Test Fuel Filler Neck View	A-25
Pre-Test Fuel Tank View	A-26
Post-Test Fuel Tank View	A-27
Pre-Test Driver Dummy Position - View 1	A-28
Post-Test Driver Dummy Position - View 1	A-29

List of Photographs, Cont'd.

<u>Description</u>	<u>Figure</u>
Pre-Test Driver Dummy Position -View 2	A-30
Post-Test Driver Dummy Position - View 2	A-31
Pre-Test Driver Dummy Position -View 3	A-32
Post-Test Driver Dummy Position - View 3	A-33
Pre-Test Passenger Dummy Position - View 1	A-34
Post-Test Passenger Dummy Position - View 1	A-35
Pre-Test Passenger Dummy Position - View 2	A-36
Post-Test Passenger Dummy Position - View 2	A-37
Pre-Test Passenger Dummy Position - View 3	A-38
Post-Test Passenger Dummy Position - View 3	A-39
Pre-Test Driver Dummy Through Windshield View	A-40
Post-Test Driver Dummy Overall View	A-41
Post-Test Driver Dummy Head Contact - View 1	A-42
Post-Test Driver Dummy Head Contact - View 2	A-43
Post-Test Driver Dummy Head Contact - View 3	A-44
Post-Test Driver Dummy Knee Contact - View 1	A-45
Post-Test Driver Dummy Knee Contact - View 2	A-46
Pre-Test Passenger Dummy Through Windshield View	A-47
Post-Test Passenger Dummy Overall View	A-48
Post-Test Passenger Dummy Head Contact - View 1	A-49
Post-Test Passenger Dummy Head Contact - View 2	A-50
Post-Test Passenger Dummy Head Contact - View 3	A-51
Post-Test Passenger Dummy Knee Contact - View 1	A-52
Post-Test Passenger Dummy Knee Contact - View 2	A-53
Pre-Test Vehicle Certification Label View	A-54

Section 1.0

Purpose and Test Procedure

Purpose and Test Summary

This 30 mph flat frontal barrier impact test had the objective of investigating the performance of small female unbelted occupants in a full frontal 30 mph barrier test.

This test was conducted with a 1998 Ford Taurus that impacted a flat frontal load cell barrier. The test vehicle contained two instrumented Hybrid III 5th percentile adult female dummies.

Section 2.0

Frontal Barrier Impact Test Summary

Test Procedure

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

The test vehicle was instrumented with thirteen (13) accelerometers to measure longitudinal, lateral, and vertical axis accelerations. The vehicle was also instrumented with two (2) event circuits to measure squib current fire times in the airbag system. The vehicle's specified impact velocity range was 46.5 to 48.1 kph. The vehicle impacted a flat frontal load cell barrier instrumented with thirty-six (36) load cells.

The test vehicle contained two (2) Hybrid III 5th percentile adult female anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the February 2, 1998, draft SAE Hybrid III Small Female Dummy Positioning Procedure. The dummies were restrained by the airbag system.

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations; chest deflection potentiometers; left and right femur load cells to measure axial forces; upper neck load cells to measure forces and moments; and spine and sternum accelerometers to measure longitudinal accelerations. The driver dummy was also instrumented with pelvic accelerometers to measure longitudinal, lateral, and vertical accelerations.

The ninety-six (96) data channels were digitally sampled at 12,500 samples per second and processed per Sections 11.13 through 11.15 of the Laboratory Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and sixteen (16) high-speed motion picture cameras. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera.

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

Test Results Summary

This frontal load cell barrier test was conducted at TRC on April 21, 1998.

The test vehicle, a 1998 Ford Taurus, was equipped with airbags at the driver's and right front passenger's seating positions. The vehicle's test weight was 1666.1 kilograms. The vehicle's impact speed was 47.2 kph. The vehicle's maximum static crush was 310 millimeters.

The driver's 36 millisecond HIC was 309. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 48.2 g. The driver's chest deflection was 35 millimeters. The driver's left and right femur maximum compressive forces were 3916 N and 4490 N, respectively.

The right front passenger's 36 millisecond HIC was 282. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 39.6 g. The passenger's chest deflection measurement of 6 millimeters was questionable (See Data Acquisition Explanations). The right front passenger's left and right femur maximum compressive forces were 4969 N and 5878 N, respectively.

Data Acquisition Explanations

The driver dummy's neck X-axis moment load cell, NEKXM1, exceeded its data channel's full scale input at approximately 210 milliseconds and recorded questionable data after that.

The vehicle's left radiator X-axis acceleration data channel, RADXG1, exceeded its data channel's full scale input at approximately 120 milliseconds and recorded questionable data after that.

The vehicle's right radiator X-axis acceleration data channel, RADXG2, exceeded its data channel's full scale input at approximately 150 milliseconds and recorded questionable data after that.

The passenger dummy's chest deflection channel, CSTXD2, recorded questionable data. The data polarity is inconsistent with this transducer's expected negative output during chest compression.

Table 1 Crash Test Summary

Test type:	Load cell barrier impact
Test date:	04/21/98
Test time:	1458
Ambient temperature at impact area:	22° C
Vehicle year/make/ model/body style:	1998/Ford/Taurus/4-door LX
Vehicle test weight:	1666.1 kg
Impact angle ¹ :	0°
Impact velocity ² :	
Primary:	47.2 kph
Secondary:	47.2 kph
Maximum static crush:	310 mm
Average rebound:	1170 mm
Number of cameras:	
Real-time:	1
High-speed:	16
Door opening data:	
Left-front:	Slightly difficult
Right-front:	Slightly difficult

¹ With respect to tow track centerline.

² Speed trap measurement ($\pm .05$ mph accuracy)

Table 1 Crash Test Summary, Cont'd.

Dummies:	<u>Driver #289</u>	<u>Passenger #288</u>
Type:	Hybrid III 5th percentile adult female	Hybrid III 5th percentile adult female
Location:	Left front	Right front
Restraint:	Airbag	Airbag
Number of data channels:	24	21
Front seat data:		
Seat track failure:	None	None
Seat back failure:	None	None
Visible dummy contact points:		
Head:	Airbag/headrest	Airbag/headrest
Chest:	Airbag	Airbag
Abdomen:	Lower steering wheel	None
Left knee:	Instrument panel	Instrument panel
Right knee:	Instrument panel	Instrument panel

Table 2 Test Vehicle Information

Vehicle year/make/
model/body style: 1998/Ford/Taurus/4-door LX

Color: White

VIN: 1FAFP52U1WG145718

Build date: 12/97

Engine data:

Placement: Transverse/lateral

Cylinders: 6

Displacement: 3.0 liters

Transmission data: 3 speed, manual, X automatic, X overdrive

Final drive: X fwd, rwd, 4wd

Date vehicle received: 04/16/98

Odometer reading: 6

Dealer's name and address: N/A

Accessories:

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
Power door locks	No	Other:	None

Certification data from vehicle's label:

Vehicle manufactured by: Ford Motor Company

Date of manufacture: 12/97

VIN: 1FAFP52U1WG145718

GVWR: 4687 lb

GAWR: Front: 2647 lb

Rear: 2065 lb

Table 2 Test Vehicle Information, Cont'd.

Size of tires on vehicle: P205/65R15
Spare tire: Space Saver
Type of front seats: Bucket

Tire & capacity data from vehicle's label:

Recommended tire size: P205/65R15
Recommended cold tire pressure:
Front: 33 psi
Rear: 33 psi
Designated Seating Capacity:
Front 3
Rear 3
Total 6
Vehicle Capacity Weight: 1100 lbs.

Test vehicle attitudes:

Delivered attitude:	LF: 718 mm	RF: 725 mm	LR: 692 mm	RR: 700 mm
Fully loaded attitude:	LF: 712 mm	RF: 716 mm	LR: 656 mm	RR: 666 mm
Pre-test attitude:	LF: 717 mm	RF: 720 mm	LR: 657 mm	RR: 658 mm
Post-test attitude:	LF: 708 mm	RF: 709 mm	LR: 655 mm	RR: 656 mm

Table 2 Test Vehicle Information, Cont'd.

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

Right front	482.2 kg	Right rear	252.7 kg
Left front	480.4 kg	Left rear	265.4 kg
Total front weight	962.6 kg	(65.0% of total vehicle weight)	
Total rear weight	518.1 kg	(35.0% of total vehicle weight)	
Total delivered weight	1480.7 kg		

Calculation of test vehicle's target test weight:

RCLW¹ = Rated Cargo and Luggage Weight

UDW = Unloaded Delivered Weight (1480.7 kg)

VCW = Vehicle Capacity Weight (499.0 kg)

DSC² = Designated Seating Capacity (6)

RCLW¹ = VCW - 68 (DSC) = 499.0 - 68 (6) = 91.0 kg

Target test weight = UDW + RCLW + (number of Hybrid III 5th Female Dummies x 47.6 kg
per dummy)

Target test weight = 1480.7 + 91.0 + 95.2 = 1666.9 kg

Weight of test vehicle with required dummies and 90.2 kg of cargo weight:

Right front	500.8 kg	Right rear	329.8 kg
Left front	503.0 kg	Left rear	332.5 kg
Total front weight	1003.8 kg	(60.2% of total vehicle weight)	
Total rear weight	662.3 kg	(39.8% of total vehicle weight)	
Total test weight	1666.1 kg		

Weight of ballast secured in vehicle: None

Components removed to meet target test weight: Exhaust system

CG rearward of front wheel centerline: 1099.1 mm

Vehicle Wheelbase: 2765 mm

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

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

Table 3 Post-Impact Data

Test number: 980421-1
Test date: 04/21/98
Test time: 1458
Test type: Load cell barrier impact
Impact angle: 0°
Ambient temperature
at impact area: 22° C
Temperature in
occupant compartment: 22° C

Impact velocity:
Primary: 47.2 kph
Secondary: 47.2 kph
Specified range: 46.5 to 48.1 kph

Distance from vehicle to barrier:

Entering velocity trap: 356 mm
Exiting velocity trap: 51 mm

Test vehicle static crush:

Overall length of test vehicle:

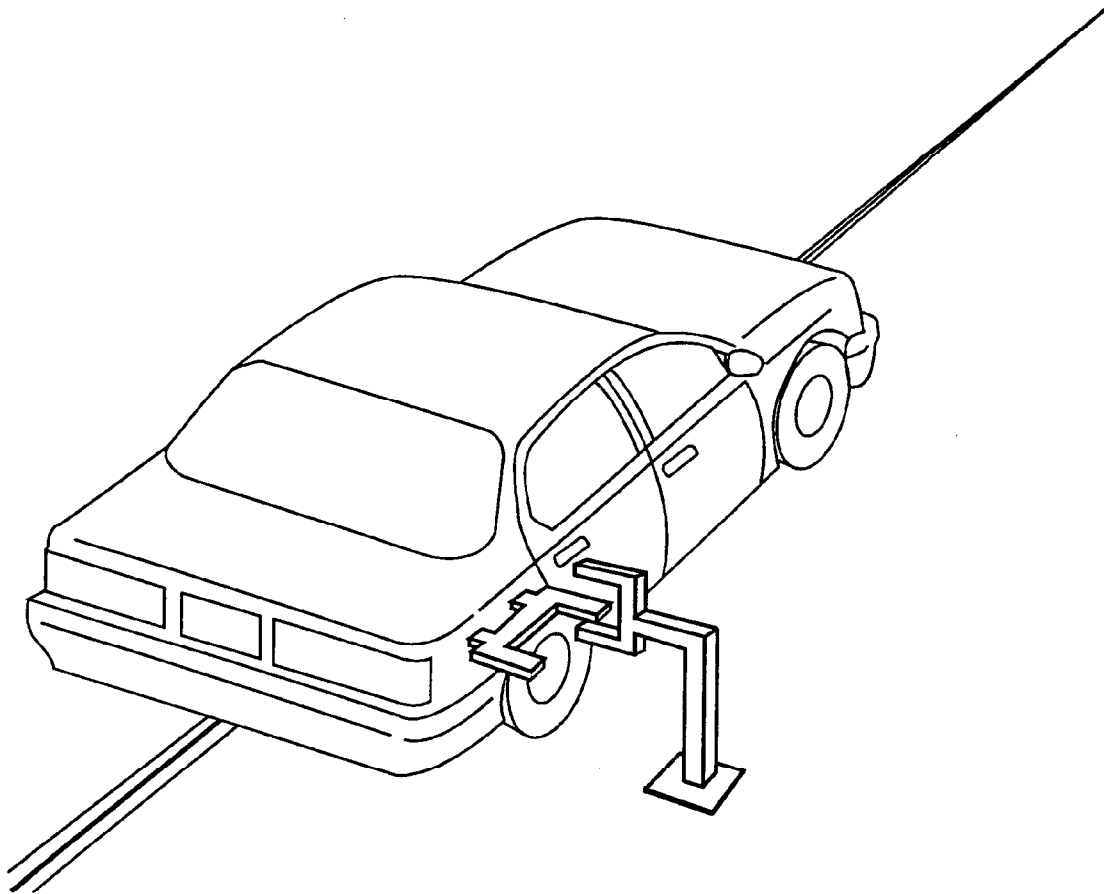
Pre-test:	L: 4812 mm	C: 5025 mm	R: 4807 mm
Post-test:	L: 4615 mm	C: 4715 mm	R: 4532 mm
Total crush:	L: 197 mm	C: 310 mm	R: 275 mm
Average crush:	257 mm		

Test vehicle rebound from flat barrier:

Distance from test vehicle to barrier:

Post-test:	L: 1163 mm	C: 1080 mm	R: 1267 mm
Average rebound:	1170 mm		

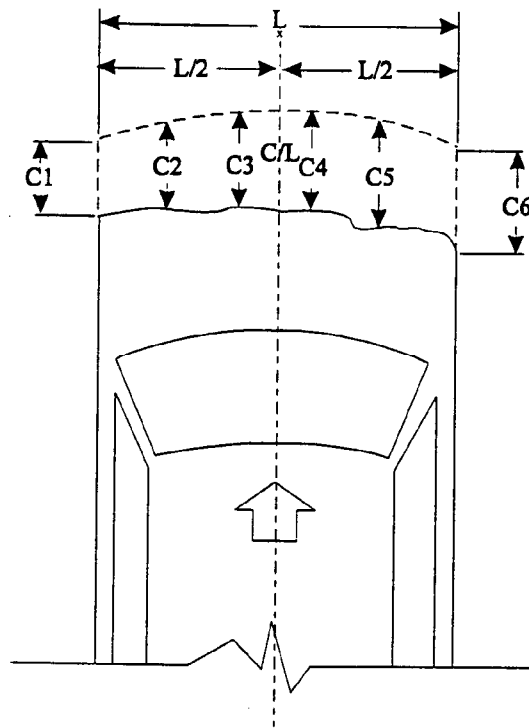
Figure 1 Impact Velocity Measurement System



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

The vanes have 305-millimeter spacing.

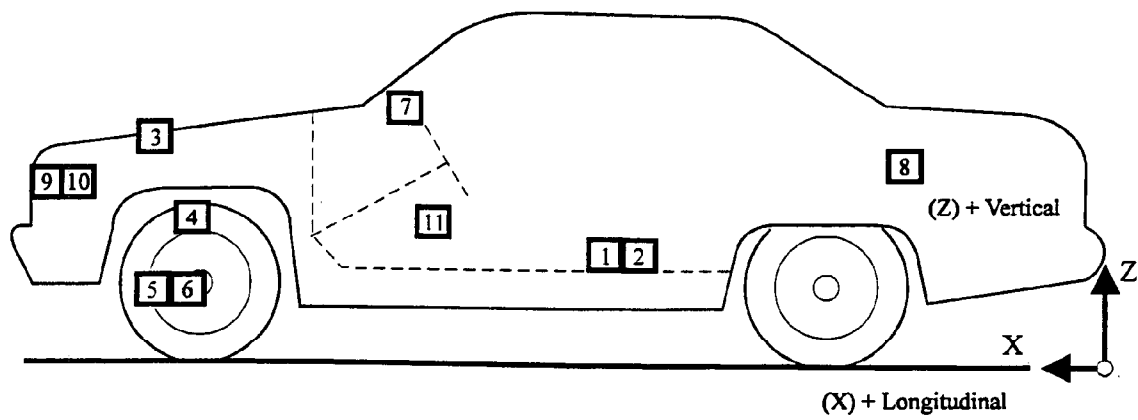
Figure 2 Vehicle Crush



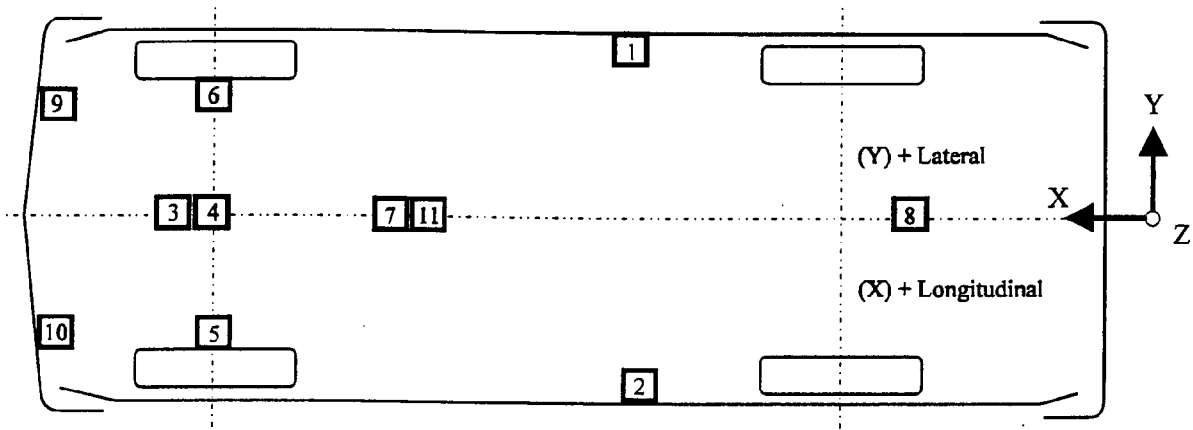
Notes: L is pre-test length of contact surface.
 C1 through C6 are spaced equally apart.
 CL is vehicle centerline.
 Measurements taken from a plane perpendicular
 to the vehicle centerline.

	Pre-test	Post-test	Crush
L	1524 mm		
C1	4812 mm	4615 mm	197 mm
C2	4963 mm	4692 mm	271 mm
C3	5011 mm	4718 mm	293 mm
C4	5013 mm	4706 mm	307 mm
C5	4960 mm	4652 mm	308 mm
C6	4807 mm	4532 mm	275 mm
CL	5025 mm	4715 mm	310 mm

Figure 3 Vehicle Accelerometer Placement



Side View



Bottom View

Table 4 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 980421-1 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	2092 mm	585 mm	255 mm	0.8 g @ 104.7 ms	25.3 g @ 44.4 ms
2 RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	2092 mm	-585 mm	255 mm	14.1 g @ 71.9 ms	26.5 g @ 57.9 ms
3 ENGINE TOP LONGITUDINAL	4103 mm	-180 mm	851 mm	12.3 g @ 60.2 ms	73.0 g @ 38.7 ms
4 ENGINE BOTTOM LONGITUDINAL	4205 mm	-45 mm	185 mm	8.5 g @ 56.4 ms	64.9 g @ 35.0 ms
5 RIGHT BRAKE CALIPER LONGITUDINAL	4080 mm	-685 mm	309 mm	36.0 g @ 71.4 ms	56.6 g @ 28.7 ms
6 LEFT BRAKE CALIPER LONGITUDINAL	4080 mm	685 mm	300 mm	28.8 g @ 73.7 ms	53.2 g @ 34.2 ms
7 INSTRUMENT PANEL CENTER LONGITUDINAL	3491 mm	45 mm	960 mm	3.1 g @ 94.9 ms	37.8 g @ 64.9 ms
8 REAR VEHICLE CENTERLINE VERTICAL	300 mm	0 mm	387 mm	12.9 g @ 71.6 ms	18.0 g @ 105.2 ms

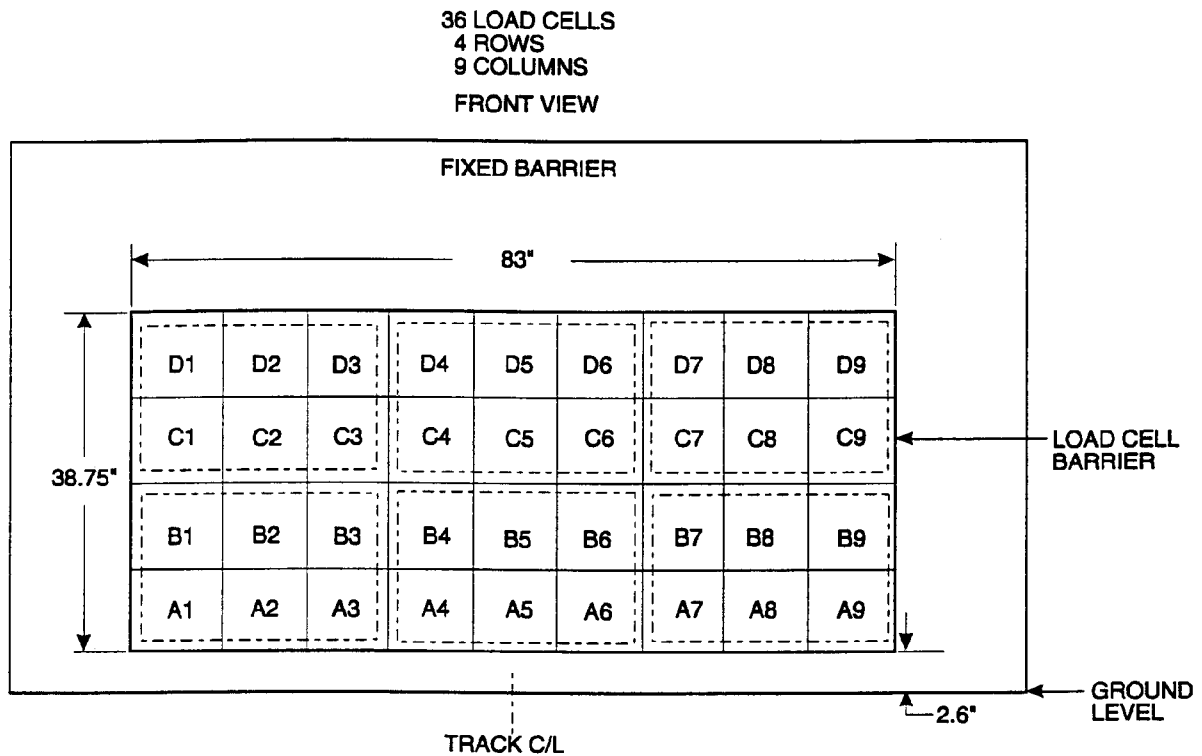
Table 4 Vehicle Accelerometer Locations and Data Summary, Cont'd.

TEST NUMBER: 980421 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
9 LEFT RADIATOR LONGITUDINAL ¹	4550 mm	460 mm	659 mm	178.6 g @ 26.4 ms	1052.2 g @ 56.1 ms
10 RIGHT RADIATOR LONGITUDINAL ¹	4555 mm	-392 mm	622 mm	229.2 g @ 22.1 ms	276.8 g @ 16.9 ms
11 FLOOR TUNNEL LONGITUDINAL LATERAL VERTICAL RESULTANT	2173 mm	0 mm	310 mm	1.9 g @ 148.2 ms 2.6 g @ 47.0 ms 9.7 g @ 93.7 ms 33.2 g @ 73.5 ms	28.1 g @ 73.8 ms 4.5 g @ 63.4 ms 17.9 g @ 73.3 ms

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

¹See DATA ACQUISITION EXPLANATIONS

Figure 4 Load Cell Barrier Configuration



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

Group A: A1 through A9
Group B: B1 through B9
Group C: C1 through C9
Group D: D1 through D9

Table 5 Load Cell Barrier Data Summary

Location	Positive direction				Negative direction			
Total group 1	2.3	kN	@	4.2 ms	119.3	kN	@	41.7 ms
Total group 2	0.0	kN	@	255.4 ms	129.3	kN	@	51.2 ms
Total group 3	1.8	kN	@	4.5 ms	148.9	kN	@	35.6 ms
Total group 4	1.5	kN	@	5.0 ms	40.5	kN	@	25.5 ms
Total group 5	0.1	kN	@	304.7 ms	61.1	kN	@	25.9 ms
Total group 6	0.5	kN	@	4.0 ms	35.5	kN	@	33.0 ms
Total load cell force	0.2	kN	@	238.0 ms	470.5	kN	@	40.8 ms

Tension is positive
Compression is negative

Table 5 Load Cell Barrier Data Summary, Cont'd.

Location	Positive direction	Negative direction
Total group A	4.1 kN @ 23.5 ms	54.0 kN @ 61.1 ms
Total group B	0.2 kN @ 202.8 ms	357.0 kN @ 40.2 ms
Total group C	0.2 kN @ 307.9 ms	106.1 kN @ 18.3 ms
Total group D	4.5 kN @ 15.0 ms	23.1 kN @ 26.0 ms

Section 3.0

FMVSS 208 Data

Table 6 Dummy Injury Criteria

<u>Maximum Acceleration</u>							
	Head				Chest		
	X	Y	Z	R	X	Y	Z
Driver	-48.4 g	6.5 g	8.9 g	49.3 g	-49.4 g	-8.2 g	9.1 g
Passenger	-94.3 g	-33.2 g	57.2 g	94.5 g	-36.0 g	6.0 g	-18.8 g

<u>Maximum Femur Compressive Force</u>		
	Left Femur	Right Femur
Driver	3916 N	4490 N
Passenger	4969 N	5878 N

<u>Head Injury Criteria¹</u>			
	HIC	Time t ₁	Time t ₂
Driver	309	46.6 ms	82.6 ms
Passenger	282	70.1 ms	106.1 ms

<u>Chest Maximum Resultant Acceleration²</u>			
	Acceleration	Time t ₁	Time t ₂
Driver	48.2 g	77.8 ms	80.8 ms
Passenger	39.6 g	91.7 ms	94.6 ms

<u>Maximum Chest Deflection</u>	
Driver	35 mm
Passenger ³	6 mm

¹ As defined in FMVSS No. 208

² Defined as equal to or exceeding 0.003 sec. duration

³ See Data Acquisition Explanations

Dummy Kinematic Summary

Driver Dummy

Upon impact, the driver dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head and chest impacted the airbag. 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 and upper seat back. The dummy's pelvis submarined slightly. The dummy translated forward again into the airbag. The driver dummy came to rest seated in the driver's seat. The dummy's head and shoulders were against the seat back.

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 dummy translated forward again into the airbag. The passenger dummy came to rest seated in the passenger's seat. The dummy's head and shoulders were slumped forward.

Section 4.0

Vehicle, Occupant, and Camera Measurements

Figure 5 Pre-test and Post-test Measurement Points

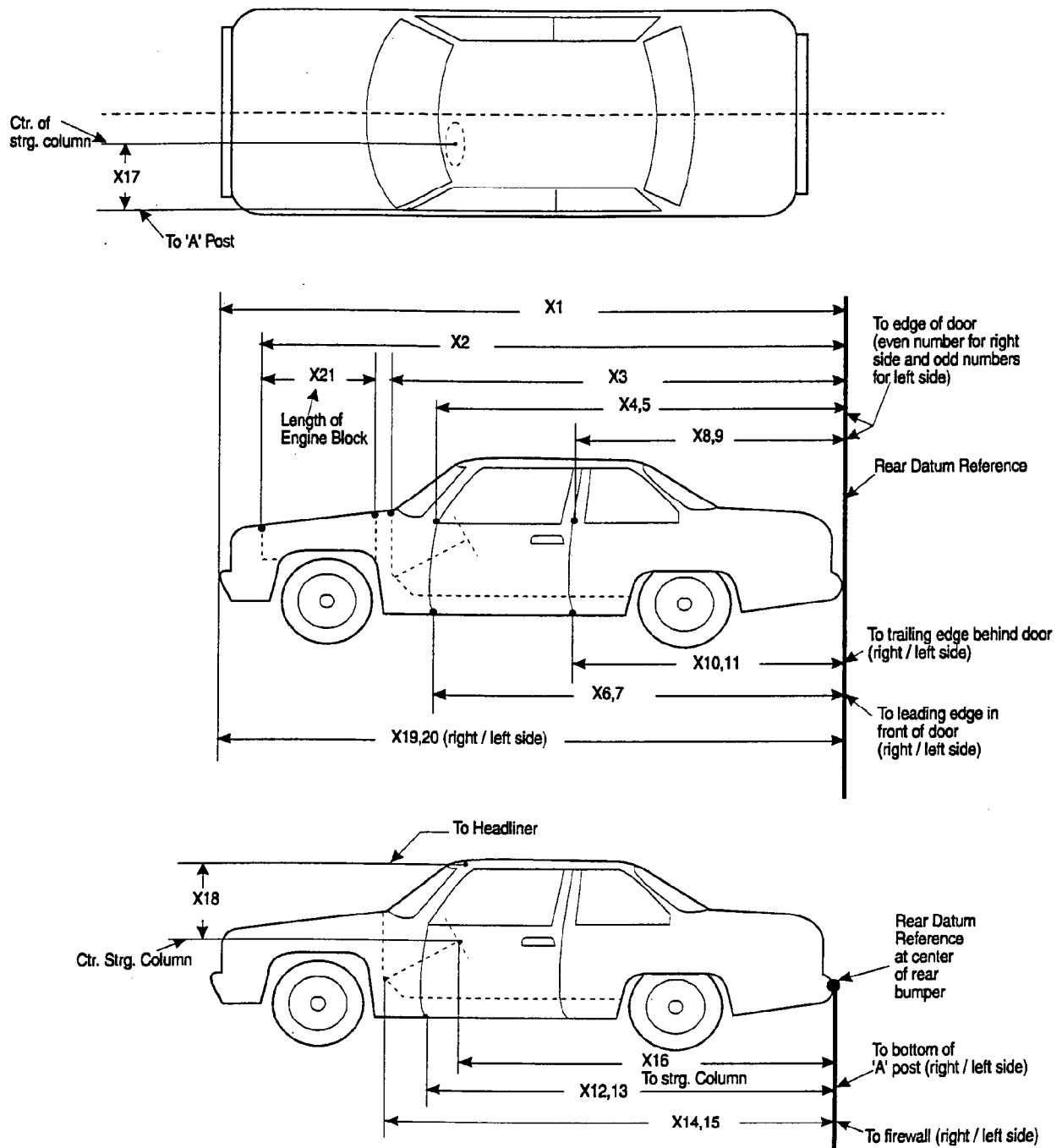


Table 7 Impacted Vehicle Measurements

Vehicle year/make/model/body style: 1998/Ford/Taurus/4-door LX

Test Number: 980421-1

No.	Type of measurement	Pre-test	Post-test	Difference
X1	Total Length of Veh. at Centerline	5025	4715	310
X2	Rear Surface of Veh. to Front of Engine Block	4415	4128	287
X3	Rear Surface of Veh. to Firewall	3885	3860	25
X4	Rear Surface of Veh. to Upper Leading Edge of Right Door	3437	3447	-10
X5	Rear Surface of Veh. to Upper Leading Edge of Left Door	3431	3425	6
X6	Rear Surface of Veh. to Lower Leading Edge of Right Door	3424	3415	9
X7	Rear Surface of Veh. to Lower Leading Edge of Left Door	3415	3405	10
X8	Rear Surface of Veh. to Upper Trailing Edge of Right Door	2425	2435	-10
X9	Rear Surface of Veh. to Upper Trailing Edge of Left Door	2421	2420	1
X10	Rear Surface of Veh. to Lower Trailing Edge of Right Door	2415	2412	3
X11	Rear Surface of Veh. to Lower Trailing Edge of Left Door	2410	2402	8
X12	Rear Surface of Veh. to Bottom of " A " Post on Right Side	3425	3426	-1
X13	Rear Surface of Veh. to Bottom of " A " Post on Left Side	3422	3422	0
X14	Rear Surface of Veh. to Firewall--Right Side	3661	3351	310
X15	Rear Surface of Veh. to Firewall--Left Side	3702	3385	317
X16	Rear Surface of Veh. to Steering Wheel Center	3045	3028	17
X17	Center of Steering Column to " A " Post	316	300	16
X18	Center of Steering Column to Headliner	415	410	5
X19	Rear Surface of Veh. to Right Side of Front Bumper	4807	4532	275
X20	Rear Surface of Veh. to Left Side of Front Bumper	4812	4615	197
X21	Length of Engine Block	345	345	0

Figure 6 Vehicle Target Locations

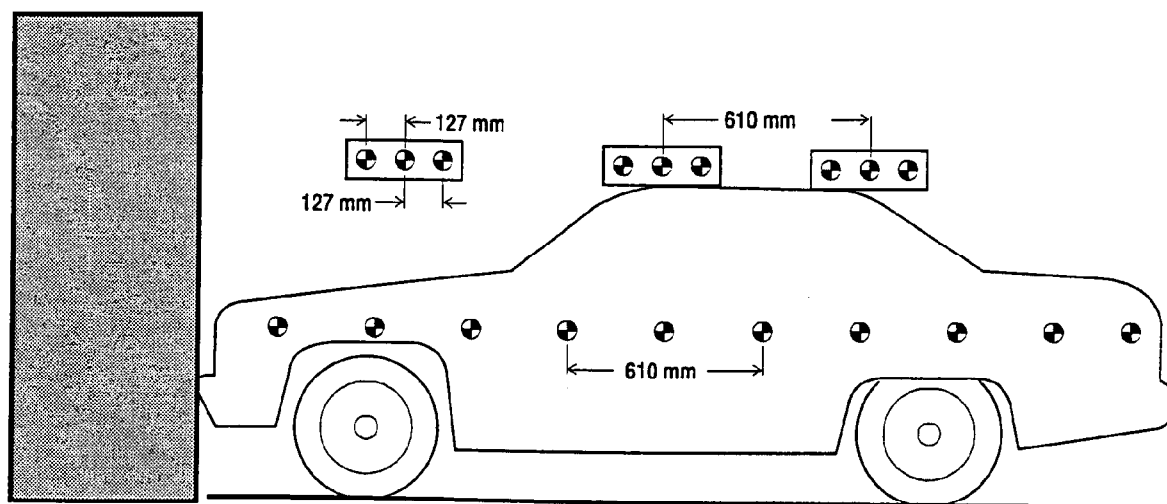


Figure 7 Dummy Measurement Locations for Front Seat Occupants

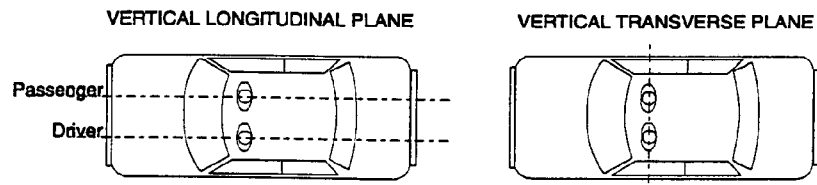
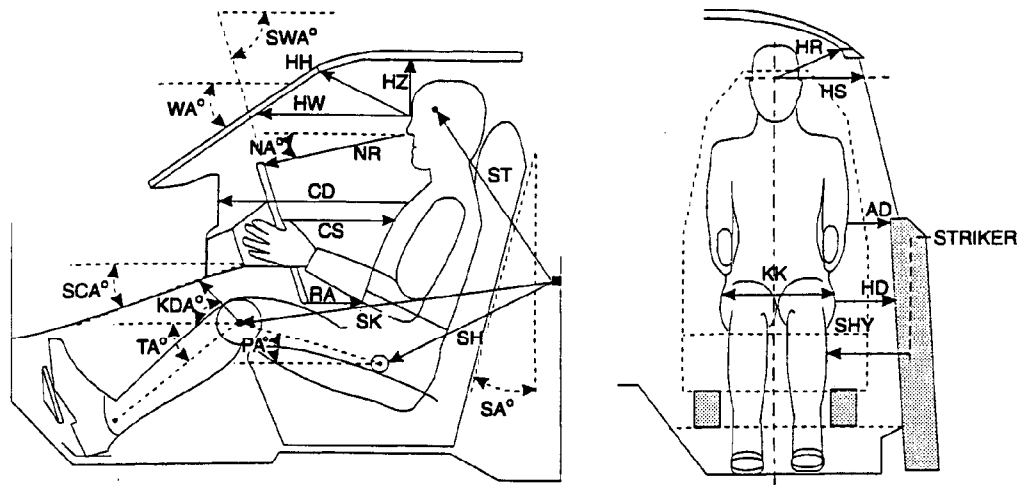


Table 8 Dummy Measurement Data For Front Seat Occupants

<u>Designation</u>	<u>Type of Measurement</u>	<u>Driver (Serial #289)</u>	<u>Passenger (Serial #288)</u>
WA	Windshield angle	25°	25°
SWA	Steering wheel angle	70°	NA
SCA	Steering column angle	20°	NA
SA ¹	Seat back angle	20°	24°
HZ	Head to roof	186 mm	180 mm
HH	Head to header	248 mm	247 mm
HW	Head to windshield	621 mm	617 mm
HR	Head to side header	251 mm	246 mm
NR	Nose to rim	237 mm	NA
NA	Nose to rim angle	4°	NA
CD	Chest to dash	433 mm	353 mm
CS	Steering wheel to chest	191 mm	NA
RA	Rim to abdomen	85 mm	NA
KDL	Left knee to dash	122 mm	104 mm
KDR	Right knee to dash	105 mm	128 mm
KDA	Outboard knee to dash angle	34°	25°
PA	Pelvic angle	22.3°	20°
TA	Tibial angle	48°	53°
KK	Knee to knee	291 mm	230 mm
ST ²	Striker to head	511 mm	534 mm
	Striker to head angle	-60°	-66°
SK	Striker to knee	675 mm	660 mm
	Striker to knee angle	2°	2°
SH	Striker to H-point	378 mm	351 mm
	Striker to H-point angle	13°	24°
SHY	Striker to H-point (Y dir.)	271 mm	309 mm
HS	Head to side window	357 mm	368 mm
HD	H-point to door	202 mm	188 mm
AD	Arm to door	163 mm	154 mm

The seat back angle (SA°) is measured relative to vertical, all other angles are measured relative to horizontal.

¹ Passenger seat was deformed due to previous testing.

² A negative angle indicates the measurement point was above the striker.

Figure 8 Camera Positions

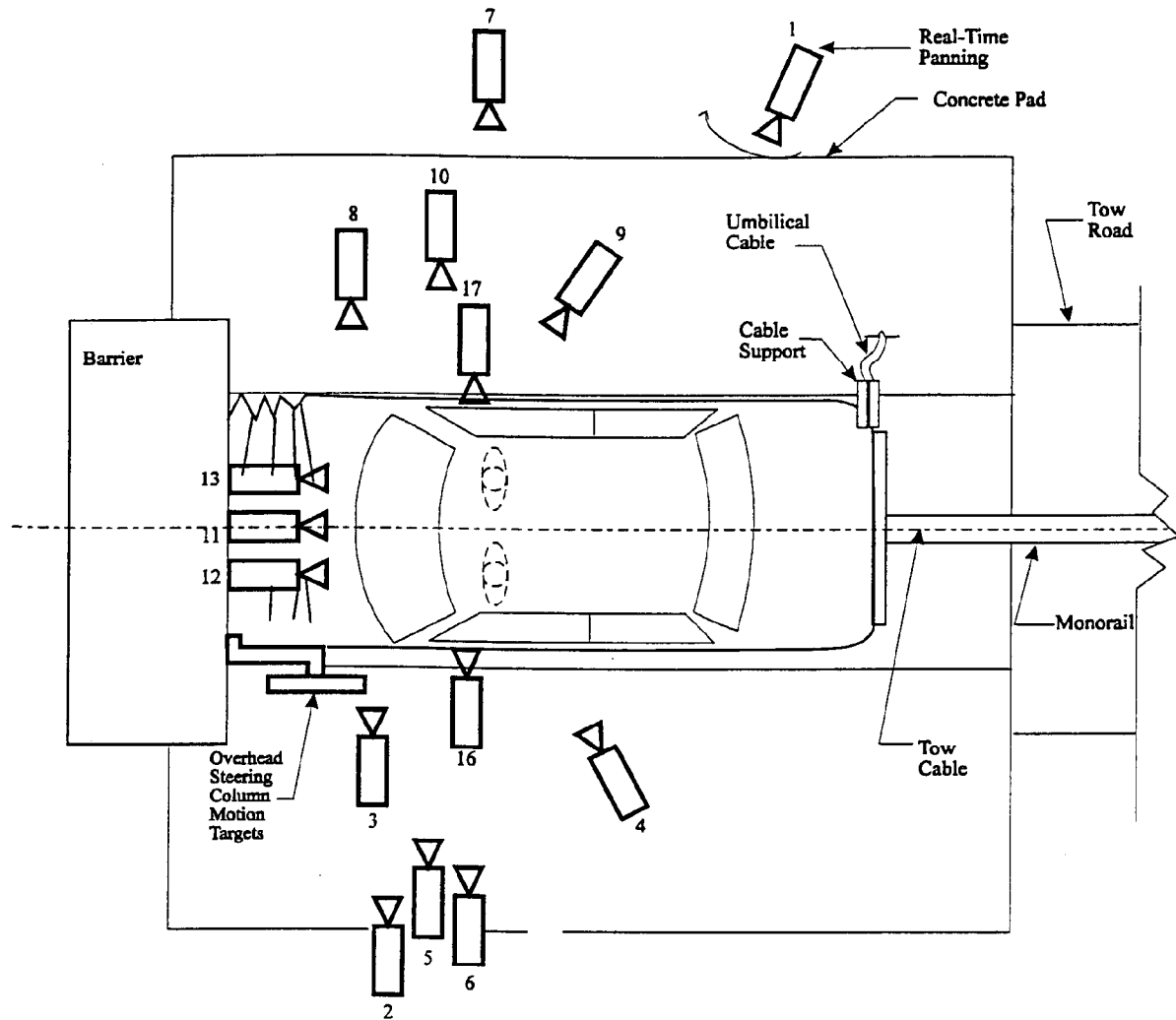


Figure 8 Camera Positions, Cont'd.

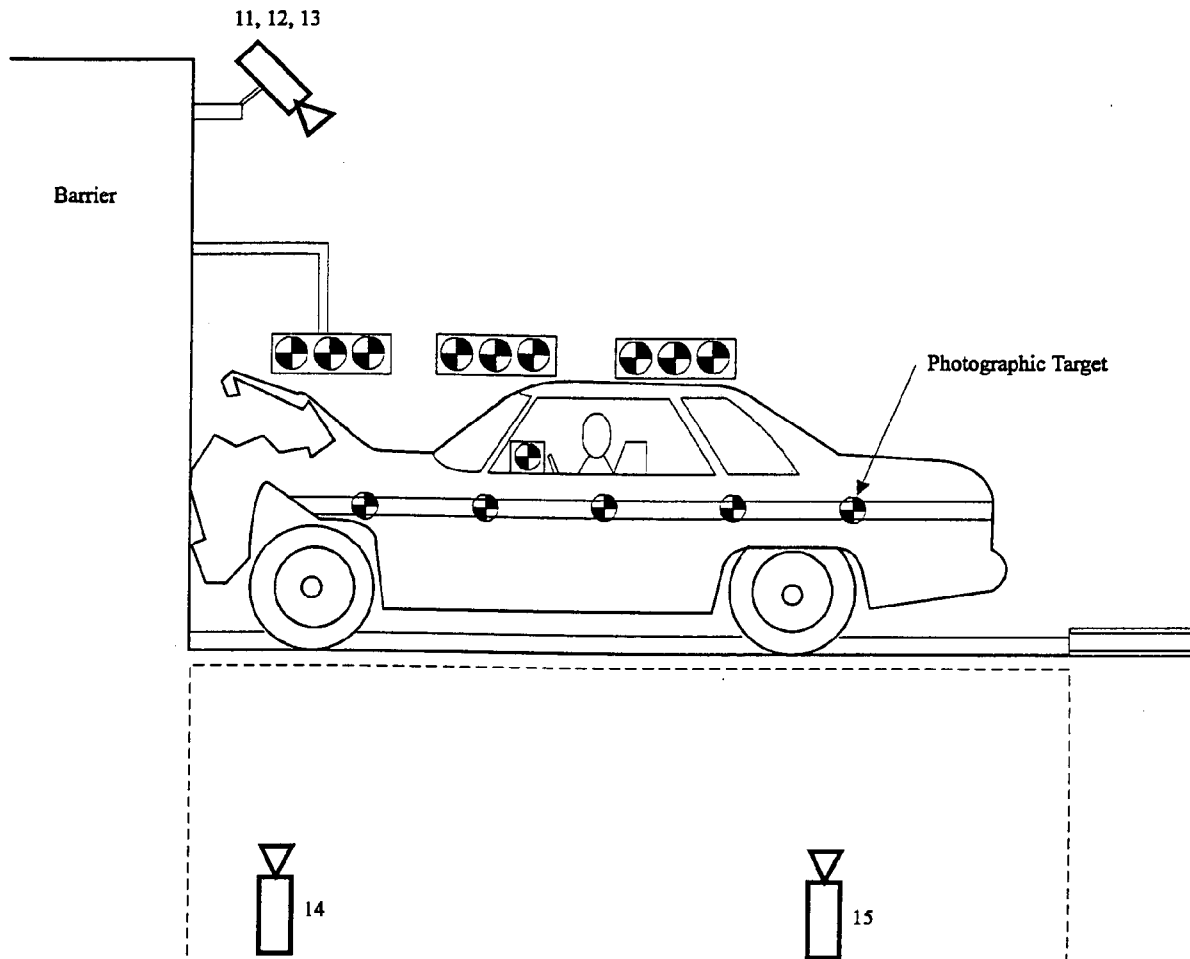


Table 9 Motion Picture Camera Locations
Vehicle year/make/model/body style: 1998/Ford/Taurus/4-door LX
Test number: 980421-1

Camera Number	View	Camera Positions ¹			Angle ²	Film Plane to Head Target	Lens	Film Speed
		X	Y	Z				
1	Real-time panning	NA	NA	NA	NA	NA	NA	24 frames/s
2	Left vehicle crush	-1054 mm	7493 mm	1118 mm	NA	NA	25 mm	1000 frames/s
3	Left windshield intrusion	-1346 mm	7859 mm	1074 mm	NA	NA	50 mm	1002 frames/s
4	Driver over shoulder	-3995 mm	2946 mm	2210 mm	NA	NA	25 mm	953 frames/s
5	Column movement - lower	2134 mm	7264 mm	1908 mm	NA	NA	25 mm	1000 frames/s
6	Column movement - upper	2134 mm	7264 mm	2616 mm	NA	NA	25 mm	1008 frames/s
7	Right side overall	-2065 mm	-6767 mm	942 mm	NA	NA	13 mm	992 frames/s
8	Right windshield intrusion	-968 mm	-7775 mm	1118 mm	NA	NA	50 mm	1000 frames/s
9	Passenger over shoulder	-3863 mm	-2946 mm	2210 mm	NA	NA	25 mm	1008 frames/s
10	Passenger A-pillar to B-pillar	-986 mm	-7442 mm	1151 mm	NA	NA	25 mm	1018 frames/s
11	Windshield - front view	-152 mm	0 mm	2040 mm	NA	NA	8.5 mm	1000 frames/s
12	Driver - front view	-173 mm	368 mm	2362 mm	NA	NA	17 mm	992 frames/s
13	Passenger - front view	-114 mm	-351 mm	2362 mm	NA	NA	17 mm	992 frames/s
14	Pit front position	-1283 mm	0 mm	-2347 mm	NA	NA	13 mm	945 frames/s
15	Pit rear position	-2522 mm	0 mm	-2515 mm	NA	NA	13 mm	1008 frames/s
16	Onboard driver	NA	NA	NA	NA	NA	8 mm	905 frames/s
17	Onboard passenger	NA	NA	NA	NA	NA	8 mm	925 frames/s

¹ +X = Film plane forward of barrier face

+Y = Film plane to left of monorail centerline

+Z = Film plane above ground level

² +Angle = Film plane angled upward from horizontal plane

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.



