V2807

2098

Report Number NCAP-TRC-98-001

New Car Assessment Program (NCAP)

Frontal Barrier Impact Test

Ford Motor Corporation

1998 Ford Expedition

multi-purpose passenger vehicle

NHTSA Number: MW0205

TRC Test Number: 980115

Prepared By:

Transportation Research Center Inc.

10820 State Route 347

East Liberty, OH 43319

February 12, 1998

Final Report

Prepared For:

U. S. Department of Transportation

National Highway Traffic Safety Administration

Performance Standards,

Office of Crashworthiness Standards,

Motor Vehicle Information Division

Mail Code: NPS-10

400 Seventh Street, S.W., Room 5315

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Technical Report Documentation Page

1. Report No. NCAP-TRC-98-001	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Final Report of New Car Assessment Program (NCAP) Frontal Barrier Impact Test of a 1998 Ford Expedition multi-purpose passenger vehicle, NHTSA No. MW0205		5. Report Date February 12, 1998 6. Performing Organization Code TRC
7. Author(s) Allison E. Louden, Project Engineer		8. Performing Organization Report No. NCAP-TRC-98-001
9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, OH 43319-0367		10. Work Unit No. (TRAIS) 11. Contract or Grant No. DTNH22-96-D-22010
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Performance Standards., Office of Crashworthiness Standards; Motor Vehicle Information Division, Mail Code NPS-10 400 Seventh Street, S. W., Room 5311, Washington, DC 20590		13. Type of Report and Period Covered Final Report February 1998 14. Sponsoring Agency Code NPS-10
15. Supplemental Notes		

16. Abstract

A 56 kph (35 mph) frontal load cell barrier impact test was conducted on a 1998 Ford Expedition multi-purpose passenger vehicle, NHTSA No. MW0205, at Transportation Research Center Inc. on January 15, 1998. This test was conducted in accordance with Office of Crashworthiness Standards NCAPTP090196 for the determination of vehicle crashworthiness. The barrier impact velocity was 57.3 kph. The vehicle's maximum static crush was 718 millimeters. The ambient temperature was 21° C.

The driver's Head Injury Criteria (HIC) was 544. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.8 g. The driver's maximum chest deflection was 33 millimeters. The driver's left and right femur maximum axial forces were 5389 N and 3734 N, respectively.

The passenger's HIC was 569. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 42.2 g. The passenger's maximum chest deflection was 38 millimeters. The passenger's left and right femur maximum axial forces were 2174 N and 2355 N, respectively.

17. Key Words	18. Distribution Statement
56 kph (35 mph) Frontal Barrier Impact Test: New Car Assessment Program (NCAP)	Copies of this report are available from: National Highway Traffic Safety Admin. Technical Reference Division 400 Seventh Street, S. W., Room 5108 Washington, DC 20590

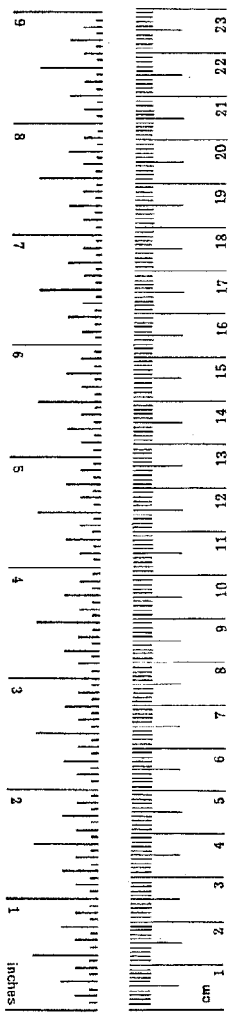
19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. Number of Pages	22. Price
Unclassified	Unclassified	390	

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

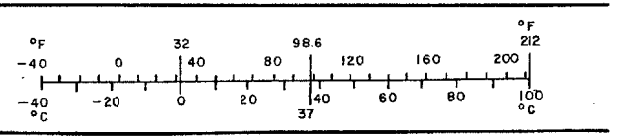
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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Section 1.0

Purpose and Test Procedure

Purpose

This 56 kph (35 mph) frontal barrier impact test is part of the New Car Assessment Program (NCAP) conducted for the National Highway Traffic Safety Administration's (NHTSA) Office of Crashworthiness Standards by Transportation Research Center Inc. (TRC) under Contract Number DTNH22-96-D-22010.

The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for the subject vehicle, a 1998 Ford Expedition multi-purpose passenger vehicle, NHTSA Number MW0205, at an impact speed of 57.3 kph (35.6 mph) FMVSS 208, 212, 219, and 301 requirements.

Test Procedure

This 56 kph (35 mph) test was conducted in accordance with NHTSA's Office of Crashworthiness Standards Laboratory Indicant Test Procedure, NCAPTP090196. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity," performance.

The test vehicle was instrumented with nine (9) accelerometers to measure longitudinal axis accelerations. The driver's and passenger's restraint systems were instrumented with load cells to measure lap and shoulder belt forces and potentiometers to measure shoulder belt stretch and spoolout. The vehicle impacted a frontal load cell barrier instrumented with thirty-six (36) barrier face load cells. The vehicle's specified impact velocity range was 55.5 to 57.1 kph.

The test vehicle contained two (2) Part 572E 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedures specified in Appendix B of the Laboratory Indicant Test Procedure. This test was the third use of the driver dummy and the first use of the passenger dummy.

Both dummies were instrumented with primary and redundant head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations, and with left and right femur load cells to measure axial forces. The dummies were also instrumented with neck moment and force load cells, chest deflection potentiometers, foot accelerometers to measure longitudinal and vertical axis accelerations, and upper and lower tibia load cells to measure forces and moments.

The one-hundred-thirty-three (133) data channels were digitally sampled and recorded at 12,500 samples per second and processed per Section 11.13 of the Laboratory Indicant Test Procedure.

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

The vehicle, occupant, and load cell barrier data are presented in Section 2.0. The occupant, camera, and vehicle measurements are presented in Section 3.0. Appendix A contains the still photographic prints. Appendix B contains the dummy, vehicle, and load cell barrier data plots. Appendix C contains the dummy certification data. Appendix D contains miscellaneous test information. Appendix E contains the restraint system instructions from the owner's manual.

Section 2.0

Frontal Barrier Impact Test Summary

Test Results Summary

This frontal load cell barrier test was conducted at TRC on January 15, 1998.

The test vehicle, a 1998 Ford Expedition multi-purpose passenger vehicle, NHTSA Number MW0205, was equipped with a 4.6-liter inline engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 2672.6 kg. The vehicle's impact speed was 57.3 kph. The vehicle sustained 718 mm of static crush during the impact.

The driver's Head Injury Criteria (HIC) was 544. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.8 g. The driver's maximum chest deflection was 33 mm. The driver's left and right femur maximum axial forces were 5389 N and 3734 N, respectively.

The right front passenger's HIC was 569. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 42.2 g. The passenger's maximum chest deflection was 38 mm. The passenger's left and right femur maximum axial forces were 2174 N and 2355 N, respectively.

There was 85% loss of windshield periphery retention.

There was no penetration through the windshield.

Following the impact, no fluid spilled from the vehicle's fuel system prior to the static rollover test or during the static rollover test.

Data Acquisition Explanations

The load cell barrier data channel, BC3F, did not return to zero. This affected the total group 4 plots and the total load cell force plots.

Table 1 Crash Test Summary

NHTSA number:	MW0205	
Test type:	Frontal Load Cell Barrier	
Test date:	01/15/98	
Test time:	1742	
Ambient temperature:	21° C	
Vehicle year/make/ model/body style:	1998/Ford/Expedition/multi-purpose passenger vehicle	
Vehicle test weight:	2672.6 kg	
Impact angle[1]:	0°	
Impact velocity[2]:	Primary = 57.3 kph Secondary = 57.3 kph	
Maximum static crush:	718 mm	
Average rebound:	610 mm	
Dummies:	Driver #192	Passenger #142
Type:	Part 572 E	Part 572 E
Location:	Left front	Right front
Restraint:	Airbag and 3-point unibelt	Airbag and 3-point unibelt
Number of data channels:	40	40
Number of cameras:	High-speed 16 Real-time 1	

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

Table 2 Test Vehicle Information

Vehicle year/make/ model/body style:	1998/Ford/Expedition/multi-purpose passenger vehicle
Color:	Silver
VIN:	1FMRU18W4WLA91125
NHTSA number:	MW0205
Engine data:	
Placement:	inline
Cylinders:	8
Displacement	4.6 liters
Transmission data:	_4_speed, ___manual, _X_automatic, ___overdrive
	___FWD, ___RWD, _X_4WD
Date vehicle received:	01/13/98
Odometer reading:	86
Dealer's name and address:	Ricart Ford Inc. 4255 S. Hamilton Road, Columbus, OH 43227

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	Yes
Clock	Yes	Rear window defroster	Yes
Other			

Certification data from vehicle's label:

Vehicle manufactured by:	Ford Motor Corporation
Date of manufacture:	12/97
VIN:	1FMRU18W4WLA91125
GVWR:	7000 lbs.
GAWR: Front:	3450 lbs.
Rear:	3900 lbs.

Table 2 Test Vehicle Information, Cont'd.

Size of tires:	P265/70R17
Tire pressure with maximum capacity vehicle load:	
Front:	35 psi
Rear:	35 psi
Spare tire:	P265/70R17
Type of front seats:	Bucket

Tire & capacity data from vehicle's label:

Recommended tire size:	P265/70R17
Recommended cold tire pressure:	
Front:	30 psi
Rear:	35 psi

Designated seating capacity:

Front	2
Rear	3
Total	5

Vehicle capacity weight: NA

Test vehicle attitude:

Delivered attitude:	LF 987 mm;	RF 988 mm;	LR 942 mm;	RR 942 mm
Pre-test attitude:	LF 983 mm;	RF 978 mm;	LR 920 mm;	RR 916 mm
Post-test attitude:	LF1022 mm;	RF1081 mm;	LR 903 mm;	RR 952 mm

Table 2 Test Vehicle Information Cont'd

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

Right front	615.5 kg	Right rear	550.2 kg
Left front	665.4 kg	Left rear	562.9 kg
Total front weight	1280.9 kg	(53.5% of total vehicle weight)	
Total rear weight	1113.1 kg	(46.5% of total vehicle weight)	
Total delivered weight	2394.0 kg		

Calculation of test vehicle's target test weight:

RCLW[1] = Rated cargo and luggage weight

GVWR = Gross Vehicle Weight Rating (3175 kg)

UDW = Unloaded delivered weight (2394 kg)

VCW = Vehicle capacity weight = GVWR - UDW = 3175 - 2394 = 781 kg

DSC = Designated seating capacity (5)

RCLW[1] = GVWR - UDW - 68 (DSC) = 3175 - 2394 - 68(5) = 441 kg

Target test weight = UDW + RCLW[1] + (Number of Hybrid III dummies x 76 kg/dummy)

Target test weight = 2394 + 136 + 152 = 2682 kg

Target test weight = 2682.0 kg

Weight of test vehicle with required dummies and 127 kg of cargo weight:

Right front	649.6 kg	Right rear	670.4 kg
Left front	691.7 kg	Left rear	660.9 kg
Total front weight	1341.3 kg	(50.2% of total vehicle weight)	
Total rear weight	1331.3 kg	(49.8% of total vehicle weight)	
Total test weight	2672.6 kg	(0.4% under target test weight)	

Weight of ballast secured in vehicle: None

Components removed to meet target test weight: None

CG rearward of front wheel centerline: 1509 mm

[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:	980115
NHTSA number:	MW0205
Test date:	01/15/98
Test time:	1742
Test type:	Frontal load cell barrier
Impact angle:	0°
Ambient temperature at impact area:	21° C
Temperature in occupant compartment:	20° C
Impact velocity:	
Primary	57.3 kph
Secondary	57.3 kph
Specified range	55.5 to 57.1 kph

Distance from vehicle to barrier:

Entering velocity trap	356 mm
Exiting velocity trap	51 mm

Test vehicle static crush:

Overall length of test vehicle:

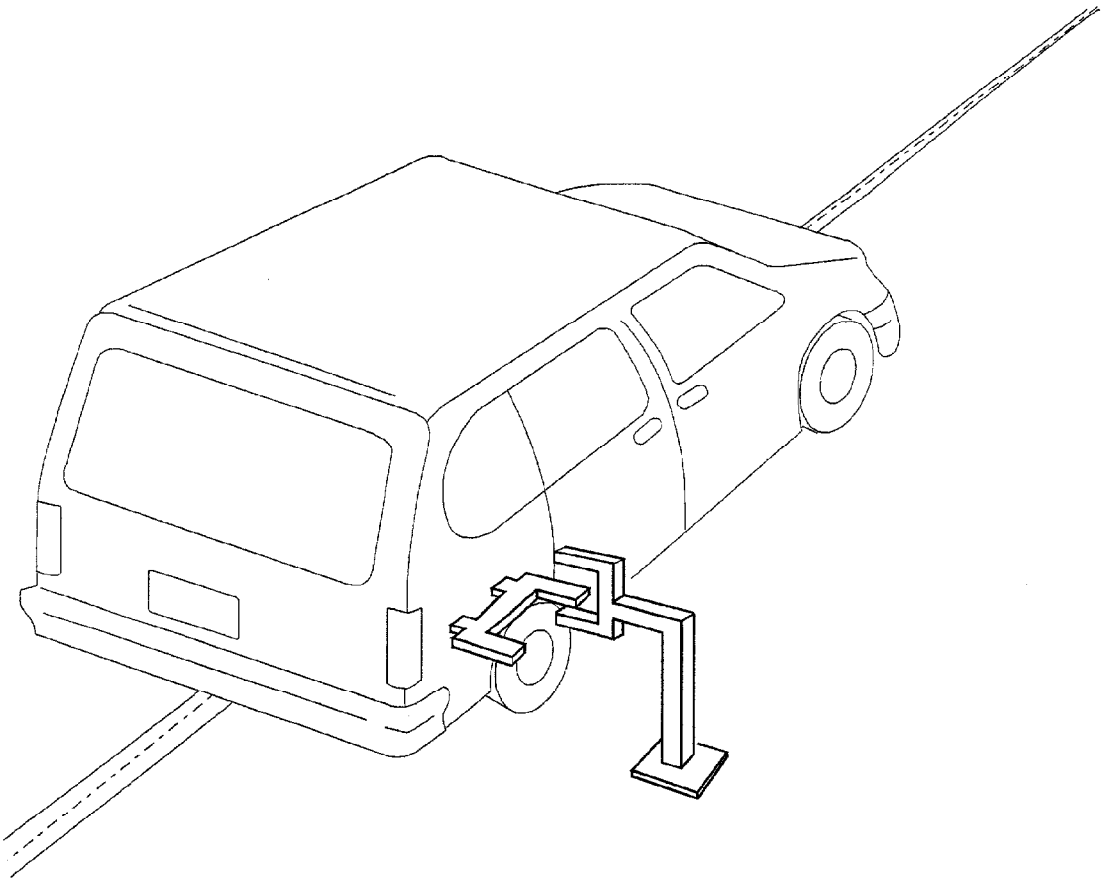
Pre-test:	L	5030 mm;	C	5210 mm;	R	5030 mm
Post-test:	L	4400 mm;	C	4500 mm;	R	4436 mm
Total crush:	L	630 mm;	C	710 mm;	R	594 mm
Average crush:	645 mm					

Test vehicle rebound from flat barrier:

Distance from test vehicle to barrier:

Post-test:	L	635 mm;	C	578 mm;	R	618 mm
Average rebound	610 mm					

Figure 1 Impact Velocity Measurement System

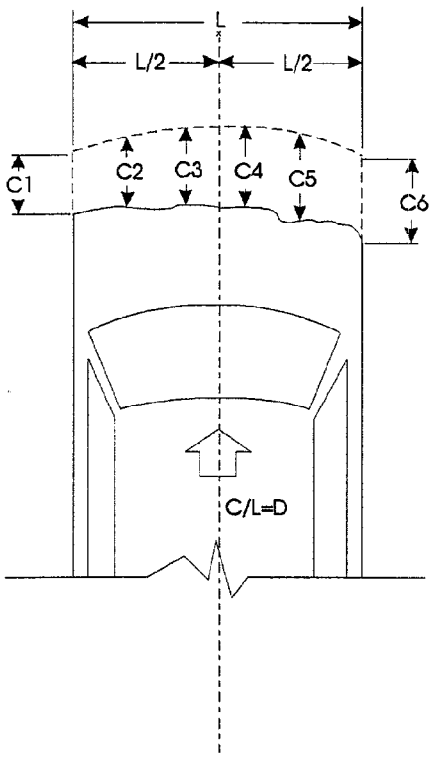


The final vane clears the final emitter/receiver pair 51 millimeters before impact.

The vanes have 305-millimeter spacing.

