

3190

**1999 Dodge Intrepid
into a 30° Right Angled Barrier
TRC Test Number: 990831-2**

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**Final Report
August - September 1999**

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Section 1.0

Purpose and Test Procedure

Purpose and Test Summary

This 30.1 mph 30° right angled barrier impact test has as the main objective to investigate both vehicle and occupant dynamics during a 30° right angled barrier test. A secondary objective is to gather information on depowered airbags.

This test was conducted with a 1999 Dodge Intrepid that impacted a 30° right angled barrier. The test vehicle contained two instrumented Hybrid III 5th percentile adult female dummies.

Section 2.0

30° Right Angled Barrier Impact Test Summary

Test Procedure

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

The test vehicle was instrumented with twelve (12) accelerometers to measure longitudinal, lateral, and vertical axis accelerations and two (2) inductive pickup switches to measure the driver and passenger airbag fire times. The vehicle's specified impact velocity range was 47.5 to 49.1 kph. The vehicle impacted a 30° right angled barrier.

The test vehicle contained two (2) Hybrid III 5th percentile adult female anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the FMVSS 208 laboratory seating procedure.

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations; chest deflection potentiometers; left and right femur load cells to measure axial forces; and upper neck load cells to measure forces and moments.

The fifty-four (54) data channels were digitally sampled at 12,500 samples per second and processed per Sections 11.13 through 11.15 of the Laboratory Test Procedure.

One (1) real-time panning motion picture camera and fifteen (15) high-speed motion picture cameras recorded the crash event. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera.

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

Test Results Summary

This 30° right angled barrier test was conducted at TRC on August 31, 1999.

The test vehicle, a 1999 Dodge Intrepid, was equipped with airbags at the driver's and right front passenger's seating positions. The vehicle's test weight was 1697.0 kilograms. The vehicle's impact speed was 48.4 kph. The vehicle's maximum static crush was 474 millimeters.

The driver's 15-millisecond HIC was 107 and its 36-millisecond HIC was 159. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 36.7 g. The driver's chest deflection was 32.0 millimeters. The driver's left and right femur maximum compressive forces were 2962 N and 5644 N, respectively.

The right front passenger's 15-millisecond HIC was 121 and its 36-millisecond HIC was 207. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 29.2 g. The passenger's chest deflection was 5.5 millimeters. The right front passenger's left and right femur maximum compressive forces were 3289 N and 3658 N, respectively.

Table 1 Crash Test Summary

Test type:	30° right angled barrier impact
Test date:	08/31/99
Test time:	0827
Ambient temperature at impact area:	22° C
Vehicle year/make/ model/body style:	1999/Dodge/Intrepid/Sedan
Vehicle test weight:	1697.0 kg
Impact angle ¹ :	30°
Impact velocity ² :	
Primary:	48.4 kph
Secondary:	48.4 kph
Maximum static crush:	474 mm
Average rebound:	N/A
Number of cameras:	
Real-time:	1
High-speed:	15
Door opening data:	
Left-front:	N/A
Right-front:	N/A

¹ With respect to tow track centerline.

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

Table 1 Crash Test Summary, Cont'd.

Dummies:	<u>Driver #369</u>	<u>Passenger #289</u>
Type:	Hybrid III 5 th percentile adult female	Hybrid III 5 th percentile adult female
Location:	Left front	Right front
Restraint:	Airbag	Airbag
Number of data channels:	15	15
Front seat data:		
Seat track failure:	None	None
Seat back failure:	None	None
Visible dummy contact points:		
Head:	Airbag, Headrest	Airbag
Chest:	Airbag	Airbag
Abdomen:	None	None
Left knee:	Instrument panel	Instrument panel
Right knee:	Instrument panel	Instrument panel

Table 2 Test Vehicle Information

Vehicle year/make/
model/body style: 1999/Dodge/Intrepid/Sedan

Color: Purple

VIN: 2B3HD46R4XH595575

Engine data:

Placement: Longitudinal/Inline

Cylinders: 6

Displacement: 2.7 liters

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

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

Date vehicle received: N/A

Odometer reading: 83

Dealer's name and address: N/A

Accessories:

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

Certification data from vehicle's label:

Vehicle manufactured by: Chrysler Corp.

Date of manufacture: 10/98

VIN: 2B3HD46R4XH595575

GVWR: 4551 lb.

GAWR: Front: 2595 lb.

Rear: 2031 lb.

Table 2 Test Vehicle Information, Cont'd.

Size of tires on vehicle:	P225/60R16
Spare tire:	Space Saver
Type of front seats:	Split Bench

Tire & capacity data from vehicle's label:

Recommended tire size:	P225/60R16
------------------------	------------

Recommended cold tire pressure:

Front:	32 psi
--------	--------

Rear:	32 psi
-------	--------

Designated Seating Capacity:

Front	2
-------	---

Rear	3
------	---

Total	5
-------	---

Vehicle Cargo Weight:	865 lb.
-----------------------	---------

Test vehicle attitudes:

Delivered attitude:	LF: 736 mm	RF: 738 mm	LR: 750 mm	RR: 750 mm
---------------------	------------	------------	------------	------------

Fully loaded attitude:	LF: 726 mm	RF: 727 mm	LR: 727 mm	RR: 727 mm
------------------------	------------	------------	------------	------------

Pre-test attitude:	LF: 725 mm	RF: 721 mm	LR: 721 mm	RR: 690 mm
--------------------	------------	------------	------------	------------

Post-test attitude:	LF: 712 mm	RF: 774 mm	LR: 698 mm	RR: 740 mm
---------------------	------------	------------	------------	------------

Table 2 Test Vehicle Information, Cont'd.

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

Right front	501.7 kg	Right rear	276.7 kg
Left front	488.9 kg	Left rear	287.1 kg
Total front weight	990.6 kg	(63.7% of total vehicle weight)	
Total rear weight	563.8 kg	(36.3% of total vehicle weight)	
Total delivered weight	1554.4 kg		

Calculation of test vehicle's target test weight:

RCLW = Rated Cargo and Luggage Weight

UDW = Unloaded Delivered Weight (kg)

DSC¹ = Designated Seating Capacity (5)

RCLW² = 52.2 kg

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

Target test weight = 1554.4 + 52.2 + 95.2 = 1701.8 kg

Weight of test vehicle with required dummies and 7.7 kg of cargo weight:

Right front	507.6 kg	Right rear	339.3 kg
Left front	520.3 kg	Left rear	329.8 kg
Total front weight	1027.9 kg	(60.6% of total vehicle weight)	
Total rear weight	669.1 kg	(39.4% of total vehicle weight)	
Total test weight	1697.0 kg	(0.28% under target test weight)	

Weight of ballast secured in vehicle: None

Components removed to meet target test weight: Taillights, rear seat, driver's side right rear door skin (interior), rear fascia, muffler

CG rearward of front wheel centerline: 1138 mm

Vehicle Wheelbase: 2886 mm

¹ The designated seating capacity is determined by counting the number of seat belts installed in the vehicle.

² From vehicle's tire label.

Table 3 Post-Impact Data

Test number: 990831-2
Test date: 08/31/99
Test time: 0827
Test type: 30° right angled barrier impact
Impact angle: 30°
Ambient temperature
at impact area: 22° C
Temperature in
occupant compartment: 21° C
Impact velocity:
Primary: 48.4 kph
Secondary: 48.4 kph
Specified range: 47.5 to 49.1 kph

Distance from vehicle to barrier:

Entering velocity trap: 661 mm
Exiting velocity trap: 51 mm

Test vehicle static crush:

Overall length of test vehicle:

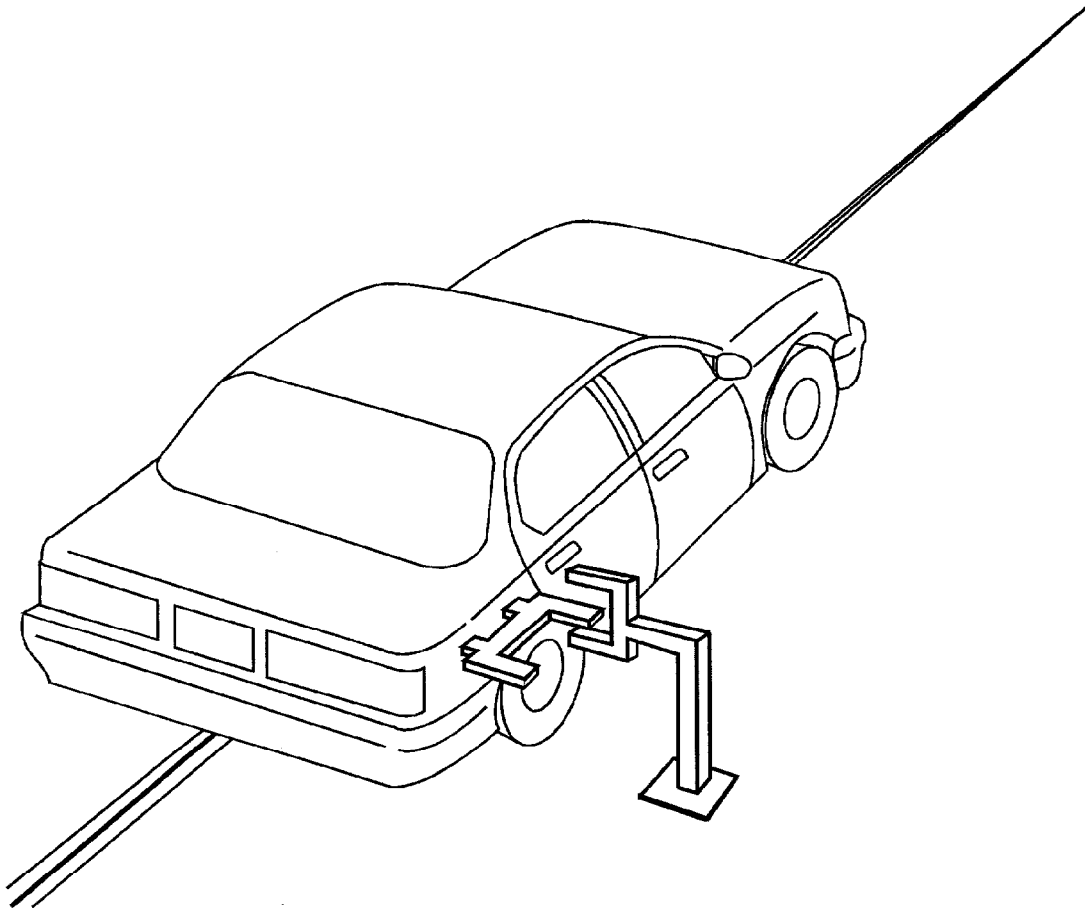
Pre-test:	L: 5080 mm	C: 5325 mm	R: 5088 mm
Post-test:	L: 5075 mm	C: 5090 mm	R: 4566 mm
Total crush:	L: 5 mm	C: 235 mm	R: 522 mm
Average crush:	254 mm		

Test vehicle rebound from 30° right angled barrier:

Distance from test vehicle to barrier:

Post-test:	L: N/A	C: N/A	R: N/A
Average rebound:	N/A		

Figure 1 Impact Velocity Measurement System



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

The vanes have 610-millimeter spacing.

Figure 2 Accident Investigation Division Data for 35 mph 30° Barrier Impact

Test date: 08/31/99
 Vehicle year/make/
 model/body style: 1999/Dodge/Intrepid/Sedan
 VIN: 2B3HD46R4XH595575
 Build date: 10/98
 Test weight: 1697.0 kg
 Vehicle wheelbase: 2886 mm
 Maximum width: 1910 mm
 Front overhang: 1095 mm

Collision Deformation
 Classification (CDC) Code: 12FDEW3

Crush depth
 measurements: C1: 5 mm
 C2: 65 mm
 C3: 179 mm
 C4: 279 mm
 C5: 474 mm
 C6: 522 mm

Midpoint of damage: D: Vehicle Longitudinal Centerline

Length of damaged
 region: L: 1524 mm

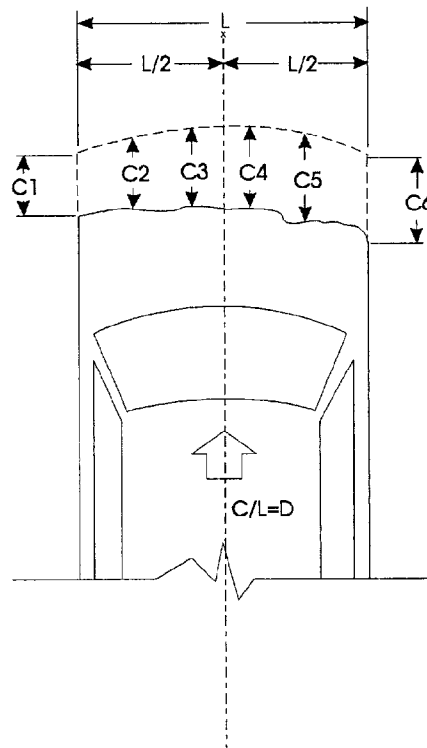
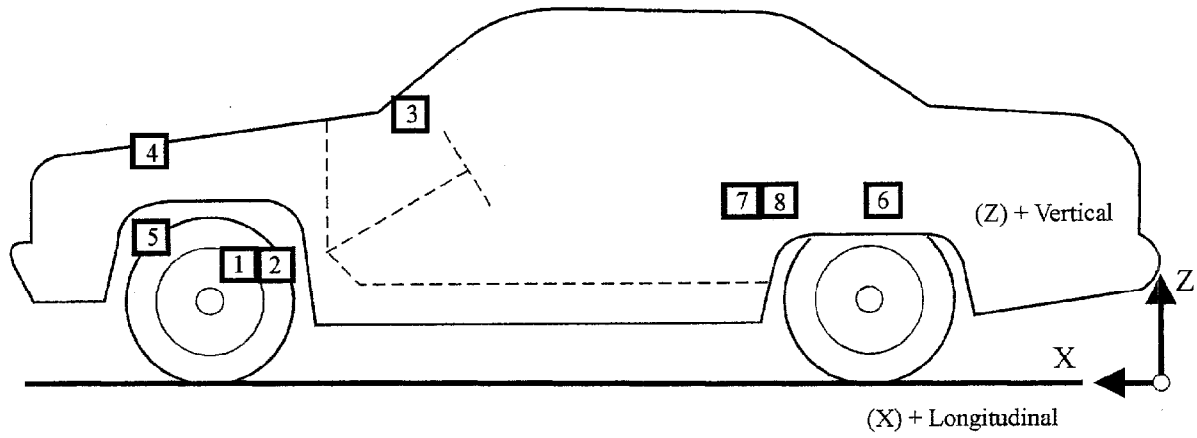
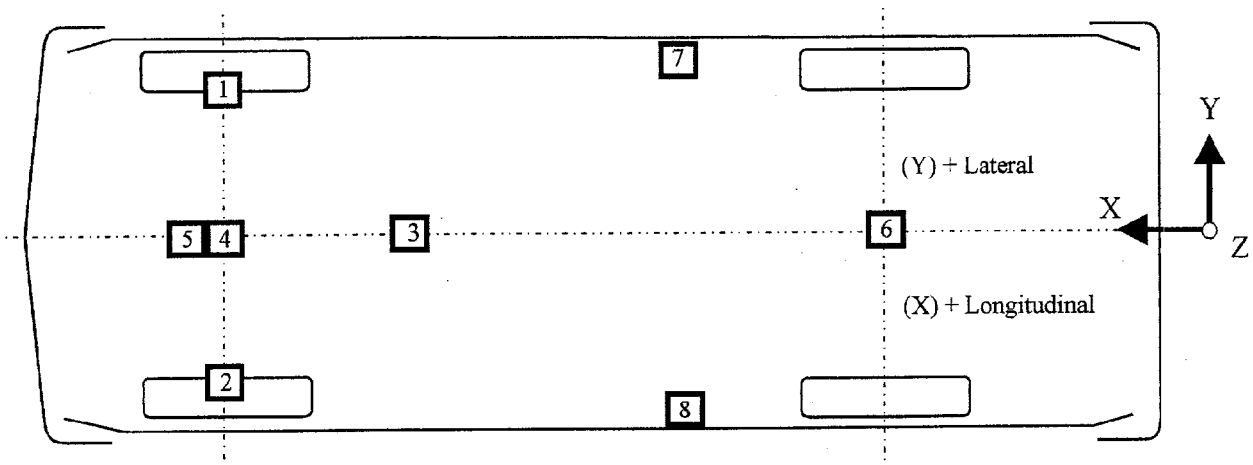


Figure 3 Vehicle Accelerometer Placement



Side View



Bottom View

Table 4 Vehicle Accelerometer Locations and Data Summary

TEST NUMBER: 990831-2		X		Y		Z		POSITIVE DIRECTION	NEGATIVE DIRECTION
No. LOCATION									
1	LEFT BRAKE CALIPER	PRE	4295 mm	700 mm		310 mm			
		POST	4400 mm	650 mm		285 mm			
LONGITUDINAL							54.3 g	@ 49.1 ms	8.0 g @ 71.9 ms
2	RIGHT BRAKE CALIPER	PRE	4295 mm	-700 mm		300 mm			
		POST	4240 mm	-790 mm		NA			
LONGITUDINAL							61.2 g	@ 50.2 ms	19.9 g @ 72.5 ms
3	INSTRUMENT PANEL	PRE	3525 mm	-40 mm		900 mm			
	CENTER	POST	3525 mm	-40 mm		910 mm			
LONGITUDINAL							52.7 g	@ 42.1 ms	21.0 g @ 33.0 ms
LATERAL							14.7 g	@ 38.0 ms	33.2 g @ 32.9 ms
4	ENGINE TOP	PRE	4740 mm	-175 mm		794 mm			
		POST	4636 mm	-145 mm		800 mm			
LONGITUDINAL							60.8 g	@ 42.6 ms	20.1 g @ 56.6 ms
5	ENGINE BOTTOM	PRE	4585 mm	15 mm		180 mm			
		POST	4481 mm	15 mm		176 mm			
LONGITUDINAL							51.7 g	@ 42.2 ms	12.3 g @ 53.8 ms

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

TEST NUMBER: 990831-2									
No. LOCATION		X	Y	Z	POSITIVE DIRECTION		NEGATIVE DIRECTION		
6 REAR VEHICLE CENTERLINE LATERAL VERTICAL	PRE	335 mm	0 mm	510 mm					
	POST	335 mm	0 mm	510 mm					
					10.6 g	@ 61.3 ms	6.3 g	@ 90.2 ms	
7 LEFT REAR SEAT LONGITUDINAL LATERAL	PRE	2194 mm	648 mm	394 mm					
	POST	2194 mm	648 mm	385 mm					
					0.8 g	@ 260.2 ms	31.6 g	@ 67.2 ms	
8 RIGHT REAR SEAT LONGITUDINAL LATERAL	PRE	2194 mm	-648 mm	394 mm					
	POST	2194 mm	-648 mm	418 mm					
					0.4 g	@ 262.2 ms	24.9 g	@ 63.5 ms	
					2.0 g	@ 84.2 ms	10.7 g	@ 63.0 ms	

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

Section 3.0

FMVSS 208 Data

Table 5 Dummy Injury Criteria

	<u>Maximum Acceleration</u>						
	<u>Head</u>				<u>Chest</u>		
	X	Y	Z	R	X	Y	Z
Driver	37.0 g	-63.8 g	54.2 g	90.0 g	-37.3 g	-18.8 g	9.3 g
Passenger	28.1 g	-24.7 g	32.4 g	40.4 g	-27.8 g	25.7 g	11.3 g

	<u>Maximum Femur Compressive Force</u>	
	<u>Left Femur</u>	<u>Right Femur</u>
Driver	2962 N	5644 N
Passenger	3289 N	3658 N

	<u>15-millisecond Head Injury Criteria¹</u>		
	<u>HIC</u>	<u>Time t₁</u>	<u>Time t₂</u>
Driver	107	197.9 ms	200.4 ms
Passenger	121	81.6 ms	96.6 ms

	<u>36-millisecond Head Injury Criteria¹</u>		
	<u>HIC</u>	<u>Time t₁</u>	<u>Time t₂</u>
Driver	159	61.2 ms	97.2 ms
Passenger	207	70.2 ms	106.2 ms

	<u>Chest Maximum Resultant Acceleration²</u>		
	<u>Acceleration</u>	<u>Time t₁</u>	<u>Time t₂</u>
Driver	36.7 g	77.7 ms	80.6 ms
Passenger	29.2 g	93.3 ms	96.3 ms

<u>Maximum Chest Deflection</u>	
Driver	32.0 mm
Passenger	5.5 mm

¹ As defined in FMVSS No. 208

² Defined as equal to or exceeding 0.003 sec. duration

Dummy Kinematic Summary

Driver Dummy

Upon impact, the driver dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head and chest impacted the airbag. While the dummy was still forward in the seat, the head and upper body rotated 90 degrees to the left as the torso displaced to the right. As the dummy rotated to the left, the left arm and elbow impacted the driver's seat back. The back of the driver dummy's head then impacted the passenger dummy's left side. The driver dummy came to rest in an upright position, leaning to the right against the passenger dummy. The dummy's left forearm and elbow were touching the seat back, with the dummy balanced on its right thigh and buttock. The left thigh and buttock were not contacting the driver's seat at all. The driver dummy's head was positioned behind the passenger dummy's head, forward of and between the seats, below the level of the headrests.

Right Front Passenger Dummy

Upon impact, the passenger dummy translated forward, impacting both knees into the instrument panel. The dummy's head and chest then impacted the airbag, as the dummy's head snapped to the left. The dummy rebounded rearward into the passenger seat. The dummy came to rest seated upright in the passenger's seat. The dummy was bent forward from the waist, and leaning to the driver's side of the car. The dummy's head was located between the headrests, in front of the driver dummy's head. The dummy's face was buried in the passenger side airbag.

Section 4.0

Vehicle, Occupant, and Camera Measurements

Figure 4 Pre-test and Post-test Measurement Points

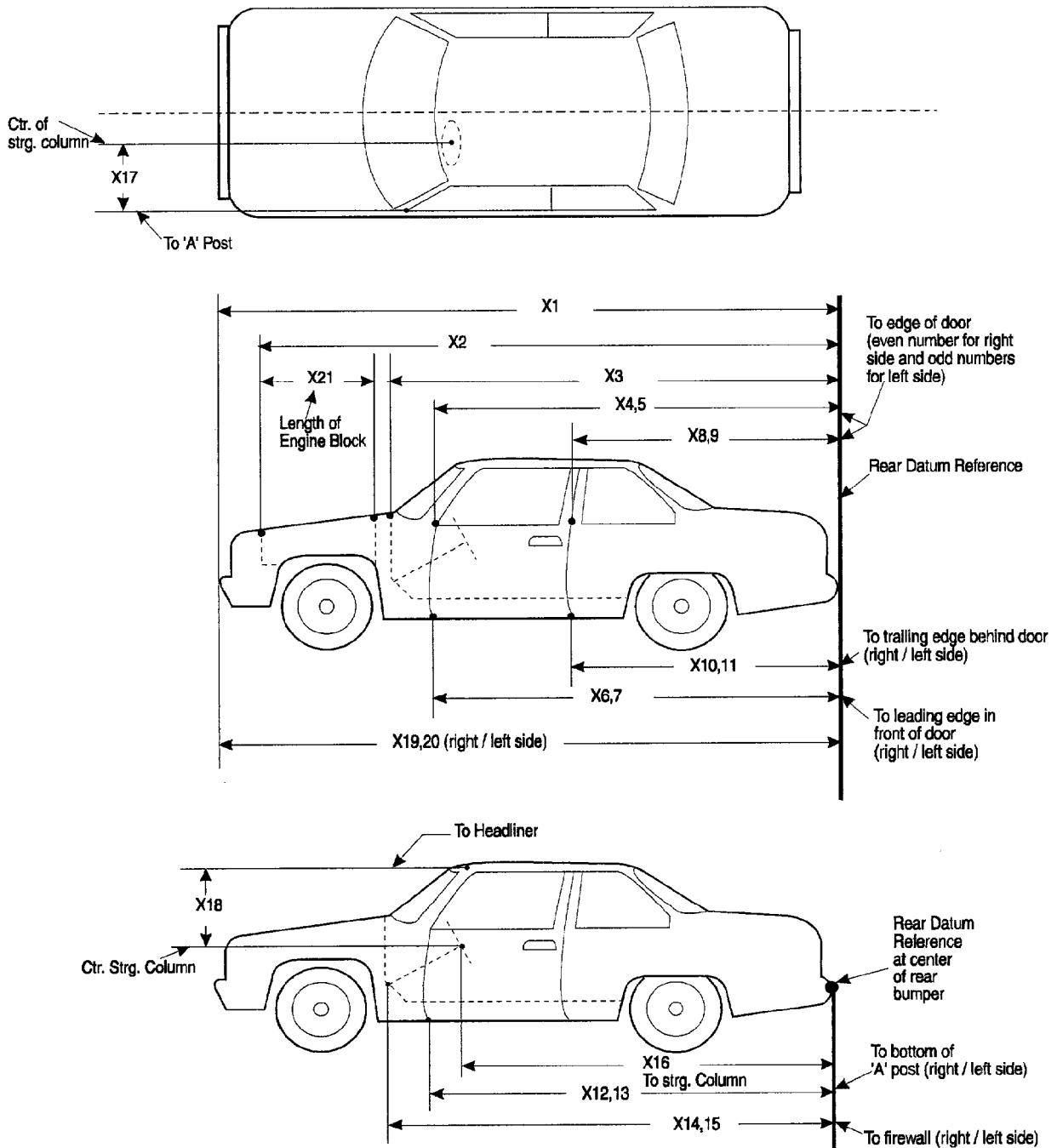


Table 6 Impacted Vehicle Measurements

Vehicle year/make/model/body style: 1999/Dodge/Intrepid/Sedan

Test Number: 990831-2

No.	Type of measurement	Pre-Test	Post-Test	Difference
X1	Total Length of Veh. at Centerline	5325	5090	235
X2	Rear Surface of Veh. to Front of Engine Block	4769	4640	129
X3	Rear Surface of Veh. to Firewall	4321	4320	1
X4	Rear Surface of Veh. to Upper Leading Edge of Right Door	3759	3755	4
X5	Rear Surface of Veh. to Upper Leading Edge of Left Door	3764	3765	-1
X6	Rear Surface of Veh. to Lower Leading Edge of Right Door	3695	3695	0
X7	Rear Surface of Veh. to Lower Leading Edge of Left Door	3705	3695	10
X8	Rear Surface of Veh. to Upper Trailing Edge of Right Door	2662	2658	4
X9	Rear Surface of Veh. to Upper Trailing Edge of Left Door	2666	2666	0
X10	Rear Surface of Veh. to Lower Trailing Edge of Right Door	2659	2662	-3
X11	Rear Surface of Veh. to Lower Trailing Edge of Left Door	2667	2664	3
X12	Rear Surface of Veh. to Bottom of " A " Post on Right Side	3674	3660	14
X13	Rear Surface of Veh. to Bottom of " A " Post on Left Side	3667	3665	2
X14	Rear Surface of Veh. to Firewall--Right Side	4347	4360	-13
X15	Rear Surface of Vehicle to Firewall --Left Side	4339	4355	-16
X16	Rear Surface of Veh. to Steering Wheel Center	3256	3225	31
X17	Center of Steering Column to " A " Post	359	375	-16
X18	Center of Steering Column to Headliner	400	390	10
X19	Rear Surface of Veh. to Right Side of Front Bumper	5088	4566	522
X20	Rear Surface of Veh. to Left Side of Front Bumper	5080	5075	5
X21	Length of Engine Block	440	440	0

Figure 5 Vehicle Target Locations

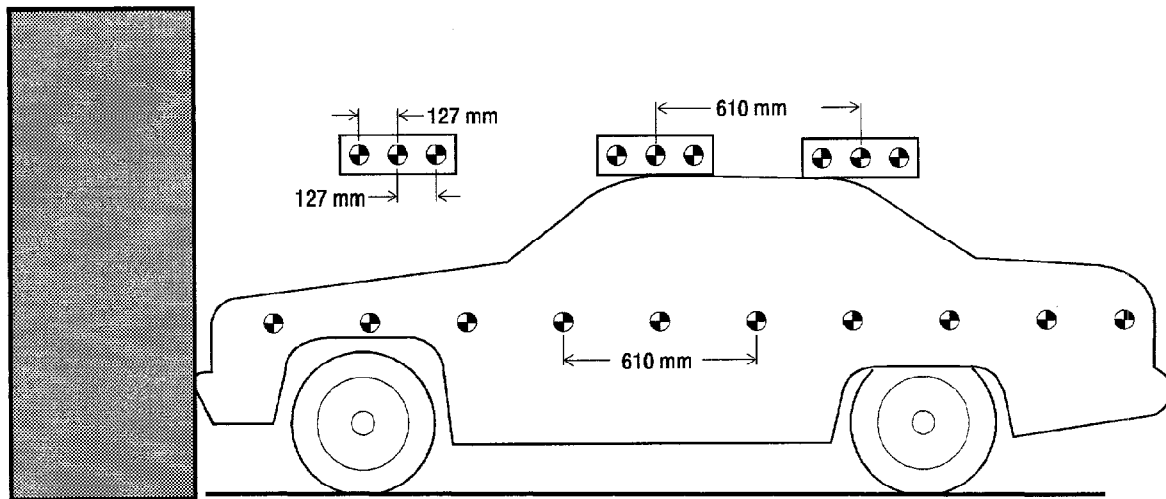


Figure 6 Dummy Measurement Locations for Front Seat Occupants

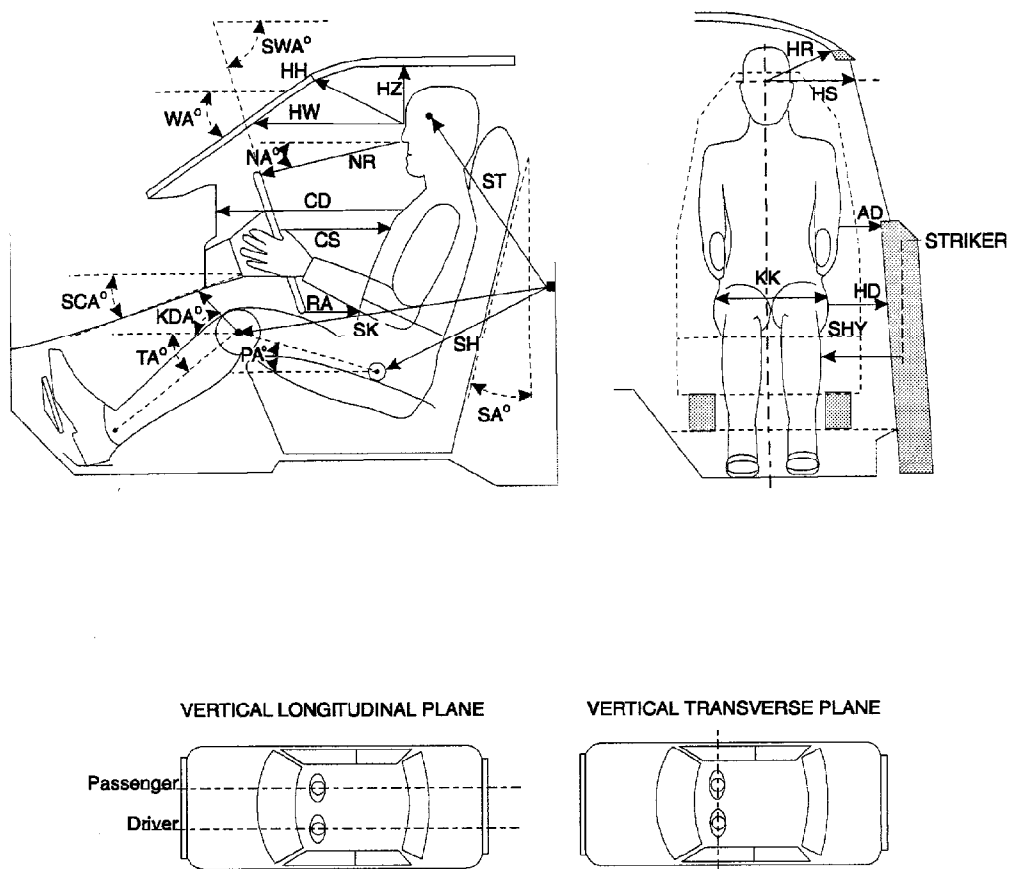


Table 7 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #369)	Passenger (Serial #289)
WA	Windshield angle	21.4°	N/A
SWA	Steering wheel angle	70.4°	N/A
SCA	Steering column angle	19.6°	N/A
SA	Seat back angle	25.5°	21.2°
HZ	Head to roof	222 mm	179 mm
HH	Head to header	305 mm	274 mm
HW	Head to windshield	712 mm	623 mm
HR	Head to side header	265 mm	226 mm
NR	Nose to rim	263 mm	N/A
NA	Nose to rim angle	4.4°	N/A
CD	Chest to dash	468 mm	435 mm
CS	Steering wheel to chest	215 mm	N/A
RA	Rim to abdomen	122 mm	N/A
KDL	Left knee to dash	140 mm	133 mm
KDR	Right knee to dash	155 mm	125 mm
KDA	Outboard knee to dash angle	52.9°	54.6°
PA	Pelvic angle	21.8°	21.2°
TA	Tibial angle	24.0°	47.9°
KK	Knee to knee	235 mm	230 mm
ST ¹	Striker to head	434 mm	493 mm
	Striker to head angle	-69.2°	-69.9°
SK ¹	Striker to knee	633 mm	629 mm
	Striker to knee angle	5.3°	1.0°
SH ¹	Striker to H-point	320 mm	322 mm
	Striker to H-point angle	29.0°	16.6°
SHY	Striker to H-point (Y dir.)	314 mm	295 mm
HS	Head to side window	367 mm	345 mm
HD	H-point to door	226 mm	196 mm
AD	Arm to door	179 mm	163 mm

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

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

Figure 7 Camera Positions

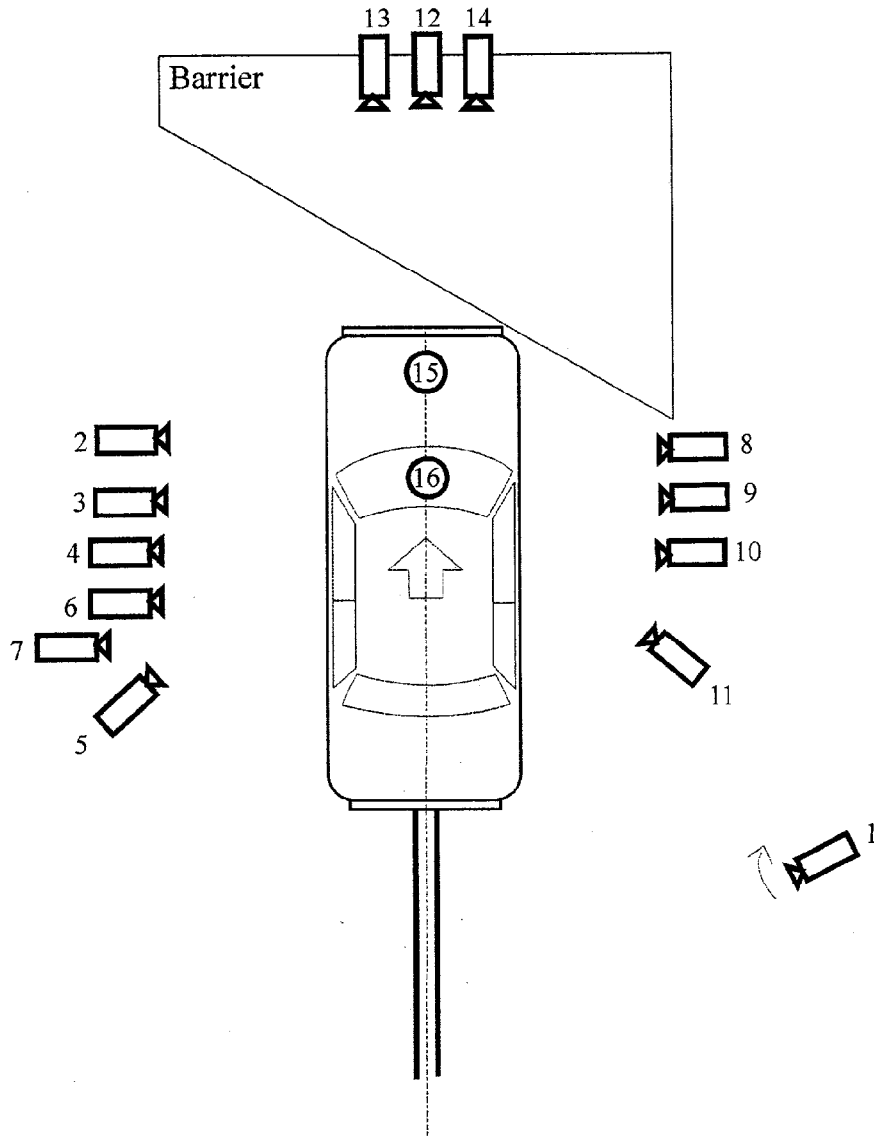


Table 8 Motion Picture Camera Locations

Vehicle year/make/model/body style: 1999/Dodge/Intrepid/Sedan

Test number: 990831-2

Camera Number	View	Camera Positions ¹			Camera Angle ^{2,3}	Film Plane to Head Target	Camera Lens	Film Speed
		X	Y	Z				
1	Real-time panning/doc	NA	NA	NA	NA	NA	Zoom	24 frames/s
2	Left vehicle crush	765 mm	6200 mm	830 mm	0	NA	25 mm	1000 frames/s
3	Left windshield intrusion	995 mm	7250 mm	1220 mm	0	7010 mm	50 mm	997 frames/s
4	Driver kinematics	1580 mm	7250 mm	1470 mm	-3.6	6950 mm	25 mm	1010 frames/s
5	Driver kinematics angle	3350 mm	2175 mm	1950 mm	-22	2000 mm	25 mm	1072 frames/s
6	Steering column motion upper	2690 mm	7440 mm	2580 mm	-14.1	7040 mm	25 mm	997 frames/s
7	Steering column motion lower	2690 mm	7440 mm	1624 mm	-6.3	6930 mm	25 mm	995 frames/s
8	Right wide	2435 mm	-8400 mm	939 mm	0	7040 mm	13 mm	1002 frames/s
9	Right windshield intrusion	1080 mm	-7400 mm	1210 mm	0	7150 mm	50 mm	1062 frames/s
10	Passenger kinematics	3540 mm	-1800 mm	1470 mm	-5.3	6950 mm	25 mm	1005 frames/s
11	Passenger kinematics angle	3540 mm	-7300 mm	1975 mm	-22.4	2160 mm	25 mm	1000 frames/s
12	Windshield front view	-390 mm	0 mm	2300 mm	-36.4	3950 mm	8.5 mm	987 frames/s
13	Driver - front view	-390 mm	380 mm	2300 mm	-30	3950 mm	25 mm	995 frames/s
14	Passenger - front view	-390 mm	-345 mm	2300 mm	-31.3	3950 mm	25 mm	1000 frames/s
15	Overhead tight	1960 mm	0 mm	5700 mm	90	NA	25 mm	1007 frames/s
16	Overhead wide	2290 mm	0 mm	5700 mm	90	NA	13 mm	997 frames/s

¹ +X: Film plane forward of barrier face

+Y: Film plane to left of monorail centerline

+Z: Film plane above ground level

² +Angle: Film plane angled upward from horizontal plane

³ Camera angles were not recorded.