Figure A-1 Pre-Test Front View

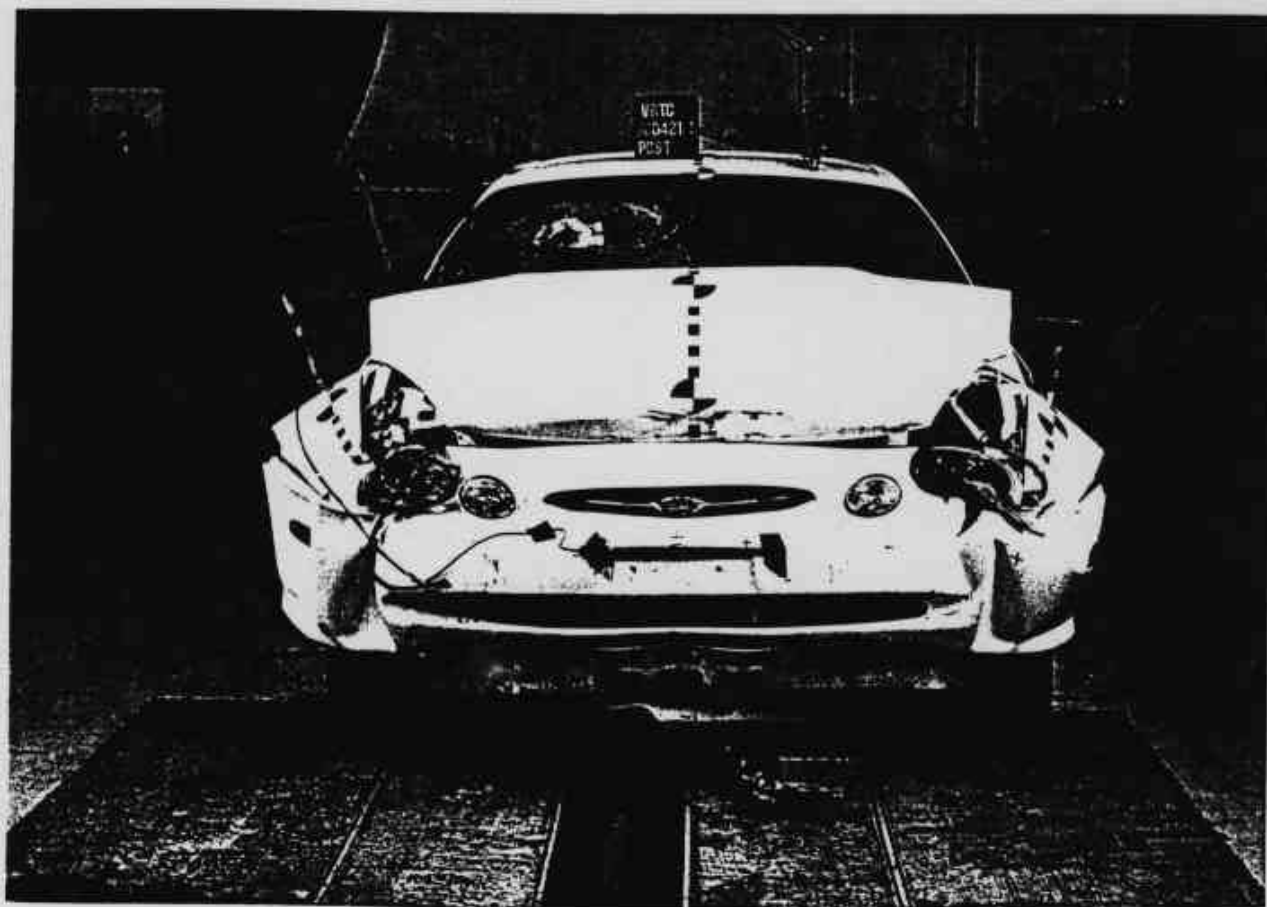


Figure A-2 Post-Test Front View

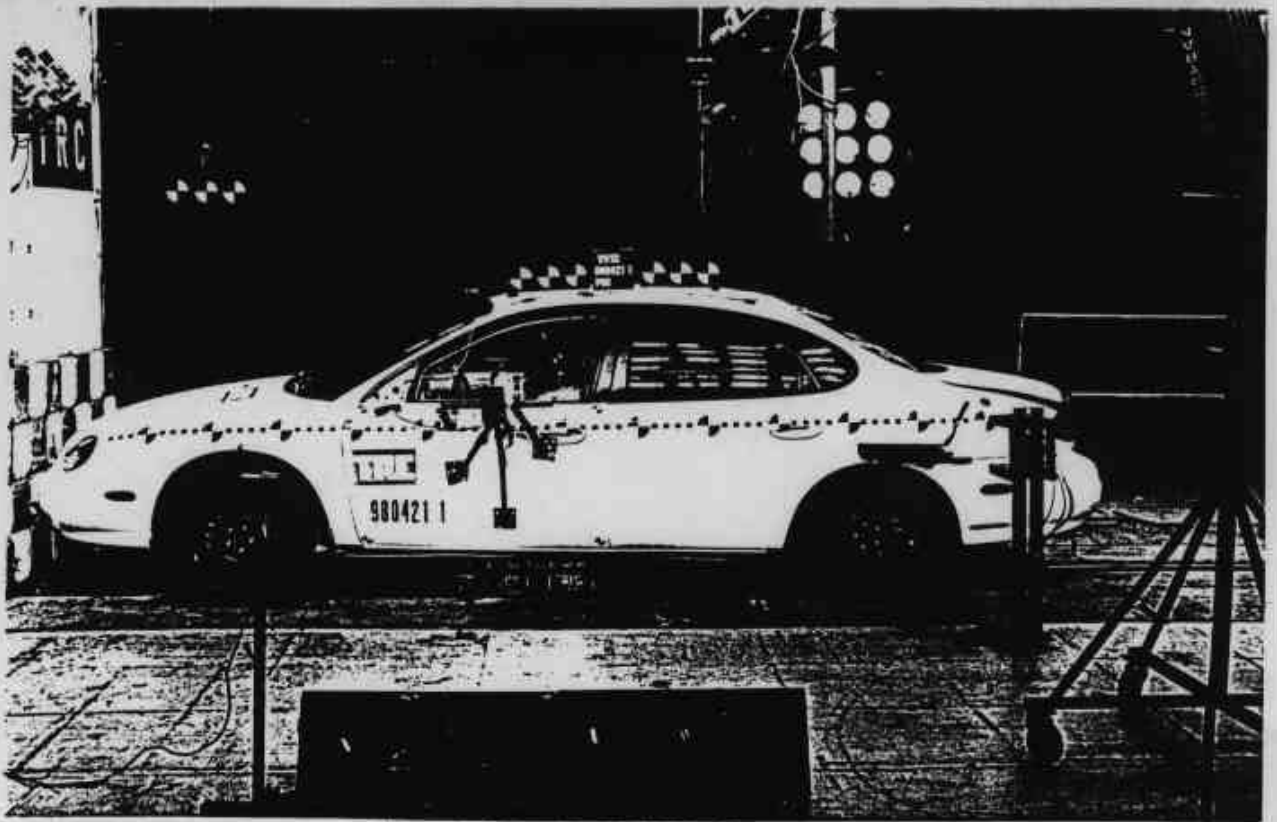


Figure A-3 Pre-Test Left Side View



Figure A-4 Post-Test Left Side View



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



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



Figure A-7 Pre-Test Rear View

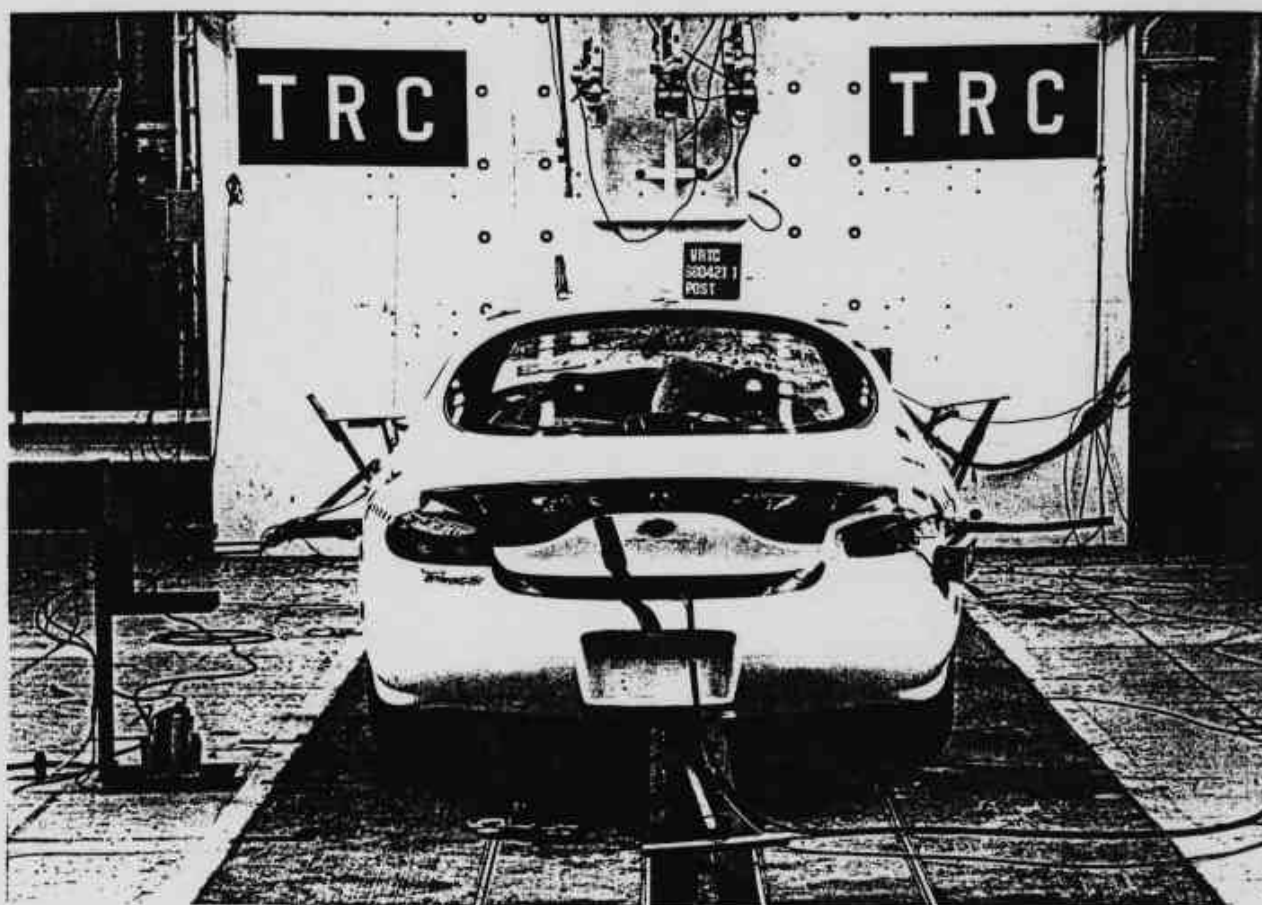


Figure A-8 Post-Test Rear View

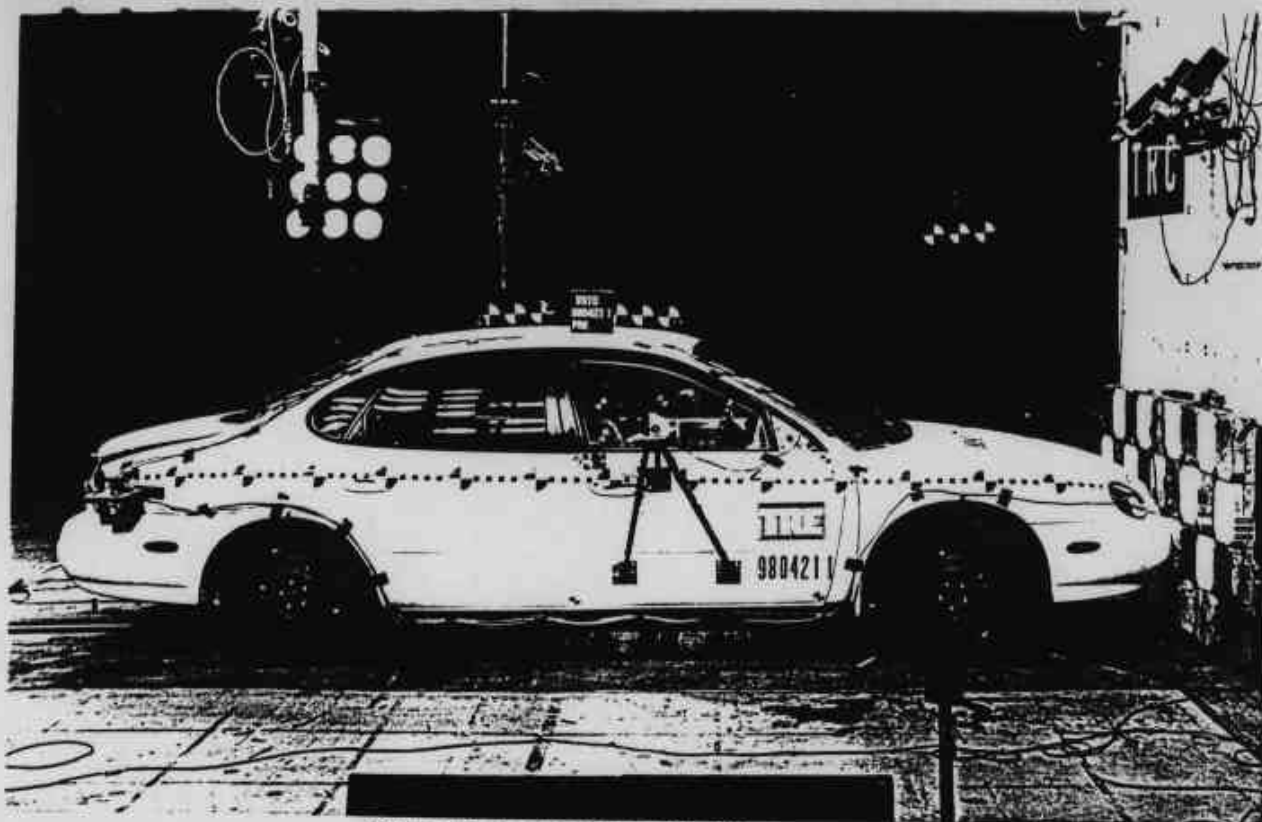


Figure A-9 Pre-Test Right Side View



Figure A-10 Post-Test Right Side View

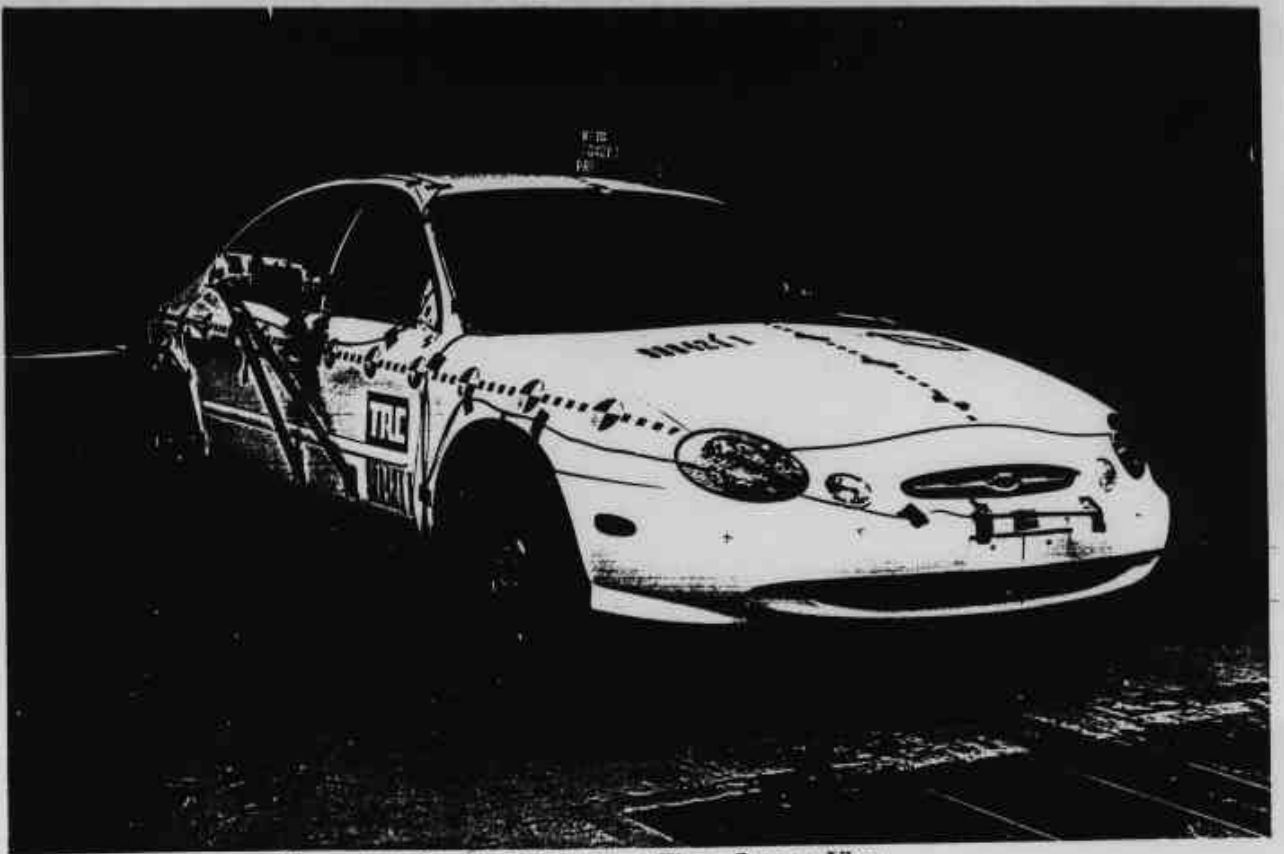


Figure A-11 Pre-Test Right Front Three-Quarter View



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

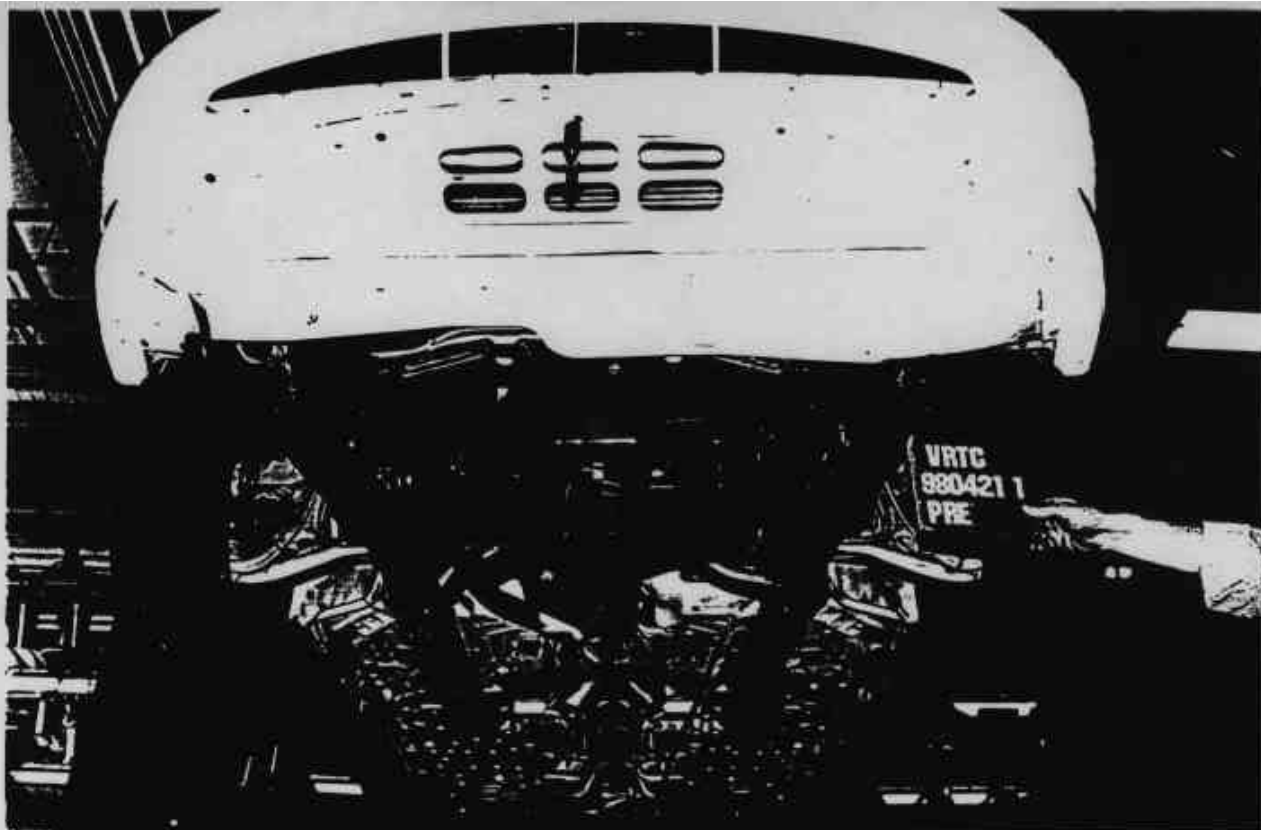


Figure A-13 Pre-Test Front Underbody View

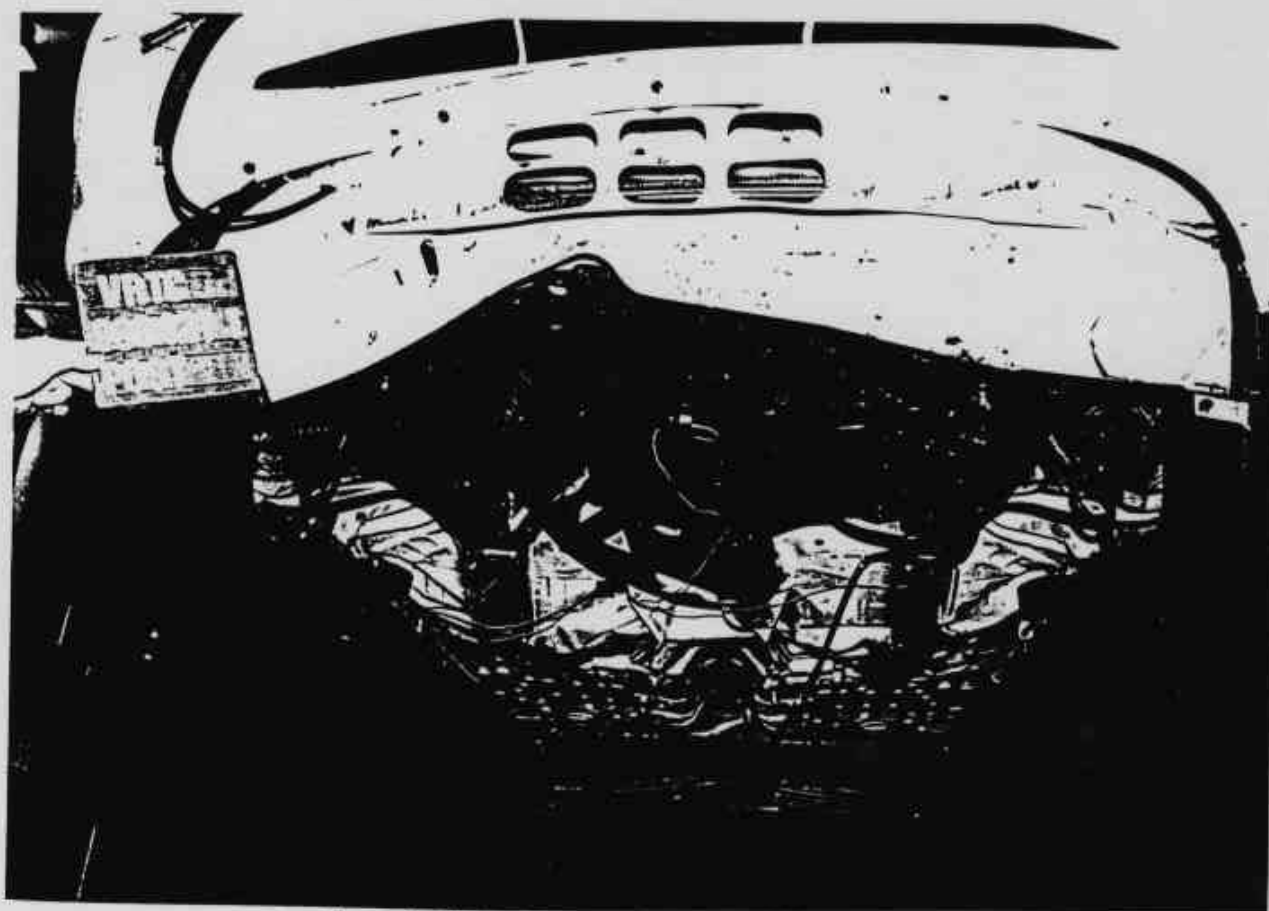


Figure A-14 Post-Test Front Underbody View

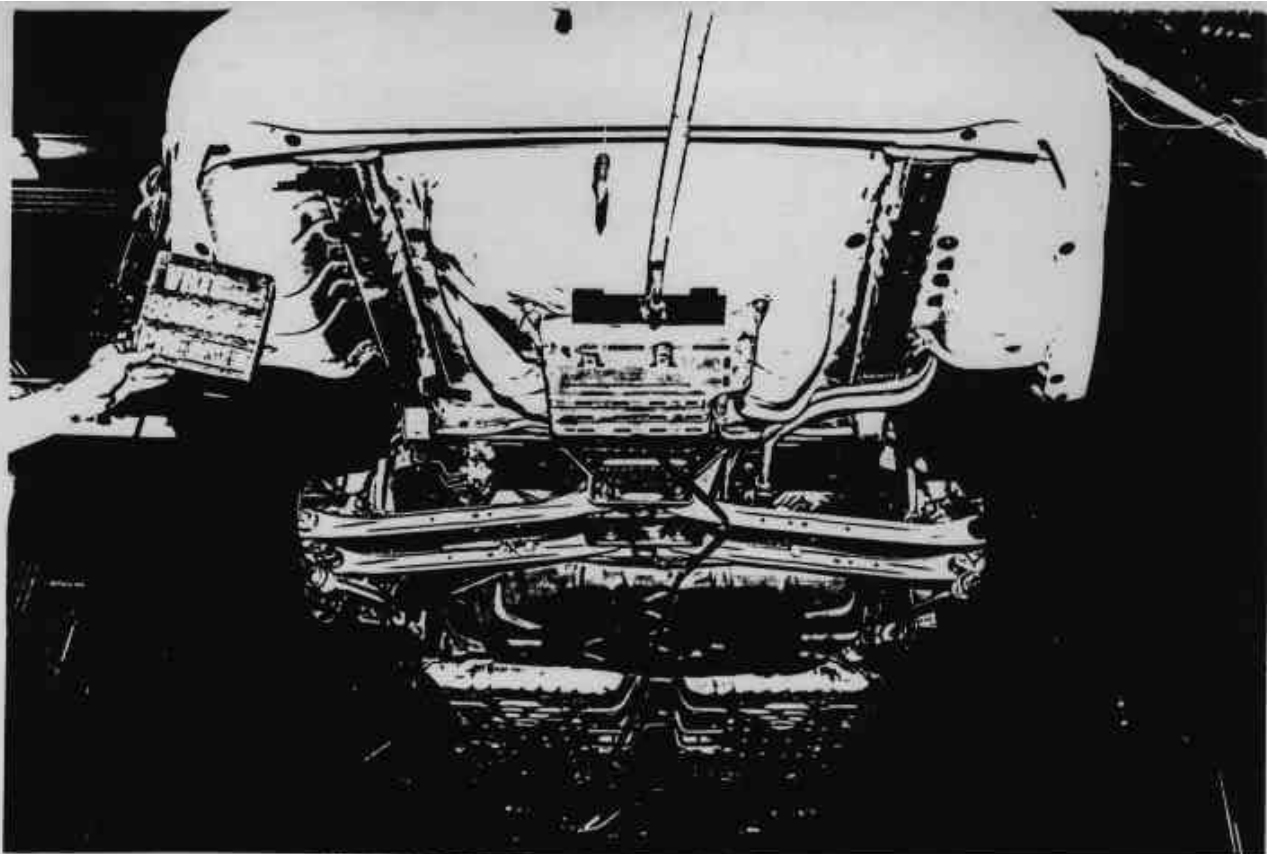


Figure A-15 Pre-Test Rear Underbody View

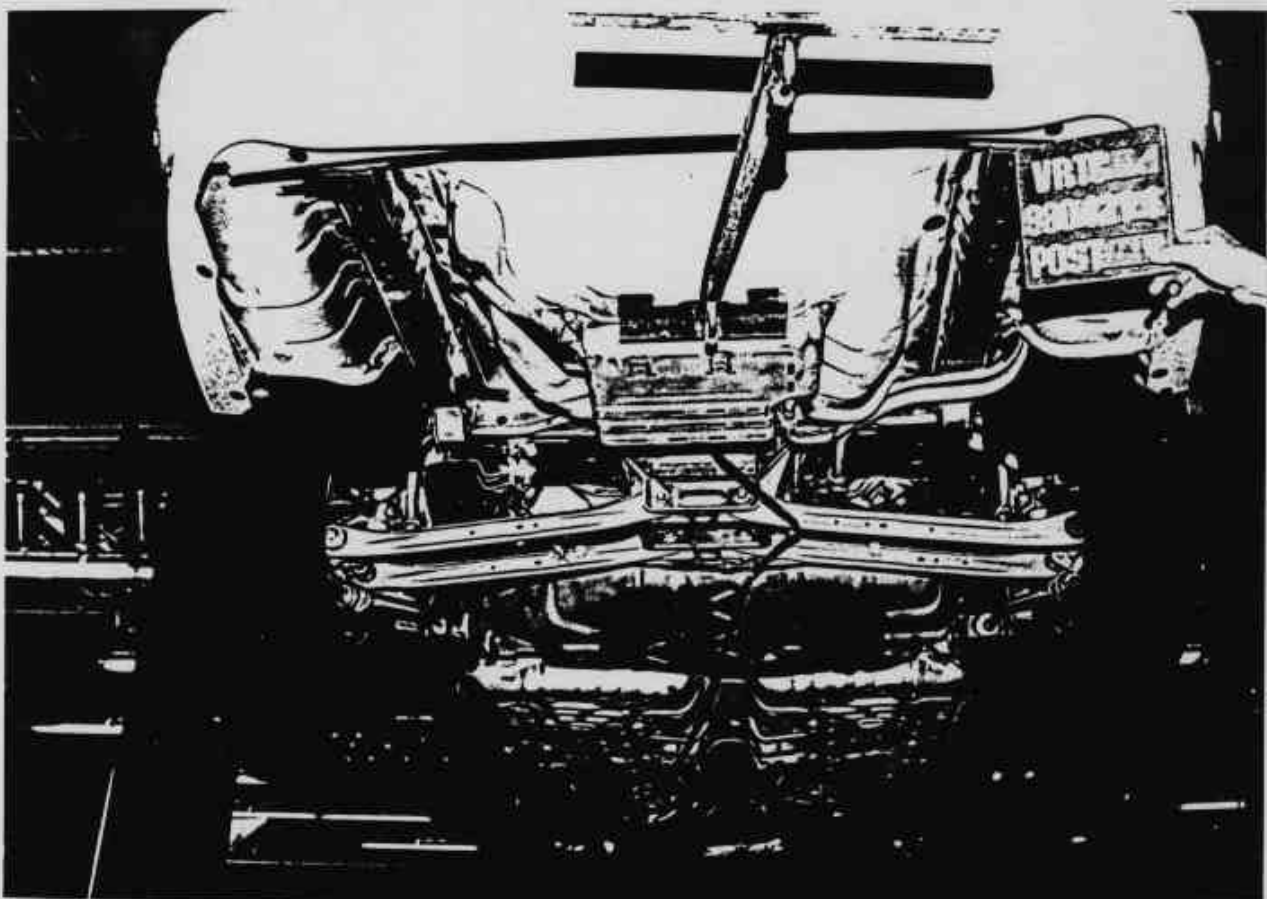


Figure A-16 Post-Test Rear Underbody View

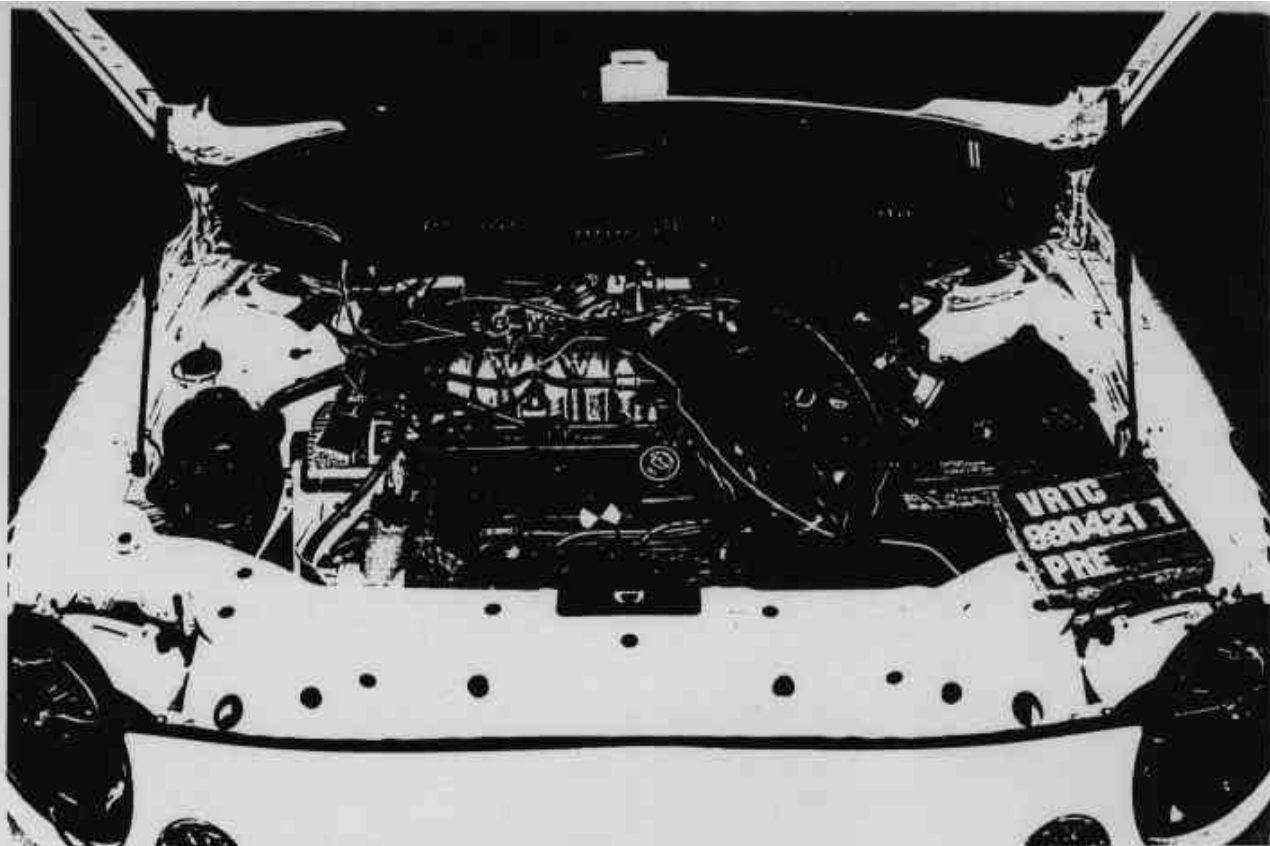


Figure A-17 Pre-Test Engine Compartment View

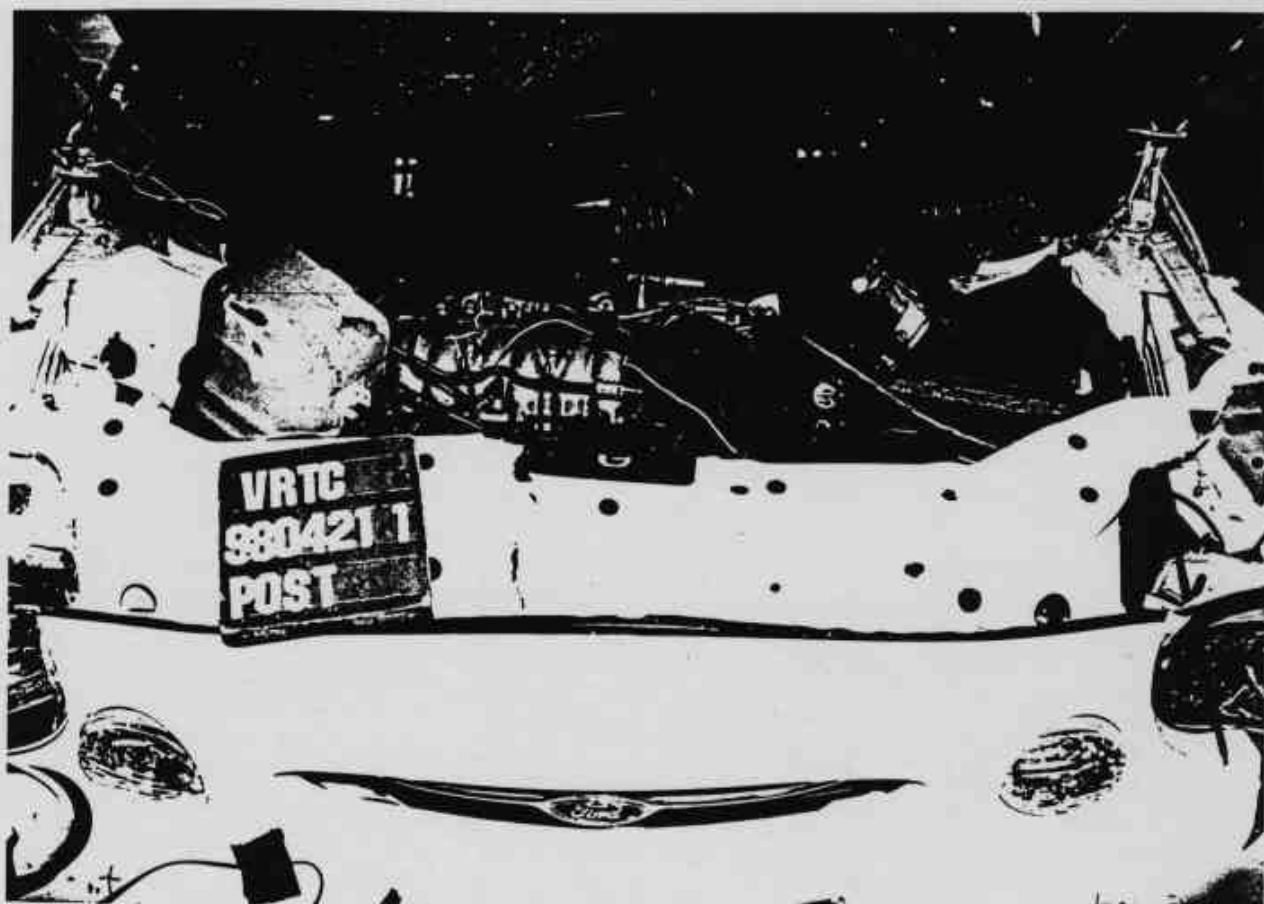


Figure A-18 Post-Test Engine Compartment View



980421 1

Figure A-19 Pre-Test Windshield View



Figure A-20 Post-Test Windshield - View 1

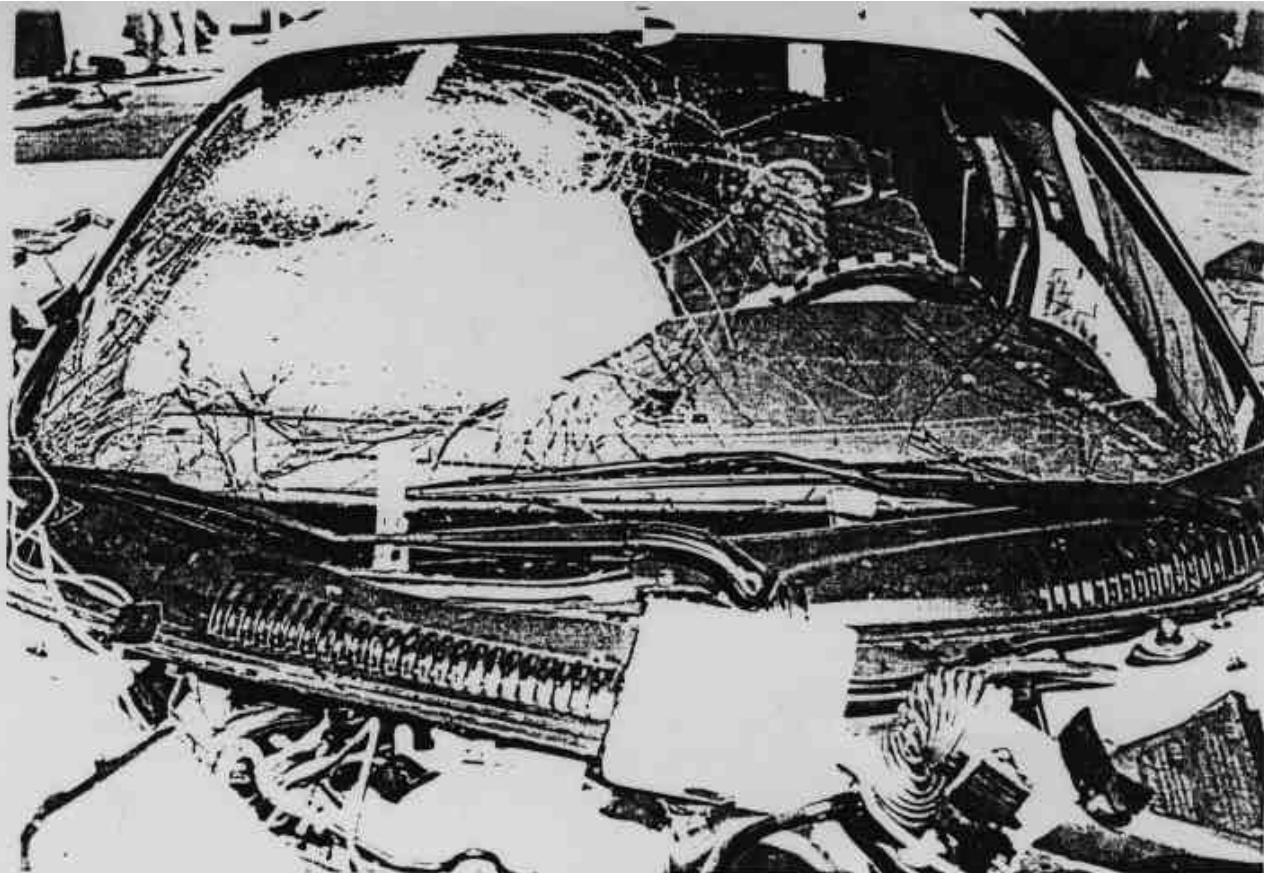


Figure A-21 Post-Test Windshield - View 2

Intentionally Left Blank

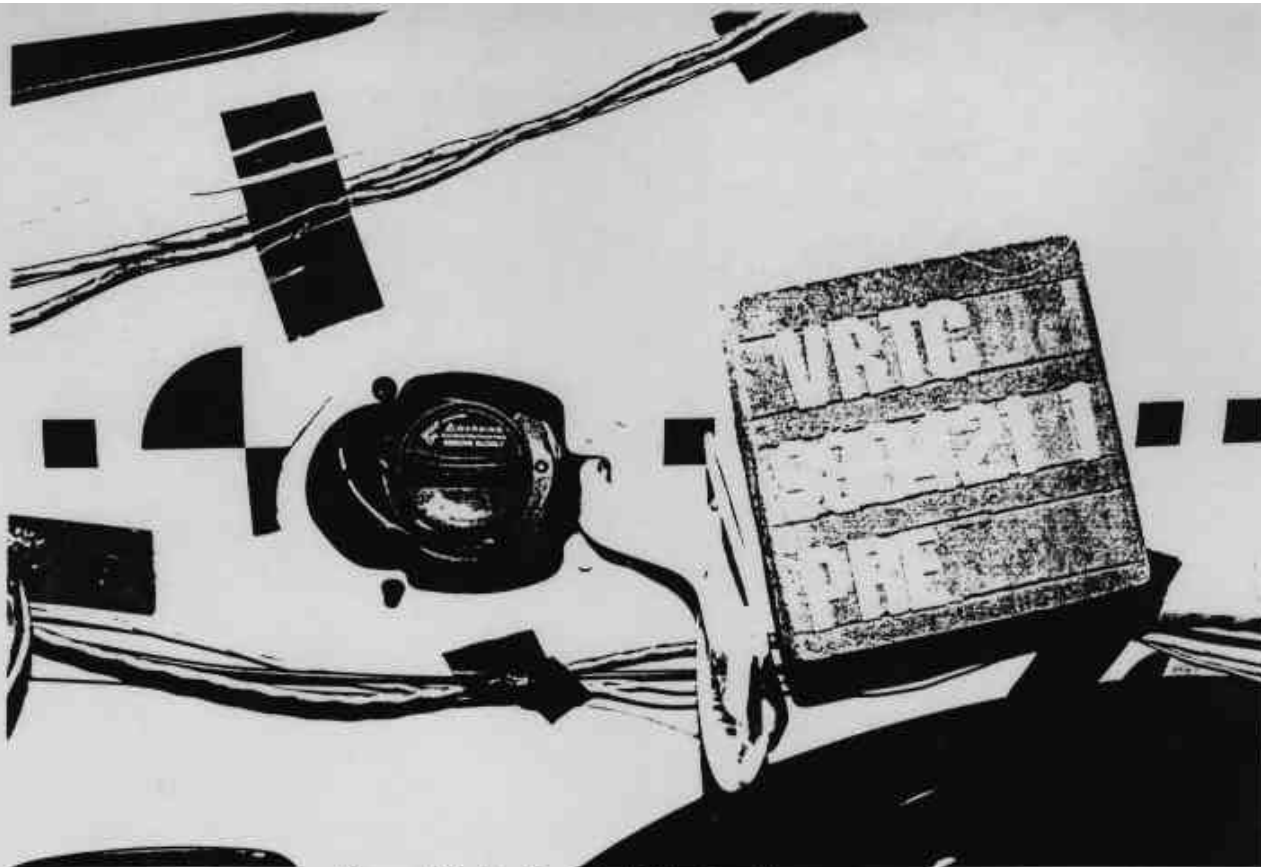


Figure A-22 Pre-Test Fuel Filler Cap View



Figure A-23 Post-Test Fuel Filler Cap View

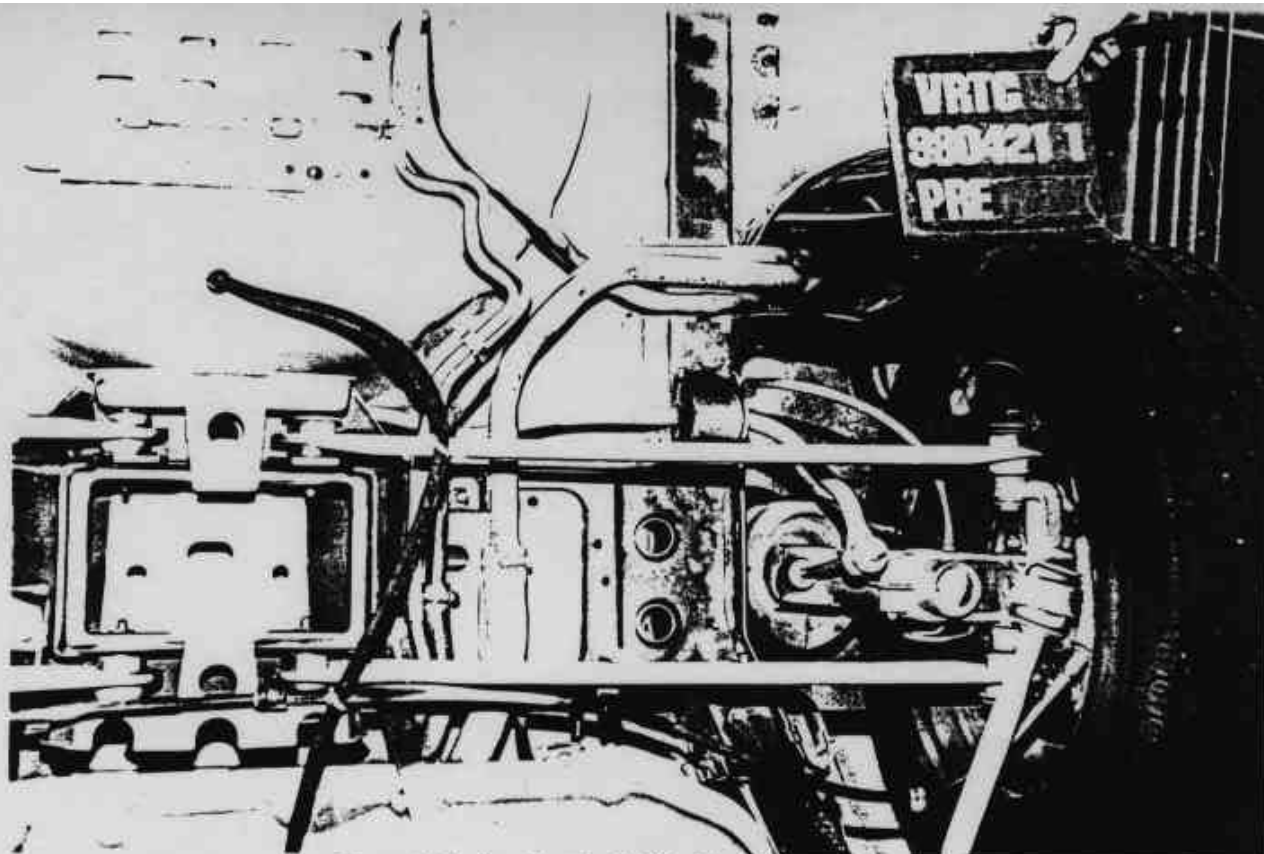


Figure A-24 Pre-Test Fuel Filler Neck View

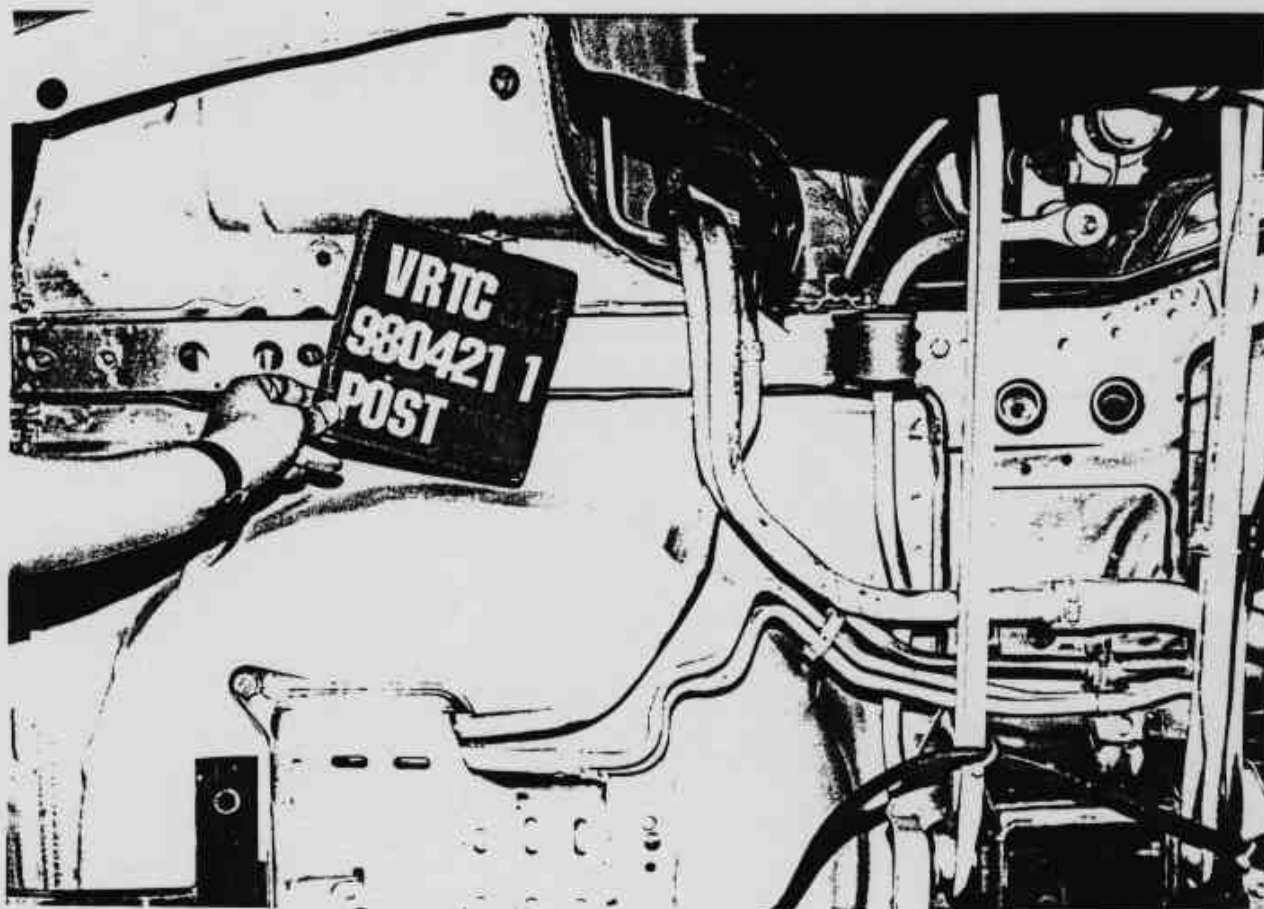


Figure A-25 Post-Test Fuel Filler Neck View



Figure A-26 Pre-Test Fuel Tank View

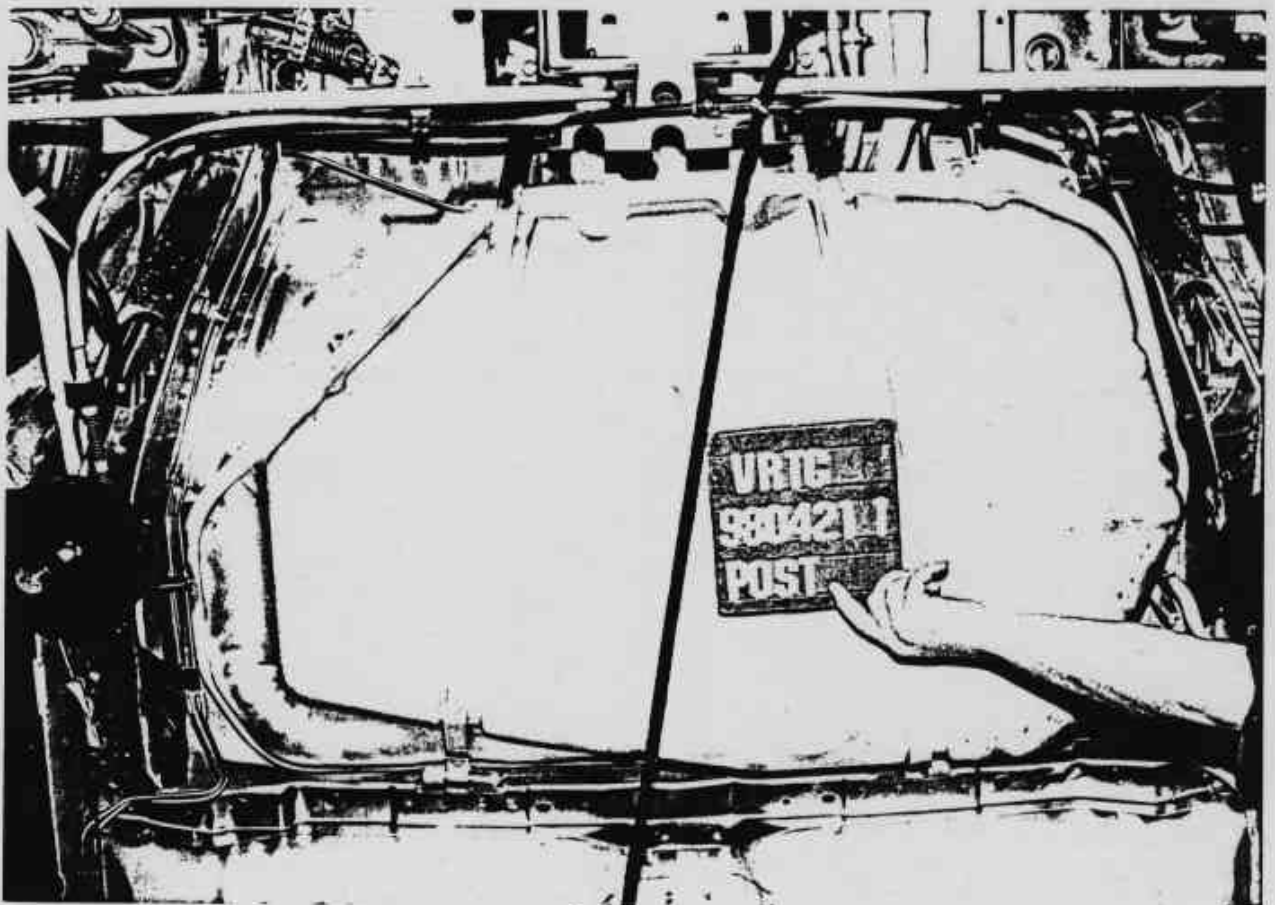


Figure A-27 Post-Test Fuel Tank View

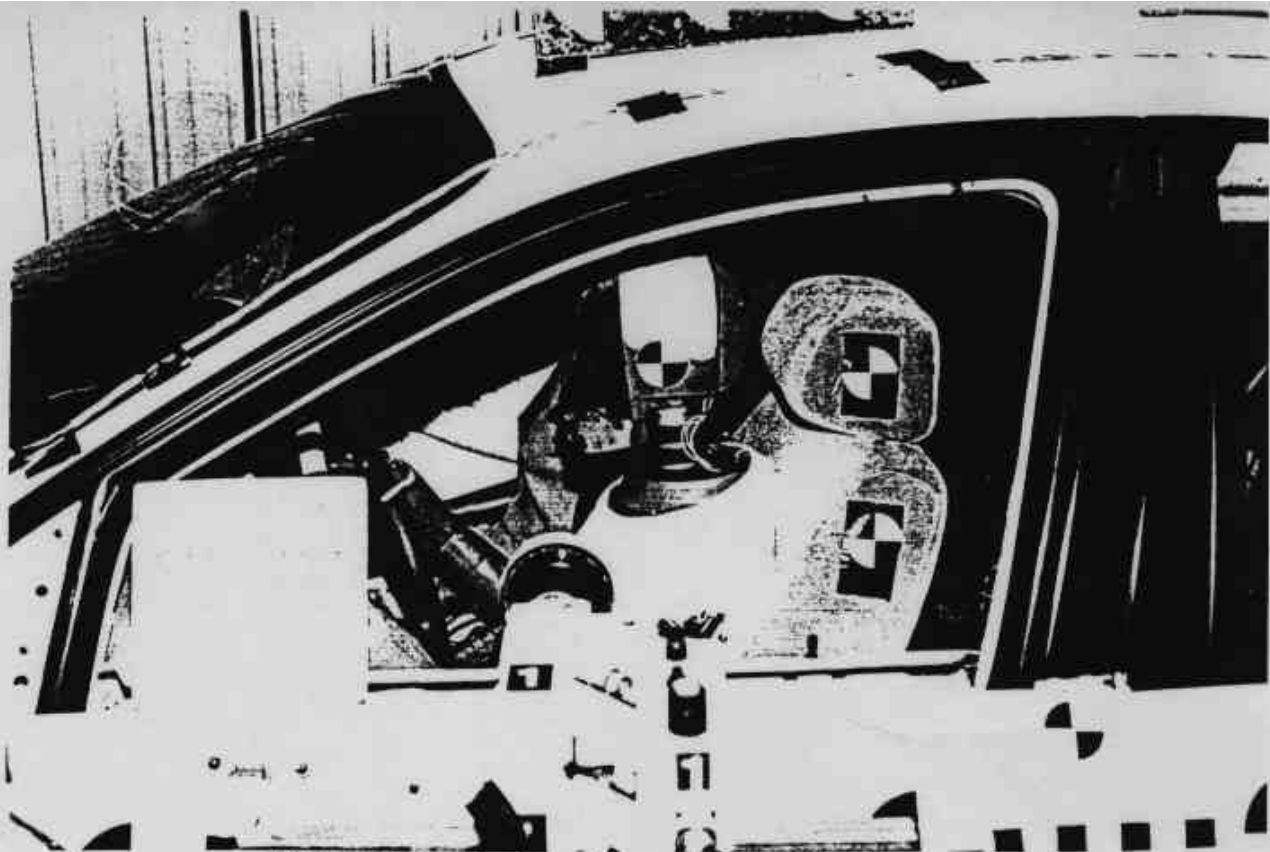


Figure A-28 Pre-Test Driver Dummy Position - View 1



Figure A-29 Post-Test Driver Dummy Position - View 1



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



Figure A-31 Post-Test Driver Dummy Position - View 2



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



Figure A-33 Post-Test Driver Dummy Position - View 3

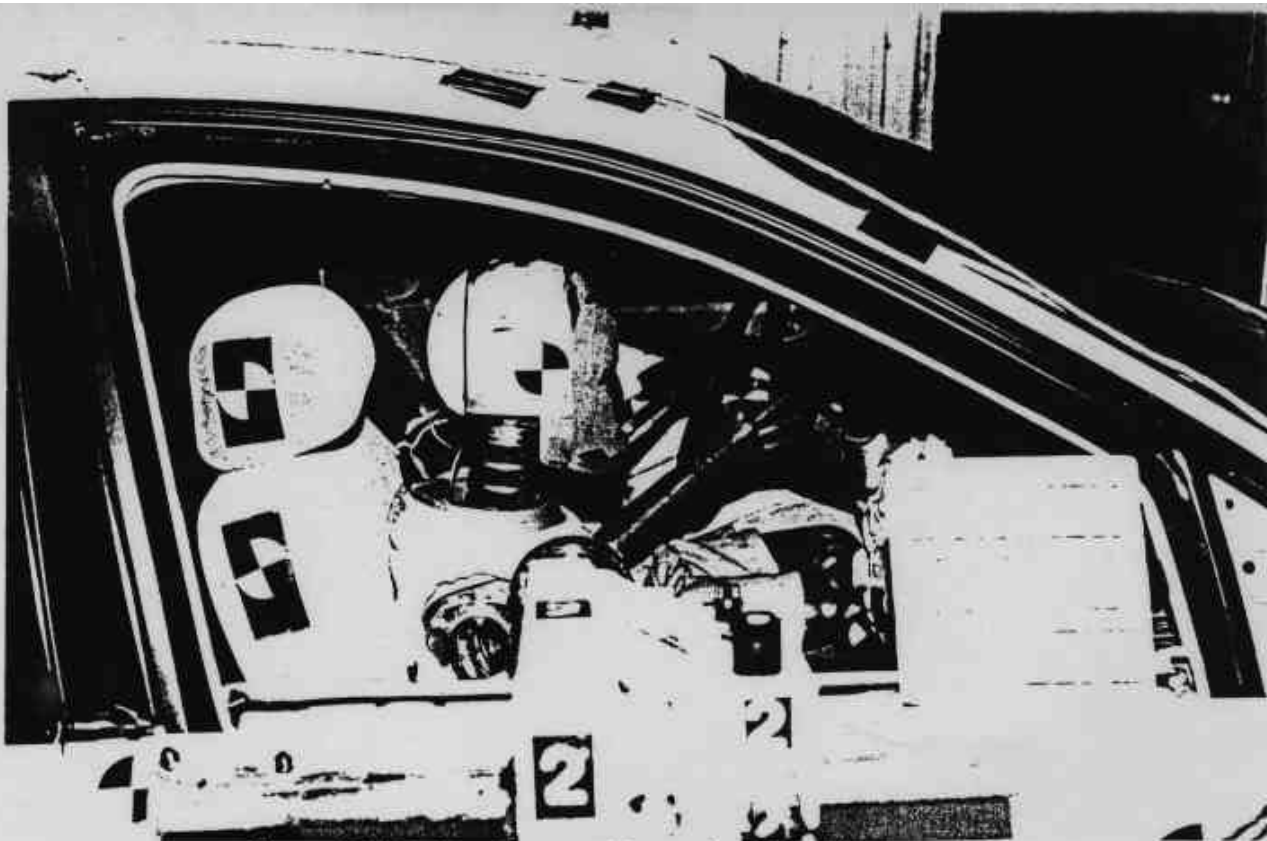


Figure A-34 Pre-Test Passenger Dummy Position - View 1



Figure A-35 Post-Test Passenger Dummy Position - View 1

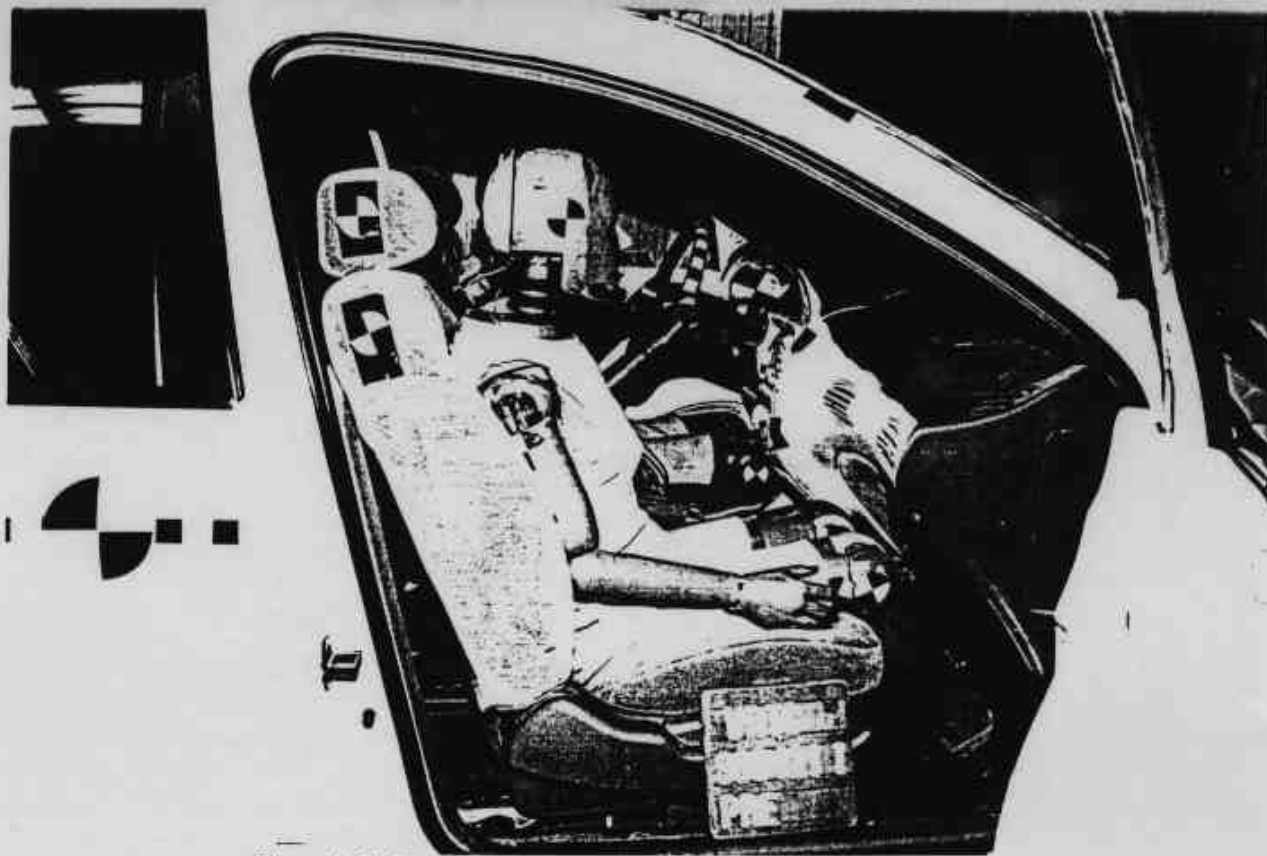


Figure A-36 Pre-Test Passenger Dummy Position - View 2



Figure A-37 Post-Test Passenger Dummy Position - View 2



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



Figure A-39 Post-Test Passenger Dummy Position - View 3

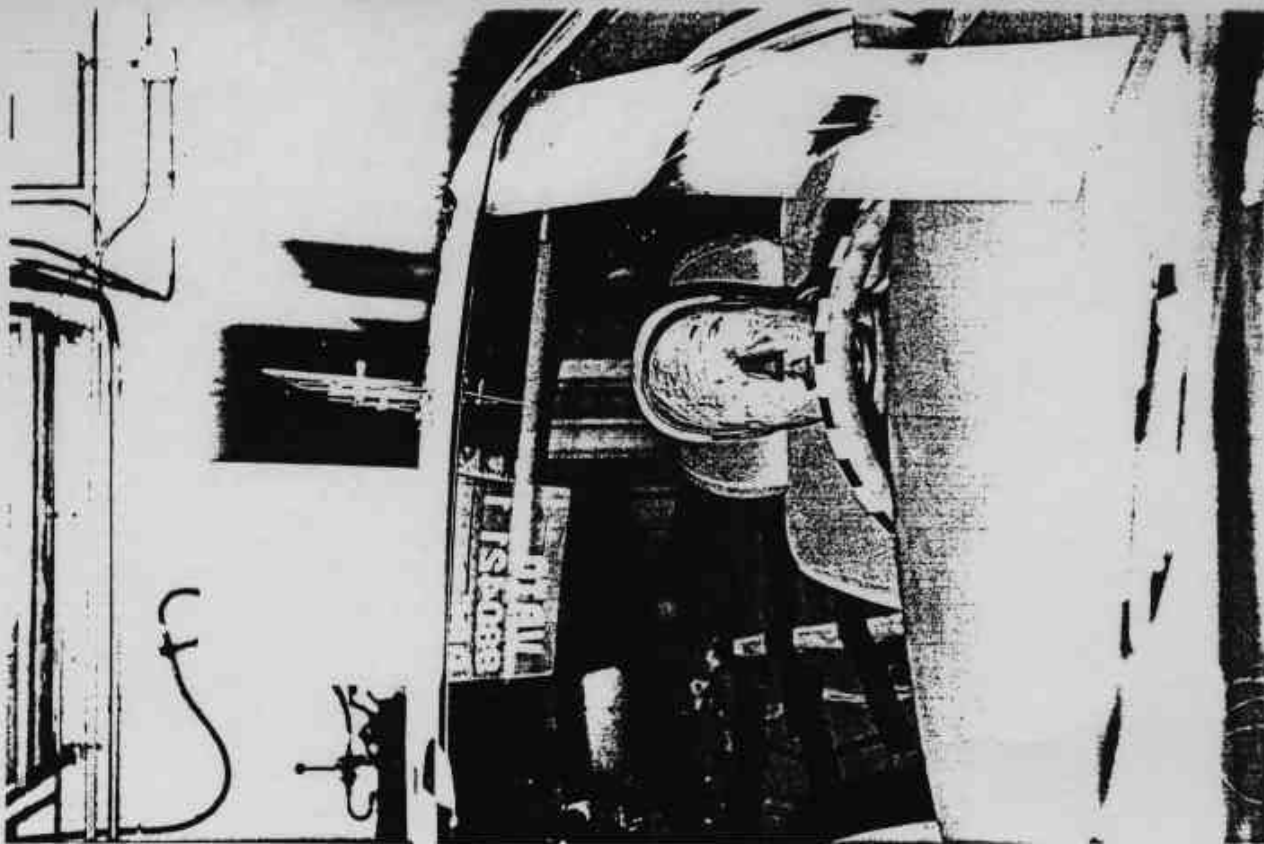


Figure A-40 Pre-Test Driver Dummy Through Windshield View

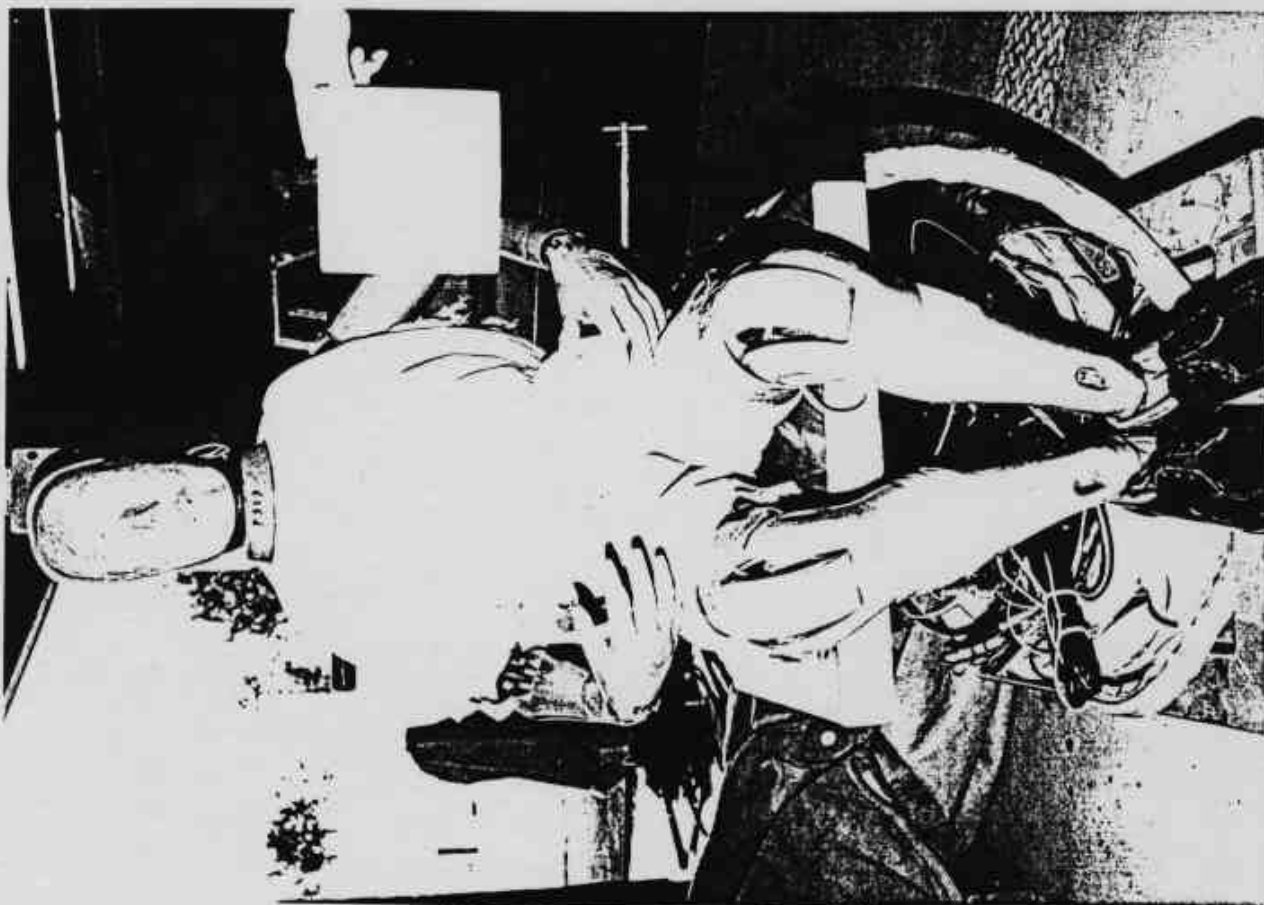


Figure A-41 Post-Test Driver Dummy Overall View

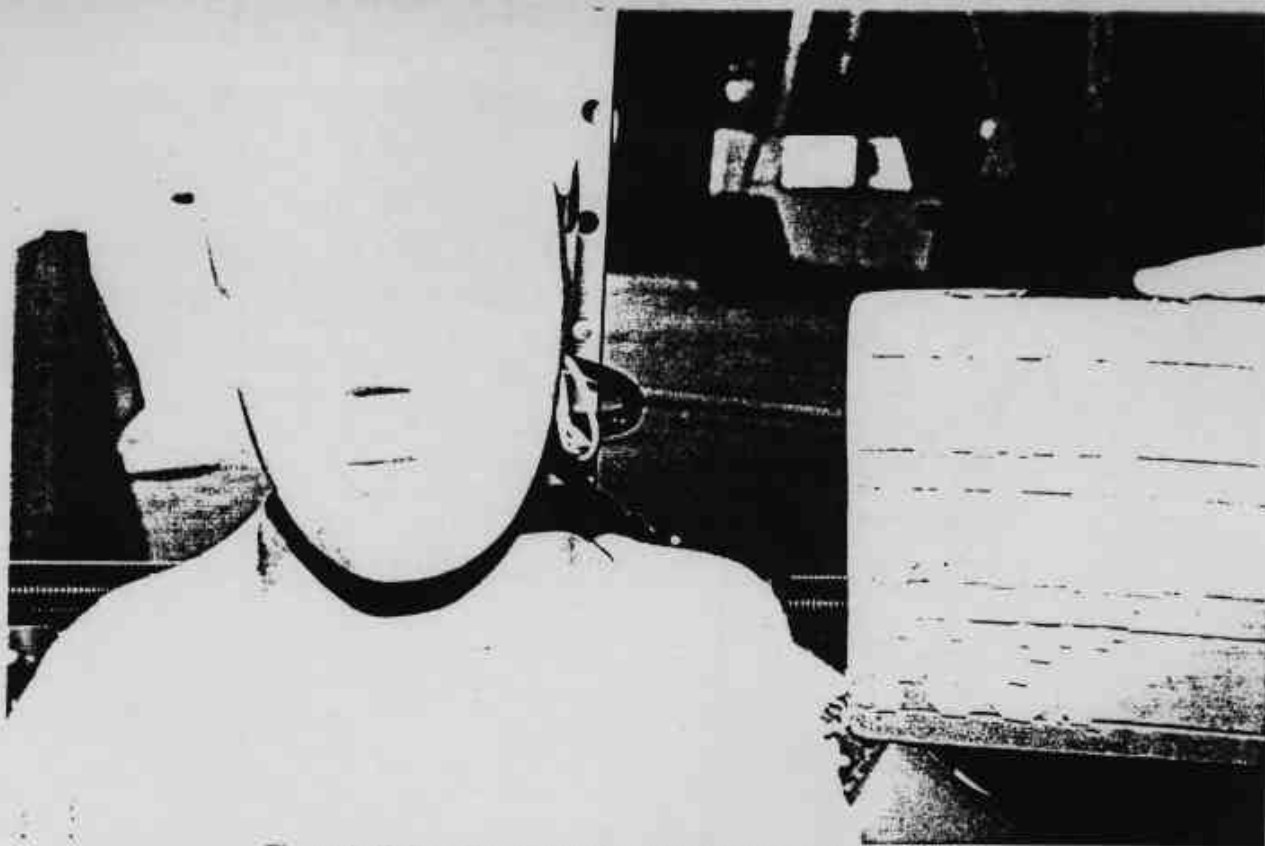


Figure A-42 Post-Test Driver Dummy Head Contact - View 1



Figure A-43 Post-Test Driver Dummy Head Contact - View 2

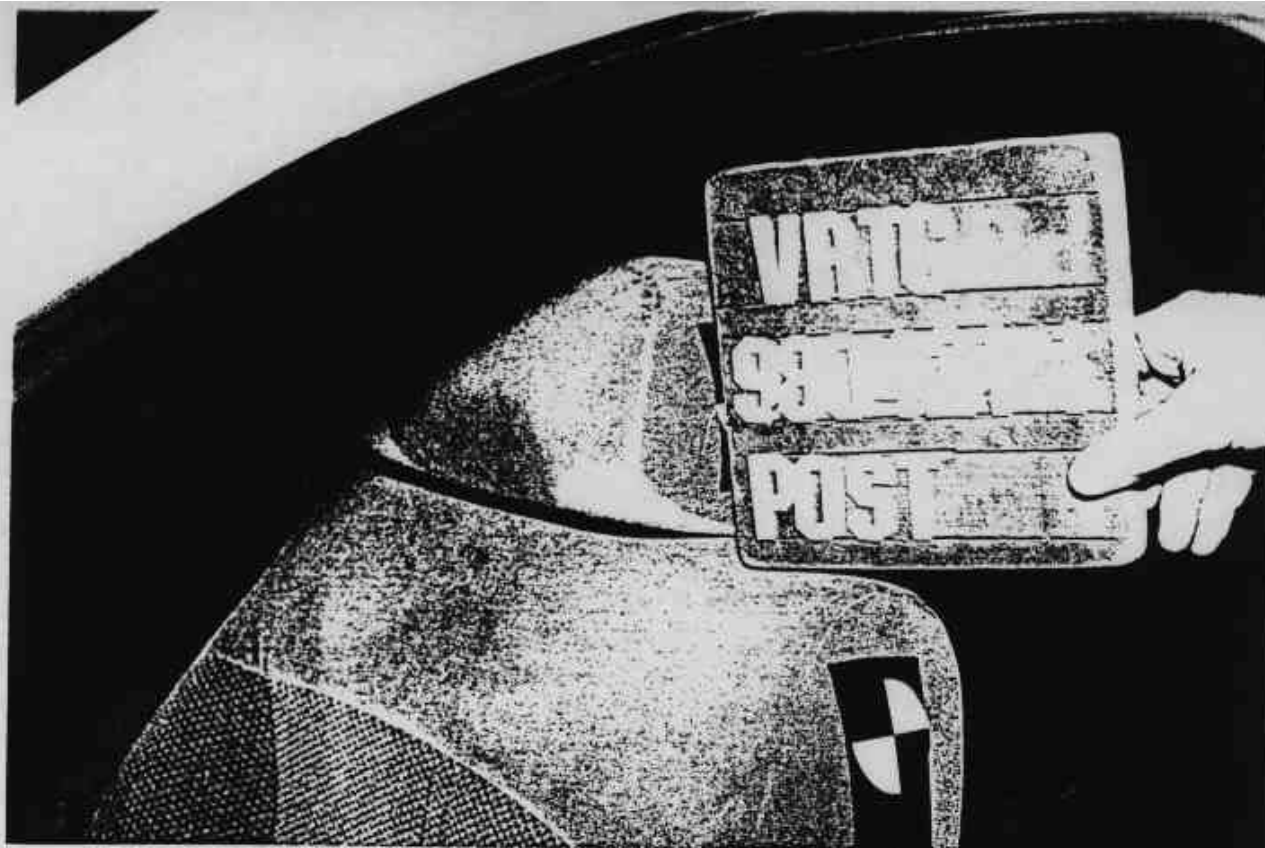


Figure A-44 Post-Test Driver Dummy Head Contact - View 3



Figure A-45 Post-Test Driver Dummy Knee Contact - View 1



Figure A-46 Post-Test Driver Dummy Knee Contact - View 2



Figure A-47 Pre-Test Passenger Dummy Through Windshield View

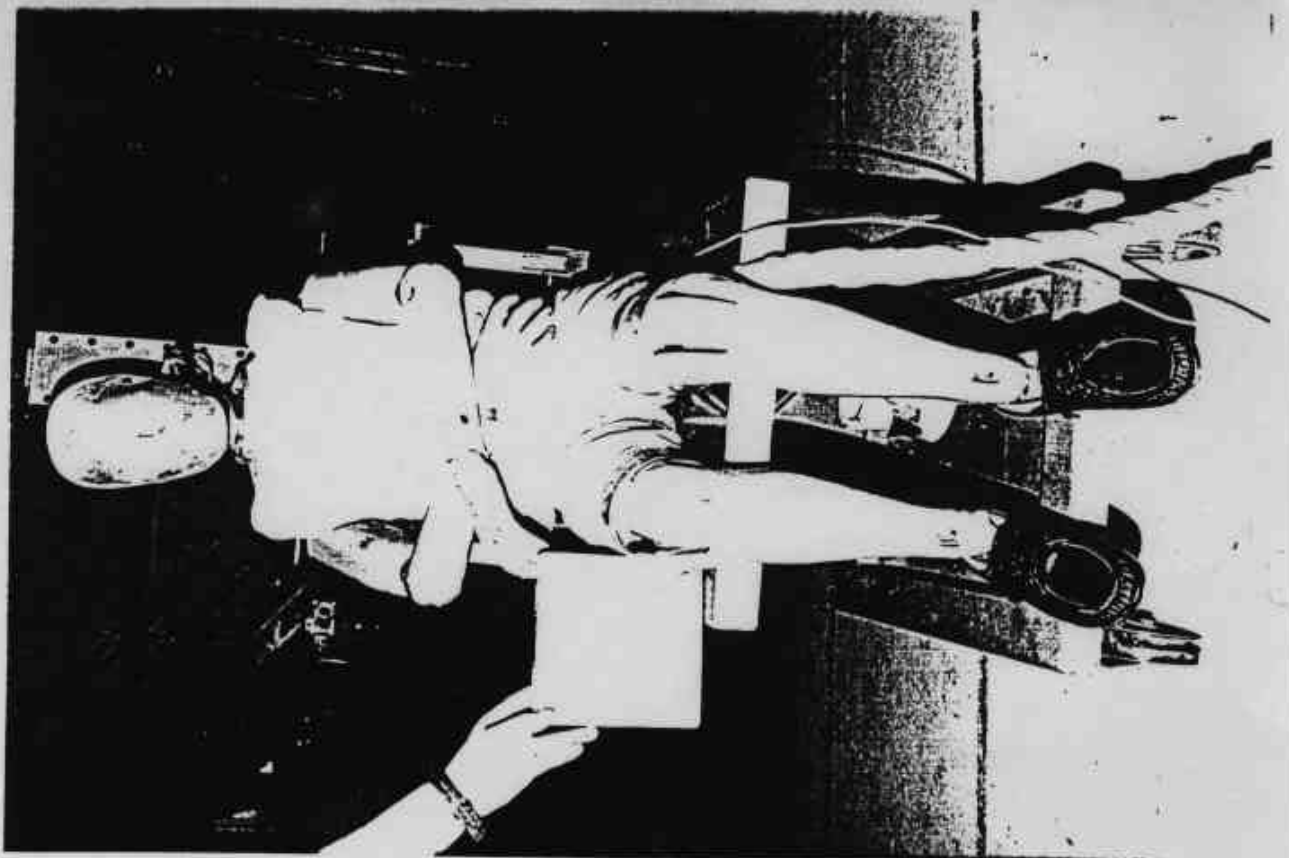


Figure A-48 Post-Test Passenger Dummy Overall View

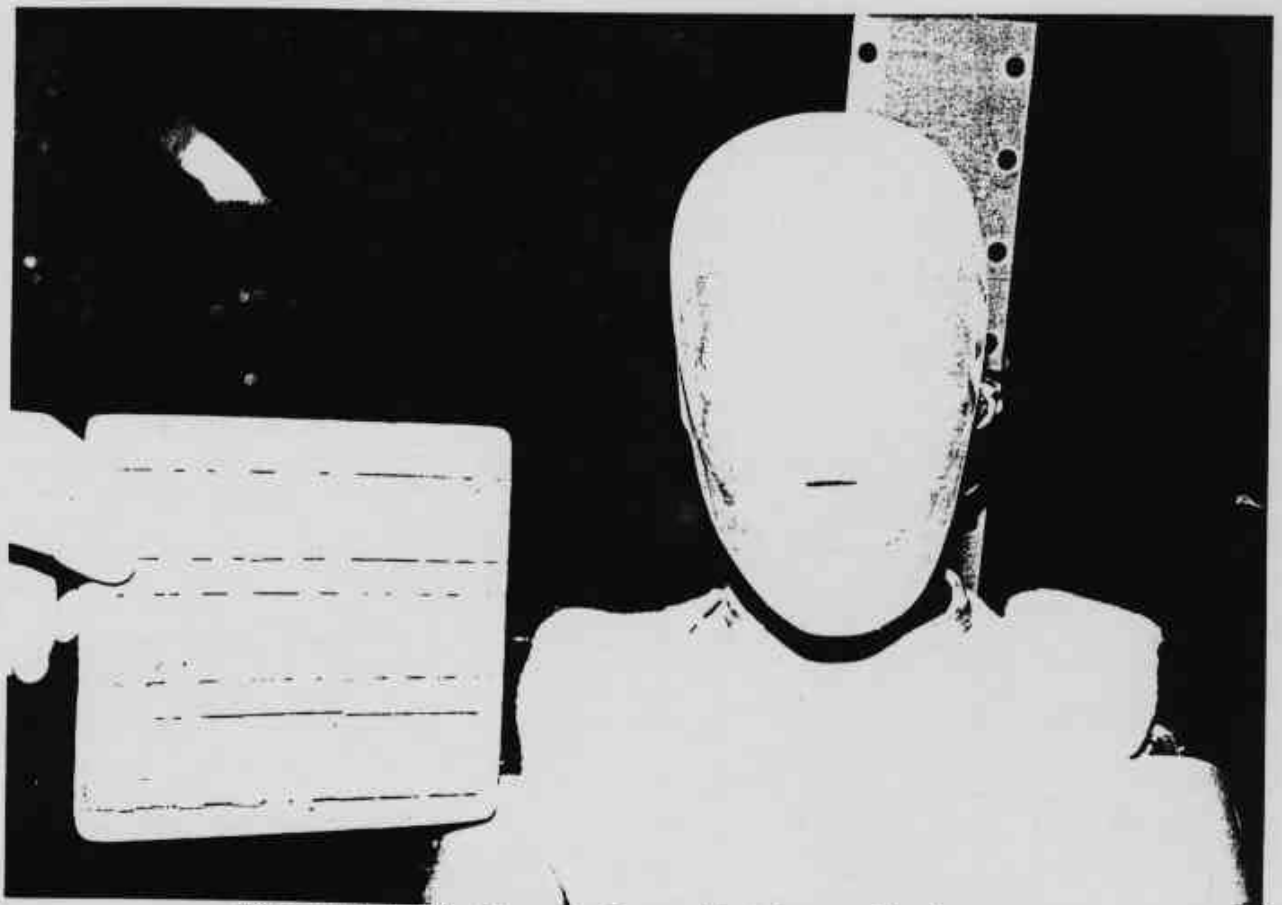


Figure A-49 Post-Test Passenger Dummy Head Contact - View 1



Figure A-50 Post-Test Passenger Dummy Head Contact - View 2

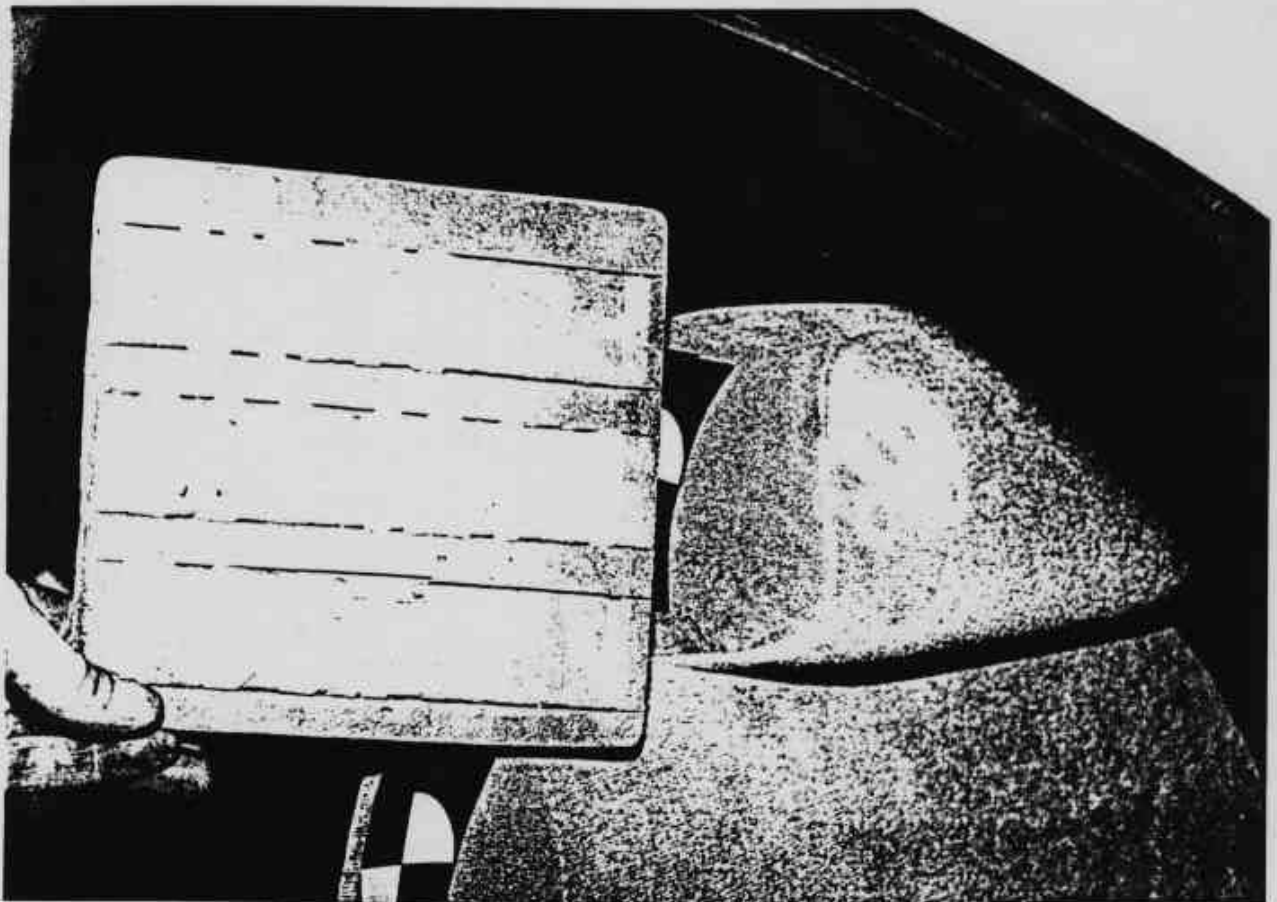


Figure A-51 Post-Test Passenger Dummy Head Contact - View 3

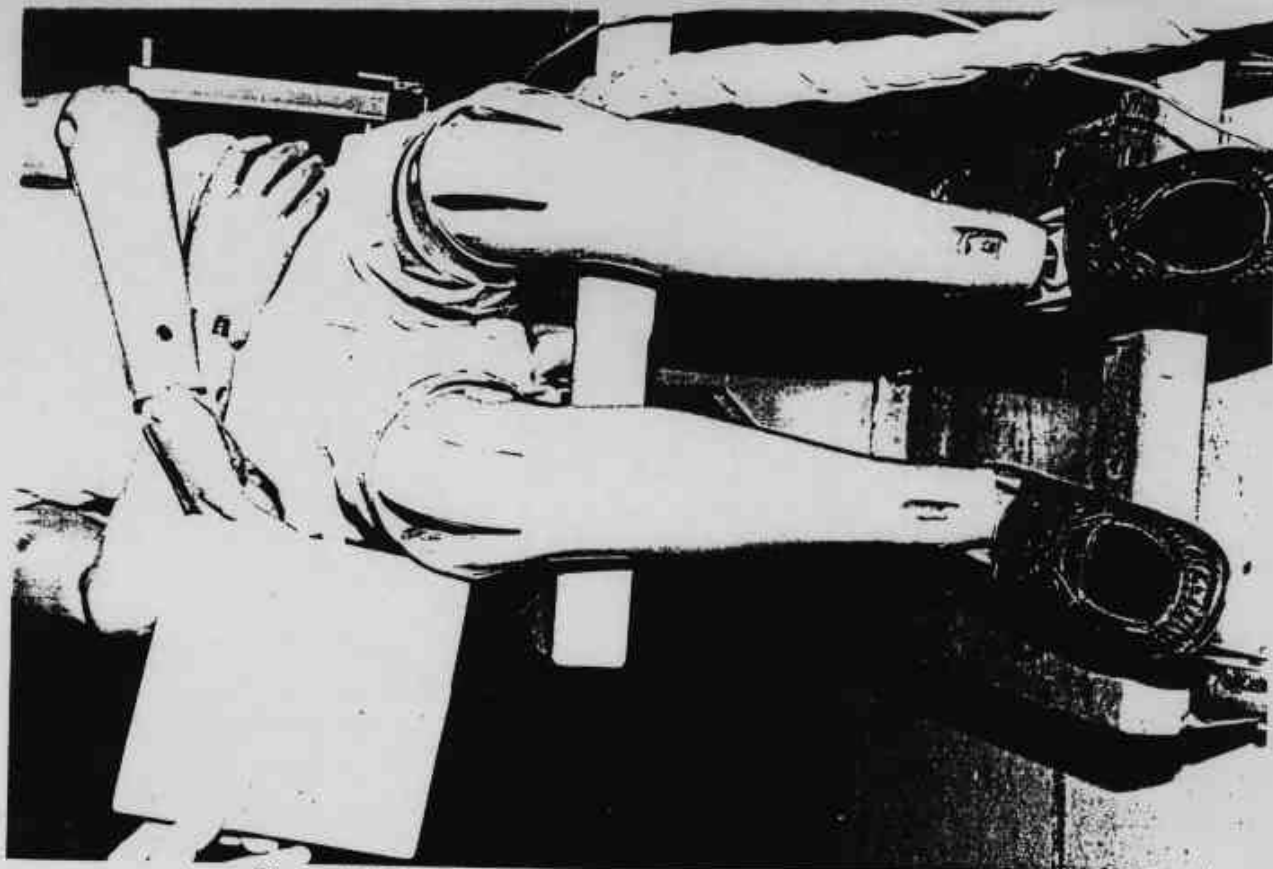


Figure A-52 Post-Test Passenger Dummy Knee Contact - View 1



Figure A-53 Post-Test Passenger Dummy Knee Contact - View 2

MFD. BY FORD MOTOR CO. IN U.S.A.
 DATE: 12/97 GVWR: 4687LB/2125KG
 GVW: 2647LB 1200KG
 GVW: 2065LB 936KG
 THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR
 VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS
 IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.
 VIN: 1FAFP52U1WG145718 F0173
 TYPE: PASSENGER R0061



EXT PNT: WT RC: 47 DSO:
 BRK INT TR TP/PS R AXLE TR SPR
 A J2 H 3R X LLHH
 UPC 0F60B-5420472-AA

Figure A-54 Pre-Test Vehicle Certification Label View

Appendix B

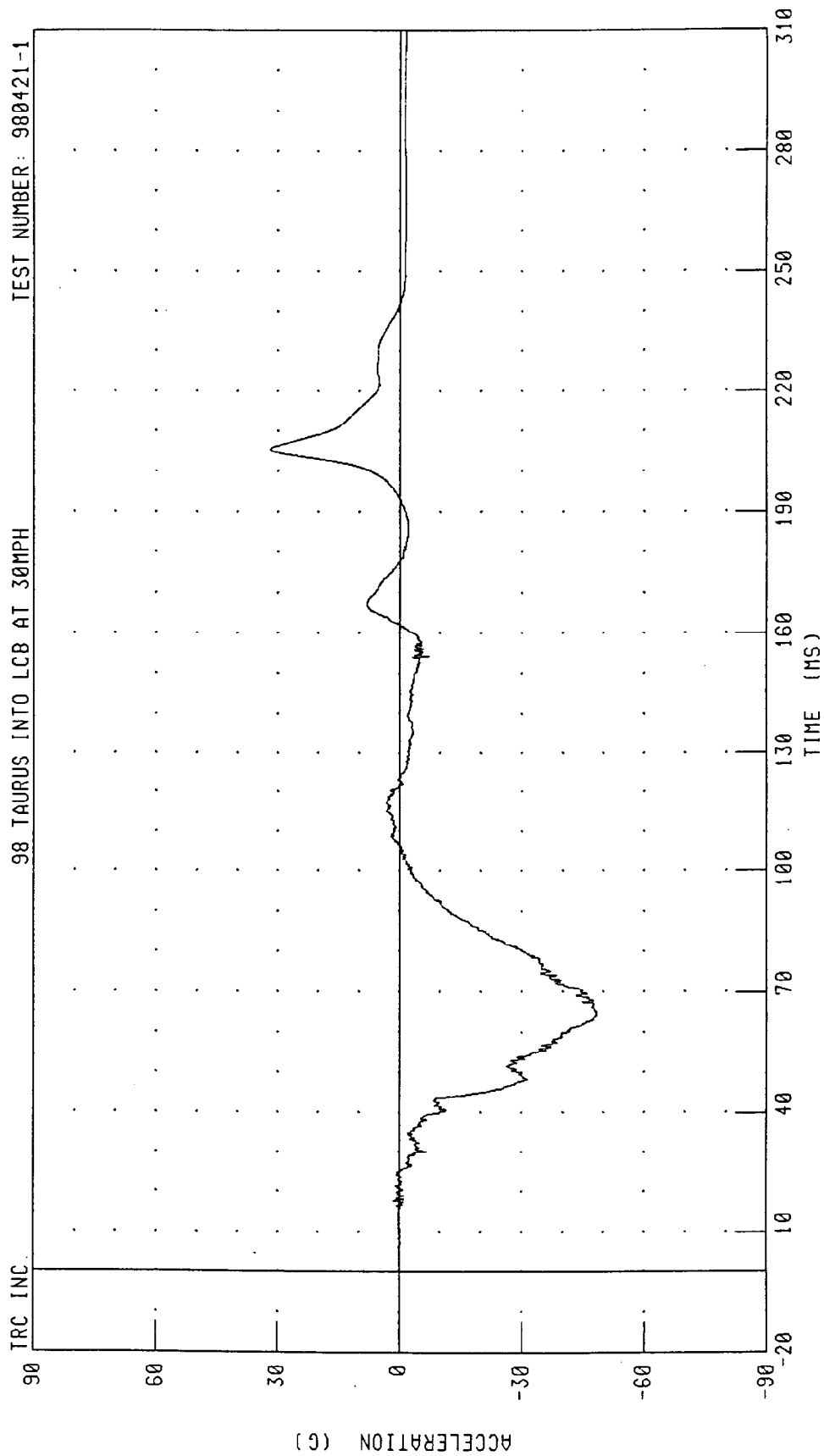
Data Plots

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

DRIVER HEAD X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

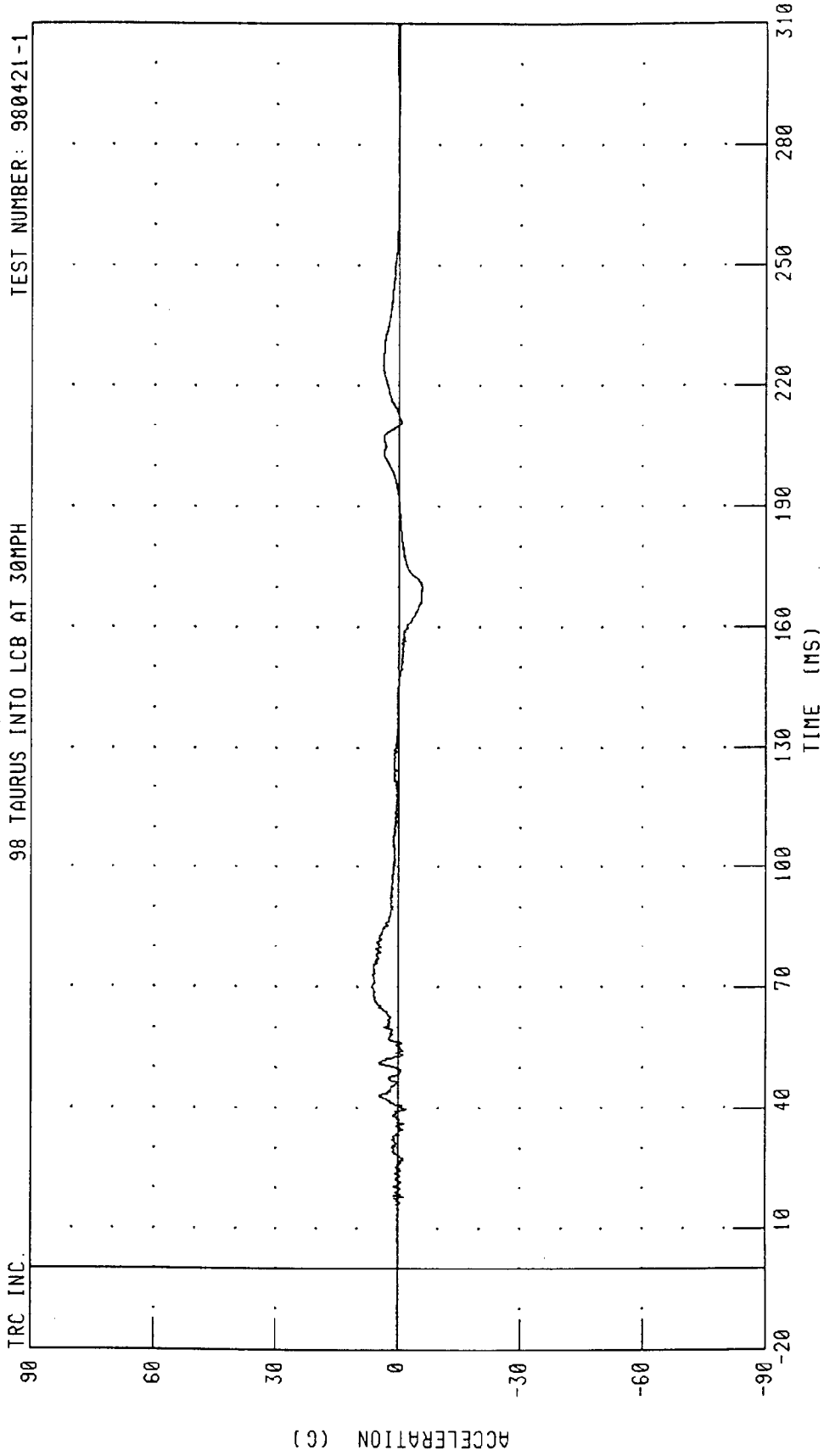


CHANNEL: HEDXC1 FILTER: CH. CLASS 1000

PEAK DATA: 31.87 G @ 205.44 MS; -48.42 G @ 63.92 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER HEAD Y-AXIS ACCELERATION

TRC INC. 98 TAURUS INTO LCB AT 30MPH TEST NUMBER: 980421-1



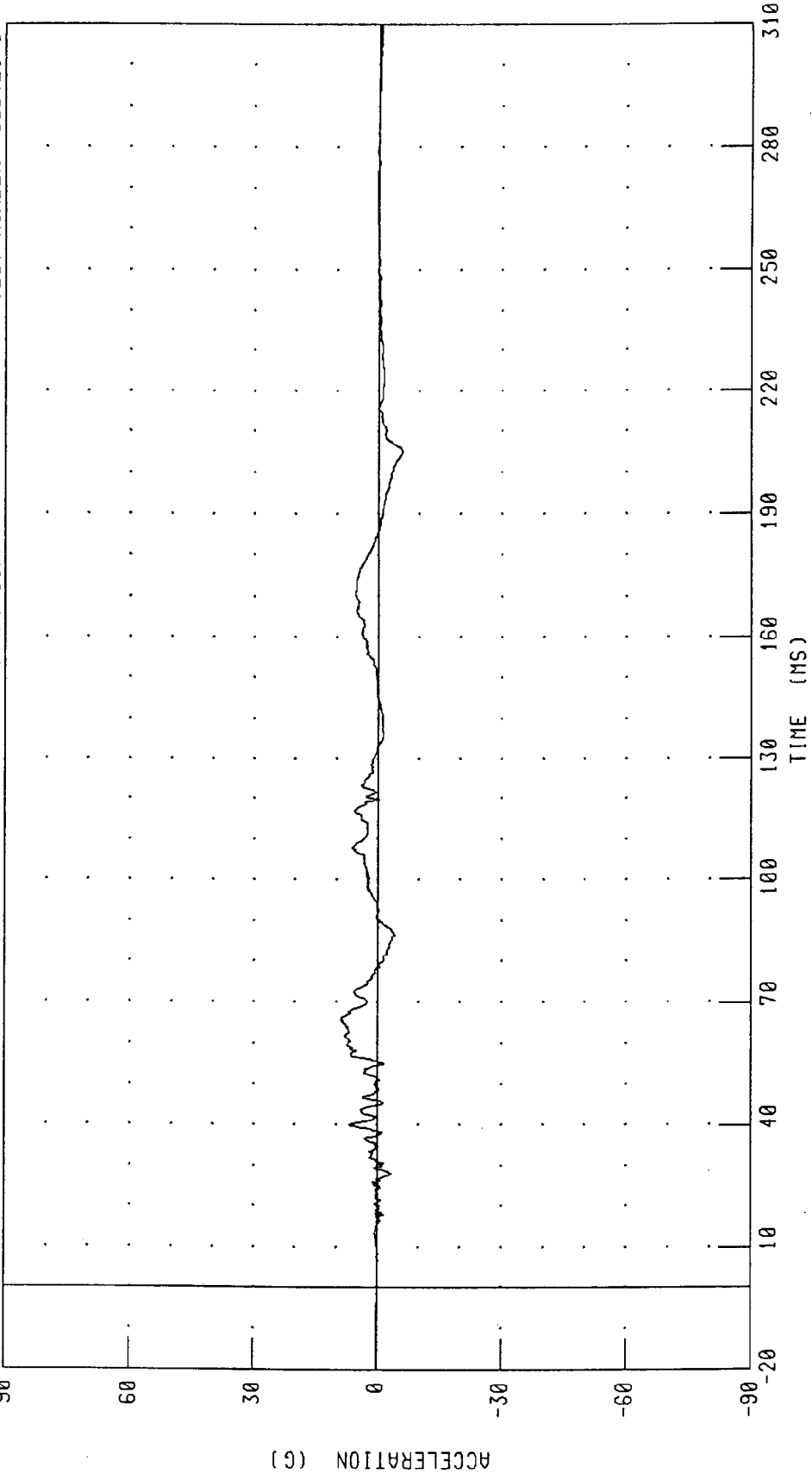
CHANNEL: HEDYC1 FILTER: CH. CLASS 1000

PEAK DATA: 6.46 G @ 70.08 MS, -5.97 G @ 170.08 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER HEAD Z-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: HEDZG1 FILTER: CH. CLASS 1000 PEAK DATA: 8.85 G @ 65.68 MS; -6.00 G @ 205.04 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER HEAD RESULTANT ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.

120

100

80

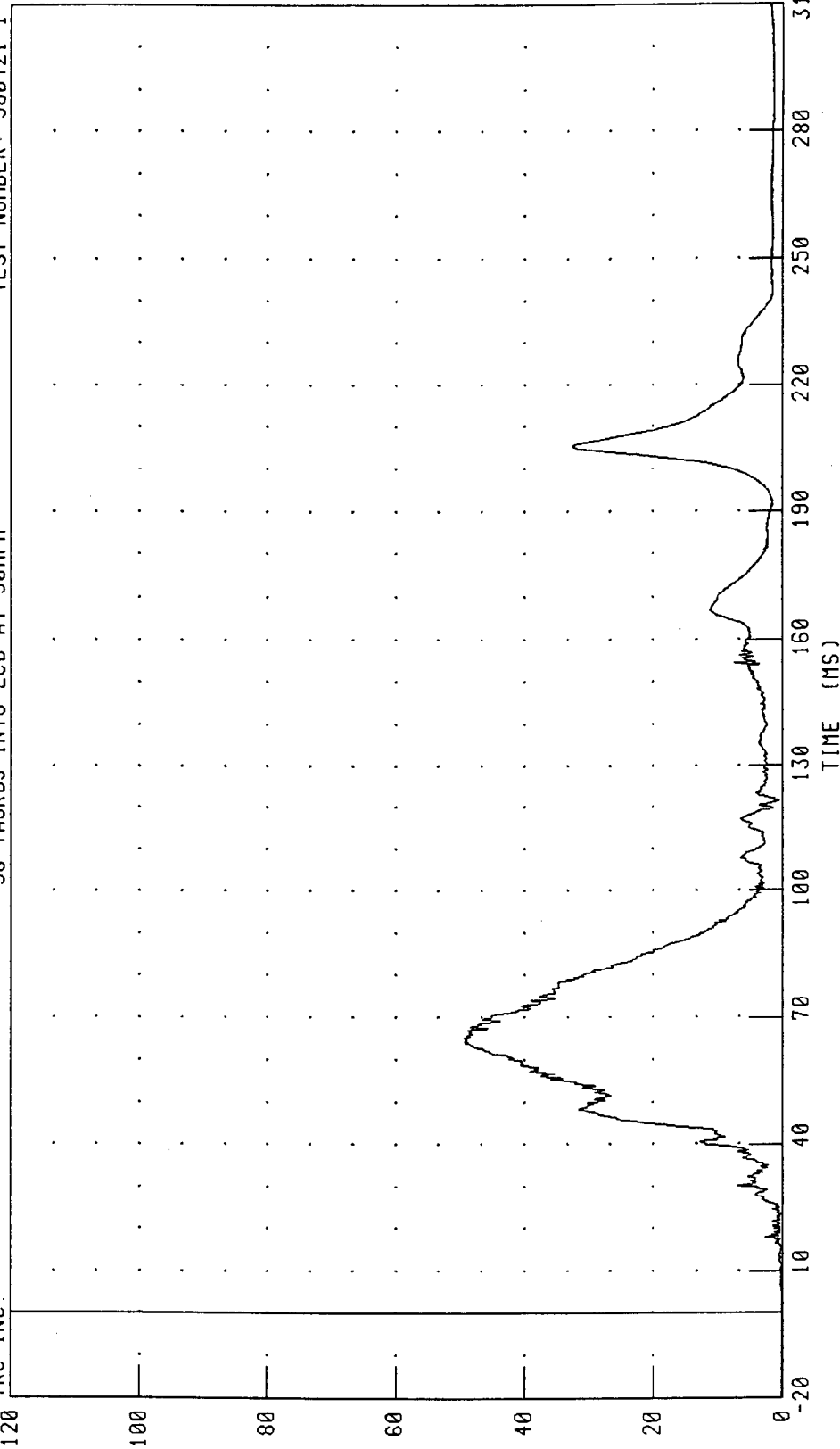
60

40

20

0

ACCELERATION (G)



TIME (MS)

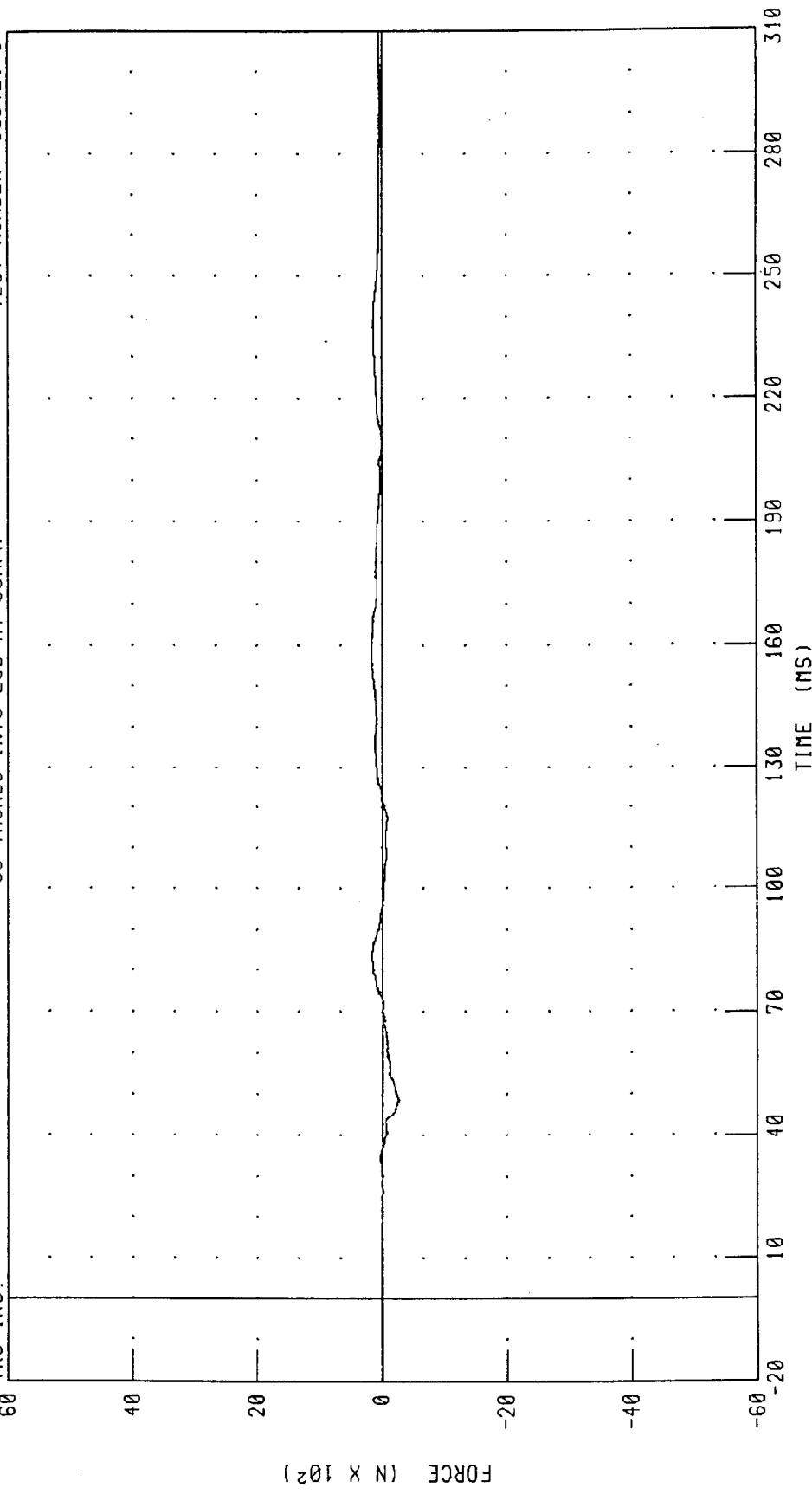
CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

PEAK DATA: 49.29 G @ 65.12 MS; 0.06 G @ -16.40 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER NECK X-AXIS SHEAR FORCE
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: NEKXF1 FILTER: CH. CLASS 1000

PEAK DATA: 165.00 N @ 83.04 MS; -269.91 N @ 269.91 MS

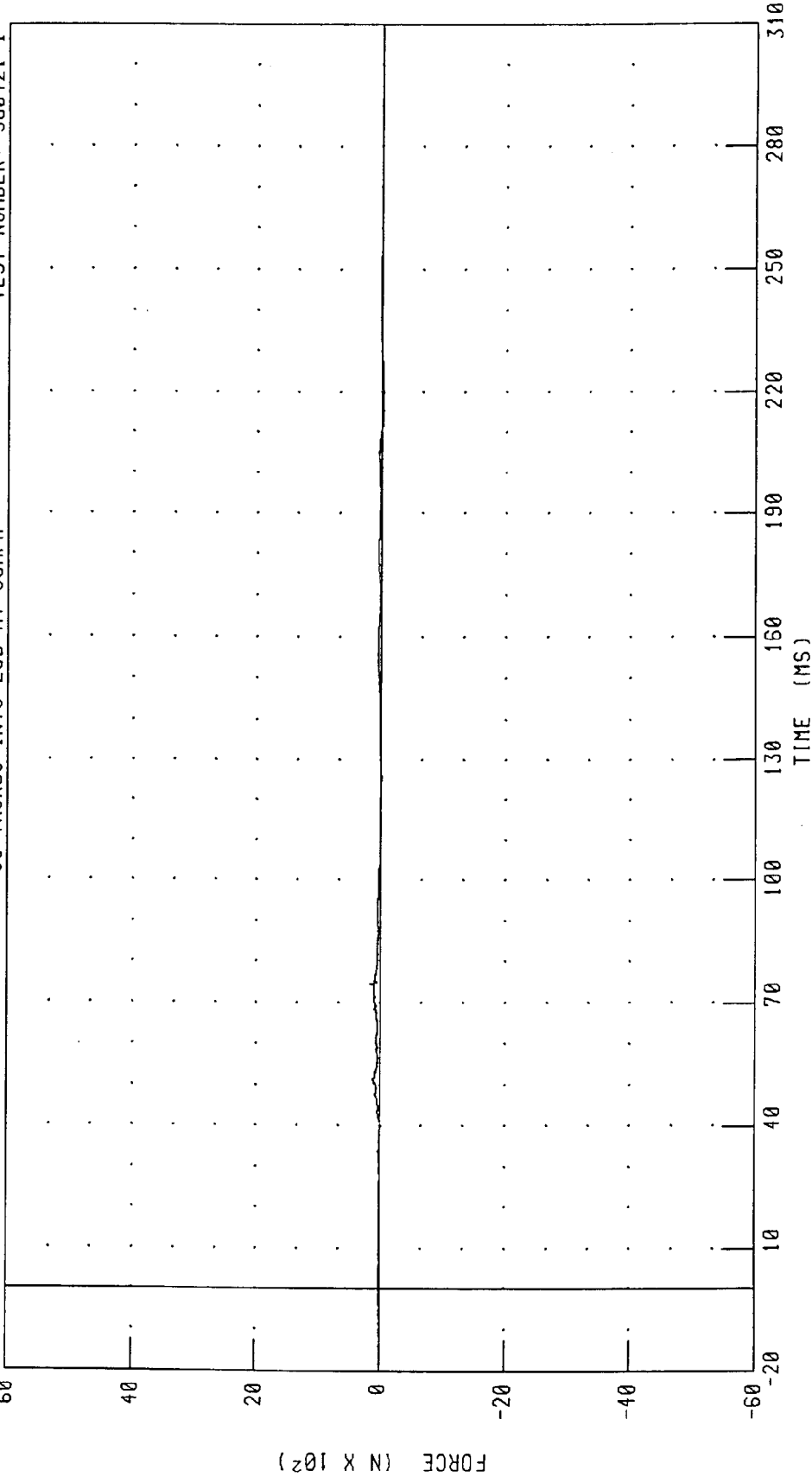
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

DRIVER NECK Y-AXIS SHEAR FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

PEAK DATA: 154.36 N @ 74.64 MS; -36.80 N @ 215.60 MS

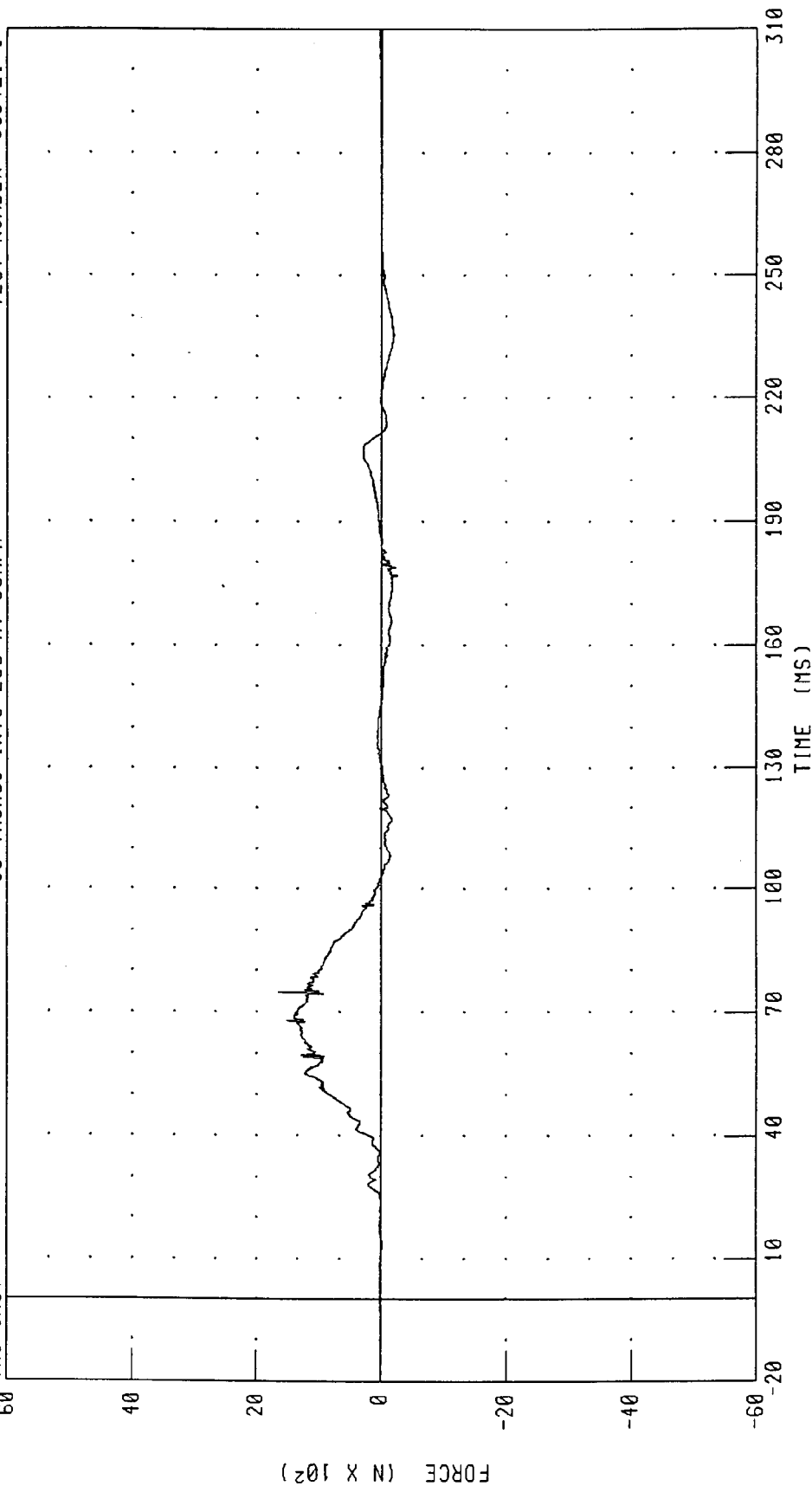
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

DRIVER NECK Z-AXIS AXIAL FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

PEAK DATA: 1648.24 N @ 74.88 MS, -255.01 N @ 176.88 MS

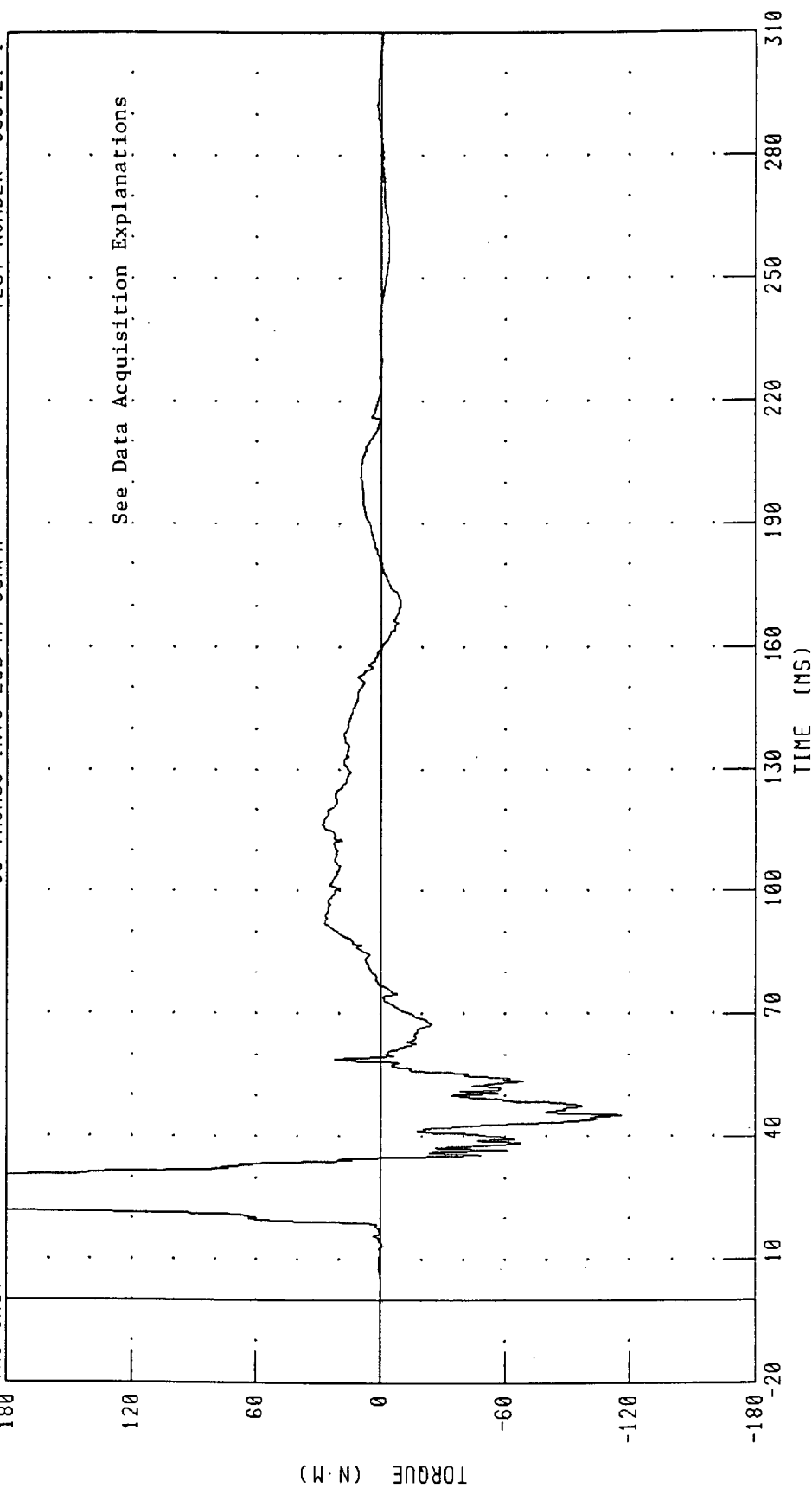
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

DRIVER NECK MOMENT ABOUT X AXIS

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



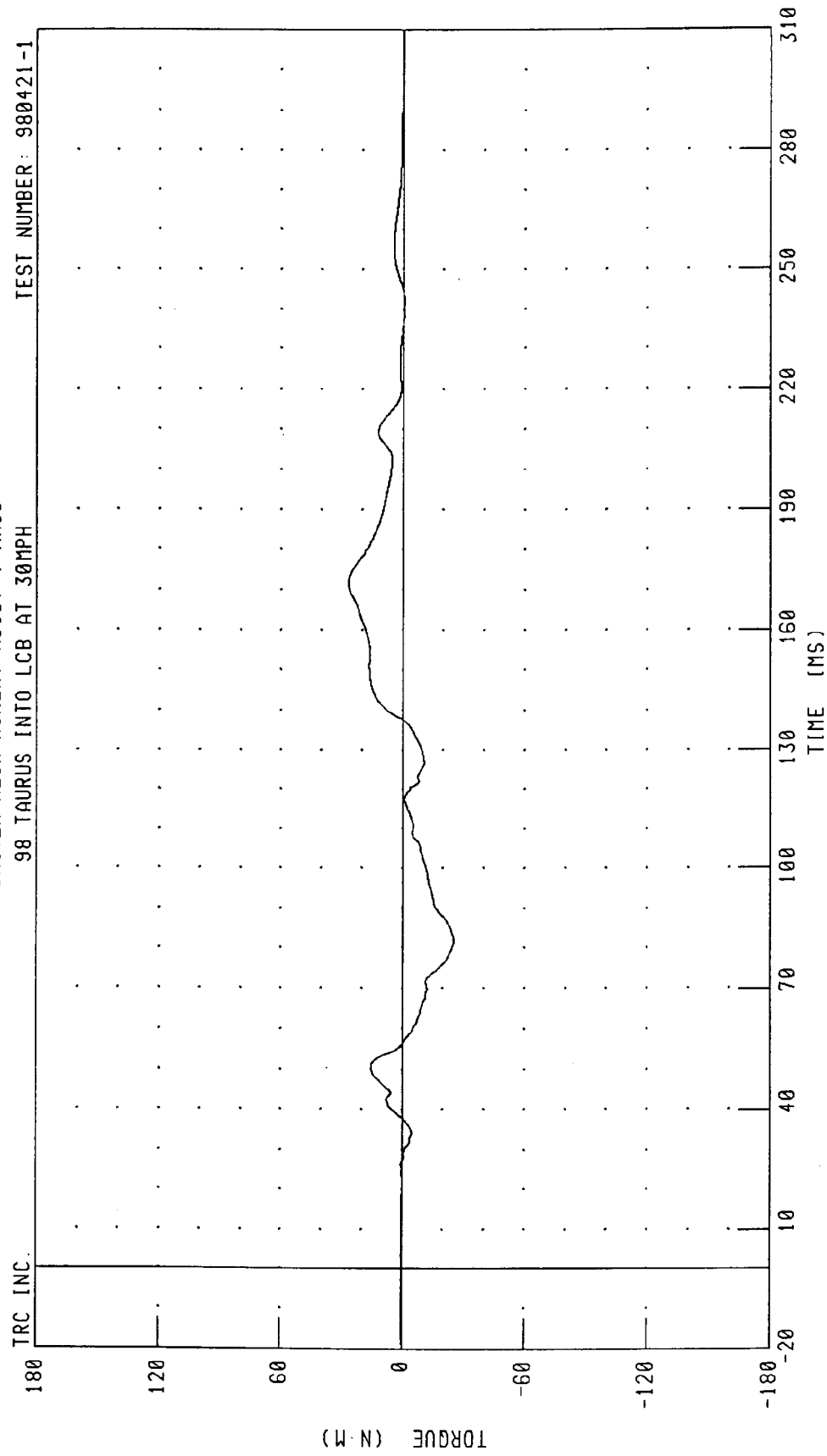
CHANNEL: NEKXM1 FILTER: CH. CLASS 600

PEAK DATA: 286.23 N·M @ 29.68 MS, -116.20 N·M @ 45.28 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER NECK MOMENT ABOUT Y AXIS

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



CHANNEL: NEKYM1 FILTER: CH. CLASS 600

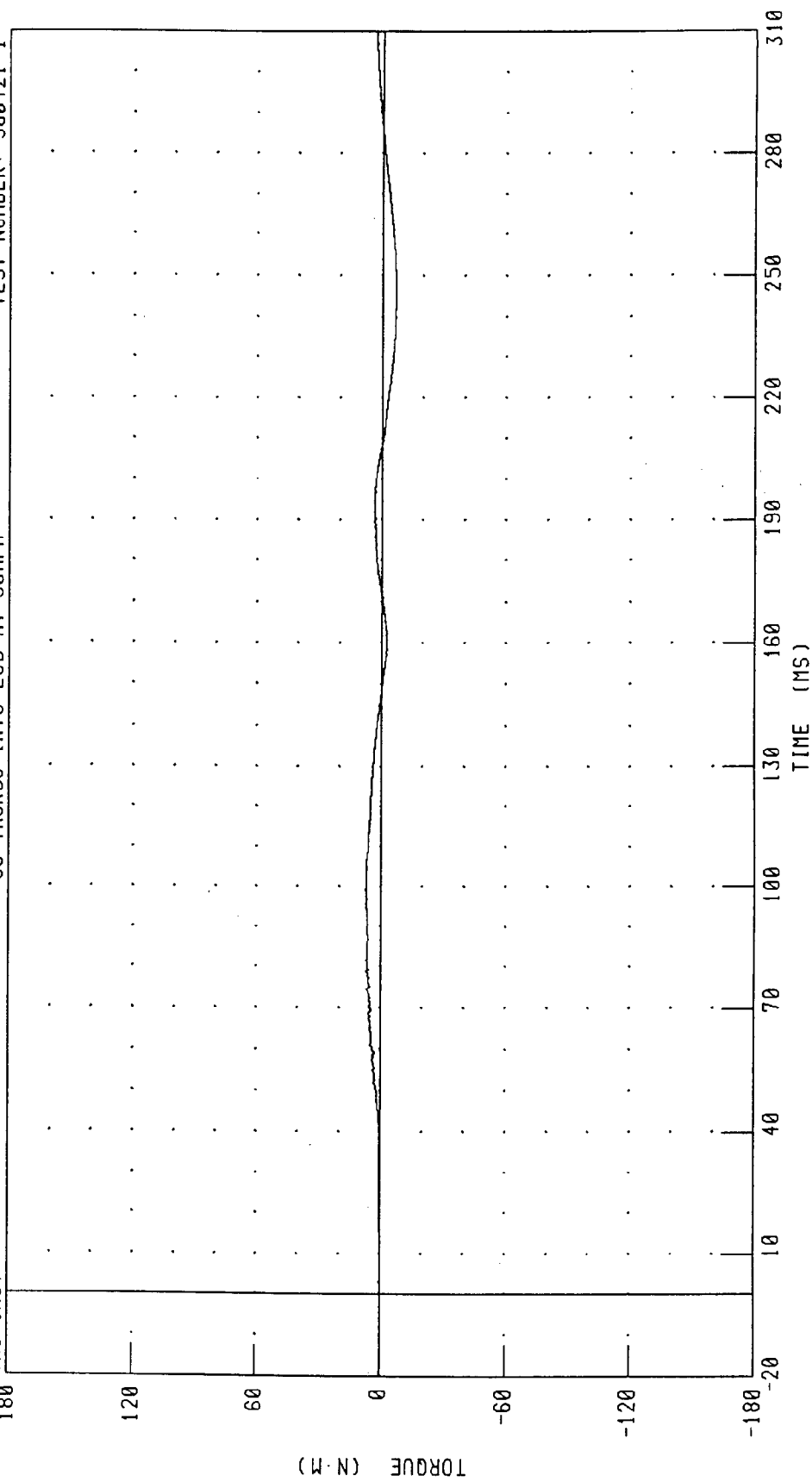
PEAK DATA: 26.72 N·M @ 172.24 MS, -25.44 N·M @ 81.84 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER NECK MOMENT ABOUT Z AXIS

TRC INC.

98 TAURUS INTO LCB AT 30MPH

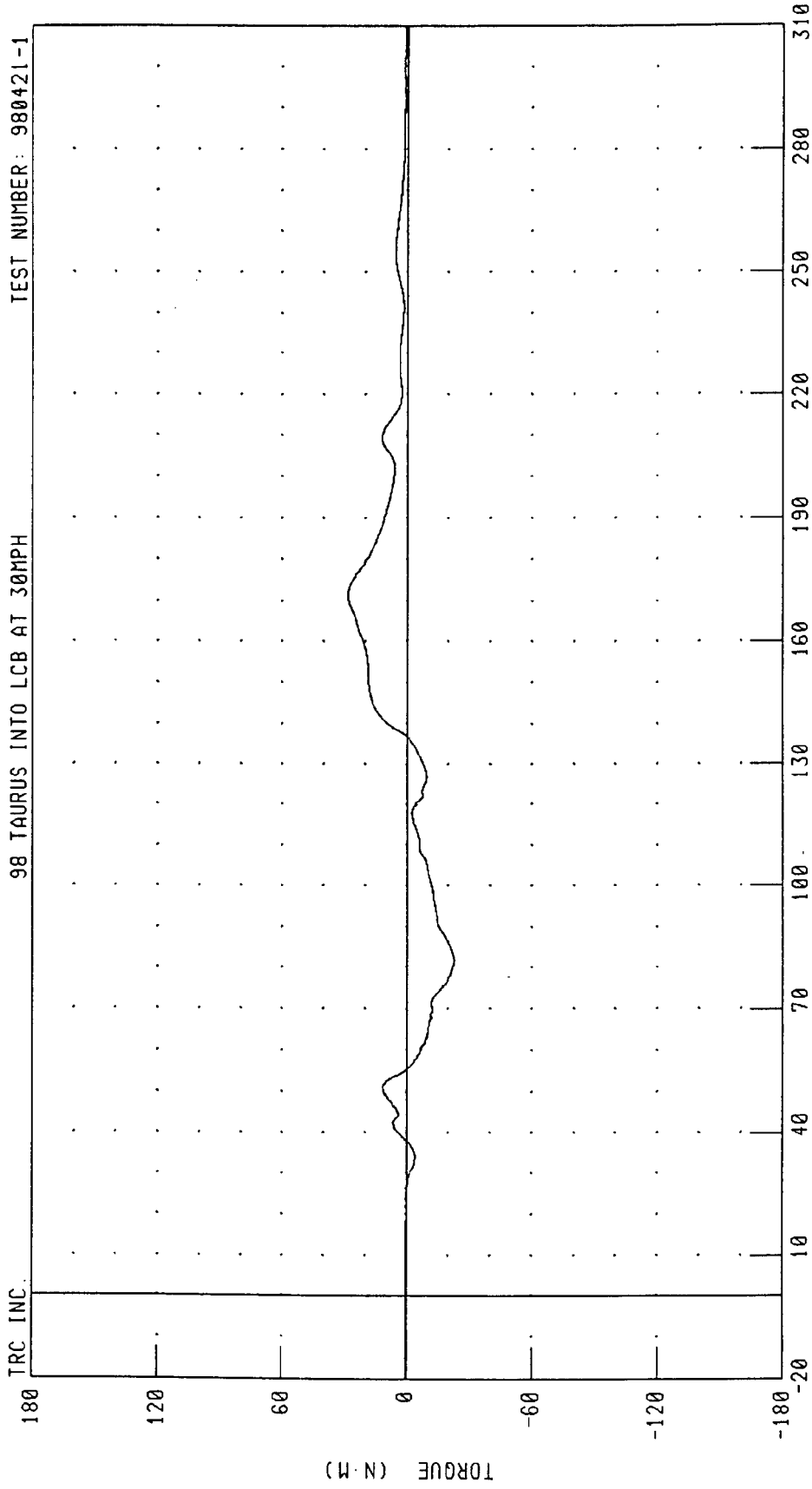
TEST NUMBER: 980421-1



CHANNEL: NEKZM1 FILTER: CH. CLASS 600

PEAK DATA: 7.18 N·M @ 99.28 MS; -6.77 N·M @ 246.08 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER NECK OCCIPITAL CONDYLE ABOUT Y AXIS



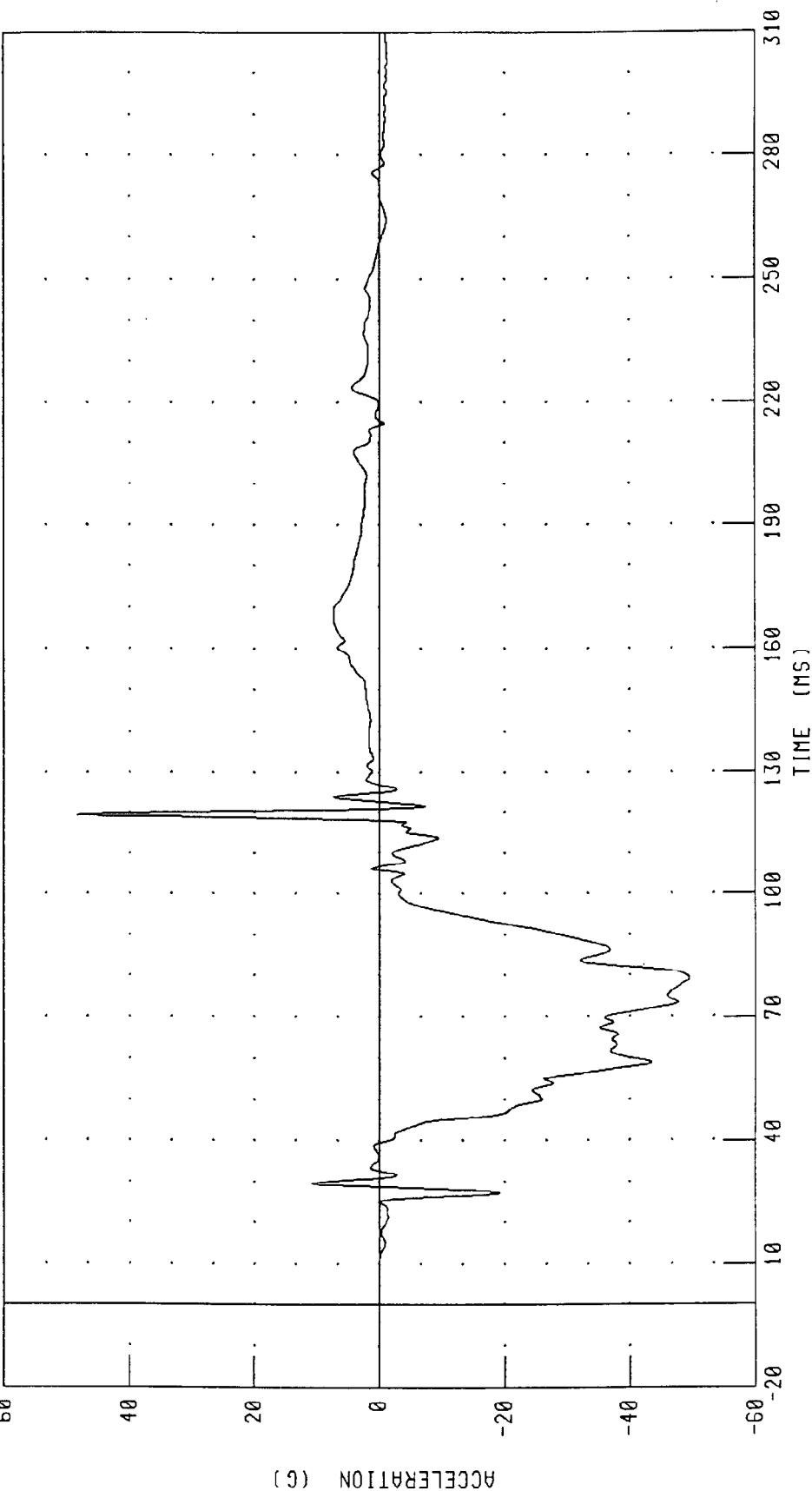
CHANNEL: NEKOH1 FILTER: CH. CLASS 600

PEAK DATA: 28.28 N·m @ 171.36 ms, -22.87 N·m @ 81.92 ms

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER CHEST X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.

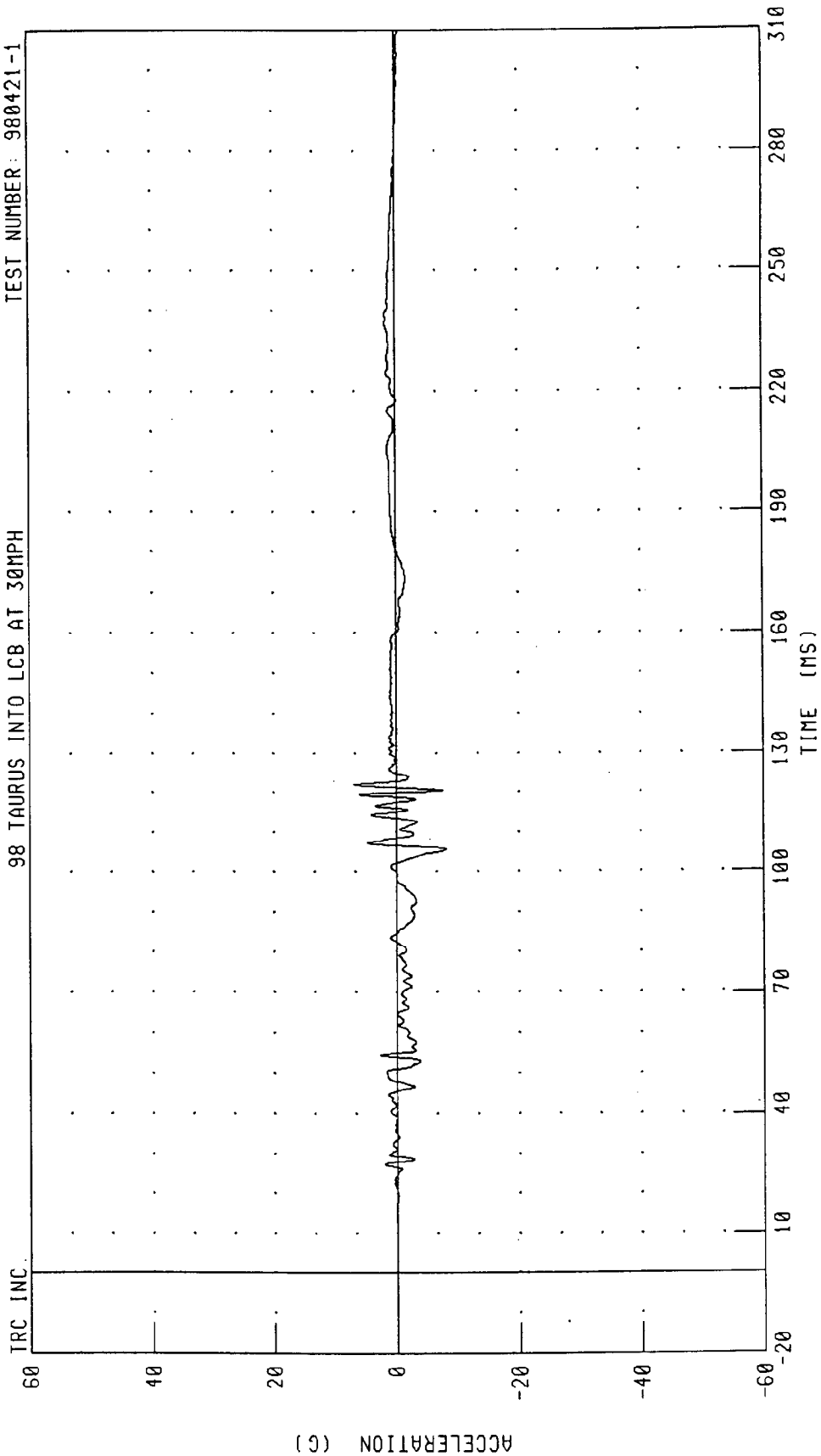


PEAK DATA: 48.27 G @ 119.52 MS; -49.39 G @ 79.20 MS

CHANNEL: CSTXC1 FILTER: CH. CLASS 180

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER CHEST Y-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH TEST NUMBER: 980421-1



CHANNEL: CSTYG1 FILTER: CH. CLASS 180

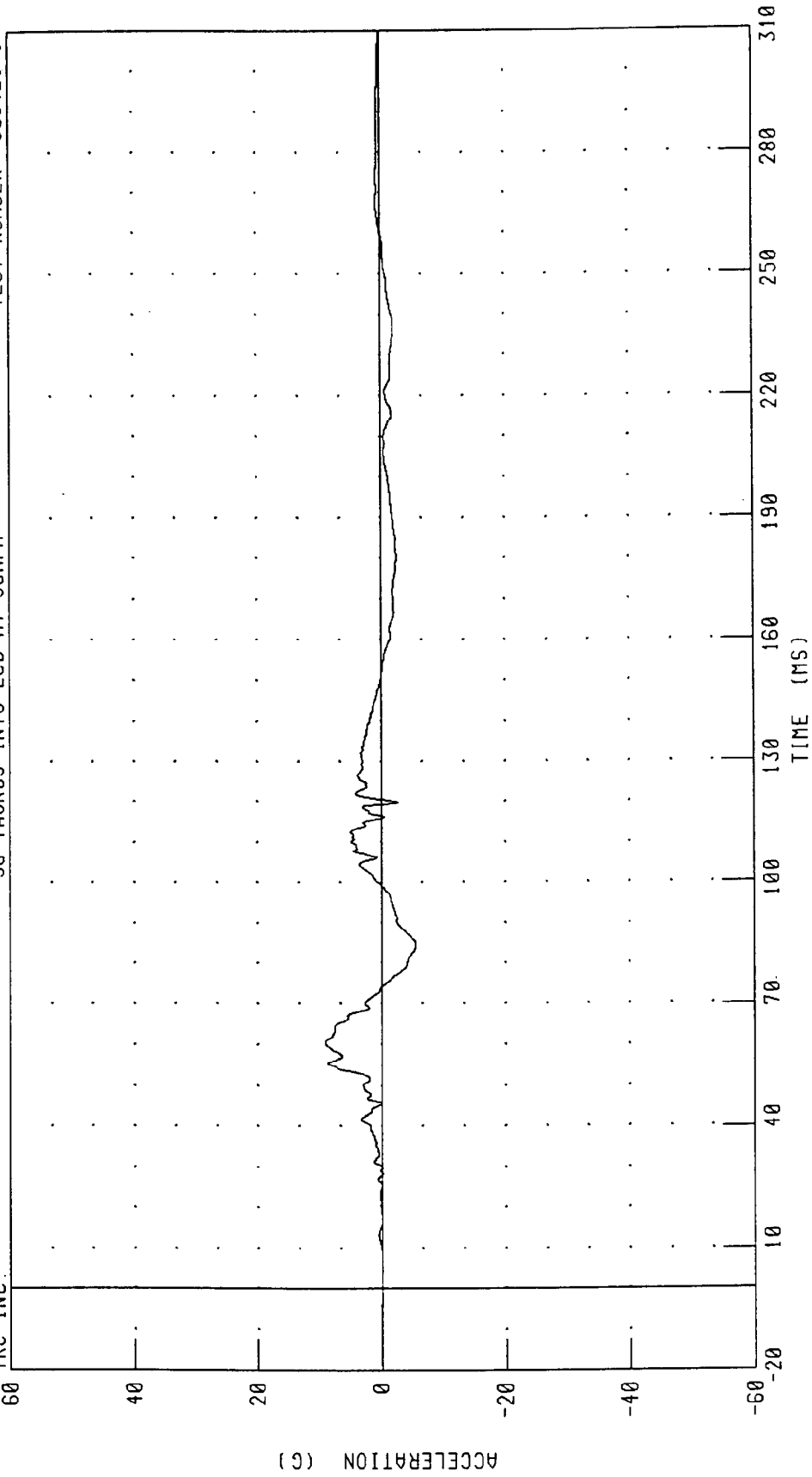
PEAK DATA: 6.82 G @ 122.08 MS, -8.15 G @ 105.60 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER CHEST Z-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: CSTZG1 FILTER: CH. CLASS 180

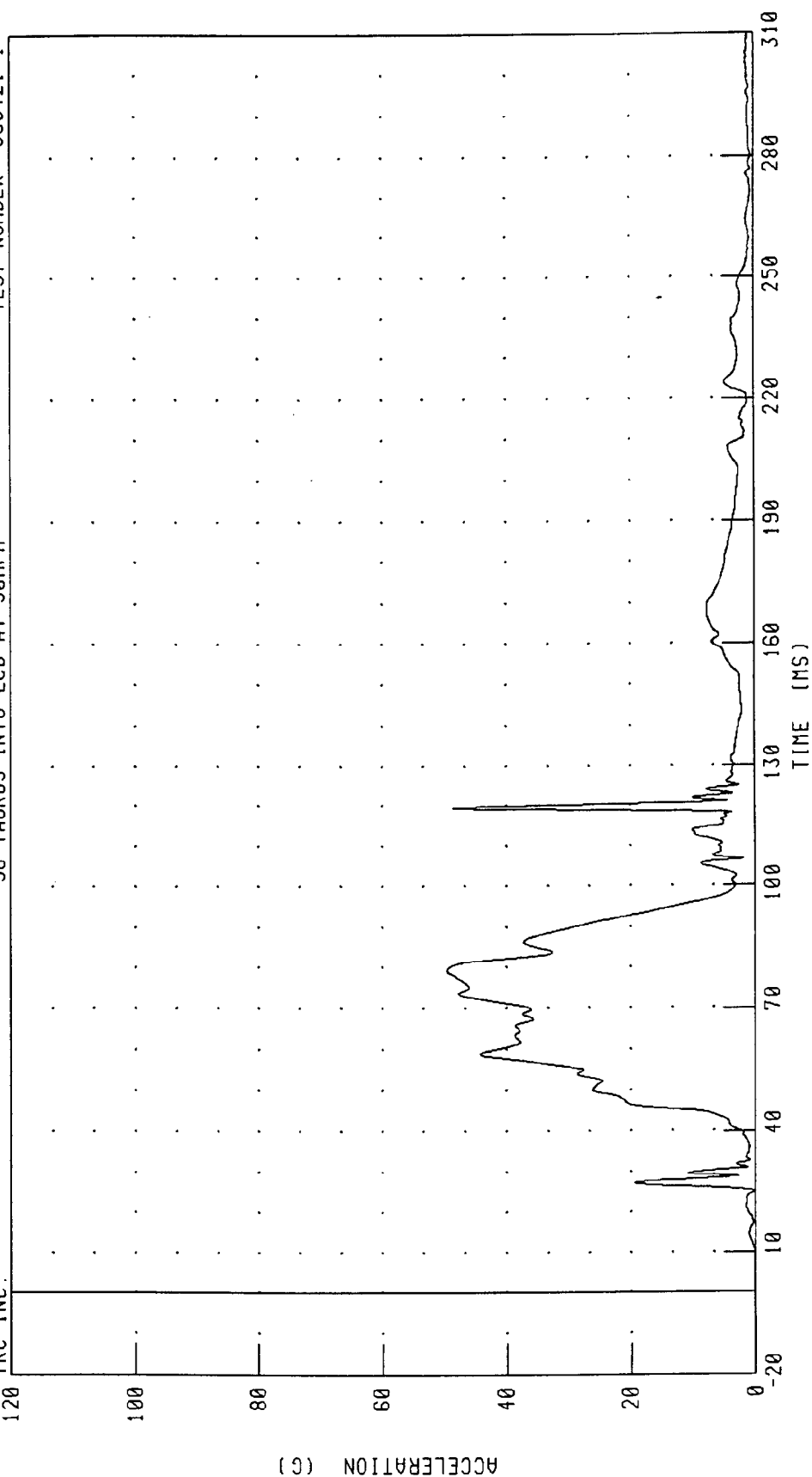
PEAK DATA: 9.11 G @ 60.40 MS, -5.49 G @ 85.28 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER CHEST RESULTANT ACCELERATION

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



CHANNEL: CSTRG1 FILTER: CH. CLASS 180

PEAK DATA: 49.56 G @ 79.28 MS, 0.01 G @ -20.00 MS

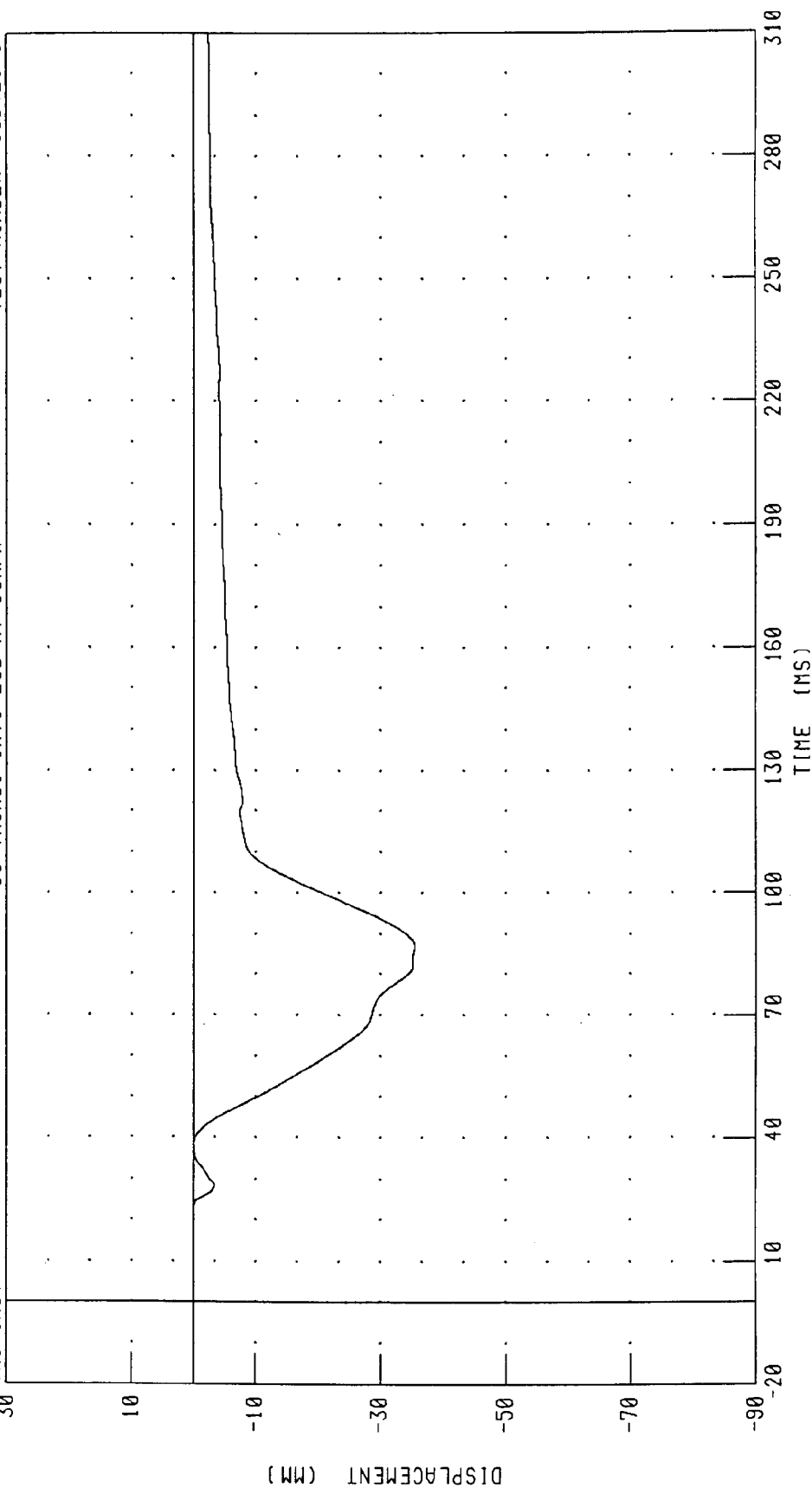
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

DRIVER CHEST DEFLECTION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC

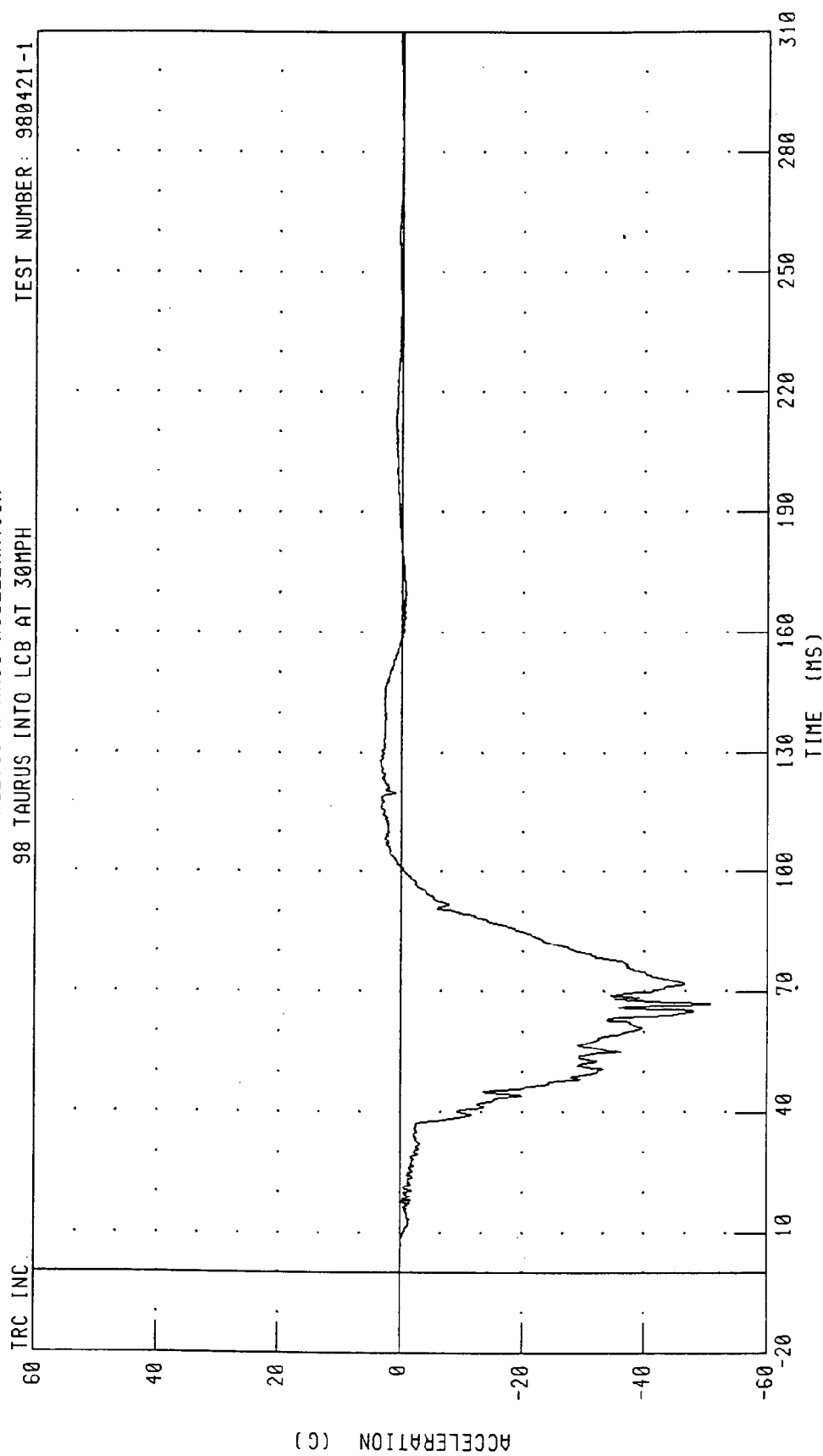


PEAK DATA: 0.09 MM @ 38.08 MS; -35.47 MM @ 86.96 MS

CHANNEL: CSTXD1 FILTER: CH. CLASS 180

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER PELVIS X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

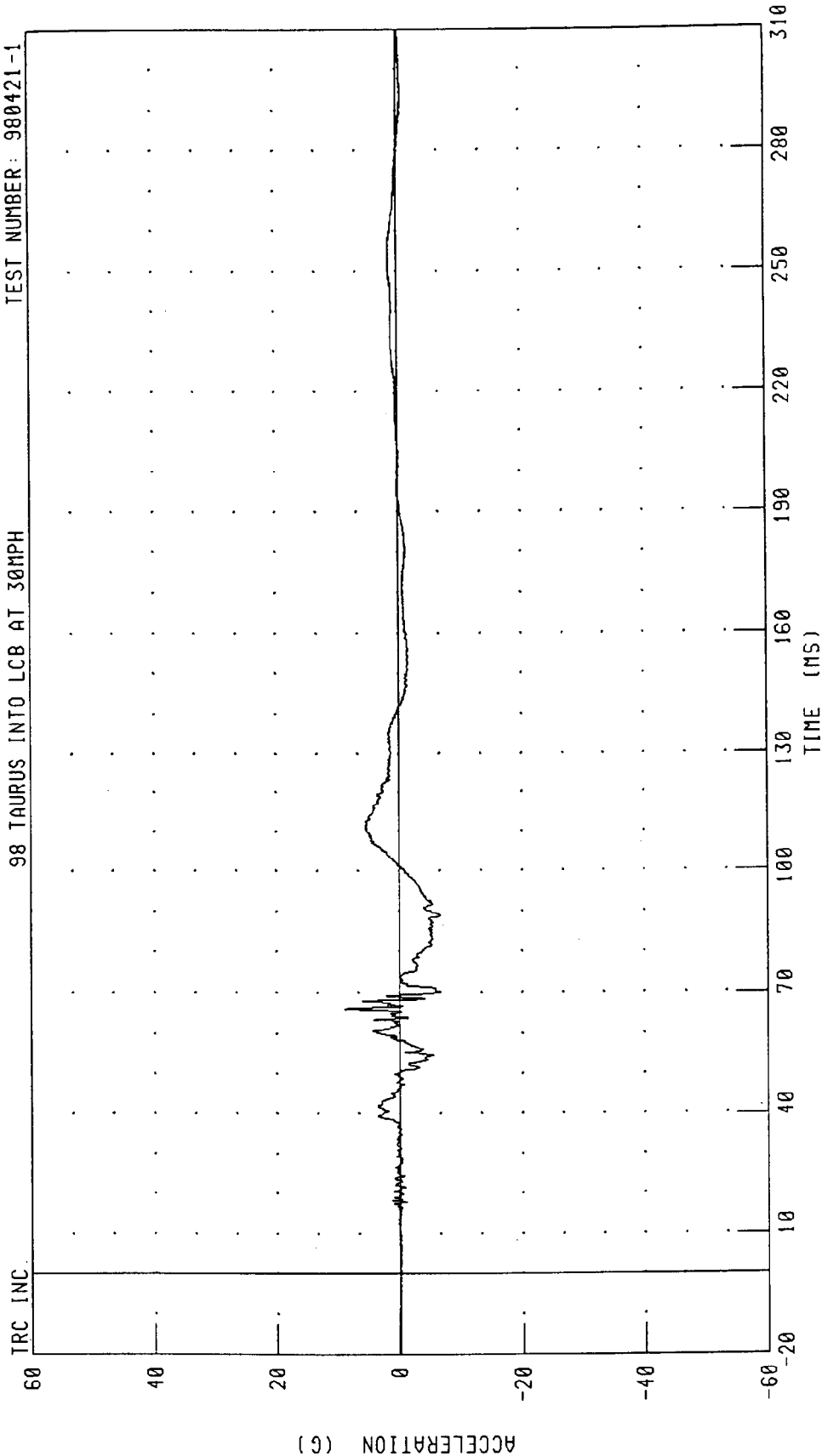


CHANNEL: PEYXG1 FILTER: CH. CLASS 1000

PEAK DATA: 3.47 G @ 127.76 MS; -50.72 G @ 66.88 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER PELVIS Y-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



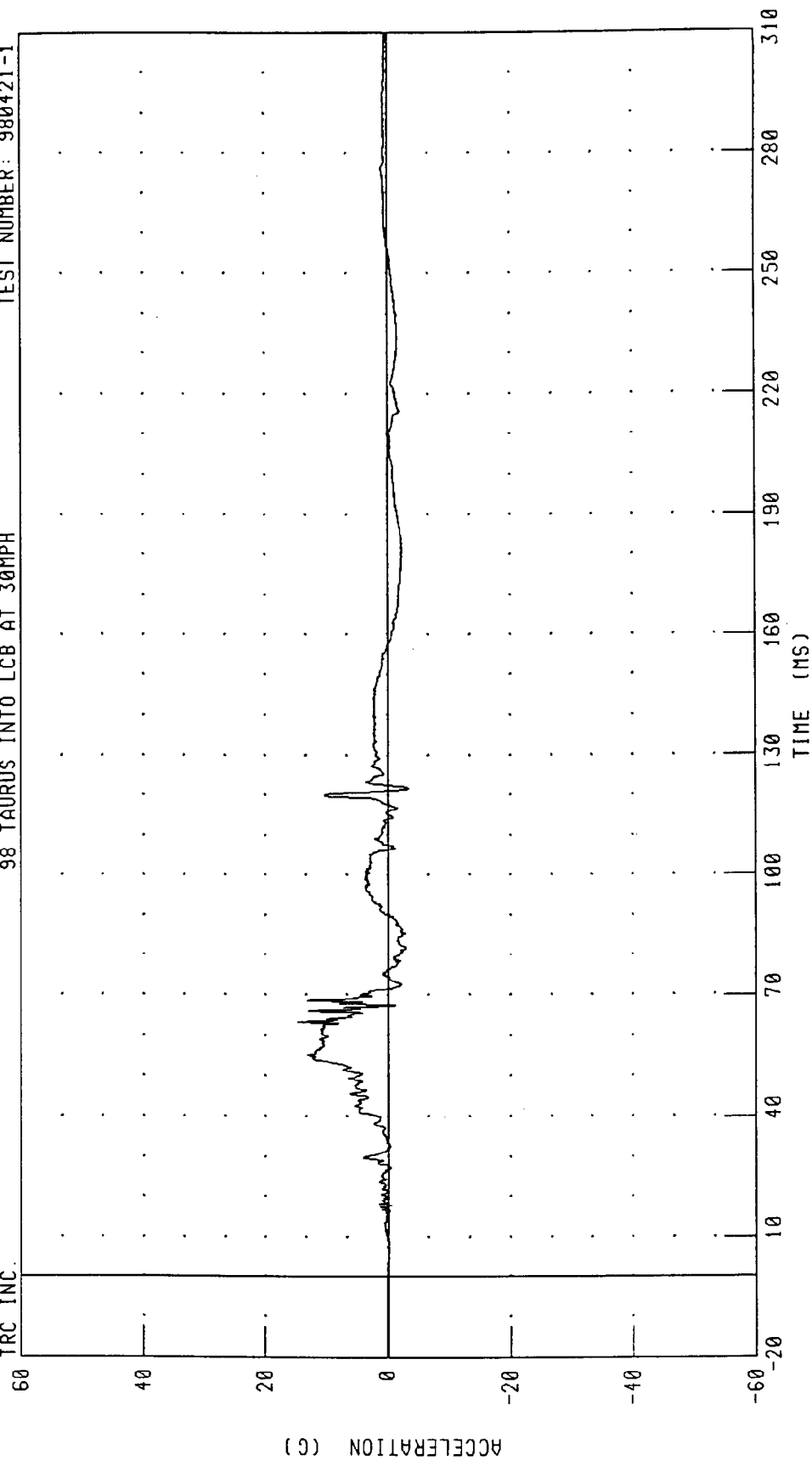
CHANNEL: PEVYG1 FILTER: CH. CLASS 1000

PEAK DATA: 8.84 G @ 66.16 MS; -6.75 G @ 70.24 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER PELVIS Z-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: PEVZG1 FILTER: CH. CLASS 1000

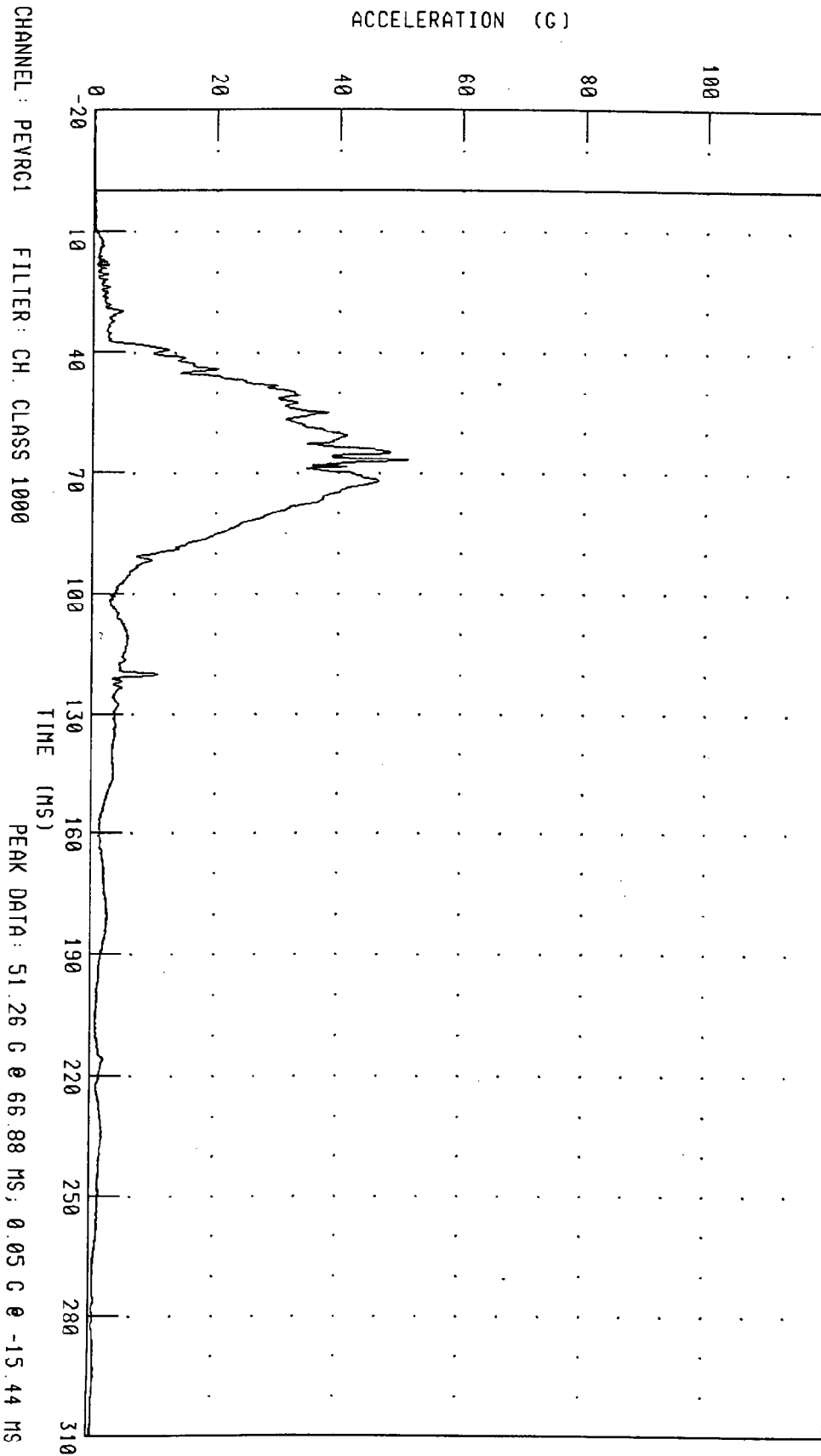
PEAK DATA: 14.68 G @ 63.28 MS, -3.40 G @ 121.68 MS

TRC INC.

