

Frontal Barrier Impact Test

**DaimlerChrysler Corporation
2001 Dodge Grand Caravan MPV
NHTSA Number:
TRC Inc. Test Number: 010910**

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



**Final Report
September 21, 2001**

**Prepared For:
U. S. Department of Transportation
Volpe National Transportation Systems Center
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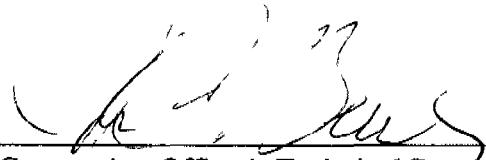
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FINAL REPORT ACCEPTANCE BY COTR:



Contracting Officer's Technical Representative (COTR),
USDOT, Volpe National Transportation Systems Center Date FEB 2002

1. Report No. DTS-TRC-01-001	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of Frontal Barrier Impact Test of a 2001 Dodge Grand Caravan MPV, NHTSA No.		5. Report Date September 21, 2001	
		6. Performing Organization Code TRC Inc.	
7. Author(s) Virginia L. Watters, Project Manager		8. Performing Organization Report No. DTS-TRC-01-001	
9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, OH 43319-0367		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTRS57-98-D-00042	
12. Sponsoring Agency Name and Address U. S. Department of Transportation Volpe National Transportation Systems Center 55 Broadway, Kendall Square Cambridge, MA 02142		13. Type of Report and Period Covered Final Report September 2001	
		14. Sponsoring Agency Code DTS-85	
15. Supplemental Notes			
16. Abstract A 40 km/h flat frontal rigid barrier impact test was conducted on a 2001 Dodge Grand Caravan MPV, at Transportation Research Center Inc. on September 10, 2001. This test was conducted in accordance with Volpe Task Order No. 1, for the evaluation of vehicle and occupant responses. The impact velocity was 39.9 km/h. The vehicle's maximum static crush was 267 millimeters. The ambient temperature was 21° C. The driver's 36 millisecond Head Injury Criteria (HIC) was 302. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 46.7 g. The driver's maximum chest deflection was 69 millimeters. The driver's left and right femur maximum axial compressive forces were 5791 N and 6819 N, respectively. The passenger's 36 millisecond HIC was 407. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 53.6 g. The passenger's maximum chest deflection was 13 millimeters. The passenger's left and right femur maximum axial compressive forces were 9057 N and 8484 N, respectively.			
17. Key Words Frontal Barrier Impact Test		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration NHTSA Technical Reference Division 400 Seventh Street, S. W., Room 5108 Washington, DC 20590	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. Number of Pages 440	22. Price

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Section 1.0

Purpose and Test Procedure

Purpose

This 40 km/h frontal barrier impact test was conducted for the Volpe National Transportation Systems Center (VNTSC) by Transportation Research Center Inc. (TRC Inc.).

The purpose of this testing was to evaluate and compare vehicle and occupant responses in frontal rigid barrier crash tests conducted at various impact speeds using model year 2001 vehicles in support of the FMVSS 208 Implementation plan (May 12, 2000 interim rule). For this test, the subject vehicle was a 2001 Dodge Grand Caravan MPV.

Test Procedure

This test was conducted in accordance with VNTSC's instructions for a full frontal car to rigid barrier test. Data was obtained relative to FMVSS 208, "Occupant Crash Protection" performance

The test vehicle, a 2001 Dodge Grand Caravan, was instrumented with ten (10) accelerometers to measure longitudinal axis accelerations and three (3) accelerometers to measure vertical axis accelerations. The driver's and passenger's primary and secondary airbag signals were monitored with inductive pickups. The vehicle impacted a rigid flat frontal barrier. The vehicle's specified impact velocity range was 39.3 to 40.9 km/h.

The test vehicle contained two (2) Part 572E adult male Hybrid III anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to NHTSA Laboratory Test Procedure TP-208-10. The driver dummy and the passenger dummy were both unbelted and were restrained with front dual stage airbags.

Both dummies were instrumented with an array of twelve (12) accelerometers in the head, and three (3) accelerometers in the chest, oriented to measure longitudinal, lateral, and vertical accelerations. The dummies were also instrumented with upper and lower neck moment and force load cells, left and right femur load cells to measure axial forces, and chest deflection potentiometers. Both dummies were also instrumented upper and lower tibia load cells to measure forces and moments, and knee displacement potentiometers. The driver dummy was equipped with THOR-LX legs, which included longitudinal and lateral tibia accelerometers, three (3) foot accelerometers on each foot to measure accelerations in three (3) axes and three (3) rotary potentiometers at each ankle to measure foot rotations about three (3) axes. The passenger dummy was instrumented with three (3) foot accelerometers to measure accelerations at the heel and toe.

The 137 data channels were digitally sampled and recorded at 12,500 samples per second and processed per SAE J211 March 1995.

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

The rigid barrier crash test summary data are presented in Section 2.0. The FMVSS 208 summary data are presented in Section 3.0. The occupant, camera, and vehicle 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 verification data. Appendix D contains miscellaneous test information.

Section 2.0

Full Frontal Barrier Test Summary

Test Results Summary

This full frontal rigid barrier crash test was conducted by TRC Inc. on September 10, 2001.

The test vehicle, a 2001 Dodge Grand Caravan MPV, was equipped with a 3.3-liter transverse engine, automatic transmission, power steering, power brakes and dual stage front airbags. The vehicle's test weight was 2116.4 kg. The vehicle's impact speed was 39.9 km/h. The vehicle sustained 267 mm of static crush during the impact.

The driver's 36 millisecond Head Injury Criteria (HIC) was 302. The driver's 15 millisecond HIC was 213. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 46.7 g. The driver's maximum chest deflection was 69 mm. The driver's left and right femur maximum axial compressive forces were 5791 N and 6819 N, respectively. The driver dummy's neck injury calculations were as follows: NTF, 0.27; NTE, 0.07; NCF, 0.20; NCE, 0.06.

The right front passenger's 36 millisecond HIC was 407. The passenger's 15 millisecond HIC was 327. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 53.6 g. The passenger's maximum chest deflection was 13 mm. The passenger's left and right femur maximum axial compressive forces were 9057 N and 8484 N, respectively. The right front passenger's neck injury calculations were as follows: NTF, 0.38; NTE, 0.19; NCF, 0.43; NCE, 0.14.

Data Acquisition Explanations

The pre-test offset measurements for the driver dummy's left foot to ankle rotations, FTLXD1, FTLYD1, and FTLZD1, were determined to be invalid. To make the offset corrections for these three channels, post-test offset measurements, taken with the manufacturer's zeroing device, were applied.

The passenger's neck lower moment about the Z-axis data channel, NKLZM2, recorded anomalous spikes between approximately 225 and 300 milliseconds. The data cable connector to the load cell was tightened following this test.

The passenger's right foot at toe Z-axis acceleration data channel, FRTZG2, lost data between approximately 55 and 82 milliseconds as a result of a damaged cable. The damage was repaired by splicing the cable following this test.

Each frontal airbag had two (2) inductive pickup devices installed on the airbag wires. The channels are labeled DABET1 and DABET2 for the driver side and PABET1 and PABET2 for the passenger side, however, it is unknown which pickup was on the primary wire and which on the secondary. There was no manufacturer information provided. Correct airbag fire times are difficult to detect on the DABET1, DABET2, and PABET2 inductive pickup data channels.

Table 1 Crash Test Summary

Test mode:	Flat frontal barrier		
Test date:	09/10/01		
Test time:	1159		
Ambient temperature:	21° C		
Vehicle year/make/ model/body style:	2001/Dodge/Grand Caravan/MPV		
Vehicle test weight:	2116.4 kg		
Impact angle ¹ :	0°		
Impact velocity ² :	39.9 km/h		
Maximum static crush:	267 mm		
Average rebound:	1081 mm		
Number of data channels:	137		
Number of cameras:	High-speed	14	Real-time 1
<u>Dummies:</u>	<u>Driver #206</u>		<u>Passenger #202</u>
Type:	Part 572E		Part 572E
Location:	Left Front		Right Front
Restraint:	Airbag, dual stage		Airbag, dual stage
<u>Seat track position for test:</u>			
Driver:	Mid		
Passenger:	Mid		
<u>Seat back position for test:</u>			
Driver:	15.8°		
Passenger:	22.6°		
<u>Head restraint position for test:</u>			
Driver:	Full up		
Passenger:	Full up		
Steering column position:	3rd notch from top		

¹ With respect to tow track centerline.

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

Table 2 General Test and Vehicle Parameter Data

Vehicle year/make/
model/body style: 2001/Dodge/Grand Caravan/MPV

VIN: 2B8GP44631R102341

Model year: 2001

Body style: 4-door

Color: Blue

Engine data:

 Cylinders: 6

 Displacement 3.3 liters

 Cylinder placement: V

 Engine placement: Transverse

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

 Final drive: X FWD, RWD, 4WD

Date vehicle received: 08/30/2001

Odometer reading: 170

Dealer's name and address: Stapleton Chrysler-Dodge
955 North Main Street
Urbana, OH 43078

Accessories:

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

Certification data from vehicle's label:

Vehicle manufactured by: DaimlerChrysler Corporation

Date of manufacture: 07/00

VIN: 2B8GP44G31R102341

GVWR: 5500 lbs. (2495 kg)

GAWR: Front: 2850 lbs. (1293 kg)

 Rear: 2850 lbs. (1293 kg)

Table 2 General Test and Vehicle Parameter Data, Cont'd.

Tires on vehicle (mfr., line, size): Michelin, MX4, 215/60R16

Tire pressure with maximum capacity vehicle load:

Front: 44 psi (300 kPa)

Rear: 44 psi (300 kPa)

Spare tire (mfr., line, size): Goodyear, Temporary, T145/90D16

Type of seats:

Front Bucket

Rear Mid-Bucket Rear-Bench

Maximum width: 1956 mm

Wheelbase: 3030 mm

Location of "Recommended Tire Pressure" label:

The label was located on driver door.

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

Recommended tire size: 215/65R16

Recommended cold tire pressure:

Front: 36 psi (250 kPa)

Rear: 36 psi (250 kPa)

Vehicle Capacity Data:

Number of Occupants (Designated seating capacity):

Front 2

Mid 2

Rear 3

Total 7

Vehicle capacity weight: 1150 lbs. (522 kg)

Test vehicle attitude:

Delivered attitude: LF 754 mm; RF 760 mm; LR 769 mm; RR 777 mm

Fully loaded attitude: LF 739 mm; RF 745 mm; LR 751 mm; RR 760 mm

Pre-test attitude: LF 740 mm; RF 745 mm; LR 747 mm; RR 747 mm

Post-test attitude: LF 768 mm; RF 780 mm; LR 750 mm; RR 755 mm

Table 2 General Test and Vehicle Parameter Data Cont'd

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

Right front	535 kg	Right rear	408 kg
Left front	558 kg	Left rear	422 kg
Total front weight	1093 kg	(56.8 % of total vehicle weight)	
Total rear weight	830 kg	(43.2 % of total vehicle weight)	
Total delivered weight	1923 kg		

Calculation of test vehicle's target test weight:

Total Delivered Weight (UDW) =	1923 kg
Rated Cargo/Luggage Weight (RCLW) ¹ =	46 kg
Weight of 2 Part 572E Dummies @ 76 kg each =	152 kg
Target test weight =	2121 kg

Weight of test vehicle with required dummies and 41.1 kg of cargo weight:

Right front	565.6 kg	Right rear	477.8 kg
Left front	583.2 kg	Left rear	489.8 kg
Total front weight	1148.8 kg	(54.3 % of total vehicle weight)	
Total rear weight	967.6 kg	(45.7 % of total vehicle weight)	
Total test weight	2116.4 kg	(2.2 % under target test weight)	

Weight of ballast secured in vehicle: None

Components removed to meet target test weight: Third row seats.

Location of Vehicle's CG: 1385 mm rearward of front wheel centerline

¹ Cargo weight for multipurpose passenger vehicles, trucks, and buses is the vehicle's rated cargo and luggage weight from the vehicle's label or 136 kilograms, whichever is less.

Table 3 Post-Impact Data

Test number: 010910
Test date: 09/10/01
Test time: 11:59
Test type: Flat Frontal barrier
Impact angle: 0°
Ambient temperature
at impact area: 21° C
Required impact velocity range: 39.3 to 40.9 km/h

Barrier impact velocity:

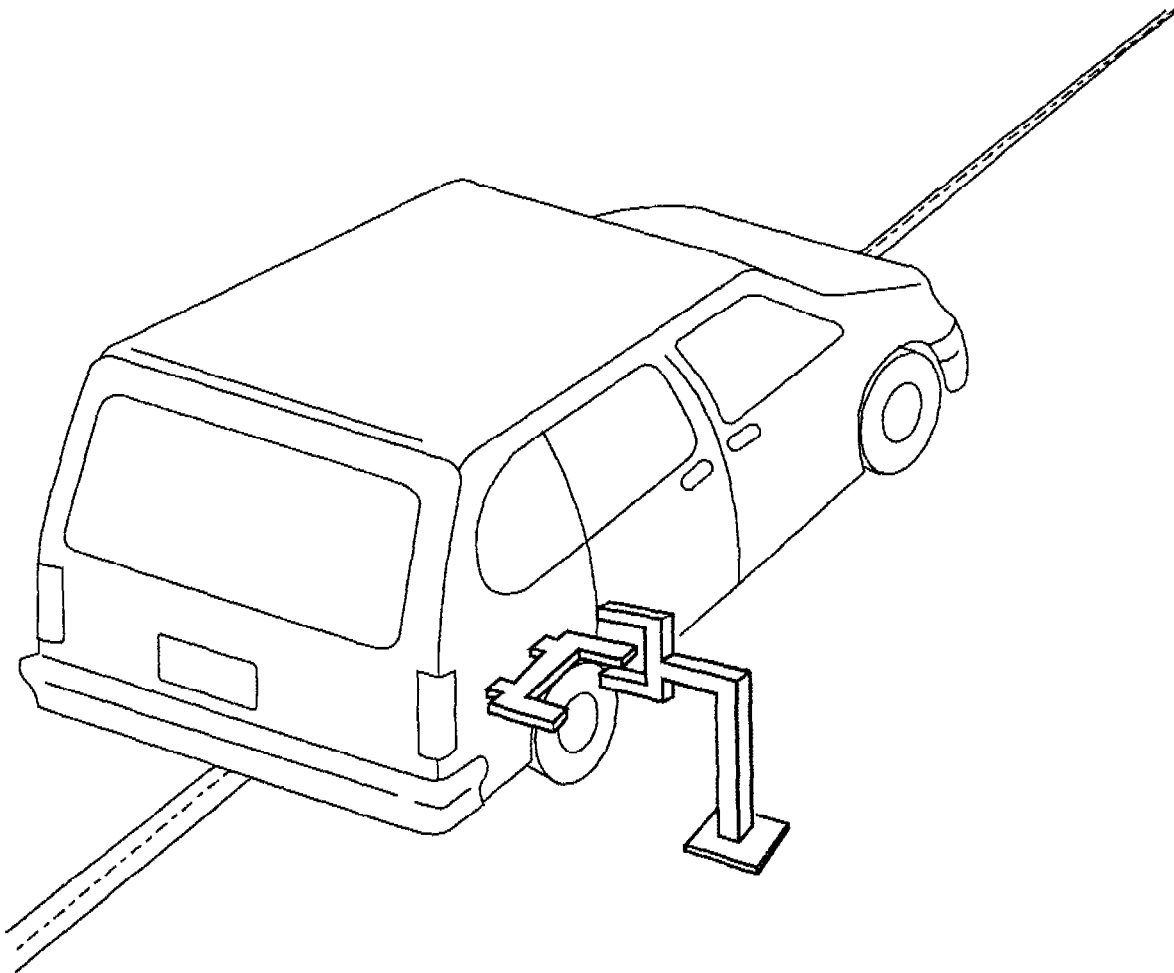
Primary: 39.9 km/h
Secondary: 39.9 km/h
Distance from vehicle to barrier:
Entering velocity trap: 661 mm
Exiting velocity trap: 51 mm

Vehicle rebound from flat rigid barrier:

Distance from test vehicle to barrier impact point:

Post-test: L 1141 mm; C 1048 mm; R 1054 mm
Average rebound: 1081 mm

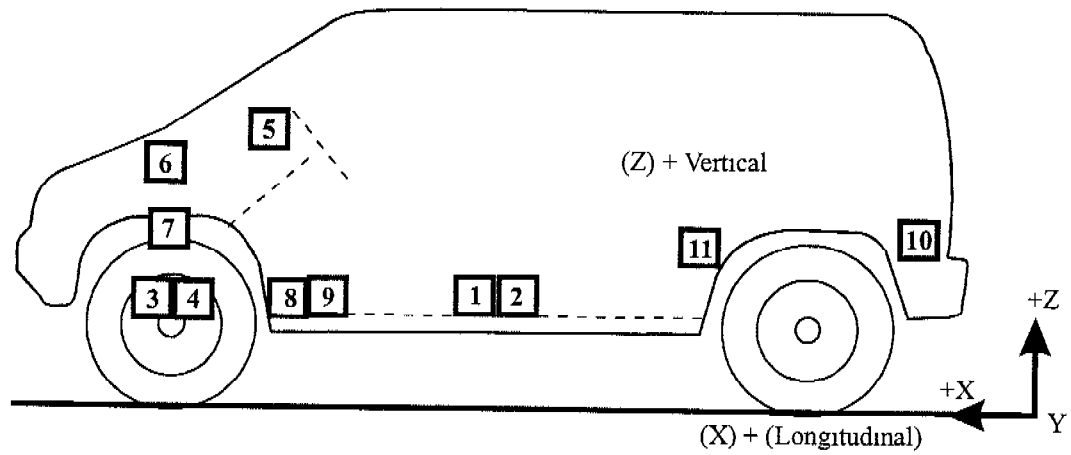
Figure 1 Impact Velocity Measurement System



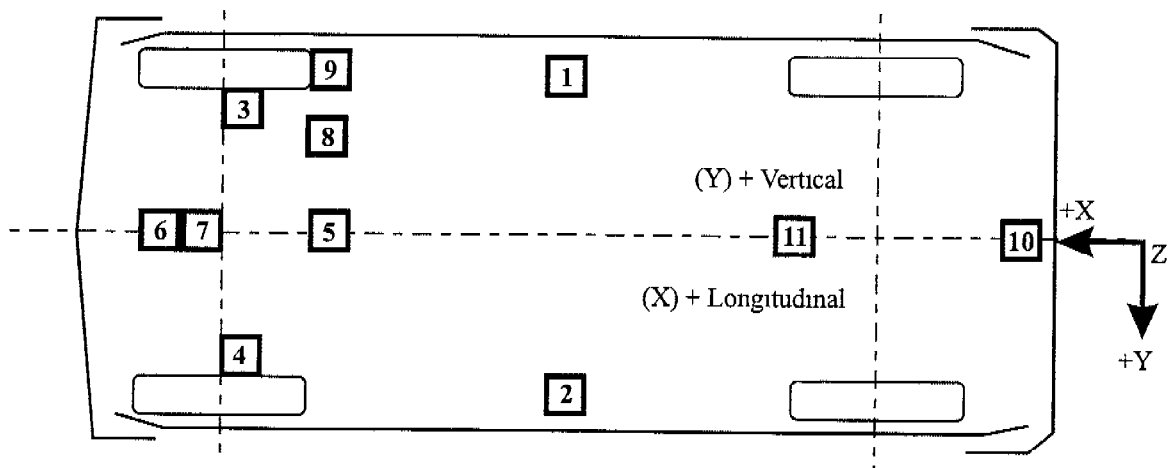
The final vane clears the final emitter/receiver pair 51 millimeters before impact.

The vanes have 305-millimeter spacing.

Figure 2 Vehicle Accelerometer Placement



Side View



Bottom View

Table 4 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 010910 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	2180 mm	715 mm	454 mm	2.3 g @ 90.6 ms	35.2 g @ 49.0 ms
2 RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	2180 mm	-715 mm	448 mm	2.6 g @ 92.9 ms	28.4 g @ 48.6 ms
3 FRONT BRAKE CALIPER LEFT LONGITUDINAL	4270 mm	670 mm	335 mm	19.0 g @ 66.6 ms	96.3 g @ 46.6 ms
4 FRONT BRAKE CALIPER RIGHT LONGITUDINAL	4270 mm	-670 mm	335 mm	27.7 g @ 88.4 ms	55.0 g @ 64.3 ms
5 DASH PANEL CENTER LONGITUDINAL	3566 mm	0 mm	1180 mm	85.7 g @ 44.6 ms	100.9 g @ 50.9 ms
6 ENGINE TOP LONGITUDINAL	4915 mm	-68 mm	704 mm	33.3 g @ 48.4 ms	66.8 g @ 39.6 ms
7 ENGINE BOTTOM LONGITUDINAL	4370 mm	110 mm	180 mm	30.4 g @ 55.2 ms	75.6 g @ 36.3 ms

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

TEST NUMBER: 010910 No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
8 TOEPAN NEXT TO ACCEL LONGITUDINAL VERTICAL	3700 mm	314 mm	355 mm	1.9 g @ 123.4 ms 12.1 g @ 28.1 ms	34.2 g @ 47.4 ms 20.1 g @ 33.8 ms
9 TOEPAN NEXT TO FOOTREST LONGITUDINAL VERTICAL	3700 mm	508 mm	355 mm	1.8 g @ 123.5 ms 9.6 g @ 76.2 ms	35.5 g @ 48.6 ms 11.6 g @ 33.7 ms
10 REAR DECK VERTICAL	362 mm	0 mm	499 mm	11.2 g @ 47.4 ms	7.5 g @ 55.0 ms
11 REAR COMPARTMENT CENTER LONGITUDINAL	1086 mm	0 mm	422 mm	2.1 g @ 92.0 ms	32.0 g @ 48.9 ms

Section 3.0

Summary of FMVSS 208 Data

Table 5 Dummy Injury Criteria Data

<u>Maximum Acceleration¹</u>							
	Head				Chest		
	X	Y	Z	R	X	Y	Z
Driver	-44.8 g	7.8 g	20.8 g	48.6 g	-47.0 g	2.4 g	-9.5 g
Passenger	-51.0 g	-20.0 g	33.9 g	59.8 g	-51.7 g	3.4 g	23.3 g

<u>Maximum Femur Compressive Force</u>		
	Left Femur	Right Femur
Driver	5791 N	6819 N
Passenger	9057 N	8484 N

<u>Head Injury Criteria²</u>			
36 millisecond			
	HIC	Time t ₁	Time t ₂
Driver	302	72.6 ms	107.4 ms
Passenger	407	82.1 ms	113.7 ms

15 millisecond			
	HIC	Time t ₁	Time t ₂
Driver	213	81.8 ms	96.9 ms
Passenger	327	89.8 ms	104.9 ms

<u>Chest Maximum Resultant Acceleration³</u>			
	Acceleration	Time t ₁	Time t ₂
Driver	46.7 g	92.9 ms	95.8 ms
Passenger	53.6 g	94.4 ms	97.3 ms

Table 5 Dummy Injury Criteria Data, Cont'd.

Maximum Chest Deflection

Driver	69 mm
Passenger	13 mm

Neck Injury Calculations (Nij)²

	NTF	NTE	NCF	NCE
Driver	0.3	0.1	0.2	0.1
Passenger	0.4	0.2	0.4	0.1

¹ See Report Sign Convention in Appendix D.

² As defined in FMVSS No. 208.

³ Defined as equal to or exceeding 0.003 sec. duration.

⁴ See Data Acquisition Explanation in Section 2.0.

Table 6 Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	<u>Driver</u>	<u>Passenger</u>
Head	Airbag, sun visor, head liner	Airbag, sun visor, head restraint
Chest	Airbag	Airbag
Abdomen	None	None
Left knee	Instrument panel	Instrument panel
Right knee	Instrument panel	Instrument panel

Door opening:

	<u>Left</u>	<u>Right</u>
Front	Easy	Easy
Rear	Easy	Easy

Seat movement:

	<u>Seat back failure</u>	<u>Seat shift</u>
Left Front	None	None
Right Front	None	None
Left Rear	N/A	N/A
Right Rear	N/A	N/A

Glazing damage: None

Other notable impact effects: No

Section 4.0

Occupant, Camera, and Vehicle Information

Dummy Kinematic Summary

Driver Dummy

Upon impact, the driver dummy translated forward on the seat impacting both knees into the instrument panel as the head and chest impacted the airbag. The dummy's head rotated forward, impacting the sun visor and headliner, as the dummy rebounded rearward and upward into the seat back. The dummy then moved downward into the seat cushion. The driver dummy came to rest seated in the driver's seat.

Right Front Passenger Dummy

Upon impact, the passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head rotated forward as the head and chest impacted the airbag. The dummy's head rotated forward as the dummy rebounded rearward into the seat. The dummy came to rest seated on the right front passenger's seat.

Figure 3 Dummy Measurement Locations for Front Seat Occupants

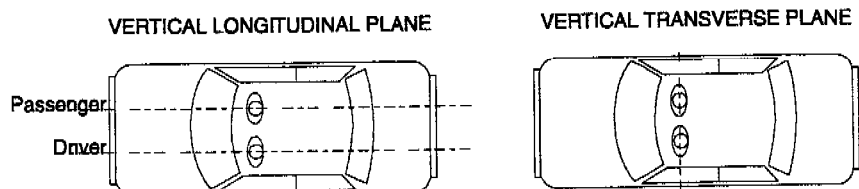
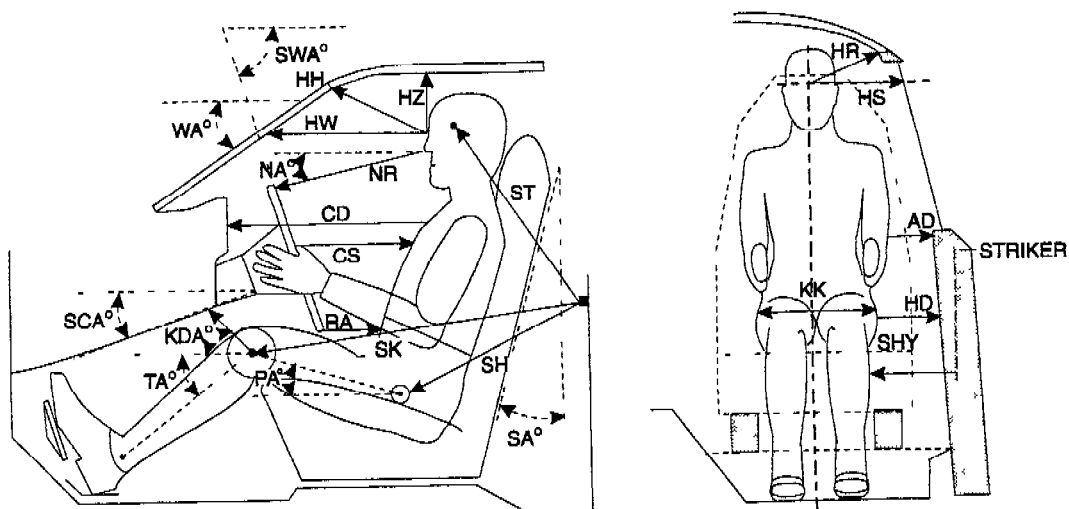


Table 7 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial # 206)	Passenger (Serial # 202)
WA	Windshield angle	29.3°	29.3°
SWA	Steering wheel angle	59.6°	N/A
SCA	Steering column angle	31.4°	N/A
SA	Seat back angle	15.8°	22.6°
HZ	Head to roof	207 mm	192 mm
HH	Head to header	368 mm	356 mm
HW	Head to windshield	578 mm	600 mm
HR	Head to side header	224 mm	229 mm
NR	Nose to rim	425 mm	N/A
NA	Nose to rim angle	14.5°	N/A
CD	Chest to dash	565 mm	549 mm
CS	Steering wheel to chest	300 mm	N/A
RA	Rim to abdomen	188 mm	N/A
KDL	Left knee to dash	163 mm	195 mm
KDR	Right knee to dash	202 mm	209 mm
KDA	Outboard knee to dash angle	67.7°	73.1°
PA	Pelvic angle	24.3°	22.7°
TA	Tibia angle	64.7°	55.4°
KK	Knee to knee	320 mm	300 mm
ST ¹	Striker to head	658 mm	678 mm
	Striker to head angle	-80.6°	-79.7°
SK ¹	Striker to knee	638 mm	595 mm
	Striker to knee angle	-13°	-6.2°
SH ¹	Striker to H-point	226 mm	210 mm
	Striker to H-point angle	-6°	-2.8°
SHY	Striker to H-point (Y dir.)	208 mm	240 mm
HS	Head to side window	253 mm	258 mm
HD	H-point to door	144 mm	145 mm
AD	Arm to door	147 mm	143 mm

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

¹ A negative angle indicates the measurement point was above the striker.

Descriptions of Dummy Measurements

When a level is to be used, it is to ensure that the line containing the two points described is either parallel or perpendicular to the ground. If a measurement to be made is less than 10 inches ignore the directions to use a level and approximate a level measurement. Also, when a measurement is to be taken to or from the center of a bolt on the dummy, take the measurement from the center of the bolt hole if the bolt is recessed.

The following measurements are to be made within a vertical longitudinal plane.

- * HH Head to Header, taken from the point where the dummy's nose meets his forehead (between his eyes) to the furthest point forward on the header.
- * HW Head to Windshield, taken from the point where the dummy's nose meets his forehead (between his eyes) to a point on the windshield. Use a level.
- HZ Head to Roof, taken from the point where the dummy's nose meets his forehead (between his eyes) to the point on the roof directly above it. Use a level.
- * CS Steering Wheel to Chest, taken from the center of the steering wheel hub to the dummy's chest. Use a level.
- * CD Chest to Dash, place a tape measure on the tip of the dummy's chin and rotate five inches of it downward toward the dummy to the point of contact on the transverse center of the dummy's chest. Then measure from this point to the closest point on the dashboard either between the upper part of the steering wheel between the hub and the rim, or measure to the dashboard placing the tape measure above the rim, whichever is a shorter measurement. See diagram.
- RA Steering Wheel Rim to Abdomen, taken from the bottommost point of the steering wheel rim horizontally rearward to the dummy. Use a level.
- NR Nose to Rim, taken from the tip of the dummy's nose to the closest point on the top of the steering wheel rim. Also indicate the angle this line makes with respect to the horizontal (NA).
- *¹ KDL, Left and Right Knees to Dashboard, taken from the center of the knee pivot bolt's outer surface to the closest point forward acquired by swinging the tape measure in continually larger arcs until it contacts the dashboard. Also reference the angle of this measurement with respect to the horizontal for the outboard knee (KDA). See diagram.

* Measurement used in Data Tape Reference Guide

¹ Only outboard measurement is referenced in Data Tape Reference Guide

Descriptions of Dummy Measurements, Cont'd.

SH, Striker to Hip, Knee, and Head, these measurements are to be taken in the X-
SK, Z plane measured from the forward most center point on the striker to the
ST center of the H-point, outer knee bolt, and head target. When taking this
measurement a firm device that can be rigidly connected to the striker should
be used. Use a level. The angles of these measurements with respect to the
horizontal should also be recorded. The measurement in the Y (transverse)
direction from the striker to the H-point should also be taken (SHY). See
diagram.

The following measurements are to be made within a vertical transverse plane.

- HS Head to Side Window, taken from the point where the dummy's nose meets
his forehead (between his eyes) to the outside of the side window. In order to
make this measurement, roll the window down to the exact height which
allows a level measurement. Use a level. See diagram.
- * AD Arm to Door, taken from the outer surface of the elbow pivot bolt on a Hybrid
II dummy to the first point it hits on the door. In the case of a Hybrid III
dummy, measure from the bolt on the outer biceps. When a SID is used make
the measurement from the center of the bottom of the arm segment where it
meets the dummy's torso.
- * HD H-point to Door, taken from the H-point on the dummy to the closest point on
the door. Use a level.
- * HR Head to Side Header, measure the shortest distance from the point where the
dummy's nose meets his forehead (between his eyes) to the side edge of the
header just above the window frame, directly adjacent to the dummy.
- SHY Striker to H-point, taken from a rod rigidly connected to the forward most
center point on the striker to the H-point. Use a level. See diagram.
- KK Knee to Knee, for Hybrid II dummies measure the distance between knee
pivot bolt head outer surfaces. For Hybrid III dummies measure the distance
between the outboard knee clevis flange surfaces. (This measurement may
not be exactly transverse.)

Angles

- SA Seat Back Angle, find this angle using the instructions provided by the
manufacturer. If the manufacturer doesn't provide clear instructions contact
the COTR.

* Measurement used in Data Tape Reference Guide

Descriptions of Dummy Measurements, Cont'd.

- PA Pelvic or Femur Angle, taken by inserting the pelvic angle gauge into the H-point gauging hole on the SID or the Hybrid III dummies and taking this angle with respect to the horizontal. Measure the angle of the line connecting the H-point hole and the outer knee pivot bolt hole on a Hybrid II dummy with respect to the horizontal, to find the femur angle.
- SWA Steering Wheel Angle, find this by placing a straight edge against the steering wheel rim along the longitudinal plane. Then measure the acute angle of the straight edge with respect to the horizontal.
- SCA Steering Column Angle, measured with respect to the horizontal by placing an inclinometer on the center of the underside of the steering column.
- NA Measure the angle made when taking the measurement NR with respect to the horizontal.
- KDA Knee to Dash Angle, the angle that the measurement KD is taken at with respect to the horizontal. Only get this angle for the outboard knee. See diagram.
- WA Windshield Angle, place an inclinometer along the transverse center of the windshield exterior (measurement is made with respect to horizontal).
- TA Tibia Angle, use a straight edge to connect the dummy's knee and ankle bolts. Then place an inclinometer on the straight edge and measure the angle with respect to the horizontal.

Figure 4 Pre-Test And Post-Test Measurement Points

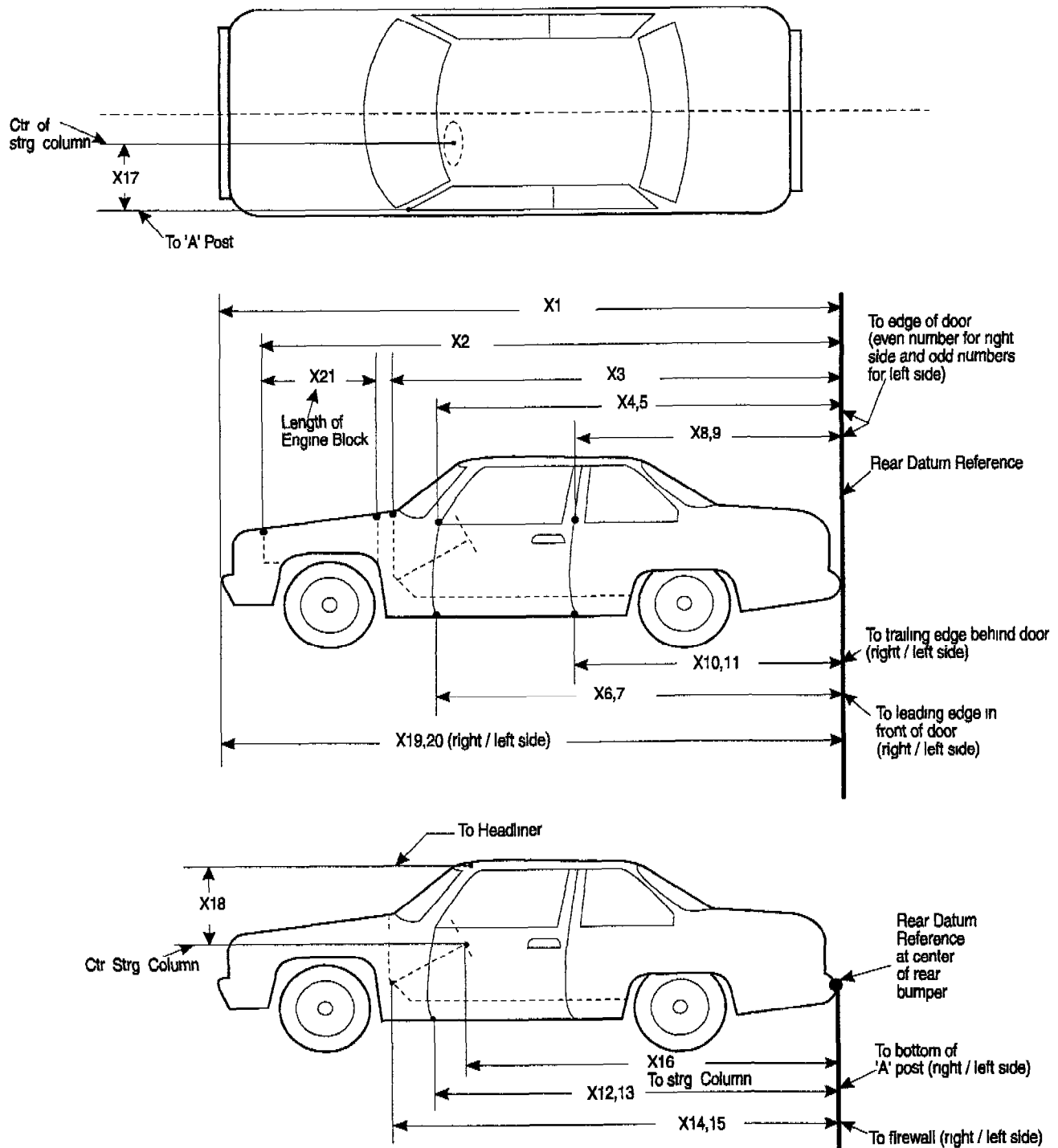


Table 8 Impacted Vehicle Measurements

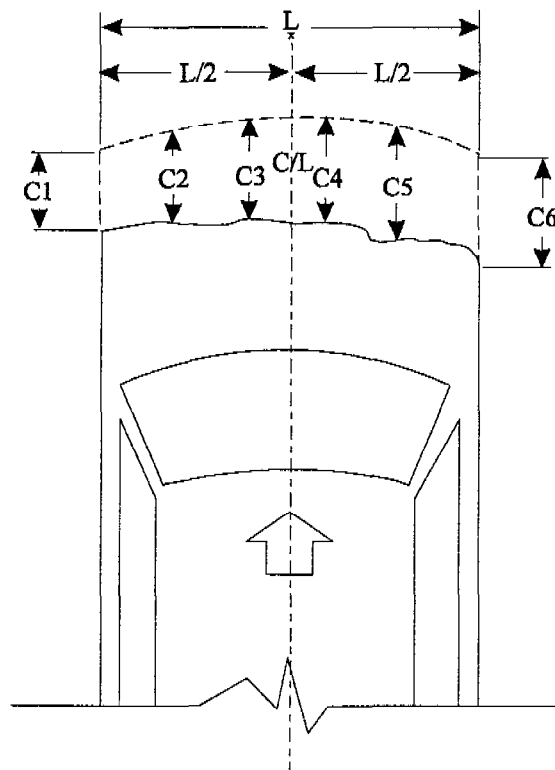
Test number: 010910

Vehicle year/make/model/body style: 2001/Dodge/Grand Caravan/MPV

No.	Type of measurement	Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	5081	4896	185
X2	Rear Surface of Vehicle to Front of Engine Block	4506	4443	63
X3	Rear Surface of Vehicle to Firewall	4281	4276	5
X4	Rear Surface of Veh. to Upper Leading Edge of Right Door	3663	3658	5
X5	Rear Surface of Veh. to Upper Leading Edge of Left Door	3656	3663	-7
X6	Rear Surface of Veh. to Lower Leading Edge of Right Door	3630	3636	-6
X7	Rear Surface of Veh. to Lower Leading Edge of Left Door	3626	3641	-15
X8	Rear Surface of Veh. to Upper Trailing Edge of Right Door	2673	2669	4
X9	Rear Surface of Veh. to Upper Trailing Edge of Left Door	2671	2675	-4
X10	Rear Surface of Veh. to Lower Trailing Edge of Right Door	2671	2672	-1
X11	Rear Surface of Veh. to Lower Trailing Edge of Left Door	2668	2681	-13
X12	Rear Surface of Veh. to Bottom of " A " Post on Right Side	3656	3671	-15
X13	Rear Surface of Veh. to Bottom of " A " Post on Left Side	3656	3661	-5
X14	Rear Surface of Vehicle to Firewall--Right Side	4017	3983	34
X15	Rear Surface of Vehicle to Firewall --Left Side	4010	3973	37
X16	Rear Surface of Vehicle to Steering Wheel Center	3600	3655	-55
X17	Center of Steering Column to " A " Post	333	319	14
X18	Center of Steering Column to Headliner	444	415	29
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4901	4800	101
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4905	4763	142
X21	Length of Engine Block	395	395	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3511	3491	20
CD	Rear Surface of Vehicle to Center of Dash Panel	3486	3481	5
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3486	3476	10

All distance measurements are in millimeters.

Figure 5 Vehicle Crush



Notes: L is pre-test length of contact surface.
C1 through C6 are spaced equally apart.
CL is vehicle centerline.

Vehicle: 2001 Dodge Grand Caravan

Location	Pre-test	Post-test	Difference
L	1525 mm		
C1	4905 mm	4763 mm	142 mm
C2	5011 mm	4763 mm	248 mm
C3	5440 mm	5237 mm	203 mm
C4	5071 mm	4902 mm	169 mm
C5	5011 mm	4841 mm	170 mm
C6	4901 mm	4800 mm	101 mm
CL	5081 mm	4896 mm	185 mm

Table 9 Test Vehicle Frontal Profile Data

Pre-Test Profile							
		Vehicle Left			Vehicle Right		
		Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Bottom of Front Bumper	X	4876 mm	5006 mm	5046 mm	5091 mm	4996 mm	4886 mm
	Y	777 mm	460 mm	161 mm	161 mm	460 mm	765 mm
	Z	375 mm	380 mm	380 mm	387 mm	384 mm	380 mm
Top of Front Bumper	X	4886 mm	5031 mm	5071 mm	5076 mm	5016 mm	4906 mm
	Y	770 mm	456 mm	150 mm	151 mm	460 mm	760 mm
	Z	543 mm	528 mm	530 mm	528 mm	535 mm	600 mm
Center of Grille	X	4806 mm	4956 mm	5026 mm	4956 mm	4956 mm	4846 mm
	Y	782 mm	469 mm	151 mm	151 mm	460 mm	767 mm
	Z	603 mm	650 mm	640 mm	645 mm	643 mm	653 mm
Front of Hood	X	4723 mm	4892 mm	4941 mm	4951 mm	4891 mm	4731 mm
	Y	770 mm	455 mm	150 mm	150 mm	455 mm	765 mm
	Z	788 mm	784 mm	780 mm	788 mm	788 mm	855 mm

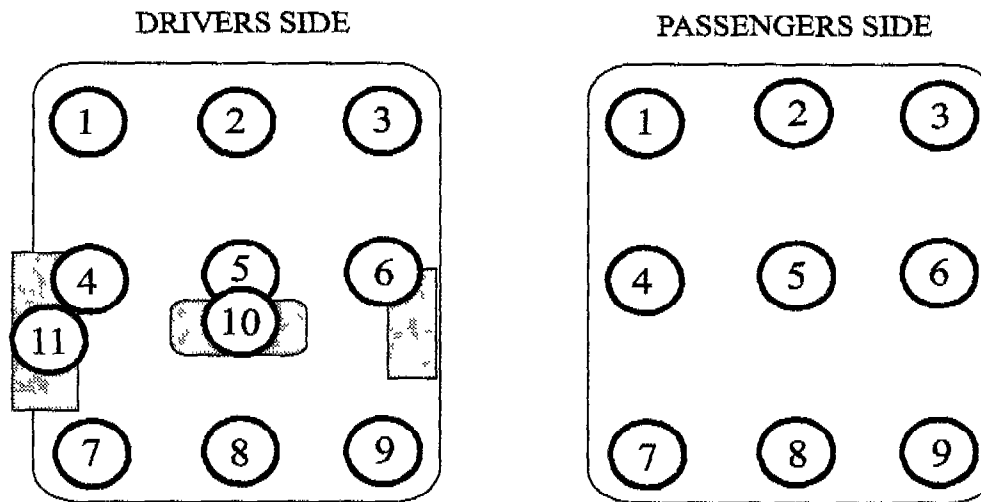
Post-Test Profile							
		Vehicle Left			Vehicle Right		
		Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Bottom of Front Bumper	X	4742 mm	4752 mm	4872 mm	4893 mm	4860 mm	4877 mm
	Y	725 mm	445 mm	160 mm	162 mm	450 mm	742 mm
	Z	335 mm	378 mm	374 mm	383 mm	377 mm	358 mm
Top of Front Bumper	X	4765 mm	4764 mm	4872 mm	4889 mm	4830 mm	4790 mm
	Y	745 mm	446 mm	155 mm	150 mm	446 mm	755 mm
	Z	509 mm	530 mm	537 mm	535 mm	525 mm	523 mm
Center of Grille	X	4693 mm	4775 mm	4809 mm	4823 mm	4789 mm	4740 mm
	Y	780 mm	465 mm	155 mm	147 mm	458 mm	755 mm
	Z	577 mm	662 mm	651 mm	652 mm	643 mm	585 mm
Front of Hood	X1	N/A	N/A	N/A	N/A	N/A	N/A
	Y1	N/A	N/A	N/A	N/A	N/A	N/A
	Z	888 mm	782 mm	724 mm	739 mm	774 mm	888 mm

Difference							
		Vehicle Left			Vehicle Right		
		Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Bottom of Front Bumper	X	134 mm	254 mm	174 mm	198 mm	136 mm	9 mm
	Y	52 mm	15 mm	1 mm	-1 mm	10 mm	23 mm
	Z	40 mm	2 mm	6 mm	6 mm	7 mm	22 mm
Top of Front Bumper	X	121 mm	267 mm	199 mm	187 mm	186 mm	116 mm
	Y	25 mm	10 mm	-5 mm	1 mm	14 mm	5 mm
	Z	34 mm	-2 mm	-7 mm	-7 mm	10 mm	77 mm
Center of Grille	X	113 mm	181 mm	217 mm	193 mm	167 mm	106 mm
	Y	2 mm	4 mm	-4 mm	4 mm	2 mm	12 mm
	Z	26 mm	-12 mm	-11 mm	-7 mm	0 mm	68 mm
Front of Hood	X1	N/A	N/A	N/A	N/A	N/A	N/A
	Y1	N/A	N/A	N/A	N/A	N/A	N/A
	Z	-100 mm	2 mm	56 mm	49 mm	14 mm	-33 mm

Note X-axis measurements referenced forward of the rear bumper centerline. Y-axis measurements are left and right of the original vehicle centerline Y-axis measurements (6 points) divide the width of the car. Z-axis (height) measurements are from the ground.

1 Hood was removed for post-test photography prior to recording the post-test X and Y profile measurements

Figure 6 Toeboard Measurements



Driver's Side Floorpan Measurements

Floorpan Location	X			Z		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3801 mm	3804 mm	-3 mm	614 mm	645 mm	-31 mm
2	3881 mm	3862 mm	19 mm	508 mm	577 mm	-69 mm
3	3875 mm	3861 mm	14 mm	503 mm	558 mm	-55 mm
4	3765 mm	3747 mm	18 mm	527 mm	560 mm	-33 mm
5	3852 mm	3831 mm	21 mm	489 mm	527 mm	-38 mm
6	3839 mm	3822 mm	17 mm	468 mm	493 mm	-25 mm
7	3740 mm	3718 mm	22 mm	470 mm	509 mm	-39 mm
8	3810 mm	3781 mm	29 mm	407 mm	448 mm	-41 mm
9	3815 mm	3788 mm	25 mm	428 mm	445 mm	-17 mm
10	3604 mm	3745 mm	-141 mm	565 mm	593 mm	-28 mm
11	N/A mm	N/A mm	N/A mm	N/A mm	N/A mm	N/A mm

Passenger's Side Floorpan Measurements

Floorpan Location	X			Z		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
1	3900 mm	3899 mm	1 mm	538 mm	560 mm	-22 mm
2	3906 mm	3930 mm	-24 mm	583 mm	570 mm	13 mm
3	3816 mm	3805 mm	11 mm	640 mm	650 mm	-10 mm
4	3845 mm	3838 mm	7 mm	503 mm	505 mm	-2 mm
5	3863 mm	3880 mm	-17 mm	533 mm	516 mm	17 mm
6	3781 mm	3775 mm	6 mm	590 mm	585 mm	5 mm
7	3790 mm	3767 mm	23 mm	433 mm	435 mm	-2 mm
8	3815 mm	3831 mm	-16 mm	441 mm	460 mm	-19 mm
9	3655 mm	3717 mm	-62 mm	440 mm	440 mm	0 mm

Reference: +X forward from rear bumper; +Z upward from ground level

Table 10 Intrusion of Upper Instrument Panel

Pre-Test

	X	Y	Z
Driver Left Knee	3126 mm	900 mm	916 mm
Driver Right Knee	3186 mm	300 mm	928 mm
Passenger Left Knee	3154 mm	270 mm	930 mm
Passenger Right Knee	3143 mm	607 mm	942 mm

Post-Test

Driver Left Knee	3150 mm	610 mm	940 mm
Driver Right Knee	3110 mm	230 mm	940 mm
Passenger Left Knee	3180 mm	280 mm	949 mm
Passenger Right Knee	3165 mm	630 mm	937 mm

Difference

Driver Left Knee	-24 mm	290 mm	-24 mm
Driver Right Knee	76 mm	70 mm	-12 mm
Passenger Left Knee	-26 mm	-10 mm	-19 mm
Passenger Right Knee	-22 mm	-23 mm	5 mm

Instructions: Mark a point to be measured pre and post which is just above where the four (4) knees would be expected to contact the instrument panel.

+X: Forward from rear bumper

+Y: From centerline

+Z: Upward from ground level

Table 11 Fuel System Data

Usable fuel system capacity:	75.7 liters (from owner's manual)
Test volume range:	69.6 - 71.2 liters (92-94% of usable)
Actual test volume:	70.4 liters (93% of usable)
Test fluid type:	Stoddard
Specific gravity:	0.764
Kinematic viscosity:	0.99 centistoke
Test fluid color:	Purple
Type of fuel pump:	Electric
Did electric fuel pump operate with ignition switch "on" and the engine not operating.	No
Details of fuel system:	The fuel tank was located in front of the rear axle. The fuel filler neck was located on the left side. The fuel lines ran along the left frame rail to the engine compartment.

Figure 7 Camera Positions

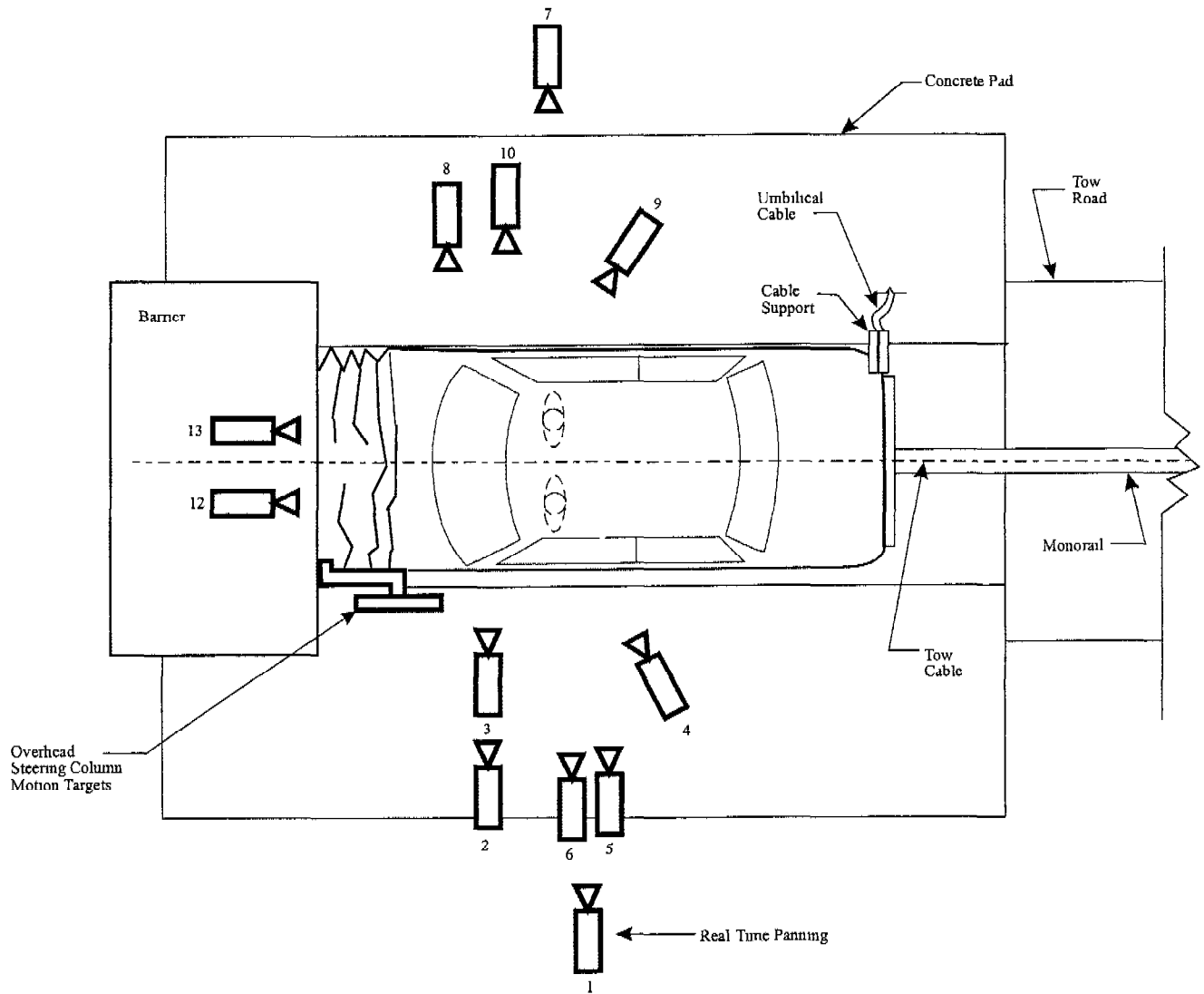


Figure 7 Camera Positions, Cont'd.

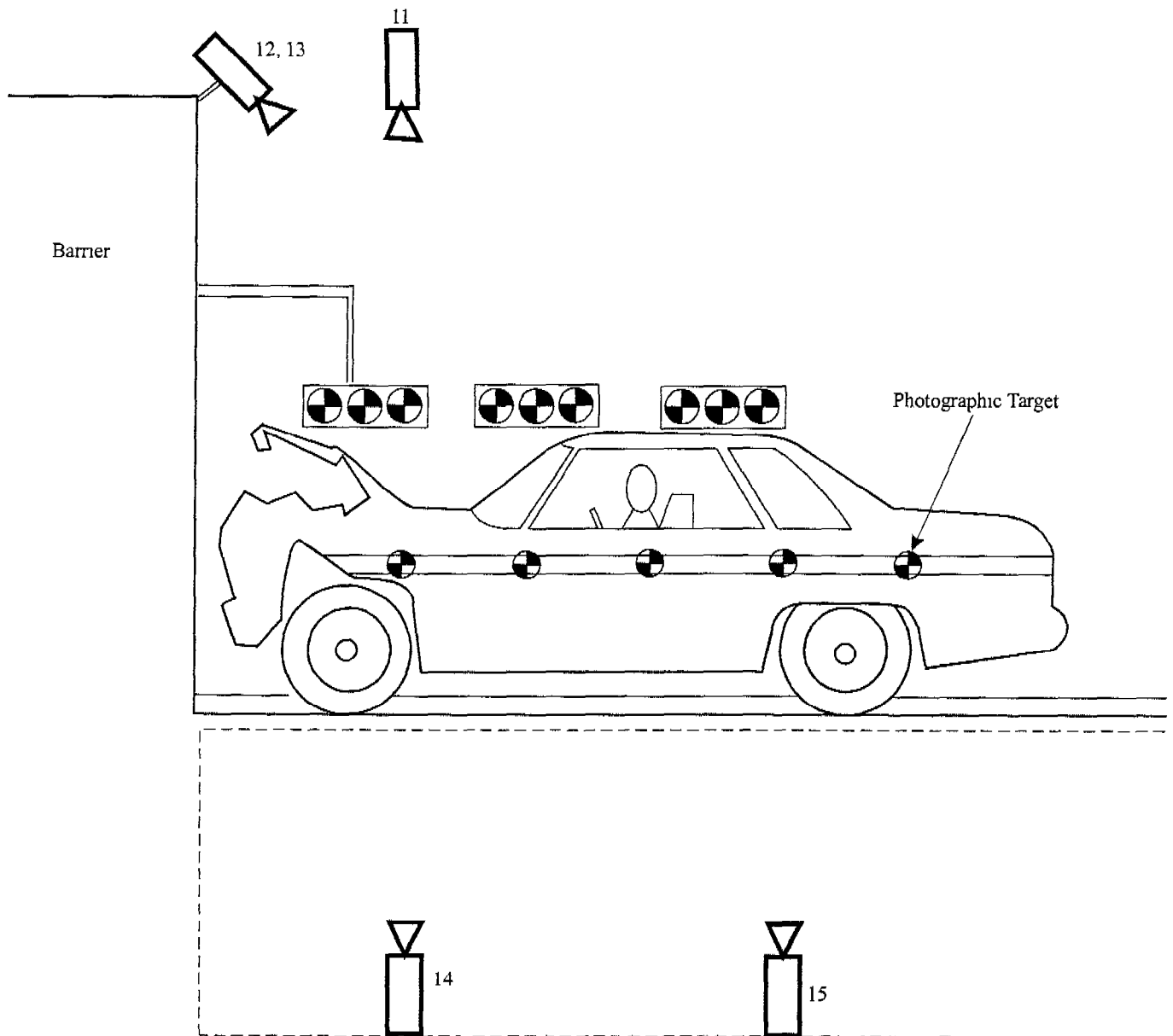


Table 12 Camera Information

No.	View	Type	Lens	Film Speed	Camera Positions ¹			Angle ²	Film Plane to Head Target
					X	Y	Z		
1	Real-time panning	Bolex		24 frames/s	N/A	N/A	N/A	N/A	N/A
2	Left side overall	Photosonic	25 mm	1032 frames/s	1025 mm	9020 mm	1573 mm	-3.2	7520 mm
3	Left tight dummy	Hycam	50 mm	1032 frames/s	540 mm	7055 mm	1416 mm	-0.6	7420 mm
4	Left angled on dummy	Photosonic	25 mm	Too slow	3450 mm	2500 mm	2205 mm	-17.4	2353 mm
5	Left steering column upper	Photosonic	25 mm	997 frames/s	1850 mm	9000 mm	2704 mm	-11.0	8433 mm
6	Left steering column lower	Photosonic	25 mm	415 frames/s	1850 mm	9000 mm	1670 mm	-2.4	8433 mm
7	Right side overall	Hycam	13 mm	990 frames/s	2865 mm	-8270 mm	1257 mm	-3.0	8252 mm
8	Right tight dummy	Hycam	50 mm	1000 frames/s	830 mm	-7570 mm	1440 mm	-1.1	7255 mm
9	Right angled on dummy	Photosonic	25 mm	990 frames/s	3630 mm	-2300 mm	2905 mm	-18.8	2333 mm
10	Right side passenger	Photosonic	25 mm	1027 frames/s	1300 mm	-8040 mm	1628 mm	-4.4	7655 mm
11	Overhead	Photosonic	8.5 mm	995 frames/s	470 mm	0 mm	2560 mm	-67.4	2250 mm
12	Barrier driver	Photosonic	17 mm	1000 frames/s	470 mm	380 mm	2560 mm	-52.3	2250 mm
13	Barrier passenger	Photosonic	17 mm	1000 frames/s	470 mm	380 mm	2560 mm	-59.9	2250 mm
14	Pit front	Photosonic	17 mm	412 frames/s	1050 mm	0 mm	940 mm	90.0	N/A
15	Pit rear	Photosonic	17 mm	995 frames/s	2660 mm	0 mm	935 mm	90.0	N/A

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

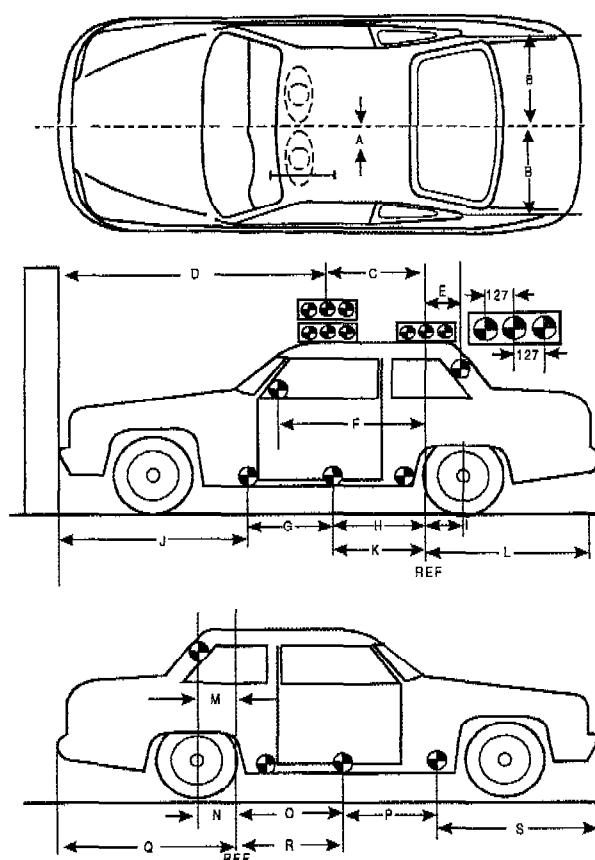
All TRC high-speed cameras are equipped with red LEDs which put timing marks on the right edge of the film. TRC uses a single timing generator to generate the timing for all cameras. This allows the timing marks to be common to all cameras. The timing marks can be used to measure camera speed (frames 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 8 Vehicle Reference Photo Target Locations



Measurement	Pre-Test
A	395 mm
B	684 mm
C	610 mm
D	1205 mm
E	1630 mm
F	1141 mm
G	970 mm
H	1053 mm
I	729 mm
J	1478 mm
K	331 mm
L	2305 mm
M	1630 mm
N	729 mm
O	1055 mm
P	965 mm
Q	2305 mm
R	321 mm
S	1490 mm

Additional targeting:
Inch tape along the top
and sides of the vehicle
has targets placed at
300 mm intervals
except the first side
target is placed 600 mm
from front of front
bumper.

Appendix A

Photographs

.



Figure A-1 Pre-Test Front View



Figure A-2 Post-Test Front View



Figure A-3 Pre-Test Left Front View



Figure A-4 Post-Test Left Front View



Figure A-5 Pre-Test Left Side View



Figure A-6 Post-Test Left Side View



Figure A-7 Pre-Test Left Rear View



Figure A-8 Post-Test Left Rear View

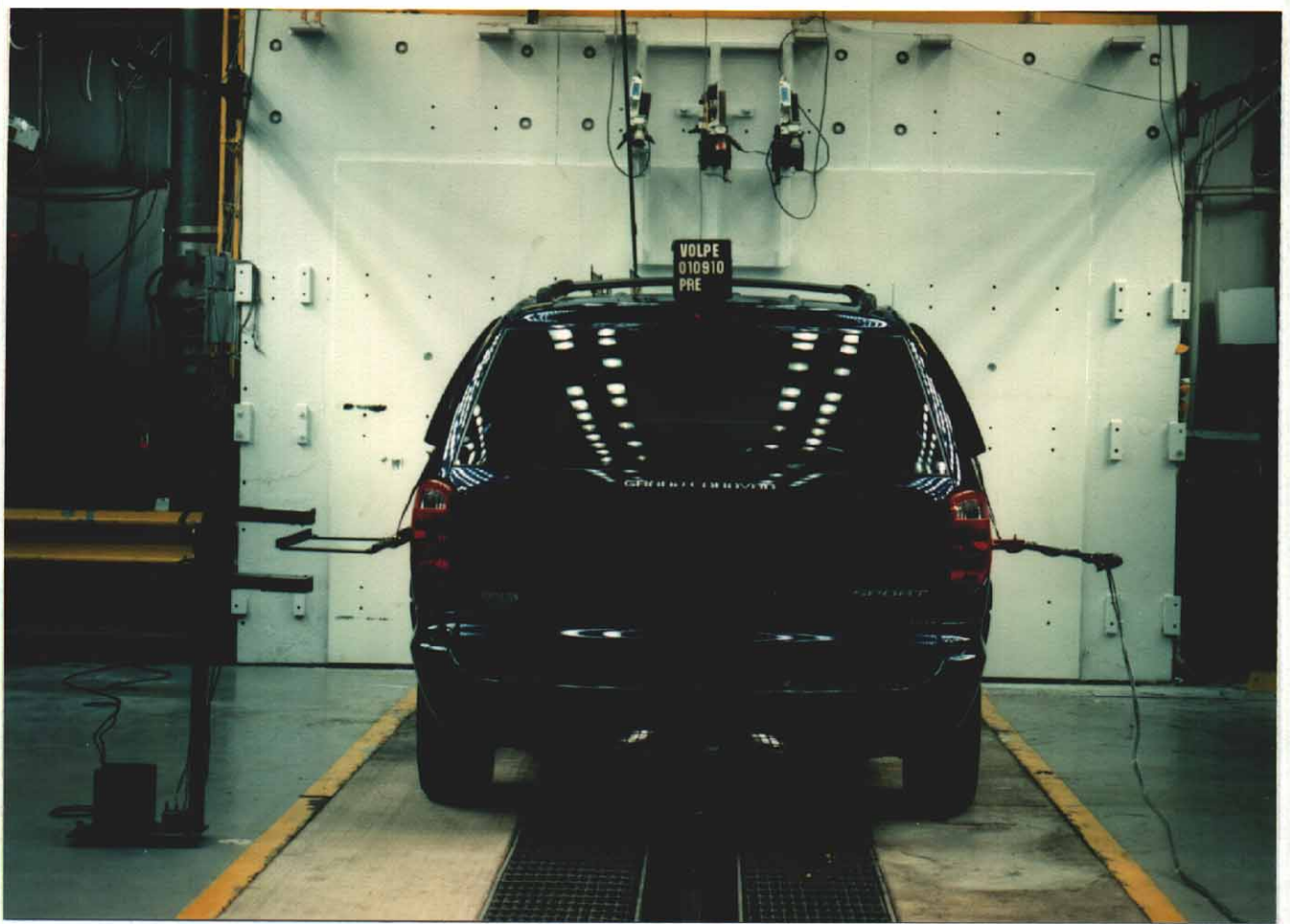


Figure A-9 Pre-Test Rear View

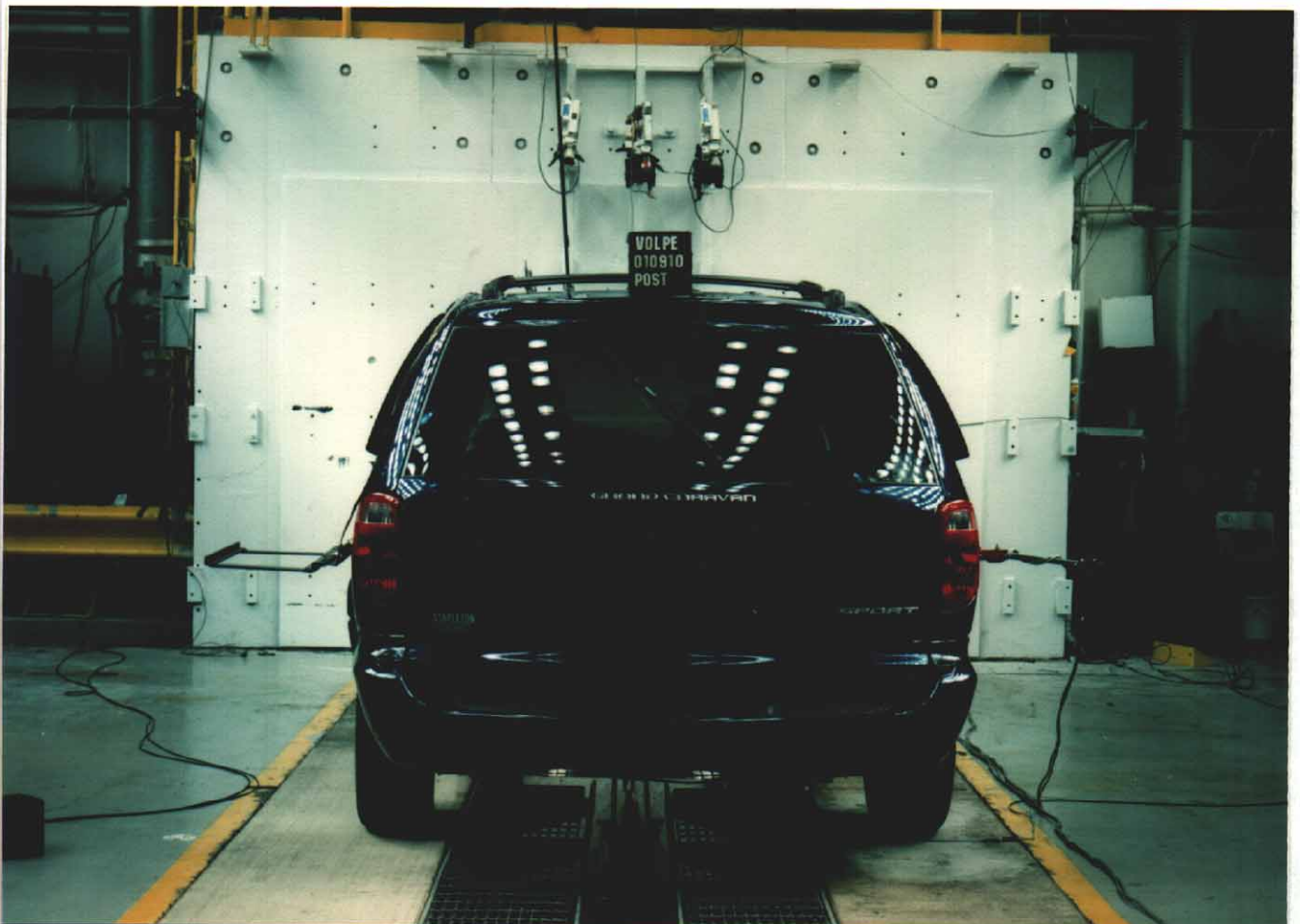


Figure A-10 Post-Test Rear View



Figure A-11 Pre-Test Right Rear View



Figure A-12 Post-Test Right Rear View



Figure A-13 Pre-Test Right Side View



Figure A-14 Post-Test Right Side View



Figure A-15 Pre-Test Right Front View



Figure A-16 Post-Test Right Front View

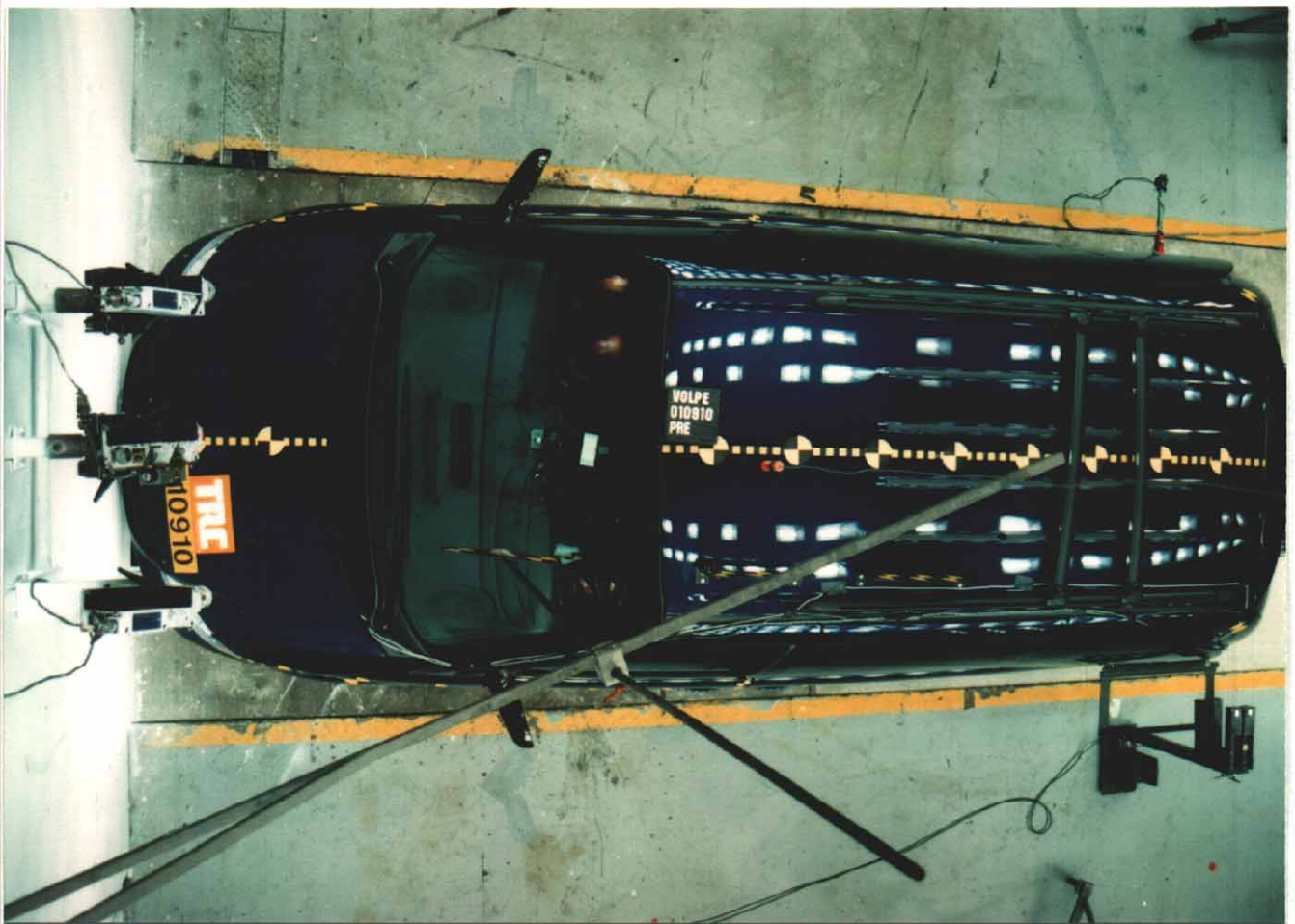


Figure A-17 Pre-Test Overhead Overall View

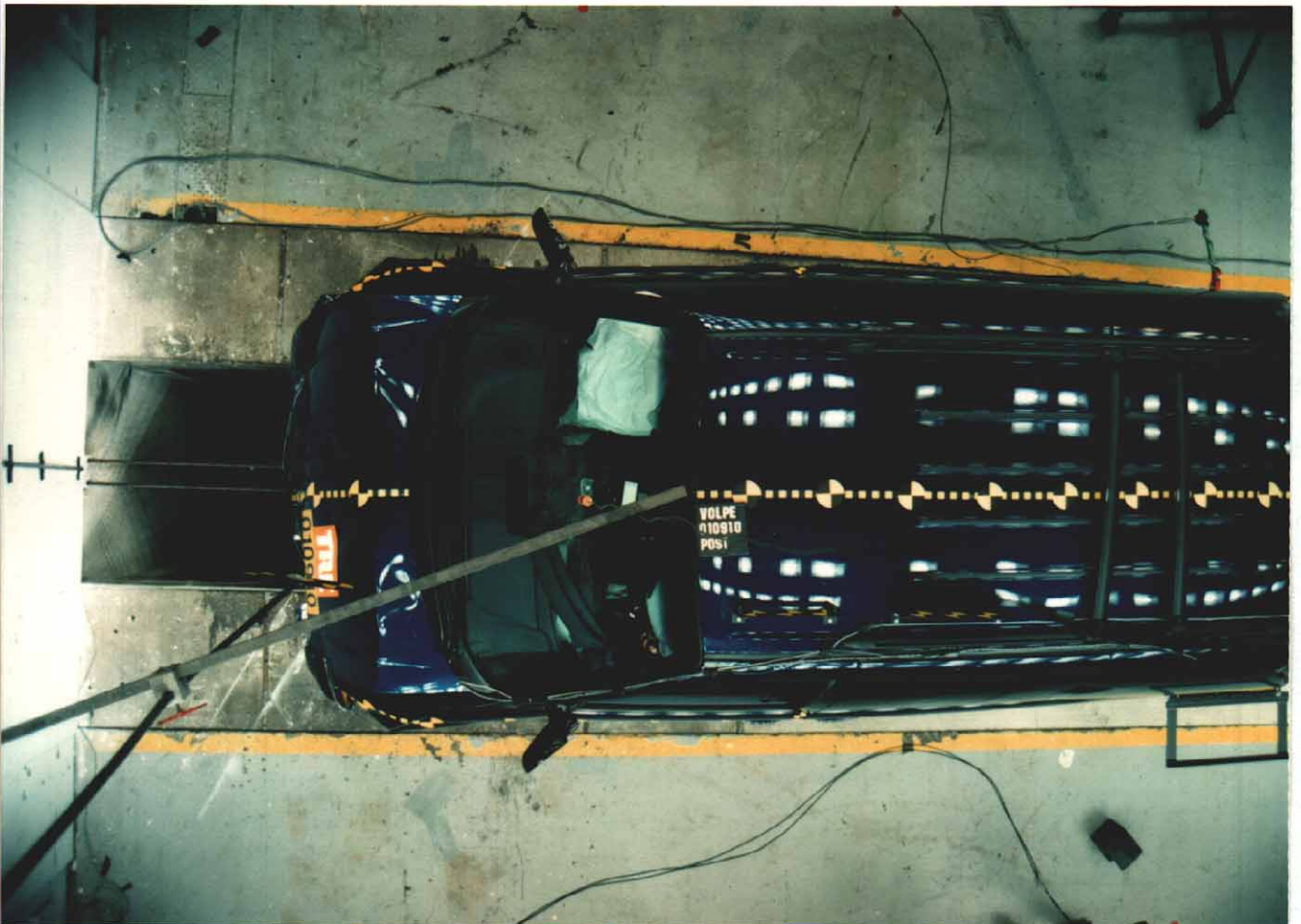


Figure A-18 Post-Test Overhead Overall View



Figure A-19 Pre-Test Overhead Close-up View



Figure A-20 Post-Test Overhead Close-up View

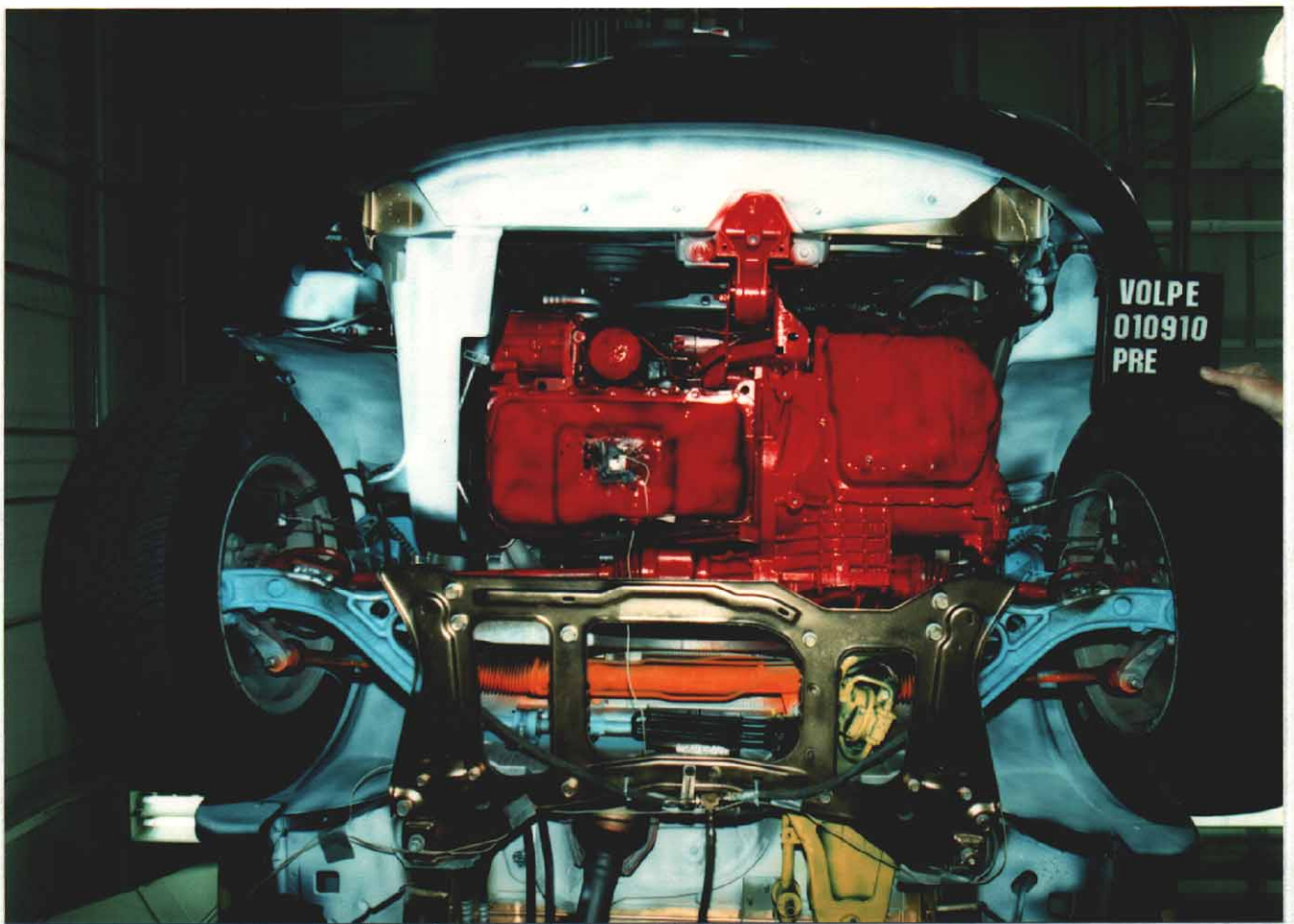


Figure A-21 Pre-Test Front Underbody View

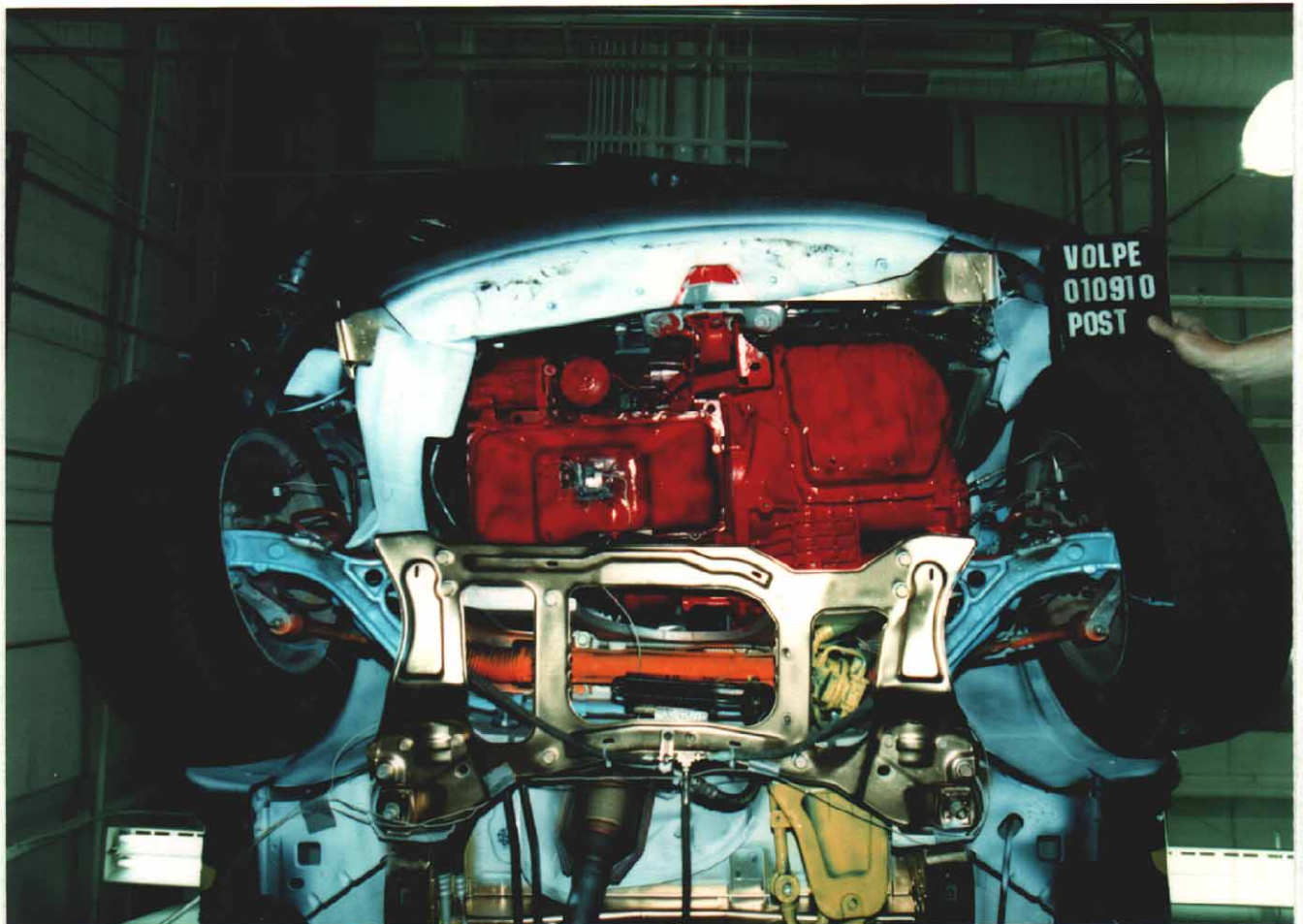


Figure A-22 Post-Test Front Underbody View

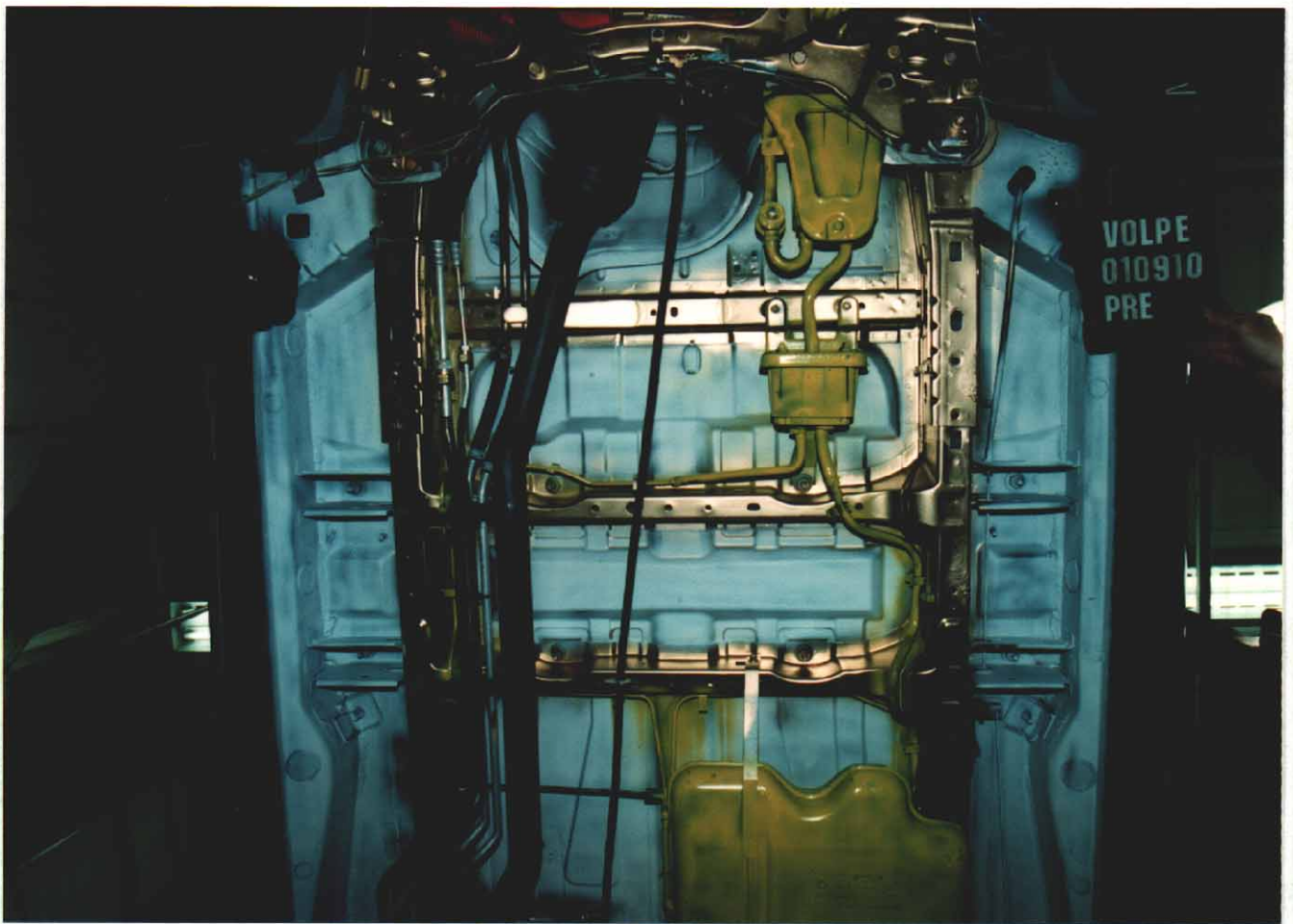


Figure A-23 Pre-Test Front Mid Underbody View

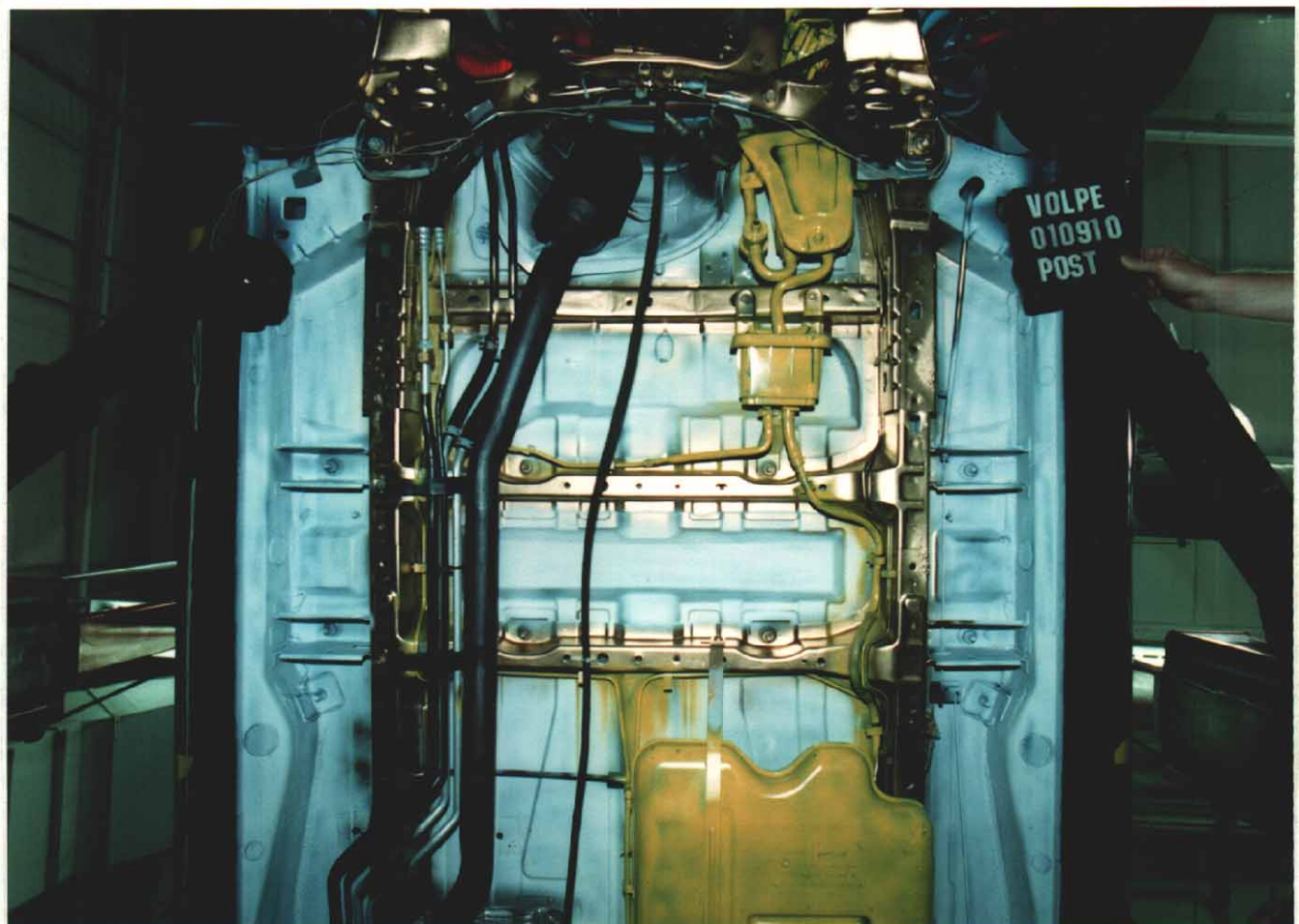


Figure A-24 Post-Test Front Mid Underbody View

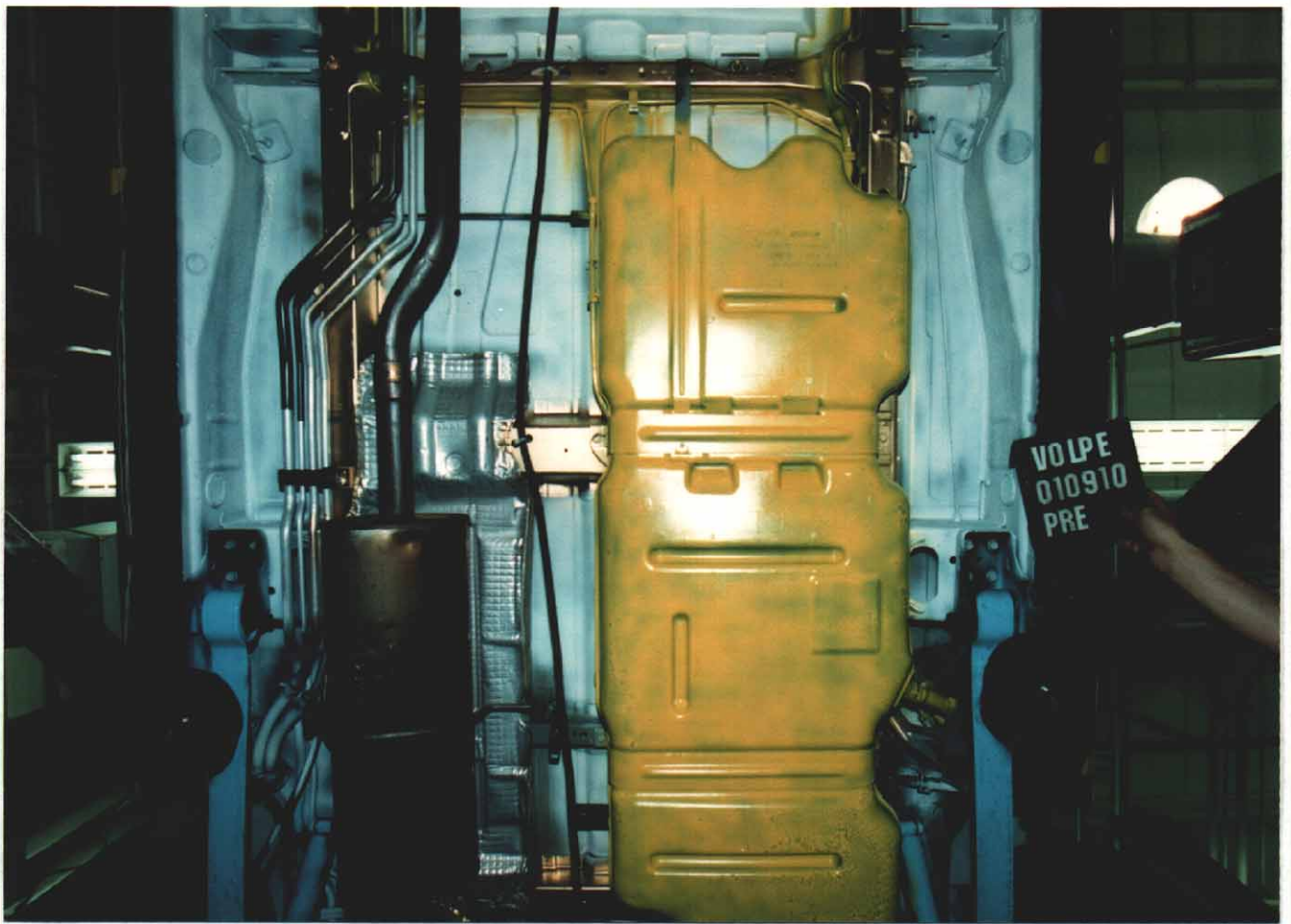


Figure A-25 Pre-Test Rear Mid Underbody View

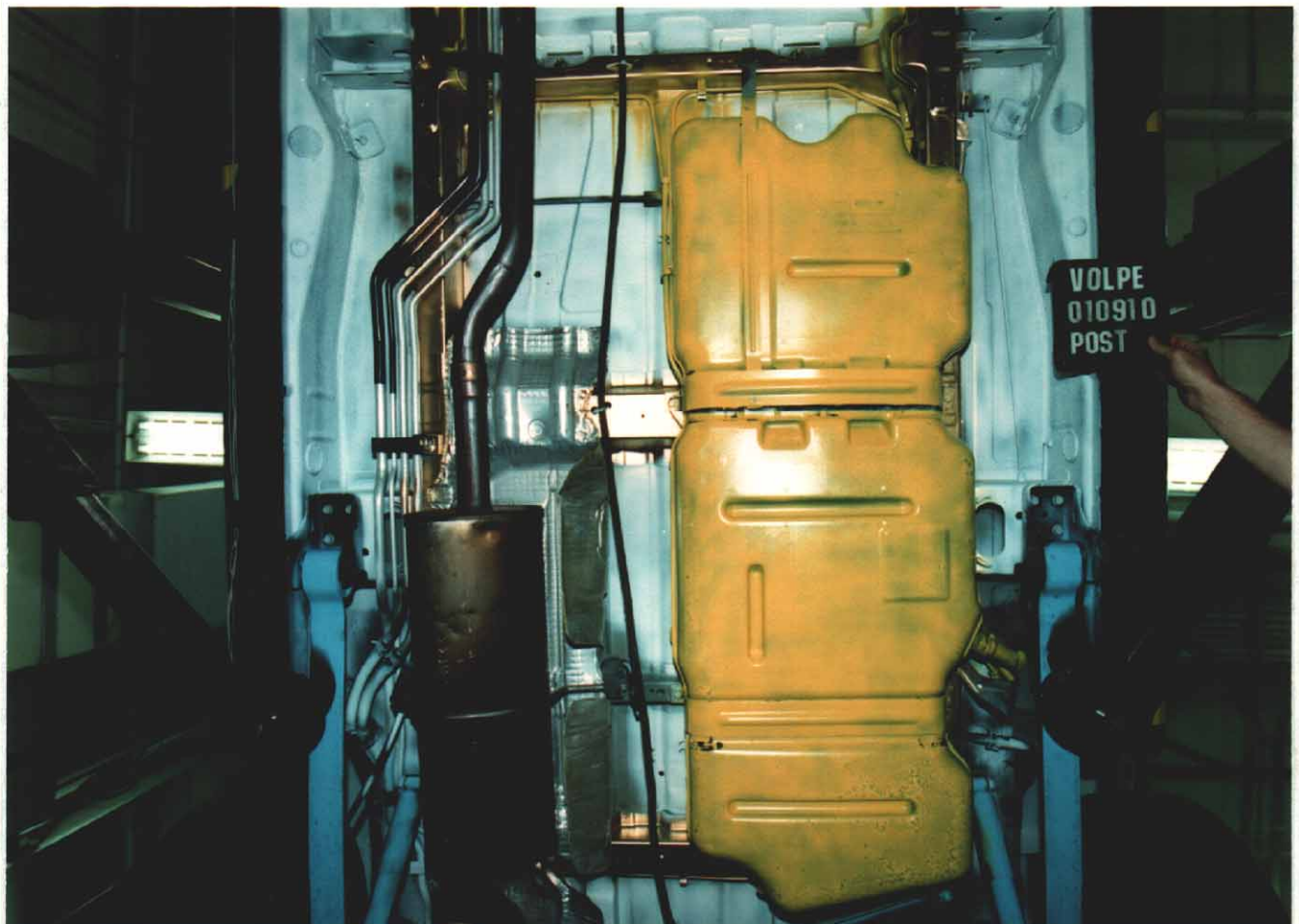


Figure A-26 Post-Test Rear Mid Underbody View

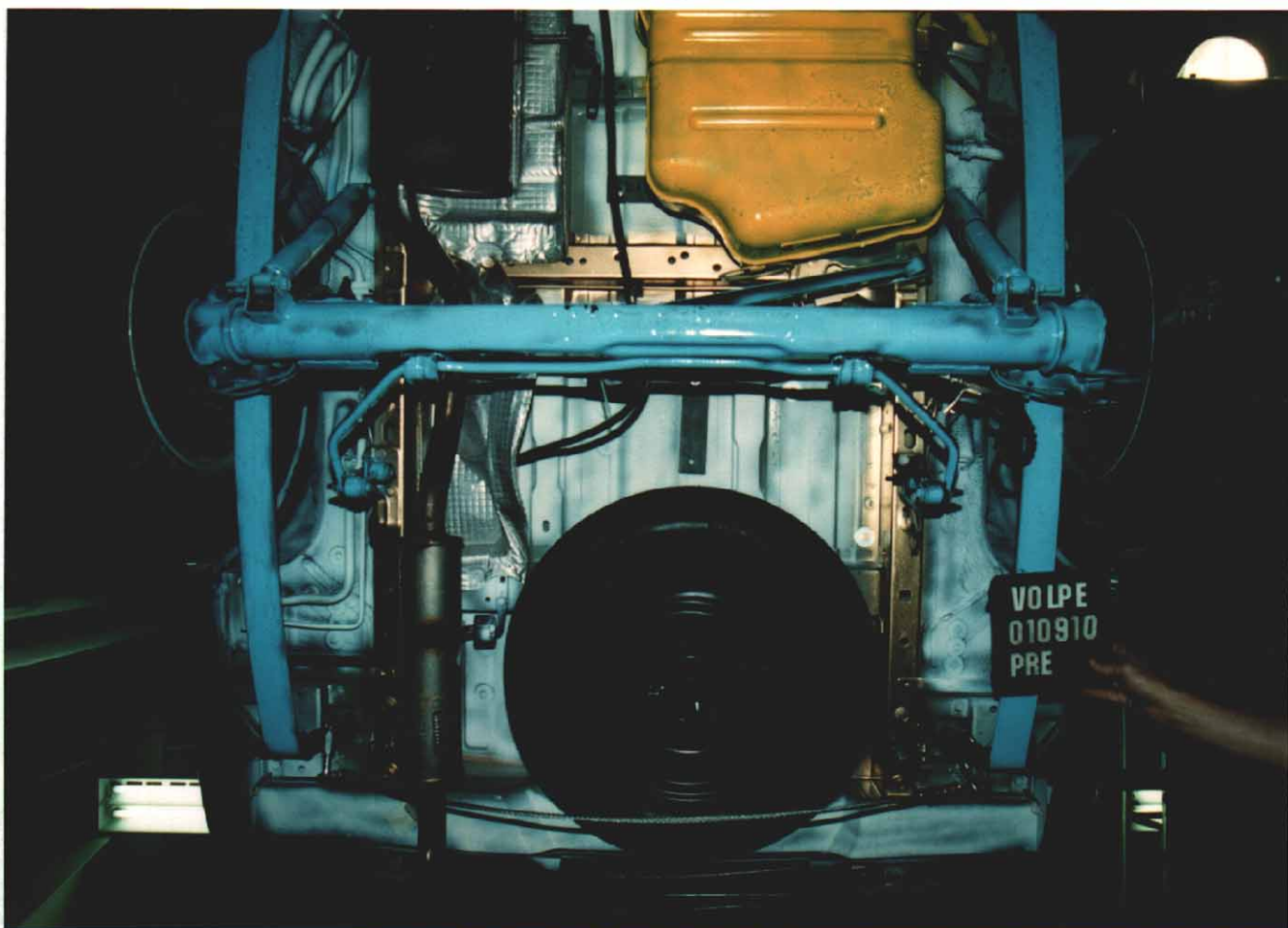


Figure A-27 Pre-Test Rear Underbody View

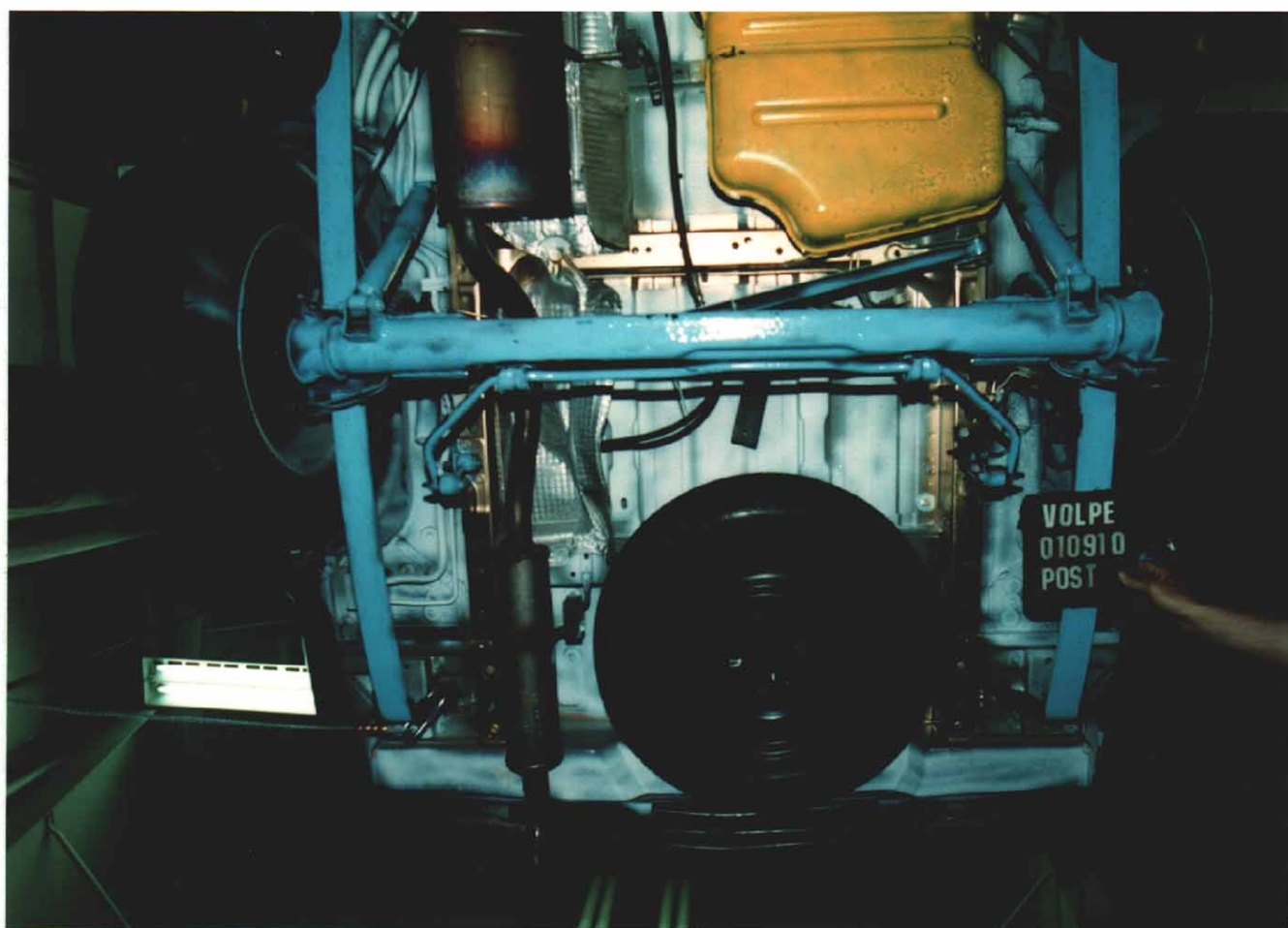


Figure A-28 Post-Test Rear Underbody View

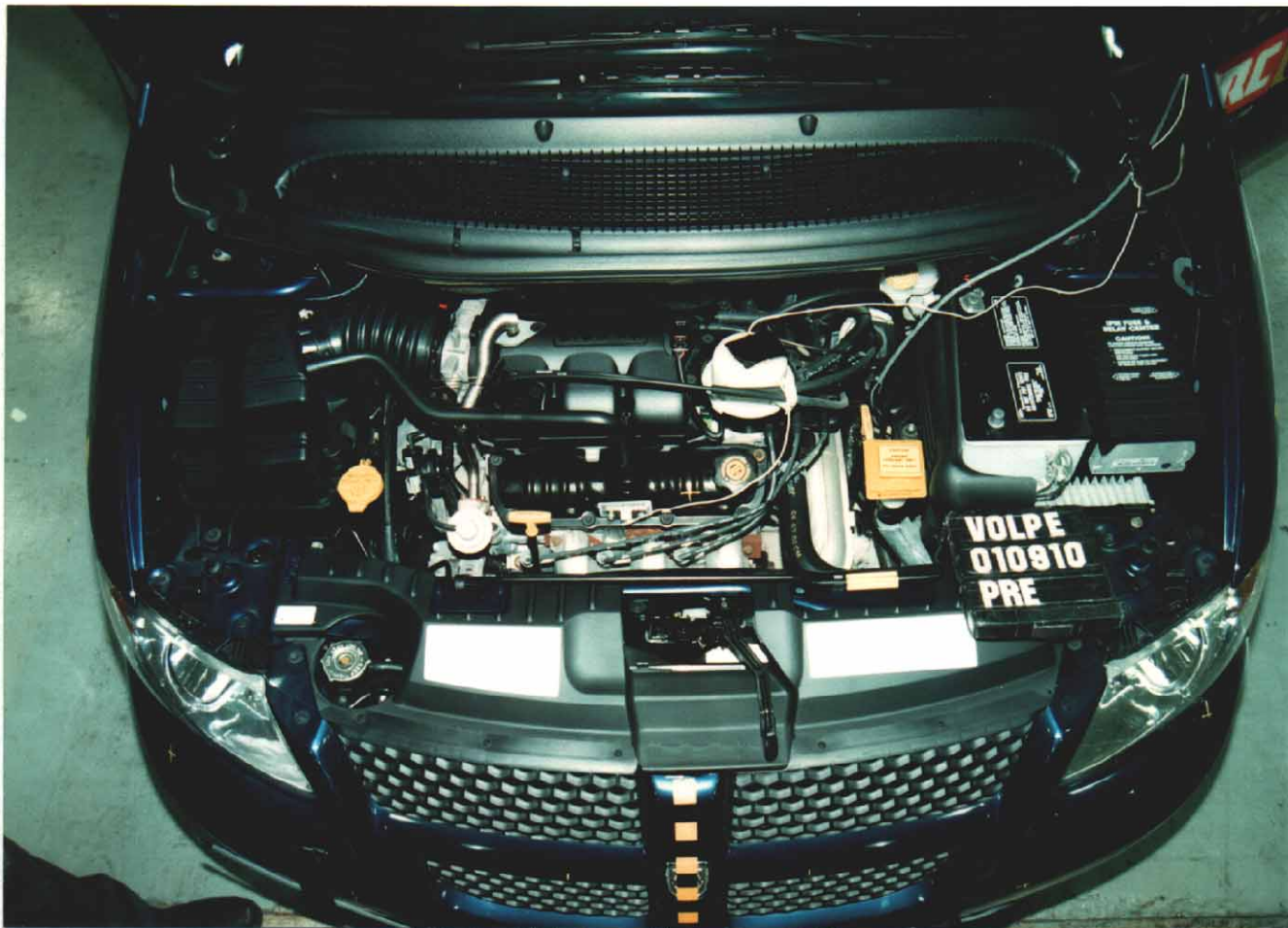


Figure A-29 Pre-Test Engine Compartment View

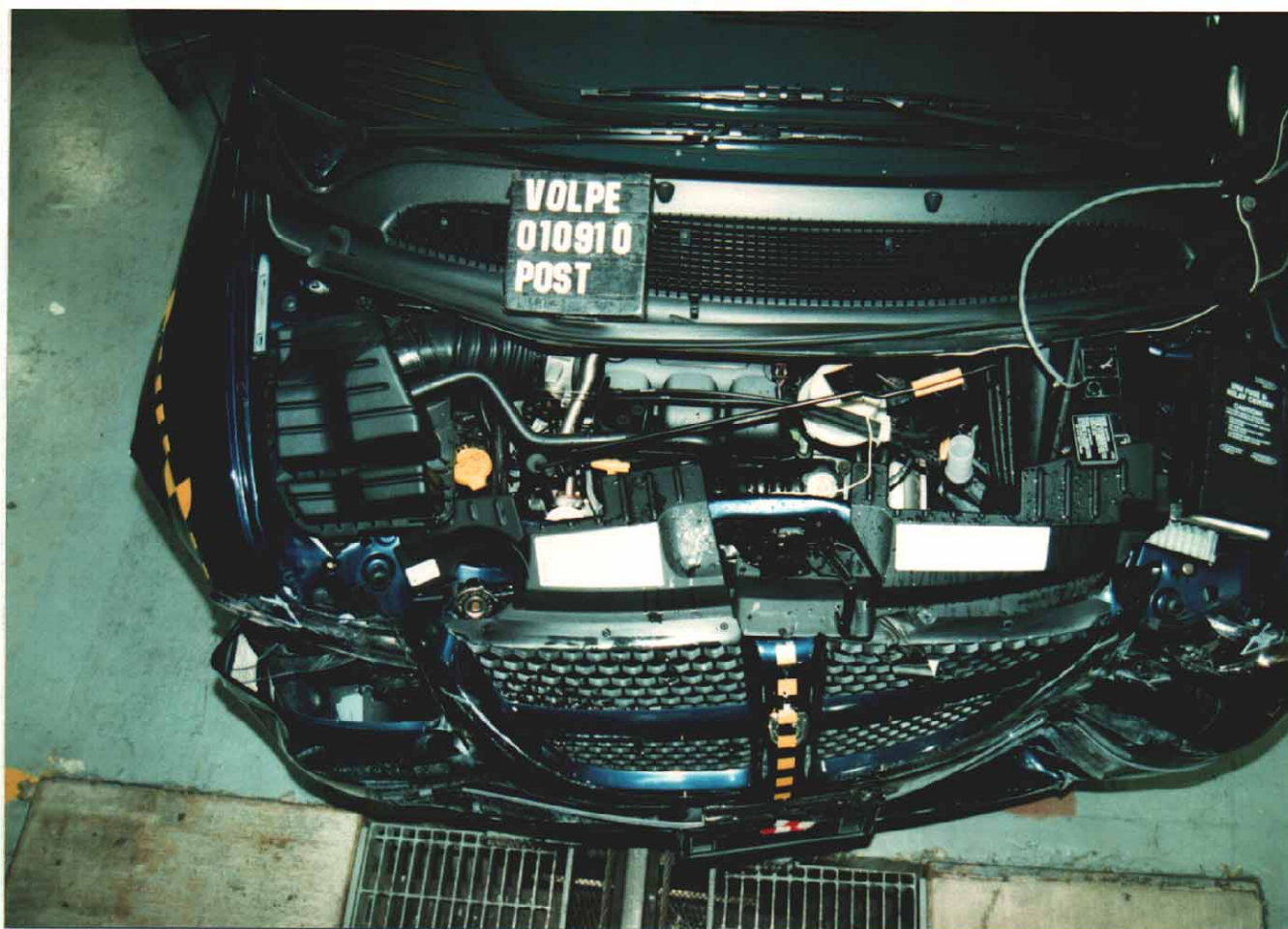


Figure A-30 Post-Test Engine Compartment View



Figure A-31 Pre-Test Windshield View



Figure A-32 Post-Test Windshield View



Figure A-33 Pre-Test Driver and Passenger Dummies Front View



Figure A-34 Post-Test Driver and Passenger Dummies Front View

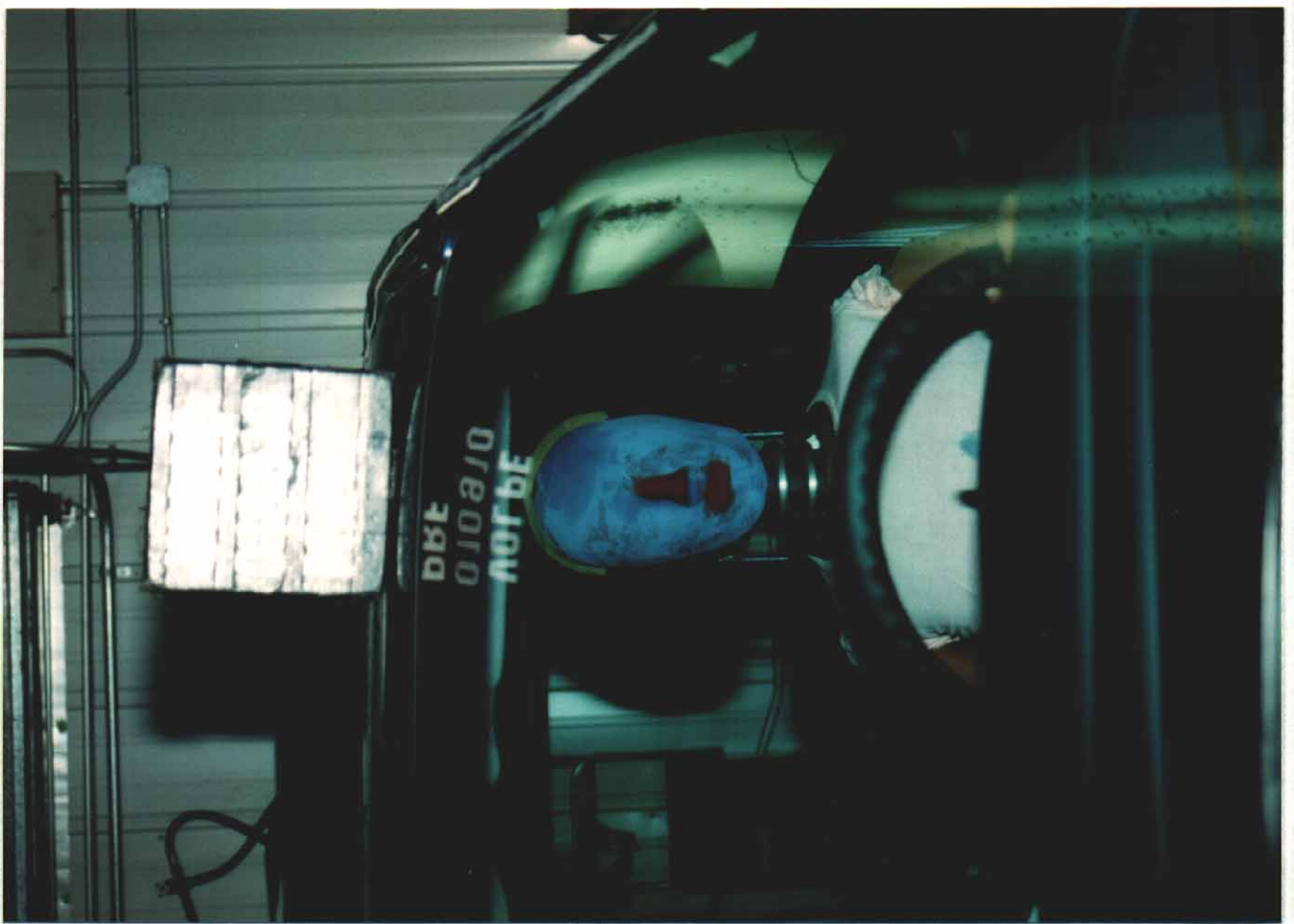


Figure A-35 Pre-Test Driver Dummy Position - View 1



Figure A-36 Post-Test Driver Dummy Position - View 1



Figure A-37 Pre-Test Driver Dummy Position - View 2



Figure A-38 Post-Test Driver Dummy Position - View 2



Figure A-39 Pre-Test Driver Dummy & Vehicle Interior - View 1



Figure A-40 Post-Test Driver Dummy & Vehicle Interior - View 1



Figure A-41 Pre-Test Driver Dummy & Vehicle Interior - View 2



Figure A-42 Post-Test Driver Dummy & Vehicle Interior - View 2



Figure A-43 Pre-Test Driver Dummy & Vehicle Interior - View 3



Figure A-44 Post-Test Driver Dummy & Vehicle Interior - View 3



Figure A-45 Pre-Test Driver Dummy & Vehicle Interior - View 4



Figure A-46 Post-Test Driver Dummy & Vehicle Interior - View 4



Figure A-47 Pre-Test Passenger Dummy Position - View 1



Figure A-48 Post-Test Passenger Dummy Position - View 1



Figure A-49 Pre-Test Passenger Dummy Position - View 2



Figure A-50 Post-Test Passenger Dummy Position - View 2

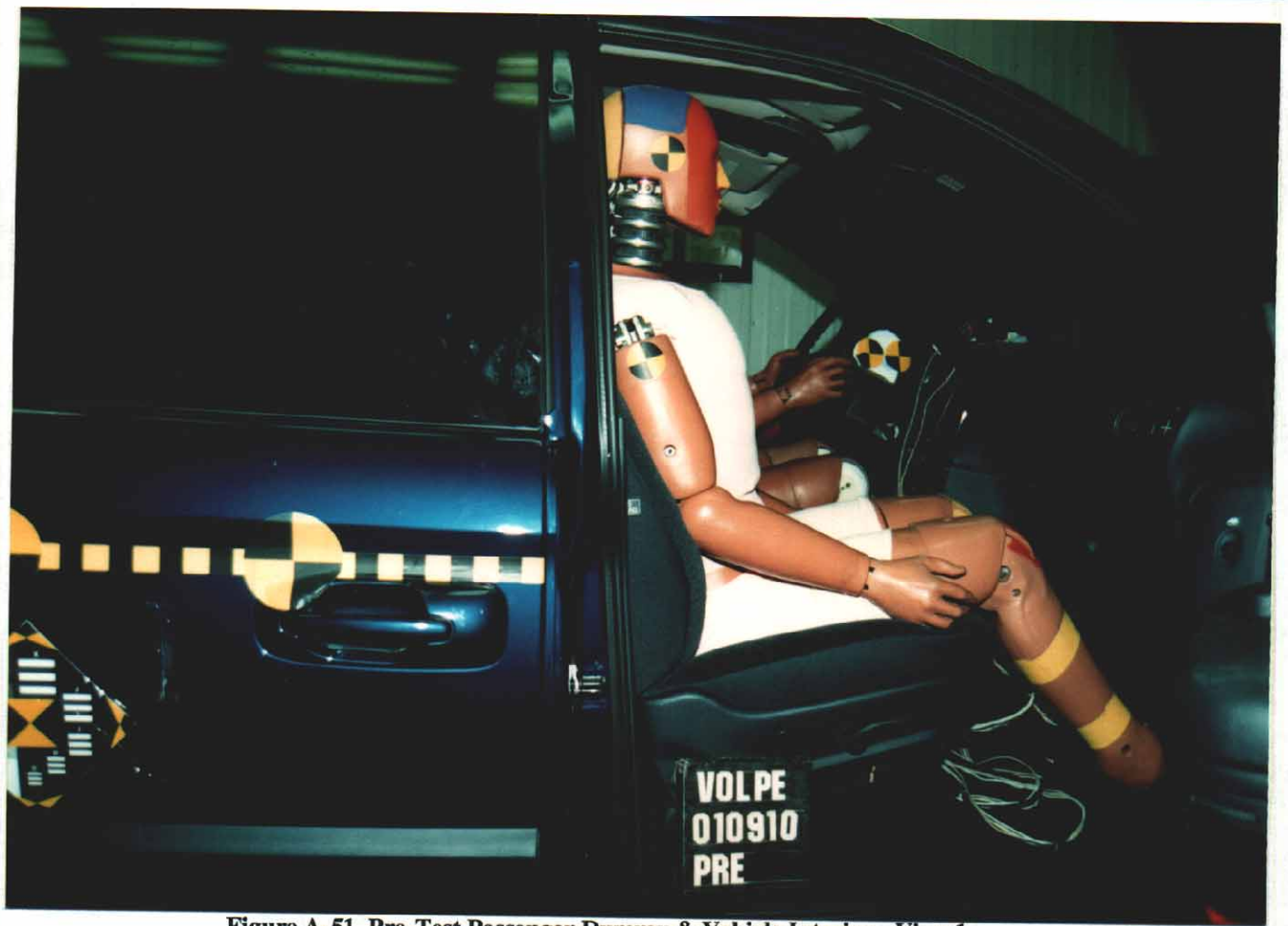


Figure A-51 Pre-Test Passenger Dummy & Vehicle Interior - View 1



Figure A-52 Post-Test Passenger Dummy & Vehicle Interior - View 1

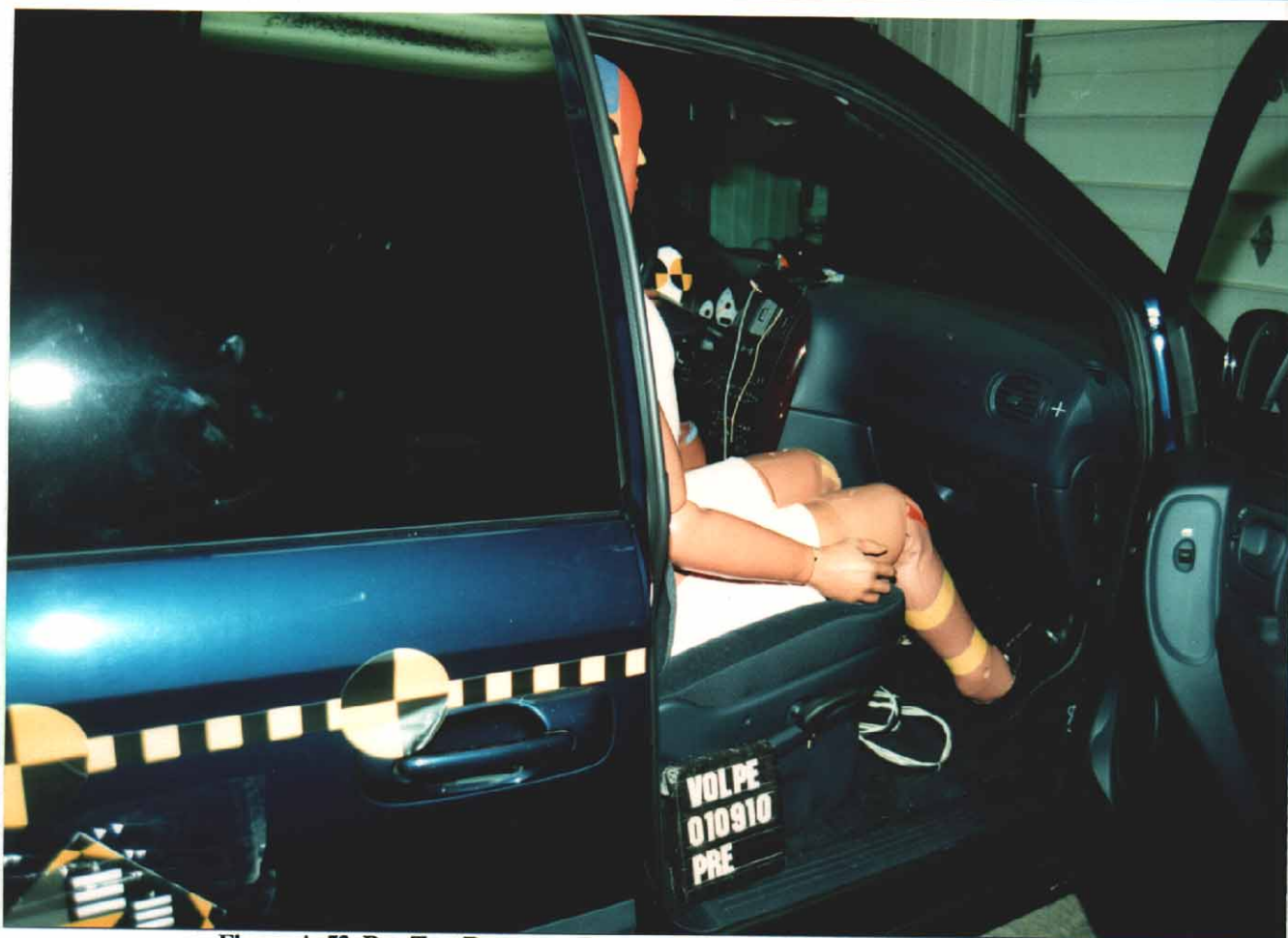


Figure A-53 Pre-Test Passenger Dummy & Vehicle Interior - View 2



Figure A-54 Post-Test Passenger Dummy & Vehicle Interior - View 2

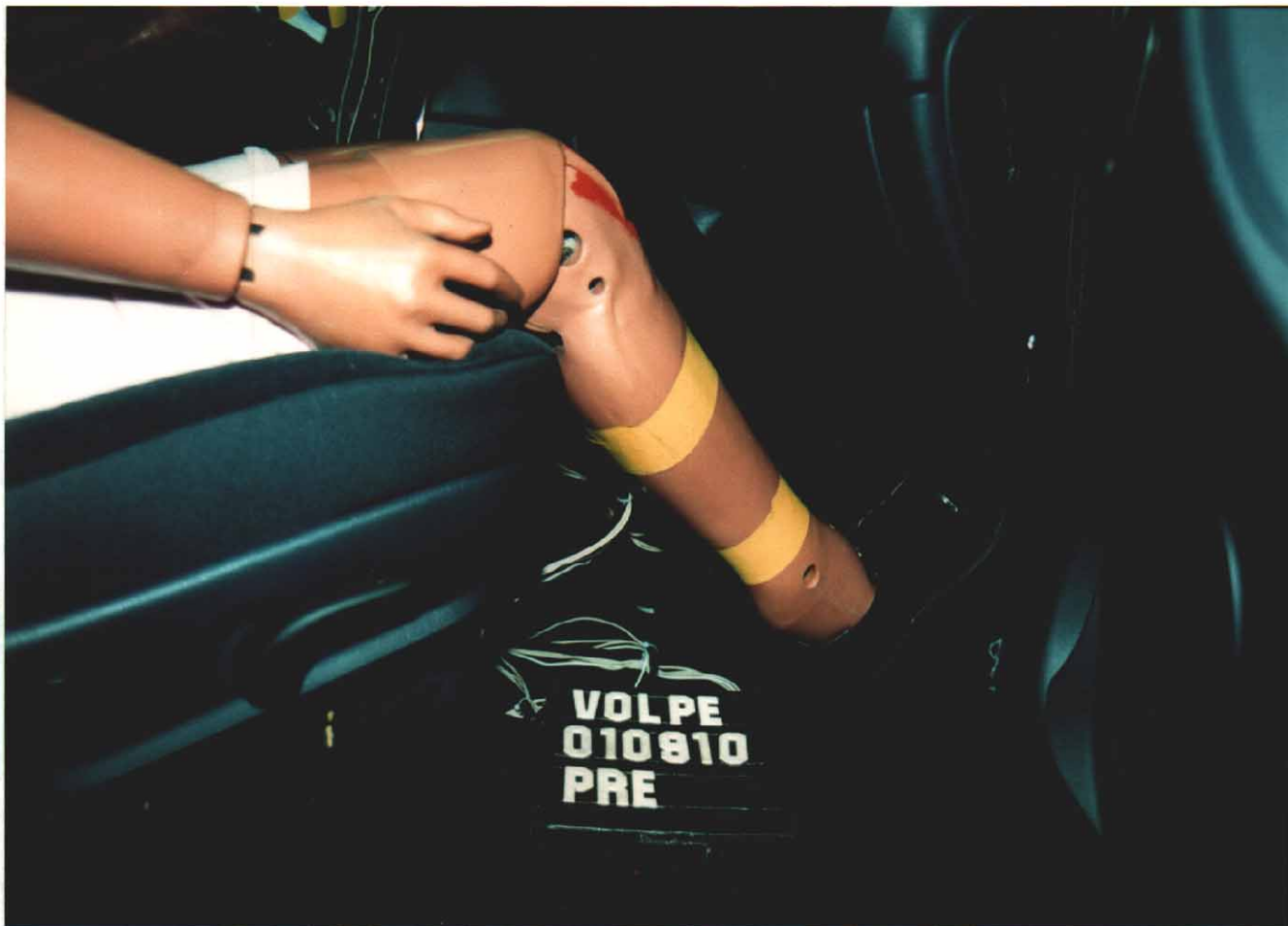


Figure A-55 Pre-Test Passenger Dummy & Vehicle Interior - View 3



Figure A-56 Post-Test Passenger Dummy & Vehicle Interior - View 3



Figure A-57 Post-Test Driver Dummy Overall View



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



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



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



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

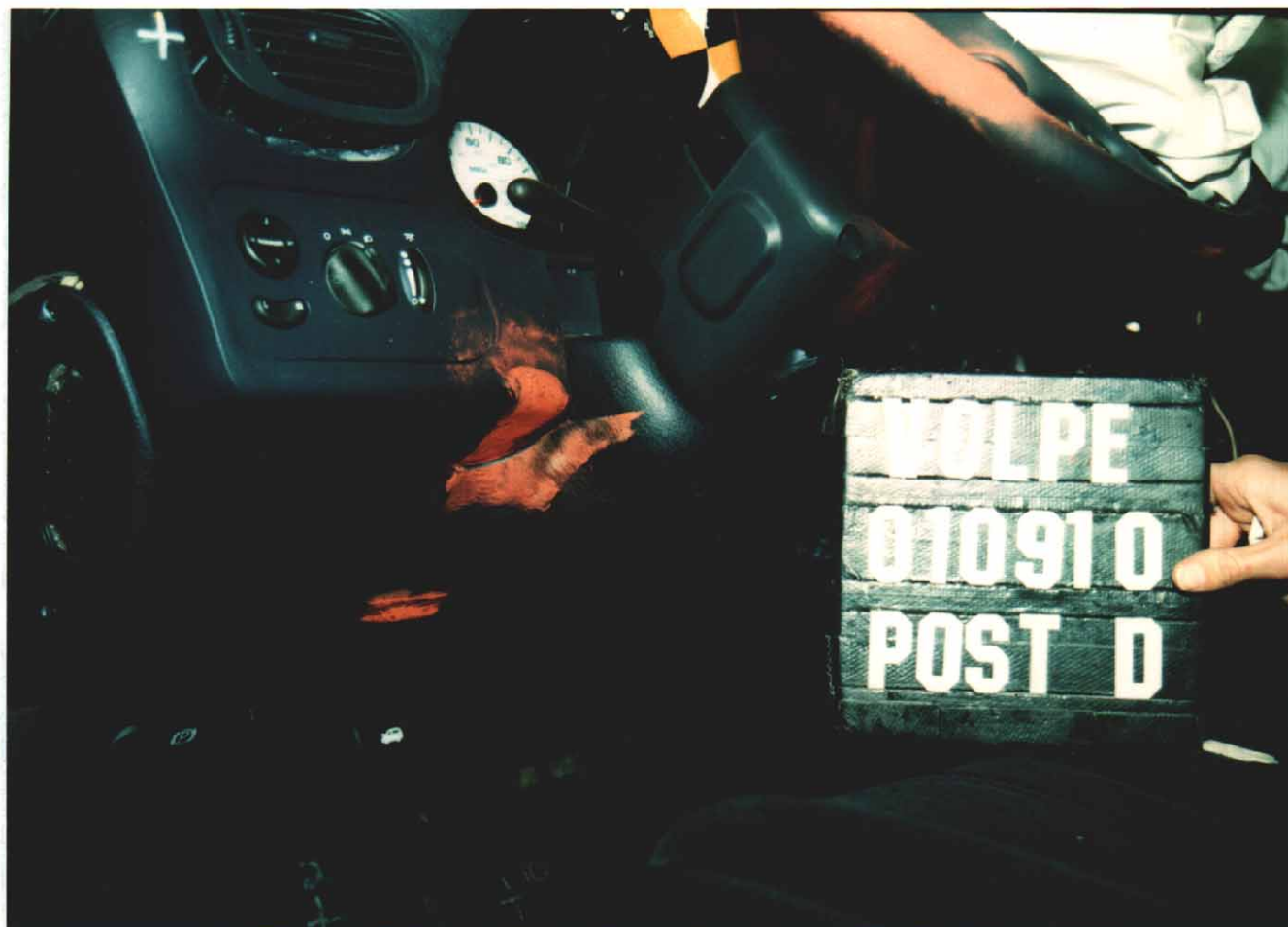


Figure A-62 Post-Test Driver Dummy Knee Contact - View 2



Figure A-63 Post-Test Driver Dummy Knee Contact - View 3

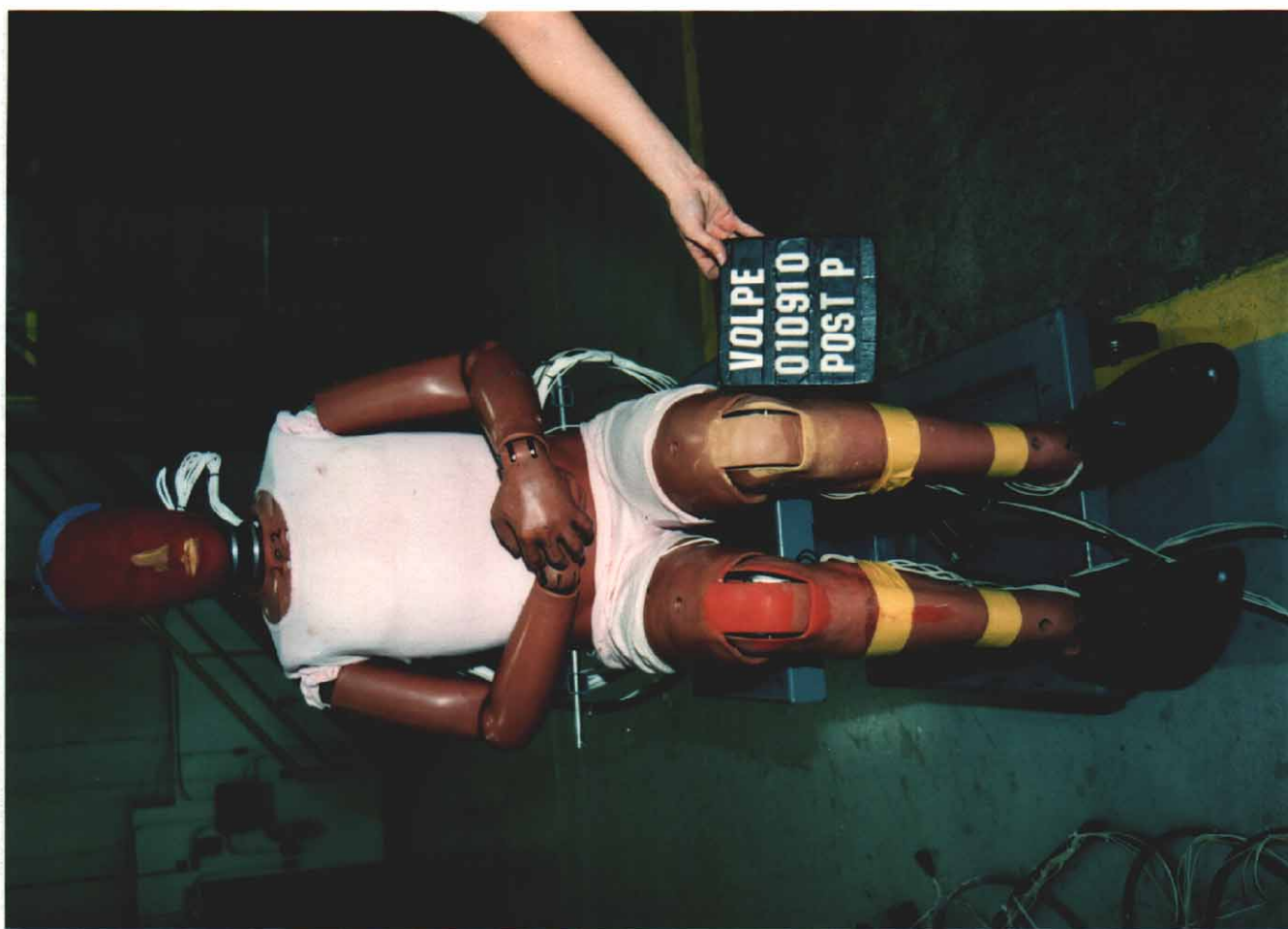


Figure A-64 Post-Test Passenger Dummy Overall View



Figure A-65 Post-Test Passenger Dummy Head Contact - View 1



Figure A-66 Post-Test Passenger Dummy Head Contact - View 2

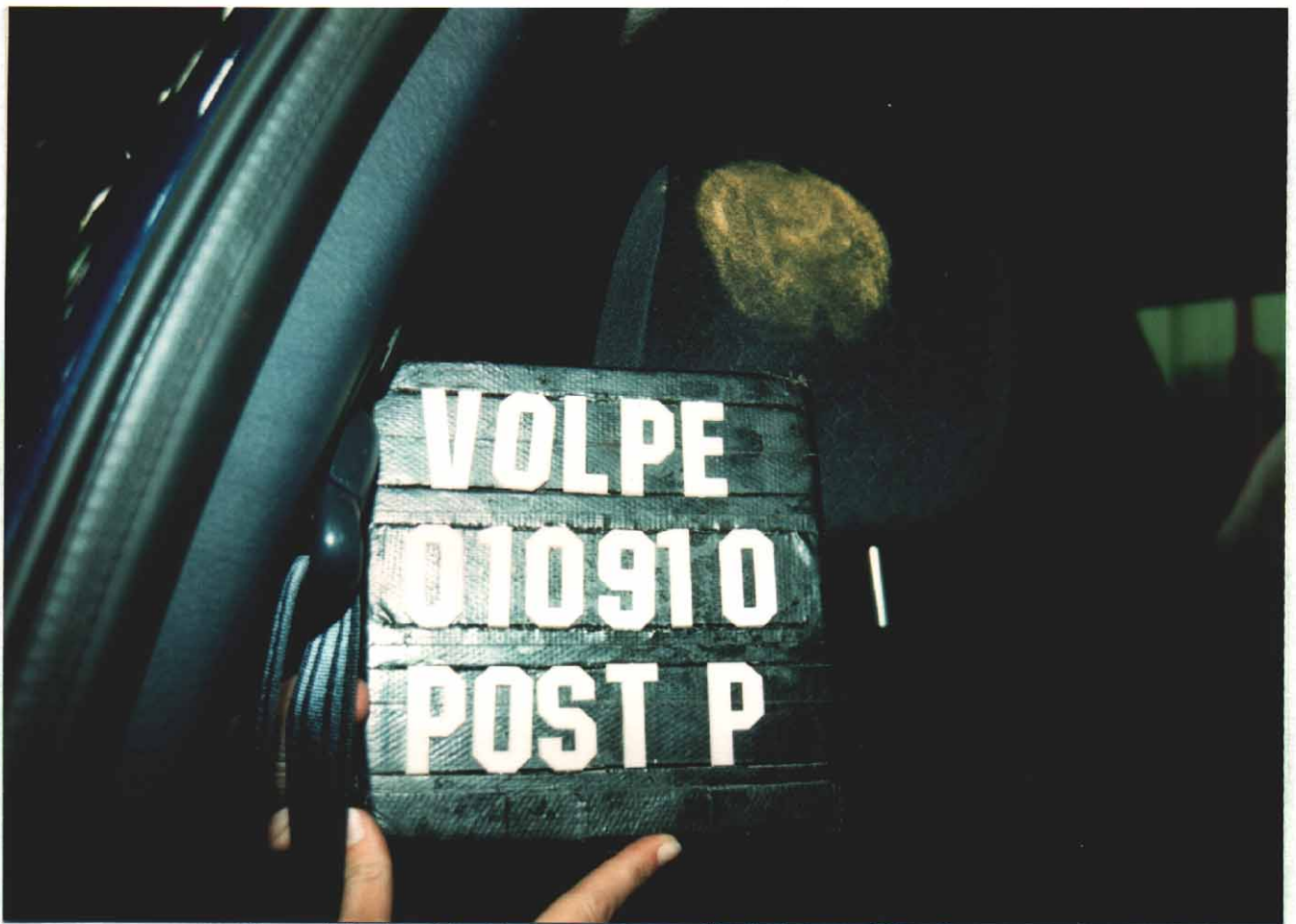


Figure A-67 Post-Test Passenger Dummy Head Contact - View 3



Figure A-68 Post-Test Passenger Dummy Head Contact - View 4



Figure A-69 Post-Test Passenger Dummy Head Contact - View 5

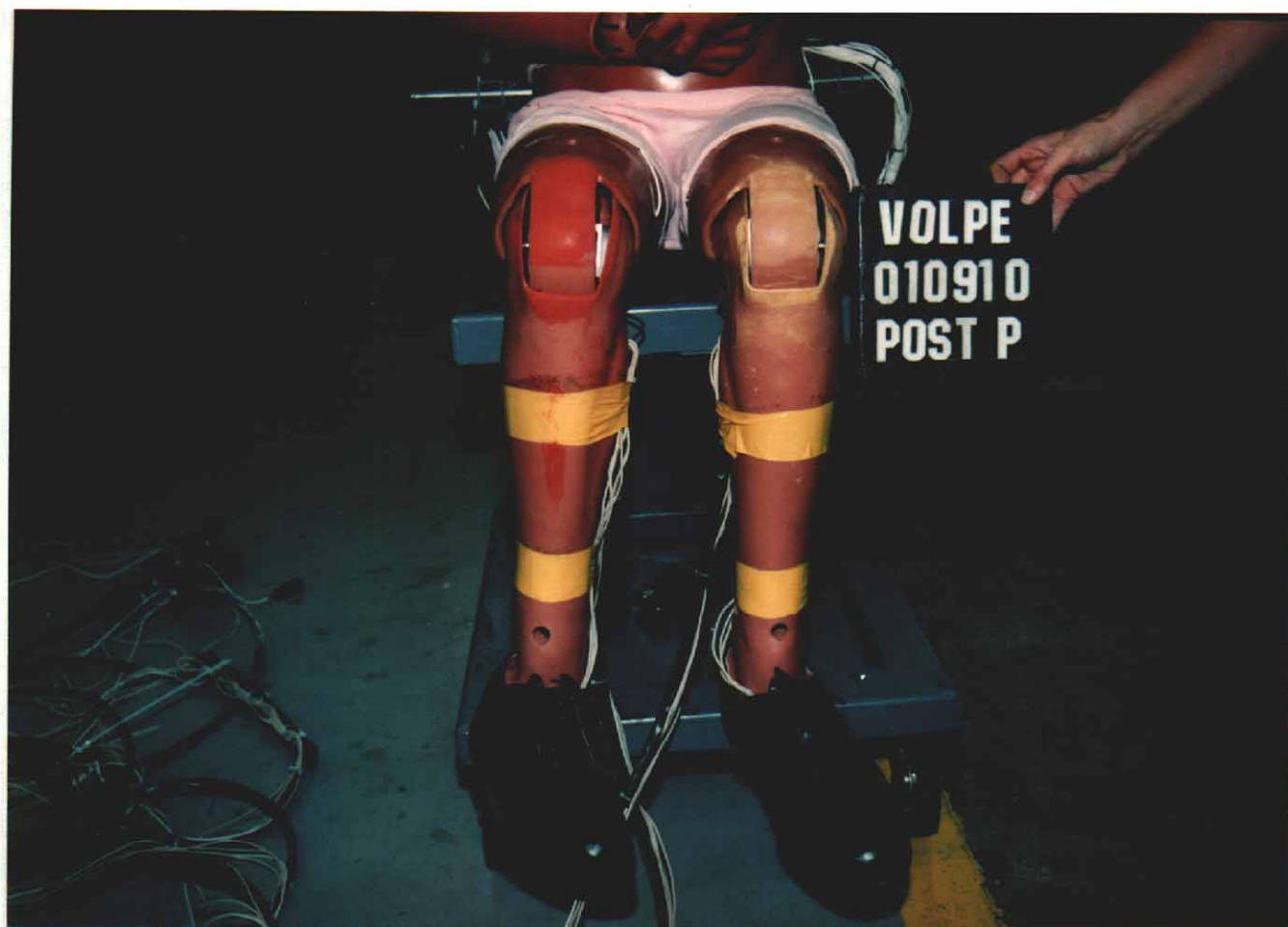


Figure A-70 Post-Test Passenger Dummy Knee Contact - View 1



Figure A-71 Post-Test Passenger Dummy Knee Contact - View 2



Figure A-72 Pre-Test Ballast View

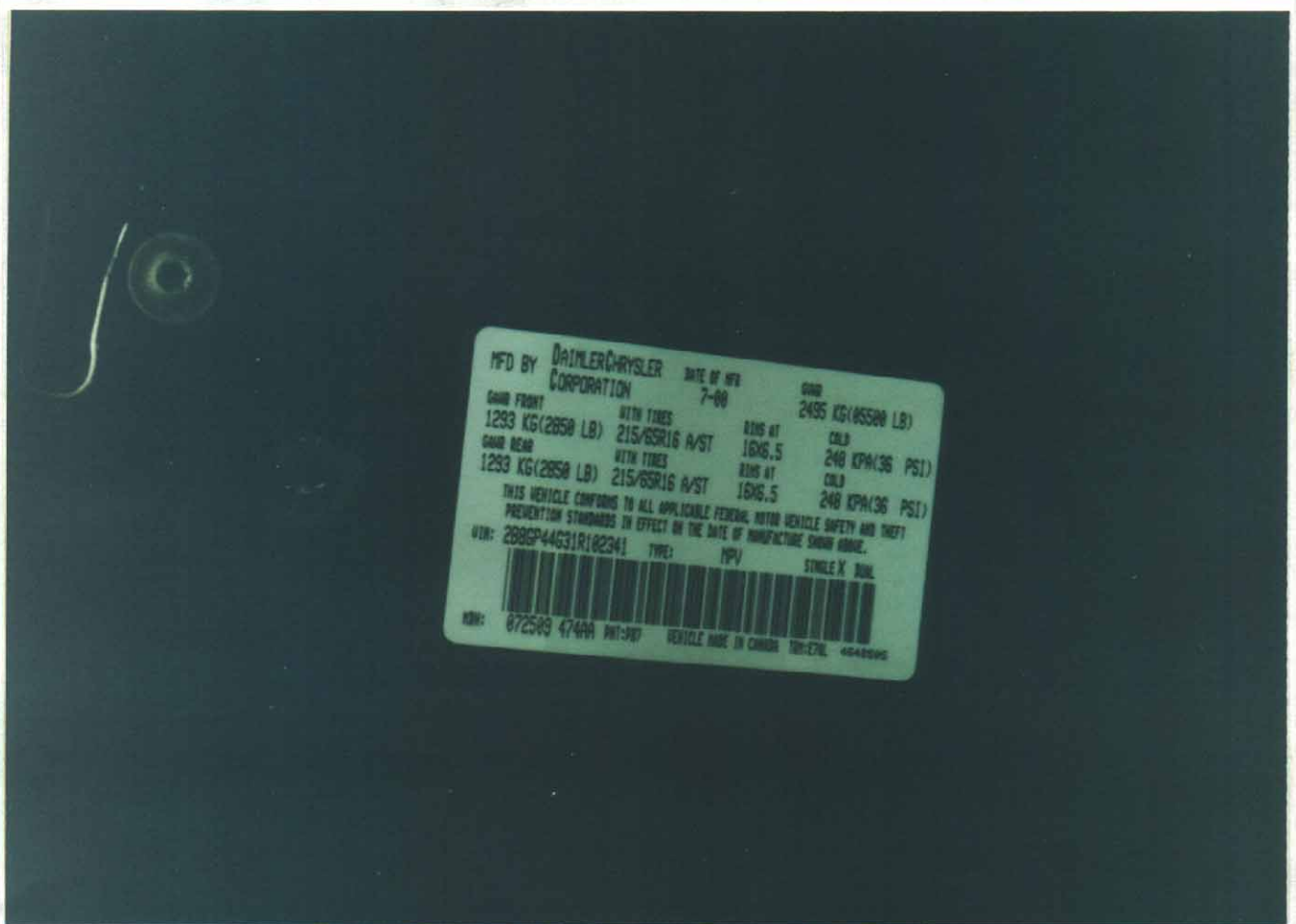


Figure A-73 Pre-Test Vehicle Certification Label View

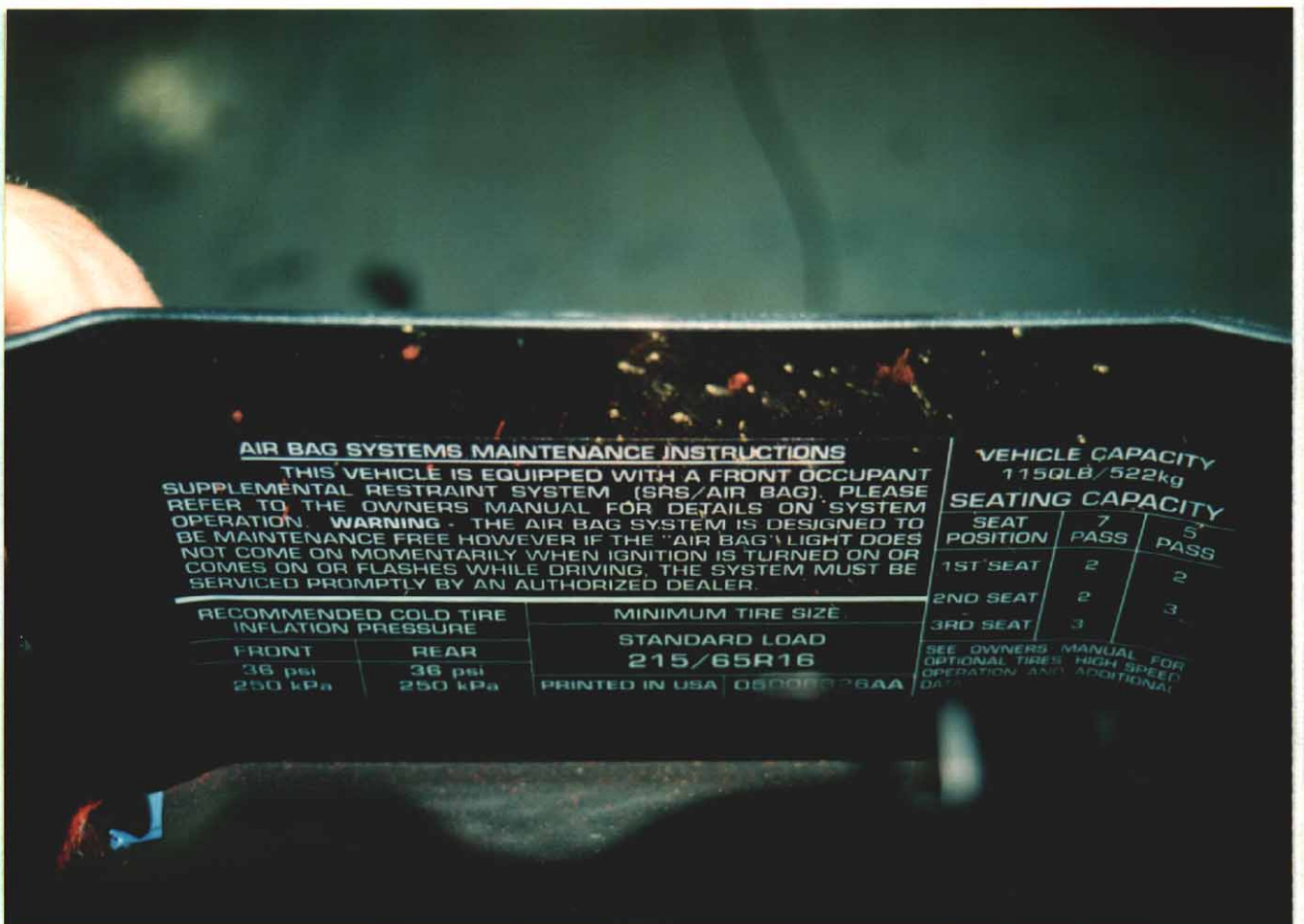
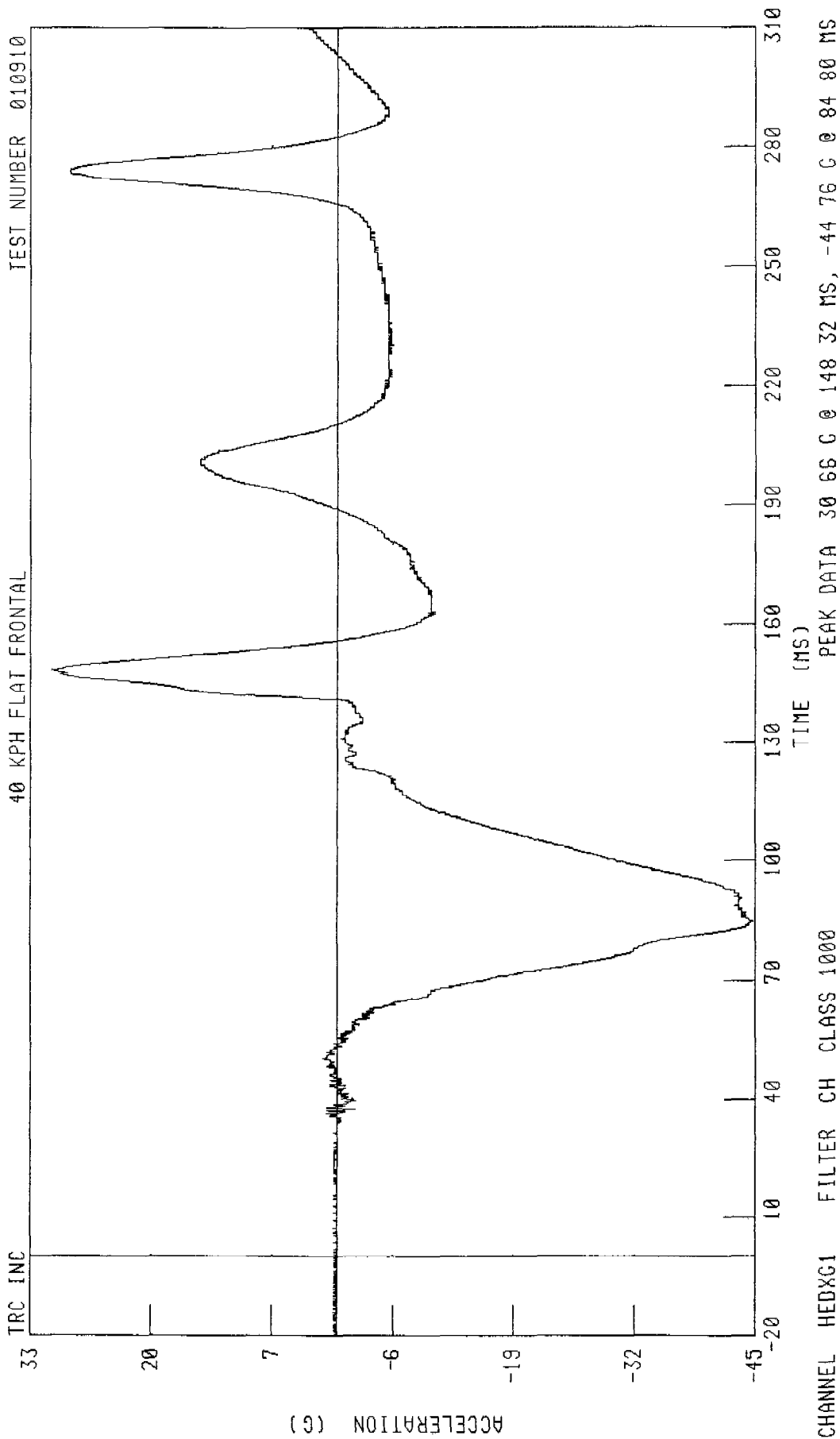