Appendix A

Photographs

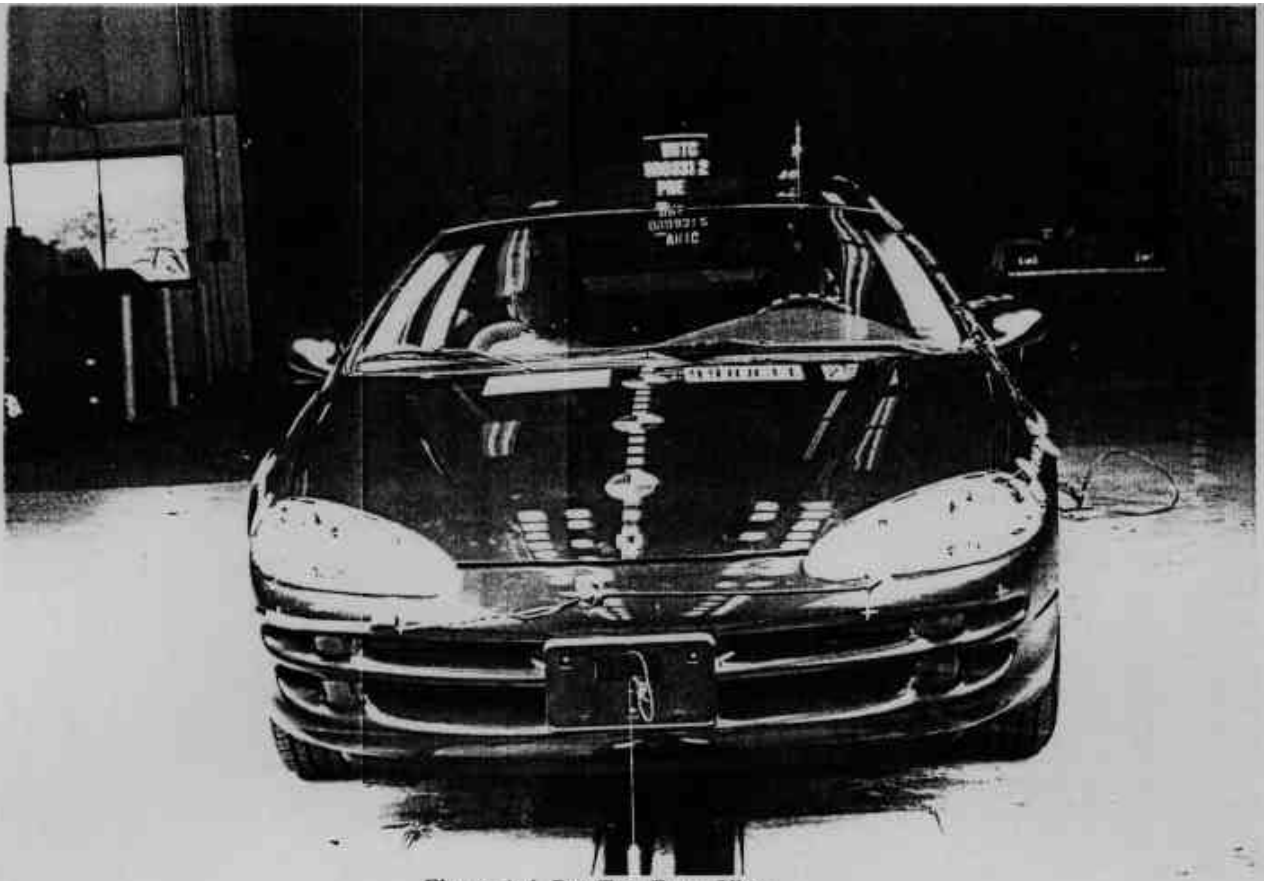


Figure A-1 Pre-Test Front View



Figure A-2 Post-Test Front View



Figure A-3 Pre-Test Left Side View



Figure A-4 Post-Test Left Side View



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



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

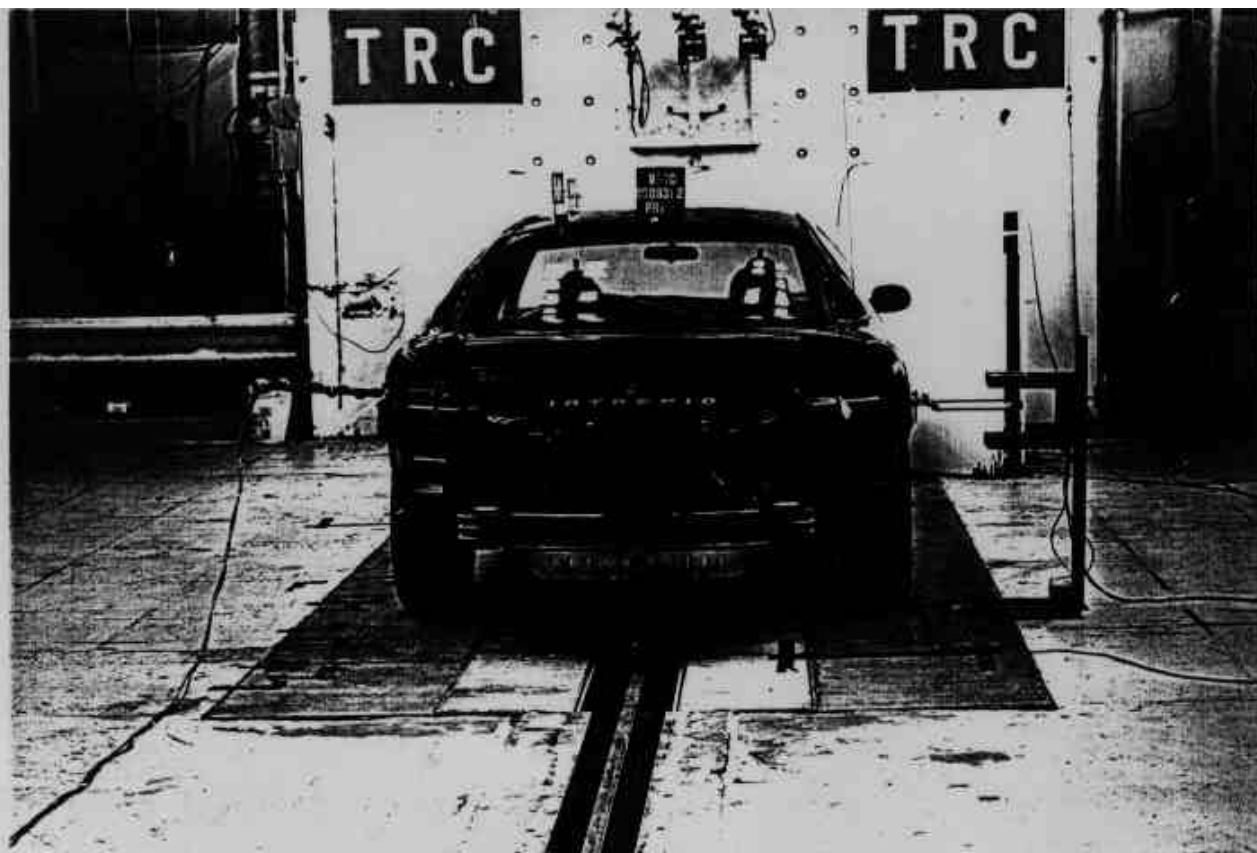


Figure A-7 Pre-Test Rear View



Figure A-8 Post-Test Rear View



Figure A-9 Pre-Test Right Side View



Figure A-10 Post-Test Right Side View



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



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

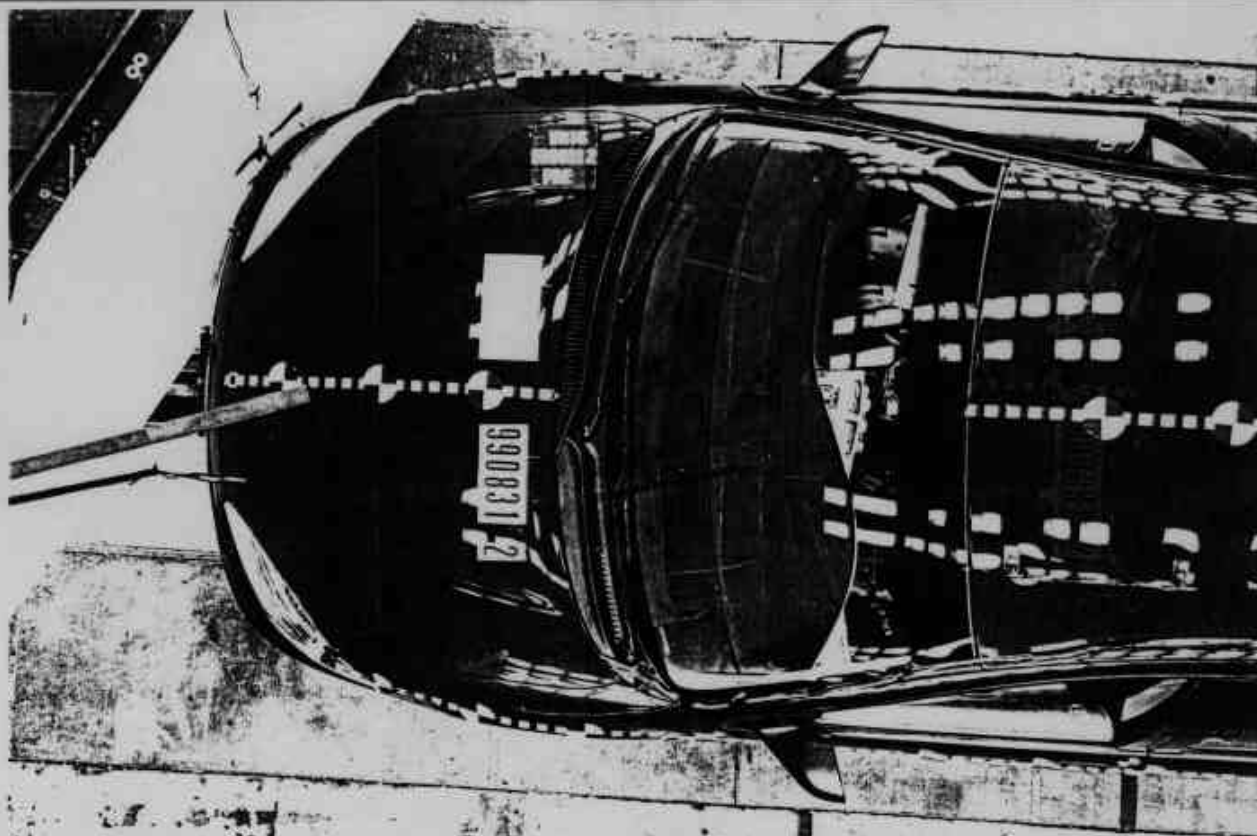


Figure A-13 Pre-Test Overhead View

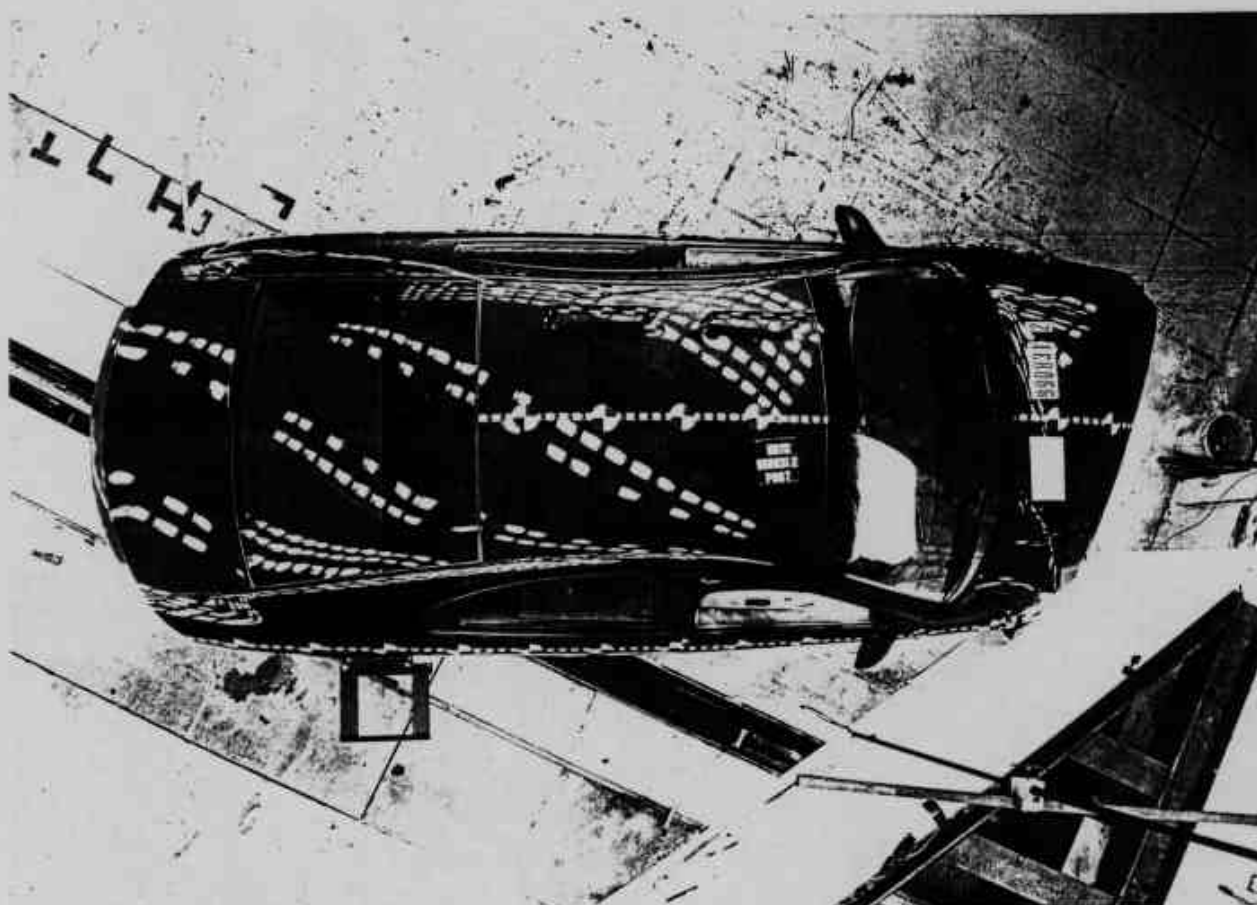


Figure A-14 Post-Test Overhead View

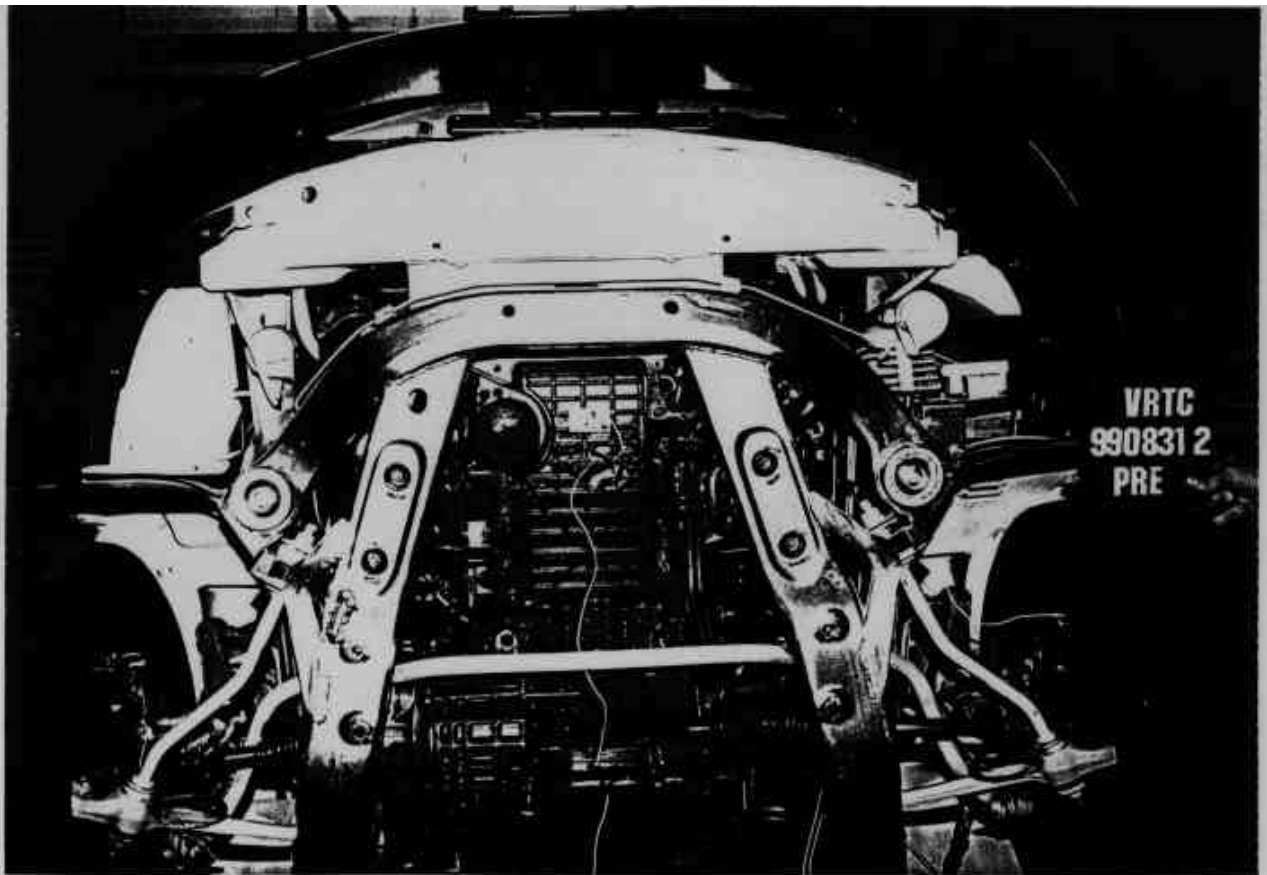


Figure A-15 Pre-Test Underbody - View 1

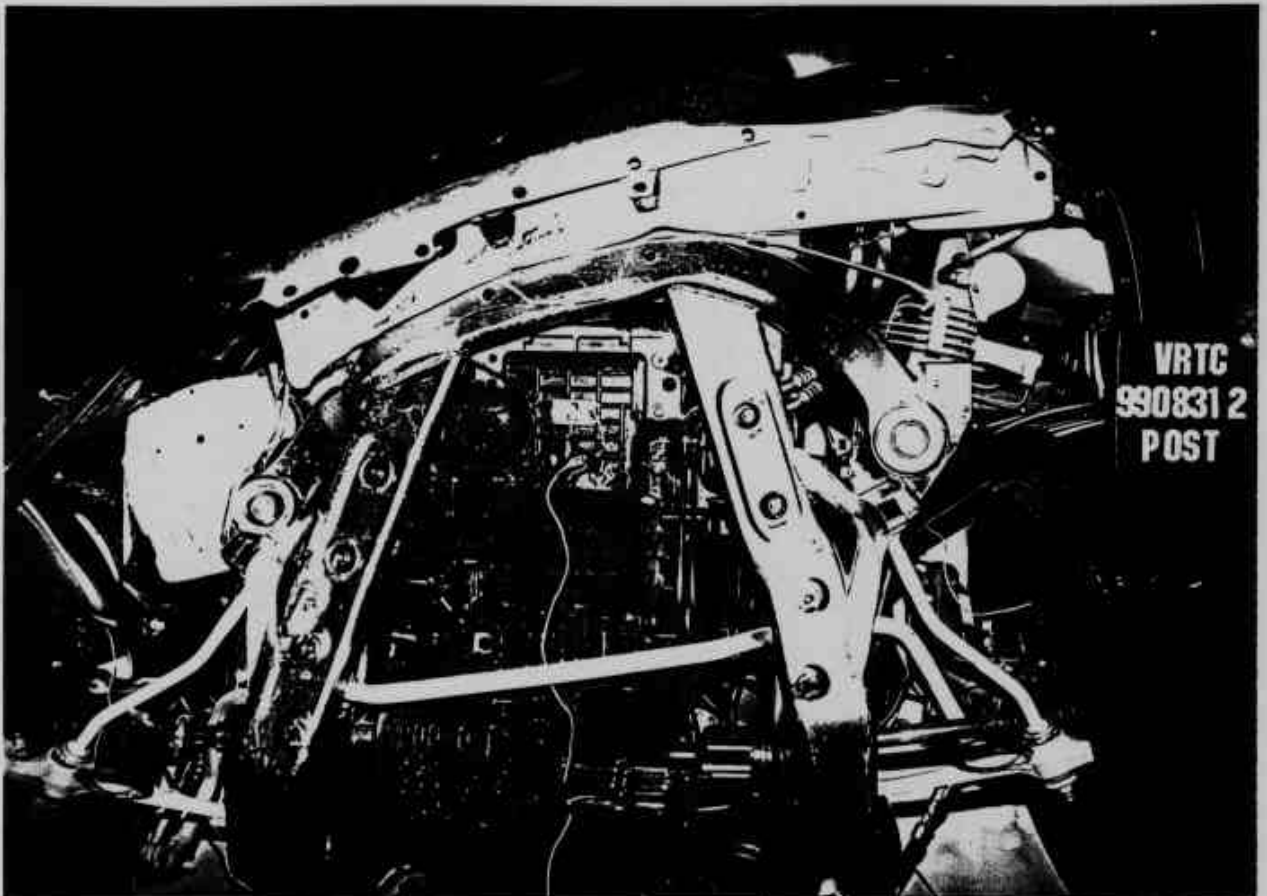


Figure A-16 Post-Test Underbody - View 1

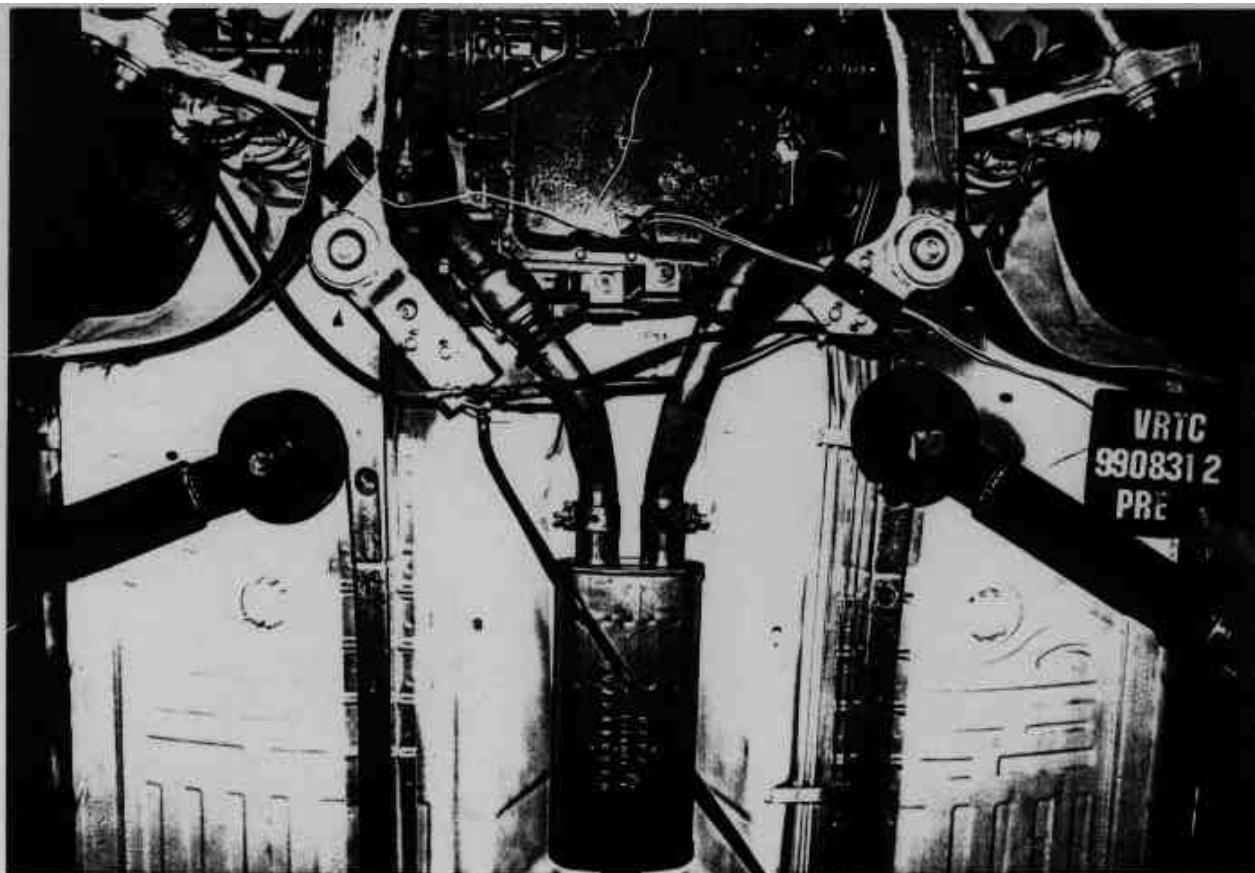


Figure A-17 Pre-Test Underbody - View 2

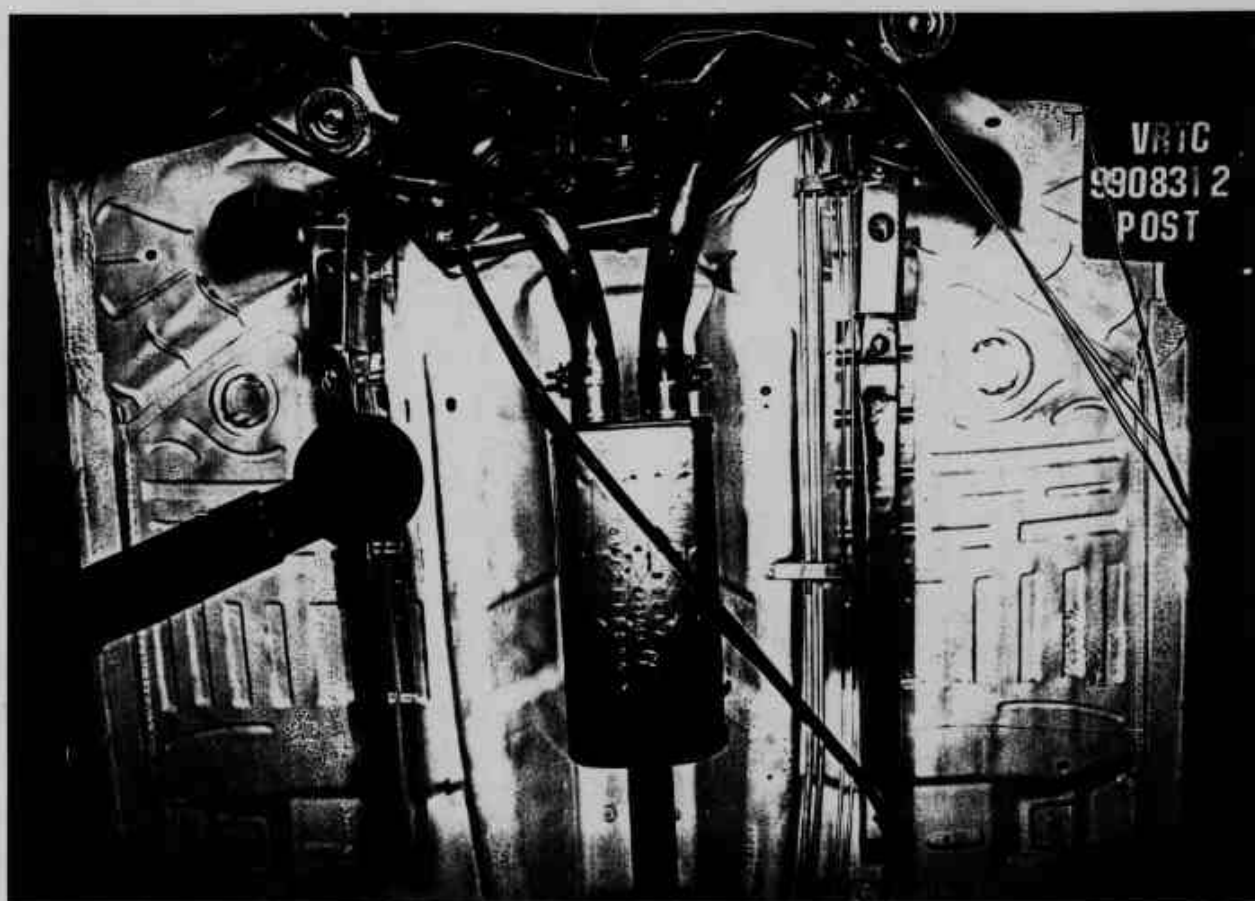


Figure A-18 Post-Test Underbody - View 2

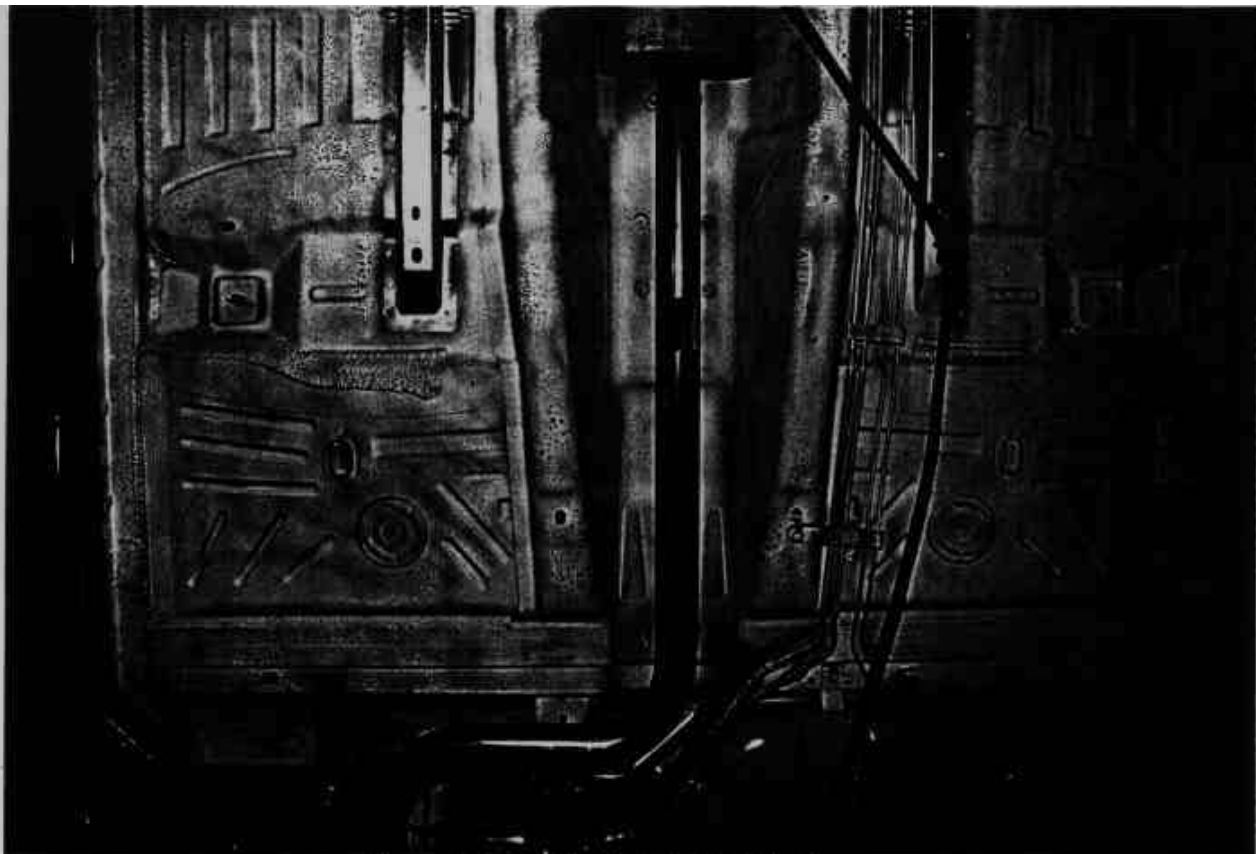


Figure A-19 Pre-Test Underbody - View 3



Figure A-20 Post-Test Underbody - View 3

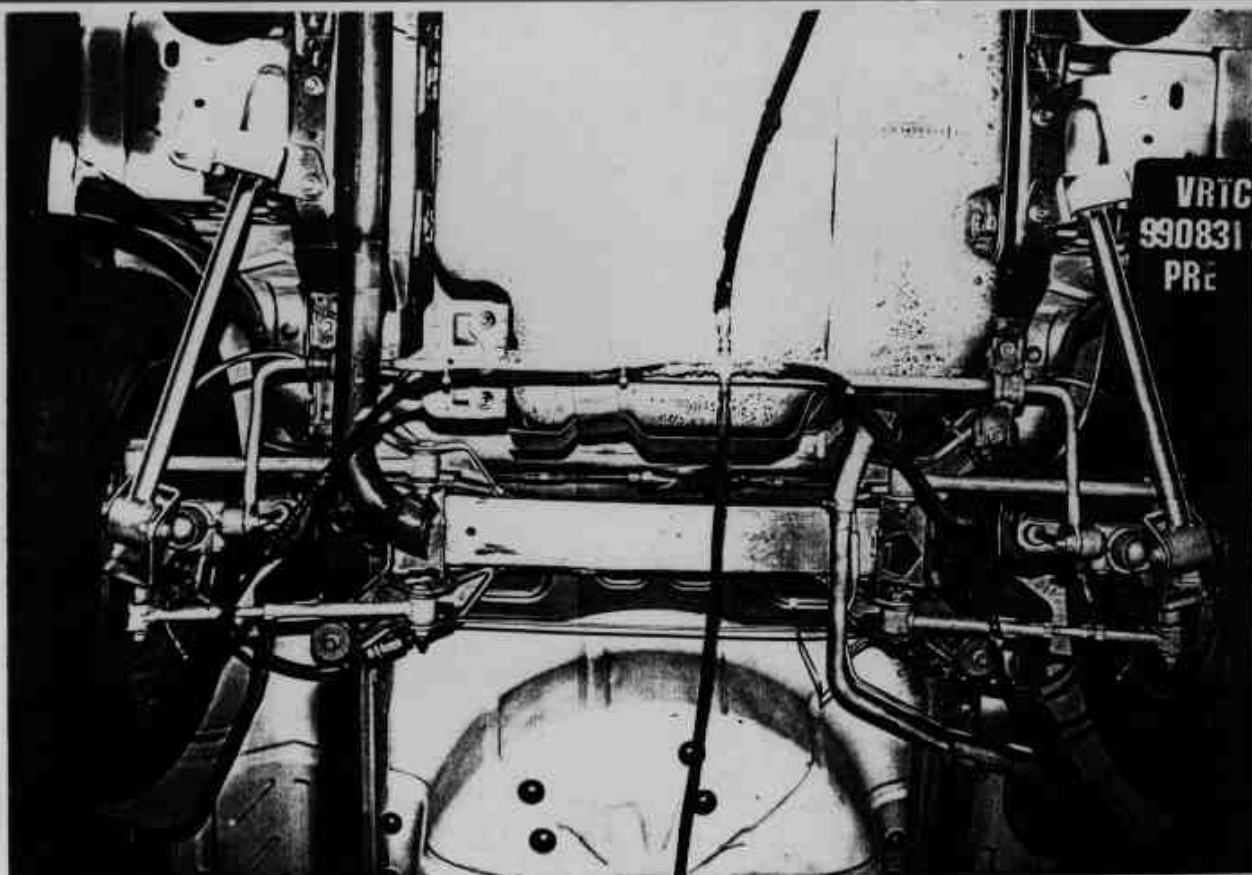


Figure A-21 Pre-Test Underbody - View 4

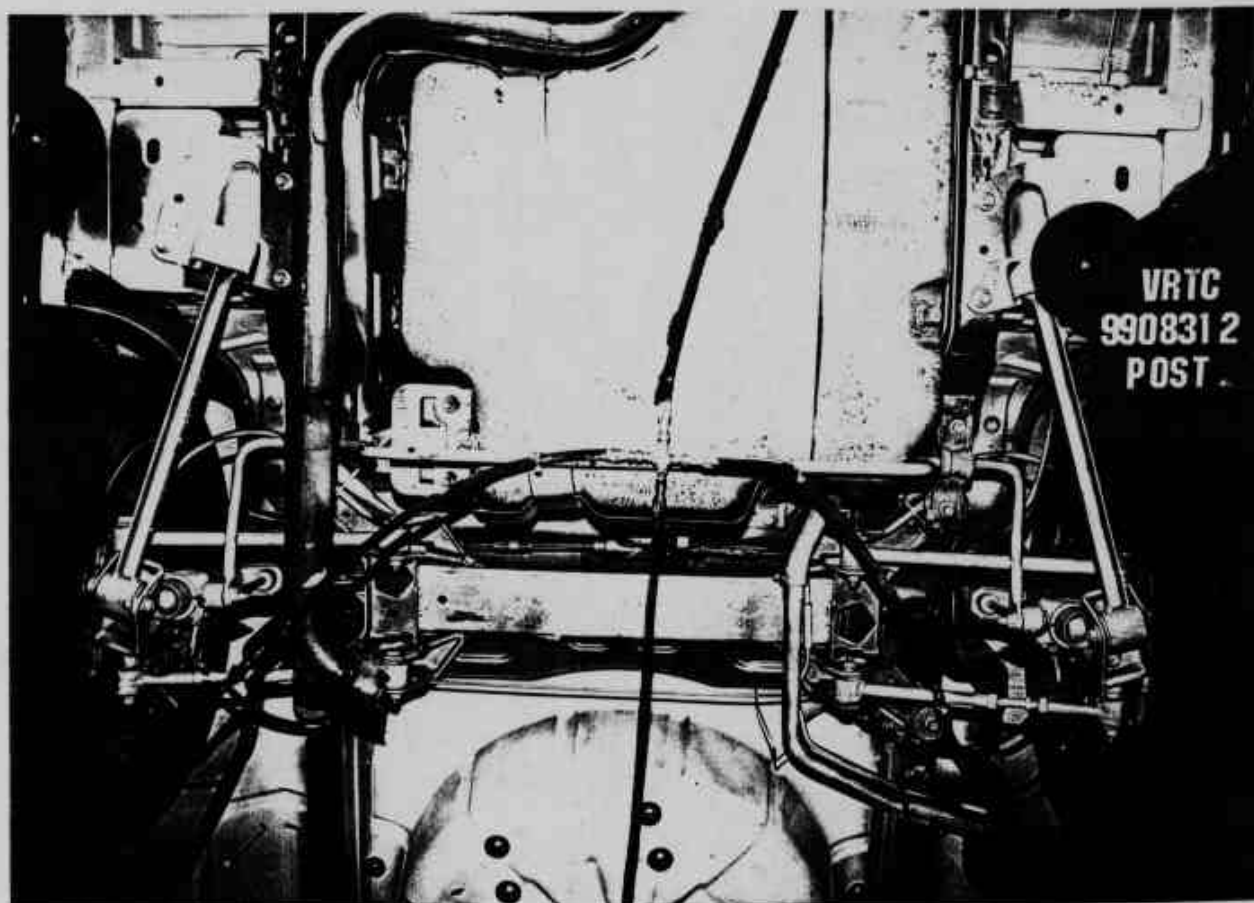


Figure A-22 Post-Test Underbody - View 4

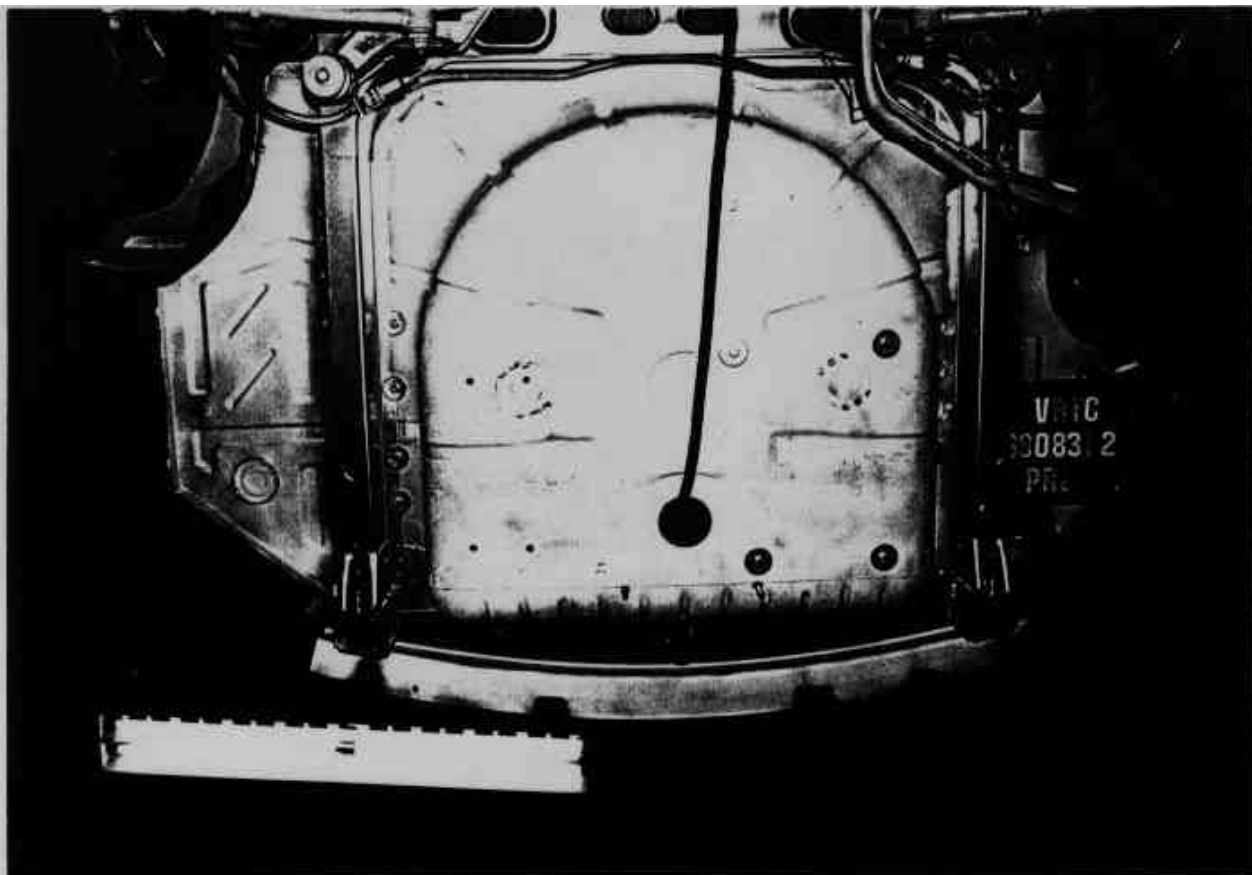


Figure A-23 Pre-Test Underbody - View 5

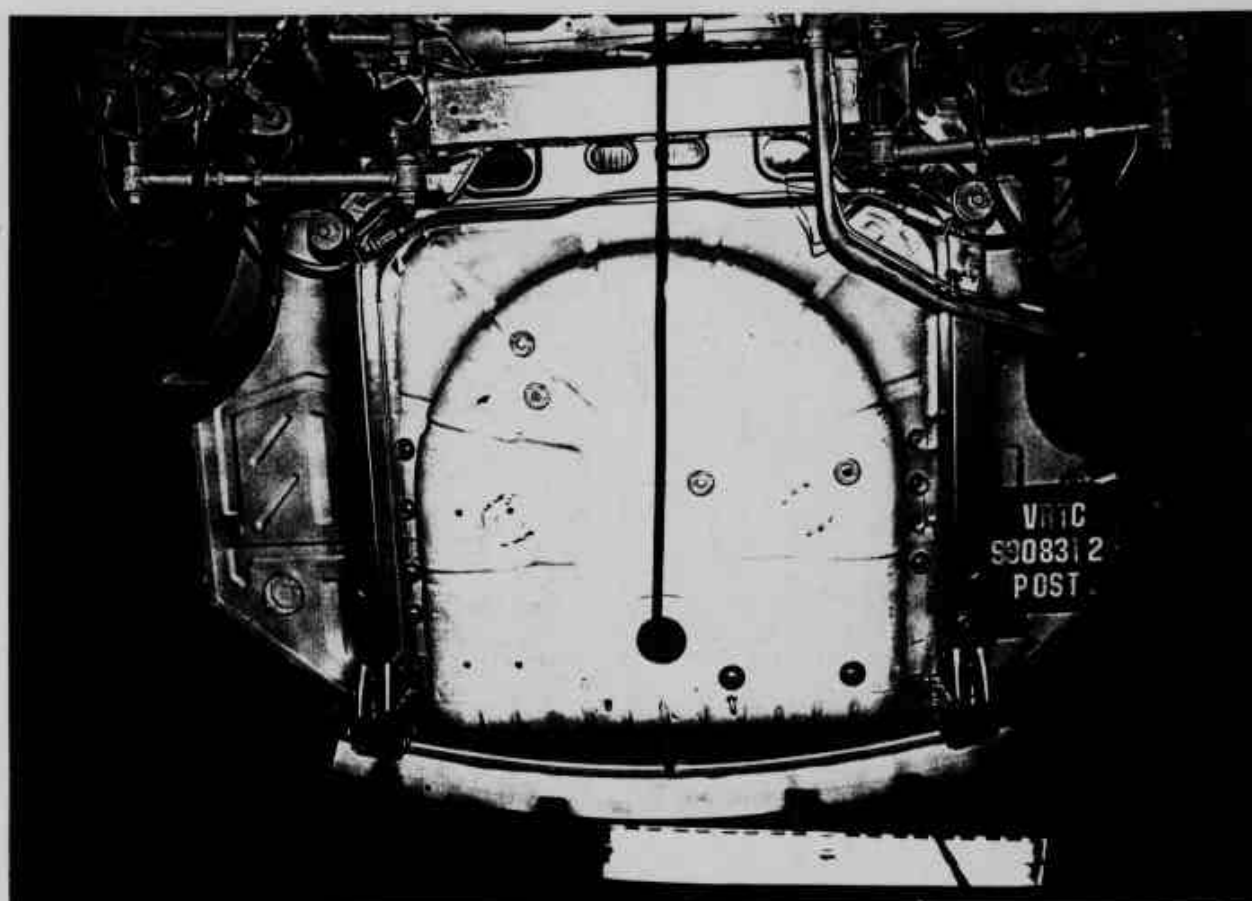


Figure A-24 Post-Test Underbody - View 5



Figure A-25 Pre-Test Engine Compartment View



Figure A-26 Post-Test Engine Compartment View

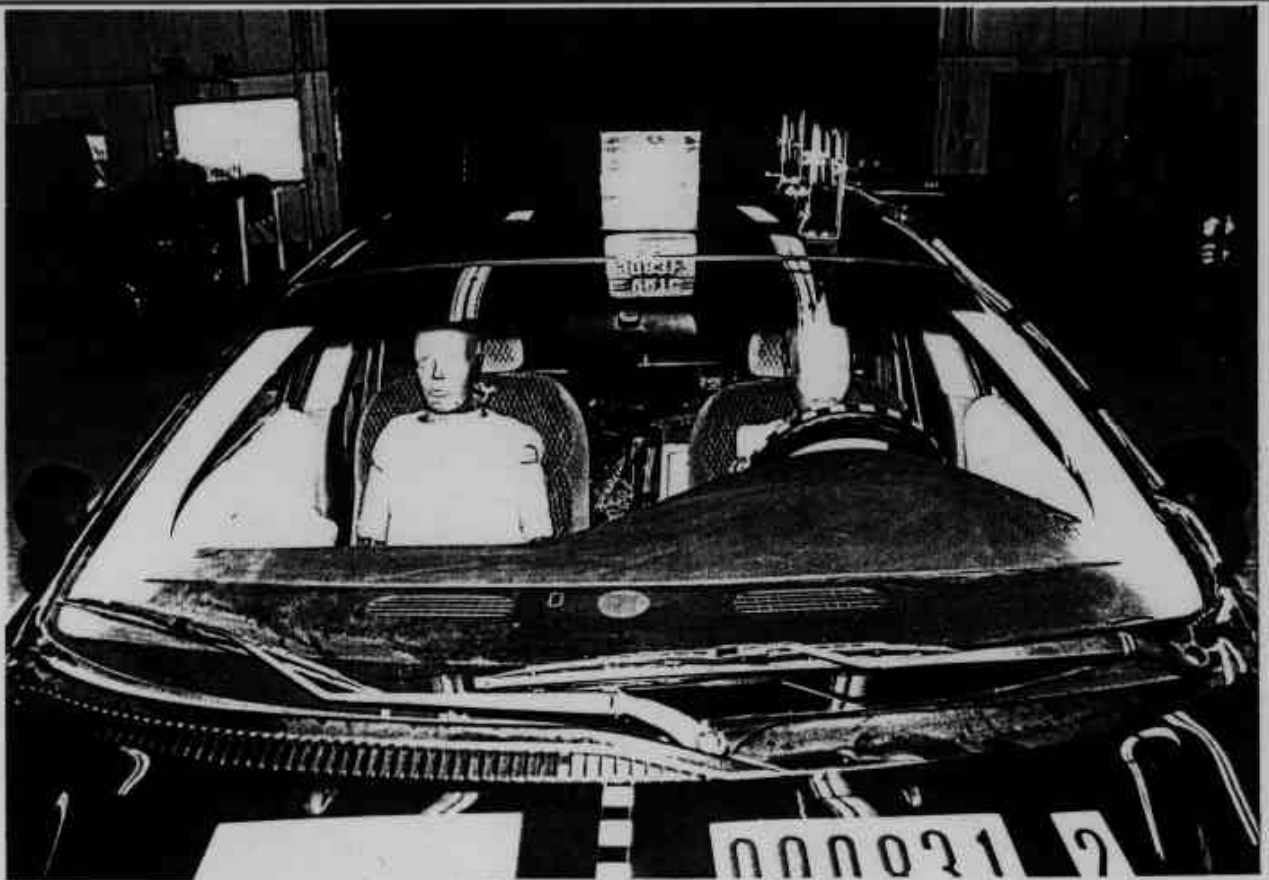


Figure A-27 Pre-Test Windshield - View 1

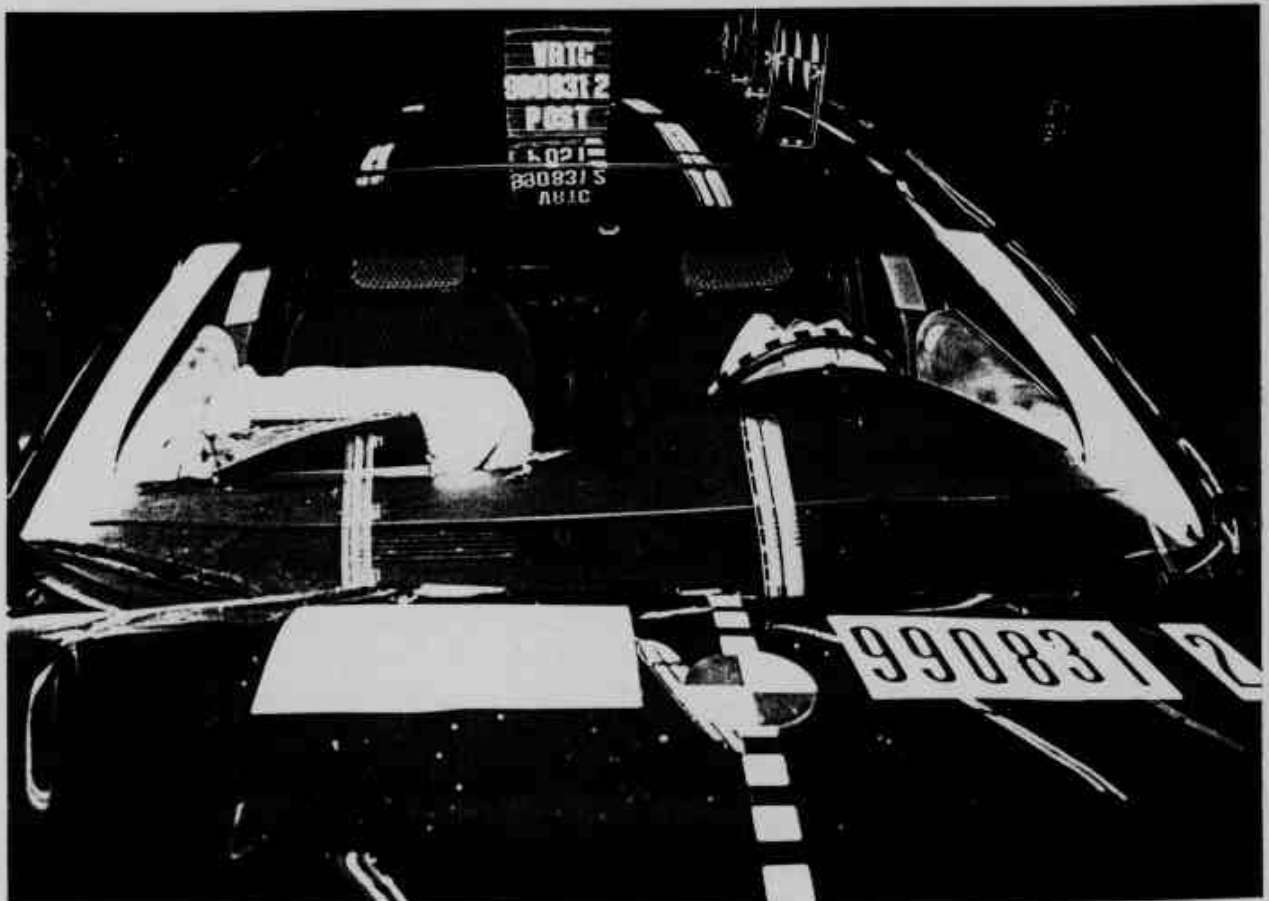


Figure A-28 Post-Test Windshield - View 1

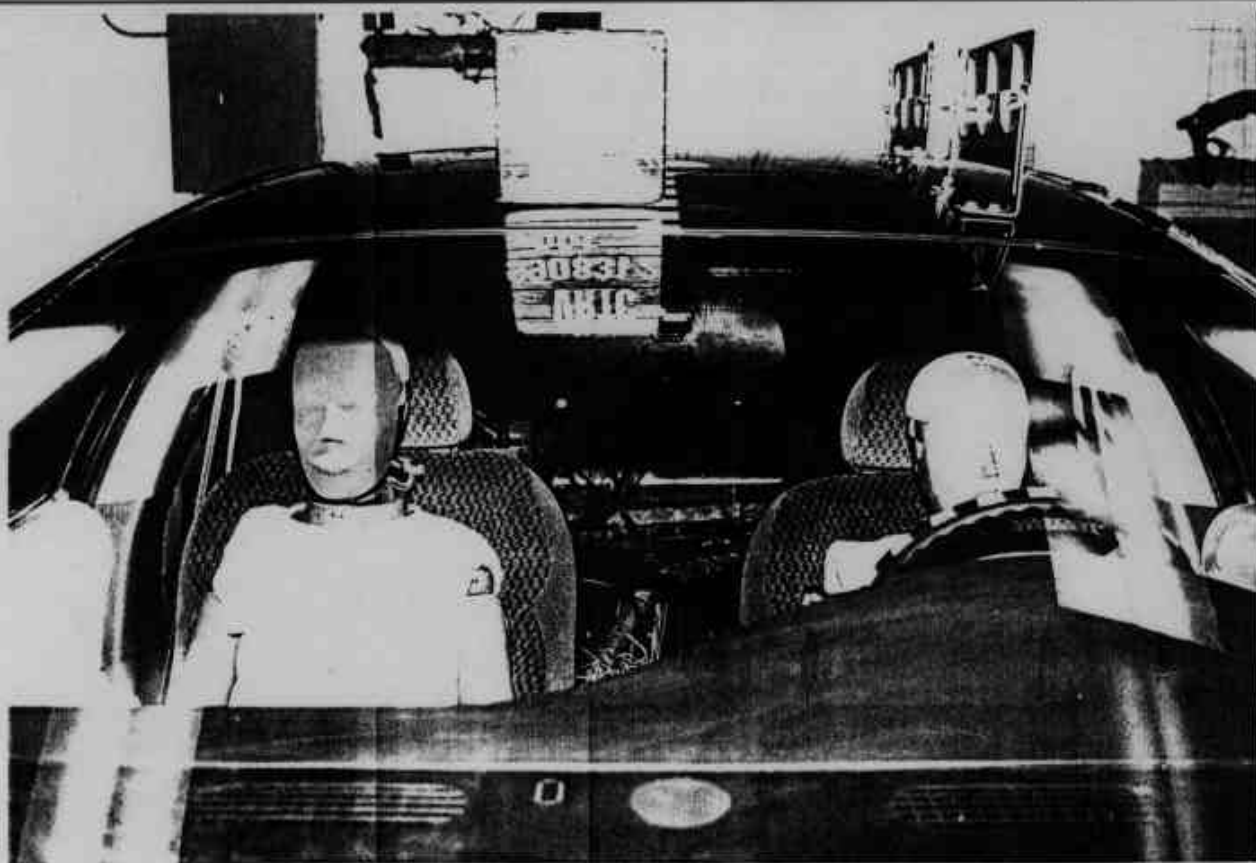


Figure A-29 Pre-Test Windshield - View 2



Figure A-30 Post-Test Windshield - View 2

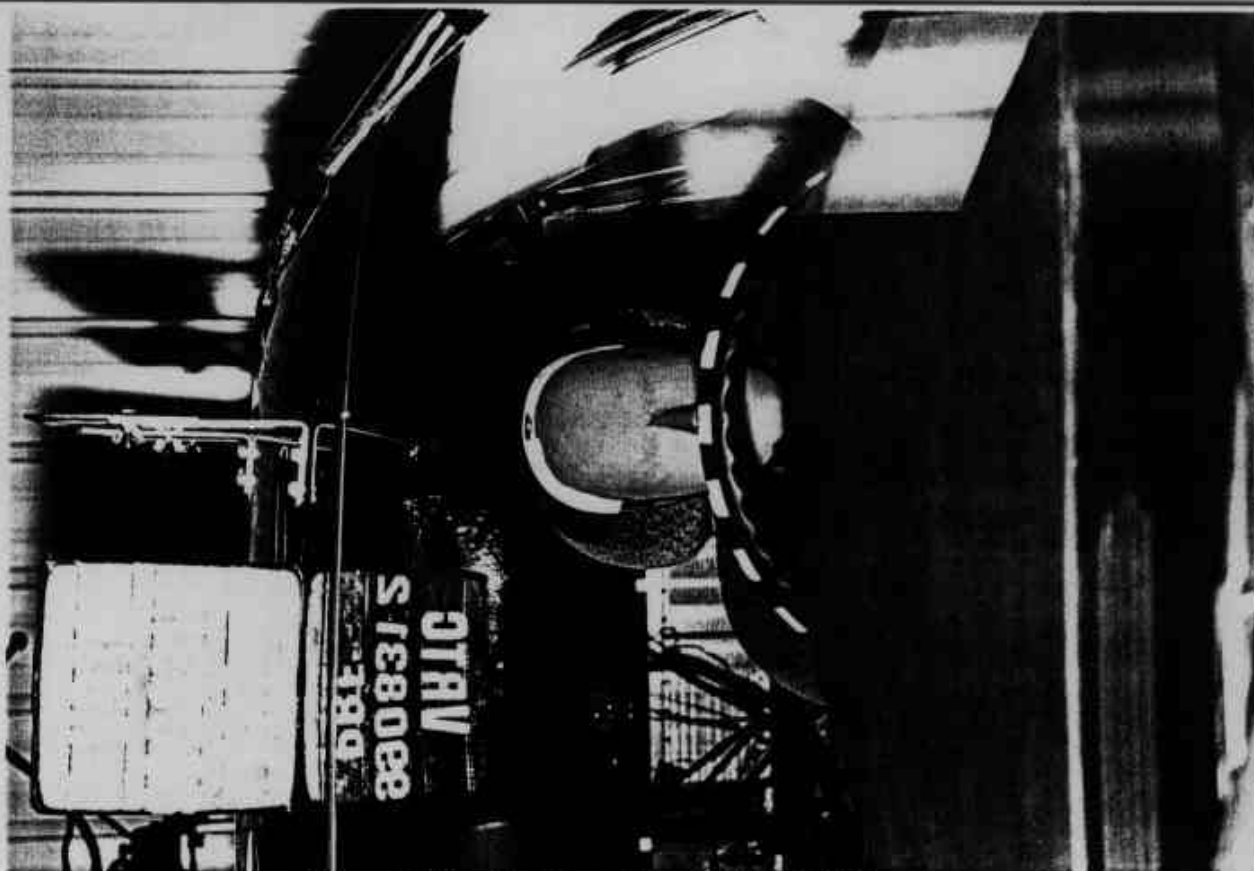


Figure A-31 Pre-Test Driver Dummy Windshield View



Figure A-32 Post-Test Driver Dummy Windshield View

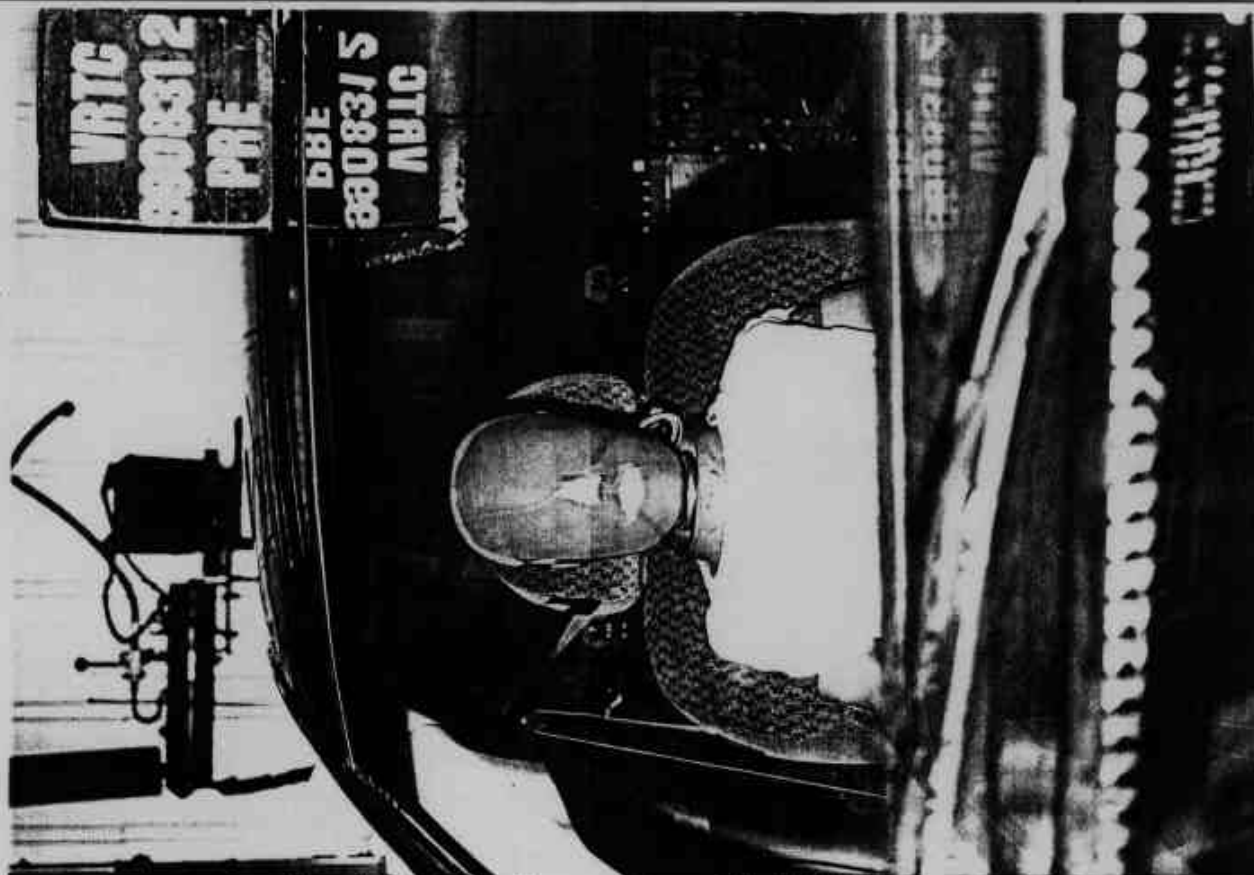


Figure A-33 Pre-Test Passenger Dummy Windshield View

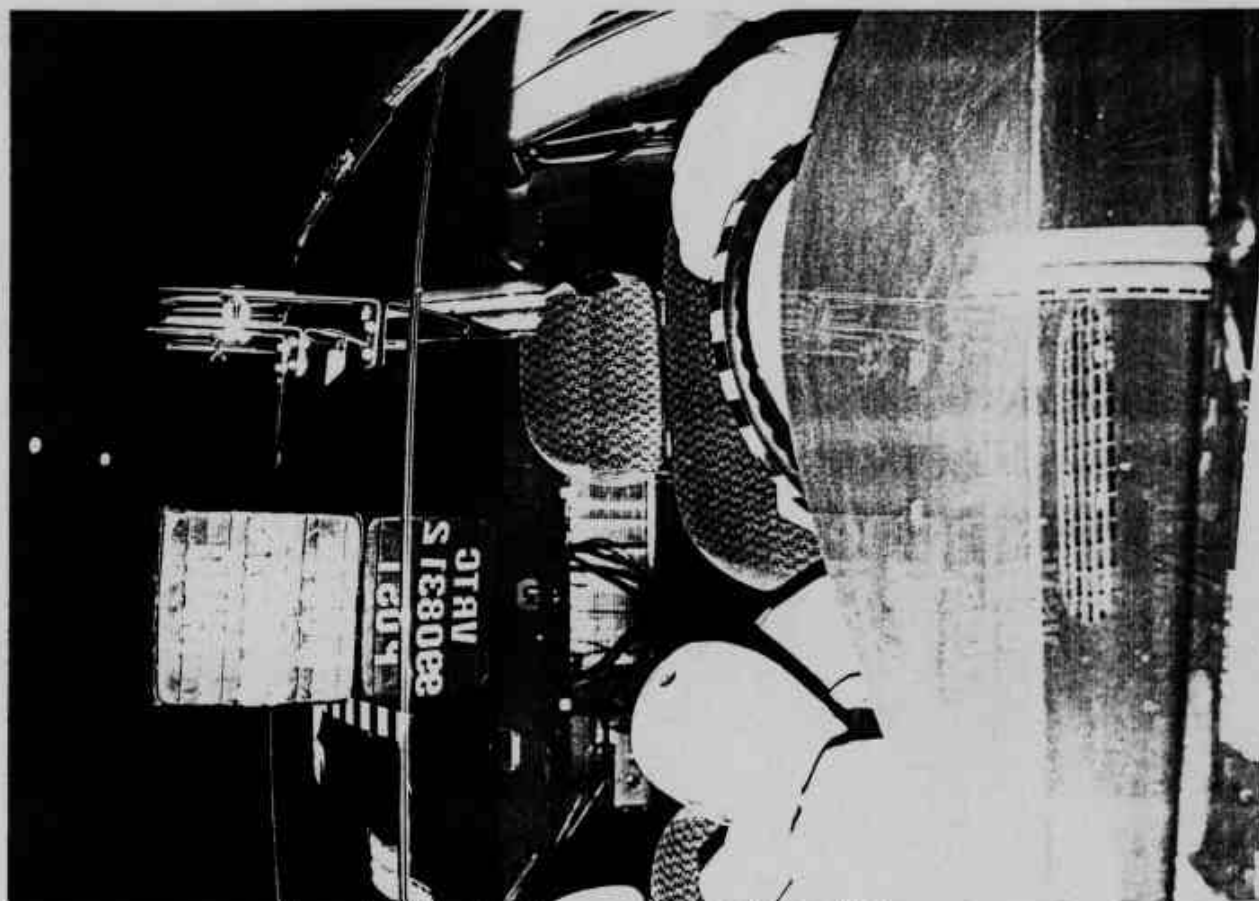


Figure A-34 Post-Test Passenger Dummy Windshield View



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



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



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



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

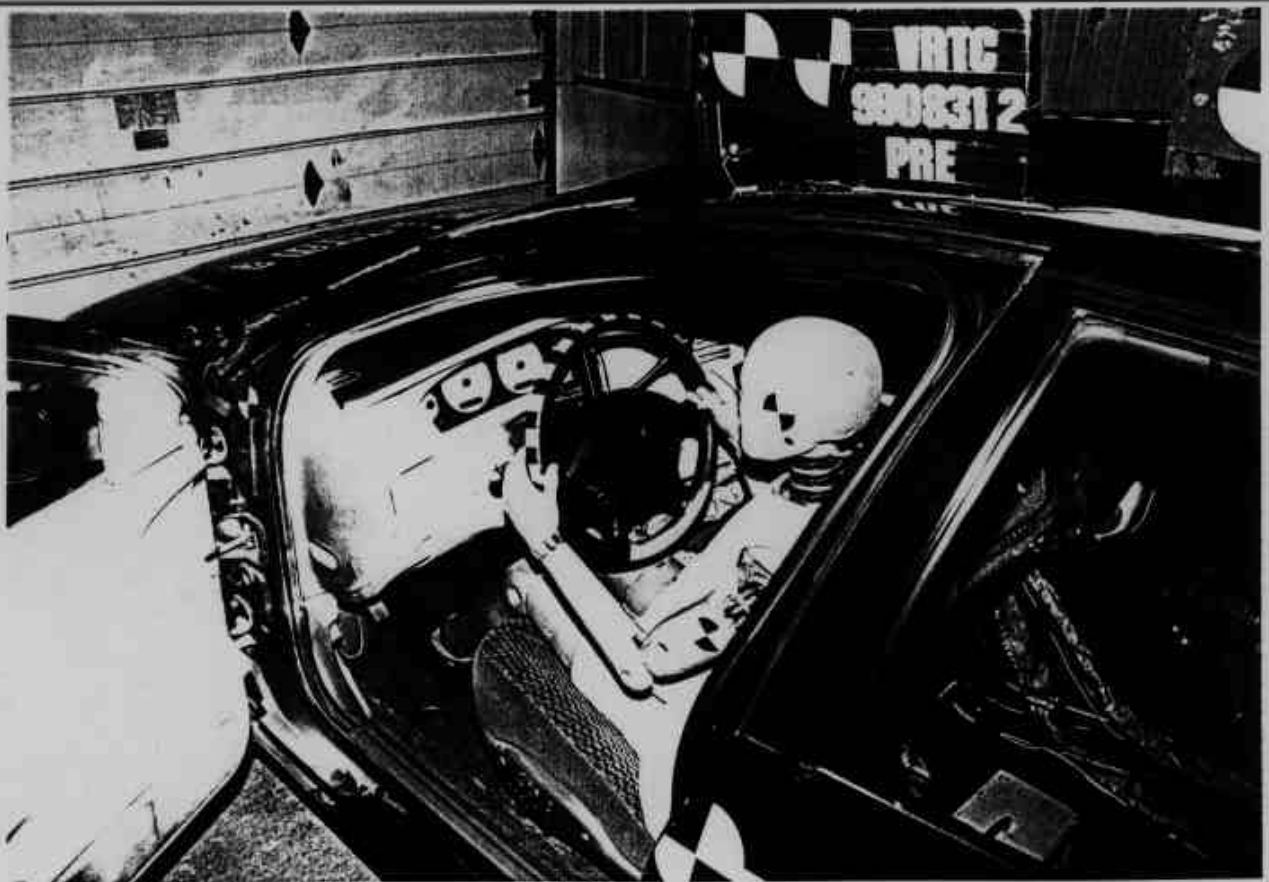


