V4322

Vehicle Research and Test Center
2001 Dodge Grand Caravan into
Flat Frontal Barrier at 25.0 mph
TRC Inc. Test Number: 020606

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Section 1.0

Purpose and Test Procedure

Purpose

This 40 km/h (25 mph) frontal barrier impact test was conducted for the National Highway Traffic Safety Administration (NHTSA) and Vehicle Research and Test Center (VRTC) by Transportation Research Center Inc. (TRC Inc.).

The purpose of this test was to evaluate frontal crash protection in a full frontal barrier impact test. The subject vehicle was a 2001 Dodge Grand Caravan.

Test Procedure

This test was conducted in accordance with VRTC instructions for a full frontal car to stationary barrier test. Data was obtained relative to FMVSS 208, "Occupant Crash Protection" (December 18, 2001) performance for the 25 mph test mode using 5th percentile female anthropomorphic test devices (dummies).

The test vehicle, a 2001 Dodge Grand Caravan, was instrumented with six (6) accelerometers to measure longitudinal, lateral and vertical axis accelerations. The driver's and passenger's primary and secondary airbag signals were monitored with inductive pickups. The vehicle impacted a flat frontal barrier. The vehicle's specified impact velocity range was 39.4 to 41.0 km/h.

The test vehicle contained two (2) Part 572O small adult female Hybrid III dummies. The dummies were positioned in the front outboard designated seating positions according to FMVSS 208 (December 18, 2001). 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, plus six (6) chest and three (3) pelvis accelerometers to measure longitudinal, lateral, and vertical accelerations, three (3) sternum accelerometers to measure longitudinal accelerations. The dummies were also instrumented with upper and lower neck moment and force load cells, lumbar moment and force loads cells, left and right femur load cells to measure axial forces, and chest deflection potentiometers. Both dummies were also equipped with THOR-FLX legs, which included upper and lower tibia load cells to measure forces and moments, tibia and foot accelerometers in three axes, tibia to femur displacement potentiometers at each knee and three (3) rotary potentiometers at each ankle to measure foot rotations about three axes.

The 170 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 eleven (11) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera.

The barrier test summary data are presented in Section 2.0. The summary of FMVSS 208 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 frontal barrier test was conducted by TRC Inc. on June 6, 2002.

The test vehicle, a 2001 Dodge Grand Caravan, 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 2047.4 kg. The vehicle's impact speed was 40.1 km/h. The vehicle sustained 318 mm of static crush during the impact.

The driver's 36 millisecond Head Injury Criteria (HIC) was 156. The driver's 15 millisecond HIC was 94. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 63.3 g. The driver's maximum chest deflection was 53 mm. The driver's left and right femur maximum axial compressive forces were 4323 N and 4230 N, respectively. The driver dummy's neck injury calculations were as follows: NTF, 0.17; NTE, 1.62; NCF, 0.17; NCE, 0.01. The driver dummy's peak neck tension force was 1579 N and peak neck compression force was 51 N.

The right front passenger's 36 millisecond HIC was 320. The passenger's 15 millisecond HIC was 228. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 45.6 g. The passenger's maximum chest deflection was 8 mm. The passenger's left and right femur maximum axial compressive forces were 3683 N and 4006 N, respectively. The right front passenger's neck injury calculations were as follows: NTF, 0.46; NTE, 0.51; NCF, 0.27; NCE, 0.03. The right front passenger dummy's peak neck tension force was 476 N and peak neck compression force was 456 N.

Data Acquisition Explanations

The vehicle's X-axis acceleration data channel, VCGXG, recorded a questionable data spike at approximately 70 milliseconds that exceeded its full-scale capacity. This affected the calculated resultant vehicle acceleration data channel, VCGXG.

The vehicle's driver airbag inductive pickup, DABETB, did not record valid data throughout the event.

The passenger dummy's lumbar X, Y, and Z axes force load cell data channels, LMBXF2, LMBYF2, and LMBZF2, respectively, recorded an anomalous data spike at approximately 86 milliseconds.

Table 1 Crash Test Summary

Test mode:	Flat frontal barrier	
Test date:	06/06/02	
Test time:	1111	
Ambient temperature:	21° C	
Vehicle year/make/ model/body style:	2001/Dodge/Grand/Caravan	
Vehicle test weight:	2047.4 kg	
Impact angle[1]:	0°	
Impact velocity[2]:	40.1 km/h	
Maximum static crush:	318 mm	
Average rebound:	1720 mm	
Number of data channels:	170	
Number of cameras:	High-speed 11	Real-time 1
Dummies:	Driver #416	Passenger #421
Type:	Part 572O	Part 572O
Location:	Left front	Right front
Restraint:	Airbag, dual stage	Airbag, dual stage
Seat track position for test:		
Driver:	Full Forward	
Passenger:	Full Forward	
Seat back position for test:		
Driver:	22.8°	
Passenger:	18.1°	
Head restraint position for test:		
Driver:	Full Down	
Passenger:	Full Down	
Steering column position:	Mid, notch 4 of 7 from top	

[1] With respect to tow track centerline.
[2] Speed trap measurement (± .08 km/h accuracy)

Table 2 General Test and Vehicle Parameter Data

Vehicle year/make/ model/body style:	2001/Dodge/Grand/Caravan
VIN:	2B8GP44341R322195
Model year:	2001
Body style:	Van
Color:	Tan
Engine data:	
Cylinders:	6
Displacement	3.3 liters
Cylinder placement:	Straight
Engine placement:	Transverse
Transmission data:	_3_speed, ___manual, _X_automatic, ___overdrive
Final drive:	_X_FWD, ___RWD, ___4WD
Date vehicle received:	06/03/2002
Odometer reading:	203
Dealer's name and address:	N/A (Supplied by VRTC)

Accessories:

Power steering	Yes	Automatic transmission	Yes
Power brakes	Yes	Automatic speed control	Yes
Power seats	Driver only	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	
Date of manufacture:		04/02	
VIN:		2B8GP44341R322195	
GVWR:		2495 kg	(5500 lbs.)
GAWR:	Front:	1293 kg	(2850 lbs.)
	Rear:	1293 kg	(2850 lbs.)

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

Tires on vehicle (mfr., line, size):	Goodyear, Integrity, P215/70R15	
Tire pressure with maximum capacity vehicle load:		
Front:	36 psi	(248 kPa)
Rear:	36 psi	(248 kPa)
Spare tire (mfr., line, size):	Goodyear, Temp, T145/90D16	
Type of seats:		
Front	Bucket	
Rear	Bucket	
Maximum width:	1950 mm	
Wheelbase:	3028 mm	

Location of "Recommended Tire Pressure" label:

The label was located on glove box.

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

Recommended tire size:	P215/70R15	
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:	522 kg
Rated cargo/luggage weight	46 kg

Test vehicle attitude:

Delivered attitude:	LF	780 mm;	RF	773 mm;	LR	783 mm;	RR	779 mm
Fully loaded attitude:	LF	767 mm;	RF	759 mm;	LR	763 mm;	RR	758 mm
Pre-test attitude:	LF	753 mm;	RF	753 mm;	LR	758 mm;	RR	758 mm
Post-test attitude:	LF	782 mm;	RF	772 mm;	LR	760 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	515.5 kg	Right rear	415.5 kg
Left front	572.5 kg	Left rear	406.0 kg
Total front weight	1088.0 kg	(57.0 % of total vehicle weight)	
Total rear weight	821.5 kg	(43.0 % of total vehicle weight)	
Total delivered weight	1909.5 kg		

Calculation of test vehicle's target test weight:

Total Delivered Weight (UDW) =	1909.5 kg
Rated Cargo/Luggage Weight (RCLW)[1] =	46 kg
Weight of 2 Part 572O Dummies @ 49 kg each =	98 kg
Target test weight =	2053.5 kg

Weight of test vehicle with required dummies and 39.9 kg of cargo weight:

Right front	544.0 kg	Right rear	464.6 kg
Left front	578.6 kg	Left rear	460.2 kg
Total front weight	1122.6 kg	(54.8% of total vehicle weight)	
Total rear weight	924.8 kg	(45.2% of total vehicle weight)	
Total test weight	2047.4 kg	(0.3% under target test weight)	

Weight of ballast secured in vehicle: None

Components removed to meet target test weight: Rear fascia, 2nd row seat, rear wiper and motor, taillights

Location of Vehicle's CG: 1368 mm rearward of front wheel centerline

Fuel System Data:

Usable fuel system capacity	75.7 liters (from owner's manual)
Actual test volume:	70.4 liters (93% of usable)

[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:	020606
Test date:	06/06/02
Test time:	1111
Test type:	Flat frontal barrier
Impact angle:	0°
Ambient temperature at impact area:	21° C
Required impact velocity range:	39.4 to 41.0 km/h

Barrier impact velocity:

Primary:	N/A
Secondary:	40.1 km/h

Distance from vehicle to barrier:

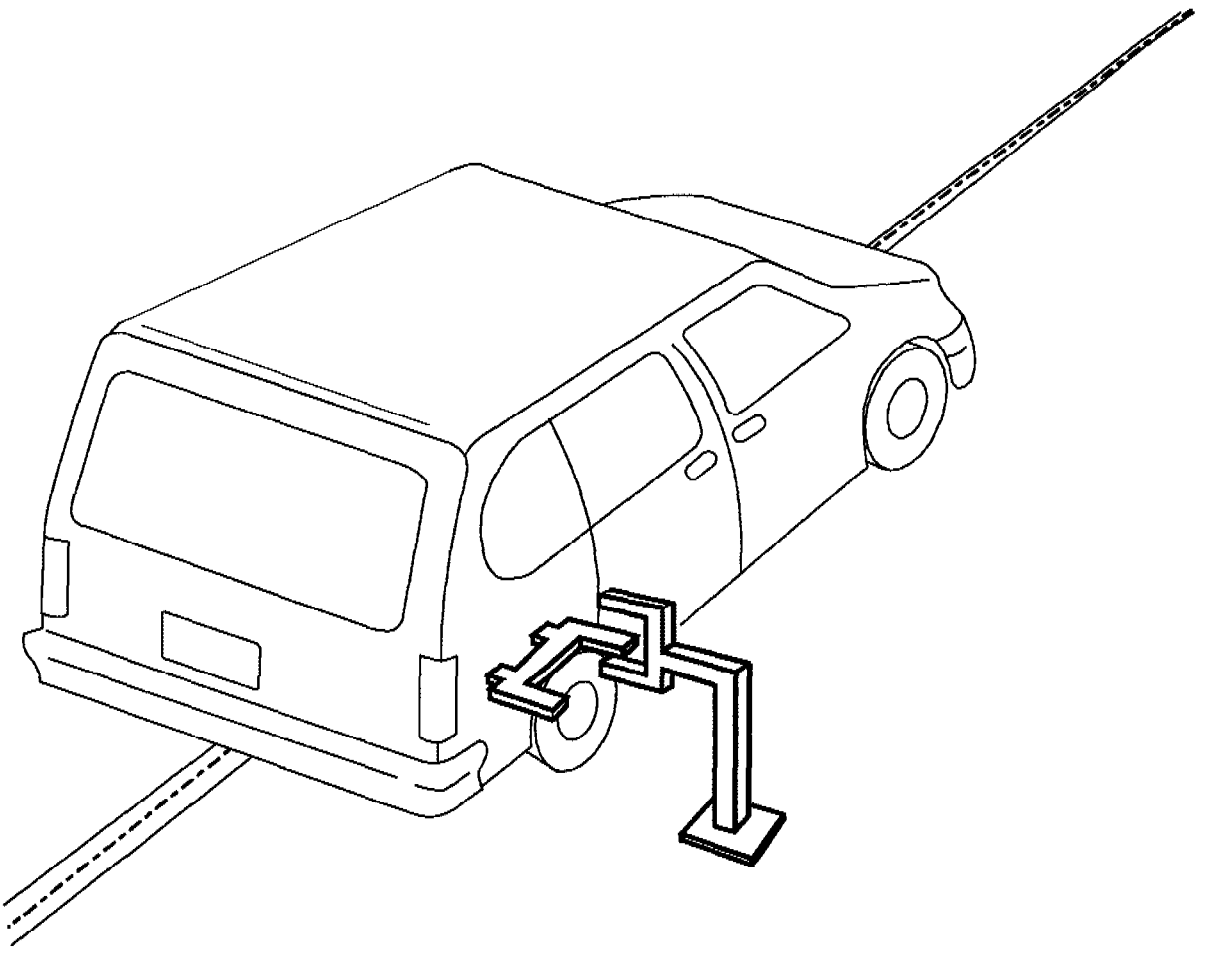
Entering velocity trap:	356 mm
Exiting velocity trap:	51 mm

Vehicle rebound from flat rigid barrier:

Distance from test vehicle to barrier impact point:

Post-test:	L	1760 mm;	C	1680 mm;	R 1720 mm
Average rebound:	1720 mm				

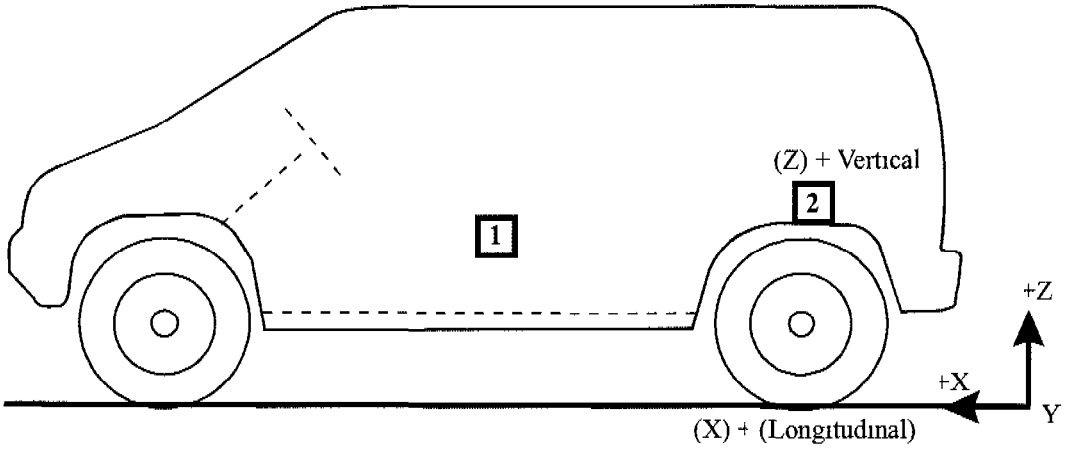
Figure 1 Impact Velocity Measurement System



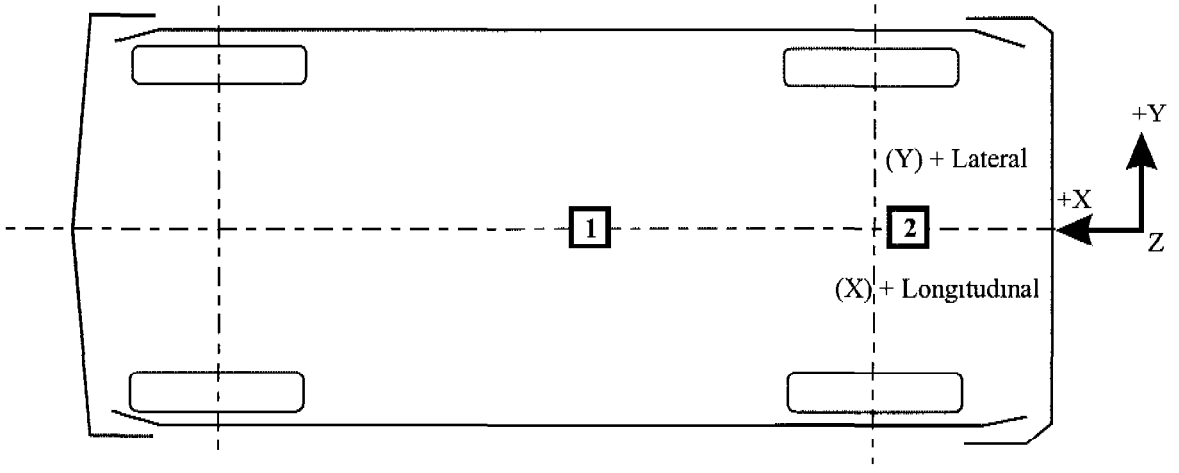
The final vane clears the final emitter/receiver pair 51 millimeters before impact.

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: 020606 No. LOCATION	X	Y	POSITIVE DIRECTION		NEGATIVE DIRECTION	
1 VEHICLE CENTER OF GRAVITY	2798 mm	0 mm				
LONGITUDINAL [1]			1.8 g	@ 130.6 ms	175.7 g	@ 69.9 ms
LATERAL			8.0 g	@ 76.9 ms	8.3 g	@ 48.8 ms
VERTICAL			14.0 g	@ 73.4 ms	21.2 g	@ 45.2 ms
RESULTANT [1]			176.0 g	@ 69.9 ms		
2 REAR DECK	NA	NA				
LONGITUDINAL			1.6 g	@ 127.7 ms	30.6 g	@ 45.9 ms
LATERAL			5.9 g	@ 44.8 ms	3.3 g	@ 74.6 ms
VERTICAL			10.1 g	@ 49.7 ms	8.8 g	@ 58.6 ms
RESULTANT			31.3 g	@ 45.9 ms		

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

[1]See DATA ACQUISITION EXPLANATIONS

Section 3.0

Summary of FMVSS 208 Data

Table 5 Dummy Injury Criteria Data

Maximum Acceleration[1]

	Head				Chest			
	X	Y	Z	R	X	Y	Z	R
Driver	-30.5 g	6.2 g	-22.5 g	34.0 g	-64.8 g	-3.5 g	-12.2 g	65.0 g
Passenger	-51.7 g	-12.2 g	-24.6 g	53.2 g	-44.1 g	-5.4 g	17.8 g	46.1 g

Maximum Femur Compressive Force

	Left Femur	Right Femur
Driver	4323 N	4230 N
Passenger	3683 N	4006 N

Head Injury Criteria[2]

36 millisecond

	HIC	Time t_1	Time t_2
Driver	156	51.8 ms	87.8 ms
Passenger	320	67.2 ms	103.2 ms

15 millisecond

	HIC	Time t_1	Time t_2
Driver	94	67.1 ms	82.2 ms
Passenger	228	76.9 ms	91.9 ms

Chest Maximum Resultant Acceleration[3]

	Acceleration	Time t_1	Time t_2
Driver	63.3 g	72.9 ms	75.9 ms
Passenger	45.6 g	83.0 ms	88.8 ms

Table 5 Dummy Injury Criteria Data, Cont'd.

Maximum Chest Deflection

Driver	53 mm
Passenger	8 mm

Neck Injury Calculations (Nij)[2]

	NTF	NTE	NCF	NCE
Driver	0.17	1.62	0.17	0.01
Passenger	0.46	0.51	0.27	0.03

Neck Axial Force

	Neck Tension	Neck Compression
Driver	1579 N	51 N
Passenger	476 N	456 N

Tibia Index[4]

	Upper Tibia	Lower Tibia
Driver - Left	0.53	0.69
Driver - Right	0.50	0.55
Passenger - Left	0.55	0.33
Passenger - Right	0.43	0.23

[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] Tibia Index calculation for Small Female THOR-FLX legs: F/8.6 kN + M/146 Nm (where M is the resultant of the measured Mx and My channels in Nm and Fz is absolute value of Fz in kN.

Table 6 Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	Driver	Passenger
Head	Airbag, head restraint	Airbag, head restraint
Chest	Airbag	Airbag
Abdomen	N/A	N/A
Left knee	Knee bolster	Glove box, back side of airbag
Right knee	Knee bolster	Glove box, back side of airbag

Door opening:

	Left	Right
Front	Easy	Easy
Rear	Easy	Easy

Seat movement:

	Seat back failure	Seat shift
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: None

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. The dummy's head contacted the airbag and first rotated rearward as the chest moved forward into the airbag. The head and neck then flexed forward and the dummy began to rebound into the seat. The head and neck flexed rearward again and the head contacted the head restraint on rebound. The driver dummy came to rest seated upright in the driver's seat.

Right Front Passenger Dummy

Upon impact, the passenger dummy translated forward impacting both knees into the glove box. The dummy's head contacted the airbag and first rotated rearward as the chest moved forward into the airbag. As the dummy moved further forward the neck rotated so that the head faced inboard. The head and neck then returned upright and face forward as the dummy rebounded into the seat. The head and neck flexed rearward again and the head contacted the head restraint on rebound. The dummy came to rest in the seat leaning slightly forward.

Figure 3 Dummy Measurement Locations for Front Seat Occupants

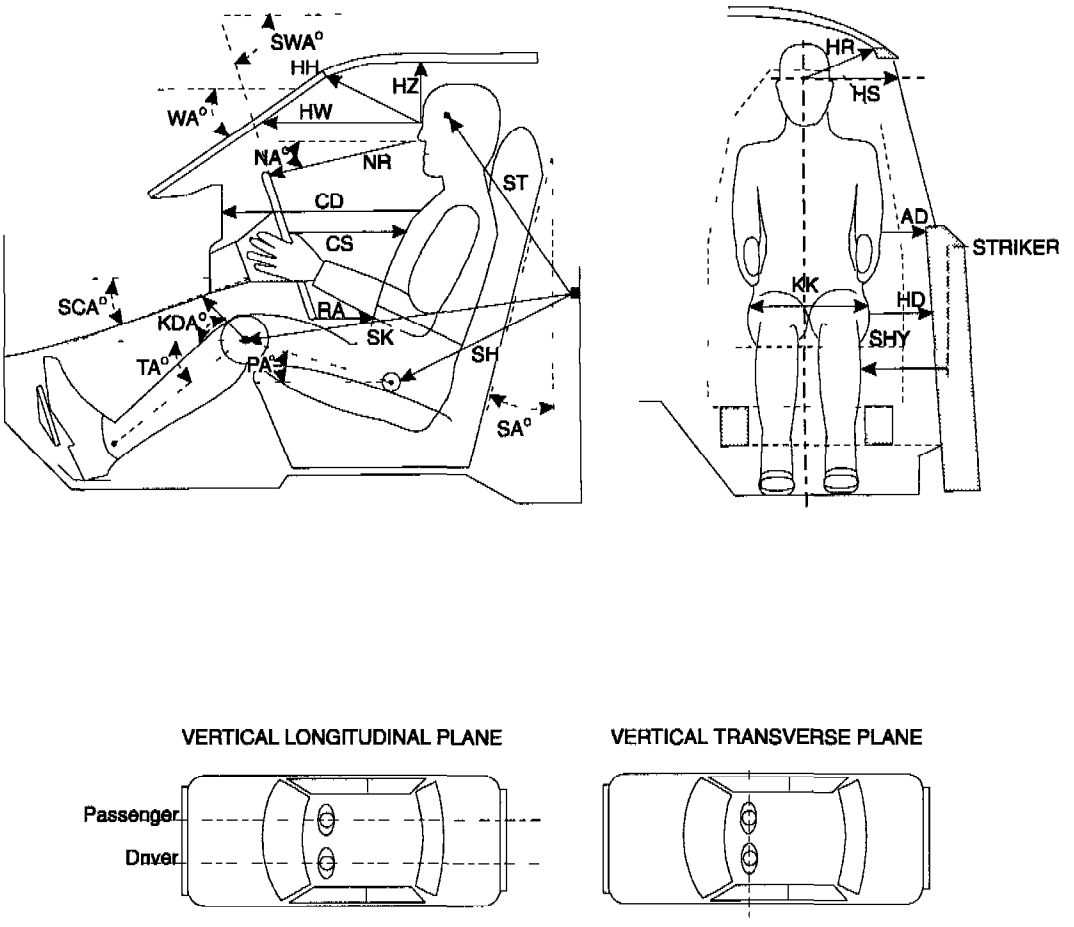


Table 7 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial # 416)	Passenger (Serial # 421)
WA	Windshield angle	28.4°	28.4°
SWA	Steering wheel angle	65.4°	N/A
SCA	Steering column angle	24.6°	N/A
SA	Seat back angle	22.8°	18.1°
HZ	Head to roof	240 mm	205 mm
HH	Head to header	337 mm	300 mm
HW	Head to windshield	693 mm	643 mm
HR	Head to side header	280 mm	250 mm
NR	Nose to rim	286 mm	N/A
NA	Nose to rim angle	5.8°	N/A
CD	Chest to dash	500 mm	646 mm
CS	Steering wheel to chest	220 mm	N/A
RA	Rim to abdomen	96 mm	N/A
KDL	Left knee to dash	135 mm	120 mm
KDR	Right knee to dash	130 mm	120 mm
KDA	Outboard knee to dash angle	60.5°	67.8°
PA	Pelvic angle	22.5°	21.7°
TA	Tibia angle	63.4°	60.1°
KK	Knee to knee	210 mm	160 mm
ST[1]	Striker to head	600 mm	645 mm
	Striker to head angle	-68.4°	-64.5°
SK[1]	Striker to knee	686 mm	695 mm
	Striker to knee angle	-6.9°	-8.6°
SH[1]	Striker to H-point	367 mm	360 mm
	Striker to H-point angle	0.7°	-1.1°
SHY	Striker to H-point (Y dir.)	283 mm	283 mm
HS	Head to side window	295 mm	265 mm
HD	H-point to door	190 mm	166 mm
AD	Arm to door	178 mm	164 mm

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

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

Figure 4 Pre-Test And Post-Test Measurement Points

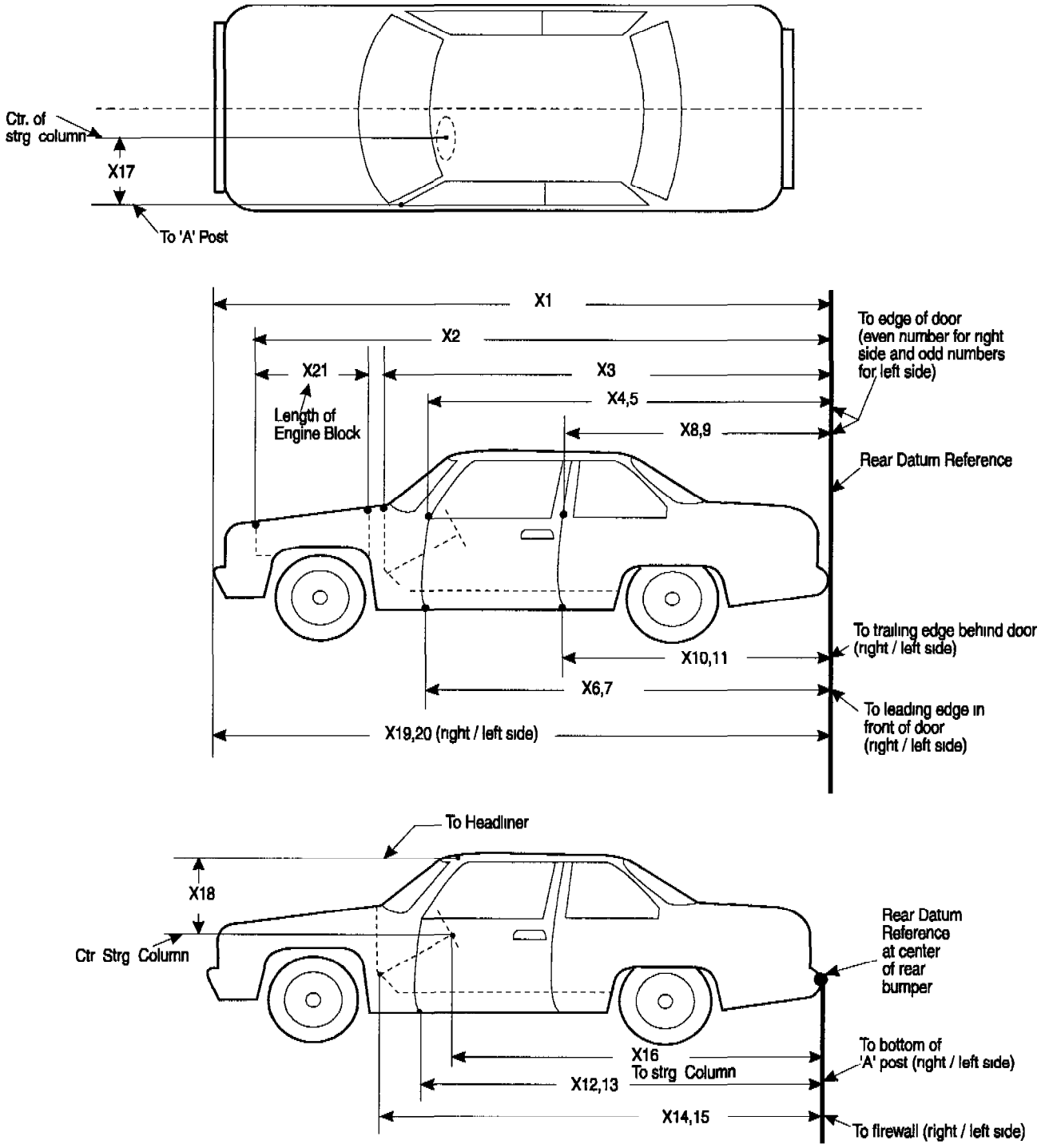


Table 8 Impacted Vehicle Measurements

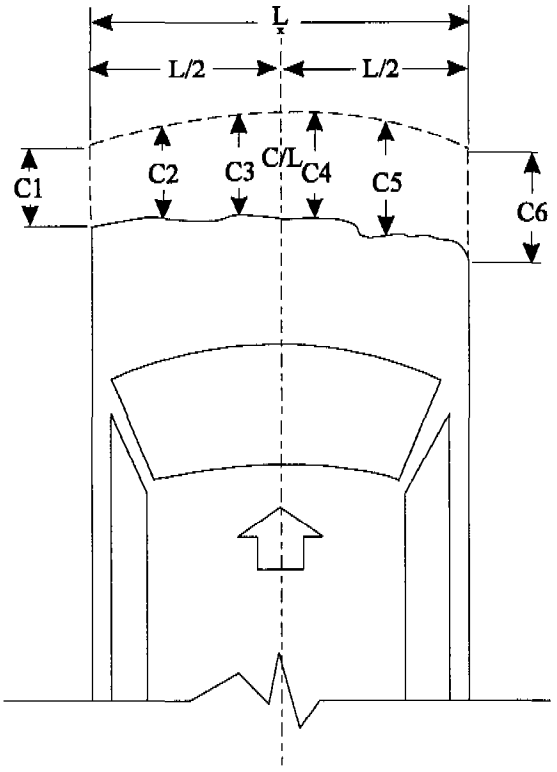
Test number: 020606

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

No.	Type of measurement	Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	5085	4847	238
X2	Rear Surface of Vehicle to Front of Engine Block	4530	4322	208
X3	Rear Surface of Vehicle to Firewall	4330	4331	-1
X4	Rear Surface of Veh. to Upper Leading Edge of Right Door	3665	3660	5
X5	Rear Surface of Veh. to Upper Leading Edge of Left Door	3665	3667	-2
X6	Rear Surface of Veh. to Lower Leading Edge of Right Door	3637	3635	2
X7	Rear Surface of Veh. to Lower Leading Edge of Left Door	3637	3640	-3
X8	Rear Surface of Veh. to Upper Trailing Edge of Right Door	2680	2675	5
X9	Rear Surface of Veh. to Upper Trailing Edge of Left Door	2672	2680	-8
X10	Rear Surface of Veh. to Lower Trailing Edge of Right Door	2680	2675	5
X11	Rear Surface of Veh. to Lower Trailing Edge of Left Door	2680	2685	-5
X12	Rear Surface of Veh. to Bottom of " A " Post on Right Side	3670	3659	11
X13	Rear Surface of Veh. to Bottom of " A " Post on Left Side	3665	3668	-3
X14	Rear Surface of Vehicle to Firewall--Right Side	4020	4043	-23
X15	Rear Surface of Vehicle to Firewall --Left Side	4020	4051	-31
X16	Rear Surface of Vehicle to Steering Wheel Center	3230	3268	-38
X17	Center of Steering Column to " A " Post	325	325	0
X18	Center of Steering Column to Headliner	469	550	-81
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4915	4772	143
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4920	4742	178
X21	Length of Engine Block	450	450	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3520	3520	0
CD	Rear Surface of Vehicle to Center of Dash Panel	3485	3490	-5
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3515	3515	0

All distance measurements are in millimeters.

Figure 5 Vehicle Crush



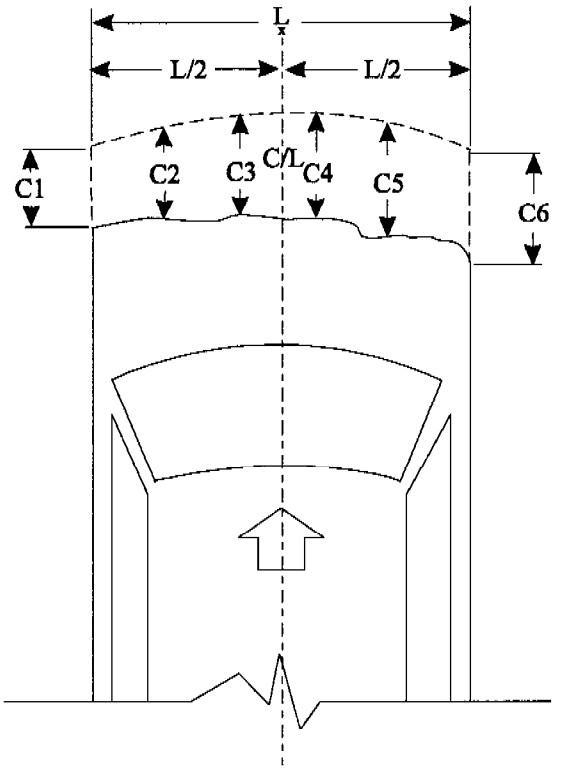
Notes: L is pre-test length of contact surface.
C1 through C6 are spaced equally apart.
CL is vehicle centerline.

Vehicle: 2001 Dodge Grand Caravan

Measured with bumper fascia:

Location	Pre-test	Post-test	Difference
L	1525 mm		
C1	4920 mm	4742 mm	178 mm
C2	5020 mm	4702 mm	318 mm
C3	5080 mm	4817 mm	263 mm
C4	5080 mm	4857 mm	223 mm
C5	5020 mm	4822 mm	198 mm
C6	4915 mm	4772 mm	143 mm
CL	5085 mm	4847 mm	238 mm

Figure 5 Vehicle Crush, Cont'd.



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

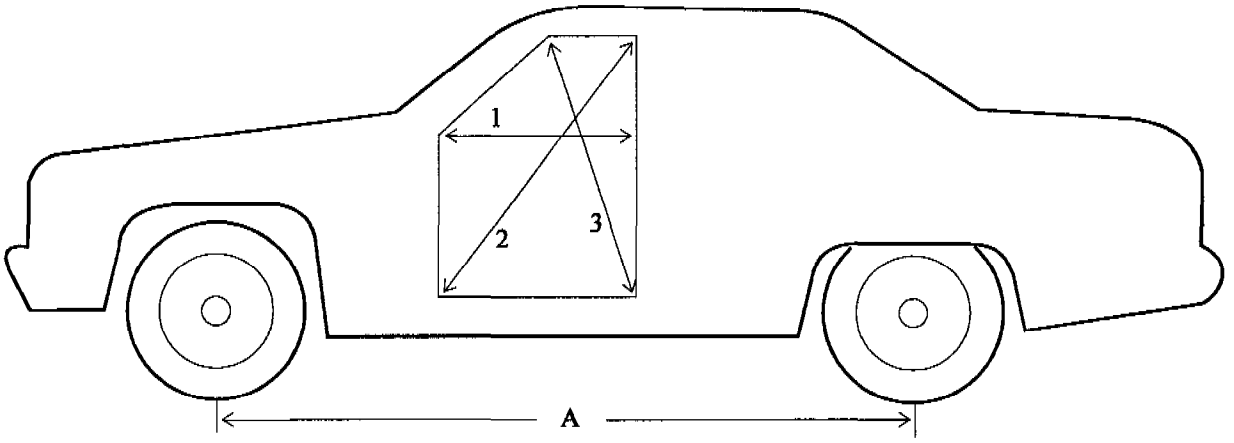
Measured to bumper beam without bumper fascia:

Location	Pre-test	Post-test	Difference
L	1270 mm		
C1[1]	4880 mm	4662 mm	218 mm
C2	4984 mm	4692 mm	292 mm
C3	5020 mm	4722 mm	298 mm
C4	5020 mm	4722 mm	298 mm
C5	5020 mm	4718 mm	302 mm
C6[1]	4978 mm	4682 mm	296 mm
CL	4875 mm	4652 mm	223 mm

[1] C1 and C6 measurements without bumper fascia were moved inboard closer to C2 and C5 to catch the bumper beam.

Figure 6 Vehicle Intrusion Measurements

Door Opening Width

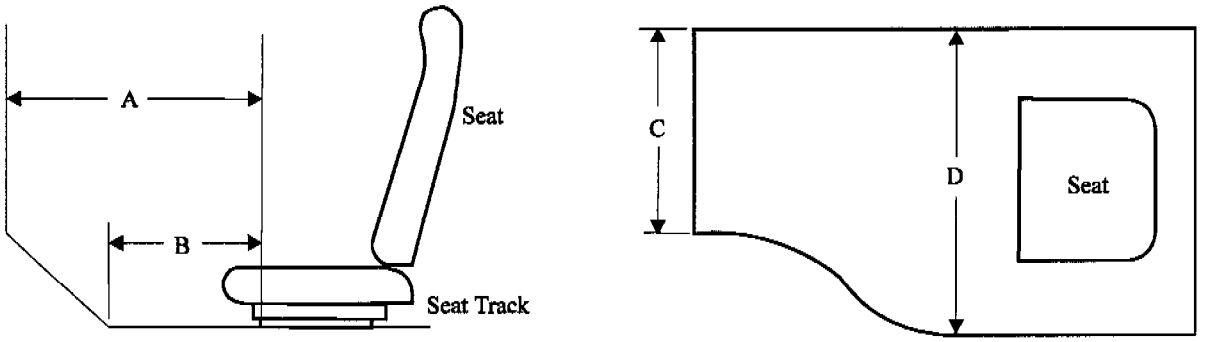


Units (mm)	Left			Right		
Measurement	1	2	3	1	2	3
Pre-Test	932 mm	1522 mm	1190 mm	940 mm	1532 mm	1190 mm
Post-Test	930 mm	1525 mm	1195 mm	935 mm	1535 mm	1190 mm
Difference	2 mm	-3 mm	-5 mm	5 mm	-3 mm	0 mm

Units (mm)	A = Wheelbase Left	A = Wheelbase Right
Pre-Test	3028 mm	3028 mm
Post-Test	3005 mm	3005 mm
Difference	23 mm	23 mm

Figure 7 Vehicle Intrusion Measurements

Static Footwell Deformation



Driver's Side

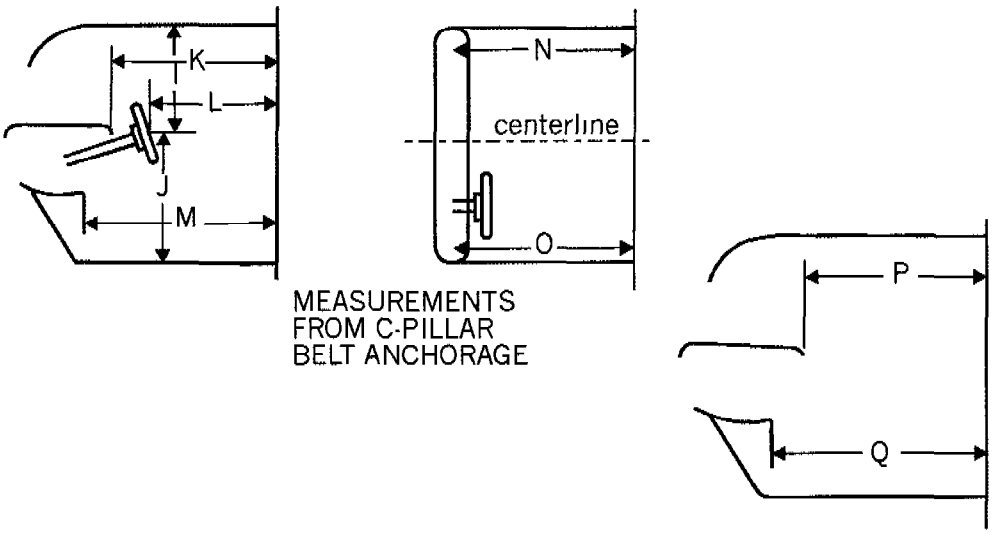
Measurement	Pre-Test	Post-Test	Difference
A	570 mm	570 mm	0 mm
B	477 mm	460 mm	17 mm
C	465 mm	470 mm	-5 mm
D	485 mm	490 mm	-5 mm

Passenger's Side

Measurement	Pre-Test	Post-Test	Difference
A	605 mm	605 mm	0 mm
B	480 mm	480 mm	0 mm
C	365 mm	362 mm	3 mm
D	420 mm	425 mm	-5 mm

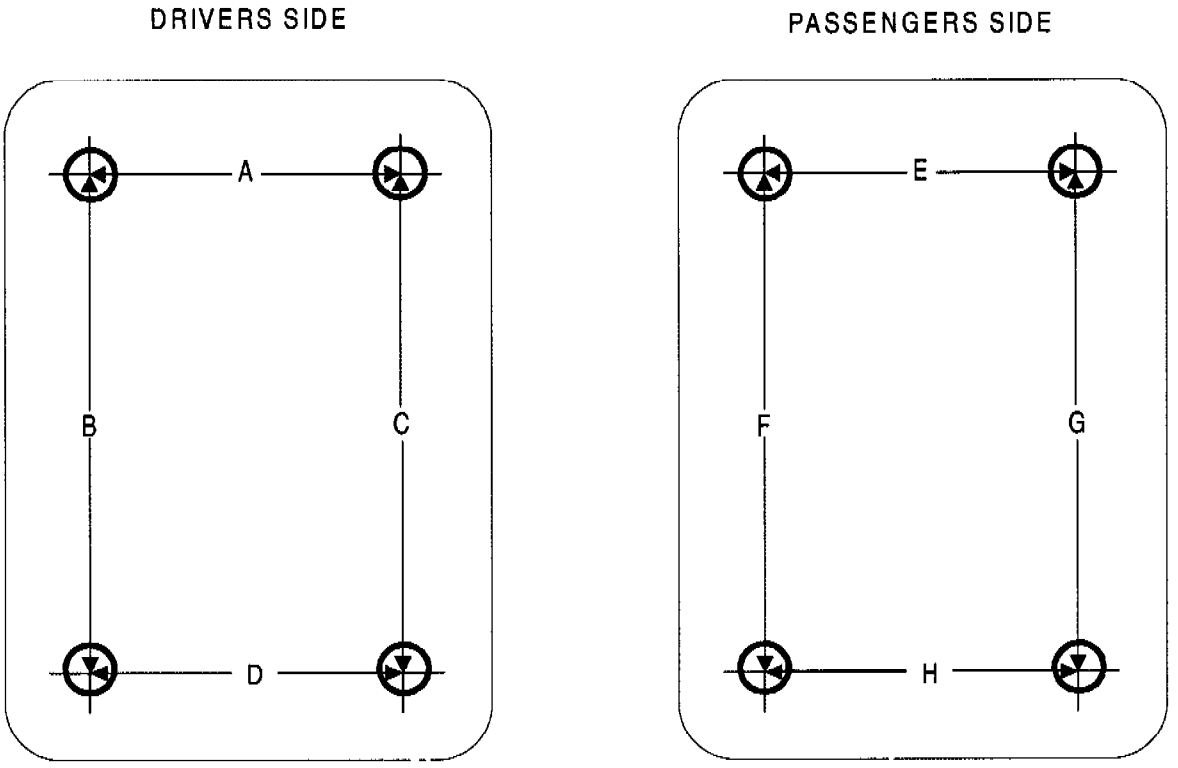
Figure 8 Vehicle Intrusion Measurements

Static Passenger Compartment Intrusion



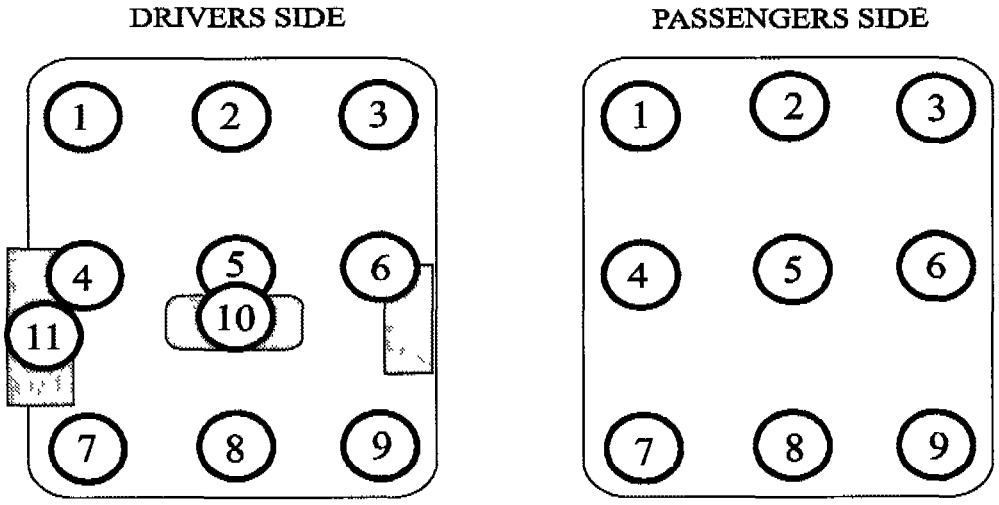
Measurement	Pre-Test	Post-Test	Difference
I	470 mm	435 mm	35 mm
J	630 mm	705 mm	-75 mm
K (driver's side)	1750 mm	1750 mm	0 mm
L	1500 mm	1500 mm	0 mm
M (driver's side)	1800 mm	1805 mm	-5 mm
N (passenger's side)	1750 mm	1750 mm	0 mm
O (driver's side)	1736 mm	1735 mm	1 mm
P (passenger's side)	1740 mm	1745 mm	-5 mm
Q (passenger's side)	1810 mm	1820 mm	-10 mm

Figure 9 Floorboard Deformation



Measurement	Pre-Test	Post-Test	Difference
A	465 mm	470 mm	-5 mm
B	410 mm	410 mm	0 mm
C	385 mm	380 mm	5 mm
D	485 mm	490 mm	-5 mm
E	365 mm	362 mm	3 mm
F	465 mm	465 mm	0 mm
G	460 mm	467 mm	-7 mm
H	420 mm	425 mm	-5 mm

Figure 10 Toeboard Measurements



Driver's Side Toeboard Measurements in Millimeters

Toeboard Location	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
1	3768	623	577	3773	623	610	-5	0	-33
2	3856	380	530	3830	380	573	26	0	-43
3	3838	166	492	3818	166	560	20	0	-68
4	3723	623	505	3728	623	534	-5	0	-29
5	3803	380	473	3783	380	505	20	0	-32
6	3794	166	460	3778	166	505	16	0	-45
7	3690	623	402	3693	623	424	-3	0	-22
8	3728	380	415	3728	380	430	0	0	-15
9	3638	166	405	3628	166	425	10	0	-20
10	3698	380	570	3708	380	600	-10	0	-30
11	3723	N/A	505	3728	N/A	534	-5	0	-29

Passenger's Side Toeboard Measurements in Millimeters

Toeboard Location	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
1	3898	301	575	3898	301	600	0	0	-25
2	3898	456	585	3898	456	614	0	0	-29
3	3808	653	630	3798	653	675	10	0	-45
4	3828	301	505	3823	301	525	5	0	-20
5	3838	456	515	3838	456	540	0	0	-25
6	3728	653	525	3743	653	557	-15	0	-32
7	3743	301	440	3743	301	437	0	0	3
8	3748	456	420	3748	456	427	0	0	-7
9	3698	653	400	3698	653	415	0	0	-15

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

Table 9 Intrusion of Upper Instrument Panel

Pre-Test	X	Y	Z
Driver Left Knee	3460	598	930
Driver Right Knee	3495	225	940
Passenger Left Knee	3505	252	905
Passenger Right Knee	3515	592	905
Steering Column	3348	400	1095
Driver Front Outboard Seat Attachment Bolt	3213	612	405
Pass. Front Outboard Seat Attachment Bolt	3218	635	430

Post-Test	X	Y	Z
Driver Left Knee	3463	598	960
Driver Right Knee	3518	225	958
Passenger Left Knee	3520	252	920
Passenger Right Knee	3515	592	914
Steering Column	3344	400	1061
Driver Front Outboard Seat Attachment Bolt	3218	612	436
Pass. Front Outboard Seat Attachment Bolt	3232	635	430

Difference	X	Y	Z
Driver Left Knee	-3	0	-30
Driver Right Knee	-23	0	-18
Passenger Left Knee	-15	0	-15
Passenger Right Knee	0	0	-9
Steering Column	4	0	34
Driver Front Outboard Seat Attachment Bolt	-5	0	-31
Pass. Front Outboard Seat Attachment Bolt	-14	0	0

Knee intrusions are points measured pre and post, which are located just above where the four knees would be expected to contact the instrument panel.
+X: Forward from rear bumper
+Y: From centerline
+Z: Upward from ground level

Figure 11 Camera Positions

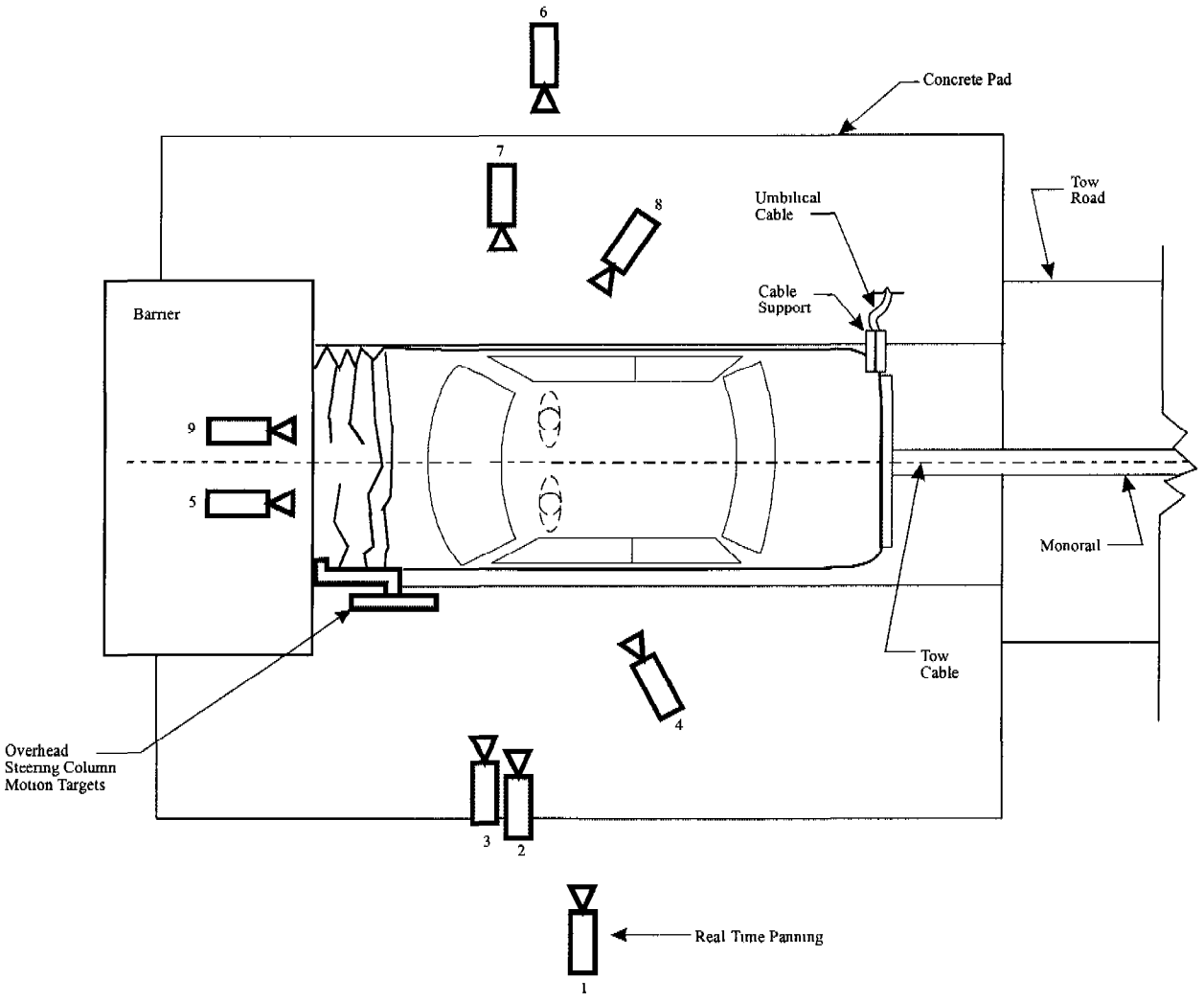


Figure 11 Camera Positions, Cont'd.

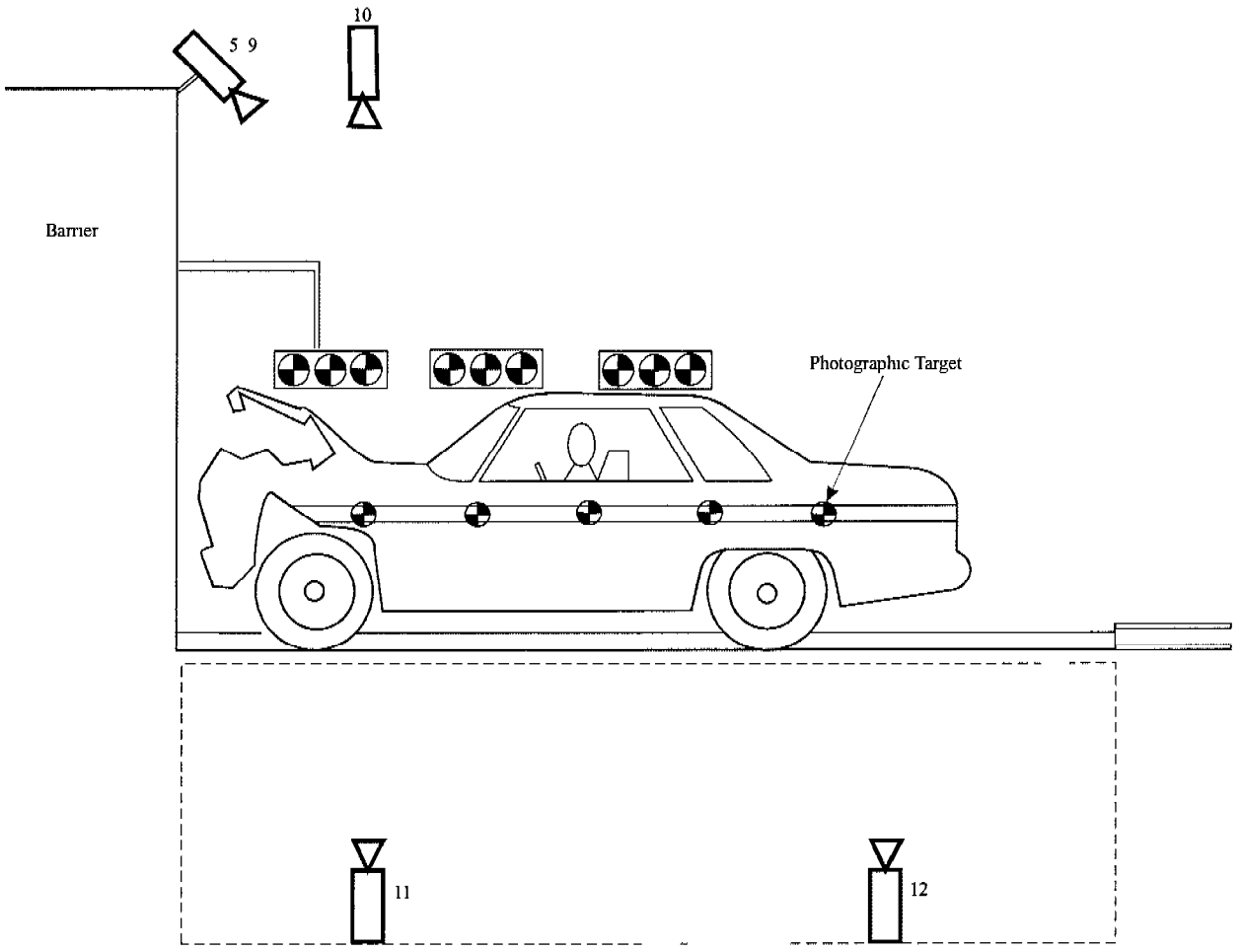
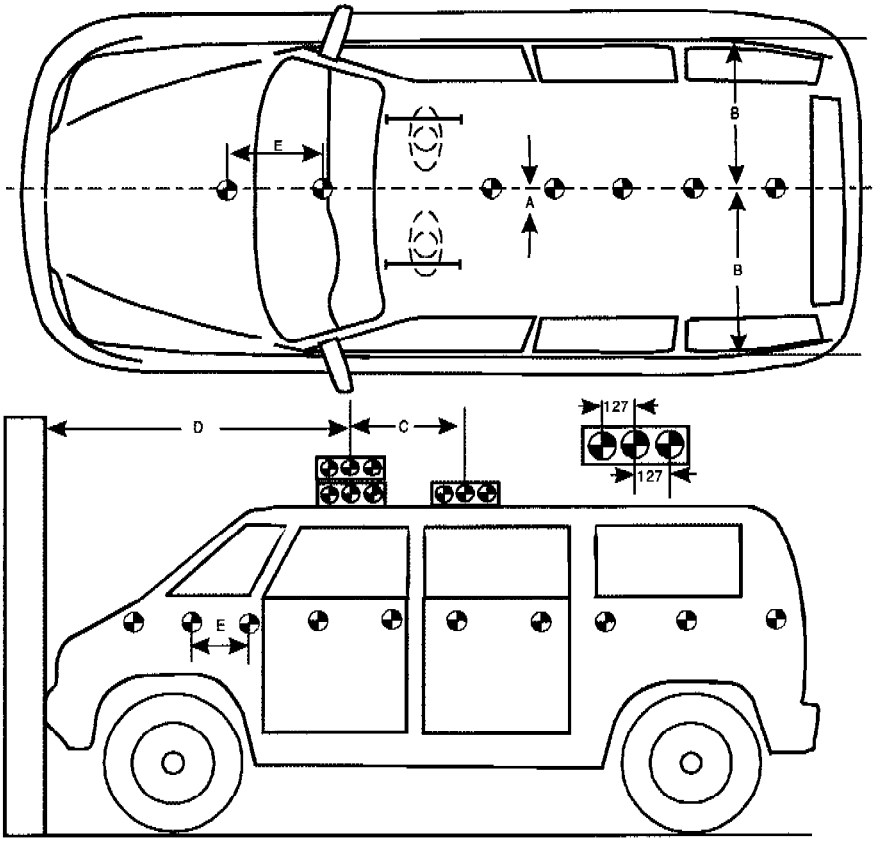


Table 10 Camera Information

Camera Number	Location	Type	Lens (mm)	Speed (fps)	Purpose of camera data
1	Panning	Bolex		24	Vehicle dynamics
2	Left perpendicular overall	Photosonic	13	1015	Vehicle crush
3	Left tight dummy	Photosonic	25	1000	Dummy kinematics
4	Left angled on dummy	Photosonic	25	1000	Dummy kinematics
5	Barrier driver	Photosonic	17	1000	Airbag deployment
6	Right perpendicular overall	Photosonic	13	1000	Vehicle crush
7	Right tight dummy	Photosonic	25	1005	Dummy kinematics
8	Right angled on dummy	Photosonic	25	1005	Dummy kinematics
9	Barrier passenger	Photosonic	17	1000	Airbag deployment
10	Overhead	Photosonic	13	1005	Vehicle dynamics
11	Pit front	Photosonic	13	1000	Vehicle crush
12	Pit rear	Photosonic	13	1000	Vehicle crush

Figure 12 Vehicle Reference Photo Target Locations



Measurement	Pre-Test
A	left: 415 mm right: 415 mm
B	N/A
C	left: N/A right: N/A
D	1385 mm
E[1]	300 mm

[1] The first side target is placed 600 mm from front edge of bumper, and others are at 300 mm intervals.

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 View

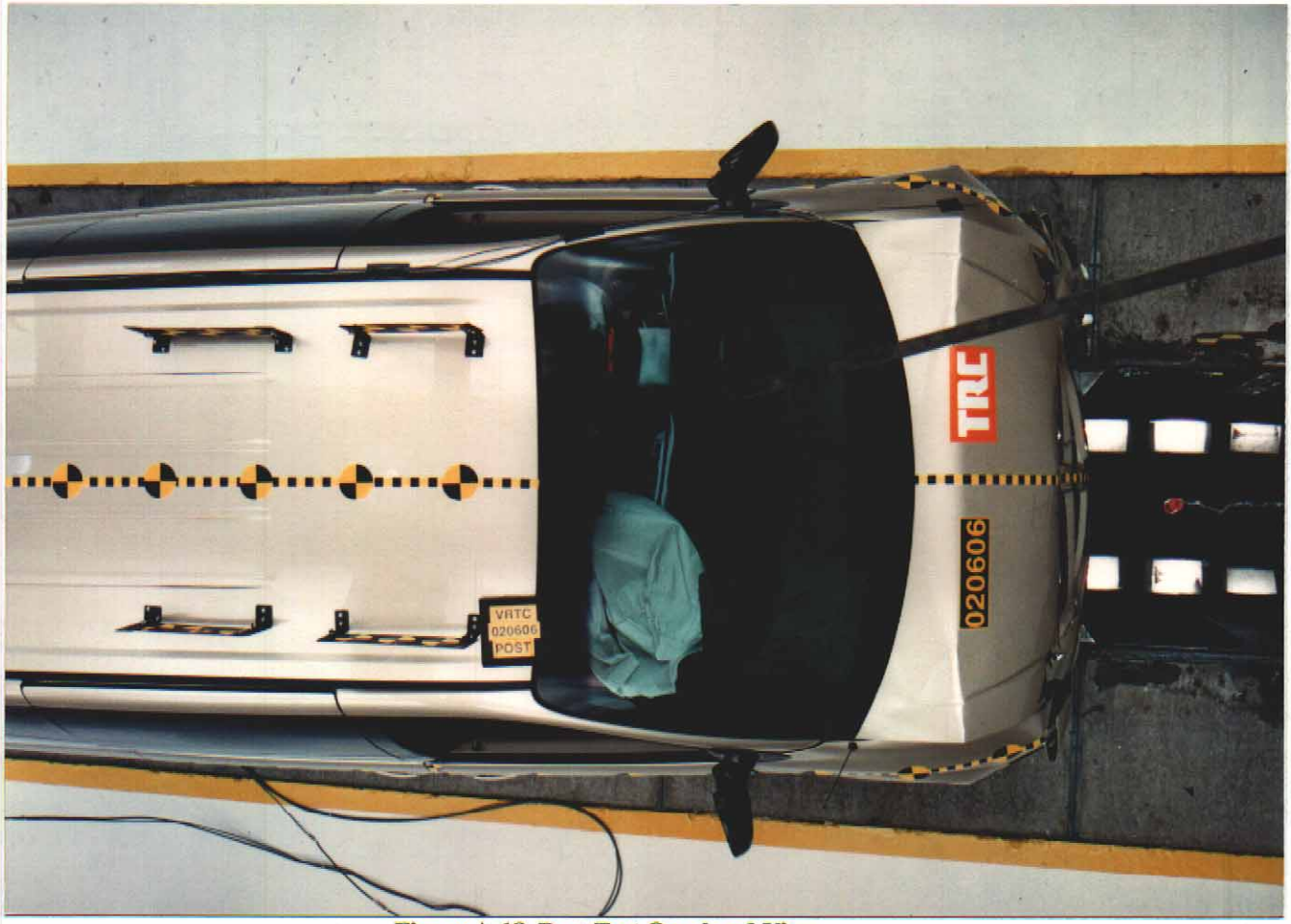


Figure A-18 Post-Test Overhead View

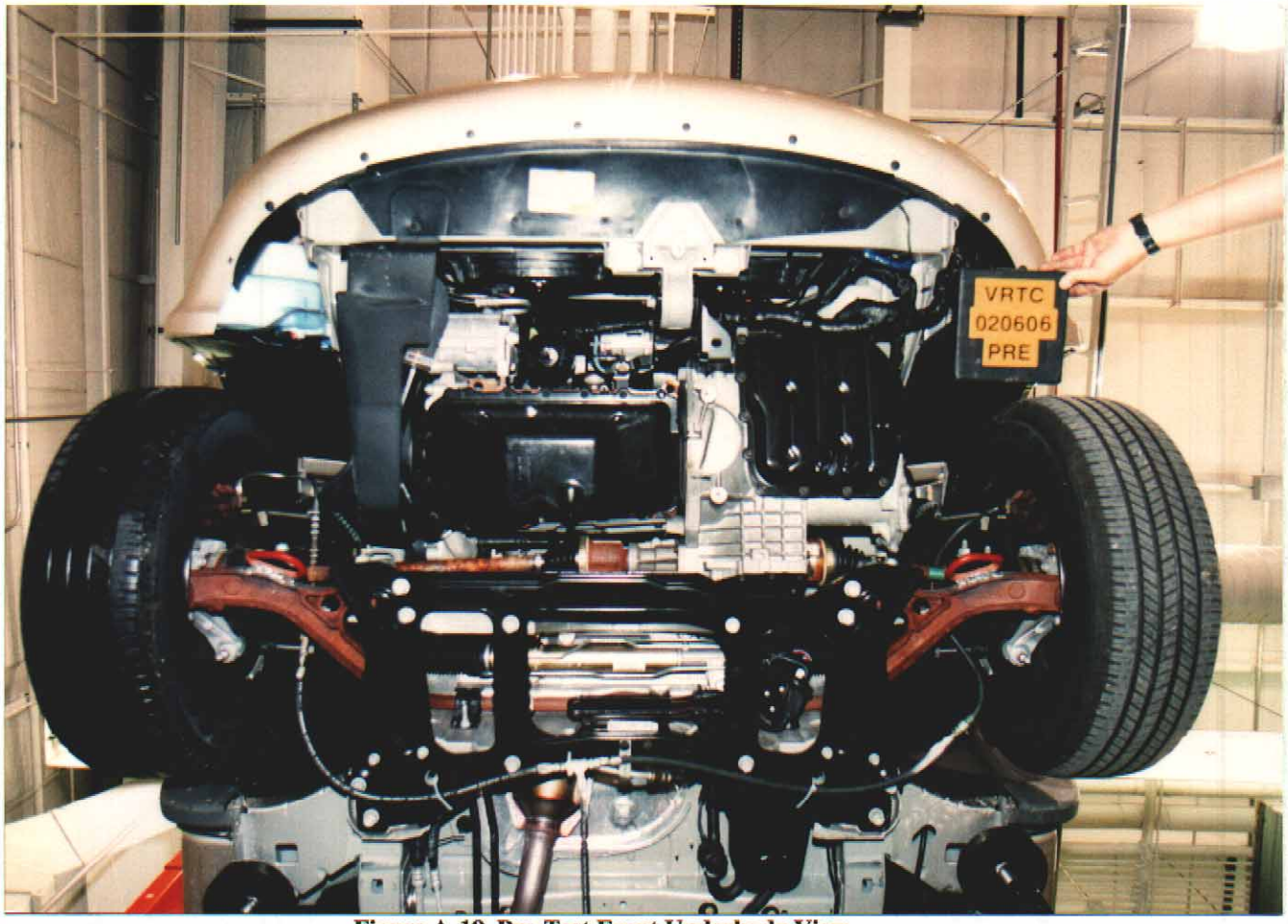


Figure A-19 Pre-Test Front Underbody View

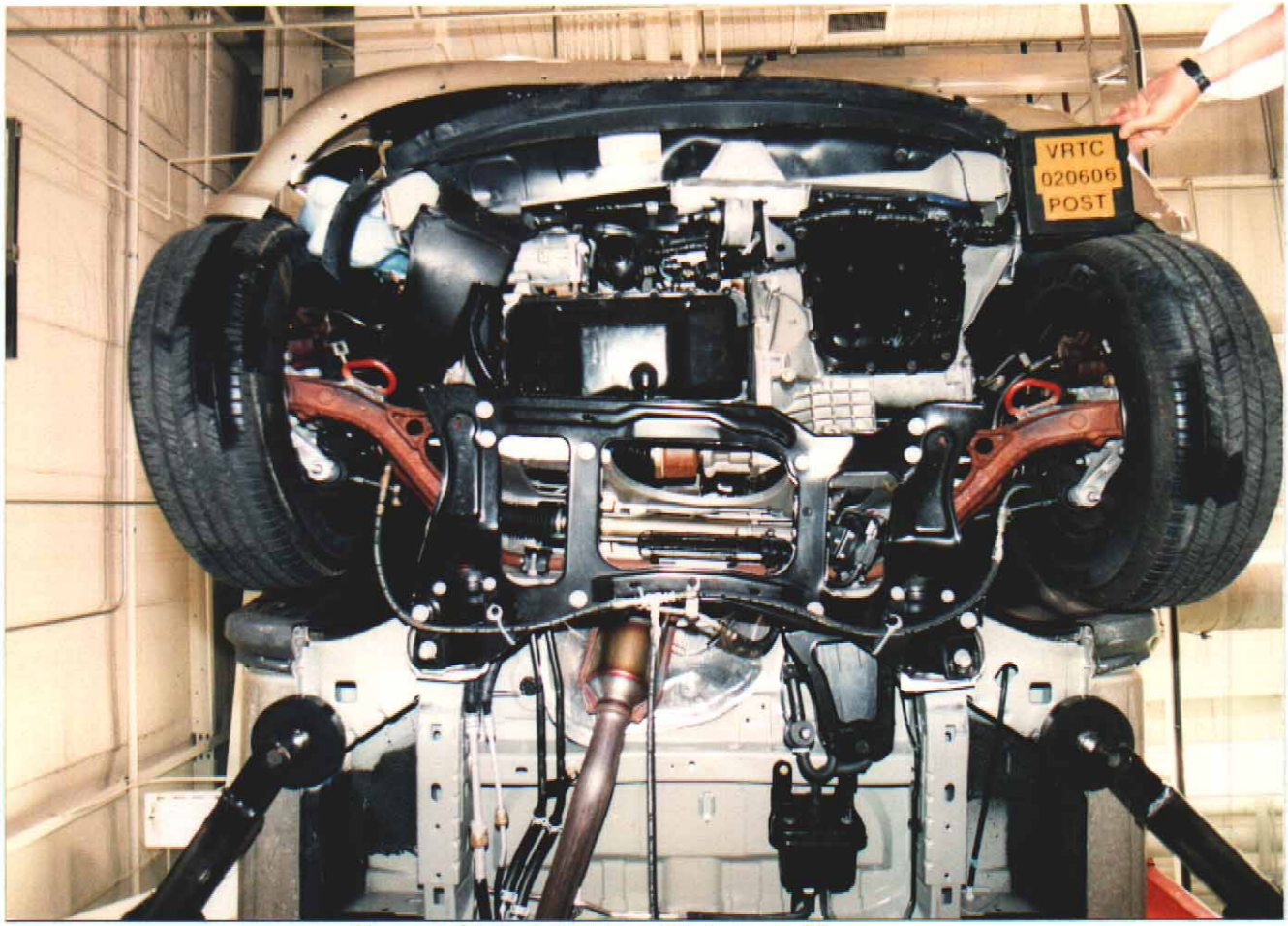


Figure A-20 Post-Test Front Underbody View

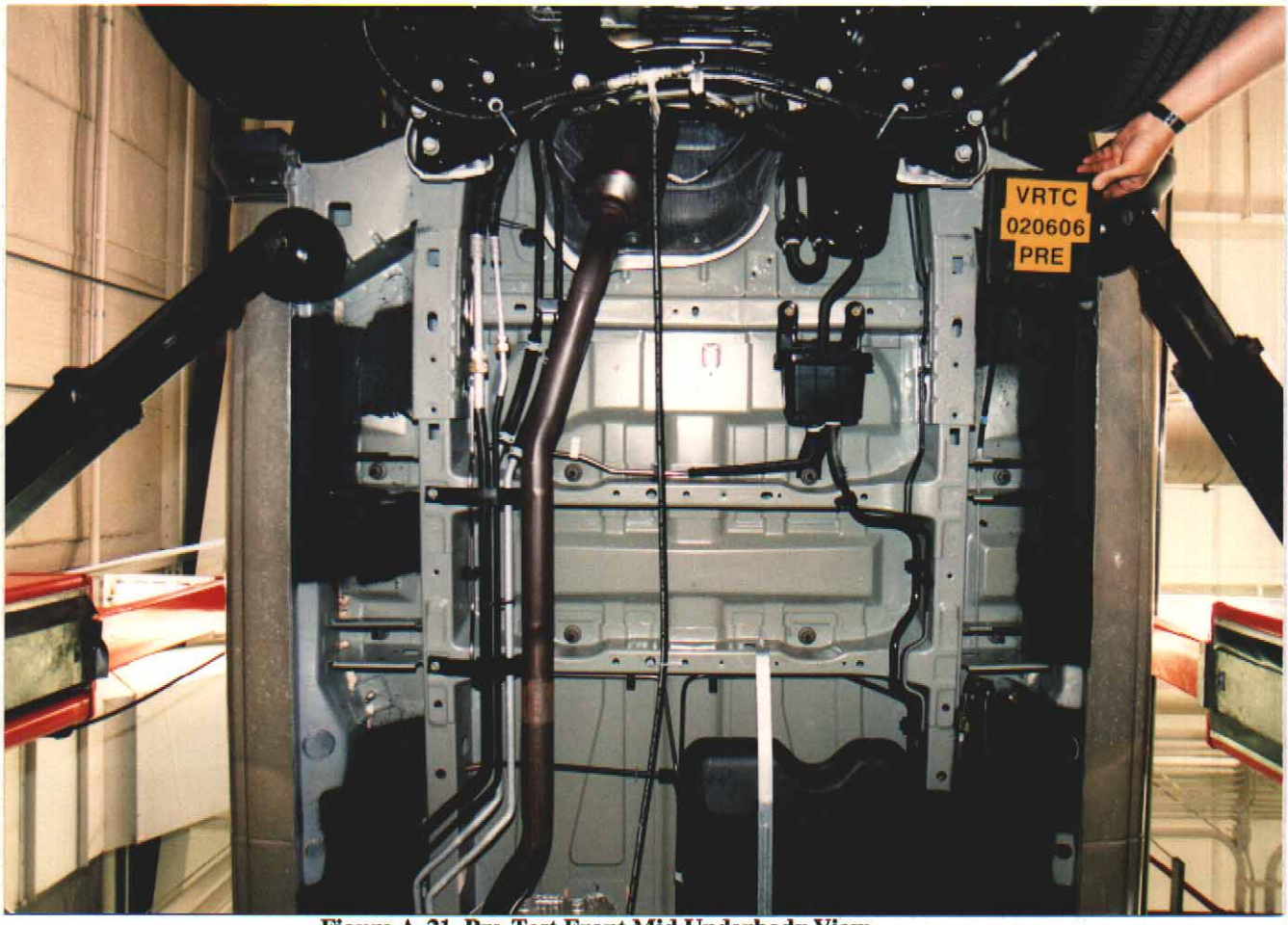


Figure A-21 Pre-Test Front Mid Underbody View

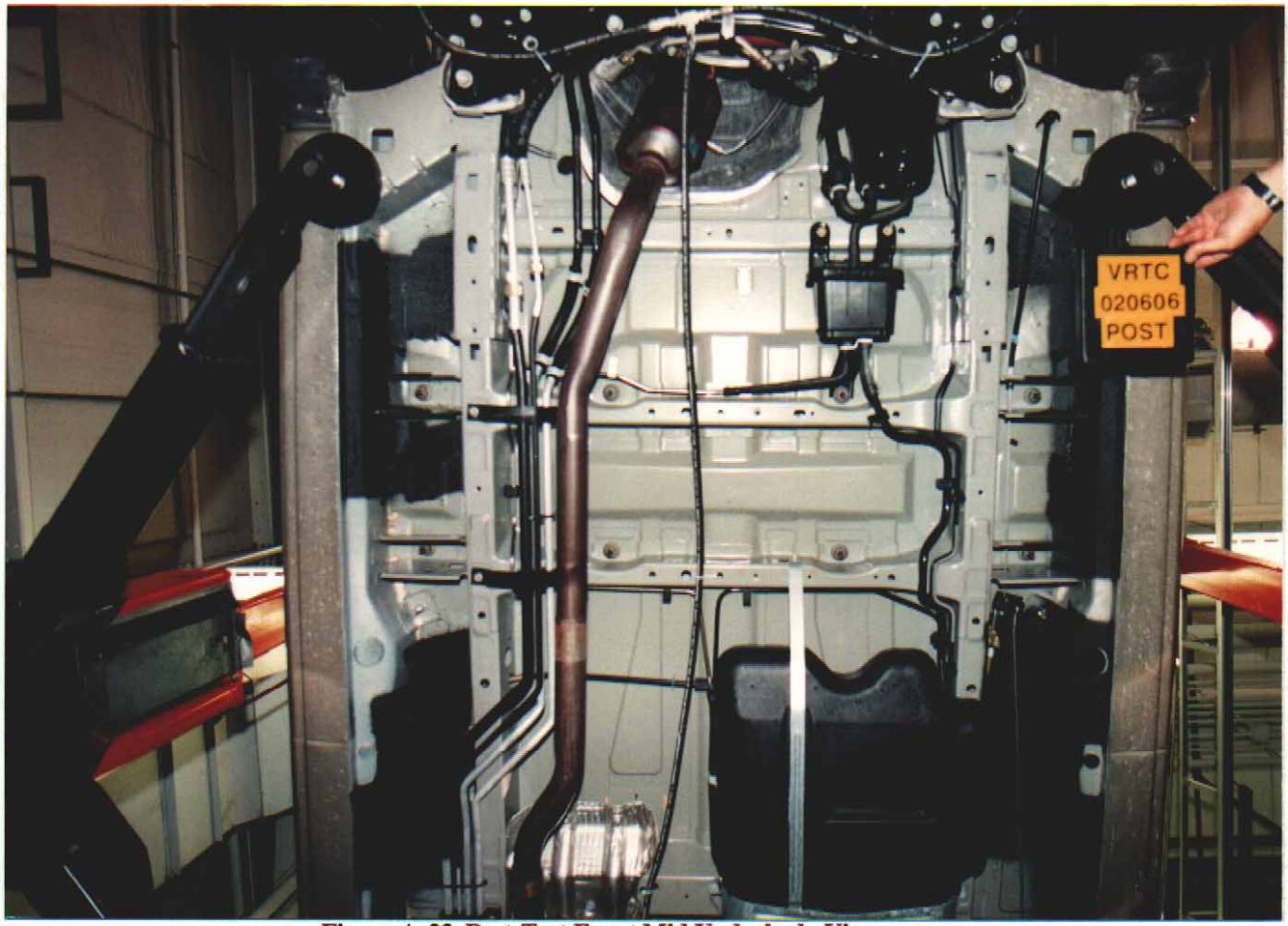


Figure A-22 Post-Test Front Mid Underbody View

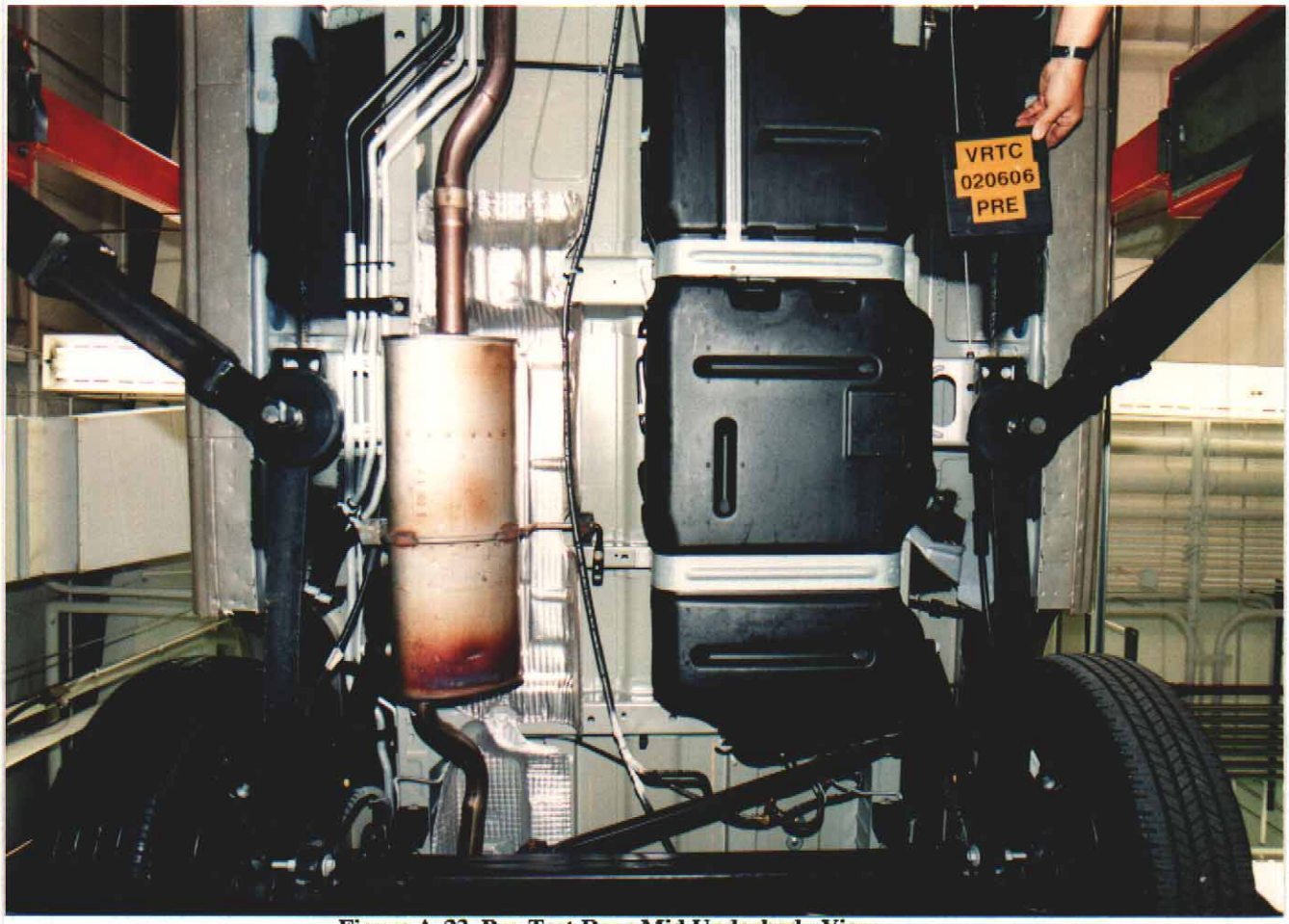


Figure A-23 Pre-Test Rear Mid Underbody View

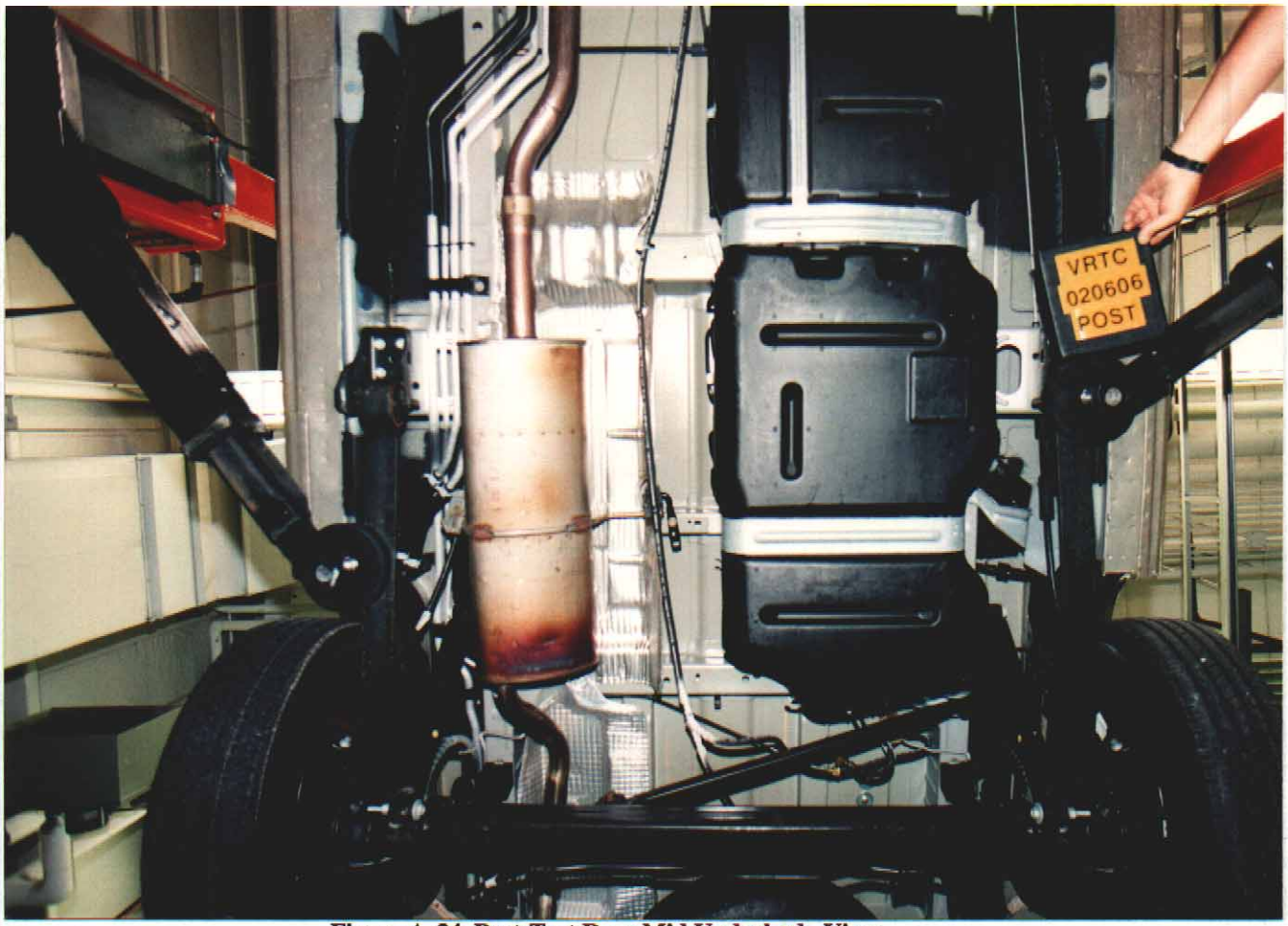


Figure A-24 Post-Test Rear Mid Underbody View

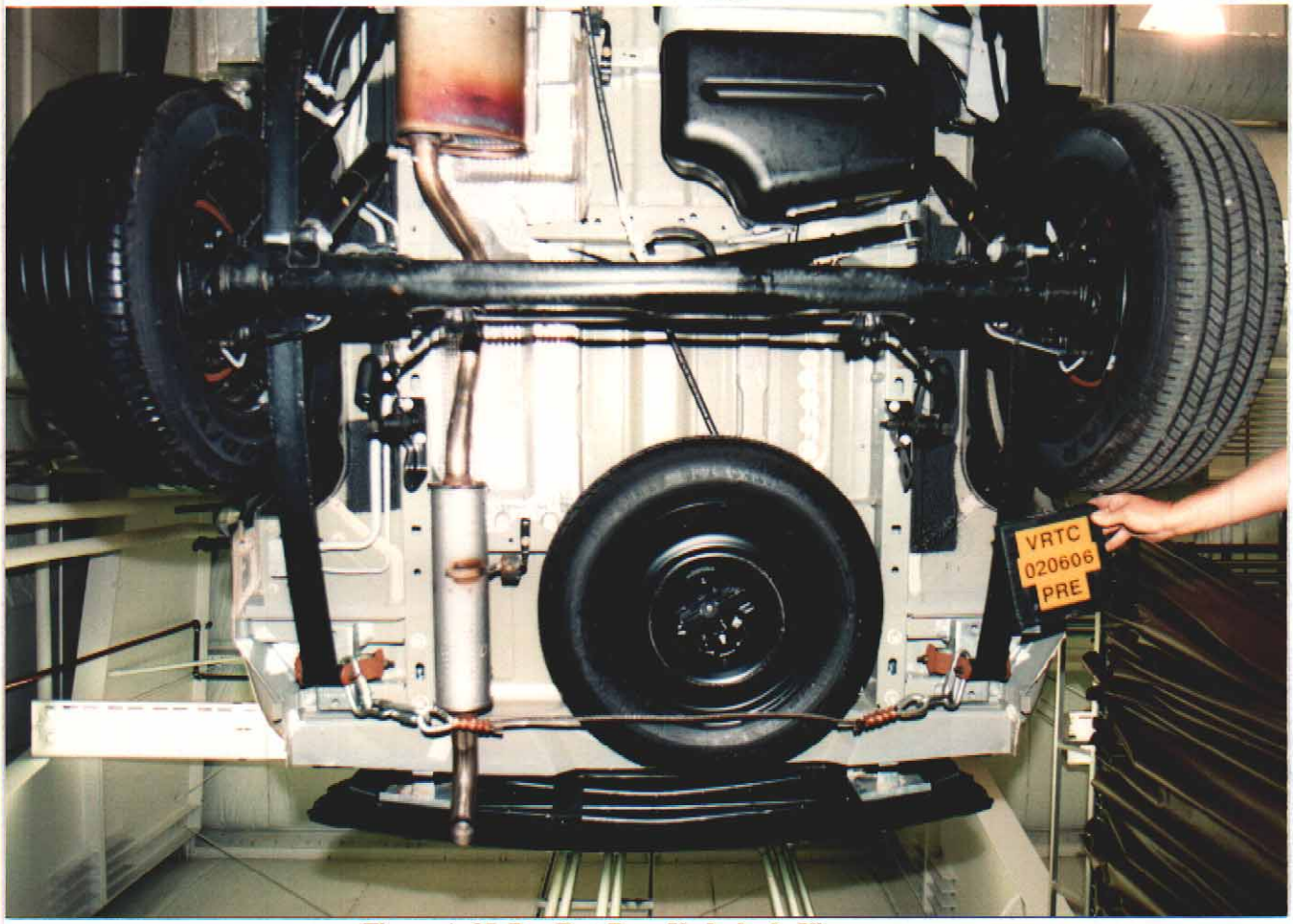


Figure A-25 Pre-Test Rear Underbody View

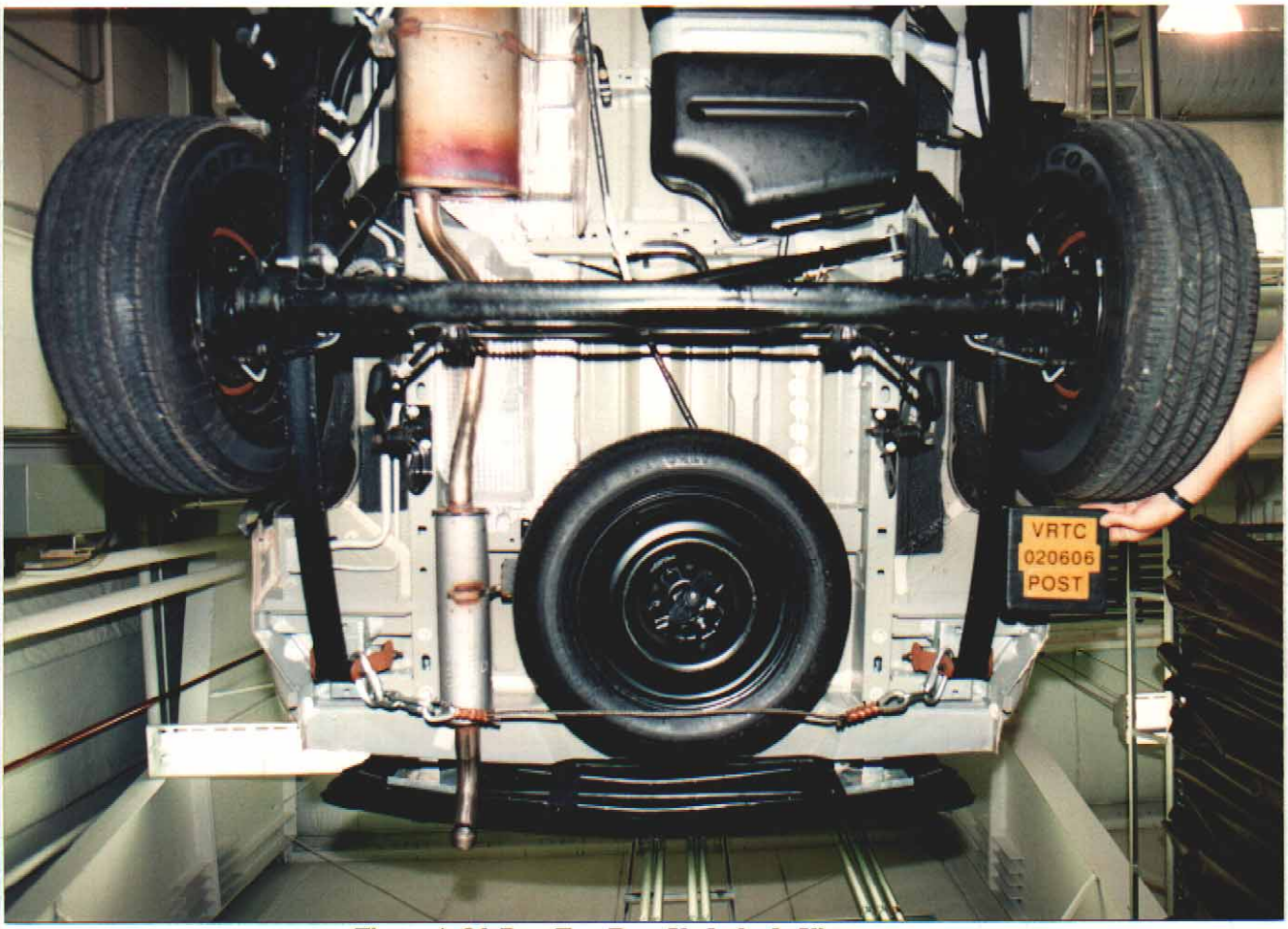


Figure A-26 Post-Test Rear Underbody View

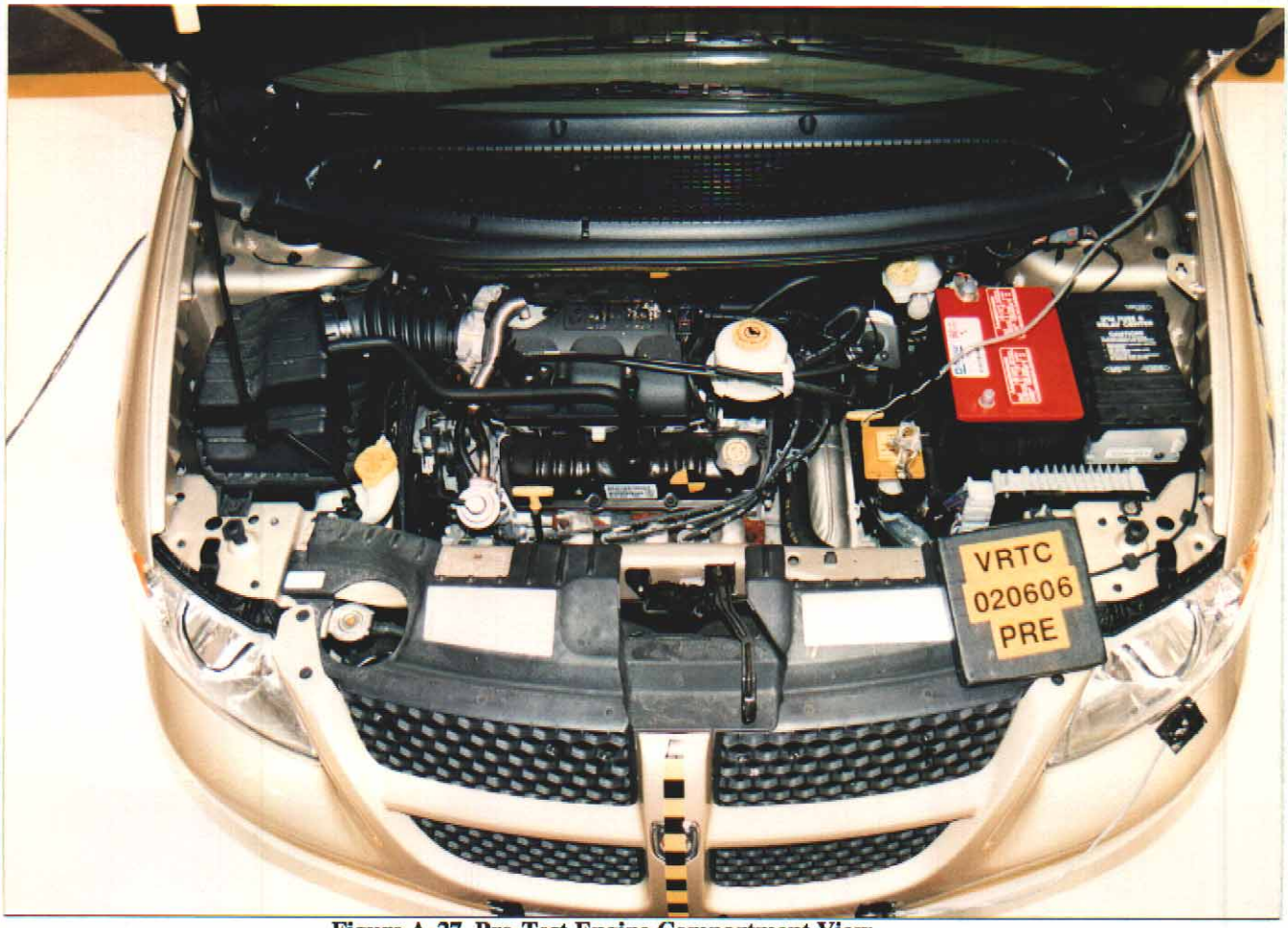


Figure A-27 Pre-Test Engine Compartment View

Figure A-28 Post-Test Engine Compartment View

Figure A-29 Pre-Test Windshield View

Figure A-30 Post-Test Windshield View

Figure A-31 Pre-Test Left Front Windshield View

Figure A-32 Post-Test Left Front Windshield View

Figure A-33 Pre-Test Right Front Windshield View

Figure A-34 Post-Test Right Front Windshield View

Figure A-35 Pre-Test Driver and Passenger Dummies Front View

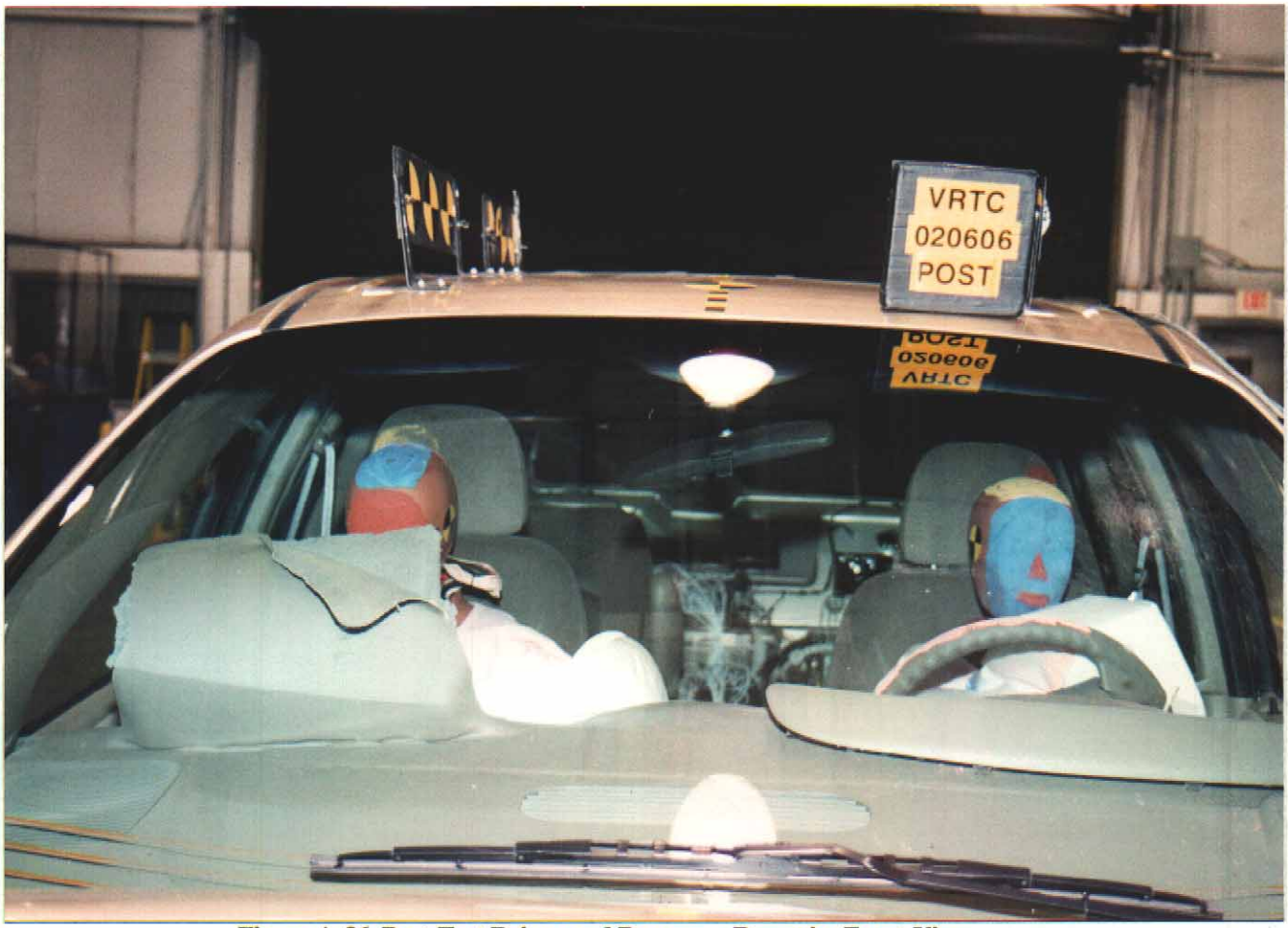


Figure A-36 Post-Test Driver and Passenger Dummies Front View

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

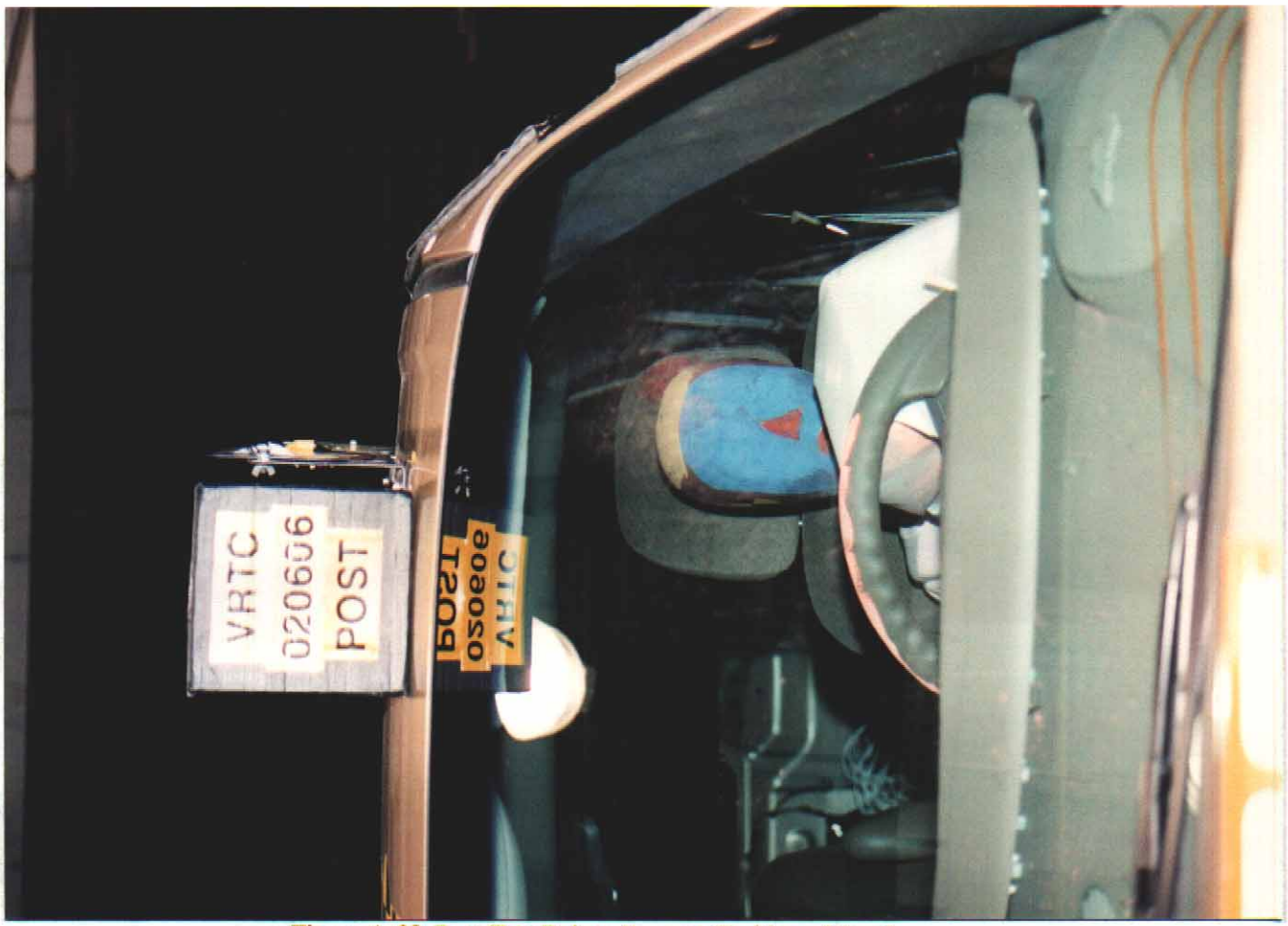


Figure A-38 Post-Test Driver Dummy Position - View 1

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

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

Figure A-41 Pre-Test Driver Dummy and Vehicle Interior - View 1

Figure A-42 Post-Test Driver Dummy and Vehicle Interior - View 1

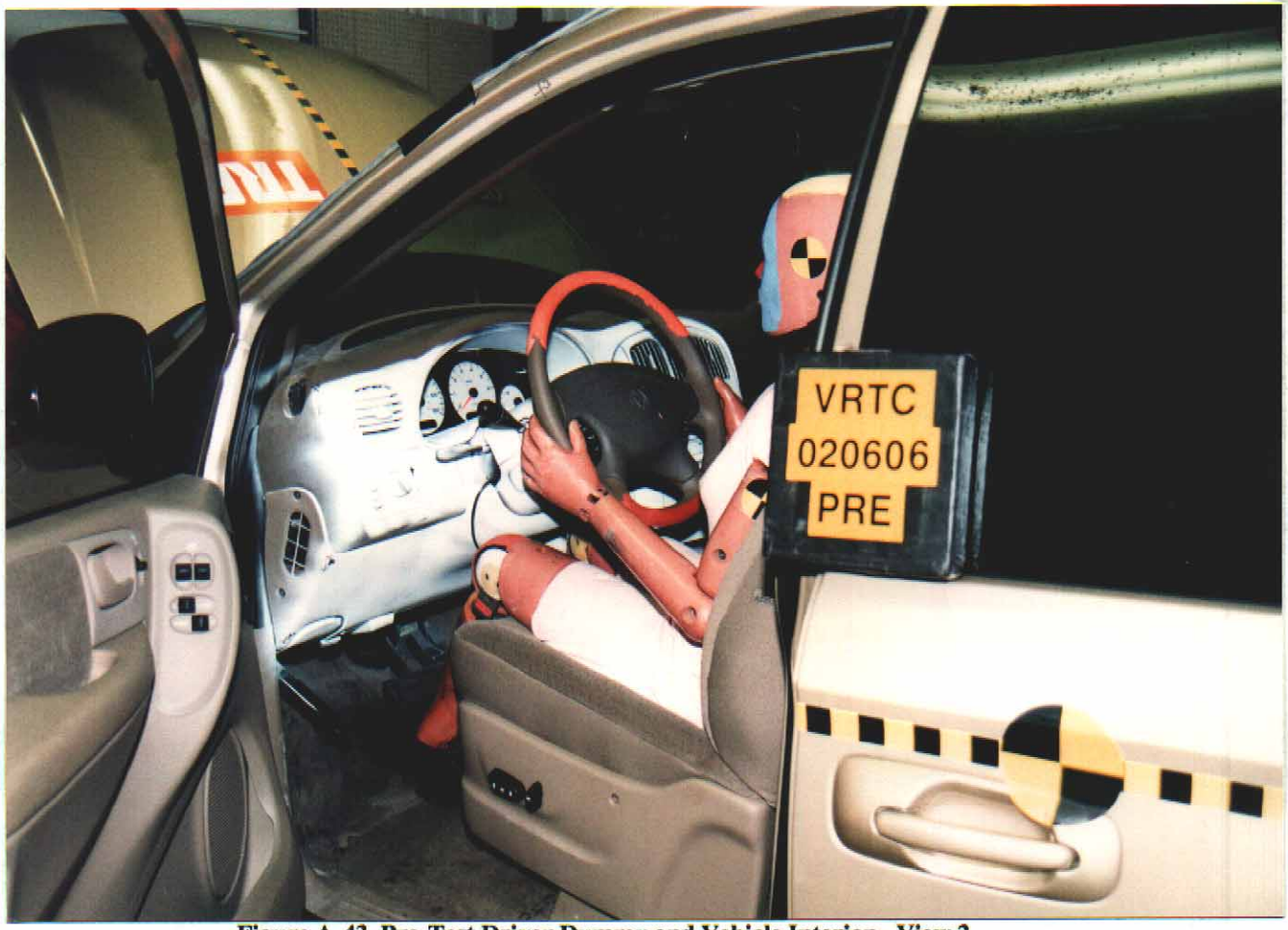


Figure A-43 Pre-Test Driver Dummy and Vehicle Interior - View 2

Figure A-44 Post-Test Driver Dummy and Vehicle Interior - View 2

Figure A-45 Pre-Test Passenger Dummy Position - View 1

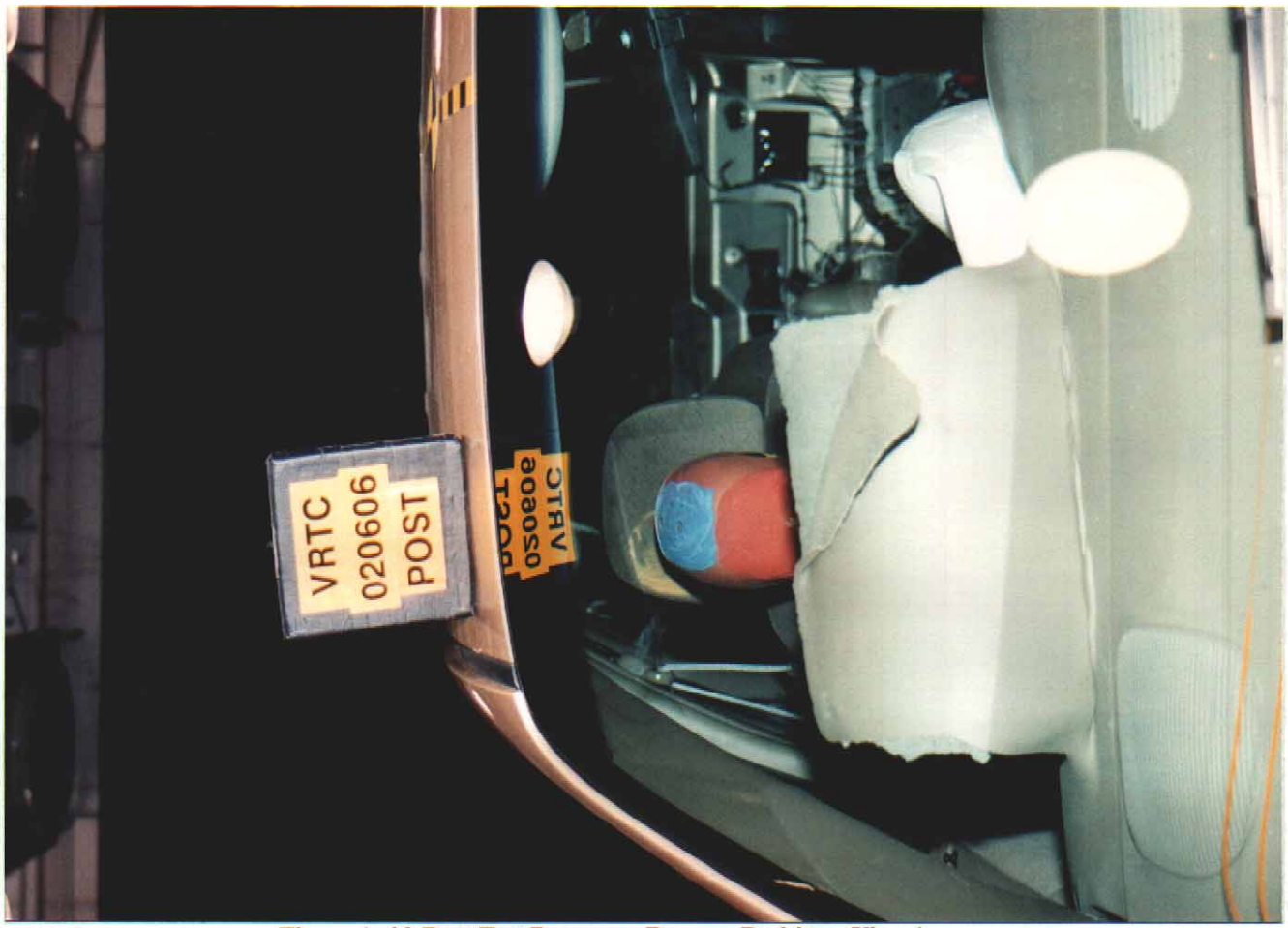


Figure A-46 Post-Test Passenger Dummy Position - View 1

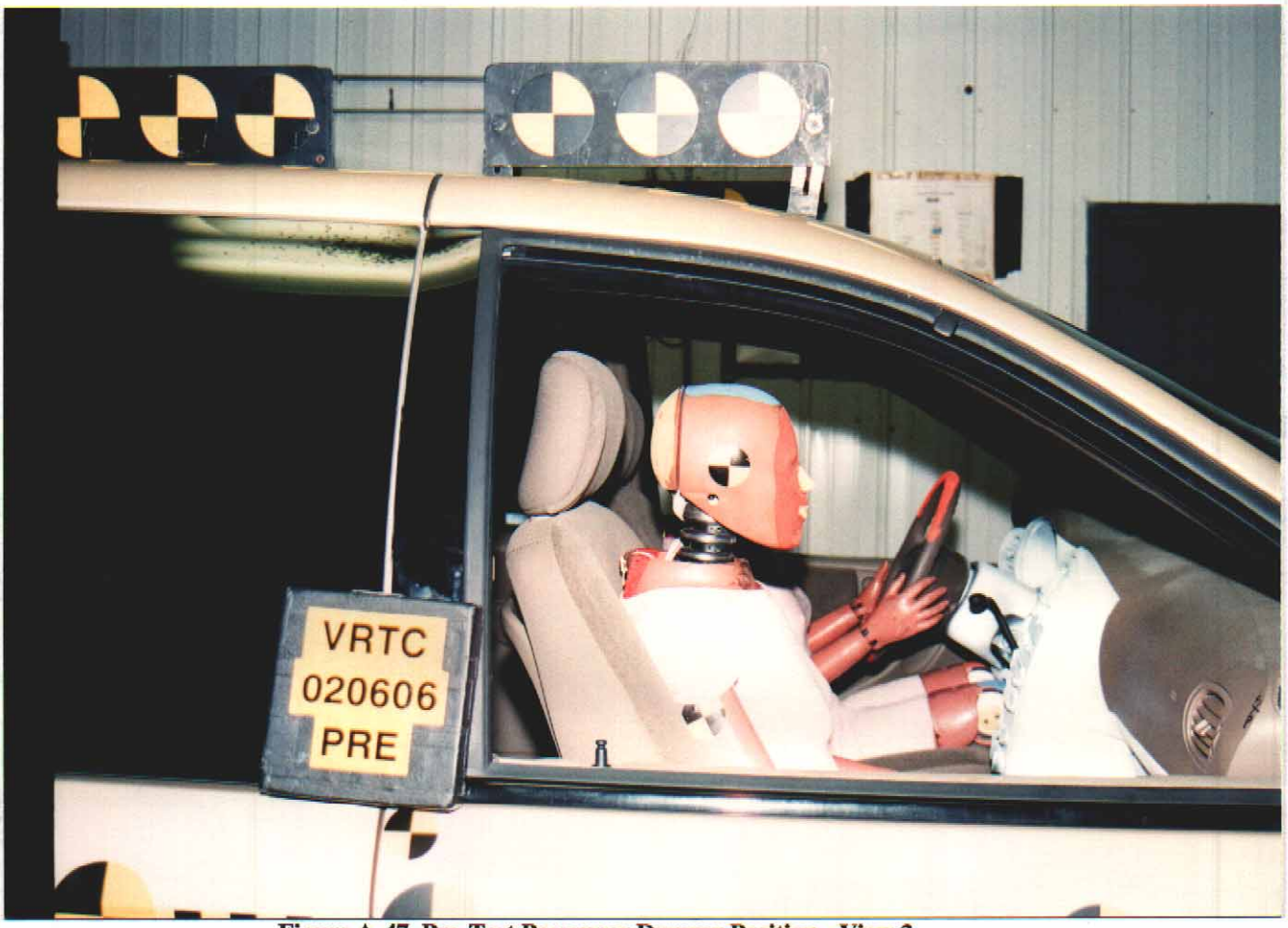


Figure A-47 Pre-Test Passenger Dummy Position - View 2

Figure A-48 Post-Test Passenger Dummy Position - View 2

Figure A-49 Pre-Test Passenger Dummy and Vehicle Interior - View 1

Figure A-50 Post-Test Passenger Dummy and Vehicle Interior - View 1

Figure A-51 Pre-Test Passenger Dummy and Vehicle Interior - View 2

Figure A-52 Post-Test Passenger Dummy and Vehicle Interior - View 2

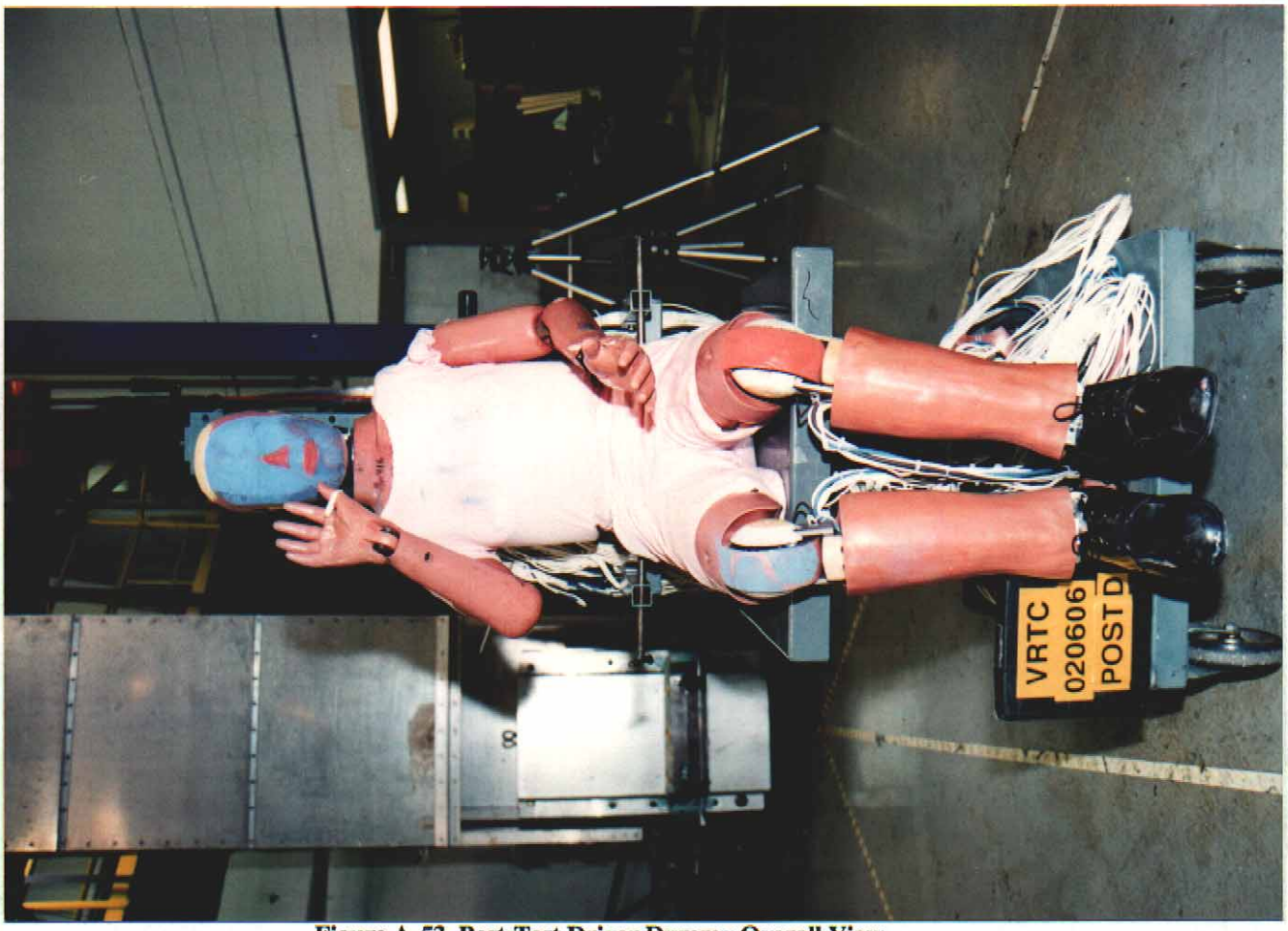


Figure A-53 Post-Test Driver Dummy Overall View

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

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

Figure A-56 Post-Test Driver Dummy Head Contact - View 3

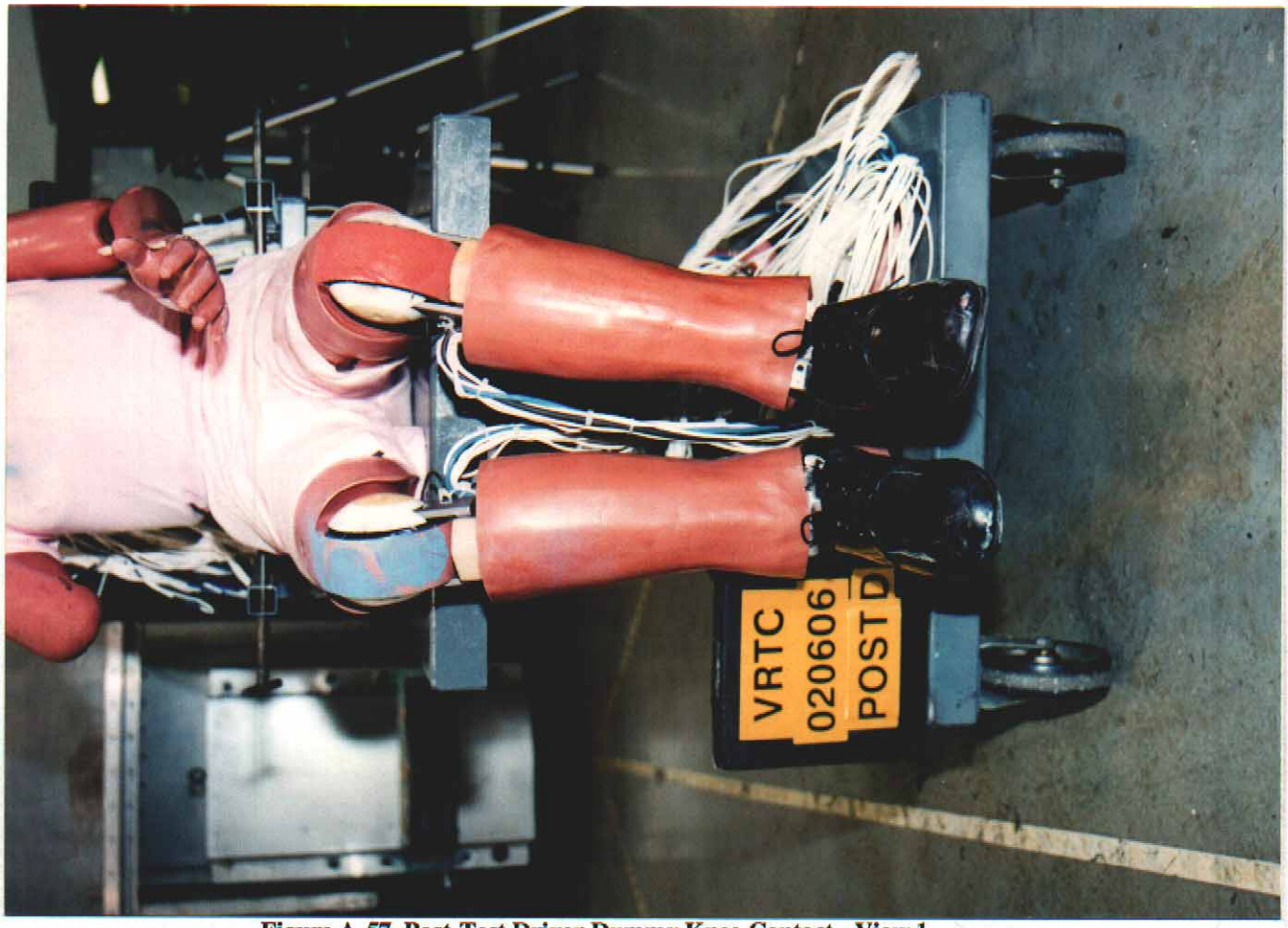


Figure A-57 Post-Test Driver Dummy Knee Contact - View 1

Figure A-58 Post-Test Driver Dummy Knee Contact - View 2

Figure A-59 Post-Test Driver Dummy Knee Contact - View 3

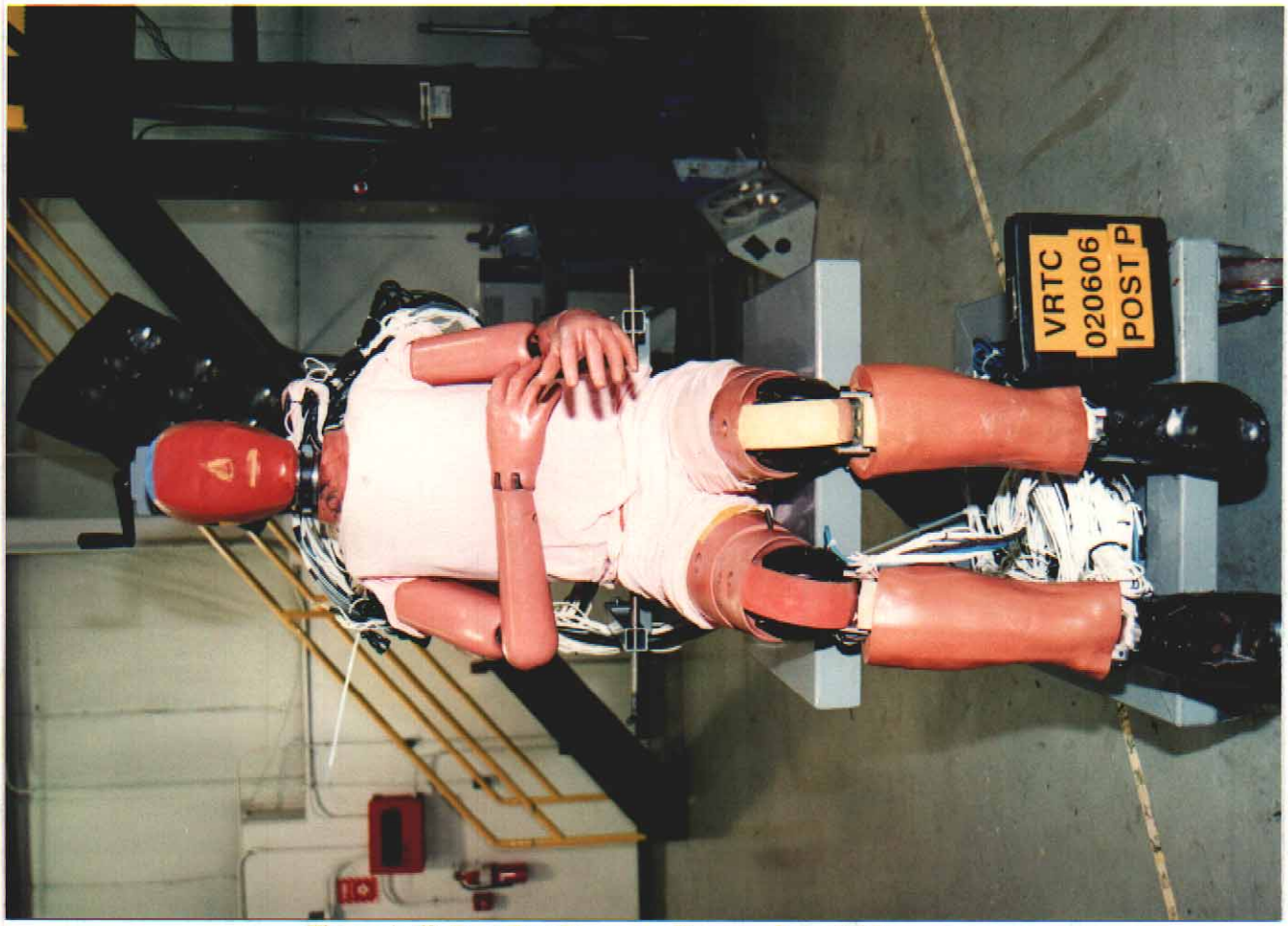


Figure A-60 Post-Test Passenger Dummy Overall View

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

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

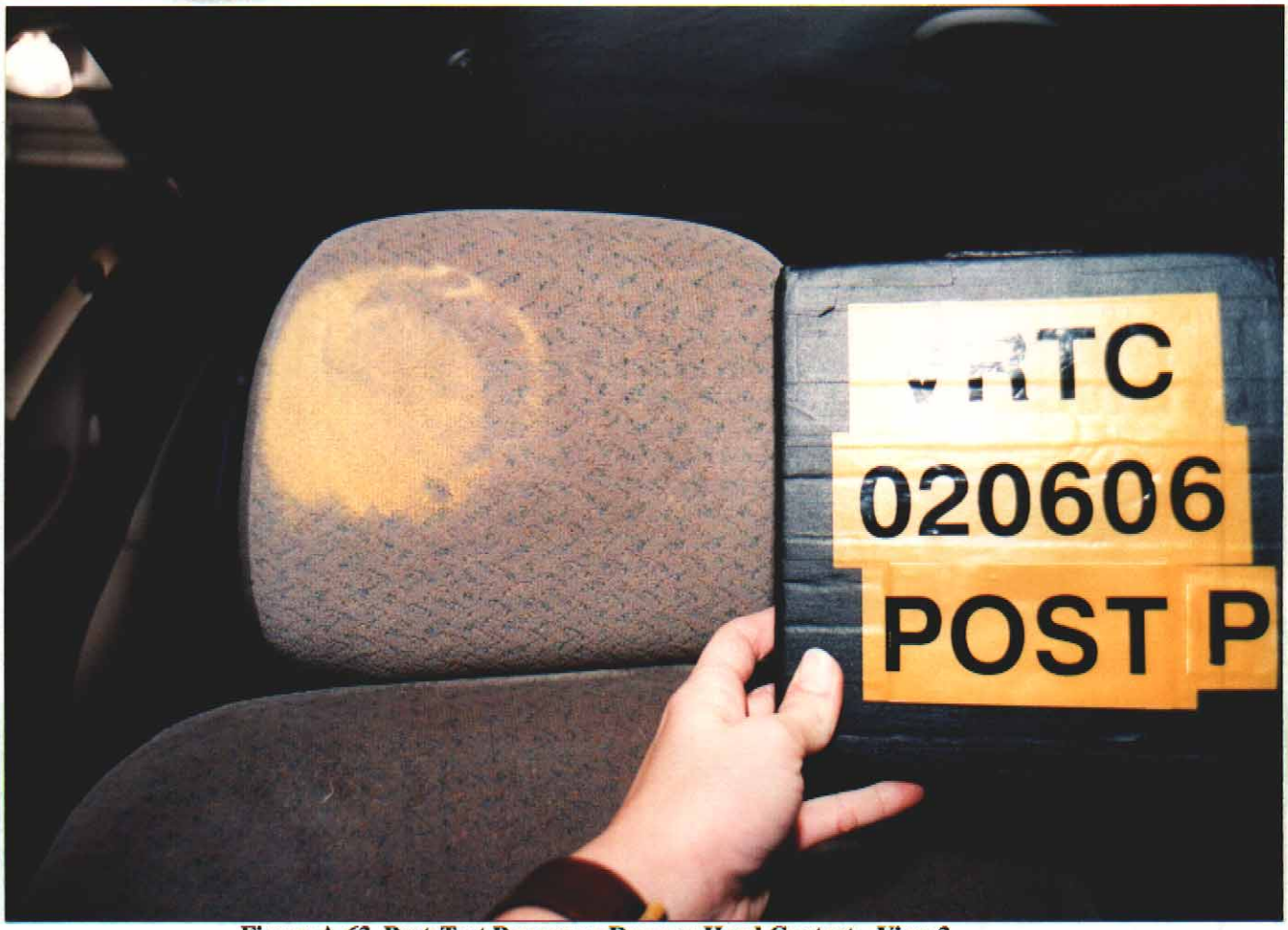


Figure A-63 Post-Test Passenger Dummy Head Contact - View 3

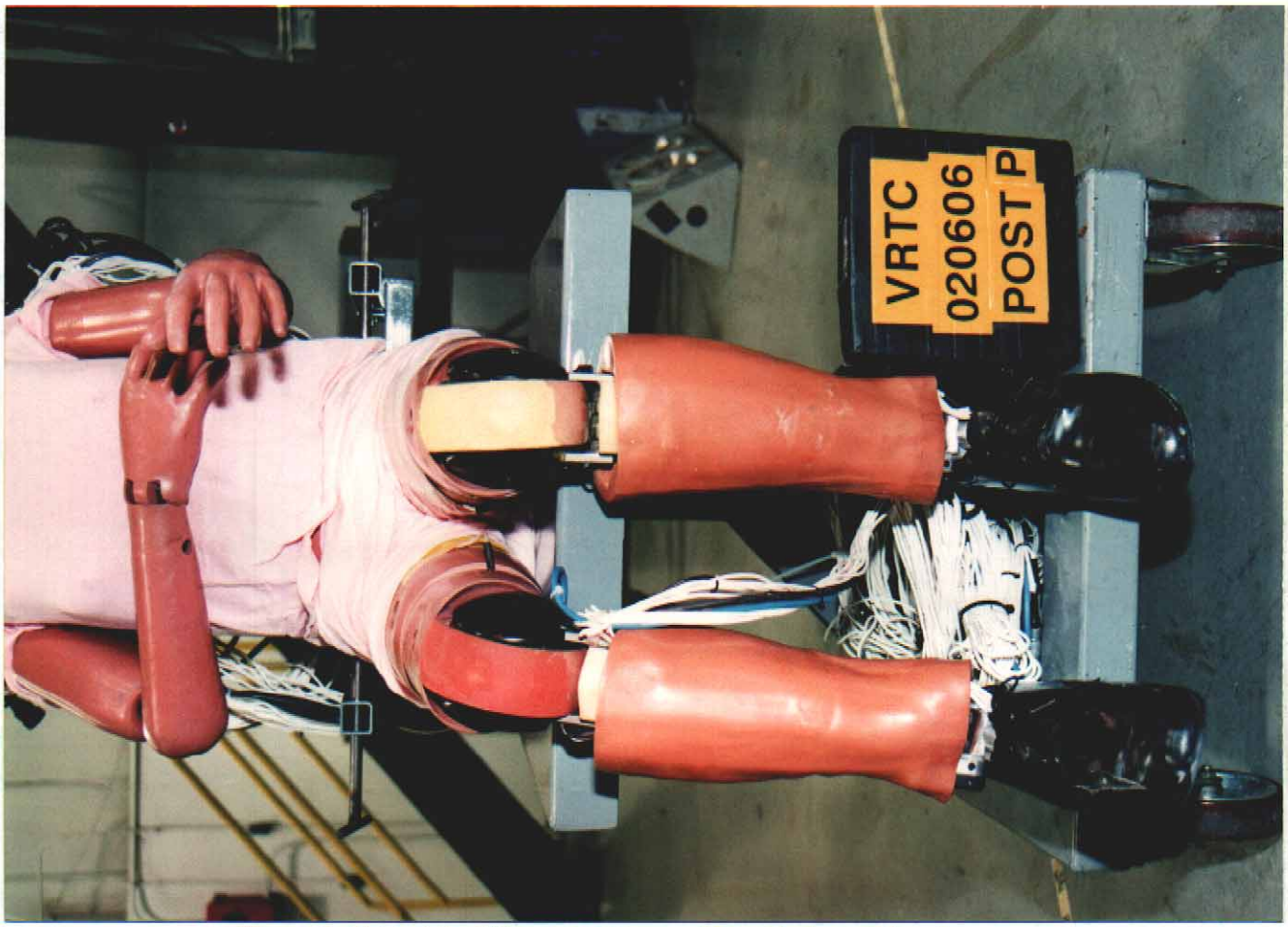


Figure A-64 Post-Test Passenger Dummy Knee Contact - View 1

Figure A-65 Post-Test Passenger Dummy Knee Contact - View 2

Figure A-66 Post-Test Passenger Dummy Knee Contact - View 3

Figure A-67 Pre-Test Vehicle Certification Label View

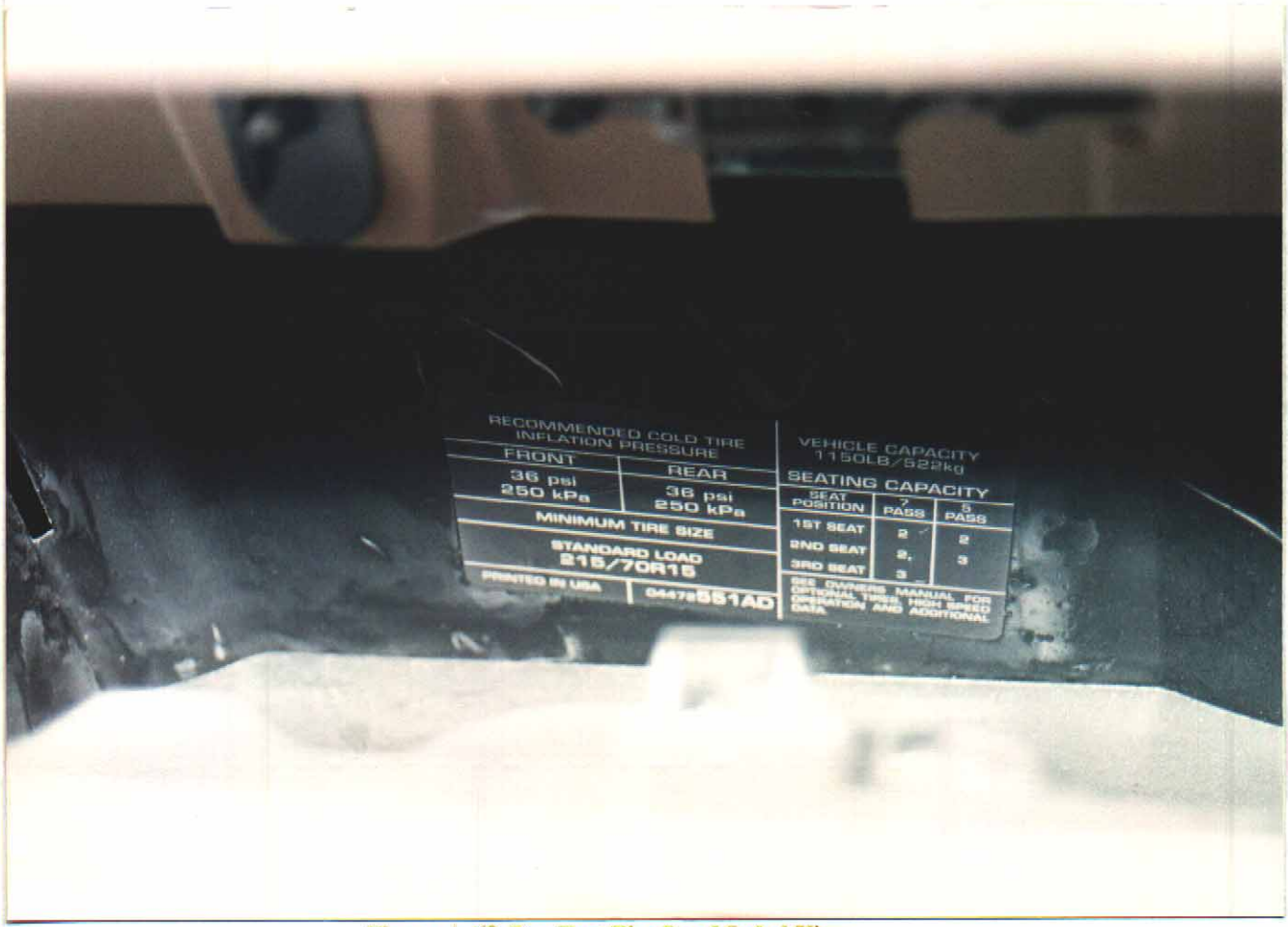
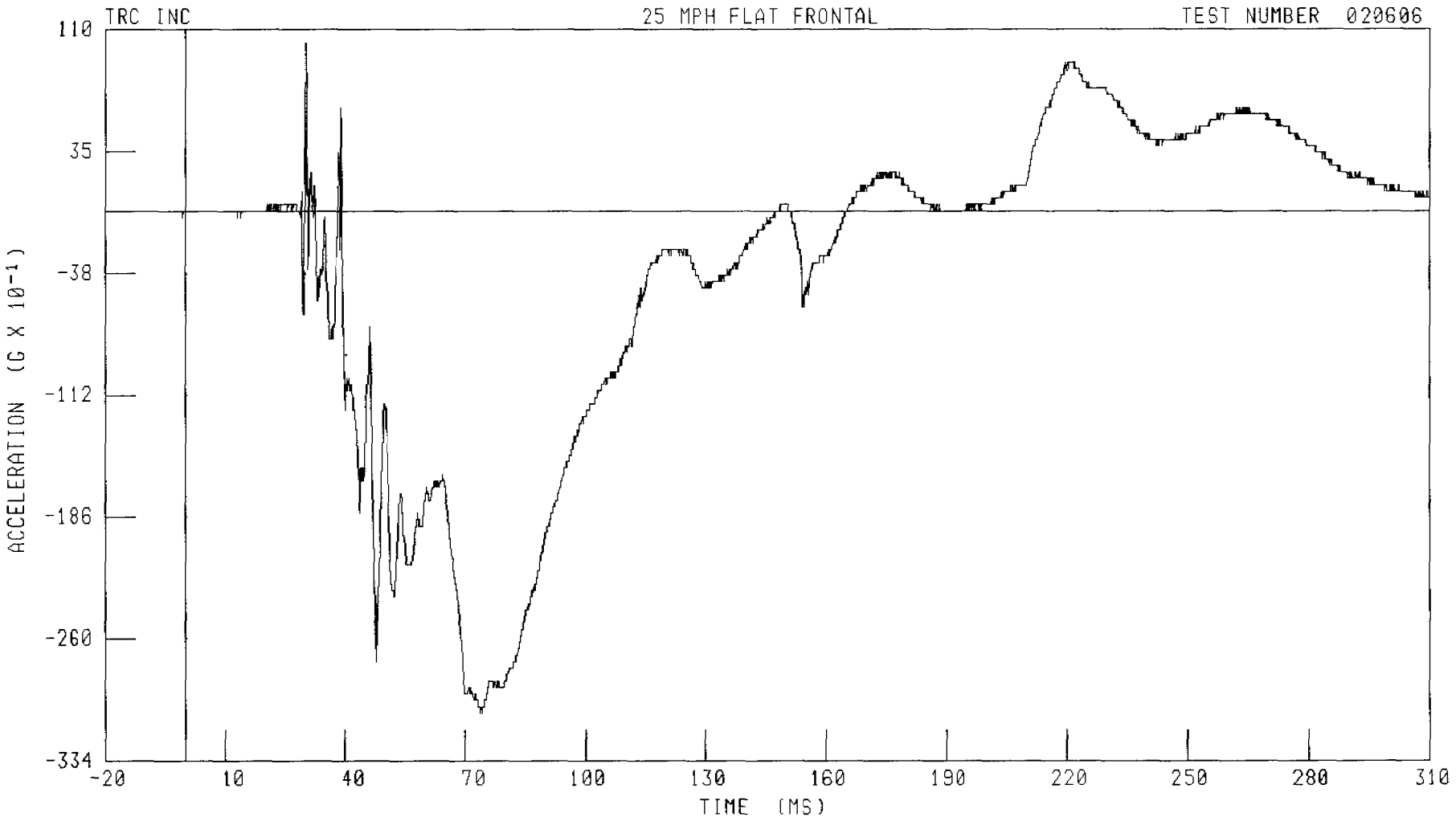