Figure A-74 Pre-Test Tire Load Label View

Appendix B

Data Plots

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER HEAD X-AXIS ACCELERATION



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

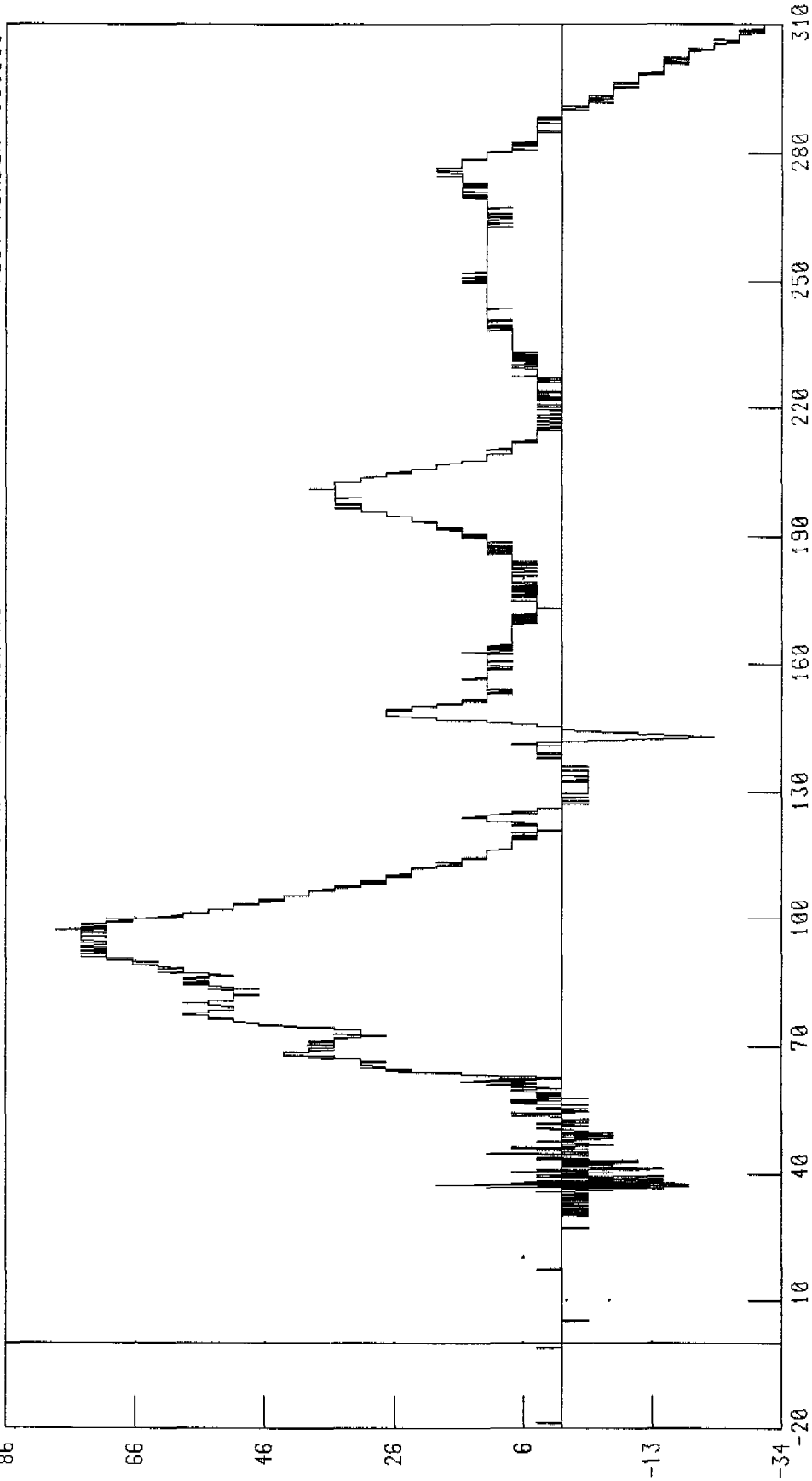
DRIVER HEAD Y-AXIS ACCELERATION

TRC INC

40 KPH FLAT FRONTAL

TEST NUMBER 010910

ACCELERATION ($G \times 10^{-1}$)



TIME (MS)

CHANNEL HEDYG1 FILTER CH CLASS 1000

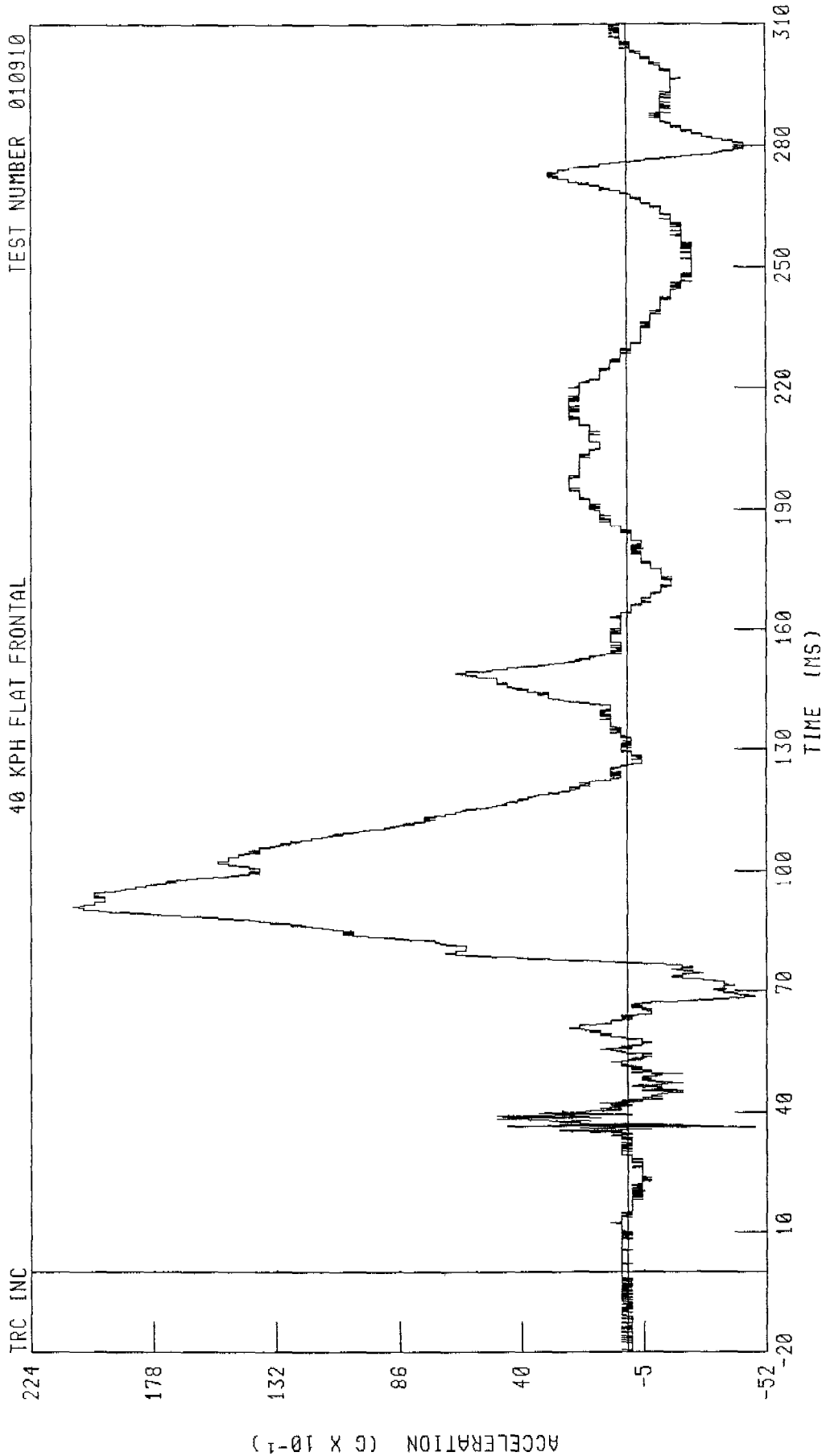
PEAK DATA 7 82 C @ 97 44 MS, -3 14 C @ 307 76 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER HEAD Z-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL HEDZG1 FILTER CH CLASS 1000

PEAK DATA 20 82 0 91 12 MS, -4 78 0 0 36 40 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER HEAD RESULTANT ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

534

445

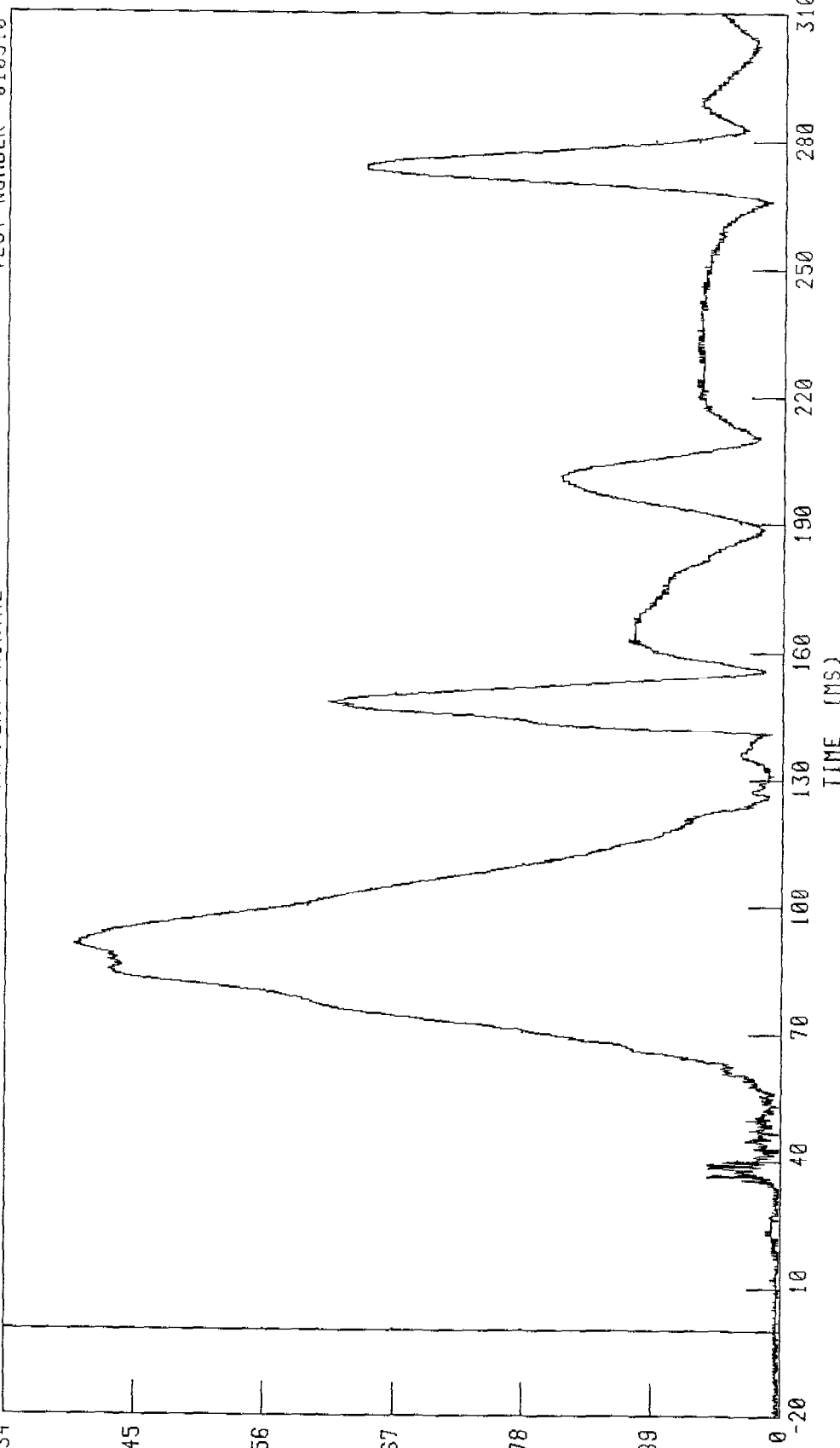
356

267

178

89

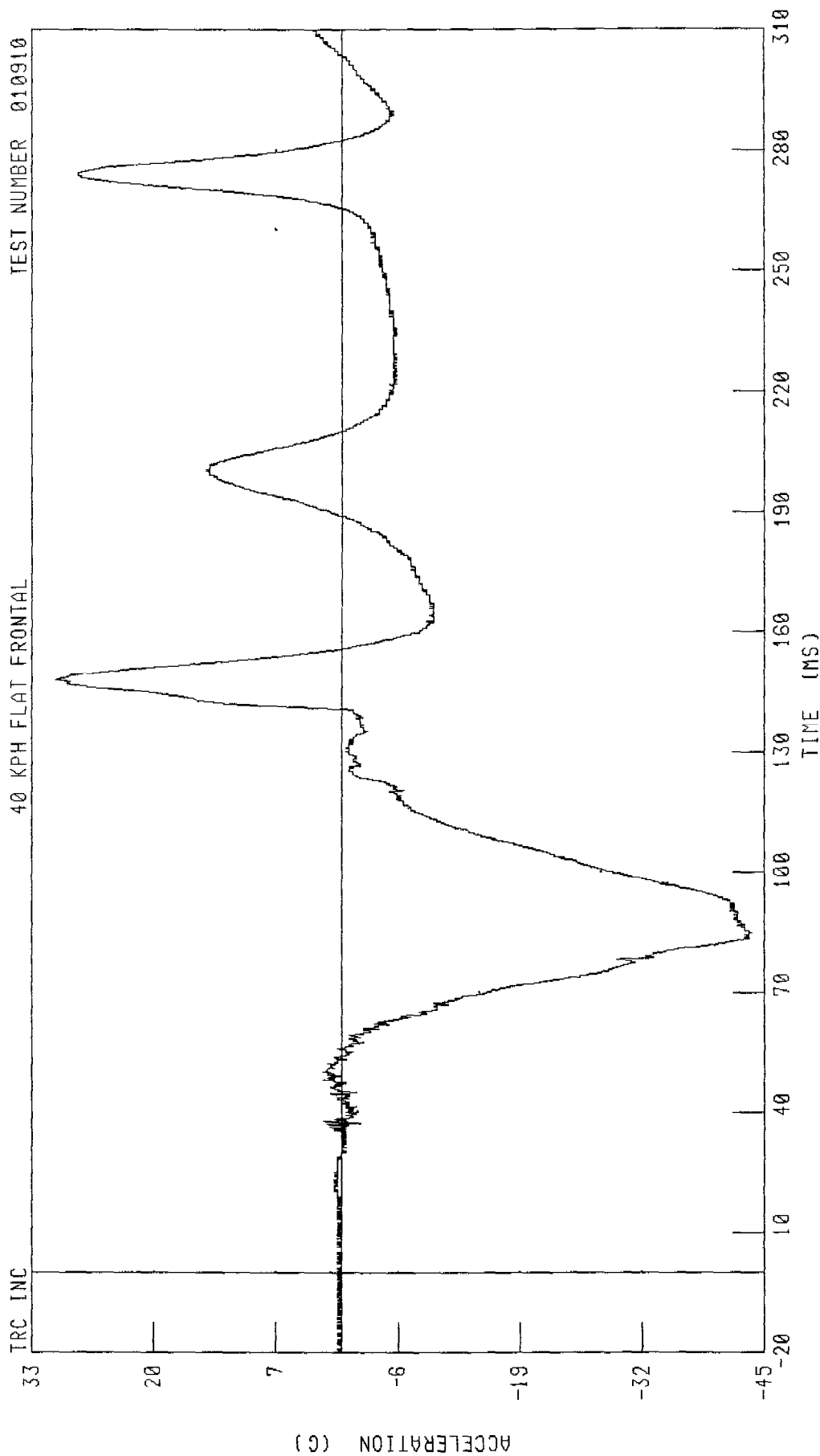
ACCELERATION (G X 10⁻²)



CHANNEL HEDG1 FILTER CH CLASS 1000

PEAK DATA 48 65 0 90 80 MS, 0 13 0 -19 60 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER HEAD X-AXIS ACCELERATION REDUNDANT
 40 KPH FLAT FRONTAL



CHANNEL HEDXR1 FILTER CH CLASS 1000 PEAK DATA 30 46 C @ 148 16 MS, -43 73 C @ 84 96 MS

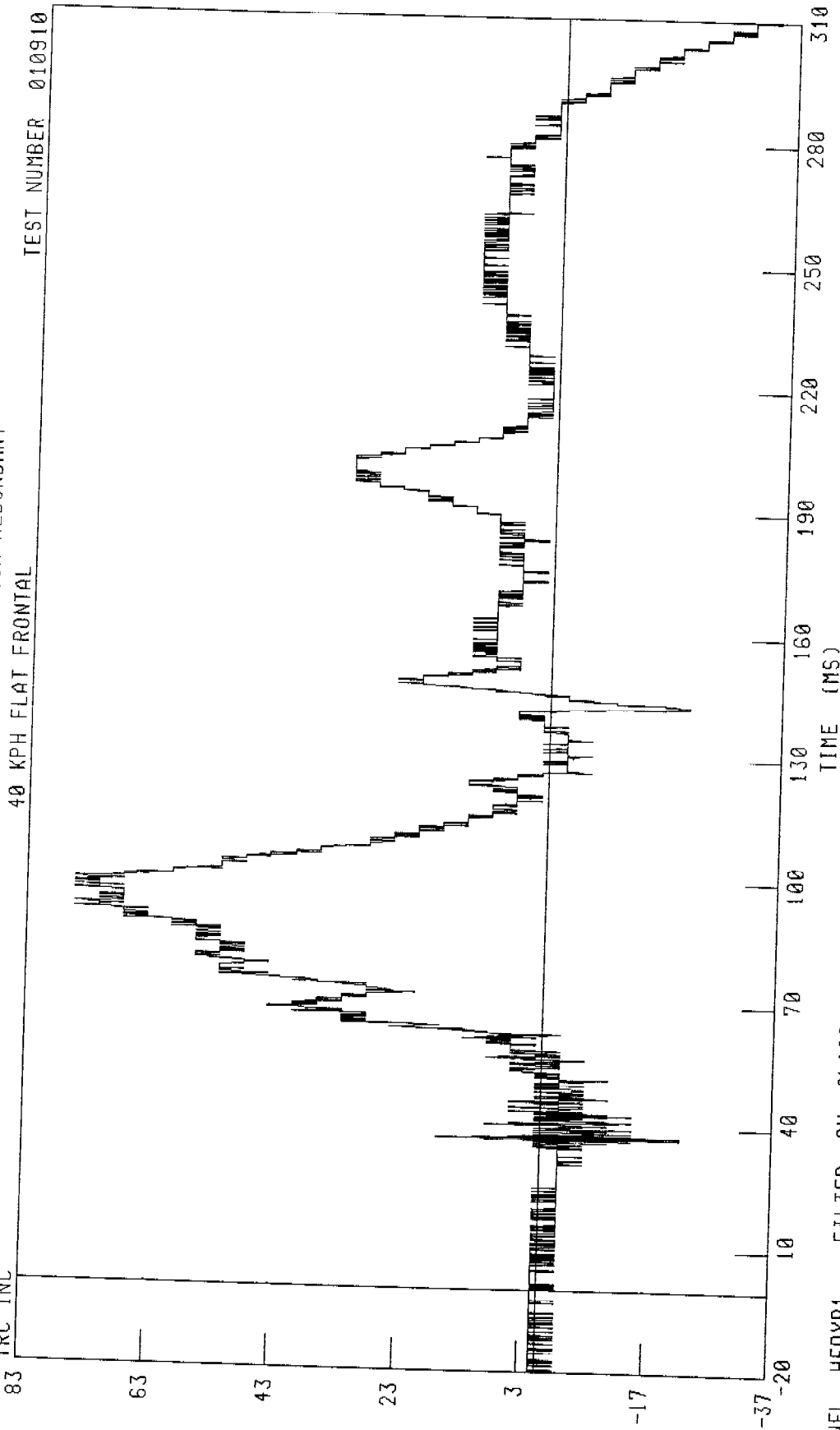
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER HEAD Y-AXIS ACCELERATION REDUNDANT

TRC INC

TEST NUMBER 010910

40 KPH FLAT FRONTAL

ACCELERATION ($G \times 10^{-1}$)

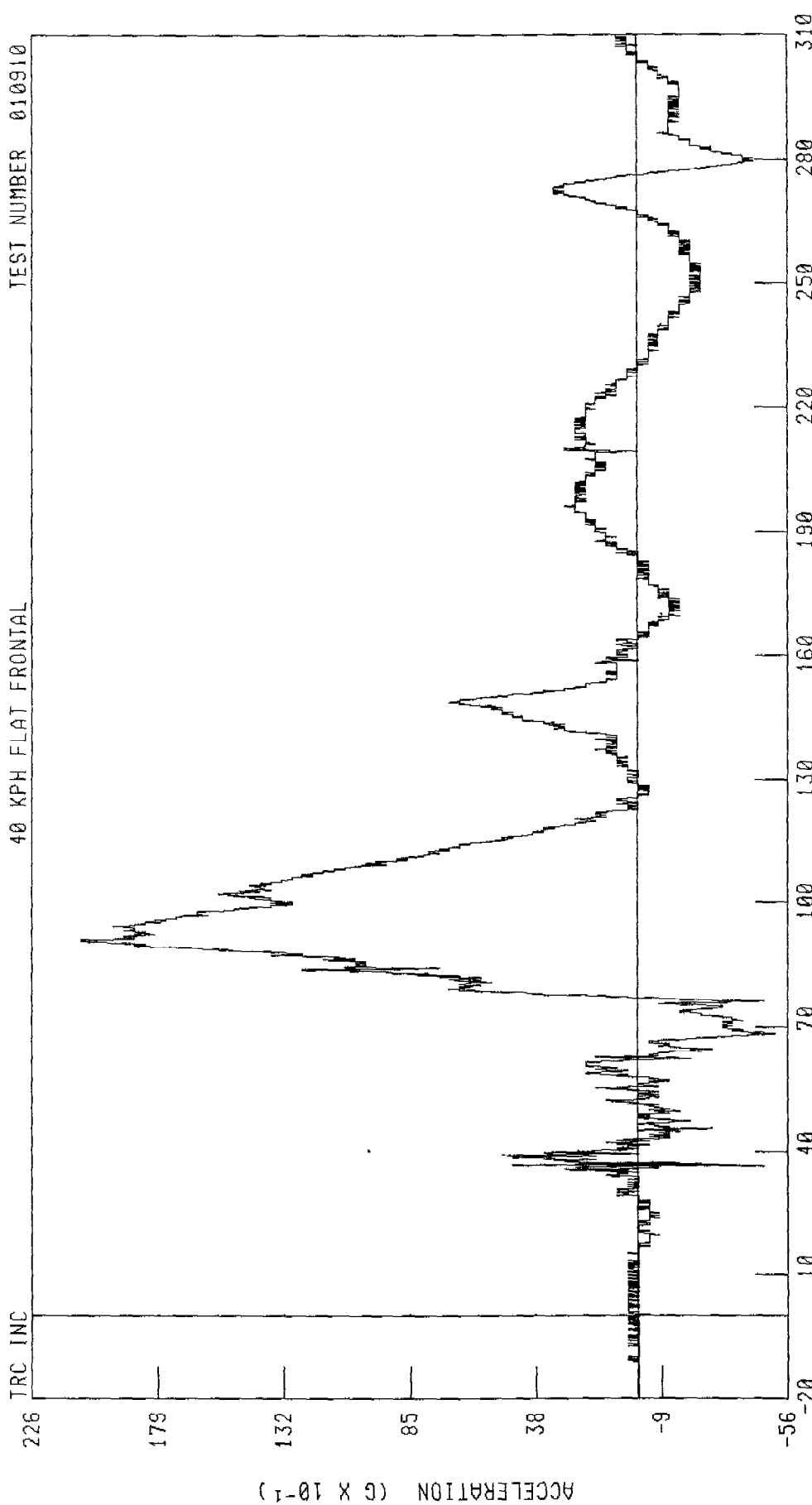


CHANNEL HEDYR1 FILTER CH CLASS 1000

PEAK DATA 7 55 0 91 44 MS, -3 41 0 309 76 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER HEAD Z-AXIS ACCELERATION REDUNDANT
 40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL HEDZR1 FILTER CH CLASS 1000

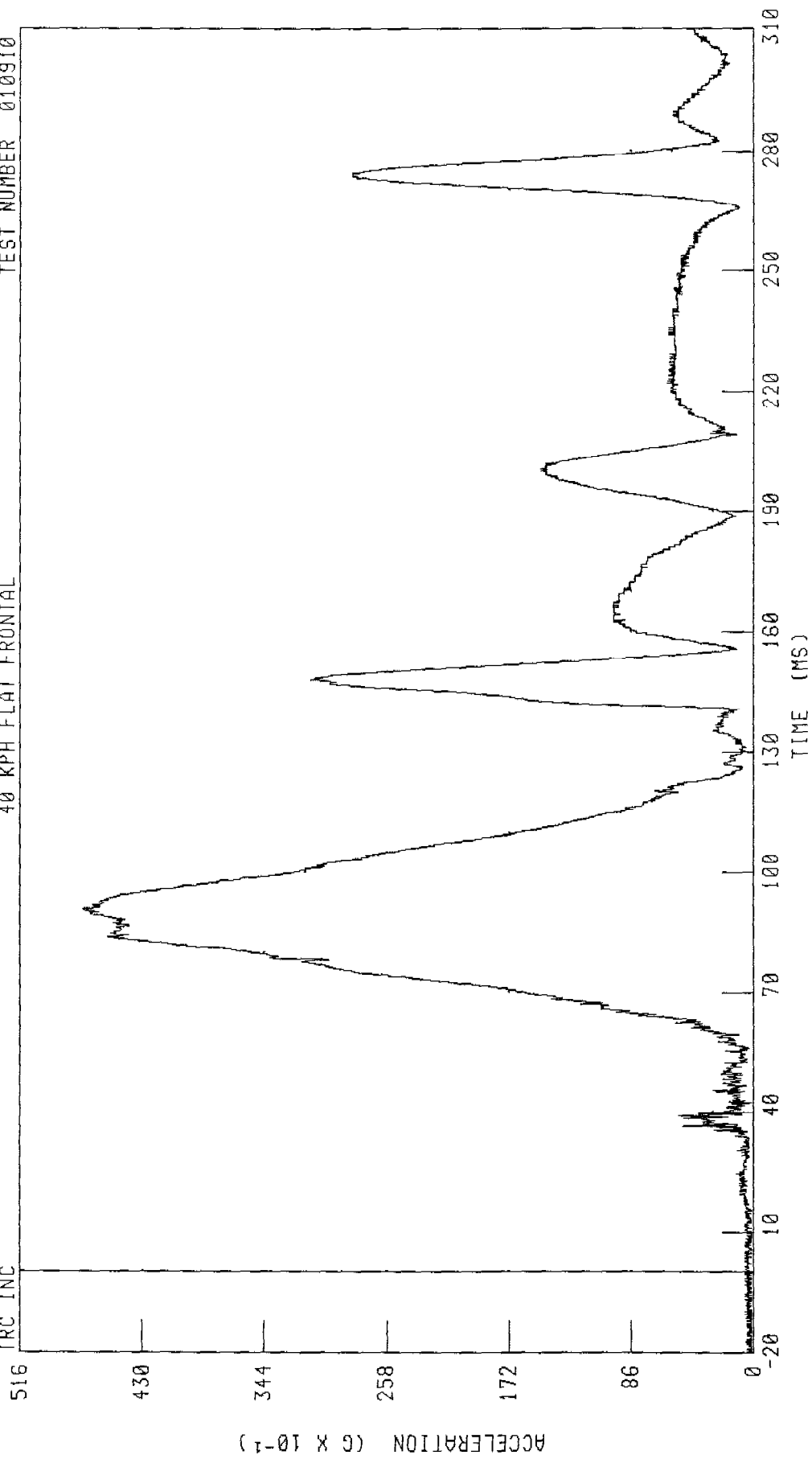
PEAK DATA 20 76 G @ 90 88 MS, -5 12 G @ 68 16 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER HEAD RESULTANT ACCELERATION REDUNDANT

TEST NUMBER 010910

40 KPH FLAT FRONTAL

TRC INC



CHANNEL HEDRR1 FILTER CH CLASS 1000

PEAK DATA 47 14 0 90 88 MS, 0 12 0 -20 00 MS

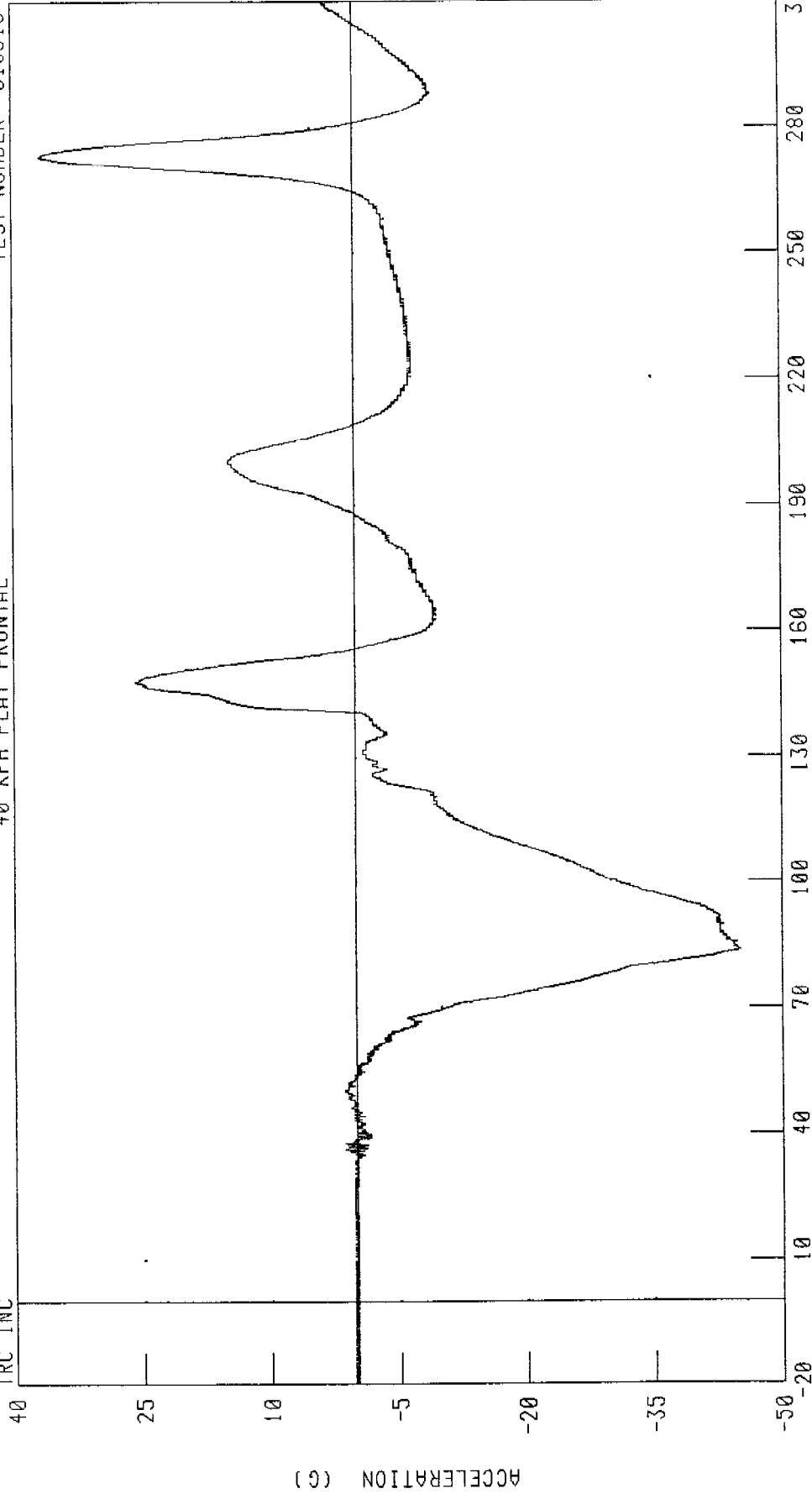
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER HEAD X-AXIS (LT) ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

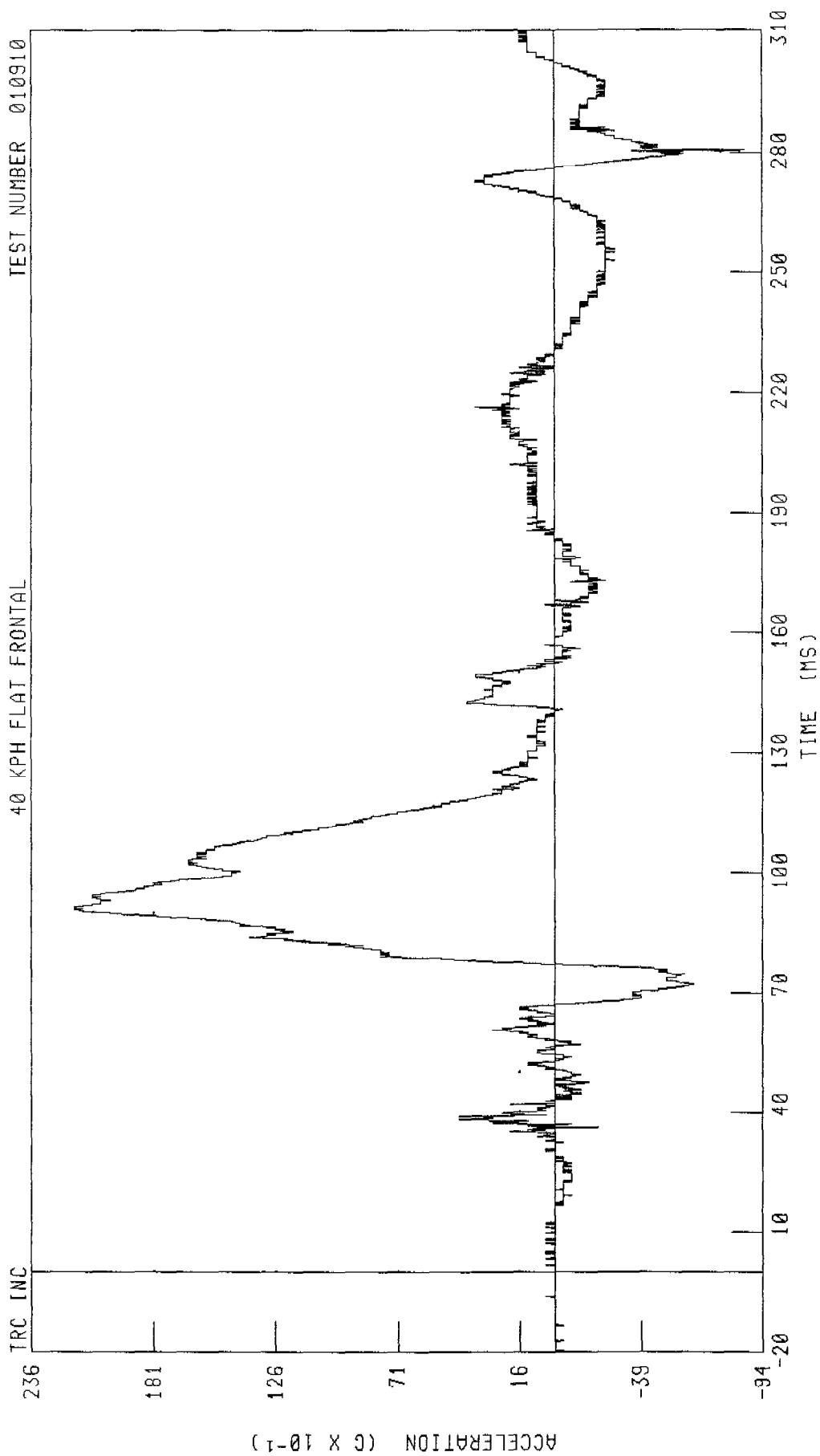


TIME (MS)

PEAK DATA 36 71 G @ 273 28 MS, -45 15 G @ 83 52 MS

CHANNEL HD1XG1 FILTER CH CLASS 1000

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER HEAD Z-AXIS (LT) ACCELERATION

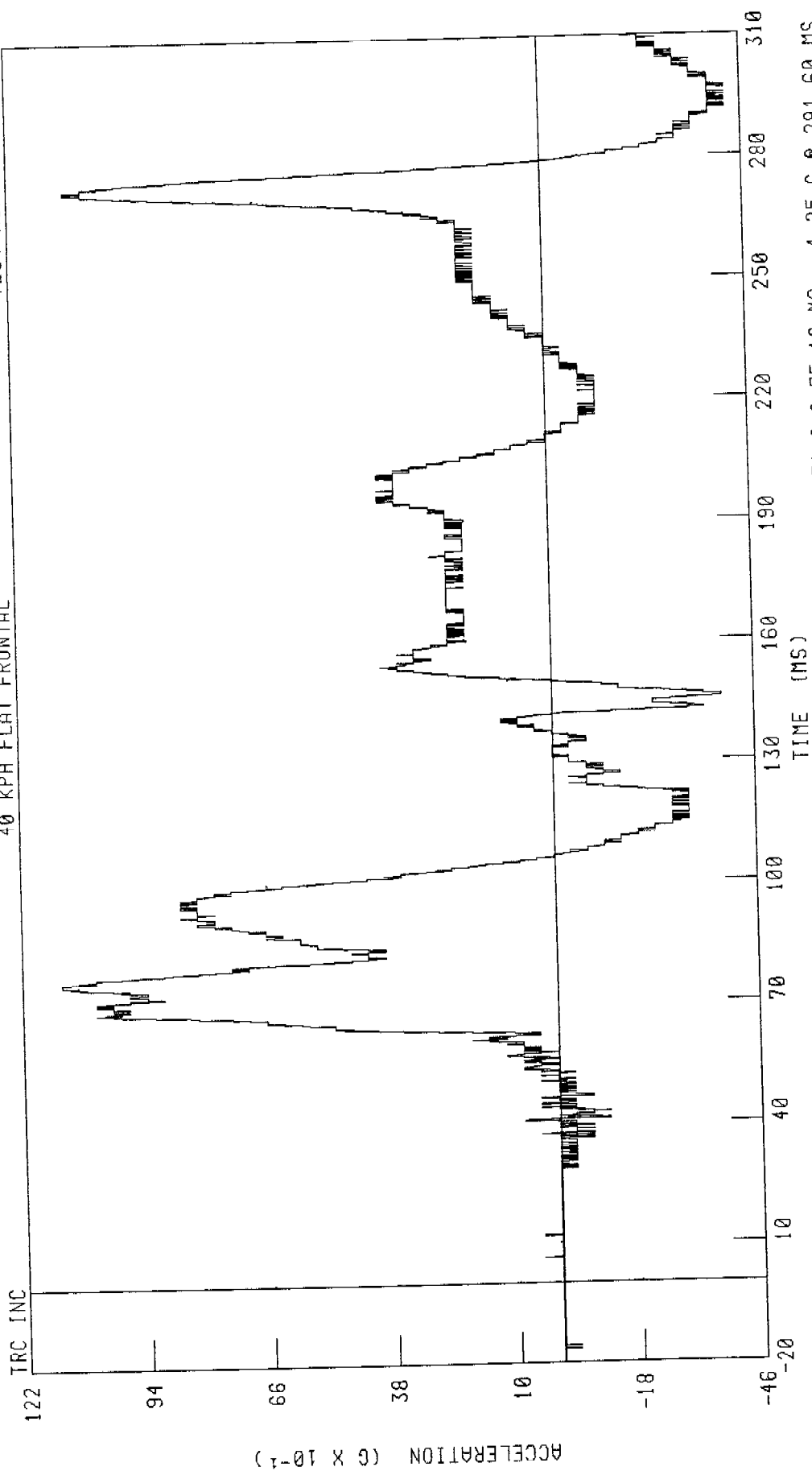


CHANNEL HD1ZG1 FILTER CH CLASS 1000

PEAK DATA 21 66 G @ 90 88 MS, -8 63 G @ 280 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER HEAD Y-AXIS (FT) ACCELERATION
 40 KPH FLAT FRONTAL

TEST NUMBER 010910



PEAK DATA 11 31 G @ 75 12 MS, -4 25 G @ 291 60 MS

CHANNEL HD2Y61 FILTER CH CLASS 1000

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER HEAD Z-AXIS (FT) ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

218

165

112

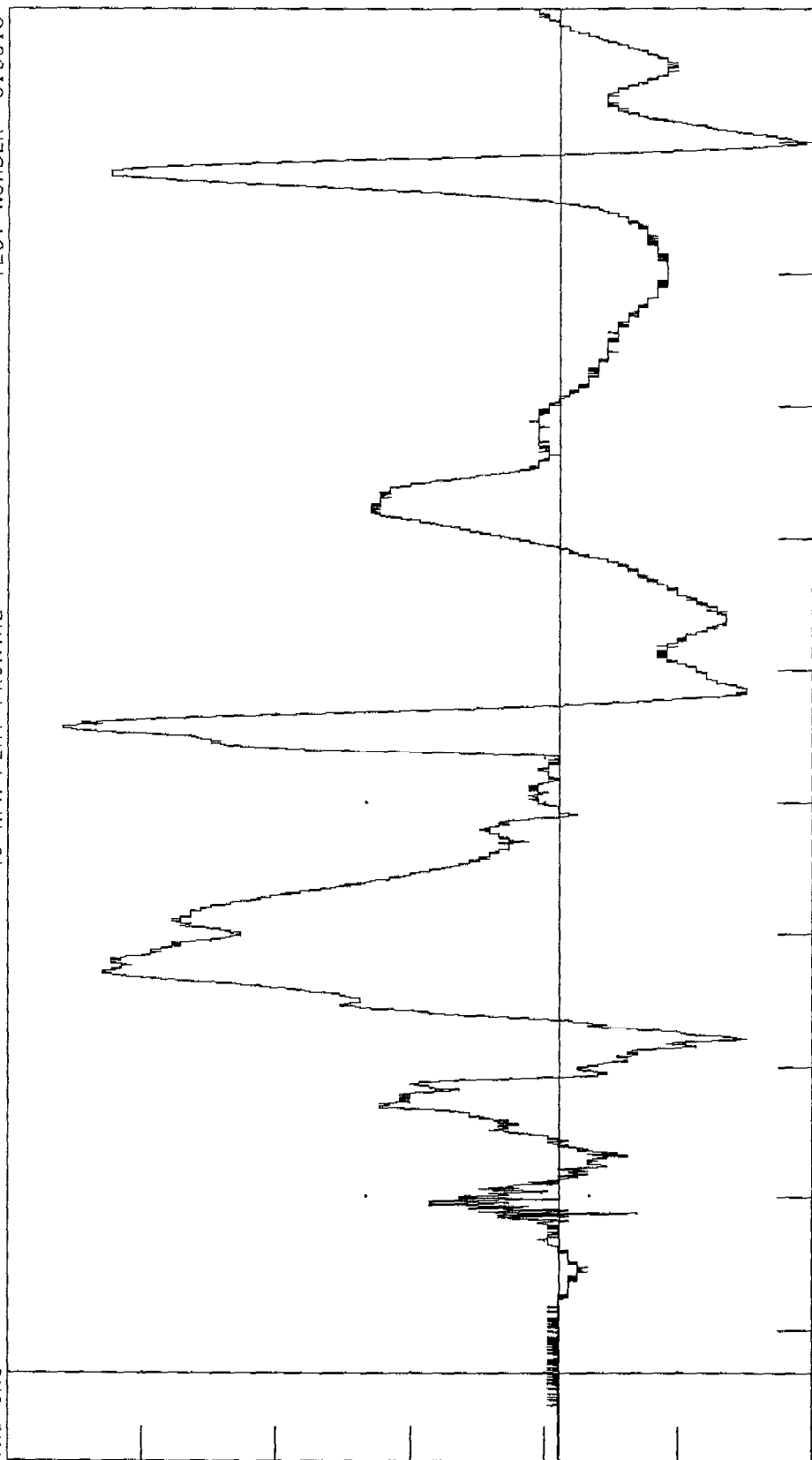
59

6

-46

-100

ACCELERATION (G X 10⁻¹)

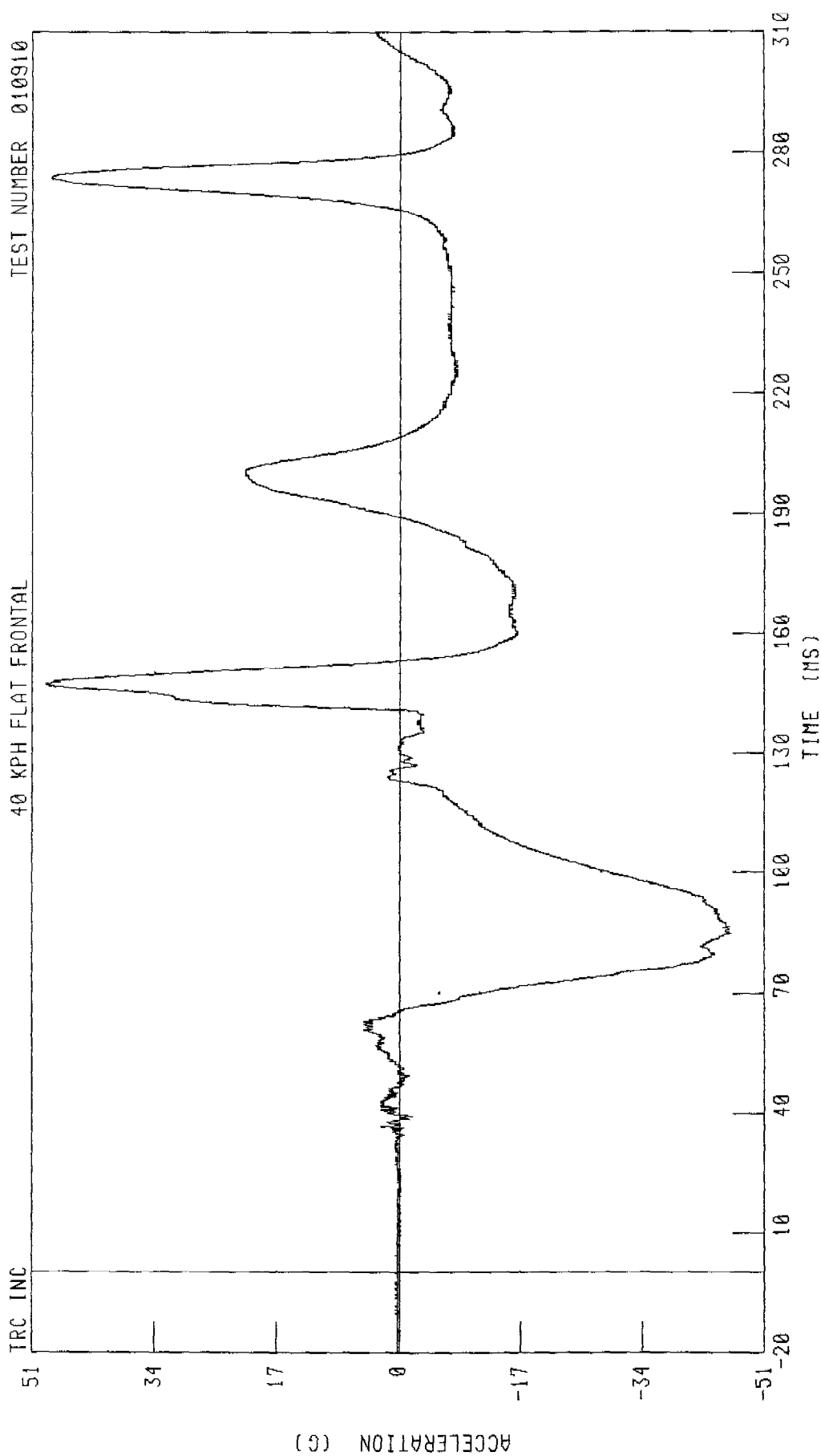


TIME (MS)

CHANNEL HD2ZG1 FILTER CH CLASS 1000

PEAK DATA 19 68 G @ 146 88 MS, -9 75 G @ 279 44 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER HEAD X-AXIS (TP) ACCELERATION
40 KPH FLAT FRONTAL



TEST NUMBER 010910

CHANNEL H03XG1 FILTER CH CLASS 1000

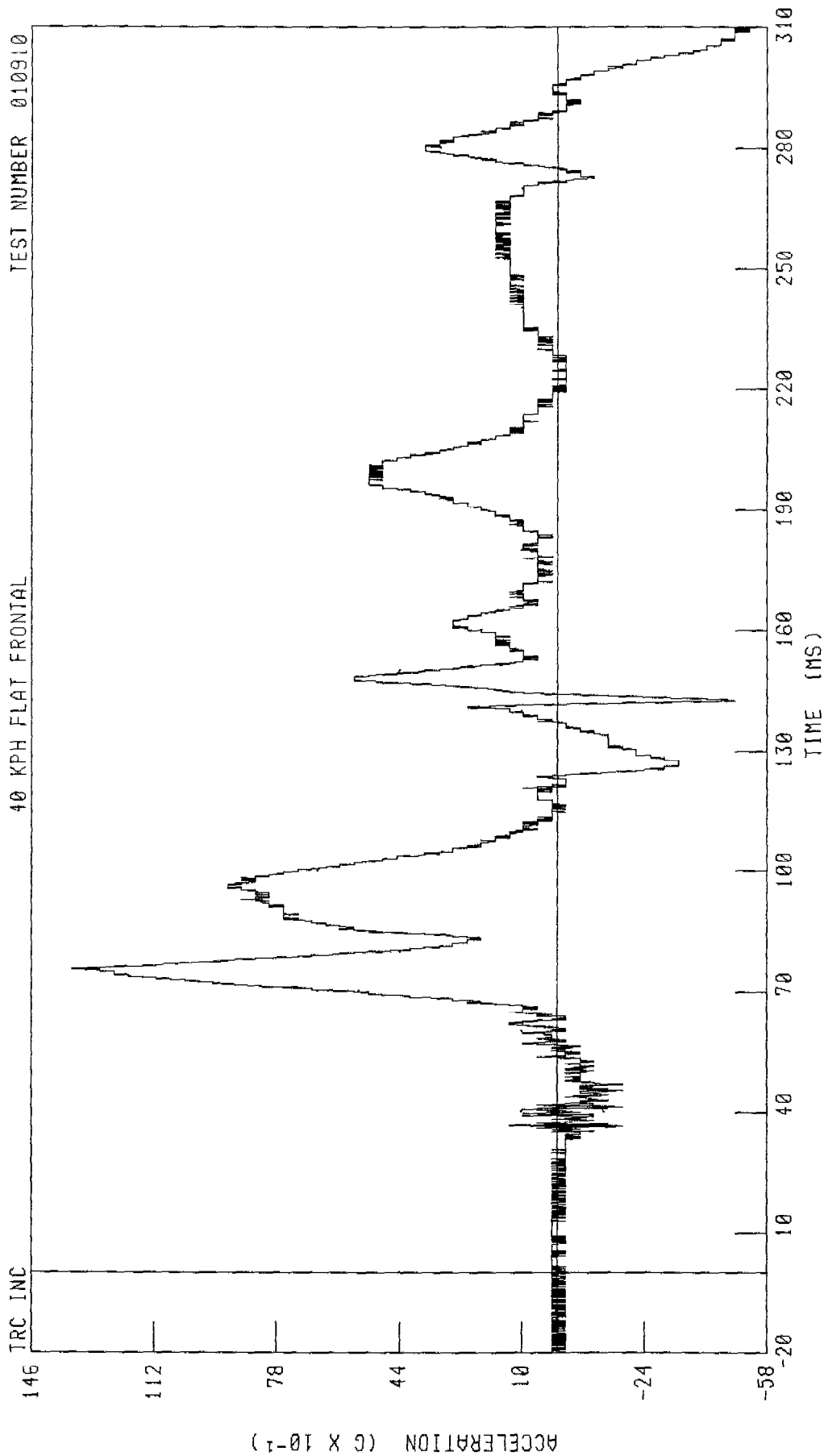
PEAK DATA 49 13 G @ 147 20 MS, -46 45 G @ 84 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER HEAD Y-AXIS (TP) ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL HD3YC1 FILTER CH CLASS 1000

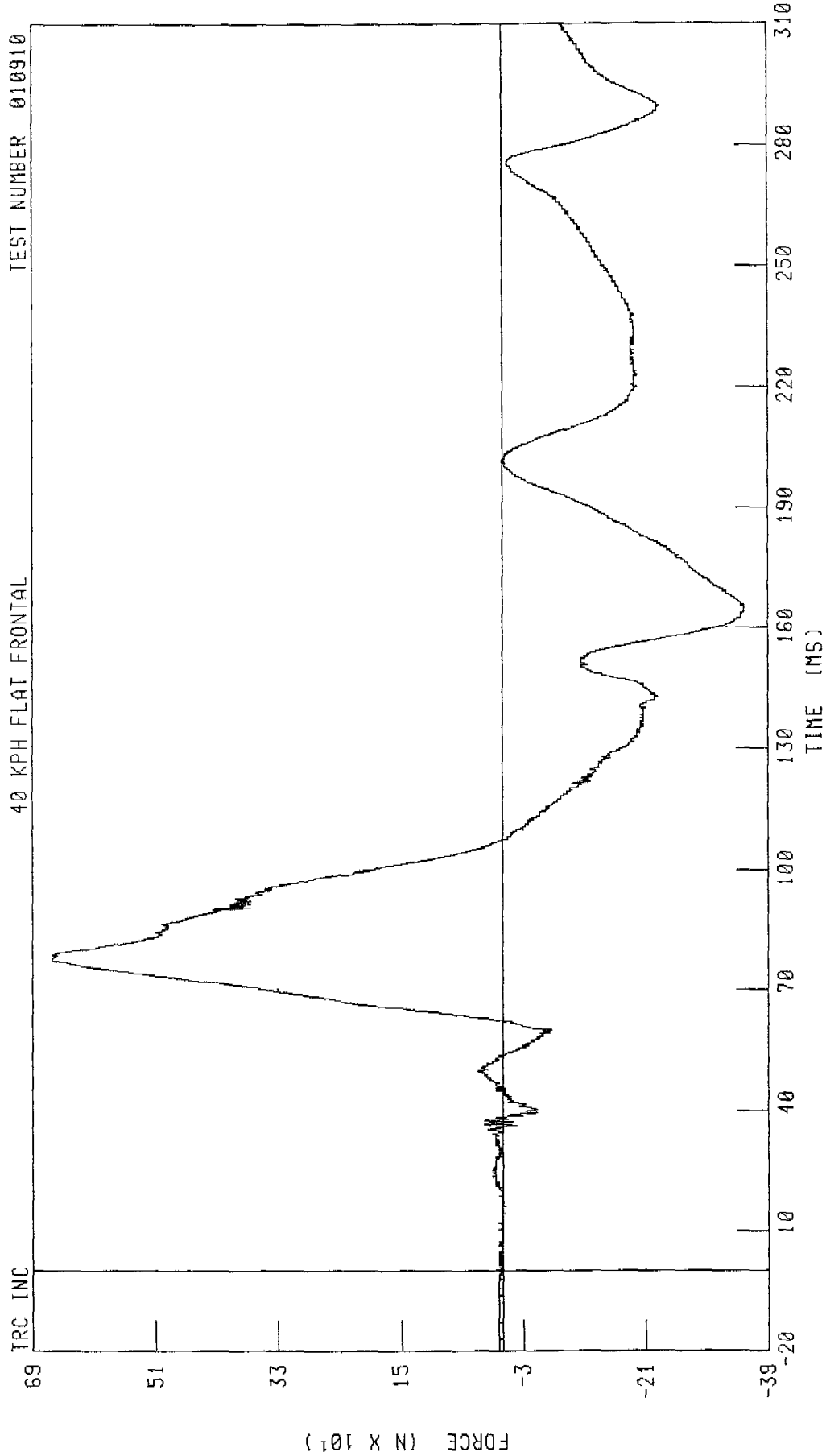
PEAK DATA 13 49 G @ 75 44 MS, -5 31 G @ 308 72 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER NECK X-AXIS SHEAR FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910



TIME (MS)

PEAK DATA 662 02 N @ 77 44 MS, -354 76 N @ 163 76 MS

CHANNEL NEKXF1 FILTER CH CLASS 1000

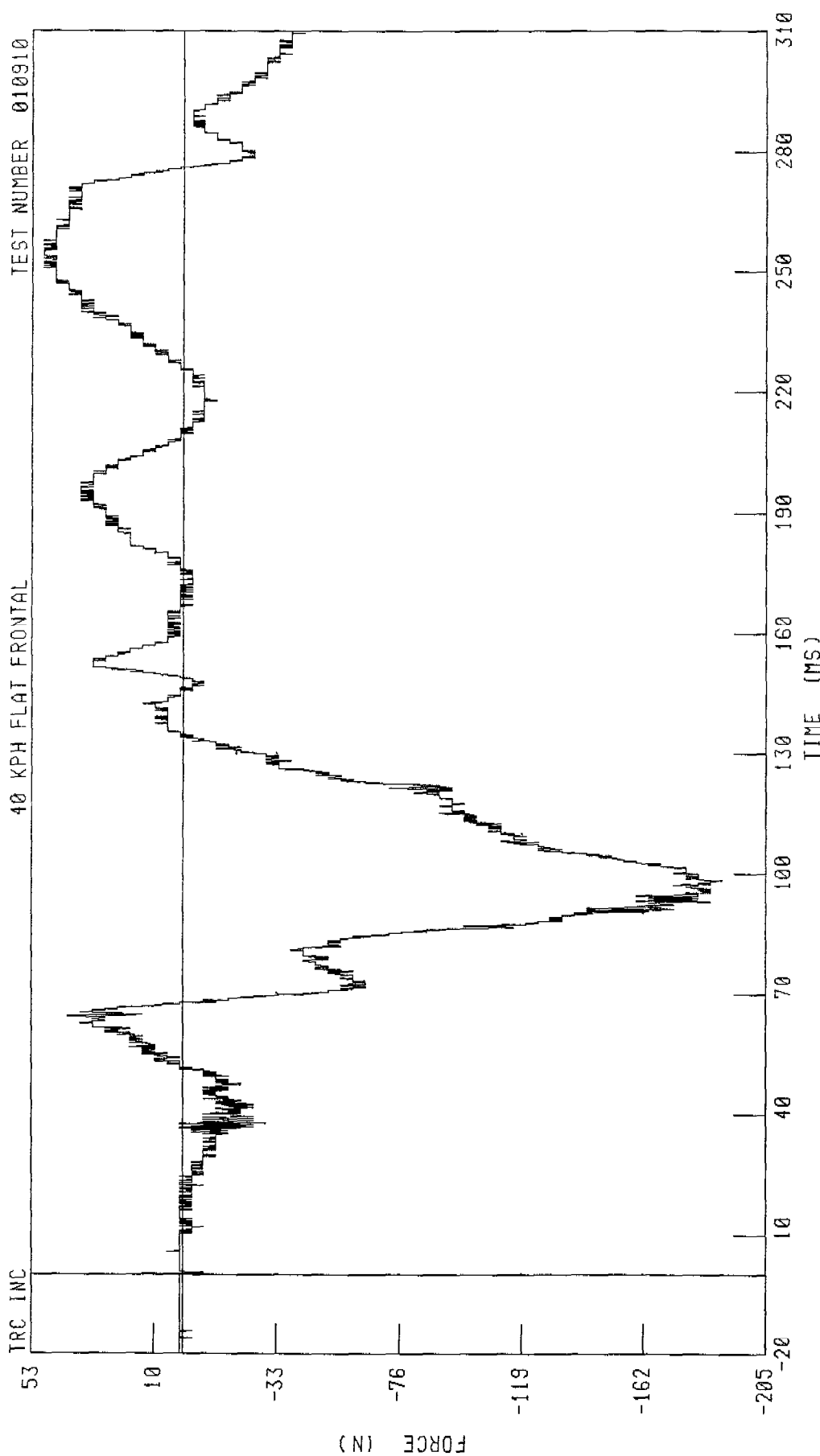
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER NECK Y-AXIS SHEAR FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



CHANNEL NEKYF1 FILTER CH CLASS 1000

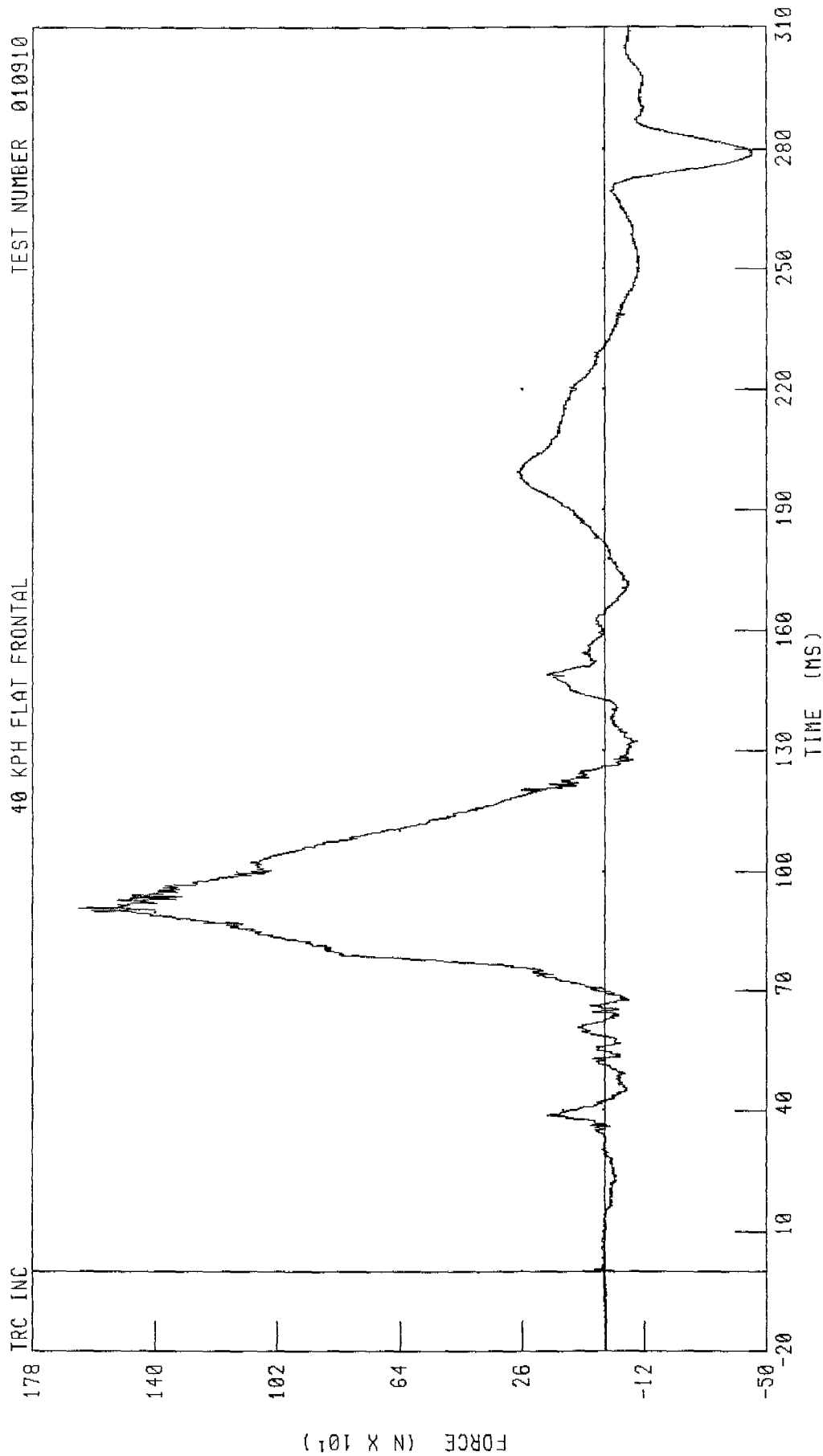
PEAK DATA 48 93 N @ 250 72 MS, -189 92 N @ 98 24 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER NECK Z-AXIS AXIAL FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910



TIME (MS)

PEAK DATA 1635 46 N @ 91 04 MS, -456 49 N @ 278 48 MS

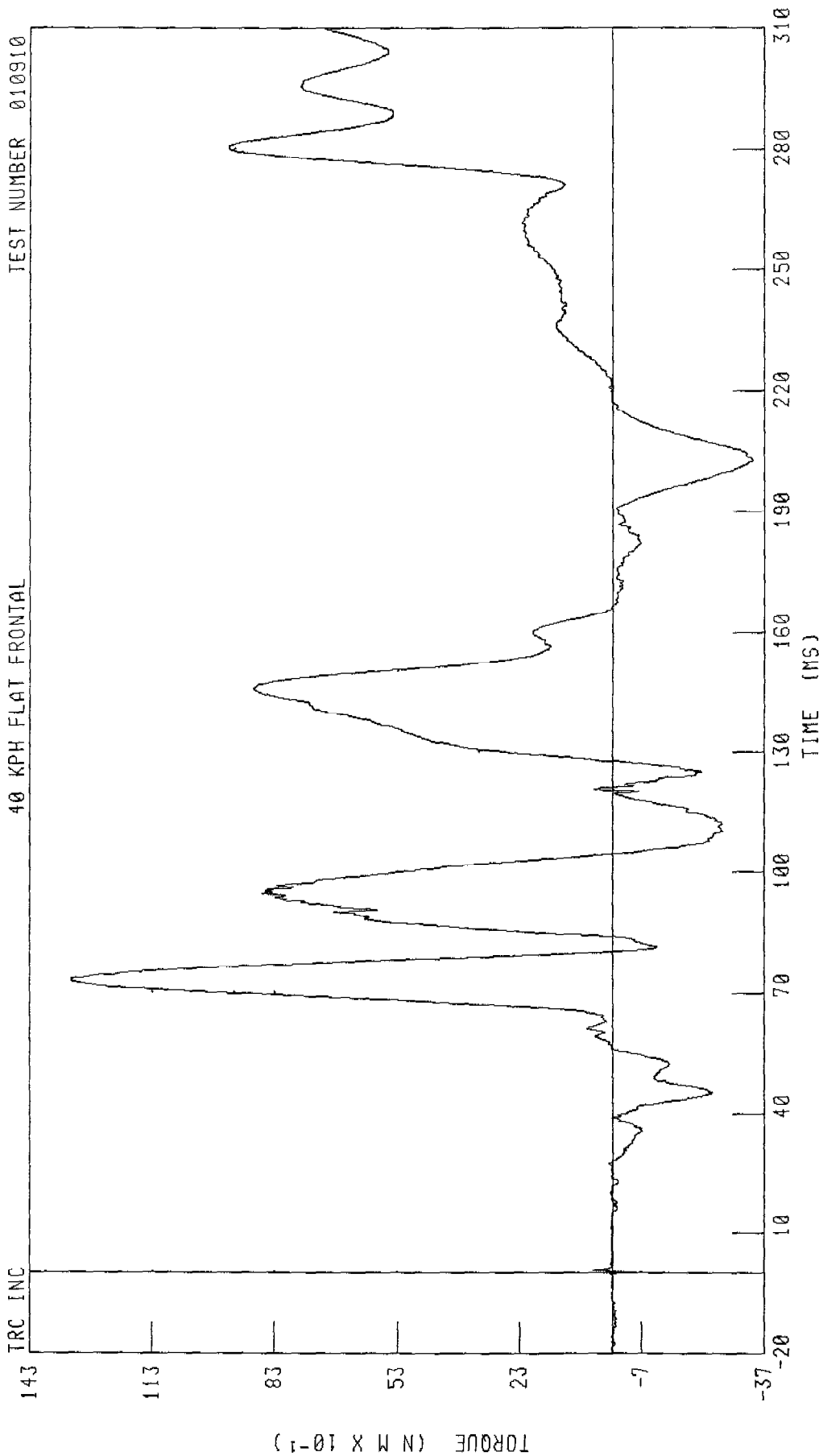
CHANNEL NEKZF1 FILTER CH CLASS 1000

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER NECK MOMENT ABOUT X AXIS

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL NEKXN1 FILTER CH CLASS 600

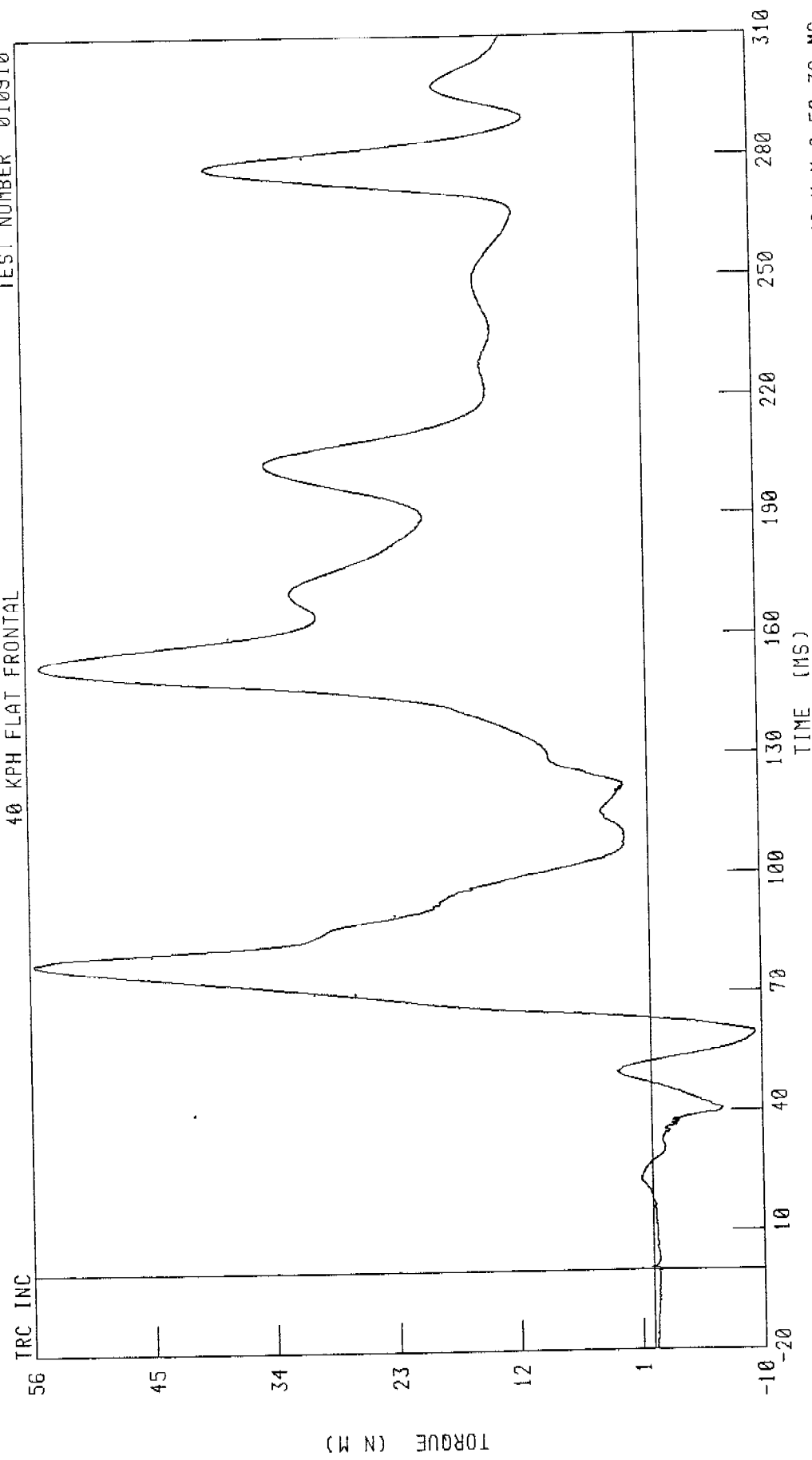
PEAK DATA 13 29 N M 0 73 36 MS, -3 42 N M 0 202 58 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER NECK MOMENT ABOUT Y AXIS

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL NEKYM1 FILTER CH CLASS 600

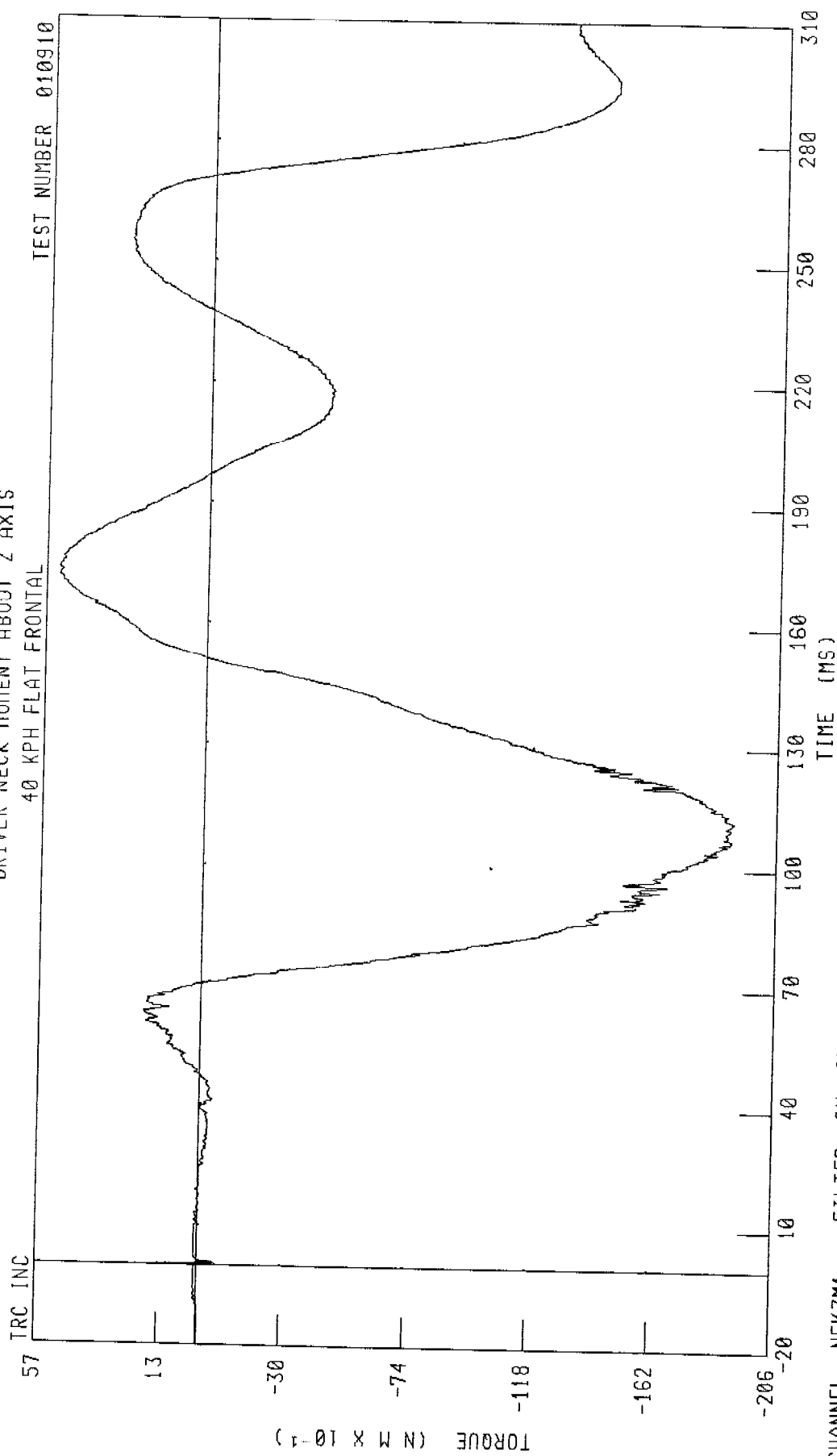
PEAK DATA 55 70 N M @ 78 16 MS, -9 49 N M @ 59 36 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER NECK MOMENT ABOUT Z AXIS

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL NEKZM1 FILTER CH CLASS 600

TIME (MS)

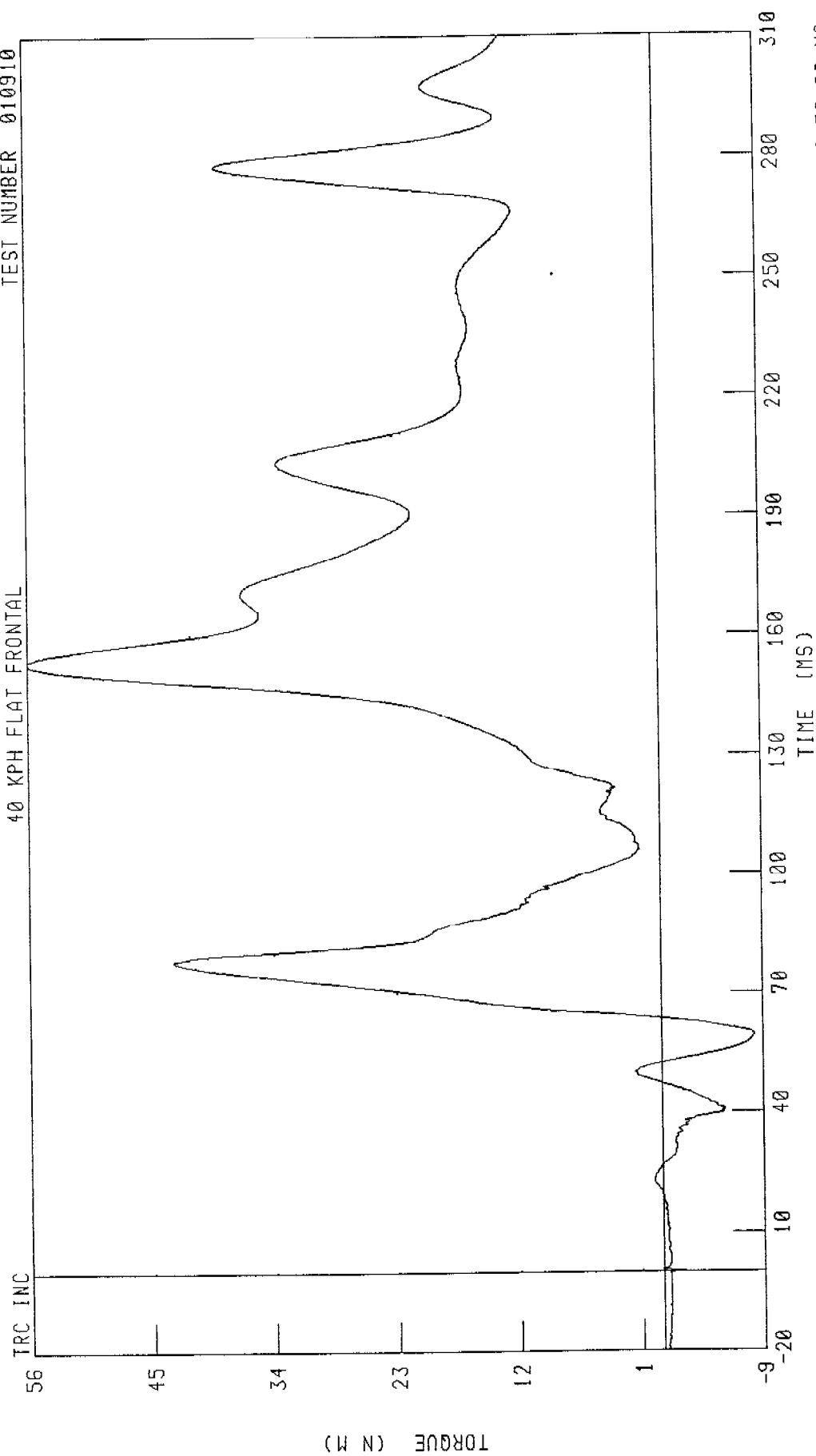
PEAK DATA 5 35 N M @ 173 36 MS, -19 07 N M @ 112 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER NECK OCCIPITAL CONDYLE MOMENT ABOUT Y AXIS

40 KPH FLAT FRONTAL

TEST NUMBER 010910



PEAK DATA 56 97 N M @ 153 36 MS, -8 35 N M @ 59 28 MS

CHANNEL NEKOM1 FILTER CH CLASS 600

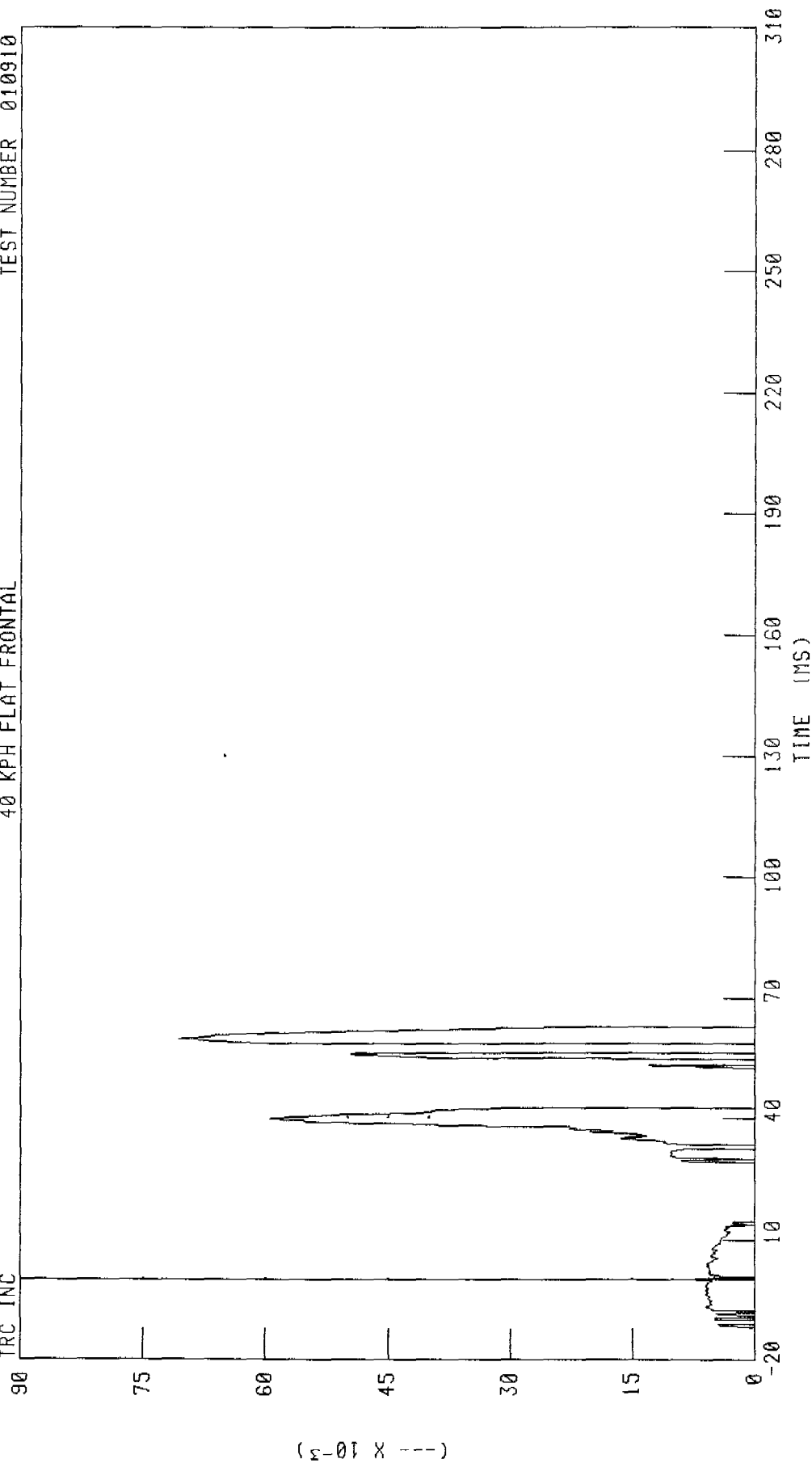
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER NECK TENSION/EXTENSION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

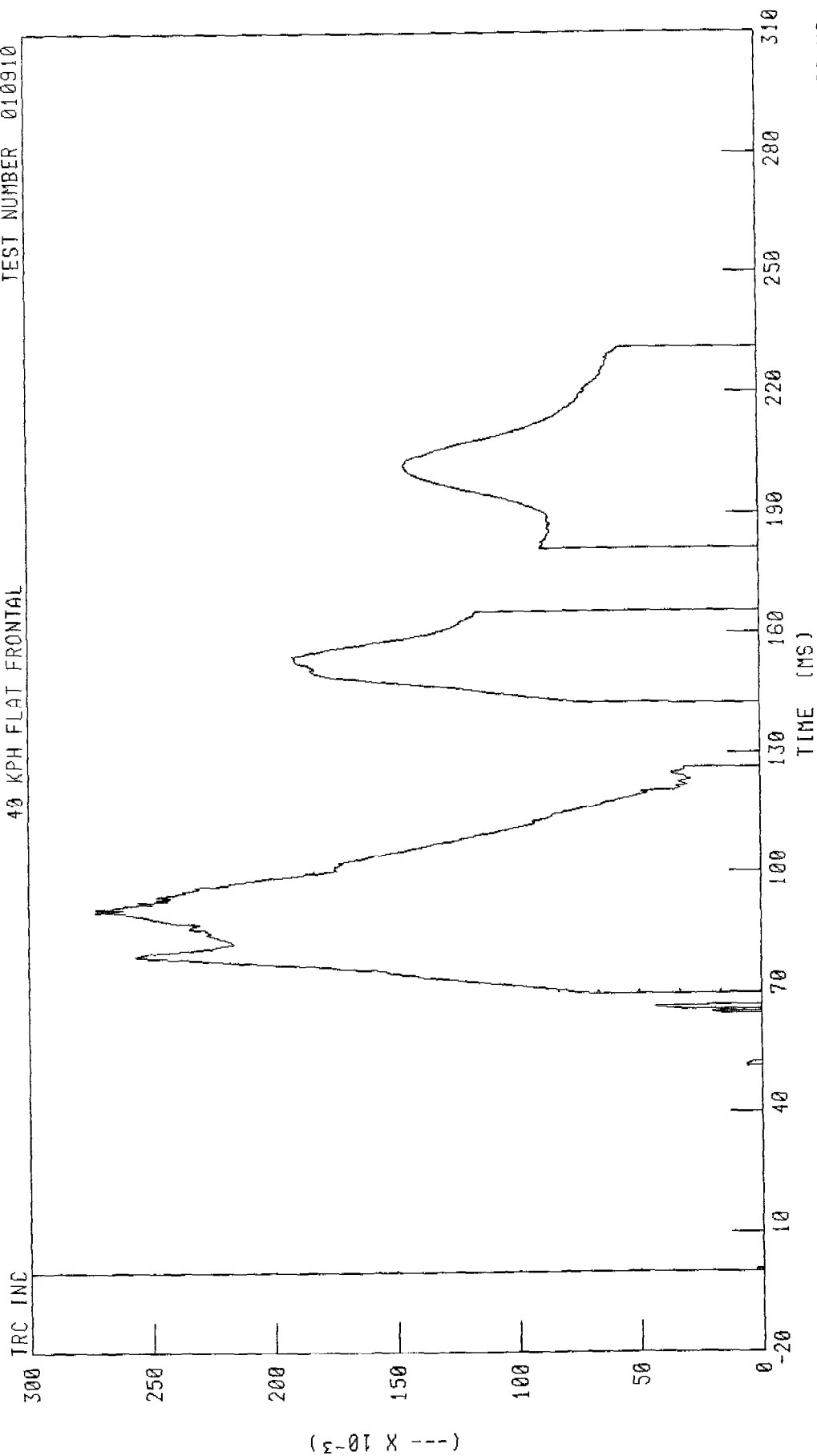


CHANNEL NTE1 FILTER CH CLASS 600

PEAK DATA 0 07 --- 0 59 76 MS, 0 00 --- 0 -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER NECK TENSION/FLEXION
 40 KPH FLAT FRONTAL

TEST NUMBER 010910



PEAK DATA 0 27 --- 0 90 32 MS, 0 00 --- 0 -20 00 MS

CHANNEL NTF1 FILTER CH CLASS 600

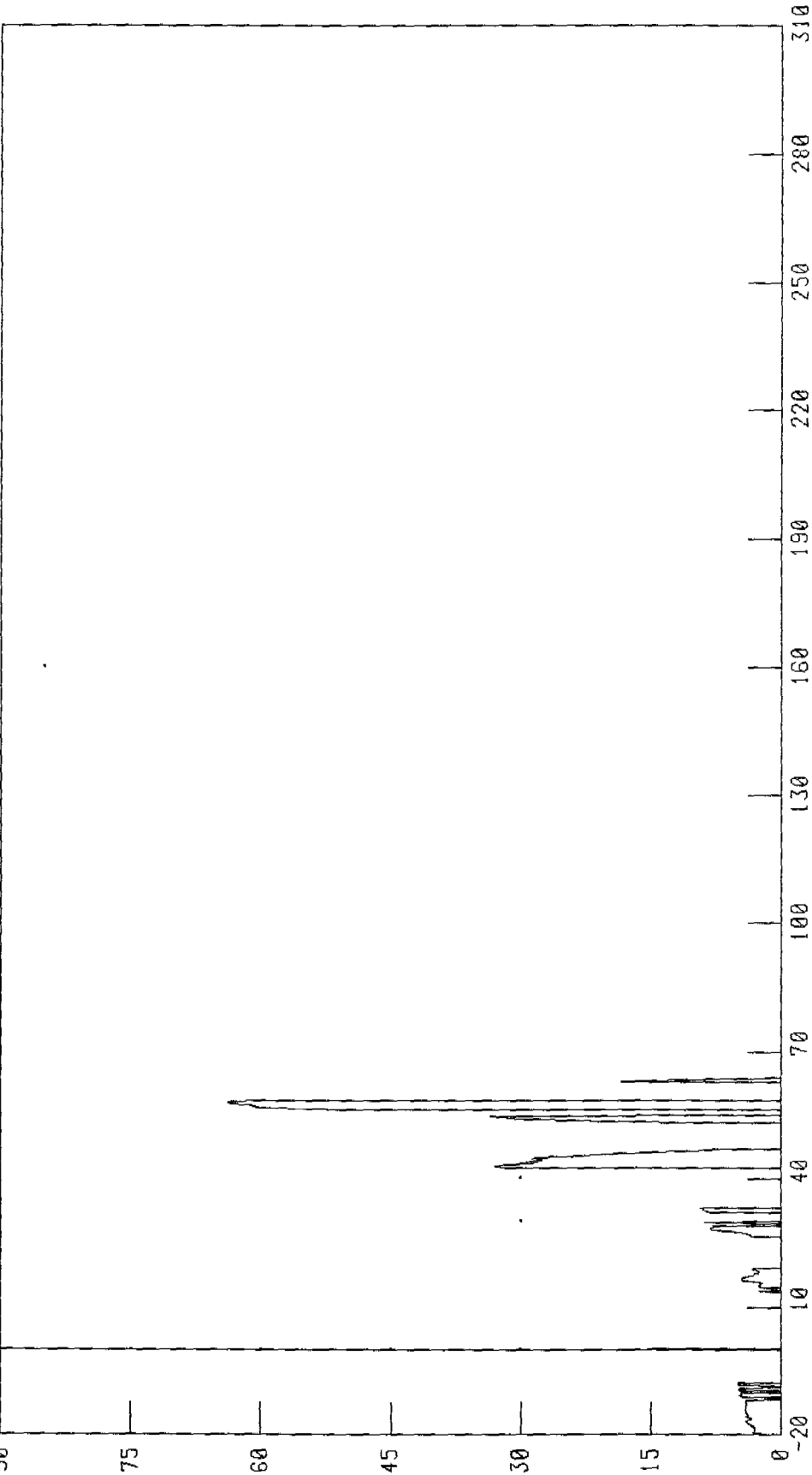
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER NECK COMPRESSION/EXTENSION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



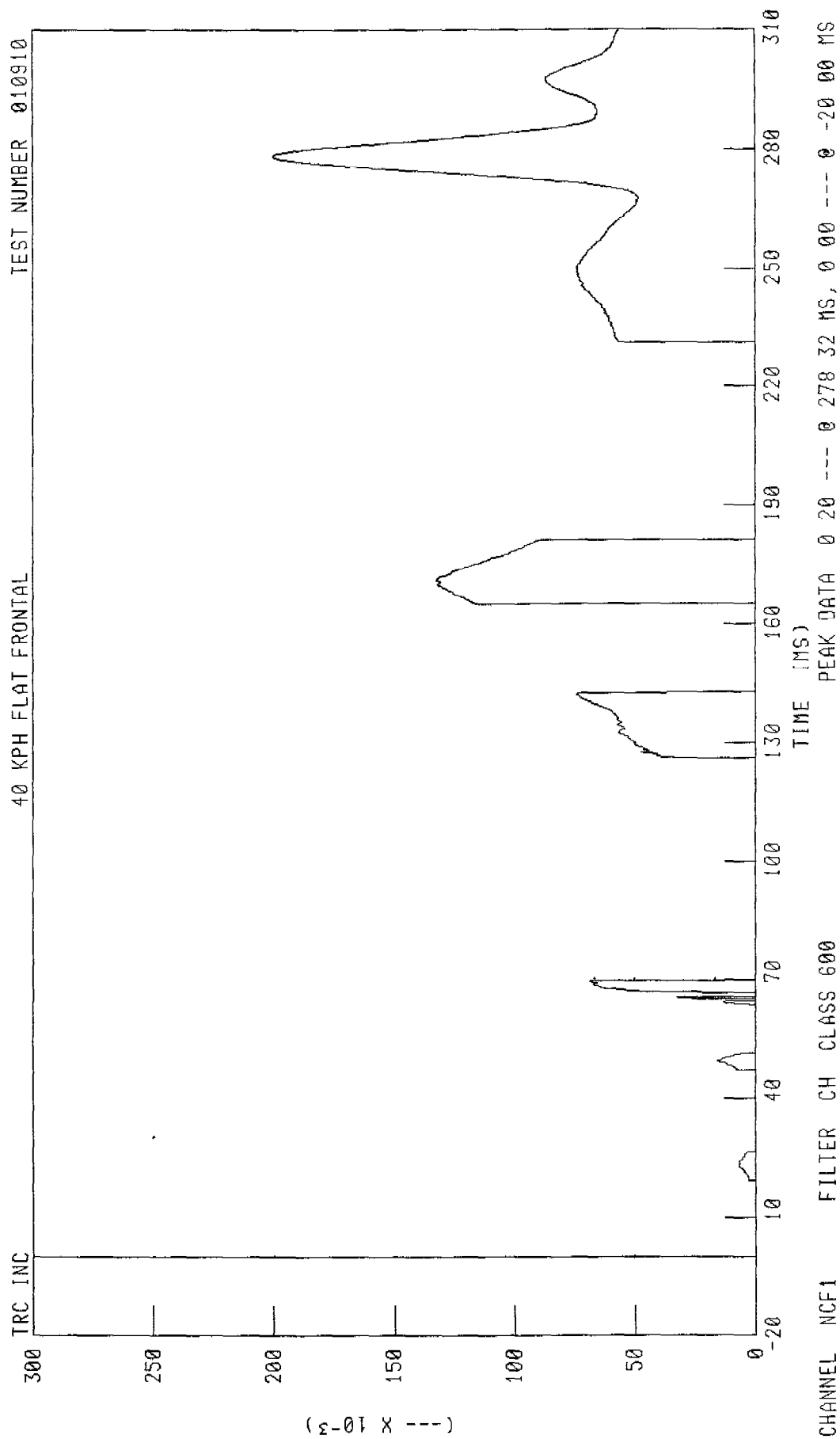
($\times 10^{-3}$)

TIME (MS)

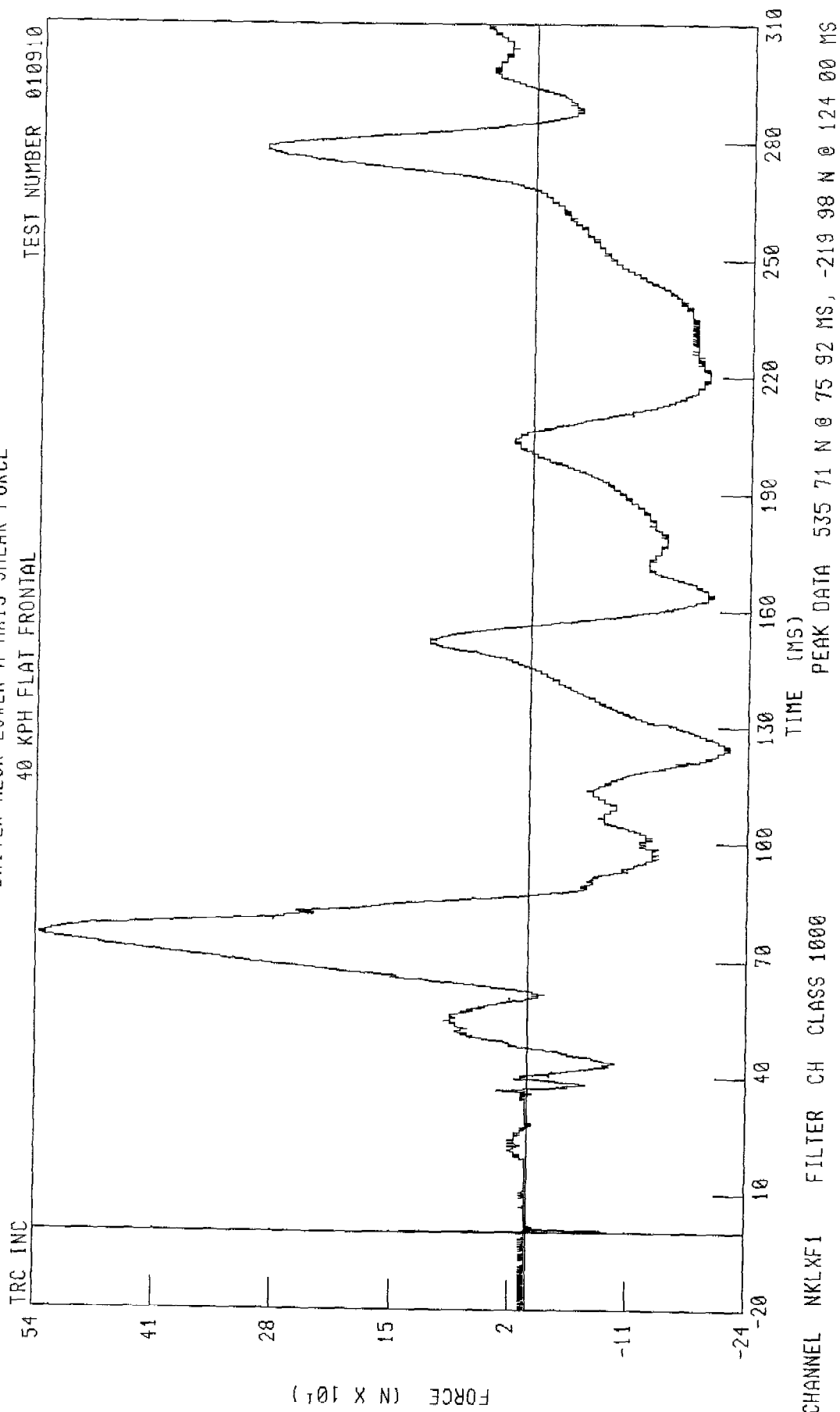
PEAK DATA 0 06 --- 0 57 92 MS, 0 00 --- 0 -11 76 MS

CHANNEL NCE1 FILTER CH CLASS 600

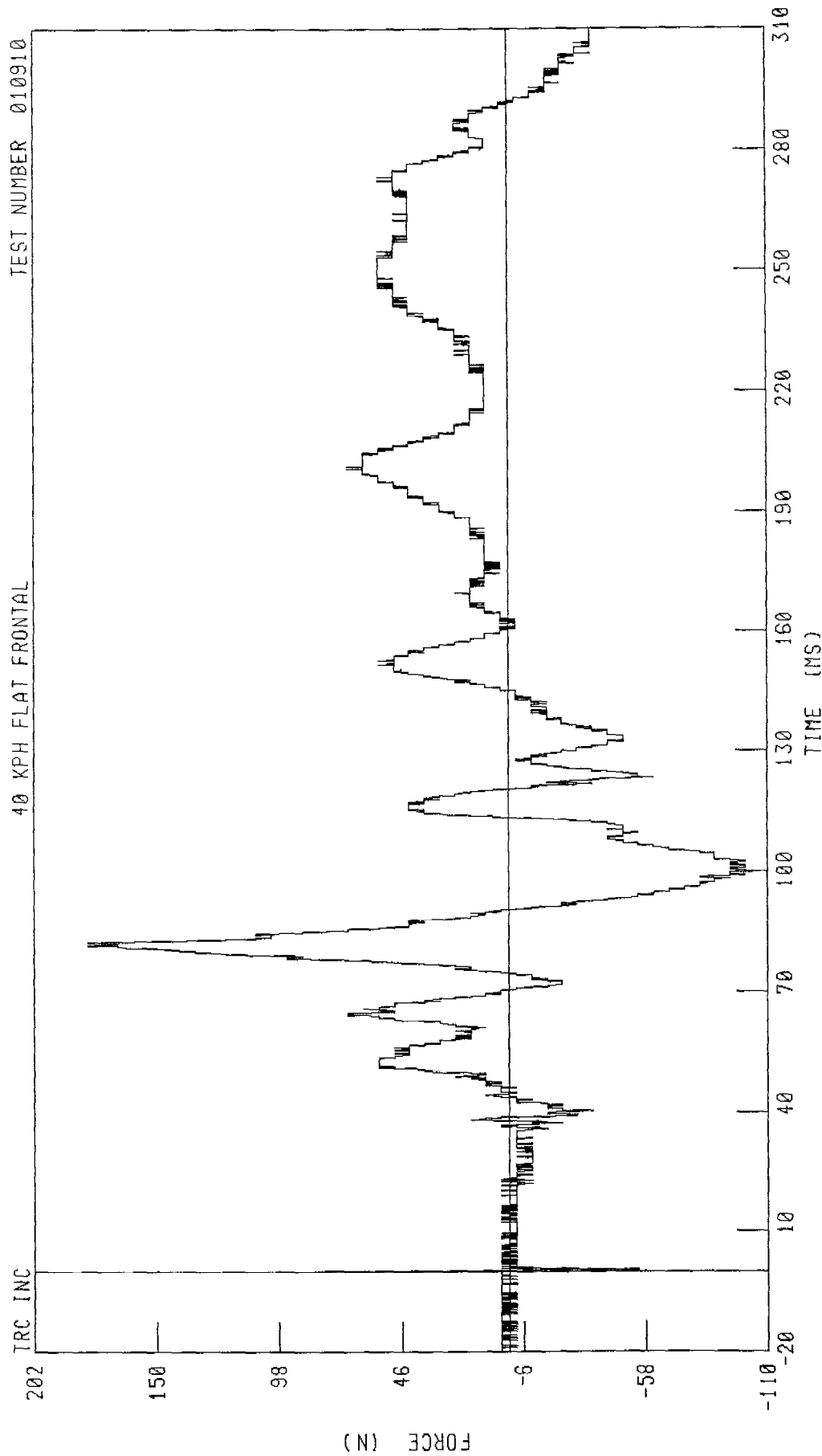
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER NECK COMPRESSION/FLEXION



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER NECK LOWER X-AXIS SHEAR FORCE



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER NECK LOWER Y-AXIS SHEAR FORCE
 40 KPH FLAT FRONTAL



PEAK DATA 179 37 N @ 81 68 MS, -107 28 N @ 100 00 MS

CHANNEL NKLYF1 FILTER CH CLASS 1000

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER NECK LOWER Z-AXIS AXIAL FORCE

TEST NUMBER 010910

40 KPH FLAT FRONTAL

TRC INC

234

188

142

96

50

4

-42

-20

FORCE (N X 10¹)

TIME (MS)

310

280

250

220

190

160

130

100

70

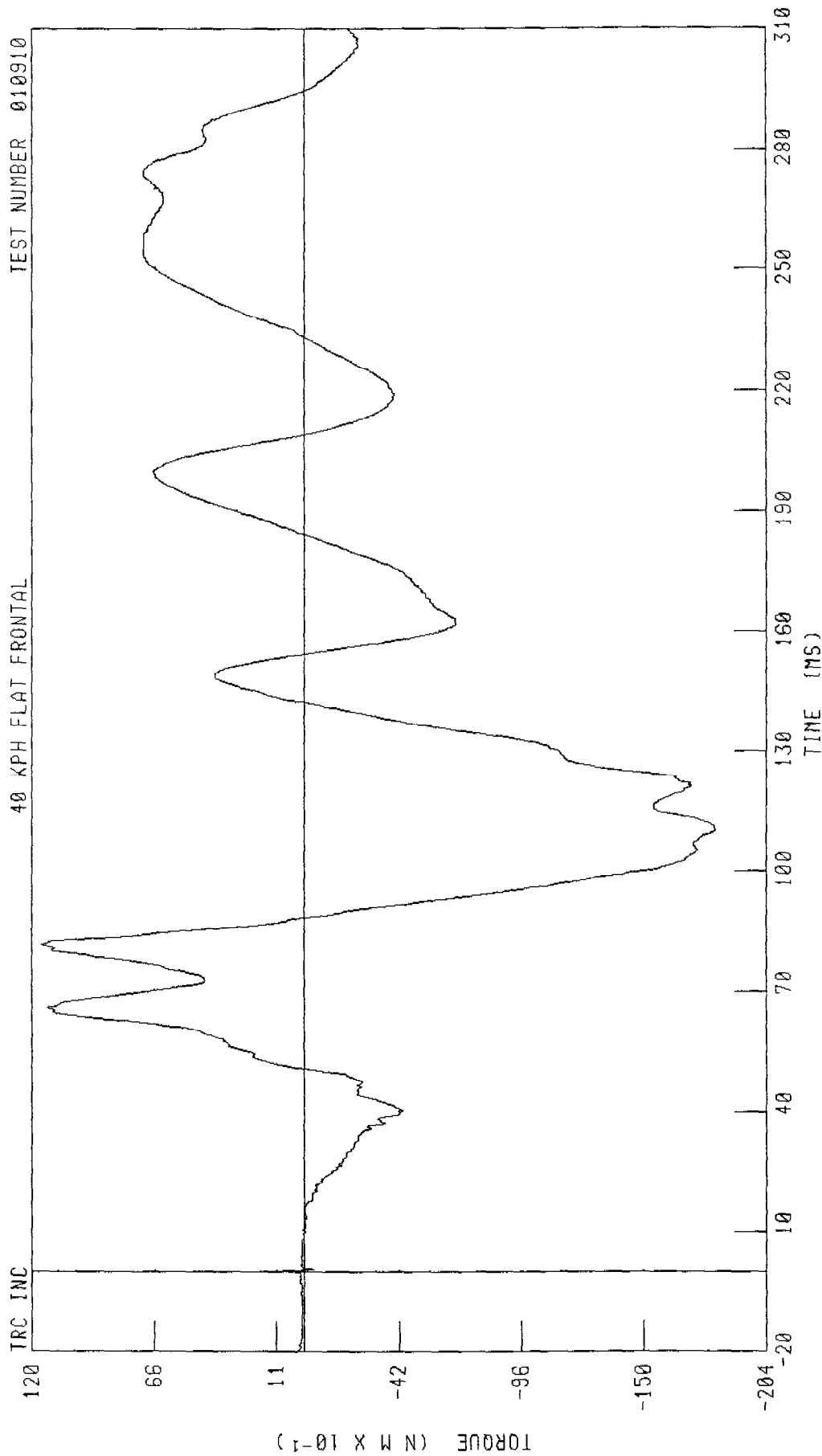
40

10

CHANNEL NKLZF1 FILTER CH CLASS 1000

PEAK DATA 2132 42 N @ 90 72 MS, -388 75 N @ 278 96 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER NECK LOWER MOMENT ABOUT X AXIS
 40 KPH FLAT FRONTAL



PEAK DATA 11 58 N M @ 81 52 MS, -18 15 N M @ 110 24 MS

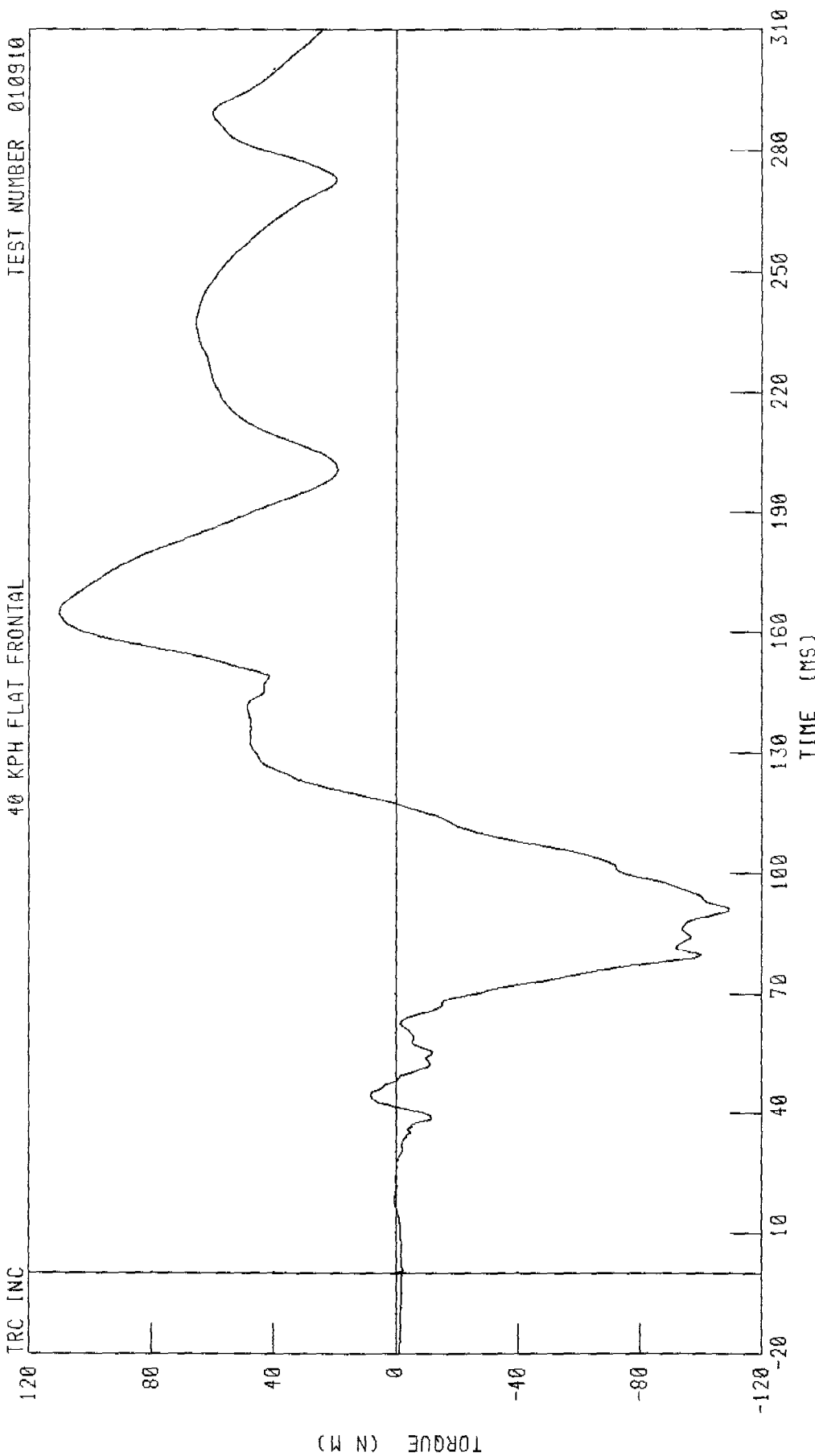
CHANNEL NKLX11 FILTER CH CLASS 600

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER NECK LOWER MOMENT ABOUT Y AXIS

40 KPH FLAT FRONTAL

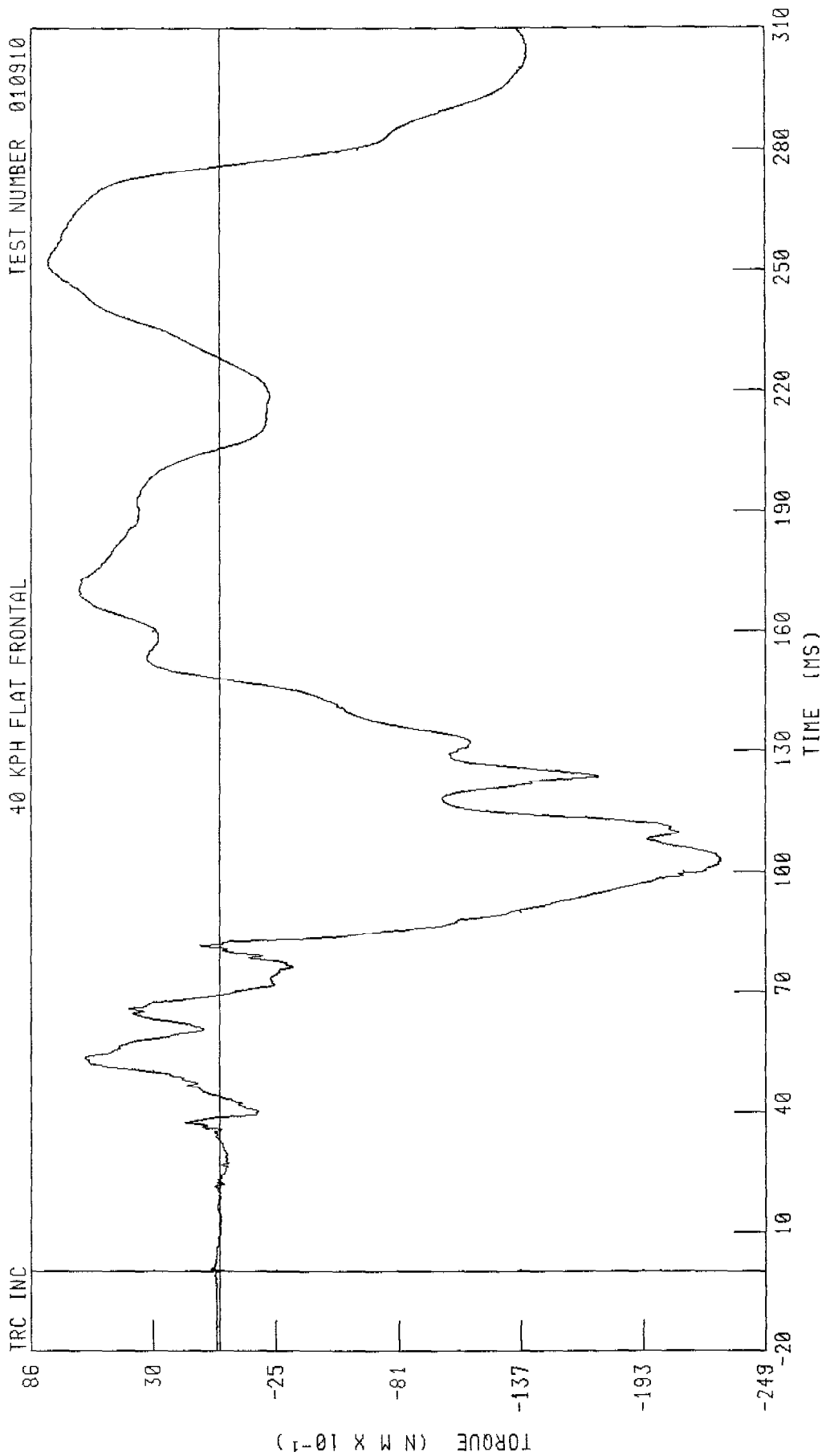
TEST NUMBER 010910

TRC INC



CHANNEL NKLYM1 FILTER CH CLASS 600 PEAK DATA 110 15 N M 0 164 96 MS, -109 39 N M 0 90 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER NECK LOWER MOMENT ABOUT Z AXIS



CHANNEL NKLZM1 FILTER CH CLASS 600 PEAK DATA 7 85 N M 252 24 MS, -22 95 N M 103 36 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER CHEST X-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

38

-54

-146

-238

-330

-422

-514

ACCELERATION (G X 10⁻¹)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

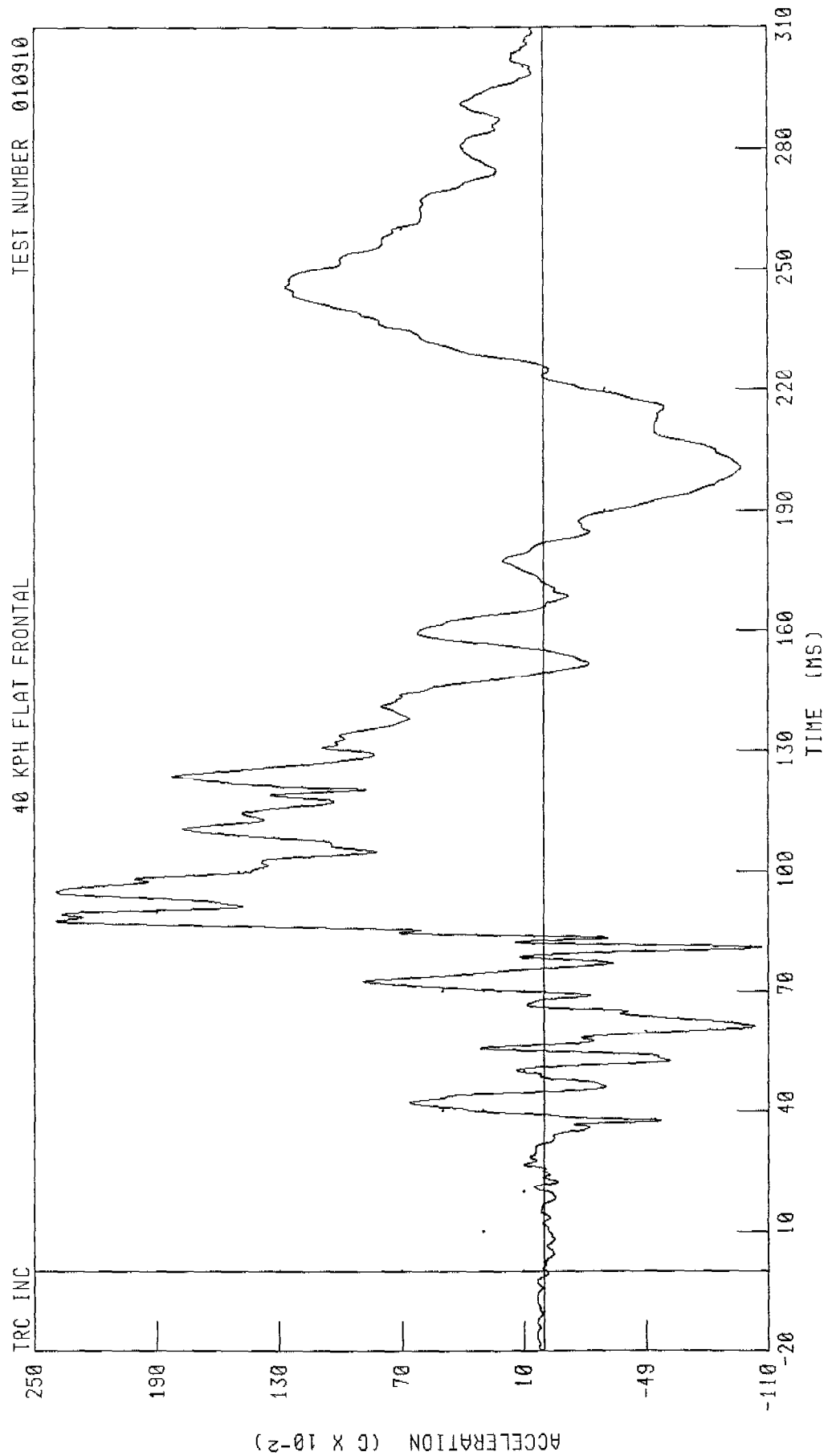
10

-20

CHANNEL CSTXG1 FILTER CH CLASS 180

PEAK DATA 3 54 G @ 220 80 MS, -46 98 G @ 94 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER CHEST Y-AXIS ACCELERATION
40 KPH FLAT FRONTAL