Figure A-39 Pre-Test Driver Dummy Position - View 3



Figure A-40 Post-Test Driver Dummy Position - View 3



Figure A-41 Pre-Test Passenger Dummy Position - View 1



Figure A-42 Post-Test Passenger Dummy Position - View 1

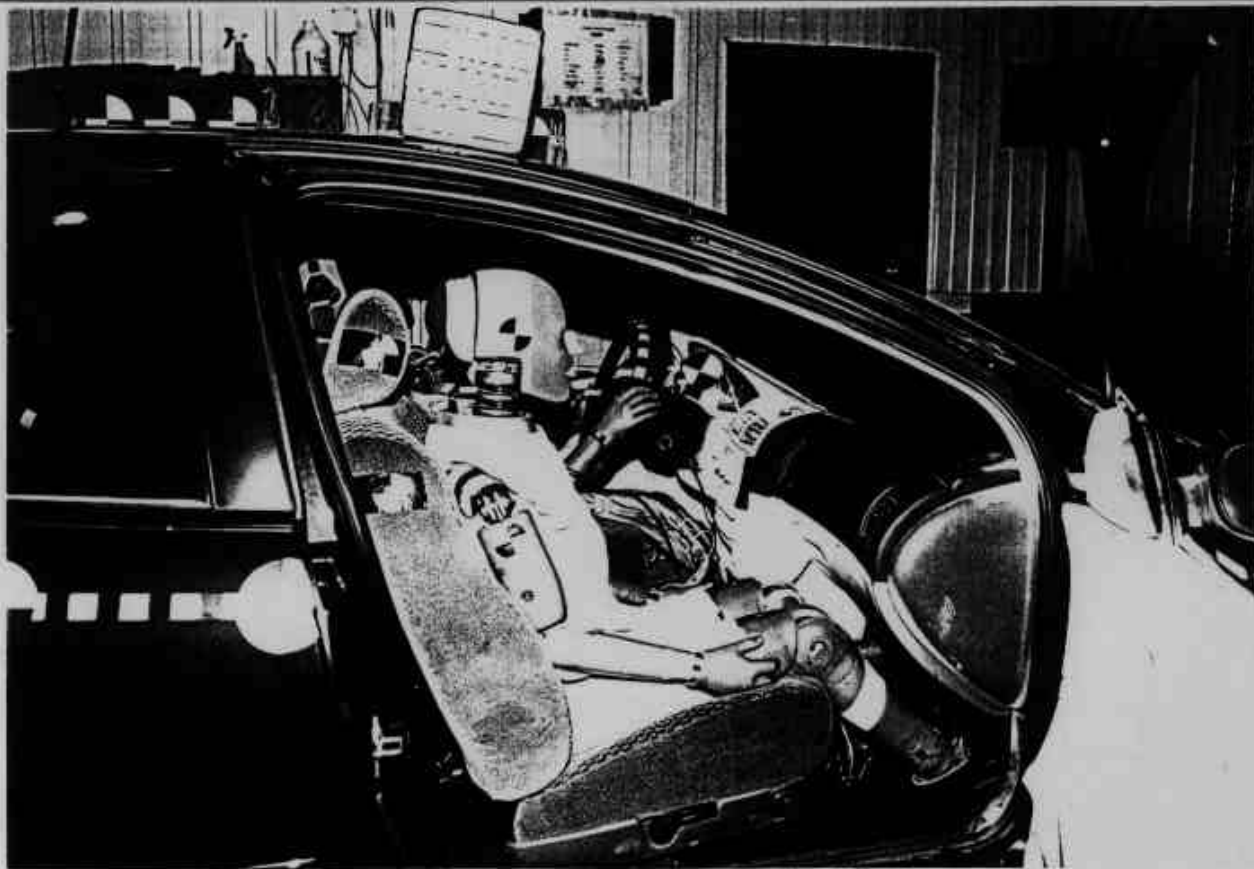


Figure A-43 Pre-Test Passenger Dummy Position - View 2



Figure A-44 Post-Test Passenger Dummy Position - View 2

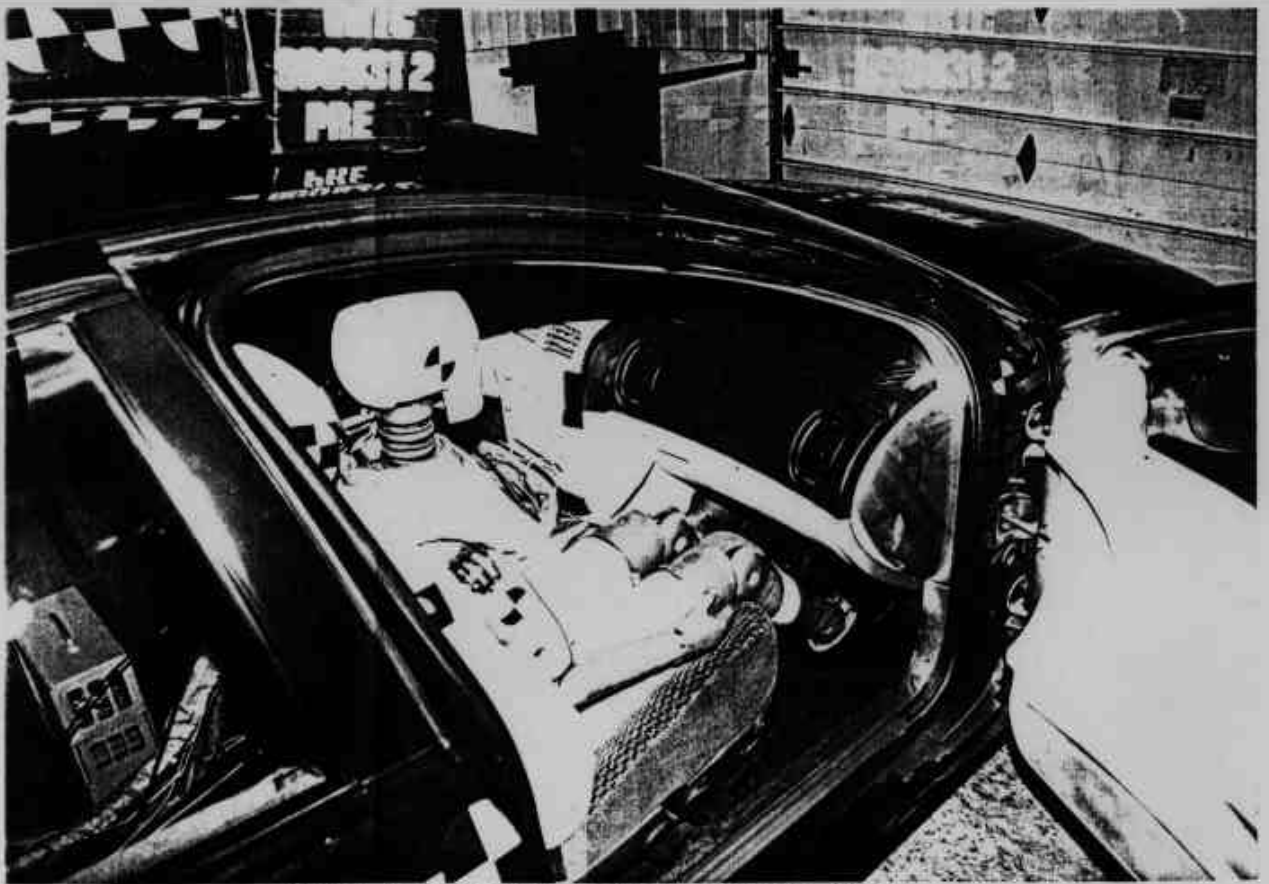


Figure A-45 Pre-Test Passenger Dummy Position - View 3



Figure A-46 Post-Test Passenger Dummy Position - View 3

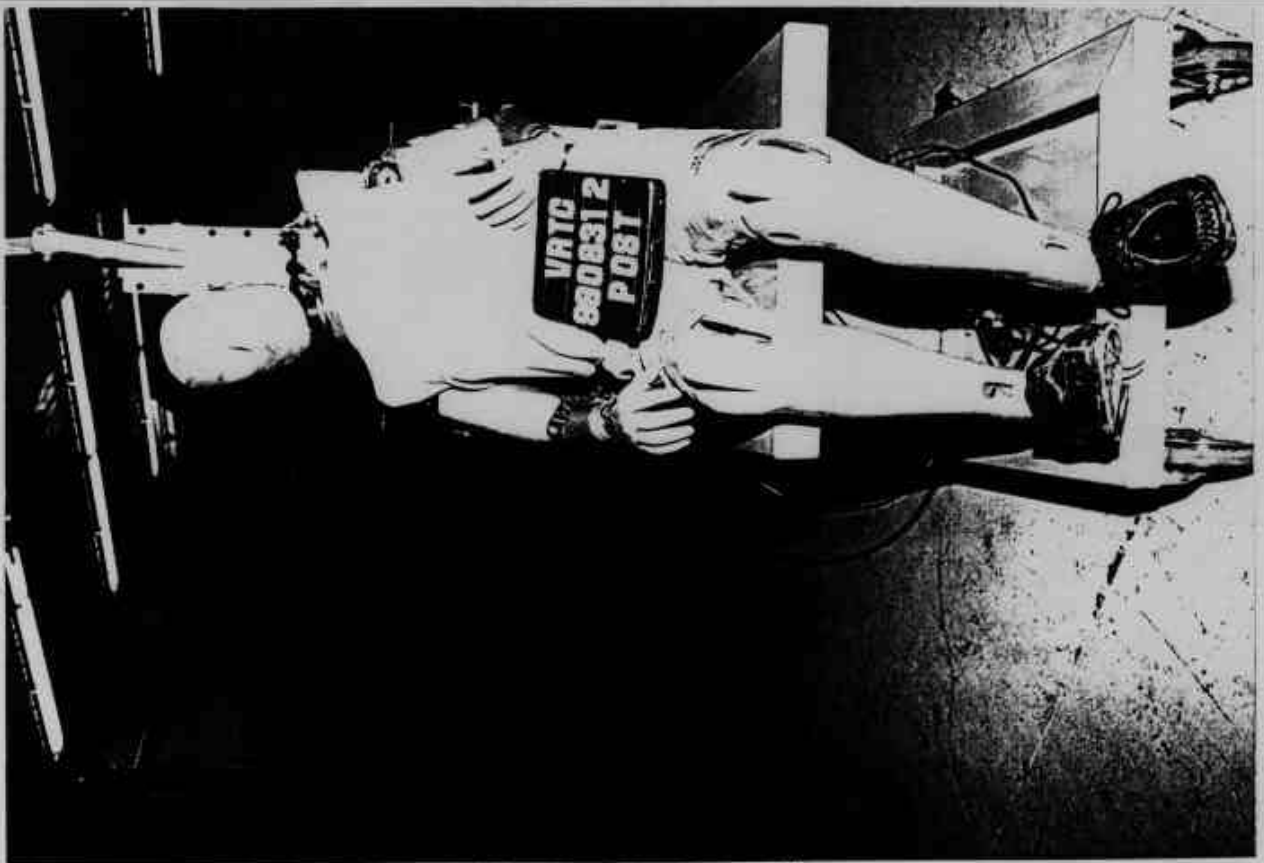


Figure A-47 Post-Test Driver Dummy View



Figure A-48 Post-Test Driver Dummy Head Contact - View 1



Figure A-49 Post-Test Driver Dummy Head Contact - View 2



Figure A-50 Post-Test Driver Dummy Knee Contact - View 1



Figure A-51 Post-Test Driver Dummy Knee Contact - View 2



Figure A-52 Post-Test Driver Dummy Knee Contact - View 3



Figure A-53 Post-Test Driver Footwell Deformation View

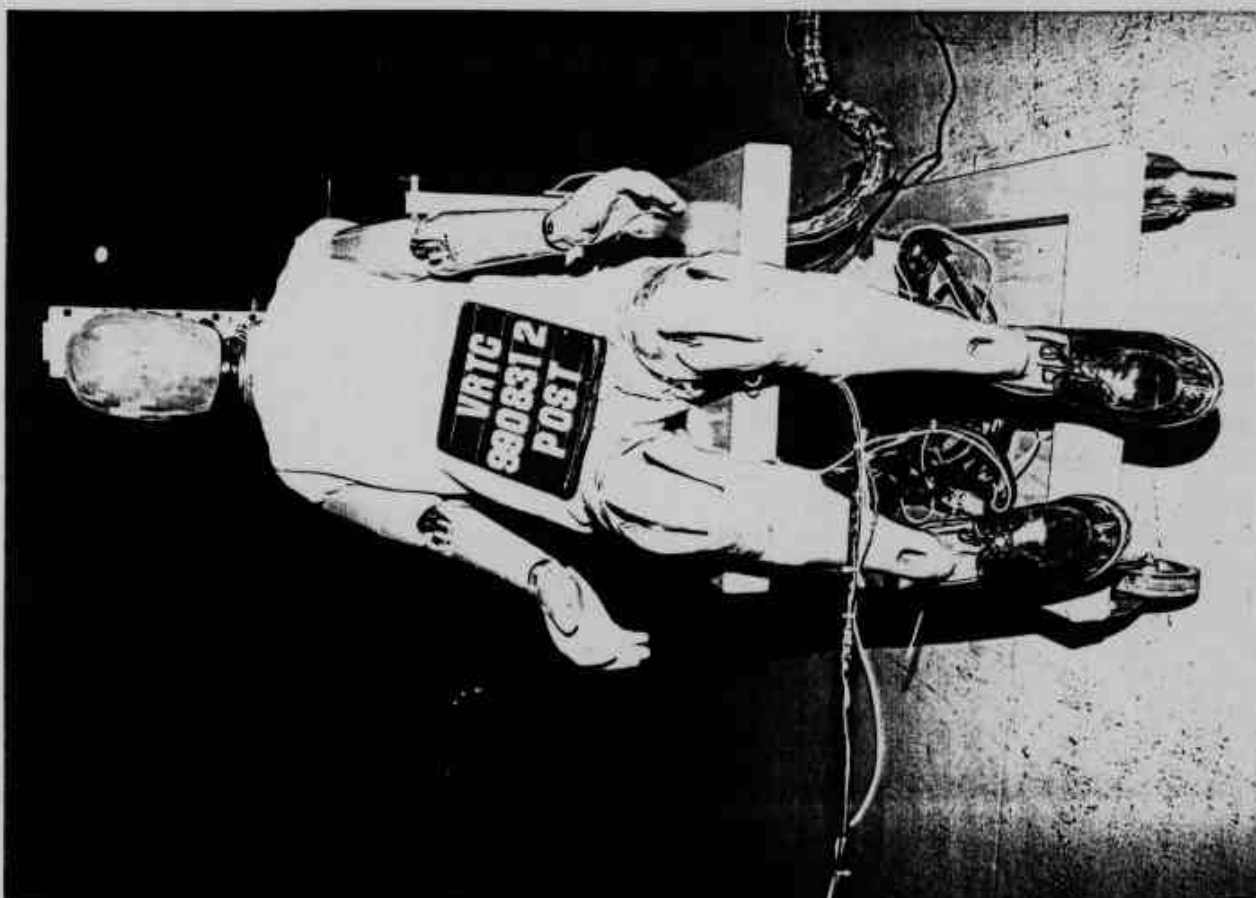


Figure A-54 Post-Test Passenger Dummy View



Figure A-55 Post-Test Passenger Dummy Head Contact - View 1



Figure A-56 Post-Test Passenger Dummy Head Contact - View 2

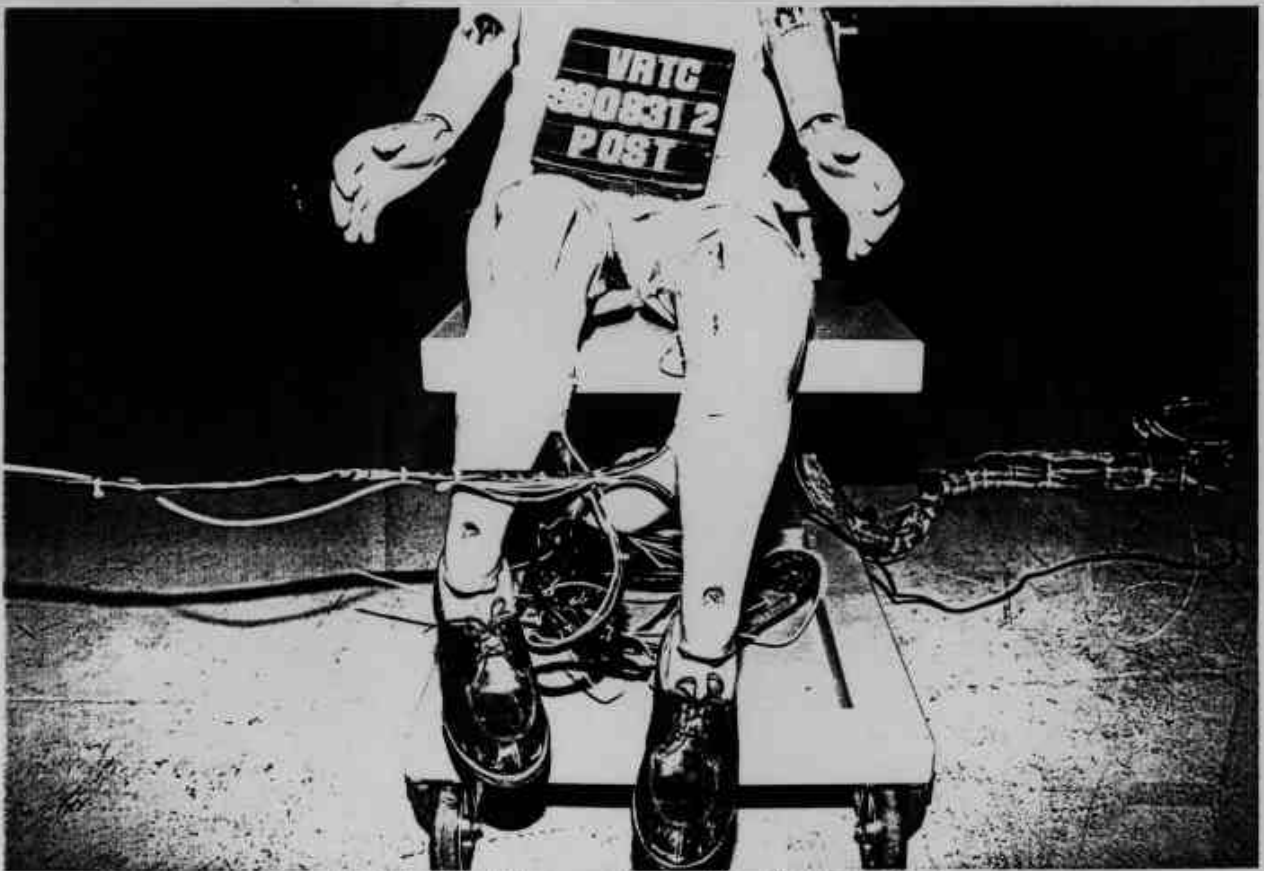


Figure A-57 Post-Test Passenger Dummy Knee Contact - View 1



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



Figure A-59 Pre-Test Vehicle Certification Label View



Figure A-60 Impact Event

Appendix B

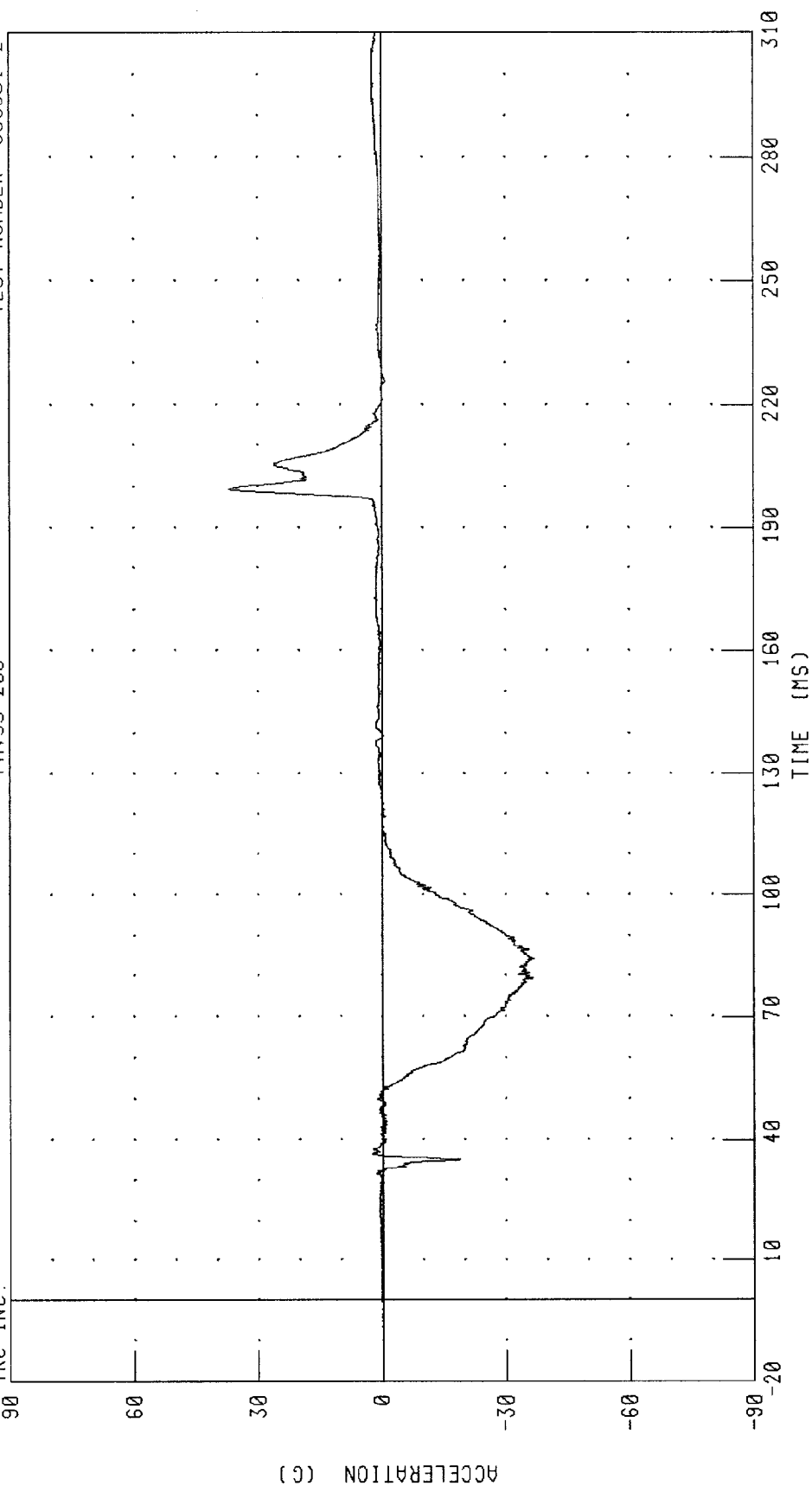
Data Plots

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER HEAD X-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: HEDXC1 FILTER: CH. CLASS 1000

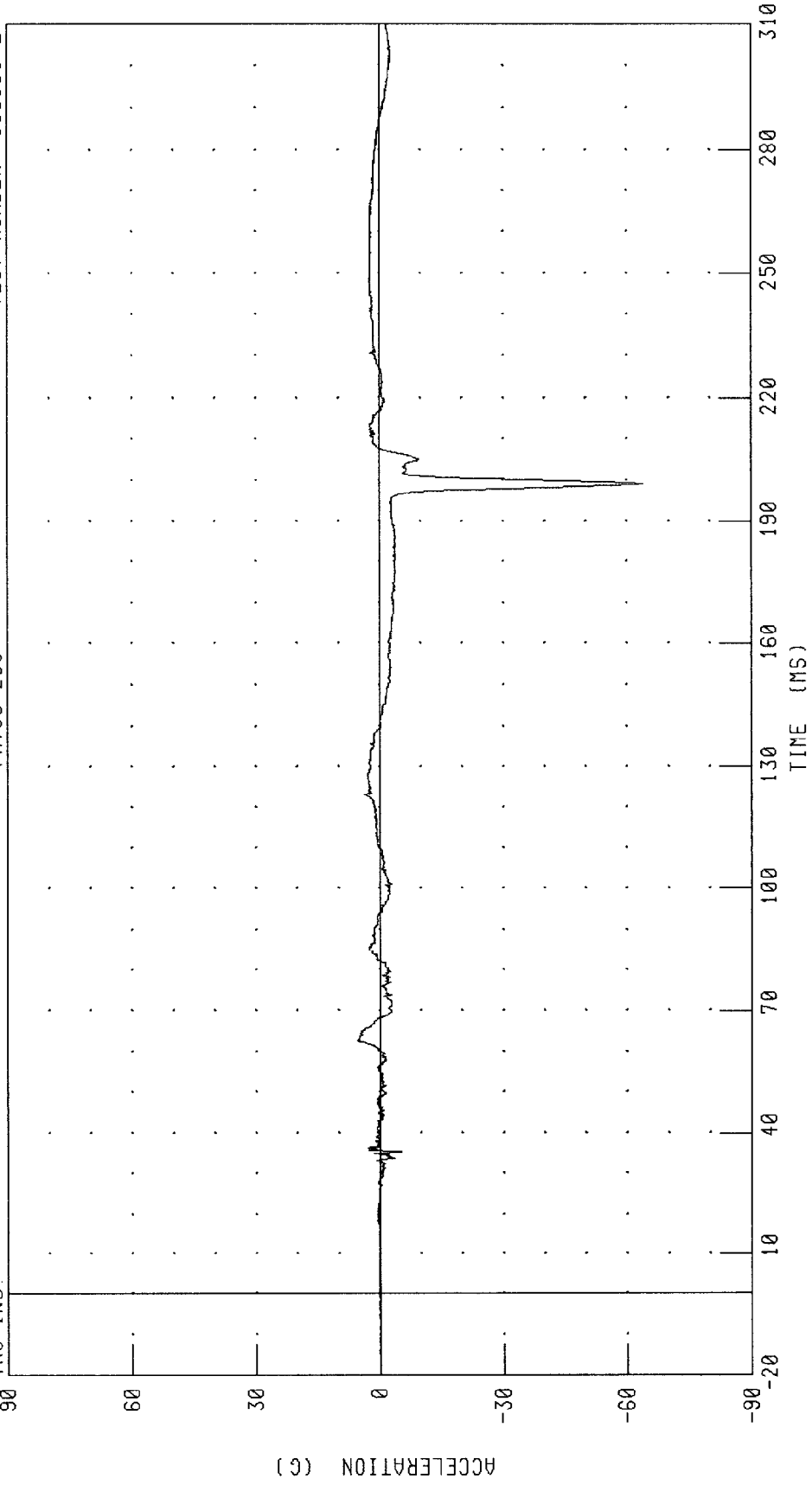
PEAK DATA: 37.00 G @ 199.52 MS; -36.89 G @ 84.08 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER HEAD Y-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

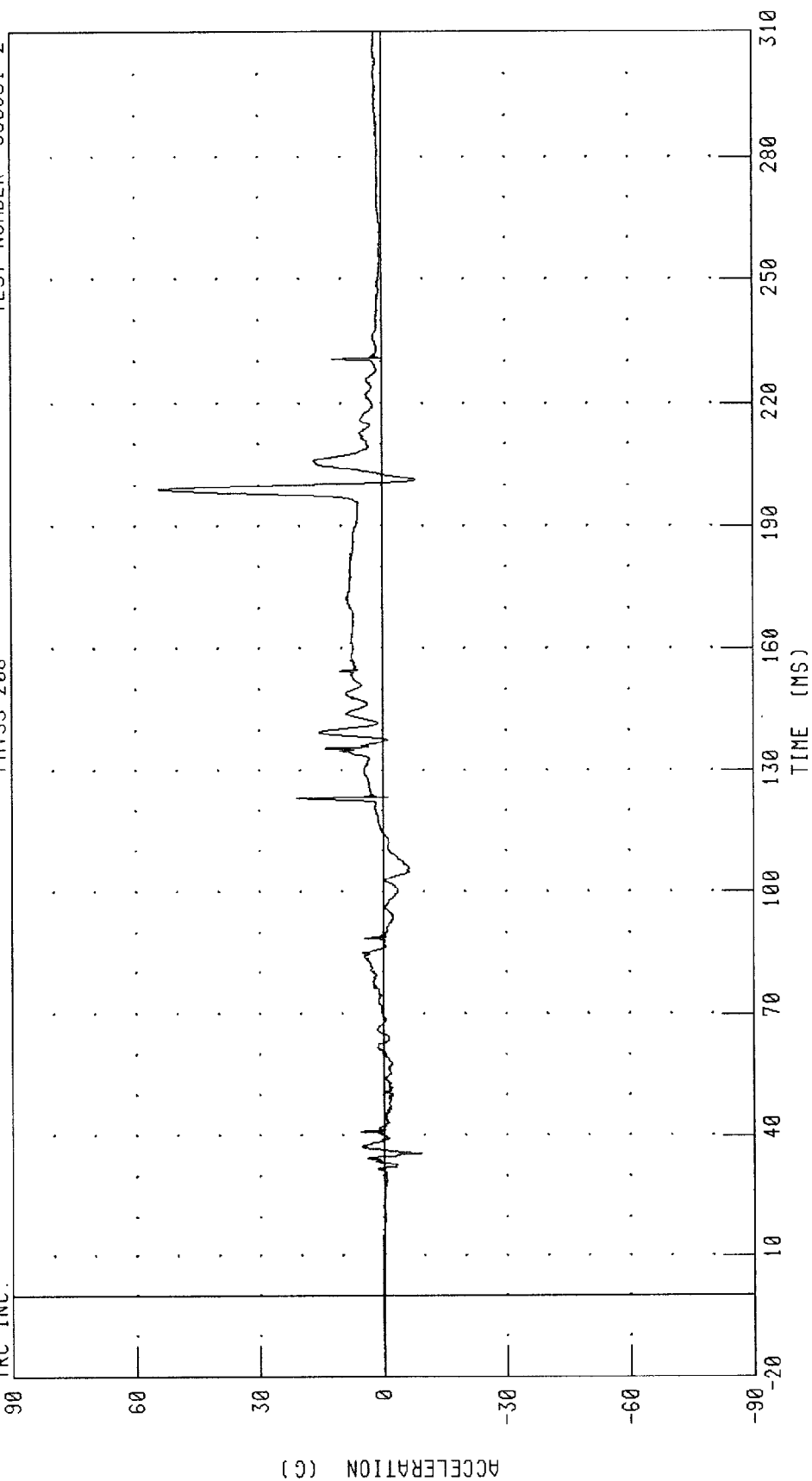
PEAK DATA: 5.39 G @ 62.64 MS, -63.81 G @ 199.12 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER HEAD Z-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: HEDZG1 FILTER: CH. CLASS 1000

PEAK DATA: 54.24 G @ 199.04 MS; -9.23 G @ 35.76 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER HEAD RESULTANT ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC

100

80

60

40

20

0

-20

ACCELERATION (G)

TIME (MS)

10 40 70 100 130 160 190 220 250 280 310

PEAK DATA: 90.89 G @ 199.12 MS, 0.17 G @ -15.12 MS

CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER NECK X-AXIS SHEAR FORCE

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.