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER PELVIS RESULTANT ACCELERATION

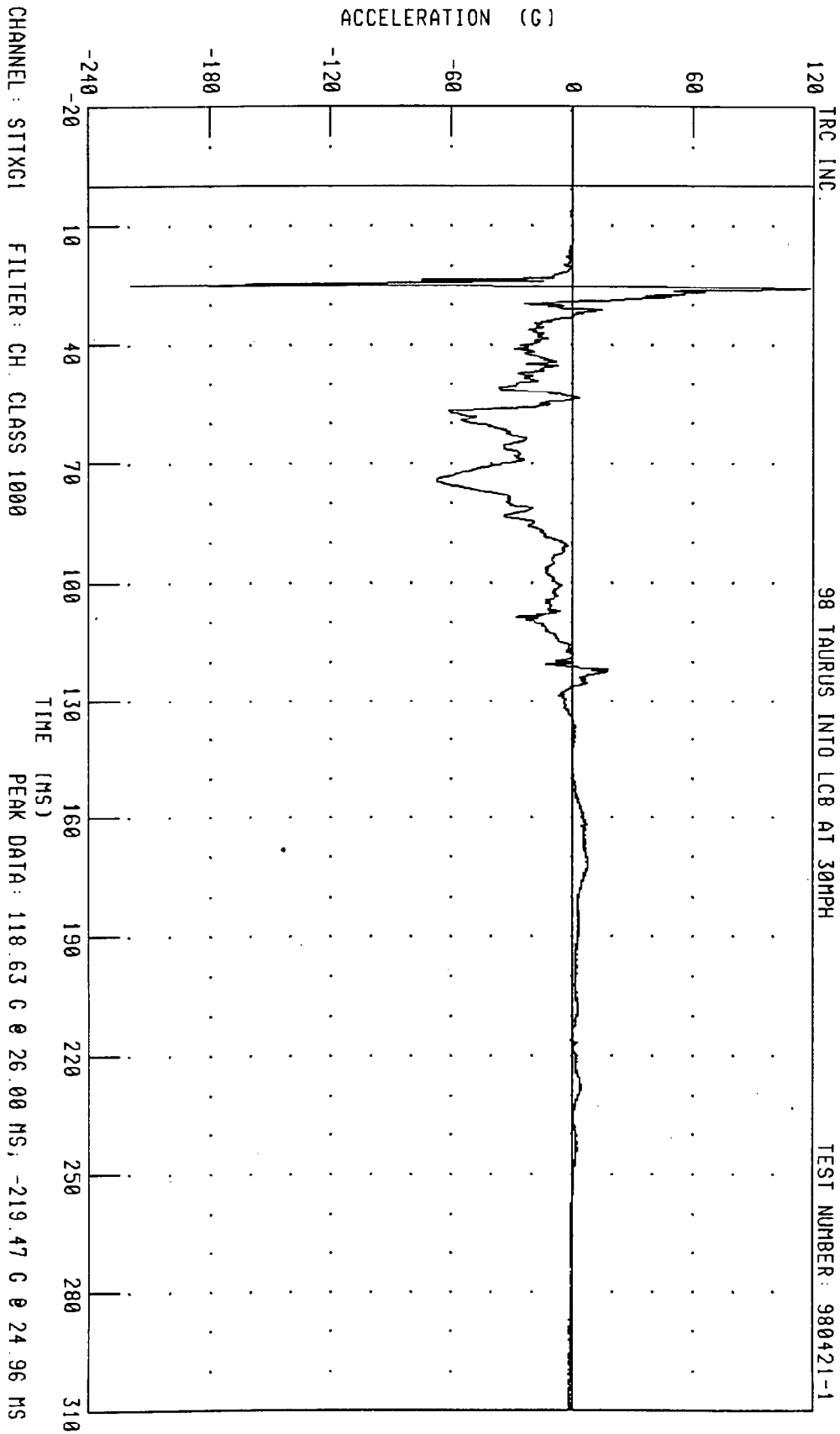


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

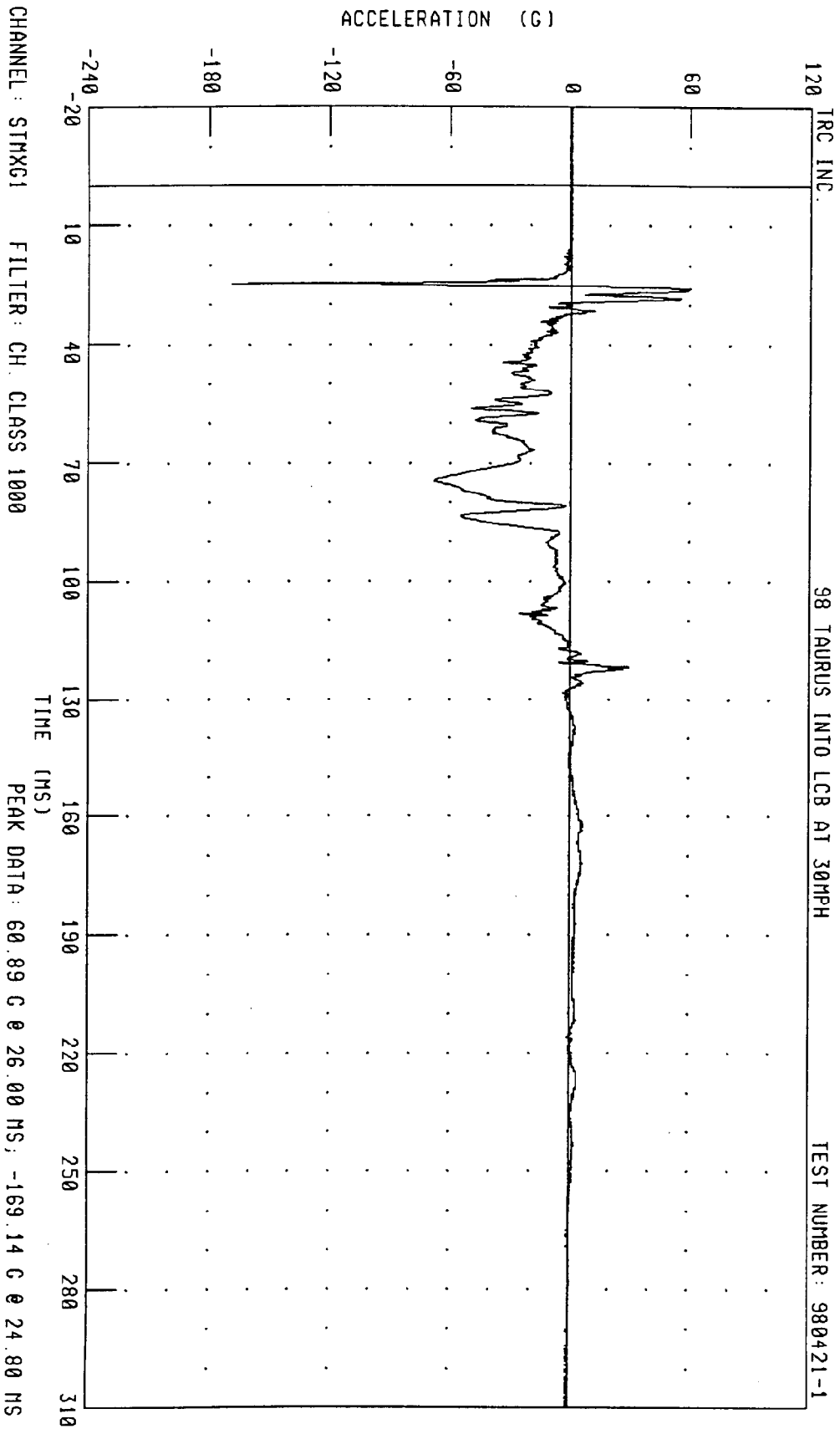
DRIVER STERNUM TOP X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

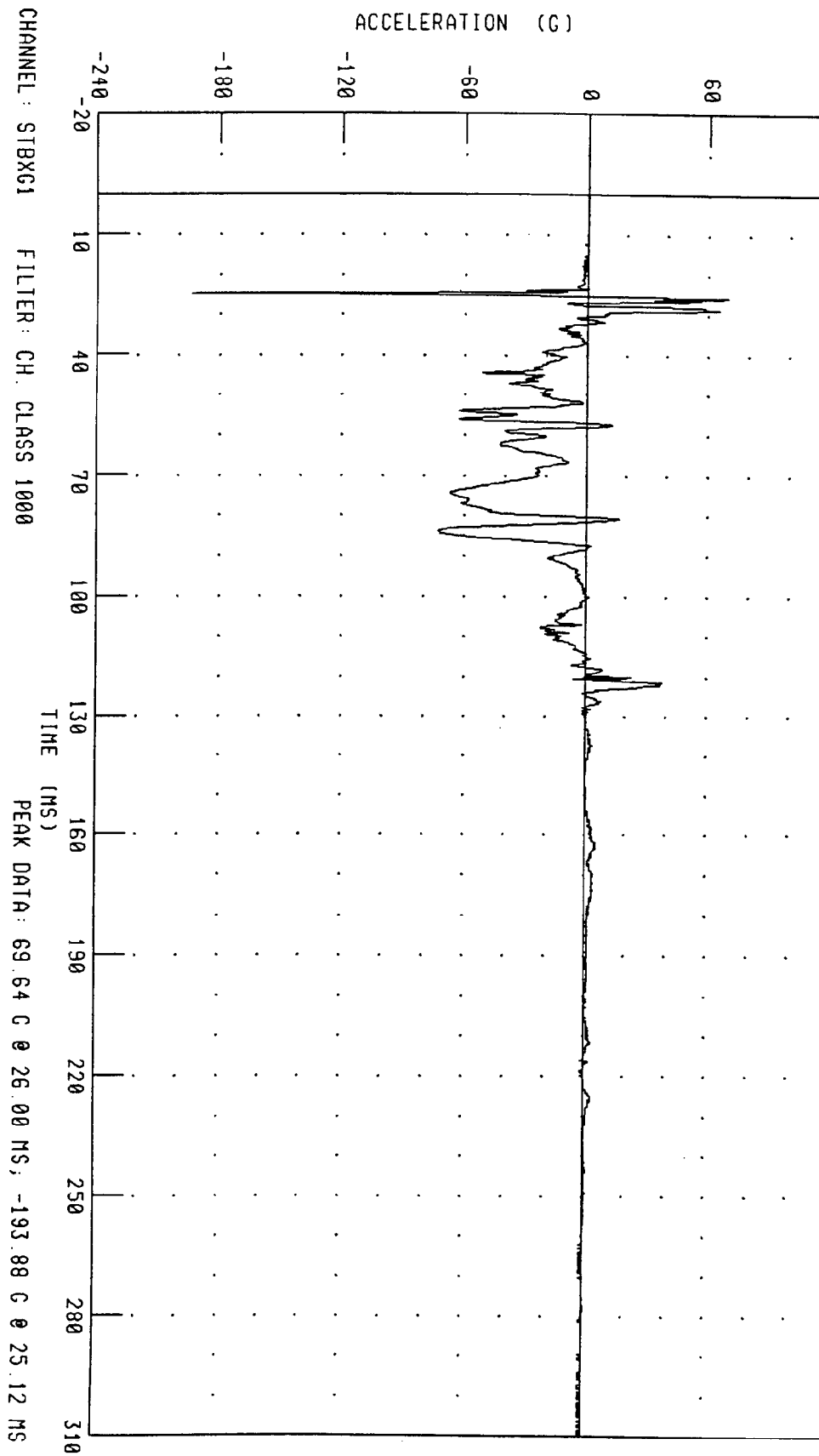
TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER STERNUM MIDDLE X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1

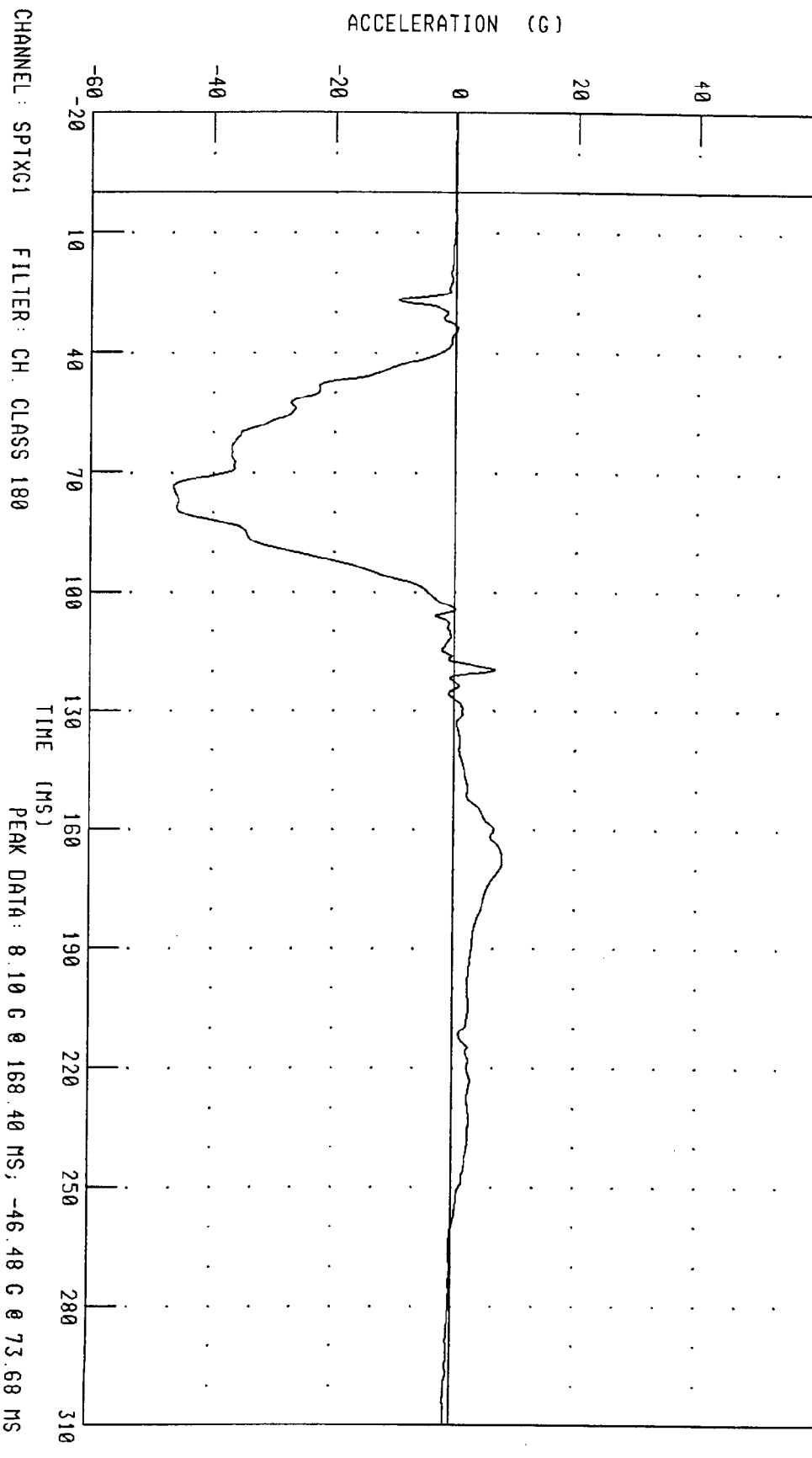


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER STERNUM BOTTOM X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TRC INC.
TEST NUMBER: 980421-1



CHANNEL: STBXG1 FILTER: CH. CLASS 1000
PEAK DATA: 69.64 G @ 26.00 MS, -193.88 G @ 25.12 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER SPINE TOP X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TRC INC.
TEST NUMBER: 980421-1

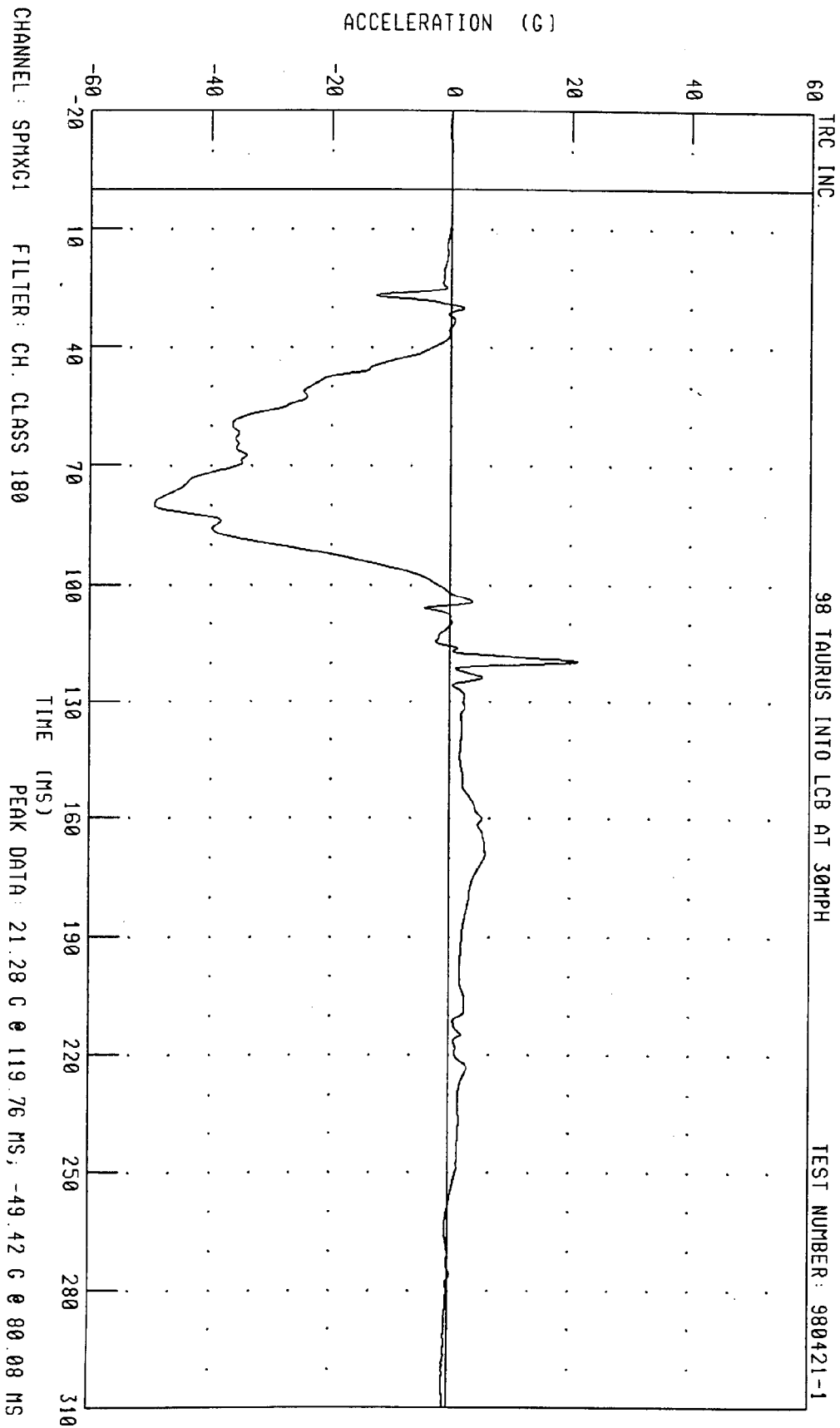


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

DRIVER SPINE MIDDLE X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

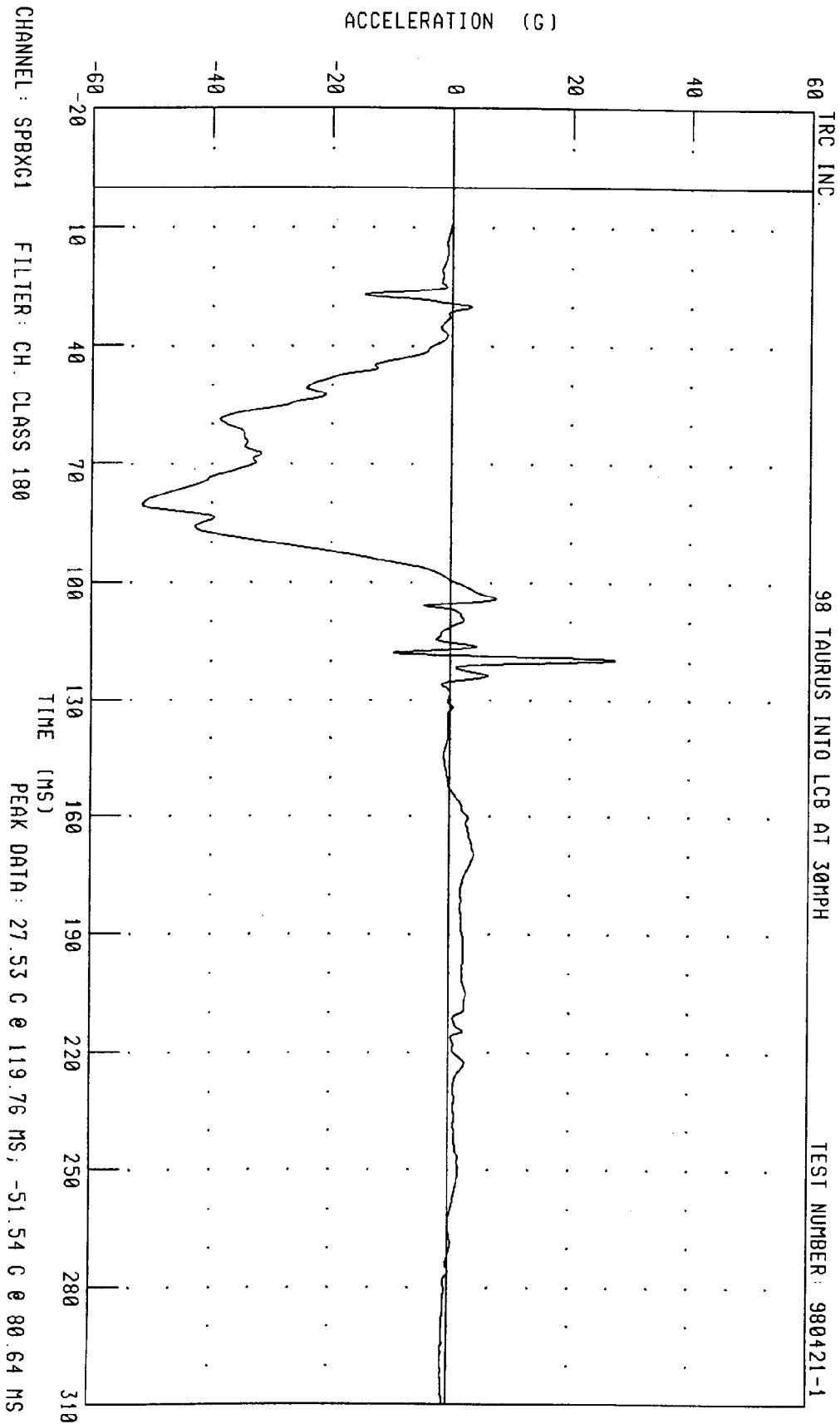


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

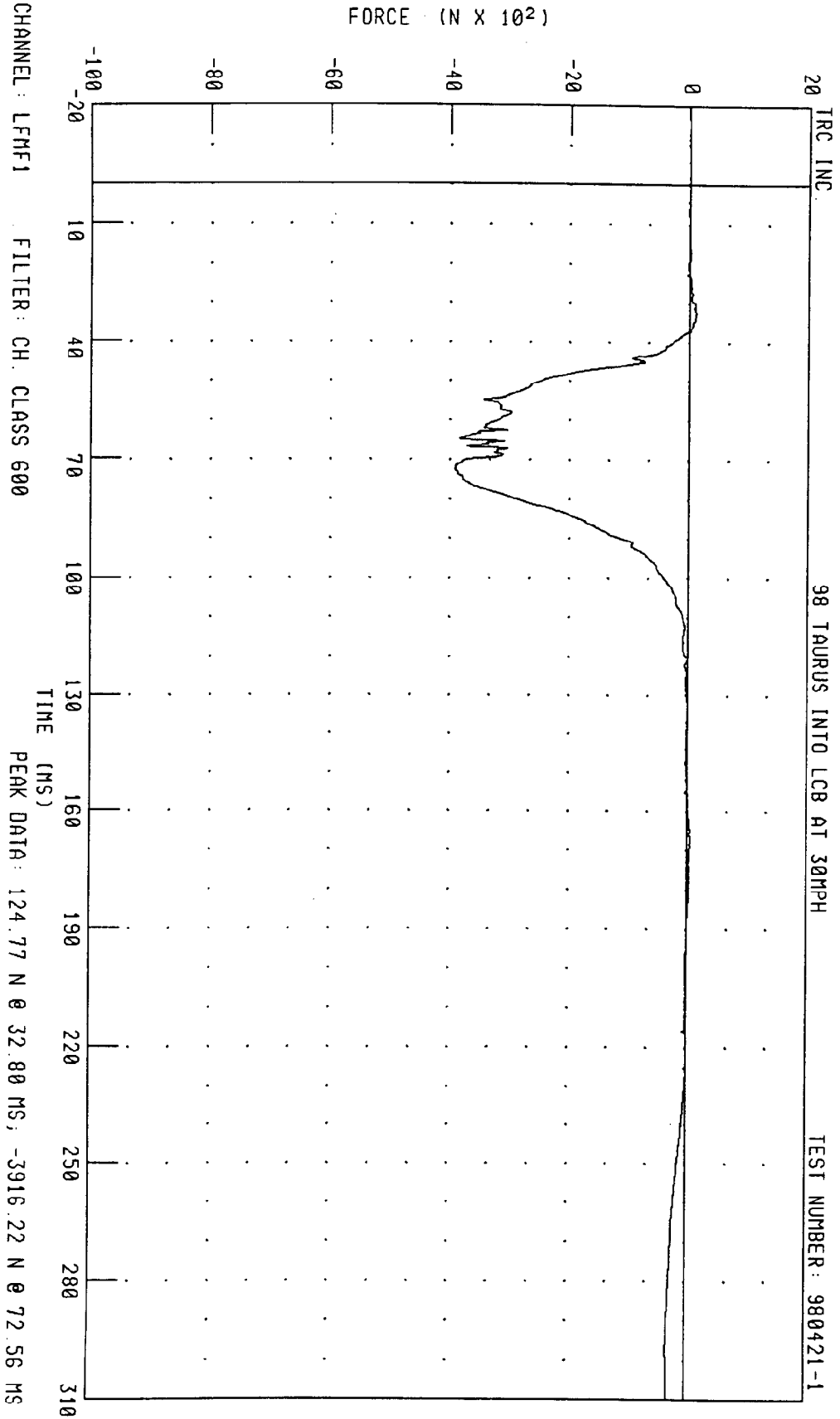
DRIVER SPINE BOTTOM X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
DRIVER LEFT FEMUR FORCE
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1

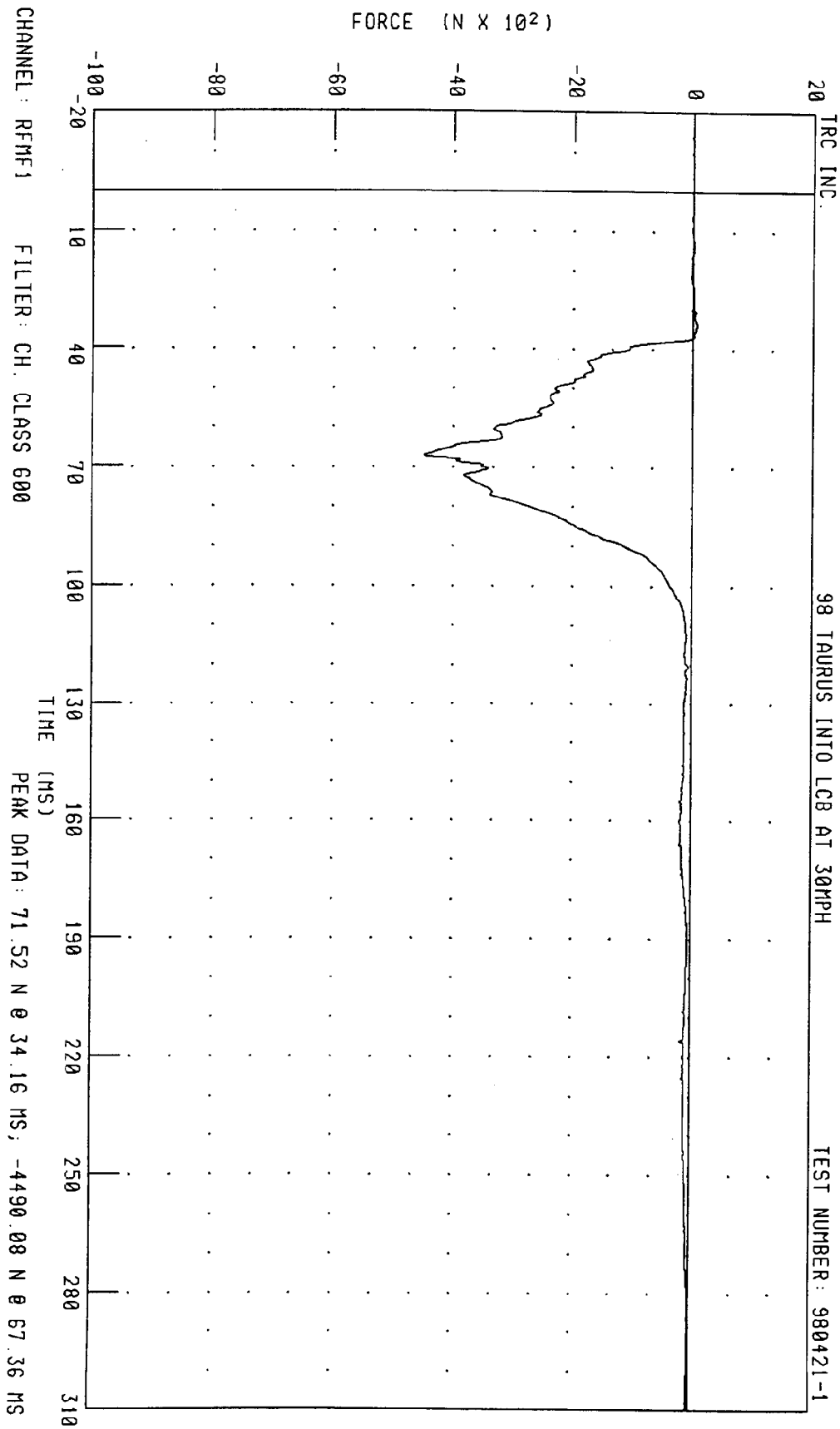


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

DRIVER RIGHT FEMUR FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



TRC INC.

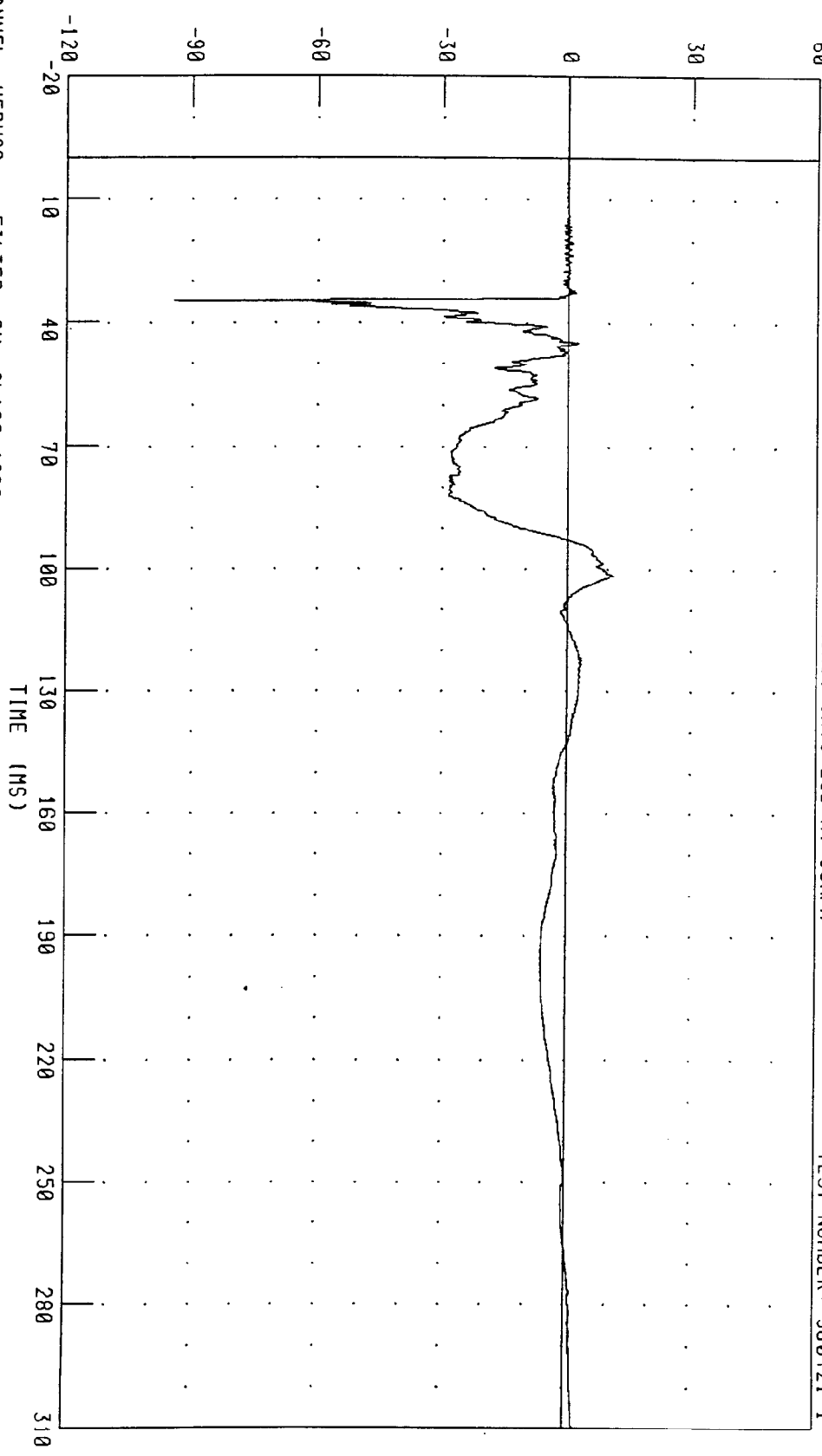
TEST NUMBER: 980421-1

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

PASSENGER HEAD X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

ACCELERATION (G)



CHANNEL: HEDXC2 FILTER: CH. CLASS 1000

TIME (MS)

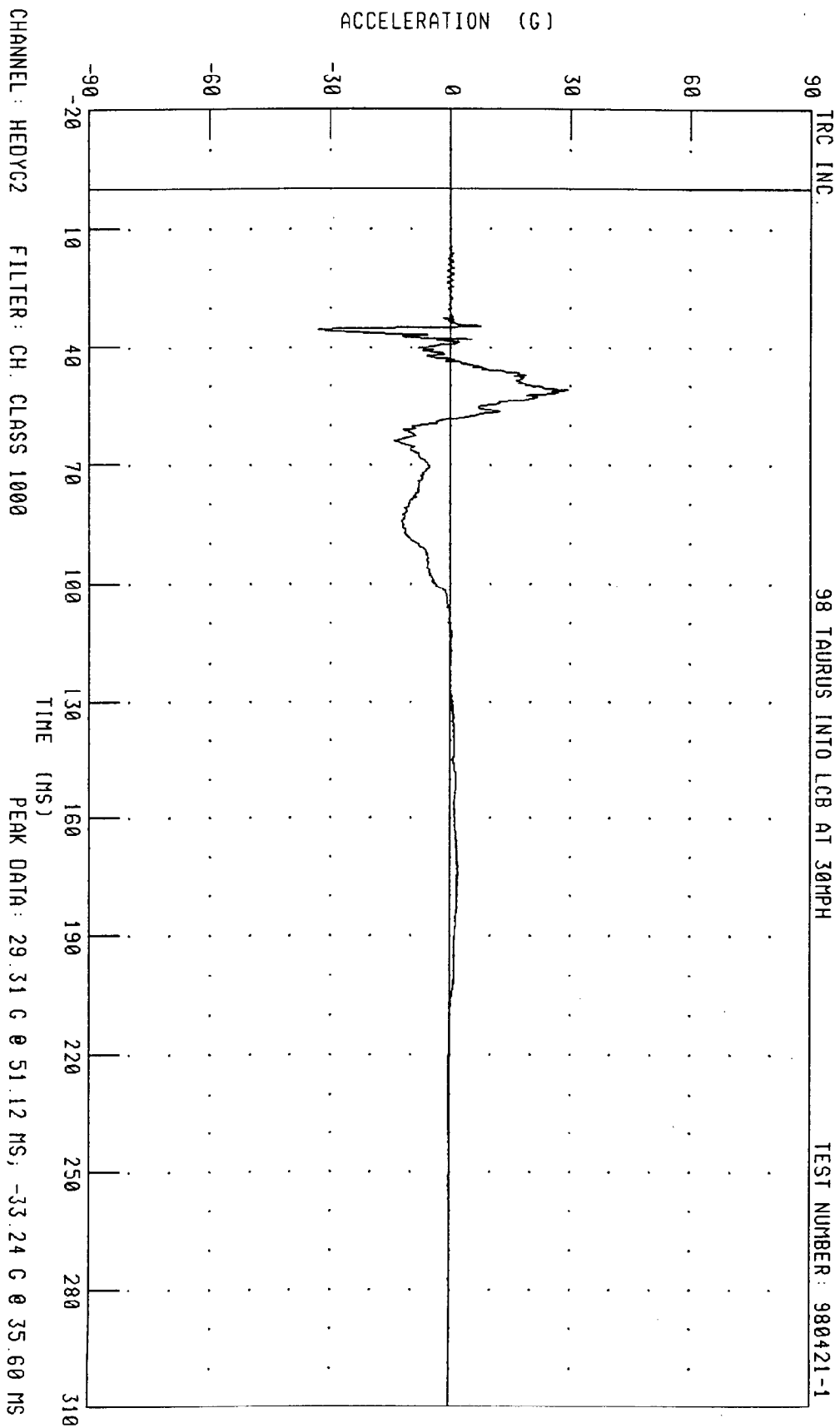
PEAK DATA: 11.22 G @ 101.84 MS, -94.25 G @ 34.88 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

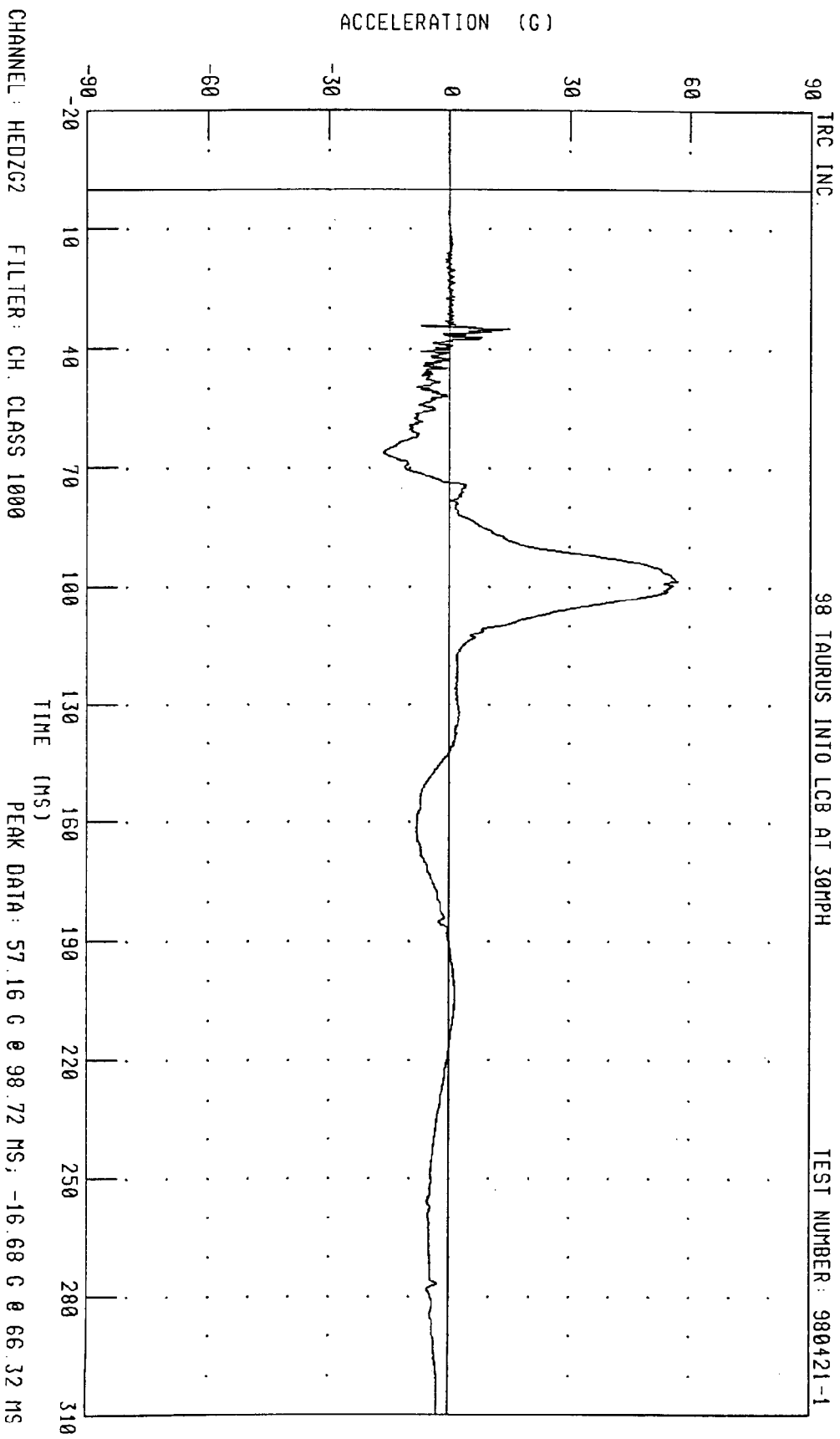
PASSENGER HEAD Y-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

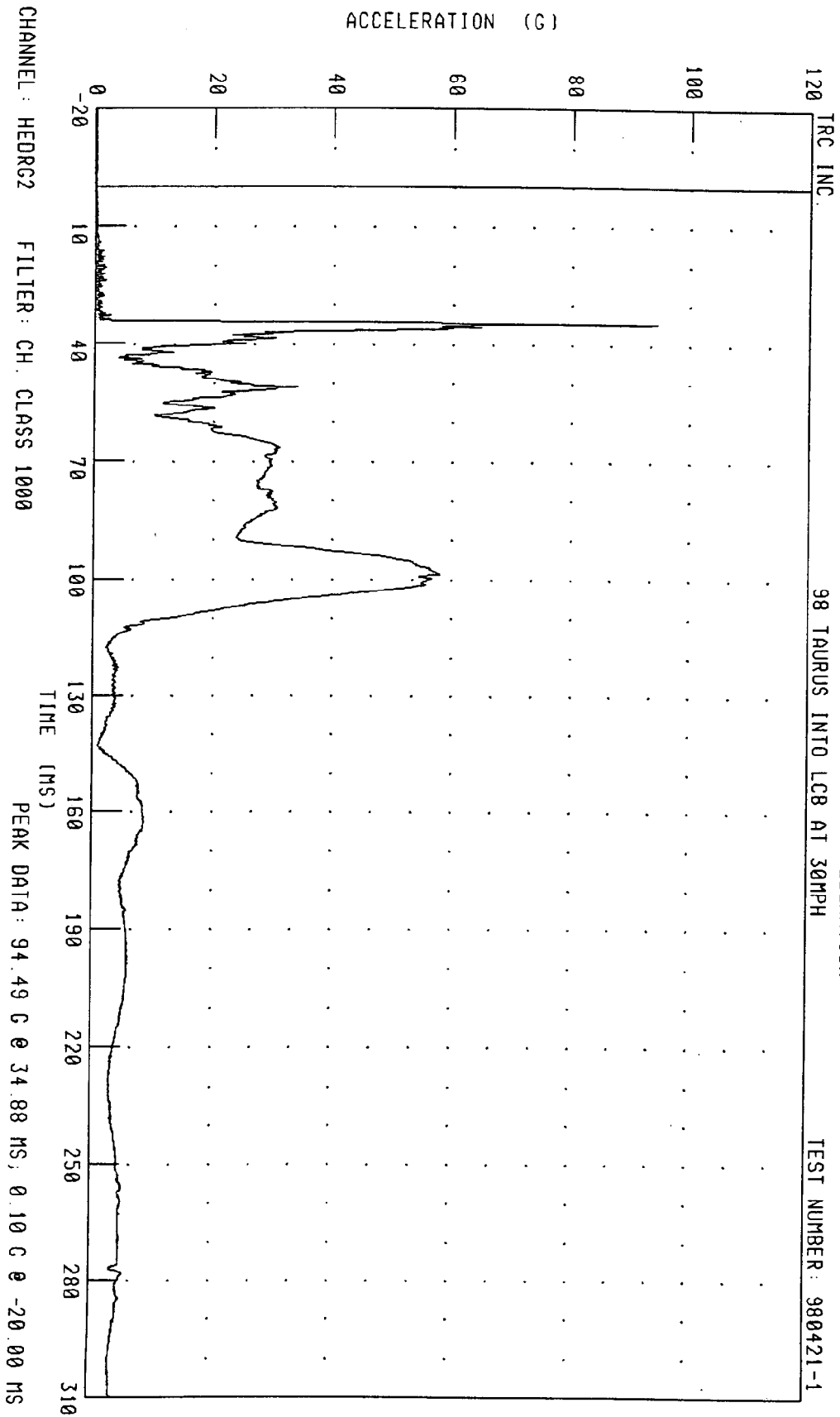
TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER HEAD Z-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER HEAD RESULTANT ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1



TRC INC.

98 TAURUS INTO LCB AT 30MPH

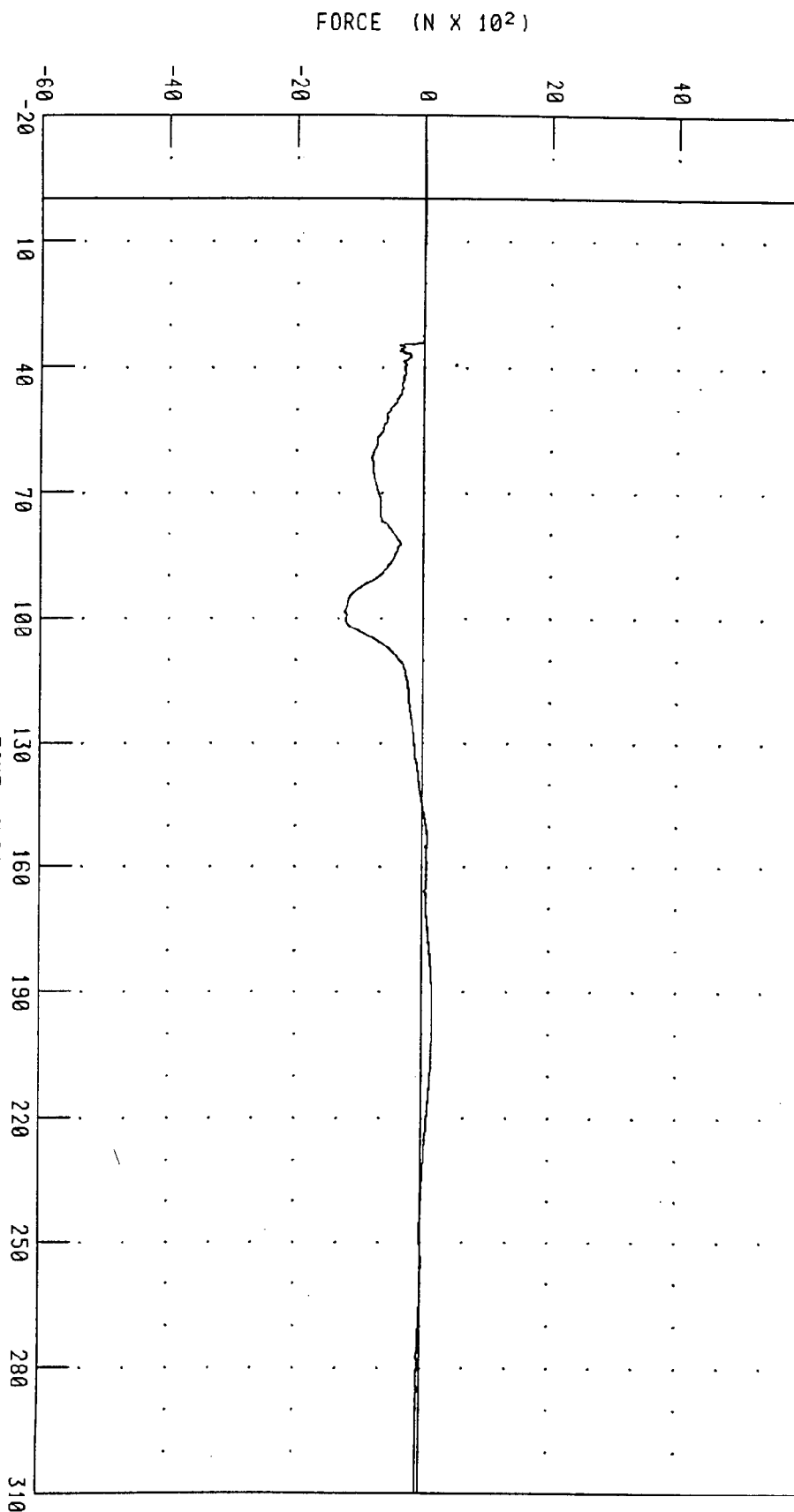
TEST NUMBER: 980421-1

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

PASSENGER NECK X-AXIS SHEAR FORCE

CHANNEL: NEKXF2 FILTER: CH. CLASS 1000

TIME (MS) PEAK DATA: 164.74 N @ 191.28 MS, -1238.91 N @ 98.64 MS



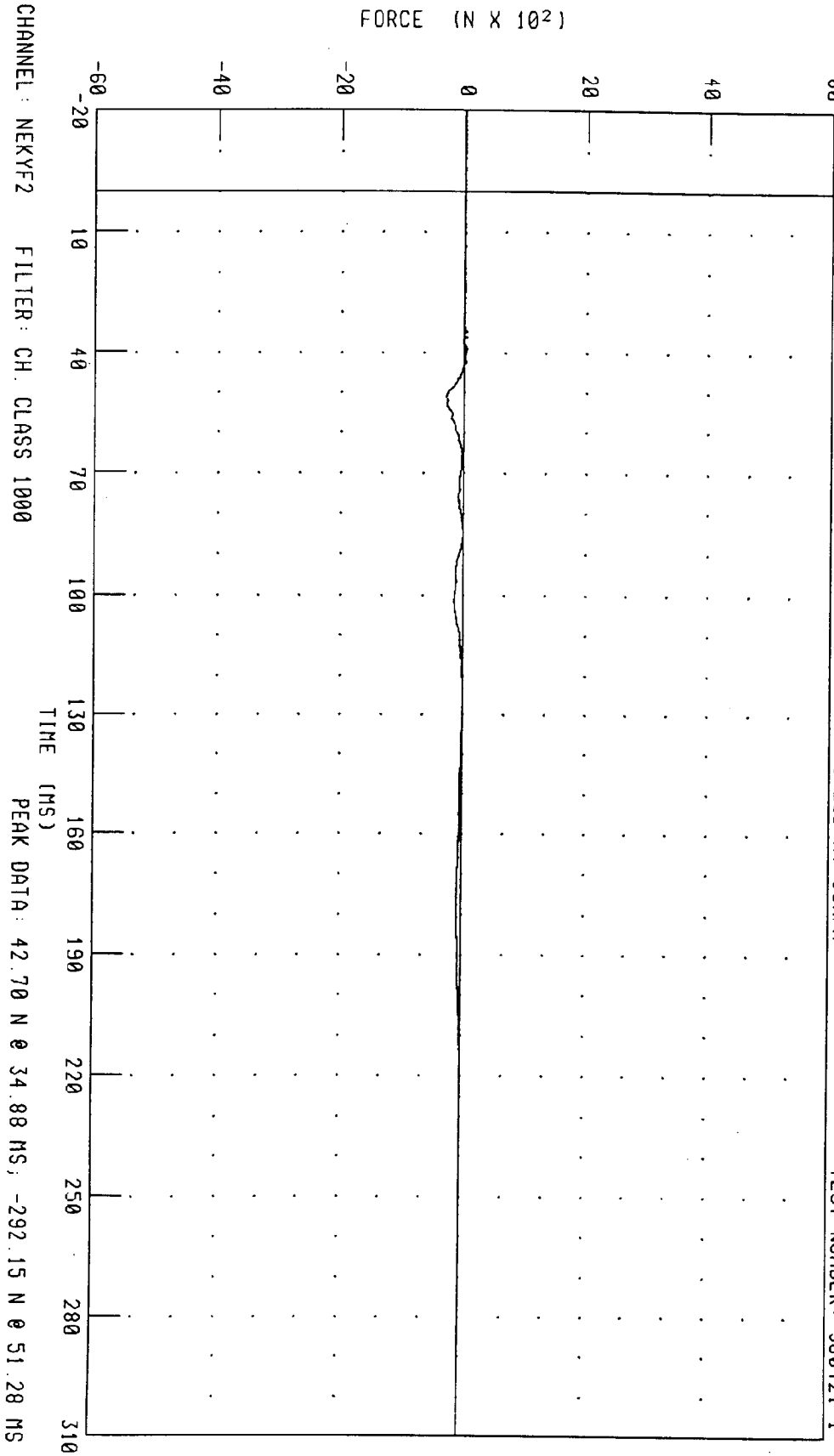
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

PASSENGER NECK Y-AXIS SHEAR FORCE

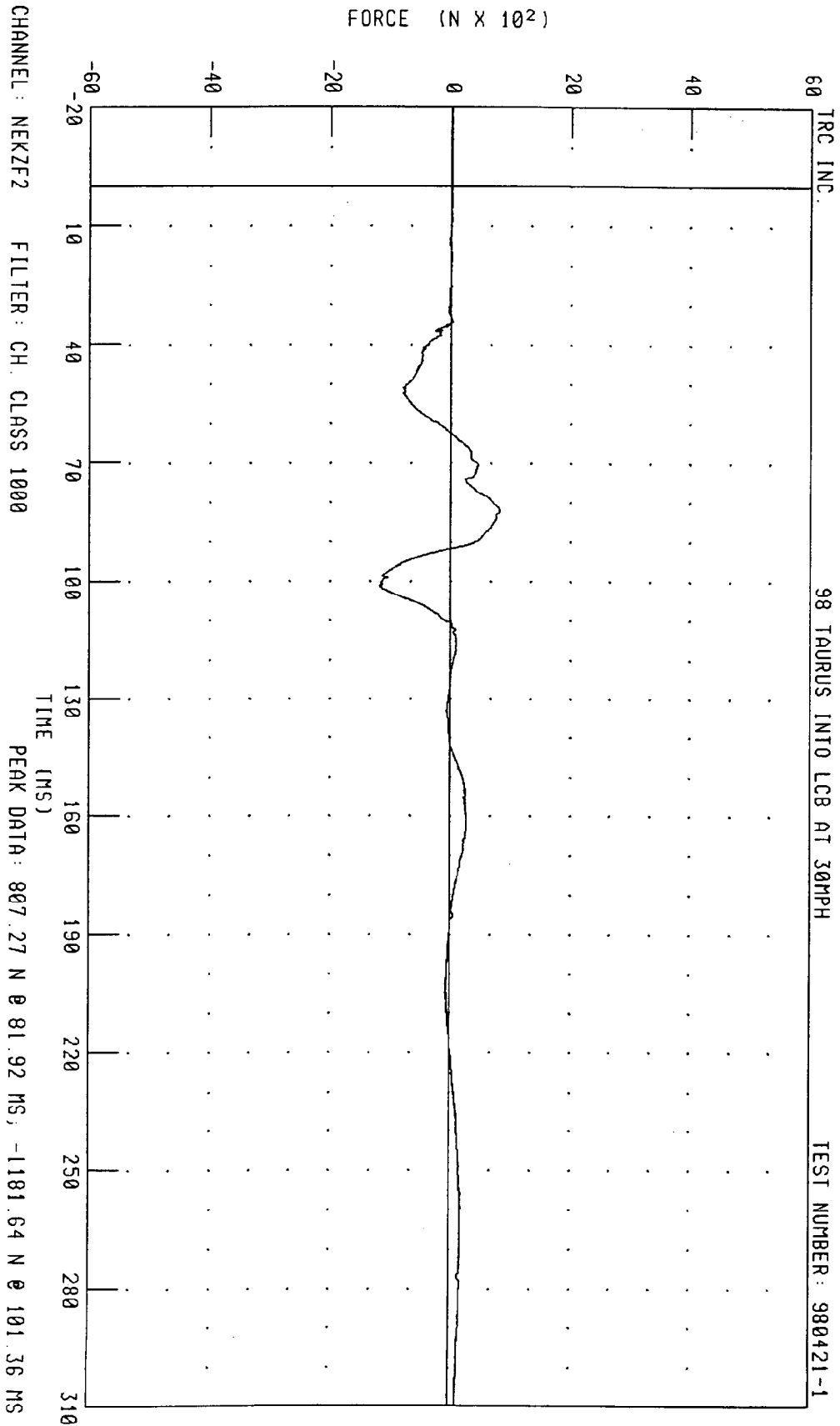
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

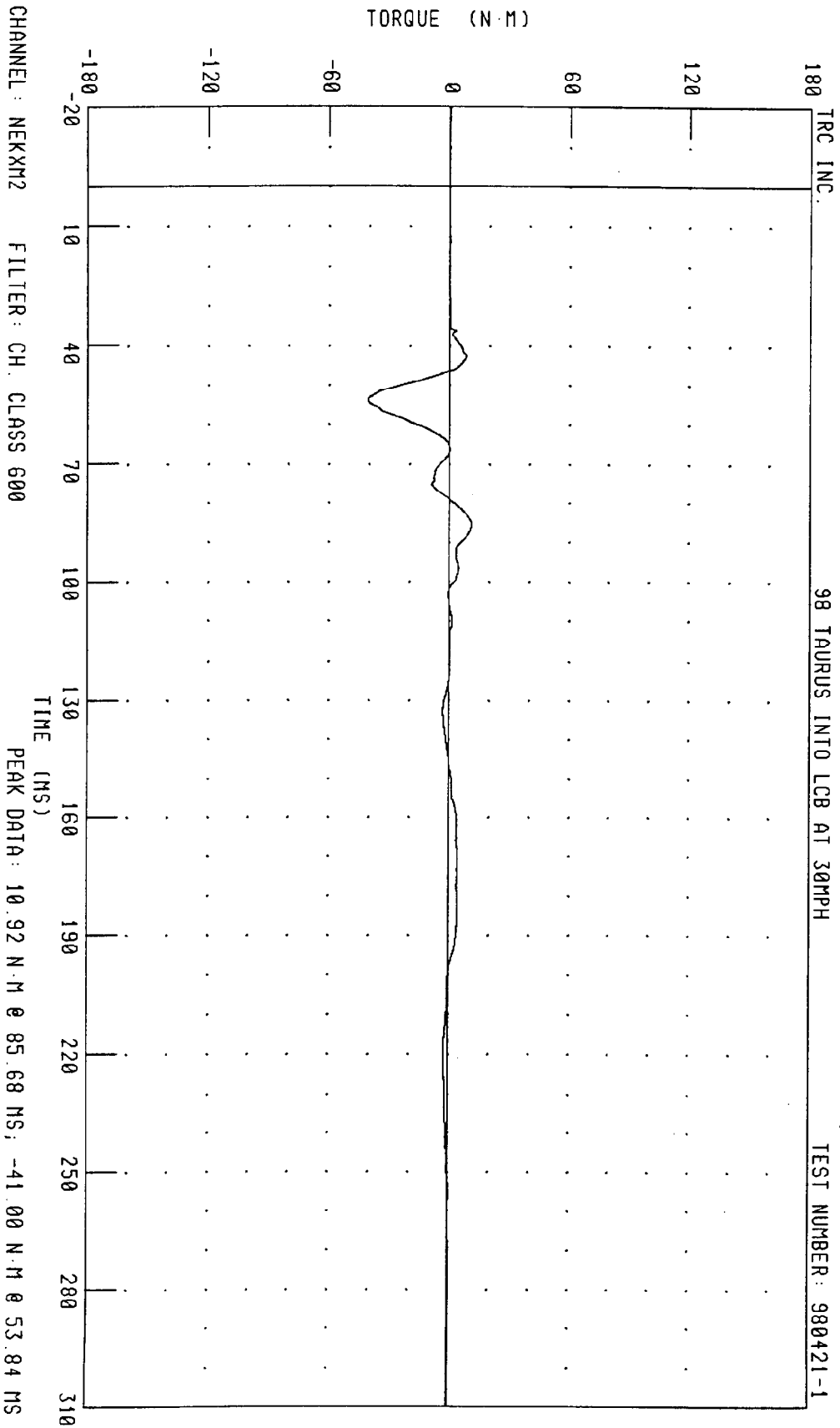
TRC INC.



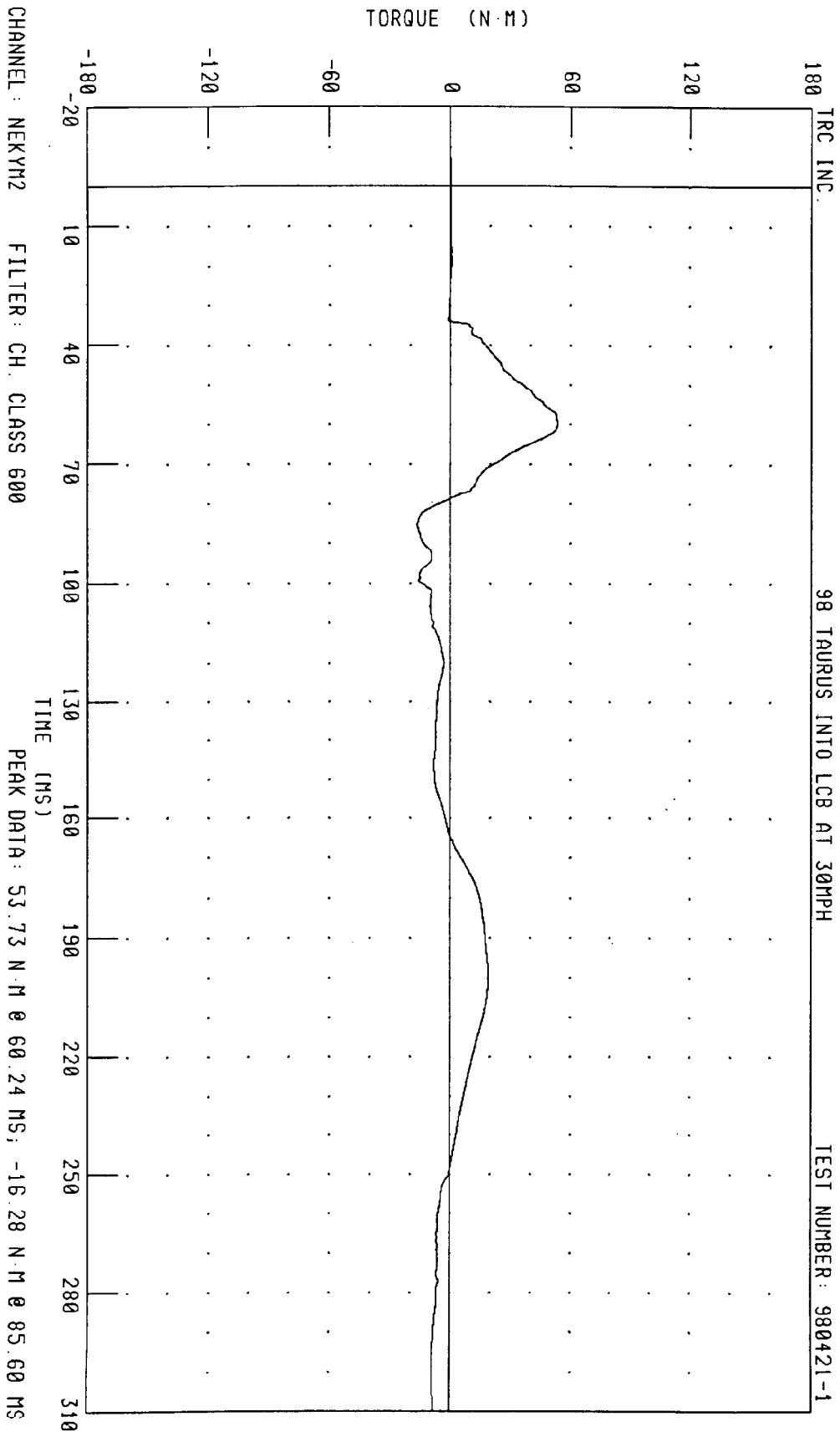
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER NECK Z-AXIS AXIAL FORCE
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1



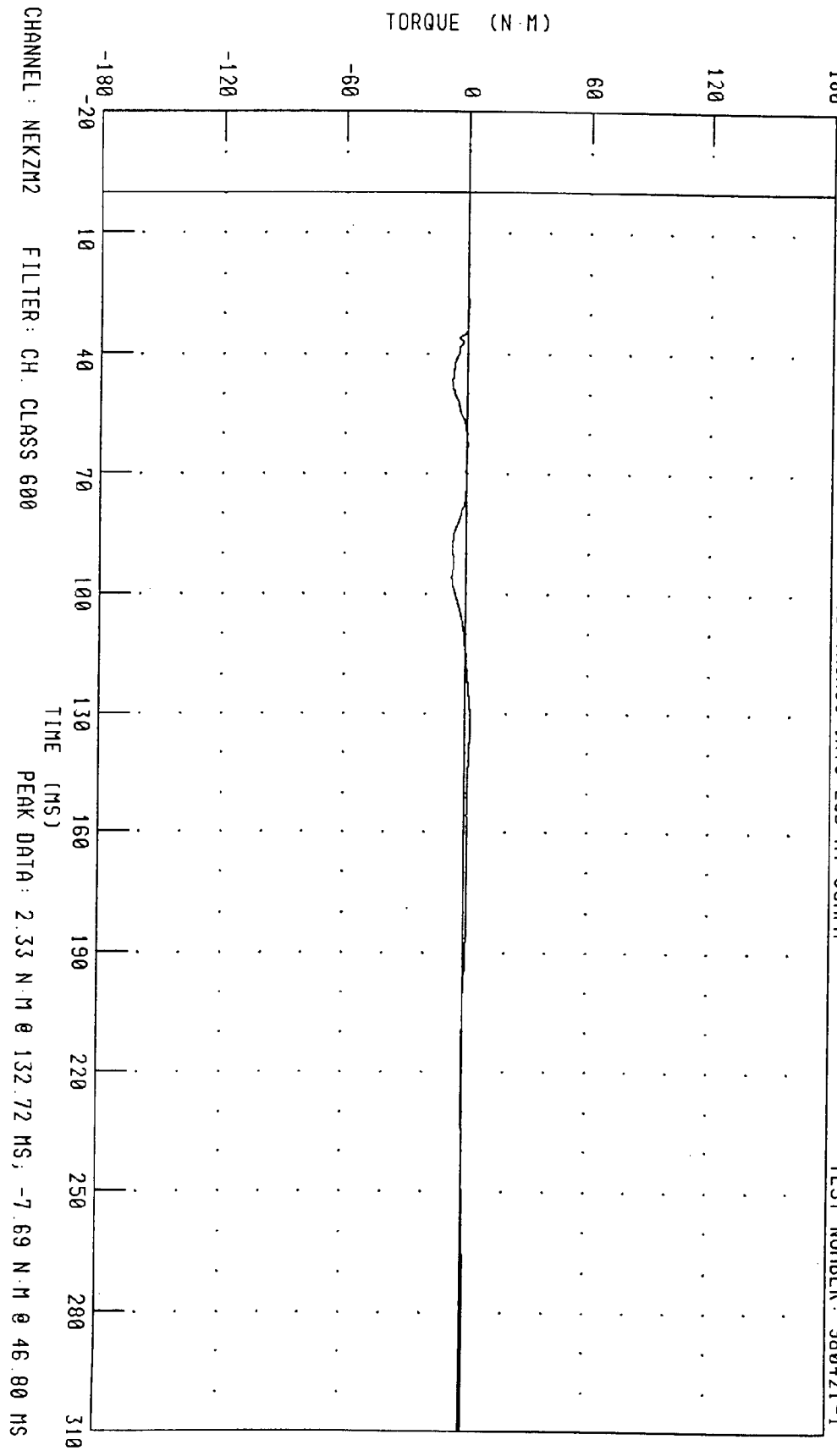
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER NECK MOMENT ABOUT X AXIS
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1



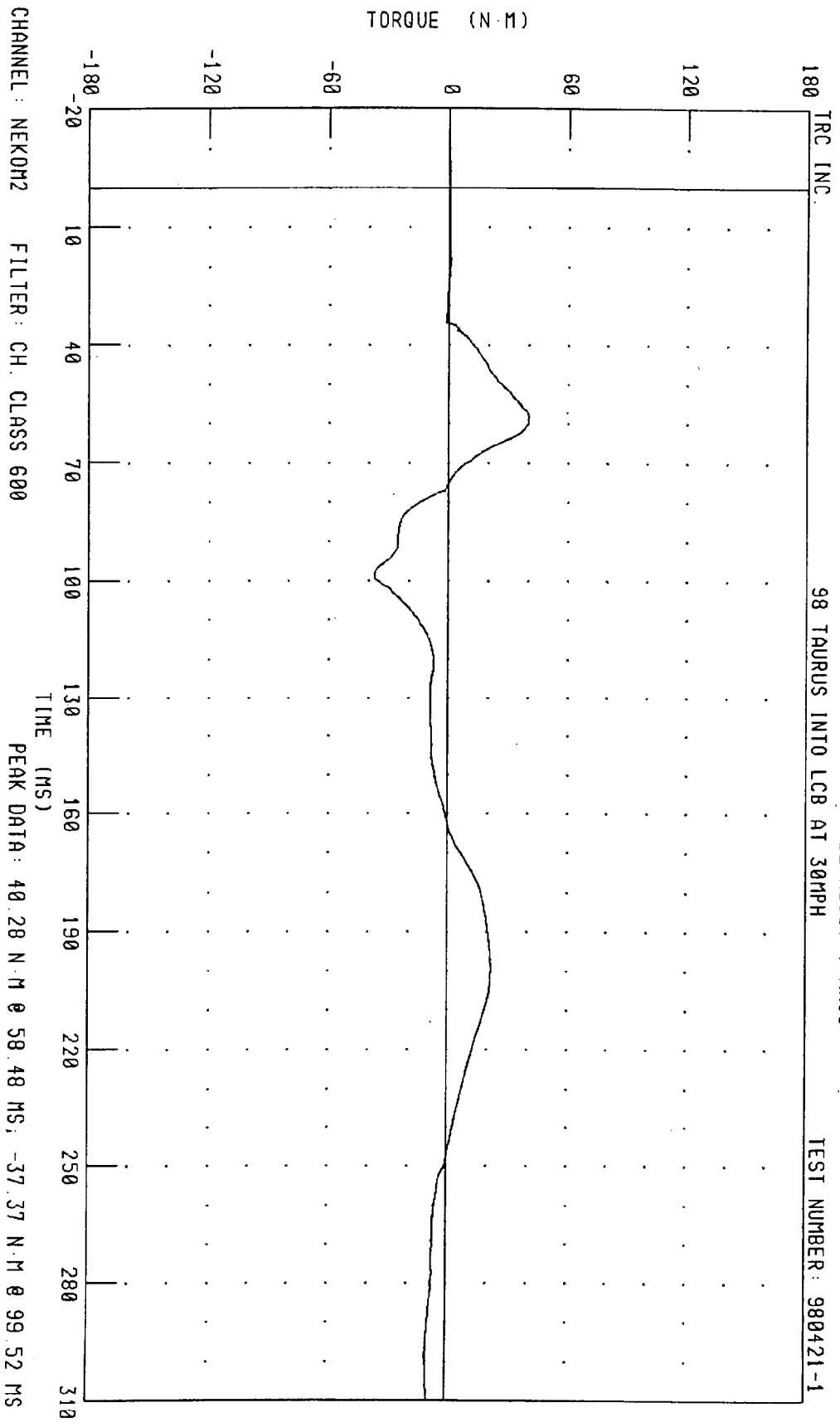
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER NECK MOMENT ABOUT Y AXIS
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER NECK MOMENT ABOUT Z AXIS
98 TAURUS INTO LCB AT 30MPH
TRC INC.
TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER NECK OCCIPITAL CONDYLE ABOUT Y AXIS
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1

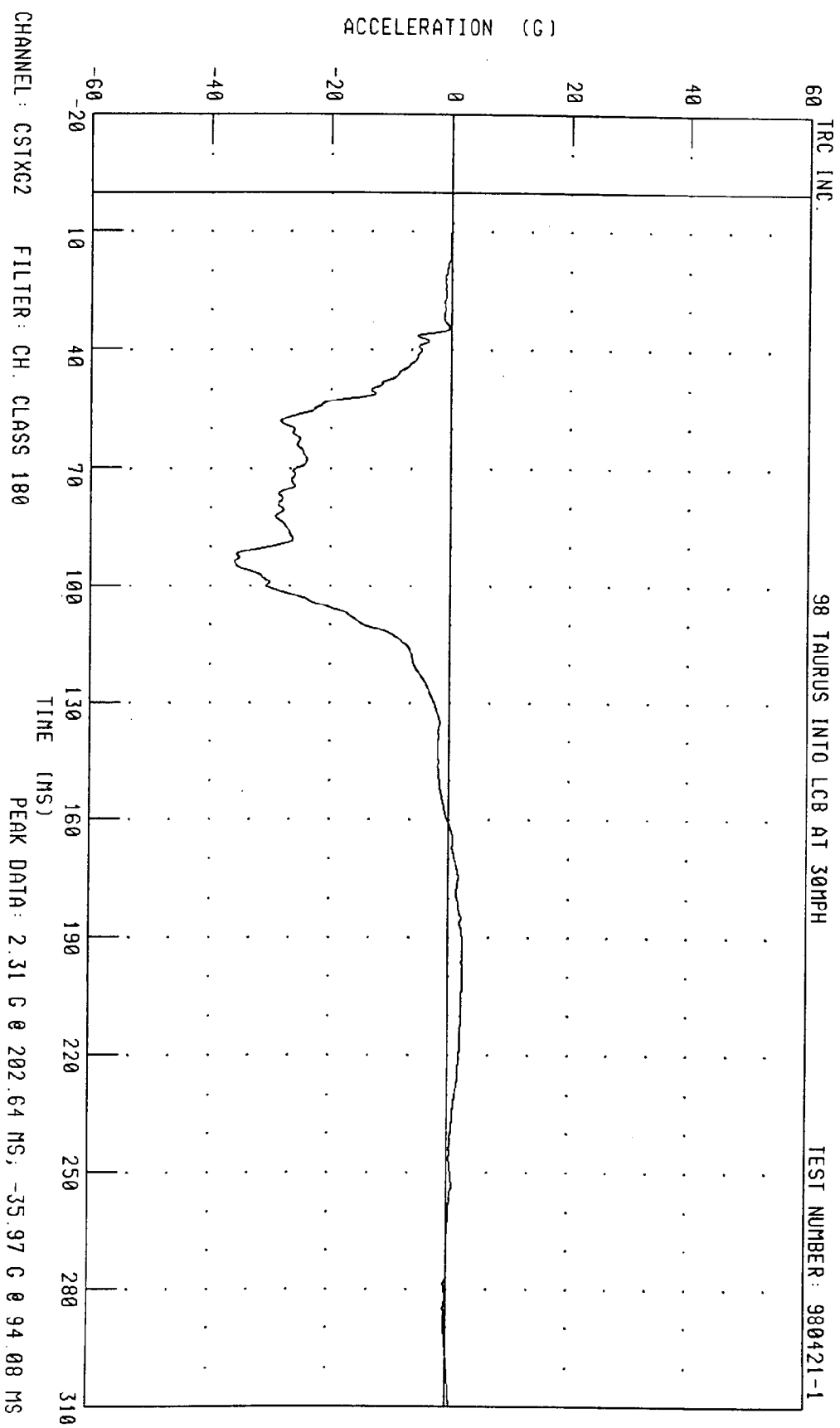


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

PASSENGER CHEST X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

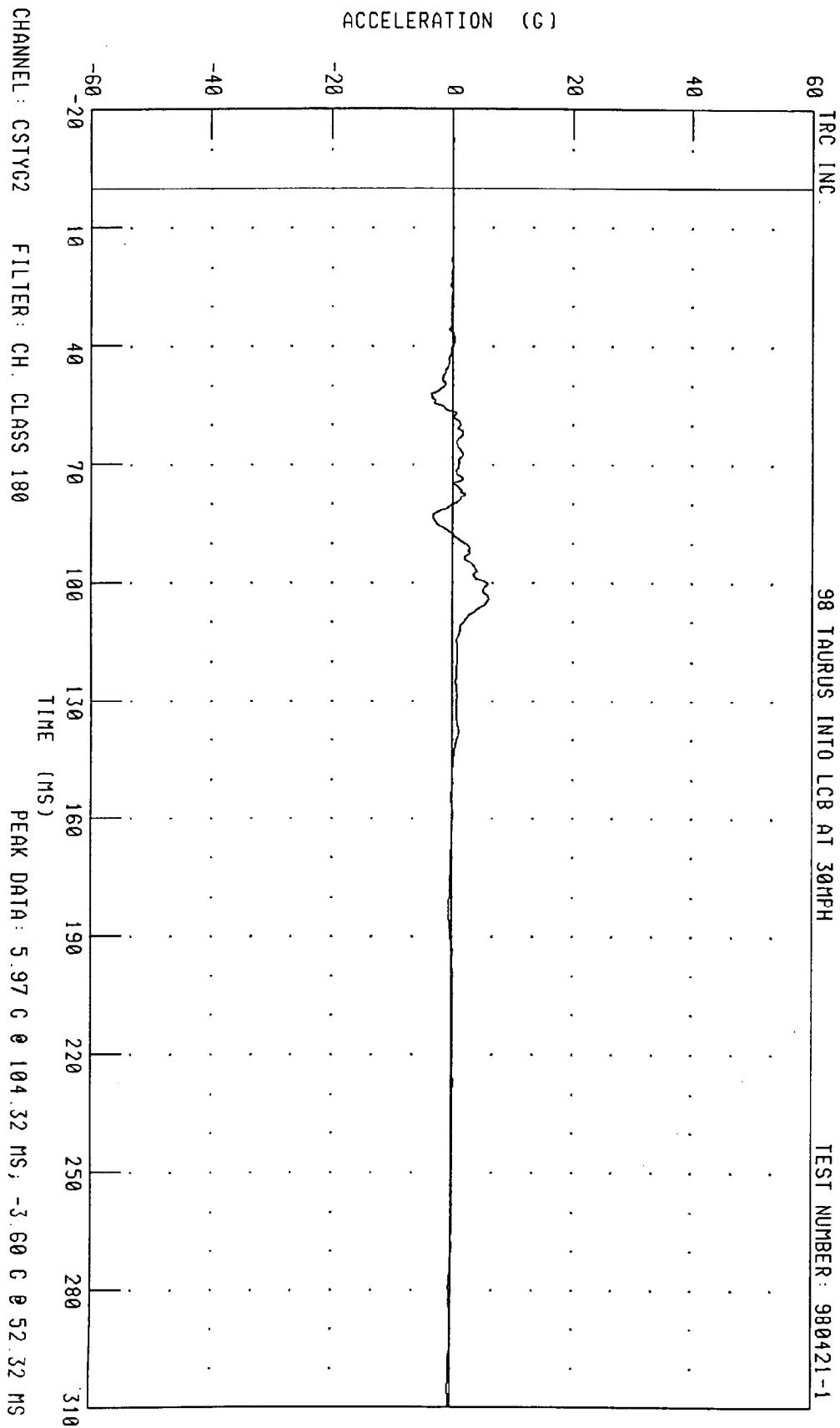


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

PASSENGER CHEST Y-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

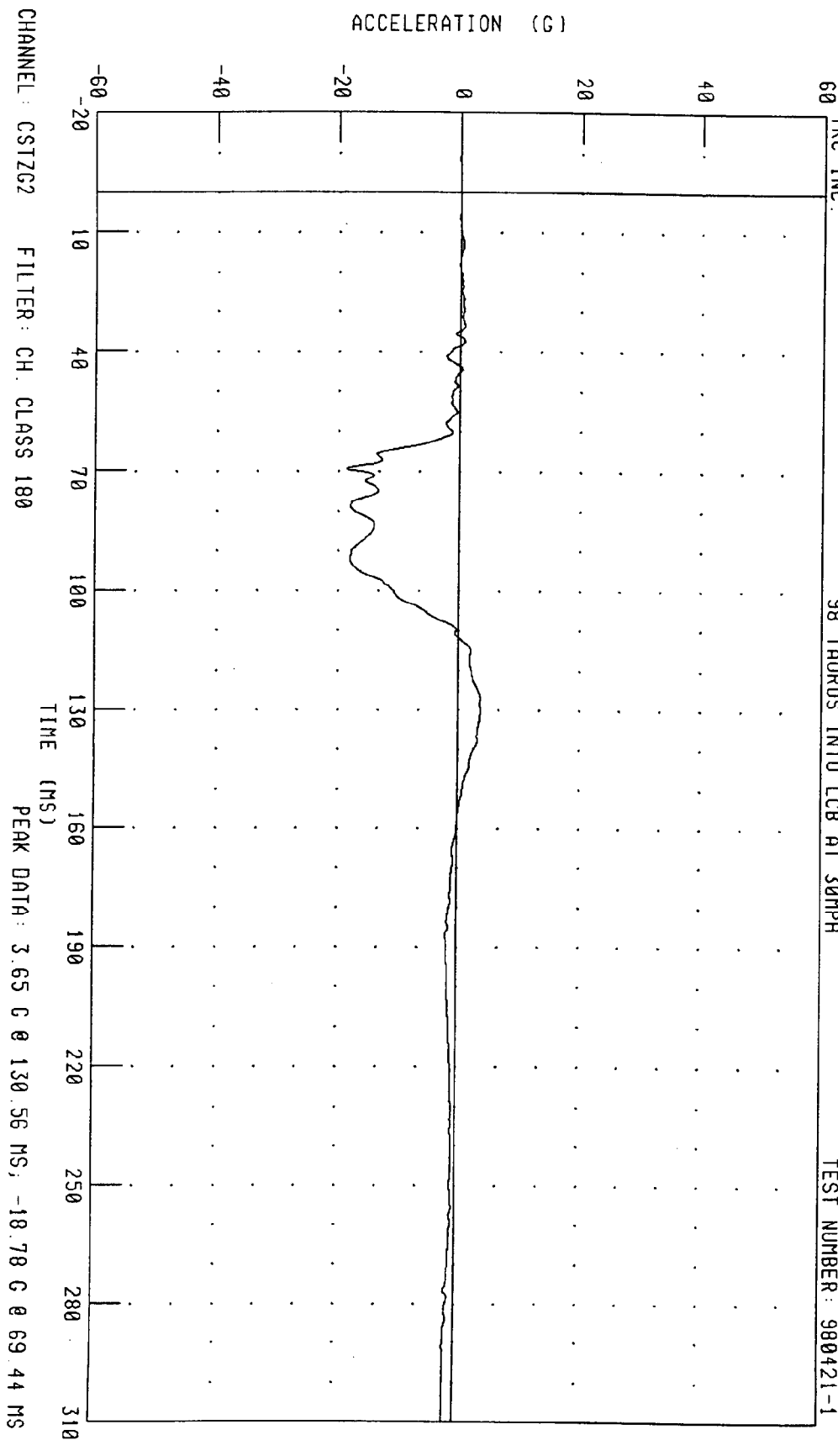


TRC INC.

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER CHEST Z-AXIS ACCELERATION

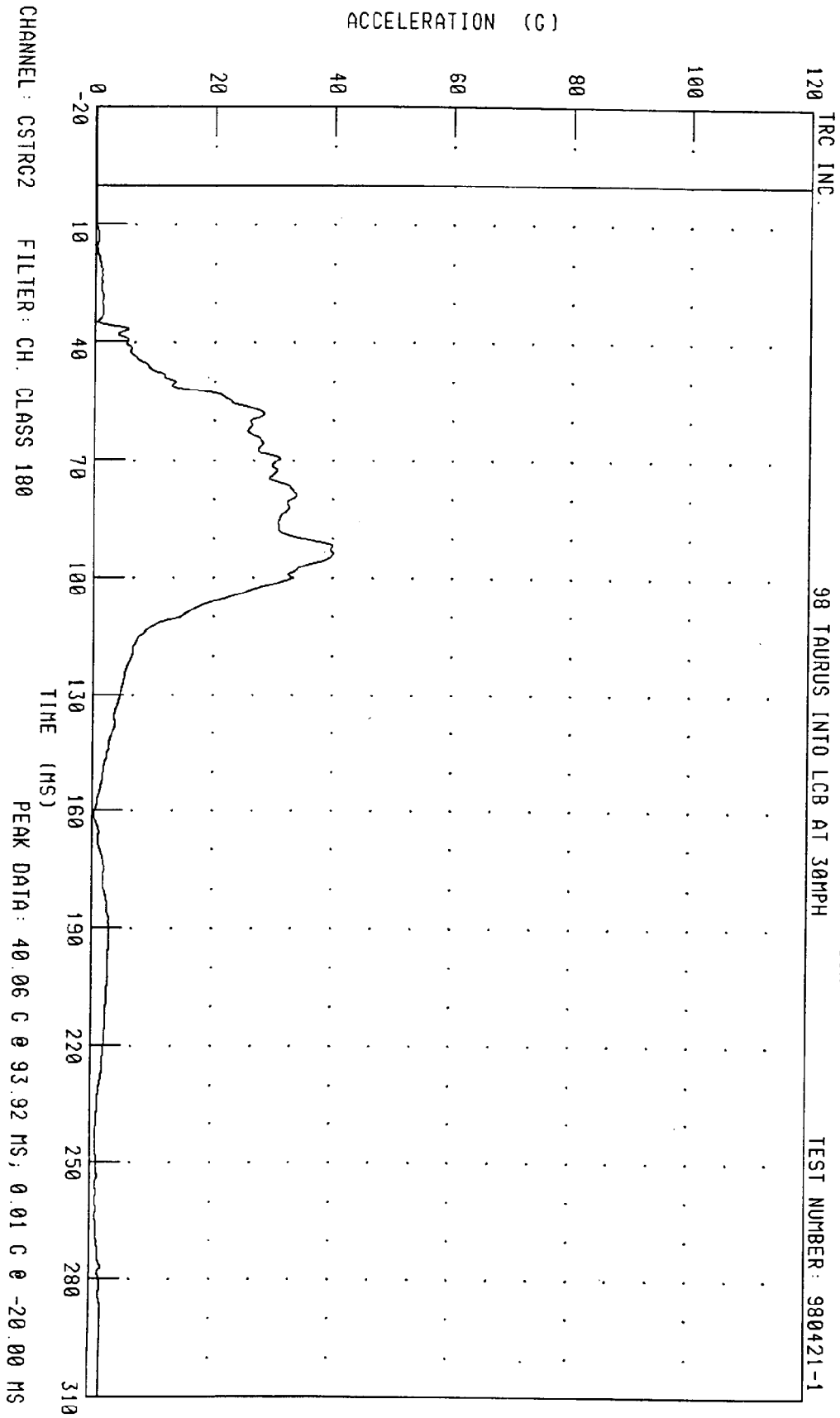


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

PASSENGER CHEST RESULTANT ACCELERATION

98 TAURUS INTO LCB AT 30MPH

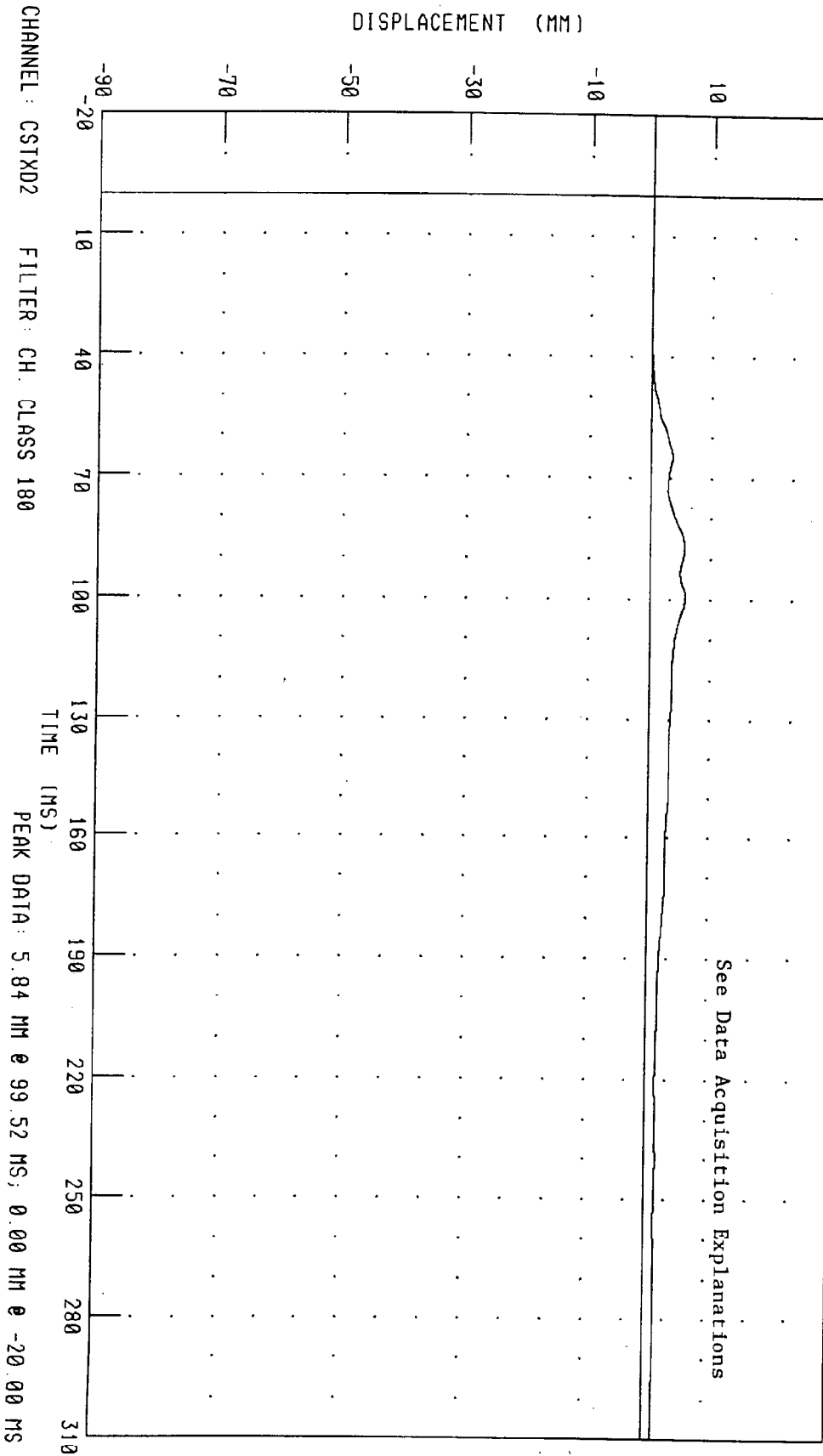
TEST NUMBER: 980421-1



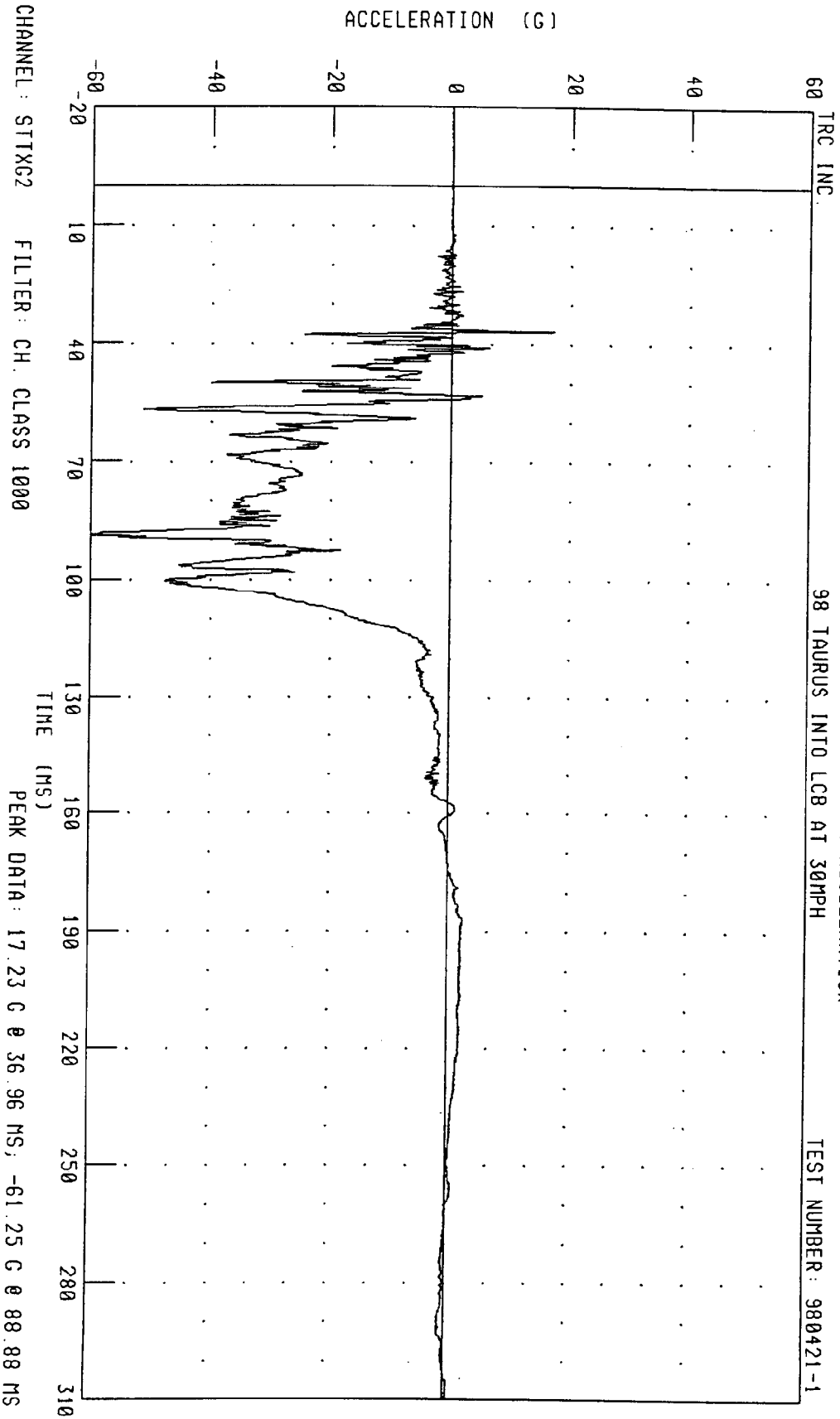
TRC INC.