Figure 2 Accident Investigation Division Data
for 56 kph (35 mph) Frontal Barrier Impact

NHTSA number:	MW0205
Test date:	01/15/98
Vehicle year/make/ model/body style:	1998/Ford/Expedition/multi-purpose passenger vehicle
Vehicle size category:	Special purpose vehicle
VIN:	1FMRU18W4WLA91125
Build date:	12/97
Test weight:	2672.6 kg
Vehicle wheelbase:	3030 mm
Maximum width:	2000 mm
Front overhang:	980 mm



Collision Deformation Classification (CDC) code: 12FDEW3

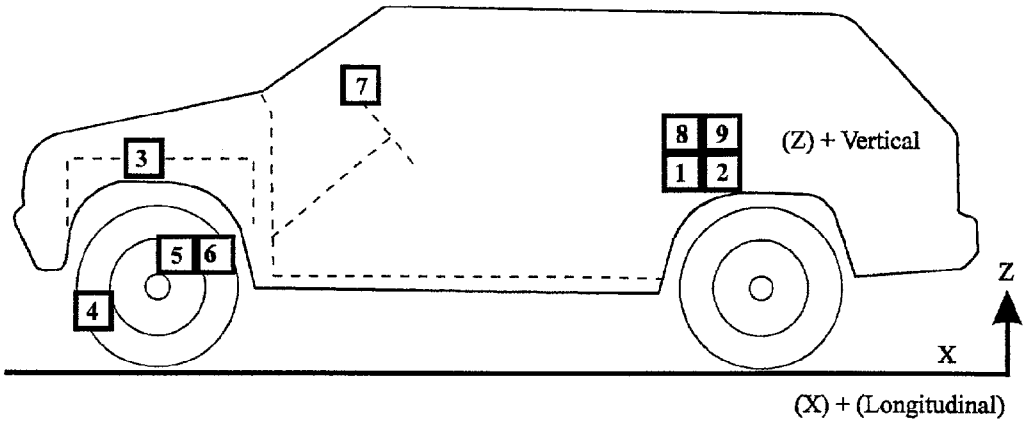
Crush depth measurements:

C1 = 630 mm
C2 = 668 mm
C3 = 698 mm
C4 = 718 mm
C5 = 698 mm
C6 = 594 mm

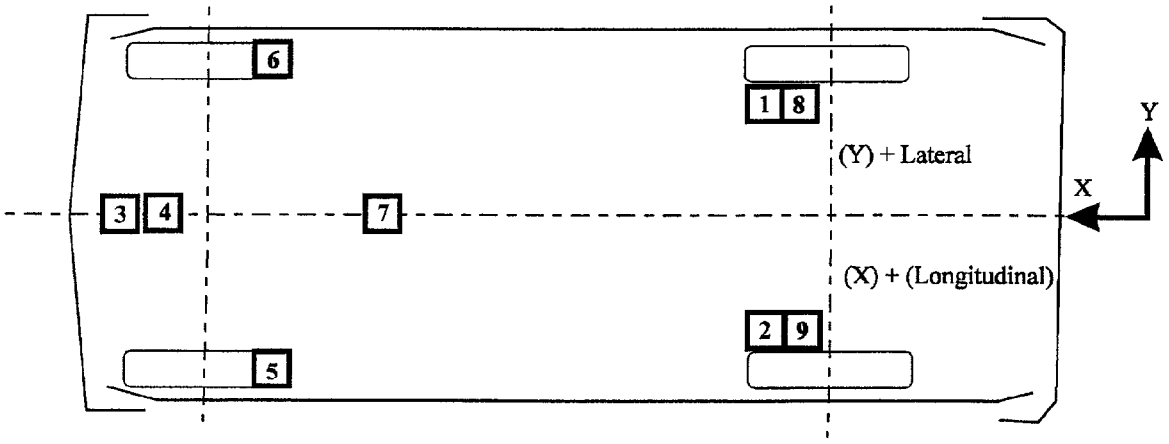
Midpoint of damage: D: Vehicle Longitudinal Centerline

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: 980115 No. LOCATION	X	Y	Z	POSITIVE DIRECTION		NEGATIVE DIRECTION	
1 LEFT REAR SEAT CROSSMEMBER	1752 mm	462 mm	742 mm				
LONGITUDINAL				4.1 g	@ 132.8 ms	28.8 g	@ 75.5 ms
REDUNDANT				3.9 g	@ 132.8 ms	28.6 g	@ 75.6 ms
2 RIGHT REAR SEAT CROSSMEMBER	1752 mm	-444 mm	742 mm				
LONGITUDINAL				3.3 g	@ 132.7 ms	28.5 g	@ 75.9 ms
REDUNDANT				3.5 g	@ 132.6 ms	29.9 g	@ 75.8 ms
3 ENGINE TOP	4140 mm	282 mm	971 mm				
LONGITUDINAL				13.8 g	@ 67.8 ms	79.8 g	@ 48.2 ms
4 ENGINE BOTTOM	4000 mm	-133 mm	448 mm				
LONGITUDINAL				15.9 g	@ 69.2 ms	73.2 g	@ 51.6 ms
5 RIGHT BRAKE CALIPER	4040 mm	-680 mm	348 mm				
LONGITUDINAL				36.5 g	@ 68.2 ms	121.5 g	@ 43.5 ms
6 LEFT BRAKE CALIPER	4040 mm	680 mm	343 mm				
LONGITUDINAL				54.0 g	@ 62.3 ms	132.7 g	@ 41.8 ms
7 INSTRUMENT PANEL CENTER	3667 mm	-5 mm	1374 mm				
LONGITUDINAL				75.0 g	@ 83.1 ms	103.7 g	@ 62.8 ms

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

Table 5 Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	Driver #192	Passenger #142
Head	Airbag, head restraint	Airbag, head restraint
Chest	Airbag	Airbag
Abdomen	None	None
Left knee	Instrument panel	Instrument panel
Right knee	Instrument panel	Instrument panel

Door Opening:

	Left	Right
Front	Difficult, no tools required	Difficult, no tools required
Rear	Easy	Easy

Seat Movement:

	Seat Back Failure	Seat Shift
Front	None	None
Rear	NA	NA

Glazing Damage: The entire windshield was cracked on impact.

Other Notable Impact Effects: None

Table 6 FMVSS 208 Data Summary

Vehicle year/make/
model/body style: 1998/Ford/Expedition/multi-purpose passenger vehicle

Vehicle NHTSA number: MW0205

Test date: 01/15/98

	Driver Dummy #192		Passenger Dummy #142	
Maximum Accelerations:				
Head X-axis	-55.8	g	-54.3	g
Head Y-axis	10.1	g	-12.1	g
Head Z-axis	-30.0	g	-34.9	g
Head resultant	58.7	g	58.7	g
Chest X-axis	-45.3	g	-42.9	g
Chest Y-axis	5.1	g	-7.3	g
Chest Z-axis	-15.4	g	-15.7	g
Chest resultant[1]	44.8	g	42.2	g
Chest resultant time interval[1]	.003	sec	.003	sec
Head Injury Criteria (HIC) Values:				
HIC[2]	544		569	
HIC starting time	.061	sec	.063	sec
HIC ending time	.097	sec	.099	sec
Average head resultant acceleration during HIC time interval	46.9	g	47.8	g
Maximum Chest Deflections:				
Chest X-axis	-33.4	mm	-37.8	mm
Maximum chest deflection time	.073	sec	.075	sec
Maximum Compressive Femur Forces:				
Left femur	5389	N	2174	N
Right femur	3734	N	2355	N
Maximum Seat Belt Forces:				
Lap belt	6490.5	N	7636.5	N
Shoulder belt	6654.0	N	7511.7	N

Note: All values listed must be occurring during primary impact event.
(Head accelerations listed must be during HIC time interval.)

[1] 0.003 Sec. Minimum duration.

[2] The maximum HIC time interval is 36 milliseconds.

Table 7 Hybrid III Data Summary

Vehicle year/make/
model/body style: 1998/Ford/Expedition/multi-purpose passenger vehicle

Vehicle NHTSA number: MW0205

Test date: 01/15/98

	Driver Dummy #192	Passenger Dummy #142
Maximum Forces		
Neck X-axis shear force	-559 N	318 N
Neck Y-axis shear force	173 N	-197 N
Neck Z-axis axial force	1843 N	1570 N
Maximum Moments		
Neck moment about X-axis	-12.8 N·m	15.0 N·m
Neck moment about Y-axis	60.9 N·m	-33.5 N·m
Neck moment about Z-axis	20.6 N·m	10.7 N·m
Maximum Accelerations:		
Pelvis X-axis	-14.6 g	-57.2 g
Pelvis Y-axis	12.1 g	-11.4 g
Pelvis Z-axis	72.5 g	11.9 g
Pelvis resultant	72.5 g	57.4 g

Table 7 Hybrid III Data Summary, Cont'd.

Vehicle year/make/
model/body style: 1998/Ford/Expedition/multi-purpose passenger vehicle

Vehicle NHTSA number: MW0205

Test date: 01/15/98

	Driver Dummy #192	Passenger Dummy #142
Left upper tibia moment about X-axis	126.7 N·m	-28.3 N·m
Left upper tibia moment about Y-axis	53.4 N·m	87.1 N·m
Right upper tibia moment about X-axis	-45.9 N·m	-31.5 N·m
Right upper tibia moment about Y-axis	85.9 N·m	-133.9 N·m
Left lower tibia X-axis force	-842.2 N	-779.0 N
Left lower tibia Z-axis force	-1773.3 N	-1386.0 N
Left lower tibia moment about Y-axis	115.8 N·m	72.7 N·m
Right lower tibia X-axis force	-1130.4 N	1386.1 N
Right lower tibia Z-axis force	-2989 N	-1412.1 N
Right lower tibia moment about Y-axis	-199.7 N·m	-95.6 N·m
Left foot X-axis acceleration	-99.8 g	-118.0 g
Left foot Z-axis acceleration at heel	-36.3 g	55.7 g
Left foot Z-axis acceleration at toe	72.5 g	99.6 g
Right foot X-axis acceleration	-106.4 g	-124.2 g
Right foot Z-axis acceleration at heel	106.8 g	50.6 g
Right foot Z-axis acceleration at toe	204.8 g	192.6 g

Note: All values listed must be occurring during primary impact event.

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 were restrained by the driver's airbag as the dummy's torso was restrained by the three-point unibelt. The dummy's head rotated rearward into the head restraint as the dummy rebounded into the seat back. The dummy came to rest seated in the driver's seat, restrained by the three-point unibelt.

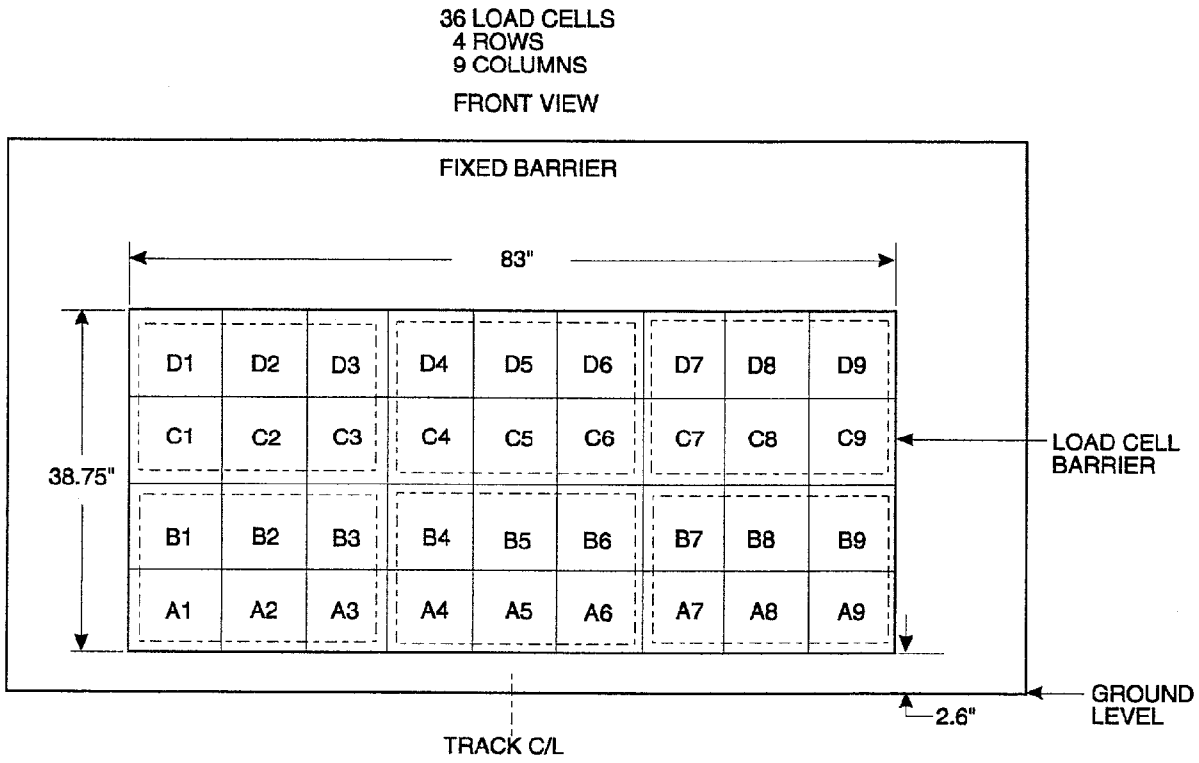
Right Front Passenger Dummy

Upon impact, the right front passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head rotated forward as the dummy's head and chest were restrained by the passenger's airbag and the dummy's torso was restrained by the three-point unibelt. The dummy's head rotated rearward into the head restraint as the dummy rebounded into the seat back. The dummy came to rest seated upright in the right front passenger's seat, restrained by the three-point unibelt.

Table 8 Seat Belt Performance Assessment Test Data

	Driver	Passenger
Belt length data:		
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	2010 mm	2050 mm
Shoulder belt length as measured on Part 572 dummy.	800 mm	775 mm
Lap belt length as measured on Part 572 dummy.	880 mm	830 mm
Shoulder belt spool-off length:		
As determined by film analysis	51 mm	64 mm
As determined mechanically	46 mm	60 mm
As determined electronically	80 mm	87 mm
Belt stretch length:		
As measured mechanically	0 mm/m	0 mm/m
As measured electronically	0 mm/m	0 mm/m
Retractor lock-up time:		
As determined by shoulder belt spool-off	65 ms	63 ms

Figure 4 Load Cell Barrier Configuration



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

Table 9 Load Cell Barrier Data Summary

Location	Positive direction					Negative direction				
Total group 1	2.2	kN	@	2.2	ms	39.1	kN	@	77.0	ms
Total group 2	2.3	kN	@	34.7	ms	5.0	kN	@	14.3	ms
Total group 3	1.7	kN	@	1.4	ms	64.1	kN	@	53.5	ms
Total group 4 [1]	0.7	kN	@	1.4	ms	266.2	kN	@	45.5	ms
Total group 5	0.2	kN	@	189.3	ms	109.2	kN	@	51.6	ms
Total group 6	---.-	kN	@	---.-	ms [2]	254.9	kN	@	41.8	ms
Total load cell force	---.-	kN	@	---.-	ms [2]	678.0	kN	@	47.4	ms

Tension is positive
Compression is negative

[1] See Data Acquisition Explanations
[2] No positive value in the time frame of interest.

Section 3.0

FMVSS 212, 219 (partial), and 301 Data

Figure 5 FMVSS 212 Test Data

Details of windshield mounting such as retention method, trim type, etc.:

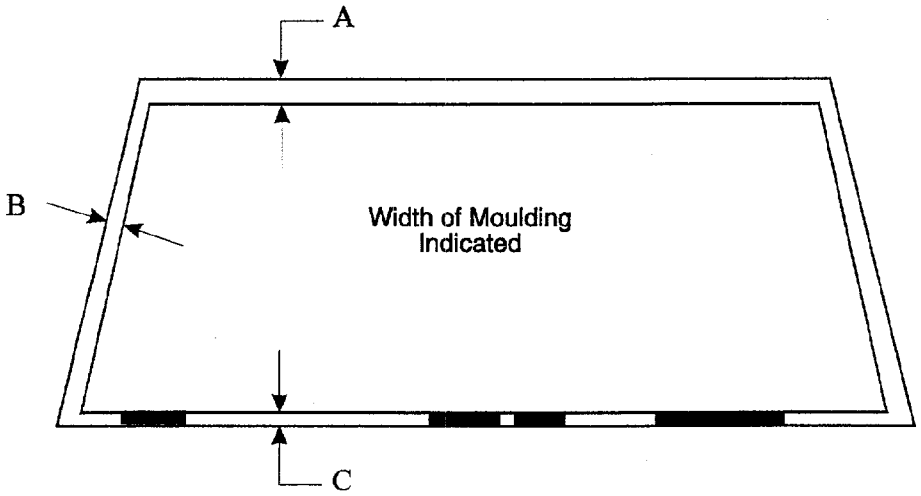
FMVSS 212 requirements: The post-test periphery retention amount must be at least 75% of the pre-test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of windshield for vehicles equipped with automatic restraint systems for front occupants.