Figure A-68 Pre-Test Tire Load Label View

Appendix B

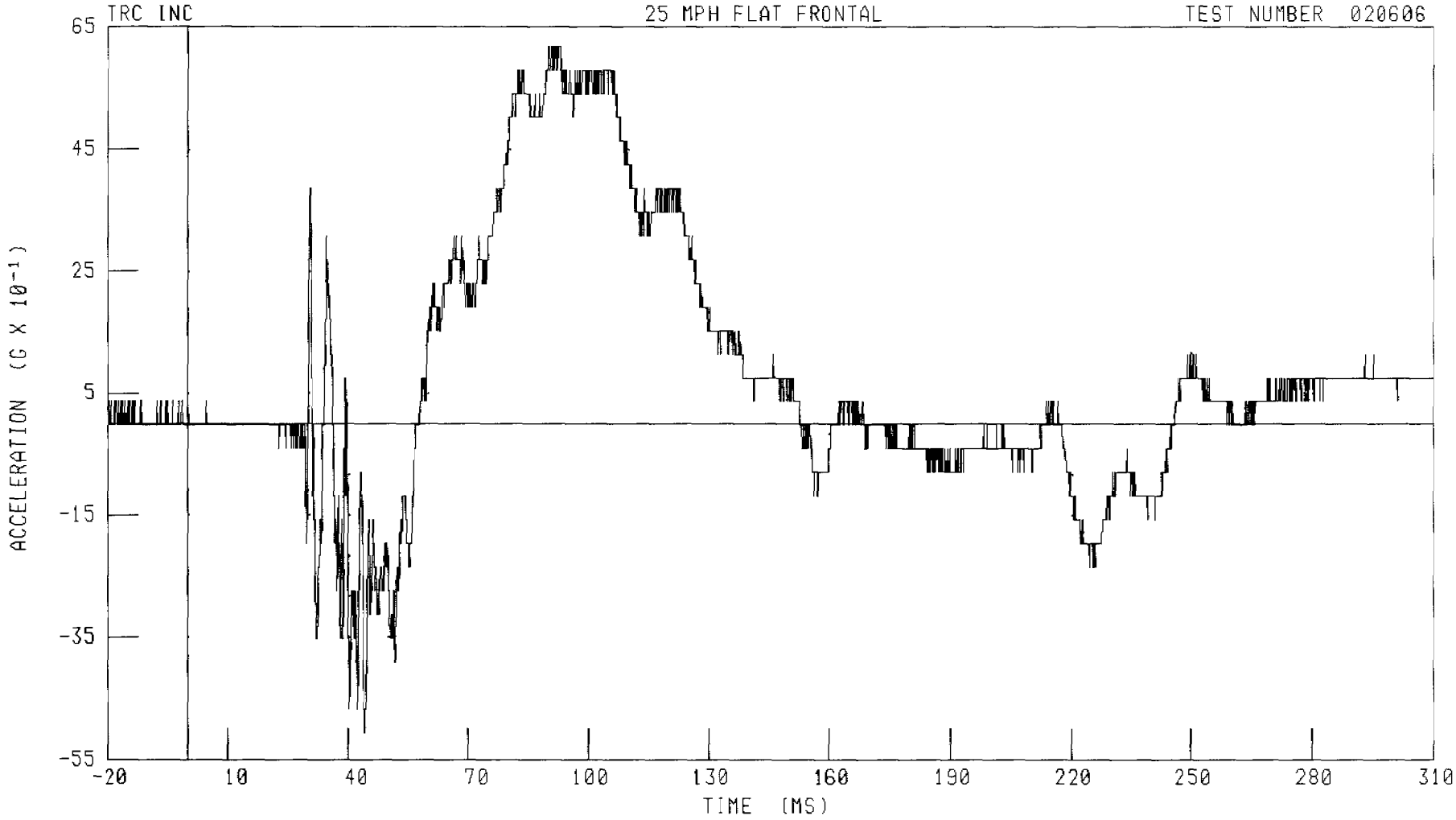
Data Plots

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD X-AXIS ACCELERATION



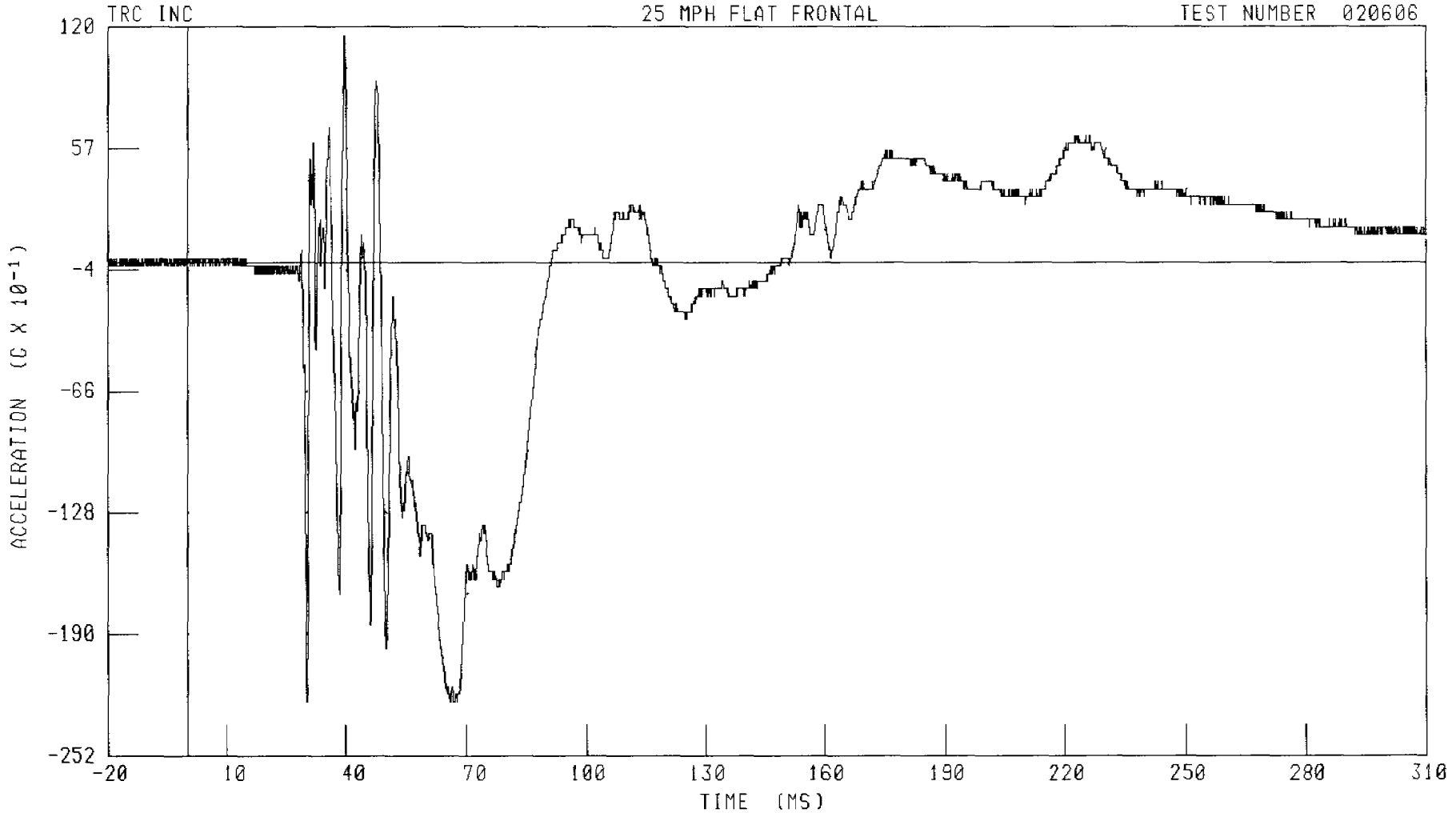
CHANNEL HEDXG1 FILTER CH CLASS 1000 PEAK DATA 10 20 G @ 30 24 MS, -30 52 G @ 73 76 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD Y-AXIS ACCELERATION



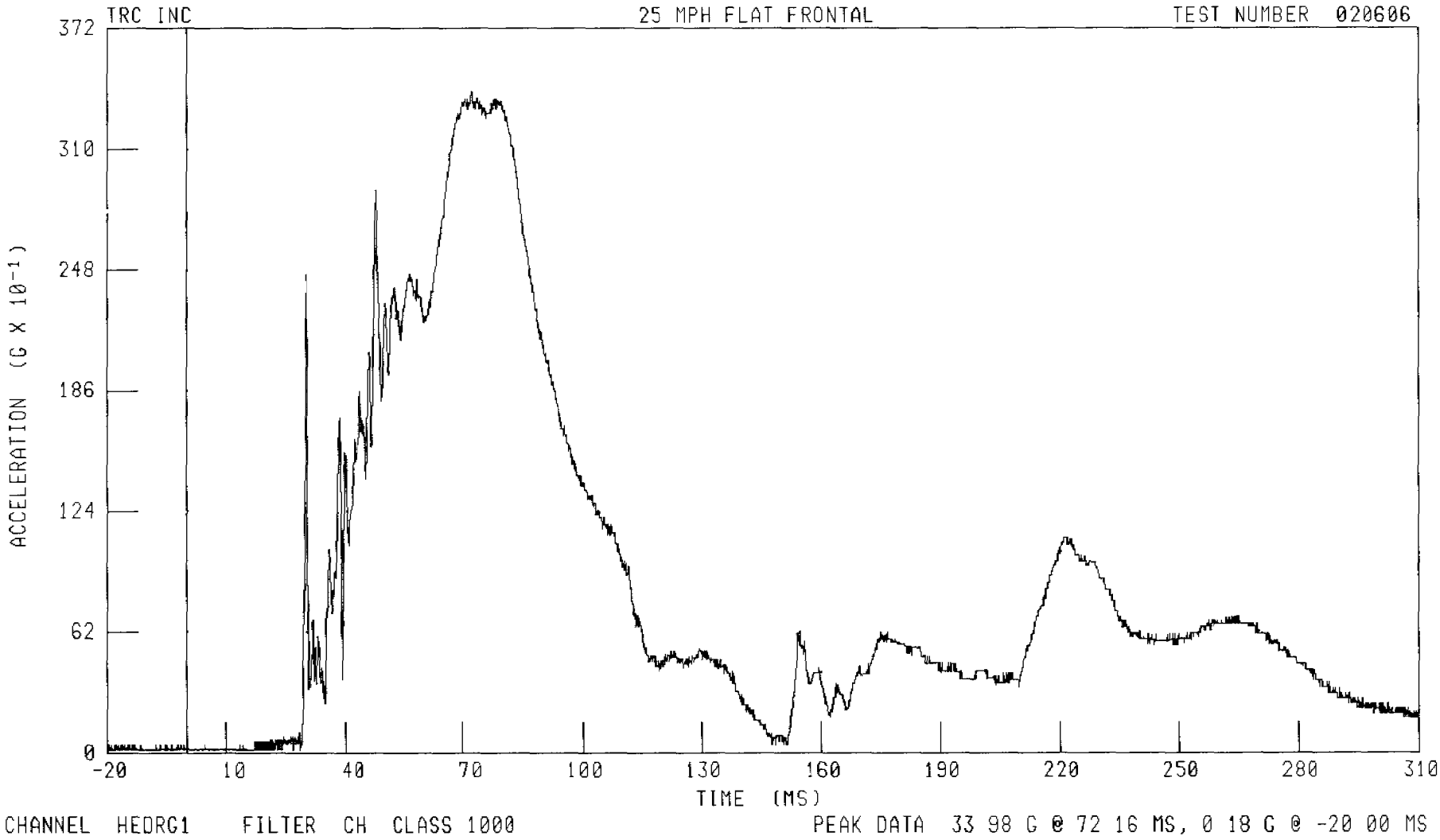
CHANNEL HEDYG1 FILTER CH CLASS 1000 PEAK DATA 6 19 G @ 89 92 MS, -5 07 G @ 43 92 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD Z-AXIS ACCELERATION



CHANNEL HEDZG1 FILTER CH CLASS 1000 PEAK DATA 11 56 G @ 39 76 MS, -22 46 G @ 30 16 MS

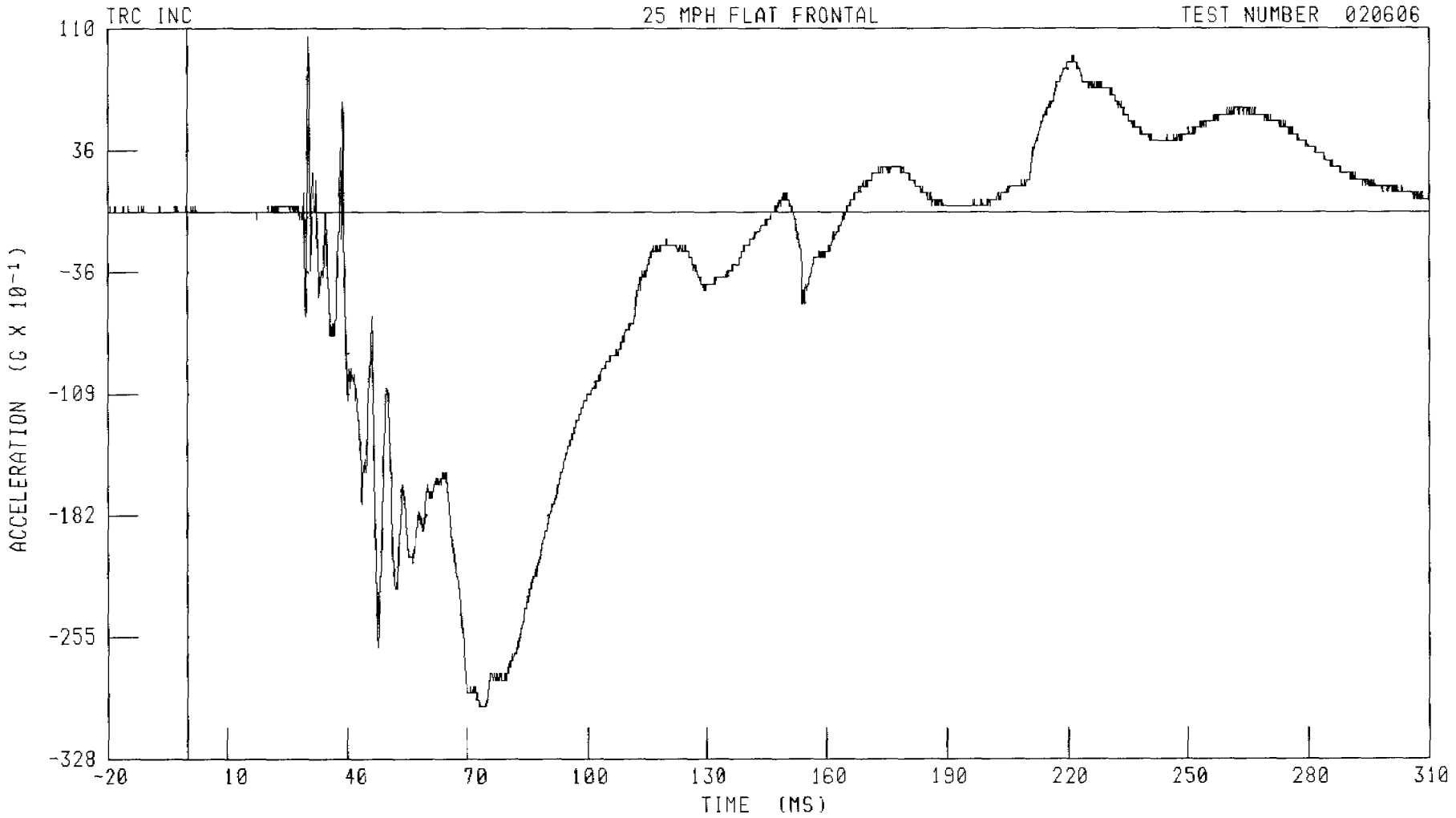
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD RESULTANT ACCELERATION



CHANNEL HEDRG1 FILTER CH CLASS 1000 PEAK DATA 33 98 G @ 72 16 MS, 0 18 G @ -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

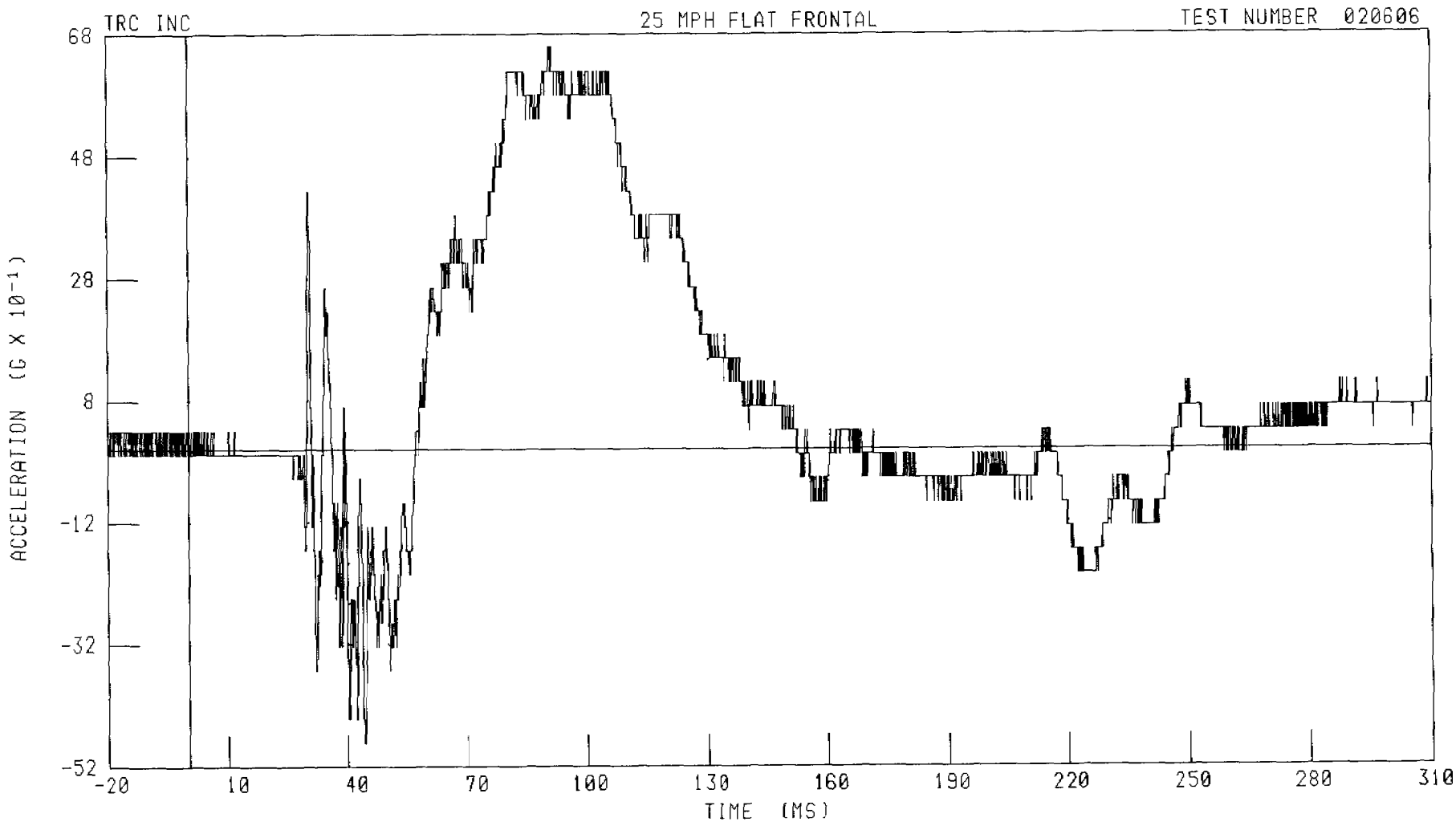
DRIVER HEAD X-AXIS ACCELERATION REDUNDANT



CHANNEL HEDXR1 FILTER CH CLASS 1000

PEAK DATA 10 53 G @ 30 24 MS, -29 65 G @ 73 20 MS

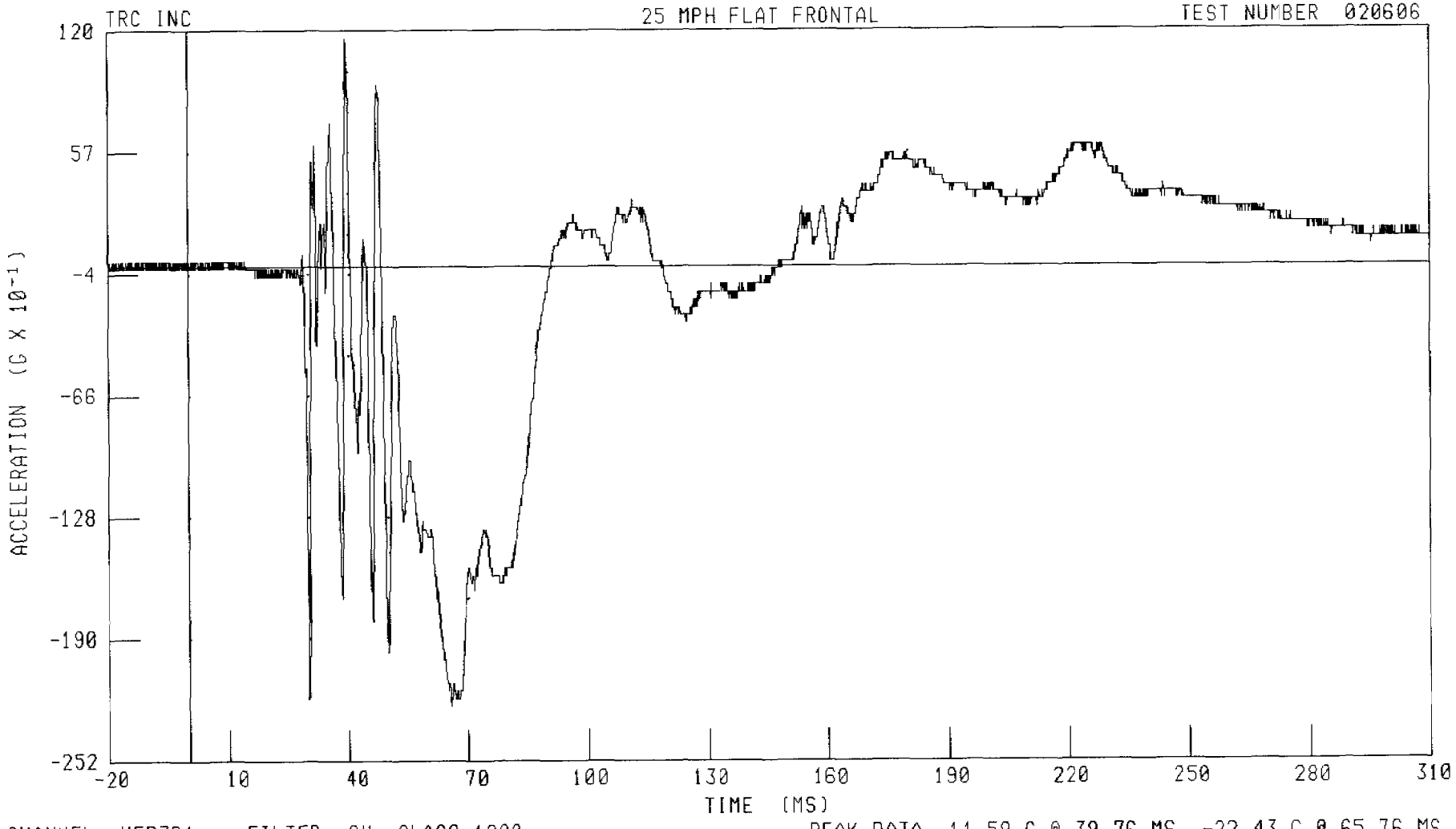
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD Y-AXIS ACCELERATION REDUNDANT



CHANNEL HEDYR1 FILTER CH CLASS 1000

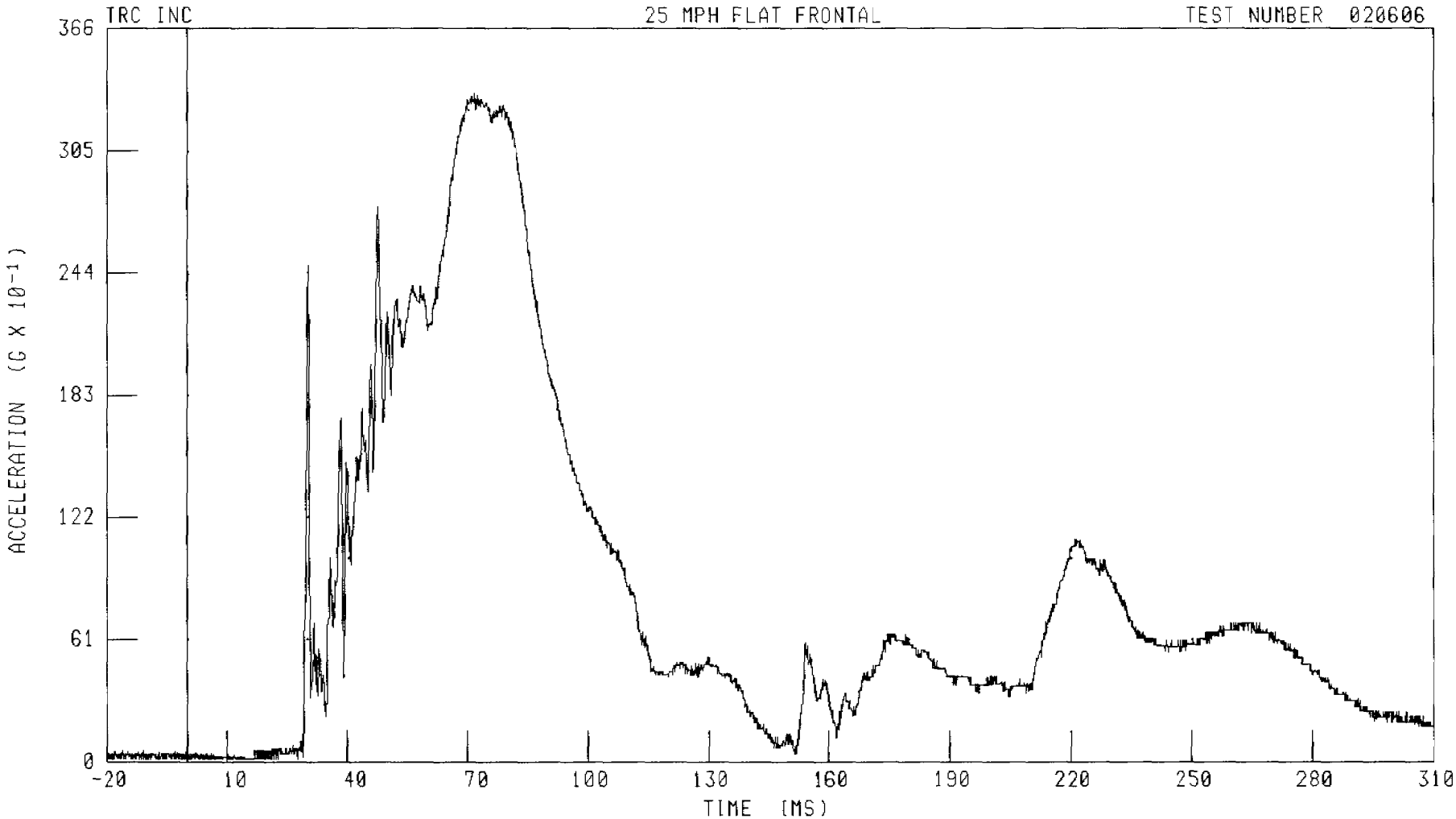
PEAK DATA 6 59 G @ 90 72 MS, -4 81 G @ 43 92 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD Z-AXIS ACCELERATION REDUNDANT



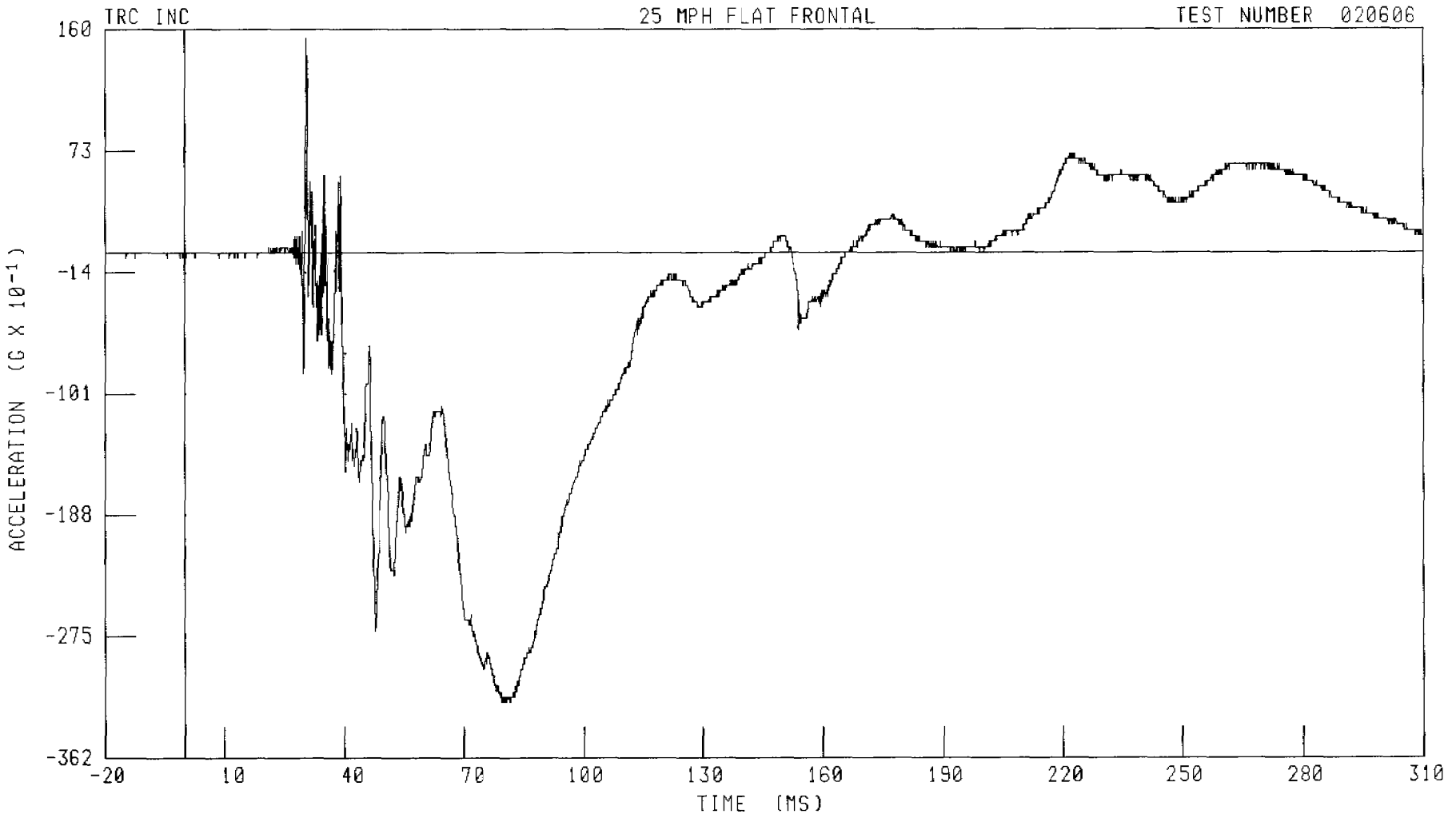
CHANNEL HEDZR1 FILTER CH CLASS 1000 PEAK DATA 11 59 G @ 39 76 MS, -22 43 G @ 65 76 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD RESULTANT ACCELERATION REDUNDANT



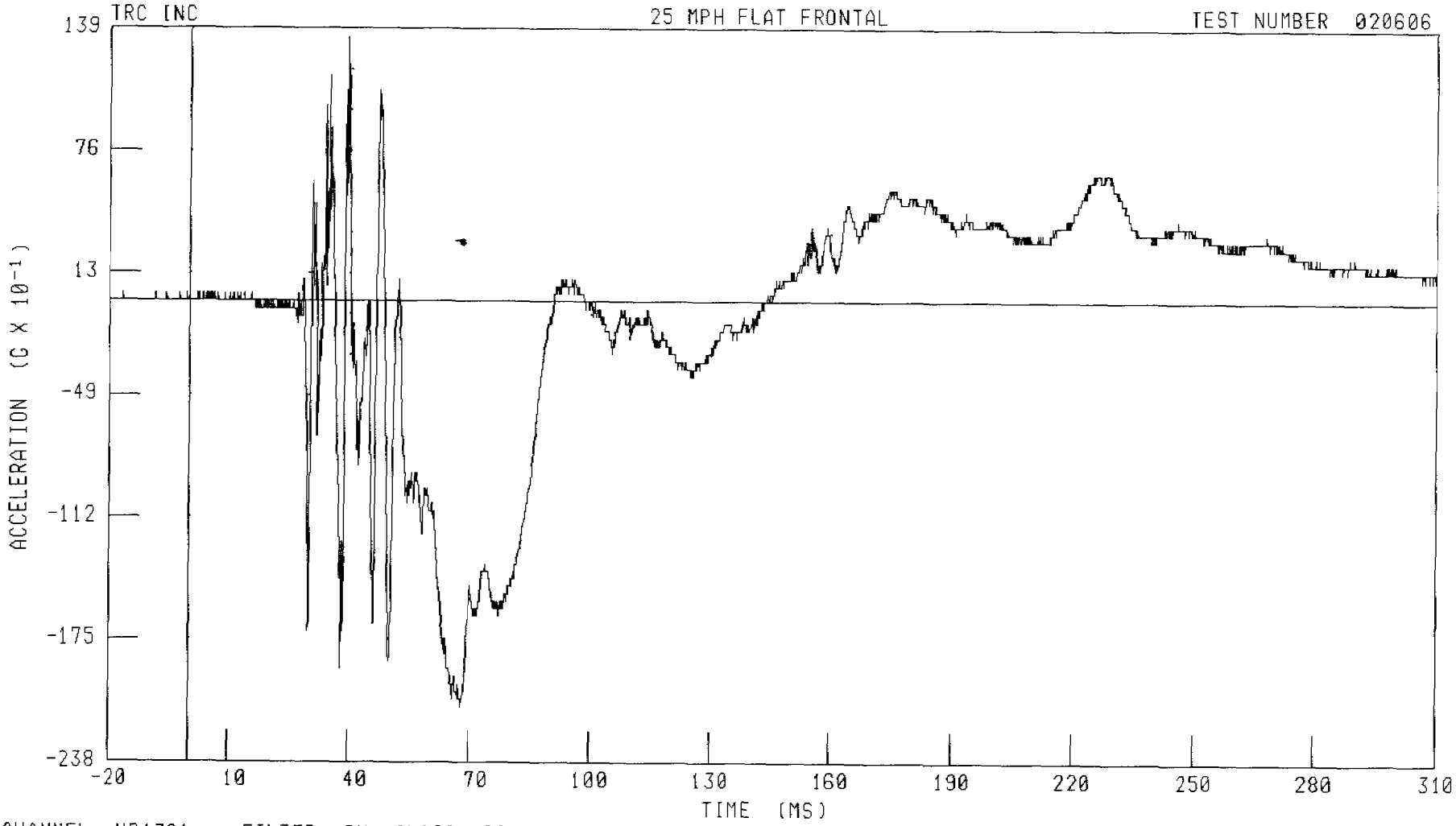
CHANNEL HEDRR1 FILTER CH CLASS 1000 PEAK DATA 33 36 G @ 71 68 MS, 0 17 G @ -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD X-AXIS (LT) ACCELERATION



CHANNEL HD1XG1 FILTER CH CLASS 1000 PEAK DATA 15 39 G @ 30 32 MS, -32 25 G @ 79 28 MS

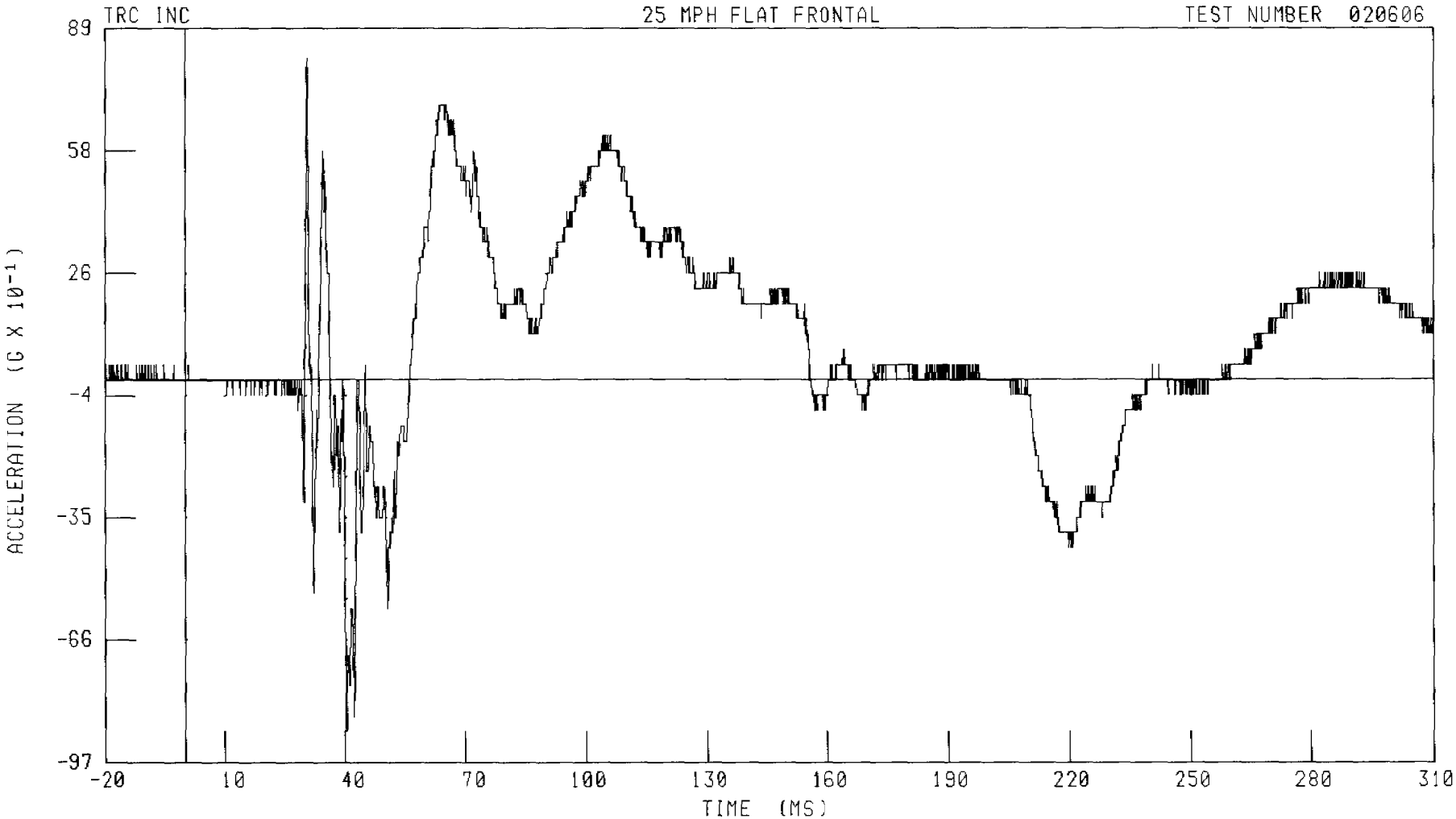
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD Z-AXIS (LT) ACCELERATION



CHANNEL HD1ZG1 FILTER CH CLASS 1000

PEAK DATA 13 52 G @ 39 52 MS, -20 95 G @ 67 92 MS

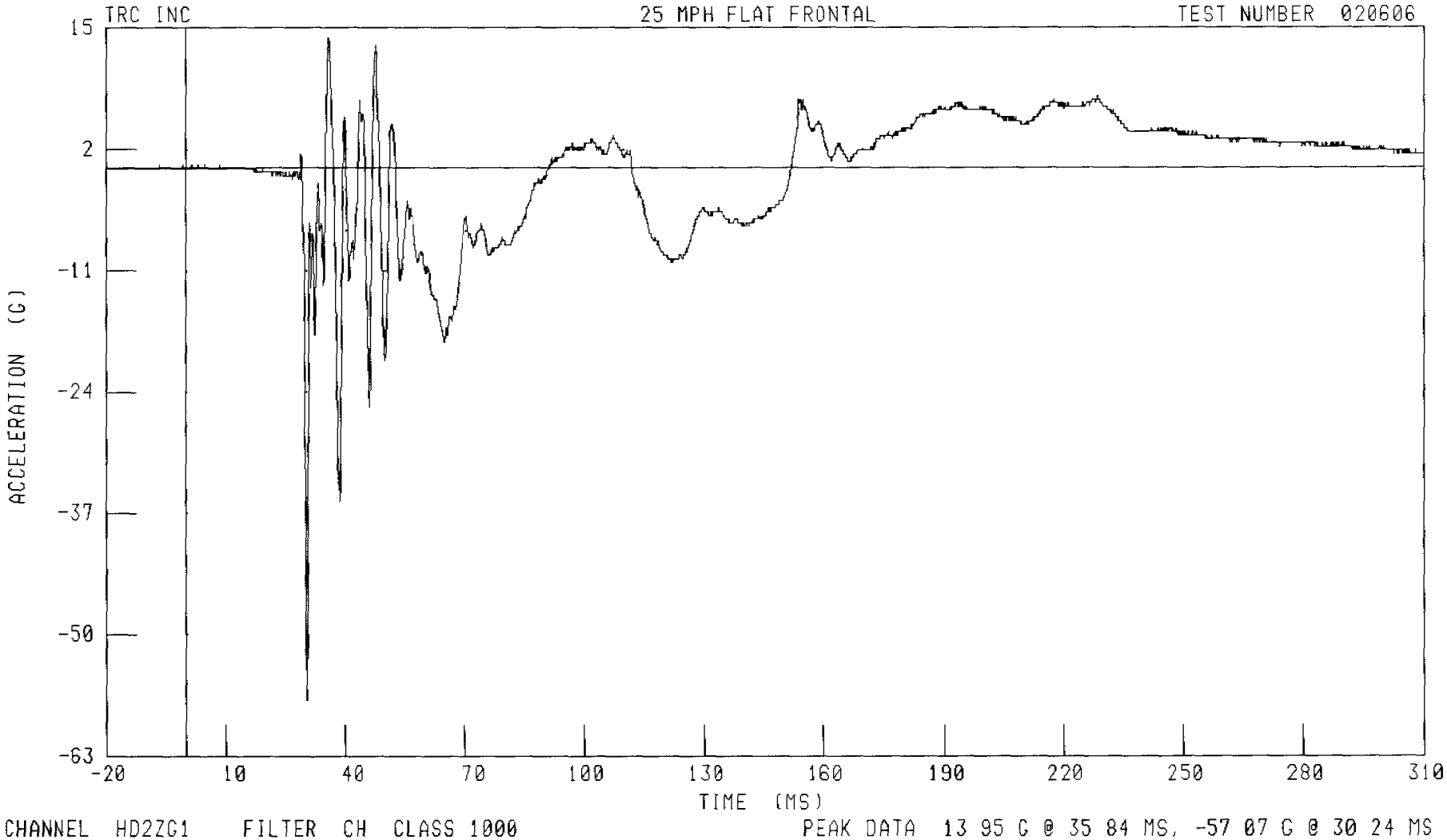
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER HEAD Y-AXIS (FT) ACCELERATION



CHANNEL HD2YG1 FILTER CH CLASS 1000 PEAK DATA 8 14 G @ 30 40 MS, -8 93 G @ 40 24 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

DRIVER HEAD Z-AXIS (FT) ACCELERATION

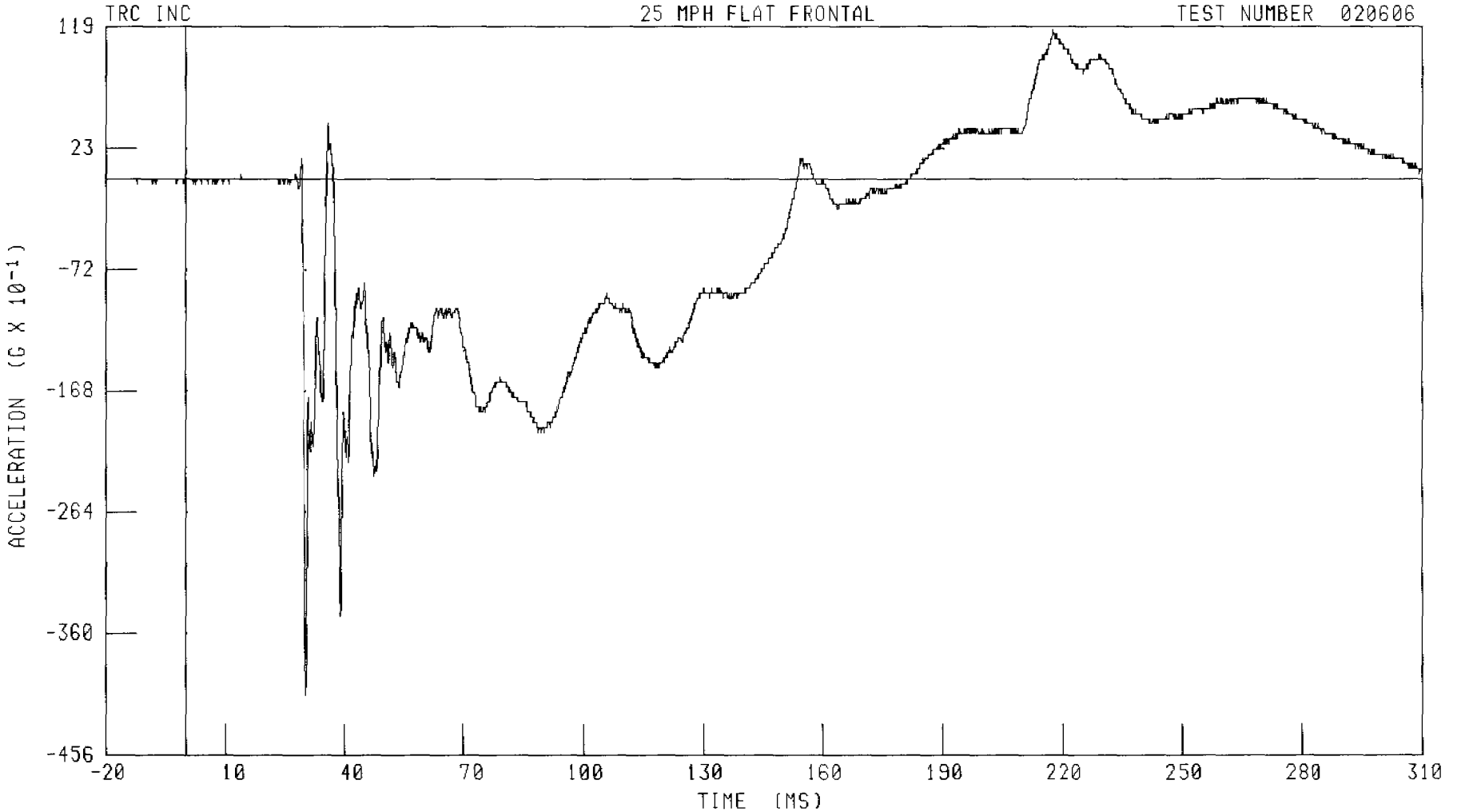


CHANNEL HD2ZG1 FILTER CH CLASS 1000

PEAK DATA 13 95 G @ 35 84 MS, -57 07 G @ 30 24 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

DRIVER HEAD X-AXIS (TP) ACCELERATION

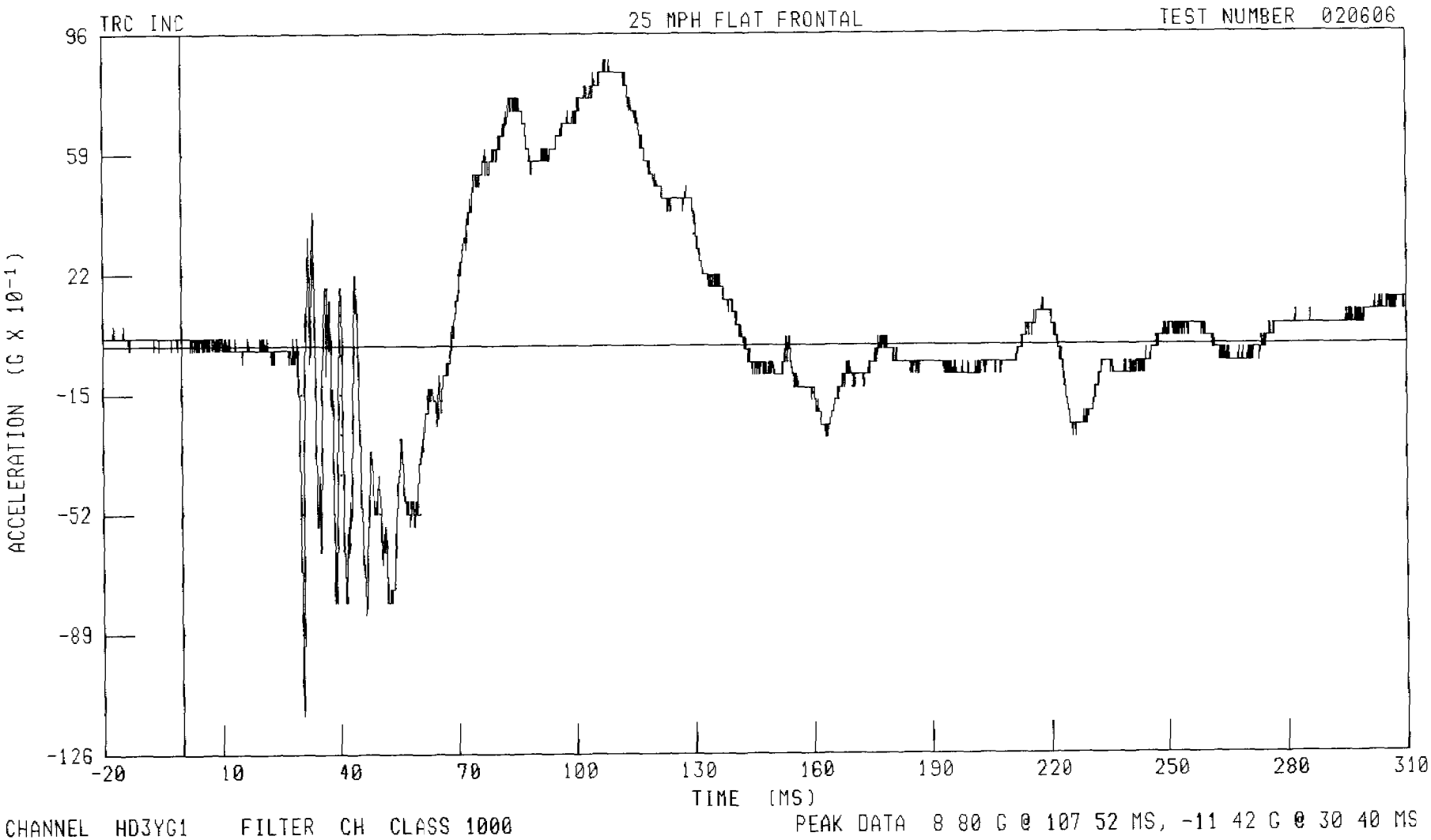


CHANNEL HD3XG1 FILTER CH CLASS 1000

PEAK DATA 11 81 G @ 217 52 MS, -40 90 G @ 30 32 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

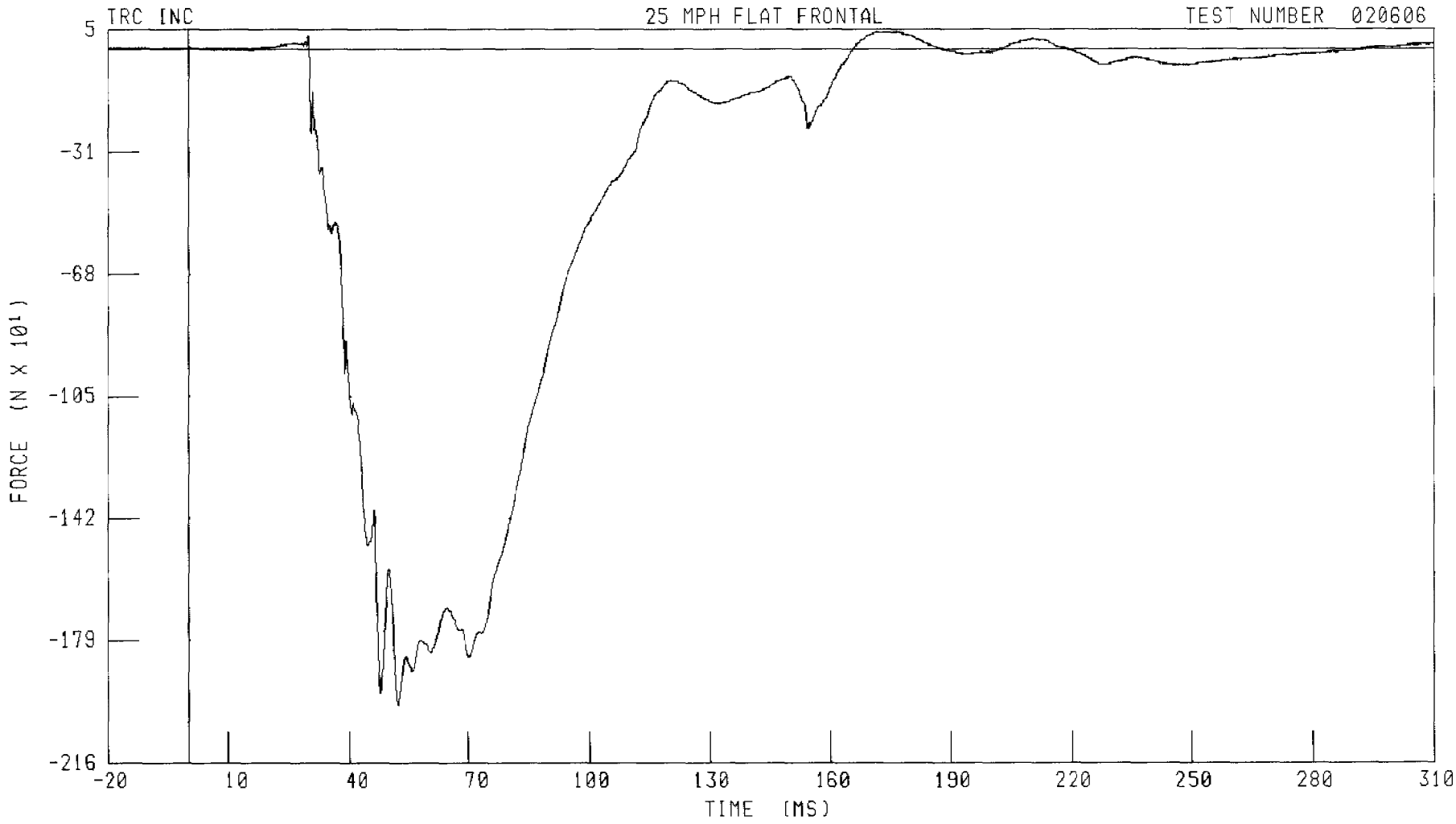
DRIVER HEAD Y-AXIS (TP) ACCELERATION



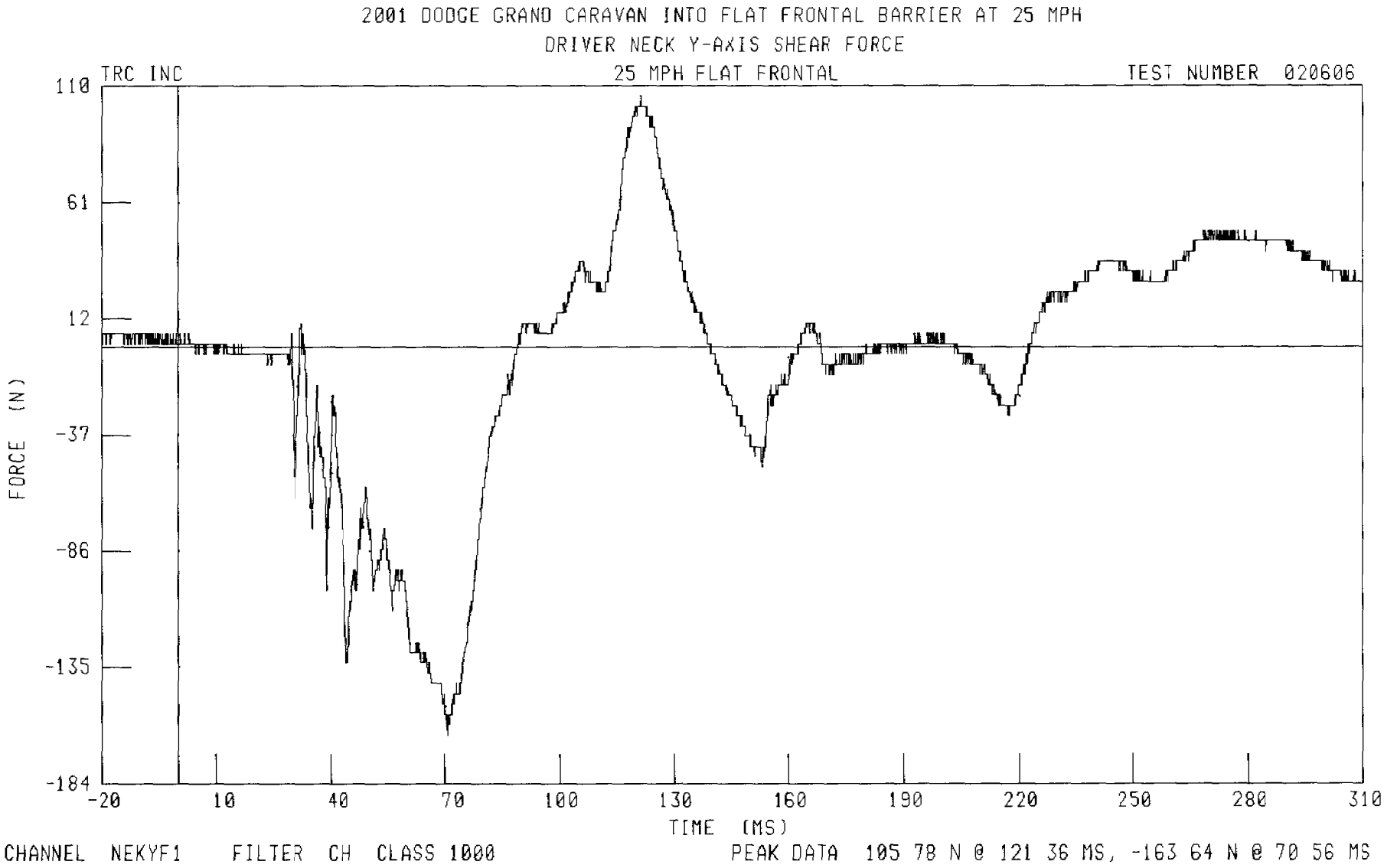
CHANNEL HD3YG1 FILTER CH CLASS 1000

PEAK DATA 8 80 G @ 107 52 MS, -11 42 G @ 30 40 MS

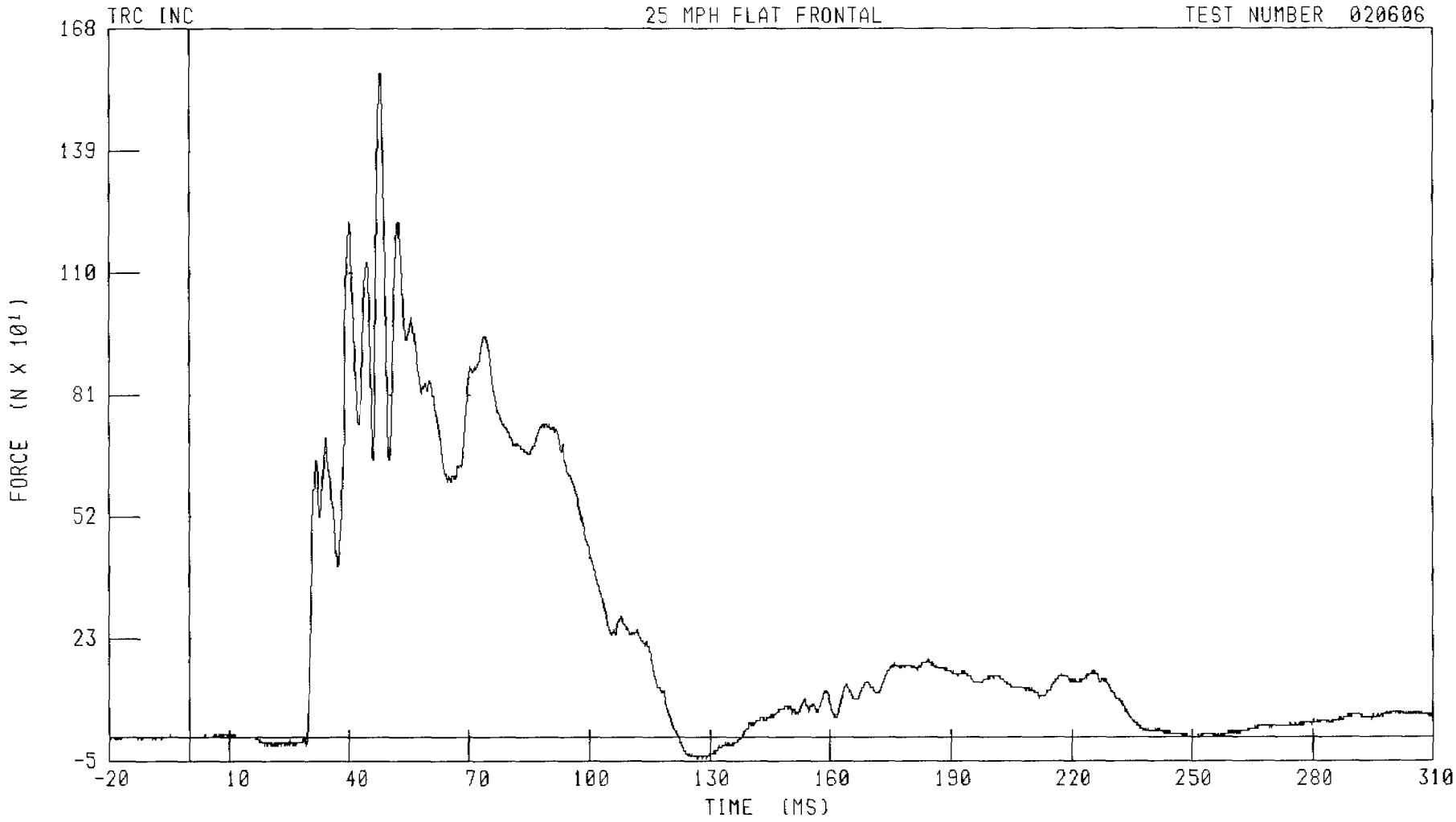
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK X-AXIS SHEAR FORCE



CHANNEL NEKXF1 FILTER CH CLASS 1000 PEAK DATA 53 12 N @ 171 76 MS, -1987 64 N @ 52 16 MS


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK Y-AXIS SHEAR FORCE
TRC INC
25 MPH FLAT FRONTAL
TEST NUMBER 020606
110
61
12
-37
-86
-135
-184
FORCE (N)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL NEKYF1 FILTER CH CLASS 1000
PEAK DATA 105 78 N @ 121 36 MS, -163 64 N @ 70 56 MS

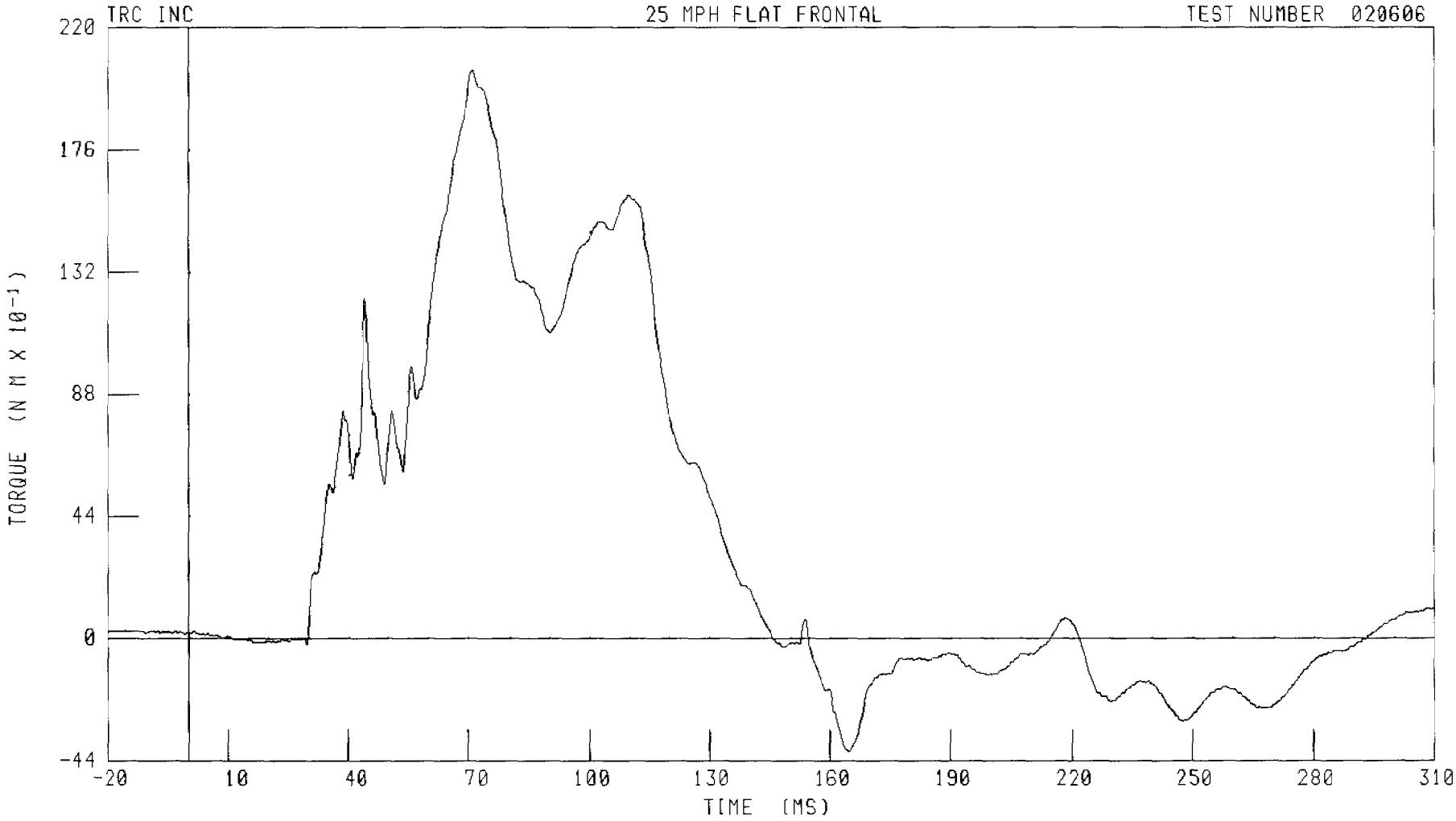
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK Z-AXIS AXIAL FORCE



CHANNEL NEKZF1 FILTER CH CLASS 1000 PEAK DATA 1578 66 N @ 47 84 MS, -51 19 N @ 126 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

DRIVER NECK MOMENT ABOUT X AXIS

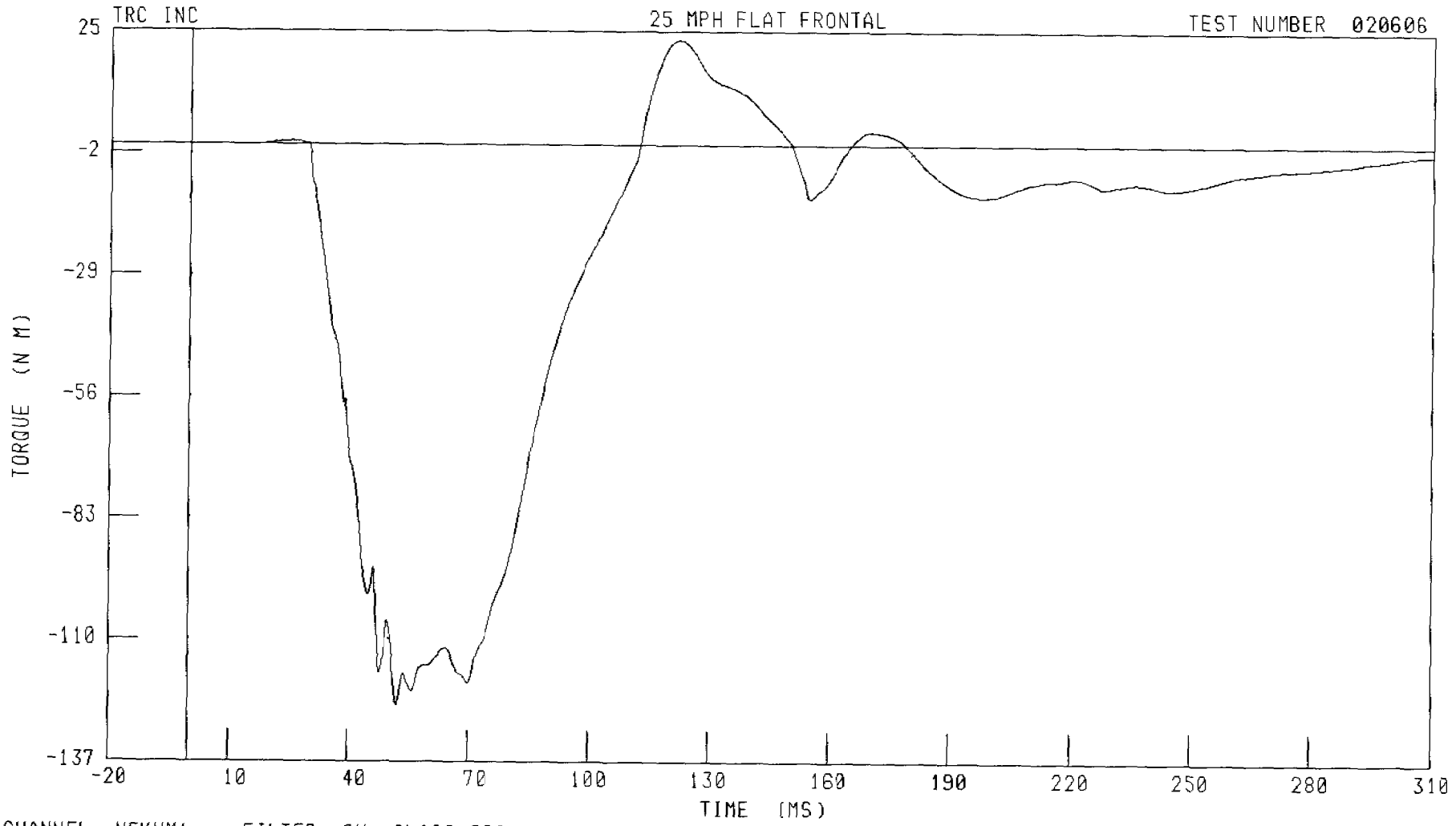


CHANNEL NEKXM1 FILTER CH CLASS 600

PEAK DATA 20 48 N M @ 71 12 MS, -4 06 N M @ 164 72 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

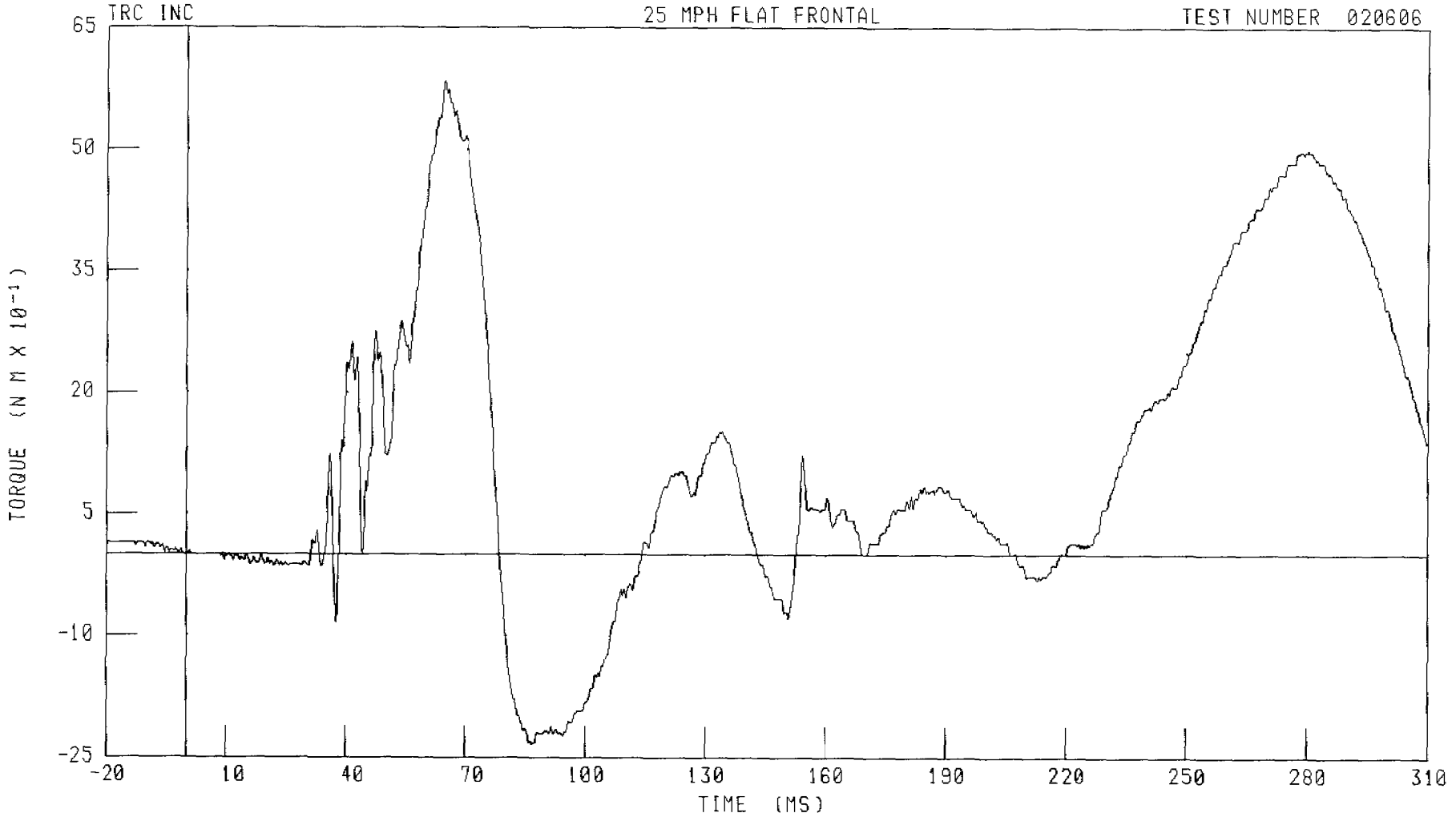
DRIVER NECK MOMENT ABOUT Y AXIS



CHANNEL NEKYM1 FILTER CH CLASS 600

PEAK DATA 23 13 N M @ 121 76 MS, -124 49 N M @ 52 24 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK MOMENT ABOUT Z AXIS

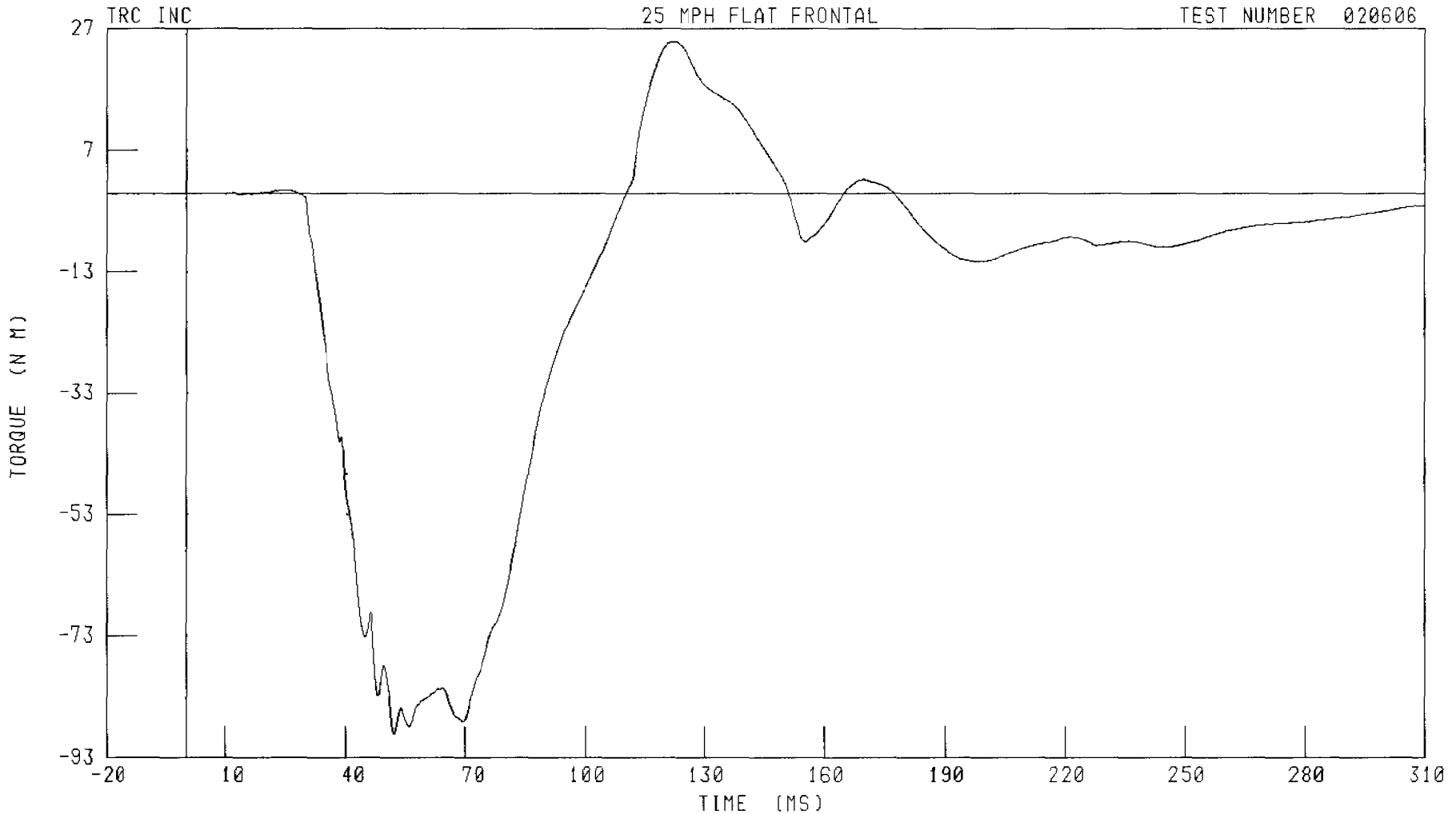


CHANNEL NEKZM1 FILTER CH CLASS 600

PEAK DATA 5 85 N M @ 64 80 MS, -2 34 N M @ 87 04 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

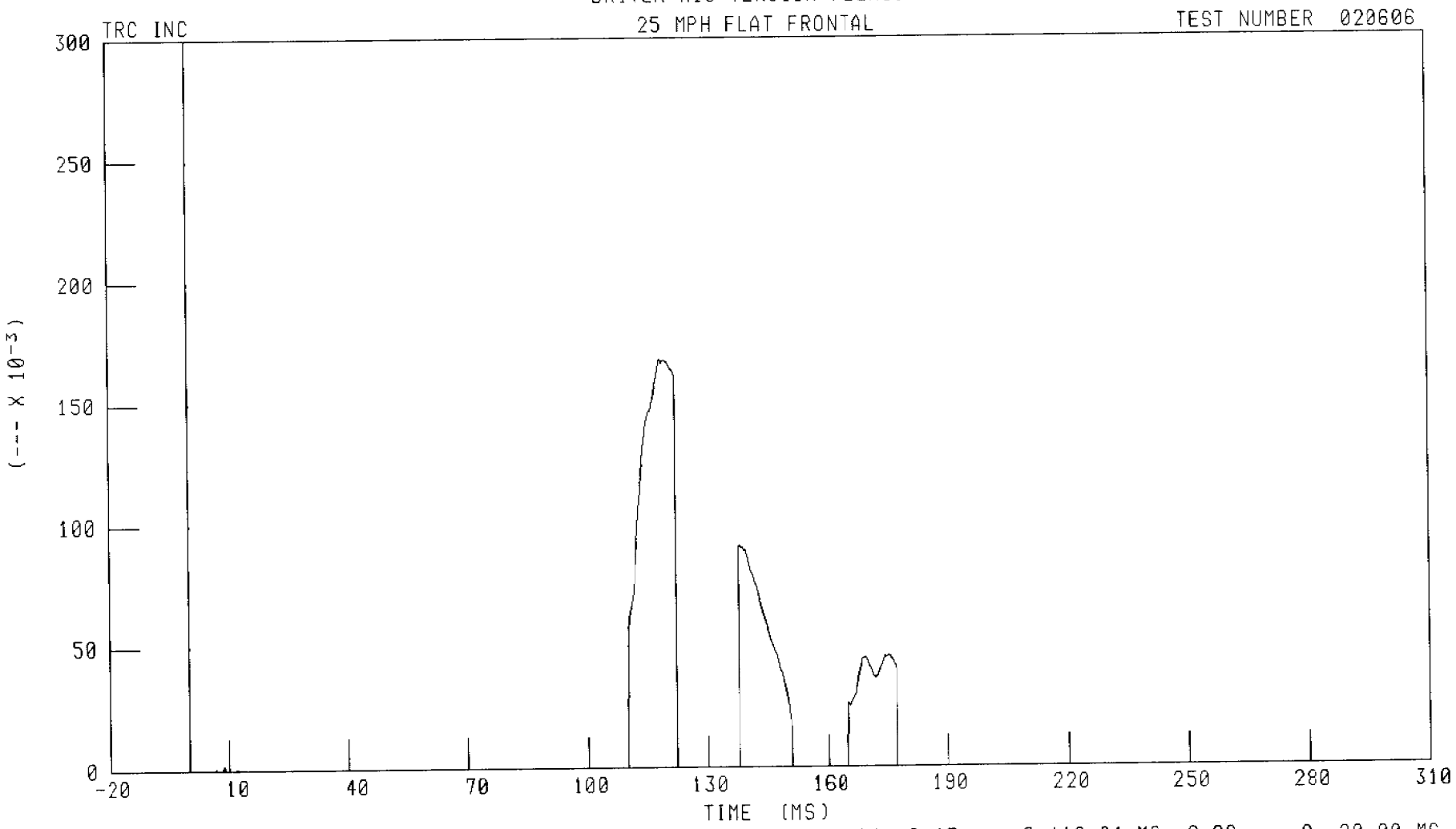
DRIVER NECK OCCIPITAL CONDYLE MOMENT ABOUT Y AXIS



CHANNEL NEKOM1 FILTER CH CLASS 600

PEAK DATA 24 89 N M @ 121 76 MS, -89 18 N M @ 52 24 MS

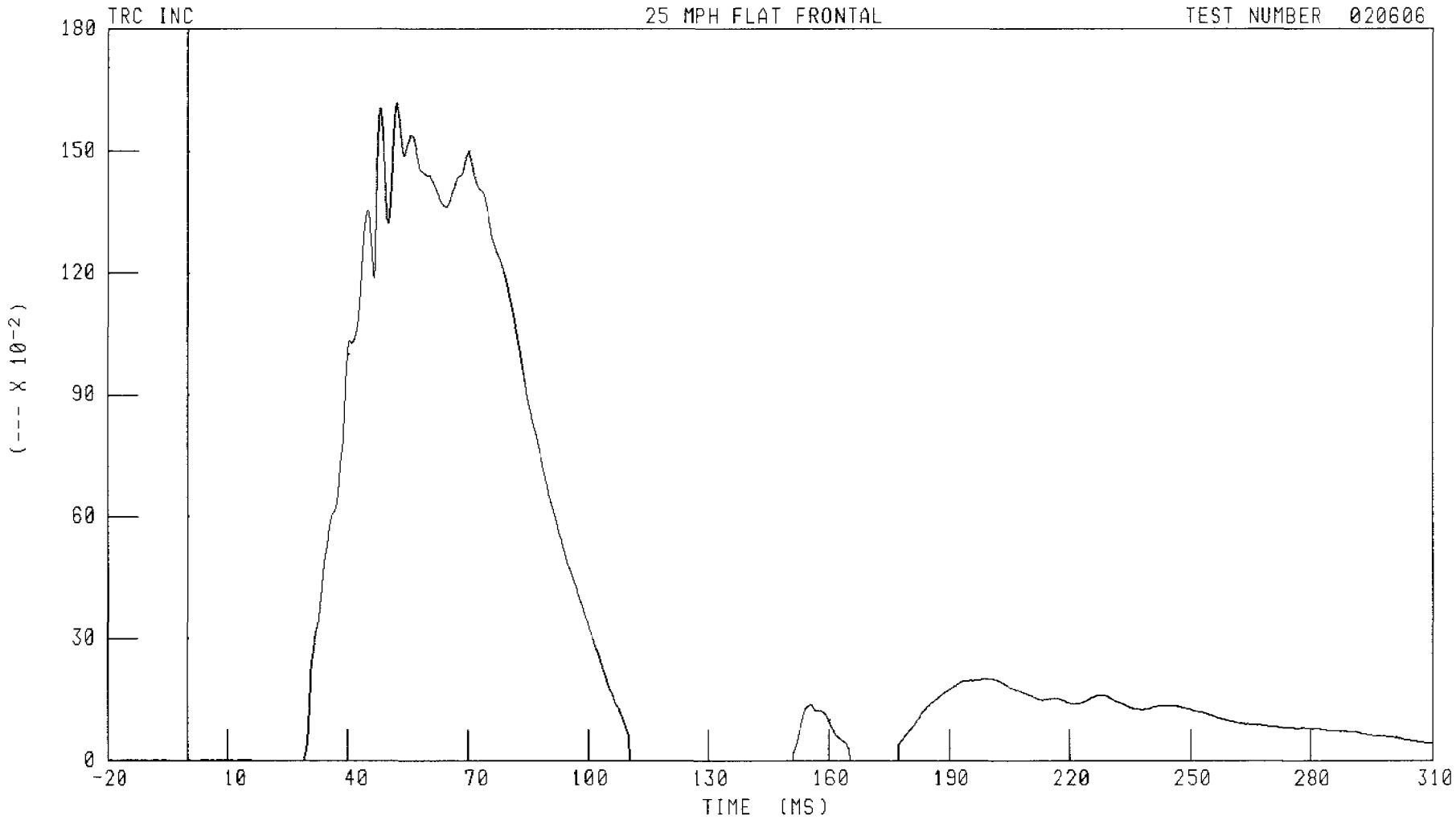
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NIJ TENSION/FLEXION
25 MPH FLAT FRONTAL



CHANNEL NTF1 FILTER CH CLASS 600

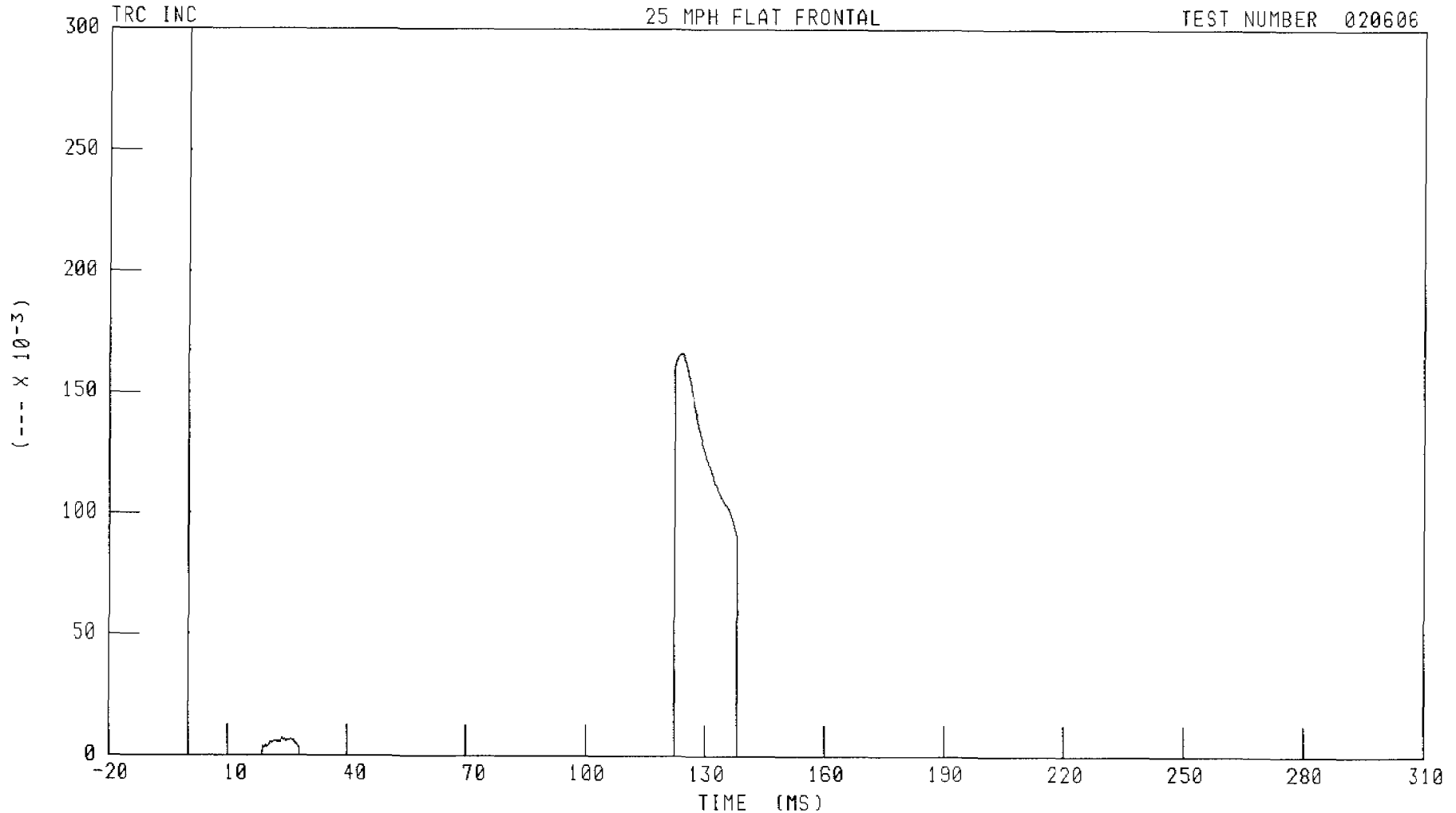
PEAK DATA 0 17 --- @ 118 64 MS, 0 00 --- @ -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NIJ TENSION/EXTENSION



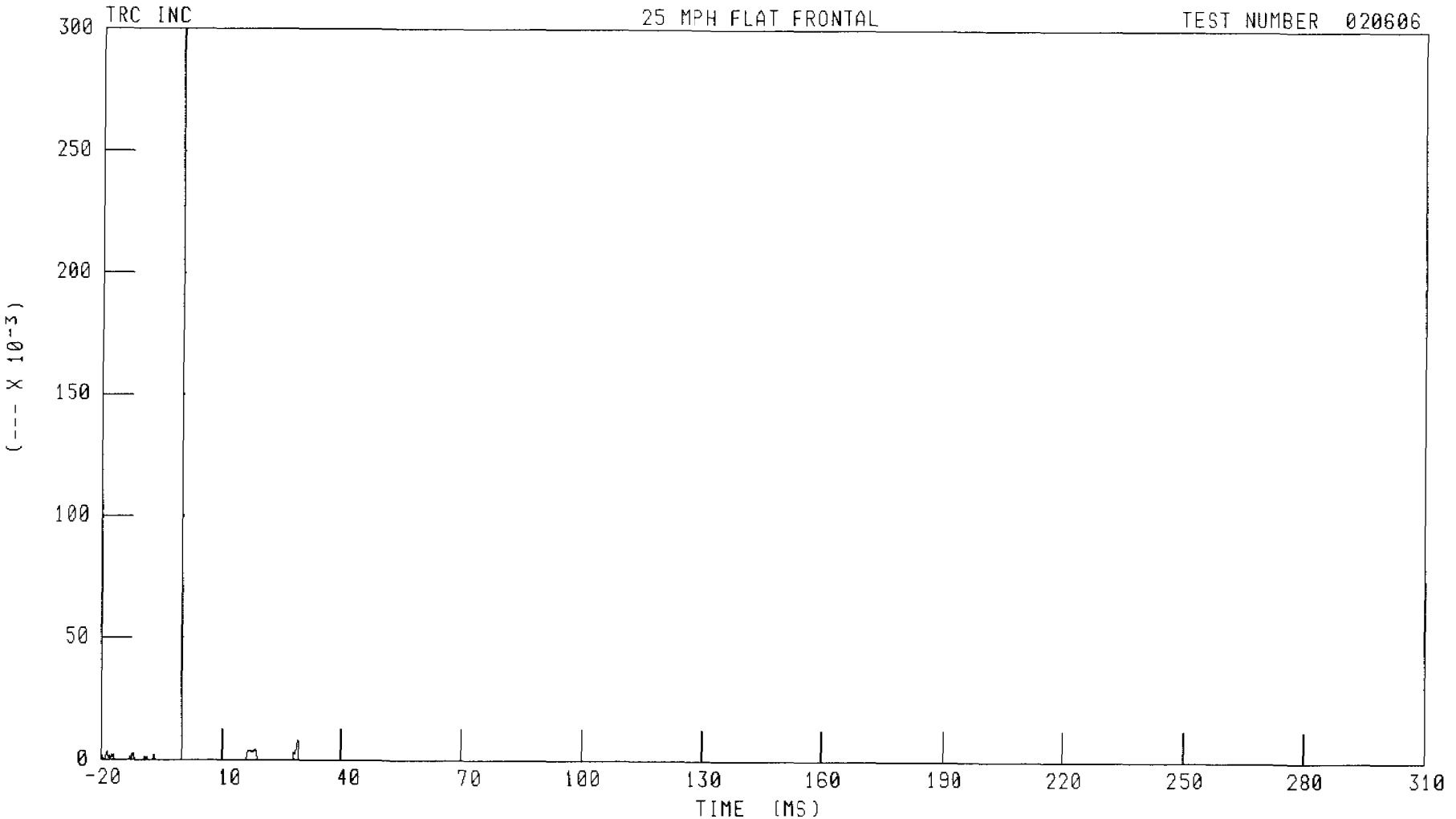
CHANNEL NTE1 FILTER CH CLASS 600 PEAK DATA 1 62 --- @ 52 16 MS, 0 00 --- @ -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NIJ COMPRESSION/FLEXION



CHANNEL NCF1 FILTER CH CLASS 600 PEAK DATA 0 17 --- @ 124 08 MS, 0 00 --- @ -20 00 MS

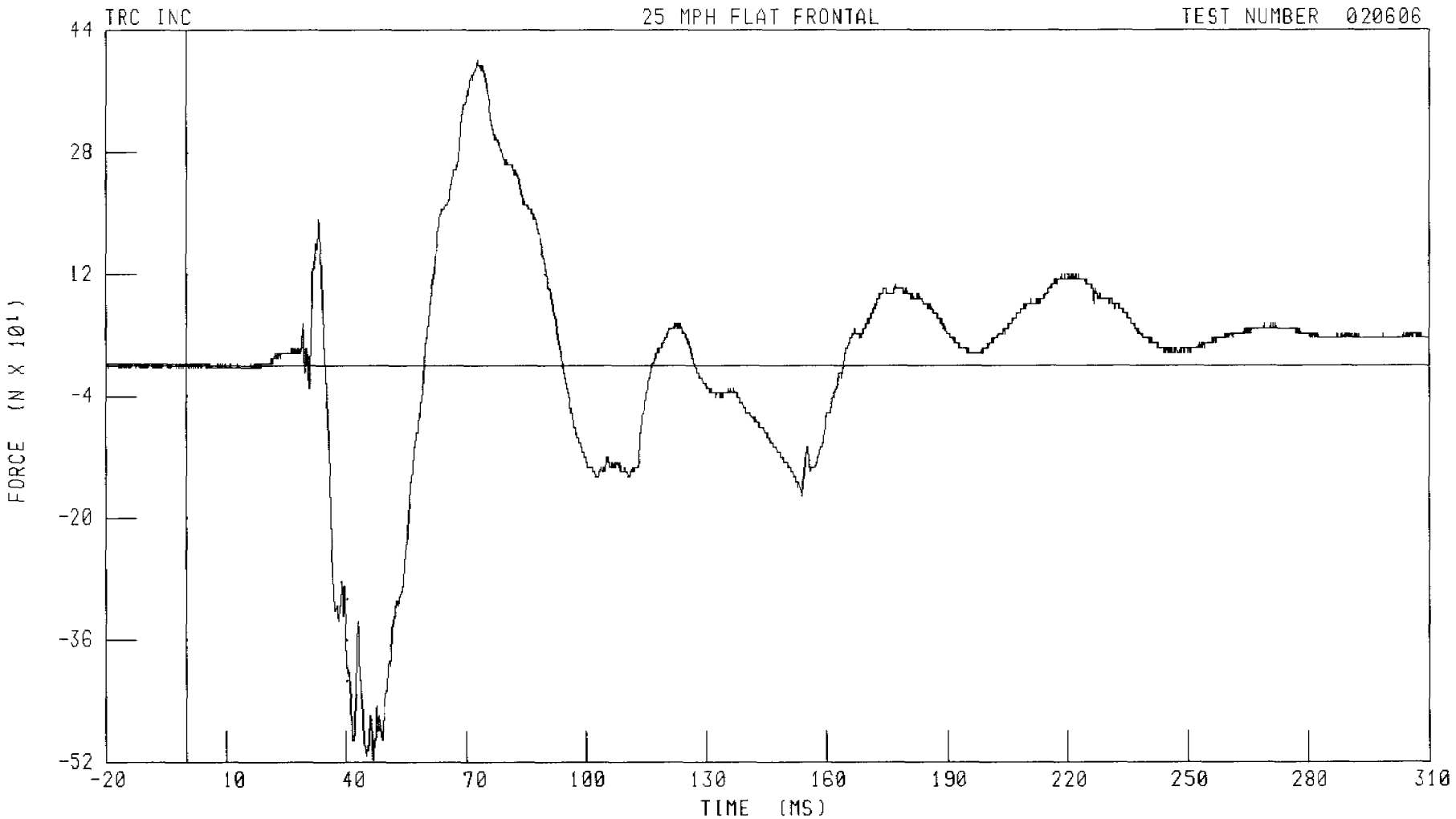
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NIJ COMPRESSION/EXTENSION



CHANNEL NCE1 FILTER CH CLASS 600
PEAK DATA 0 01 --- @ 29 04 MS, 0 00 --- @ -19 60 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

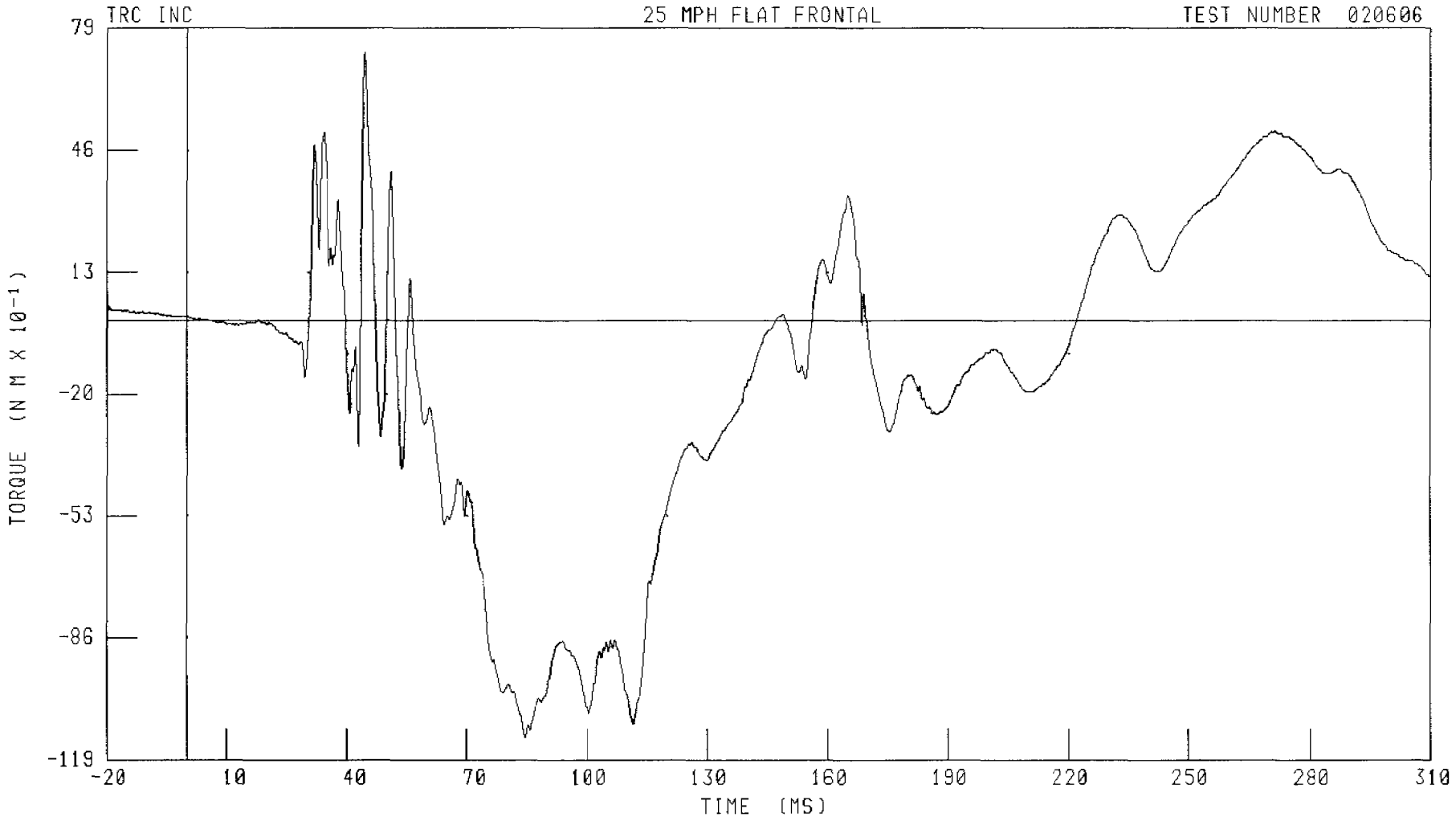
DRIVER NECK LOWER X-AXIS SHEAR FORCE



CHANNEL NKLXF1 FILTER CH CLASS 1000

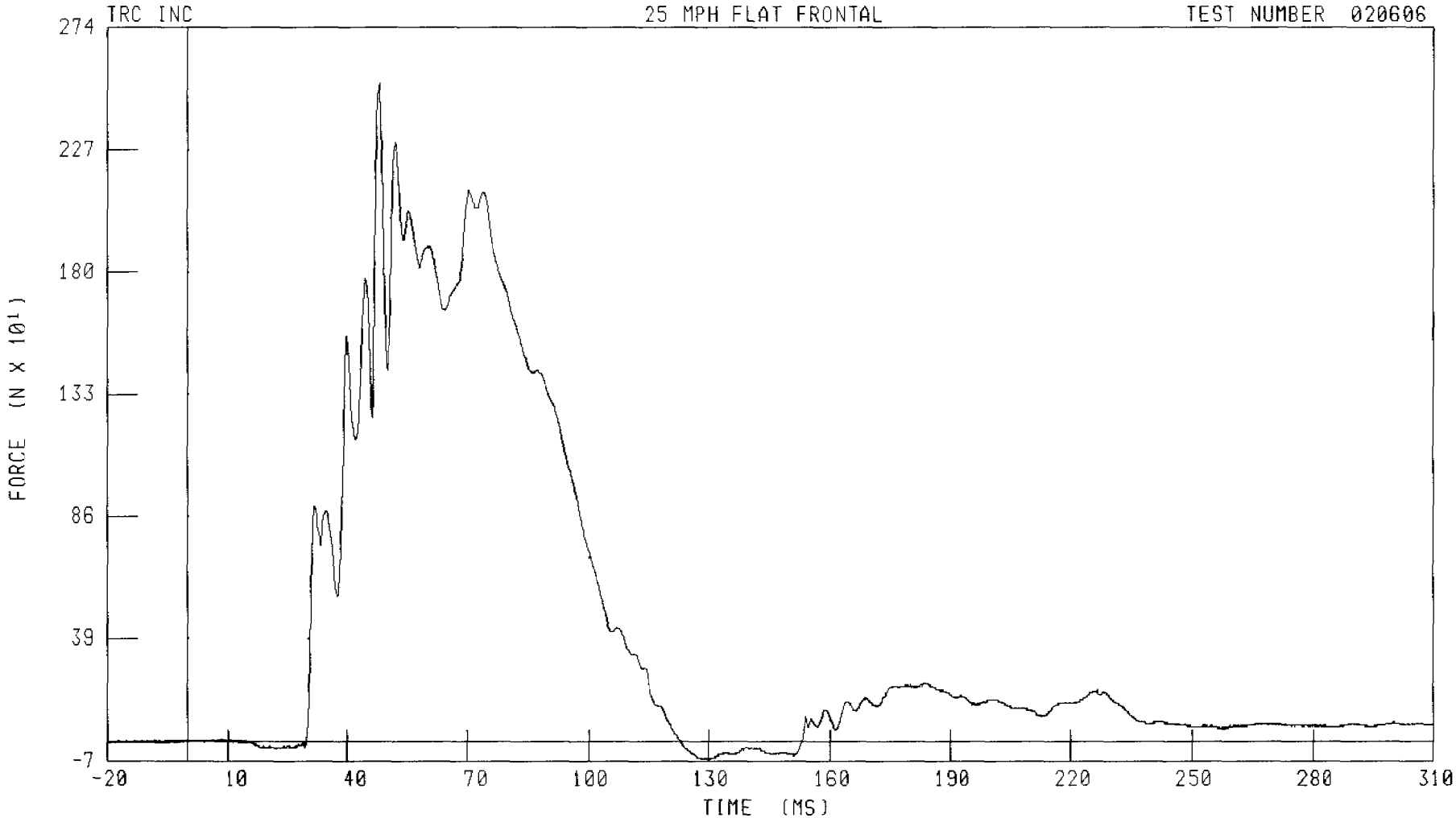
PEAK DATA 401 06 N @ 72 56 MS, -518 07 N @ 46 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK LOWER MOMENT ABOUT Z AXIS



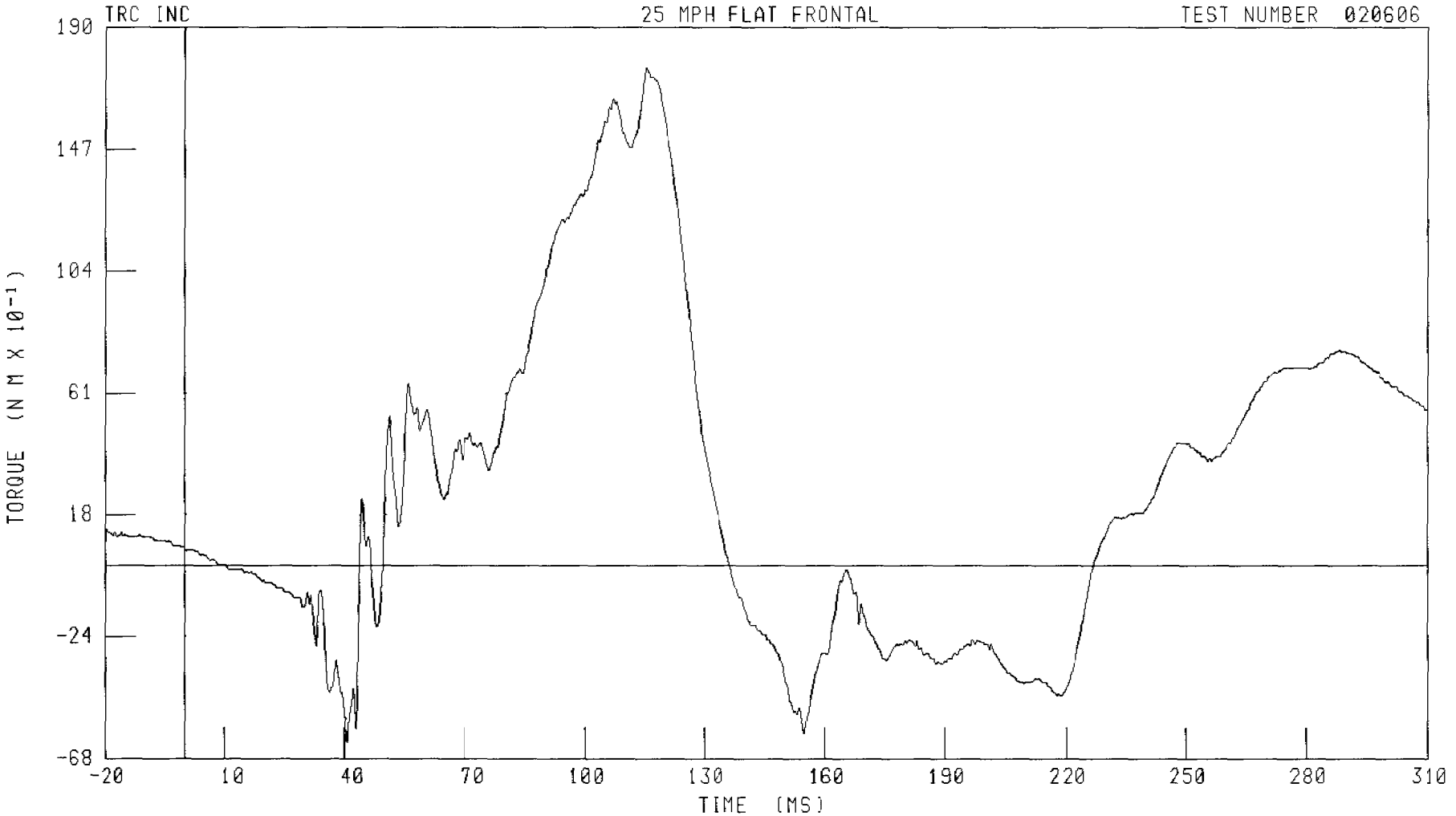
CHANNEL NKLZM1 FILTER CH CLASS 600 PEAK DATA 7 23 N M @ 44 40 MS, -11 29 N M @ 84 48 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK LOWER Z-AXIS AXIAL FORCE



CHANNEL NKLZF1 FILTER CH CLASS 1000 PEAK DATA 2531 91 N @ 47 92 MS, -67 35 N @ 128 08 MS

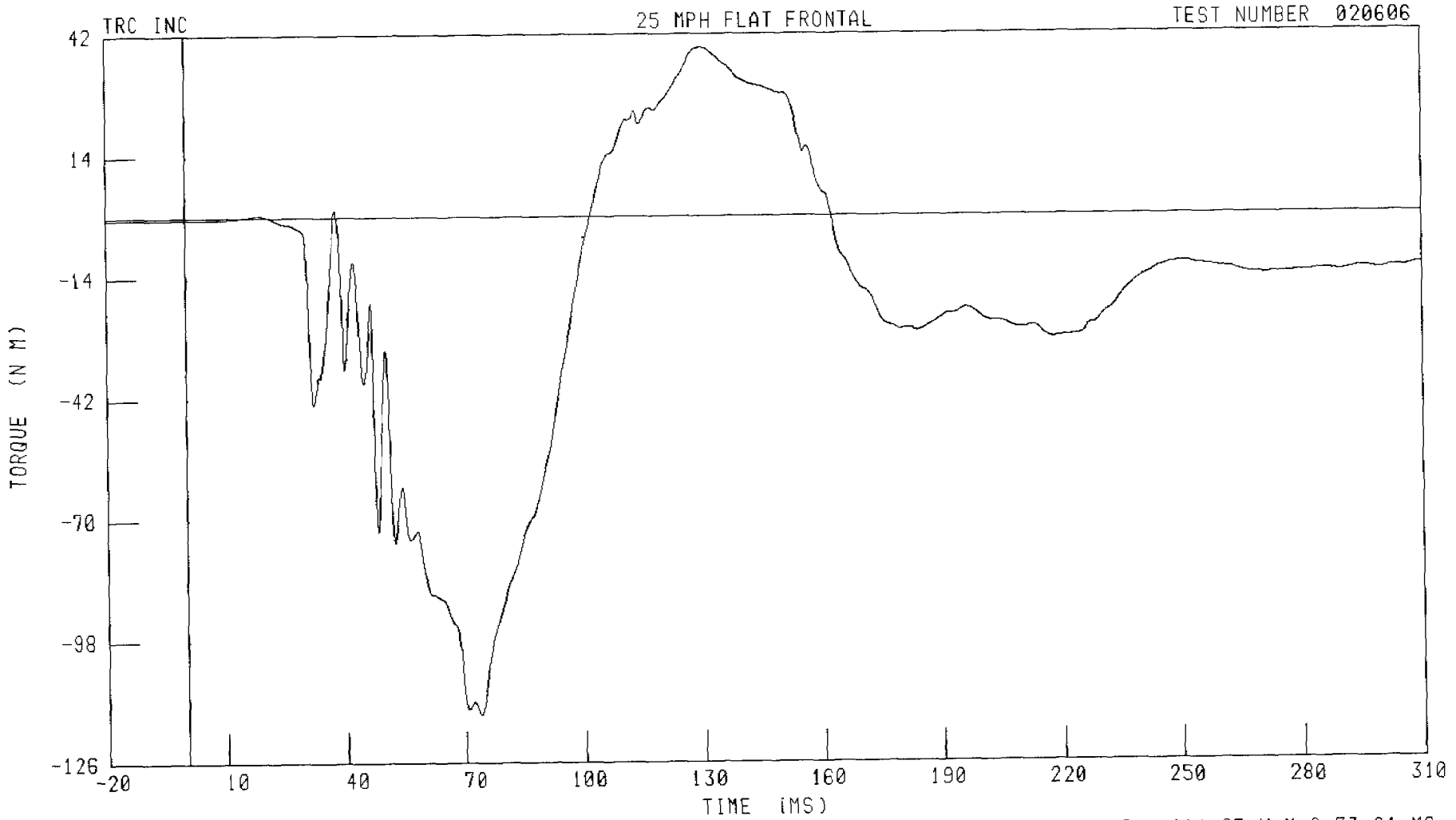
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK LOWER MOMENT ABOUT X AXIS



CHANNEL NKLXM1 FILTER CH CLASS 600

PEAK DATA 17 59 N M @ 115 52 MS, -6 23 N M @ 40 64 MS

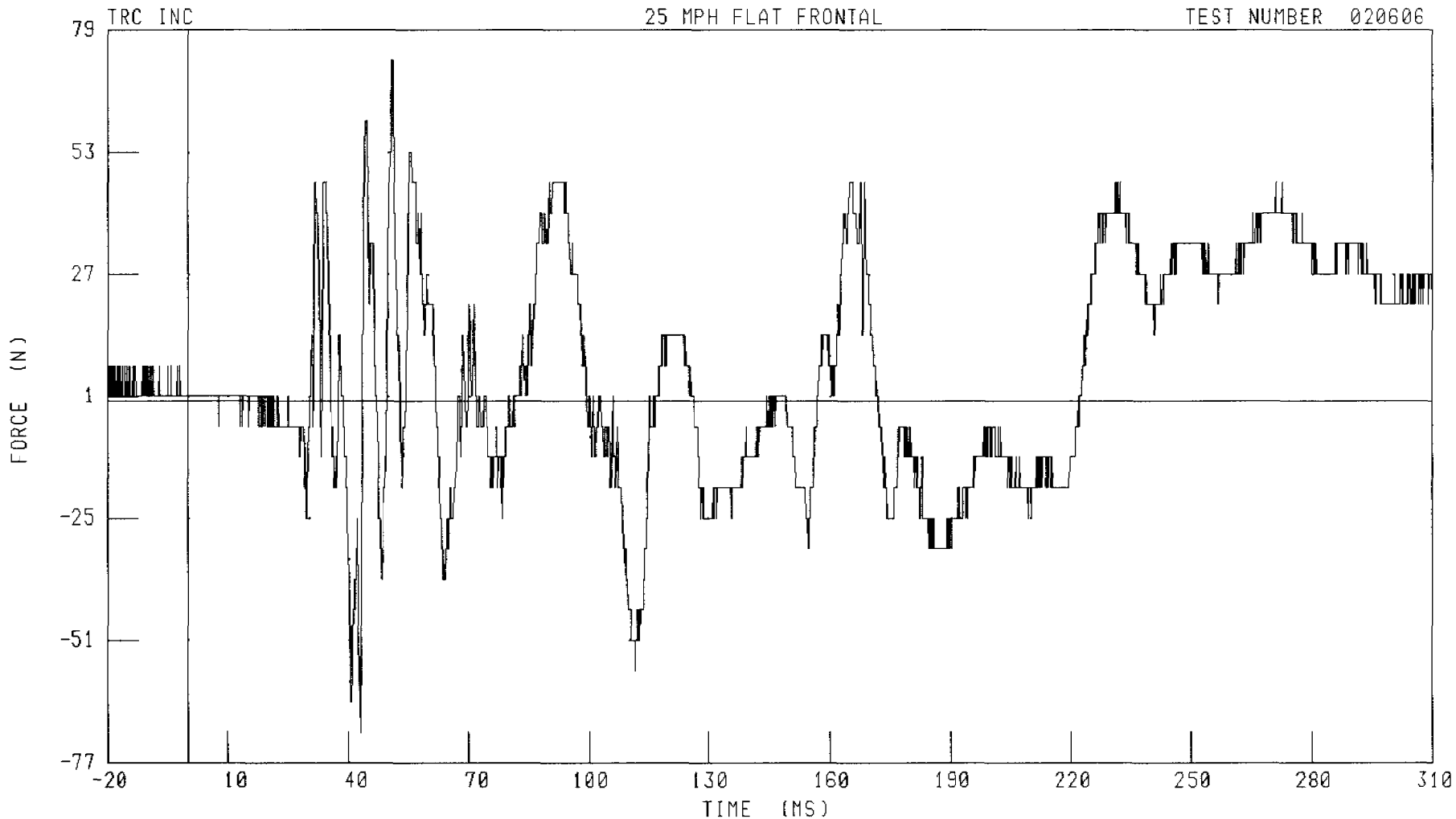
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK LOWER MOMENT ABOUT Y AXIS
25 MPH FLAT FRONTAL



CHANNEL NKLYM1 FILTER CH CLASS 600

PEAK DATA 38 96 N M @ 130 00 MS, -114 97 N M @ 73 84 MS

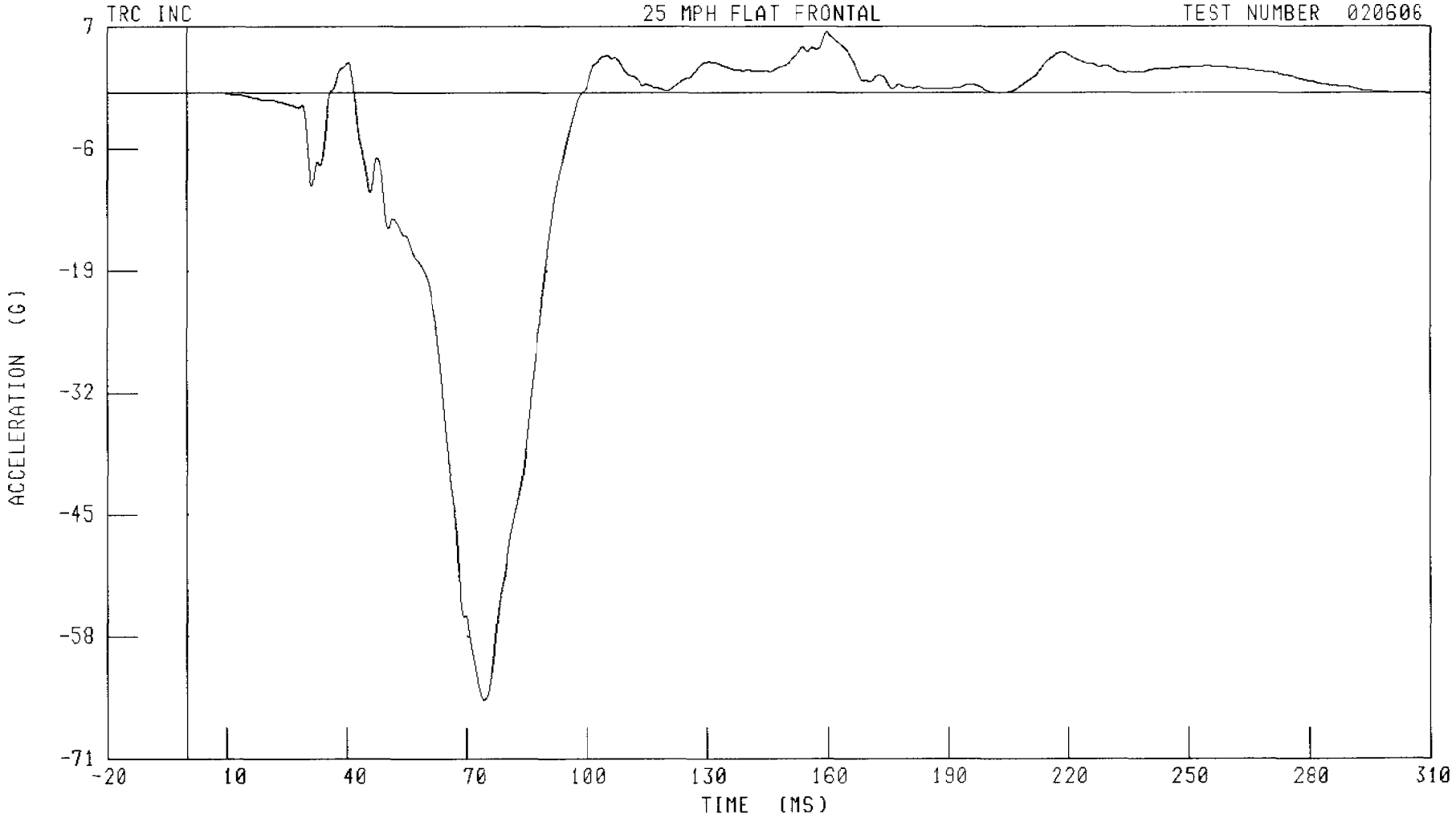
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER NECK LOWER Y-AXIS SHEAR FORCE



CHANNEL NKLYF1 FILTER CH CLASS 1000 PEAK DATA 72 72 N @ 51 12 MS, -70 56 N @ 42 88 MS

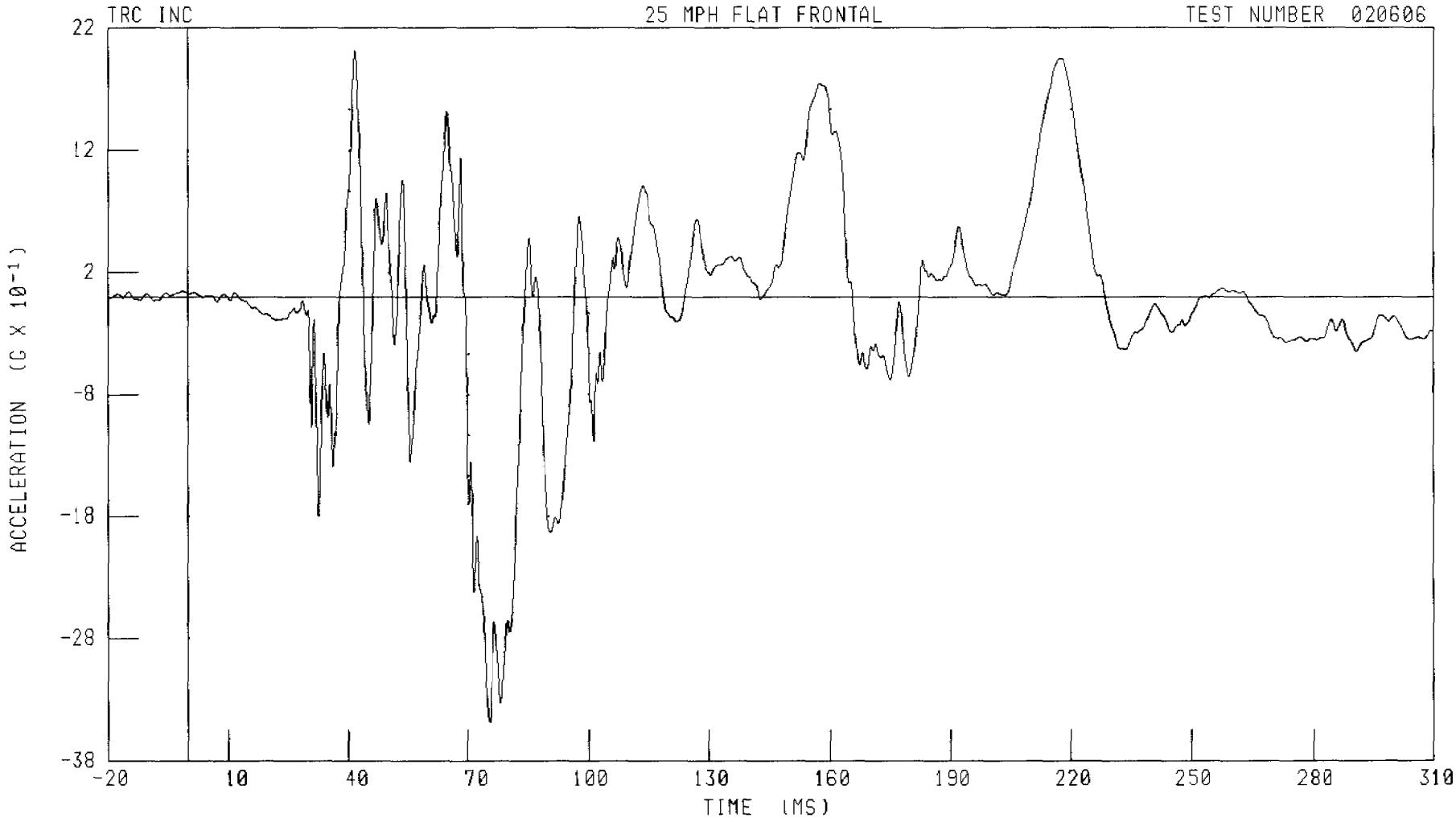
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

DRIVER CHEST X-AXIS ACCELERATION



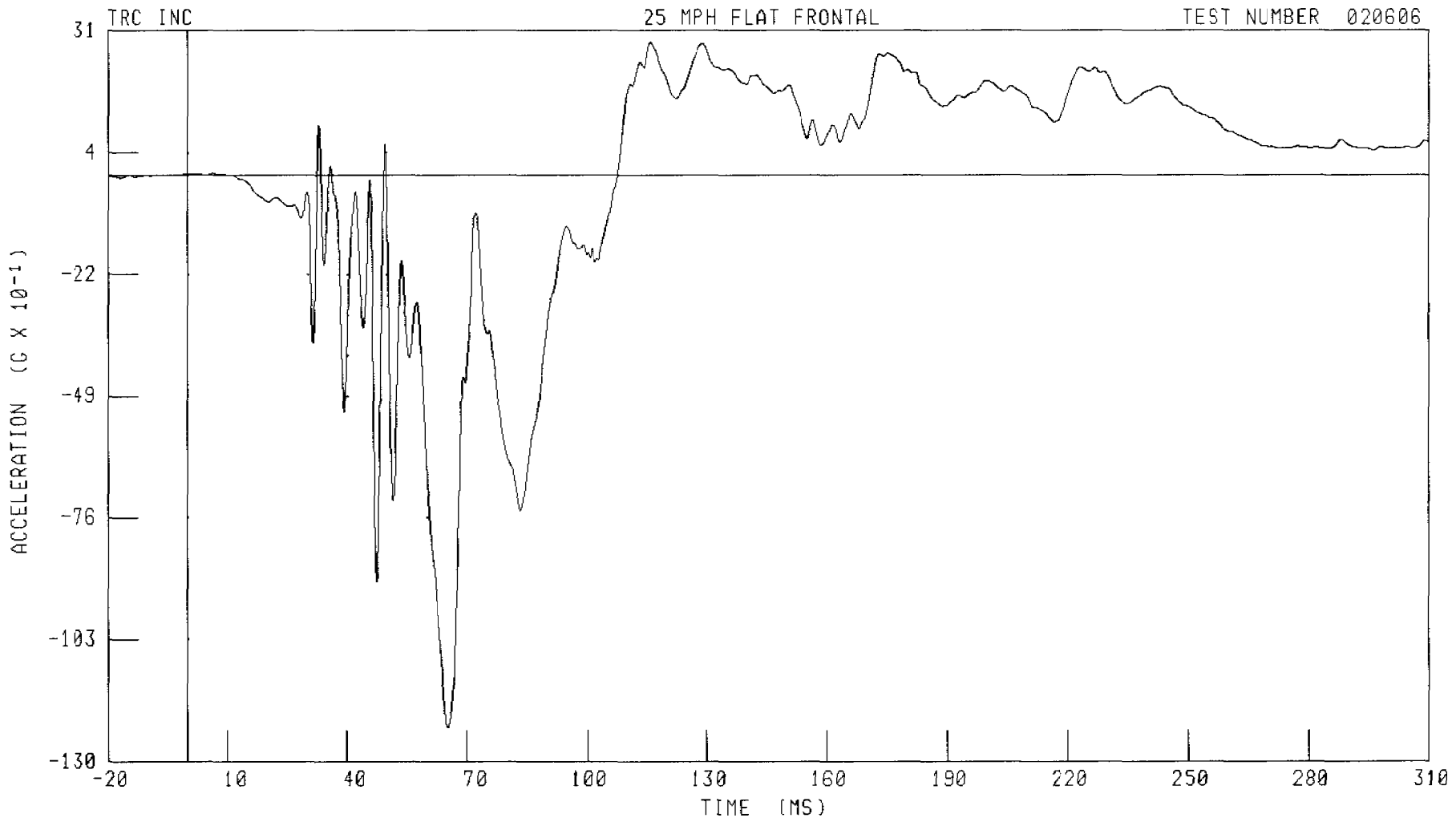
CHANNEL CSTXG1 FILTER CH CLASS 180 PEAK DATA 6 44 G @ 159 76 MS, -64 80 G @ 74 32 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST Y-AXIS ACCELERATION