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER CHEST DEFLECTION
98 TAURUS INTO LCB AT 30MPH

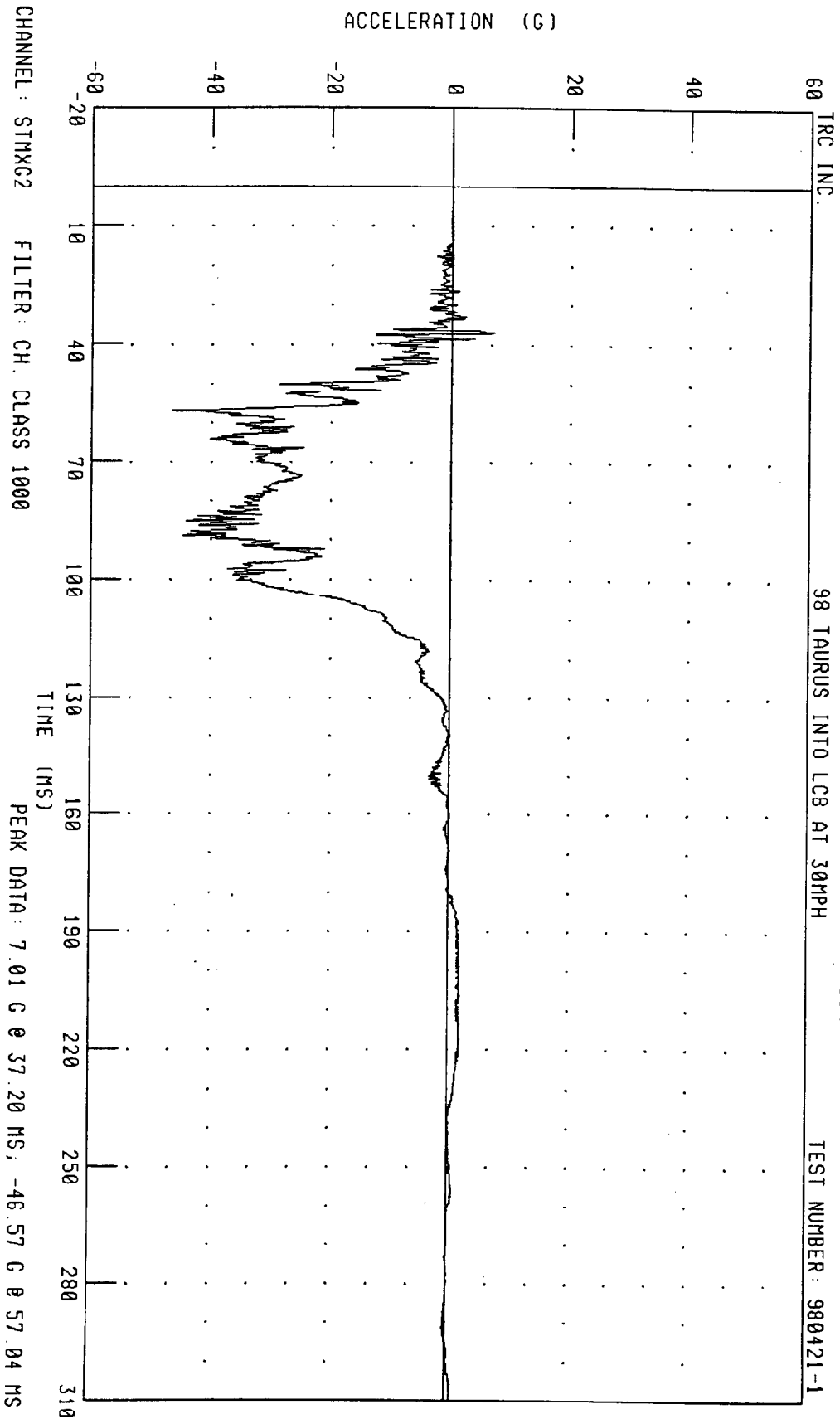
TEST NUMBER: 980421-1



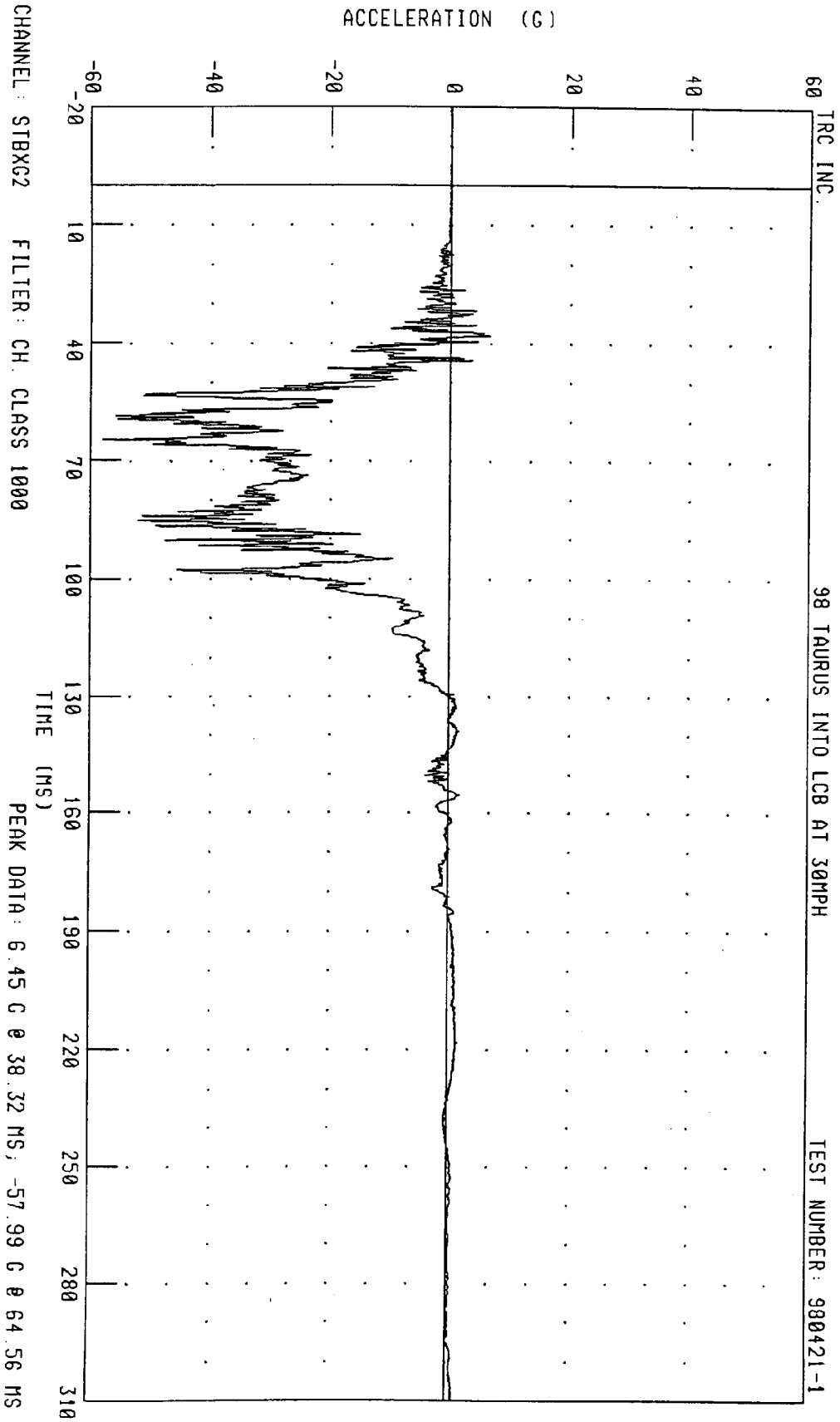
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER STERNUM TOP X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TRC INC.
TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER STERNUM MIDDLE X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER STERNUM BOTTOM X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1

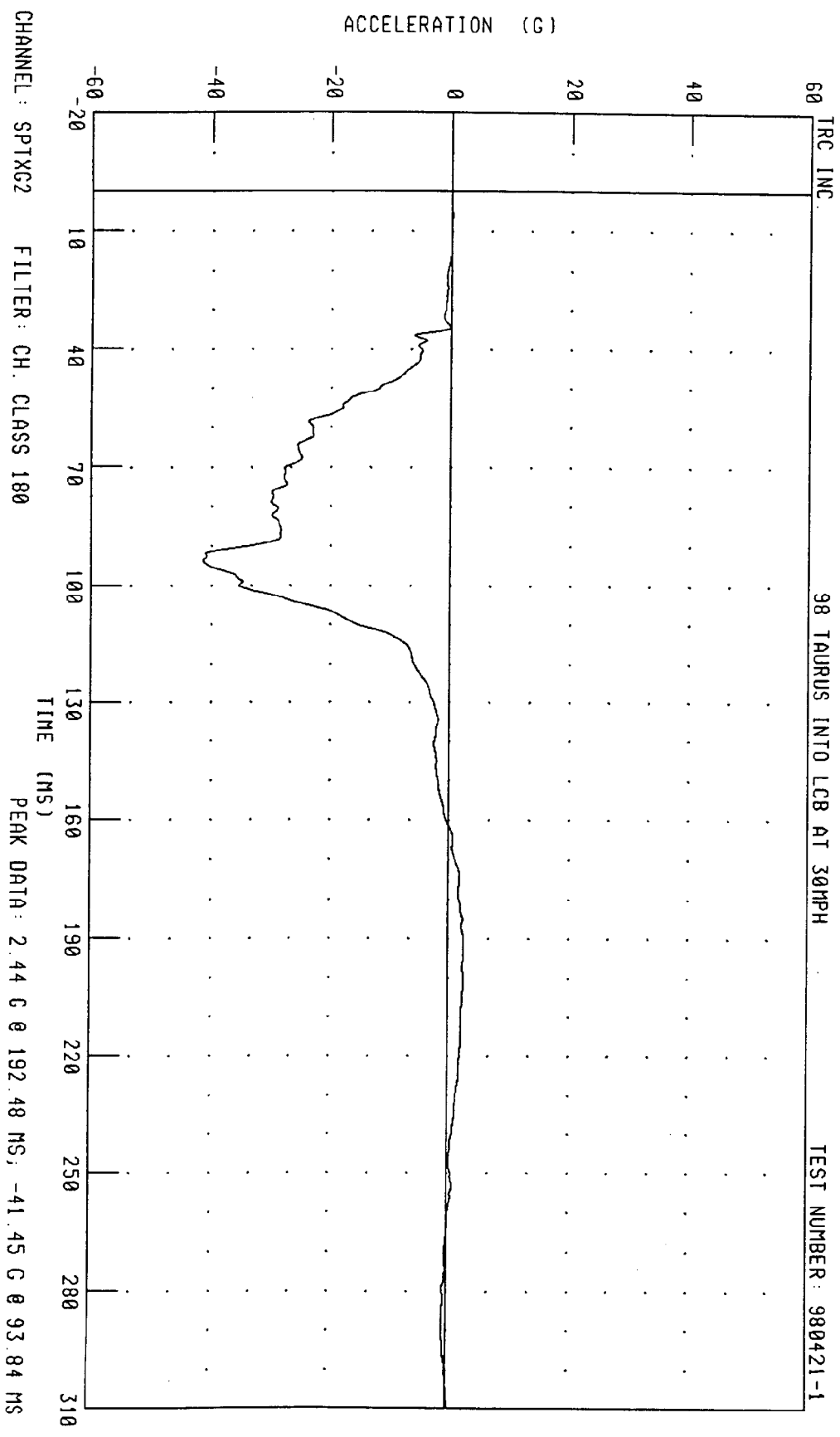


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

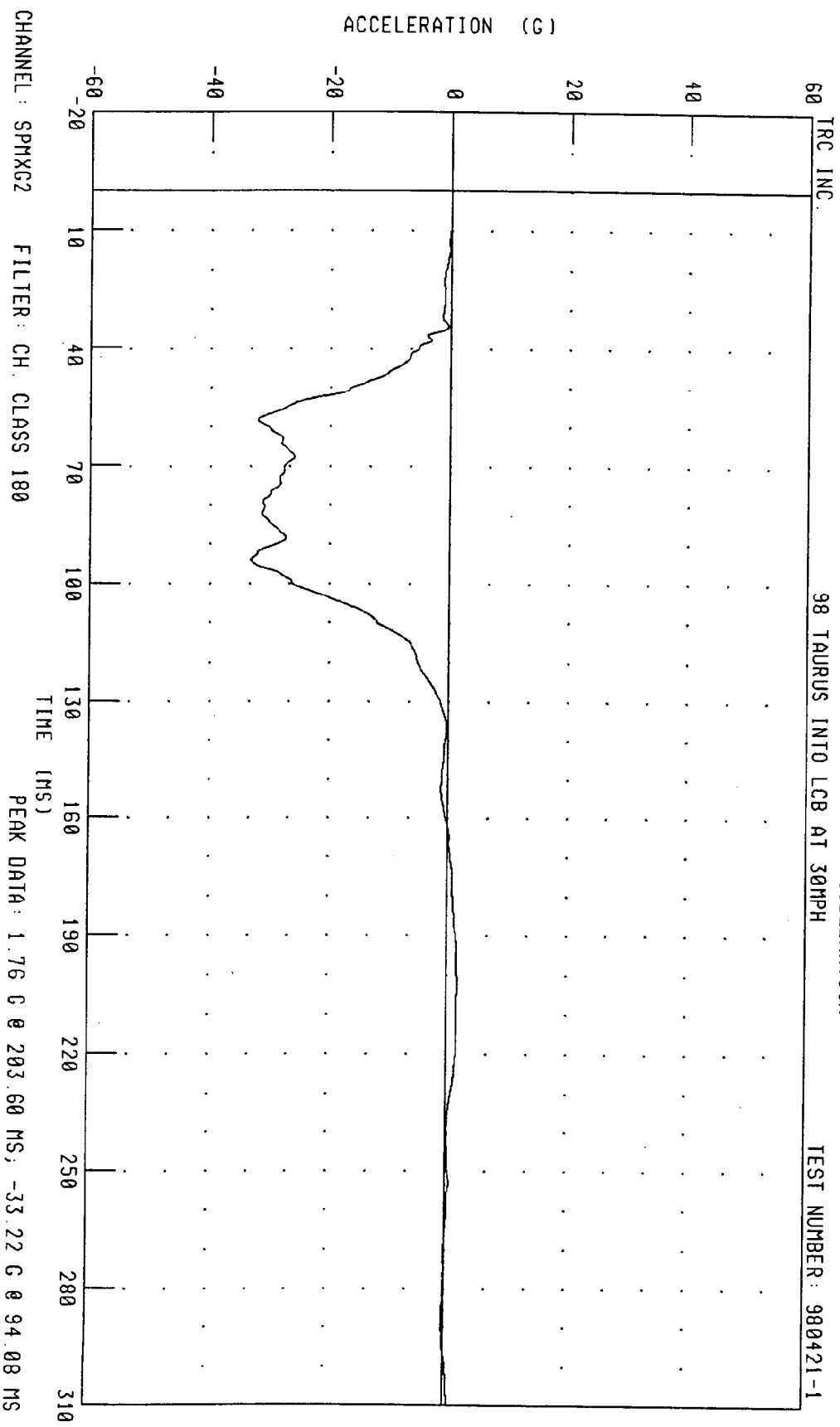
PASSENGER SPINE TOP X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER SPINE MIDDLE X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TRC INC.
TEST NUMBER: 980421-1



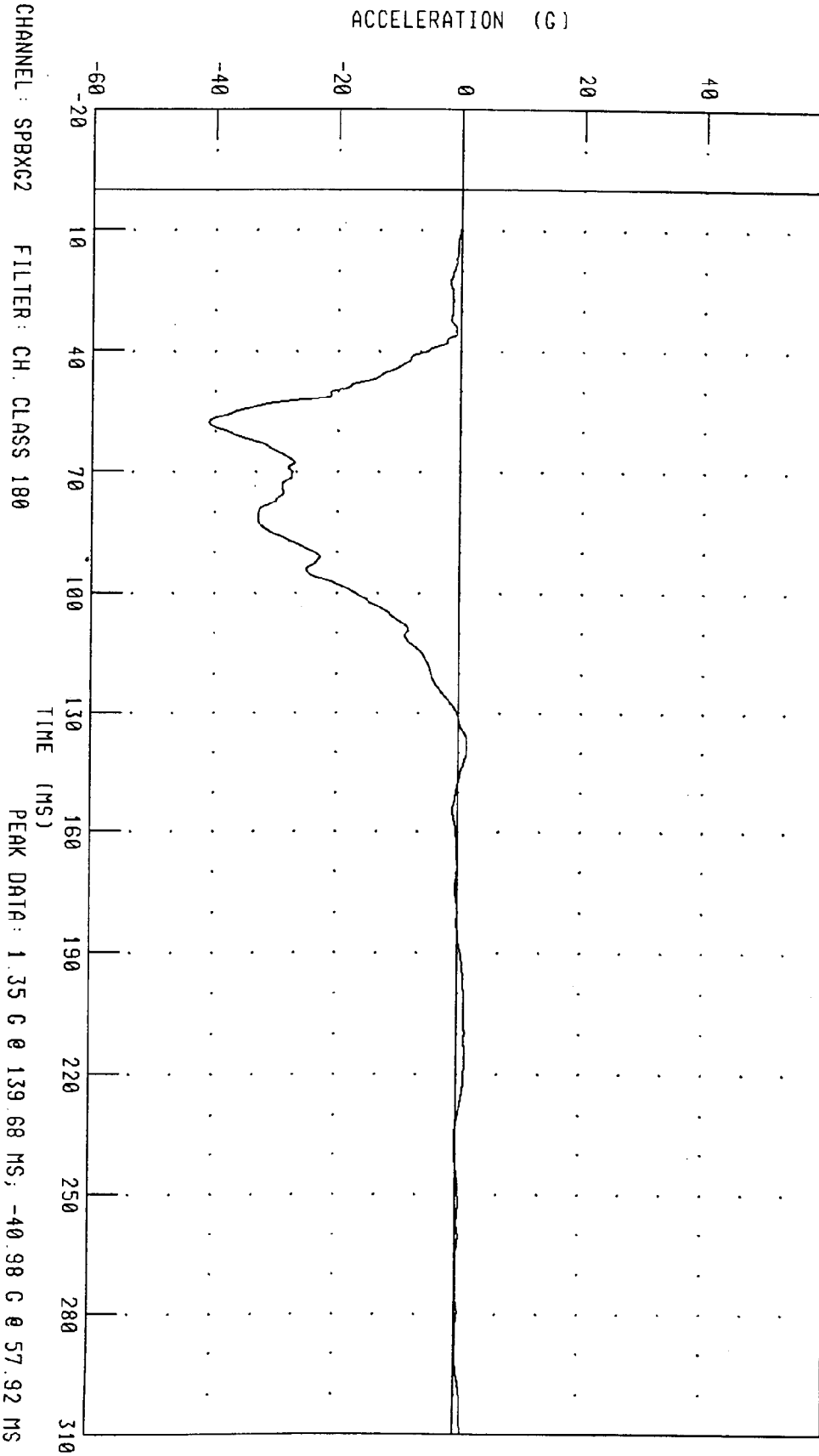
TRC INC.

98 TAURUS INTO LCB AT 30MPH

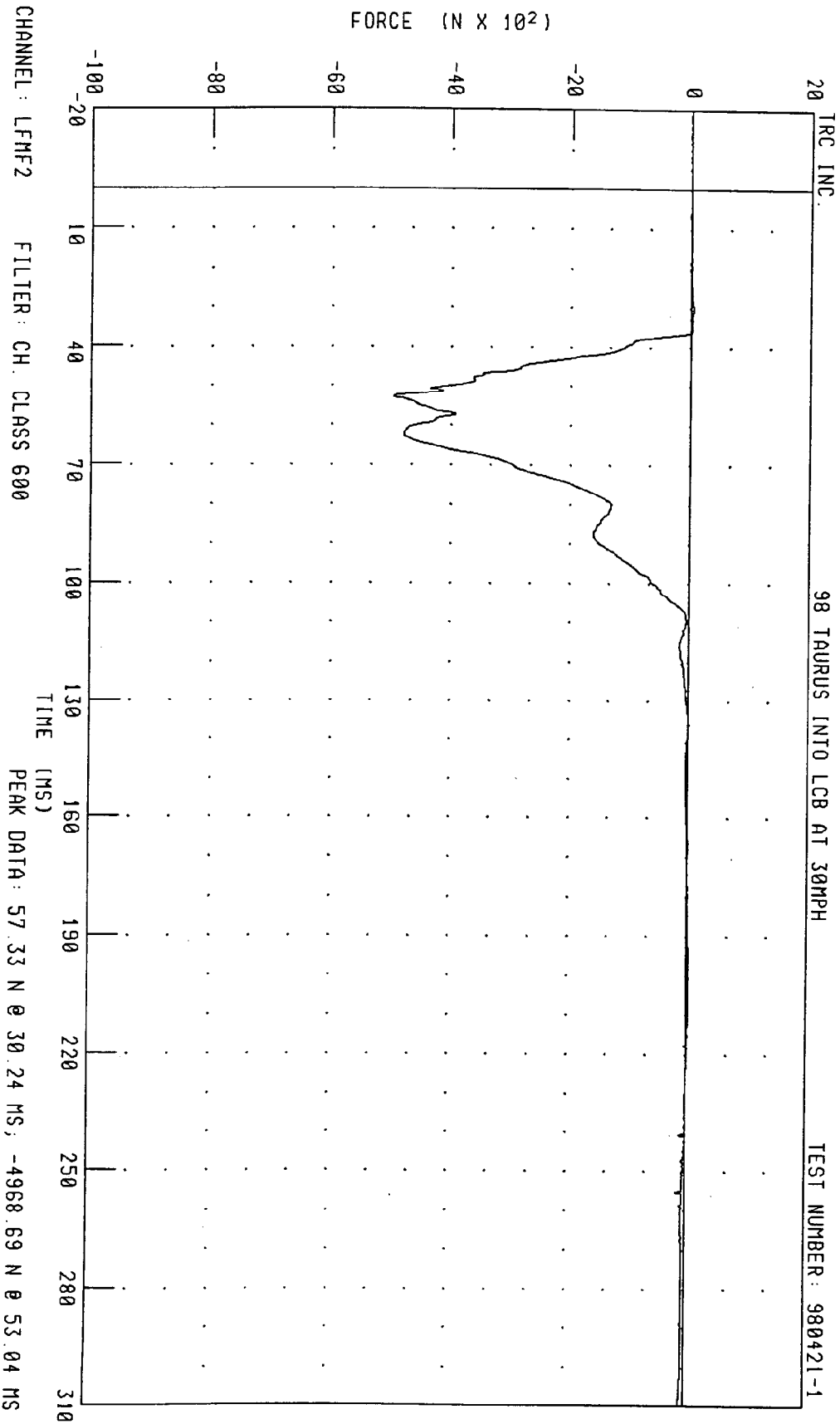
TEST NUMBER: 980421-1

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

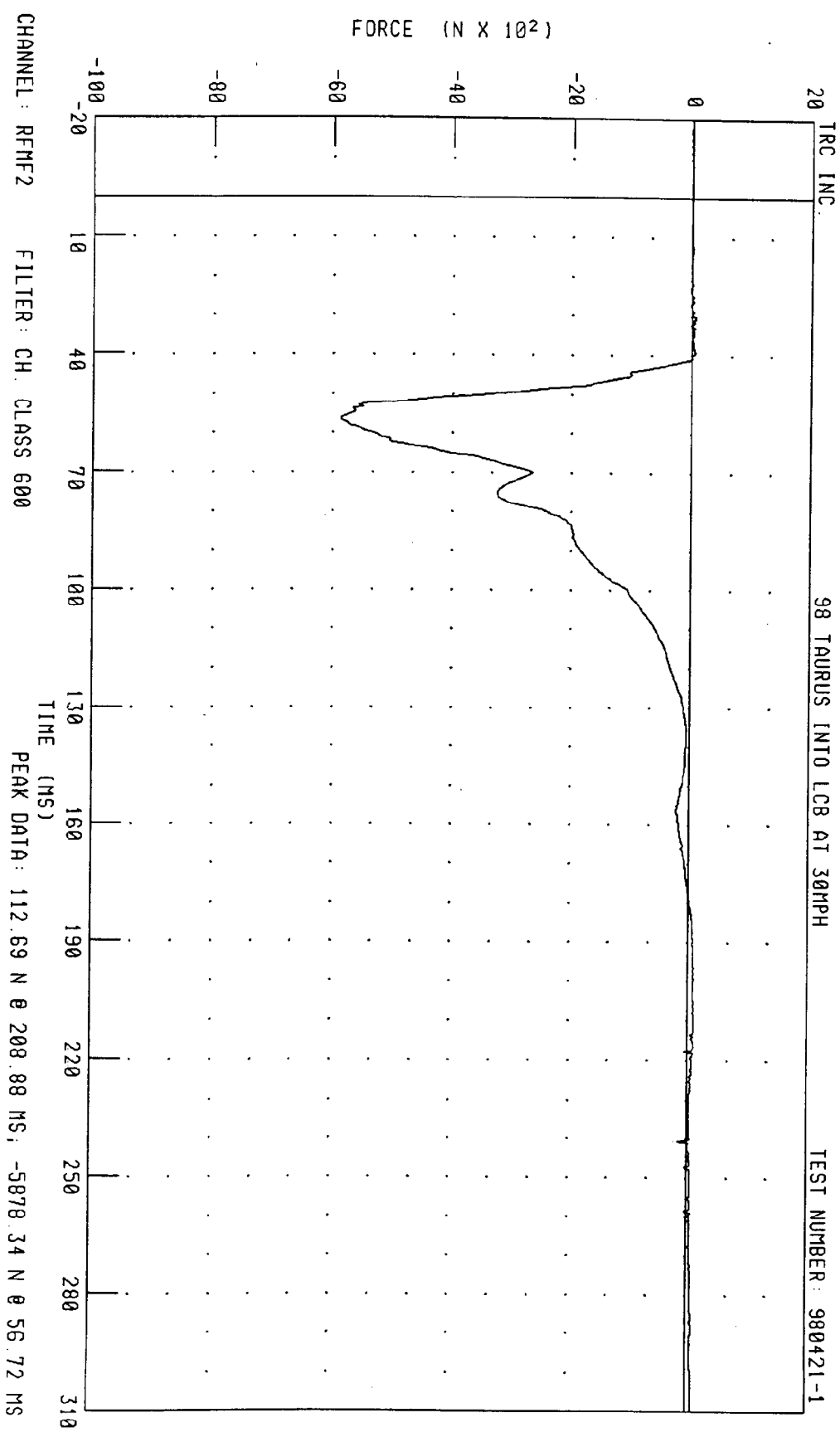
PASSENGER SPINE BOTTOM X-AXIS ACCELERATION



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER LEFT FEMUR FORCE
98 TAURUS INTO LCB AT 30MPH
TRC INC.
TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
PASSENGER RIGHT FEMUR FORCE
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1

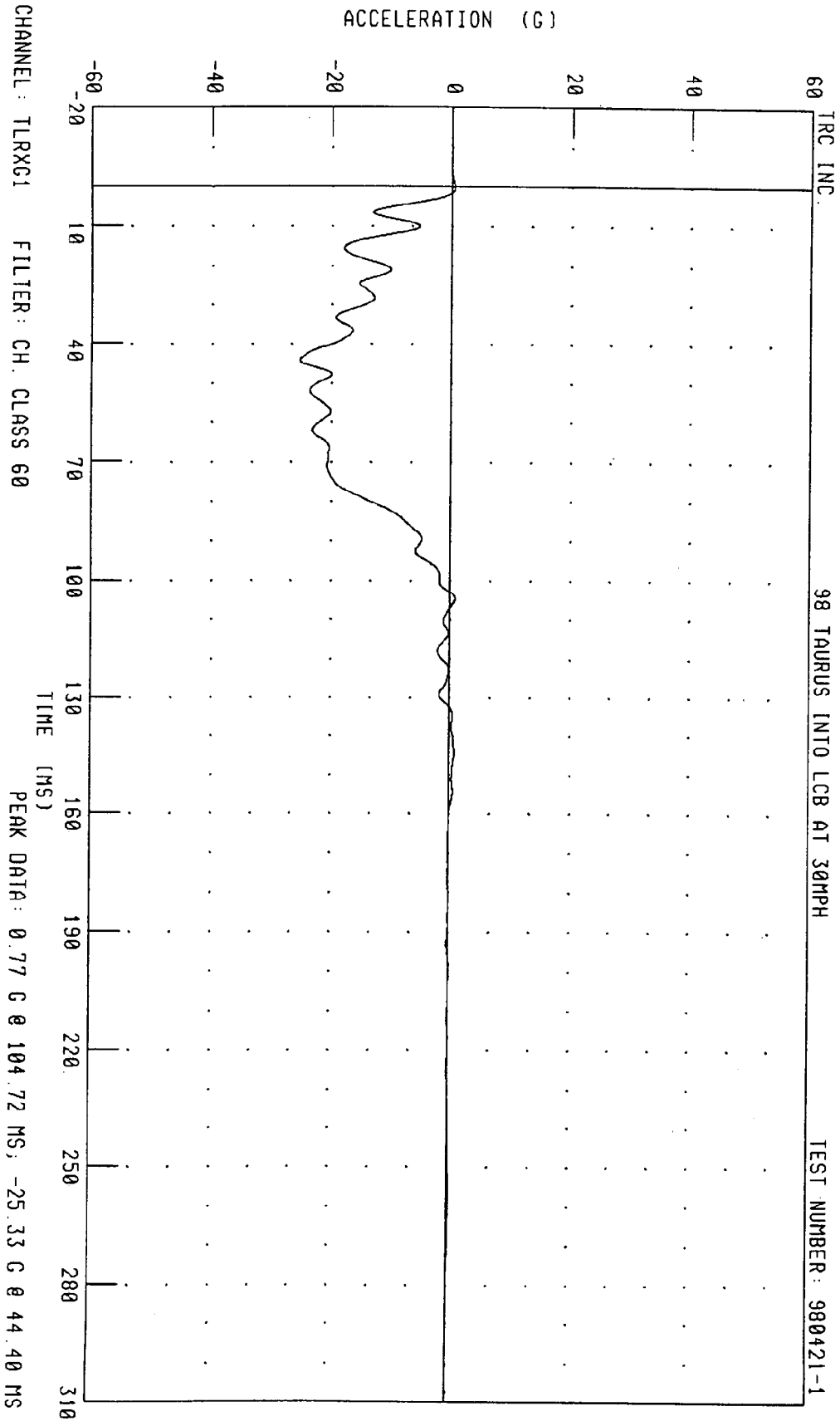


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LEFT REAR SEAT X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



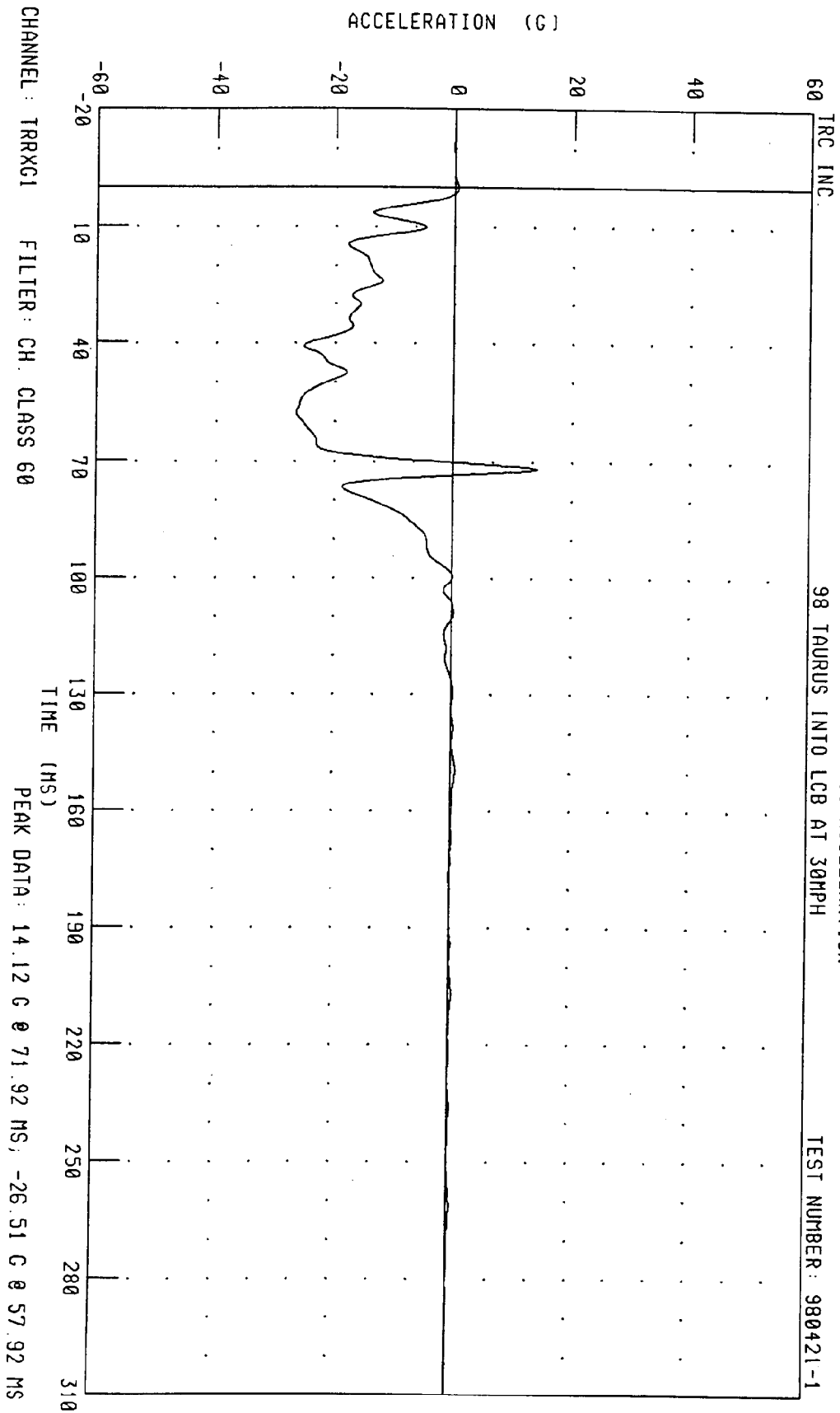
TRC INC.

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

RIGHT REAR SEAT X-AXIS ACCELERATION

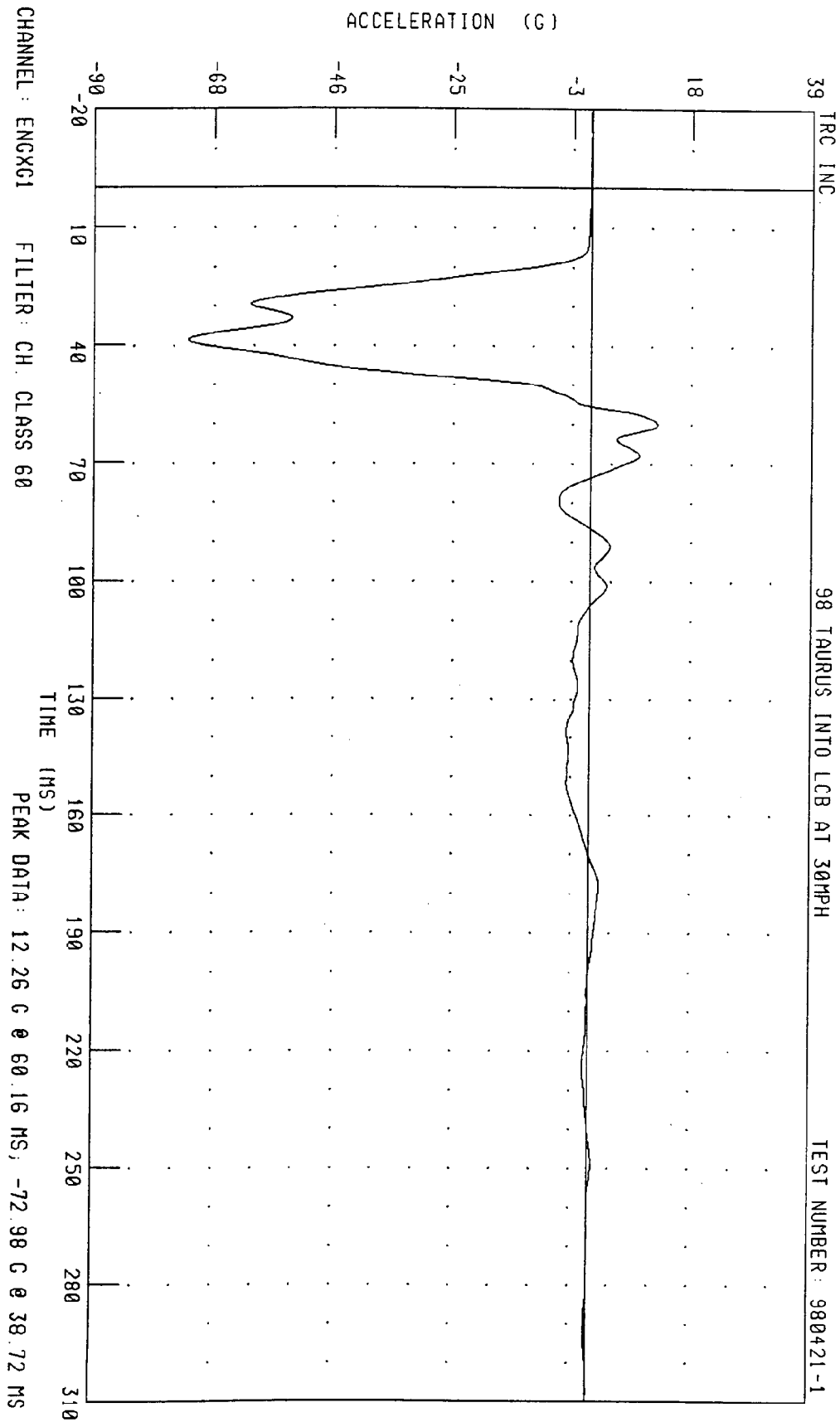


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

ENGINE TOP X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

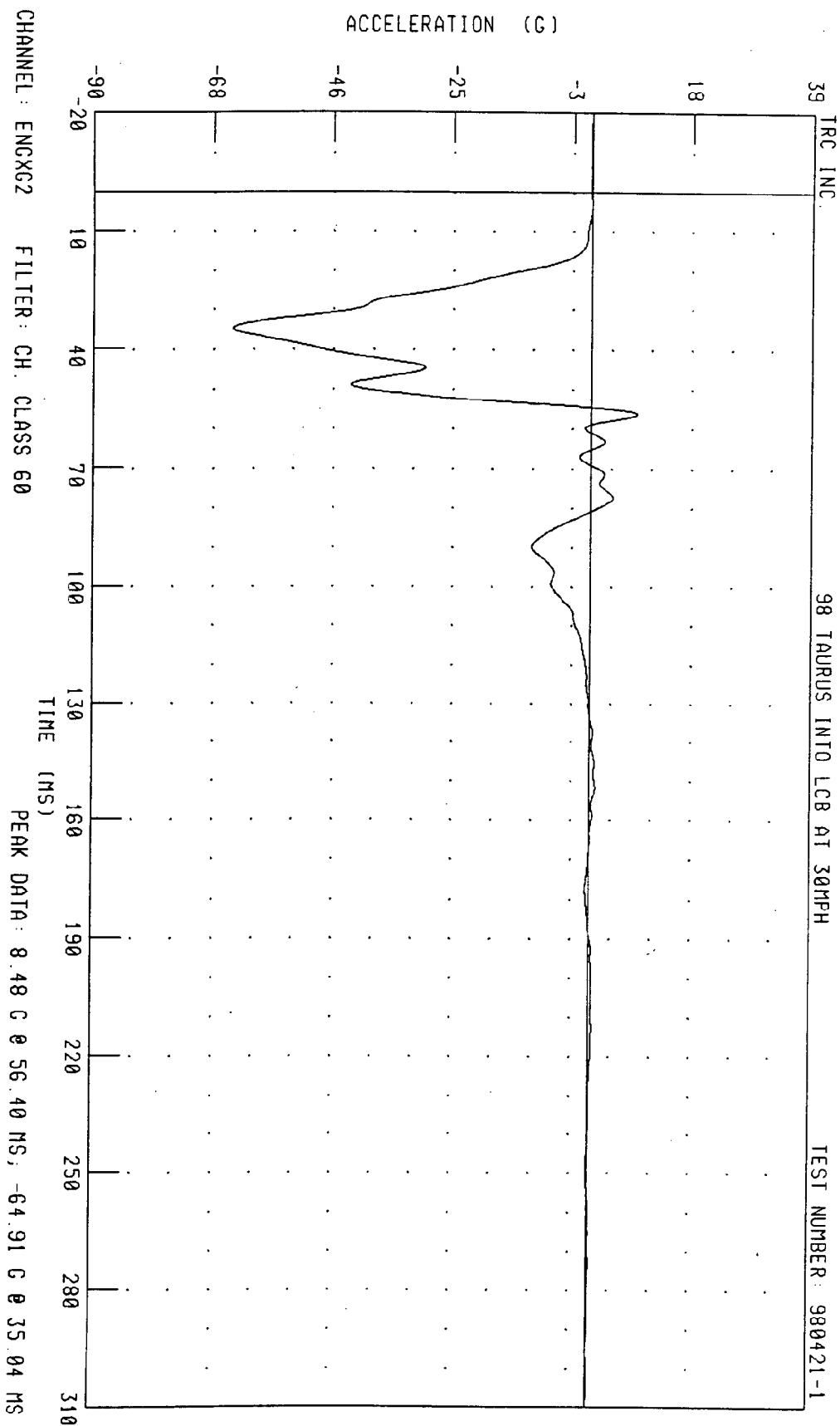


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

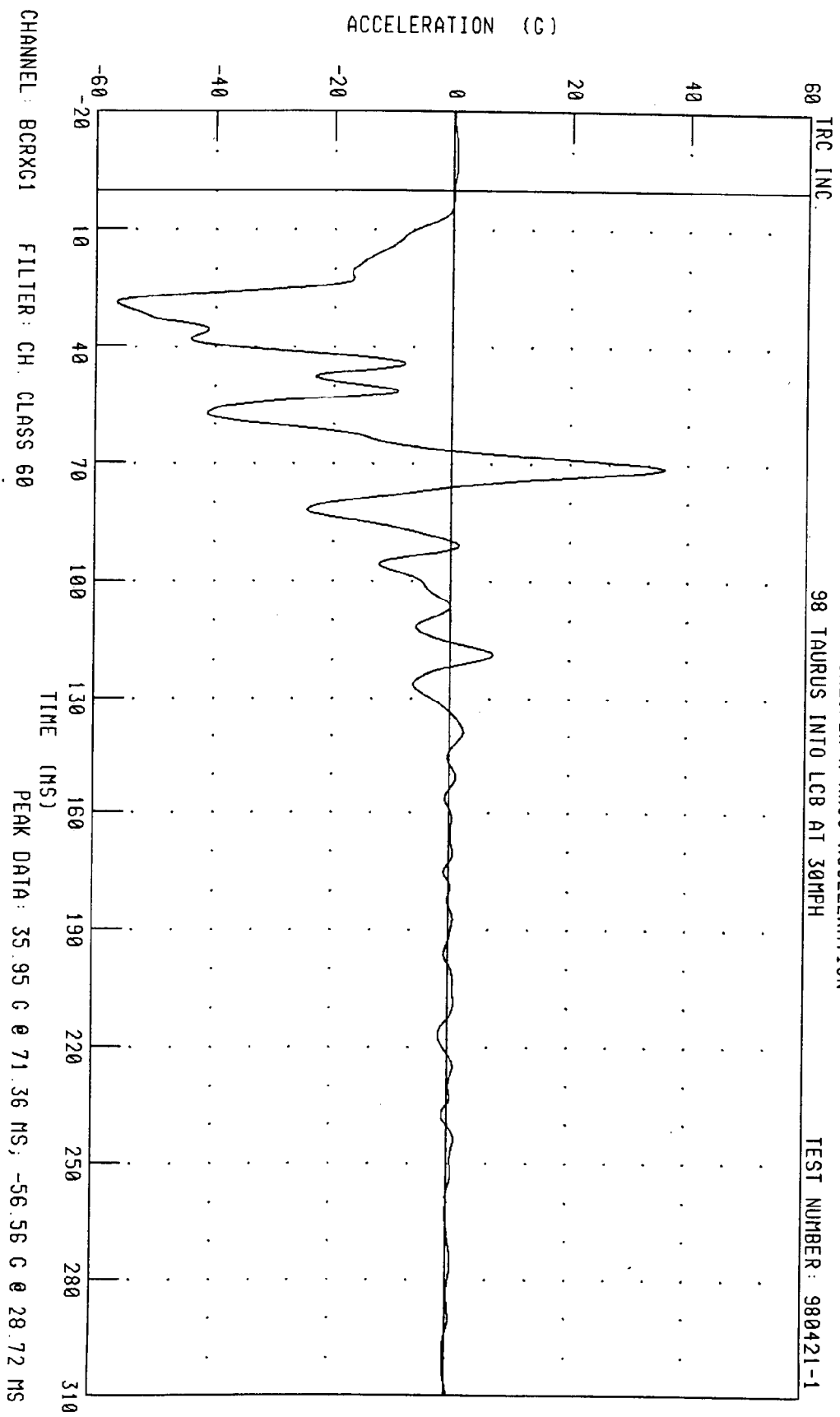
ENGINE BOTTOM X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
RIGHT BRAKE CALIPER X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1

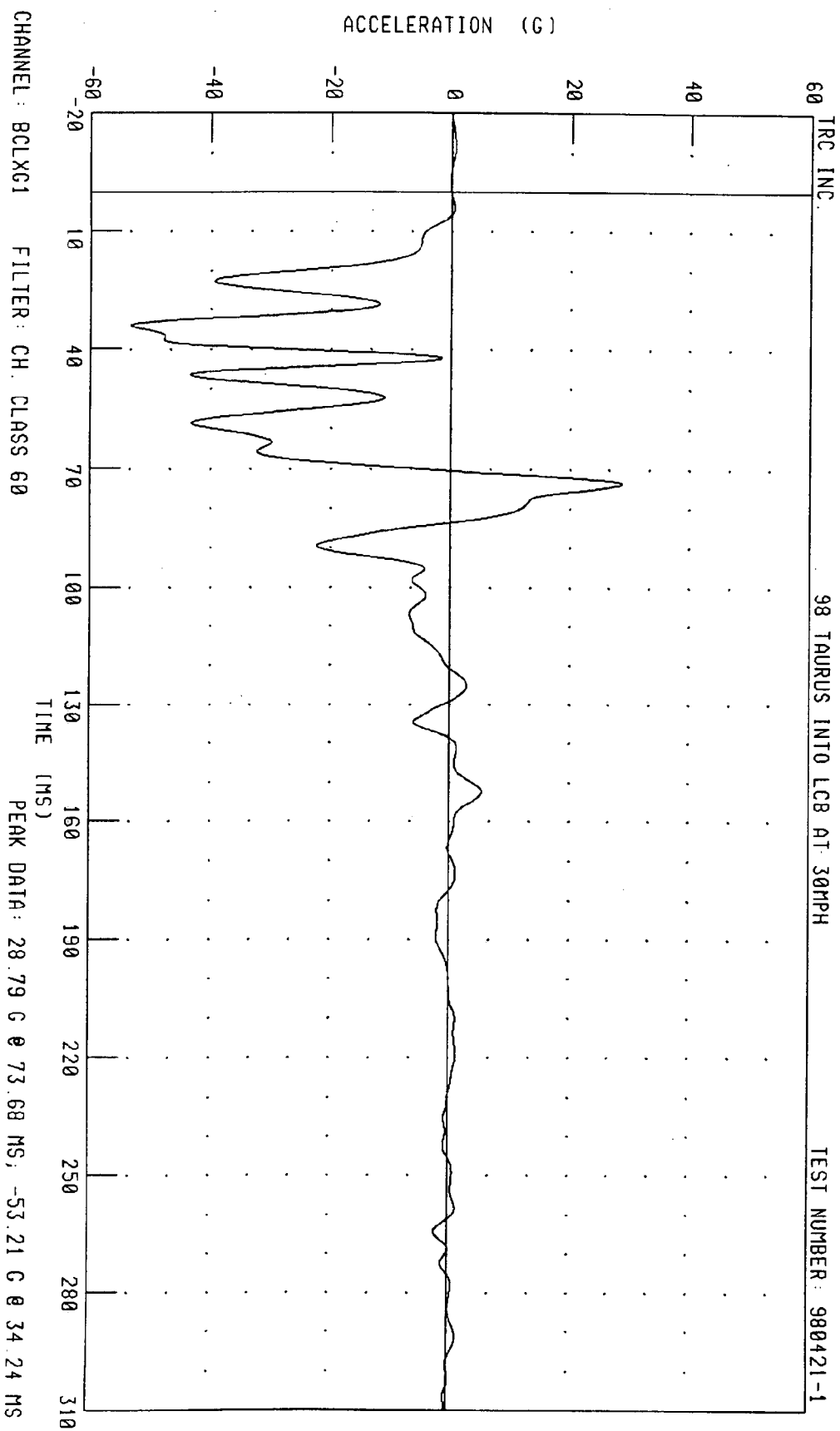


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LEFT BRAKE CALIPER X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

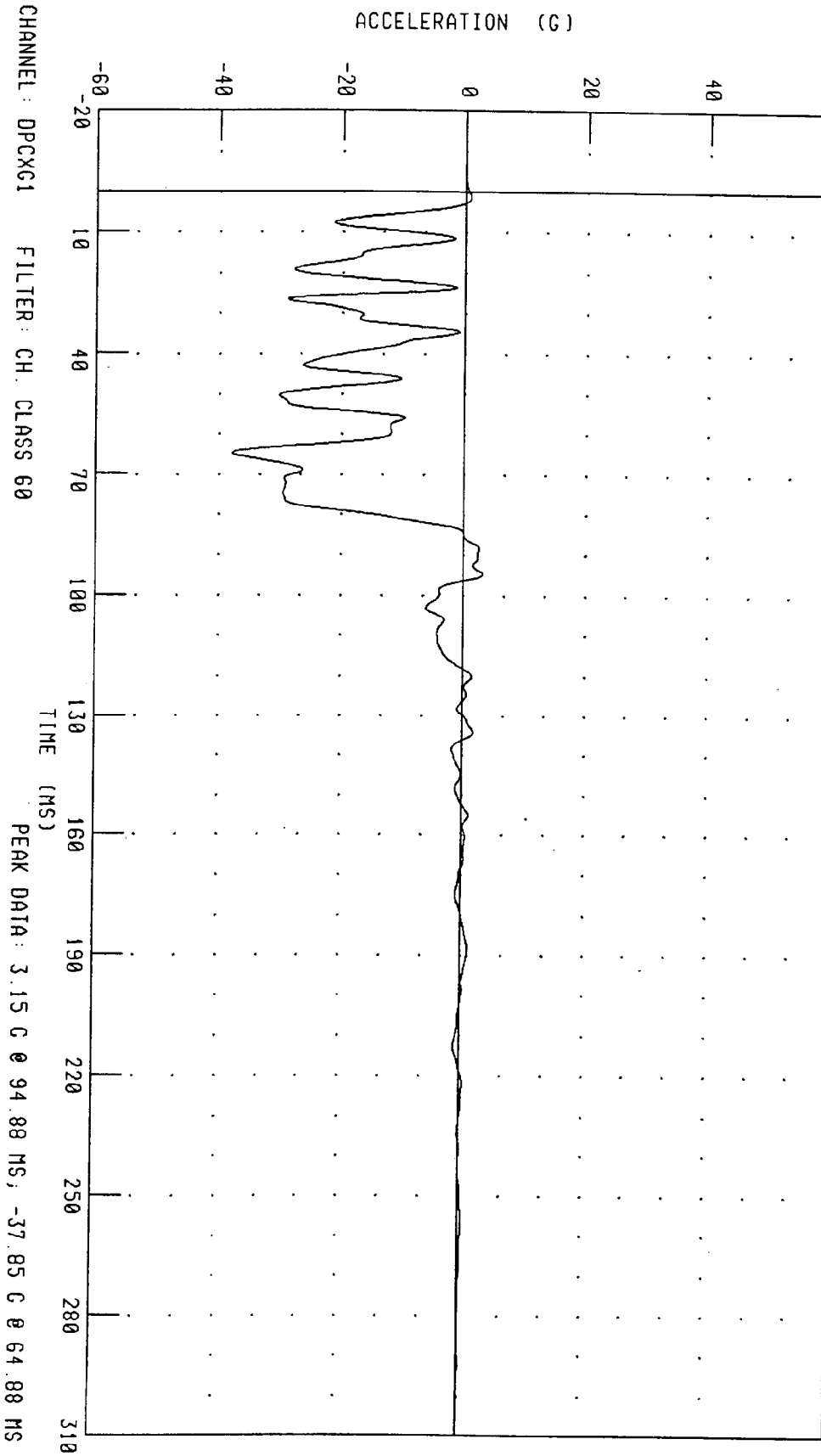


TRC INC.

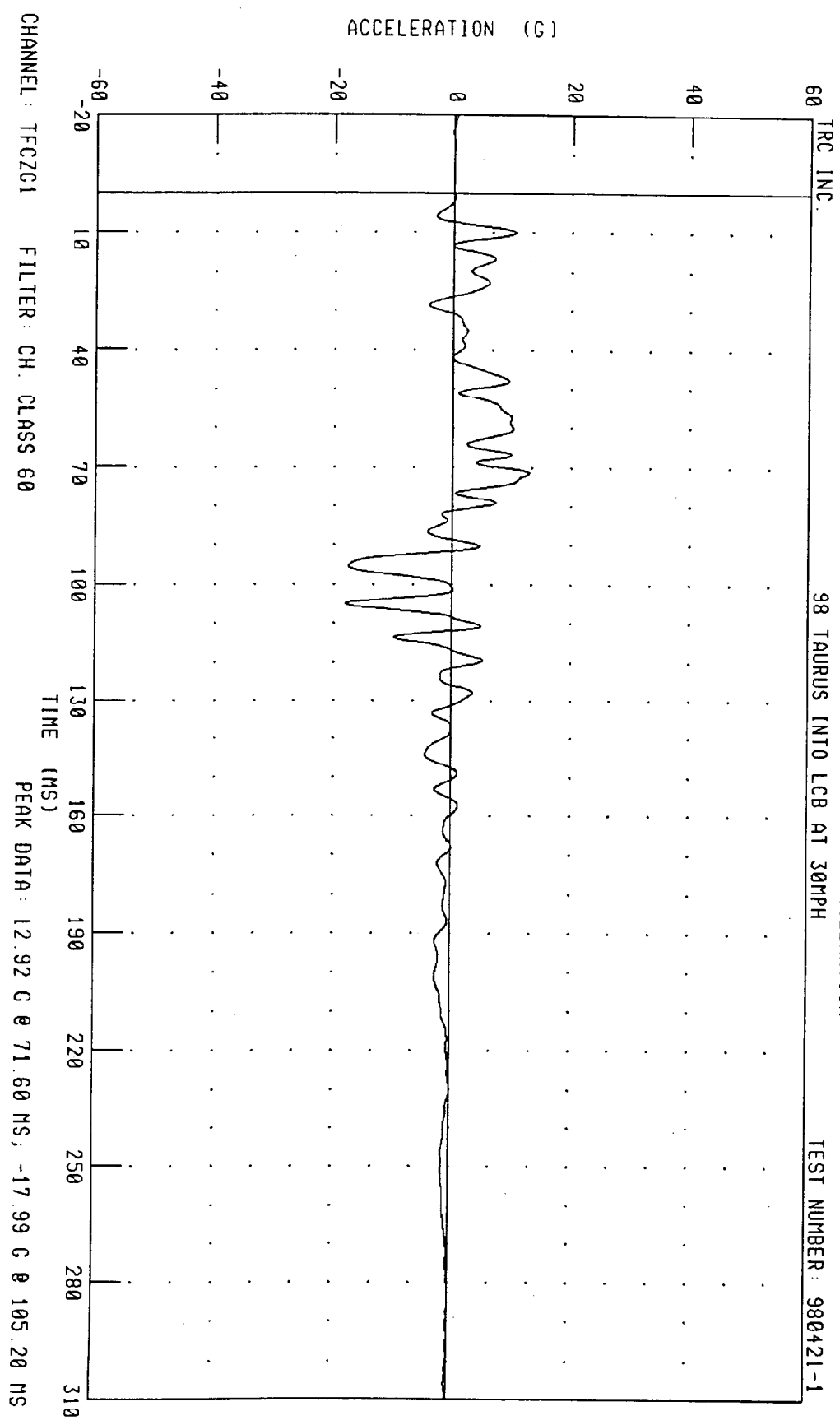
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
REAR VEHICLE CENTERLINE Z-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1

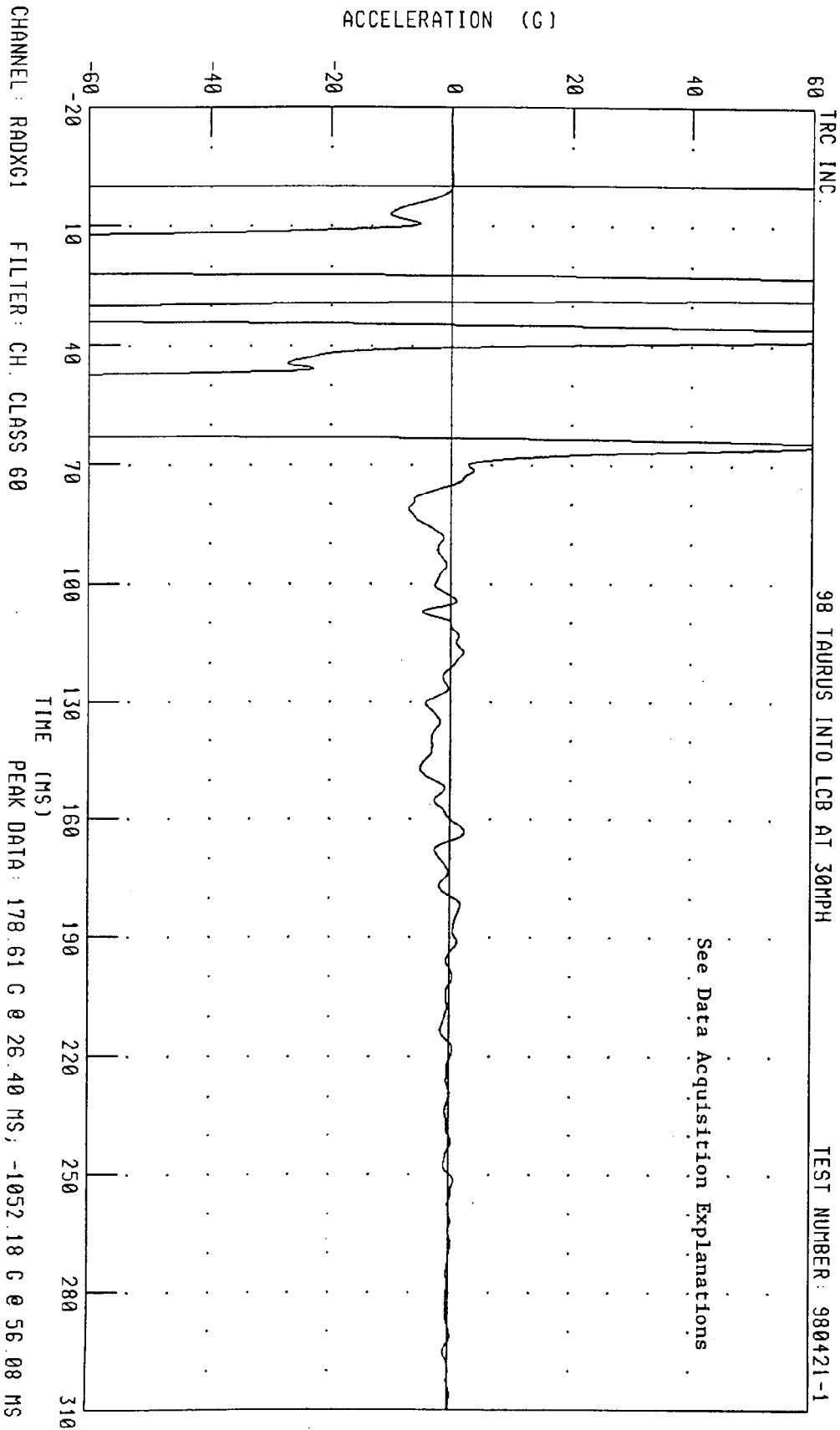


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

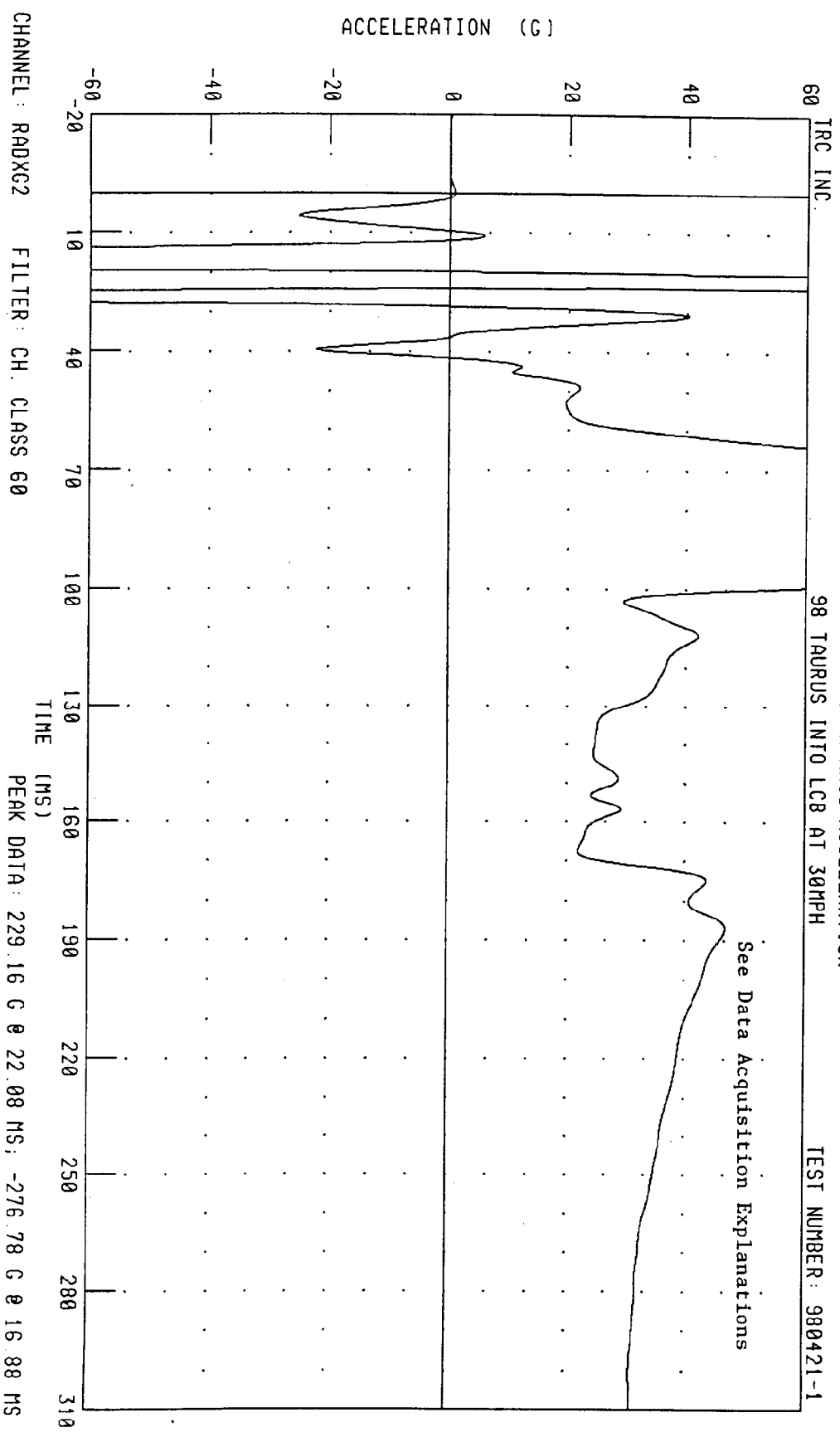
LEFT RADIATOR X-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

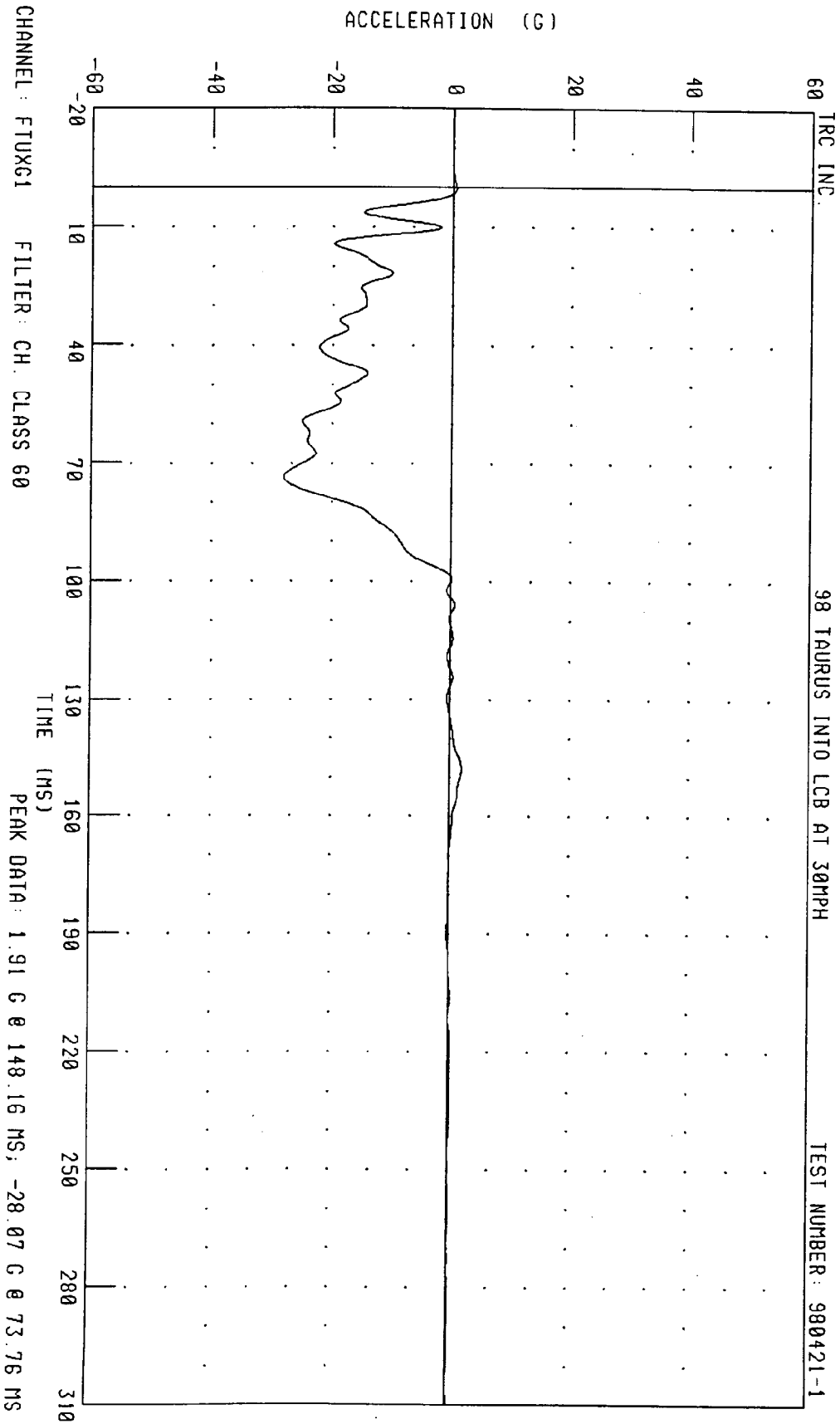
TEST NUMBER: 980421-1



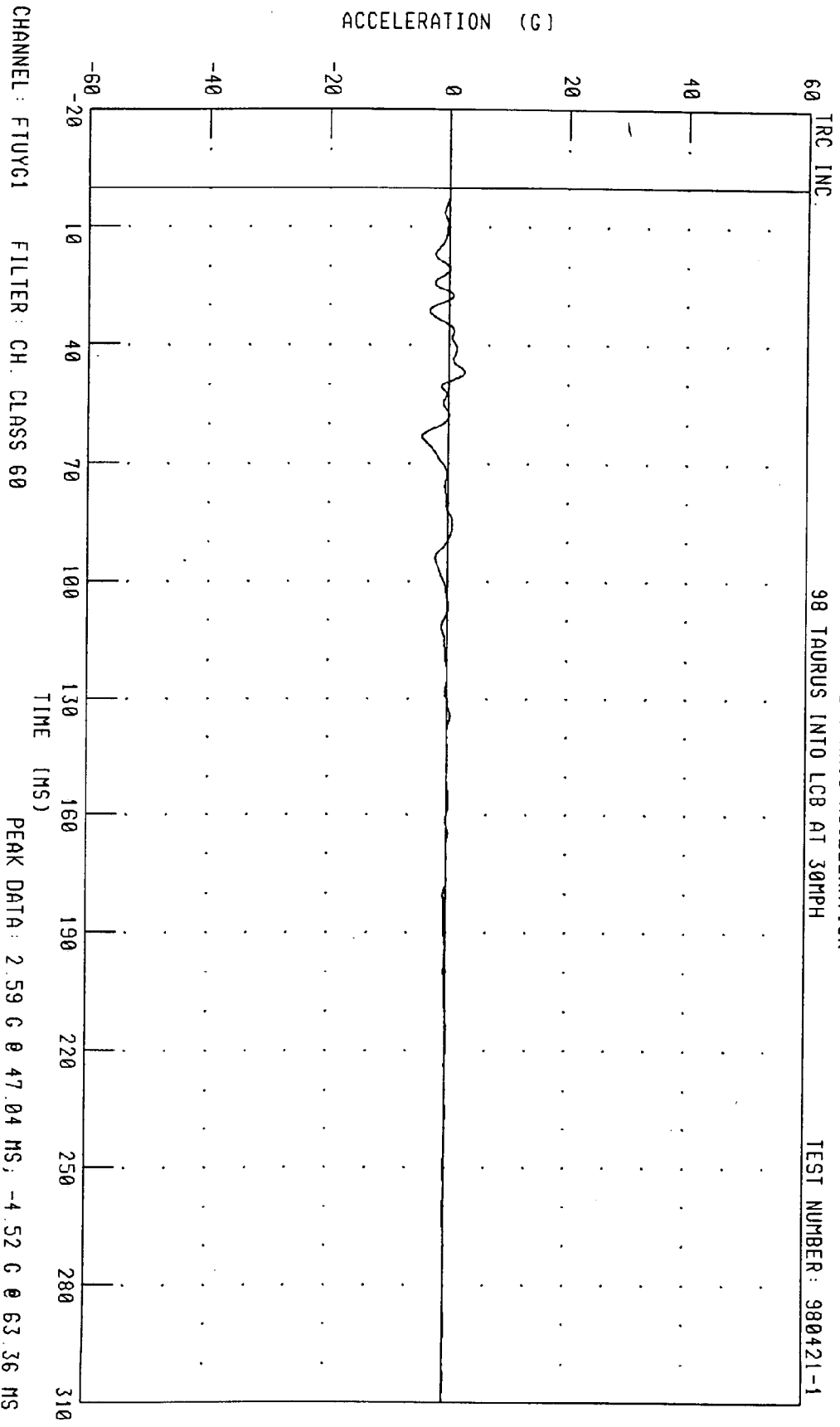
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
RIGHT RADIATOR X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
FLOOR TUNNEL X-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
FLOOR TUNNEL Y-AXIS ACCELERATION
98 TAURUS INTO LCB AT 30MPH
TEST NUMBER: 980421-1

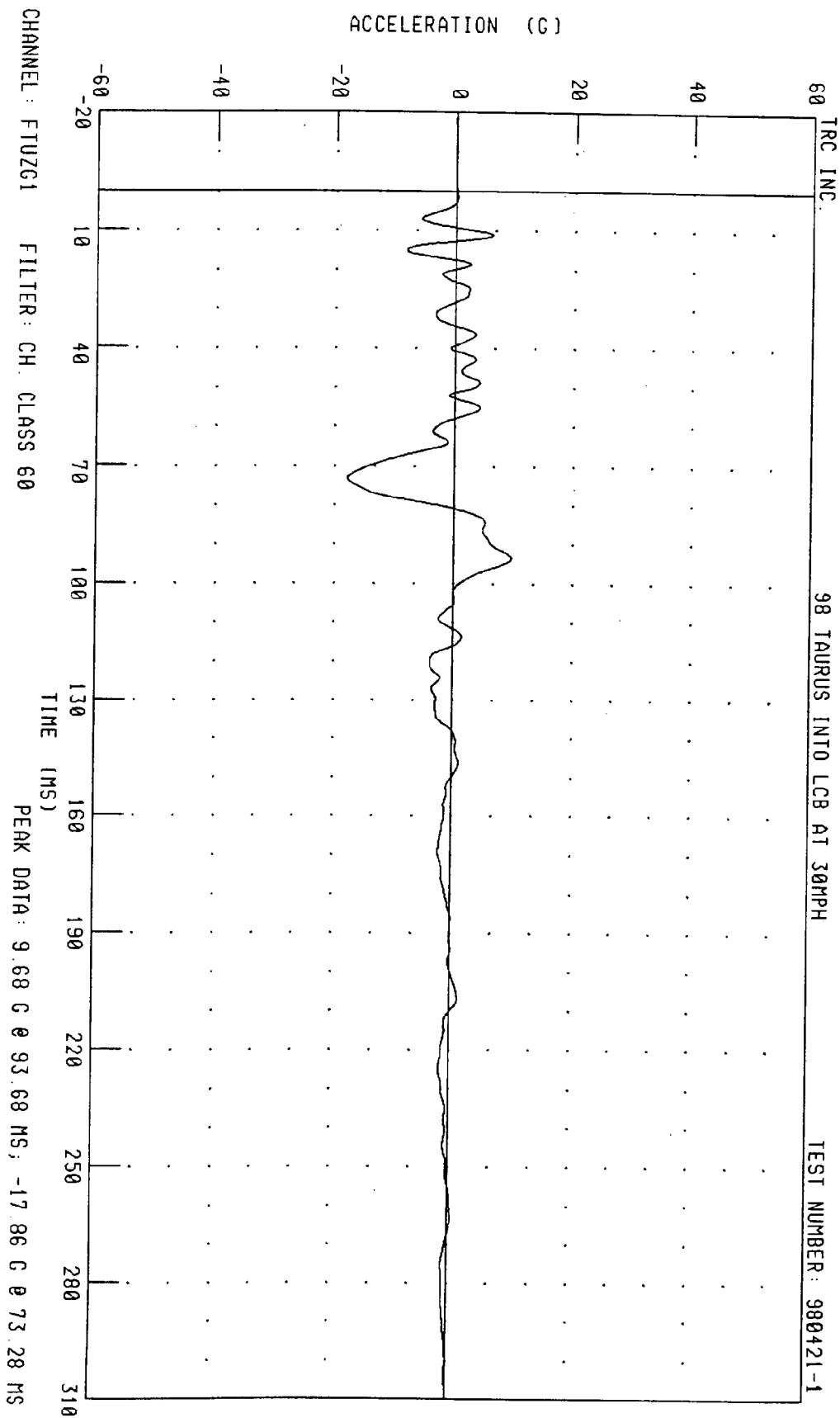


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

FLOOR TUNNEL Z-AXIS ACCELERATION

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

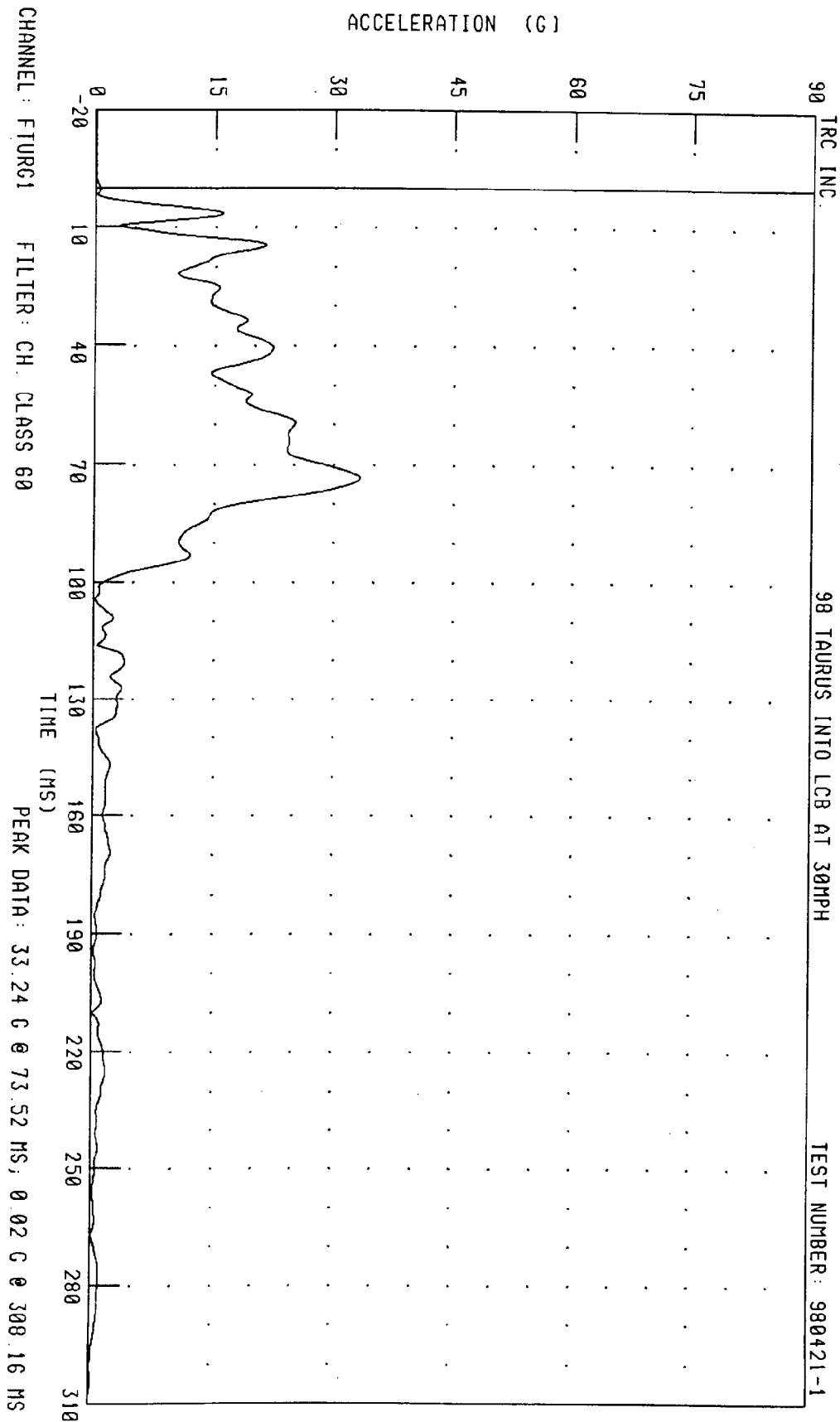


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

FLOOR TUNNEL RESULTANT

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

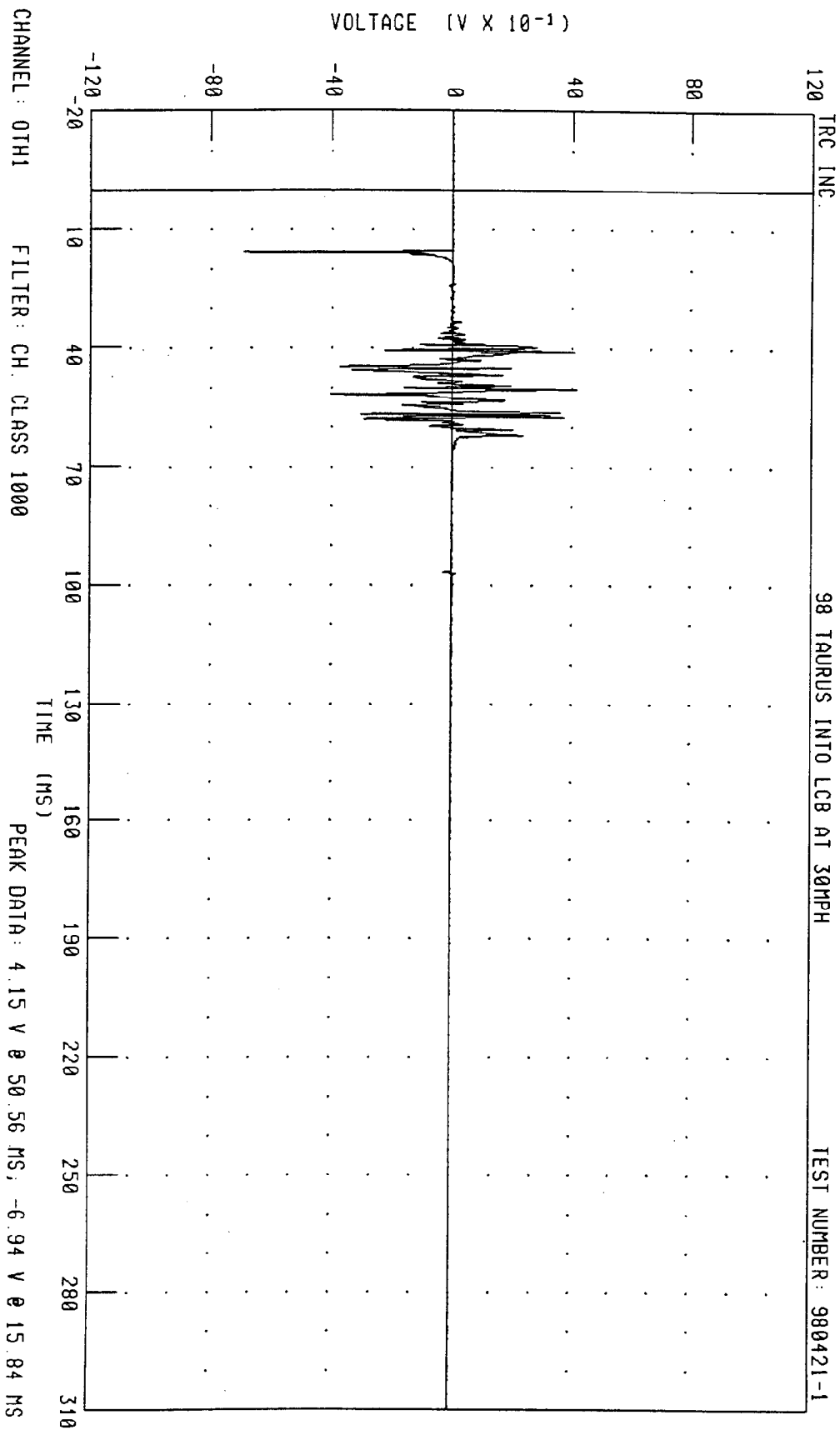


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

DRIVER SQUIB

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

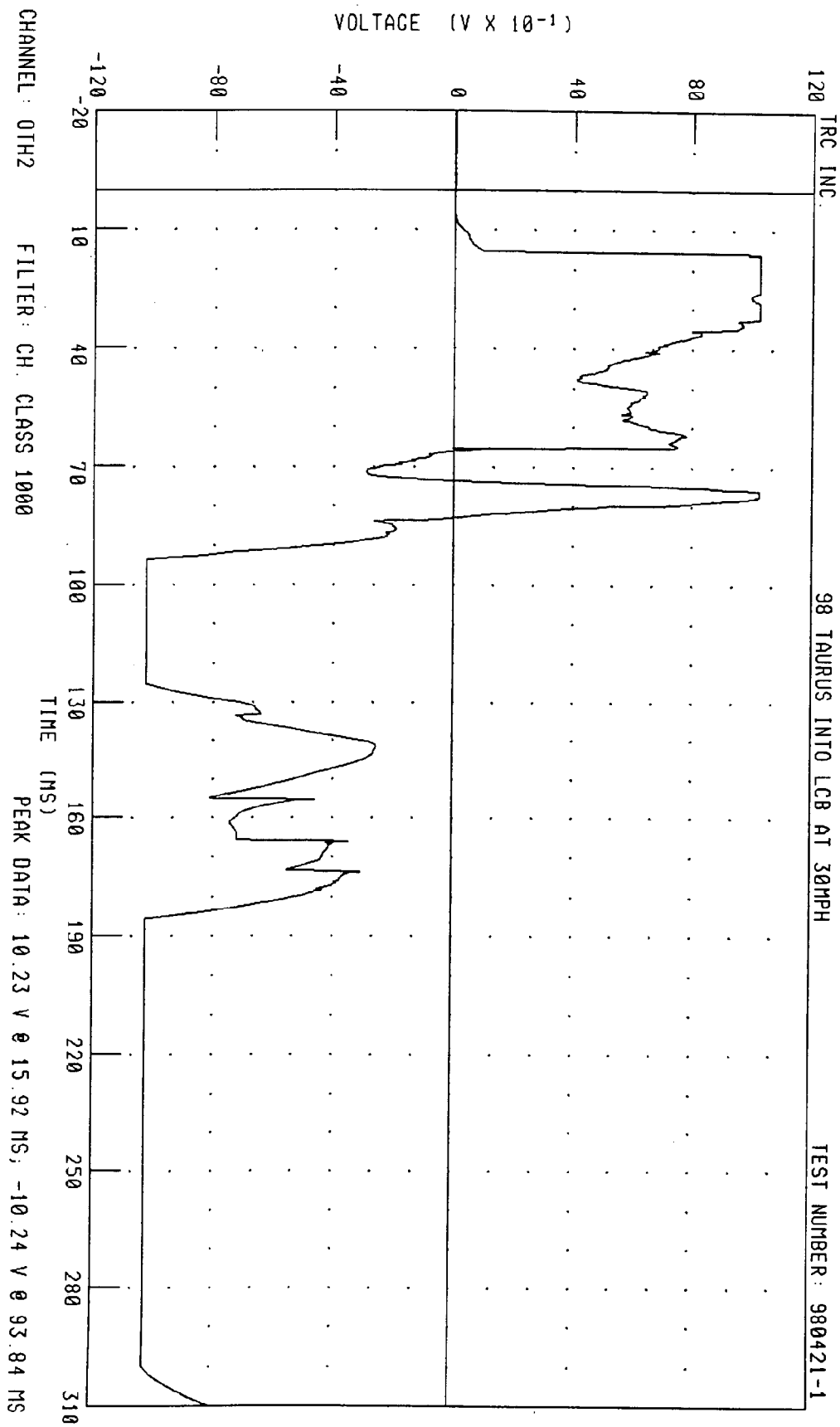


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG. LOAD CELL BARRIER AT 30MPH

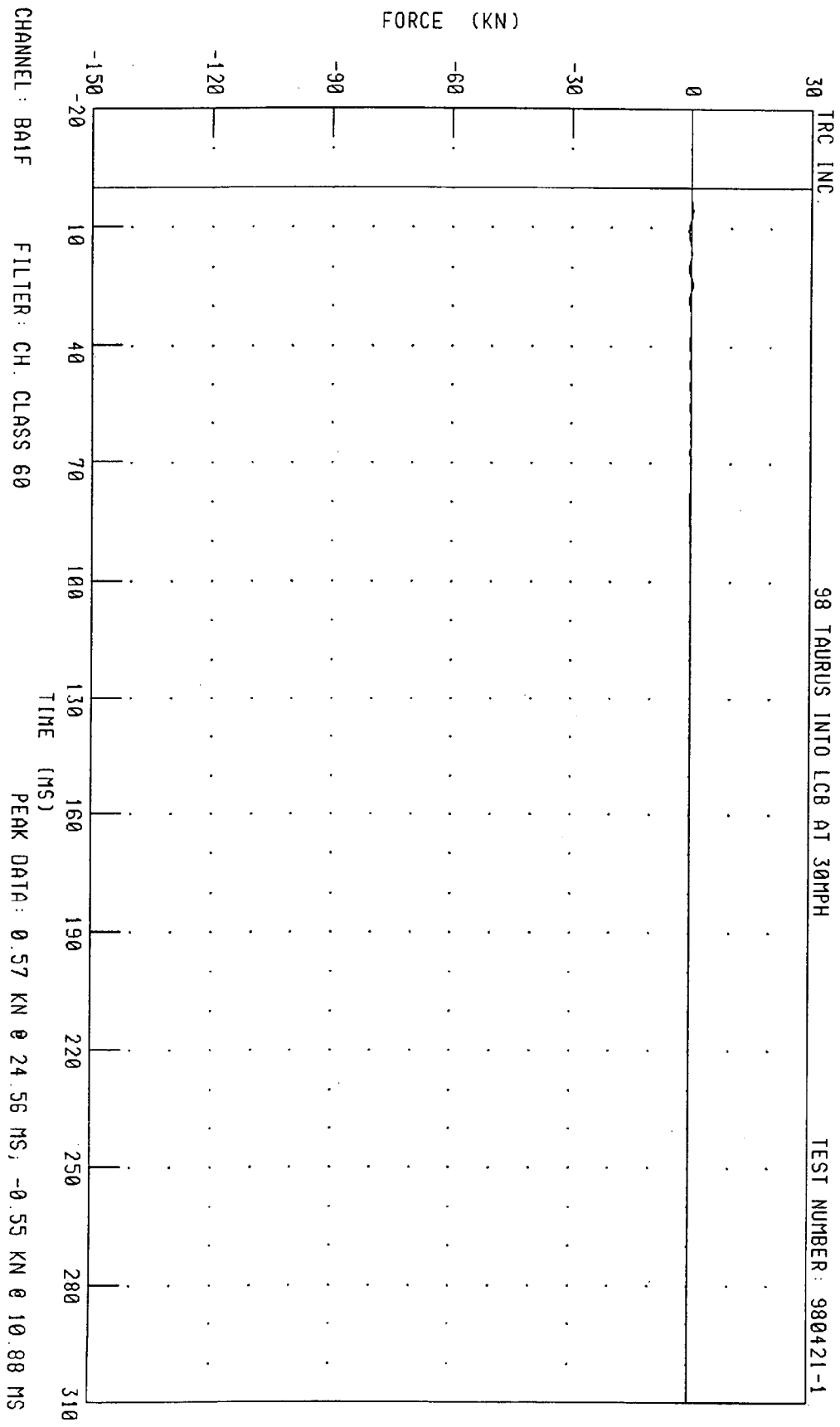
PASSENGER SQUIB

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION A1 FORCE
 98 TAURUS INTO LCB AT 30MPH
 TEST NUMBER: 980421-1

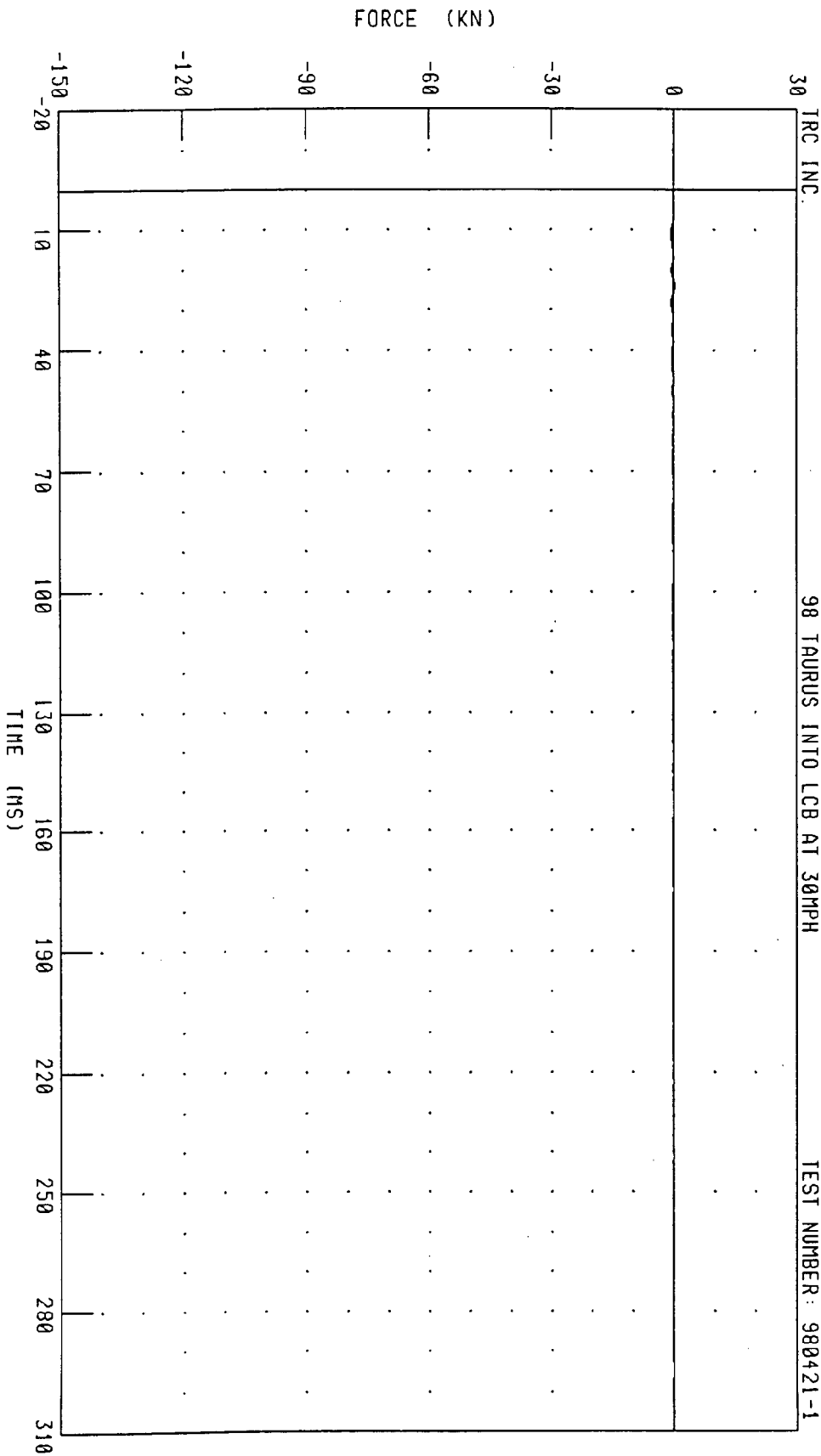


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER POSITION A2 FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



CHANNEL: BAZF

FILTER: CH. CLASS 60

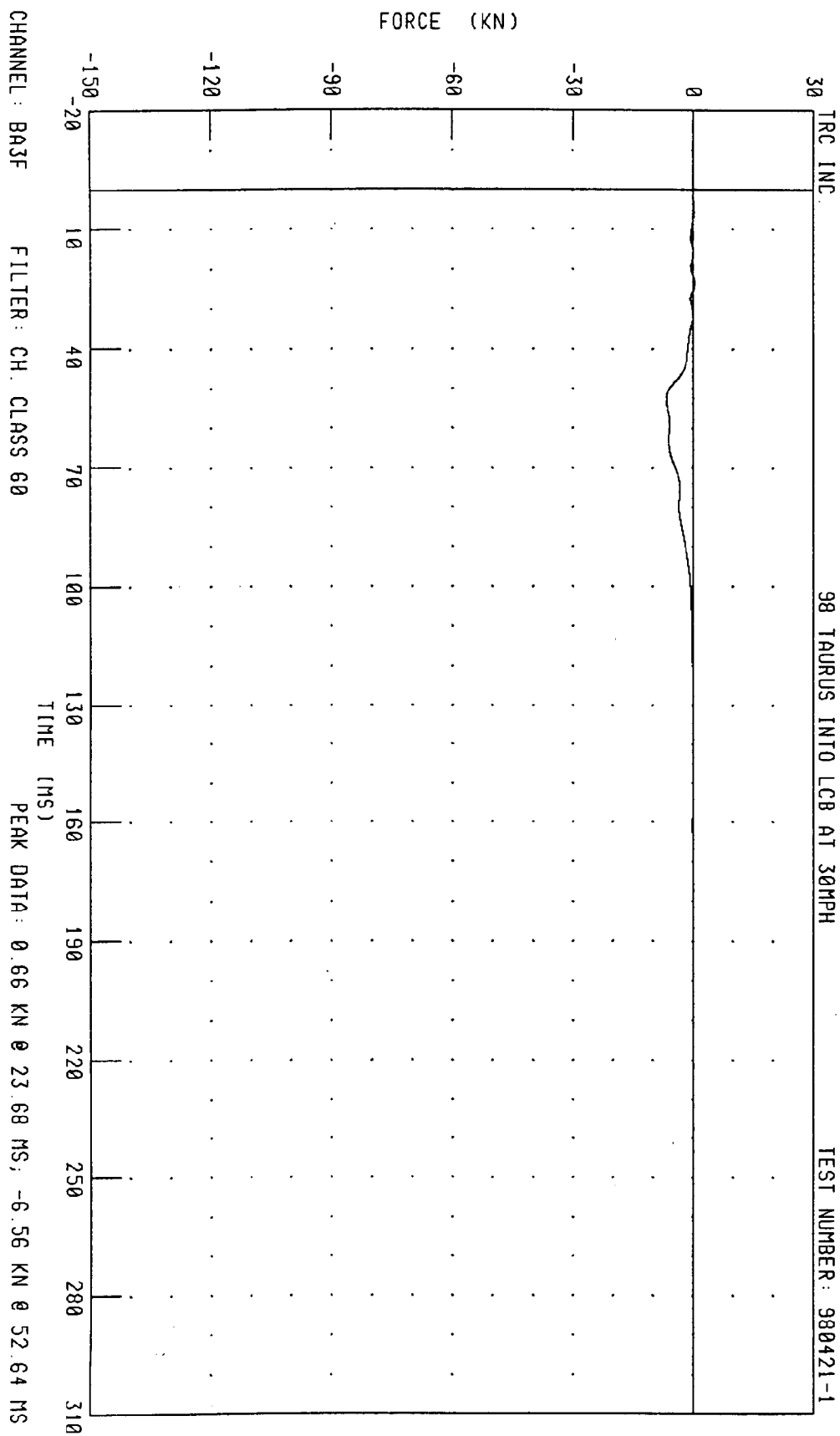
PEAK DATA: 0.56 KN @ 24.08 MS, -0.43 KN @ 11.12 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER POSITION A3 FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

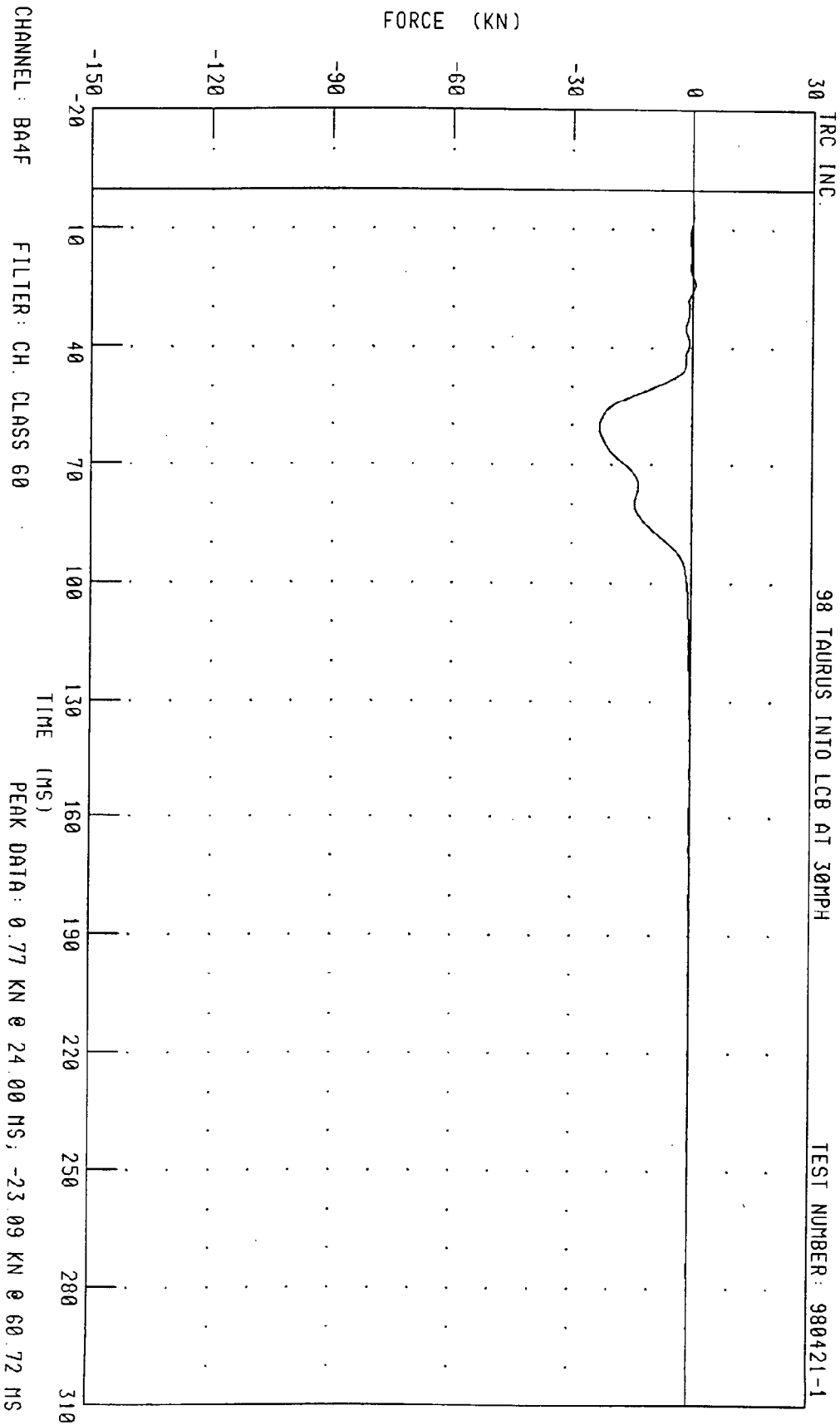


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER POSITION A4 FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

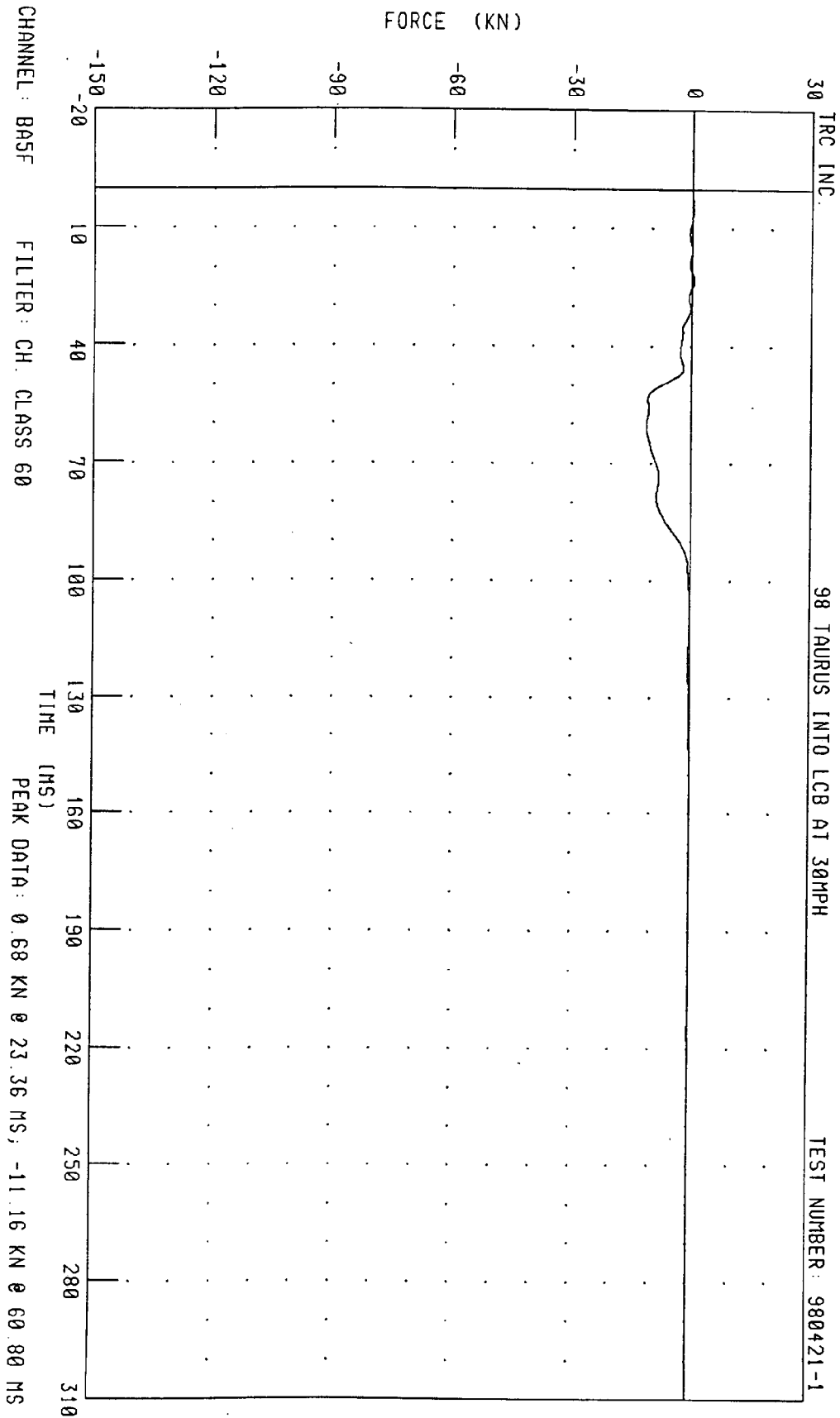


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER POSITION AS FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

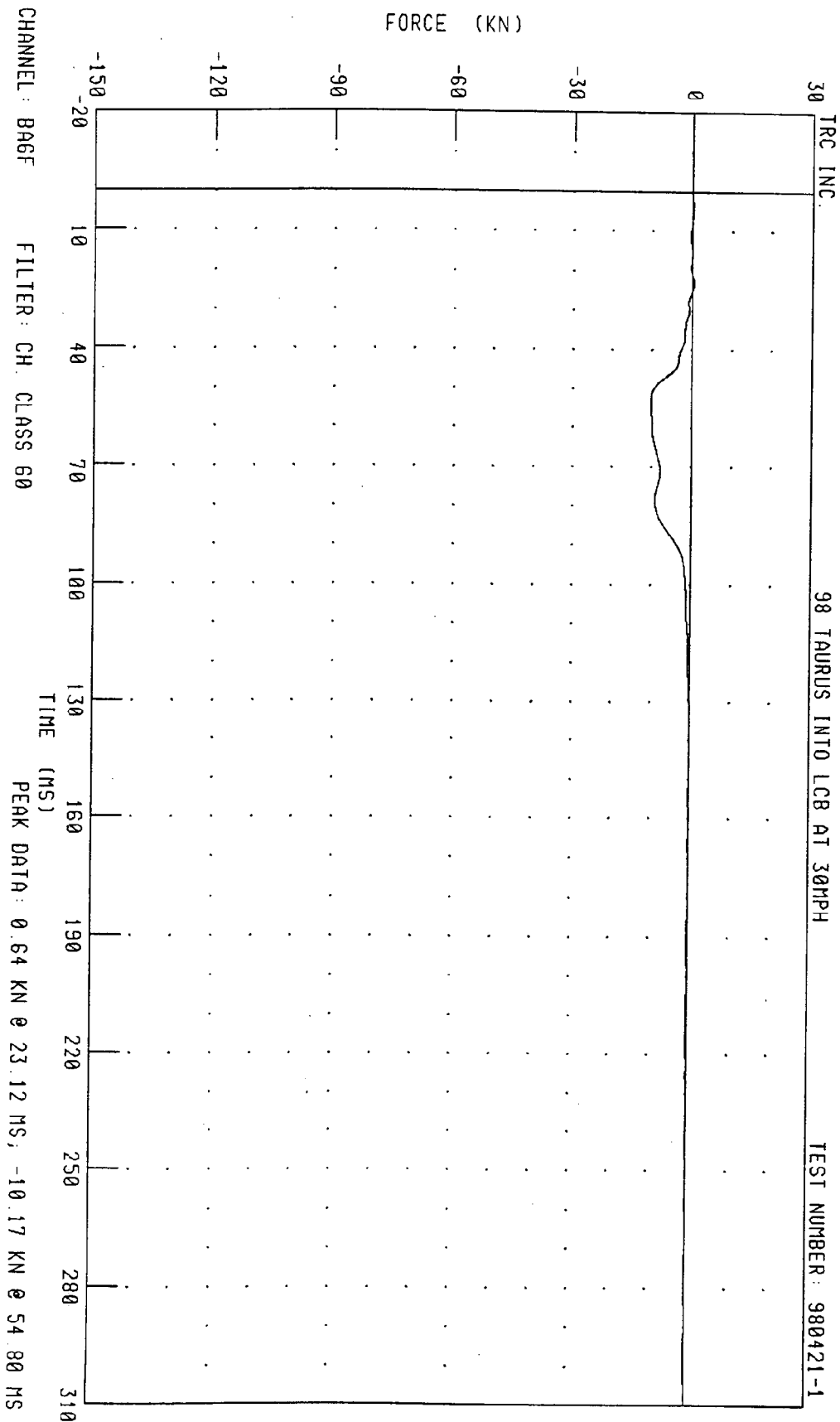


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER POSITION AG FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



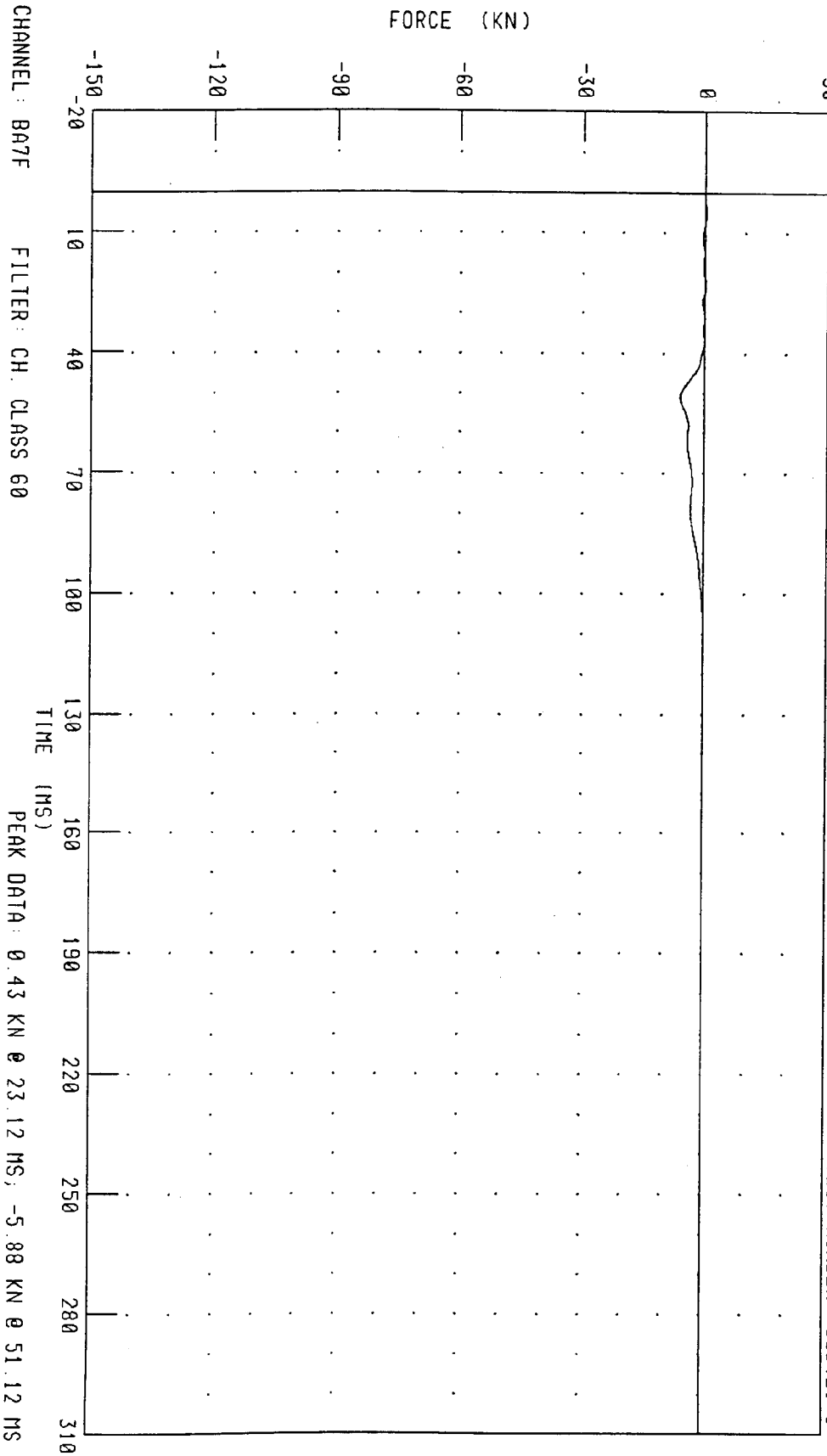
TRC INC.