Windshield periphery measurements:

	Pre-test	Post-test	Percent retention
Right side	2262 mm	1823 mm	80
Left side	2262 mm	2036 mm	90
Total	4524 mm	3859 mm	85

Pre-test windshield mounting material temperature: 21° C

A = 26 mm
B = 26 mm
C = 14 mm



Front view of windshield[1]

Loss of windshield retention lengths: 91 mm, 135 mm, 69 mm, 370 mm

[1] Indicate areas of loss of retention, if any, on windshield diagram.

Figure 6 FMVSS 219 Test Data

Protected zone lower edge requirement:

The lower edge of the protected zone is determined by placing a 165-millimeter diameter rigid sphere weighing 6.8 kg in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. Draw the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and 13 millimeters from the locus line. The **lower edge of the protected zone** is the longitudinal projection onto the outer surface of the windshield of this line.

Windshield measurements:

A = 1420 mm

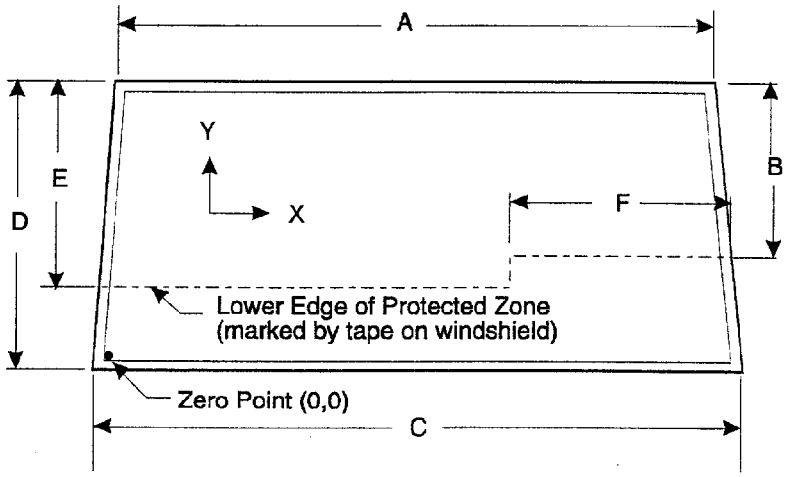
B = 455 mm

C = 1820 mm

D = 760 mm

E = 560 mm

F = 888 mm



FRONT VIEW

Method of adhering protected zone template to windshield: NA

Areas of windshield template penetration greater than 6 mm: NA

	Coordinates X	Y
1.		
2.		
3.		

Areas of windshield penetration, below the protected zone, through the inner surface of the windshield: None

1.
2.
3.

Table 10 Fuel System Data

Vehicle year/make/ model/body style:	1998/Ford/Expedition/multi-purpose passenger vehicle
NHTSA number:	MW0205
Fuel system capacity:	79.3 liters (from owner's manual)
Usable capacity:	79.3 liters (furnished by COTR)
Test volume range:	72.9 liters to 74.5 liters (92-94% of usable)
Actual test volume:	73.7 liters (with entire fuel system filled)
Test fluid type:	Stoddard solvent
Specific gravity:	0.764
Kinematic viscosity:	0.99 centistoke
Test fluid color:	Purple
Did electric fuel pump operate with ignition switch "on" and the engine not operating.	Yes
Details of fuel system:	The fuel tank was located in front of the rear axle, between the left frame rail and the driveshaft. The fuel filler neck was located on the left side and entered the rear of the fuel tank. The fuel lines ran along the left frame rail to the engine compartment.

Table 11 FMVSS 301 Post-Impact Test Data

NHTSA number: MW0205

Test date: 01/15/98

Vehicle year/make/
model/body style: 1998/Ford/Expedition/multi-purpose passenger vehicle

Test requirements:

Test vehicle fuel tank filled to 92 to 94% of manufacturer's usable capacity and with electric fuel pump operating (if it will operate without engine operation). Part 572 test dummies located at each front designated seating position.

Test vehicle impact type:

_x_ Frontal (_56_ kph)

___ Oblique (48 kph) with __° barrier face first contacting ___ (driver/pass.) side

___ Rear moving barrier (48 kph)

___ Lateral moving barrier (32 kph)

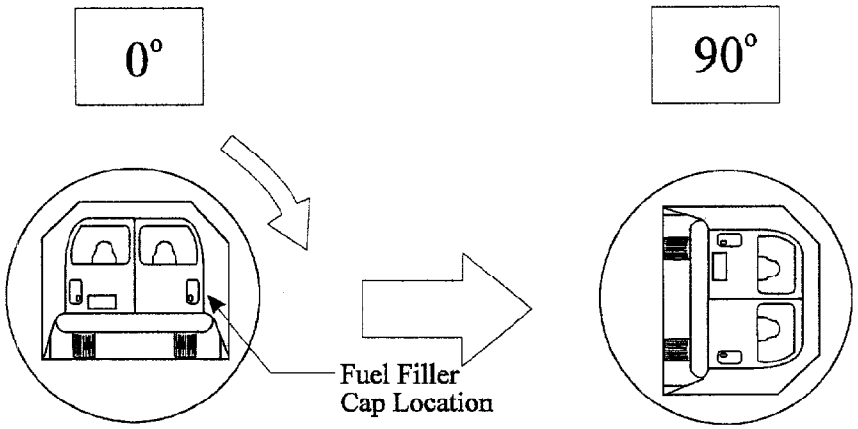
Fuel system fluid spillage measurements:

		Test Results	Maximum Allowable
1.	From impact until vehicle motion ceases	0 g	28 g
2.	5-minute period after vehicle motion ceases	0 g	142 g
3.	Next 25 minutes after 5-minute period	0 g	28 g/min

Fuel system fluid spillage location(s): None

Figure 7 FMVSS 301 Static Rollover Test Data

NHTSA number: MW0205
Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90°	=	2	minutes,	0	seconds
FMVSS 301 position hold time	=	5	minutes,	0	seconds
Total	=	7	minutes,	0	seconds
Next whole minute interval	=	7	minutes		

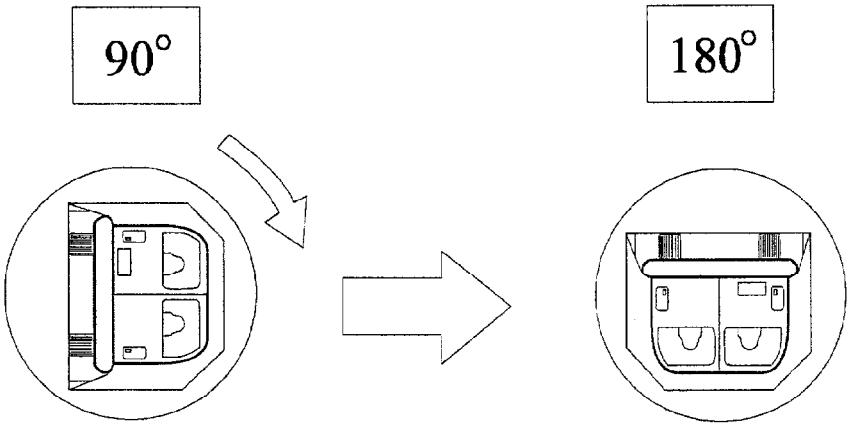
Fuel system fluid spillage measurements:

0° to 90° rotation (fuel filler cap down)	Test Results	Maximum Allowable
1. First five minutes from onset of rotation	0 g	142 g
2. Sixth minute from onset of rotation	0 g	28 g
3. Seventh minute from onset of rotation	0 g	28 g

Fuel system fluid spillage location(s): None

Figure 7 FMVSS 301 Static Rollover Test Data, Cont'd.

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90°	=	2	minutes,	0	seconds
FMVSS 301 position hold time	=	5	minutes,	0	seconds
Total	=	7	minutes,	0	seconds
Next whole minute interval	=	14	minutes		

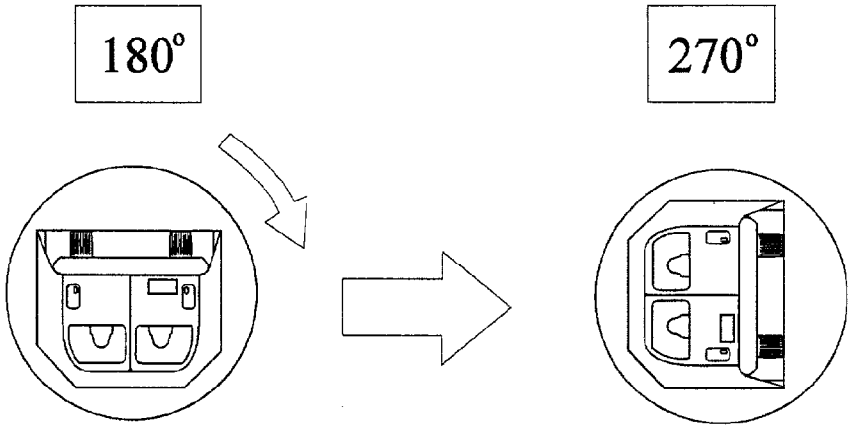
Fuel system fluid spillage measurements:

90° to 180° rotation	Test Results	Maximum Allowable
1. First five minutes from onset of rotation	0 g	142 g
2. Sixth minute from onset of rotation	0 g	28 g
3. Seventh minute from onset of rotation	0 g	28 g

Fuel system fluid spillage location(s): None

Figure 7 FMVSS 301 Static Rollover Test Data, Cont'd.

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90°	=	2	minutes,	0 seconds
FMVSS 301 position hold time	=	5	minutes,	0 seconds
Total	=	7	minutes,	0 seconds
Next whole minute interval	=	21	minutes	

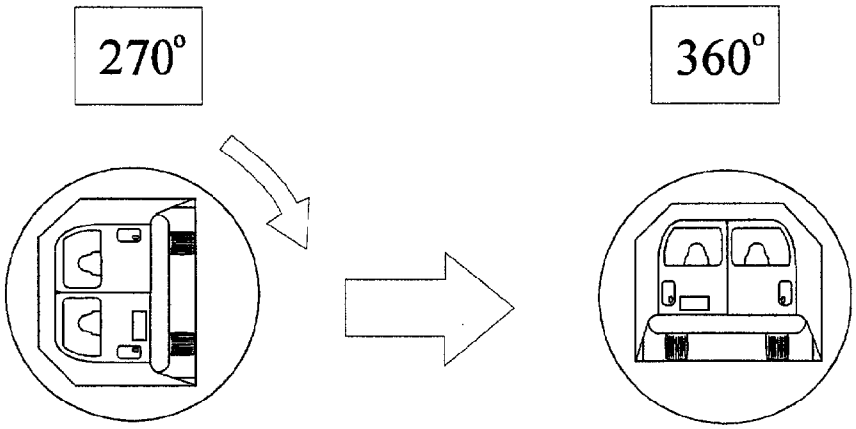
Fuel system fluid spillage measurements:

180° to 270° rotation	Test Results	Maximum Allowable
1. First five minutes from onset of rotation	0 g	142 g
2. Sixth minute from onset of rotation	0 g	28 g
3. Seventh minute from onset of rotation	0 g	28 g

Fuel system fluid spillage location(s): None

Figure 7 FMVSS 301 Static Rollover Test Data, Cont'd.

Test phase



Static rollover machine rotation time information: (specified range is 1-3 minutes)

Time required for machine to rotate 90°	=	2	minutes,	0 seconds
FMVSS 301 position hold time	=	5	minutes,	0 seconds
Total	=	7	minutes,	0 seconds
Next whole minute interval	=	28	minutes	

Fuel system fluid spillage measurements:

270° to 360° rotation	Test Results	Maximum Allowable
1. First five minutes from onset of rotation	0 g	142 g
2. Sixth minute from onset of rotation	0 g	28 g
3. Seventh minute from onset of rotation	0 g	28 g

Fuel system fluid spillage location(s): None

Section 4.0

Occupant, Camera, and Vehicle Information

Figure 8 Dummy Measurement Locations for Front Seat Occupants

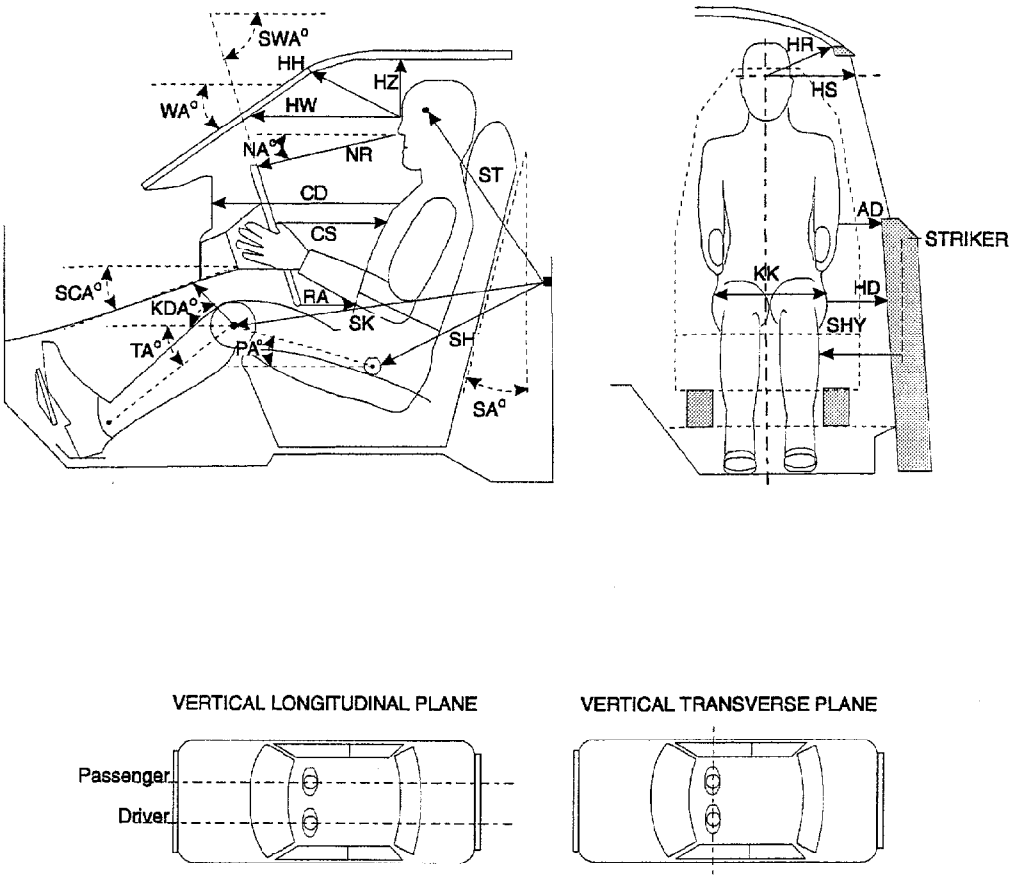


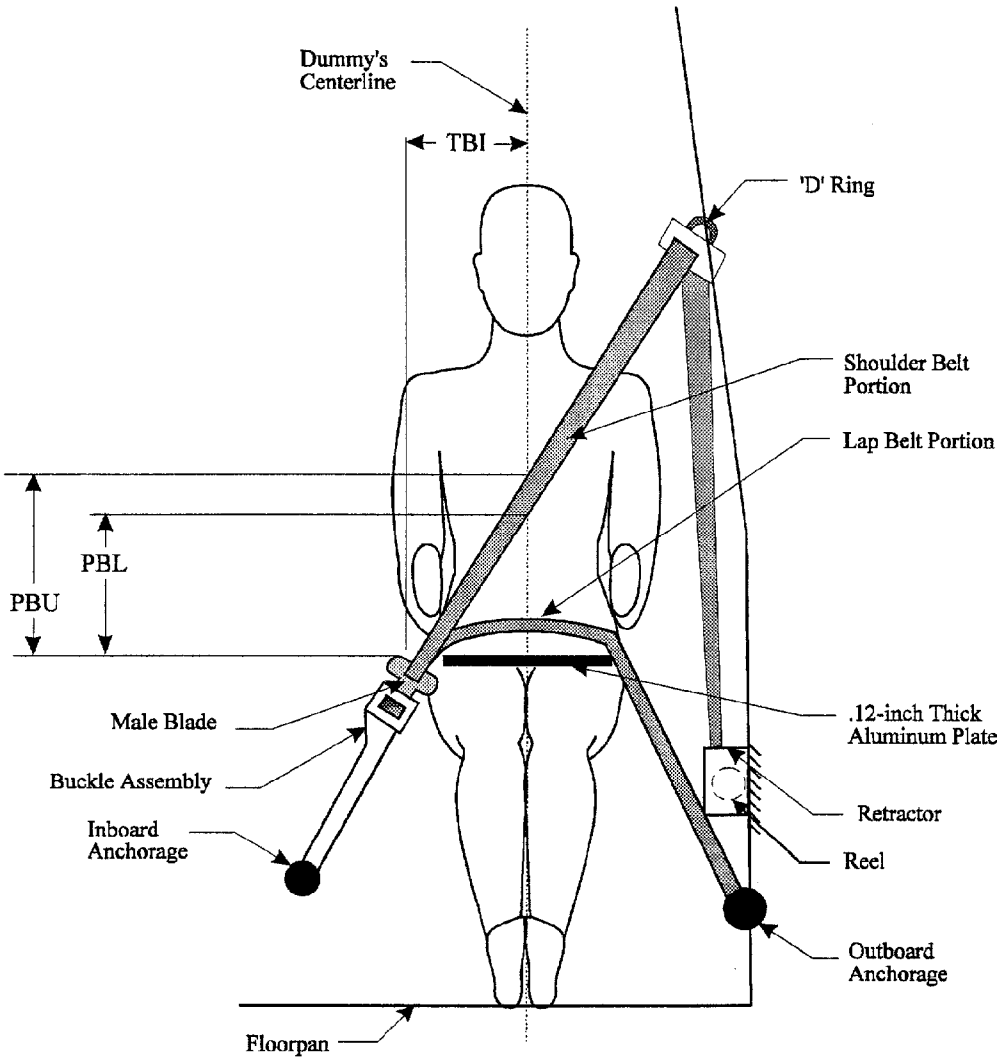
Table 12 Dummy Measurement Data For Front Seat Occupants