CHANNEL CSTYG1 FILTER CH CLASS 180

PEAK DATA 2 40 G @ 87 84 MS, -1 07 G @ 80 96 MS

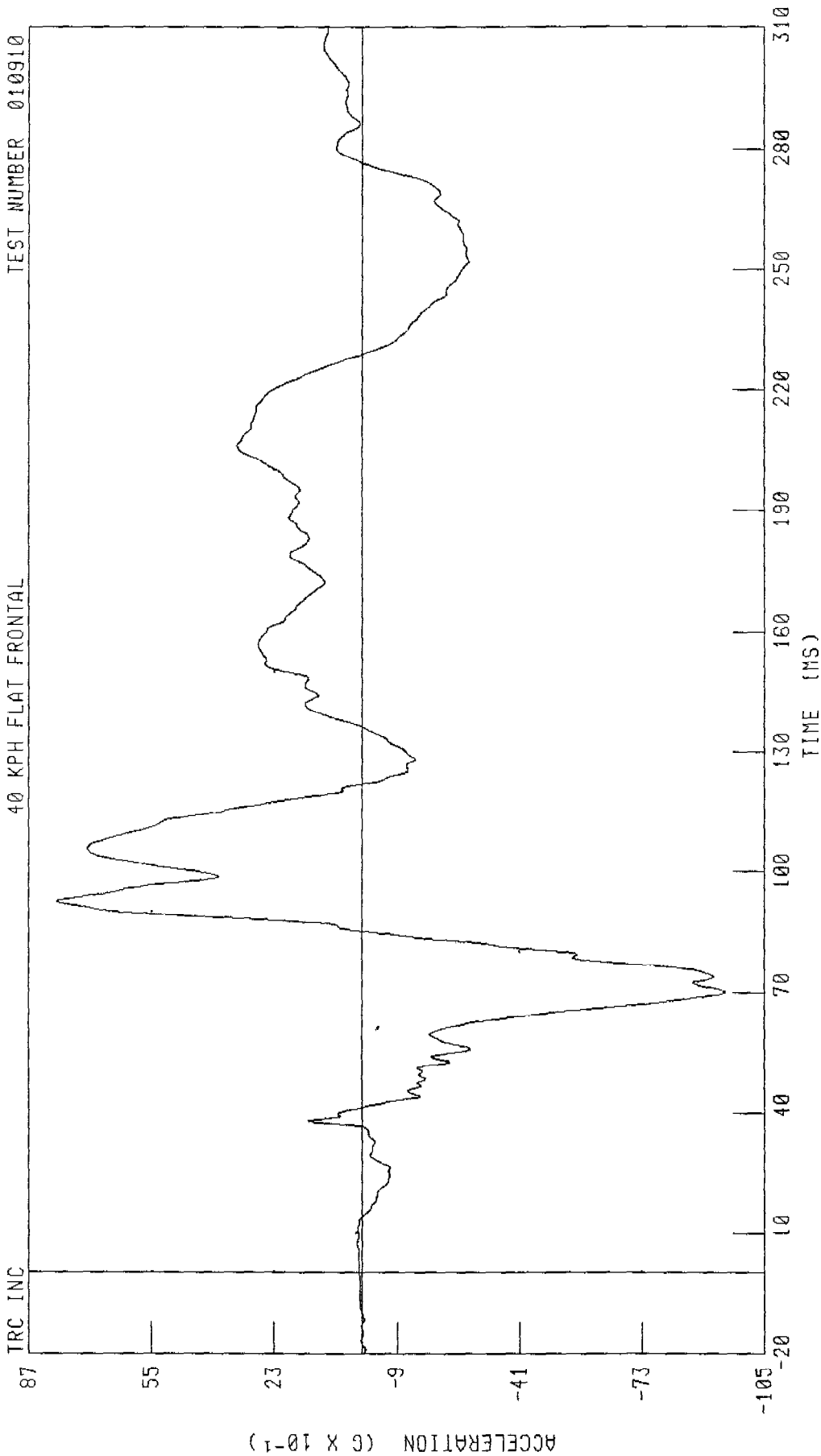
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER CHEST Z-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



CHANNEL CSTZG1 FILTER CH CLASS 180

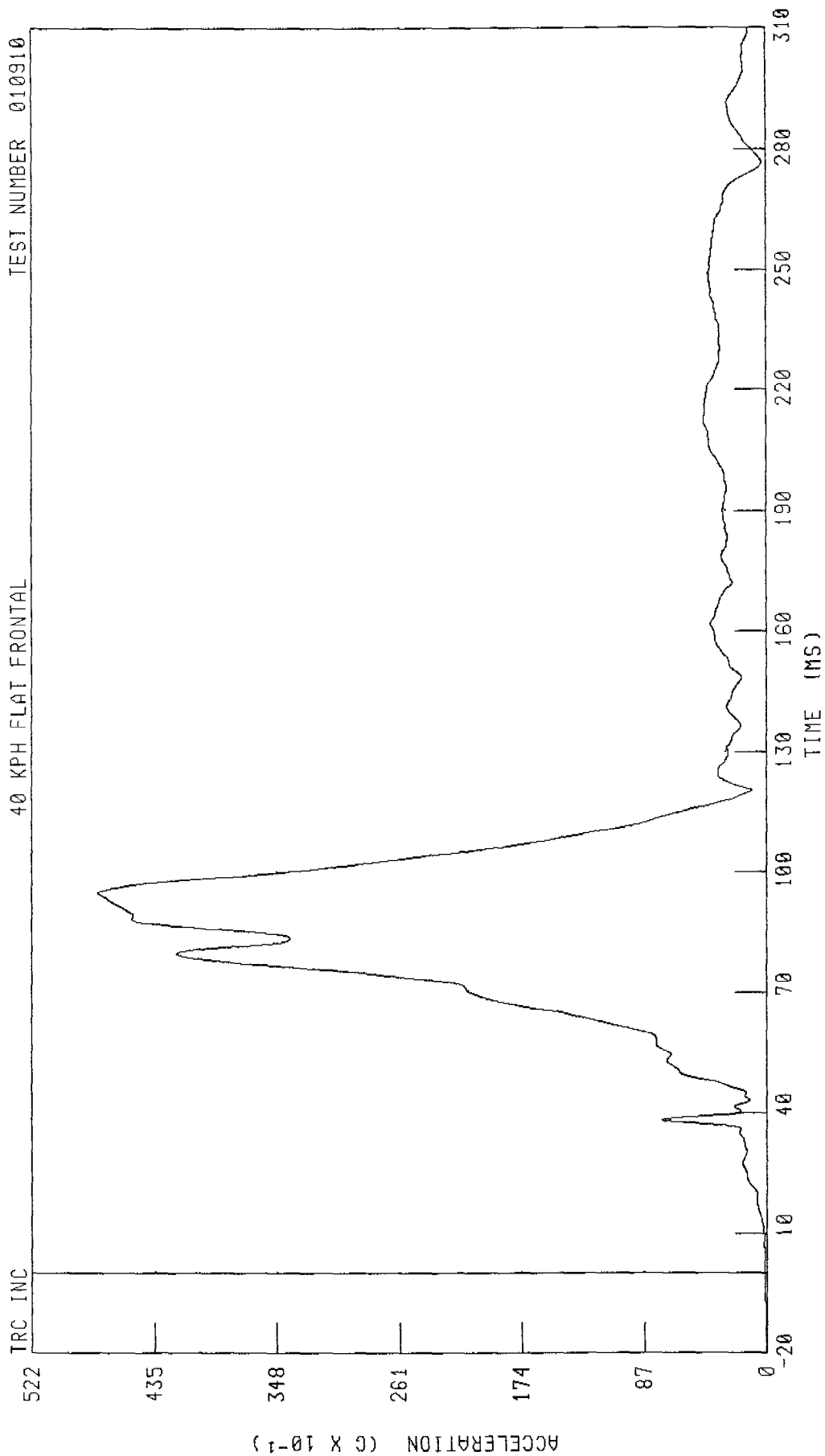
PEAK DATA 7 97 G @ 92 64 MS, -9 48 G @ 70 08 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER CHEST RESULTANT ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910



PEAK DATA 47 51 6 94 80 MS, 0 01 G 0 -20 00 MS

CHANNEL CSTRC1 FILTER CH CLASS 180

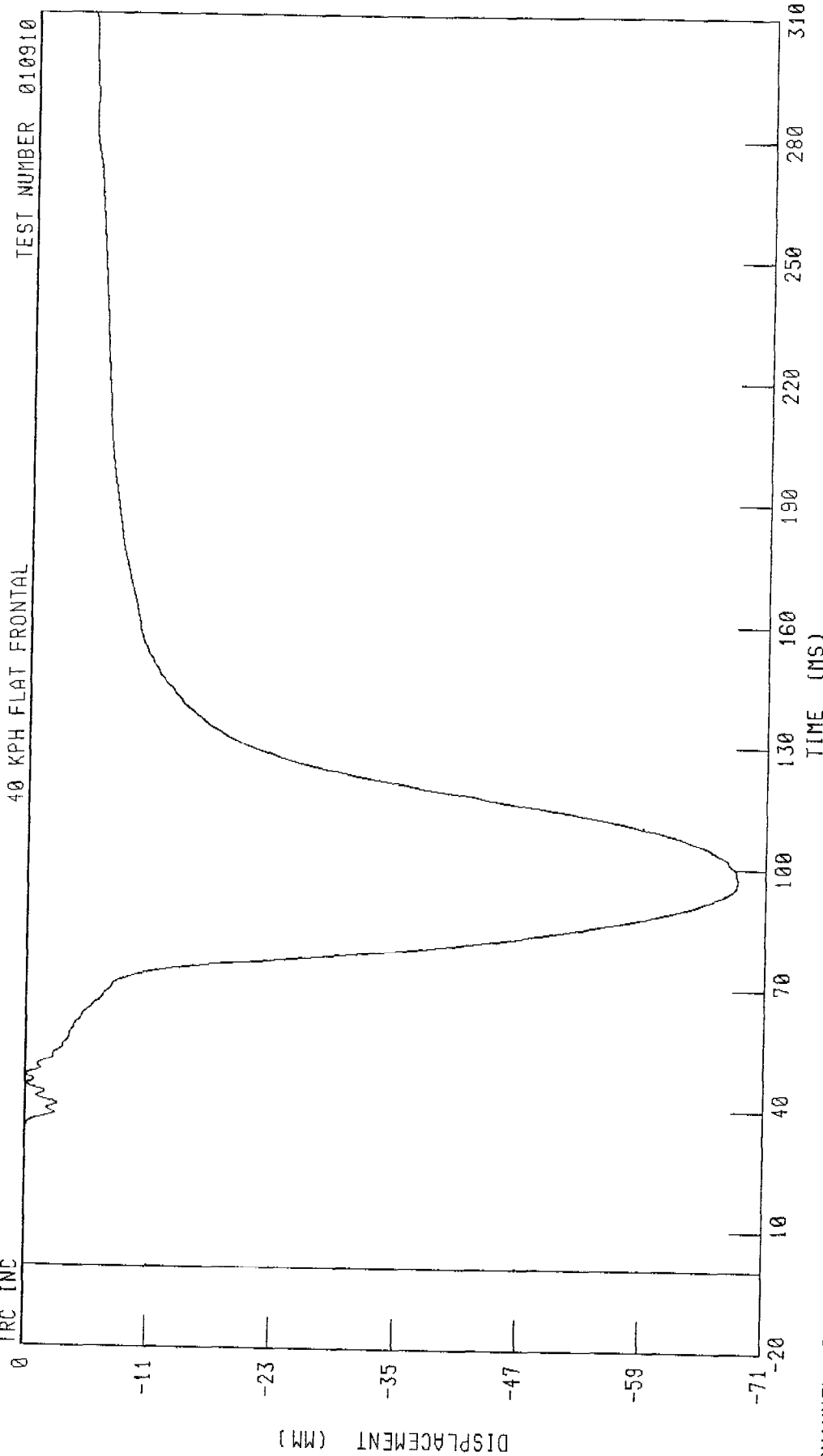
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER CHEST DEFLECTION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



CHANNEL CSTXD1 FILTER CH CLASS 600

PEAK DATA 0 10 MM @ 30 88 MS, -69 22 MM @ 97 52 MS

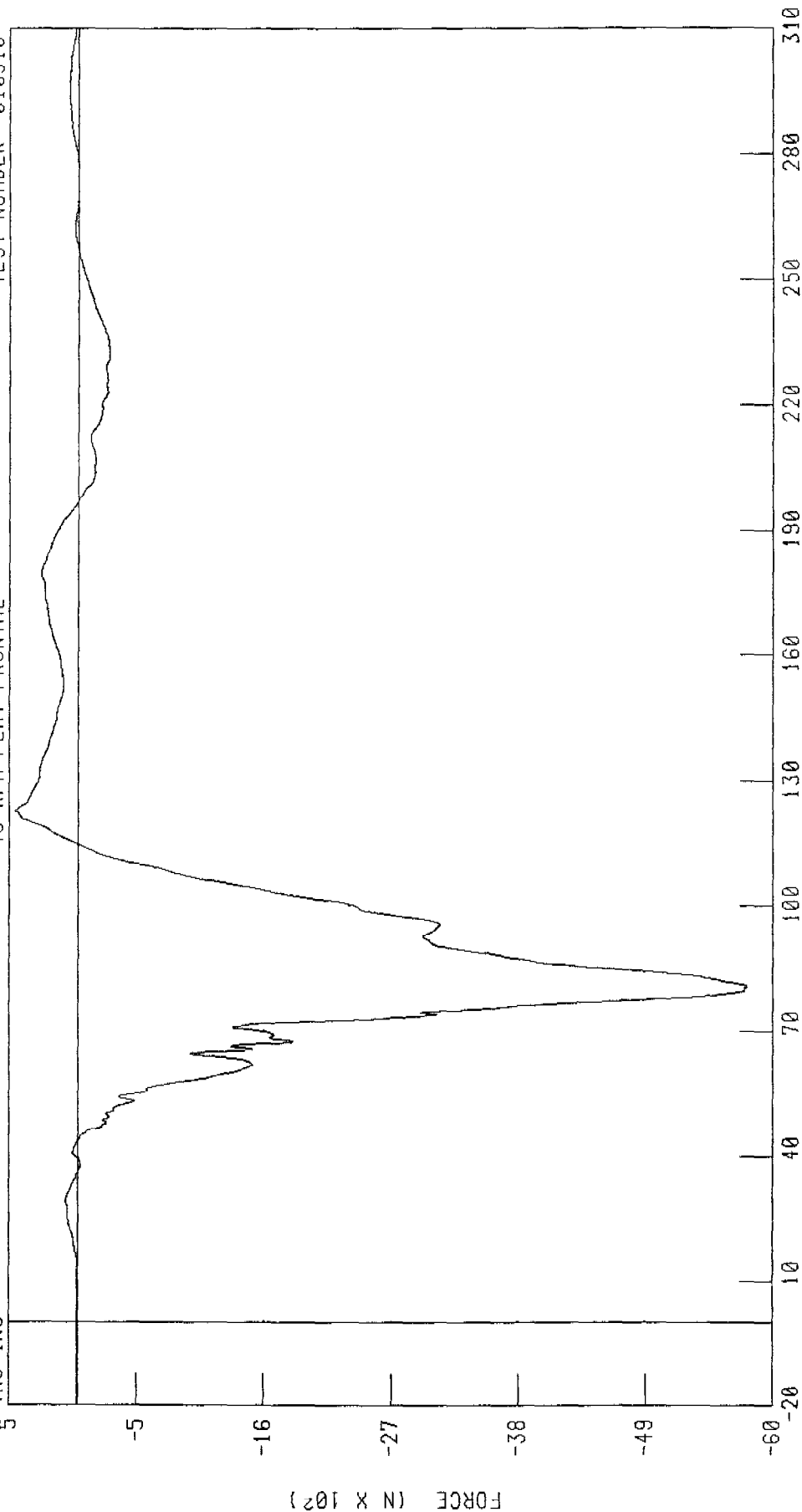
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER LEFT FEMUR FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



TIME (MS)

PEAK DATA 545 17 N @ 122 72 MS, -5790 74 N @ 80 56 MS

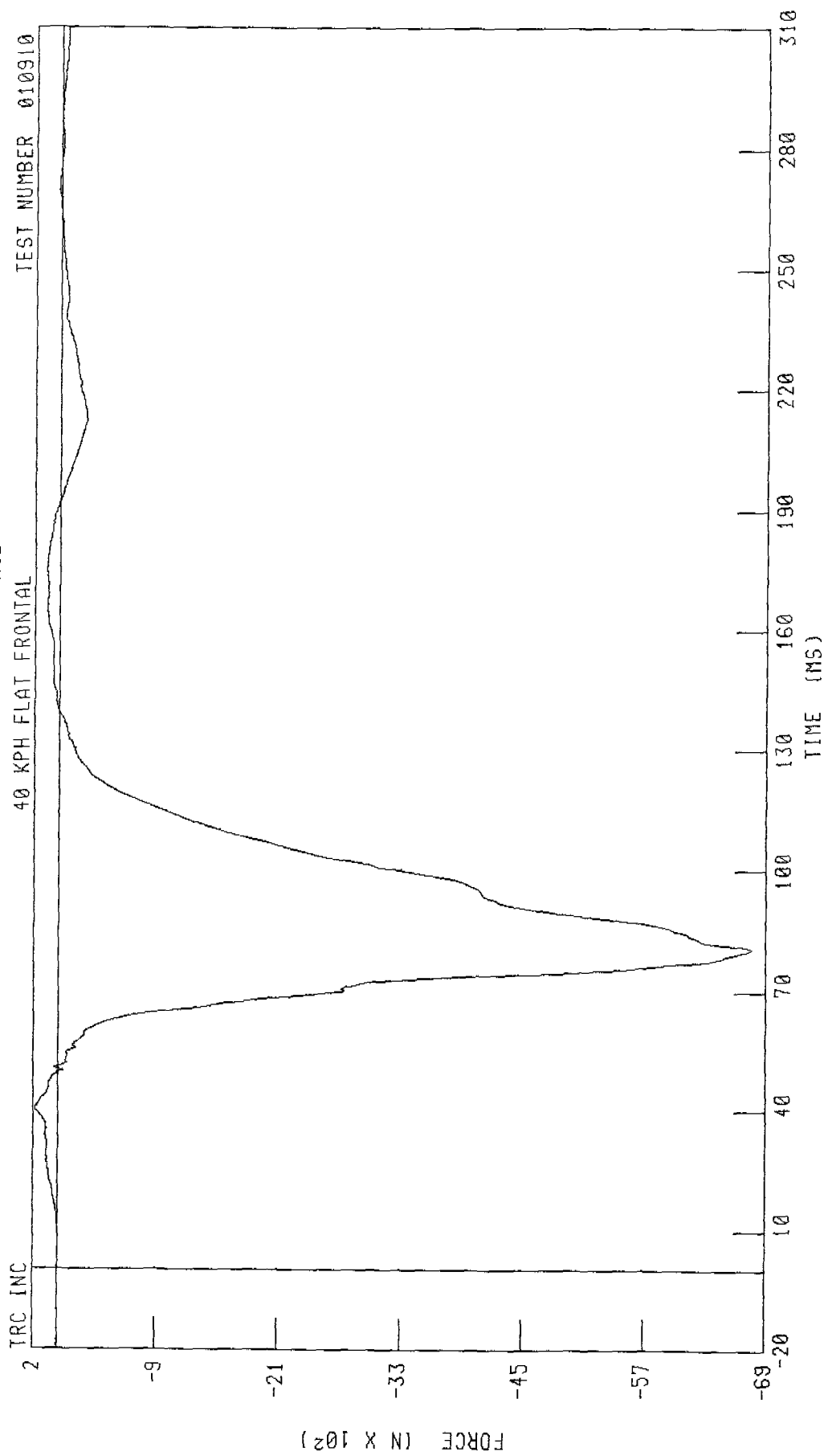
CHANNEL LFMZF1 FILTER CH CLASS 600

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT FEMUR FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910

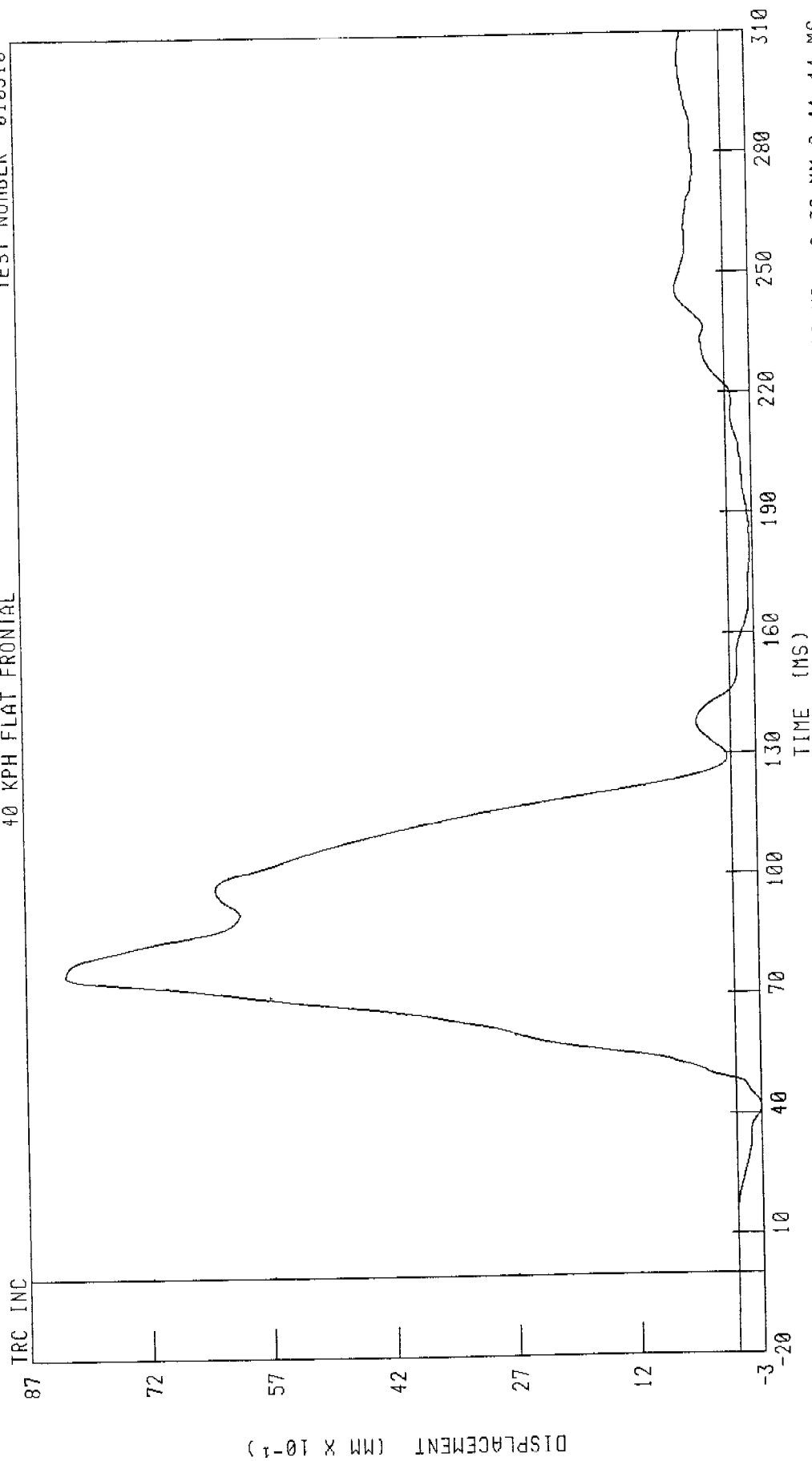


CHANNEL RFNZF1 FILTER CH CLASS 600

PEAK DATA 221 75 N @ 40 00 MS, -6818 61 N @ 80 80 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT KNEE DISPLACEMENT
40 KPH FLAT FRONTAL

TEST NUMBER 010910



PEAK DATA 8 22 MM @ 76 00 MS, -0 30 MM @ 41 44 MS

CHANNEL KNLXD1 FILTER CH CLASS 180

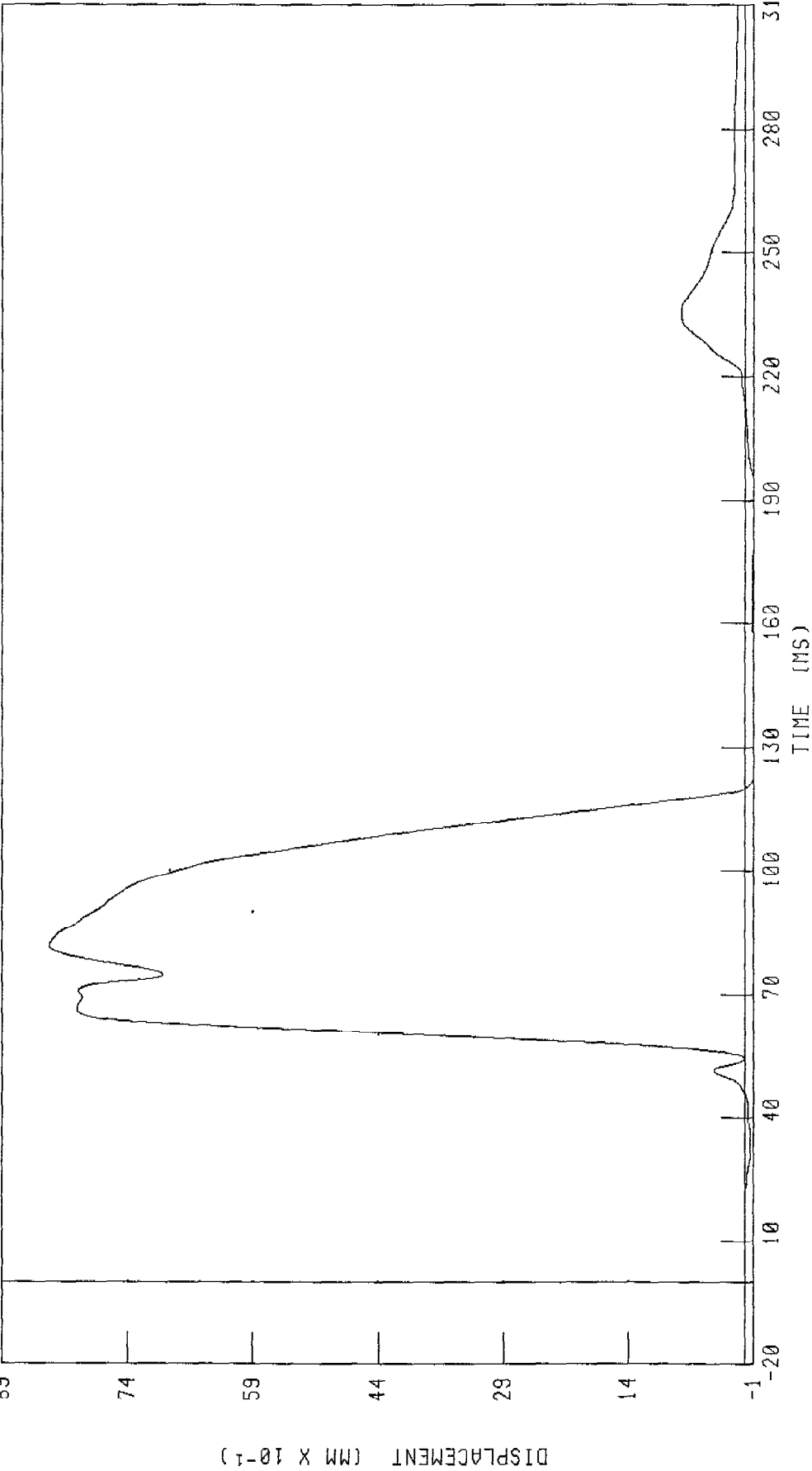
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT KNEE DISPLACEMENT

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

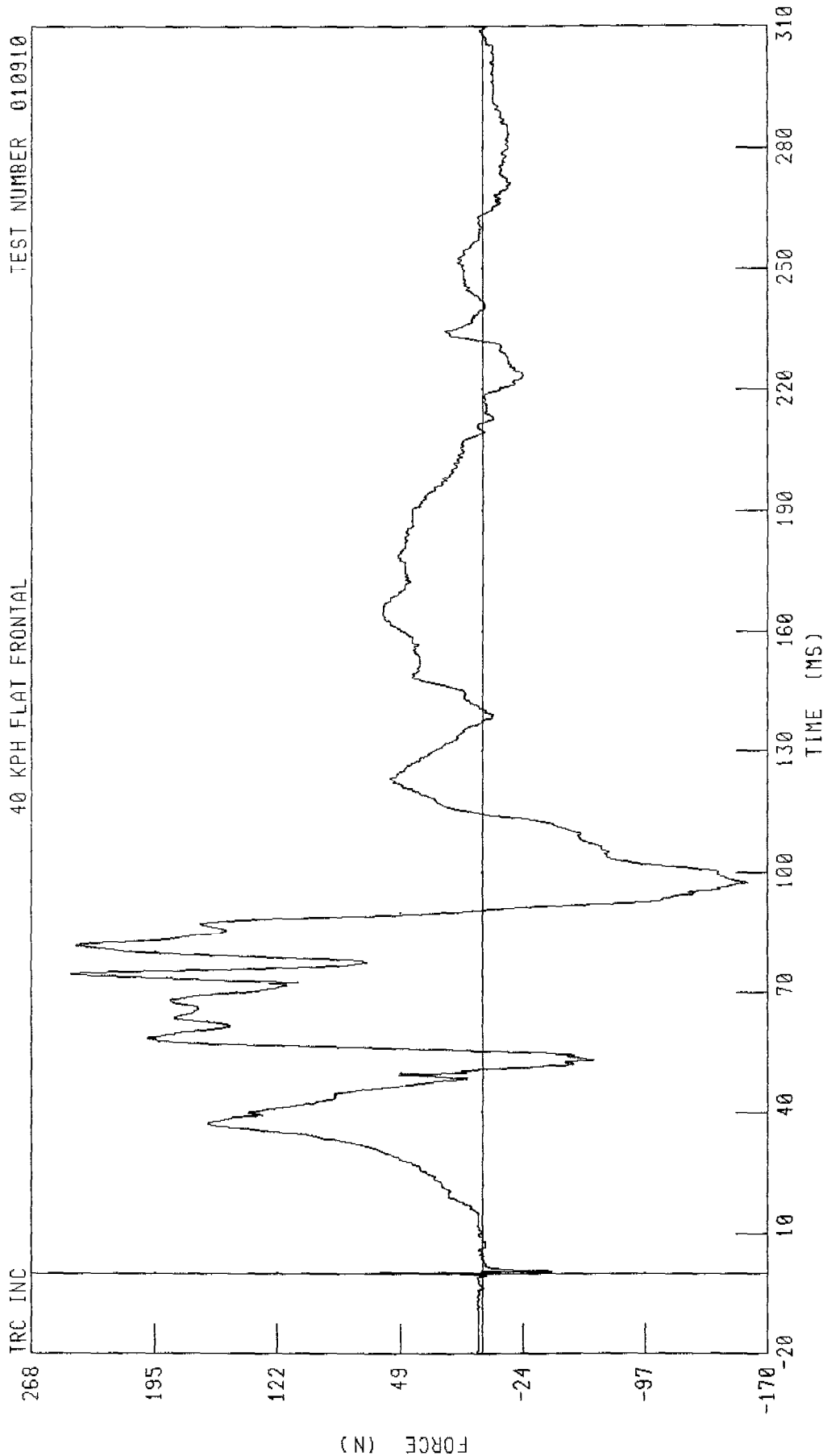


CHANNEL KNRXD1 FILTER CH CLASS 180

PEAK DATA 8 34 MM @ 81 60 MS, -0 15 MM @ 127 36 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT UPPER TIBIA X-AXIS FORCE
40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL TBLXF1 FILTER CH CLASS 600

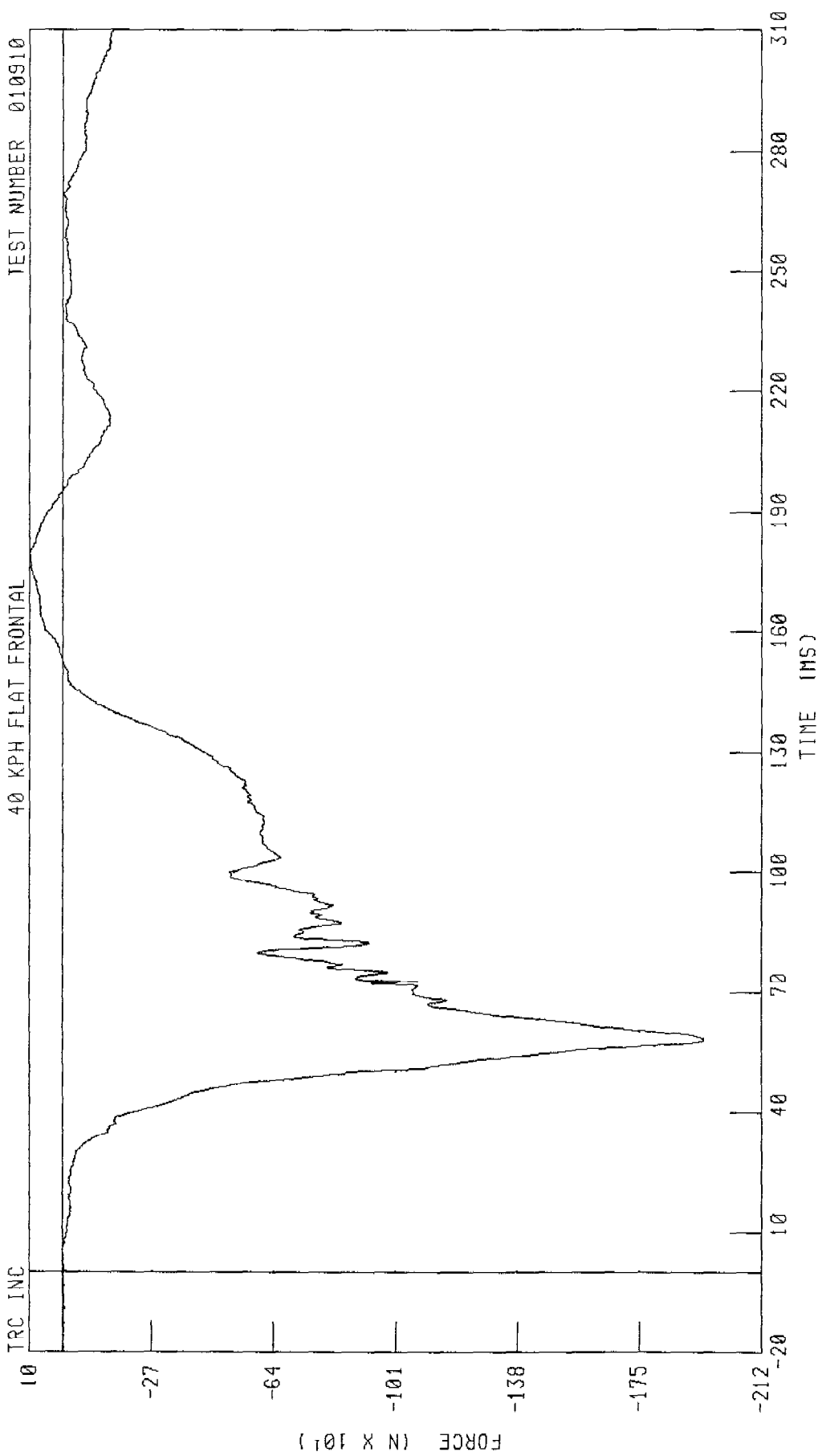
PEAK DATA 244 47 N @ 74 64 MS, -158 58 N @ 97 60 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER LEFT UPPER TIBIA Z-AXIS FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL TBLZF1 FILTER CH CLASS 600

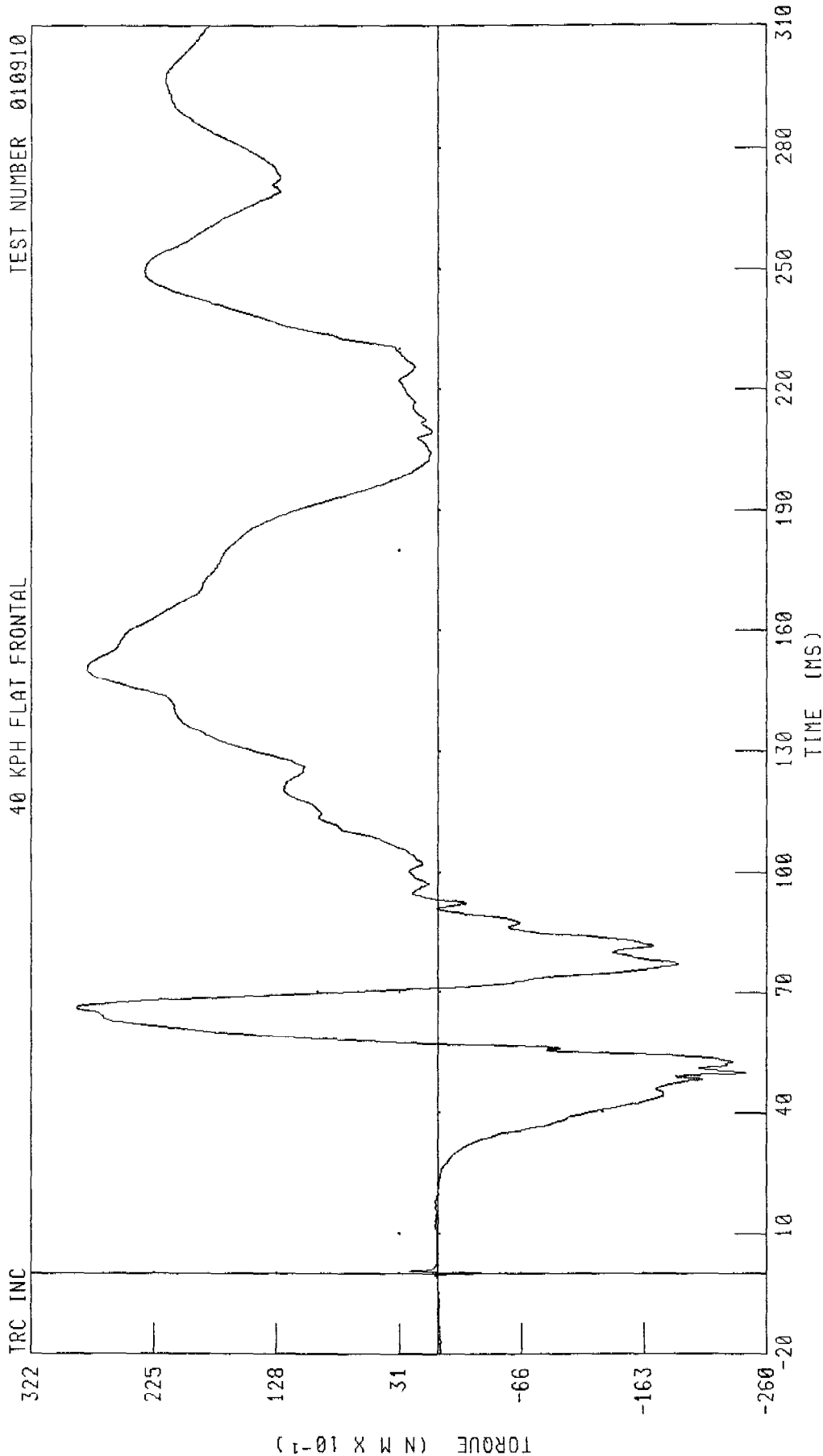
PEAK DATA 99 95 N @ 179 60 MS, -1945 94 N @ 57 84 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER LEFT UPPER TIBIA MOMENT ABOUT X AXIS

40 KPH FLAT FRONTAL

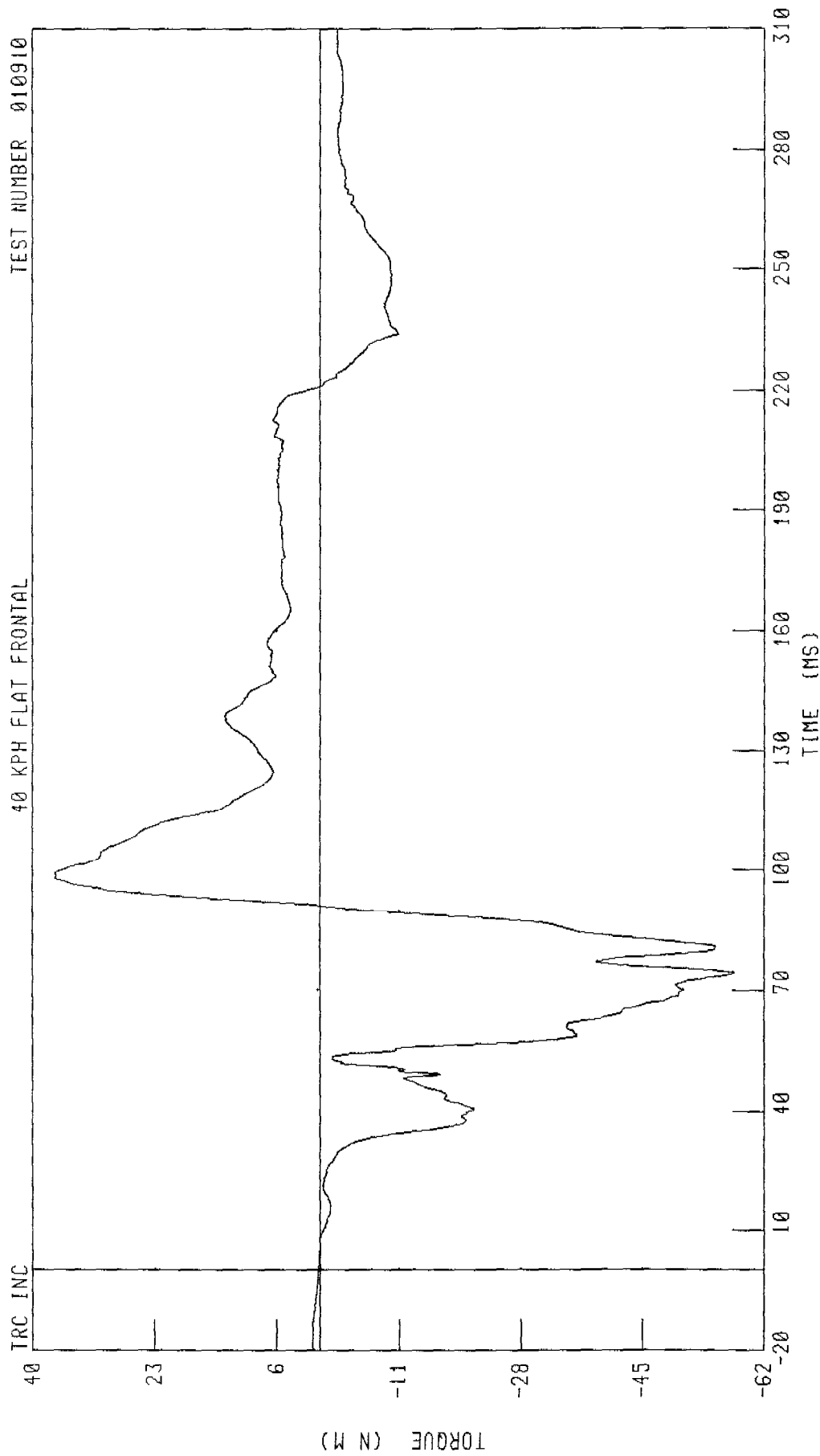
TEST NUMBER 010910



CHANNEL TBLXM1 FILTER CH CLASS 600

PEAK DATA 28 61 N M @ 66 24 MS, -24 34 N M @ 49 92 MS

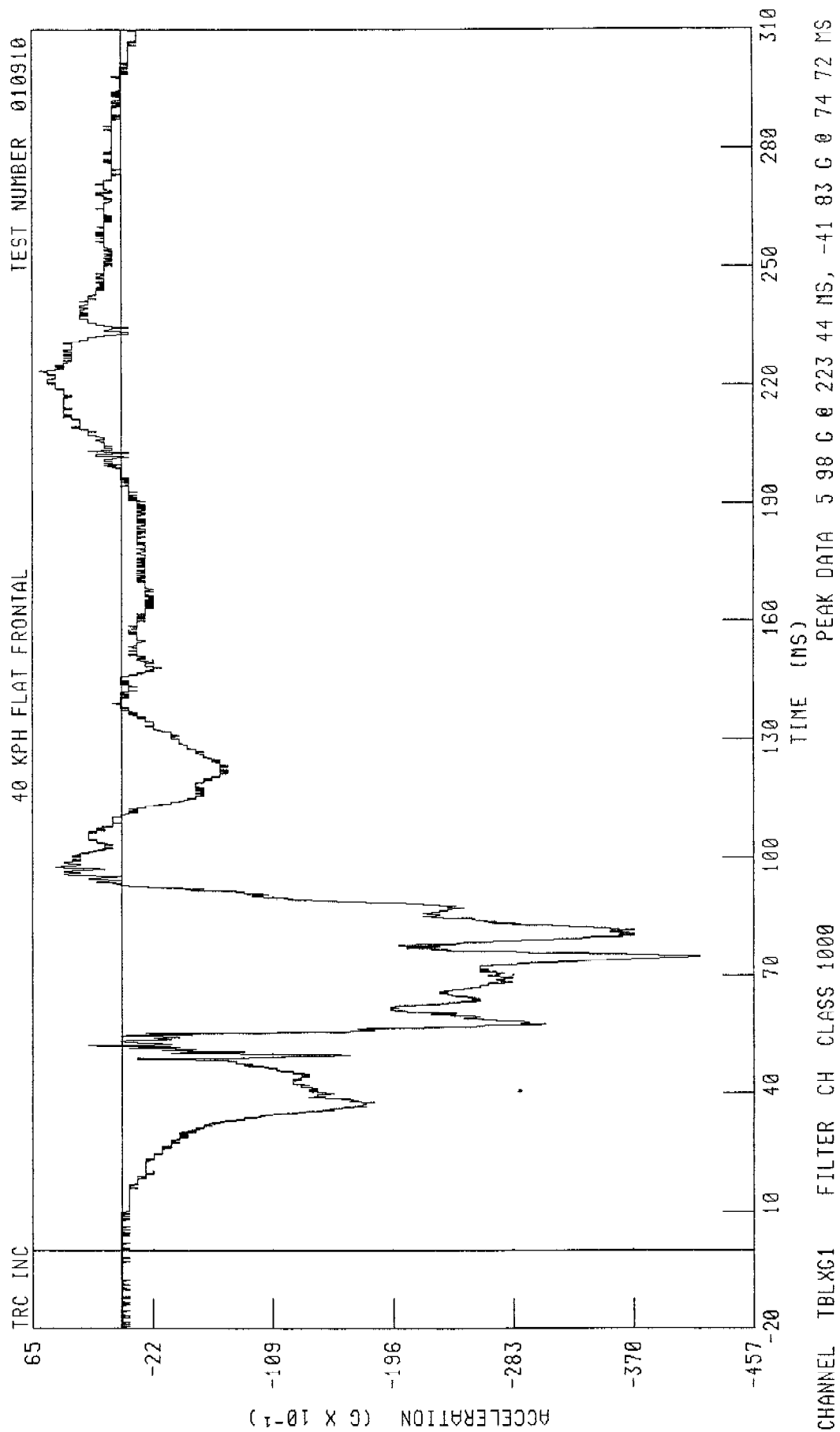
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS



CHANNEL TBLYM1 FILTER CH CLASS 600

PEAK DATA 36 91 N M @ 98 16 MS, -57 90 N M @ 74 32 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT TIBIA X-AXIS ACCELERATION

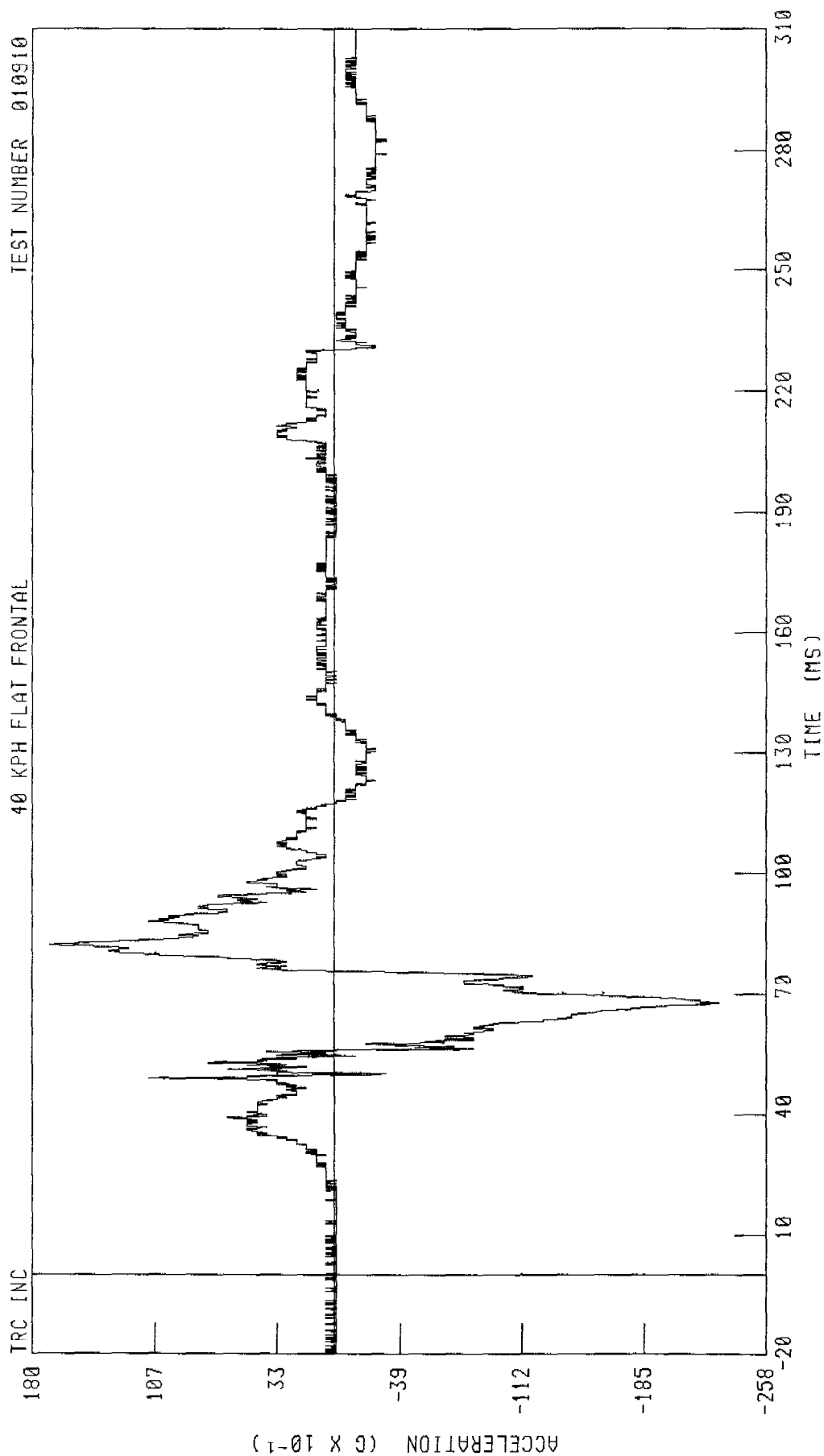


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER LEFT TIBIA Y-AXIS ACCELERATION

40 KPH FLAT FRONTAL

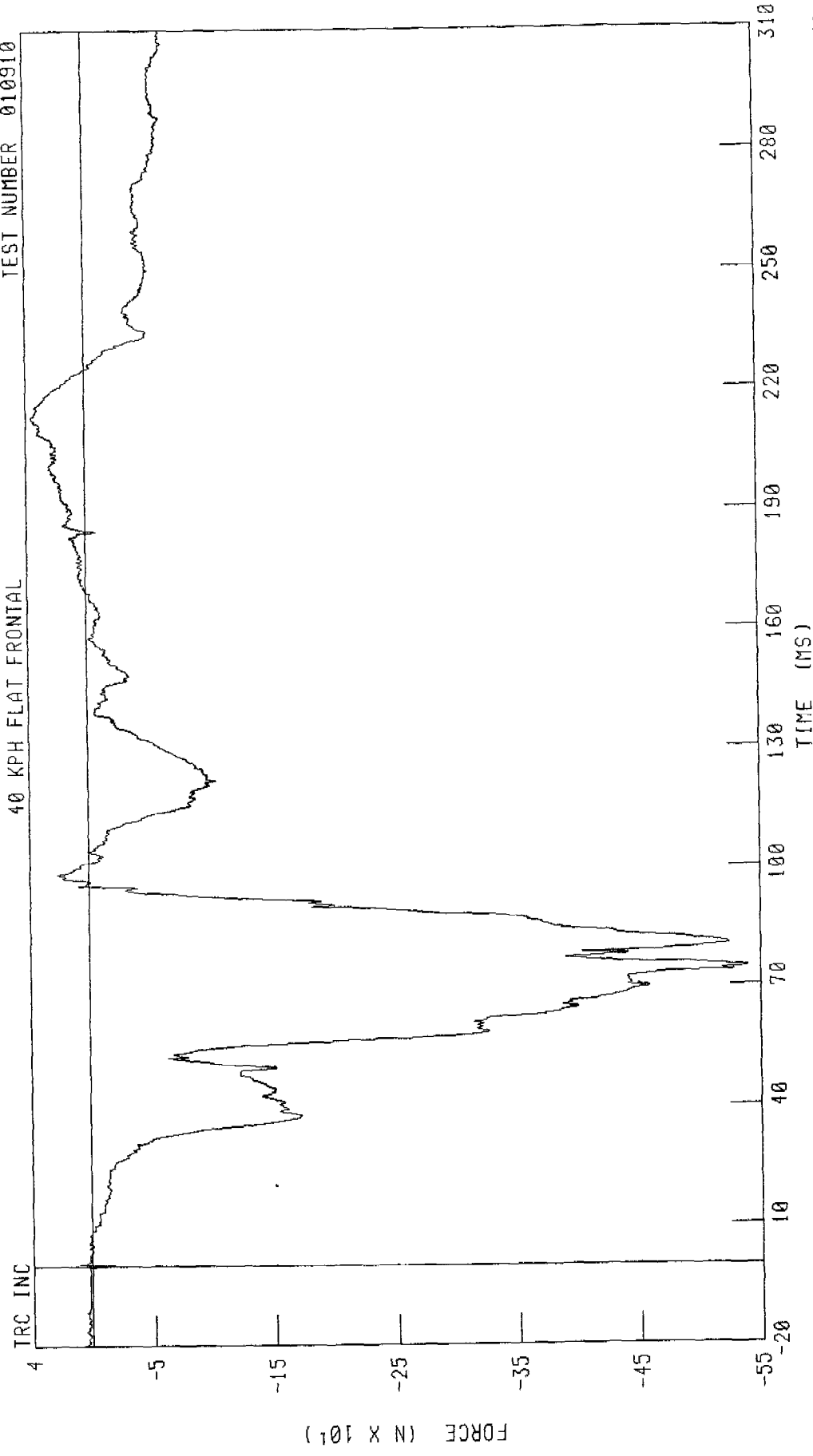
TEST NUMBER 010910



CHANNEL TBLYG1 FILTER CH CLASS 1000 PEAK DATA 16 97 G @ 82 00 MS, -23 03 G @ 67 60 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT LOWER TIBIA X-AXIS FORCE
40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL ANLXF1 FILTER CH CLASS 600

PEAK DATA 44 11 N @ 213 04 MS, -541 51 N @ 74 64 MS

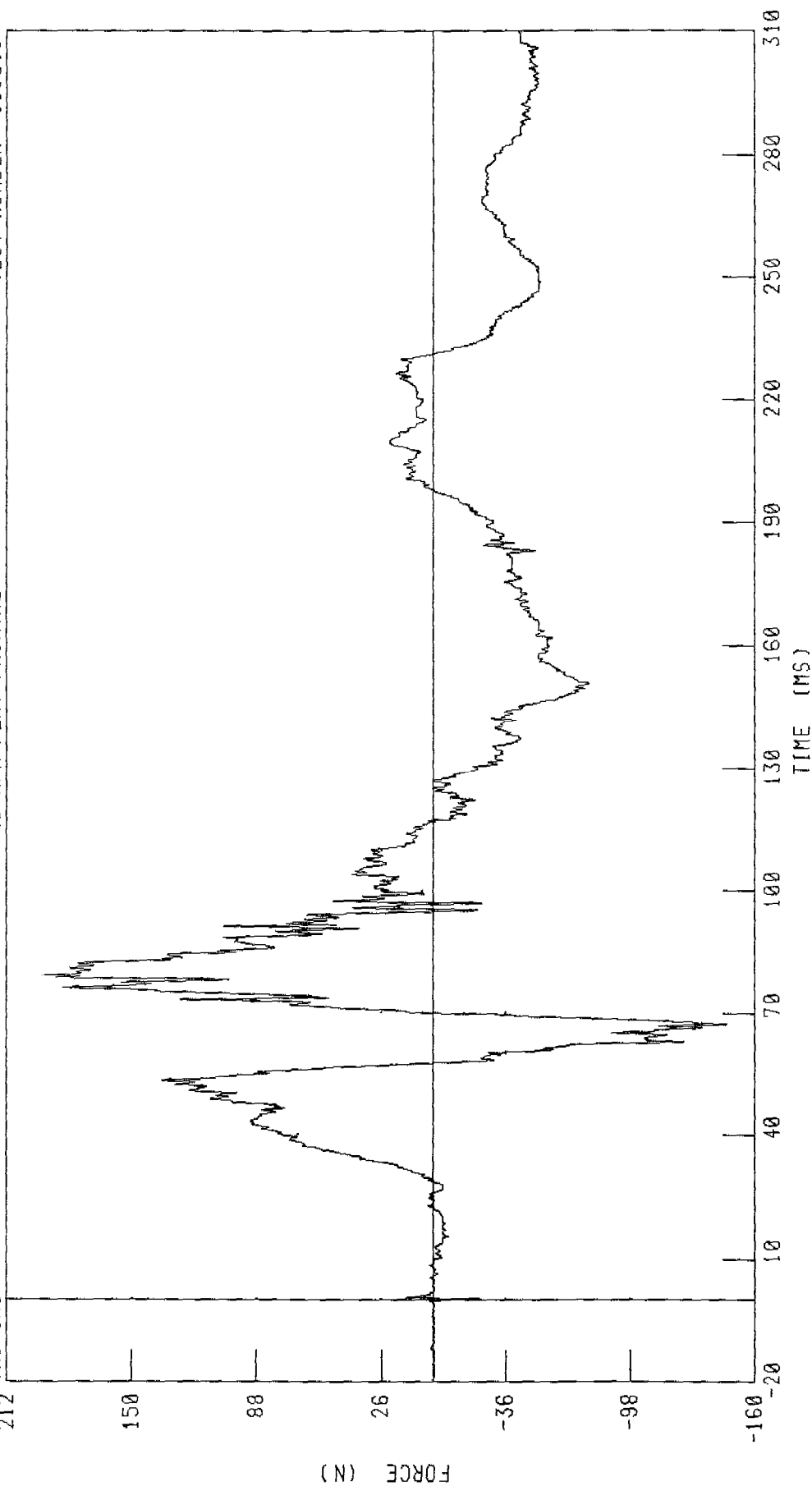
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER LEFT LOWER TIBIA Y-AXIS FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



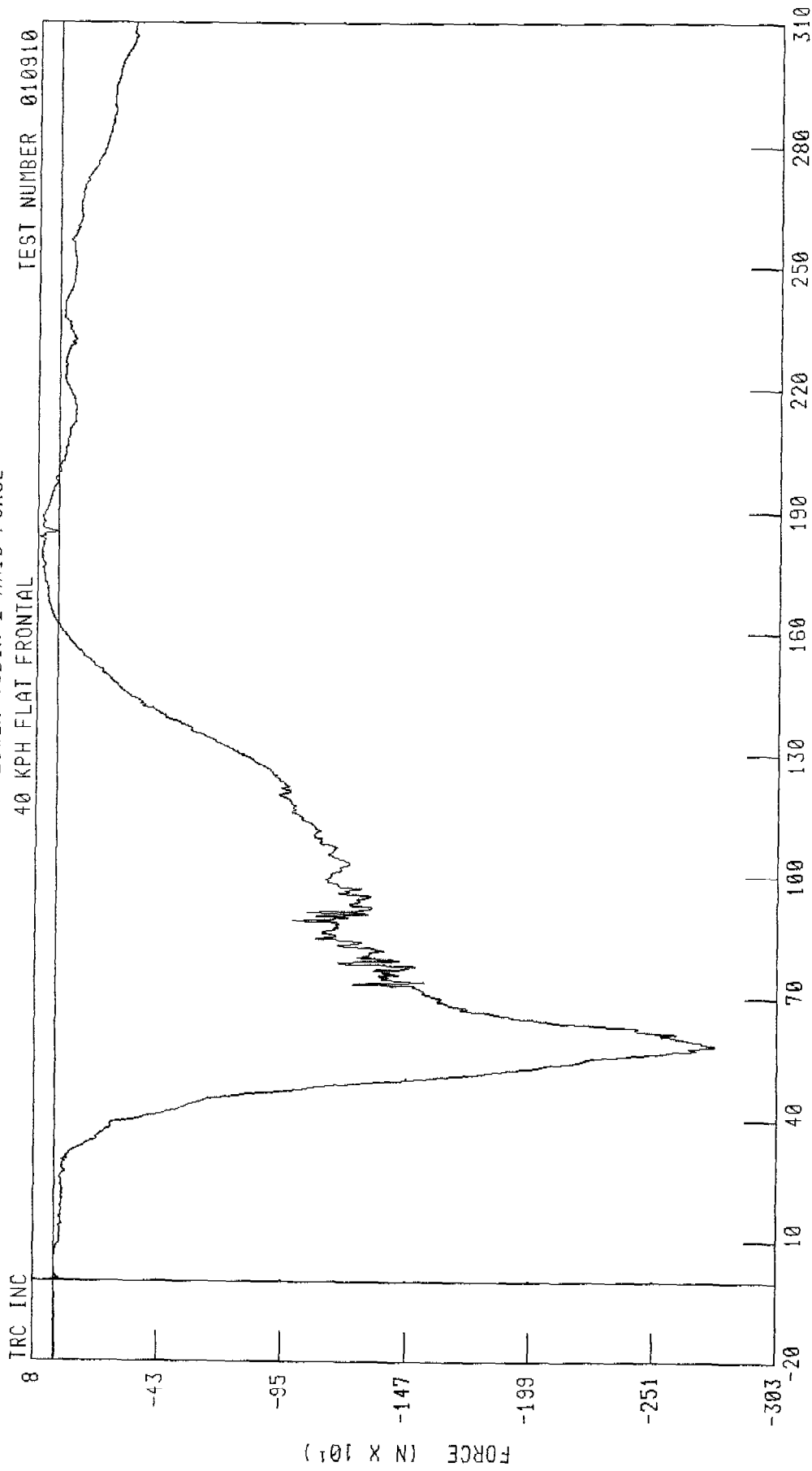
CHANNEL ANLYF1 FILTER CH CLASS 600

PEAK DATA 194 11 N @ 79 36 MS, -146 33 N @ 67 28 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT LOWER TIBIA Z-AXIS FORCE
40 KPH FLAT FRONTAL

TRC INC

TEST NUMBER 010910

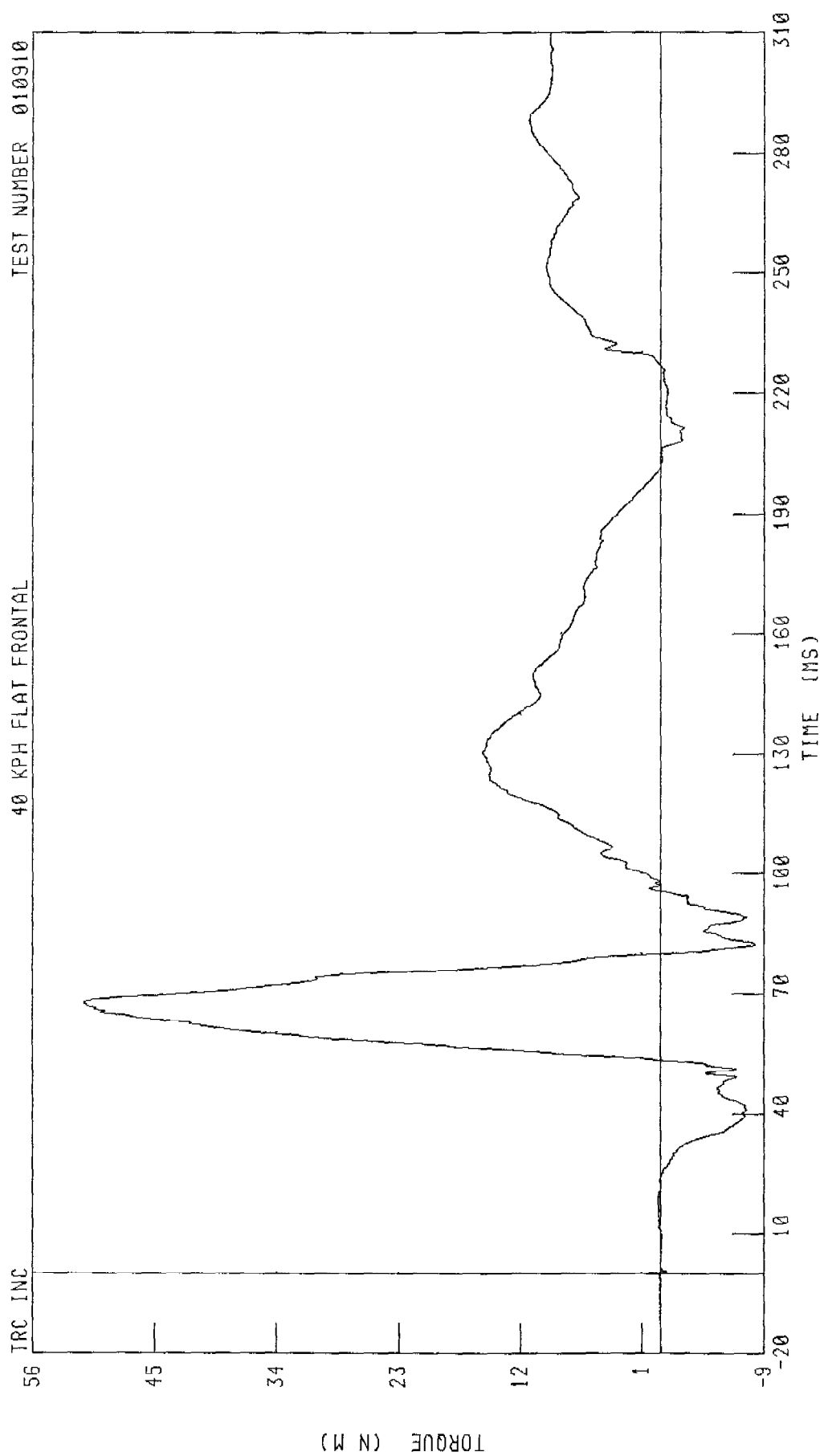


TIME (MS)

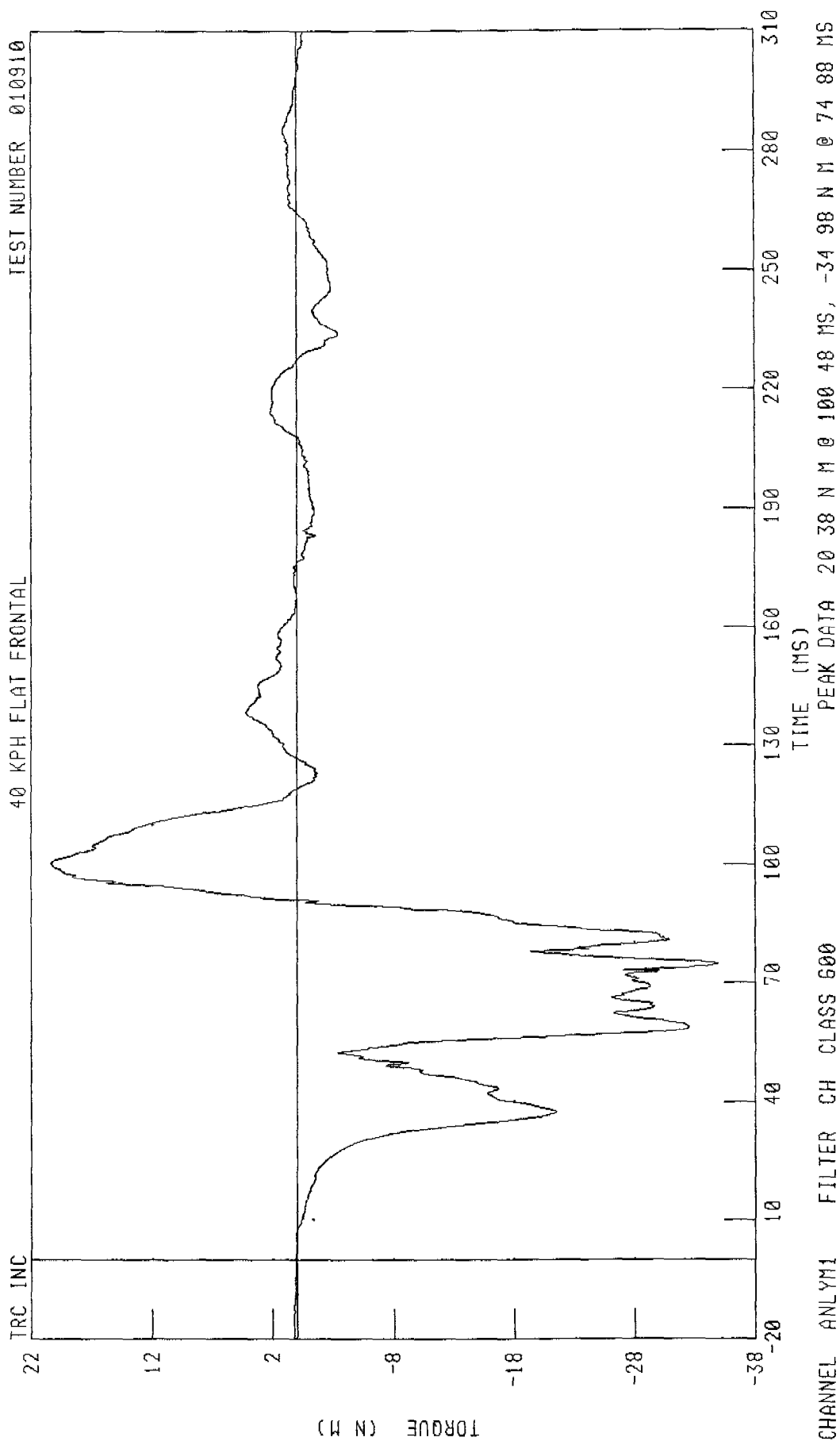
PEAK DATA 80 32 N @ 183 36 MS, -2773 70 N @ 58 16 MS

CHANNEL ANLZF1 FILTER CH CLASS 600

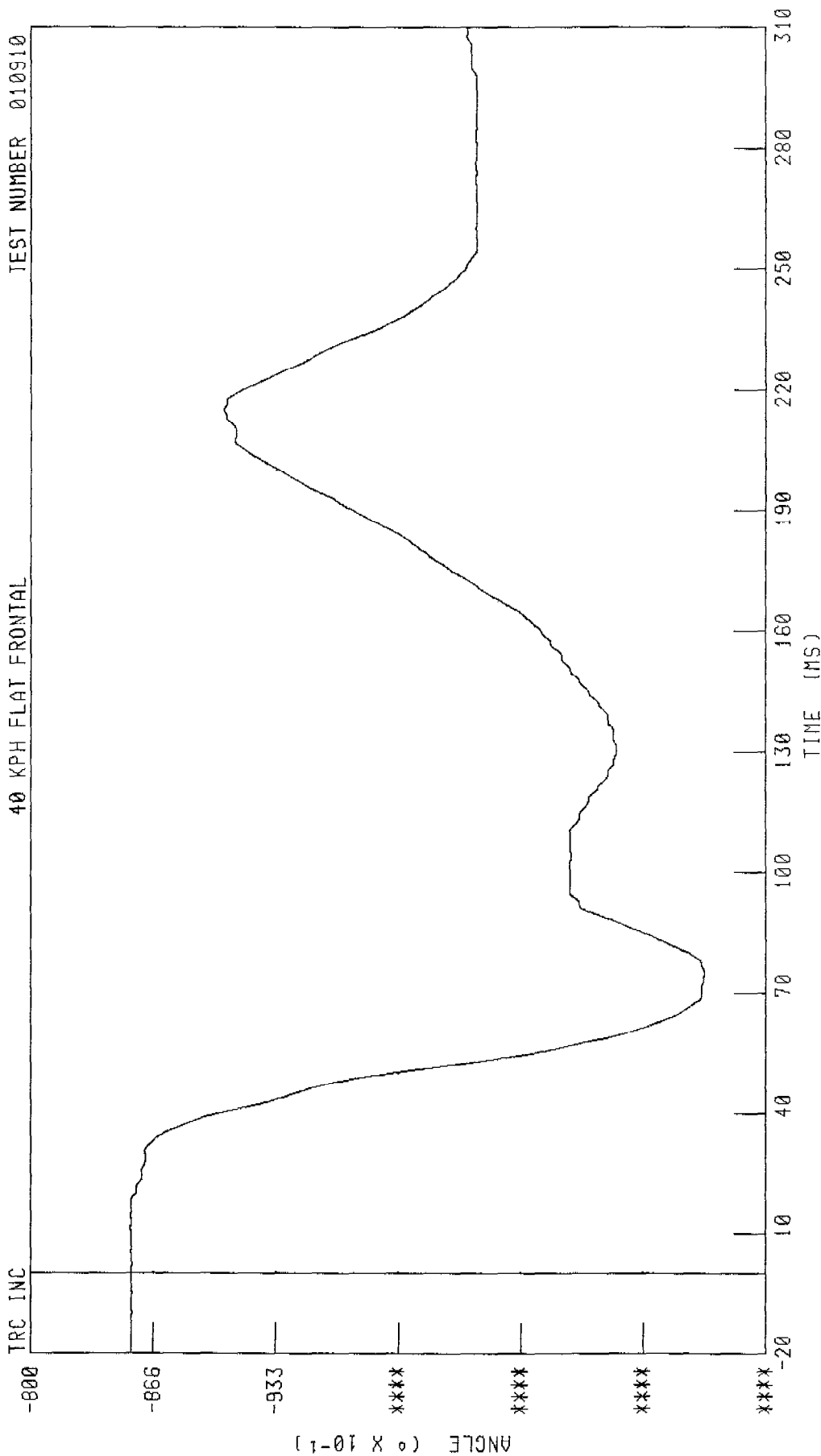
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT LOWER TIBIA MOMENT ABOUT X AXIS



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS

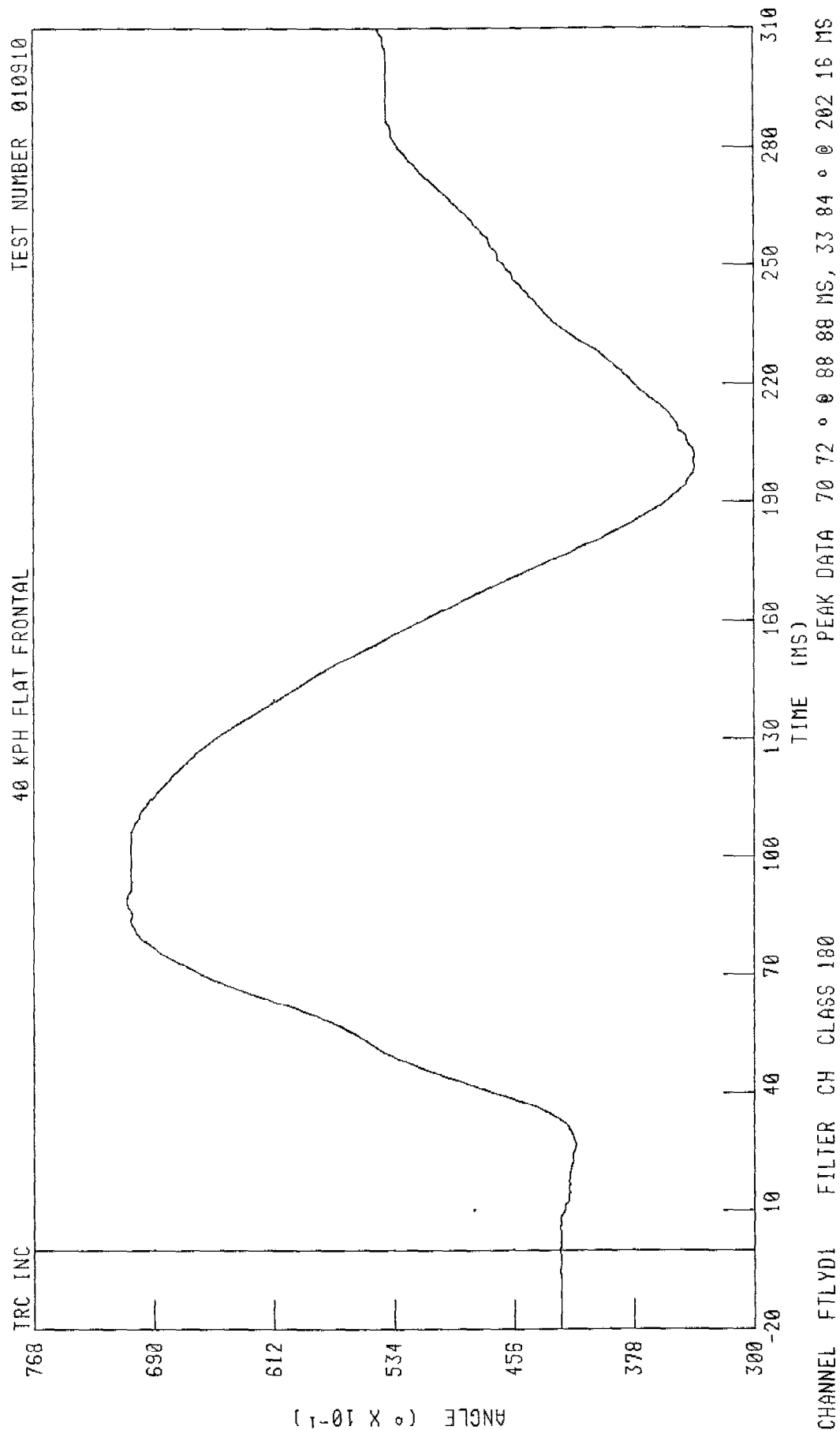


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT FOOT TO ANKLE X-AXIS DISPLACEMENT

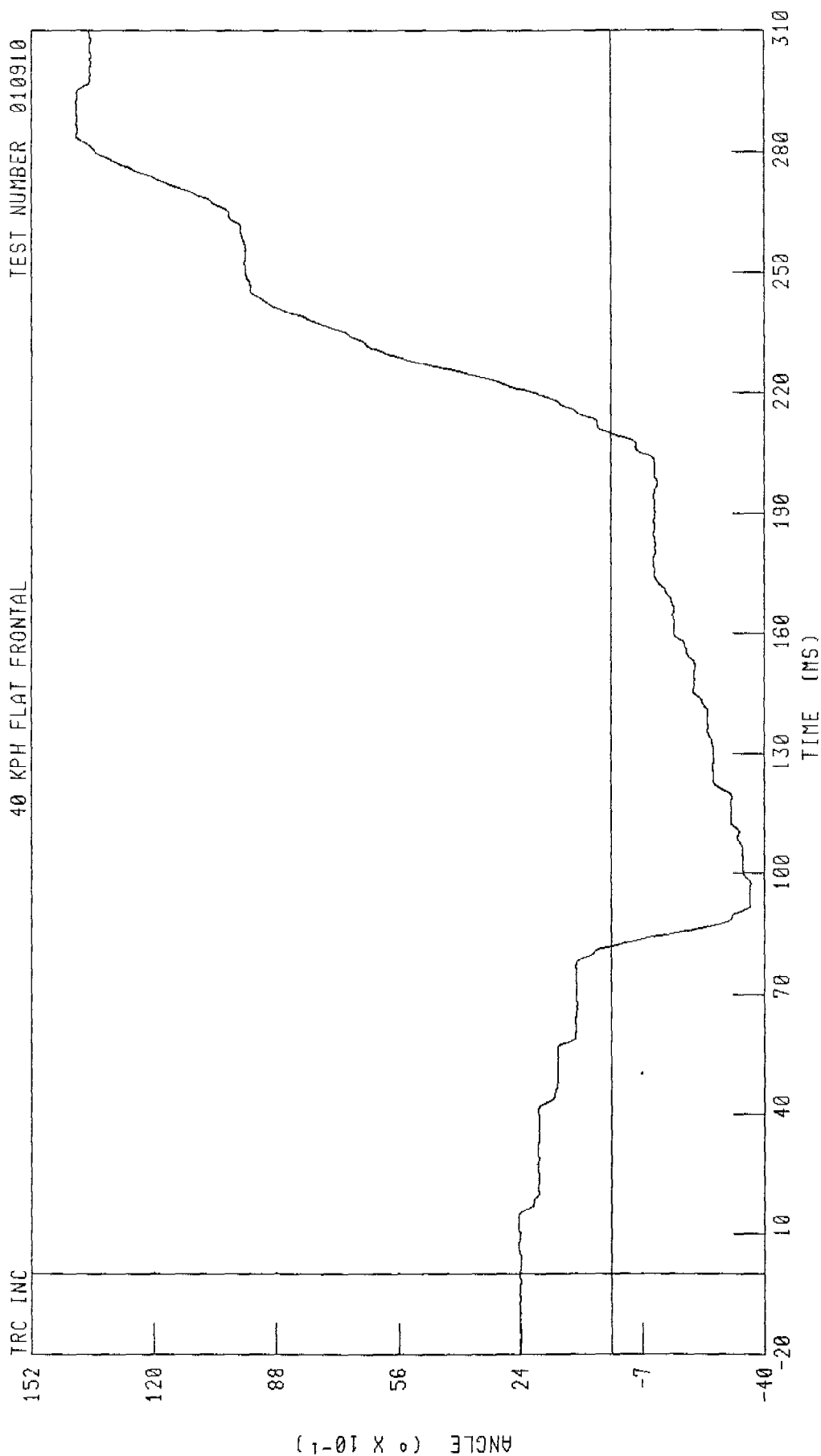


PEAK DATA -85 42 ° @ 14 16 MS, -116 68 ° @ 75 20 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT FOOT TO ANKLE Y-AXIS DISPLACEMENT

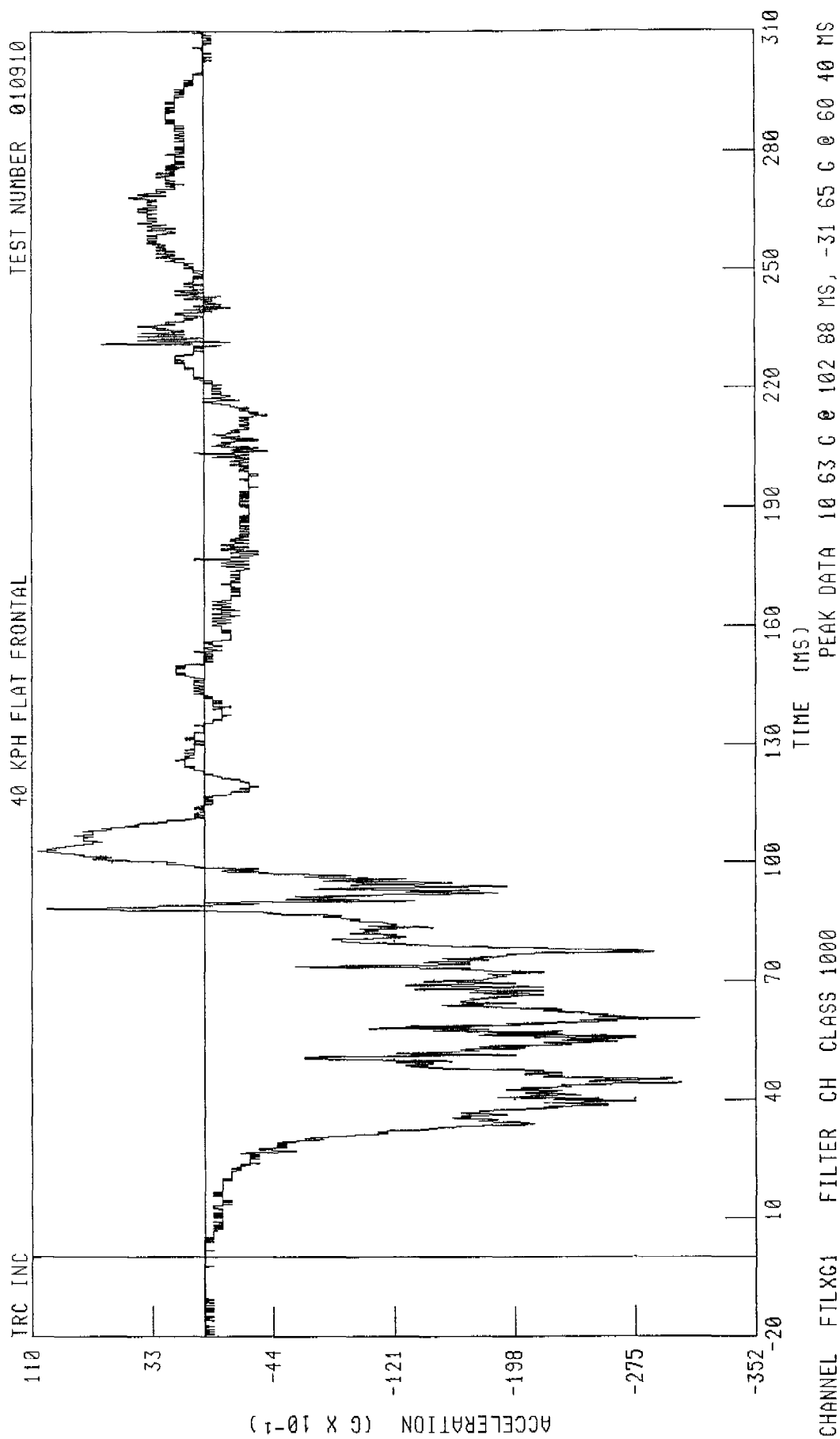


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER LEFT FOOT TO ANKLE Z-AXIS DISPLACEMENT

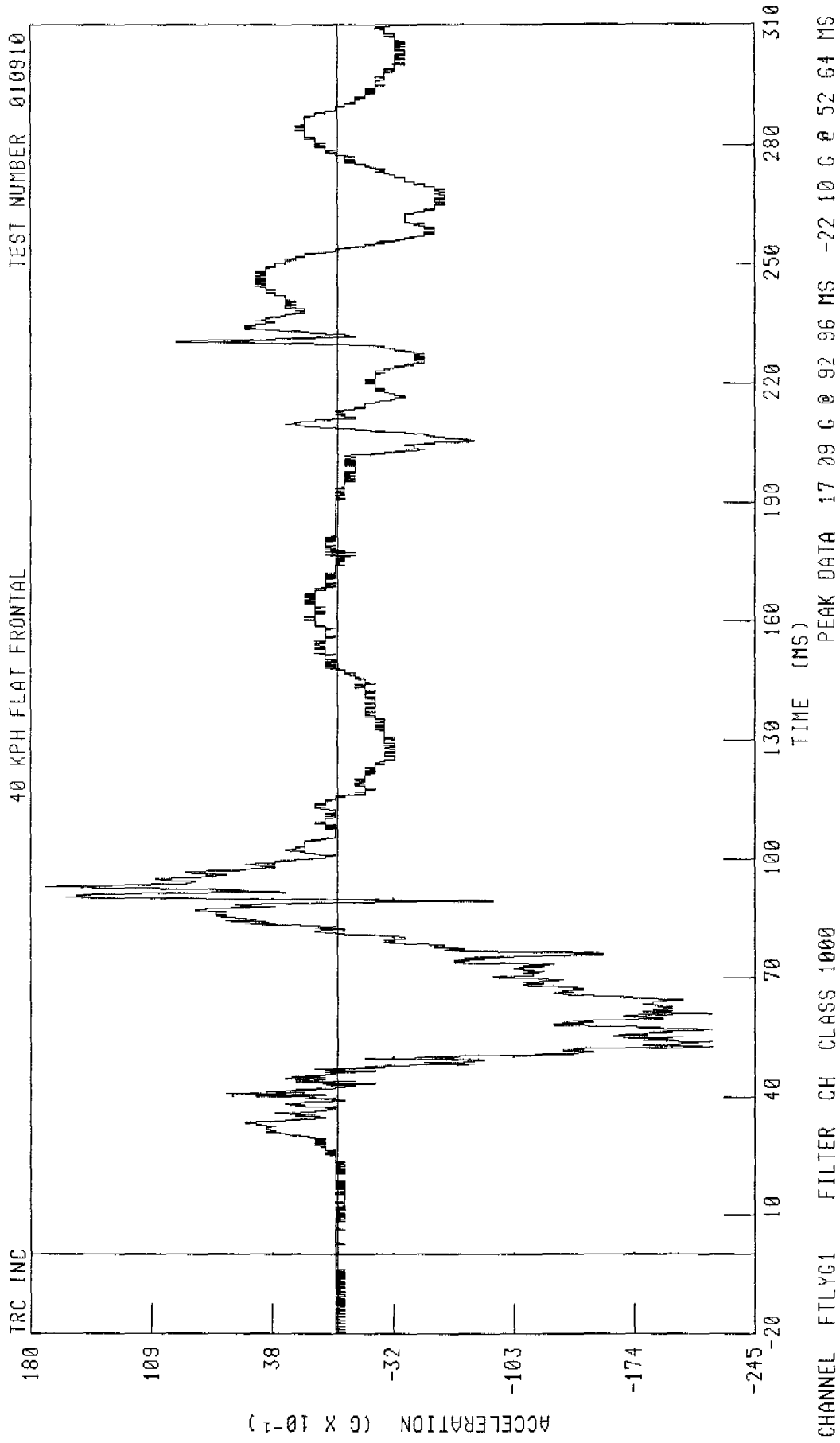


CHANNEL FTLZD1 FILTER CH CLASS 180 PEAK DATA 14 05 ° @ 291 68 MS, -3 64 ° @ 97 44 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT FOOT X-AXIS ACCELERATION



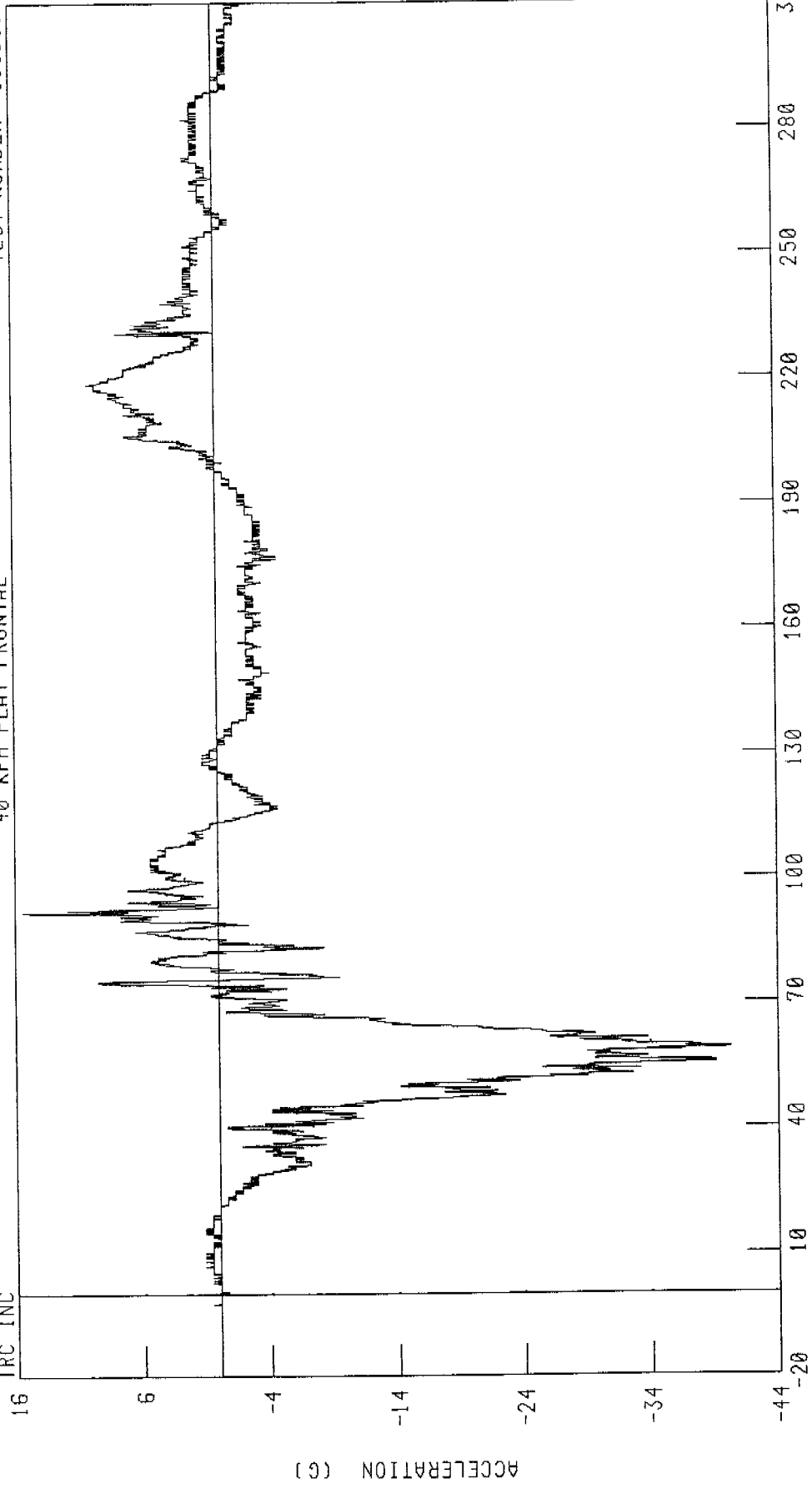
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT FOOT Y-AXIS ACCELERATION



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER LEFT FOOT Z-AXIS ACCELERATION

40 KPH FLAT FRONTAL TEST NUMBER 010910

TRC INC



CHANNEL FTLZG1 FILTER CH CLASS 1000 PEAK DATA 15 40 G @ 91 92 MS, -40 29 G @ 58 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

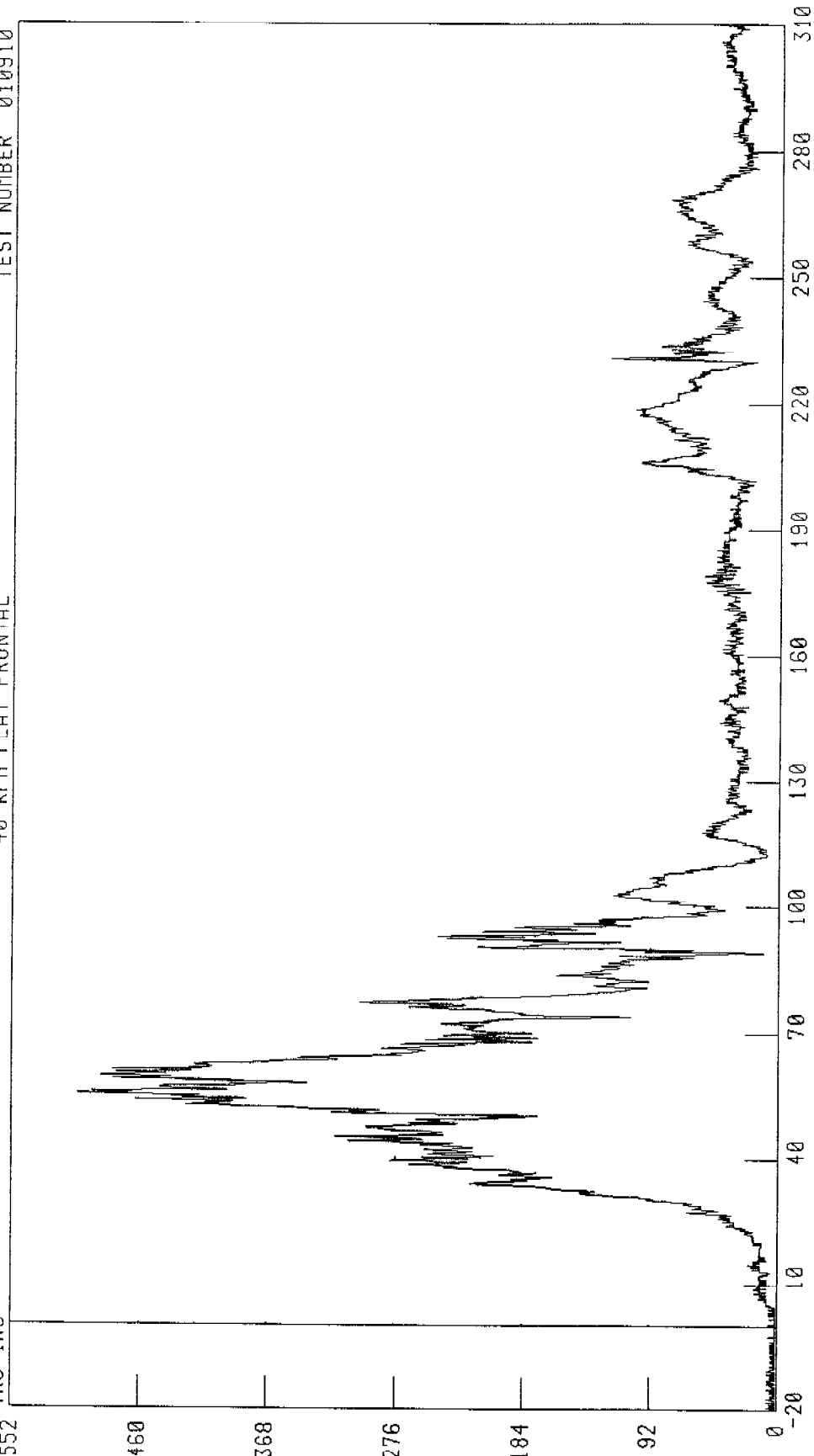
DRIVER LEFT FOOT RESULTANT ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

ACCELERATION ($G \times 10^{-1}$)



TIME (MS)

CHANNEL FTLR01 FILTER CH CLASS 1000

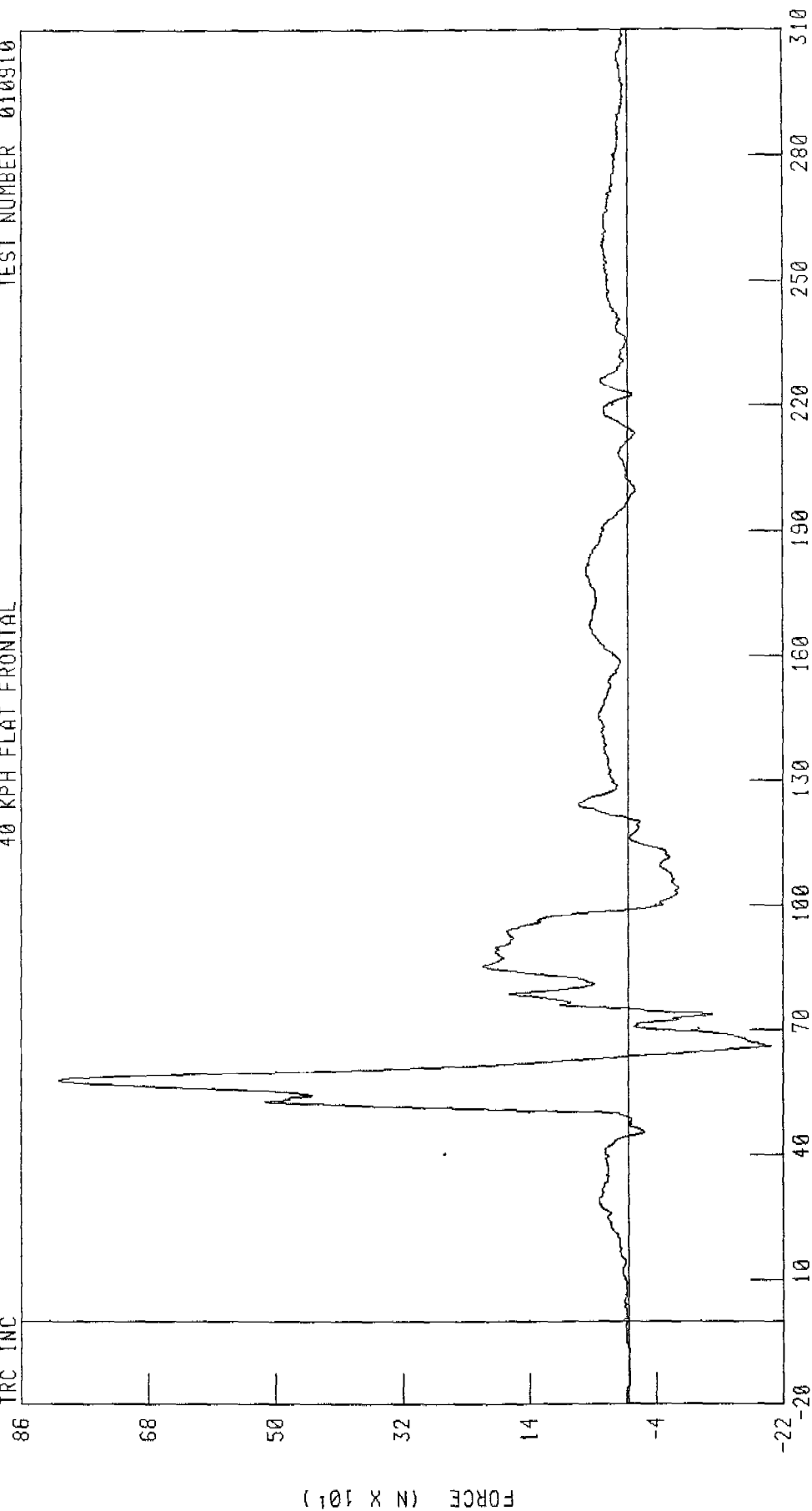
PEAK DATA 50 48 G @ 55 28 MS, 0 14 G @ -19 84 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER RIGHT UPPER TIBIA X-AXIS FORCE

TEST NUMBER 010910

40 KPH FLAT FRONTAL

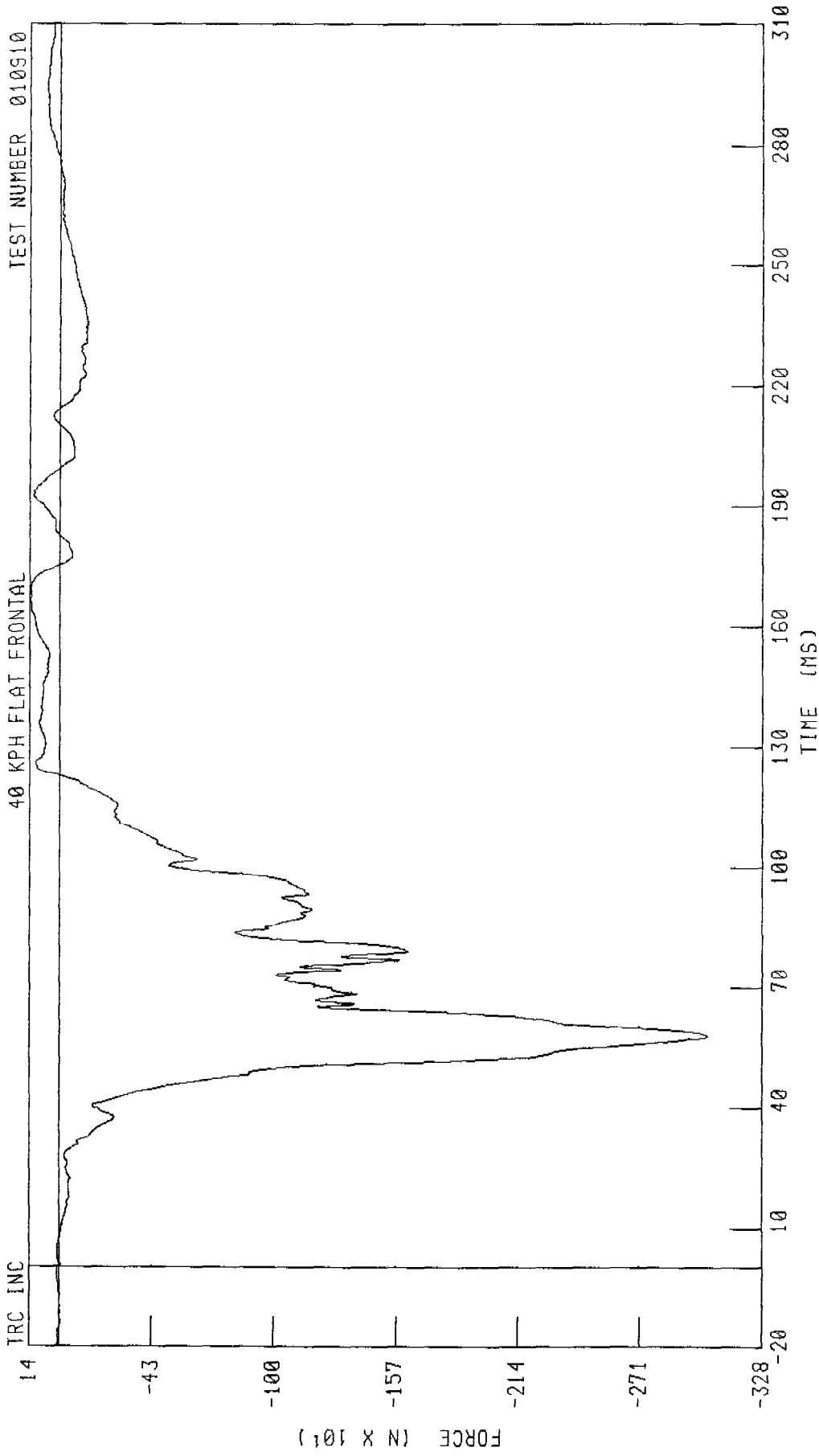
TRC INC



CHANNEL TBRXF1 FILTER CH CLASS 600

PEAK DATA 806 39 N @ 57 76 MS, -204 06 N @ 66 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER RIGHT UPPER TIBIA Z-AXIS FORCE



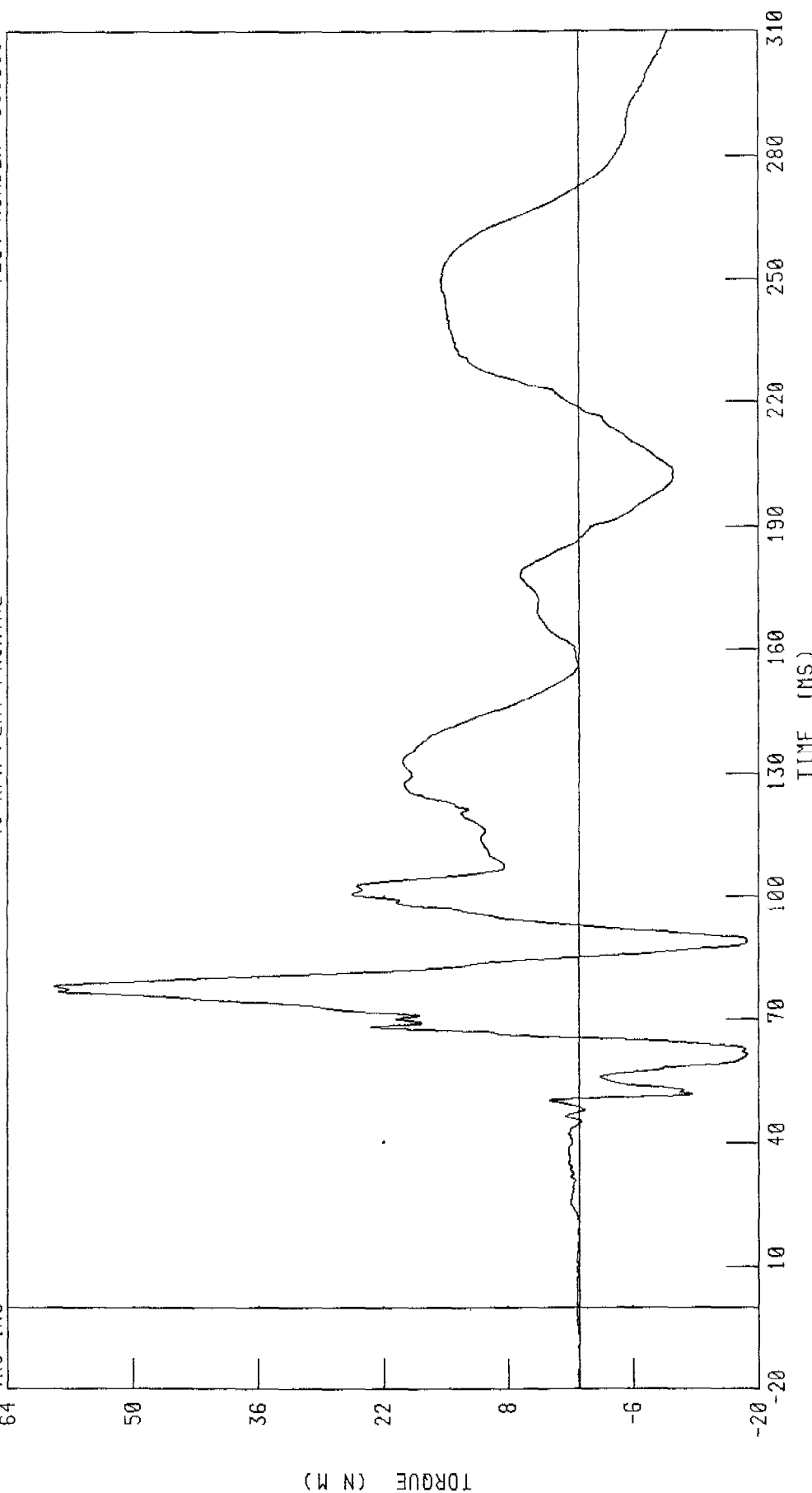
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS

40 KPH FLAT FRONTAL

TEST NUMBER 010910

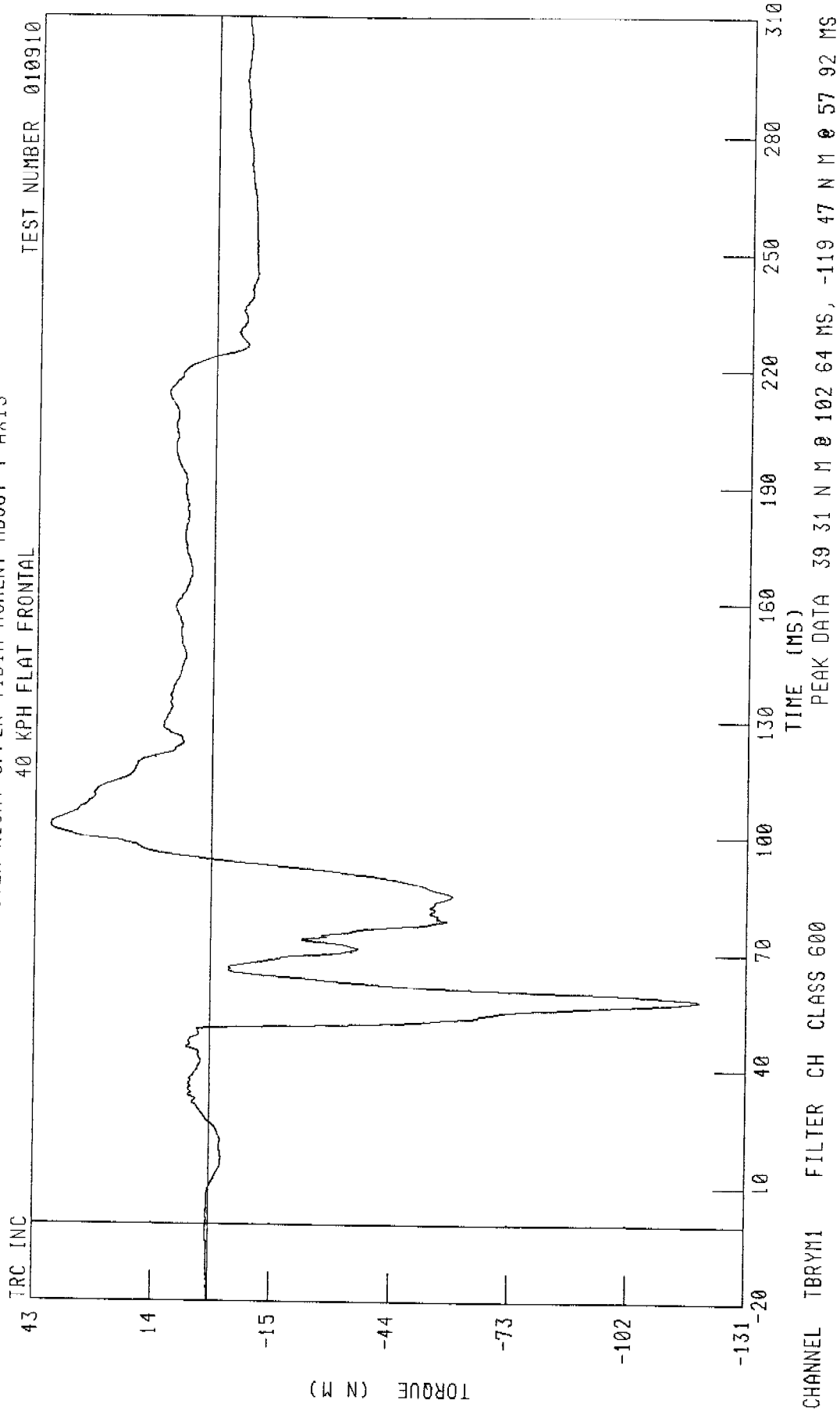
TRC INC



PEAK DATA 58 84 N M @ 78 08 MS, -18 78 N M @ 61 60 MS

CHANNEL TBRXM1 FILTER CH CLASS 600

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS



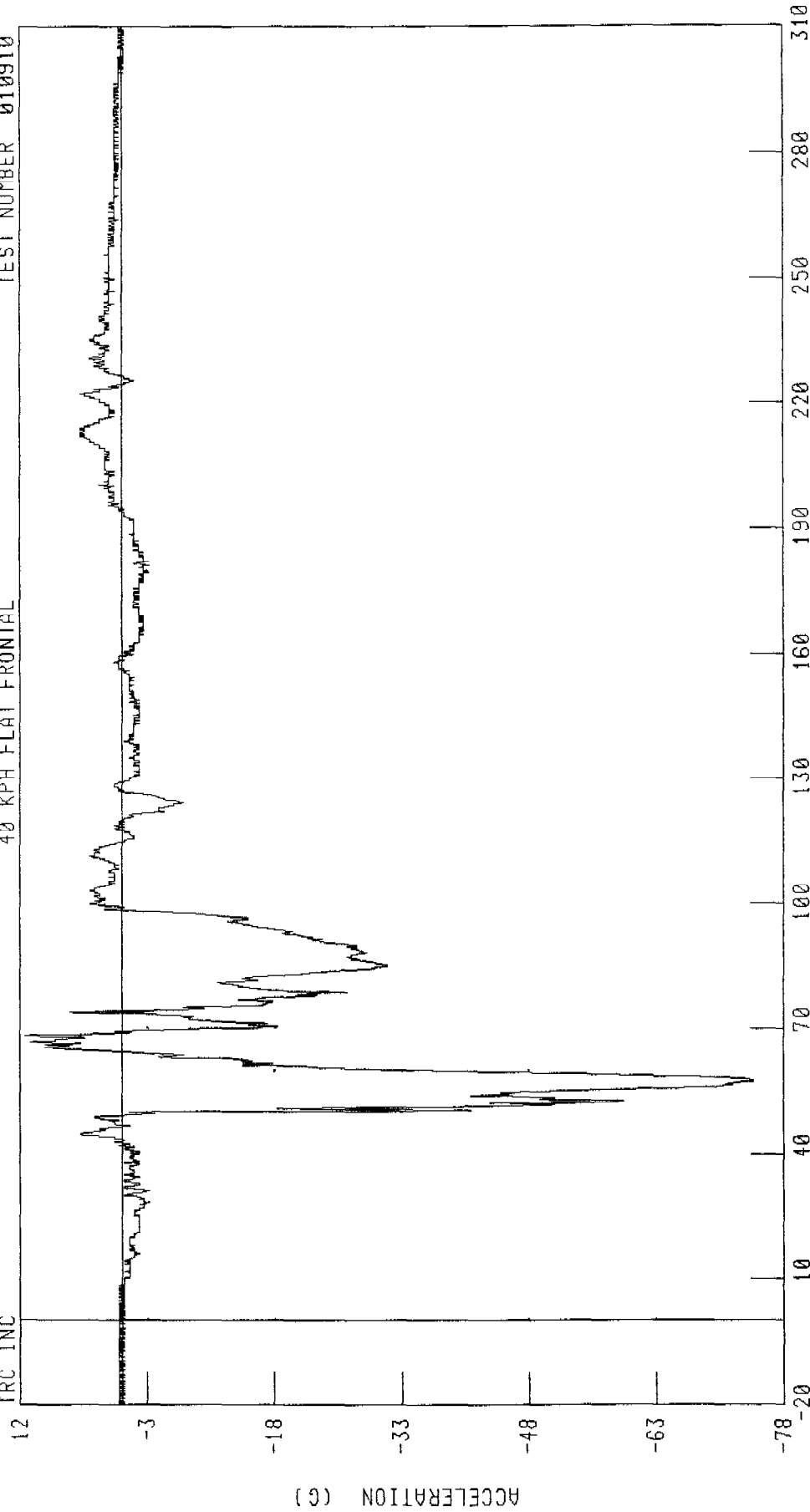
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT TIBIA X-AXIS ACCELERATION

TEST NUMBER 010910

40 KPH FLAT FRONTAL

TRC INC



TIME (MS)

PEAK DATA 11 38 G @ 68 32 MS, -74 40 G @ 57 52 MS

CHANNEL TBRXG1 FILTER CH CLASS 1000

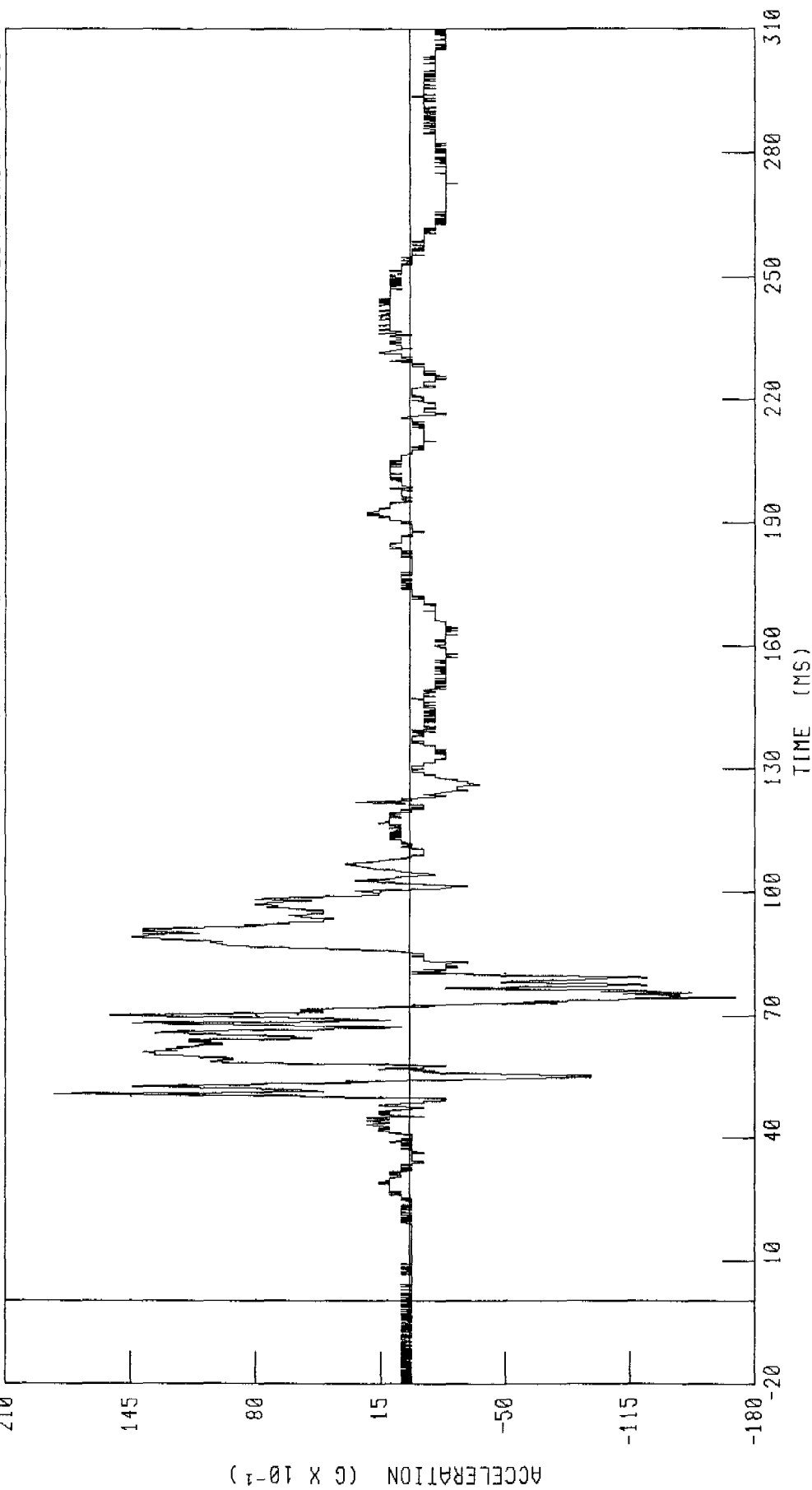
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT TIBIA Y-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



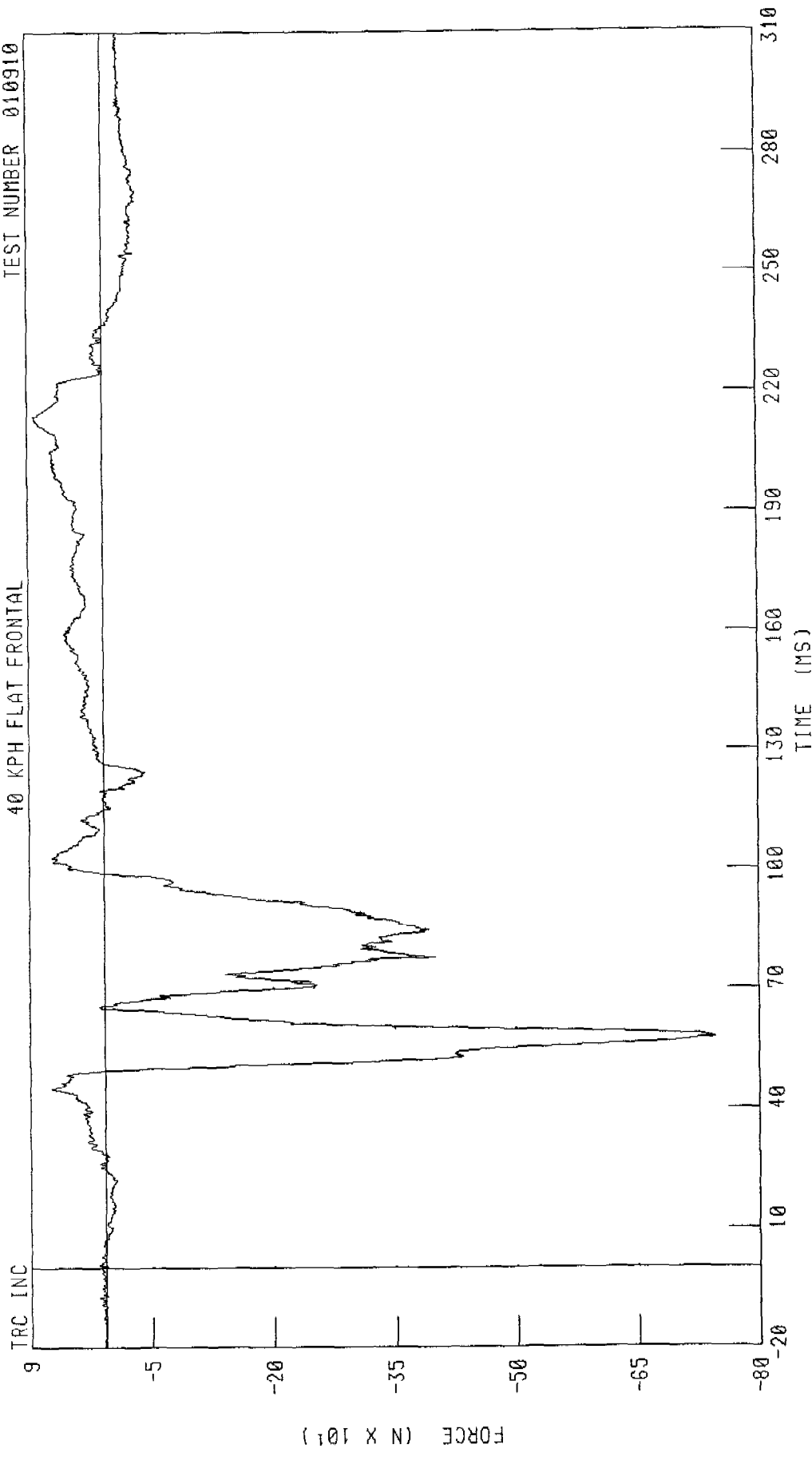
CHANNEL TBRYG1 FILTER CH CLASS 1000

PEAK DATA 18 49 G @ 50 64 MS, -17 02 G @ 74 32 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER RIGHT LOWER TIBIA X-AXIS FORCE

TEST NUMBER 010910

40 KPH FLAT FRONTAL



PEAK DATA 85 29 N @ 213 76 MS, -752 90 N @ 57 68 MS

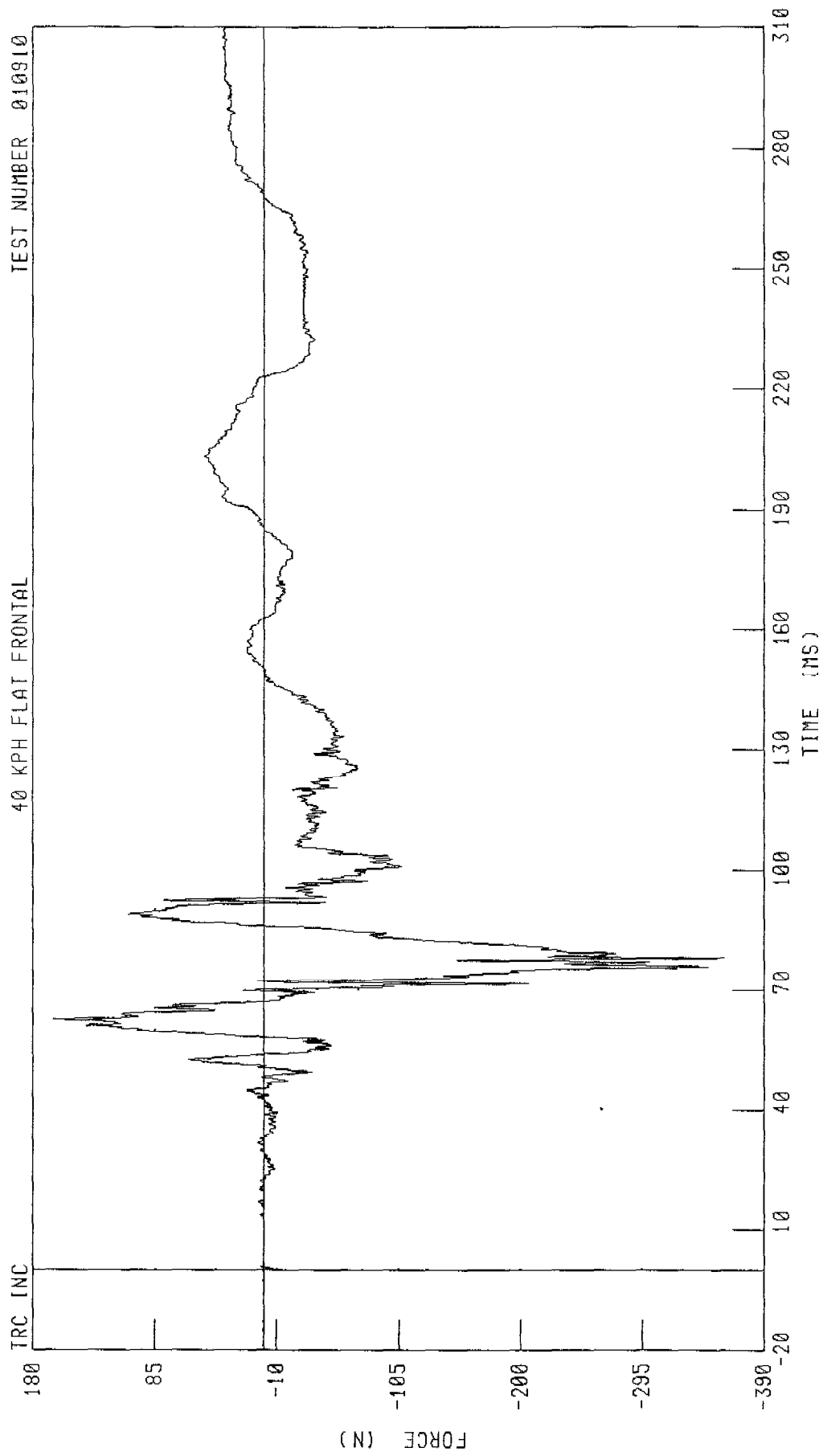
CHANNEL ANRXP1 FILTER CH CLASS 600

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT LOWER TIBIA Y-AXIS FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL ANRYF1 FILTER CH CLASS 600

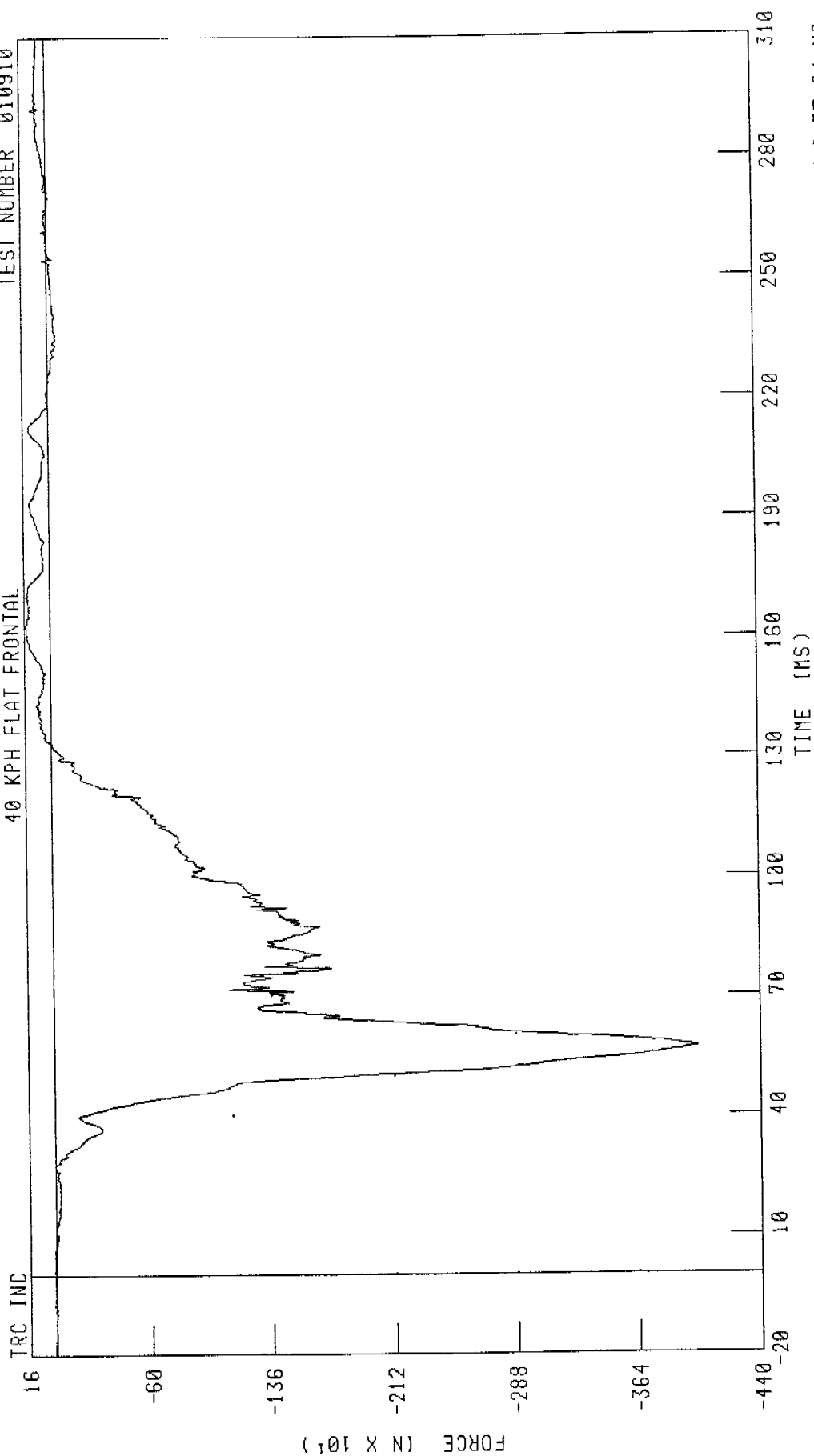
PEAK DATA 163 84 N 0 62 72 MS, -358 43 N 0 77 92 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT LOWER TIBIA Z-AXIS FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910



TIME (MS)

PEAK DATA 153 20 N 0 163 28 MS, -4010 58 N 0 57 04 MS

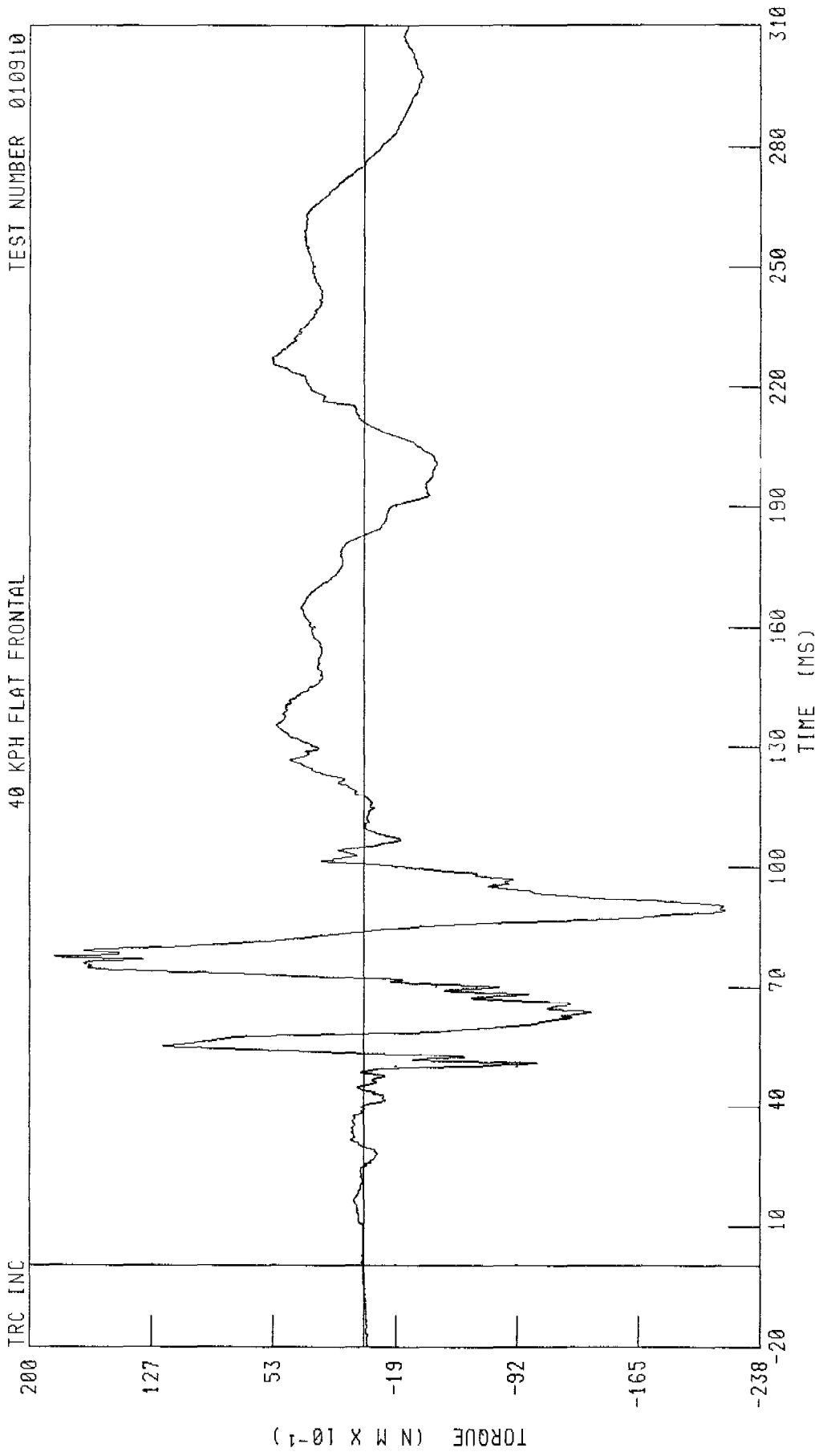
CHANNEL ANRZF1 FILTER CH CLASS 600

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT LOWER TIBIA MOMENT ABOUT X AXIS