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER POSITION A7 FORCE

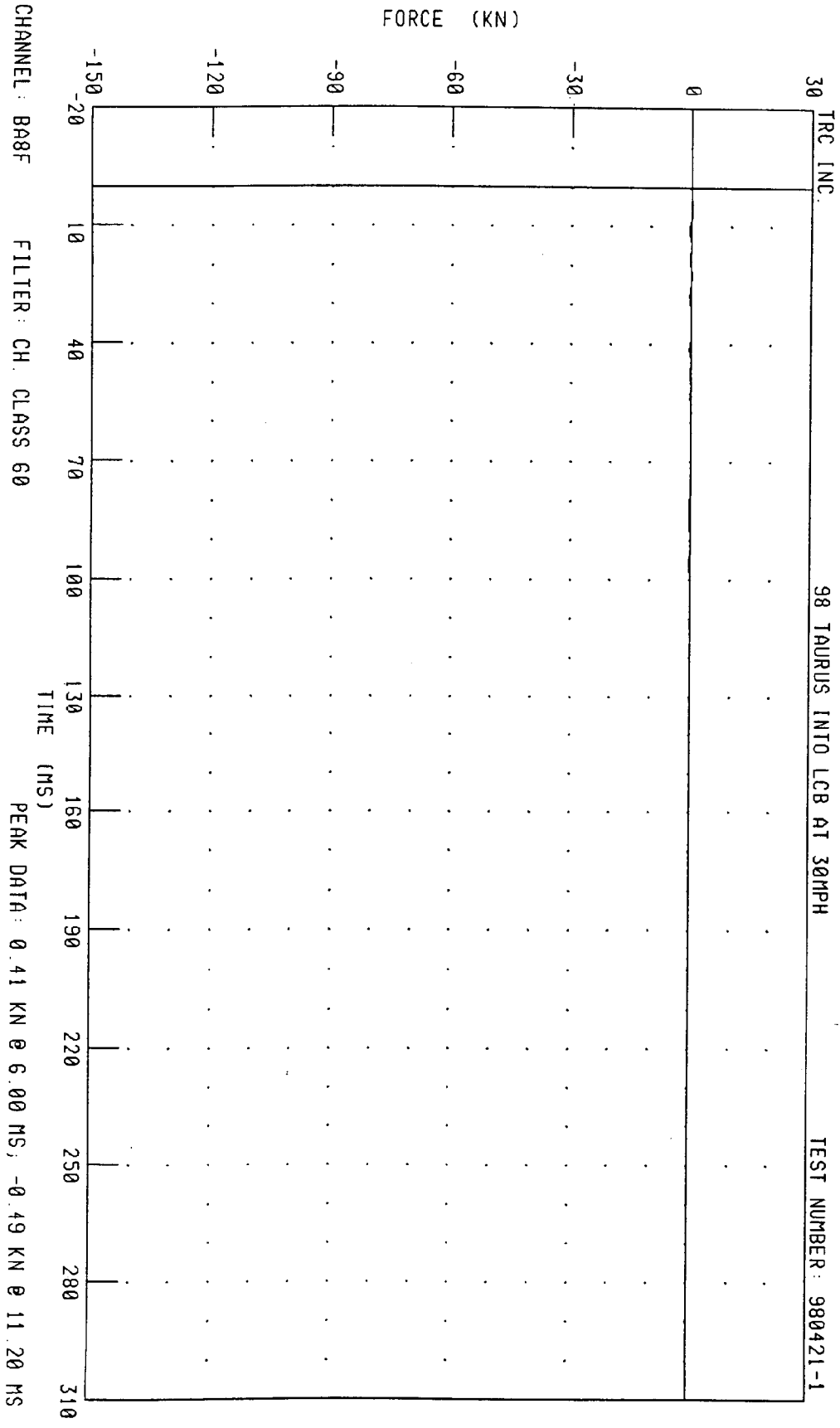


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER POSITION A8 FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



TRC INC.

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER POSITION A9 FORCE

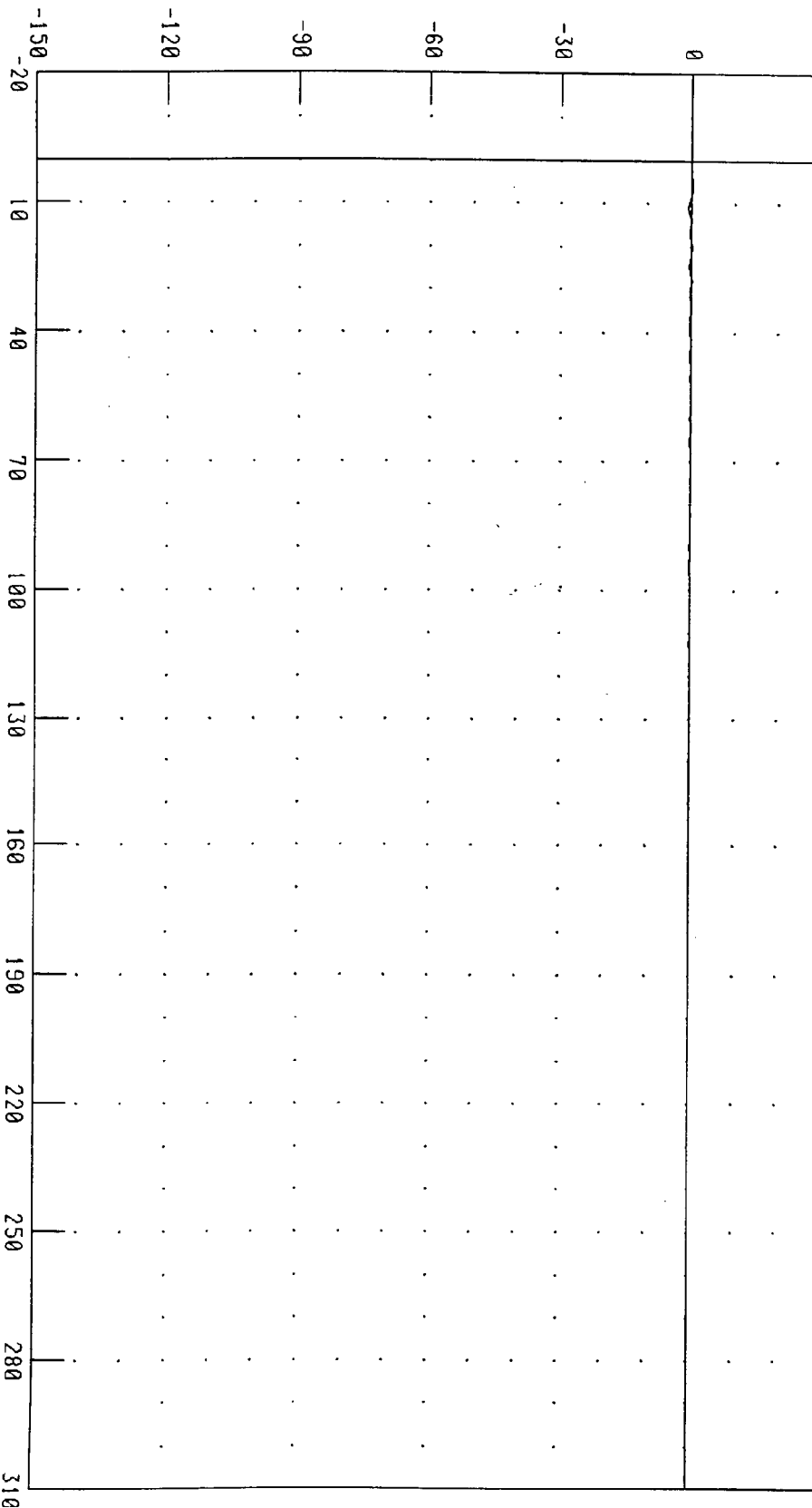
FORCE (KN)

CHANNEL: BA9F

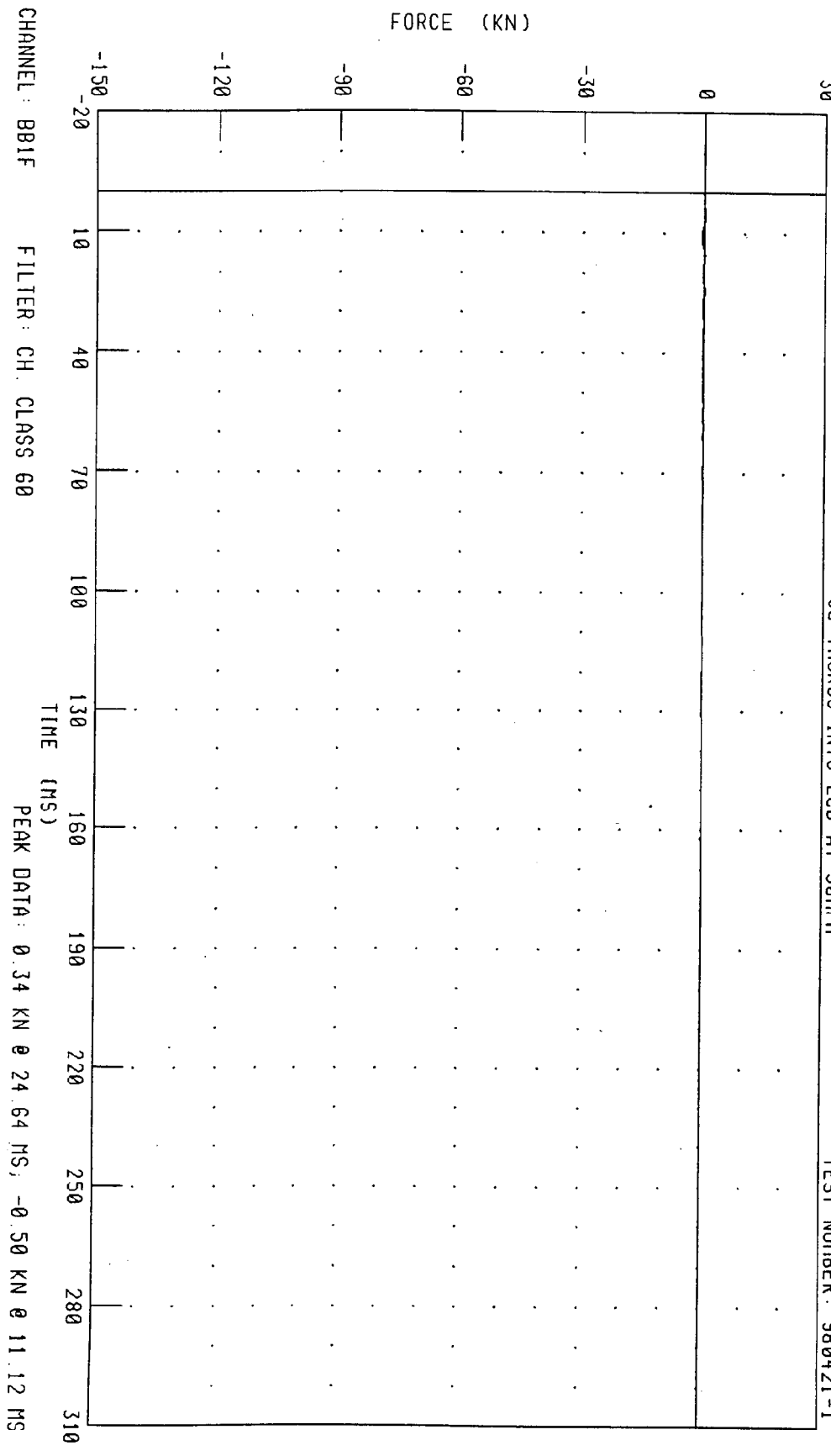
FILTER: CH. CLASS 60

TIME (MS)

PEAK DATA: 0.36 KN @ 6.16 MS, -0.58 KN @ 11.12 MS



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION 81 FORCE
 98 TAURUS INTO LCB AT 30MPH
 TRC INC.
 TEST NUMBER: 980421-1



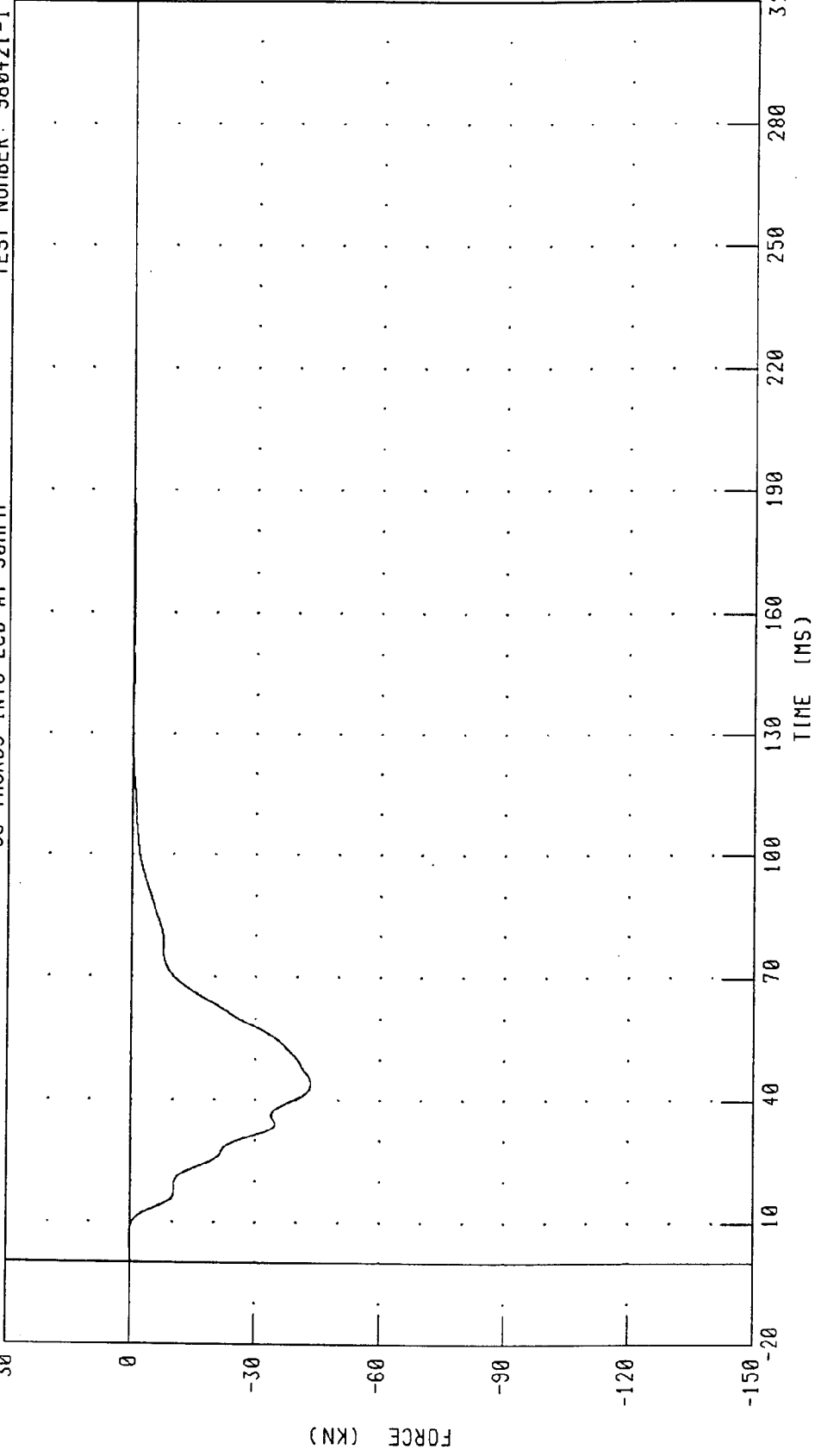
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION B2 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.

30



CHANNEL: BB2F FILTER: CH. CLASS 60

TIME (MS)

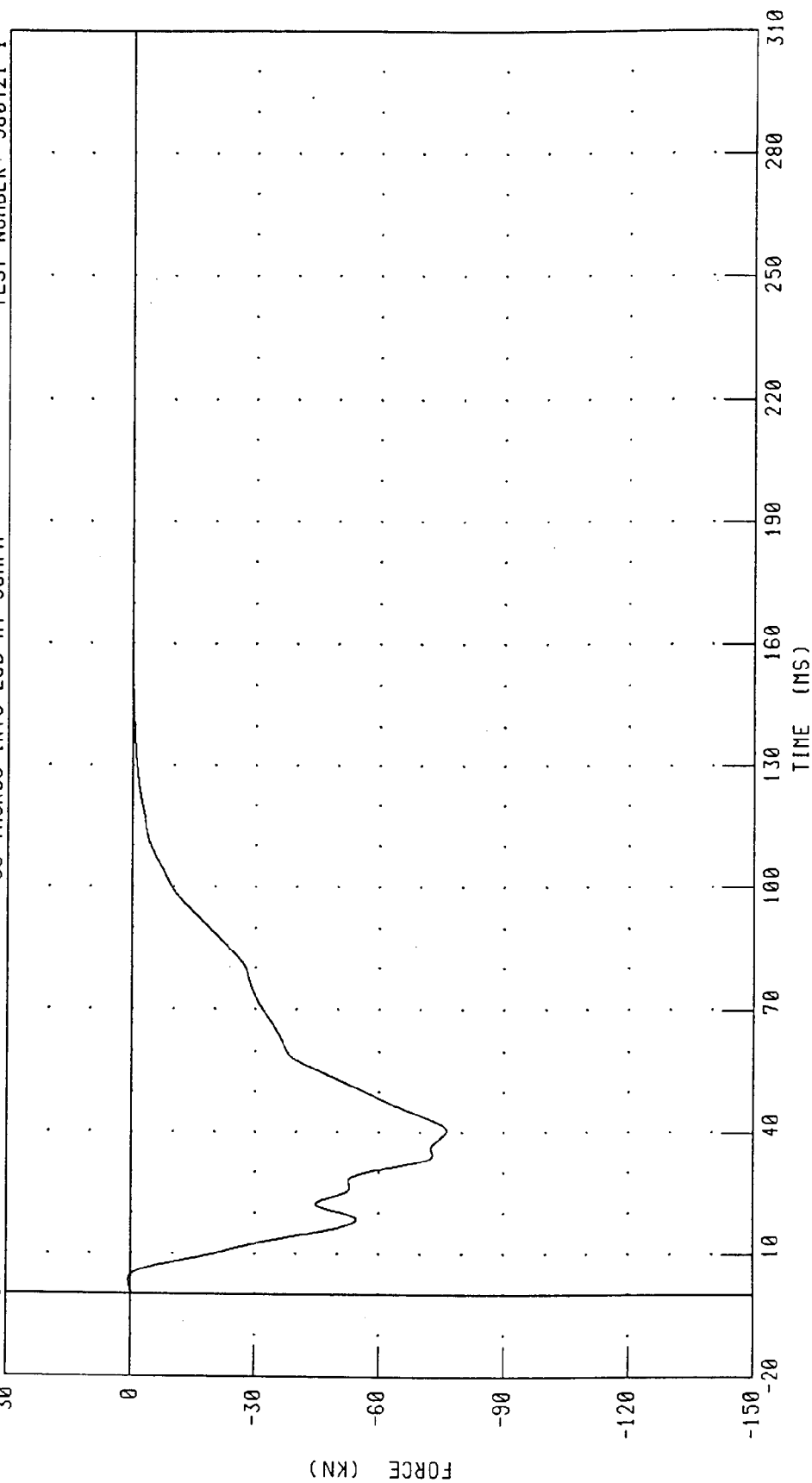
PEAK DATA: 0.36 KN @ 6.48 MS; -43.30 KN @ 44.24 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION B3 FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: 883F

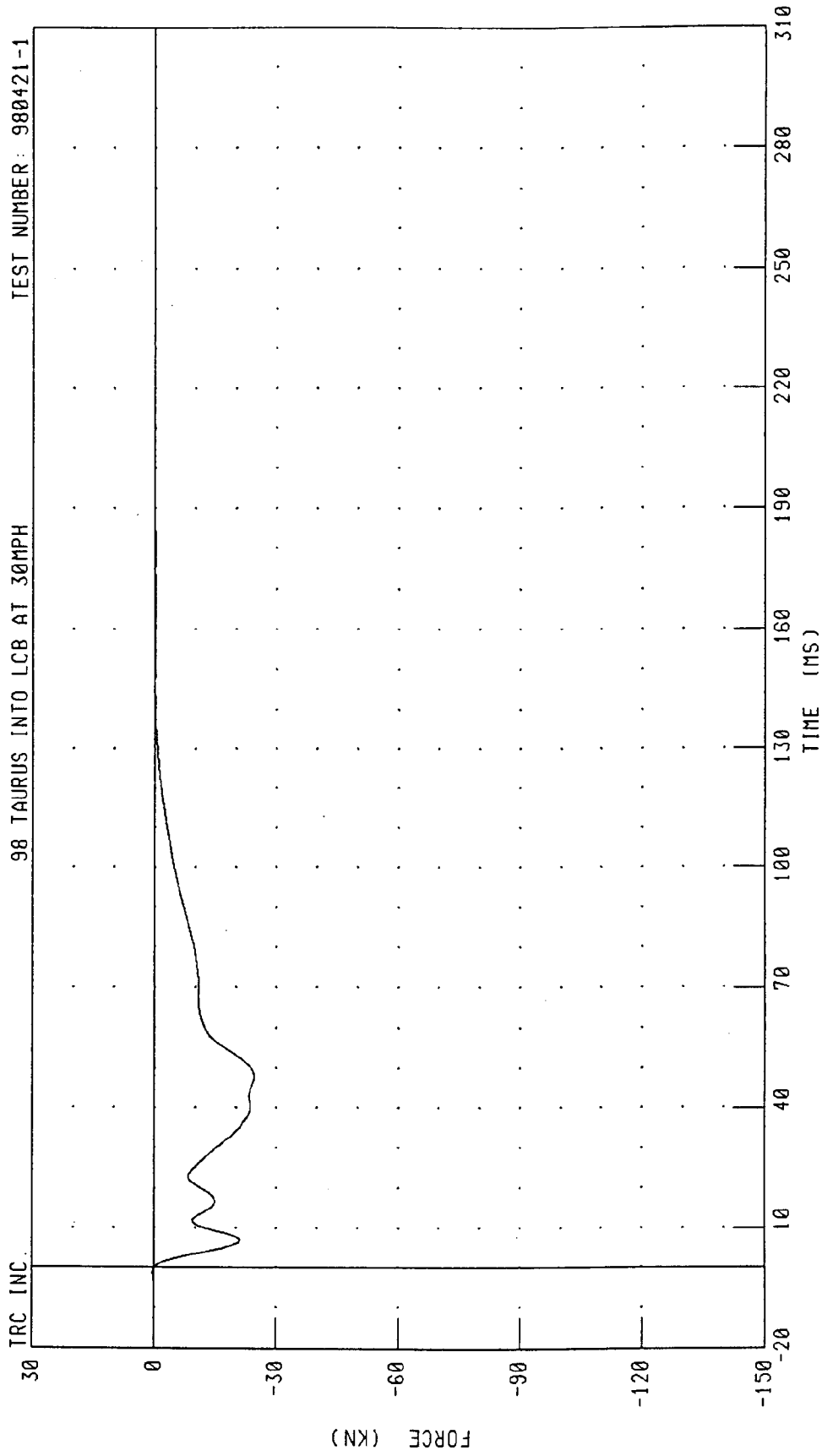
FILTER: CH. CLASS 60

TIME (MS)

PEAK DATA: 0.74 KN @ 3.28 MS, -76.31 KN @ 40.64 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION B4 FORCE

98 TAURUS INTO LCB AT 30MPH TEST NUMBER: 980421-1

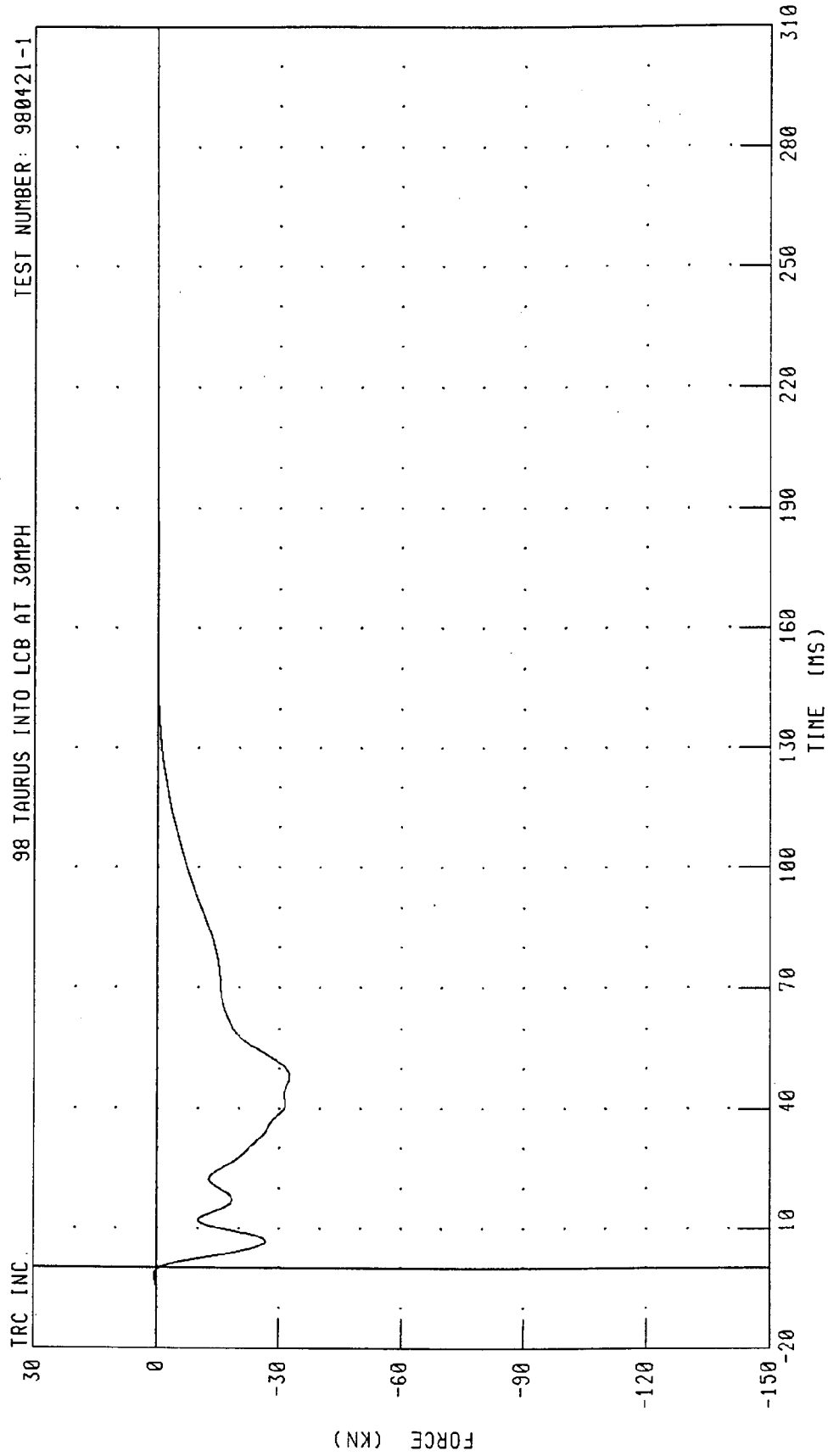


CHANNEL: BB4F FILTER: CH. CLASS 60

PEAK DATA: 0.51 KN @ -1.28 MS, -24.53 KN @ 47.92 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION B5 FORCE
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



CHANNEL: BB5F

FILTER: CH. CLASS 60

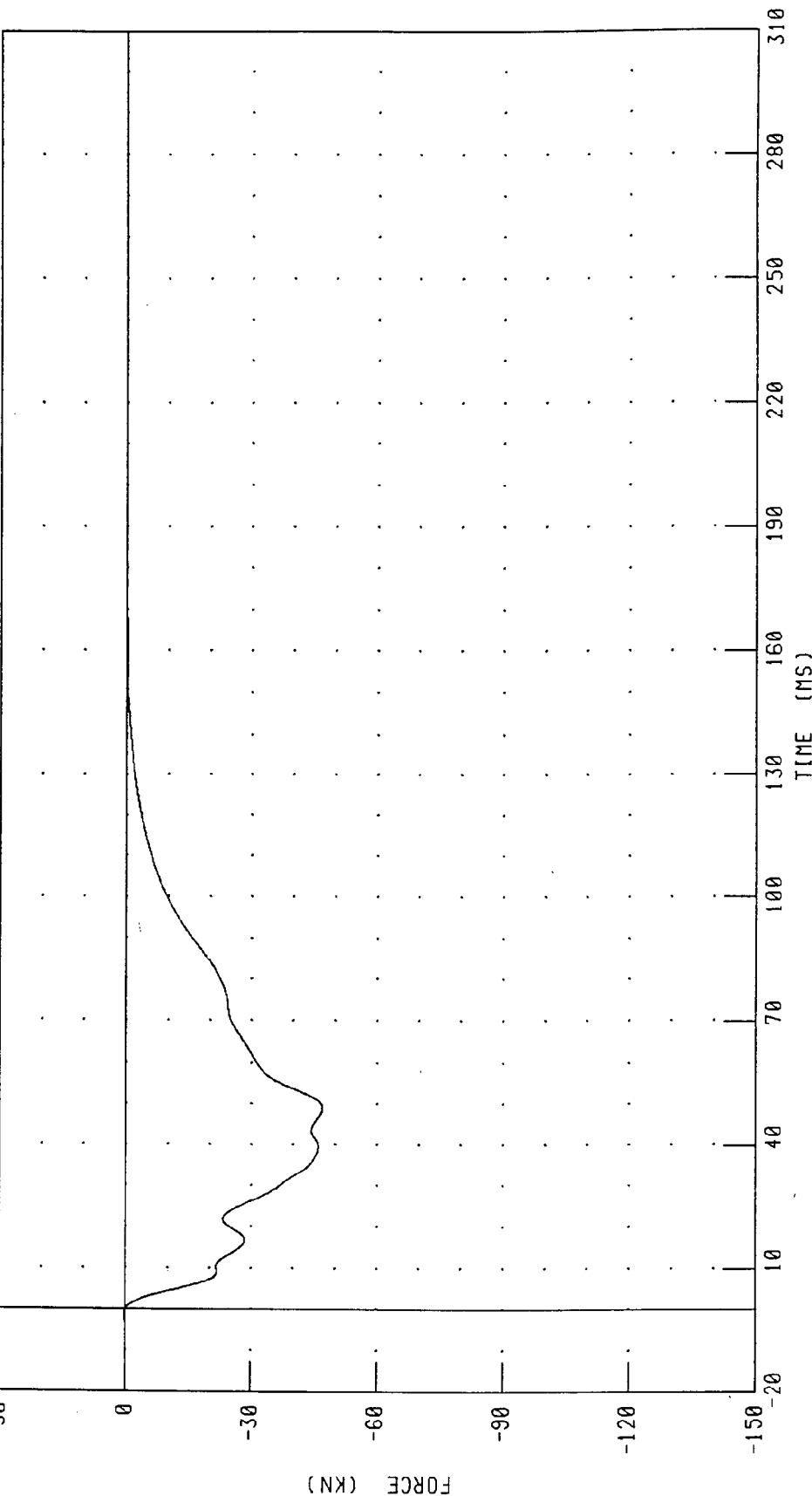
PEAK DATA: 0.68 KN @ -1.84 MS, -32.53 KN @ 48.08 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION B6 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



CHANNEL: B86F

FILTER: CH. CLASS 60

TIME (MS)

PEAK DATA: 0.34 KN @ -1.28 MS; -46.98 KN @ 48.96 MS

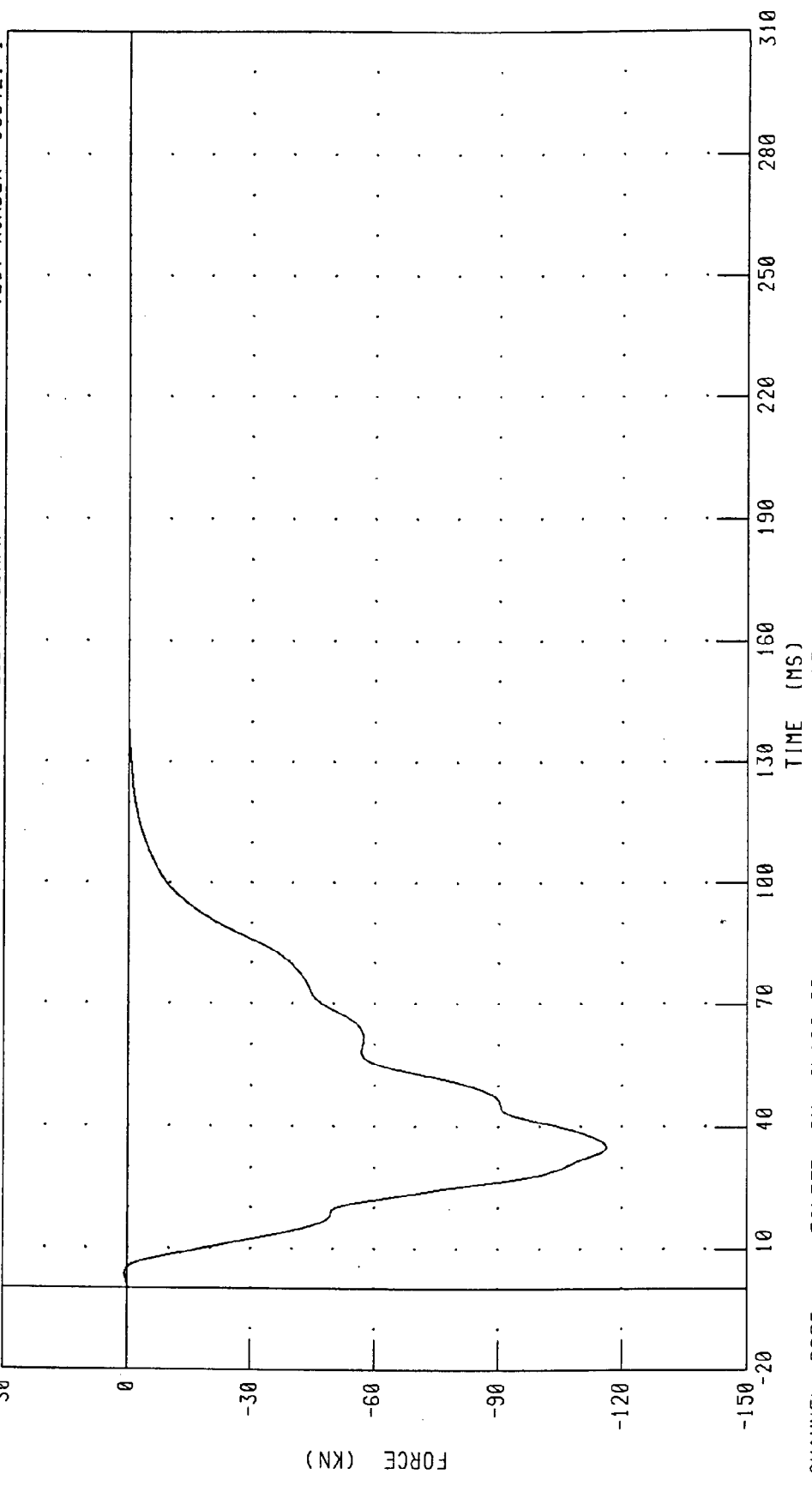
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER POSITION B7 FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



PEAK DATA: 0.72 KN @ 3.76 MS; -116.20 KN @ 35.12 MS

FILTER: CH. CLASS 60

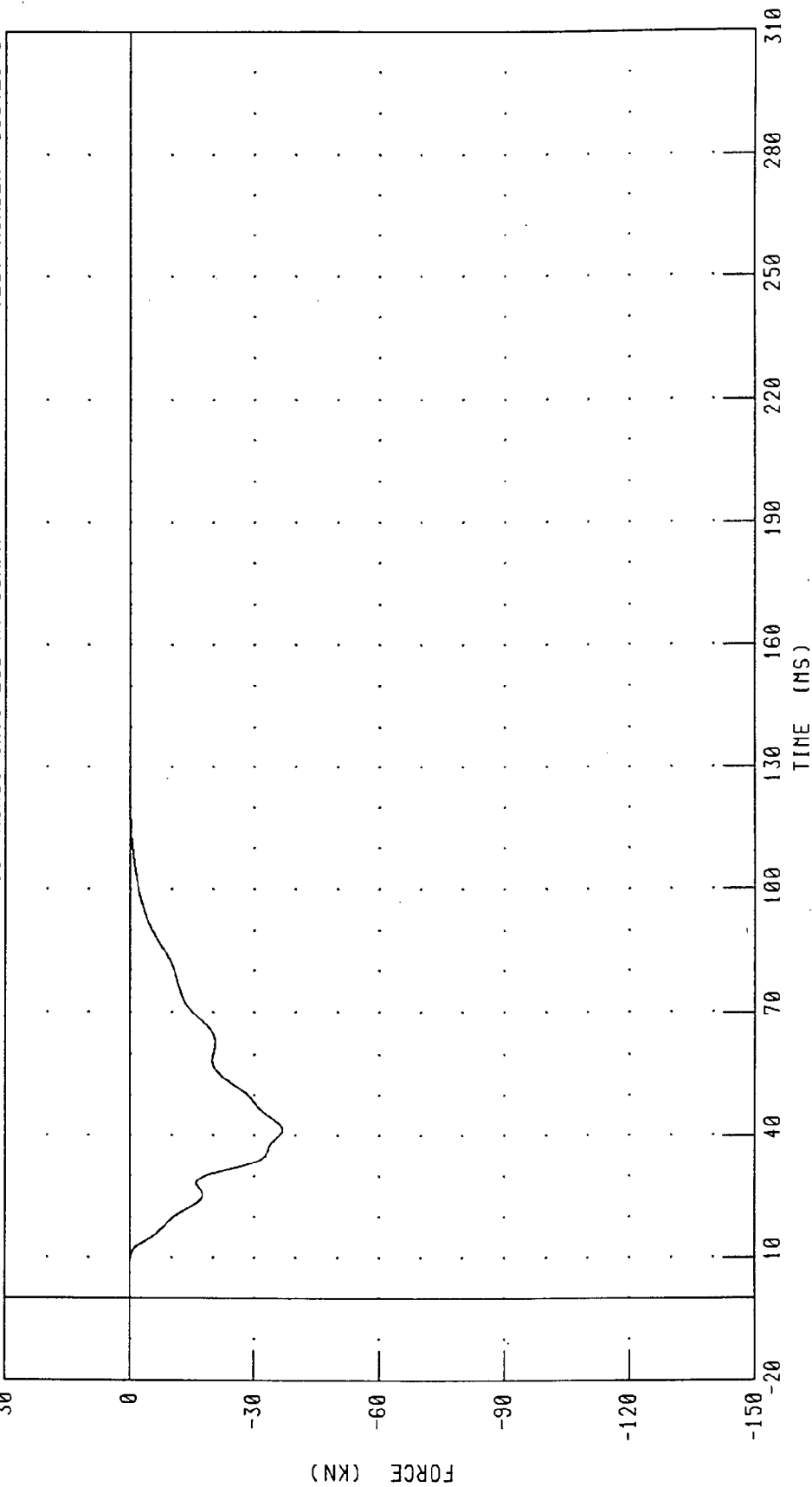
CHANNEL: BB7F

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION 88 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



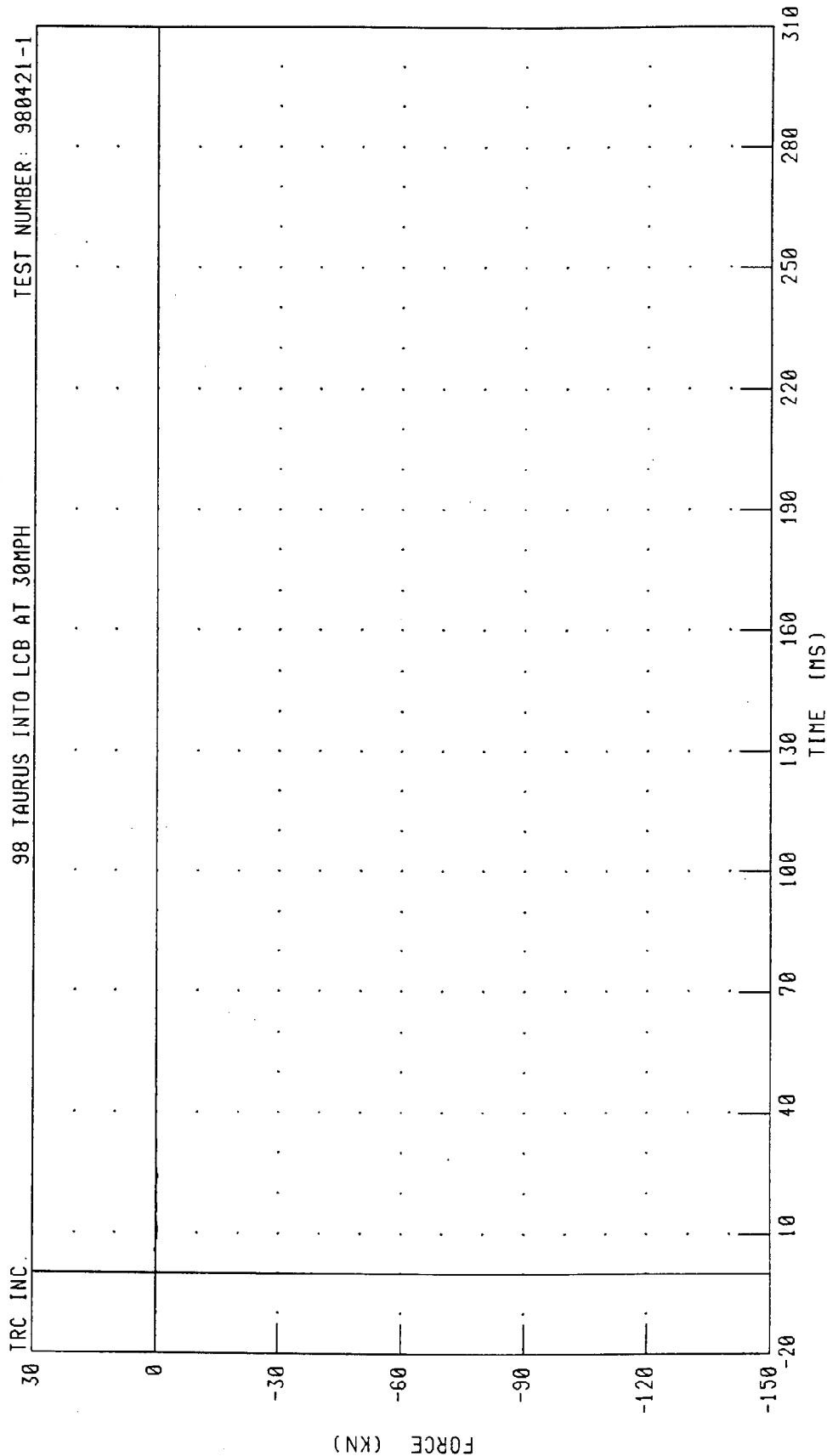
CHANNEL: BB8F

FILTER: CH CLASS 60

PEAK DATA: 0.21 KN @ 6.64 MS; -36.75 KN @ 41.60 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION B9 FORCE

98 TAURUS INTO LCB AT 30MPH TEST NUMBER: 980421-1



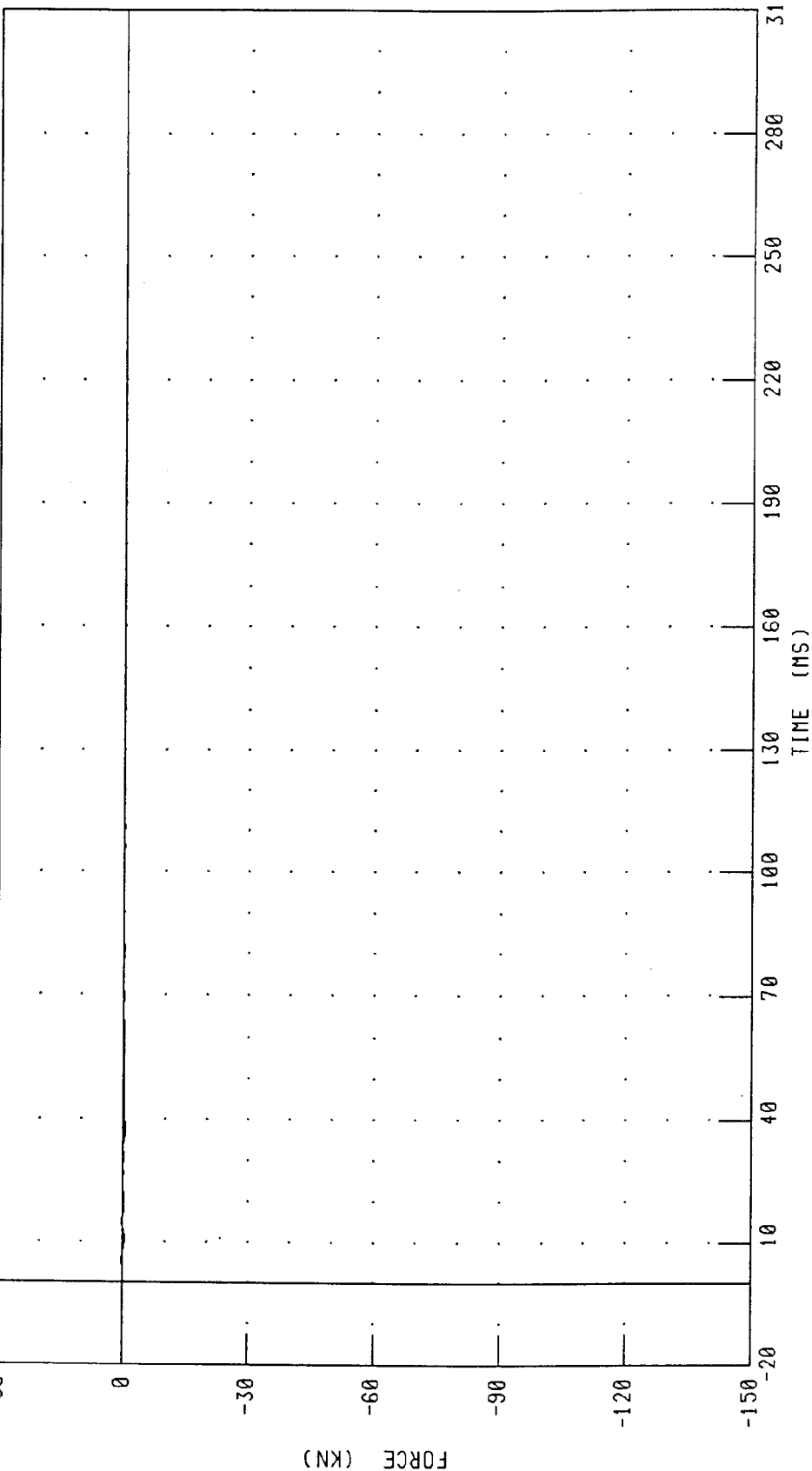
CHANNEL: B89F FILTER: CH. CLASS 60 PEAK DATA: 0.22 KN @ 5.68 MS; -0.36 KN @ 10.80 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION C1 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



CHANNEL: BC1F

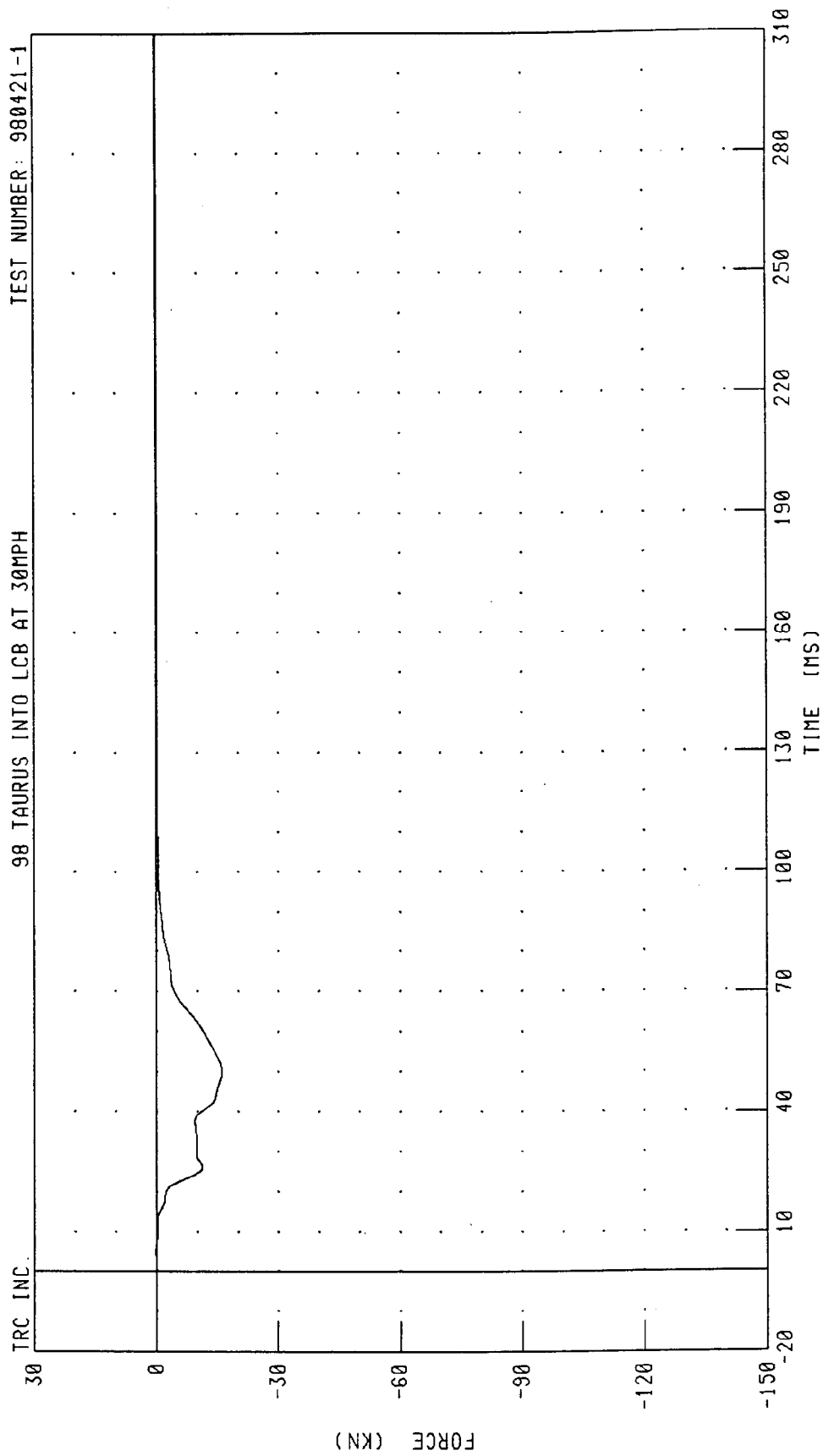
FILTER: CH CLASS 60

TIME (MS)

PEAK DATA: 0.28 KN @ 14.96 MS; -0.53 KN @ 37.44 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION C2 FORCE

TRC INC. 98 TAURUS INTO LCB AT 30MPH TEST NUMBER: 980421-1

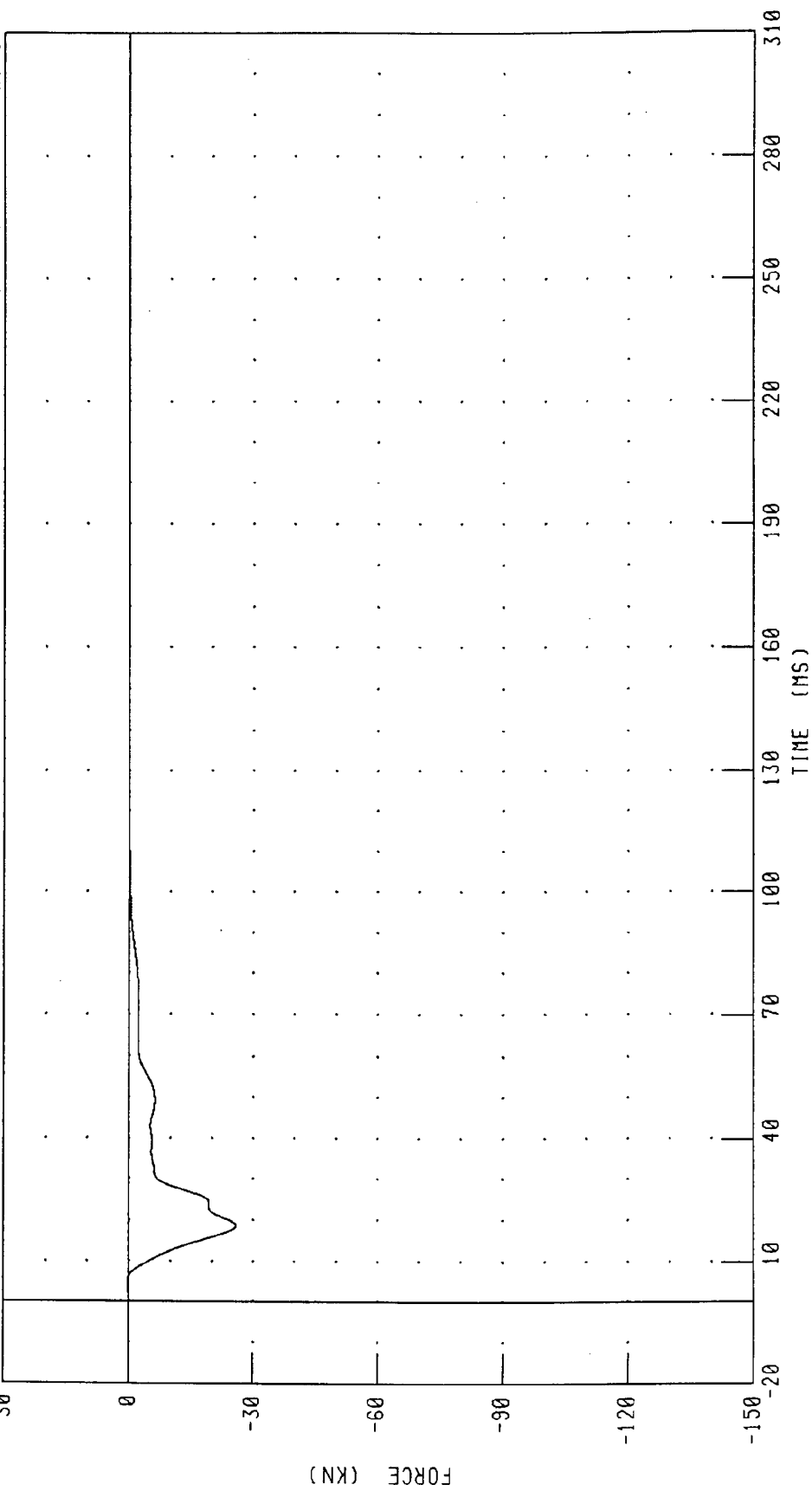


CHANNEL: BC2F FILTER: CH. CLASS 60 PEAK DATA: 0.23 KN @ 4.80 MS, -16.02 KN @ 50.08 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION C3 FORCE
 98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

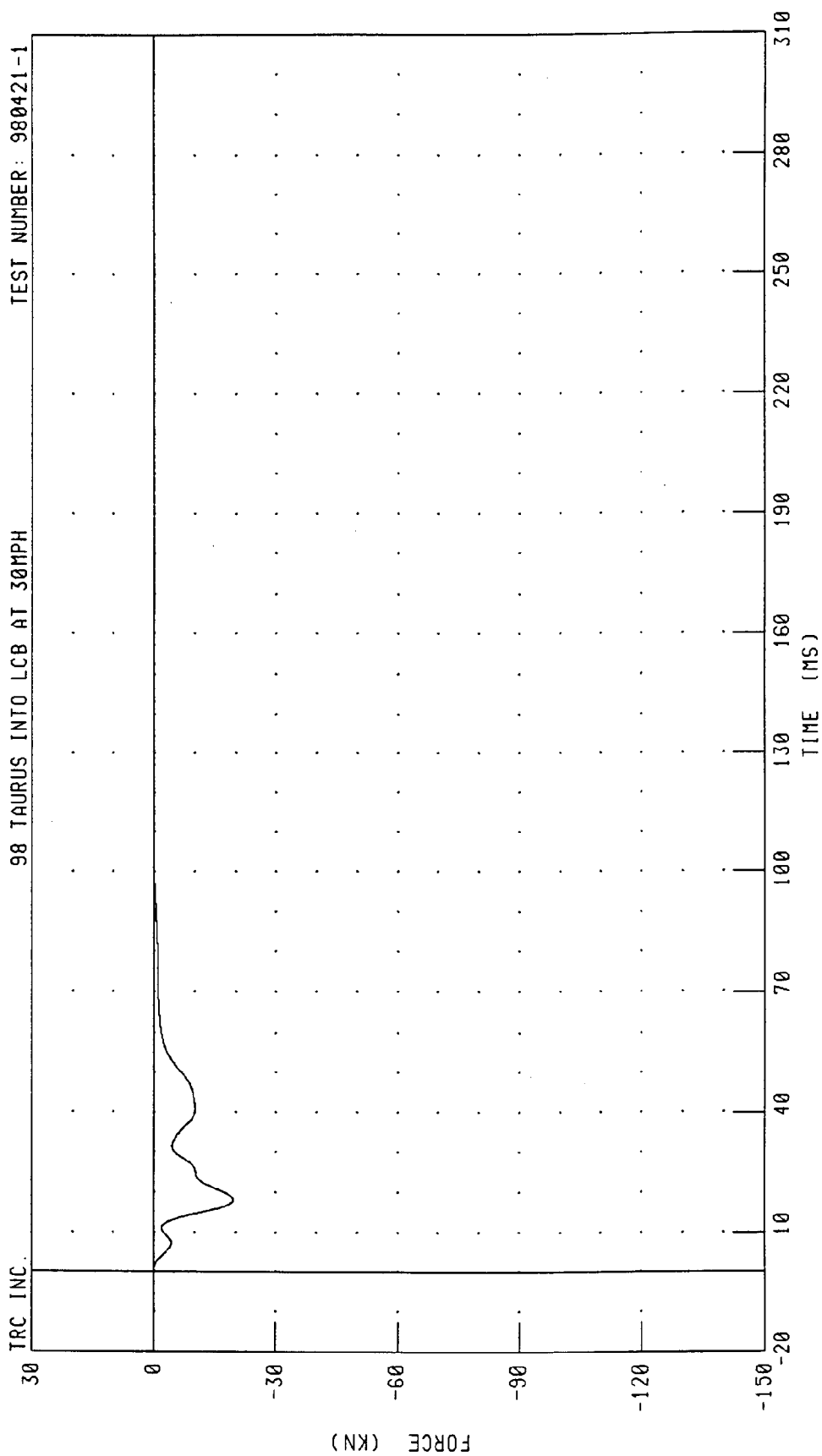
TRC INC.



CHANNEL: BC3F FILTER: CH. CLASS 60 PEAK DATA: 0.39 KN @ 4.56 MS, -25.90 KN @ 18.72 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION C4 FORCE

98 TAURUS INTO LCB AT 30MPH TEST NUMBER: 980421-1



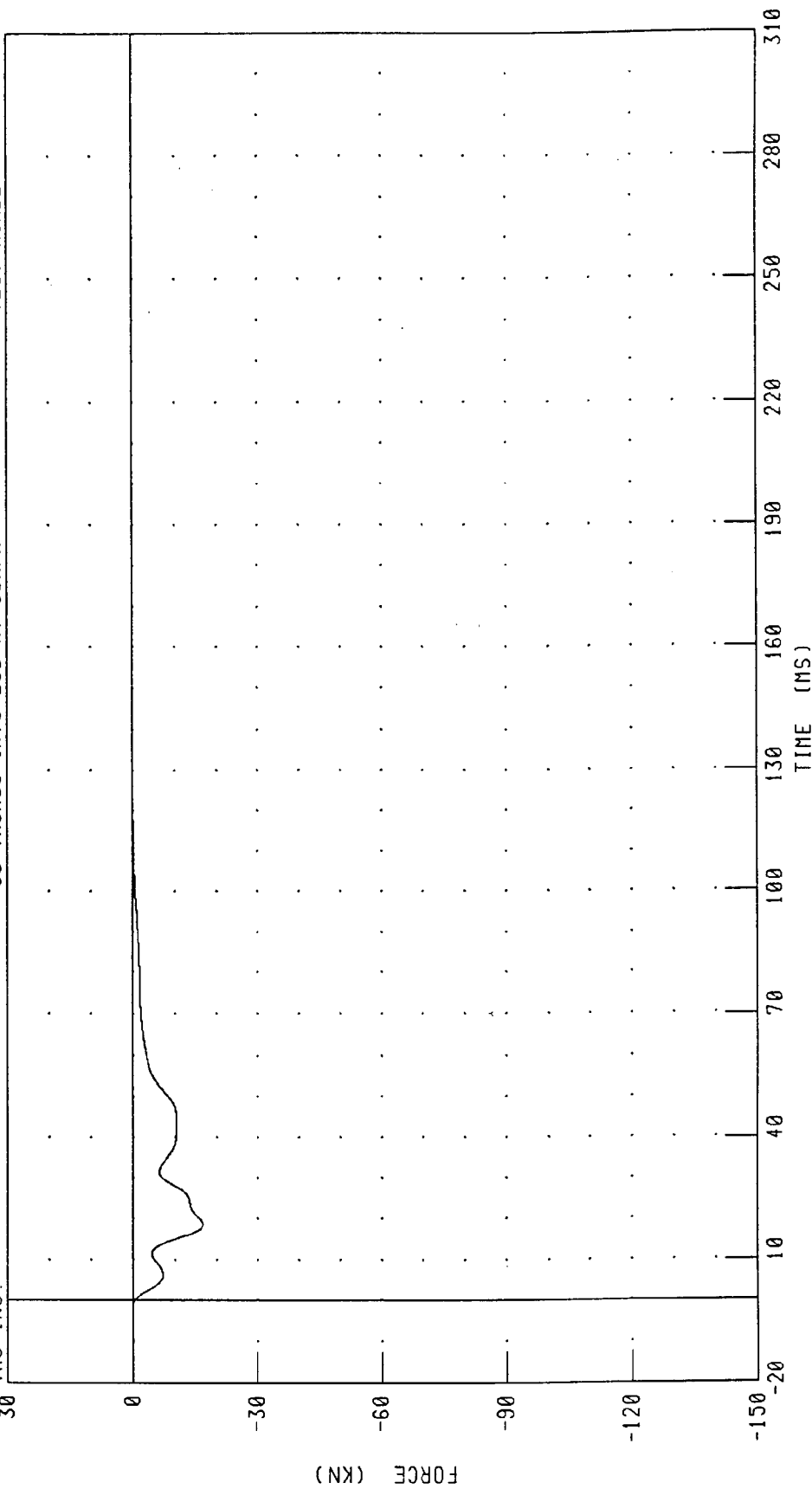
CHANNEL: BC4F FILTER: CH. CLASS 60 PEAK DATA: 0.13 KN @ -0.24 MS, -19.46 KN @ 18.16 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION C5 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



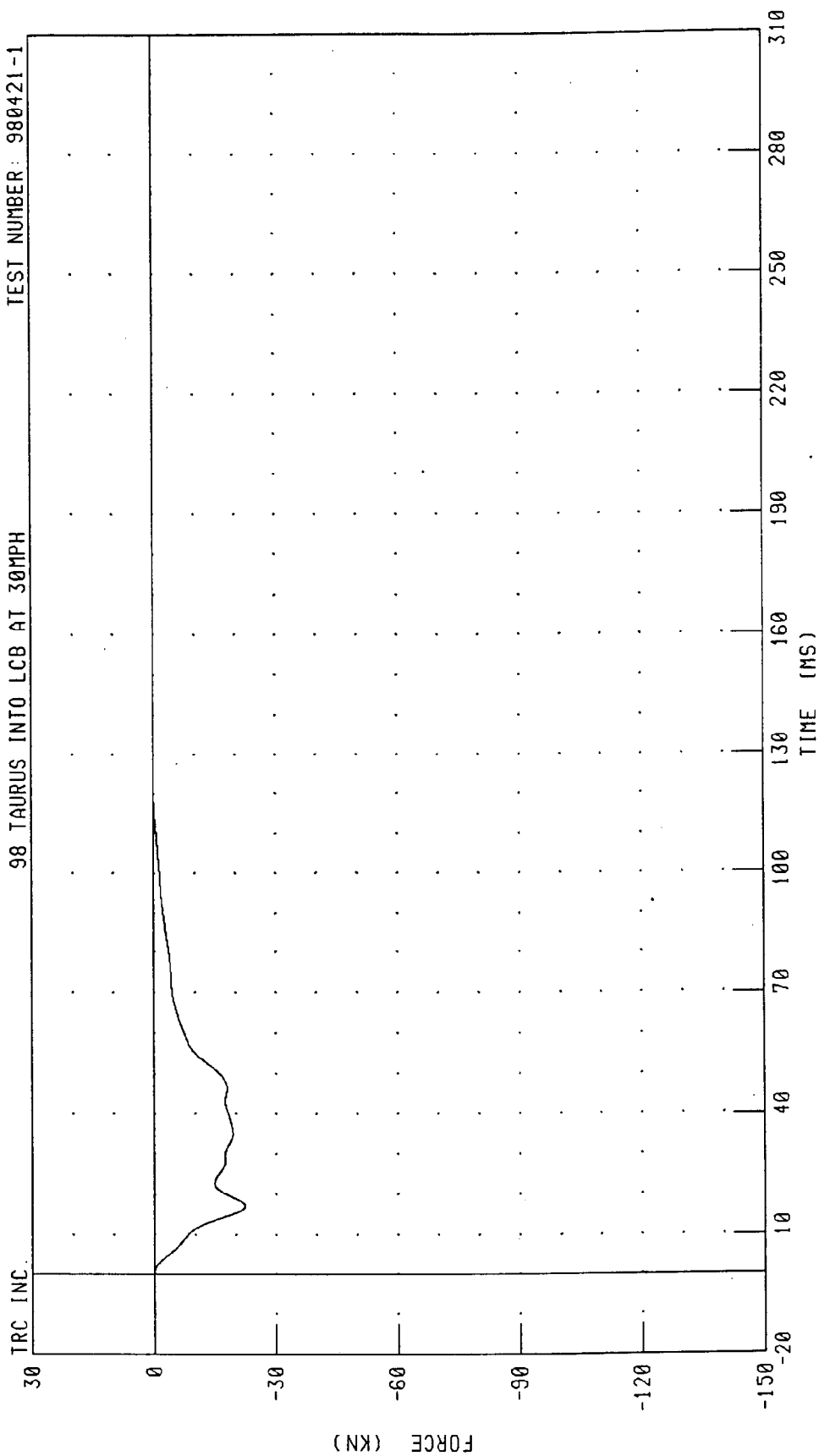
PEAK DATA: 0.21 KN @ -2.08 MS, -16.63 KN @ 18.64 MS

FILTER: CH. CLASS 60

CHANNEL: BC5F

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION C6 FORCE
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



CHANNEL: BC6F FILTER: CH. CLASS 60

PEAK DATA: 0.11 KN @ -0.48 MS; -22.33 KN @ 17.20 MS

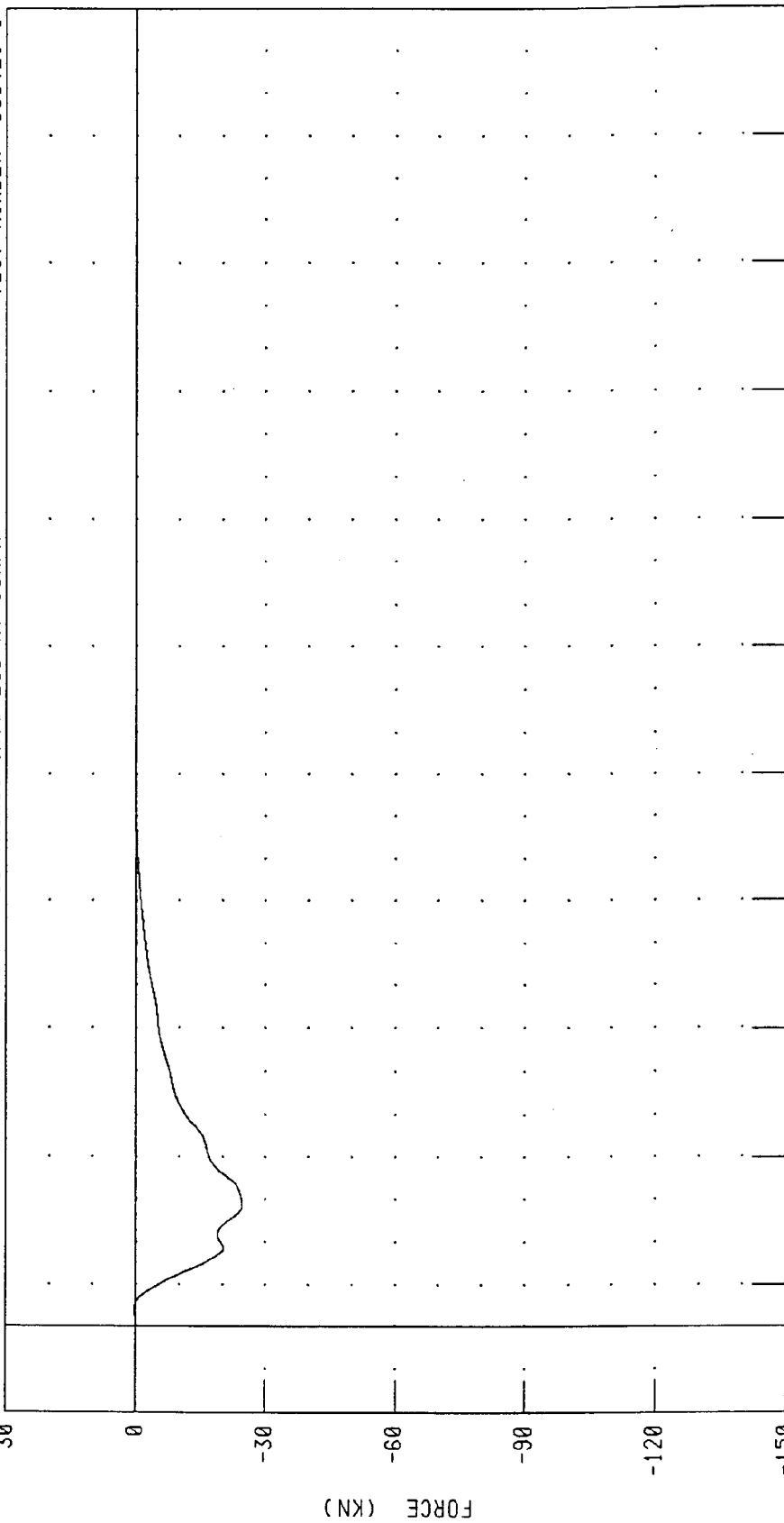
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION C7 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.

30



TIME (MS)

PEAK DATA: 0.30 KN @ 4.00 MS, -24.67 KN @ 28.80 MS

FILTER: CH. CLASS 60

CHANNEL: BC7F

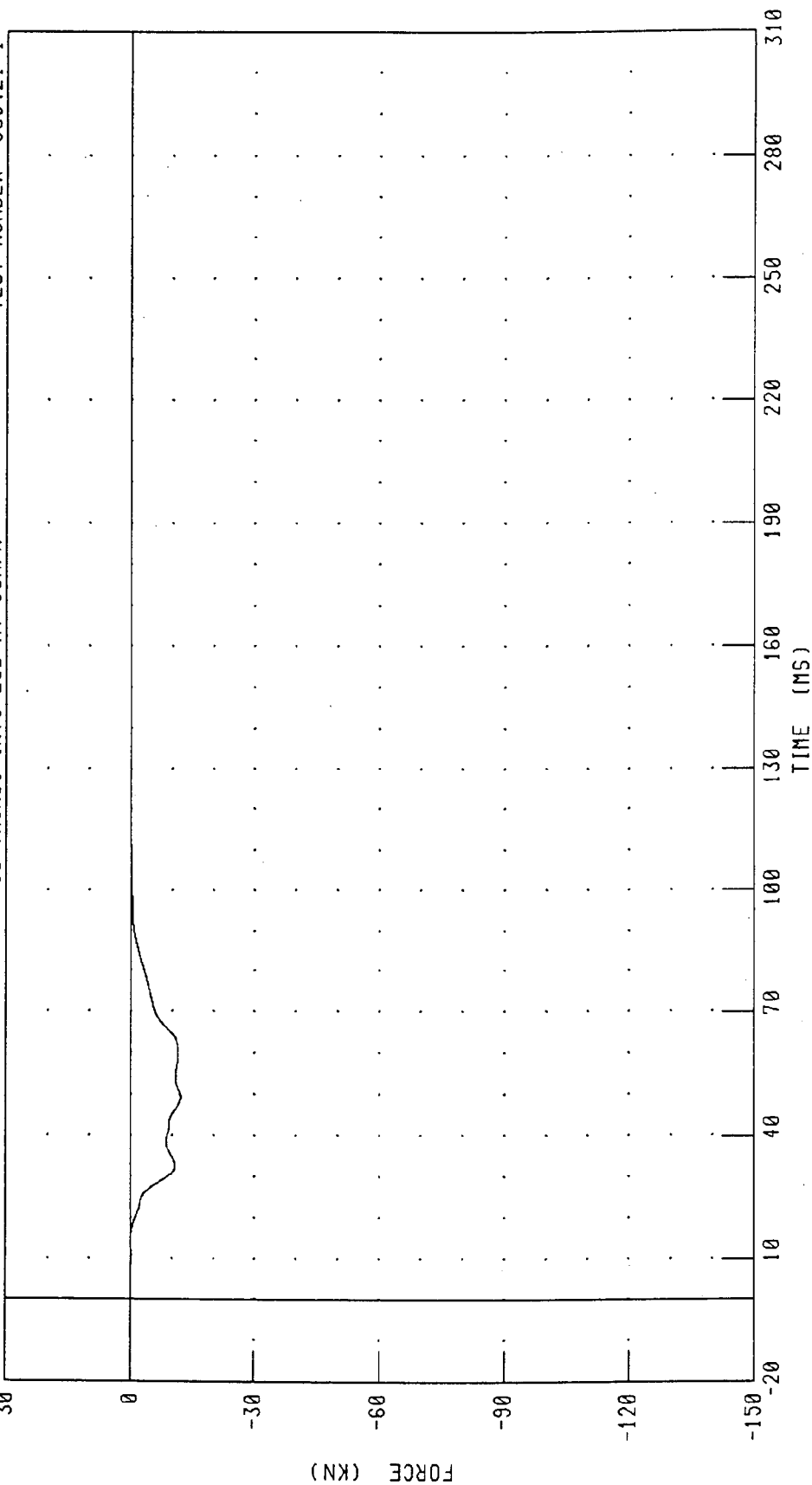
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER POSITION C8 FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: BC8F FILTER: CH. CLASS 60

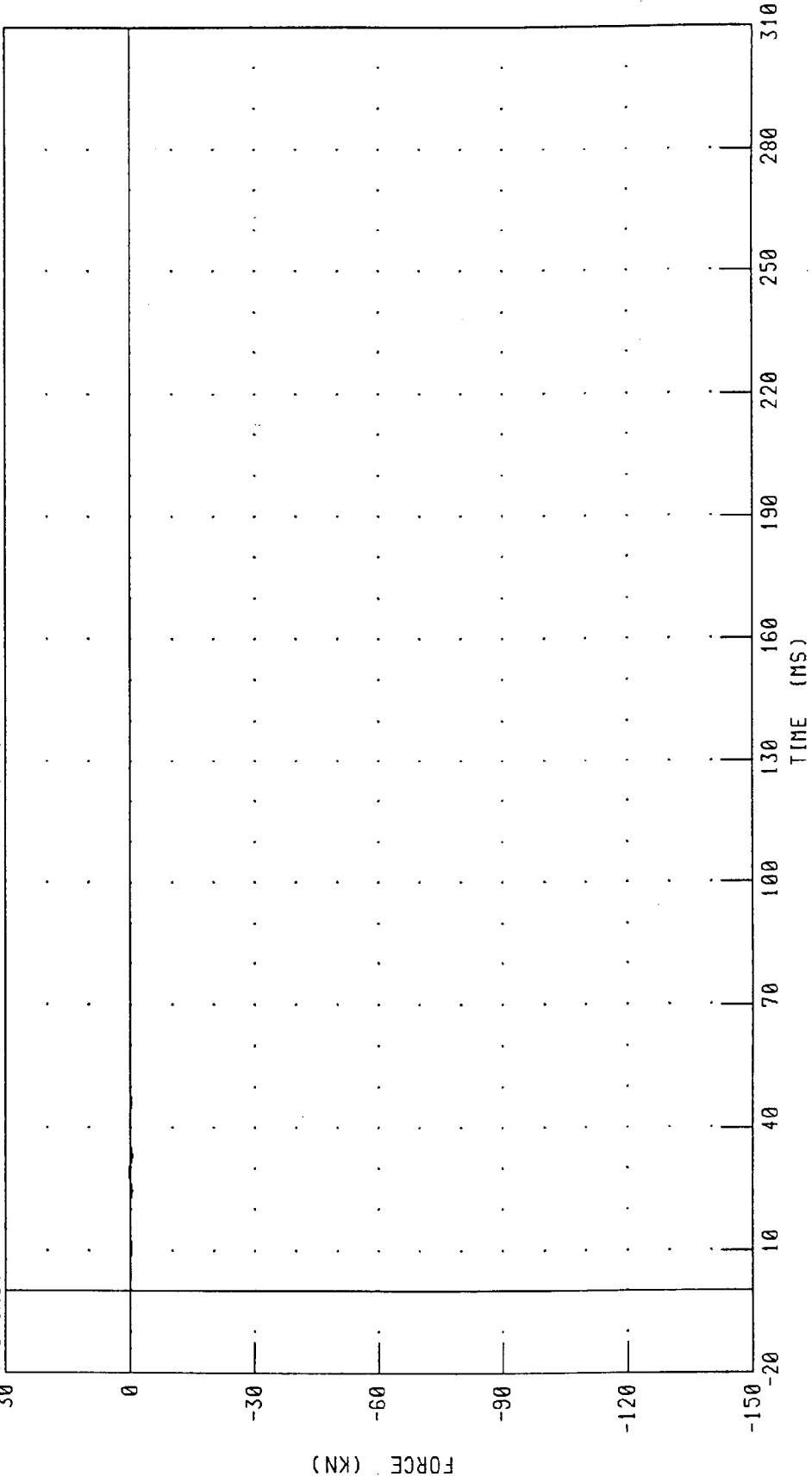
PEAK DATA: 0.16 KN @ 14.16 MS; -12.02 KN @ 49.36 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION C9 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



CHANNEL: BC9F

FILTER: CH. CLASS 60

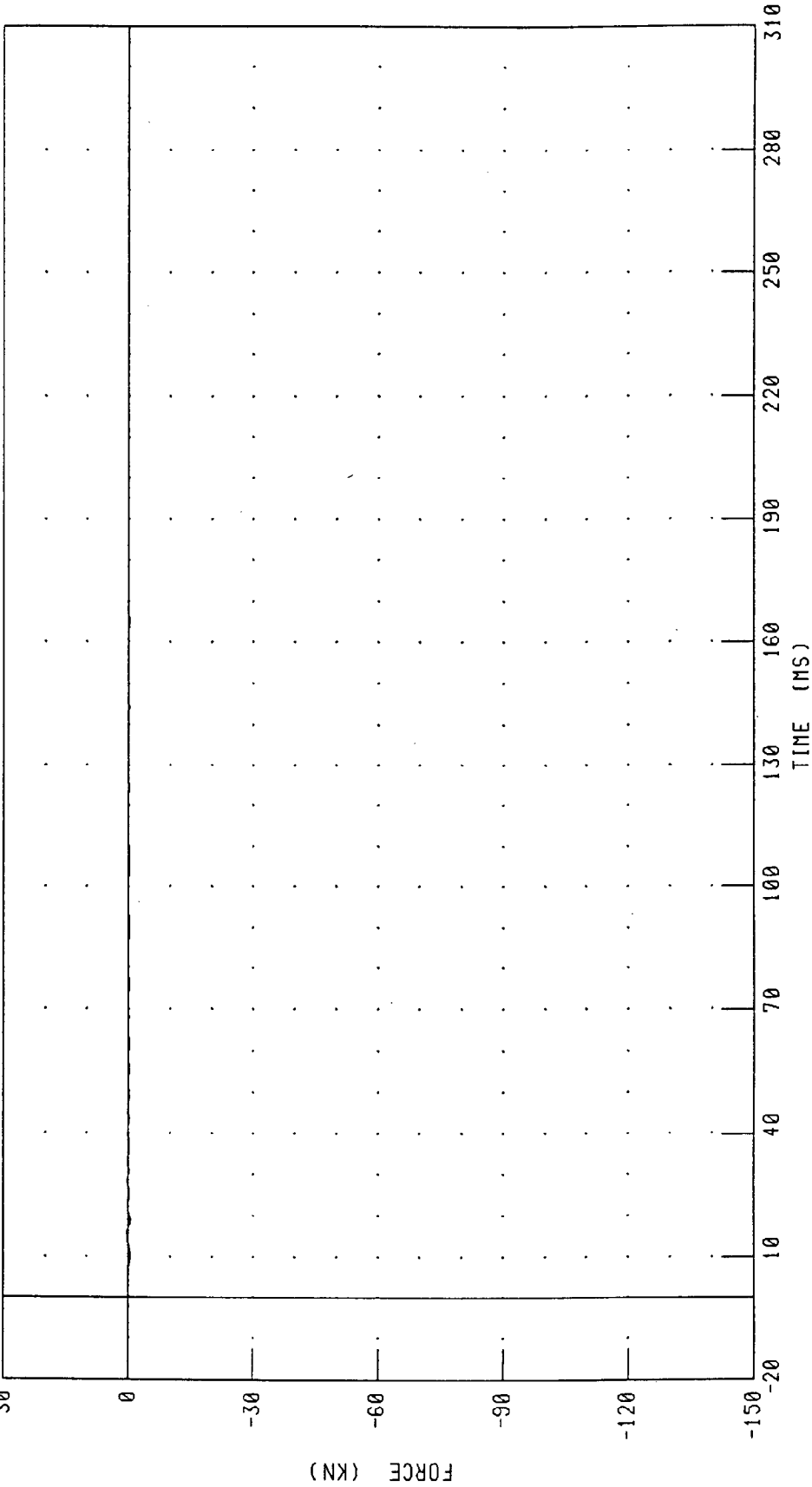
PEAK DATA: 0.38 KN @ 28.96 MS; -0.32 KN @ 33.28 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION D1 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



PEAK DATA: 0.41 KN @ 15.28 MS, -0.40 KN @ 18.96 MS

FILTER: CH. CLASS 60

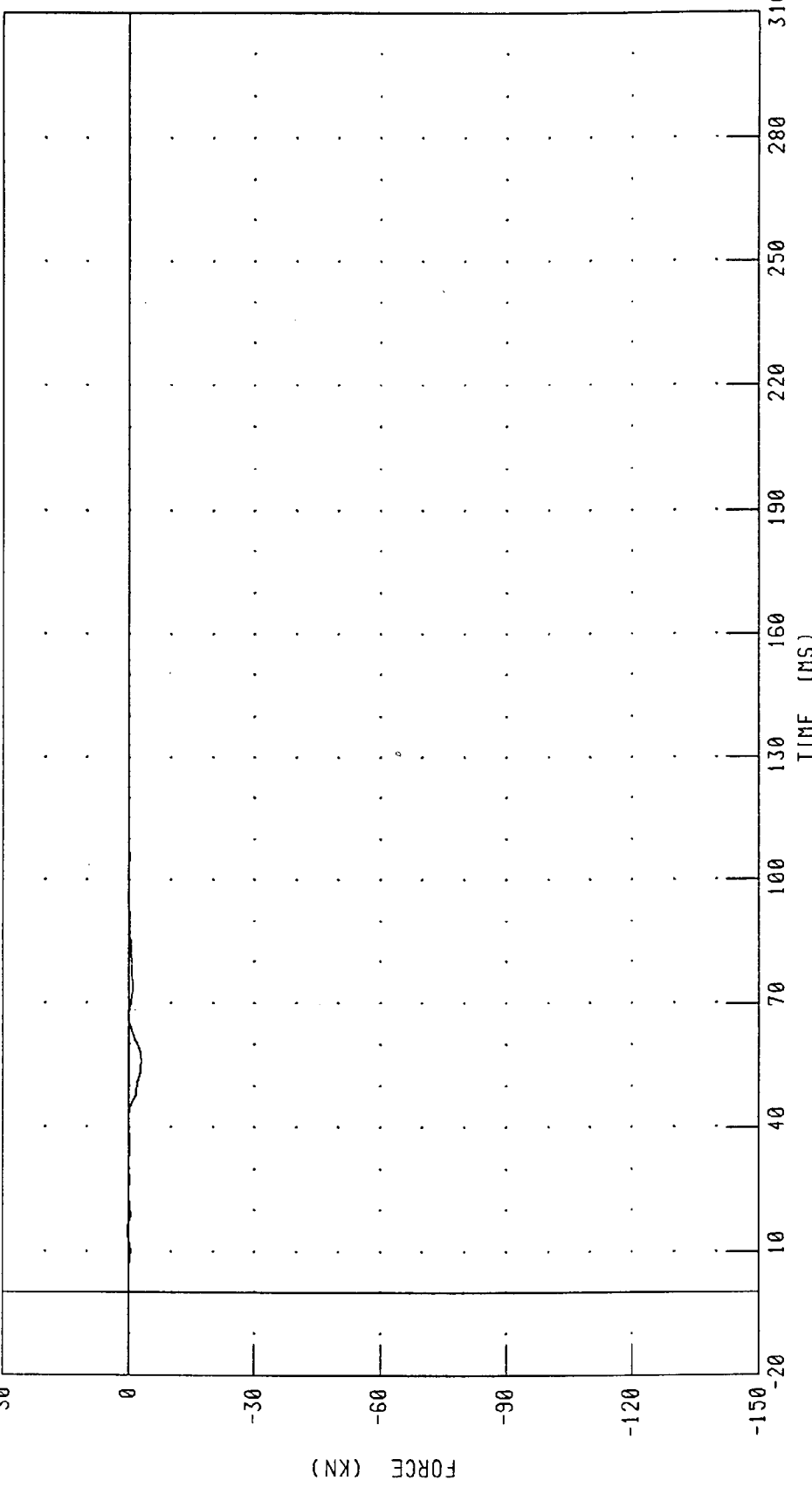
CHANNEL: BD1F

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION D2 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



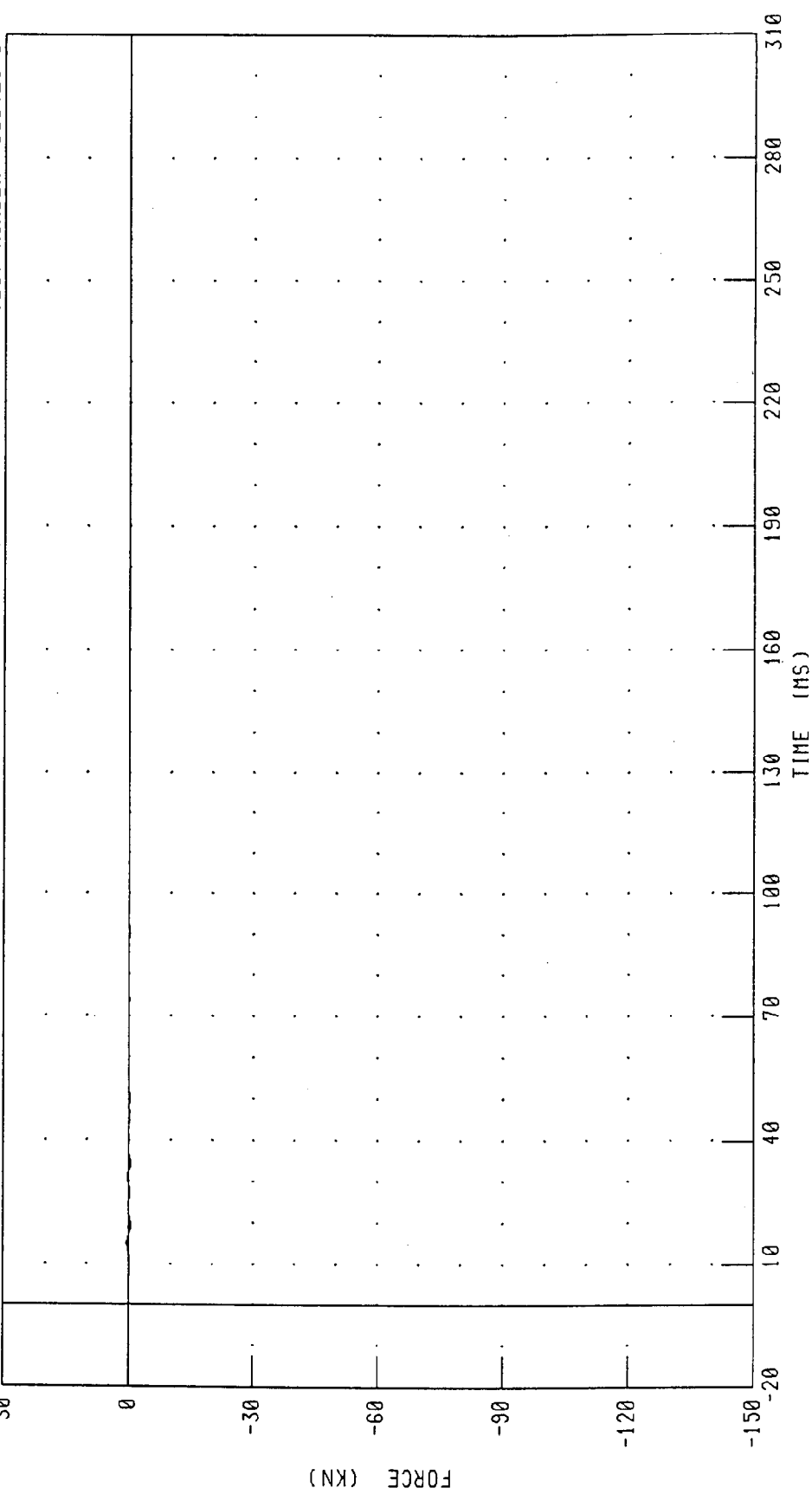
CHANNEL: 802F FILTER: CH. CLASS 60

PEAK DATA: 0.46 KN @ 15.20 MS, -2.84 KN @ 56.16 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION D3 FORCE
 98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



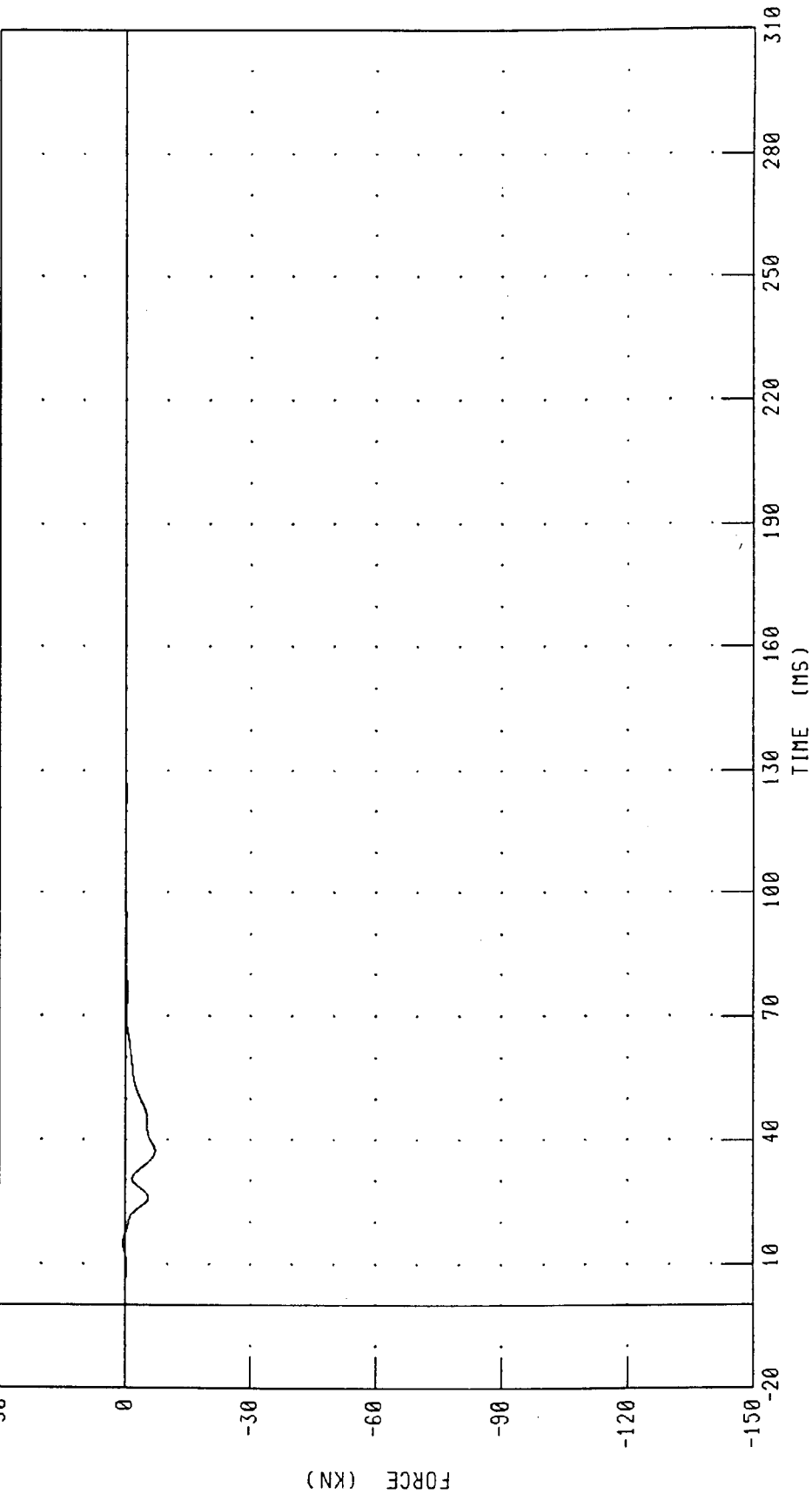
CHANNEL: BD3F FILTER: CH. CLASS 60 PEAK DATA: 0.50 KN @ 15.12 MS; -0.42 KN @ 19 20 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION D4 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.

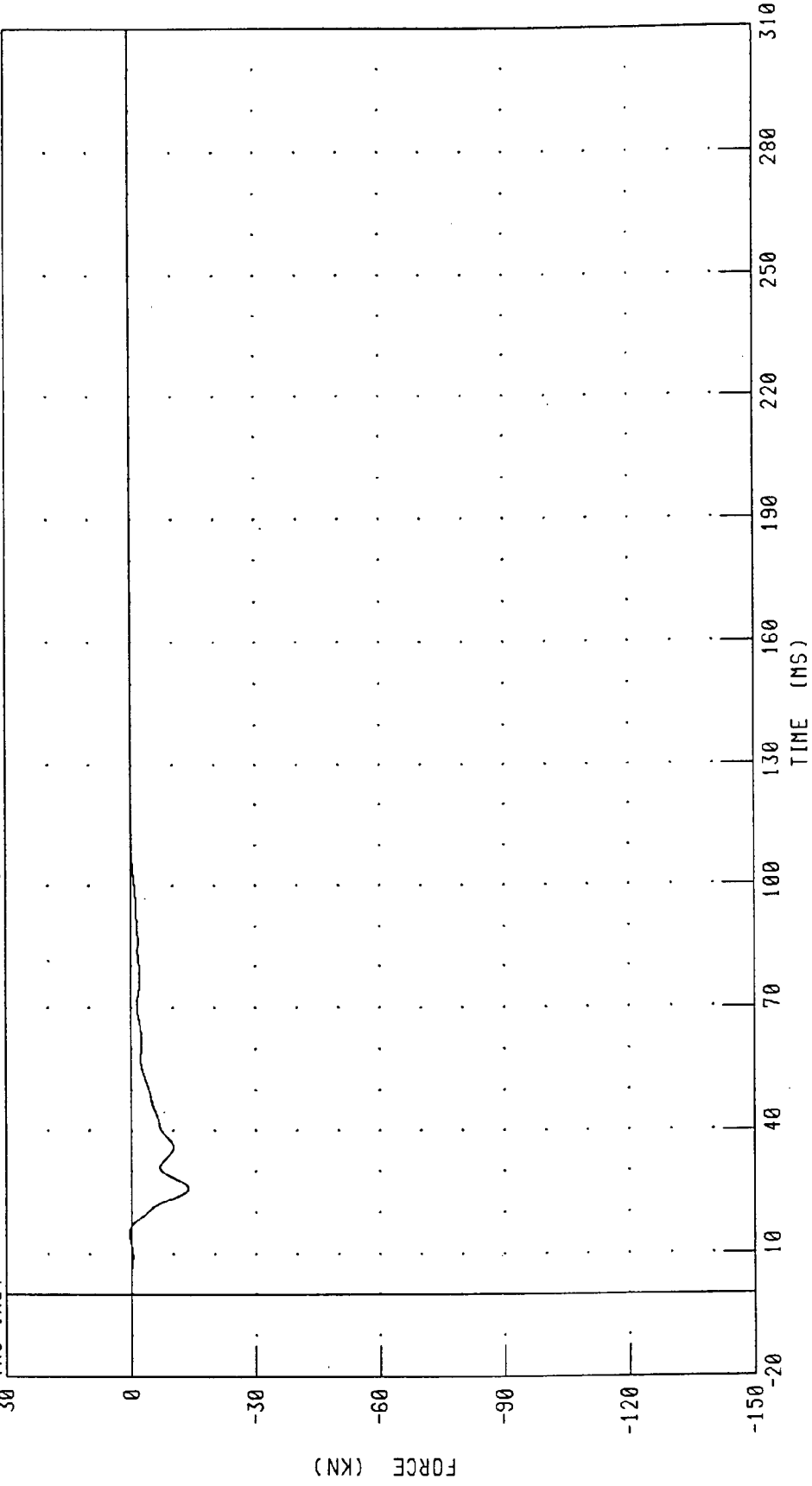


CHANNEL: BD4F FILTER: CH. CLASS 60 PEAK DATA: 0.57 KN @ 15.04 MS, -6.93 KN @ 37.36 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION D5 FORCE
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



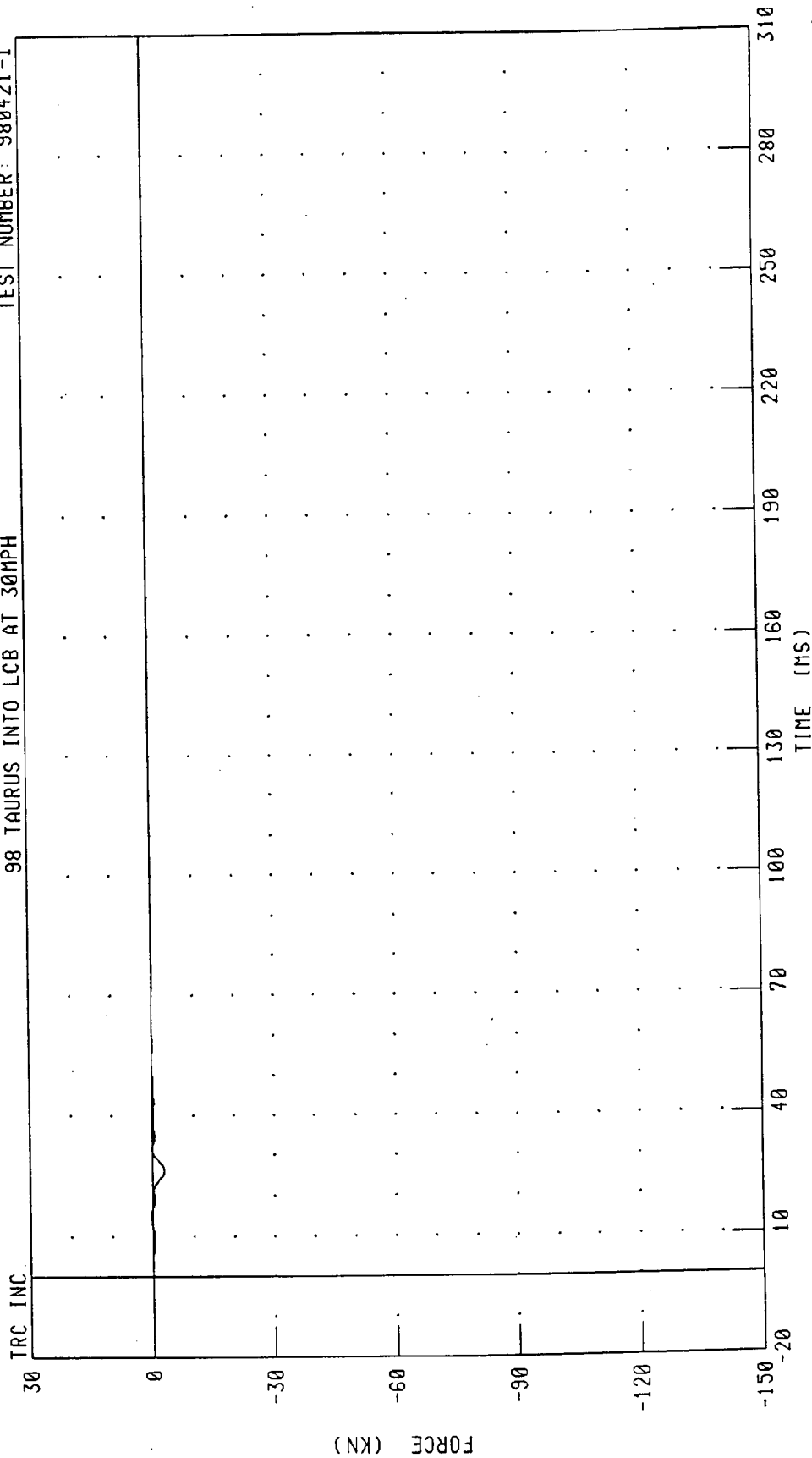
PEAK DATA: 0.63 KN @ 15.12 MS; -13.67 KN @ 25.92 MS

FILTER: CH. CLASS 60

CHANNEL: BD5F

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER POSITION D6 FORCE

98 TAURUS INTO LCB AT 30MPH TEST NUMBER: 980421-1

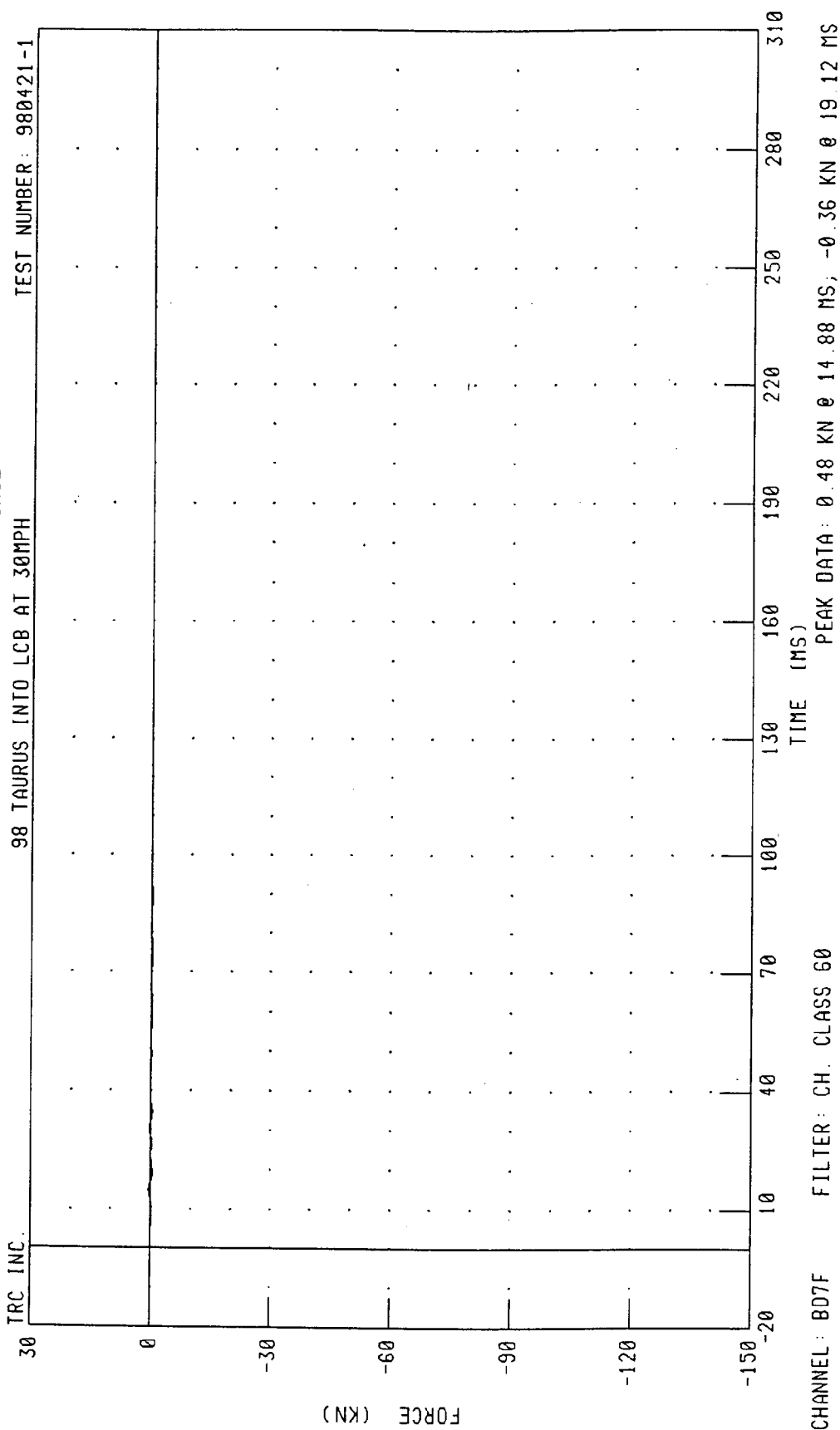


CHANNEL: BD6F

FILTER: CH. CLASS 60

PEAK DATA: 0.50 KN @ 14.96 MS, -2.81 KN @ 26.32 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION D7 FORCE

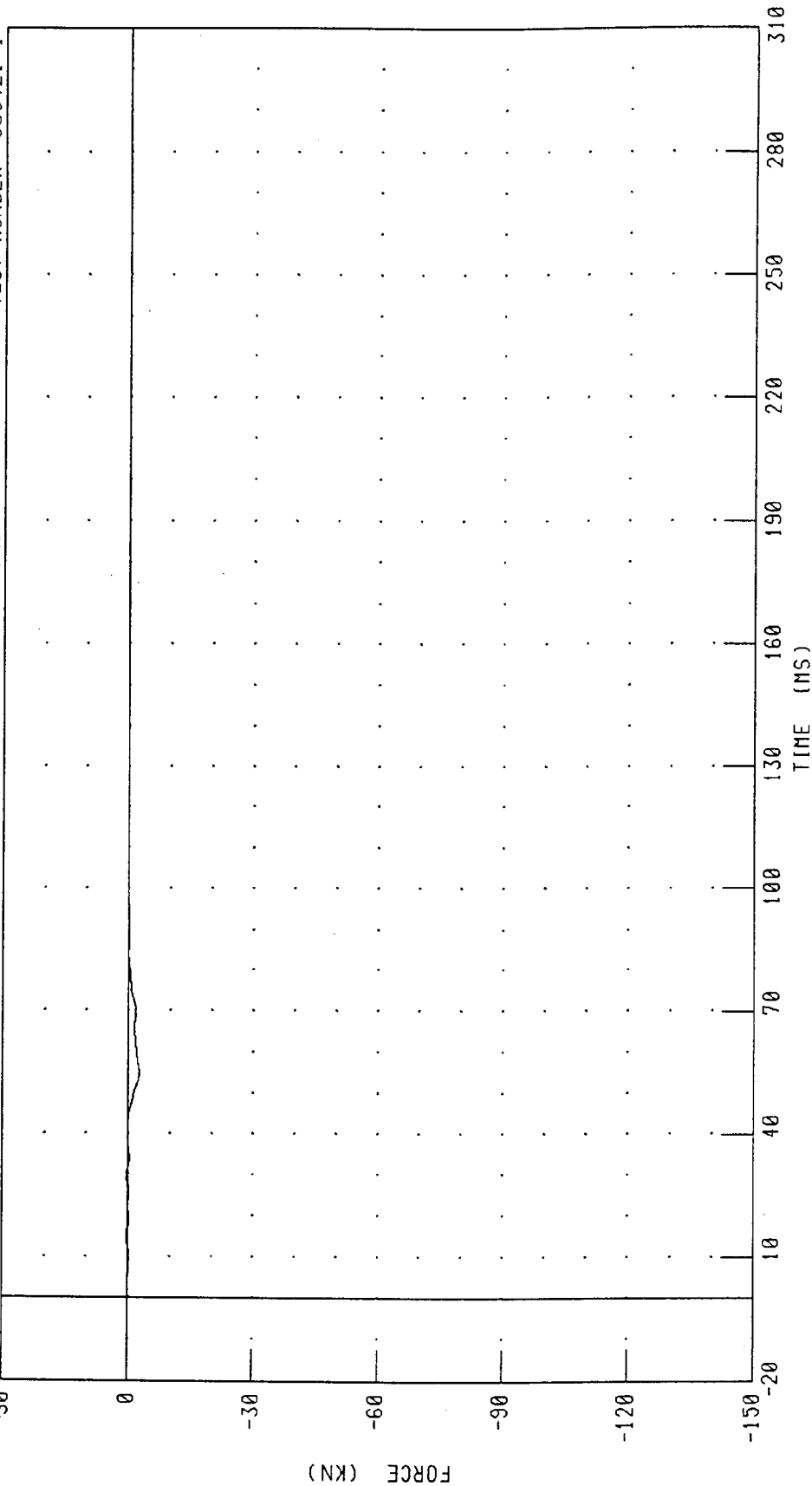


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION D8 FORCE

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



PEAK DATA: 0.46 KN @ 14.88 MS; -2.65 KN @ 54.72 MS

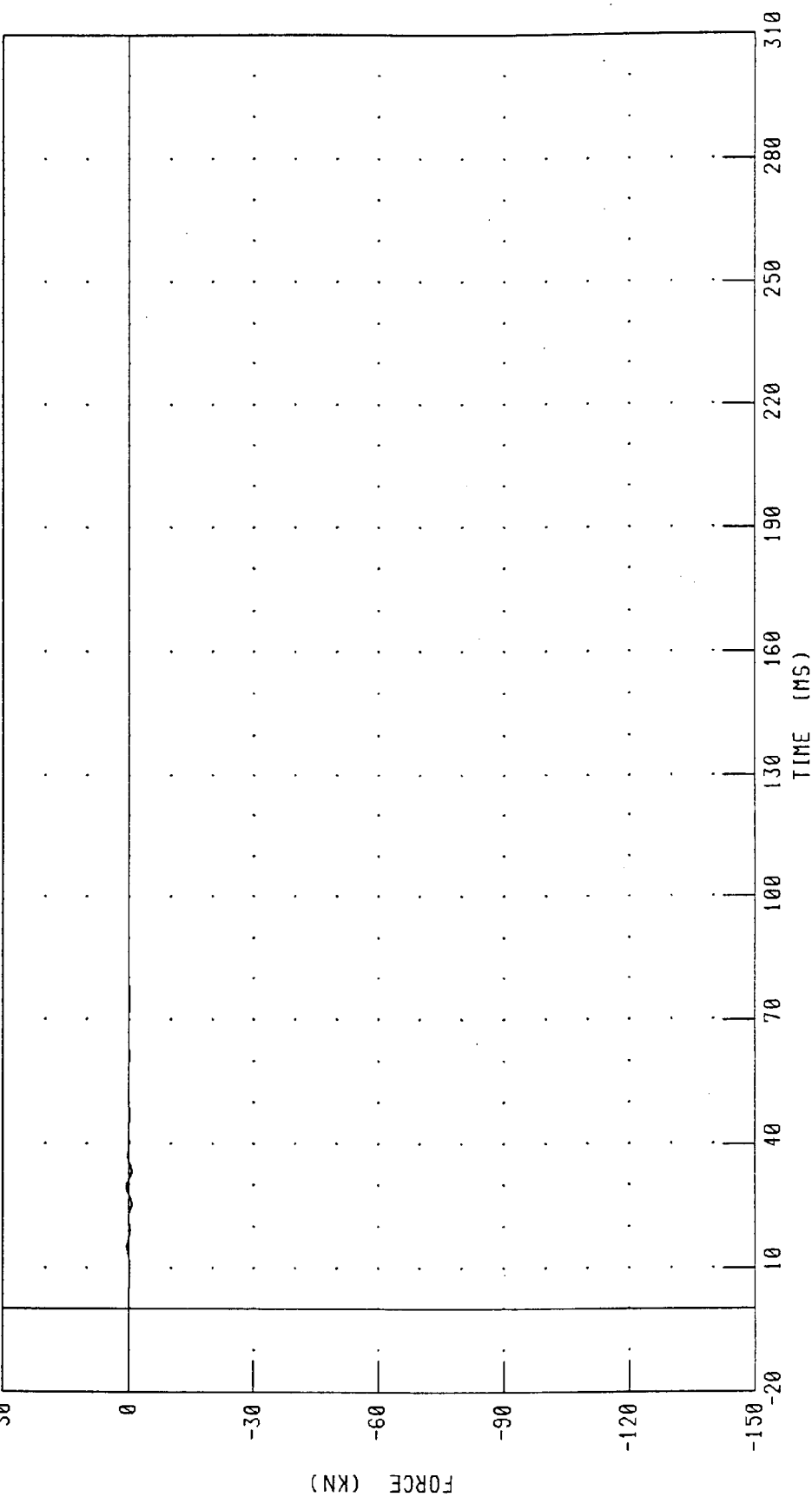
FILTER: CH. CLASS 60

CHANNEL: BD8F

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER POSITION D9 FORCE
 98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



PEAK DATA: 0.71 KN @ 29.52 MS, -0.60 KN @ 33.52 MS

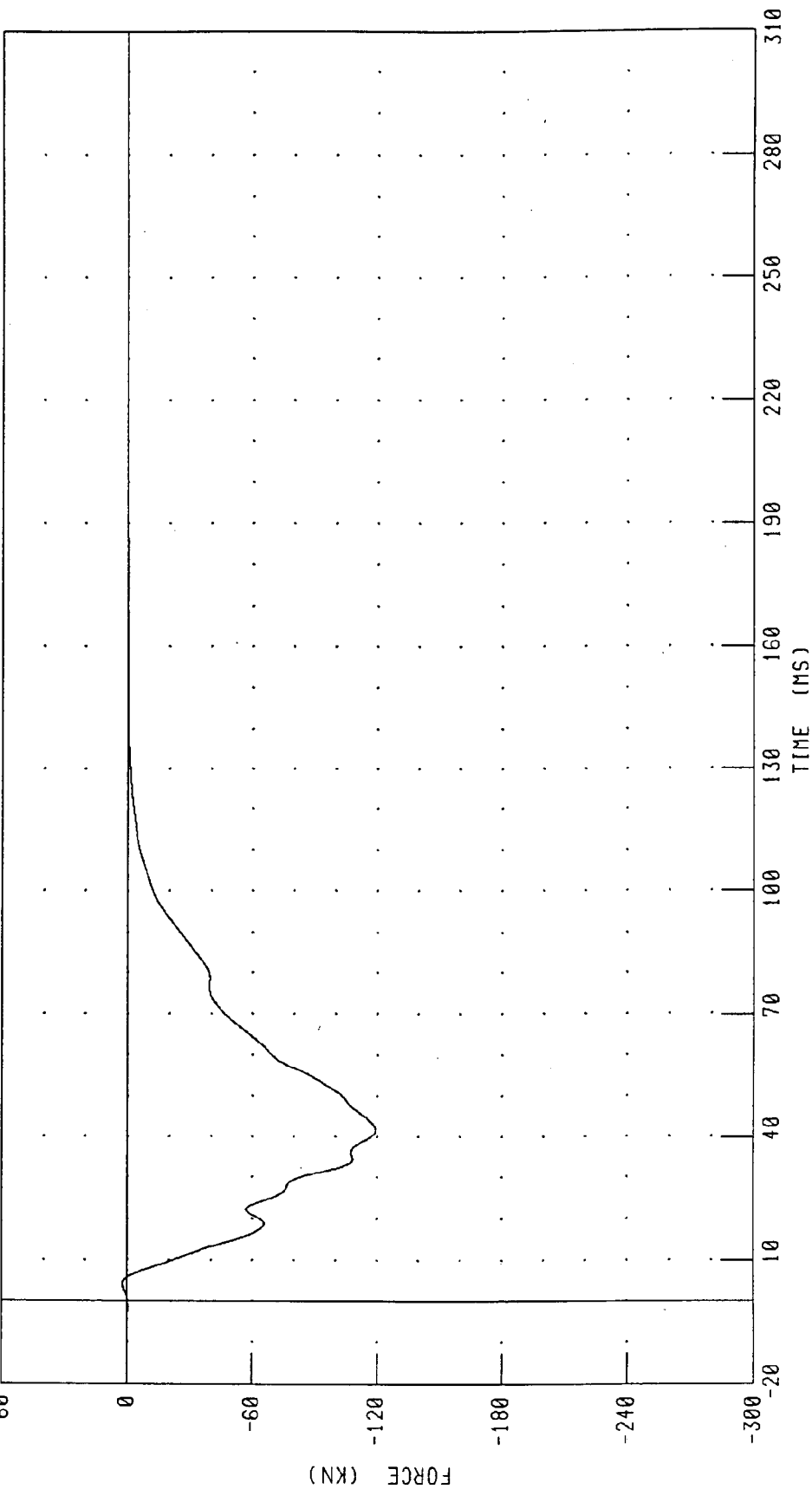
FILTER: CH. CLASS 60

CHANNEL: BD9F

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER GROUP # 1 FORCE TOTAL
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

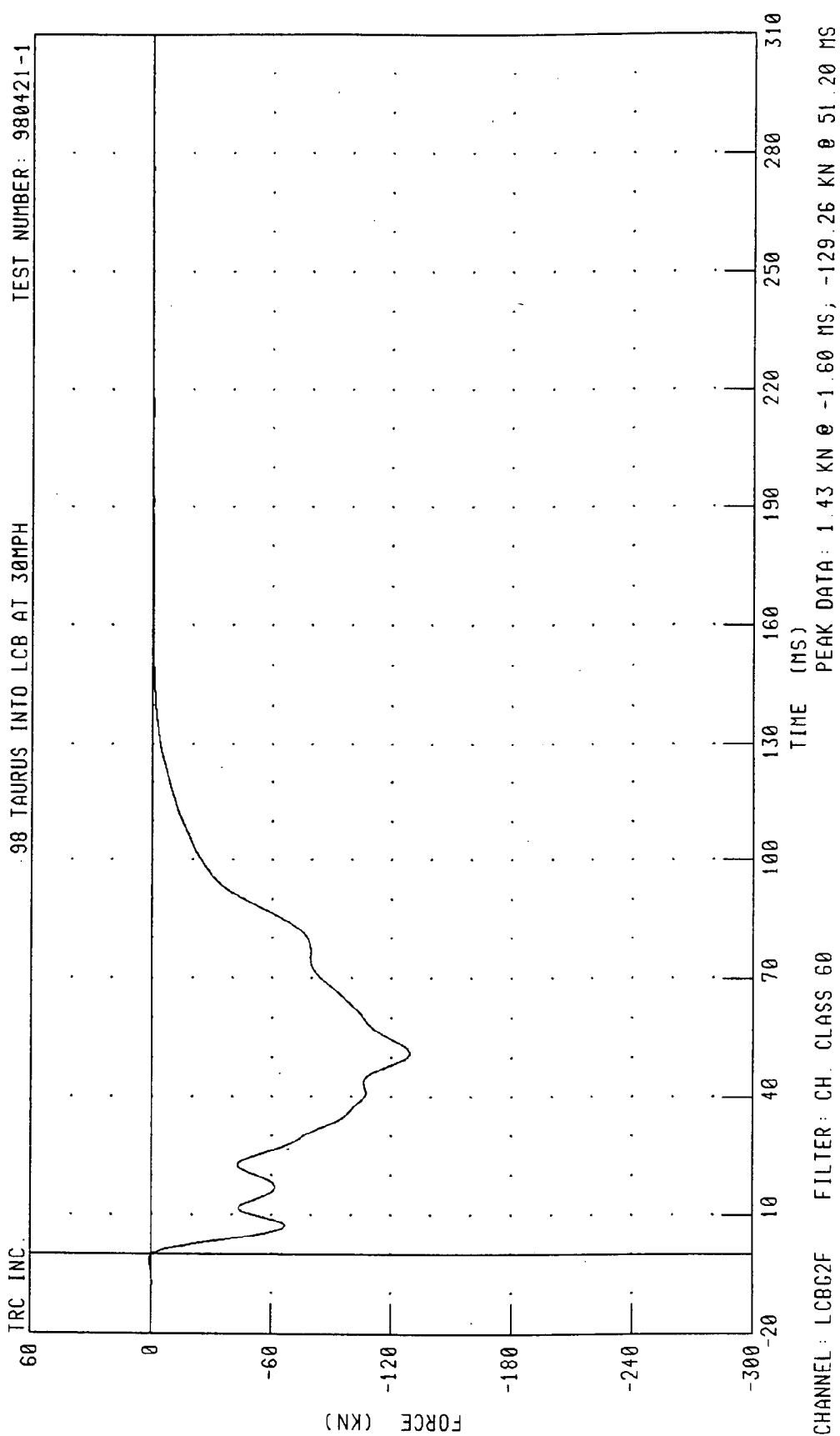
TRC INC.