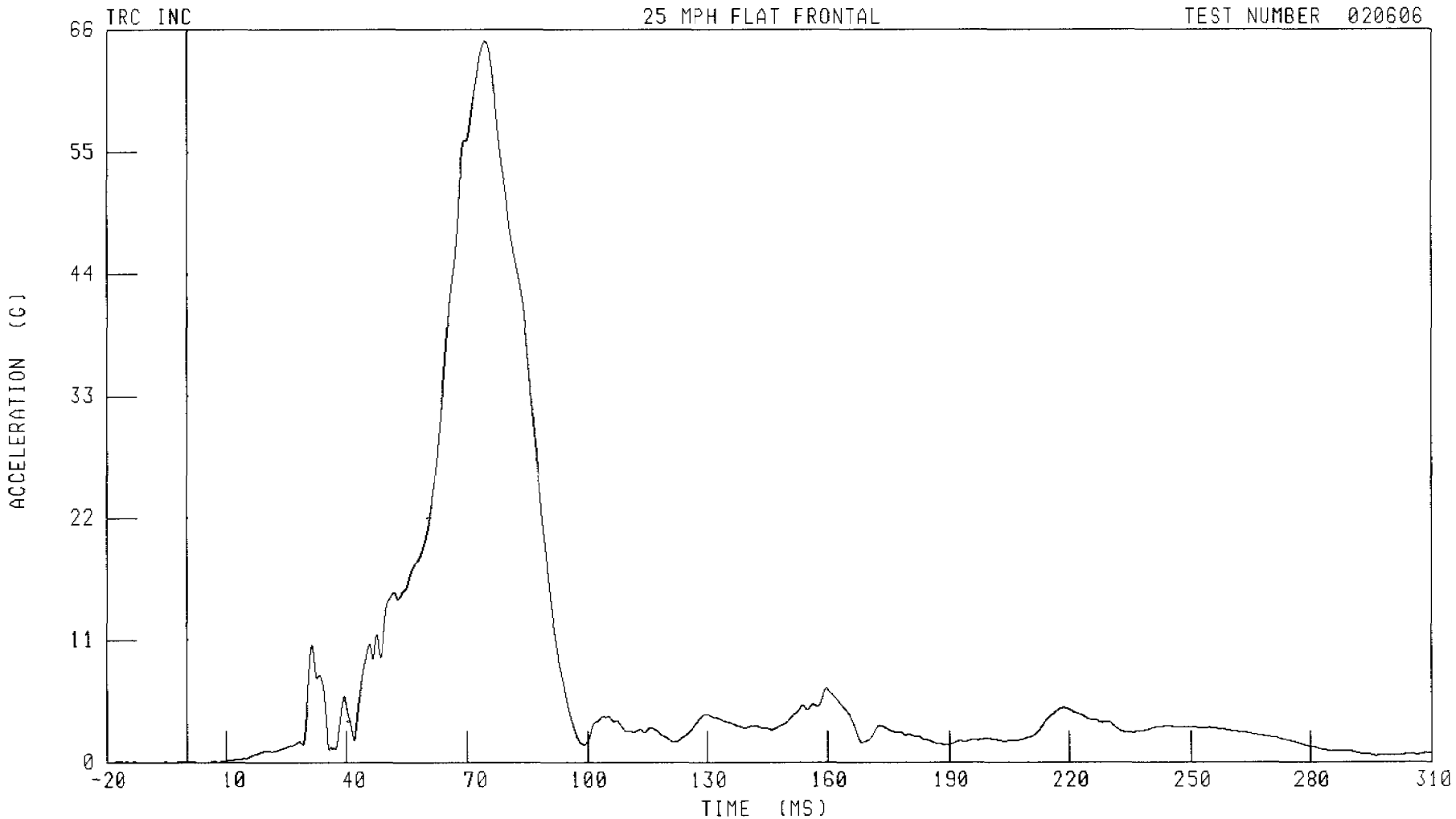
CHANNEL CSTYG1 FILTER CH CLASS 180 PEAK DATA 2 01 G @ 41 52 MS, -3 49 G @ 75 36 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST Z-AXIS ACCELERATION



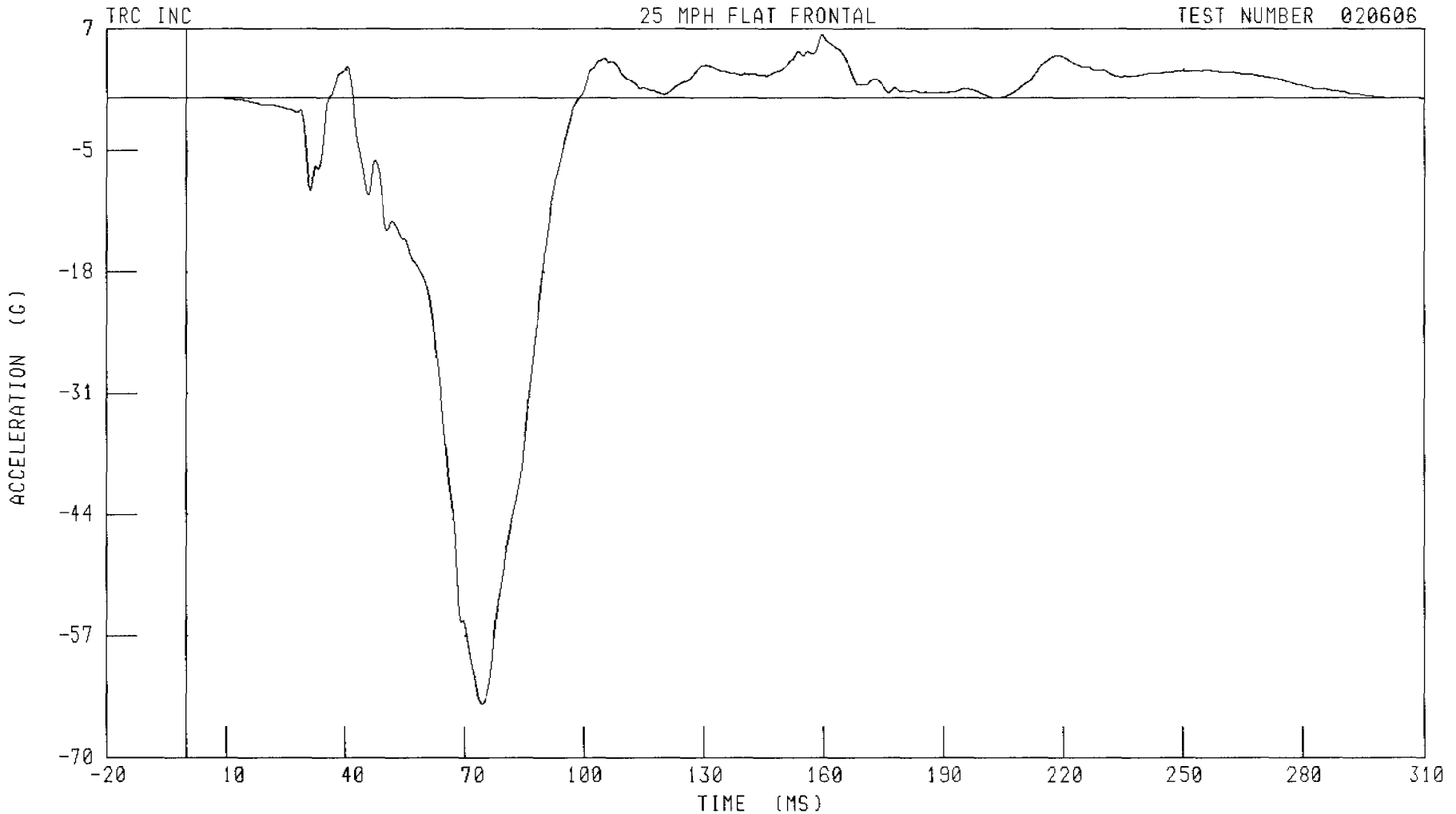
CHANNEL CSTZG1 FILTER CH CLASS 180 PEAK DATA 2 94 G @ 116 08 MS, -12 25 G @ 65 28 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST RESULTANT ACCELERATION



CHANNEL CSTRG1 FILTER CH CLASS 180 PEAK DATA 64 95 G @ 74 32 MS, 0 00 G @ -20 00 MS

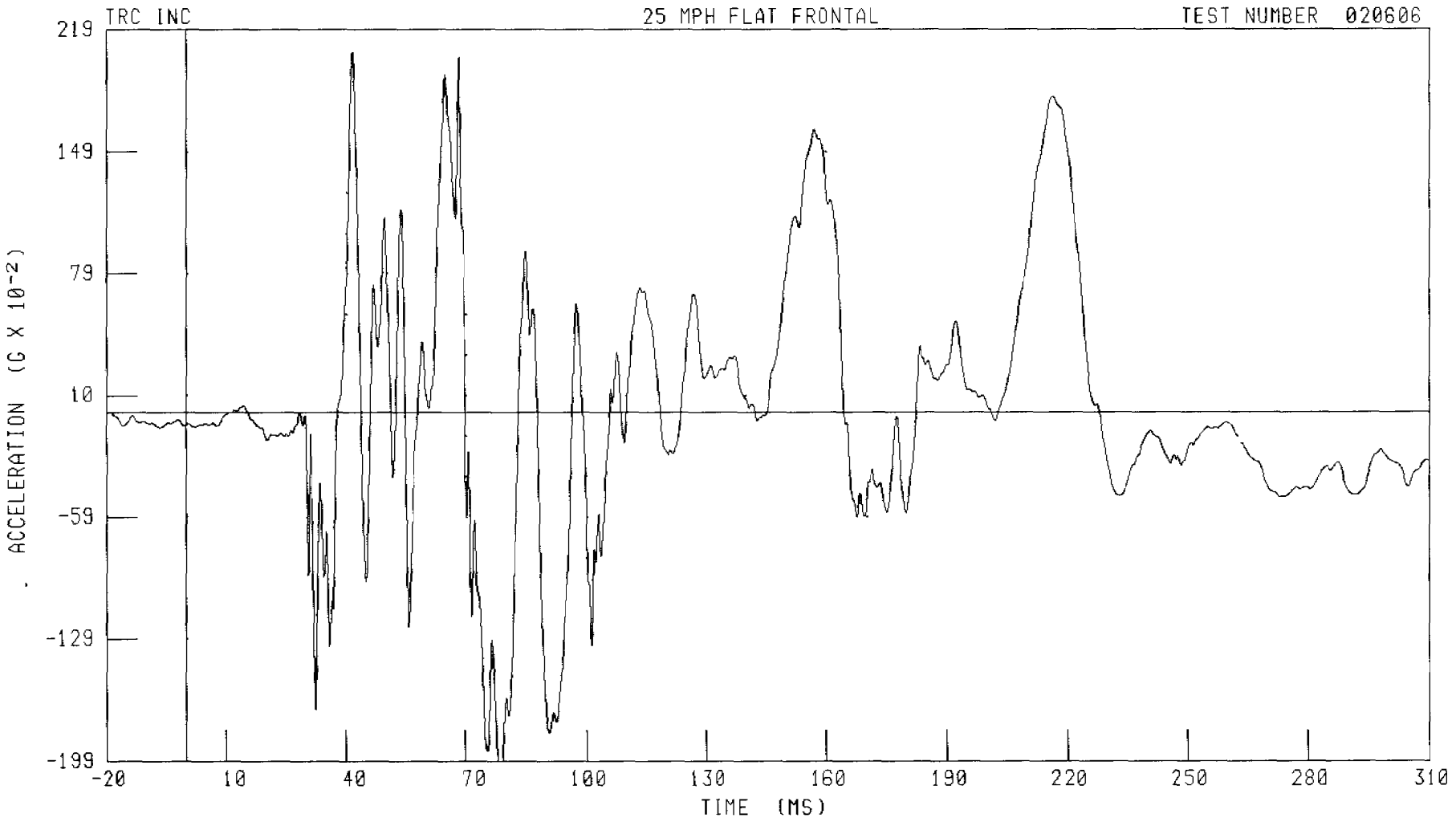
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST X-AXIS REDUNDANT ACCELERATION



CHANNEL CSTXR1 FILTER CH CLASS 180 PEAK DATA 6 67 G @ 159 76 MS, -64 98 G @ 74 32 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

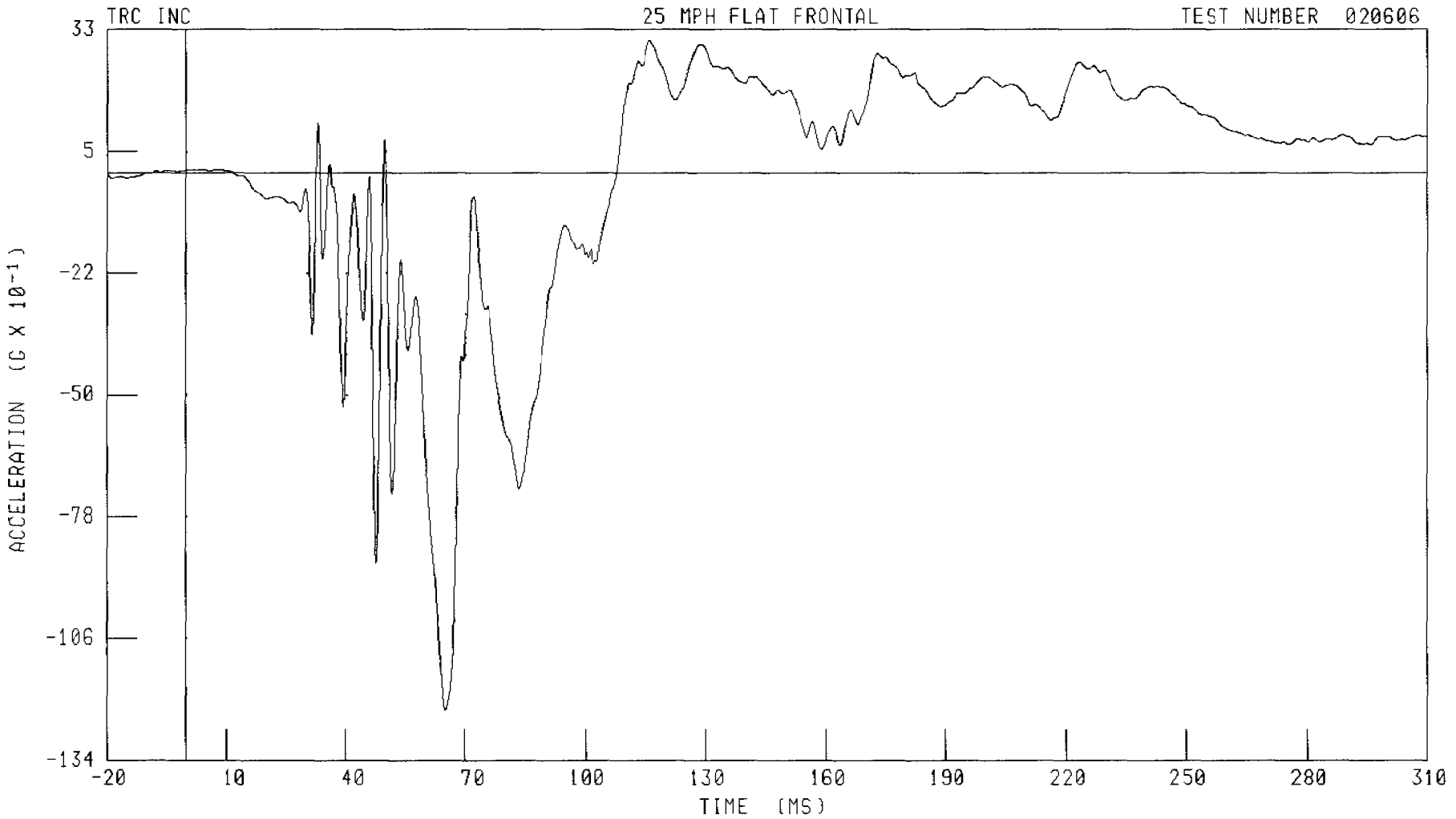
DRIVER CHEST Y-AXIS REDUNDANT ACCELERATION



CHANNEL CSTYR1 FILTER CH CLASS 180

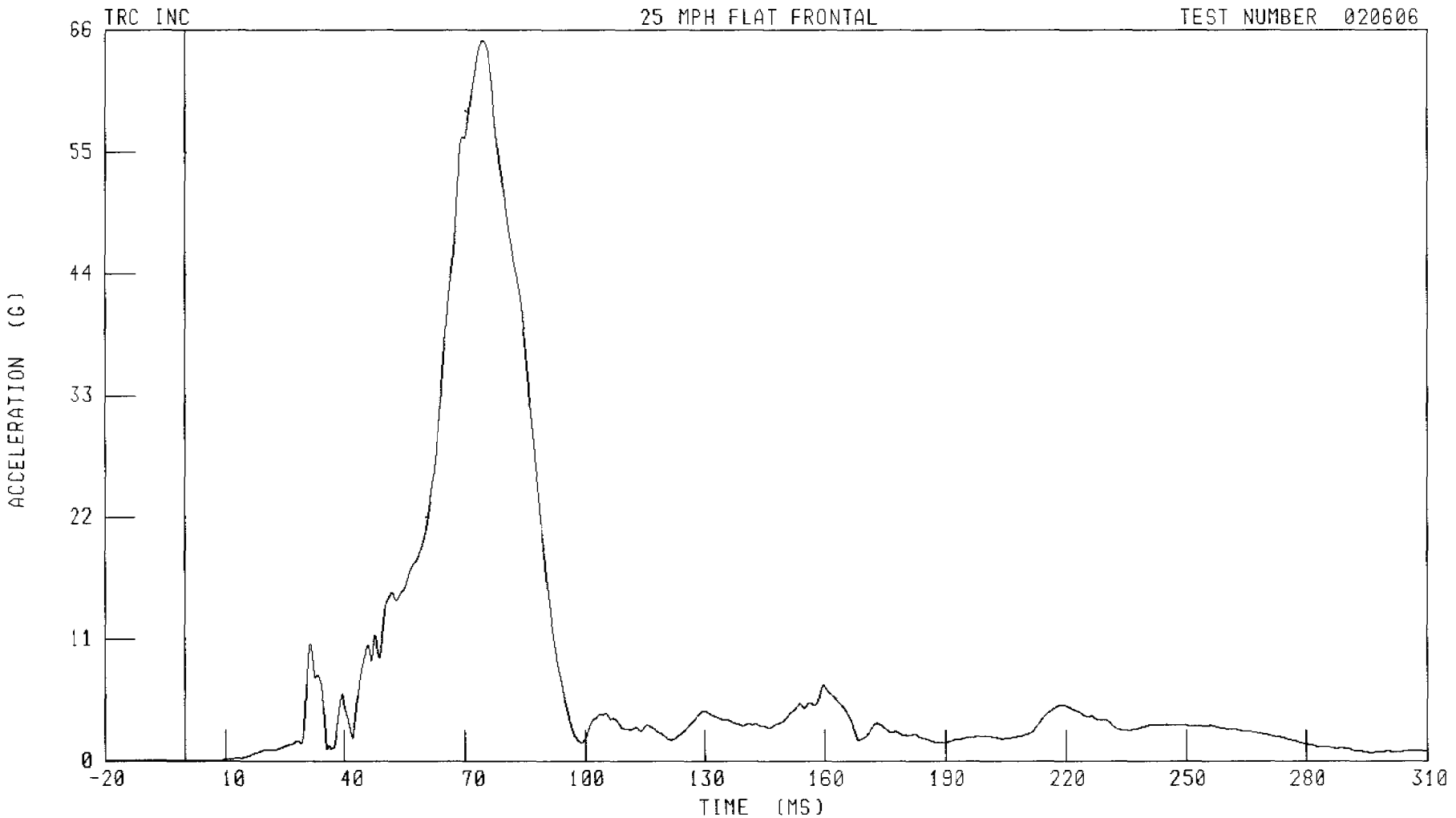
PEAK DATA 2 07 G @ 41 60 MS, -2 21 G @ 78 24 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST Z-AXIS REDUNDANT ACCELERATION



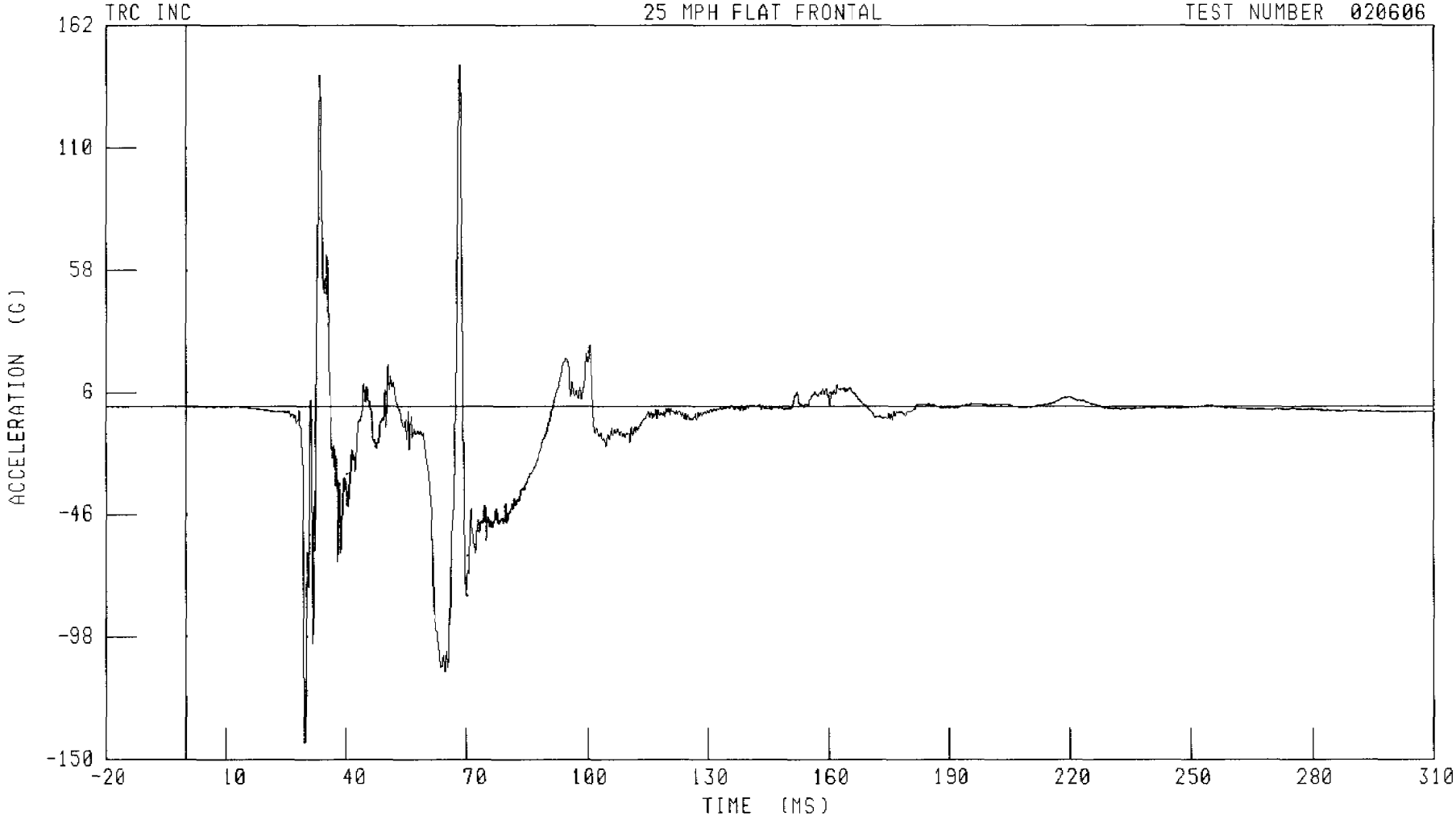
CHANNEL CSTZR1 FILTER CH CLASS 180 PEAK DATA 3 04 G @ 116 08 MS, -12 34 G @ 65 20 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER CHEST REDUNDANT RESULTANT ACCELERATION



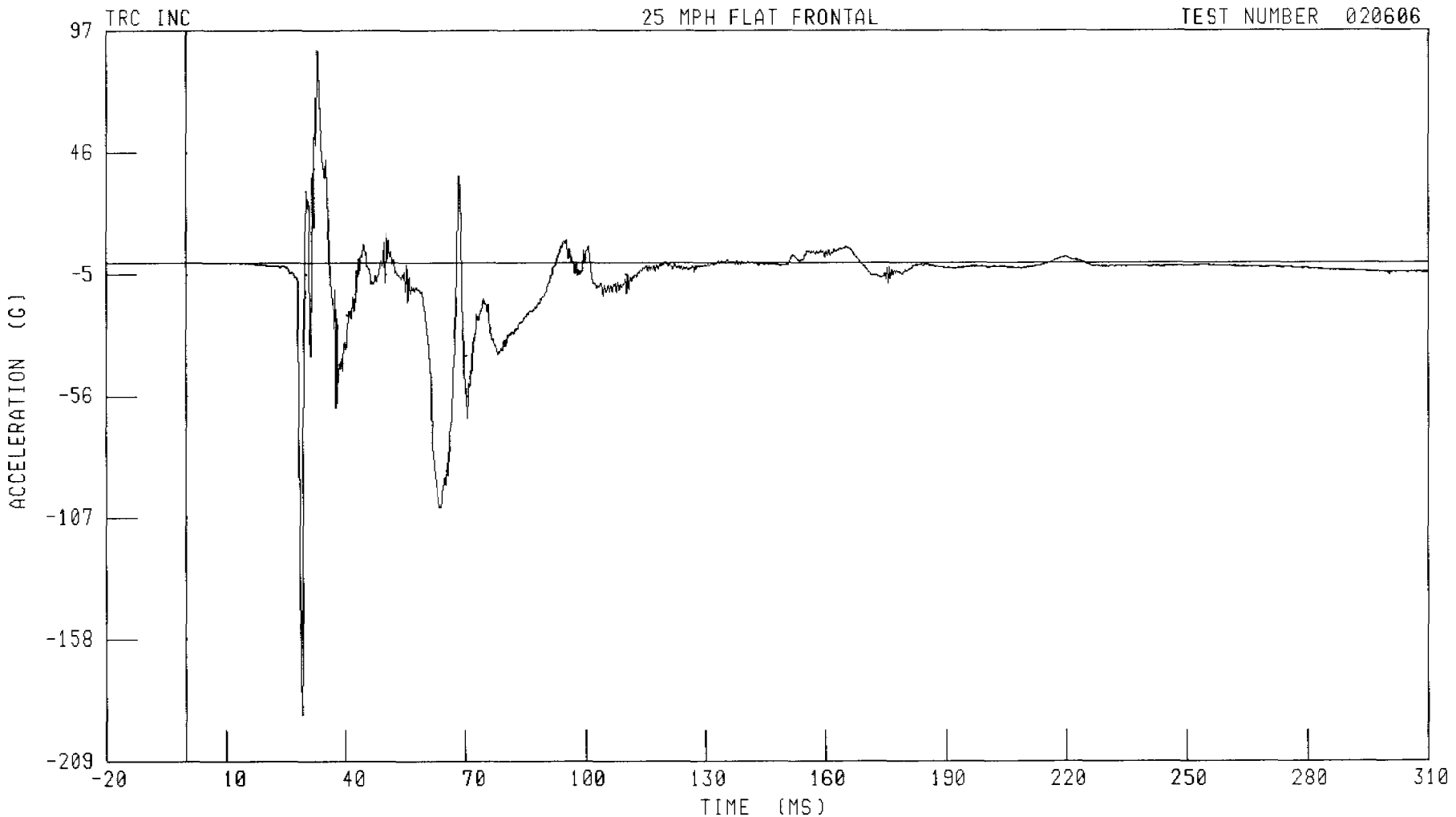
CHANNEL CSTRR1 FILTER CH CLASS 180 PEAK DATA 65 07 G @ 74 32 MS, 0 01 G @ -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER STERNUM UPPER X-AXIS ACCELERATION



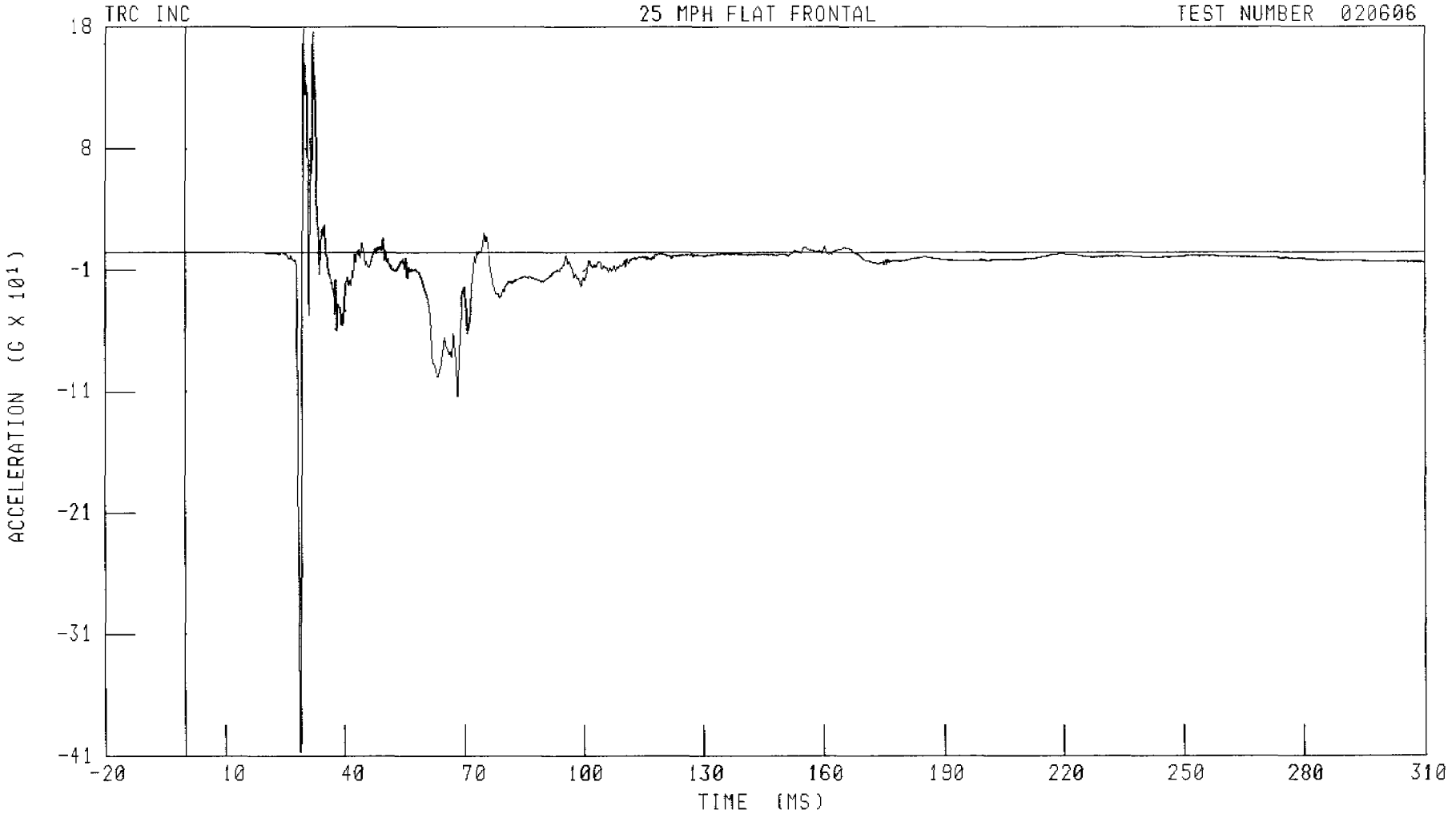
CHANNEL STUXG1 FILTER CH CLASS 1000 PEAK DATA 145 23 G @ 68 32 MS, -142 88 G @ 29 60 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER STERNUM MID X-AXIS ACCELERATION



CHANNEL STMXG1 FILTER CH CLASS 1000 PEAK DATA 88 69 G @ 32 88 MS, -189 79 G @ 28 96 MS

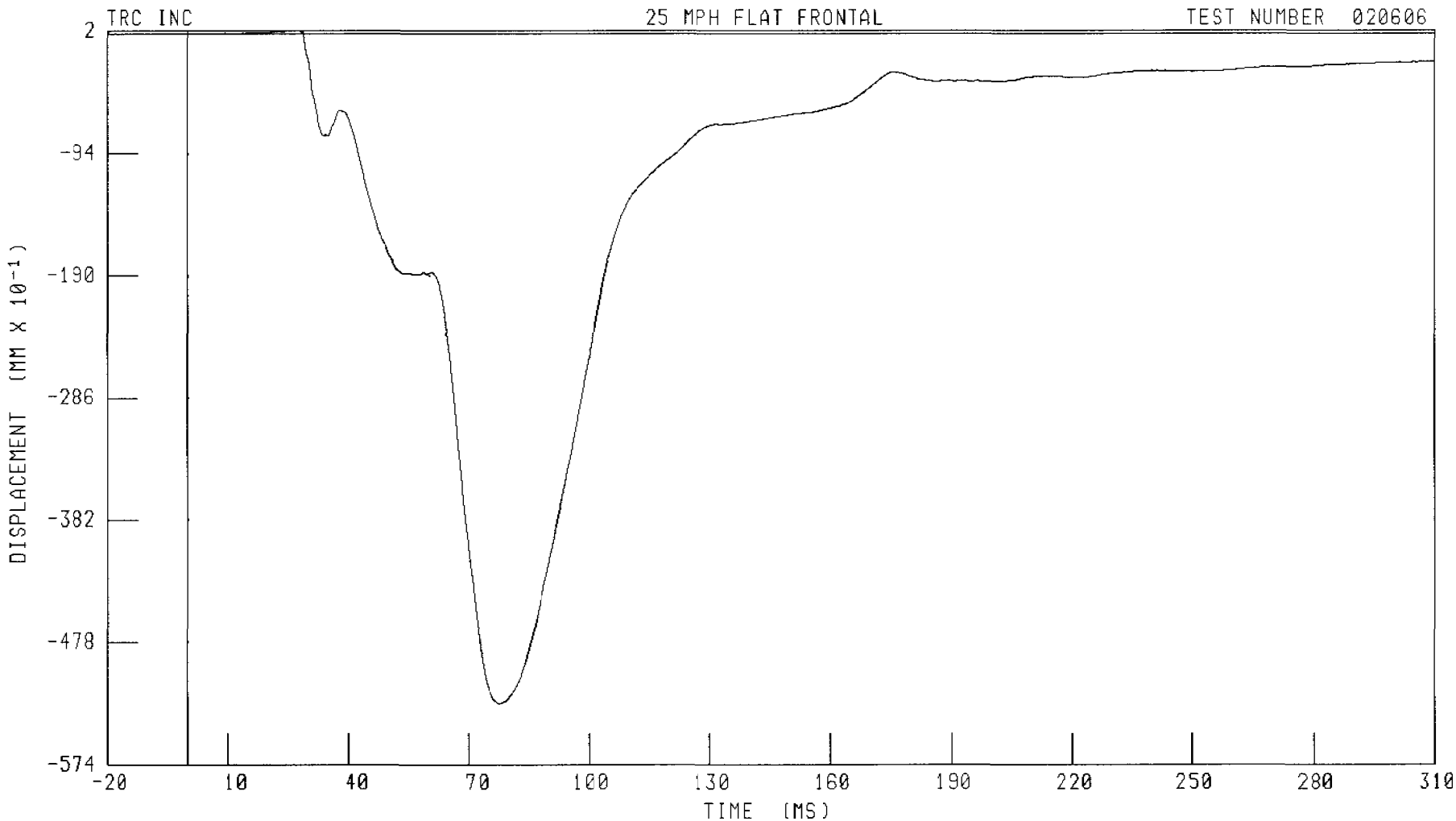
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER STERNUM LOWER X-AXIS ACCELERATION



CHANNEL STLXG1 FILTER CH CLASS 1000 PEAK DATA 183 65 G @ 29 60 MS, -411 86 G @ 28 80 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

DRIVER CHEST DEFLECTION

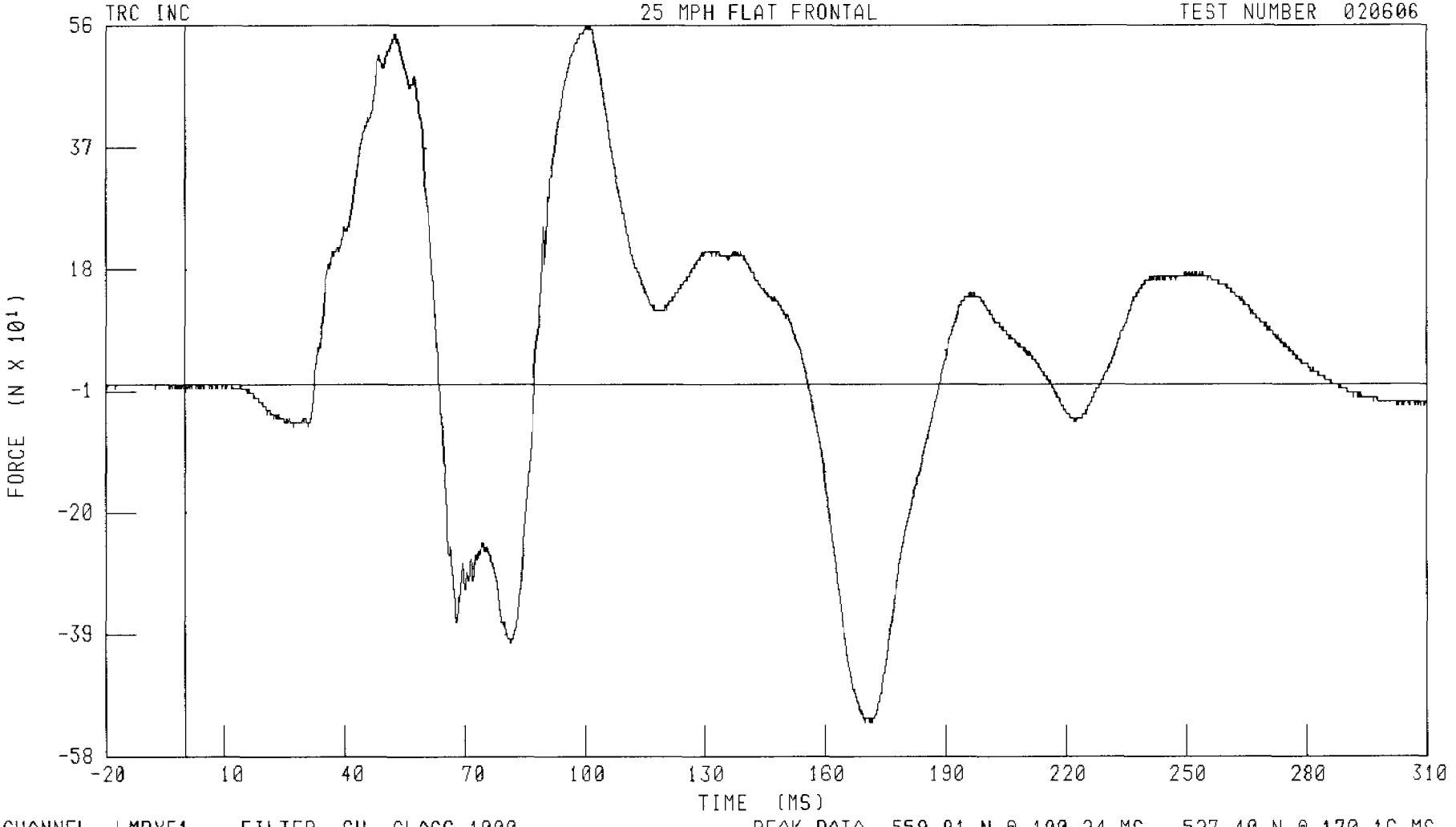


CHANNEL CSTXD1 FILTER CH CLASS 600

PEAK DATA 0 20 MM @ 26 16 MS, -52 62 MM @ 77 52 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

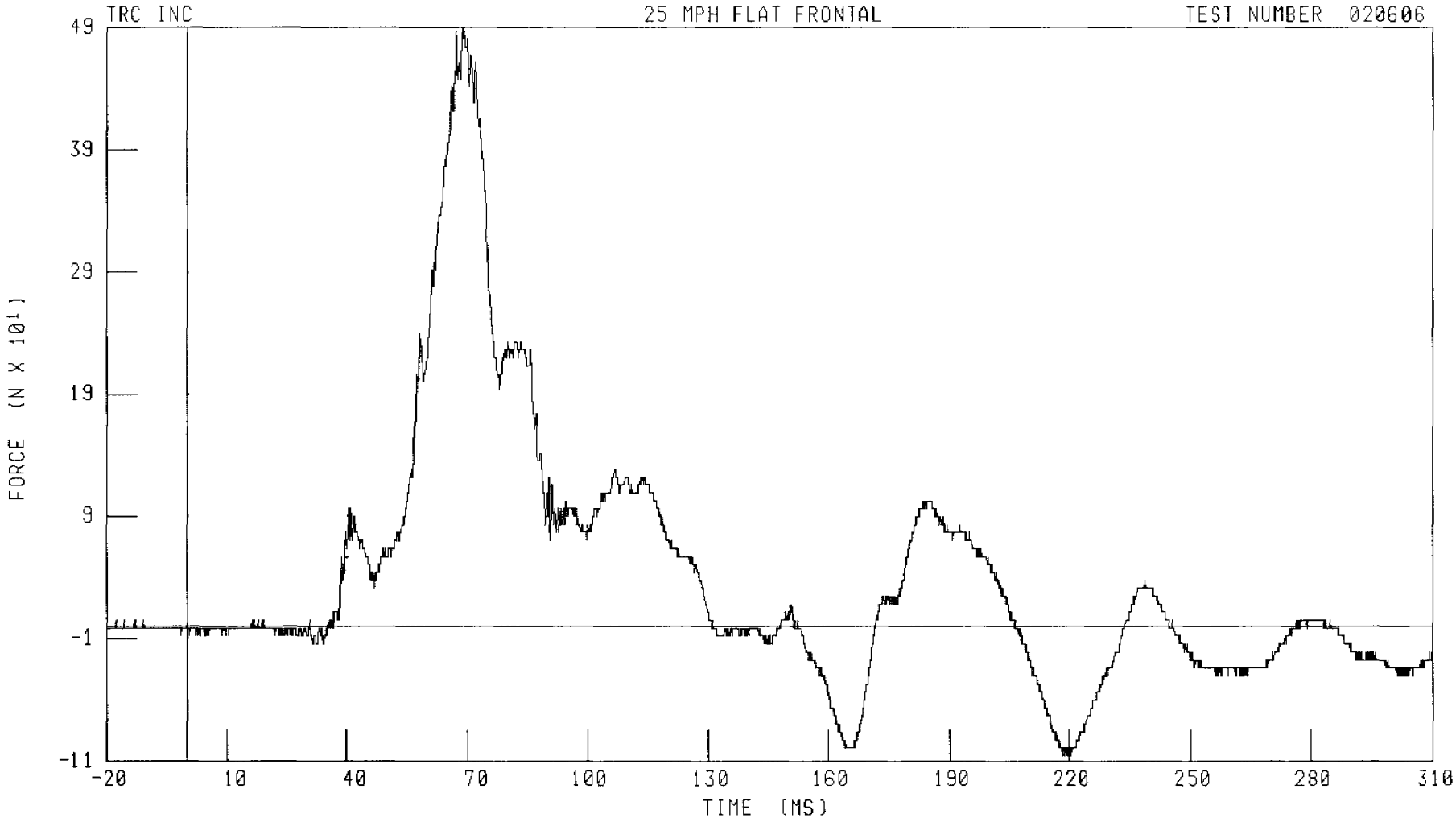
DRIVER LUMBAR X-AXIS FORCE



CHANNEL LMBXF1 FILTER CH CLASS 1000 PEAK DATA 559 81 N @ 100 24 MS, -527 40 N @ 170 16 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

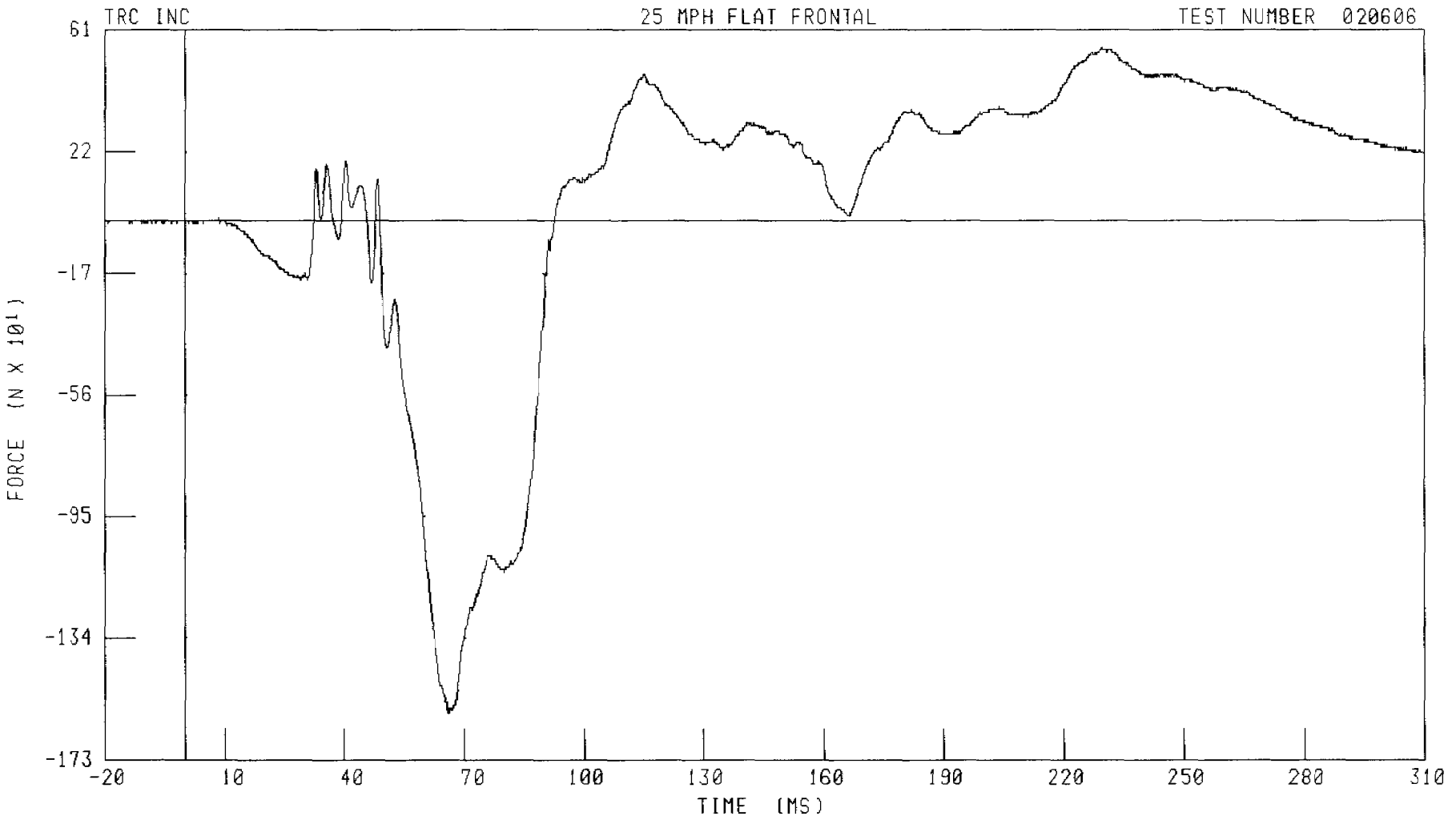
DRIVER LUMBAR Y-AXIS FORCE



CHANNEL LMBYF1 FILTER CH CLASS 1000

PEAK DATA 493 67 N @ 68 72 MS, -105 80 N @ 218 40 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LUMBAR Z-AXIS FORCE

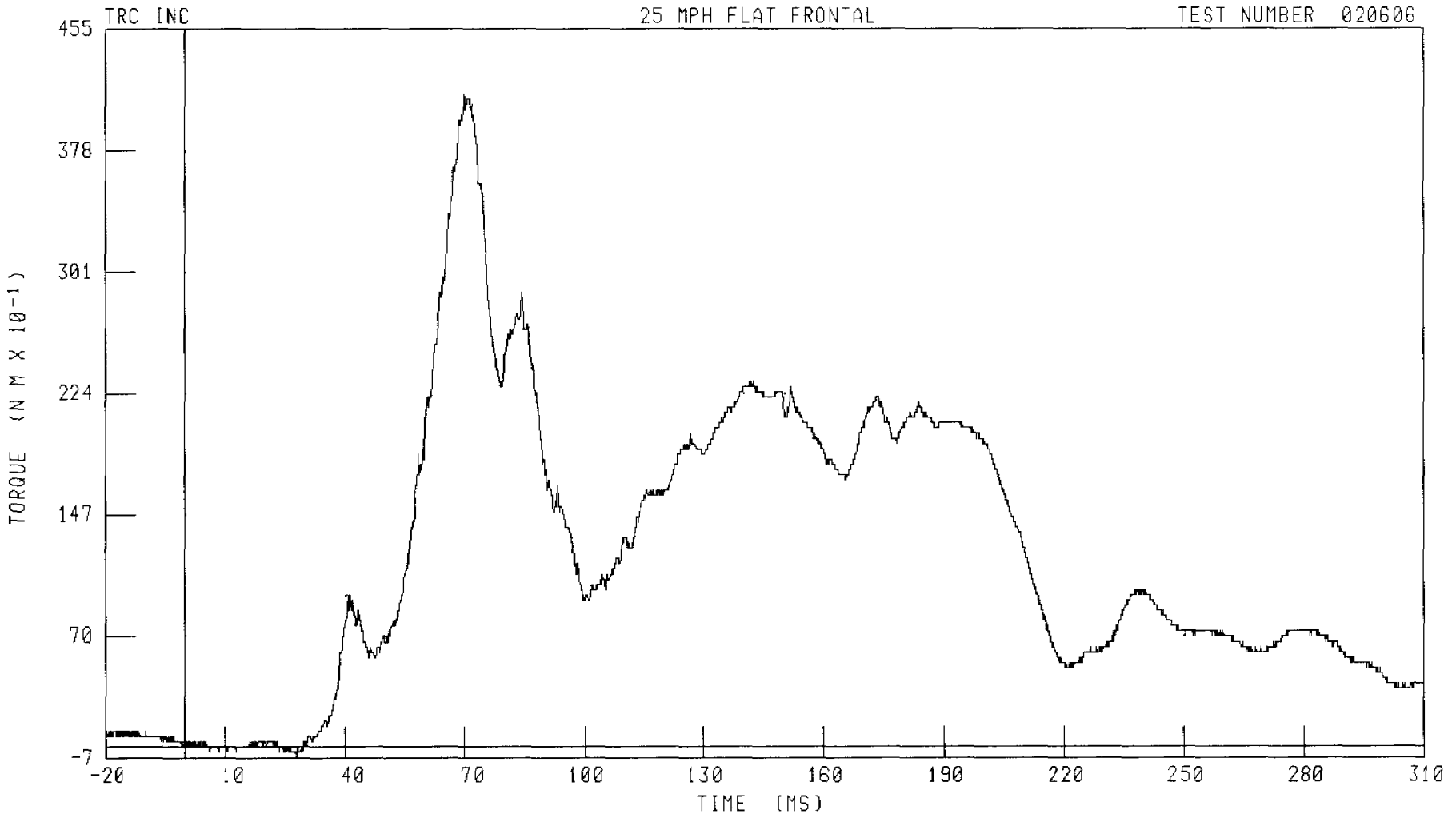


CHANNEL LMBZF1 FILTER CH CLASS 1000

PEAK DATA 556 00 N @ 229 28 MS, -1581 03 N @ 66 00 MS

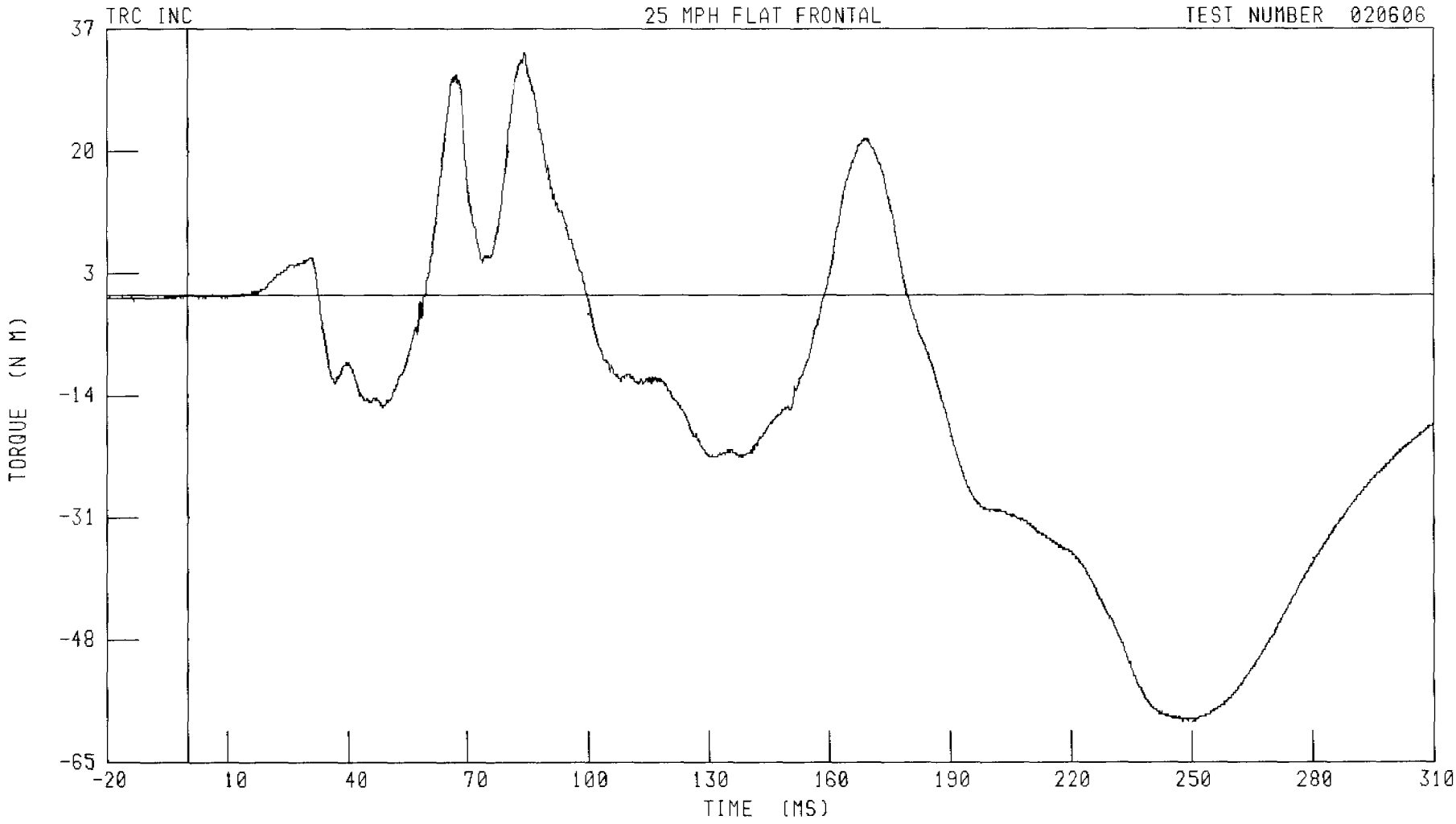
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

DRIVER LUMBAR X-AXIS MOMENT



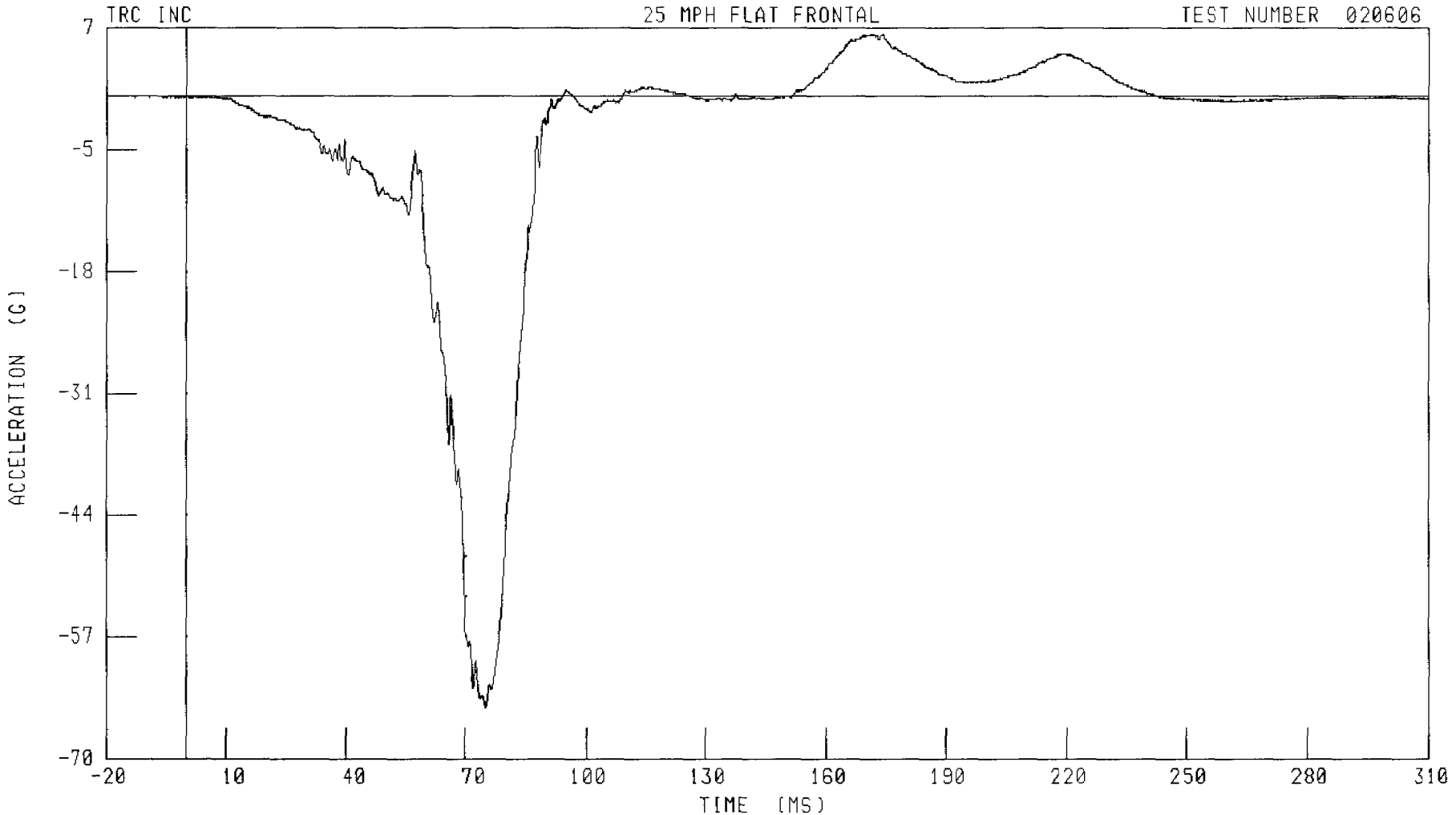
CHANNEL LMBXM1 FILTER CH CLASS 1000 PEAK DATA 41 39 N M @ 69 92 MS, -0 66 N M @ 27 60 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LUMBAR Y-AXIS MOMENT



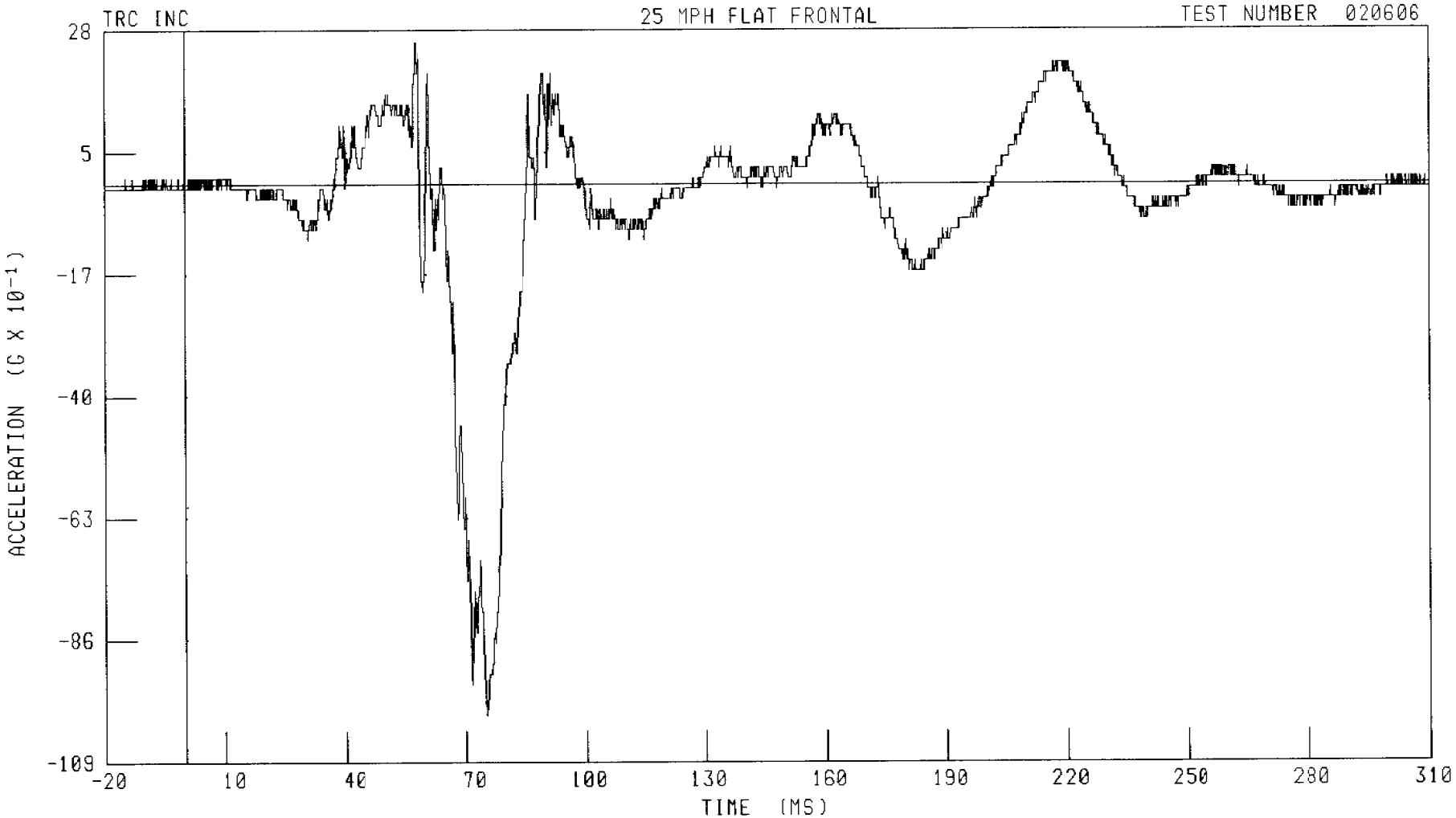
CHANNEL LMBYM1 FILTER CH CLASS 1000 PEAK DATA 33 68 N M @ 84 16 MS, -59 35 N M @ 247 68 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER PELVIS X-AXIS ACCELERATION



CHANNEL PEVXG1 FILTER CH CLASS 1000 PEAK DATA 6 60 G @ 171 28 MS, -65 43 G @ 74 96 MS

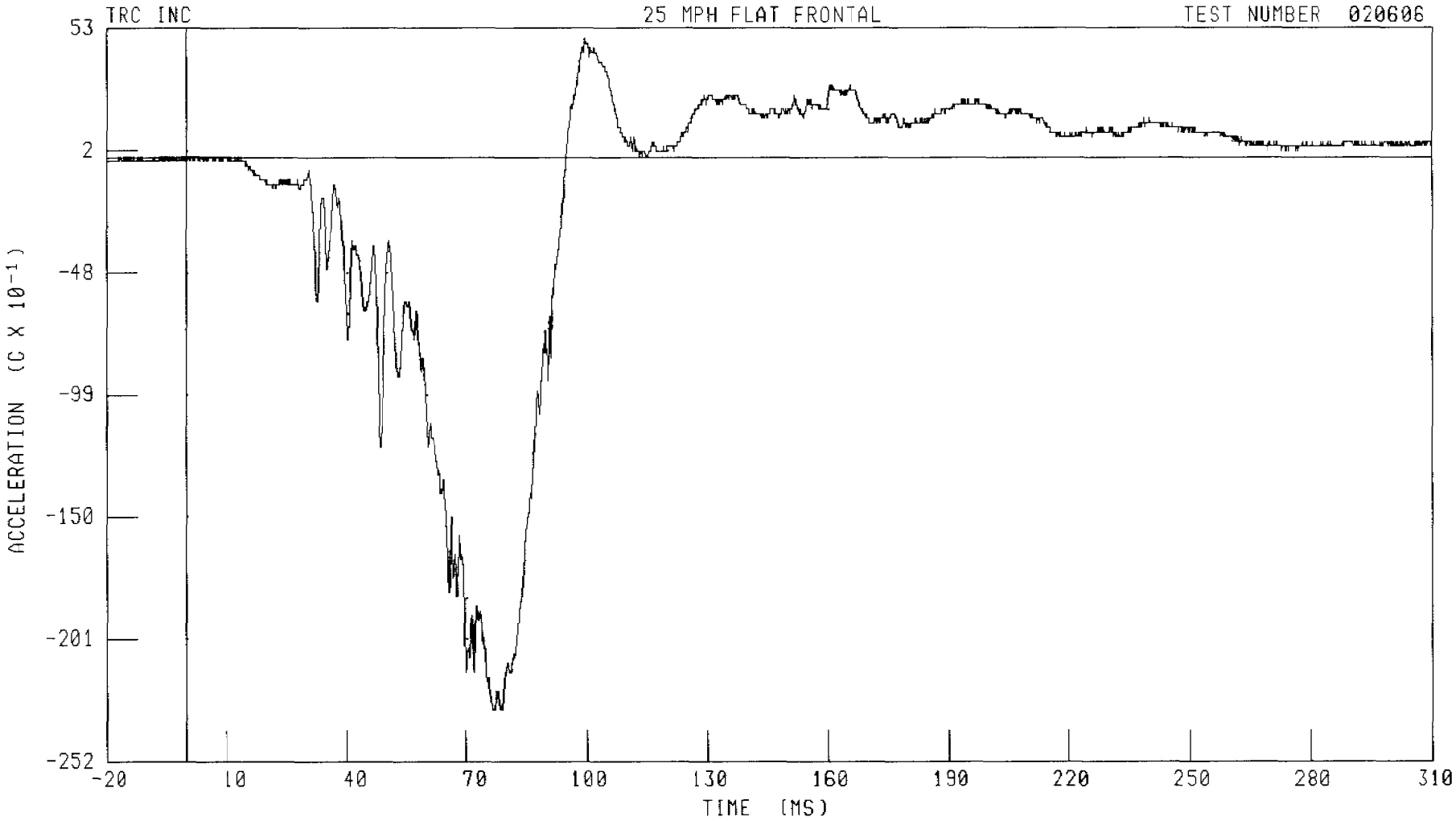
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER PELVIS Y-AXIS ACCELERATION



CHANNEL PEVYG1 FILTER CH CLASS 1000

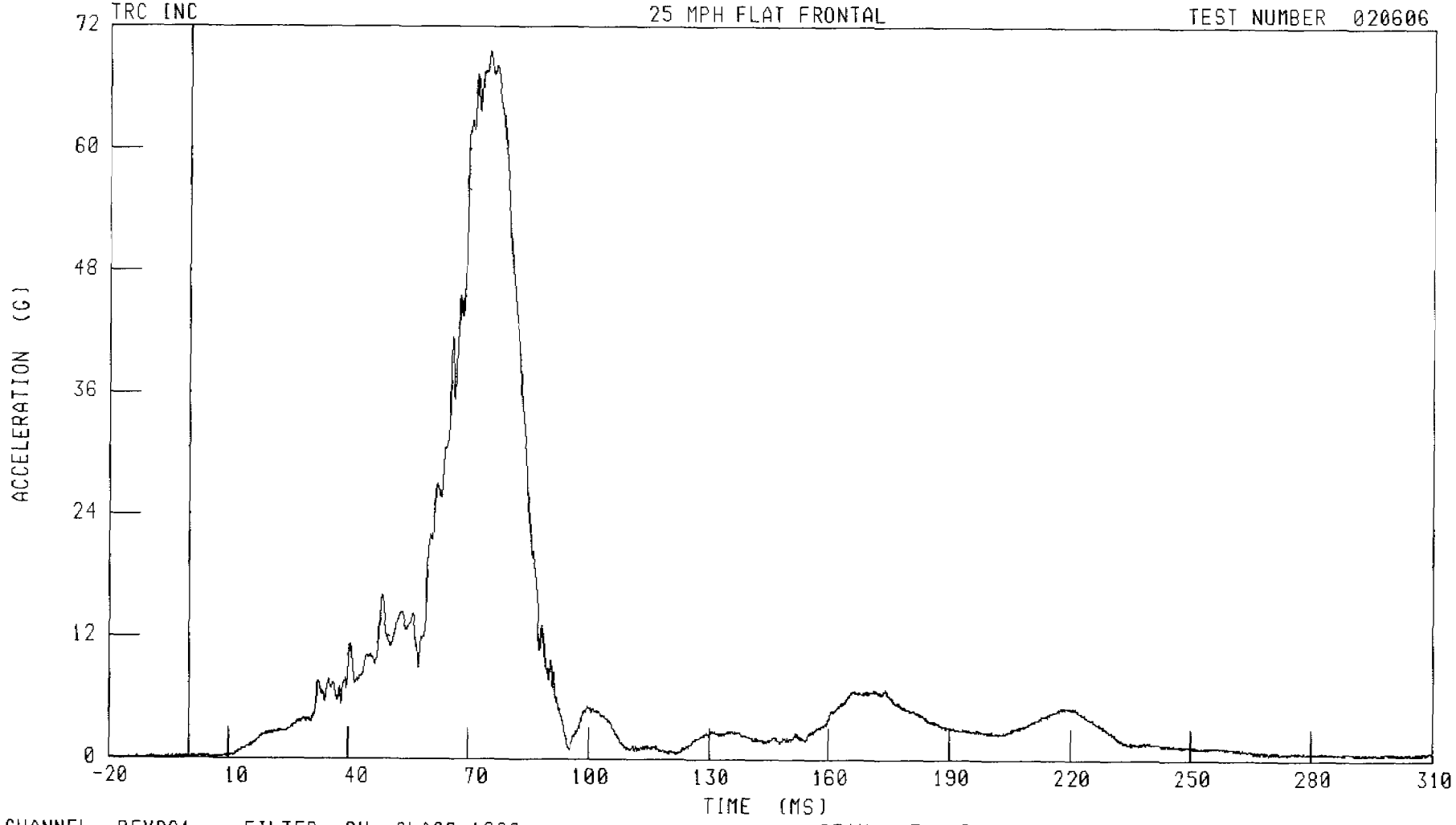
PEAK DATA 2 67 G @ 57 52 MS, -10 03 G @ 75 20 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER PELVIS Z-AXIS ACCELERATION



CHANNEL PEVZG1 FILTER CH CLASS 1000 PEAK DATA 4 98 G @ 99 68 MS, -23 06 G @ 76 56 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER PELVIS RESULTANT ACCELERATION

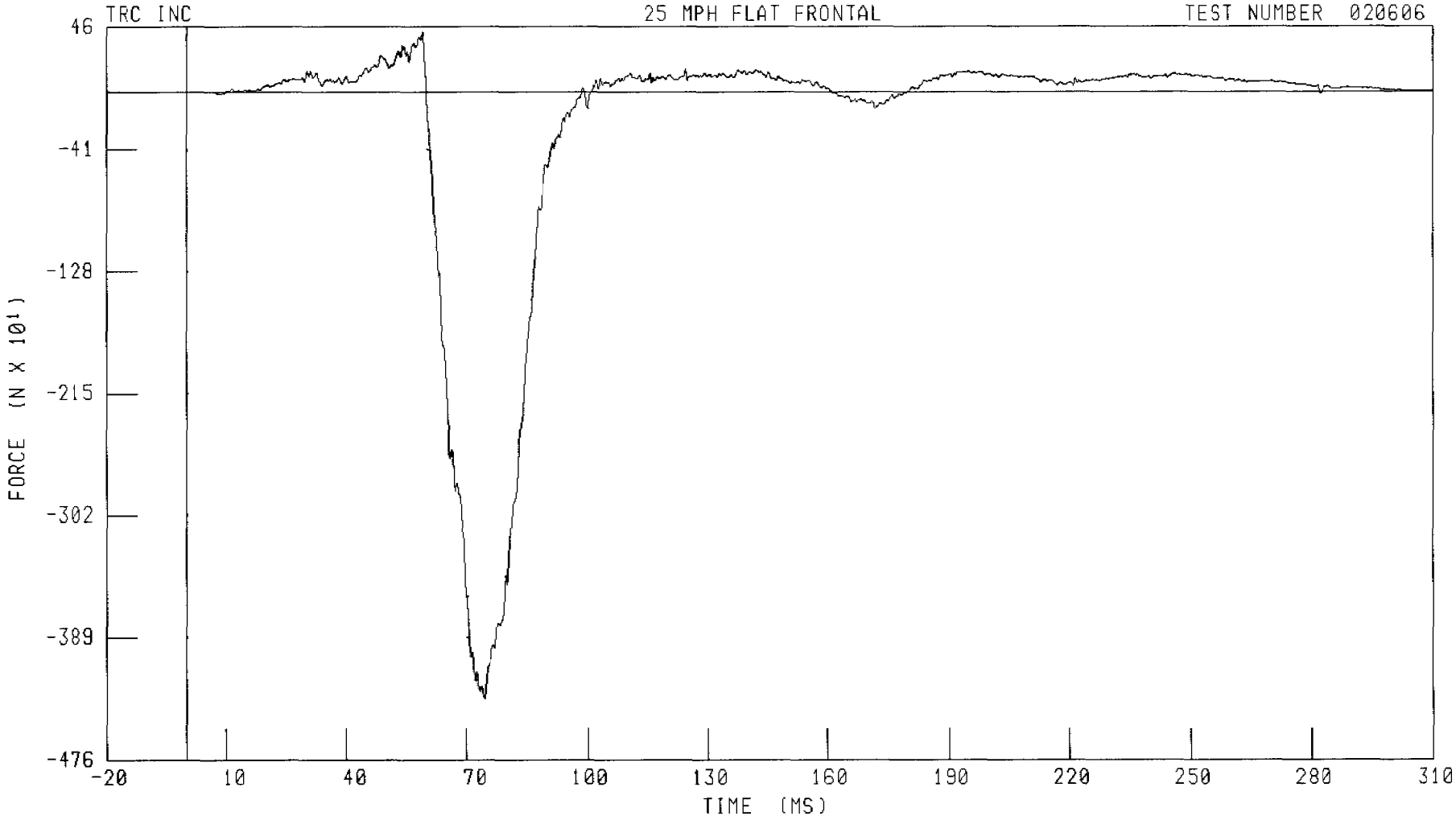


CHANNEL PEVRG1 FILTER CH CLASS 1000

PEAK DATA 69 54 G @ 74 96 MS, 0 10 G @ -17 20 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

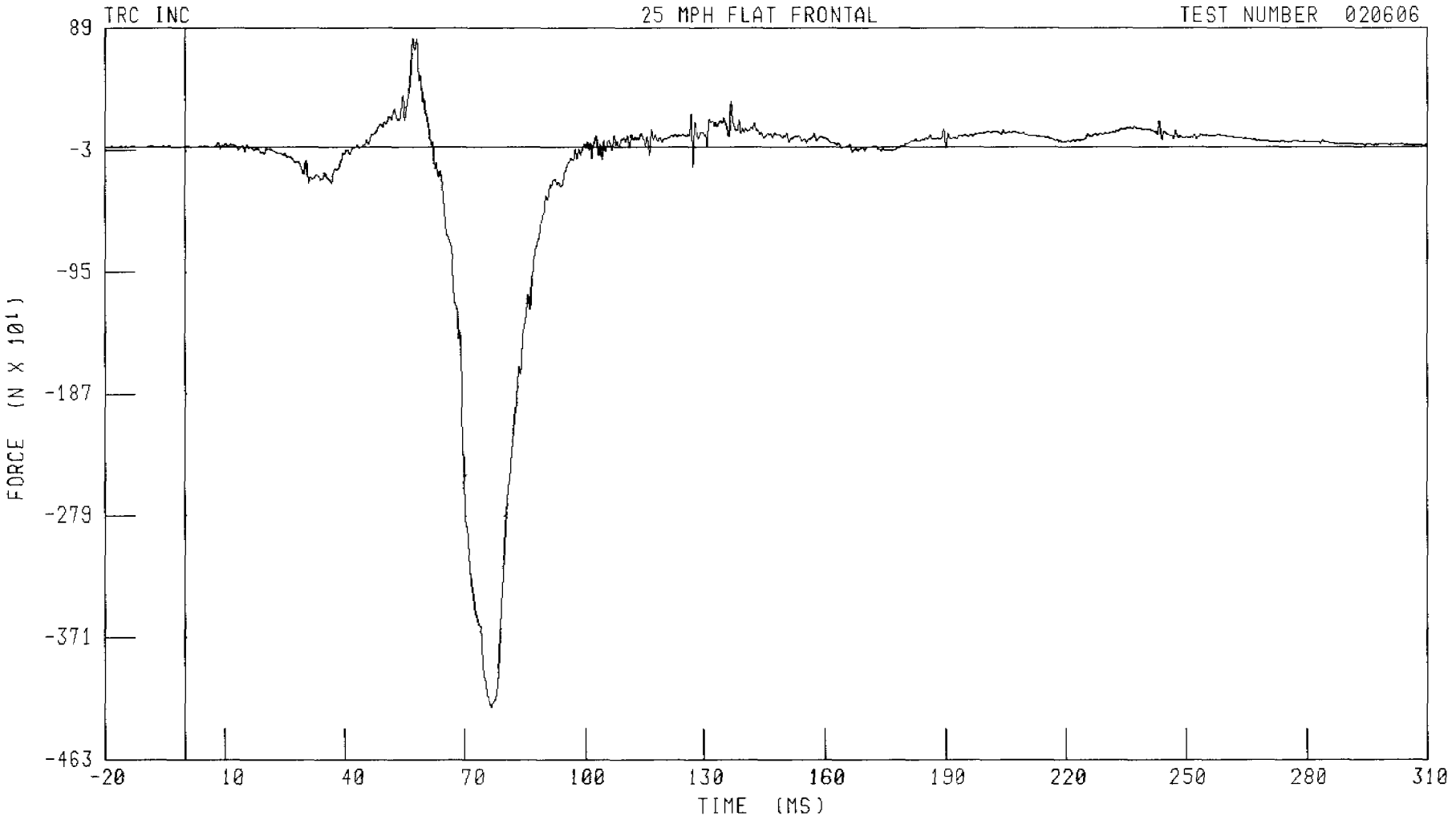
DRIVER LEFT FEMUR FORCE



CHANNEL LFMZF1 FILTER CH CLASS 600

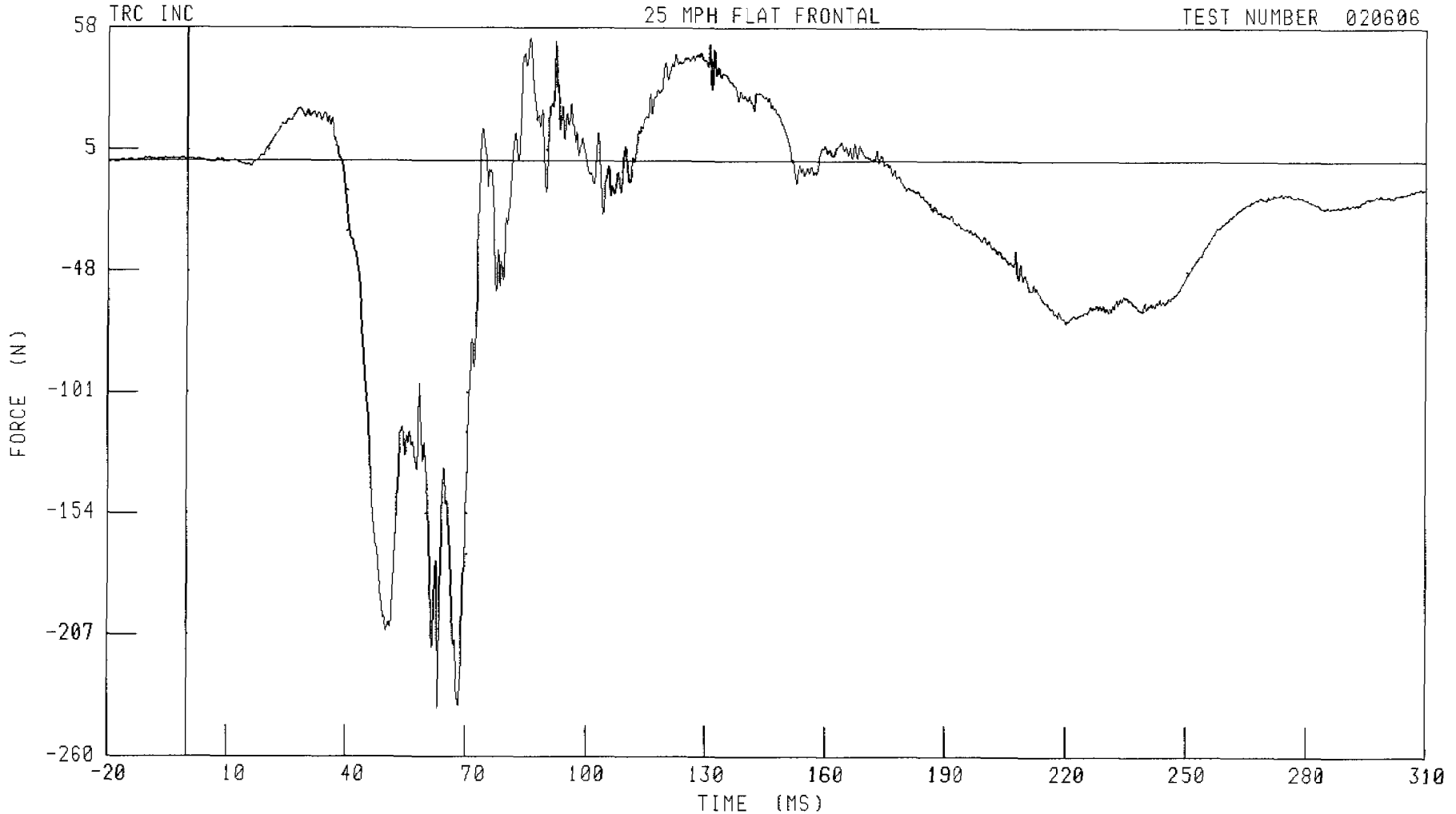
PEAK DATA 425 49 N @ 58 80 MS, -4322 57 N @ 74 40 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT FEMUR FORCE



CHANNEL RFMZF1 FILTER CH CLASS 600 PEAK DATA 815 04 N @ 57 28 MS, -4230 19 N @ 76 80 MS

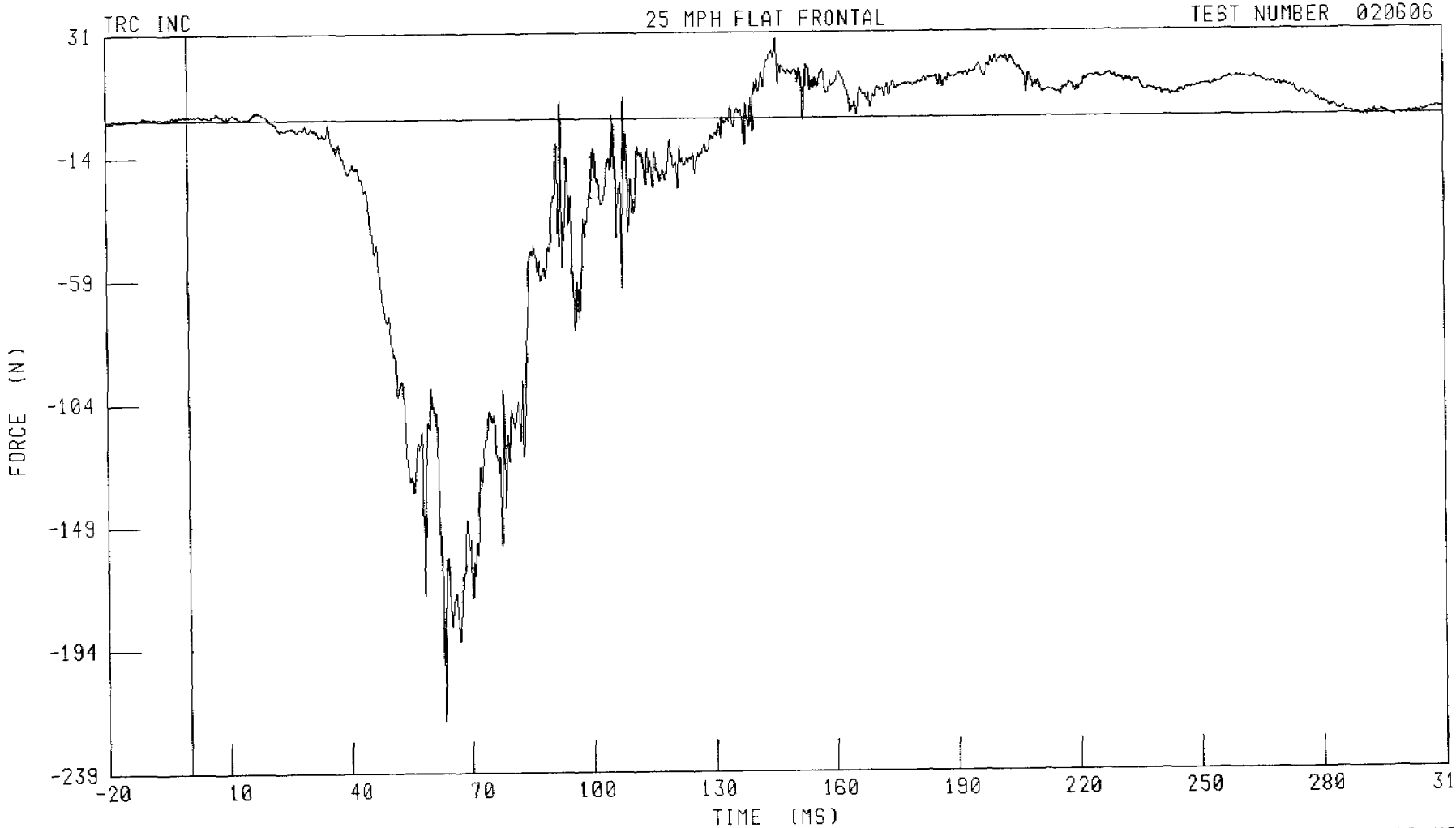
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT LOWER TIBIA X-AXIS FORCE



CHANNEL ANRXF2 FILTER CH CLASS 600

PEAK DATA 53 46 N @ 85 84 MS, -238 89 N @ 63 12 MS

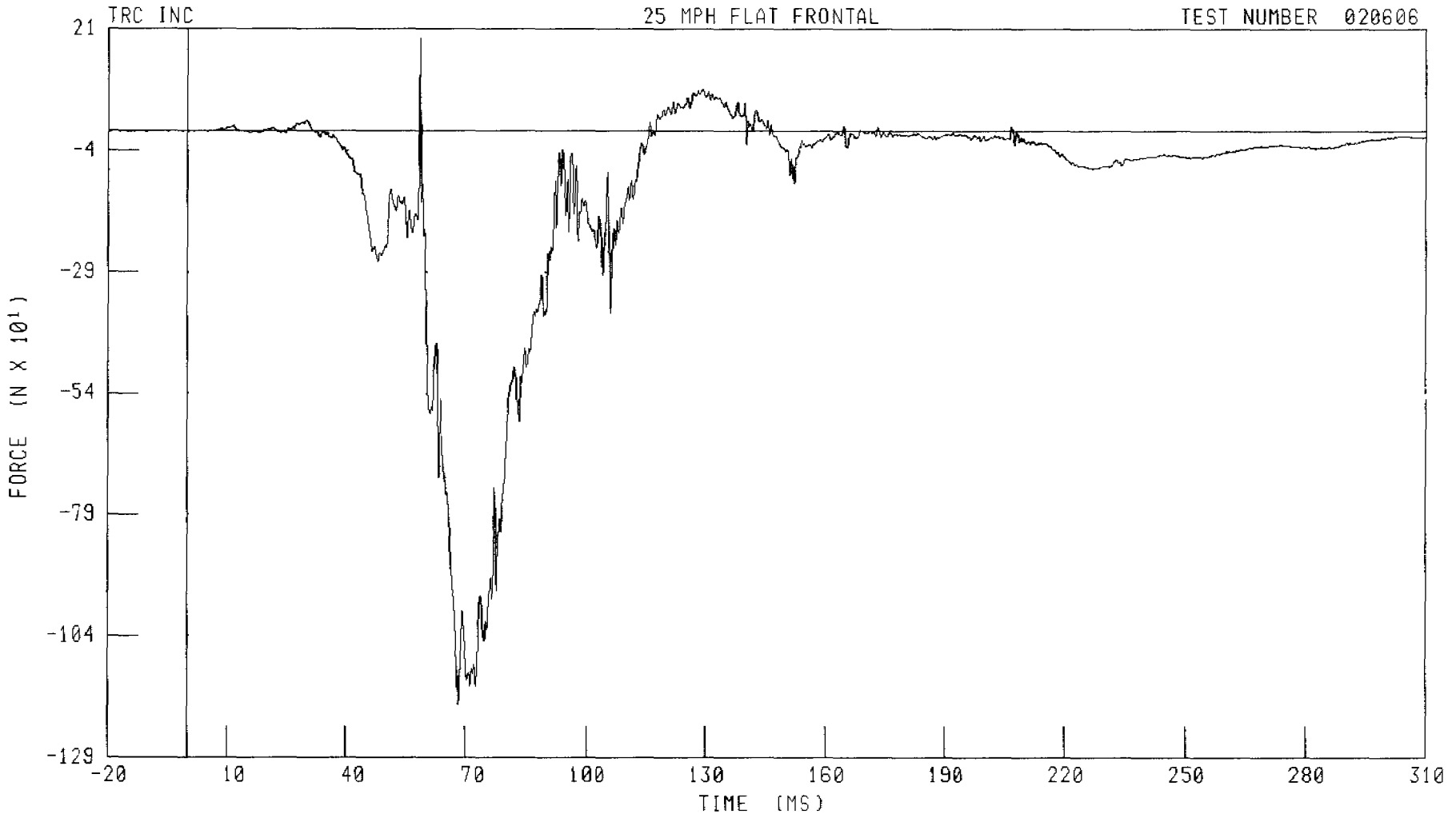
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT LOWER TIBIA Y-AXIS FORCE



CHANNEL ANRYF2 FILTER CH CLASS 600

PEAK DATA 28 91 N @ 145 76 MS, -220 14 N @ 63 12 MS

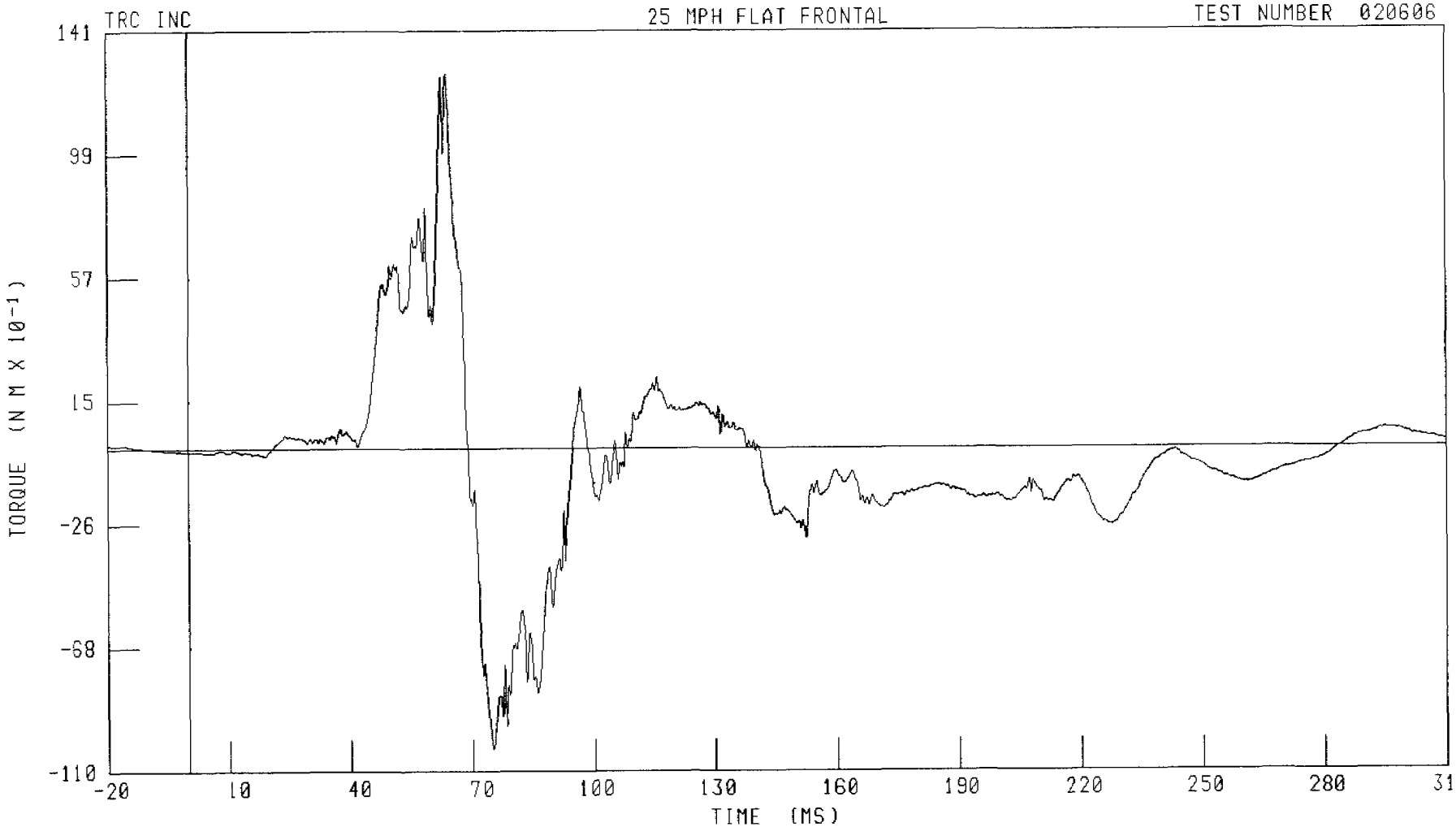
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT LOWER TIBIA Z-AXIS FORCE



CHANNEL ANRZF2 FILTER CH CLASS 600

PEAK DATA 191 06 N @ 58 40 MS, -1182 98 N @ 68 16 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT LOWER TIBIA MOMENT ABOUT X AXIS

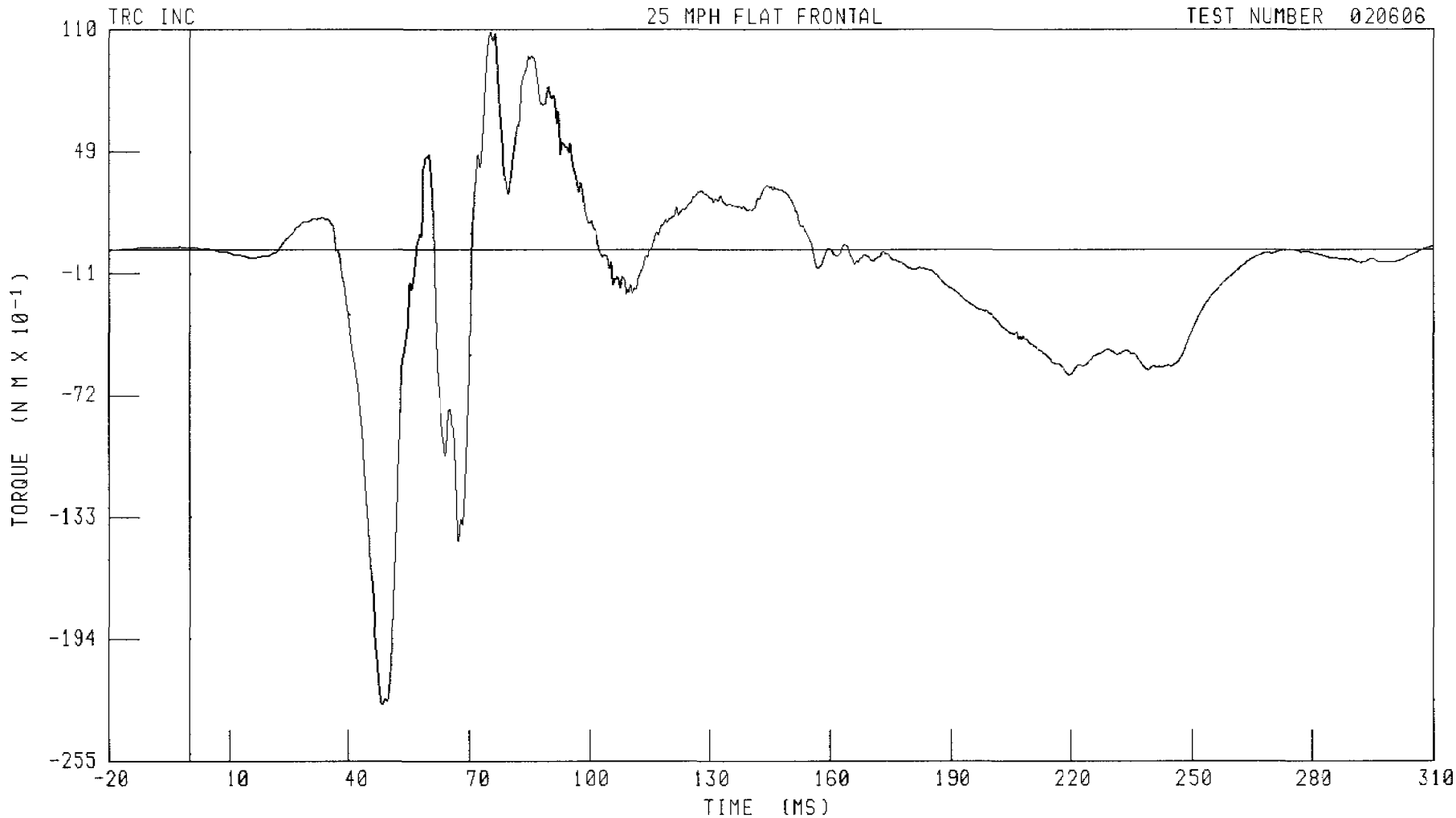


CHANNEL ANRXM2 FILTER CH CLASS 600

PEAK DATA 12 76 N M @ 64 00 MS, -10 27 N M @ 74 96 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

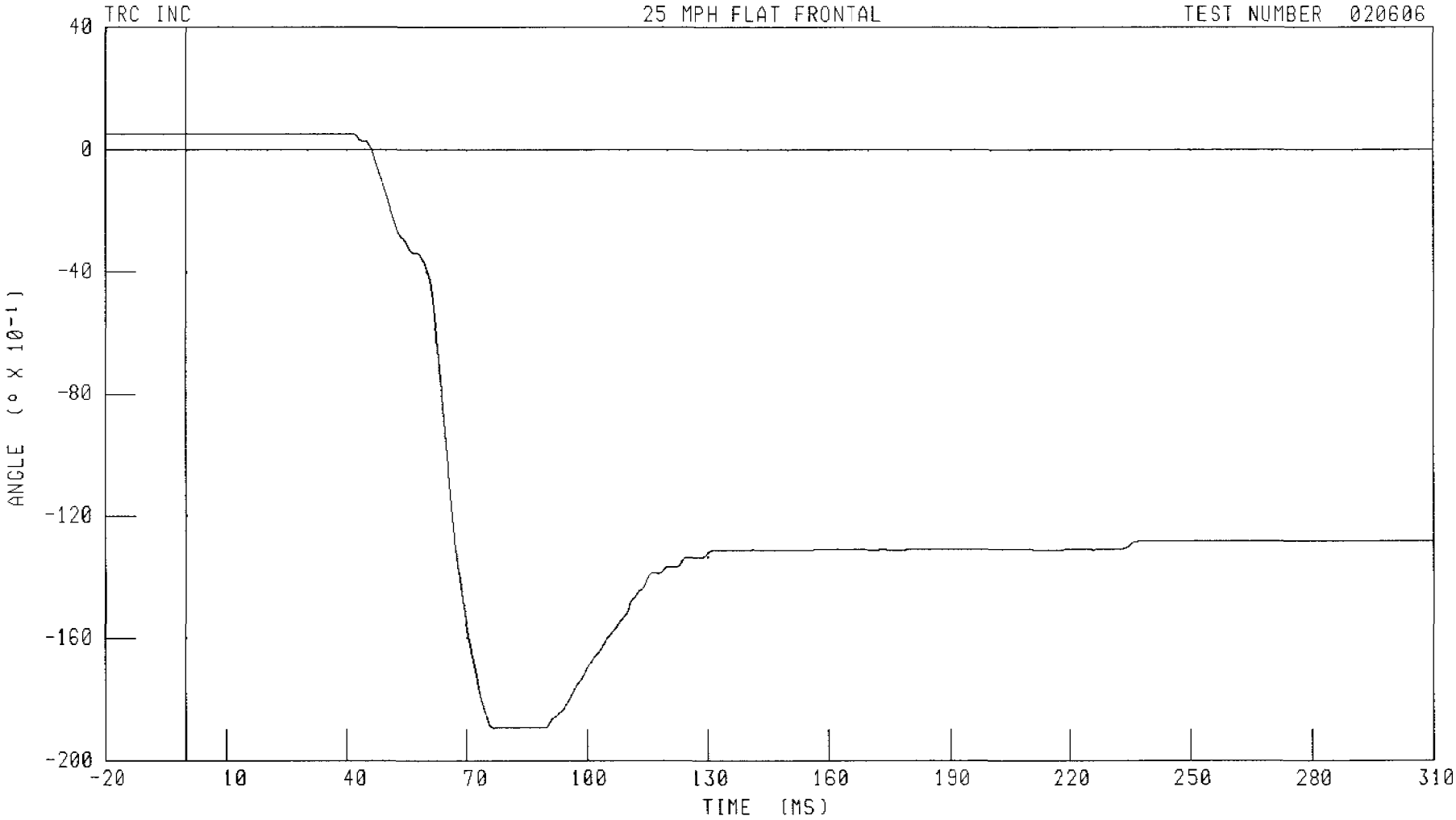
PASSENGER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS



CHANNEL ANRYM2 FILTER CH CLASS 600

PEAK DATA 10 87 N M @ 75 04 MS, -22 78 N M @ 48 32 MS

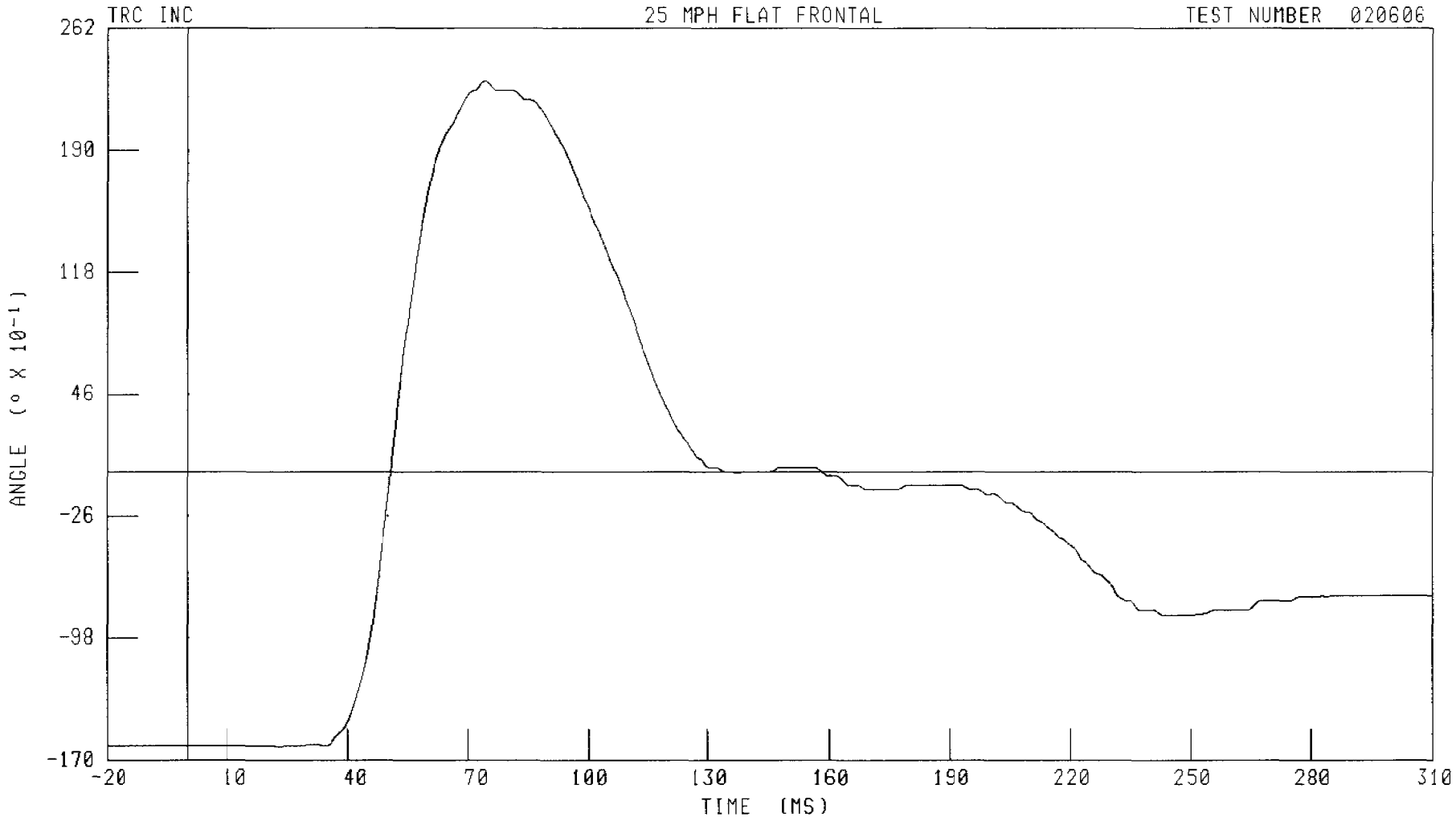
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT FOOT TO ANKLE X-AXIS DISPLACEMENT



CHANNEL FTRXD2 FILTER CH CLASS 180

PEAK DATA 0 53 ° @ -10 48 MS, -18 94 ° @ 76 88 MS

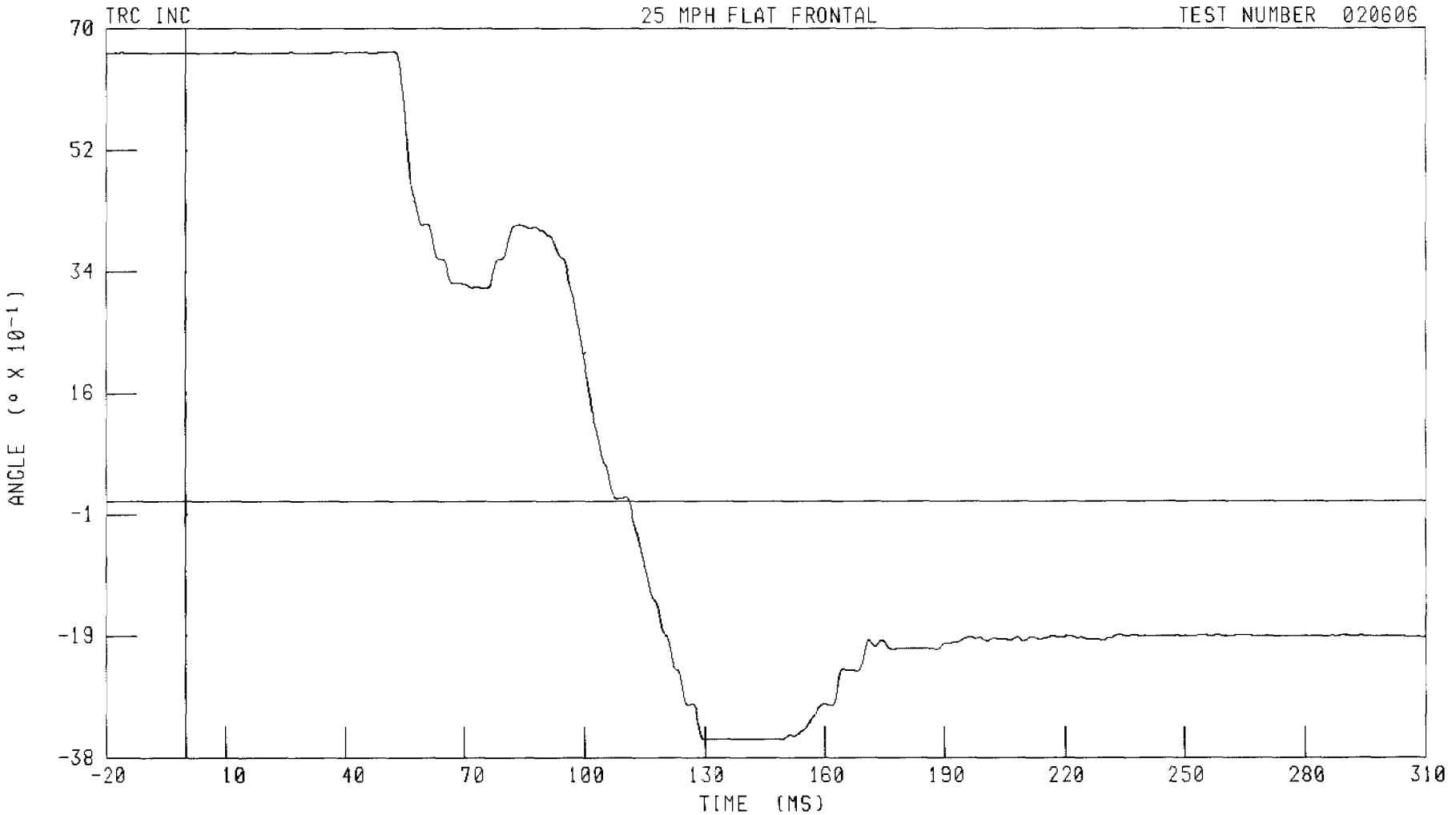
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT FOOT TO ANKLE Y-AXIS DISPLACEMENT



CHANNEL FTRYD2 FILTER CH CLASS 180

PEAK DATA 23 09 ° @ 74 08 MS, -16 20 ° @ 22 72 MS

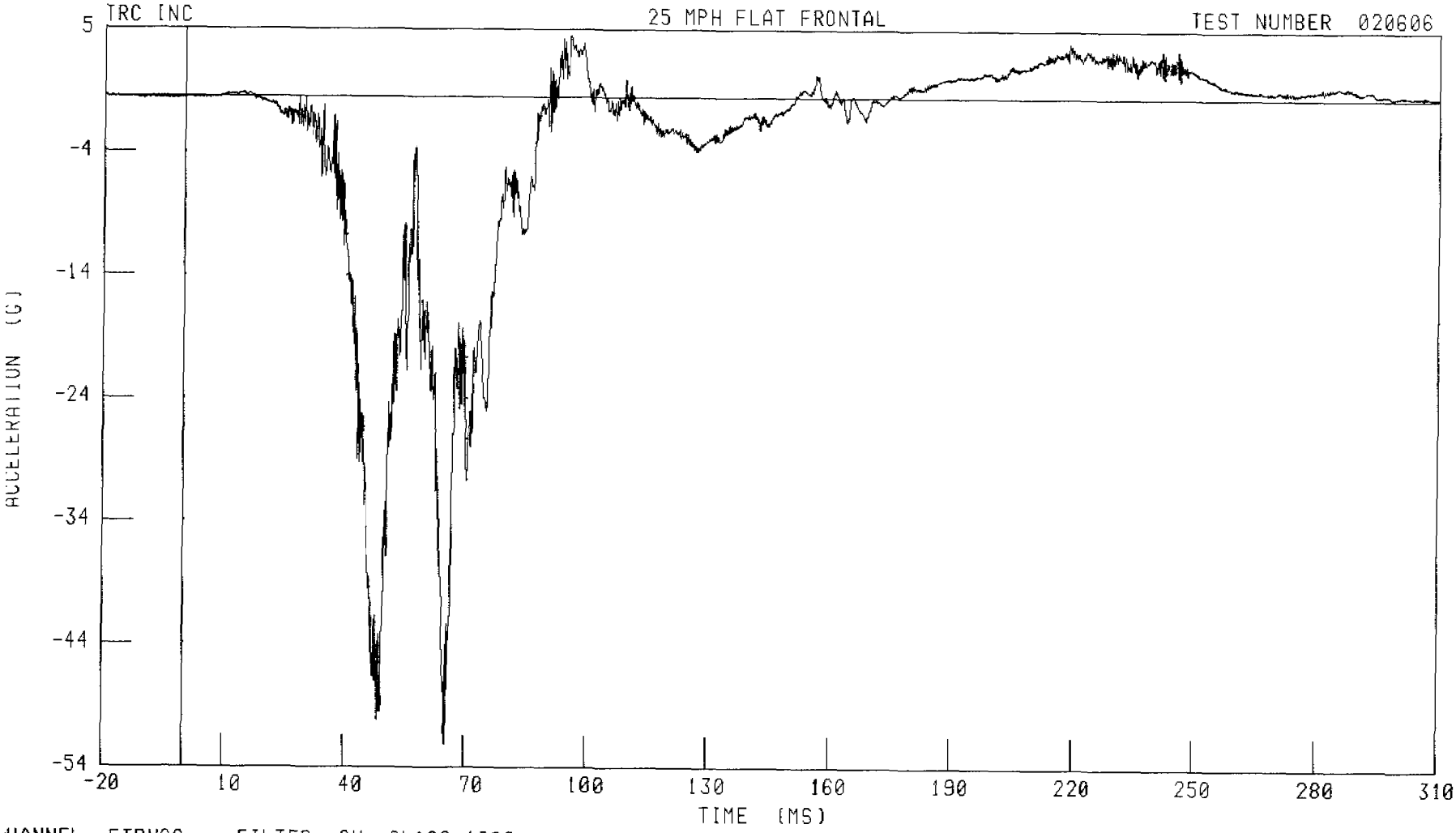
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT FOOT TO ANKLE Z-AXIS DISPLACEMENT



CHANNEL FTRZD2 FILTER CH CLASS 180 PEAK DATA 6 66 ° @ 52 24 MS, -3 53 ° @ 130 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

PASSENGER RIGHT FOOT X-AXIS ACCELERATION



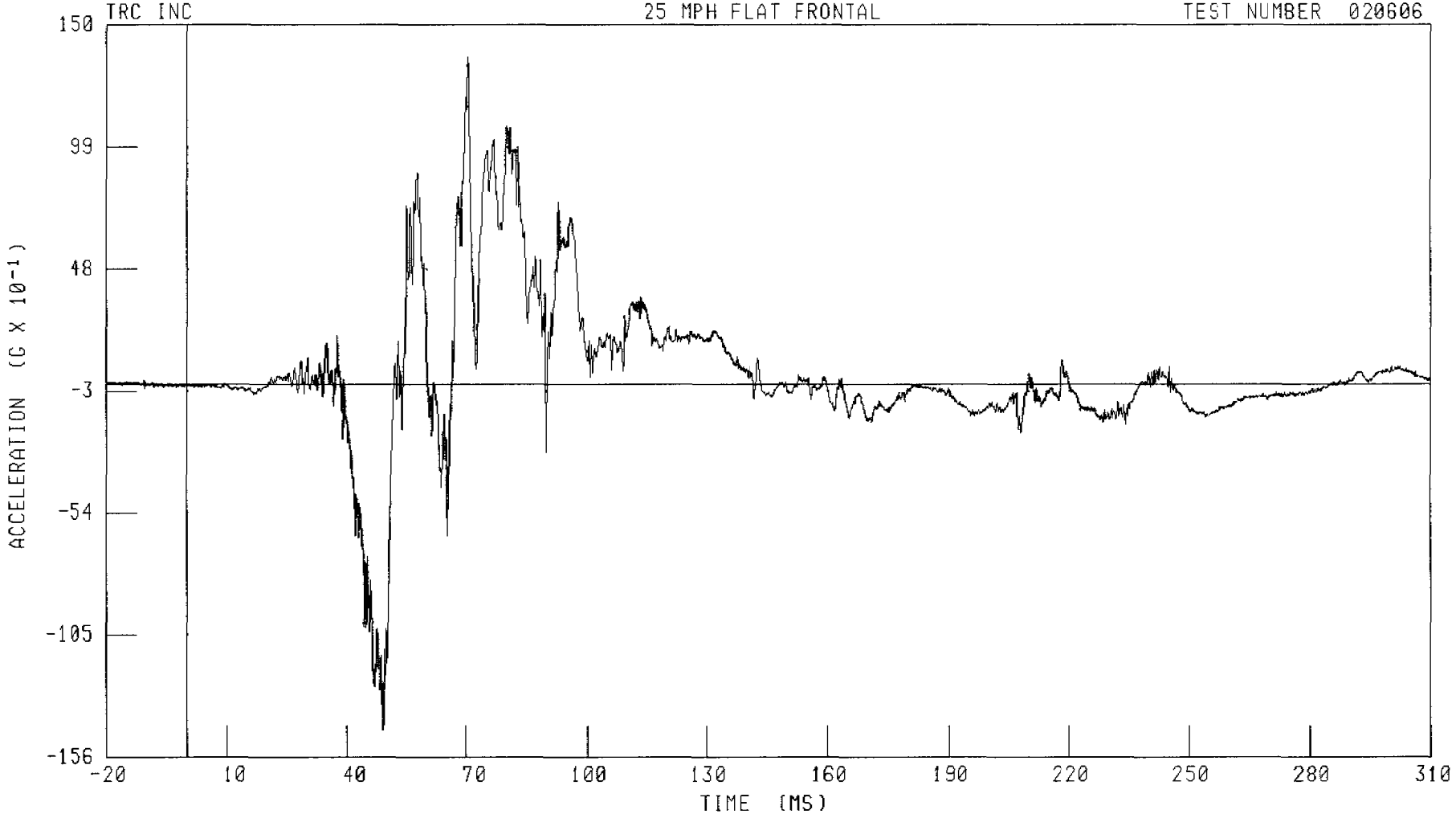
CHANNEL FTRXG2 FILTER CH CLASS 1000

PEAK DATA 5.02 G @ 95.68 MS, -52.66 G @ 65.20 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

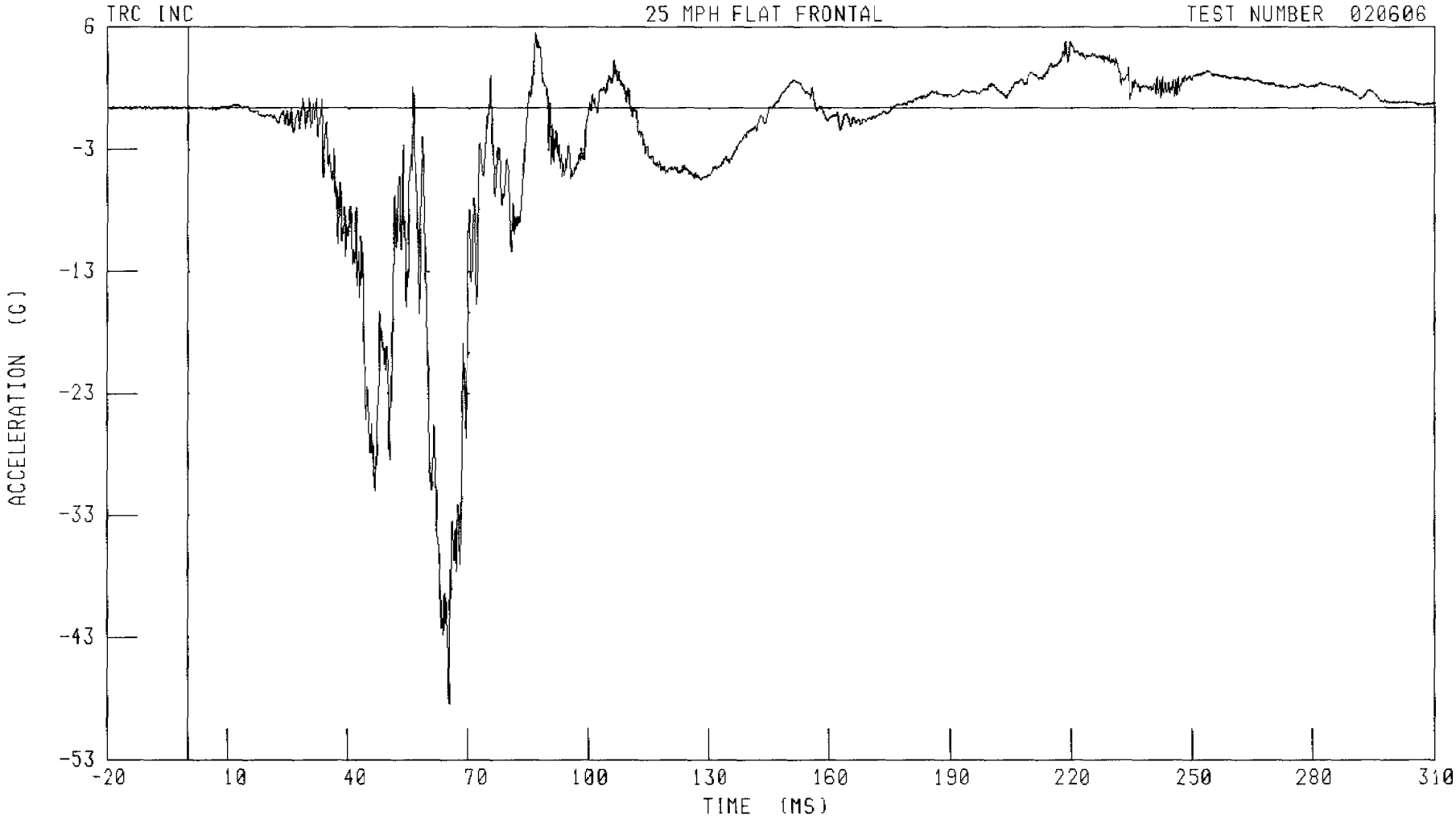
PASSENGER RIGHT FOOT Y-AXIS ACCELERATION

TRC INC 25 MPH FLAT FRONTAL TEST NUMBER 020606



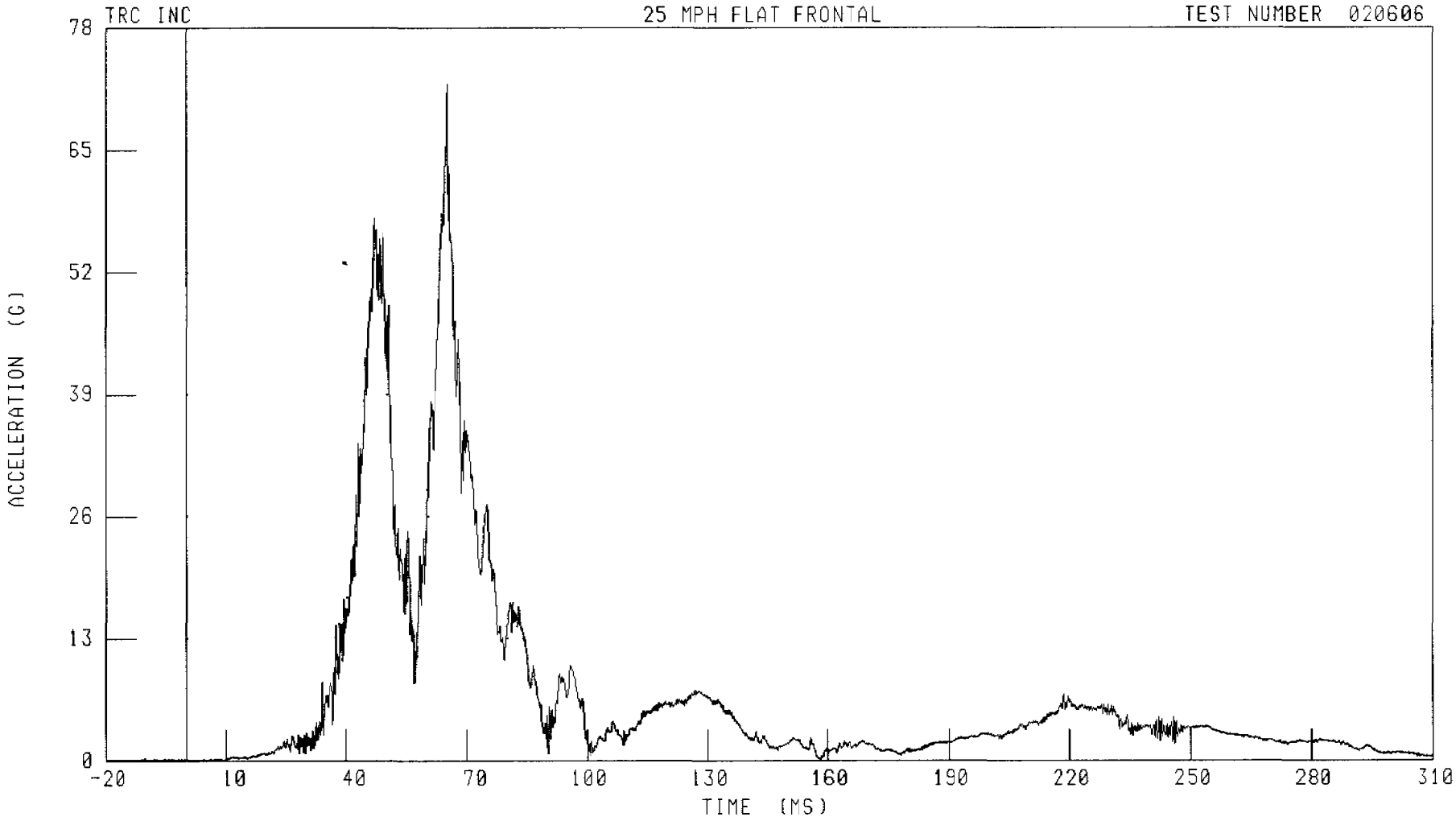
CHANNEL FTRYG2 FILTER CH CLASS 1000 PEAK DATA 13 67 G @ 70 48 MS, -14 49 G @ 49 12 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT FOOT Z-AXIS ACCELERATION



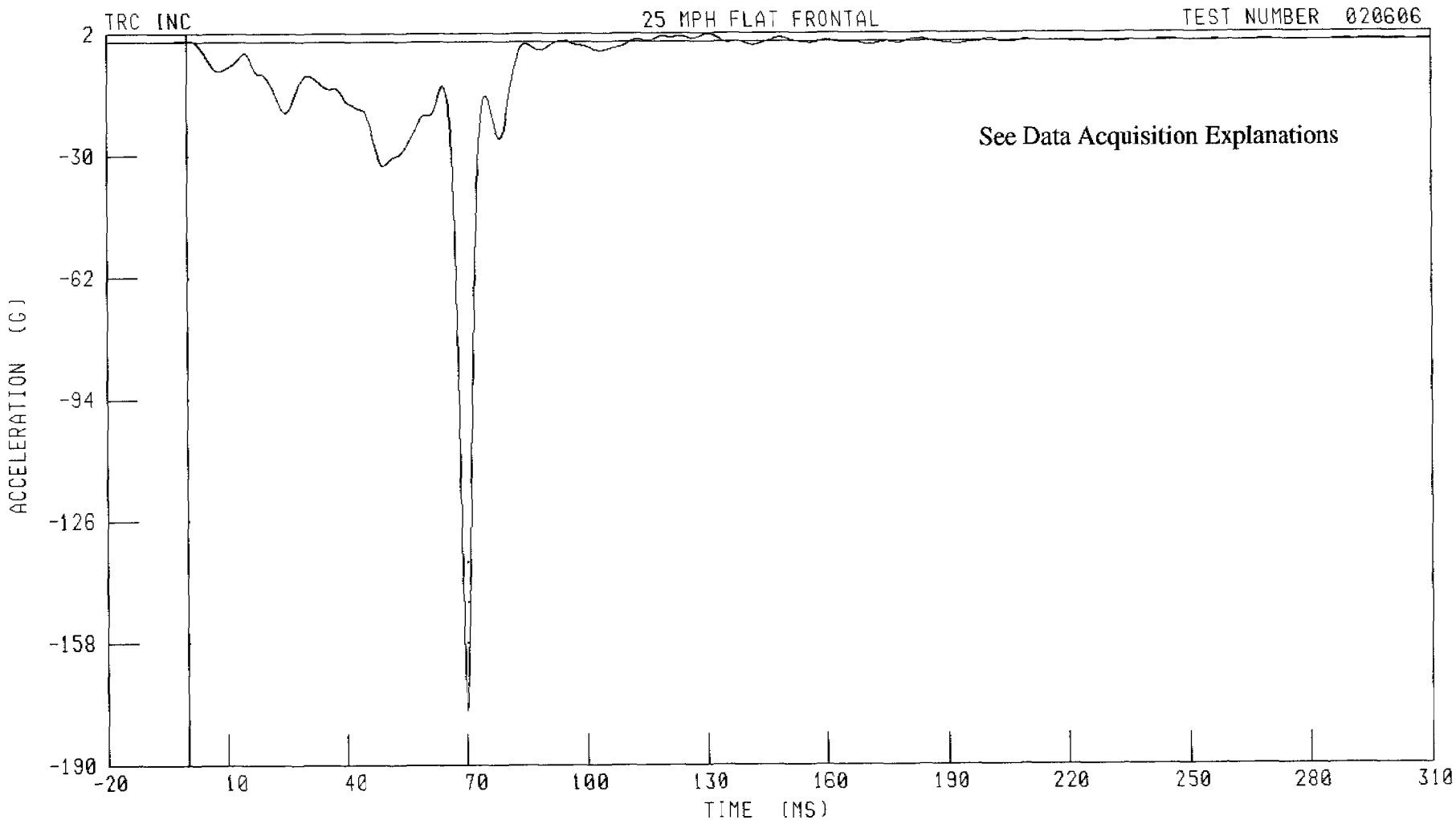
CHANNEL FTRZG2 FILTER CH CLASS 1000 PEAK DATA 6 09 G @ 86 96 MS, -48 83 G @ 65 20 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT FOOT RESULTANT ACCELERATION



CHANNEL FTRRG2 FILTER CH CLASS 1000 PEAK DATA 72 10 G @ 65 20 MS, 0 02 G @ -17 92 MS

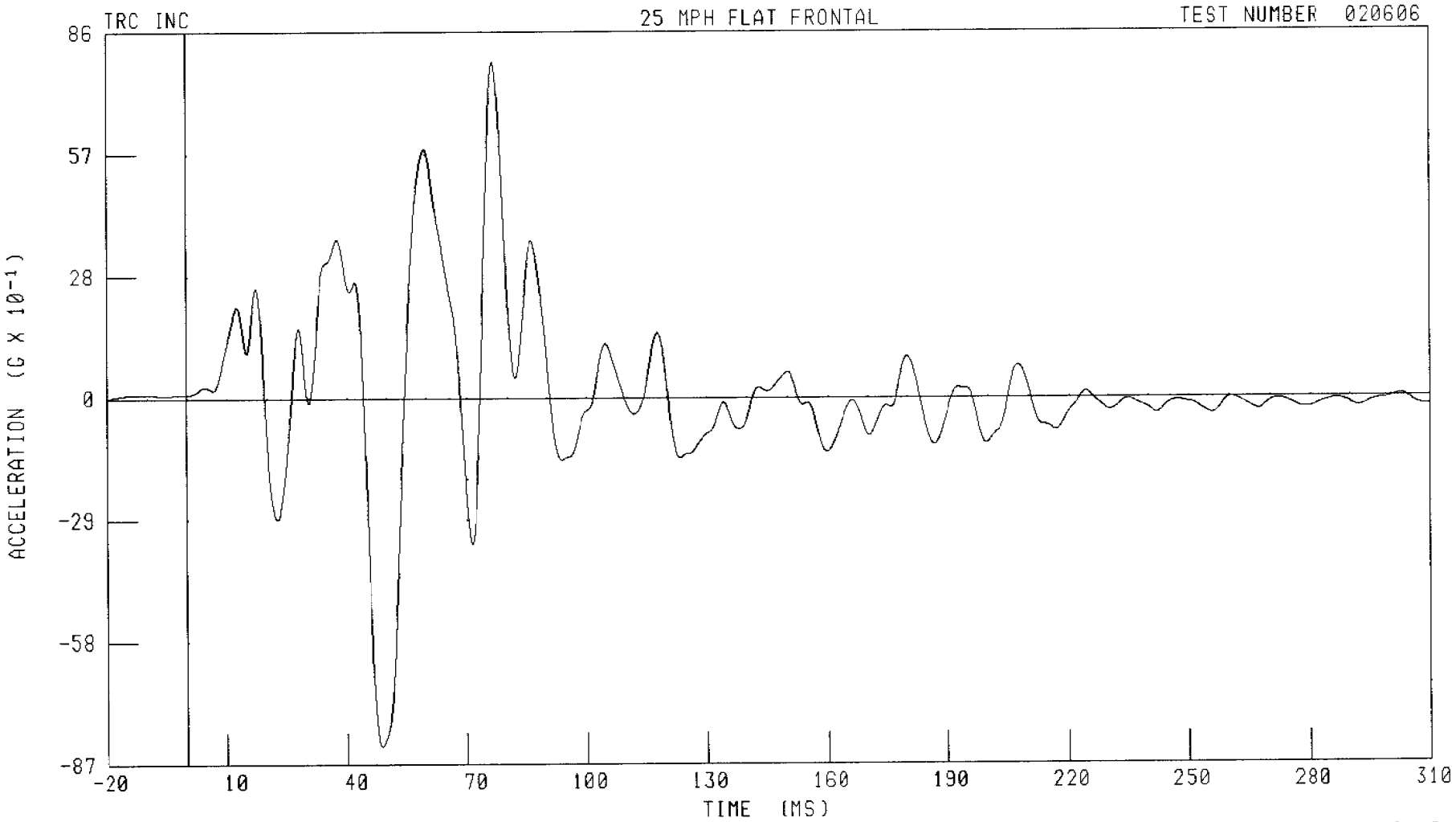
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
VEHICLE CENTER OF GRAVITY X-AXIS ACCELERATION



CHANNEL VCGXG1 FILTER CH CLASS 60

PEAK DATA 1 85 G @ 130 64 MS, -175 75 G @ 69 92 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
VEHICLE CENTER OF GRAVITY Y-AXIS ACCELERATION