60

40

20

0

-20

-40

-60

FORCE (N X 10²)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

PEAK DATA: 451.03 N @ 69.84 MS; -61.32 N @ 36.96 MS

FILTER: CH. CLASS 1000

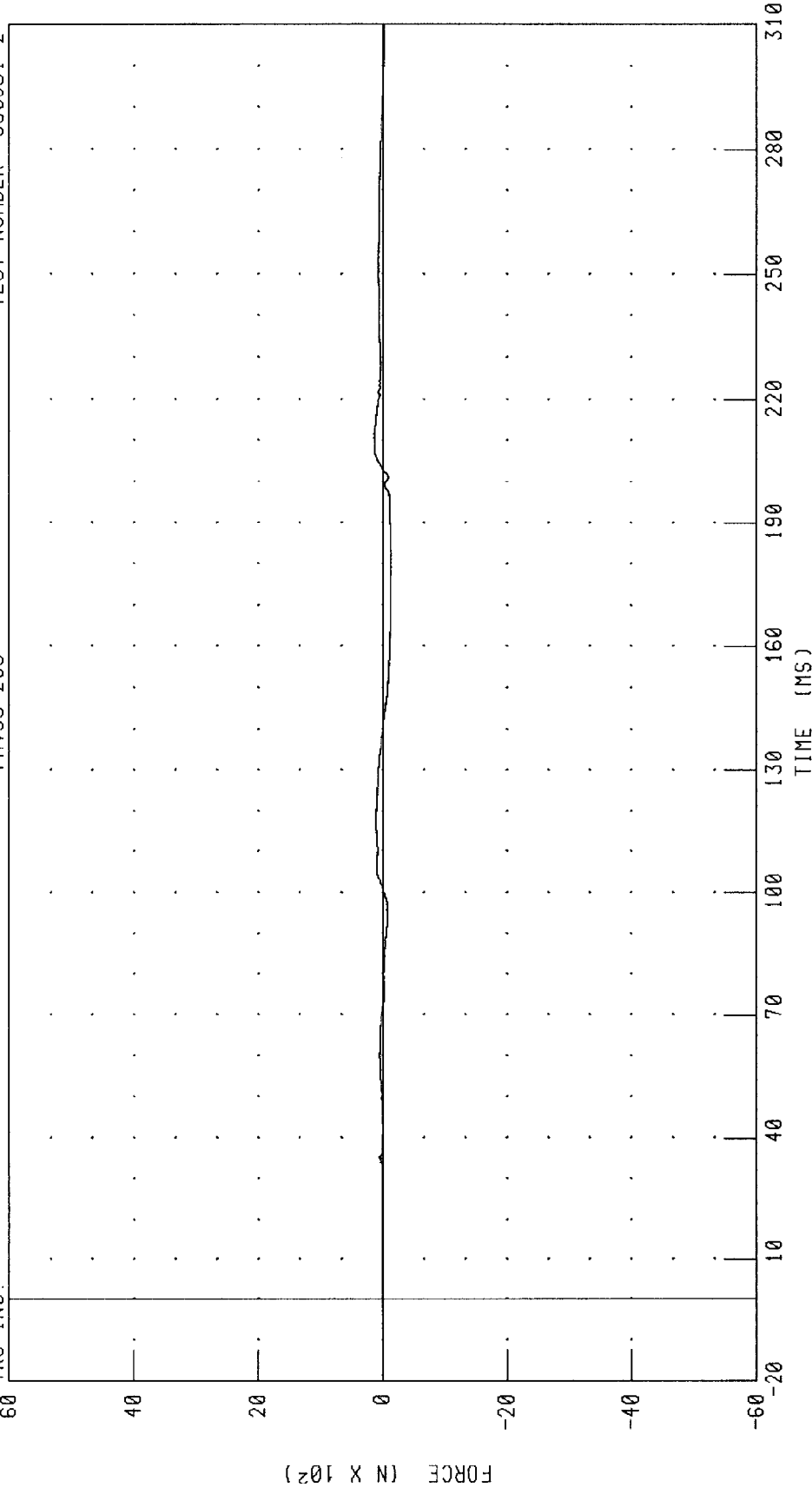
CHANNEL: NEKXF1

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER NECK Y-AXIS SHEAR FORCE

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

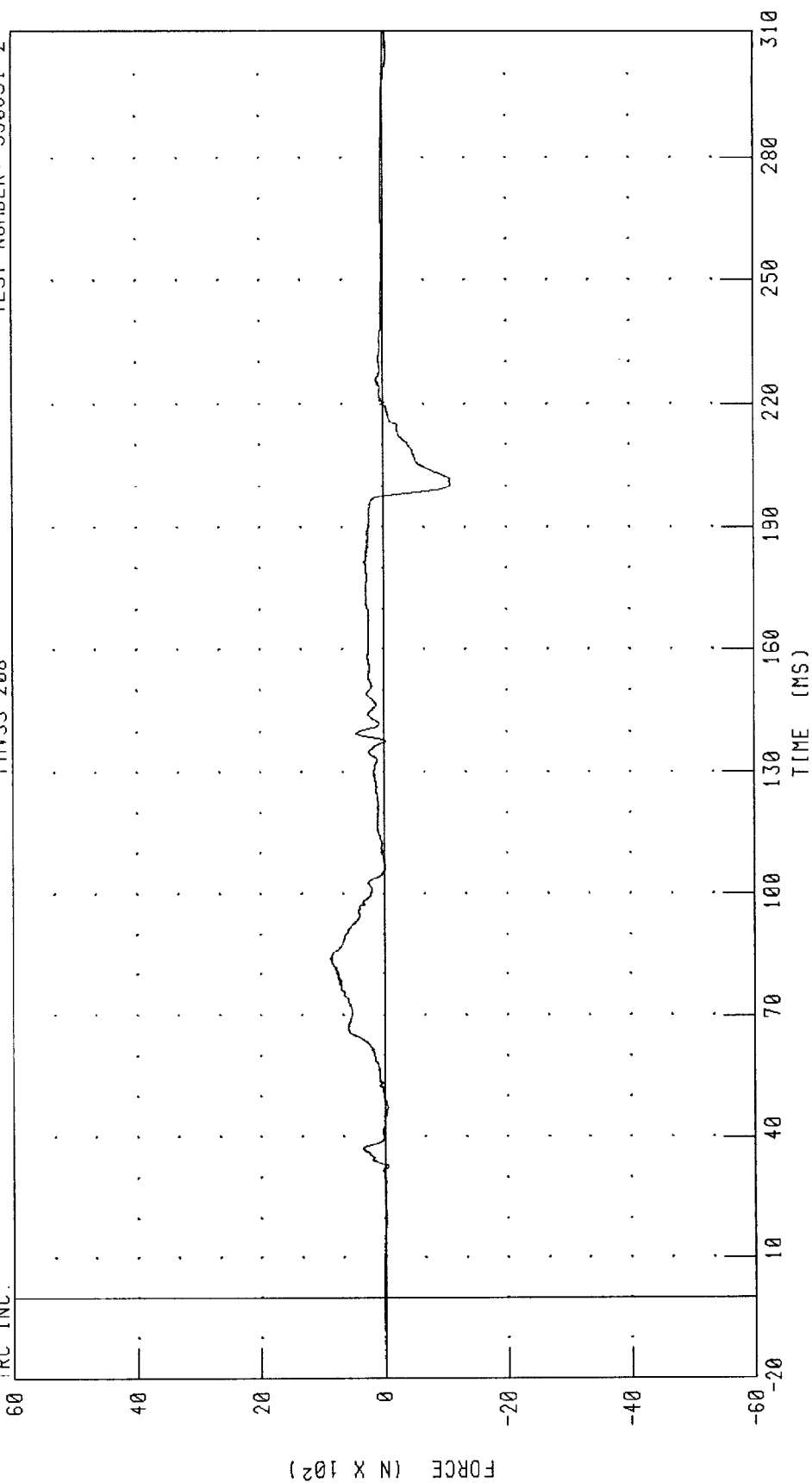
PEAK DATA: 141.62 N @ 210.56 MS; -141.95 N @ 182.56 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER NECK Z-AXIS AXIAL FORCE

TEST NUMBER: 990831-2

FMVSS 208

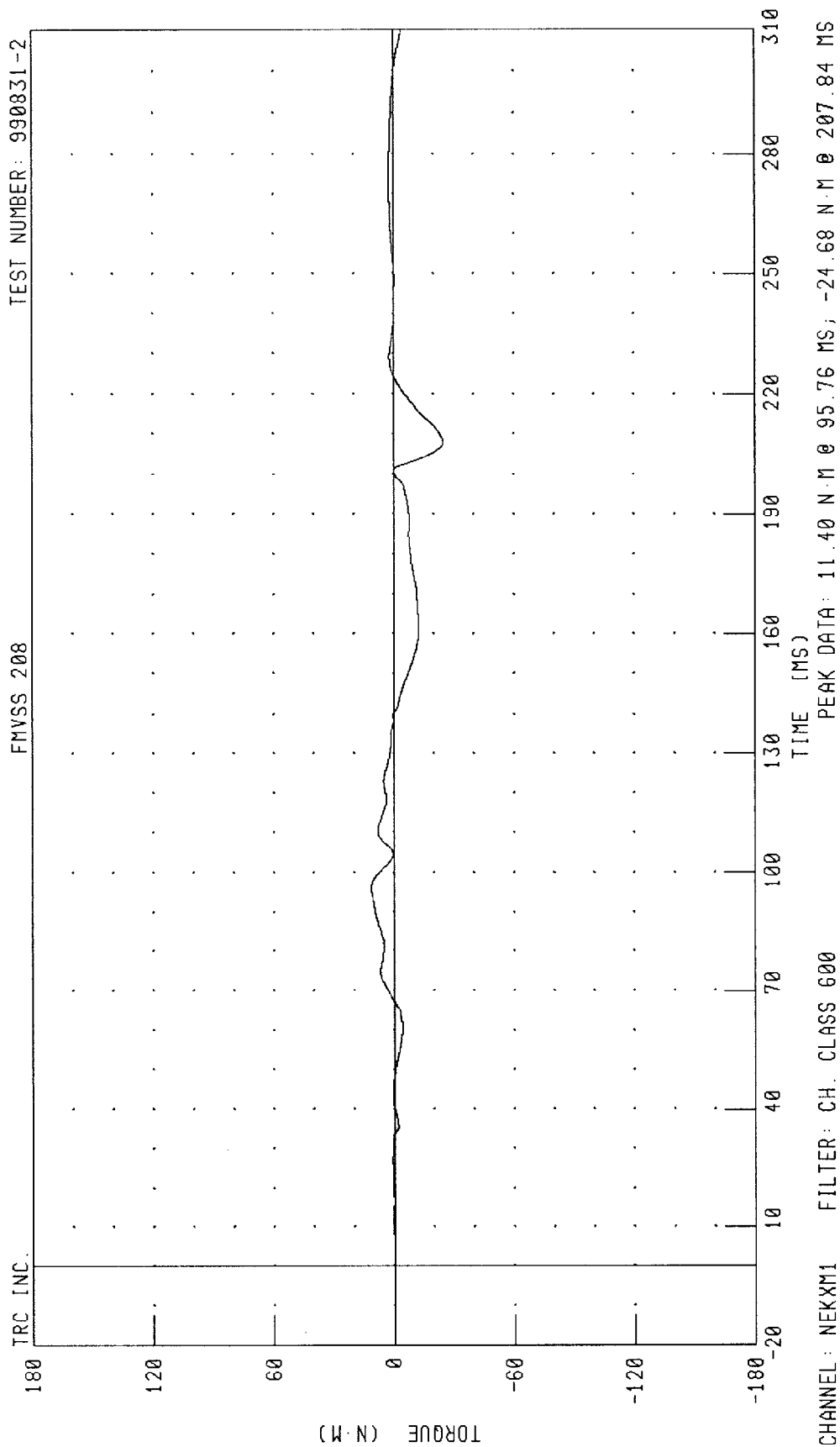
TRC INC.



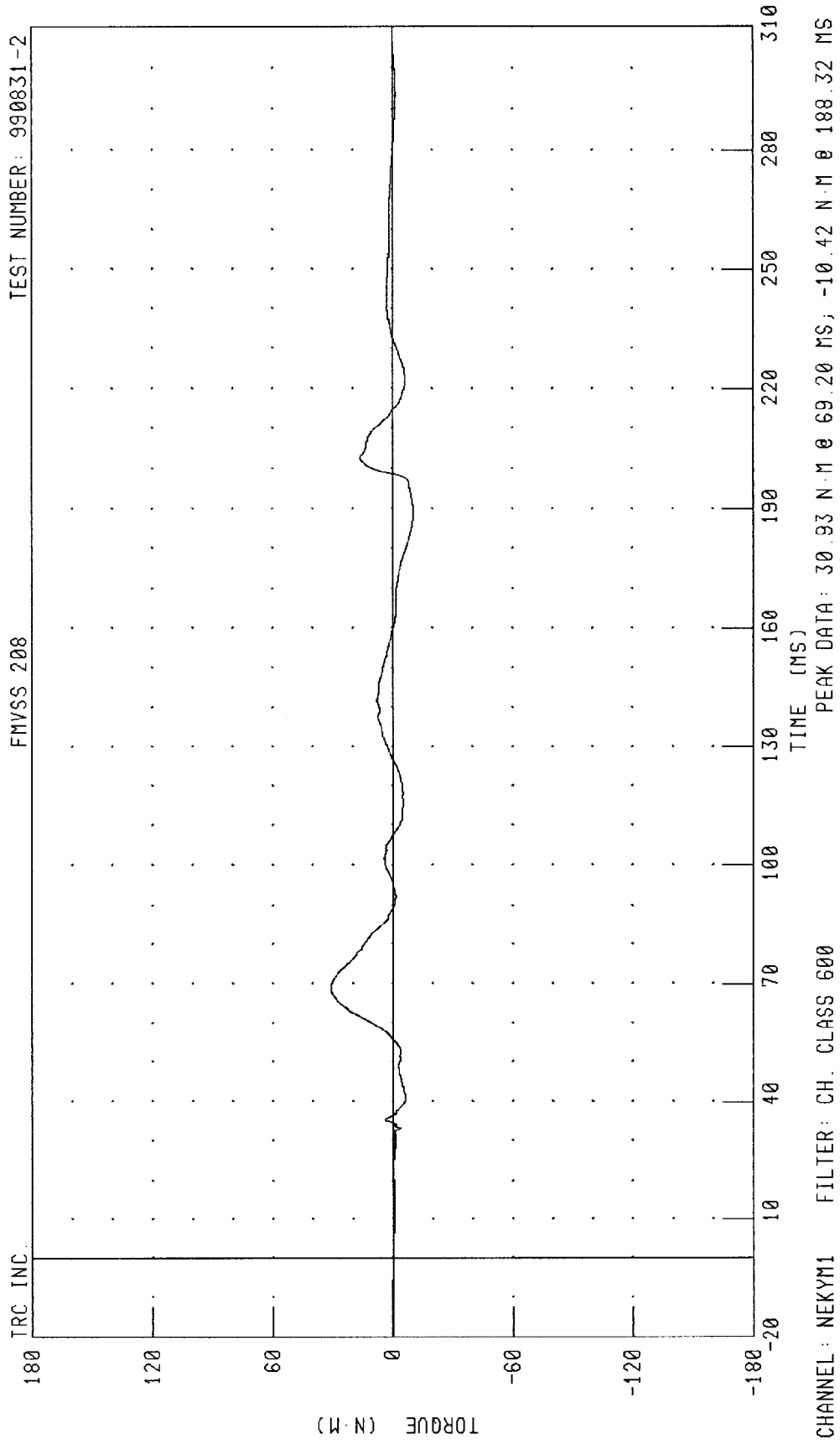
PEAK DATA: 874.44 N @ 83.92 MS, -1092.80 N @ 200.40 MS

CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER NECK MOMENT ABOUT X AXIS



1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER NECK MOMENT ABOUT Y AXIS

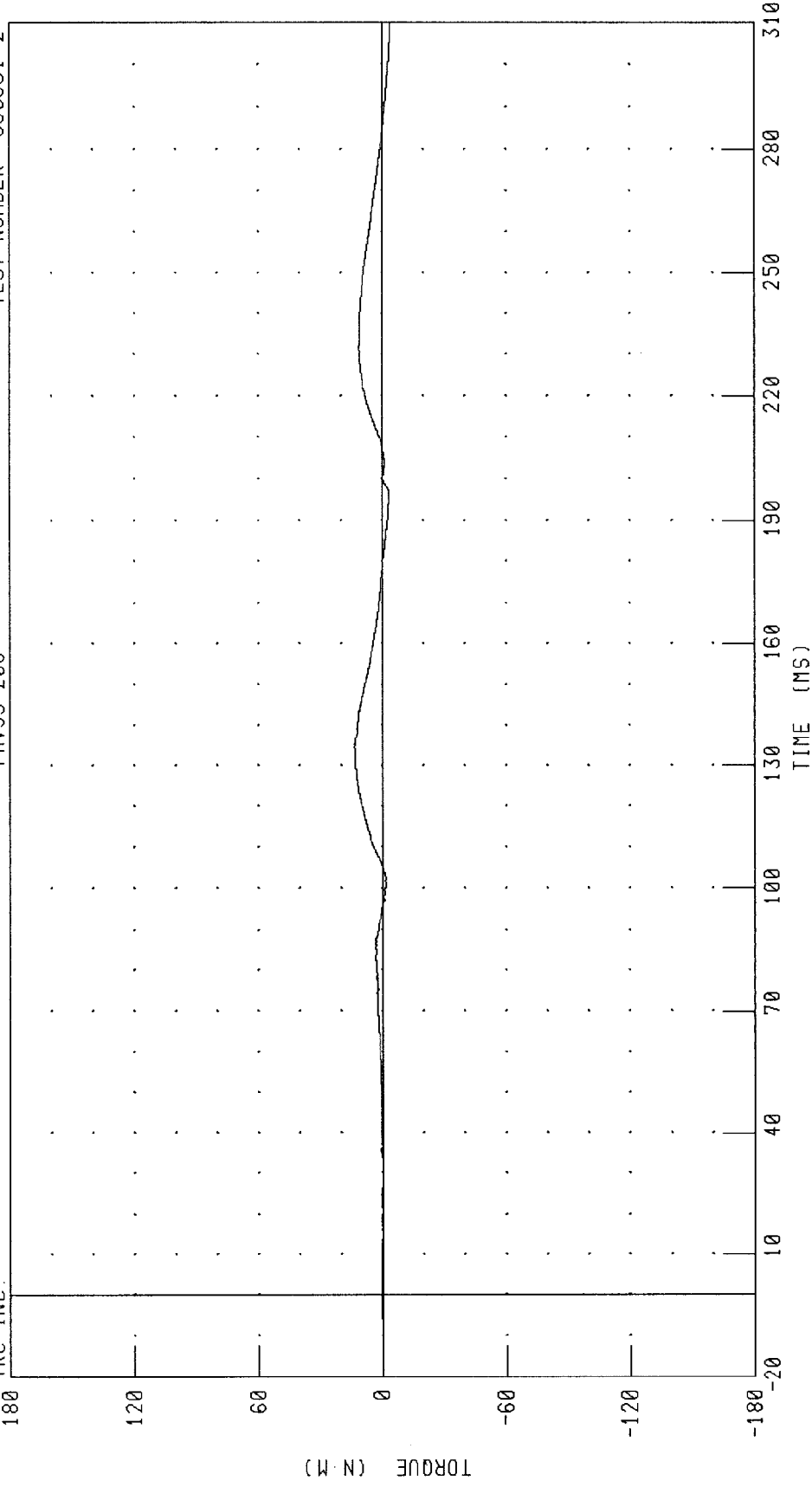


1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: NEKZM1 FILTER: CH. CLASS 600

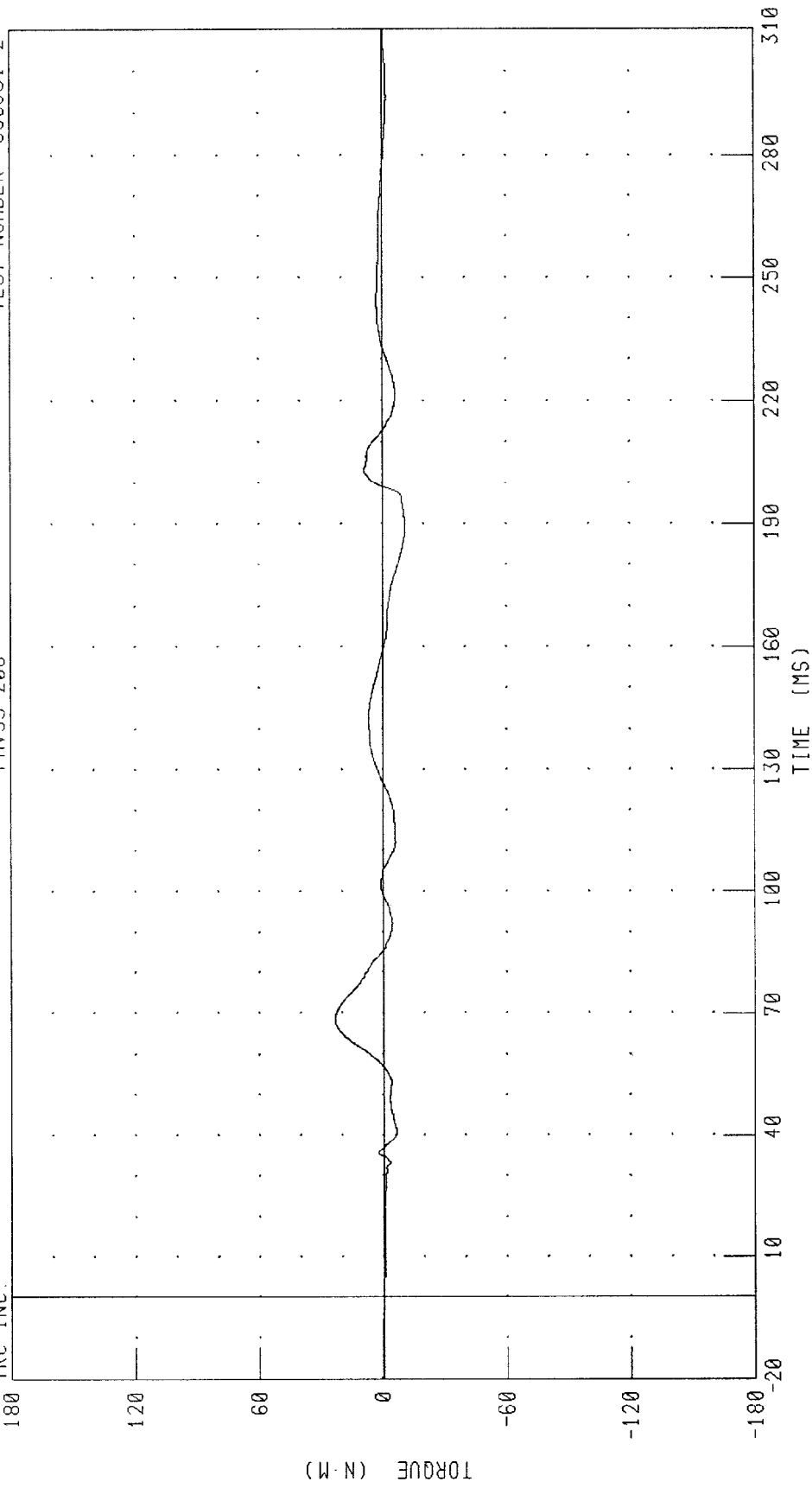
PEAK DATA: 13.27 N-M @ 134.48 MS, -3.92 N-M @ 309.68 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER NECK OCCIPITAL CONDYLE MOMENT ABOUT Y AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



PEAK DATA: 23.27 N-M @ 68.56 MS; -11.00 N-M @ 190.08 MS

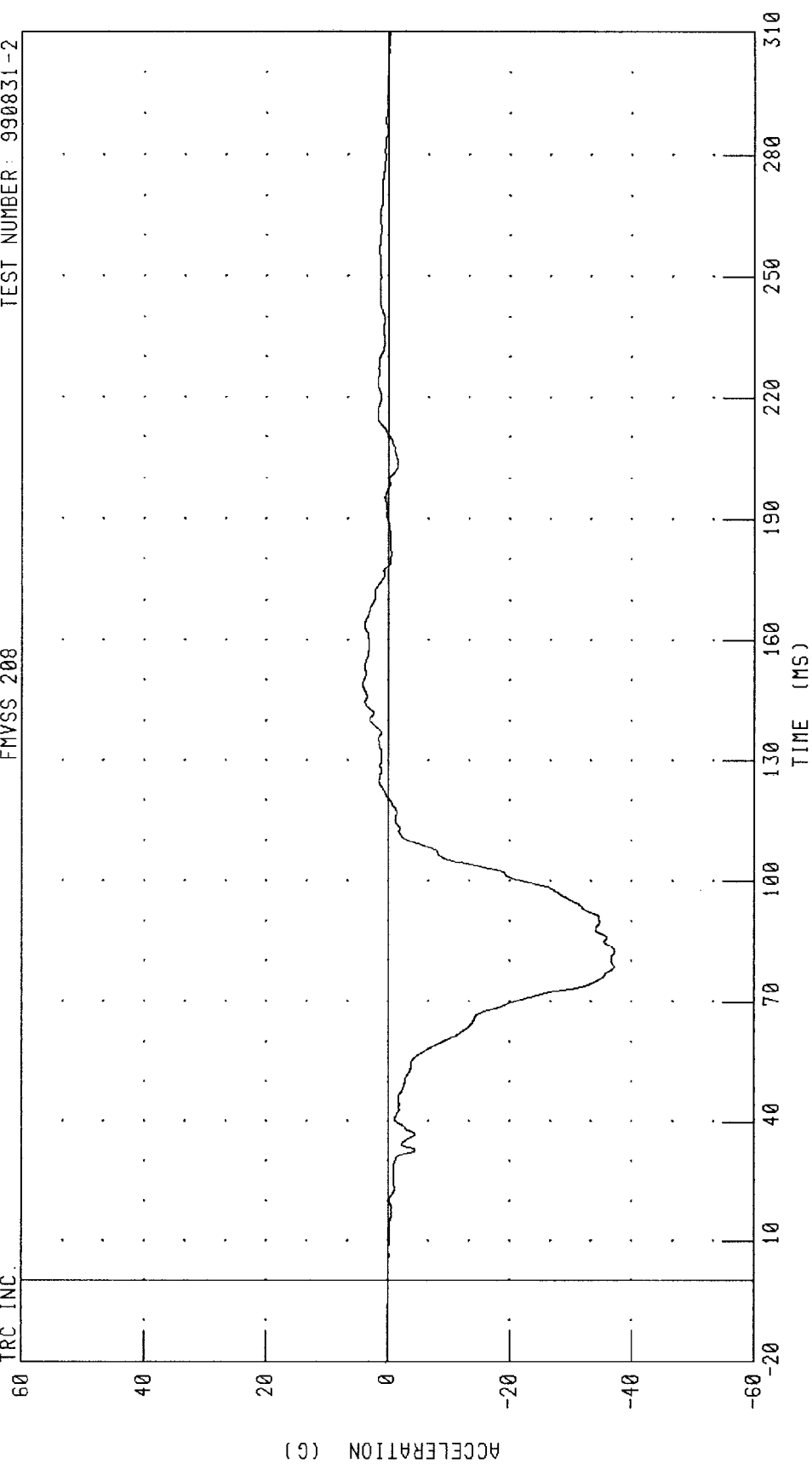
CHANNEL: NEKOM1 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER CHEST X-AXIS ACCELERATION

TRC INC.

FMVSS 208

TEST NUMBER: 990831-2



CHANNEL: CSTXG1 FILTER: CH. CLASS 180

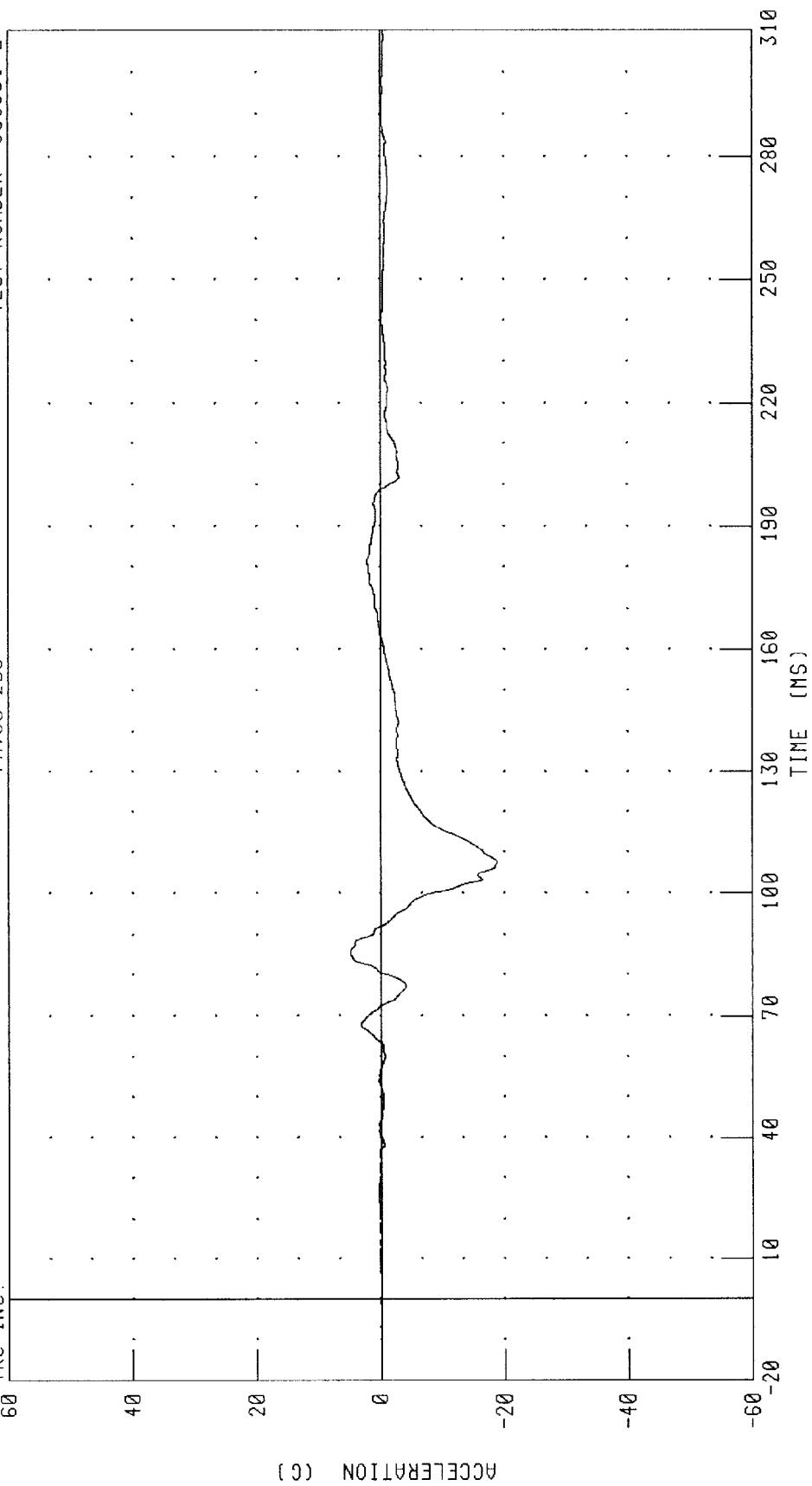
PEAK DATA: 4.13 G @ 149.04 MS; -37.25 G @ 82.32 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER CHEST Y-AXIS ACCELERATION

TRC INC.

FMVSS 208

TEST NUMBER: 990831-2



CHANNEL: CSTYG1 FILTER: CH. CLASS 180

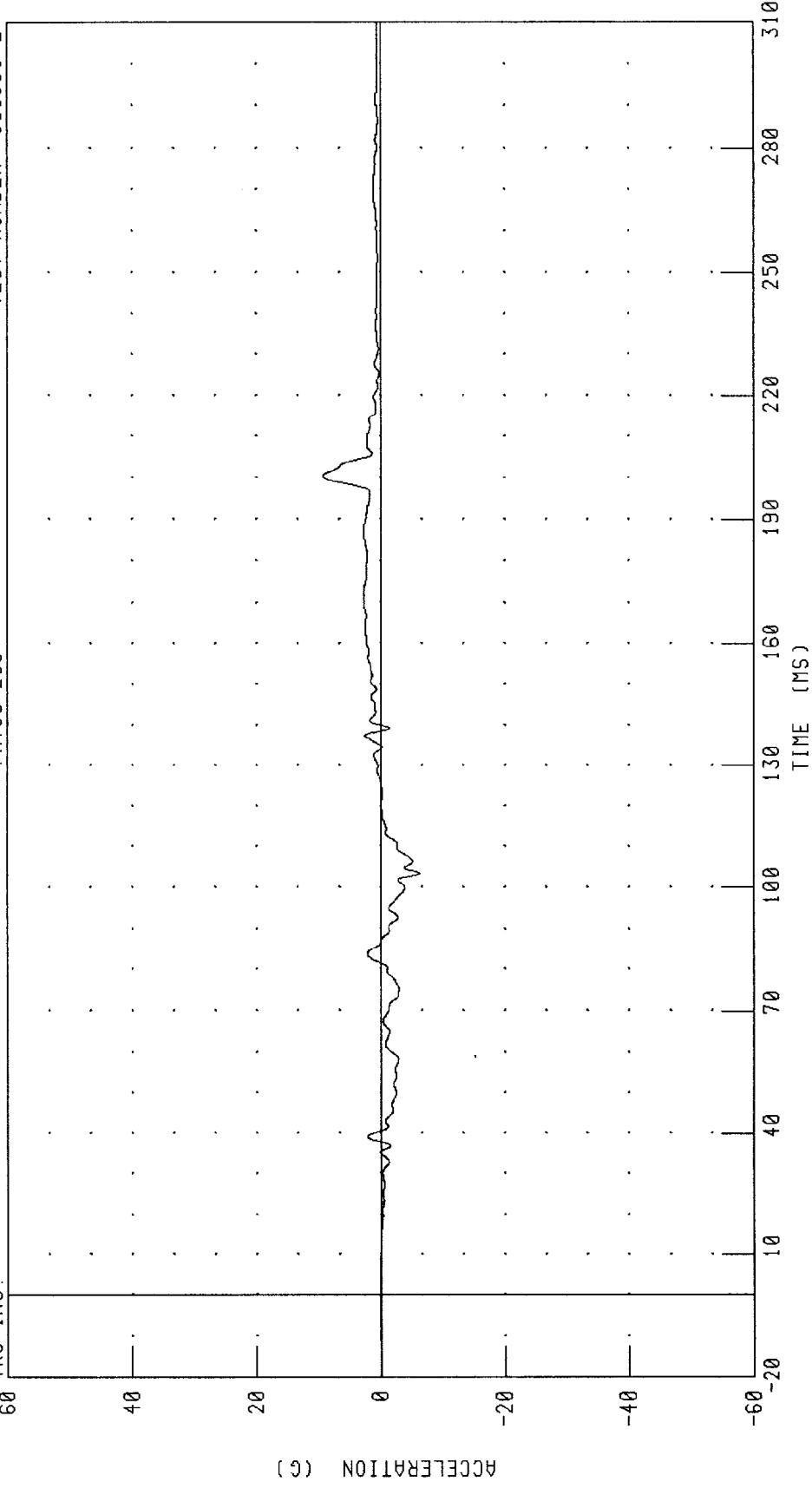
PEAK DATA: 4.89 G @ 85.28 MS, -18.85 G @ 107.28 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER CHEST Z-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

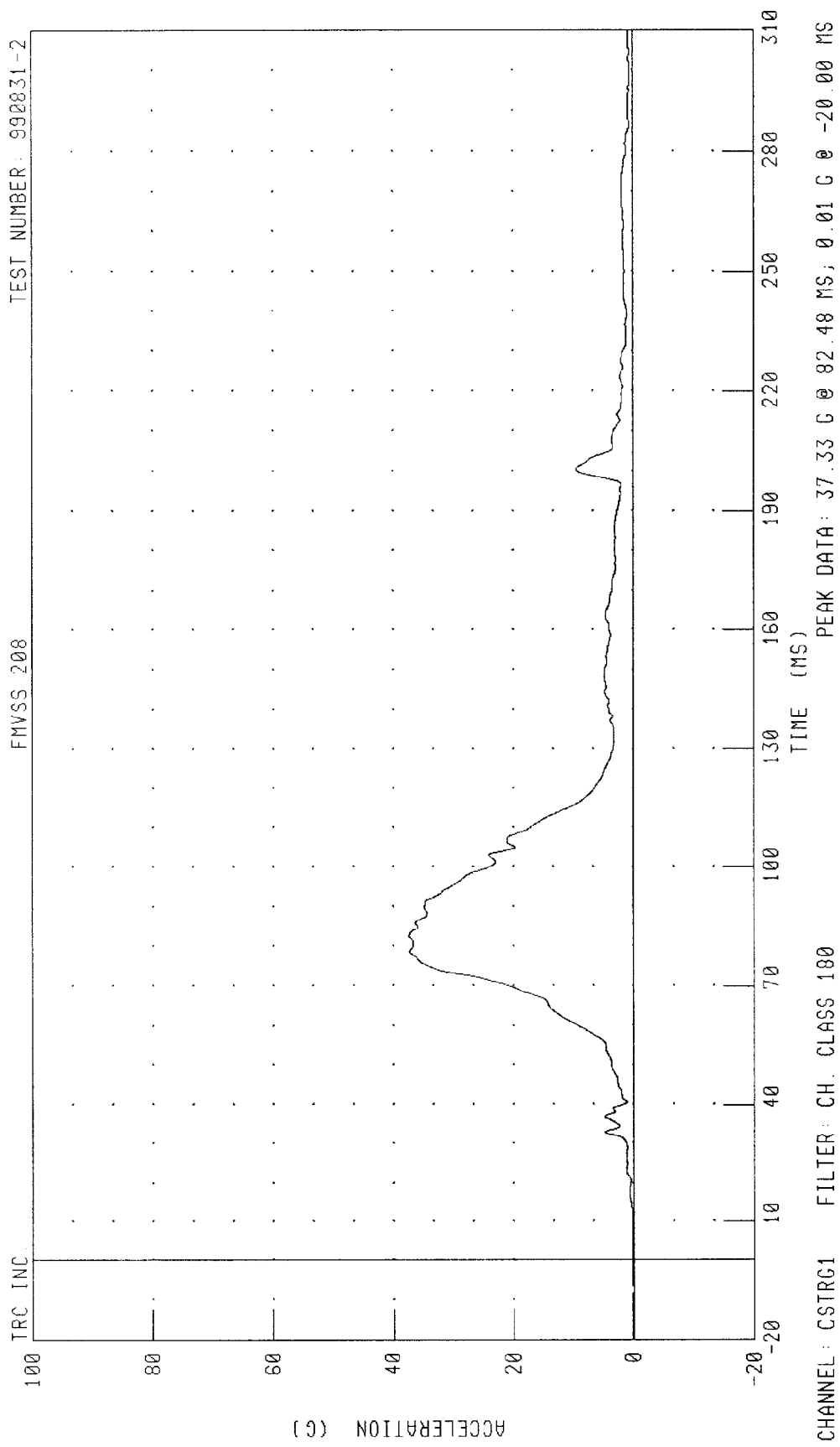
TRC INC.



CHANNEL: CSTZG1 FILTER: CH. CLASS 180

PEAK DATA: 9.31 G @ 200.40 MS, -6.31 G @ 103.44 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER CHEST RESULTANT ACCELERATION



1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER CHEST DEFLECTION

TEST NUMBER: 990831-2

FMYSS 208

TRC INC.