PEAK DATA: 2.29 KN @ 4.24 MS, -119.34 KN @ 41.68 MS

CHANNEL: LCBG1F FILTER: CH. CLASS 60

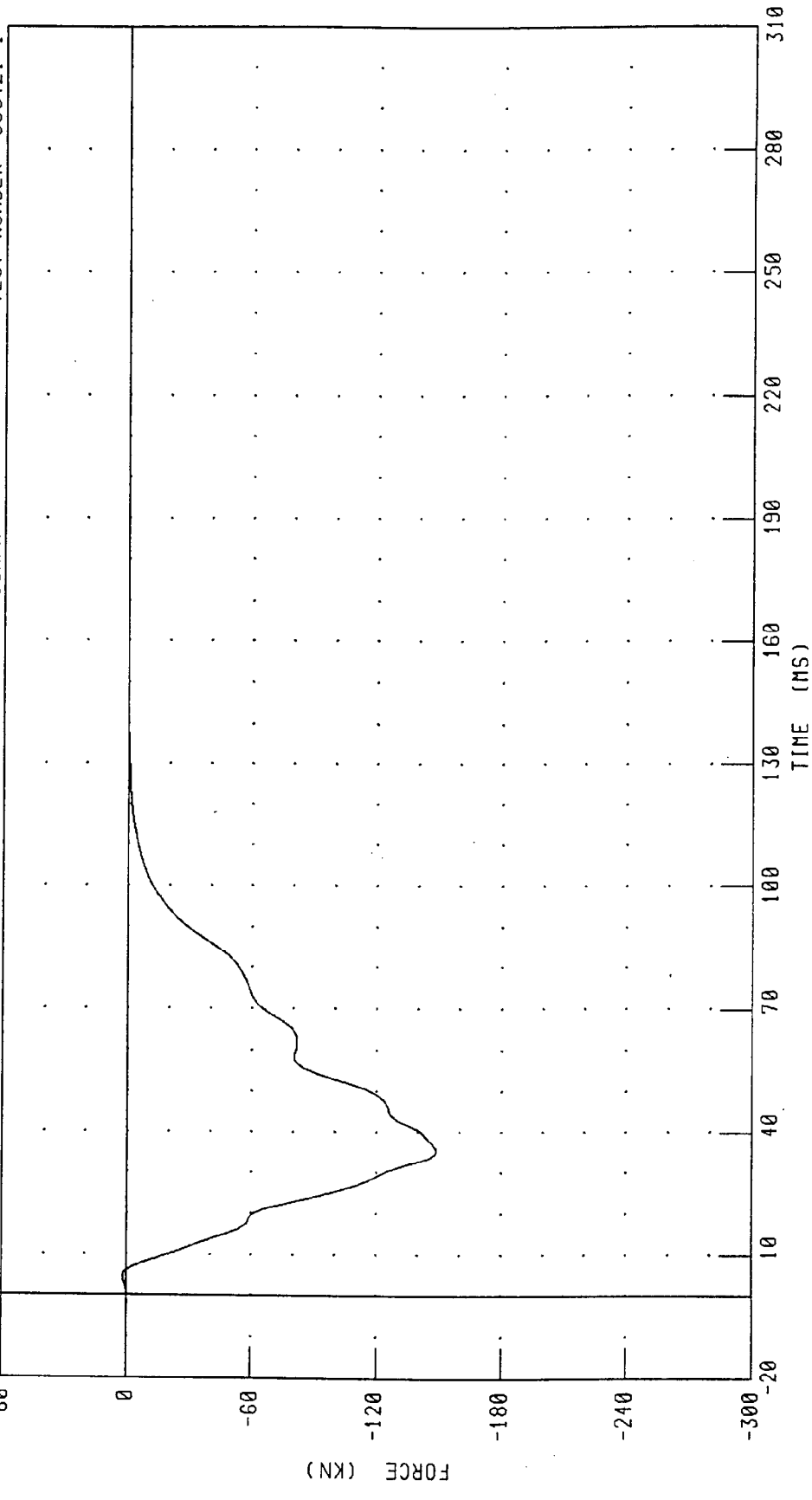
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER GROUP # 2 FORCE TOTAL



1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER GROUP # 3 FORCE TOTAL
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.

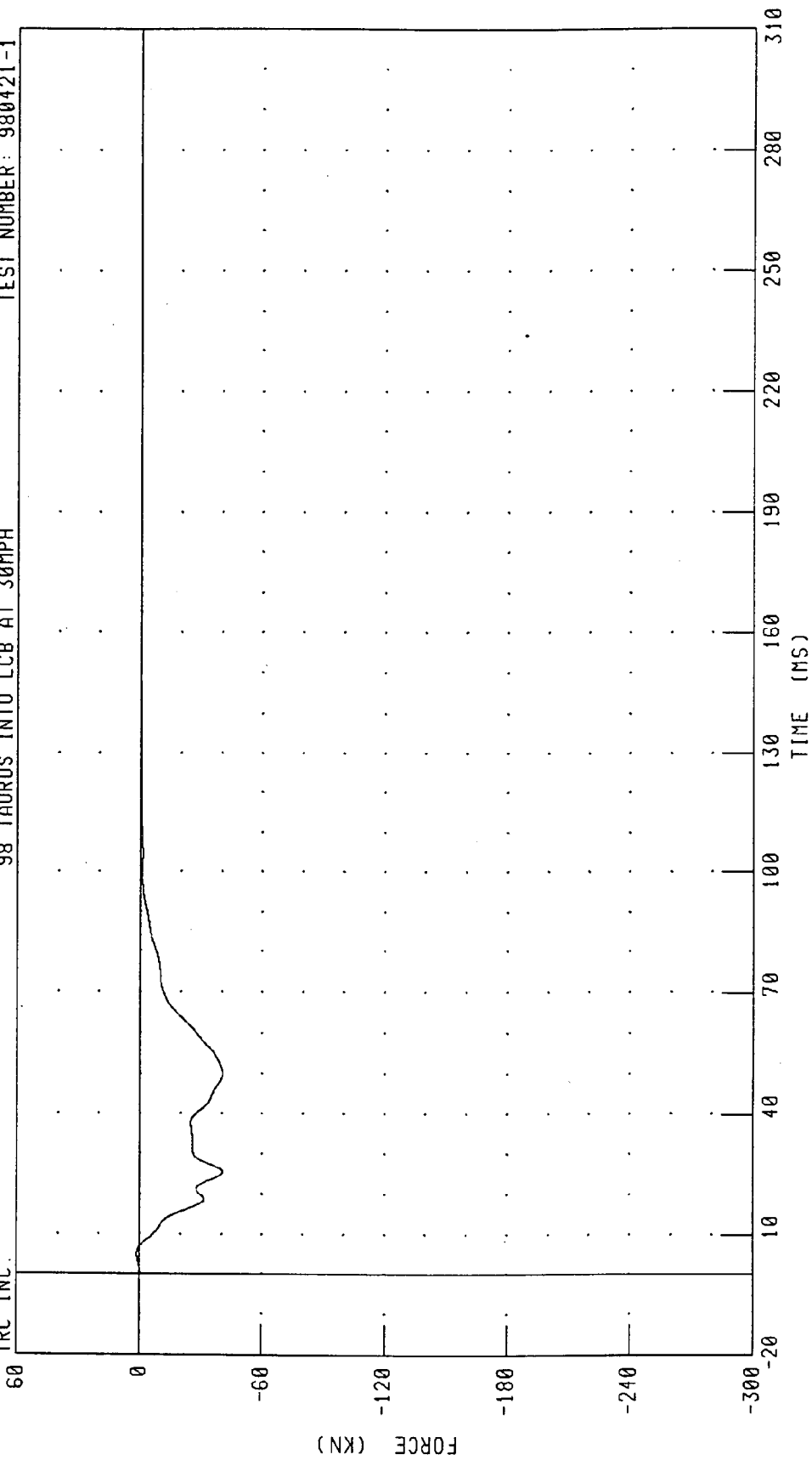


CHANNEL: LC8G3F FILTER: CH. CLASS 60
PEAK DATA: 1.83 KN @ 4.48 MS; -148.87 KN @ 35.60 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER GROUP # 4 FORCE TOTAL
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



PEAK DATA: 1.50 KN @ 4.96 MS, -40.48 KN @ 25.52 MS

CHANNEL: LCBG4F FILTER: CH. CLASS 60

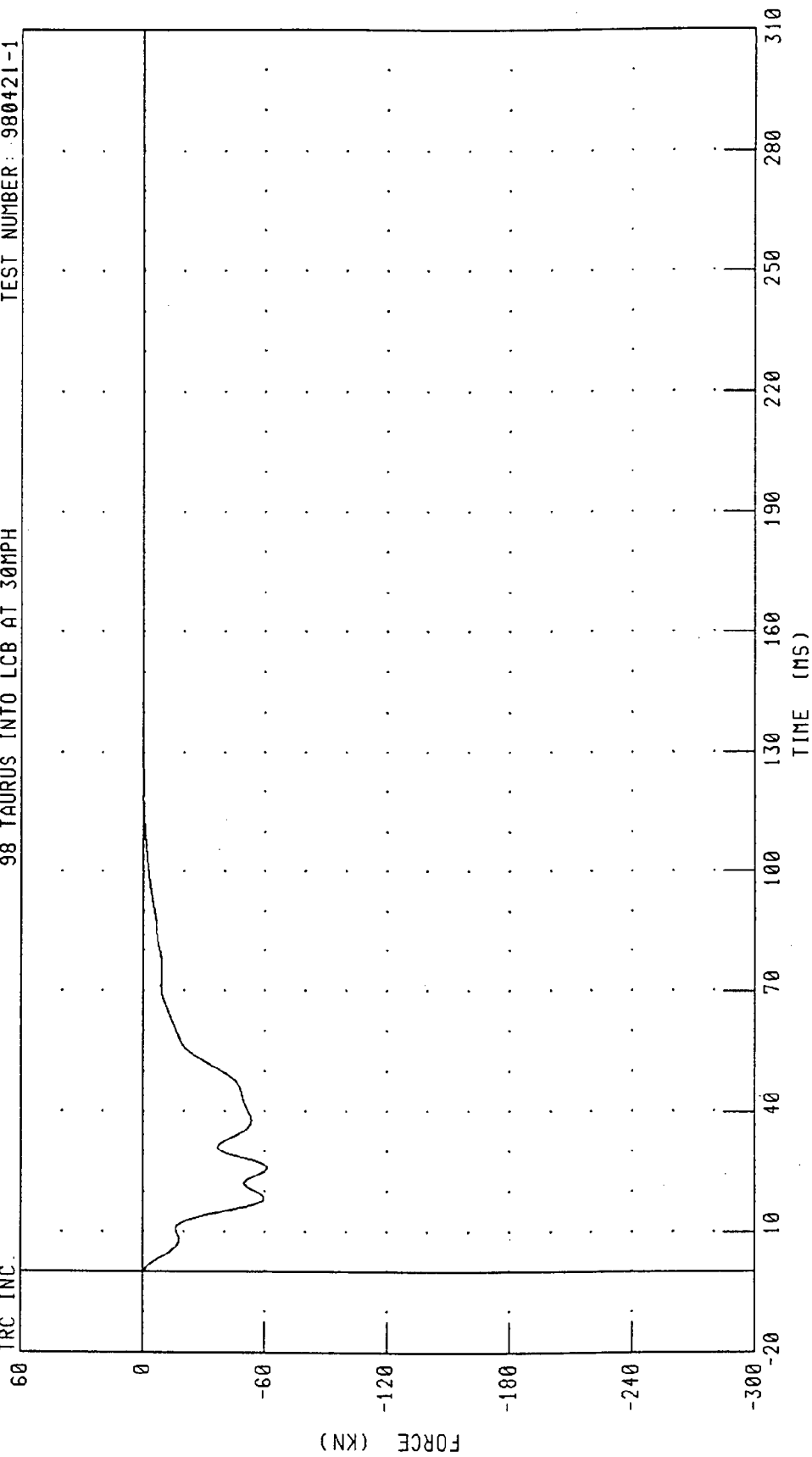
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

LOAD CELL BARRIER GROUP # 5 FORCE TOTAL

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: LCB05F FILTER: CH. CLASS 60

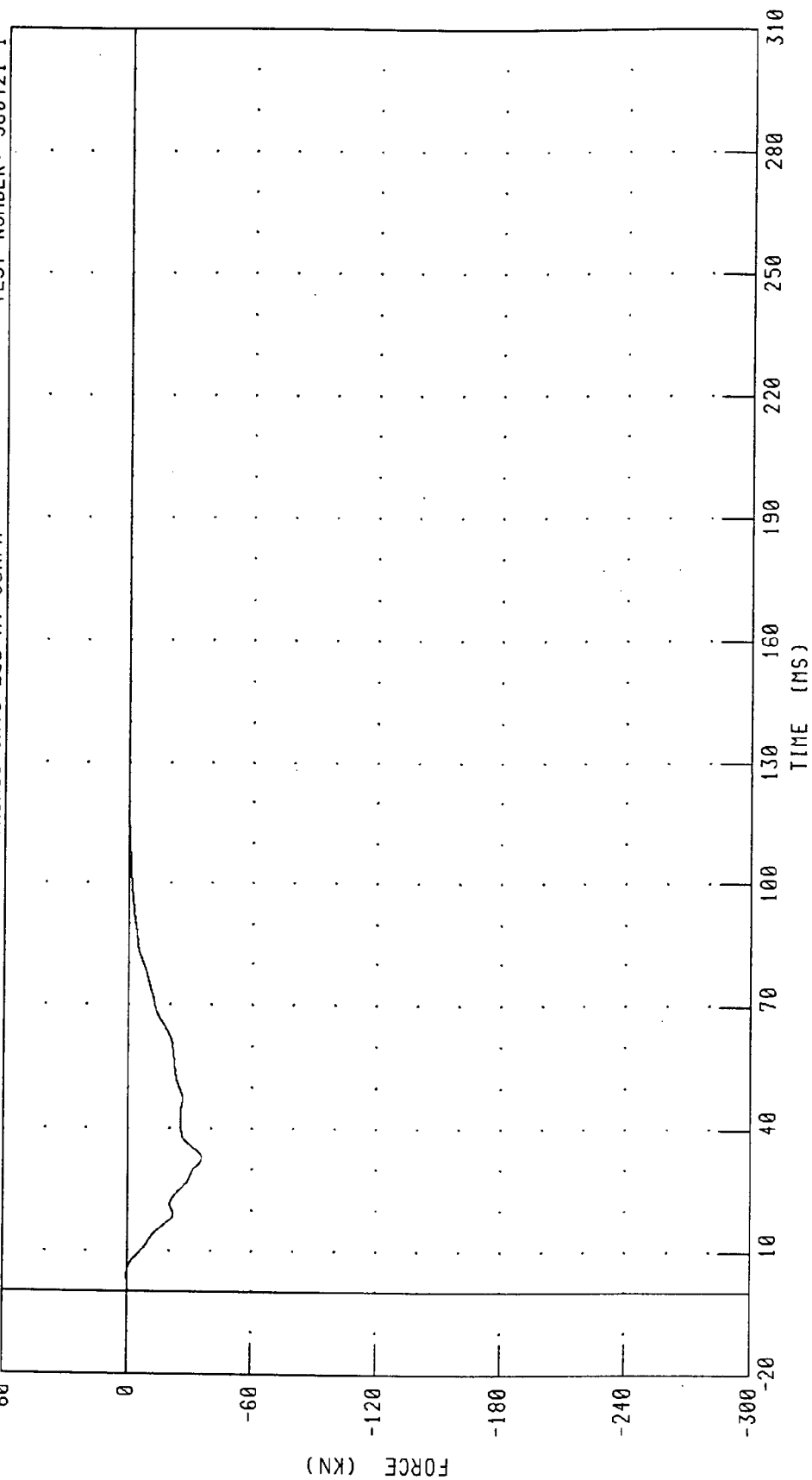
PEAK DATA: 0.33 KN @ -1.52 MS, -61.13 KN @ 25.92 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER GROUP # 6 FORCE TOTAL

TRC INC.

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1



CHANNEL: LCBG6F FILTER: CH. CLASS 60

PEAK DATA: 0.53 KN @ 4.00 MS, -35.49 KN @ 33.04 MS

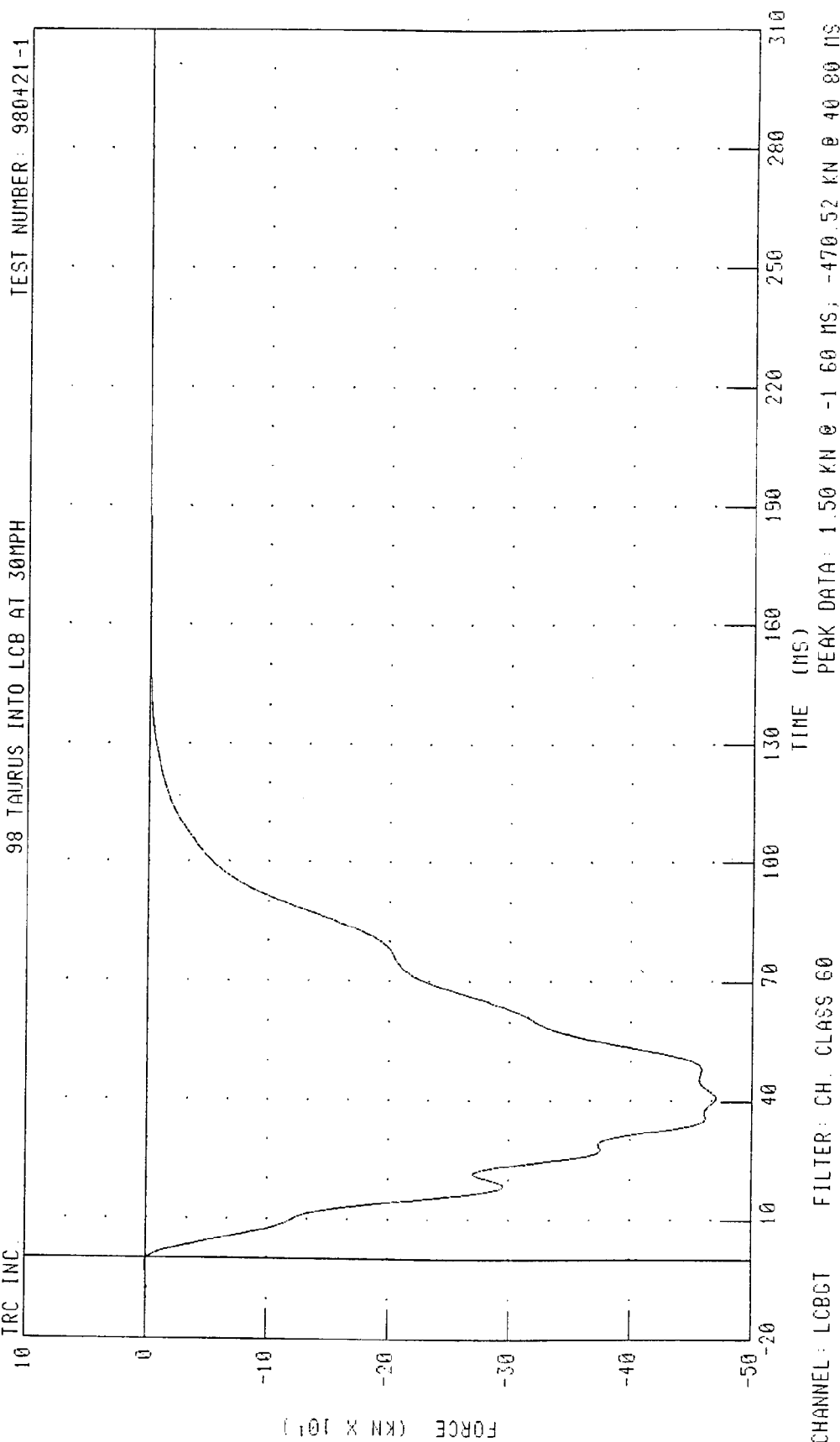
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

TOTAL LOAD CELL BARRIER FORCE

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: LCBGT FILTER: CH. CLASS 60

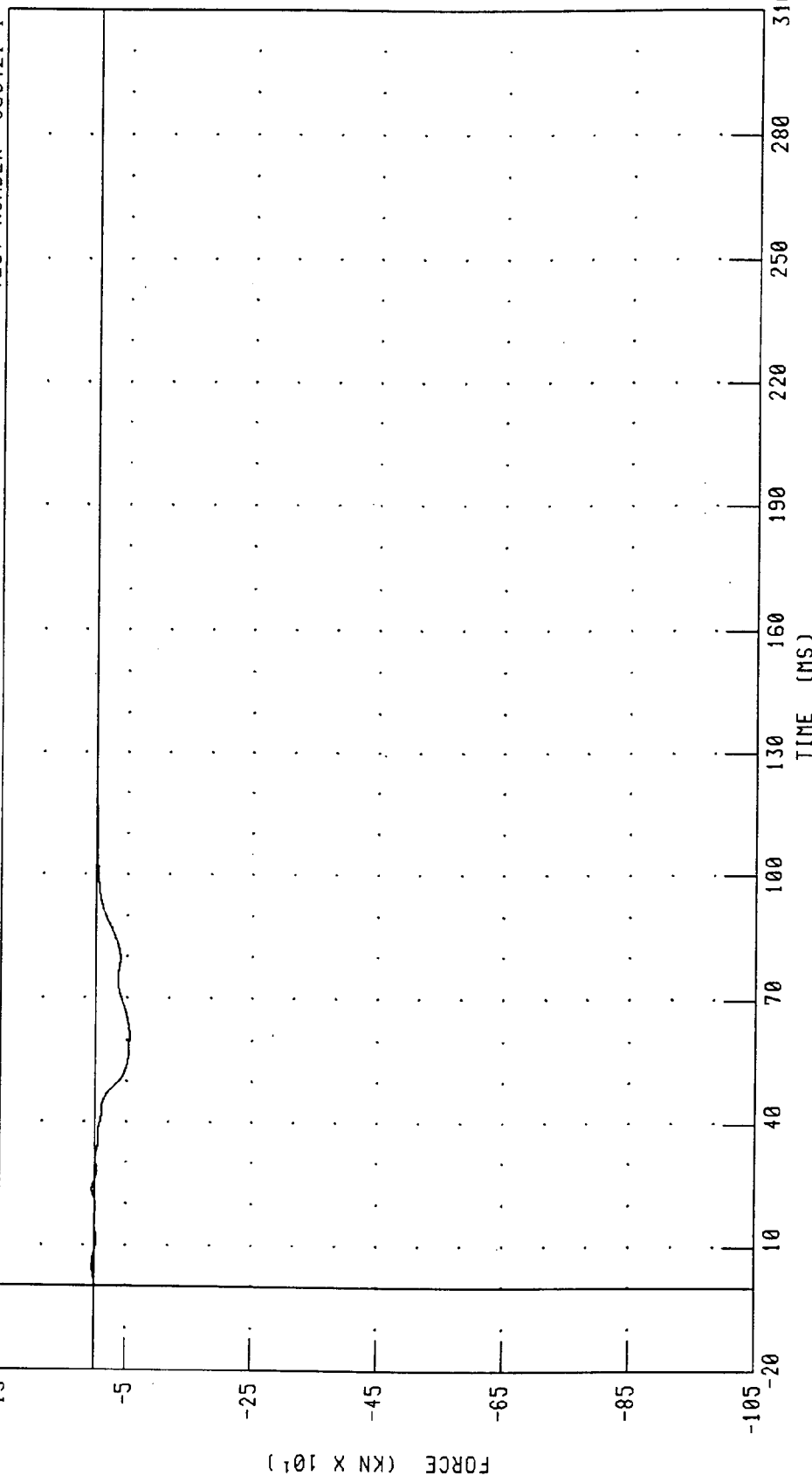
PEAK DATA: 1.50 KN @ -1.60 MS; -470.52 KN @ 40.80 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER GROUP A TOTAL

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.

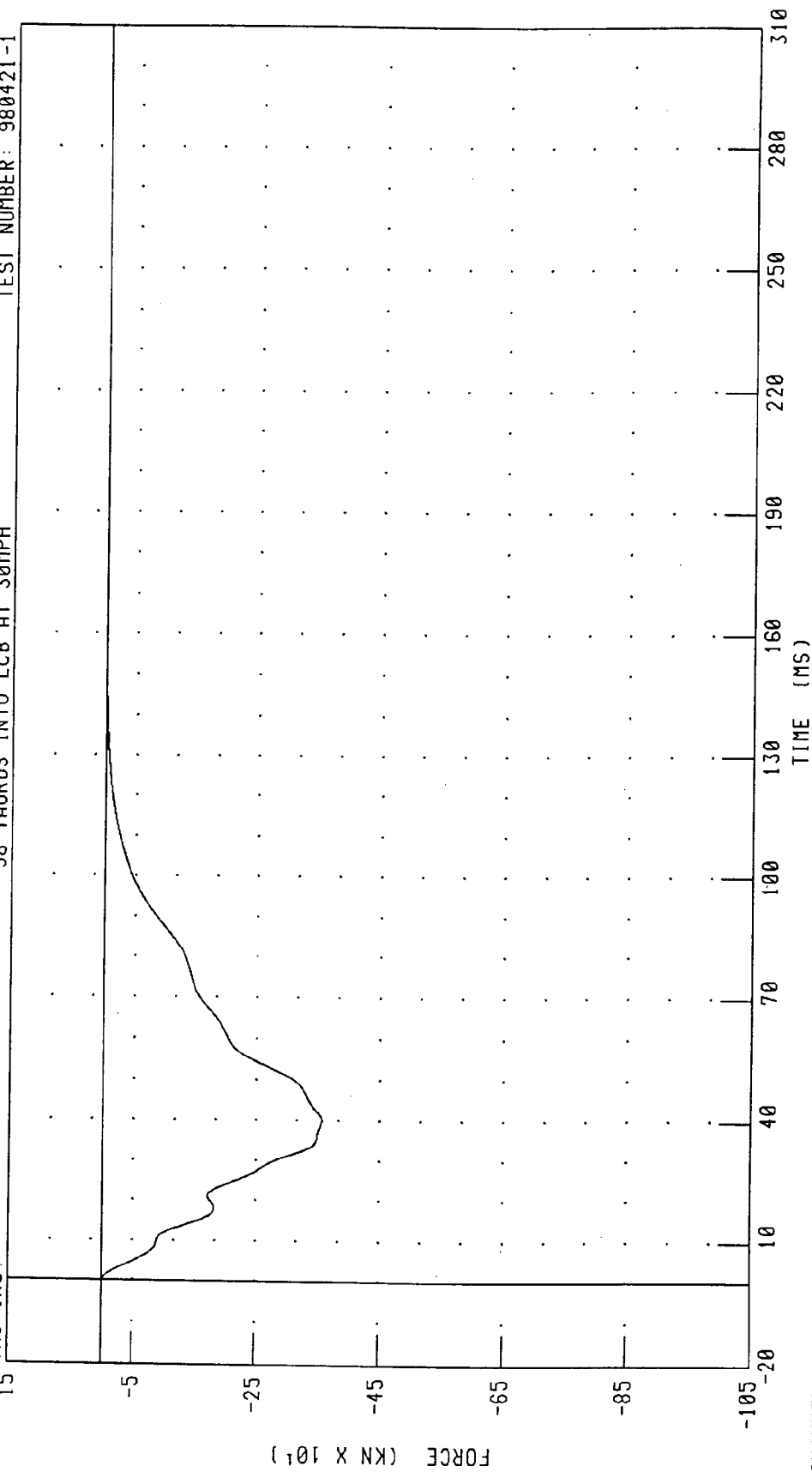


CHANNEL: LCBTA FILTER: CH. CLASS 60 PEAK DATA: 4.08 KN @ 23.52 MS, -54.80 KN @ 61.12 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER GROUP B TOTAL
98 TAURUS INTO LCB AT 30MPH

TEST NUMBER: 980421-1

TRC INC.



CHANNEL: LCBTB FILTER: CH. CLASS 60

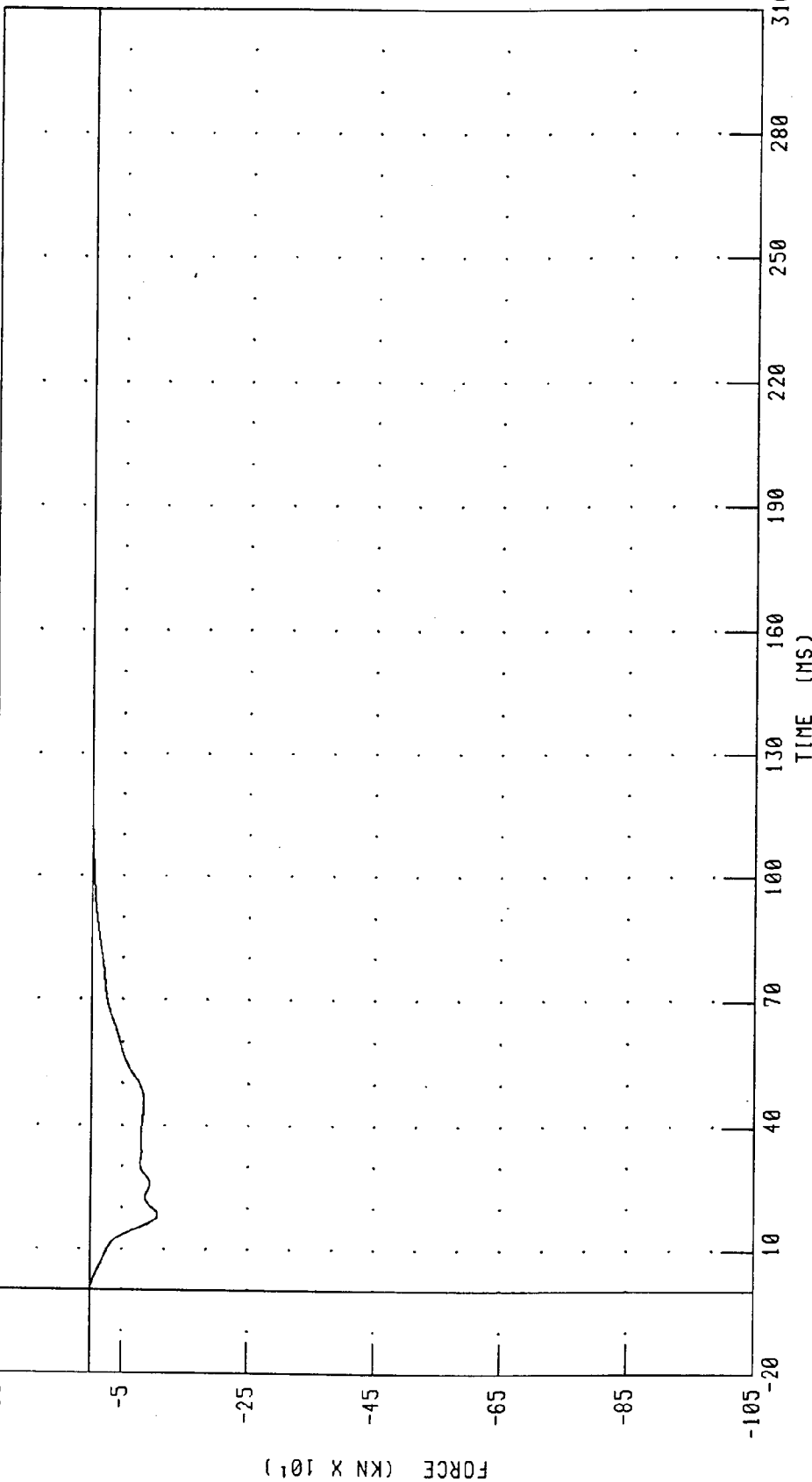
PEAK DATA: 0 22 KN @ 202.80 MS, -356.95 KN @ 40.24 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEC LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER GROUP C TOTAL

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

15 IRC INC.

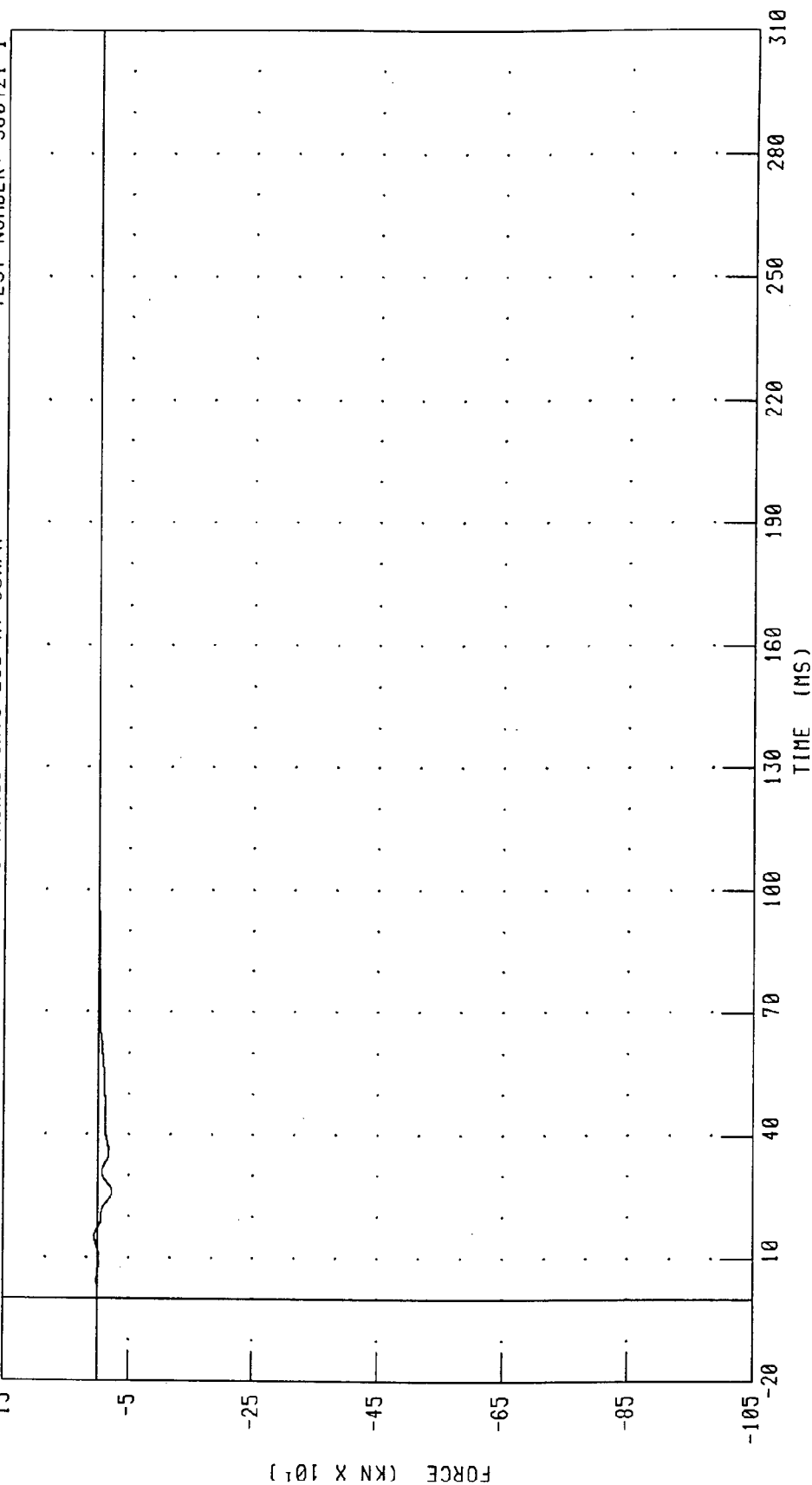


CHANNEL: LCBTC FILTER: CH. CLASS 60

PEAK DATA: 0.16 KN @ 307.92 MS; -106.10 KN @ 18.32 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER GROUP 0 TOTAL

TRC INC. 98 TAURUS INTO LCB AT 30MPH TEST NUMBER: 980421-1



CHANNEL: LCBTD FILTER: CH. CLASS 60 PEAK DATA: 4.52 KN @ 15.04 MS, -23.06 KN @ 26.00 MS

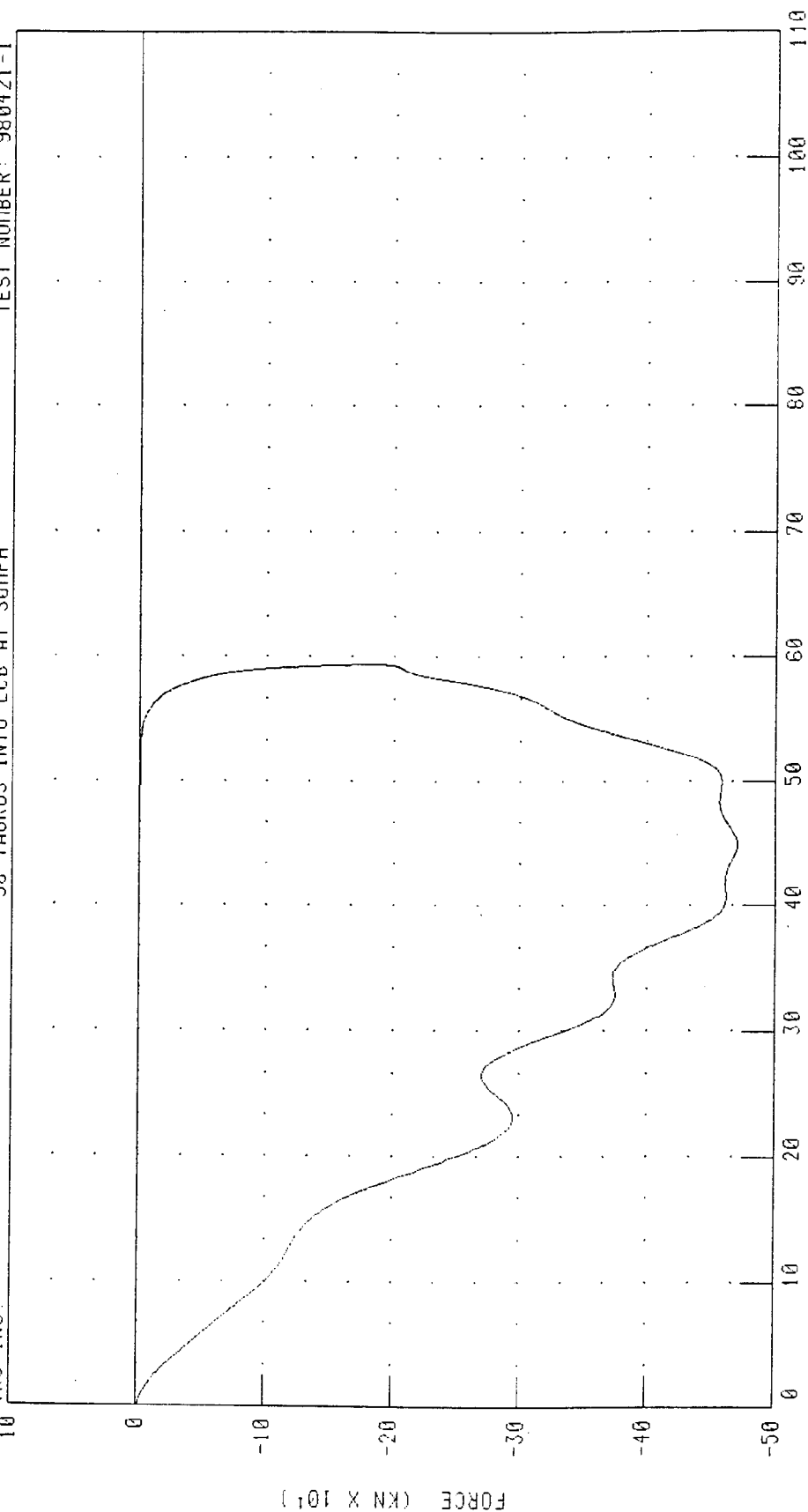
1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH

TOTAL LOAD CELL BARRIER FORCE VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



DISPLACEMENT (MM X 10¹)

CHANNEL: 0THXD
LCBCT

FILTER: CH CLASS 180
CH CLASS 60

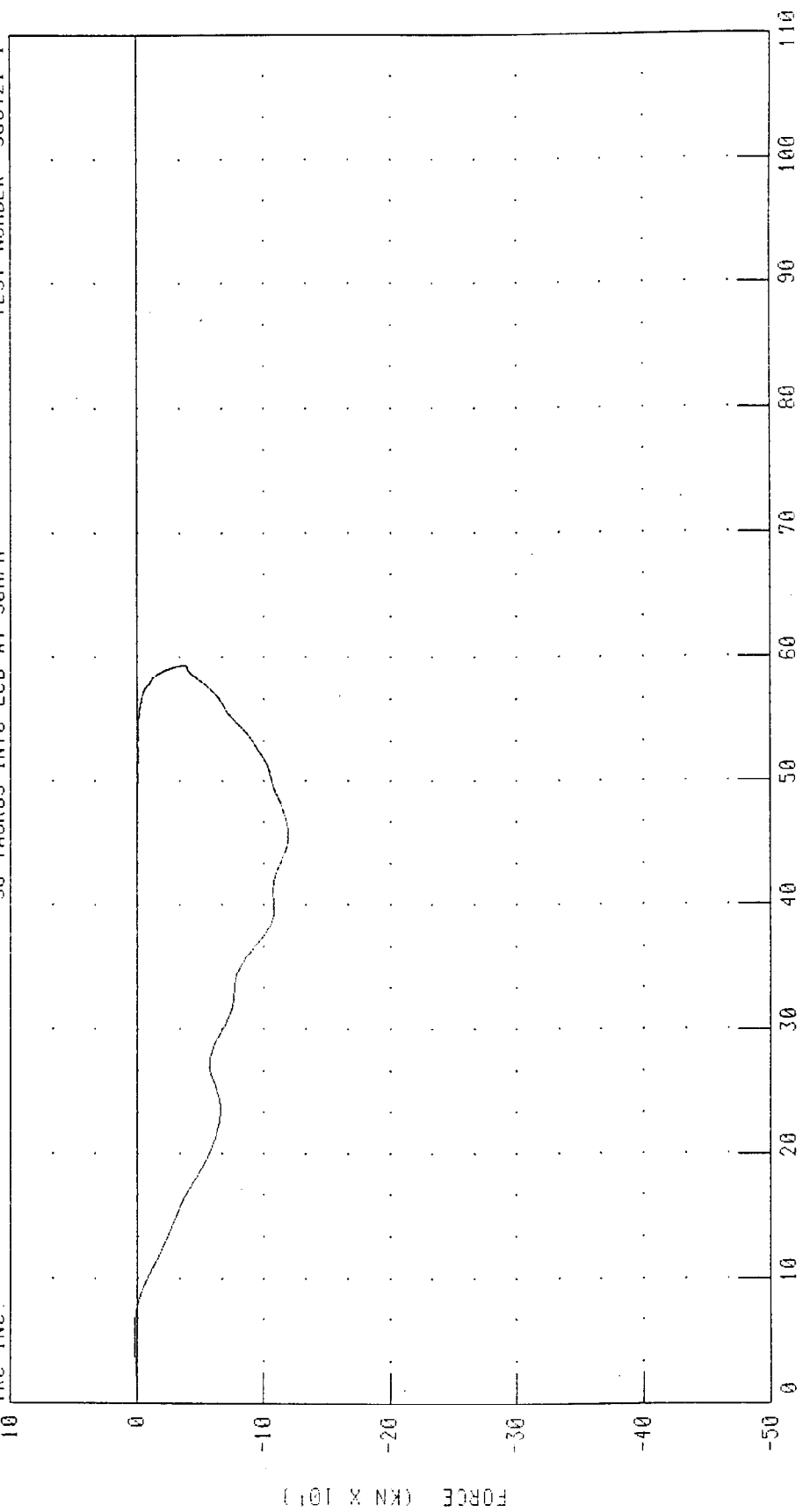
PEAK DATA: 594.01 MM @ 81.92 MS;
0.21 KN @ 238.00 MS;

0.00 MN @ 0.00 MS
-470.52 KN @ 40.80 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
LOAD CELL BARRIER GROUP #1 VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TRC INC. TEST NUMBER: 980421-1

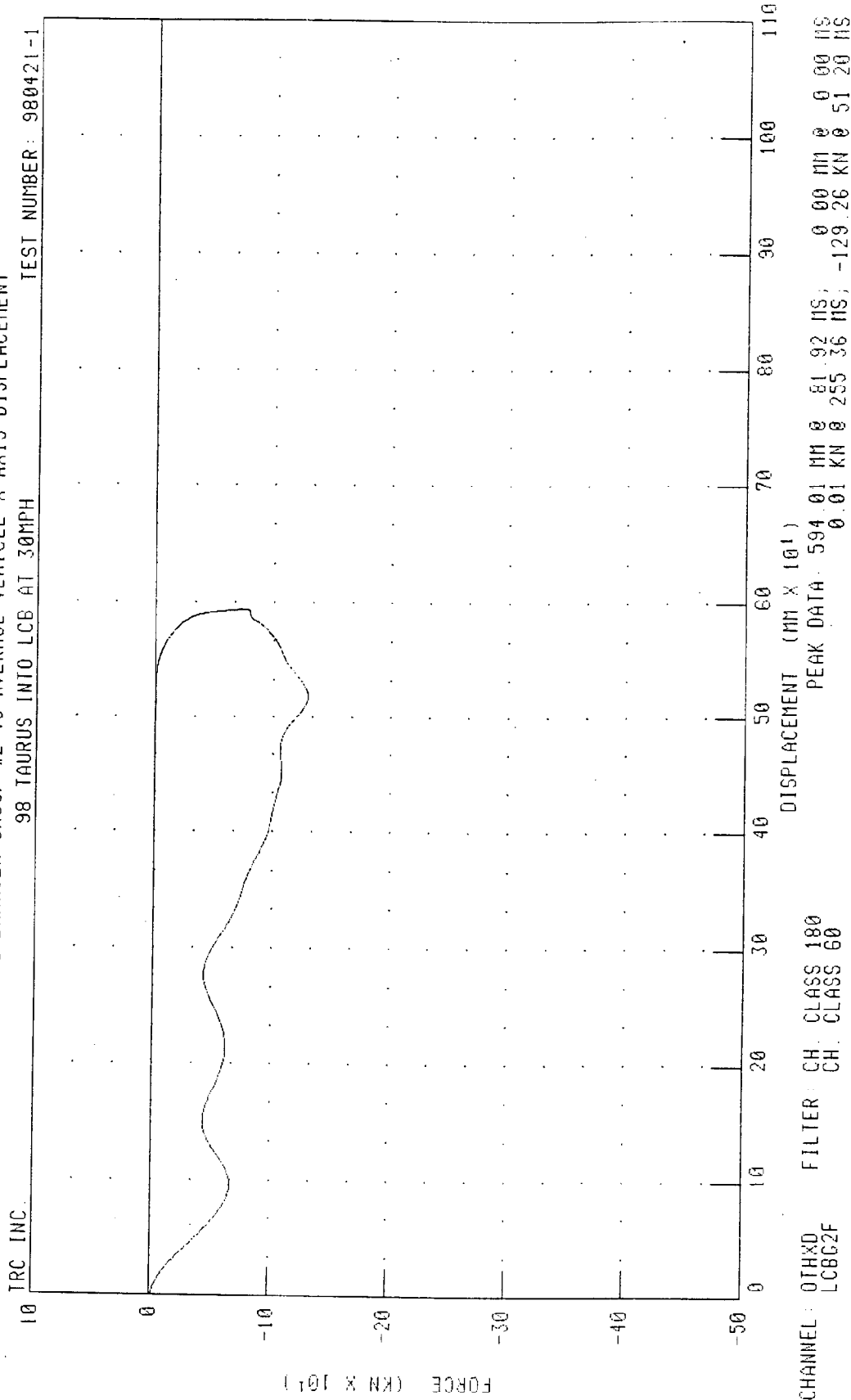
98 TAURUS INTO LCB AT 30MPH



DISPLACEMENT (mm x 10¹)

CHANNEL: 0THXD FILTER: CH. CLASS 180
LCBC1F CH. CLASS 60
PEAK DATA: 594.01 mm @ 81.92 ms, 0.00 mm @ 0.00 ms
2.29 KN @ 4.24 ms, -119.34 KN @ 41.68 ms

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER GROUP #2 VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

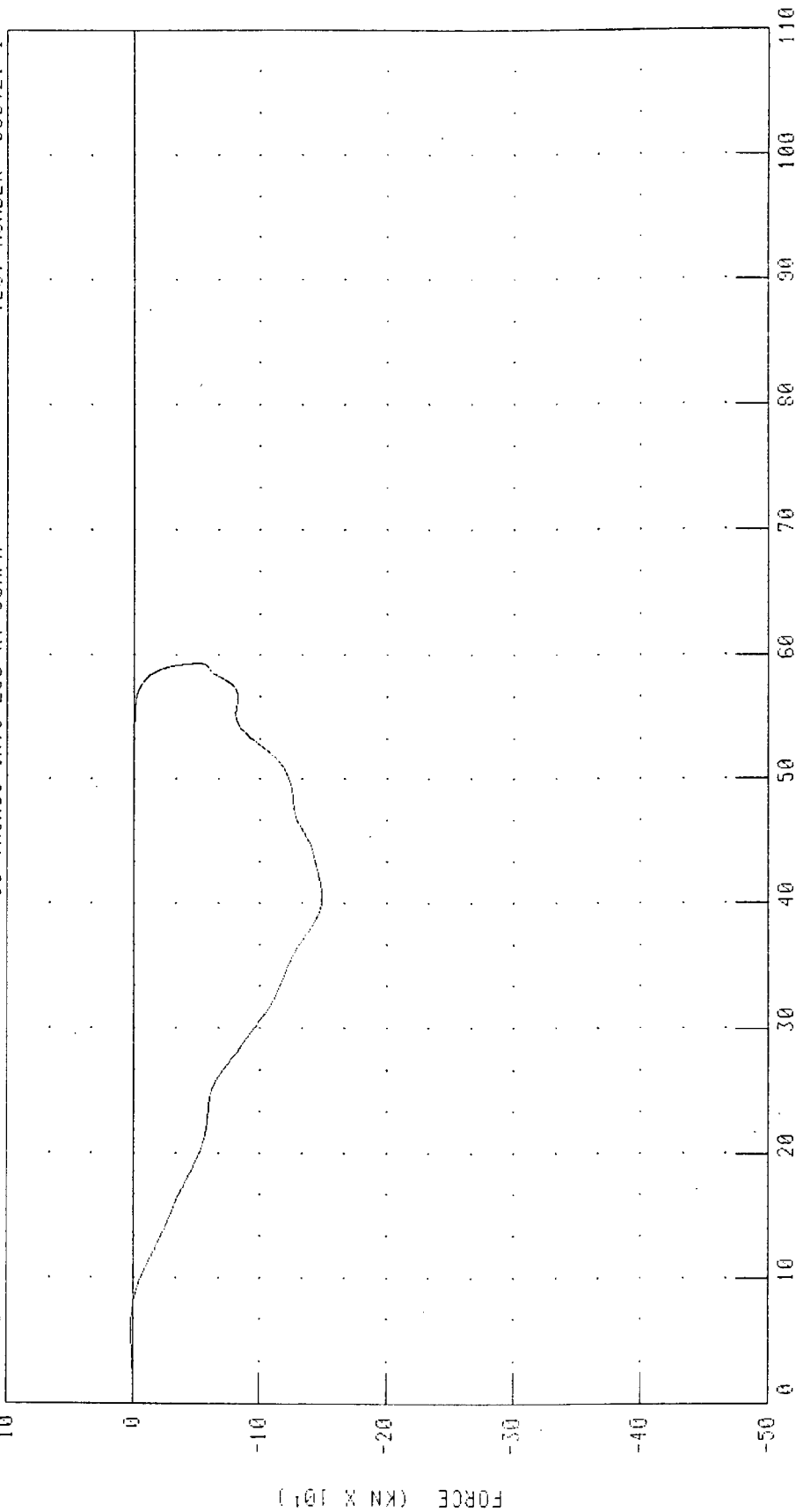


1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER GROUP #3 VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



CHANNEL: OTHXD
 LCBG3F

FILTER: CH CLASS 180
 CH CLASS 60

PEAK DATA: 594.01 MM @ 81.92 MS;
 1.83 KN @ 4.48 MS;

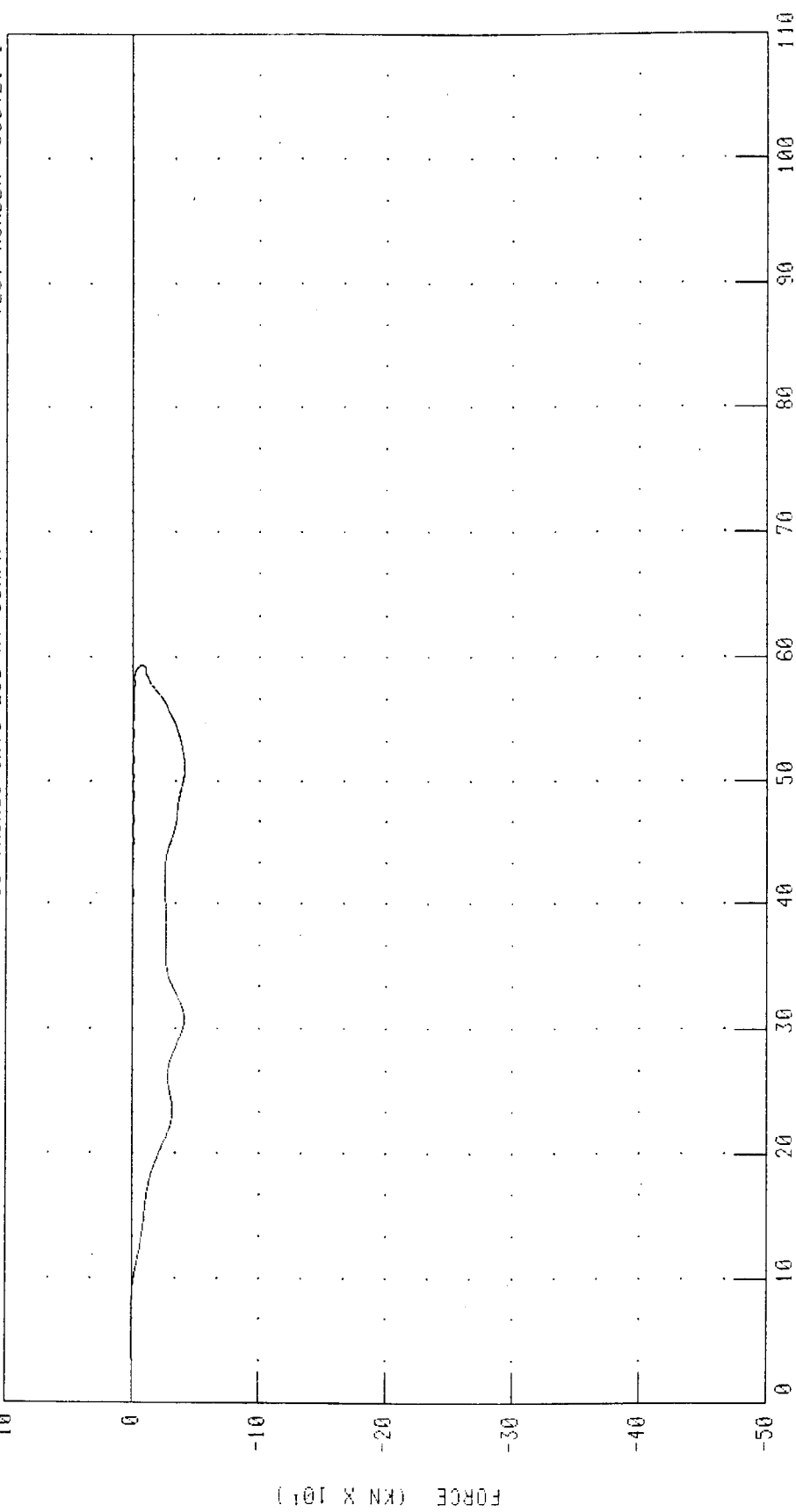
0.00 MM @ 0.00 MS
 -148.87 KN @ 35.60 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER GROUP #4 VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



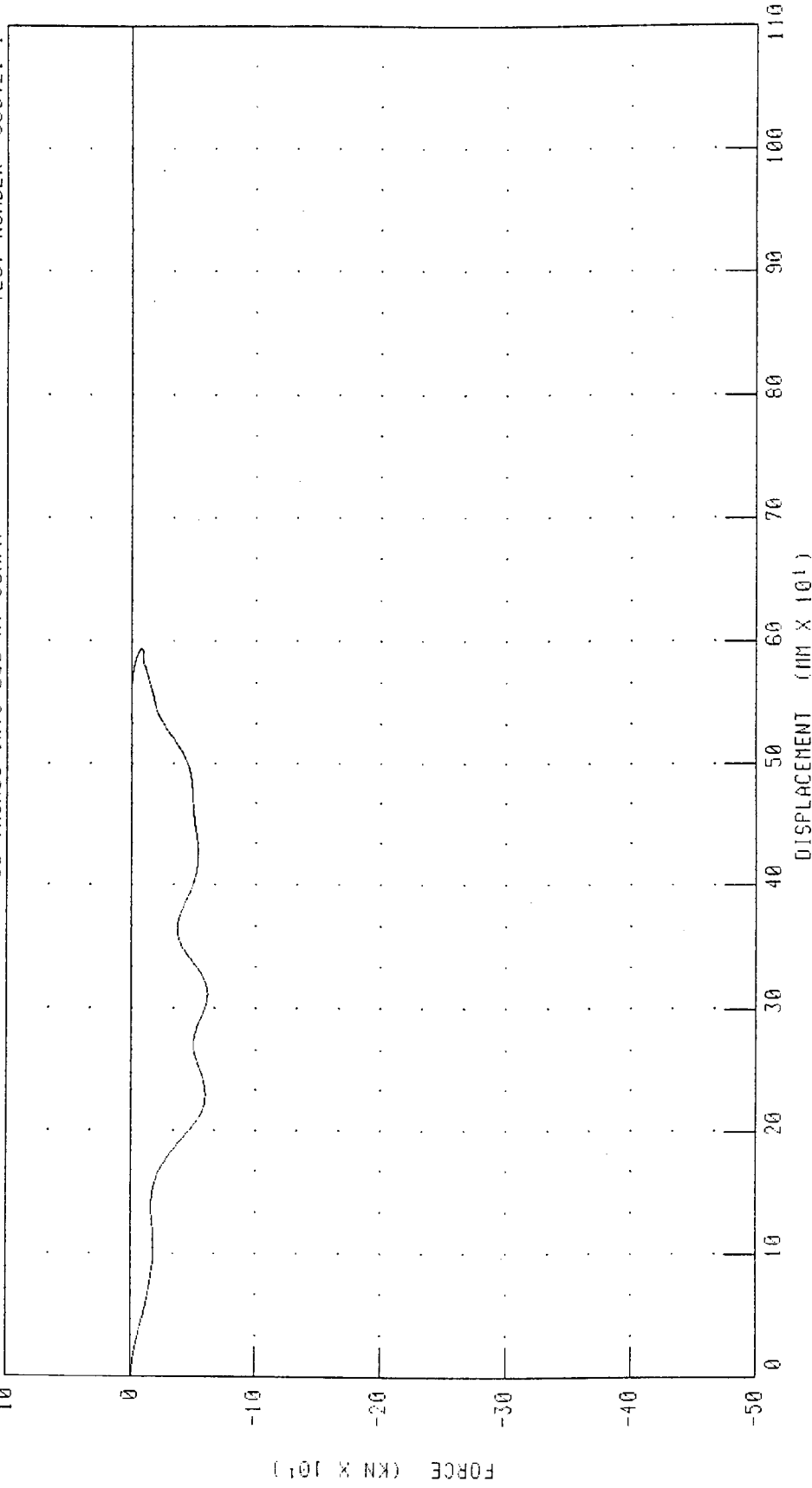
CHANNEL: OTHXD
 LCBC4F

FILTER: CH. CLASS 180
 CH. CLASS 60

PEAK DATA: 594.01 MM @ 81.92 MS;
 1.50 KN @ 4.96 MS, -40.48 KN @ 25.52 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER GROUP #5 VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TRC INC. 98 TAURUS INTO LCB AT 30MPH TEST NUMBER: 980421-1



CHANNEL: OTHXD
 LCBC5F

FILTER: CH. CLASS 180
 CH. CLASS 60

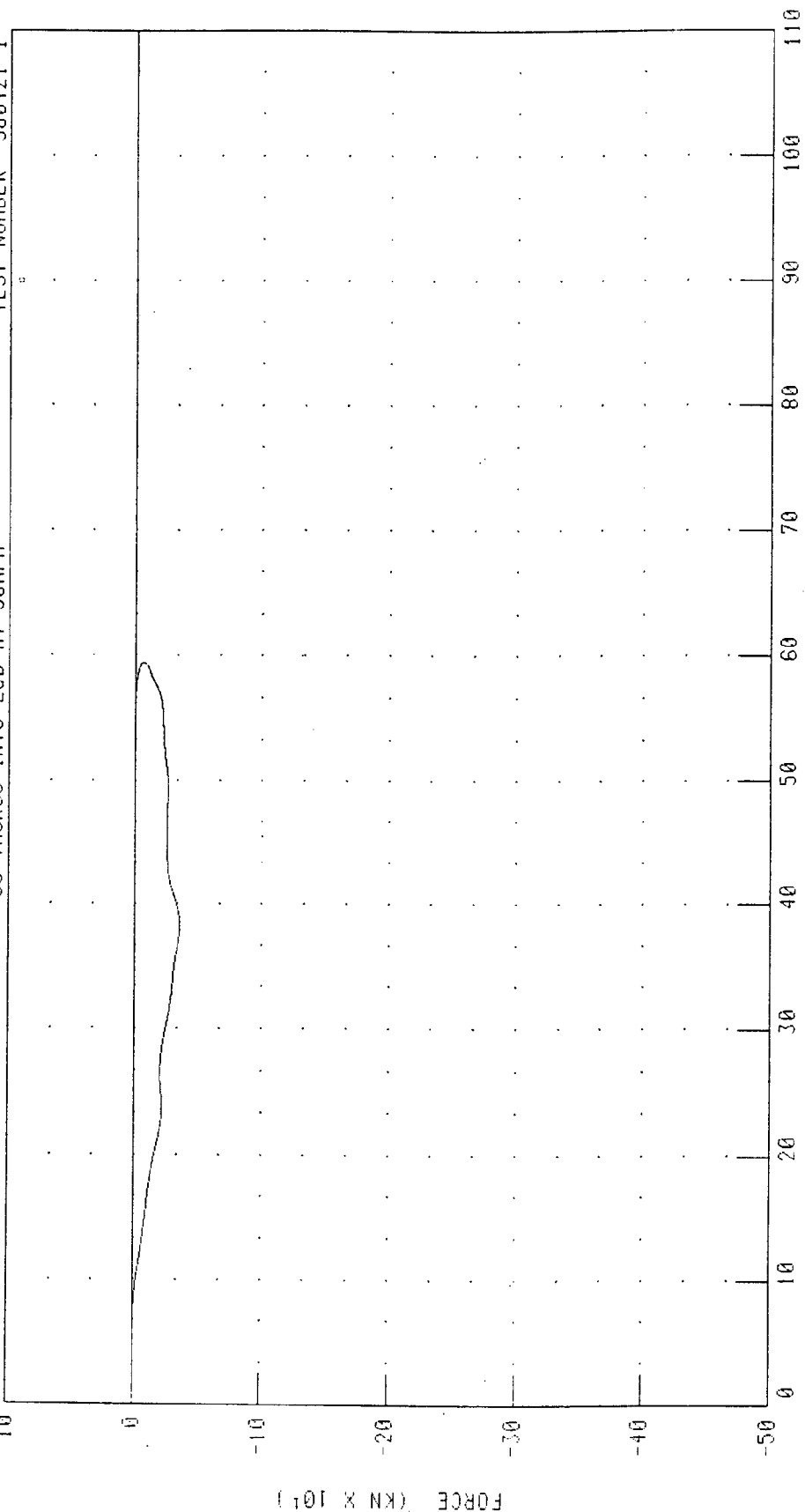
PEAK DATA: 594.01 MM @ 31.92 MS;
 0.08 KN @ 304.72 MS, -61.13 KN @ 25.92 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER GROUP #6 VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TRC INC.

98 TAURUS INTO LCB AT 30MPH

TEST NUMBER 980421-1



CHANNEL: OTHXD
 LC806F

FILTER: CH CLASS 180

CH CLASS 60

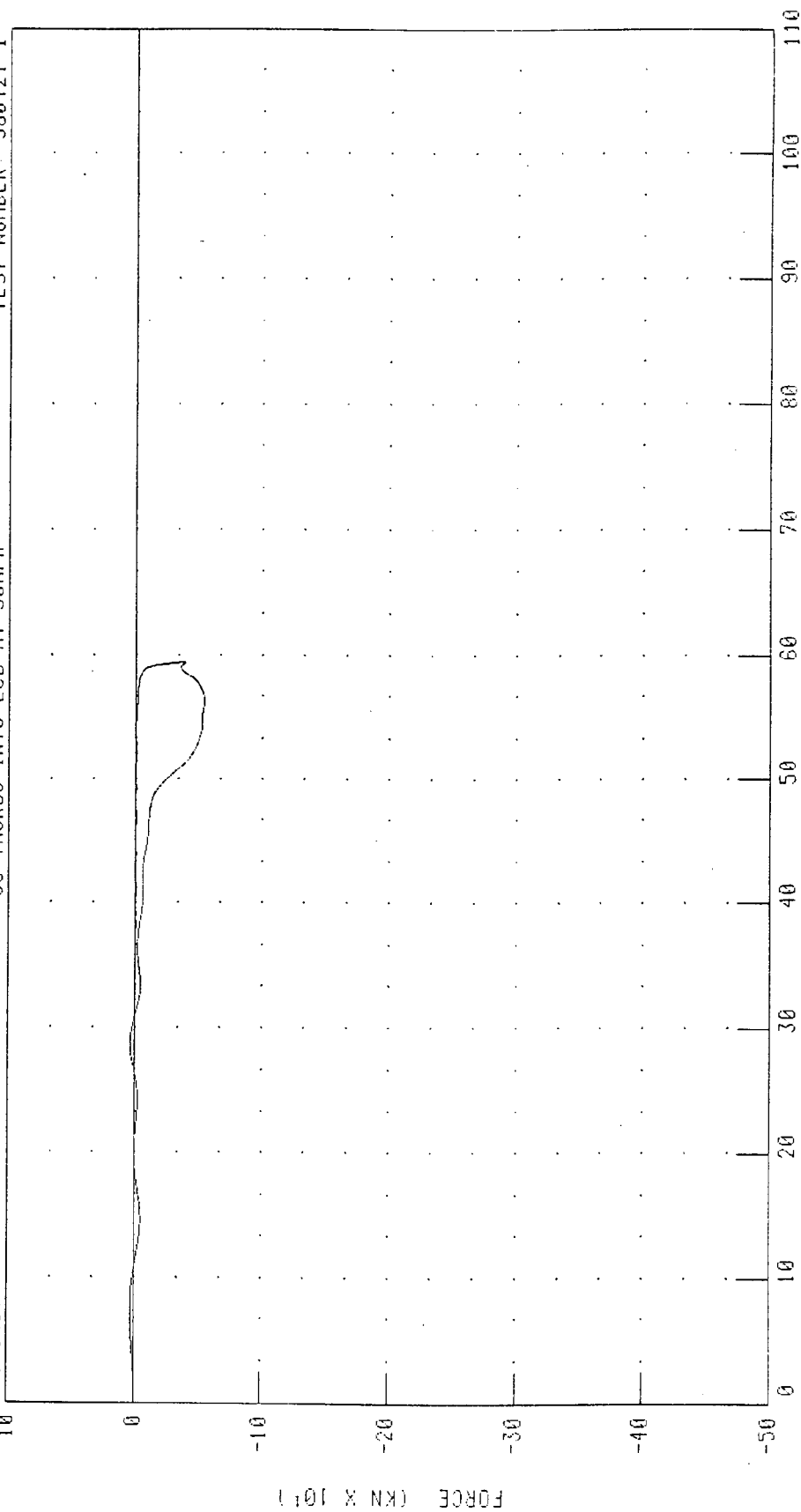
DISPLACEMENT (MM X 10^1)
 PEAK DATA: 594.01 MM @ 81.92 MS;
 0.53 KN @ 4.00 MS; -35.49 KN @ 33.04 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER GROUP A VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



CHANNEL: 0TH20 FILTER: CH. CLASS 180
 LOBTA CH. CLASS 60

DISPLACEMENT (MM X 10¹)

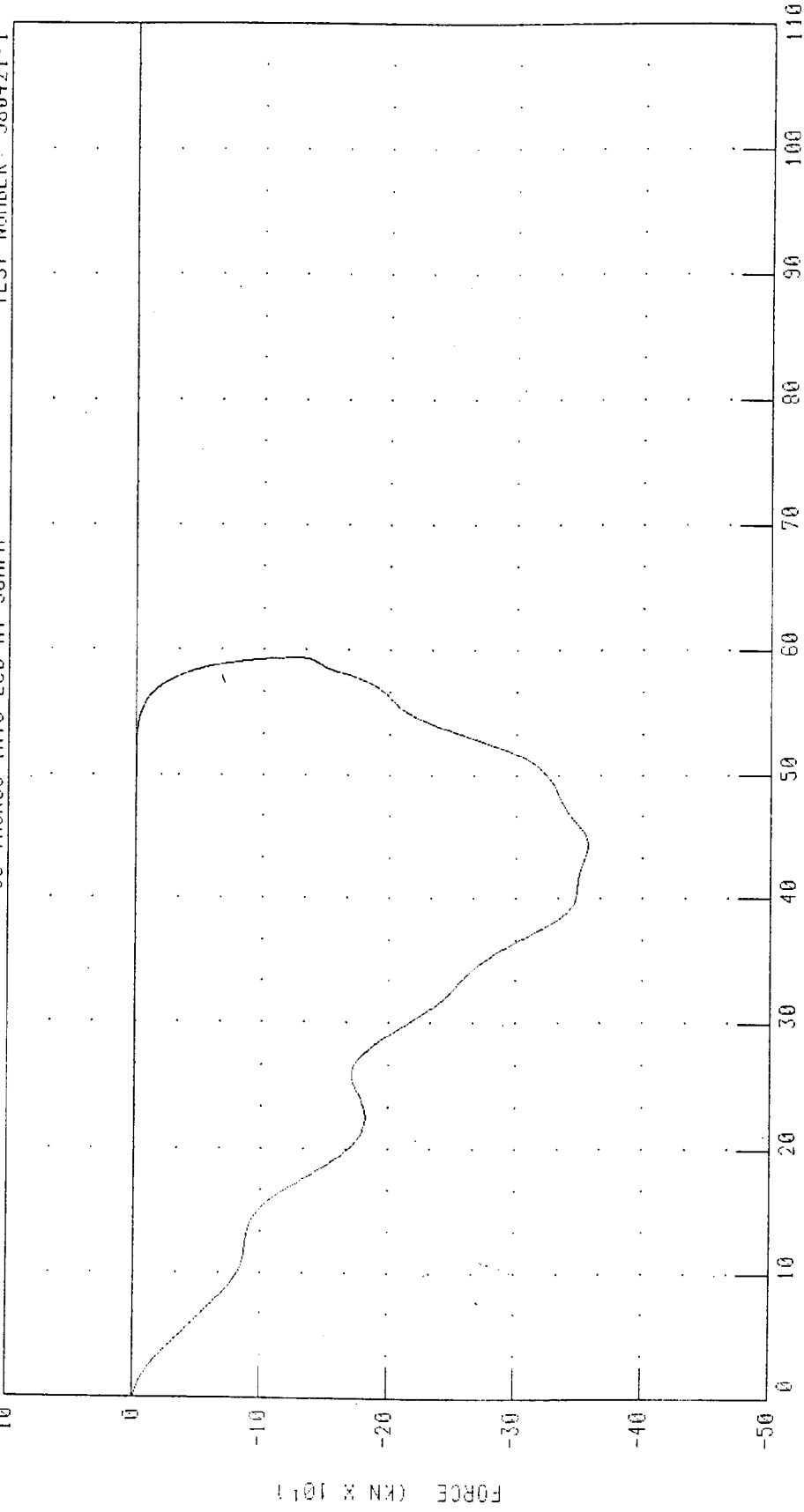
PEAK DATA: 594.01 MM @ 81.92 MS; 4.08 KN @ 23.52 MS; -54.00 KN @ 61.12 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER GROUP B VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TEST NUMBER: 980421-1

98 TAURUS INTO LCB AT 30MPH

TRC INC.



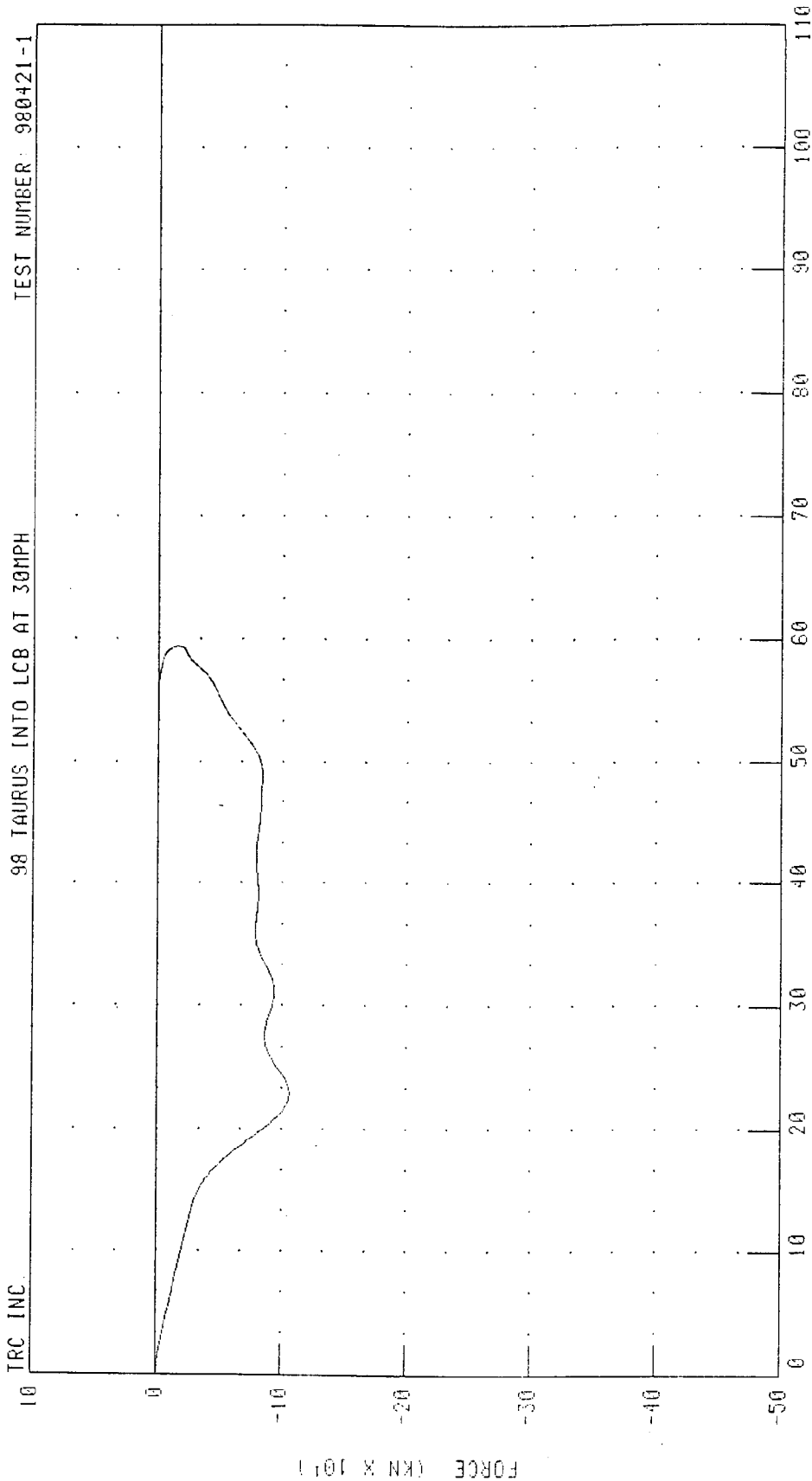
CHANNEL: QTHXD
 LCBTB

FILTER: CH CLASS 190
 CH CLASS 60

DISPLACEMENT ($MM \times 10^1$)

PEAK DATA: 594.01 MM @ 81.92 MS;
 0.22 KN @ 202.80 MS;
 -356.95 KN @ 40.24 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER GROUP C VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

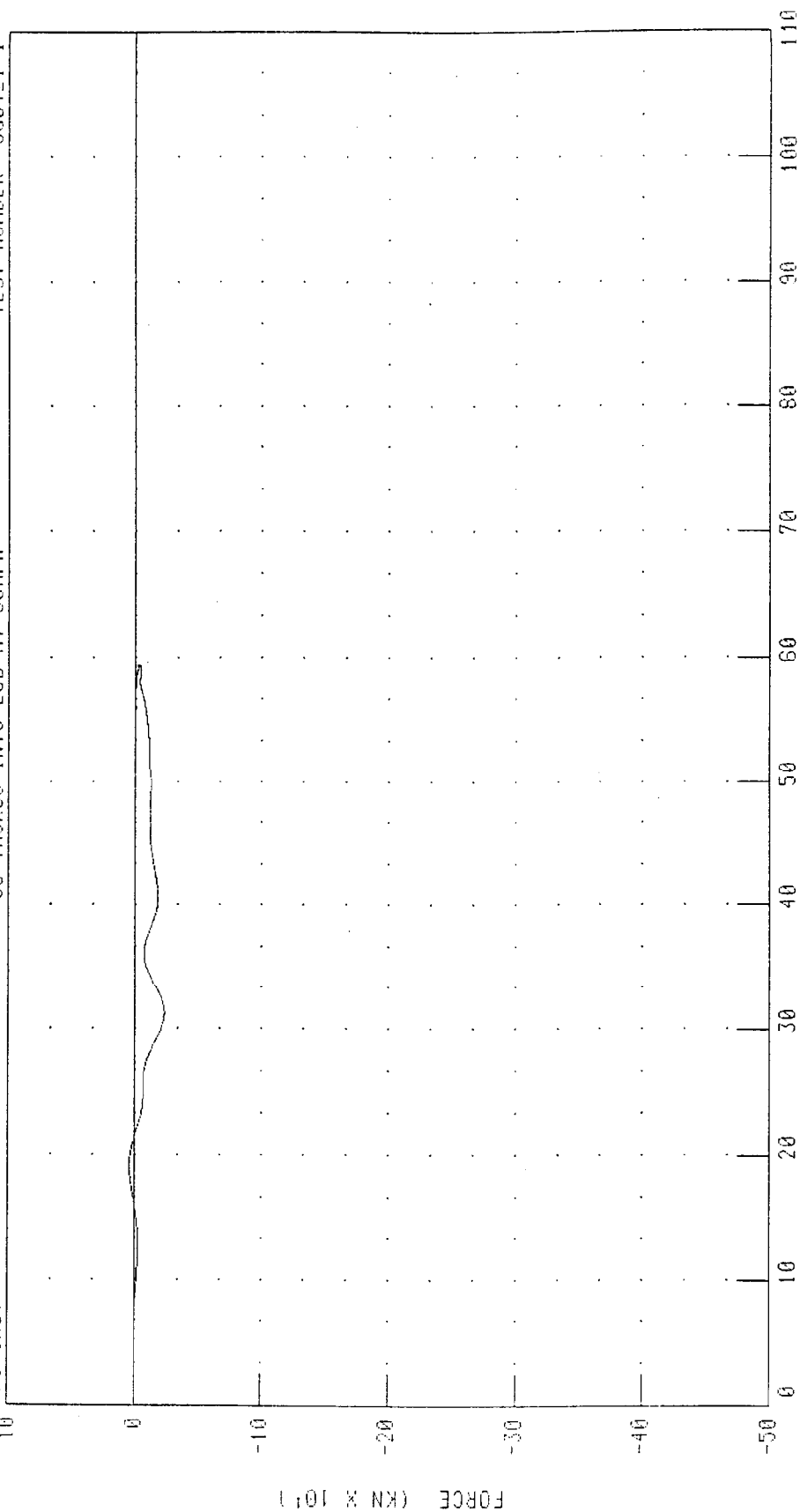


CHANNEL: 0THXD FILTER: CH. CLASS 180
 LCBTC CH. CLASS 60

PEAK DATA: 594 01 MM @ 81.92 MS; 0 00 MM @ 0 00 MS
 0 16 KN @ 307.92 MS; -106 10 KN @ 18 32 MS

1998 FORD TAURUS WITH SMALL FEMALE DUMMIES INTO 0 DEG LOAD CELL BARRIER AT 30MPH
 LOAD CELL BARRIER GROUP D VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TRC INC. 98 TAURUS INTO LCB AT 30MPH TEST NUMBER: 980421-1



CHANNEL OTHXD FILTER CH CLASS 180
 LCBTD CH CLASS 60
 DISPLACEMENT (MM X 10¹)
 PEAK DATA: 594.01 MM @ 81.92 MS, 0.00 MM @ 0.00 MS
 4.52 KN @ 15.04 MS, -23.06 KN @ 26.00 MS

Appendix C

Dummy Certification

Dummy Certification

Driver Dummy S/N 289

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III SMALL FEMALE

30-JAN-98

TRC INC.

TEST NO: 289C3HD1

H3 SM FEMALE SN289 HEAD DROP

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	65.0 %
PEAK RESULTANT ACCELERATION	240 - 295 G	269.68 G
PEAK LATERAL ACCELERATION	15 G MAX	-6.79 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

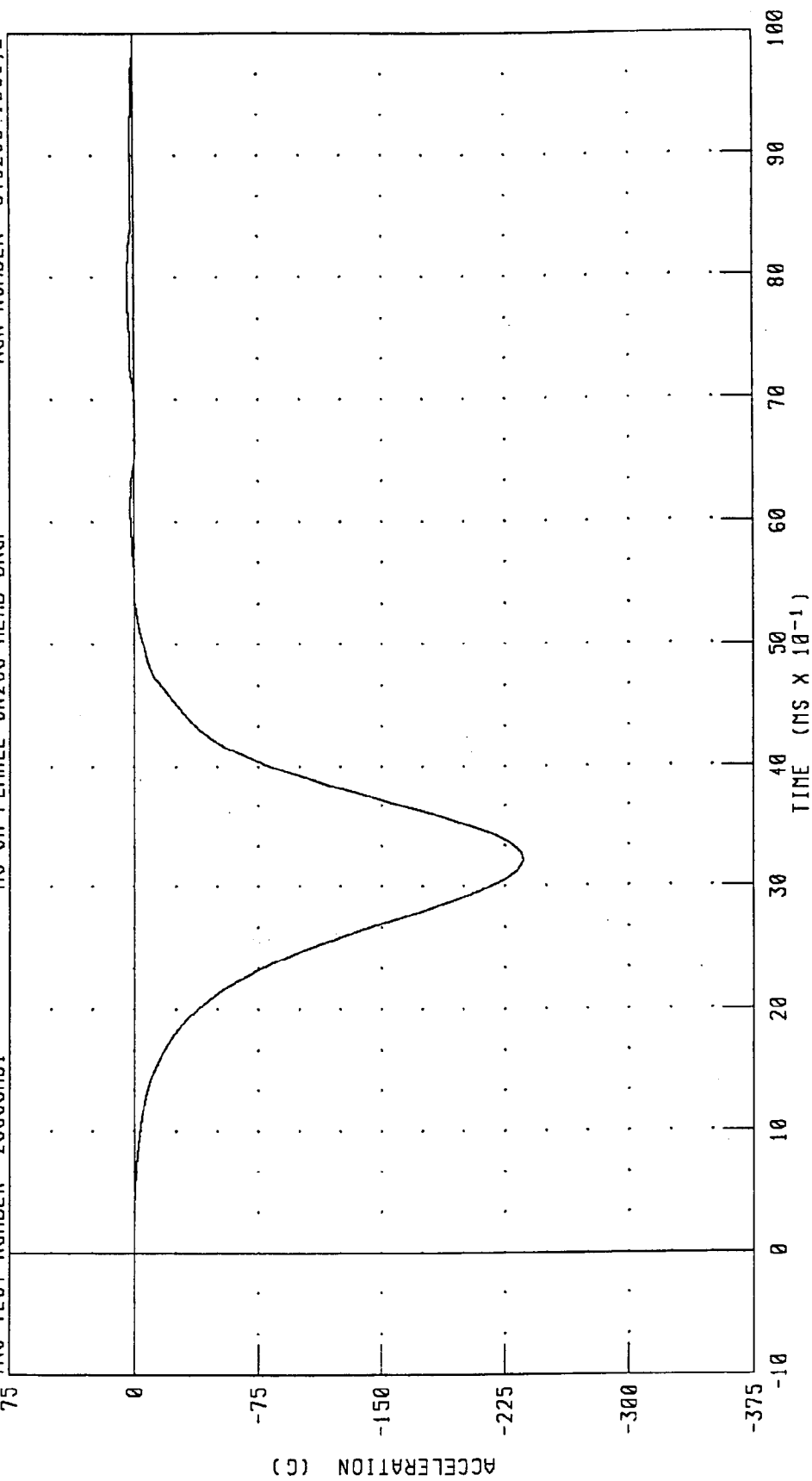
TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 040298.1050;2

HYBRID III SMALL FEMALE HEAD CALIBRATION HEAD ACCELERATION X AXIS

IRC TEST NUMBER: 289C3HD1 H3 SM FEMALE SN289 HEAD DRQP RUN NUMBER: 040298.1050;2



CHANNEL: HEDXG FILTER: CH. CLASS 1000 PEAK DATA: 3.66 G @ 7.92 MS; -236.35 G @ 3.20 MS

HYBRID III SMALL FEMALE HEAD CALIBRATION HEAD ACCELERATION Y AXIS

TRC TEST NUMBER: 289C3HD1

H3 SM FEMALE SN289 HEAD DRQP

RUN NUMBER: 040298.1050.2

225

150

75

0

-75

-150

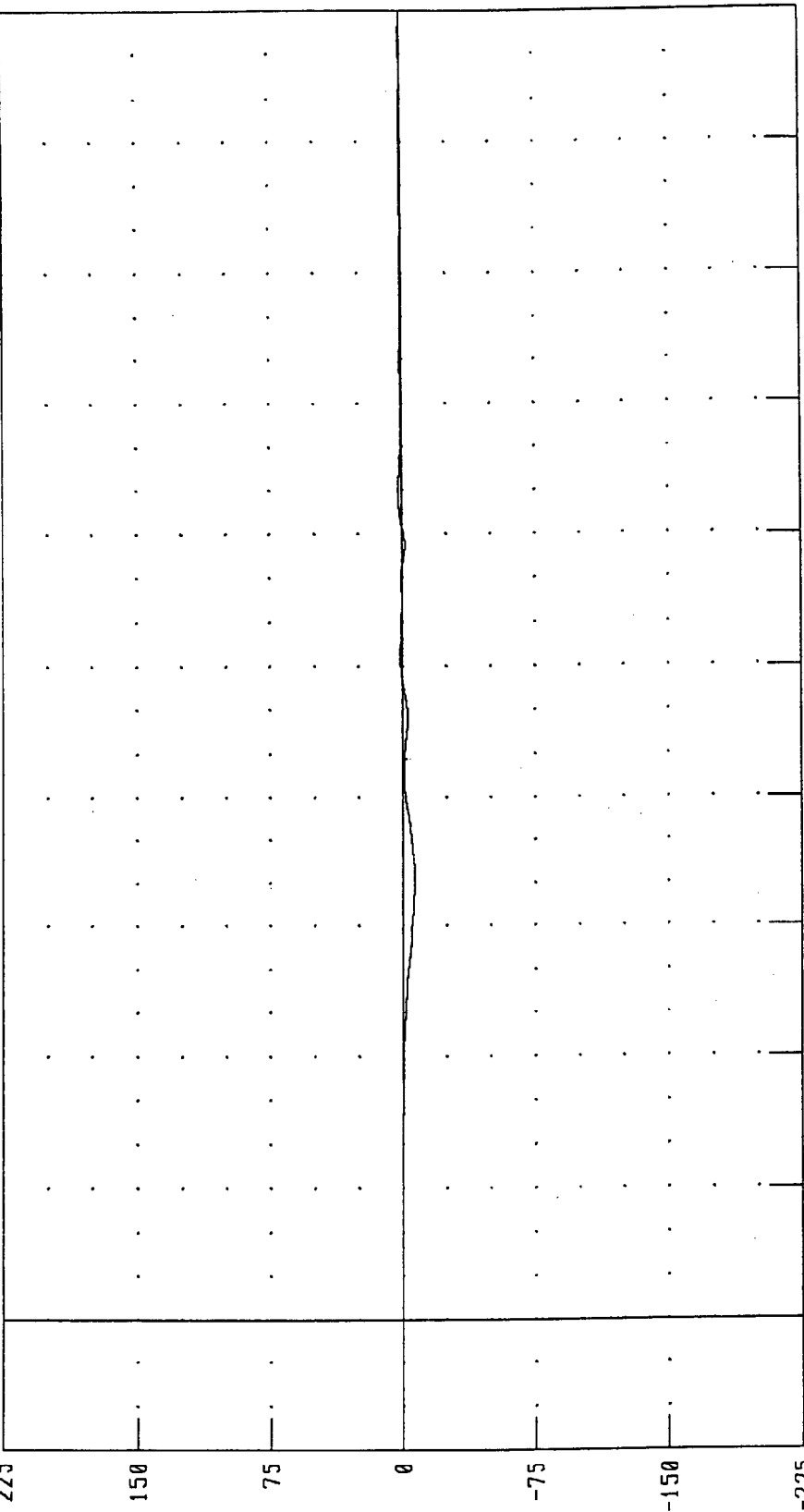
-225

ACCELERATION (G)

TIME (MS X 10⁻¹)

CHANNEL: HEDYG FILTER: CH. CLASS 1000

PEAK DATA: 1.93 G @ 6.24 MS; -6.79 G @ 3.36 MS



HYBRID III SMALL FEMALE HEAD CALIBRATION HEAD ACCELERATION Z AXIS

TRC TEST NUMBER: 289C3HD1

H3 SM FEMALE SN289 HEAD DROP

RUN NUMBER: 040298.1050.2

75

0

-75

-150

-225

-300

-375

ACCELERATION (G)

-10

0

10

20

30

40

50

60

70

80

90

100

TIME (MS X 10⁻¹)

PEAK DATA: 1.32 G @ 9.44 MS; -129.71 G @ 3.20 MS

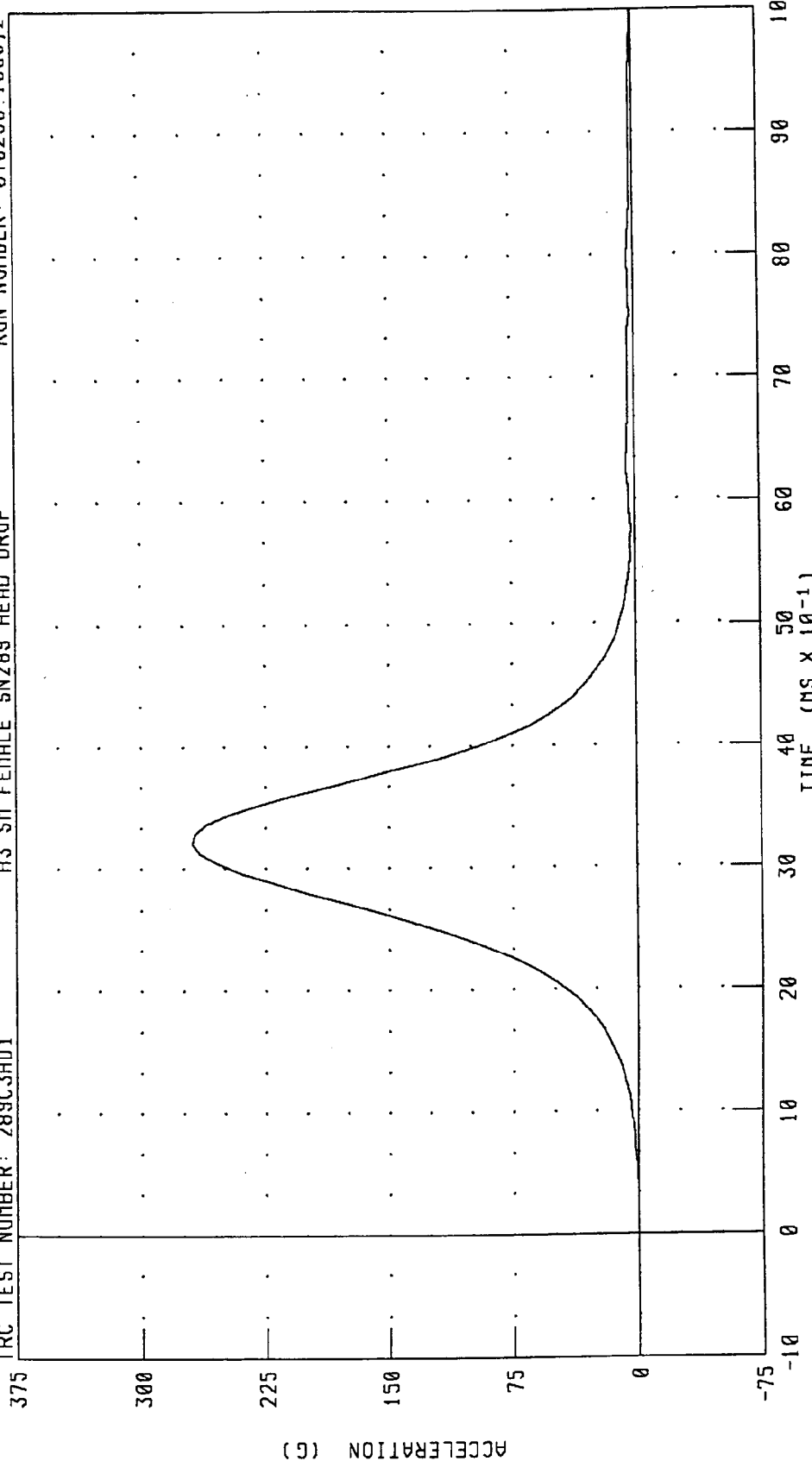
CHANNEL: HEDZG FILTER: CH. CLASS 1000

HYBRID III SMALL FEMALE HEAD CALIBRATION
HEAD RESULTANT ACCELERATION

TRC TEST NUMBER: 289C3HD1

H3 SM FEMALE SN289 HEAD DROP

RUN NUMBER: 040298.1050;2



PEAK DATA: 269.68 G @ 3.20 MS; 0.14 G @ -0.96 MS

CHANNEL: HEDRG FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

19-FEB-98

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 289C3NF5 H3 SM FEMALE SN289 NECK FLEX.