40 KPH FLAT FRONTAL

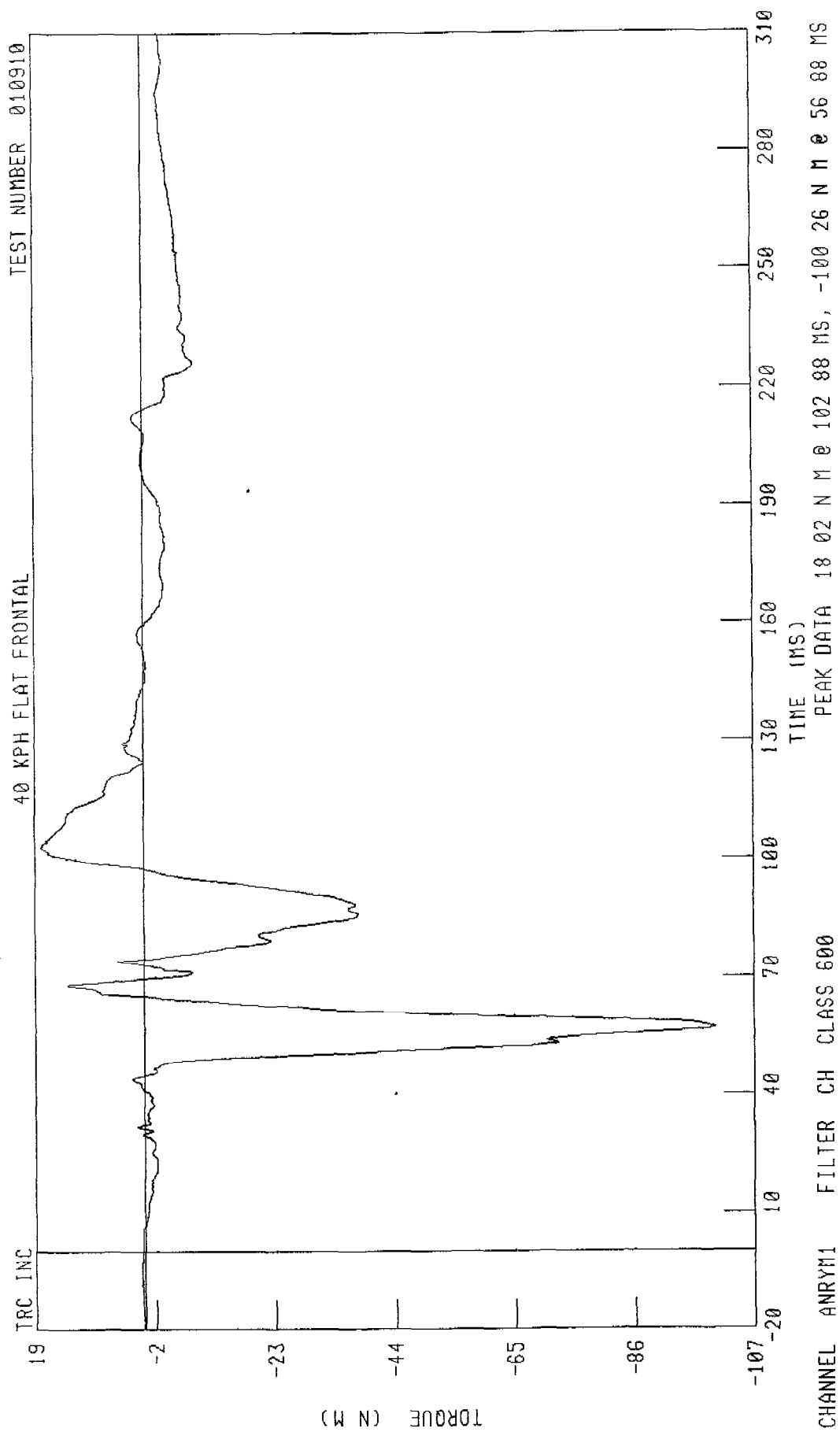
TEST NUMBER 010910



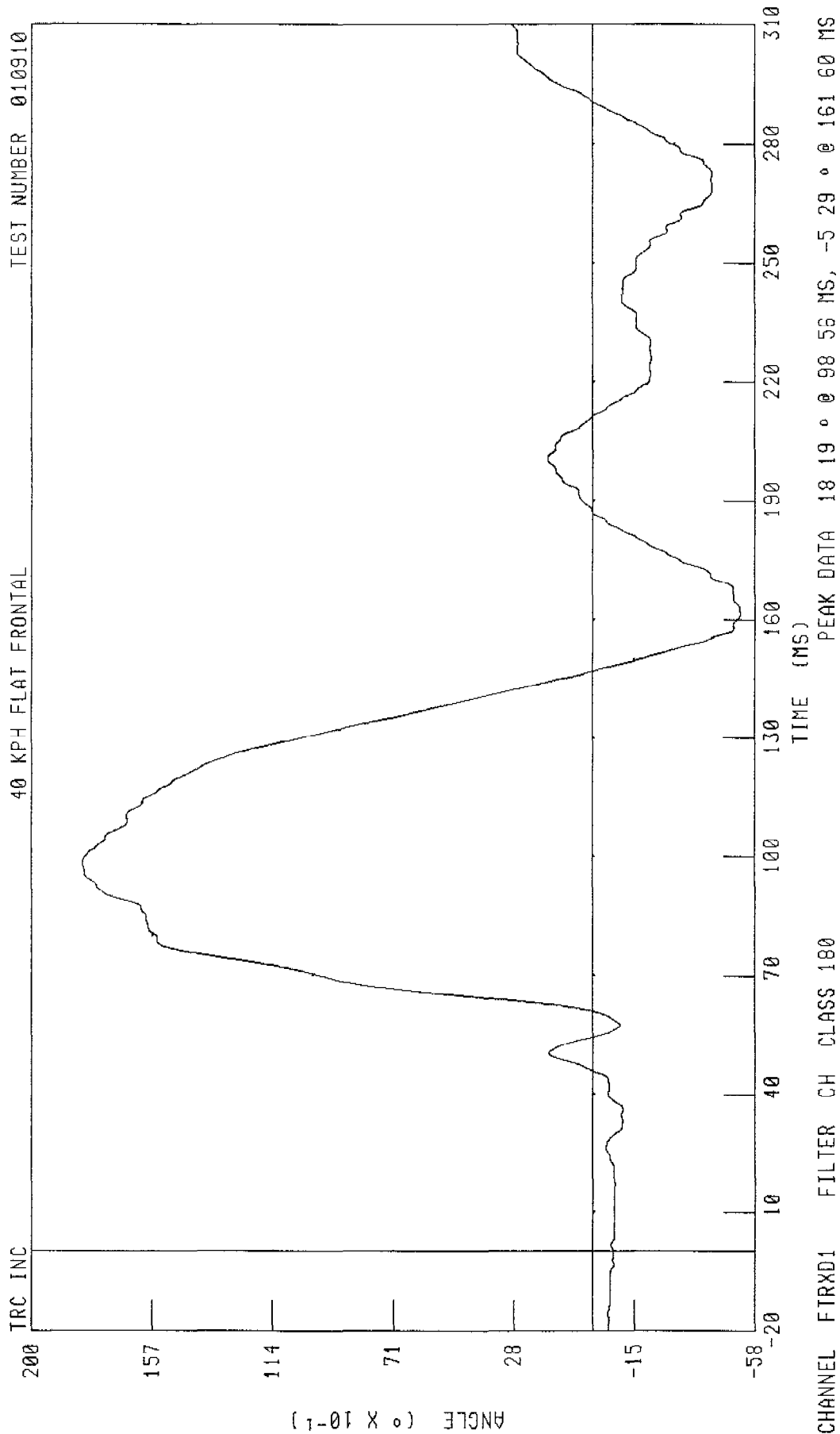
PEAK DATA 18 53 N M @ 77 52 MS, -21 72 N M @ 89 28 MS

CHANNEL ANRXM1 FILTER CH CLASS 600

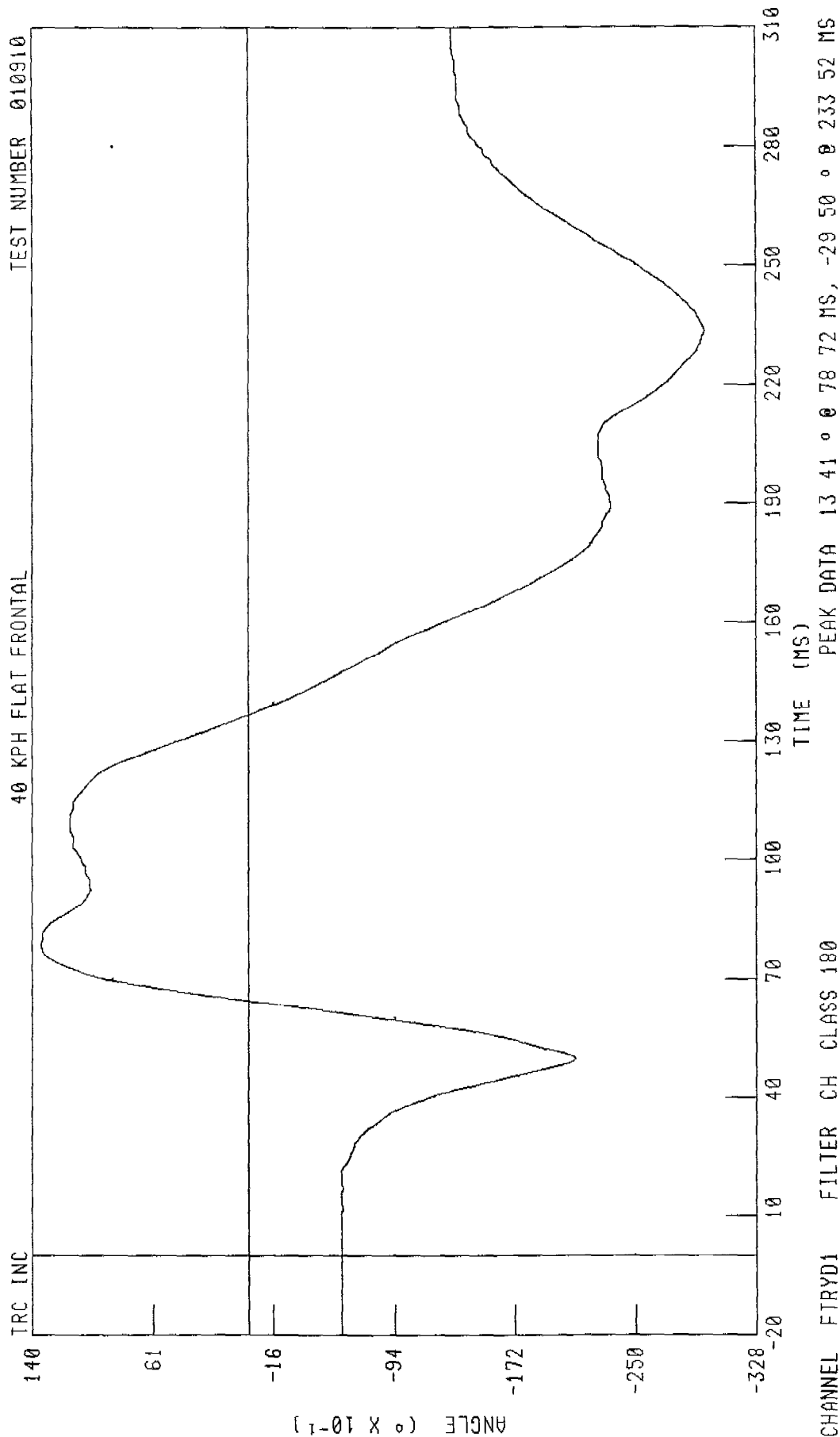
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER RIGHT FOOT TO ANKLE X-AXIS DISPLACEMENT

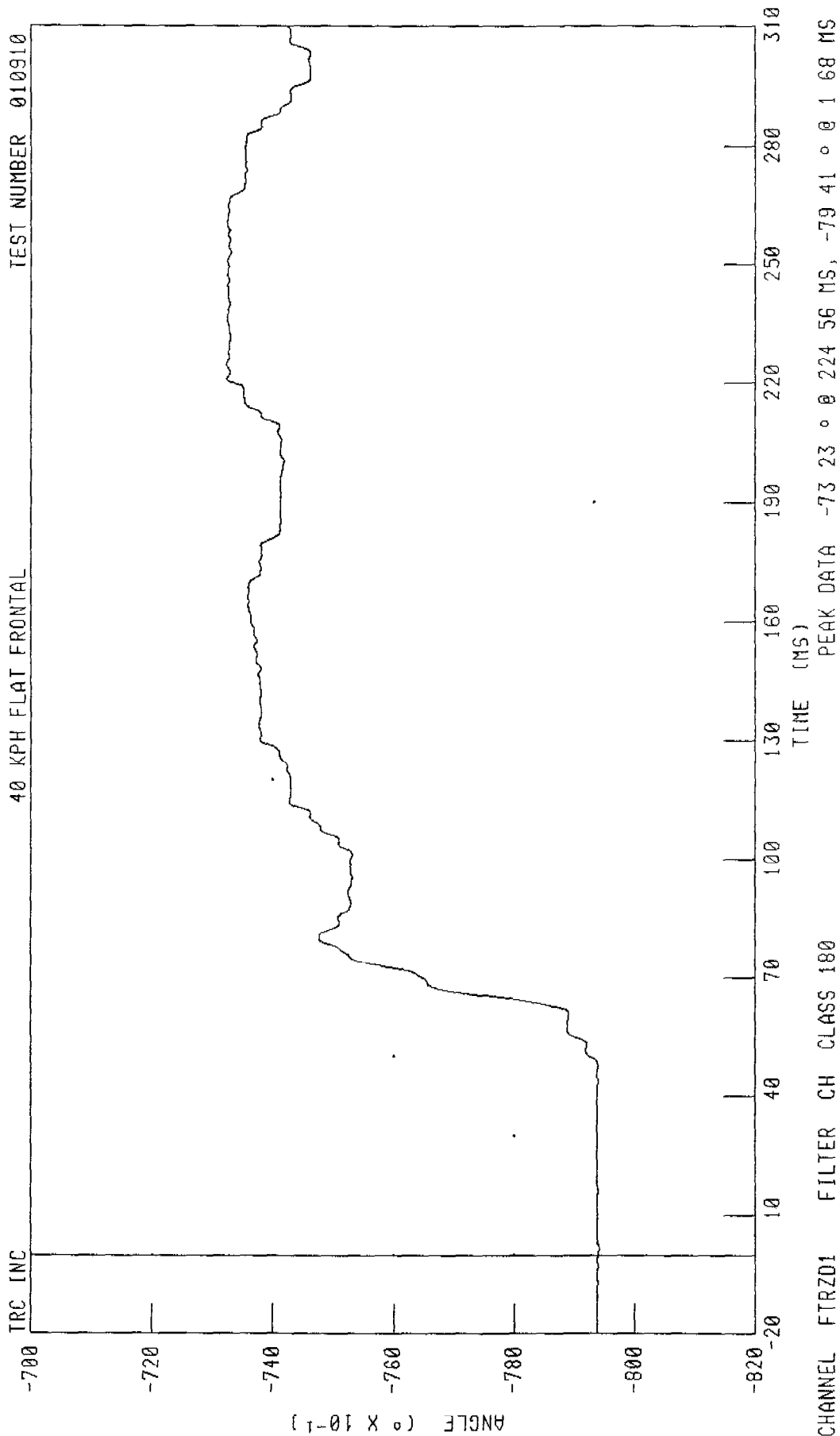


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER RIGHT FOOT TO ANKLE Y-AXIS DISPLACEMENT
 40 KPH FLAT FRONTAL



CHANNEL FTRYD1 FILTER CH CLASS 180

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 DRIVER RIGHT FOOT TO ANKLE Z-AXIS DISPLACEMENT



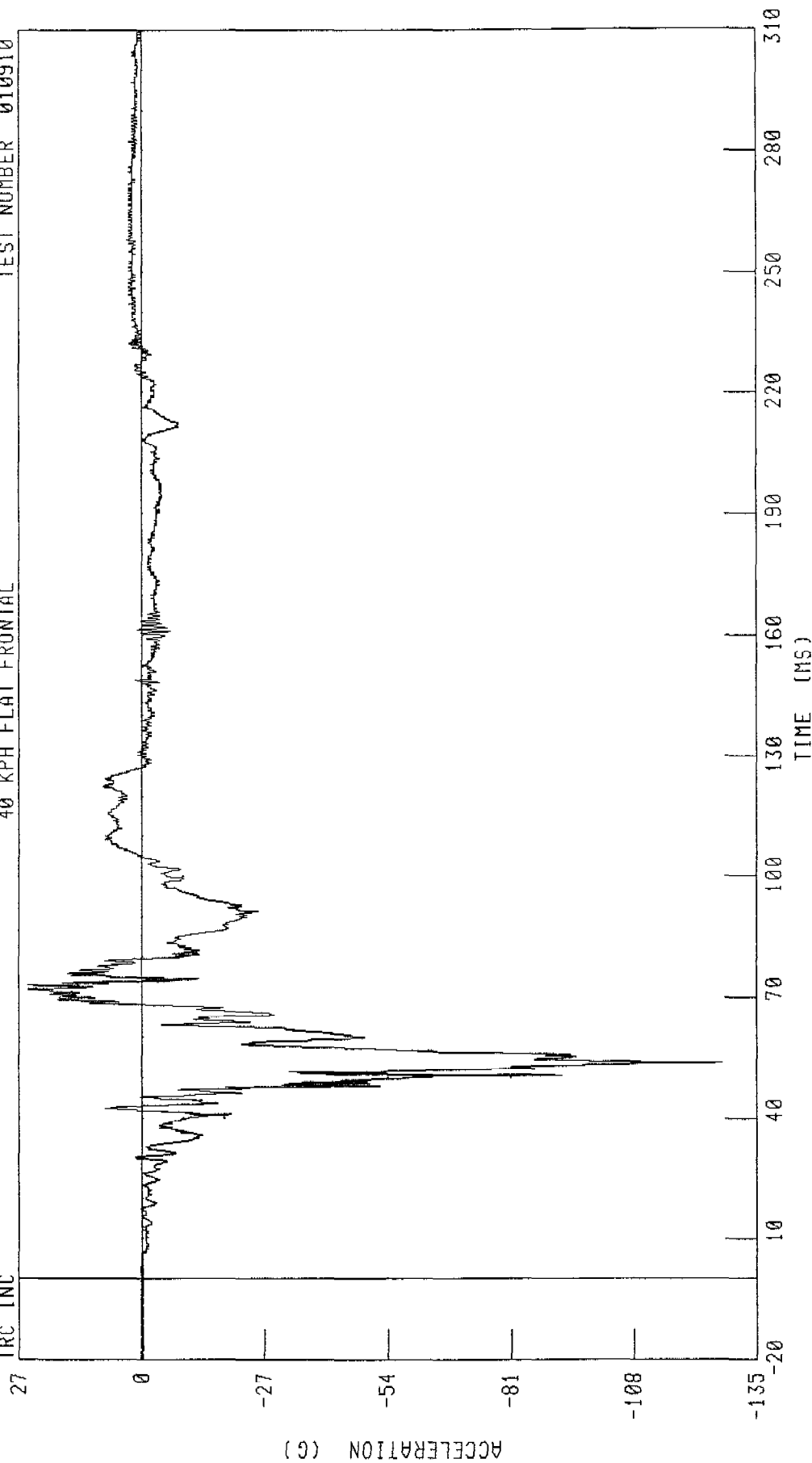
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT FOOT X-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



CHANNEL FTRXC1 FILTER CH CLASS 1000

PEAK DATA 25 00 G @ 72 00 MS, -127 40 G @ 53 76 MS

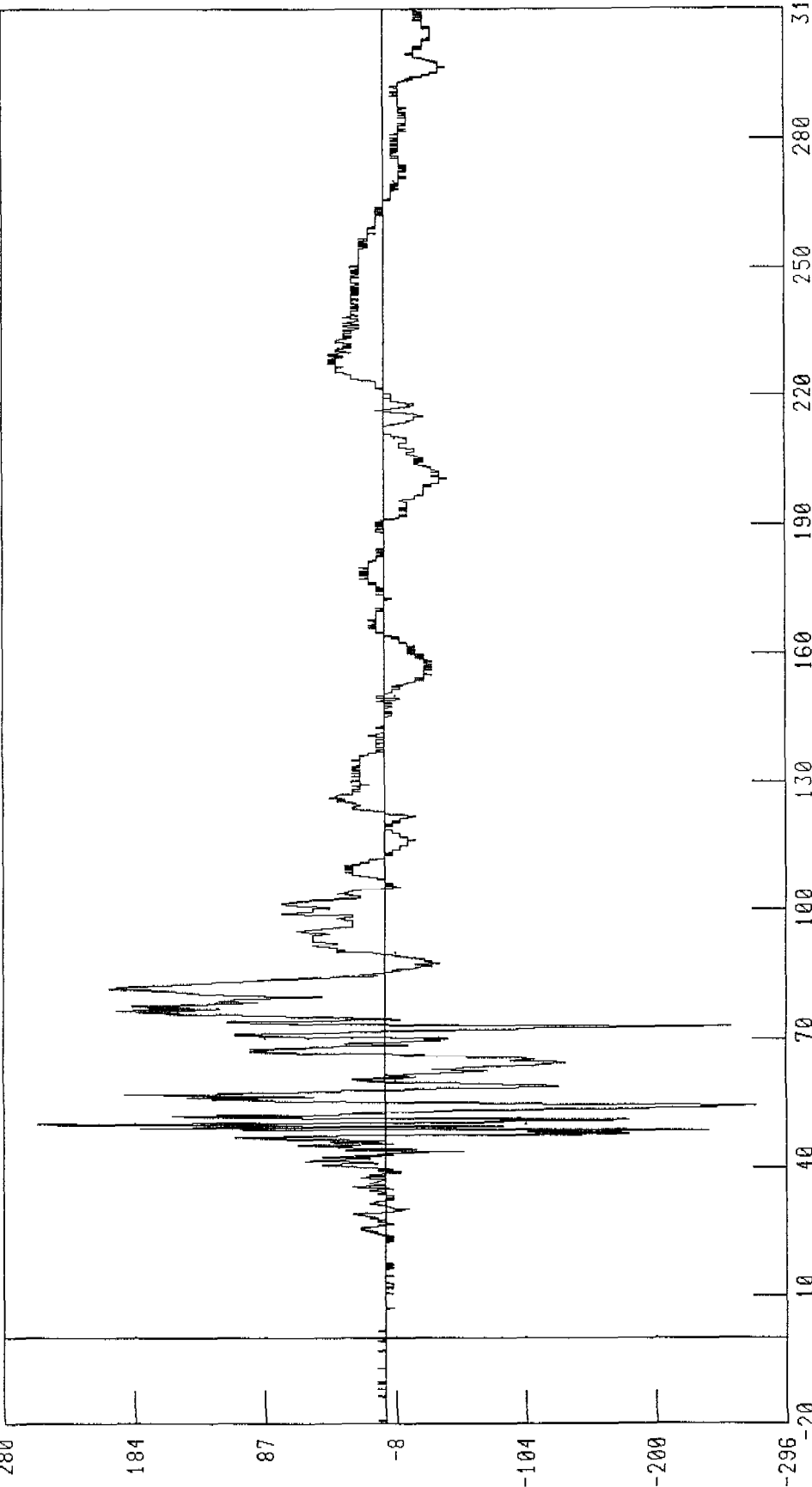
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT FOOT Y-AXIS ACCELERATION

TEST NUMBER 010910

40 KPH FLAT FRONTAL

TRC INC



PEAK DATA 25 56 G @ 50 00 MS, -27 32 G @ 54 32 MS

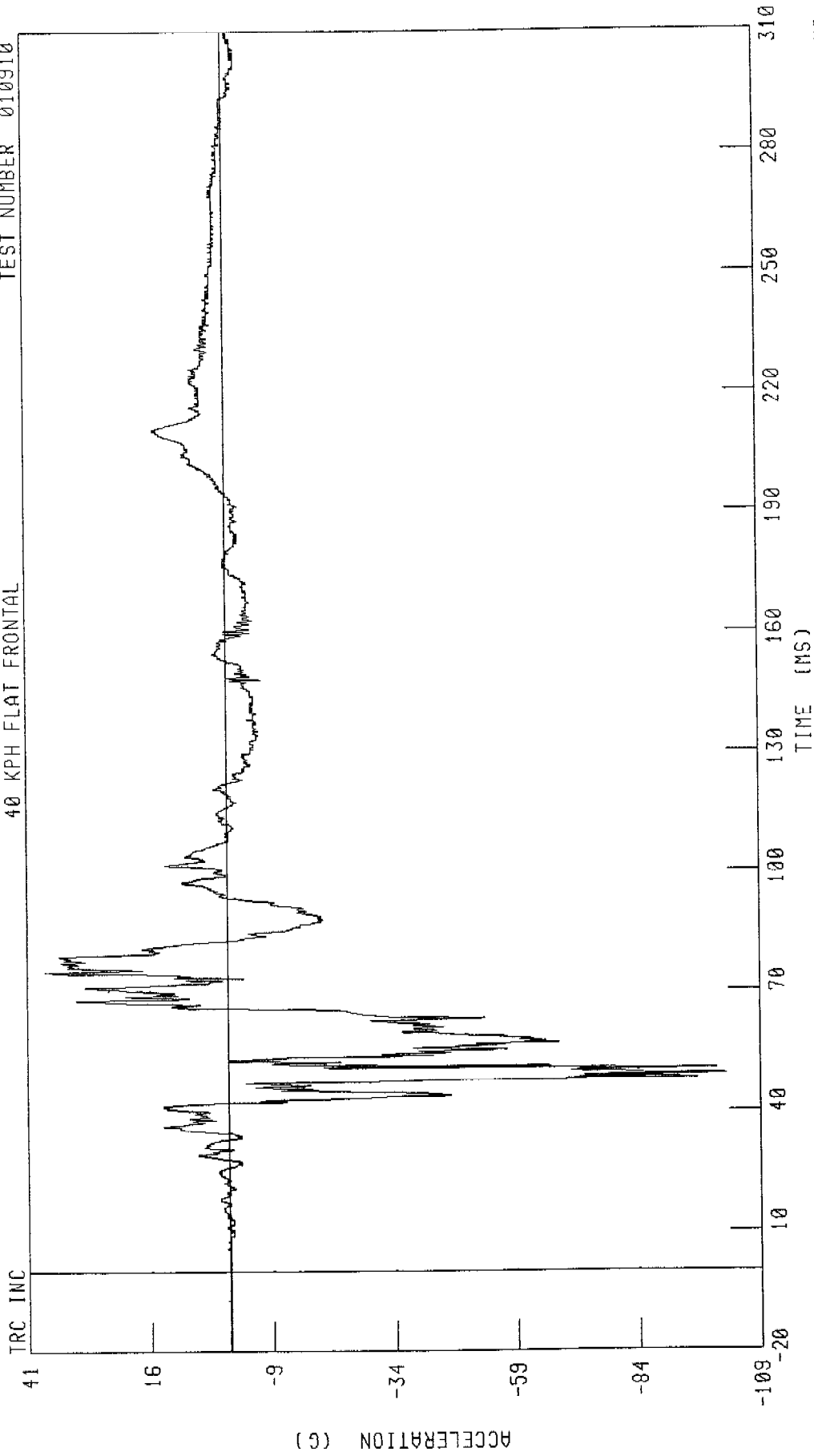
CHANNEL FTRYG1 FILTER CH CLASS 1000

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER RIGHT FOOT Z-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910



PEAK DATA 37 50 C @ 75 04 MS, -101 98 G @ 49 12 MS

CHANNEL FTRZG1 FILTER CH CLASS 1000

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
DRIVER RIGHT FOOT RESULTANT ACCELERATION

TRC INC

40 KPH FLAT FRONTAL

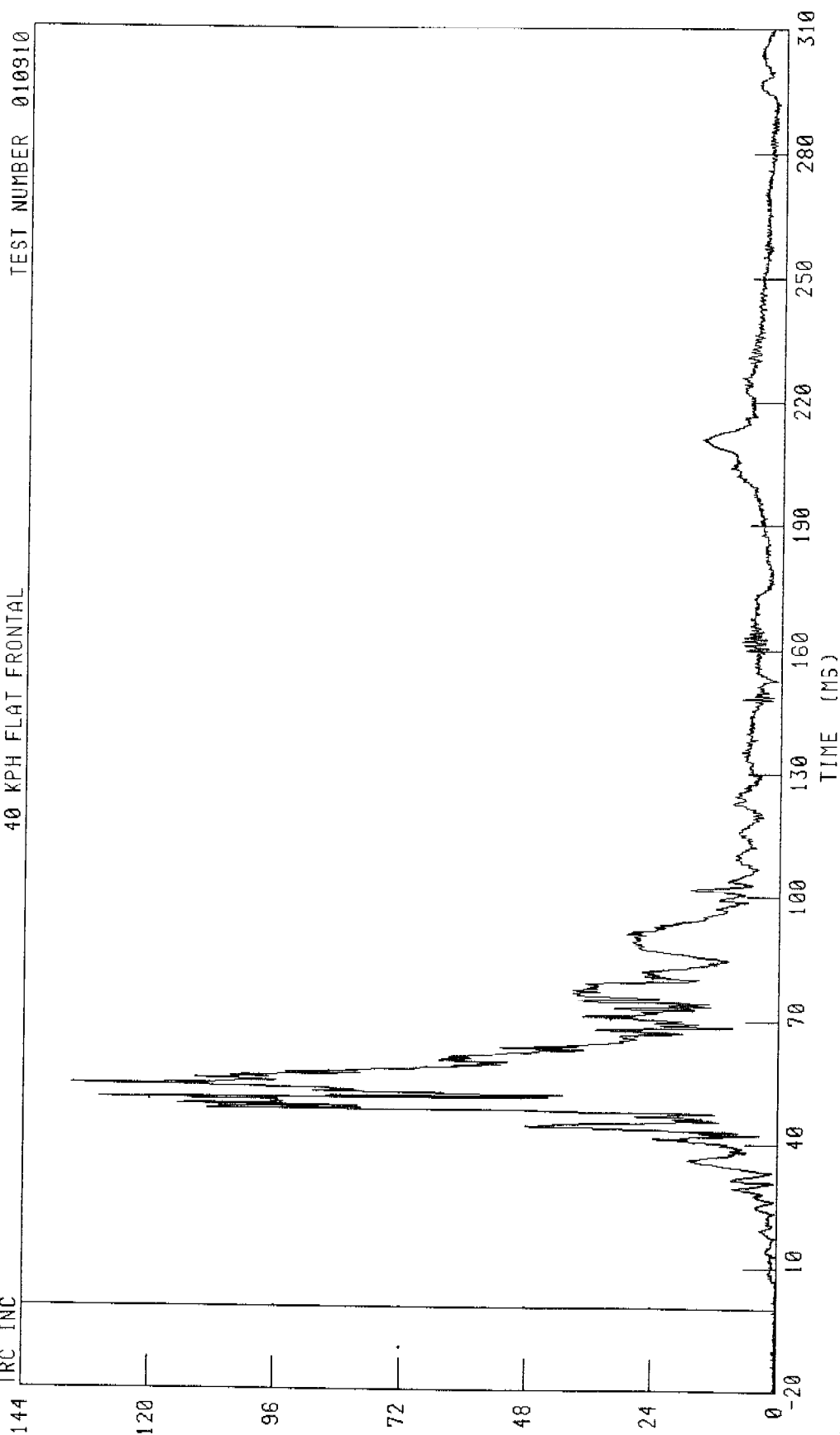
TEST NUMBER 010910

ACCELERATION (G)

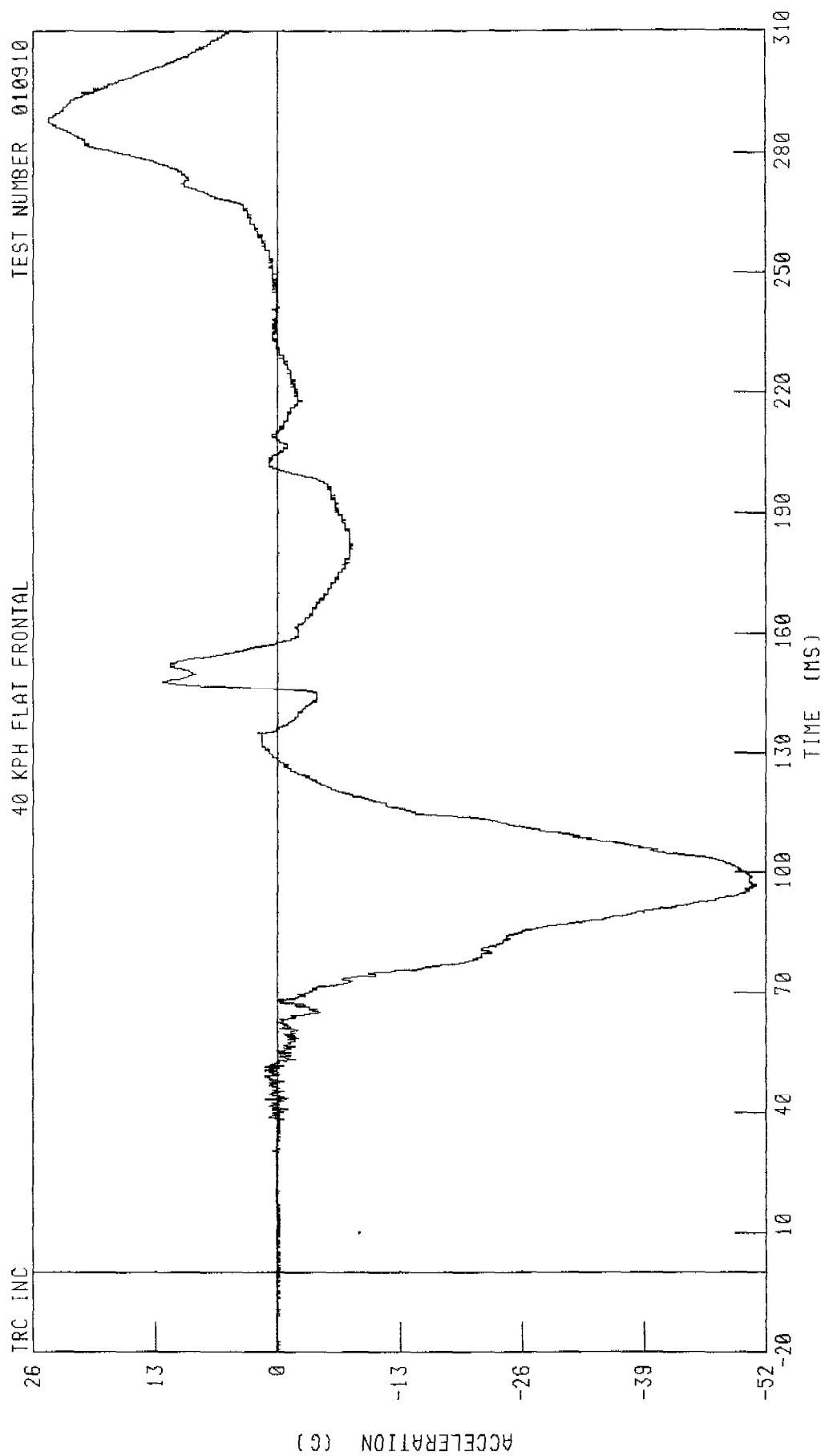
TIME (MS)

CHANNEL FTRG1 FILTER CH CLASS 1000

PEAK DATA 134 87 G 0 53 76 MS, 0 27 G 0 -19 76 MS



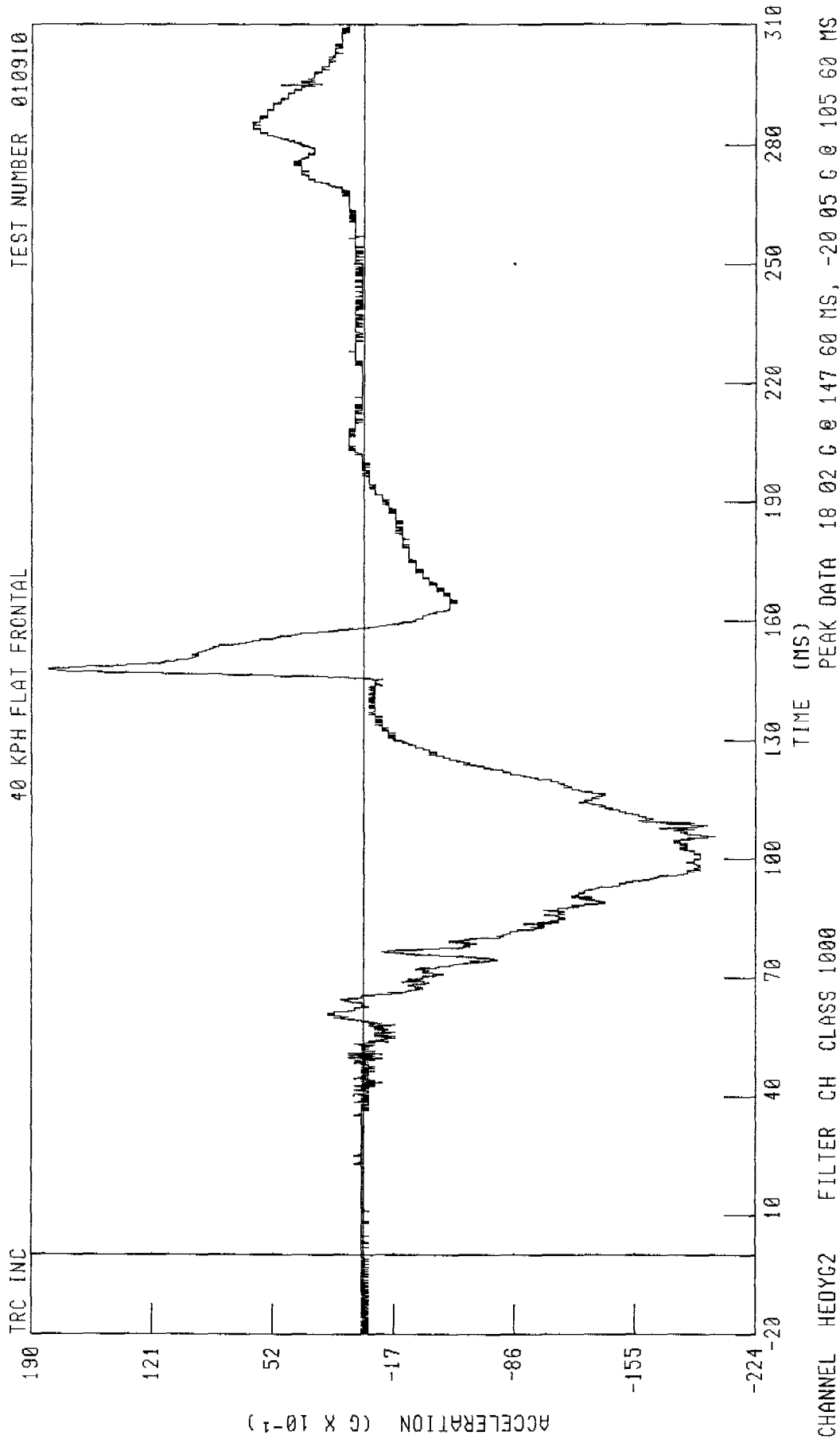
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER HEAD X-AXIS ACCELERATION



CHANNEL HEDXC2 FILTER CH CLASS 1000

PEAK DATA 24 38 G @ 287 44 MS, -50 98 G @ 96 72 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER HEAD Y-AXIS ACCELERATION



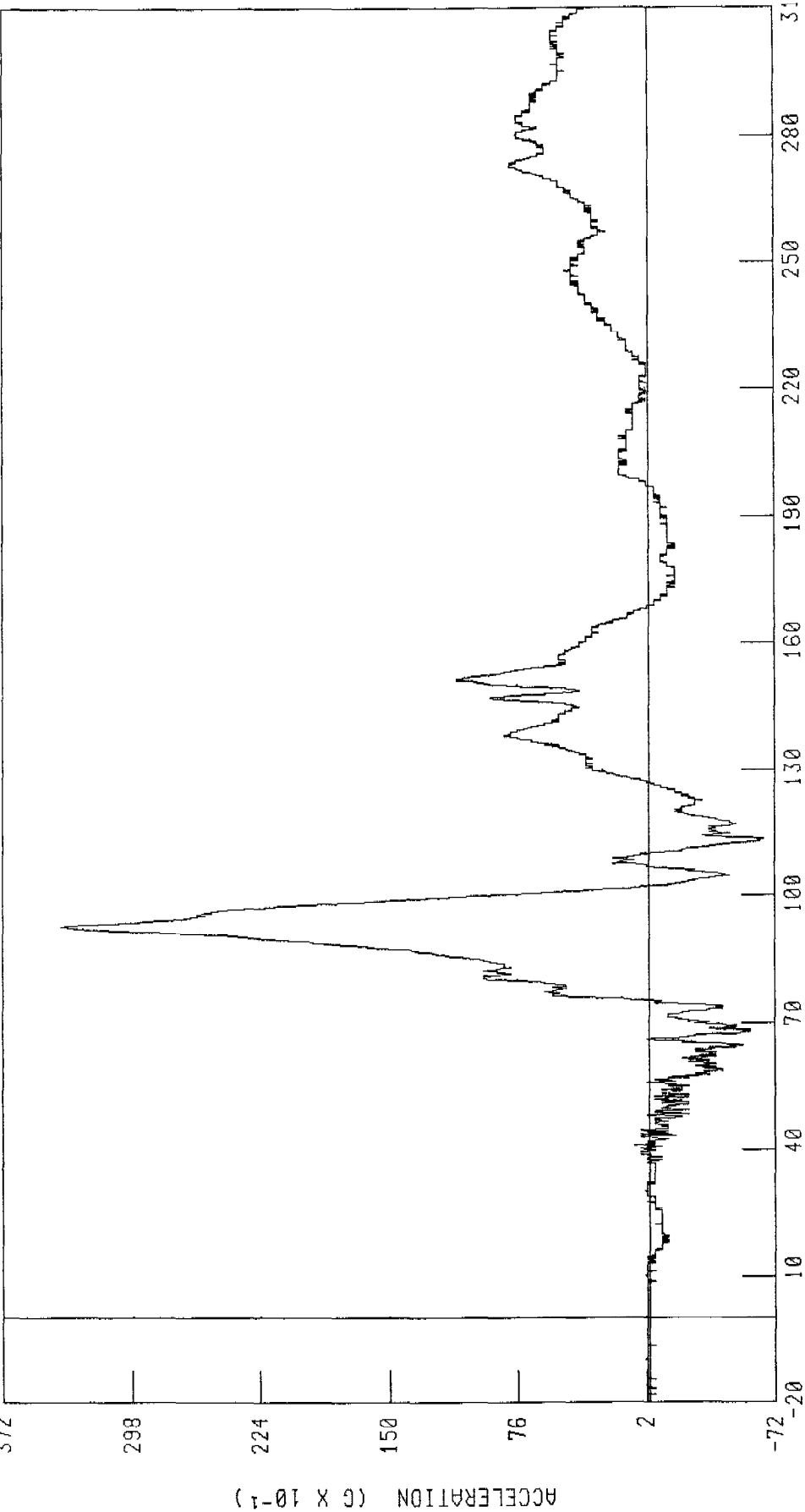
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER HEAD Z-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

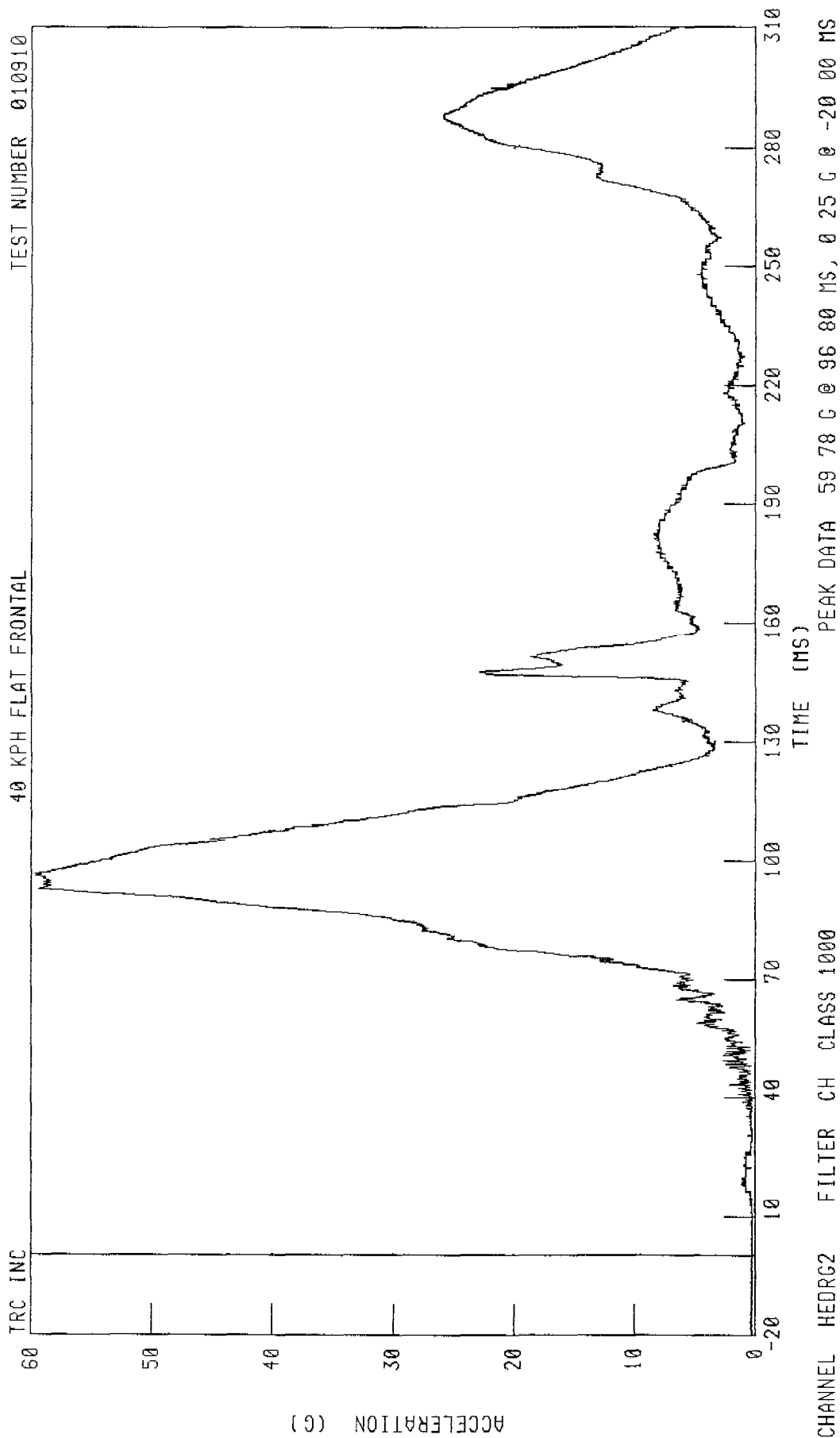


TIME (MS)

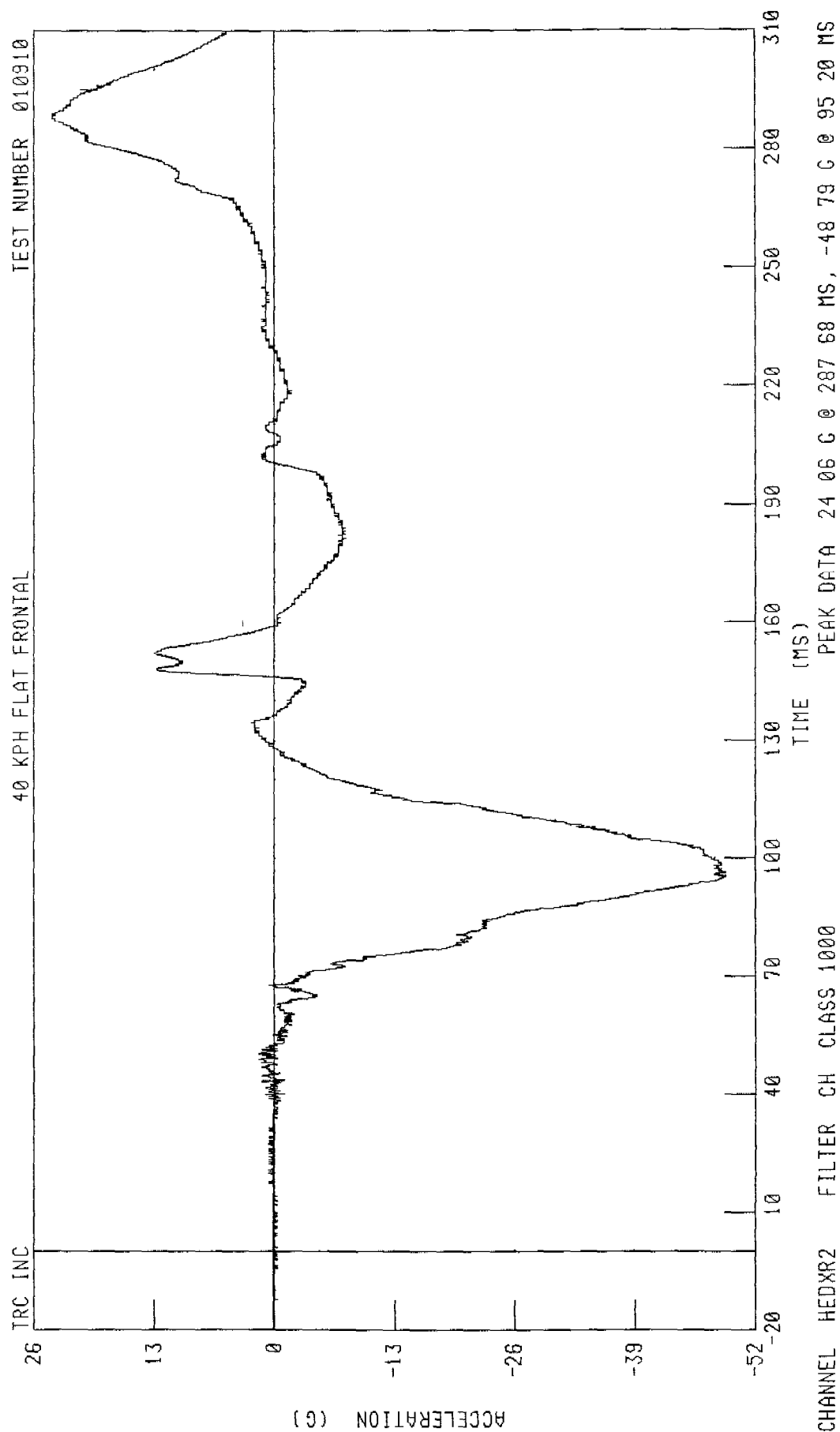
CHANNEL HEDZG2 FILTER CH CLASS 1000

PEAK DATA 33 90 G @ 93 12 MS, -6 58 G @ 113 20 MS

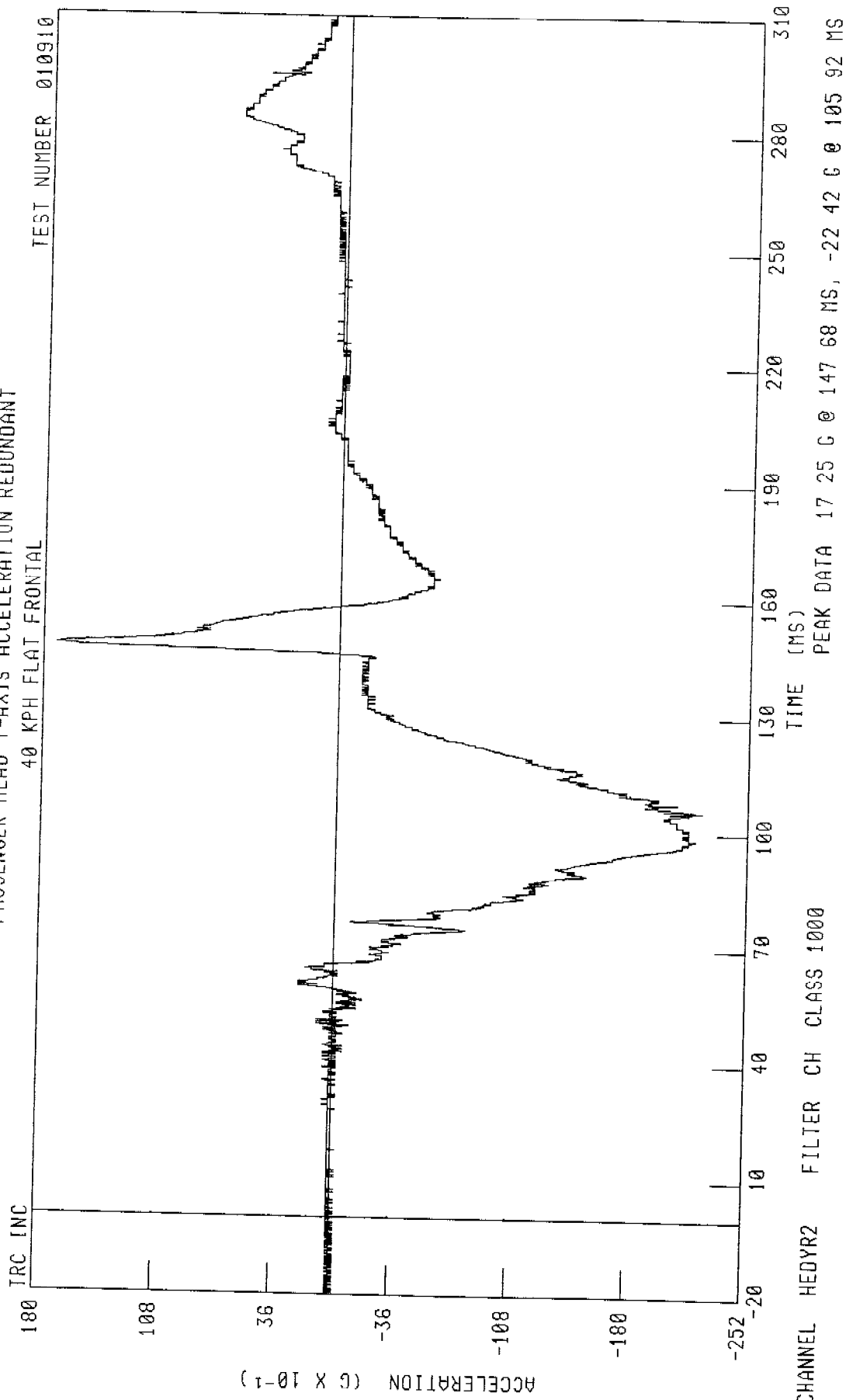
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER HEAD RESULTANT ACCELERATION



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER HEAD X-AXIS ACCELERATION REDUNDANT



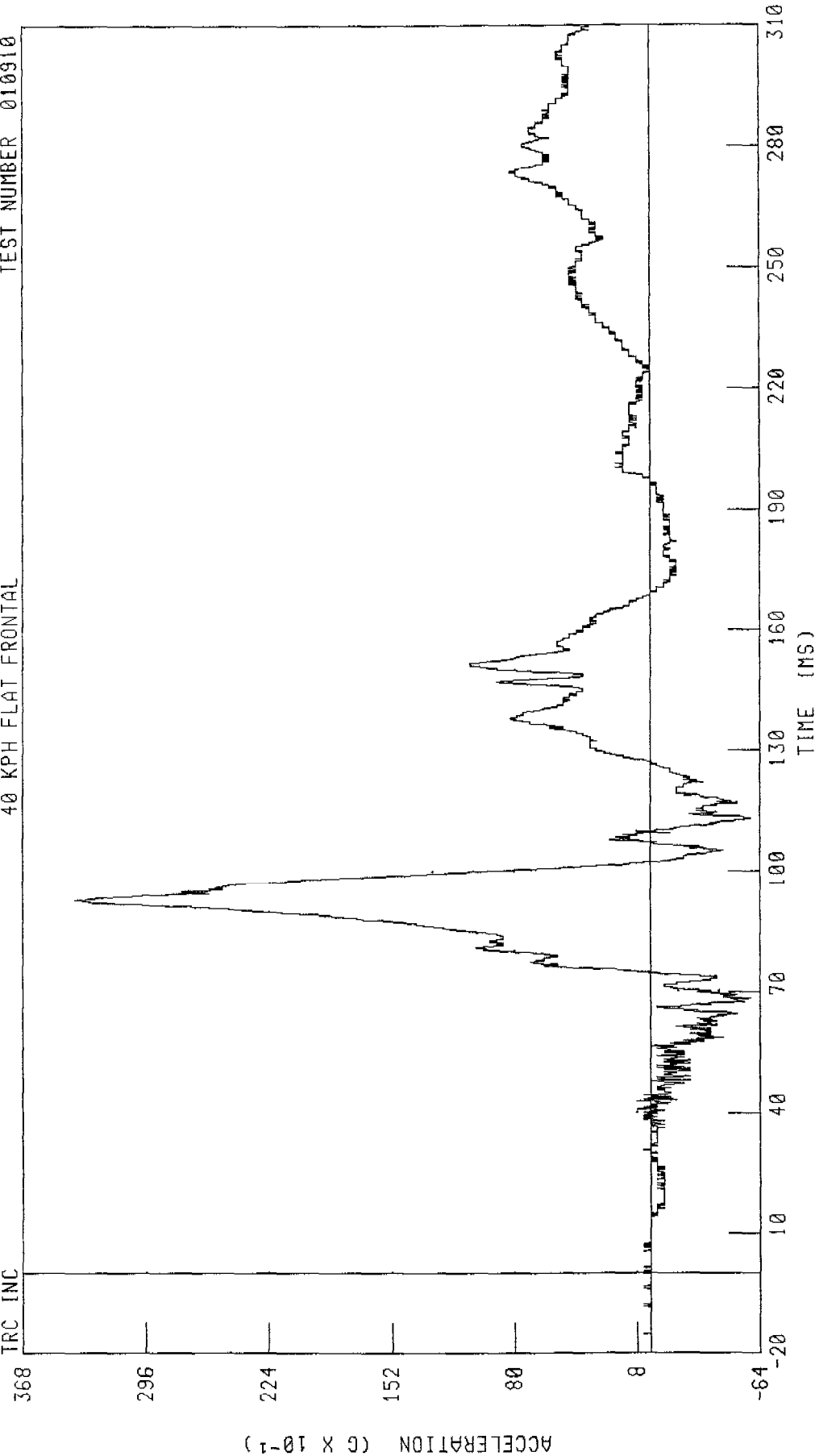
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER HEAD Y-AXIS ACCELERATION REDUNDANT



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER HEAD Z-AXIS ACCELERATION REDUNDANT
40 KPH FLAT FRONTAL

TEST NUMBER 010910

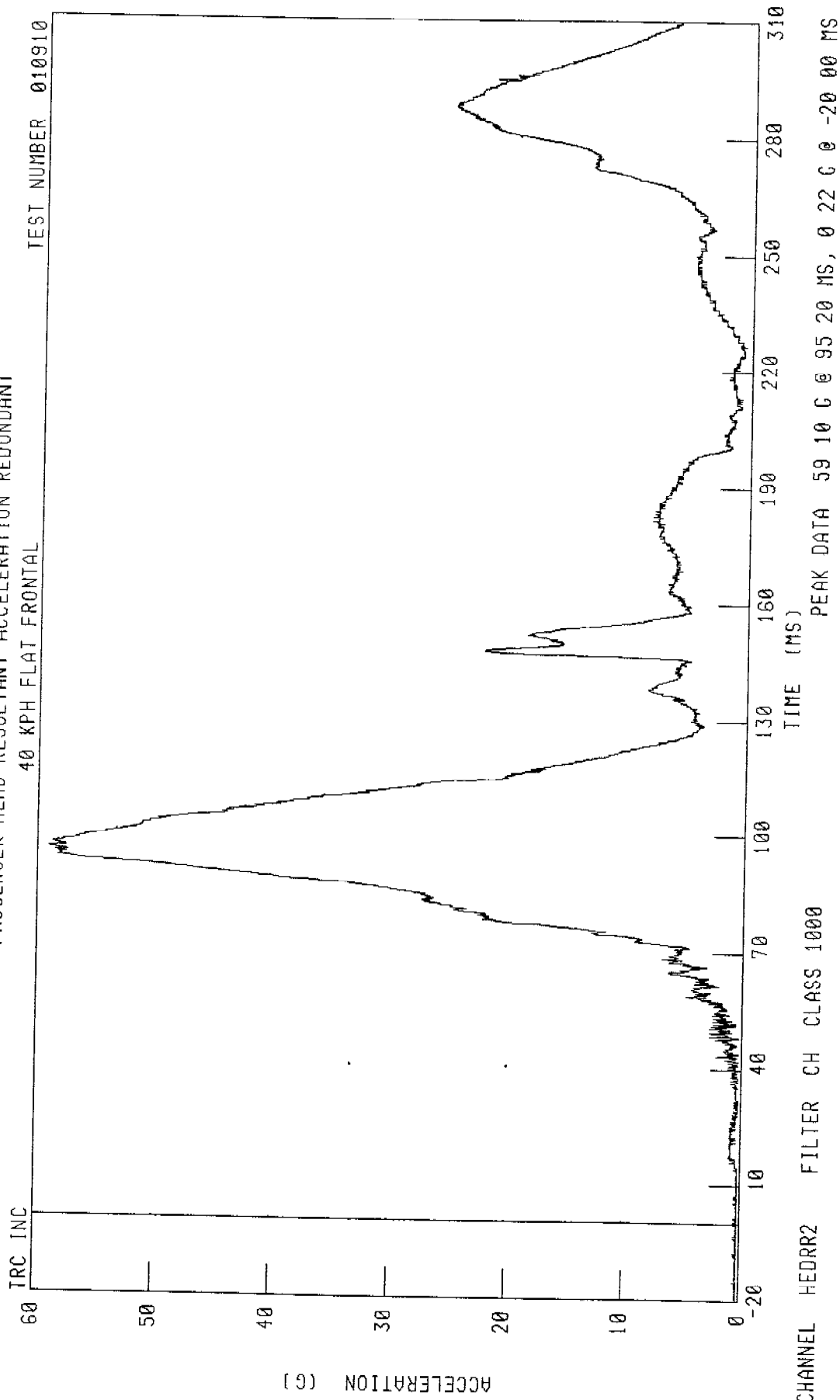
TRC INC



CHANNEL HEDZR2 FILTER CH CLASS 1000

PEAK DATA 33 74 G @ 92 96 MS, -5 87 G @ 68 24 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER HEAD RESULTANT ACCELERATION REDUNDANT

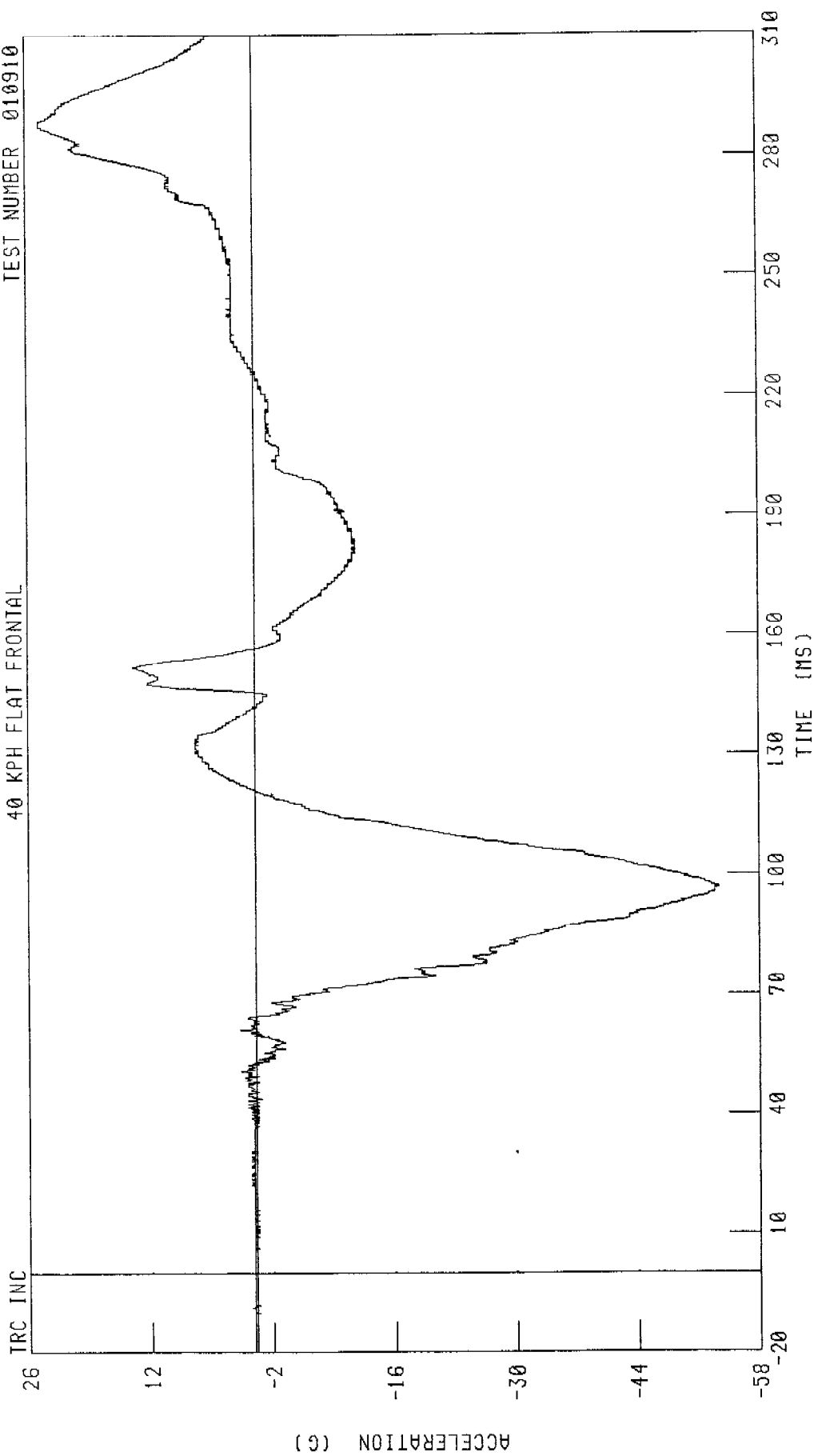


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER HEAD X-AXIS (LT) ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

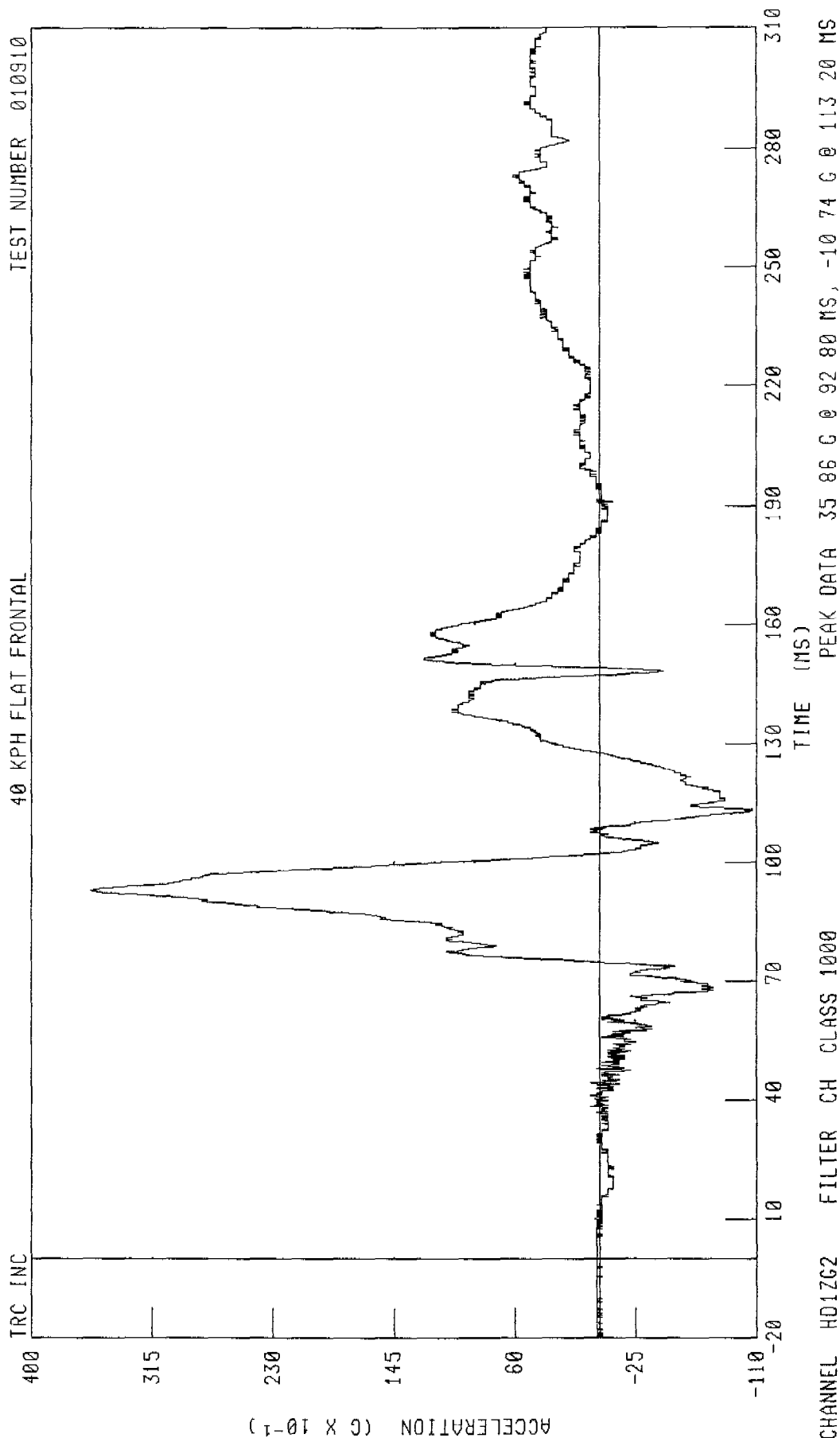


PEAK DATA 24 50 G @ 287 36 MS, -53 33 G @ 96 64 MS

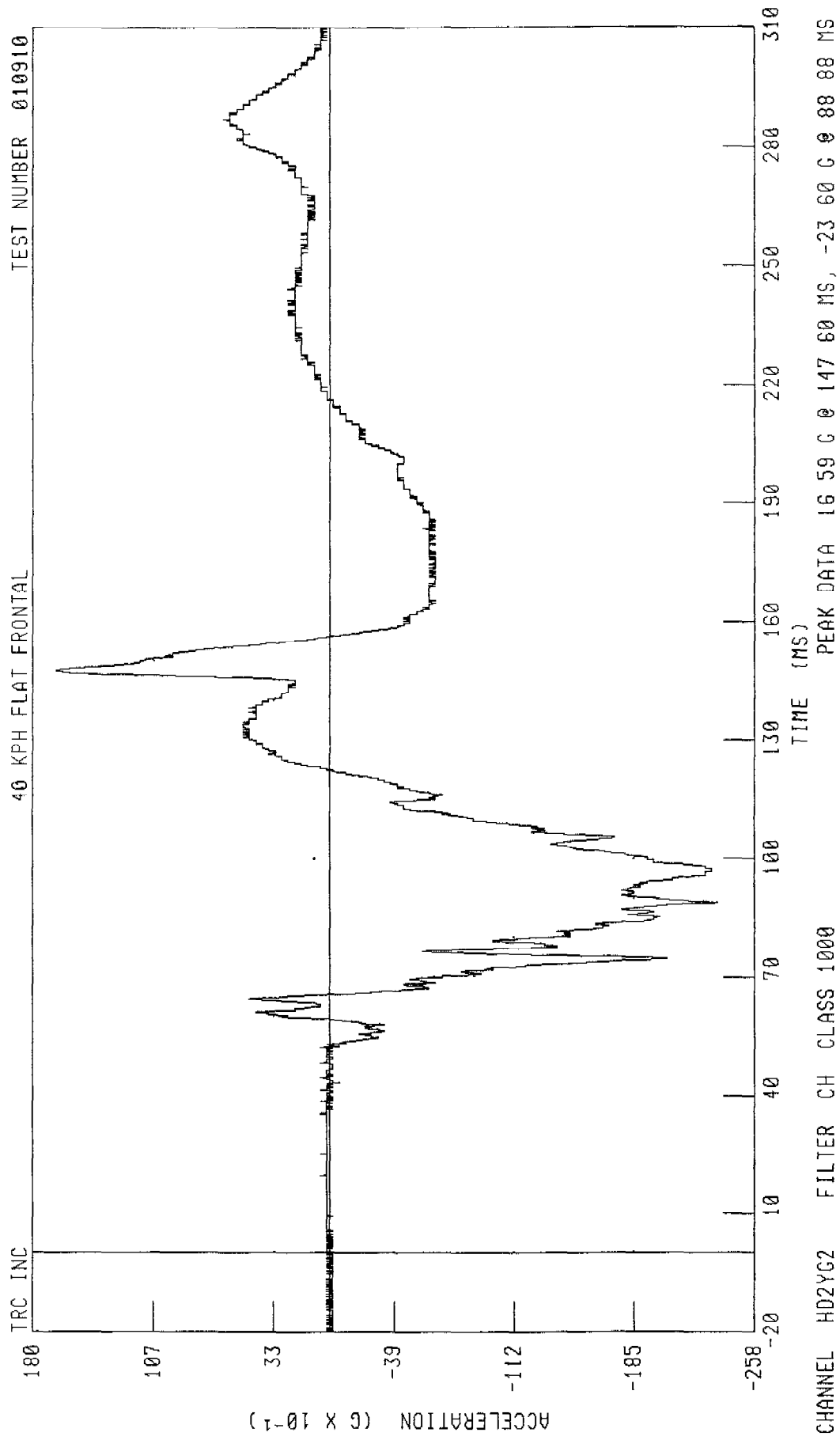
CHANNEL HD1XC2 FILTER CH CLASS 1000

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER HEAD Z-AXIS (LT) ACCELERATION



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 PASSENGER HEAD Y-AXIS (FT) ACCELERATION

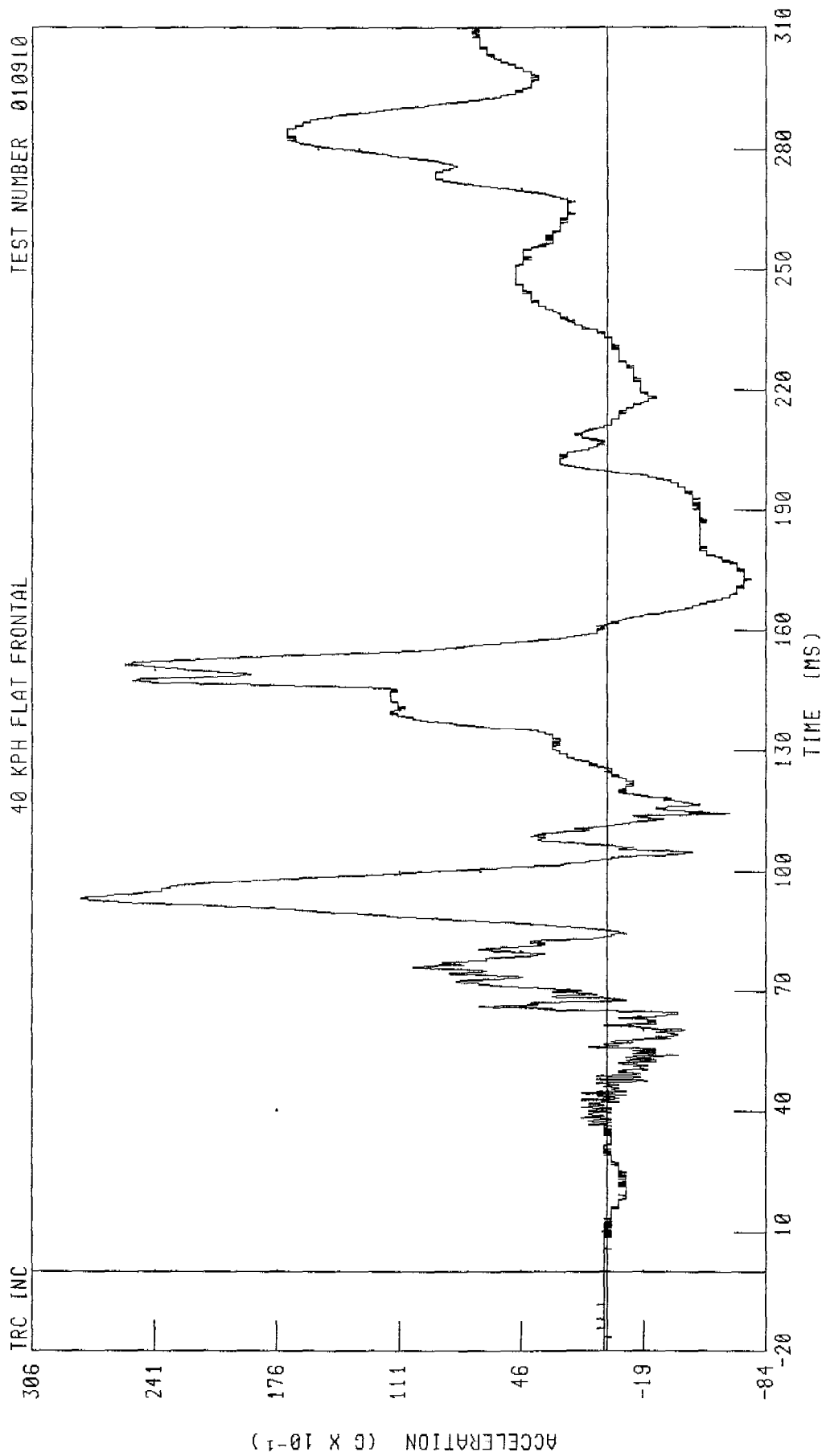


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER HEAD Z-AXIS (FT) ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL HD2Z62 FILTER CH CLASS 1000

PEAK DATA 28 02 G @ 93 12 MS, -7 64 G @ 172 88 MS

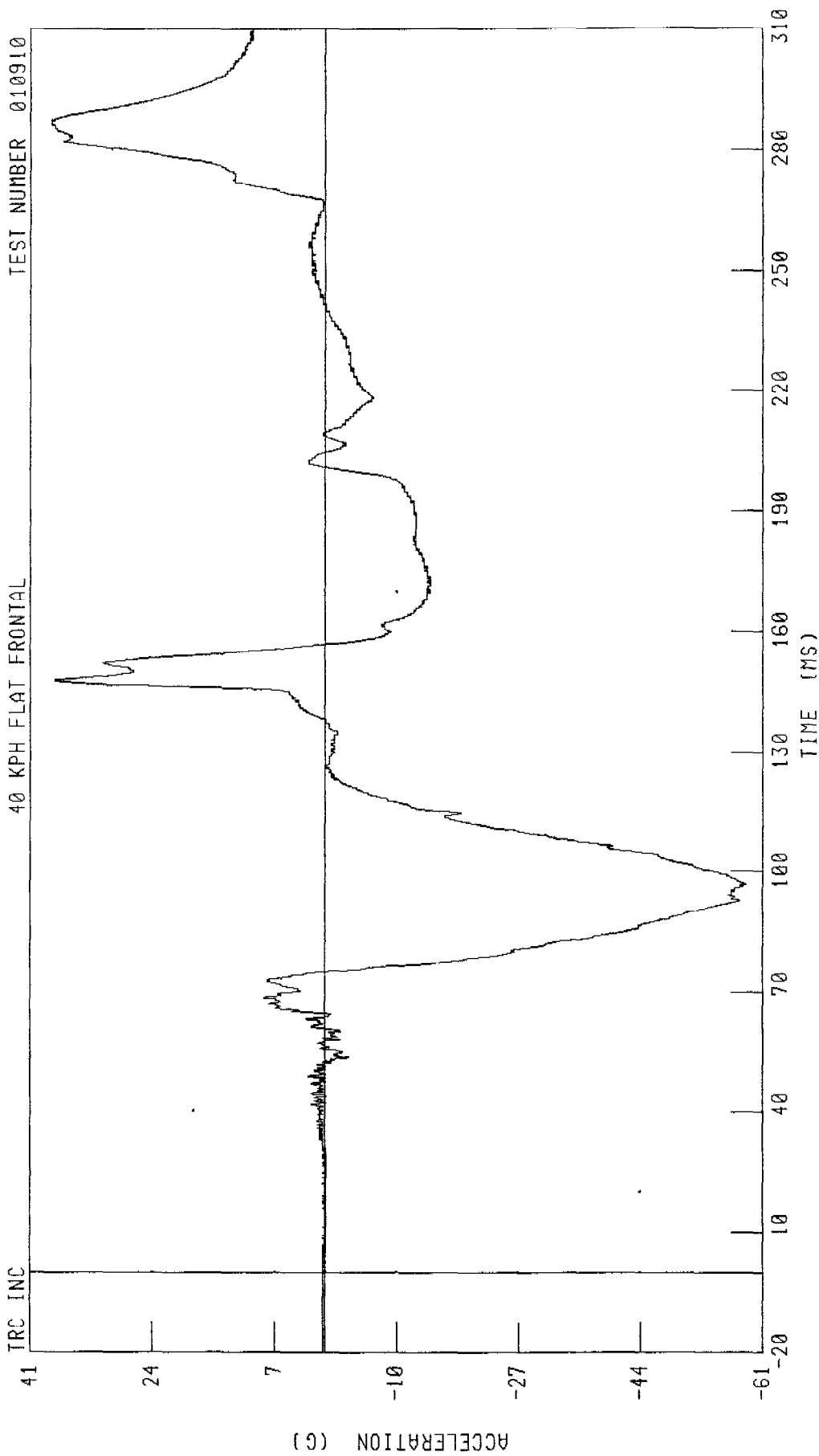
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER HEAD X-AXIS (TP) ACCELERATION

TRC INC

40 KPH FLAT FRONTAL

TEST NUMBER 010910

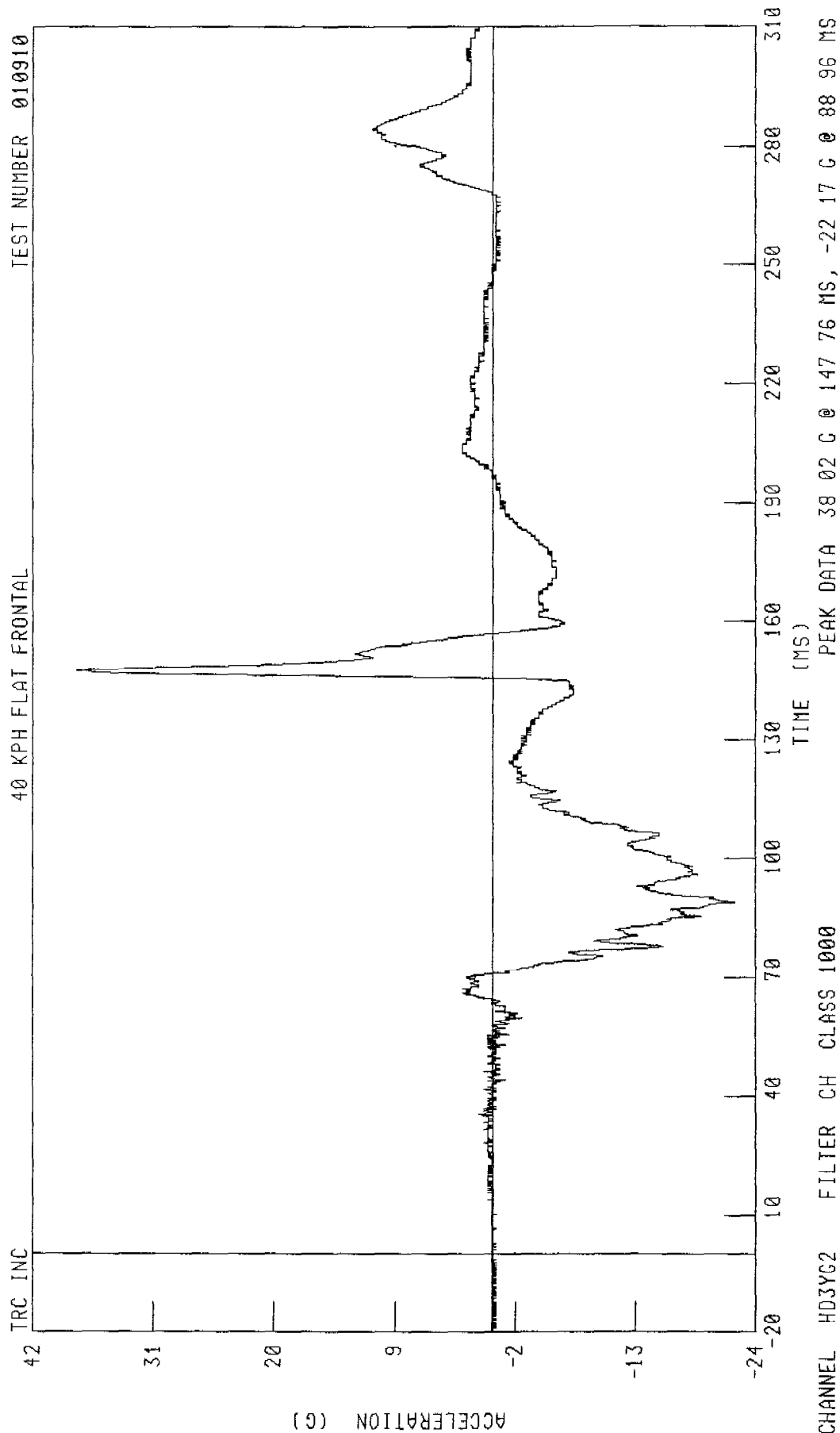


CHANNEL HD3XG2 FILTER CH CLASS 1000

PEAK DATA 38 02 G @ 286 32 MS, -58 68 G @ 96 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER HEAD Y-AXIS (TP) ACCELERATION



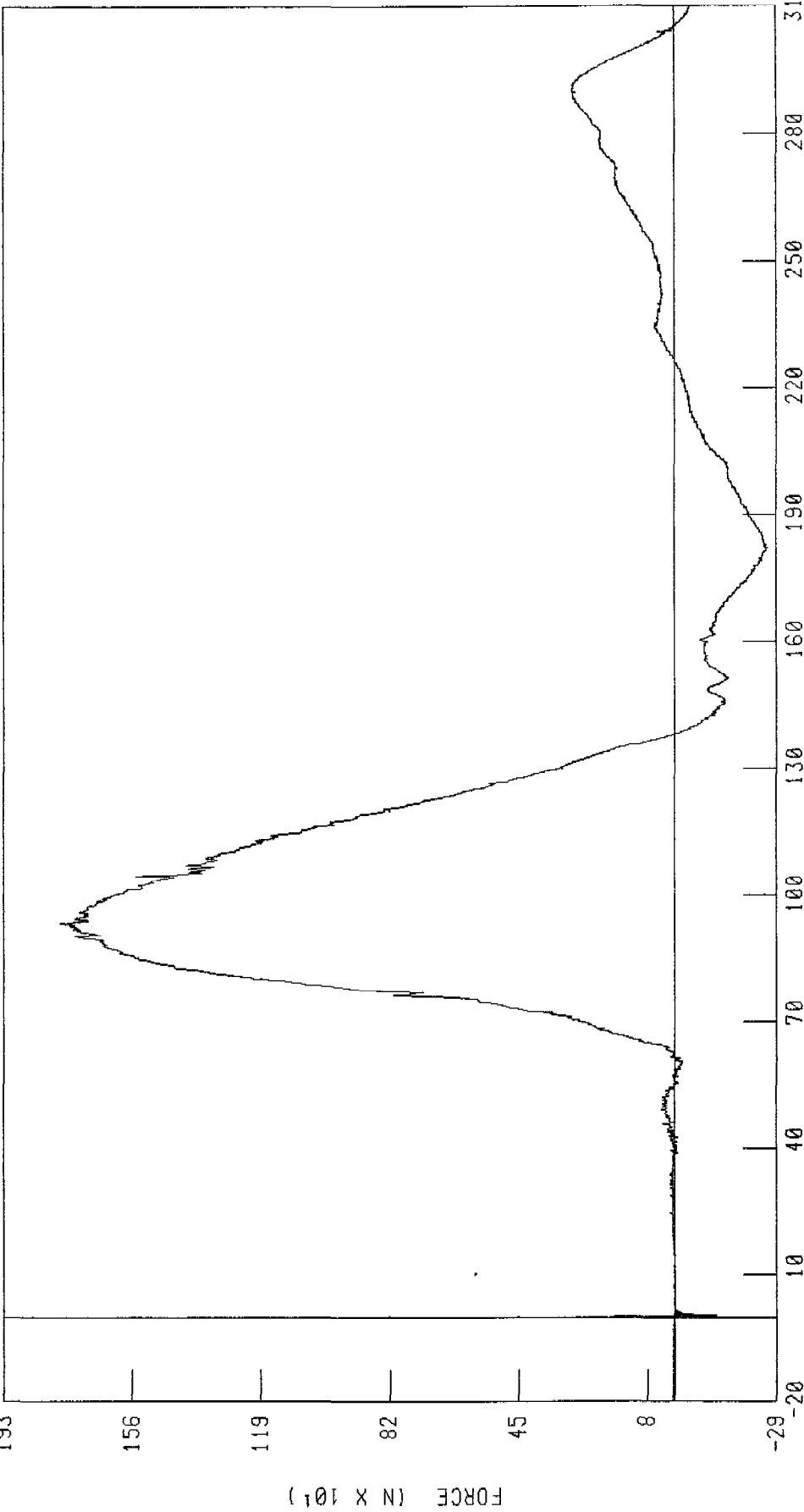
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER NECK X-AXIS SHEAR FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

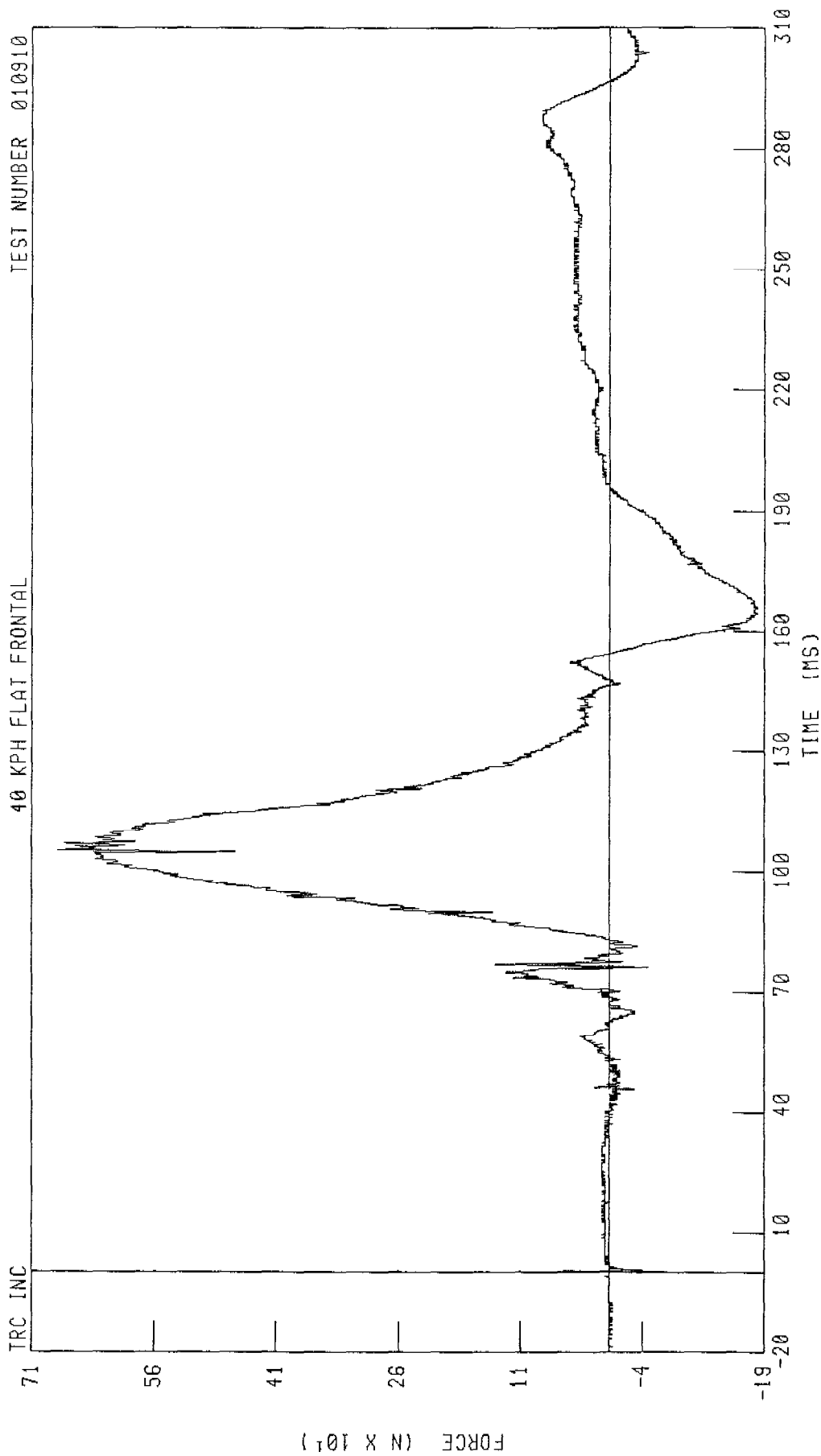


TIME (MS)

PEAK DATA 1768 78 N 93 36 MS, -265 52 N 182 32 MS

CHANNEL NEKXF2 FILTER CH CLASS 1000

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER NECK Y-AXIS SHEAR FORCE

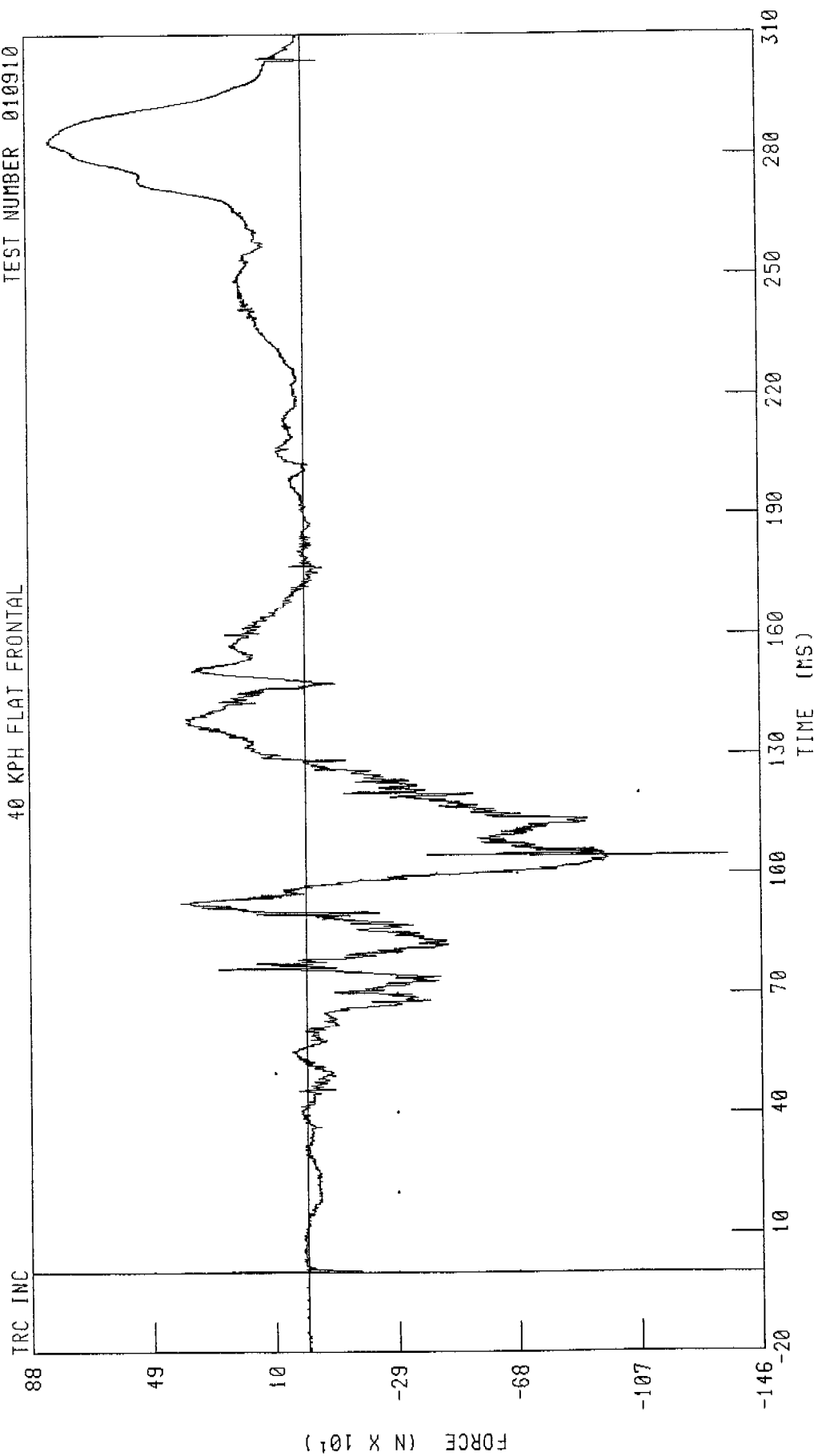


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER NECK Z-AXIS AXIAL FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910

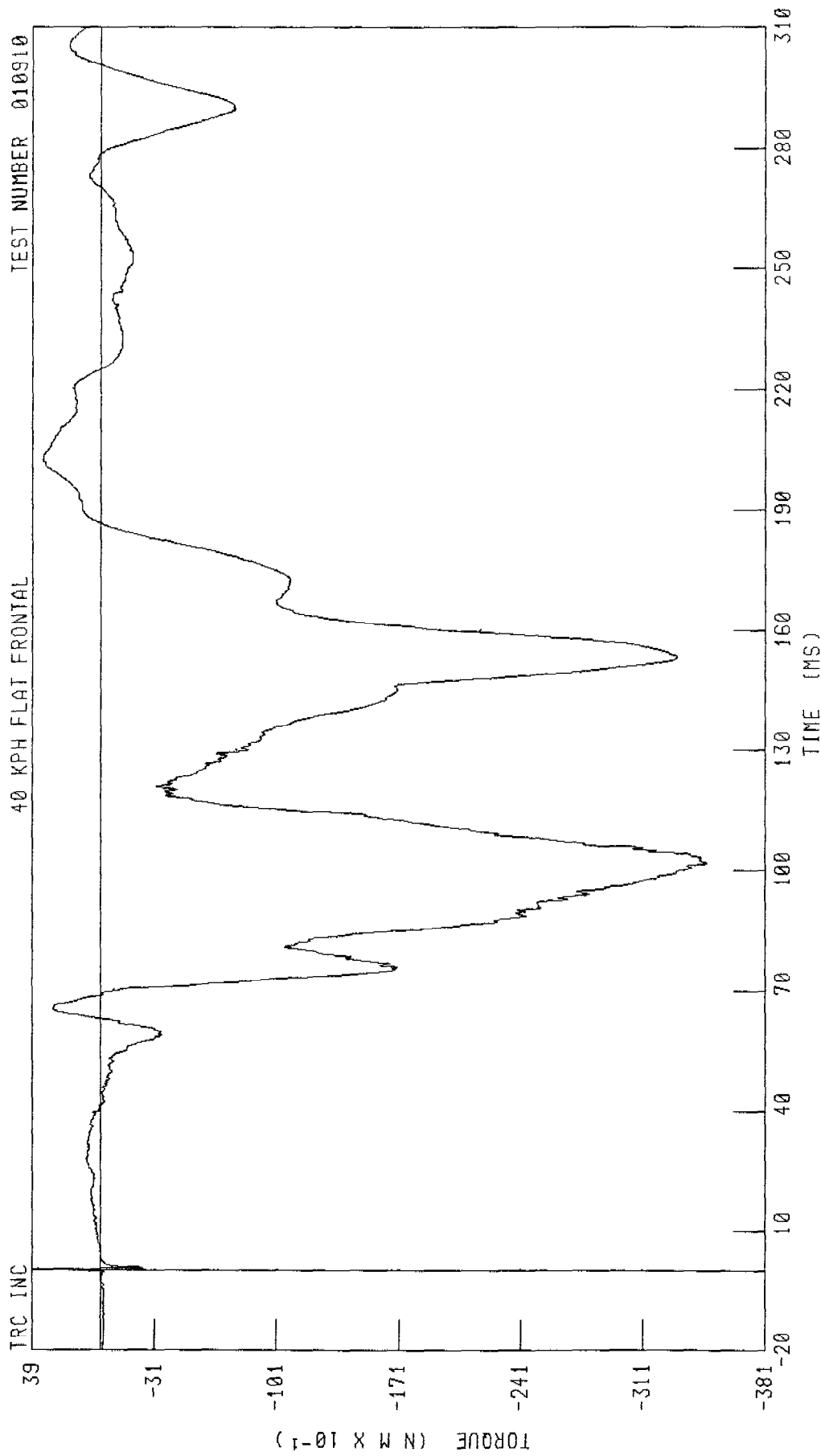


TIME (MS)

PEAK DATA 808 17 N @ 283 36 MS, -1354 51 N @ 104 64 MS

CHANNEL NEKZF2 FILTER CH CLASS 1000

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER NECK MOMENT ABOUT X AXIS



CHANNEL NEKX2 FILTER CH CLASS 600 PEAK DATA 3 61 N M @ 0 16 MS, -34 76 N M @ 101 92 MS

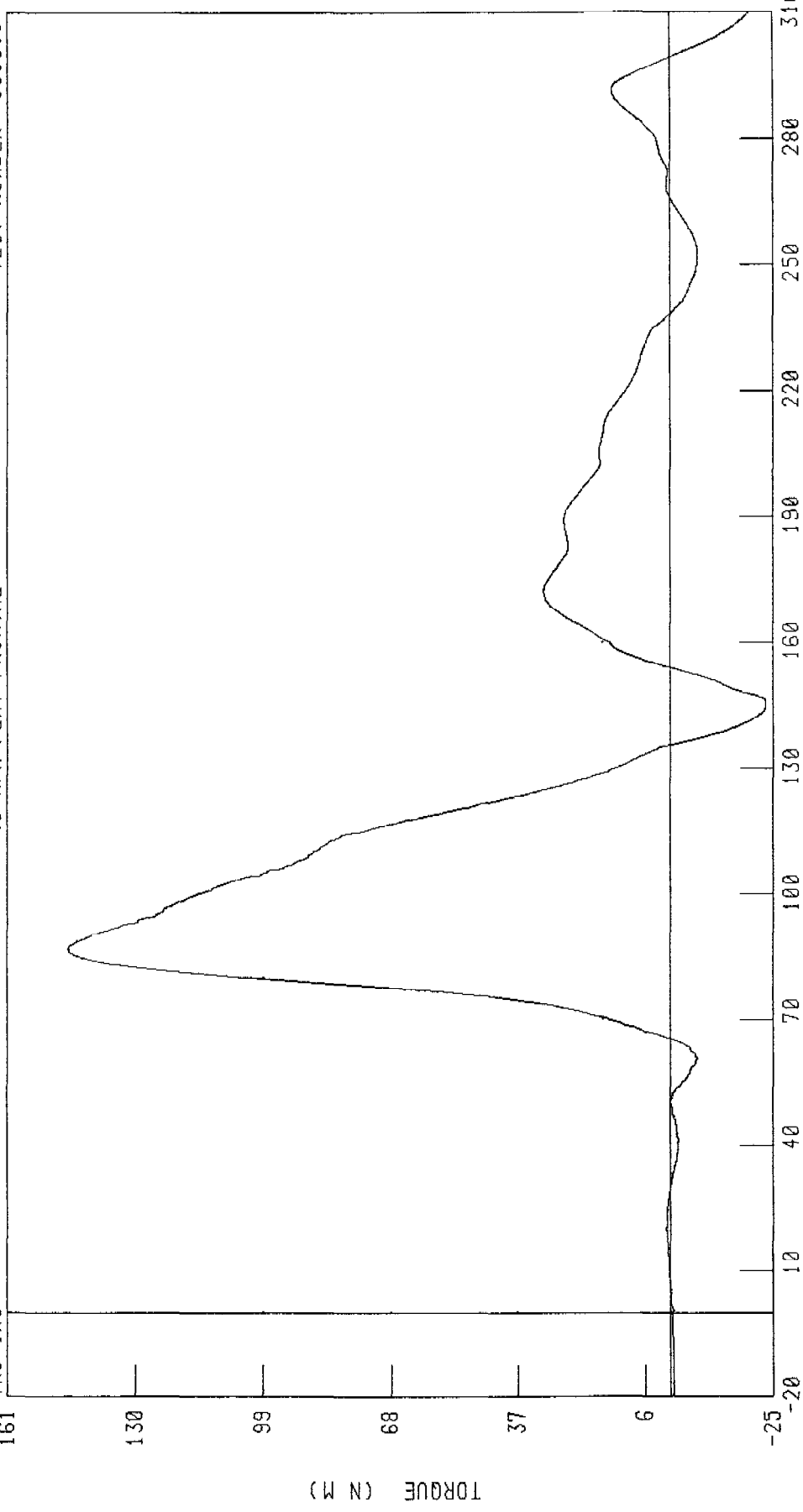
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER NECK MOMENT ABOUT Y AXIS

TEST NUMBER 010910

40 KPH FLAT FRONTAL

TRC INC



TIME (MS)

CHANNEL NEYM2 FILTER CH CLASS 600 PEAK DATA 146 35 N M @ 86 80 MS, -23 29 N M @ 144 80 MS

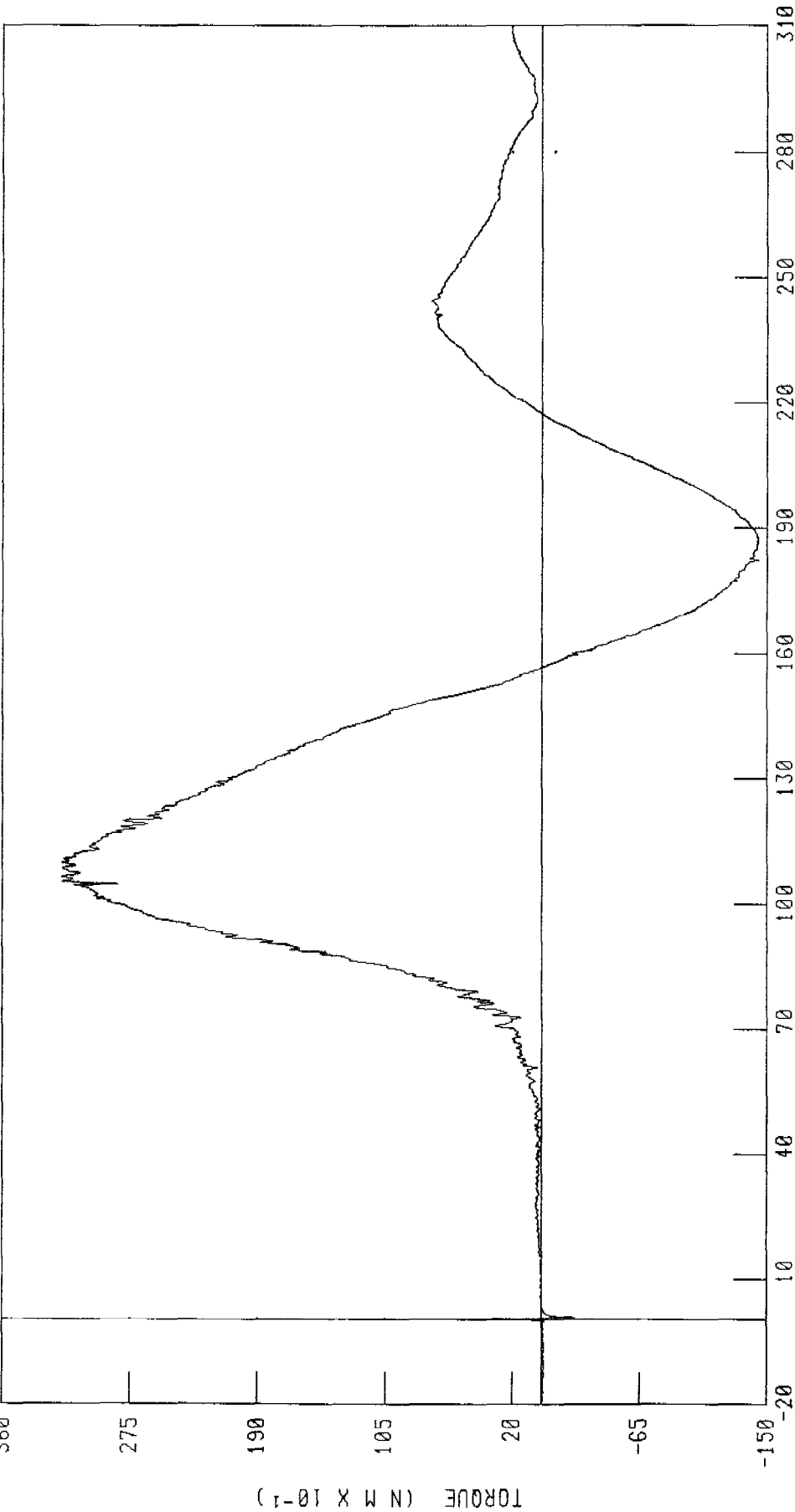
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER NECK MOMENT ABOUT Z AXIS

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



TIME (MS)

PEAK DATA 32 09 N M @ 106 64 MS, -14 44 N M @ 186 48 MS

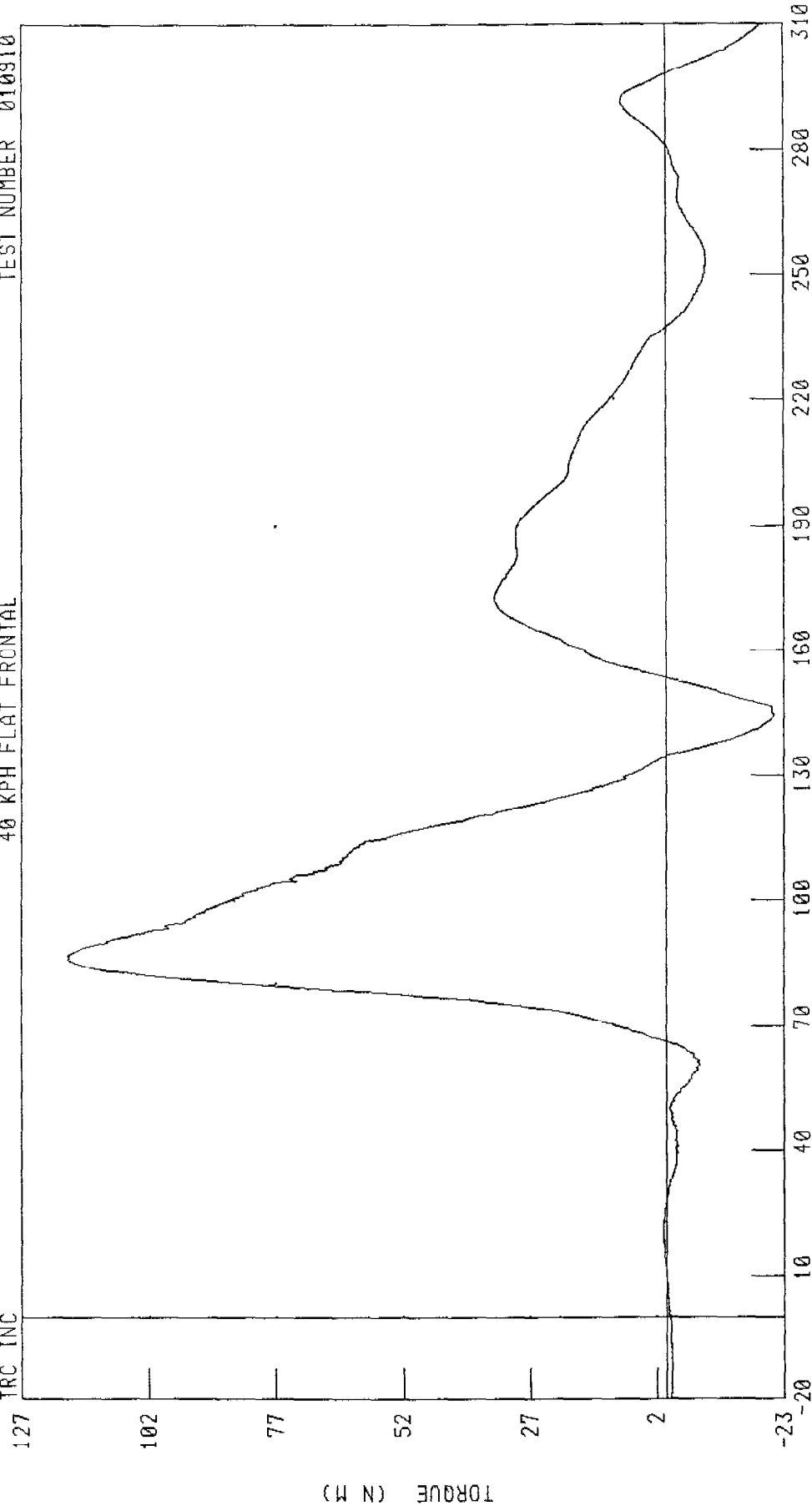
CHANNEL NEKZM2 FILTER CH CLASS 600

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER NECK OCCIPITAL CONDYLE MOMENT ABOUT Y AXIS

TEST NUMBER 010910

40 KPH FLAT FRONTAL

TRC INC



TIME (MS)

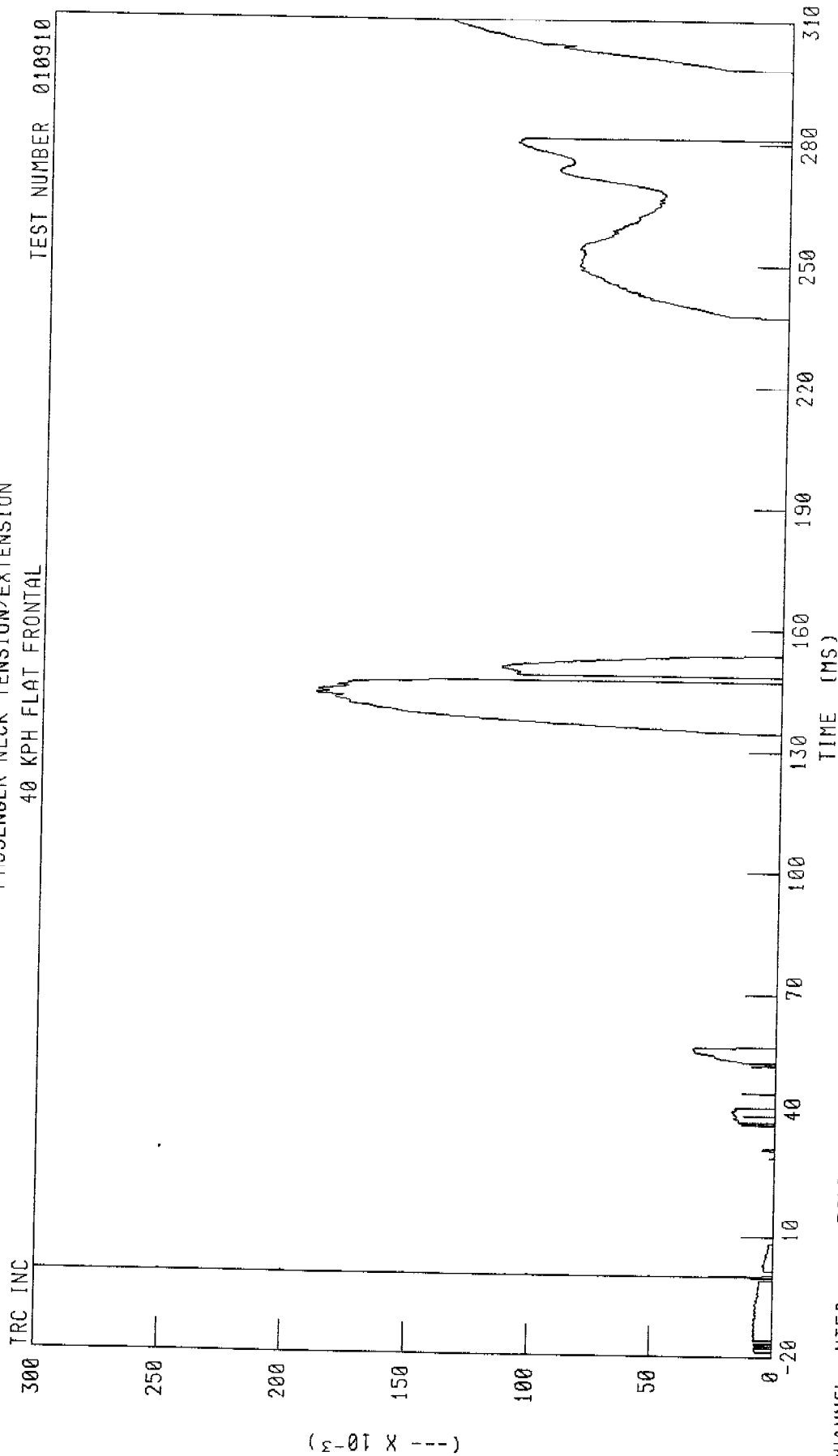
CHANNEL NEKOM2 FILTER CH CLASS 600 PEAK DATA 118 00 N M @ 86 80 MS, -21 03 N M @ 144 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER NECK TENSION/EXTENSION

40 KPH FLAT FRONTAL

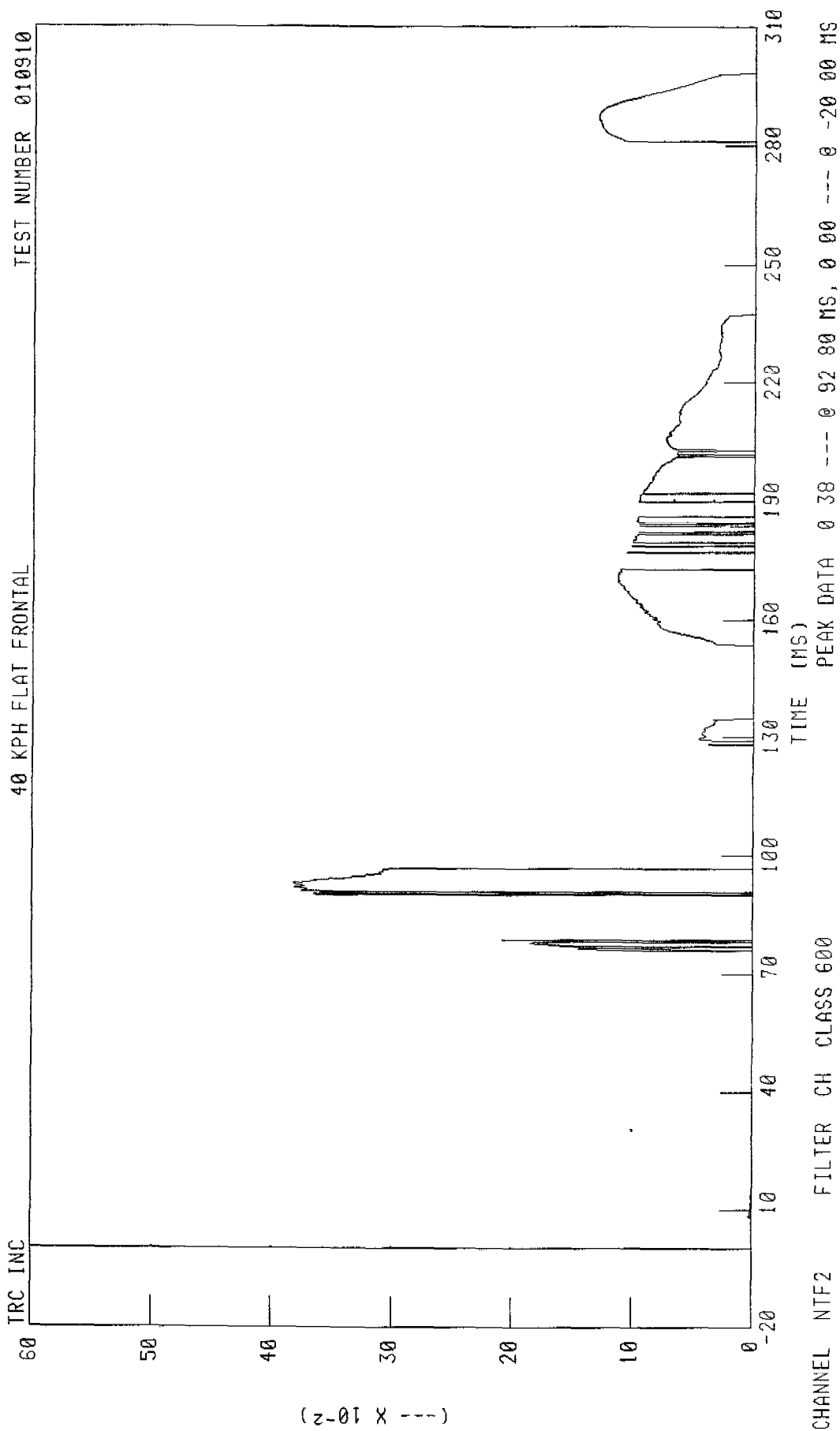
TEST NUMBER 010910



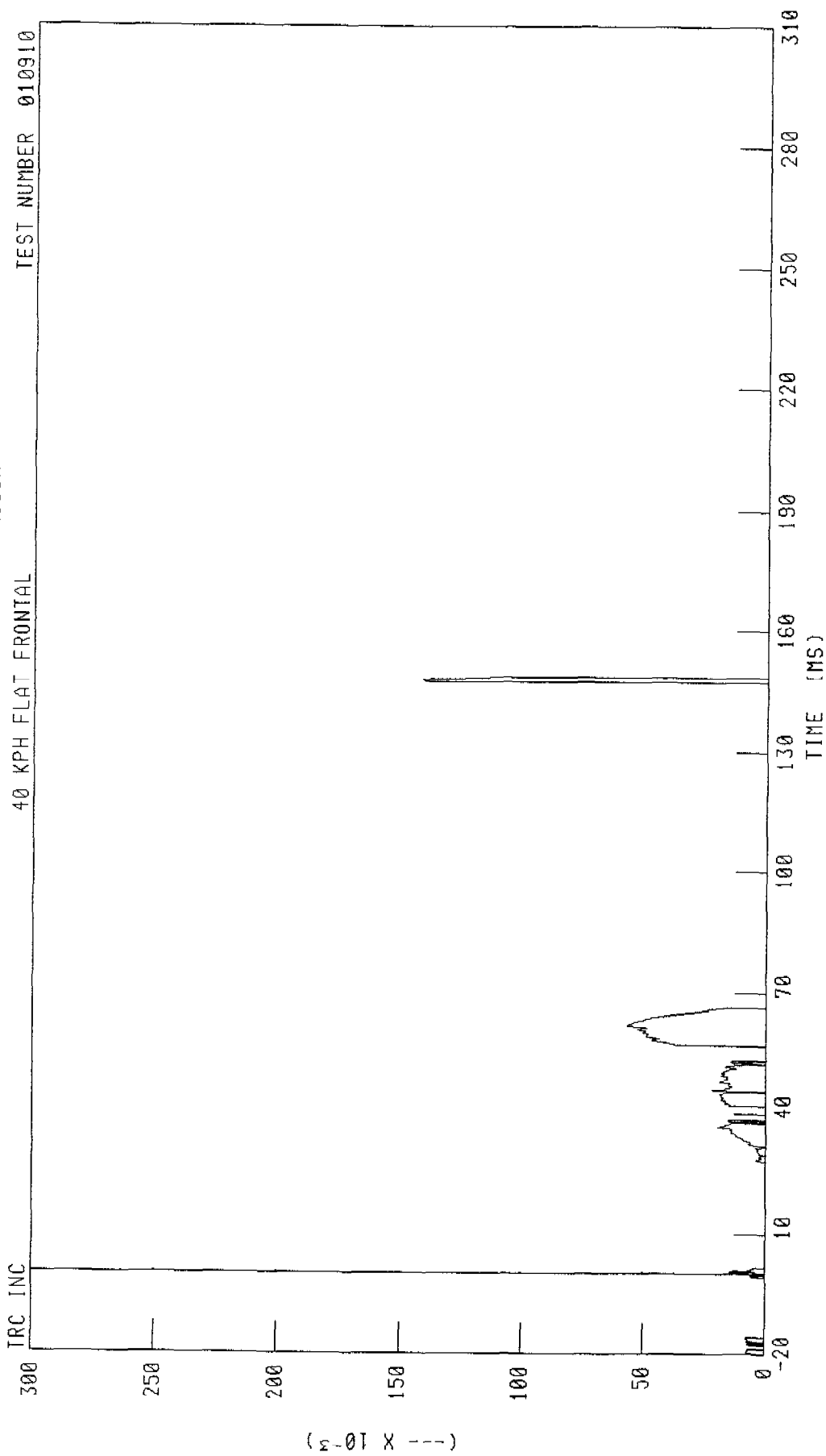
CHANNEL NTE2 FILTER CH CLASS 600

PEAK DATA 0 19 --- 0 143 68 MS, 0 00 --- 0 -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER NECK TENSION/FLEXION



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER NECK COMPRESSION/EXTENSION



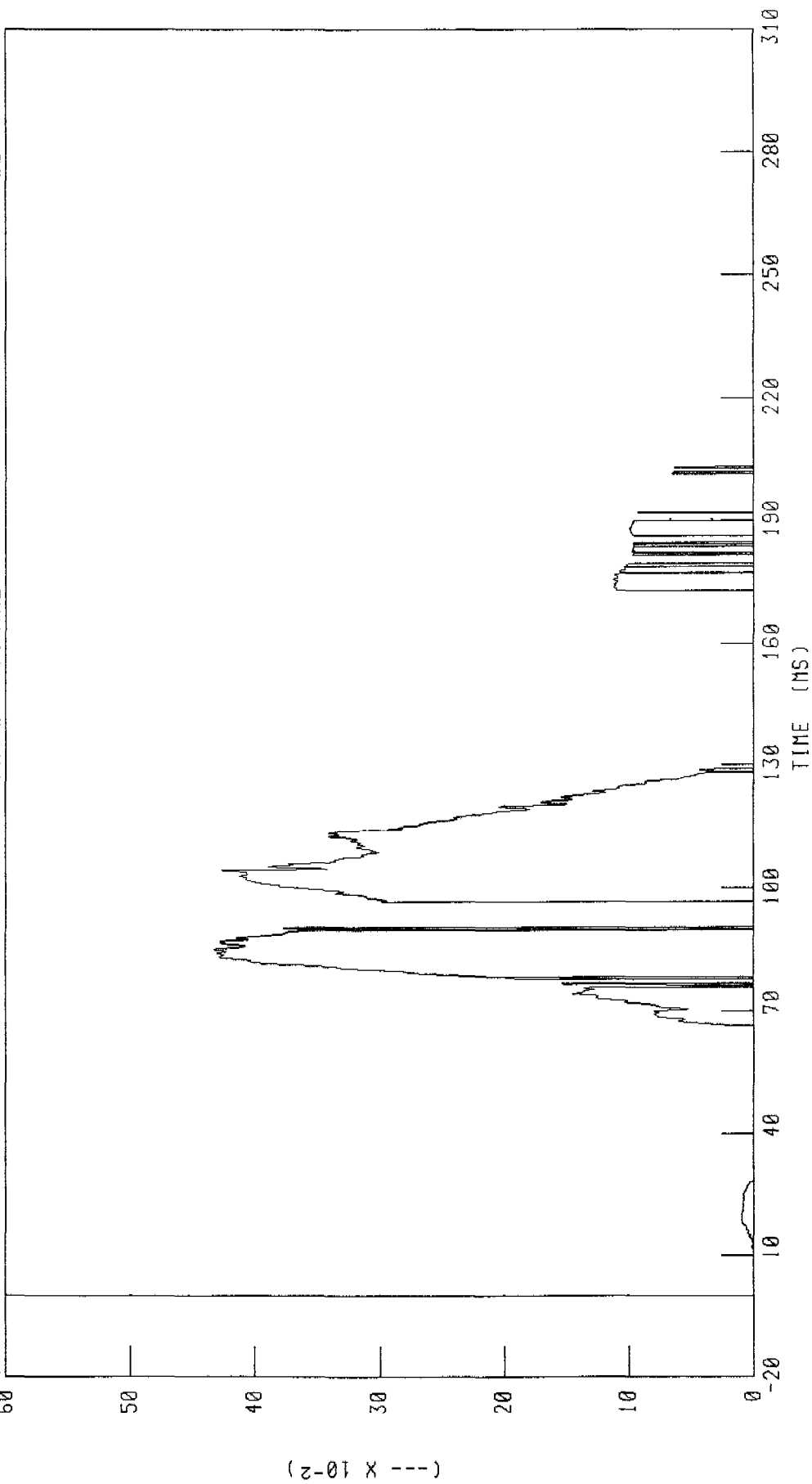
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER NECK COMPRESSION/FLEXION

TRC INC

40 KPH FLAT FRONTAL

TEST NUMBER 010910



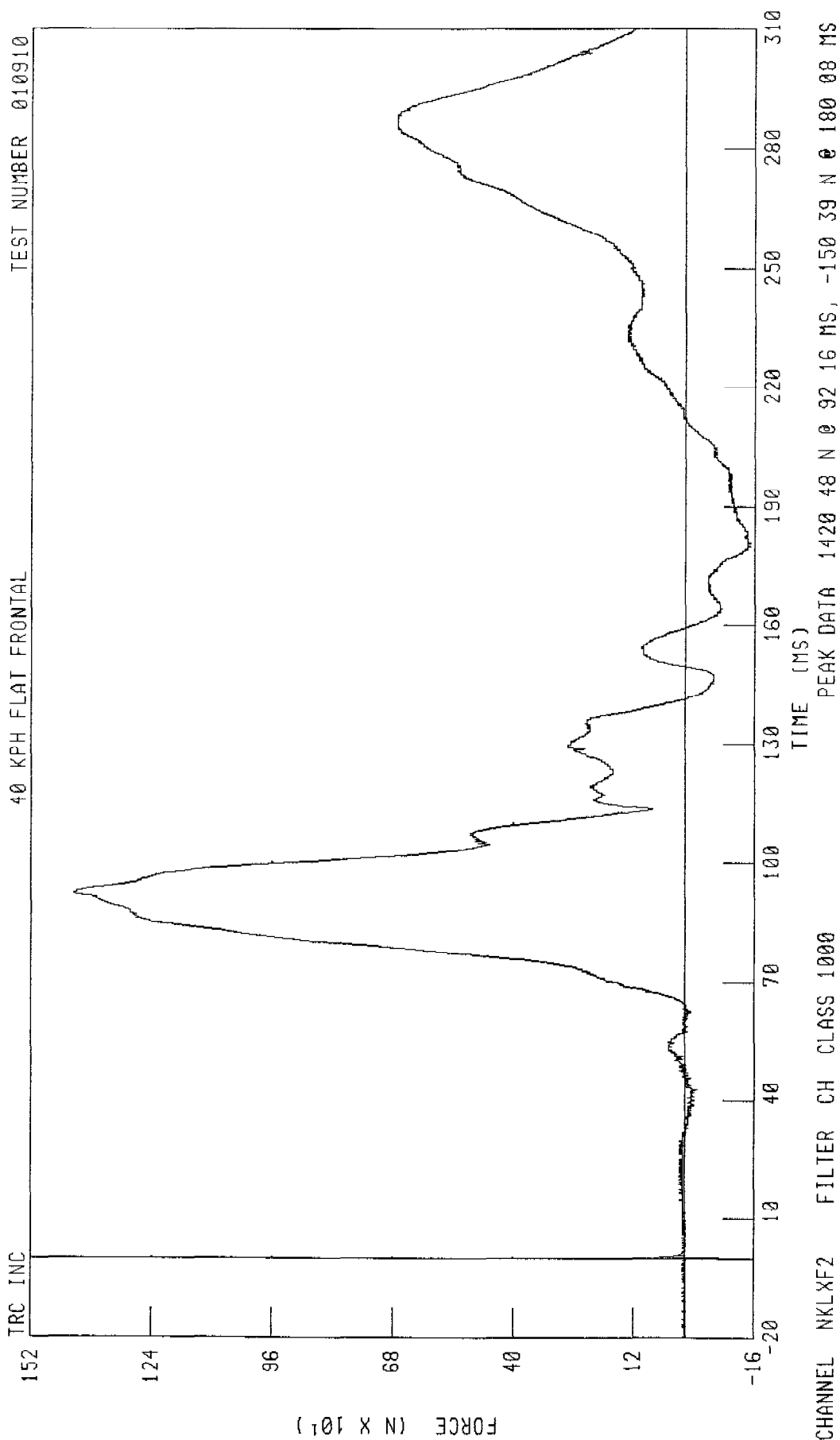
CHANNEL NCF2 FILTER CH CLASS 600

PEAK DATA 0 43 --- 0 85 12 MS, 0 00 --- 0 -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER NECK LOWER X-AXIS SHEAR FORCE

40 KPH FLAT FRONTAL TEST NUMBER 010910

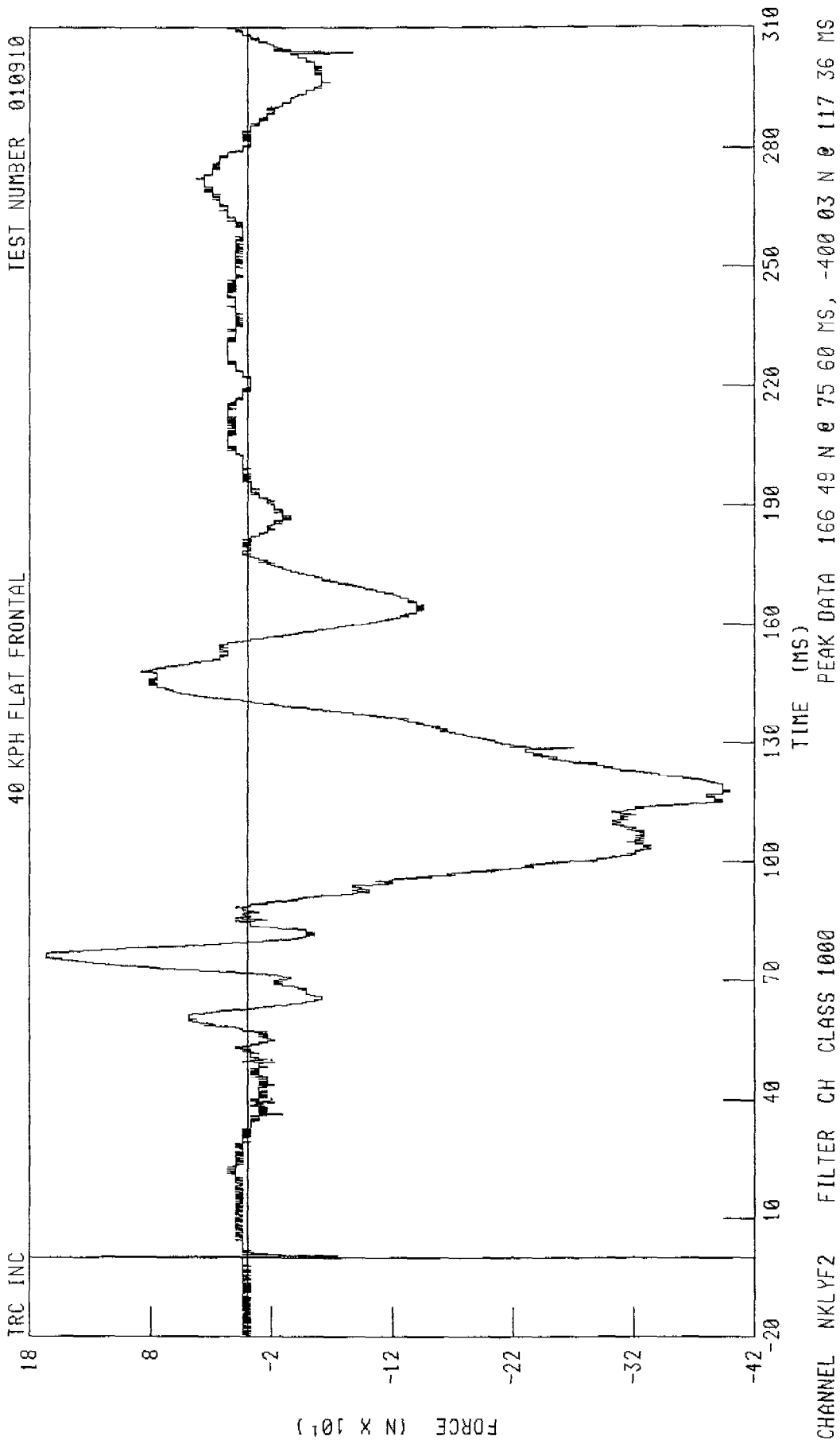


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER NECK LOWER Y-AXIS SHEAR FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910

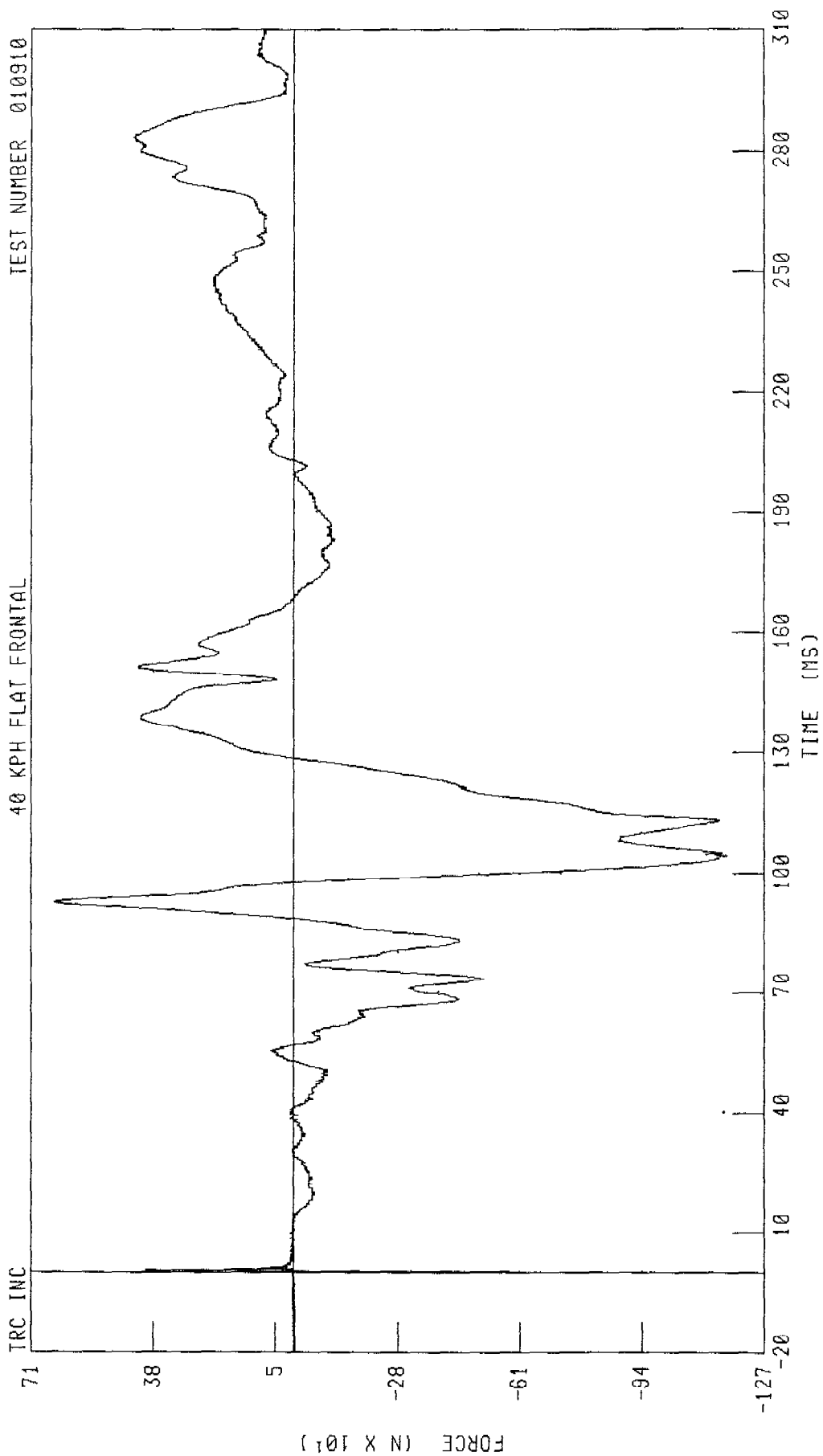


TIME (MS)

CHANNEL NKLYF2 FILTER CH CLASS 1000

PEAK DATA 166 49 N @ 75 60 MS, -400 03 N @ 117 36 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER NECK LOWER Z-AXIS AXIAL FORCE