30

10

DISPLACEMENT (MM)

-10

-30

-50

-70

-90

-20

10

40

70

100

130

160

190

220

250

280

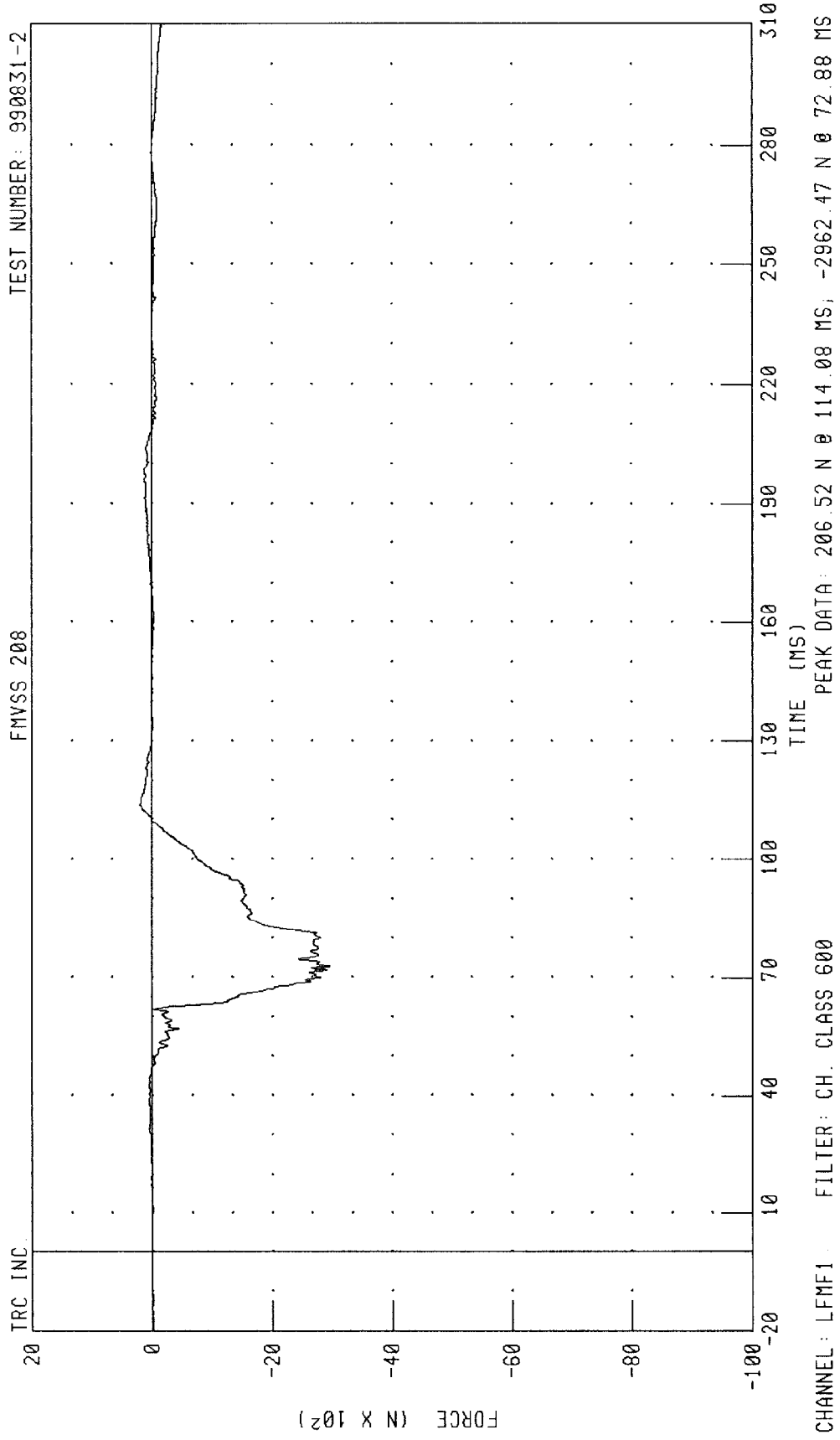
310

TIME (MS)

CHANNEL: CSTXD1 FILTER: CH. CLASS 180

PEAK DATA: 0.09 MM @ 27.20 MS; -31.99 MM @ 87.68 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER LEFT FEMUR FORCE

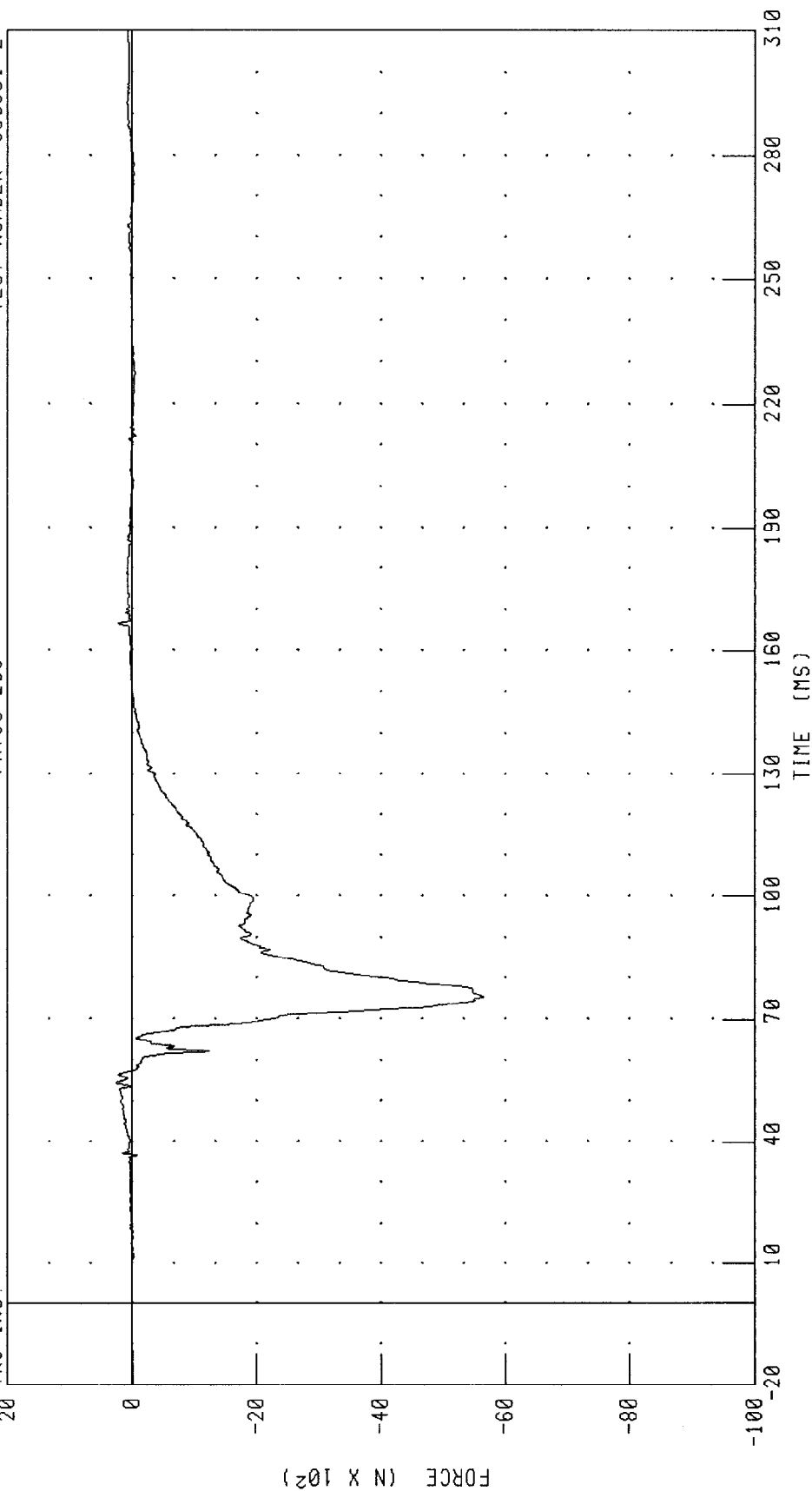


1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER RIGHT FEMUR FORCE

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



PEAK DATA: 261.07 N @ 54.40 MS; -5644.31 N @ 75.36 MS

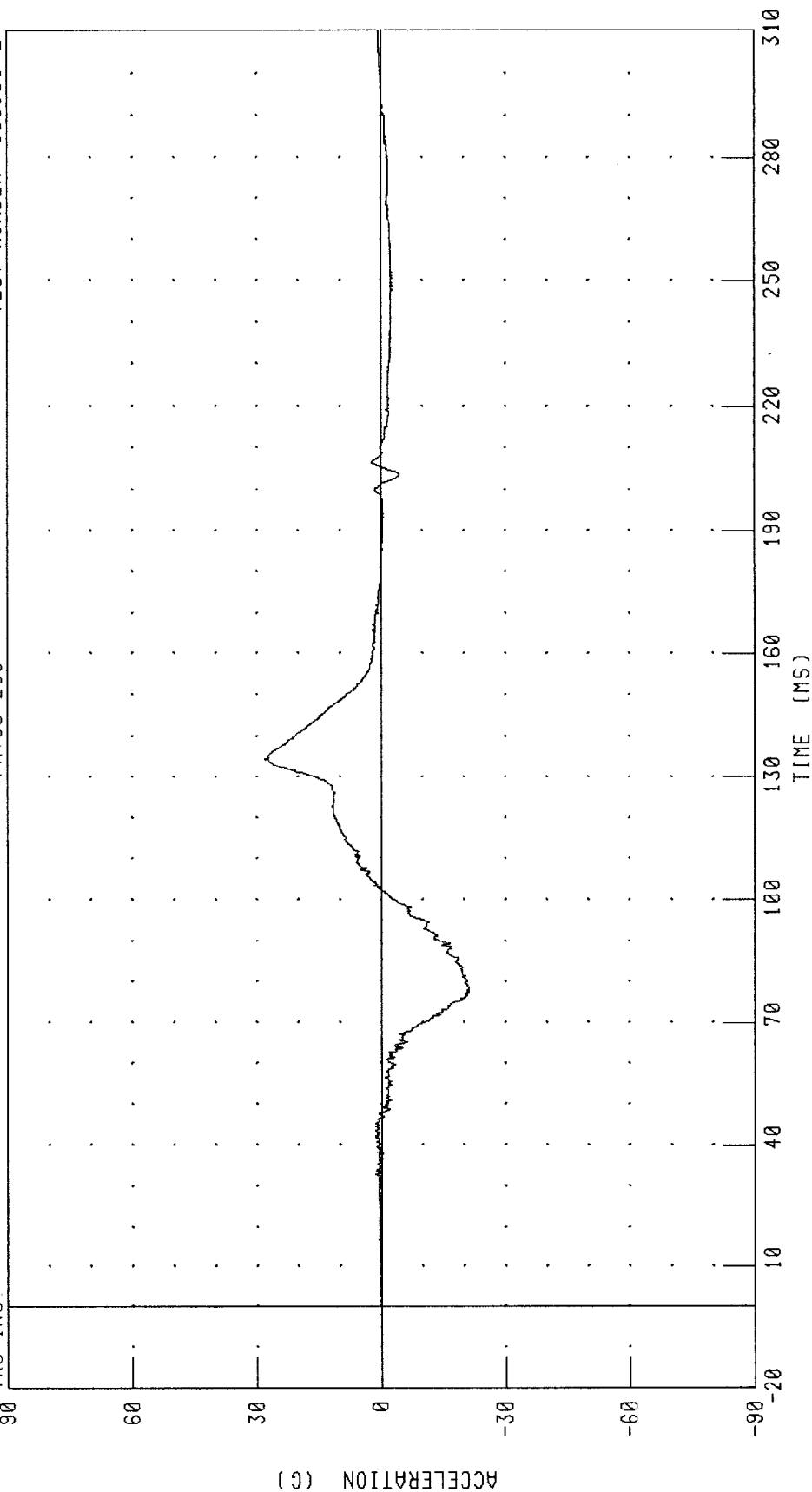
CHANNEL: RFMF1 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC



CHANNEL: HEDXC2 FILTER: CH. CLASS 1000

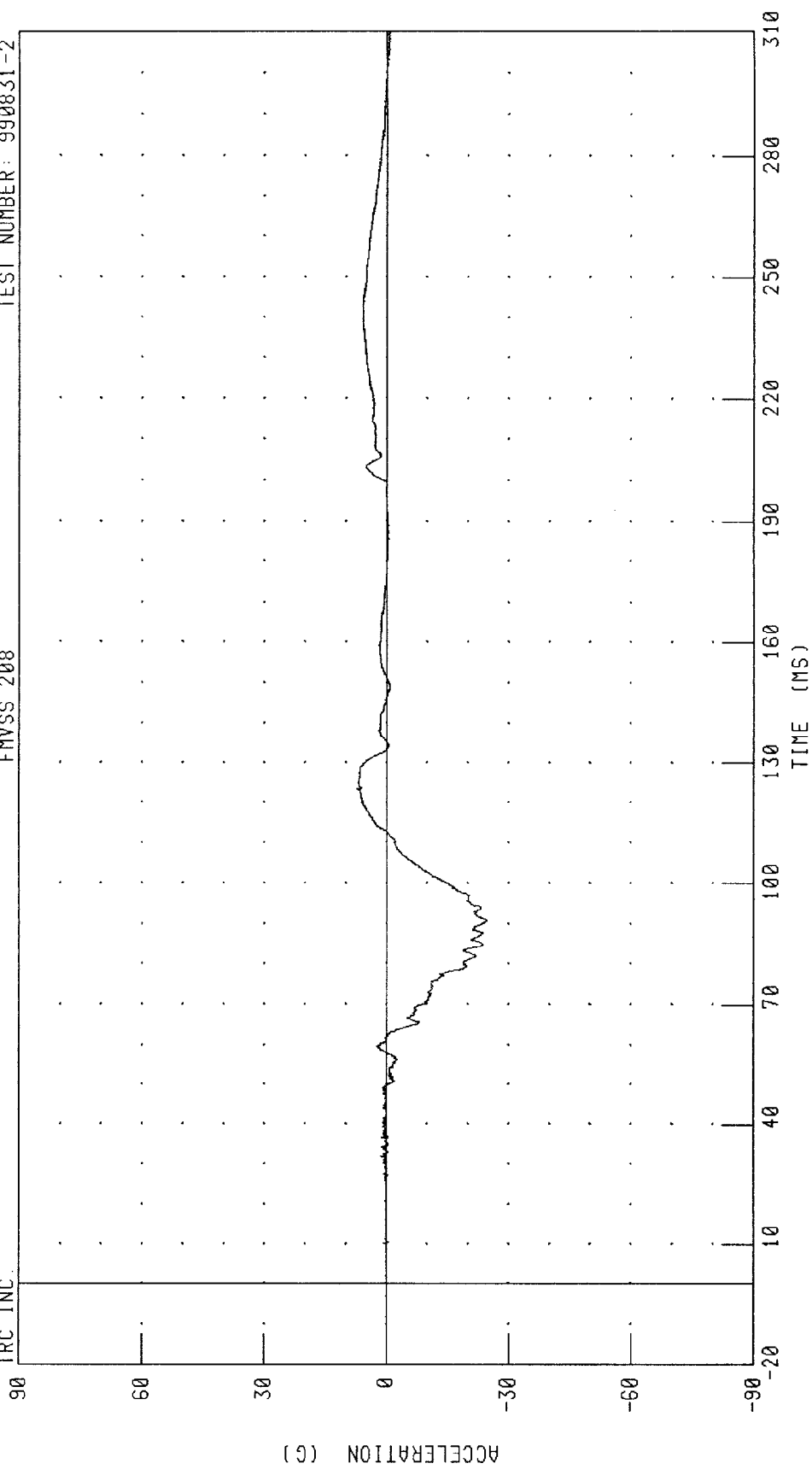
PEAK DATA: 28.11 G @ 134.24 MS, -21.28 G @ 212.28 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

TRC INC.

FMVSS 208

TEST NUMBER: 990831-2



CHANNEL: HEDYG2 FILTER: CH. CLASS 1000

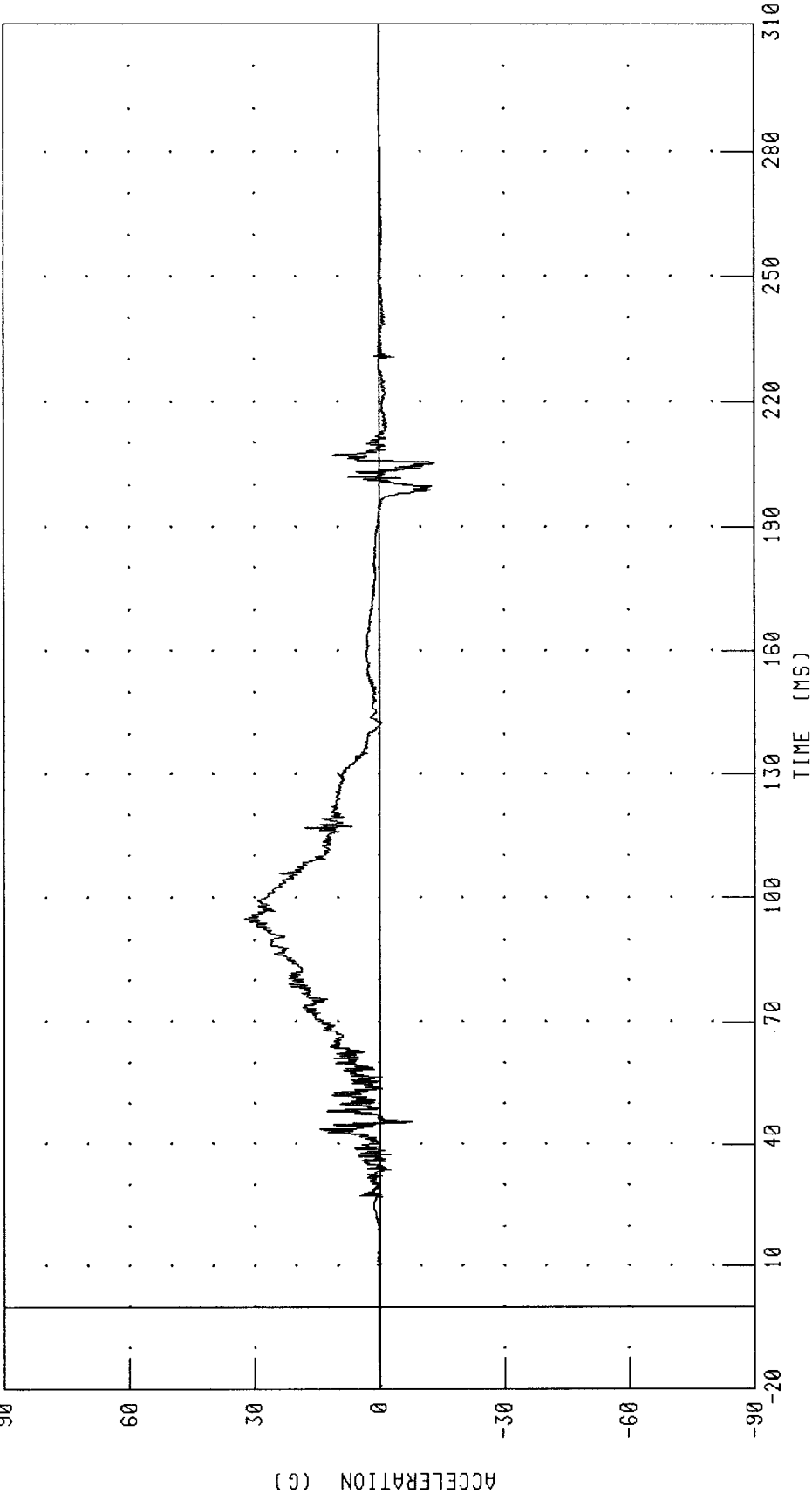
PEAK DATA: 7.25 G @ 123.36 MS, -24.70 G @ 90.72 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

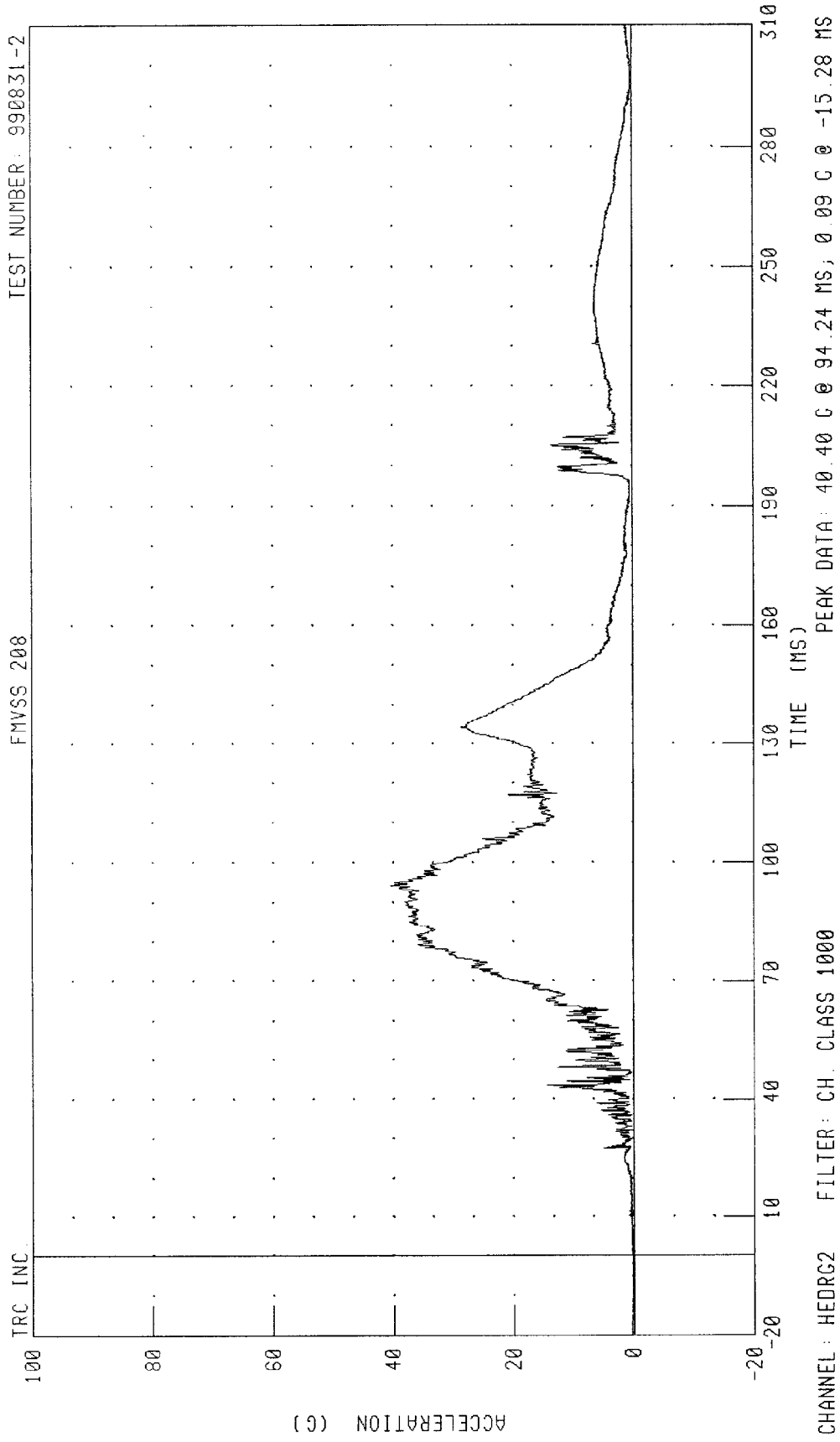
TRC INC.



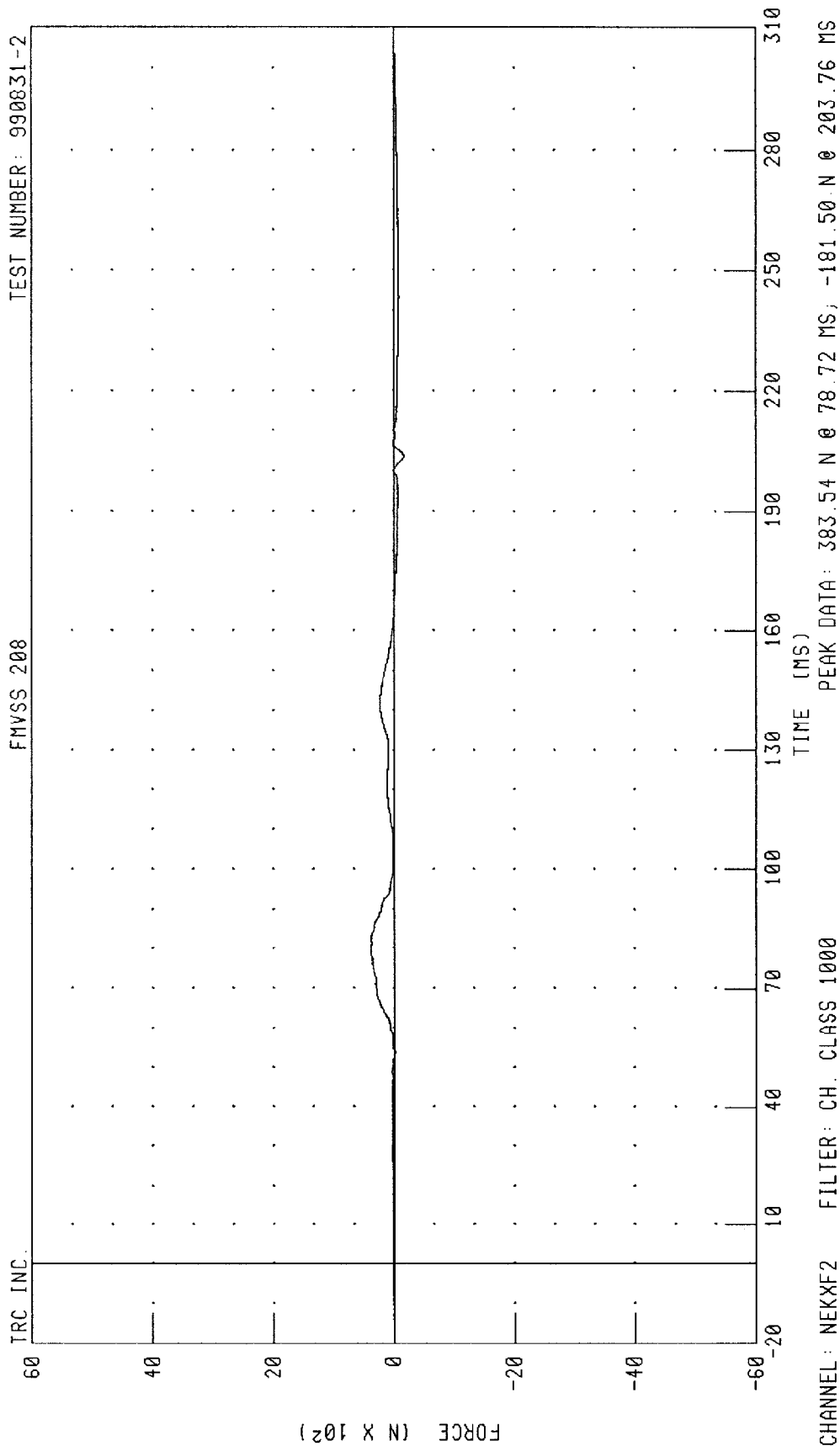
CHANNEL: HEDZG2 FILTER: CH. CLASS 1000

PEAK DATA: 32.37 G @ 95.04 MS; -13.26 G @ 205.20 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION



1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK X-AXIS SHEAR FORCE

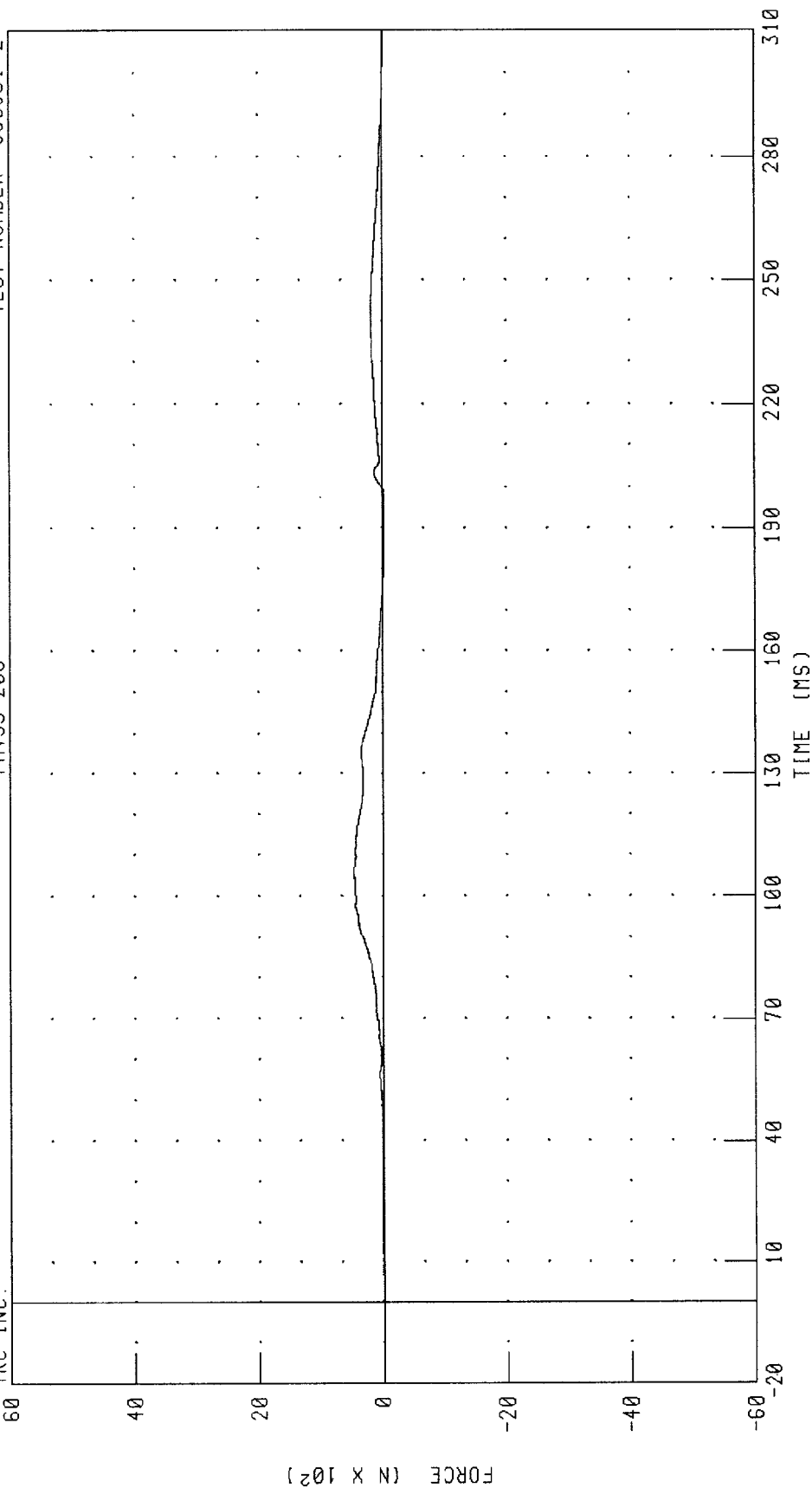


1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK Y-AXIS SHEAR FORCE

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: NEKYF2 FILTER: CH. CLASS 1000

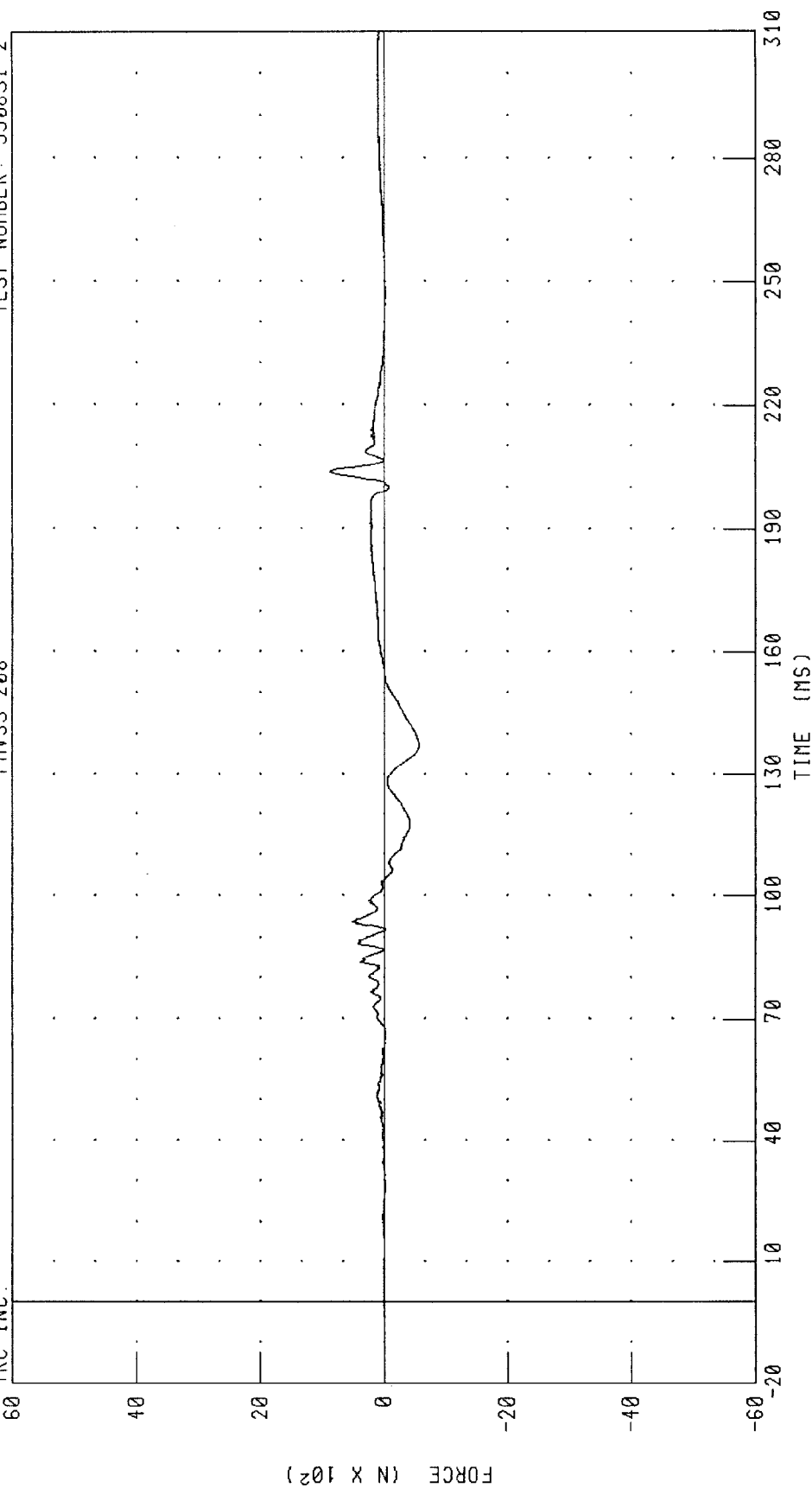
PEAK DATA: 466.51 N @ 105.44 MS; -28.38 N @ 184.08 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK Z-AXIS AXIAL FORCE

TRC INC.

FMVSS 208

TEST NUMBER: 990831-2



CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

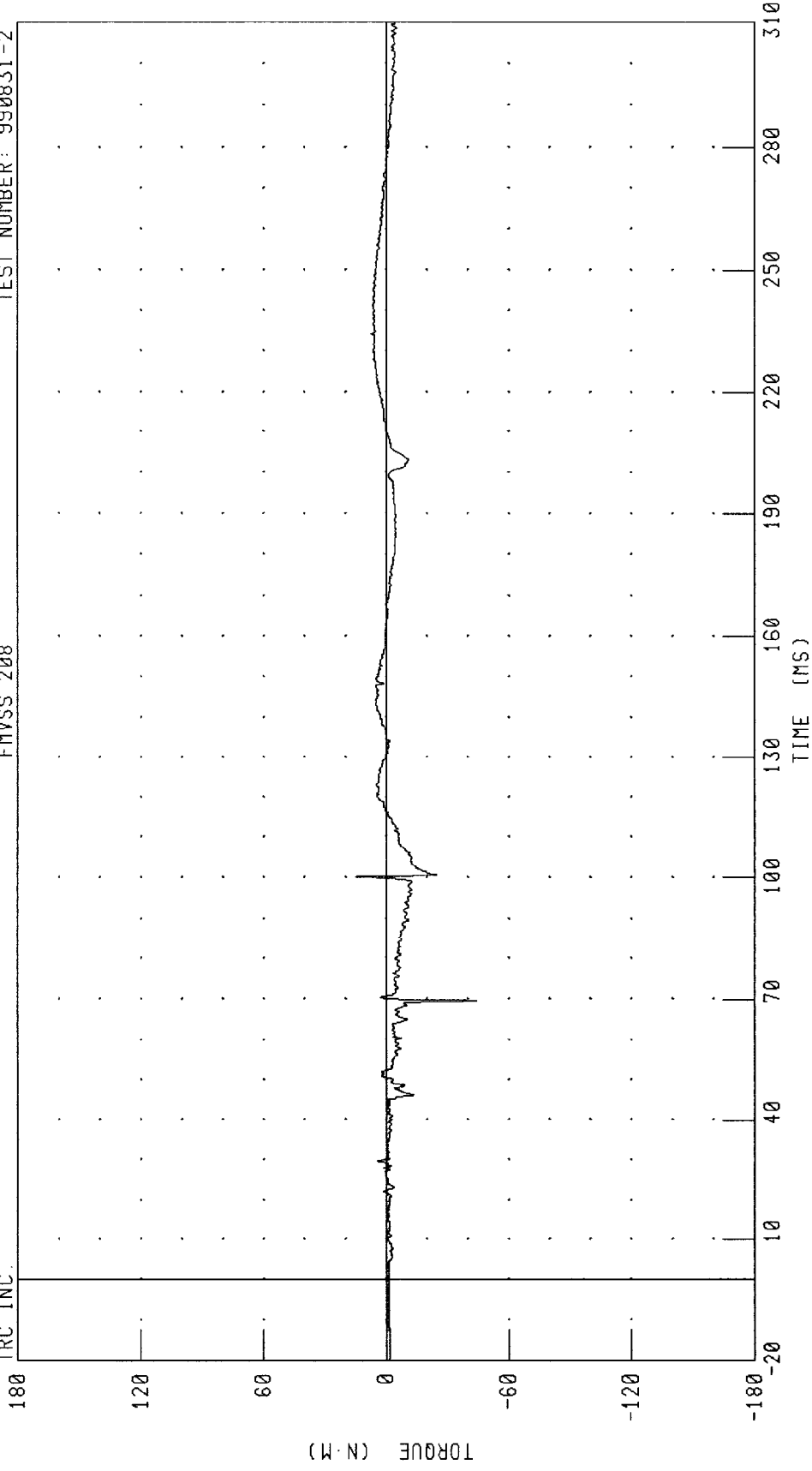
PEAK DATA: 869.27 N @ 203.84 MS, -564.68 N @ 136.88 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT X AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: NEXXM2 FILTER: CH. CLASS 600

PEAK DATA: 15.18 N·M @ 100.16 MS, -44.35 N·M @ 69.60 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Y AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.

180

120

60

0

-60

-120

-180

TORQUE (N·M)

TIME (MS)

PEAK DATA: 30.87 N·M @ 80.72 MS, -17.12 N·M @ 165.20 MS

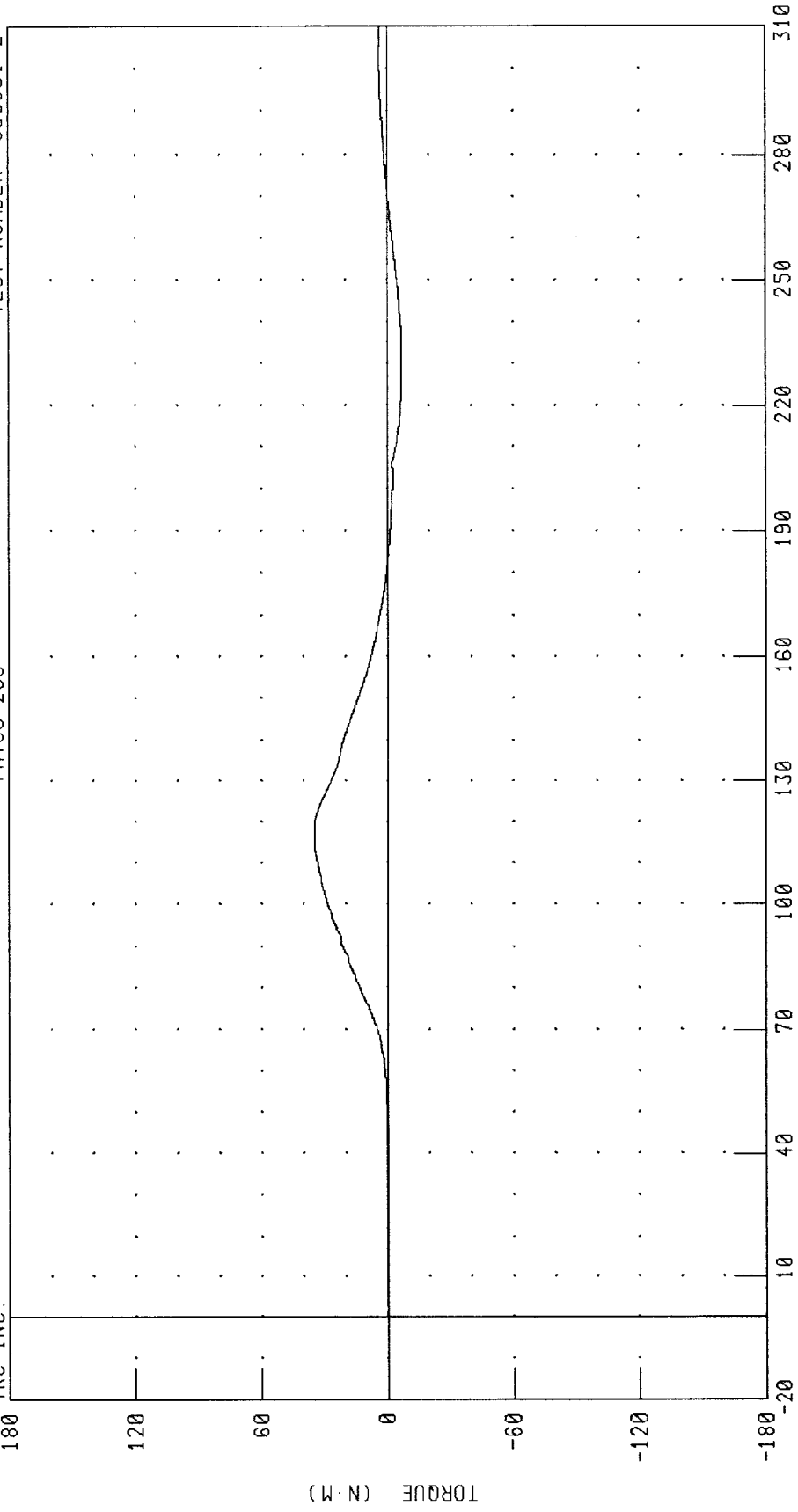
CHANNEL: NEKYM2 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



TIME (MS)

PEAK DATA: 35.08 N·M @ 117.20 MS, -7.03 N·M @ 230.64 MS

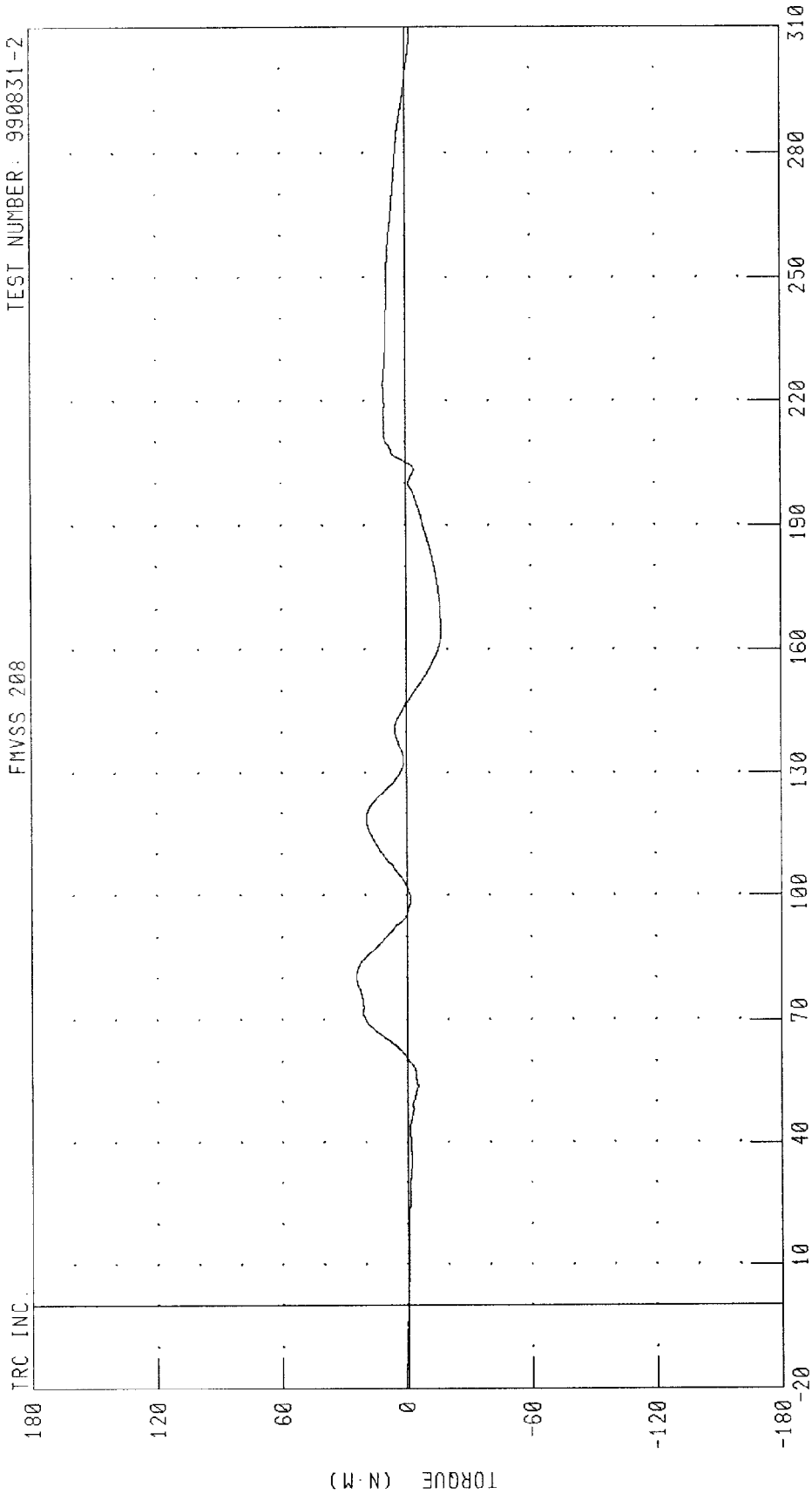
CHANNEL: NEKZM2 FILTER: CH CLASS 600

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER NECK OCCIPITAL CONDYLE MOMENT ABOUT Y AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: NEKOM2 FILTER: CH. CLASS 600

TIME (MS)

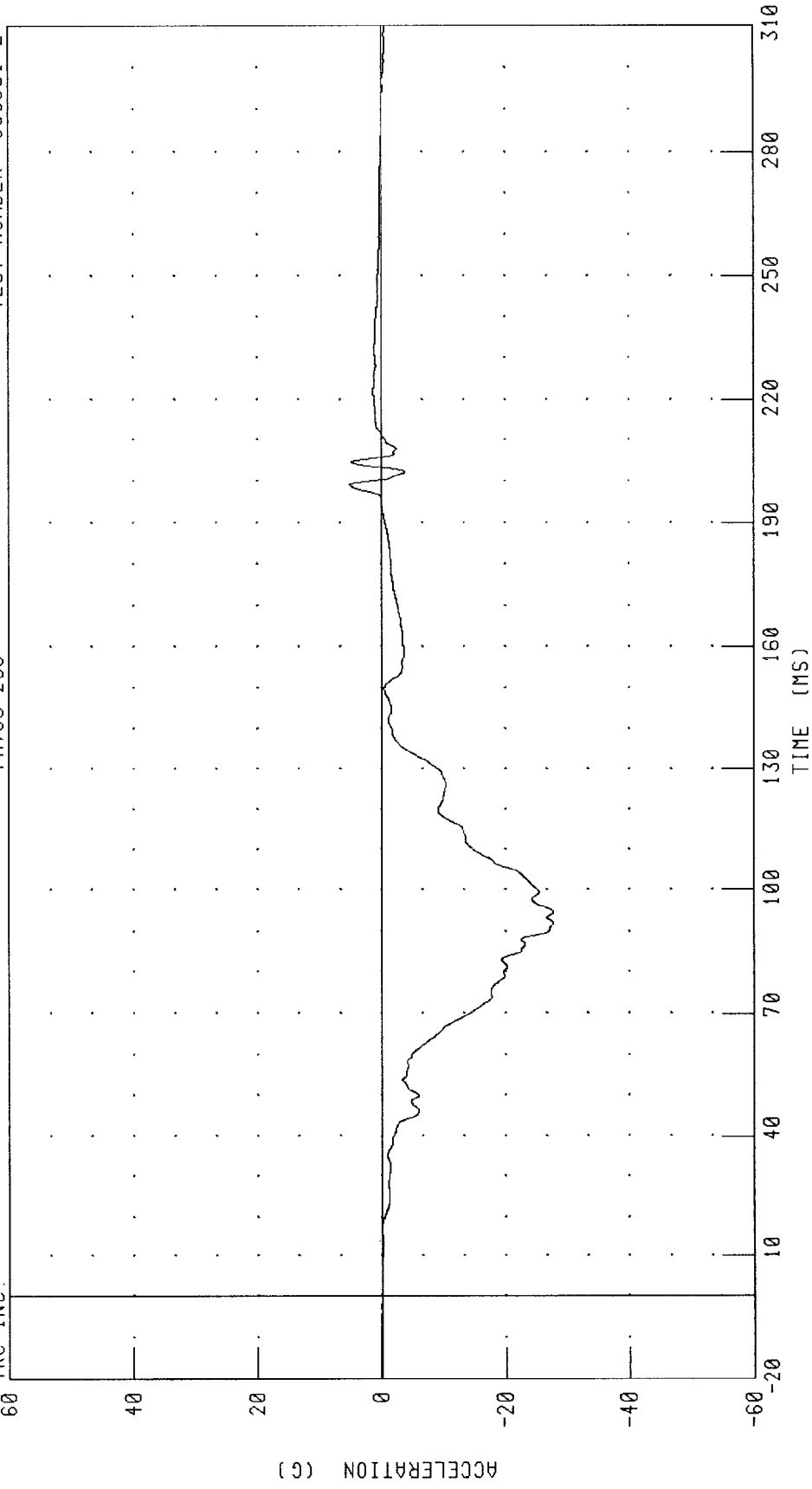
PEAK DATA: 24.17 N-M @ 80.80 MS, -17.00 N-M @ 165.04 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: CSTXG2 FILTER: CH. CLASS 180