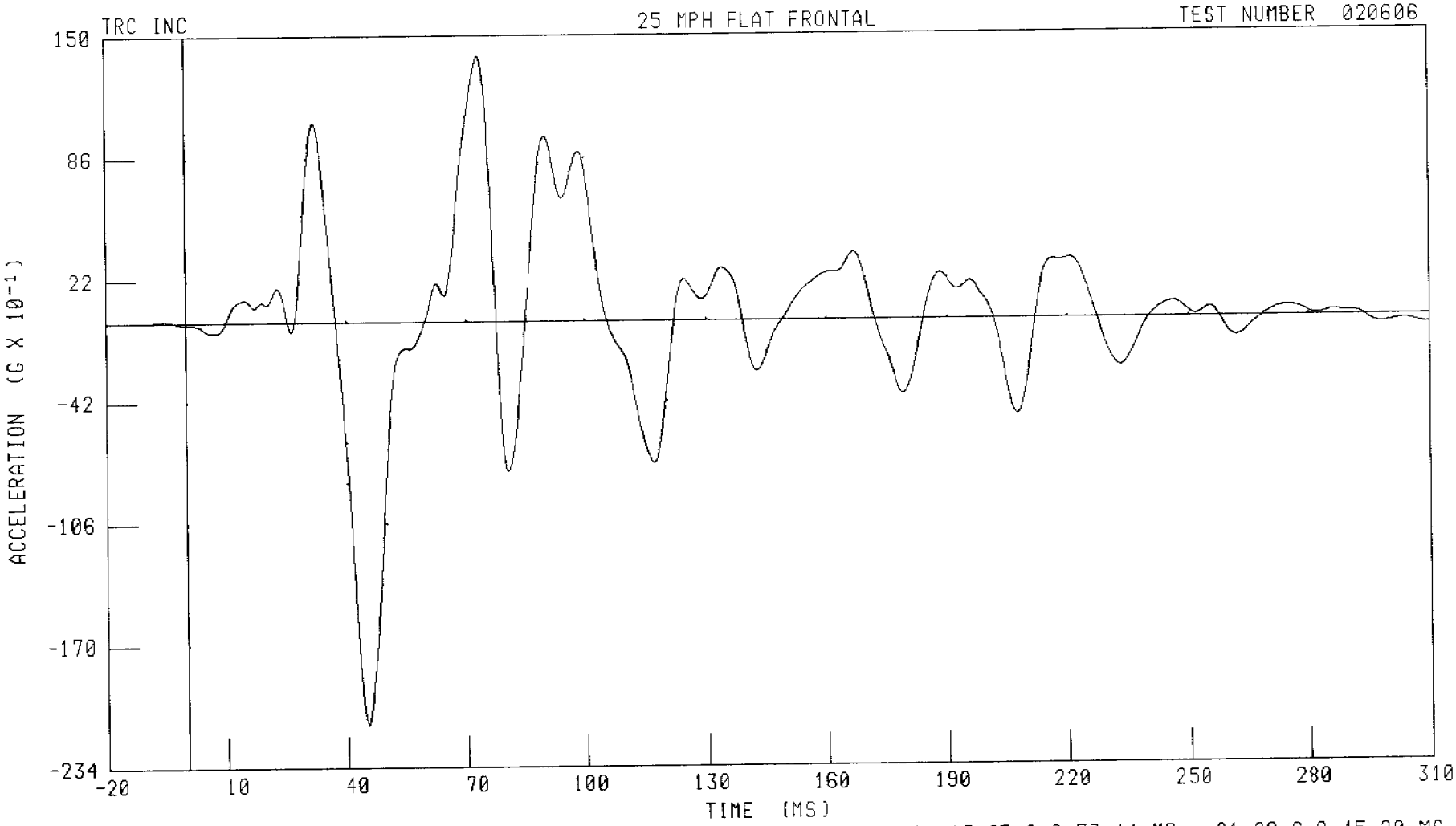


CHANNEL VCGYG1 FILTER CH CLASS 60

PEAK DATA 7 98 G @ 76 88 MS, -8 28 G @ 48 80 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

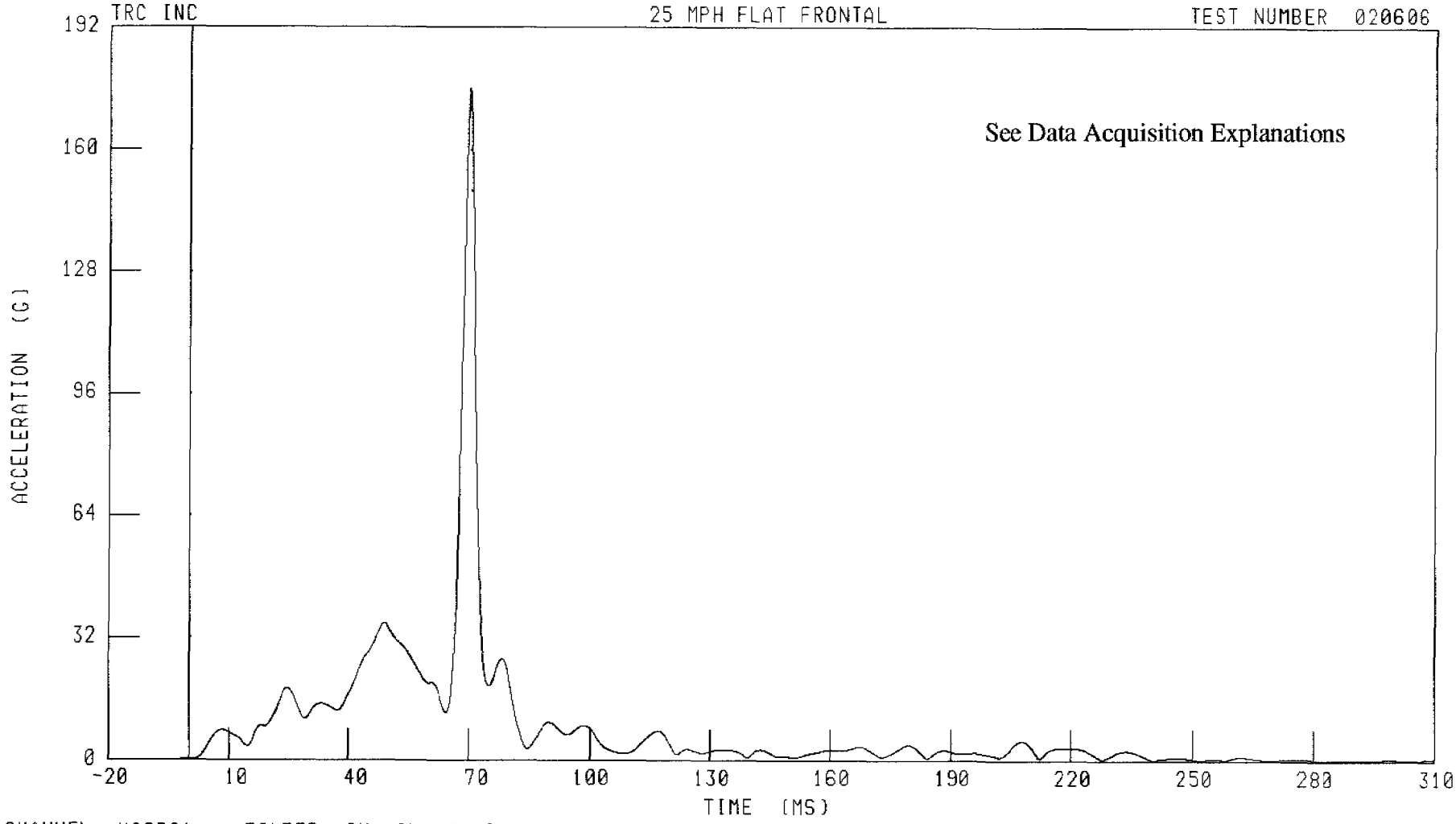
VEHICLE CENTER OF GRAVITY Z-AXIS ACCELERATION



CHANNEL VCGZG1 FILTER CH CLASS 60

PEAK DATA 13 95 G @ 73 44 MS, -21 20 G @ 45 20 MS

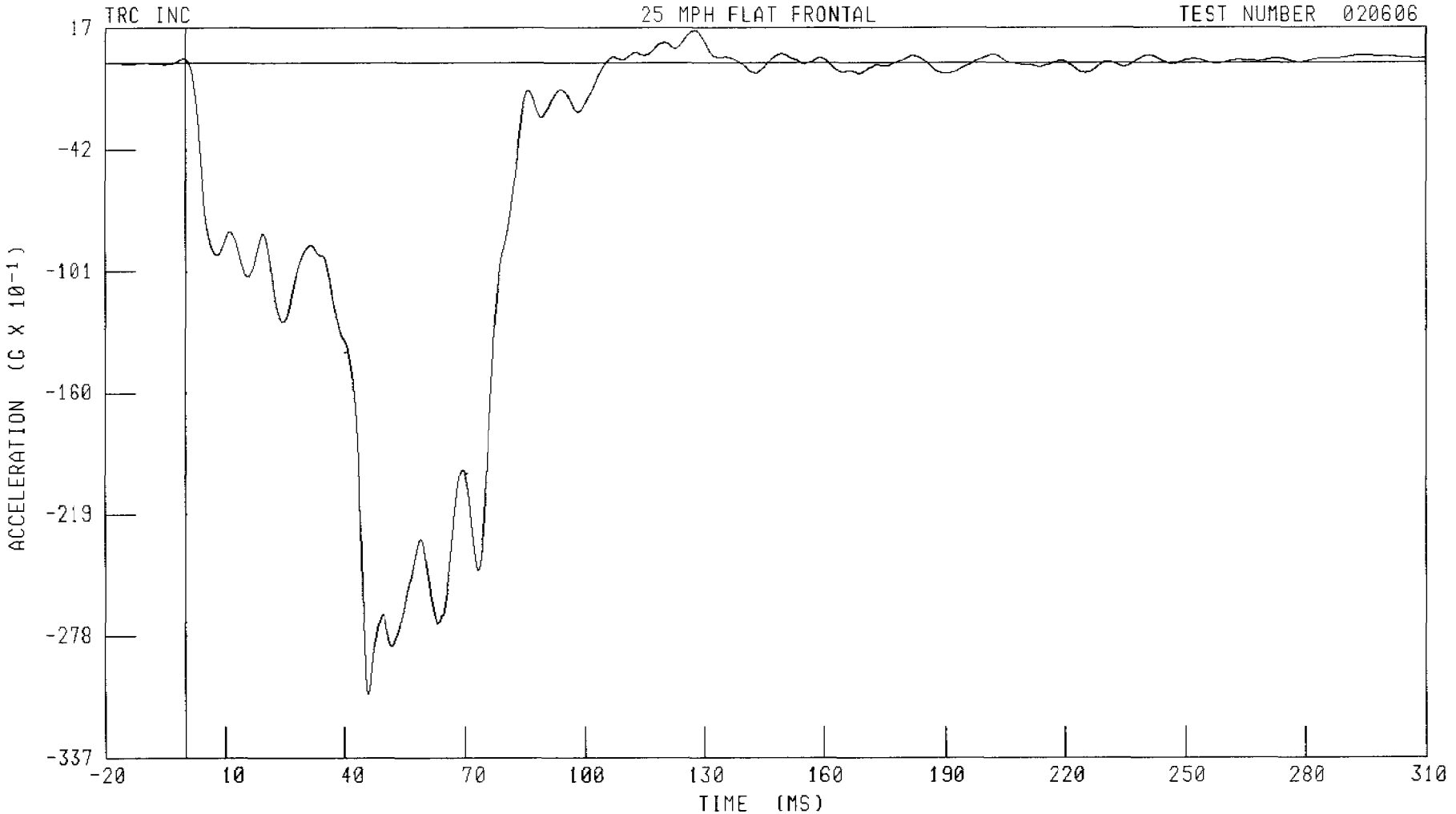
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION



CHANNEL VCGRG1 FILTER CH CLASS 60 PEAK DATA 176 05 G @ 69 92 MS, 0 01 G @ -19 60 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

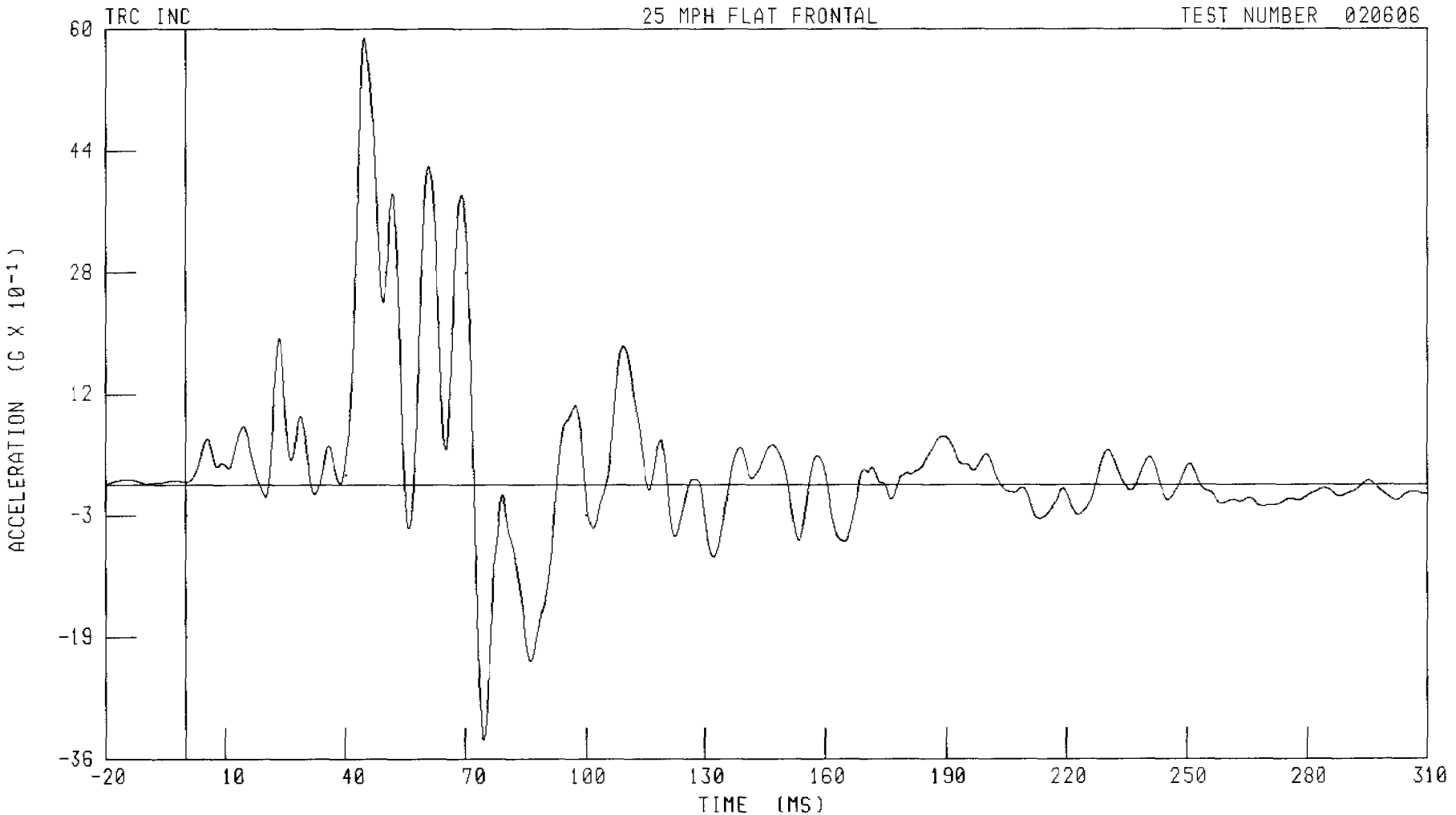
REAR DECK X-AXIS ACCELERATION



CHANNEL RDKXG1 FILTER CH CLASS 60 PEAK DATA 1 57 G @ 127 68 MS, -30 63 G @ 45 92 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

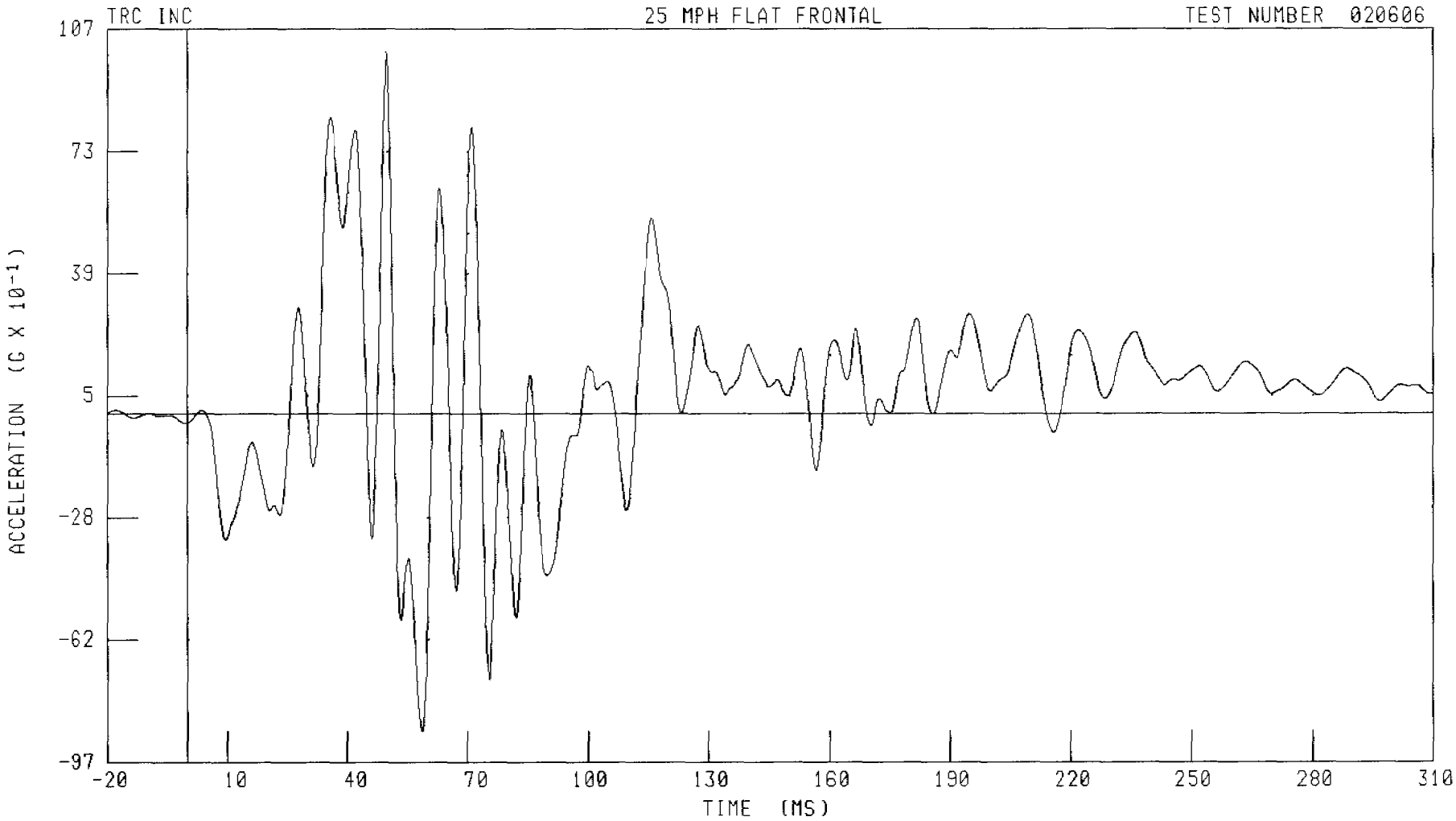
REAR DECK Y-AXIS ACCELERATION



CHANNEL RDKYG1 FILTER CH CLASS 60

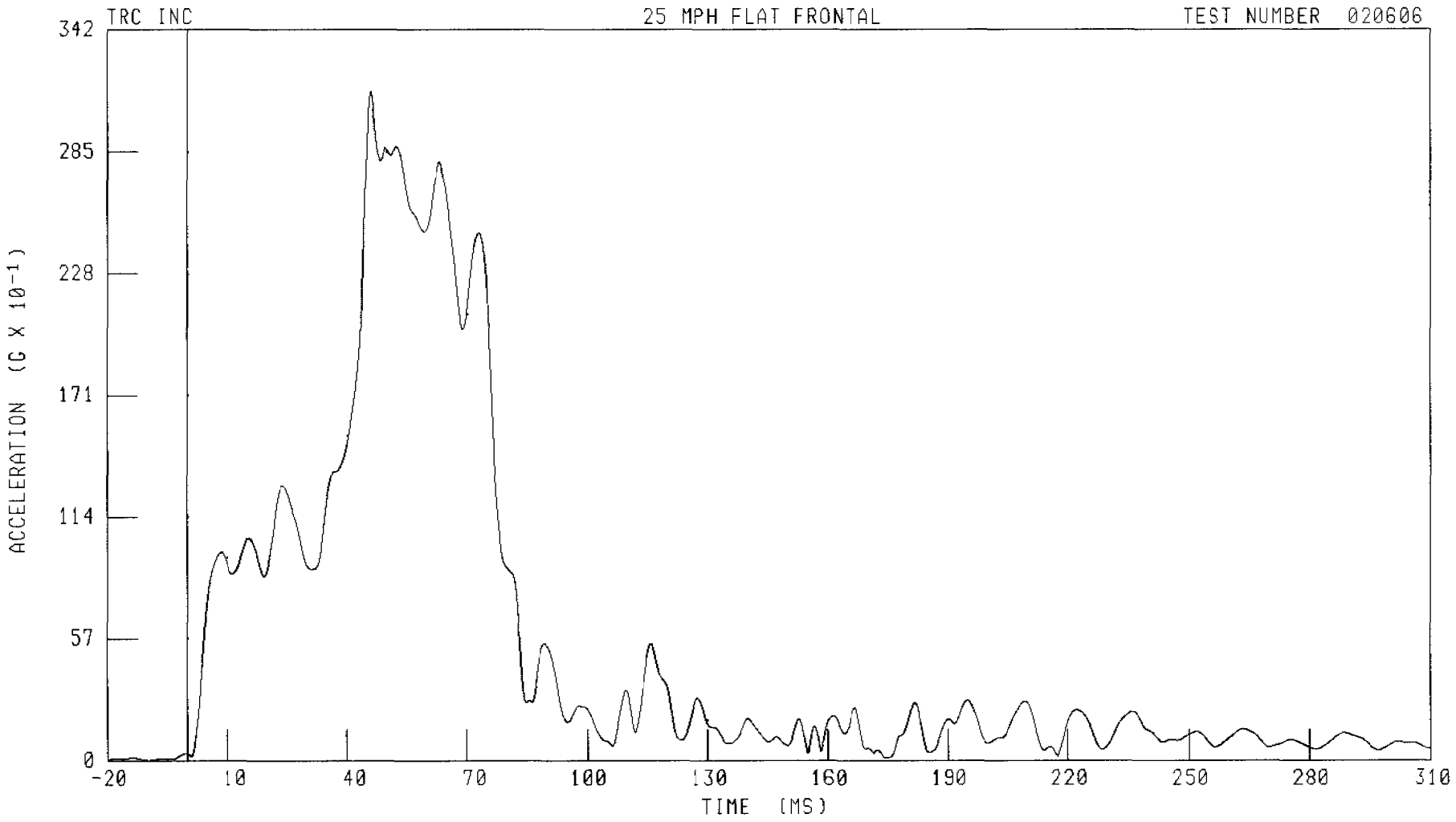
PEAK DATA 5 88 G @ 44 80 MS, -3 35 G @ 74 56 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
REAR DECK Z-AXIS ACCELERATION



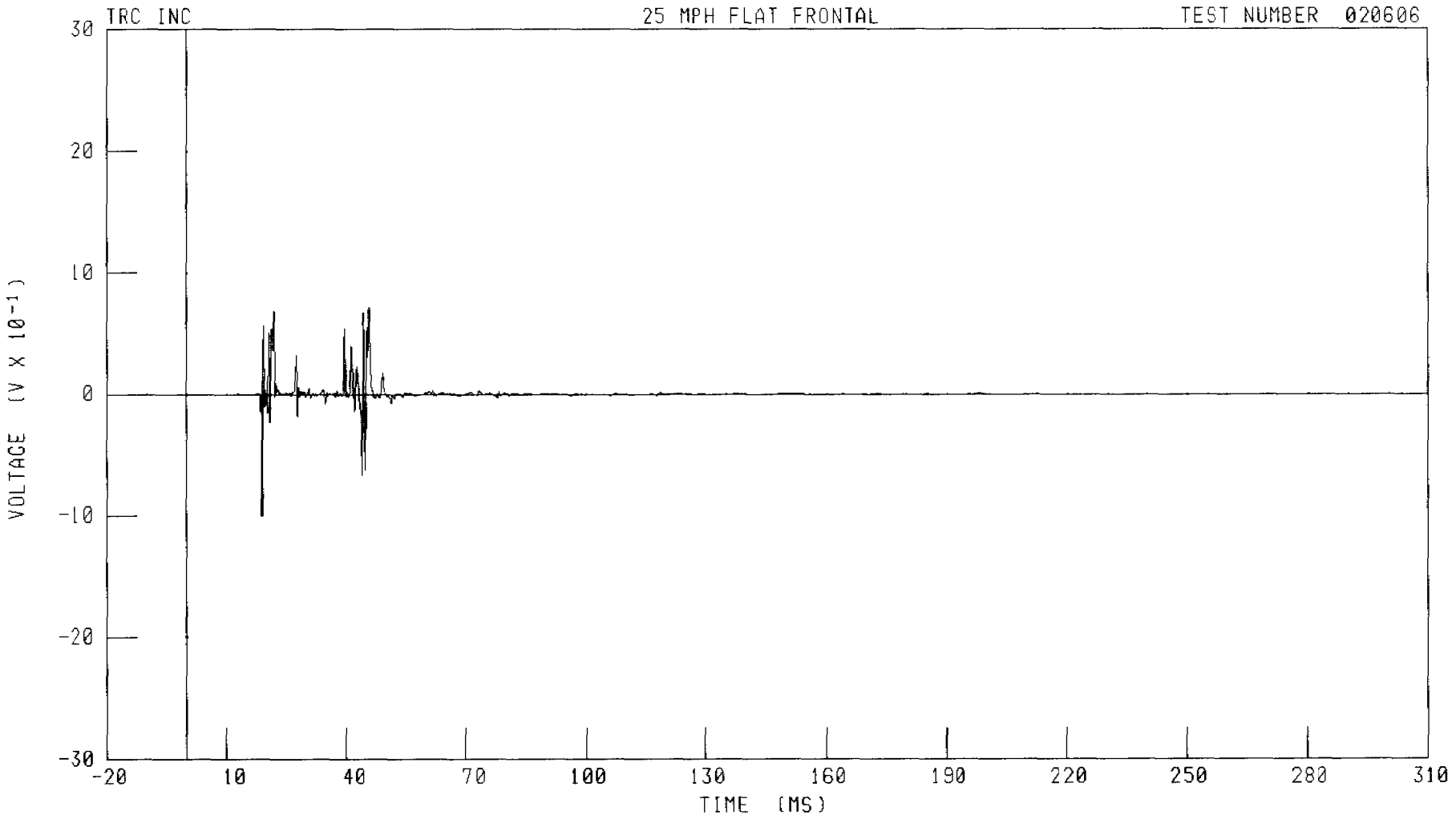
CHANNEL RDKZG1 FILTER CH CLASS 60 PEAK DATA 10 07 G @ 49 68 MS, -8 85 G @ 58 56 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
REAR DECK RESULTANT ACCELERATION



CHANNEL RDKRG1 FILTER CH CLASS 60 PEAK DATA 31 29 G @ 45 92 MS, 0 02 G @ -20 00 MS

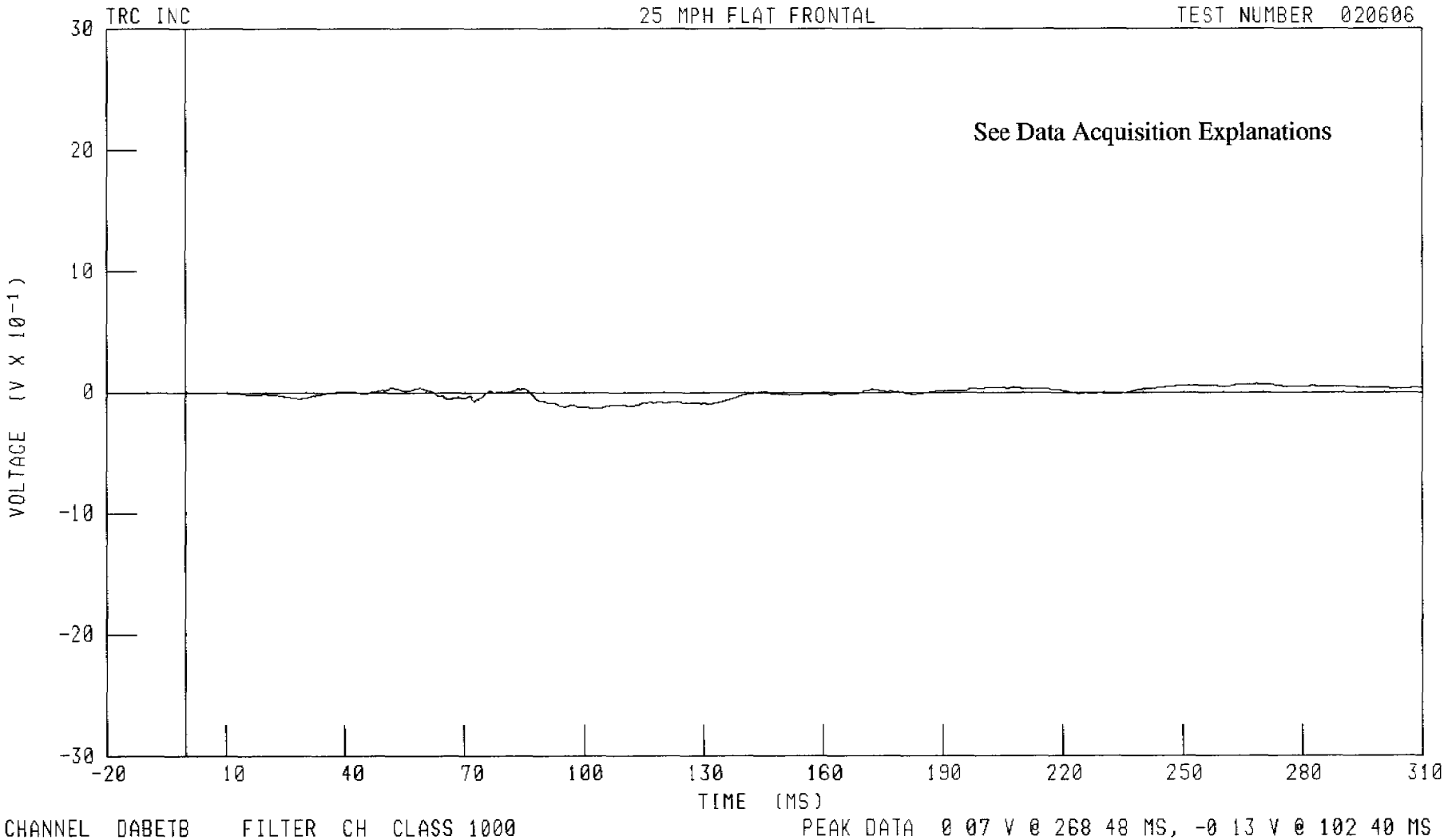
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER AIRBAG EVENT - WIRE A



CHANNEL DABETA FILTER CH CLASS 1000

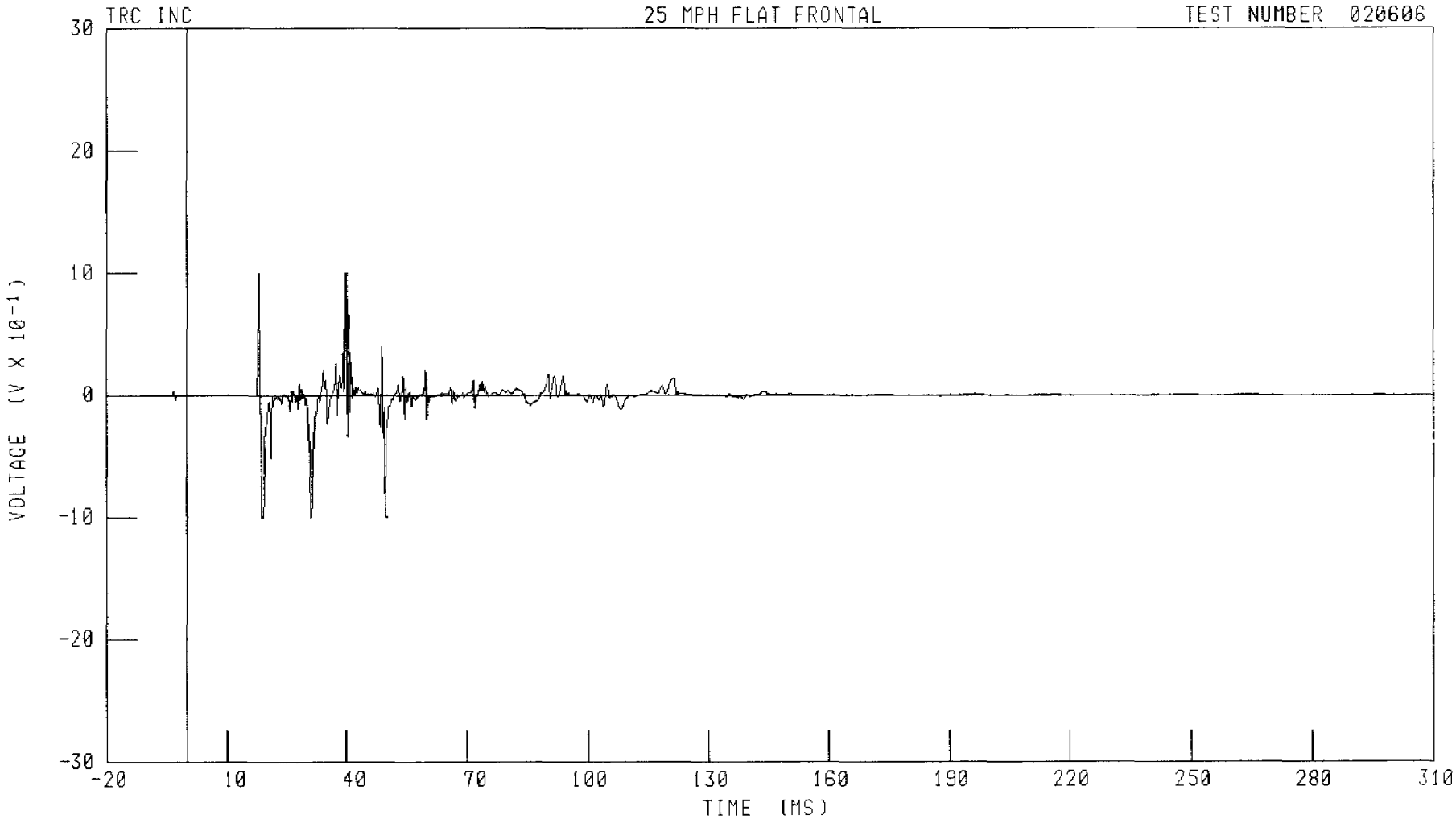
PEAK DATA 0 71 V @ 45 68 MS, -1 00 V @ 18 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER AIRBAG EVENT - WIRE B



CHANNEL DABETB FILTER CH CLASS 1000 PEAK DATA 0 07 V @ 268 48 MS, -0 13 V @ 102 40 MS

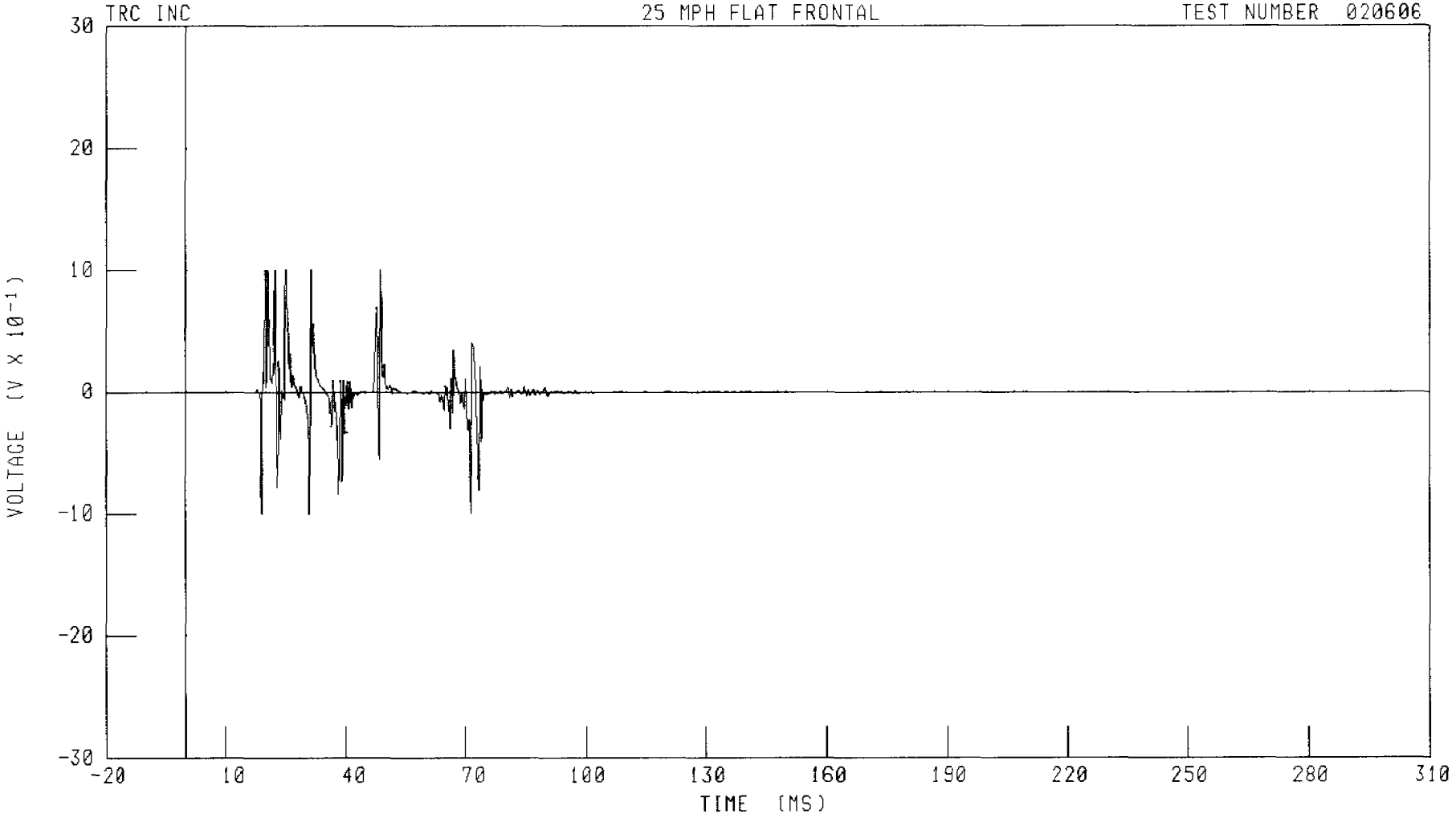
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER AIRBAG EVENT - WIRE A



CHANNEL PABETA FILTER CH CLASS 1000

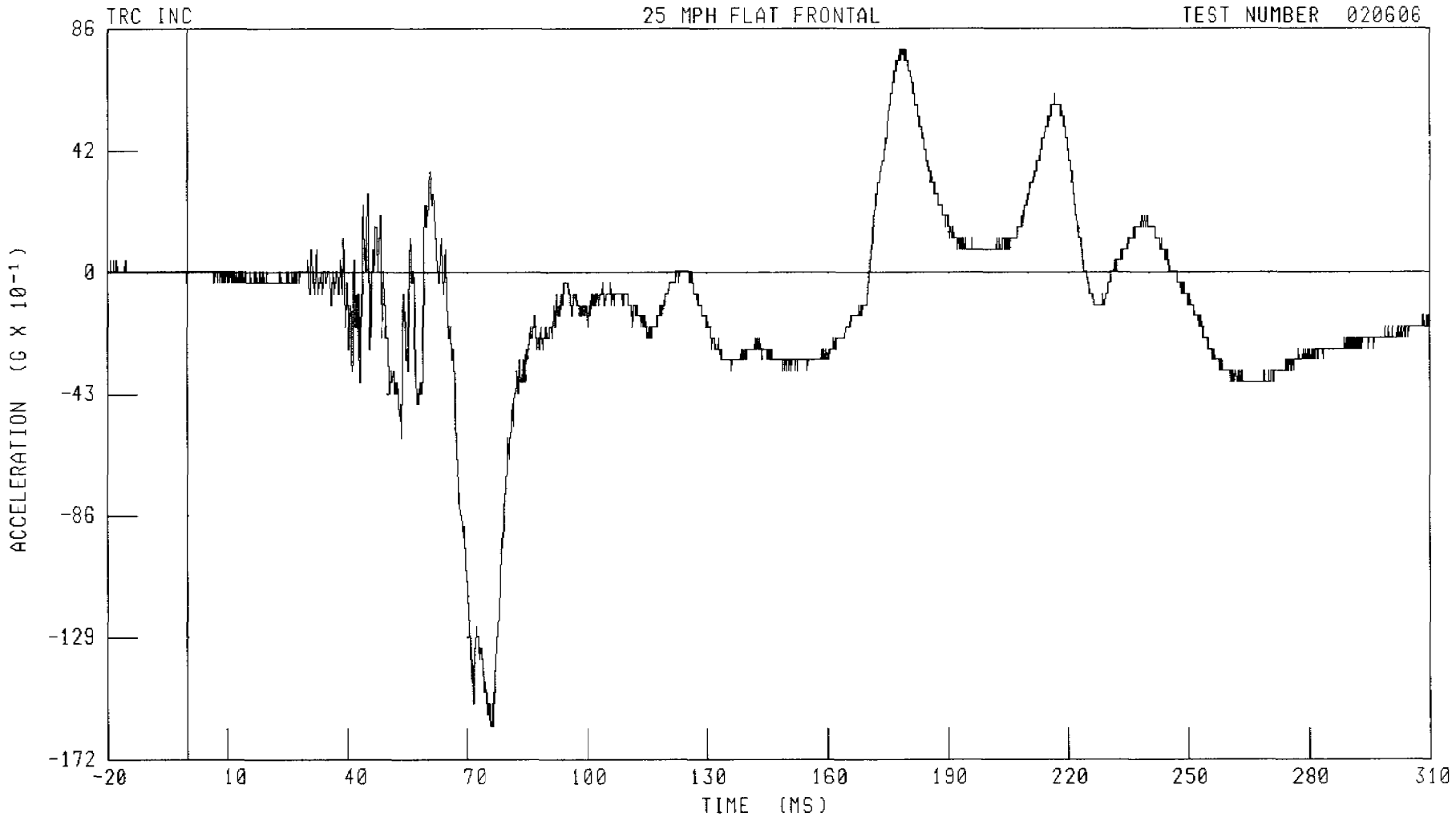
PEAK DATA 1 00 V @ 17 92 MS, -1 00 V @ 18 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER AIRBAG EVENT - WIRE B



CHANNEL PABETB FILTER CH CLASS 1000 PEAK DATA 1 00 V @ 19 84 MS, -1 00 V @ 18 96 MS

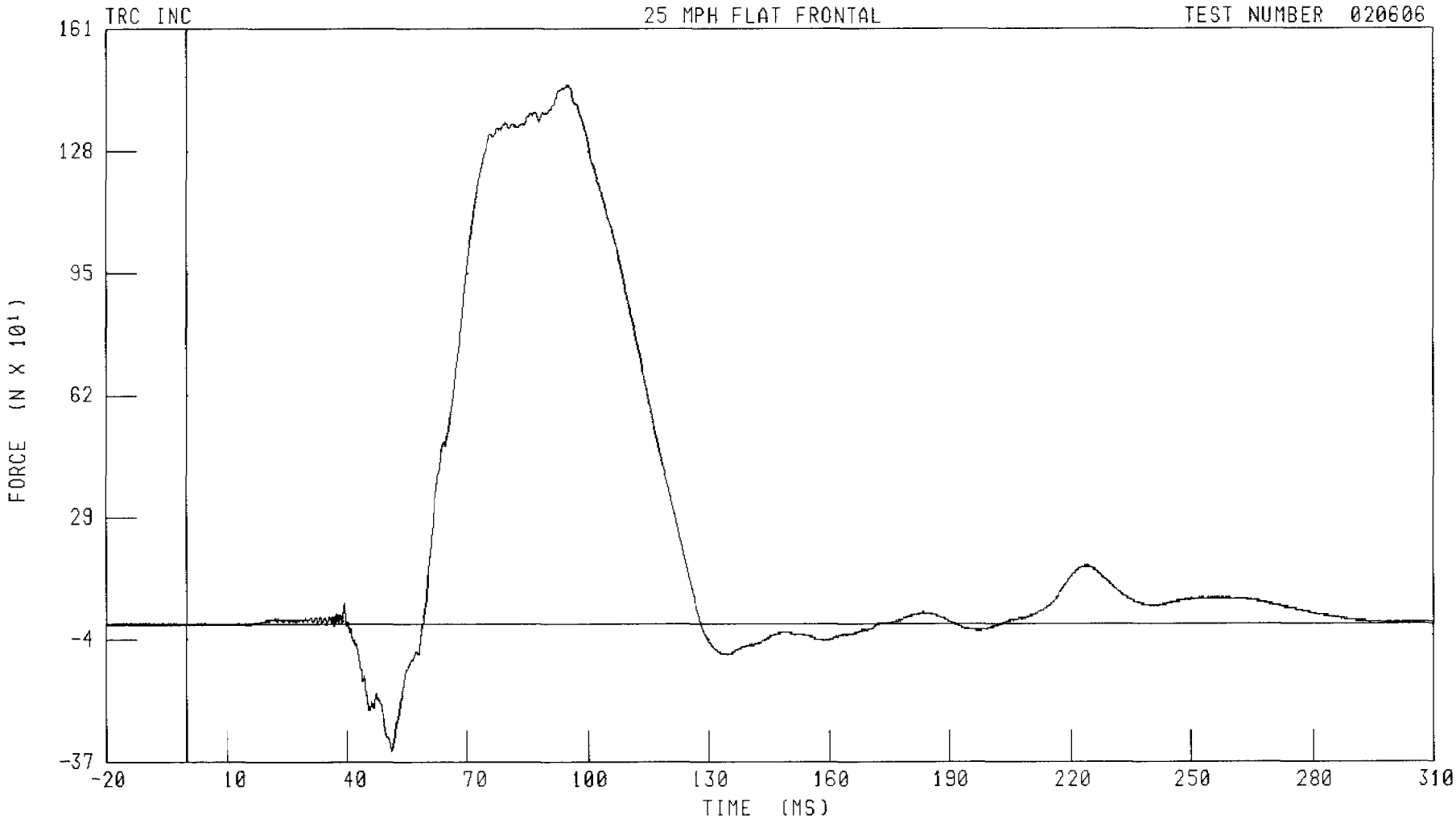
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER HEAD Y-AXIS (TP) ACCELERATION



CHANNEL HD3YG2 FILTER CH CLASS 1000 PEAK DATA 7 88 G @ 178 00 MS, -16 02 G @ 75 92 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

PASSENGER NECK X-AXIS SHEAR FORCE

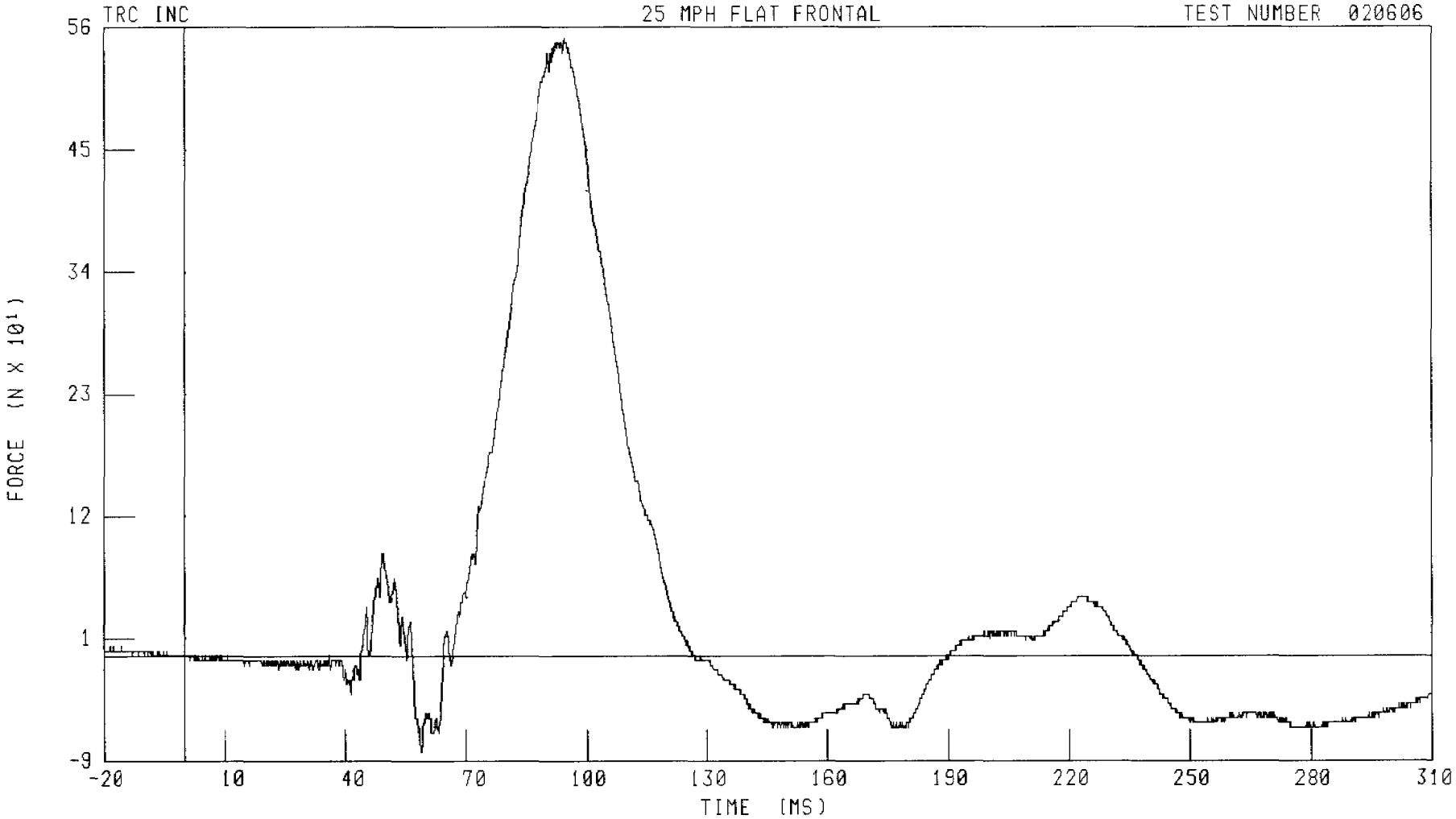


CHANNEL NEKXF2 FILTER CH CLASS 1000

PEAK DATA 1459 10 N @ 94 88 MS, -343 47 N @ 51 04 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

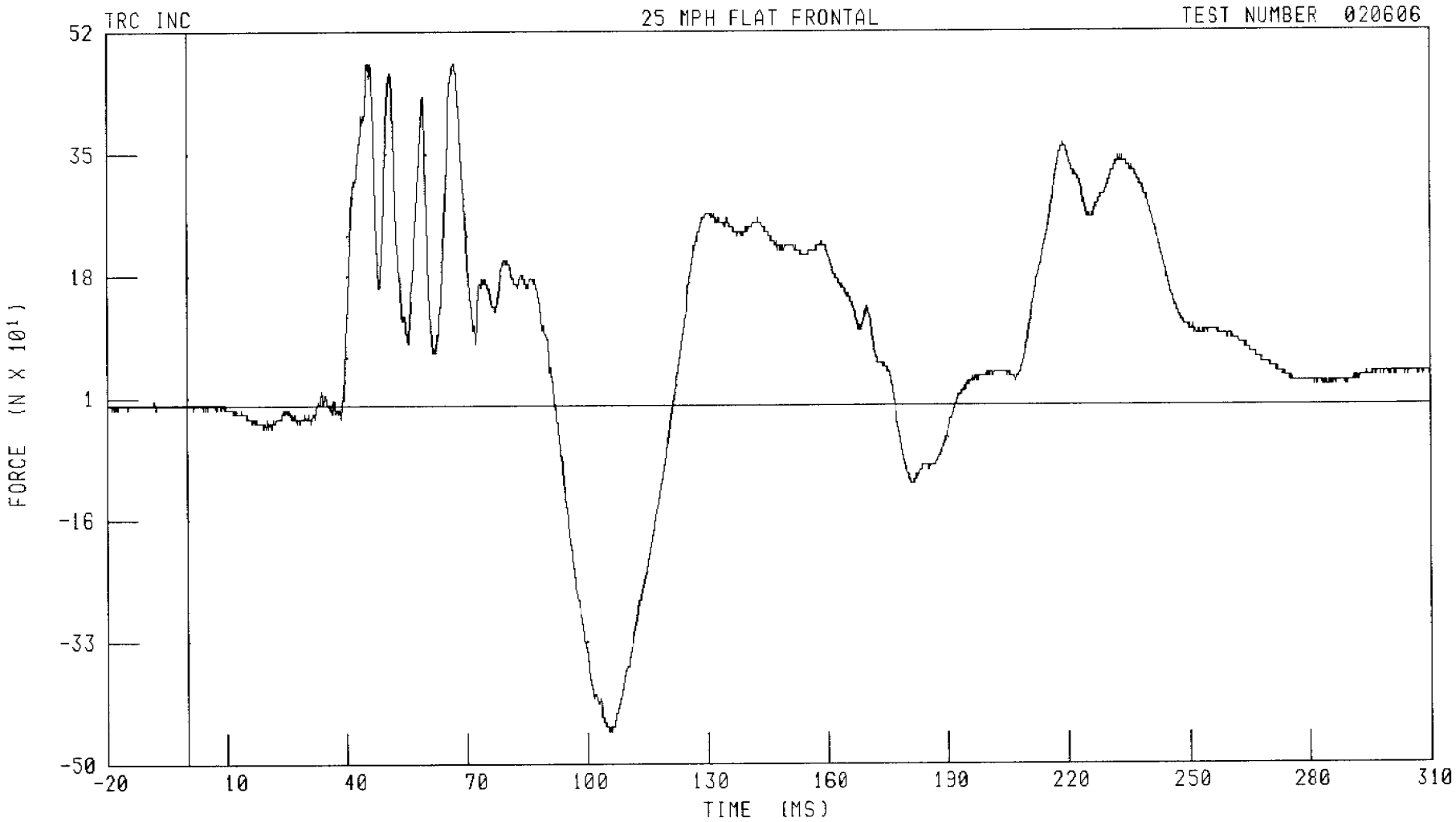
PASSENGER NECK Y-AXIS SHEAR FORCE



CHANNEL NEKYF2 FILTER CH CLASS 1000

PEAK DATA 556 28 N @ 94 72 MS, -86 13 N @ 58 80 MS

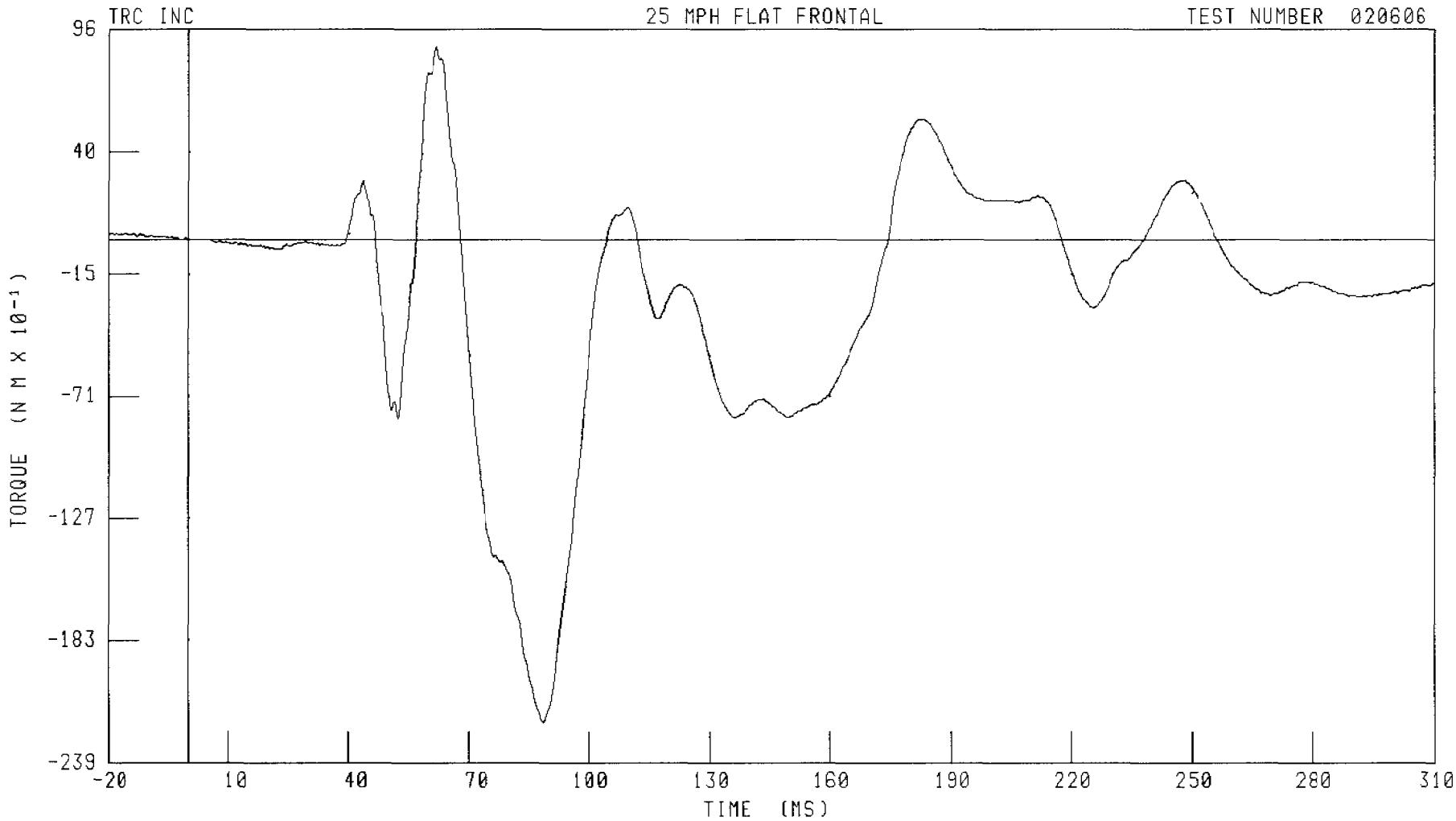
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK Z-AXIS AXIAL FORCE



CHANNEL NEKZF2 FILTER CH CLASS 1000

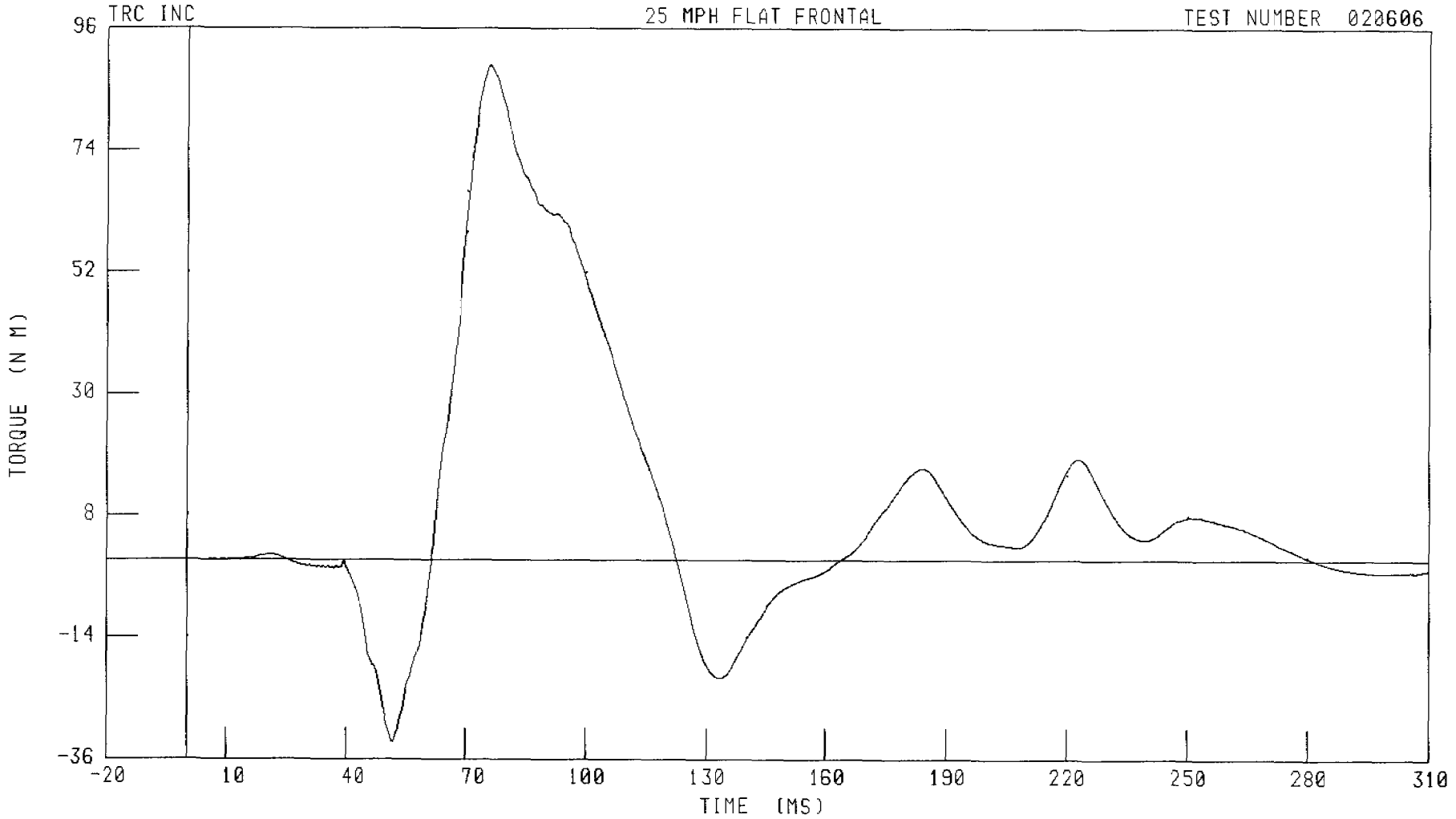
PEAK DATA 475 84 N @ 45 12 MS, -455 57 N @ 105 52 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK MOMENT ABOUT X AXIS



CHANNEL NEKXM2 FILTER CH CLASS 600 PEAK DATA 8 79 N M @ 61 92 MS, -22 14 N M @ 88 72 MS

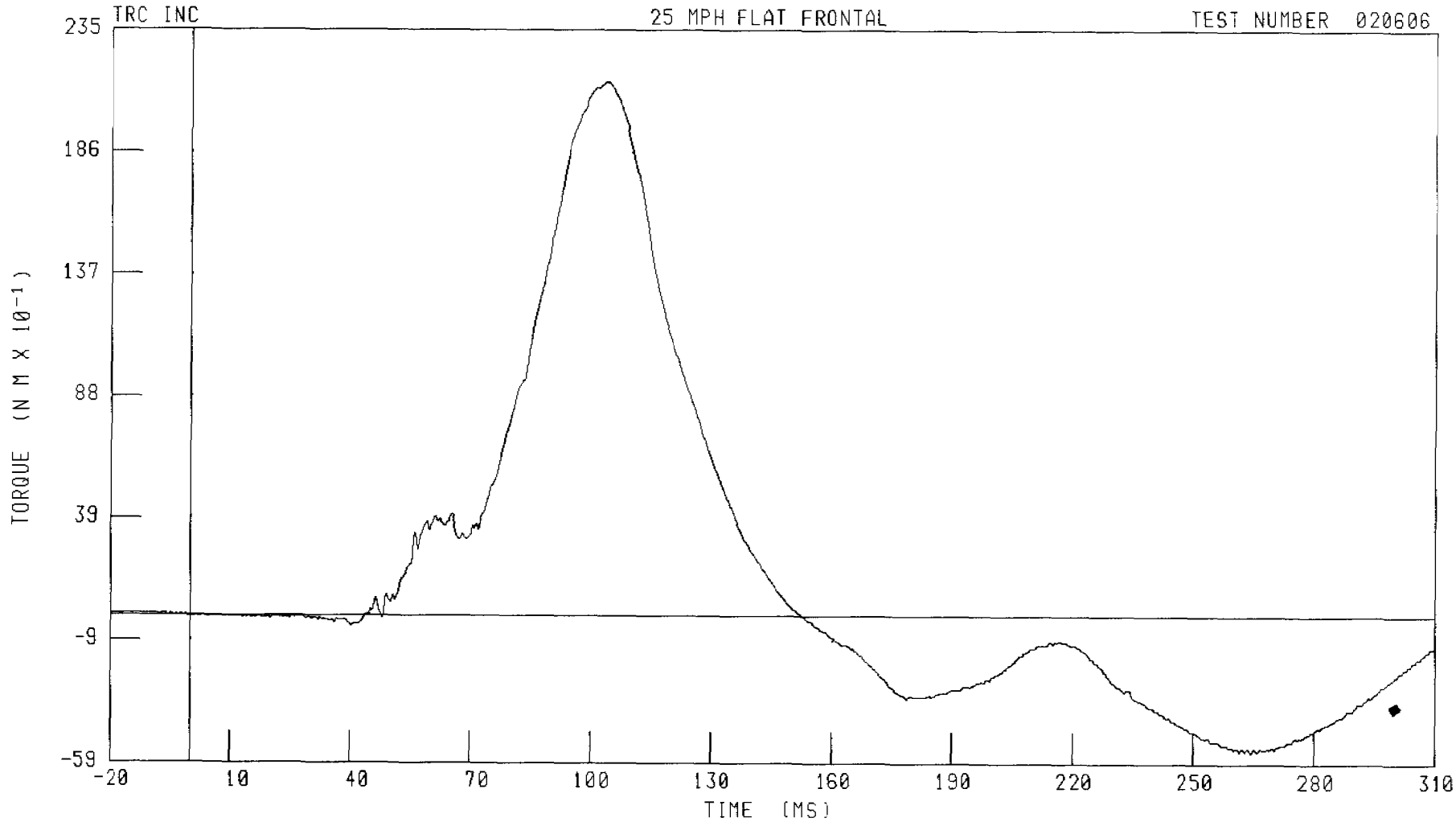
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK MOMENT ABOUT Y AXIS



CHANNEL NEKYM2 FILTER CH CLASS 600

PEAK DATA 89 29 N M @ 75 84 MS, -32 86 N M @ 51 36 MS

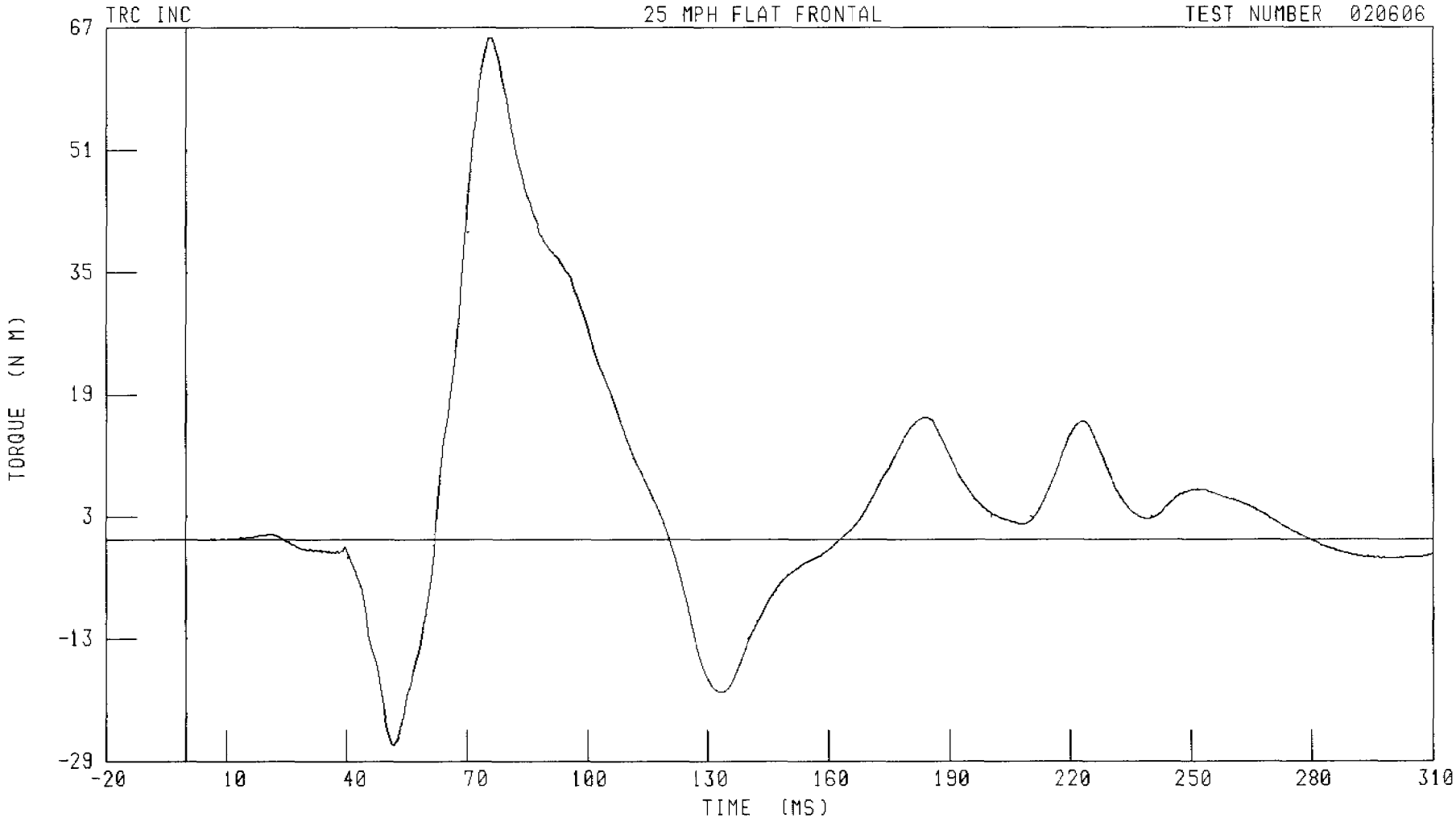
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK MOMENT ABOUT Z AXIS



CHANNEL NEKZM2 FILTER CH CLASS 600

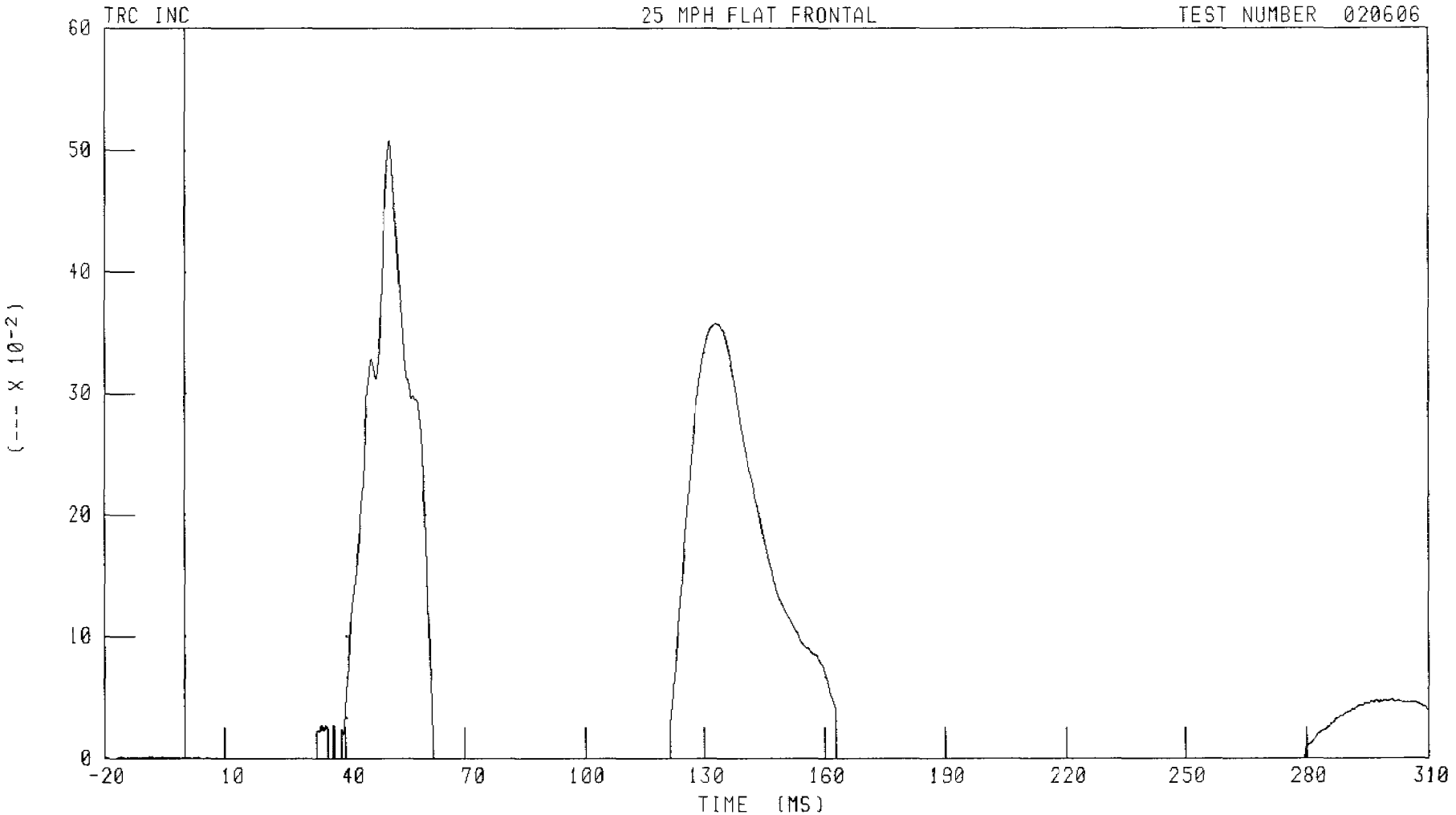
PEAK DATA 21 44 N M @ 103 68 MS, -5 45 N M @ 264 32 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK OCCIPITAL CONDYLE MOMENT ABOUT Y AXIS



CHANNEL NEKOM2 FILTER CH CLASS 600 PEAK DATA 65 73 N M @ 75 76 MS, -26 90 N M @ 51 44 MS

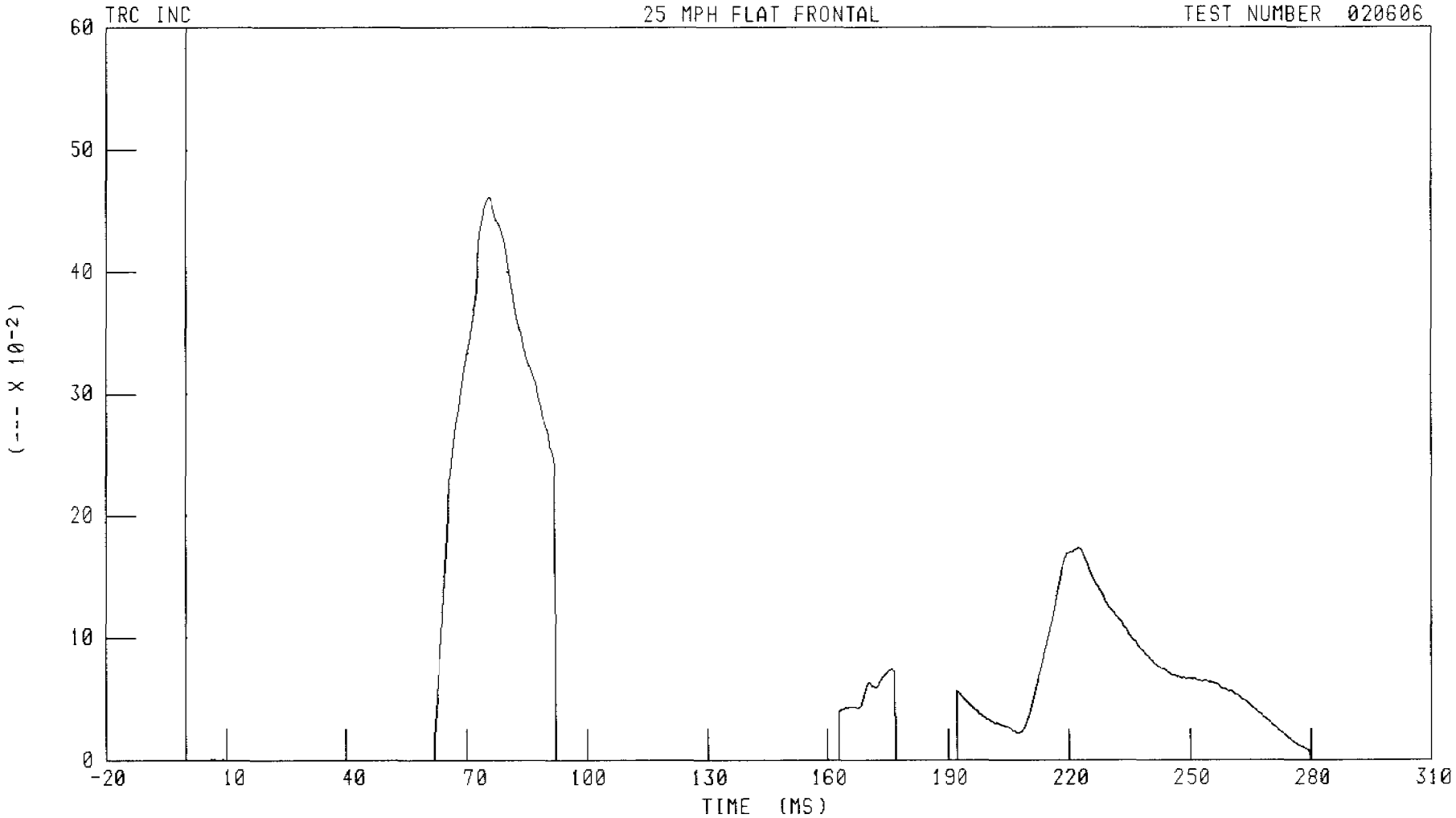
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NIJ TENSION/EXTENSION



CHANNEL NTE2 FILTER CH CLASS 600 PEAK DATA 0 51 --- @ 51 28 MS, 0 00 --- @ -19 04 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

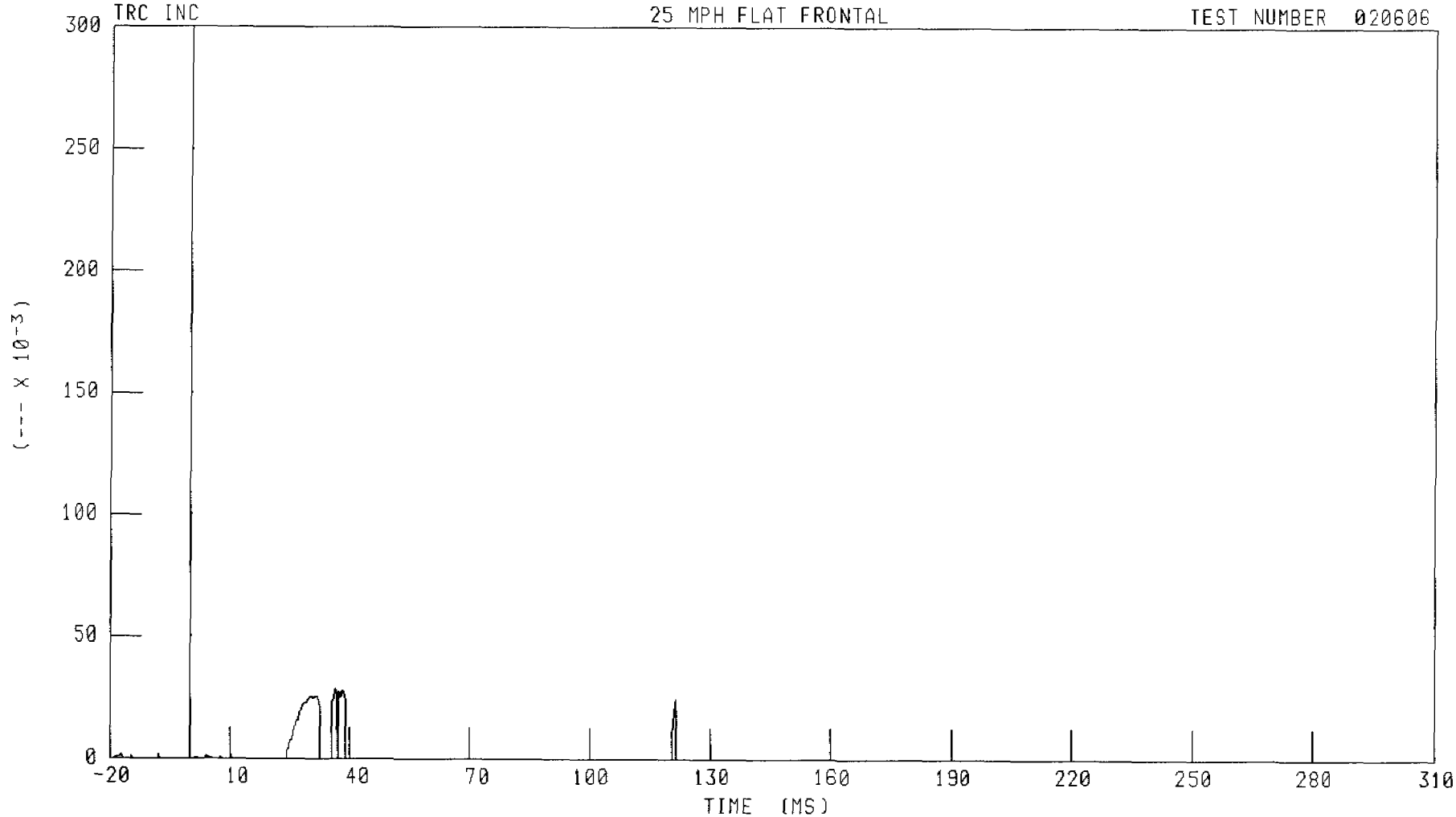
PASSENGER NIJ TENSION/FLEXION



CHANNEL NTF2 FILTER CH CLASS 600

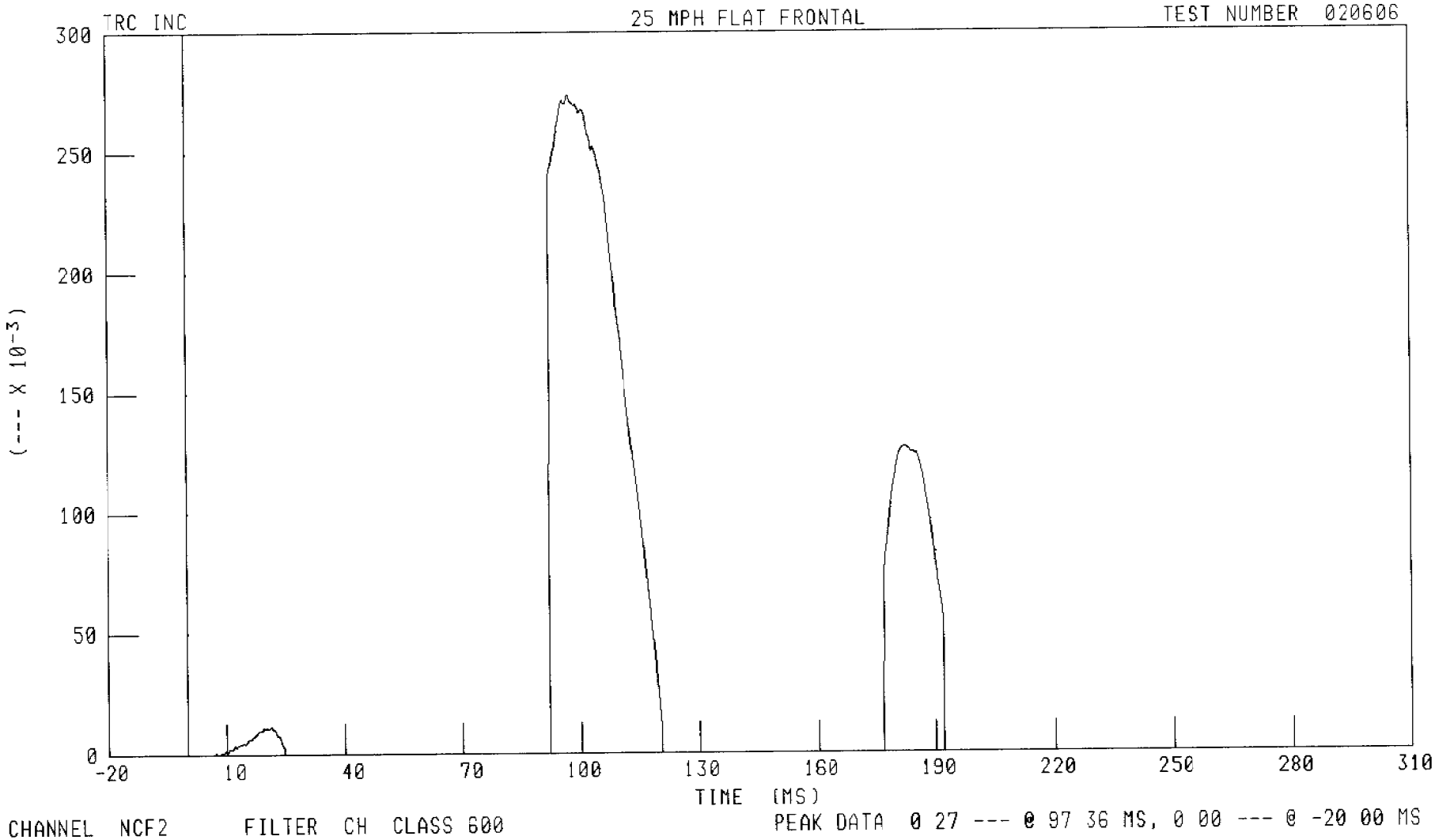
PEAK DATA 0 46 --- @ 75 52 MS, 0 00 --- @ -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NIJ COMPRESSION/EXTENSION



CHANNEL NCE2 FILTER CH CLASS 600
PEAK DATA 0 03 --- @ 36 32 MS, 0 00 --- @ -20 00 MS

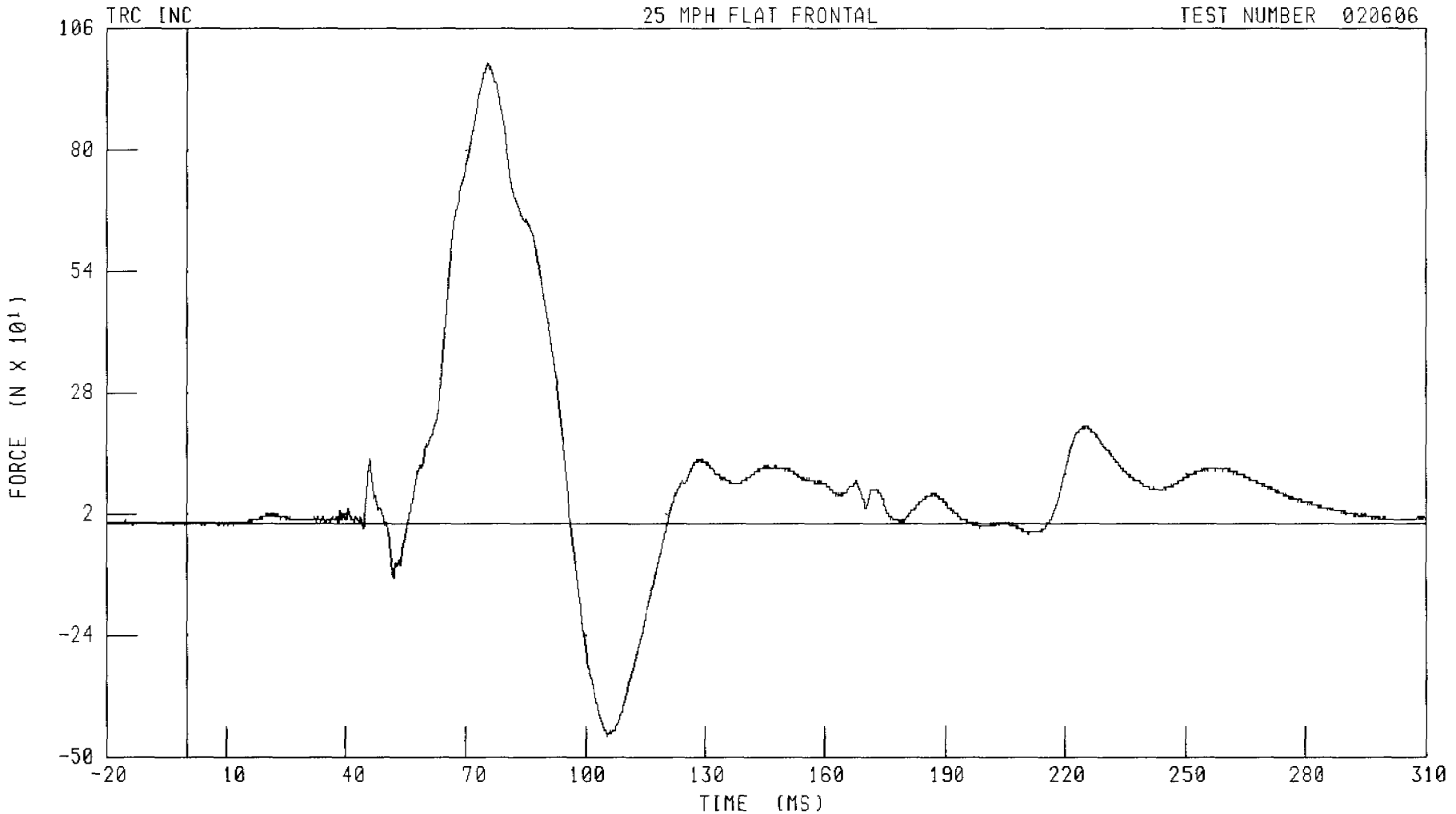
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NIJ COMPRESSION/FLEXION
25 MPH FLAT FRONTAL



CHANNEL NCF2 FILTER CH CLASS 600

PEAK DATA 0 27 --- 0 97 36 MS, 0 00 --- 0 -20 00 MS

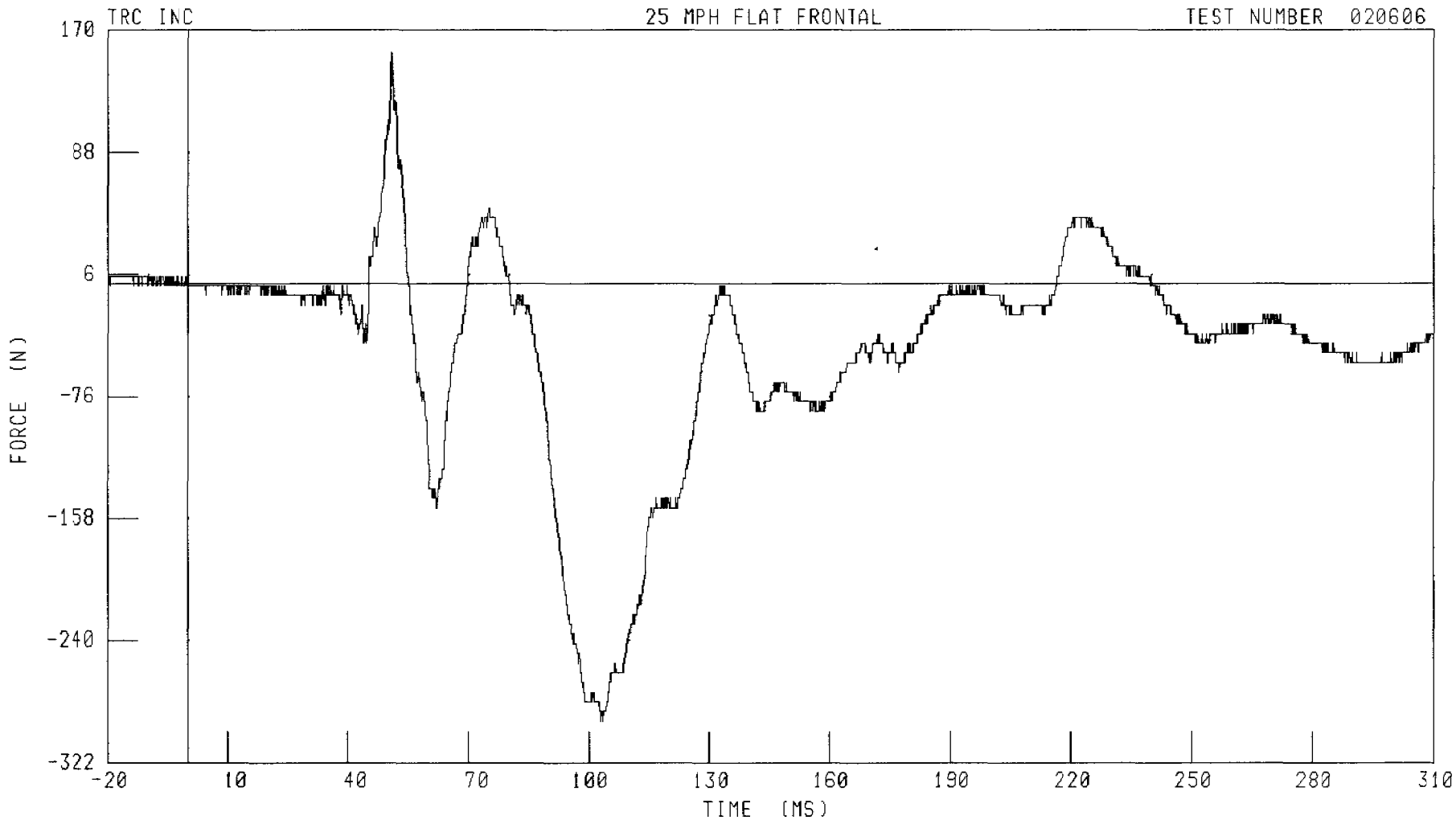
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK LOWER X-AXIS SHEAR FORCE



CHANNEL NKLXF2 FILTER CH CLASS 1000

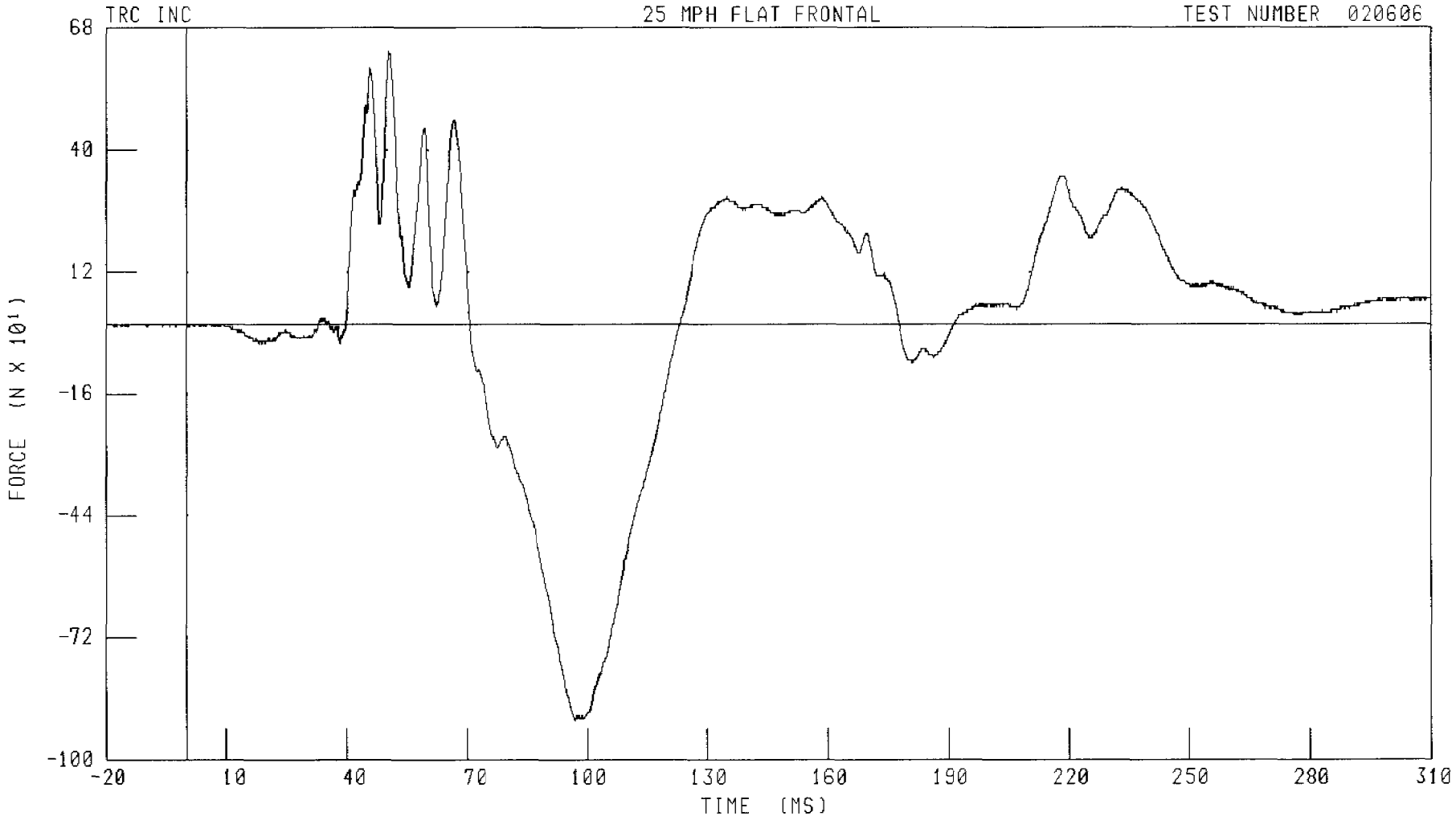
PEAK DATA 985 10 N @ 75 28 MS, -455 29 N @ 105 44 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK LOWER Y-AXIS SHEAR FORCE



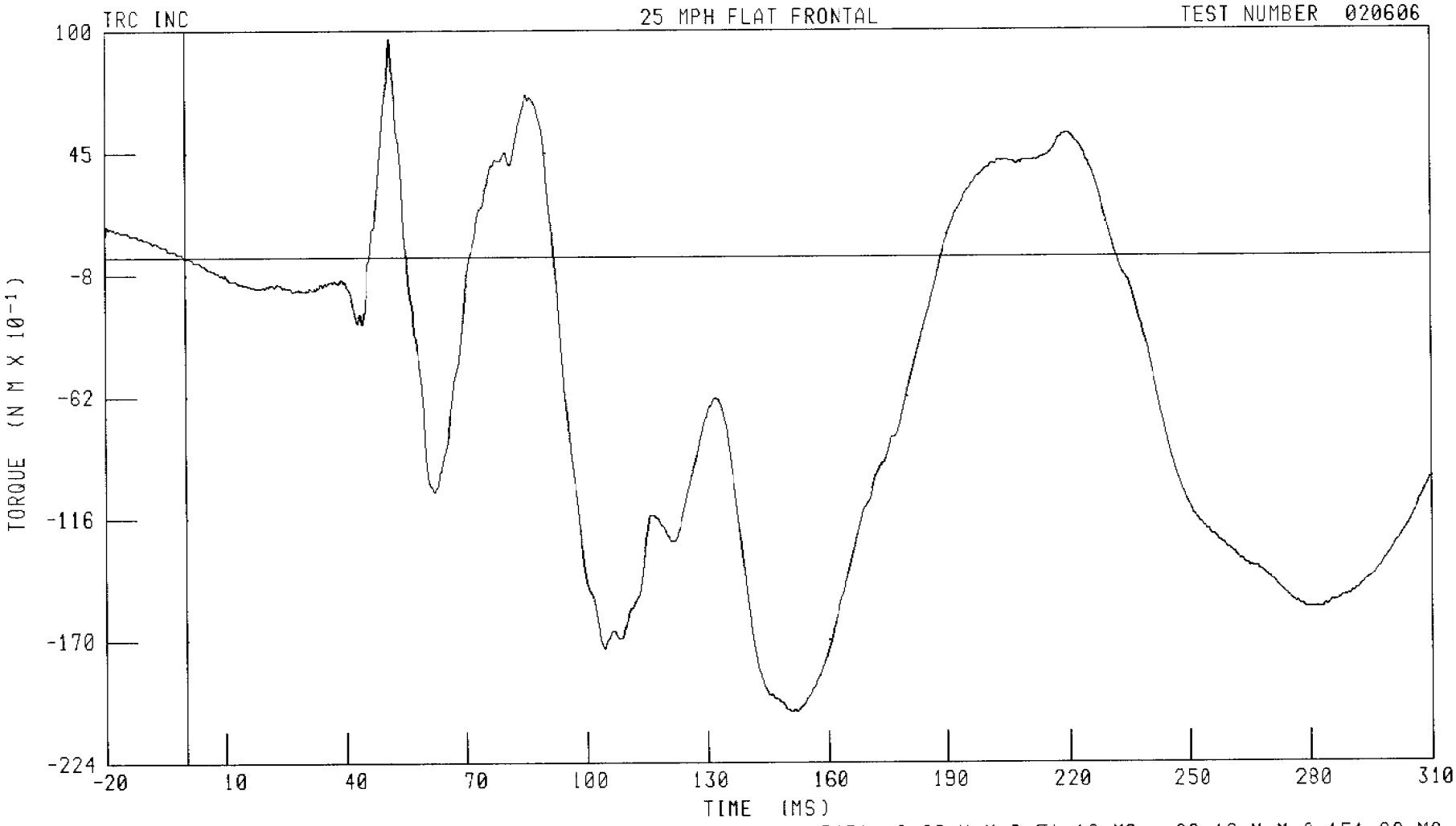
CHANNEL NKLYF2 FILTER CH CLASS 1000 PEAK DATA 154 98 N @ 51 04 MS, -294 16 N @ 103 28 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK LOWER Z-AXIS AXIAL FORCE



CHANNEL NKLZF2 FILTER CH CLASS 1000
PEAK DATA 626 58 N @ 50 64 MS, -910 82 N @ 96 96 MS

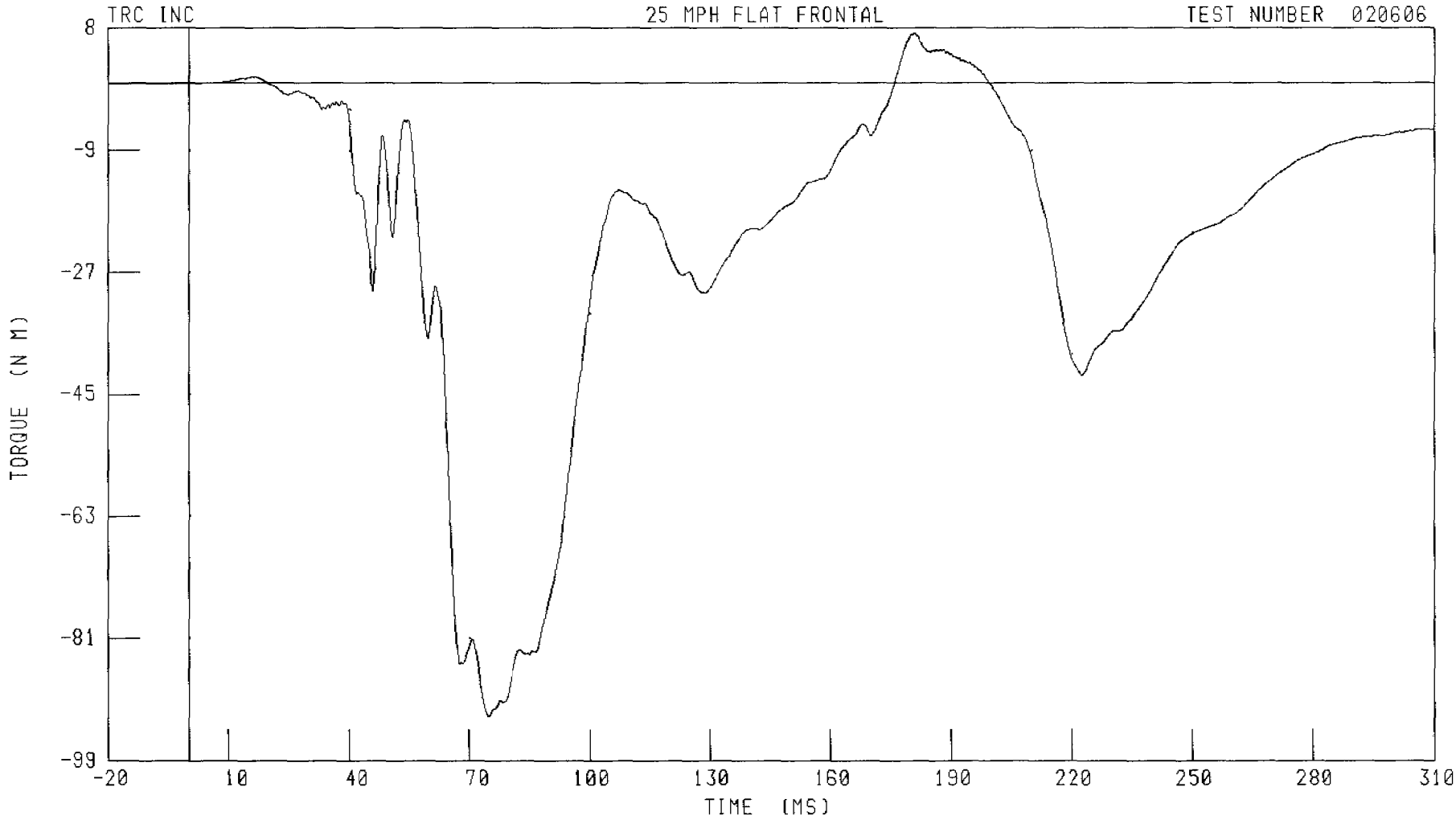
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK LOWER MOMENT ABOUT X AXIS



CHANNEL NKLXM2 FILTER CH CLASS 600

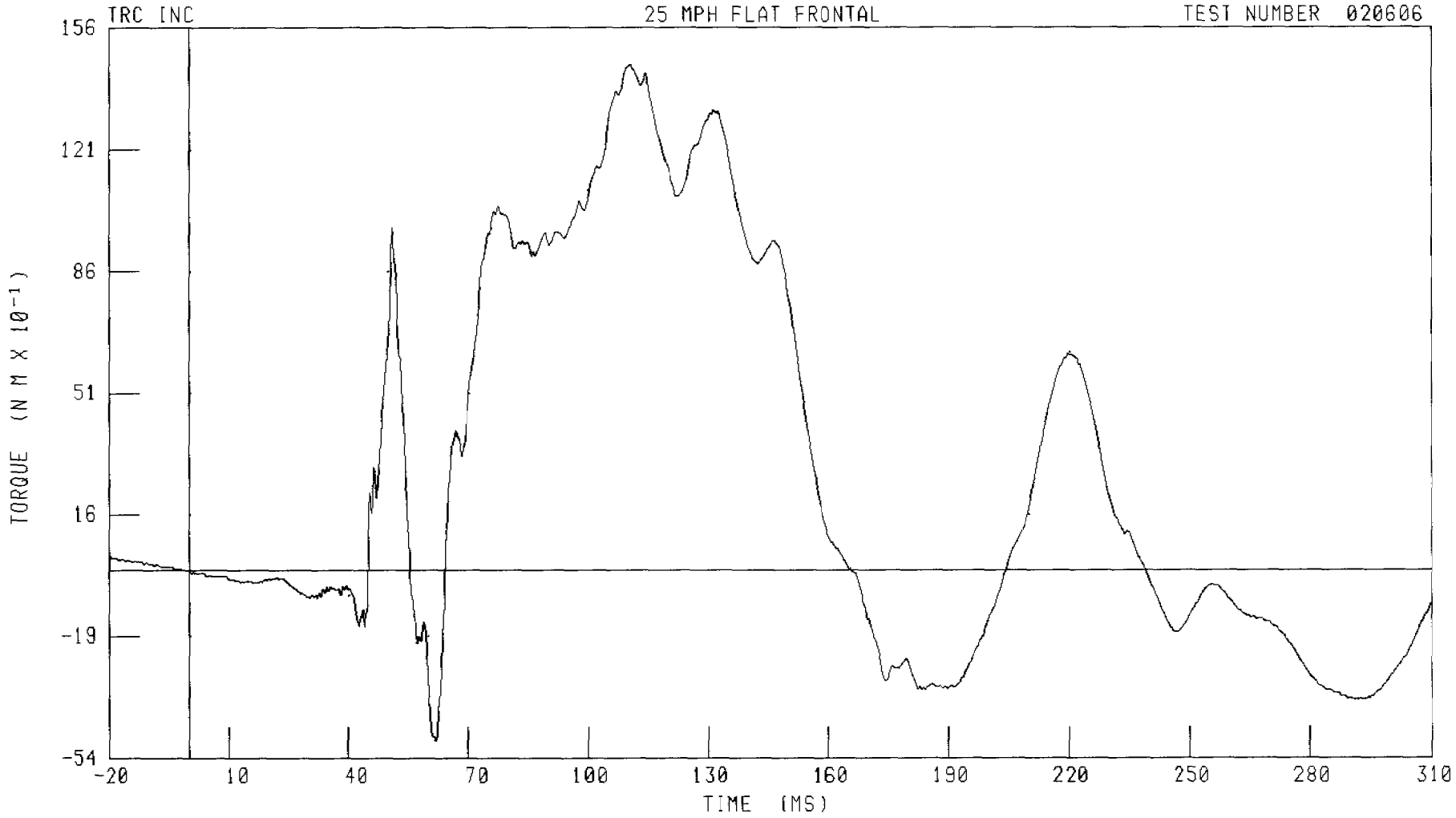
PEAK DATA 9 62 N M @ 51 12 MS, -20 18 N M @ 151 20 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK LOWER MOMENT ABOUT Y AXIS



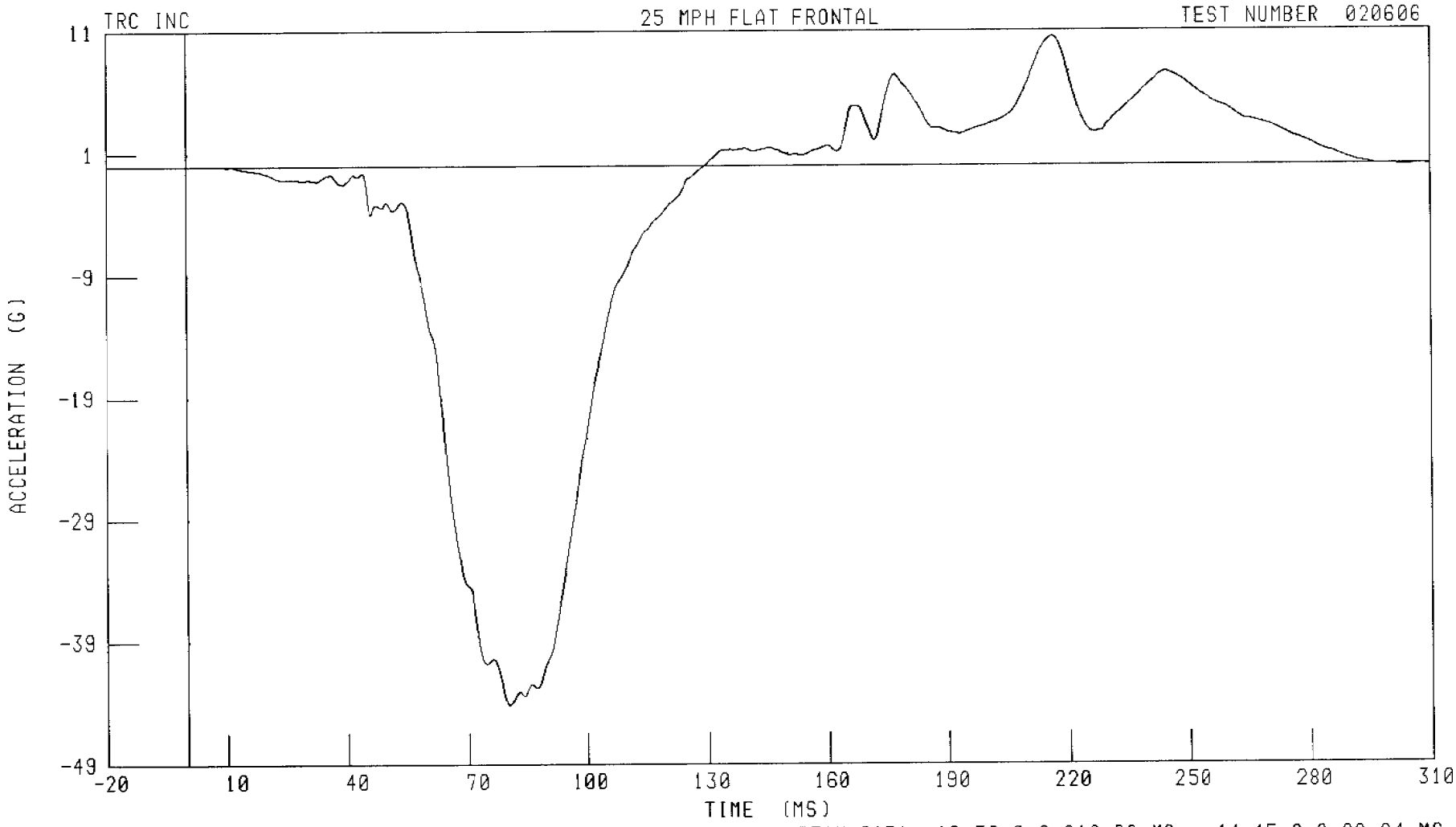
CHANNEL NKLYM2 FILTER CH CLASS 600 PEAK DATA 7 41 N M @ 181 04 MS, -93 43 N M @ 74 80 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER NECK LOWER MOMENT ABOUT Z AXIS



CHANNEL NKLZM2 FILTER CH CLASS 600 PEAK DATA 14 55 N M @ 110 80 MS, -4 91 N M @ 61 92 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER CHEST X-AXIS ACCELERATION

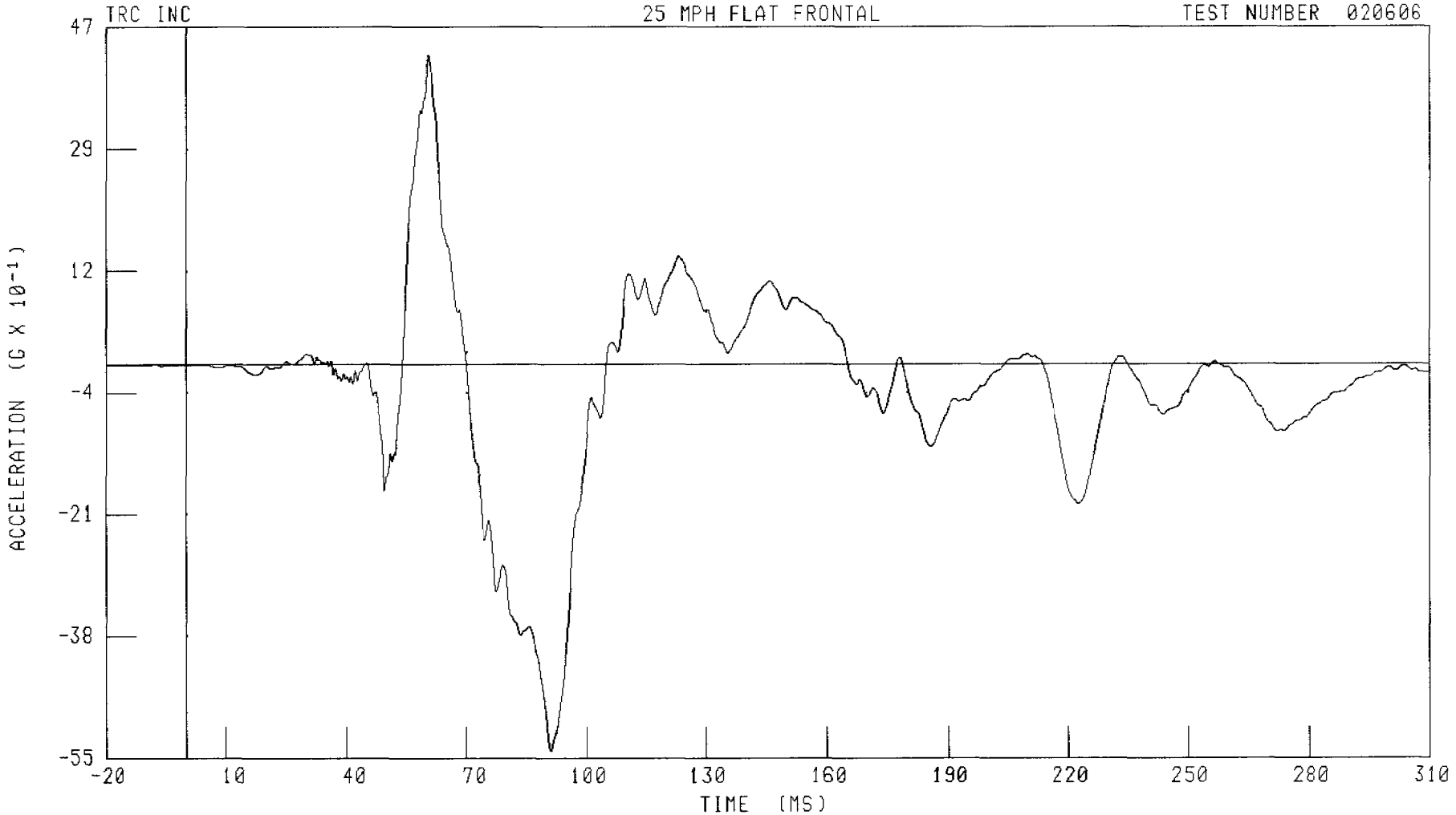


CHANNEL CSTXG2 FILTER CH CLASS 180

PEAK DATA 10 52 G @ 216 08 MS, -44 15 G @ 80 24 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

PASSENGER CHEST Y-AXIS ACCELERATION

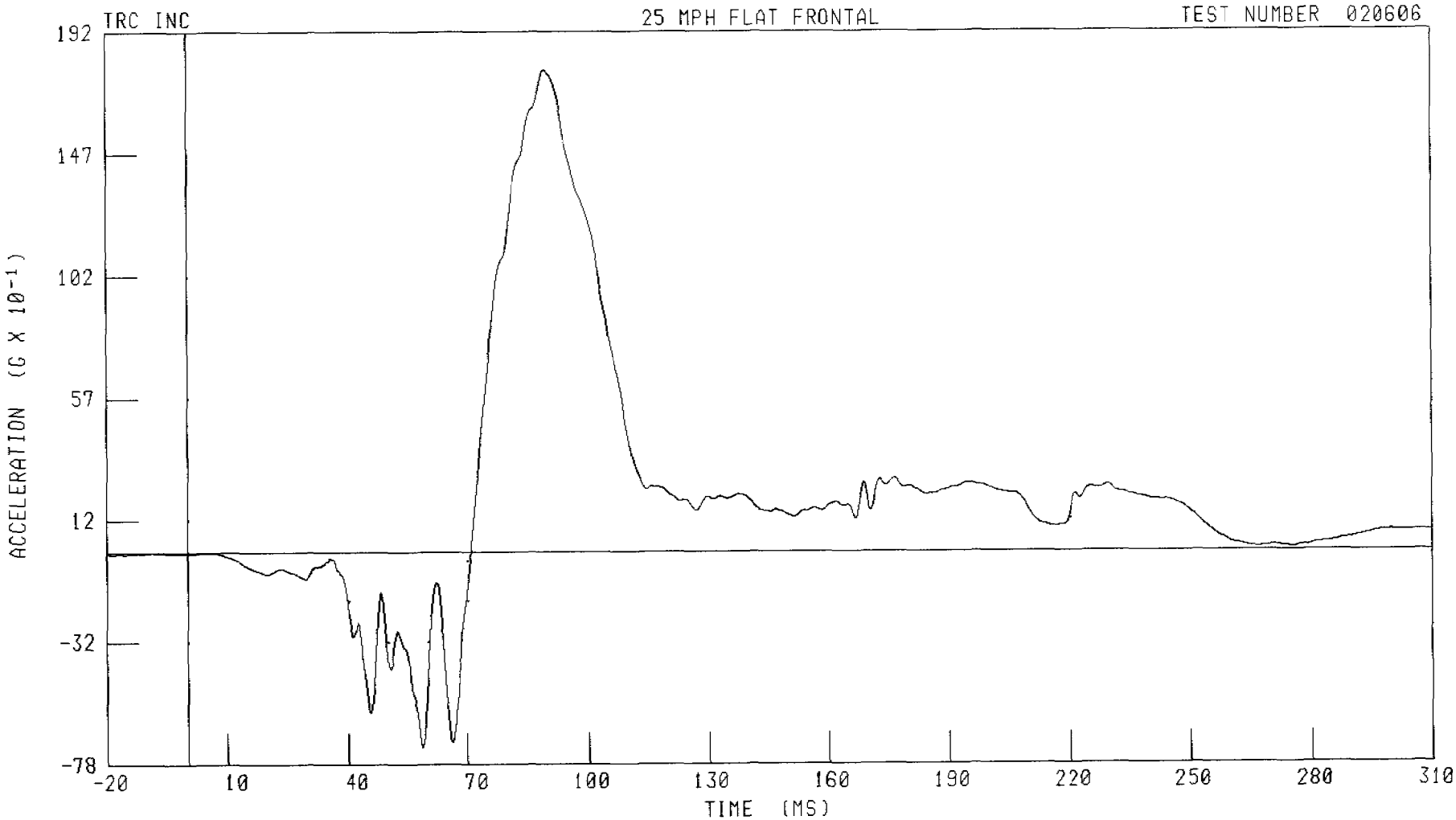


CHANNEL CSTYG2 FILTER CH CLASS 180

PEAK DATA 4 31 G @ 60 56 MS, -5 40 G @ 91 04 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

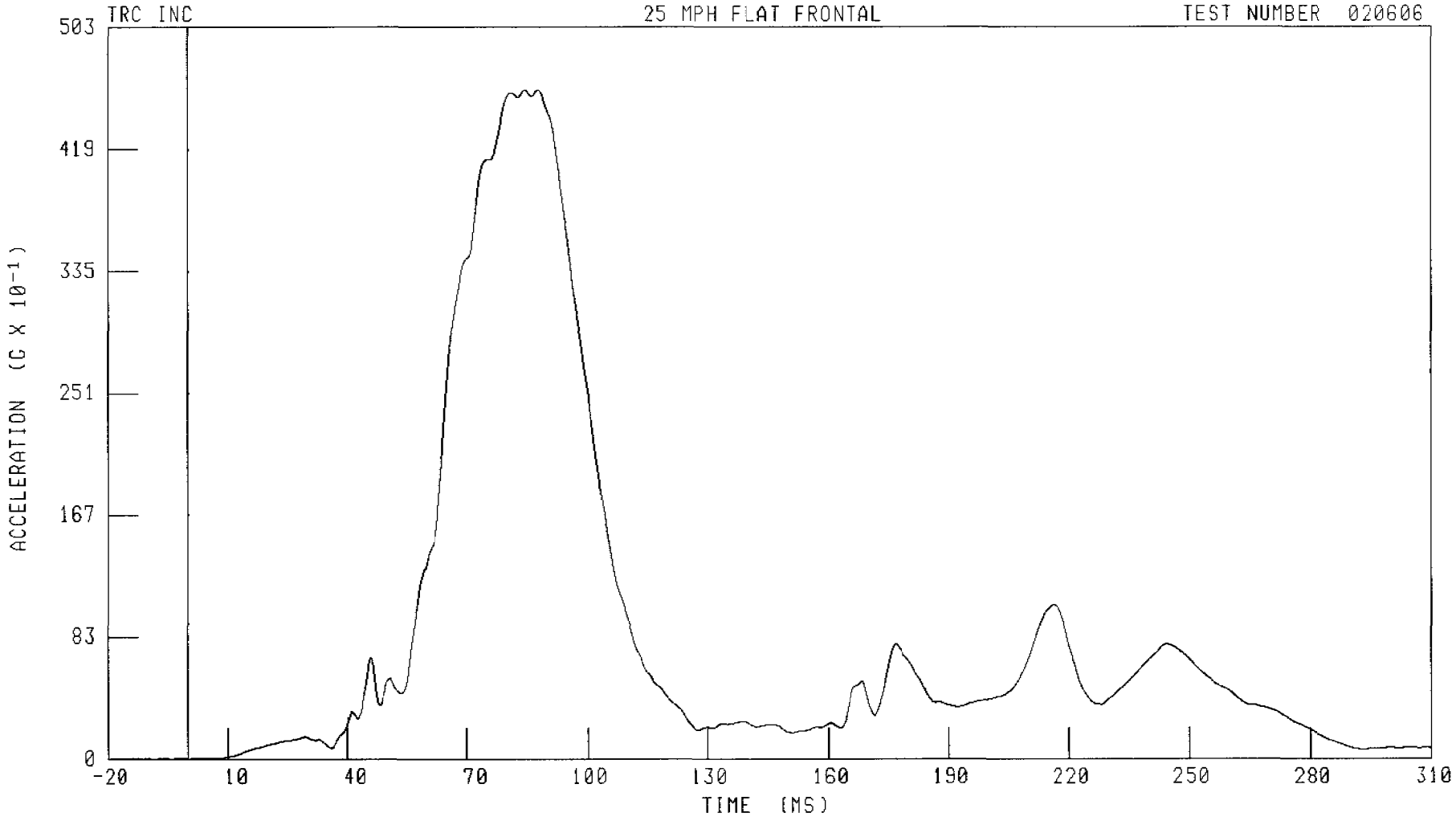
PASSENGER CHEST Z-AXIS ACCELERATION



CHANNEL CSTZG2 FILTER CH CLASS 180

PEAK DATA 17 79 G @ 89 44 MS, -7 18 G @ 58 48 MS

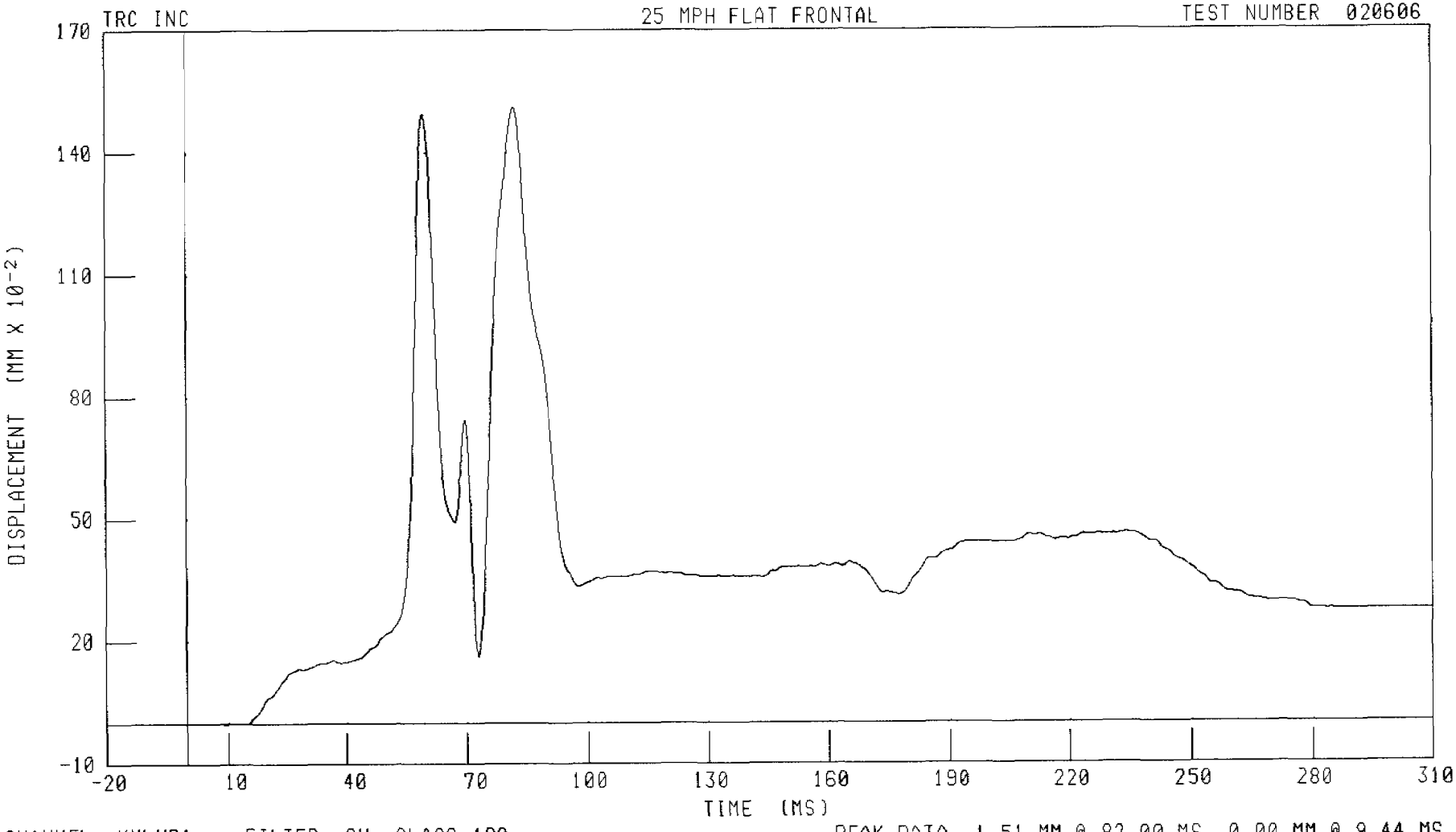
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER CHEST RESULTANT ACCELERATION



CHANNEL CSTRG2 FILTER CH CLASS 180

PEAK DATA 46 11 G @ 87 52 MS, 0 00 G @ -20 00 MS

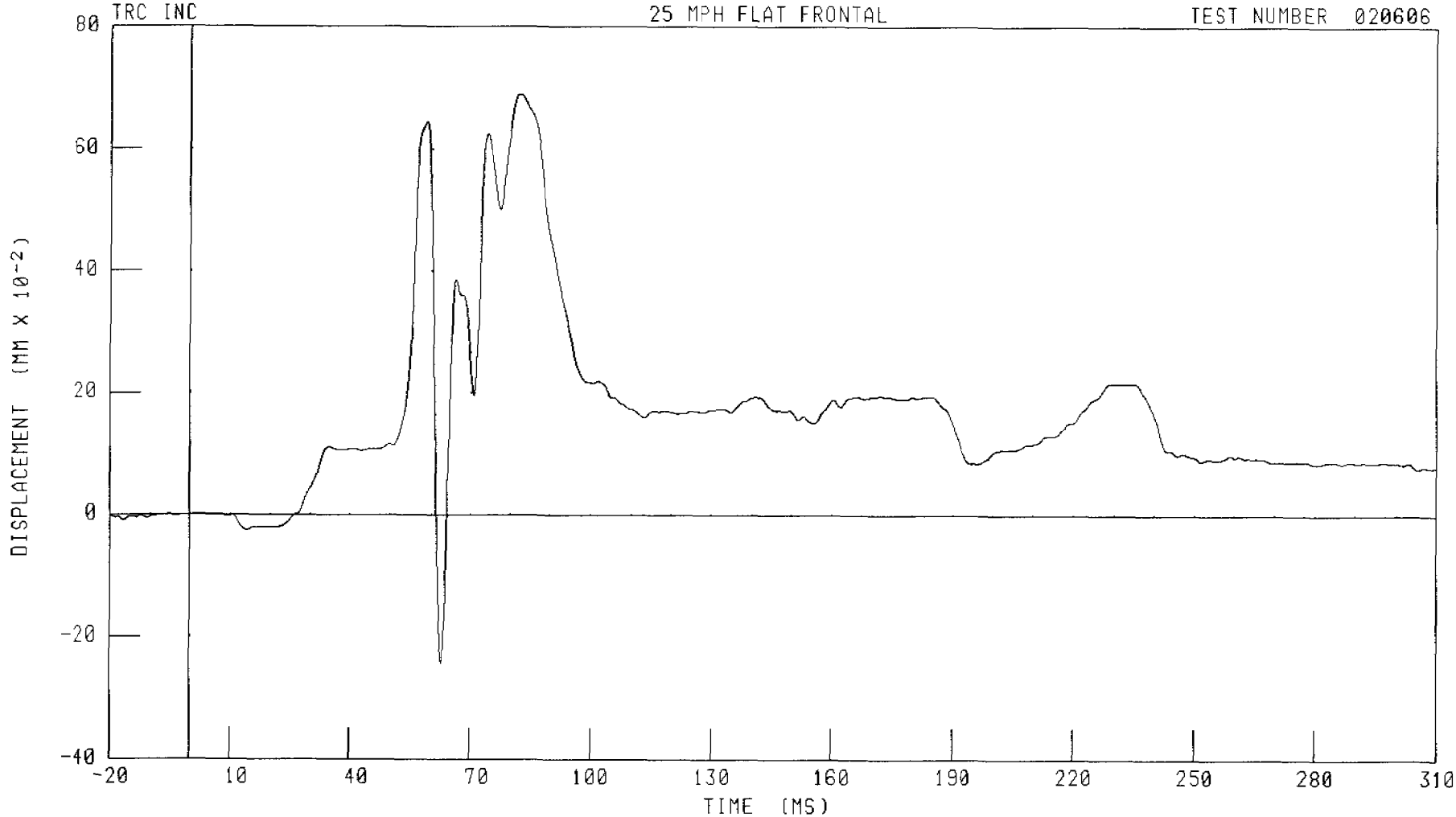
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT TIBIA TO FEMUR DISPLACEMENT



CHANNEL KNLXD1 FILTER CH CLASS 180

PEAK DATA 1 51 MM @ 82 00 MS, 0 00 MM @ 9 44 MS

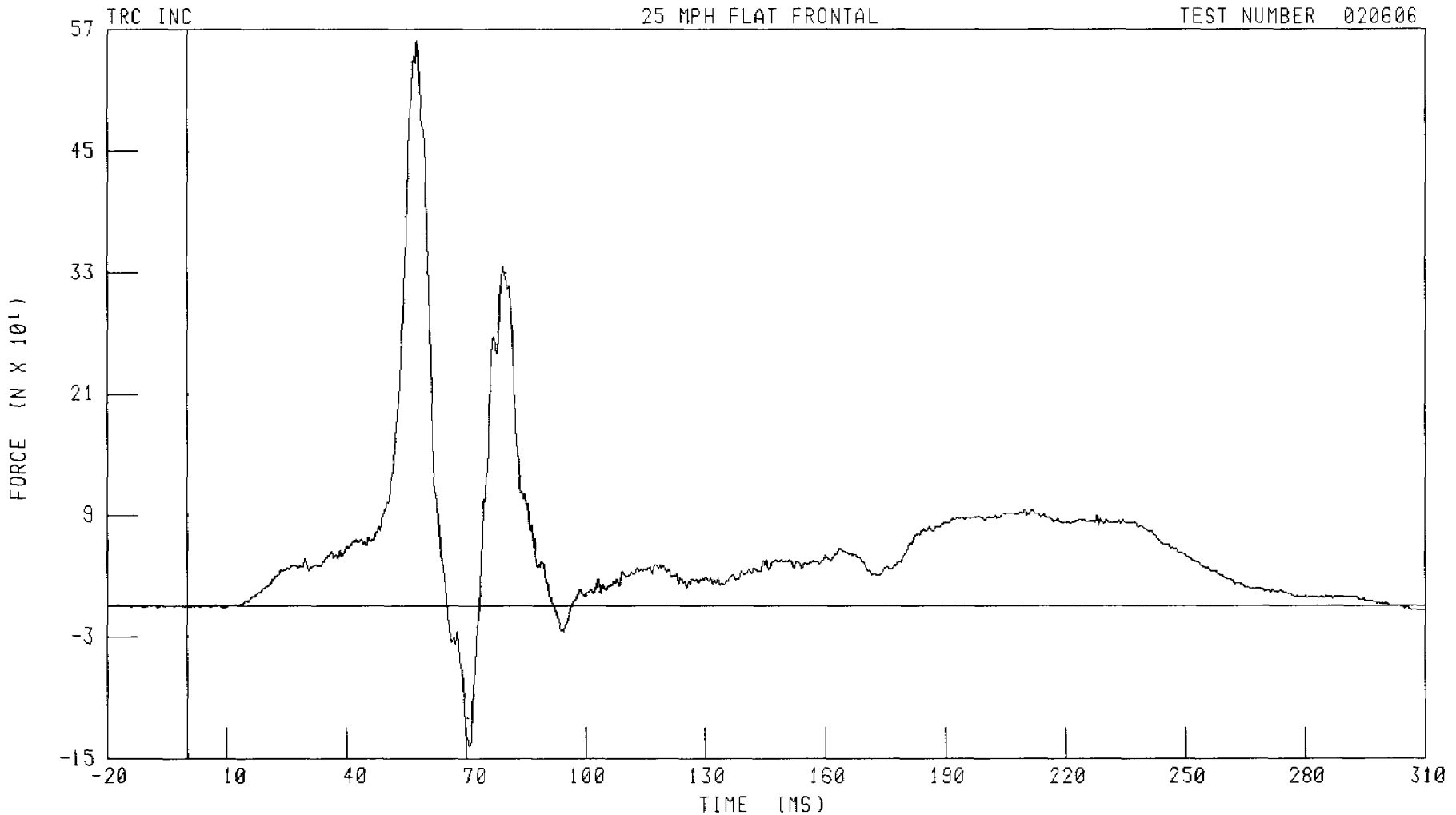
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT TIBIA TO FEMUR DISPLACEMENT