Designation	Type of Measurement	Driver (Serial #192)	Passenger (Serial #142)
WA	Windshield angle	35°	35°
SWA	Steering wheel angle	21°	NA
SCA	Steering column angle	69°	NA
SA	Seat back angle	20°	19.5°
HZ	Head to roof	243 mm	231 mm
HH	Head to header	356 mm	351 mm
HW	Head to windshield	577 mm	556 mm
HR	Head to side header	267 mm	240 mm
NR	Nose to rim	355 mm	NA
NA	Nose to rim angle	7°	NA
CD	Chest to dash	577 mm	639 mm
CS	Steering wheel to chest	276 mm	NA
RA	Rim to abdomen	193 mm	NA
KDL	Left knee to dash	162 mm	170 mm
KDR	Right knee to dash	139 mm	178 mm
KDA	Outboard knee to dash angle	21°	40°
PA	Pelvic angle	20.8°	21.6°
TA	Tibial angle	49.5°	50.9°
KK	Knee to knee	345 mm	269 mm
ST[1]	Striker to head	692 mm	675 mm
	Striker to head angle	-71°	-70°
SK[1]	Striker to knee	613 mm	646 mm
	Striker to knee angle	-8°	-8°
SH[1]	Striker to H-point	232 mm	250 mm
	Striker to H-point angle	-8°	-3°
SHY	Striker to H-point (Y dir.)	250 mm	246 mm
HS	Head to side window	356 mm	303 mm
HD	H-point to door	169 mm	147 mm
AD	Arm to door	94 mm	105 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 9 Seat Belt Positioning Data



	Driver	Passenger
PBU - Top surface of aluminum plate to belt upper edge	310 mm	310 mm
PBI - Top surface of aluminum plate to belt lower edge	332 mm	227 mm
TBI - Dummy centerline to intersection of upper torso belt and lap belt	84 mm	112 mm

Figure 10 Camera Positions

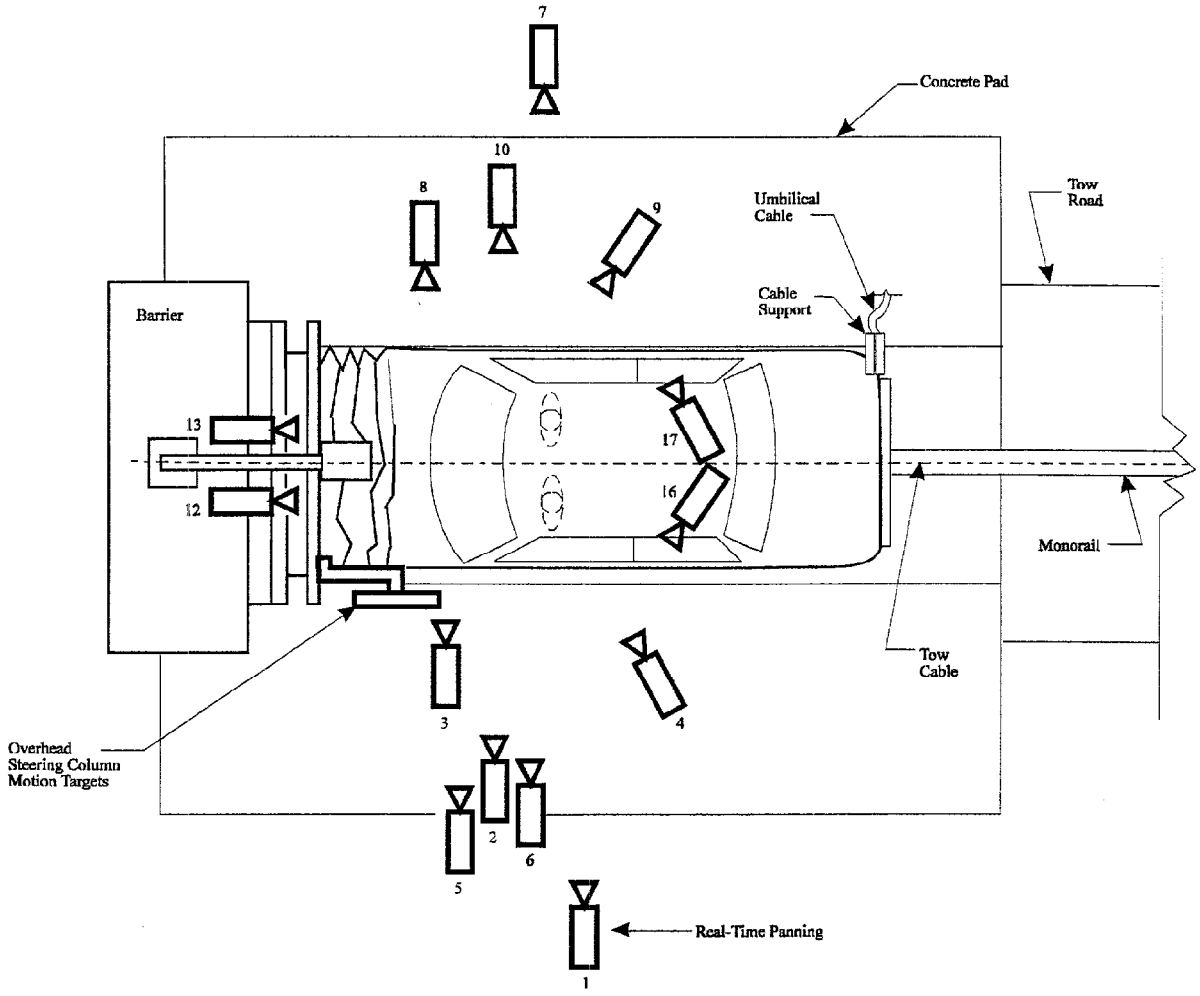


Figure 10 Camera Positions, Cont'd.

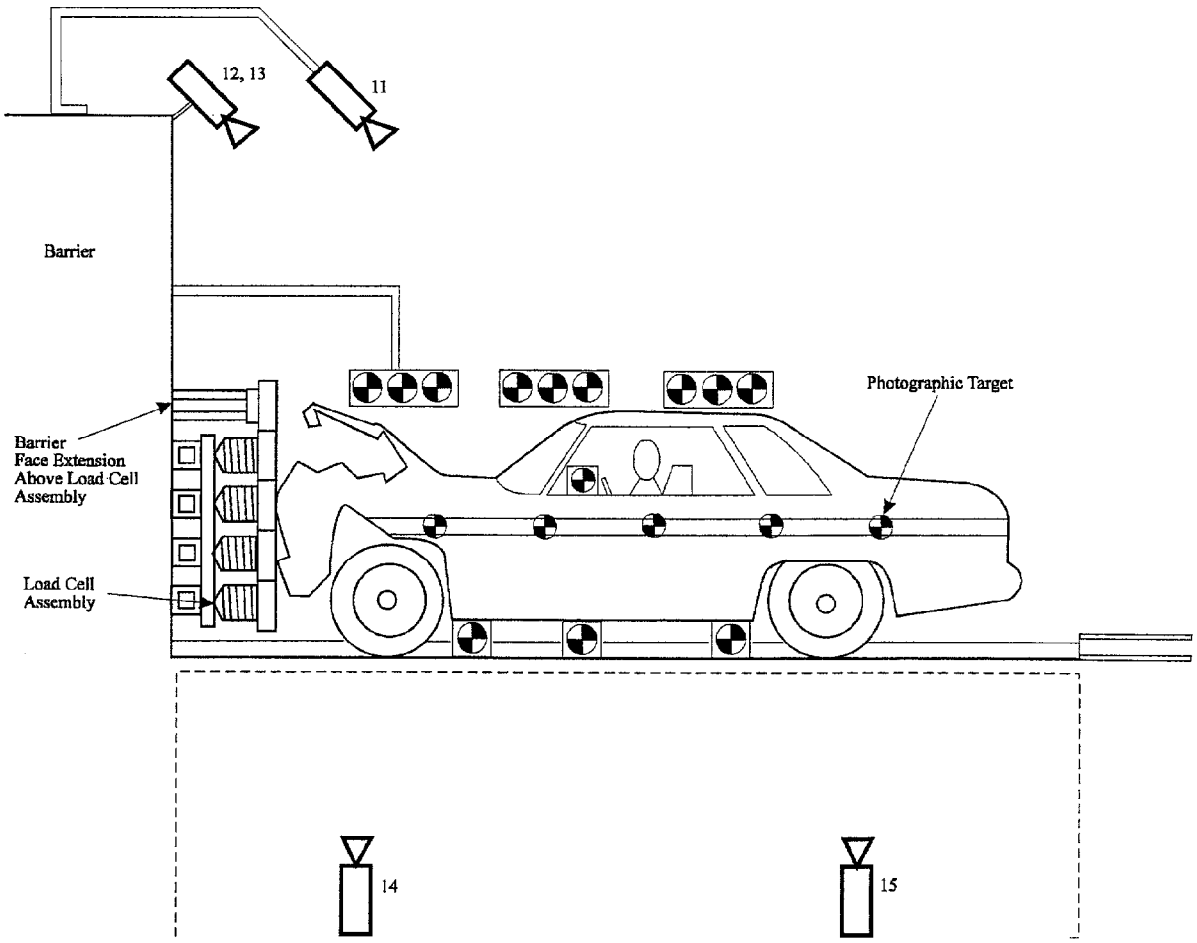


Table 13 Motion Picture Camera Locations

Test Number: 980115

Vehicle Year/Make/Model/Body Style: 1998/Ford/Expedition/multi-purpose passenger vehicle

Camera Number	View	Camera Positions[1] X	Y	Z	Angle[2]	Film Plane to Head Target	Lens	Film Speed
1	Real-time panning	-3607 mm	2802 mm	1549 mm	NA	NA	16 mm	24 frames/s
2	Left Barrier to seat back	-4572 mm	8230 mm	2591 mm	-27°	7620 mm	25 mm	992 frames/s
3	Left windshield intrusion	-1346 mm	7859 mm	1074 mm	0°	NA	50 mm	1005 frames/s
4	Dummy angled view	-1054 mm	2438 mm	1118 mm	-12°	1829 mm	25 mm	695 frames/s
5	Column movement - upper	-3048 mm	8534 mm	2616 mm	-14°	NA	25 mm	992 frames/s
6	Column movement - lower	-3048 mm	8534 mm	1908 mm	-9°	NA	25 mm	1000 frames/s
7	Right side overall	-2065 mm	-6767 mm	942 mm	-2°	NA	13 mm	970 frames/s
8	Right windshield intrusion	-968 mm	-7775 mm	1118 mm	0°	NA	50 mm	1005 frames/s
9	Passenger angled view	-986 mm	2438 mm	1151 mm	7°	1829 mm	25 mm	995 frames/s
10	Right medium tight	-4674 mm	6706 mm	2540 mm	-26°	6096 mm	25 mm	1005 frames/s
11	Windshield - barrier center	-925 mm	0 mm	2489 mm	-40°	NA	13 mm	1002 frames/s
12	Driver - barrier view	-173 mm	368 mm	2159 mm	-41°	NA	17 mm	998 frames/s
13	Passenger - barrier view	-114 mm	-351 mm	2159 mm	-40°	NA	17 mm	1005 frames/s
14	Crush & fluid spillage - front pit	-1283 mm	0 mm	-2347 mm	90°	NA	13 mm	990 frames/s
15	Fluid spillage - rear pit	-2522 mm	0 mm	-2515 mm	90°	NA	13 mm	1002 frames/s
16	Driver seat belt movement	NA	NA	NA	NA	NA	NA mm	983 frames/s
17	Passenger seat belt movement	NA	NA	NA	NA	NA	NA mm	998 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]