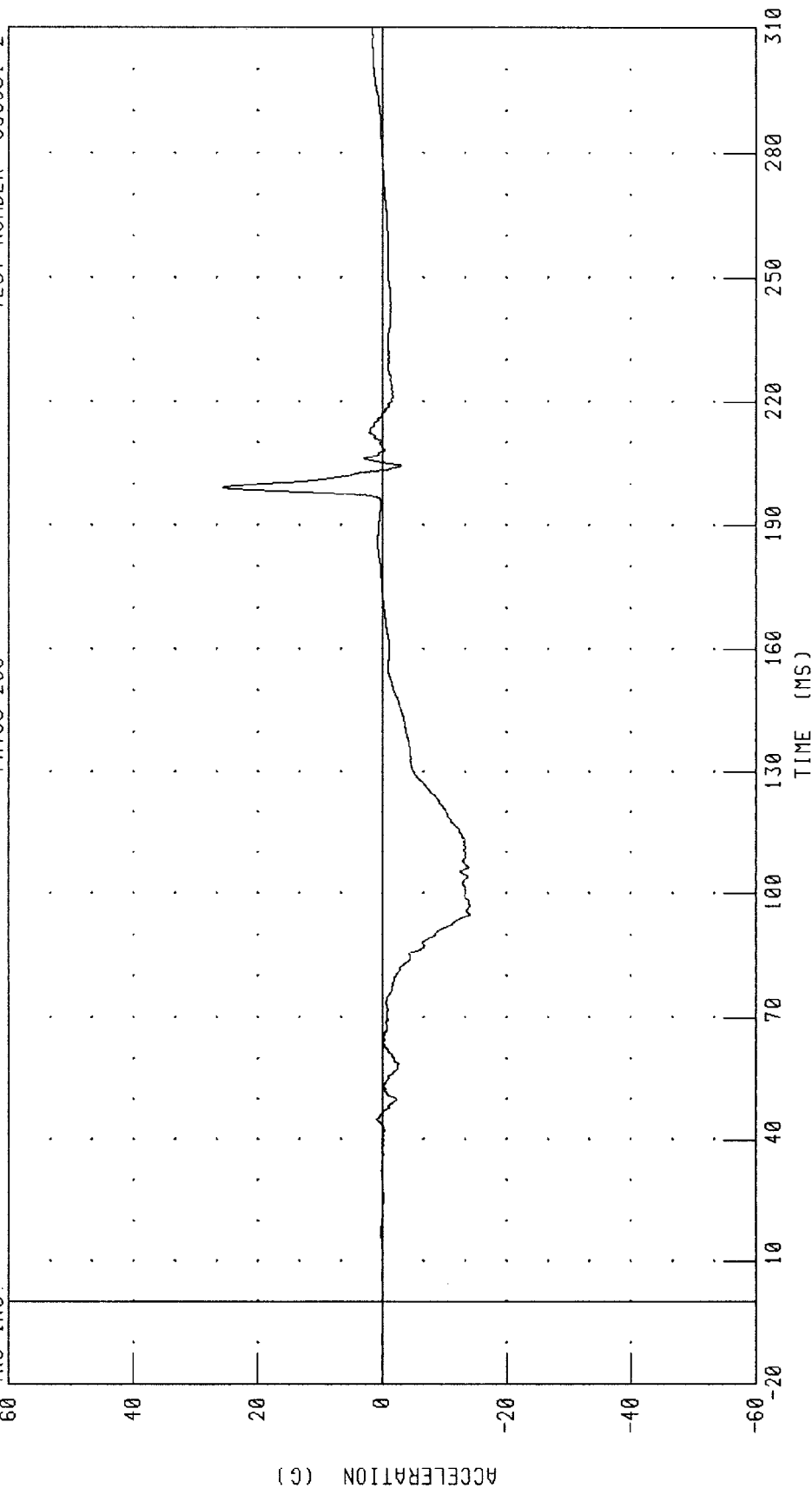
PEAK DATA: 5.15 G @ 199.12 MS, -27.76 G @ 92.00 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

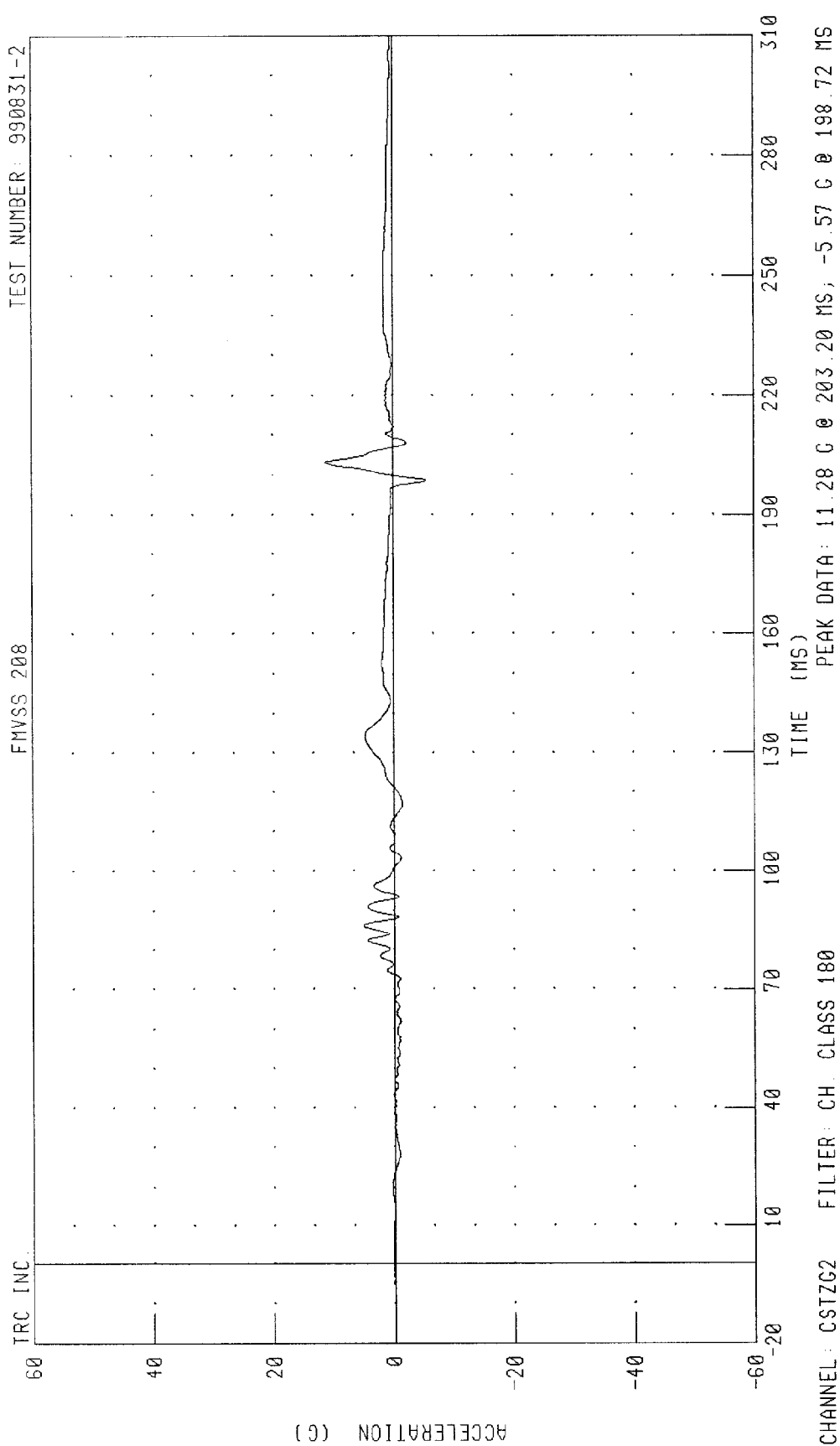
TRC INC.



CHANNEL: CSTYG2 FILTER: CH. CLASS 180

PEAK DATA: 25.68 G @ 199.28 MS; -14.09 G @ 96.96 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

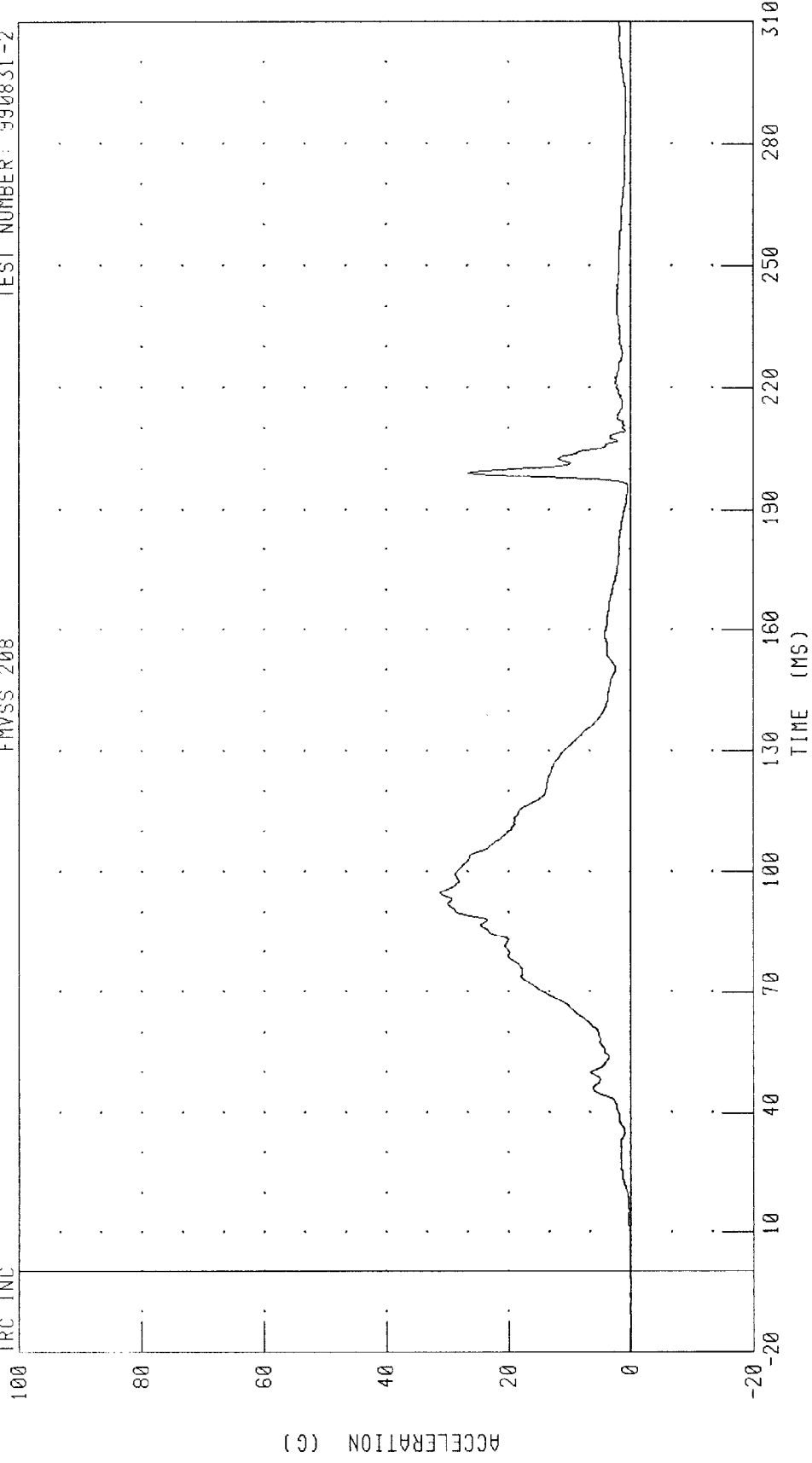


1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC



CHANNEL: CSTRG2 FILTER: CH. CLASS 180

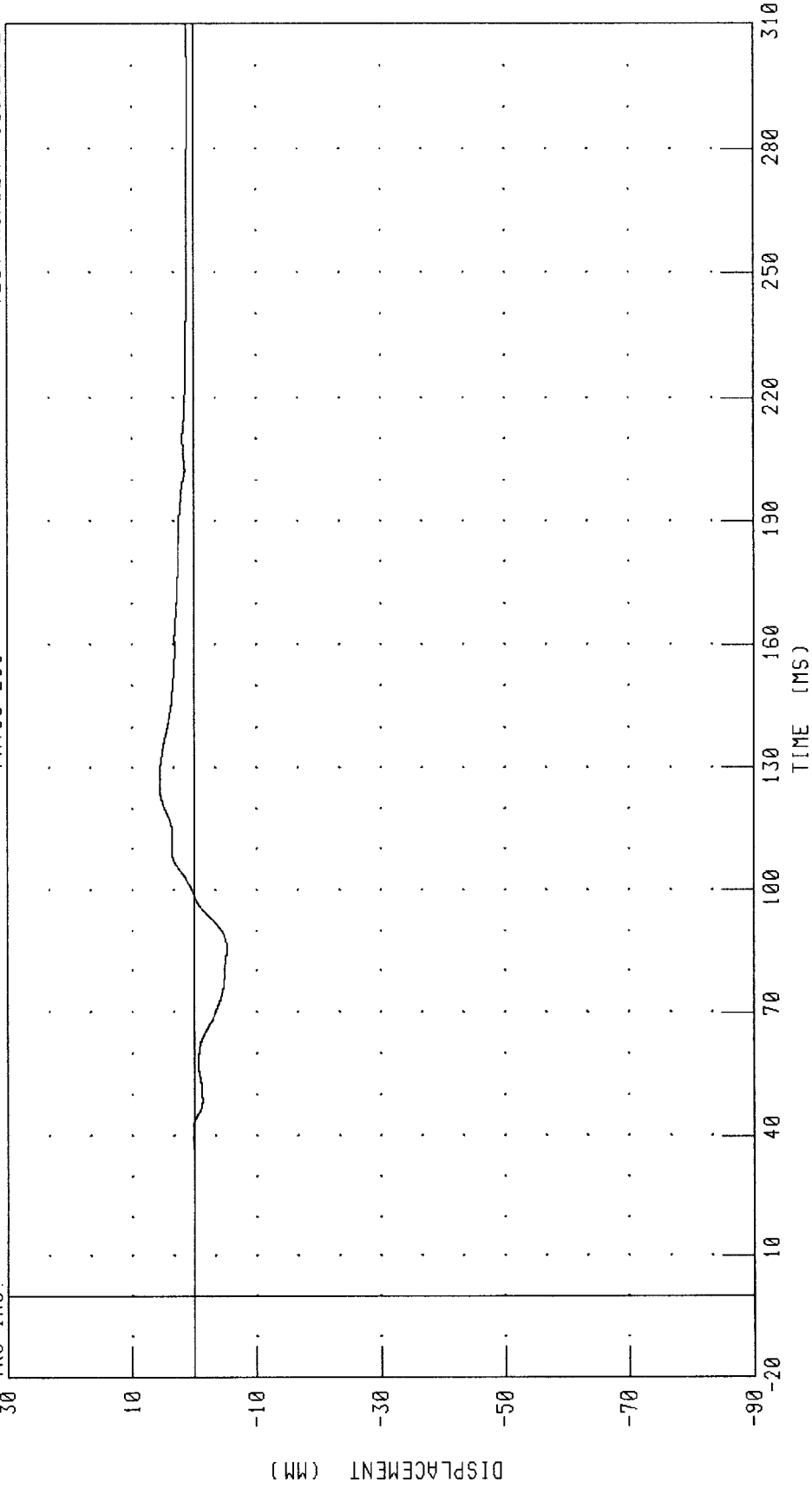
PEAK DATA: 31.08 G @ 94.80 MS; 0.01 G @ -20.00 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER CHEST DEFLECTION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: CSTXD2 FILTER: CH. CLASS 180

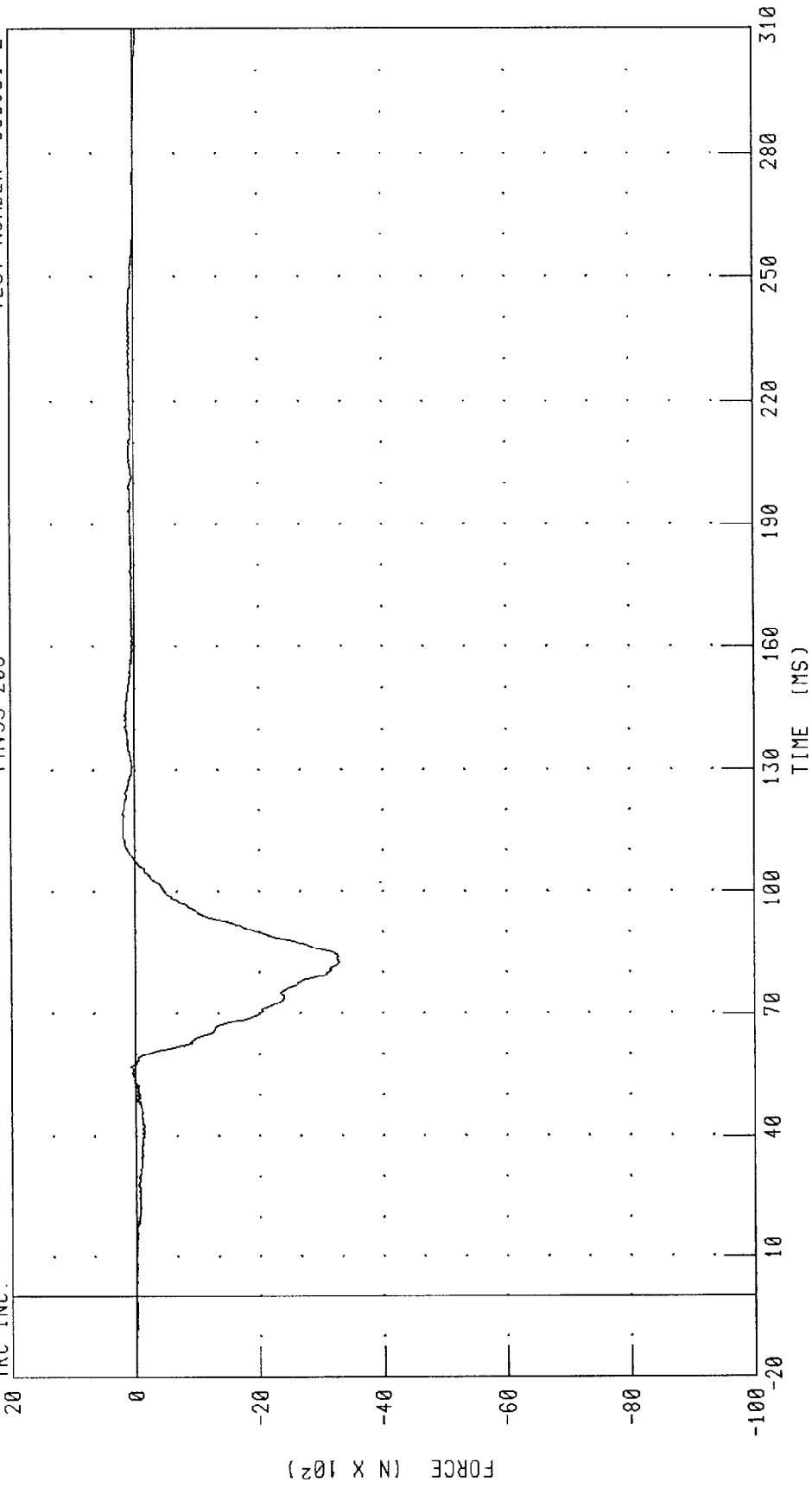
PEAK DATA: 5.51 MM @ 125.44 MS, -5.16 MM @ 85.60 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER LEFT FEMUR FORCE

TEST NUMBER: 990831-2

FMVSS 208

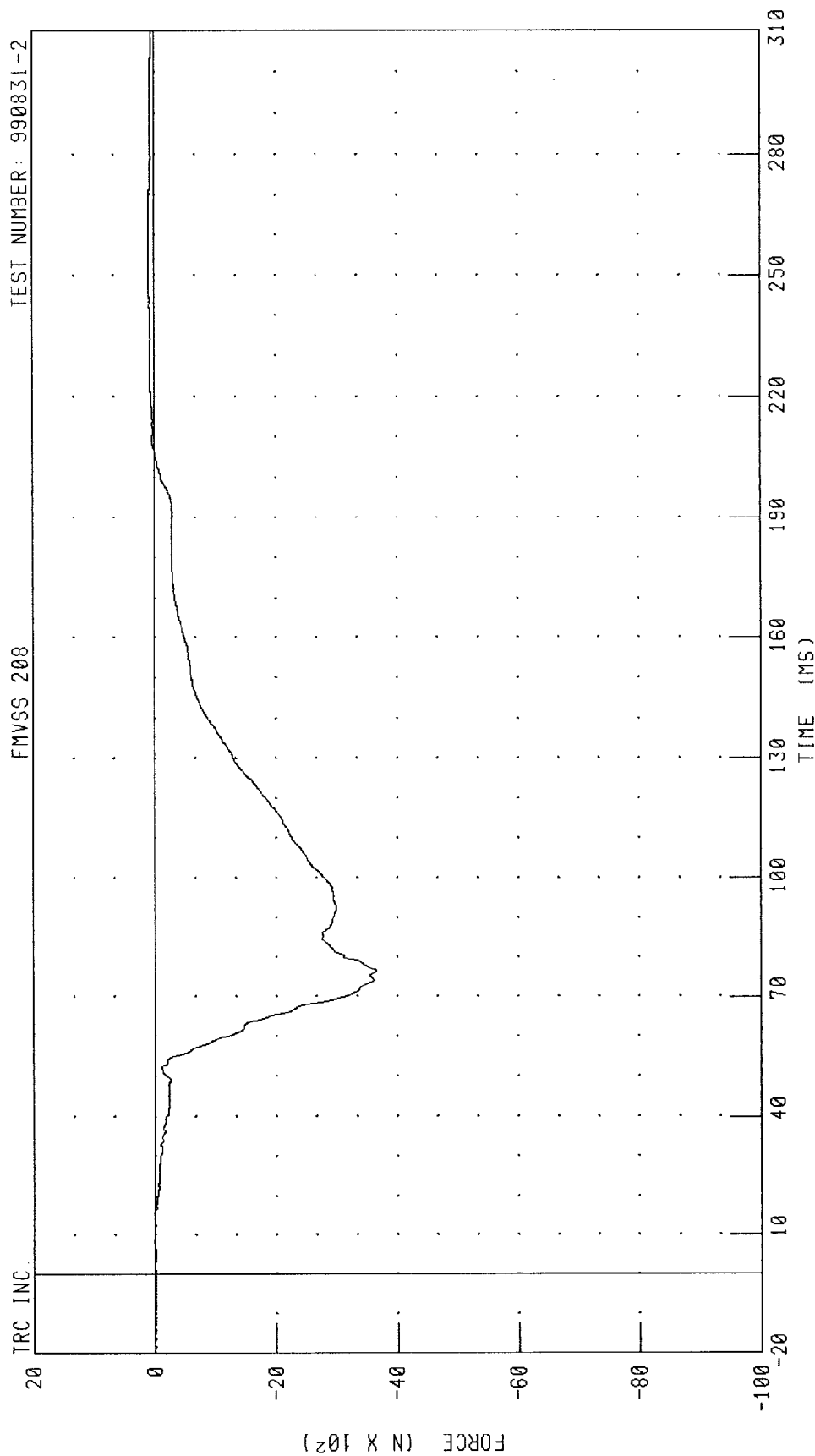
TRC INC.



CHANNEL: LFMF2 FILTER: CH. CLASS 600

PEAK DATA: 212.25 N @ 119.20 MS; -3289.07 N @ 82.64 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE



CHANNEL: RFMF2 FILTER: CH. CLASS 600

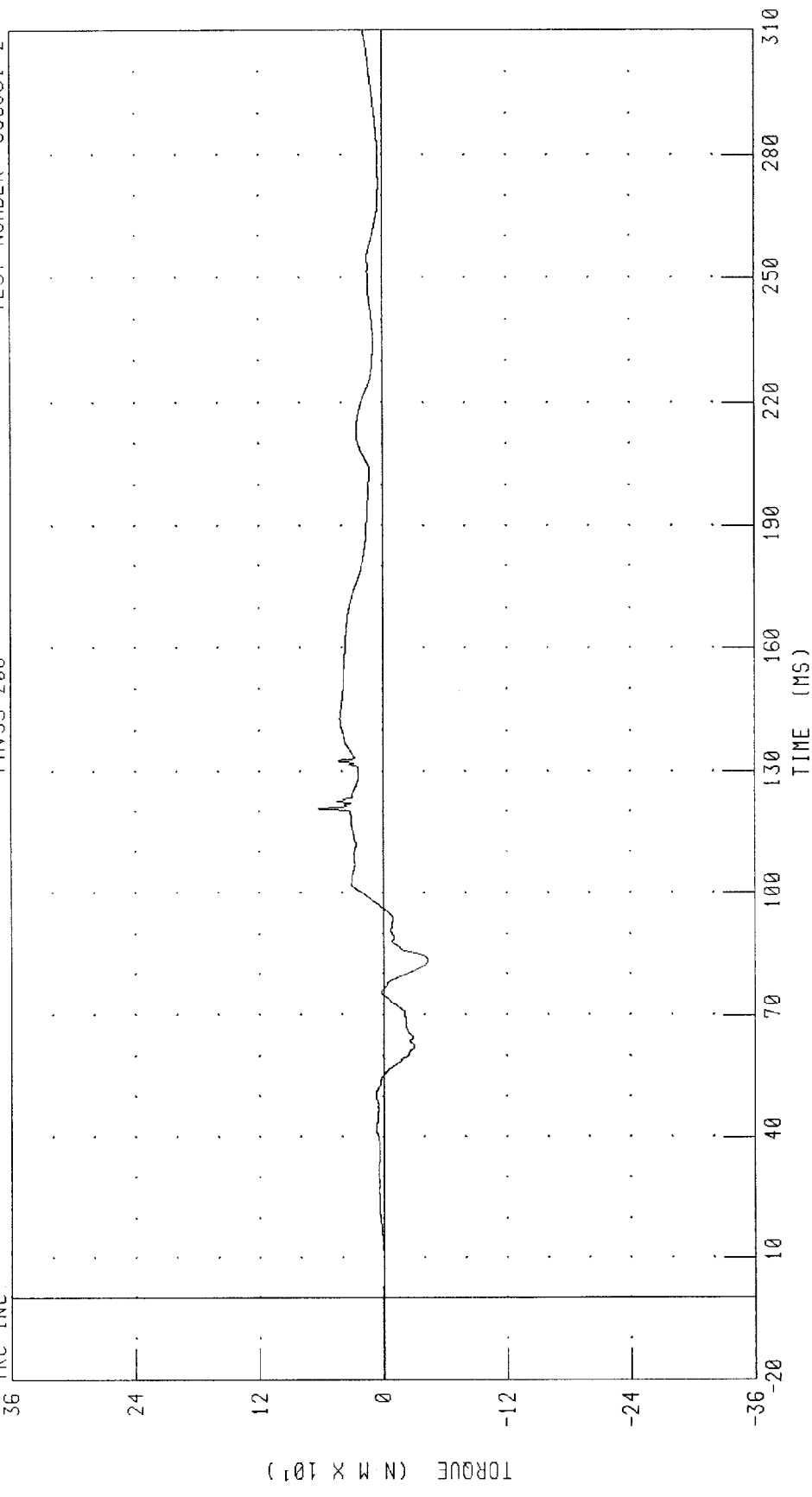
PEAK DATA: 96.91 N @ 261.84 MS; -3657.94 N @ 76.56 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER LEFT UPPER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC



PEAK DATA: 62.68 N·M @ 120.88 MS, -42.95 N·M @ 83.44 MS

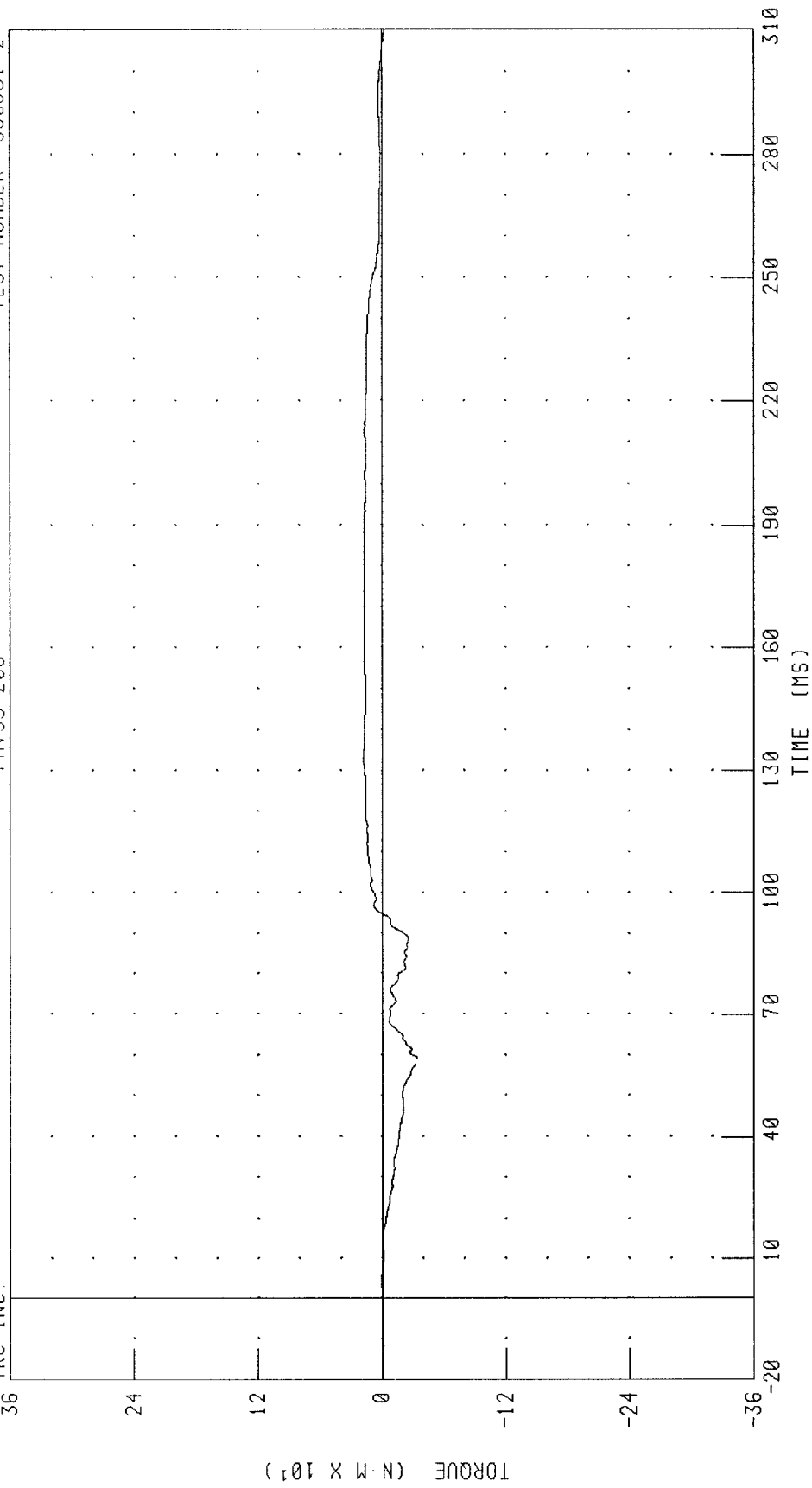
CHANNEL: TBLXM2 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



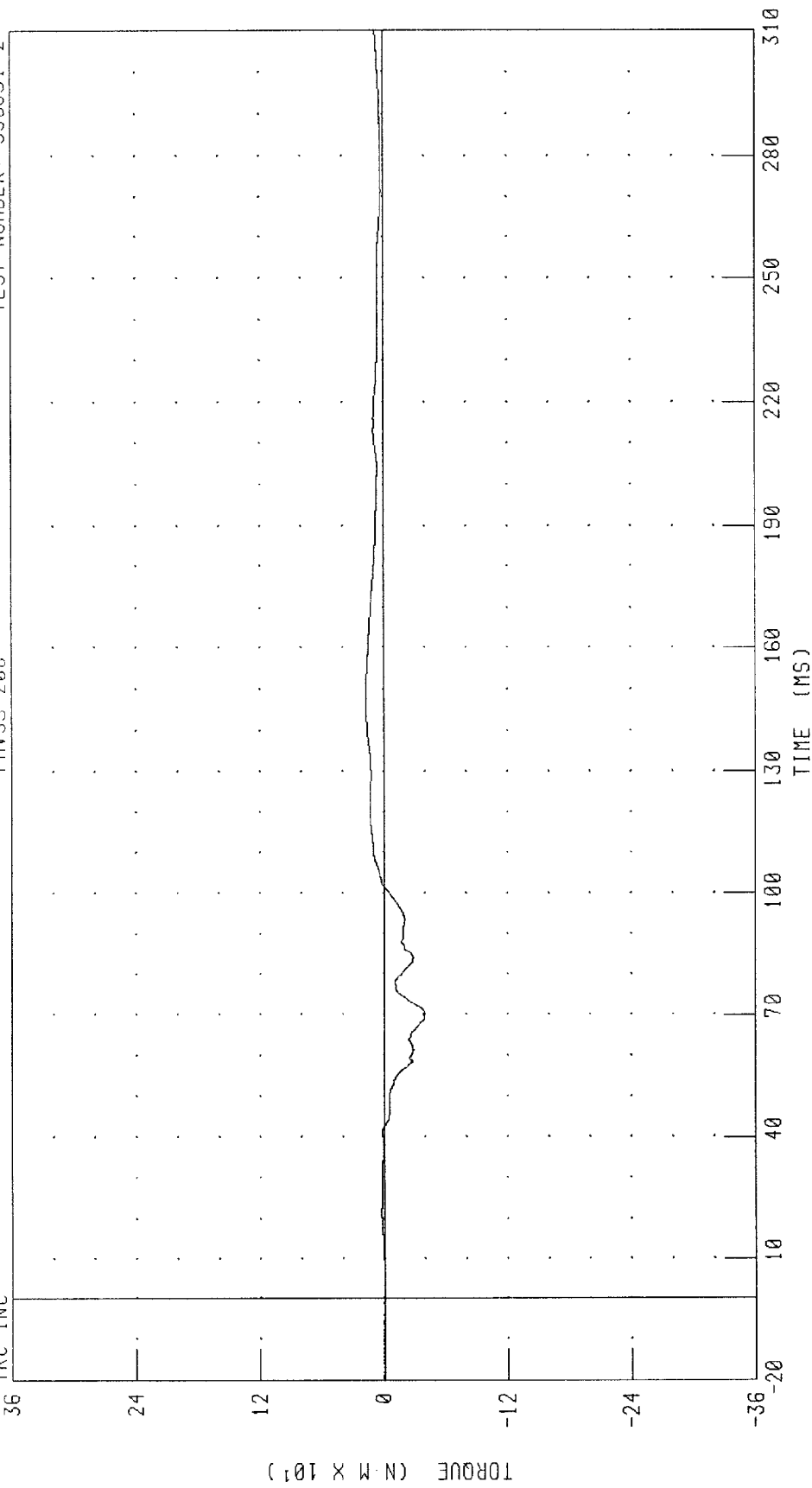
CHANNEL: TBLYM2 FILTER: CH. CLASS 600 PEAK DATA: 17.73 N-M @ 133.28 MS, -33.85 N-M @ 59.44 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER LEFT LOWER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC



CHANNEL: ANLXM2 FILTER: CH. CLASS 600
PEAK DATA: 16.75 N-M @ 146.64 MS, -39.54 N-M @ 69.52 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.

36

24

12

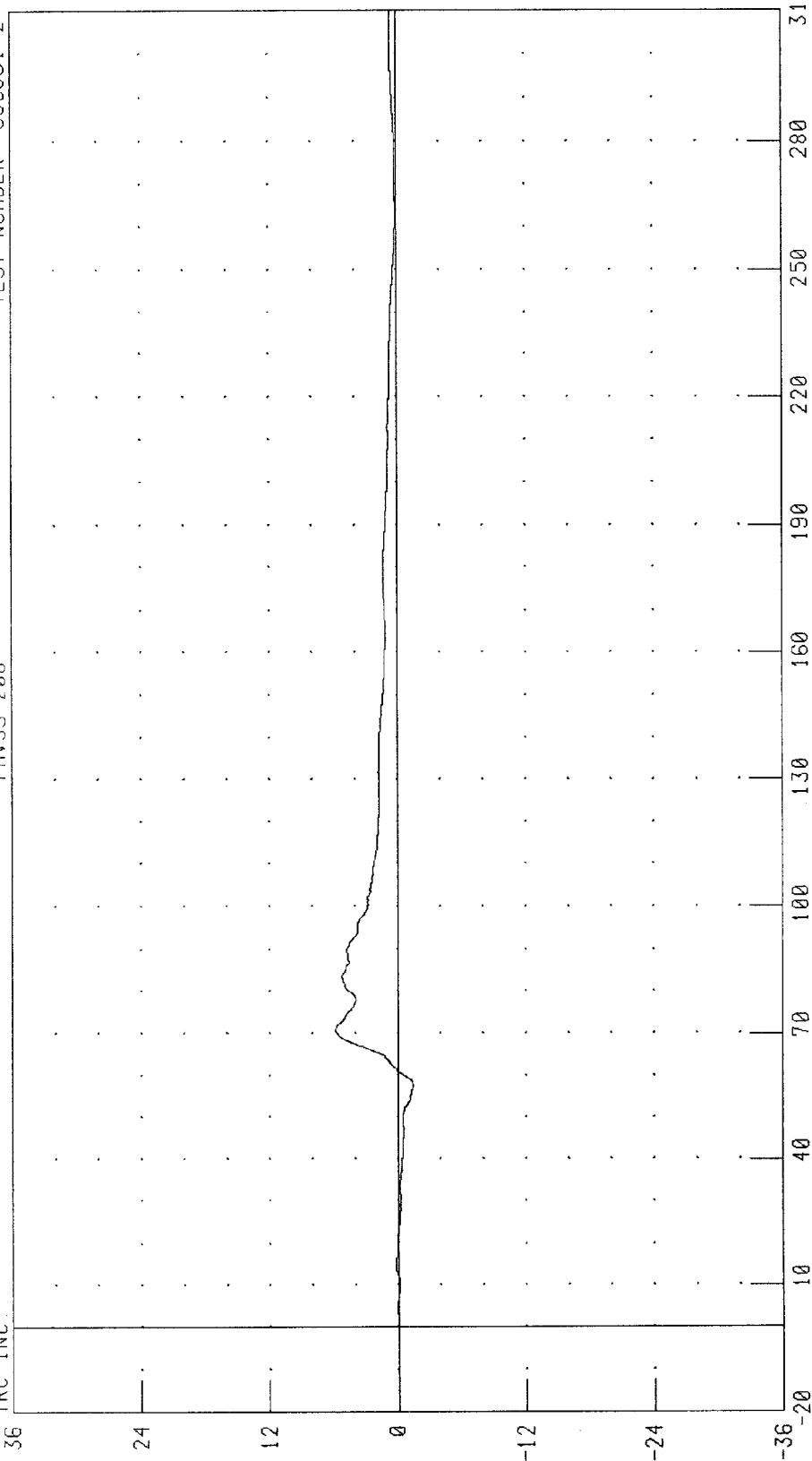
0

-12

-24

-36

TORQUE (N·M × 10¹)



TIME (MS)

PEAK DATA: 58.42 N·M @ 70.88 MS, -14.32 N·M @ 57.52 MS

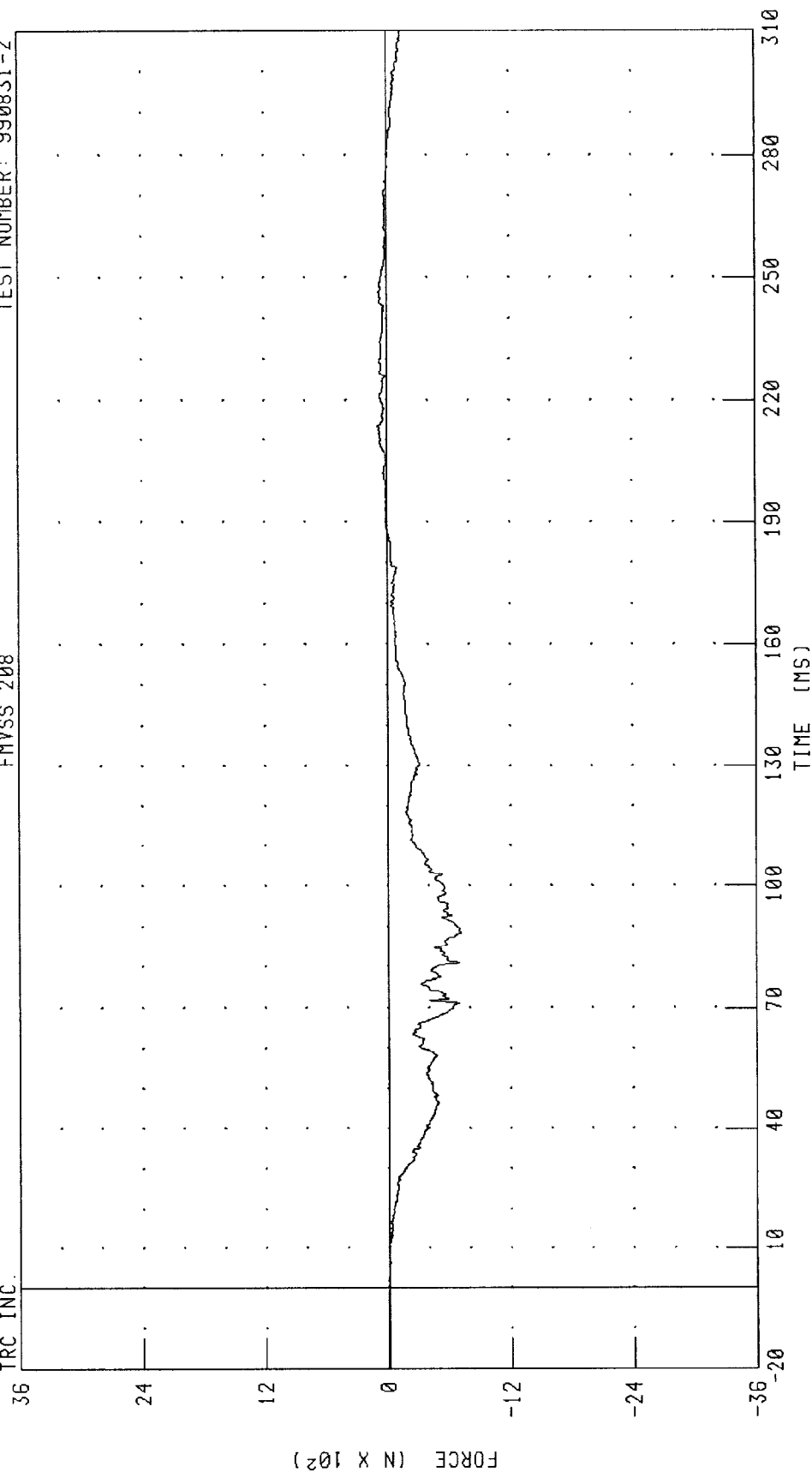
CHANNEL: ANLYM2 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER LEFT TIBIA Z-AXIS FORCE

TEST NUMBER: 990831-2

FMVSS 208

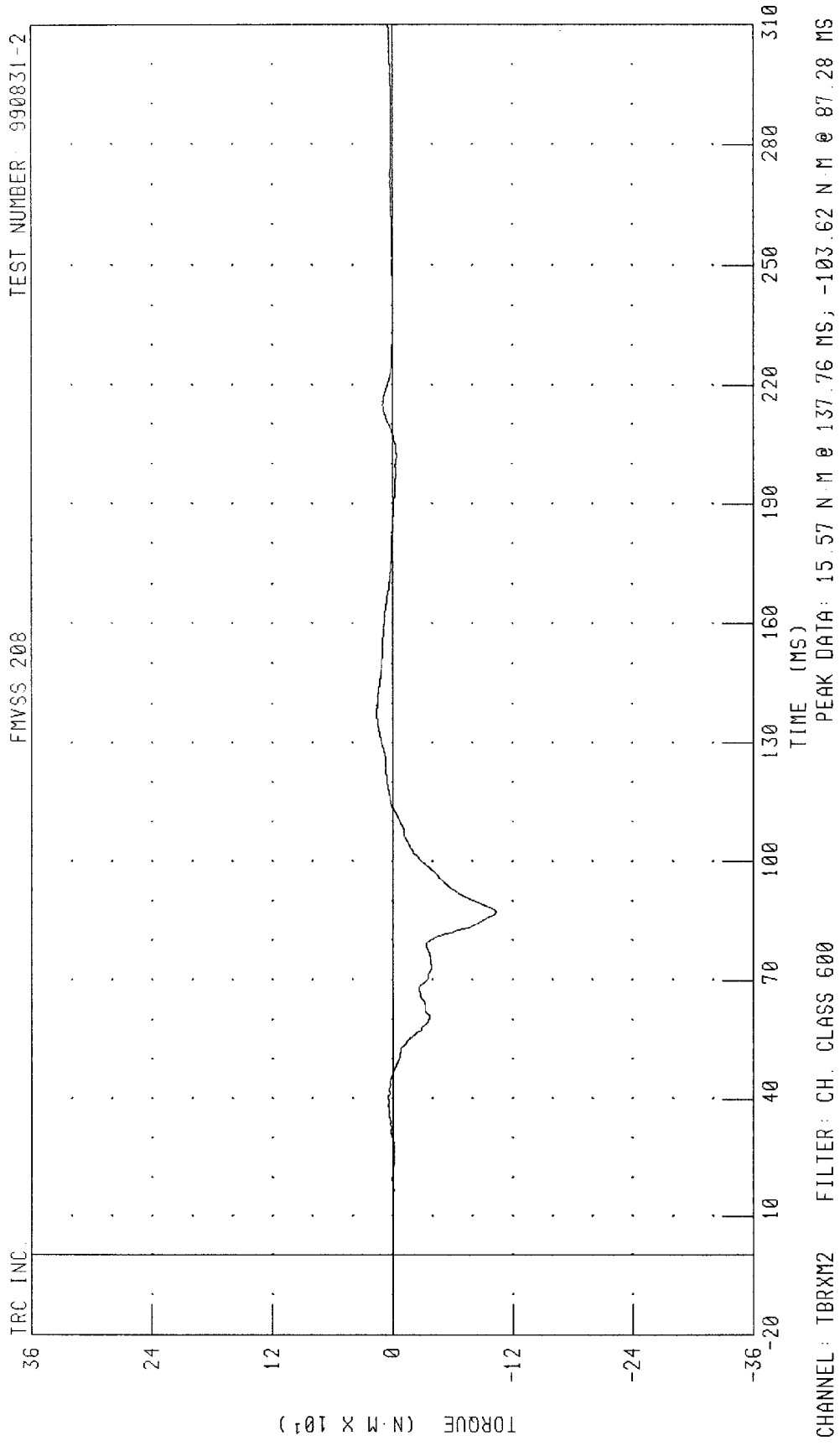
TRC INC.