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	58.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.12 M/S
INTEGRATED PENDULUM VELOCITY	10 MS	2.1 - 2.5 M/S	2.13 M/S
	20 MS	4.0 - 5.0 M/S	4.32 M/S
	30 MS	5.8 - 7.0 M/S	6.42 M/S
PEAK D-PLANE ROTATION		78 - 96 DEG.	89.26 DEG.
ROTATION ANGLE DECAY TIME FROM PEAK TO ZERO		57 - 69 MS	62.40 MS
PEAK MOMENT ABOUT OCCIPITAL CONDYLE		69 - 84 NM	79.40 NM
POSITIVE MOMENT DECAY TIME FROM PEAK TO ZERO		41 - 50 MS	40.24 MS *
TIME OF PEAK ROTATION AFTER PEAK MOMENT		2 - 12 MS	6.08 MS

* TEST DOES NOT MEET SPECIFICATIONS

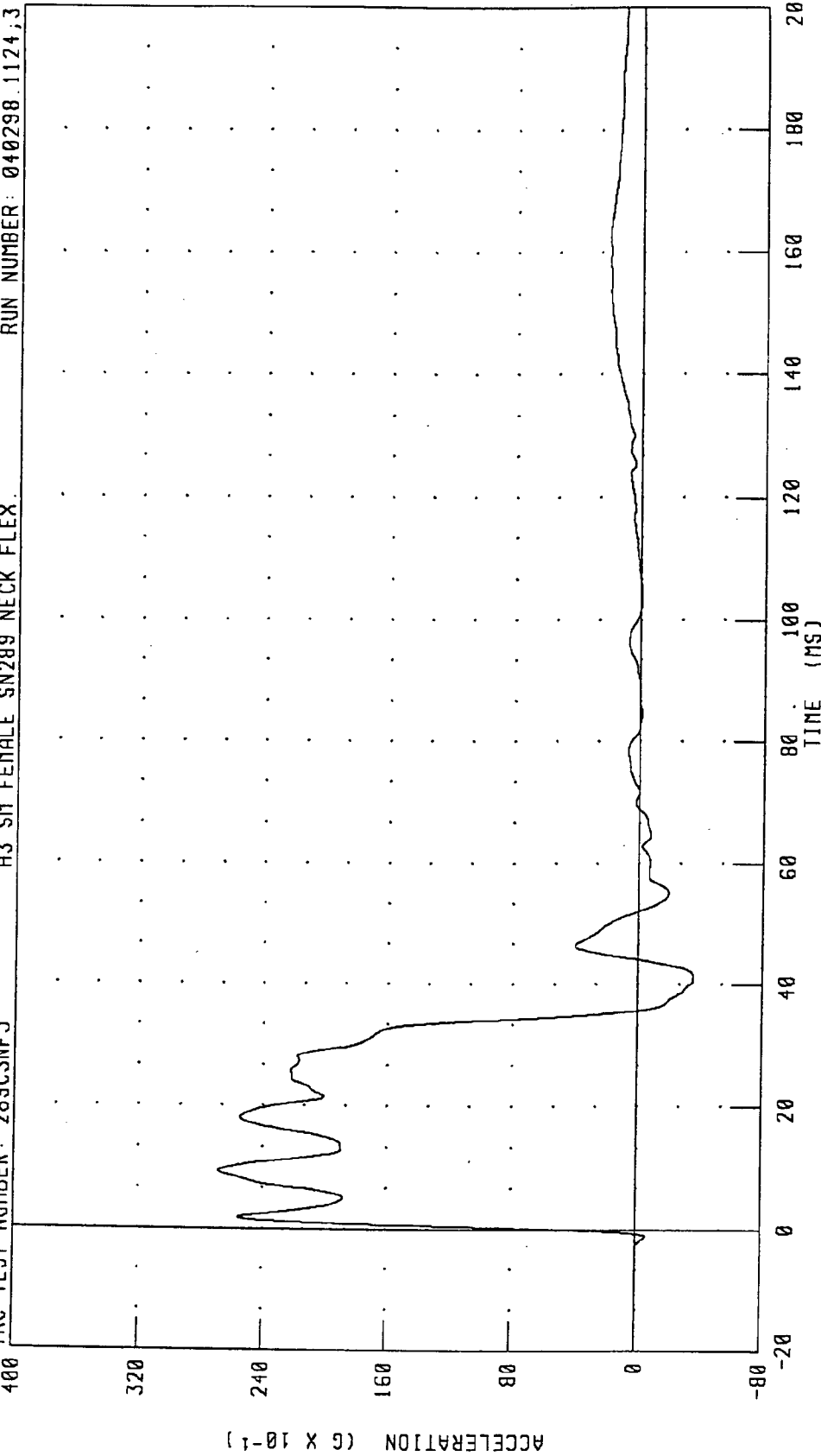
TECHNICIAN

By Calt

RUN NUMBER: 040298.1059;3

HYBRID III SMALL FEMALE NECK FLEXION CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 289C3NF5 H3 SM FEMALE SN289 NECK FLEX. RUN NUMBER: 040298.1124,3



CHANNEL: PENXG FILTER: CH. CLASS 180

PEAK DATA: 26.89 G @ 9.28 MS; -3.51 G @ 40.72 MS

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

TRC TEST NUMBER: 289C3NF5

H3 SM FEMALE SN289 NECK FLEX.

RUN NUMBER: 040298.1124,3

120

90

60

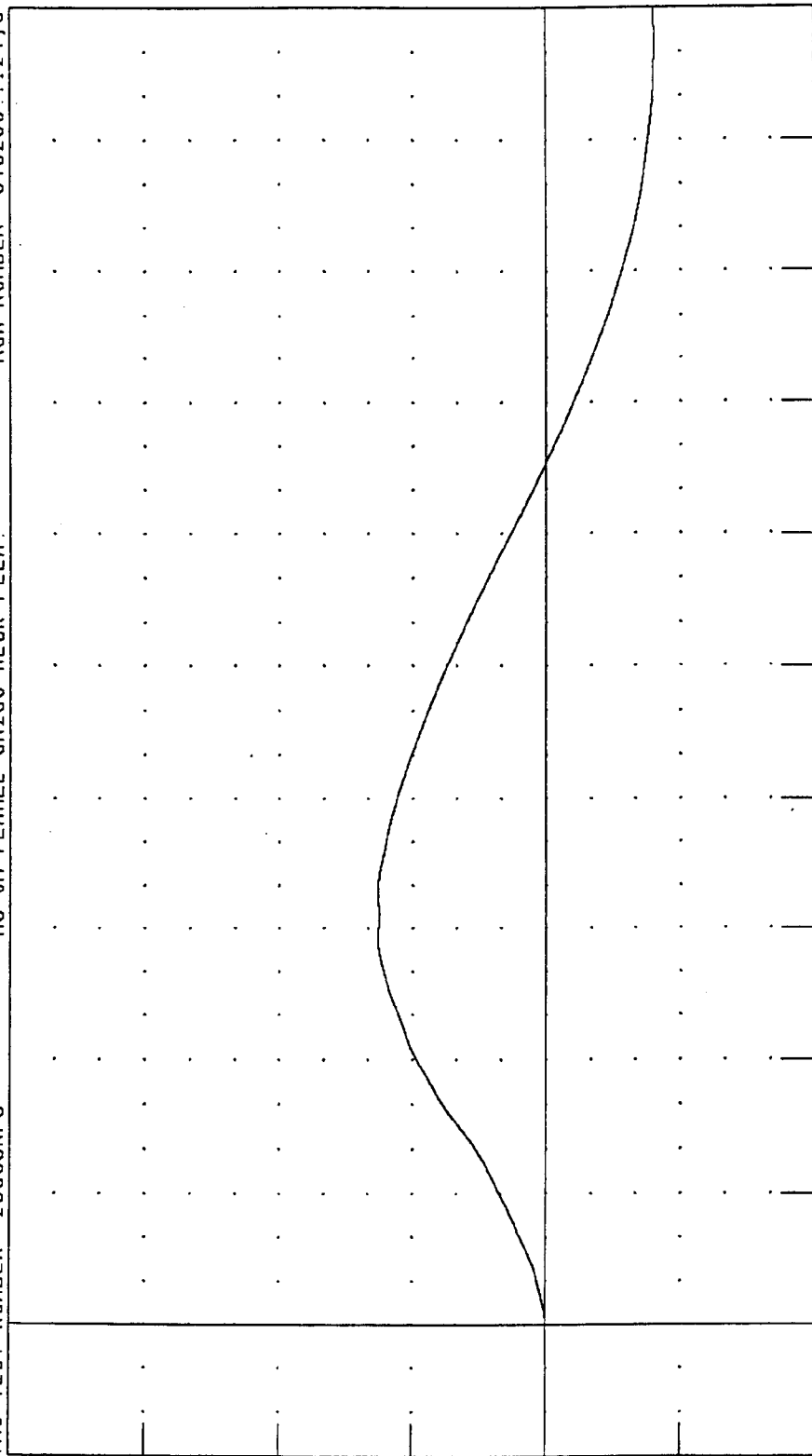
30

0

-30

-60

ANGLE (°)



TIME (MS)

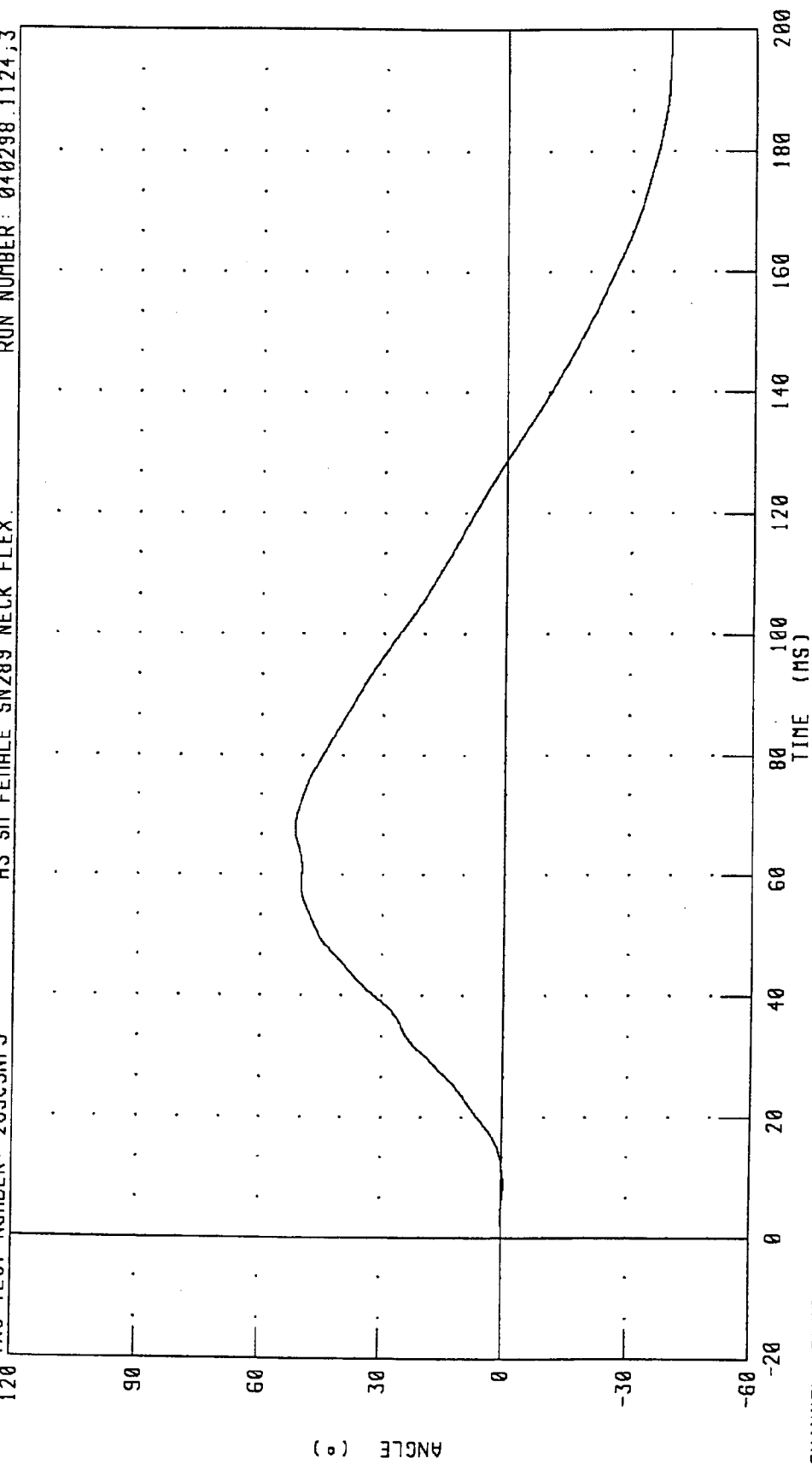
PEAK DATA: 37.64 ° @ 65.92 MS; -24.24 ° @ 194.72 MS

FILTER: CH. CLASS 60

CHANNEL: BETA

HYBRID III SMALL FEMALE NECK FLEXION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 289C3NF5 H3 SM FEMALE SN289 NECK FLEX. RUN NUMBER: 040298.1124,3

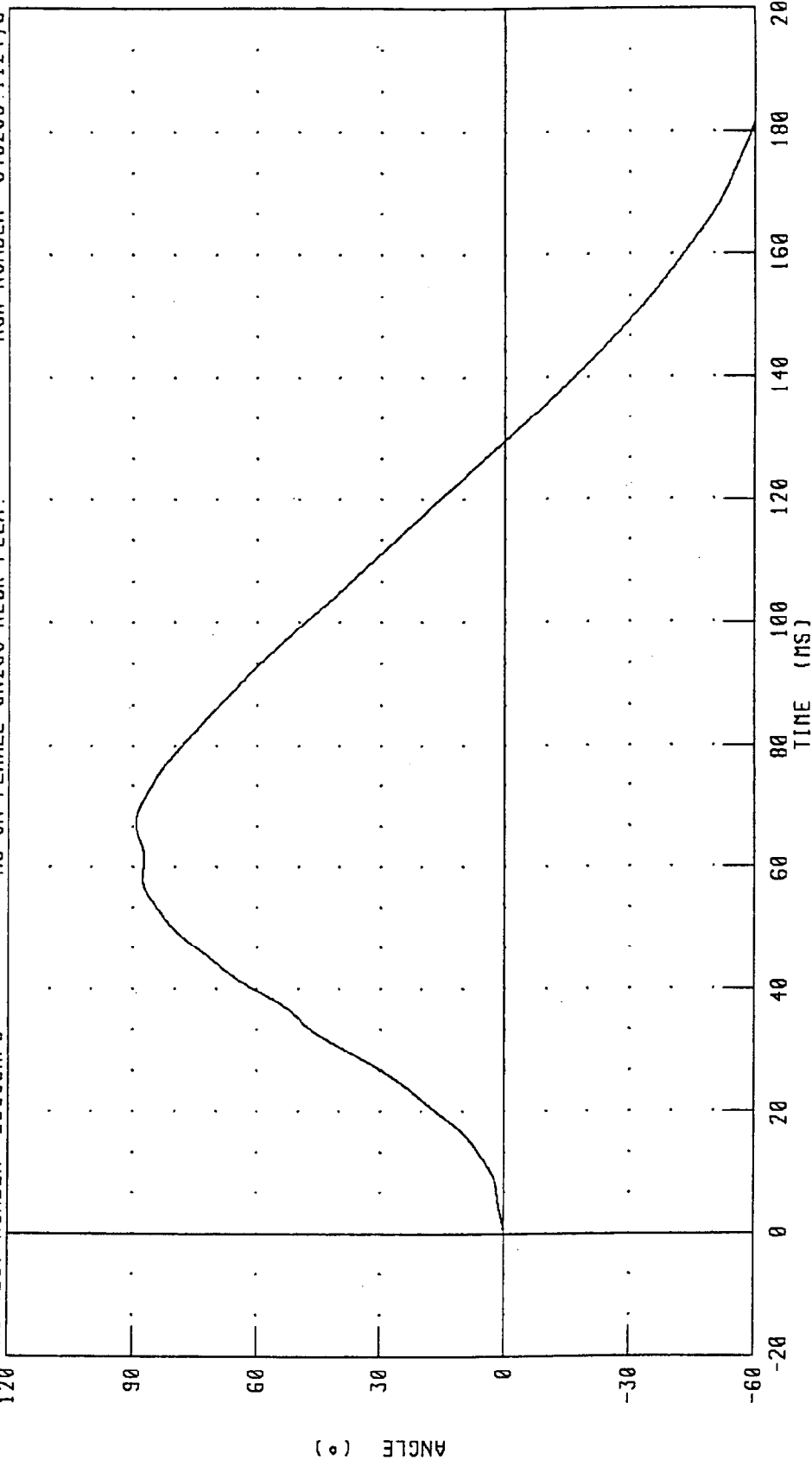


CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 51.73 ° @ 67.92 MS; -39.23 ° @ 197.76 MS

HYBRID III SMALL FEMALE NECK FLEXION CALIBRATION
TOTAL ROTATION

TRC TEST NUMBER: 289C3NF5 H3 SM FEMALE SN289 NECK FLEX. RUN NUMBER: 040298.1124;3

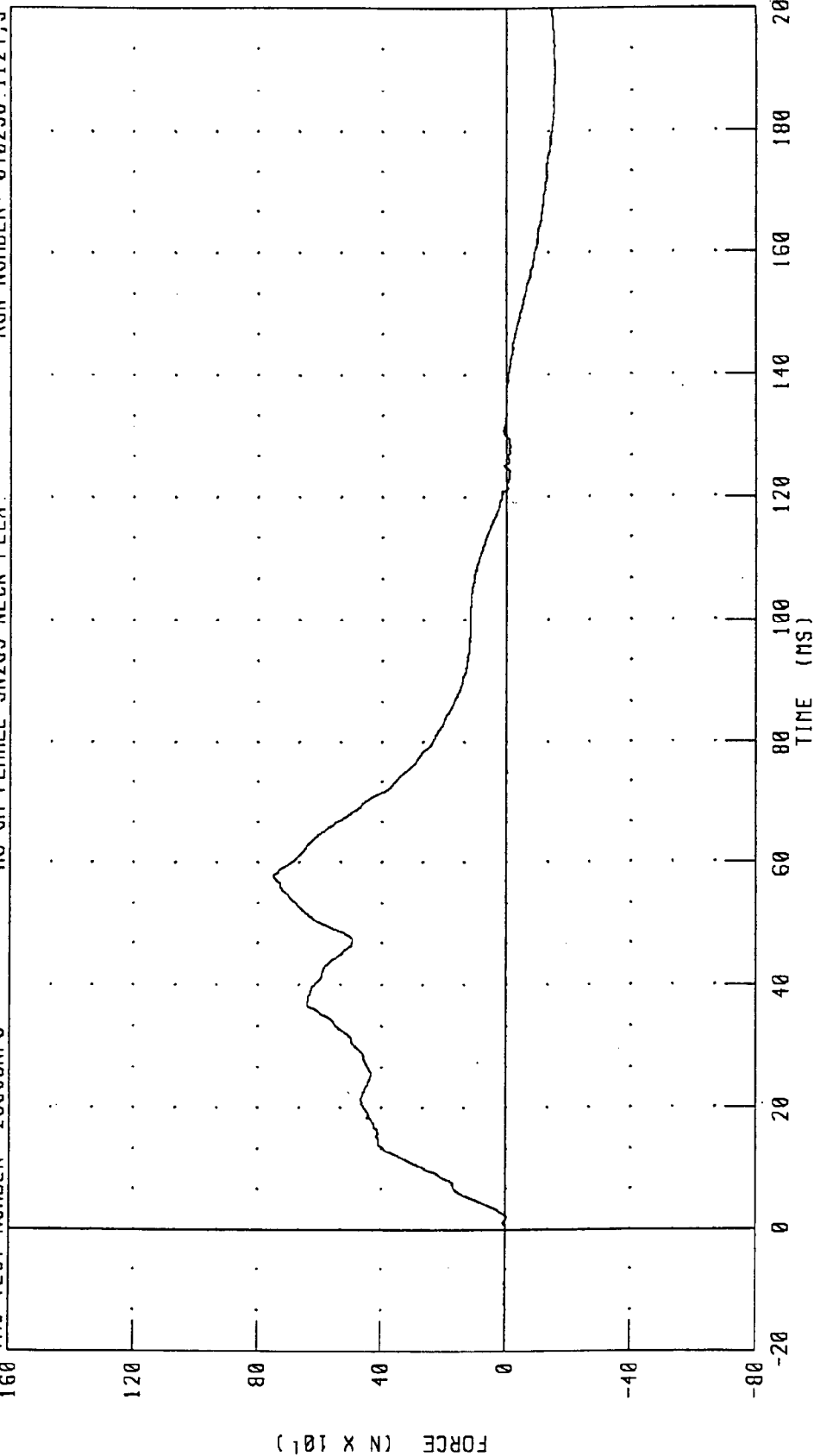


CHANNEL: TOTAL FILTER: CH. CLASS 60 PEAK DATA: 89.26 ° @ 67.28 MS; -63.44 ° @ 196.40 MS

HYBRID III SMALL FEMALE NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 289C3NF5 H3 SM FEMALE SN289 NECK FLEX. RUN NUMBER: 040298.1124.3

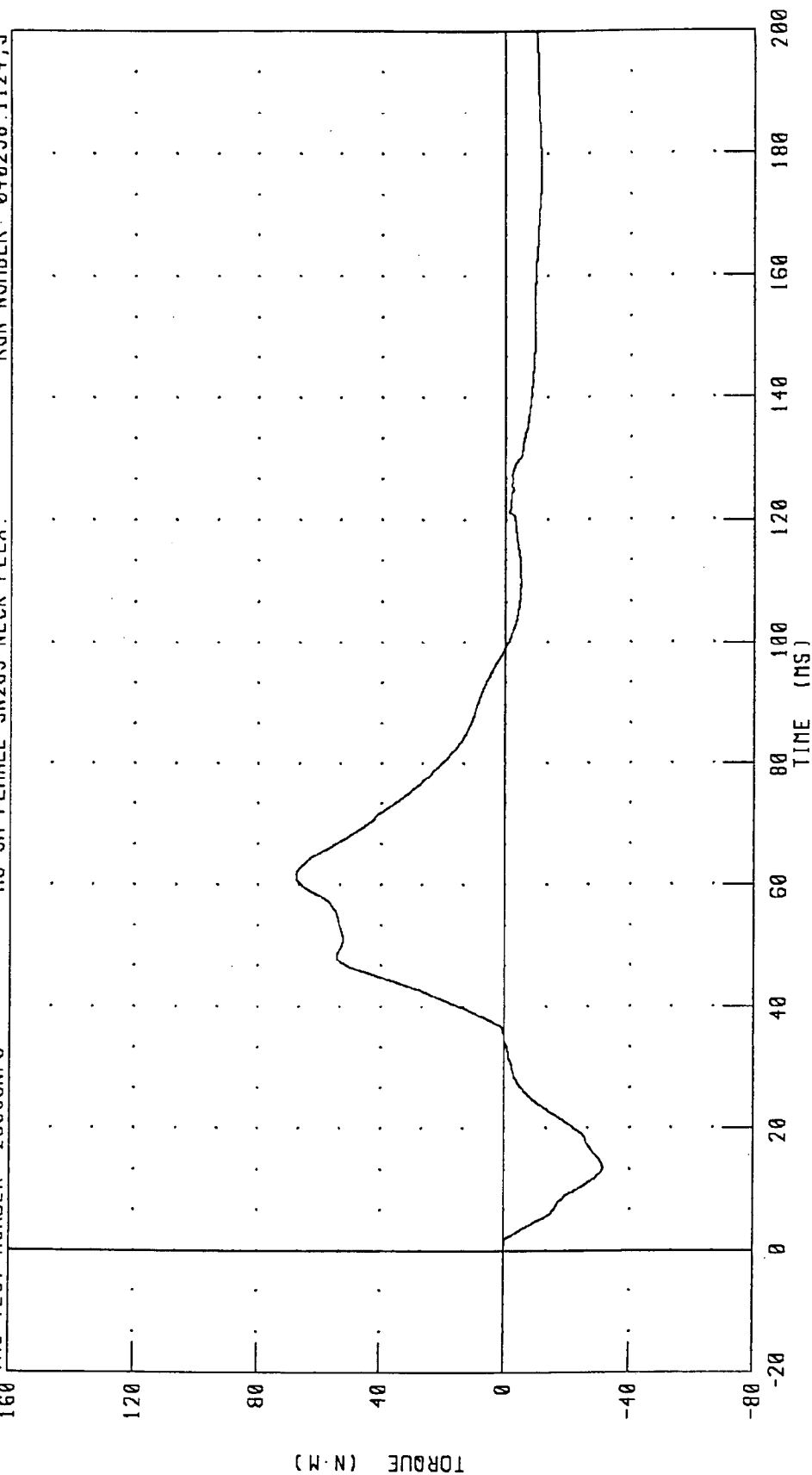


CHANNEL: NEKXF FILTER: CH. CLASS 1000

PEAK DATA: 749.92 N @ 57.92 MS; -155.85 N @ 188.72 MS

HYBRID III SMALL FEMALE NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS

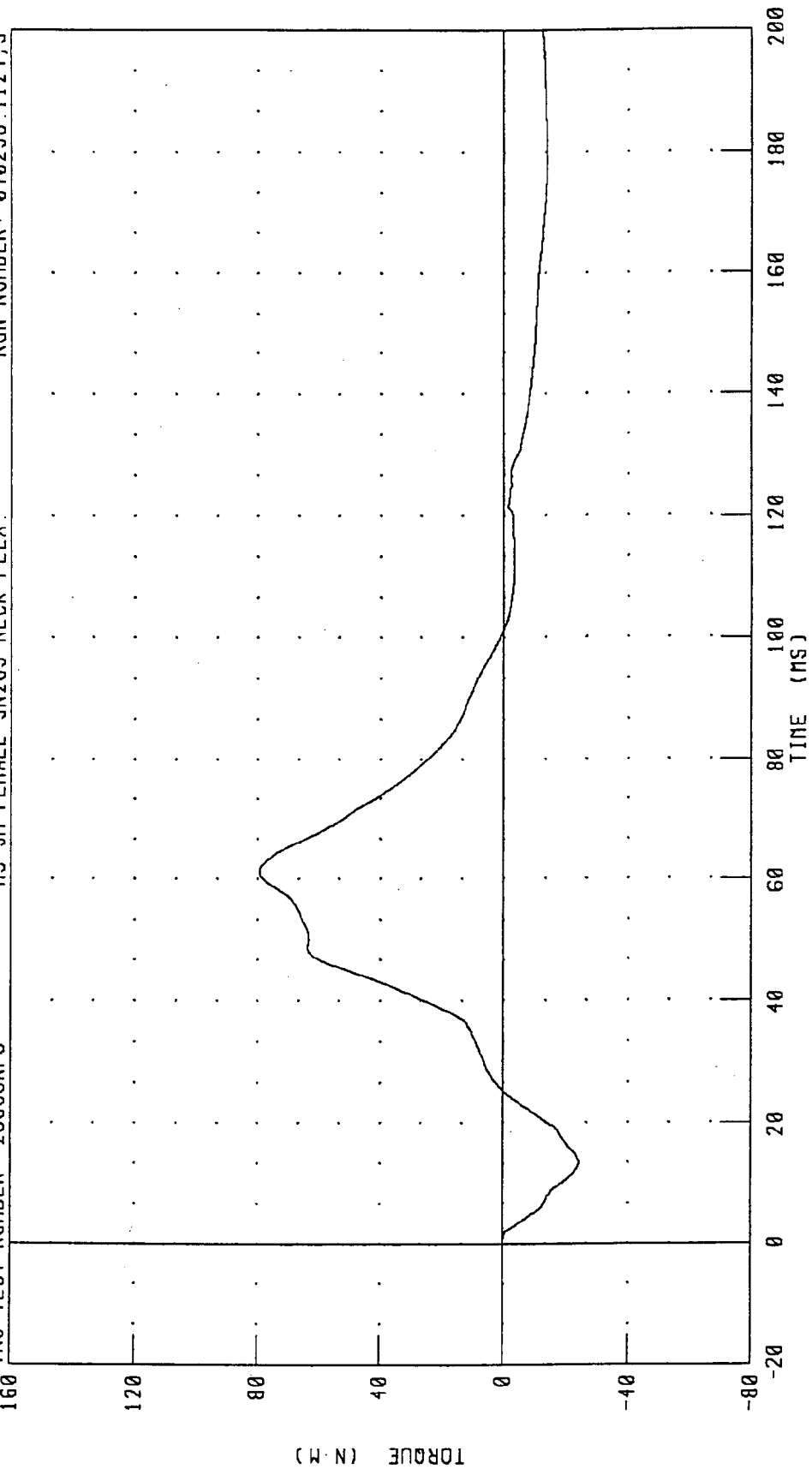
TRC TEST NUMBER: 289C3NF5 H3 SM FEMALE SN289 NECK FLEX. RUN NUMBER: 040298.1124;3



CHANNEL: NEKYM FILTER: CH. CLASS 600 PEAK DATA: 67.59 N.M @ 13.60 MS; -31.40 N.M @ 61.36 MS

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

TRC TEST NUMBER: 289C3NF5 H3 SM FEMALE SN289 NECK FLEX. RUN NUMBER: 040298.1124,3



CHANNEL: NEKOM FILTER: CH. CLASS 600 PEAK DATA: 79.40 N·M @ 61.20 MS; -24.34 N·M @ 13.60 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III SMALL FEMALE

19-FEB-98

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 289C3NE2 H3 SM FEMALE SN289 NECK EXT.

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	58.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
INTEGRATED PENDULUM VELOCITY	10 MS	1.5 - 1.9 M/S	1.61 M/S
	20 MS	3.1 - 3.9 M/S	3.30 M/S
	30 MS	4.6 - 5.6 M/S	4.96 M/S
PEAK D-PLANE ROTATION		97 - 119 DEG.	106.38 DEG.
ROTATION ANGLE DECAY AT THE 10 NM MOMENT LEVEL		80 - 96 DEG.	81.07 DEG.
PEAK MOMENT ABOUT OCCIPITAL CONDYLE		54 - 67 NM	-63.89 NM
NEGATIVE MOMENT DECAY TIME FROM PEAK TO 10 NM LEVEL		28 - 38 MS	34.24 MS
TIME OF PEAK ROTATION AFTER PEAK MOMENT		0 - 10 MS	2.40 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 040298.1055;3

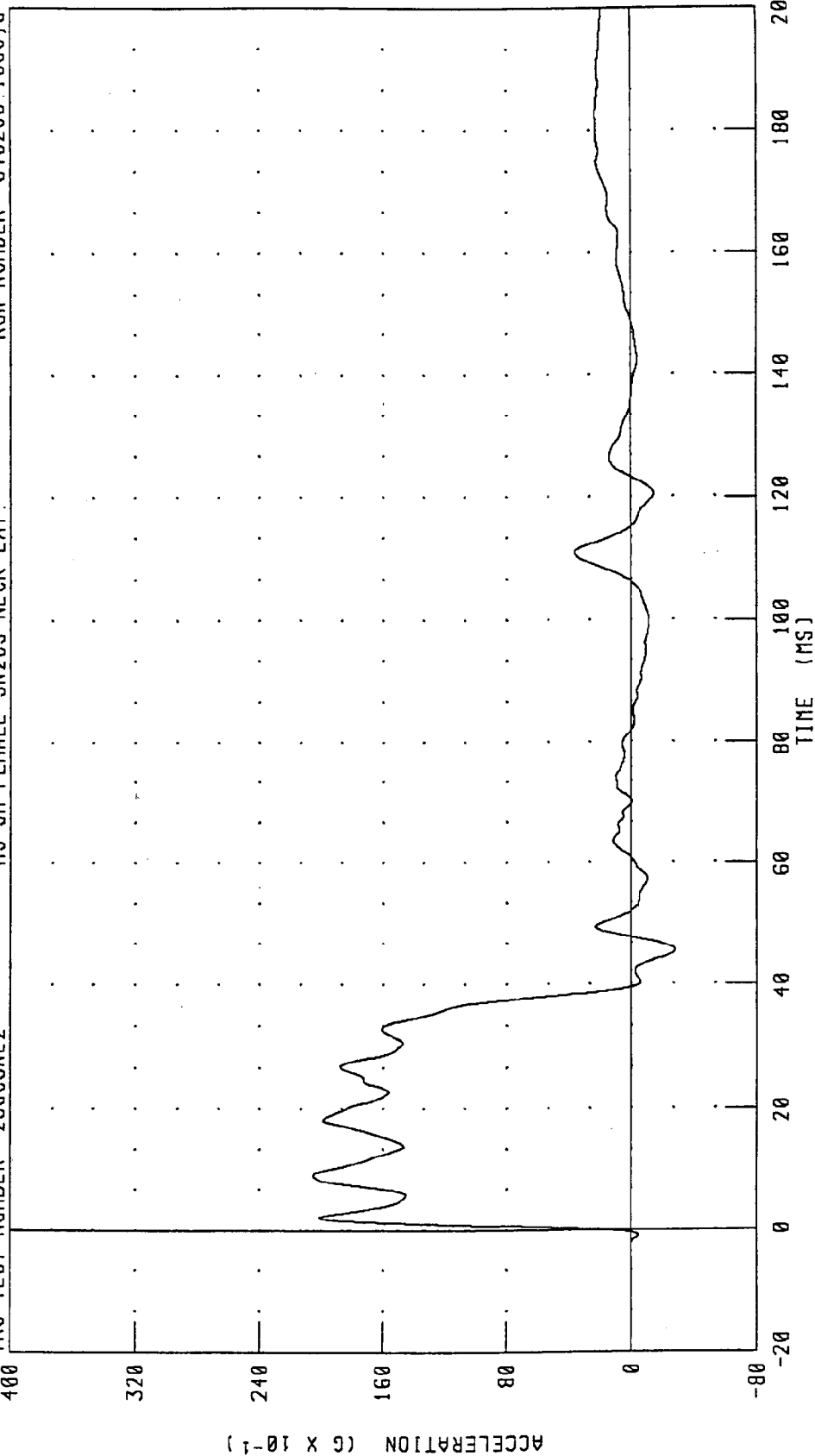
HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 289C3NE2

H3 SM FEMALE SN289 NECK EXT.

RUN NUMBER: 040298.1056;3



CHANNEL: PENXG FILTER: CH. CLASS 180

PEAK DATA: 20.51 G @ 8.96 MS; -2.75 G @ 45.52 MS

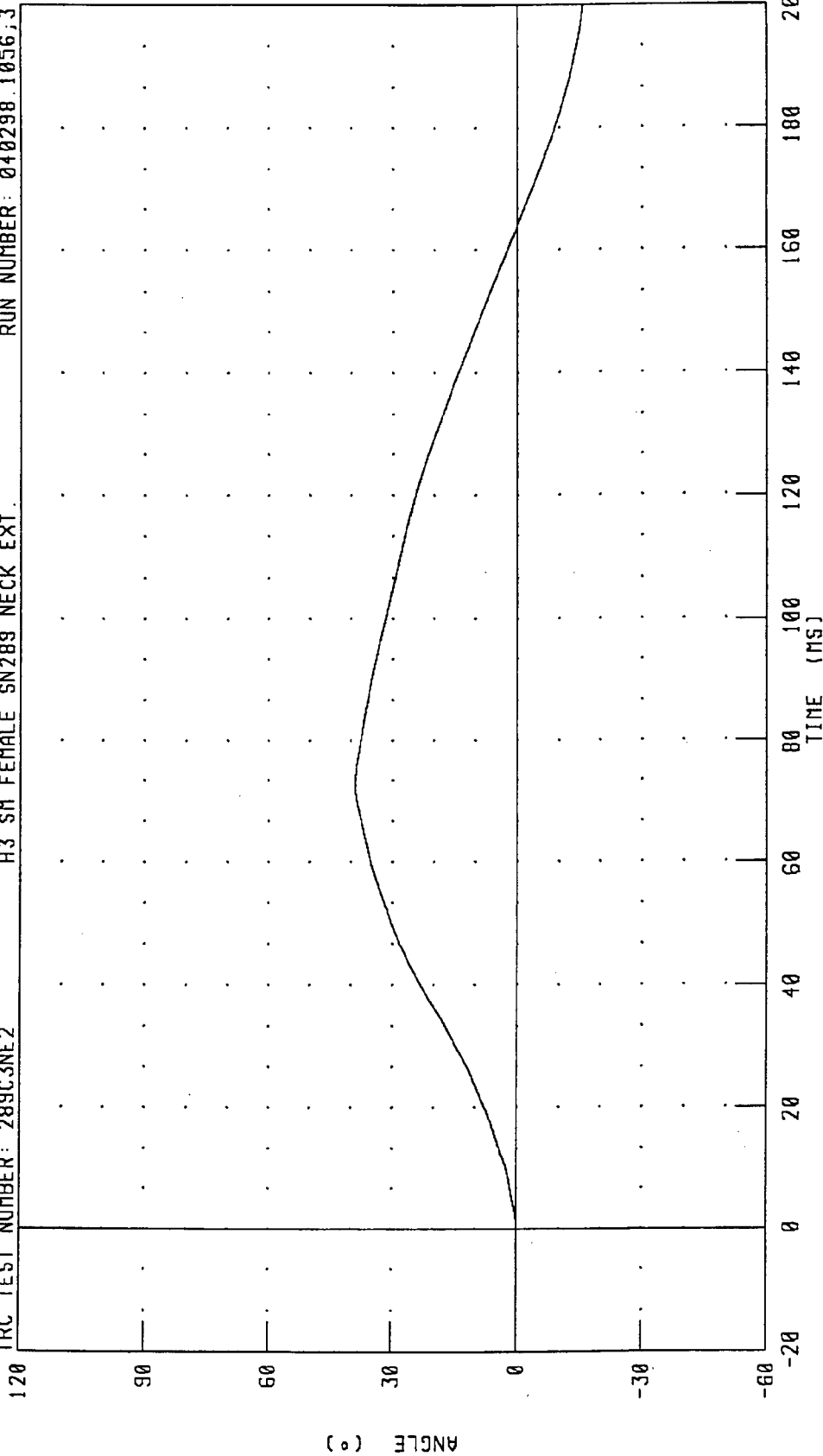
HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 289C3NE2

H3 SM FEMALE SN289 NECK EXT.

RUN NUMBER: 040290.1056;3



PEAK DATA: 38.88 ° @ 72.64 MS; -15.86 ° @ 200.00 MS

CHANNEL: BETA FILTER: CH. CLASS 60

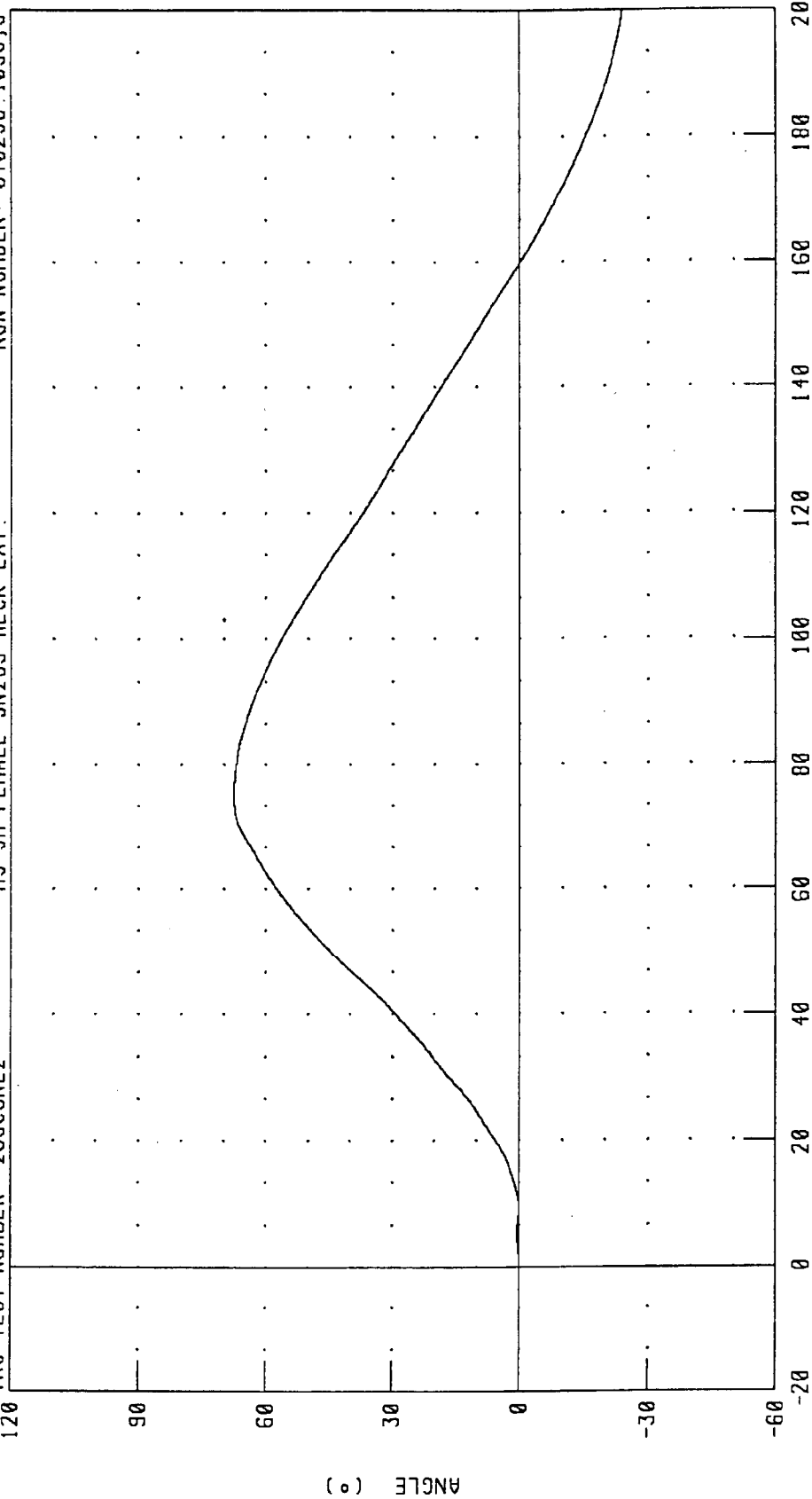
HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

IRC TEST NUMBER: 289C3NE2

H3 SM FEMALE SN289 NECK EXT.

RUN NUMBER: 040298.1056;3

120



CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 67.61 ° @ 75.20 MS; -24.06 ° @ 200.00 MS

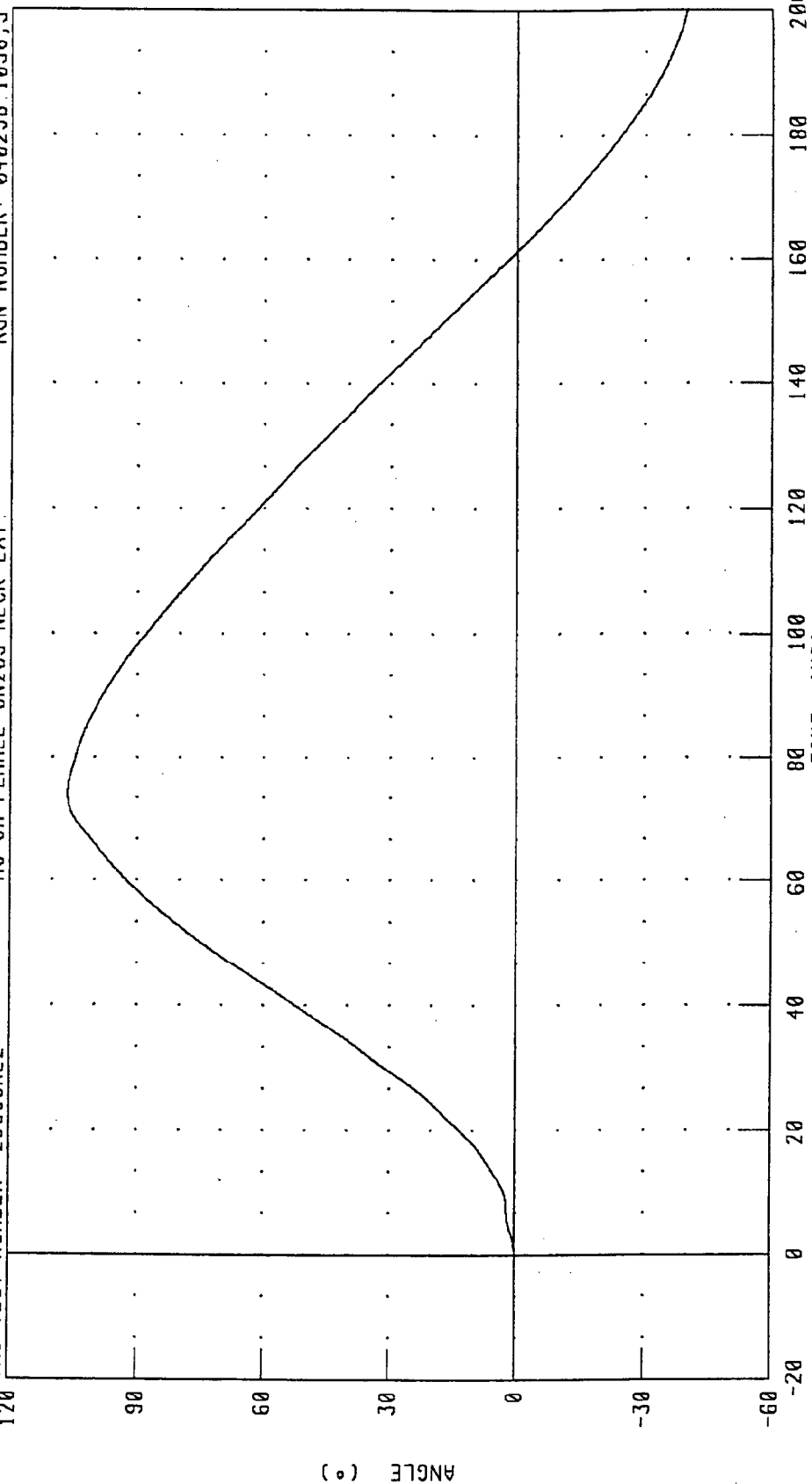
HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION

TOTAL ROTATION

IRC TEST NUMBER: 289C3NE2

H3 SM FEMALE SN289 NECK EXT.

RUN NUMBER: 04029B.1056;3



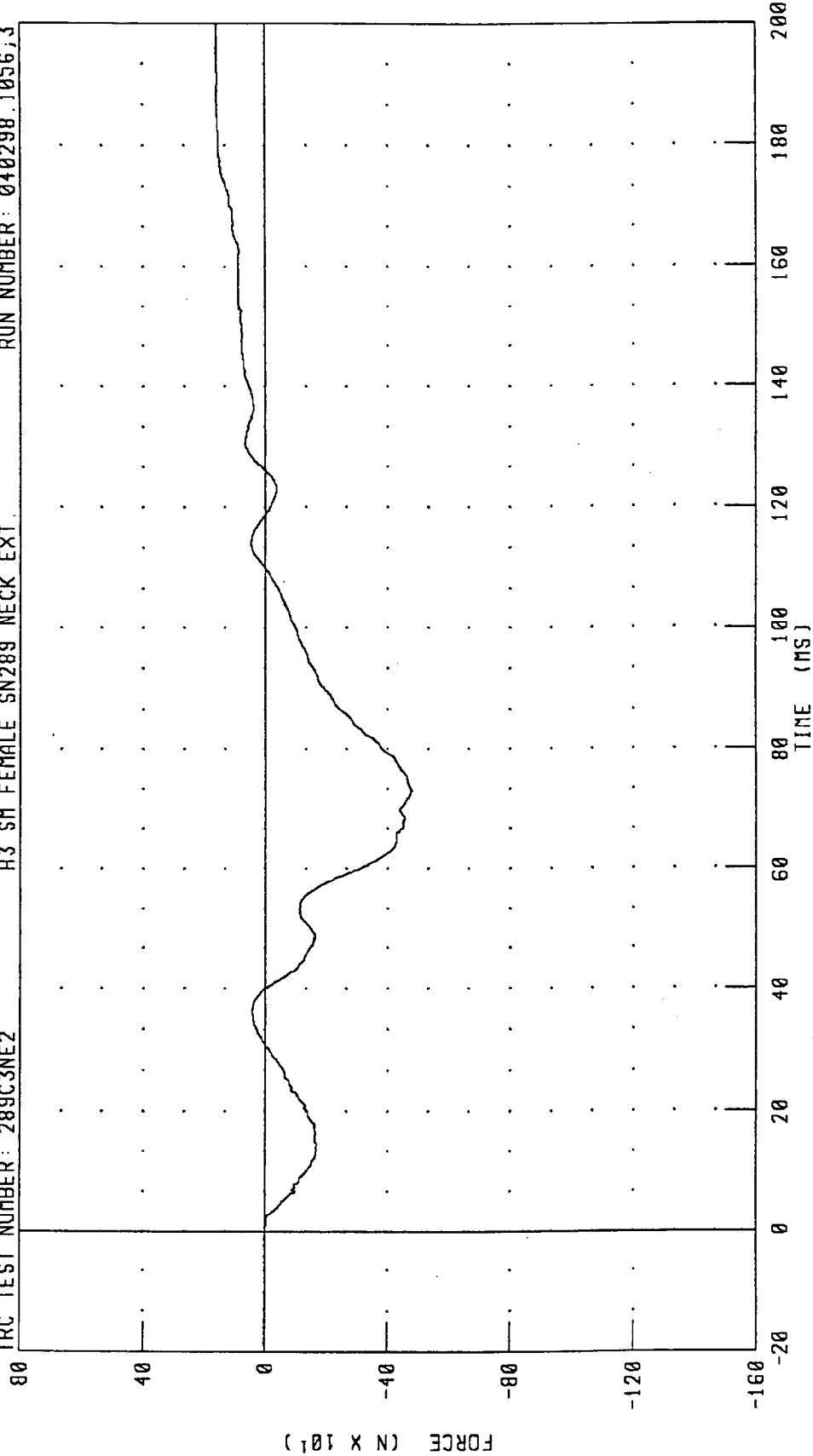
CHANNEL: TOTAN FILTER: CH. CLASS 60

PEAK DATA: 106.38 ° @ 73.92 MS; -39.92 ° @ 200.00 MS

HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 289C3NE2 H3 SM FEMALE SN289 NECK EXT. RUN NUMBER: 040298.1056;3

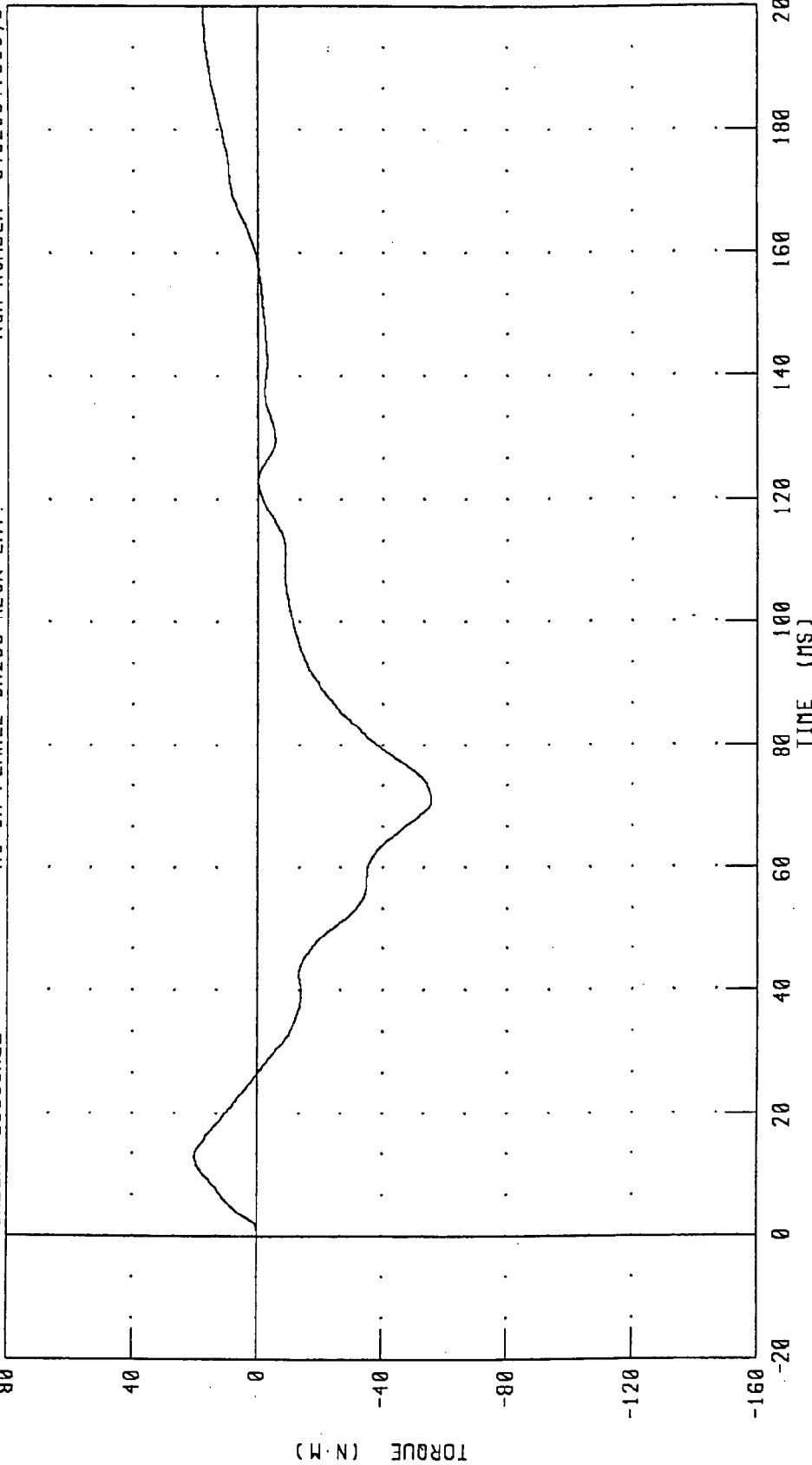


CHANNEL: NEKXF FILTER: CH. CLASS 1000

PEAK DATA: 160.73 N @ 195.28 MS; -480.90 N @ 73.04 MS

HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS

TRC TEST NUMBER: 289C3NE2 H3 SM FEMALE SN289 NECK EXT. RUN NUMBER: 040298.1056,3



CHANNEL: NEKYM FILTER: CH. CLASS 600

PEAK DATA: 20.15 N-M @ 12.88 MS; -55.66 N-M @ 71.36 MS

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

TRC TEST NUMBER: 289C3NE2

H3 SM FEMALE SN289 NECK EXT.

RUN NUMBER: 040298.1056;3

80

40

TORQUE (N·M)

0

-40

-80

-120

-160

-20

0

20

40

60

80

100

120

140

160

180

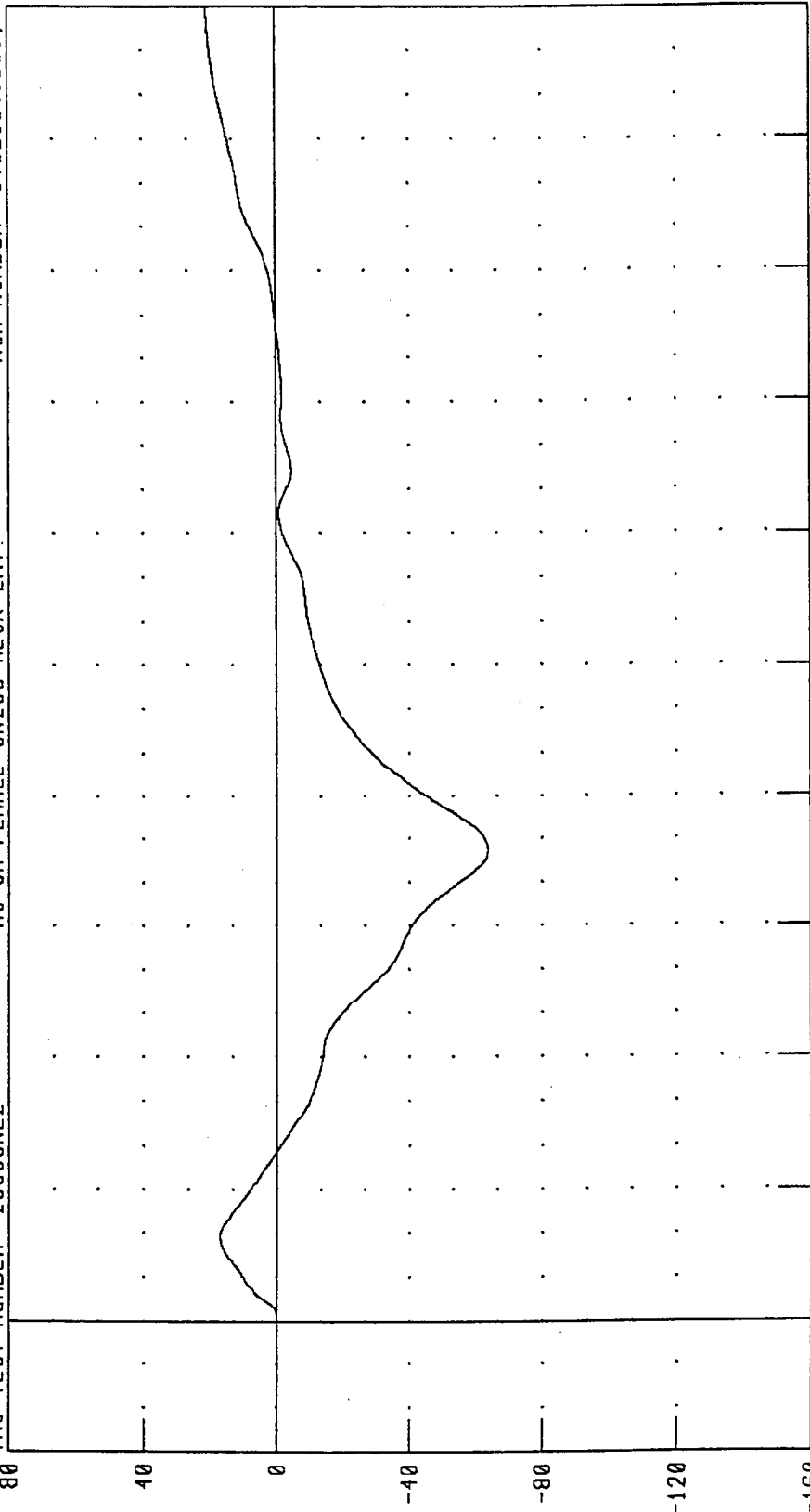
200

TIME (MS)

CHANNEL: NEKOM

FILTER: CH. CLASS 600

PEAK DATA: 20.59 N·M @ 199.76 NS; -63.89 N·M @ 71.52 NS



TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III SMALL FEMALE

13-FEB-98

TRC INC.

TEST NO: 289C3TH2

H3 SM FEMALE SN289 H.S.THORAX

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	52.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.83 M/S
MAXIMUM DEFLECTION	51 - 58 MM	53.0 MM
MAXIMUM RESISTIVE FORCE	3800 - 4300 N	4348. N 3477 *
INTERNAL HYSTERESIS	69% - 85%	75.4%

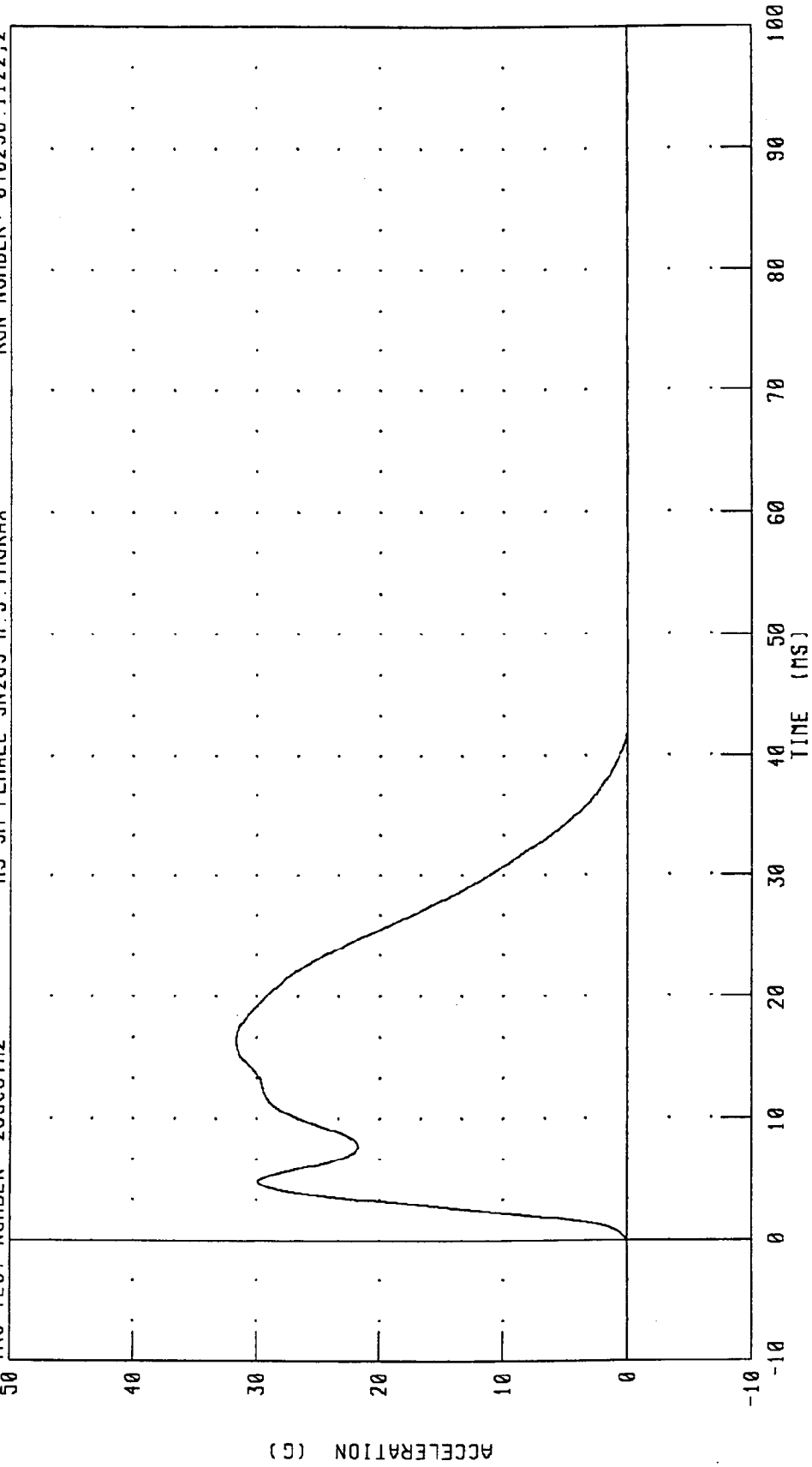
* TEST DOES NOT MEET SPECIFICATIONS

TECHNICIAN Kevin W. Jenkins

RUN NUMBER: 040298.1059;2

HYBRID III SMALL FEMALE THORAX CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 289C3TH2 H3 SM FEMALE SN289 H.S. THORAX RUN NUMBER: 040298.1122.2



CHANNEL: PENXG FILTER: CH. CLASS 180 PEAK DATA: 31.69 G @ 16.40 MS; -0.07 G @ 80.32 MS

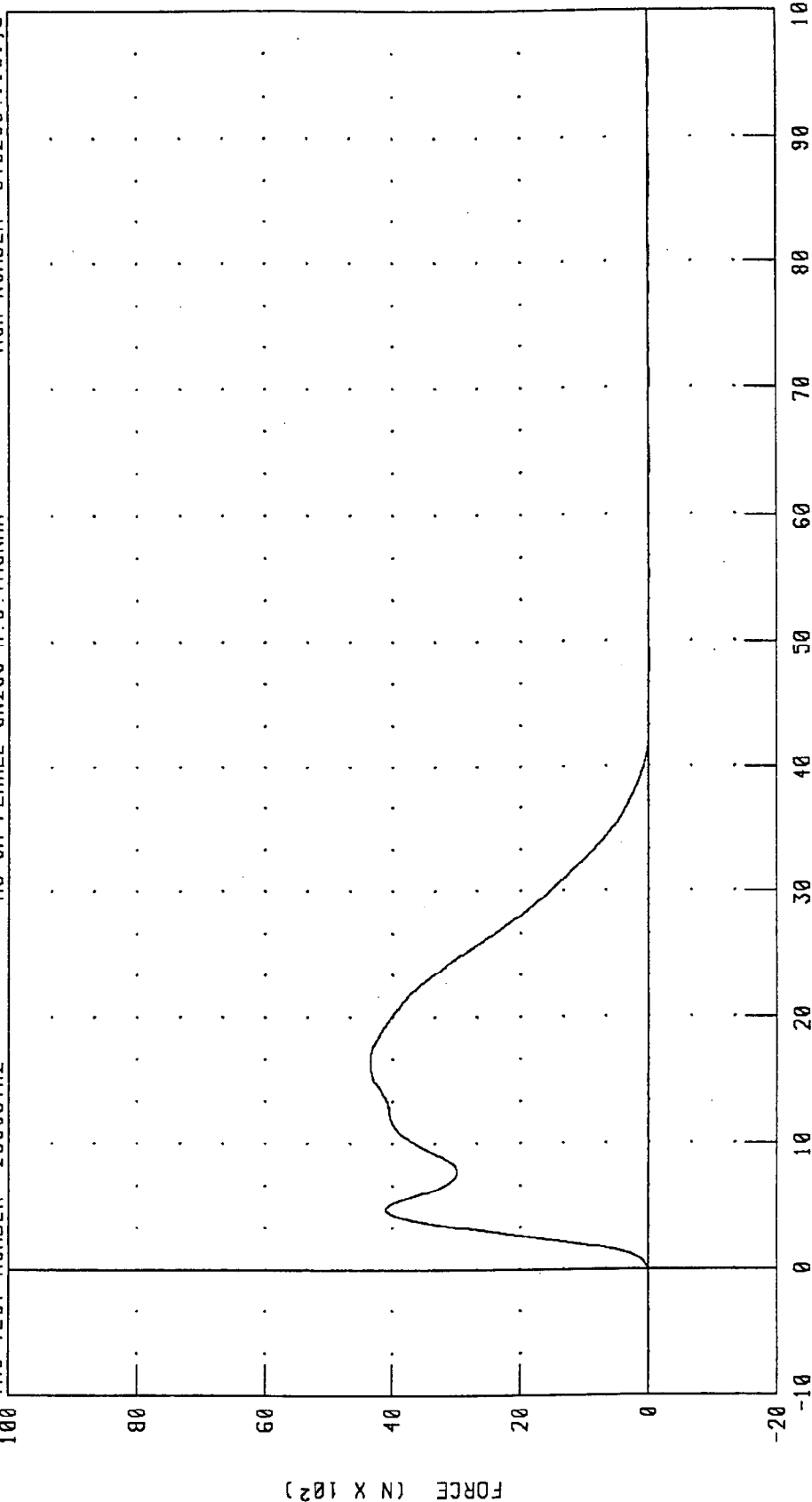
HYBRID III SMALL FEMALE THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER: 289C3TH2

H3 SM FEMALE SN289 H.S. THORAX

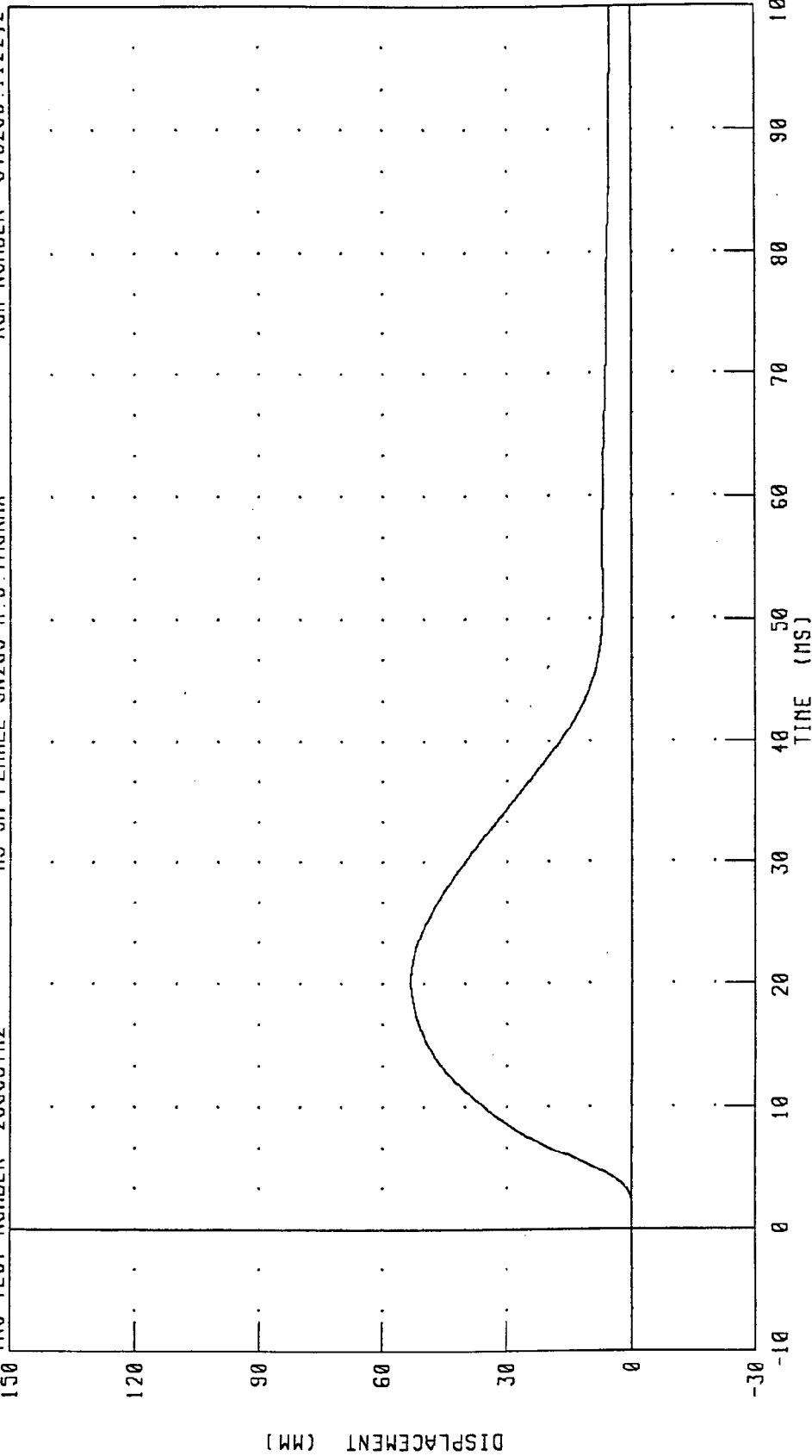
RUN NUMBER: 040298.1101.2



CHANNEL: PENXF FILTER: CH. CLASS 180 PEAK DATA: 4348.28 N @ 16.40 MS; -10.07 N @ 80.32 MS

HYBRID III SMALL FEMALE THORAX CALIBRATION STERNUM DISPLACEMENT

TRC TEST NUMBER: 289C3TH2 H3 SM FEMALE SN289 H.S. THORAX RUN NUMBER: 040298.1122,2



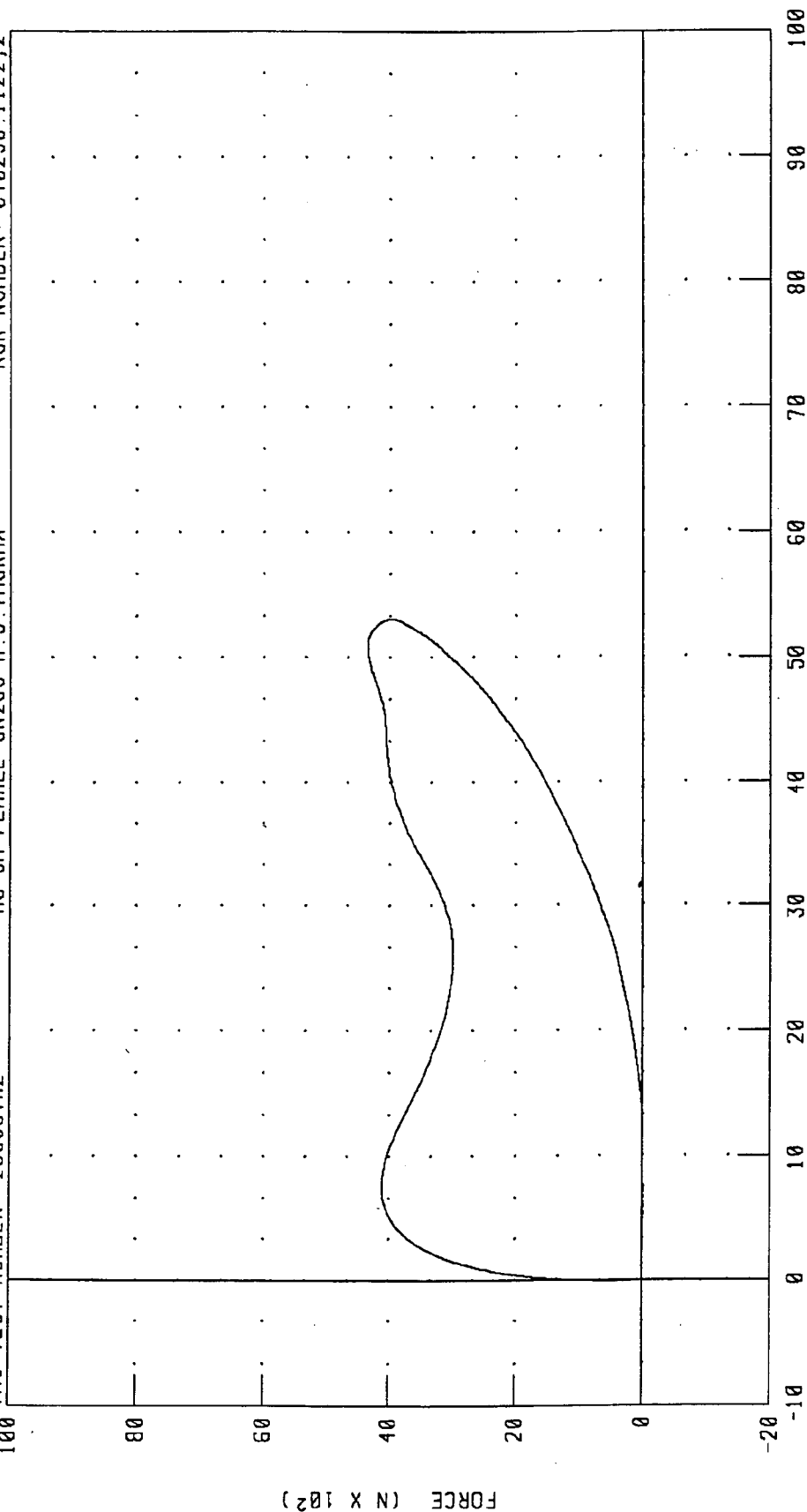
CHANNEL: CSTXD FILTER: CH. CLASS 180 PEAK DATA: 53.10 MM @ 20.24 MS; -0.04 MM @ 1.44 MS

HYBRID III SMALL FEMALE THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE

IRC TEST NUMBER: 289C3TH2

H3 SM FEMALE SN289 H.S. THORAX

RUN NUMBER: 040298.1122;2



CHANNEL: CSTXD FILTER: CH. CLASS 180
PENXF CH. CLASS 180
PEAK DATA: 53.10 MM @ 20.24 MS; -0.04 NM @ 1.44 MS
4318.28 N @ 16.40 MS; -10.07 N @ 80.32 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

30-JAN-98

TRC INC.

TEST NO: 289C3RK1

H3 SM FEMALE SN289 R.KNEE IMP.

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	58.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.13 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3400 - 4200 N	3894.2 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Byg Calt.

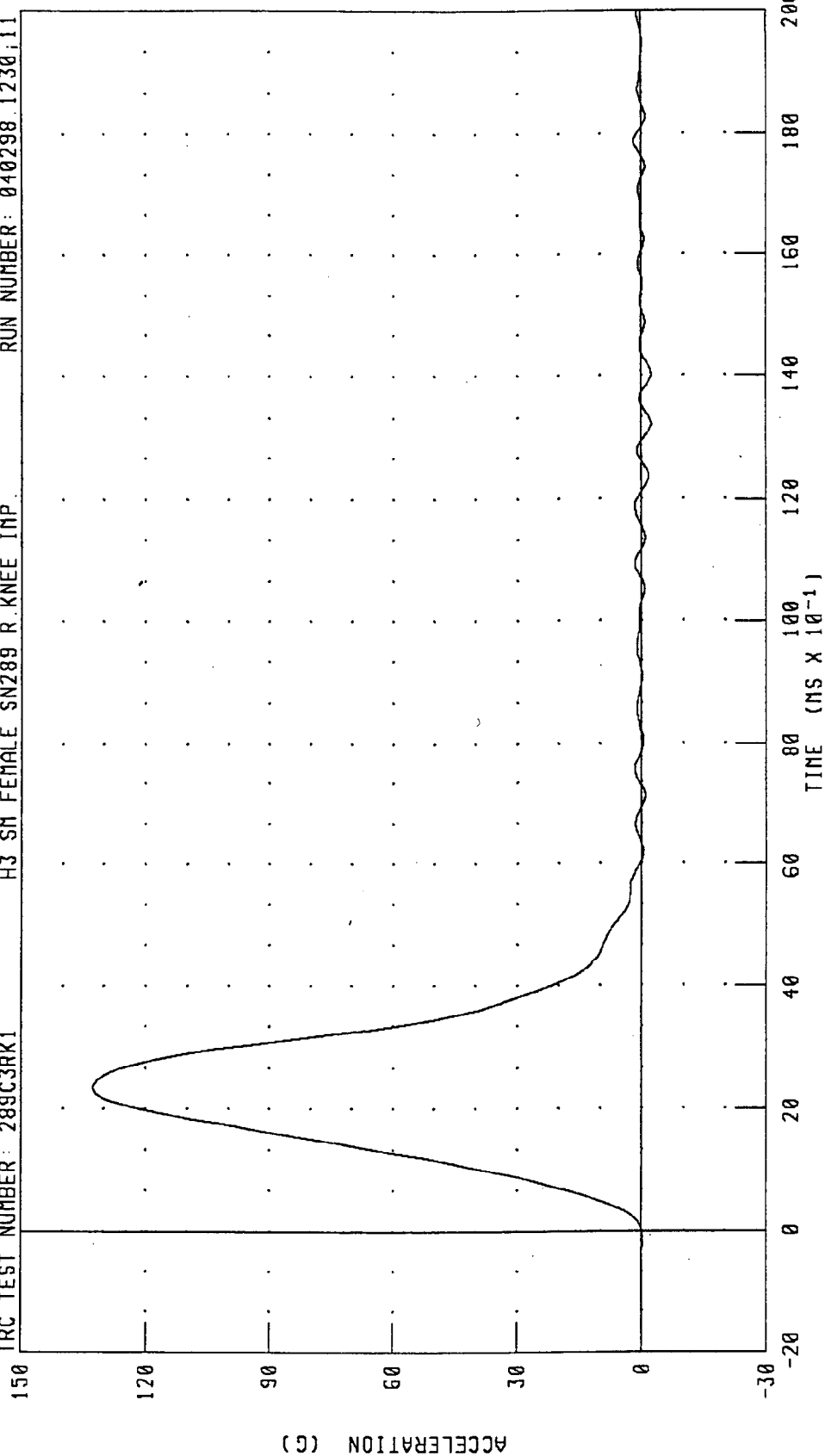
RUN NUMBER: 040298.1230;11

HYBRID [1] SMALL FEMALE RIGHT KNEE CALIBRATION
PENDULUM DECELERATION (3 KG PEND.)

TRC TEST NUMBER: 289C3RK1

H3 SM FEMALE SN289 R.KNEE INP.

RUN NUMBER: 040298.1230.11



CHANNEL: PENXC FILTER: CH. CLASS 600

PEAK DATA: 132.65 G @ 2.32 MS; -2.41 G @ 13.20 MS

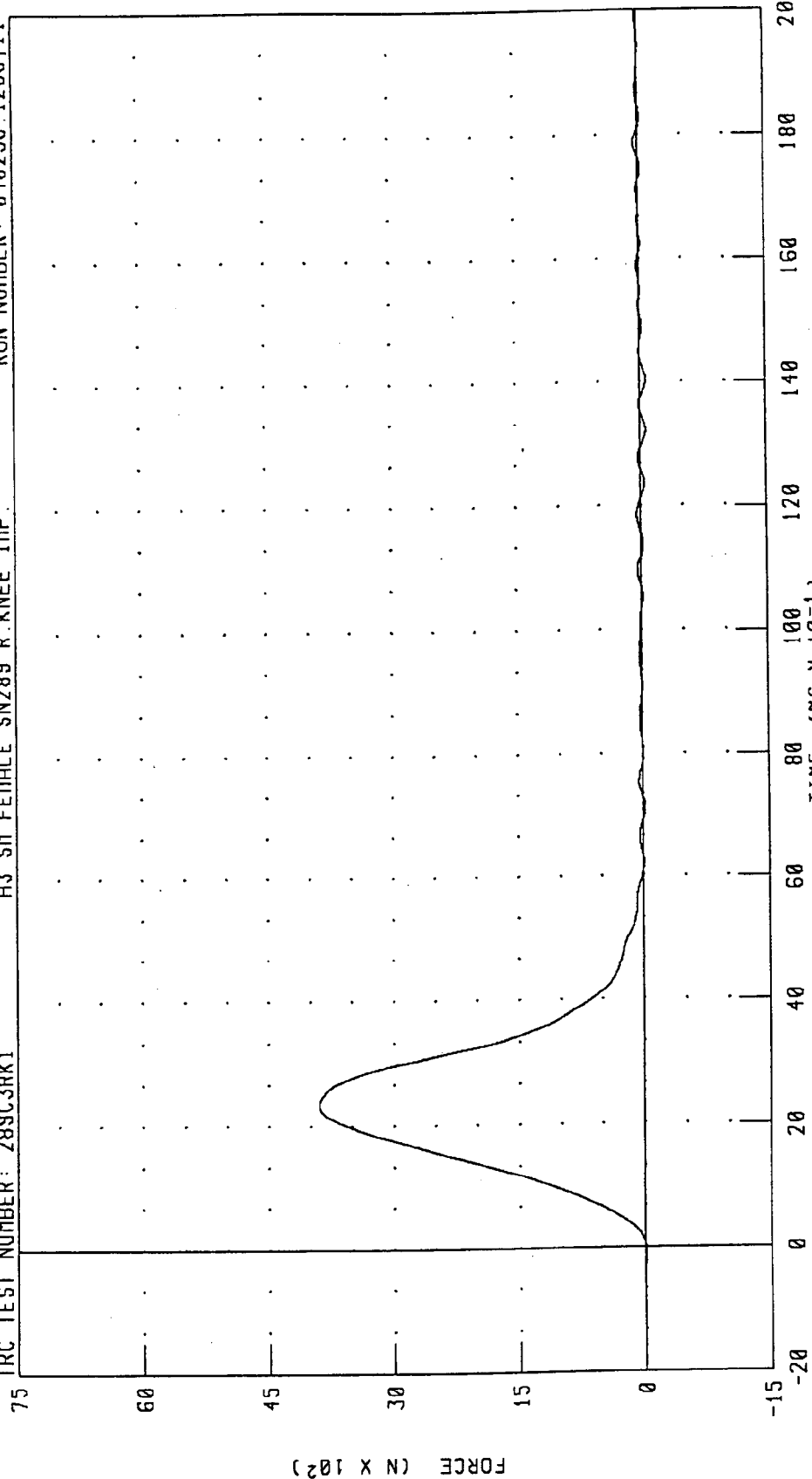
HYBRID III SMALL FEMALE RIGHT KNEE CALIBRATION

PENDULUM FORCE (3 KG PEND.)

H3 SM FEMALE SN289 R.KNEE IMP.

RUN NUMBER: 040298.1230.11

TRC TEST NUMBER: 289C3RK1



PEAK DATA: 3894.27 N @ 2.32 MS; -70.86 N @ 13.20 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III SMALL FEMALE

18-FEB-98

TRC INC. TEST NO: 289C3LK1 H3 SM FEMALE SN289 L.KNEE IMP.

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	58.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.13 M/S
PEAK KNEE IMPACT FORCE 3.0 KG PENDULUM	3400 - 4200 N	3638.6 N

TEST MEETS SPECIFICATIONS

TECHNICIAN By Cult

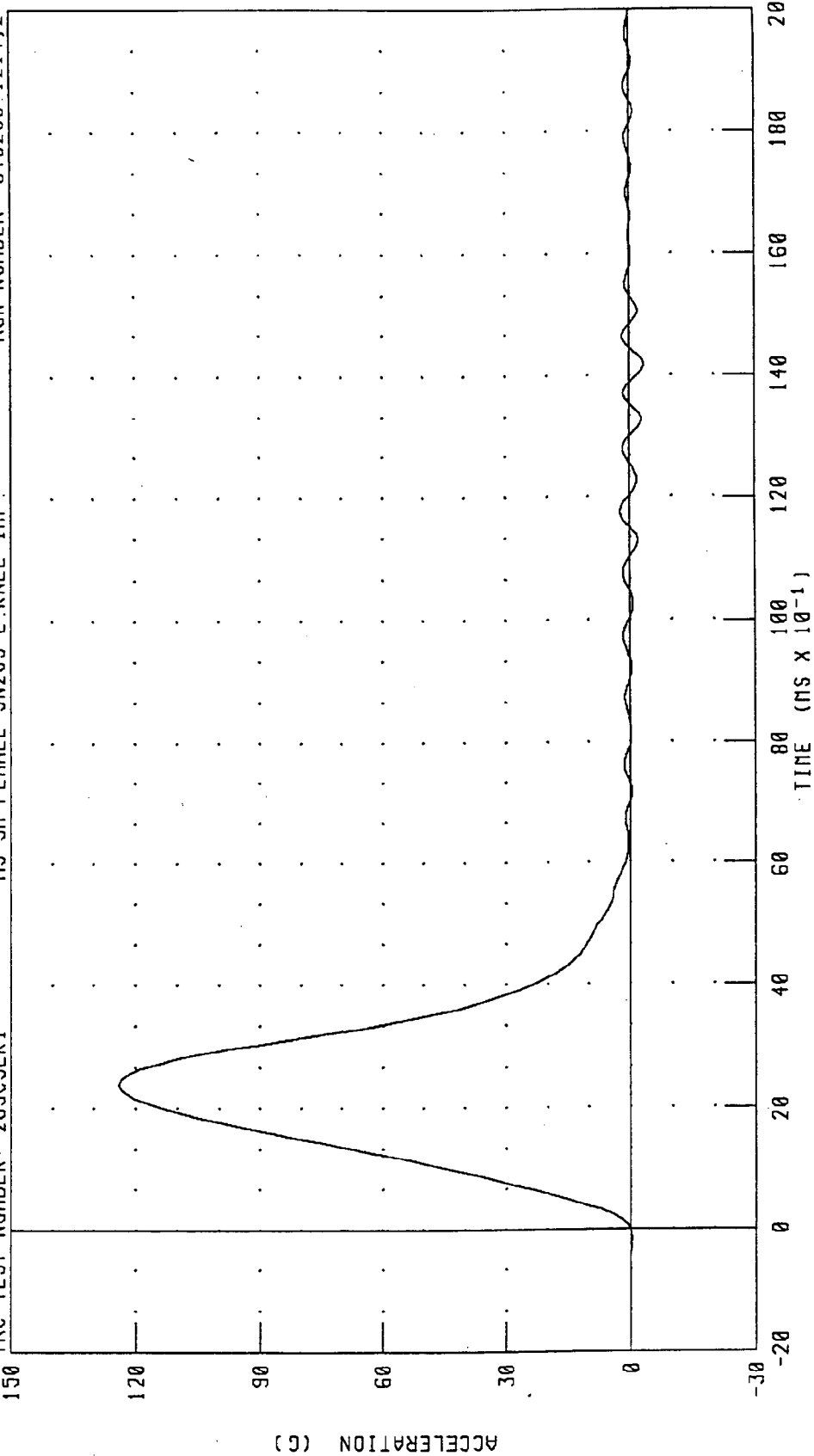
RUN NUMBER: 040298.1213;2

HYBRID III SMALL FEMALE LEFT KNEE CALIBRATION
PENDULUM DECELERATION (3 KG PEND.)

TRC TEST NUMBER: 289C3LK1

H3 SN FEMALE SN289 L KNEE INP.

RUN NUMBER: 040298.1214;2



CHANNEL: PENXC FILTER: CH. CLASS 600

PEAK DATA: 123.94 G @ 2.40 MS; -3.49 G @ 14.16 MS

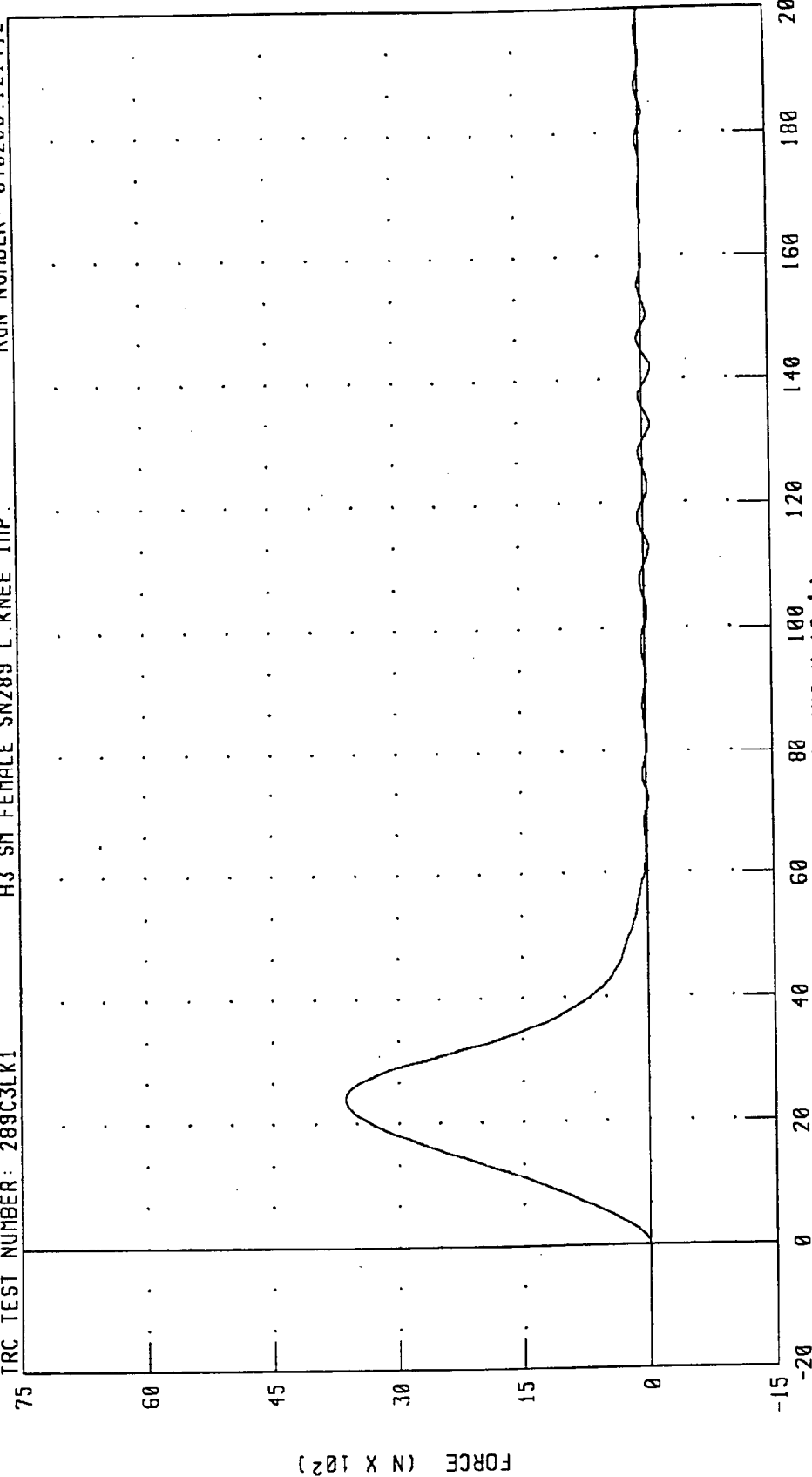
HYBRID III SMALL FEMALE LEFT KNEE CALIBRATION

PENDULUM FORCE (3 KG PEND.)

H3 SM FEMALE SN289 L KNEE IMP.

TRC TEST NUMBER: 289C3LK1

RUN NUMBER: 040298.1214.2



CHANNEL: PENXF FILTER: CH. CLASS 600

TIME (MS X 10⁻¹)

PEAK DATA: 3638.62 N @ 2.40 MS; -102.31 N @ 14.16 MS

TRANSPORTATION RESEARCH CENTER INC.

KNEE SLIDER TEST

HYBRID III SMALL FEMALE

18-FEB-98

RIGHT KNEE
TRC INC.

TEST NO: 289C3RS2

H3 FEMALE SN289 RIGHT SLIDER

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	58.0 %
PENDULUM VELOCITY	2.70-2.80 M/S	2.79 M/S
PEAK DISPLACEMENT	12.7 - 15.5 MM	12.6 MM *

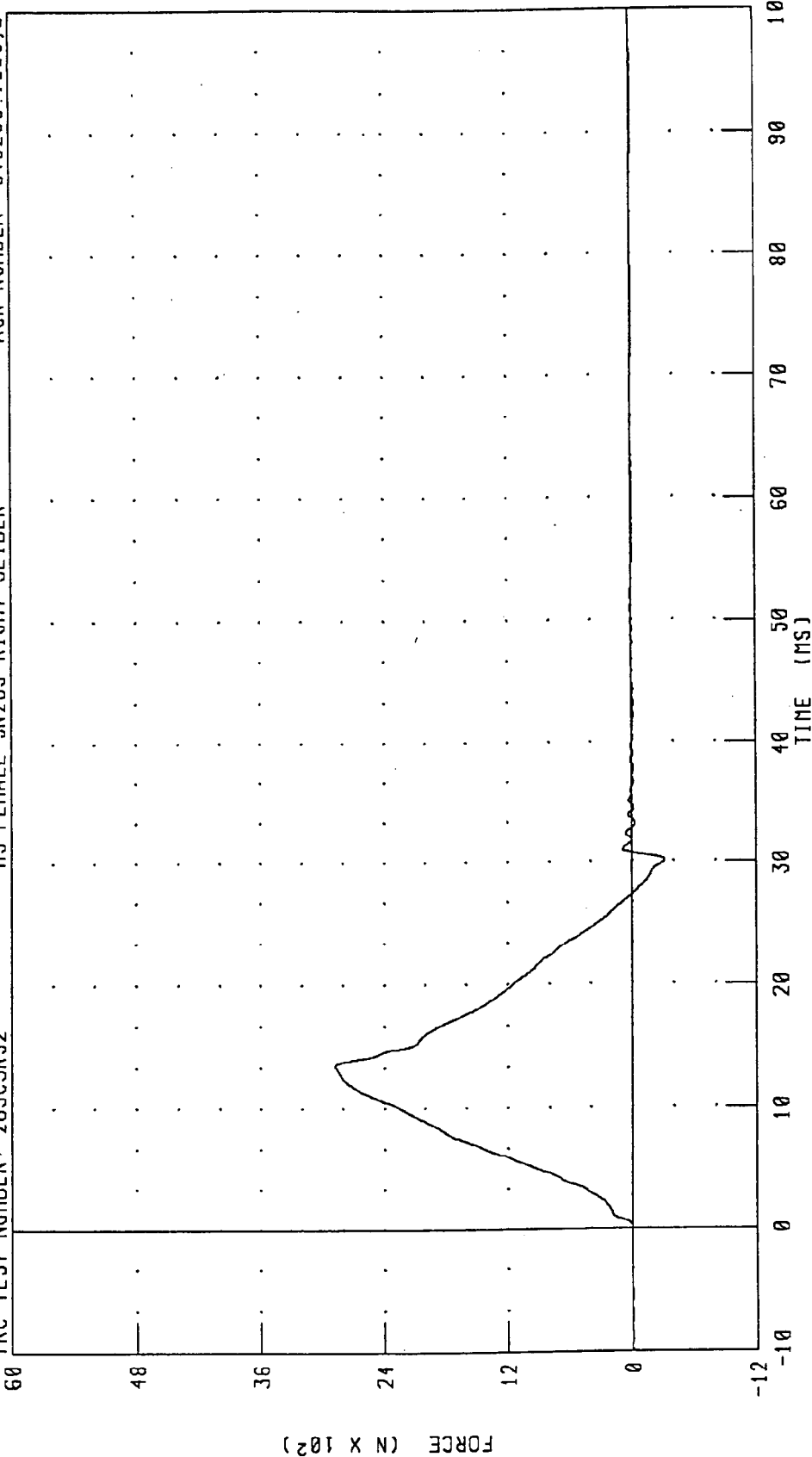
* TEST DOES NOT MEET SPECIFICATIONS

TECHNICIAN By Cult

RUN NUMBER: 040298.1234;2

HYBRID III SMALL FEMALE RIGHT KNEE SLIDER CALIBRATION
RIGHT FEMUR FORCE

TRC TEST NUMBER: 289C3RS2 H3 FEMALE SN289 RIGHT SLIDER RUN NUMBER: 040298.1235;2



CHANNEL: RFMF FILTER: CH. CLASS 600 PEAK DATA: 2875.71 N @ 13.44 MS; -316.36 N @ 30.08 MS

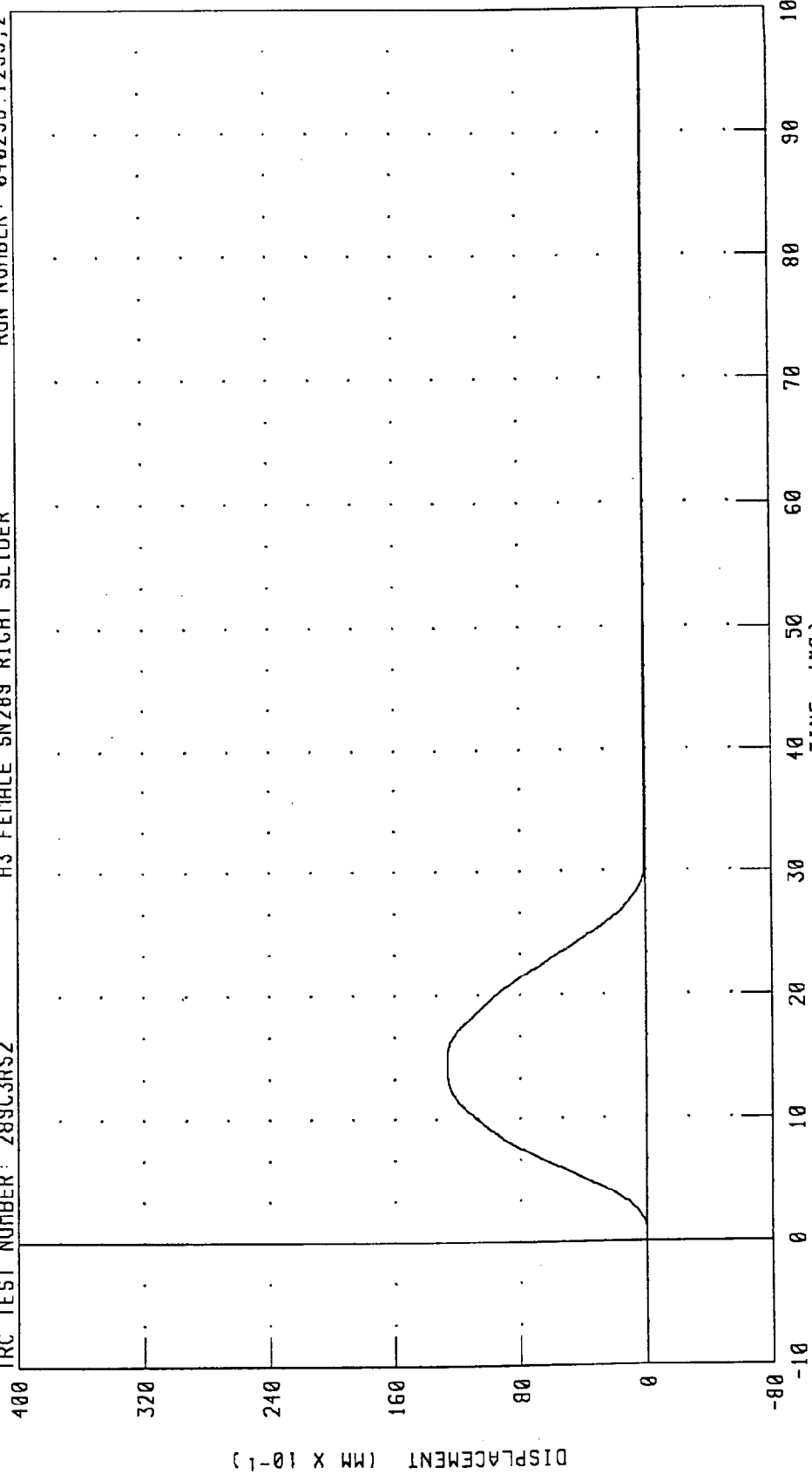
HYBRID III SMALL FEMALE RIGHT KNEE SLIDER CALIBRATION

RIGHT KNEE DISPLACEMENT

H3 FEMALE SN289 RIGHT SLIDER

RUN NUMBER: 04029B.1235;2

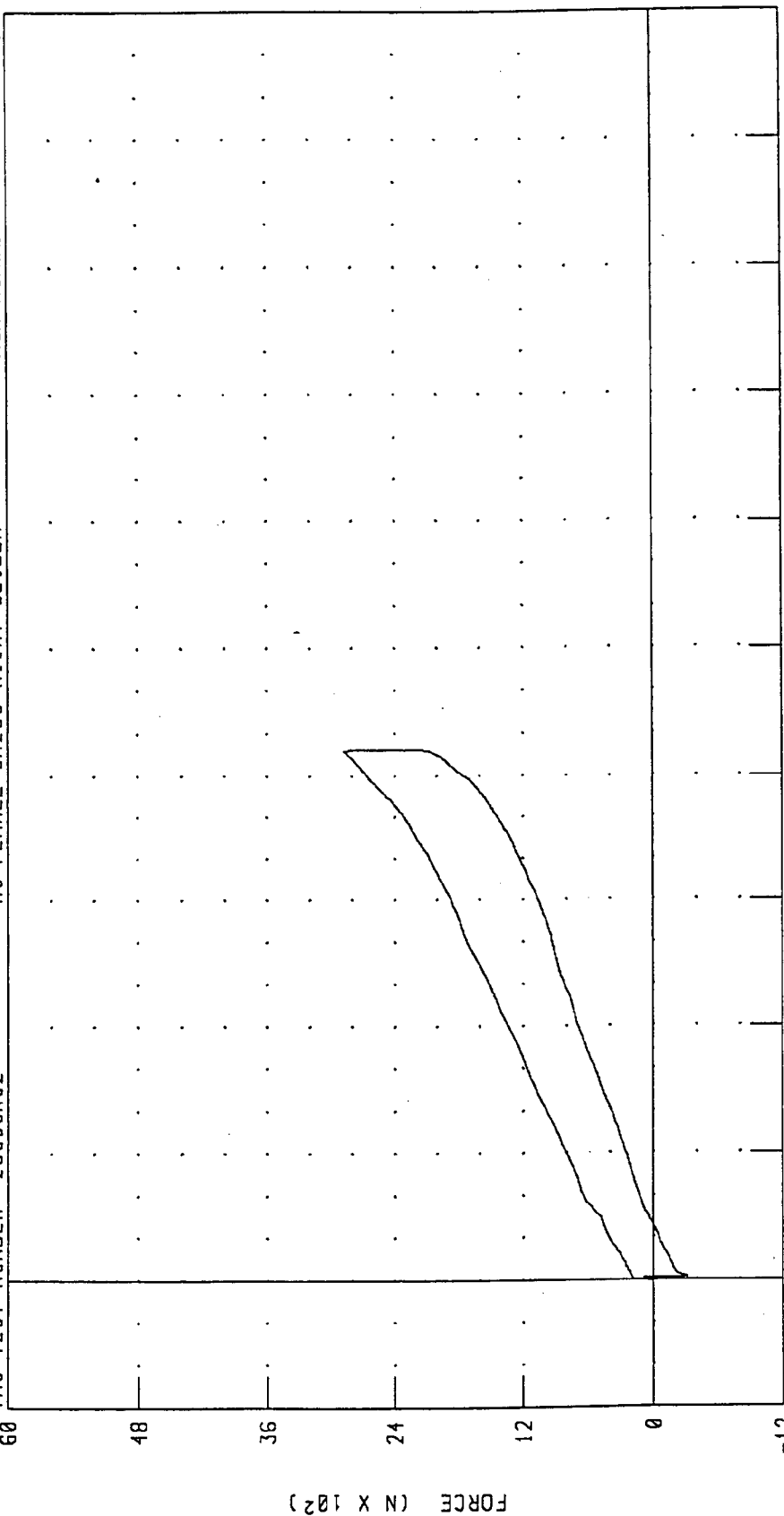
TRC TEST NUMBER: 289C3RS2



CHANNEL: KNRXD FILTER: CH. CLASS 180

HYBRID III SMALL FEMALE RIGHT KNEE SLIDER CALIBRATION RIGHT KNEE DISPLACEMENT VS FEMUR FORCE

TRC TEST NUMBER: 289C3RS2 H3 FEMALE SN289 RIGHT SLIDER RUN NUMBER: 040298.1235.2



CHANNEL: KNRXD FILTER: CH: CLASS 180
 RFMF CH: CLASS 600
 PEAK DATA: 12.63 MM @ 14.48 MS; -0.01 MM @ 0.40 MS
 2875.71 N @ 13.44 MS; -316.36 N @ 30.08 MS

TRANSPORTATION RESEARCH CENTER INC.

KNEE SLIDER TEST

HYBRID III SMALL FEMALE

18-FEB-98

LEFT KNEE
TRC INC.