Figure 11 Vehicle Target Locations

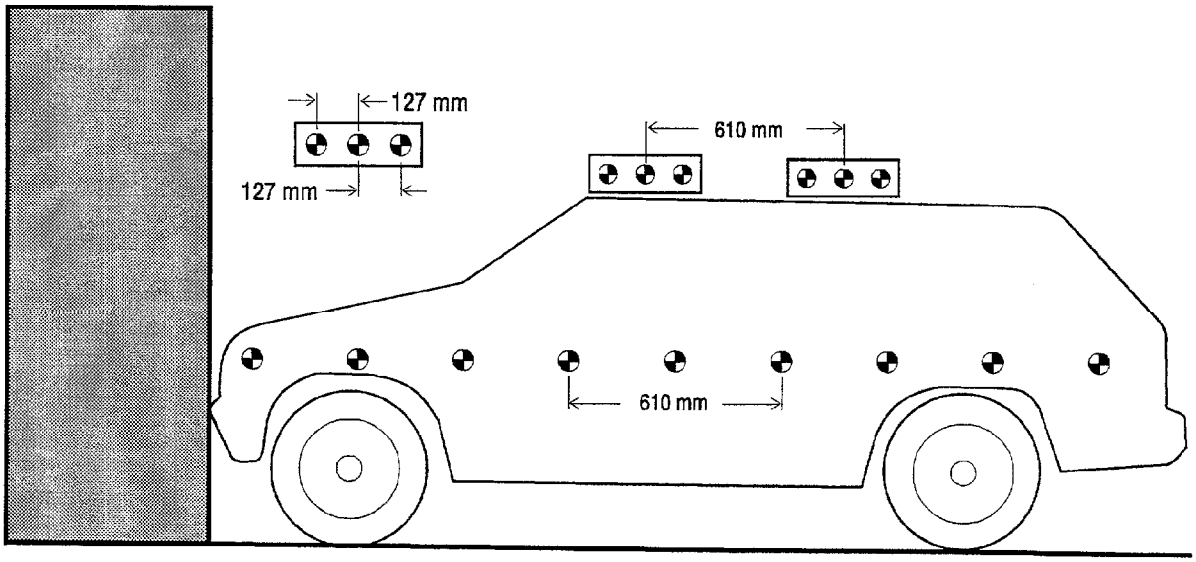


Figure 12 Pre-Test And Post-Test Measurement Points

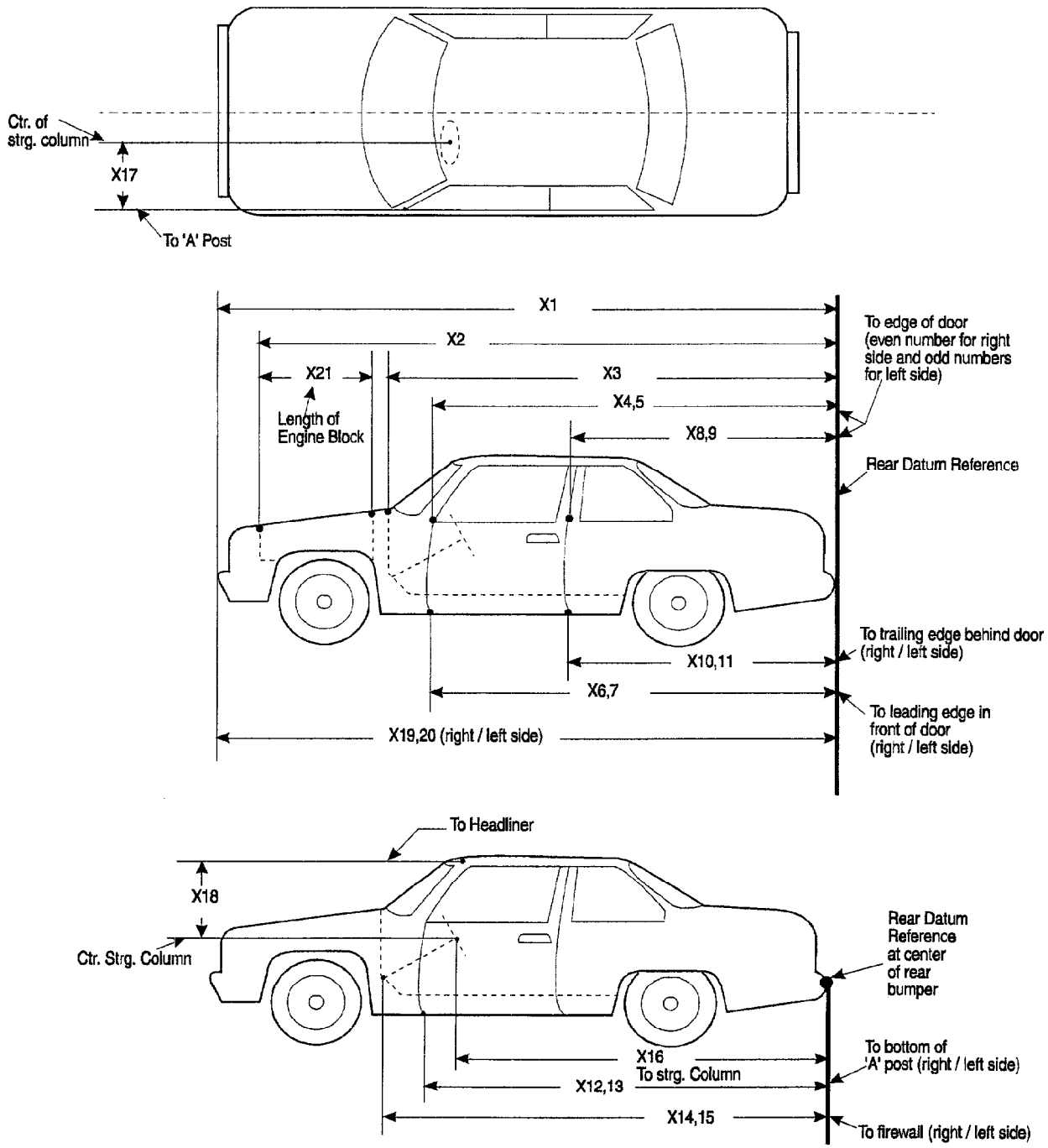


Table 14 Impacted Vehicle Measurements

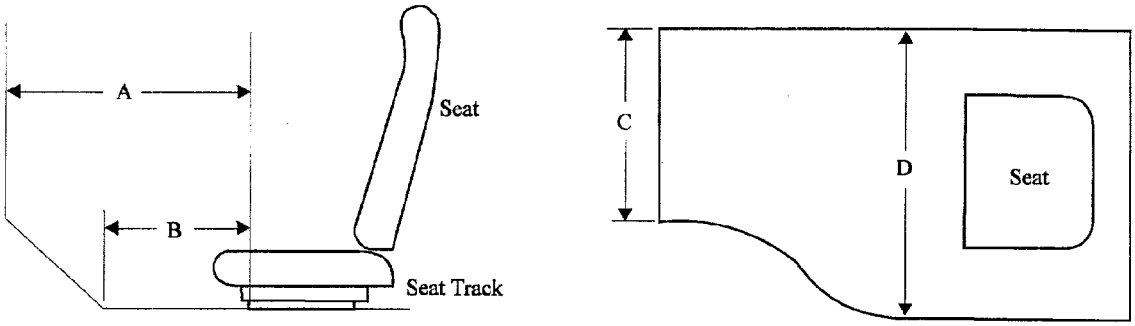
Test number: 980115

Vehicle year/make/model/body style: 1998/Ford/Expedition/multi-purpose passenger vehicle

No.	Type of measurement	Pre-test	Post-test	Difference
X1	Total length of vehicle at centerline	5210 mm	4500 mm	710 mm
X2	Rear surface of vehicle to front of engine block	4322 mm	4000 mm	322 mm
X3	Rear surface of vehicle to firewall	3988 mm	3794 mm	194 mm
X4	Rear surface of vehicle to upper leading edge of right door	3574 mm	3567 mm	7 mm
X5	Rear surface of vehicle to upper leading edge of left door	3575 mm	3541 mm	34 mm
X6	Rear surface of vehicle to lower leading edge of right door	3521 mm	3520 mm	1 mm
X7	Rear surface of vehicle to lower leading edge of left door	3519 mm	3499 mm	20 mm
X8	Rear surface of vehicle to upper trailing edge of right door	2490 mm	2484 mm	6 mm
X9	Rear surface of vehicle to upper trailing edge of left door	2495 mm	2456 mm	39 mm
X10	Rear surface of vehicle to lower trailing edge of right door	2496 mm	2500 mm	-4 mm
X11	Rear surface of vehicle to lower trailing edge of left door	2492 mm	2474 mm	18 mm
X12	Rear surface of vehicle to bottom of "A" post on right side	3544 mm	3522 mm	22 mm
X13	Rear surface of vehicle to bottom of "A" post on left side	3543 mm	3498 mm	45 mm
X14	Rear surface of vehicle to firewall - right side	3961 mm	3836 mm	125 mm
X15	Rear surface of vehicle to firewall - left side	3955 mm	3792 mm	163 mm
X16	Rear surface of vehicle to steering wheel center	3111 mm	3139 mm	-28 mm
X17	Center of steering column to "A" post	291 mm	239 mm	52 mm
X18	Center of steering column to headliner	484 mm	484 mm	0 mm
X19	Rear surface of vehicle to right side of front bumper	5030 mm	4436 mm	594 mm
X20	Rear surface of vehicle to left side of front bumper	5030 mm	4400 mm	630 mm
X21	Length of engine block	391 mm	391 mm	0 mm

Figure 13 Vehicle Intrusion Measurements

Static Footwell Deformation



Driver's Side

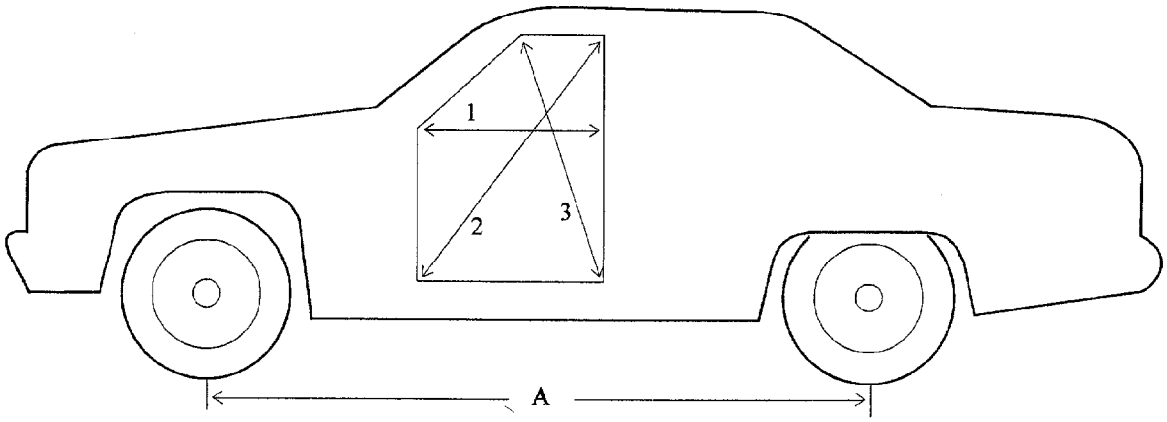
Measurement	Pre-Test	Post-Test	Difference
A	707 mm	680 mm	27 mm
B	525 mm	510 mm	15 mm
C	422 mm	373 mm	49 mm
D	456 mm	456 mm	0 mm

Passenger's Side

Measurement	Pre-Test	Post-Test	Difference
A	706 mm	660 mm	46 mm
B	537 mm	498 mm	39 mm
C	400 mm	399 mm	1 mm
D	414 mm	410 mm	4 mm

Figure 14 Vehicle Intrusion Measurements

Door Opening Width

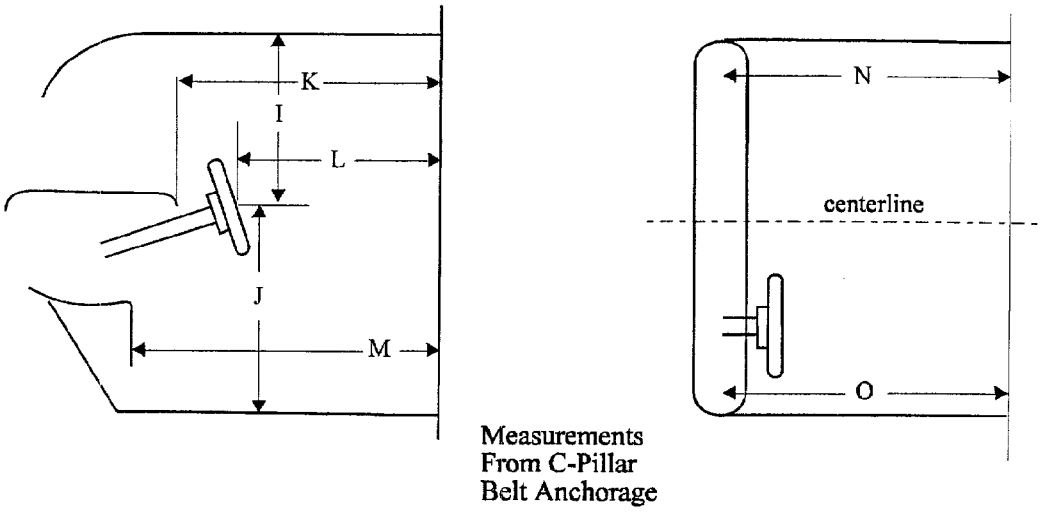


Units (mm)	Left			Right		
Measurement	1	2	3	1	2	3
Pre-Test	1011 mm	1606 mm	1272 mm	1020 mm	1577 mm	1267 mm
Post-Test	977 mm	1566 mm	1333 mm	1000 mm	1566 mm	1300 mm
Difference	34 mm	40 mm	-61 mm	20 mm	11 mm	-33 mm

Units (mm)	A = Wheelbase Left	A = Wheelbase Right
Pre-Test	3030 mm	3030 mm
Post-Test	2892 mm	2909 mm
Difference	138 mm	121 mm

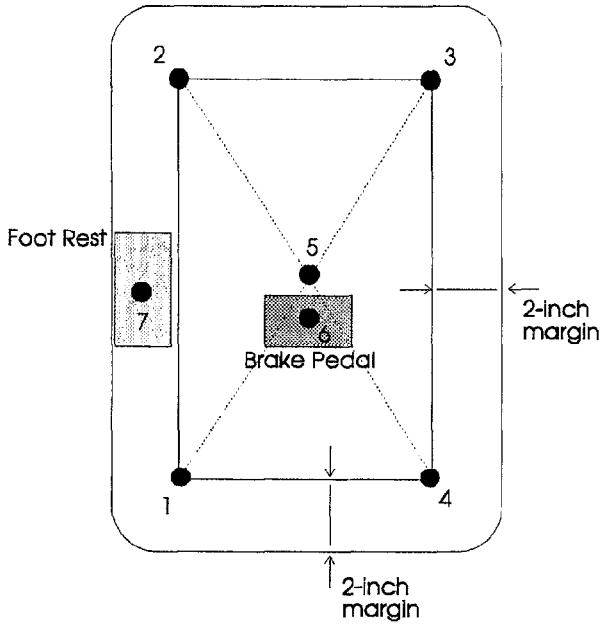
Figure 15 Vehicle Intrusion Measurements

Static Passenger Compartment Intrusion



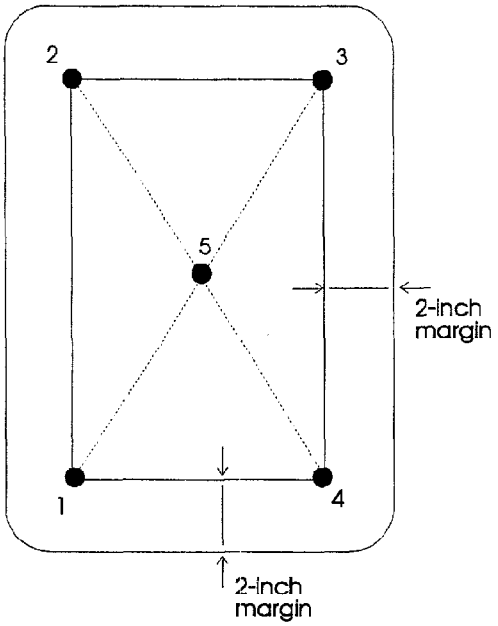
Measurement	Pre-Test	Post-Test	Difference
I	472 mm	484 mm	-12 mm
J	664 mm	747 mm	-83 mm
K (driver's side)	2975 mm	2901 mm	74 mm
L	2740 mm	2734 mm	6 mm
M (driver's side)	1785 mm	1751 mm	34 mm
N	1955 mm	1883 mm	72 mm
O	1807 mm	1720 mm	87 mm
Passenger's side	3010 mm	2926 mm	84 mm
Passenger's side	1870 mm	1835 mm	35 mm

Figure 16 Driver Toeboard Measurements



Driver Side		X	Z
1	Pre-Test	1385	614
	Post-Test	1391	633
	Crush	-6	-19
2	Pre-Test	1885	708
	Post-Test	1870	656
	Crush	15	52
3	Pre-Test	1830	708
	Post-Test	1750	602
	Crush	80	106
4	Pre-Test	1385	614
	Post-Test	1373	521
	Crush	12	93
5	Pre-Test	1625	614
	Post-Test	1628	572
	Crush	-3	42
6	Pre-Test	1764	818
	Post-Test	1687	812
	Crush	77	6
7	Pre-Test	1800	658
	Post-Test	1773	587
	Crush	27	71

Figure 17 Passenger Toeboard Measurements



	Passenger Side	X	Z
1	Pre-Test	1385	604
	Post-Test	1363	555
	Crush	22	49
2	Pre-Test	1877	741
	Post-Test	1697	765
	Crush	180	-24
3	Pre-Test	1906	741
	Post-Test	1860	747
	Crush	46	-6
4	Pre-Test	1380	604
	Post-Test	1367	582
	Crush	13	22
5	Pre-Test	1648	604
	Post-Test	1619	572
	Crush	29	32
6	Pre-Test	N/A	N/A
	Post-Test	N/A	N/A
	Crush	N/A	N/A
7	Pre-Test	N/A	N/A
	Post-Test	N/A	N/A
	Crush	N/A	N/A