CHANNEL: TBLZFP2 FILTER: CH. CLASS 600

PEAK DATA: 91.40 N @ 213.52 MS; -717.81 N @ 88.64 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS



1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.

36

24

12

0

-12

-24

-36

TORQUE (N·M X 10¹)

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

PEAK DATA: 14.92 N·M @ 277.04 MS, -39.72 N·M @ 80.80 MS

FILTER: CH. CLASS 600

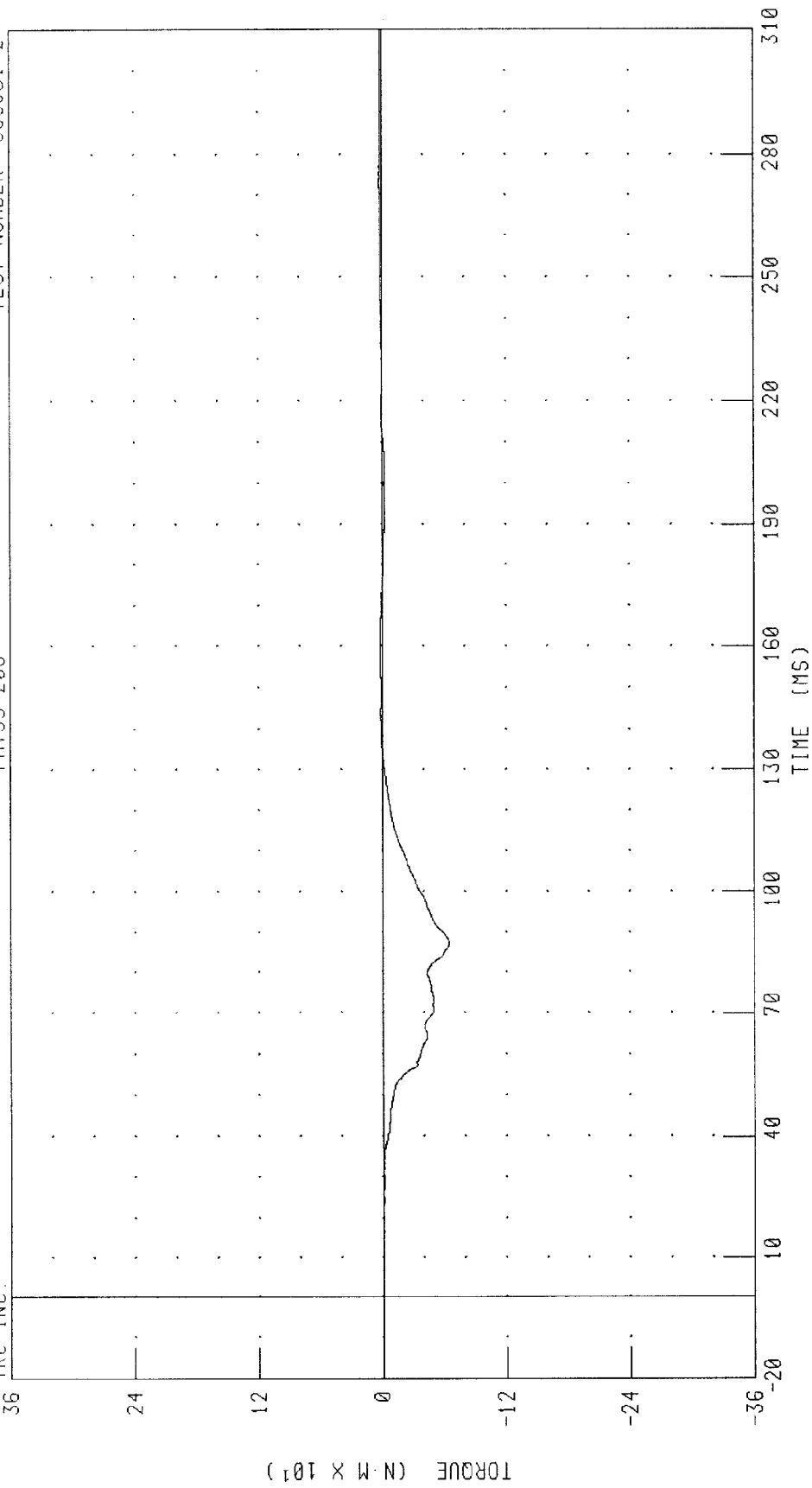
CHANNEL: TBRYM2

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER RIGHT LOWER TIBIA MOMENT ABOUT X AXIS

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



PEAK DATA: 2.37 N-M @ 273.52 MS; -64.94 N-M @ 87.44 MS

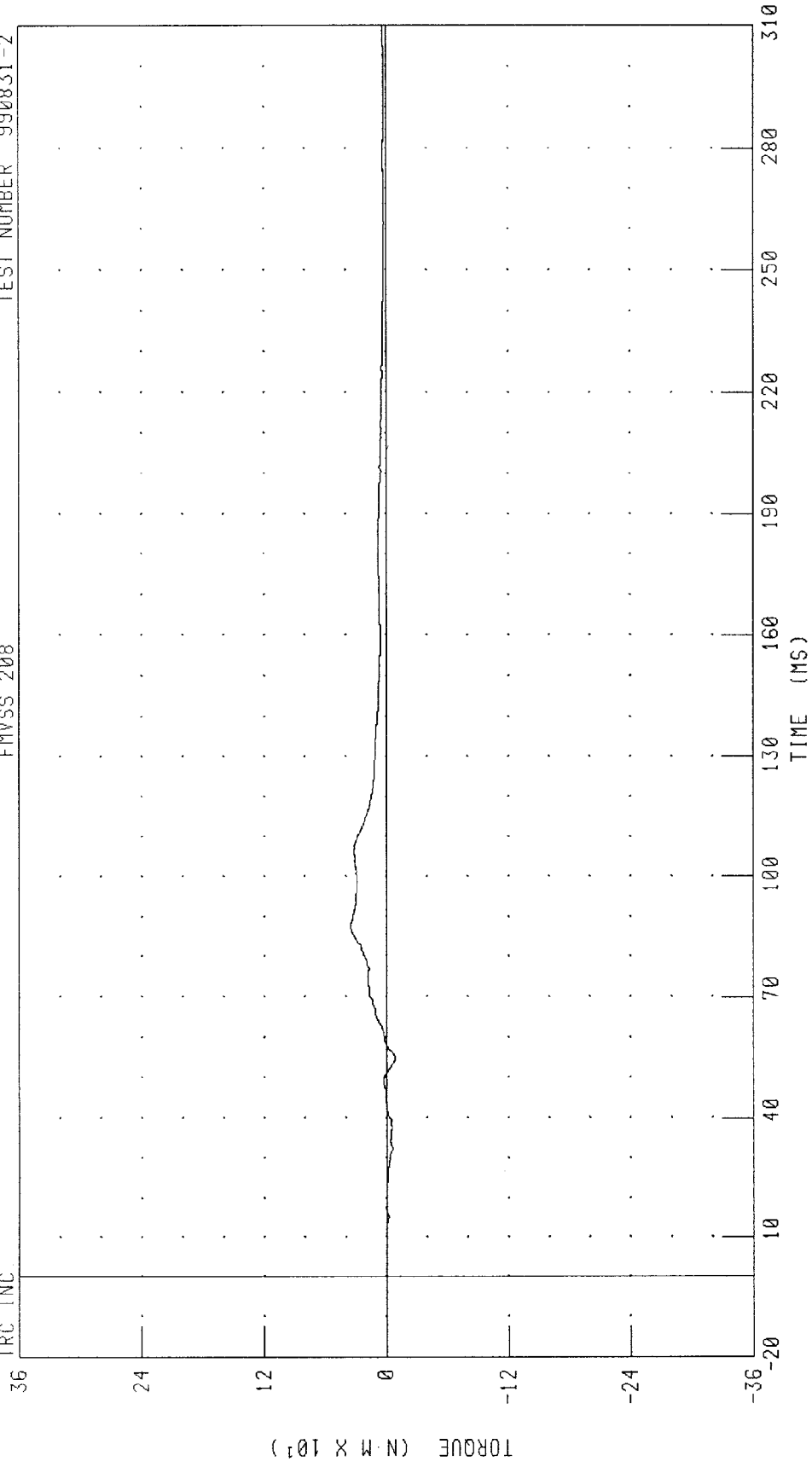
CHANNEL: ANRXM2 FILTER: CH. CLASS 600

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS

TEST NUMBER 990831-2

FMVSS 208

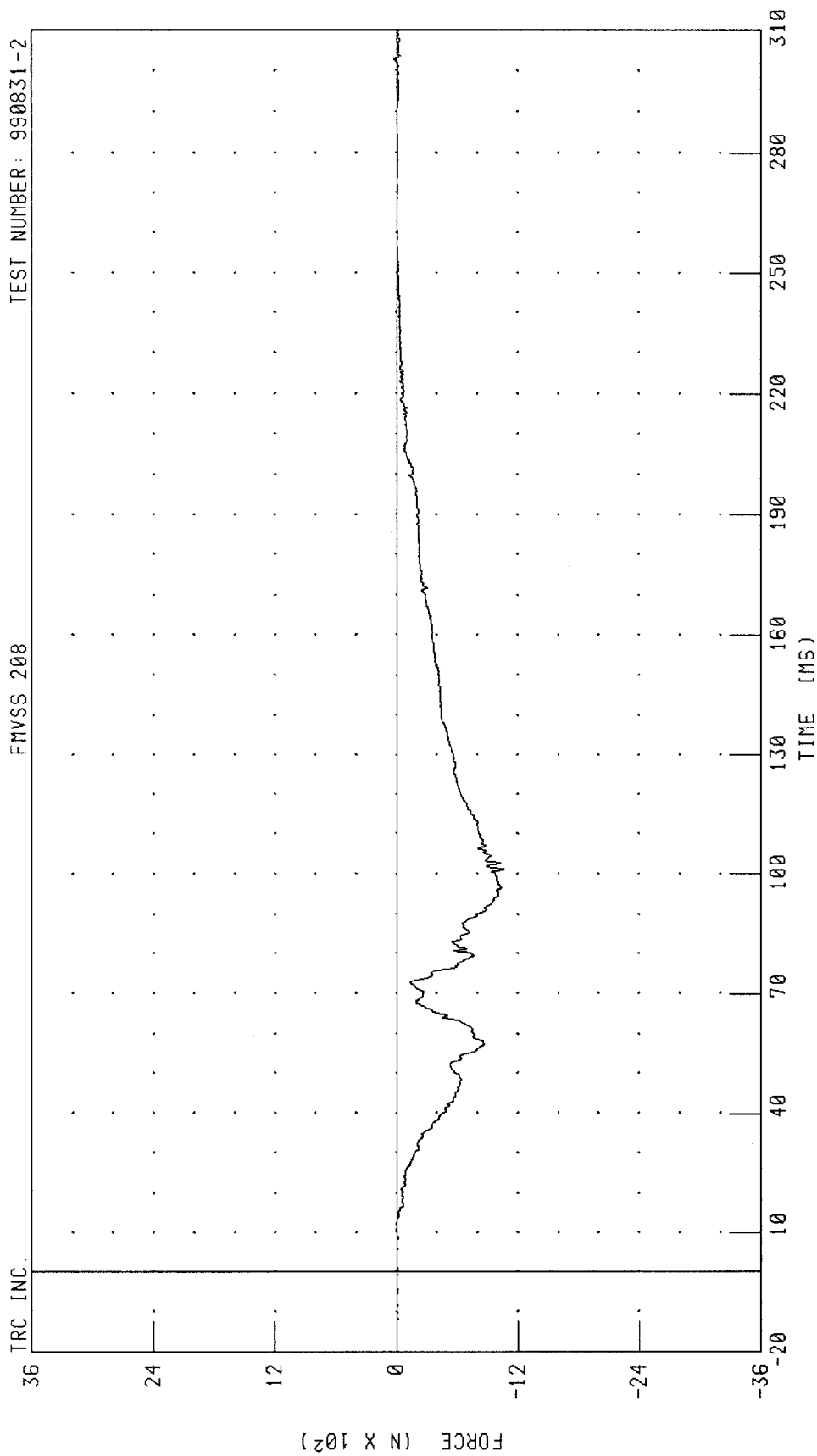
TRC INC



CHANNEL: ANPRM2 FILTER: CH. CLASS 600

PEAK DATA: 35.08 N-M @ 87.84 MS, -8.97 N-M @ 54.56 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT FRONT PASSENGER RIGHT TIBIA Z-AXIS FORCE



CHANNEL: TBRZF2 FILTER: CH. CLASS 600

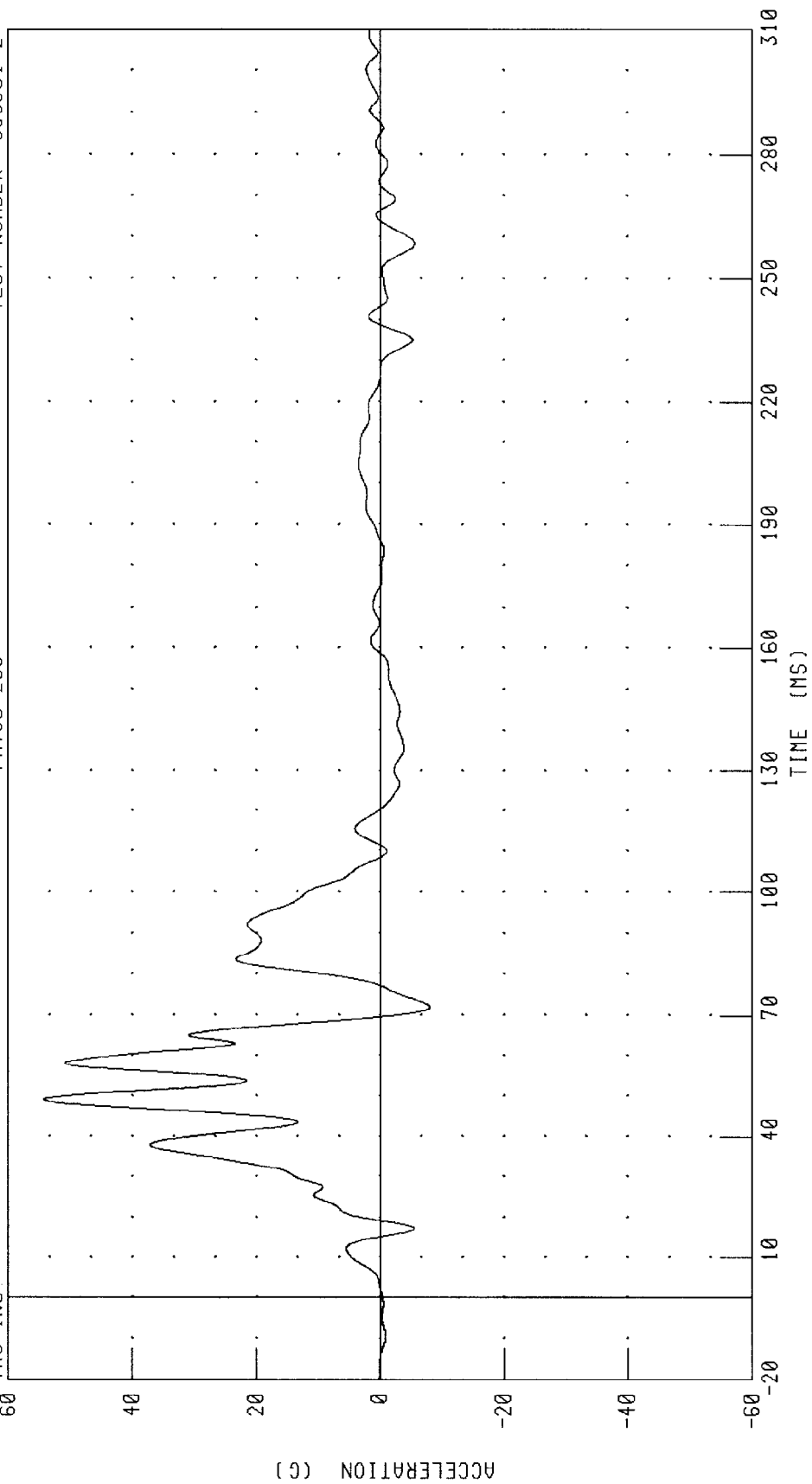
PEAK DATA: 21.77 N @ 302.88 MS, -1064.05 N @ 101.20 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC



CHANNEL: BCLXG1 FILTER: CH. CLASS 60

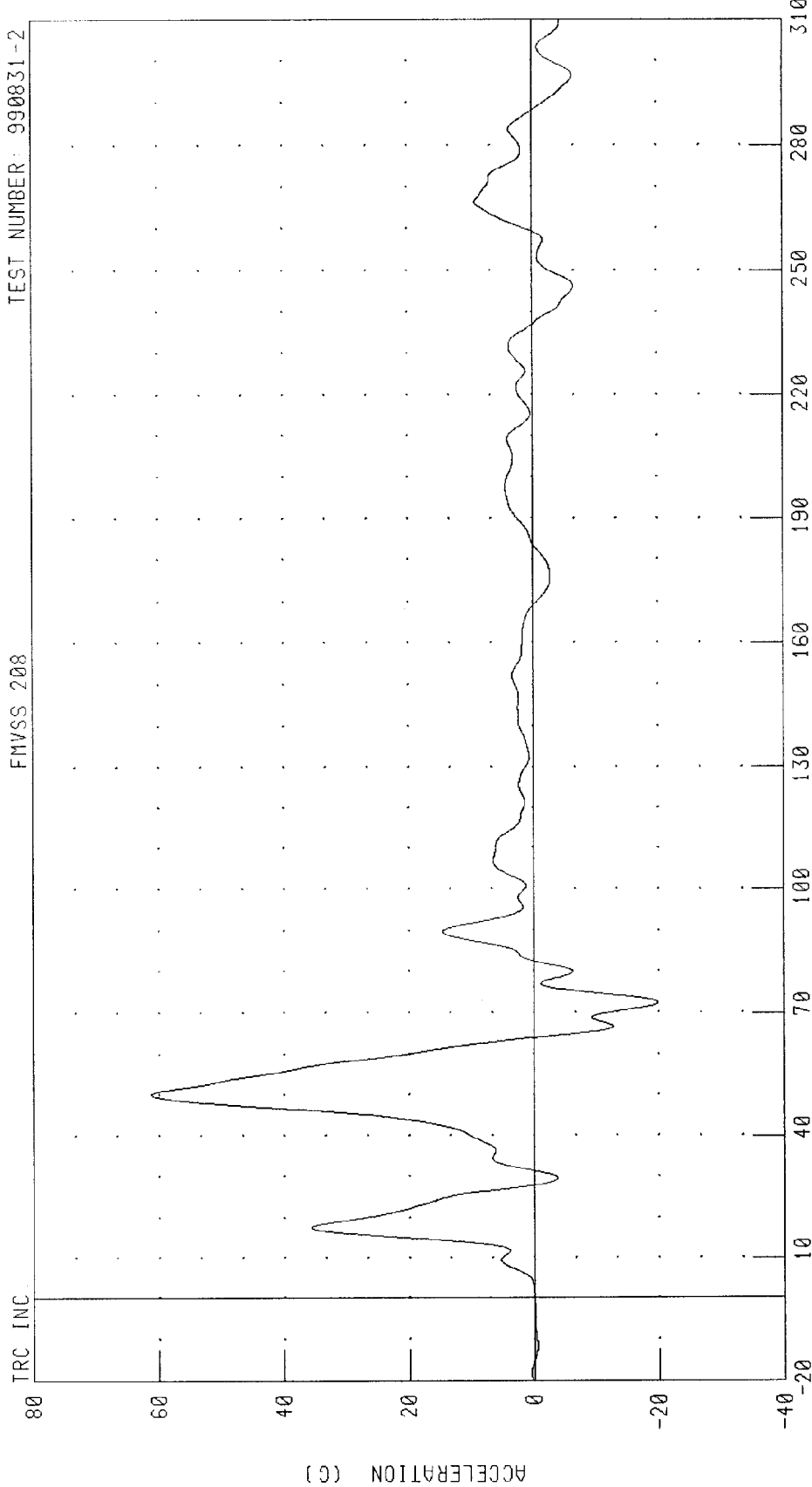
PEAK DATA: 54.28 G @ 49.12 MS; -8.04 G @ 71.92 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC



TIME (MS)

PEAK DATA: 61.23 G @ 50.16 MS, -19.95 G @ 72.48 MS

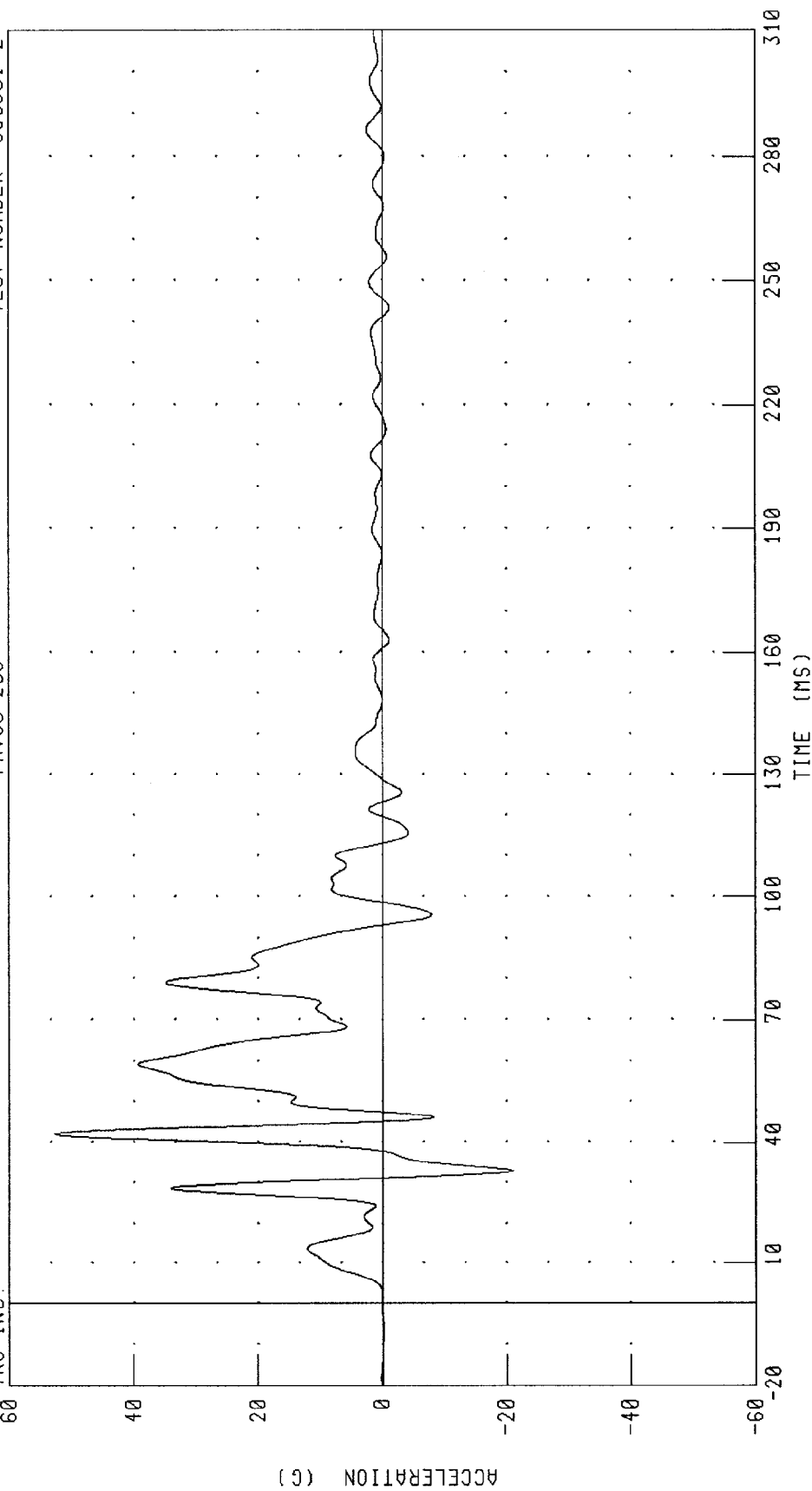
CHANNEL: BCRXG1 FILTER: CH. CLASS 60

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DASH PANEL CENTER X-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: DPCXG1 FILTER: CH. CLASS 60

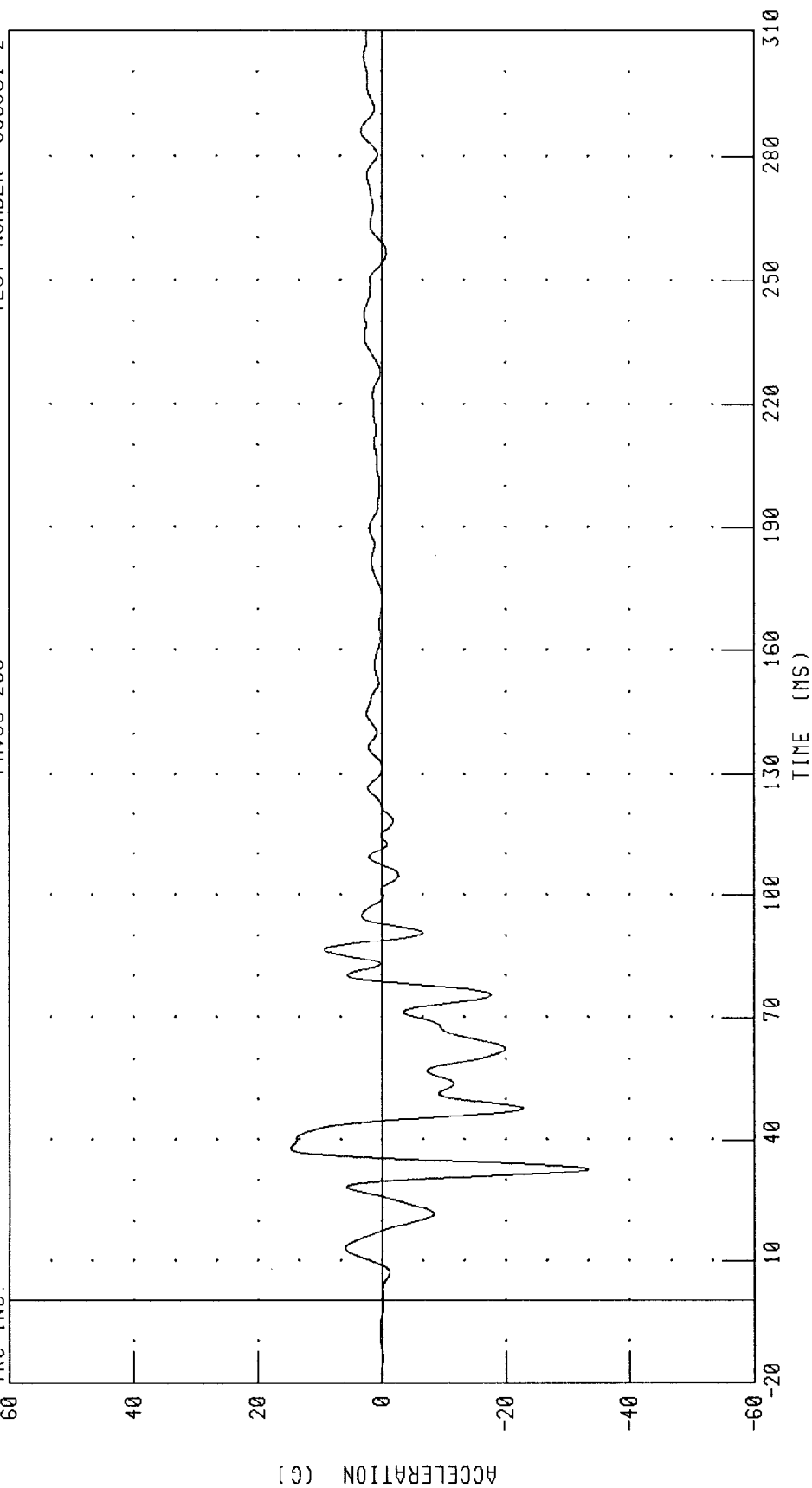
PEAK DATA: 52.69 G @ 42.08 MS, -20.99 G @ 33.04 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DASH PANEL CENTER Y-AXIS ACCELERATION

TRC INC.

FMVSS 208

TEST NUMBER: 990831-2

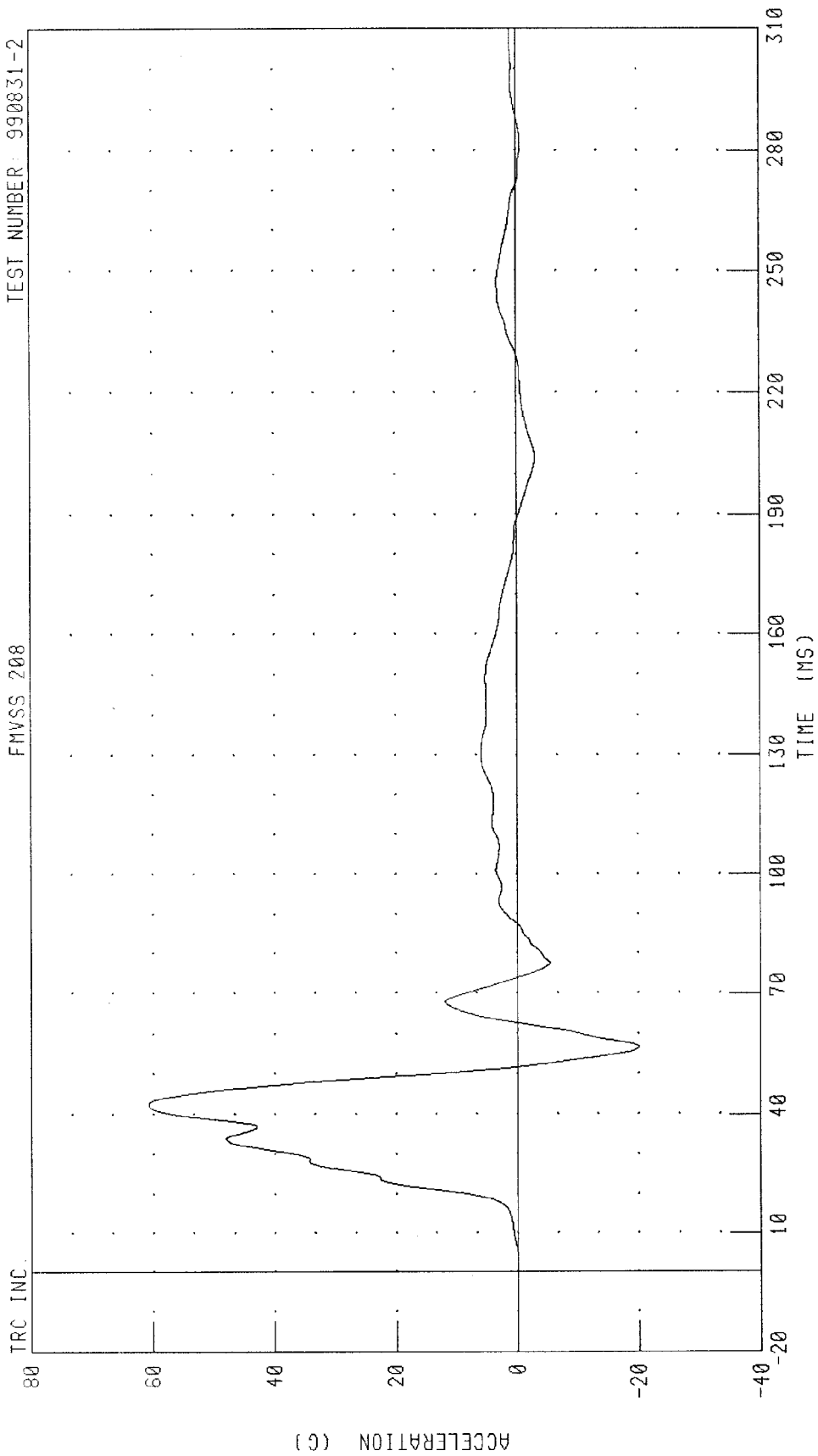


CHANNEL: DPCYG1 FILTER: CH. CLASS 60

PEAK DATA: 14.71 G @ 38.00 MS, -33.25 G @ 32.88 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
ENGINE TOP X-AXIS ACCELERATION

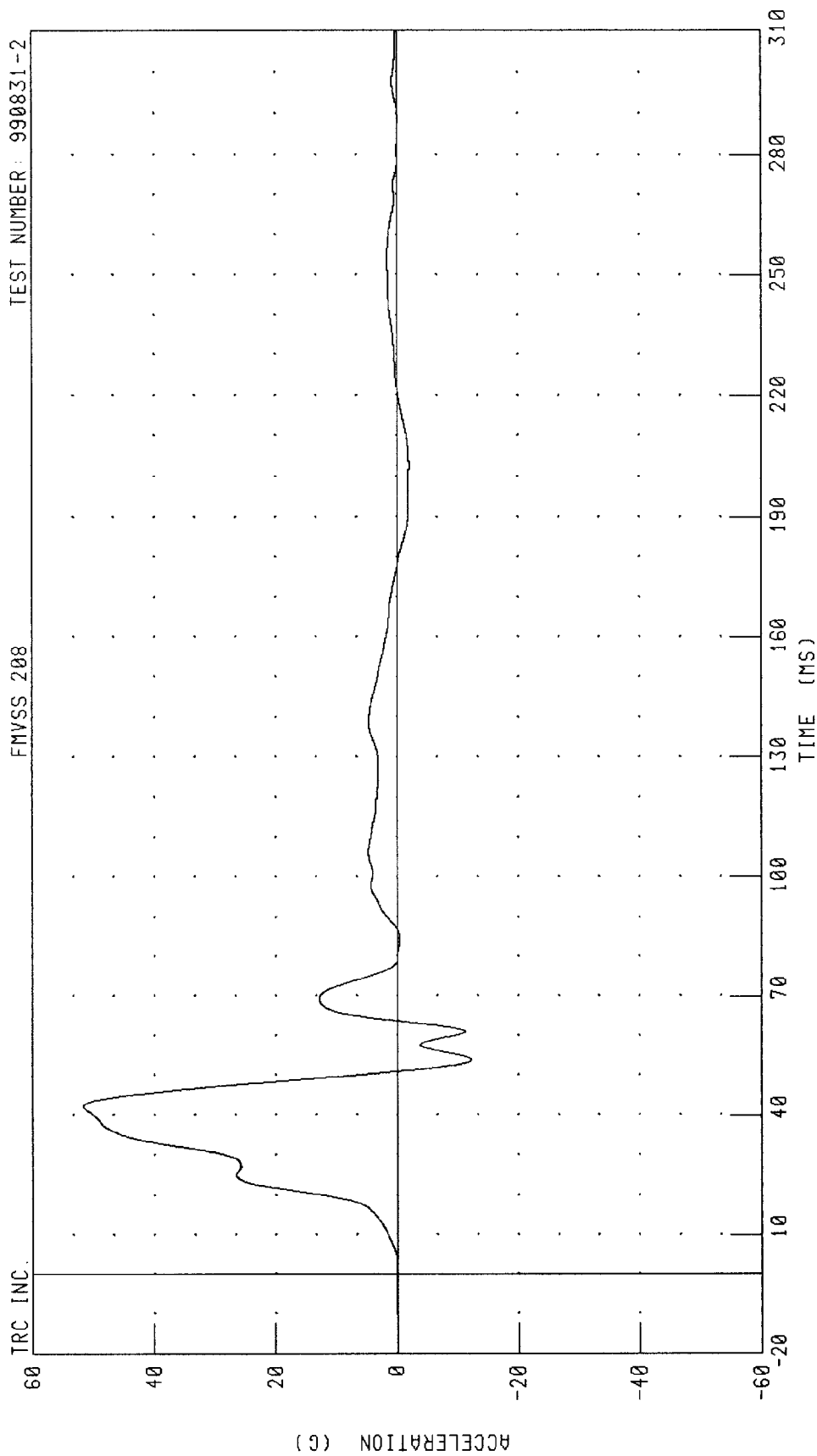
FMVSS 208 TEST NUMBER: 990831-2



CHANNEL: ENCXC1 FILTER: CH. CLASS 60

PEAK DATA: 60.76 G @ 42.56 MS, -20.06 G @ 56.64 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
ENGINE BOTTOM X-AXIS ACCELERATION



CHANNEL: ENCG2 FILTER: CH. CLASS 60

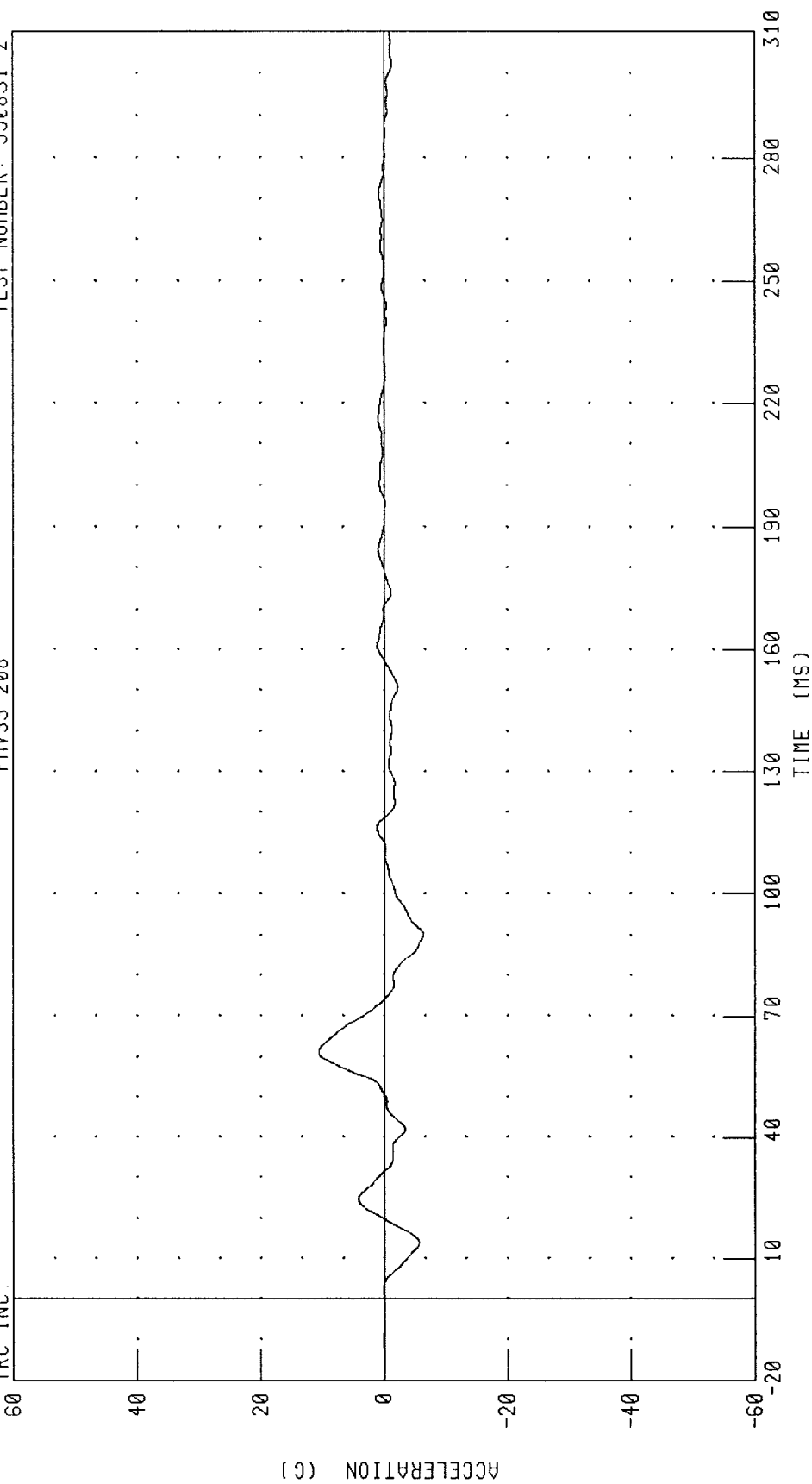
PEAK DATA: 51.65 G @ 42.24 MS; -12.34 G @ 53.84 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
 VEHICLE REAR CENTER Y-AXIS ACCELERATION

TRC INC.

FMYSS 208

TEST NUMBER: 990831-2



CHANNEL: RDKYG1 FILTER: CH. CLASS 60

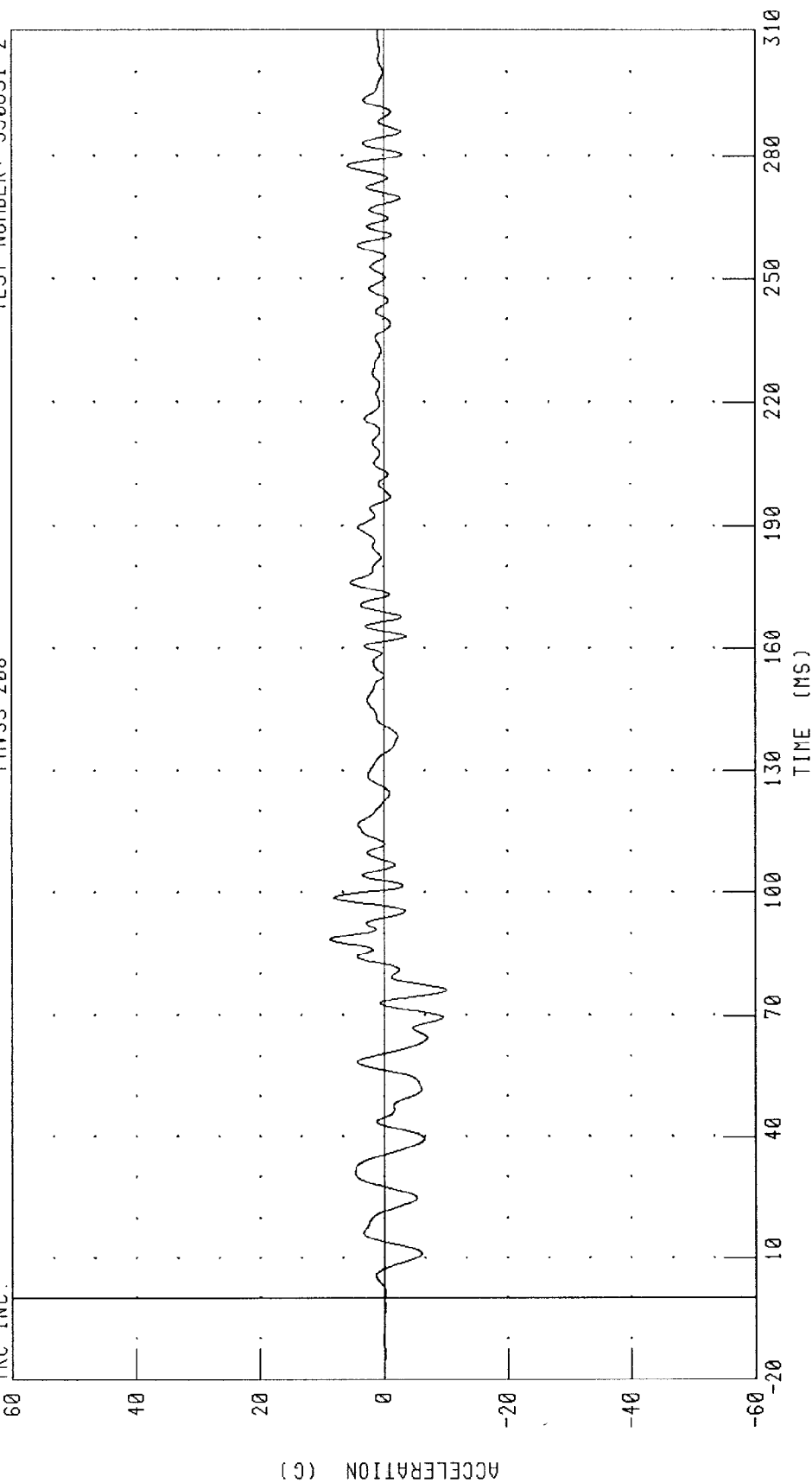
PEAK DATA: 10.64 G @ 61.28 MS; -6.35 G @ 90.16 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
VEHICLE REAR CENTER Z-AXIS ACCELERATION

TRC INC.