CHANNEL NKLZF2 FILTER CH CLASS 1000

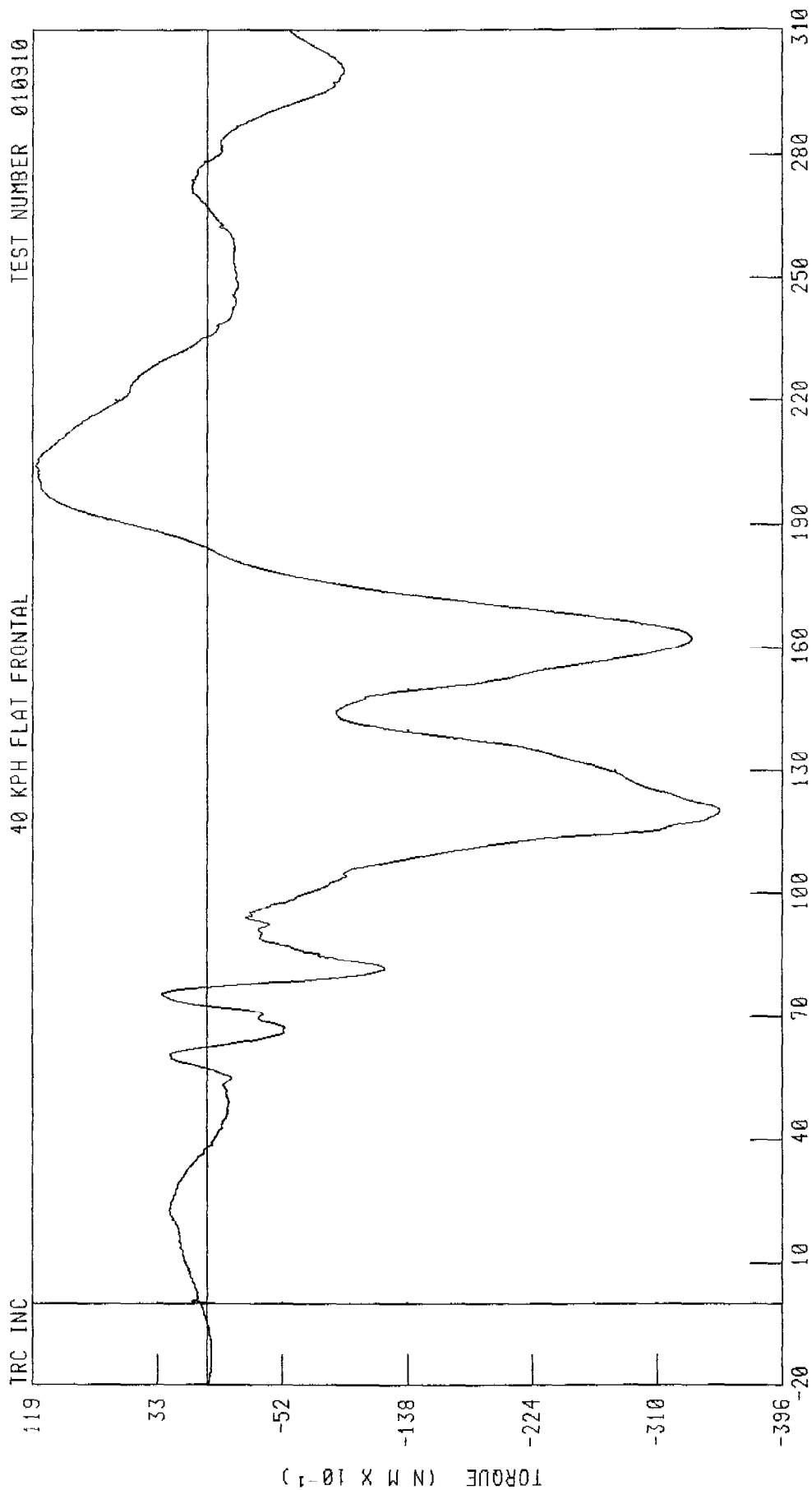
PEAK DATA 649 55 N @ 92 64 MS, -1169 74 N @ 104 56 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER NECK LOWER MOMENT ABOUT X AXIS

40 KPH FLAT FRONTAL

TEST NUMBER 010910

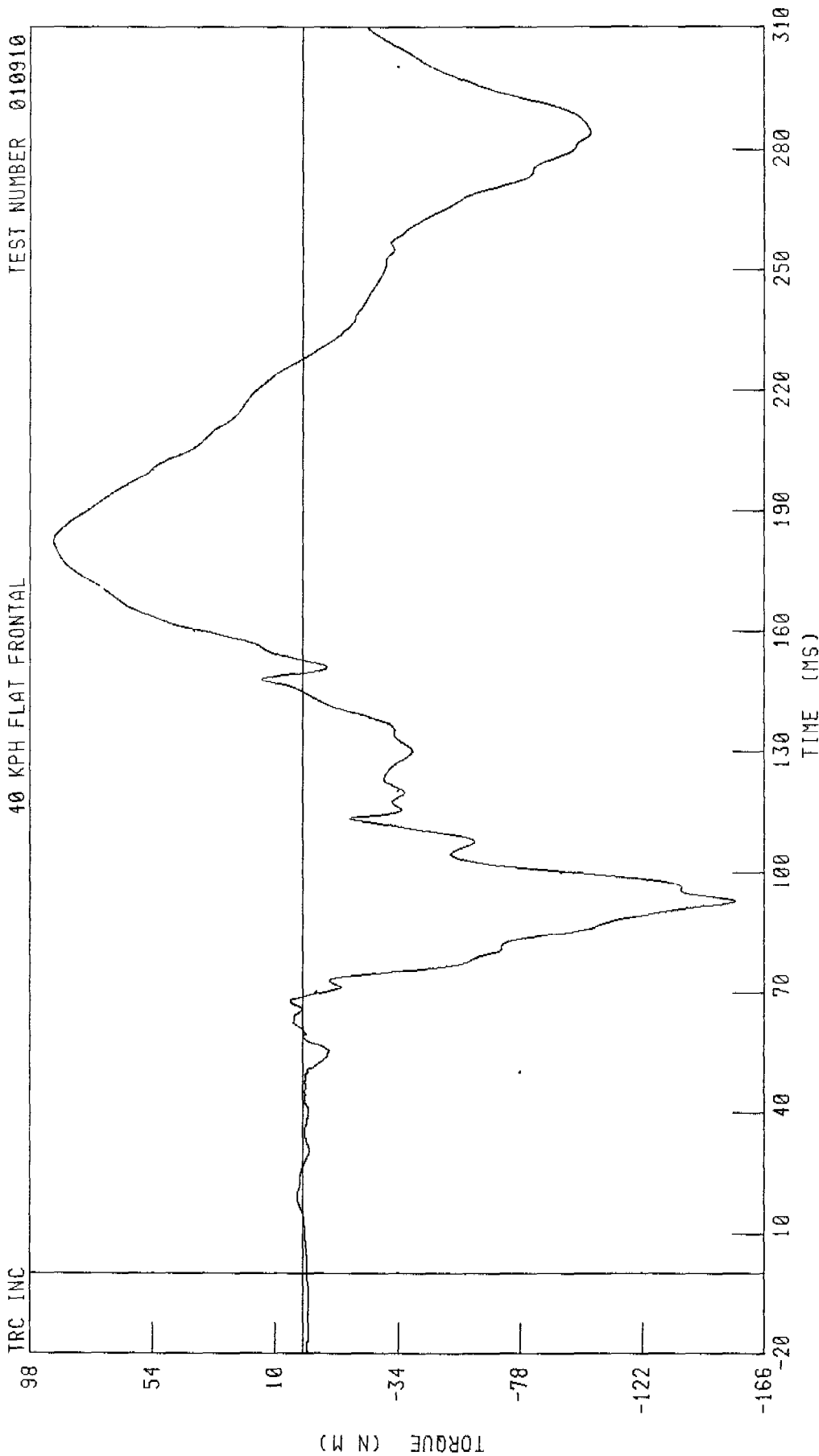


TIME (MS)

CHANNEL NKLX12 FILTER CH CLASS 600

PEAK DATA 11 78 N M @ 204 16 MS, -35 35 N M @ 120 08 MS

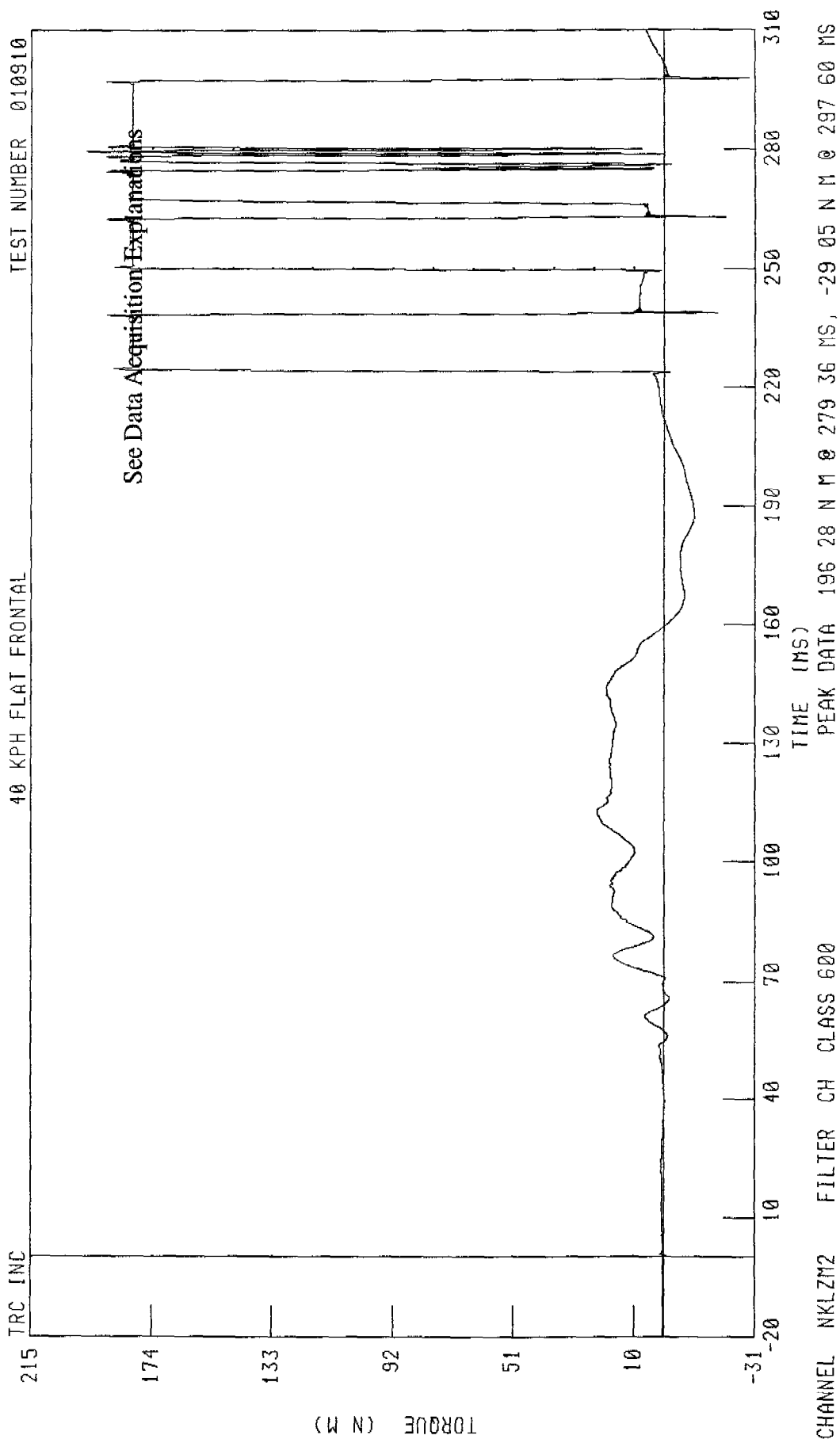
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER NECK LOWER MOMENT ABOUT Y AXIS



CHANNEL NKLYM2 FILTER CH CLASS 600

PEAK DATA 89 58 N M @ 182 24 MS, -155 77 N M @ 92 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER NECK LOWER MOMENT ABOUT Z AXIS



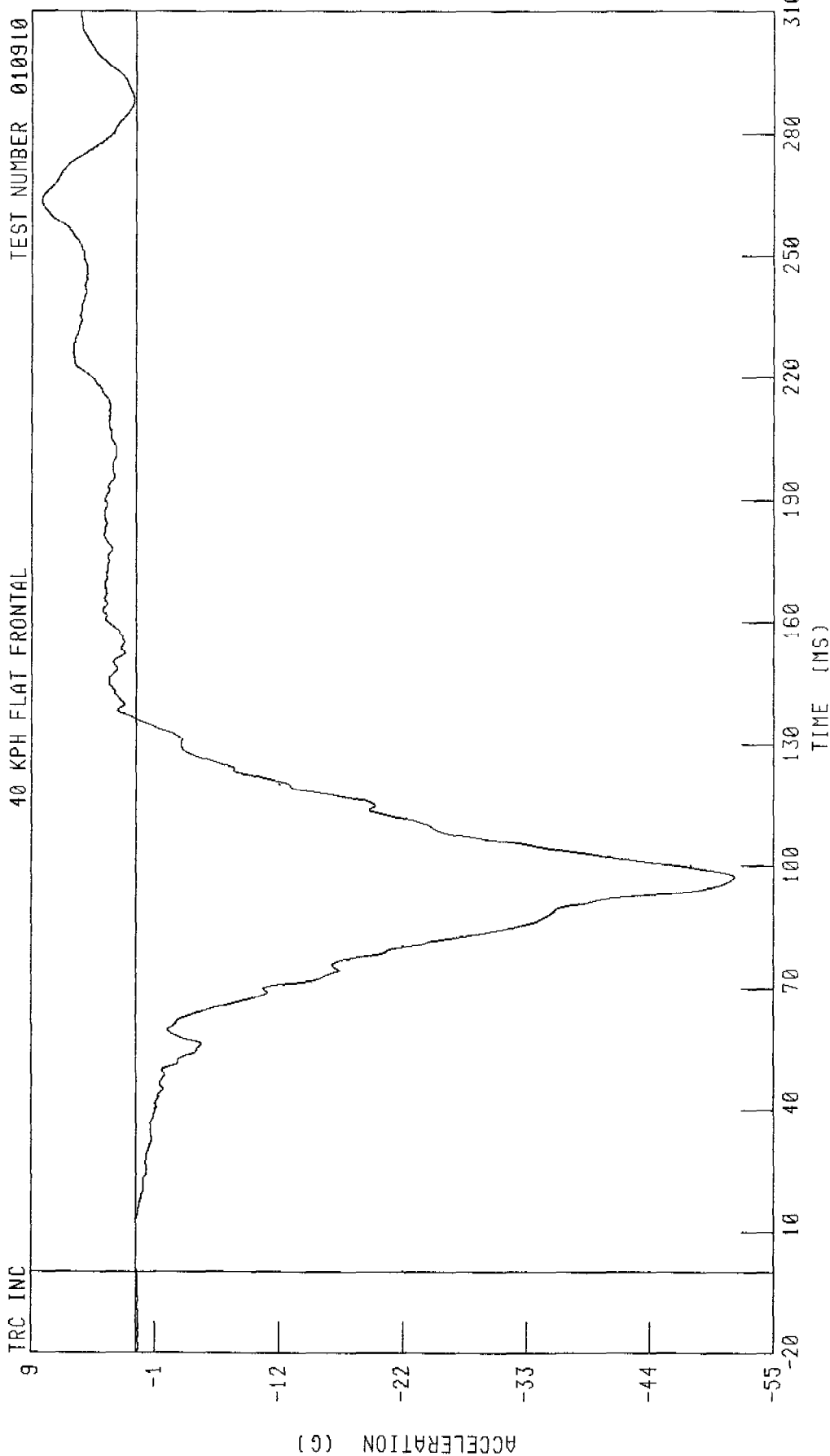
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER CHEST X-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

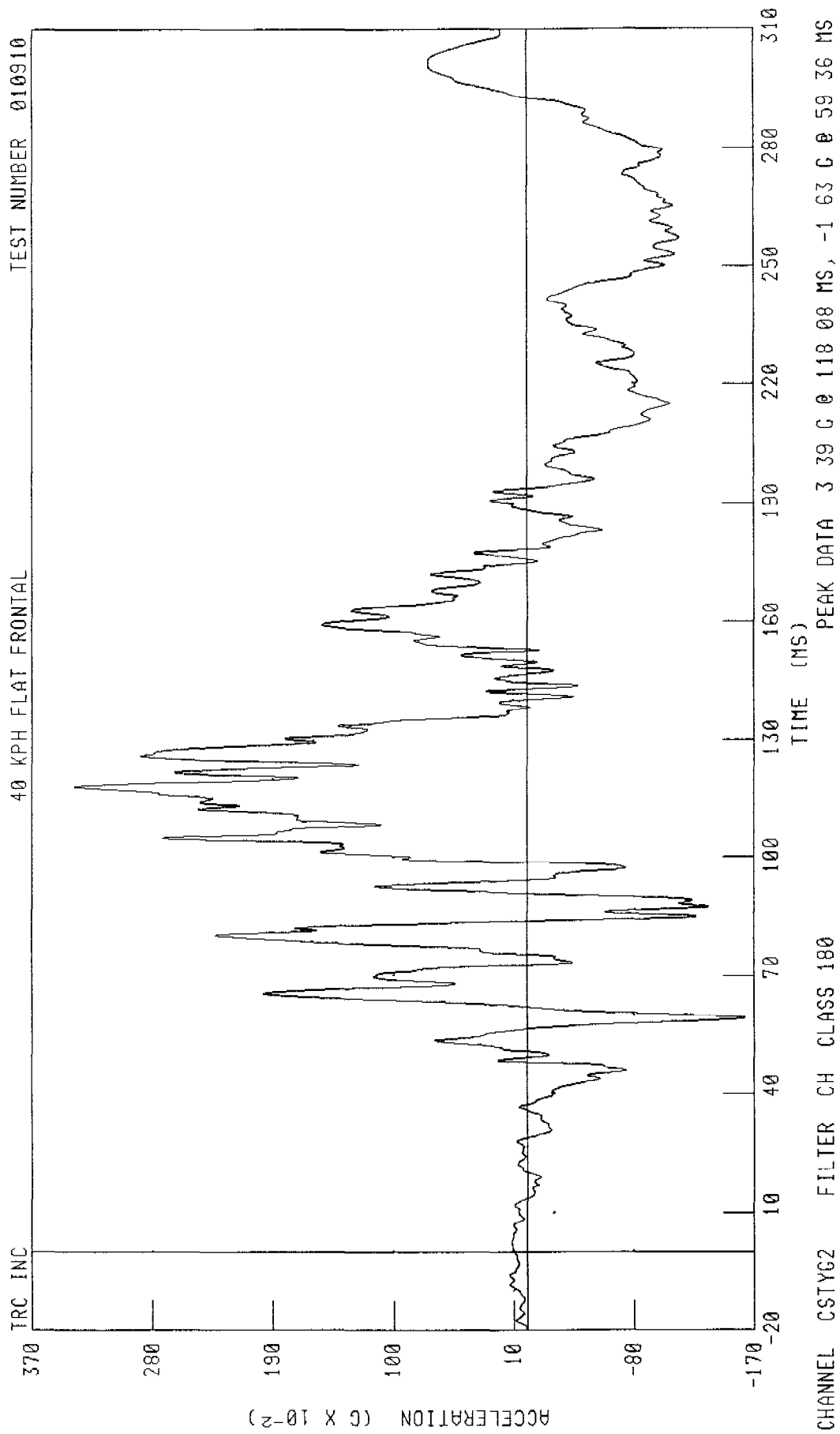
TRC INC



CHANNEL CSTXG2 FILTER CH CLASS 180

PEAK DATA 8 16 G @ 263 76 MS, -51 67 G @ 97 28 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER CHEST Y-AXIS ACCELERATION

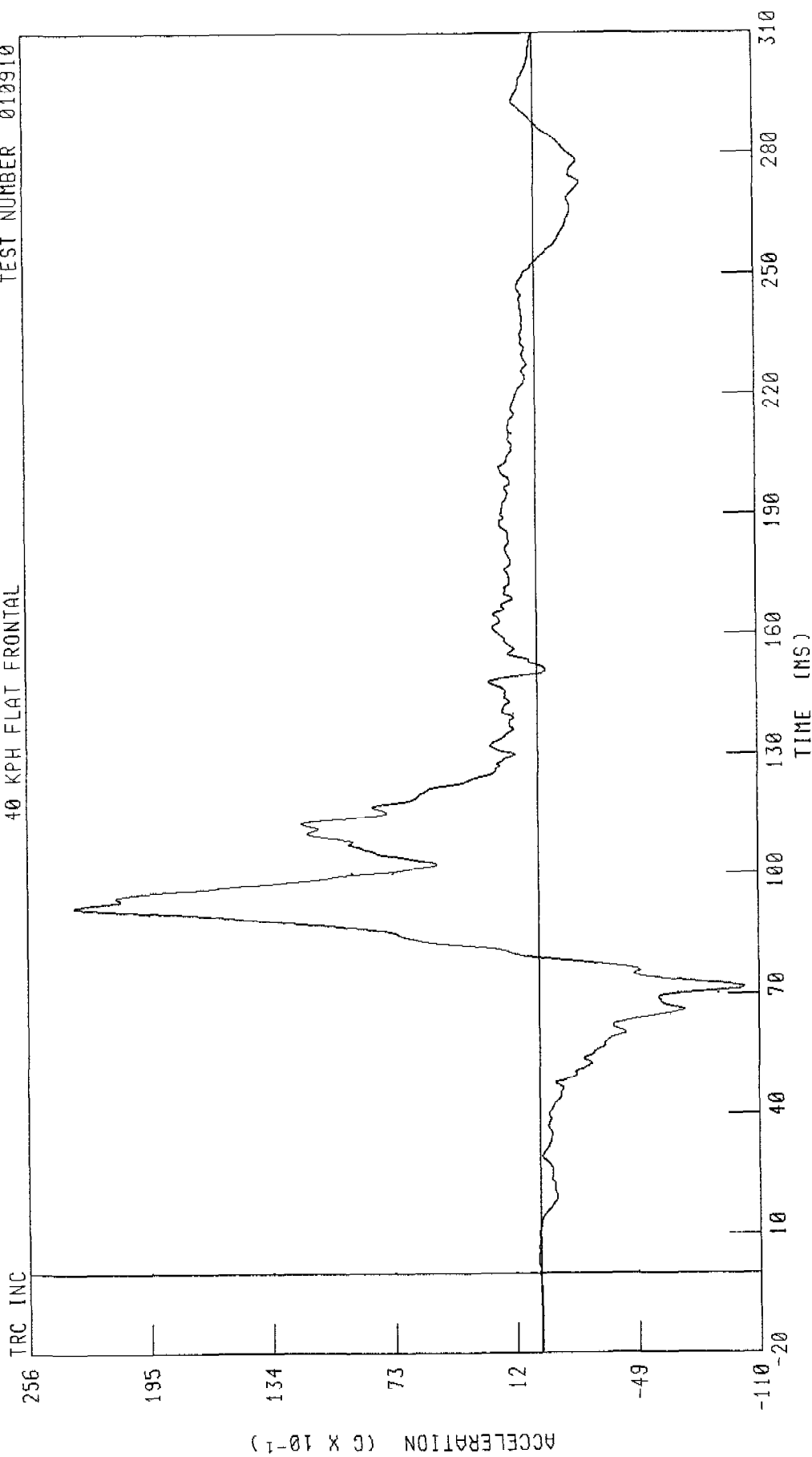


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER CHEST Z-AXIS ACCELERATION

40 KPH FLAT FRONTAL

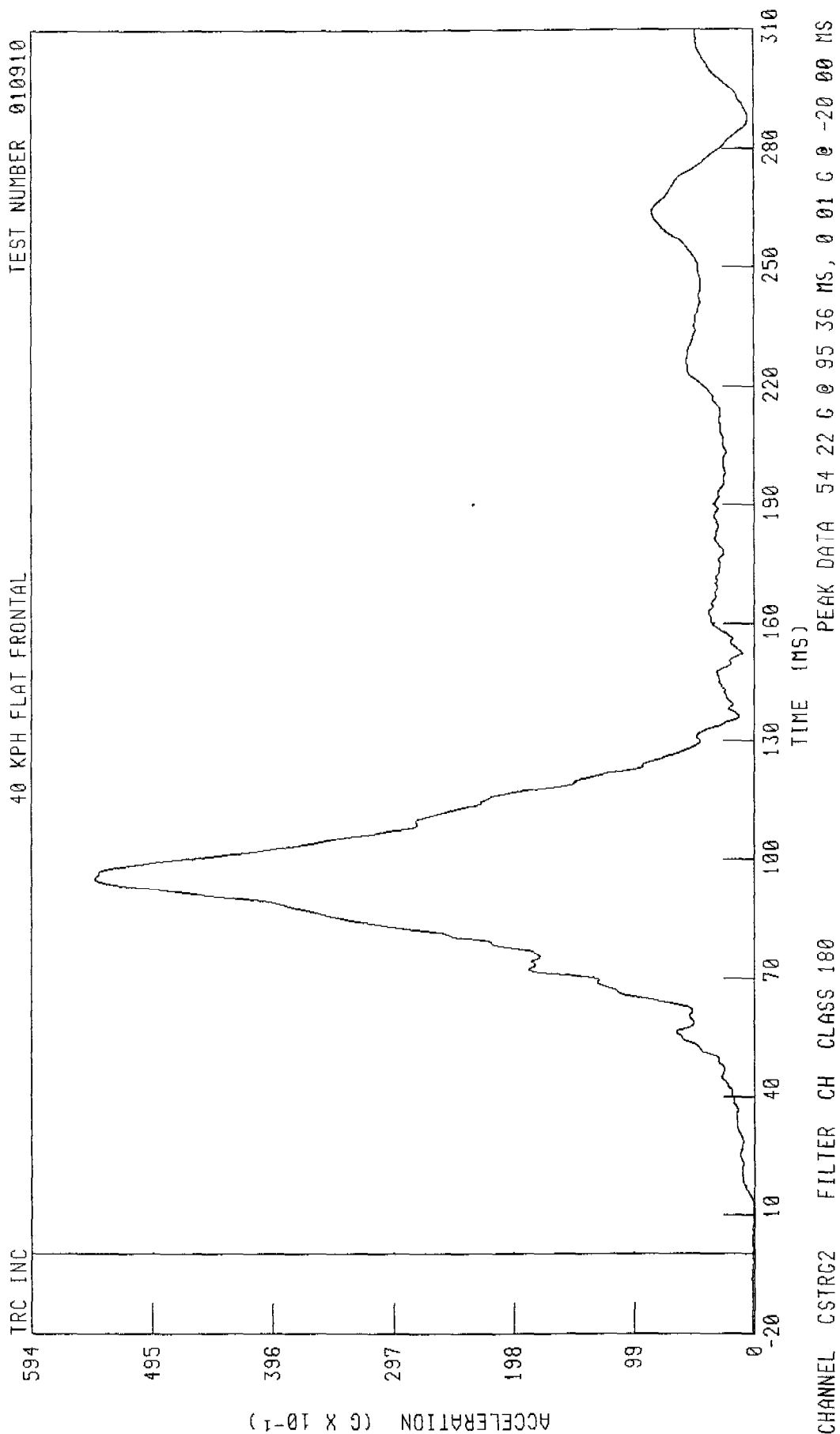
TEST NUMBER 010910



PEAK DATA 23 31 G 0 91 76 MS, -10 25 G 0 71 68 MS

CHANNEL CSTZC2 FILTER CH CLASS 180

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER CHEST RESULTANT ACCELERATION

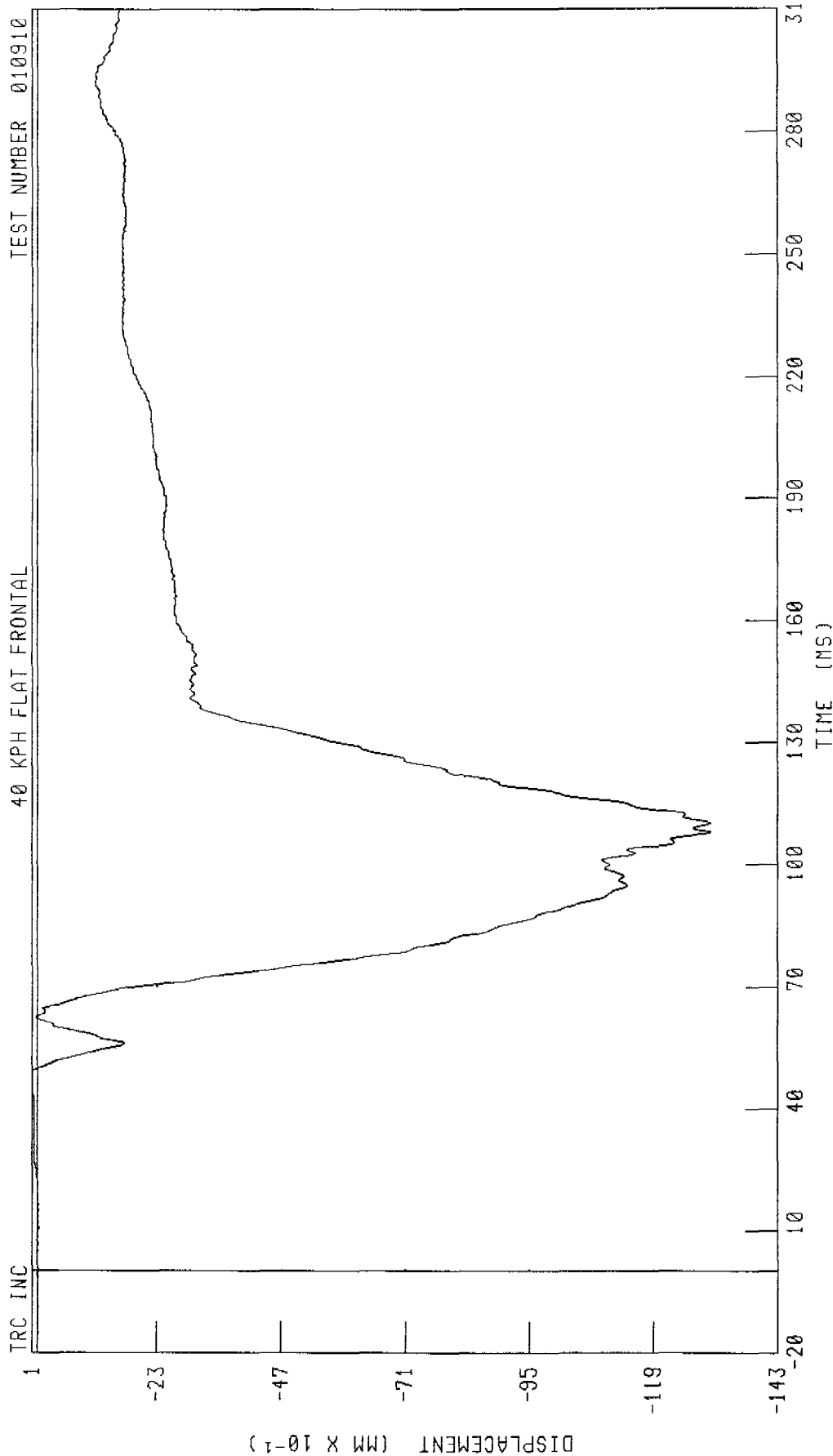


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER CHEST DEFLECTION

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL CSTXD2 FILTER CH CLASS 620

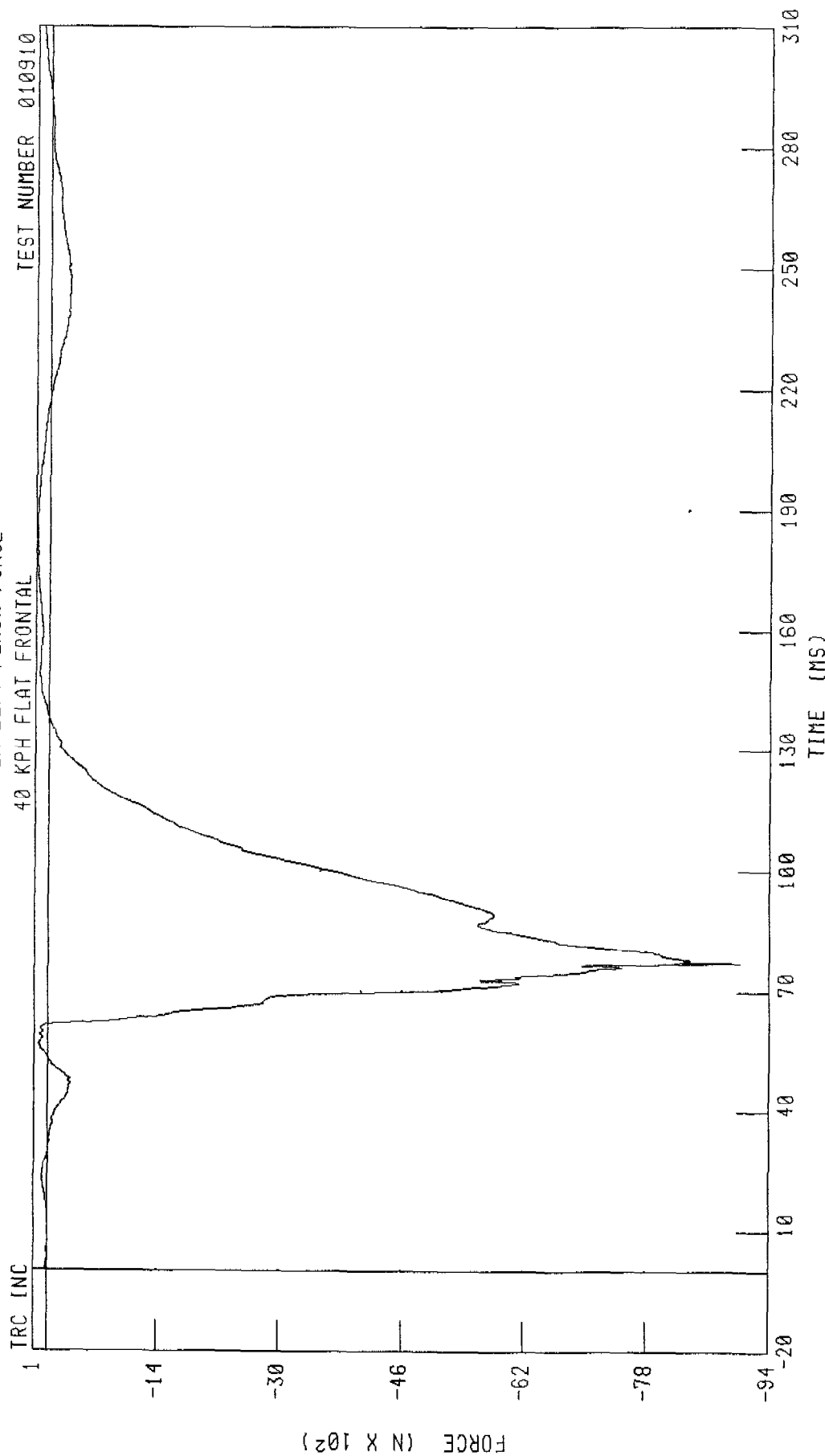
PEAK DATA 0 18 MM @ 46 56 MS, -13 00 MM @ 108 16 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER LEFT FEMUR FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL LFMZF2 FILTER CH CLASS 600

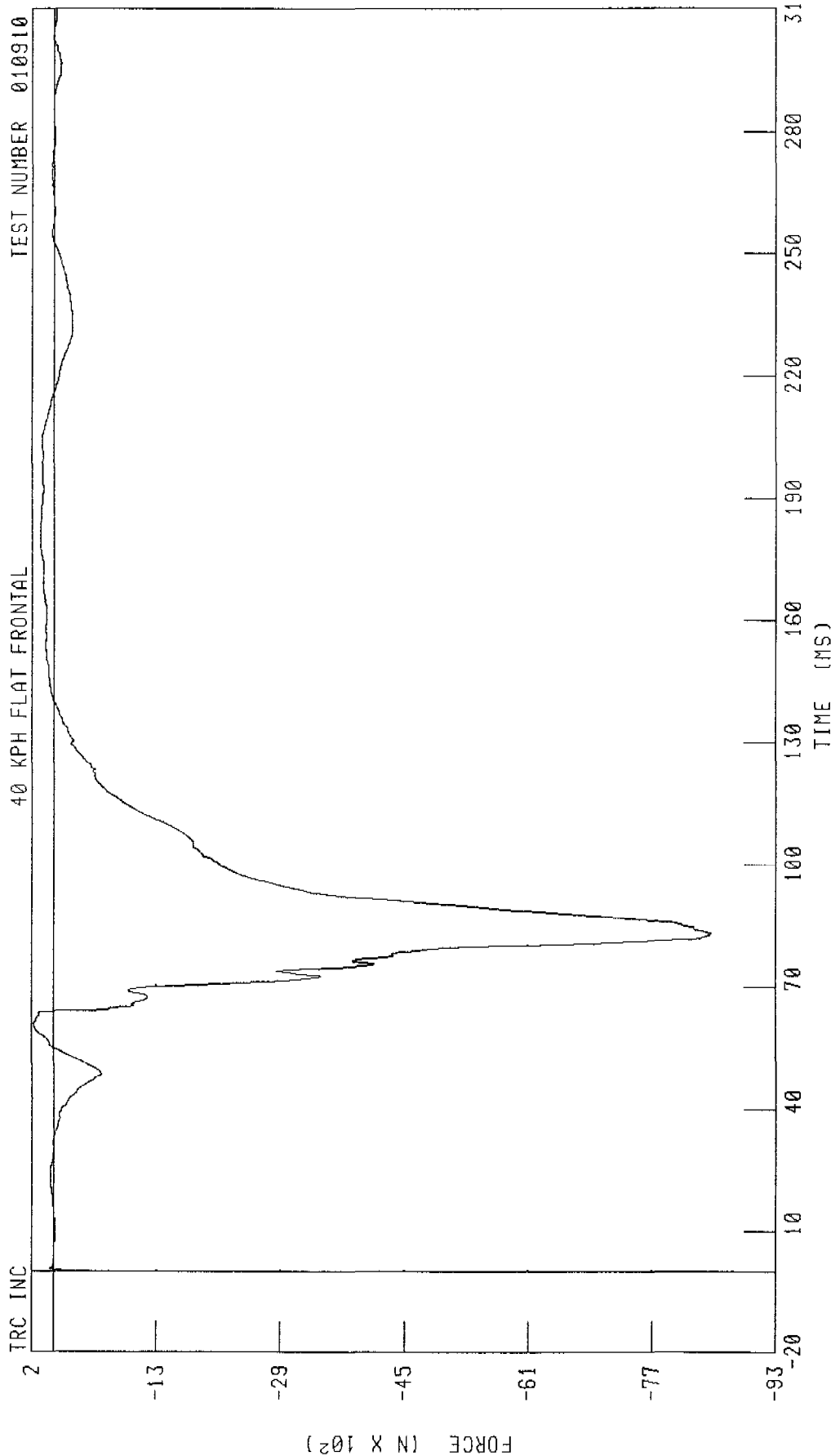
PEAK DATA 162 80 N @ 186 32 MS, -9056 53 N @ 77 12 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER RIGHT FEMUR FORCE

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL RFMZF2 FILTER CH CLASS 600

PEAK DATA 260 04 N 0 60 56 MS, -8483 69 N 0 82 88 MS

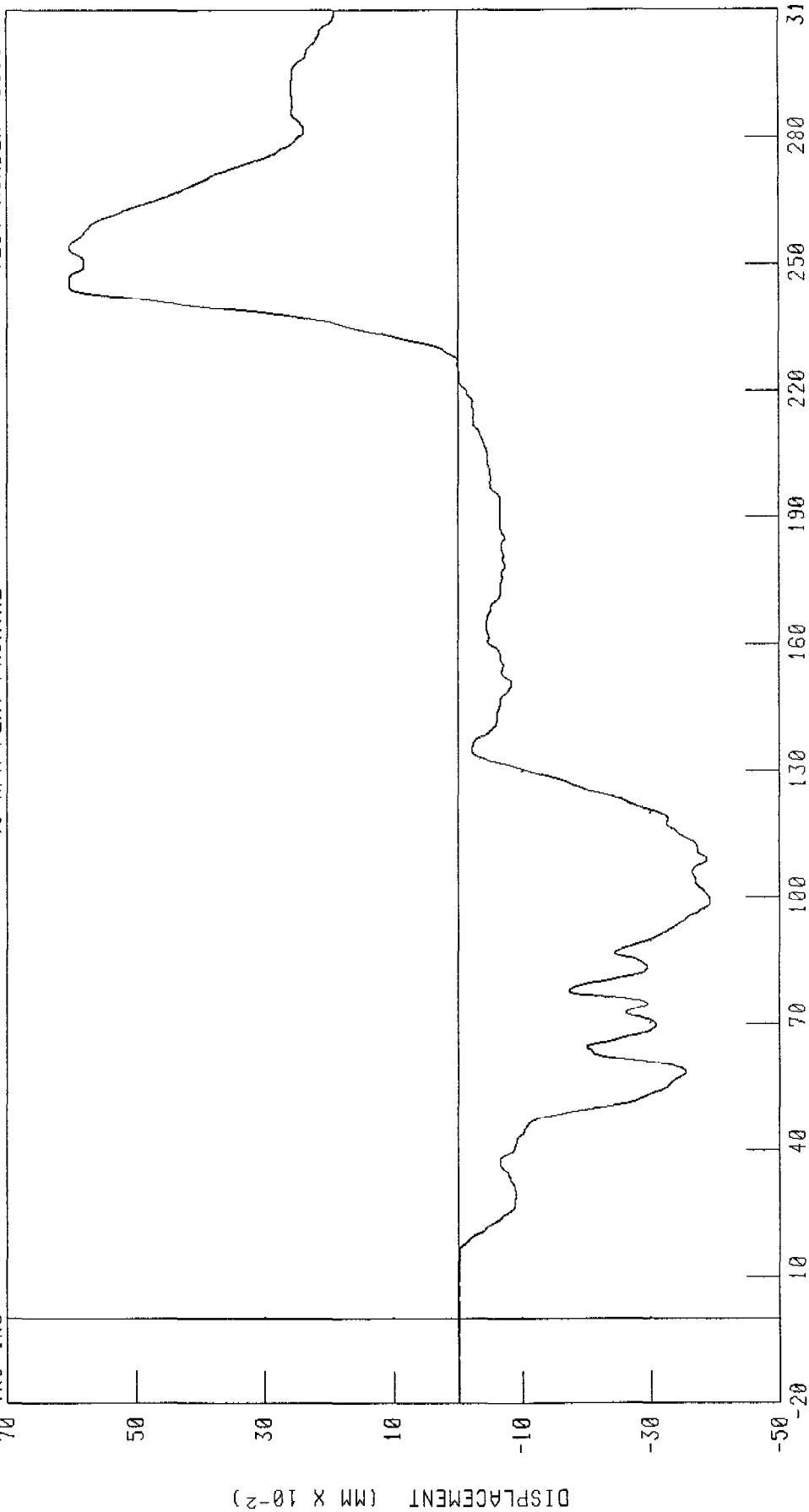
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER LEFT KNEE DISPLACEMENT

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



TIME (MS)

PEAK DATA 0 60 MM @ 246 80 MS, -0 39 MM @ 99 04 MS

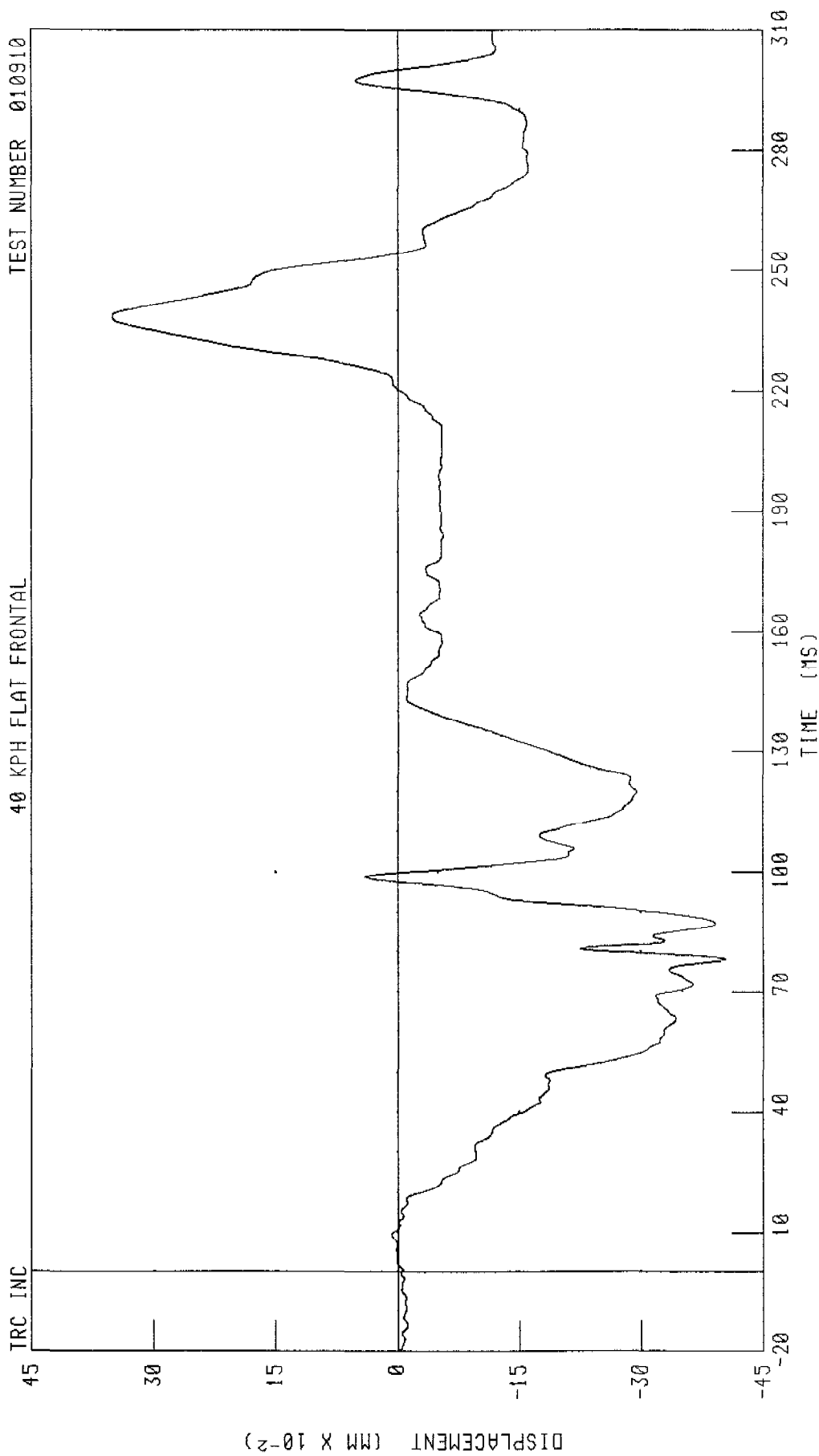
CHANNEL KNLX02 FILTER CH CLASS 180

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER RIGHT KNEE DISPLACEMENT

40 KPH FLAT FRONTAL

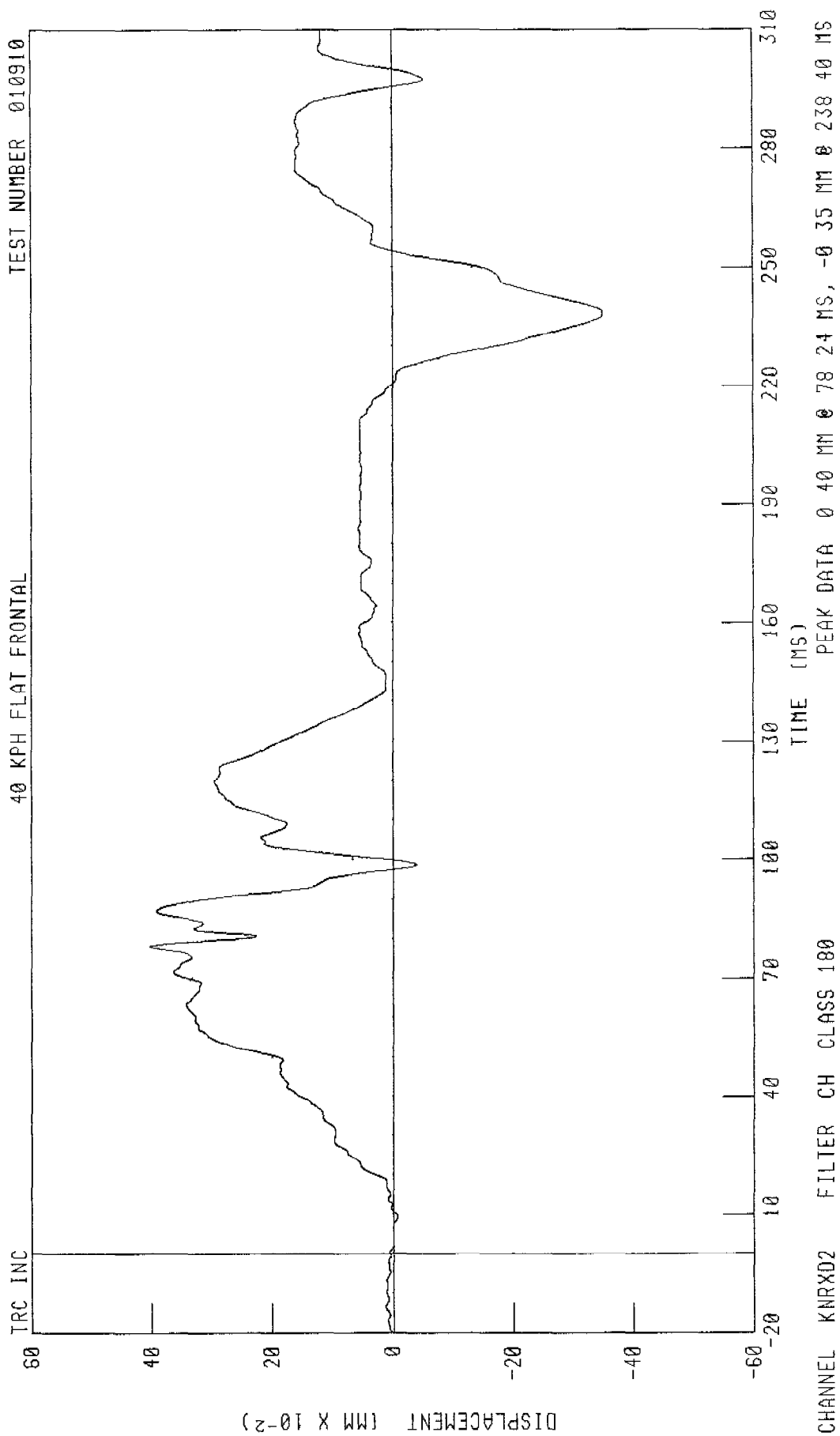
TEST NUMBER 010910



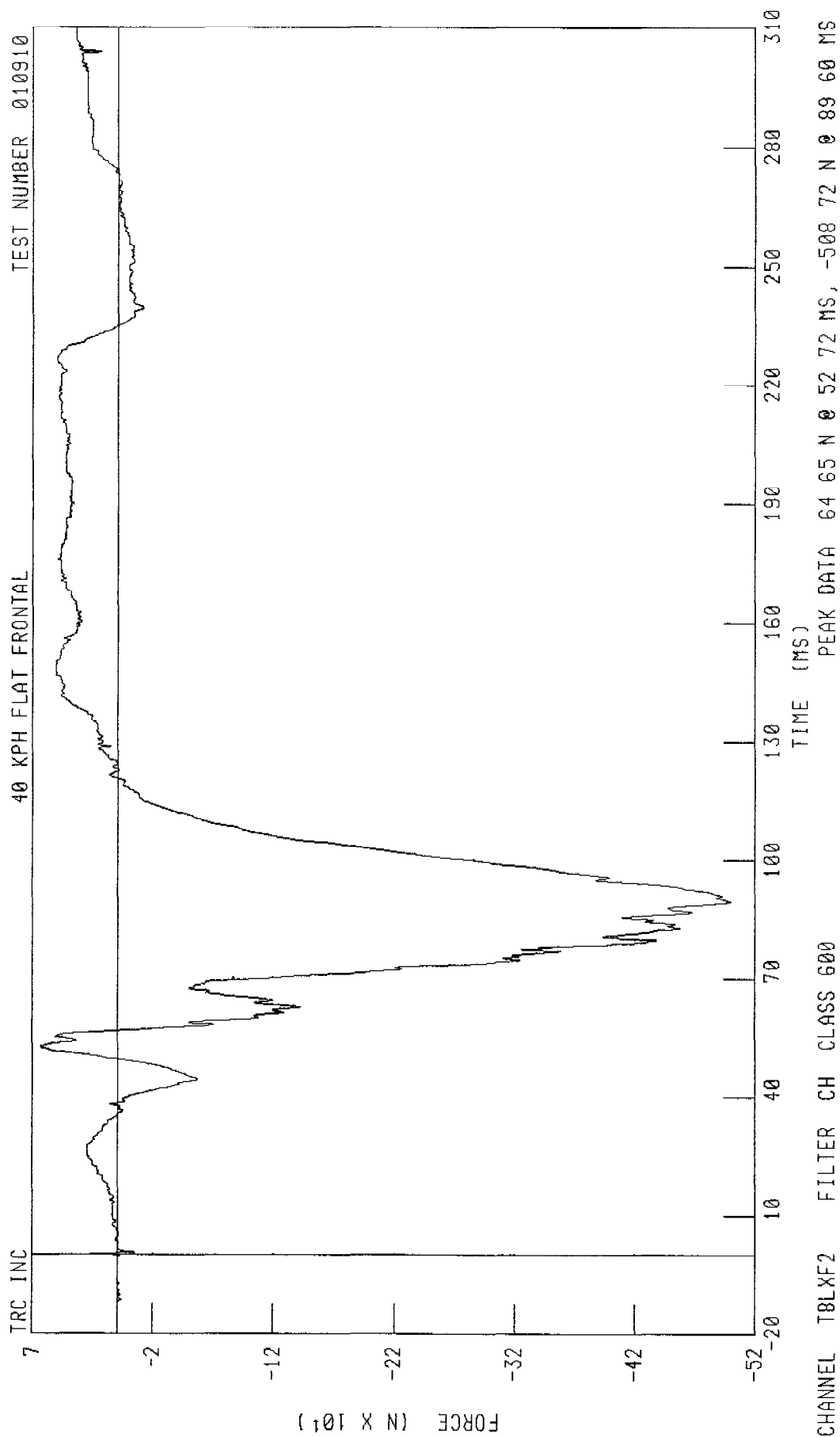
CHANNEL KNRXD2 FILTER CH CLASS 180

PEAK DATA 0 35 MM @ 238 40 MS, -0 40 MM @ 78 24 MS

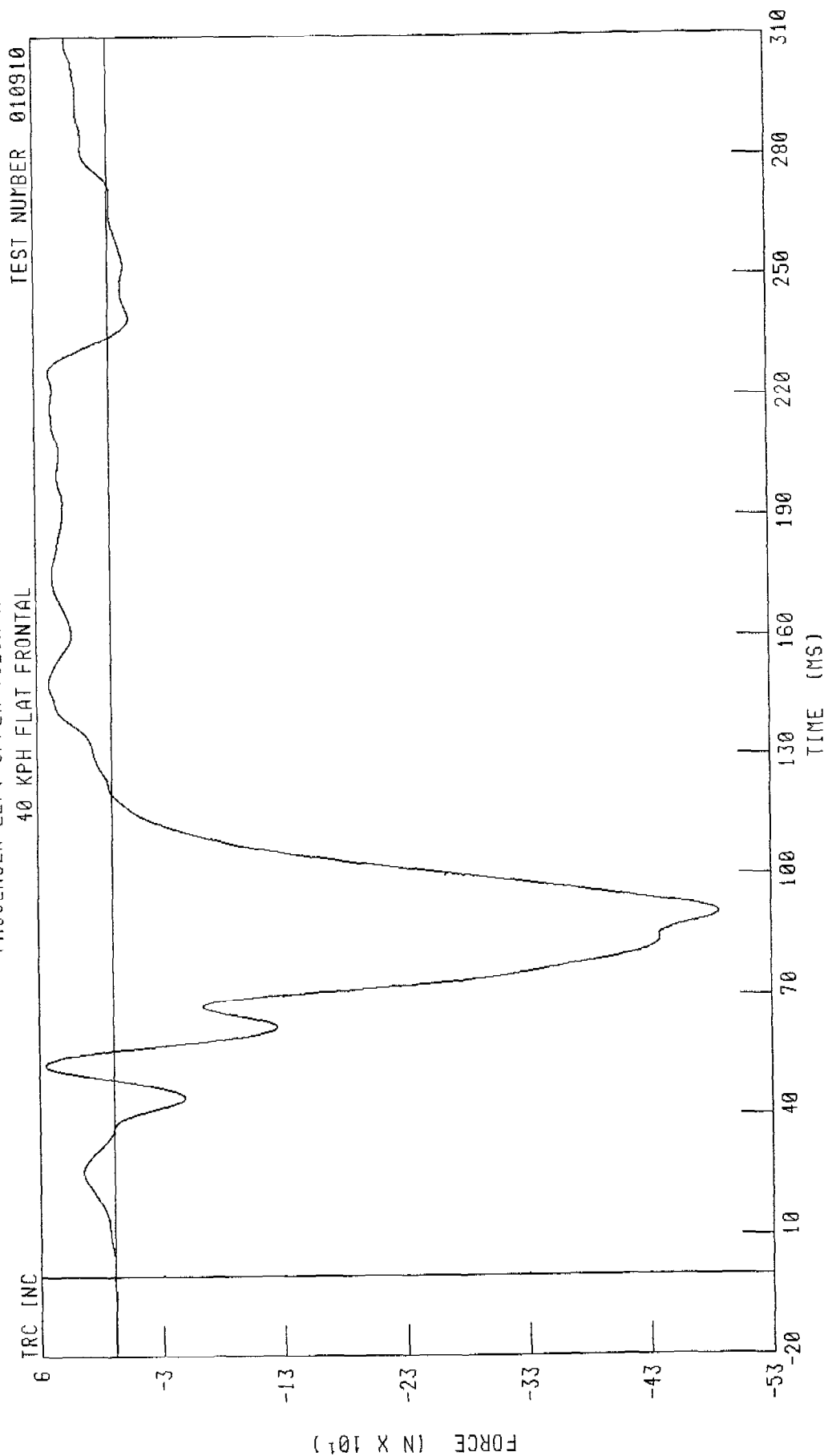
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER RIGHT KNEE DISPLACEMENT



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER LEFT UPPER TIBIA X-AXIS FORCE



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER LEFT UPPER TIBIA X-AXIS FORCE

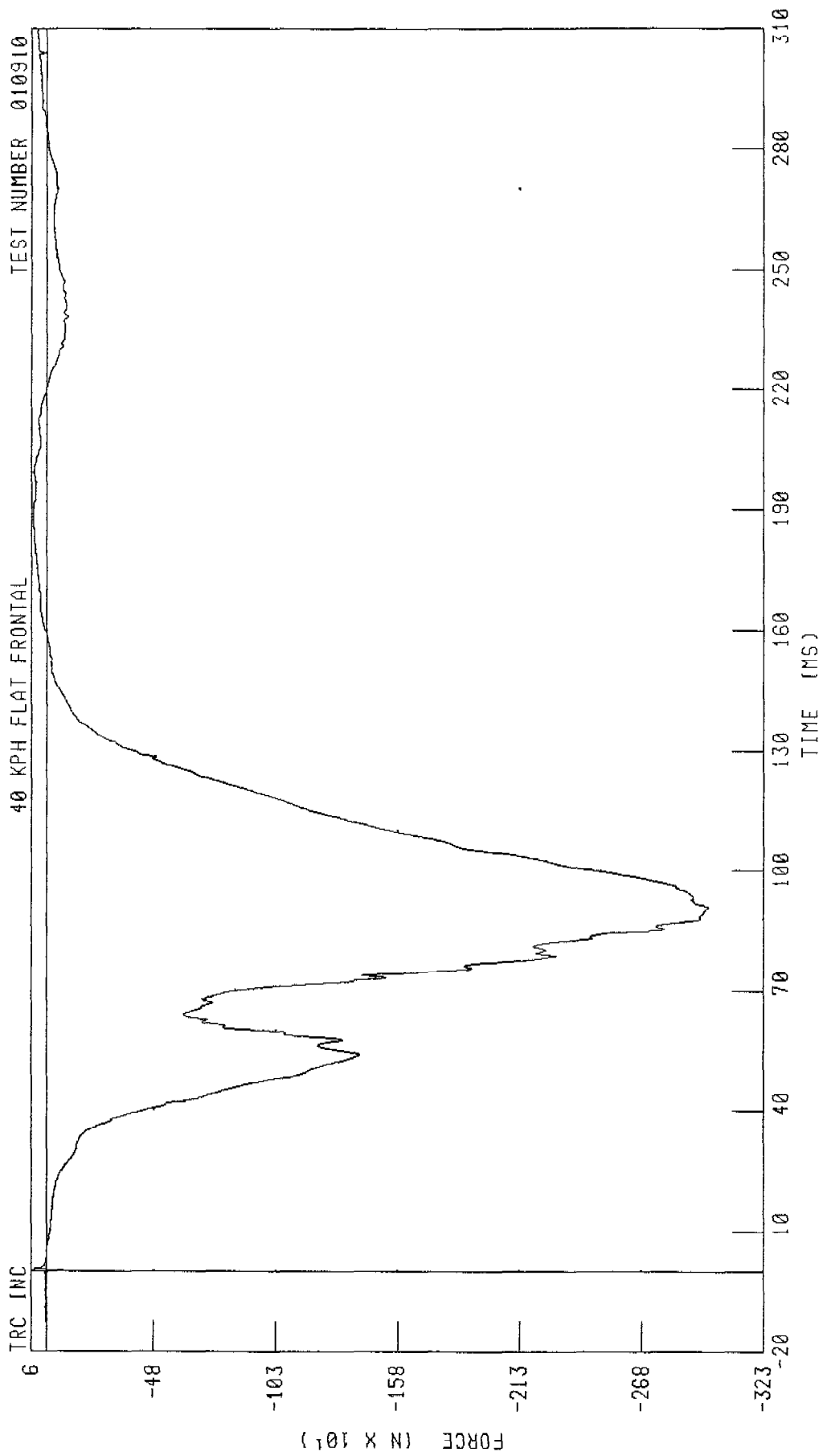


PEAK DATA 56 25 N @ 53 12 MS, -496 69 N @ 90 56 MS

CHANNEL TBLXF2 FILTER CH CLASS 60

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

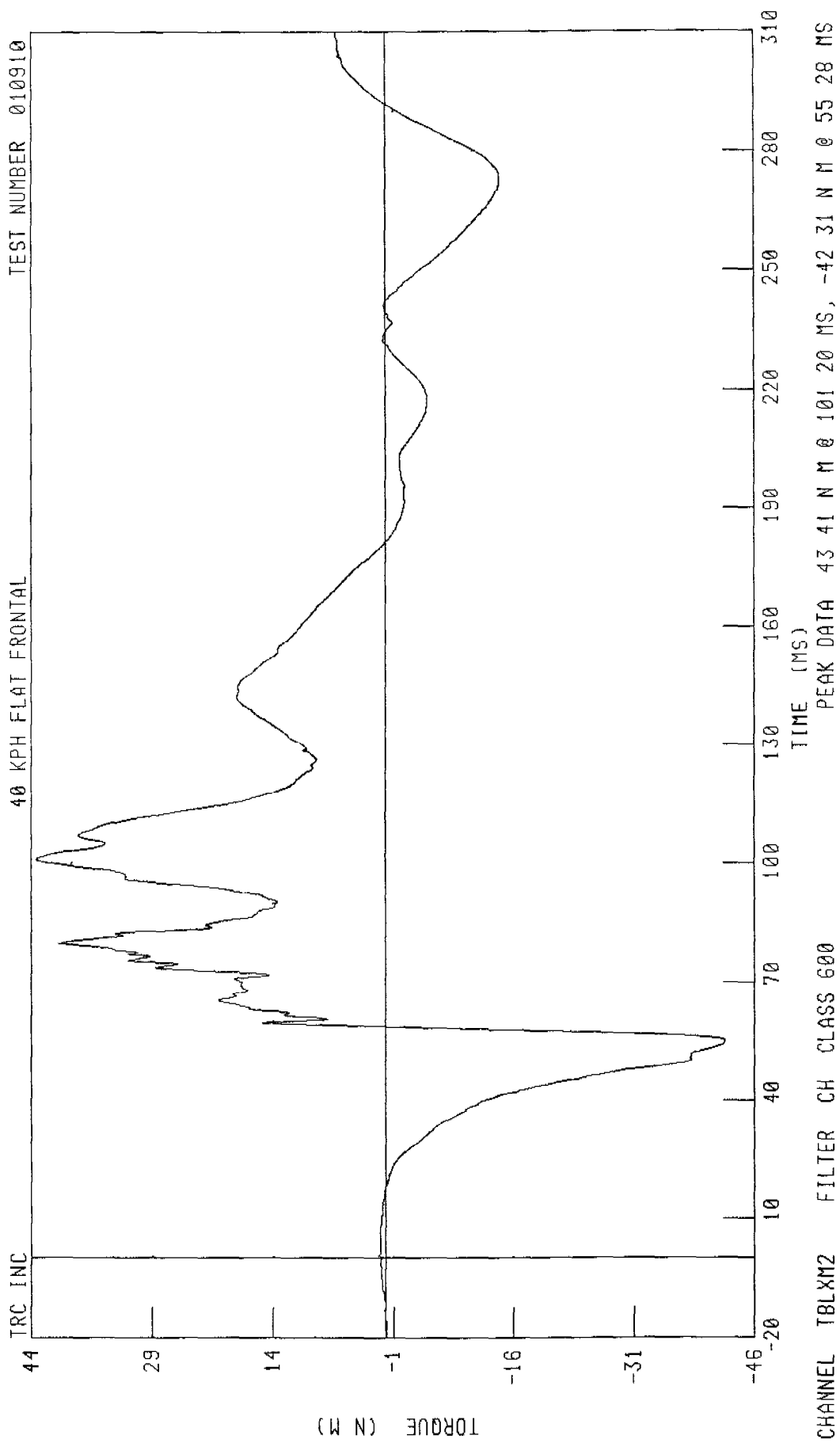
PASSENGER LEFT UPPER TIBIA Z-AXIS FORCE



CHANNEL TBLZF2 FILTER CH CLASS 600

PEAK DATA 61 03 N @ 190 16 MS, -2985 21 N @ 90 96 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER LEFT UPPER TIBIA MOMENT ABOUT X AXIS

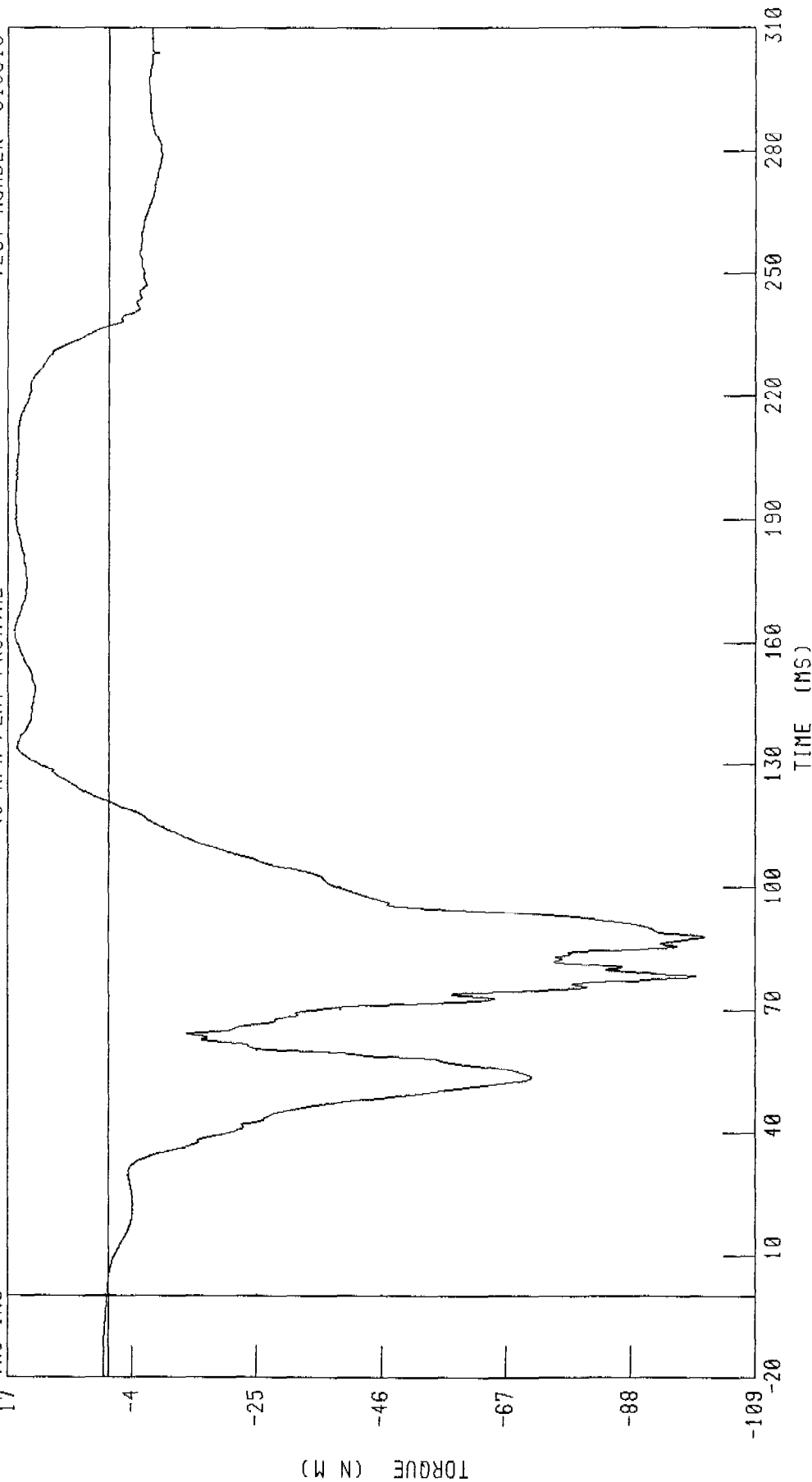


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS

TRC INC

40 KPH FLAT FRONTAL

TEST NUMBER 010910

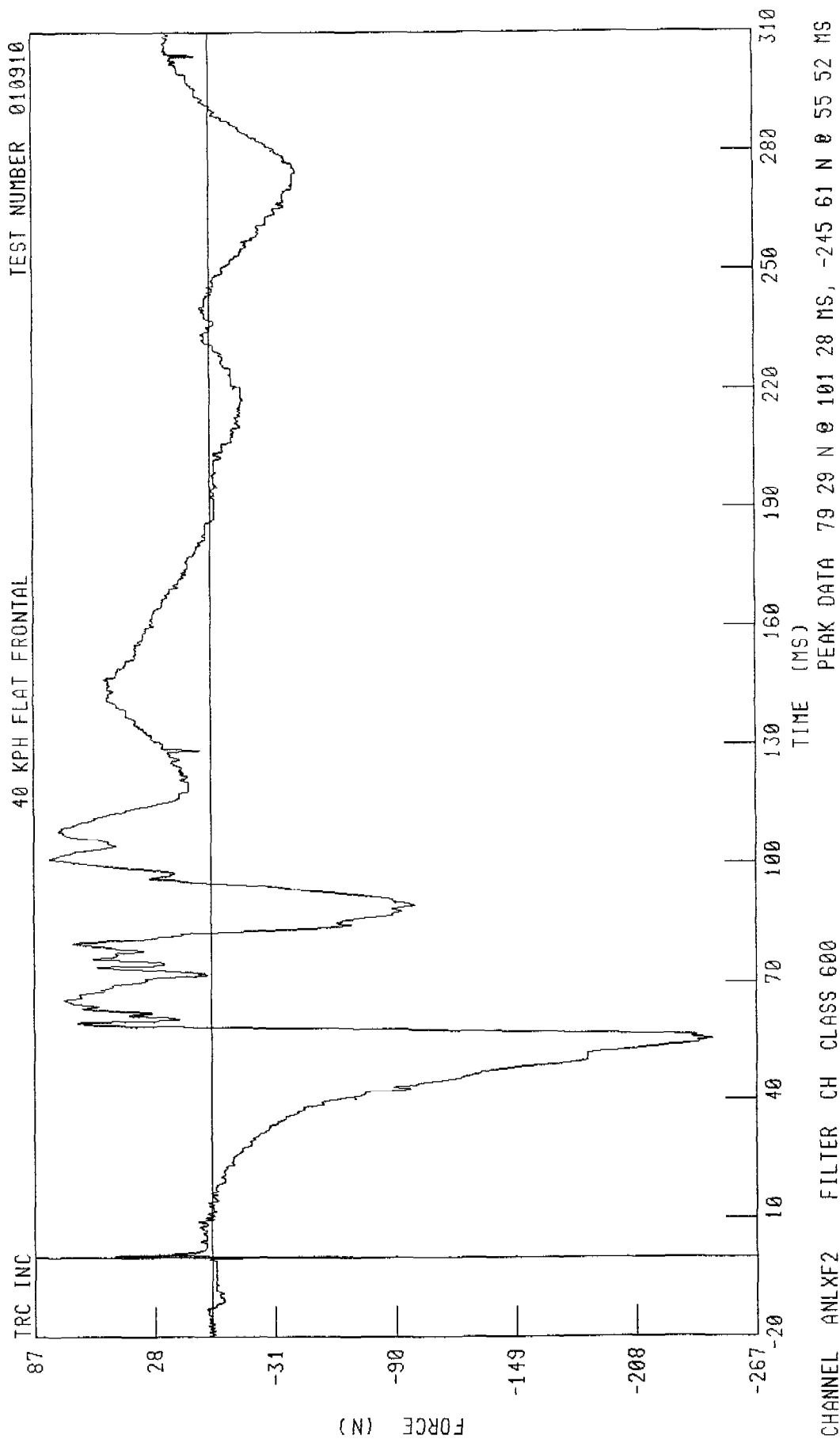


TIME (MS)

CHANNEL TBLYM2 FILTER CH CLASS 600

PEAK DATA 15 91 N M 0 162 64 MS, -100 51 N M 0 87 92 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER LEFT LOWER TIBIA X-AXIS FORCE

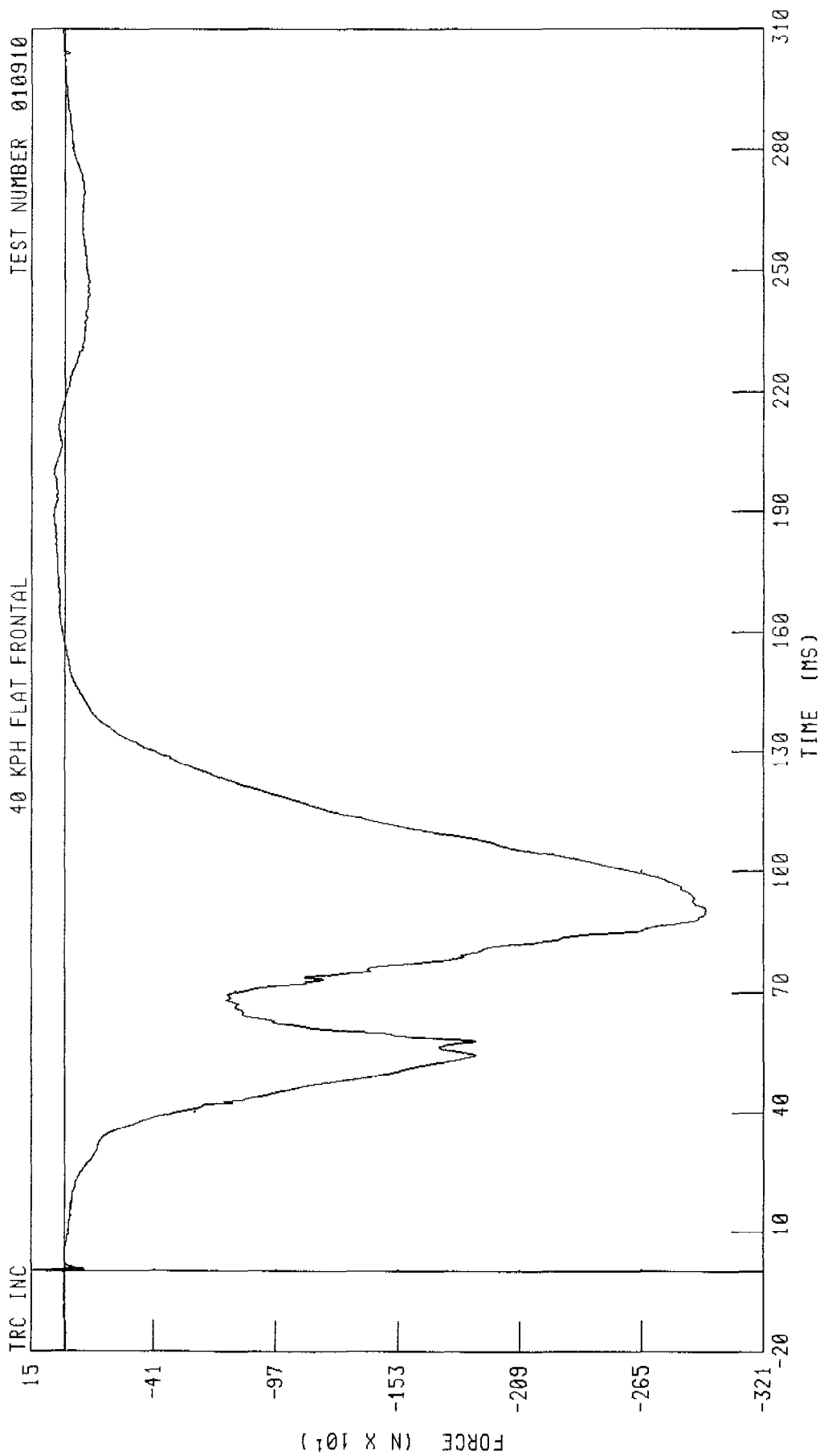


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER LEFT LOWER TIBIA Z-AXIS FORCE

40 KPH FLAT FRONTAL

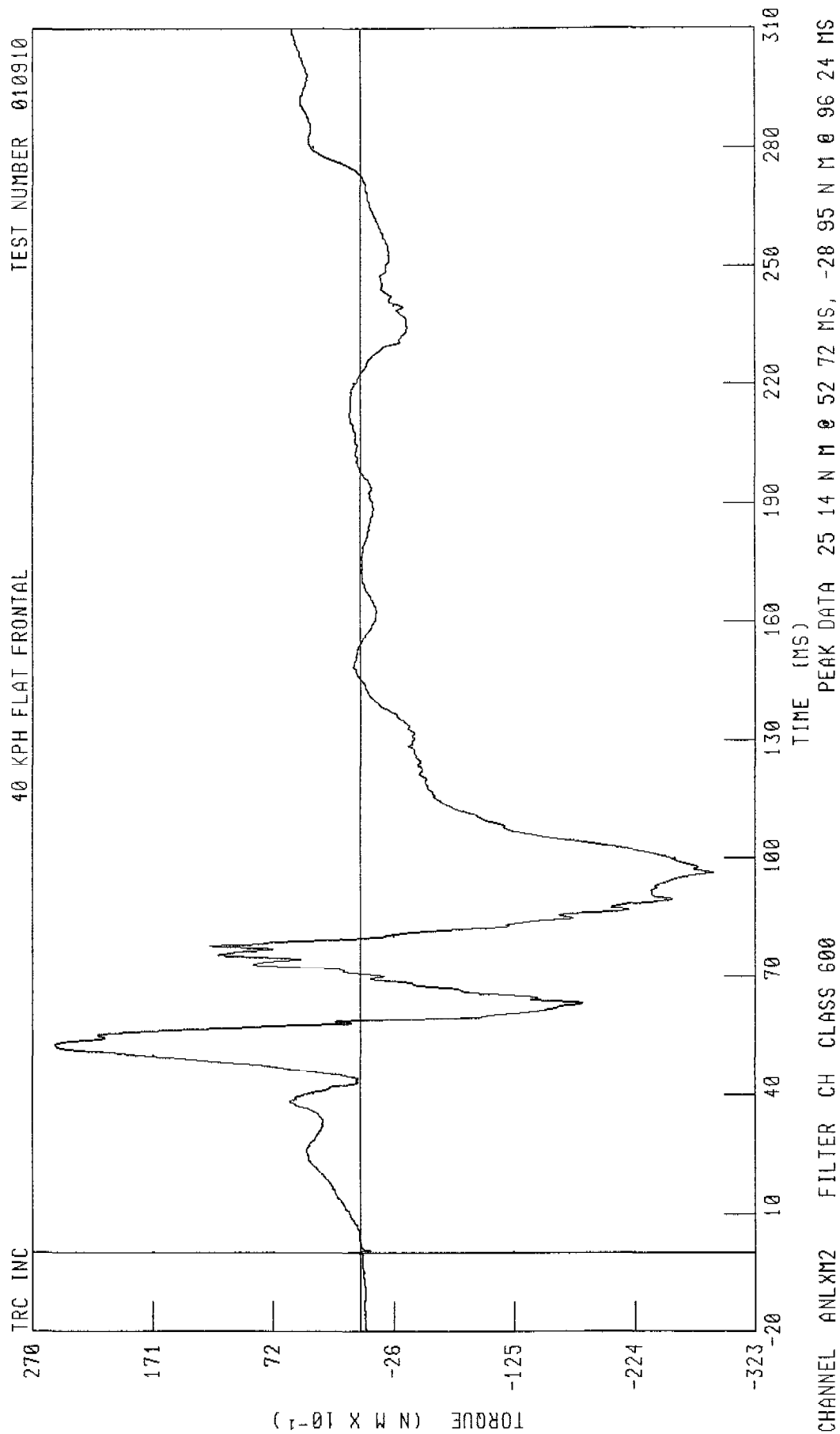
TEST NUMBER 010910



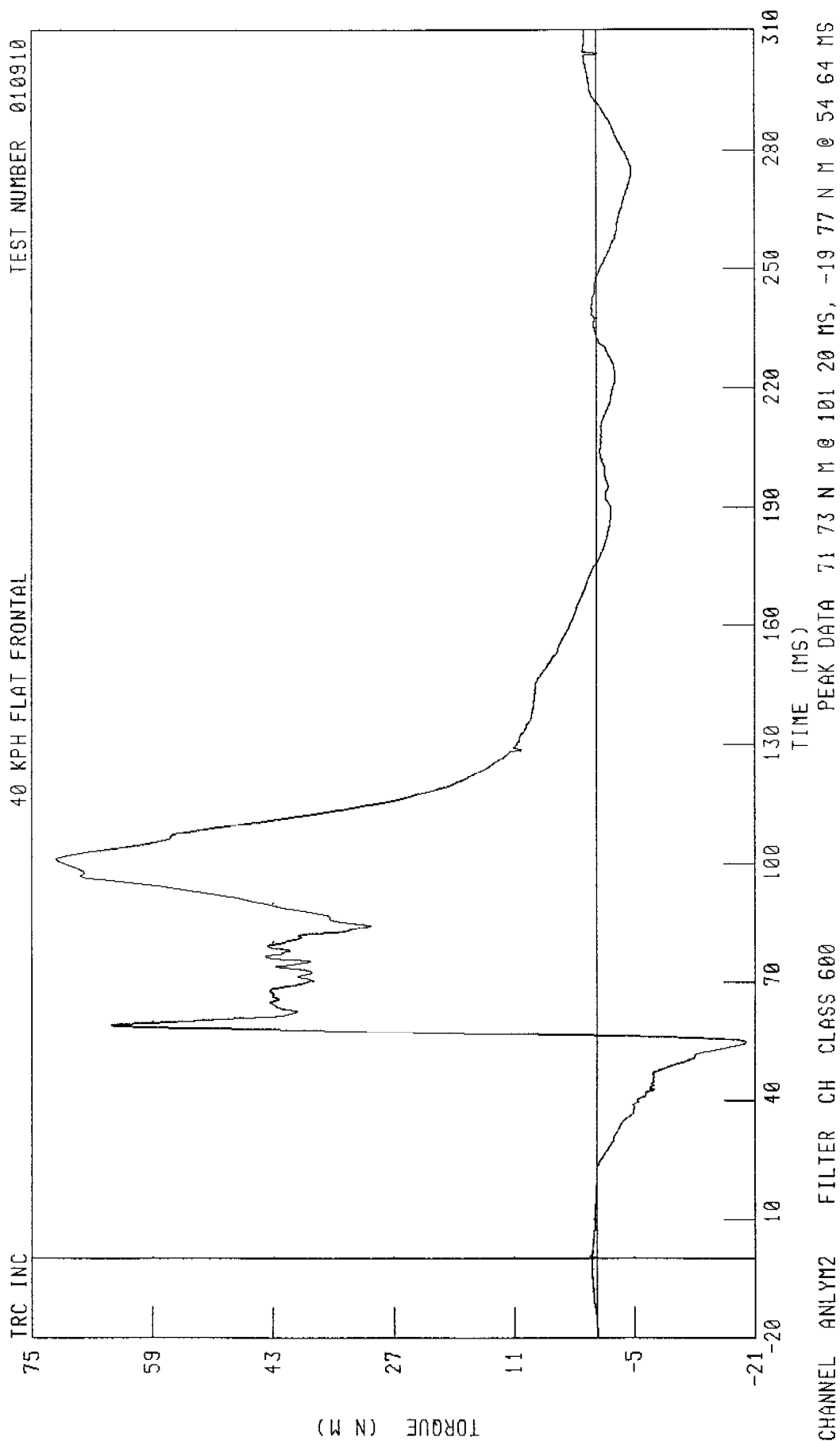
CHANNEL ANLZF2 FILTER CH CLASS 600

PEAK DATA 141 43 N @ 0 16 MS, -2947 13 N @ 90 88 MS

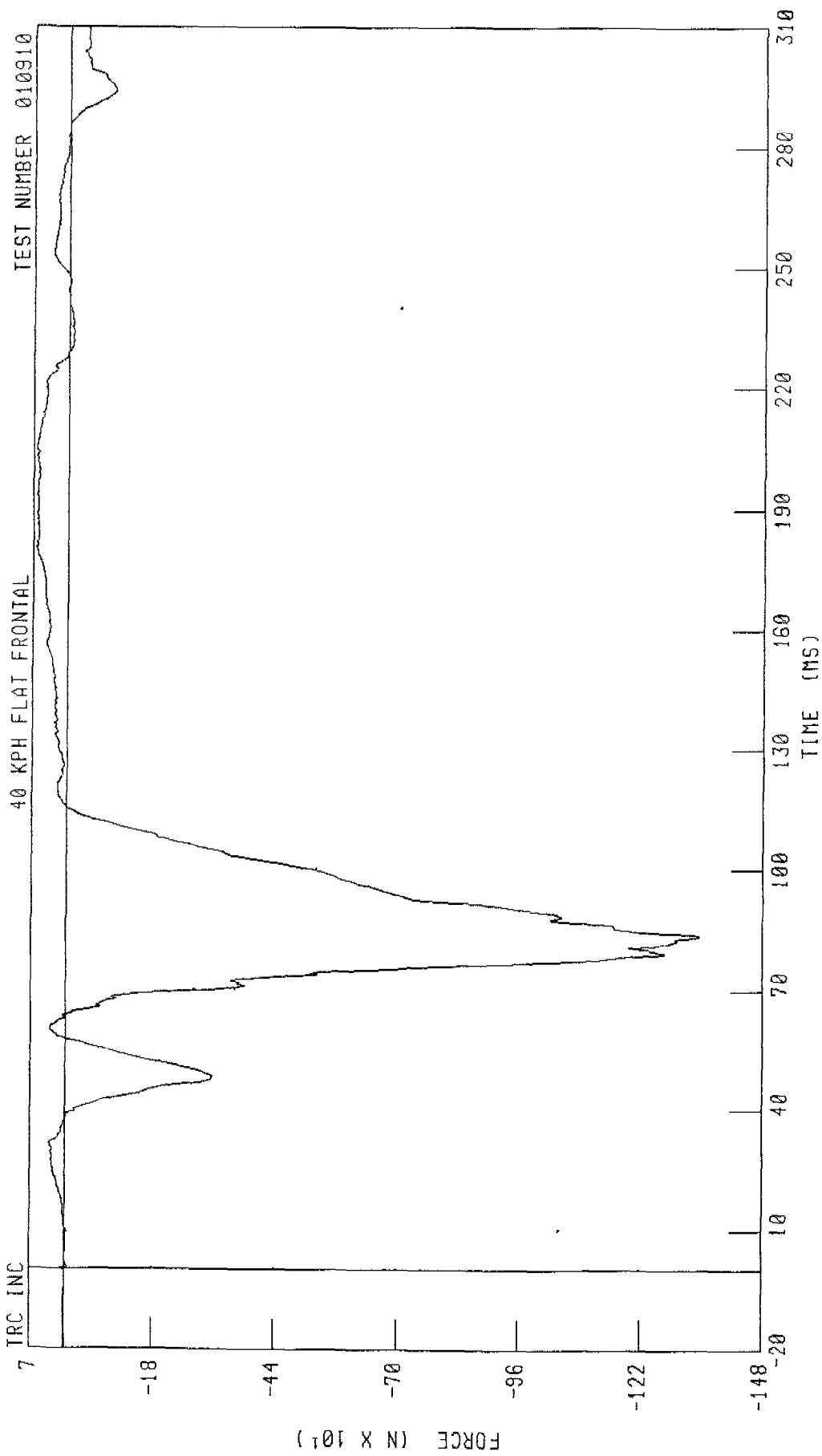
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER LEFT LOWER TIBIA MOMENT ABOUT X AXIS



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS

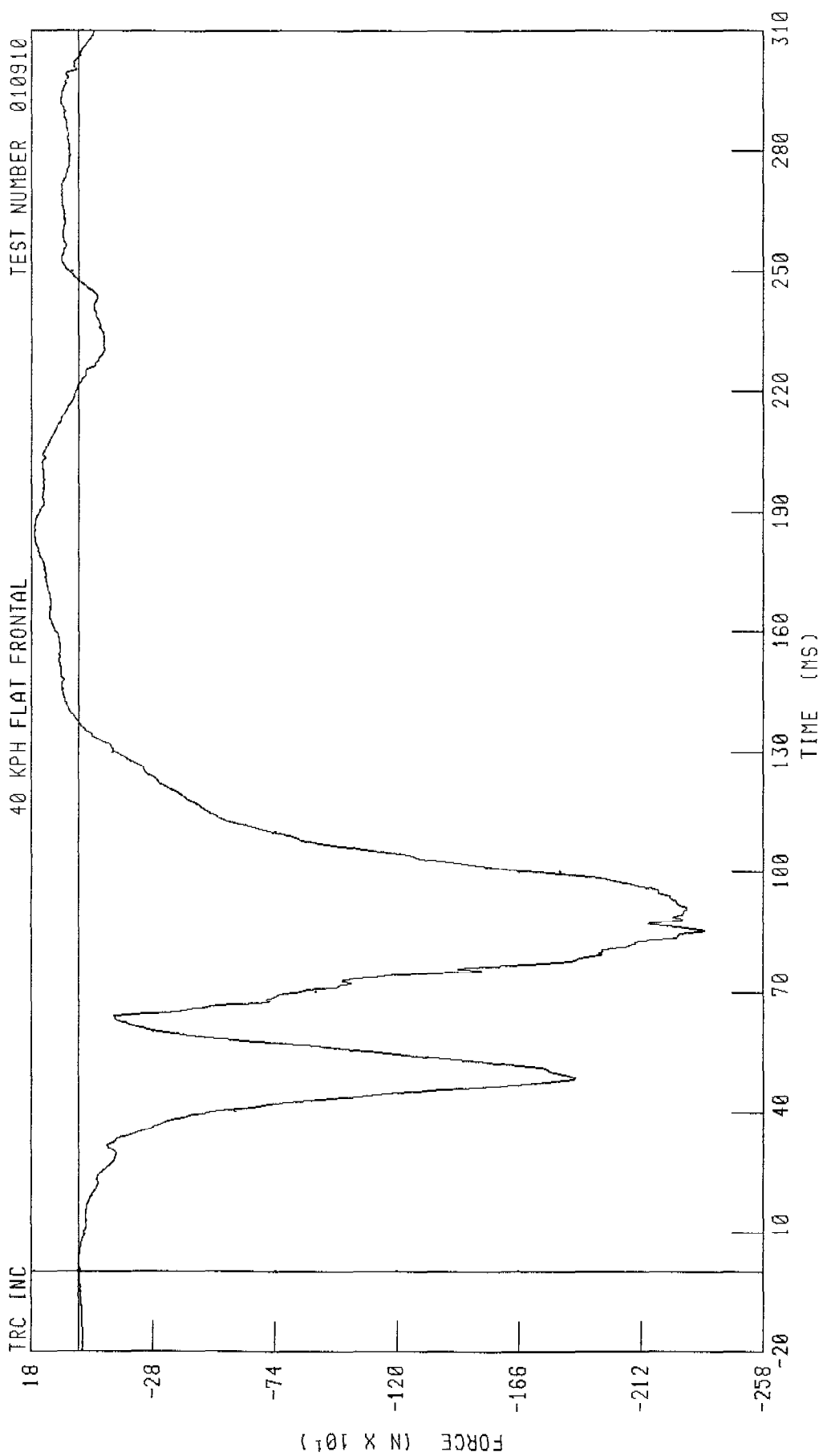


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 PASSENGER RIGHT UPPER TIBIA X-AXIS FORCE



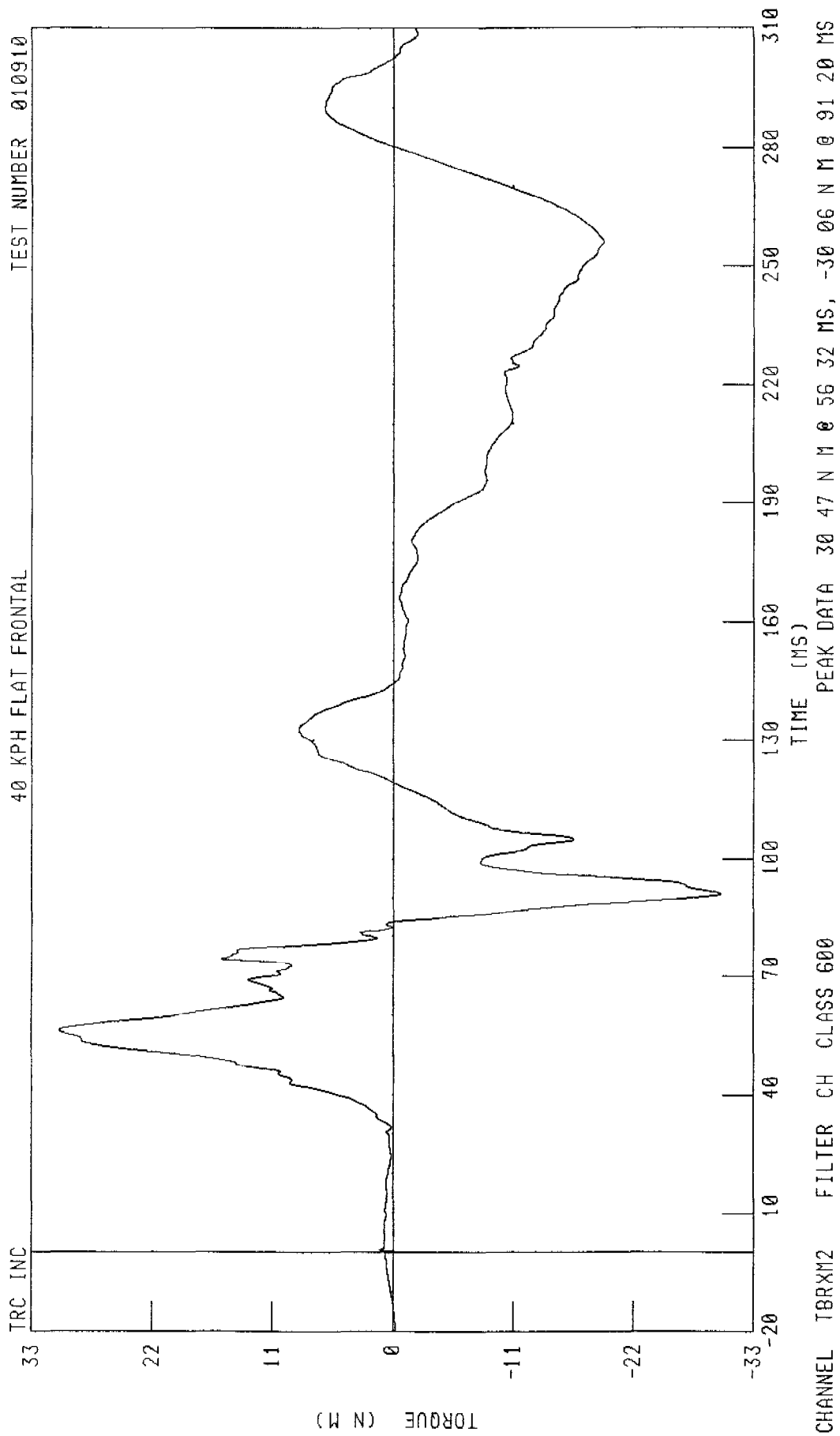
CHANNEL TBRXF2 FILTER CH CLASS 600 PEAK DATA 68 11 N @ 204 40 MS, -1351 49 N @ 83 68 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER RIGHT UPPER TIBIA Z-AXIS FORCE



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS

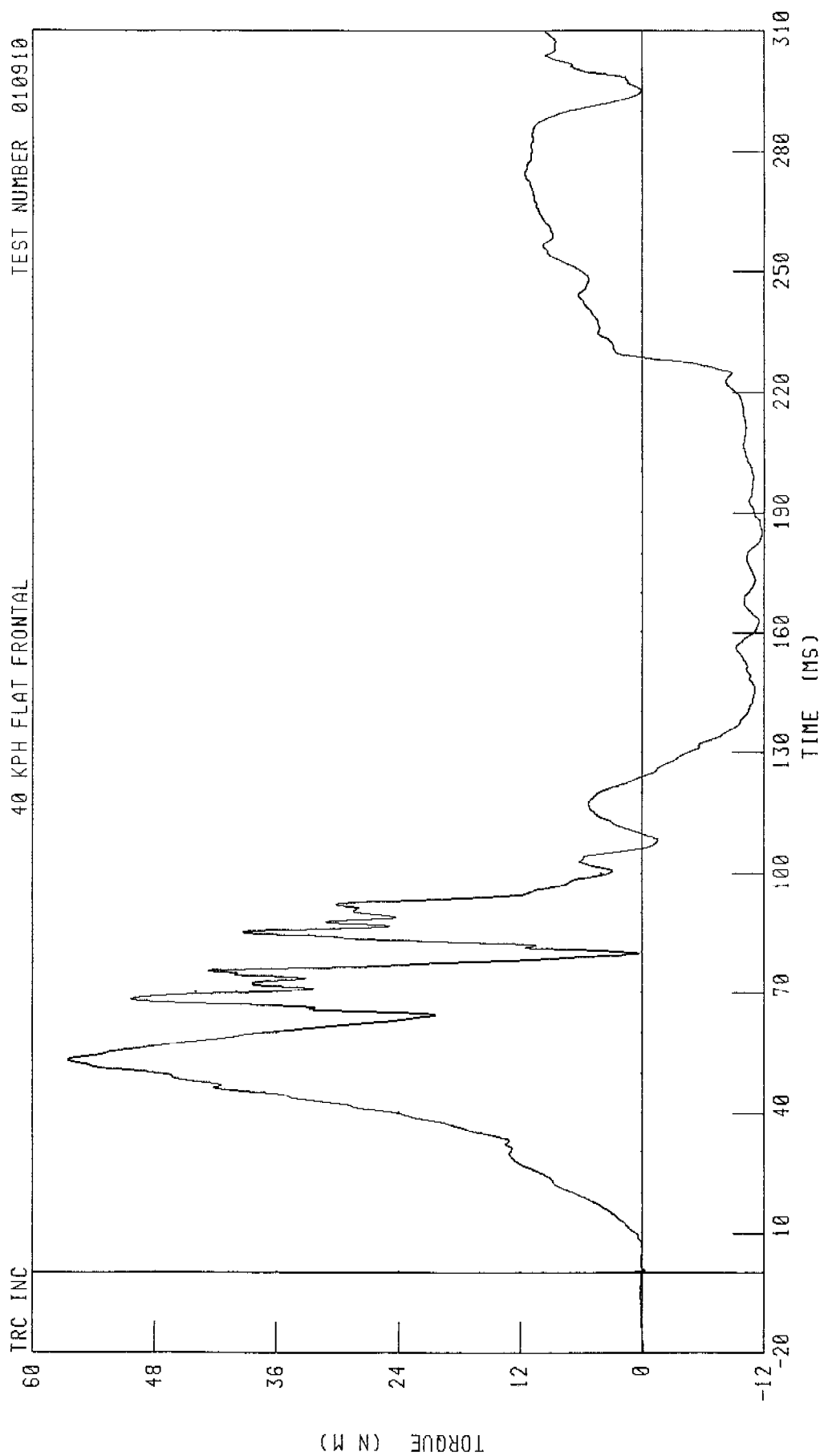


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS

40 KPH FLAT FRONTAL

TEST NUMBER 010910



TIME (MS)

PEAK DATA 56 59 N M @ 53 28 MS, -11 80 N M @ 185 28 MS

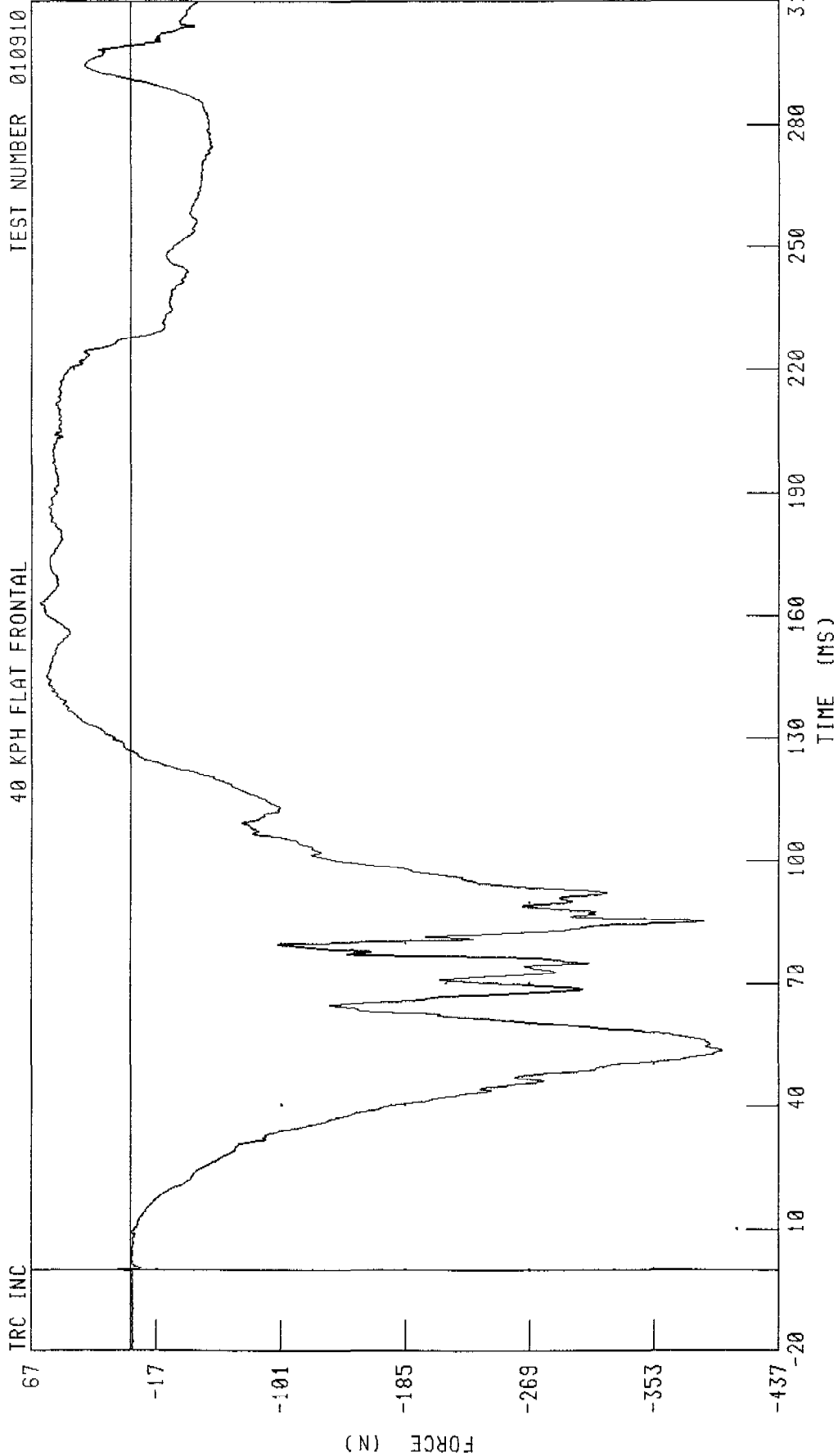
CHANNEL TBRYM2 FILTER CH CLASS 600

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER RIGHT LOWER TIBIA X-AXIS FORCE

40 KPH FLAT FRONTAL

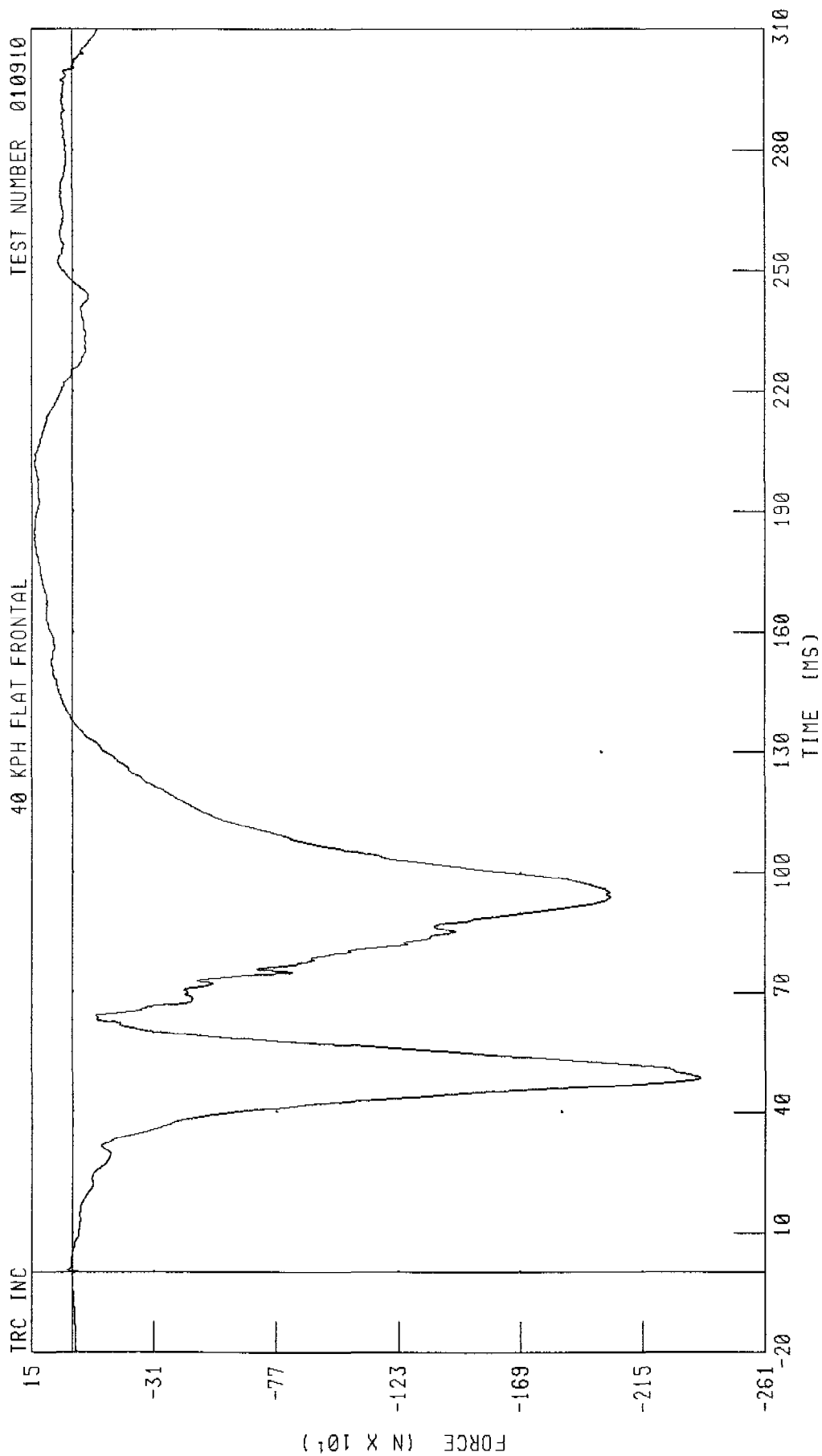
TEST NUMBER 010910



CHANNEL ANR2 FILTER CH CLASS 600

PEAK DATA 61 67 N @ 163 12 MS, -399 04 N @ 53 36 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER RIGHT LOWER TIBIA Z-AXIS FORCE



CHANNEL ANRZF2 FILTER CH CLASS 600

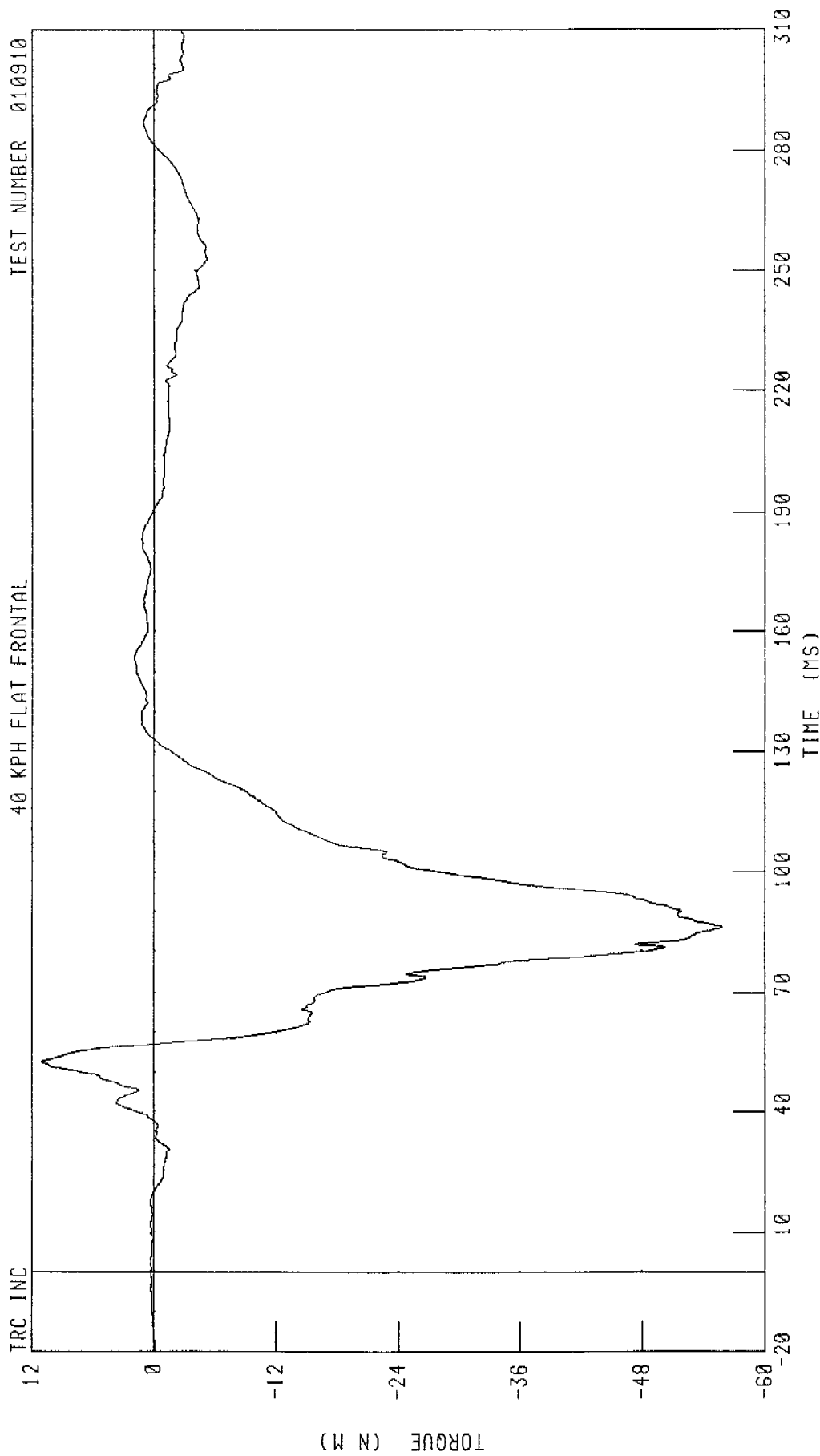
PEAK DATA 142 95 N @ 183 04 MS, -2366 81 N @ 48 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER RIGHT LOWER TIBIA MOMENT ABOUT X AXIS

40 KPH FLAT FRONTAL

TEST NUMBER 010910

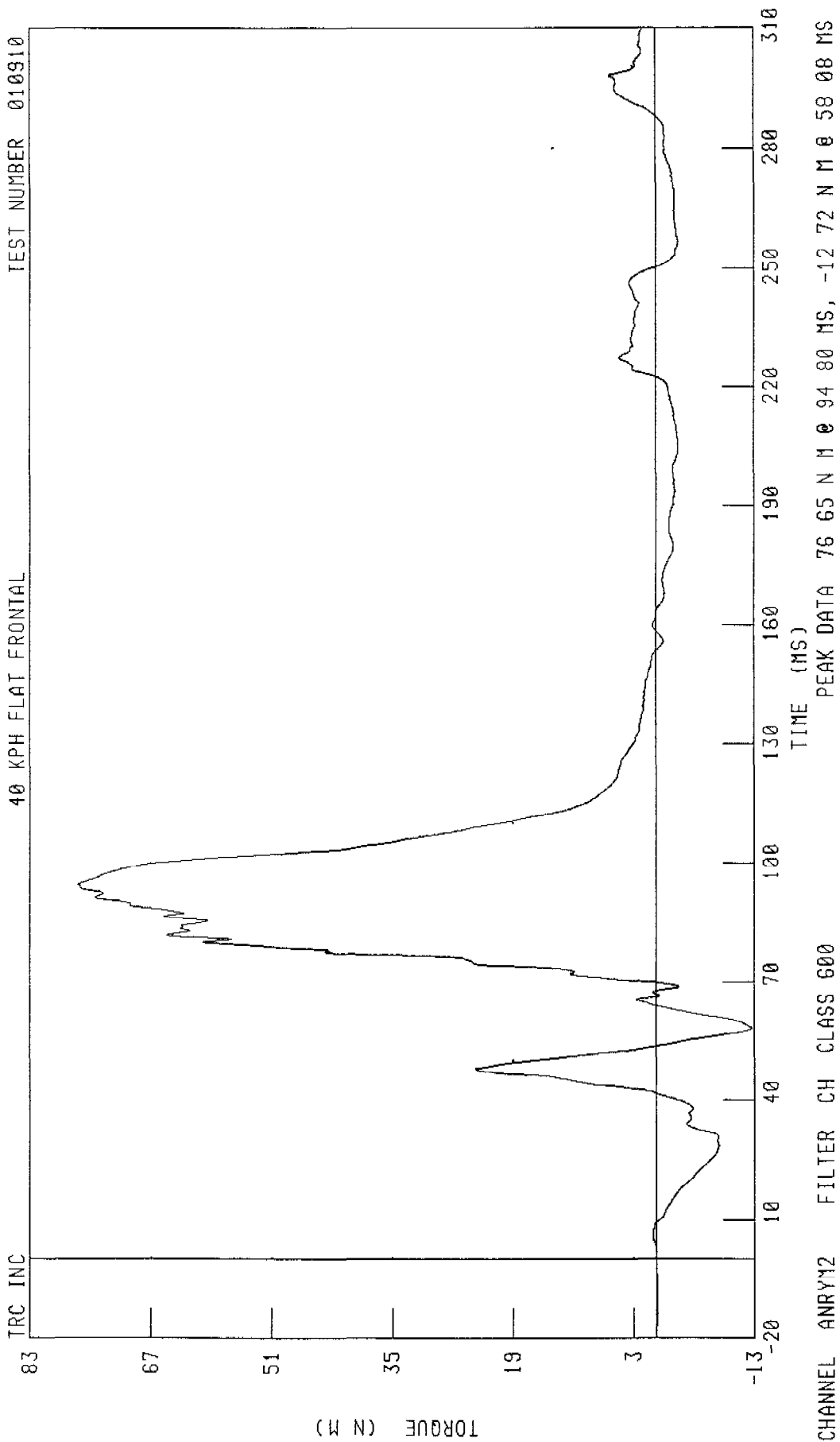


CHANNEL ANRXM2 FILTER CH CLASS 600

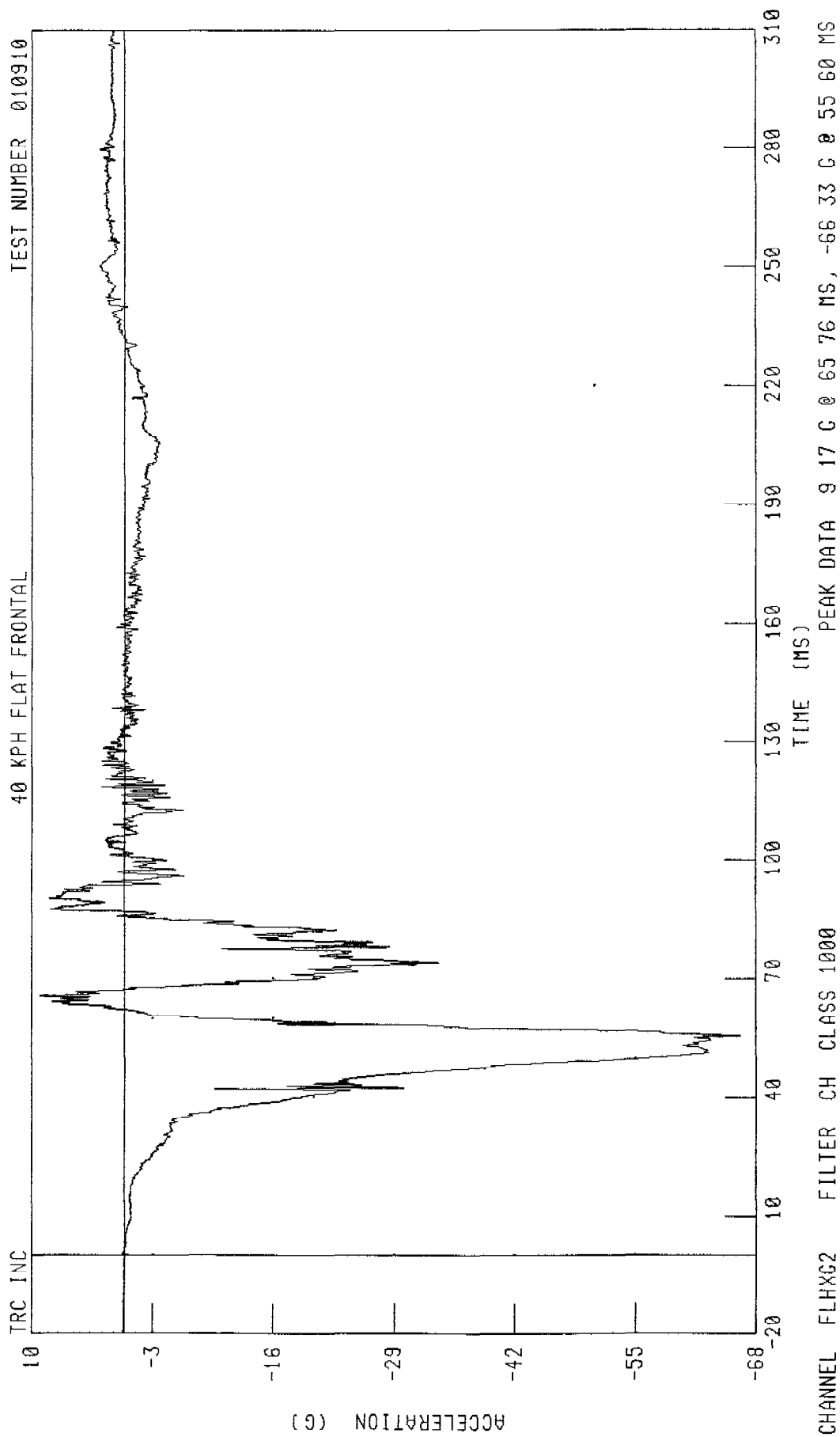
PEAK DATA 11 07 N M @ 52 56 MS, -55 89 N M @ 86 32 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 PASSENGER LEFT FOOT HEEL X-AXIS ACCELERATION

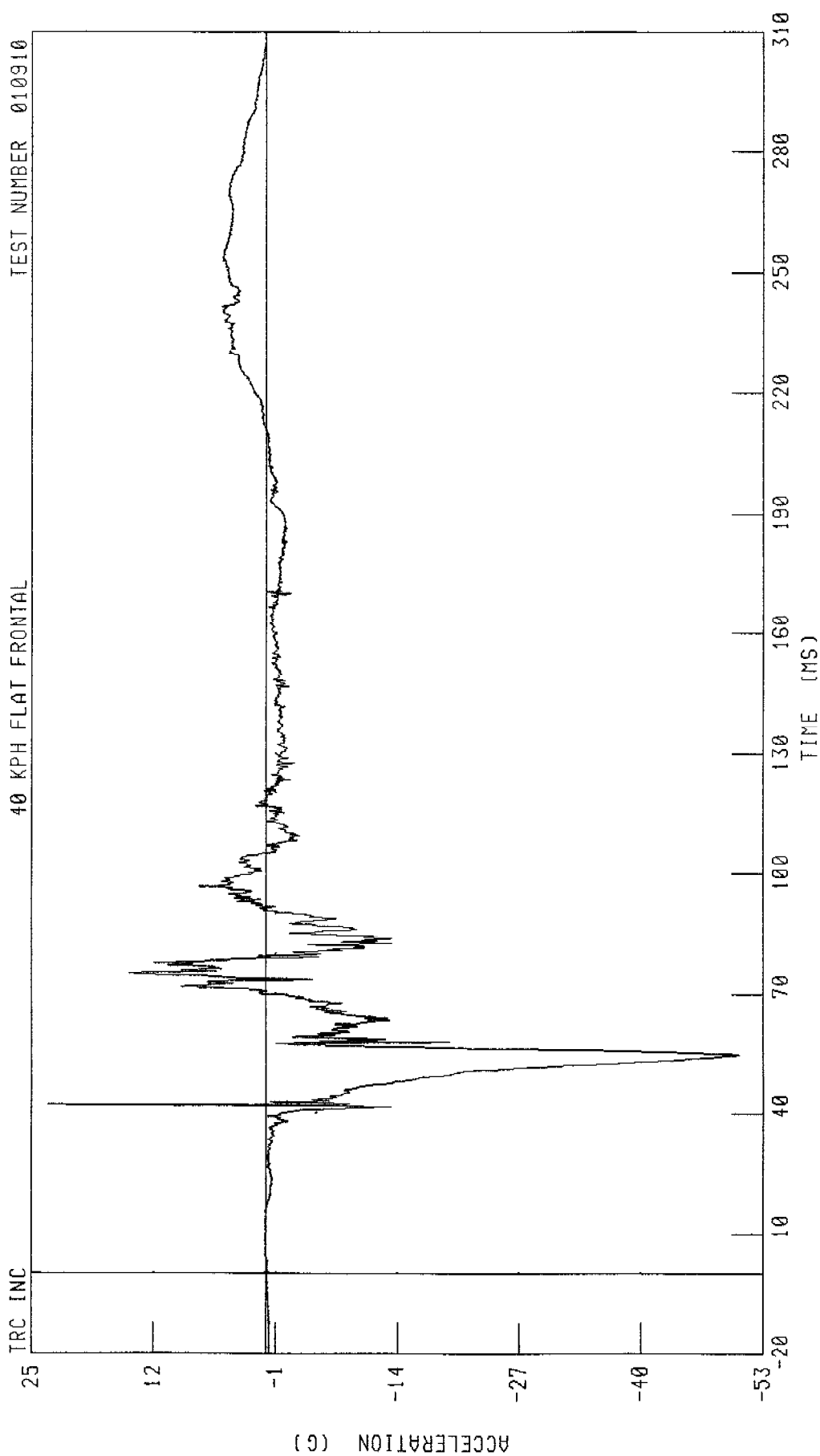


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER LEFT FOOT HEEL Z-AXIS ACCELERATION

40 KPH FLAT FRONTAL

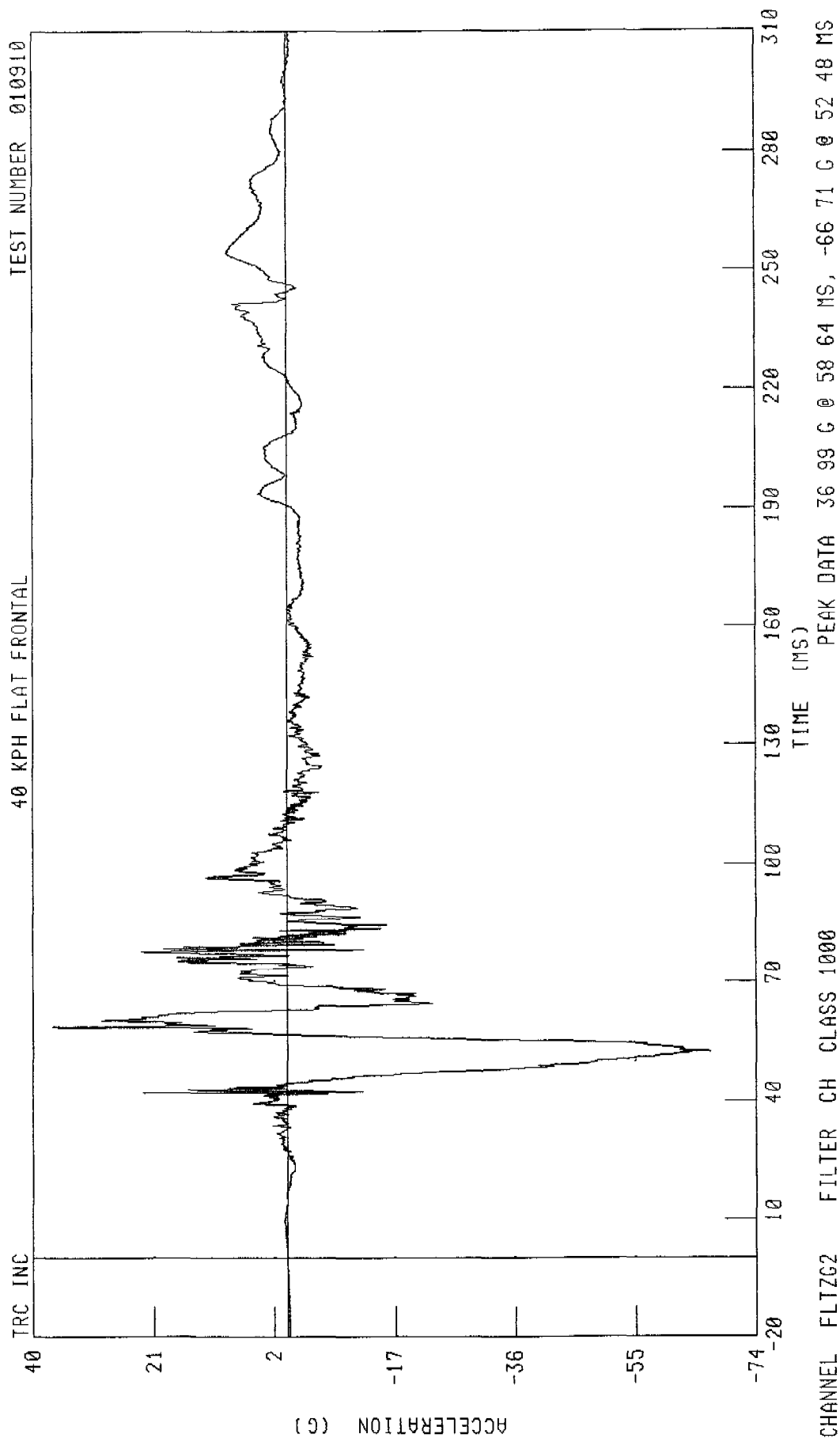
TEST NUMBER 010910



CHANNEL FLHZG2 FILTER CH CLASS 1000

PEAK DATA 23 26 G @ 42 08 MS, -50 53 G @ 54 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 PASSENGER LEFT FOOT TOE Z-AXIS ACCELERATION

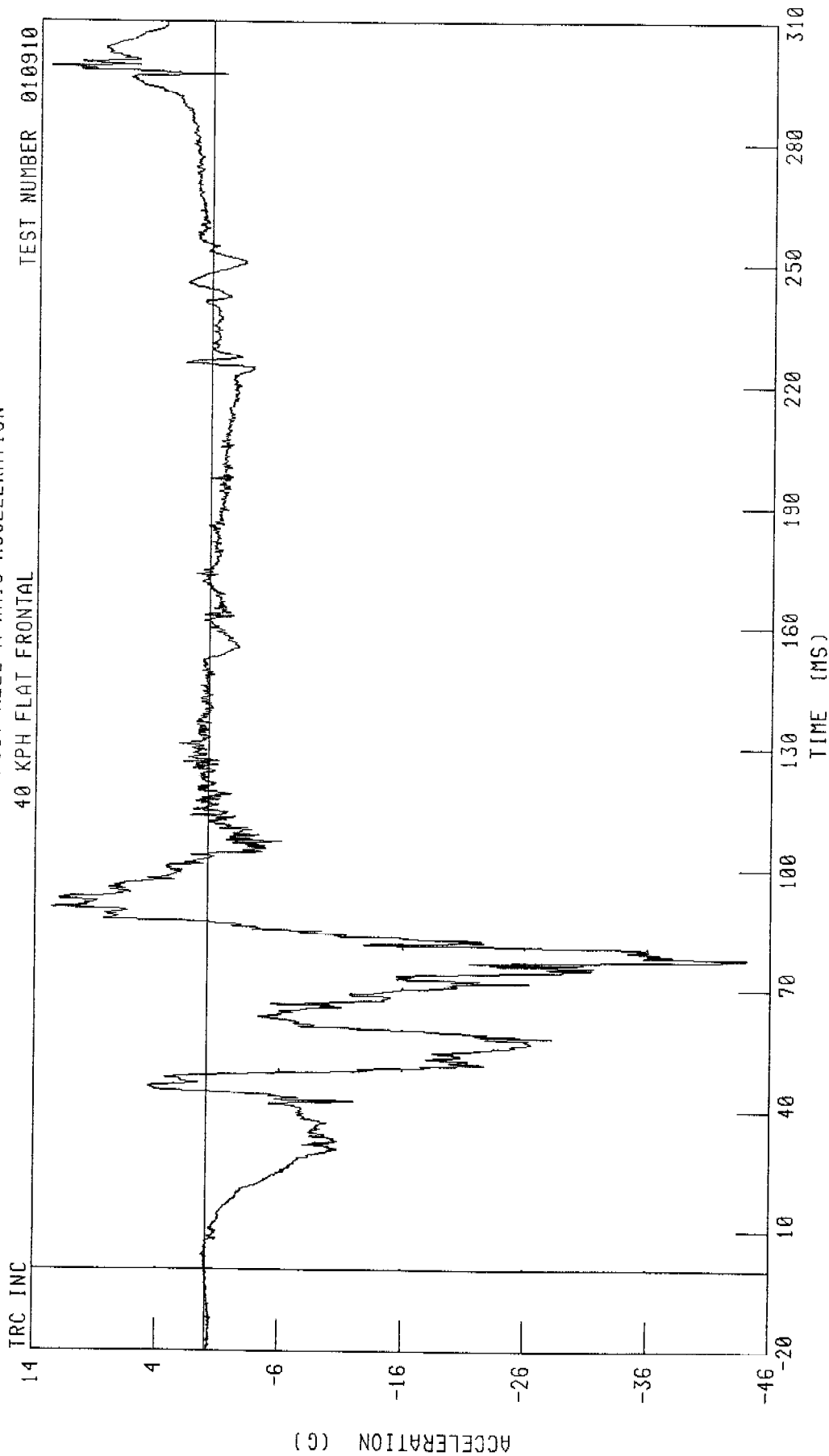


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER RIGHT FOOT HEEL X-AXIS ACCELERATION

40 KPH FLAT FRONTAL

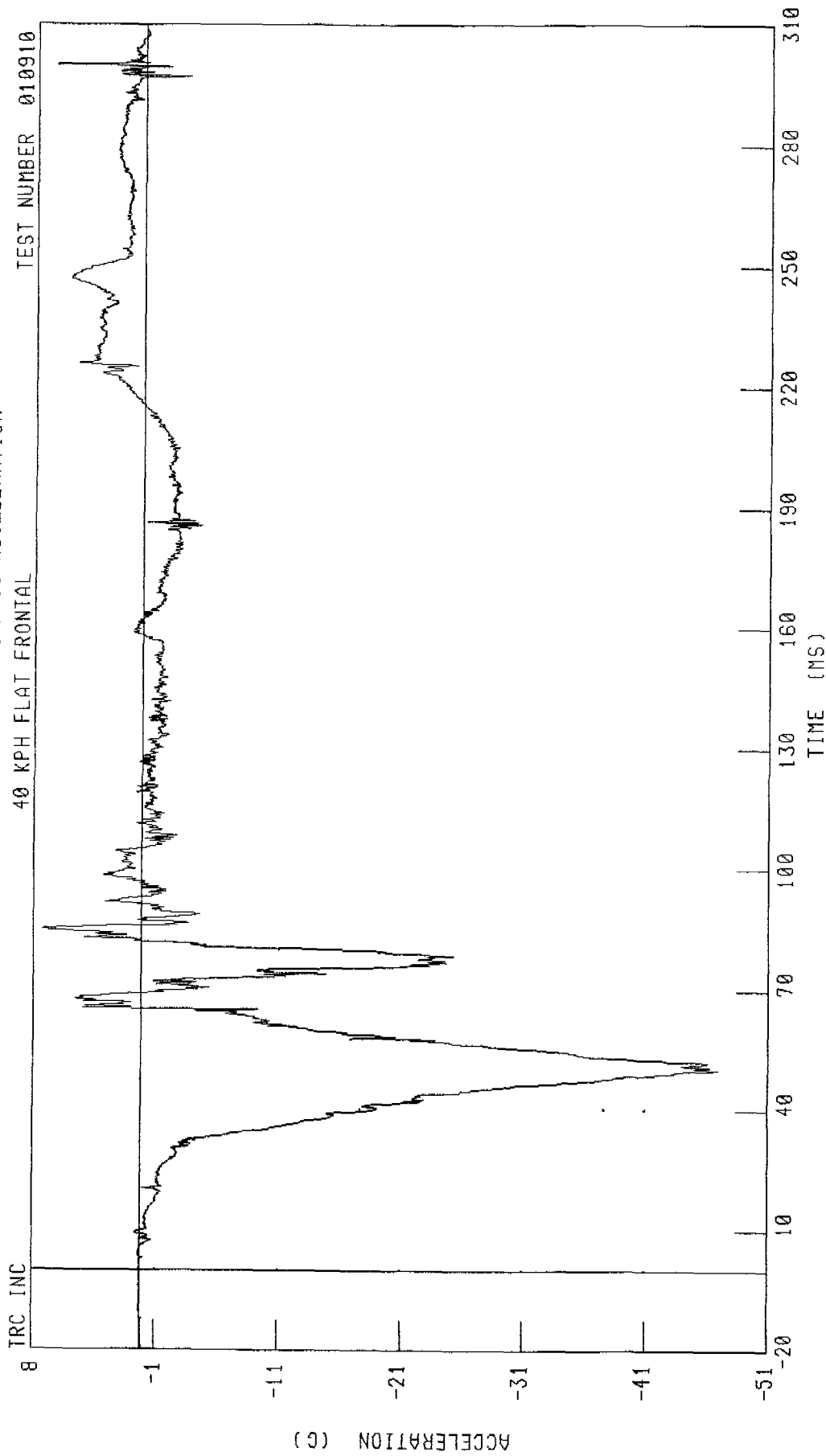
TEST NUMBER 010910



CHANNEL FRHXC2 FILTER CH CLASS 1000

PEAK DATA 13 18 C @ 298 80 MS, -44 13 C @ 77 68 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
PASSENGER RIGHT FOOT HEEL Z-AXIS ACCELERATION



CHANNEL FRHZG2 FILTER CH CLASS 1000

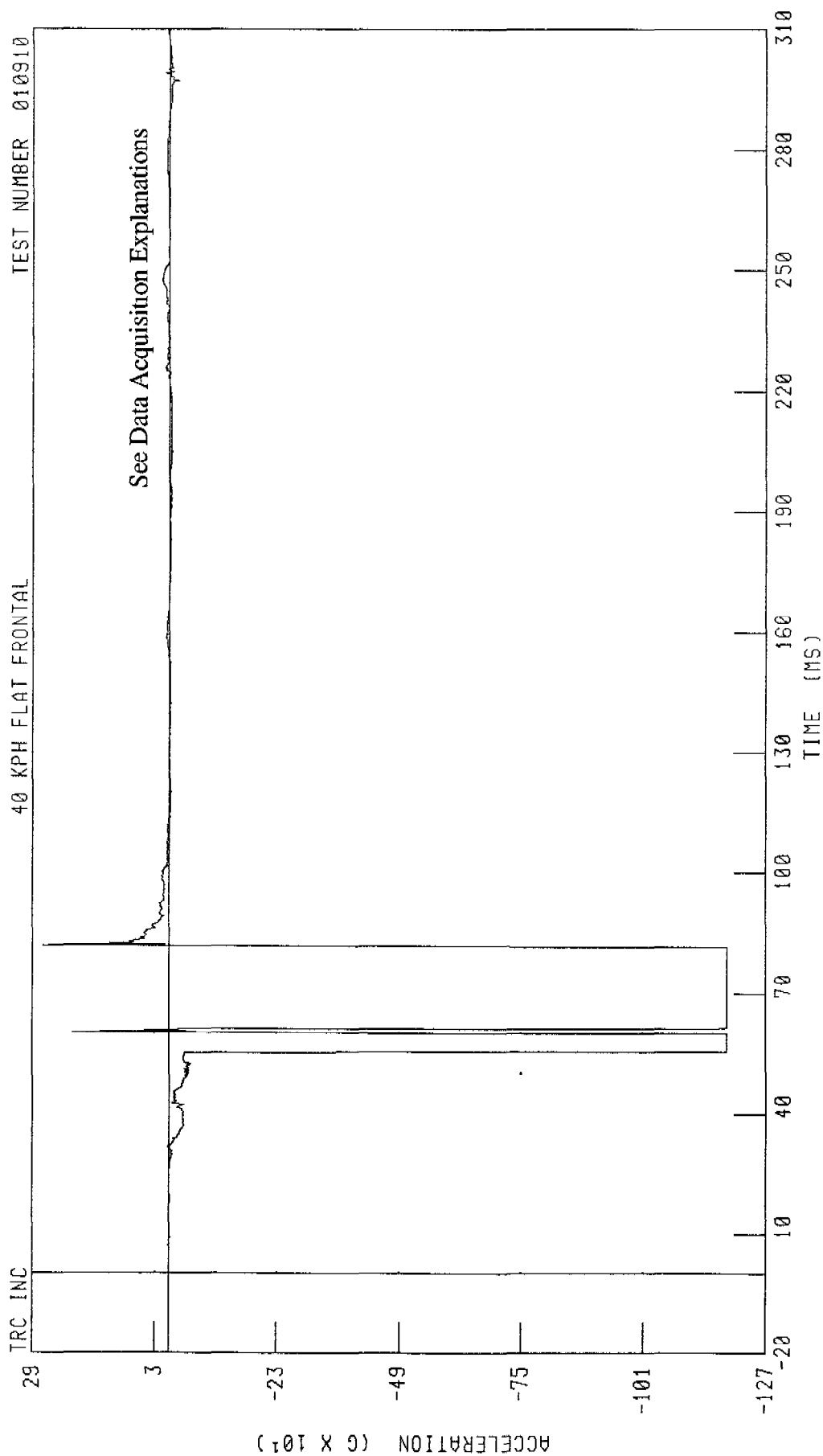
PEAK DATA 8 07 G 0 85 12 MS, -47 10 G 0 50 32 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER RIGHT FOOT TOE Z-AXIS ACCELERATION