CHANNEL KNRXD1 FILTER CH CLASS 180

PEAK DATA 0 69 MM @ 82 40 MS, -0 24 MM @ 62 72 MS

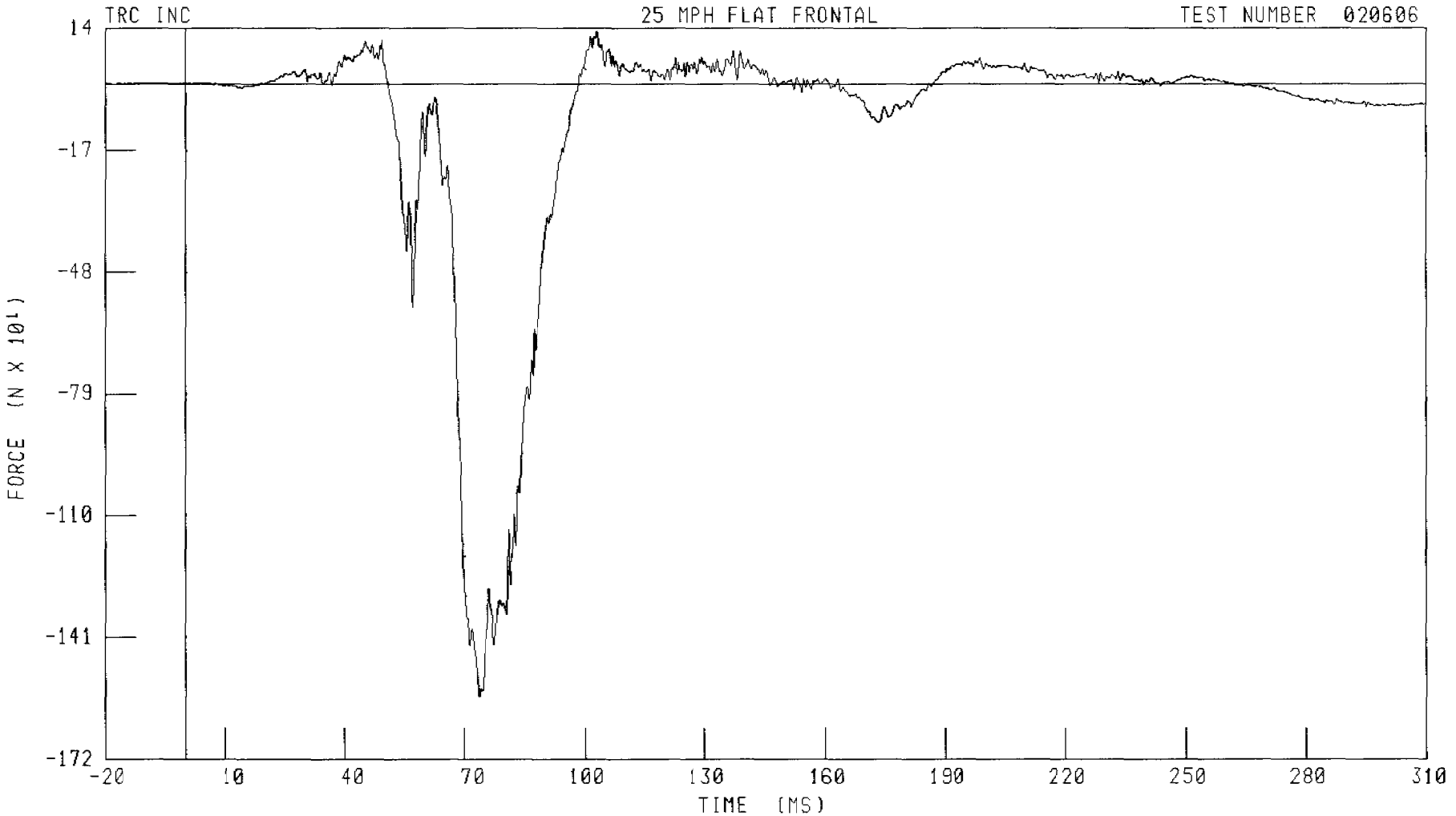
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT UPPER TIBIA X-AXIS FORCE



CHANNEL TBLXF1 FILTER CH CLASS 600

PEAK DATA 558 91 N @ 57 60 MS, -138 10 N @ 70 64 MS

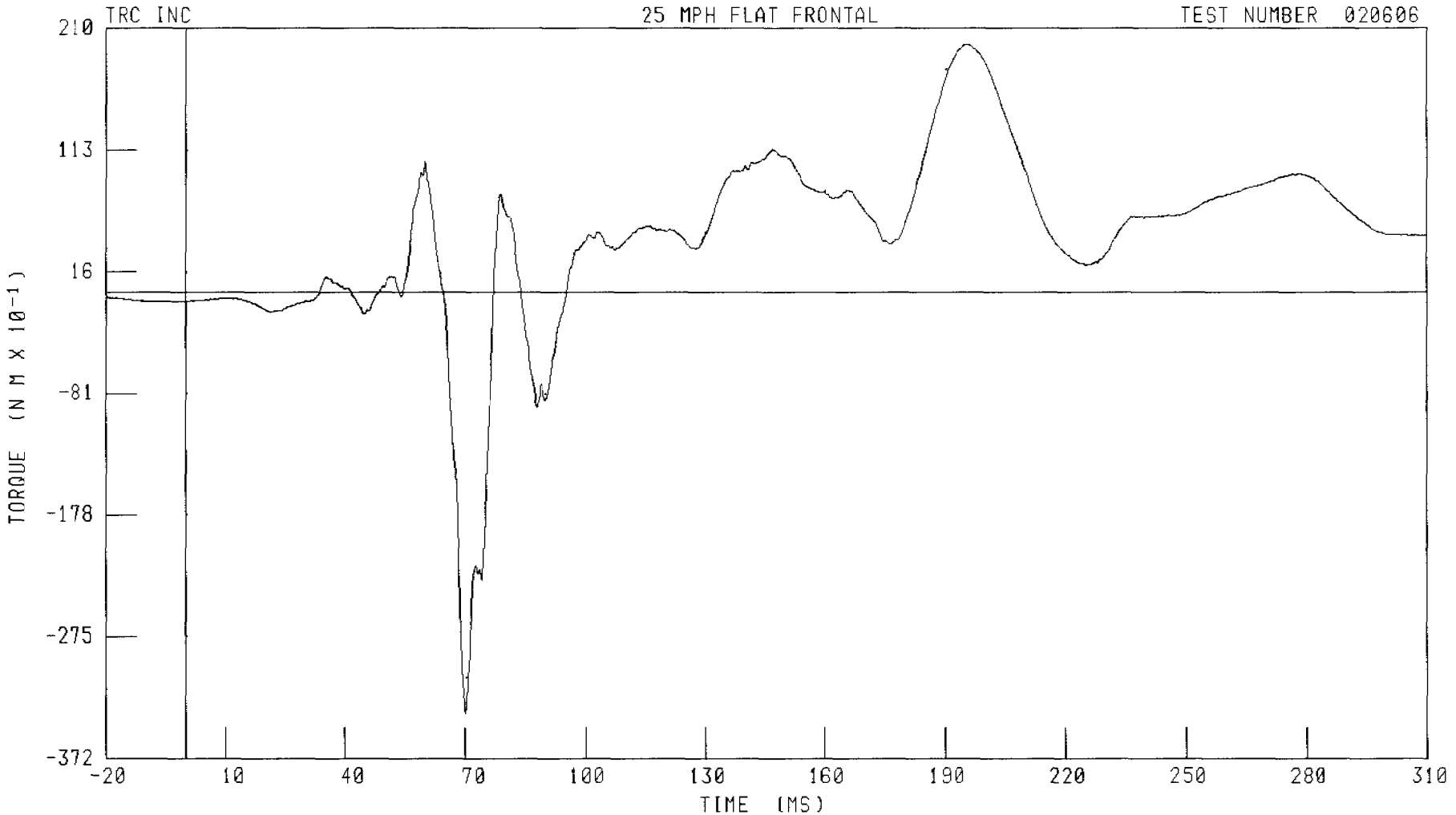
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT UPPER TIBIA Z-AXIS FORCE



CHANNEL TBLZF1 FILTER CH CLASS 600

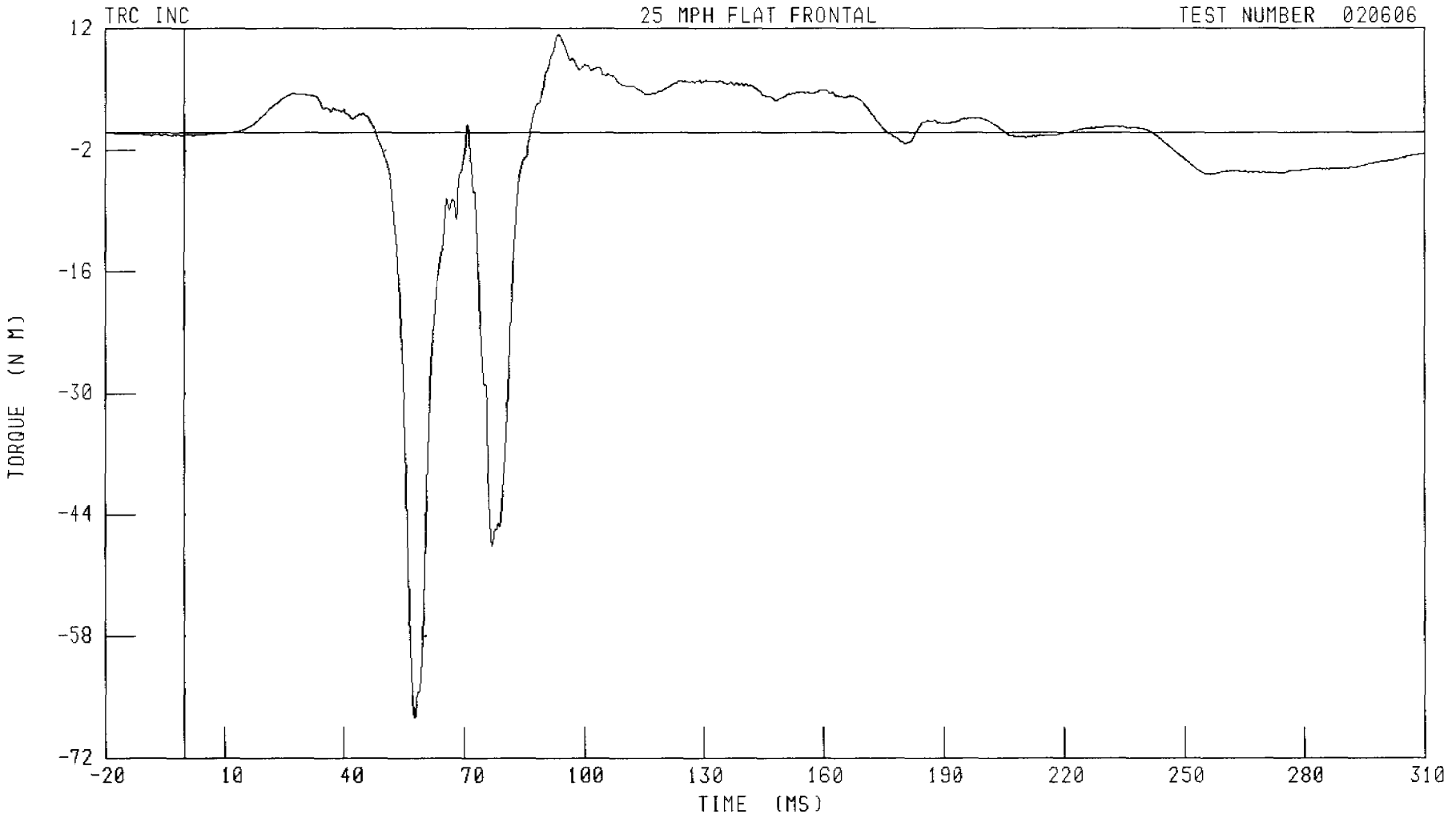
PEAK DATA 131 69 N @ 103 28 MS, -1563 06 N @ 73 60 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT UPPER TIBIA MOMENT ABOUT X AXIS



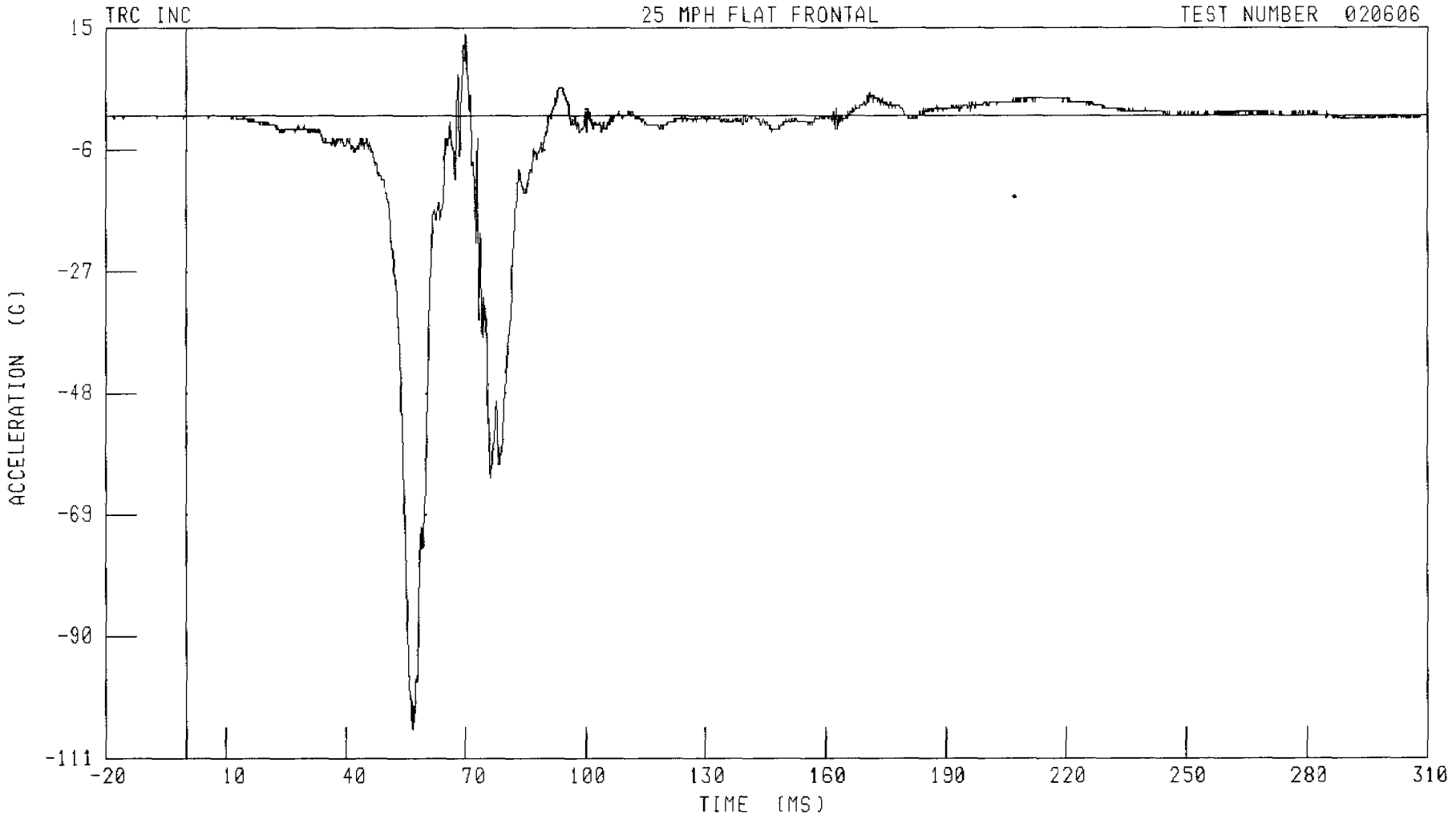
CHANNEL TBLXM1 FILTER CH CLASS 600 PEAK DATA 19 70 N M @ 195 04 MS, -33 61 N M @ 70 16 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS



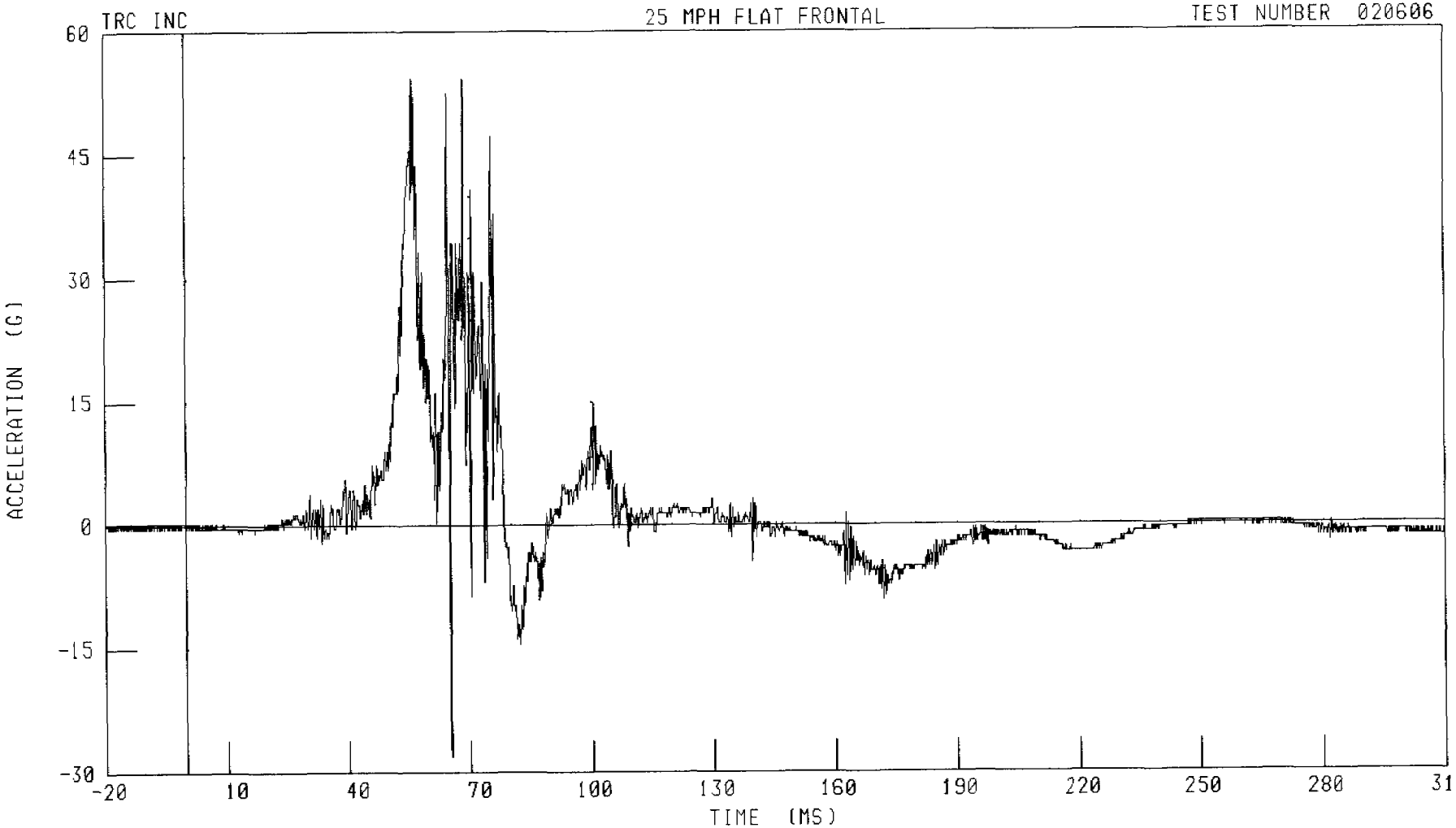
CHANNEL TBLYM1 FILTER CH CLASS 600 PEAK DATA 11 31 N M @ 93 84 MS, -67 39 N M @ 57 52 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT TIBIA X-AXIS ACCELERATION



CHANNEL TBLXG1 FILTER CH CLASS 1000 PEAK DATA 13 92 G @ 70 24 MS, -106 06 G @ 56 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT TIBIA Z-AXIS ACCELERATION
25 MPH FLAT FRONTAL

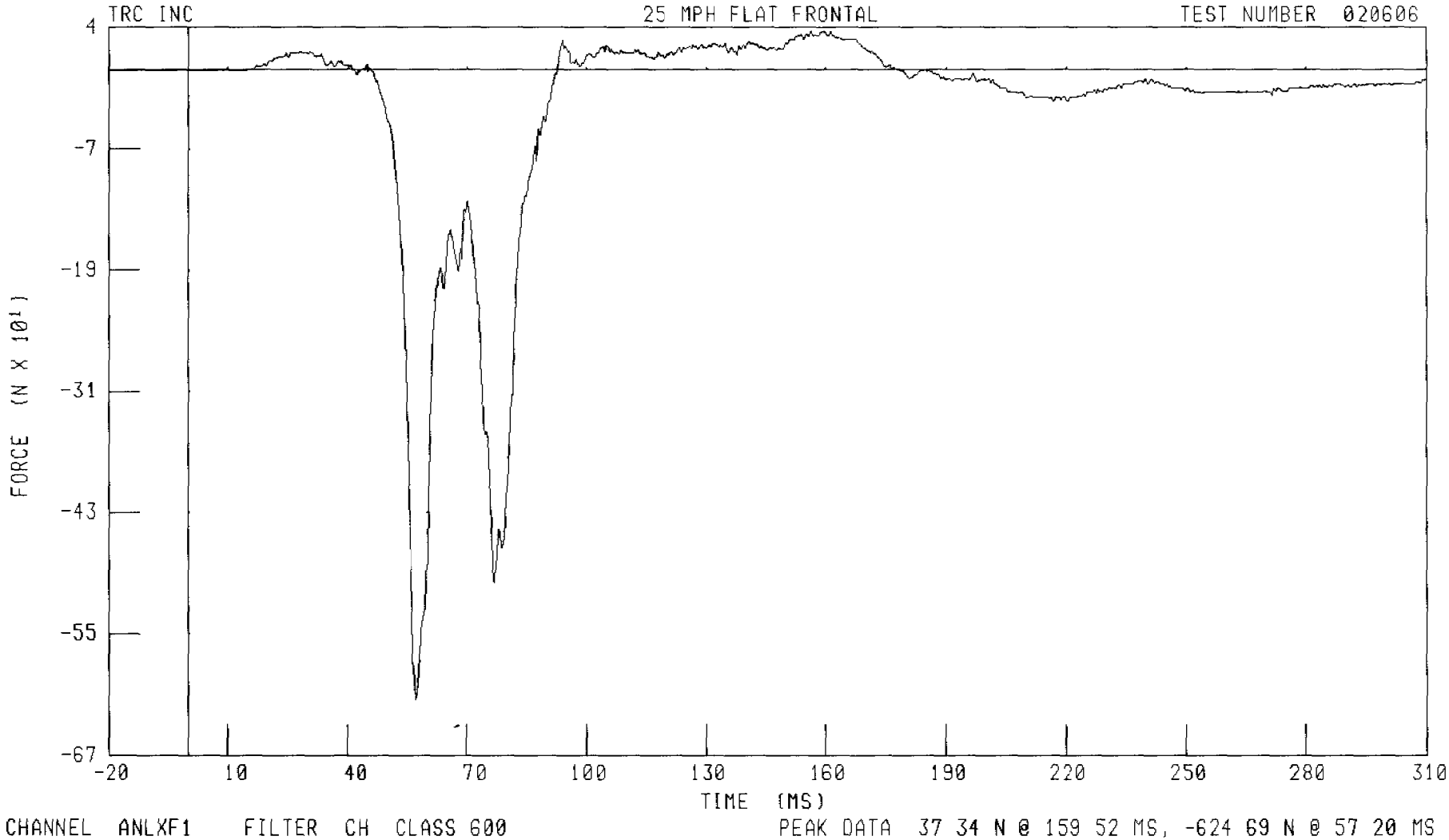


CHANNEL TBLZG1 FILTER CH CLASS 1000

PEAK DATA 54 37 G @ 56 16 MS, -28 06 G @ 65 20 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

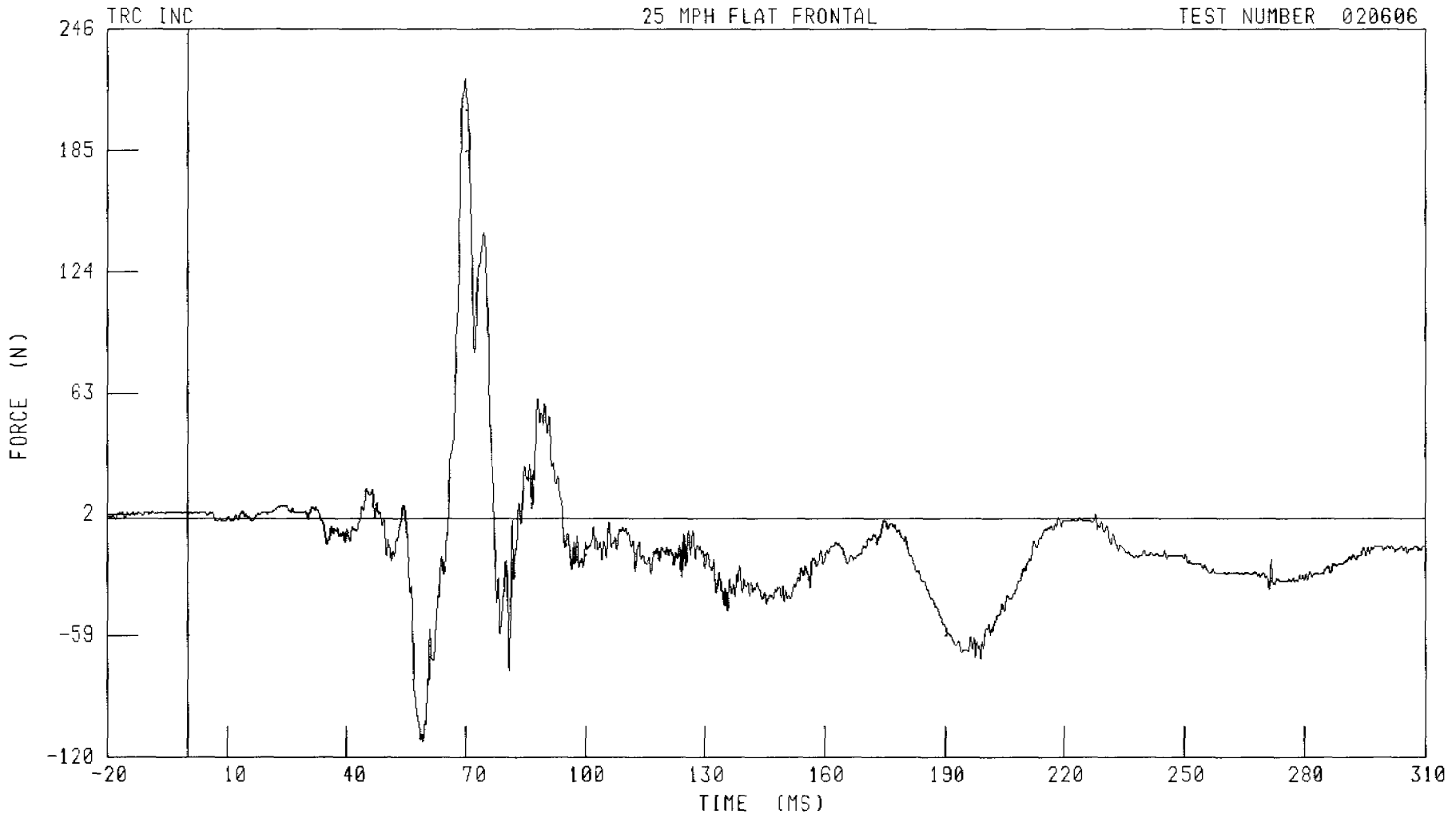
DRIVER LEFT LOWER TIBIA X-AXIS FORCE



CHANNEL ANLXF1 FILTER CH CLASS 600

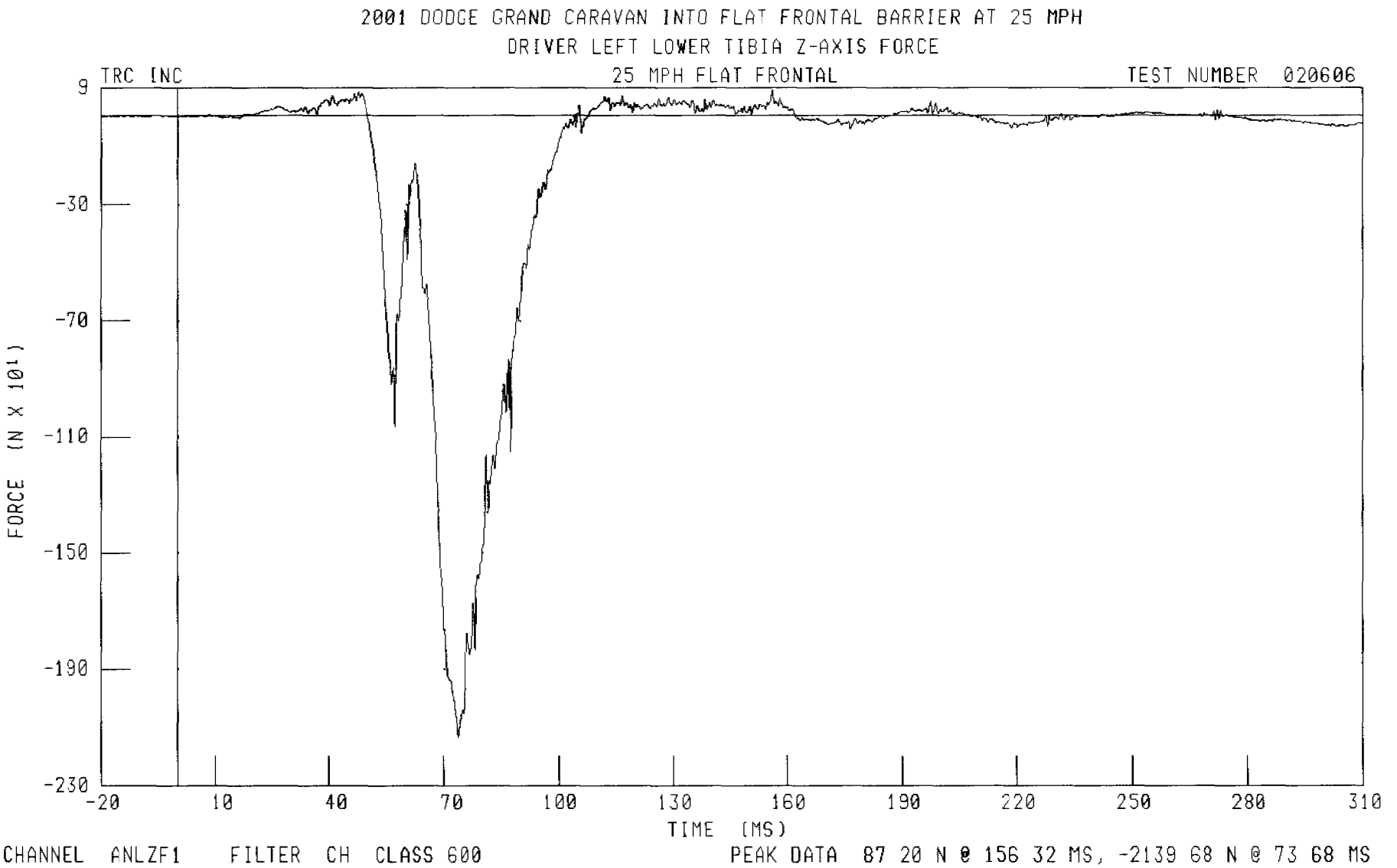
PEAK DATA 37 34 N @ 159 52 MS, -624 69 N @ 57 20 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT LOWER TIBIA Y-AXIS FORCE

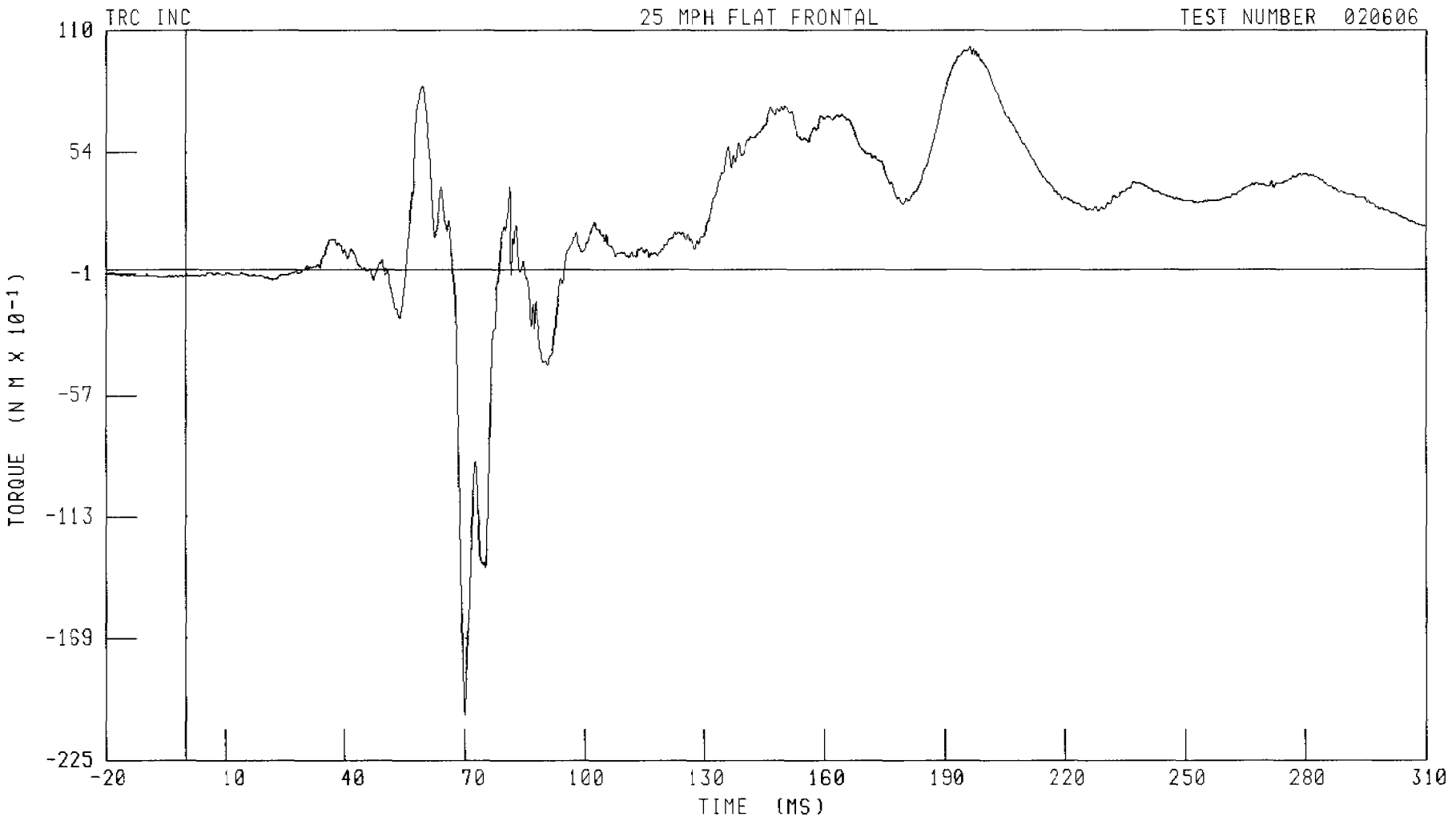


CHANNEL ANLYF1 FILTER CH CLASS 600

PEAK DATA 221 55 N @ 69 84 MS, -112 29 N @ 59 20 MS


2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT LOWER TIBIA Z-AXIS FORCE
TRC INC
25 MPH FLAT FRONTAL
TEST NUMBER 020606
9
-30
-70
-110
-150
-190
-230
FORCE (N X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL ANLZF1 FILTER CH CLASS 600
PEAK DATA 87 20 N @ 156 32 MS, -2139 68 N @ 73 68 MS

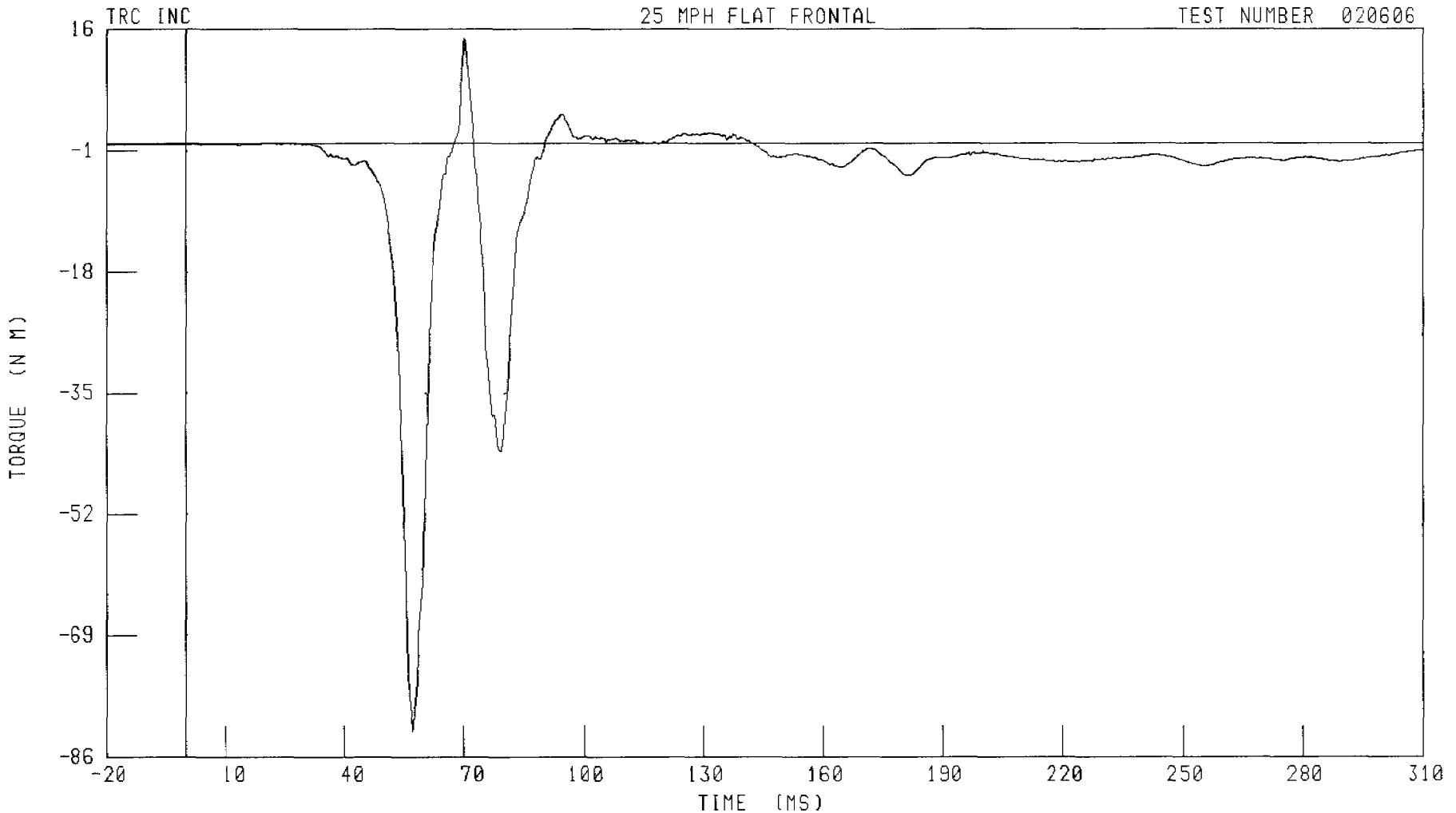
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT LOWER TIBIA MOMENT ABOUT X AXIS



CHANNEL ANLXM1 FILTER CH CLASS 600

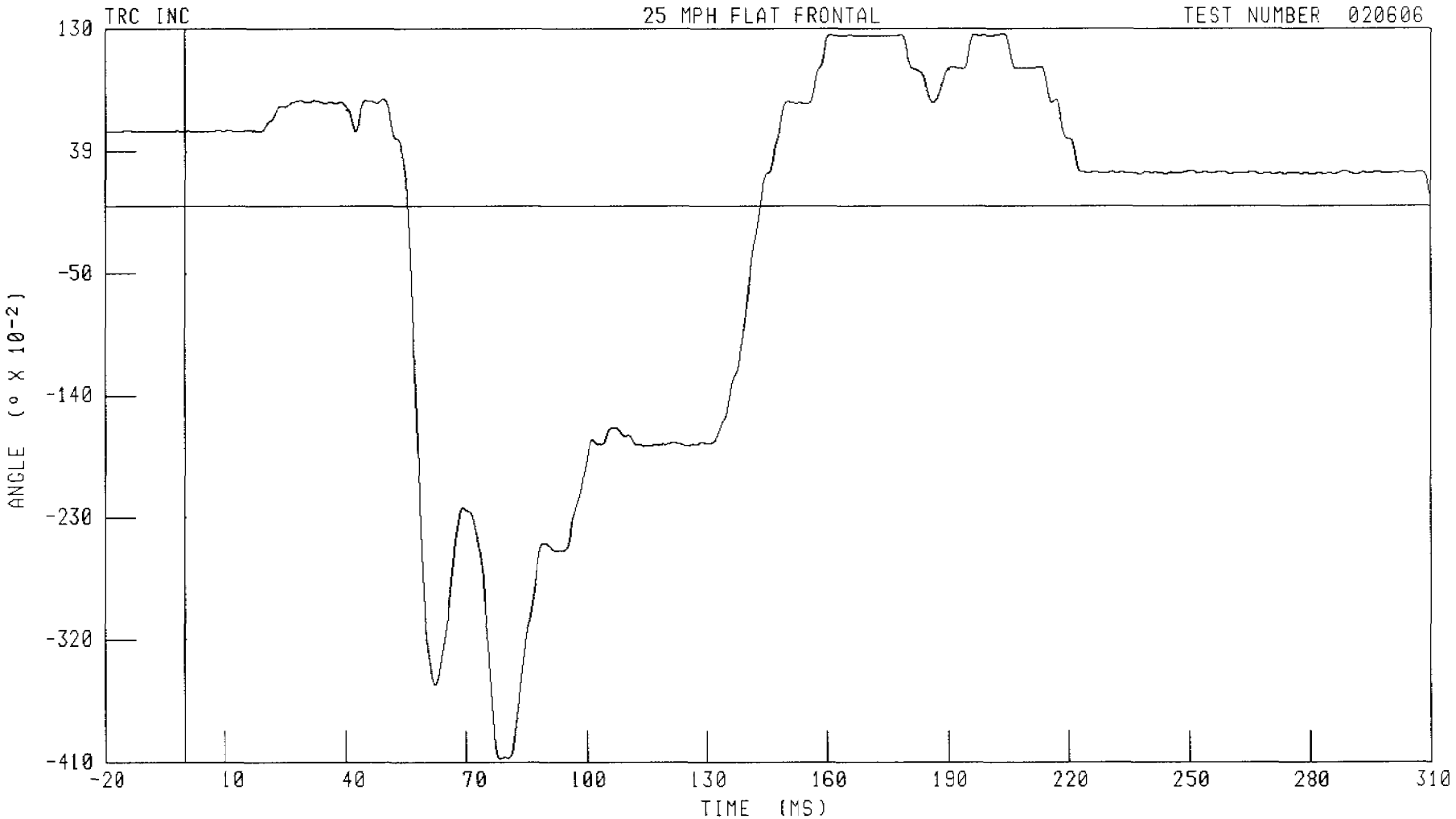
PEAK DATA 10 27 N M @ 196 48 MS, -20 54 N M @ 69 84 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS



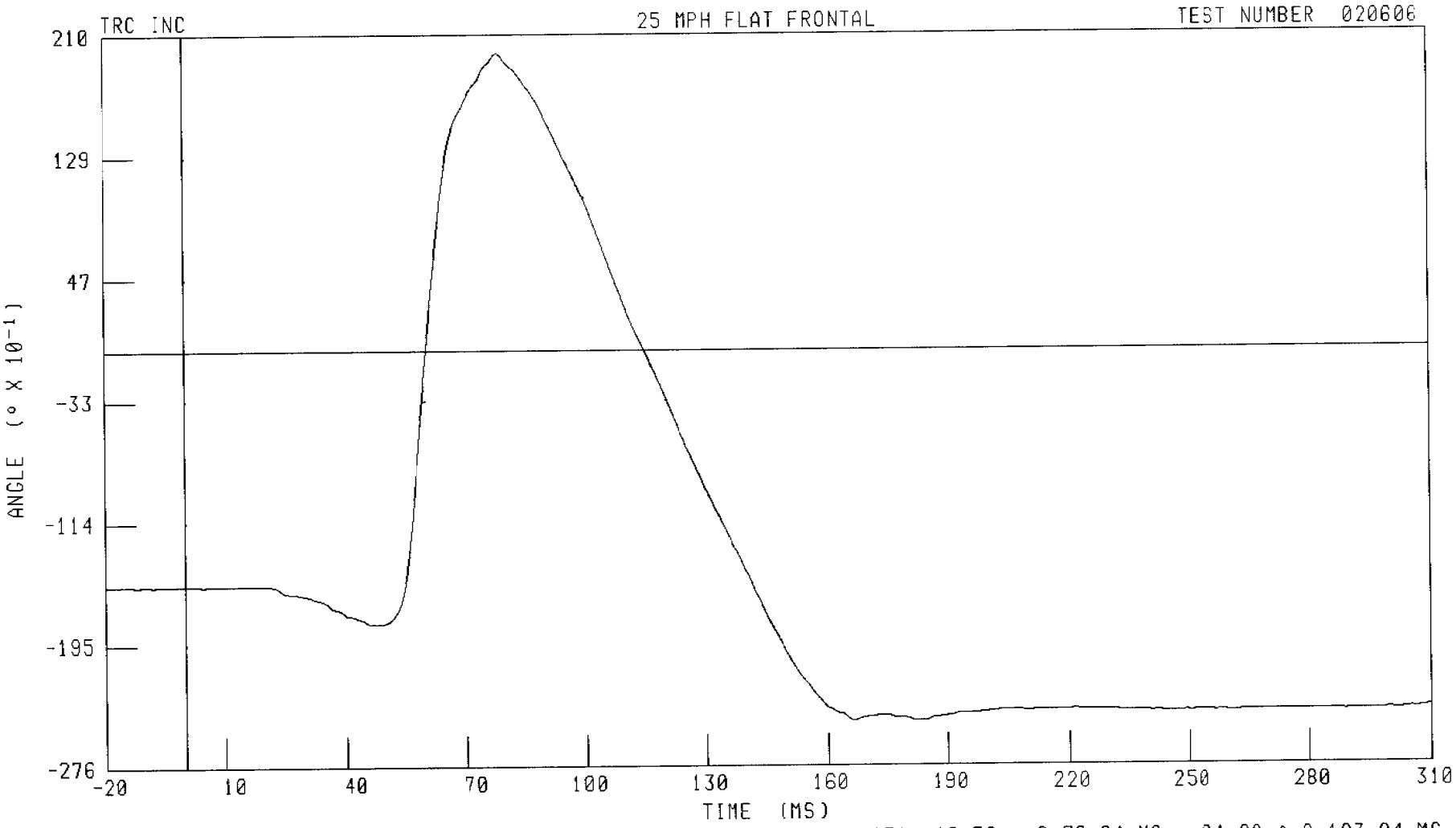
CHANNEL ANLYM1 FILTER CH CLASS 600 PEAK DATA 14 74 N M @ 70 16 MS, -82 35 N M @ 57 04 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT FOOT TO ANKLE X-AXIS DISPLACEMENT



CHANNEL FTLXD1 FILTER CH CLASS 180 PEAK DATA 1 26 ° @ 203 28 MS, -4 08 ° @ 78 32 MS

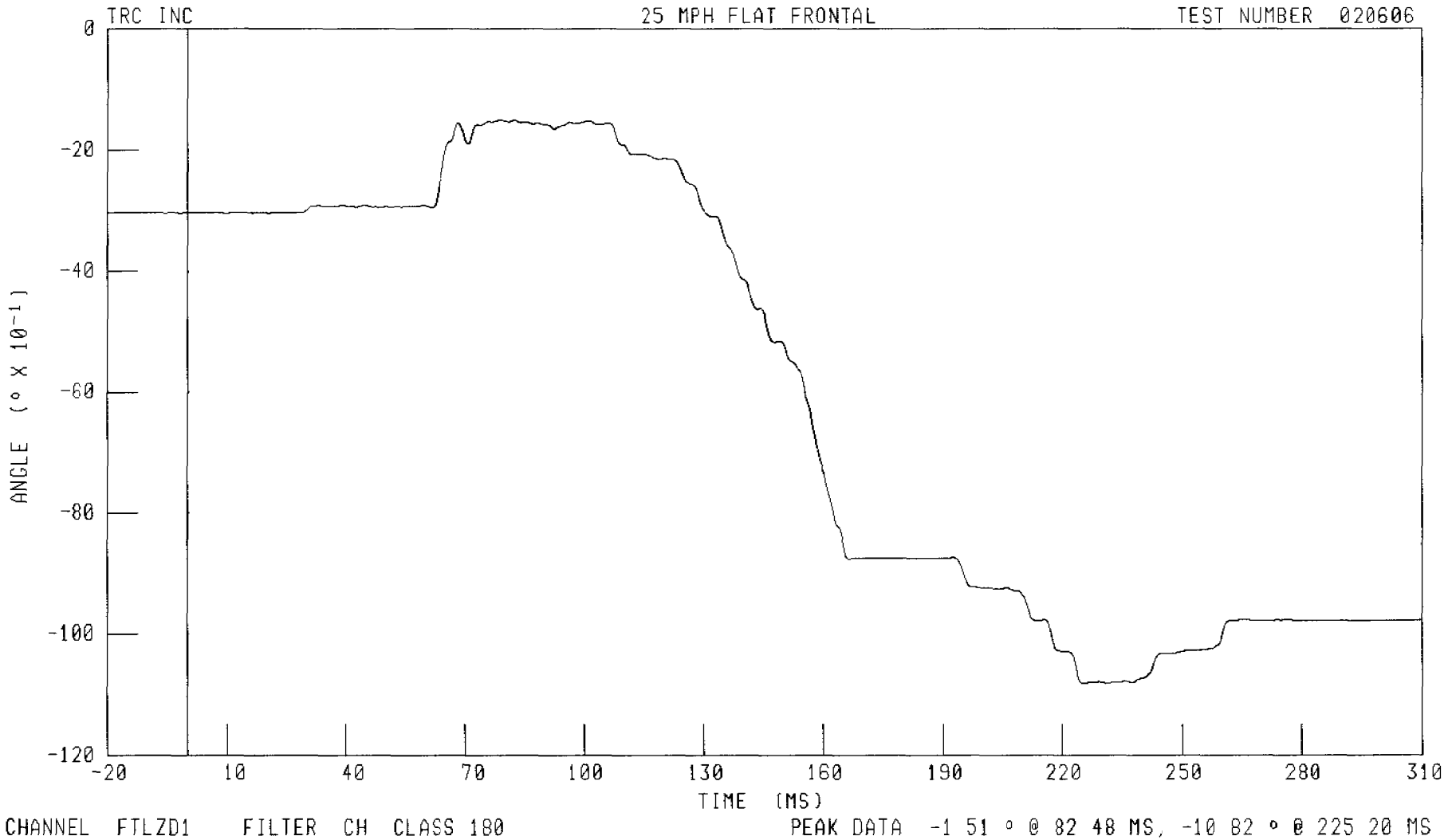
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT FOOT TO ANKLE Y-AXIS DISPLACEMENT



CHANNEL FTLYD1 FILTER CH CLASS 180

PEAK DATA 19 76 ° @ 78 64 MS, -24 68 ° @ 183 84 MS

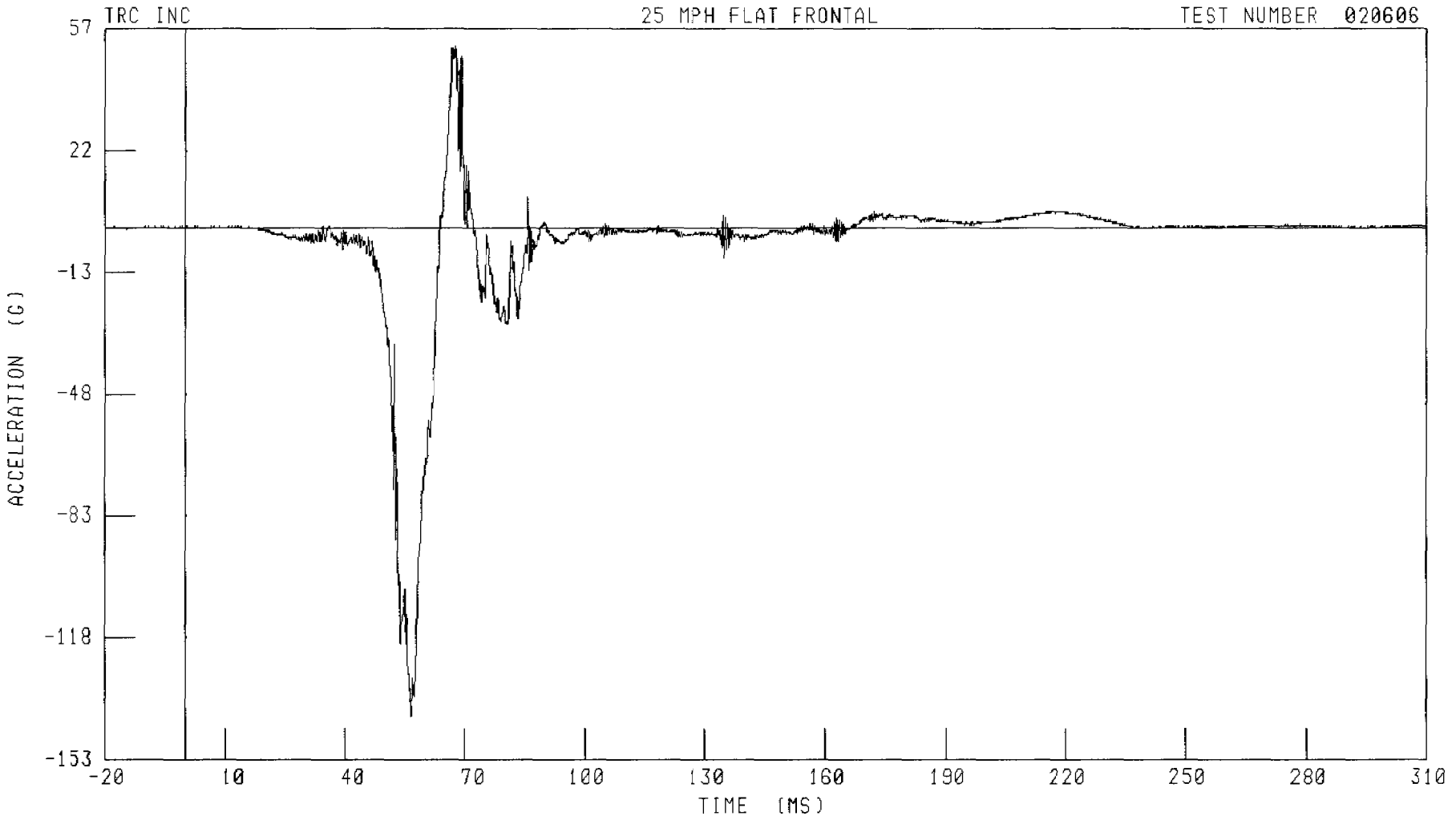
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT FOOT TO ANKLE Z-AXIS DISPLACEMENT



CHANNEL FTLZD1 FILTER CH CLASS 180 PEAK DATA -1 51 ° @ 82 48 MS, -10 82 ° @ 225 20 MS

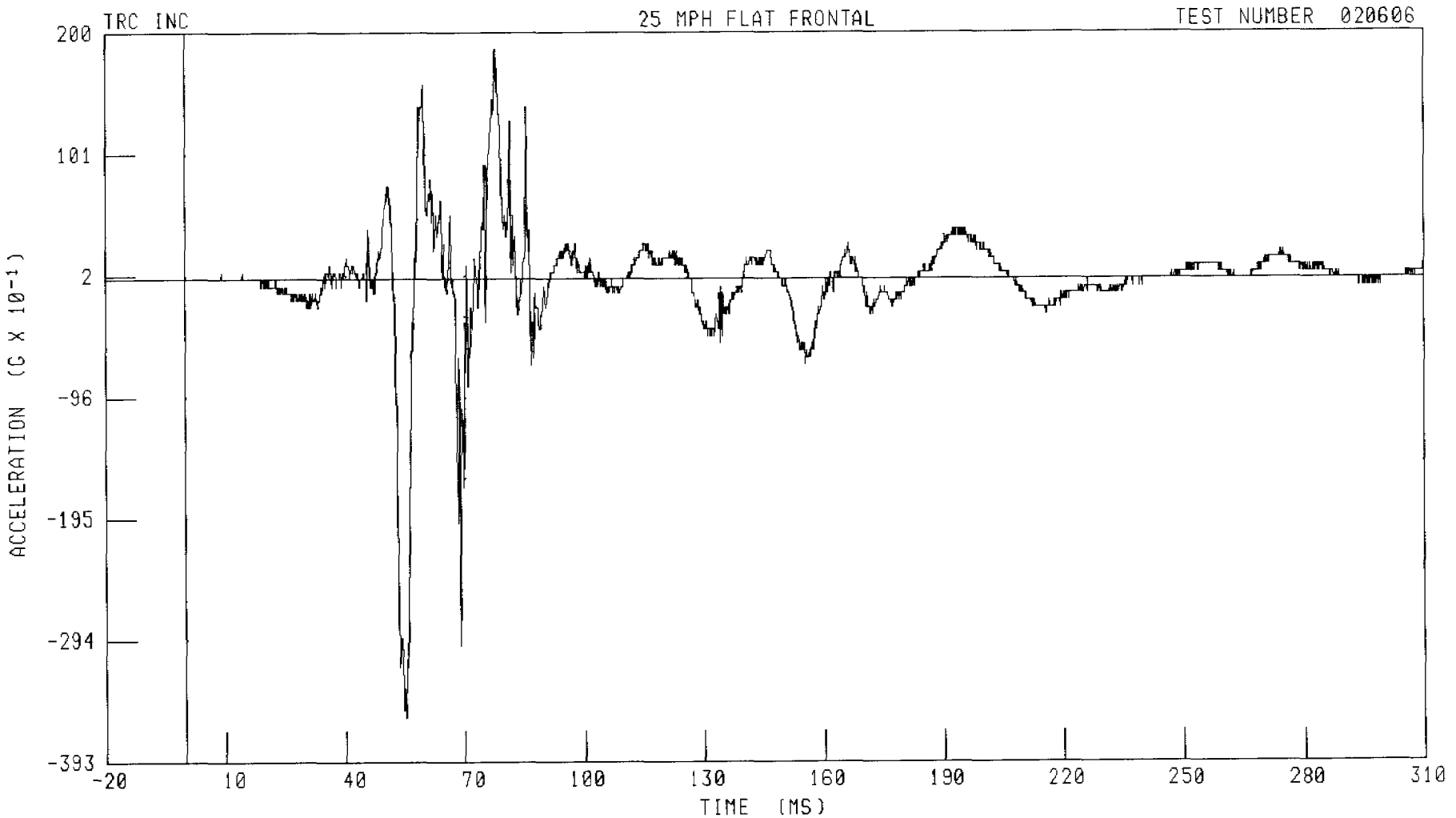
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

DRIVER LEFT FOOT X-AXIS ACCELERATION



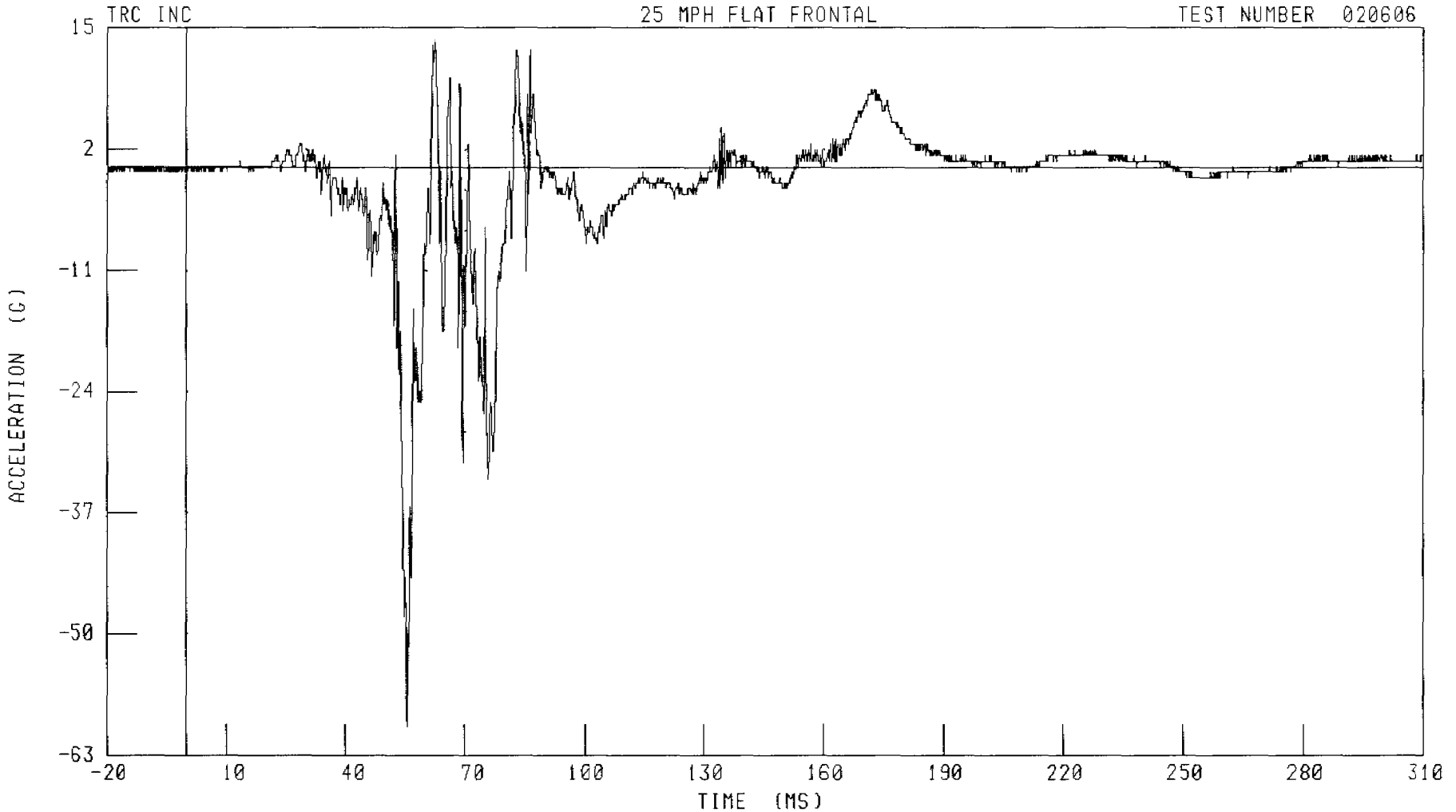
CHANNEL FTLXG1 FILTER CH CLASS 1000 PEAK DATA 52 09 G @ 67 92 MS, -140 72 G @ 56 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT FOOT Y-AXIS ACCELERATION



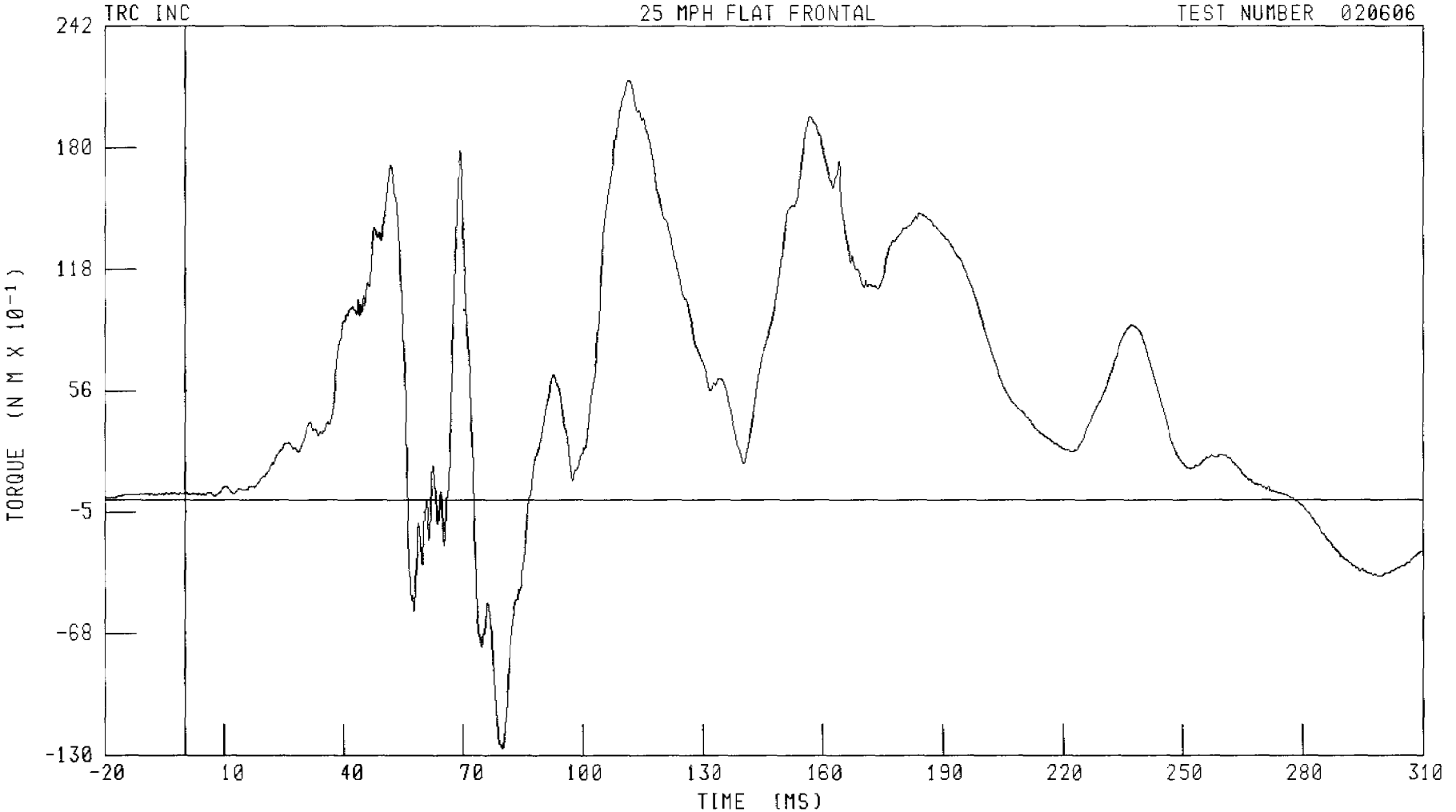
CHANNEL FTLYG1 FILTER CH CLASS 1000 PEAK DATA 18 69 G @ 78 08 MS, -35 80 G @ 55 04 MS

2001 DODCE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT FOOT Z-AXIS ACCELERATION



CHANNEL FTLZG1 FILTER CH CLASS 1000 PEAK DATA 13 73 G @ 62 32 MS, -59 94 G @ 55 28 MS

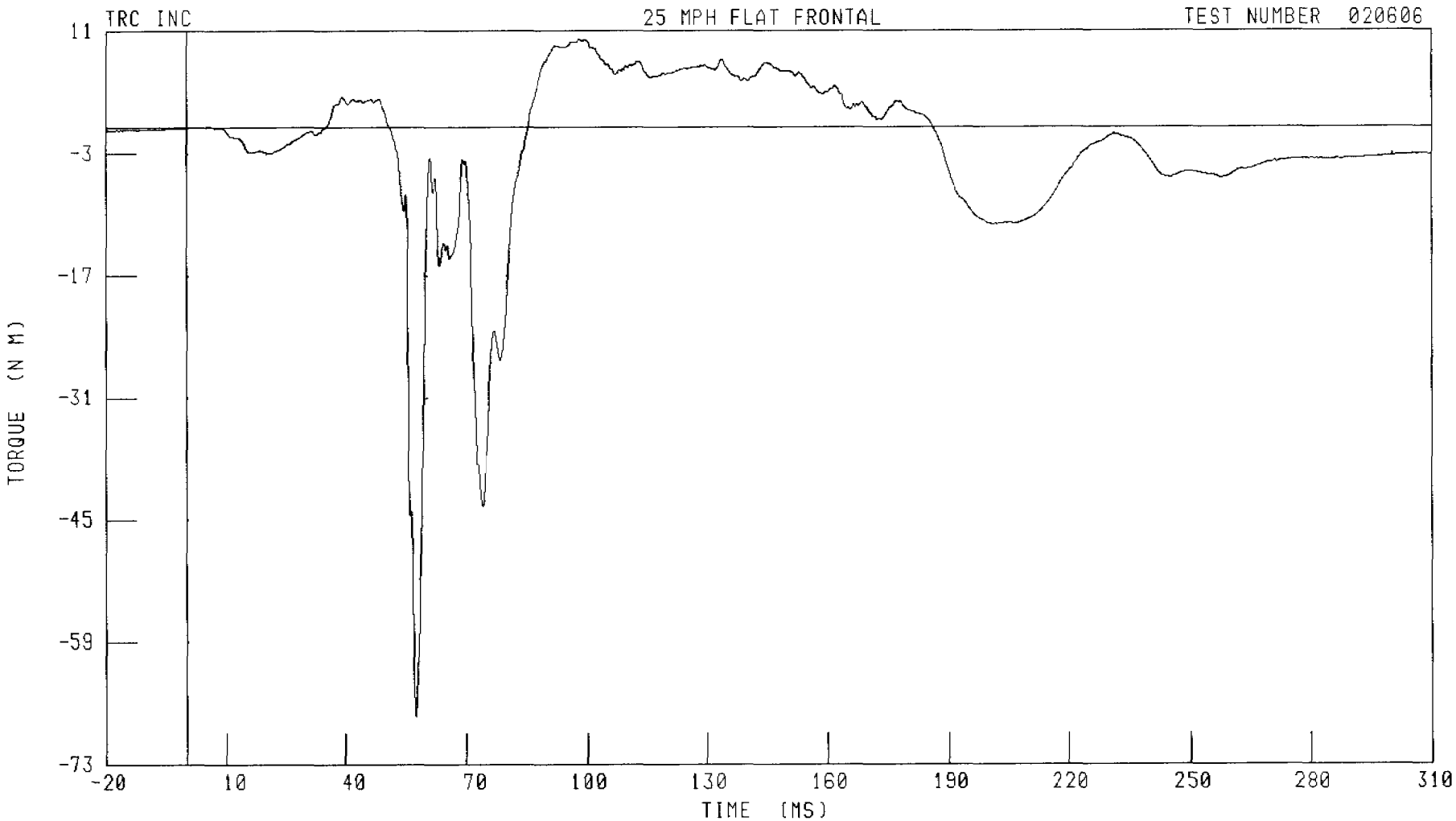
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS



CHANNEL TBRYM1 FILTER CH CLASS 600

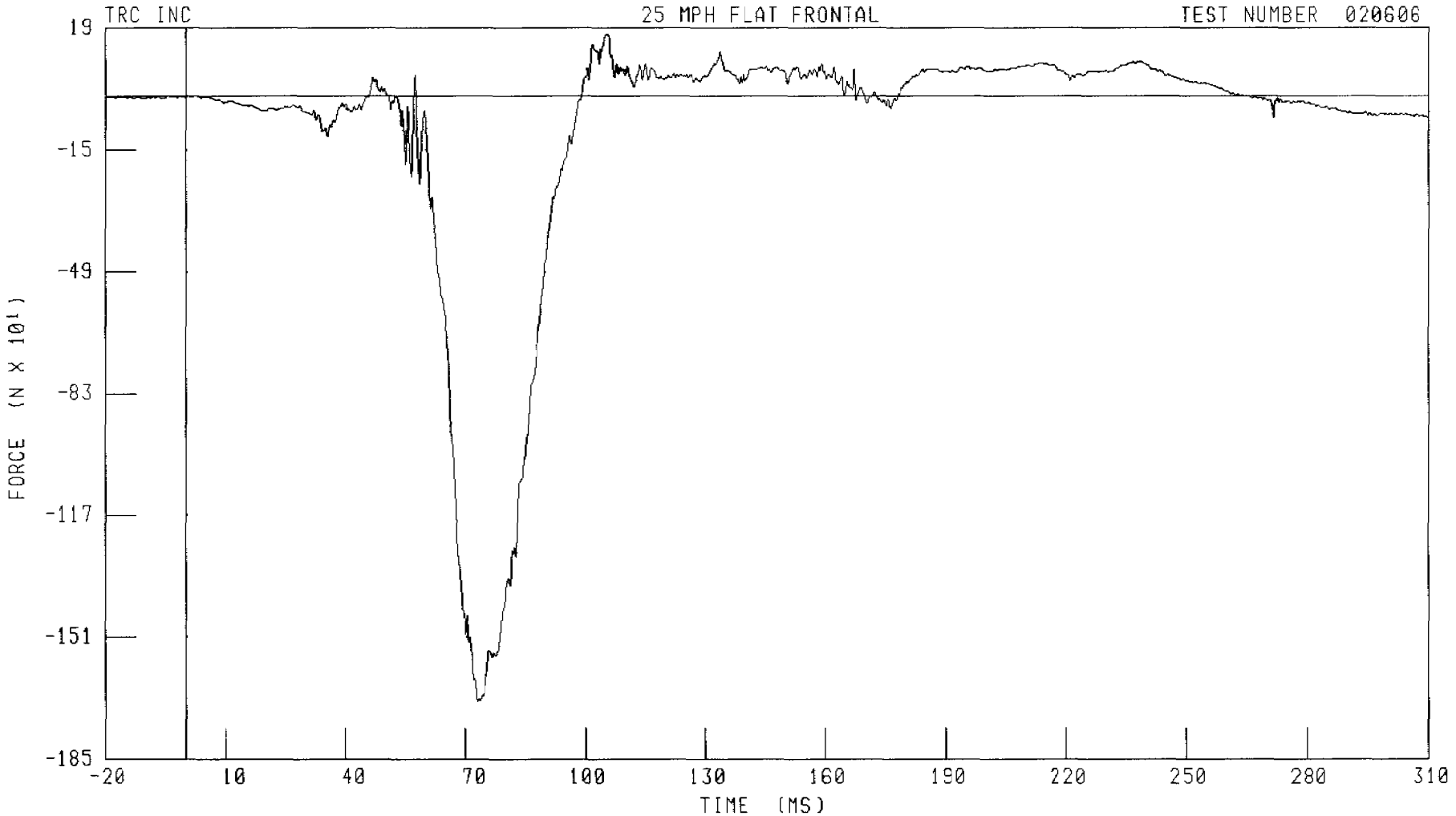
PEAK DATA 21 44 N M @ 111 52 MS, -12 66 N M @ 79 52 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS



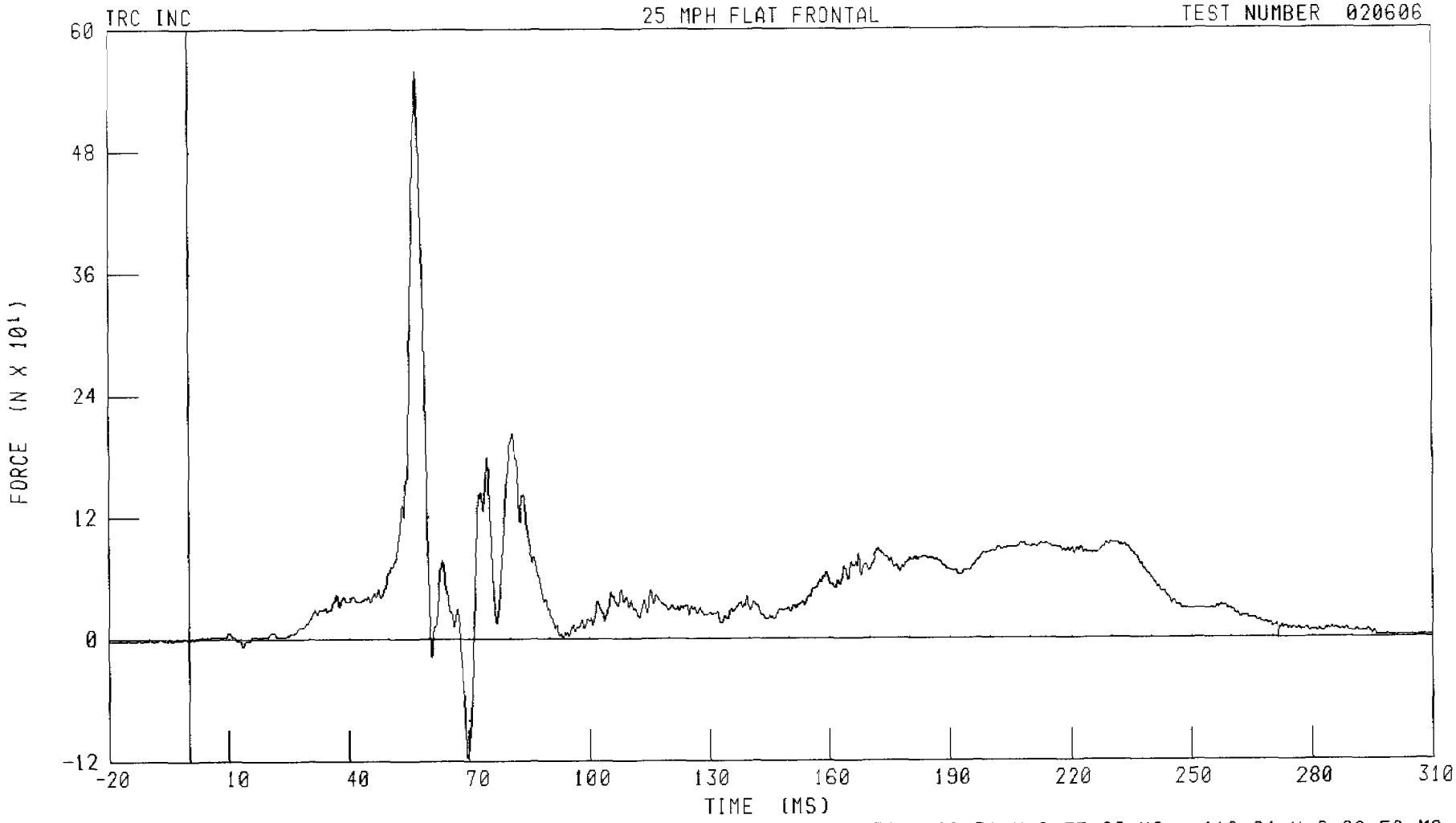
CHANNEL TBRXM1 FILTER CH CLASS 600 PEAK DATA 10 07 N M @ 98 24 MS, -67 55 N M @ 57 36 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT UPPER TIBIA Z-AXIS FORCE



CHANNEL TBRZF1 FILTER CH CLASS 600 PEAK DATA 173 67 N @ 105 44 MS, -1688 92 N @ 72 96 MS

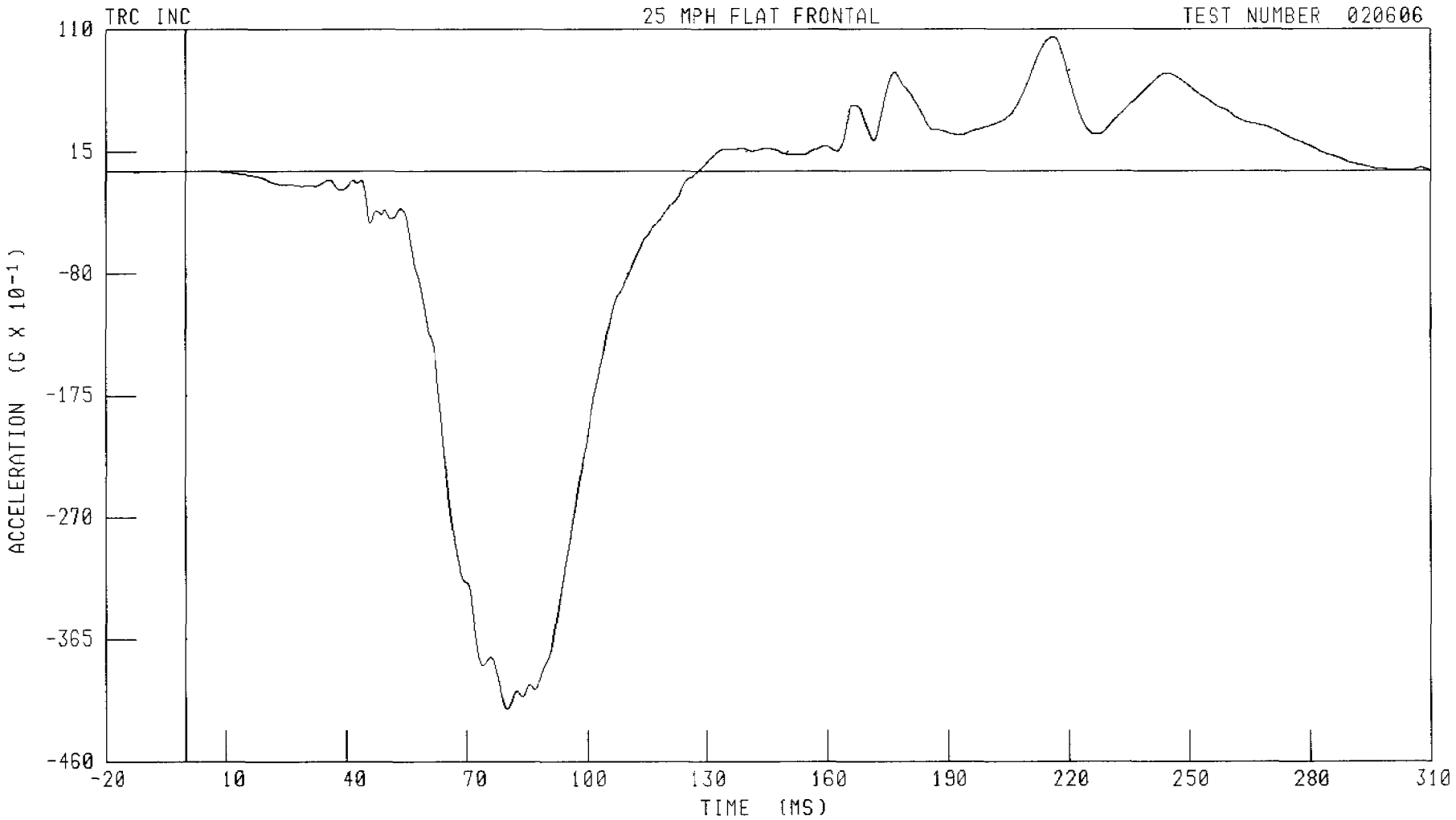
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT UPPER TIBIA X-AXIS FORCE



CHANNEL TBRXF1 FILTER CH CLASS 600

PEAK DATA 559 31 N @ 57 20 MS, -116 61 N @ 69 52 MS

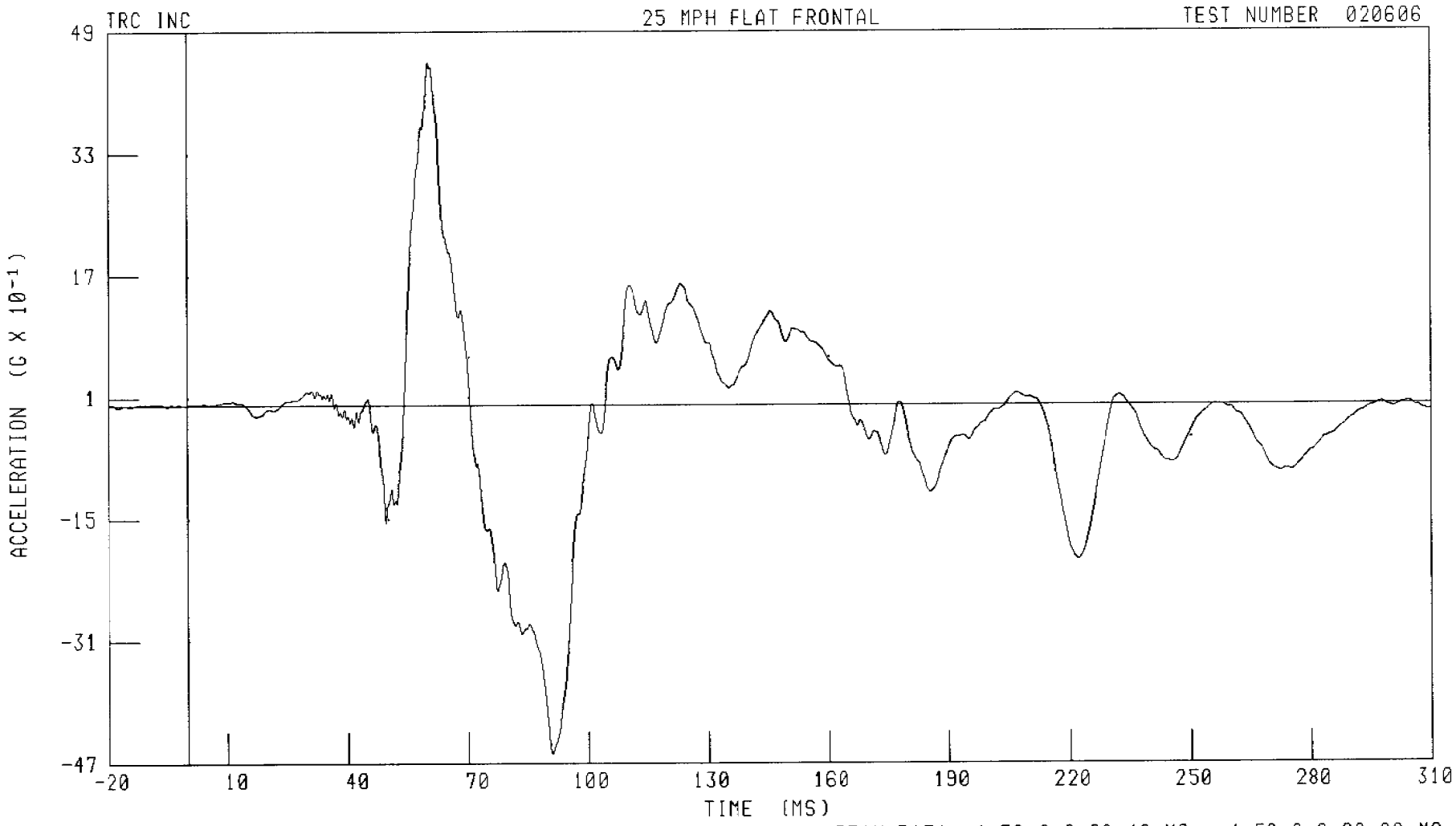
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER CHEST X-AXIS ACCELERATION REDUNDANT



CHANNEL CSTXR2 FILTER CH CLASS 180 PEAK DATA 10 39 G @ 216 08 MS, -41 94 G @ 80 08 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

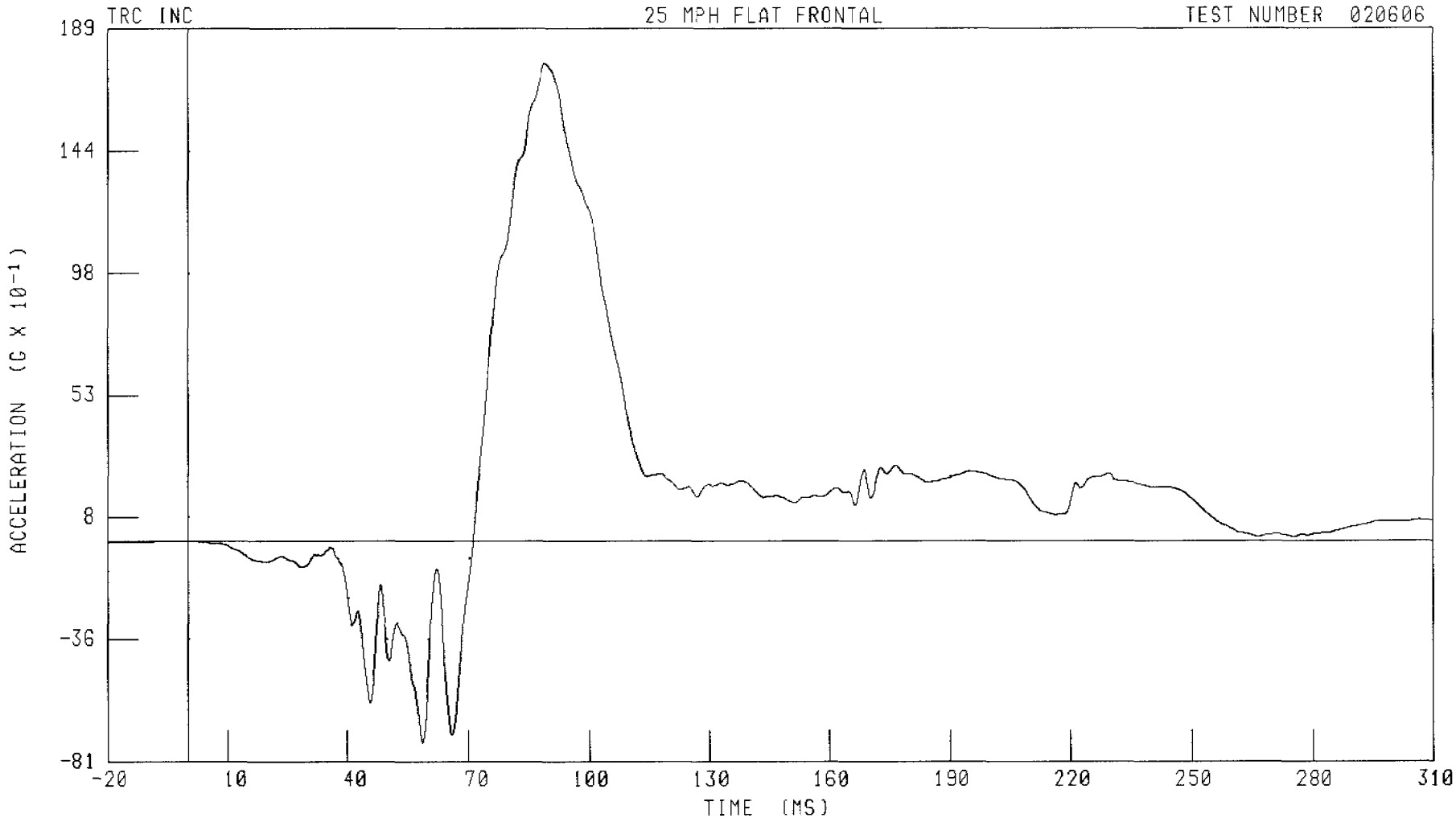
PASSENGER CHEST Y-AXIS ACCELERATION REDUNDANT



CHANNEL CSTYR2 FILTER CH CLASS 180

PEAK DATA 4 50 G @ 60 40 MS, -4 58 G @ 90 96 MS

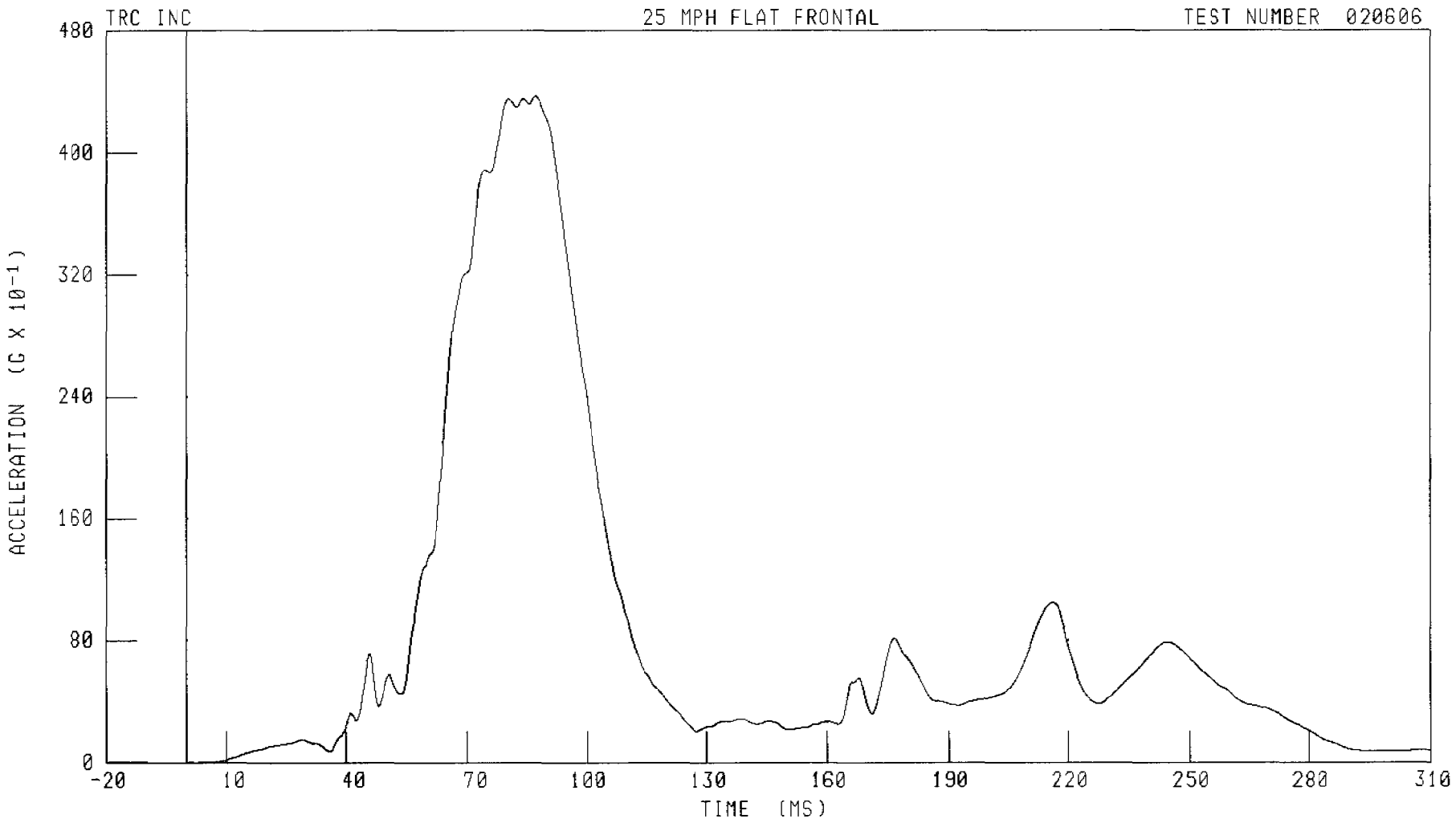
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER CHEST Z-AXIS ACCELERATION REDUNDANT



CHANNEL CSTZR2 FILTER CH CLASS 180

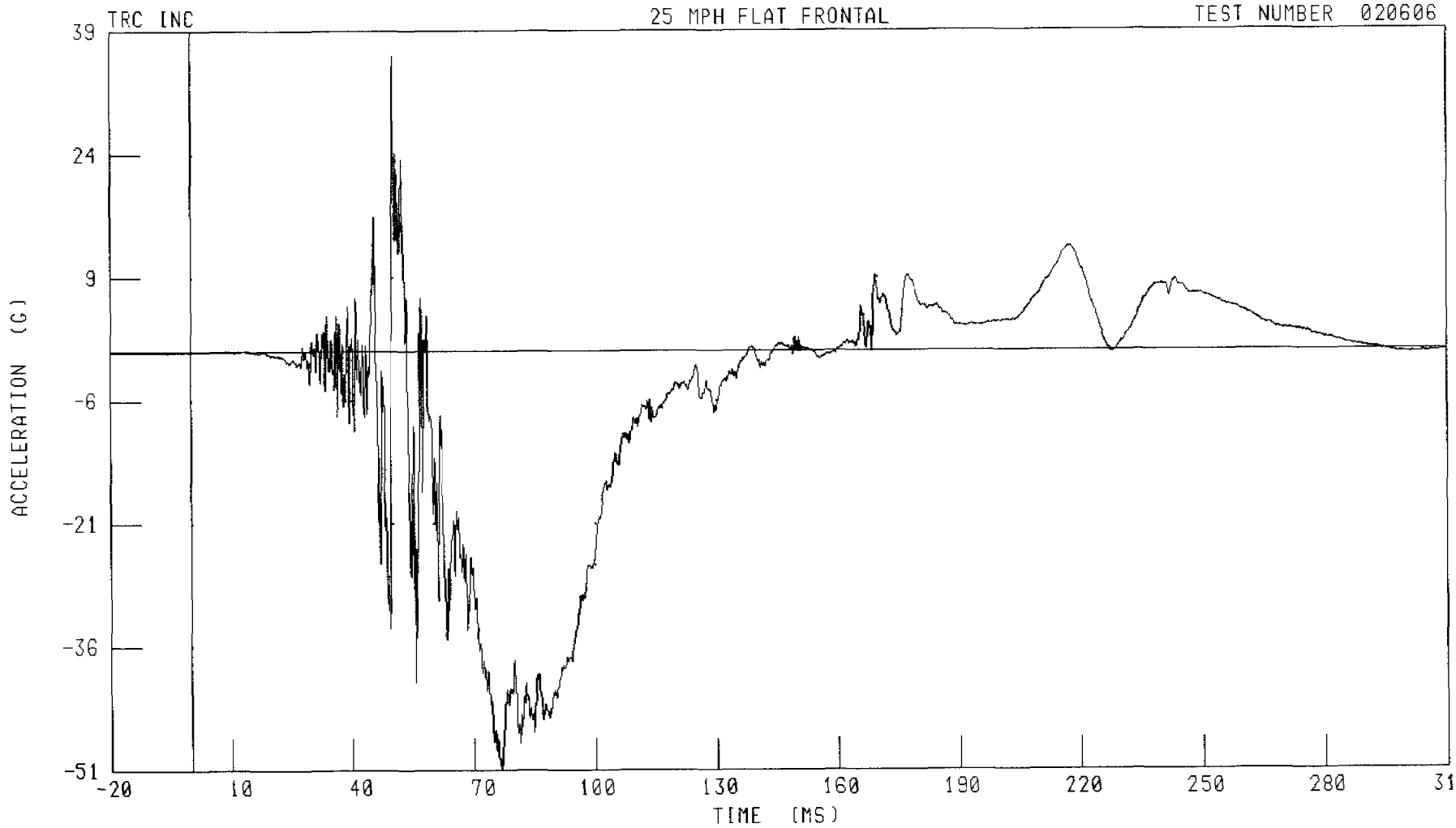
PEAK DATA 17 62 G @ 89 36 MS, -7 41 G @ 58 48 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER CHEST RESULTANT ACCELERATION REDUNDANT



CHANNEL CSTRR2 FILTER CH CLASS 180 PEAK DATA 43 74 G @ 87 20 MS, 0 00 G @ -20 00 MS

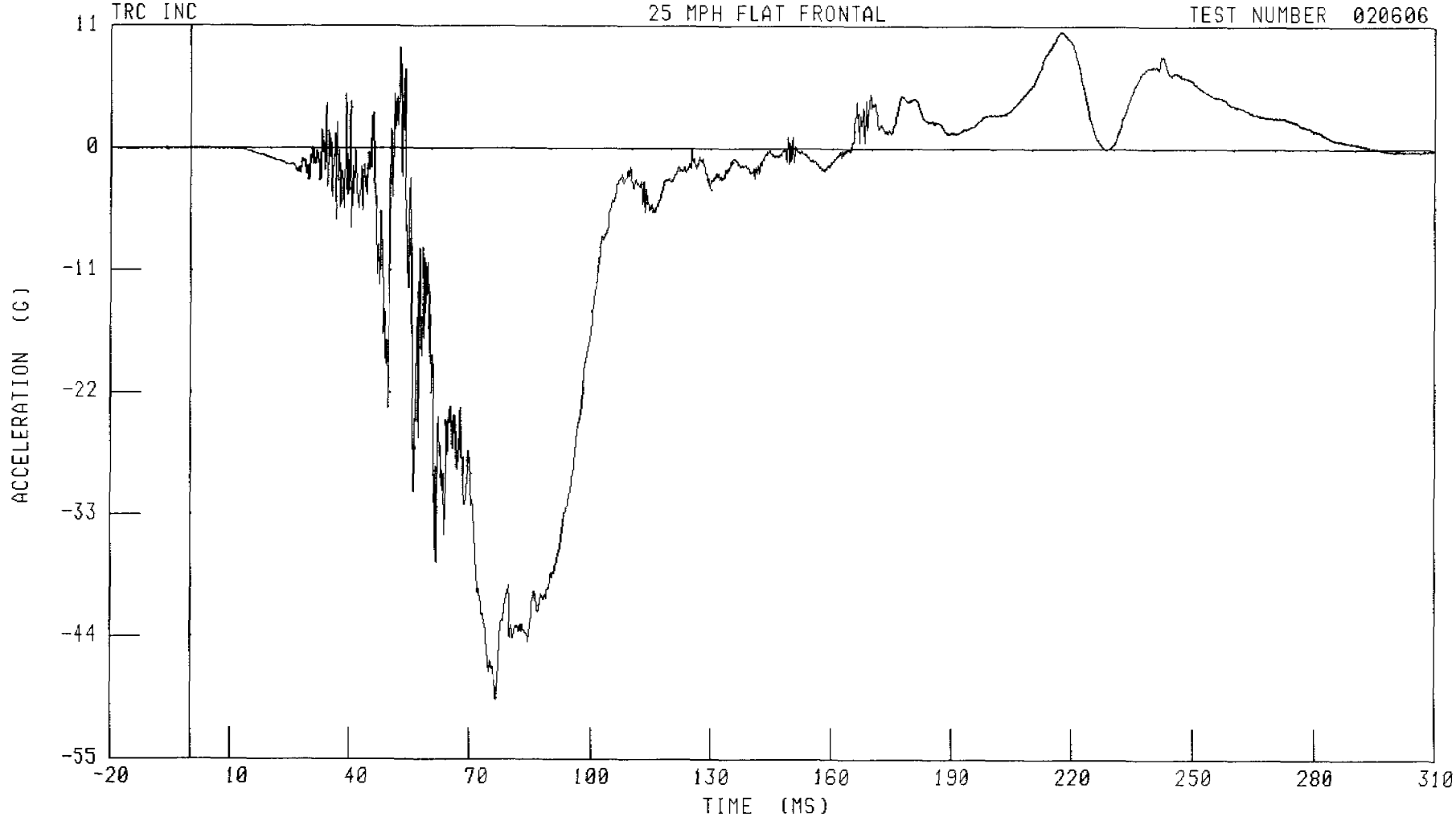
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER STERNUM UPPER X-AXIS ACCELERATION



CHANNEL STUXG2 FILTER CH CLASS 1000

PEAK DATA 35 99 G @ 50 24 MS, -50 88 G @ 76 72 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER STERNUM MID X-AXIS ACCELERATION

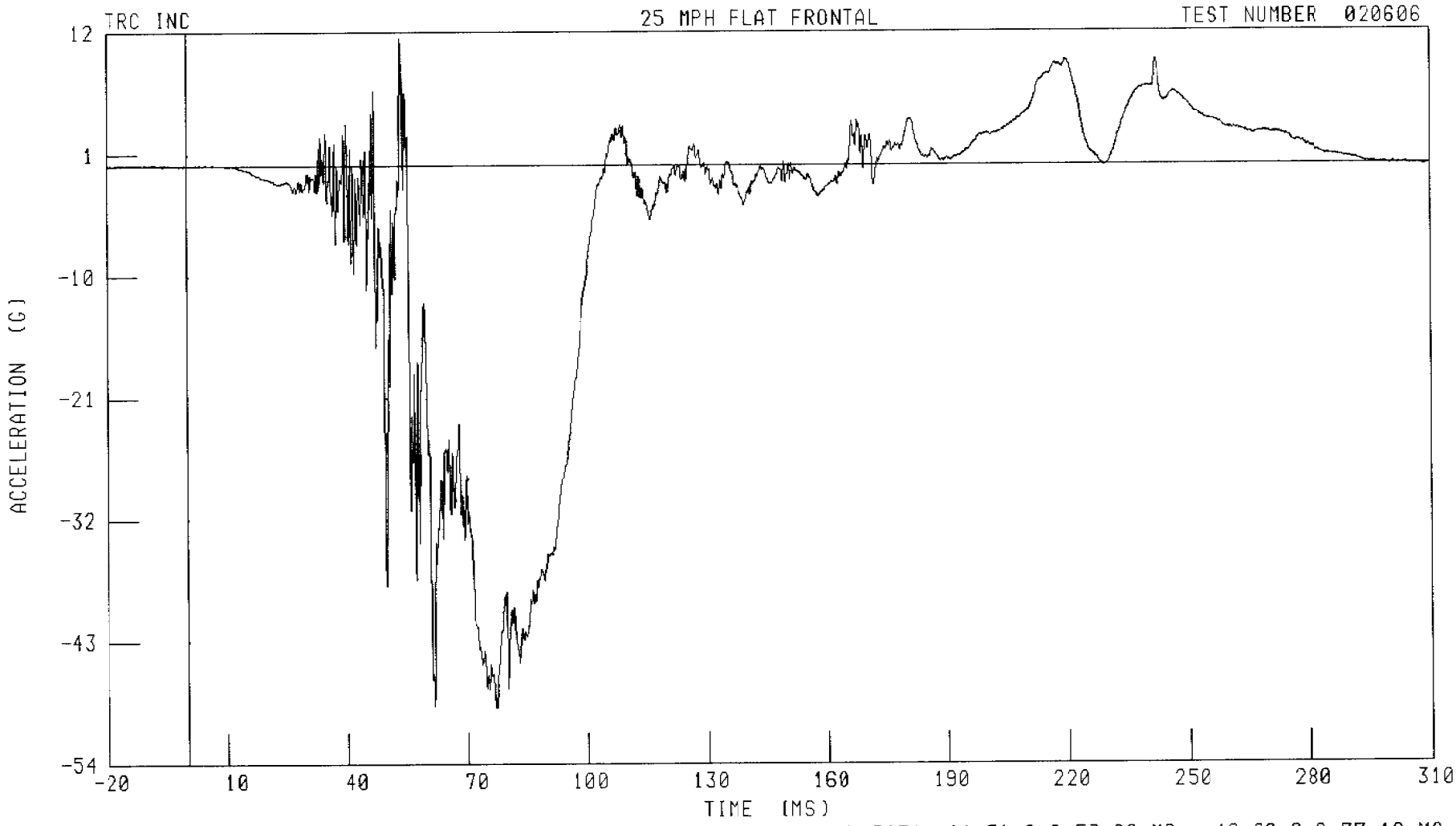


CHANNEL STMXG2 FILTER CH CLASS 1000

PEAK DATA 10 53 G @ 216 96 MS, -49 66 G @ 76 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

PASSENGER STERNUM LOWER X-AXIS ACCELERATION

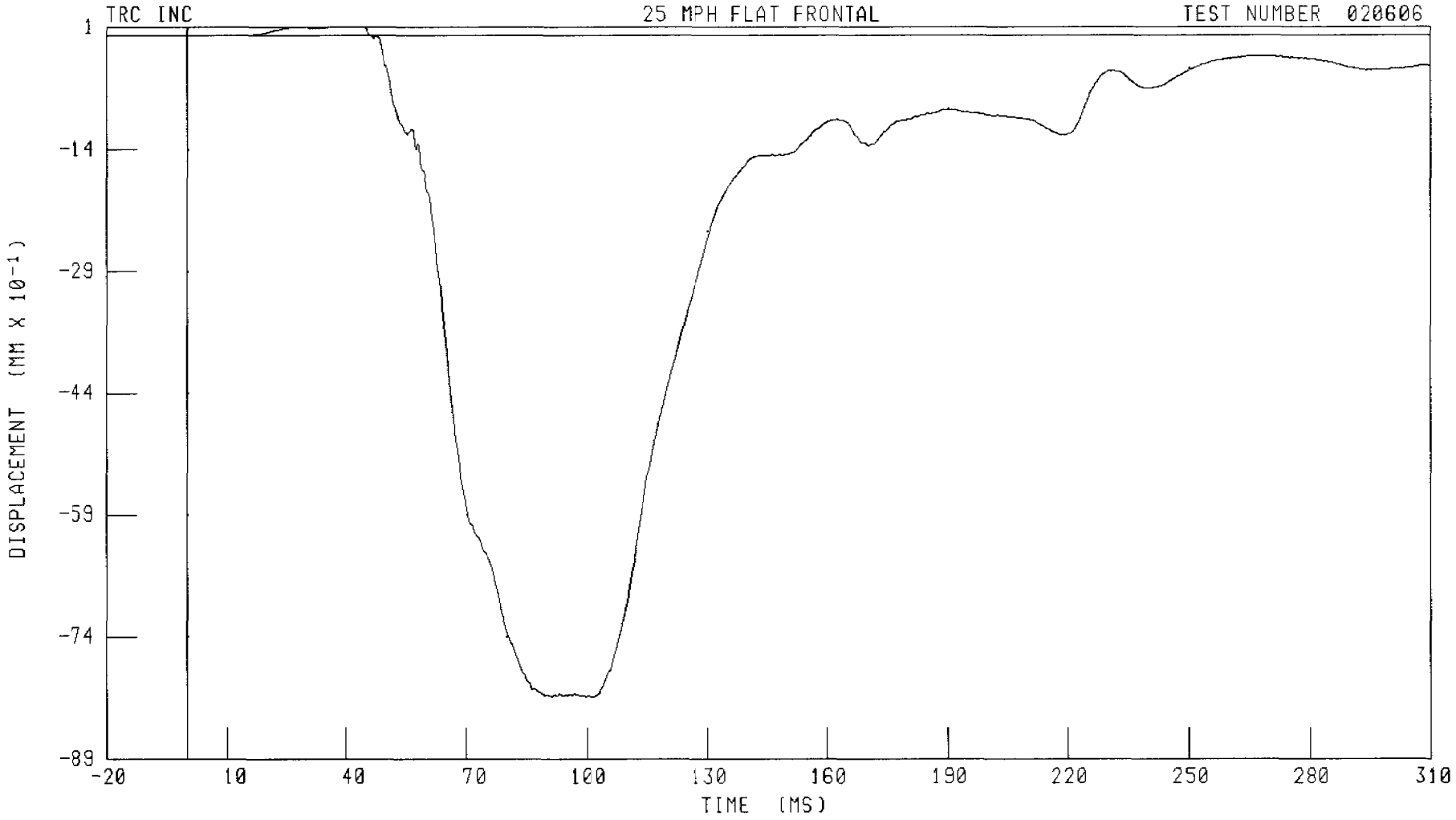


CHANNEL STLXG2 FILTER CH CLASS 1000

PEAK DATA 11 51 G @ 53 68 MS, -48 96 G @ 77 12 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

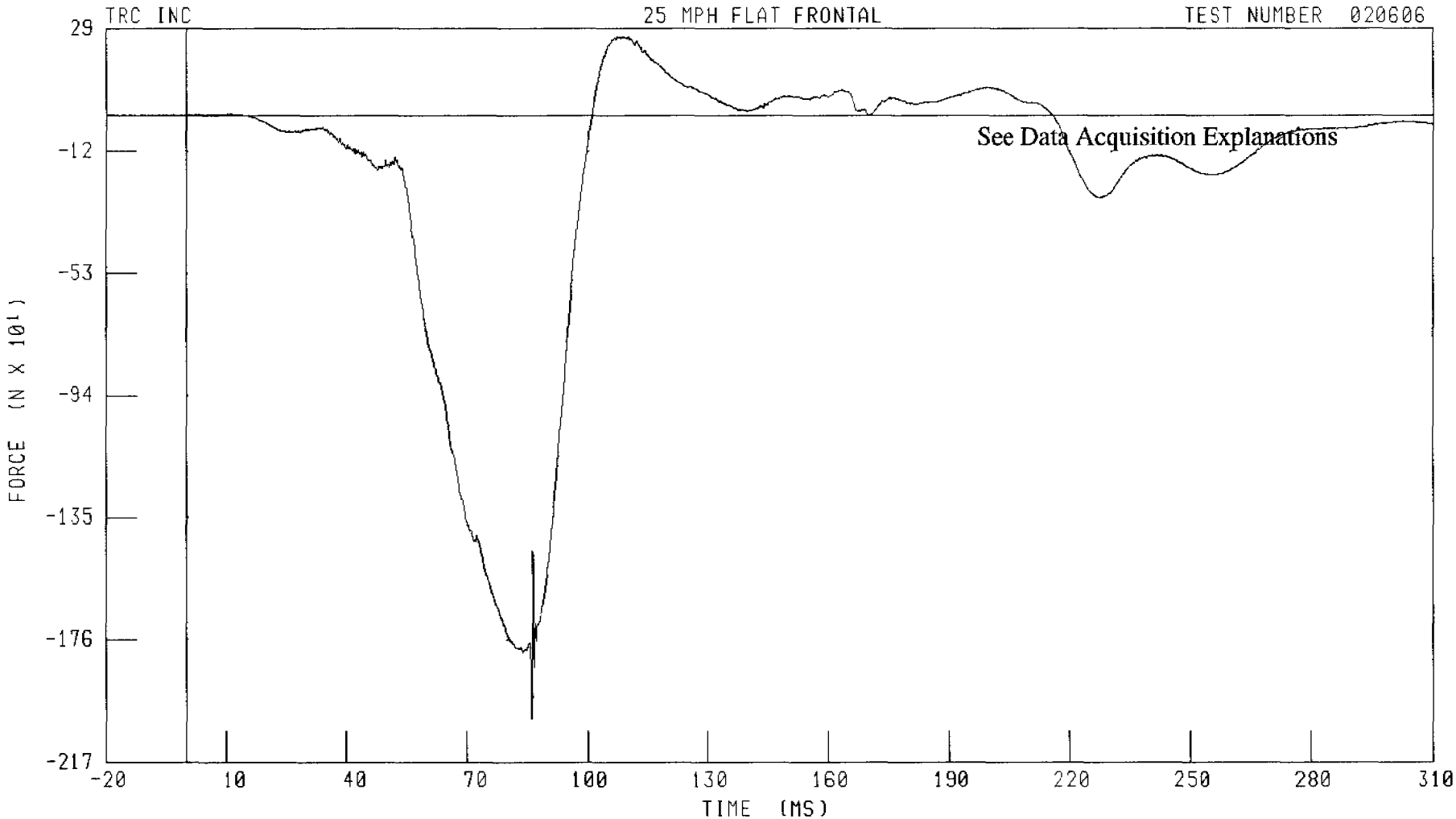
PASSENGER CHEST DEFLECTION



CHANNEL CSTXD2 FILTER CH CLASS 600

PEAK DATA 0 15 MM @ 42 56 MS, -8 14 MM @ 101 12 MS

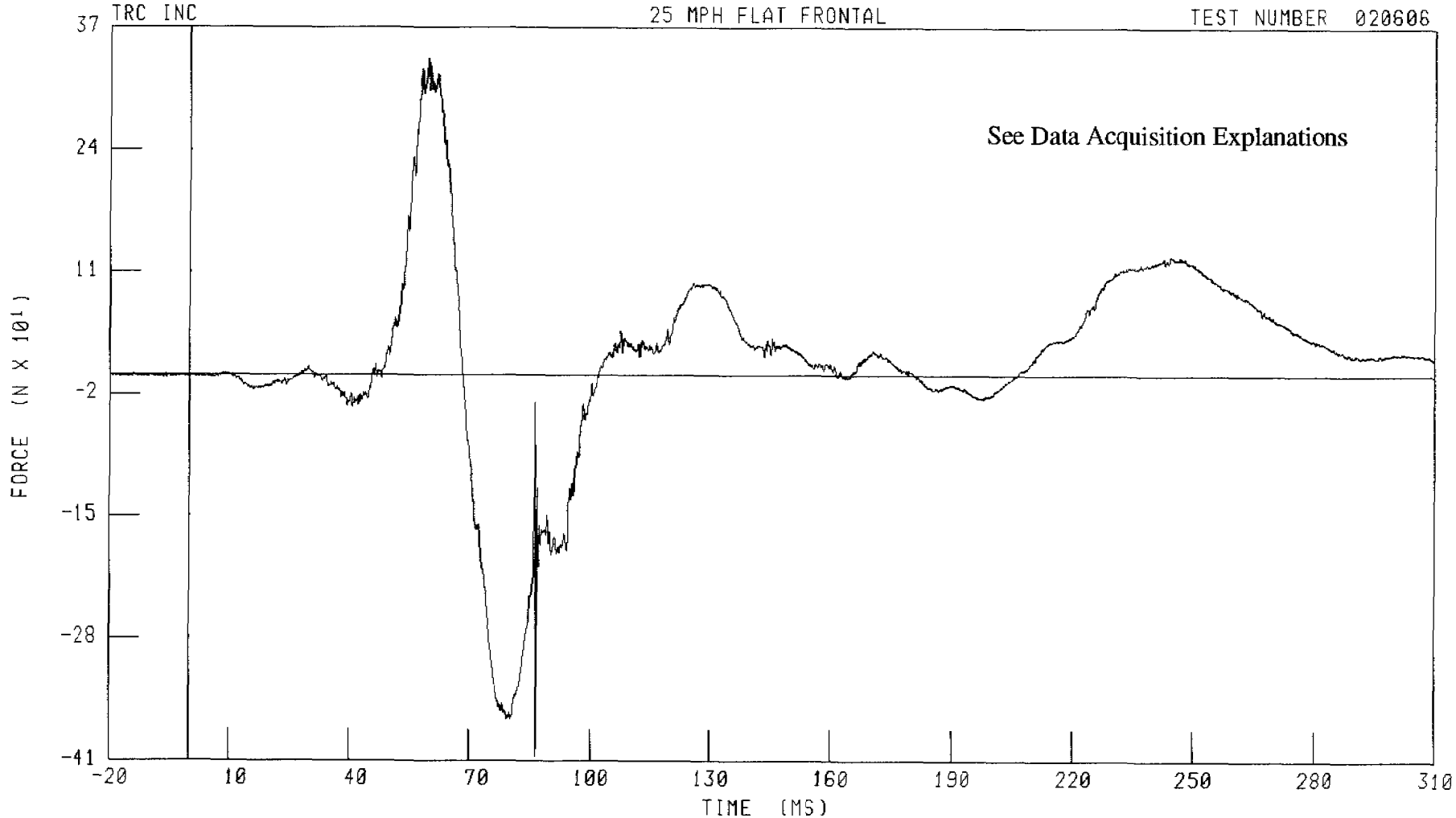
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LUMBAR X-AXIS FORCE



CHANNEL LMBXF2 FILTER CH CLASS 1000

PEAK DATA 263 79 N @ 107 60 MS, -2023 83 N @ 86 24 MS

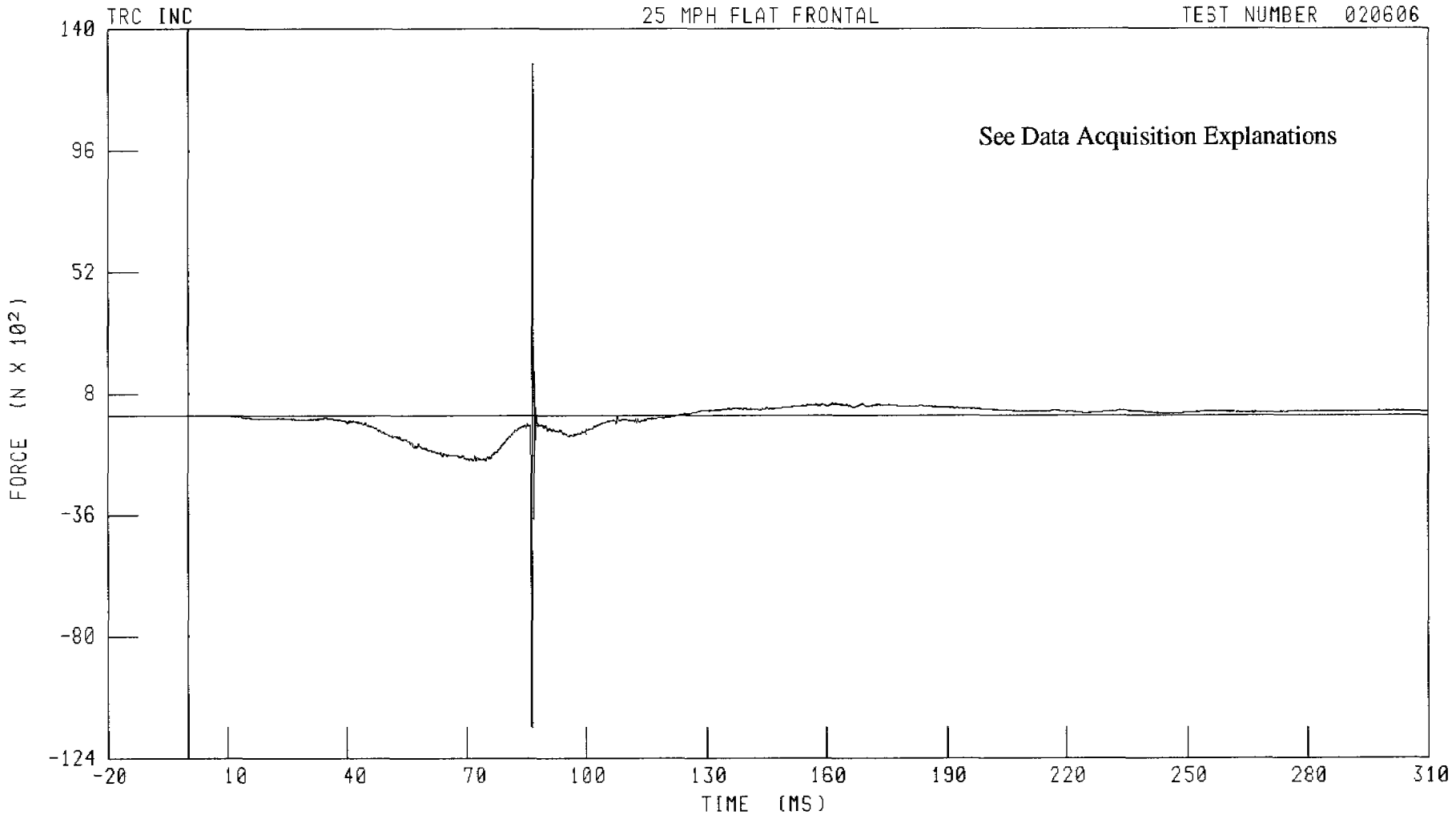
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LUMBAR Y-AXIS FORCE



CHANNEL LMBYF2 FILTER CH CLASS 1000

PEAK DATA 337 56 N @ 59 52 MS, -405 72 N @ 86 48 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LUMBAR Z-AXIS FORCE

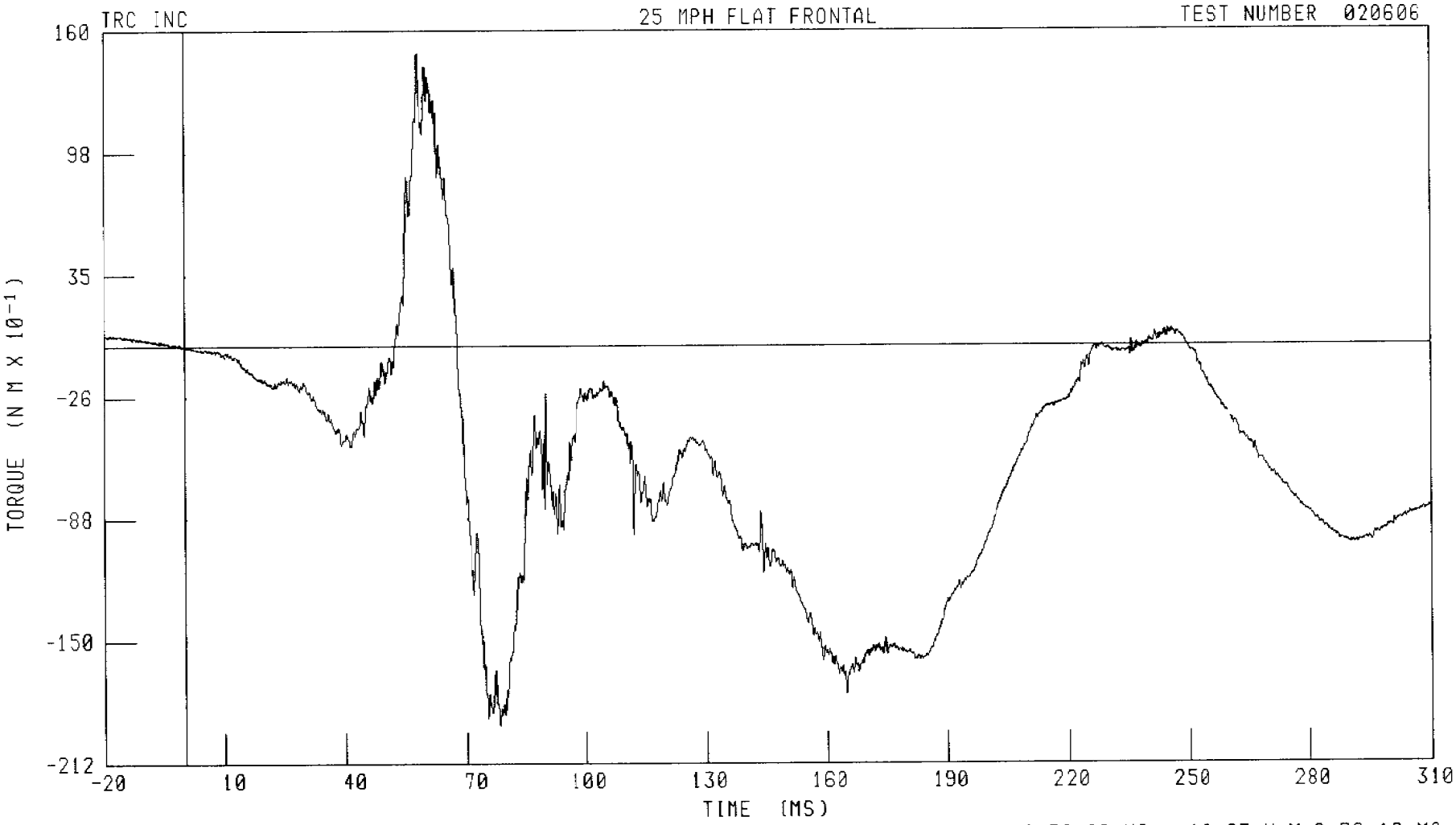


CHANNEL LMBZF2 FILTER CH CLASS 1000

PEAK DATA 12741 88 N @ 86 56 MS, -11273 87 N @ 86 32 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

PASSENGER LUMBAR X-AXIS MOMENT

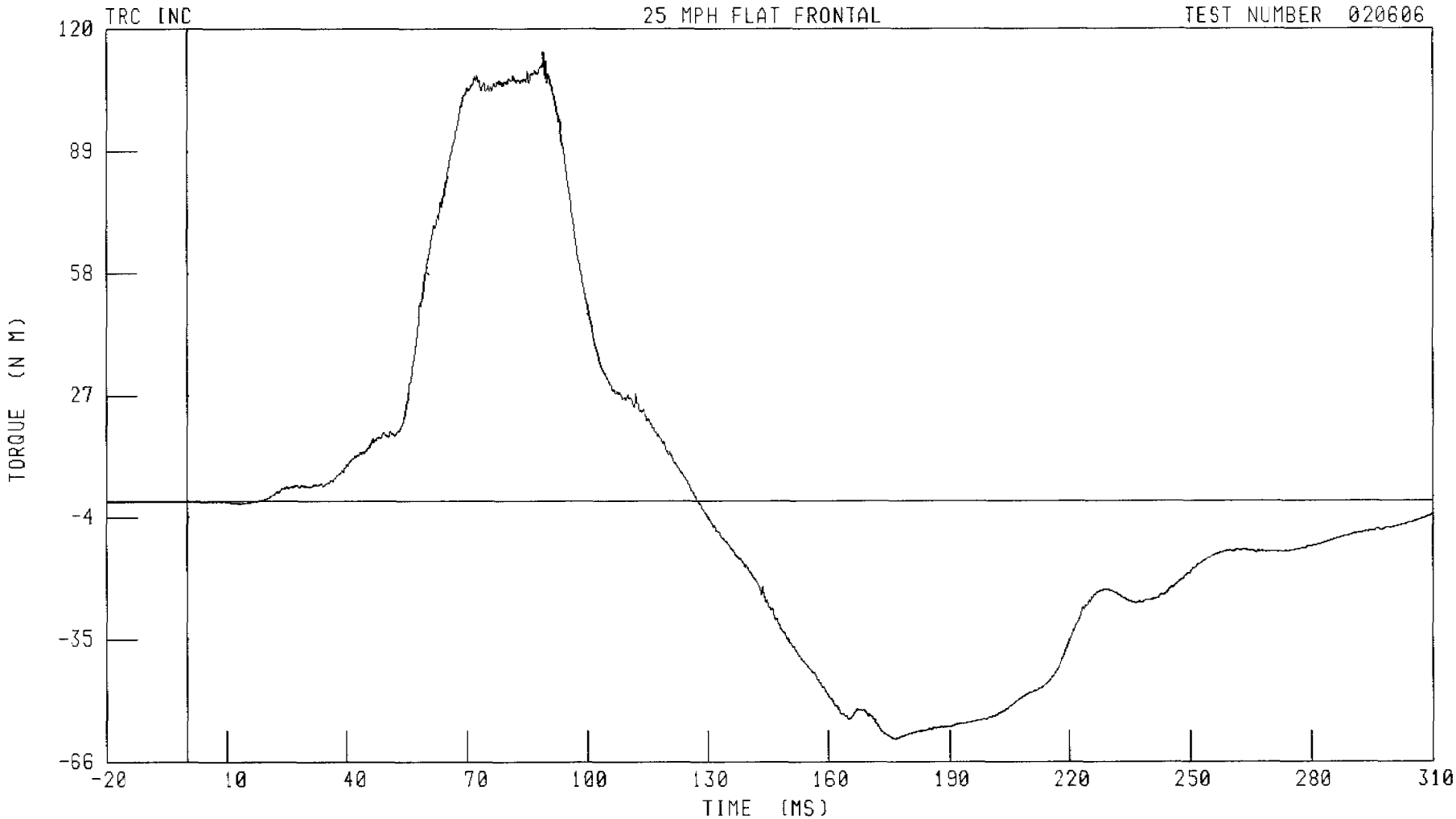


CHANNEL LMBXM2 FILTER CH CLASS 1000

PEAK DATA 14 84 N M @ 58 08 MS, -19 27 N M @ 78 16 MS

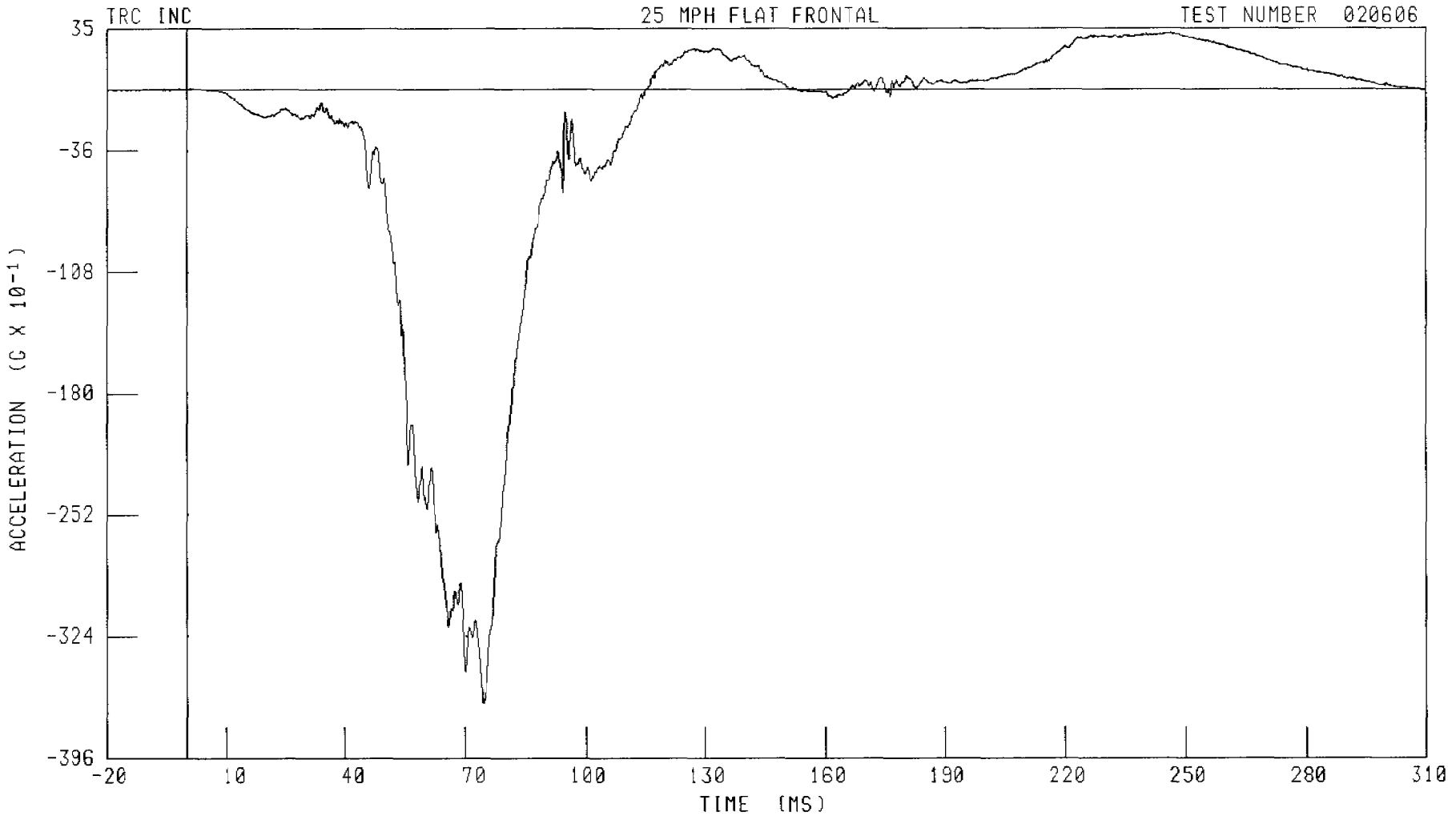
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

PASSENGER LUMBAR Y-AXIS MOMENT



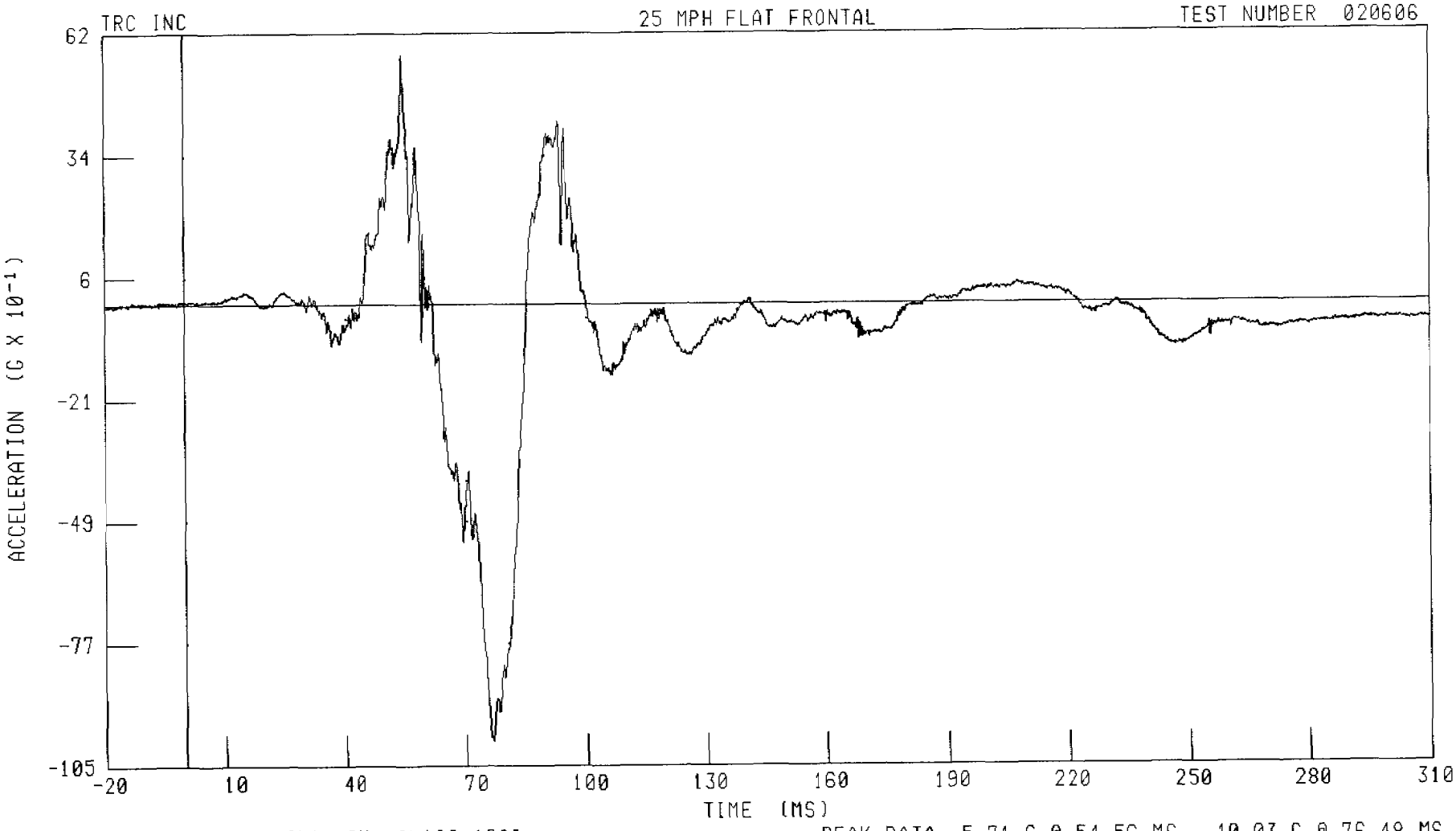
CHANNEL LMBYM2 FILTER CH CLASS 1000 PEAK DATA 114 23 N M @ 89 28 MS, -60 19 N M @ 176 32 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER PELVIS X-AXIS ACCELERATION