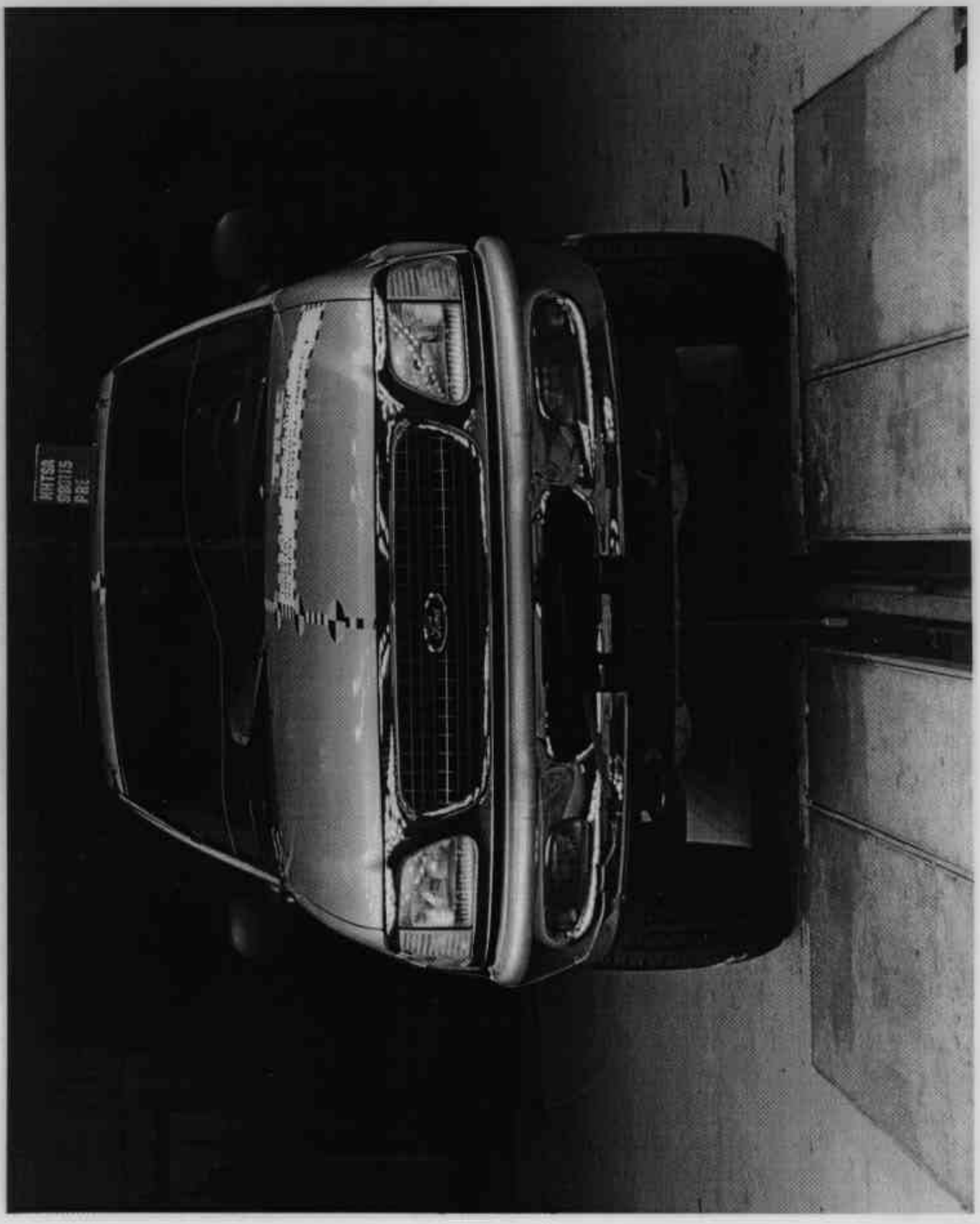


Figure A-1 Pre-Test Front View

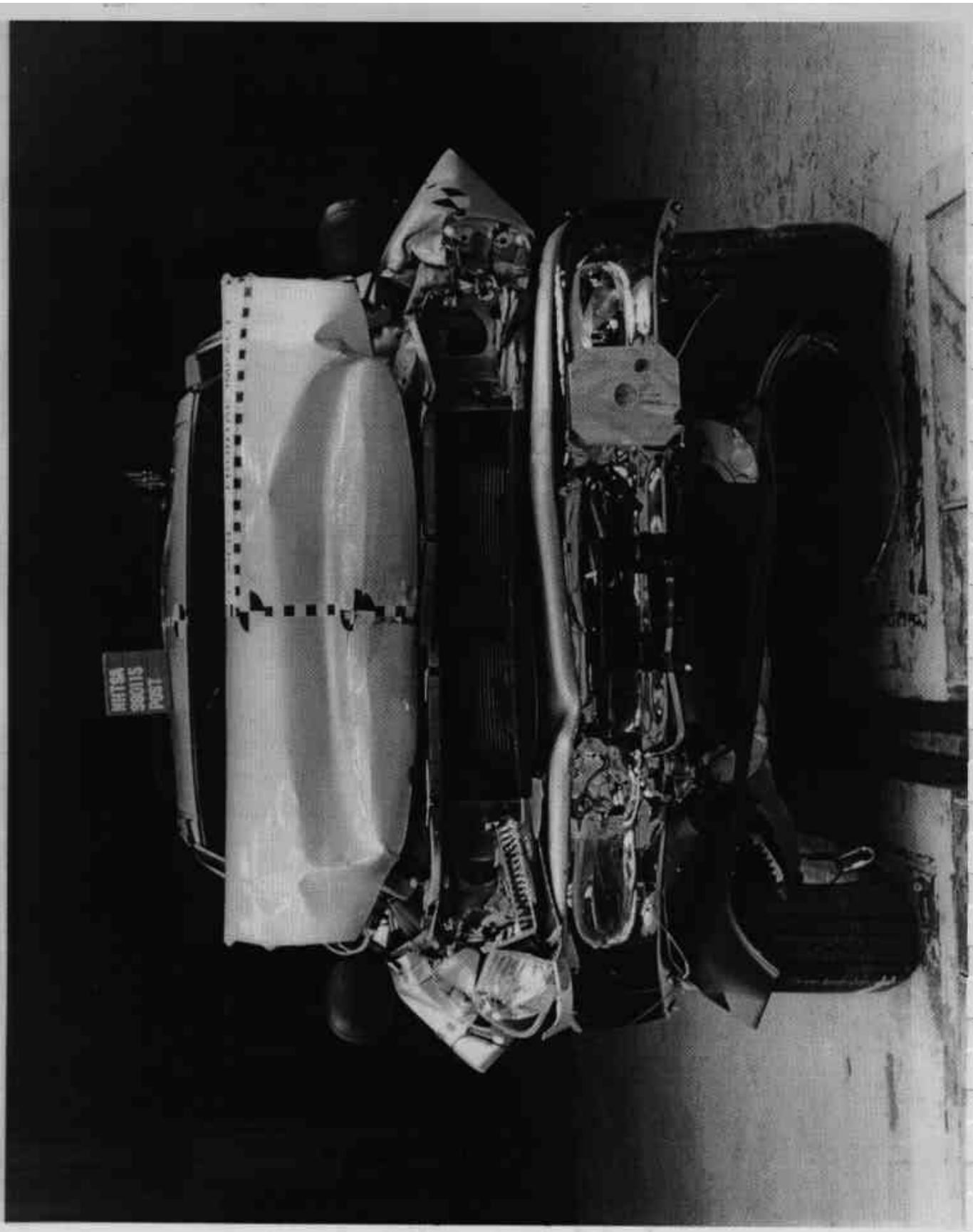


Figure A-2 Post-Test Front View

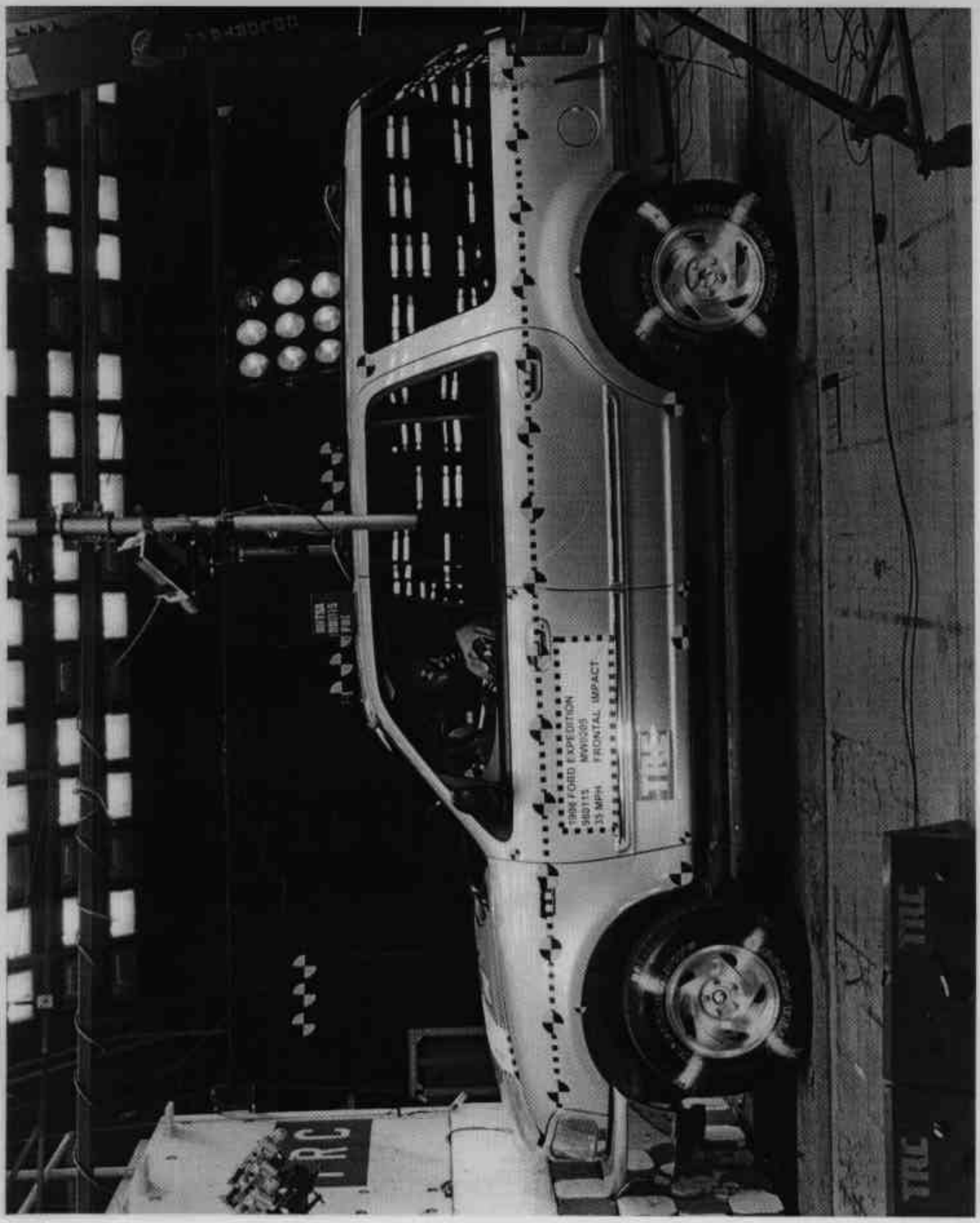


Figure A-3 Pre-Test Left Side View

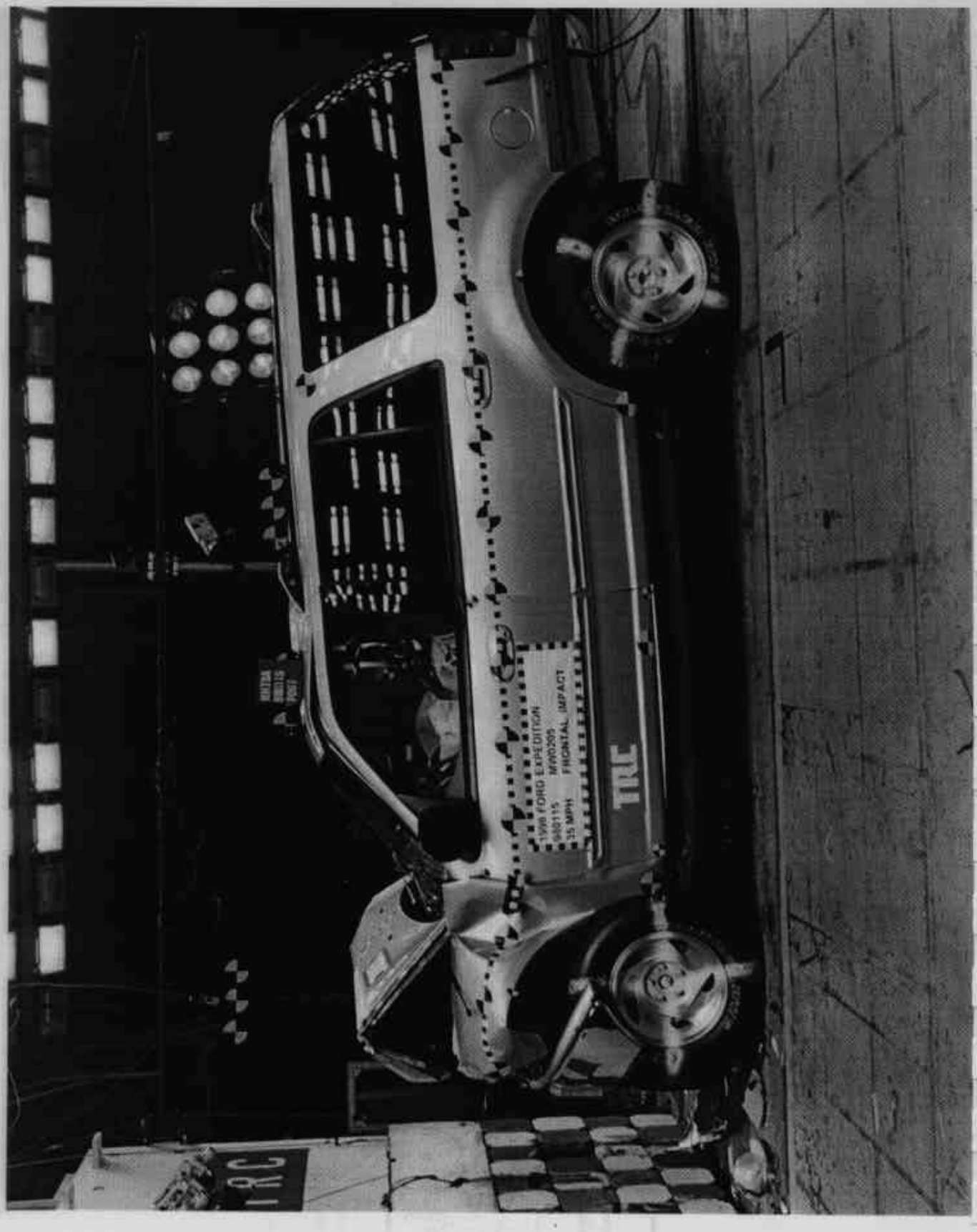


Figure A-4 Post-Test Left Side View

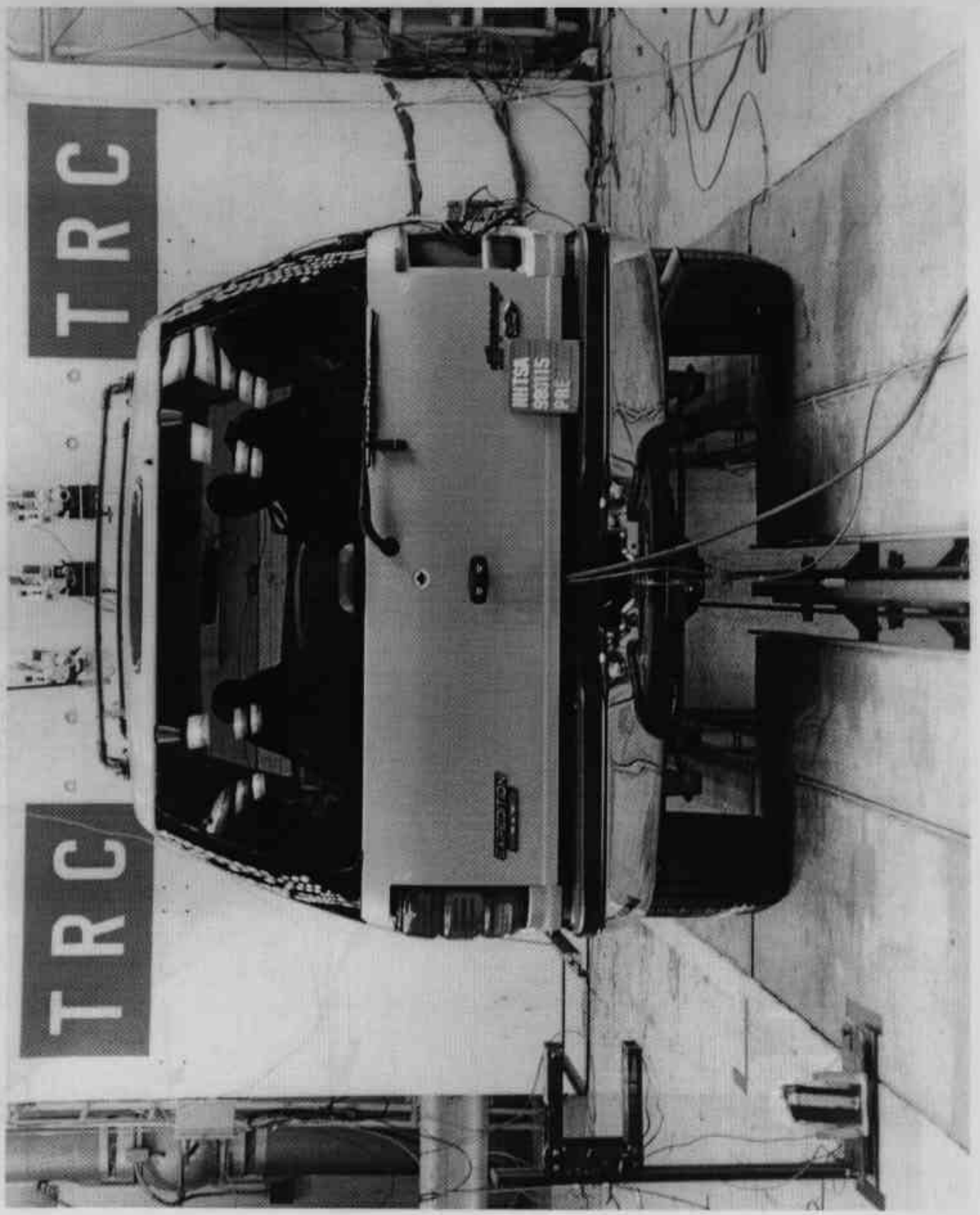


Figure A-5 Pre-Test Rear View

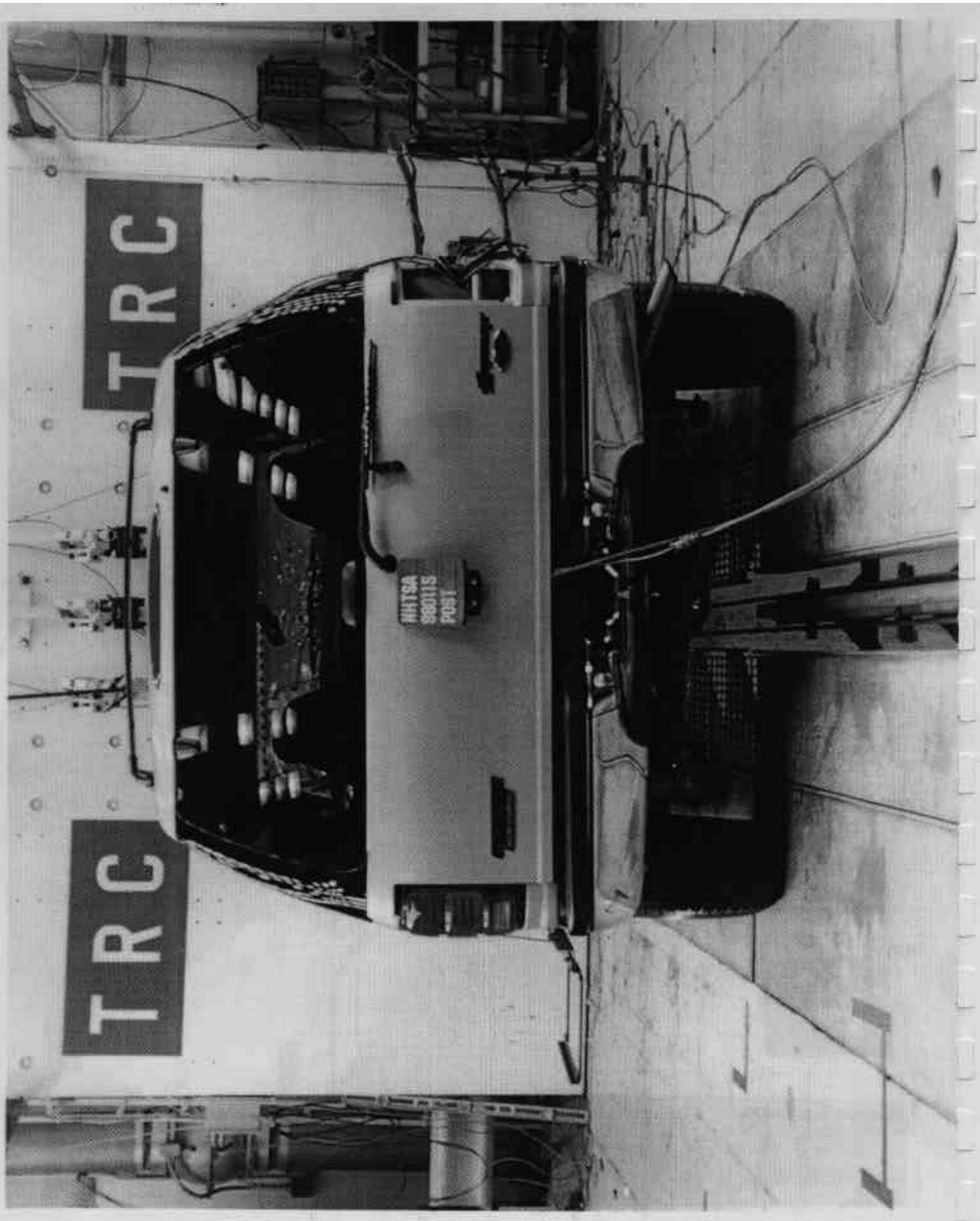


Figure A-6 Post-Test Rear View