TEST NO: 289C3LS1

H3 FEMALE SN289 LEFT SLIDER

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	65.0 %
PENDULUM VELOCITY	2.70-2.80 M/S	2.78 M/S
PEAK DISPLACEMENT	12.7 - 15.5 MM	13.5 MM

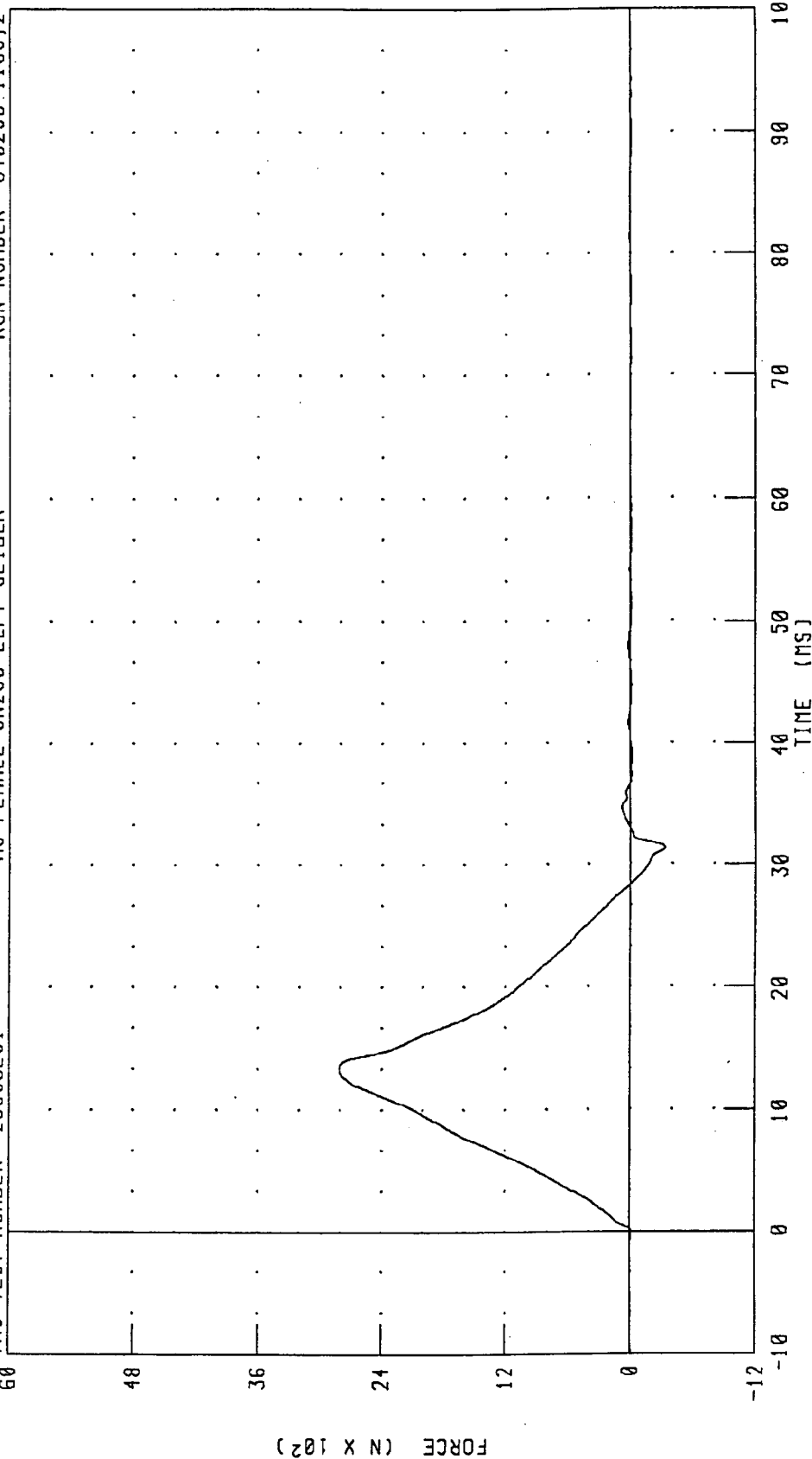
TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

RUN NUMBER: 040298.1104;2

HYBRID [1] SMALL FEMALE LEFT KNEE SLIDER CALIBRATION
LEFT FEMUR FORCE

TRC TEST NUMBER: 289C3LS1 H3 FEMALE SN289 LEFT SLIDER RUN NUMBER: 040298.1105;2

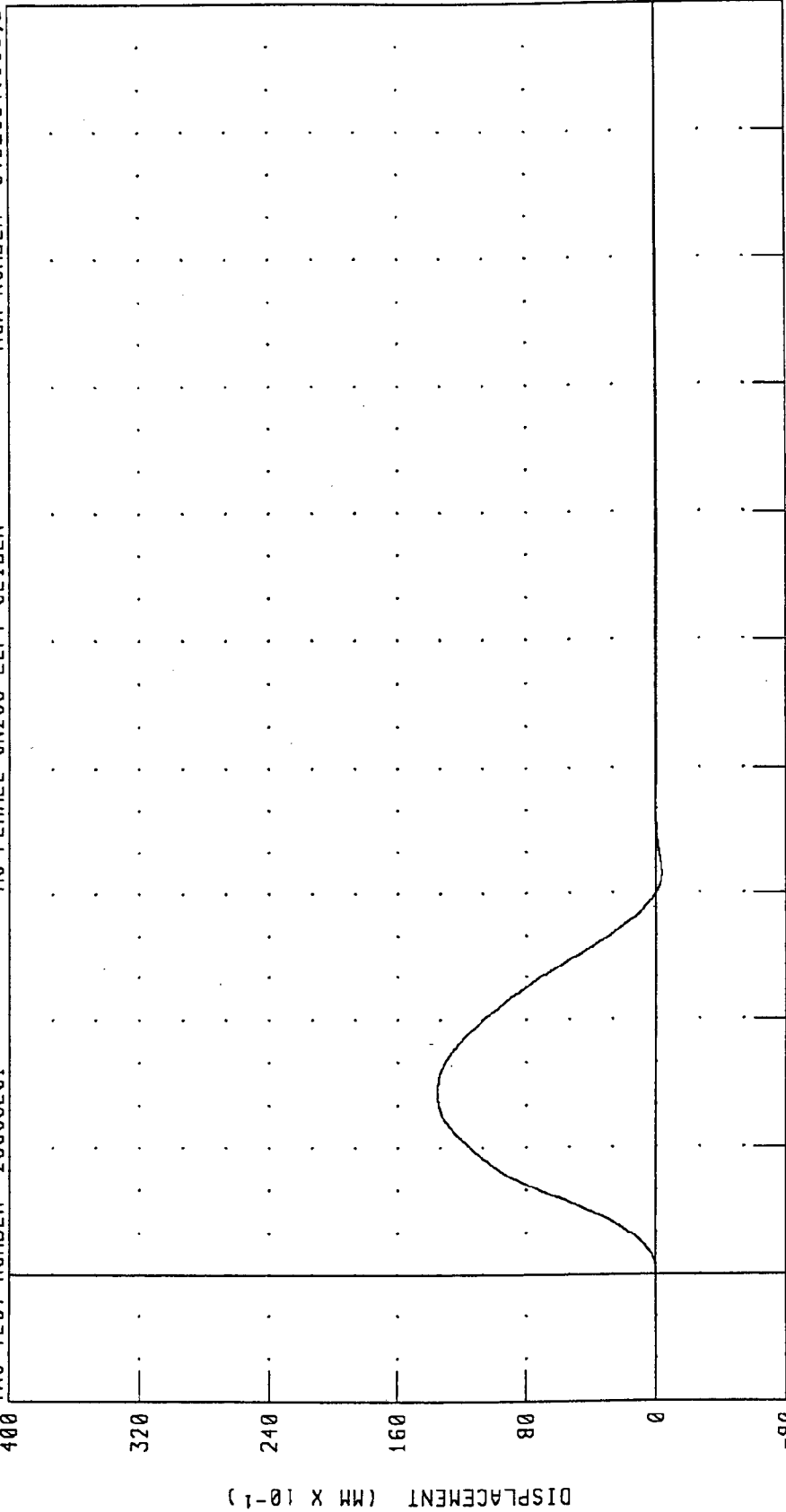


CHANNEL: LFMF FILTER: CH. CLASS 600

PEAK DATA: 2809.92 N @ 13.36 MS; -335.74 N @ 31.36 MS

HYBRID III SMALL FEMALE LEFT KNEE SLIDER CALIBRATION LEFT KNEE DISPLACEMENT

TRC TEST NUMBER: 289C3LS1 H3 FEMALE SN289 LEFT SLIDER RUN NUMBER: 040298.1105,2



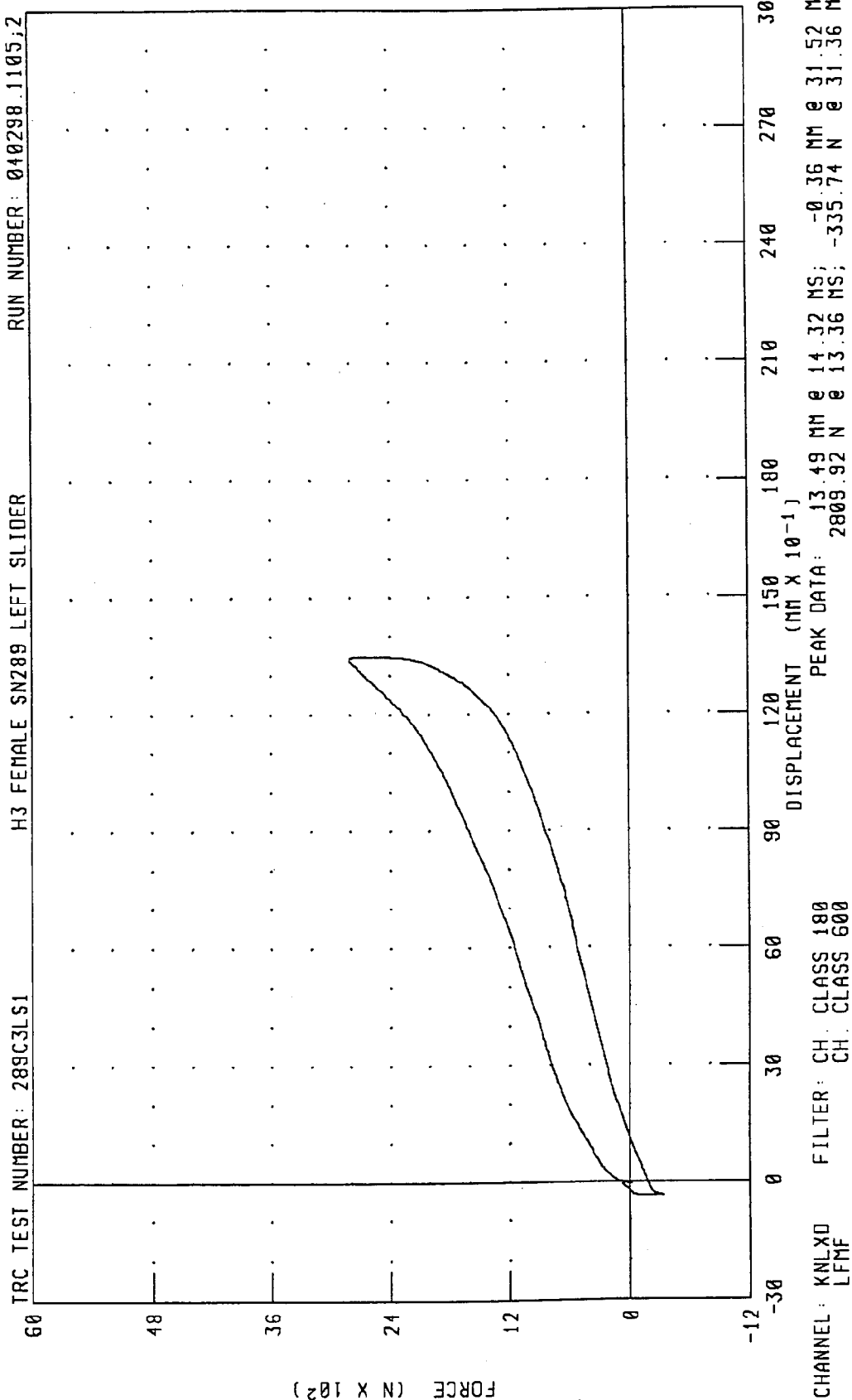
CHANNEL: KNLXD FILTER: CH. CLASS 180 PEAK DATA: 13.49 MM @ 14.32 MS; -0.36 MM @ 31.52 MS

HYBRID III SMALL FEMALE LEFT KNEE SLIDER CALIBRATION LEFT KNEE DISPLACEMENT VS FEMUR FORCE

TRC TEST NUMBER: 289C3LS1

H3 FEMALE SN289 LEFT SLIDER

RUN NUMBER: 040298.1105;2



CHANNEL: KNLXD
LFMF

FILTER: CH. CLASS 180
CH. CLASS 600

PEAK DATA: 13.49 MM @ 14.32 MS;
2809.92 N @ 13.36 MS;

-0.36 MM @ 31.52 MS
-335.74 N @ 31.36 MS

Dummy Certification

Passenger Dummy S/N 288

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III SMALL FEMALE

20-NOV-97

TRC INC.

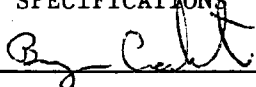
TEST NO: 288C4HD1

H3 SM FEMALE SN288 HEAD DROP

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	22.0 %
PEAK RESULTANT ACCELERATION	240 - 295 G	277.80 G
PEAK LATERAL ACCELERATION	15 G MAX	2.91 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

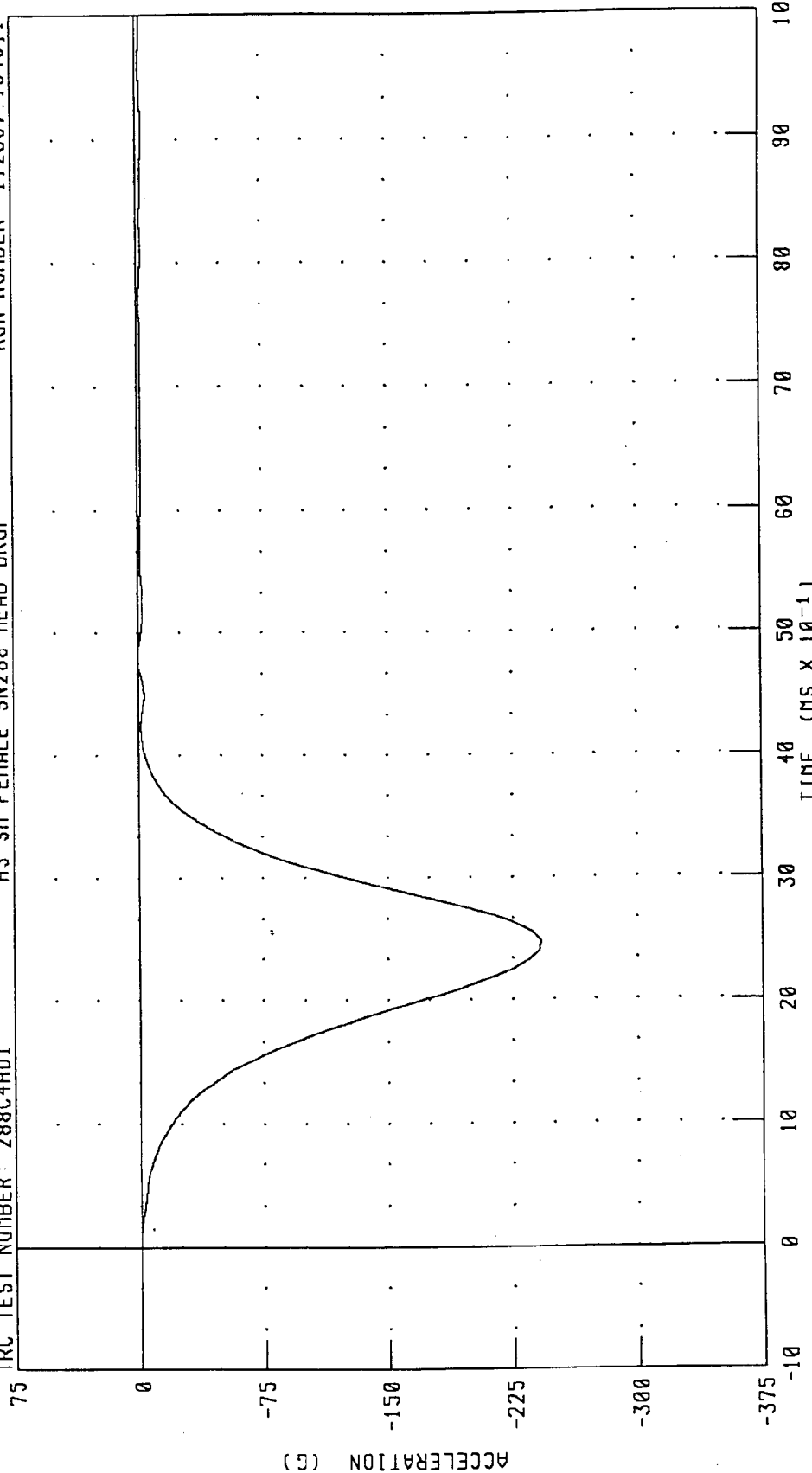
TECHNICIAN



RUN NUMBER: 112097.1343;1

HYBRID III SMALL FEMALE HEAD CALIBRATION HEAD ACCELERATION X AXIS

TRC TEST NUMBER: 288C4HD1 H3 SM FEMALE SN288 HEAD DROP RUN NUMBER: 112097.1343.1



CHANNEL: HEDXG FILTER: CH. CLASS 1000 PEAK DATA: 0.18 G @ 4.80 MS; -241.78 G @ 2.48 MS

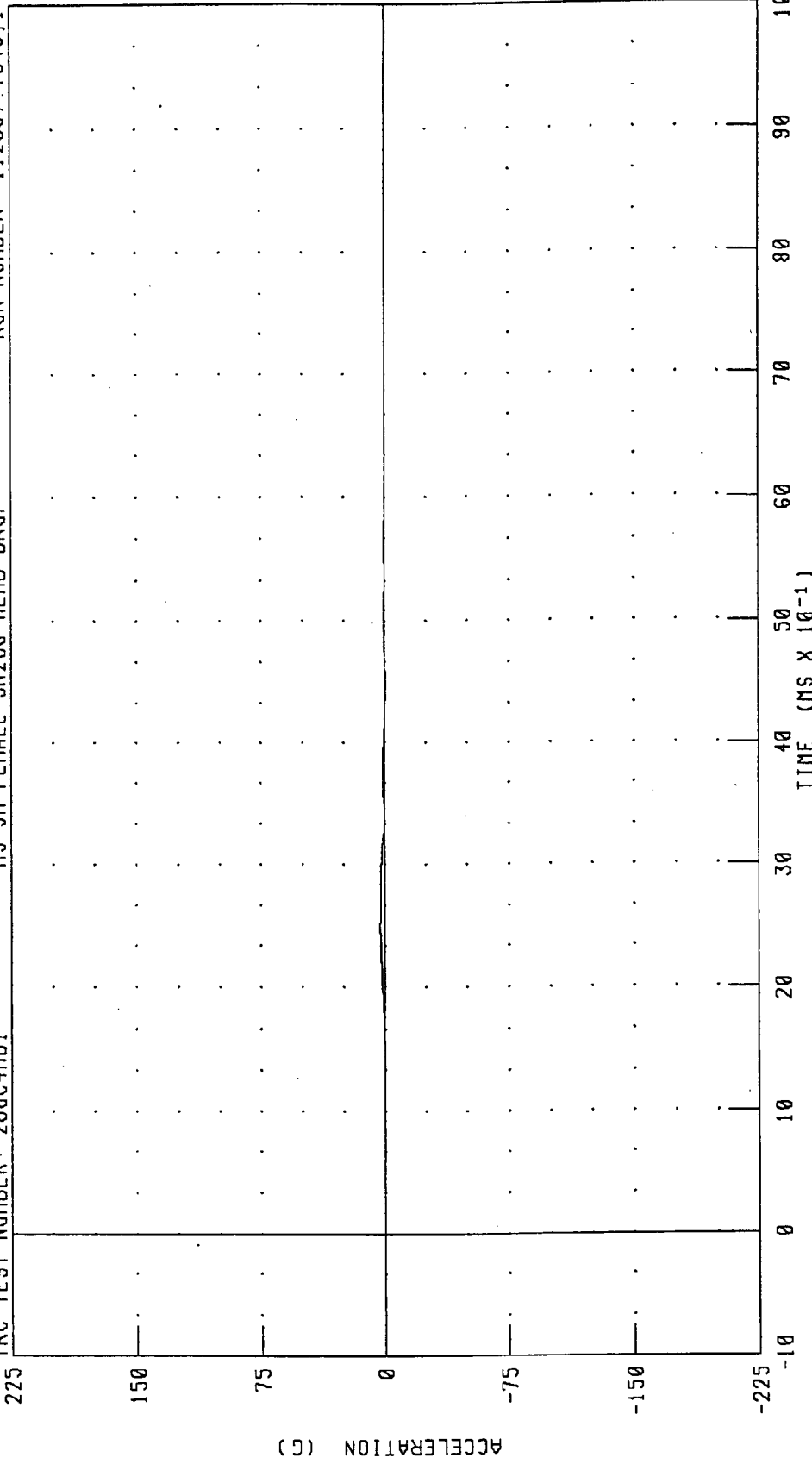
HYBRID III SMALL FEMALE HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

TRC TEST NUMBER: 288C4HD1

H3 SM FEMALE SN288 HEAD DROP

RUN NUMBER: 112097.1343;1



PEAK DATA: 2.91 G @ 2.48 MS; -0.75 G @ 4.48 MS

CHANNEL: HEDYG FILTER: CH. CLASS 1000

HYBRID III SMALL FEMALE HEAD CALIBRATION

HEAD ACCELERATION Z AXIS

H3 SM FEMALE SN288 HEAD DROP

RUN NUMBER: 112097.1343.1

TRC TEST NUMBER: 288C4HD1

75

0

-75

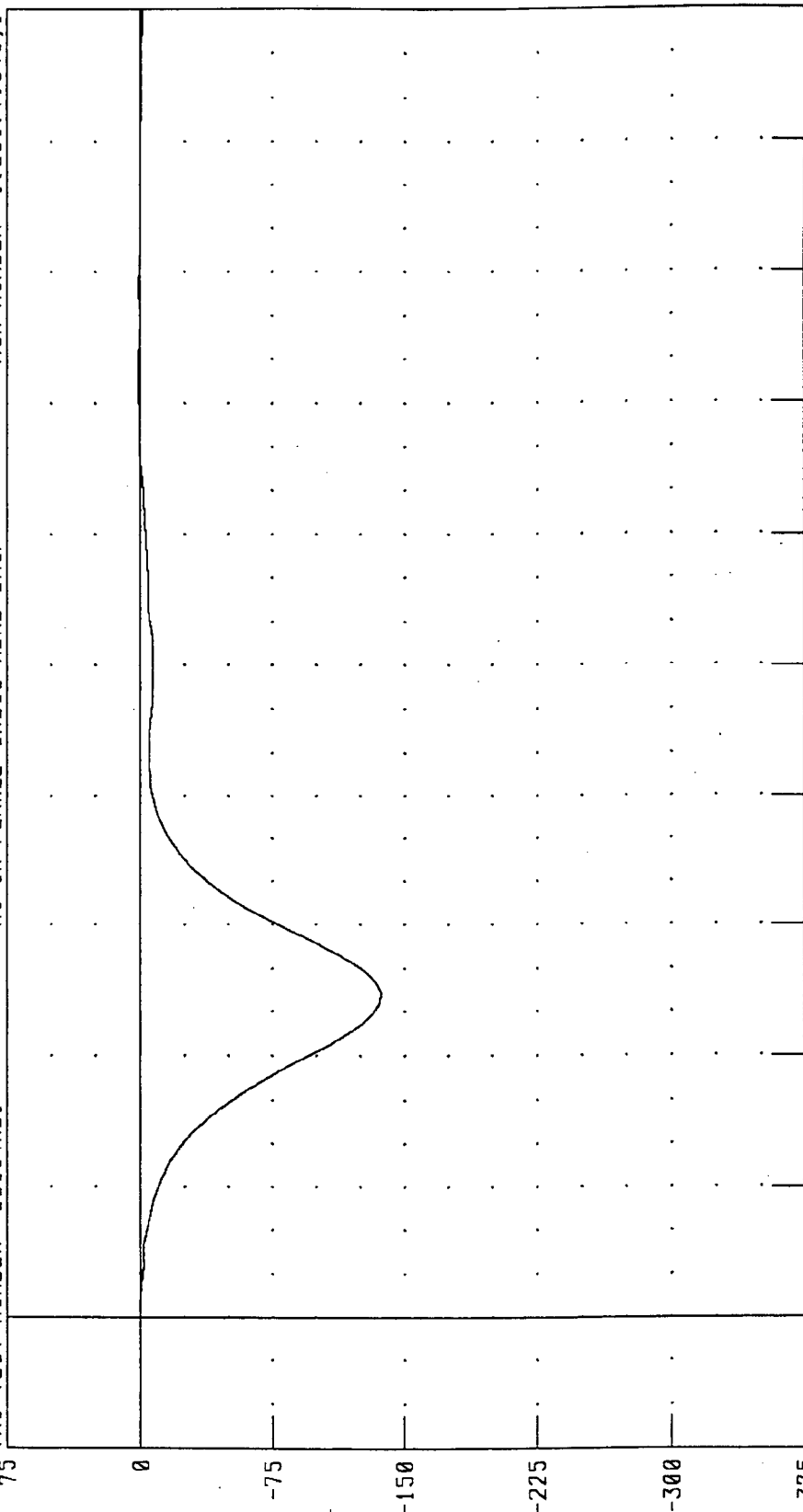
-150

-225

-300

-375

ACCELERATION (G)



100

90

80

70

60

50

40

30

20

10

0

-10

-20

-30

TIME (MS X 10⁻¹)

PEAK DATA: 0.98 G @ 7.12 MS, -136.78 G @ 2.48 MS

CHANNEL: HEADZG FILTER: CH. CLASS 1000

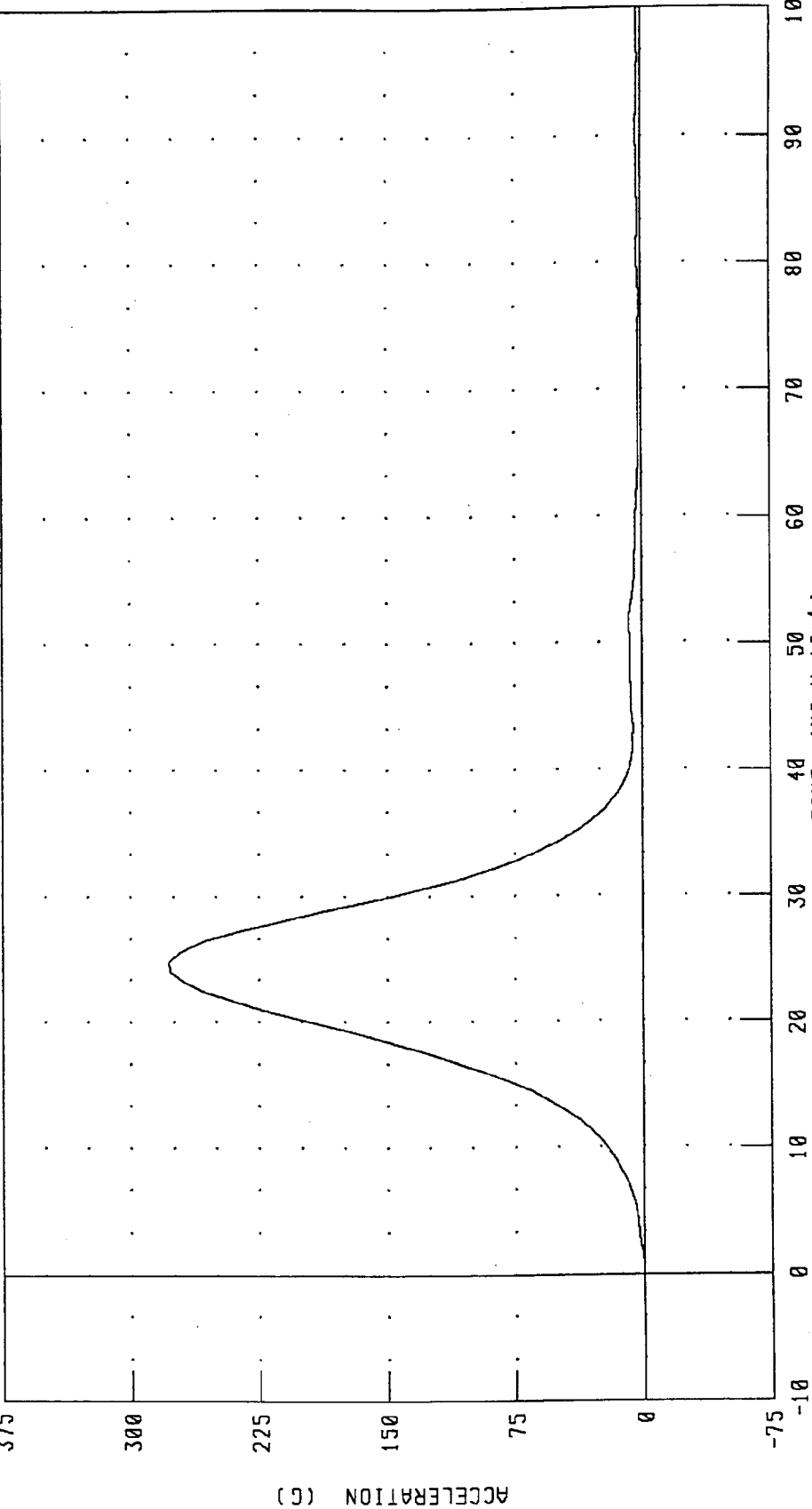
HYBRID III SMALL FEMALE HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

H3 SM FEMALE SN288 HEAD DROP

TRC TEST NUMBER: 288C4HD1

RUN NUMBER: 112097.1343;1



CHANNEL: HEDRG FILTER: CH. CLASS 1000

PEAK DATA: 277.80 G @ 2.48 MS; 0.03 G @ -0.56 MS

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

HYBRID III SMALL FEMALE

21-NOV-97

TRC INC. TEST NO: 288C4NF1 H3 SM FEMALE SN288 NECK FLEX.

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	28.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.12 M/S
INTEGRATED PENDULUM VELOCITY	10 MS	2.1 - 2.5 M/S	2.14 M/S
	20 MS	4.0 - 5.0 M/S	4.32 M/S
	30 MS	5.8 - 7.0 M/S	6.20 M/S
PEAK D-PLANE ROTATION		78 - 96 DEG.	80.56 DEG.
ROTATION ANGLE DECAY TIME FROM PEAK TO ZERO		57 - 69 MS	60.64 MS
PEAK MOMENT ABOUT OCCIPITAL CONDYLE		69 - 84 NM	73.56 NM
POSITIVE MOMENT DECAY TIME FROM PEAK TO ZERO		41 - 50 MS	53.52 MS *
TIME OF PEAK ROTATION AFTER PEAK MOMENT		2 - 12 MS	10.56 MS

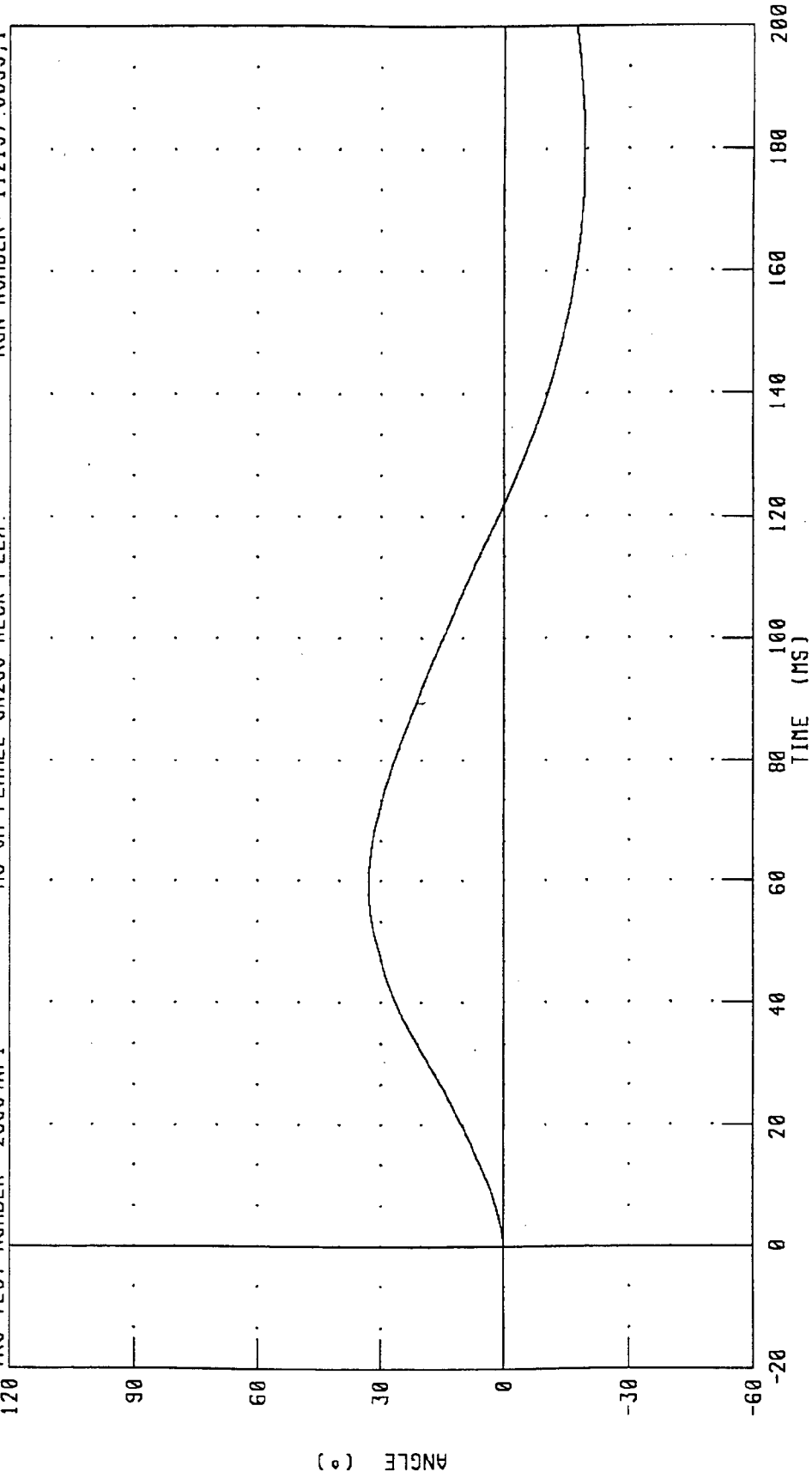
* TEST DOES NOT MEET SPECIFICATIONS

TECHNICIAN B. Calt

RUN NUMBER: 112197.0849;1

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

TRC TEST NUMBER: 288C4NF1 H3 SM FEMALE SN288 NECK FLEX. RUN NUMBER: 112197.0859,1



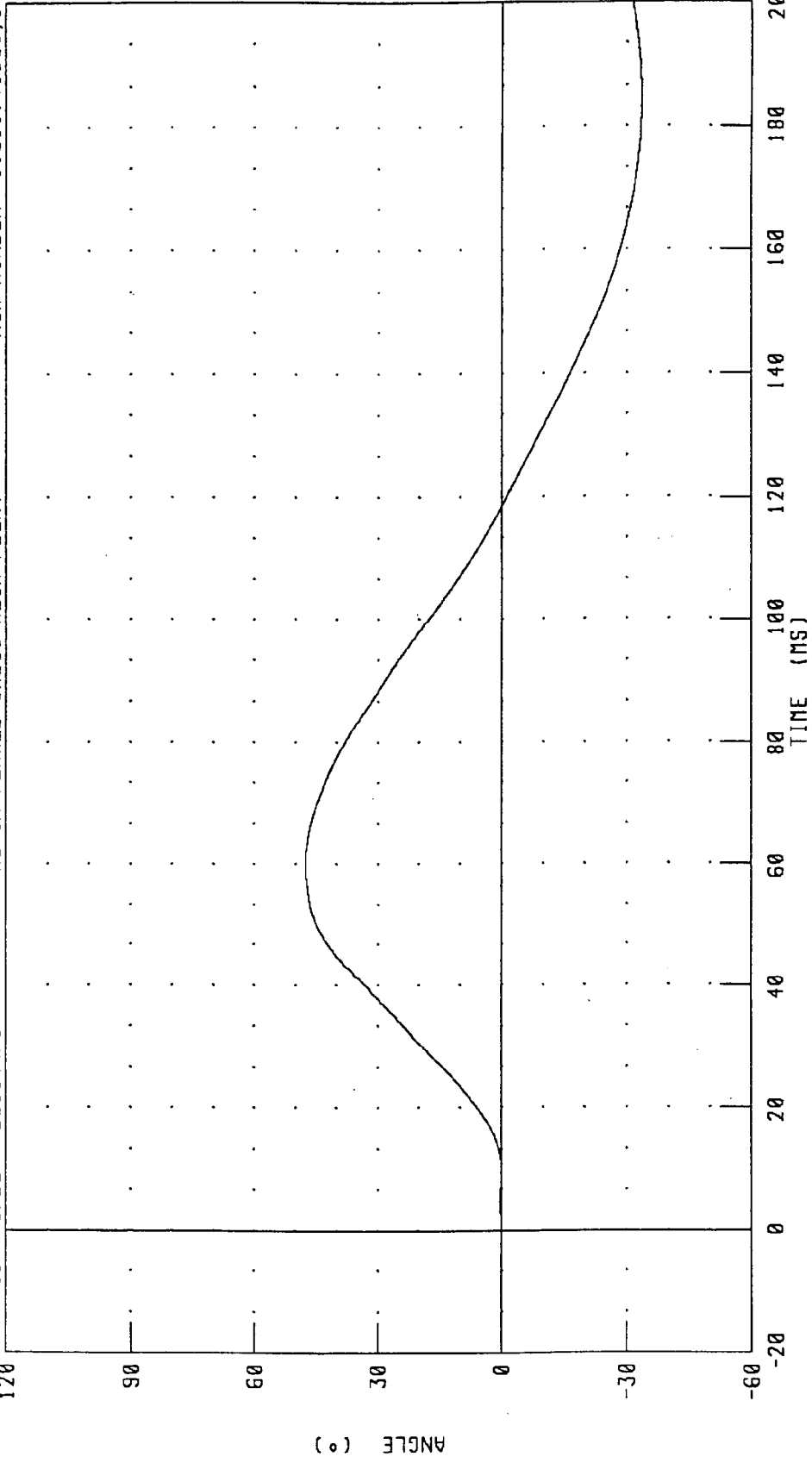
CHANNEL: BETA FILTER: CH. CLASS 60 PEAK DATA: 32.91 ° @ 59.20 MS; -19.39 ° @ 179.28 MS

HYBRID 111 SMALL FEMALE NECK FLEXION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 288C4NF1

H3 SM FEMALE SN288 NECK FLEX.

RUN NUMBER: 112197 0859;1

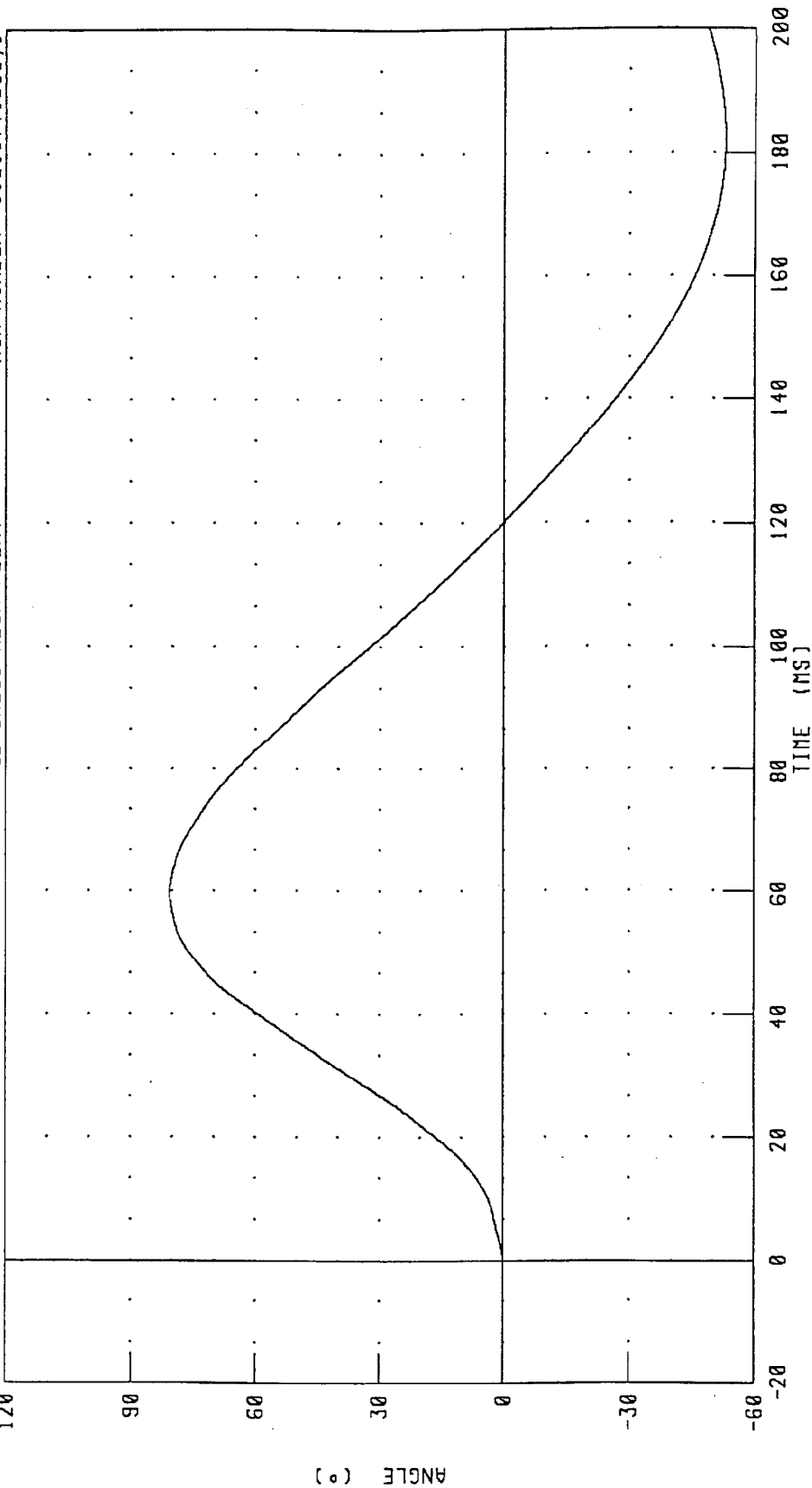


CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 47.66 ° @ 59.92 MS; -33.43 ° @ 184.32 MS

HYBRID III SMALL FEMALE NECK FLEXION CALIBRATION
TOTAL ROTATION

TRC TEST NUMBER: 288C4NF1 H3 SM FEMALE SN288 NECK FLEX. RUN NUMBER: 112197 0859,1



CHANNEL: TOTAN FILTER: CH. CLASS 60

PEAK DATA: 80.56 ° @ 59.68 MS, -52.74 ° @ 182.24 MS

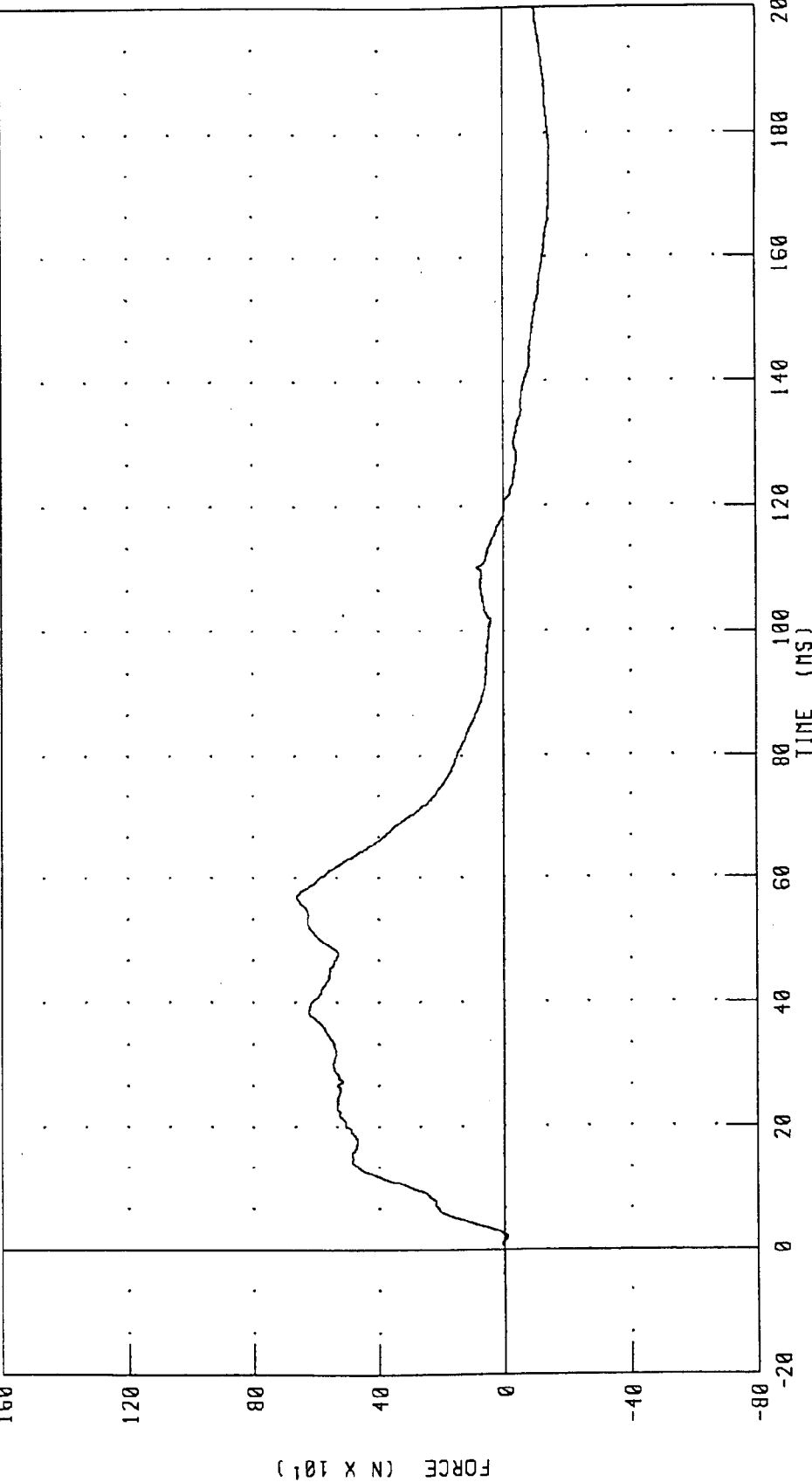
HYBRID III SMALL FEMALE NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 288C4NF1

H3 SM FEMALE SN288 NECK FLEX.

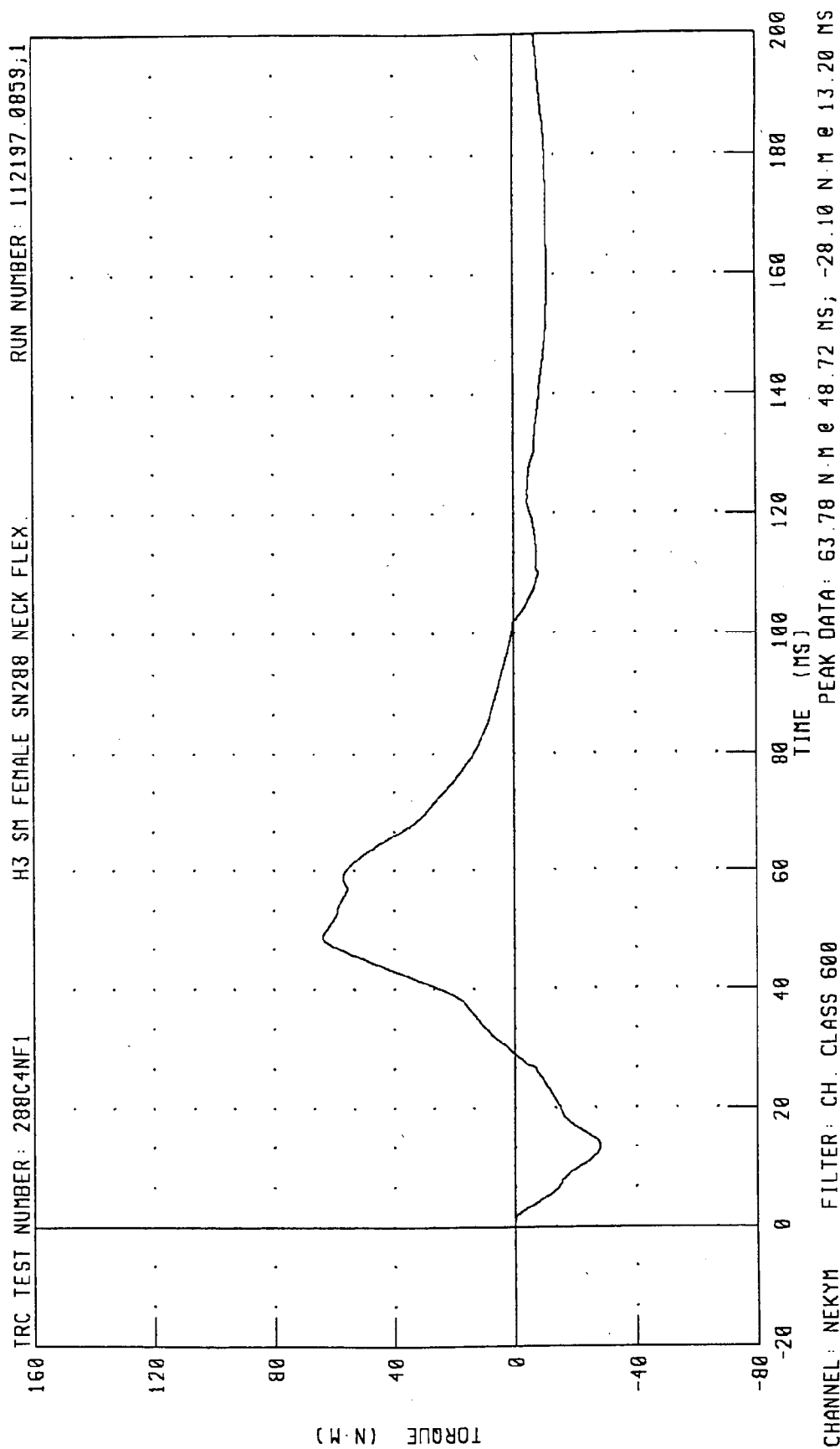
RUN NUMBER: 112197.0859.1



CHANNEL: NEKXF FILTER: CH. CLASS 1000

PEAK DATA: 661.72 N @ 56.88 MS; -148.60 N @ 177.44 MS

HYBRID III SMALL FEMALE NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS



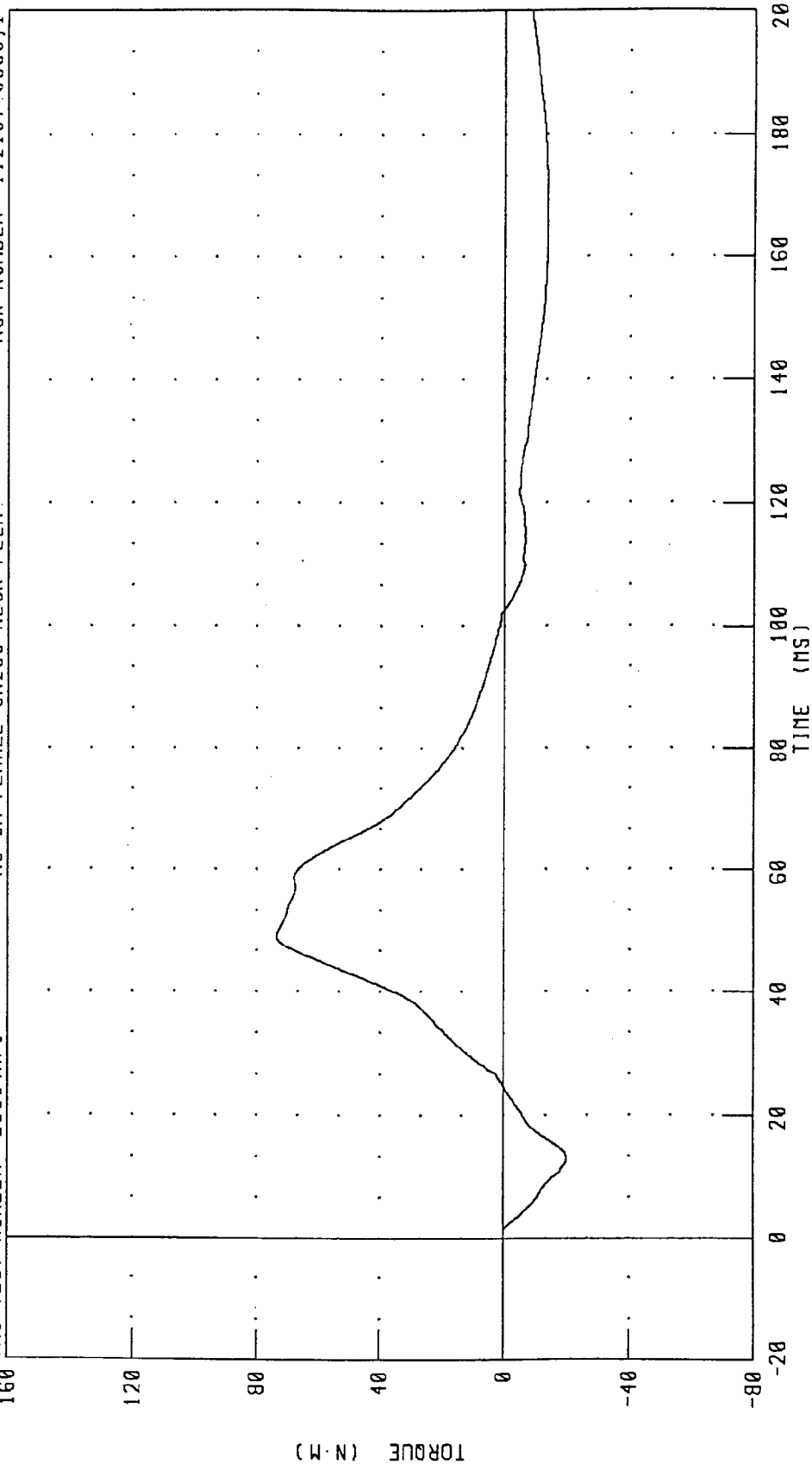
CHANNEL: NEKYM FILTER: CH. CLASS 600

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

TRC TEST NUMBER: 288C4NF1

H3 SM FEMALE SN288 NECK FLEX.

RUN NUMBER: 112197 0859,1



PEAK DATA: 73.56 N.M @ 49.12 MS; -19.88 N.M @ 12.88 MS

CHANNEL: NEKOM FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III SMALL FEMALE

21-NOV-97

TRC INC. TEST NO: 288C4NE5 H3 SM FEMALE SN288 NECK EXT.

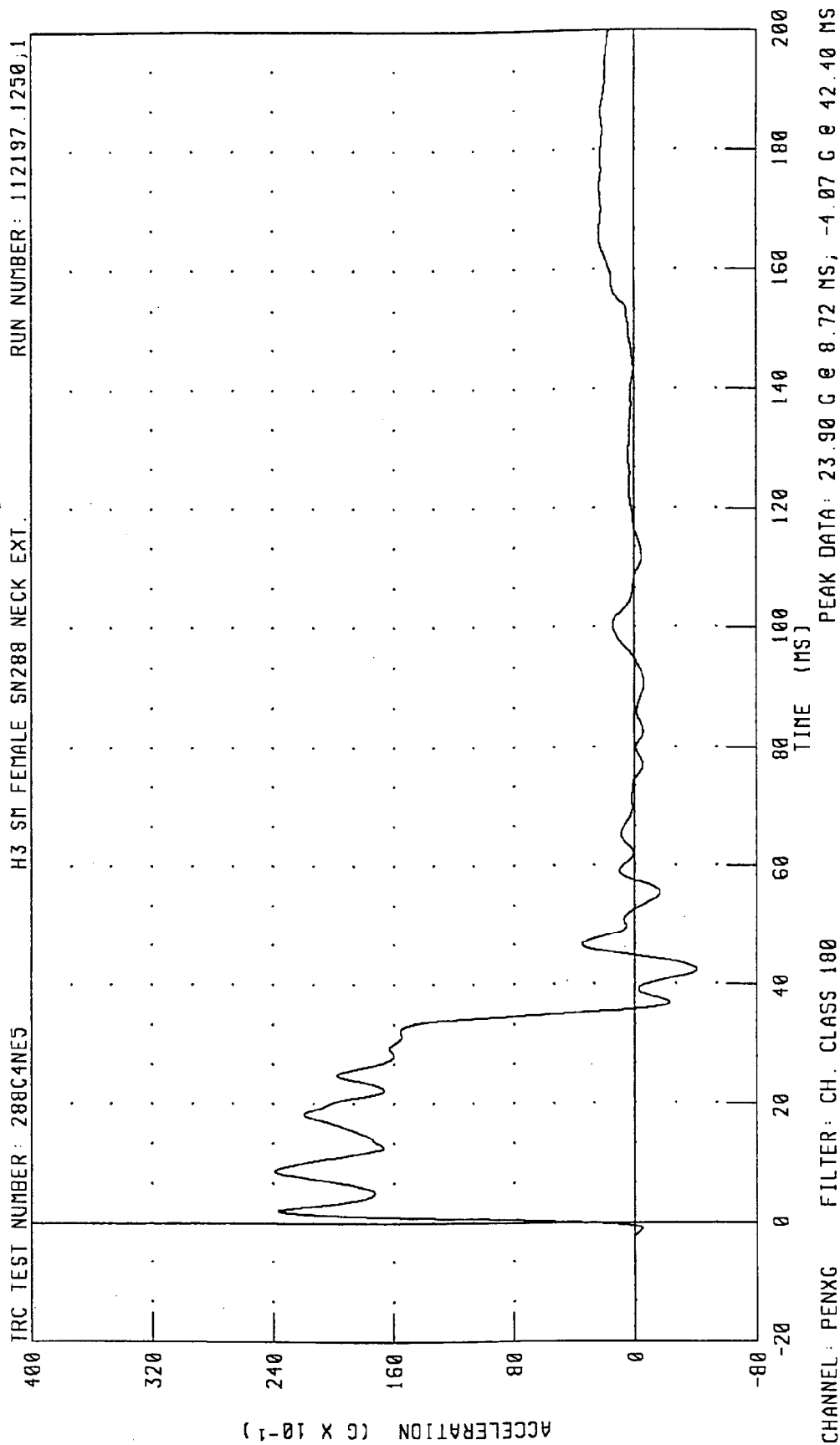
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	28.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.19 M/S
INTEGRATED PENDULUM VELOCITY	10 MS	1.5 - 1.9 M/S	1.90 M/S
	20 MS	3.1 - 3.9 M/S	3.80 M/S
	30 MS	4.6 - 5.6 M/S	5.52 M/S
PEAK D-PLANE ROTATION		97 - 119 DEG.	104.79 DEG.
ROTATION ANGLE DECAY AT THE 10 NM MOMENT LEVEL		80 - 96 DEG.	81.42 DEG.
PEAK MOMENT ABOUT OCCIPITAL CONDYLE		54 - 67 NM	-62.72 NM
NEGATIVE MOMENT DECAY TIME FROM PEAK TO 10 NM LEVEL		28 - 38 MS	34.72 MS
TIME OF PEAK ROTATION AFTER PEAK MOMENT		0 - 10 MS	6.56 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Ray Cull

RUN NUMBER: 112197.1250;1

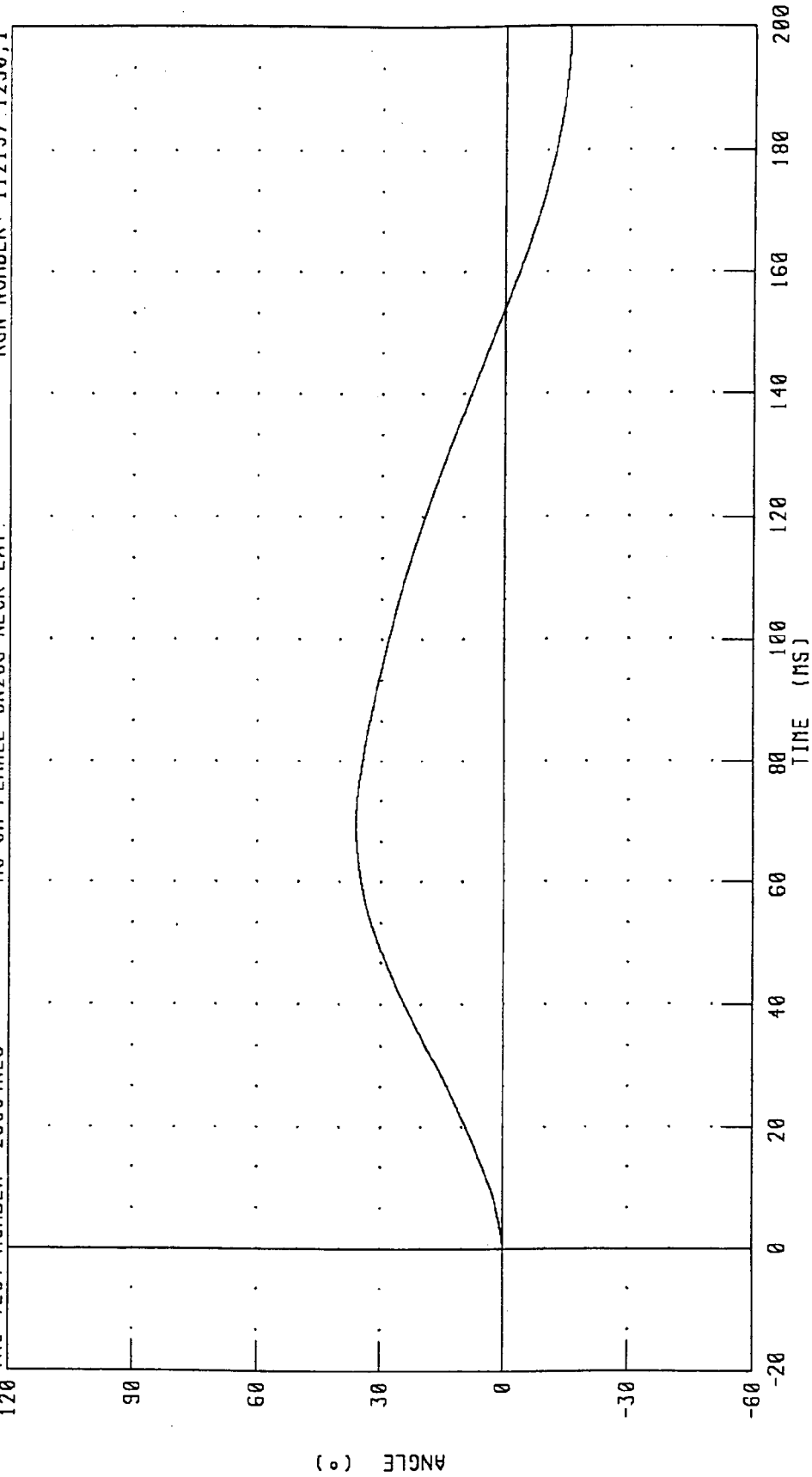
HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION
PENDULUM DECELERATION



HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 288C4NE5 H3 SM FEMALE SN288 NECK EXT. RUN NUMBER: 112197.1250;1



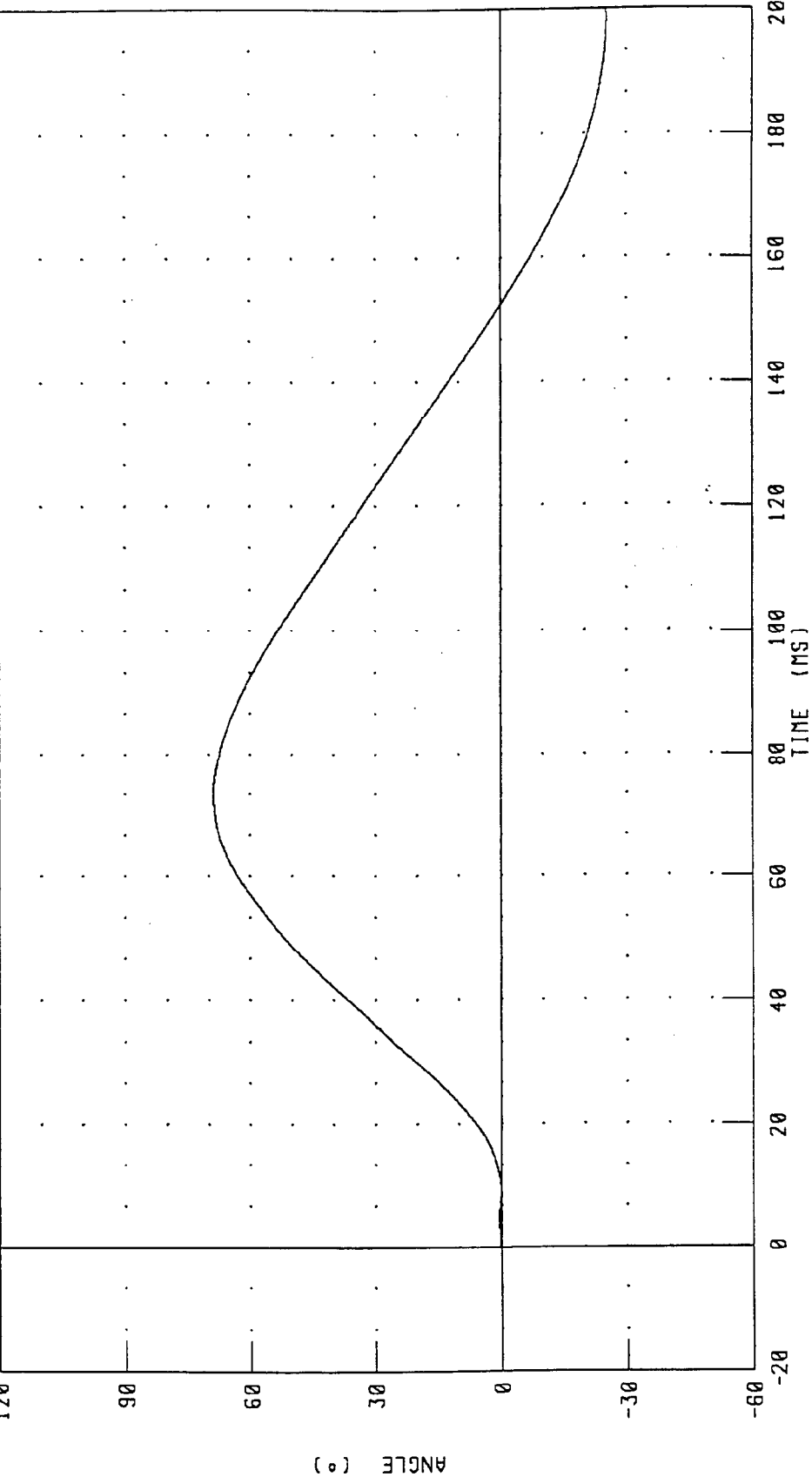
CHANNEL: BETA FILTER: CH. CLASS 60 PEAK DATA: 36.11 ° @ 69.44 MS, -15.52 ° @ 200.00 MS

HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 288C4NE5

H3 SM FEMALE SN288 NECK EXT.

RUN NUMBER: 112197.1250,1



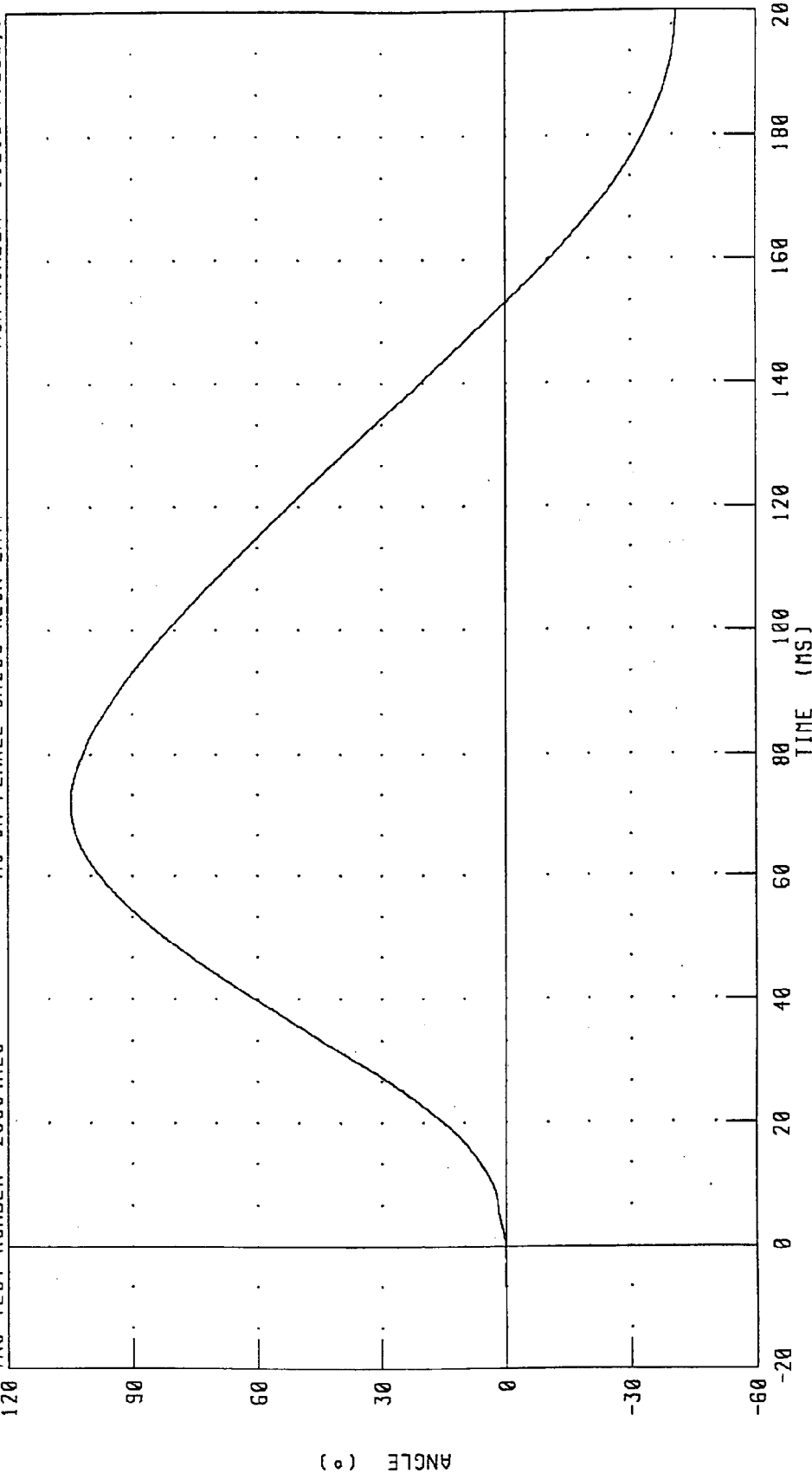
CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 68.87 ° @ 73.44 MS; -25.23 ° @ 198.64 MS

HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 288C4NE5 H3 SM FEMALE SN288 NECK EXT RUN NUMBER: 112197 1250,1

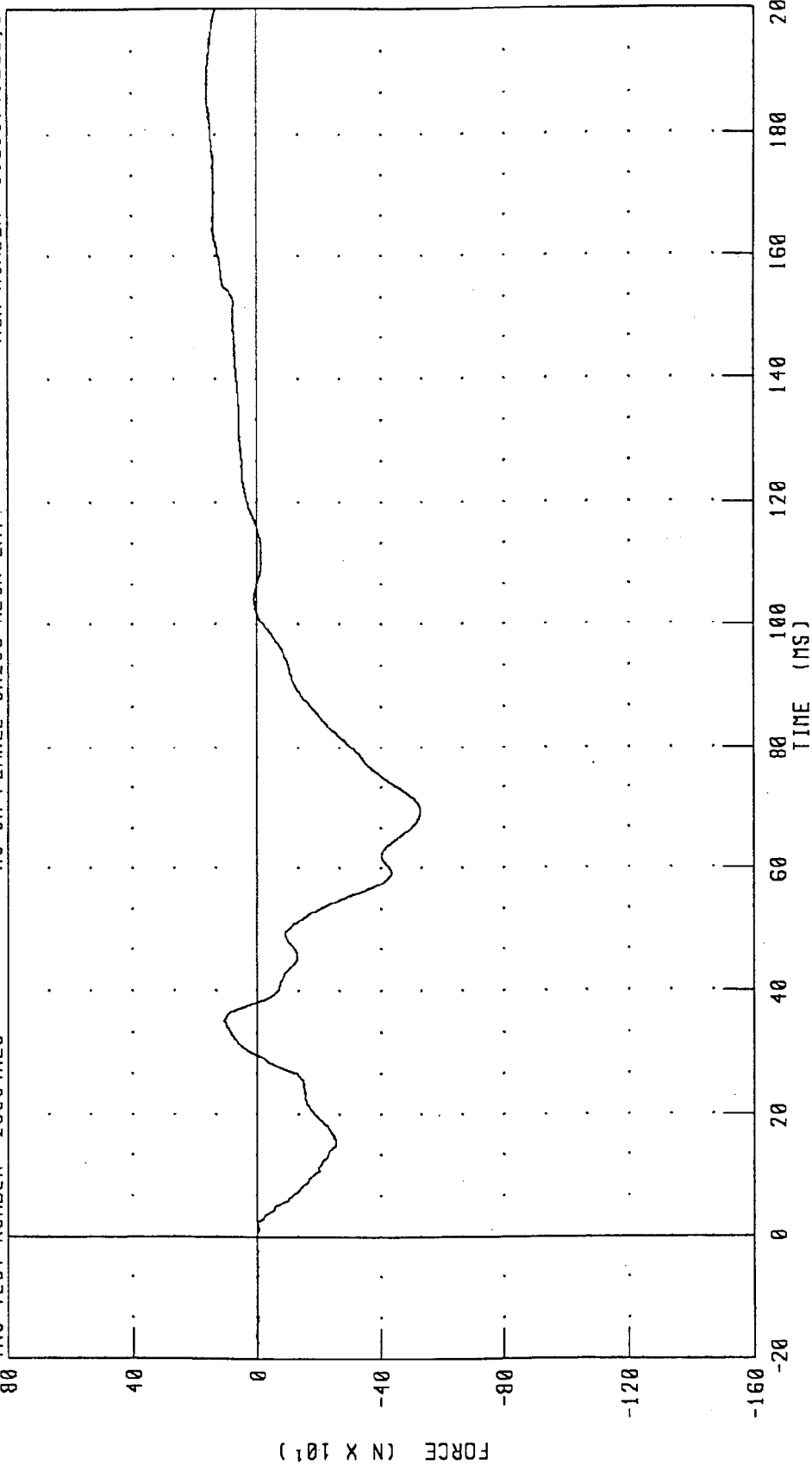


CHANNEL: TOTAL FILTER: CH. CLASS 60 PEAK DATA: 104.80 ° @ 72.08 MS; -40.73 ° @ 199.20 MS

HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

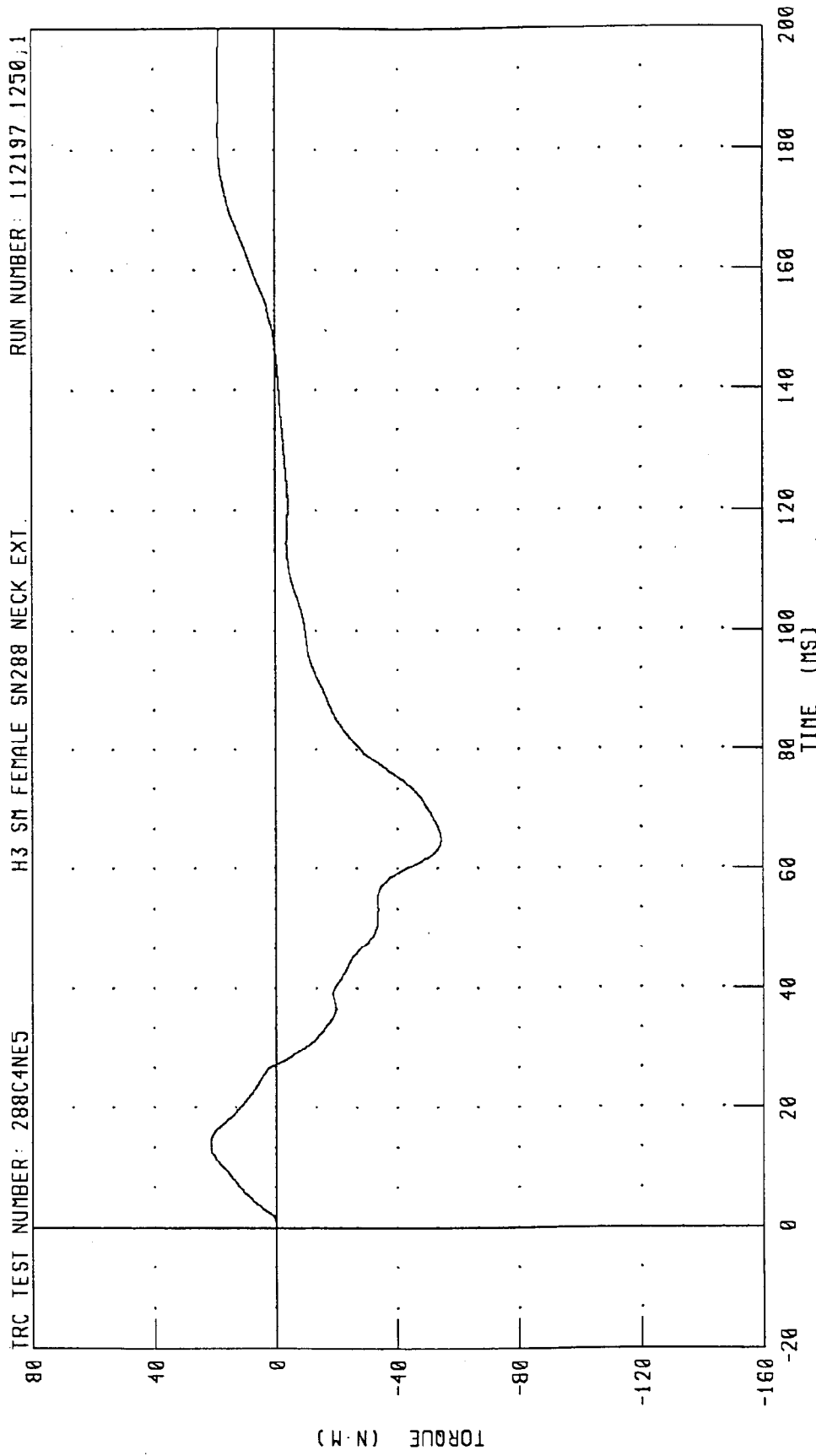
TRC TEST NUMBER: 288C4NE5 H3 SM FEMALE SN288 NECK EXT. RUN NUMBER: 112197.1250.1



CHANNEL: NEKXF FILTER: CH. CLASS 1000

PEAK DATA: 160.74 N @ 185.76 MS, -529.67 N @ 69.68 MS

HYBRID III SMALL FEMALE NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS



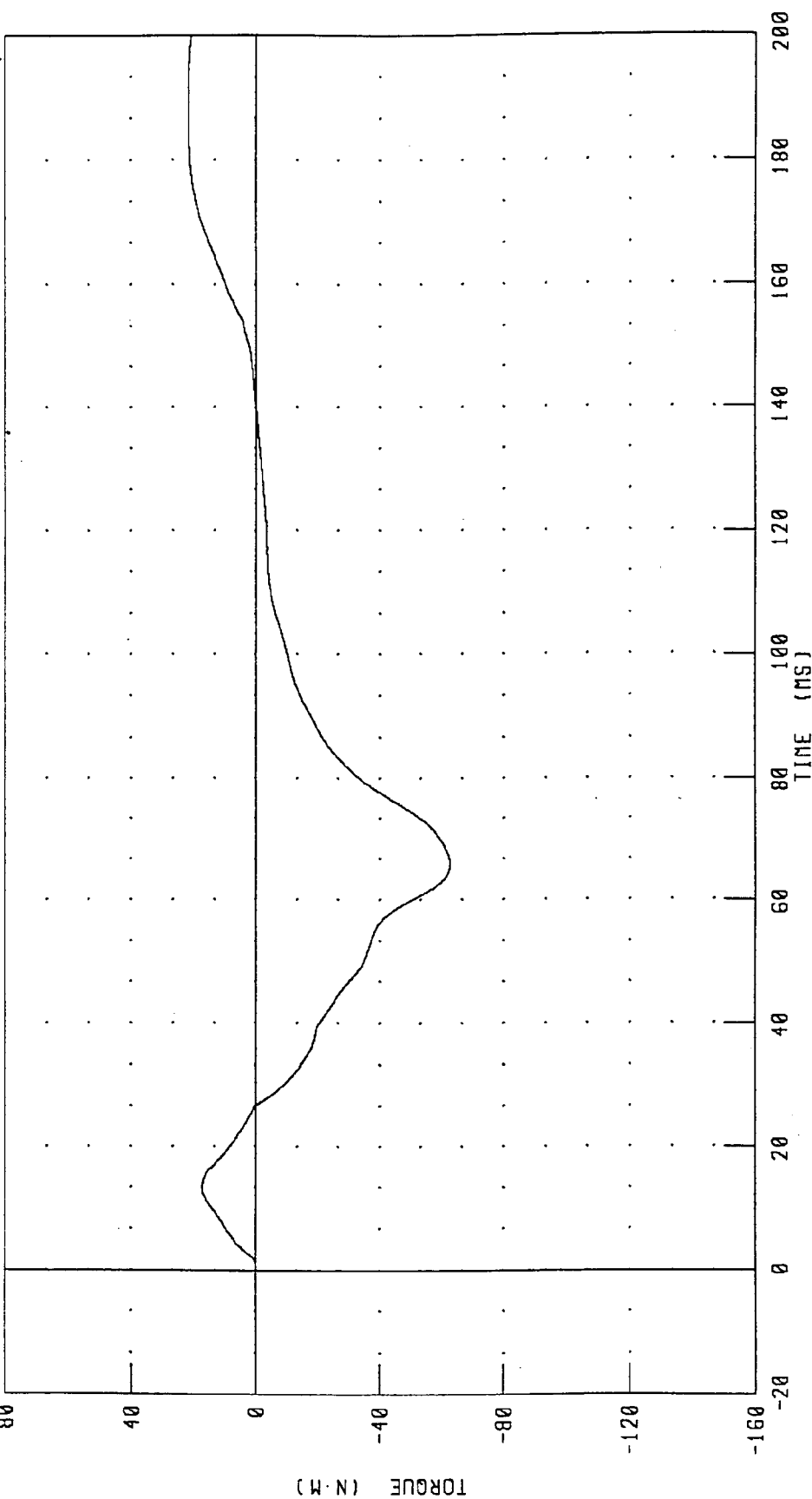
CHANNEL: NEKYM FILTER: CH. CLASS 600 PEAK DATA: 21.42 N·M @ 13.68 MS, -54.42 N·M @ 64.88 MS

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

TRC TEST NUMBER: 288C4NE5

H3 SM FEMALE SN288 NECK EXT.

RUN NUMBER: 112197 1250,1



CHANNEL: NEKOM FILTER: CH. CLASS 600 PEAK DATA: 21.70 N.M @ 192.72 MS; -62.72 N.M @ 65.52 MS

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III SMALL FEMALE

24-NOV-97

TRC INC.

TEST NO: 288C4TH1

H3 SM FEMALE SN288 H.S.THORAX

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	28.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.74 M/S
MAXIMUM DEFLECTION	51 - 58 MM	51.7 MM
MAXIMUM RESISTIVE FORCE	3800 - 4300 N	4136. N
INTERNAL HYSTERESIS	69% - 85%	75.0%

TEST MEETS SPECIFICATIONS

TECHNICIAN

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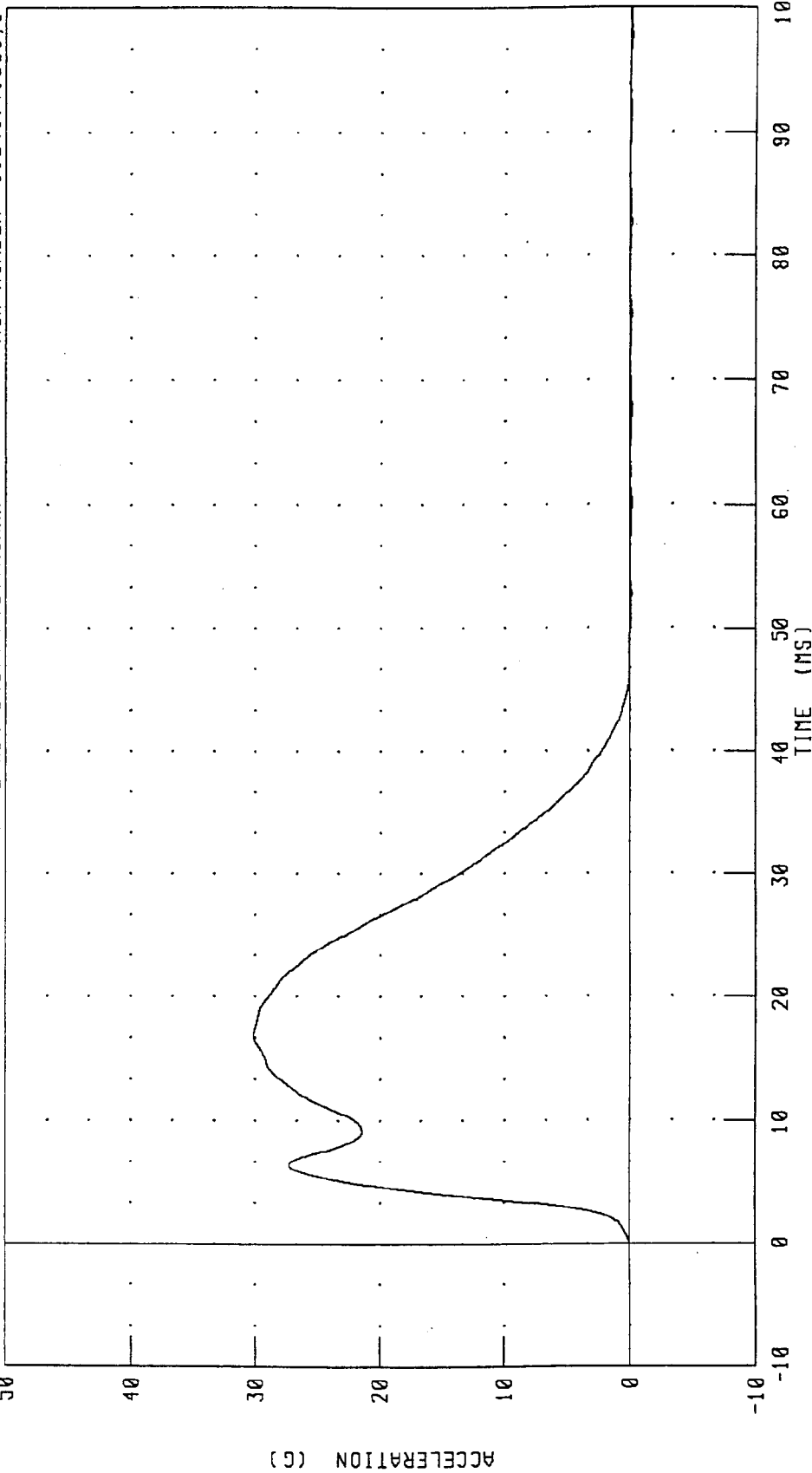
RUN NUMBER: 112497.1358;1

HYBRID III SMALL FEMALE THORAX CALIBRATION
PENDULUM DECELERATION

IRC TEST NUMBER: 288C4TH1

H3 SM FEMALE SN288 H.S. THORAX

RUN NUMBER: 112497.1359.1



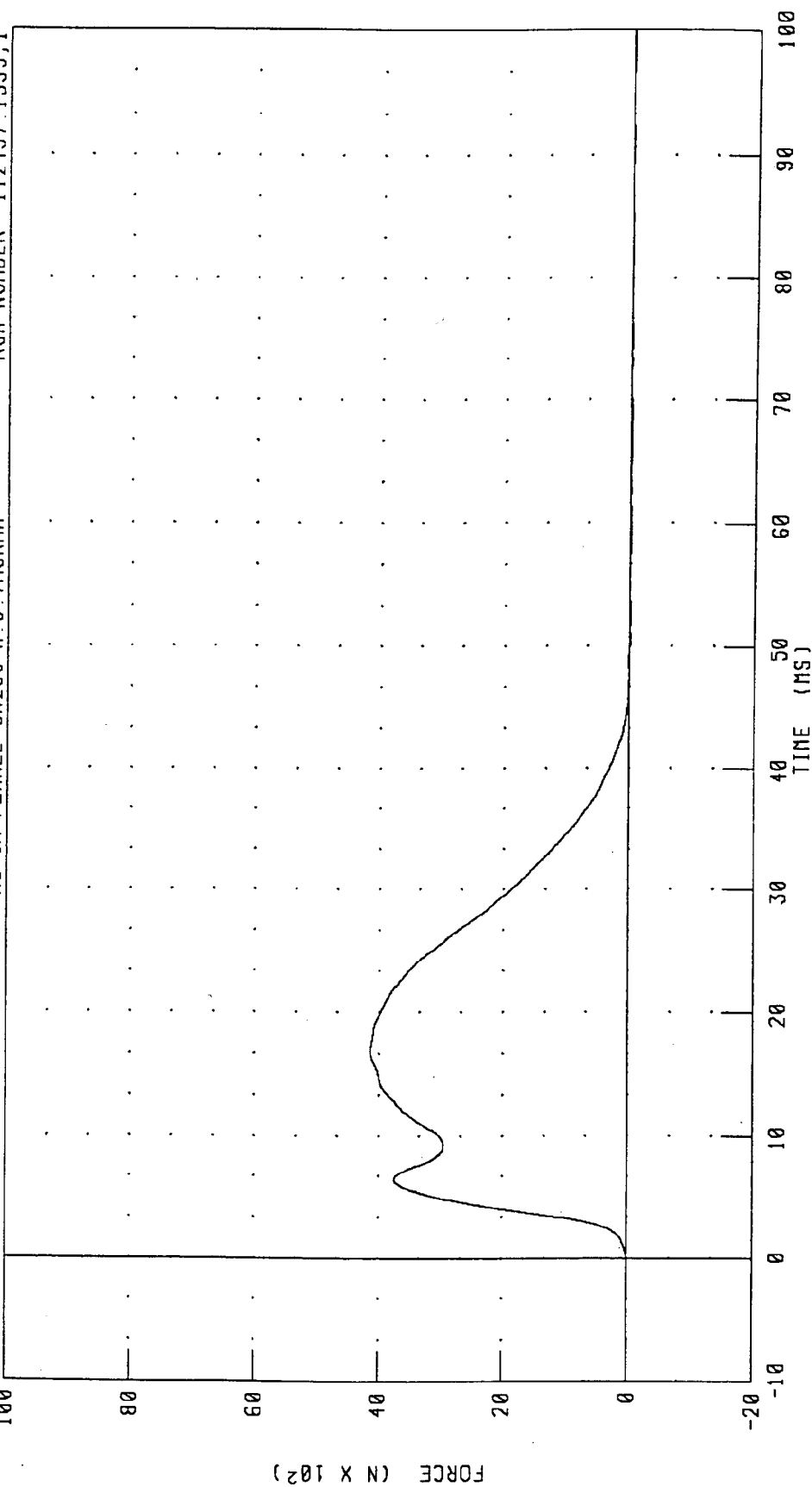
CHANNEL: PENXC FILTER: CH. CLASS 180 PEAK DATA: 30.14 G @ 16.80 MS; -0.13 G @ 67.68 MS

HYBRID III SMALL FEMALE THORAX CALIBRATION
PENDULUM FORCE

TRC TEST NUMBER: 288C4TH1

H3 SM FEMALE SN288 H.S. THORAX

RUN NUMBER: 112497.1359,1



CHANNEL: PENXF FILTER: CH. CLASS 180

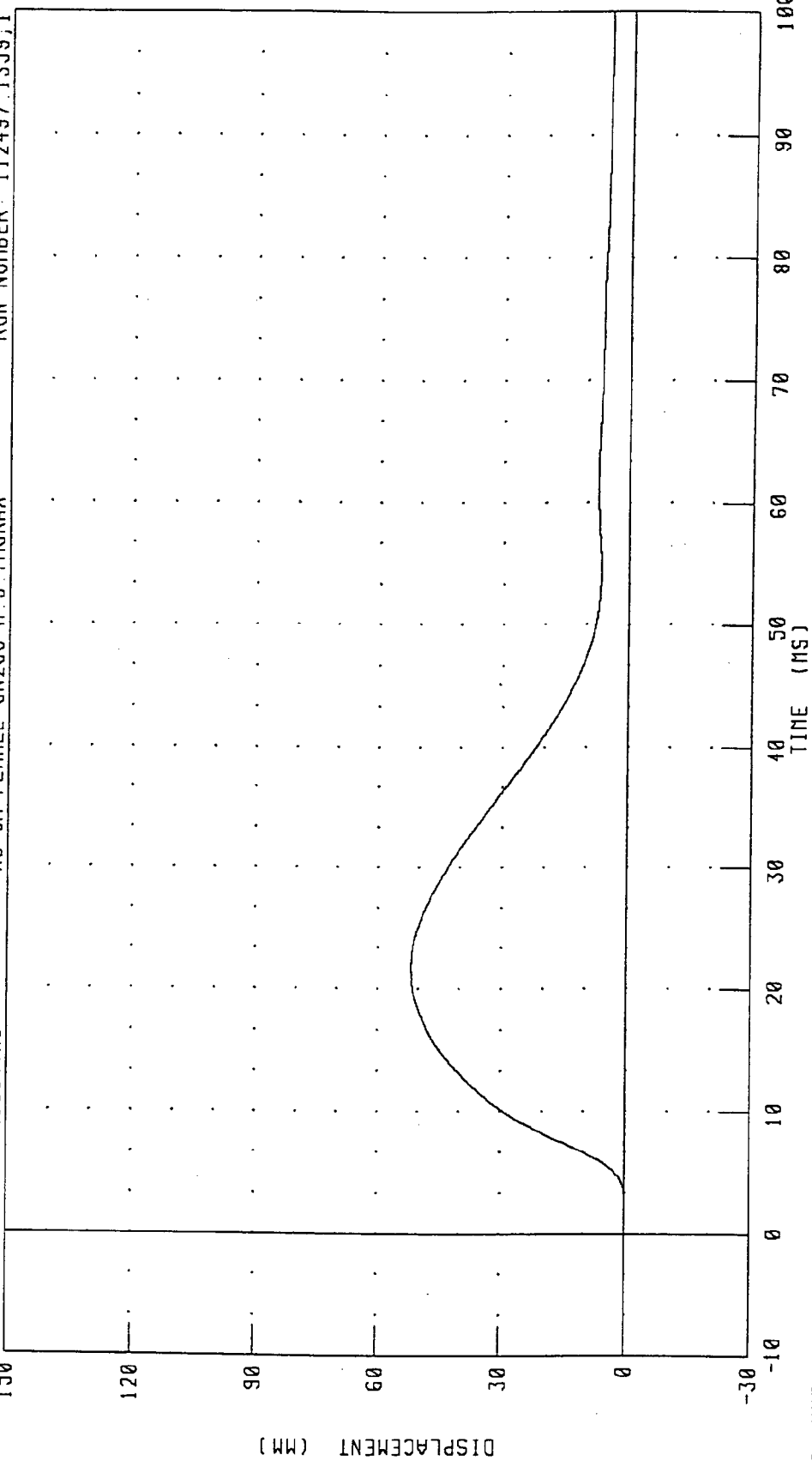
PEAK DATA: 4136.46 N @ 16.80 MS; -18.13 N @ 67.68 MS

HYBRID III SMALL FEMALE THORAX CALIBRATION
STERNUM DISPLACEMENT

TRC TEST NUMBER: 288C4TH1

H3 SM FEMALE SN288 H.S. THORAX

RUN NUMBER: 112497.1359,1



CHANNEL: CSTXD FILTER: CH. CLASS 180

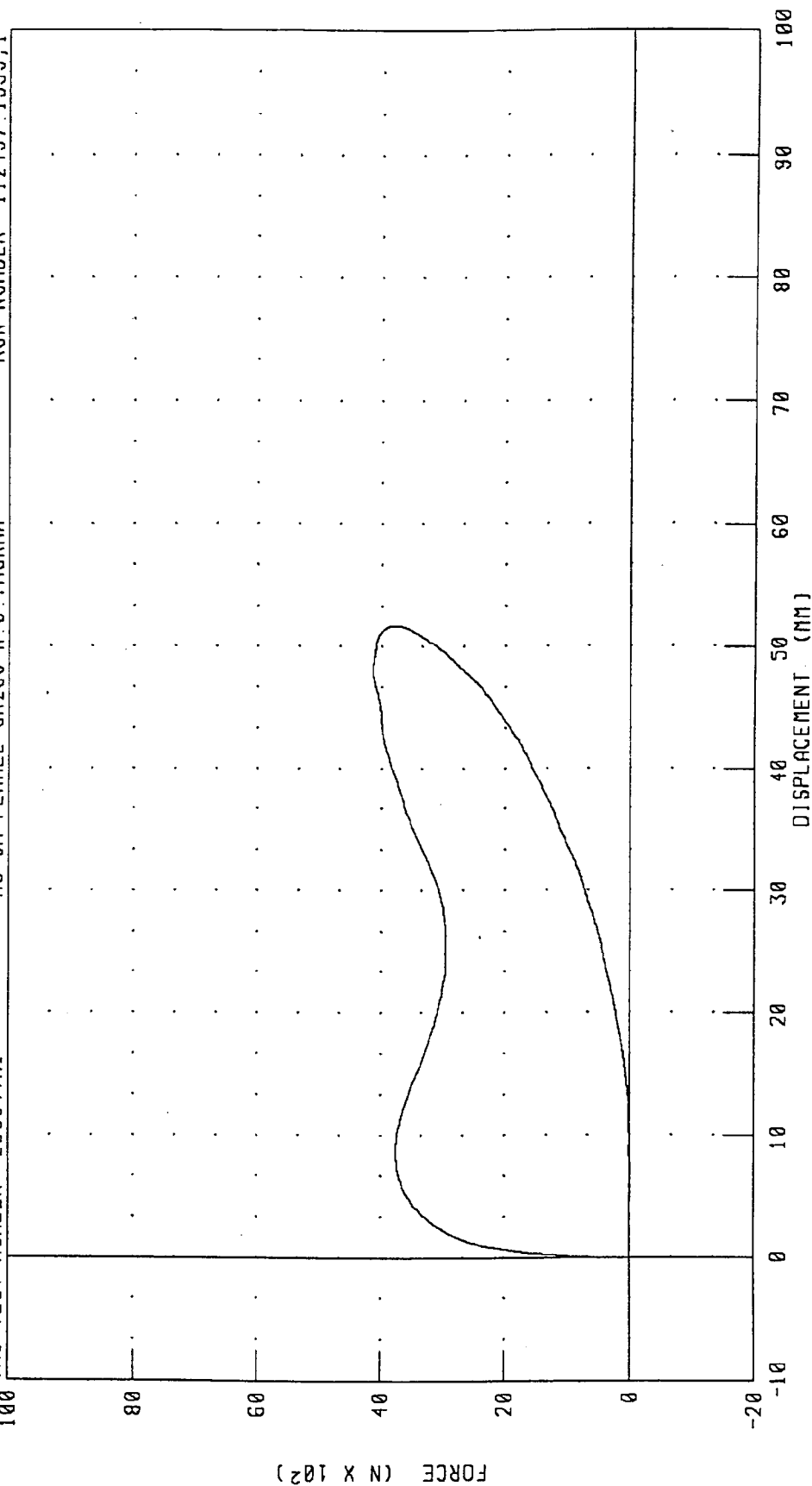
PEAK DATA: 51.78 MM @ 21.76 MS, -0.01 MM @ -10.00 MS

HYBRID III SMALL FEMALE THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE

TRC TEST NUMBER: 288C4TH1

H3 SM FEMALE SN288 H.S. THORAX

RUN NUMBER: 112497.1359.1



CHANNEL: CSTXD
PENXF
FILTER: CH. CLASS 180
CH. CLASS 180
PEAK DATA: 51.78 MM @ 21.76 NS; -0.01 MM @ -10.00 NS
4136.46 N @ 16.80 NS; -18.13 N @ 67.68 NS

Appendix D

Miscellaneous Test Data

Report Sign Convention and NHTSA Data Tape Reference Guide

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

<u>Potentiometers:</u>	+Chest longitudinal deflection:	Outward
	+Chest lateral deflection:	Leftward
	+Seat belt displacement:	Outward
	+Seat belt extension:	Elongation
	+Knee slider displacement:	Distance between femur and tibia increased (in relation to a seated dummy)

Load cells:

+Femur force:	Tension
+Seat belt force:	Tension
+Barrier force:	Tension

<u>Neck load cells:</u>	+X force:	Head pushed forward
	+Y force:	Head pushed leftward
	+Z force:	Head pulled upward (tension on neck)
	+X moment:	Right ear rotating toward right shoulder
	+Y moment:	Chin rotating toward chest
	+Z moment:	Chin rotating toward left shoulder

Tibia load cells:

+X force:	Ankle forward, knee rearward
+Y force:	Ankle rightward, knee leftward
+Z force:	Tension
+X moment:	Bottom of tibia moving leftward
+Y moment:	Bottom of tibia moving rearward

Dummy Instrumentation Placement

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

Seating position: Driver

Mnemonic	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
HEDXG1	Head	X	Endevco	7264	J20165	Rear
HEDYG1	Head	Y	Endevco	7264	J19865	Left
HEDZG1	Head	Z	Endevco	7264	J19934	Up
NEKXF1	Neck ¹	X	Denton	1716	0425FX	N/A
NEKYF1	Neck ¹	Y	Denton	1716	0425FY	N/A
NEKZF1	Neck ¹	Z	Denton	1716	0425FZ	N/A
NEKXM1	Neck ¹	X	Denton	1716	0425MX	N/A
NEKYM1	Neck ¹	Y	Denton	1716	0425MY	N/A
NEKZM1	Neck ¹	Z	Denton	1716	0425MZ	N/A
CSTXG1	Chest	X	Endevco	7264	J20599	Forward
CSTYG1	Chest	Y	Endevco	7264	J20580	Left
CSTZG1	Chest	Z	Endevco	7264	EH88J	Up
CSTXD1	Chest	X	Servo	14CB1-2897	019/289	Inward
PEVXG1	Pelvis	X	Endevco	7264	CY06H	Rearward
PEVYG1	Pelvis	Y	Endevco	7264	AGAC4	Left
PEVZG1	Pelvis	Z	Endevco	7264	BF65J	Up
LFMF1	Left femur	Z	Denton	1914	259	Compression
RFMF1	Right femur	Z	Denton	1914	257	Compression
STTXG1	Sternum top	X	Endevco	7264	J20569	Forward
STMXG1	Sternum middle	X	Endevco	7264	J20064	Forward
STBXG1	Sternum bottom	X	Endevco	7264	J20570	Forward
SPTXG1	Spine top	X	Endevco	7264	J19872	Rear
SPMXG1	Spine middle	X	Endevco	7264	J19877	Rear
SPBXG1	Spine bottom	X	Endevco	7264	J19890	Rear

¹ See Sign Convention page for polarity.

Dummy Instrumentation Placement

Dummy Manufacturer and S/N: Applied Safety Technologies/288

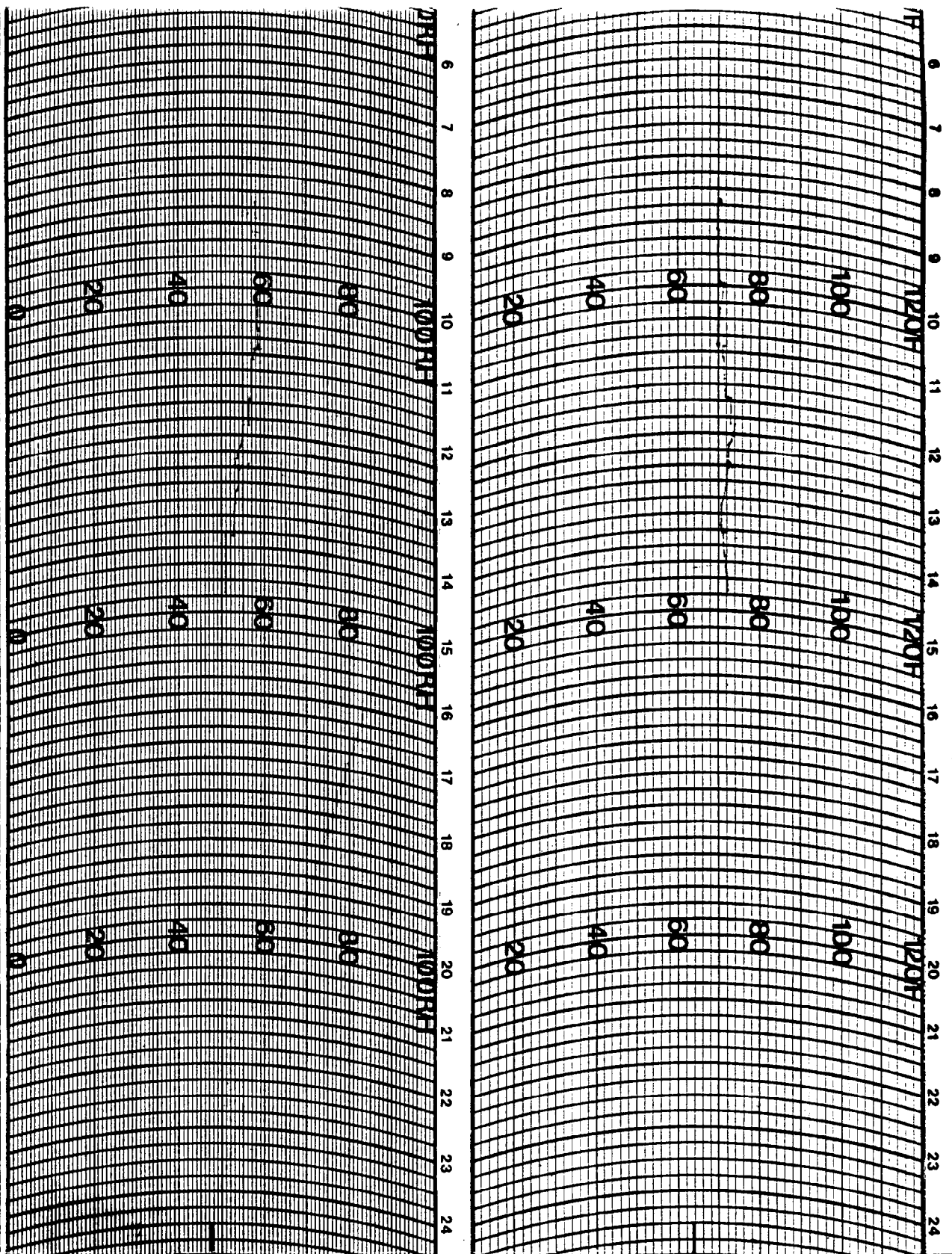
Seating position: Passenger

Mnemonic	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
HEDXG2	Head	X	Endevco	7264	J19551	Forward
HEDYG2	Head	Y	Endevco	7264	J20018	Right
HEDZG2	Head	Z	Endevco	7264	J20093	Up
NEKXF2	Neck ¹	X	Denton	1716	810FX	N/A
NEKYF2	Neck ¹	Y	Denton	1716	810FY	N/A
NEKZF2	Neck ¹	Z	Denton	1716	810FZ	N/A
NEKXM2	Neck ¹	X	Denton	1716	810MX	N/A
NEKYM2	Neck ¹	Y	Denton	1716	810MY	N/A
NEKZM2	Neck ¹	Z	Denton	1716	810MZ	N/A
CSTXG2	Chest	X	Endevco	7264	J20382	Forward
CSTYG2	Chest	Y	Endevco	7264	J19927	Left
CSTZG2	Chest	Z	Endevco	7264	J20004	Up
CSTXD2	Chest	X	Servo	14CB1-2897	288	Outward
LFMF2	Left femur	Z	Denton	1914	363	Tension
RFMF2	Right femur	Z	Denton	1914	362	Tension
STTXG2	Sternum top	X	Endevco	7264	J20047	Forward
STMXG2	Sternum middle	X	Endevco	7264	J19611	Forward
STBXG2	Sternum bottom	X	Endevco	7264	J19563	Forward
SPTXG2	Spine top	X	Endevco	7264	J19666	Rear
SPMXG2	Spine middle	X	Endevco	7264	J19996	Rear
SPBXG2	Spine bottom	X	Endevco	7264	J19223	Rear

¹ See Sign Convention page for polarity.

Vehicle Instrumentation Placement

Number	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
1	Left brake caliper	X	Endevco	7264	J22167	Forward
2	Right brake caliper	X	Endevco	7264	J21600	Forward
3	Instrument panel	X	Endevco	7264	J21535	Forward
4	Engine top	X	Endevco	7264	AC8L5	Forward
5	Engine bottom	X	Endevco	7264	J15387	Rear
6	Rear vehicle centerline	Z	Endevco	7264	10101	Up
7	Left rear seat	X	Endevco	7264	J20288	Forward
8	Right rear seat	X	Endevco	7264	J19976	Forward
9	Floor tunnel	X	Endevco	7264	APYT4	Forward
		Y	Endevco	7264	J21531	Left
		Z	Endevco	7264	J21500	Up
10	Left radiator	X	Endevco	7264	J21504	Rear
11	Right radiator	X	Endevco	7264	J20037	Rear



WEATHER MEASURE
P.O. BOX 41257
SACRAMENTO, CA. 95841
PHONE (916) 481-7565

HYGROTHERMOGRAPH
1 DAY

CHART # C311 D HF
PART # 699123

STATION _____ DATE ON 4-21-98 DATE OFF _____