CHANNEL PEVXG2 FILTER CH CLASS 1000 PEAK DATA 3 34 G @ 246 24 MS, -36 35 G @ 74 40 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER PELVIS Y-AXIS ACCELERATION

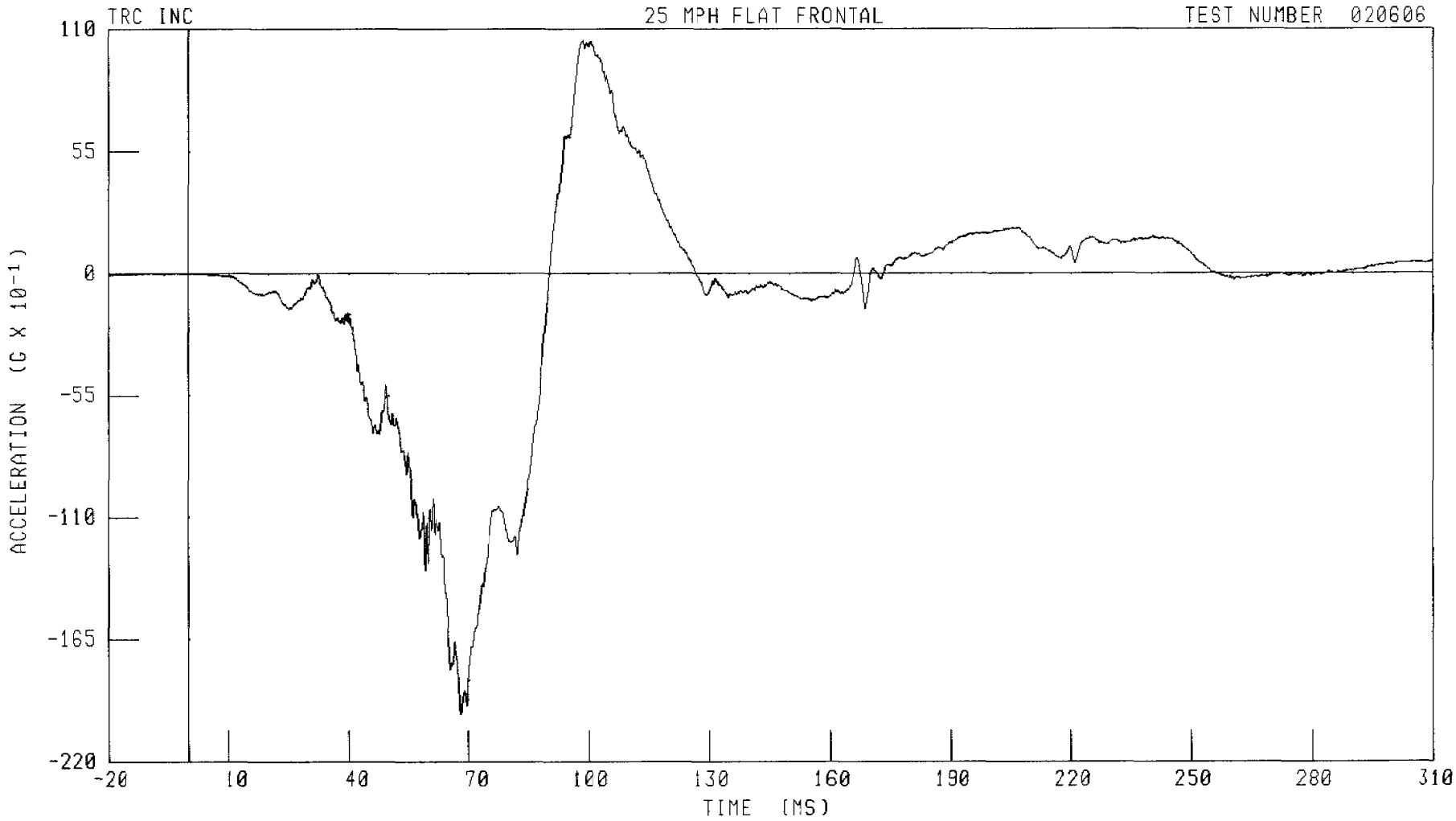


CHANNEL PEVYG2 FILTER CH CLASS 1000

PEAK DATA 5 71 G @ 54 56 MS, -10 03 G @ 76 48 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

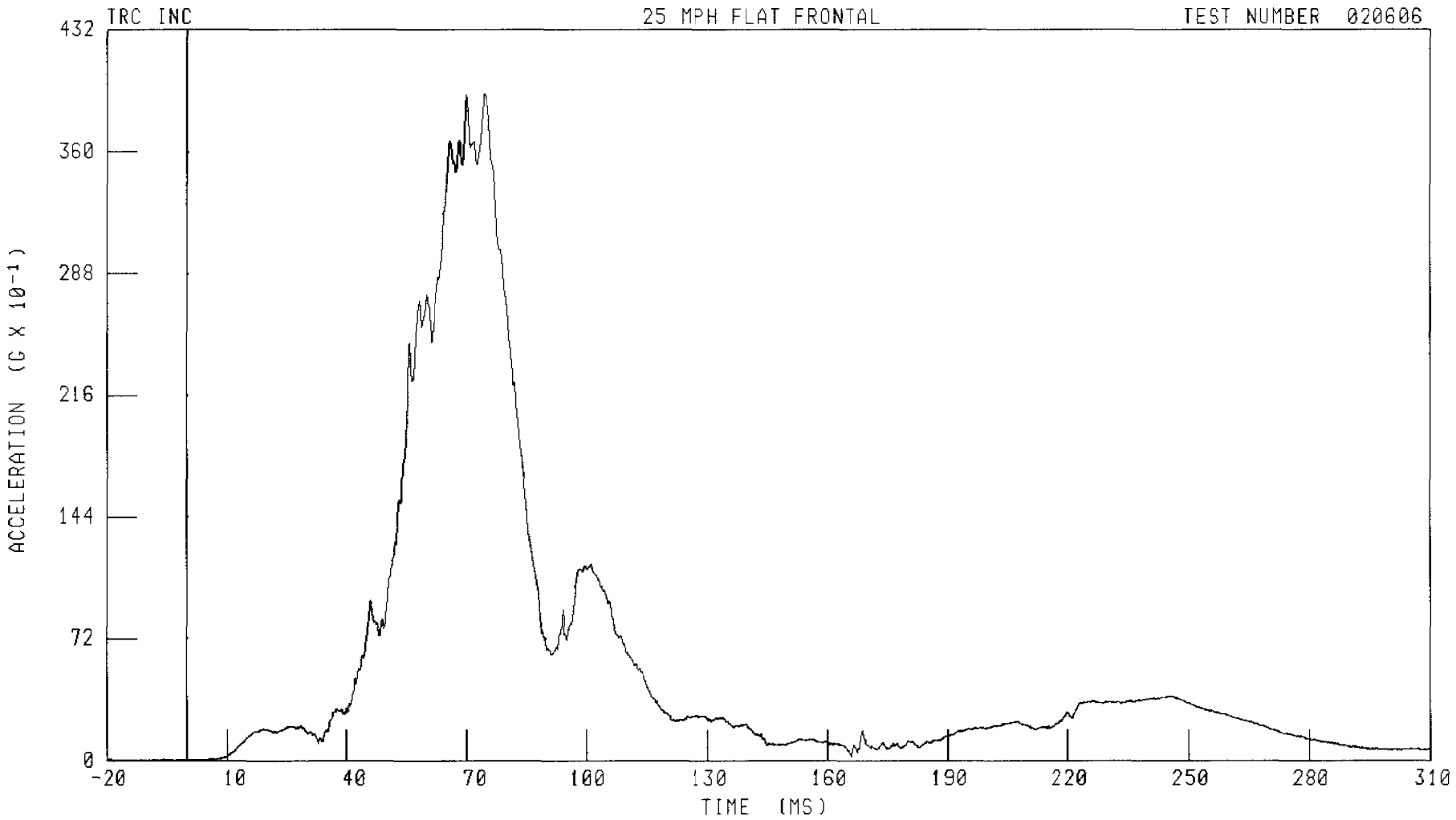
PASSENGER PELVIS Z-AXIS ACCELERATION



CHANNEL PEVZG2 FILTER CH CLASS 1000

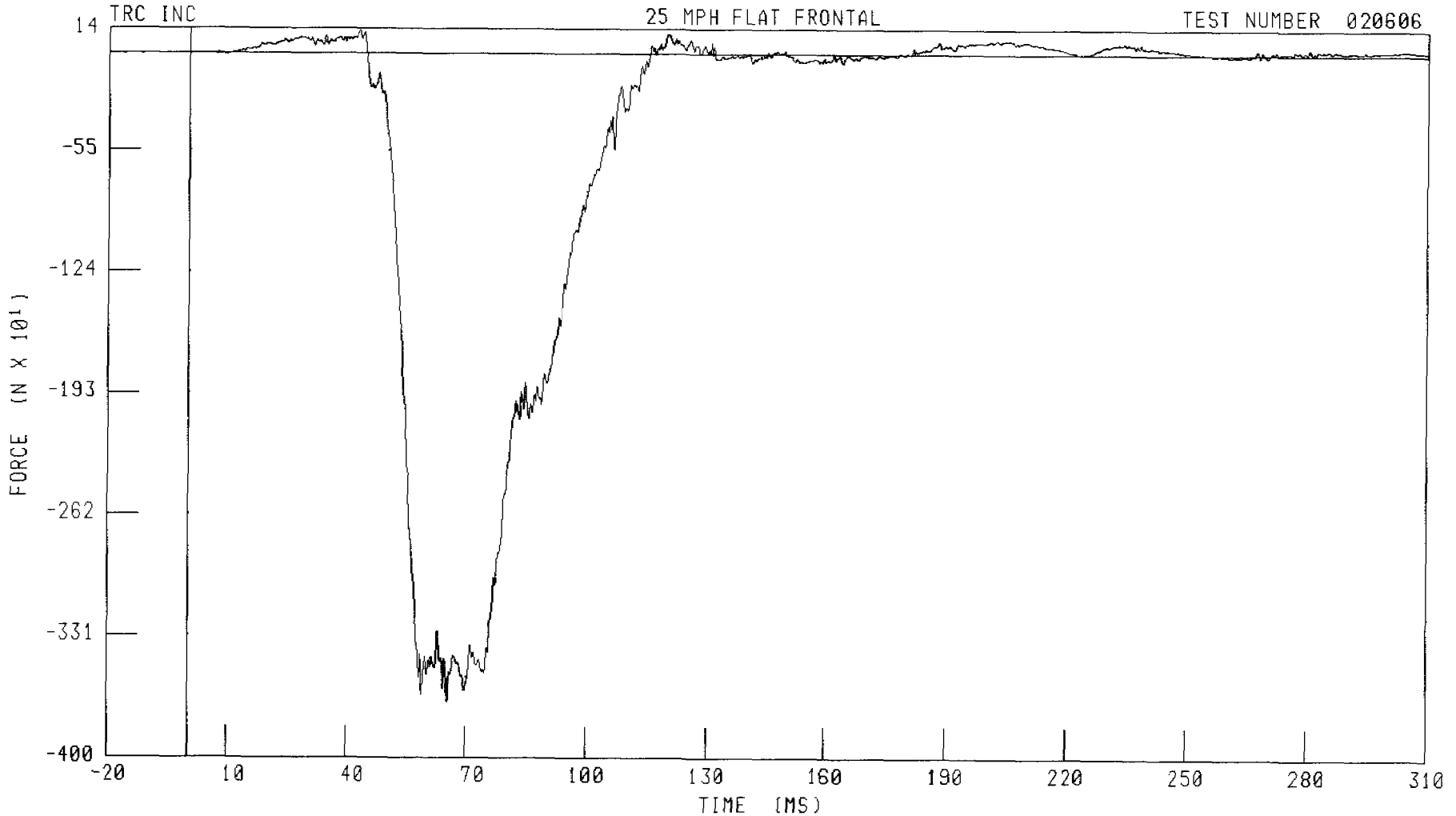
PEAK DATA 10 49 G @ 98 80 MS, -19 88 G @ 68 08 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER PELVIS RESULTANT ACCELERATION



CHANNEL PEVRG2 FILTER CH CLASS 1000 PEAK DATA 39 46 G @ 74 48 MS, 0 01 G @ -16 16 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT FEMUR FORCE

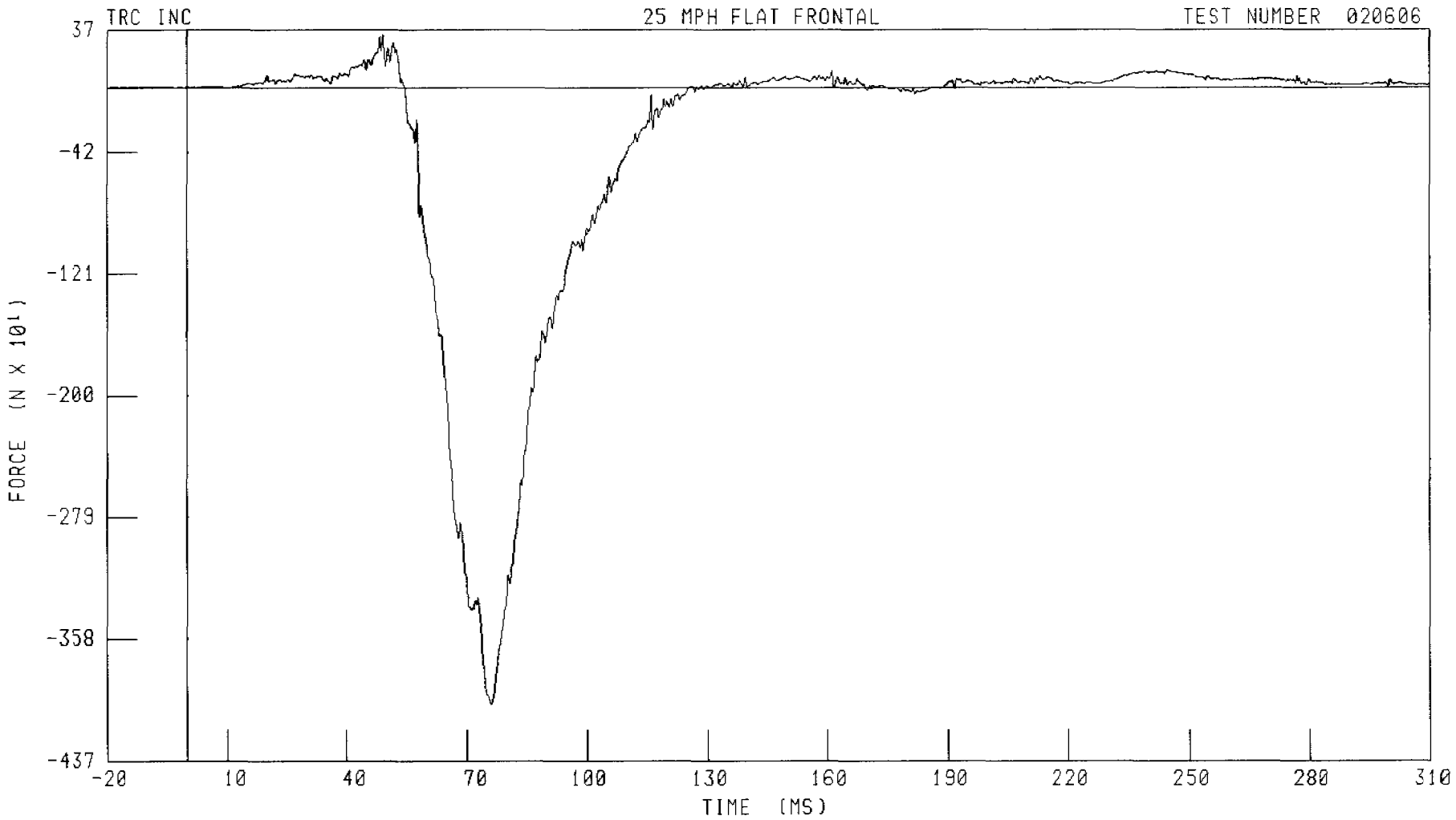


CHANNEL LFMZF2 FILTER CH CLASS 600

PEAK DATA 129 07 N @ 42 96 MS, -3683 12 N @ 65 36 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

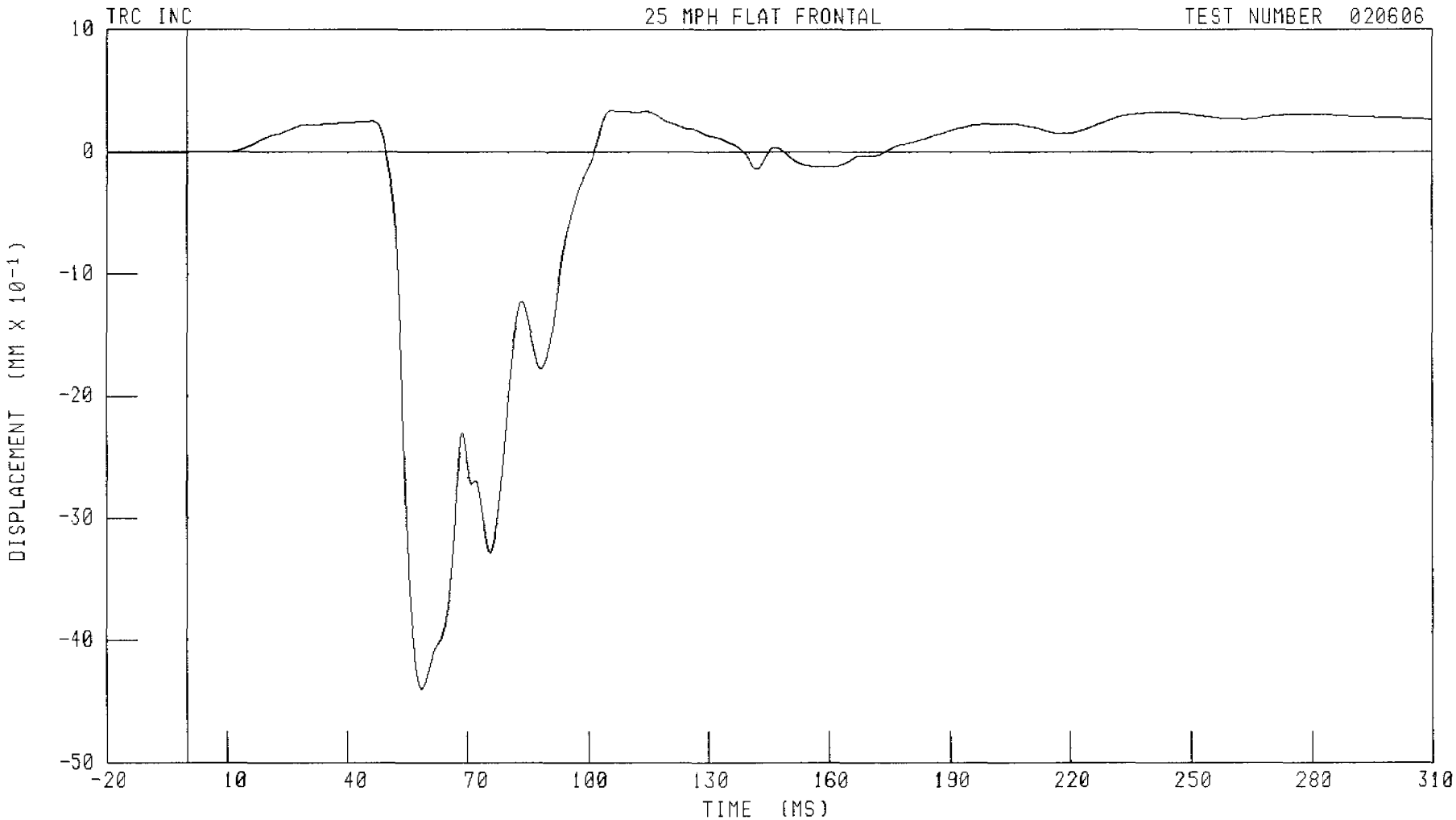
PASSENGER RIGHT FEMUR FORCE



CHANNEL RFMZF2 FILTER CH CLASS 600

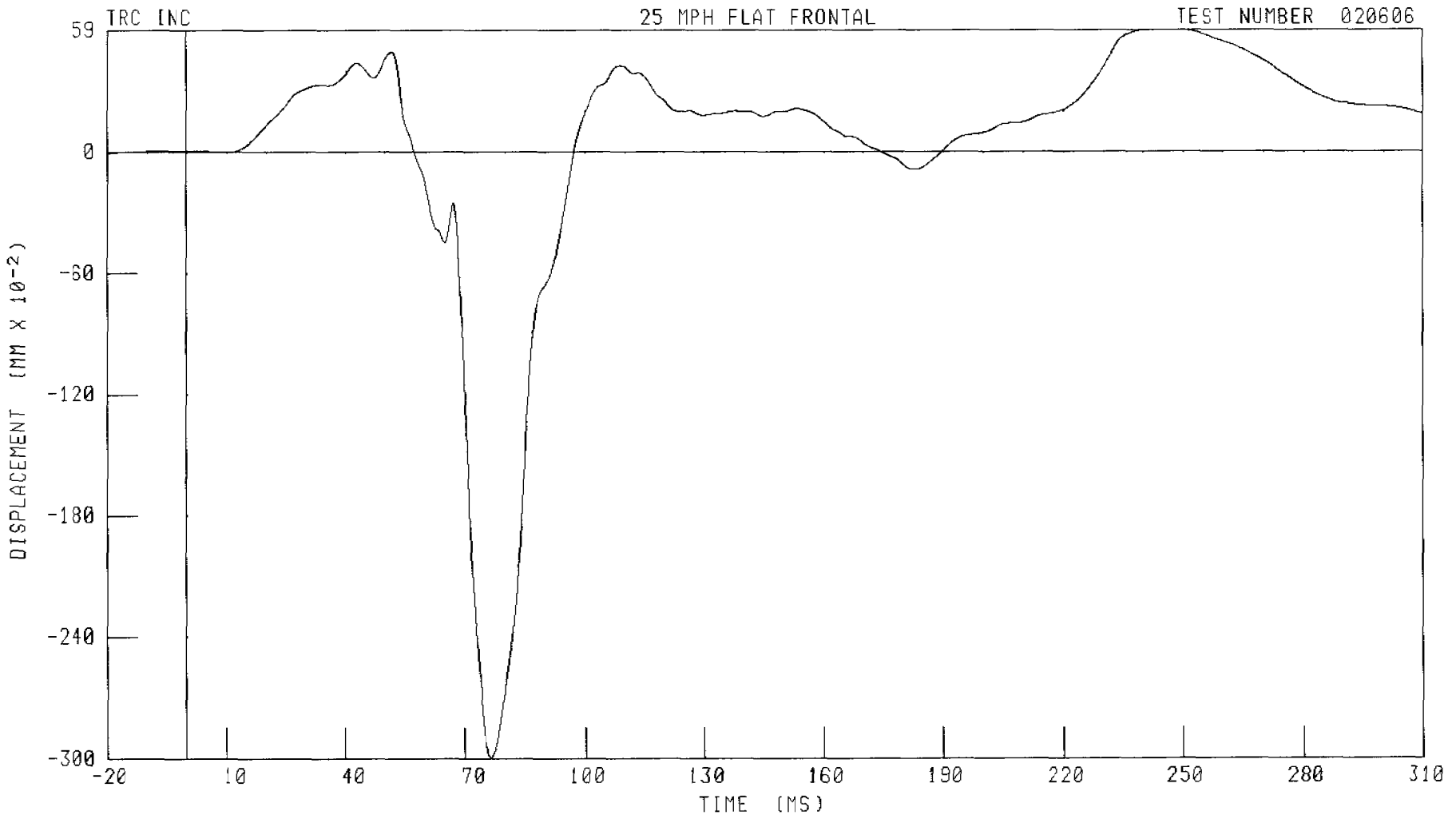
PEAK DATA 340 63 N @ 49 12 MS, -4005 52 N @ 76 16 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT TIBIA TO FEMUR DISPLACEMENT



CHANNEL KNLXD2 FILTER CH CLASS 180 PEAK DATA 0 34 MM @ 106 24 MS, -4 40 MM @ 58 64 MS

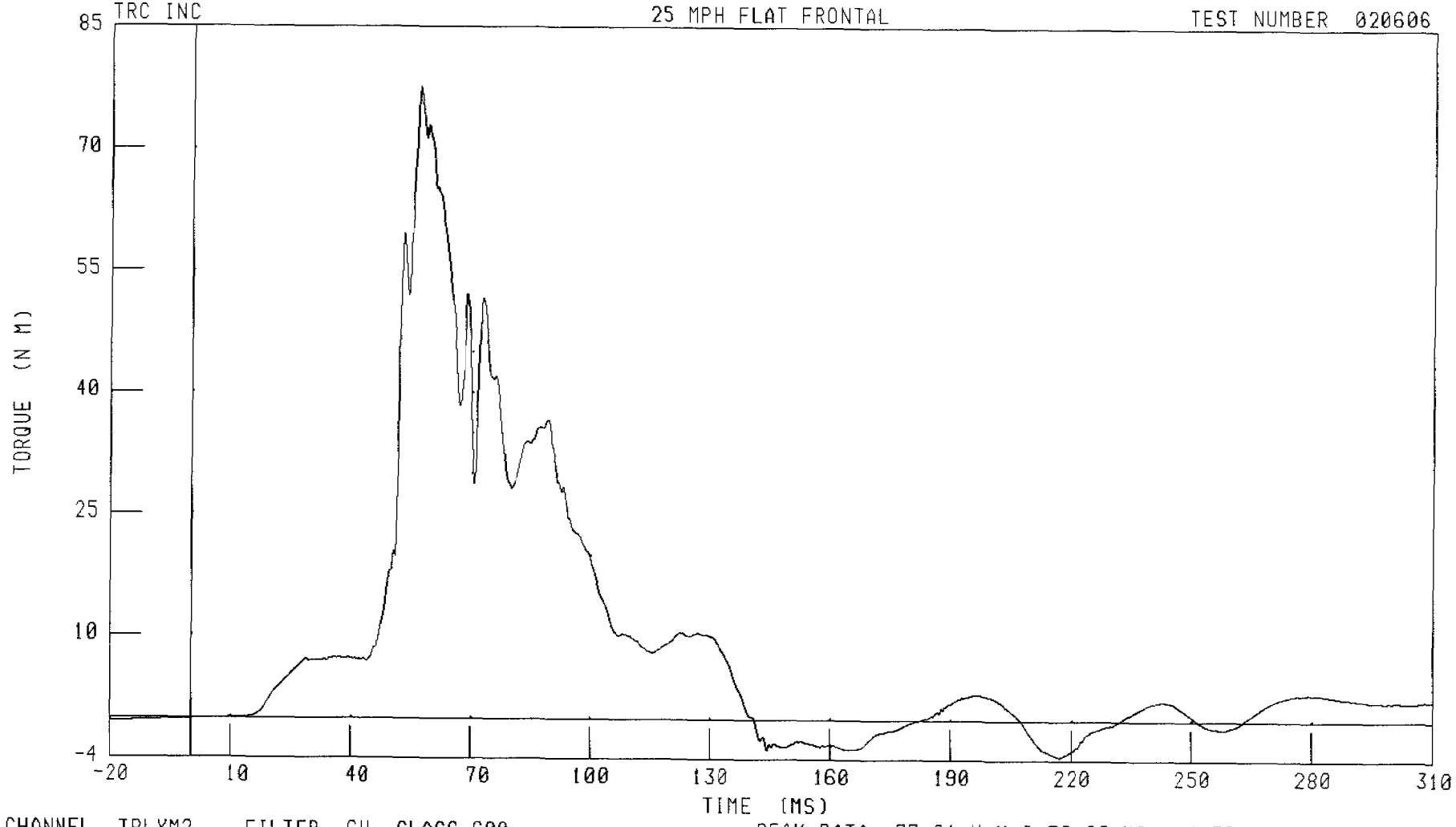
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT TIBIA TO FEMUR DISPLACEMENT



CHANNEL KNRXD2 FILTER CH CLASS 180

PEAK DATA 0 61 MM @ 246 40 MS, -2 99 MM @ 76 64 MS

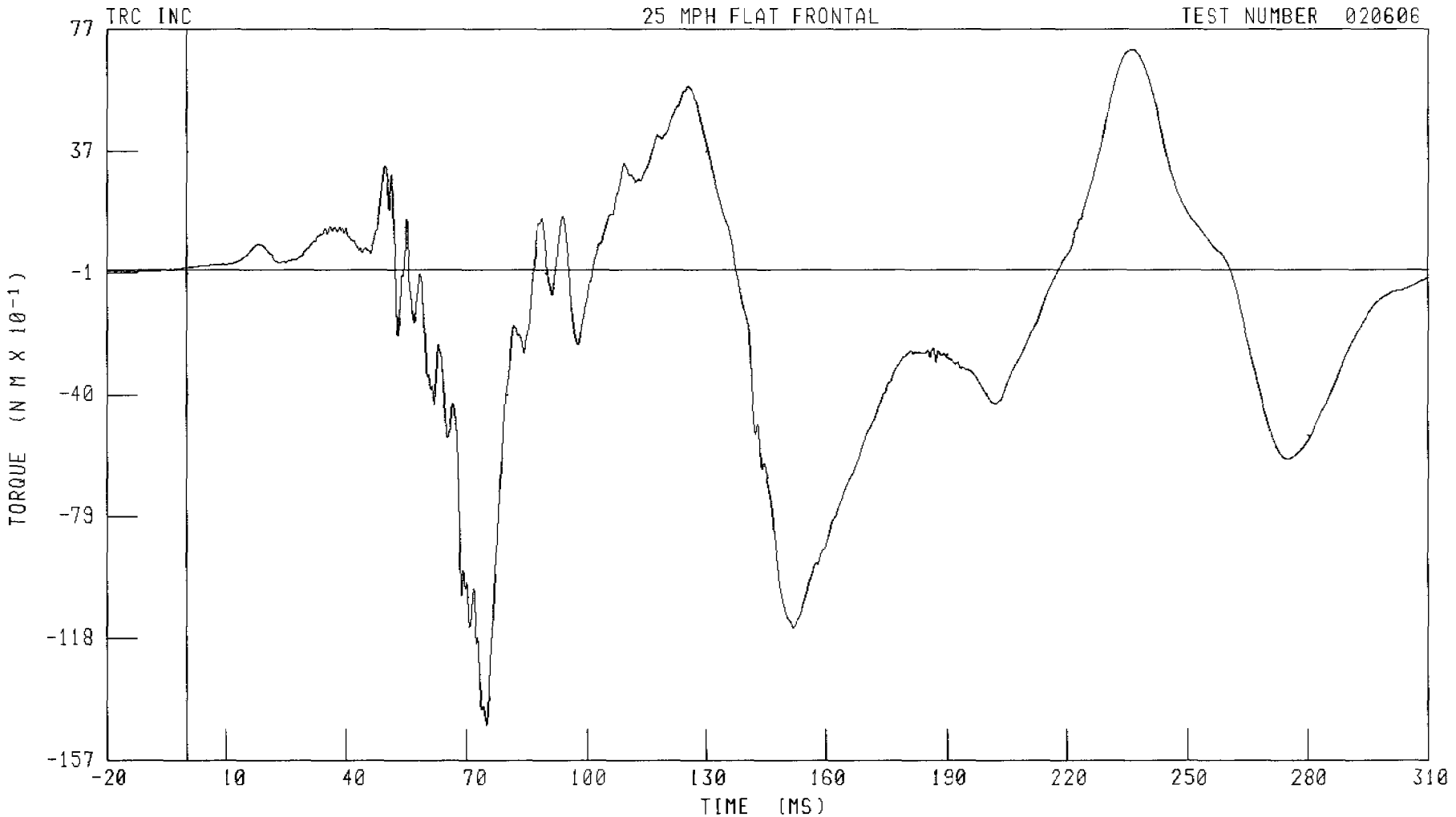
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS



CHANNEL TBLYM2 FILTER CH CLASS 600

PEAK DATA 77 81 N M @ 56 96 MS, -4 38 N M @ 216 96 MS

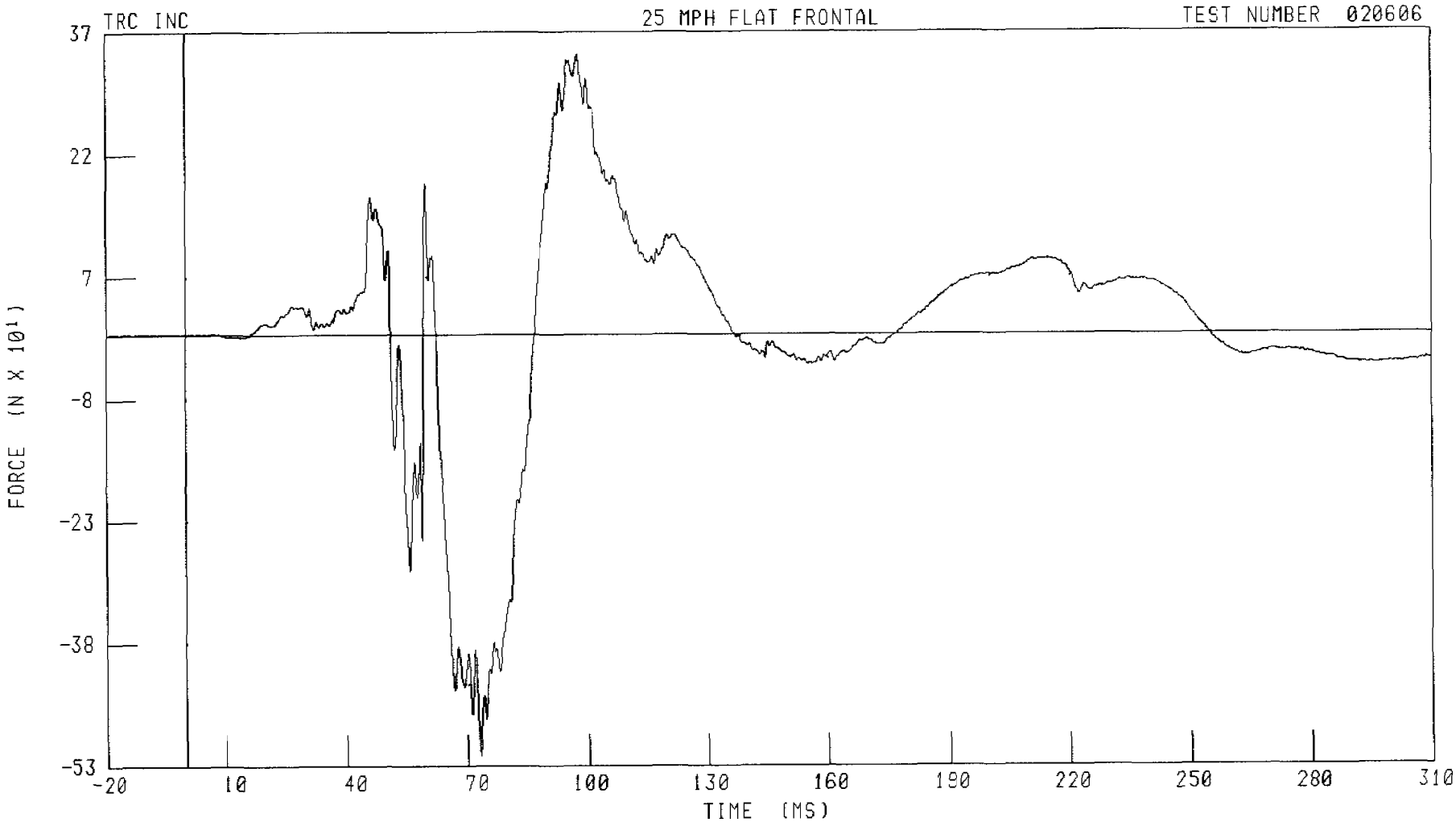
2001 DODCE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT UPPER TIBIA MOMENT ABOUT X AXIS



CHANNEL TBLXM2 FILTER CH CLASS 600

PEAK DATA 7 06 N M @ 236 32 MS, -14 56 N M @ 75 04 MS

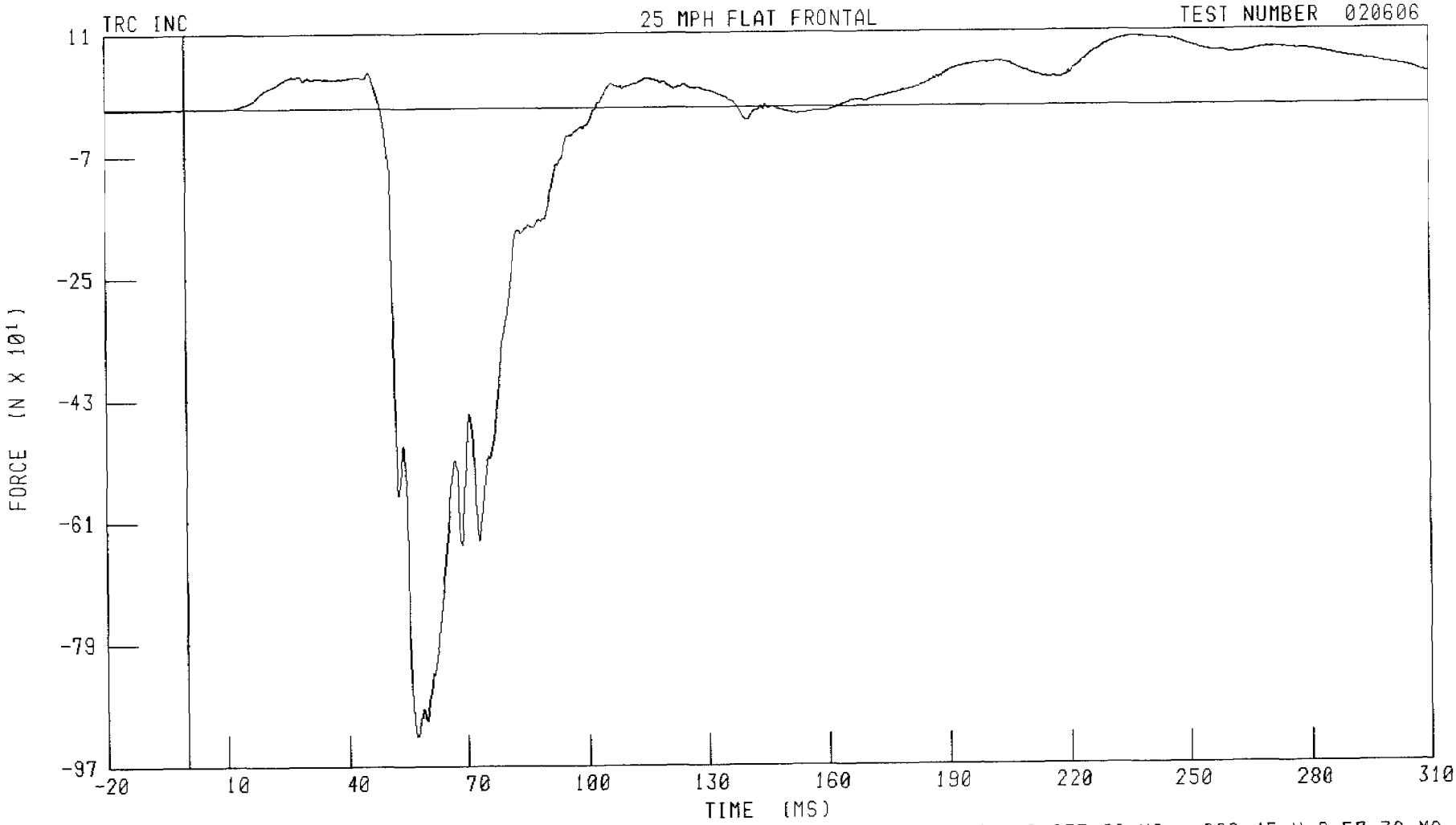
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT UPPER TIBIA Z-AXIS FORCE



CHANNEL TBLZF2 FILTER CH CLASS 600

PEAK DATA 342 58 N @ 97 92 MS, -517 90 N @ 72 96 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT UPPER TIBIA X-AXIS FORCE
25 MPH FLAT FRONTAL

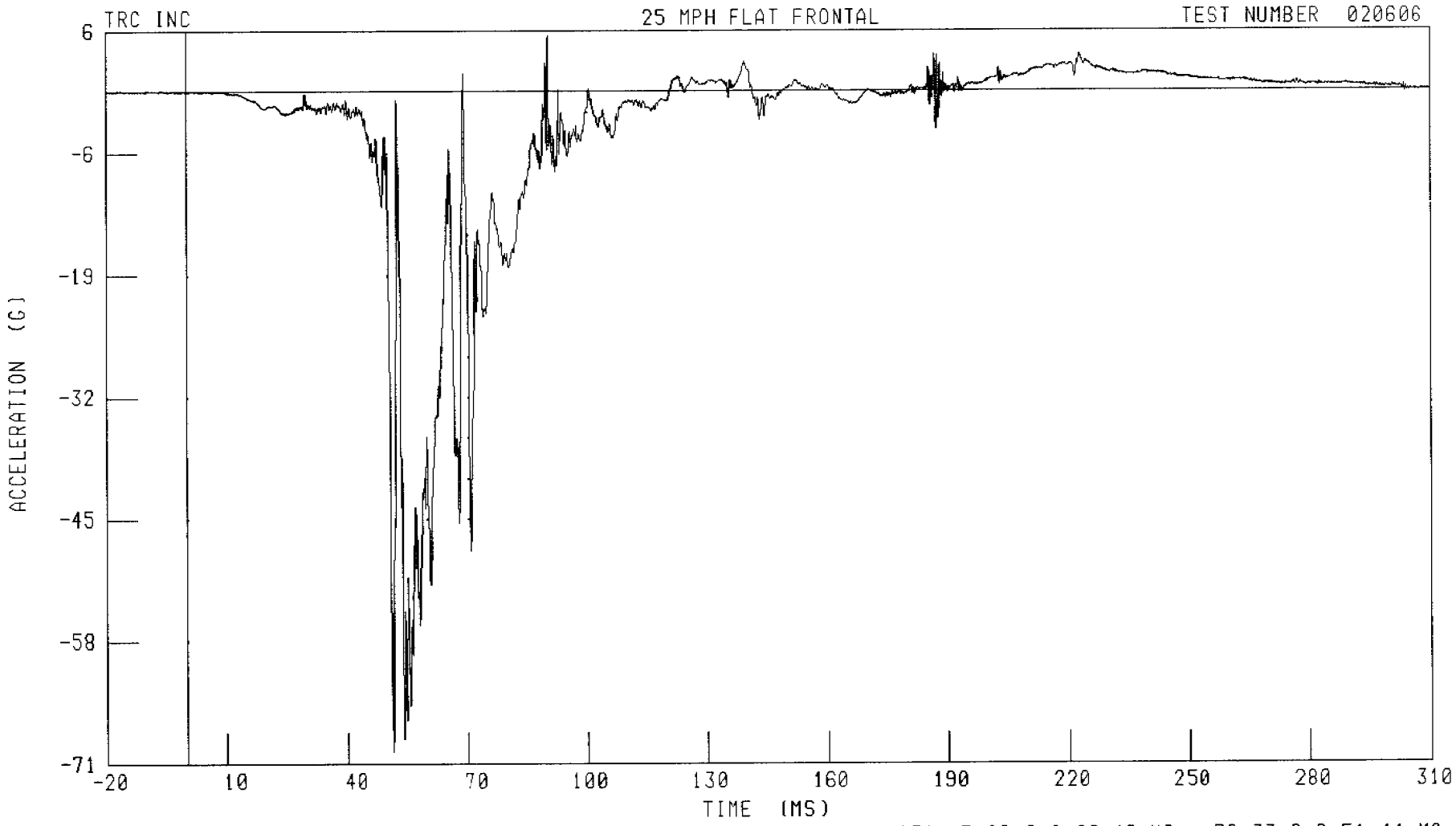


CHANNEL TBLXF2 FILTER CH CLASS 600

PEAK DATA 101 32 N @ 237 68 MS, -926 45 N @ 57 36 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

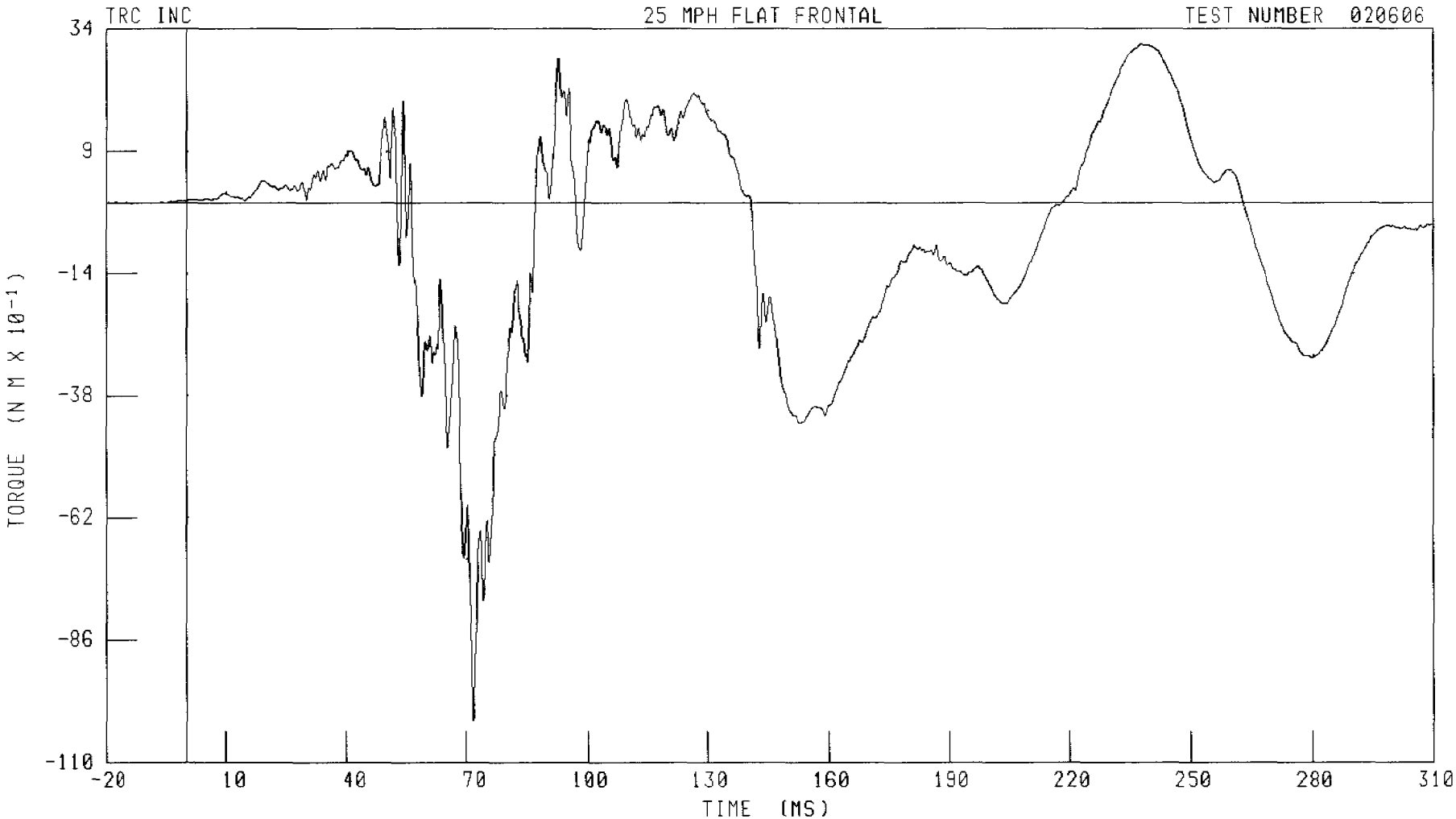
PASSENGER LEFT TIBIA X-AXIS ACCELERATION



CHANNEL TBLXG2 FILTER CH CLASS 1000

PEAK DATA 5 89 G @ 90 40 MS, -70 33 G @ 51 44 MS

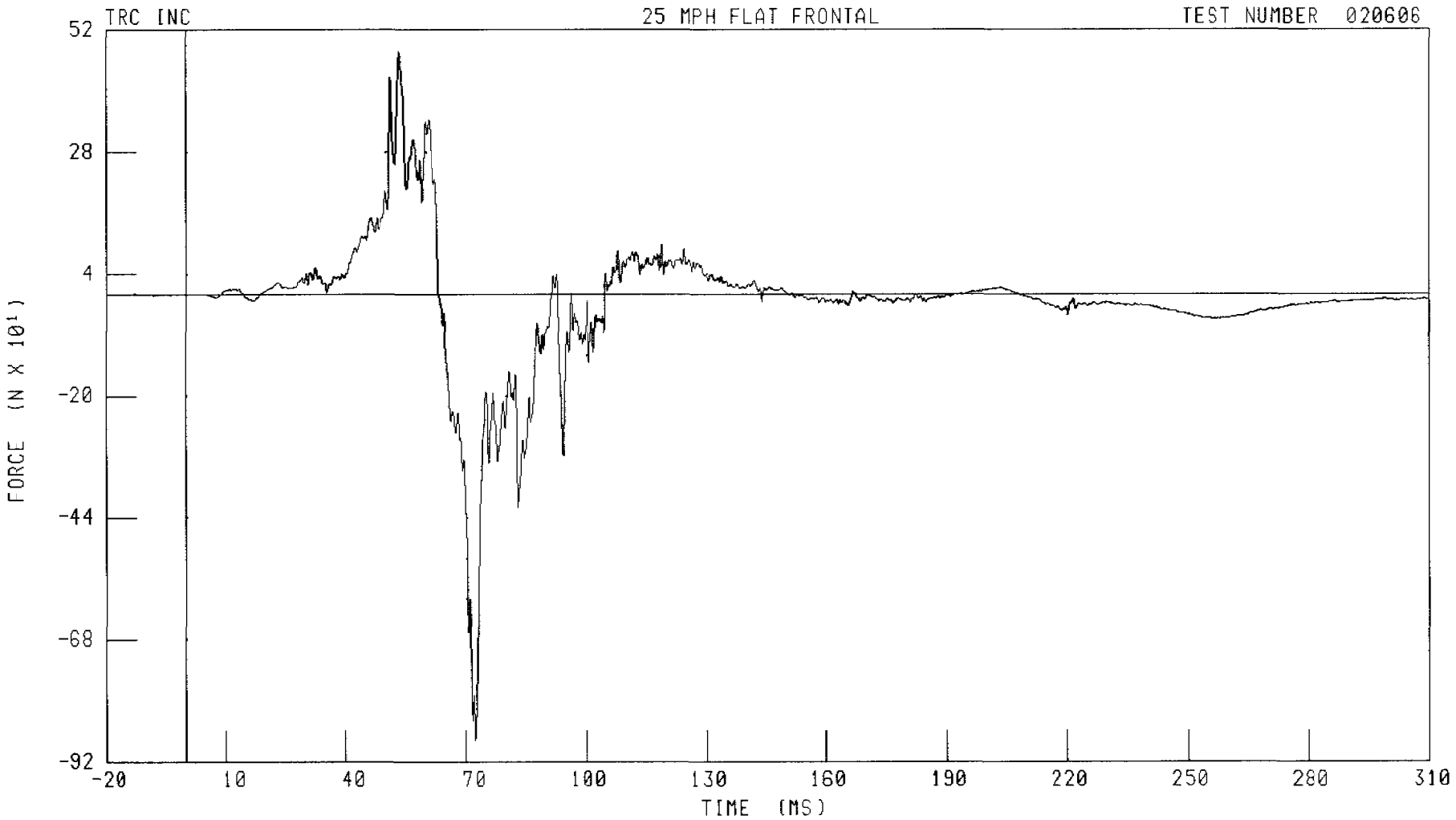
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT LOWER TIBIA MOMENT ABOUT X AXIS



CHANNEL ANLXM2 FILTER CH CLASS 600

PEAK DATA 3 10 N M @ 237 44 MS, -10 19 N M @ 71 76 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT LOWER TIBIA Z-AXIS FORCE

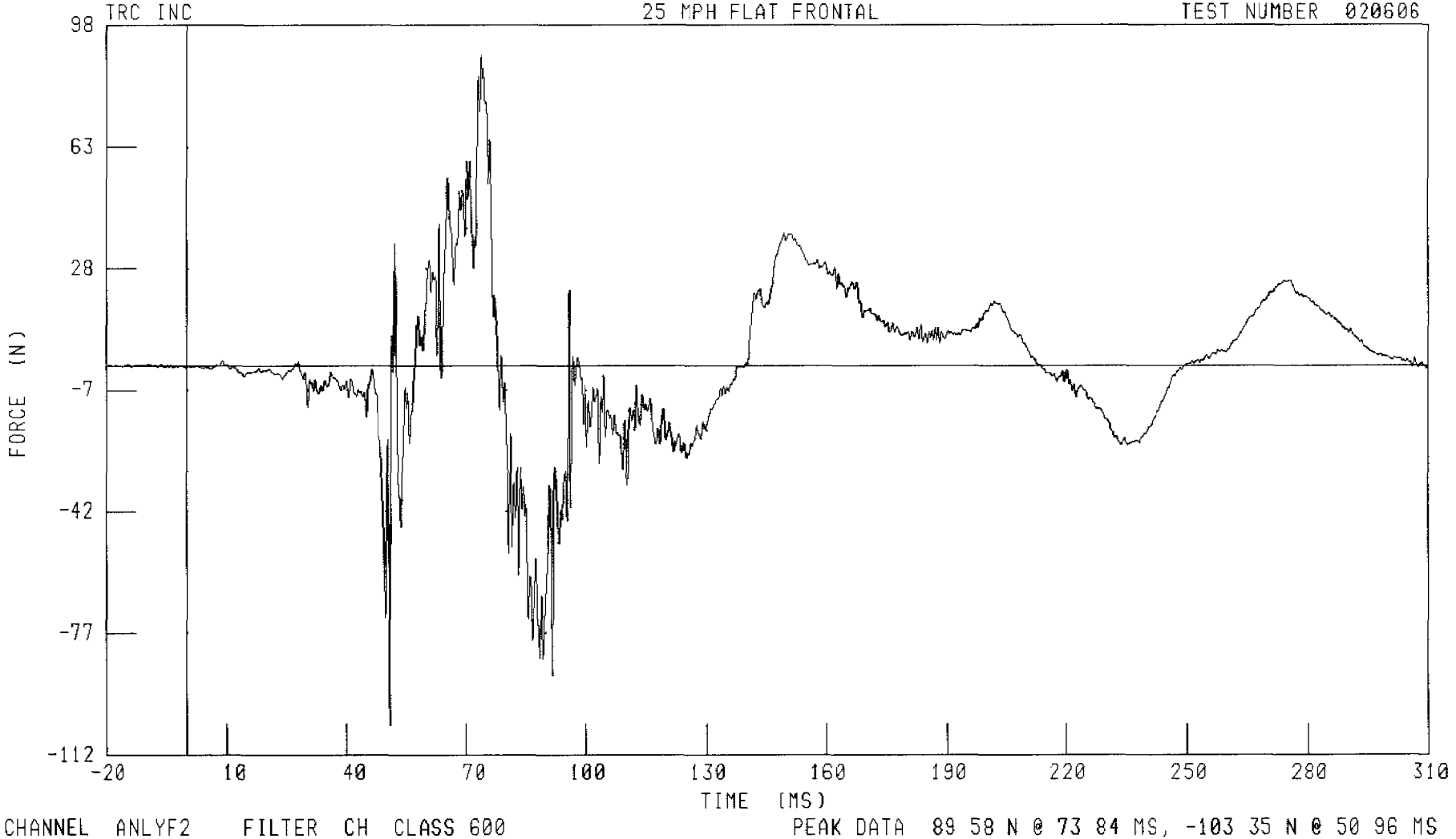


CHANNEL ANLZF2 FILTER CH CLASS 600

PEAK DATA 477 14 N @ 53 36 MS, -877 74 N @ 72 24 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

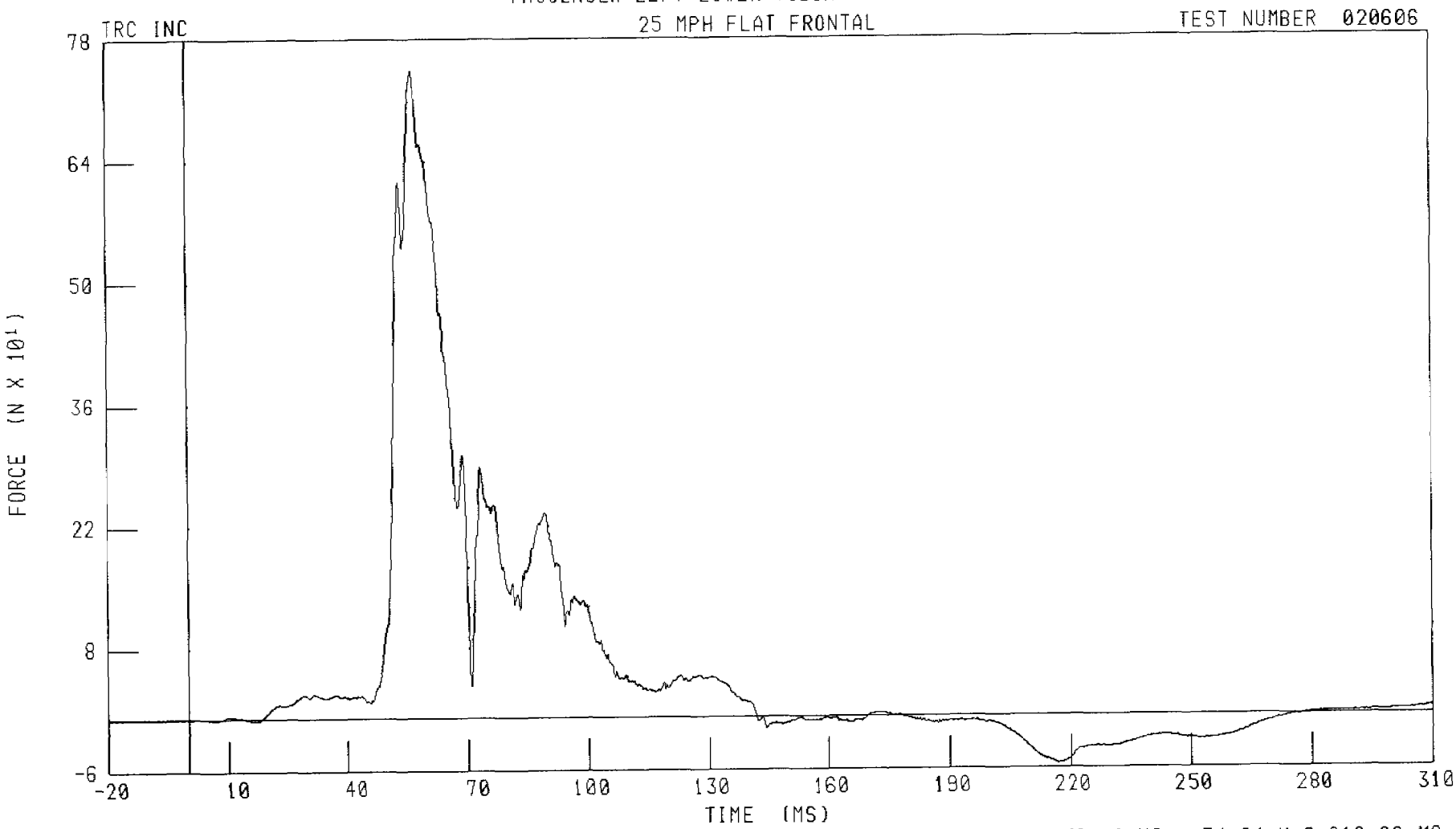
PASSENGER LEFT LOWER TIBIA Y-AXIS FORCE



CHANNEL ANLYF2 FILTER CH CLASS 600

PEAK DATA 89 58 N @ 73 84 MS, -103 35 N @ 50 96 MS

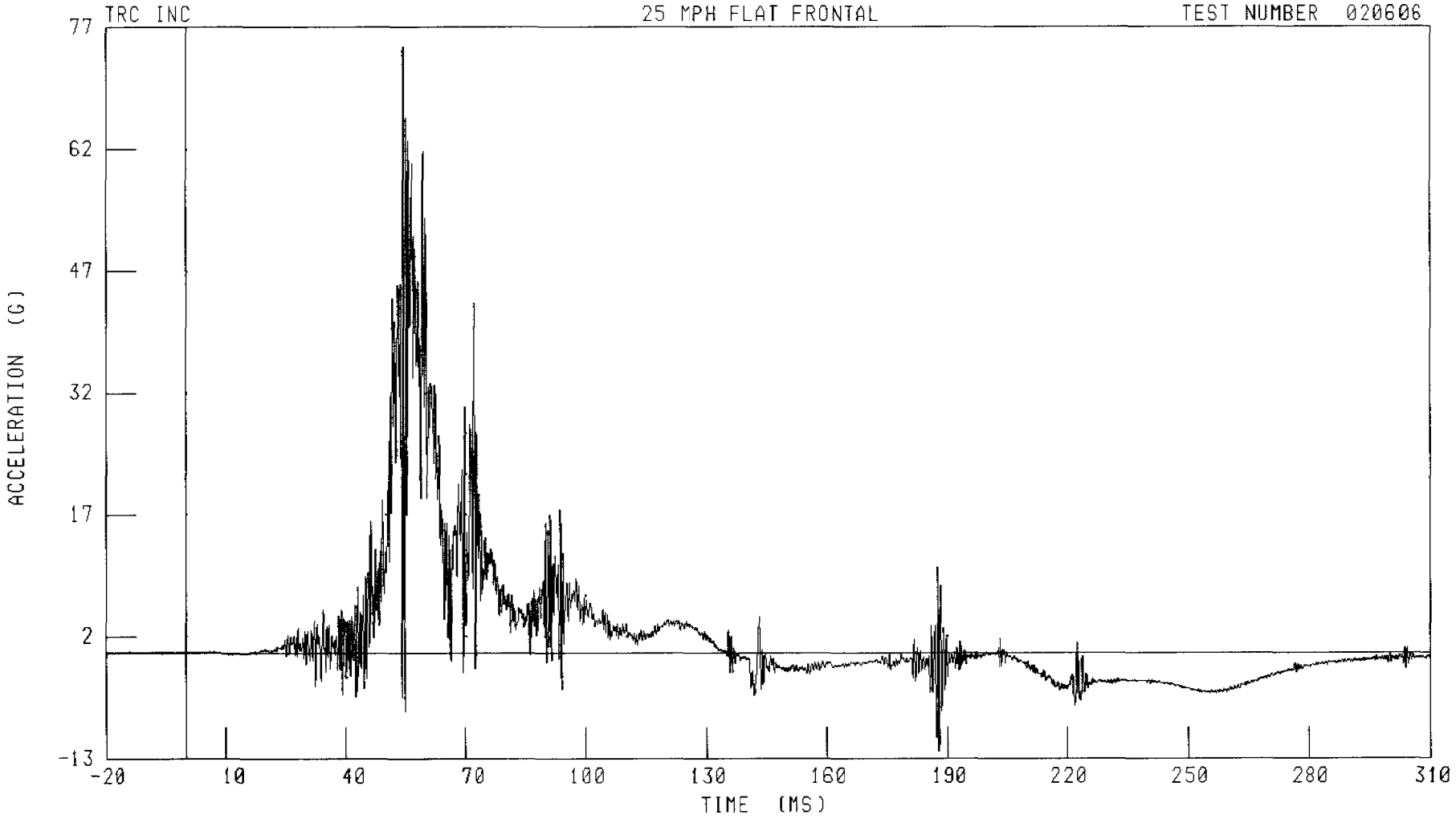
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT LOWER TIBIA X-AXIS FORCE
25 MPH FLAT FRONTAL



CHANNEL ANLXF2 FILTER CH CLASS 600

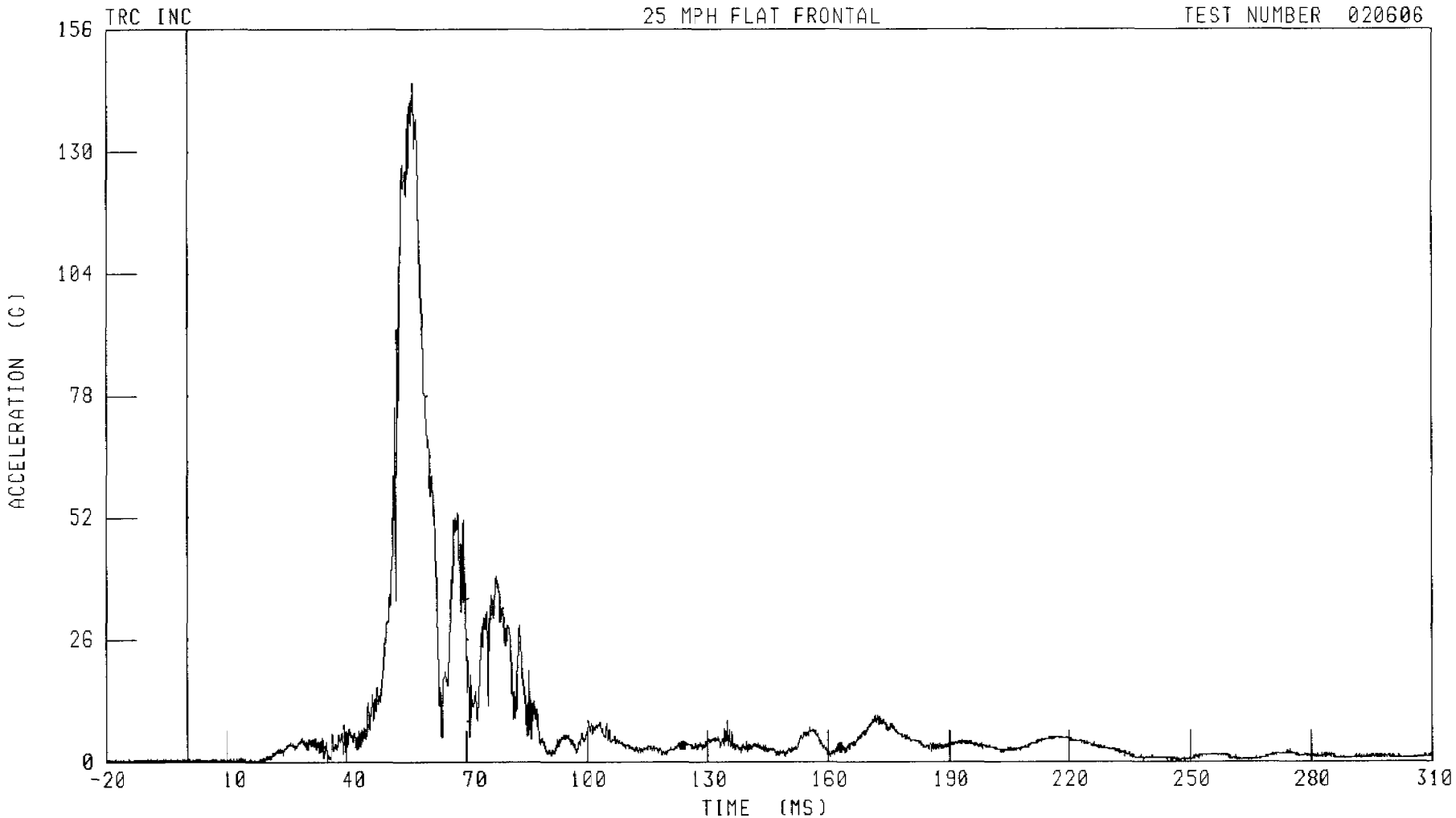
PEAK DATA 743 84 N @ 56 80 MS, -54 94 N @ 216 80 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT TIBIA Z-AXIS ACCELERATION



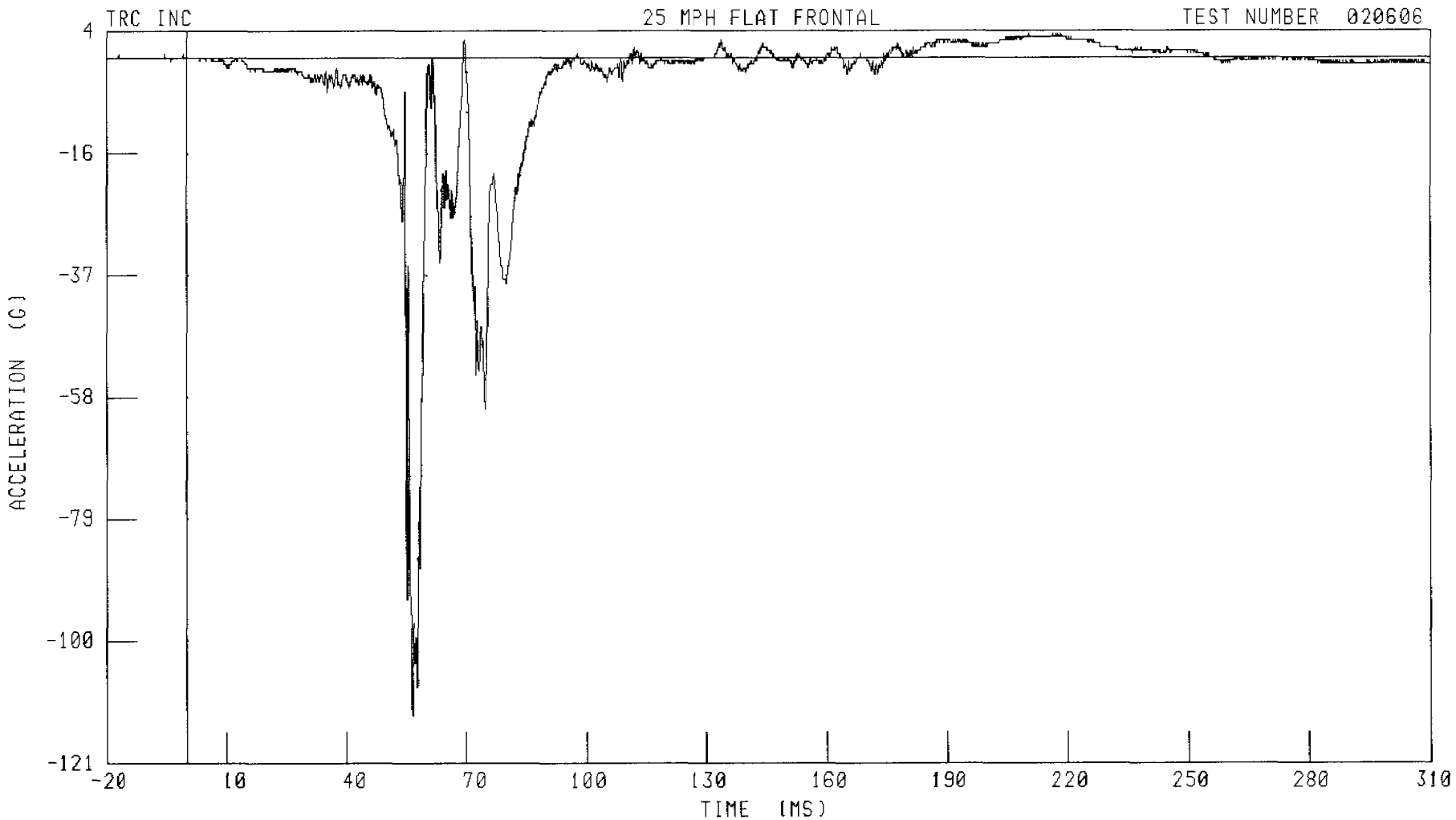
CHANNEL TBLZG2 FILTER CH CLASS 1000 PEAK DATA 74 58 G @ 54 56 MS, -12 11 G @ 187 84 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER LEFT FOOT RESULTANT ACCELERATION



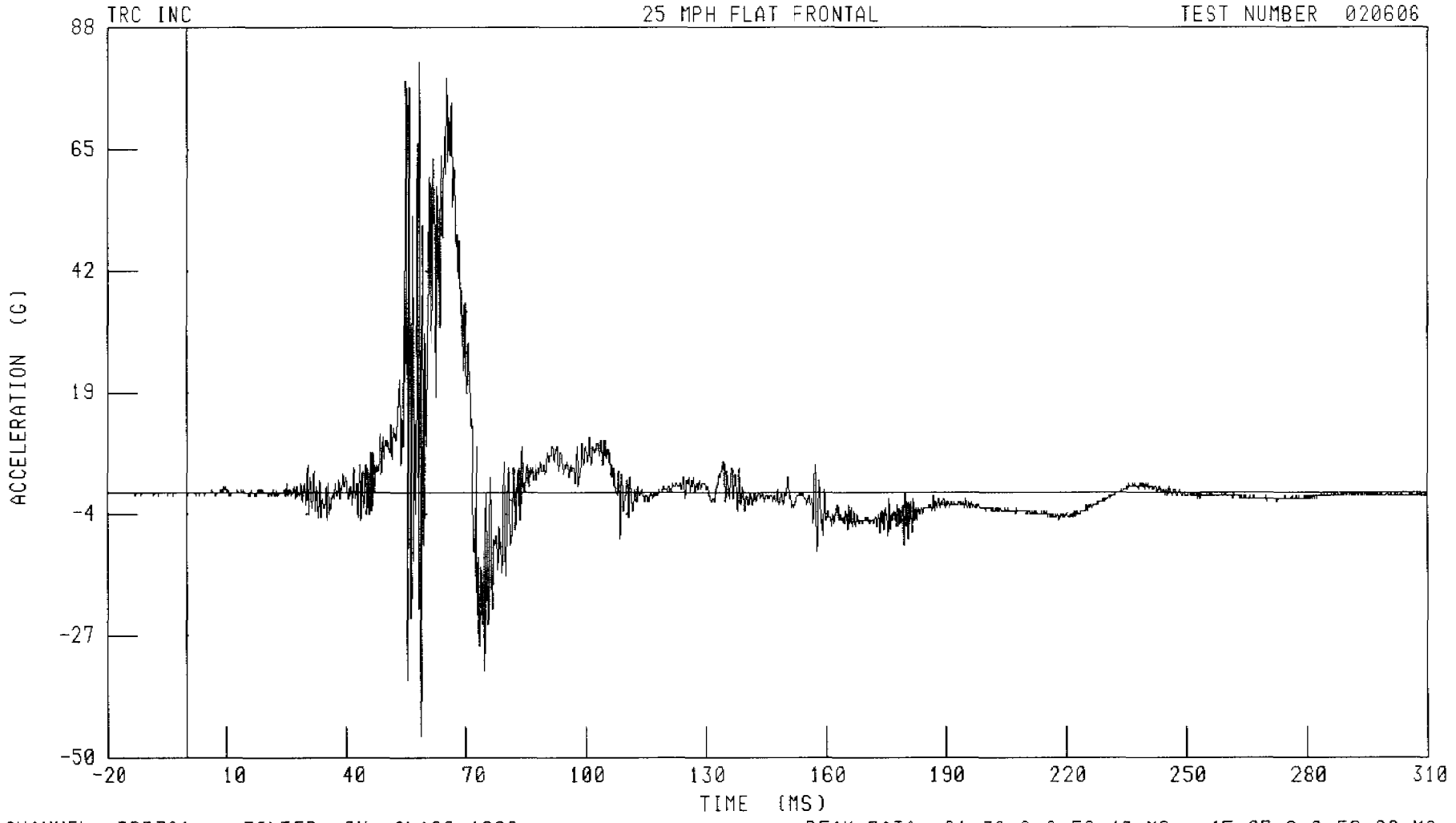
CHANNEL FTLRG1 FILTER CH CLASS 1000 PEAK DATA 144 54 G @ 56 64 MS, 0 19 G @ -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT TIBIA X-AXIS ACCELERATION



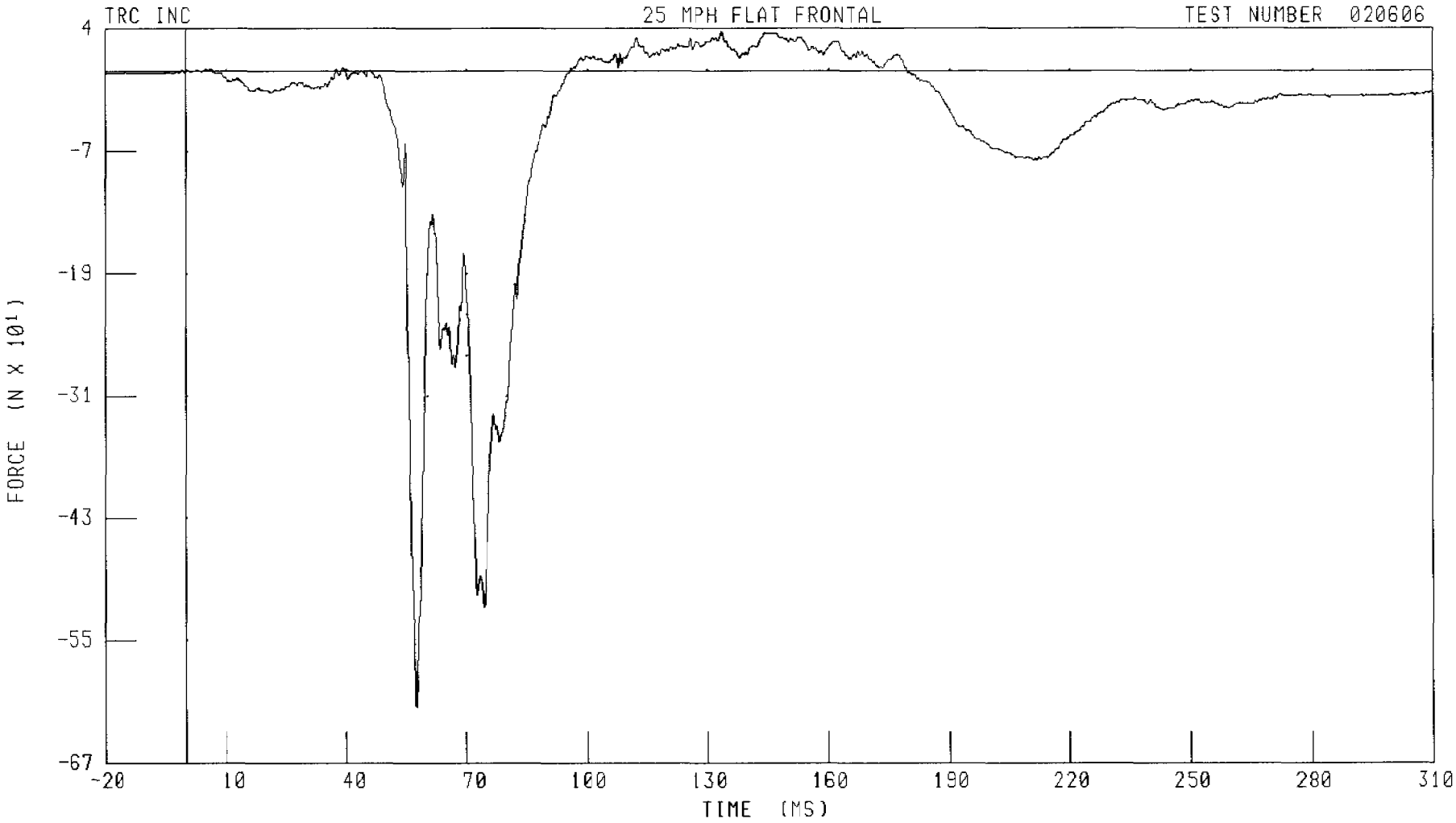
CHANNEL TBRXC1 FILTER CH CLASS 1000 PEAK DATA 4 09 G @ 210 48 MS, -113 31 G @ 56 56 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT TIBIA Z-AXIS ACCELERATION



CHANNEL TBRZG1 FILTER CH CLASS 1000 PEAK DATA 81 39 G @ 58 48 MS, -45 87 G @ 58 80 MS

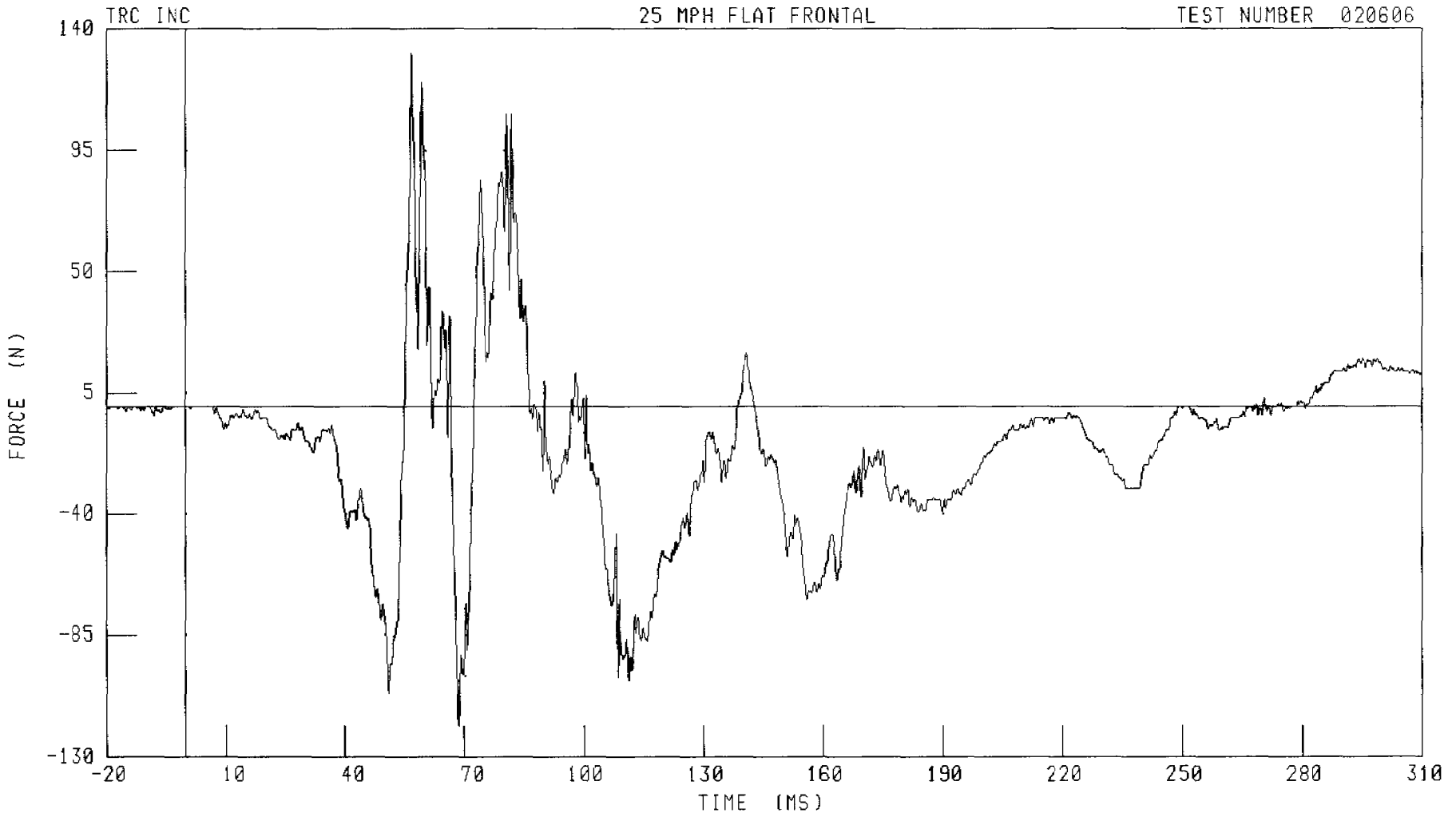
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT LOWER TIBIA X-AXIS FORCE



CHANNEL ANRXF1 FILTER CH CLASS 600

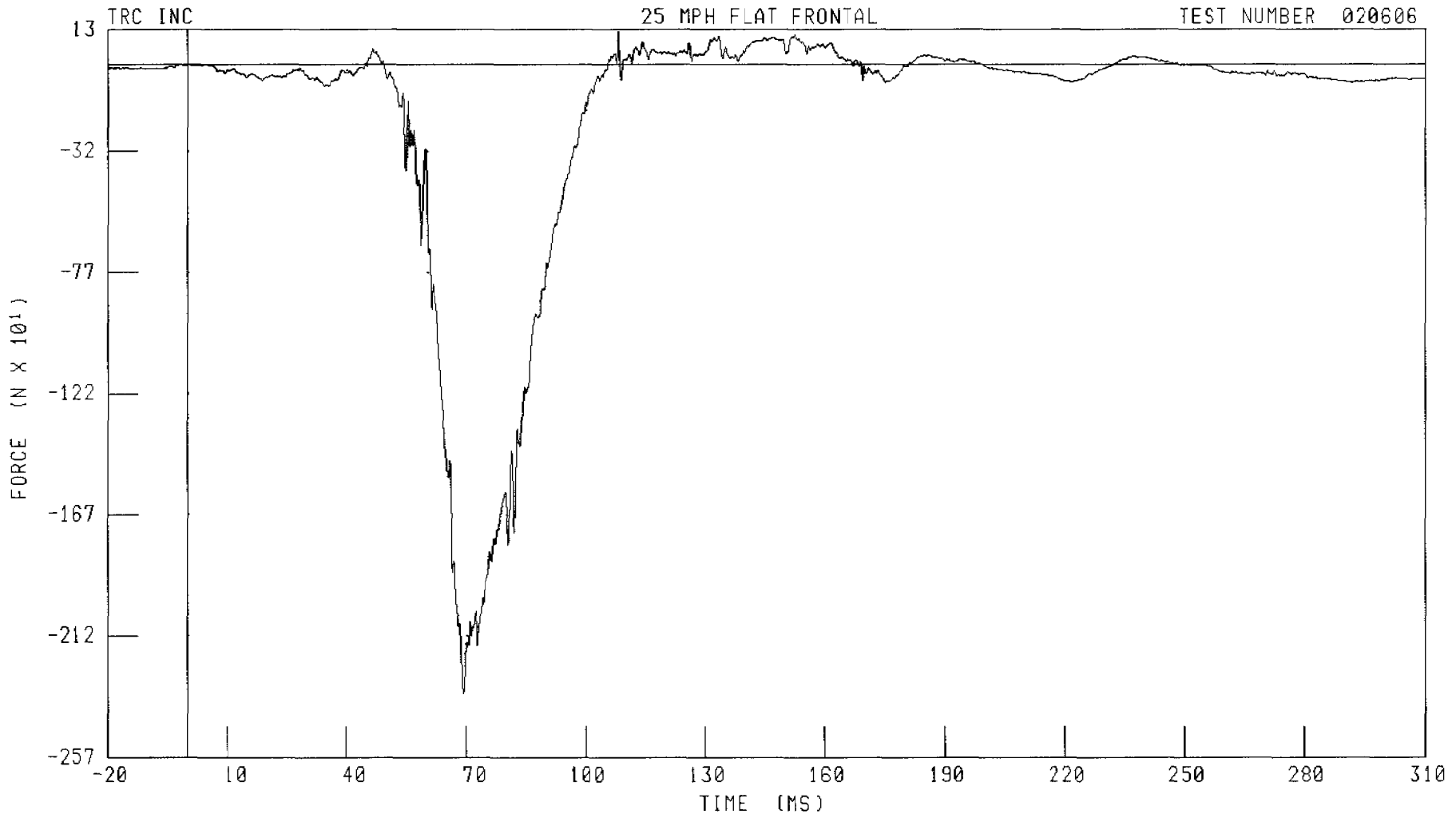
PEAK DATA 37 82 N @ 133 68 MS, -624 46 N @ 57 36 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT LOWER TIBIA Y-AXIS FORCE



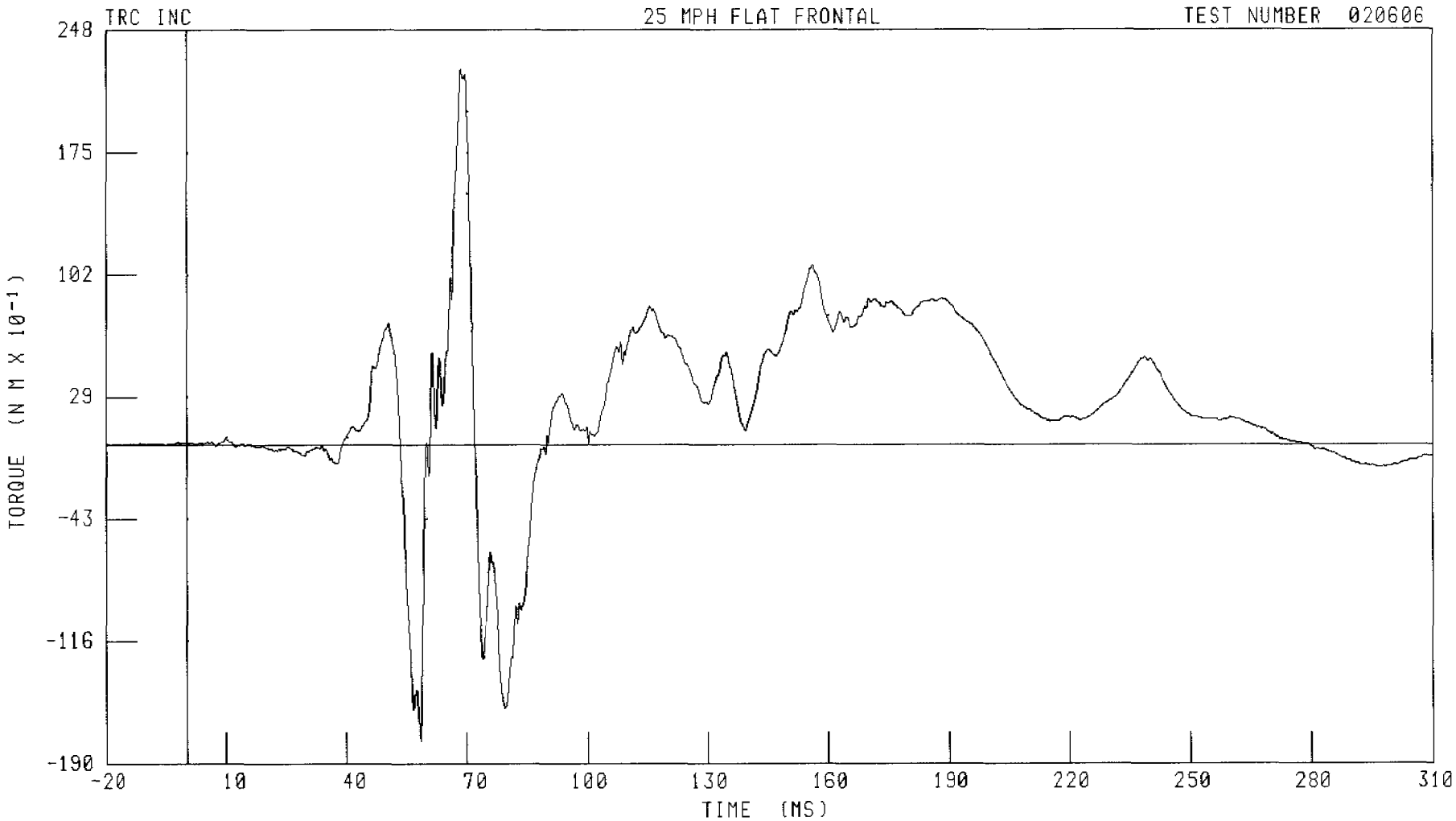
CHANNEL ANRYF1 FILTER CH CLASS 600 PEAK DATA 130 95 N @ 56 72 MS, -118 69 N @ 68 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT LOWER TIBIA Z-AXIS FORCE



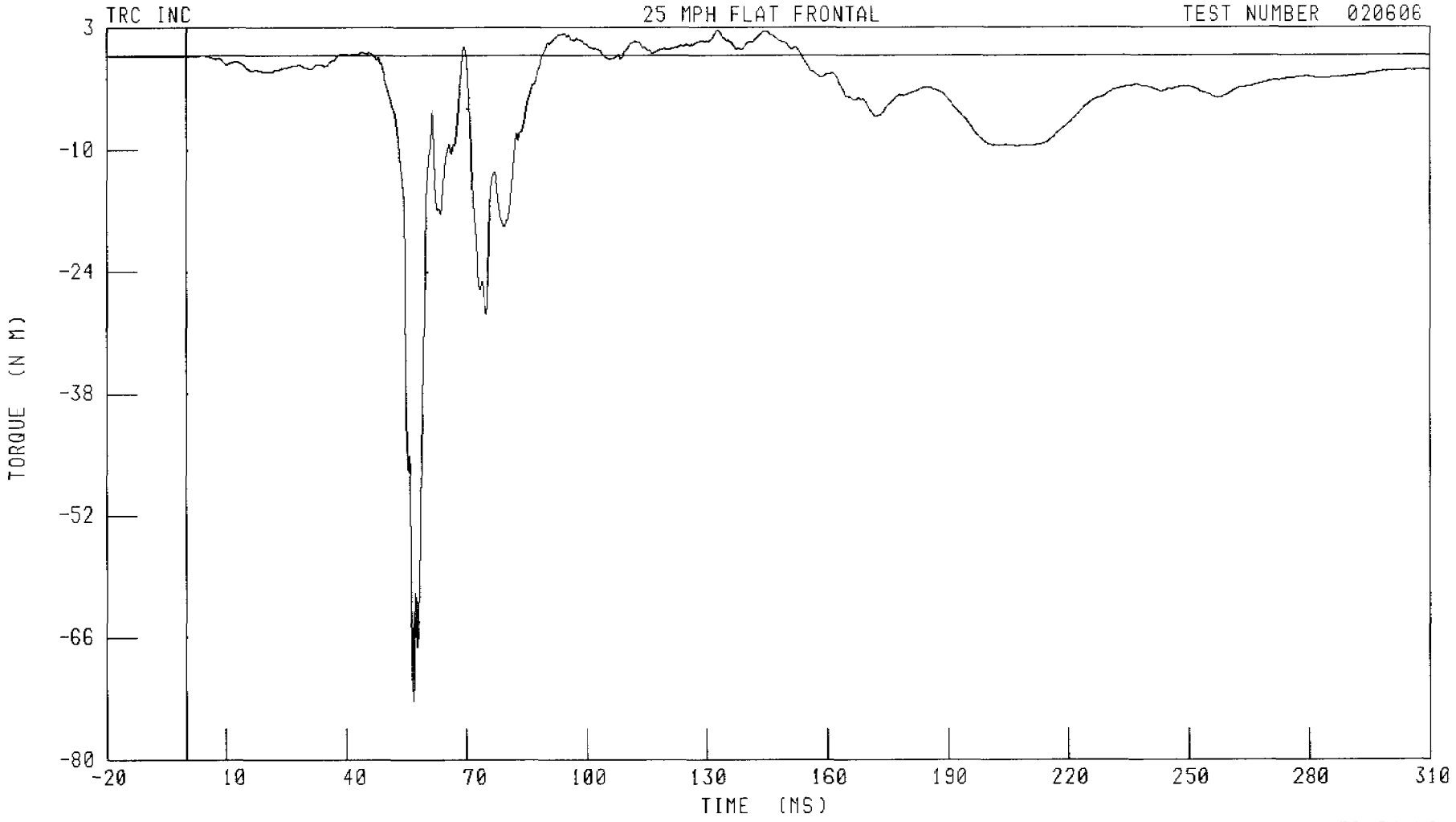
CHANNEL ANRZF1 FILTER CH CLASS 600 PEAK DATA 123 48 N @ 108 40 MS, -2334 97 N @ 69 12 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT LOWER TIBIA MOMENT ABOUT X AXIS



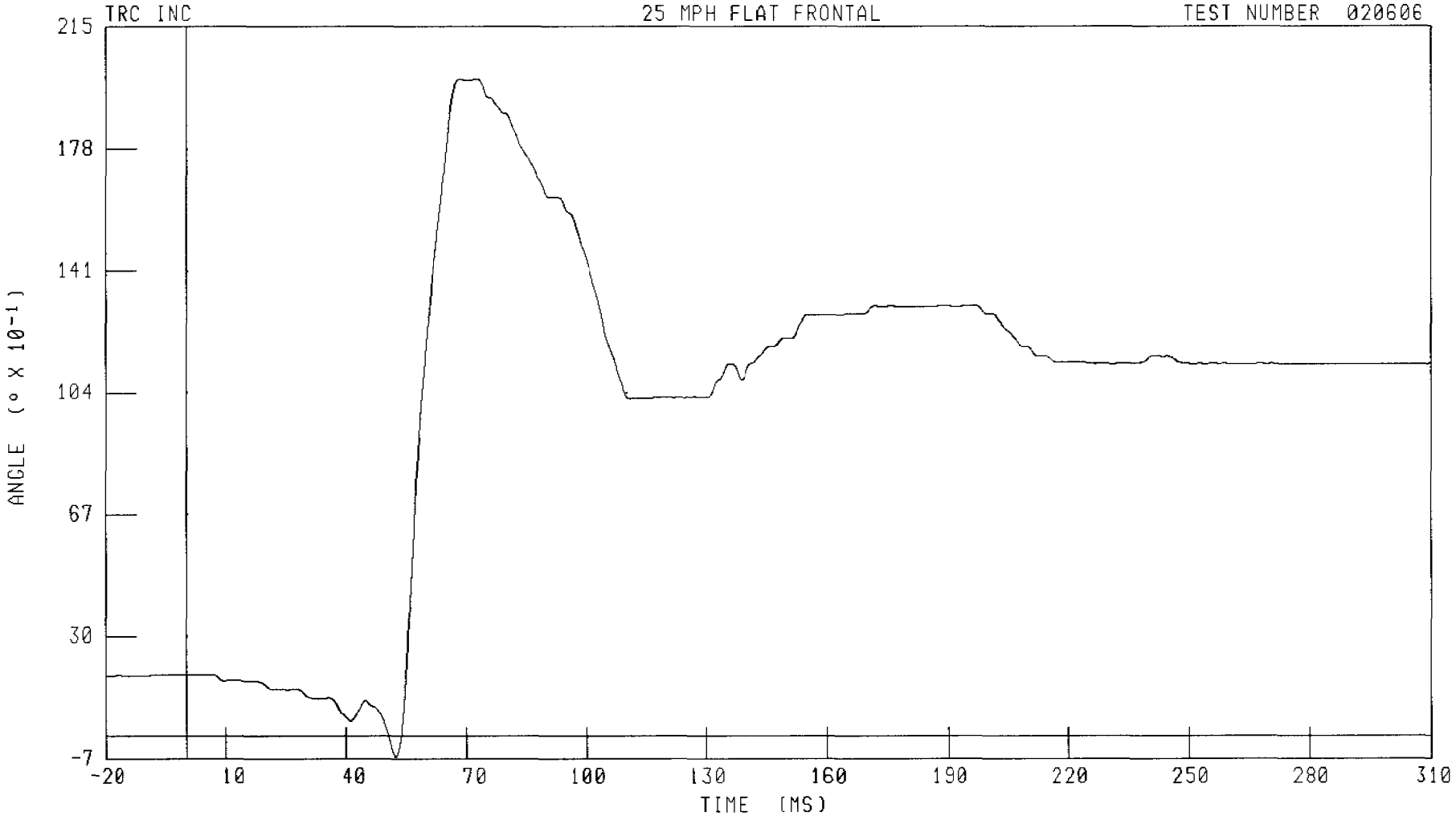
CHANNEL ANRXM1 FILTER CH CLASS 600 PEAK DATA 22 44 N M @ 68 56 MS, -17 65 N M @ 58 40 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS



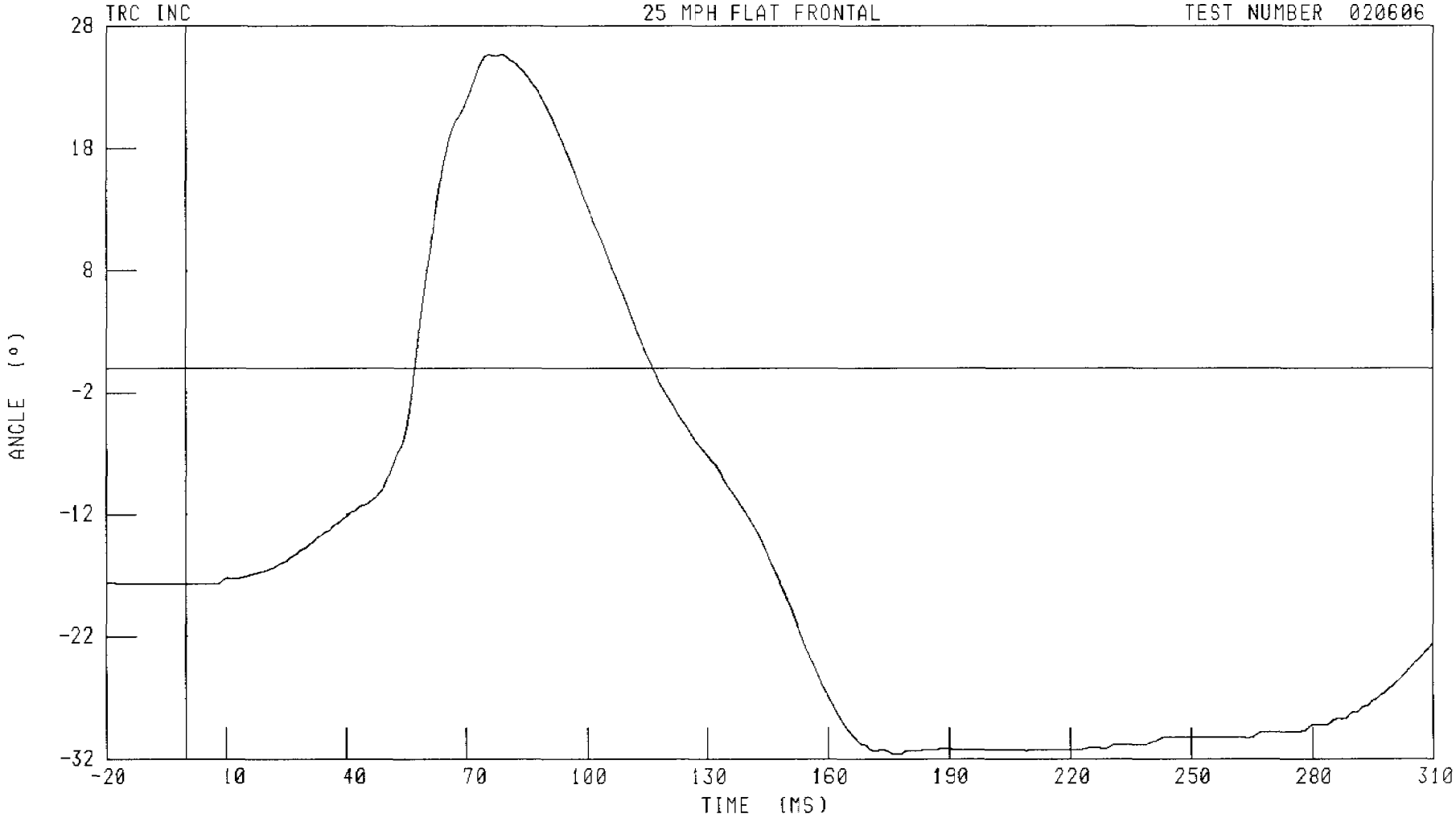
CHANNEL ANRYM1 FILTER CH CLASS 600 PEAK DATA 2 92 N M @ 132 80 MS, -74 09 N M @ 56 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT FOOT TO ANKLE X-AXIS DISPLACEMENT



CHANNEL FTRXD1 FILTER CH CLASS 180 PEAK DATA 19 91 ° @ 68 24 MS, -0 66 ° @ 52 40 MS

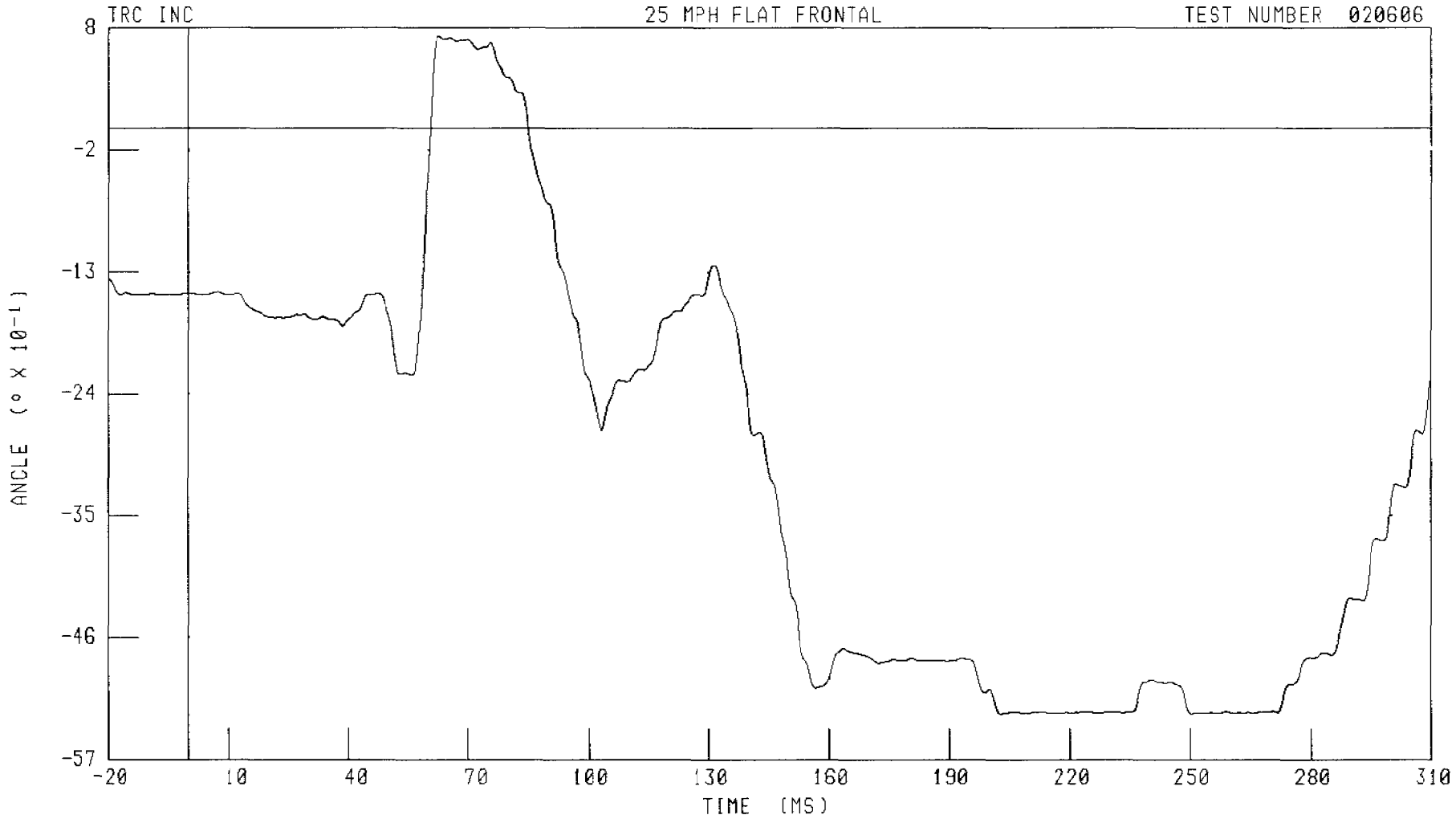
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT FOOT TO ANKLE Y-AXIS DISPLACEMENT



CHANNEL FTRYD1 FILTER CH CLASS 180

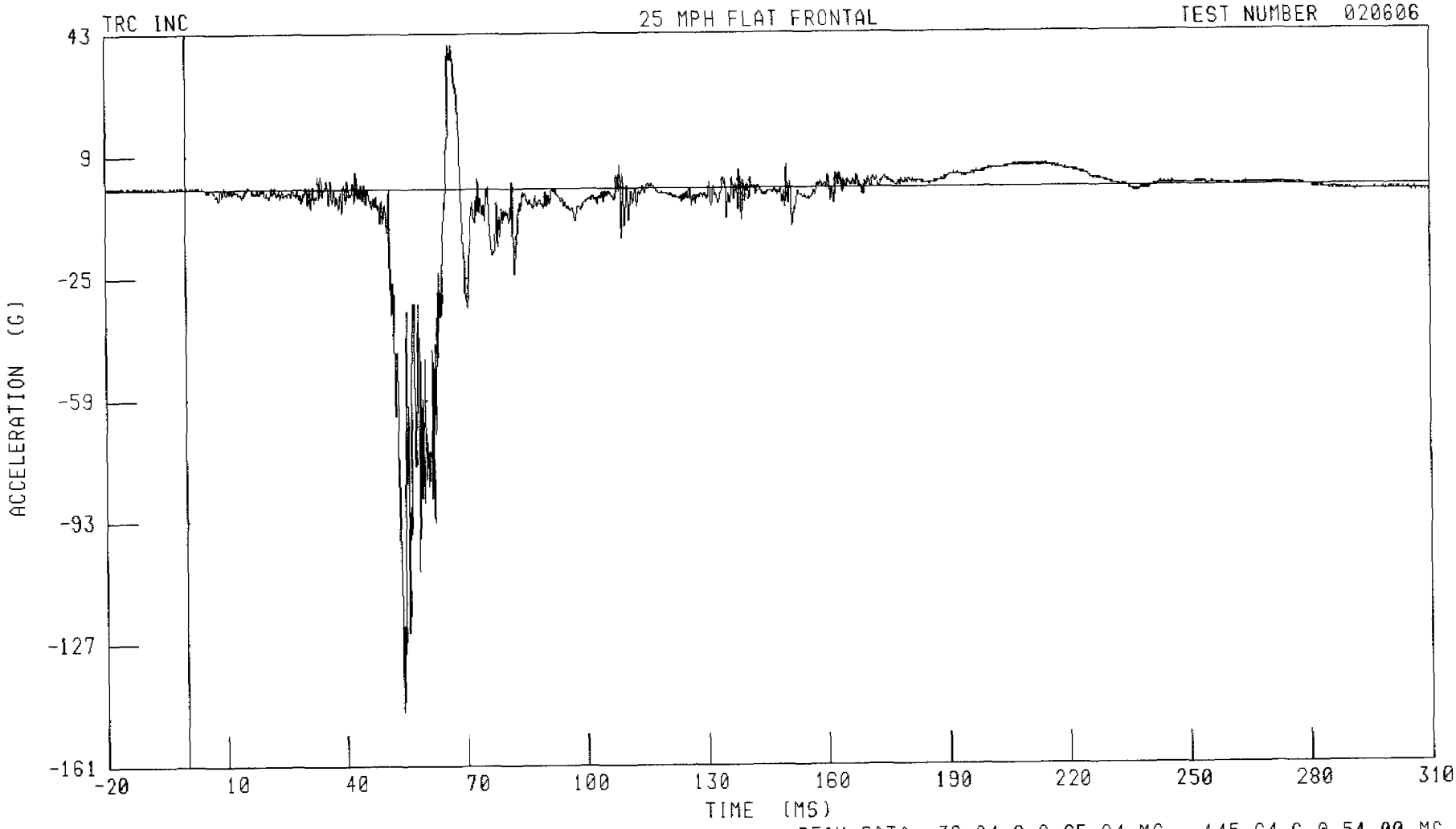
PEAK DATA 25 62 ° @ 75 68 MS, -31 62 ° @ 177 20 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT FOOT TO ANKLE Z-AXIS DISPLACEMENT



CHANNEL FTRZD1 FILTER CH CLASS 180 PEAK DATA 0 83 ° @ 62 72 MS, -5 29 ° @ 250 24 MS

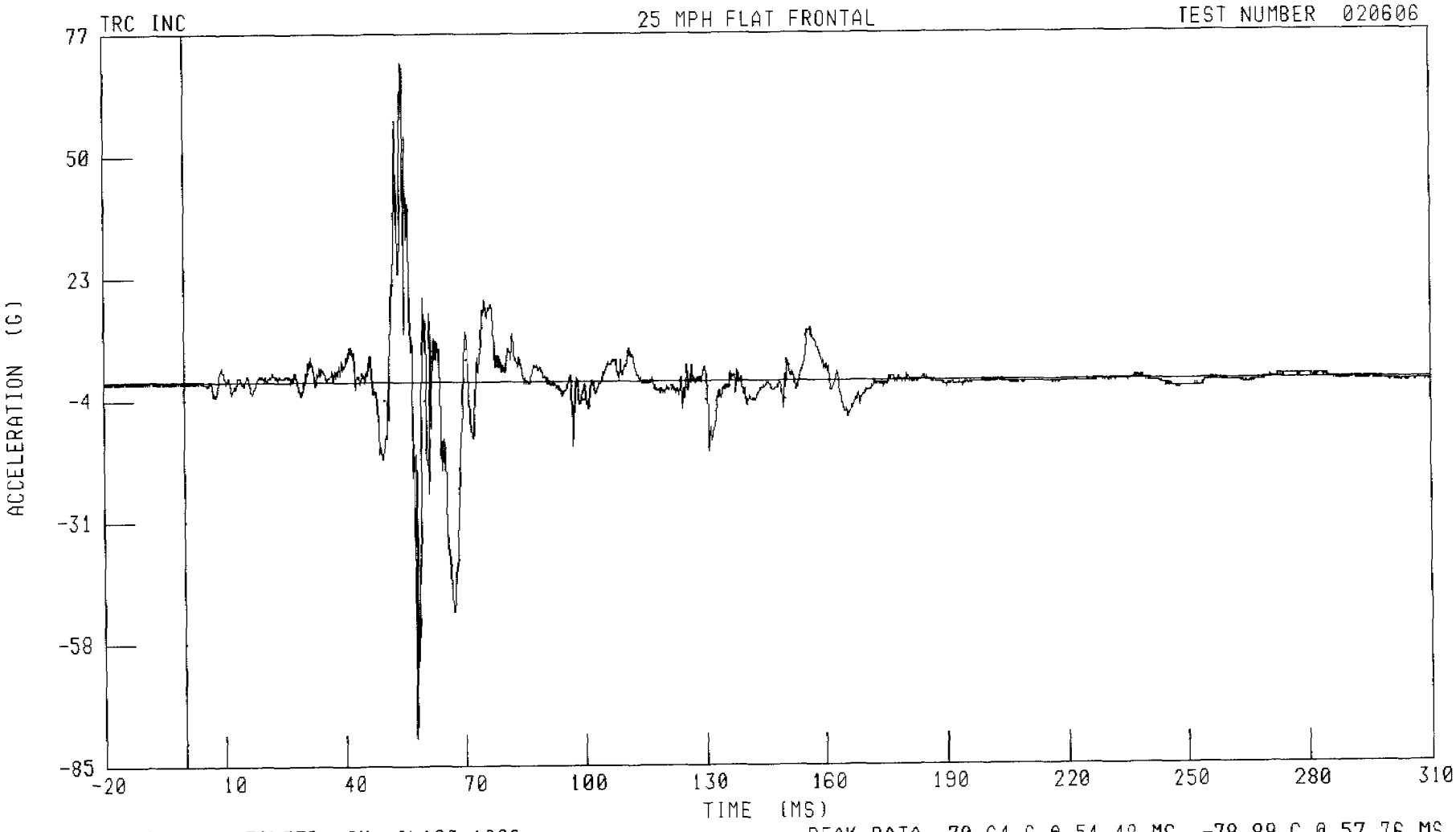
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT FOOT X-AXIS ACCELERATION
25 MPH FLAT FRONTAL



CHANNEL FTRXG1 FILTER CH CLASS 1000

PEAK DATA 39 94 G @ 65 84 MS, -145 64 G @ 54 00 MS

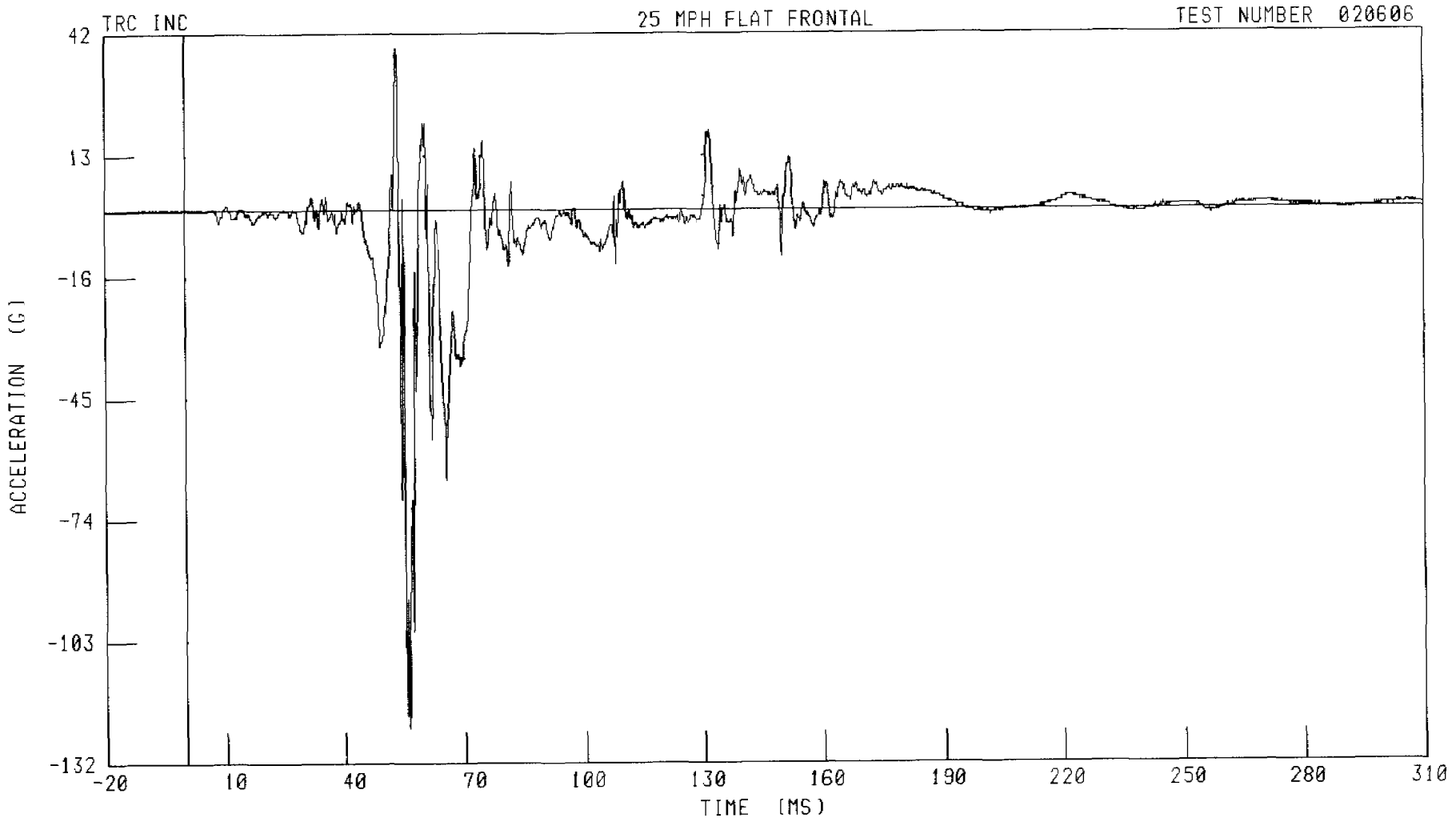
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT FOOT Y-AXIS ACCELERATION



CHANNEL FTRYC1 FILTER CH CLASS 1000

PEAK DATA 70 64 G @ 54 48 MS, -78 89 G @ 57 76 MS

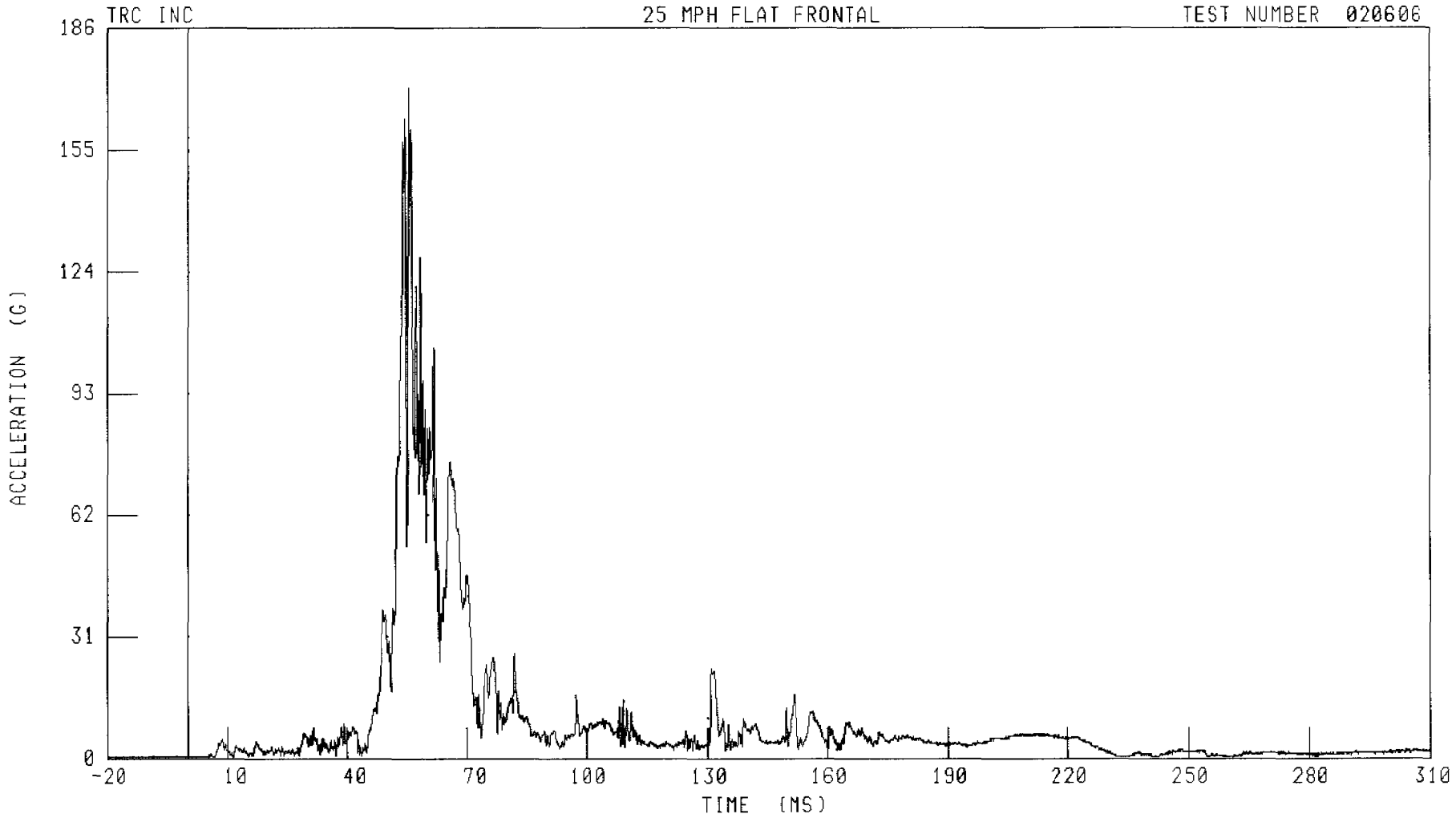
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT FOOT Z-AXIS ACCELERATION
25 MPH FLAT FRONTAL



CHANNEL FTRZG1 FILTER CH CLASS 1000

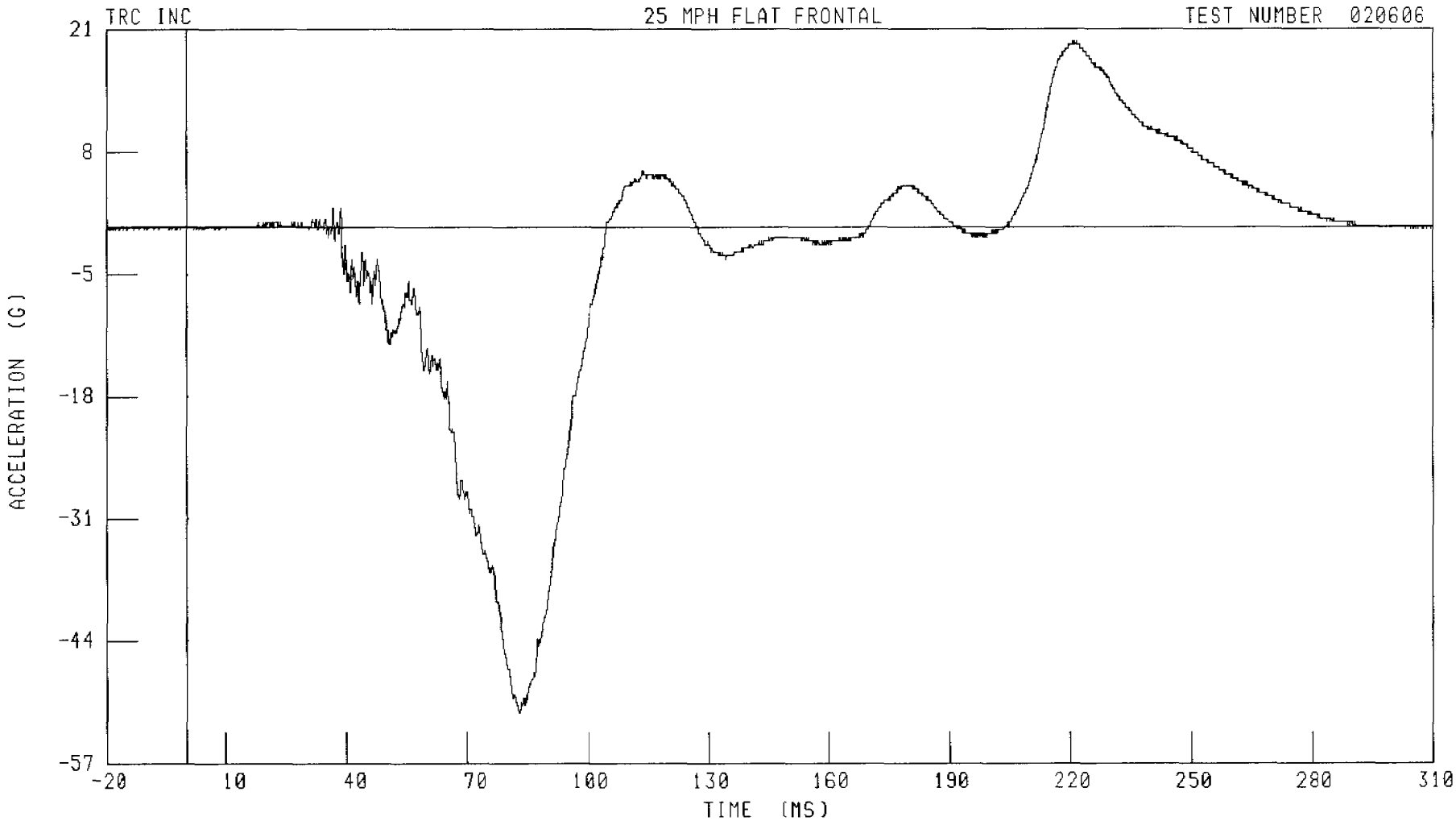
PEAK DATA 38 68 G @ 53 28 MS, -123 69 G @ 56 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
DRIVER RIGHT FOOT RESULTANT ACCELERATION



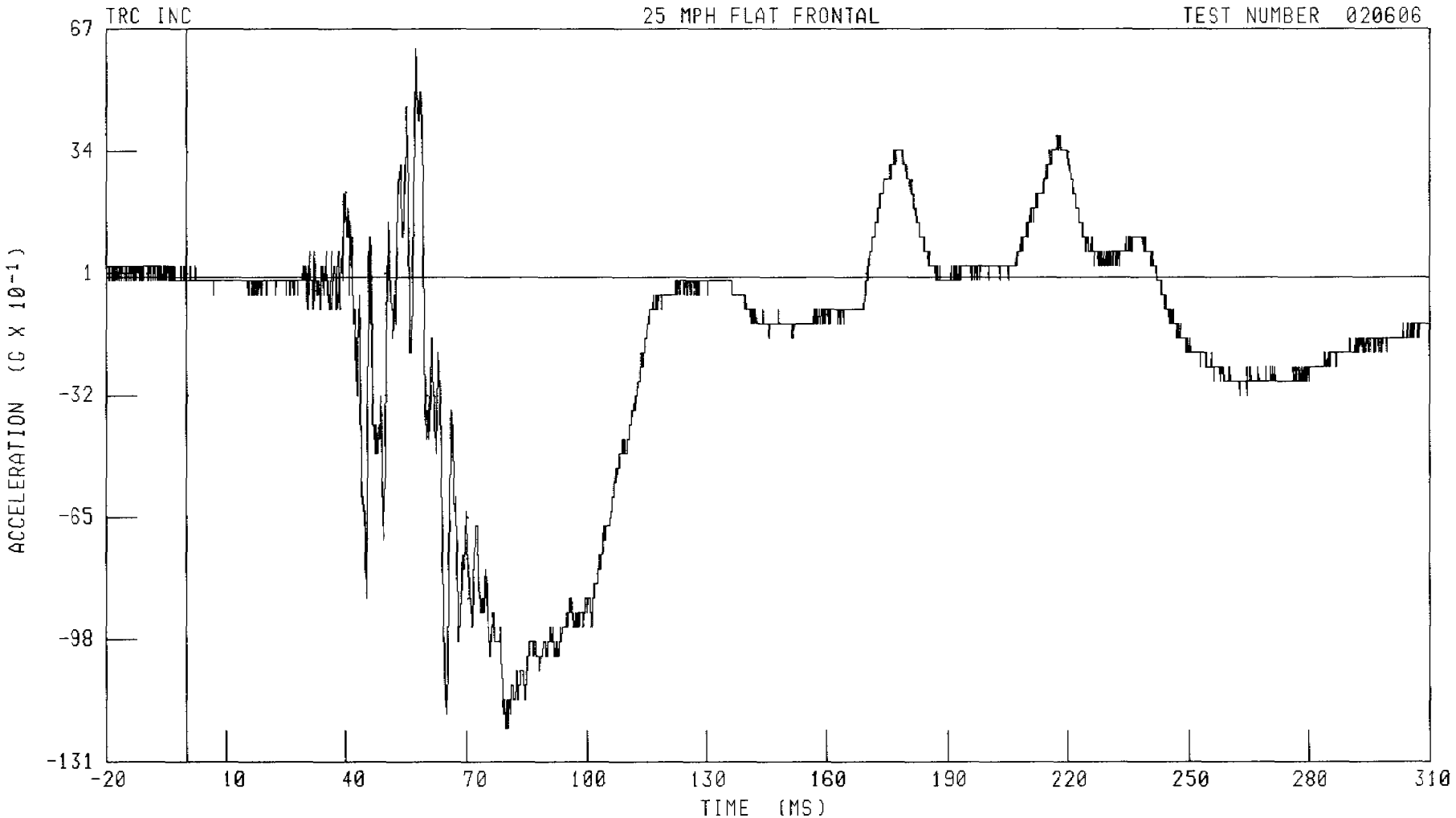
CHANNEL FTRRG1 FILTER CH CLASS 1000 PEAK DATA 170 92 G @ 55 44 MS, 0 39 G @ -20 00 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER HEAD X-AXIS ACCELERATION



CHANNEL HEDXG2 FILTER CH CLASS 1000 PEAK DATA 19 74 G @ 220 72 MS, -51 66 G @ 82 72 MS

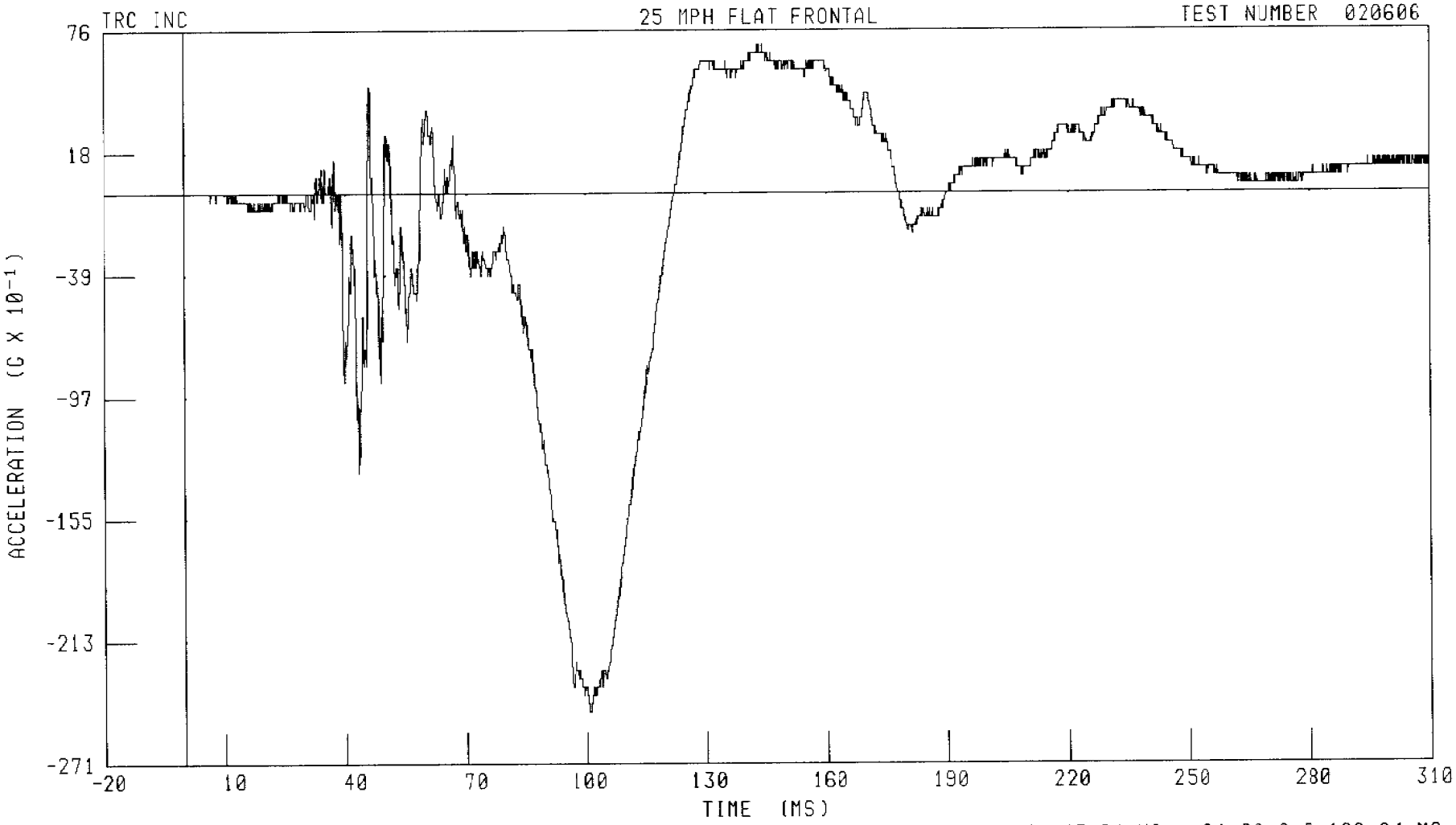
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER HEAD Y-AXIS ACCELERATION



CHANNEL HEDYG2 FILTER CH CLASS 1000 PEAK DATA 6 16 G @ 57 44 MS, -12 21 G @ 79 76 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