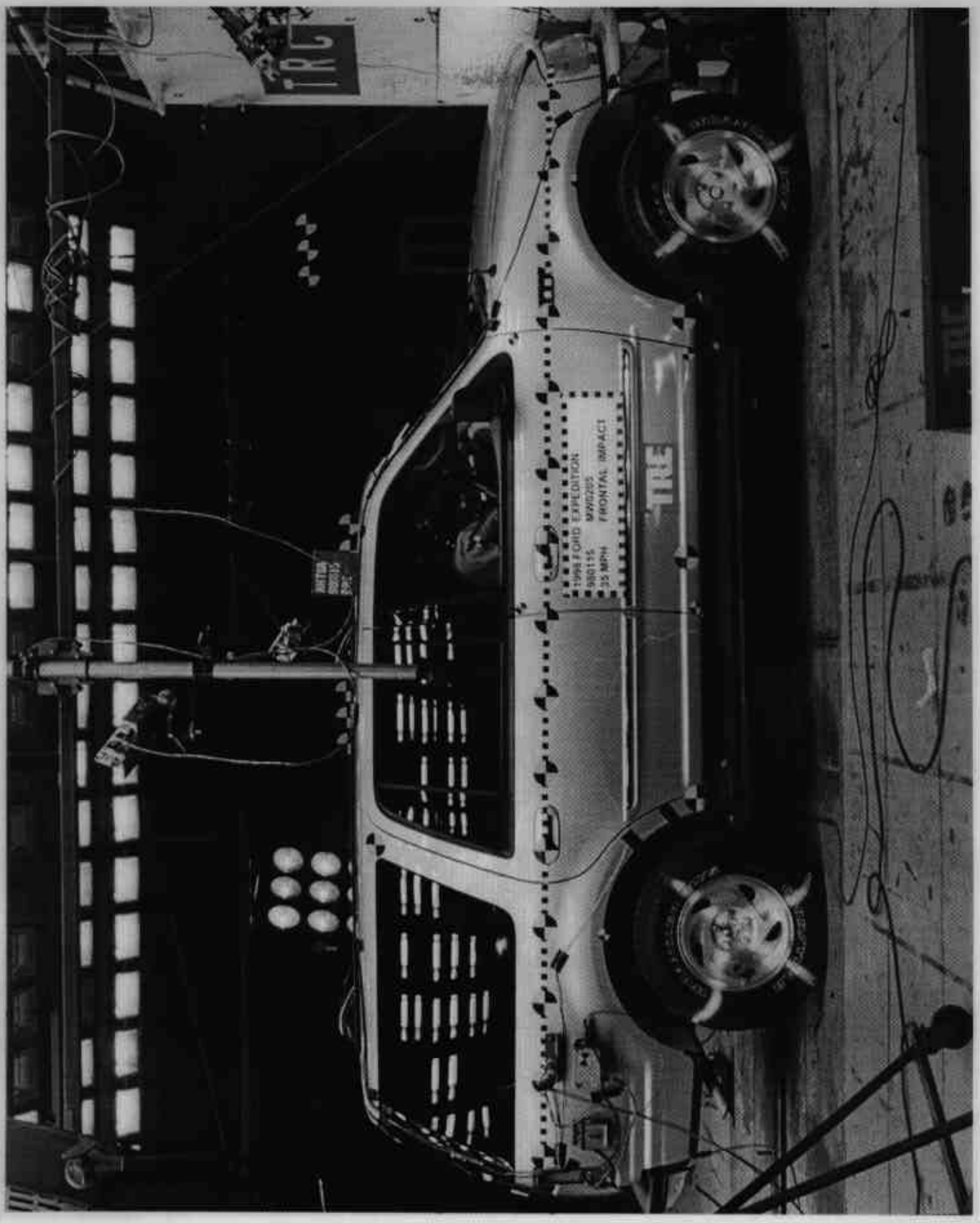


Figure A-7 Pre-Test Right Side View

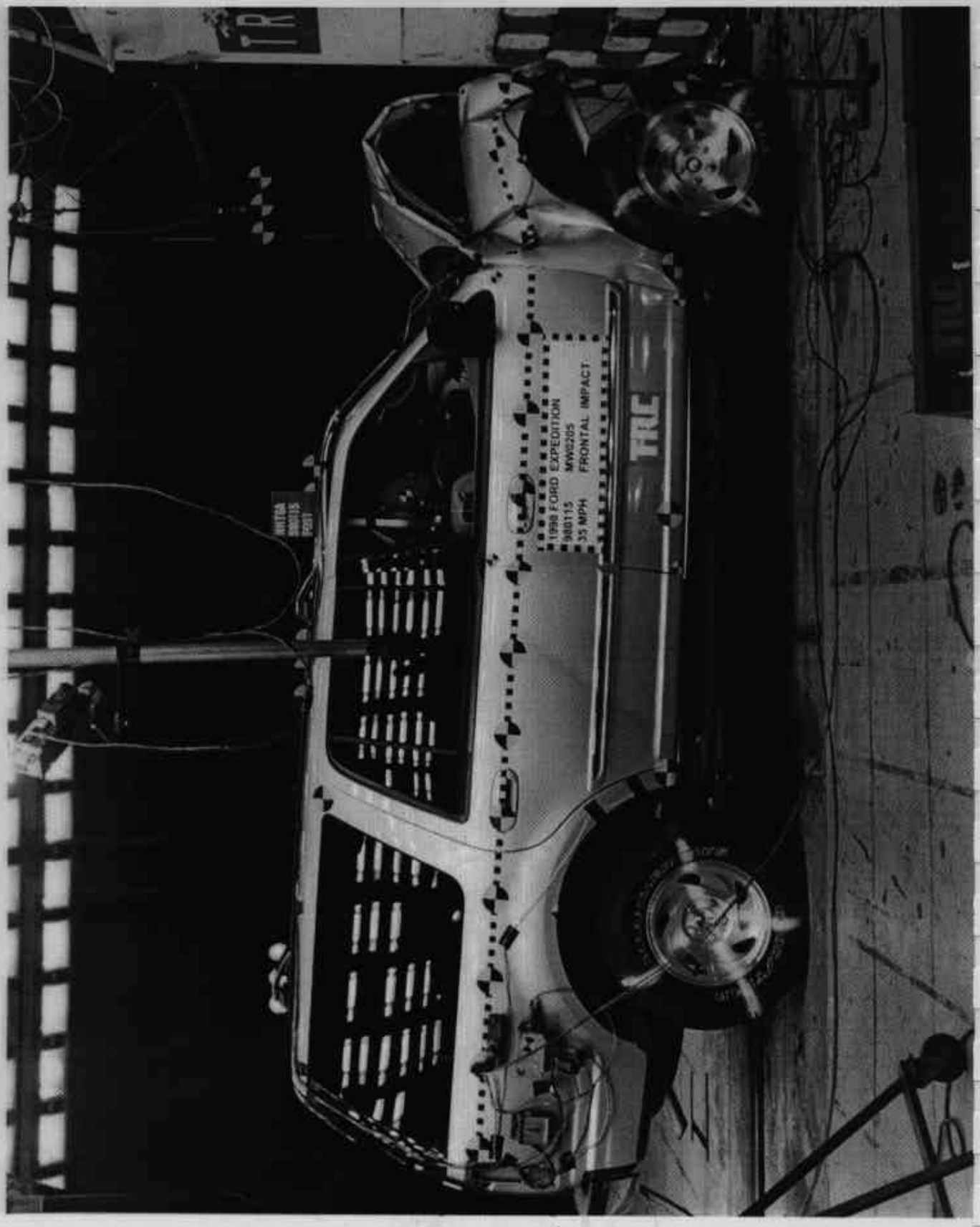


Figure A-8 Post-Test Right Side View

Figure A-9 Pre-Test Right Front Three-Quarter View

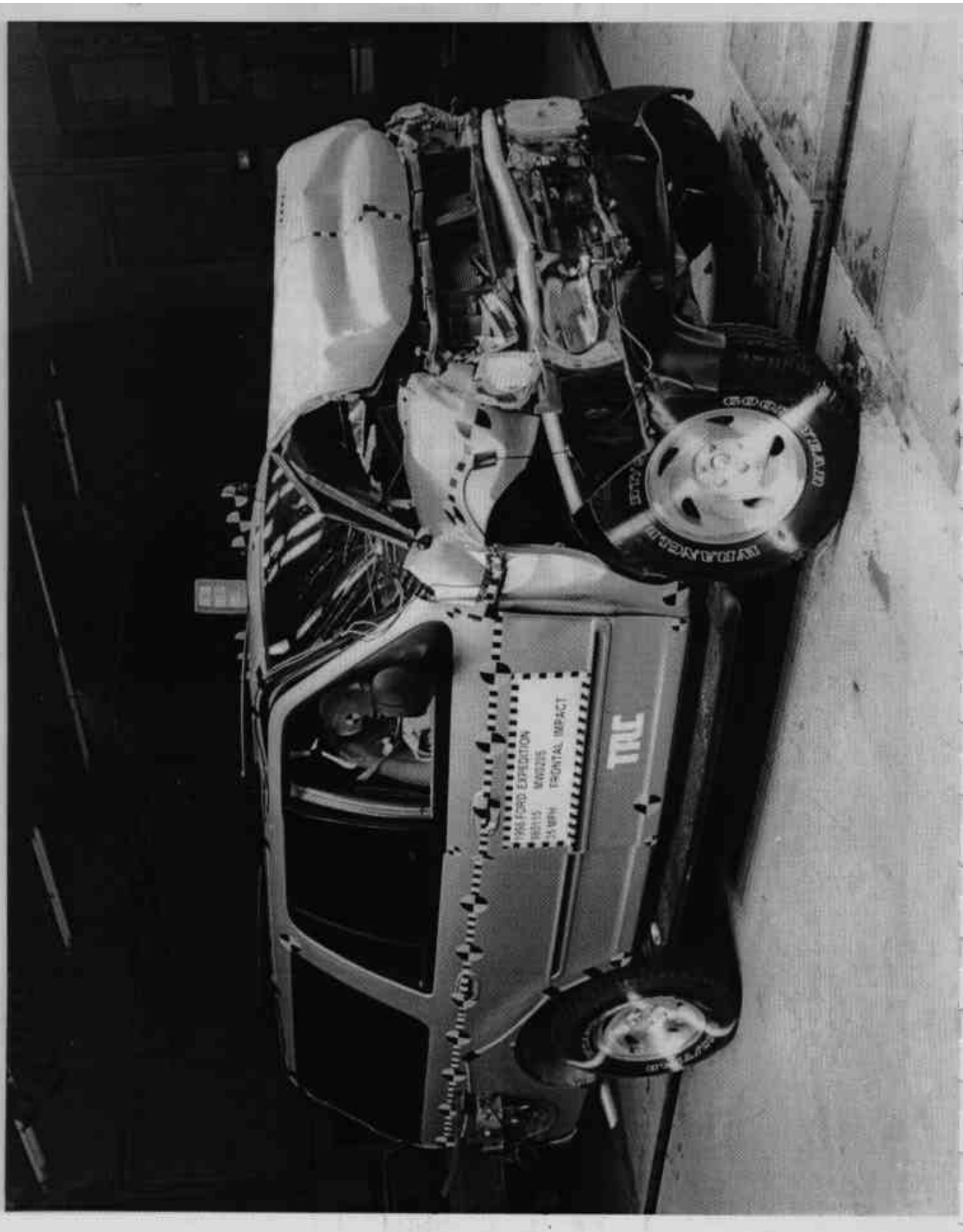


Figure A-10 Post-Test Right Front Three-Quarter View

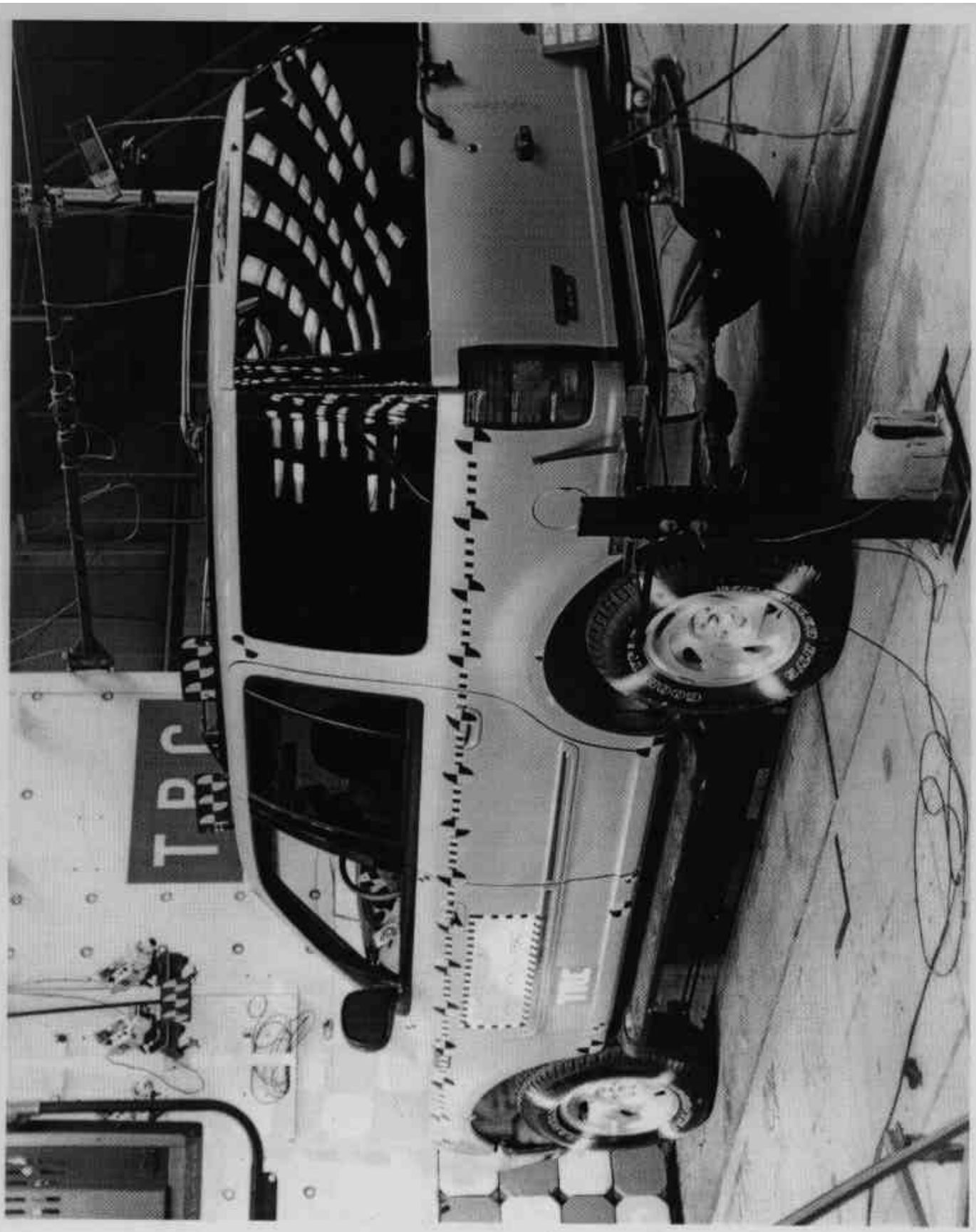


Figure A-11 Pre-Test Left Rear Three-Quarter View

Figure A-12 Post-Test Left Rear Three-Quarter View

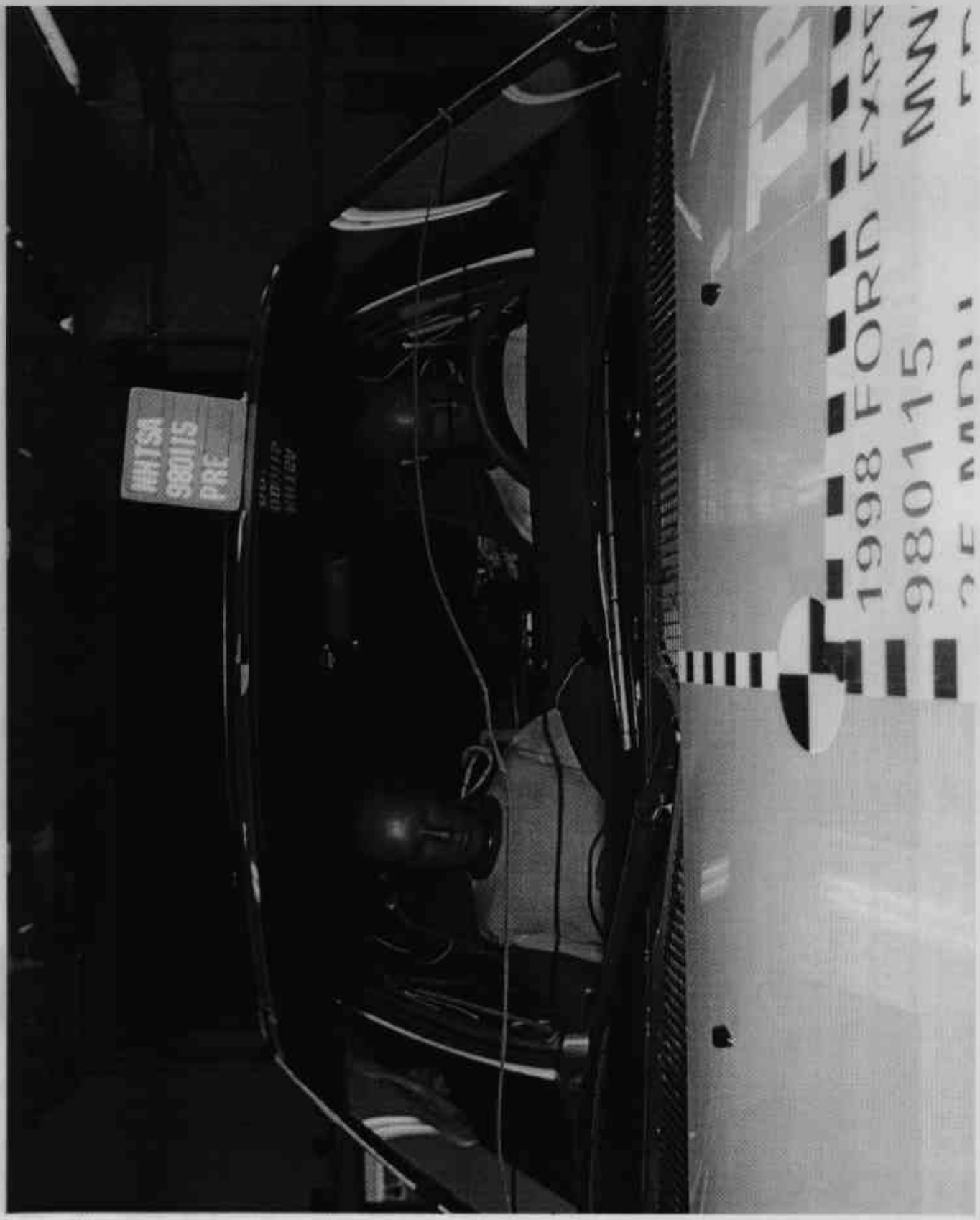