FMVSS 208

TEST NUMBER: 990831-2



CHANNEL: RDKZG1 FILTER: CH. CLASS 60

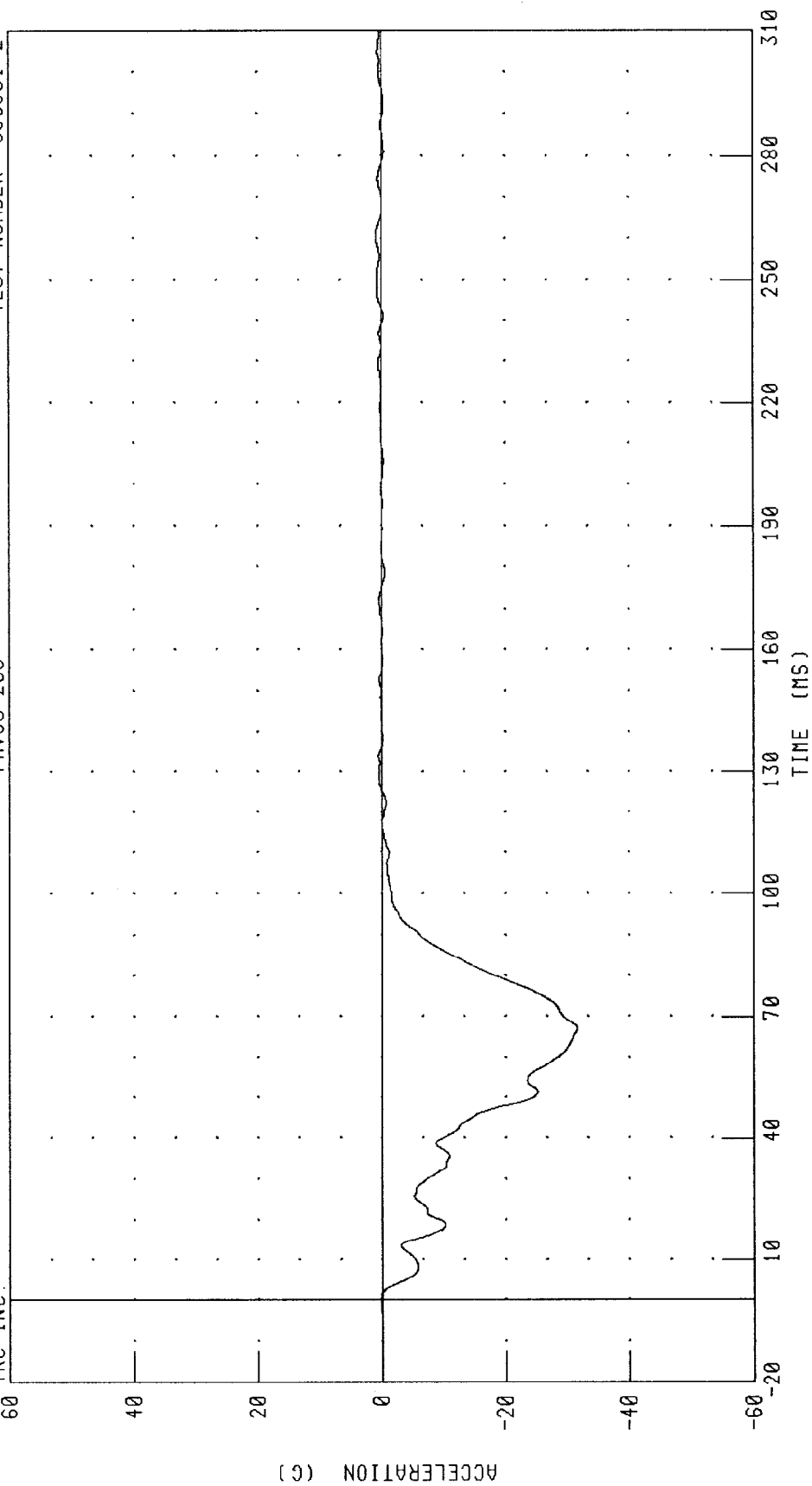
PEAK DATA: 8.74 G @ 88.64 MS; -10.09 G @ 76.08 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
LEFT REAR SEAT X-AXIS ACCELERATION

TRC INC.

FMVSS 208

TEST NUMBER: 990831-2



CHANNEL: TLRXG1 FILTER: CH. CLASS 60

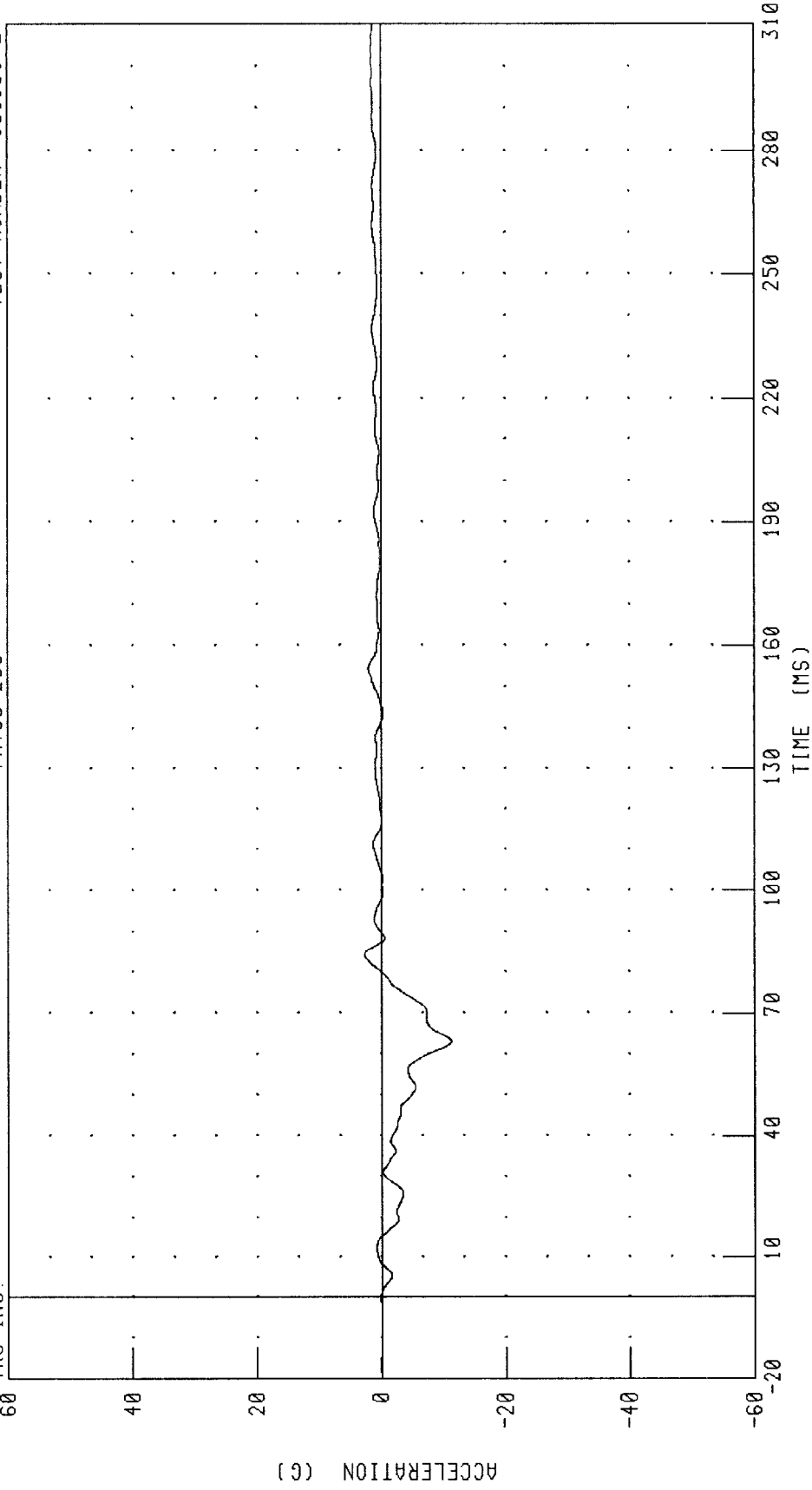
PEAK DATA: 0.75 G @ 260.16 MS, -31.62 G @ 67.20 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
LEFT REAR SEAT Y-AXIS ACCELERATION

TEST NUMBER: 990831-2

FMVSS 208

TRC INC.



CHANNEL: TLRYG1 FILTER: CH. CLASS 60

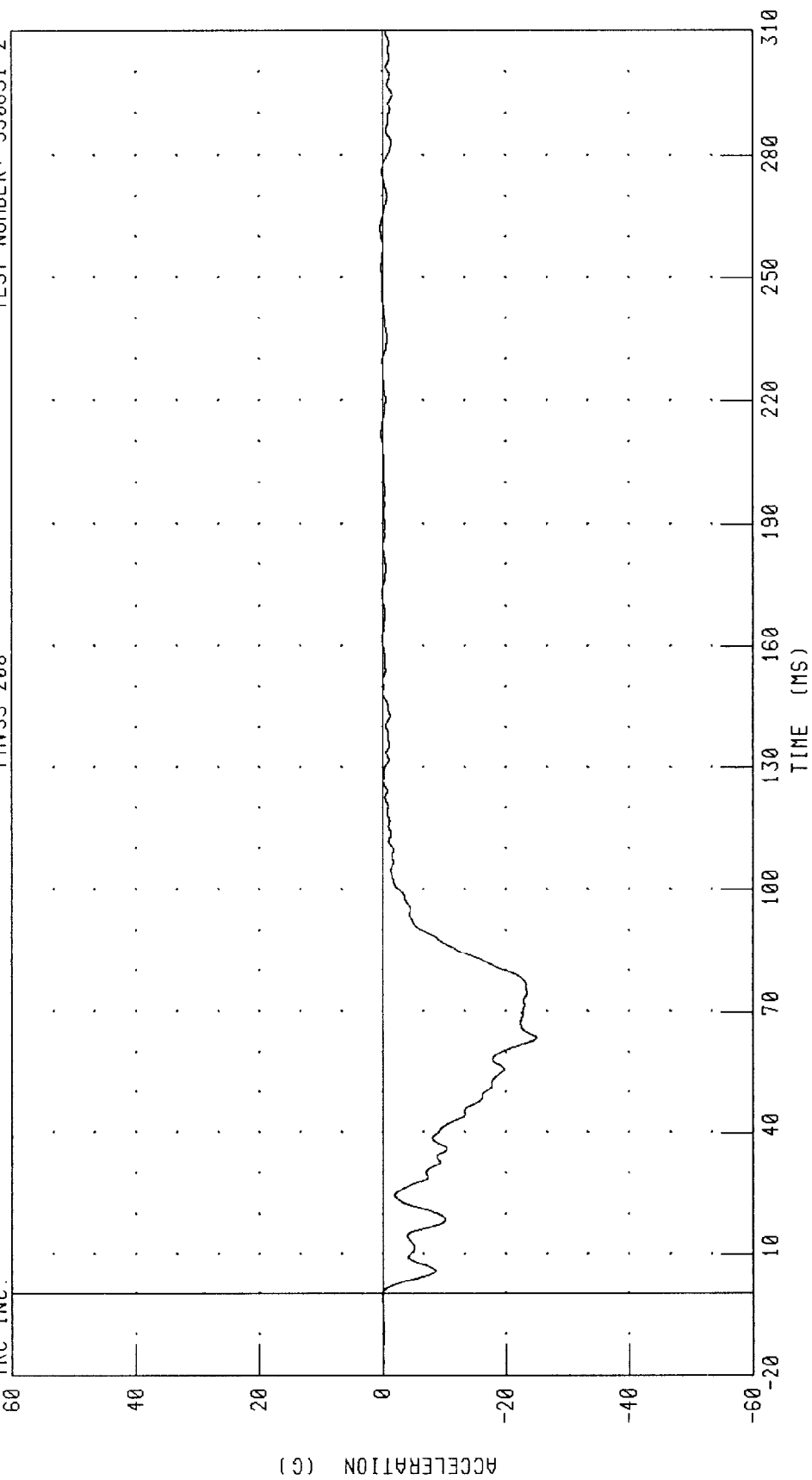
PEAK DATA: 2.64 G @ 84.24 MS; -11.27 G @ 63.20 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT REAR SEAT X-AXIS ACCELERATION

TRC INC.

FHVSS 208

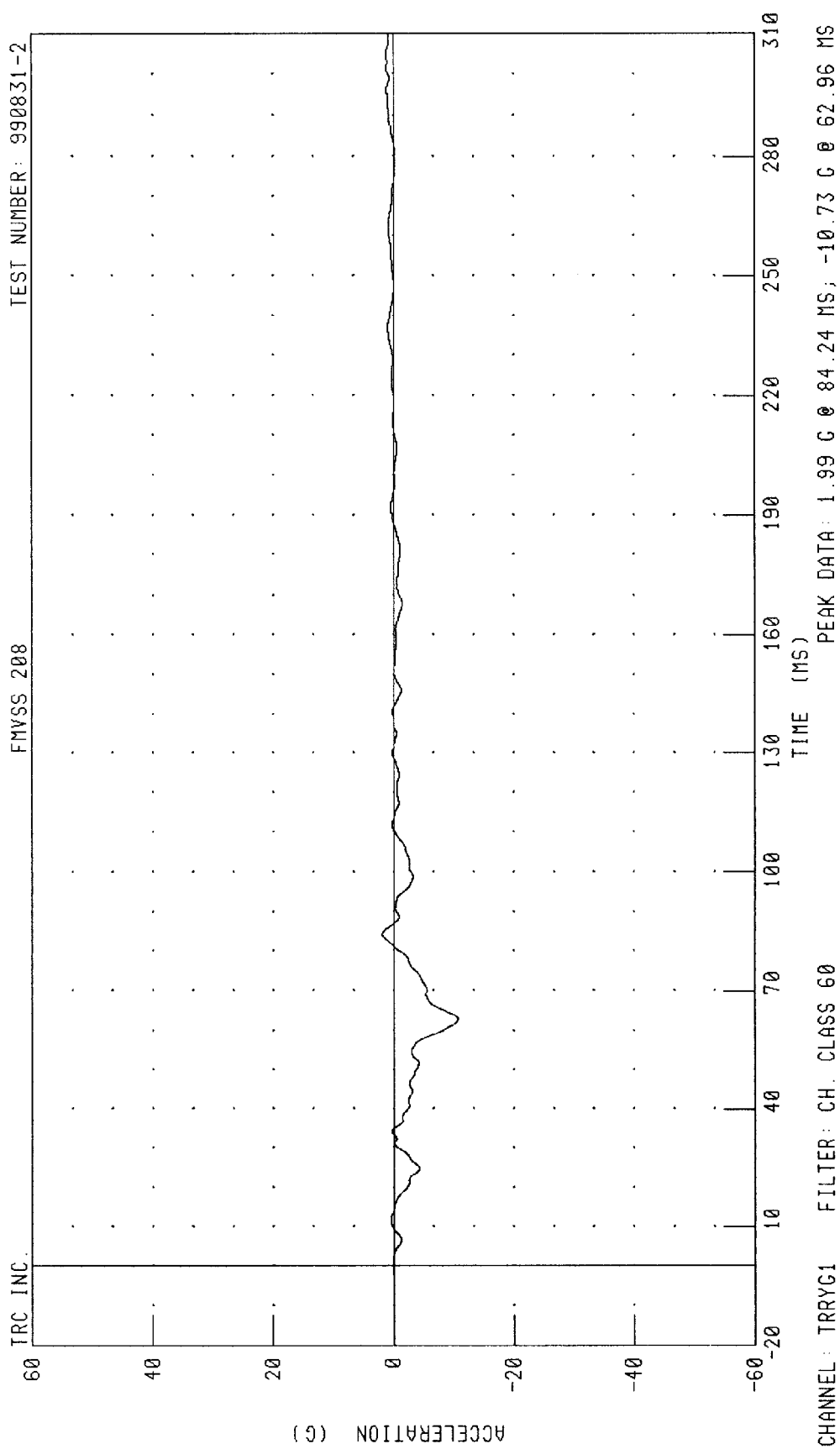
TEST NUMBER: 990831-2



CHANNEL: TRRXG1 FILTER: CH. CLASS 60

PEAK DATA: 0.37 G @ 262.16 MS, -24.93 G @ 63.52 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
RIGHT REAR SEAT Y-AXIS ACCELERATION

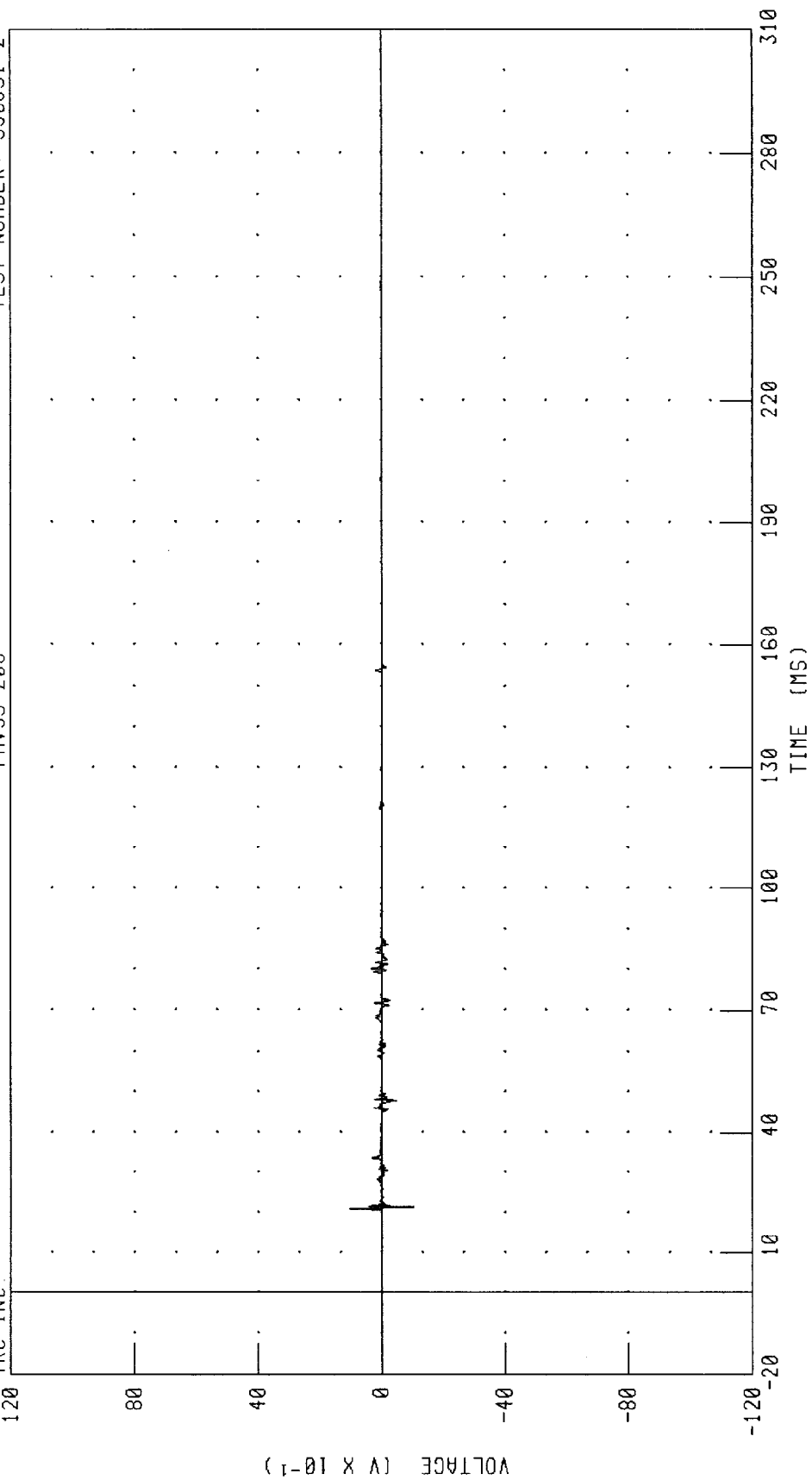


1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
DRIVER SIDE INDUCTIVE AIRBAG FIRE PICKUP

TRC INC

FMVSS 208

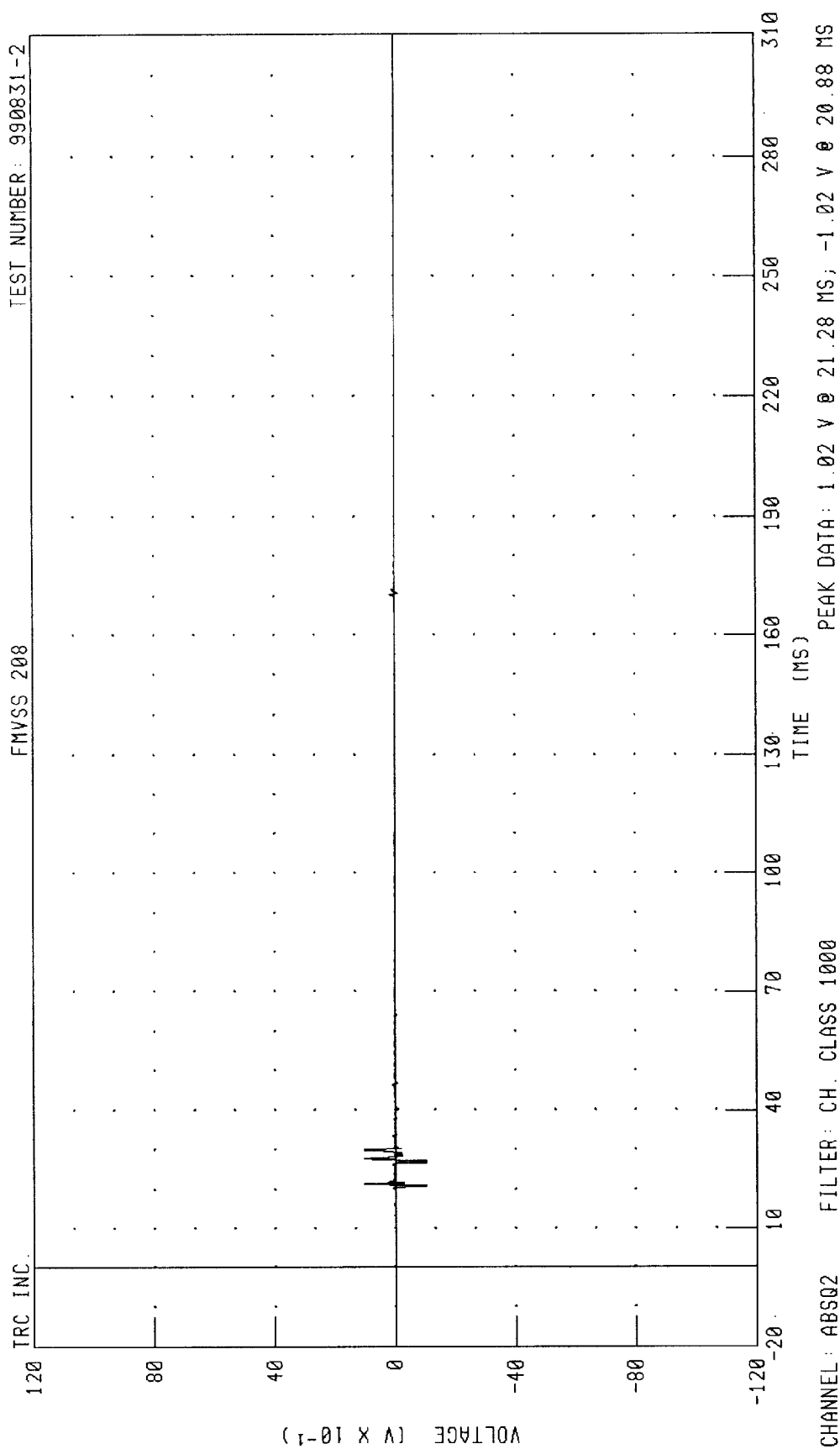
TEST NUMBER: 990831-2



CHANNEL: ABS01 FILTER: CH. CLASS 1000

PEAK DATA: 1.02 V @ 20.88 MS; -1.02 V @ 21.28 MS

1999 DODGE INTREPID INTO A 30 DEGREE RIGHT ANGLED BARRIER AT 30 MPH
PASSENGER SIDE INDUCTIVE AIRBAG FIRE PICKUP



Appendix C

Miscellaneous Test Information

Dummy Sign Convention

Accelerometers:

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

Potentiometers:

+Chest longitudinal deflection: Outward

Load cells:

+Femur force: Tension

Neck load cells:

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

Filtering Data

J211 MAR95

Load Cell Barrier Forces Class 60

Vehicle Structural Accelerations Class 60

Occupant

Head Accelerometer Class 1000

Neck Class 60

Chest Accelerometer Class 180

Chest Deflection Class 180

Femur Force Class 600

Sternum Accelerometer Class 180

Lower Leg Class 600

Accelerometer Information

Engineer: Rhule
 Test Date: Feb-98
 Dummy S/N: 289
 Type: 5th female

Mnemonic Parameter Being Measured	Description	Model Number	Serial Number	Mfr.	Sensitivity Mv/g @100 Hz	Cal Due Date	Full- Scale Desired G	Direction Of Positive Polarity
CSTXG	Chest X	7264	J20599	Endevco	0.2054	10/07/99	200	FWD
CSTYG	Chest Y	7264	J20580	Endevco	0.2237	10/07/99	200	LEFT
CSTZG	Chest Z	7264	EH88J	Endevco	0.2833	10/07/99	200	UP
STTXG	Sternum top X	7264	J20569	Endevco	0.2179	10/07/99	2000	FWD
STMXG	Sternum middle X	7264	J20064	Endevco	0.2279	10/07/99	2000	FWD
STBXG	Sternum bottom X	7264	J20570	Endevco	0.2230	10/07/99	2000	FWD
SPTXG	Spine top X	7264	J19872	Endevco	0.2406	10/07/99	200	REAR
SPMXG	Spine middle X	7264	J19877	Endevco	0.2472	10/07/99	200	REAR
SPBXG	Spine bottom X	7264	J19890	Endevco	0.2267	10/07/99	200	REAR
HEDXG	Head X	7264	J20165	Endevco	0.2225	10/07/99	200	REAR
HEDYG	Head Y	7264	J19865	Endevco	0.2129	10/07/99	200	LEFT
HEDZG	Head Z	7264	J19934	Endevco	0.2452	10/07/99	200	UP
PEVXG	Pelvis X	7264	CY06H	Endevco	0.3020	10/07/99	200	REAR
PEVYG	Pelvis Y	7264	AGAC4	Endevco	0.2385	10/07/99	200	LEFT
PEVZG	Pelvis Z	7264	BF65J	Endevco	0.3357	10/07/99	200	UP
PEVYGA	Pelvis Y	7264	J20218	Endevco	0.2473	10/27/99	200	RIGHT

Accelerometer Information

Engineer: Rhule
 Test Date: Feb-98
 Dummy S/N: 289
 Type: Hybrid III 5th percentile

Mnemonic Parameter Being Measured	Description	Model Number	Serial Number	Sensitivity (mV/V)	Cal Due Date	Full-Scale Desired G	Direction Of Positive Polarity
Neck Load Cell							
NEKXF	Neck X-force	1716	425	1.6944 @ 2,000 lbs	10/07/99	2000	Head forward/chest rearward
NEKYF	Neck Y-force	1716	425	1.6421 @ 2,000 lbs	10/07/99	2000	Head left/chest right
NEKZF	Neck Z-force	1716	425	1.1515 @ 3,000 lbs	10/07/99	3000	Head up/chest down
NEKXM	Neck X-moment	1716	425	1.5817 @ 2500 in-lbs	10/07/99	2500	Right ear to right shoulder
NEKYM	Neck Y-moment	1716	425	1.6308 @ 2500 in-lbs	10/07/99	2500	Chin forward to sternum
NEKZM	Neck Z-moment	1716	425	2.2688 @ 2500 in-lbs	10/07/99	2500	Chin to left shoulder
Femur Load Cells							
Left femur							
LFMXF	Left femur X-force	1914	0259	1.9091 @ 3000 lbs	10/07/99	3000	Knee upward/upper femur down
LFMYF	Left femur Y-force	1914	0259	1.9105 @ 3000 lbs	10/07/99	3000	Knee left/upper femur right
LFMZf	Left femur Z-force	1914	0259	1.1840 @ 3000 lbs	10/07/99	5000	Knee forward/pelvis rearward
LFMXM	Left femur X-moment	1914	0259	1.4989 @ 3000 in-lbs	10/07/99	3000	Knee left, hold upper femur in place
LFMYM	Left femur Y-moment	1914	0259	1.5040 @ 3000 in-lbs	10/07/99	3000	Knee up, hold upper femur in place
LFMZM	Left femur Z-moment	1914	0259	2.6742 @ 3000 in-lbs	10/07/99	3000	Twist knee to right, hold up femur
Right femur							
RFMXF	Right femur X-force	1914	0257	1.9130 @ 3000 lbs	10/07/99	3000	Knee upward/upper femur down
RFMYF	Right femur Y-force	1914	0257	1.9299 @ 3000 lbs	10/07/99	3000	Knee left/upper femur right
RFMZf	Right femur Z-force	1914	0257	1.1926 @ 3000 lbs	10/07/99	5000	Knee forward/pelvis rearward
RFMXM	Right femur X-moment	1914	0257	1.4705 @ 3000 in-lbs	10/07/99	3000	Knee left, hold upper femur in place
RFMYM	Right femur Y-moment	1914	0257	1.5124 @ 3000 in-lbs	10/07/99	3000	Knee up, hold upper femur in place
RFMZM	Right femur Z-moment	1914	0257	2.5006 @ 3000 in-lbs	10/07/99	3000	Twist knee to right, hold up femur

Engineer: Rhule
Test Date: Feb-98
Dummy S/N: 289
Type: Hybrid III 5th percentile

[illegible]

TRANSDUCER INFORMATION

5th Female HYBRID III DUMMY SERIAL NO.: 289v ; MFR.: ; SEATING POSITION: PASS
 PROJECT-SEGMENT NO.: 401 RETEST OF 6-25 ; ENGINEER: PG ; TEST DATE: 8-31-99 -2

MNEMONIC PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NO.	SERIAL NO.	MFR.	SENSITIVITY	CAL DATE	FULL SCALE (ENGR. UNITS)		DIRECTION OF POSITIVE POLARITY	CABLE NO.
							DESIRED	ACTUAL		
KNLLF	LEFT KNEE LEFT SENSOR FORCE	1587	-LEFT	DEN	1.2872mv/v at 2000 lb.	1997	2,000 lbs. 9,000 N			-LEFT
KNLMF	LEFT KNEE RIGHT SENSOR FORCE	"	-RIGHT	"	1.2866 mv/v at 2000 lb.	"	2,000 lbs. 9,000 N			-RIGHT
KNRMF	RIGHT KNEE LEFT SENSOR FORCE	"	-LEFT	"	1.3049 mv/v at 2000 lb.	"	2,000 lbs. 9,000 N			-LEFT
KNRLF	RIGHT KNEE RIGHT SENSOR FORCE	"	-RIGHT	"	1.2844 mv/v at 2000 lb.	"	2,000 lbs. 9,000 N			-RIGHT
KNLXD	LEFT KNEE DISPLACEMENT	8TC1- 2702	018L V	SERV O	981.2 mv/v/in	8-11- 1999	1 inch 25 mm			018L
KNRXD	RIGHT KNEE DISPLACEMENT	"	018R V	"	1016 mv/v/in	"	1 inch 25 mm			018R
TBLXF	LEFT UPPER TIBIA X AXIS FORCE	3115	265-FX V	DEN	1.9815 mv/v at 2500 lb.	8-11- 1999	2,500 lbs. 11,000 N			265-FX
TBLXM	LEFT UPPER TIBIA MOMENT ABOUT X AXIS	"	265-MX	"	2.9510 mv/v at 3500 in- lb.	"	300 ft-lbs 400 N-m			265-MX
TBLYM	LEFT UPPER TIBIA MOMENT ABOUT Y AXIS	"	265-MY	"	3.0172 mv/v at 3500 in- lb.	"	300 ft-lbs 400 N-m			265-MY

TRANSDUCER INFORMATION

5th Female Hybrid III Dummy Serial No.: 289v ; MFR.: ; SEATING POSITION: PASS
 PROJECT-SEGMENT NO.: 401 RETEST OF 6-25 ; ENGINEER: PG ; TEST DATE: 8-31-99 -2

MNEMONIC PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NO.	SERIAL NO.	MFR.	SENSITIVITY	CAL DATE	FULL SCALE (ENGR. UNITS) DESIRED ACTUAL	DIRECTION OF POSITIVE POLARITY	CABLE NO.
TBLZF	LEFT UPPER TIBIA Z AXIS FORCE	3115	265-FZ	DEN	1.1181 mv/v at 2500 lb.	8-11- 1999	2,500 lbs. 11,000 N		265-FZ
TBRXF	RIGHT UPPER TIBIA X AXIS FORCE	"	266-FX V	"	1.9341 mv/v at 2500 lb.	"	2,500 lbs. 11,000 N		266-FX
TBRXM	RIGHT UPPER TIBIA MOMENT ABOUT X AXIS	"	266-MX	"	2.9020 mv/v at 3500 in- lb.	"	300 ft.-lbs 400 N.m		266-MX
TBRYM	RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS	"	266-MY	"	2.9367 mv/v at 3500 in- lb.	"	300 ft.-lbs 400 N.m		266-MY
TBRZF	RIGHT UPPER TIBIA Z AXIS FORCE	"	266-FZ	"	1.0885 mv/v at 2500 lb.	"	2,500 lbs. 11,000 N		266-FZ
ANLXF	LEFT LOWER TIBIA X-AXIS FORCE	3287	178-FX V	"	1.9204 mv/v at 2500 lb.	"	2,500 lbs. 11,000 N		178-FX
ANLZF	LEFT LOWER TIBIA Z-AXIS FORCE	"	178-FZ	"	1.0526 mv/v at 2500 lb.	"	2,500 lbs. 11,000 N		178-FZ
ANLXM	LEFT LOWER TIBIA MOMENT ABOUT X AXIS	"	178-MX	"	2.9612 mv/v at 3500 in- lb.	"	300 ft.-lbs 400 N.m		178-MX
ANLYM	LEFT LOWER TIBIA MOMENT ABOUT Y AXIS	"	178-MY	"	2.9779 mv/v at 3500 in - lb.	"	300 ft.-lbs 400 N.m		178-MY

TRANSDUCER INFORMATION

289v : MFR.: _____ ; SEATING POSITION: _____ PASS _____

101 RETEST OF 6-25
: ENGINEER: PG
: TEST DATE: 8-31-99 -2

[illegible]

TRANSDUCER INFORMATION

5th Female HYBRID III DUMMY SERIAL NO.: 3691; MFR.: _____; SEATING POSITION: DR _____
 PROJECT-SEGMENT NO.: 401 RETEST OF 6-25; ENGINEER: PG _____; TEST DATE: 8-31-99 -2

MNEMONIC PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NO.	SERIAL NO.	MFR.	SENSITIVITY	CAL DUE DATE	FULL SCALE (ENGR. UNITS) DESIRED ACTUAL	DIRECTION OF POSITIVE POLARITY	CABLE NO.
HEDXG HAP	HEAD X-AXIS ACCEL.	7264	A20FJ	End.	.2563 mv/g at 10 volts	12-2- 1999	400 g	Rear	A20FJ
HEDYG HLR	HEAD Y-AXIS ACCEL.	"	A31FJ	"	.2683 mv/g at 10 volts	"	400 g	Left	A31FJ
HEDZG HIS	HEAD Z-AXIS ACCEL.	"	CL95H	"	.2822 mv/g at 10 volts	"	400 g	Up	CL95H
NEKXF NFX	NECK X-AXIS SHEAR FORCE	1716A	0534	DEN	1.7247 mv/v at 2000 lbs.	12-2- 1999	2,000 lbs. 9,000 N		FX
NEKYF NFY	NECK Y-AXIS SHEAR FORCE	"	"	"	1.6643 mv/v at 2000 lbs.	"	2,000 lbs. 9,000 N		FY
NEKZF NFZ	NECK Z-AXIS AXIAL FORCE	"	"	"	1.1561 mv/v at 3000 lbs.	"	3,000 lbs. 13,500 N		FZ
NEKXM NMX	NECK MOMENT ABOUT X AXIS	"	"	"	1.6355 mv/v at 2500 in. lbs.	"	200 ft-lbs 275 N-m		MX
NEKYM NMY	NECK MOMENT ABOUT Y AXIS	"	"	"	1.6430 mv/v at 2500 in. lbs.	"	200 ft-lbs 275 N-m		MY
NEKZM NMZ	NECK MOMENT ABOUT Z AXIS	"	"	"	2.3186 mv/v at 2500 in. lbs.	"	200 ft-lbs 275 N-m		MZ

TRANSDUCER INFORMATION

5th Female HYBRID III DUMMY SERIAL NO.: 369t ; MFR.: ; SEATING POSITION: DR
 PROJECT-SEGMENT NO.: 401 RETEST OF 6-25 ; ENGINEER: PG ; TEST DATE: 8-31-99 -2

MNEMONIC PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NO.	SERIAL NO.	MFR.	SENSITIVITY	CAL DUE DATE	FULL SCALE (ENGR. UNITS)		DIRECTION OF POSITIVE POLARITY	CABLE NO.
							DESIRED	ACTUAL		
CSTXG CAP	CHEST X-AXIS ACCEL.	7264	A72JJ	End.	.2773 mv/g at 10 volts	12-2- 1999	400 g		Forward	A72JJ
CSTYG CLR	CHEST Y-AXIS ACCEL.	"	A69JJ	"	.2702 mv/g at 10 volts	"	400 g		Left	A69JJ
CSTZG CIS	CHEST Z-AXIS ACCEL.	"	A34FJ	"	.2565 mv/g at 10 volts	"	400 g		Up	A34FJ
CSTXD CAPD	CHEST DEFLECTION	14CB1- 2897	1188	Bourn	43.6 mv/v/in	"	6 inch 150 mm		Extension	1188
PEVXG PAP	PELVIS X-AXIS ACCEL.	7264	CY31H	End.	.2031 mv/g at 10 volts	"	400 g		Rear	C14981
PEVYG PLR	PELVIS Y-AXIS ACCEL.	"	A51JJ	"	.2917 mv/g at 10 volts	"	400 g		Left	C15183
PEVZG PIS	PELVIS Z-AXIS ACCEL.	"	A75JJ	"	.2695 mv/g at 10 volts	"	400 g		Up	C15184
LFMF LF	LEFT FEMUR FORCE	2430	1006	DEN	0.9459 mv/v at 3000 lbs.	12-2- 1999	1300 Kg 3,000 lbs. 13,500 N		Extension	1518
RFMF RF	RIGHT FEMUR FORCE	"	1007	"	0.9114 mv/v at 3000 lbs.	"	1300 Kg 3,000 lbs. 13,500 N		Extension	71

54. Formula HYPERID III DUMMY SERIAL NO. 3691 : MFR.: : SEATING POSITION: DR _____

54. Formula HYPERID III DUMMY SERIAL NO. 3691 : MFR.: : SEATING POSITION: DR _____

PROJECT SEGMENT NO. 401 RETEST OF 6-25
ENGINEER: PG
TEST DATE: 8-31-99 -2

[illegible]

Vehicle Instrumentation Placement

Vehicle year/make/model/body style: 1999/Dodge/Intrepid/Sedan

Test number: 990831-2

Number	Location	Axis	Manufacturer	Model	S/N	Orientation (+ Sensing)
1	Left Brake Caliper	X	Endevco	7264-2000T	J26879	Forward
2	Right Brake Caliper	X	Endevco	7264-2000T	J27415	Forward
3	Instrument Panel Center	X	Endevco	7264-2000T	CR58H	Forward
		Y	Endevco	7264-2000T	J27670	Left
4	Engine Top	X	Endevco	7264-2000T	J28882	Forward
5	Engine Bottom	X	Endevco	7264-2000T	J29421	Forward
6	Vehicle Rear Center	Y	Endevco	7264-2000T	J27684	Right
		Z	Endevco	7264-2000T	J25465	Up
7	Left Rear Seat Crossmember	X	Endevco	7264-2000T	J29021	Forward
		Y	Endevco	7264-2000T	J25527	Left
8	Right Rear Seat Crossmember	X	Endevco	7264-2000T	J29035	Rear
		Y	Endevco	7264-2000T	J29146	Right
9	Driver Airbag	N/A	Fluke	Y8101A	IP1	N/A
10	Passenger Airbag	N/A	Fluke	Y8101A	IP2	N/A

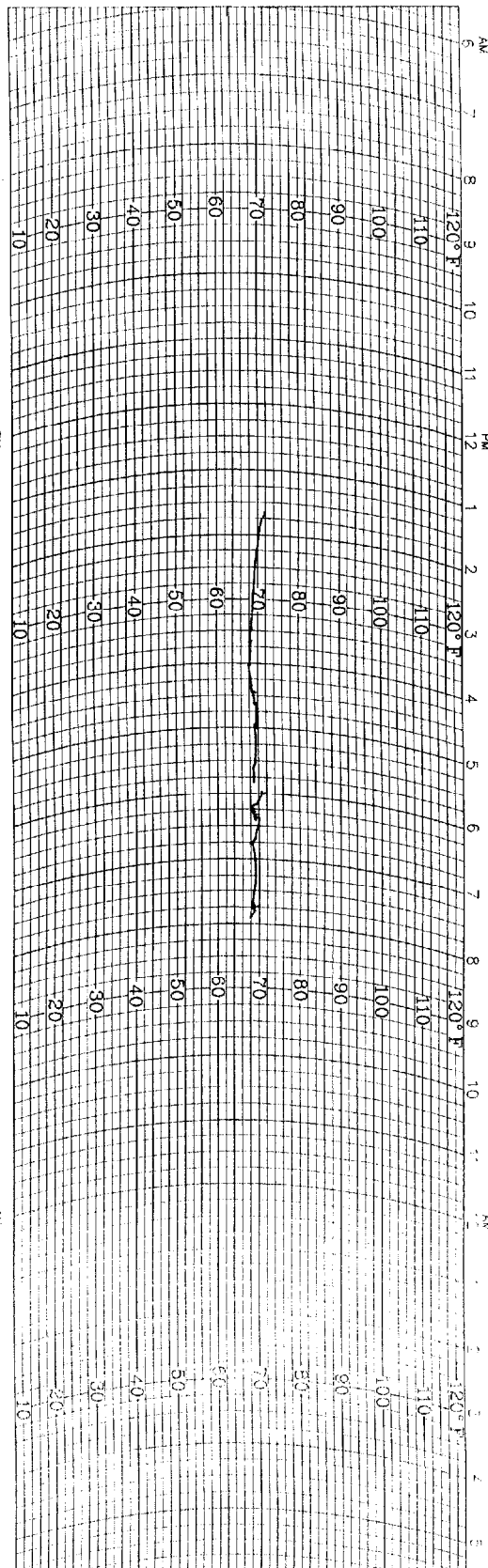
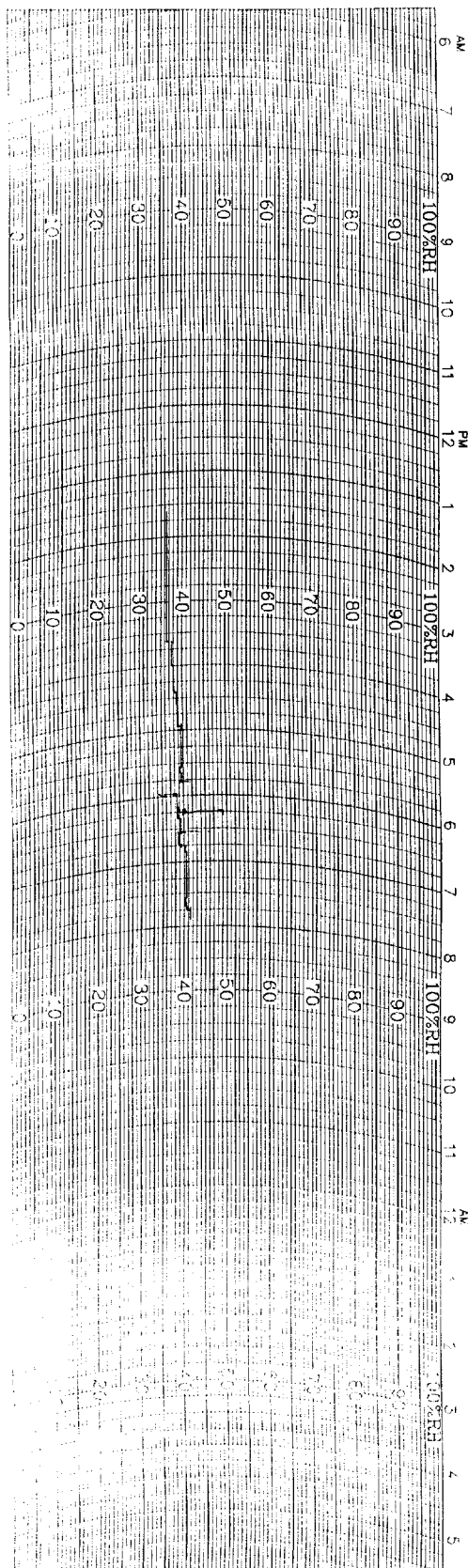
Description Of Timing Marks On TRC High-Speed Film

All TRC high-speed cameras are equipped with red LEDs which put timing marks on the right edge of the film. TRC uses a single timing generator to generate the timing for all cameras. This allows the timing marks to be common to all cameras. The timing marks can be used to measure camera speed (frames per second) or to locate a point in time before or after the time-zero event.

The timing marks appear on the film as small red marks on the right edge of the film. Round marks are left by the Photo-Sonics and Stalex cameras while horizontal bars are left by the Hycam, Locam, and Fastax II cameras.

The timing generator puts out a pulse for every millisecond plus it generates additional pulses for hundredths and tenths of seconds. To explain this further, we can use an example of a camera running at 1000 frames per second.

1. Every frame will have **one** LED appear in it. This indicates a *millisecond* pulse.
2. Every ten frames will have **two** LEDs appear in it. These indicate a *millisecond* pulse plus a *hundredth of a second* pulse.
3. Every one hundred frames will have **three** LEDs appear in it. These indicate a *millisecond* pulse, a *hundredth of a second* pulse, and a *tenth of a second* pulse.



WeatherMeasure
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HYGROTHERMOGRAPH
1 DAY
8-31-99 HE CR
CHART NO. M699123
C311-D-HF
ECN 2/17
6-9-87

STATION _____ DATE ON _____ DATE OFF _____