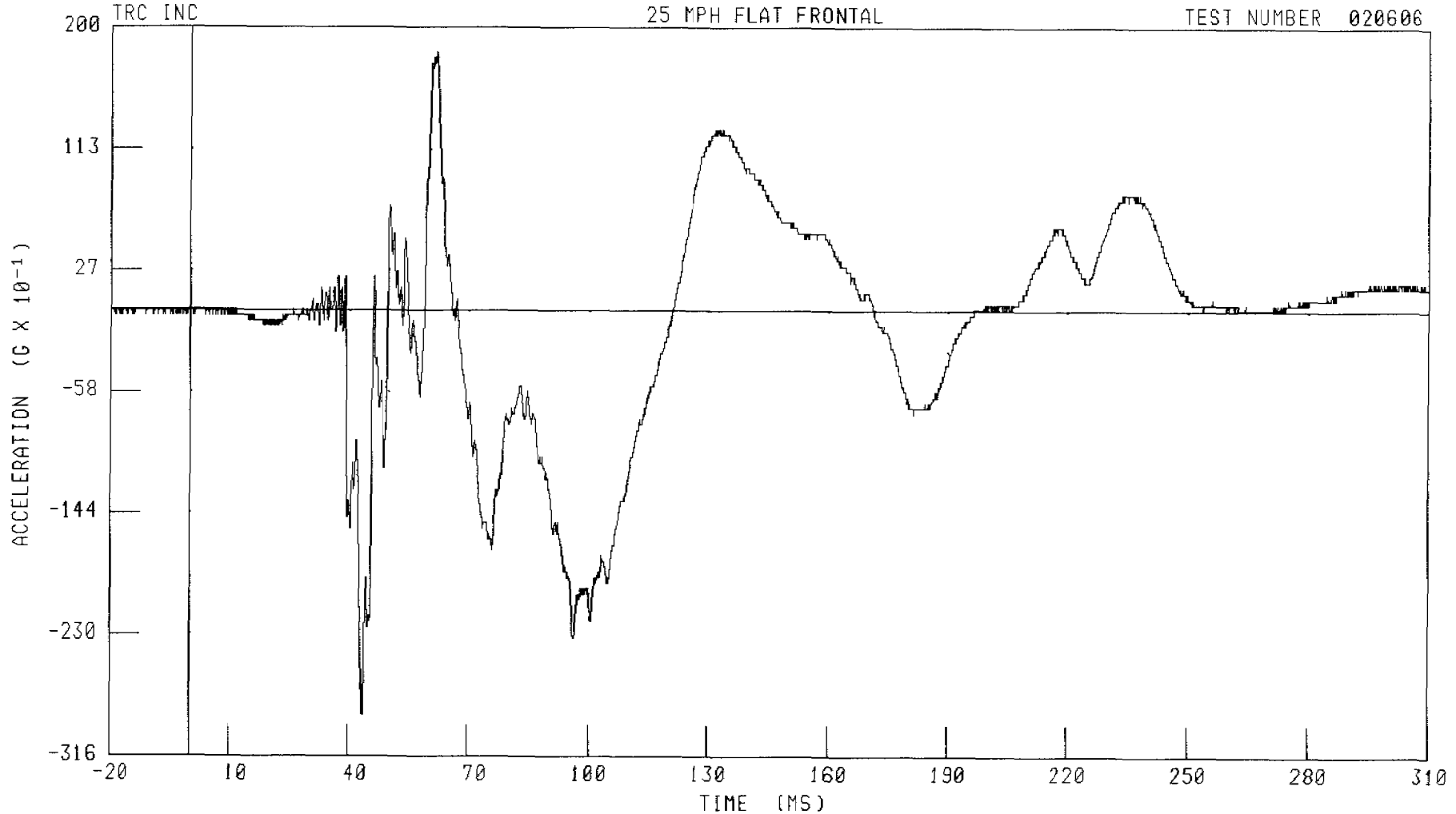
PASSENGER HEAD Z-AXIS ACCELERATION



CHANNEL HEDZG2 FILTER CH CLASS 1000

PEAK DATA 7 04 G @ 143 04 MS, -24 62 G @ 100 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER HEAD Z-AXIS (FT) ACCELERATION

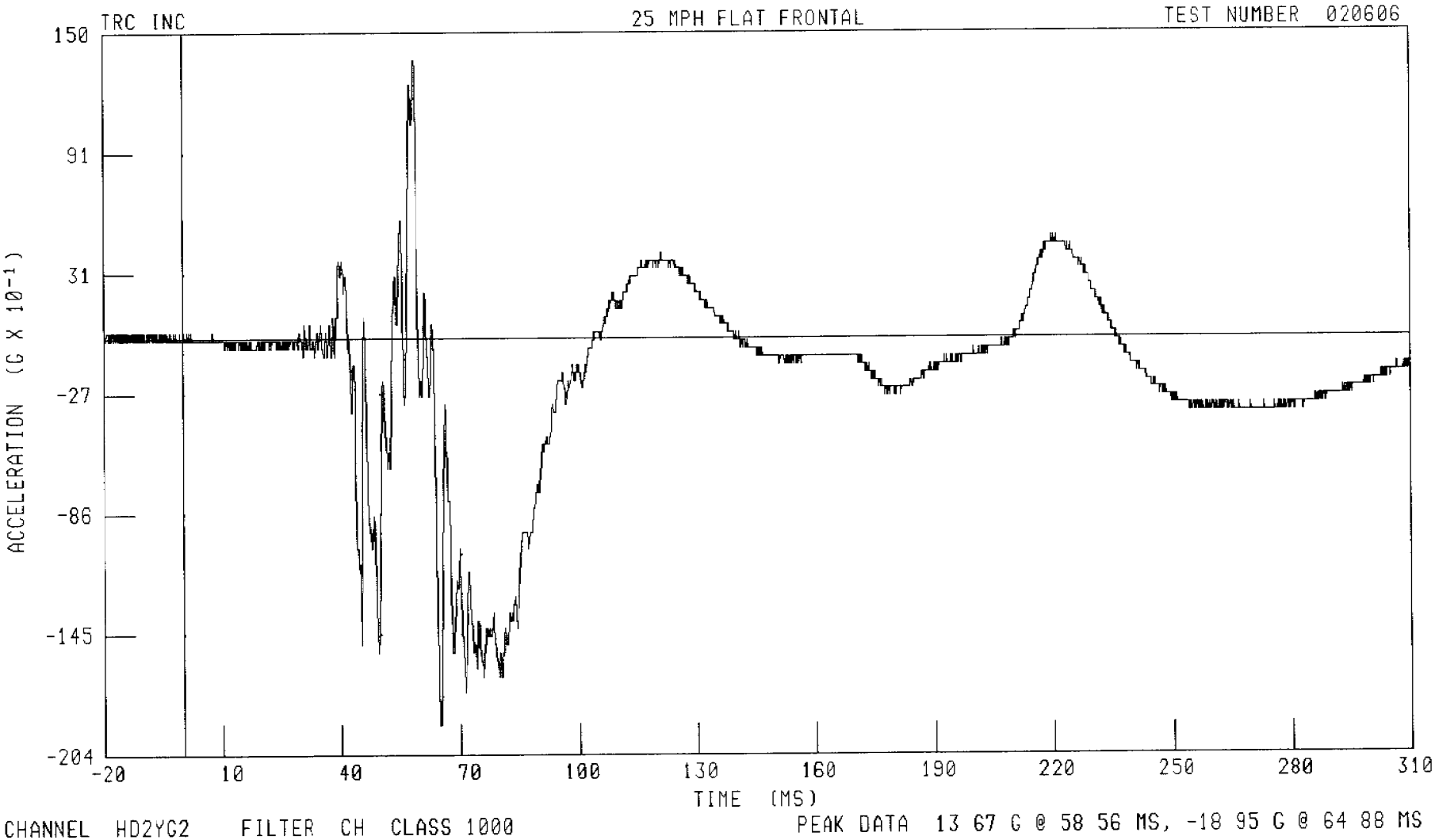


CHANNEL HD2ZG2 FILTER CH CLASS 1000

PEAK DATA 18 28 G @ 62 00 MS, -28 68 G @ 43 52 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

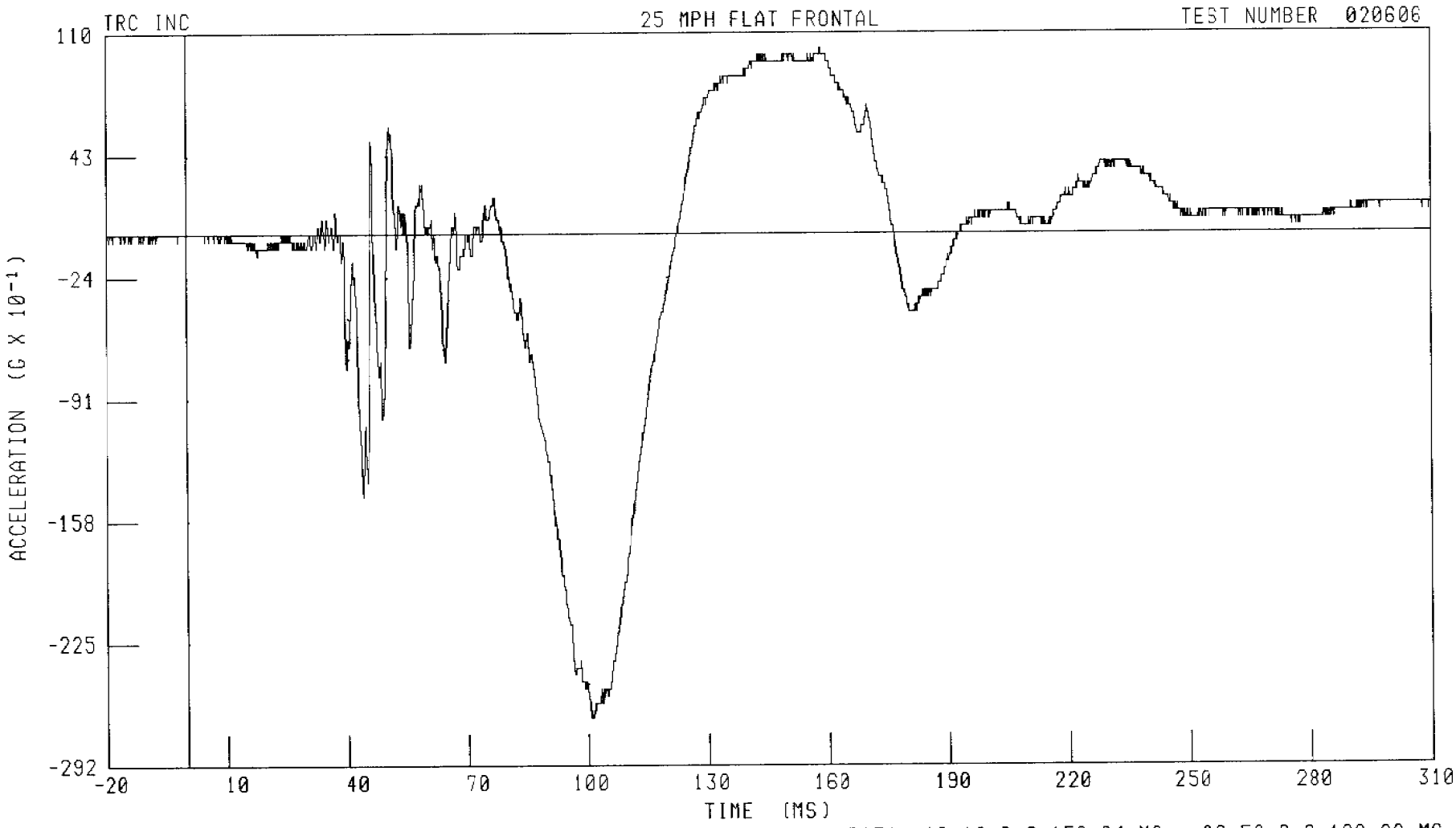
PASSENGER HEAD Y-AXIS (FT) ACCELERATION



CHANNEL HD2YG2 FILTER CH CLASS 1000

PEAK DATA 13 67 G @ 58 56 MS, -18 95 G @ 64 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER HEAD Z-AXIS (LT) ACCELERATION

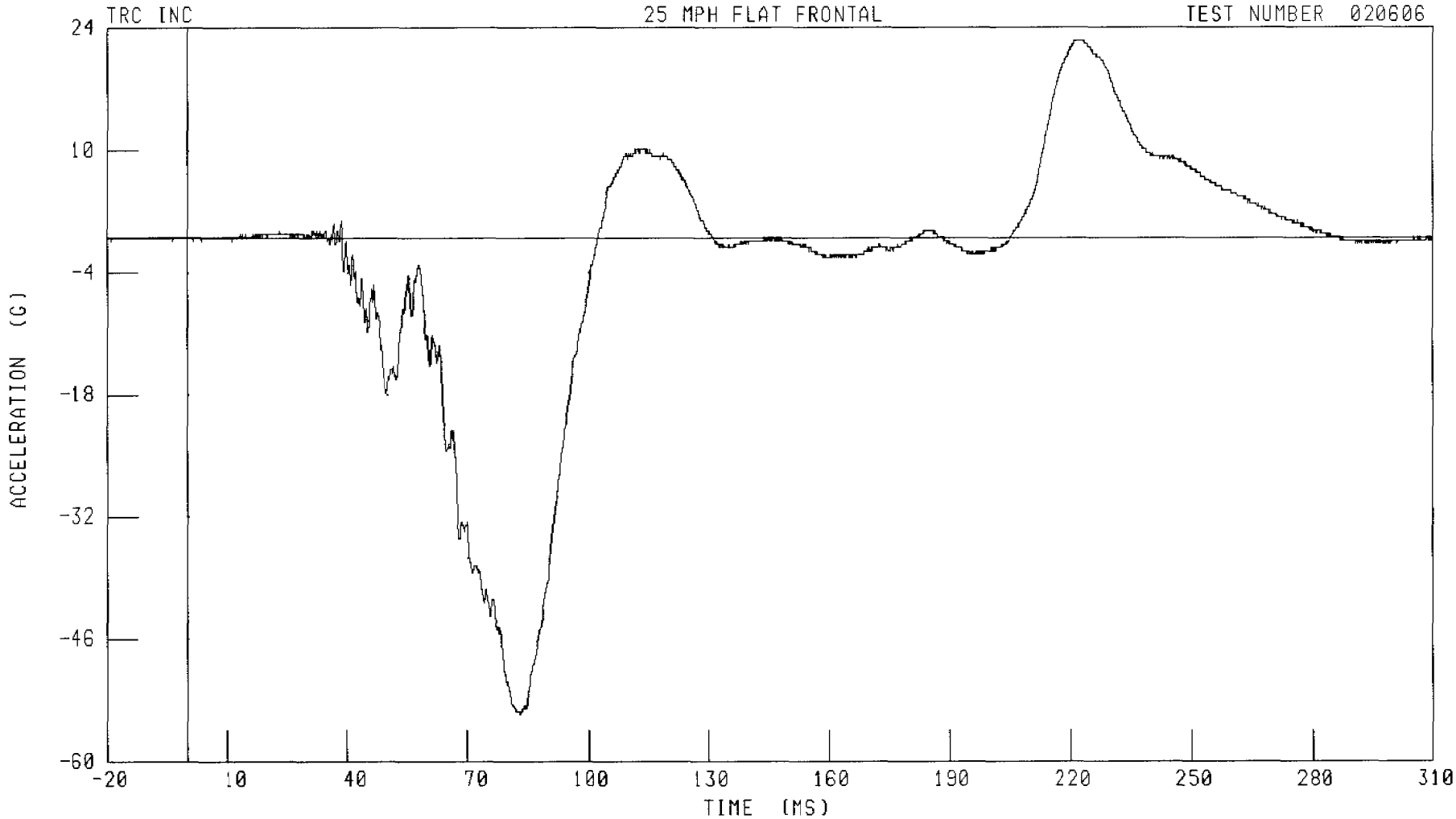


CHANNEL HD1ZG2 FILTER CH CLASS 1000

PEAK DATA 10 19 G @ 158 24 MS, -26 59 G @ 100 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

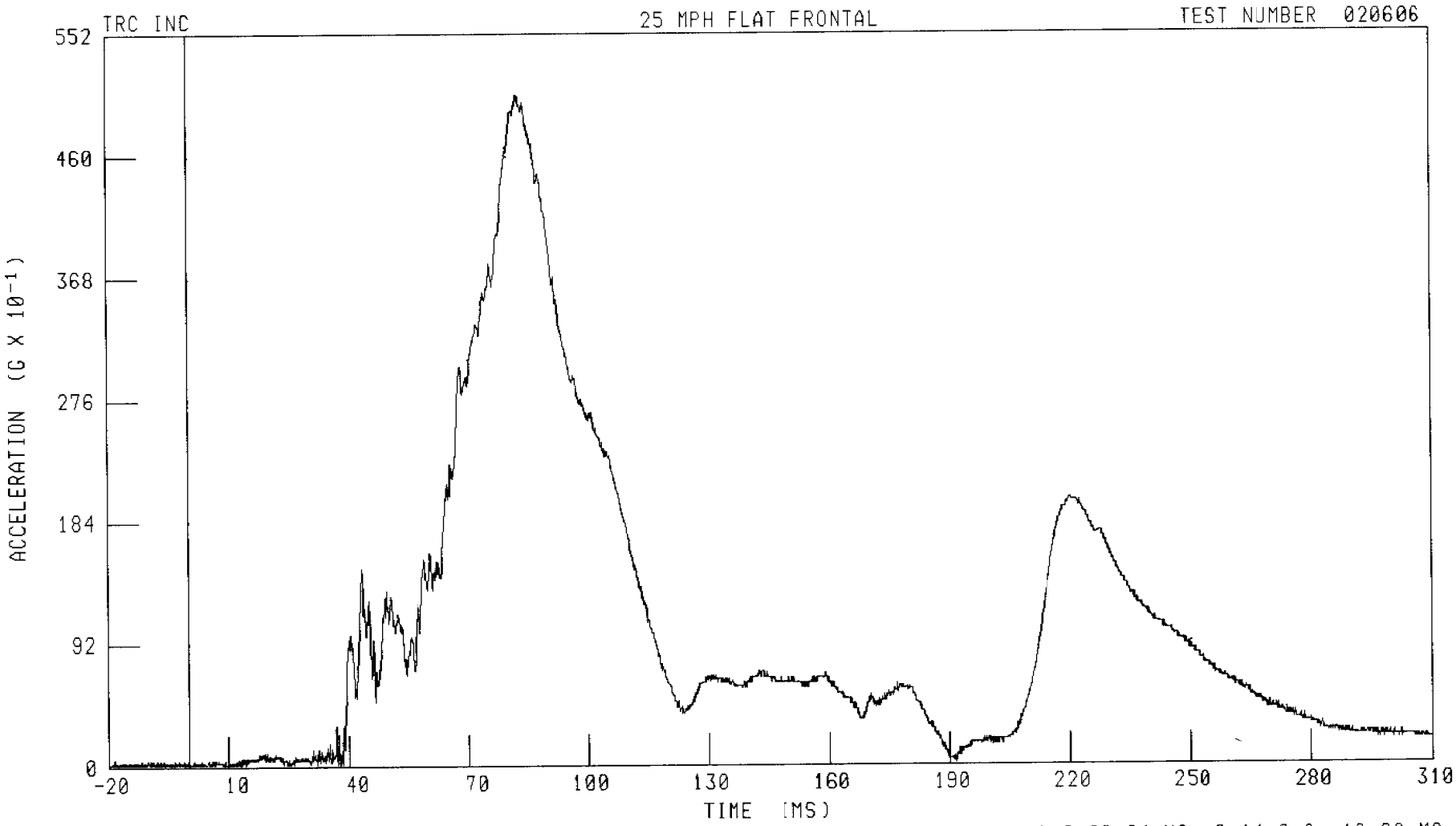
PASSENGER HEAD X-AXIS (LT) ACCELERATION



CHANNEL HD1XG2 FILTER CH CLASS 1000

PEAK DATA 22 55 G @ 220 96 MS, -54 72 G @ 82 80 MS

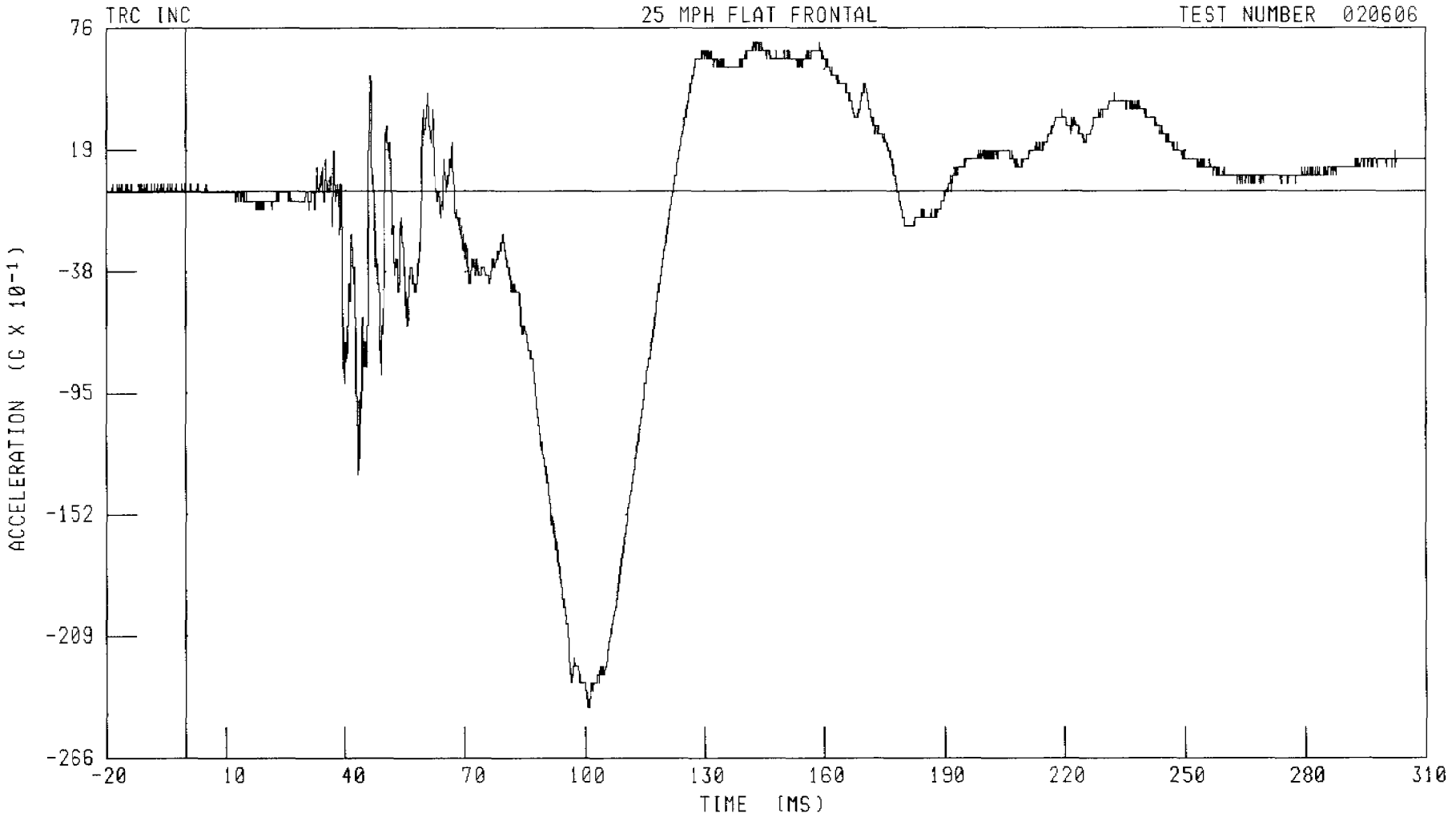
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER HEAD RESULTANT ACCELERATION REDUNDANT



CHANNEL HEDRR2 FILTER CH CLASS 1000

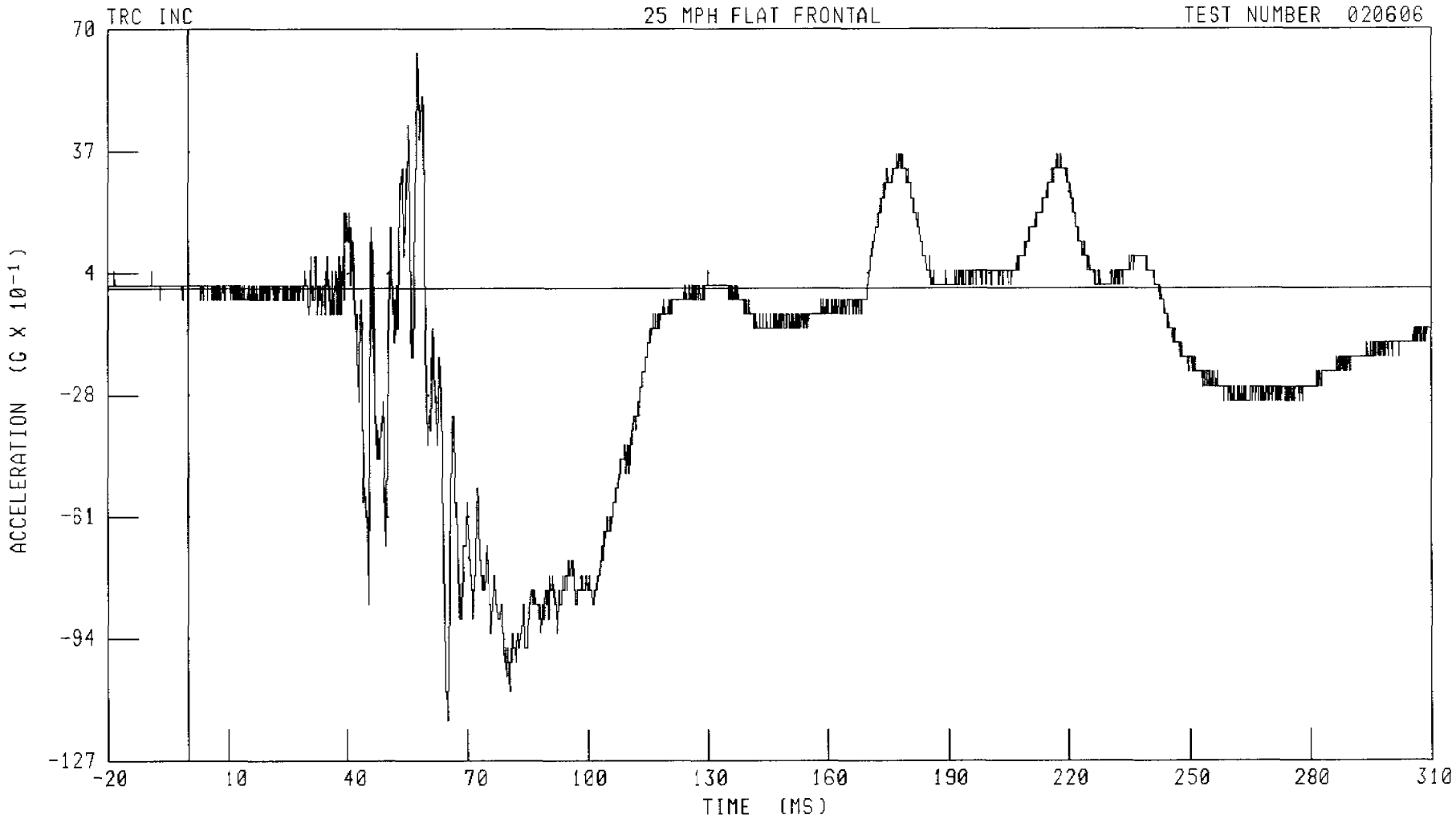
PEAK DATA 50 59 G @ 82 64 MS, 0 14 G @ -19 92 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER HEAD Z-AXIS ACCELERATION REDUNDANT



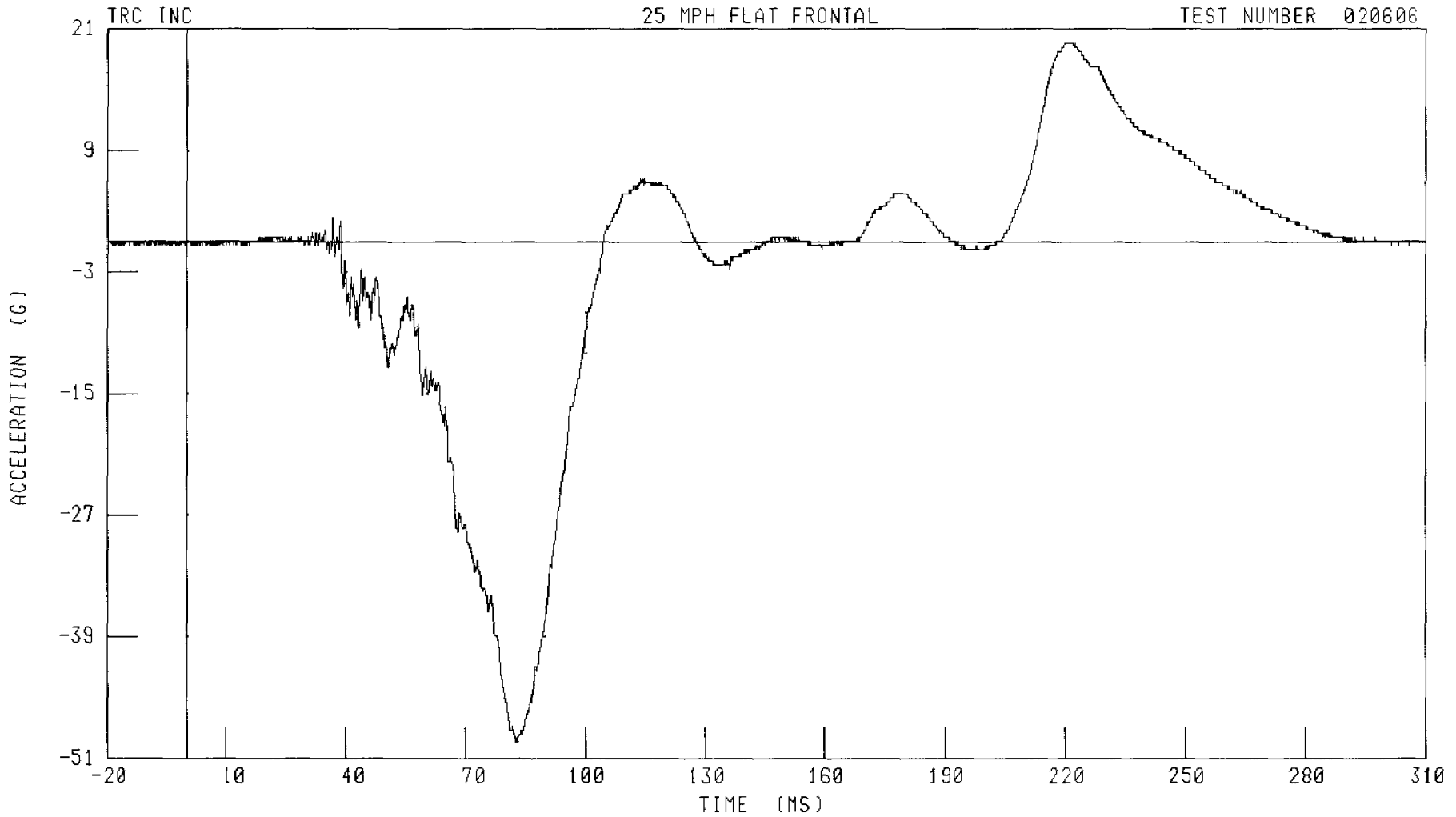
CHANNEL HEDZR2 FILTER CH CLASS 1000 PEAK DATA 6 93 G @ 142 40 MS, -24 25 G @ 100 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER HEAD Y-AXIS ACCELERATION REDUNDANT



CHANNEL HEDYR2 FILTER CH CLASS 1000 PEAK DATA 6 37 G @ 57 52 MS, -11 72 G @ 65 04 MS

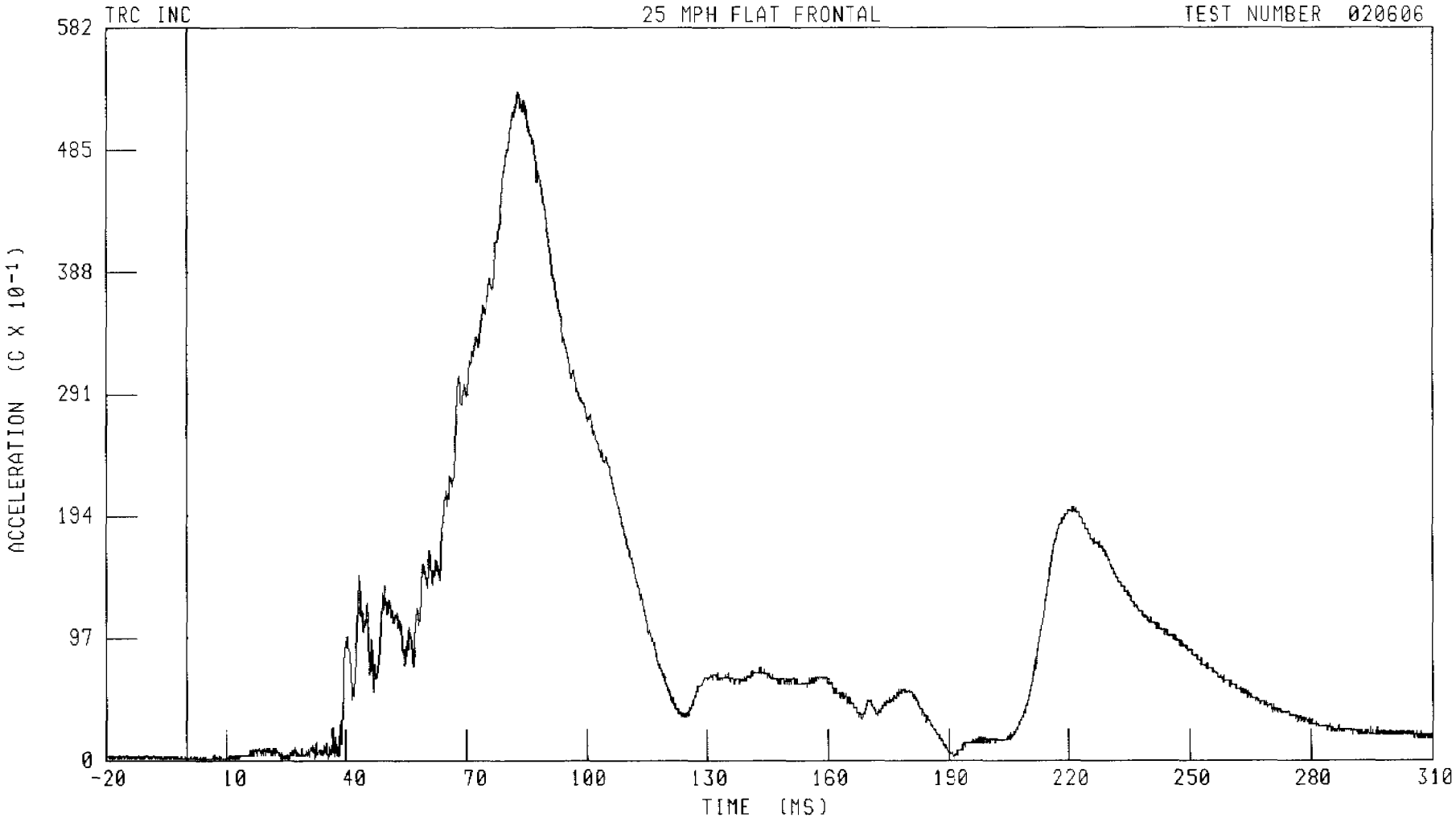
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER HEAD X-AXIS ACCELERATION REDUNDANT



CHANNEL HEDXR2 FILTER CH CLASS 1000 PEAK DATA 19 57 G @ 219 92 MS, -49 41 G @ 82 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

PASSENGER HEAD RESULTANT ACCELERATION

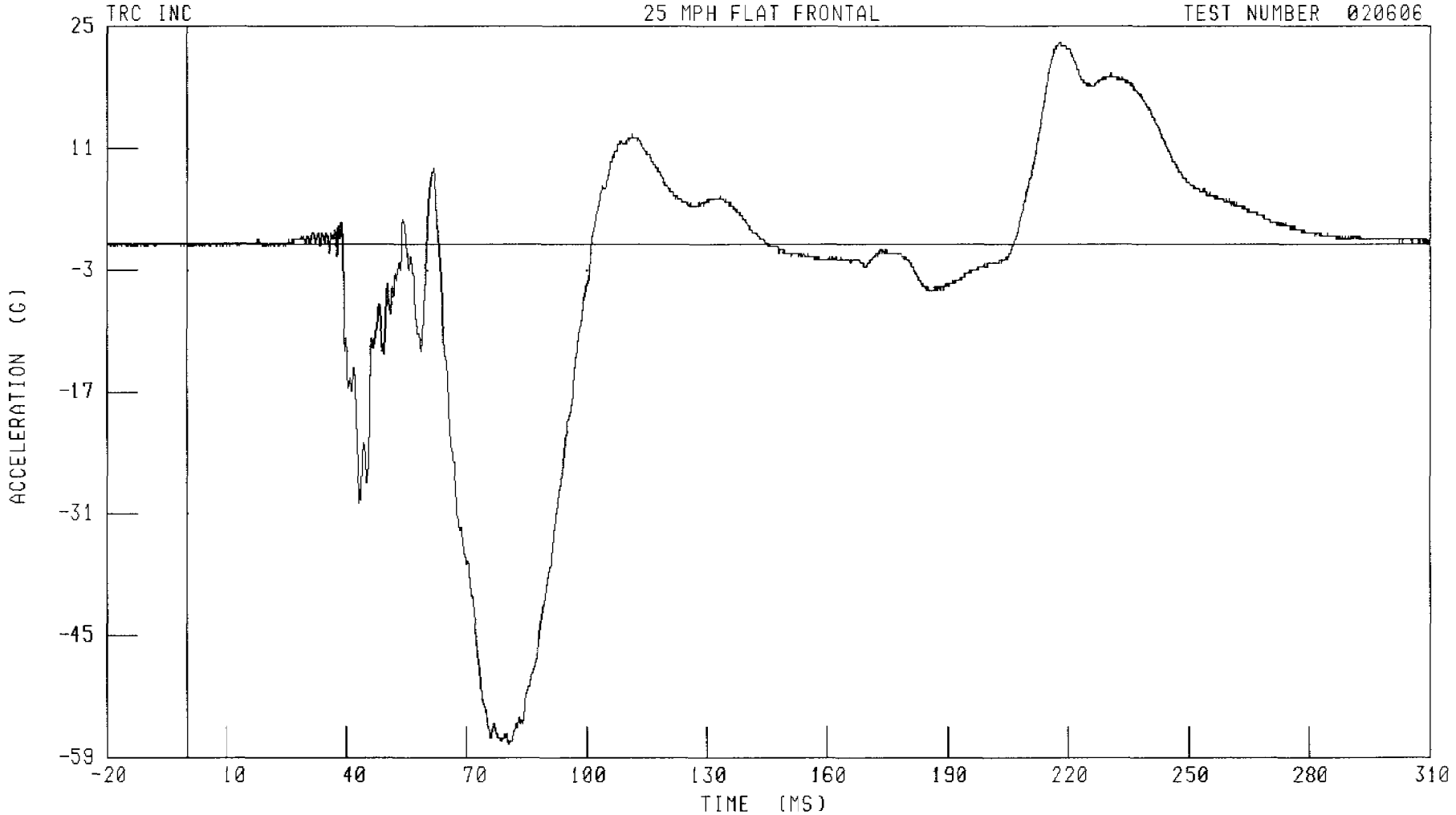


CHANNEL HEDRG2 FILTER CH CLASS 1000

PEAK DATA 53 15 G @ 82 72 MS, 0 16 G @ -19 28 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

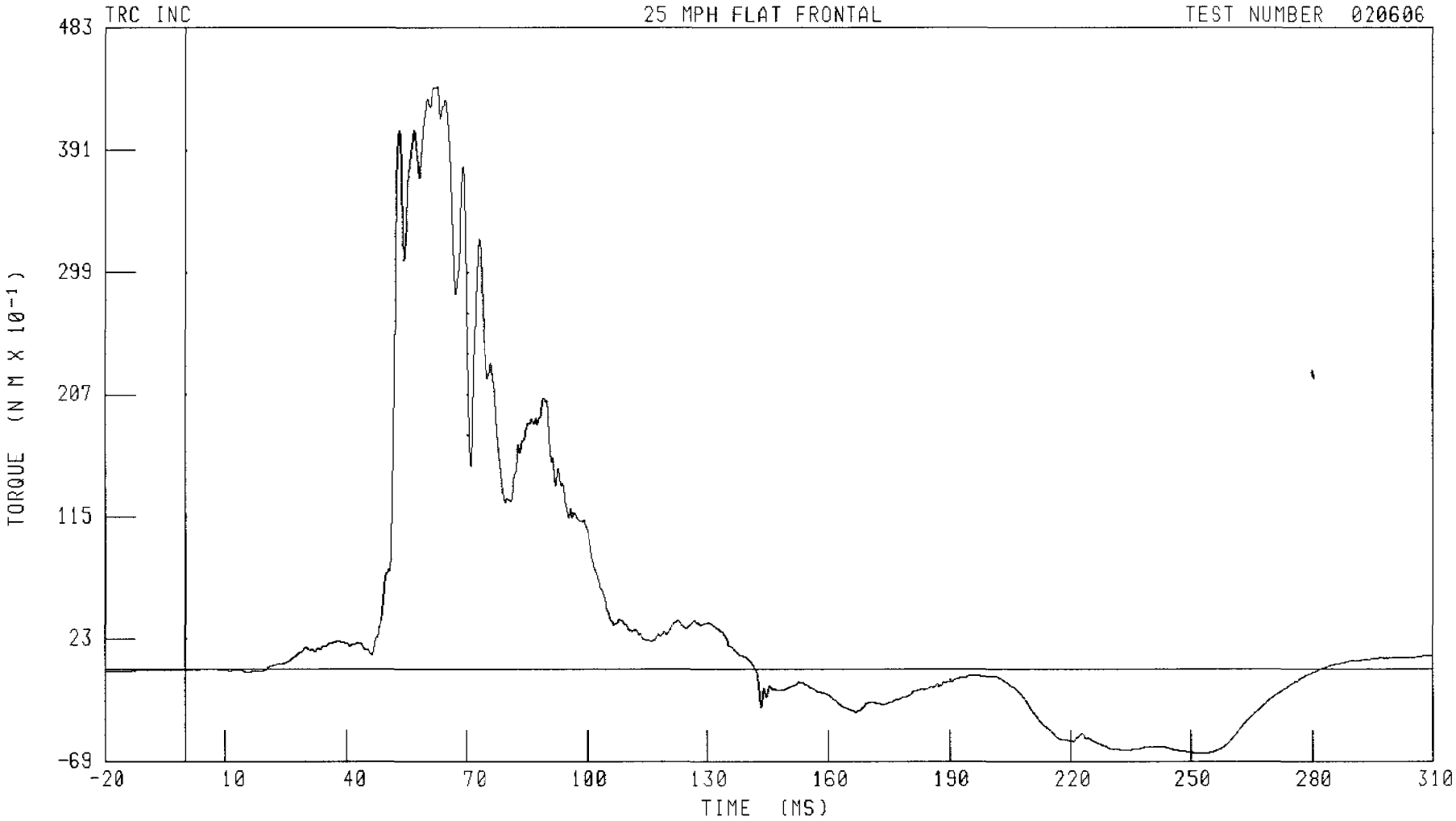
PASSENGER HEAD X-AXIS (TP) ACCELERATION



CHANNEL HD3XC2 FILTER CH CLASS 1000

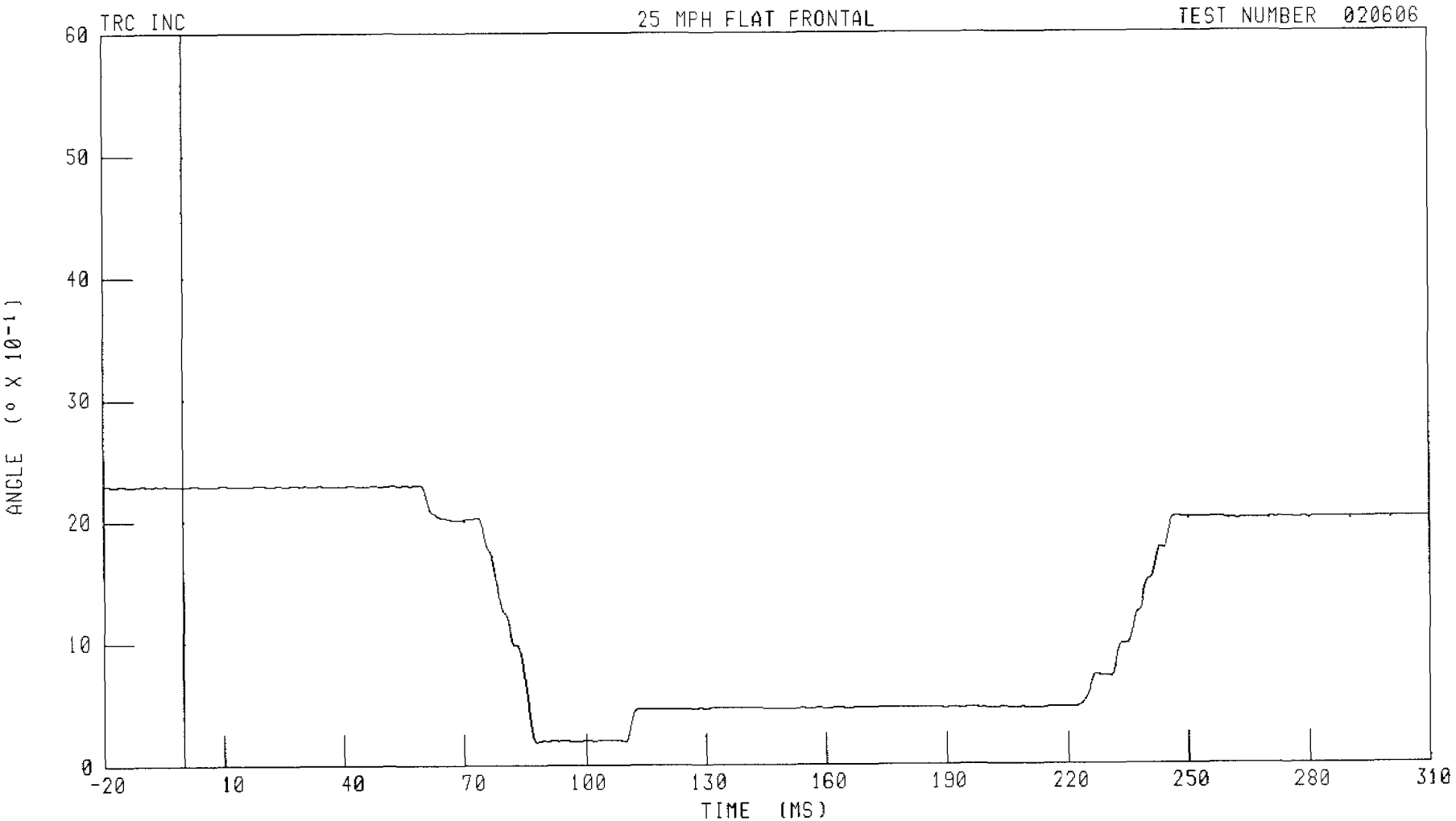
PEAK DATA 23 16 G @ 217 84 MS, -57 50 G @ 80 48 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS



CHANNEL ANLYM2 FILTER CH CLASS 600 PEAK DATA 43 87 N M @ 62 88 MS, -6 32 N M @ 253 12 MS

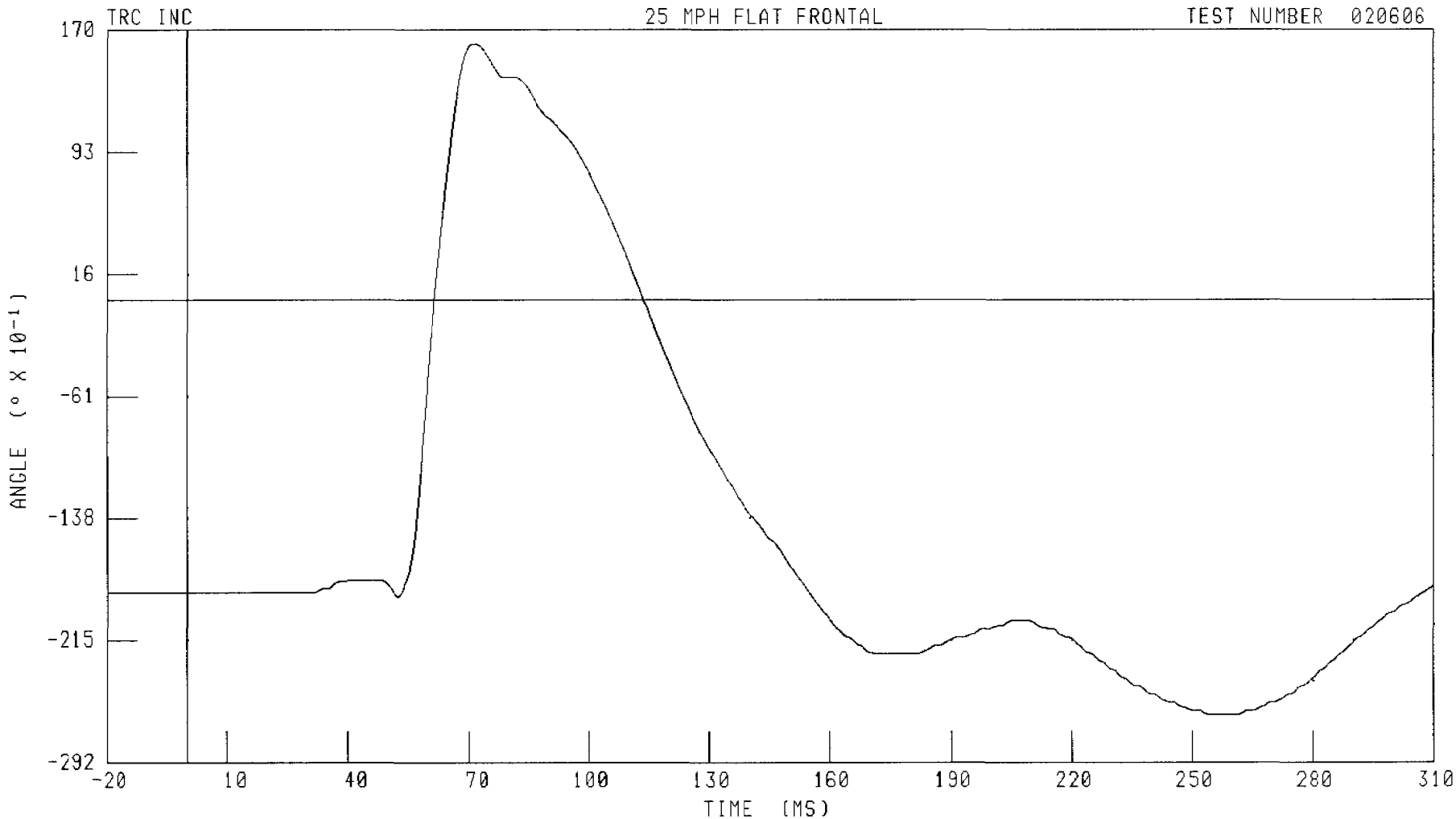
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT FOOT TO ANKLE X-AXIS DISPLACEMENT



CHANNEL FTLXD2 FILTER CH CLASS 180

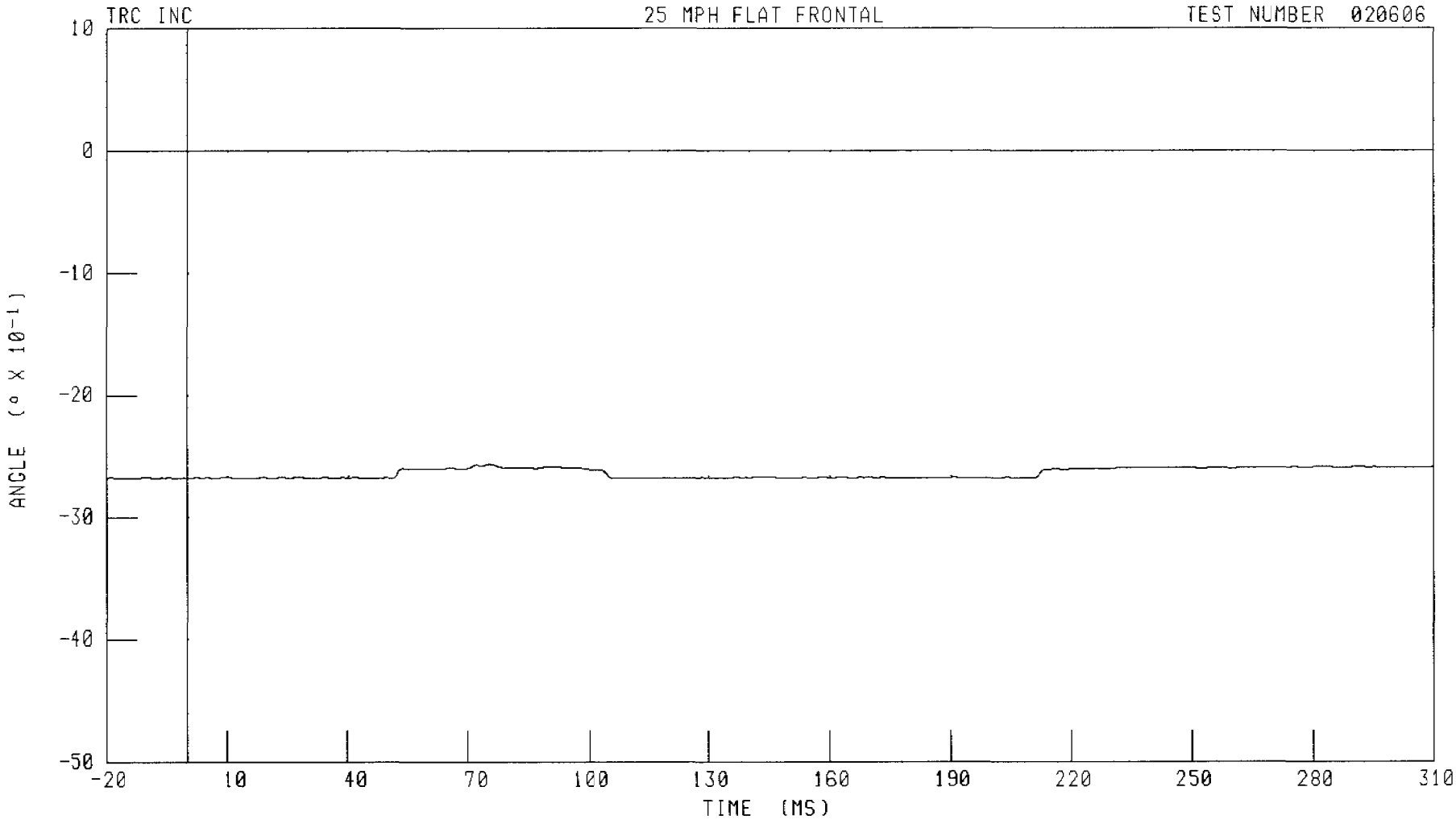
PEAK DATA 2 29 ° @ 58 96 MS, @ 19 ° @ 87 84 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT FOOT TO ANKLE Y-AXIS DISPLACEMENT



CHANNEL FTLYD2 FILTER CH CLASS 180 PEAK DATA 16 09 ° @ 70 96 MS, -26 22 ° @ 257 52 MS

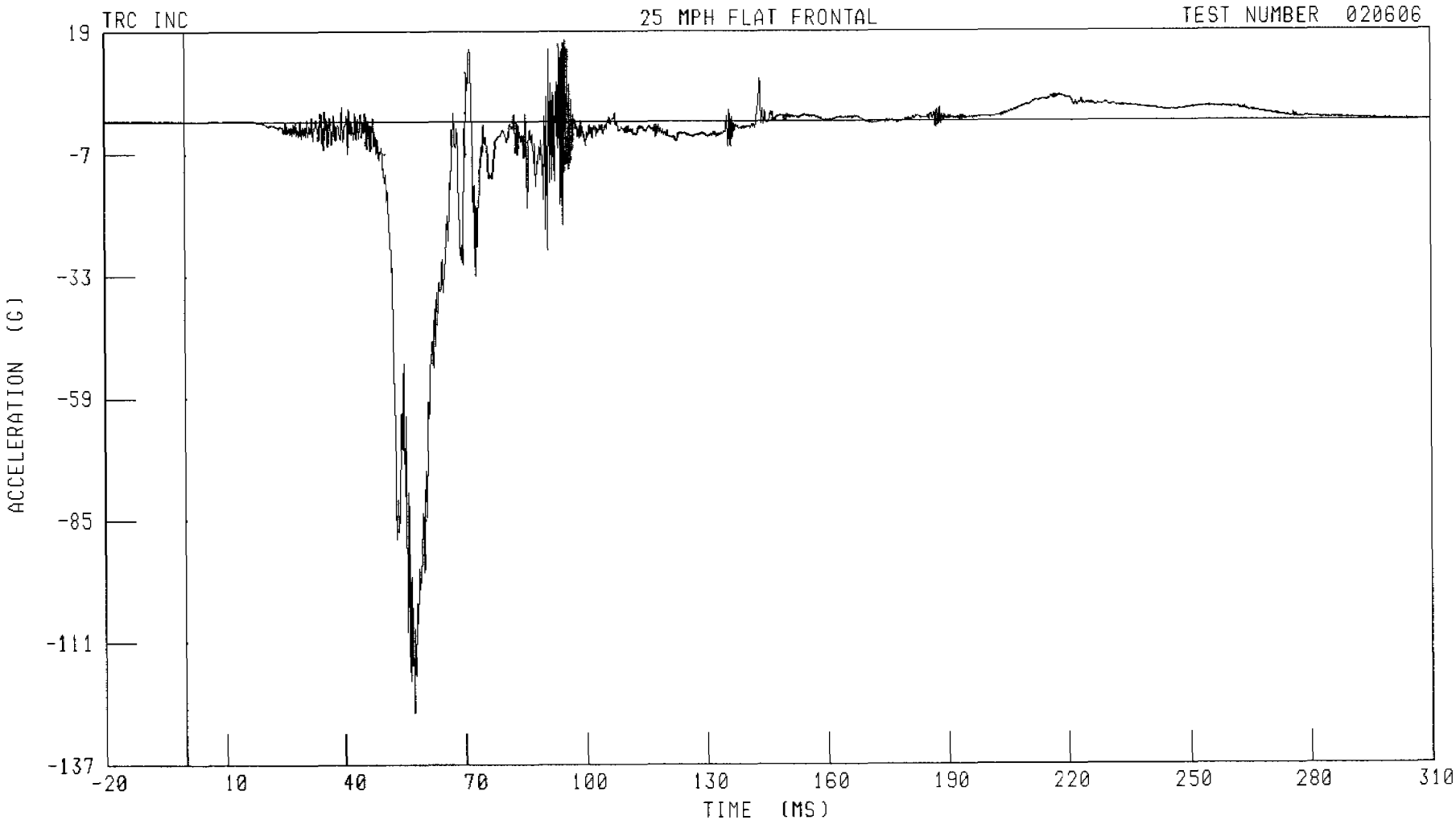
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT FOOT TO ANKLE Z-AXIS DISPLACEMENT



CHANNEL FTLZD2 FILTER CH CLASS 180

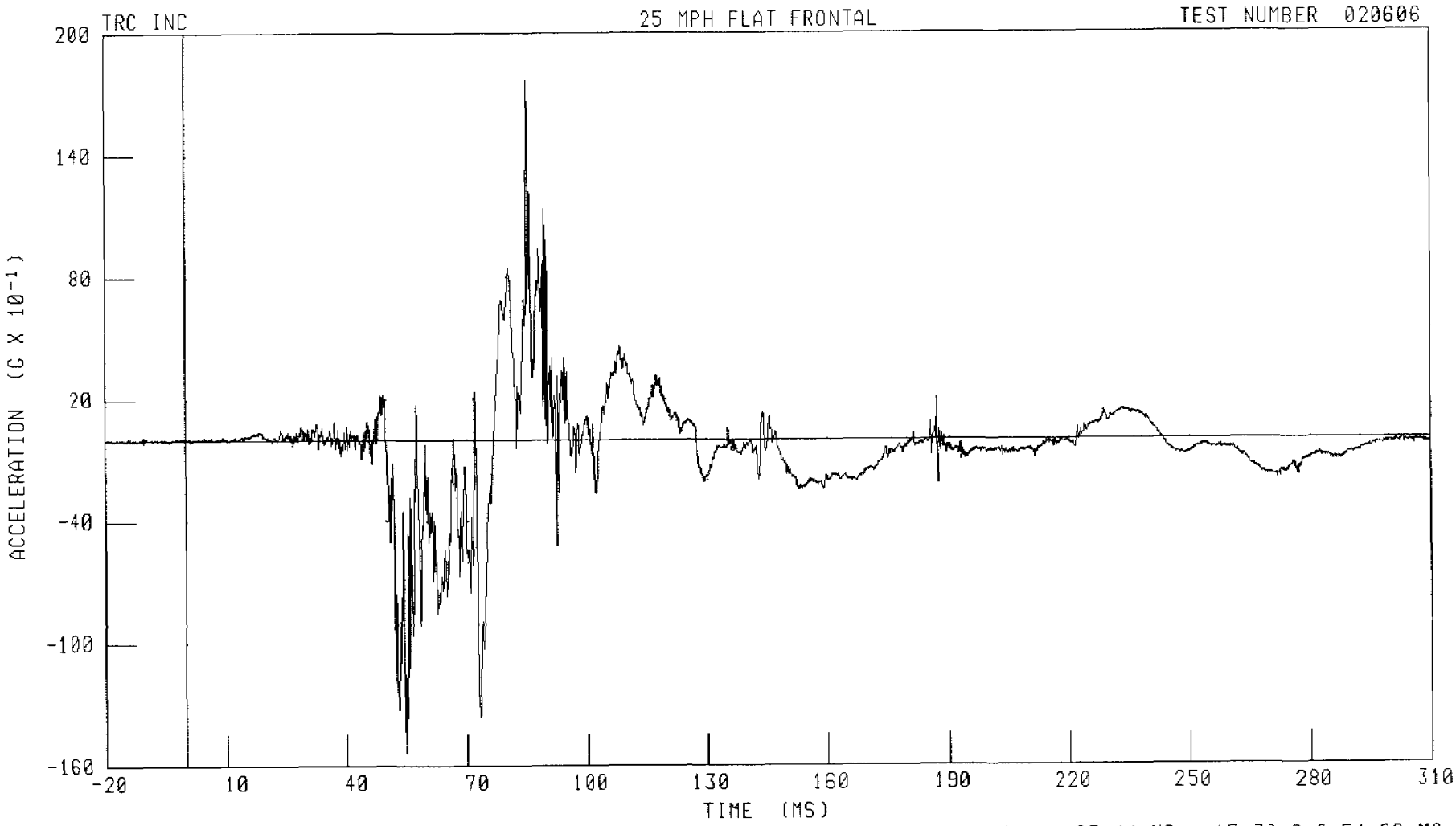
PEAK DATA -2 57 ° @ 75 52 MS, -2 68 ° @ 210 64 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT FOOT X-AXIS ACCELERATION



CHANNEL FTLXG2 FILTER CH CLASS 1000 PEAK DATA 17 36 G @ 95 20 MS, -126 02 G @ 57 20 MS

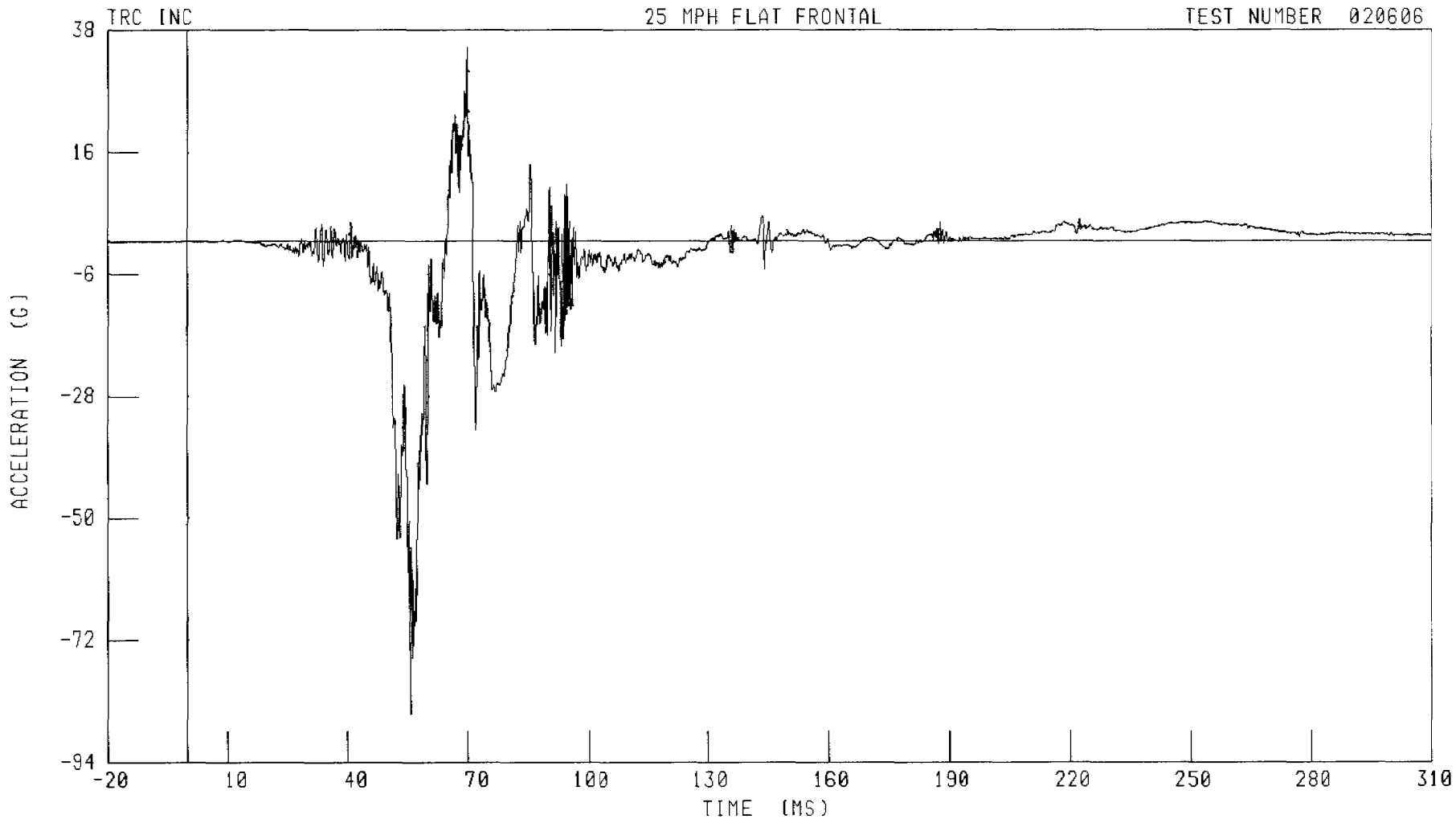
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT FOOT Y-AXIS ACCELERATION



CHANNEL FTLYG2 FILTER CH CLASS 1000

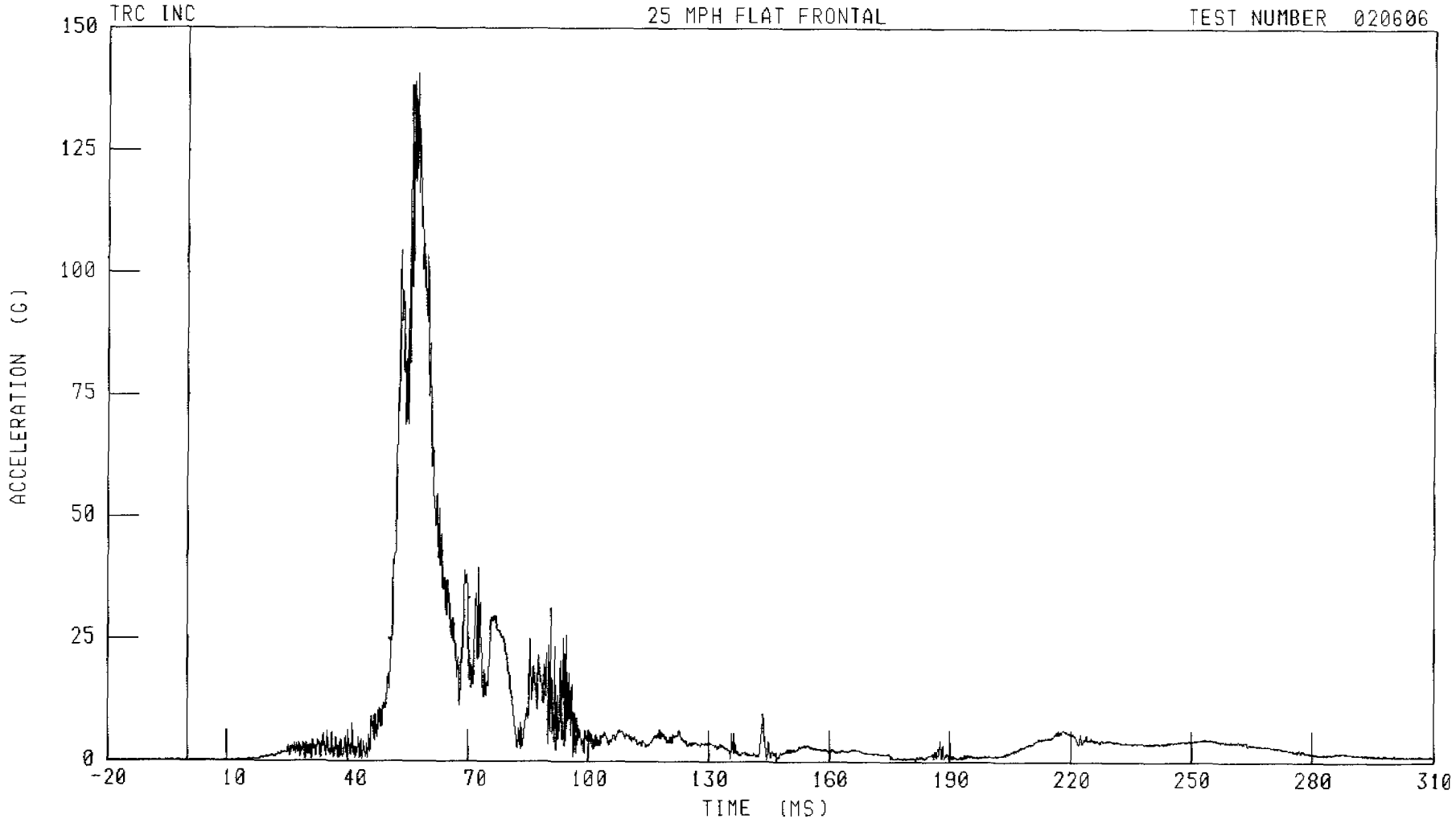
PEAK DATA 17 75 G @ 85 44 MS, -15 38 G @ 54 88 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT FOOT Z-AXIS ACCELERATION



CHANNEL FTLZG2 FILTER CH CLASS 1000 PEAK DATA 34 92 G @ 69 84 MS, -85 26 G @ 55 68 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER LEFT FOOT RESULTANT ACCELERATION

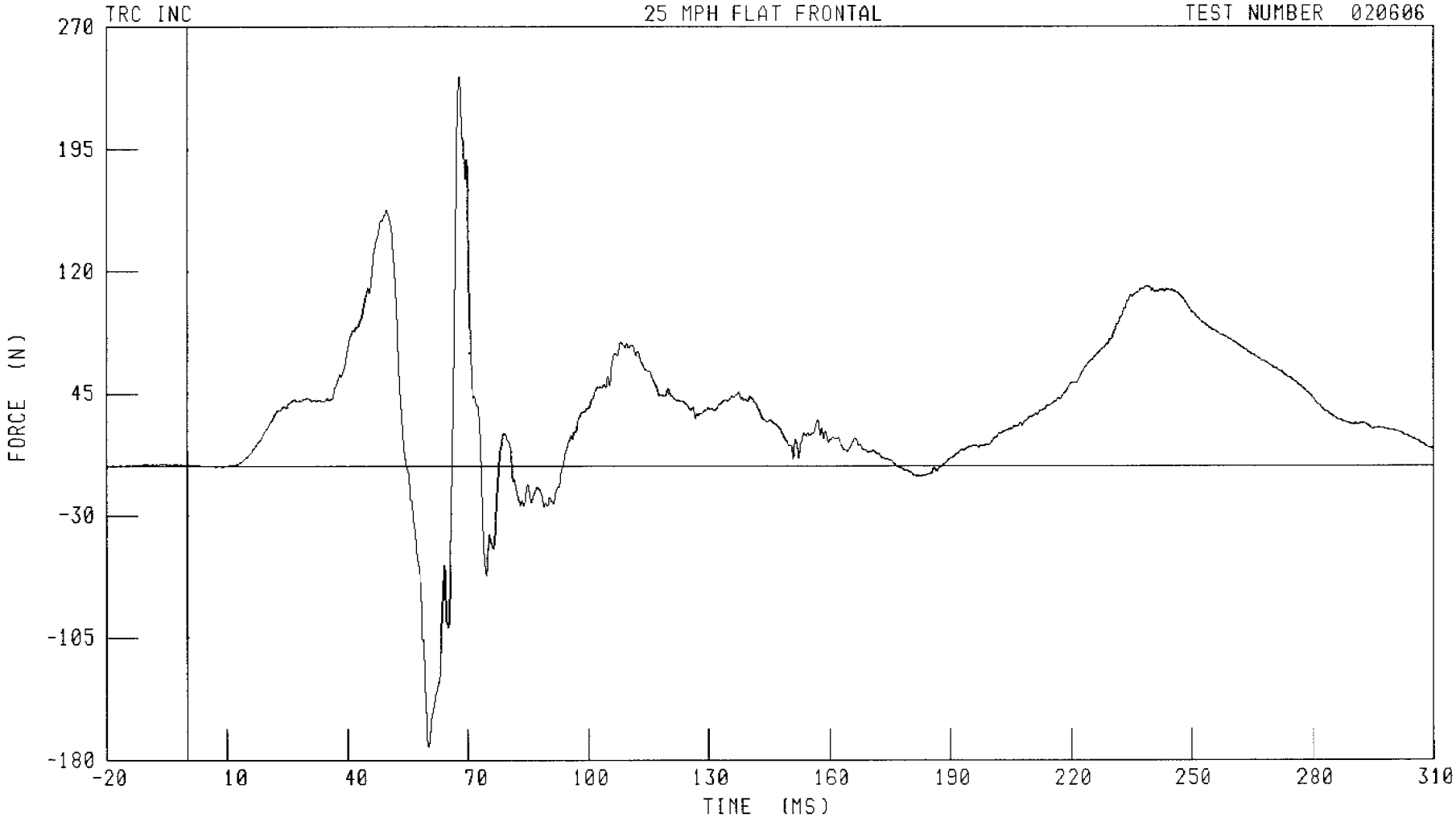


CHANNEL FTLRG2 FILTER CH CLASS 1000

PEAK DATA 140 82 G @ 57 20 MS, 0 02 G @ -14 96 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

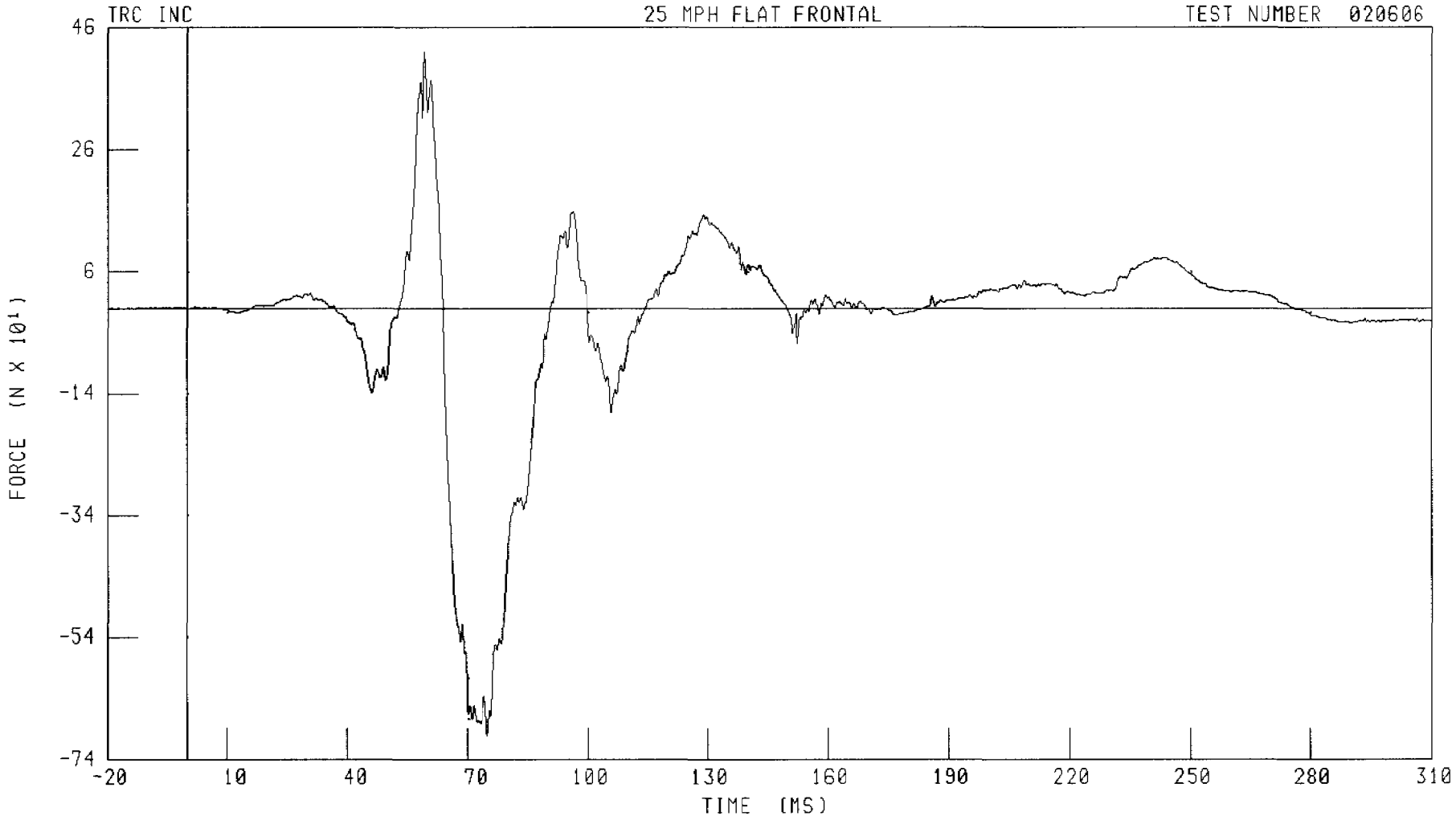
PASSENGER RIGHT UPPER TIBIA X-AXIS FORCE



CHANNEL TBRXF2 FILTER CH CLASS 600

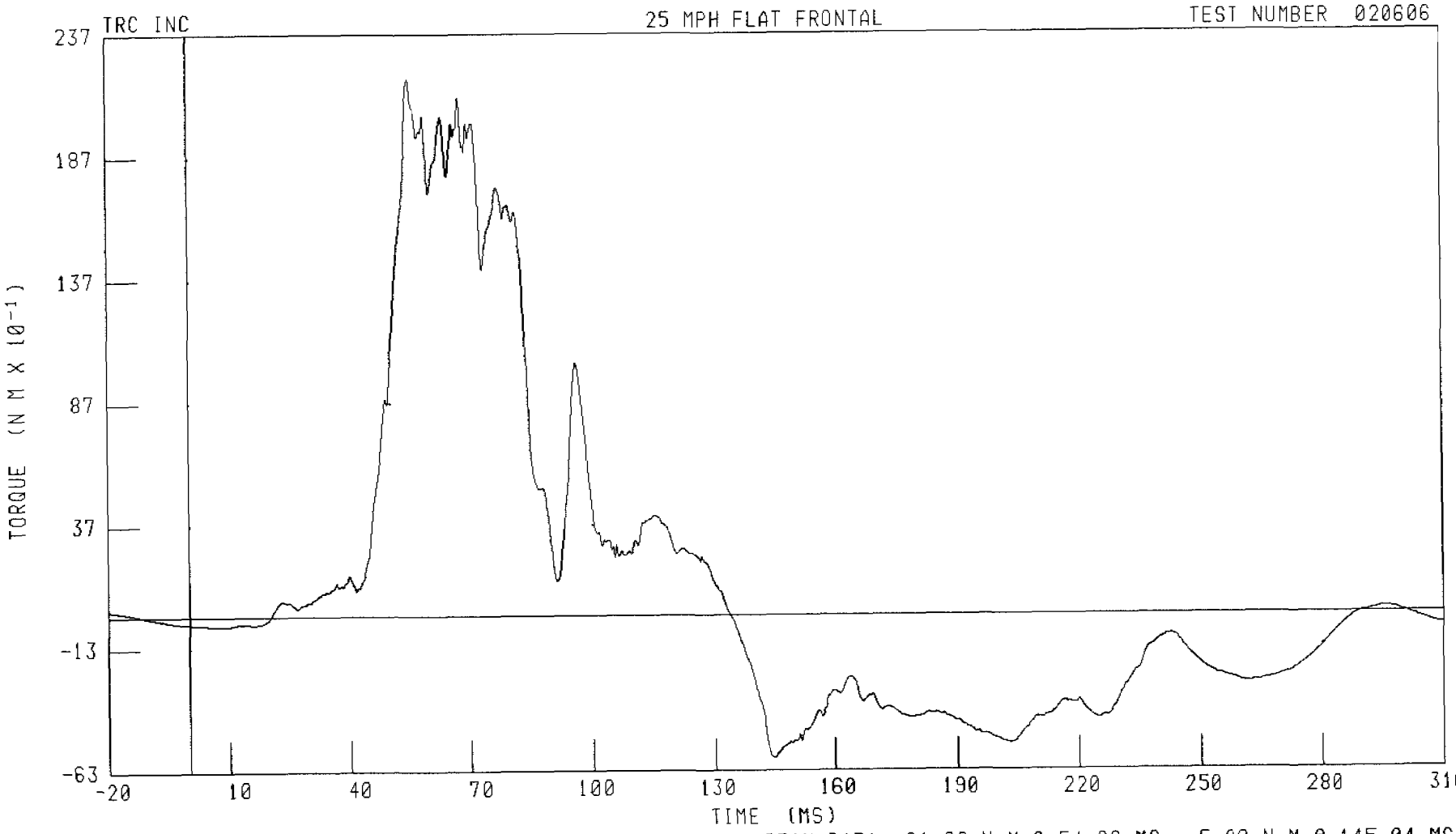
PEAK DATA 239 36 N @ 67 76 MS, -171 70 N @ 60 16 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT UPPER TIBIA Z-AXIS FORCE



CHANNEL TBRZF2 FILTER CH CLASS 600 PEAK DATA 420 14 N @ 58 96 MS, -701 61 N @ 74 96 MS

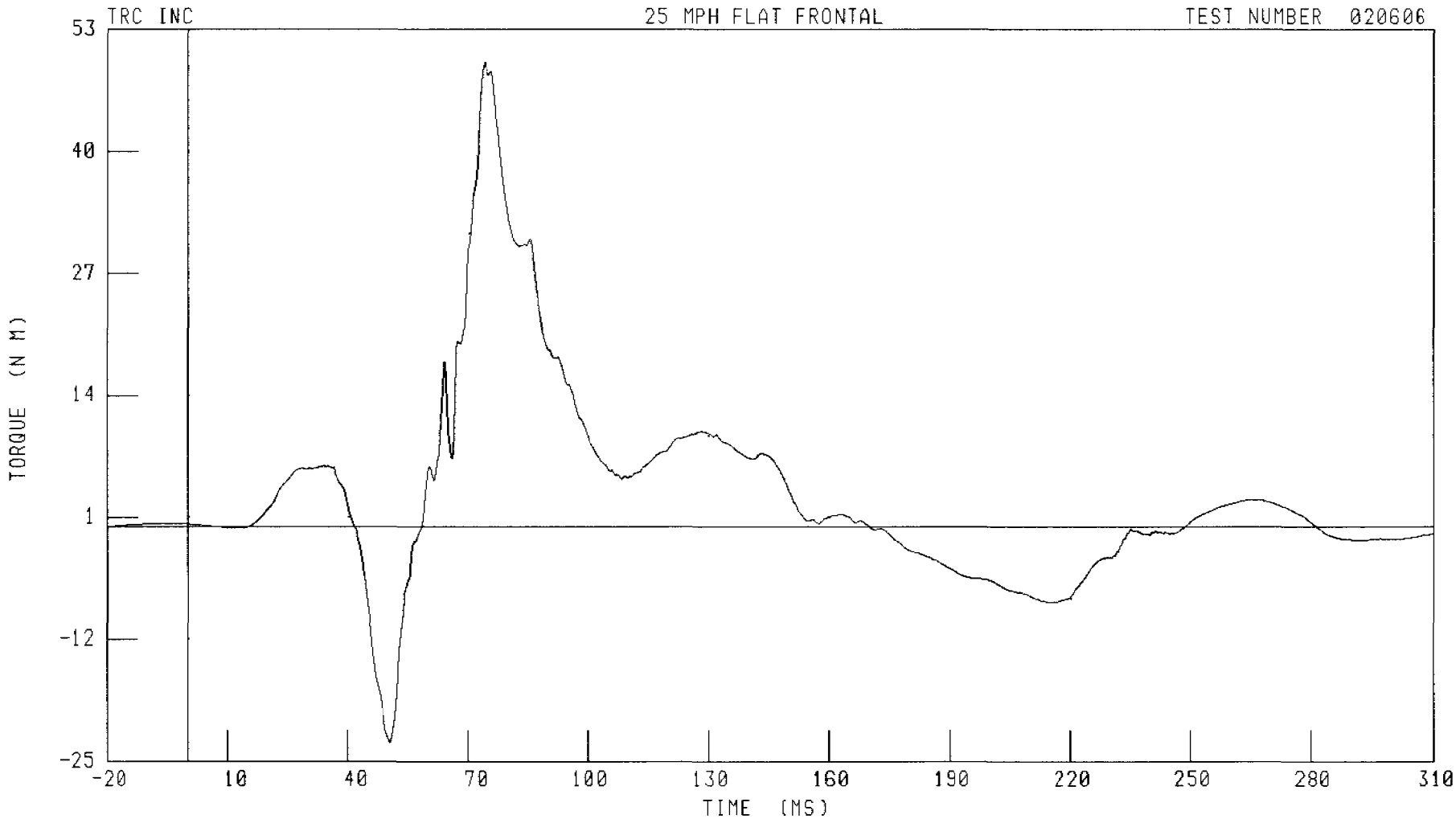
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS



CHANNEL TBRXM2 FILTER CH CLASS 600

PEAK DATA 21 88 N M @ 54 88 MS, -5 80 N M @ 145 04 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS

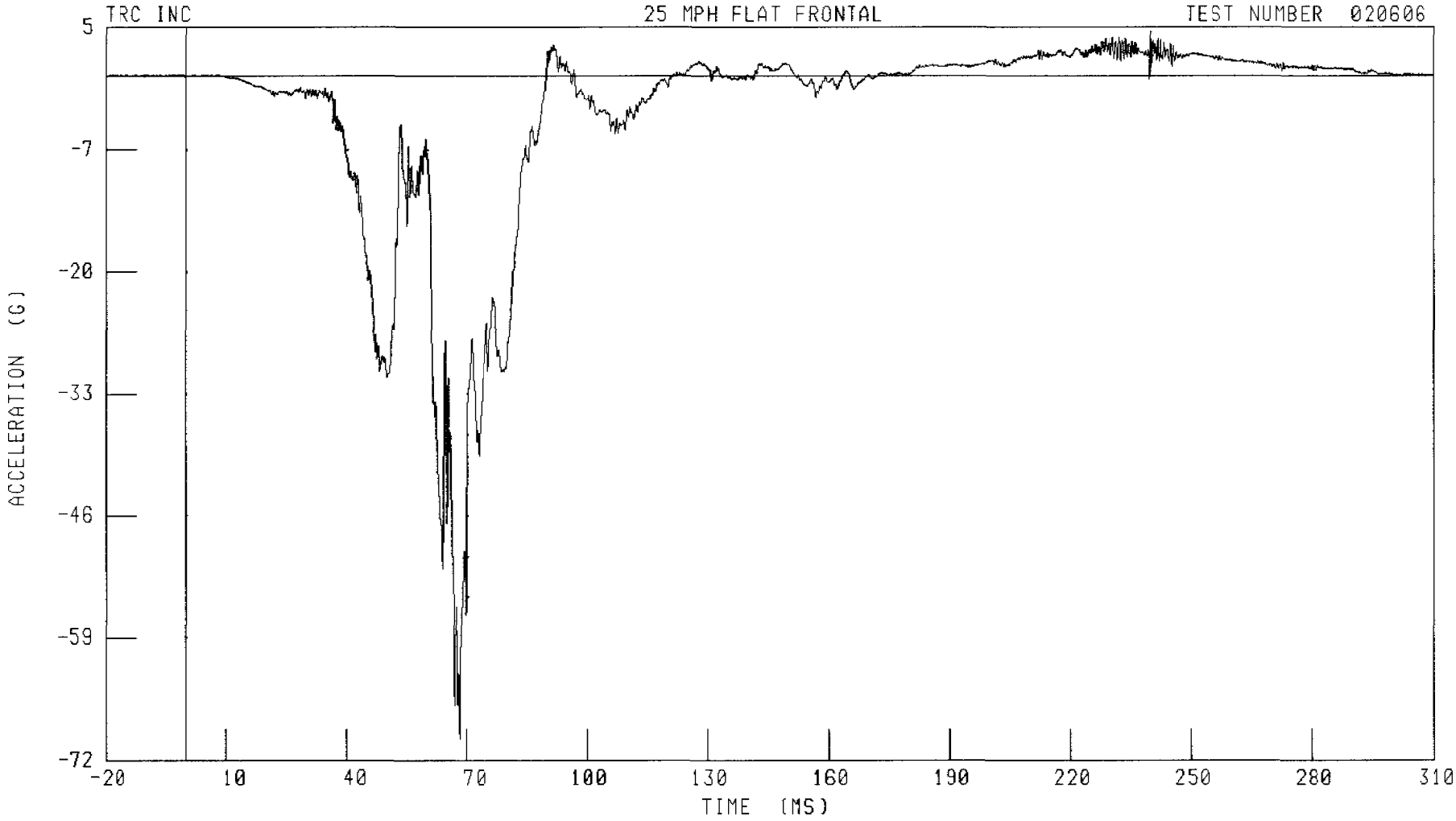


CHANNEL TBRYM2 FILTER CH CLASS 600

PEAK DATA 49 55 N M @ 74 32 MS, -23 00 N M @ 50 32 MS

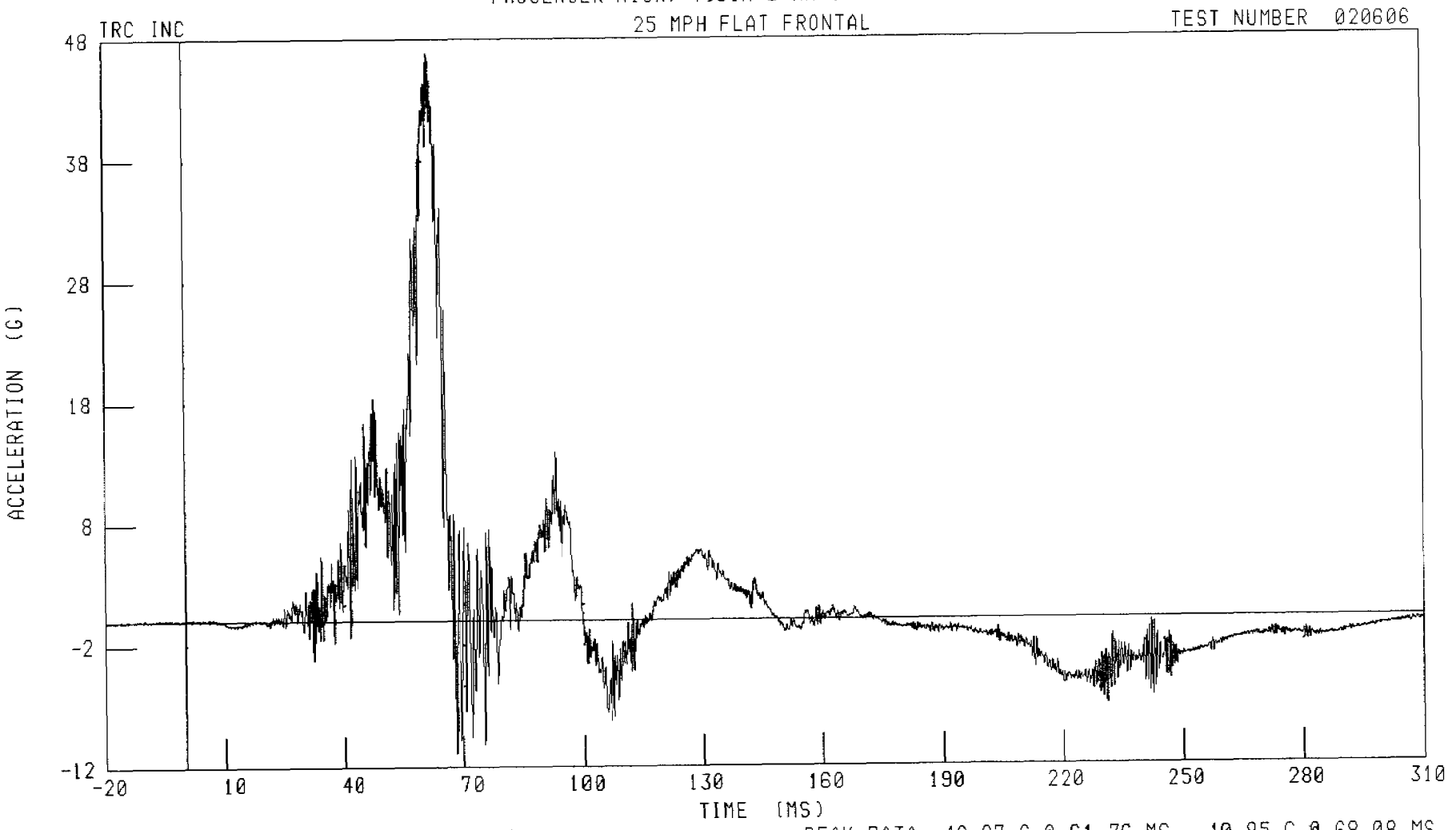
2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH

PASSENGER RIGHT TIBIA X-AXIS ACCELERATION



CHANNEL TBRXG2 FILTER CH CLASS 1000 PEAK DATA 4 64 G @ 239 84 MS, -70 55 G @ 68 24 MS

2001 DODGE GRAND CARAVAN INTO FLAT FRONTAL BARRIER AT 25 MPH
PASSENGER RIGHT TIBIA Z-AXIS ACCELERATION



CHANNEL TBRZG2 FILTER CH CLASS 1000

PEAK DATA 46 87 G @ 61 76 MS, -10 95 G @ 68 08 MS

Appendix C

Dummy Configuration and Performance Verification Data

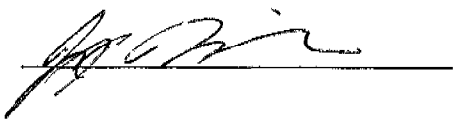
Pre-test Dummy Configuration and Performance Verification Data

Driver Dummy S/N: 416

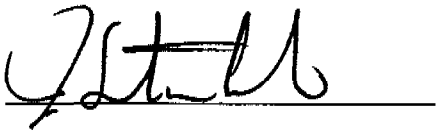
Transportation Research Center Inc.
572F HIII 5th Dummy
External Dimensions
Serial No. 416 Calibration No. 14

Test Parameter	Dimension	Specification	Results	Pass
Total Sitting Height	A	774 7 - 800 1 mm	783 mm	Yes
Shoulder Pivot Height	B	431 8 - 457 2 mm	449 mm	Yes
Hip Pivot Height	C	81.3 - 86.3 mm	82 mm	Yes
Hip Pivot from Backline	D	144.8 - 149.8 mm	149 mm	Yes
Shoulder Pivot from Backline	E	68.6 - 83 8 mm	70 5 mm	Yes
Thigh Clearance	F	119.4 - 134.6 mm	123 mm	Yes
Back of Elbow to Wrist Pivot	G	243.9 - 259.0 mm	249 mm	Yes
Head Back to Backline	H	40 7 - 45.7 mm	43 mm	Yes
Shoulder to Elbow Length	I	276 9 - 297.1 mm	283 mm	Yes
Elbow Rest Height	J	182 9 - 203.2 mm	193 mm	Yes
Buttock Knee Length	K	520 7 - 546 1 mm	536 mm	Yes
Popliteal Height	L	355 6 - 375 9 mm	361 mm	Yes
Knee Pivot Height	M	393.7 - 419.1 mm	402 mm	Yes
Buttock Popliteal Height	N	414.1 - 439.4 mm	421 mm	Yes
Chest Depth without Jacket	O	175.3 - 190.5 mm	181 mm	Yes
Foot Length	P	218.5 - 233 6 mm	230 mm	Yes
Buttock to Knee Pivot Length	R	457 2 - 482 6 mm	468 mm	Yes
Head Breadth	S	137.2 - 147.3 mm	139 mm	Yes
Head Depth	T	177.8 - 187 9 mm	180 mm	Yes
Hip Breadth	U	299 8 - 314.9 mm	302 mm	Yes
Shoulder Breadth	V	350 6 - 365.7 mm	356 mm	Yes
Foot Breadth	W	78.8 - 93.9 mm	88 mm	Yes
Head Circumference	X	528.4 - 548.6 mm	539 mm	Yes
Chest Circumference with Jacket	Y	850 9 - 881.3 mm	864 mm	Yes
Waist Circumference	Z	759.5 - 789.9 mm	782 mm	Yes
Reference Location for Chest Circumference	AA	299.8 - 309 8 mm	306 mm	Yes
Reference Location for Waist Circumference	BB	160.1 - 170.1 mm	168 mm	Yes

Technician



Approved



TRC

Transportation Research Center Inc.

5720 Head Drop Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Peak Resultant Acceleration	250 - 300 g	285.9 g	Yes
Peak Lateral Acceleration	15 g Max	12.2 g	Yes
Is Acceleration Curve Unimodal?	Yes	Yes	Yes

Comments:

Technician

Approved

05 17 2002 09 11 03 604

TRC

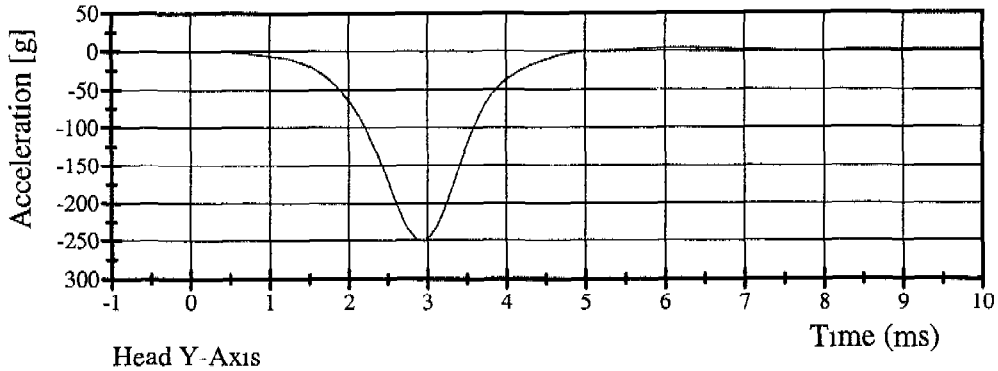
Transportation Research Center Inc.

572O Head Drop Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Head X-Axis

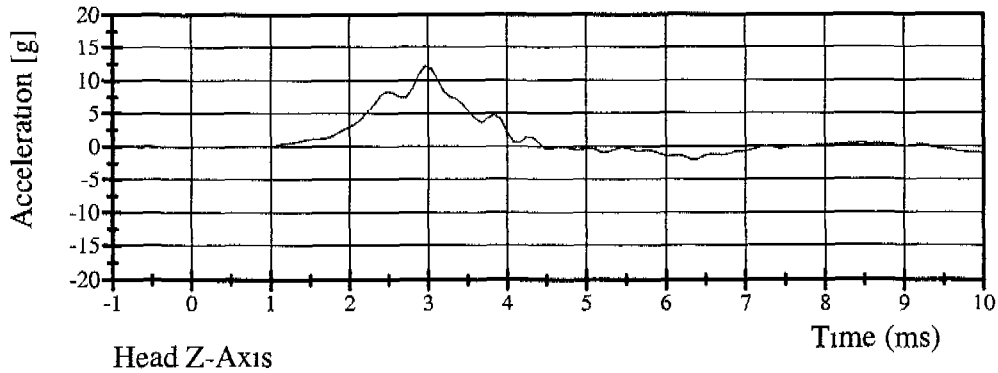


Filter Class: 1000

Max. 3.9 g at 6.1 ms

Min: -250.6 g at 3.0 ms

Head Y-Axis

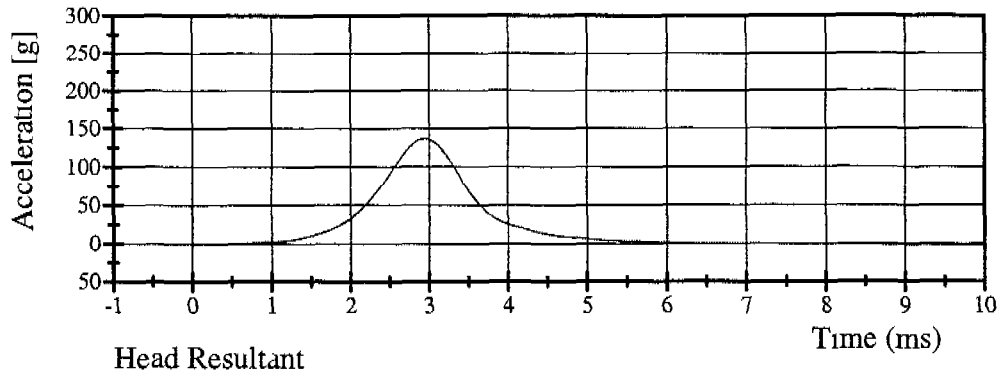


Filter Class: 1000

Max: 12.2 g at 3.0 ms

Min: -2.0 g at 6.3 ms

Head Z-Axis

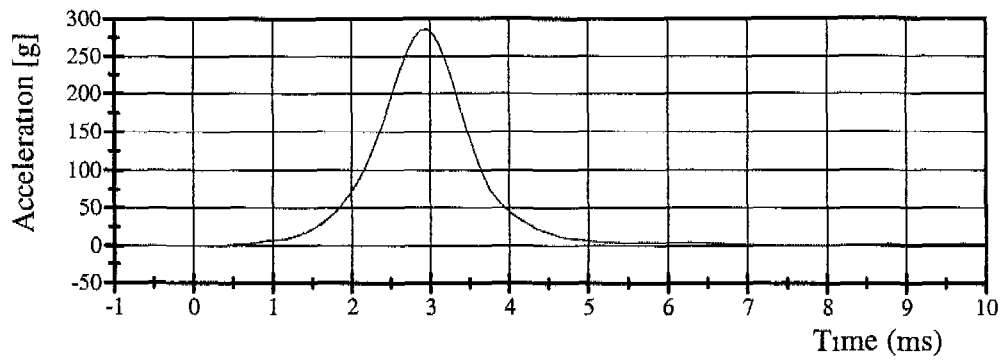


Filter Class: 1000

Max: 137.0 g at 3.0 ms

Min: -2 0 g at 9.9 ms

Head Resultant



Filter Class. 1000

Max· 285.9 g at 3.0 ms

Min: 0.0 g at 2.1 ms

05 17 2002 09 11 05 604

Transportation Research Center Inc.

5720 Neck Flexion Test - 6 Channel Transducer

HIII 5th Female Serial No. 416 Calibration No. 14 - 2

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impact Velocity	6.89 - 7.13 m/s	7.10 m/s	Yes
Integrated Pendulum Velocity			
10 ms	2.10 - 2.50 m/s	2 14 m/s	Yes
20 ms	4.00 - 5.00 m/s	4.21 m/s	Yes
30 ms	5.80 - 7.00 m/s	6.12 m/s	Yes
Peak D Plane Rotation	77 - 91 °	78.4 °	Yes
Peak Moment About Occipital Condyles (During time interval rotation is within specified corridors)	69 0 - 83.0 N·m	76.74 N·m	Yes
Positive Moment Decay Time To 10 N·m	80 - 100 ms	89.84 ms	Yes

Comments:

Technician

Approved

05 17 2002 11 00 17 480

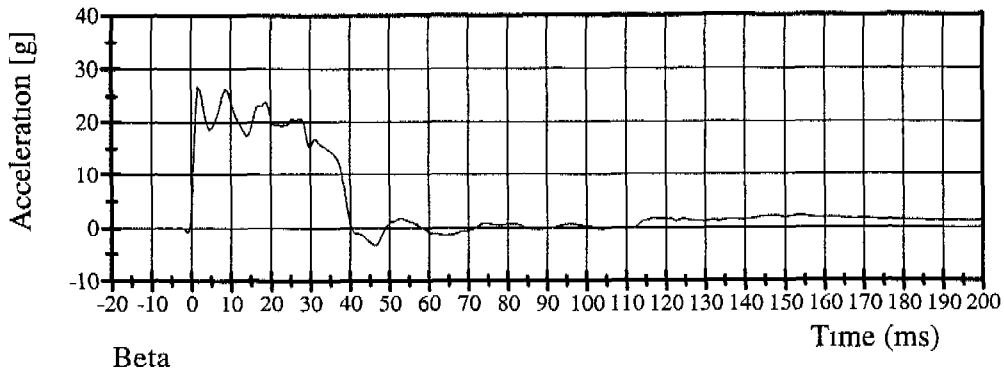
Transportation Research Center Inc.

5720 Neck Flexion Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 2

Test Date 05/17/2002

Pendulum Deceleration

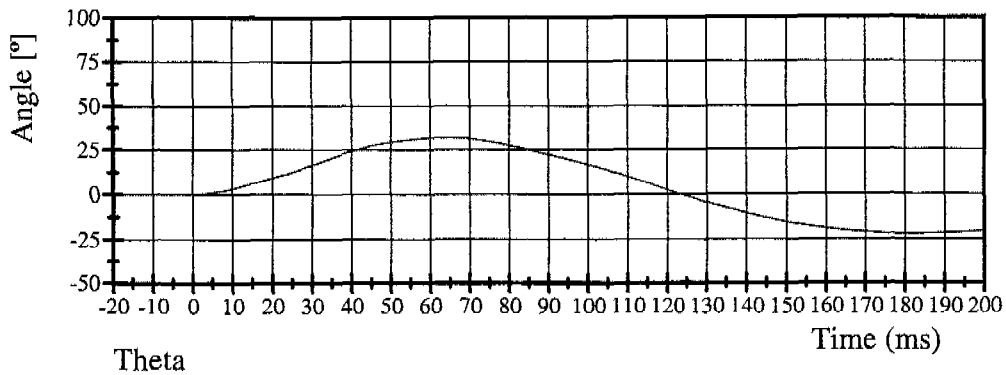


Filter Class: 180

Max: 26.7 g at 1.8 ms

Min: -3 4 g at 46.3 ms

Beta

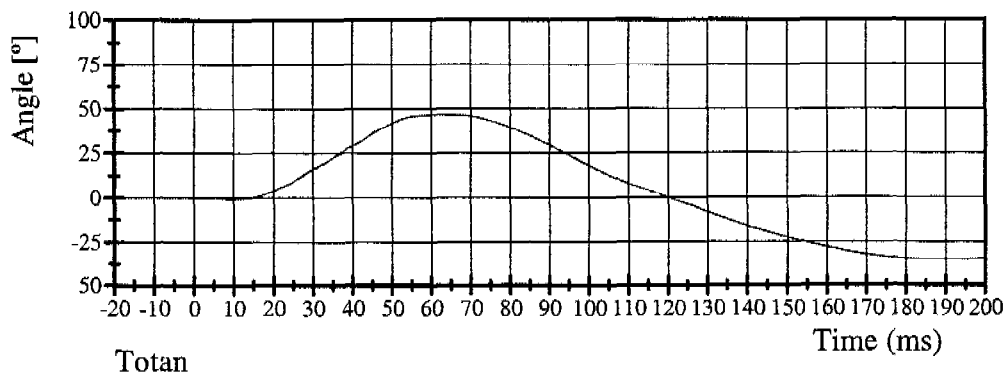


Filter Class: 60

Max: 31 7 ° at 63.7 ms

Min: -22.0 ° at 181.6 ms

Theta

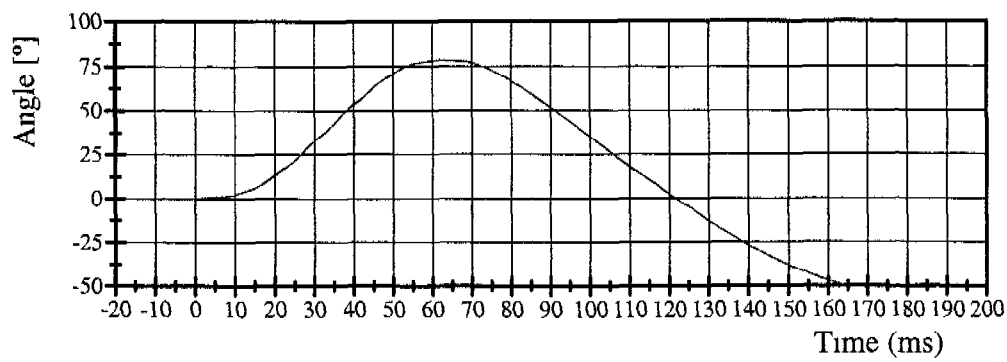


Filter Class: 60

Max: 46.8 ° at 61.7 ms

Min: -35.1 ° at 189.0 ms

Totan



Filter Class: 60

Max· 78 4 ° at 62.2 ms

Min: -57 0 ° at 184.2 ms

05 17 2002 11 00 19 480

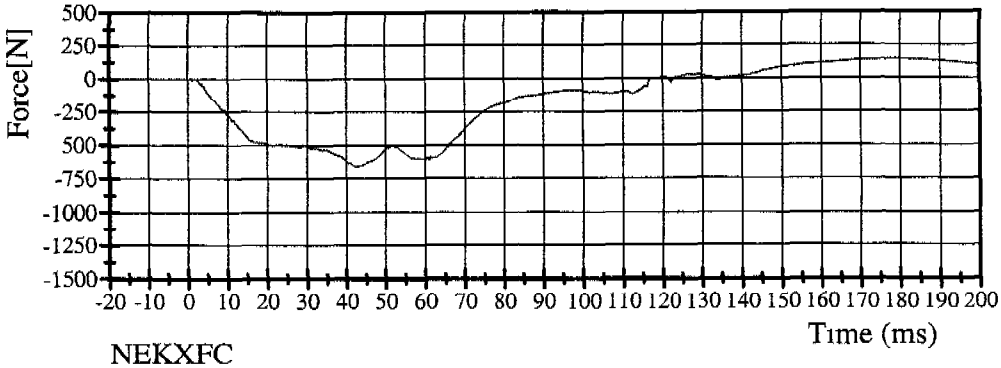
Transportation Research Center Inc.

5720 Neck Flexion Test

HIII 5th Female Serial No 416 Calibration No. 14 - 2

Test Date 05/17/2002

NEKXF

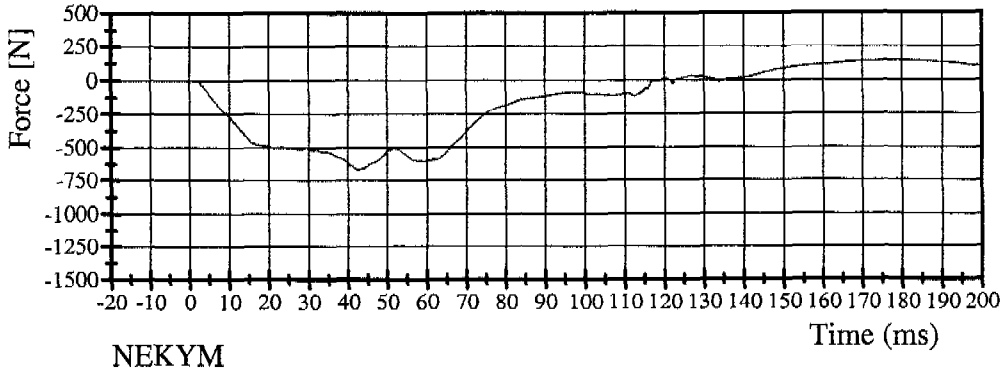


Filter Class: 1000

Max: 143.7 N at 177.8 ms

Min: -667.9 N at 42.4 ms

NEKXFC

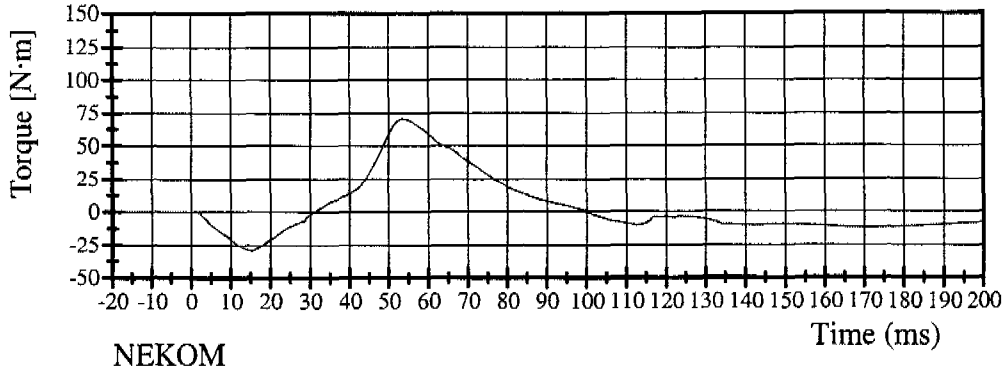


Filter Class: 600

Max: 143.1 N at 177.9 ms

Min: -666.7 N at 42 5 ms

NEKYM

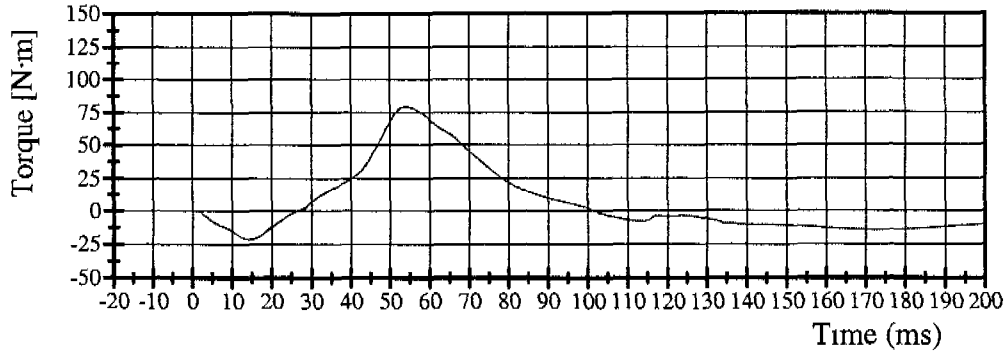


Filter Class· 600

Max. 69.9 N·m at 53.6 ms

Min: -29.4 N·m at 15.3 ms

NEKOM



Filter Class: 600

Max: 79 5 N·m at 54 1 ms

Min· -21.5 N·m at 14.9 ms

Appendix D

Test Equipment and Instrumentation Calibration Information

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

Sign Convention, Cont'd.
SAE J211 MAR95

Lumbar load cells:	+X force:	Chest rearward, pelvis forward
	+Y force:	Chest leftward, pelvis rightward
	+Z force:	Chest upward, pelvis downward
	+X moment:	Left shoulder toward left hip
	+Y moment:	Sternum toward front of legs
	+Z moment:	Right shoulder forward, left shoulder rearward

Frequency Response Classes
SAE J211 MAR95

Typical Test Measurements	Channel Class
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. The polarity column indicates whether a polarity change occurred during data acquisition to conform to J211 MAR95. See Report Sign Convention sheet for description of data output as presented in the report: occasionally channels have been adjusted in post-acquisition processing to conform to J211 MAR95.

Channel Report

Name of Test 020606 **System** K3600 **Name of DAU** DAU1

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range		Pol.	Cal.		Group	Mfg.	Model
1000	EVENT	SYNC1	SYNC1		10 24	V	+	4/15/2002	---	-1	TRC	Event
1001	02A02-F02	HEDXG1	Head Accel X	Fwd	801 85428	g	+	2/1/2002	OK	416v	Entran	EGE-73B6Q-200
1002	02A18 N10	HEDYG1	Head Accel Y	Lft	794 83358	g	-	2/1/2002	OK	416v	Entran	EGE-73B6Q-200
1003	02A09-F15	HEDZG1	Head Accel Z	Up	800 87595	g	-	2/1/2002	OK	416v	Entran	EGE-73B6Q-200
1004	01L26-F02	HEDXR1	Head Accel Red X	Rwd	798 80179	g	-	2/1/2002	OK	416v	Entran	EGE-73B6Q-200
1005	02A09-F13	HEDYR1	Head Accel Red Y	Lft	805 41135	g	-	2/1/2002	OK	416v	Entran	EGE-73B6Q-200
1006	02A16-A06	HEDZR1	Head Accel Red Z	Up	800 98872	g	-	2/1/2002	OK	416v	Entran	EGE-73B6Q-200
1007	02A16-A19	HD1XG1	Head (LT) Accel X	Fwd	806 28651	g	+	1/25/2002	OK	416v	Entran	EGE-73B6Q-200
1008	02A16-A22	HD1ZG1	Head (LT) Accel Z	Up	793 23273	g	-	1/30/2002	OK	416v	Entran	EGE-73B6Q-200
1009	02A18-N04	HD2YG1	Head (FT) Accel Y	Lft	794 42660	g	-	2/1/2002	OK	416v	Entran	EGE-73B6Q-200
1010	02A18-N20	HD2ZG1	Head (FT) Accel Z	Up	794 84592	g	-	2/1/2002	OK	416v	Entran	EGE-73B6Q-200
1011	02A09-F01	HD3XG1	Head (TP) Accel X	Fwd	805 63947	g	+	2/1/2002	OK	416v	Entran	EGE-73B6Q-200
1012	02A09-F17	HD3YG1	Head (TP) Accel Y	Lft	796 34180	g	-	2/1/2002	OK	416v	Entran	EGE-73B6Q-200
1013	IF-205-161-FX	NEKXF1	Neck Force X	Hd	8892 5003	N	-	3/18/2002	OK	416v	FTSS	IF-205
1014	IF-205-161-FY	NEKYF1	Neck Force Y	Hd	8899 5046	N	+	3/18/2002	OK	416v	FTSS	IF-205
1015	IF-205-161-FZ	NEKZF1	Neck Force Z	Hd	13351 704	N	+	3/18/2002	OK	416v	FTSS	IF-205
1016	IF-205-161-MX	NEKXM1	Neck Moment X	Rt Ear	282 61167	N m	-	3/18/2002	OK	416v	FTSS	IF-205
1017	IF-205-161-MY	NEKYM1	Neck Moment Y	Chin	282 67032	N m	+	3/18/2002	OK	416v	FTSS	IF-205
1018	IF-205-161-MZ	NEKZM1	Neck Moment Z	Chn	282 76257	N m	+	3/18/2002	OK	416v	FTSS	IF-205
1019	3251-108-FX	NKLXF1	Neck Lwr Force X	Hd	13350 194	N	-	8/21/2001	OK	416v	Denton	3251
1020	3251-108-FY	NKLYF1	Neck Lwr Force Y	Hd	13337 912	N	+	8/21/2001	OK	416v	Denton	3251
1021	3251-108-FZ	NKLZF1	Neck Lwr Force Z	Hd	13341 543	N	+	8/21/2001	OK	416v	Denton	3251
1022	3251-108-MX	NKLXM1	Neck Lwr Moment X	Rt Ear	339 23322	N m	-	8/21/2001	OK	416v	Denton	3251
1023	3251-108-MY	NKLYM1	Neck Lwr Moment Y	Chn	338 91670	N m	+	8/21/2001	OK	416v	Denton	3251
1024	3251-108-MZ	NKLZM1	Neck Lwr Moment Z	Chn	181 17067	N m	+	8/21/2001	OK	416v	Denton	3251
1025	02A16-A04	CSTXG1	Chest Accel X	Fwd	398 71663	g	+	1/30/2002	OK	416v	Entran	EGE-73B6Q-200
1026	C02B19-F02	CSTYG1	Chest Accel Y	Lft	399 43828	g	-	3/25/2002	OK	416v	Entran	EGE-73B6Q-200
1027	C02B19-F06	CSTZG1	Chest Accel Z	Up	400 72318	g	-	3/25/2002	OK	416v	Entran	EGE-73B6Q-200
1028	B02A25-N08	CSTXR1	Chest Accel Red X	Rwd	400 65732	g	-	2/8/2002	OK	416v	Entran	EGE-73B6Q-200
1029	01L17-F09	CSTYR1	Chest Accel Red Y	Lft	399 33859	g	-	2/1/2002	OK	416v	Entran	EGE-73B6Q-200

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1030	C02B19-F04	CSTZR1	Chest Accel Red Z	Up	401 39232	g	-	3/25/2002	OK	416v	Entran	EGE-73B6Q-200
1031	B02A09-F08	STUXG1	Sternum Upr Accel X	Fwd	795 21010	g	+	2/11/2002	OK	416v	Entran	EGE-73B6Q-200
1032	02A16-A05	STMXG1	Sternum Mid Accel X	Fwd	793 23273	g	+	1/25/2002	OK	416v	Entran	EGE-73B6Q-200
1033	02A16-A16	STLXG1	Sternum Lwr Accel X	Fwd	793 50319	g	+	1/25/2002	OK	416v	Entran	EGE-73B6Q-200
1034	14CB1-2897-416	CSTXD1	Chest Deflection X 516	Strnm	98 566265	mm	+	6/18/2001	OK	416v	Servo	14CB1-2897
1035	2152-076-FX	LMBXF1	Lumbar Force X	Cst	13333 047	N	-	6/1/2001	---	416v	Denton	2152
1036	2152-076-FY	LMBYF1	Lumbar Force Y	Cst	13344 730	N	+	6/1/2001	---	416v	Denton	2152
1037	2152-076-FZ	LMBZF1	Lumbar Force Z	Cst	17791 212	N	+	6/1/2001	---	416v	Denton	2152
1038	2152-076-MX	LMBXM1	Lumbar Moment X	Rt	678 13736	N m	-	6/1/2001	---	416v	Denton	2152
1039	2152-076-MY	LMBYM1	Lumbar Moment Y	Strnm	677 99944	N m	+	6/1/2001	---	416v	Denton	2152
1040	C02B19-F03	PEVXG1	Pelvis Accel X	Rwd	398 73215	g	-	3/25/2002	OK	416v	Entran	EGE-73B6Q-200
1041	02A16-A27	PEVYG1	Pelvis Accel Y	Lft	399 86254	g	-	1/30/2002	OK	416v	Entran	EGE-73B6Q-200
1042	C02B19-F01	PEVZG1	Pelvis Accel Z	Up	401 51666	g	-	3/25/2002	OK	416v	Entran	EGE-73B6Q-200
1043	2430-736	LFMZF1	Left Femur Force Z #8	Knee	13340 662	N	+	3/18/2002	OK	416v	GSE	2430
1044	2430-742	RFMZF1	Right Femur Force Z 507	Knee	13339 705	N	+	3/18/2002	OK	416v	GSE	2430
1045	150-0121VR-555	KNLXD1	Left Knee Displacement	Tib	43 132134	mm	-	5/8/2002	OK	416v	SpaceAge	150-0121VR
1046	4825-79-FX	TBLXF1	Left Upr Tibia Force X LC12	Tib	8891 9575	N	+	11/29/2000	---	416v	Denton	4825
1047	4825-79-FZ	TBLZF1	Left Upr Tibia Force Z LC7	Tib	8896 9975	N	+	11/29/2000	---	416v	Denton	4825
1048	4825-79-MX	TBLXM1	Left Upr Tibia Moment X LC3	Ank	282 78718	N m	+	11/29/2000	---	416v	Denton	4825
1049	4825-79-MY	TBLYM1	Left Upr Tibia Moment Y LC4	Ank	282 40542	N m	+	11/29/2000	---	416v	Denton	4825
1050	99H30-Z10	TBLXG1	Left Tibia Accel X	Fwd	1186 9986	g	+	4/26/2002	OK	416v	Entran	EGE-73BQE0-20
1051	98H10-F17	TBLZG1	Left Tibia Accel Z	Up	1205 7697	g	-	4/25/2002	OK	416v	Entran	EGE-73BQ-2000
1052	4826-77-FX	ANLXF1	Left Lwr Tibia Force X LC21	Ank	8902 0193	N	+	11/8/2000	---	416v	Denton	4826
1053	4826-77-FY	ANLYF1	Left Lwr Tibia Force Y LC06	Ank	8901 3331	N	+	11/8/2000	---	416v	Denton	4826
1054	4826-77-FZ	ANLZF1	Left Lwr Tibia Force Z LC24	Ank	8903 6937	N	+	11/8/2000	---	416v	Denton	4826
1055	4826-77-MX	ANLXM1	Left Lwr Tibia Moment X	Ank	282 48278	N m	+	11/8/2000	---	416v	Denton	4826
1056	4826-77-MY	ANLYM1	Left Lwr Tibia Moment Y	Ank	282 74668	N m	+	11/8/2000	---	416v	Denton	4826
1057	PD210-4B-AK-04	FTLXD1	Left Foot Disp X POT7	Eversi	160	°	+	7/31/2001	OK	416v	Contelec	PD210-4B
1058	PD210-4B-AK-04	FTLYD1	Left Foot Disp Y POT8	Dorsif	160 40100	°	+	7/31/2001	OK	416v	Contelec	PD210-4B
1059	PD210-4B-AK-08	FTLZD1	Left Foot Disp Z POT9	Intern	162 79809	°	+	7/31/2001	OK	416v	Contelec	PD210-4B
1060	99H30-Z11	FTLXG1	Left Foot Accel X	Fwd	1185 8439	g	+	4/26/2002	OK	416v	Entran	EGE-73BQE0-20
1061	01J02-F05	FTLYG1	Left Foot Accel Y	Rt	1200 0187	g	+	4/25/2002	OK	416v	Entran	EGE-73B6Q-200
1062	01J02-F22	FTLZG1	Left Foot Accel Z	Dn	1206 9636	g	+	4/25/2002	OK	416v	Entran	EGE-73B6Q-200
1063	150-0121VL-548	KNRXD1	Right Knee Displacement	Tib	43 923990	mm	-	5/8/2002	OK	416v	SpaceAge	150-0121VL
1064	4825-76-FX	TBRXF1	Right Upr Tibia Force X	Tib	8895 4242	N	+	11/8/2000	---	416v	Denton	4825

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1065	4825-76-FZ	TBRZF1	Right Upr Tibia Force Z	Tib	8902 9634	N	+	11/8/2000	---	416v	Denton	4825
1066	4825-76-MX	TBRXM1	Right Upr Tibia Moment X	Ank	282 19485	N m	+	11/8/2000	---	416v	Denton	4825
1067	4825-76-MY	TBRYM1	Right Upr Tibia Moment Y	Ank	282 29805	N m	+	11/8/2000	---	416v	Denton	4825
1068	99H30-Z13	TBRXG1	Right Tibia Accel X	Fwd	1202 2165	g	+	4/25/2002	OK	416v	Entran	EGE-73BQE0-20
1069	99H30-Z01	TBRZG1	Right Tibia Accel Z	Up	1190 1441	g	-	4/25/2002	OK	416v	Entran	EGE-73BQE0-20
1070	4826-78-FX	ANRXF1	Right Lwr Tibia Force X	Ank	8900 6516	N	+	11/8/2000	---	416v	Denton	4826
1071	4826-78-FY	ANRYF1	Right Lwr Tibia Force Y LC25	Ank	8902 2298	N	+	11/8/2000	---	416v	Denton	4826
1072	4826-78-FZ	ANRZF1	Right Lwr Tibia Force Z	Ank	8903 7377	N	+	11/8/2000	---	416v	Denton	4826
1073	4826-78-MX	ANRXM1	Right Lwr Tibia Moment X	Ank	282 00626	N m	+	11/8/2000	---	416v	Denton	4826
1074	4826-78-MY	ANRYM1	Right Lwr Tibia Moment Y	Ank	282 18429	N m	+	11/8/2000	---	416v	Denton	4826
1075	PD210-4B-AK-08	FTRXD1	Right Foot Disp X ROT X	Invers	162 28209	°	+	7/31/2001	OK	416v	Contelec	PD210-4B
1076	PD210-4B-AK-08	FTRYD1	Right Foot Disp Y ROTY	Dorsif	161 82048	°	+	7/31/2001	OK	416v	Contelec	PD210-4B
1077	PD210-4B-AK-08	FTRZD1	Right Foot Disp Z ROTZ	Exter	161 46326	°	-	7/31/2001	OK	416v	Contelec	PD210-4B
1078	01J02-F10	FTRXG1	Right Foot Accel X	Fwd	1210 4018	g	+	4/25/2002	OK	416v	Entran	EGE-73B6Q-200
1079	99H30-Z15	FTRYG1	Right Foot Accel Y	Rt	1191 6399	g	+	4/26/2002	OK	416v	Entran	EGE-73BQE0-20
1080	01J02-F03	FTRZG1	Right Foot Accel Z	Dn	1187 5768	g	+	4/26/2002	OK	416v	Entran	EGE-73B6Q-200
1081	02A16-A24	HEDXG2	Head Accel X	Fwd	803 51537	g	+	1/25/2002	OK	421v	Entran	EGE-73B6Q-200
1082	02A16-A01	HEDYG2	Head Accel Y	Lft	800 51908	g	-	1/28/2002	OK	421v	Entran	EGE-73B6Q-200
1083	01L26-F06	HEDZG2	Head Accel Z	Up	800 57541	g	-	2/1/2002	OK	421v	Entran	EGE-73B6Q-200
1084	02A16-A03	HEDXR2	Head Accel Red X	Rwd	798 15426	g	-	1/28/2002	OK	421v	Entran	EGE-73B6Q-200
1085	02A16-A08	HEDYR2	Head Accel Red Y	Lft	805 39235	g	-	1/28/2002	OK	421v	Entran	EGE-73B6Q-200
1086	02A16-A09	HEDZR2	Head Accel Red Z	Up	798 32849	g	-	1/25/2002	OK	421v	Entran	EGE-73B6Q-200
1087	02A16-A28	HD1XG2	Head (LT) Accel X	Fwd	795 22862	g	+	1/25/2002	OK	421v	Entran	EGE-73B6Q-200
1088	02A16-A20	HD1ZG2	Head (LT) Accel Z	Up	801 28957	g	-	1/25/2002	OK	421v	Entran	EGE-73B6Q-200
1089	02A09-F12	HD2YG2	Head (FT) Accel Y	Lft	804 72777	g	-	2/1/2002	OK	421v	Entran	EGE-73B6Q-200
1090	02A18-N07	HD2ZG2	Head (FT) Accel Z	Up	794 84592	g	-	2/1/2002	OK	421v	Entran	EGE-73B6Q-200
1091	02A16-A23	HD3XG2	Head (TP) Accel X	Fwd	798 00498	g	+	1/30/2002	OK	421v	Entran	EGE-73B6Q-200
1092	02A16-A25	HD3YG2	Head (TP) Accel Y	Lft	802 66509	g	-	1/25/2002	OK	421v	Entran	EGE-73B6Q-200
1093	IF-205-180-FX	NEKXF2	Neck Force X	Hd	8895 5814	N	-	3/18/2002	OK	421v	FTSS	IF-205
1094	IF-205-180-FY	NEKYF2	Neck Force Y	Hd	8889 5852	N	+	3/18/2002	OK	421v	FTSS	IF-205
1095	IF-205-180-FZ	NEKZF2	Neck Force Z	Hd	13339 358	N	+	3/18/2002	OK	421v	FTSS	IF-205
1096	IF-205-180-MX	NEKXM2	Neck Moment X	Rt Ear	282 44346	N m	-	3/18/2002	OK	421v	FTSS	IF-205
1097	IF-205-180-MY	NEKYM2	Neck Moment Y	Chin	282 51594	N m	+	3/18/2002	OK	421v	FTSS	IF-205
1098	IF-205-180-MZ	NEKZM2	Neck Moment Z	Chn	282 66794	N m	+	3/18/2002	OK	421v	FTSS	IF-205
1099	3251-107-FX	NKLXF2	Neck Lwr Force X	Hd	13348 061	N	-	7/6/2001	OK	421v	Denton	3251

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1100	3251-107-FY	NKLYF2	Neck Lwr Force Y	Hd	13331 262	N	+	7/6/2001	OK	421v	Denton	3251
1101	3251-107-FZ	NKLZF2	Neck Lwr Force Z	Hd	13341 504	N	+	7/6/2001	OK	421v	Denton	3251
1102	3251-107-MX	NKLXM2	Neck Lwr Moment X	Rt Ear	338 99620	N m	-	7/6/2001	OK	421v	Denton	3251
1103	3251-107-MY	NKLYM2	Neck Lwr Moment Y	Chn	338 80164	N m	+	7/6/2001	OK	421v	Denton	3251
1104	3251-107-MZ	NKLZM2	Neck Lwr Moment Z	Chn	181 03965	N m	+	7/6/2001	OK	421v	Denton	3251
1105	B02A25-N03	CSTXG2	Chest Accel X	Fwd	400 42075	g	+	2/11/2002	OK	421v	Entran	EGE-73B6Q-200
1106	02A18-N12	CSTYG2	Chest Accel Y	Lft	399 88440	g	-	2/1/2002	OK	421v	Entran	EGE-73B6Q-200
1107	J35834	VCGXG	Vehicle C G X-Axis	FWD	1006 9423	g	+	3/20/2002	OK	-1	Endevco	7264-2000TZ

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Name of Test 020606 **System** MINIDAU **Name of DAU** DAU6

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range		Pol.	Cal.		Group	Mfg.	Model
6001	B02A25-N06	CSTXR2	Chest Accel Red X	Rwd	397 21946	g	-	2/11/2002	OK	421v	Entran	EGE-73B6Q-200
6002	02A04-A24	CSTYR2	Chest Accel Red Y	Lft	399 67526	g	-	2/1/2002	OK	421v	Entran	EGE-73B6Q-200
6003	B02A18-N22	CSTZR2	Chest Accel Red Z	Up	400 83298	g	-	2/11/2002	OK	421v	Entran	EGE-73B6Q-200
6004	02A16-A14	STUXG2	Sternum Upr Accel X	Fwd	813 78345	g	+	1/25/2002	OK	421v	Entran	EGE-73B6Q-200
6005	02A16-A12	STMXG2	Sternum Mid Accel X	Fwd	795 63643	g	+	1/28/2002	OK	421v	Entran	EGE-73B6Q-200
6006	02A18-N16	STLXG2	Sternum Lwr Accel X	Fwd	792 80283	g	+	2/1/2002	OK	421v	Entran	EGE-73B6Q-200
6007	14CB1-2897-135	CSTXD2	Chest Deflection X	Strnm	99 823164	mm	+	3/25/2002	OK	421v	Servo	14CB1-2897
6008	2152A-086-FX	LMBXF2	Lumbar Force X	Cst	13347 713	N	-	6/2/2001	---	421v	Denton	2152A
6009	2152A-086-FY	LMBYF2	Lumbar Force Y	Cst	13345 651	N	+	6/2/2001	---	421v	Denton	2152A
6010	2152A-086-FZ	LMBZF2	Lumbar Force Z	Cst	17801 847	N	+	6/2/2001	---	421v	Denton	2152A
6011	2152A-086-MX	LMBXM2	Lumbar Moment X	Rt	678 65489	N m	-	6/2/2001	---	421v	Denton	2152A
6012	2152A-086-MY	LMBYM2	Lumbar Moment Y	Strnm	677 74043	N m	+	6/2/2001	---	421v	Denton	2152A
6013	02A09-F11	PEVXG2	Pelvis Accel X	Rwd	397 82439	g	-	2/1/2002	OK	421v	Entran	EGE-73B6Q-200
6014	02A16-A26	PEVYG2	Pelvis Accel Y	Lft	401 00250	g	-	1/28/2002	OK	421v	Entran	EGE-73B6Q-200
6015	02A18-N15	PEVZG2	Pelvis Accel Z	Up	397 23179	g	-	2/1/2002	OK	421v	Entran	EGE-73B6Q-200
6016	2430-739	LFMZF2	Left Femur Force Z S37	Knee	13342 961	N	+	3/18/2002	OK	421v	GSE	2430
6017	2430-760	RFMZF2	Right Femur Force Z VRTC 4	Knee	13346 030	N	+	3/18/2002	OK	421v	GSE	2430
6018	150-0121VR-150	KNLXD2	Left Knee Displacement	Tib	39 804553	mm	+	5/8/2002	OK	421v	SpaceAge	150-0121VR
6019	4825-82-FX	TBLXF2	Left Upr Tibia Force X LC2	Tib	8896 4868	N	+	11/8/2000	---	421v	Denton	4825
6020	4825-82-FZ	TBLZF2	Left Upr Tibia Force Z LC9	Tib	8888 9485	N	+	11/8/2000	---	421v	Denton	4825
6021	4825-82-MX	TBLXM2	Left Upr Tibia Moment X	Ank	282 05009	N m	+	11/8/2000	---	421v	Denton	4825
6022	4825-82-MY	TBLYM2	Left Upr Tibia Moment Y	Ank	281 70191	N m	+	11/8/2000	---	421v	Denton	4825
6023	99H30-Z09	TBLXG2	Left Tibia Accel X	Fwd	1191 0300	g	+	4/25/2002	OK	421v	Entran	EGE-73BQE0-20
6024	99H12-F09	TBLZG2	Left Tibia Accel Z	Up	1205 2446	g	-	4/26/2002	OK	421v	Entran	EGE-73BQE0-20
6025	4826-82-FX	ANLXF2	Left Lwr Tibia Force X LC13	Ank	8913 1993	N	+	11/15/2000	---	421v	Denton	4826
6026	4826-82-FY	ANLYF2	Left Lwr Tibia Force Y LC14	Ank	8879 6414	N	+	11/15/2000	---	421v	Denton	4826
6027	4826-82-FZ	ANLZF2	Left Lwr Tibia Force Z LC20	Ank	8899 2296	N	+	11/15/2000	---	421v	Denton	4826
6028	4826-82-MX	ANLXM2	Left Lwr Tibia Moment X	Ank	282 62355	N m	+	11/15/2000	---	421v	Denton	4826
6029	4826-82-MY	ANLYM2	Left Lwr Tibia Moment Y	Ank	282 95264	N m	+	11/15/2000	---	421v	Denton	4826
6030	PD210-4B-AK-06	FTLXD2	Left Foot Disp X POT4	Eversi	161 56516	°	+	7/31/2001	OK	421v	Contelec	PD210-4B