40 KPH FLAT FRONTAL

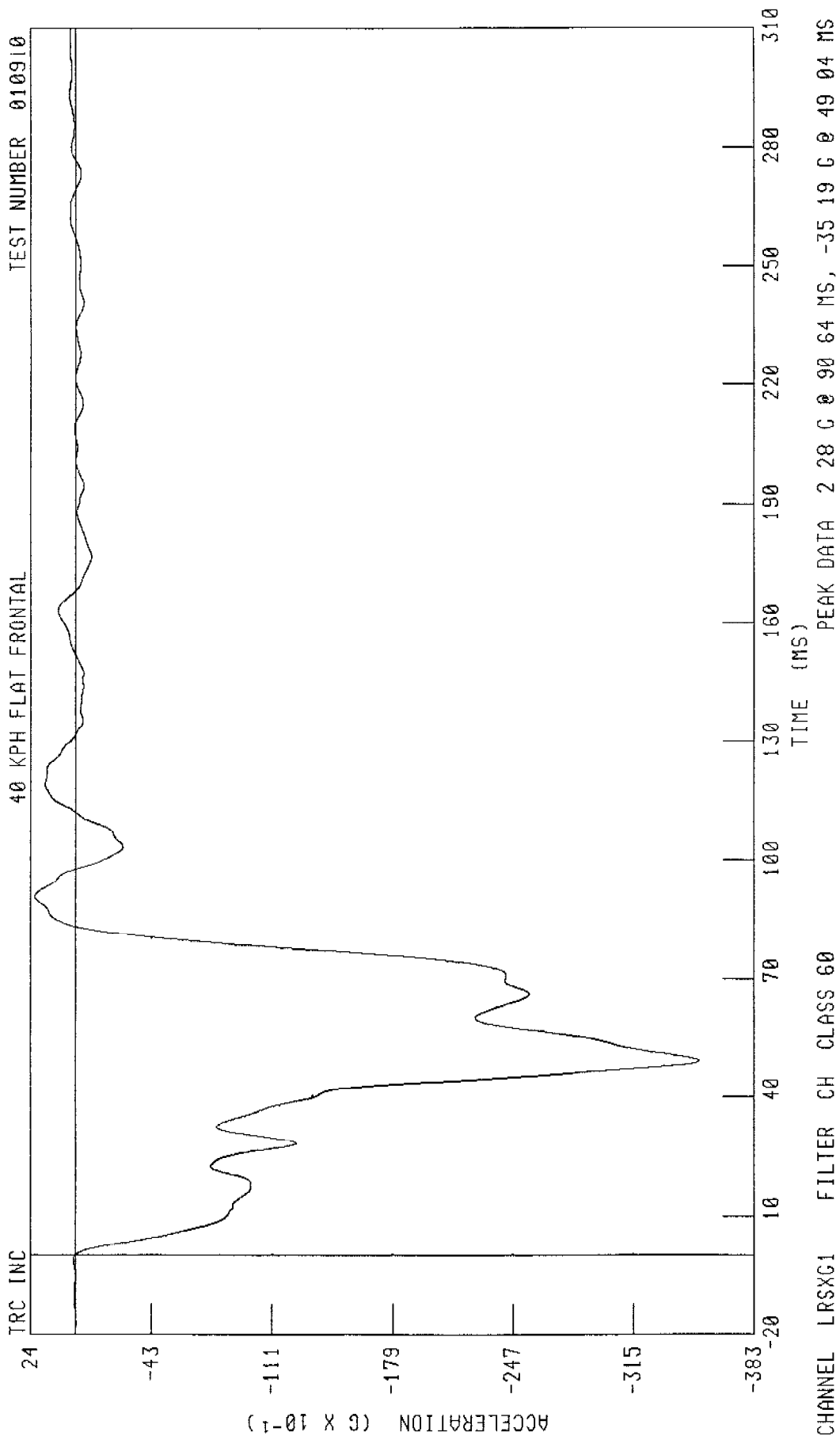
TEST NUMBER 010910



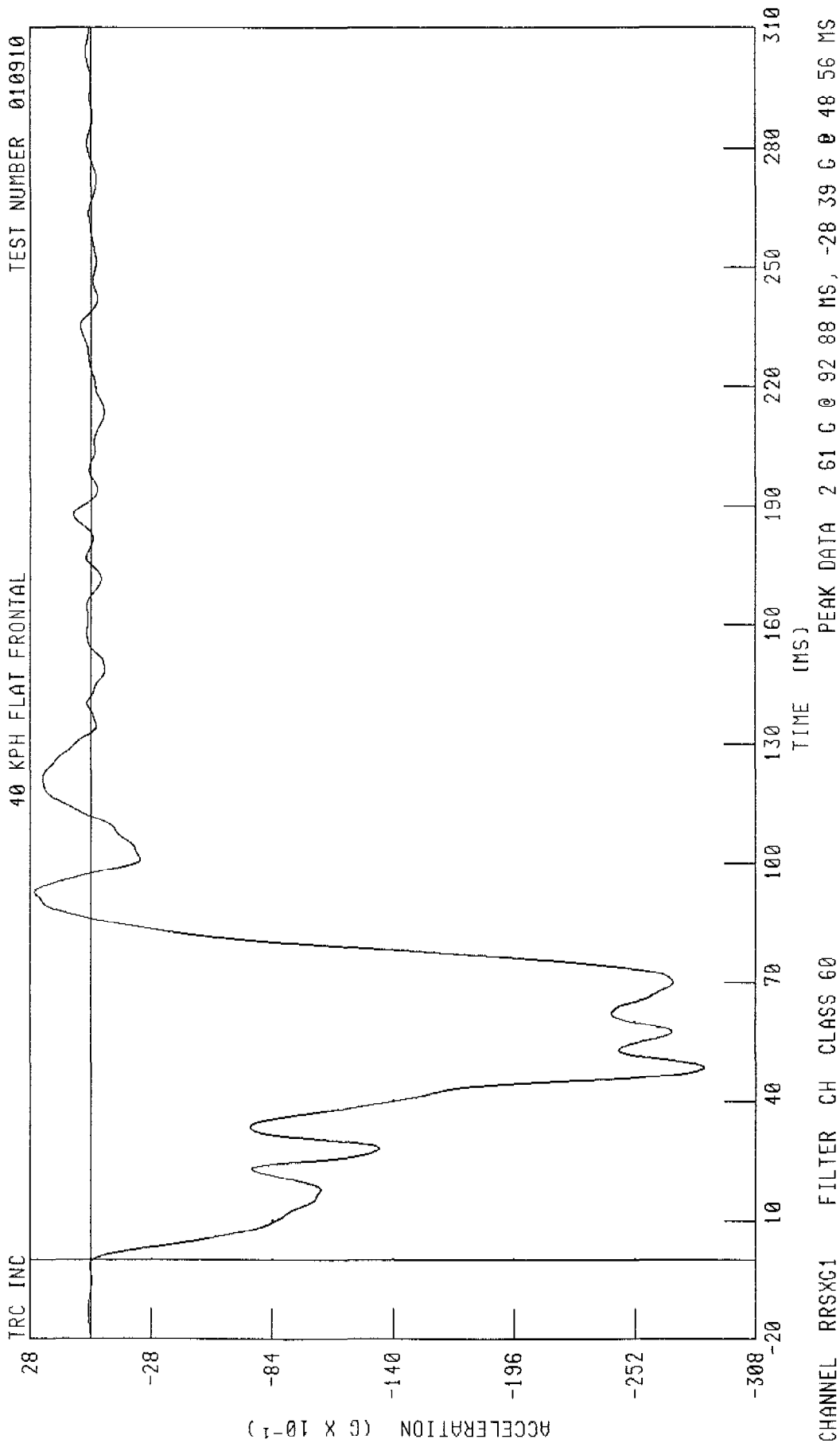
CHANNEL FRTZG2 FILTER CH CLASS 1000

PEAK DATA 268 55 G @ 81 92 MS, -1189 05 G @ 55 44 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
LEFT REAR SEAT CROSSMEMBER X-AXIS ACCELERATION

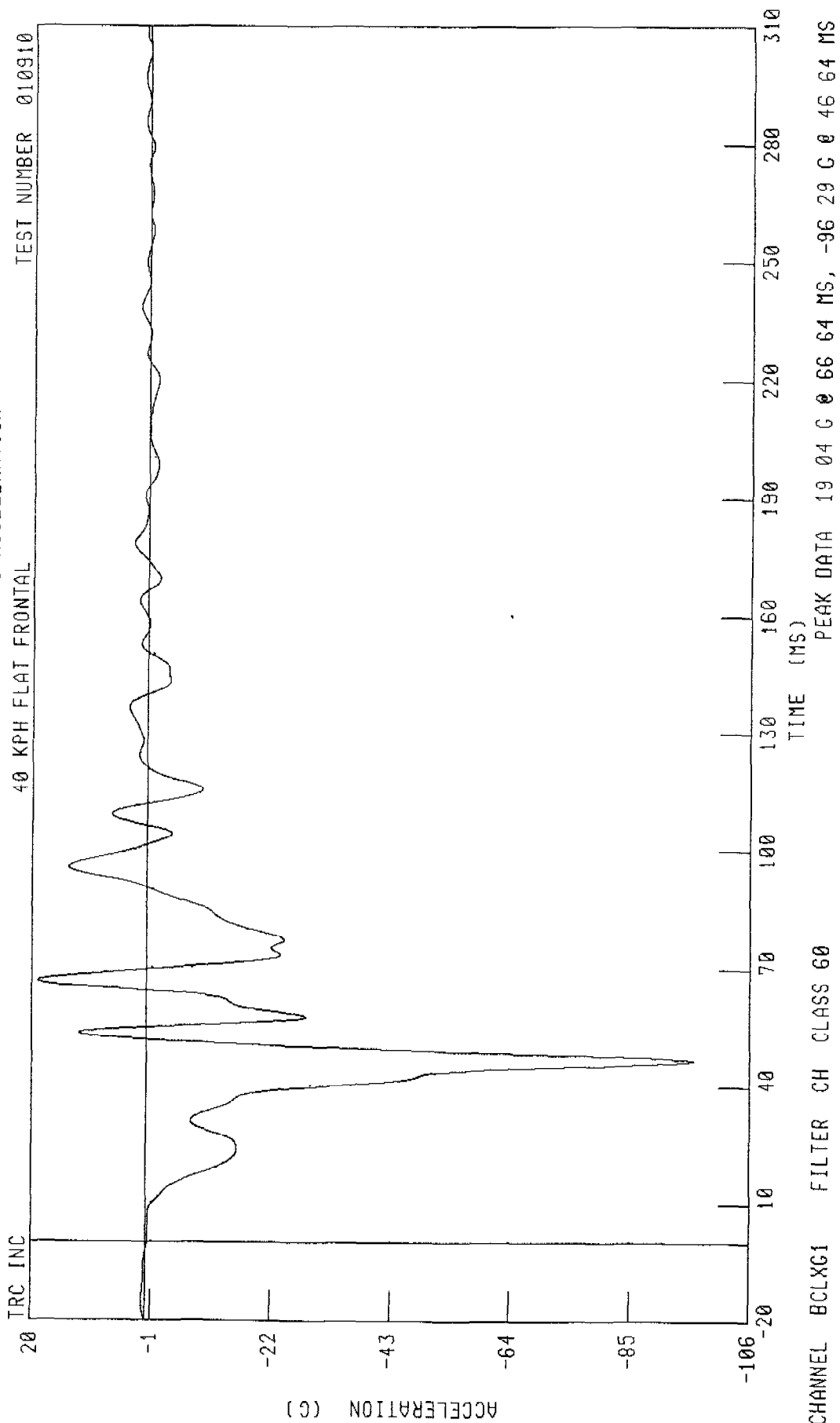


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 RIGHT REAR SEAT CROSSMEMBER X-AXIS ACCELERATION

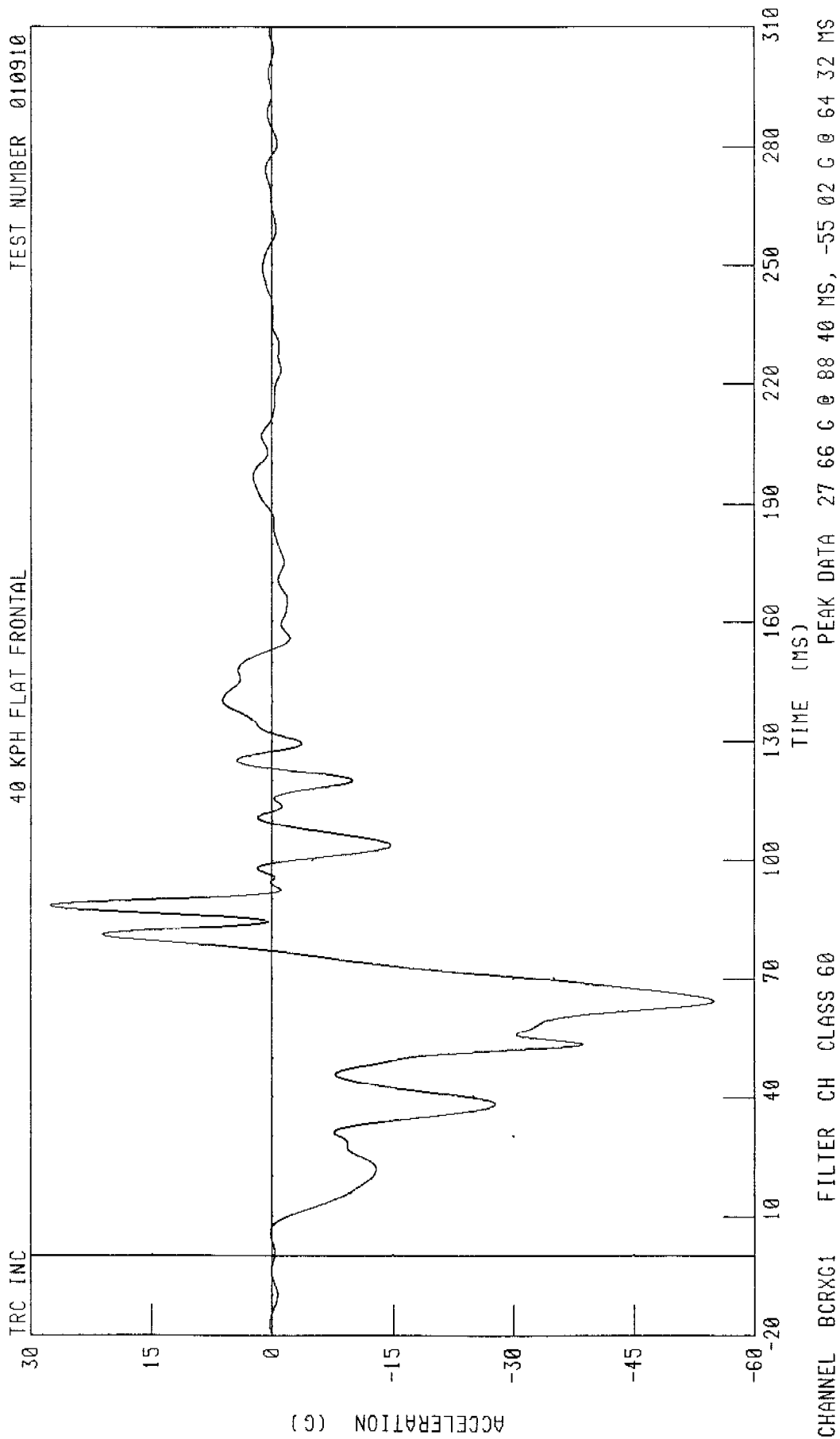


CHANNEL RRSXC1 FILTER CH CLASS 60

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
FRONT BRAKE CALIPER LEFT X-AXIS ACCELERATION



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 FRONT BRAKE CALIPER RIGHT X-AXIS ACCELERATION



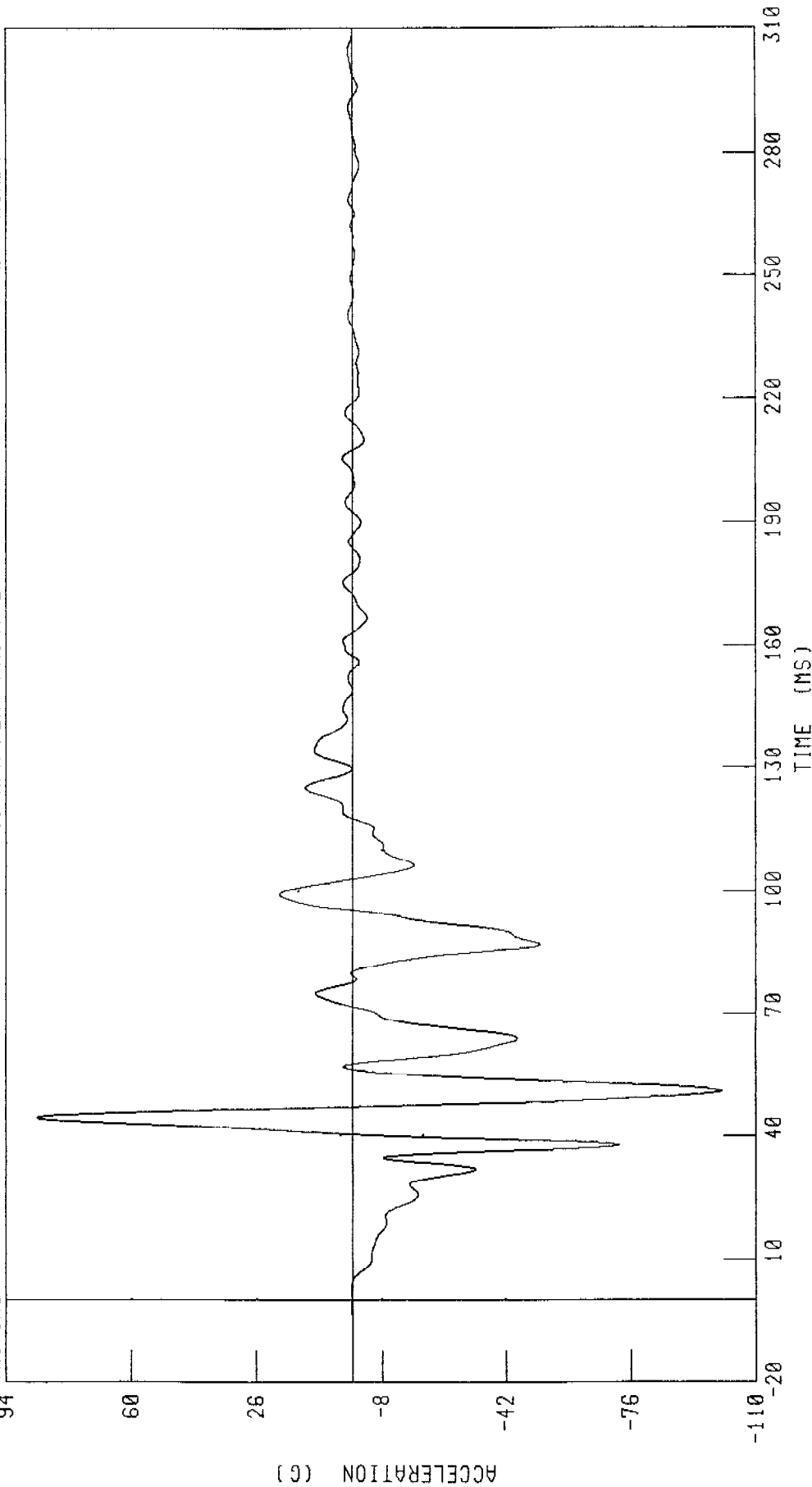
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DASH PANEL CENTER X-AXIS ACCELERATION

TEST NUMBER 010910

40 KPH FLAT FRONTAL

TRC_INC



CHANNEL DPCXG1 FILTER CH CLASS 60

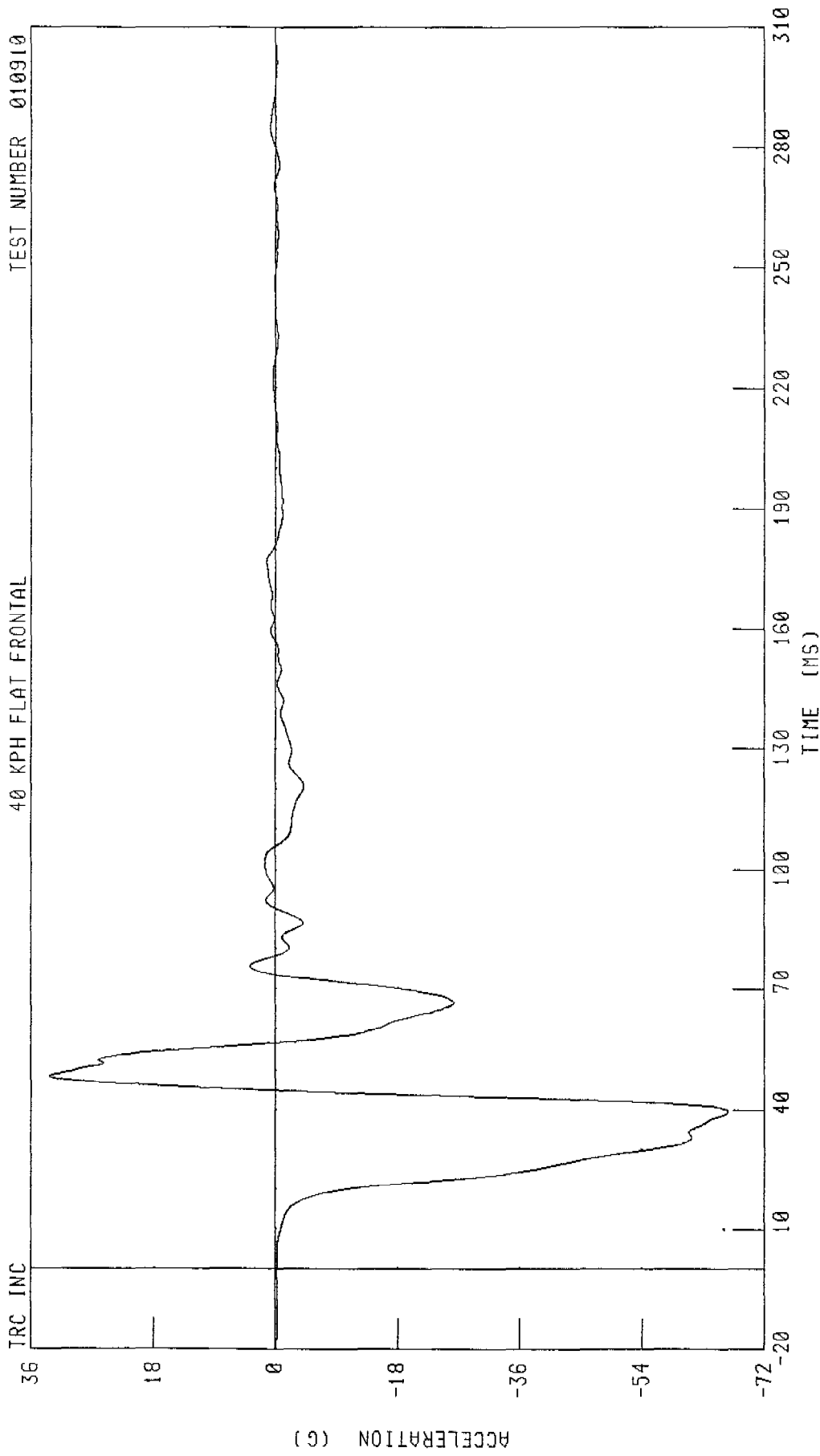
PEAK DATA 85 70 0 44 56 MS, -100 88 0 50 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

ENGINE TOP X-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910



CHANNEL ENGXC1 FILTER CH CLASS 60

PEAK DATA 33 26 G @ 48 40 MS, -66 75 G @ 39 60 MS

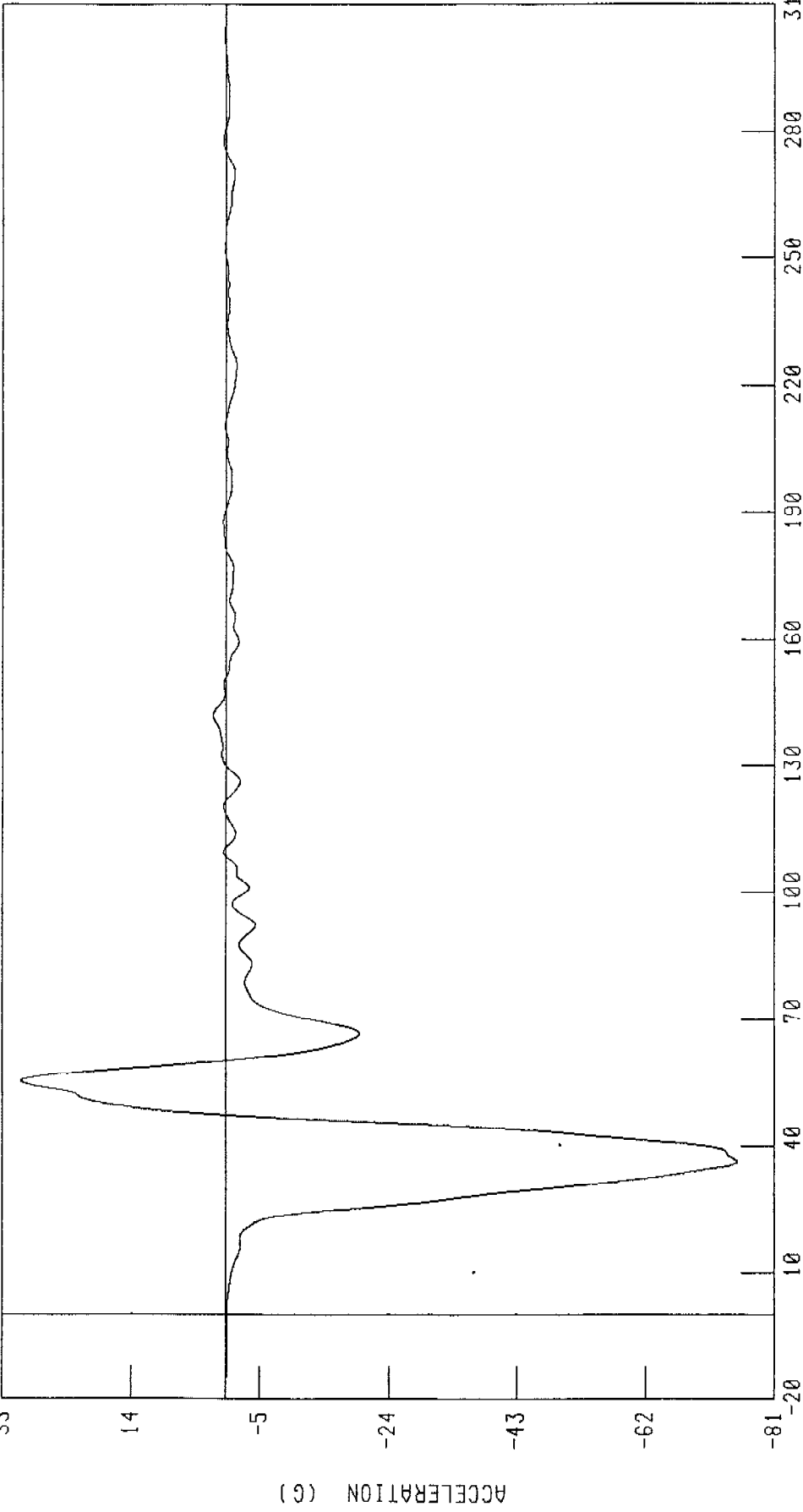
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

ENGINE BOTTOM X-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

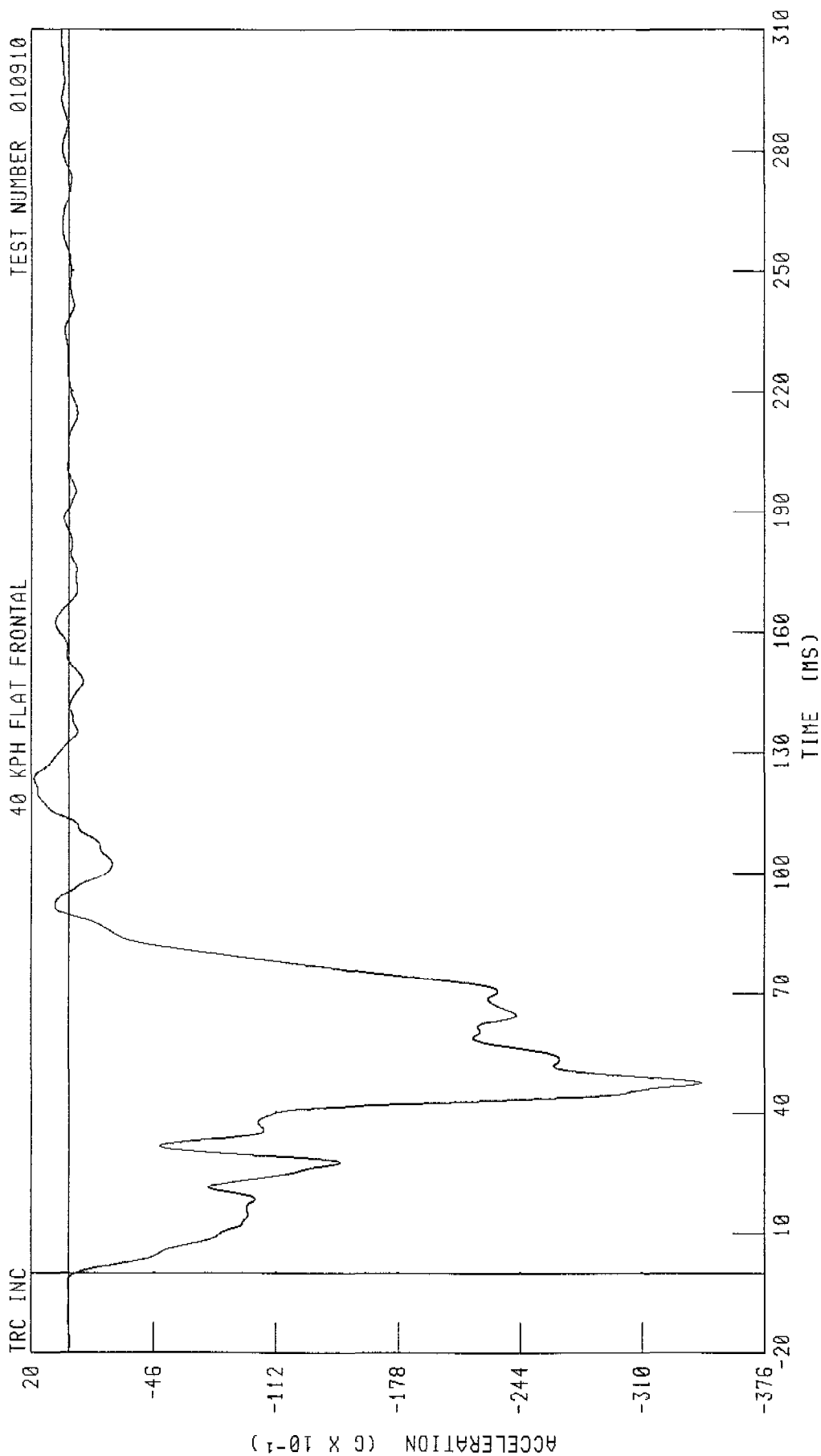
TRC INC



CHANNEL ENCXC2 FILTER CH CLASS 60

PEAK DATA 30 37 0 55 20 MS, -75 59 G 0 36 32 MS

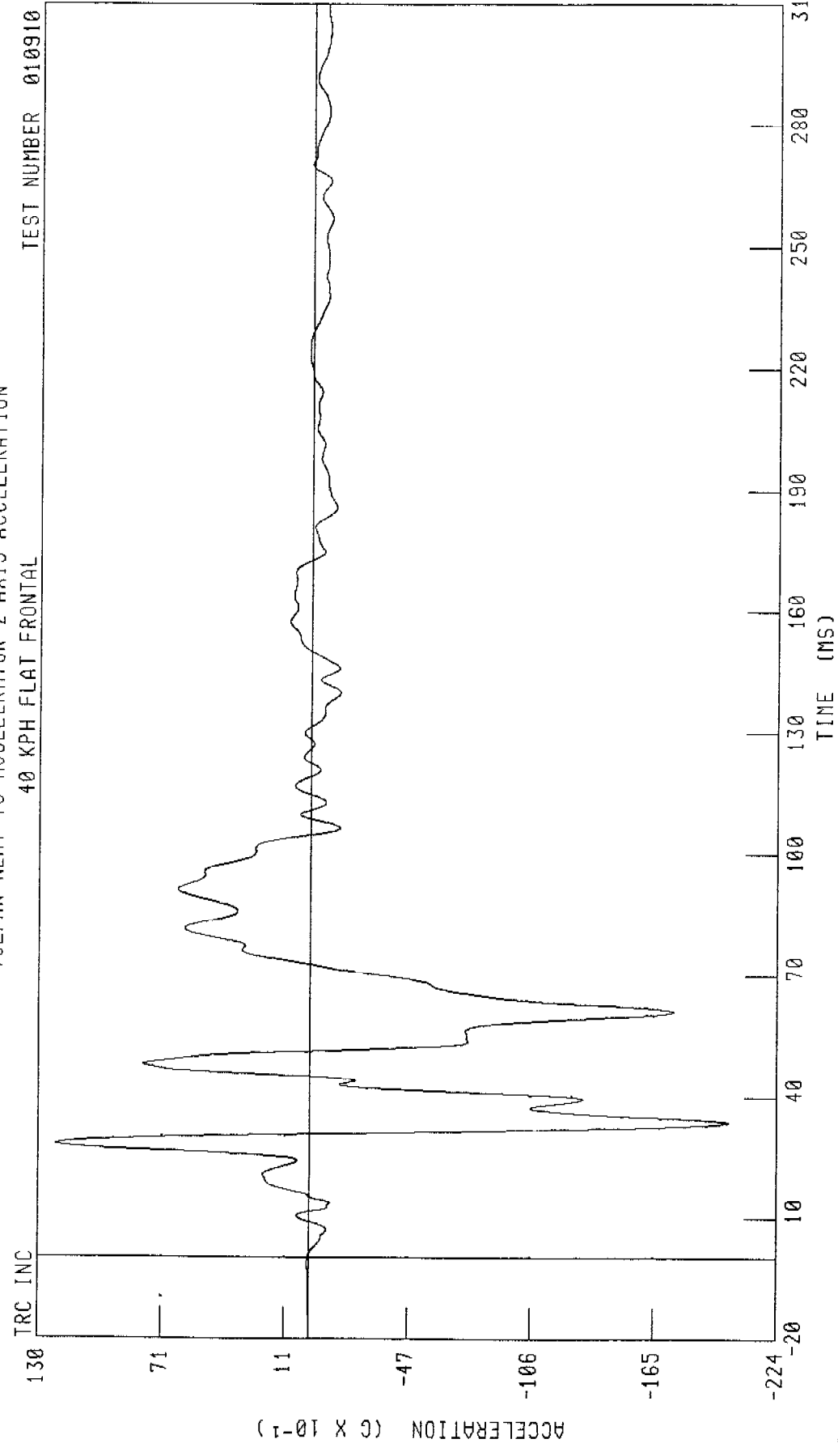
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 TOEPAN NEXT TO ACCELERATOR X-AXIS ACCELERATION



CHANNEL IPAXG1 FILTER CH CLASS 60 PEAK DATA 1 88 G @ 123 36 MS, -34 20 G @ 47 44 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 TOEPAN NEXT TO ACCELERATOR Z-AXIS ACCELERATION

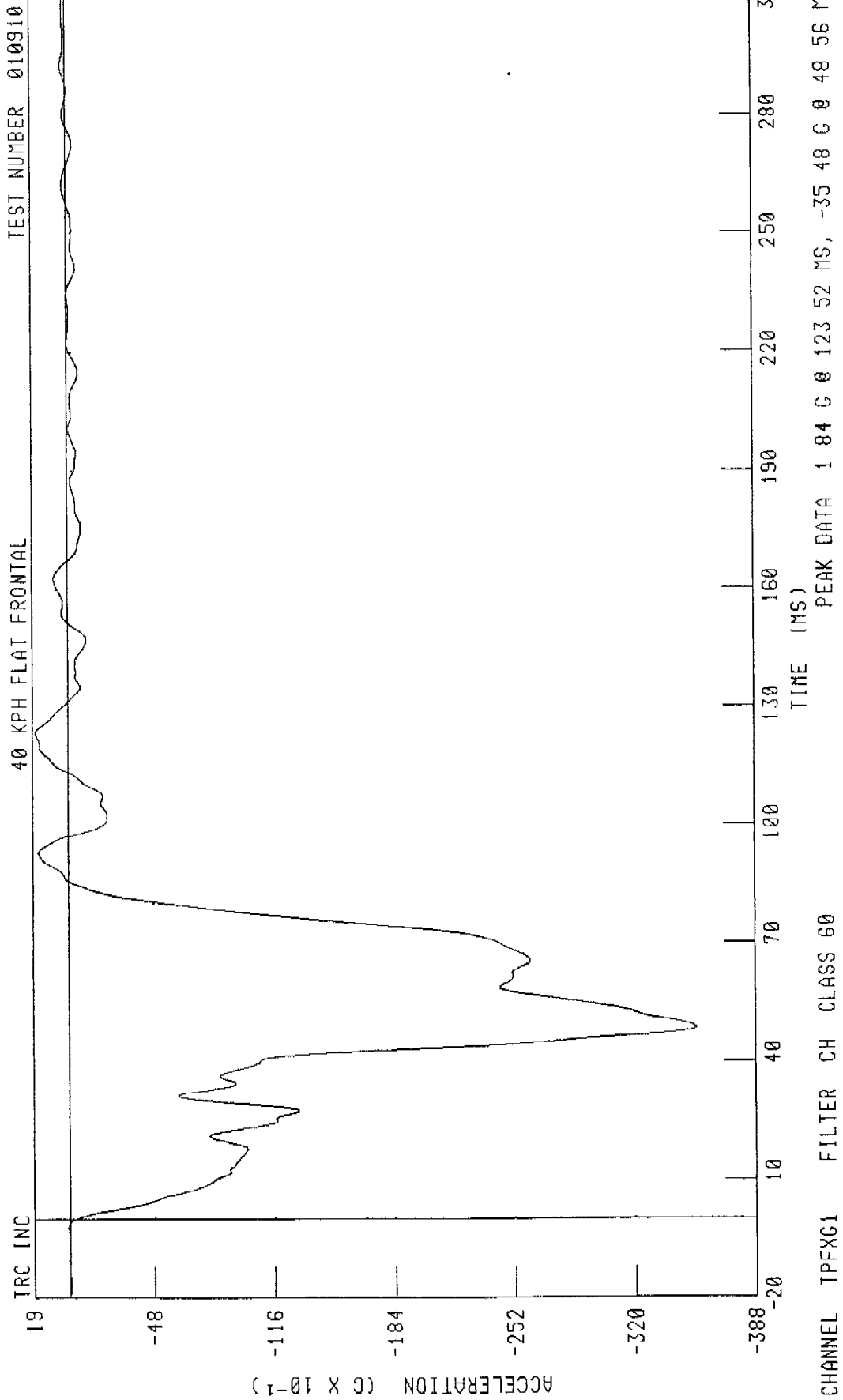
TEST NUMBER 010910



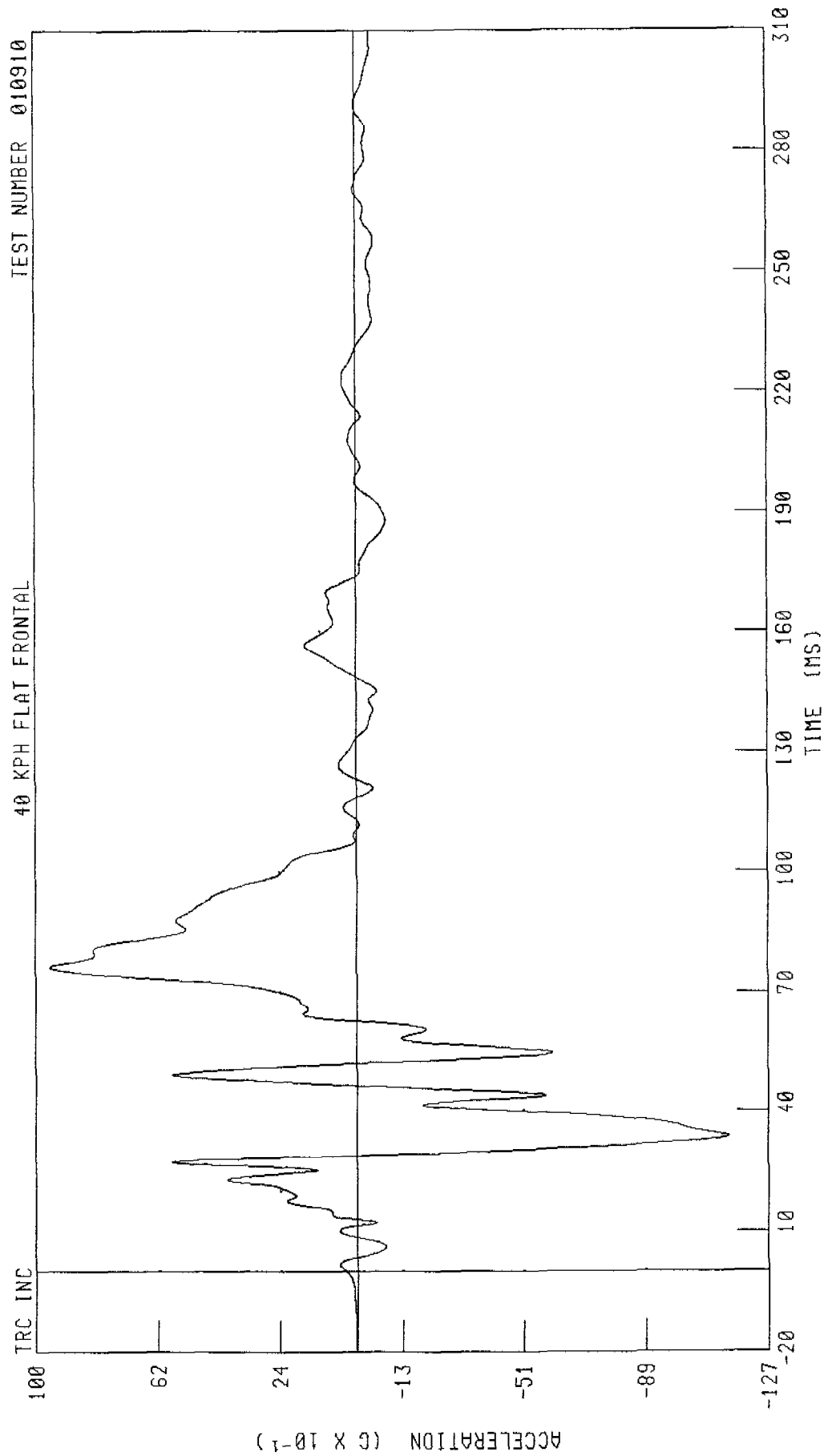
CHANNEL TPAZG1 FILTER CH CLASS 60

PEAK DATA 12 15 G @ 28 08 MS, -20 10 G @ 33 76 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
TOEPAN NEXT TO FOOTREST X-AXIS ACCELERATION



2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 TOEPAN NEXT TO FOOTREST Z-AXIS ACCELERATION



CHANNEL TPFZG1 FILTER CH CLASS 60

PEAK DATA 9 55 G @ 76 24 MS, -11 58 G @ 33 68 MS

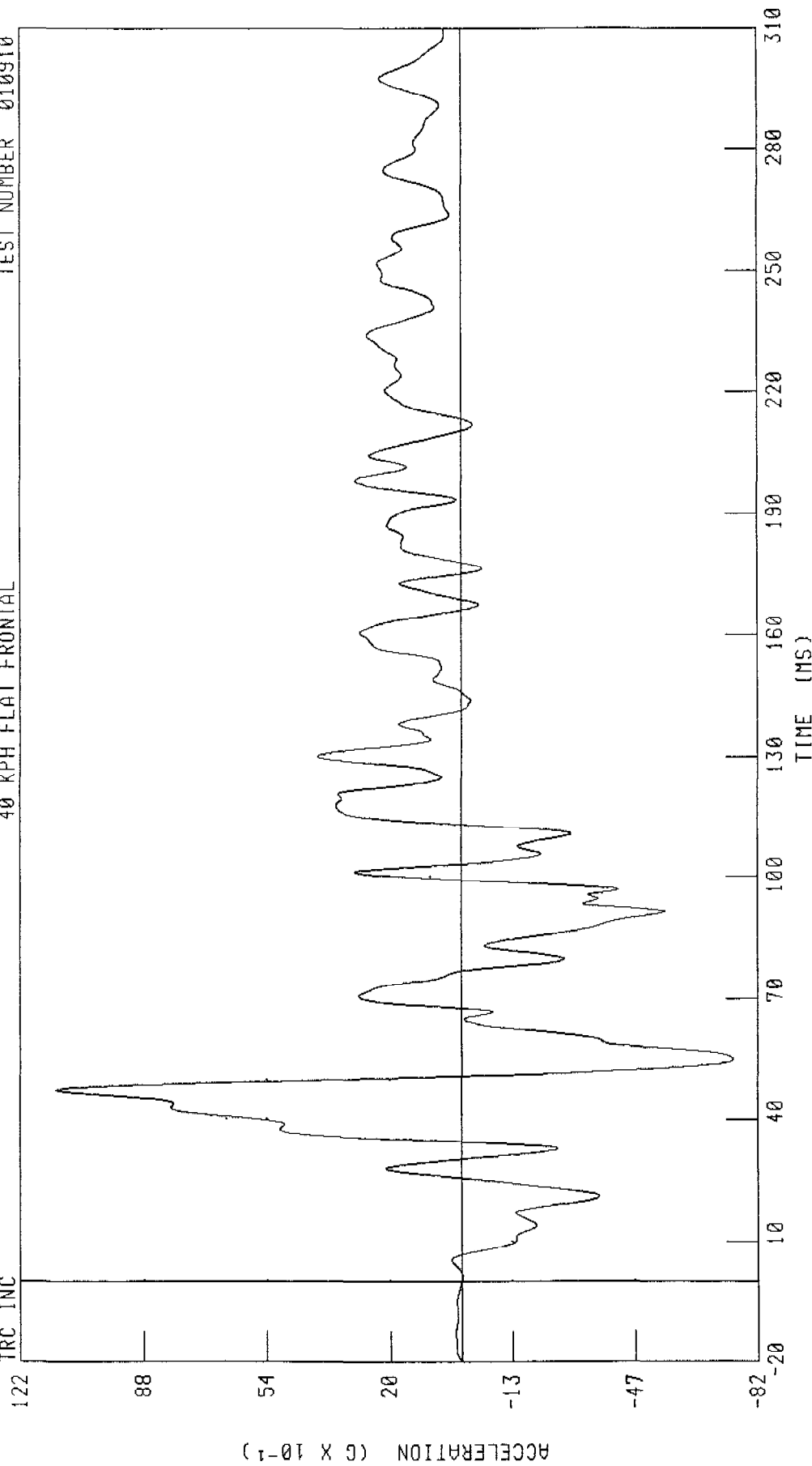
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

REAR DECK Z-AXIS ACCELERATION

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



CHANNEL RDKZG1 FILTER CH CLASS 60

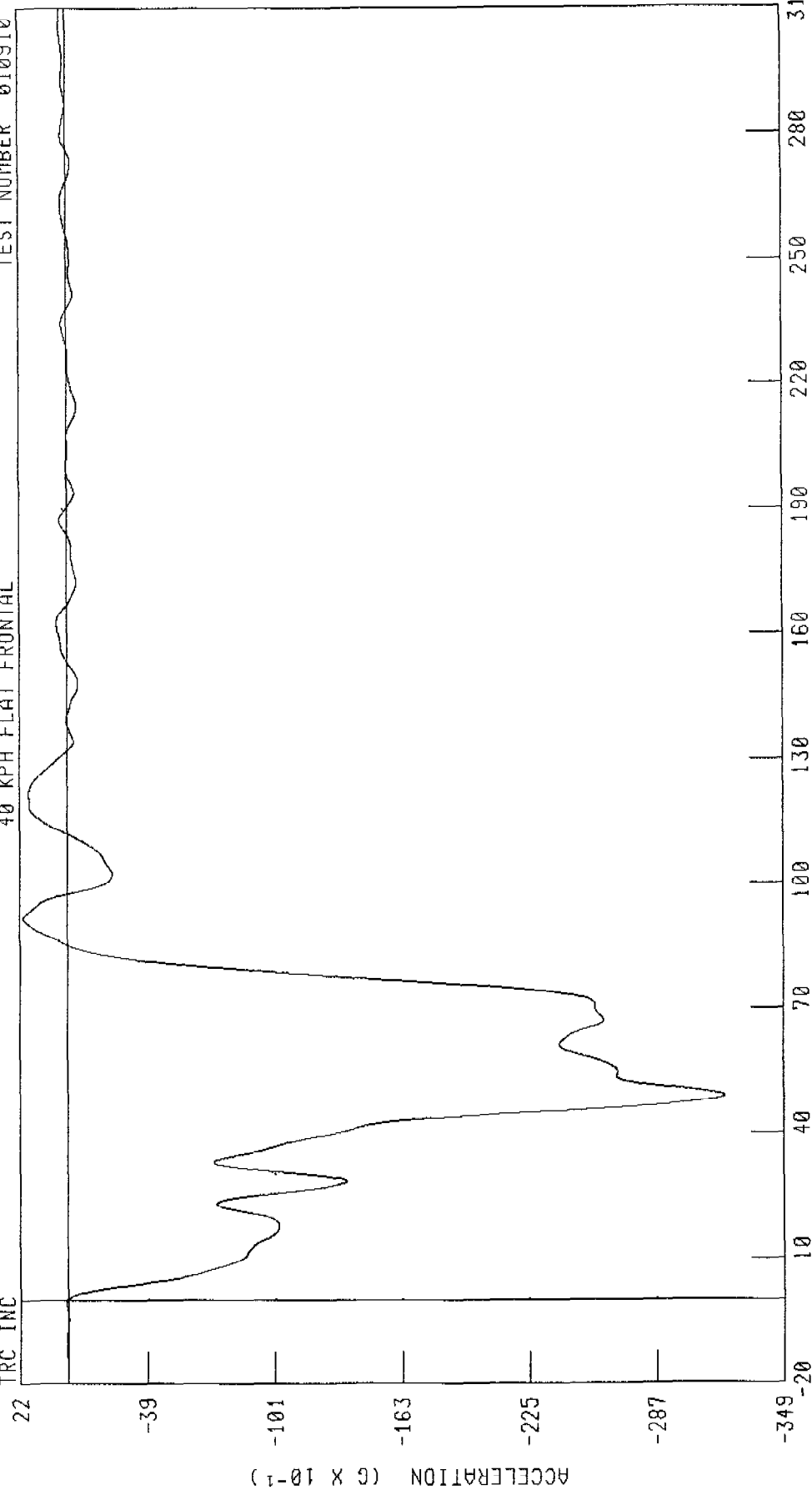
PEAK DATA 11 22 G @ 47 36 MS, -7 52 G @ 55 04 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH
 REAR COMPARTMENT CENTER X-AXIS ACCELERATION

TEST NUMBER 010910

40 KPH FLAT FRONTAL

TRC INC



TIME (MS)

PEAK DATA 2 15 G 0 92 00 MS, -32 01 G 0 48 88 MS

CHANNEL RDCXG1 FILTER CH CLASS 60

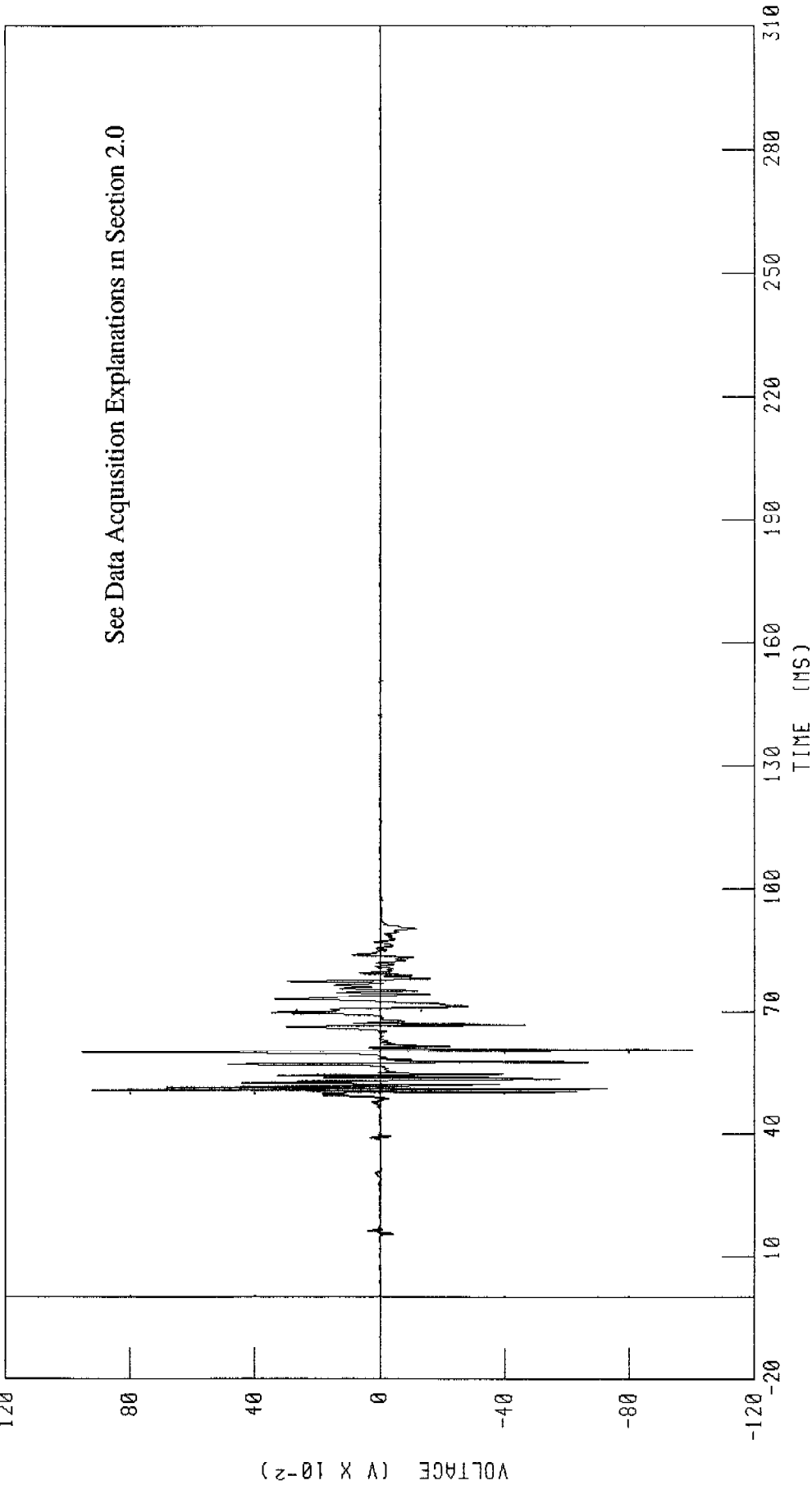
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER AIRBAG EVENT 1 OF 2

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



CHANNEL DABET1 FILTER CH CLASS 1000

PEAK DATA 0 95 V @ 60 16 MS, -1 00 V @ 60 72 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

DRIVER AIRBAG EVENT 2 OF 2

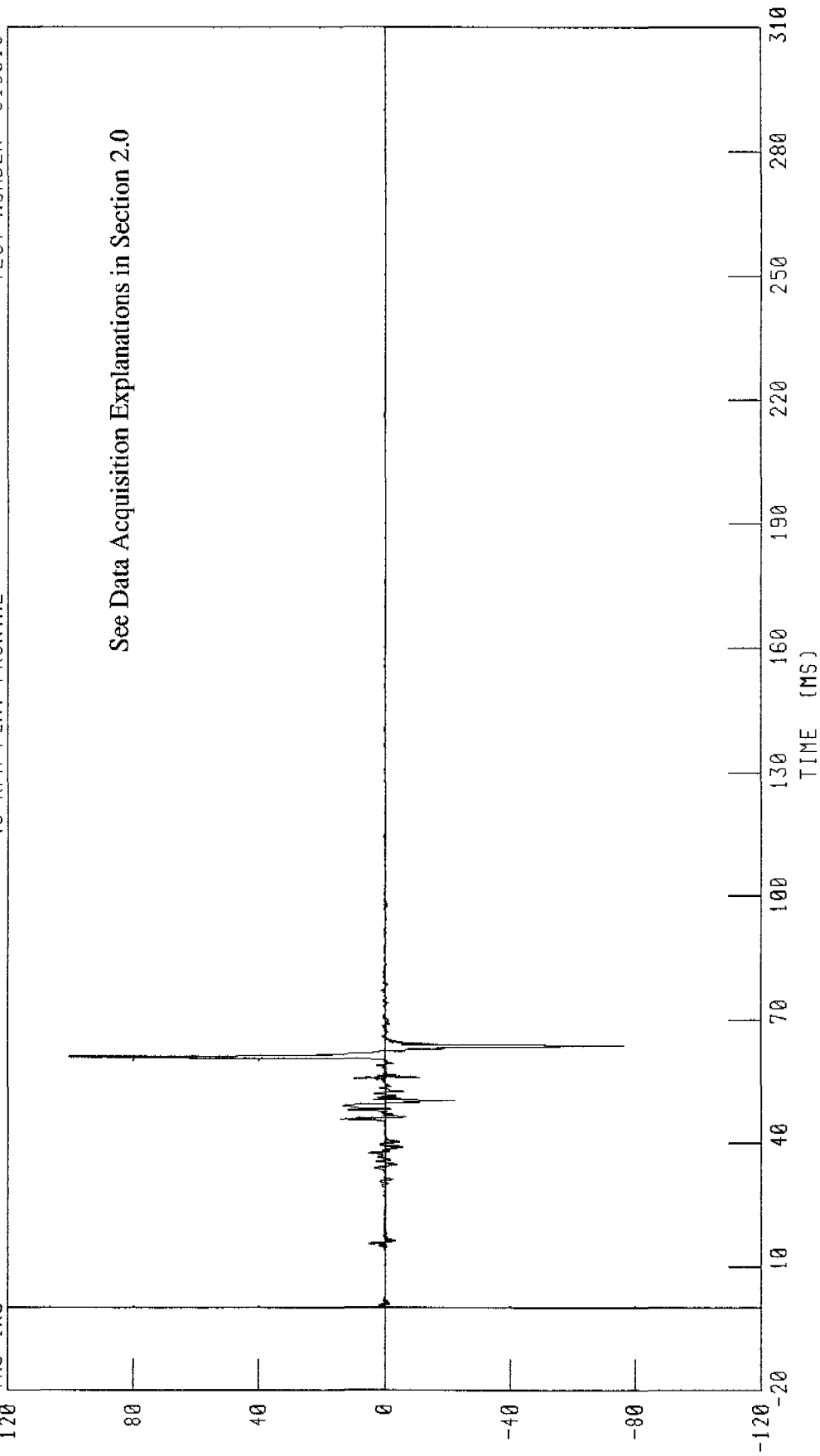
40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

See Data Acquisition Explanations in Section 2.0

VOLTAGE (V X 10⁻²)



CHANNEL DABET2 FILTER CH CLASS 1000

PEAK DATA 1 00 V 0 60 80 MS, -0 76 V 0 63 76 MS

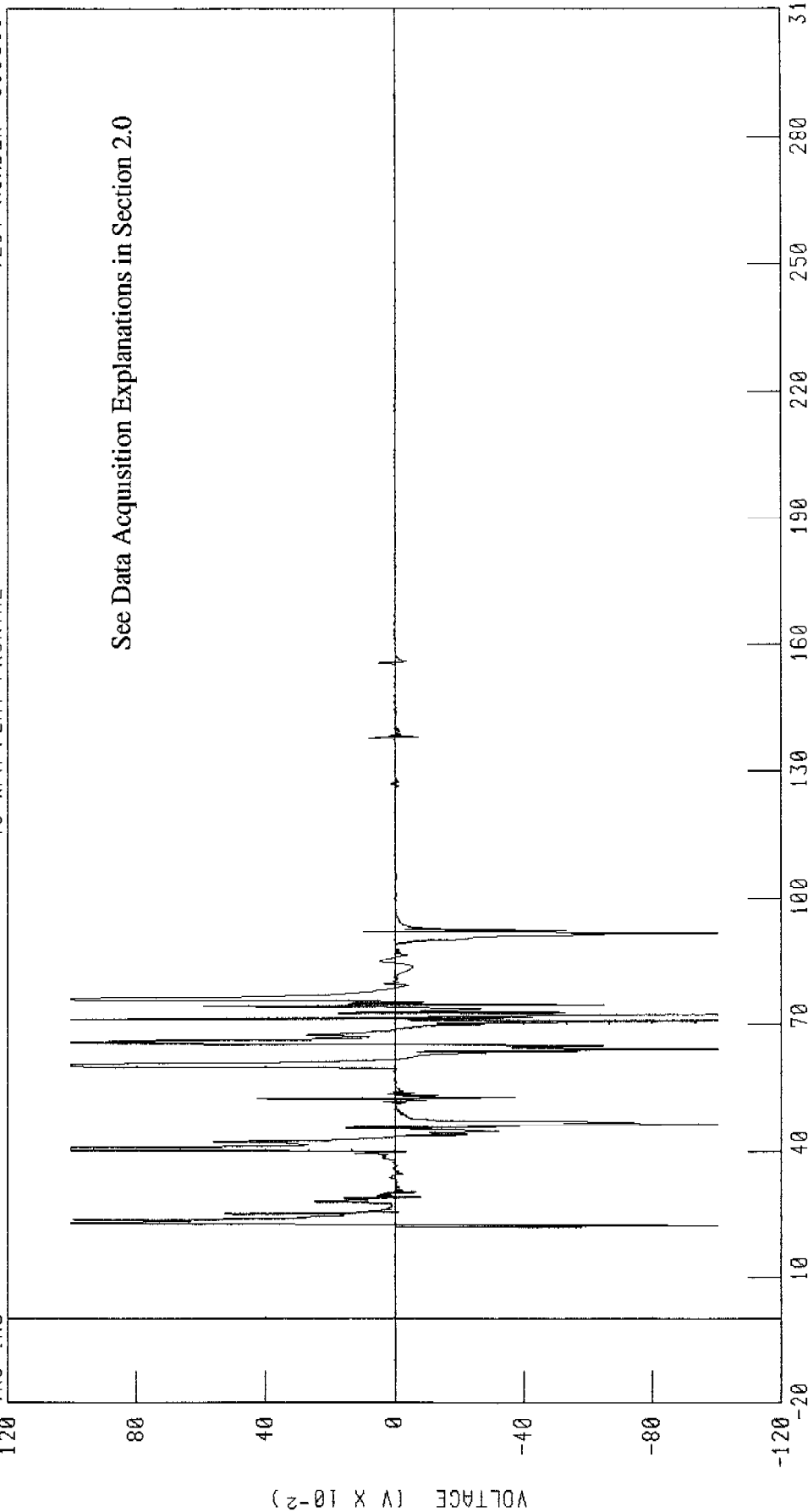
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER AIRBAG EVENT 1 OF 2

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC



CHANNEL PABET1 FILTER CH CLASS 1000

PEAK DATA 1 00 V @ 22 72 MS, -1 00 V @ 22 16 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 40 KPH

PASSENGER AIRBAG EVENT 2 OF 2

40 KPH FLAT FRONTAL

TEST NUMBER 010910

TRC INC

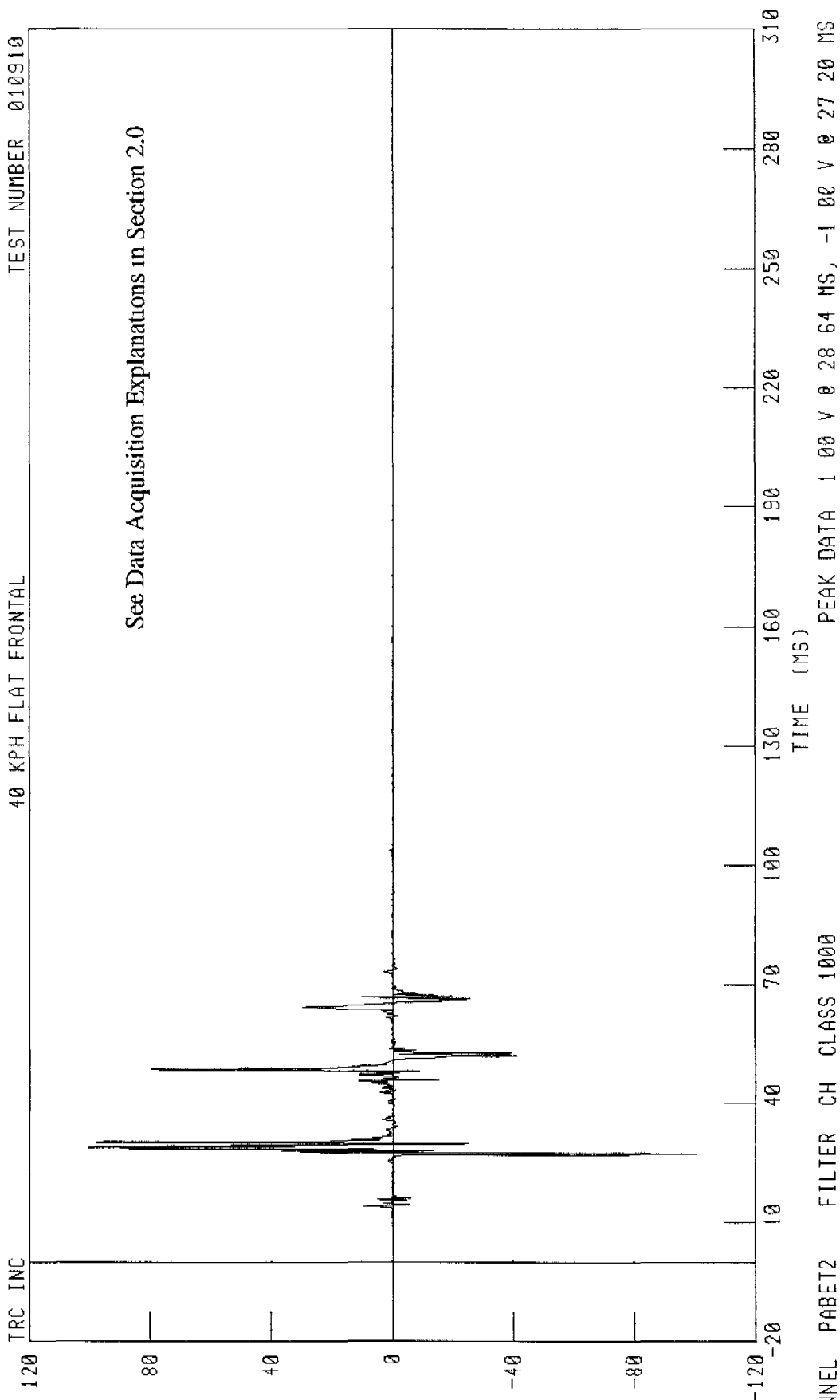
See Data Acquisition Explanations in Section 2.0

VOLTAGE (V X 10⁻²)

TIME (MS)

CHANNEL PABET2 FILTER CH CLASS 1000

PEAK DATA 1 00 V 0 28 64 MS, -1 00 V 0 27 20 MS



Appendix C

Dummy Configuration and Performance Verification Data

Pre-Test Dummy Configuration and Performance Verification Data

Driver Dummy S/N: 206

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS

206

27-AUG-01

TRC INC. TEST NO: 206C01ED1 572E SN206 EXT.DIMENSION CAL01

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
LOCATION FOR CHEST CIRCUMFERENCE (AA)		429 - 434 MM	432. MM
LOCATION FOR WAIST CIRCUMFERENCE (BB)		226 - 231 MM	229. MM
CHEST CIRCUMFERENCE (Y)		970 - 1001 MM	996. MM
WAIST CIRCUMFERENCE (Z)		836 - 866 MM	859. MM
CHEST DEPTH (O)		213 - 229 MM	221. MM
H-POINT HEIGHT (C)		84 - 89 MM	86. MM
H-POINT FROM SEATBACK (D)		135 - 140 MM	137. MM
SKULL CAP TO BACKLINE (H)		41 - 46 MM	43. MM
TOTAL SITTING HEIGHT (A)		879 - 889 MM	886. MM
THIGH CLEARANCE (F)		140 - 155 MM	145. MM
BUTTOCK KNEE LENGTH (K)		579 - 605 MM	599. MM
BUTTOCK POPLITEAL LENGTH (N)		452 - 478 MM	470. MM
POPLITEAL HEIGHT (L)		429 - 455 MM	447. MM
KNEE PIVOT HEIGHT (M)		485 - 500 MM	490. MM
FOOT LENGTH (P)		252 - 267 MM	254. MM
FOOT BREADTH (W)		91 - 107 MM	102. MM
SHOULDER PIVOT FROM BACKLINE (E)		84 - 94 MM	91. MM
SHOULDER BREADTH (V)		422 - 437 MM	434. MM
SHOULDER PIVOT HEIGHT (B)		506 - 521 MM	516. MM
ELBOW REST HEIGHT (J)		191 - 211 MM	206. MM
SHOULDER-ELBOW LENGTH (I)		330 - 345 MM	330. MM
BACK OF ELBOW TO WRIST PIVOT (G)		290 - 305 MM	297. MM

572E SN206 EXT.DIMENSION CAL01

DUMMY MEETS SPECIFICATIONS

TECHNICIAN *[Signature]*

RUN NUMBER: 090701.1354

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III 50th

29-AUG-01

TRC INC.

TEST NO: 206C01HD1

572E SN206 HEAD DROP CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	60.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	256.98 G
PEAK LATERAL ACCELERATION	15 G MAX	-5.02 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

J.P.C. Milt

RUN NUMBER: 082901.1525;1

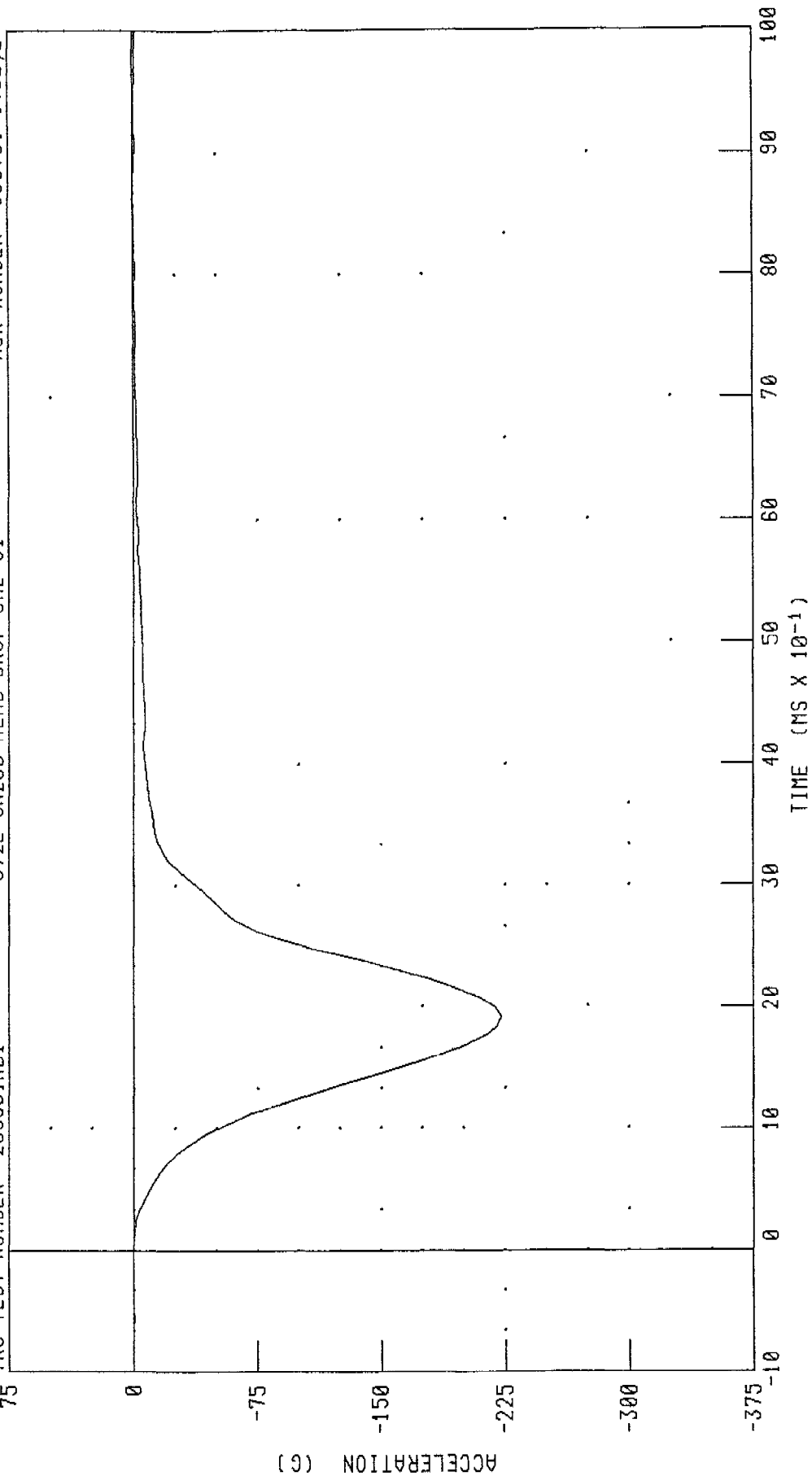
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

TRC TEST NUMBER 206C01HD1

572E SN206 HEAD DROP CAL 01

RUN NUMBER 090701 1402,2



CHANNEL HEDXC FILTER CH CLASS 1000

PEAK DATA 0 09 G @ -0 48 MS, -222 70 G @ 1 92 MS

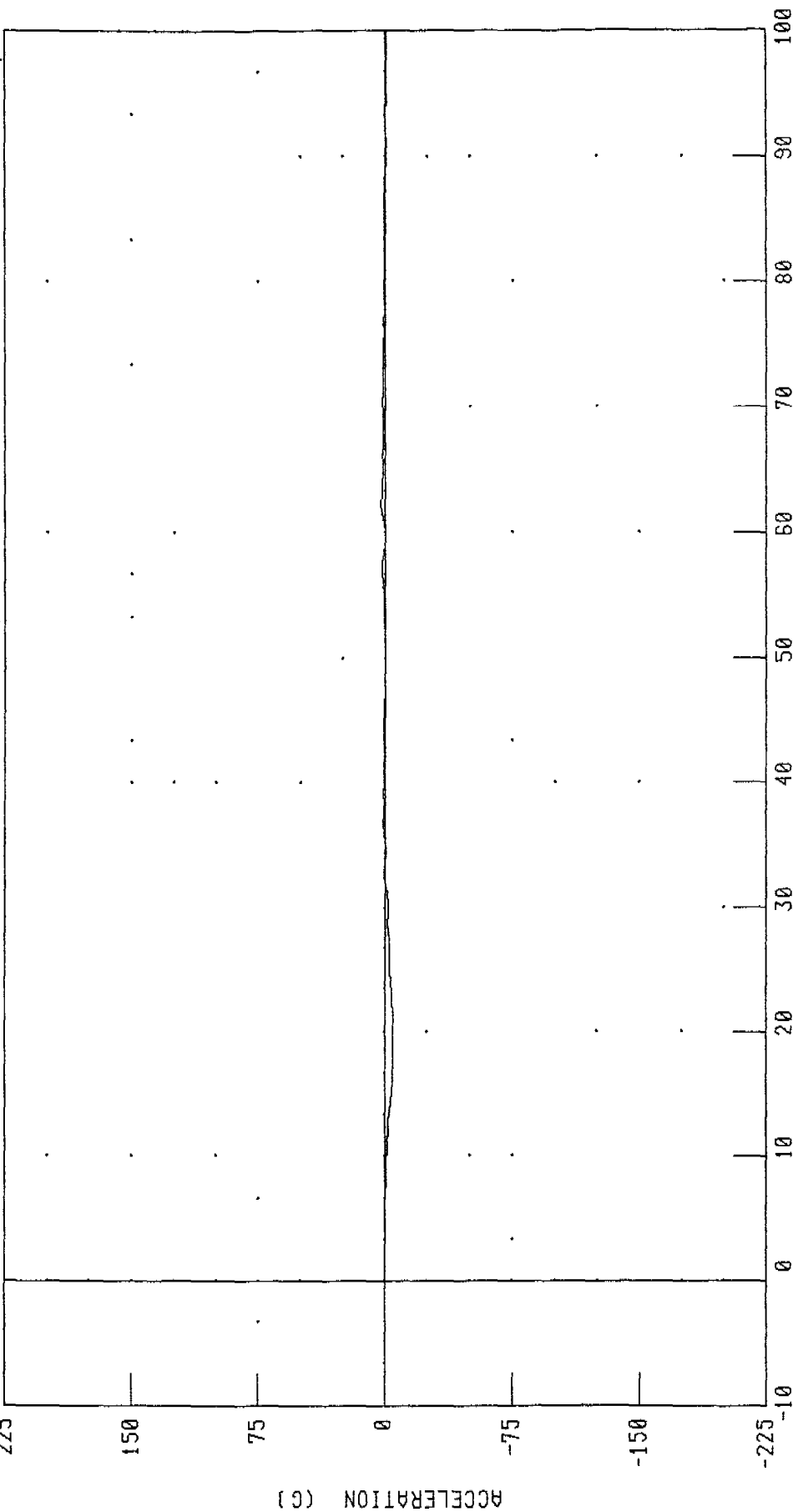
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

TRC TEST NUMBER 206C01HD1

572E SN206 HEAD DROP CAL 01

RUN NUMBER 090701 1402,2



TIME (MS X 10⁻¹)

CHANNEL HEDYC FILTER CH CLASS 1000

PEAK DATA 2 05 C 0 6 24 MS, -5 02 C 0 1 92 MS

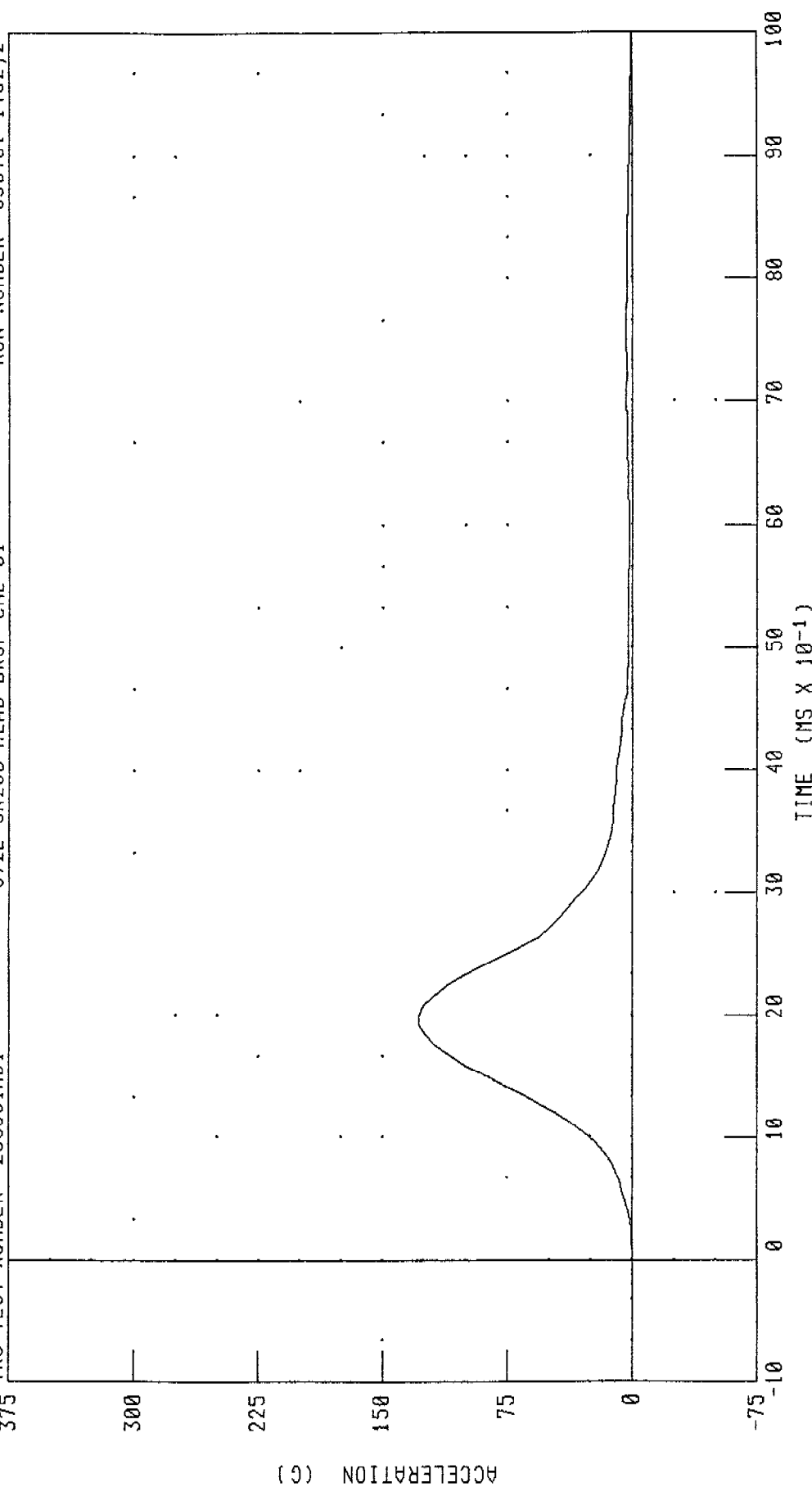
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Z AXIS

TRC TEST NUMBER 206C01HD1

572E SN206 HEAD DROP CAL 01

RUN NUMBER 090701 1402,2



CHANNEL HE0ZG FILTER CH CLASS 1000

TIME (MS X 10⁻¹)

PEAK DATA 128 38 G @ 2 00 MS, -0 03 G @ -0 32 MS

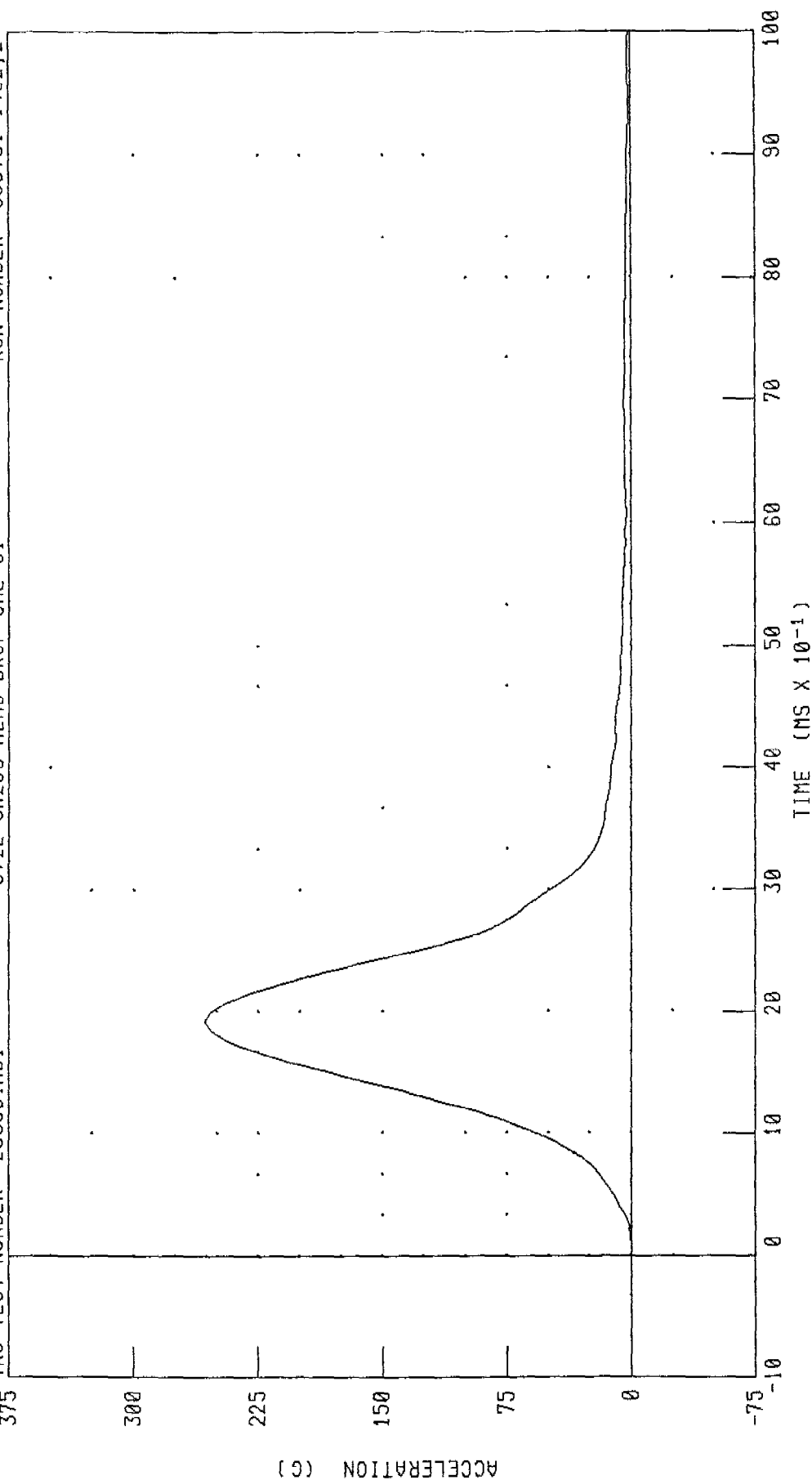
PART 572-E HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

TRC TEST NUMBER 206C01HD1

572E SN206 HEAD DROP CAL 01

RUN NUMBER 090701 1402,2



TIME (MS X 10⁻¹)

CHANNEL HEADRC FILTER CH CLASS 1000

PEAK DATA 256 98 G @ 1 92 MS, 0 05 G @ -0 24 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

06-SEP-01

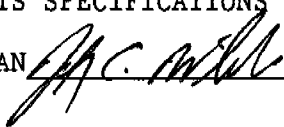
NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 206C01NF1 572E SN206 NECK FLEXION CAL01

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	61.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.93 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	24.49 G
	20 MS	17.60 - 22.60 G	22.55 G
	30 MS	12.50 - 18.50 G	17.66 G
MAX PENDULUM G		29 G MAX	24.94 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	17.57 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	38.00 MS
D PLANE	MAX	64 - 78 DEG.	70.31 DEG.
ROTATION	TIME	57 - 64 MS	60.24 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	99.92 NM
	TIME	47 - 58 MS	51.04 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	120.08 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	101.04 MS

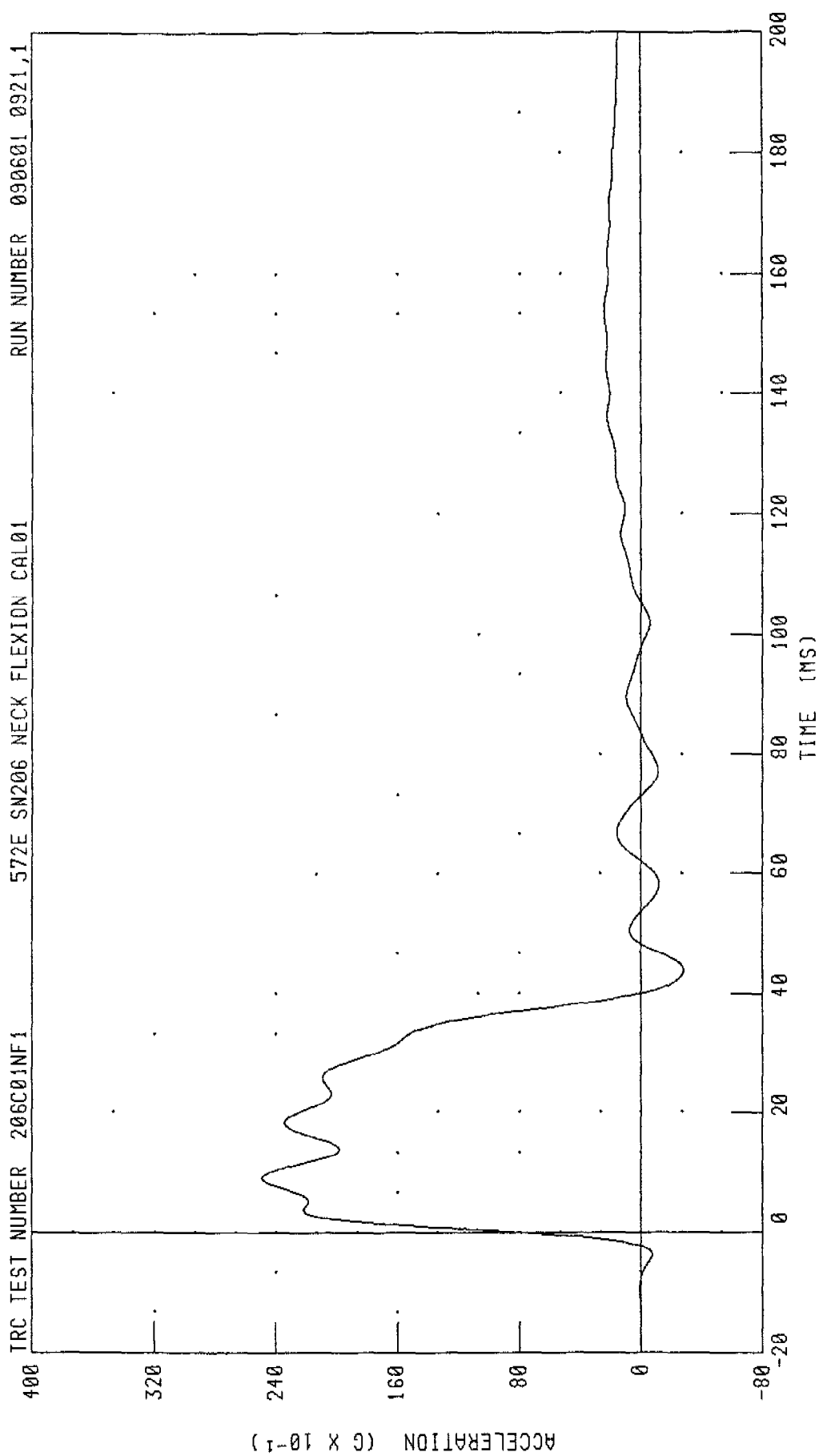
TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 090601.0921;1

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 PENDULUM DECELERATION



CHANNEL PENXC FILTER CH CLASS 60

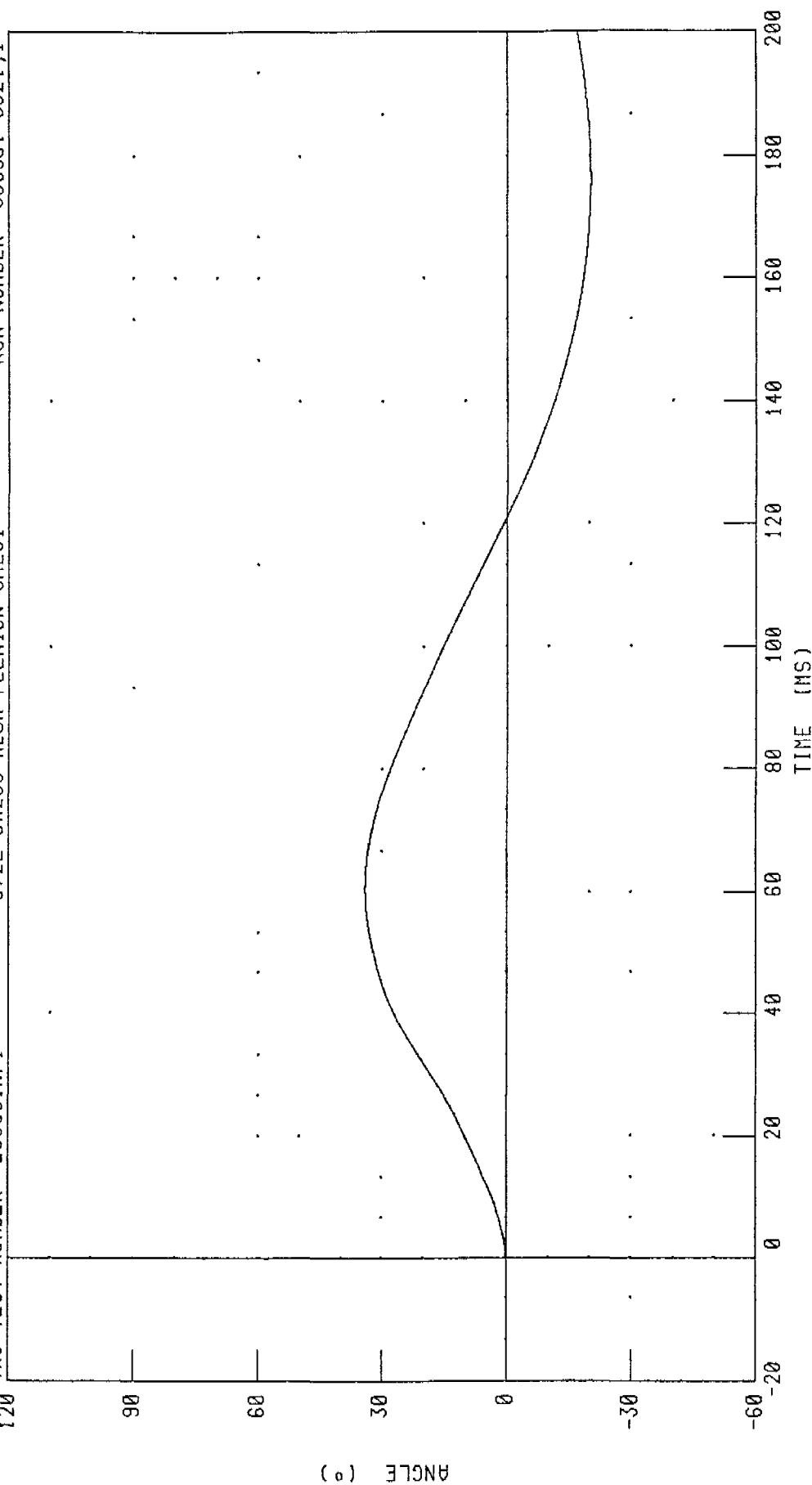
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER 206C01NF1

572E SN206 NECK FLEXION CAL01

RUN NUMBER 090601 0921,1



CHANNEL BETA FILTER CH CLASS 60

PEAK DATA 34 09 ° 0 60 56 MS, -20 28 ° 0 176 08 MS

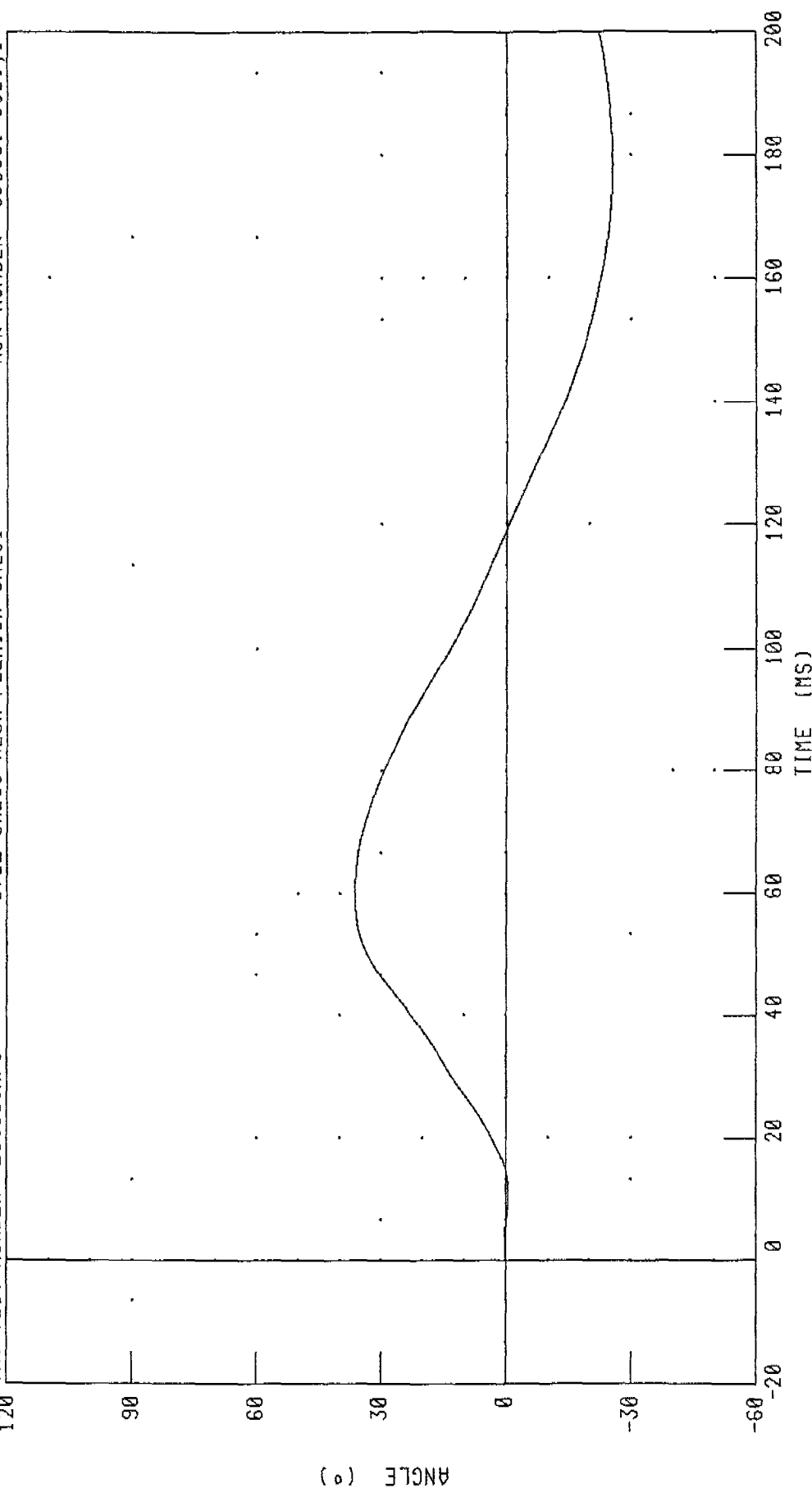
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER 206C01NF1

572E SN206 NECK FLEXION CAL01

RUN NUMBER 090601 0921,1



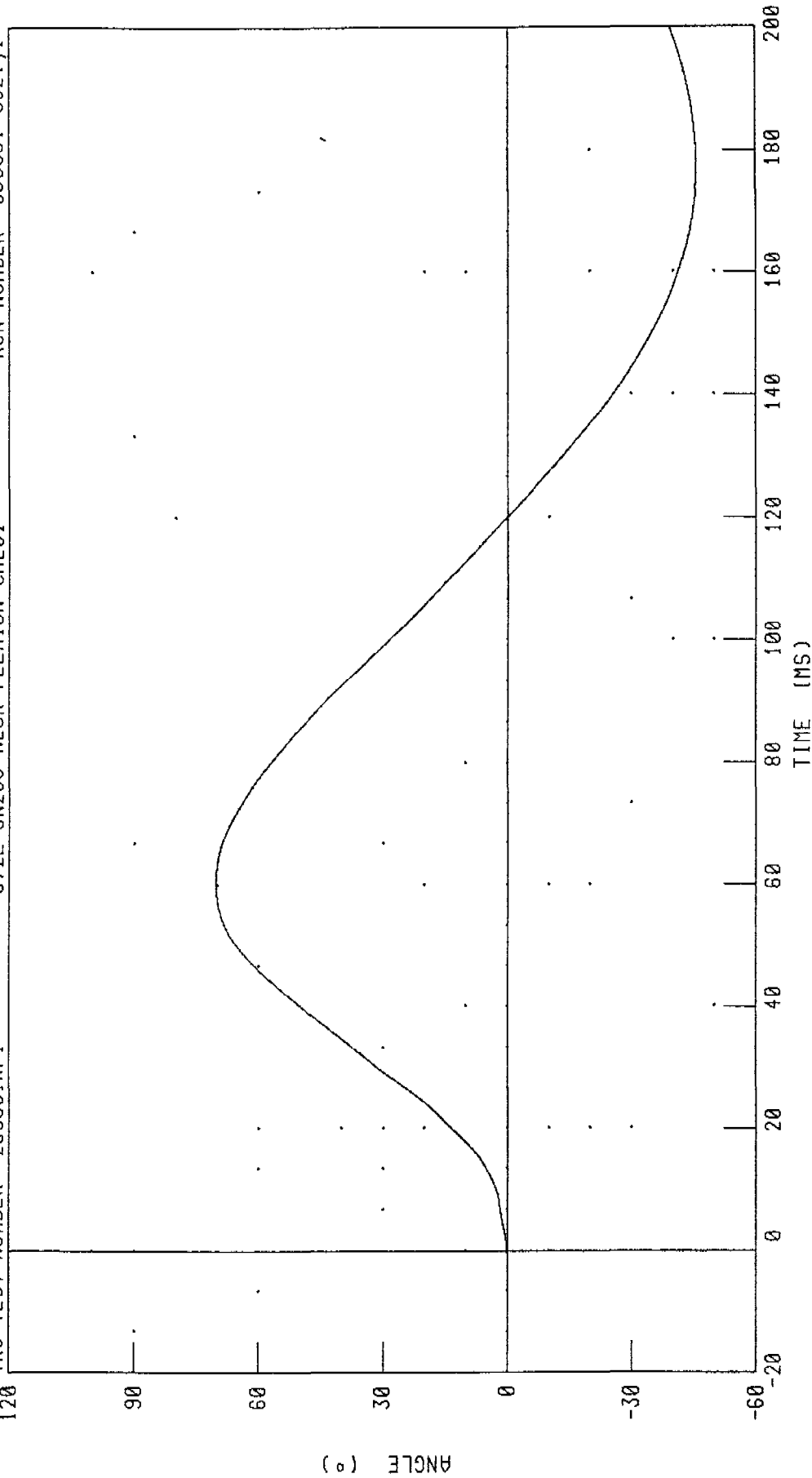
CHANNEL THETA FILTER CH CLASS 60

PEAK DATA 36 23 ° @ 59 76 MS, -25 60 ° @ 178 56 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER 206C01NF1 572E SN206 NECK FLEXION CAL01 RUN NUMBER 090601 0921,1



CHANNEL TOTAL FILTER CH CLASS 60 PEAK DATA 70 31 ° @ 60 24 MS, -45 86 ° @ 177 84 MS

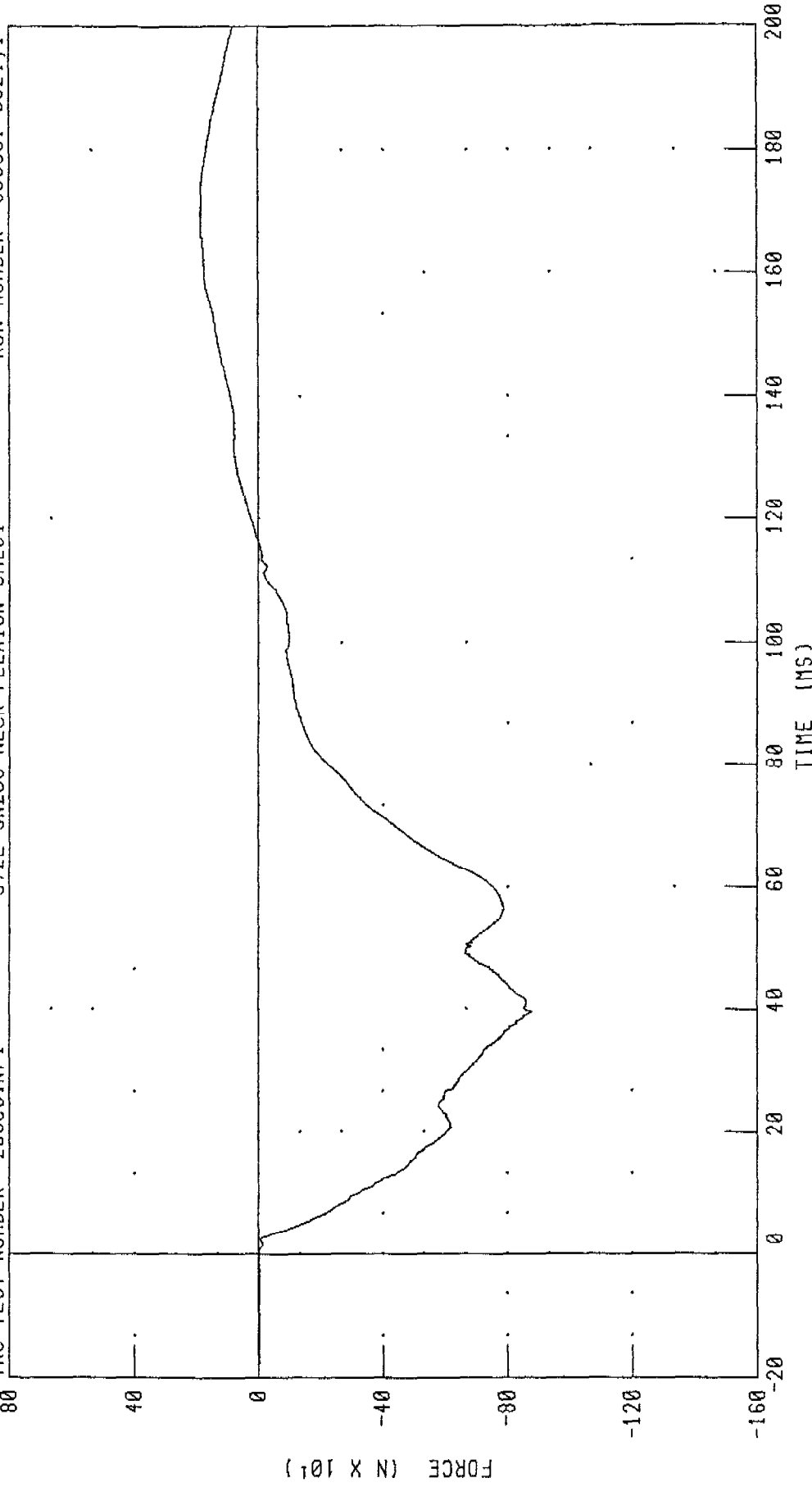
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER 206C01NF1

572E SN206 NECK FLEXION CAL01

RUN NUMBER 090601 0921,1



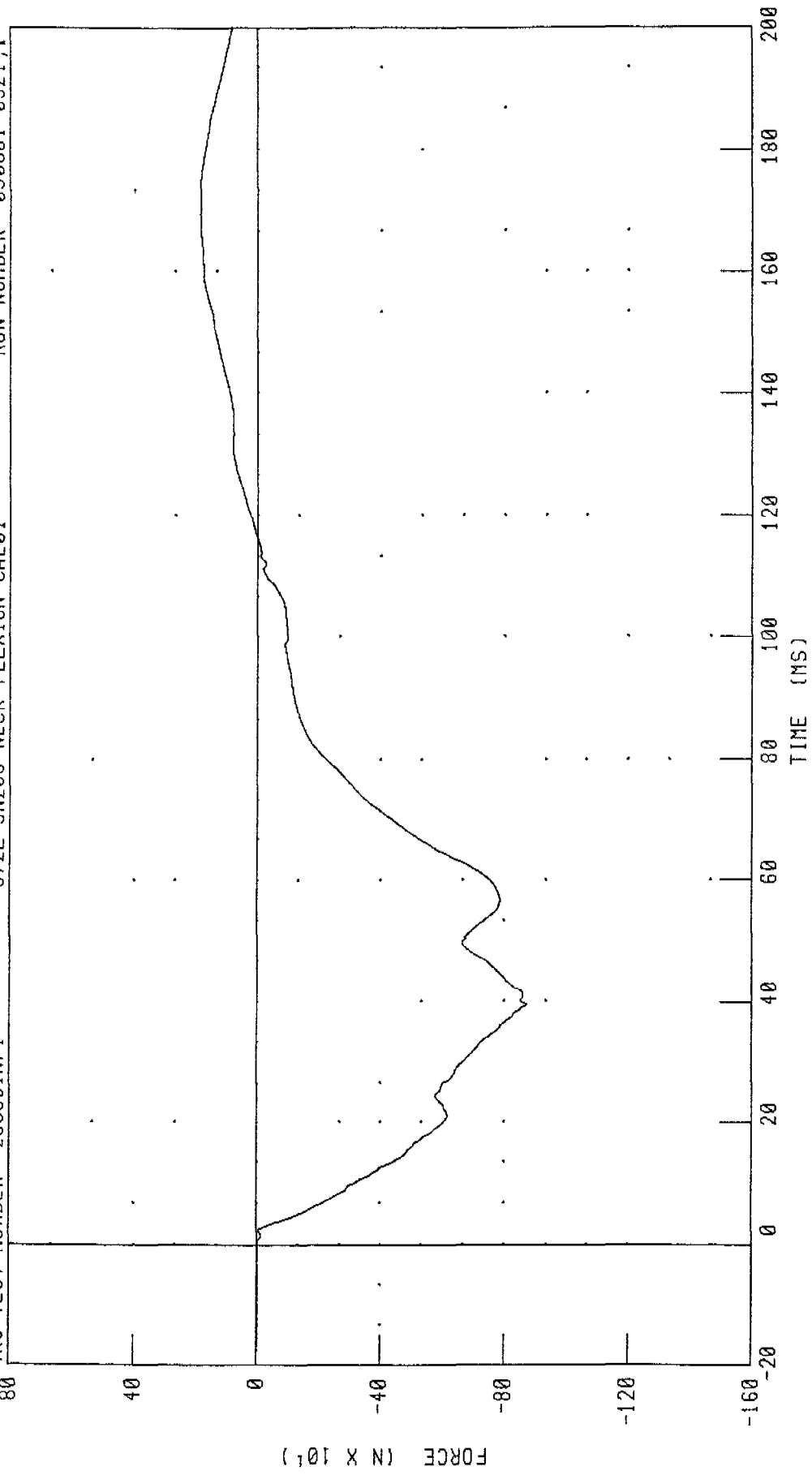
CHANNEL NEKXF FILTER CH CLASS 1000

PEAK DATA 186 54 N 0 169 28 MS, -874 24 N 0 39 52 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS FILTERED FOR USE IN OCCIPITAL MOMENT CALCULATION

TRC TEST NUMBER 206C01NF1 572E SN206 NECK FLEXION CAL01 RUN NUMBER 090601 0921,1



CHANNEL NEKXFC FILTER CH CLASS 600

PEAK DATA 186 14 N @ 169 36 MS, -870 64 N @ 39 52 MS

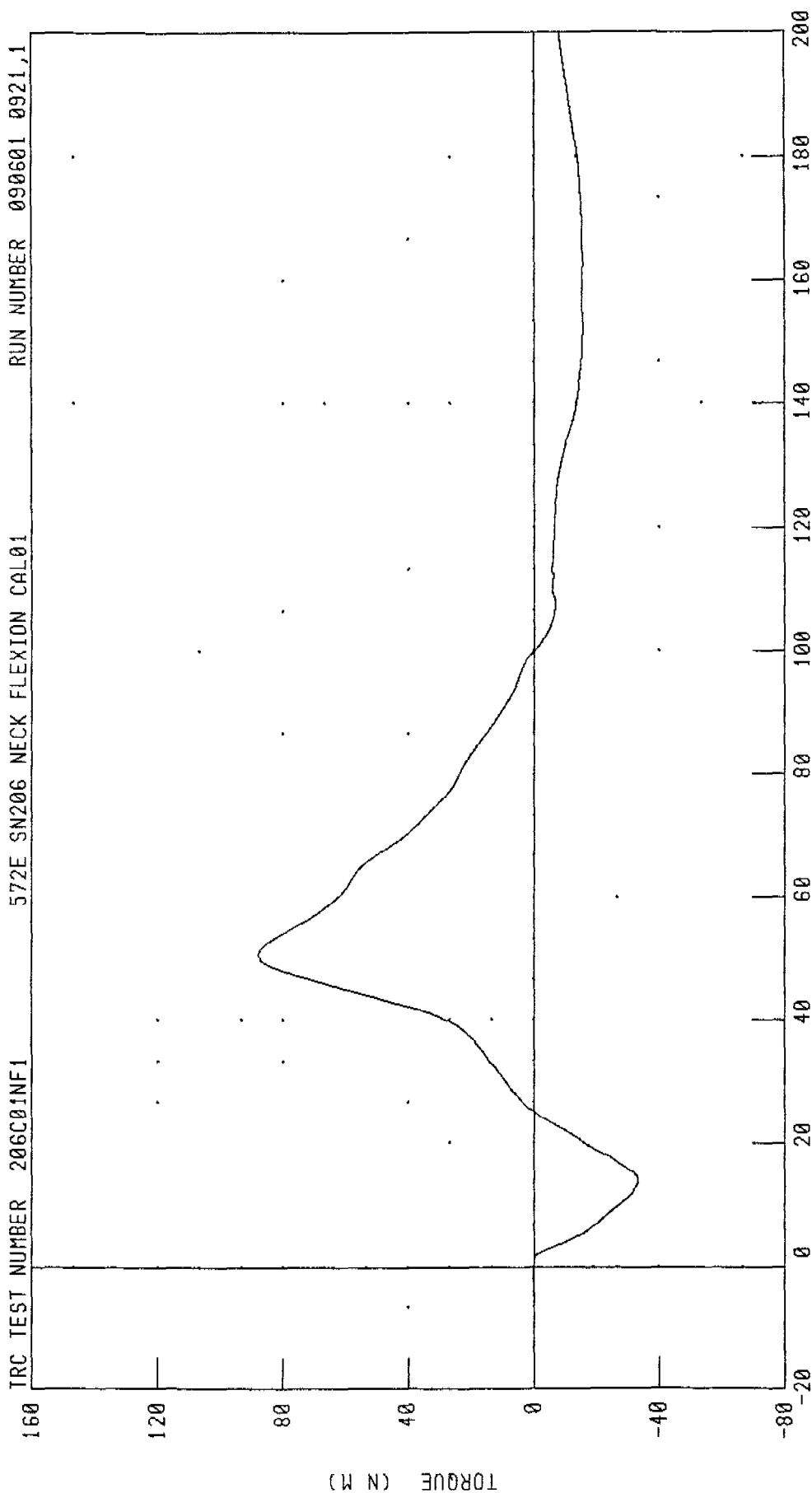
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER 206C01NF1

572E SN206 NECK FLEXION CAL01

RUN NUMBER 090601 0921,1



TIME (MS)

CHANNEL NEKYM FILTER CH CLASS 600

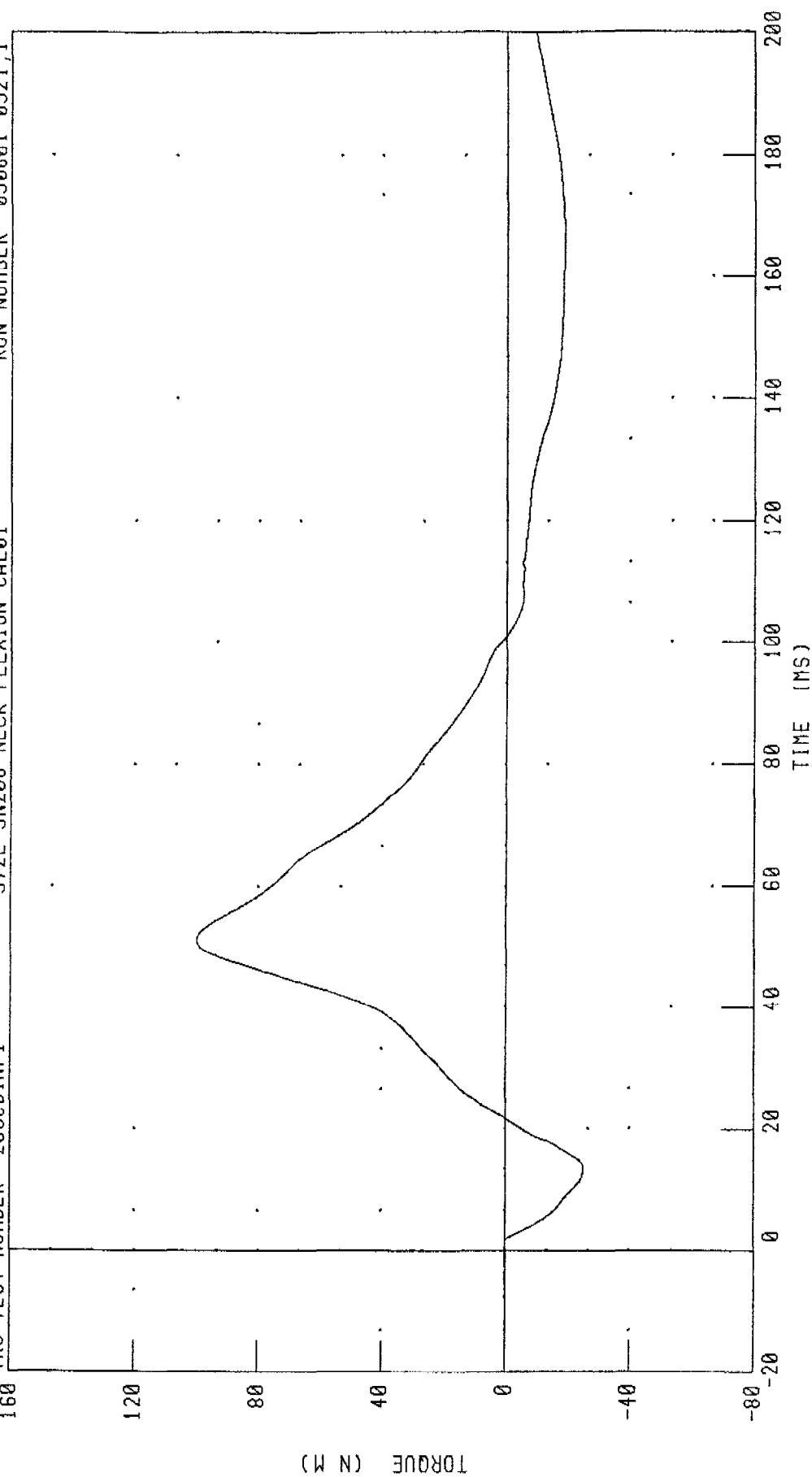
PEAK DATA 87 88 N M 0 50 80 MS, -33 34 N M 0 13 84 MS

PART 572-E HYBRID I/II NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER 206C01NF1

572E SN206 NECK FLEXION CAL01

RUN NUMBER 090601 0921,1



CHANNEL NEKOM FILTER CH CLASS 600

PEAK DATA 99 92 N M @ 51 04 MS, -25 33 N M @ 13 36 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

06-SEP-01

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC.

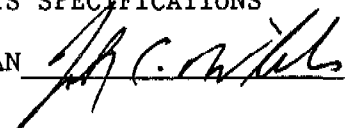
TEST NO: 206C01NE1

572E SN206 NECK EXT CAL01

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	61.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.00 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	17.20 G
	20 MS	14.00 - 19.00 G	17.18 G
	30 MS	11.00 - 16.00 G	15.01 G
MAX PENDULUM G		22 G MAX	17.44 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	14.96 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	43.84 MS
D PLANE	MAX	81 - 106 DEG.	93.85 DEG.
ROTATION	TIME	72 - 82 MS	81.28 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-62.87 NM
	TIME	65 - 79 MS	67.76 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	161.84 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	144.56 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 090601.1045;1

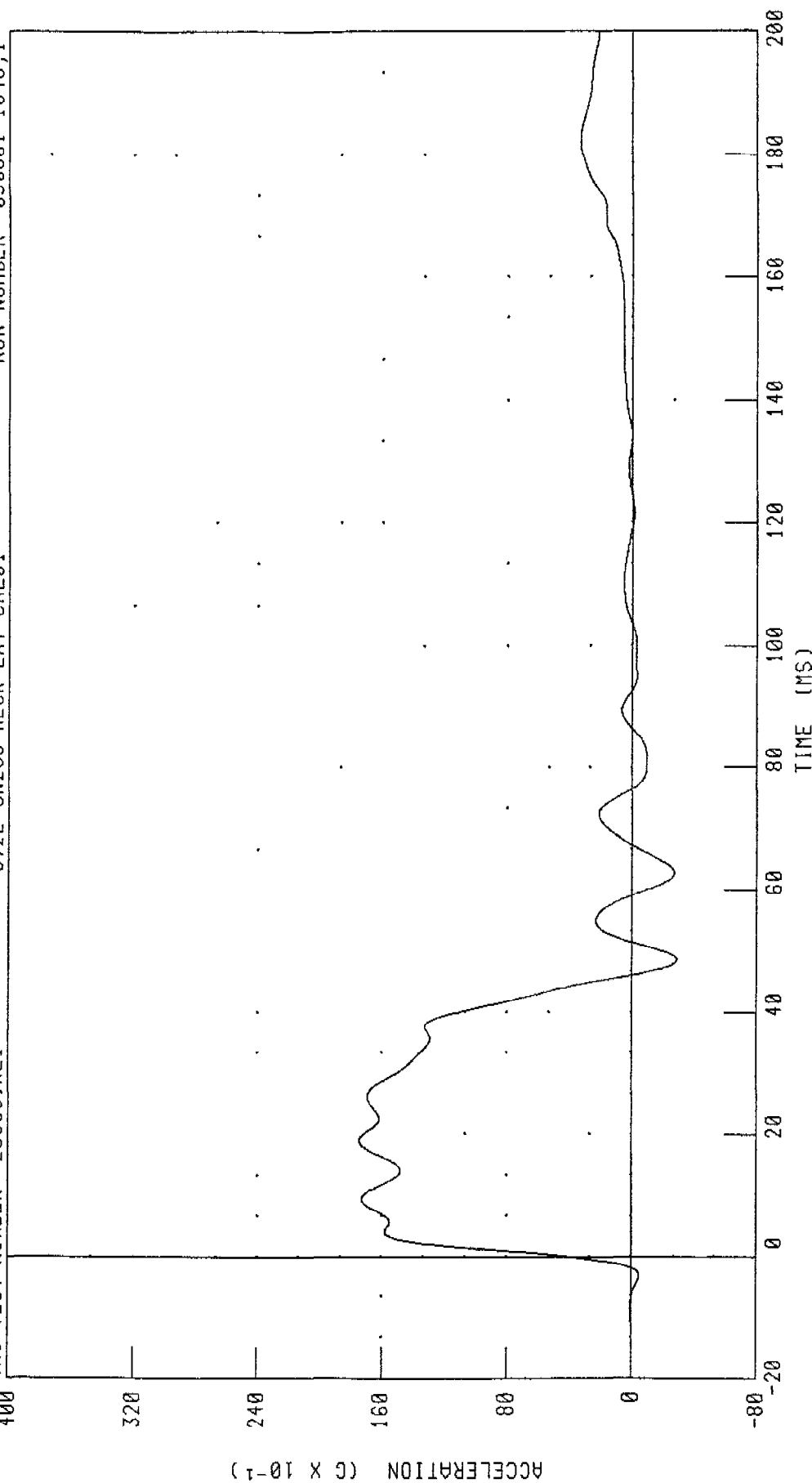
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER 206C01NE1

572E SN206 NECK EXT CAL01

RUN NUMBER 090601 1046,1



CHANNEL PENXC FILTER CH CLASS 60

PEAK DATA 17 44 C 0 19 04 MS, -2 89 C 0 48 64 MS

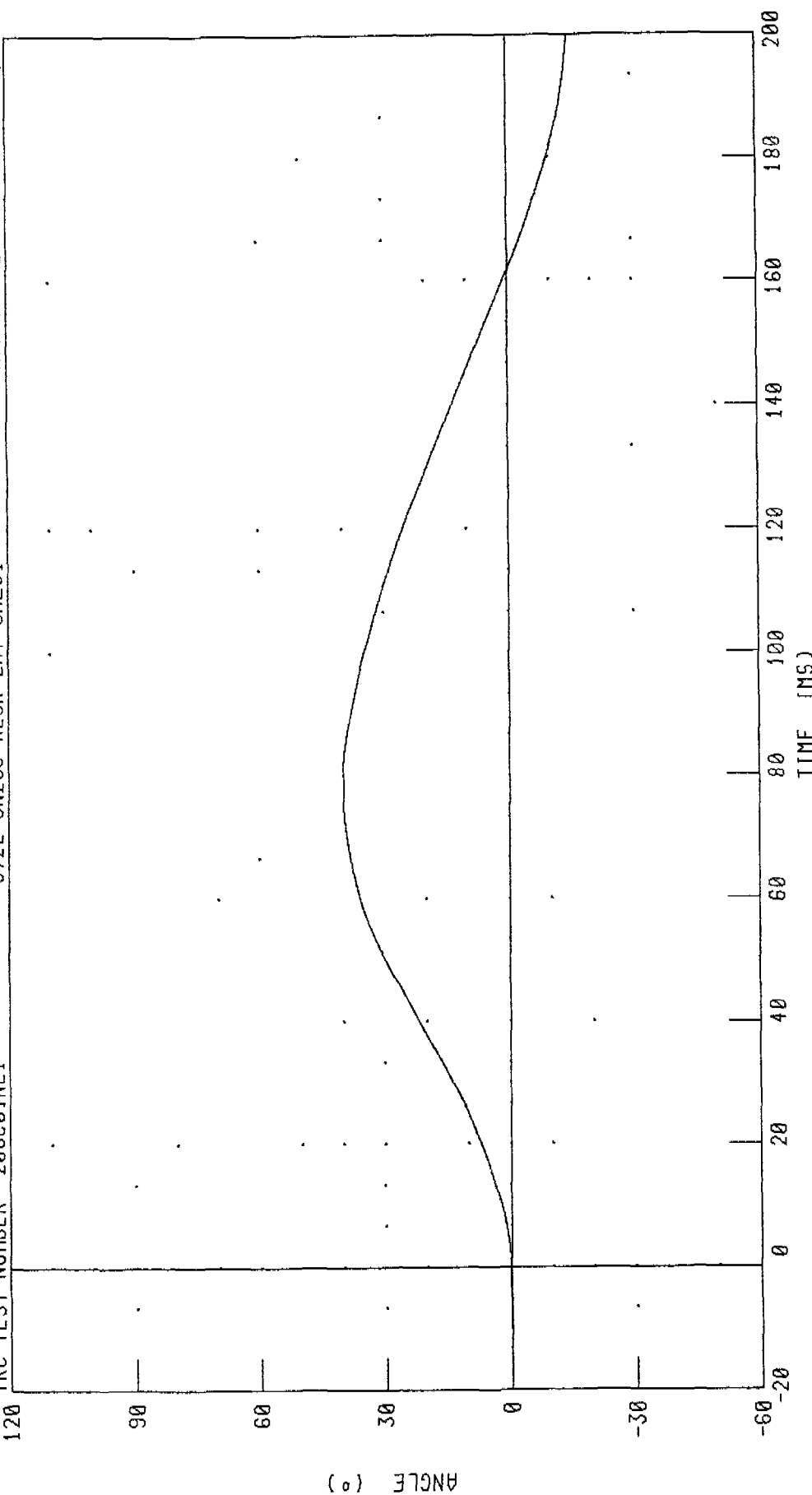
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER 206C01NE1

572E SN206 NECK EXT CAL01

RUN NUMBER 090601 1046,1



PEAK DATA 39 83 ° @ 78 64 MS, -14 83 ° @ 200 00 MS

CHANNEL BETA FILTER CH CLASS 60

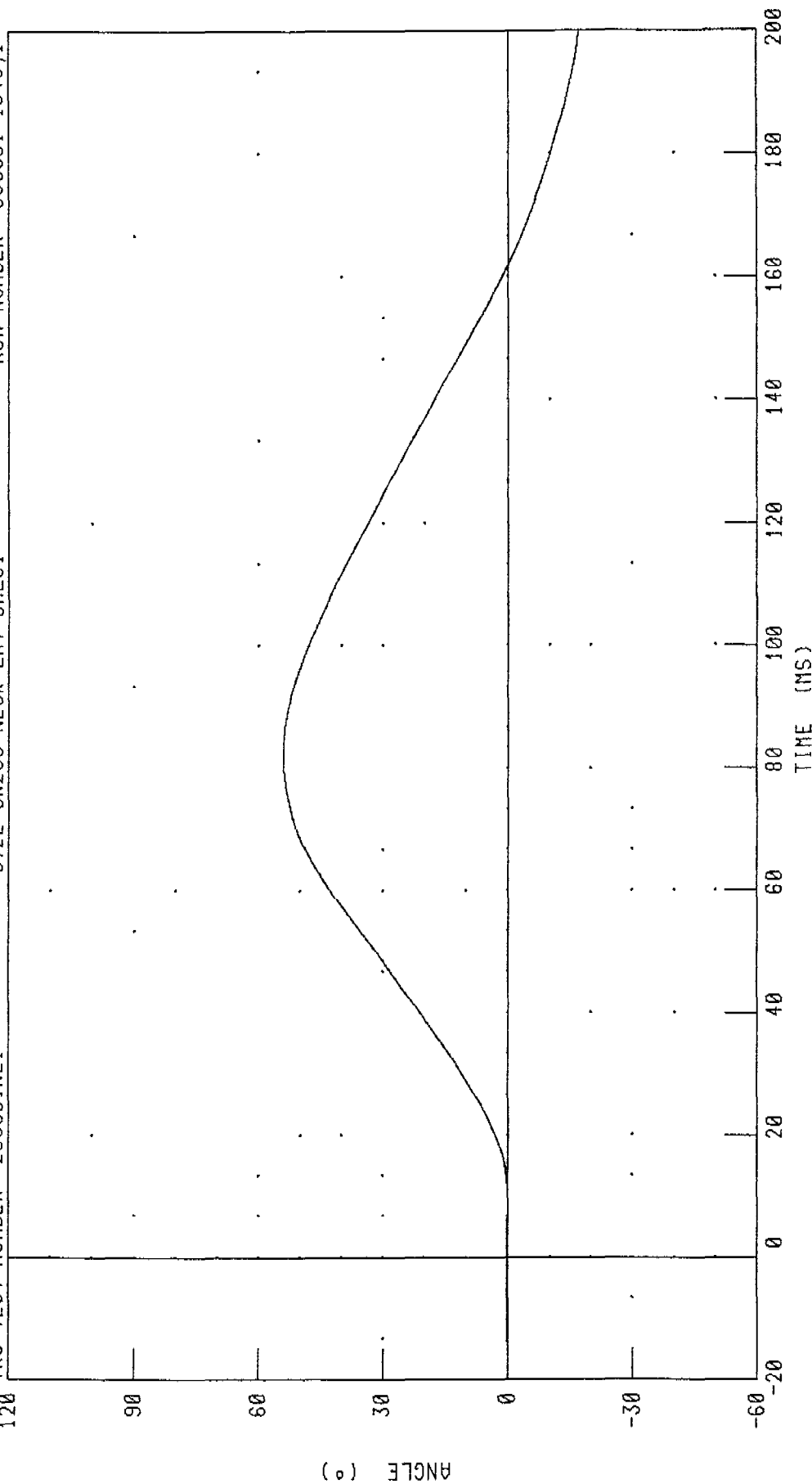
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER 206C0JNE1

572E SN206 NECK EXT CAL01

RUN NUMBER 090601 1046,1



CHANNEL THETA FILTER CH CLASS 60

PEAK DATA 54 12 ° @ 82 40 MS, -17 12 ° @ 200 00 MS

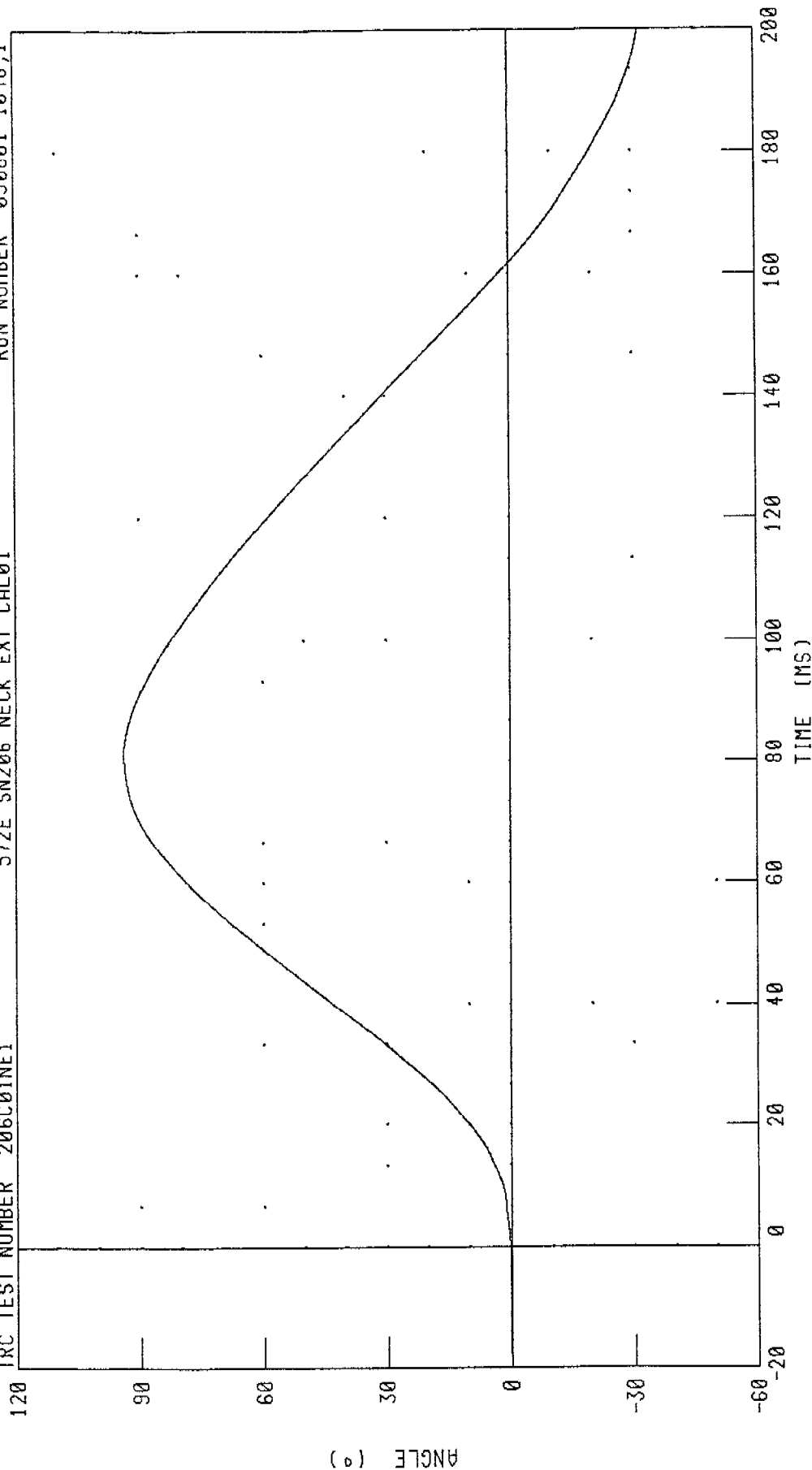
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER 206C01NE1

572E SN206 NECK EXT CAL01

RUN NUMBER 090601 1046,1



CHANNEL TOTAL FILTER CH CLASS 60

PEAK DATA 93 85 ° @ 81 28 MS, -31 95 ° @ 200 00 MS

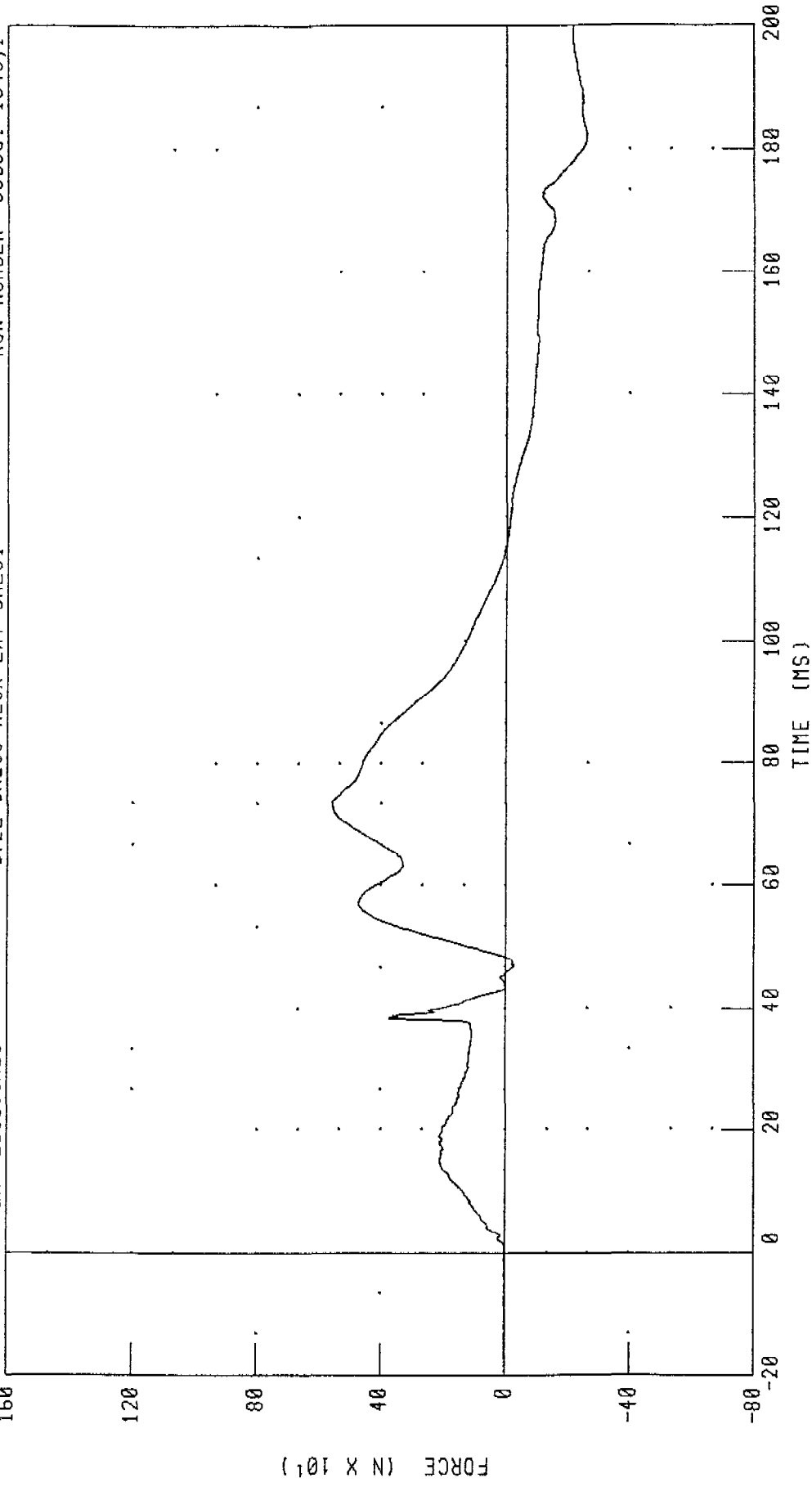
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER 206C01NE1

572E SN206 NECK EXT CAL01

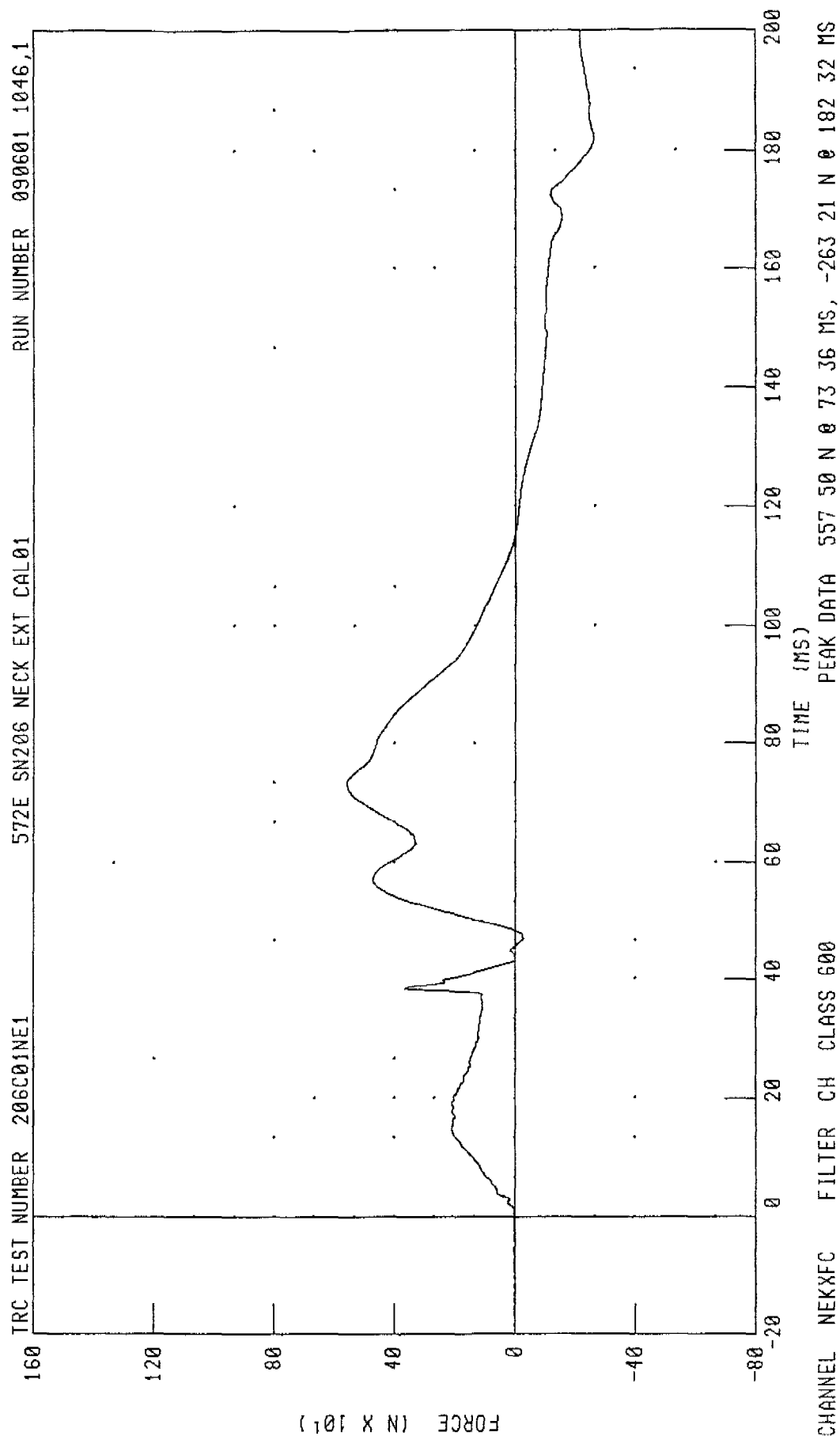
RUN NUMBER 090601 1046,1



CHANNEL NEKF FILTER CH CLASS 1000

PEAK DATA 557 61 N 0 73 12 MS, -263 64 N 0 182 32 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 NECK FORCE X AXIS FILTERED FOR USE IN OCCIPITAL MOMENT CALCULATION



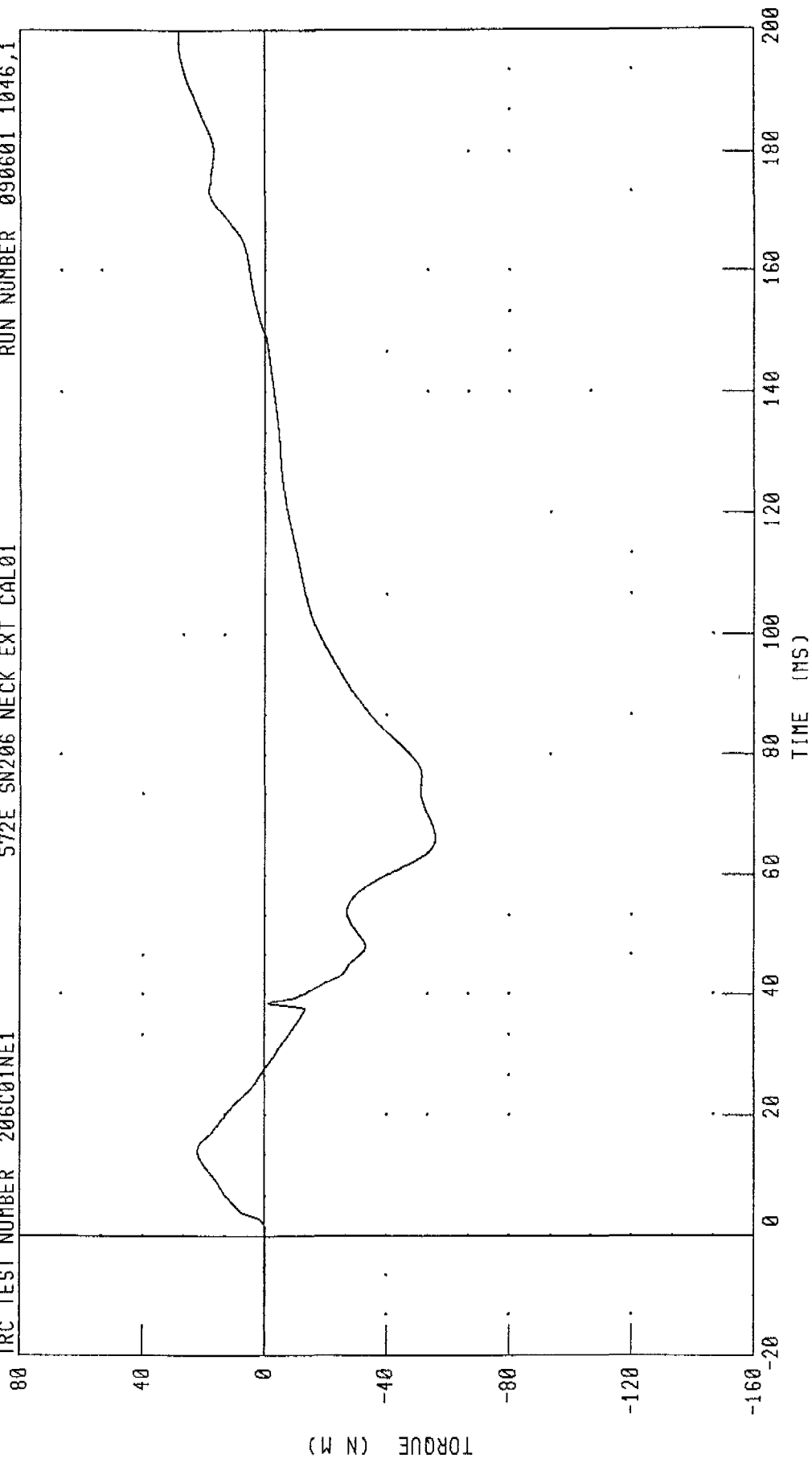
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER 206C01NE1

572E SN206 NECK EXT CAL01

RUN NUMBER 090601 1046,1



CHANNEL NEKYM FILTER CH CLASS 600

PEAK DATA 28 38 N M @ 198 24 MS, -55 69 N M @ 65 84 MS

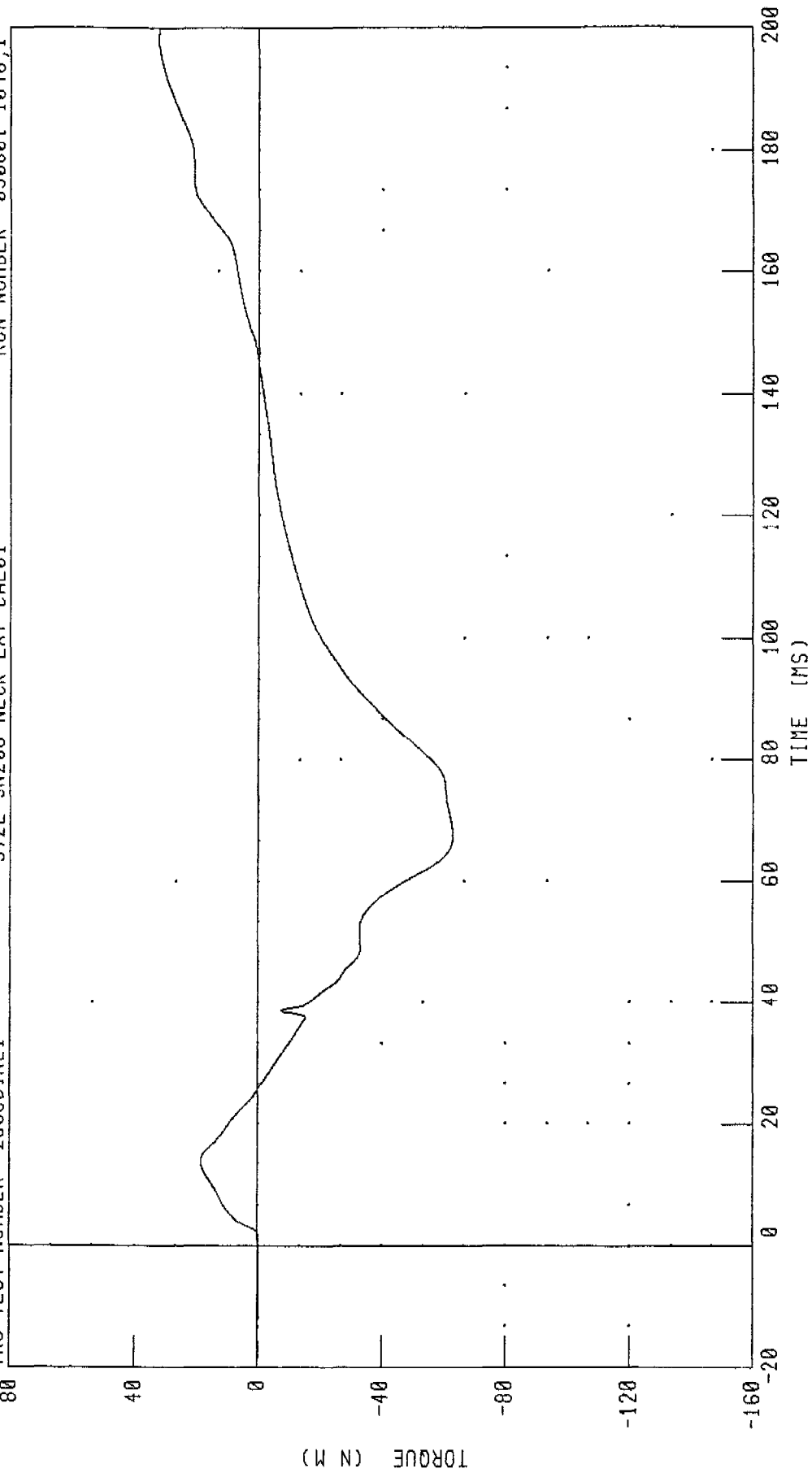
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER 206C01NE1

572E SN206 NECK EXT CAL01

RUN NUMBER 090601 1046,1



CHANNEL NEKOM FILTER CH CLASS 600

PEAK DATA 32 24 N M 0 198 24 MS, -62 87 N M 0 67 76 MS

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III 50th

07-SEP-01

TRC INC.