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6031	PD210-4B-AK-06	FTLYD2	Left Foot Disp	Y	POT5	Dorsif	162 48809	°	+	7/31/2001	OK	421v	Contelec	PD210-4B
6032	PD210-4B-AK-06	FTLZD2	Left Foot Disp	Z	POT6	Intern	161 87164	°	+	7/31/2001	OK	421v	Contelec	PD210-4B

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Name of Test 020606 **System** MINIDAU **Name of DAU** DAU7

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range		Pol.	Cal.		Group	Mfg.	Model
7001	98H10 F03	FTLXG2	Left Foot Accel X	Fwd	1219 0476	g	+	4/25/2002	OK	421v	Entran	EGE-73BQ-2000
7002	98H10-F07	FTLYG2	Left Foot Accel Y	Rt	1200 7504	g	+	4/25/2002	OK	421v	Entran	EGE-73BQ-2000
7003	98H13-F16	FTLZG2	Left Foot Accel Z	Dn	1218 4383	g	+	4/25/2002	OK	421v	Entran	EGE-73BQ-2000
7004	150-0121VL-149	KNRXD2	Right Knee Displacement	Tib	39 721330	mm	+	5/8/2002	OK	421v	SpaceAge	150-0121VL
7005	4825-80-FX	TBRXF2	Right Upr Tibia Force X LC1	Tib	8908 1824	N	+	12/7/2000	---	421v	Denton	4825
7006	4825-80-FZ	TBRZF2	Right Upr Tibia Force Z LC8	Tib	8896 2540	N	+	12/7/2000	---	421v	Denton	4825
7007	4825-80-MX	TBRXM2	Right Upr Tibia Moment X	Ank	281 63277	N m	+	12/7/2000	---	421v	Denton	4825
7008	4825-80-MY	TBRYM2	Right Upr Tibia Moment Y	Ank	281 94845	N m	+	12/7/2000	---	421v	Denton	4825
7009	99H12-F19	TBRXG2	Right Tibia Accel X	Fwd	1227 6411	g	+	4/26/2002	OK	421v	Entran	EGE-73BQE0-20
7010	99H30-Z12	TBRZG2	Right Tibia Accel Z	Up	1208 1740	g	-	4/26/2002	OK	421v	Entran	EGE-73BQE0-20
7011	4826-76-FX	ANRXF2	Right Lwr Tibia Force X LC16	Ank	8879 8889	N	+	11/8/2000	---	421v	Denton	4826
7012	4826-76-FY	ANRYF2	Right Lwr Tibia Force Y LC18	Ank	8908 5918	N	+	11/8/2000	---	421v	Denton	4826
7013	4826-76-FZ	ANRZF2	Right Lwr Tibia Force Z I C19	Ank	8893 9854	N	+	11/8/2000	---	421v	Denton	4826
7014	4826-76-MX	ANRXM2	Right Lwr Tibia Moment X	Ank	282 71059	N m	+	11/8/2000	---	421v	Denton	4826
7015	4826-76-MY	ANRYM2	Right Lwr Tibia Moment Y	Ank	283 01268	N m	+	11/8/2000	---	421v	Denton	4826
7016	PD210-4B-AK-13	FTRXD2	Right Foot Disp X POT1	Invers	162 17928	°	+	7/31/2001	OK	421v	Contelec	PD210-4B
7017	PD210-4B-AK-06	FTRYD2	Right Foot Disp Y POT2	Dorsif	161 71825	°	+	7/31/2001	OK	421v	Contelec	PD210-4B
7018	PD210-4B-AK-06	FTRZD2	Right Foot Disp Z POT3	Exter	161 66719	°	+	7/31/2001	OK	421v	Contelec	PD210-4B
7019	98H14-K06	FTRXG2	Right Foot Accel X	Fwd	1213 2701	g	+	4/26/2002	OK	421v	Entran	EGE-73BQ-2000
7020	99H12-F03	FTRYG2	Right Foot Accel Y	Rt	1174 0964	g	+	4/25/2002	OK	421v	Entran	EGE-73BQE0-20
7021	98H14-K10	FTRZG2	Right Foot Accel Z	Dn	1225 8188	g	+	4/25/2002	OK	421v	Entran	EGE-73BQ-2000
7022	B02A25-N10	CSTZG2	Chest Accel Z	Up	400 86122	g	-	2/11/2002	OK	421v	Entran	EGE-73B6Q-200
7023	J35794	VCGYG	Vehicle C G Y-Axis	LT	989 25728	g	-	2/11/2002	OK	-1	Endevco	7264-2000TZ
7024	J35771	VCGZG	Vehicle C G Z-Axis	UP	1011 4179	g	-	3/20/2002	OK	-1	Endevco	7264-2000TZ
7025	J15368	RDKXG	Rear Deck X-Axis Acceleration	FWD	1028 1537	g	+	5/23/2002	OK	-1	Endevco	7264-2000TZ
7026	J20184	RDKYG	Rear Deck X-Axis Acceleration	LT	1009 8619	g	-	5/23/2002	OK	-1	Endevco	7264-2000TZ
7027	ACCM9	RDKZG	Rear Deck X-Axis Acceleration	UP	998 75156	g	-	5/23/2002	OK	-1	Endevco	7264-2000TZ
7028	IP1	DABETA	Driver Airbag Event-Wire A	69	1 0039215	V	+	6/15/2000	---	-1	FLUKE	Y8101A
7029	IP2	DABETB	Driver Airbag Event-Wire B	9	1 0039215	V	+	6/15/2000	---	-1	FLUKE	Y8101A
7030	IP3	PABE1A	Passenger Airbag Event A	F	1 0039215	V	+	6/15/2000	---	-1	FLUKE	Y8101A

Dummy 416v **Type** HYBRID III 5th **Description** VRTC - 416v HYBRID III 5th Female CAL'd 2-1-02 (DKS 5-17-02)J211

Chsname	Location	Model	Name	Manufacturer	Sens./mV/V/U		Fullscale	Caldate	Pos Output	Flip
HEDXG	Head Accel X	EGE-73B6Q-20	02A02-F02	Entran	0 02504	g	2000	2/1/02	Fwd	0
HEDYG	Head Accel Y	EGE-73B6Q-20	02A18-N10	Entran	0 01952	g	2000	2/1/02	Lft	1
HEDZG	Head Accel Z	EGE-73B6Q-20	02A09-F15	Entran	0 02131	g	2000	2/1/02	Up	1
HEDXR	Head Accel Red X	EGE-73B6Q-20	01L26-F02	Entran	0 02003	g	2000	2/1/02	Rwd	1
HEDYR	Head Accel Red Y	EGE-73B6Q-20	02A09-F13	Entran	0 01956	g	2000	2/1/02	Lft	1
HEDZR	Head Accel Red Z	EGE-73B6Q-20	02A16-A06	Entran	0 01937	g	2000	2/1/02	Up	1
HD1XG	Head (LT) Accel X	EGE-73B6Q-20	02A16-A19	Entran	0 02082	g	2000	1/25/02	Fwd	0
HD1ZG	Head (LT) Accel Z	EGE-73B6Q-20	02A16-A22	Entran	0 02188	g	2000	1/30/02	Up	1
HD2YG	Head (FT) Accel Y	EGE-73B6Q-20	02A18-N04	Entran	0 01953	g	2000	2/1/02	Lft	1
HD2ZG	Head (FT) Accel Z	EGE-73B6Q-20	02A18-N20	Entran	0 01982	g	2000	2/1/02	Up	1
HD3XG	Head (TP) Accel X	EGE-73B6Q-20	02A09-F01	Entran	0 01986	g	2000	2/1/02	Fwd	0
HD3YG	Head (TP) Accel Y	EGE-73B6Q-20	02A09-F17	Entran	0 02074	g	2000	2/1/02	Lft	1
NEKXF	Neck Force X	IF-205	IF-205-161-FX	FTSS	0 000187241	N	8896	3/18/02	Hd Fd,Cst Rr	1
NEKYF	Neck Force Y	IF-205	IF-205-161-FY	FTSS	0 000180632	N	8896	3/18/02	Hd Lt,Cst Rt	0
NEKZF	Neck Force Z	IF-205	IF-205-161-FZ	FTSS	0 000092626	N	13344	3/18/02	Hd Up,Cst Dn	0
NEKXM	Neck Moment X	IF-205	IF-205-161-MX	FTSS	0 005688142	N m	282 5	3/18/02	Rt Ear to Rt Shld	1
NEKYM	Neck Moment Y	IF-205	IF-205-161-MY	FTSS	0 005759292	N m	282 5	3/18/02	Chin to Strnm	0
NEKZM	Neck Moment Z	IF-205	IF-205-161-MZ	FTSS	0 00836354	N m	282 5	3/18/02	Chn to Lt Shld	0
NKLXF	Neck Lwr Force X	3251	3251-108-FX	Denton	0 000174325	N	13344 6	8/21/01	Hd Rr,Cst Fd	1
NKLYF	Neck Lwr Force Y	3251	3251-108-FY	Denton	0 000173696	N	13344 6	8/21/01	Hd Lt,Cst Rt	0
NKLZF	Neck Lwr Force Z	3251	3251-108-FZ	Denton	0 000096061	N	13344 6	8/21/01	Hd Up,Cst Dn	0
NKLXM	Neck Lwr Moment X	3251	3251-108-MX	Denton	0 004491923	N m	451 9	8/21/01	Lt Ear to Lt Shld	1
NKLYM	Neck Lwr Moment Y	3251	3251-108-MY	Denton	0 004297854	N m	451 9	8/21/01	Chn to Strnm	0
NKLZM	Neck Lwr Moment Z	3251	3251-108-MZ	Denton	0 005223779	N m	338 95	8/21/01	Chn to Lt Shld	0
CSTXG	Chest Accel X	EGE-73B6Q-20	02A16-A04	Entran	0 02088	g	2000	1/30/02	Fwd	0
CSTYG	Chest Accel Y	EGE-73B6Q-20	C02B19-F02	Entran	0 01885	g	2000	3/25/02	Lft	1

Chsname	Location	M del	Name	Manufacturer	Sens./mV/V/U		Fullscale	Caldate	Pos Output	Flip
CSTZG	Chest Accel Z	EGE-73B6Q-20	C02B19-F06	Entran	0 01907	g	2000	3/25/02	Up	1
CSTXR	Chest Accel Red X	EGE-73B6Q-20	B02A25-N08	Entran	0 01966	g	2000	2/8/02	Rwd	1
CSTYR	Chest Accel Red Y	EGE-73B6Q-20	01L17-F09	Entran	0 01928	g	2000	2/1/02	Lft	1
CSTZR	Chest Accel Red Z	EGE-73B6Q-20	C02B19-F04	Entran	0 01784	g	2000	3/25/02	Up	1
STUXG	Stemum Upr Accel X	EGE-73B6Q-20	B02A09-F08	Entran	0 02111	g	2000	2/11/02	Fwd	0
STMXG	Stemum Mid Accel X	EGE-73B6Q-20	02A16-A05	Entran	0 02188	g	2000	1/25/02	Fwd	0
STLXG	Stemum Lwr Accel X	EGE-73B6Q-20	02A16-A16	Entran	0 02264	g	2000	1/25/02	Fwd	0
CSTXD	Chest Deflection X 516	14CB1-2897	14CB1-2897-416	Servo	1 5983	mm	100	6/18/01	Strnm Away Frm Spn	0
LMBXF	Lumbar Force X	2152	2152-076-FX	Denton	0 000144364	N	13344 6	6/1/01	Cst Fd,Pel Rr	1
LMBYF	Lumbar Force Y	2152	2152-076-FY	Denton	0 000143967	N	13344 6	6/1/01	Cst Lt,Pel Rt	0
LMBZF	Lumbar Force Z	2152	2152-076-FZ	Denton	0 000058433	N	17793	6/1/01	Cst Up,Pel Dn	0
LMBXM	Lumbar Moment X	2152	2152-076-MX	Denton	0 002374243	N m	677 9	6/1/01	Rt Shld to Rt Hip	1
LMBYM	Lumbar Moment Y	2152	2152-076-MY	Denton	0 002370998	N m	677 9	6/1/01	Strnm to Frt of Legs	0
PEVXG	Pelvis Accel X	EGE-73B6Q-20	C02B19-F03	Entran	0 01759	g	2000	3/25/02	Rwd	1
PEVYG	Pelvis Accel Y	EGE-73B6Q-20	02A16-A27	Entran	0 02152	g	2000	1/30/02	Lft	1
PEVZG	Pelvis Accel Z	EGE-73B6Q-20	C02B19-F01	Entran	0 01977	g	2000	3/25/02	Up	1
LFMZF	Left Femur Force Z #8	2430	2430-736	GSE	0 000069527	N	13344	3/18/02	Knee Fd,Pel Rr	0
RFMZF	Right Femur Force Z 507	2430	2430-742	GSE	0 000066867	N	13344	3/18/02	Knee Fd,Pel Rr	0
KNLXD	Left Knee Displacement	150-0121VR	150-0121VR-5556	SpaceAge	23 741	mm	40	5/8/02	Tib Rr,Hld Fem	1
TBLXF	Left Upr Tibia Force X LC12	4825	4825-79-FX	Denton	0 000264129	N	8896	11/29/00	Tib Fd,Knee Rr	0
TBLZF	Left Upr Tibia Force Z LC7	4825	4825-79-FZ	Denton	0 000108172	N	8896	11/29/00	Tib Dn,Knee Up	0
TBLXM	Left Upr Tibia Moment X LC3	4825	4825-79-MX	Denton	0 010405453	N m	282 4	11/29/00	Ank Lt,Hld Knee	0
TBLYM	Left Upr Tibia Moment Y LC4	4825	4825-79-MY	Denton	0 010242917	N m	282 4	11/29/00	Ank Fd,Hld Knee	0
TBLXG	Left Tibia Accel X	EGE-73BQE0-2	99H30-Z10	Entran	0 02054	g	2000	4/26/02	Fwd	0
TBLYG	Left Tibia Accel Z	EGE-73BQ-200	98H10-F17	Entran	0 01975	g	2000	4/25/02	Up	0
ANLXF	Left Lwr Tibia Force X LC21	4826	4826-77-FX	Denton	0 000261432	N	8896	11/8/00	Ank Fd,Knee Rr	0
ANLYF	Left Lwr Tibia Force Y LC06	4826	4826-77-FY	Denton	0 000262646	N	8896	11/8/00	Ank Rt,Knee Lft	0
ANLZF	Left Lwr Tibia Force Z LC24	4826	4826-77-FZ	Denton	0 000107284	N	8896	11/8/00	Ank Dn,Knee Up	0

Chsname	Location	Model	Name	Manufacturer	Sens./mV/V/U		Fullscale	Caldate	Pos Output	Flip
ANLXM	Left Lwr Tibia Moment X LC30	4826	4826-77-MX	Denton	0 010269121	N m	282 4	11/8/00	Ank Lt,Hld Knee	0
ANLYM	Left Lwr Tibia Moment Y LC05	4826	4826-77-MY	Denton	0 010377124	N m	282 4	11/8/00	Ank Fd,Hld Knee	0
FTLXD	Left Foot Disp X POT7	PD210-4B	PD210-4B-AK-047	Contelec	3 2	°	318	7/31/01	Inversion	0
FTLYD	Left Foot Disp Y POT8	PD210-4B	PD210-4B-AK-049	Contelec	3 192	°	318	7/31/01	Dorsiflexion	0
FTLZD	Left Foot Disp Z POT9	PD210-4B	PD210-4B-AK-087	Contelec	3 145	°	318	7/31/01	External Rotation	0
FTLXG	Left Foot Accel X	EGE-73BQE0-2	99H30-Z11	Entran	0 02056	g	2000	4/26/02	Fwd	0
FTLYG	Left Foot Accel Y	EGE-73B6Q-20	01J02-F05	Entran	0 02188	g	2000	4/25/02	Rt	0
FTLZG	Left Foot Accel Z	EGE-73B6Q-20	01J02-F22	Entran	0 02293	g	2000	4/25/02	Dn	0
KNRXD	Right Knee Displacement	150-0121VL	150-0121VL-5482	SpaceAge	23 313	mm	40	5/8/02	Tib Rr,Hld Fem	1
TBRXF	Right Upr Tibia Force X UTRFX	4825	4825-76-FX	Denton	0 000260442	N	8896	11/8/00	Tib Fd,Knee Rr	0
TBRZF	Right Upr Tibia Force Z UTRFZ	4825	4825-76-FZ	Denton	0 000107093	N	8896	11/8/00	Tib Dn,Knee Up	0
TBRXM	Right Upr Tibia Moment X UTRMX	4825	4825-76-MX	Denton	0 010338172	N m	282 4	11/8/00	Ank Lt,Hld Knee	0
TBRYM	Right Upr Tibia Moment Y UTRMY	4825	4825-76-MY	Denton	0 010246813	N m	282 4	11/8/00	Ank Fd,Hld Knee	0
TBRXG	Right Tibia Accel X	EGE-73BQE0-2	99H30-Z13	Entran	0 02028	g	2000	4/25/02	Fwd	0
TBRYG	Right Tibia Accel Z	EGE-73BQE0-2	99H30-Z01	Entran	0 01912	g	2000	4/25/02	Up	0
ANRXF	Right Lwr Tibia Force X LTRFX	4826	4826-78-FX	Denton	0 000263871	N	8896	11/8/00	Ank Fd,Knee Rr	0
ANRYF	Right Lwr Tibia Force Y LC25	4826	4826-78-FY	Denton	0 00026504	N	8896	11/8/00	Ank Rt,Knee Lft	0
ANRZF	Right Lwr Tibia Force Z LTRFZ	4826	4826-78-FZ	Denton	0 000108498	N	8896	11/8/00	Ank Dn,Knee Up	0
ANRXM	Right Lwr Tibia Moment X LC27	4826	4826-78 MX	Denton	0 010286473	N m	282 4	11/8/00	Ank Lt,Hld Knee	0
ANRYM	Right Lwr Tibia Moment Y LTRMY	4826	4826-78-MY	Denton	0 01048796	N m	282 4	11/8/00	Ank Fd,Hld Knee	0
FTRXD	Right Foot Disp X ROT X	PD210-4B	PD210-4B-AK-084	Contelec	3 155	°	318	7/31/01	Eversion	0
FTRYD	Right Foot Disp Y ROTY	PD210-4B	PD210-4B-AK-085	Contelec	3 164	°	318	7/31/01	Dorsiflexion	0
FTRZD	Right Foot Disp Z ROTZ	PD210-4B	PD210-4B-AK-086	Contelec	3 171	°	318	7/31/01	Internal Rotation	0
FTRXG	Right Foot Accel X	EGE-73B6Q-20	01J02-F10	Entran	0 02115	g	2000	4/25/02	Fwd	0
FTRYG	Right Foot Accel Y	EGE-73BQE0-2	99H30-Z15	Entran	0 01953	g	2000	4/26/02	Rt	0
FTRZG	Right Foot Accel Z	EGE-73B6Q-20	01J02-F03	Entran	0 02053	g	2000	4/26/02	Dn	0

020606

Dummy 421v **Type** HYBRID III 5th **Description** VRTC - 421v HYBRID III 5th Female CAL'd 1-25-02 (DKS 5-17-02)J211

Cisname	Location	Model	Name	Manufacturer	Sens./mV/V/U		Fullscale	Caldate	Pos Output	Flip
HIDXG	Head Accel X	EGE-73B6Q-20	02A16-A24	Entran	0 02124	g	2000	1/25/02	Fwd	0
HIDYG	Head Accel Y	EGE-73B6Q-20	02A16-A01	Entran	0 02097	g	2000	1/28/02	Lft	1
HIDZG	Head Accel Z	EGE-73B6Q-20	01L26-F06	Entran	0 01938	g	2000	2/1/02	Up	1
HIDXR	Head Accel Red X	EGE-73B6Q-20	02A16-A03	Entran	0 02291	g	2000	1/28/02	Rwd	1
HIDYR	Head Accel Red Y	EGE-73B6Q-20	02A16-A08	Entran	0 02493	g	2000	1/28/02	Lft	1
HIDZR	Head Accel Red Z	EGE-73B6Q-20	02A16-A09	Entran	0 02036	g	2000	1/25/02	Up	1
HD1XG	Head (LT) Accel X	EGE-73B6Q-20	02A16-A28	Entran	0 02012	g	2000	1/25/02	Fwd	0
HD1ZG	Head (LT) Accel Z	EGE-73B6Q-20	02A16-A20	Entran	0 02242	g	2000	1/25/02	Up	1
HD2YG	Head (FT) Accel Y	EGE-73B6Q-20	02A09 F12	Entran	0 01928	g	2000	2/1/02	Lft	1
HD2ZG	Head (FT) Accel Z	EGE-73B6Q-20	02A18-N07	Entran	0 01982	g	2000	2/1/02	Up	1
HD3XG	Head (TP) Accel X	EGE-73B6Q-20	02A16-A23	Entran	0 02005	g	2000	1/30/02	Fwd	0
HD3YG	Head (TP) Accel Y	EGE-73B6Q-20	02A16-A25	Entran	0 02025	g	2000	1/25/02	Lft	1
NEKXF	Neck Force X	IF-205	IF-205-180-FX	FTSS	0 00018243	N	8896	3/18/02	Hd Fd,Cst Rr	1
NEKYF	Neck Force Y	IF-205	IF-205-180-FY	FTSS	0 000175596	N	8896	3/18/02	Hd Lt,Cst Rt	0
NEKZF	Neck Force Z	IF-205	IF-205-180-FZ	FTSS	0 000092266	N	13344	3/18/02	Hd Up,Cst Dn	0
NEKXM	Neck Moment X	IF-205	IF-205-180-MX	FTSS	0 005577699	N m	282 5	3/18/02	Rt Ear to Rt Shld	1
NEKYM	Neck Moment Y.	IF-205	IF-205-180-MY	FTSS	0 005602124	N m	282 5	3/18/02	Chin to Strnm	0
NEKZM	Neck Moment Z	IF-205	IF-205-180-MZ	FTSS	0 008122478	N m	282 5	3/18/02	Chn to Lt Shld	0
NKLXF	Neck Lwr Force X	3251	3251-107-FX	Denton	0 000175149	N	13344 6	7/6/01	Hd Fd,Cst Rr	1
NKLYF	Neck Lwr Force Y	3251	3251-107-FY	Denton	0 000175771	N	13344 6	7/6/01	Hd Lt,Cst Rt	0
NKLZF	Neck Lwr Force Z	3251	3251-107-FZ	Denton	0 000095109	N	13344 6	7/6/01	Hd Up,Cst Dn	0
NKLXM	Neck Lwr Moment X	3251	3251-107-MX	Denton	0 004384155	N m	451 9	7/6/01	Lt Ear to Lt Shld	1
NKLYM	Neck Lwr Moment Y	3251	3251-107-MY	Denton	0 004373976	N m	451 9	7/6/01	Chn to Strnm	0
NKLZM	Neck Lwr Moment Z	3251	3251-107-MZ	Denton	0 005777548	N m	338 95	7/6/01	Chn to Lt Shld	0
CSTXG	Chest Accel X	EGE-73B6Q-20	B02A25-N03	Entran	0 02149	g	2000	2/11/02	Fwd	0
CSTYG	Chest Accel Y	EGE-73B6Q-20	02A18-N12	Entran	0 01911	g	2000	2/1/02	Lft	1

Chsname	Location	Model	Name	Manufacturer	Sens./mV/V/U		Fullscale	Caldate	Pos Output	Flip
CSTZG	Chest Accel Z	EGE-73B6Q-20	B02A25-N10	Entran	0 01965	g	2000	2/11/02	Up	1
CSTXR	Chest Accel Red X	EGE-73B6Q-20	B02A25-N06	Entran	0 02014	g	2000	2/11/02	Rwd	1
CSTYR	Chest Accel Red Y	EGE-73B6Q-20	02A04-A24	Entran	0 01912	g	2000	2/1/02	Lft	1
CSTZR	Chest Accel Red Z	EGE-73B6Q-20	B02A18-N22	Entran	0 02094	g	2000	2/11/02	Up	1
STUXG	Sternum Upr Accel X	EGE-73B6Q-20	02A16-A14	Entran	0 02247	g	2000	1/25/02	Fwd	0
STMXG	Sternum Mid Accel X	EGE-73B6Q-20	02A16-A12	Entran	0 02219	g	2000	1/28/02	Fwd	0
STLXG	Sternum Lwr Accel X	EGE-73B6Q-20	02A18-N16	Entran	0 01957	g	2000	2/1/02	Fwd	0
CSTXD	Chest Deflection X	14CB1-2897	14CB1-2897-1355	Servo	1 70969	mm	100	3/25/02	Strnm Away Frm Spn	0
LMBXF	Lumbar Force X	2152A	2152A-086-FX	Denton	0 000139995	N	13344 6	6/2/01	Cst Fd,Pel Rr	1
LMBYF	Lumbar Force Y	2152A	2152A-086-FY	Denton	0 000138002	N	13344 6	6/2/01	Cst Lt,Pel Rt	0
LMBZF	Lumbar Force Z	2152A	2152A-086-FZ	Denton	0 000050458	N	17793	6/2/01	Cst Up,Pel Dn	0
LMBXM	Lumbar Moment X	2152A	2152A-086-MX	Denton	0 002293111	N m	677 9	6/2/01	Rt Shld to Rt Hip	1
LMBYM	Lumbar Moment Y	2152A	2152A-086-MY	Denton	0 002268623	N m	677 9	6/2/01	Strnm to Frt of Legs	0
LFMZF	Left Femur Force Z S37	2430	2430-739	GSE	0 000067676	N	13344	3/18/02	Knee Fd,Pel Rr	0
RFMZF	Right Femur Force Z VRTC 4	2430	2430-760	GSE	0 000067069	N	13344	3/18/02	Knee Fd,Pel Rr	0
PEVXG	Pelvis Accel X	EGE-73B6Q-20	02A09-F11	Entran	0 0198	g	2000	2/1/02	Rwd	1
PEVYG	Pelvis Accel Y	EGE-73B6Q-20	02A16-A26	Entran	0 01995	g	2000	1/28/02	Lft	0
PEVZG	Pelvis Accel Z	EGE-73B6Q-20	02A18-N15	Entran	0 01868	g	2000	2/1/02	Up	1
KNLXD	Left Knee Displacement POT10	150-0121VR	150-0121VR-15021	SpaceAge	23 387	mm	40	5/8/02	Tib Fd,Hld Fem	0
TBLXF	Left Upr Tibia Force X LC2	4825	4825-82-FX	Denton	0 000268929	N	8896 4	11/8/00	Tib Fd,Knee Rr	0
TBLZF	Left Upr Tibia Force Z LC9	4825	4825-82-FZ	Denton	0 000109505	N	8896 4	11/8/00	Tib Dn,Knee Up	0
TBLXM	Left Upr Tibia Moment X LC10	4825	4825-82-MX	Denton	0 010314093	N m	282 4	11/8/00	Ank Lt,Hld Knee	0
TBLYM	Left Upr Tibia Moment Y LC11	4825	4825-82-MY	Denton	0 010326841	N m	282 4	11/8/00	Ank Fd,Hld Knee	0
TBLXG	Left Tibia Accel X	EGE-73BQE0-2	99H30-Z09	Entran	0 01954	g	2000	4/25/02	Fwd	0
TBLYG	Left Tibia Accel Z	EGE-73BQE0-2	99H12-F09	Entran	0 01847	g	2000	4/26/02	Up	0
ANLXF	Left Lwr Tibia Force X LC13	4826	4826-82-FX	Denton	0 000264714	N	8896 4	11/15/00	Ank Fd,Knee Rr	0
ANLYF	Left Lwr Tibia Force Y LC14	4826	4826-82-FY	Denton	0 000265714	N	8896 4	11/15/00	Ank Rt,Knee Lft	0
ANLZF	Left Lwr Tibia Force Z LC20	4826	4826-82-FZ	Denton	0 000108145	N	8896 4	11/15/00	Ank Dn,Knee Up	0

Chsname	Location	Model	Name	Manufacturer	Sens./mV/V/U		Fullscale	Caldate	Pos Output	Flip
ANLXM	Left Lwr Tibia Moment X LC22	4826	4826-82-MX	Denton	0 010351983	N m	282 4	11/15/00	Ank Lt,Hld Knee	0
ANLYM	Left Lwr Tibia Moment Y LC28	4826	4826-82-MY	Denton	0 010339943	N m	282 4	11/15/00	Ank Fd,Hld Knee	0
FTLXD	Left Foot Disp X POT4	PD210-4B	PD210-4B-AK-066	Contelec	3 169	°	318	7/31/01	Inversion	0
FTLYD	Left Foot Disp Y POT5	PD210-4B	PD210-4B-AK-068	Contelec	3 151	°	318	7/31/01	Dorsiflexion	0
FTLZD	Left Foot Disp Z POT6	PD210-4B	PD210-4B-AK-067	Contelec	3 163	°	318	7/31/01	External Rotation	0
FTLXG	Left Foot Accel X	EGE-73BQ-200	98H10-F03	Entran	0 0168	g	2000	4/25/02	Fwd	0
FTLYG	Left Foot Accel Y	EGE-73BQ-200	98H10-F07	Entran	0 02132	g	2000	4/25/02	Rt	0
FTLZG	Left Foot Accel Z	EGE-73BQ-200	98H13-F16	Entran	0 01827	g	2000	4/25/02	Dn	0
KNRXD	Right Knee Displacement AXRRP	150-0121VL	150-0121VL-14949	SpaceAge	23 436	mm	40	5/8/02	Tib Fd,Hld Fem	0
TBRXF	Right Upr Tibia Force X LC1	4825	4825-80-FX	Denton	0 00027111	N	8896 4	12/7/00	Tib Fd,Knee Rr	0
TBRZF	Right Upr Tibia Force Z LC8	4825	4825-80-FZ	Denton	0 000109415	N	8896 4	12/7/00	Tib Dn,Knee Up	0
TBRXM	Right Upr Tibia Moment X LC15	4825	4825-80-MX	Denton	0 010508499	N m	282 4	12/7/00	Ank Lt,Hld Knee	0
TBRYM	Right Upr Tibia Moment Y LC17	4825	4825-80-MY	Denton	0 01037677	N m	282 4	12/7/00	Ank Fd,Hld Knee	0
TBRXG	Right Tibia Accel X	EGE-73BQE0-2	99H12-F19	Entran	0 01986	g	2000	4/26/02	Fwd	0
TBRYG	Right Tibia Accel Z	EGE-73BQE0-2	99H30-Z12	Entran	0 02018	g	2000	4/26/02	Up	0
ANRXF	Right Lwr Tibia Force X LC16	4826	4826-76-FX	Denton	0 000262084	N	8896 4	11/8/00	Ank Fd,Knee Rr	0
ANRYF	Right Lwr Tibia Force Y LC18	4826	4826-76-FY	Denton	0 000262432	N	8896 4	11/8/00	Ank Rt,Knee Lft	0
ANRZF	Right Lwr Tibia Force Z LC19	4826	4826-76-FZ	Denton	0 000108617	N	8896 4	11/8/00	Ank Dn,Knee Up	0
ANRXM	Right Lwr Tibia Moment X LC23	4826	4826-76-MX	Denton	0 010348796	N m	282 4	11/8/00	Ank Lt,Hld Knee	0
ANRYM	Right Lwr Tibia Moment Y LC26	4826	4826-76-MY	Denton	0 010518059	N m	282 4	11/8/00	Ank Fd,Hld Knee	0
FTRXD	Right Foot Disp X POT1	PD210-4B	PD210-4B-AK-131	Contelec	3 157	°	318	7/31/01	Eversion	0
FTRYD	Right Foot Disp Y POT2	PD210-4B	PD210-4B-AK-064	Contelec	3 166	°	318	7/31/01	Dorsiflexion	0
FTRZD	Right Foot Disp Z POT3	PD210-4B	PD210-4B-AK-065	Contelec	3 167	°	318	7/31/01	Internal Rotation	0
FTRXG	Right Foot Accel X	EGE-73BQ-200	98H14-K06	Entran	0 0211	g	2000	4/26/02	Fwd	0
FTRYG	Right Foot Accel Y	EGE-73BQE0-2	99H12-F03	Entran	0 01896	g	2000	4/25/02	Rt	0
FTRZG	Right Foot Accel Z	EGE-73BQ-200	98H14-K10	Entran	0 01816	g	2000	4/25/02	Dn	0

020606

Channel Report

7031	IP4	PABETB	Passenger Airbag Event B	A3	1 0039215	V	+	6/15/2000	---	-1	FLUKE	Y8101A

020606

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 Photosonic 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.

To locate time-zero, observe the continuous LED that is visible on the left side of the frame at the beginning of each view. Locate the frame where the left side LED is fully extinguished and reverse 4 frames for the Photosonic cameras; reverse 5 frames for Hycam cameras; reverse 2 frames for Stalex cameras. This frame is time-zero.

Dual Stage Airbag Event Information

Inductive pick-ups to monitor airbag fire times were labeled "A" and "B" rather than primary and secondary, because wiring information to distinguish primary and secondary was not available.

The following set-up information was recorded for test 020606:

Driver A, DABETA, inductive pick-up 69, placed on the green and pink wire.

Driver B, DABETB, inductive pick-up 9, placed on the green and orange wire.

Passenger A, PABETA, inductive pick-up F, placed on the blue and orange wire.

Passenger B, PABETB, inductive pick-up A3, placed on the blue and pink wire.

Transportation Research Center Inc.

572O Neck Extension Test - 6 Channel Transducer

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Impact Velocity	5.95 - 6.19 m/s	6.18 m/s	Yes
Integrated Pendulum Velocity			
10 ms	1.50 - 1.90 m/s	1.54 m/s	Yes
20 ms	3.10 - 3.90 m/s	3.13 m/s	Yes
30 ms	4.60 - 5 60 m/s	4.64 m/s	Yes
Peak D Plane Rotation	99 - 114 °	102.4 °	Yes
Peak Moment About Occipital Condyles (During time interval rotation is within specified corridors)	-65.0 - (-53.0) N·m	-55 50 N m	Yes
Positive Moment Decay Time To -10 N·m	94 - 114 ms	105.60 ms	Yes

Comments:

Technician

Approved

05 17 2002 11 40 08 547

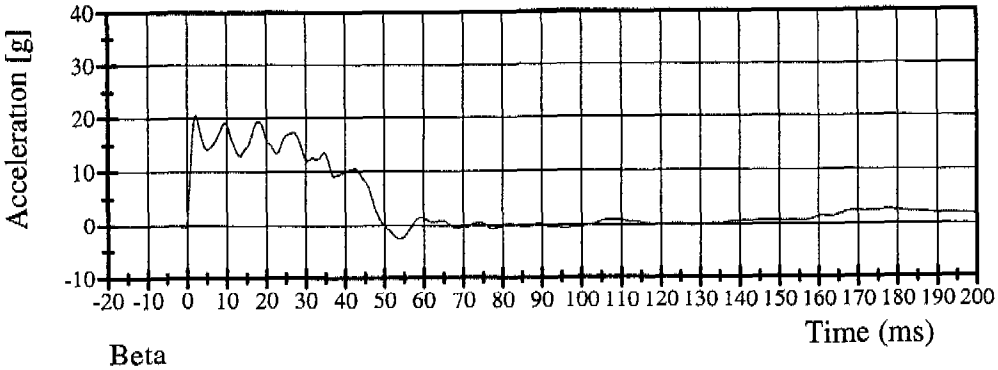
Transportation Research Center Inc.

5720 Neck Extension Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Pendulum Deceleration

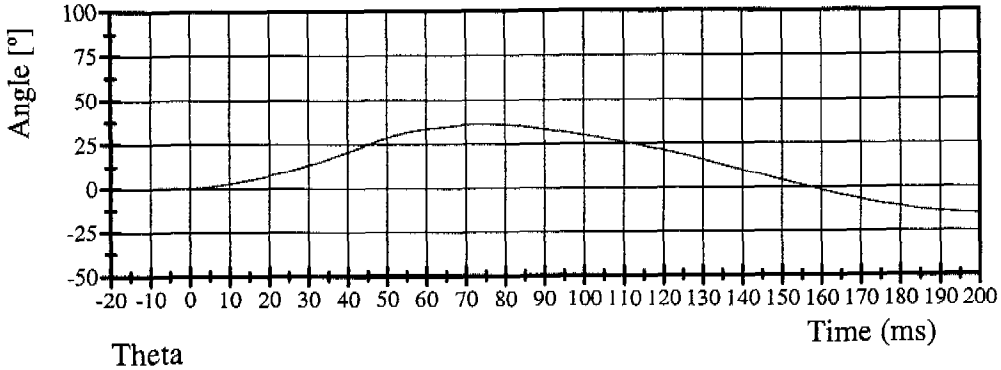


Filter Class: 180

Max: 20.4 g at 2.0 ms

Min: -2.7 g at 53.8 ms

Beta

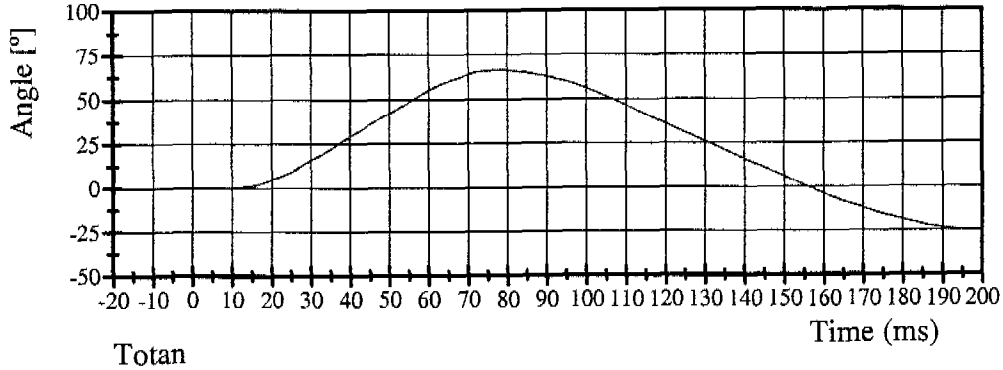


Filter Class: 60

Max: 36.2 ° at 73.7 ms

Min: -15.4 ° at 204.3 ms

Theta

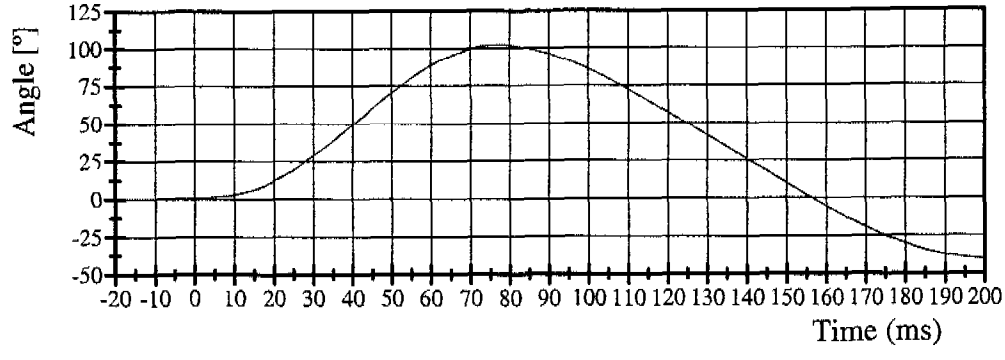


Filter Class: 60

Max: 66.4 ° at 78.6 ms

Min: -25.4 ° at 202.8 ms

Totan



Filter Class. 60

Max. 102.4 ° at 77.8 ms

Min: -40.8 ° at 203.7 ms

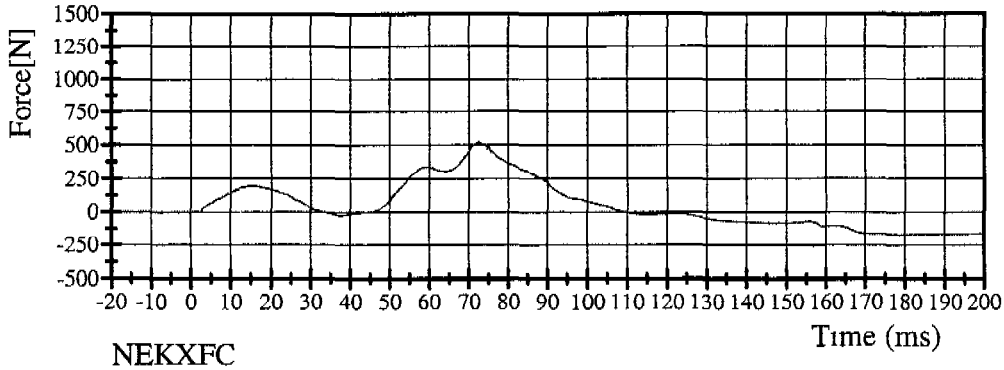
Transportation Research Center Inc.

5720 Neck Extension Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

NEKXF

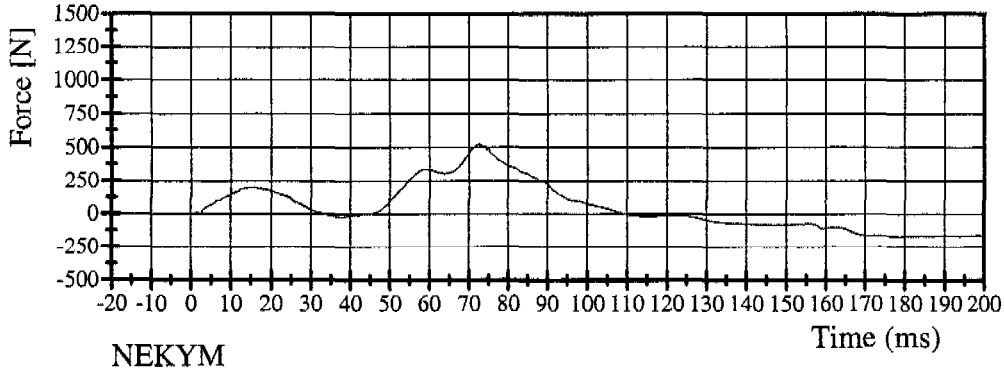


Filter Class: 1000

Max: 521.6 N at 72.6 ms

Min: -173.1 N at 178.9 ms

NEKXFC

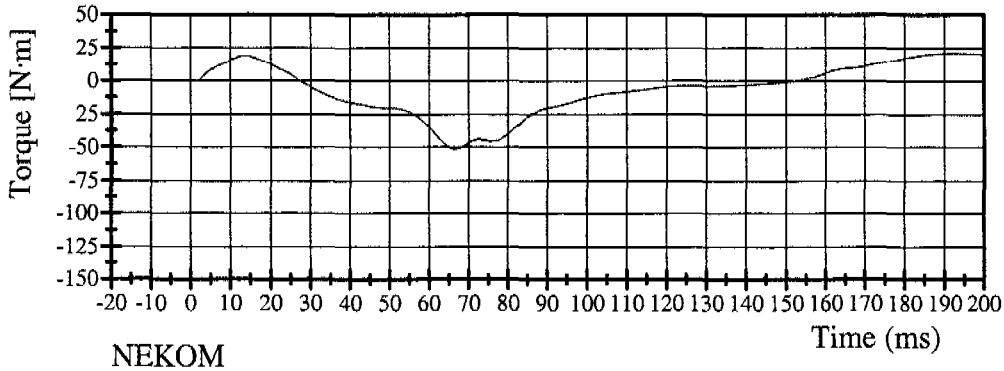


Filter Class: 600

Max: 521.7 N at 72.5 ms

Min: -172.4 N at 178.9 ms

NEKYM

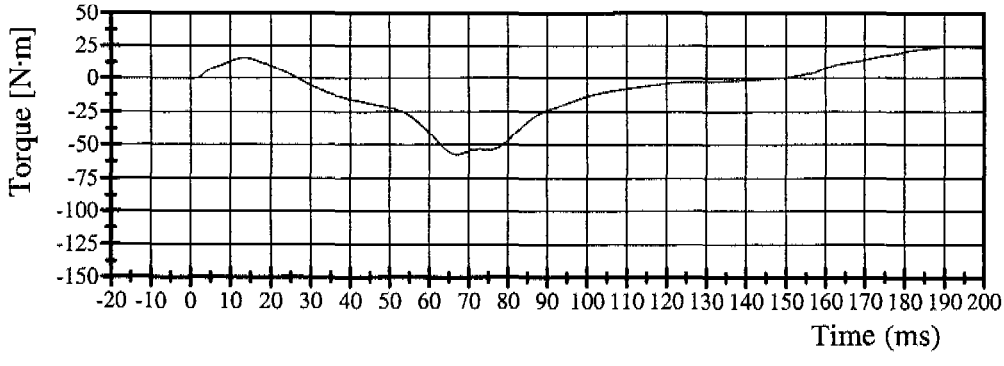


Filter Class 600

Max: 21.3 N·m at 192.0 ms

Min: -51.4 N·m at 66 6 ms

NEKOM



Filter Class: 600

Max: 24.3 N·m at 192 0 ms

Min: -57.4 N·m at 67.0 ms

Transportation Research Center Inc.

572O Thorax Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 3

Test Date 05/20/2002

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Pendulum Velocity	6.59 - 6.83 m/s	6.66 m/s	Yes
Maximum Chest Deflection	-58.0 - (-50 0) mm	-54.9 mm	Yes
Peak Impact Probe Force Within Compression Corridor	3900 - 4400 N	4290 N	Yes
Internal Hysteresis	105 % Max.	95 %	Yes
Internal Hysteresis	69 - 85 %	73 %	Yes

Comments:

Technician

Approved

05 20 2002 09 09 18 1745

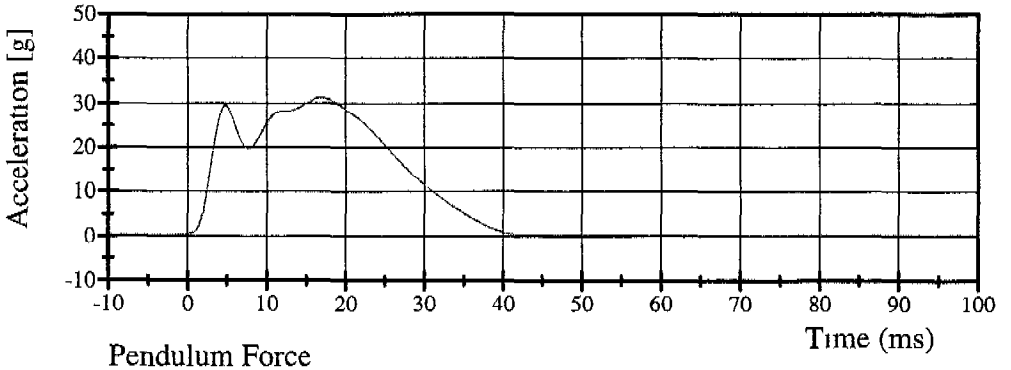
Transportation Research Center Inc.

572O Thorax Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 3

Test Date 05/20/2002

Pendulum Deceleration

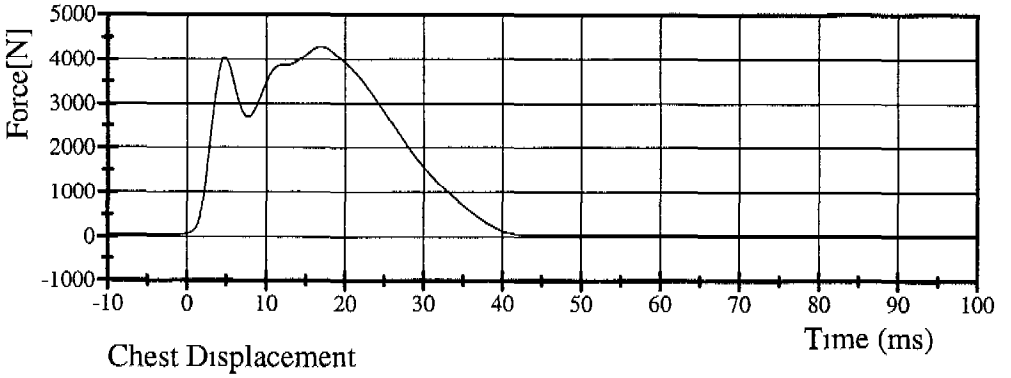


Filter Class· 180

Max: 31.3 g at 17.0 ms

Min: -1.0 g at 407.8 ms

Pendulum Force

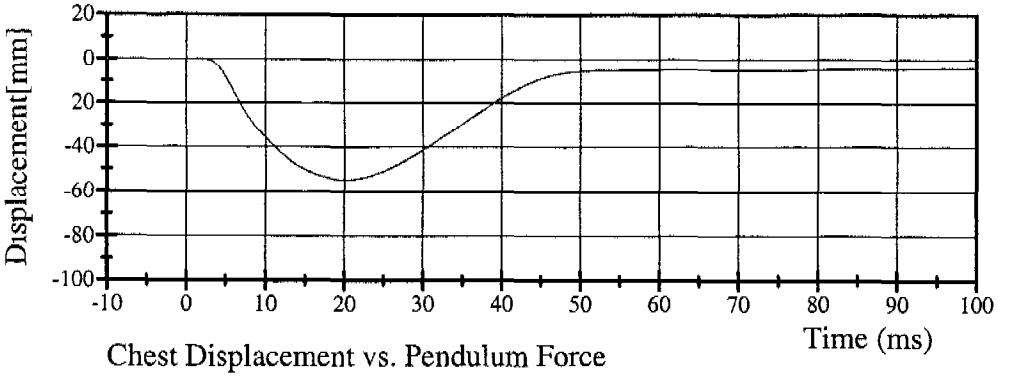


Filter Class. 180

Max: 4290 1 N at 17.0

Min: -131.5 N at 407.8

Chest Displacement

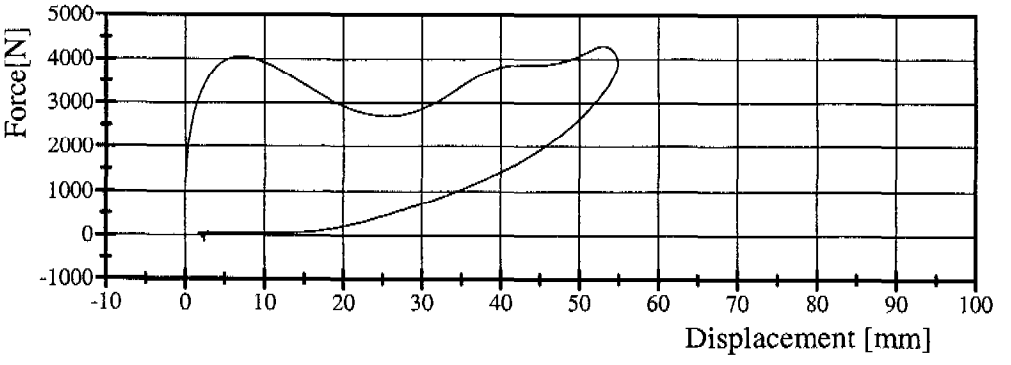


Filter Class· 180

Max: 0.1 mm at 1 8 ms

Mın: -54.9 mm at 20.2

Chest Displacement vs. Pendulum Force



05 20 2002 09 09 19 1745

TRANSPORTATION RESEARCH CENTER INC.

TORSO FLEXION TEST

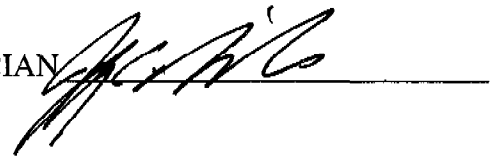
HYBRID III SMALL FEMALE

CAL DATE: 17-May-02

TRC, INC. TEST NO: 416C14TF1 572 O SN 416 TORSO FLEX CAL 14

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6 DEG. C	21.7 DEG C
RELATIVE HUMIDITY	10 – 70 %	45 %
INITIAL ANGLE OF UNSUPPORRTED DUMMY	<= 20 DEG. REFERENCED TO VERTICAL	13.2 DEG.
MAXIMUM FORCE AT 45 DEG. DURING 10 SECOND PERIOD	320 – 390 N	361.2 N
RETURN ANGLE @ 3MINUTES		17.1 DEG.
DIFFERENCE BETWEEN RETURN ANGLE & INTIAL ANGLE	+/- 8 DEG OF INTIAL ANGLE	3.9 DEG.

TEST MEETS SPECIFICATIONS

TECHNICIAN 

Transportation Research Center Inc.

572O Left Knee Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Pendulum Velocity	2.07 - 2.13 m/s	2.10 m/s	Yes
Maximum Pendulum Force	3450 - 4060 N	3532 N	Yes

Comments:

Technician

Approved

05 24 2002 08 35 05 1699

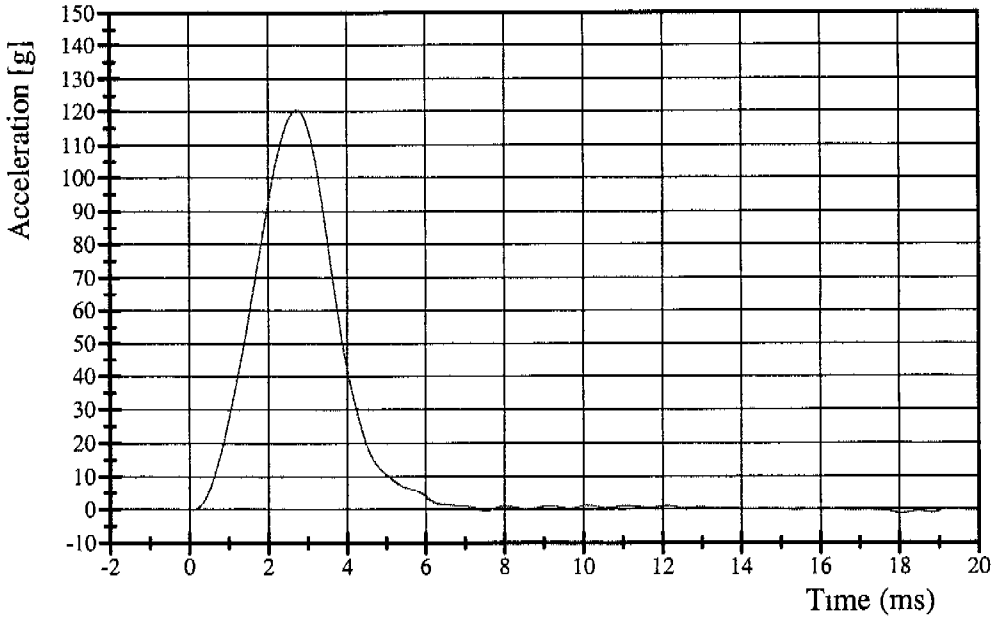
Transportation Research Center Inc.

572O Left Knee Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Pendulum Deceleration

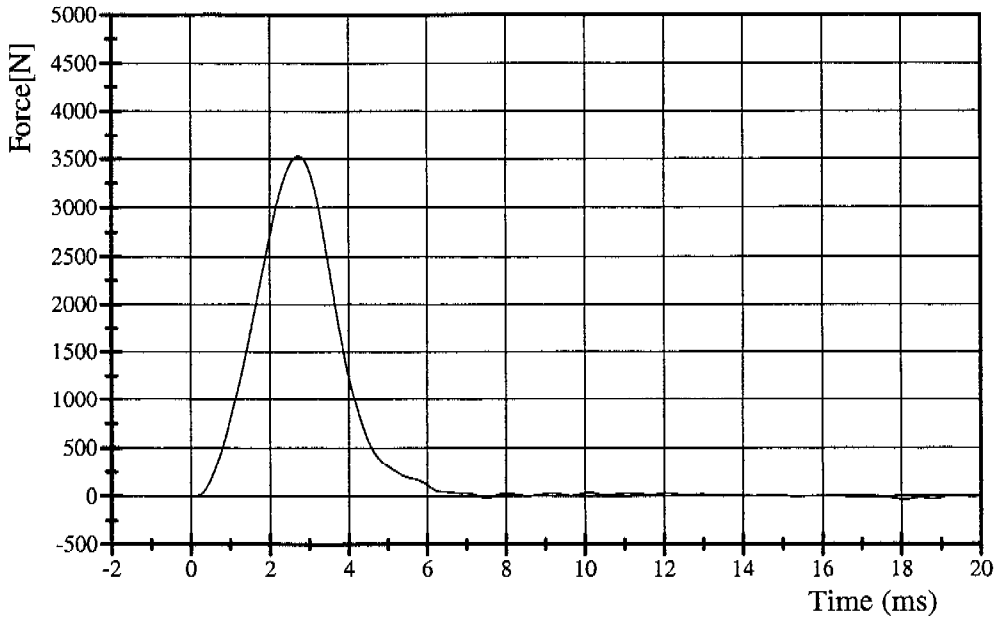


Filter Class: 600

Max: 120.5 g at 2.7 ms

Min: -1.3 g at 18.1 ms

Pendulum Force



Filter Class: 600

Max: 3531.9 N at 2.7 ms

Min: -37.2 N at 18.1 ms

05 24 2002 08 35 06 1699

Transportation Research Center Inc.

5720 Right Knee Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21 7 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Pendulum Velocity	2.07 - 2.13 m/s	2.10 m/s	Yes
Maximum Pendulum Force	3450 - 4060 N	3532 N	Yes

Comments:

Technician

Approved

05 17 2002 10 55 30 1700

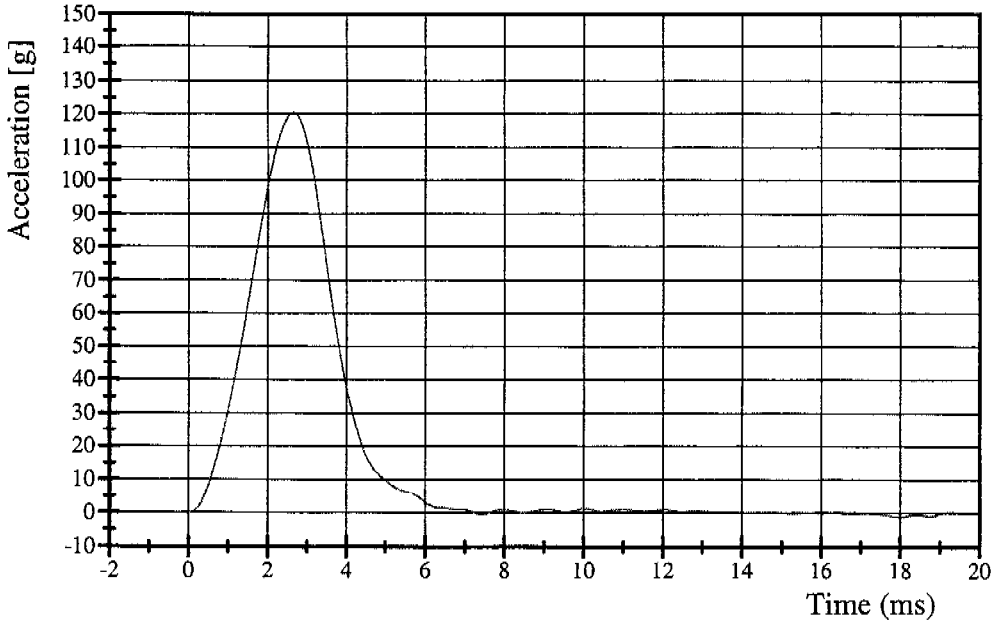
Transportation Research Center Inc.

572O Right Knee Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Pendulum Deceleration

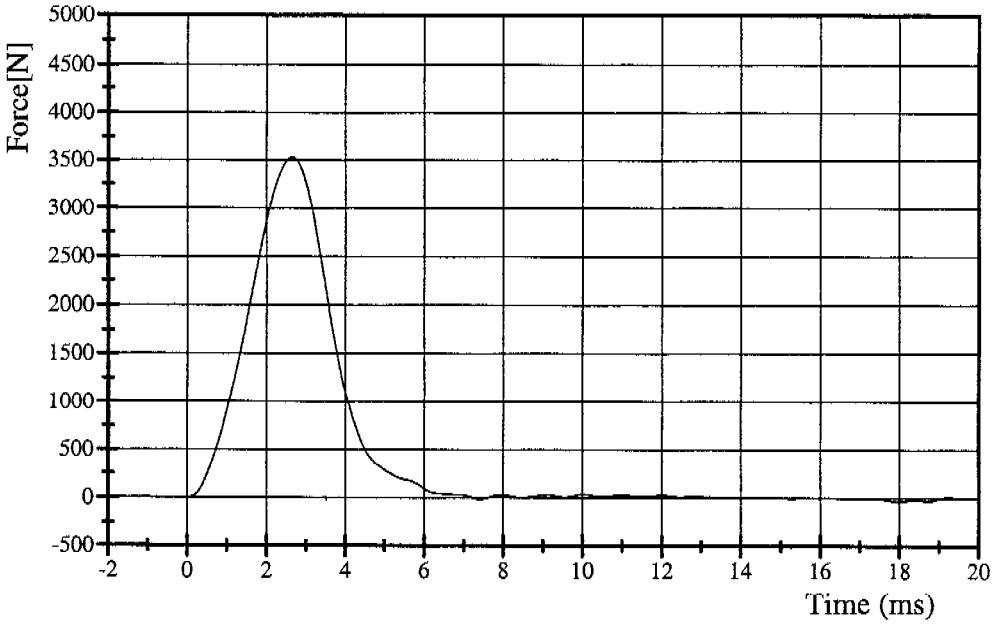


Filter Class: 600

Max: 120 5 g at 2.6 ms

Mın: -1.3 g at 18.0 ms

Pendulum Force



Filter Class: 600

Max: 3531.9 N at 2.6 ms

Min: -37.2 N at 18.0 ms

05 17 2002 10 55 31 1700

Transportation Research Center Inc.

5720 Left Knee Slider Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Pendulum Velocity	2.70 - 2.80 m/s	2.76 m/s	Yes
Knee Displacement	-15.5 - (-12.7) mm	-14.1 mm	Yes

Comments:

Technician

Approved

05 24 2002 08 45 10 1703

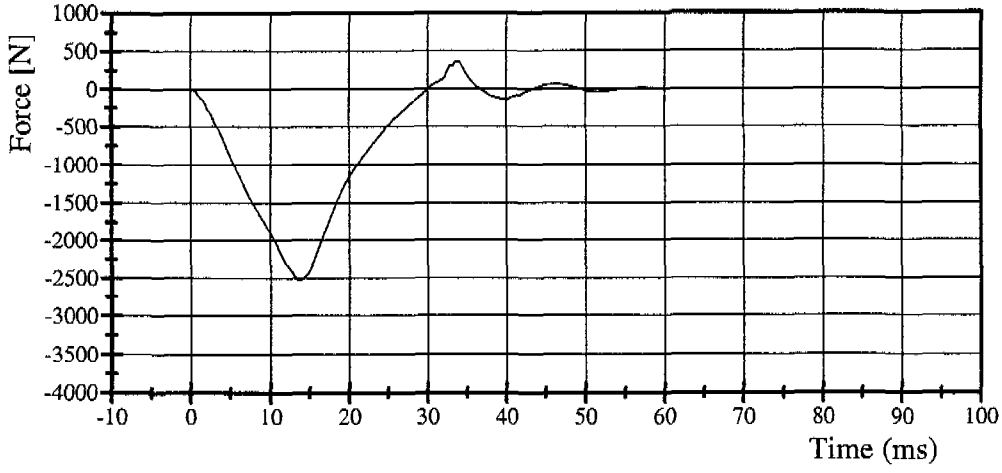
Transportation Research Center Inc.

5720 Left Knee Slider Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Femur Force

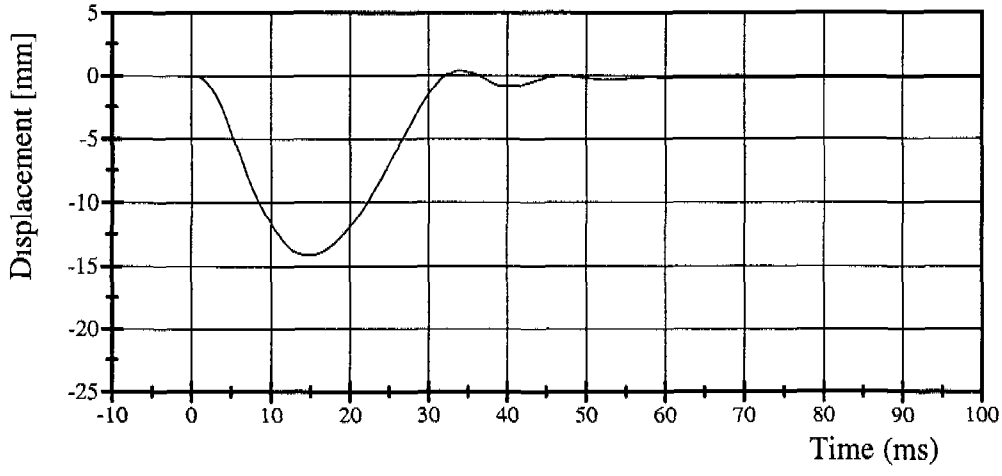


Filter Class: 600

Max: 357.4 N at 33.8 ms

Min: -2525.5 N at 13.6 ms

Tibia Displacement

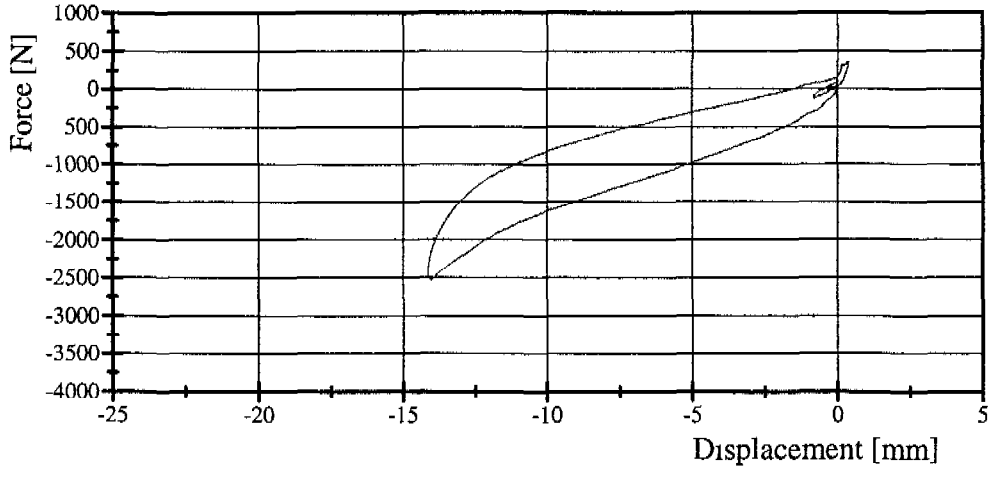


Filter Class: 600

Max: 0.4 mm at 33 9 ms

Min: -14 1 mm at 14.8 ms

Femur Force vs Tibia Displacement



05 24 2002 08 45 01 1703

Transportation Research Center Inc.

5720 Right Slider Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21 7 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Pendulum Velocity	2.70 - 2.80 m/s	2.76 m/s	Yes
Knee Displacement	-15.5 - (-12.7) mm	-14.4 mm	Yes

Comments:

Technician

Approved

05 17 2002 09 22 21 1702

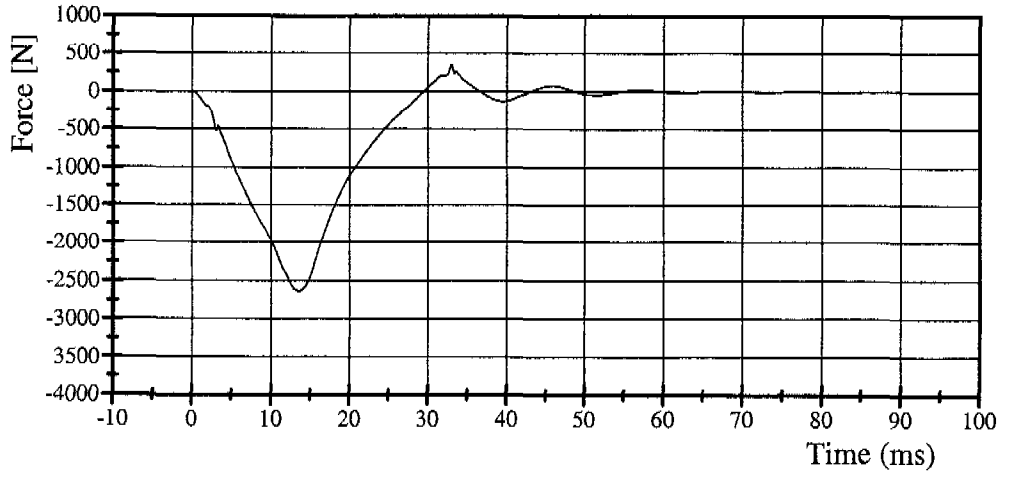
Transportation Research Center Inc.

572O Right Slider Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Femur Force

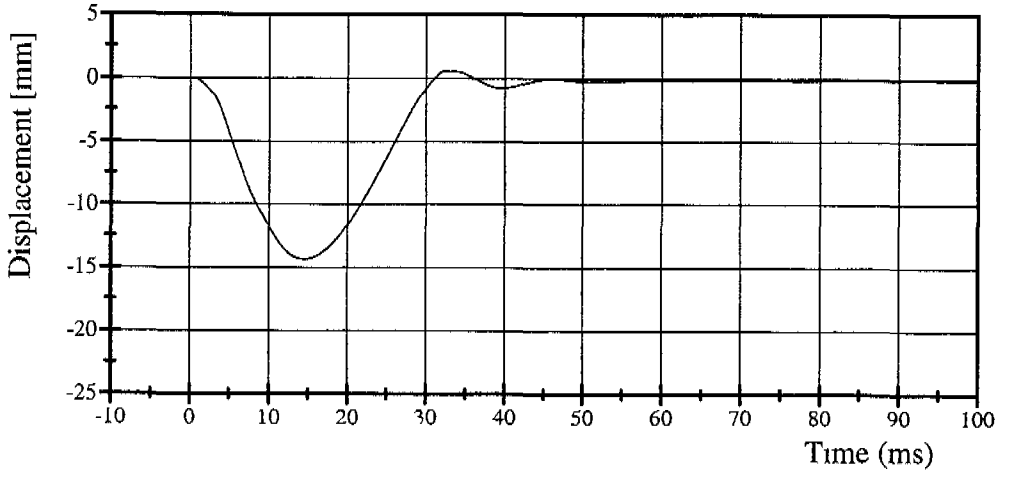


Filter Class· 600

Max: 348 6 N at 33.0 ms

Mın: -2633.0 N at 13.5 ms

Tıbıa Dısplacement

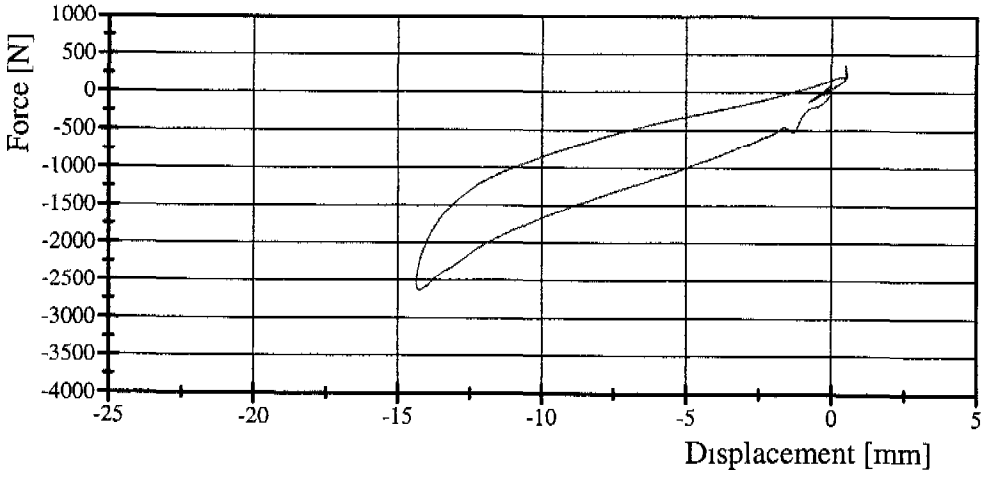


Filter Class: 600

Max 0 6 mm at 32.4 ms

Min. -14.4 mm at 14.6 ms

Femur Force vs Tibia Displacement



05 17 2002 09 22 22 1702

Pre-test Dummy Configuration and Performance Verification Data

Passenger Dummy S/N: 421

Transportation Research Center Inc.
572F HIII 5th Dummy
External Dimensions
Serial No. 421 Calibration No. 07

Test Parameter	Dimension	Specification	Results	Pass
Total Sitting Height	A	774.7 - 800 1 mm	790 mm	Yes
Shoulder Pivot Height	B	431.8 - 457.2 mm	449 mm	Yes
Hip Pivot Height	C	81.3 - 86.3 mm	86 mm	Yes
Hip Pivot from Backline	D	144 8 - 149.8 mm	145 mm	Yes
Shoulder Pivot from Backline	E	68.6 - 83.8 mm	77 mm	Yes
Thigh Clearance	F	119.4 - 134 6 mm	130 mm	Yes
Back of Elbow to Wrist Pivot	G	243 9 - 259.0 mm	254 mm	Yes
Head Back to Backline	H	40 7 - 45.7 mm	45 mm	Yes
Shoulder to Elbow Length	I	276.9 - 297 1 mm	281 mm	Yes
Elbow Rest Height	J	182 9 - 203.2 mm	192 mm	Yes
Buttock Knee Length	K	520.7 - 546 1 mm	533 mm	Yes
Popliteal Height	L	355.6 - 375 9 mm	367 mm	Yes
Knee Pivot Height	M	393 7 - 419.1 mm	408 mm	Yes
Buttock Popliteal Height	N	414.1 - 439 4 mm	430 mm	Yes
Chest Depth without Jacket	O	175 3 - 190.5 mm	184 mm	Yes
Foot Length	P	218 5 - 233.6 mm	229 mm	Yes
Buttock to Knee Pivot Length	R	457.2 - 482 6 mm	472 mm	Yes
Head Breadth	S	137.2 - 147.3 mm	144 mm	Yes
Head Depth	T	177 8 - 187.9 mm	181 mm	Yes
Hip Breadth	U	299.8 - 314 9 mm	301 mm	Yes
Shoulder Breadth	V	350.6 - 365.7 mm	351 mm	Yes
Foot Breadth	W	78 8 - 93.9 mm	89 mm	Yes
Head Circumference	X	528.4 - 548 6 mm	547 mm	Yes
Chest Circumference with Jacket	Y	850.9 - 881.3 mm	867 mm	Yes
Waist Circumference	Z	759 5 - 789.9 mm	765 mm	Yes
Reference Location for Chest Circumference	AA	299.8 - 309.8 mm	305 mm	Yes
Reference Location for Waist Circumference	BB	160.1 - 170 1 mm	165 mm	Yes

Technician

Approved

Transportation Research Center Inc.

572O Head Drop Test

HIII 5th Female Serial No. 421 Calibration No. 07 - 2

Test Date 05/20/2002

Test Parameter	Specification	Test Results	Pass
Temperature	18 9 - 25.5 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Peak Resultant Acceleration	250 - 300 g	279.3 g	Yes
Peak Lateral Acceleration	15 g Max	-3.8 g	Yes
Is Acceleration Curve Unimodal?	Yes	Yes	Yes

Comments:

Technician

Approved

05 20 2002 13 42 39 614

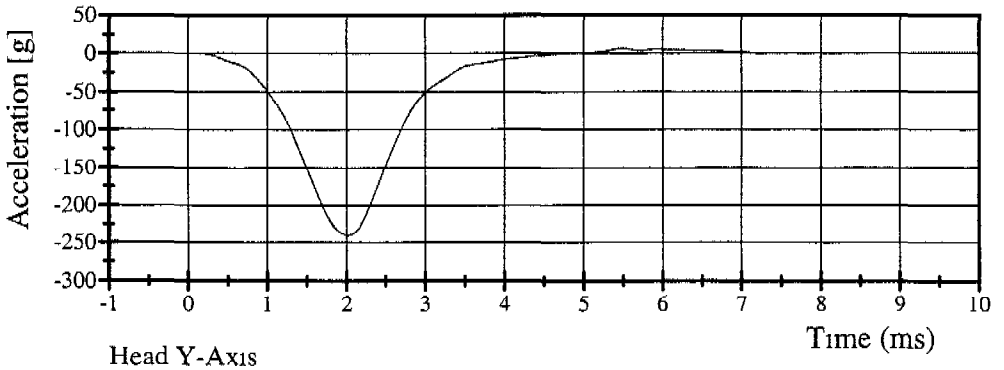
Transportation Research Center Inc.

572O Head Drop Test

HIII 5th Female Serial No. 421 Calibration No 07 - 2

Test Date 05/20/2002

Head X-Axis

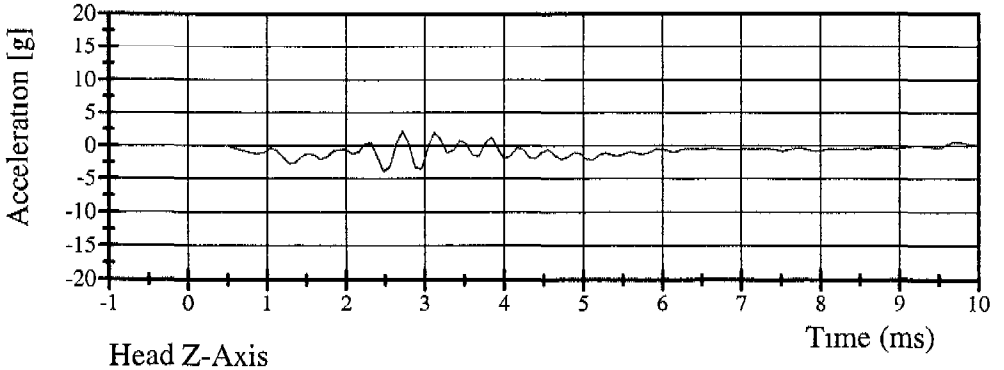


Filter Class: 1000

Max: 5 8 g at 5 5 ms

Min: -241.0 g at 2 0 ms

Head Y-Axis

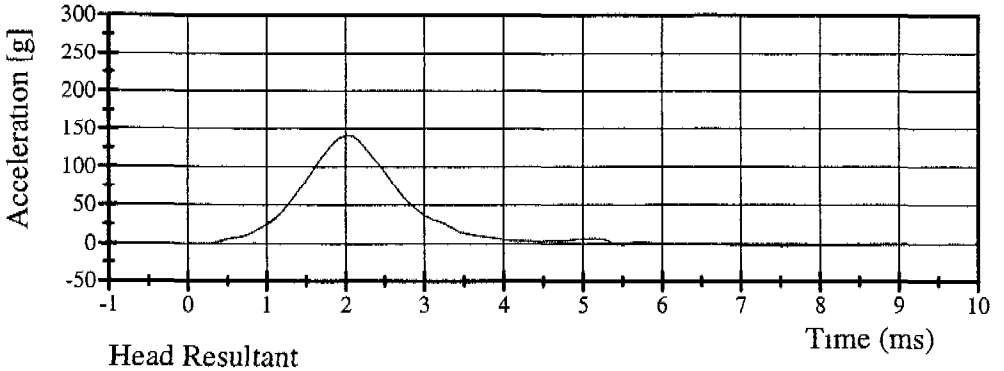


Filter Class. 1000

Max: 2.2 g at 2.7 ms

Min: -3 8 g at 2.5 ms

Head Z-Axis

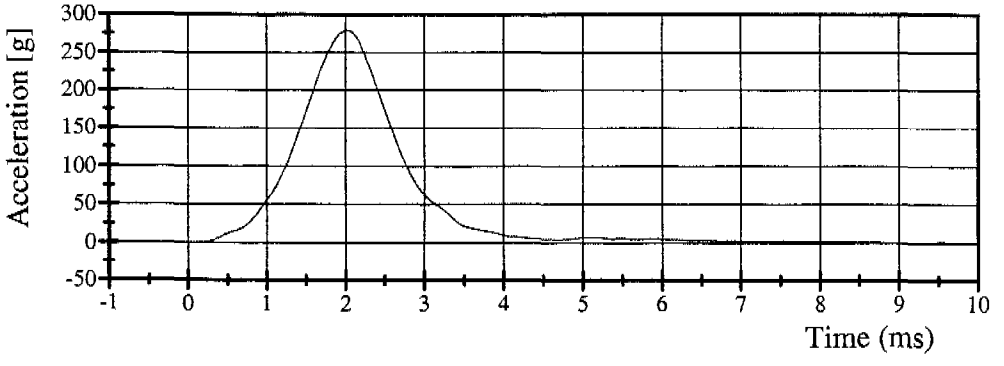


Filter Class: 1000

Max. 141.3 g at 2 0 ms

Min: -2.3 g at 7.5 ms

Head Resultant



Filter Class: 1000

Max. 279.3 g at 2.0 ms

Min. 0 0 g at 2 2 ms

05 20 2002 13 42 40 614

Transportation Research Center Inc.

572O Neck Flexion Test - 6 Channel Transducer

HIII 5th Female Serial No. 421 Calibration No. 07 - 7

Test Date 05/20/2002

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Impact Velocity	6.89 - 7.13 m/s	7 10 m/s	Yes
Integrated Pendulum Velocity			
10 ms	2.10 - 2.50 m/s	2.47 m/s	Yes
20 ms	4.00 - 5 00 m/s	4.81 m/s	Yes
30 ms	5.80 - 7.00 m/s	6.85 m/s	Yes
Peak D Plane Rotation	77 - 91 °	83 2 °	Yes
Peak Moment About Occipital Condyles (During time interval rotation is within specified corridors)	69.0 - 83.0 N·m	71 77 N·m	Yes
Positive Moment Decay Time To 10 N·m	80 - 100 ms	89.76 ms	Yes

Comments:

Technician

Approved

05 20 2002 15 08 35 477

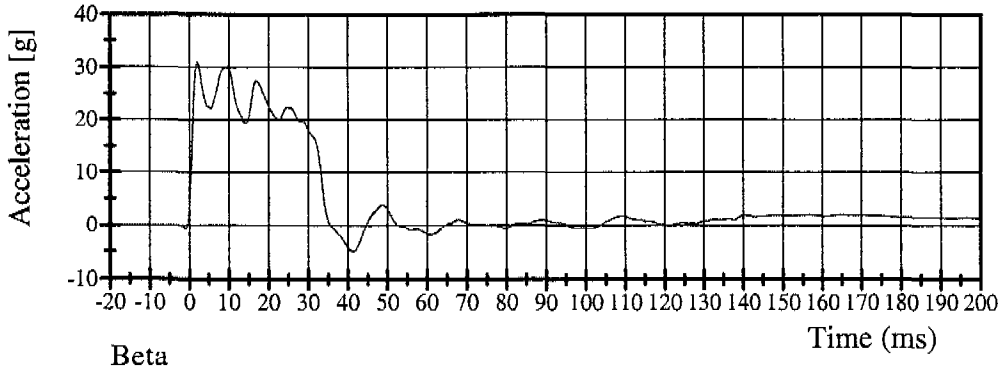
Transportation Research Center Inc.

5720 Neck Flexion Test

HIII 5th Female Serial No 421 Calibration No. 07 - 7

Test Date 05/20/2002

Pendulum Deceleration

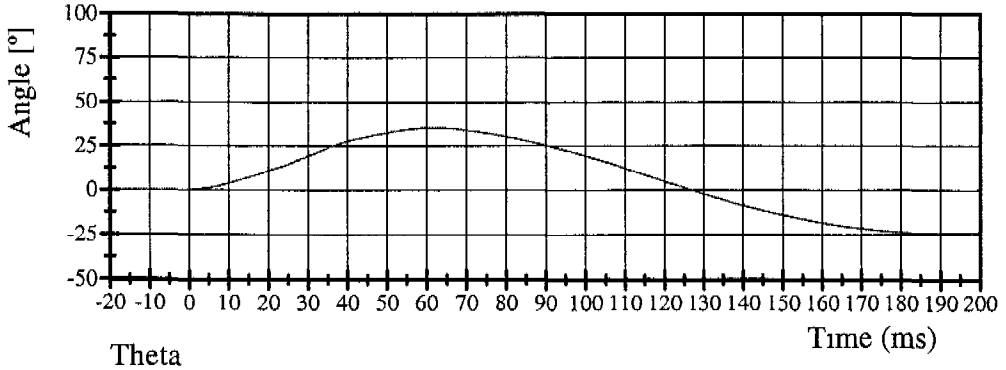


Filter Class: 180

Max: 30.9 g at 2 0 ms

Min: -5.0 g at 41 3 ms

Beta

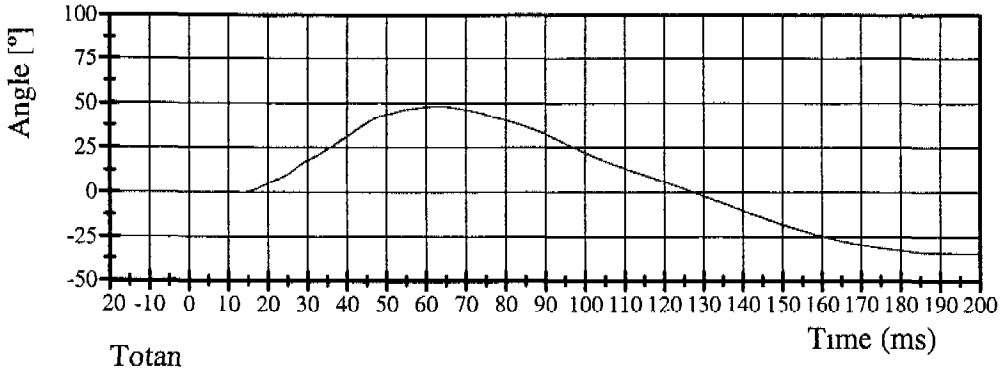


Filter Class: 60

Max: 35.1 ° at 61 7 ms

Min: -23.8 ° at 186 9 ms

Theta

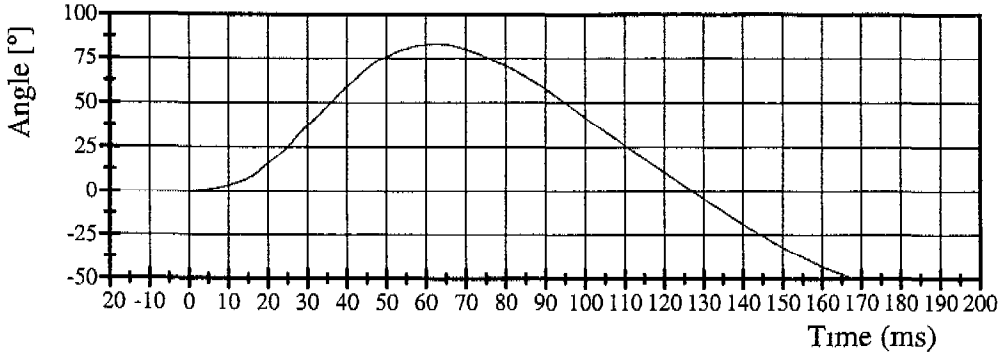


Filter Class: 60

Max 48.0 ° at 63.2 ms

Min: -34.7 ° at 196.1 ms

Totan



Filter Class. 60

Max: 83.2 ° at 63 0 ms

Min. -58.5 ° at 194.9 ms

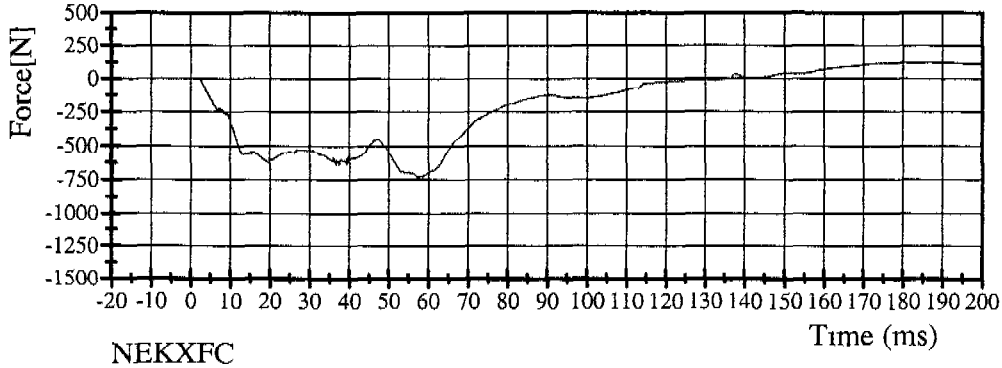
Transportation Research Center Inc.

5720 Neck Flexion Test

HIII 5th Female Serial No. 421 Calibration No. 07 - 7

Test Date 05/20/2002

NEKXF

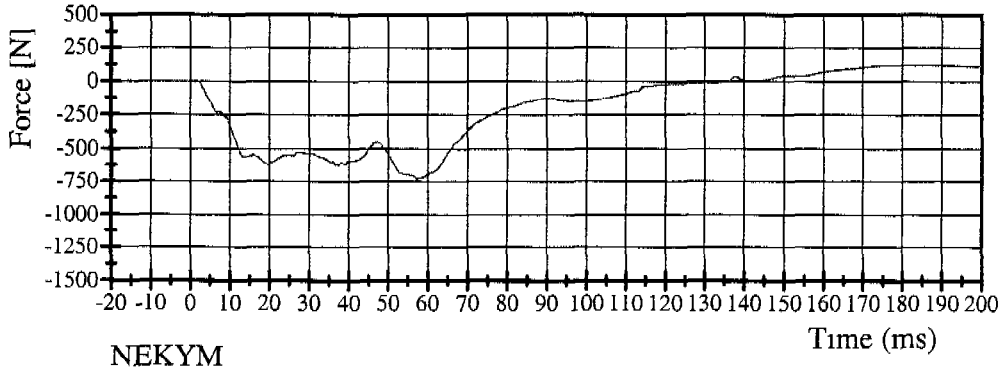


Filter Class: 1000

Max· 122.7 N at 186.4 ms

Min: -731.9 N at 57 5 ms

NEKXFC

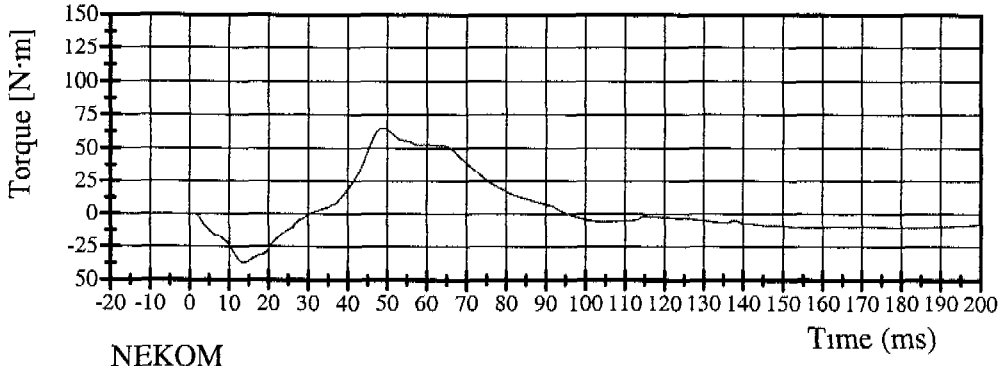


Filter Class. 600

Max. 122.0 N at 186 6 ms

Min: -730.4 N at 57 4 ms

NEKYM

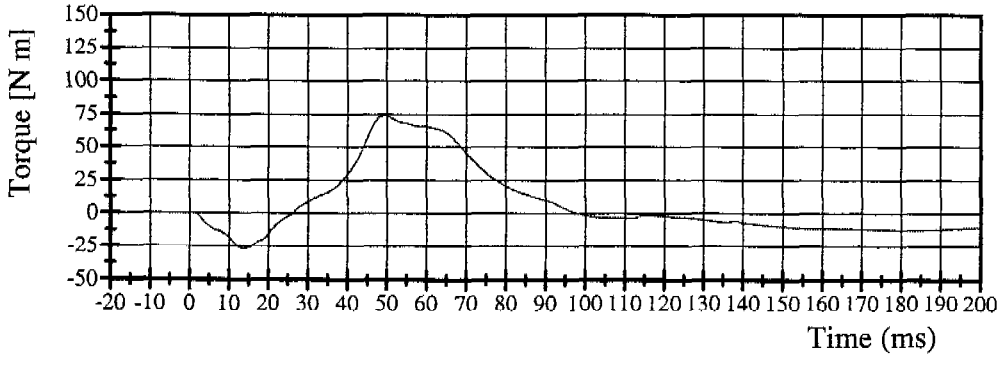


Filter Class: 600

Max: 64 8 N m at 48.7 ms

Min· -36 8 N·m at 13.4 ms

NEKOM



Filter Class. 600

Max. 73.8 N m at 49.4 ms

Min: -26 9 N m at 13.4 ms

Transportation Research Center Inc.

572O Neck Extension Test - 6 Channel Transducer

HIII 5th Female Serial No. 421 Calibration No. 07 - 1

Test Date 05/20/2002

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Impact Velocity	5 95 - 6.19 m/s	6.18 m/s	Yes
Integrated Pendulum Velocity			
10 ms	1 50 - 1.90 m/s	1.88 m/s	Yes
20 ms	3 10 - 3.90 m/s	3 82 m/s	Yes
30 ms	4.60 - 5.60 m/s	5.56 m/s	Yes
Peak D Plane Rotation	99 - 114 °	103.9 °	Yes
Peak Moment About Occipital Condyles (During time interval rotation is within specified corridors)	-65.0 - (-53 0) N·m	-60.37 N·m	Yes
Positive Moment Decay Time To -10 N·m	94 - 114 ms	102 72 ms	Yes

Comments:

Technician

Approved

05 20 2002 15 39 31 543

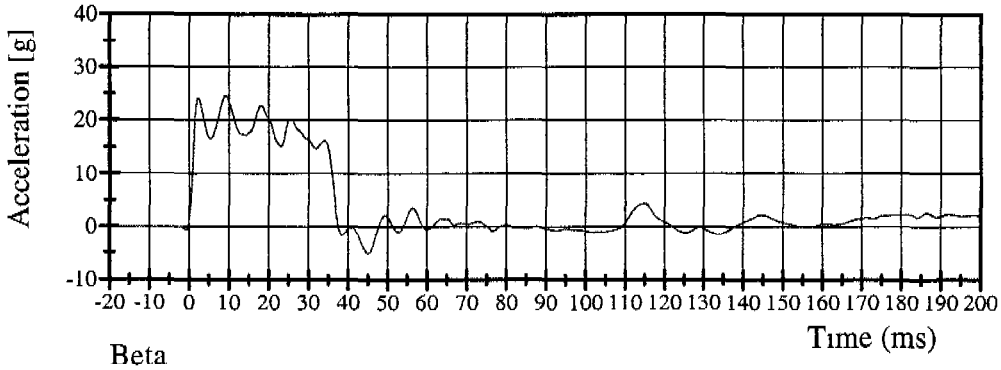
Transportation Research Center Inc.

5720 Neck Extension Test

HIII 5th Female Serial No 421 Calibration No. 07 - 1

Test Date 05/20/2002

Pendulum Deceleration

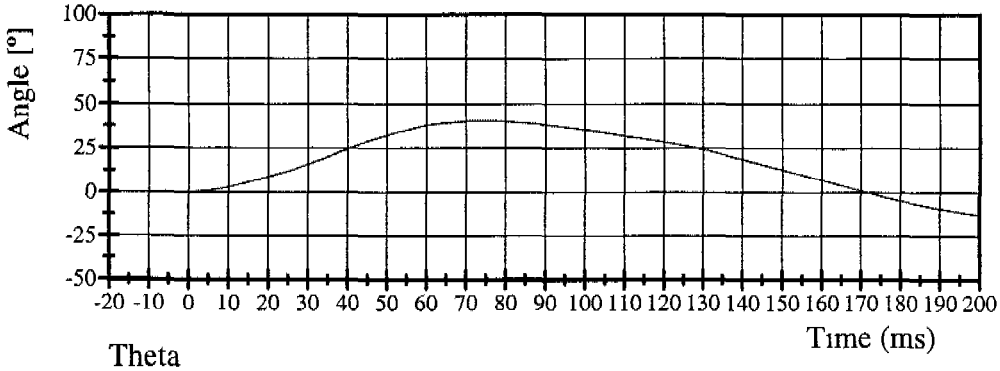


Filter Class: 180

Max: 24.7 g at 9 1 ms

Min. -5.2 g at 45.0 ms

Beta

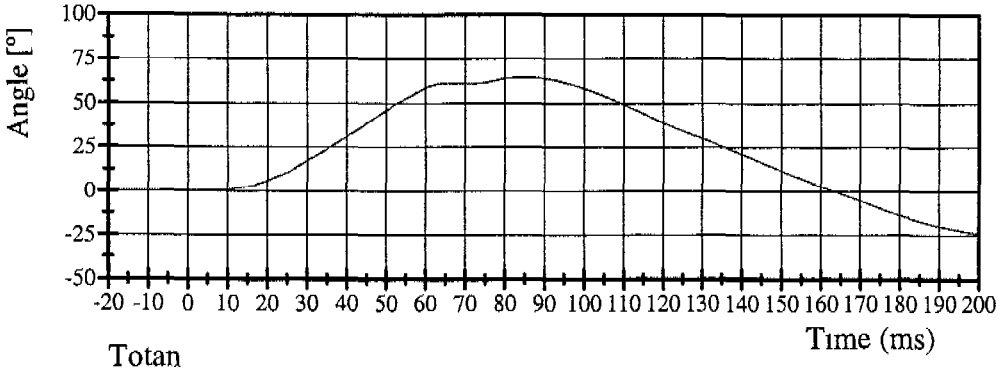


Filter Class: 60

Max: 40 4 ° at 72.9 ms

Min: -15.3 ° at 220.0 ms

Theta

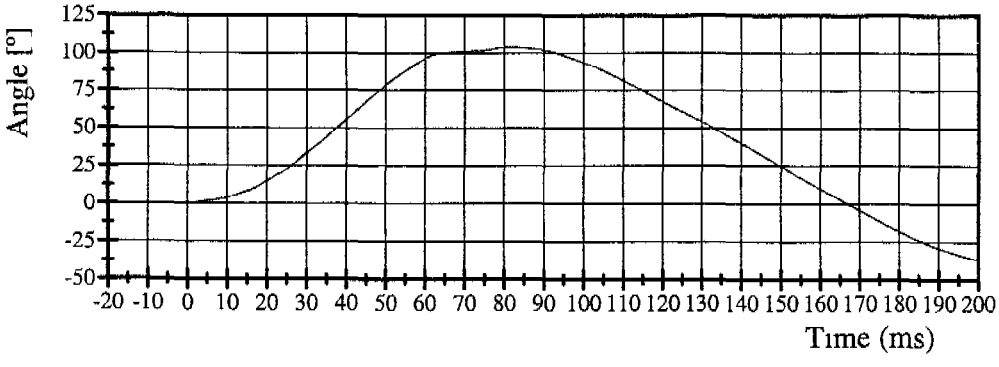


Filter Class· 60

Max· 64.4 ° at 84.2 ms

Min· -26.1 ° at 214 9 ms

Totan



Filter Class: 60

Max: 103.9 ° at 81.5 ms

Min· -41.3 ° at 219.0 ms

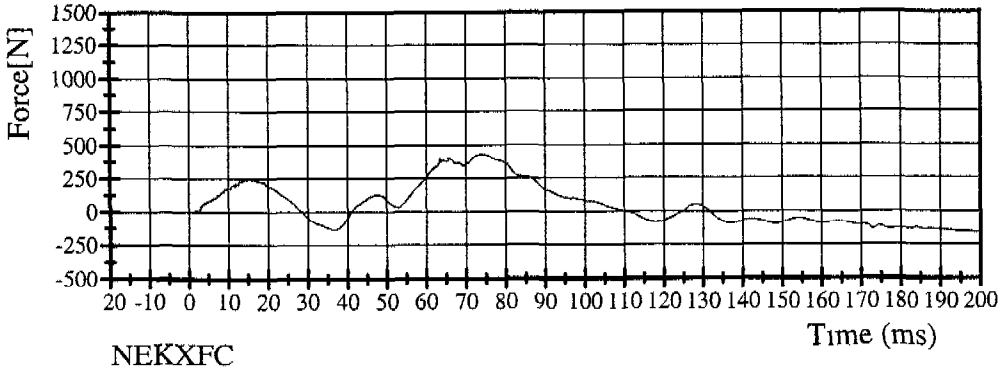
Transportation Research Center Inc.

5720 Neck Extension Test

HIII 5th Female Serial No. 421 Calibration No 07 - 1

Test Date 05/20/2002

NEKXF

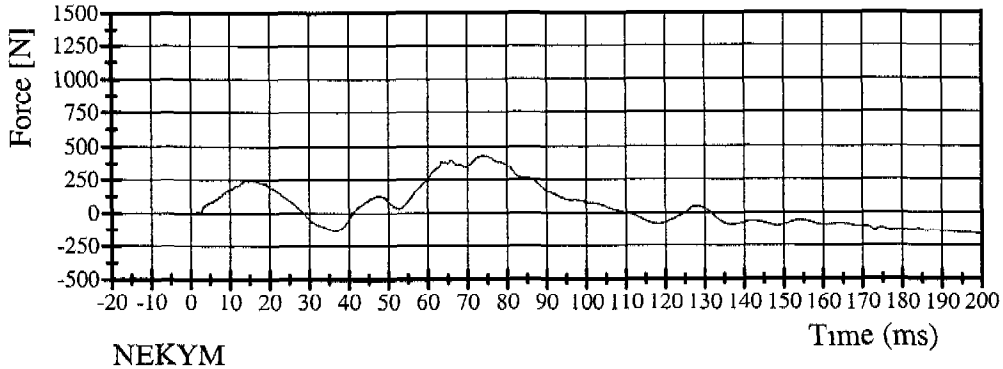


Filter Class: 1000

Max· 431.2 N at 73 6 ms

Min. -166 4 N at 201.0 ms

NEKXFC

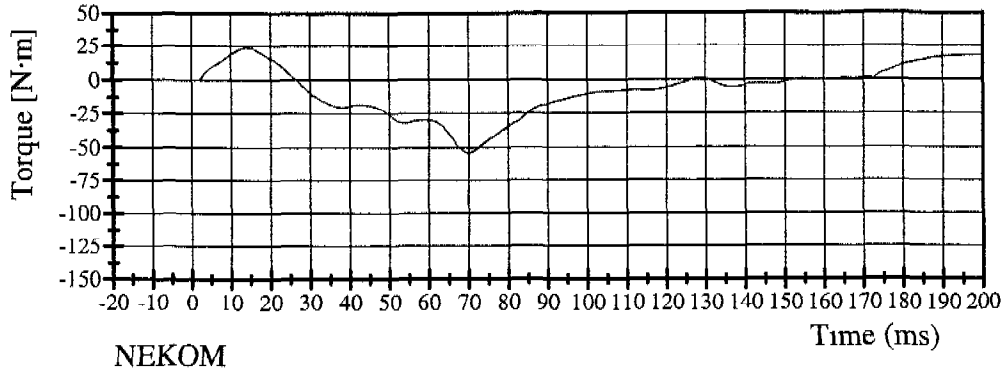


Filter Class. 600

Max· 430.6 N at 73.8 ms

Mın: -165.8 N at 202.6 ms

NEKYM

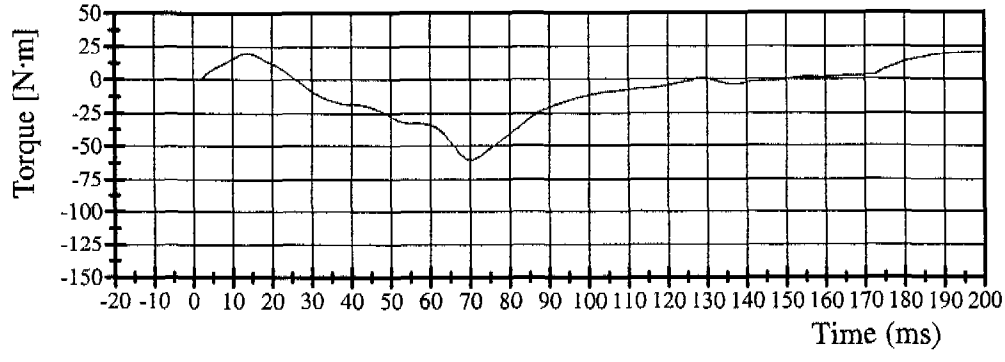


Filter Class· 600

Max: 23 8 N m at 14.0 ms

Mın: -54.2 N m at 69.8 ms

NEKOM



Filter Class: 600

Max: 21.0 N·m at 207.1 ms

Mın: -60 4 N m at 70.0 ms

Transportation Research Center Inc.

572O Thorax Test

HIII 5th Female Serial No. 421 Calibration No. 07 - 1

Test Date 05/20/2002

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21 7 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Pendulum Velocity	6.59 - 6.83 m/s	6.82 m/s	Yes
Maximum Chest Deflection	-58.0 - (-50.0) mm	-52.9 mm	Yes
Peak Impact Probe Force Within Compression Corridor	3900 - 4400 N	4086 N	Yes
Internal Hysteresis	105 % Max.	100 %	Yes
Internal Hysteresis	69 - 85 %	73 %	Yes

Comments:

Technician

Approved

05 20 2002 16 19 12 1668

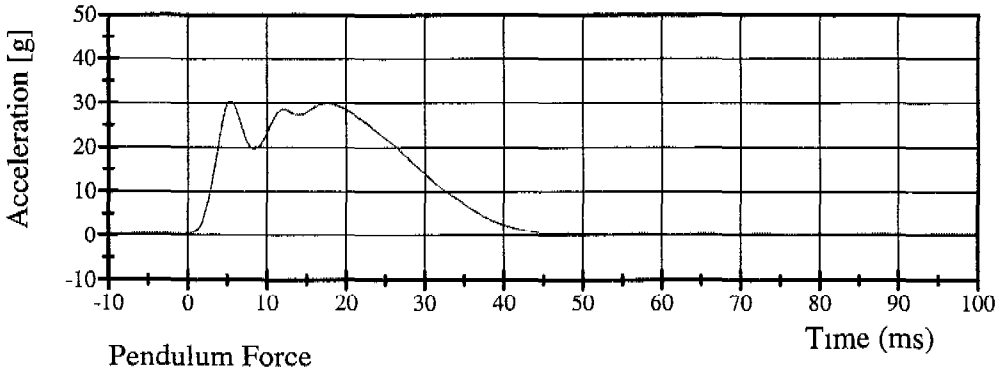
Transportation Research Center Inc.

572O Thorax Test

HIII 5th Female Serial No. 421 Calibration No. 07 - 1

Test Date 05/20/2002

Pendulum Deceleration

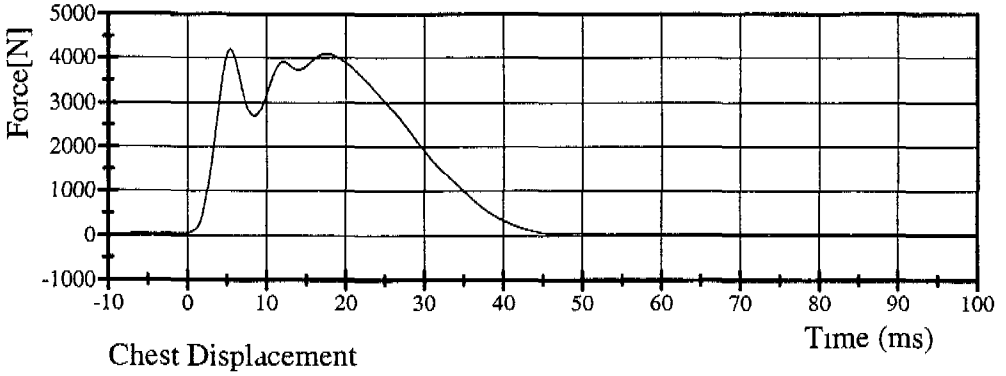


Filter Class: 180

Max: 30.5 g at 5.4 ms

Min: -0.1 g at 237.5 ms

Pendulum Force

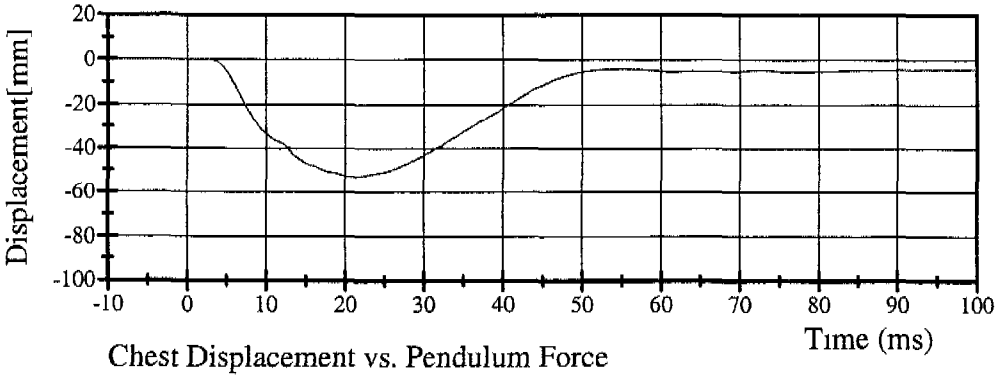


Filter Class: 180

Max. 4182.3 N at 5.4 ms

Min. -13 4 N at 237.5 ms

Chest Displacement

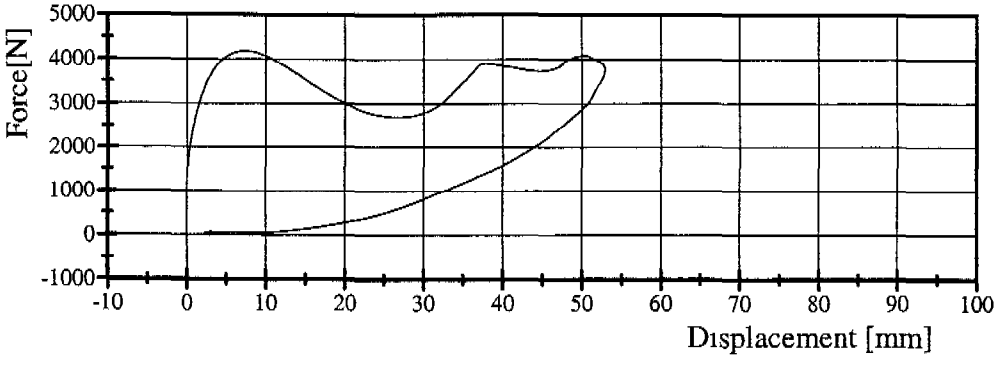


Filter Class: 180

Max: 0.0 mm at 2 2 ms

Min: -52 9 mm at 20 9 ms

Chest Displacement vs. Pendulum Force



05 20 2002 16 19 13 1668

TRANSPORTATION RESEARCH CENTER INC.

TORSO FLEXION TEST

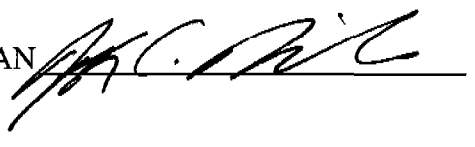
HYBRID III SMALL FEMALE

CAL DATE: 20-May-02

TRC, INC. TEST NO: 421C07TF1 572 O SN 421 TORSO FLEX CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 – 70 %	31 %
INITIAL ANGLE OF UNSUPPORRTED DUMMY	<= 20 DEG. REFERENCED TO VERTICAL	16.1 DEG.
MAXIMUM FORCE AT 45 DEG. DURING 10 SECOND PERIOD	320 – 390 N	353.2 N
RETURN ANGLE @ 3MINUTES		20.1 DEG.
DIFFERENCE BETWEEN RETURN ANGLE & INTIAL ANGLE	+/- 8 DEG OF INTIAL ANGLE	4.0 DEG.

TEST MEETS SPECIFICATIONS

TECHNICIAN 

Transportation Research Center Inc.

572O Left Knee Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Pendulum Velocity	2.07 - 2 13 m/s	2 10 m/s	Yes
Maximum Pendulum Force	3450 - 4060 N	3725 N	Yes

Comments:

Technician

Approved

05 17 2002 10 51 55 1699

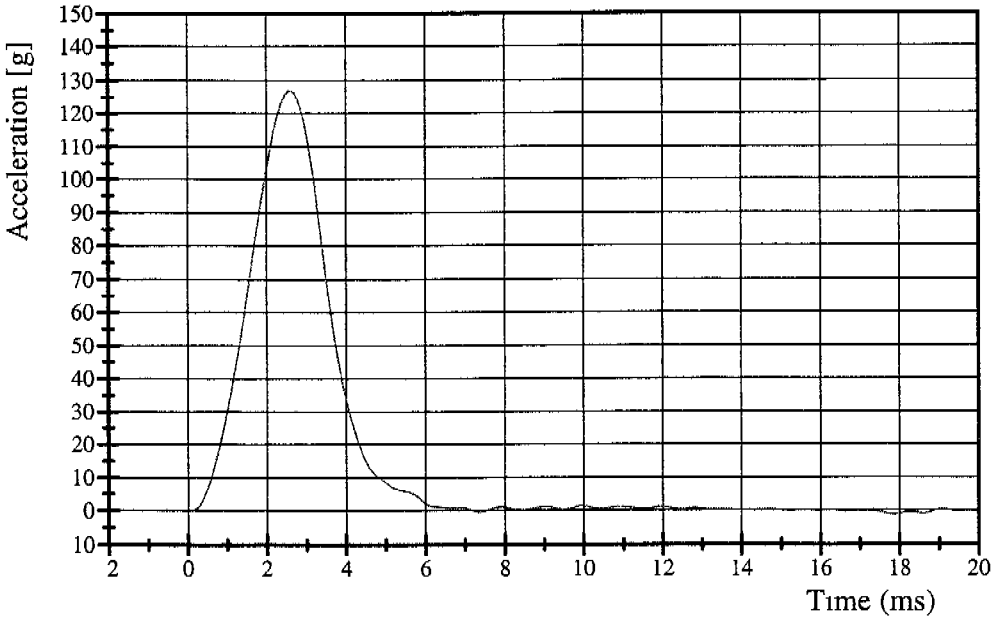
Transportation Research Center Inc.

572O Left Knee Test

HIII 5th Female Serial No. 416 Calibration No. 14 - 1

Test Date 05/17/2002

Pendulum Deceleration

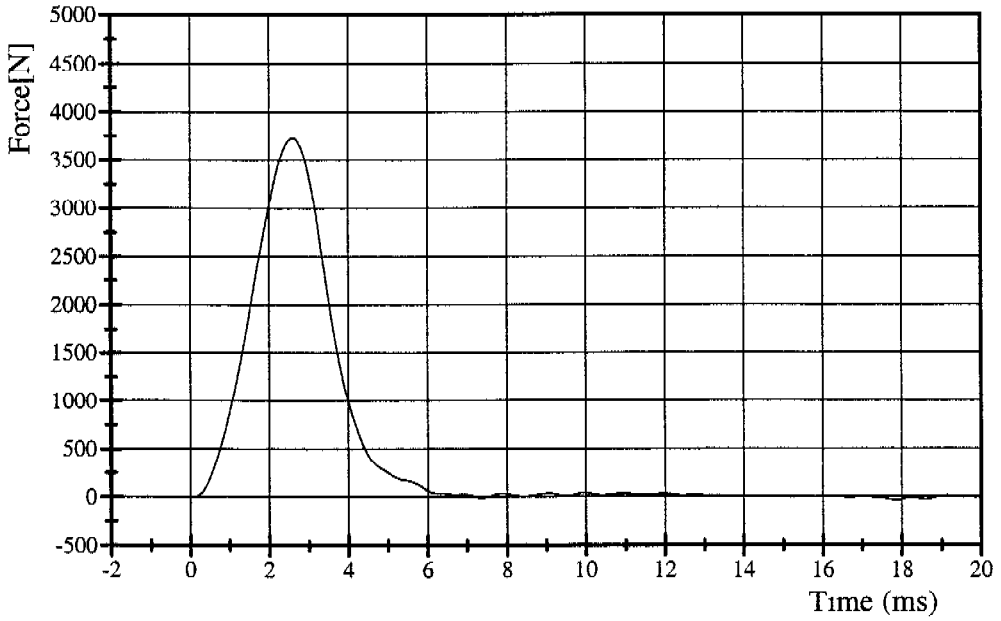


Filter Class: 600

Max: 127.0 g at 2 6 ms

Min: -1.3 g at 17.8 ms

Pendulum Force



Filter Class: 600

Max: 3725.2 N at 2.6 ms

Min -36.9 N at 17.8 ms

05 17 2002 10 51 57 1699

Transportation Research Center Inc.

5720 Right Knee Test

HIII 5th Female Serial No. 421 Calibration No. 07 - 1

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Pendulum Velocity	2.07 - 2 13 m/s	2 12 m/s	Yes
Maximum Pendulum Force	3450 - 4060 N	3732 N	Yes

Comments:

Technician

Approved

05 24 2002 10 06 12 1693

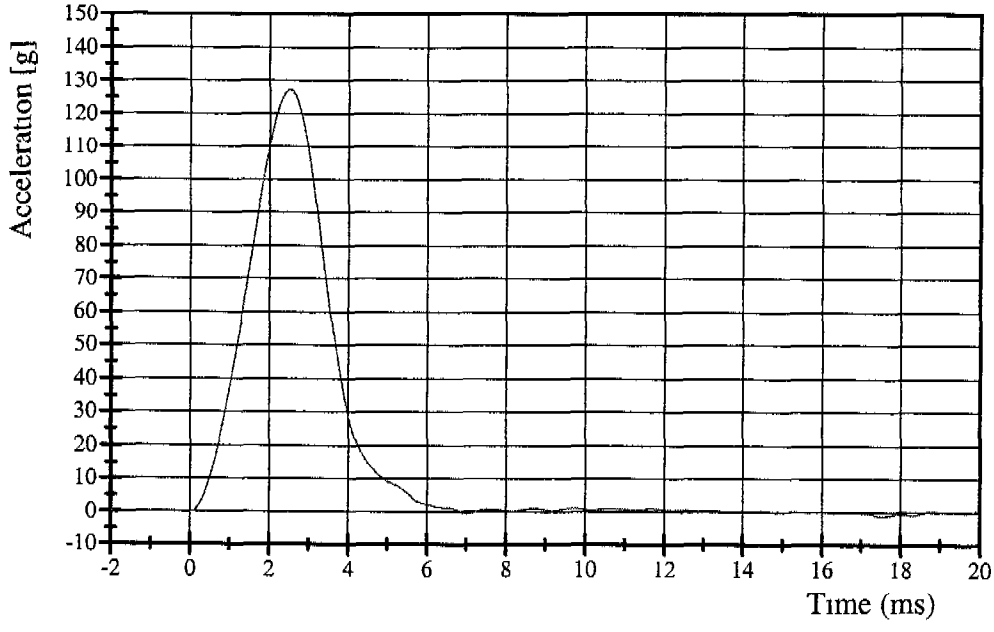
Transportation Research Center Inc.

572O Right Knee Test

HIII 5th Female Serial No. 421 Calibration No. 07 - 1

Test Date 05/17/2002

Pendulum Deceleration

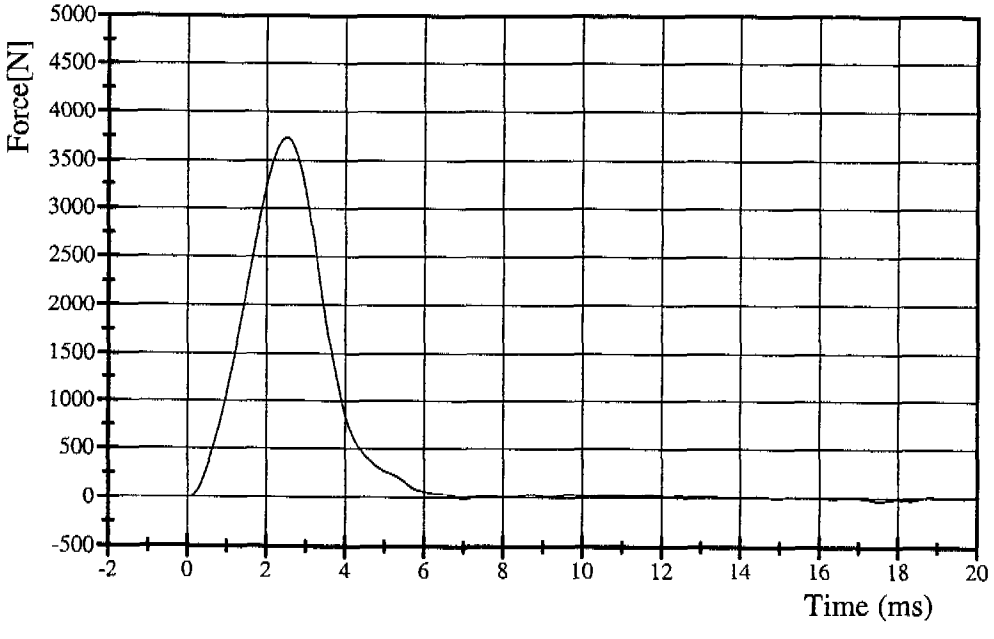


Filter Class: 600

Max· 127.3 g at 2.5 ms

Min. -1.1 g at 17.5 ms

Pendulum Force



Filter Class. 600

Max. 3732.2 N at 2.5 ms

Min. -33.4 N at 17.5 ms

05 24 2002 10 06 13 1693

Transportation Research Center Inc.

572O Left Knee Slider Test

HIII 5th Female Serial No. 421 Calibration No. 07 - 1

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	18 9 - 25.6 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Pendulum Velocity	2.70 - 2.80 m/s	2.76 m/s	Yes
Knee Displacement	-15.5 - (-12.7) mm	-14.3 mm	Yes

Comments:

Technician

Approved

05 24 2002 08 18 50 1701

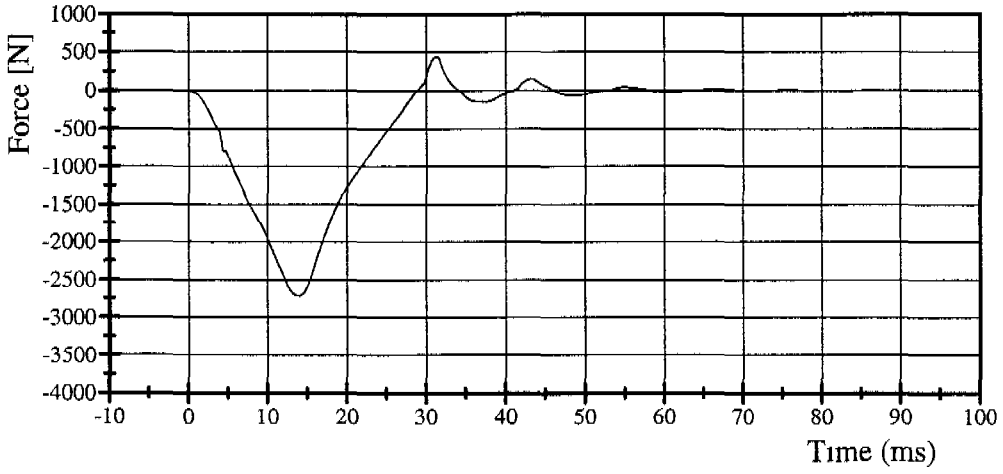
Transportation Research Center Inc.

572O Left Knee Slider Test

HIII 5th Female Serial No. 421 Calibration No. 07 - 1

Test Date 05/17/2002

Femur Force

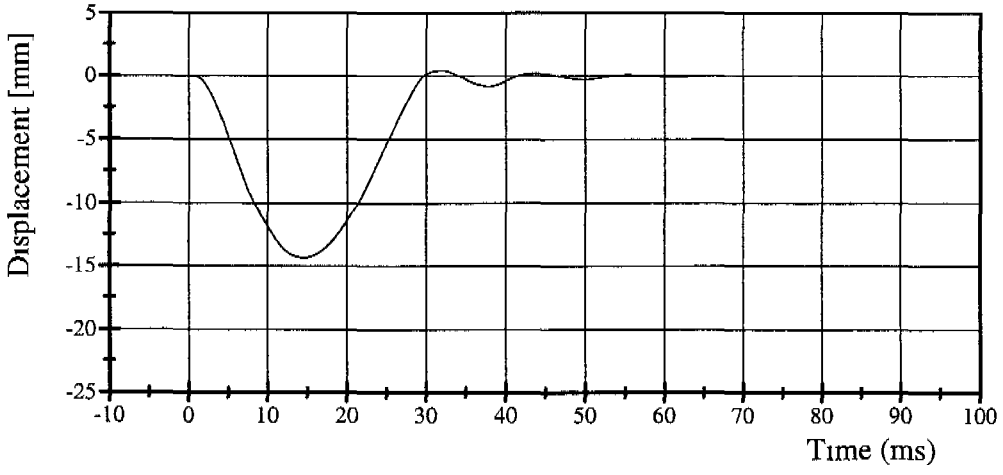


Filter Class: 600

Max: 438.4 N at 31.4 ms

Min -2717.6 N at 13 9 ms

Tibia Displacement

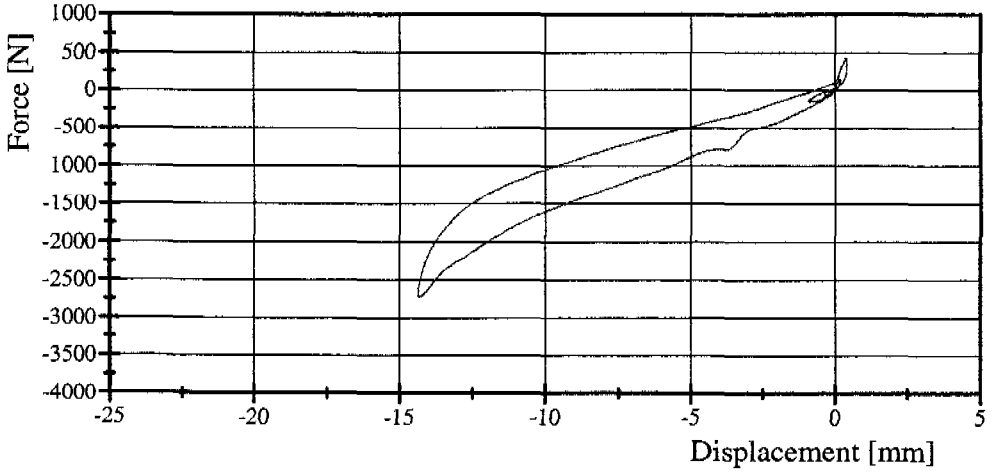


Filter Class: 600

Max: 0 4 mm at 31.8 ms

Min· -14.3 mm at 14 6 ms

Femur Force vs Tibia Displacement



Transportation Research Center Inc.

5720 Right Knee Slider Test

HIII 5th Female Serial No. 421 Calibration No 07 - 1

Test Date 05/17/2002

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25 6 °C	21 7 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Pendulum Velocity	2.70 - 2.80 m/s	2.75 m/s	Yes
Knee Displacement	-15.5 - (-12.7) mm	-14.8 mm	Yes

Comments:

Technician

Approved

05 24 2002 08 17 37 1730

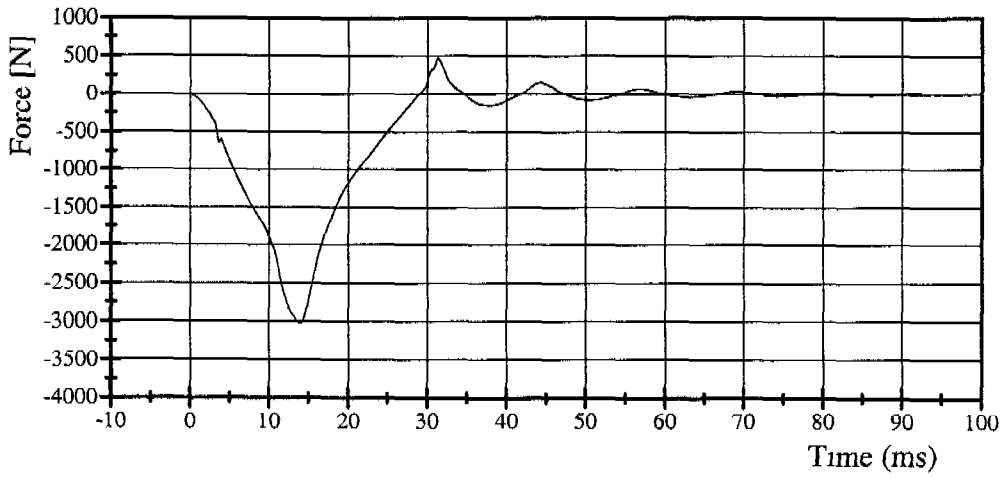
Transportation Research Center Inc.

5720 Right Knee Slider Test

HIII 5th Female Serial No. 421 Calibration No. 07 - 1

Test Date 05/17/2002

Femur Force

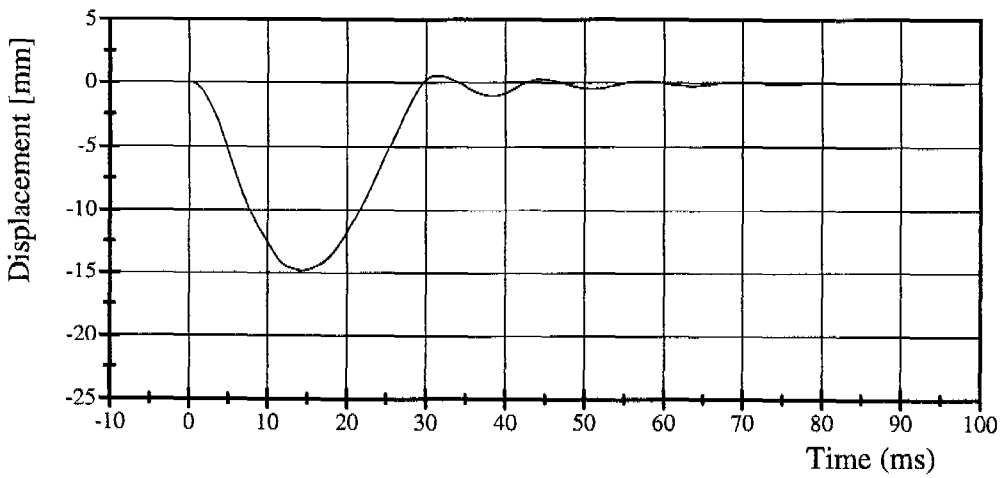


Filter Class: 600

Max: 470 3 N at 31 3 ms

Min: -3025.5 N at 14.0 ms

Tibia Displacement

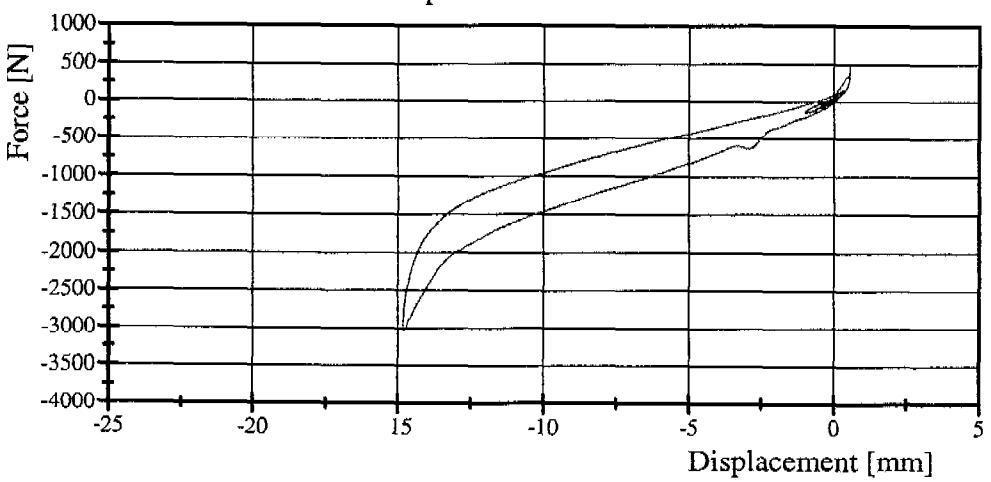


Filter Class: 600

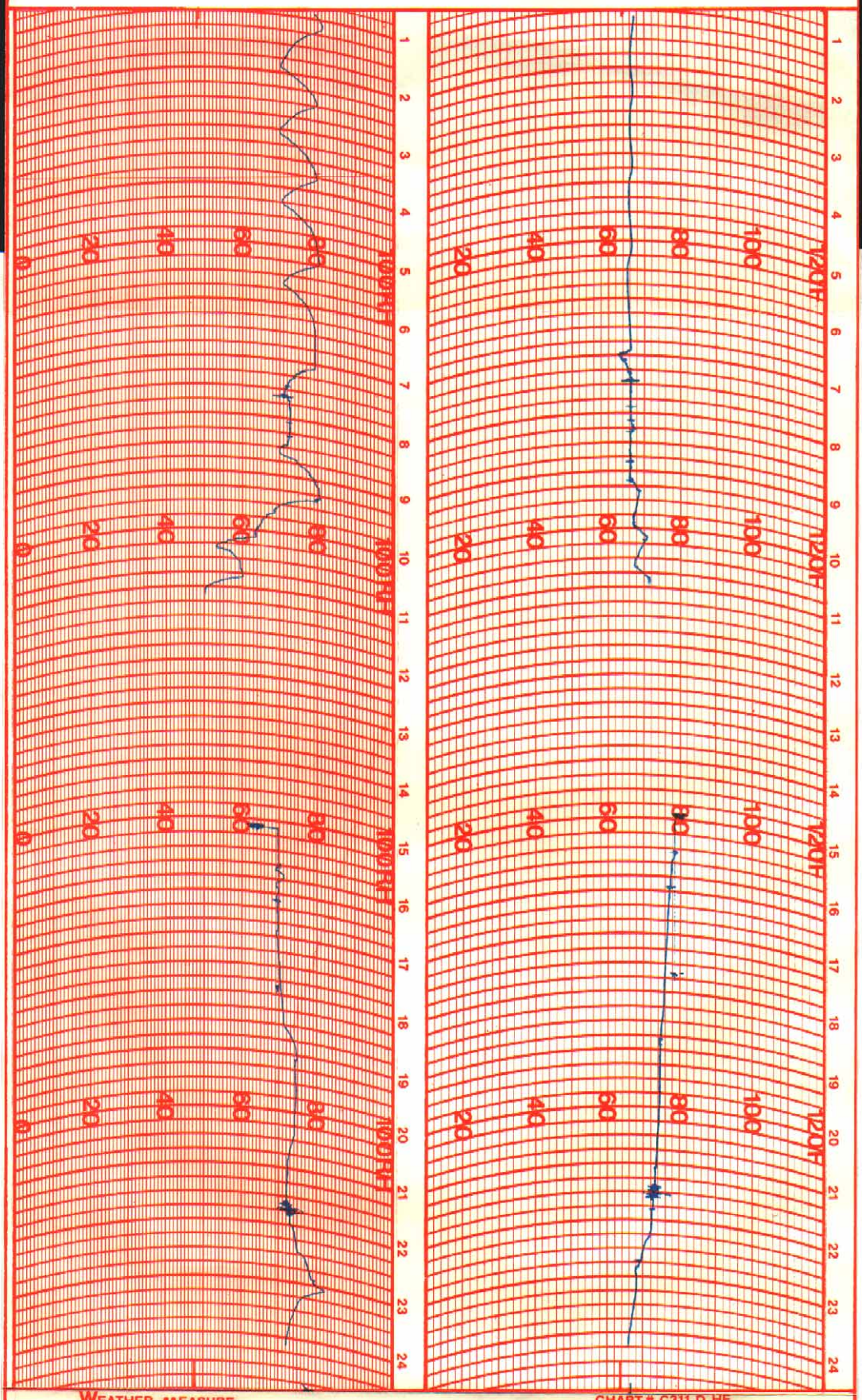
Max. 0 6 mm at 31 7 ms

Min: -14 8 mm at 14.4 ms

Femur Force vs Tibia Displacement



05 24 2002 08 17 38 1730



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

HYGROTHERMOGRAPH
1 DAY

CHART # C311 D HF
PART # 699123

20010641 - 0600

STATION VRTC DATE ON _____ DATE OFF _____

020606