TEST NO: 206C01TH1

572E SN206 H.S.THORAX CAL01

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	63.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.59 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	68.2 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5712. N
INTERNAL HYSTERESIS	69% - 85%	71.1%

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 090701.1306;1

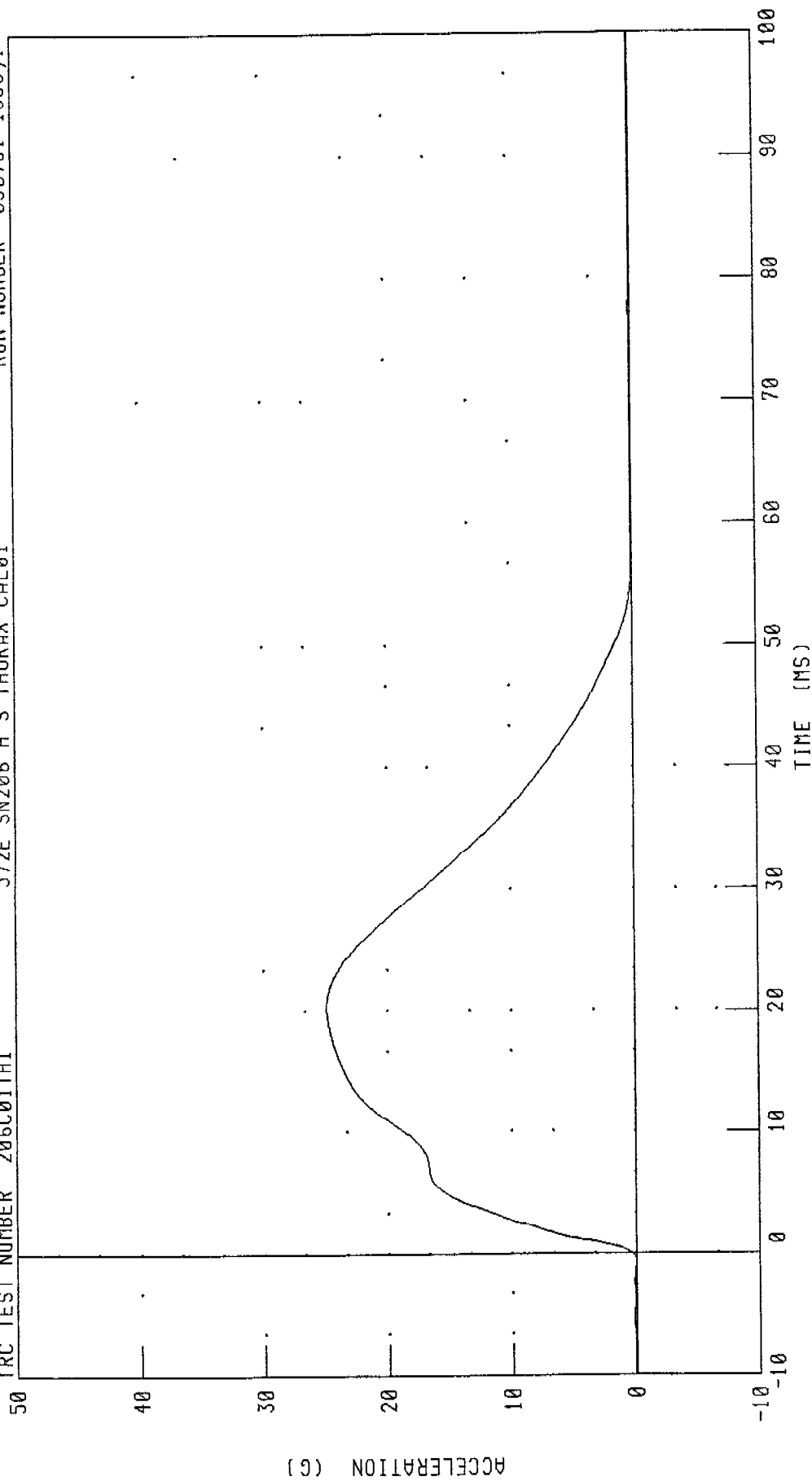
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER 206C01TH1

572E SN206 H S THORAX CAL01

RUN NUMBER 090701 1306,1



CHANNEL PENXG FILTER CH CLASS 180

PEAK DATA 24 94 G 0 20 32 MS, -0 02 G 0 -0 64 MS

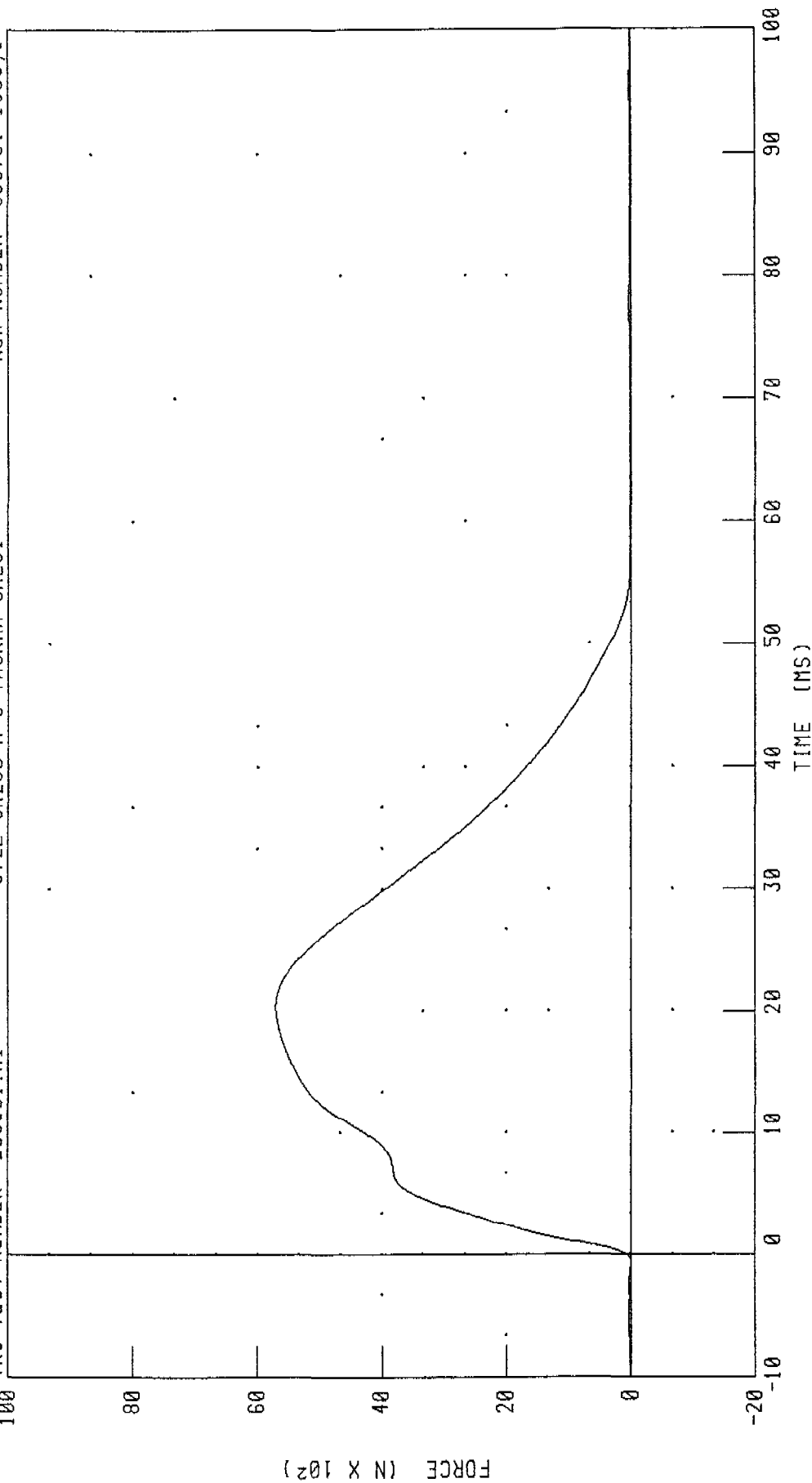
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER 206C01TH1

572E SN206 H S THORAX CAL01

RUN NUMBER 090701 1306,1



CHANNEL PENXF FILTER CH CLASS 180

TIME (MS)

PEAK DATA 5712 25 N 0 20 32 MS, -5 08 N 0 -0 64 MS

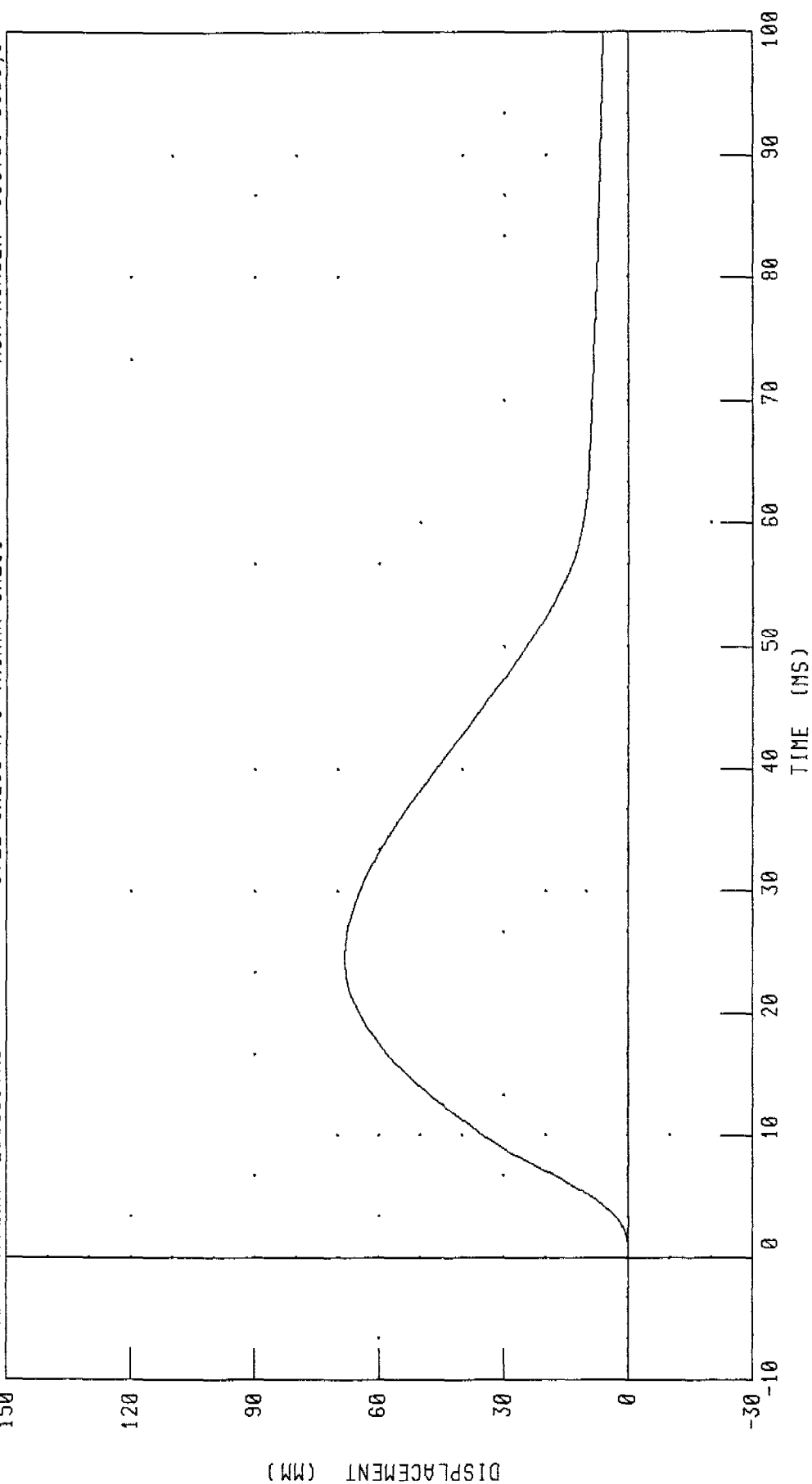
PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

TRC TEST NUMBER 206C01TH1

572E SN206 H S THORAX CAL01

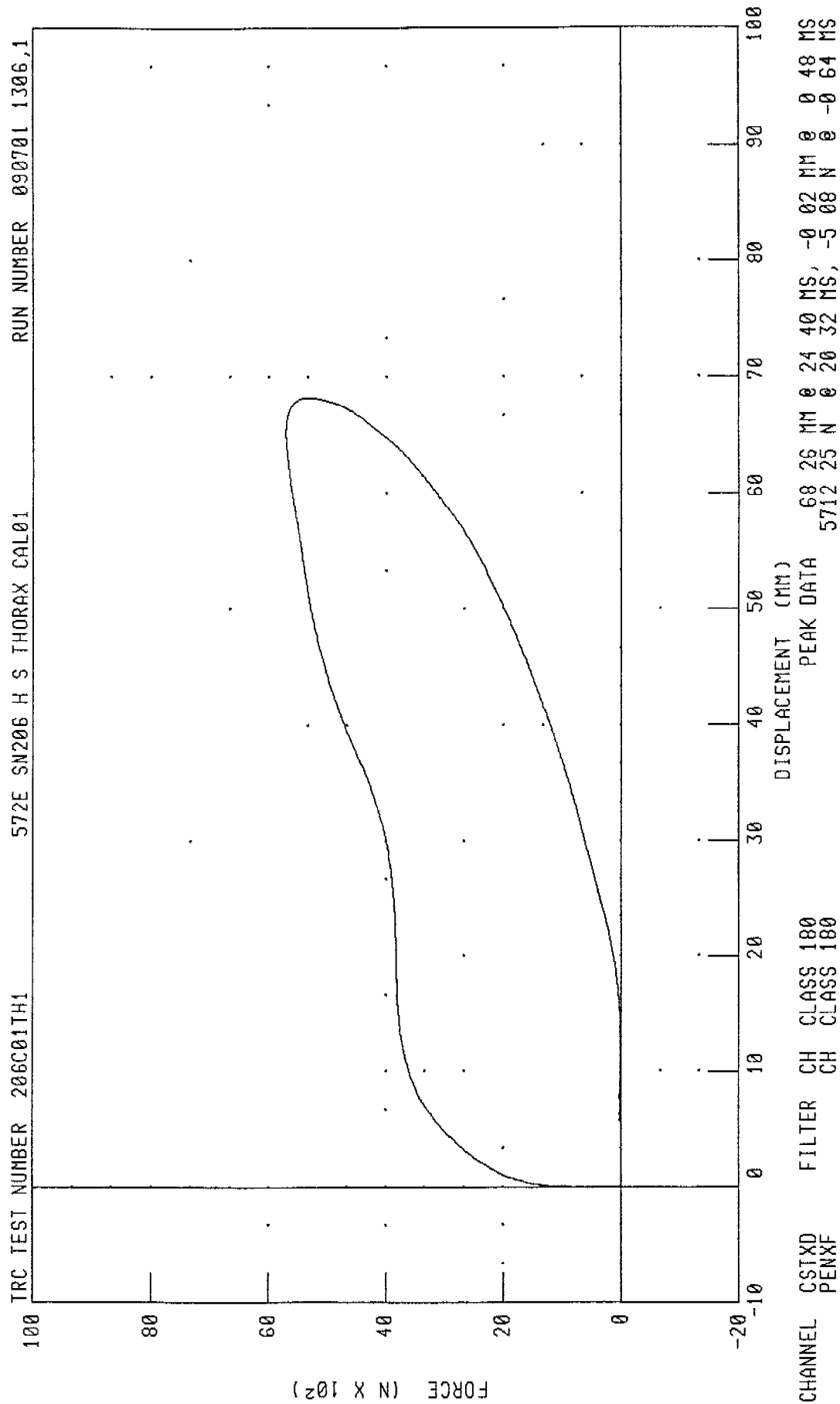
RUN NUMBER 090701 1306,1



CHANNEL CSTXD FILTER CH CLASS 180

PEAK DATA 68 26 MM @ 24 40 MS, -0 02 MM @ 0 48 MS

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



Transportation Research Center Inc

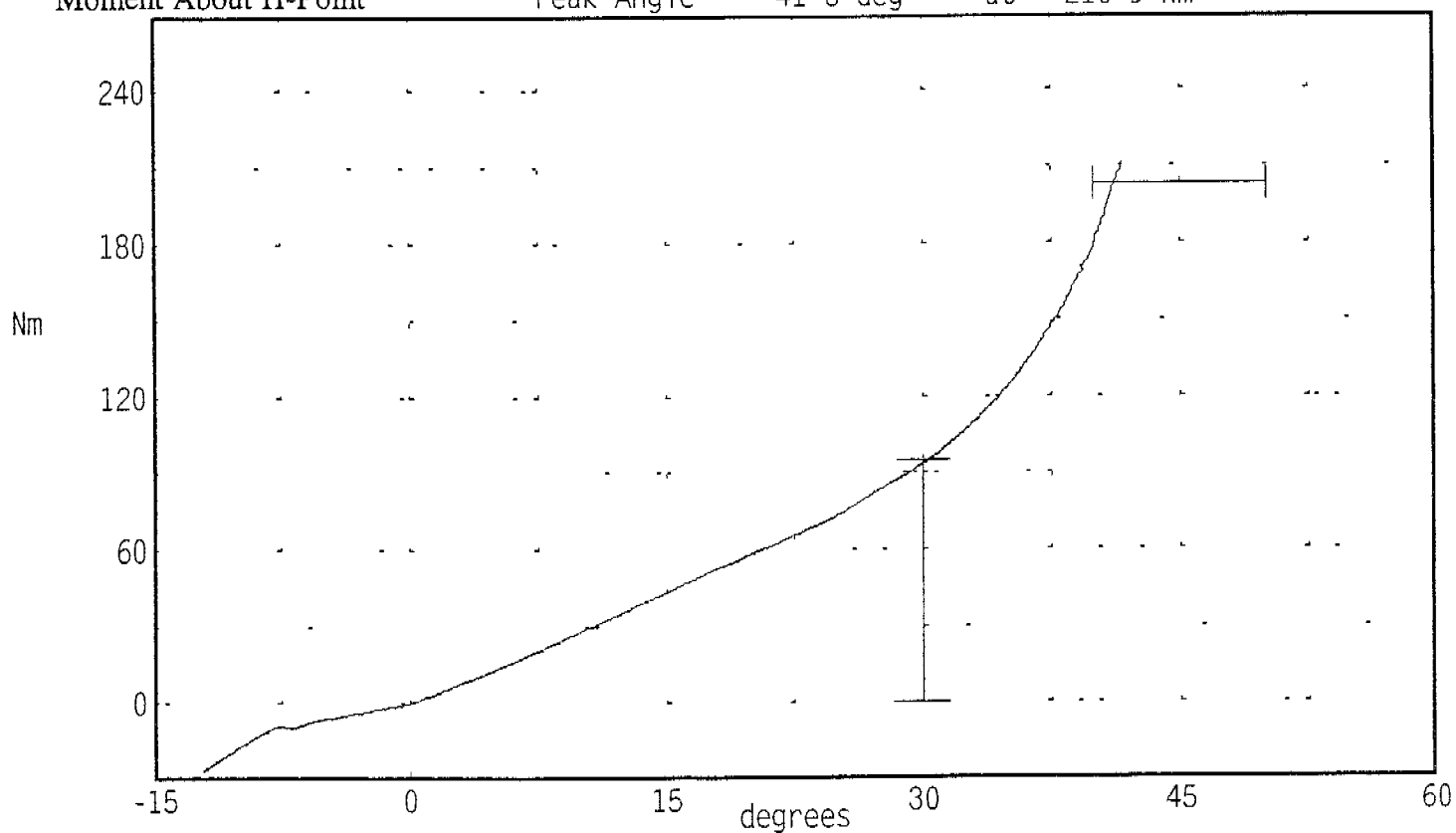
Hybrid III Hip Range of Motion

Serial Number: 206L
Test Number: 206C01
Comments:

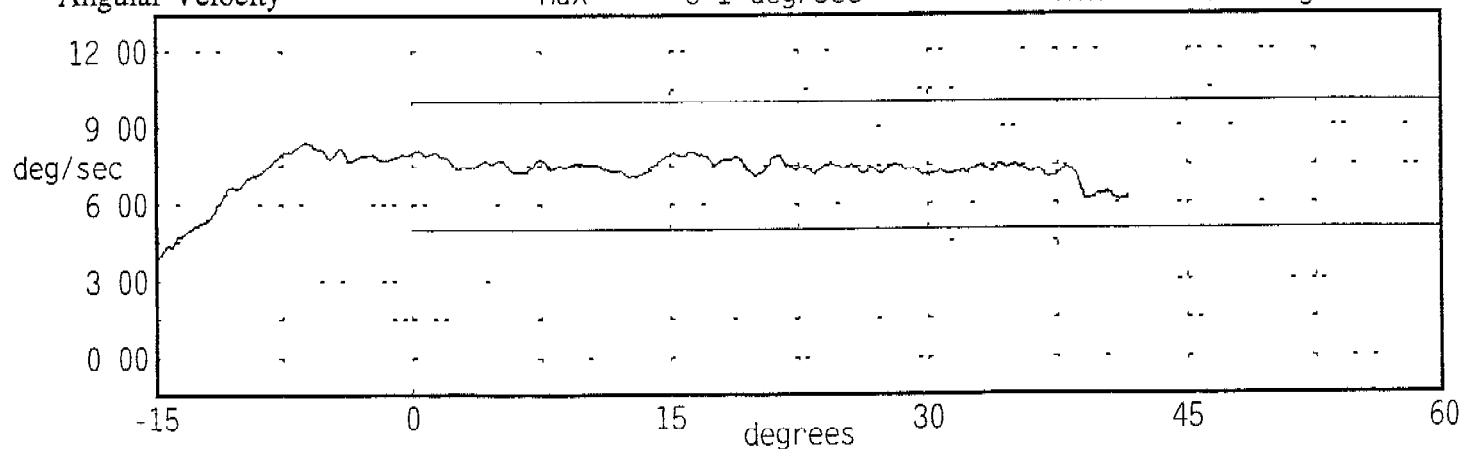
Date: 09/06/2001
Time: 10:02

TEST PARAMETER	SPECIFICATION	TEST RESULTS	
Temperature	18.9 - 25.6	21.7 °C	Pass
Humidity	10 - 70	59 %	Pass
Moment at 30 deg	<= 94.9	93.9 Nm	Pass
Angle at 203 Nm	40.0 - 50.0	41.2 deg	Pass
Average Velocity	5.0 - 10.0	7.4 deg/sec	Pass

Moment About H-Point
Peak Moment 210.9 Nm at 41.6 deg
Peak Angle 41.6 deg at 210.9 Nm



Angular Velocity Max 8.1 deg/sec Min 6.1 deg/sec



Transportation Research Center Inc

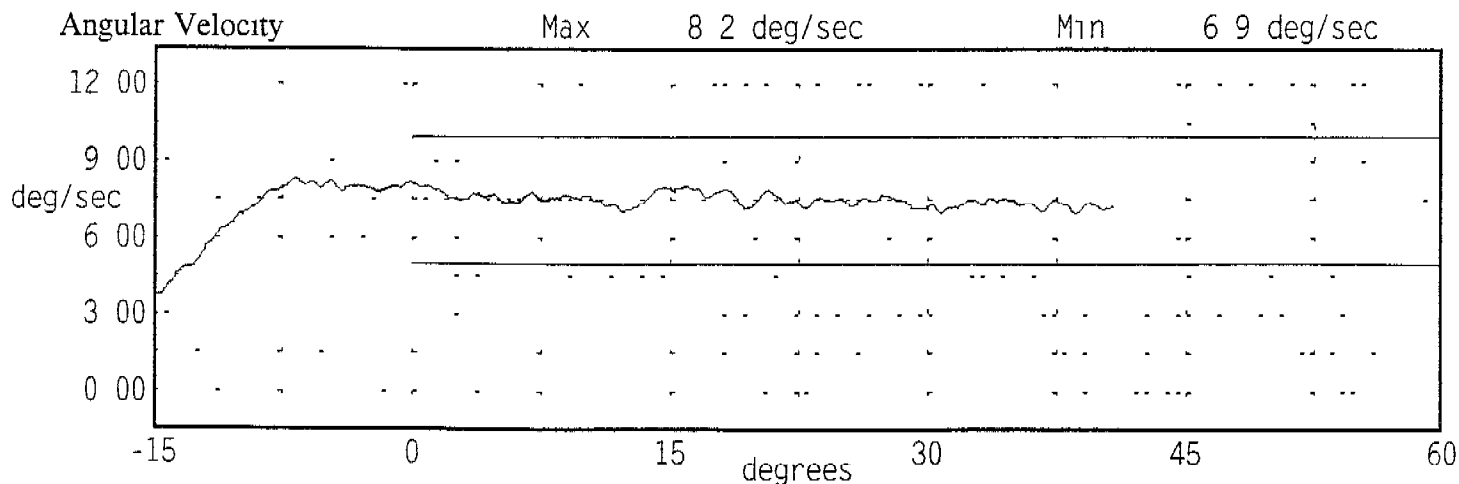
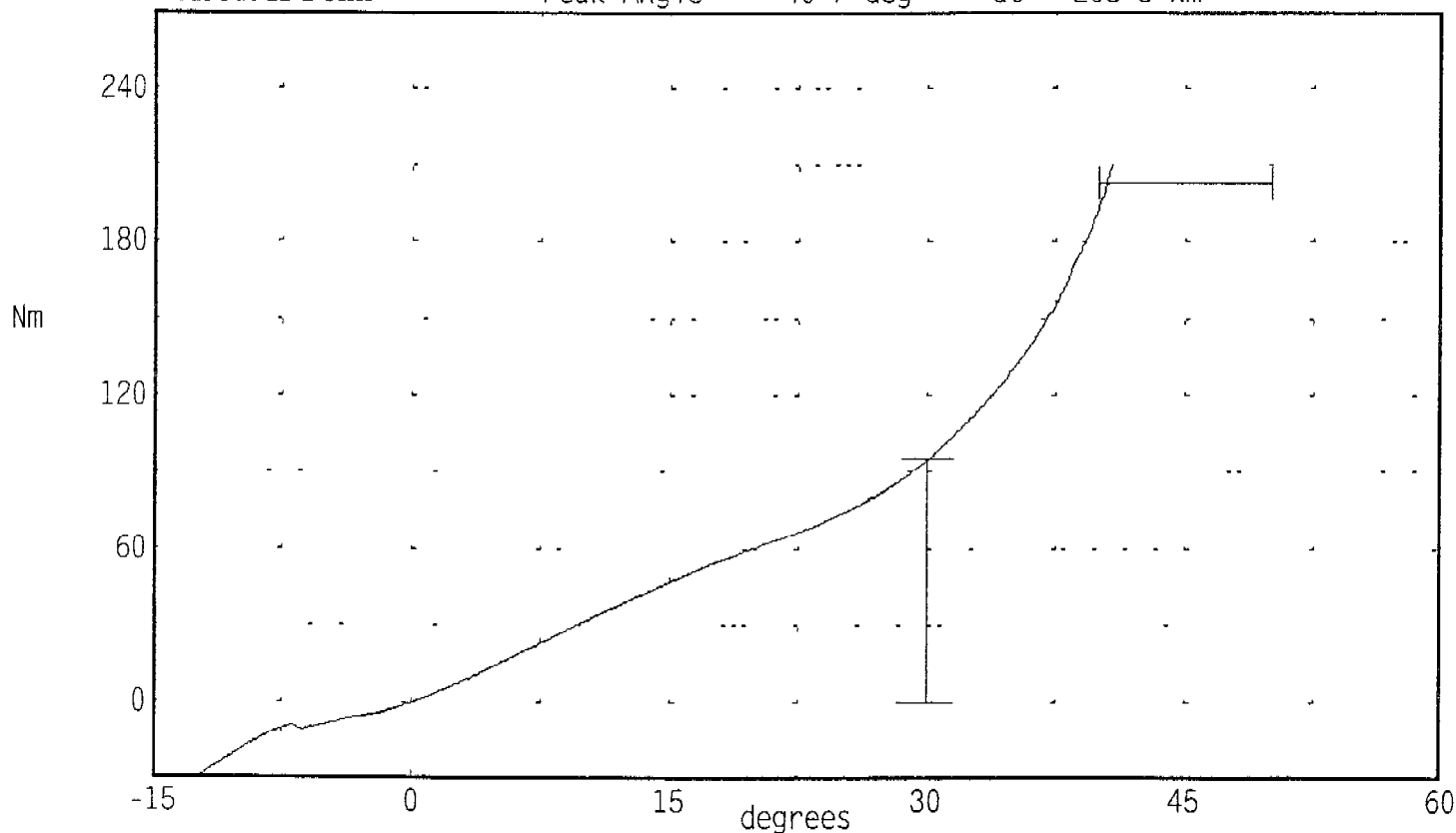
Hybrid III Hip Range of Motion

Serial Number: 206R
Test Number: 206C01
Comments:

Date: 09/06/2001
Time: 09:19

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.7 °C Pass
Humidity	10 - 70	59 % Pass
Moment at 30 deg	<= 94.9	94.7 Nm Pass
Angle at 203 Nm	40.0 - 50.0	40.5 deg Pass
Average Velocity	5.0 - 10.0	7.5 deg/sec Pass

Moment About H-Point
Peak Moment 210.2 Nm at 40.7 deg
Peak Angle 40.7 deg at 208.8 Nm



TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 50th

05-SEP-01

TRC INC.

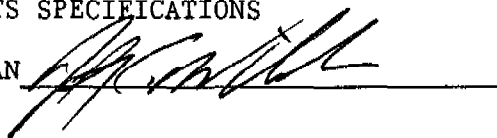
TEST NO: 206C01LK2

572E SN206 LEFT KNEE CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	60.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.12 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5109.4 N

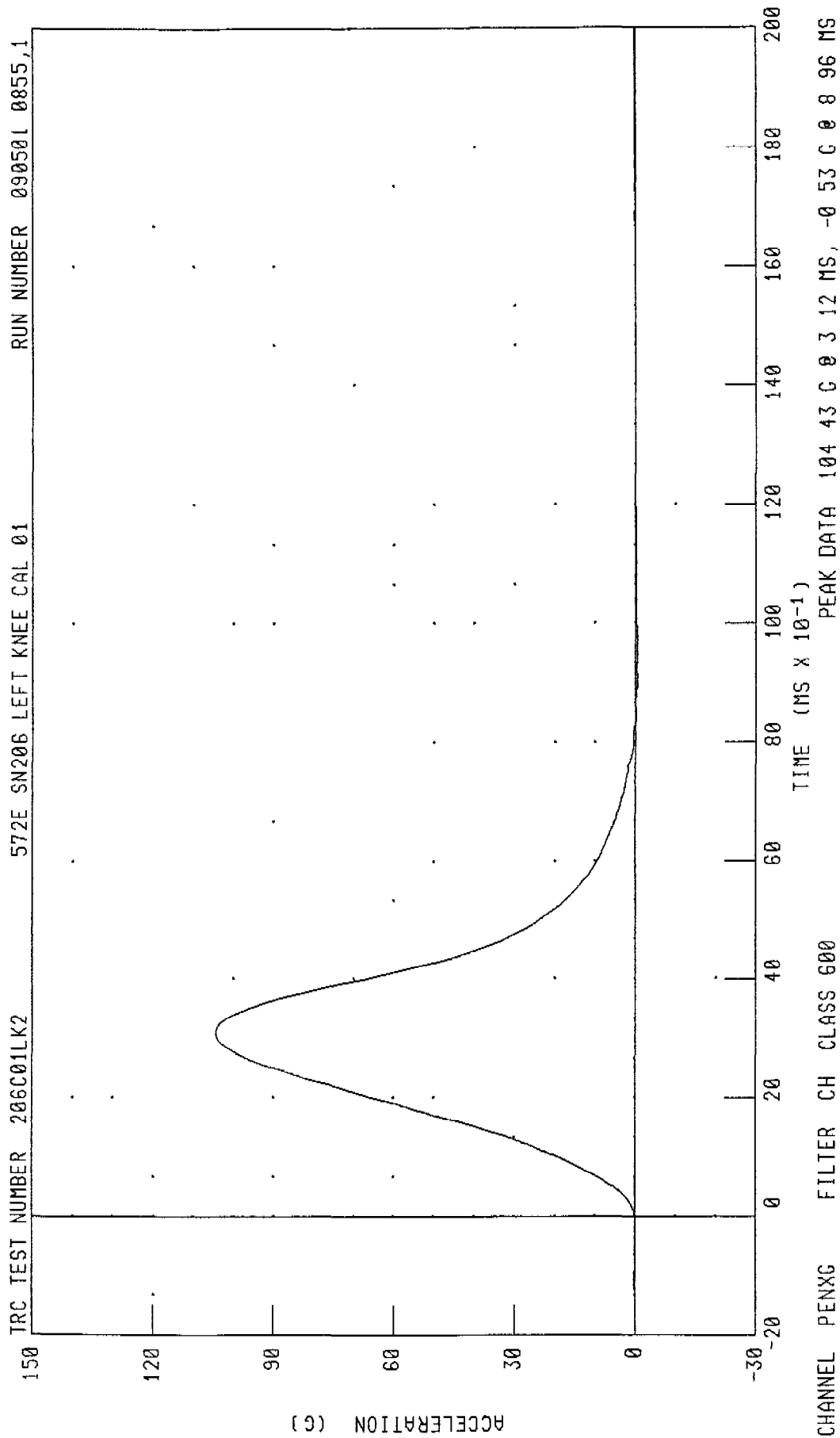
TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 090501.0855;1

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



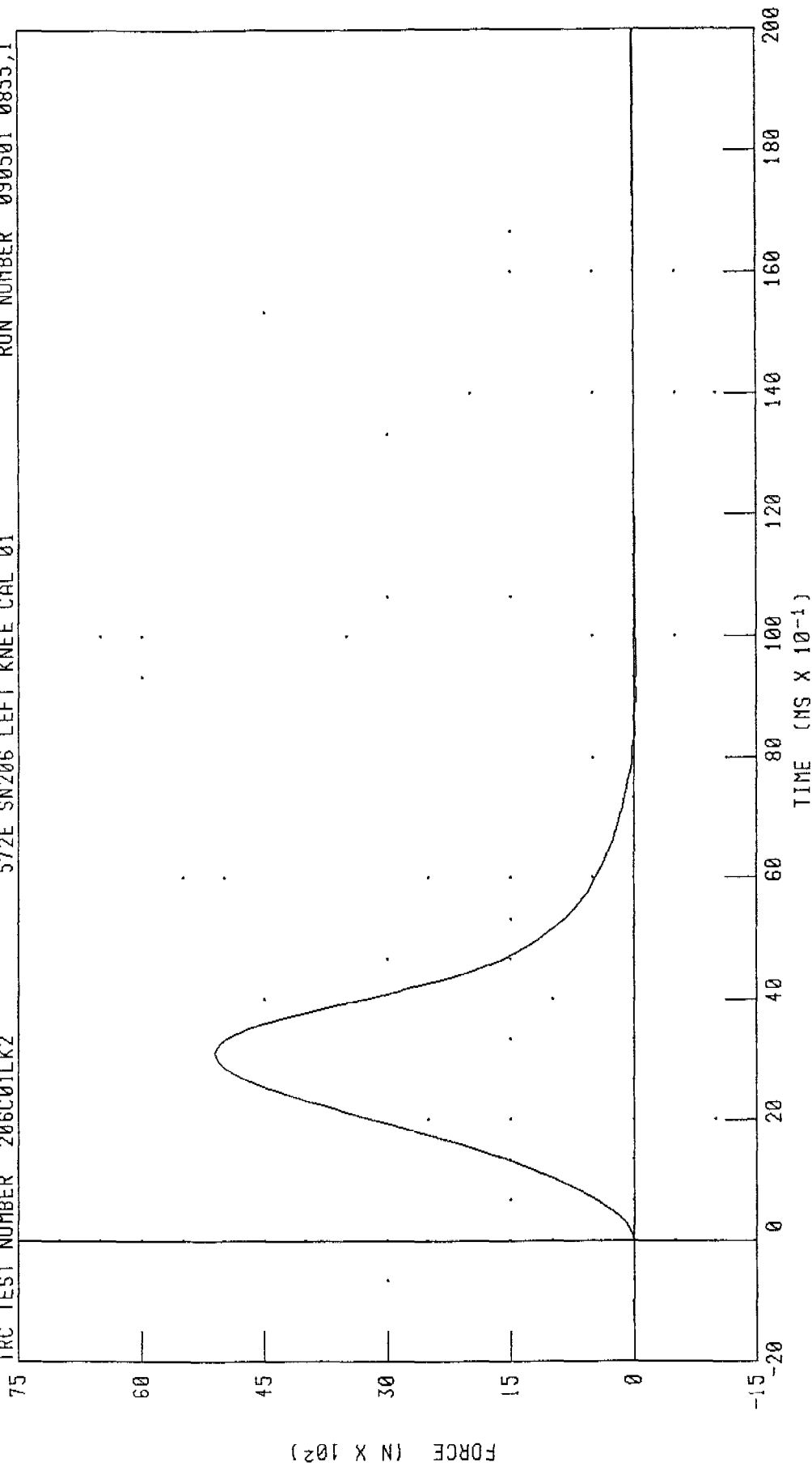
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND)

TRC TEST NUMBER 206C01LK2

572E SN206 LEFT KNEE CAL 01

RUN NUMBER 090501 0855,1



CHANNEL PENXF FILTER CH CLASS 600

TIME (NS X 10⁻¹)

PEAK DATA 5109 49 N 0 3 12 MS, -25 89 N 0 8 96 MS

TRANSPORTATION RESEARCH CENTER INC.

KNEE SLIDER TEST

HYBRID III 50th

04-SEP-01

LEFT KNEE
TRC INC.

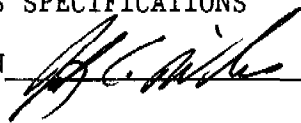
TEST NO: 206C01LS1

572E SN206 LEFT SLIDER CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	63.0 %
PENDULUM VELOCITY	2.70-2.80 M/S	2.77 M/S
FORCE AT 10.0 MM DISPLACEMENT	1259 - 1721 N	1443. N
FORCE AT 18.0 MM DISPLACEMENT	2268 - 3096 N	2689. N

TEST MEETS SPECIFICATIONS

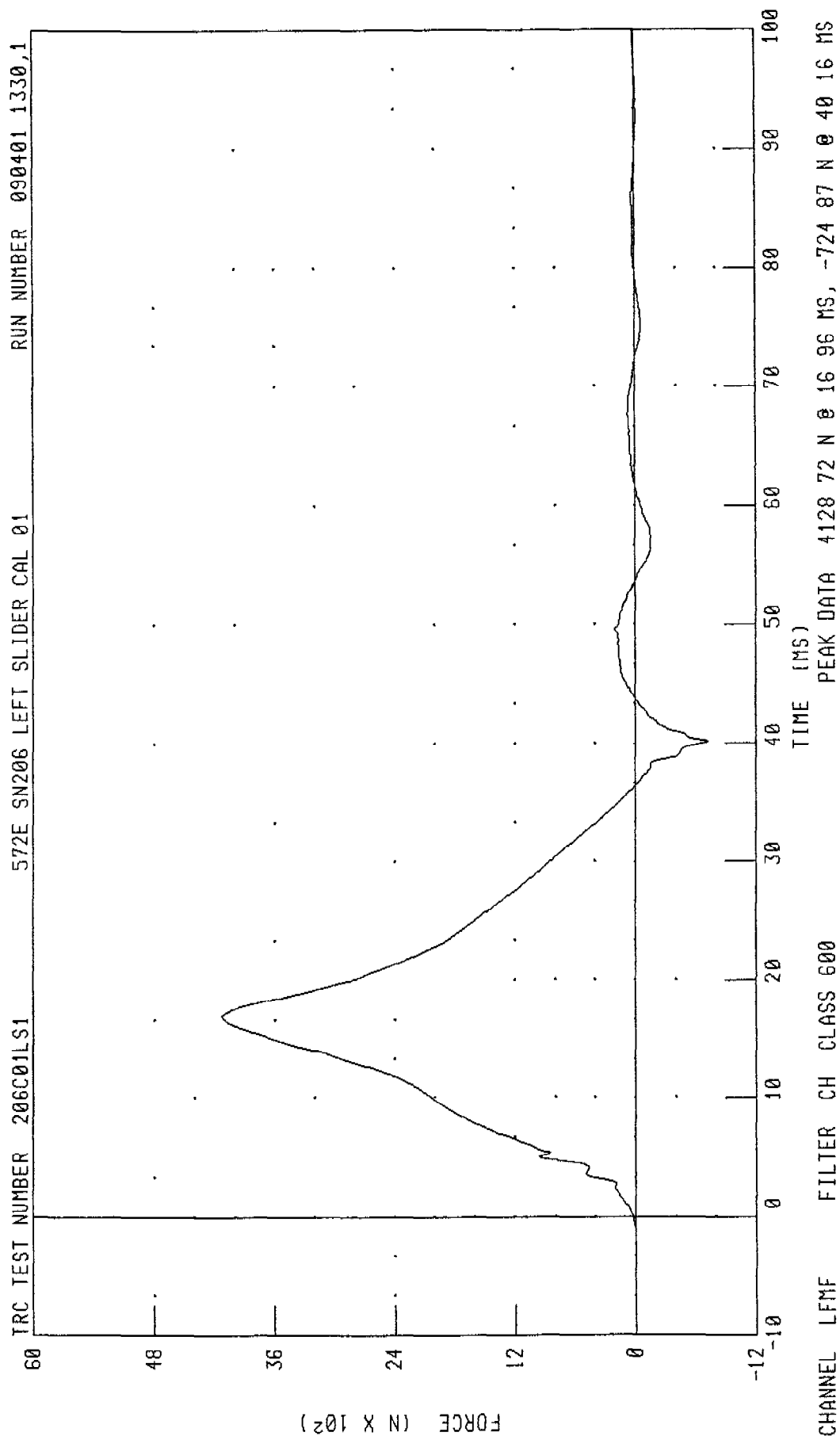
TECHNICIAN



RUN NUMBER: 090401.1330;1

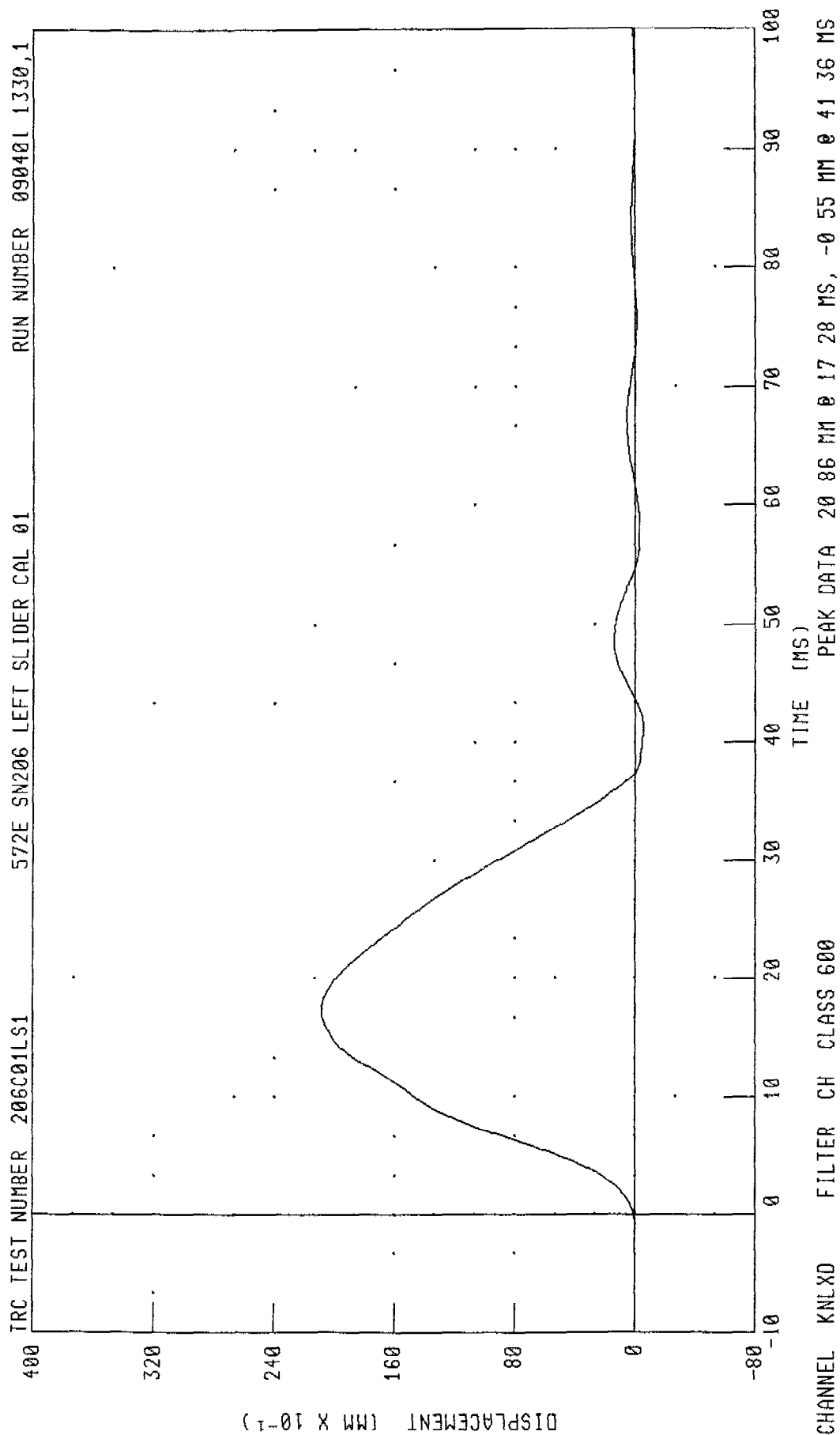
PART 572-E HYBRID 111 LEFT KNEE SLIDER CALIBRATION

LEFT FEMUR FORCE



PART 572-E HYBRID III LEFT KNEE SLIDER CALIBRATION

LEFT KNEE DISPLACEMENT

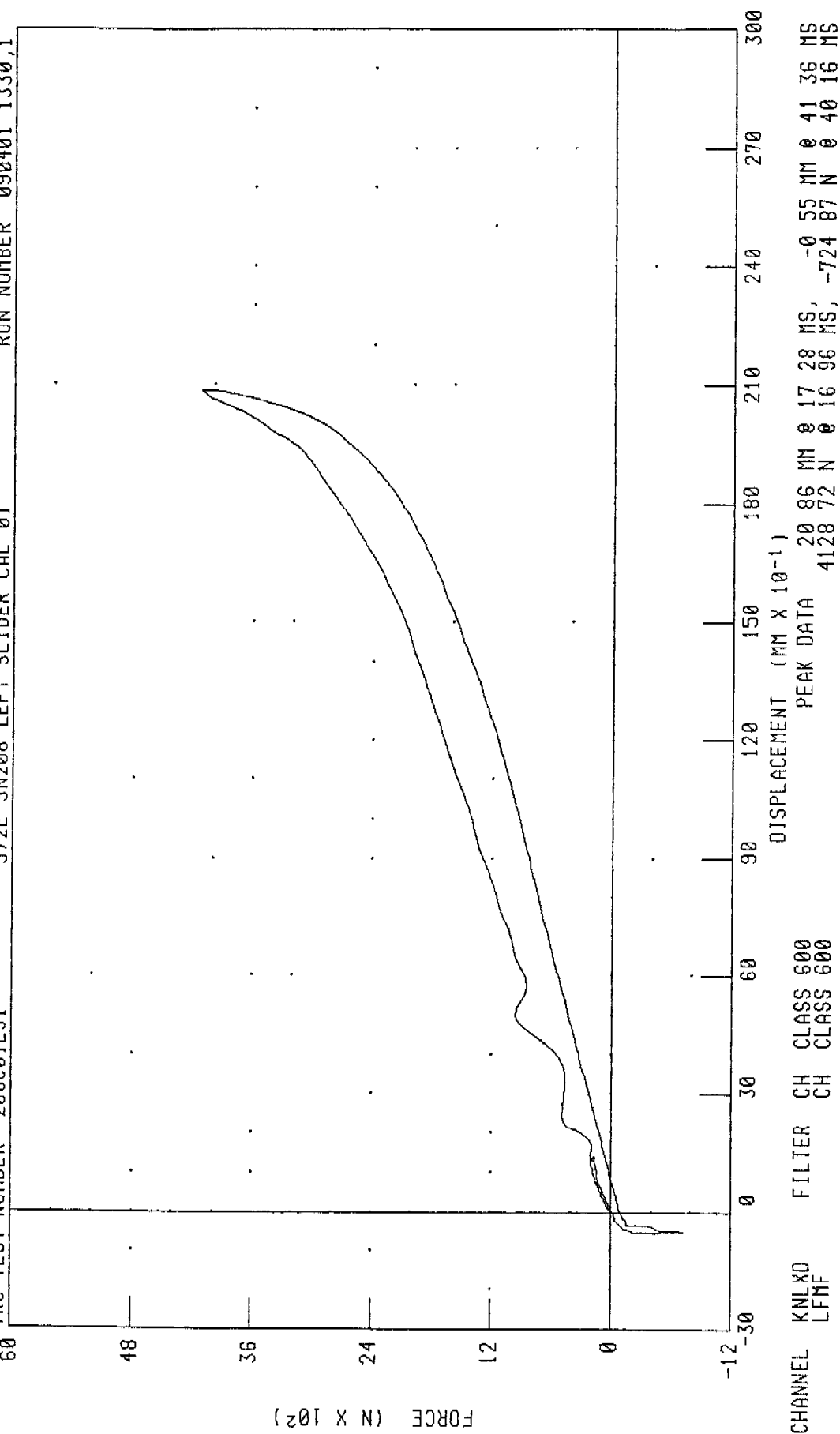


PART 572-E HYBRID III LEFT KNEE SLIDER CALIBRATION
LEFT KNEE DISPLACEMENT VS FEMUR FORCE

TRC TEST NUMBER 206C01LS1

572E SN206 LEFT SLIDER CAL 01

RUN NUMBER 090401 1330,1



TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 50th

05-SEP-01

TRC INC.

TEST NO: 206C01RK1

572E SN206 RIGHT KNEE CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	60.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.12 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5652.4 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

[Signature]

RUN NUMBER: 090501.0904;1

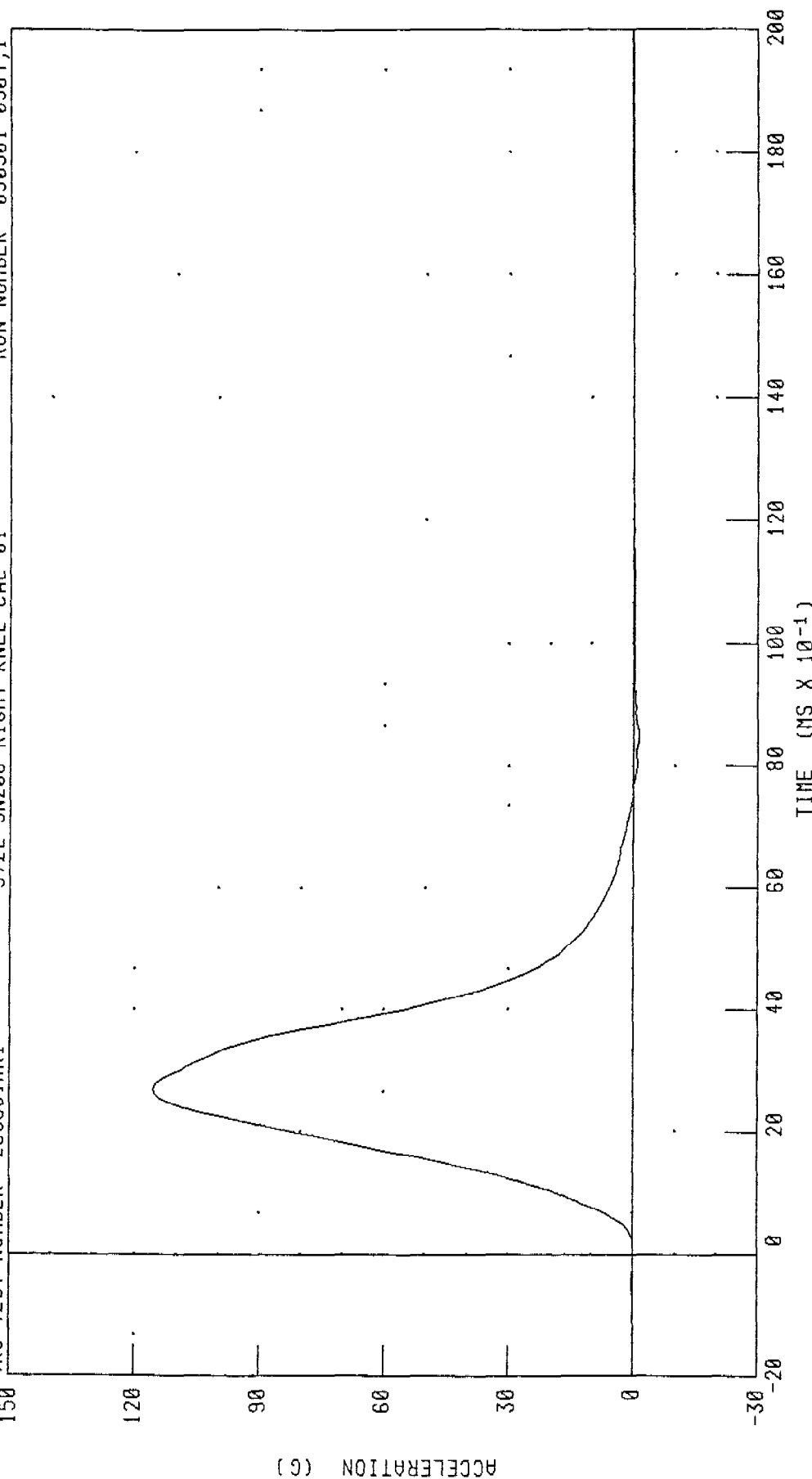
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM DECELERATION (5 KG PEND)

TRC TEST NUMBER 206C01RK1

572E SN206 RIGHT KNEE CAL 01

RUN NUMBER 090501 0904,1



CHANNEL PENXC FILTER CH CLASS 600

PEAK DATA 115 53 G 0 2 72 MS, -1 34 G 0 8 48 MS

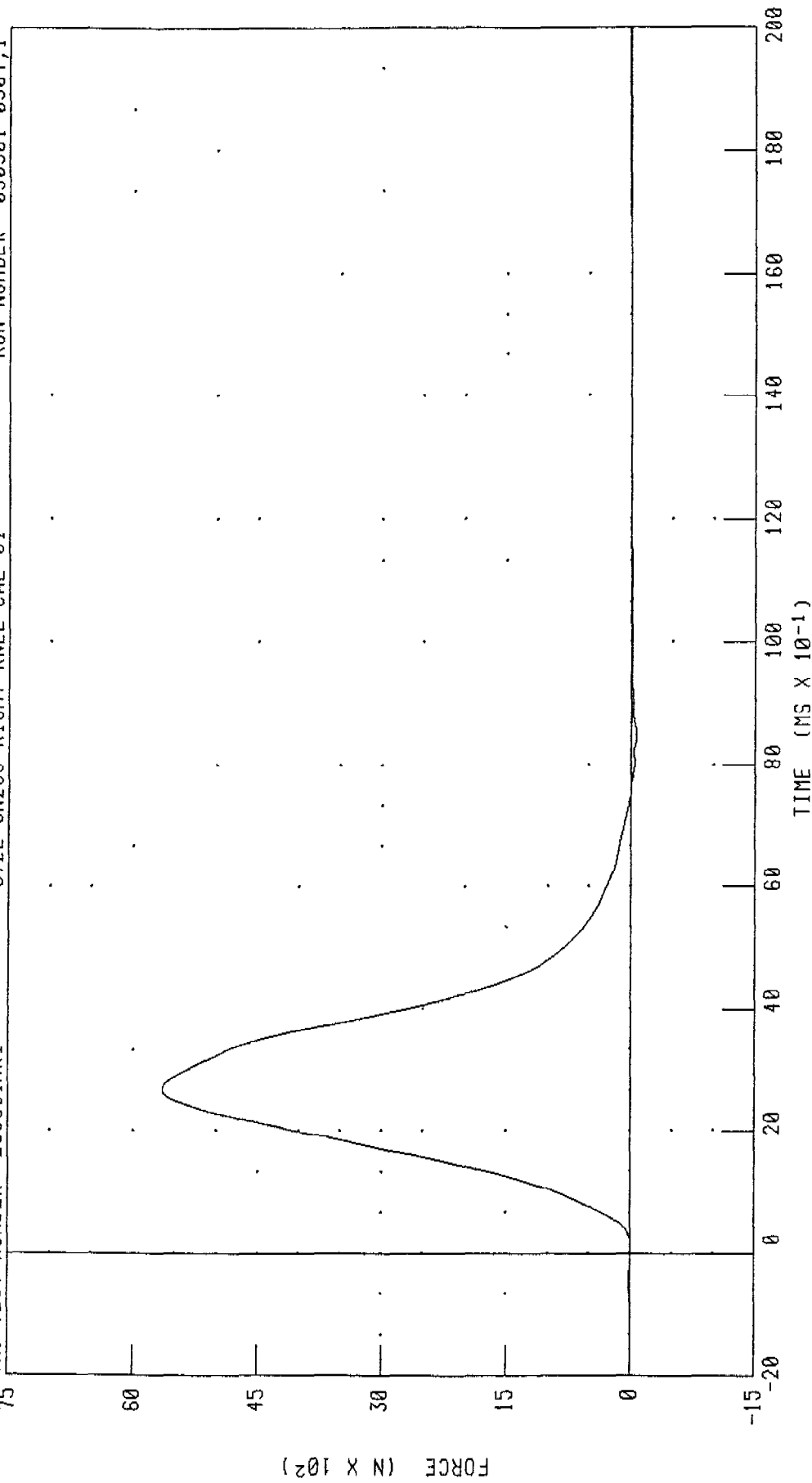
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND)

TRC TEST NUMBER 206C01RK1

572E SN206 RIGHT KNEE CAL 01

RUN NUMBER 090501 0904,1



CHANNEL PENXF FILTER CH CLASS 600

PEAK DATA 5652 49 N @ 2 72 MS, -65 34 N @ 8 48 MS

TRANSPORTATION RESEARCH CENTER INC.

KNEE SLIDER TEST

HYBRID III 50th

04-SEP-10

RIGHT KNEE

TRC INC.

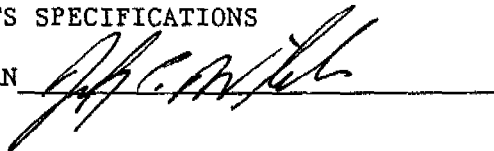
TEST NO: 206C01RS1

572E SN206 RIGHT SLIDER CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	65.0 %
PENDULUM VELOCITY	2.70-2.80 M/S	2.78 M/S
FORCE AT 10.0 MM DISPLACEMENT	1259 - 1721 N	1477. N
FORCE AT 18.0 MM DISPLACEMENT	2268 - 3096 N	2703. N

TEST MEETS SPECIFICATIONS

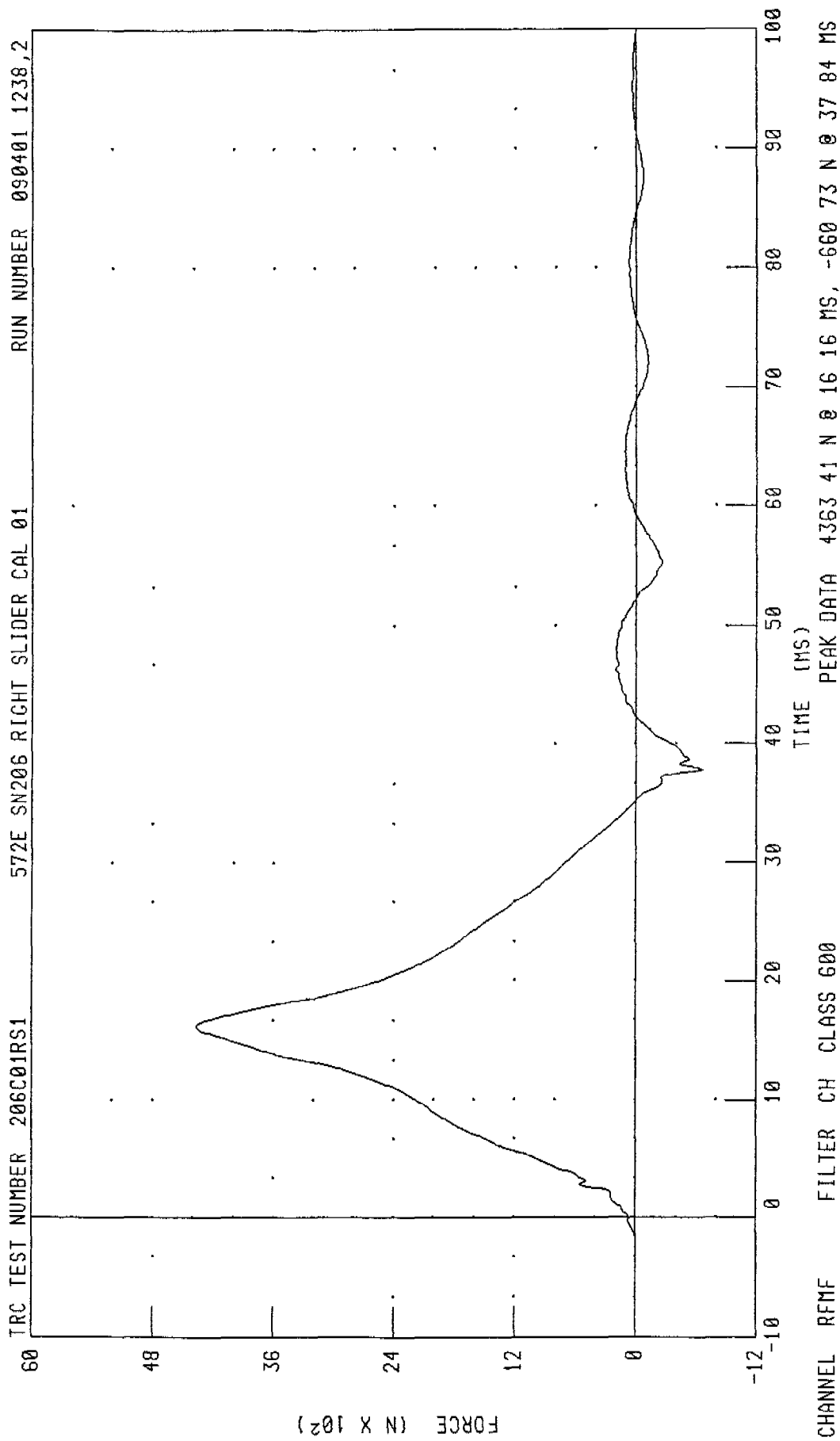
TECHNICIAN



RUN NUMBER: 090401.1236;2

PART 572-E HYBRID III RIGHT KNEE SLIDER CALIBRATION

RIGHT FEMUR FORCE



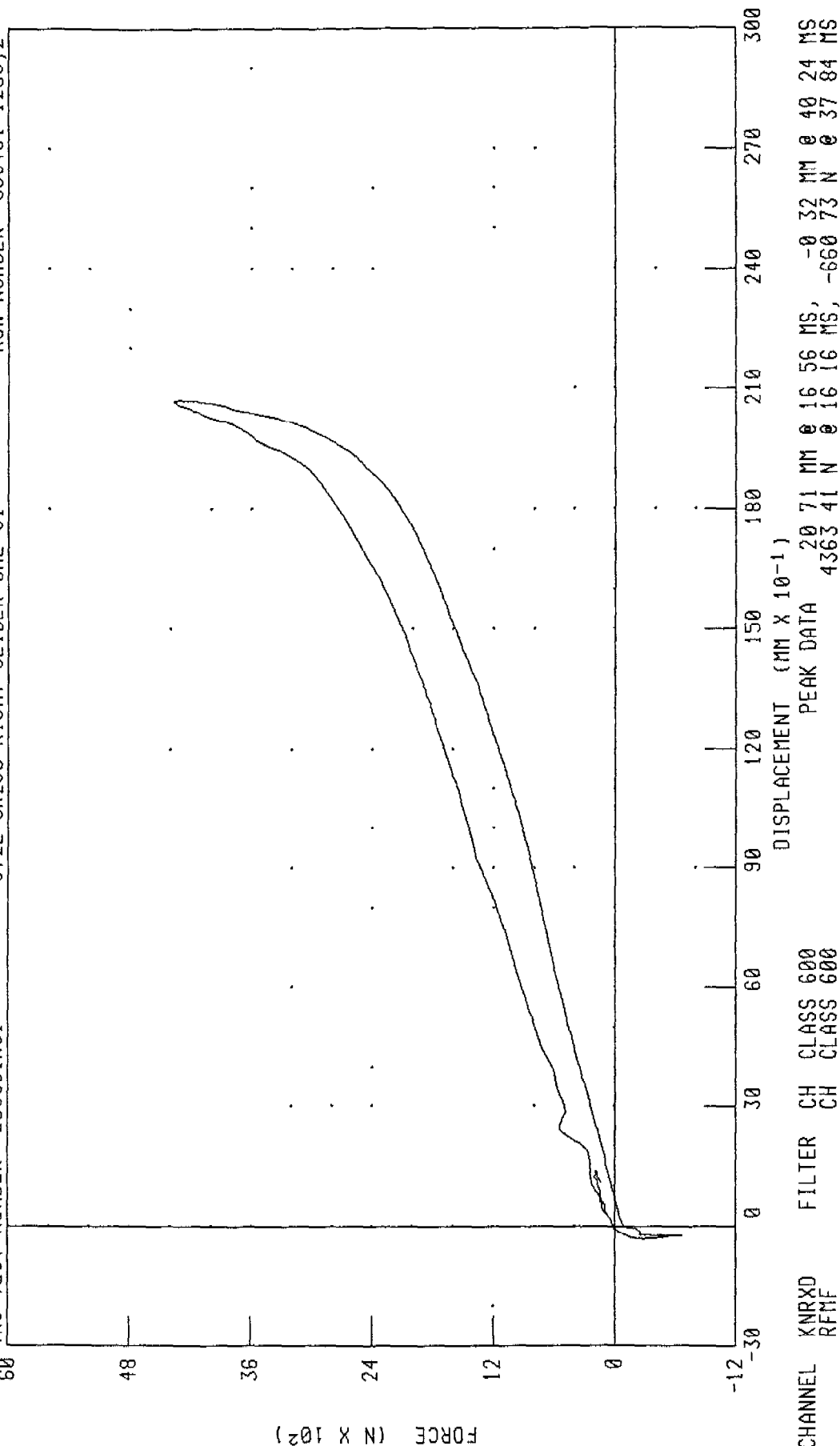
PART 572-E HYBRID III RIGHT KNEE SLIDER CALIBRATION

RIGHT KNEE DISPLACEMENT VS FEMUR FORCE

TRC TEST NUMBER 206C01RS1

572E SN206 RIGHT SLIDER CAL 01

RUN NUMBER 090401 1238,2



Pre-Test Dummy Configuration and Performance Verification Data

Passenger Dummy S/N: 202

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS

202

23-AUG-01

TRC INC. TEST NO: 202C02ED1 572E SN202 EXT.DIMENSION CAL02

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
LOCATION FOR CHEST CIRCUMFERENCE (AA)		429 - 434 MM	432. MM
LOCATION FOR WAIST CIRCUMFERENCE (BB)		226 - 231 MM	229. MM
CHEST CIRCUMFERENCE (Y)		970 -1001 MM	983. MM
WAIST CIRCUMFERENCE (Z)		836 - 866 MM	856. MM
CHEST DEPTH (O)		213 - 229 MM	224. MM
H-POINT HEIGHT (C)		84 - 89 MM	86. MM
H-POINT FROM SEATBACK (D)		135 - 140 MM	140. MM
SKULL CAP TO BACKLINE (H)		41 - 46 MM	43. MM
TOTAL SITTING HEIGHT (A)		879 - 889 MM	881. MM
THIGH CLEARANCE (F)		140 - 155 MM	142. MM
BUTTOCK KNEE LENGTH (K)		579 - 605 MM	597. MM
BUTTOCK POPLITEAL LENGTH (N)		452 - 478 MM	472. MM
POPLITEAL HEIGHT (L)		429 - 455 MM	439. MM
KNEE PIVOT HEIGHT (M)		485 - 500 MM	488. MM
FOOT LENGTH (P)		252 - 267 MM	254. MM
FOOT BREADTH (W)		91 - 107 MM	102. MM
SHOULDER PIVOT FROM BACKLINE (E)		84 - 94 MM	91. MM
SHOULDER BREADTH (V)		422 - 437 MM	434. MM
SHOULDER PIVOT HEIGHT (B)		506 - 521 MM	516 MM
ELBOW REST HEIGHT (J)		191 - 211 MM	203. MM
SHOULDER-ELBOW LENGTH (I)		330 - 345 MM	335. MM
BACK OF ELBOW TO WRIST PIVOT (G)		290 - 305 MM	297. MM

572E SN202 EXT.DIMENSION CAL02

DUMMY MEETS SPECIFICATIONS

TECHNICIAN *[Signature]*

RUN NUMBER: 090701.1701

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III 50th

04-SEP-01

TRC INC.

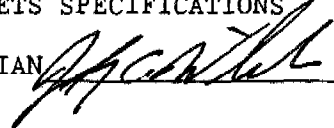
TEST NO: 202C02HD2

572E SN202 HEAD DROP CAL 02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	62.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	258.79 G
PEAK LATERAL ACCELERATION	15 G MAX	1.83 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 090501.0910;1

PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

572E SN202 HEAD DROP CAL 02

TRC TEST NUMBER 202C02HD2

75

0

-75

-150

-225

-300

-375

ACCELERATION (G)

TIME (MS X 10⁻¹)

0 10 20 30 40 50 60 70 80 90 100

CHANNEL HEDXC

FILTER CH CLASS 1000

PEAK DATA

-0 08 G 0 -0 96 MS, -227 82 G 0 1 92 MS

RUN NUMBER 090501 0910,1

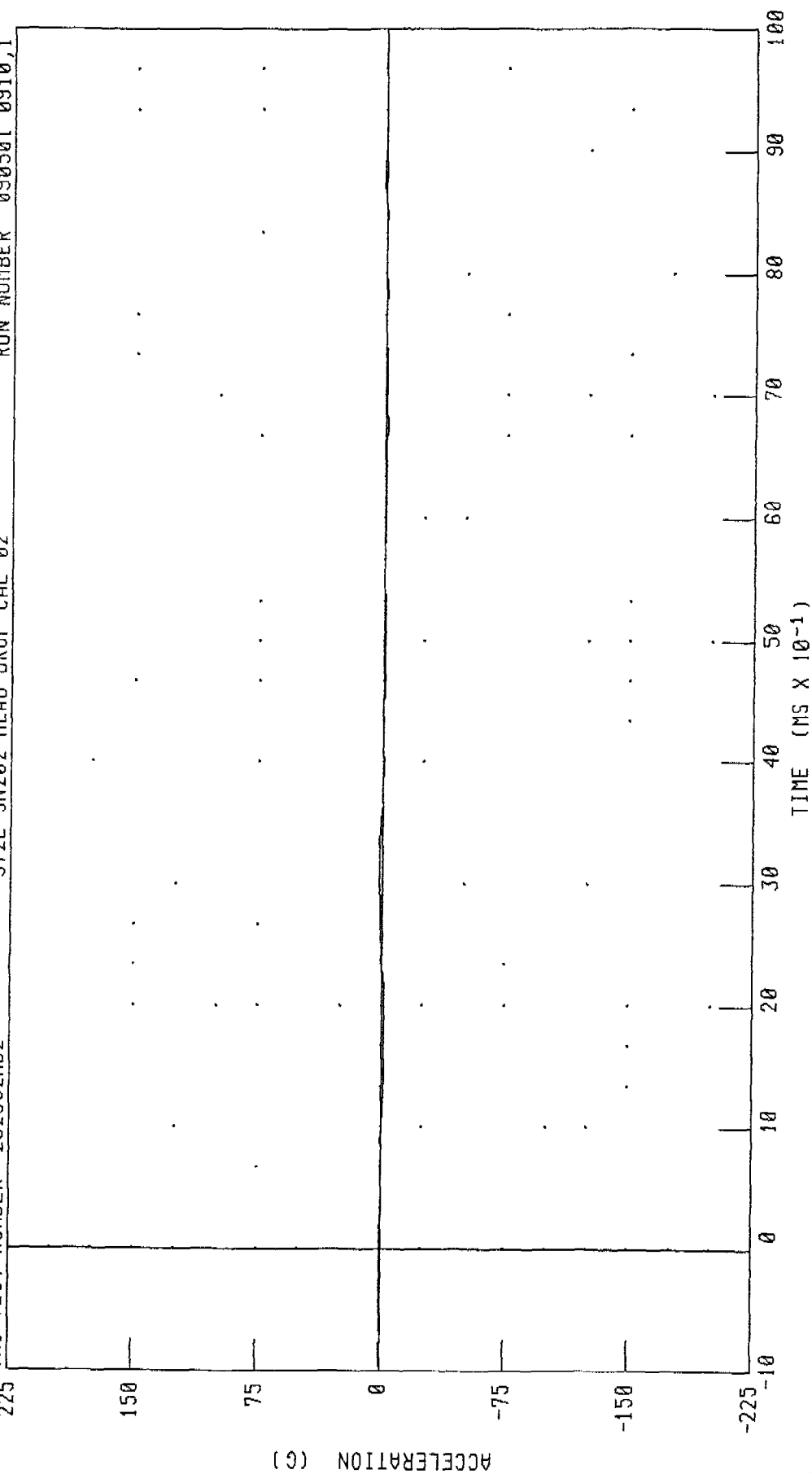
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

TRC TEST NUMBER 202C02HD2

572E SN202 HEAD DROP CAL 02

RUN NUMBER 090501 0910,1



CHANNEL HEDYC FILTER CH CLASS 1000

TIME (MS X 10⁻¹)

PEAK DATA 1 71 G 0 3 28 MS, -1 69 G 0 1 68 MS

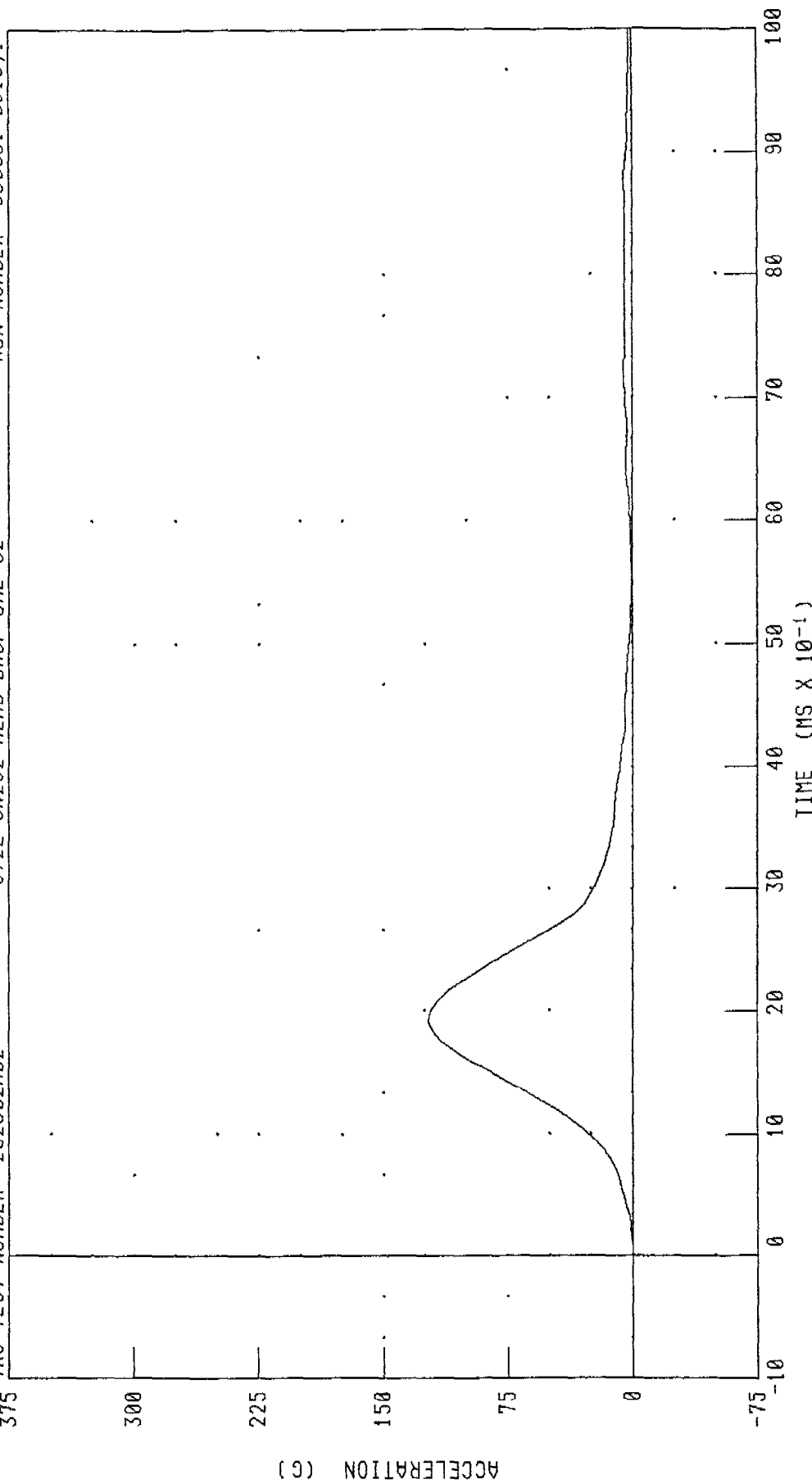
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Z AXIS

TRC TEST NUMBER 202C02HD2

572E SN202 HEAD DROP CAL 02

RUN NUMBER 090501 0910,1



CHANNEL HEDZG FILTER CH CLASS 1000

PEAK DATA 122 75 G 0 1 92 MS, -0 02 G 0 -0 96 MS

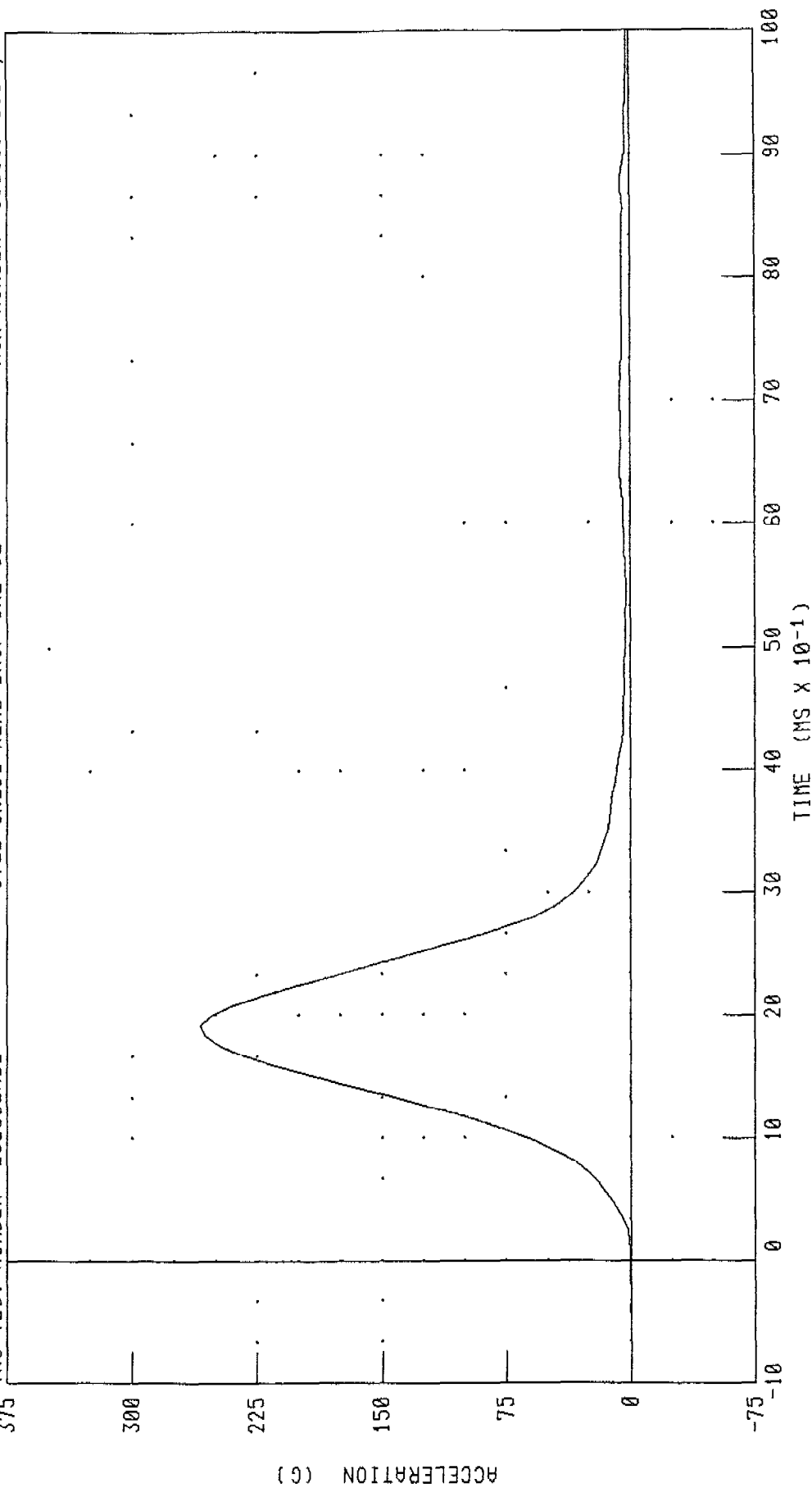
PART 572-E HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

TRC TEST NUMBER 202C02HD2

572E SN202 HEAD DROP CAL 02

RUN NUMBER 090501 0910,1



CHANNEL HEDRC FILTER CH CLASS 1000

PEAK DATA 258 79 G 0 1 92 MS, 0 09 G 0 -0 96 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

06-SEP-01

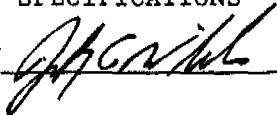
NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 202C02NF1 572E SN202 NECK FLEXION CAL02

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	57.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.06 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	24.20 G
	20 MS	17.60 - 22.60 G	22.25 G
	30 MS	12.50 - 18.50 G	17.56 G
MAX PENDULUM G		29 G MAX	24.40 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	17.49 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	38.72 MS
D PLANE	MAX	64 - 78 DEG.	72.15 DEG.
ROTATION	TIME	57 - 64 MS	61.04 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	99.51 NM
	TIME	47 - 58 MS	51.76 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	120.24 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	101.12 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 090601.0813;1

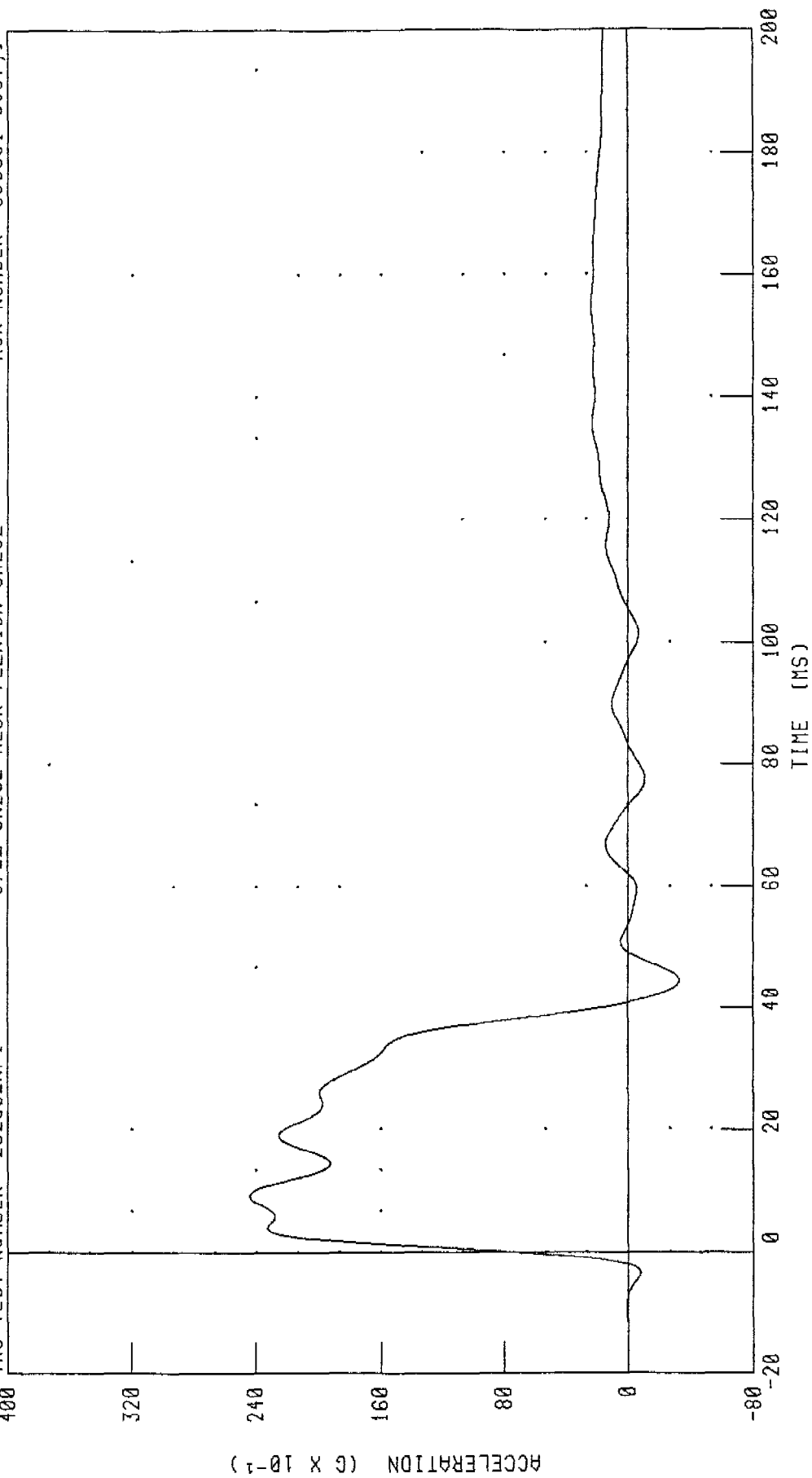
PART 572-E HYBRID III NECK FLEXION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER 202C02NF1

572E SN202 NECK FLEXION CAL02

RUN NUMBER 090601 0807,1



CHANNEL PENXC FILTER CH CLASS 60

PEAK DATA 24 41 G @ 9 28 MS, -3 26 G @ 44 48 MS

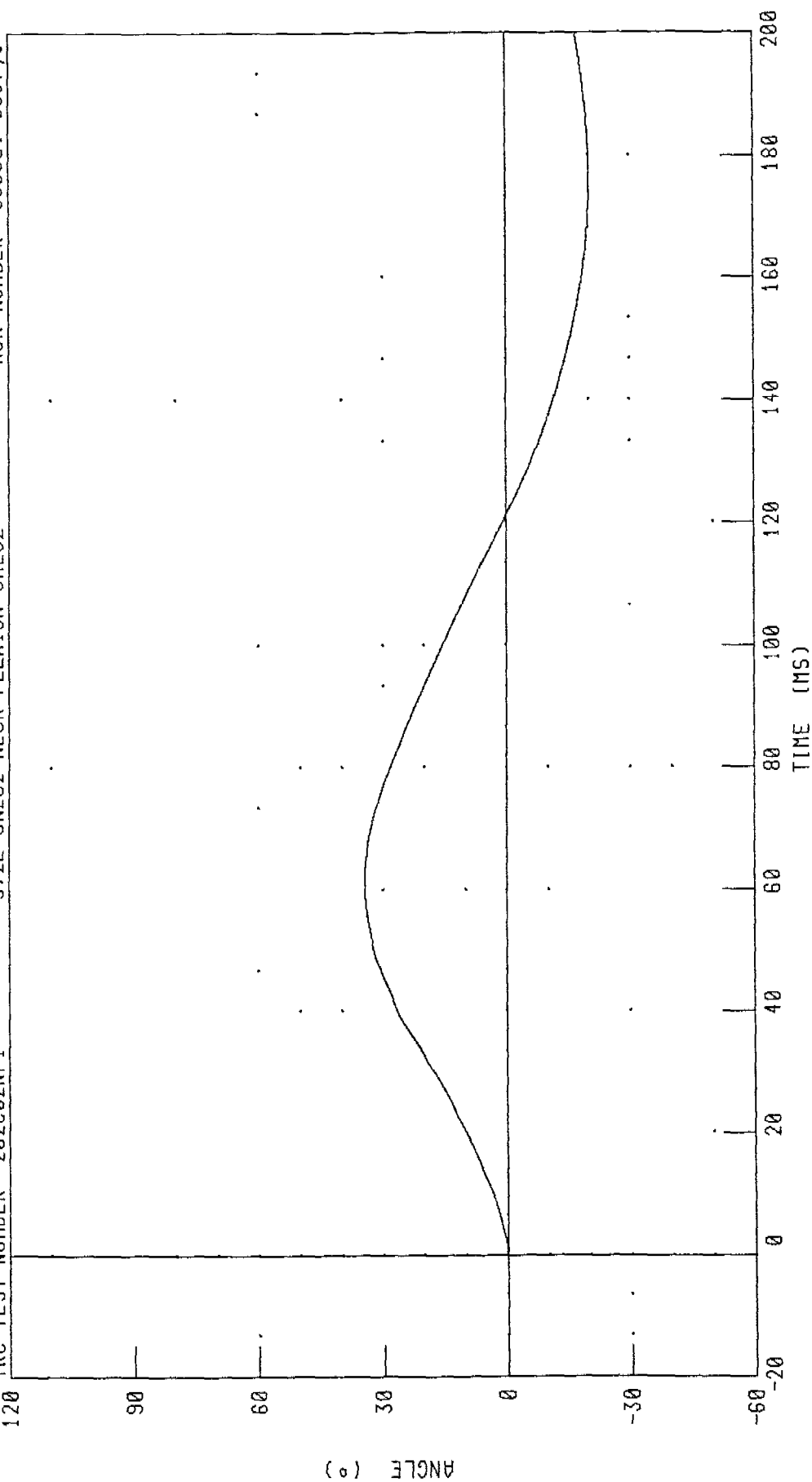
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER 202C02NF1

572E SN202 NECK FLEXION CAL02

RUN NUMBER 090601 0807,1



CHANNEL BETA FILTER CH CLASS 60

PEAK DATA 34 54 ° @ 61 12 MS, -20 15 ° @ 176 16 MS

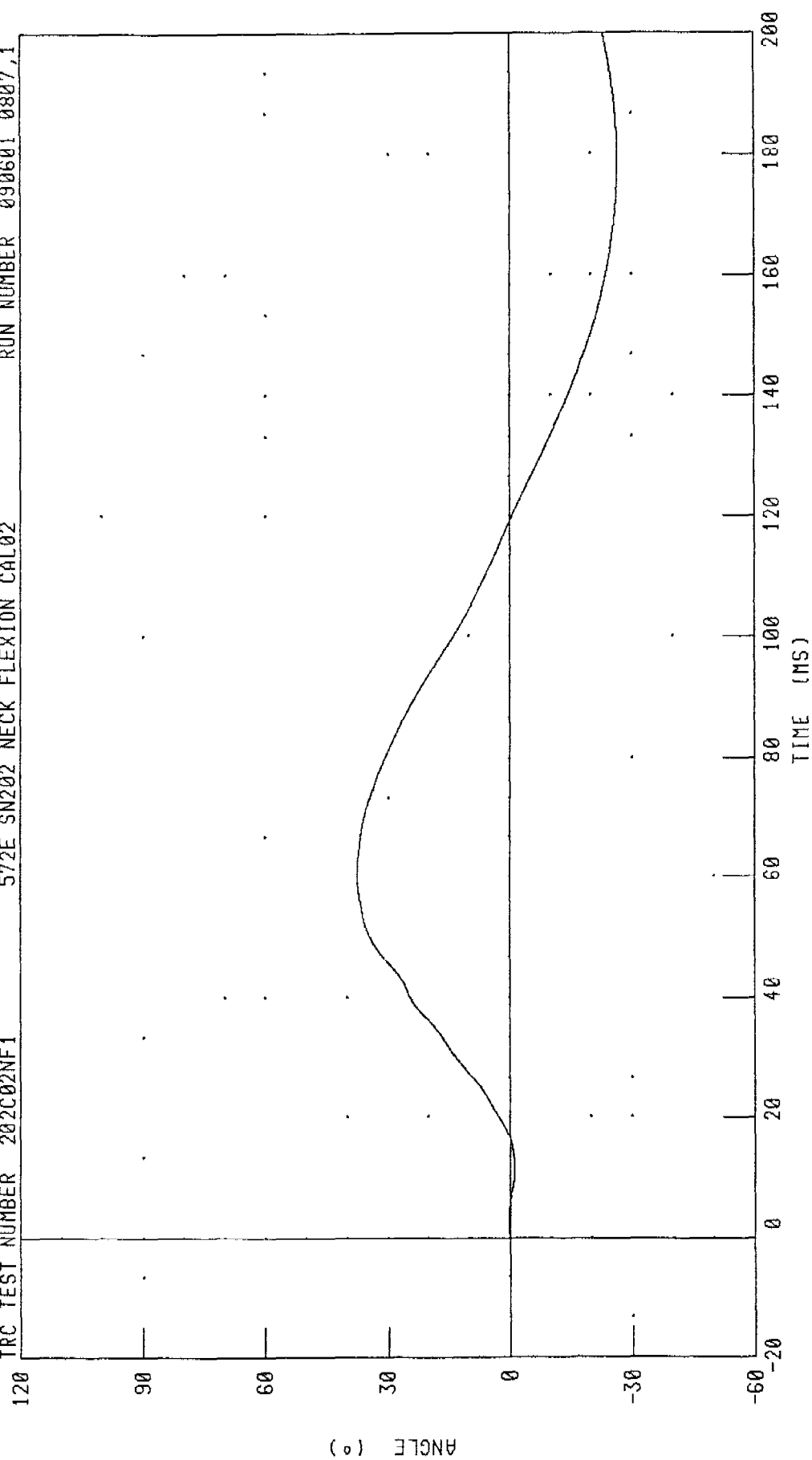
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER 202C02NF1

572E SN202 NECK FLEXION CAL02

RUN NUMBER 090601 0807,1



PEAK DATA 37 62 ° @ 60 96 MS, -26 62 ° @ 179 60 MS

CHANNEL THETA FILTER CH CLASS 60

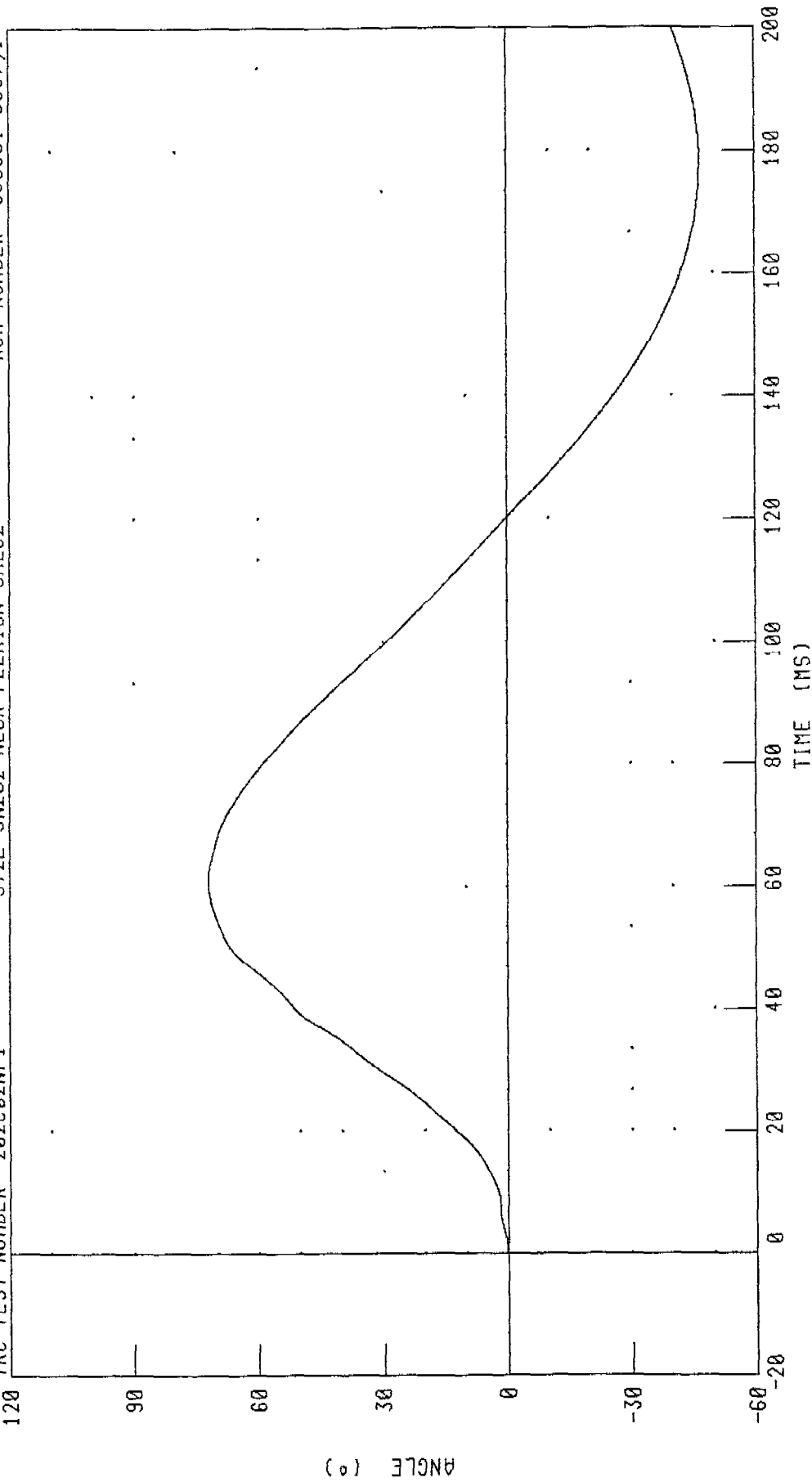
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER 202C02NF1

572E SN202 NECK FLEXION CAL02

RUN NUMBER 090601 0807,1



CHANNEL TOTAL FILTER CH CLASS 60

PEAK DATA 72 16 ° 0 61 04 MS, -46 73 ° 0 178 72 MS

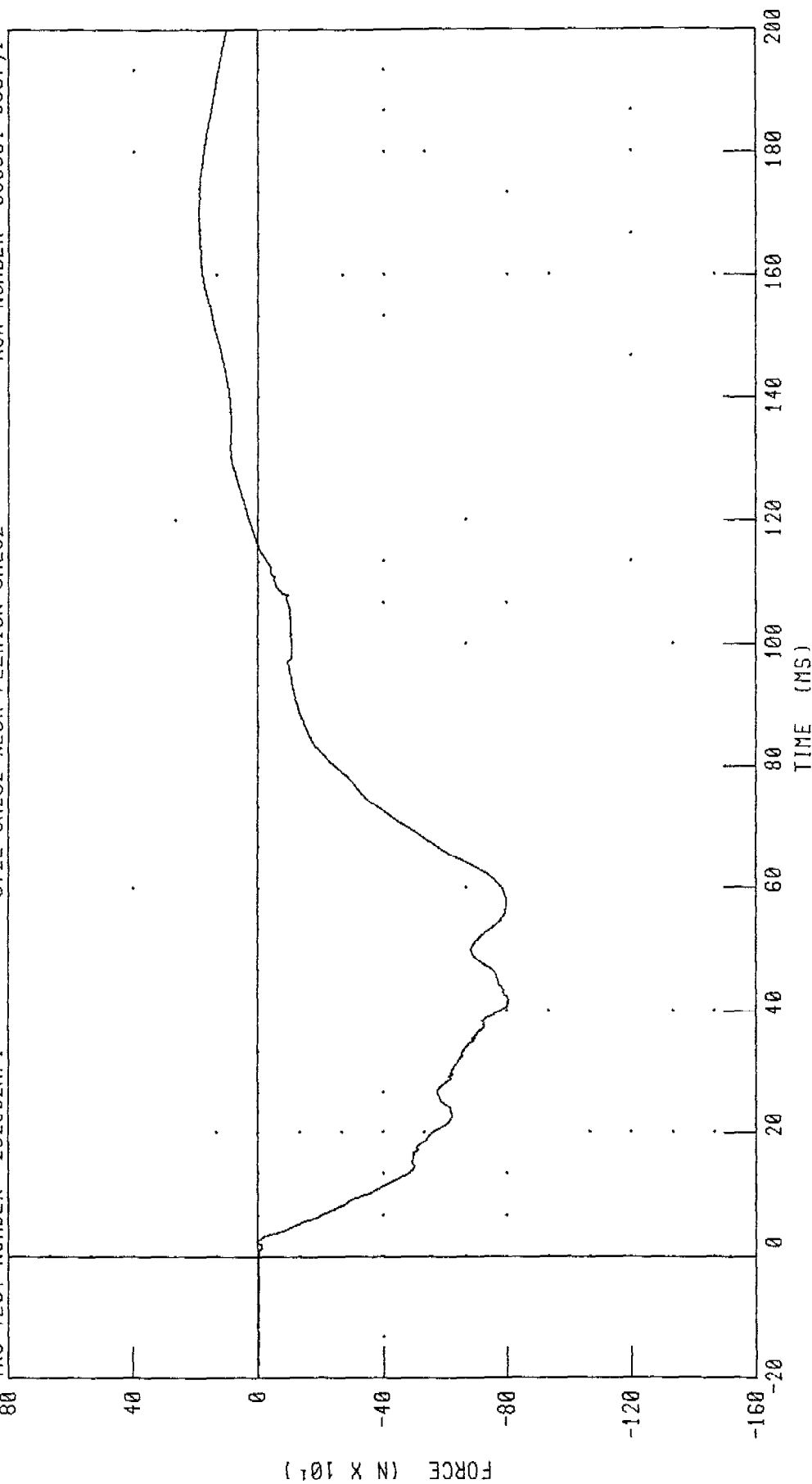
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER 202C02NF1

572E SN202 NECK FLEXION CAL02

RUN NUMBER 090601 0807,1



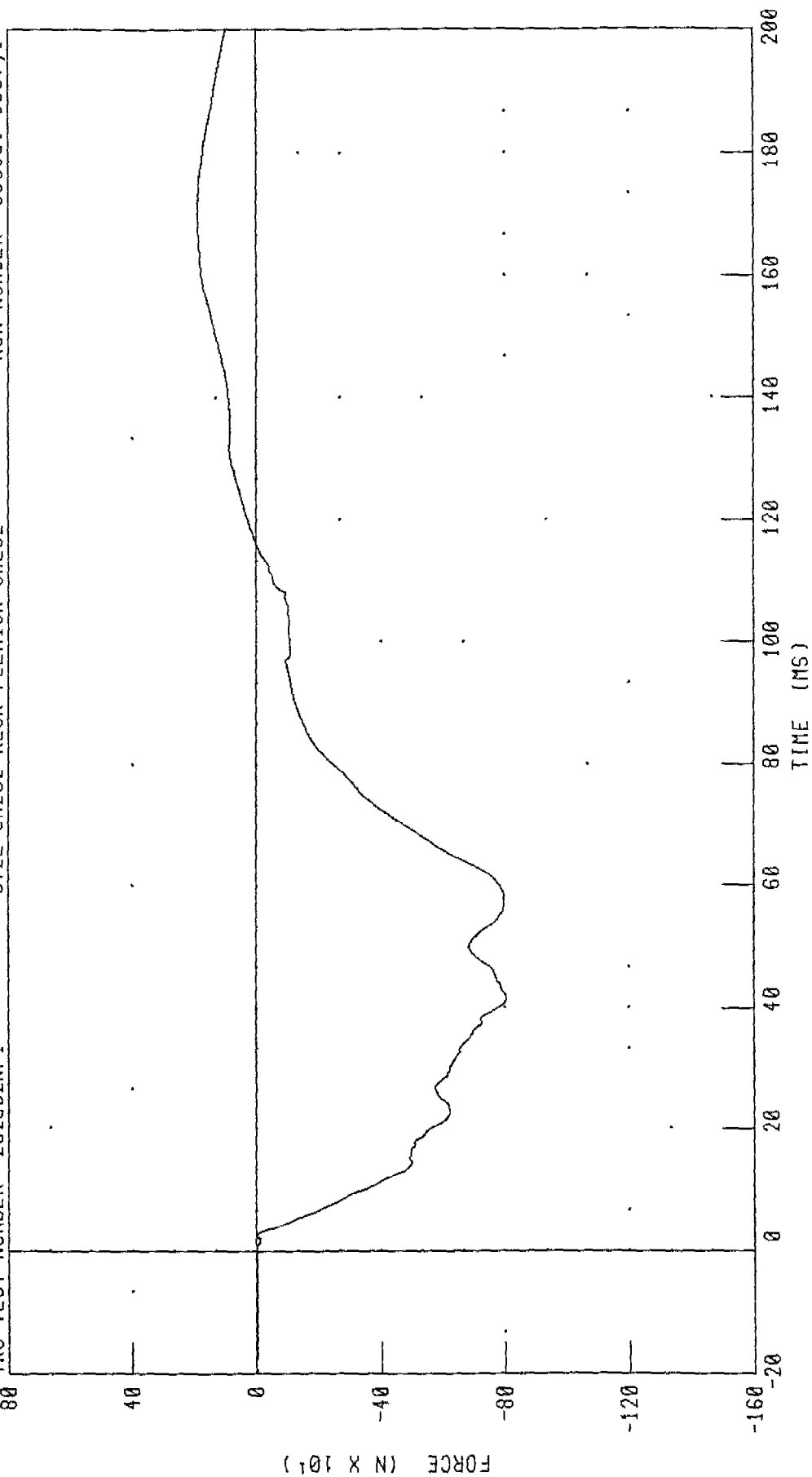
CHANNEL NEKXF FILTER CH CLASS 1000

PEAK DATA 191 41 N 0 169 68 MS, -805 94 N 0 41 84 MS

PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS FILTERED FOR USE IN OCCIPITAL MOMENT CALCULATION

TRC TEST NUMBER 202C02NF1 572E SN202 NECK FLEXION CAL02 RUN NUMBER 090601 0807,1



CHANNEL NEKXFC FILTER CH CLASS 600

PEAK DATA 191 14 N @ 169 76 MS, -804 46 N @ 41 92 MS

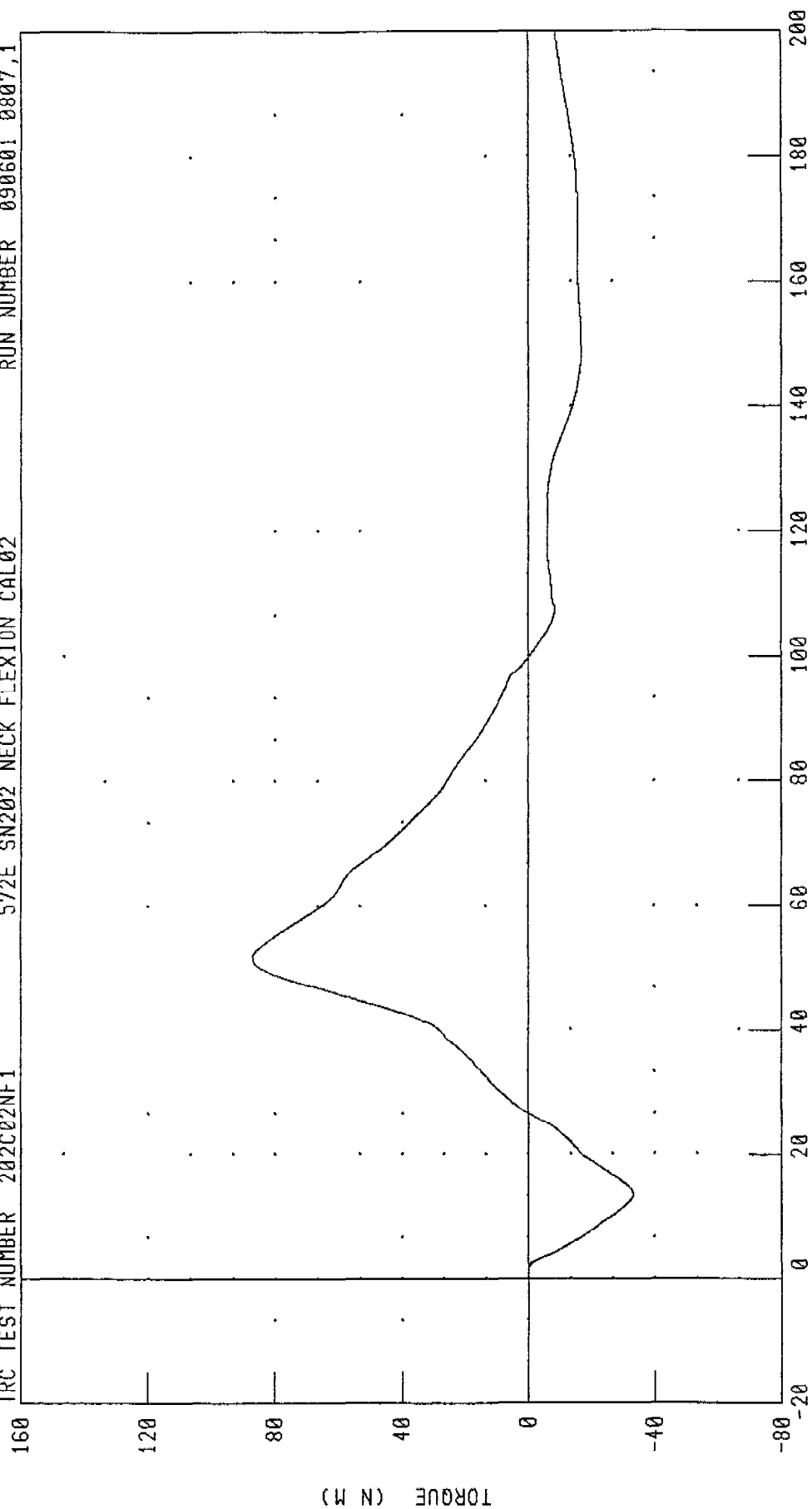
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER 202C02NF1

572E SN202 NECK FLEXION CAL02

RUN NUMBER 090601 0807,1



TIME (MS)

CHANNEL NEKYM FILTER CH CLASS 600

PEAK DATA 87 01 N M 0 51 44 MS, -33 29 N M 0 13 52 MS

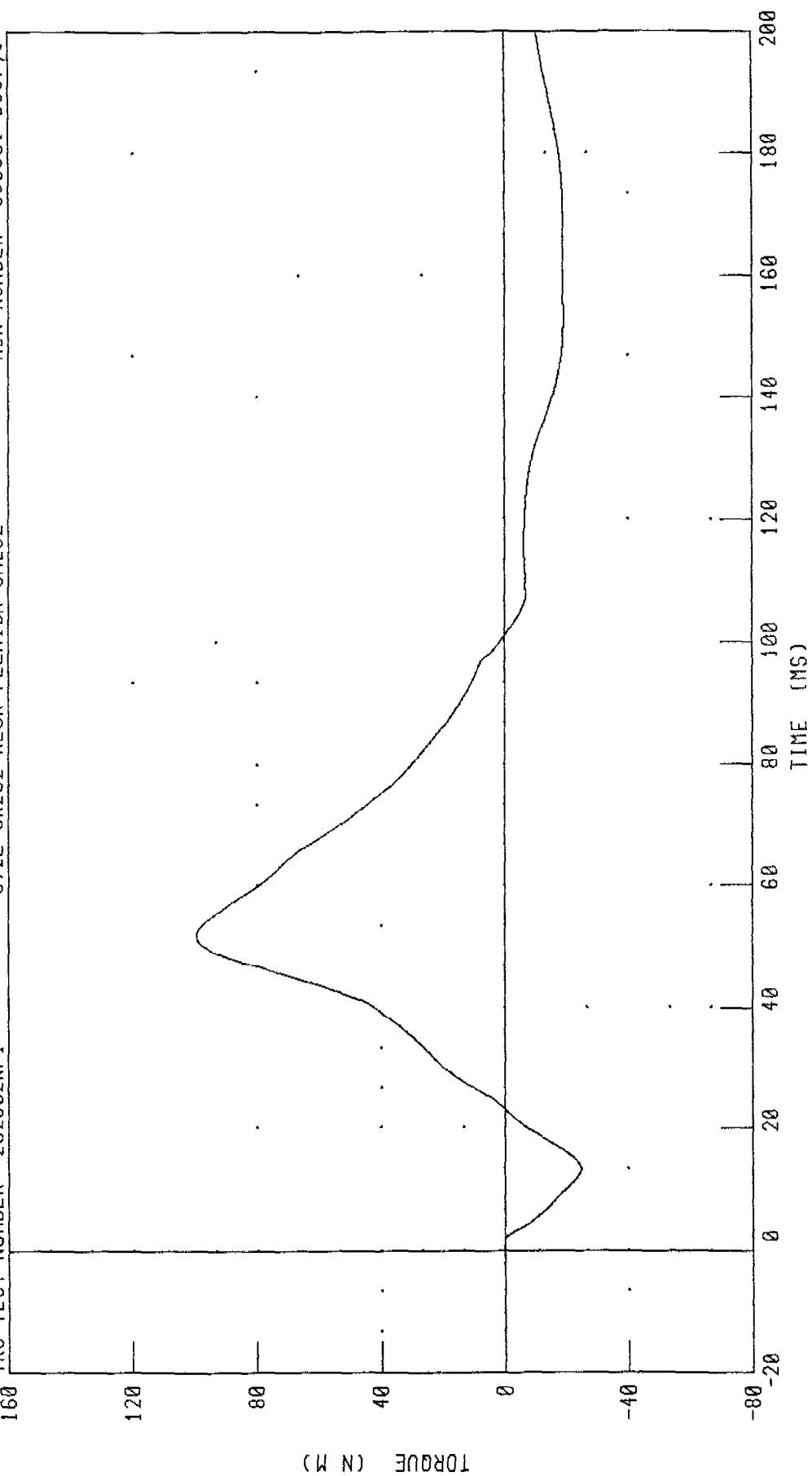
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER 202C02NF1

572E SN202 NECK FLEXION CAL02

RUN NUMBER 090601 0807,1



CHANNEL NEKOM FILTER CH CLASS 600

PEAK DATA 99 51 N M @ 51 76 MS, -24 70 N M @ 13 28 MS

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III 50th

06-SEP-01

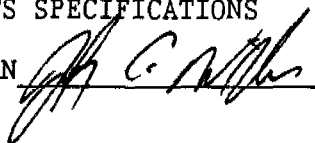
NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

TRC INC. TEST NO: 202C02NE1 572E SN202 NECK EXT CAL02

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	56.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.00 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	18.11 G
	20 MS	14.00 - 19.00 G	17.47 G
	30 MS	11.00 - 16.00 G	15.55 G
MAX PENDULUM G		22 G MAX	18.24 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	15.50 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	43.92 MS
D PLANE	MAX	81 - 106 DEG.	95.83 DEG.
ROTATION	TIME	72 - 82 MS	80.00 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-66.32 NM
	TIME	65 - 79 MS	74.72 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	160.16 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	141.60 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 090601.0832;1

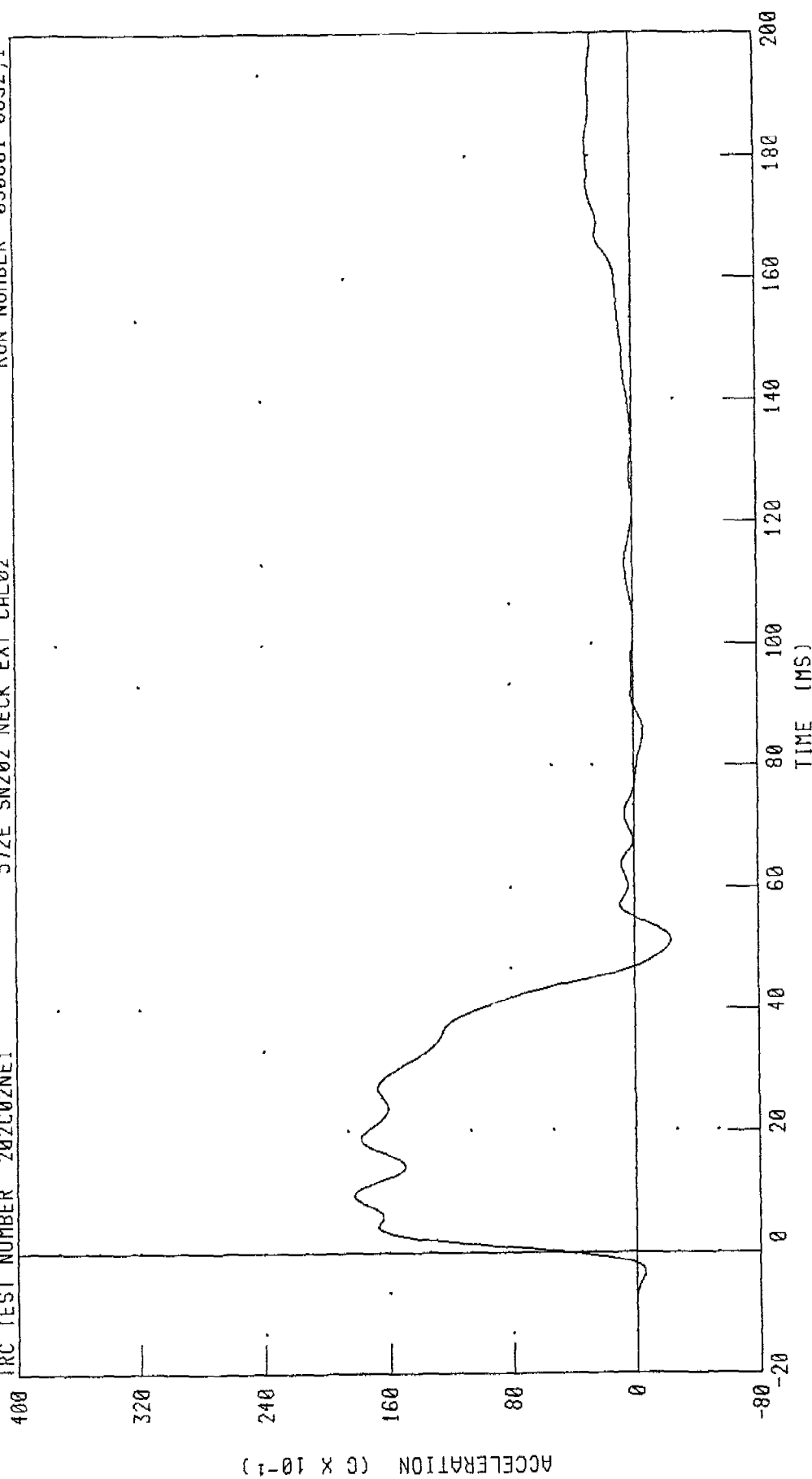
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

IRC TEST NUMBER 202C02NE1

572E SN202 NECK EXT CAL02

RUN NUMBER 090601 0832,1



CHANNEL PENXC FILTER CH CLASS 60

PEAK DATA 18 25 G 0 9 44 MS, -2 36 G 0 51 52 MS

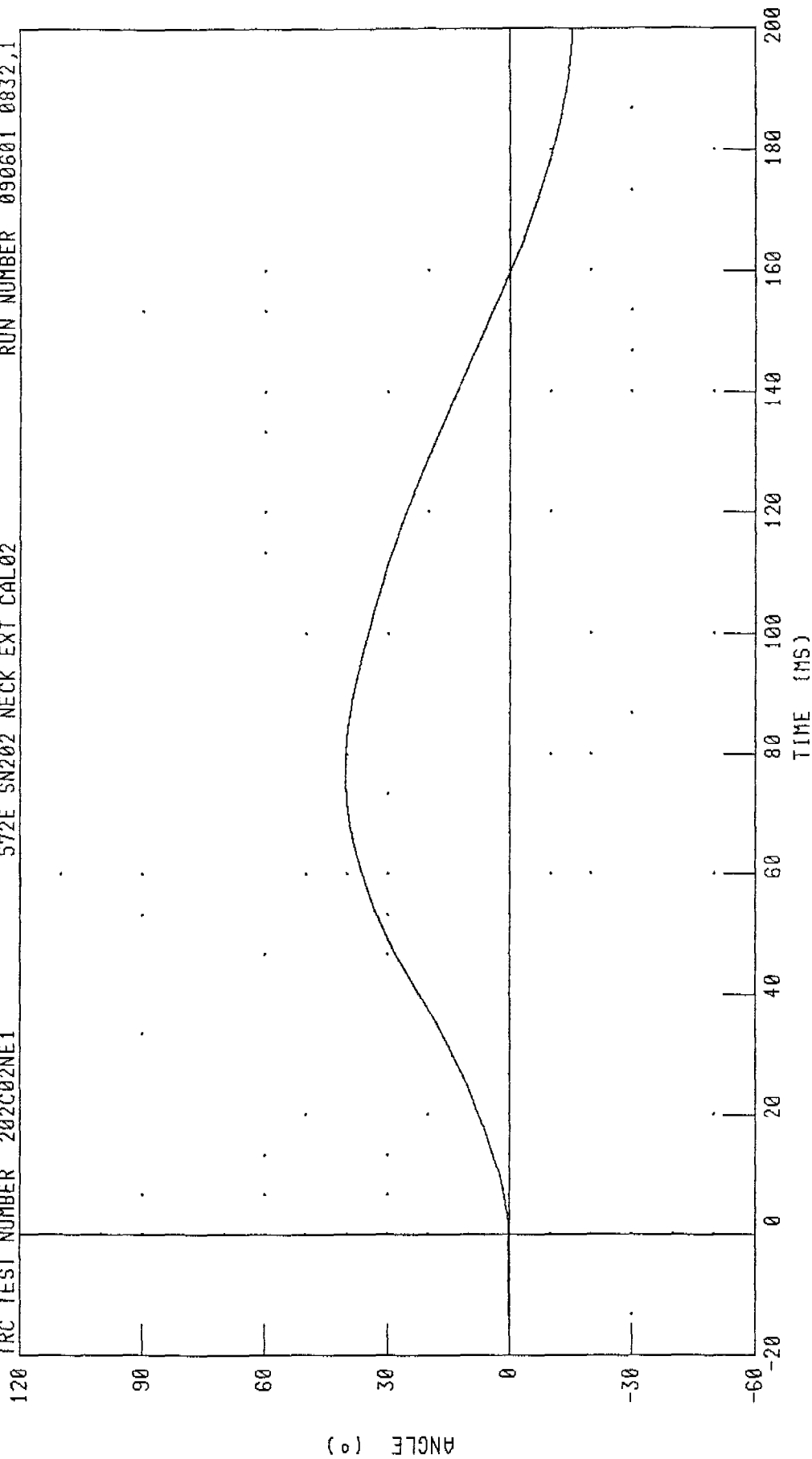
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER 202C02NE1

572E SN202 NECK EXT CAL02

RUN NUMBER 090601 0832,1

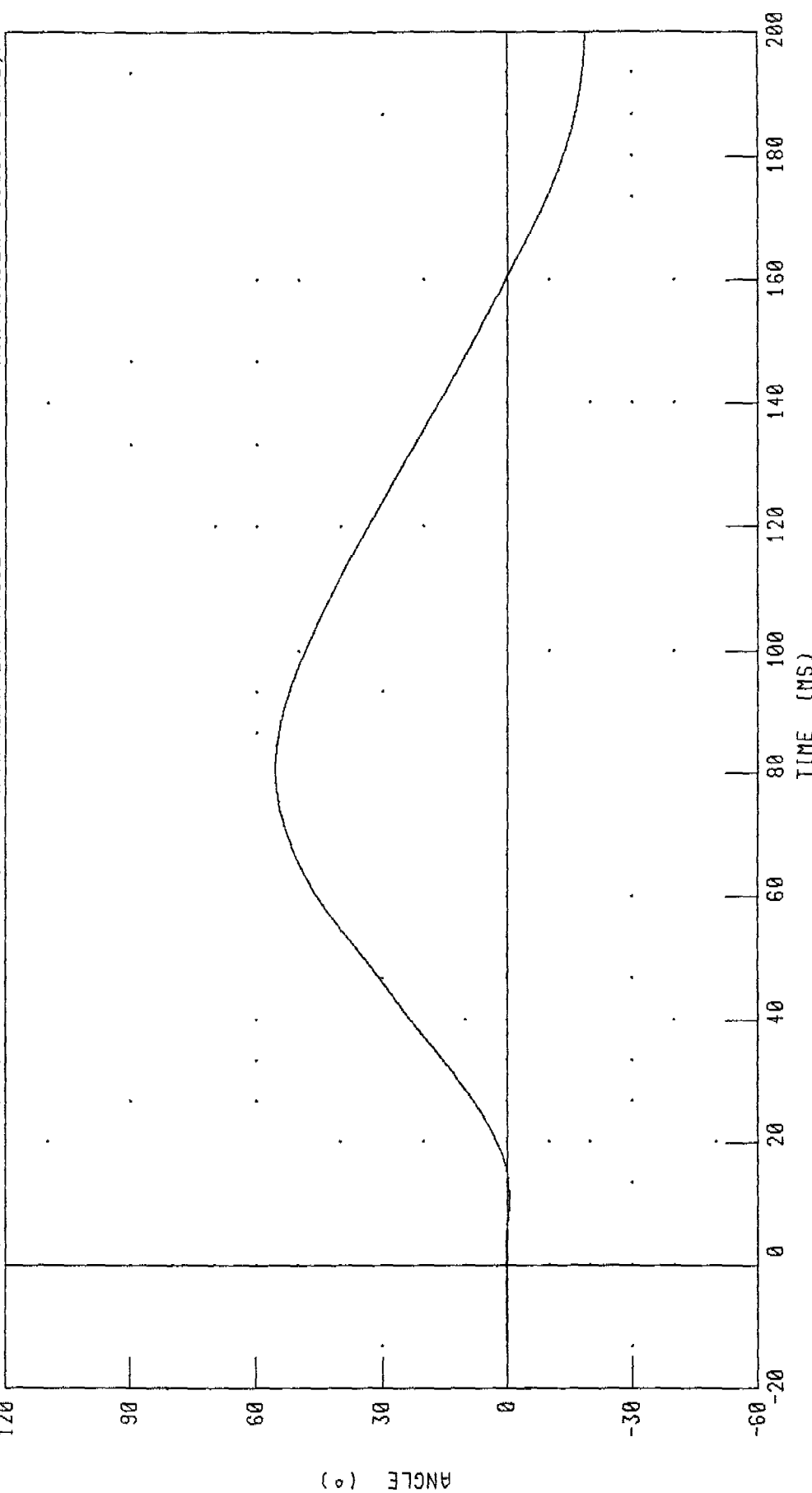


CHANNEL BETA FILTER CH CLASS 60

PEAK DATA 40 34 ° @ 77 76 MS, -15 44 ° @ 200 00 MS

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

TRC TEST NUMBER 202C02NE1 572E SN202 NECK EXT CAL02 RUN NUMBER 090601 0832,1



CHANNEL THETA FILTER CH CLASS 60

PEAK DATA 55 58 ° @ 80 96 MS, -18 85 ° @ 200 00 MS

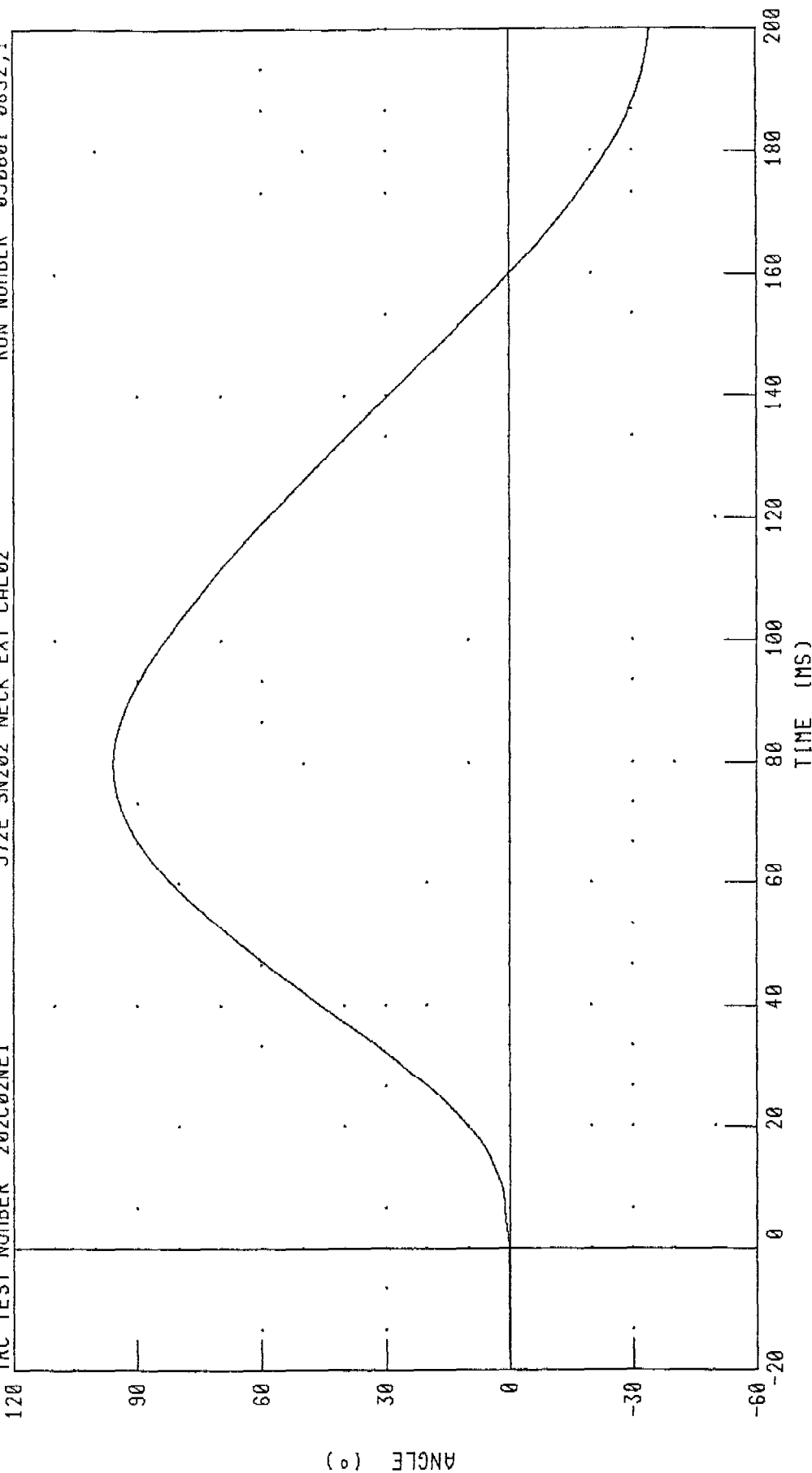
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER 202C02NE1

572E SN202 NECK EXT CAL02

RUN NUMBER 090601 0832,1



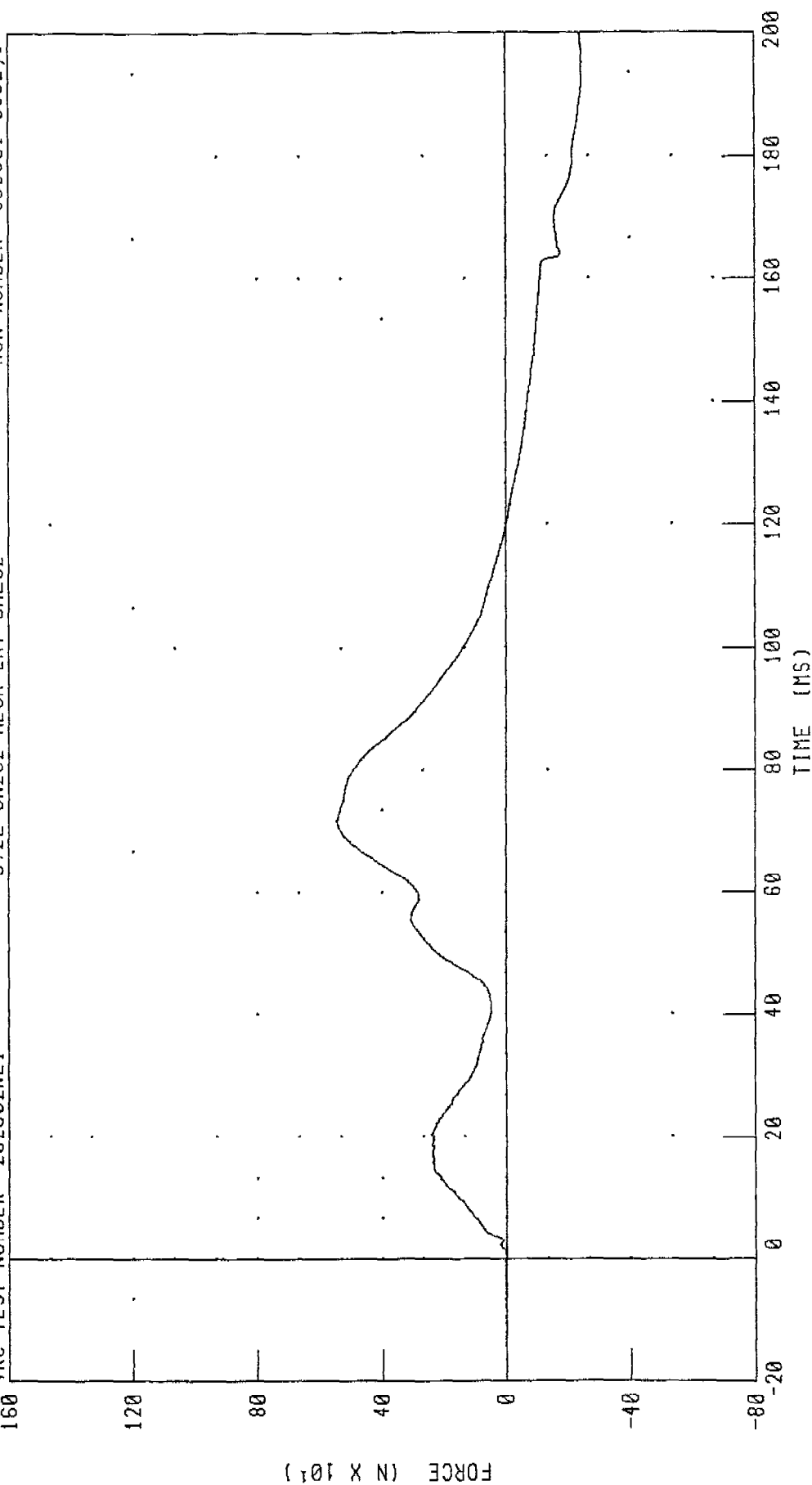
CHANNEL TOTAL FILTER CH CLASS 60

PEAK DATA 95 83 ° 0 80 00 MS, -34 30 ° 0 200 00 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

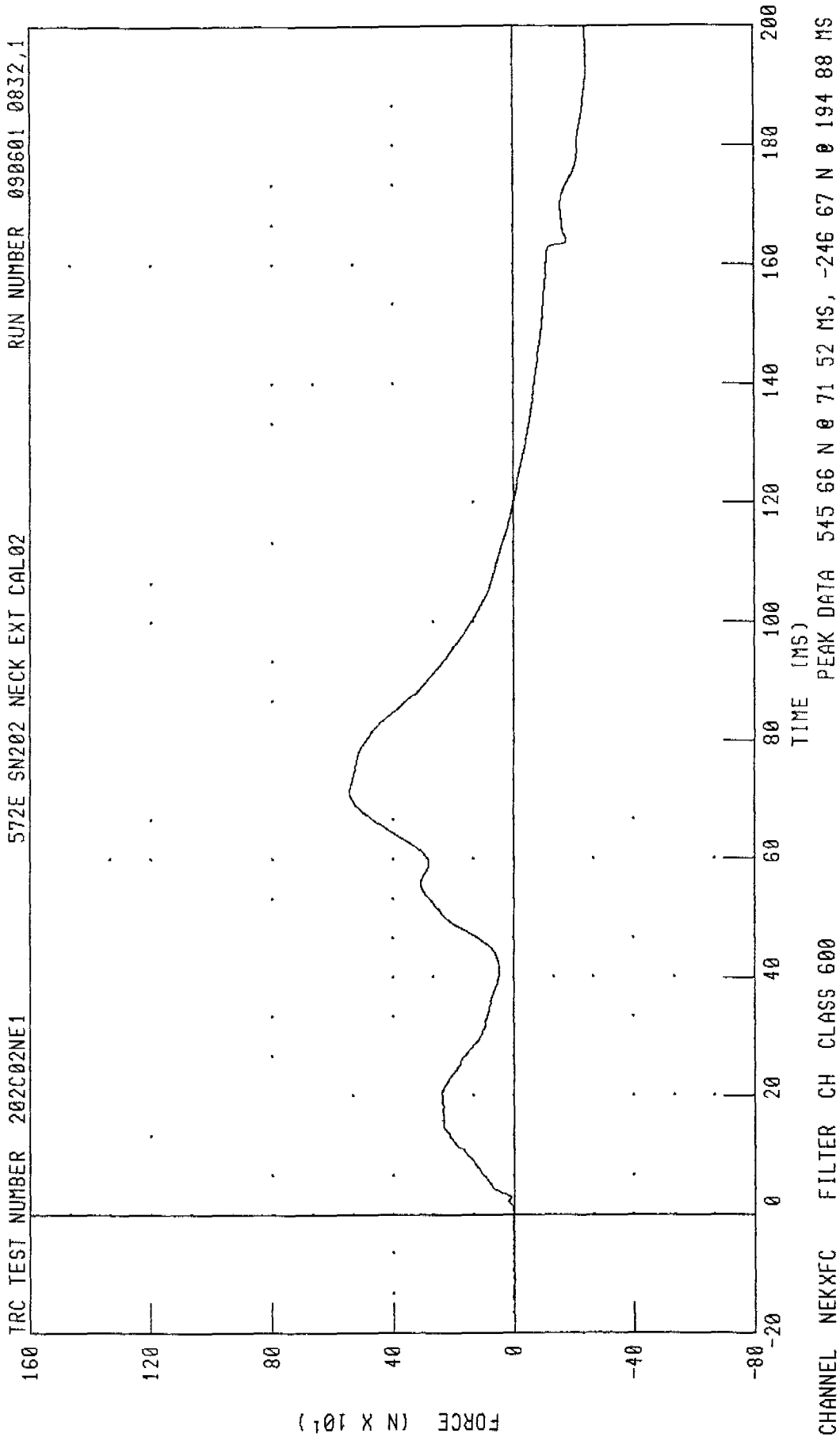
TRC TEST NUMBER 202C02NE1 572E SN202 NECK EXT CAL02 RUN NUMBER 090601 0832,1



CHANNEL NEKXF FILTER CH CLASS 1000

PEAK DATA 547 02 N @ 71 60 MS, -247 05 N @ 195 04 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 NECK FORCE X AXIS FILTERED FOR USE IN OCCIPITAL MOMENT CALCULATION



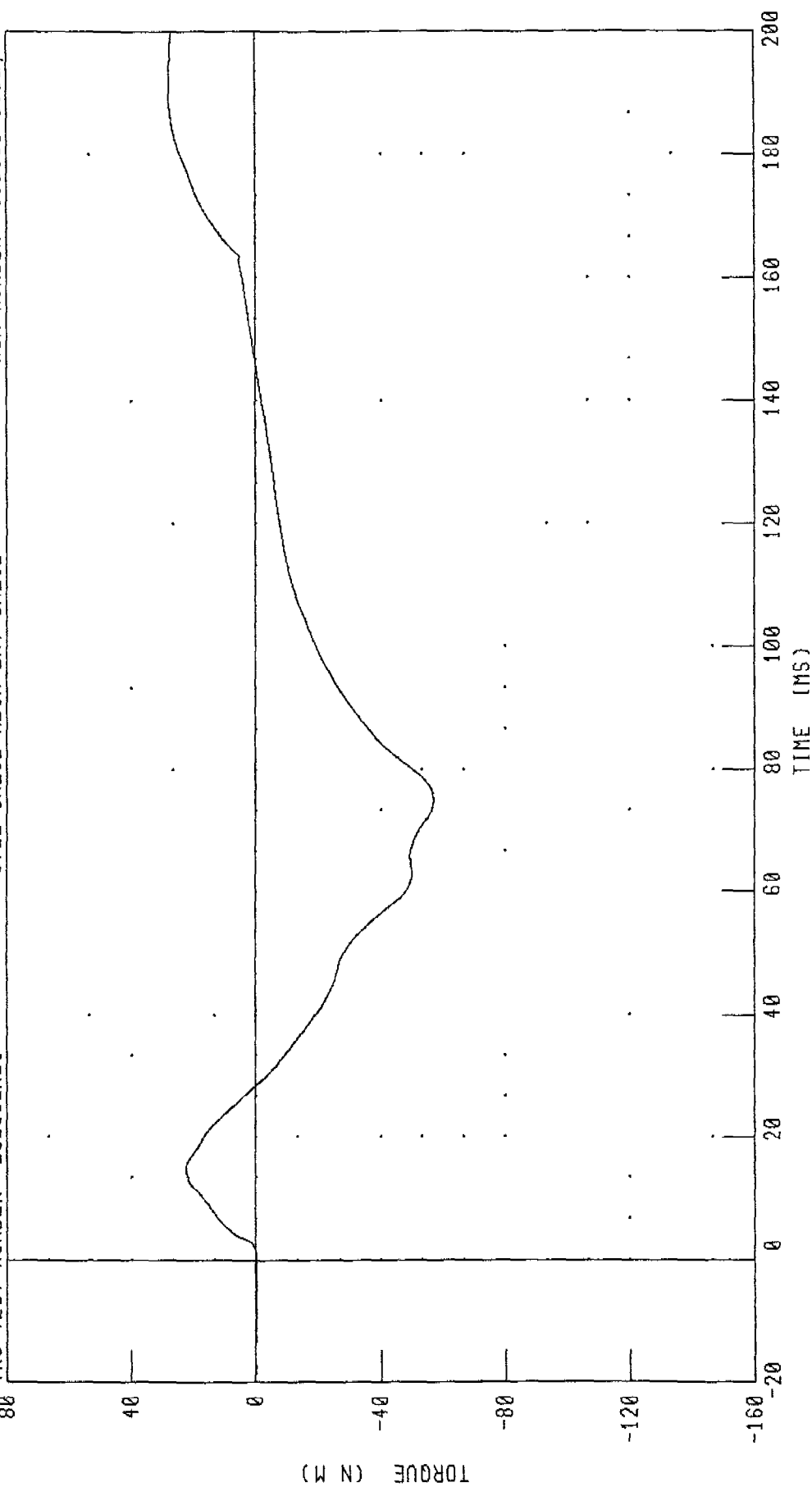
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER 202C02NE1

572E SN202 NECK EXT CAL02

RUN NUMBER 090601 0832,1



CHANNEL NEKYM FILTER CH CLASS 600

TIME (MS)

PEAK DATA 28 00 N M @ 190 48 MS, -56 96 N M @ 75 12 MS

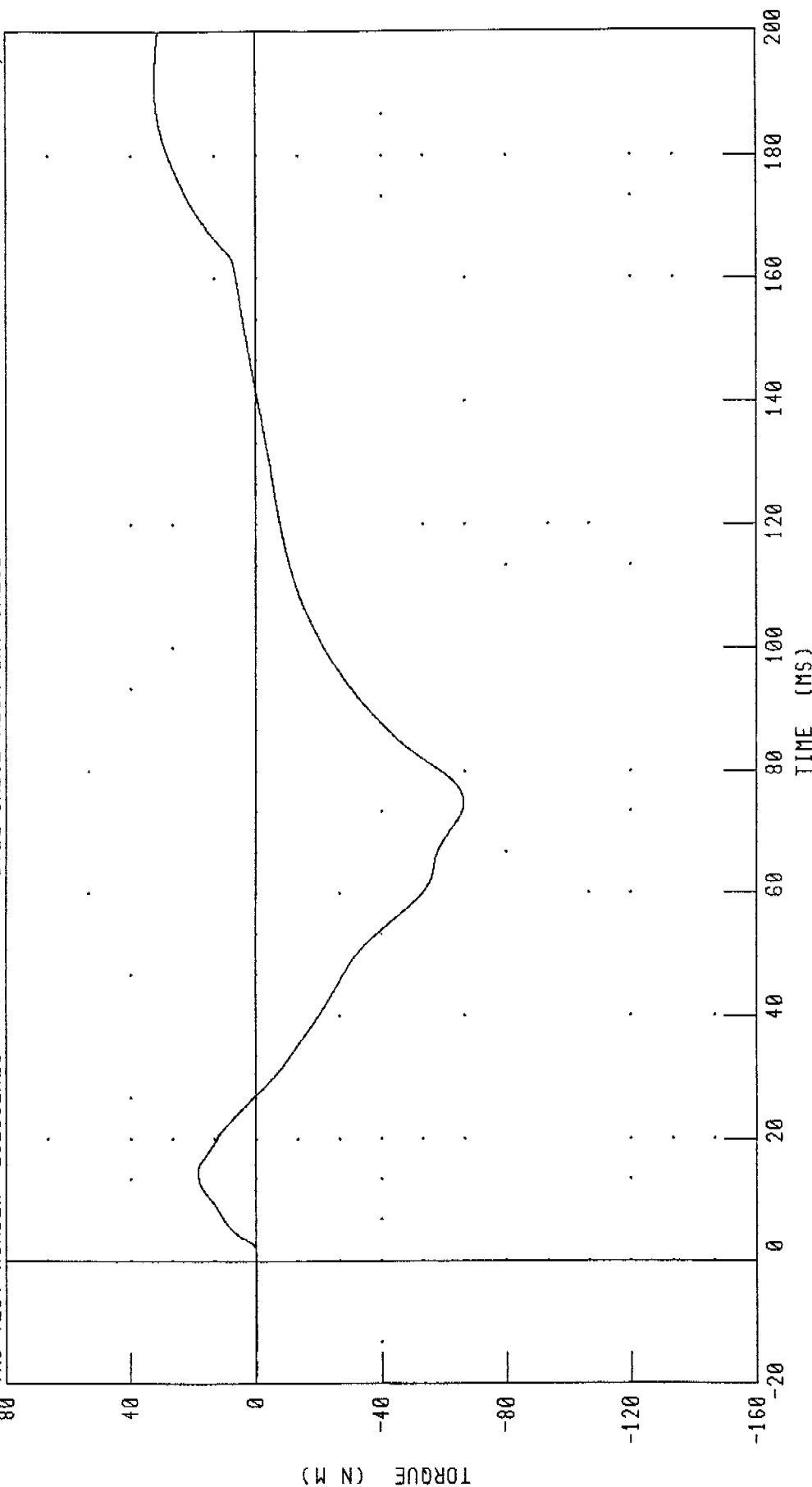
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER 202C02NE1

572E SN202 NECK EXT CAL02

RUN NUMBER 090601 0032,1



TIME (MS)

CHANNEL NEKOM FILTER CH CLASS 600

PEAK DATA 32 30 N M @ 191 60 MS, -66 32 N M @ 74 72 MS

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III 50th

07-SEP-01

TRC INC.

TEST NO: 202C02TH5

572E SN202 H.S.THORAX CAL02

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	65.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.59 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	67.5 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5644. N
INTERNAL HYSTERESIS	69% - 85%	72.6%

TEST MEETS SPECIFICATIONS

TECHNICIAN

J. C. Smith

RUN NUMBER: 090701.1435;1

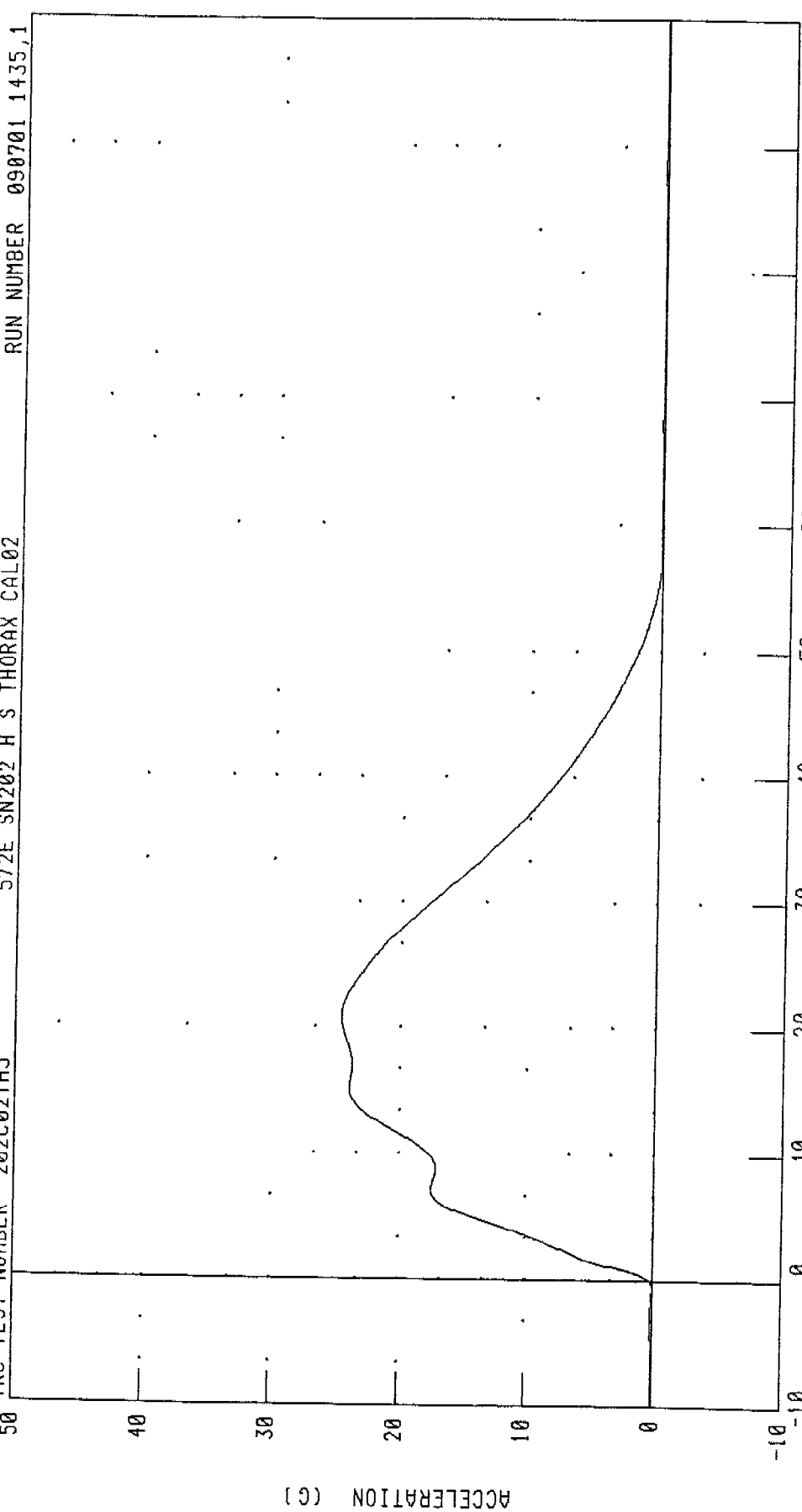
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER 202C02TH5

572E SN202 H S THORAX CAL02

RUN NUMBER 090701 1435,1



CHANNEL PENXC FILTER CH CLASS 100

TIME (MS)

PEAK DATA 24 64 C 0 20 88 MS, 0 00 C 0 -0 64 MS

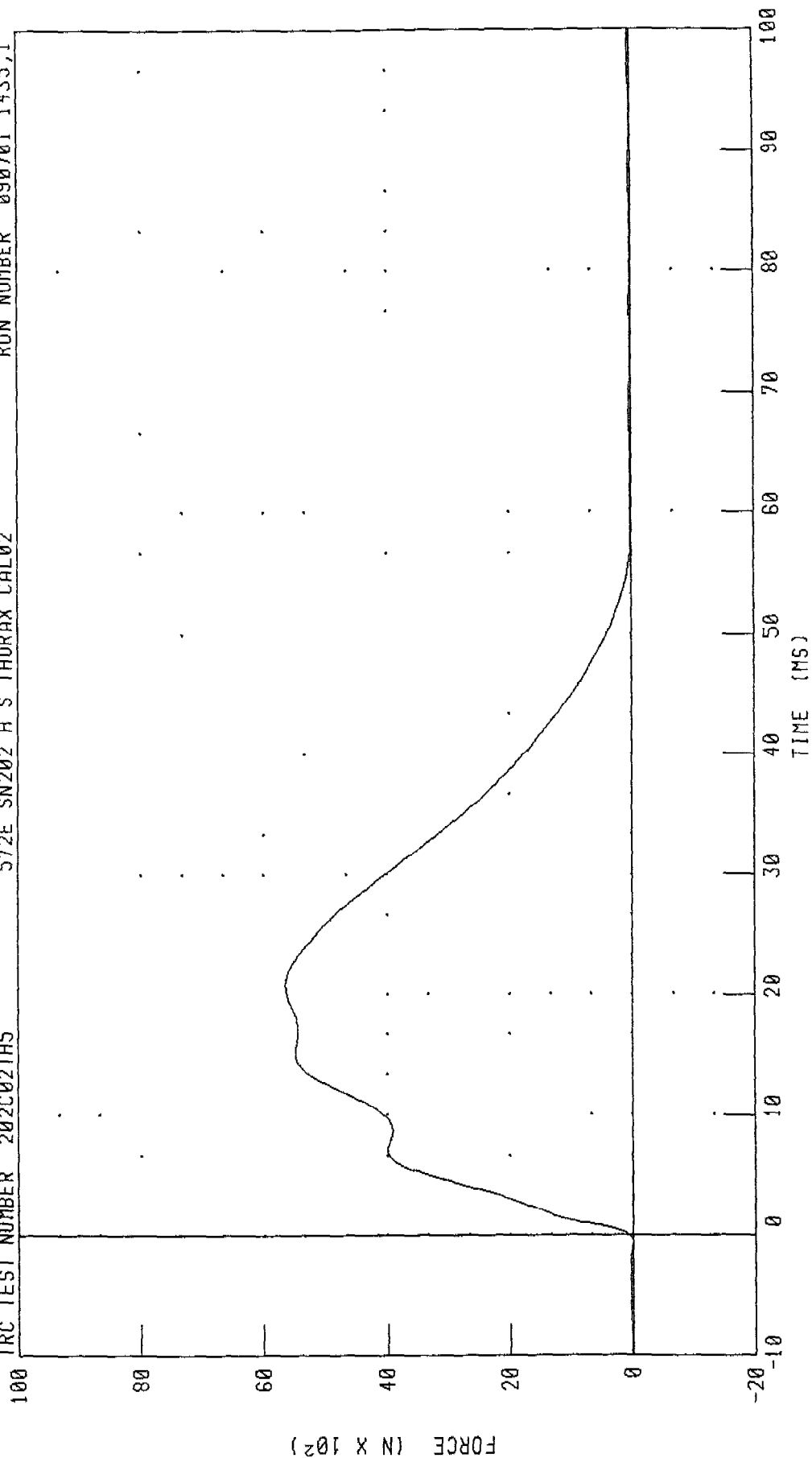
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER 202C02TH5

572E SN202 H S THORAX CAL02

RUN NUMBER 090701 1435,1

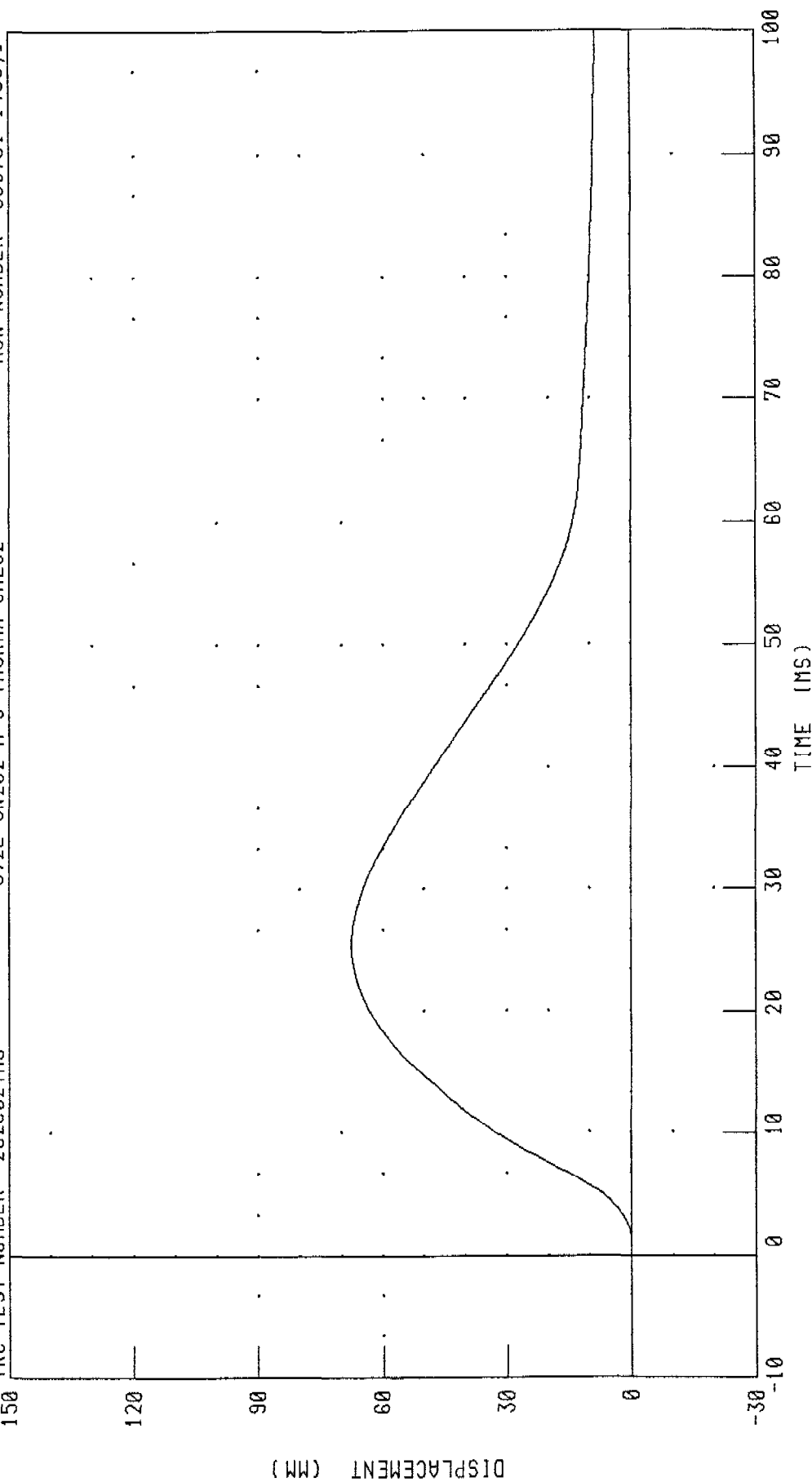


PEAK DATA 5644 89 N 0 20 88 MS, 0 85 N 0 -0 64 MS

PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

TRC TEST NUMBER 202C02TH5 572E SN202 H S THORAX CAL02 RUN NUMBER 090701 1435,1



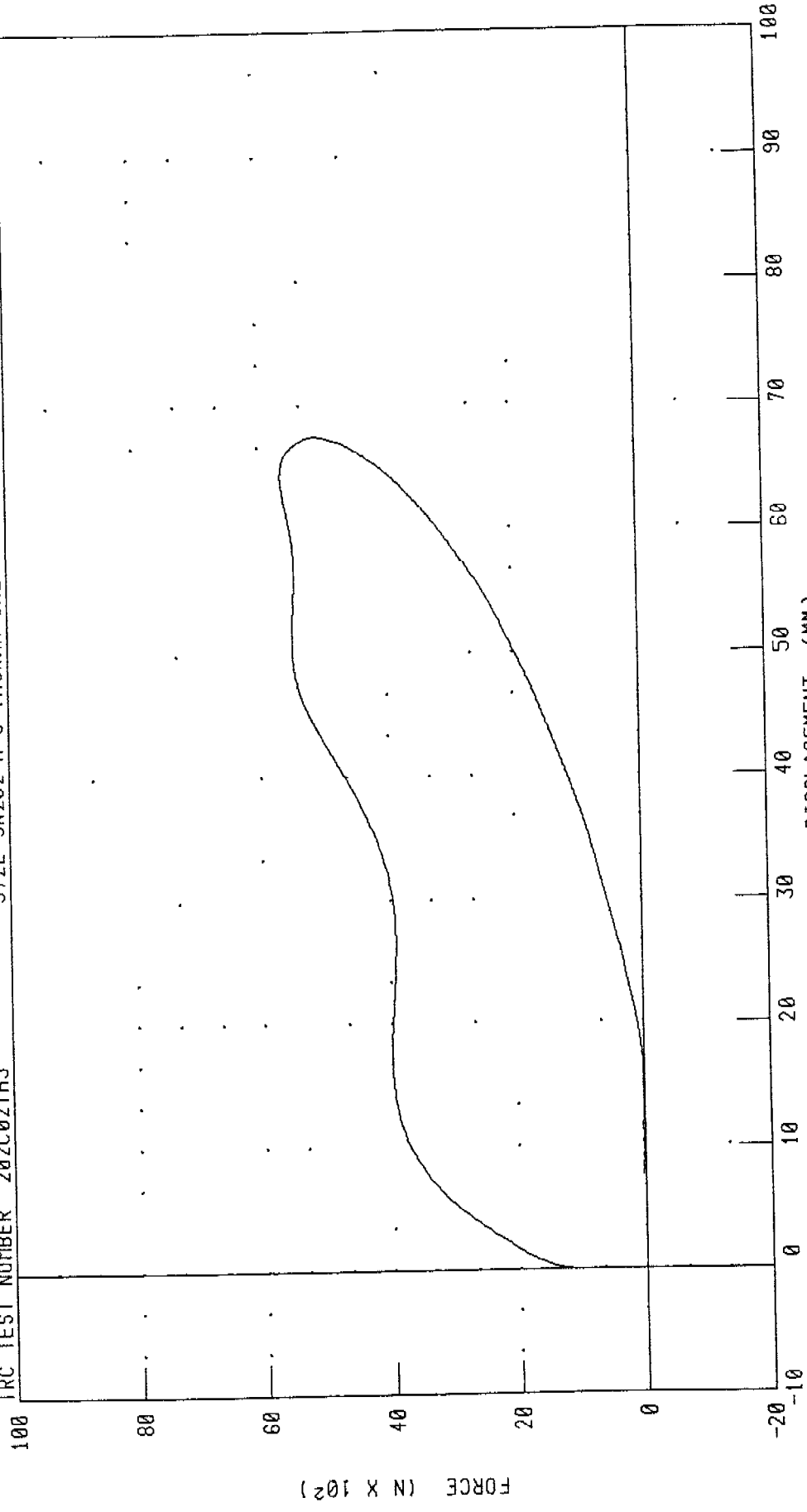
CHANNEL CSTXD FILTER CH CLASS 180

PEAK DATA 67 52 MM @ 25 44 MS, -0 03 MM @ 0 96 MS

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

TRC TEST NUMBER 202C02TH5 RUN NUMBER 090701 1435,1

572E SN202 H S THORAX CAL02



DISPLACEMENT (MM)
PEAK DATA

67 52 MM @ 25 44 MS, -0 03 MM @ 0 96 MS
5644 89 N @ 20 88 MS, 0 85 N @ -0 64 MS

FILTER CH CLASS 180
CH CLASS 180

CHANNEL CSTXD
PENXF

Transportation Research Center Inc

Hybrid III Hip Range of Motion

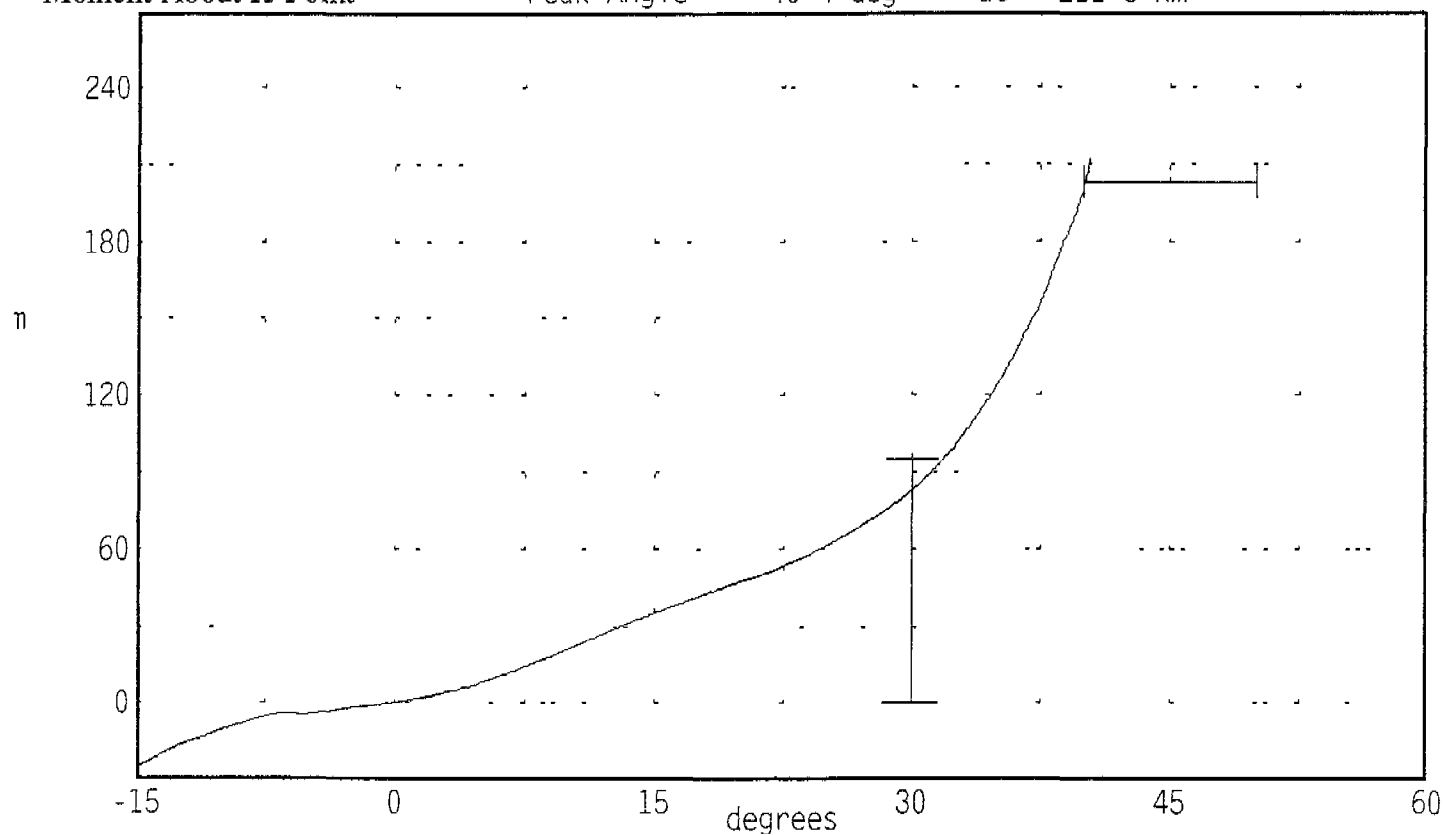
Serial Number 202L
Test Number 202C02

Date 09/06/2001
Time 07 54

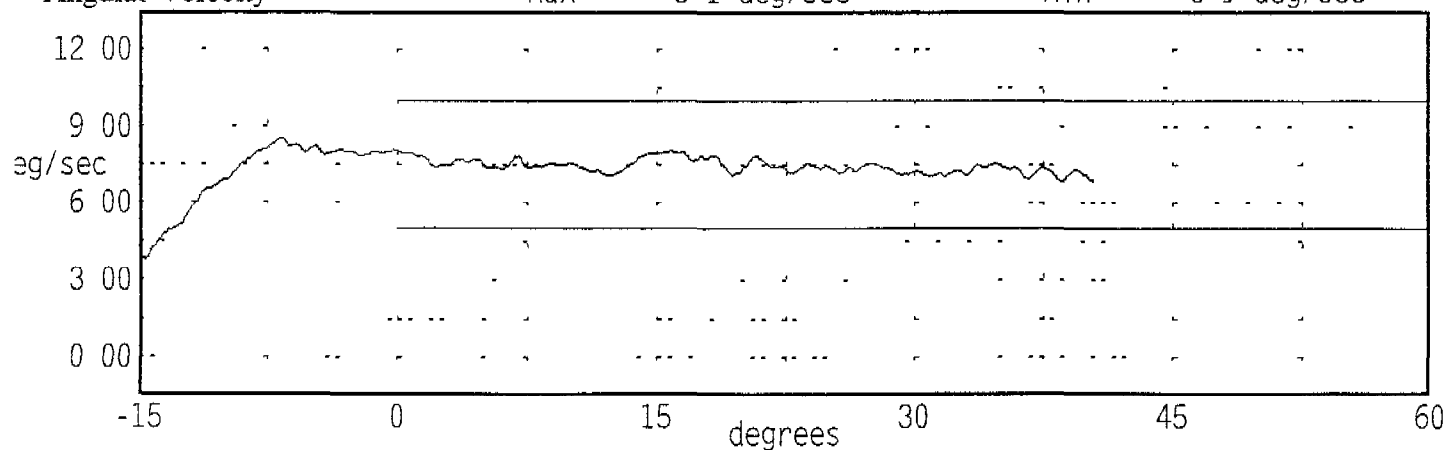
Comments:

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.7 °C Pass
Humidity	10 - 70	59 % Pass
Moment at 30 deg	<= 94.9	83.3 Nm Pass
Angle at 203 Nm	40.0 - 50.0	40.1 deg Pass
Average Velocity	5.0 - 10.0	7.4 deg/sec Pass

Moment About H-Point Peak Moment 211.8 Nm at 40.4 deg
Peak Angle 40.4 deg at 211.8 Nm



Angular Velocity Max 8.1 deg/sec Min 6.9 deg/sec



Transportation Research Center Inc

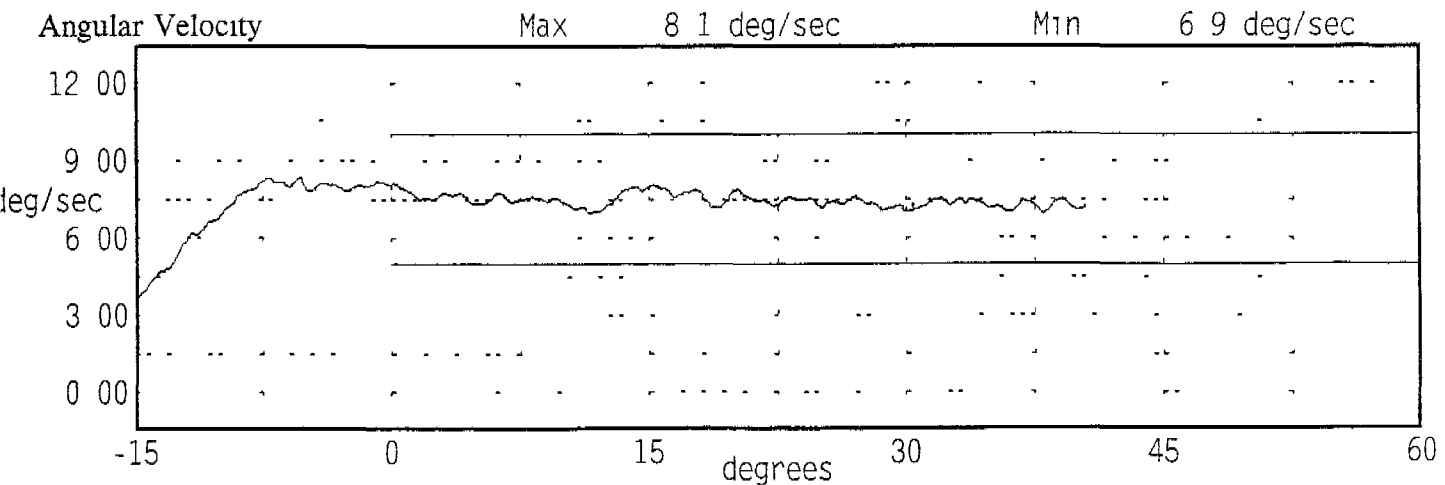
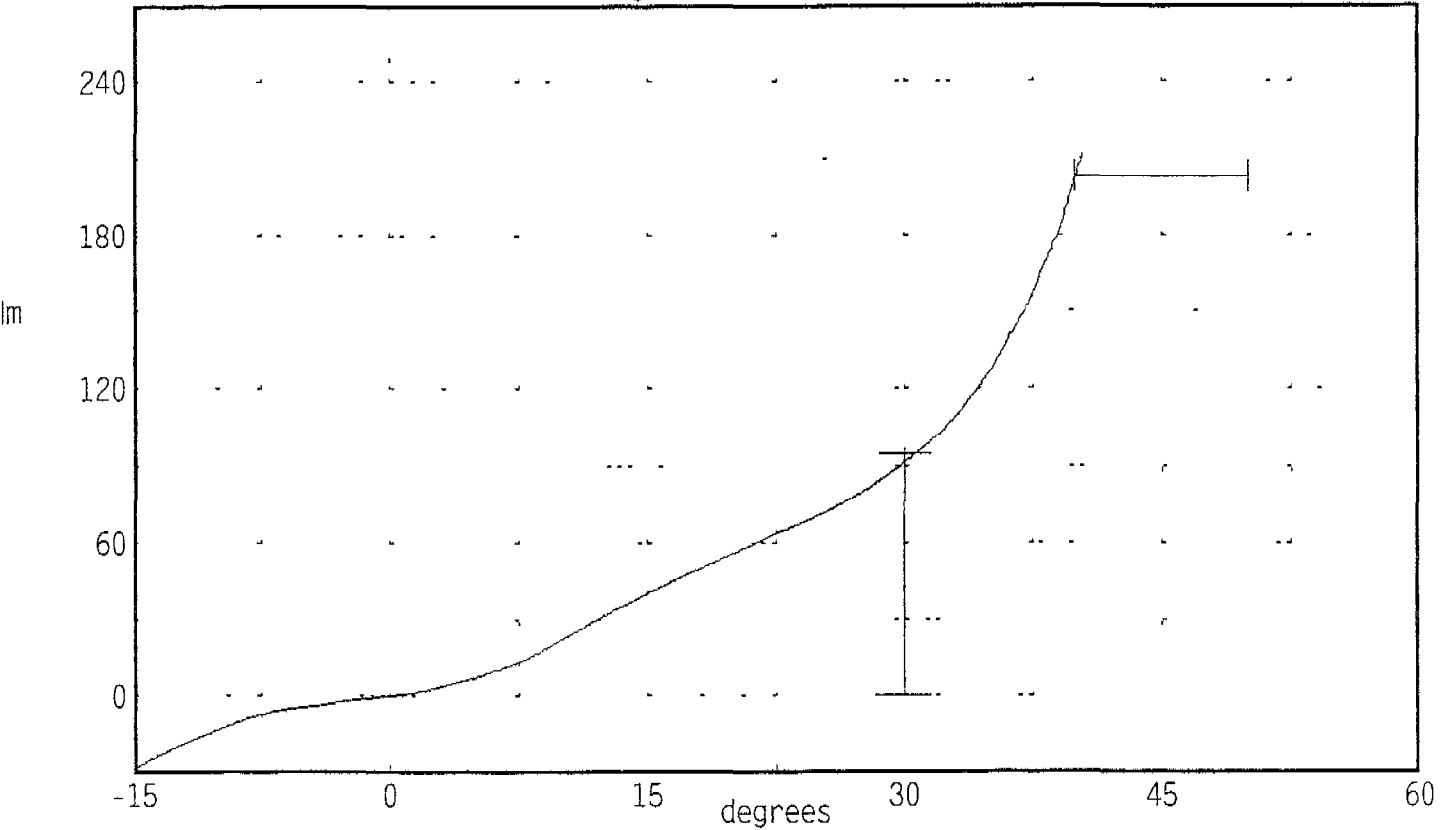
Hybrid III Hip Range of Motion

Serial Number 202R
Test Number 202C02
Comments:

Date 09/06/2001
Time 08:21

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.7 °C Pass
Humidity	10 - 70	59 % Pass
Moment at 30 deg	<= 94.9	91.9 Nm Pass
Angle at 203 Nm	40.0 - 50.0	40.1 deg Pass
Average Velocity	5.0 - 10.0	7.5 deg/sec Pass

Moment About H-Point
Peak Moment 211.5 Nm at 40.5 deg
Peak Angle 40.5 deg at 211.5 Nm



TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III 50th

27-AUG-01

TRC INC.

TEST NO: 202C02LK1

572E SN202 LEFT KNEE CAL 02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	68.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.13
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	4720.2 N

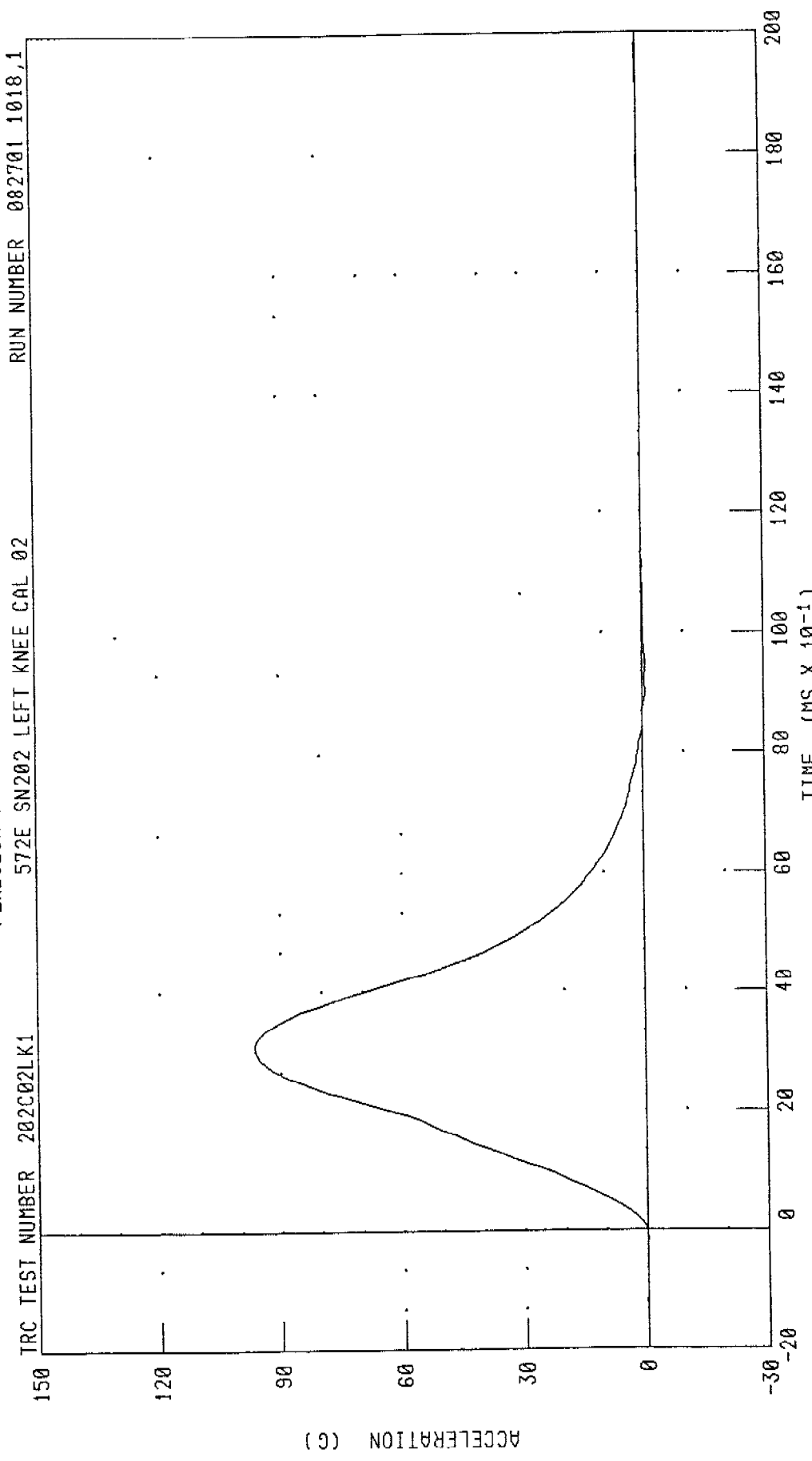
TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 082701.0733;1

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



TRC TEST NUMBER 202C02LK1 572E SN202 LEFT KNEE CAL 02 RUN NUMBER 082701 1018,1

CHANNEL PENXC FILTER CH CLASS 600

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

PEAK DATA 96 47 G 0 3 12 MS, -0 80 G 0 9 44 MS

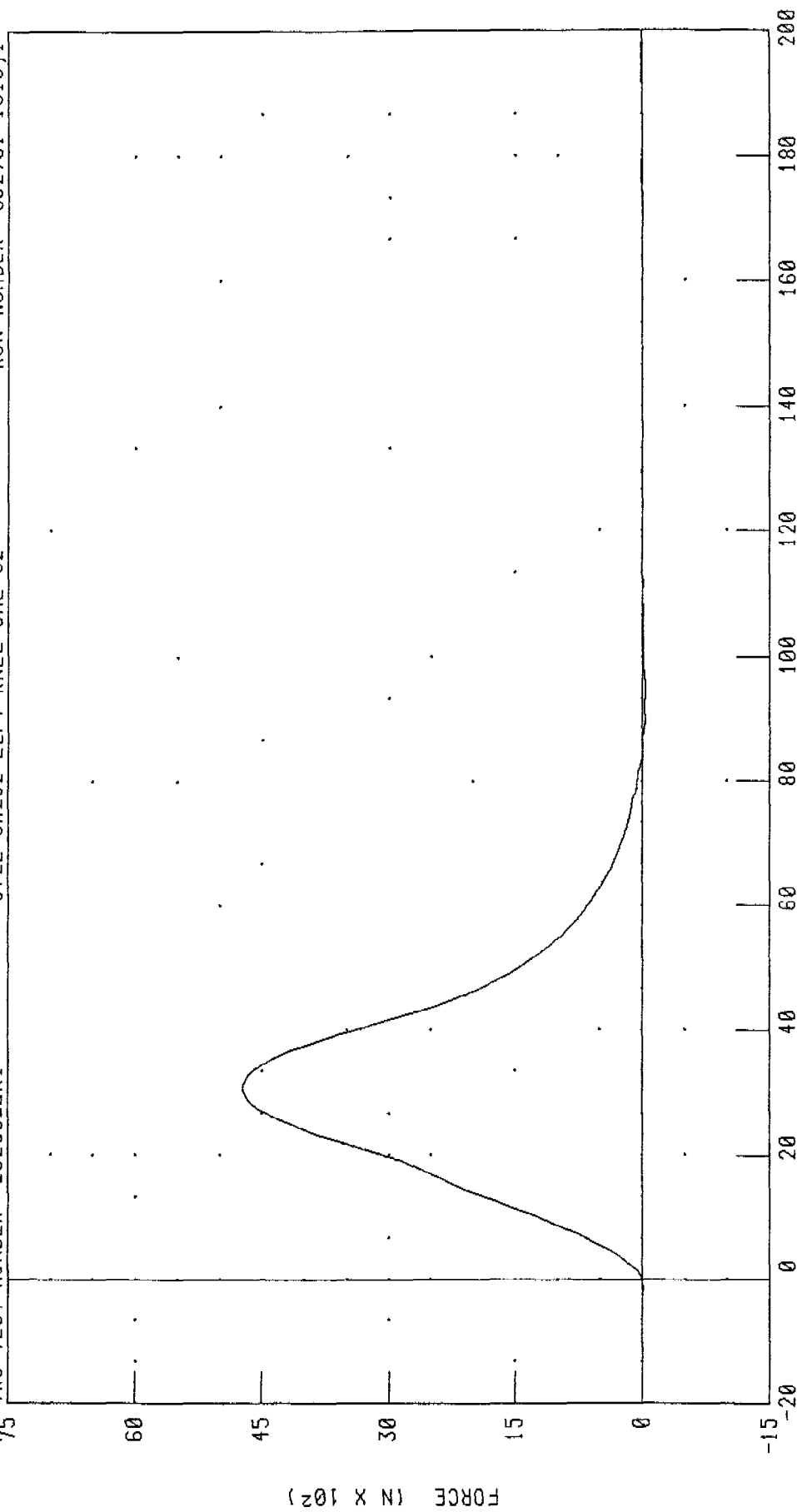
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND)

572E SN202 LEFT KNEE CAL 02

TRC TEST NUMBER 202C02LK1

RUN NUMBER 082701 1018,1



TIME (MS X 10⁻¹)

CHANNEL PENXF FILTER CH CLASS 600

PEAK DATA 4720 21 N 0 3 12 MS, -39 25 N 0 9 44 MS

TRANSPORTATION RESEARCH CENTER INC.

KNEE SLIDER TEST

HYBRID III 50th

24-AUG-01

LEFT KNEE

TRC INC.

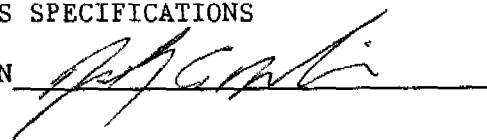
TEST NO: 202C02LS1

572E SN202 LEFT SLIDER CAL02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	64.0 %
PENDULUM VELOCITY	2.70-2.80 M/S	2.75 M/S
FORCE AT 10.0 MM DISPLACEMENT	1259 - 1721 N	1441. N
FORCE AT 18.0 MM DISPLACEMENT	2268 - 3096 N	2644. N

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 082401.1436;1

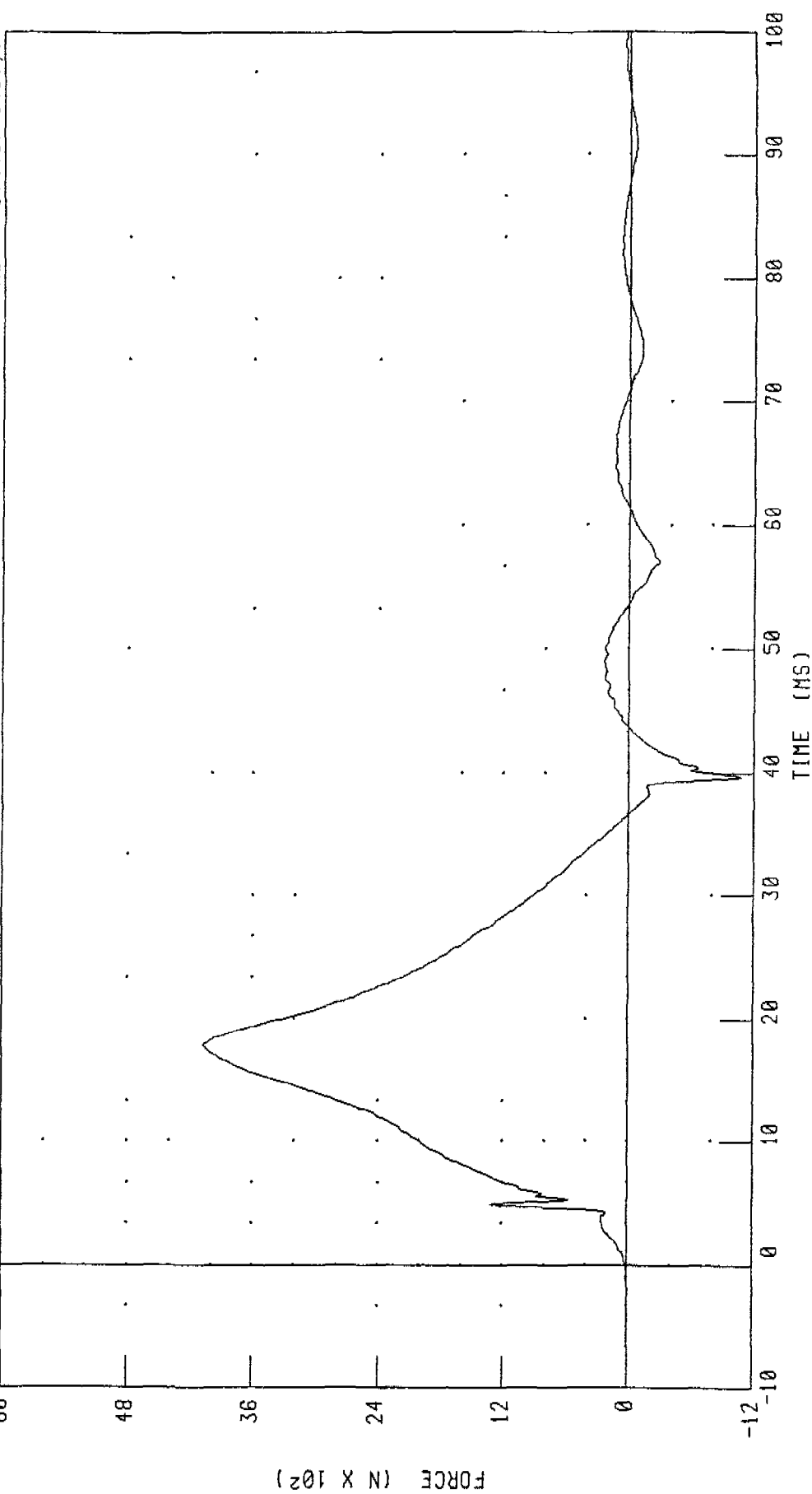
PART 572-E HYBRID III LEFT KNEE SLIDER CALIBRATION

LEFT FEMUR FORCE

TRC TEST NUMBER 202C02LS1

572E SN202 LEFT SLIDER CAL02

RUN NUMBER 082401 1436,1



CHANNEL LFMF FILTER CH CLASS 600

PEAK DATA 4067 49 N @ 17 84 MS, -1078 05 N @ 39 68 MS

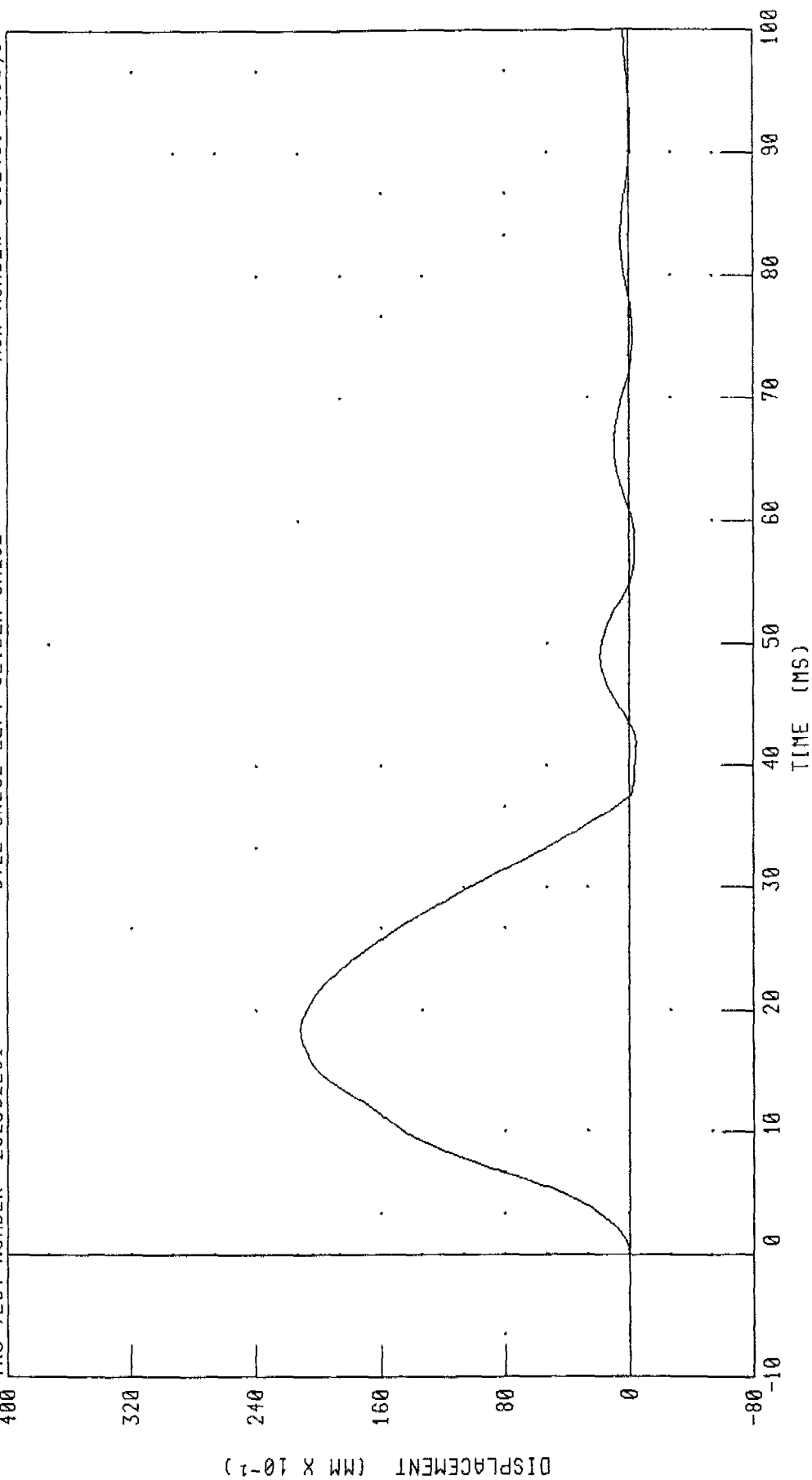
PART 572-E HYBRID III LEFT KNEE SLIDER CALIBRATION

LEFT KNEE DISPLACEMENT

TRC TEST NUMBER 202C02LS1

572E SN202 LEFT SLIDER CAL02

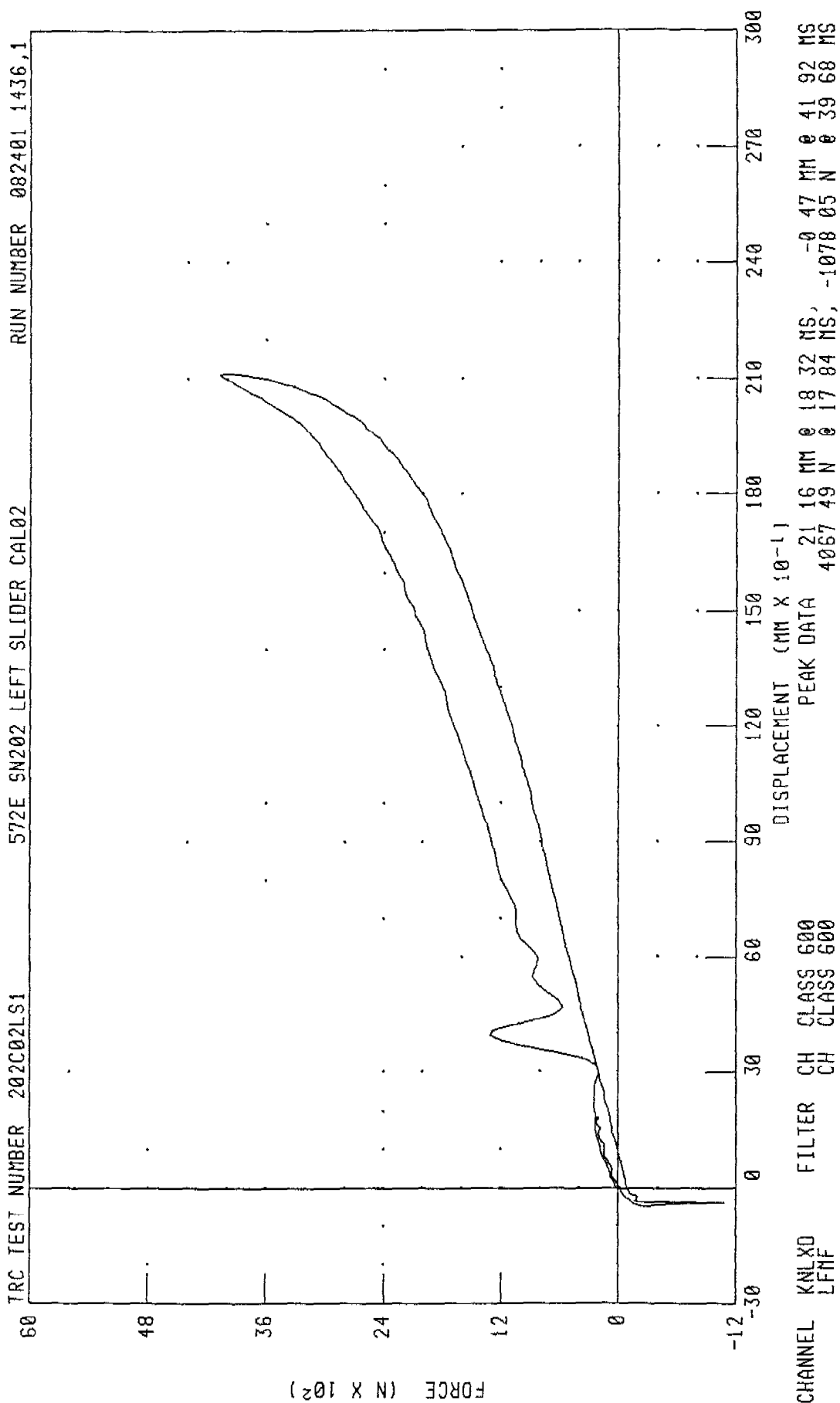
RUN NUMBER 082401 1436,1



CHANNEL KNLXD FILTER CH CLASS 600

PEAK DATA 21 16 MM @ 18 32 MS, -0 47 MM @ 41 92 MS

PART 572-E HYBRID III LEFT KNEE SLIDER CALIBRATION
LEFT KNEE DISPLACEMENT VS FEMUR FORCE



TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III 50th

27-AUG-01

TRC INC.

TEST NO: 202C02RK1

572E SN202 RIGHT KNEE CAL 02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	68.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.13 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5305.3 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

[Signature]

RUN NUMBER: 082701.0743;1

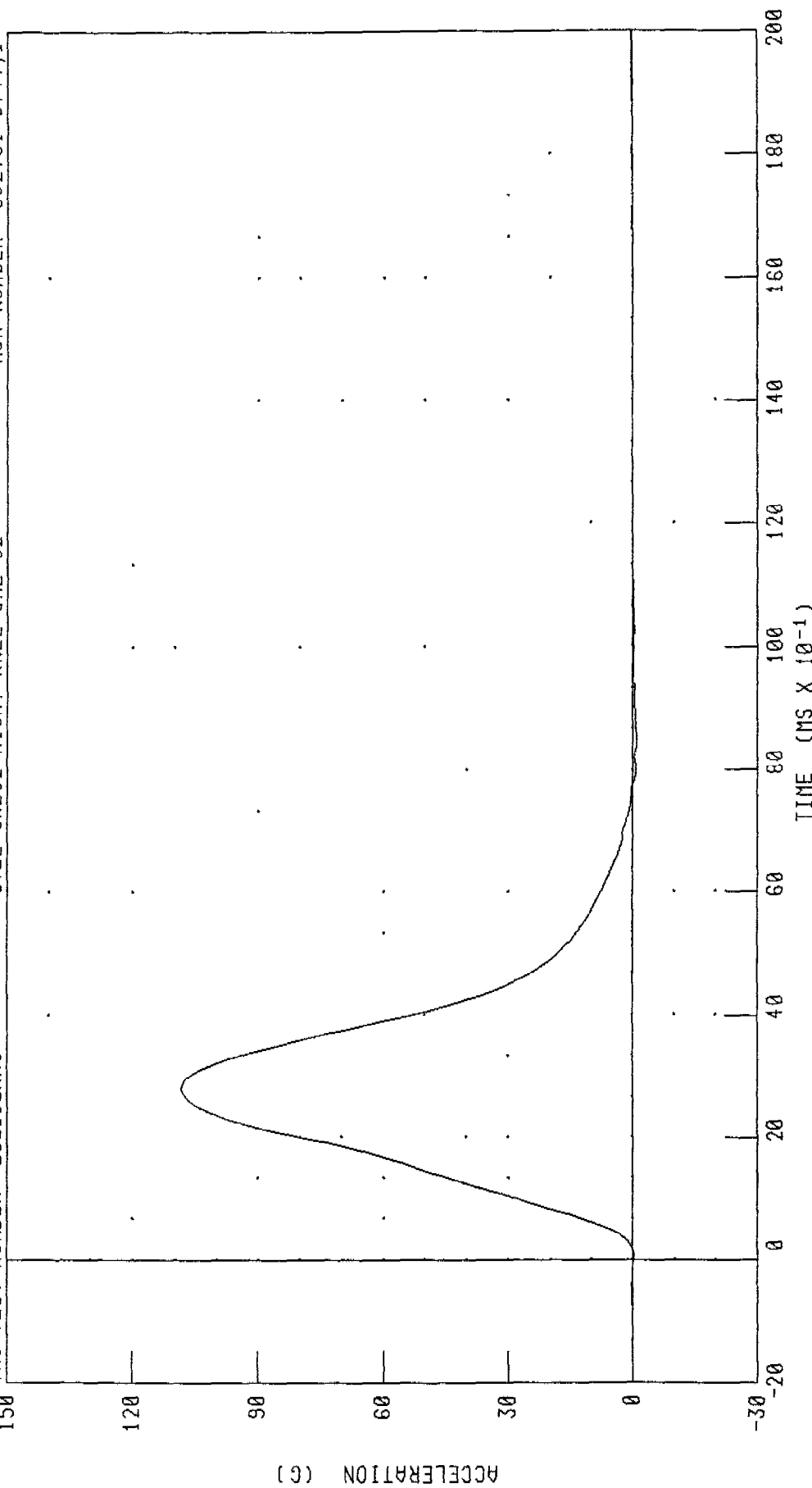
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM DECELERATION (5 KG PEND)

TRC TEST NUMBER 202C02RK1

572E SN202 RIGHT KNEE CAL 02

RUN NUMBER 082701 0744,1



CHANNEL PENXC FILTER CH CLASS 600

PEAK DATA 108 43 G @ 2 80 MS, -1 10 G @ 8 48 MS

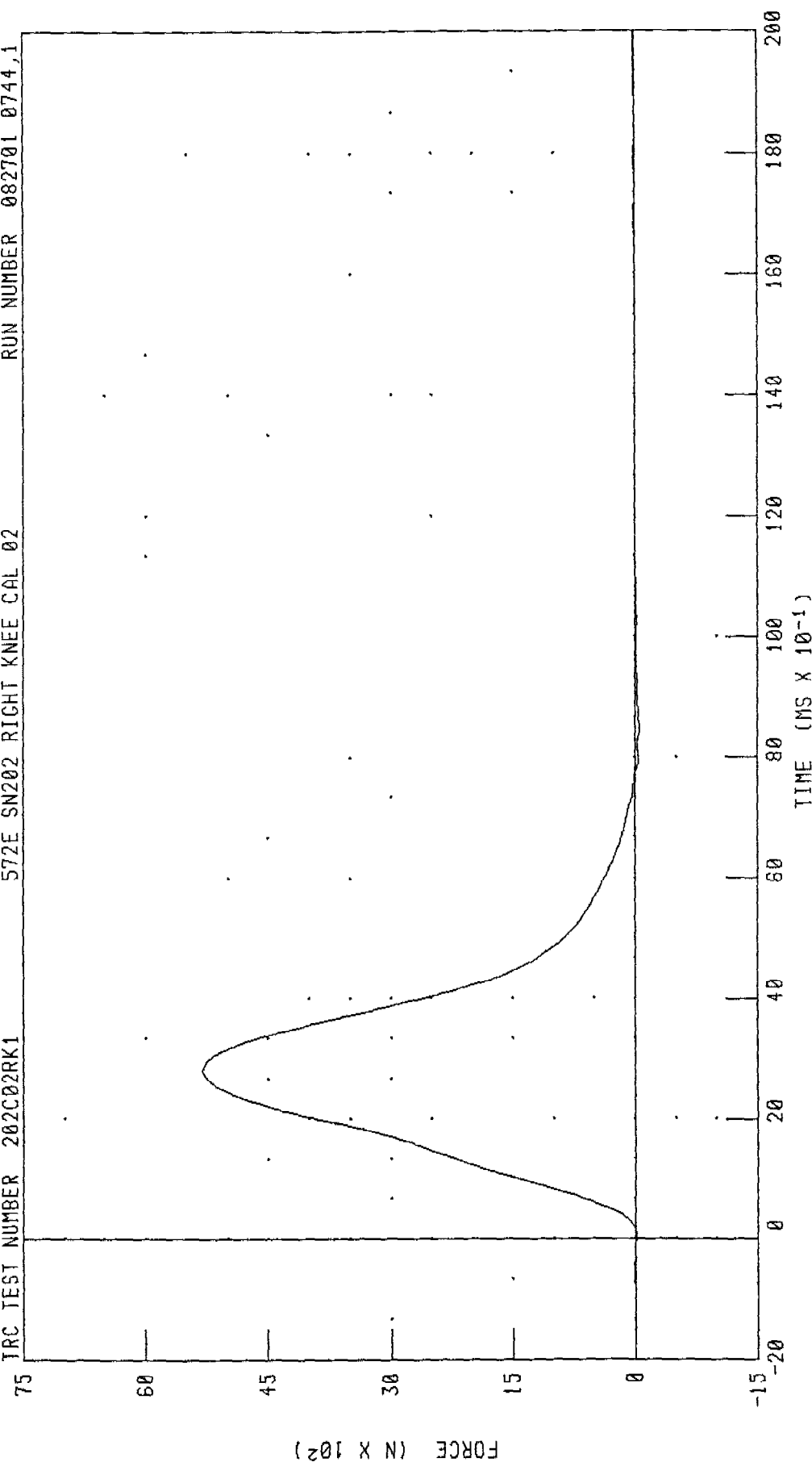
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND)

572E SN202 RIGHT KNEE CAL 02

TRC TEST NUMBER 202C02RK1

RUN NUMBER 082701 0744,1



CHANNEL PENXF FILTER CH CLASS 600

PEAK DATA 5305 35 N 0 2 80 MS, -54 02 N 0 8 48 MS

TRANSPORTATION RESEARCH CENTER INC.

KNEE SLIDER TEST

HYBRID III 50th

24-AUG-01

RIGHT KNEE

TRC INC.

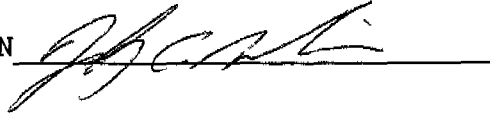
TEST NO: 202C02RS1

572E SN202 RIGHT SLIDER CAL 2

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	64.0 %
PENDULUM VELOCITY	2.70-2.80 M/S	2.74 M/S
FORCE AT 10.0 MM DISPLACEMENT	1259 - 1721 N	1446. N
FORCE AT 18.0 MM DISPLACEMENT	2268 - 3096 N	2696. N

TEST MEETS SPECIFICATIONS

TECHNICIAN

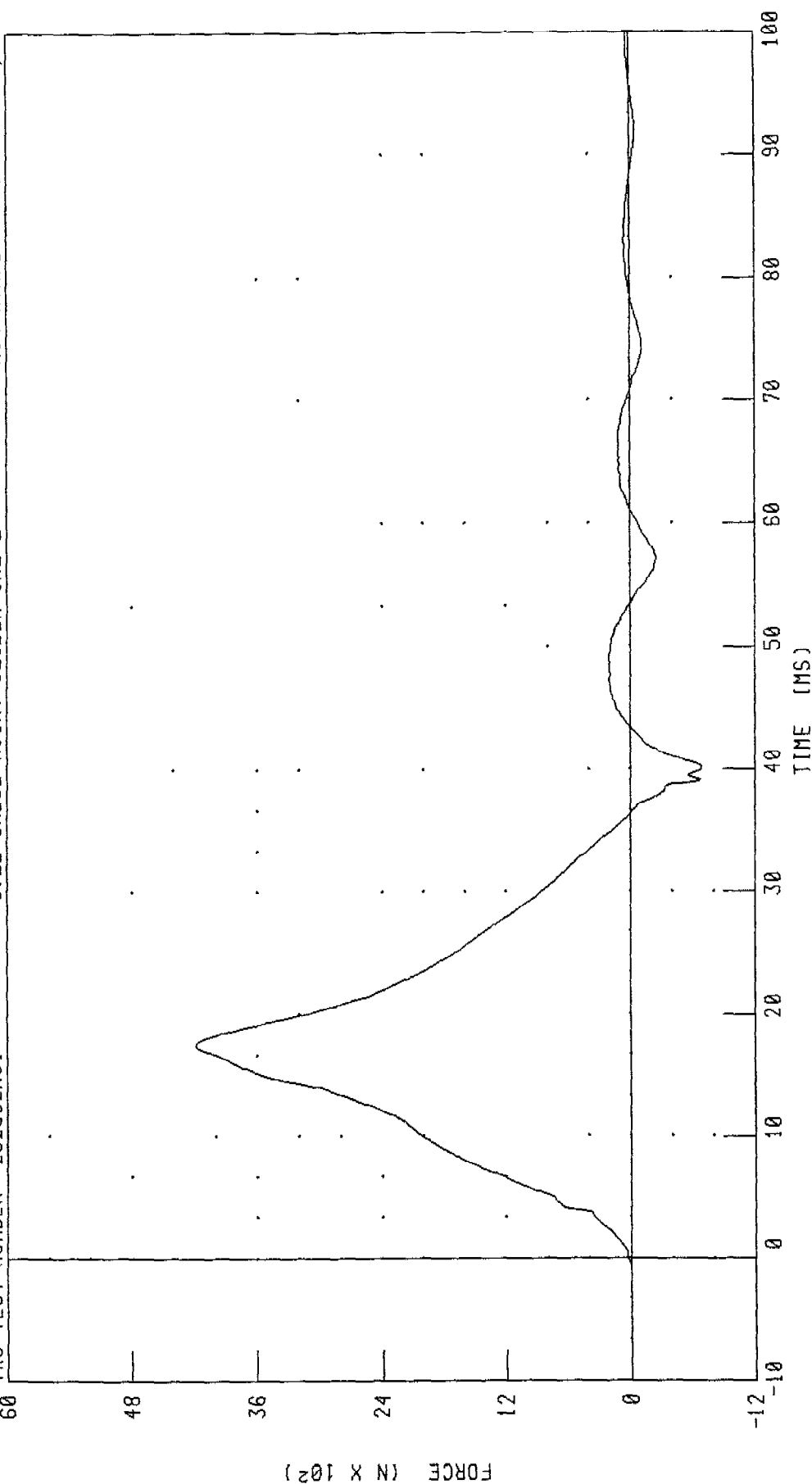


RUN NUMBER: 082401.1124;1

PART 572-E HYBRID III RIGHT KNEE SLIDER CALIBRATION

RIGHT FEMUR FORCE

TRC TEST NUMBER 202C02RS1 572E SN202 RIGHT SLIDER CAL 2 RUN NUMBER 082401 1124,1



CHANNEL RFMF FILTER CH CLASS 600 PEAK DATA 4186 33 N 0 17 60 MS, -682 97 N 0 40 16 MS

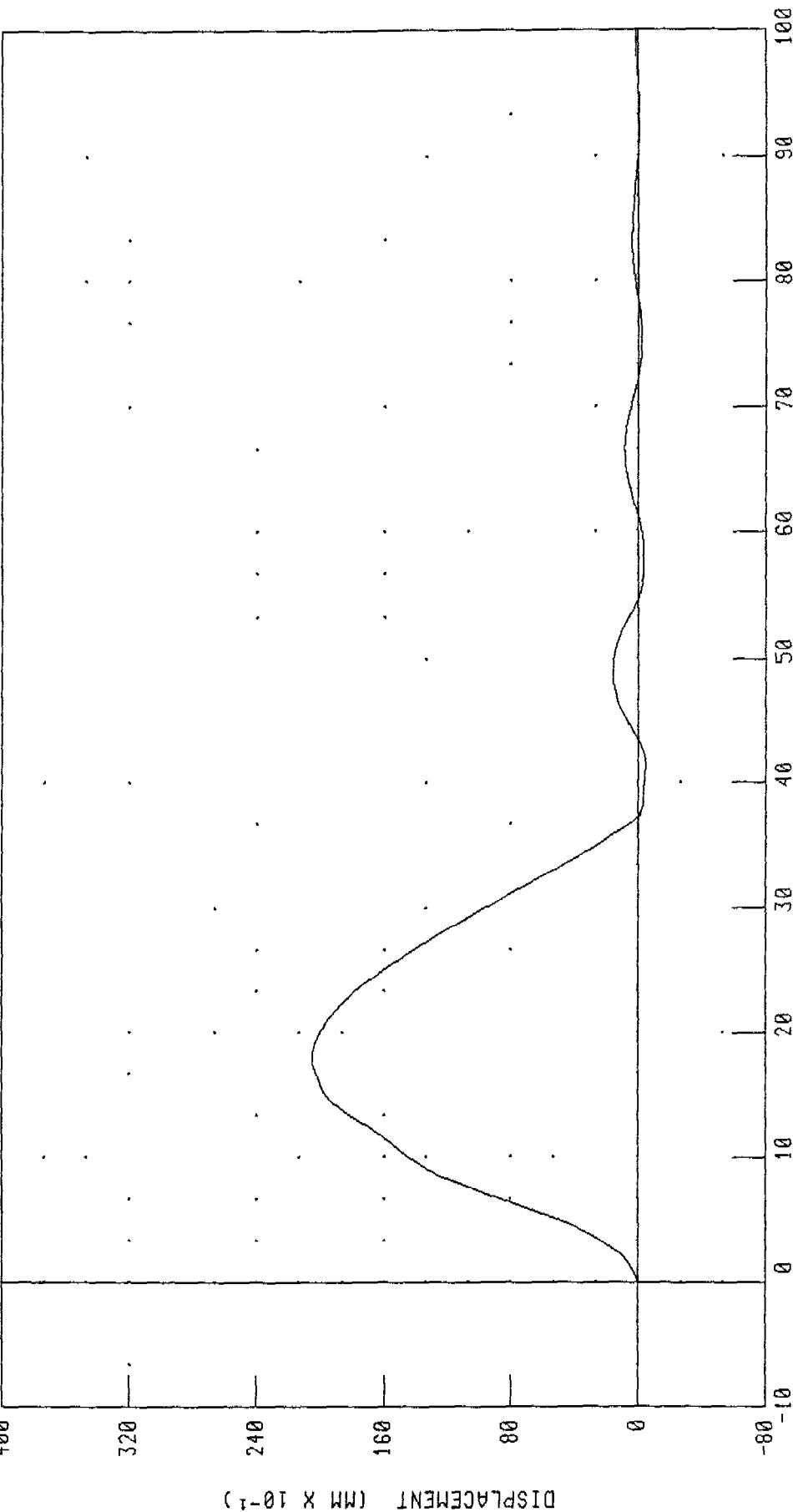
PART 572-E HYBRID III RIGHT KNEE SLIDER CALIBRATION

RIGHT KNEE DISPLACEMENT

TRC TEST NUMBER 202C02RS1

572E SN202 RIGHT SLIDER CAL 2

RUN NUMBER 082401 1124,1



TIME (MS)

CHANNEL KNRXD FILTER CH CLASS 600

PEAK DATA 20 54 MM @ 18 00 MS, -0 49 MM @ 41 60 MS

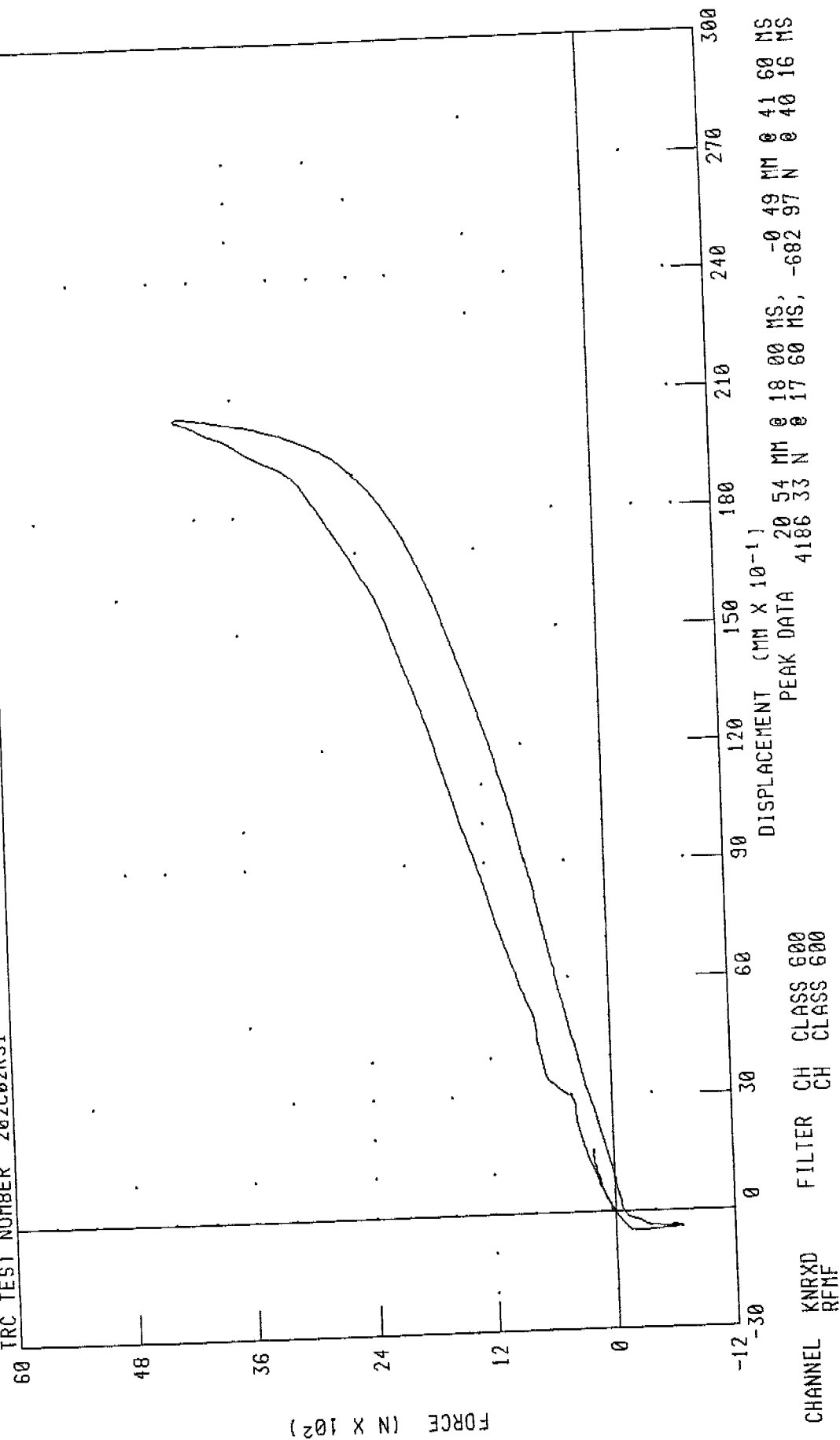
PART 572-E HYBRID III RIGHT KNEE SLIDER CALIBRATION

RIGHT KNEE DISPLACEMENT VS FEMUR FORCE

RUN NUMBER 082401 1124,1

572E SN202 RIGHT SLIDER CAL 2

TRC TEST NUMBER 202C02RS1



Appendix D

Test Equipment and Instrumentation Calibration Information

Report Sign Convention
SAE J211 MAR95

Accelerometers:

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

Potentiometers:

- +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)

Rotation potentiometers:

- +About the X-axis: Left foot-eversion
Right foot-inversion
- +About the Y-axis: Left/right foot-dorsiflexion
- +About the Z-axis: Left foot-internal
Right foot-external

Load cells:

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

Neck load cells:

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

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

Frequency Response Classes
SAE J211 MAR95

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Barrier Face Forces	60
Belt Restraint System Loads	60
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Neck	
Forces	1000
Moments	600
Thorax	
Spine accelerations	180
Rib accelerations	1000
Sternum accelerations	1000
Deflections	180
Lumbar	
Forces	1000
Moments	1000
Pelvis	
Accelerations	1000
Forces	1000
Moments	1000
Femur/Knee/Tibia/Ankle	
Forces	600
Moments	600
Displacements	180
Sled Accelerations	60
Steering Column Loads	600
Head form Accelerations	1000

The direction column on the following sheets describes the transducer output as mounted and wired in the test location. See Report Sign Convention sheet for description of data output as presented in the report: channels were adjusted in post-acquisition processing to conform to J211 MAR95.

Dummy	206v	Type	HIII 50TH	Description	VOLPE (NHTSA) - 206 HYBRID III 50TH (DKS 8-31-01)				
Chsnam	Location	Model	Name	Manufacturer	Sens./mV/V/U	Fullscale	Caldate	TRC Dir	
HEDXG	Head Accel X	EGE-73B6Q-20	01G25-N01	Entran	0 01864 G	2000	08/10/2001	Fwd	
HEDYG	Head Accel Y	EGE-73B6Q-20	01G25-N14	Entran	0 01879 G	2000	08/10/2001	Lft	
HEDZG	Head Accel Z	EGE-73B6Q-20	01G25-N08	Entran	0 02344 G	2000	08/10/2001	Up	
HEDXR	Head Accel Red X	7264C-2K-2-18	P12566	Endevco	0 0194 G	2000	08/28/2001	Rwd	
HEDYR	Head Accel Red Y	7264C-2KLC-2- P17196		Endevco	0 02095 G	2000	08/28/2001	Rgt	
HEDZR	Head Accel Red Z	7264C-2KLC-2- P17858		Endevco	0 01301 G	2000	08/28/2001	Up	
HD1XG	Head (LT) Accel X	EGE-73B6Q-20	01G25-N06	Entran	0 02364 G	2000	08/10/2001	Fwd	
HD1ZG	Head (LT) Accel Z	EGE-73B6Q-20	01G25-N05	Entran	0 01955 G	2000	08/10/2001	Up	
HD2YG	Head (FT) Accel Y	EGE-73B6Q-20	01G25-N04	Entran	0 01977 G	2000	08/10/2001	Lft	
HD2ZG	Head (FT) Accel Z	EGE-73B6Q-20	01G25-N13	Entran	0 01991 G	2000	08/10/2001	Up	
HD3XG	Head (TP) Accel X	EGE-73B6Q-20	01G25-N09	Entran	0 01934 G	2000	08/10/2001	Fwd	
HD3YG	Head (TP) Accel Y	EGE-73B6Q-20	01G25-N16	Entran	0 01877 G	2000	08/10/2001	Lft	
NEKXF	Neck Force X	1716A	1716A-858-FX	Denton	0 000193719 N	8896 4	08/16/2001	Hd Fd,Cst Rr	
NEKYF	Neck Force Y	1716A	1716A-858-FY	Denton	0 000186907 N	8896 4	08/16/2001	Hd Lt,Cst Rt	
NEKZF	Neck Force Z	1716A	1716A-858-FZ	Denton	0 000096144 N	13344 6	08/16/2001	Hd Up,Cst Dn	
NEKXM	Neck Moment X	1716A	1716A-858-MX	Denton	0 005827965 NM	282 5	08/16/2001	Rt Ear to Rt Shld	
NEKYM	Neck Moment Y	1716A	1716A-858-MY	Denton	0 005966726 NM	282.5	08/16/2001	Chn to Strmm	
NEKZM	Neck Moment Z	1716A	1716A-858-MZ	Denton	0 008246372 NM	282 5	08/16/2001	Chn to Lt Shld	
NKLXF	Lwr Neck Force X	1794A	1794A-216-FX	Denton	0 000140056 N	13344 6	07/05/2001	Hd Fd,Cst Rr	
NKLYF	Lwr Neck Force Y	1794A	1794A-216-FY	Denton	0 000137546 N	13344 6	07/05/2001	Hd Lt,Cst Rt	
NKLZF	Lwr Neck Force Z	1794A	1794A-216-FZ	Denton	0 000069773 N	13344 6	07/05/2001	Hd Up,Cst Dn	
NKLXM	Lwr Neck Moment X	1794A	1794A-216-MX	Denton	0 00389115 NM	452	07/05/2001	Rt Ear to Rt Shld	
NKLYM	Lwr Neck Moment Y	1794A	1794A-216-MY	Denton	0 003775 NM	452	07/05/2001	Chn to Strmm	
NKLZM	Lwr Neck Moment Z	1794A	1794A-216-MZ	Denton	0 006764823 NM	452	07/05/2001	Chn to Lt Shld	
CSTXG	Chest Accel X	7264-2000TZ	AJ460	Endevco	0 02863 G	2000	08/24/2001	Fwd	
CSTYG	Chest Accel Y	7264-2000TZ	J14404	Endevco	0 028 G	2000	08/24/2001	Lft	

Chsnam	Location	Model	Name	Manufacturer	Sens./mV/V/U	Fullscale	Caldate	TRC Dir
CSTZG	Chest Accel Z	7264-2000TZ	J14144	Endevco	0 03795 G	2000	08/24/2001	Up
CSTXD	Chest Deflection X	14CB1-2847	14CB1-2847-206	Servo	1.136107987 MM	100	11/27/2000	Strm Away Frm Spn
LFMZP	Left Femur Force Z	2121	2121-0160	Denton	0 000098324 N	13344.6	08/24/2001	Knee Fd, Pel Rr
RFMZP	Right Femur Force Z	2121	2121-0161	Denton	0 000099718 N	13344 6	08/24/2001	Knee Fd, Pel Rrxt
KNLXD	Left Knee Displacement	150-0121VR	150-0121VR 13741	SpaceAge	23 39429 MM	40	11/30/2000	Tib Rr, Hld Fem
TBLXP	Left Upper Tibia Force X LC8	4353J	4353J-82-FX	Denton	0 00017107 N	11120	08/03/2001	Tib Fd, Knee Rr
TBLZF	Left Upper Tibia Force Z LC15	4353J	4353J-82-FZ	Denton	0 000095631 N	11120	08/03/2001	Tib Dn, Knee Up
TBLXM	Left Upper Tibia Moment X LC17	4353J	4353J-82-MX	Denton	0 0075411 NM	395 4	08/03/2001	Ank Lt, Hld Knee
TBLYM	Left Upper Tibia Moment Y LC01	4353J	4353J-82-MY	Denton	0.0075411 NM	395.4	08/03/2001	Ank Fd, Hld Knee
TBLXG	Left Tibia Accel X	EGE-73B6Q-20	01G19-F02	Entran	0.01925 G	2000	08/21/2001	Fwd
TBLYG	Left Tibia Accel Y	EGE-73B6Q-20	01H02-N02	Entran	0 02125 G	2000	08/21/2001	Rt
ANLXF	Left Lower Tibia Force X LC23	4929J	4929J-87-FX	Denton	0 00017264 N	11120	12/22/2000	Ank Fd, Knee Rr
ANLYF	Left Lower Tibia Force Y LC16	4929J	4929J-87-FY	Denton	0 00017608 N	11120	12/22/2000	Ank Rt, Knee Lt
ANLZF	Left Lower Tibia Force Z LC19	4929J	4929J-87-FZ	Denton	0 000095856 N	11120	12/22/2000	Ank Dn, Knee Up
ANLXM	Left Lower Tibia Moment X LC26	4929J	4929J-87-MX	Denton	0 0075904 NM	395.4	12/22/2000	Ank Lt, Hld Knee
ANLYM	Left Lower Tibia Moment Y LC18	4929J	4929J-87-MY	Denton	0 0075879 NM	395 4	12/22/2000	Ank Fd, Hld Knee
FTLXD	Left Foot Disp X POT4	PD210-4B	PD210-4B-AK-060	CONTELEC	3 1541 DE	318	07/31/2001	Eversion
FTLYD	Left Foot Disp Y POT5	PD210-4B	PD210-4B-AK-061	CONTELEC	3.1679 DE	318	07/31/2001	Dorsiflexion
FTLZD	Left Foot Disp Z POT6	PD210-4B	PD210-4B-AK-062	CONTELEC	3 1819 DE	318	07/31/2001	Internal Rotation
FTLXG	Left Foot Accel X	EGE-73B6Q-20	01H02-N05	Entran	0 02077 G	2000	08/21/2001	Fwd
FTLYG	Left Foot Accel Y	EGE-73B6Q-20	01H02 N06	Entran	0 02085 G	2000	08/21/2001	Rt
FTLZG	Left Foot Accel Z	EGE-73B6Q-20	01H02-N01	Entran	0 02164 G	2000	08/21/2001	Dn
KNRXd	Right Knee Displacement	150-0121VL	150-0121VL-13729	SpaceAge	23 4514 MM	40	12/04/2000	Tib Rr, Hld Fem
TBRXF	Right Upper Tibia Force X LC10	4353J	4353J-81-FX	Denton	0 00016929 N	11120	08/03/2001	Tib Fd, Knee Rr
TBRZF	Right Upper Tibia Force Z LC14	4353J	4353J-81-FY	Denton	0 000094724 N	11120	08/03/2001	Tib Dn, Knee Up
TBRXM	Right Upper Tibia Moment X LC13	4353J	4353J-81-MX	Denton	0 0073122 NM	395 4	08/03/2001	Ank Lt, Hld Knee
TBRYM	Right Upper Tibia Moment Y LC22	4353J	4353J-81-MY	Denton	0 0073572 NM	395.4	08/03/2001	Ank Fd, Hld Knee
TBRXG	Right Tibia Accel X	EGE-73B6Q-20	01H02-N07	Entran	0 02142 G	2000	08/21/2001	Fwd

Chsnam	Location	Model	Name	Manufacturer	Sens./m V/V/U	Fullscale	Caldate	TRC Dir
TBRYG	Right Tibia Accel Y	EGE-73B6Q-20	01H02-N03	Entran	0.02147 G	2000	08/21/2001	Rt
ANRXXF	Right Lower Tibia Force X	4929J	4929J-86-FX	Denton	0.0001716 N	11120	12/22/2000	Ank Fd, Knee Rr
ANRYF	Right Lower Tibia Force Y	4929J	4929J-86-FY	Denton	0.0001746 N	11120	12/22/2000	Ank Rt, Knee Lft
ANRZF	Right Lower Tibia Force Z	4929J	4929J-86-FZ	Denton	0.000095461 N	11120	12/22/2000	Ank Dn, Knee Up
ANRXM	Right Lower Tibia Moment X	4929J	4929J-86-MX	Denton	0.0074837 NM	395.4	12/22/2000	Ank L, Hld Knee
ANRYM	Right Lower Tibia Moment Y	4929J	4929J-86-MY	Denton	0.0073843 NM	395.4	12/22/2000	Ank Fd, Hld Knee
FTRXD	Right Foot Disp. X	POT1	PD210-4B-AK-057	CONTELEC	3.1631 DE	318	07/31/2001	Inersion
FTRYD	Right Foot Disp. Y	POT2	PD210-4B-AK-058	CONTELEC	3.1586 DE	318	07/31/2001	Dorsiflexion
FTRZD	Right Foot Disp. Z	POT3	PD210-4B-AK-059	CONTELEC	3.1497 DE	318	07/31/2001	External Rotation
FTRXG	Right Foot Accel X	EGE-73B6Q-20	01G19-F06	Entran	0.02031 G	2000	08/21/2001	Fwd
FTRYG	Right Foot Accel Y	EGE-73B6Q-20	01H02-N08	Entran	0.02049 G	2000	08/21/2001	Rt
FTRZG	Right Foot Accel Z	EGE-73B6Q-20	01G19-F05	Entran	0.0177 G	2000	08/21/2001	Dn

VOLPE (NHTSA) - 202 HYBRID III 50TH (DKS 8-31-01)

Dummy	202v	Type	HIH 50TH		Description	VOLPE (NHTSA) - 202 HYBRID III 50TH (DKS 8-31-01)			
Chsnam	Location		Model	Name	Manufacturer	Sens./mV/V/U	Fullscale	Caldate	TRC Dir
HEDXG	Head Accel X		EGE-73B6Q-20	01G25-N07	Entran	0 02208 G	2000	08/10/2001	Fwd
HEDYG	Head Accel Y		EGE-73B6Q-20	01G25-N20	Entran	0 02011 G	2000	08/10/2001	Lft
HEDZG	Head Accel Z		EGE-73B6Q-20	01G25-N17	Entran	0 01957 G	2000	08/10/2001	Up
HEDXR	Head Accel Red X		7264C-2KLC-2- P15951		Endevco	0 01358 G	2000	08/28/2001	Rwd
HEDYR	Head Accel Red Y		7264C-2KLC-2- P16328		Endevco	0 01461 G	2000	08/28/2001	Rgt
HEDZR	Head Accel Red Z		7264C-2KLC-2- P16899		Endevco	0 015 G	2000	08/28/2001	Up
HD1XG	Head (LT) Accel X		EGE-73B6Q-20	01G19-F03	Entran	0 02156 G	2000	08/10/2001	Fwd
HD1ZG	Head (LT) Accel Z		EGE-73B6Q-20	01G25-N18	Entran	0 01906 G	2000	08/10/2001	Up
HD2YG	Head (FT) Accel Y		EGE-73B6Q-20	01G25-N10	Entran	0 02248 G	2000	08/10/2001	Lft
HD2ZG	Head (FT) Accel Z		EGE-73B6Q-20	01G25-N03	Entran	0 01933 G	2000	08/10/2001	Up
HD3XG	Head (TP) Accel X		EGE-73B6Q-20	01G25-N15	Entran	0 02019 G	2000	08/10/2001	Fwd
HD3YG	Head (TP) Accel Y		EGE 73B6Q-20	01G25-N02	Entran	0 01968 G	2000	08/10/2001	Lft
NEKXF	Neck Force X		1716	1716-0628-FX	Denton	0 000192033 N	8896 4	08/16/2001	Hd Fd,Cst Rr
NEKYF	Neck Force Y		1716	1716 0628-FY	Denton	0 000184075 N	8896 4	08/16/2001	Hd Lt,Cst Rt
NEKZF	Neck Force Z		1716	1716-0628-FZ	Denton	0 00008605 N	13344.6	08/16/2001	Hd Up,Cst Dn
NEKXM	Neck Moment X		1716	1716-0628-MX	Denton	0 005770973 NM	282.5	08/16/2001	Rt Ear to Rt Shld
NEKYM	Neck Moment Y		1716	1716-0628-MY	Denton	0 005887788 NM	282 5	08/16/2001	Chn to Strmm
NEKZM	Neck Moment Z		1716	1716-0628-MZ	Denton	0 008187257 NM	282.5	08/16/2001	Chn to Lt Shld
NKLXF	Lwr Neck Force X		1794A	1794A-215-FX	Denton	0 000140236 N	13344 6	07/05/2001	Hd Fd,Cst Rr
NKLYF	Lwr Neck Force Y		1794A	1794A-215-FY	Denton	0 000137853 N	13344 6	07/05/2001	Hd Lt,Cst Rt
NKLZF	Lwr Neck Force Z		1794A	1794A-215-FZ	Denton	0 000069204 N	13344 6	07/05/2001	Hd Up,Cst Dn
NKLXM	Lwr Neck Moment X		1794A	1794A-215-MX	Denton	0 003864601 NM	452	07/05/2001	Rt Ear to Rt Shld
NKLYM	Lwr Neck Moment Y		1794A	1794A-215-MY	Denton	0 003795796 NM	452	07/05/2001	Chn to Strmm
NKLZM	Lwr Neck Moment Z		1794A	1794A-215-MZ	Denton	0 006828982 NM	452	07/05/2001	Chn to Lt Shld
CSTXG	Chest Accel X		7264-2000TZ	ACCM9	Endevco	0 02826 G	2000	08/24/2001	Fwd
CSTYG	Chest Accel Y		7264-2000TZ	J15368	Endevco	0 03531 G	2000	08/24/2001	Lft

Chsnam	Location	Model	Name	Manufacturer	Sens./mV/V/U	Fullscale	Caldate	TRC Dir
CSTZG	Chest Accel Z	7264-2000TZ	J20184	Endevco	0.02521 G	2000	08/24/2001	Up
CSTXD	Chest Deflection X	14CB1-2847	14CB1-2847-0137	Servo	1 14032609 MM	100	09/06/2001	Strm Away Frm Spn
LPMZF	Left Femur Force Z	2121	2121-0226	Denton	0.000098729 N	1334.6	08/24/2001	Knee Fd, Pel Rr
RFMZ	Right Femur Force Z	2121	2121-0227	Denton	0.000098759 N	1334.6	08/24/2001	Knee Fd, Pel Rrxt
KNLXD	Left Knee Displacement	150-0121VR	150-0121VR-13739	SpaceAge	23.10643 MM	40	11/30/2000	Tib Rr, Hld Fem
TBLXF	Left Upper Tibia Force X	3115	3115-199-FX	Denton	0.000172571 N	11120	03/02/2001	Tib Rr, Knee Fd
TBLZF	Left Upper Tibia Force Z	3115	3115-199-EZ	Denton	0.000095782 N	11120.5	03/02/2001	Tib Dn, Knee Up
TBLXM	Left Upper Tibia Moment X	3115	3115-199-MX	Denton	0.007356348 NM	395.5	03/02/2001	Tib Rt, Hld Knee
TBLYM	Left Upper Tibia Moment Y	3115	3115-199-MY	Denton	0.007476226 NM	395.5	03/02/2001	Tib Fd, Hld Knee
ANLXF	Left Lower Tibia Force X	3287	3287-128-FX	Denton	0.000174361 N	11120.5	03/05/2001	Ank Rr, Knee Fd
ANLZF	Left Lower Tibia Force Z	3287	3287-128-EZ	Denton	0.000096879 N	11120.5	03/05/2001	Ank Dn, Knee Up
ANLXM	Left Lower Tibia Moment X	3287	3287-128-MX	Denton	0.007693474 NM	395.4	03/05/2001	Ank Rt, Hld Knee
ANLYM	Left Lower Tibia Moment Y	3287	3287-128-MY	Denton	0.007630753 NM	395.4	03/05/2001	Ank Fd, Hld Knee
FLHXG	Left Foot-Heel Accel X	7264-2KM5T	J27387	Endevco	0.0241 G	2000	08/24/2001	Fwd
FLHZG	Left Foot-Heel Accel Z	7264-2KM5T	J27553	Endevco	0.02754 G	2000	08/24/2001	Dwn
FLTZG	Left Foot-Toe Accel Z	7264-2KM5T	J27474	Endevco	0.02712 G	2000	08/24/2001	Up
KNRXD	Right Knee Displacement	150-0121VL	150-0121VL-13723	SpaceAge	23.5714 MM	40	11/30/2000	Tib Rr, Hld Fem
TBRXF	Right Upper Tibia Force X	3115	3115-200-FX	Denton	0.000170179 N	11120	03/05/2001	Tib Rr, Knee Fd
TBRZF	Right Upper Tibia Force Z	3115	3115-200-EZ	Denton	0.000094433 N	11120	03/05/2001	Tib Dn, Knee Up
TBRXM	Right Upper Tibia Moment X	3115	3115-200-MX	Denton	0.007369499 NM	395.5	03/05/2001	Tib Rt, Hld Knee
TBRYM	Right Upper Tibia Moment Y	3115	3115-200-MY	Denton	0.007401618 NM	395.5	03/05/2001	Tib Fd, Hld Knee
ANRXF	Right Lower Tibia Force X	3287	3287-129-FX	Denton	0.000173435 N	11120.5	03/07/2001	Ank Rr, Knee Fd
ANRZF	Right Lower Tibia Force Z	3287	3287-129-EZ	Denton	0.000096573 N	11120.5	03/07/2001	Ank Dn, Knee Up
ANRXM	Right Lower Tibia Moment X	3287	3287-129-MX	Denton	0.007584977 NM	395.4	03/07/2001	Ank Rt, Hld Knee
ANRYM	Right Lower Tibia Moment Y	3287	3287-129-MY	Denton	0.007643146 NM	395.4	03/07/2001	Ank Fd, Hld Knee
FRHXG	Right Foot-Heel Accel X	7264-2000T	J17976	Endevco	0.02777 G	2000	08/24/2001	Fwd
FRHZG	Right Foot-Heel Accel Z	7264-2KM5T	J19934	Endevco	0.02462 G	2000	08/24/2001	Dwn
FRTZG	Right Foot-Toe Accel Z	7264-2KM5T	J28727	Endevco	0.02393 G	2000	08/24/2001	Up

Channel Report

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Name of Test 010910

System K3600

Name of DAU DAU1

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal.	Date/Status	Group	Mfg.	Model
1000	EVENT1	BACKUP	BACKUP EVENT		10 24	+		06/29/2000	-1	TRC	Event
1001	01G25-N01	HEDXG1	DRIVER HEAD X-AXIS	Fwd	796 1684393 G	+		08/10/2001	OK	Entran	EGE-73B6Q-2000J
1002	01G25-N14	HEDYG1	DRIVER HEAD Y-AXIS	Lft	801 4275428 G	+		08/10/2001	OK	Entran	EGE-73B6Q-2000J
1003	01G25-N08	HEDZG1	DRIVER HEAD Z-AXIS	Up	794 2910331 G	+		08/10/2001	OK	Entran	EGE-73B6Q-2000J
1004	P12566	HEDXR1	DRIVER HEAD X-AXIS	Rwd	799 7500781 G	+		08/28/2001	OK	Endevco	7264C-2K-2-180
1005	P17196	HEDYR1	DRIVER HEAD Y-AXIS	Rgt	801 2833052 G	+		08/28/2001	OK	Endevco	7264C-2KLC-2-24
1006	P17858	HEDZR1	DRIVER HEAD Z-AXIS	Up	803 1498533 G	+		08/28/2001	OK	Endevco	7264C-2KLC-2-24
1007	01G25-N06	HD1XG1	DRIVER HEAD X-AXIS (LT)	Fwd	802 1557936 G	+		08/10/2001	OK	Entran	EGE-73B6Q-2000J
1008	01G25-N05	HD1ZG1	DRIVER HEAD Z-AXIS (LT)	Up	805 8233326 G	+		08/10/2001	OK	Entran	EGE-73B6Q-2000J
1009	01G25-N04	HD2YG1	DRIVER HEAD Y-AXIS (FT)	Lft	796 8561534 G	+		08/10/2001	OK	Entran	EGE-73B6Q-2000J
1010	01G25-N13	HD2ZG1	DRIVER HEAD Z-AXIS (FT)	Up	803 6162732 G	+		08/10/2001	OK	Entran	EGE-73B6Q-2000J
1011	01G25-N09	HD3XG1	DRIVER HEAD X-AXIS (TP)	Fwd	802 2312055 G	+		08/10/2001	OK	Entran	EGE-73B6Q-2000J
1012	01G25-N16	HD3YG1	DRIVER HEAD Y-AXIS (TP)	Lft	802 2814879 G	+		08/10/2001	OK	Entran	EGE-73B6Q-2000J
1013	1716A-858-FX	NEKXF1	DRIVER NECK X-AXIS SHEAR	Hd	8899 001770 N	+		08/16/2001	OK	Denton	1716A
1014	1716A-858-FY	NEKYF1	DRIVER NECK Y-AXIS SHEAR	Hd	8893 929399 N	+		08/16/2001	OK	Denton	1716A
1015	1716A-858-FZ	NEKZF1	DRIVER NECK Z-AXIS AXIAL	Hd	13346 73011 N	+		08/16/2001	OK	Denton	1716A
1016	1716A-858-MX	NEKXM1	DRIVER NECK MOMENT	Rt Ear	282 4832082 NM	+		08/16/2001	OK	Denton	1716A
1017	1716A-858-MY	NEKYM1	DRIVER NECK MOMENT	Chn	282 7321336 NM	+		08/16/2001	OK	Denton	1716A
1018	1716A-858-MZ	NEKZM1	DRIVER NECK MOMENT	Chn	282 2177713 NM	+		08/16/2001	OK	Denton	1716A
1019	1794A-216-FX	NKLPF1	DRIVER NECK LOWER X-AXIS		Hd 13341 89994 N	+		07/05/2001	OK	206v Denton	1794A
1020	1794A-216-FY	NKLYF1	DRIVER NECK LOWER Y-AXIS		Hd 13341 90342 N	+		07/05/2001	OK	206v Denton	1794A
1021	1794A-216-FZ	NKLZF1	DRIVER NECK LOWER Z-AXIS	Hd	13341 96739 N	+		07/05/2001	OK	Denton	1794A
1022	1794A-216-MX	NKLXM1	DRIVER NECK LOWER	Rt Ear	339 1253559 NM	+		07/05/2001	OK	Denton	1794A
1023	1794A-216-MY	NKLYM1	DRIVER NECK LOWER	Chn	339 0728476 NM	+		07/05/2001	OK	Denton	1794A
1024	1794A-216-MZ	NKLZM1	DRIVER NECK LOWER	Chn	181 0661391 NM	+		07/05/2001	OK	Denton	1794A
1025	ACCM9	CSTXG1	DRIVER CHEST X-AXIS	Fwd	398 1863854 G	+		08/24/2001	OK	Endevco	7264-2000TZ
1026	J15368	CSTYG1	DRIVER CHEST Y-AXIS	Lft	397 2641535 G	+		08/24/2001	OK	Endevco	7264-2000TZ
1027	J20184	CSTZG1	DRIVER CHEST Z-AXIS	Up	398 2235496 G	+		08/24/2001	OK	Endevco	7264-2000TZ
1028	14CB1-2847-206	CSTXD1	DRIVER CHEST DEFFLECTION	Stnm	111 9724477 MM	+		09/07/2001	OK	Servo	14CB1-2847
1029	2121-0160	LFMZP1	DRIVER LEFT FEMUR FORCE	Knee	13351 98438 N	+		08/24/2001	OK	Denton	2121

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1030	2121-0161	RFMZFI	DRIVER RIGHT FEMUR FORCE	Knee	13336 30969 N	+	08/24/2001	OK	206v	Denton	2121
1031	150-0121VR-13741	KNLXDI	DRIVER LEFT KNEE	Tib	43 77136472MM	+	11/30/2000	OK	206v	SpaceAge	150-0121VR
1032	150-0121VL-13729	KNRXDI	DRIVER RIGHT KNEE	Tib	43 66477054MM	+	12/04/2000	OK	206v	SpaceAge	150-0121VL
1033	4353J-82-FX	TBLXF1	DRIVER LEFT UPPER TIBIA	Tib	8894 284909N	+	08/03/2001	OK	206v	Denton	4353J
1034	4353J-82-FZ	TBLZF1	DRIVER LEFT UPPER TIBIA	Tib	8893 542249N	+	08/03/2001	OK	206v	Denton	4353J
1035	4353J-82-MX	TBLXM1	DRIVER LEFT UPPER TIBIA	Ank	281 7203495NM	+	08/03/2001	OK	206v	Denton	4353J
1036	4353J-82-MY	TBLYM1	DRIVER LEFT UPPER TIBIA	Ank	281 7203495NM	+	08/03/2001	OK	206v	Denton	4353J
1037	01G19-F02	TBLXG1	DRIVER LEFT TIBIA X-AXIS	Fwd	1208 972845 G	+	08/21/2001	OK	206v	Entran	EGE-73B6Q-2000J
1038	01H02-N02	TBLYG1	DRIVER LEFT TIBIA Y-AXIS	Rt	1204 705882 G	+	08/21/2001	OK	206v	Entran	EGE-73B6Q-2000J
1039	4929J-87-FX	ANLXF1	DRIVER LEFT LOWER TIBIA	Ank	8892 680629N	+	12/22/2000	OK	206v	Denton	4929J
1040	4929J-87-FY	ANLYF1	DRIVER LEFT LOWER TIBIA	Ank	8892 260537N	+	12/22/2000	OK	206v	Denton	4929J
1041	4929J-87-FZ	ANLZF1	DRIVER LEFT LOWER TIBIA	Ank	8902 242252 N	+	12/22/2000	OK	206v	Denton	4929J
1042	4929J-87-MX	ANLXM1	DRIVER LEFT LOWER TIBIA	Ank	282 2327432 NM	+	12/22/2000	OK	206v	Denton	4929J
1043	4929J-87-MY	ANLYM1	DRIVER LEFT LOWER TIBIA	Ank	281 7363244 NM	+	12/22/2000	OK	206v	Denton	4929J
1044	PD210-4B-AK-060	FTLXDI	DRIVER LEFT FOOT TO ANKLE		Eversl 324 6567959	+	DEG	+	07/31/2001	OK	206v CONTELEC
1045	PD210-4B-AK-061	FTLYDI	DRIVER LEFT FOOT TO ANKLE		Dorslf 323 2425265	+	DEG	+	07/31/2001	OK	206v CONTELEC
1046	PD210-4B-AK-062	FTLZDI	DRIVER LEFT FOOT TO ANKLE		Intern 321 8202960	+	DEG	+	07/31/2001	OK	206v CONTELEC
1047	01H02-N05	FTLXG1	DRIVER LEFT FOOT X-AXIS	Fwd	1202 484822 G	+	08/21/2001	OK	206v	Entran	EGE-73B6Q-2000J
1048	01H02-N06	FTLYG1	DRIVER LEFT FOOT Y-AXIS	Rt	1197 870971 G	+	08/21/2001	OK	206v	Entran	EGE-73B6Q-2000J
1049	01H02-N01	FTLZG1	DRIVER LEFT FOOT Z-AXIS	Dn	1213 327645 G	+	08/21/2001	OK	206v	Entran	EGE-73B6Q-2000J
1050	4353J-81-FX	TBRXF1	DRIVER RIGHT UPPER TIBIA	Tib	8895 282373 N	+	08/03/2001	OK	206v	Denton	4353J
1051	4353J-81-FZ	TBRZF1	DRIVER RIGHT UPPER TIBIA	Tib	8904 739944 N	+	08/03/2001	OK	-1	Denton	4353J
1052	4353J-81-MX	TBRXM1	DRIVER RIGHT UPPER TIBIA	Ank	281 7704894 NM	+	08/03/2001	OK	206v	Denton	4353J
1053	4353J-81-MY	TBRYM1	DRIVER RIGHT UPPER TIBIA	Ank	281 7477428 NM	+	08/03/2001	OK	206v	Denton	4353J
1054	01H02-N07	TBRXG1	DRIVER RIGHT TIBIA X-AXIS	Fwd	1195 144724 G	+	08/21/2001	OK	206v	Entran	EGE-73B6Q-2000J
1055	01H02-N03	TBRYG1	DRIVER RIGHT TIBIA Y-AXIS	Rt	1192 361434 G	+	08/21/2001	OK	206v	Entran	EGE-73B6Q-2000J
1056	4929J-86-FX	ANRXF1	DRIVER RIGHT LOWER TIBIA	Ank	8893 242872 N	+	12/22/2000	OK	206v	Denton	4929J
1057	4929J-86-FY	ANRYF1	DRIVER RIGHT LOWER TIBIA	Ank	8899 596215 N	+	12/22/2000	OK	206v	Denton	4929J
1058	4929J-86-FZ	ANRZF1	DRIVER RIGHT LOWER TIBIA	Ank	8894 605062 N	+	12/22/2000	OK	206v	Denton	4929J
1059	4929J-86-MX	ANRXM1	DRIVER RIGHT LOWER TIBIA	Ank	282 1251795 NM	+	12/22/2000	OK	206v	Denton	4929J
1060	4929J-86-MY	ANRYM1	DRIVER RIGHT LOWER TIBIA	Ank	281 8548559 NM	+	12/22/2000	OK	206v	Denton	4929J
1061	PD210-4B-AK-057	FTRXDI	DRIVER RIGHT FOOT TO	Inerst	323 7330466 DEG	+	07/31/2001	OK	206v	CONTELEC	PD210-4B
1062	PD210-4B-AK-058	FTRYDI	DRIVER RIGHT FOOT TO	Dorslf	324 1942632 DEG	+	07/31/2001	OK	206v	CONTELEC	PD210-4B
1063	PD210-4B-AK-059	FTRZDI	DRIVER RIGHT FOOT TO	Extern	325 1103279 DEG	+	07/31/2001	OK	206v	CONTELEC	PD210-4B
1064	01G19-F06	FTRXG1	DRIVER RIGHT FOOT X-AXIS	Fwd	1200 440786 G	+	08/21/2001	OK	206v	Entran	EGE-73B6Q-2000J

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1065	01H02-N08	FTRYG1	DRIVER RIGHT FOOT Y-AXIS	Rt	1189 895186G	+	08/21/2001	OK	206v	Entran	EGE-73B6Q-2000J
1066	01G19-F05	FTRZG1	DRIVER RIGHT FOOT X-AXIS	Dn	1205 273069G	+	08/21/2001	OK	206v	Entran	EGE-73B6Q-2000J
1067	01G25-N07	HEDXG2	PASSENGER HEAD X-AXIS	Fwd	799 6001999G	+	08/10/2001	OK	202v	Entran	EGE-73B6Q-2000J
1068	01G25-N20	HEDYG2	PASSENGER HEAD Y-AXIS	Lft	795 6240676G	+	08/10/2001	OK	202v	Entran	EGE-73B6Q-2000J
1069	01G25-N17	HEDZG2	PASSENGER HEAD Z-AXIS	Up	804 9998034G	+	08/10/2001	OK	202v	Entran	EGE-73B6Q-2000J
1070	P15951	HEDXR2	PASSENGER HEAD X-AXIS	Rwd	802 1809294G	+	08/28/2001	OK	202v	Endevco	7264C-2KLC-2-24
1071	P16328	HEDYR2	PASSENGER HEAD Y-AXIS	Rgt	796 4656835G	+	08/28/2001	OK	202v	Endevco	7264C-2KLC-2-24
1072	P16899	HEDZR2	PASSENGER HEAD Z-AXIS	Up	803 1372549G	+	08/28/2001	OK	202v	Endevco	7264C-2KLC-2-24
1073	01G19-F03	HD1XG2	PASSENGER HEAD X-AXIS	Fwd	805 0061318G	+	08/10/2001	OK	202v	Entran	EGE-73B6Q-2000J
1074	01G25-N18	HD1ZG2	PASSENGER HEAD Z-AXIS (LT)	Up	801 8668462	G		+	08/10/2001	OK	202v Entran EGE-
73B6Q-2000J											
1075	01G25-N10	HD2YG2	PASSENGER HEAD Y-AXIS (FT)	Lft	799 1509021	G		+	08/10/2001	OK	202v Entran EGE-
73B6Q-2000J											
1076	01G25-N03	HD2ZG2	PASSENGER HEAD Z-AXIS (FT)	Up	802 6462242	G		+	08/10/2001	OK	202v Entran EGE-
73B6Q-2000J											
1077	01G25-N15	HD3XG2	PASSENGER HEAD X-AXIS	Fwd	805 0504335G	+	08/10/2001	OK	202v	Entran	EGE-73B6Q-2000J
1078	01G25-N02	HD3YG2	PASSENGER HEAD Y-AXIS (TP)	Lft	800 5003126	G		+	08/10/2001	OK	202v Entran EGE-
73B6Q-2000J											
1079	1716-0628-FX	NEKXF2	PASSENGER NECK X-AXIS	Hd	8902 198370N	+	08/16/2001	OK	202v	Denton	1716
1080	1716-0628-FY	NEKYF2	PASSENGER NECK Y-AXIS	Hd	8900 719815N	+	08/16/2001	OK	202v	Denton	1716
1081	1716-0628-FZ	NEKZF2	PASSENGER NECK Z-AXIS	Hd	13340 87231N	+	08/16/2001	OK	202v	Denton	1716
1082	1716-0628-MX	NEKXM2	PASSENGER NECK MOMENT	Rt Ear	282 5473708NM	+	08/16/2001	OK	202v	Denton	1716
1083	1716-0628-MY	NEKYM2	PASSENGER NECK MOMENT	Chn	282 3365349NM	+	08/16/2001	OK	202v	Denton	1716
1084	1716-0628-MZ	NEKZM2	PASSENGER NECK MOMENT	Chn	282 3305064NM	+	08/16/2001	OK	202v	Denton	1716
1085	1794A-215-FX	NK1XF2	PASSENGER NECK LOWER	Hd	13349 13467N	+	07/05/2001	OK	202v	Denton	1794A
1086	1794A-215-FY	NK1YF2	PASSENGER NECK LOWER	Hd	13336 09067N	+	07/05/2001	OK	202v	Denton	1794A
1087	1794A-215-FZ	NK1ZF2	PASSENGER NECK LOWER	Hd	13354 54201N	+	07/05/2001	OK	202v	Denton	1794A
1088	1794A-215-MX	NK1XM2	PASSENGER NECK LOWER	Rt Ear	338 8352162NM	+	07/05/2001	OK	202v	Denton	1794A
1089	1794A-215-MY	NK1YM2	PASSENGER NECK LOWER	Chn	338 9097203NM	+	07/05/2001	OK	202v	Denton	1794A
1090	1794A-215-MZ	NK1ZM2	PASSENGER NECK LOWER	Chn	181 0979990NM	+	07/05/2001	OK	202v	Denton	1794A
1091	AJ460	CSTXG2	PASSENGER CHEST X-AXIS	Fwd	401 8727899G	+	08/24/2001	OK	-1	Endevco	7264-2000TZ
1092	J14404	CSTYG2	PASSENGER CHEST Y-AXIS	Lft	401 8838304G	+	08/24/2001	OK	-1	Endevco	7264-2000TZ
1093	J14144	CSTZG2	PASSENGER CHEST Z-AXIS	Up	402 7294358G	+	08/24/2001	OK	-1	Endevco	7264-2000TZ
1094	14CB1-2847-0137	CSTXD2	PASSENGER CHEST	Strum	100 2710736MM	+	09/07/2001	OK	202v	Servo	14CB1-2847
1095	2121-0226	LFMZF2	PASSENGER LEFT FEMUR	Knee	13348 55329N	+	08/24/2001	OK	202v	Denton	2121
1096	2121-0227	RFMZ2	PASSENGER RIGHT FEMUR	Knee	13344 49840N	+	08/24/2001	OK	202v	Denton	2121
1097	150-0121VR-13739	KNLXD2	PASSENGER LEFT KNEE	Tib	44 31666856MM	+	11/30/2000	OK	202v	SpaceAge	150-0121VR
1098	150-0121VL-13723	KNR2D2	PASSENGER RIGHT KNEE	Tib	43 44247689MM	+	11/30/2000	OK	202v	SpaceAge	150-0121VL
1099	3115-199-FX	TBLXF2	PASSENGER LEFT UPPER	Tib	8896 236237N	+	03/02/2001	OK	202v	Denton	3115

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1100	3115-199-FZ	TBLZF2	PASSENGER LEFT UPPER	Tib	8894 296188N	+	03/02/2001	OK	202v	Denton	3115
1101	3115-199-MX	TBLXM2	PASSENGER LEFT UPPER	Tib	281 7803744NM	+	03/02/2001	OK	202v	Denton	3115
1102	3115-199-MY	TBLYM2	PASSENGER LEFT UPPER	Tib	281 8261359NM	+	03/02/2001	OK	202v	Denton	3115
1103	3287-128-FX	ANLXF2	PASSENGER LEFT LOWER	Ank	8898 292344N	+	03/05/2001	OK	202v	Denton	3287
1104	3287-128-FZ	ANLZF2	PASSENGER LEFT LOWER	Ank	8897 210561N	+	03/05/2001	OK	202v	Denton	3287
1105	3287-128-MX	ANLXM2	PASSENGER LEFT LOWER	Ank	281 9911428NM	+	03/05/2001	OK	202v	Denton	3287
1106	3287-128-MY	ANLYM2	PASSENGER LEFT LOWER	Ank	281 9198189NM	+	03/05/2001	OK	202v	Denton	3287
1107	J39646	ENGXG1	TOP ENGINE X-AXIS	FWD	1009 742436G	+	04/20/2001	OK	-1	Endevco	7264-2000TZ

Channel Report

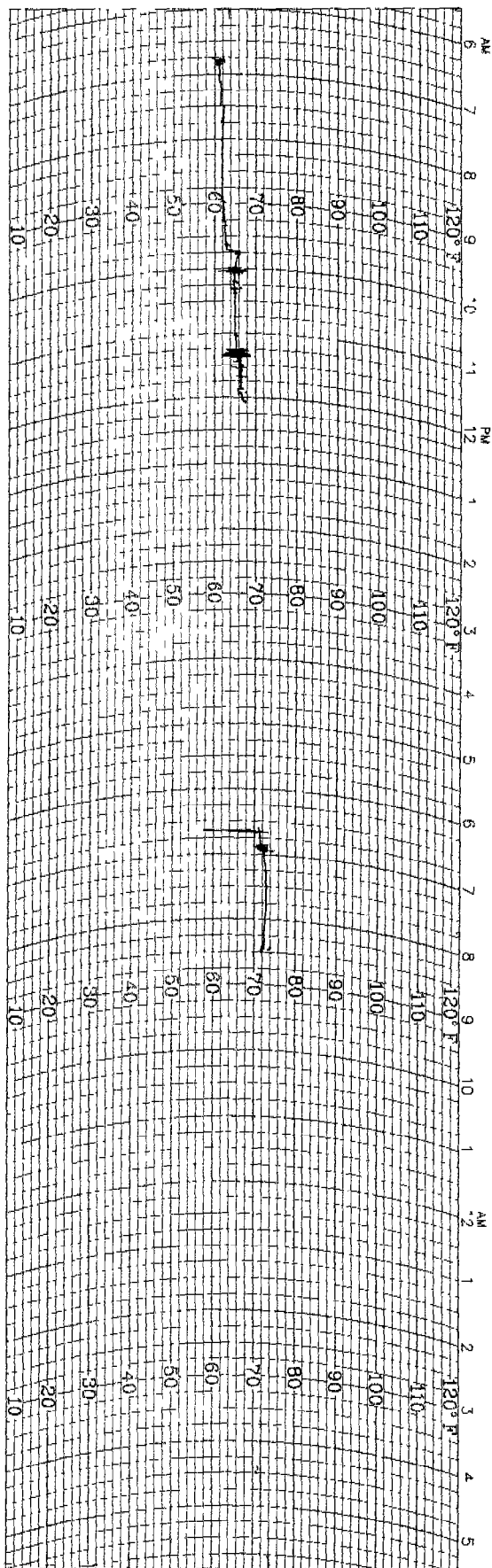
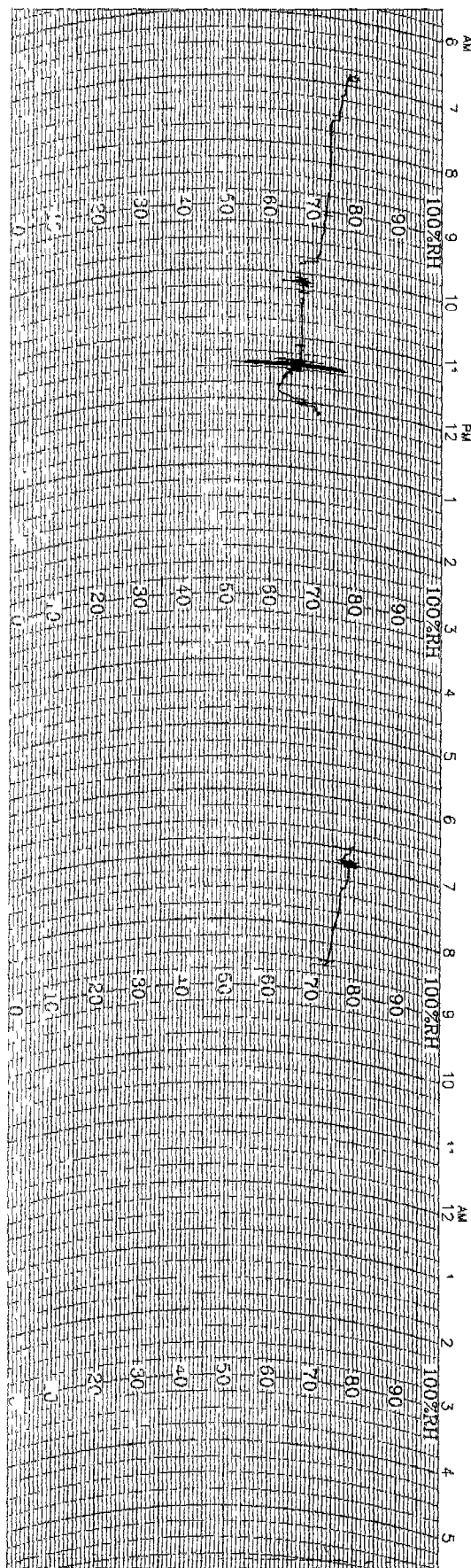
09/10/2001 10 26 12 AM

Name of Test 010910

System MINIDAU

Name of DAU DAU6

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal.	Date/Status	Group	Mfg.	Model
6001	J27387	FLHXG2	PASSENGER LEFT FOOT HEEL Fwd	Fwd	1180 267404G	+	08/24/2001	OK	202v	Endevco	7264-2KM5T
6002	J27553	FLHZG2	PASSENGER LEFT FOOT HEEL Dwn	Dwn	1239 409343G	+	08/24/2001	OK	202v	Endevco	7264-2KM5T
6003	J27474	FLTZG2	PASSENGER LEFT FOOT TOE Up	Up	1179 941002G	+	08/24/2001	OK	202v	Endevco	7264-2KM5T
6004	3115-200-FX	TBRXF2	PASSENGER RIGHT UPPER	Tlb	8901 174054N	+	03/05/2001	OK	202v	Denton	3115
6005	3115-200-FZ	TBRZF2	PASSENGER RIGHT UPPER	Tlb	8902 846419N	+	03/05/2001	OK	202v	Denton	3115
6006	3115-200-MX	TBRXM2	PASSENGER RIGHT UPPER	Tlb	282 4209370NM	+	03/05/2001	OK	202v	Denton	3115
6007	3115-200-MY	TBRYM2	PASSENGER RIGHT UPPER	Tlb	282 3431198NM	+	03/05/2001	OK	202v	Denton	3115
6008	3287-129-FX	ANRXF2	PASSENGER RIGHT LOWER	Ank	8891 9111521N	+	03/07/2001	OK	202v	Denton	3287
6009	3287-129-FZ	ANRZF2	PASSENGER RIGHT LOWER	Ank	8895 451137N	+	03/07/2001	OK	202v	Denton	3287
6010	3287-129-MX	ANRXM2	PASSENGER RIGHT LOWER	Ank	282 4345300NM	+	03/07/2001	OK	202v	Denton	3287
6011	3287-129-MY	ANRYM2	PASSENGER RIGHT LOWER	Ank	281 4626992NM	+	03/07/2001	OK	202v	Denton	3287
6012	J17976	FRHXG2	PASSENGER RIGHT FOOT HEEL	Fwd	1229 144160 G	+	08/24/2001	OK	202v	Endevco	7264-
2000T											
6013	J19934	FRHZG2	PASSENGER RIGHT FOOT HEEL	Dwn	1223 300043 G	+	08/24/2001	OK	202v	Endevco	7264-
2KM5T											
6014	J28727	FRTZG2	PASSENGER RIGHT FOOT TOE	Up	1188 652087 G	+	08/24/2001	OK	202v	Endevco	7264-
2KM5T											
6015	J35794	LRXG	LEFT REAR SEAT	FWD	993 2682794G	+	04/18/2001	OK	-1	Endevco	7264-2000TZ
6016	J40073	RRXG	RIGHT REAR SEAT	FWD	1018 034318G	+	04/20/2001	OK	-1	Endevco	7264-2000TZ
6017	J35049	BCLXG	FRONT BRAKE CALIPER LEFT	FWD	1012 978790G	+	07/13/2001	OK	-1	Endevco	7264-2000TZ
6018	J38432	BCRXG	FRONT BRAKE CALIPER	FWD	977 8456837G	+	05/14/2001	OK	-1	Endevco	7264-2000TZ
6019	A51JJ	DPCXG	DASHBOARD CENTER X-AXIS	FWD	973 4580576G	+	06/01/2001	OK	-1	Endevco	7264-2000TZ
6020	J39624	ENGXG2	BOTTOM ENGINE X-AXIS	FWD	1011 238174G	+	04/20/2001	OK	-1	Endevco	7264-2000TZ
6021	J32128	TPAXG	TOEPAN(NEXT TO	FWD	1006 764196G	+	06/19/2001	OK	-1	Endevco	7264-2000TZ
6022	J38007	TPAZG	TOEPAN(NEXT TO	UP	975 4610577G	+	03/27/2001	OK	-1	Endevco	7264-2000TZ
6023	J40066	TPFXG	TOEPAN(NEXT TO FOOT	FWD	981 8962872G	+	04/20/2001	OK	-1	Endevco	7264-2000TZ
6024	J36205	TPFZG	TOEPAN(NEXT TO FOOT	UP	986 7216558G	+	03/28/2001	OK	-1	Endevco	7264-2000TZ
6025	J36576	RDKZG	REAR DECK Z-AXIS	UP	992 0173603G	+	07/12/2001	OK	-1	Endevco	7264-2000TZ
6026	J36259	RDCXG	REAR COMPARTMENT	FWD	1001 564945G	+	03/08/2001	OK	-1	Endevco	7264-2000TZ
6027	IP1	DABET1	DRIVER AIRBAG EVENT	69	1 003921568 V	+	06/15/2000	---	-1	FLUKE	Y8101A
6028	IP2	DABET2	DRIVER AIRBAG EVENT	9	1 003921568 V	+	06/15/2000	---	-1	FLUKE	Y8101A
6029	IP3	PABET1	PASSENGER AIRBAG EVENT	4	1 003921568 V	+	06/15/2000	---	-1	FLUKE	Y8101A
6030	IP4	PABET2	PASSENGER AIRBAG EVENT	A3	1 003921568 V	+	06/15/2000	---	-1	FLUKE	Y8101A



WeatherMeasure P.O. BOX 41039
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HYGROTHERMOGRAPH
 1 DAY

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 C311-D HF
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 6-9-87

STATION 19970267-7201 DATE ON 9-7-01 DATE OFF