Figure A-13 Pre-Test Windshield View

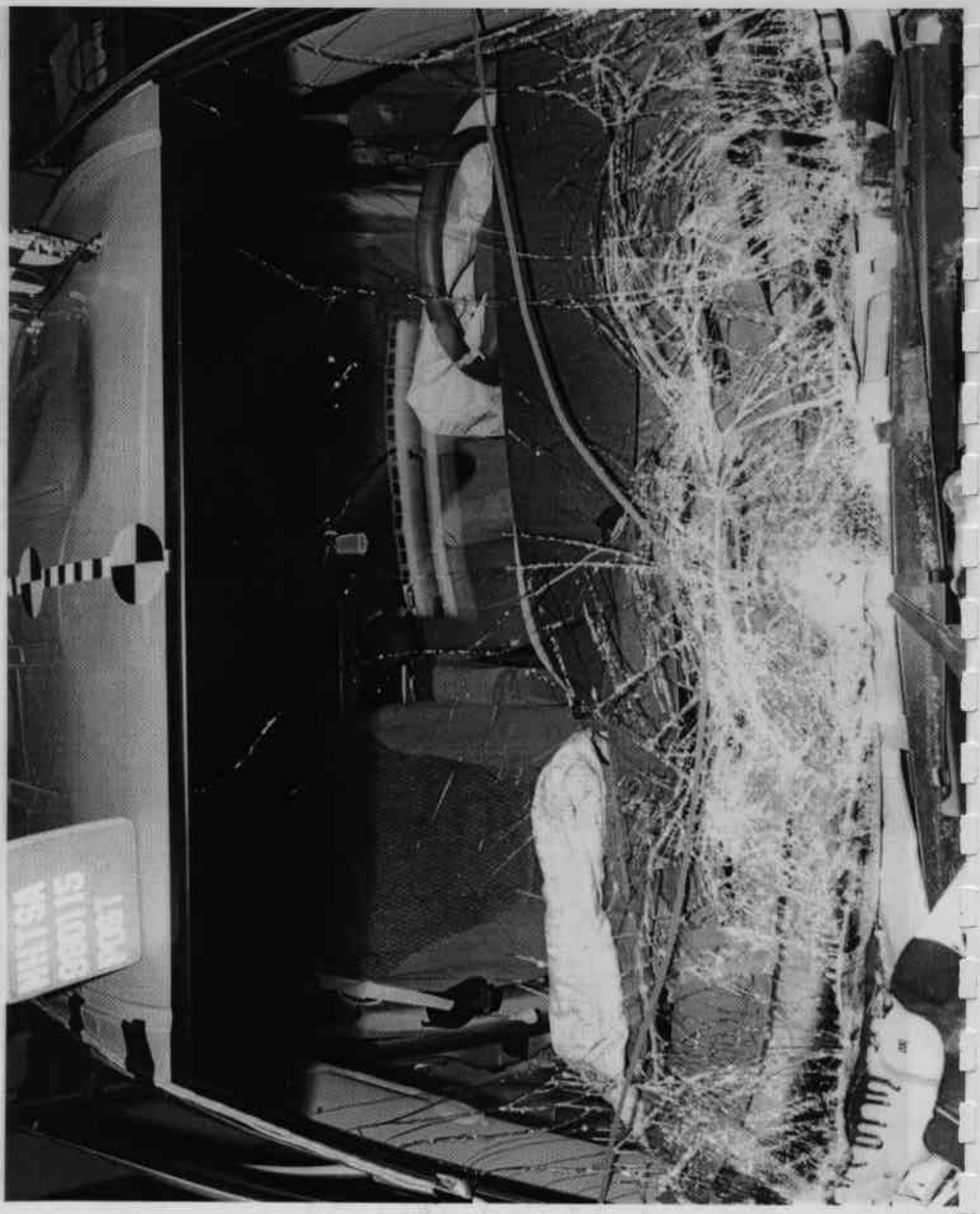


Figure A-14 Post-Test Windshield View

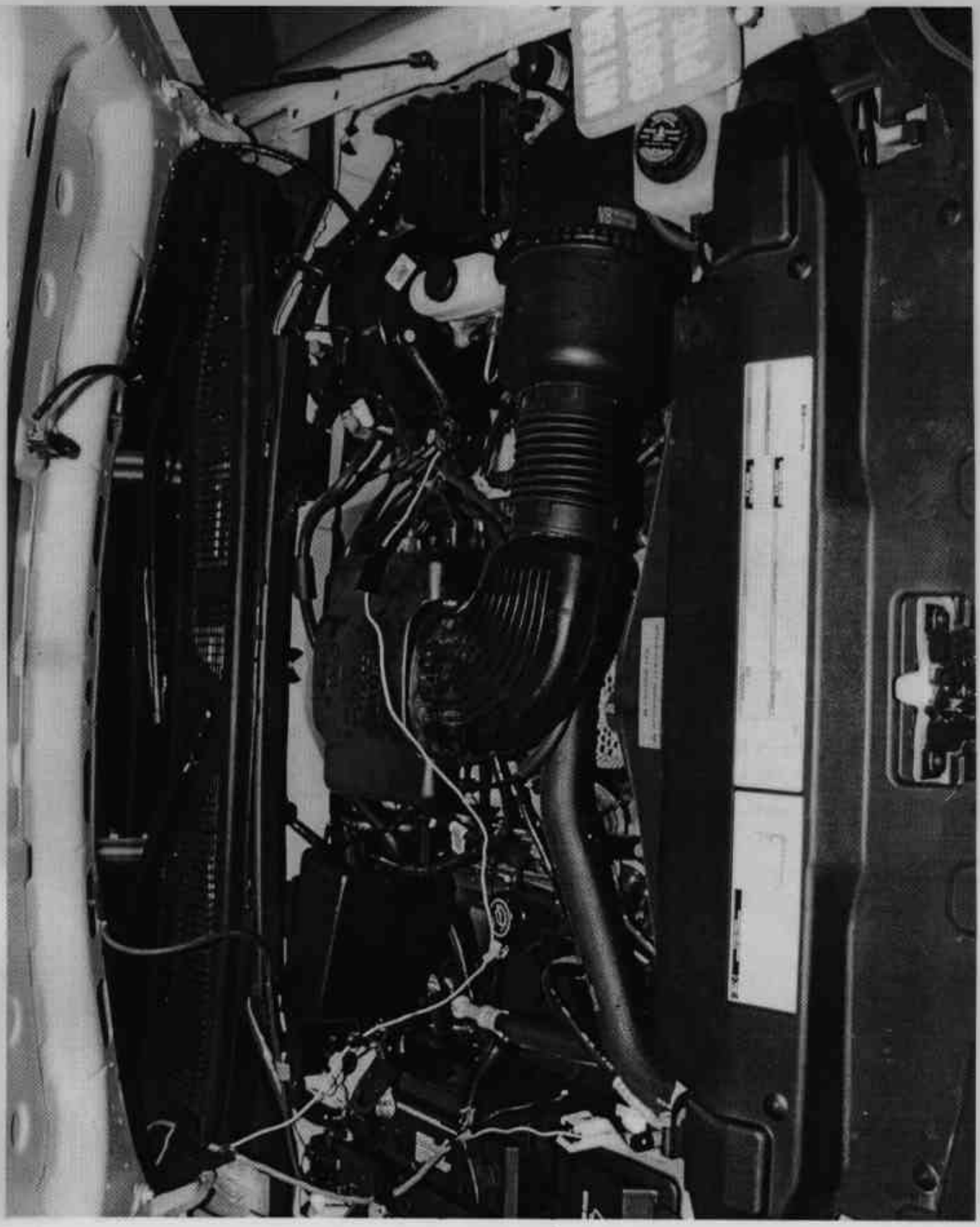


Figure A-15 Pre-Test Engine Compartment View

Figure A-16 Post-Test Engine Compartment View

Figure A-17 Pre-Test Fuel Filler Cap View

Figure A-18 Post-Test Fuel Filler Cap View

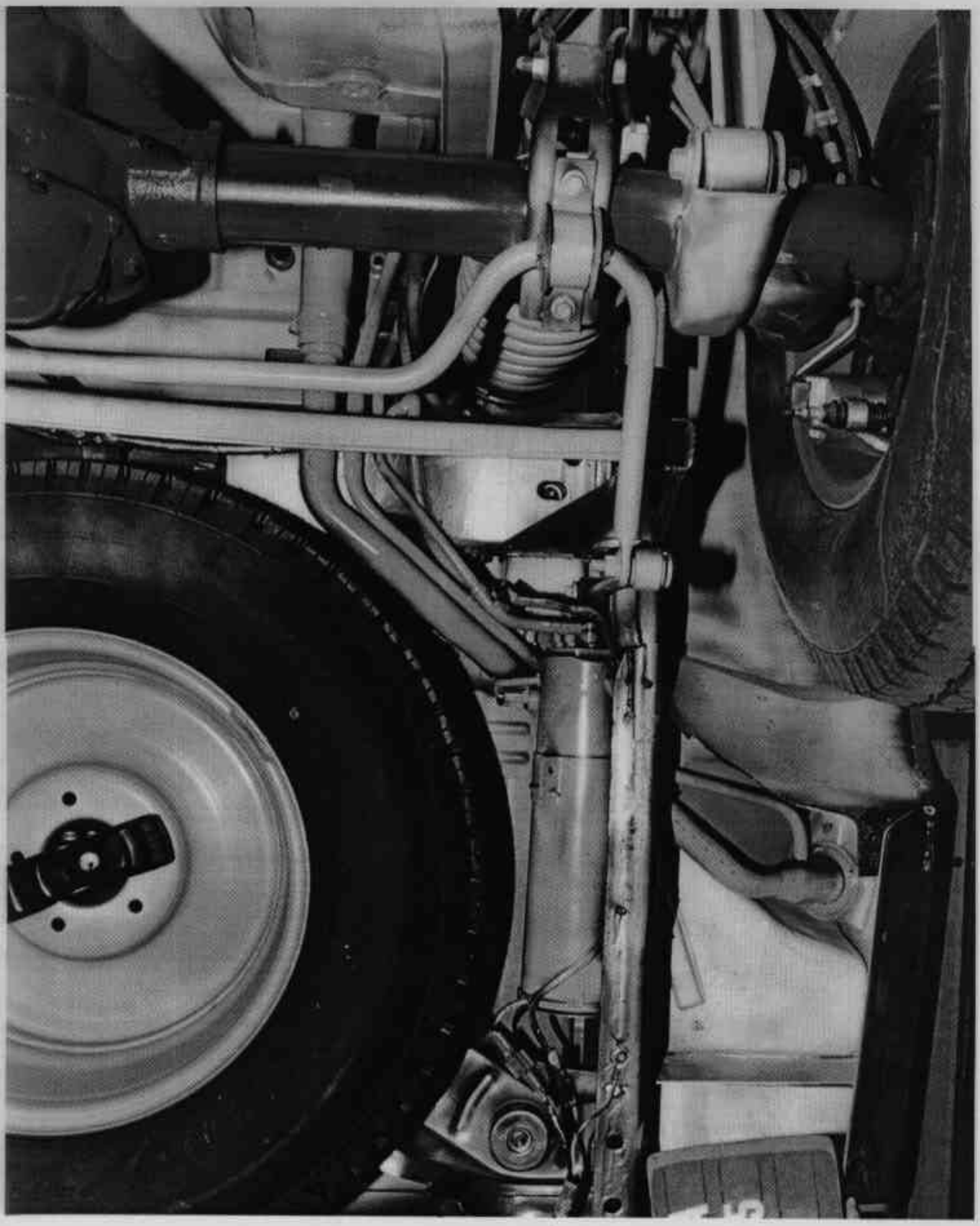


Figure A-19 Pre-Test Fuel Filler Neck View

Figure A-20 Post-Test Fuel Filler Neck View

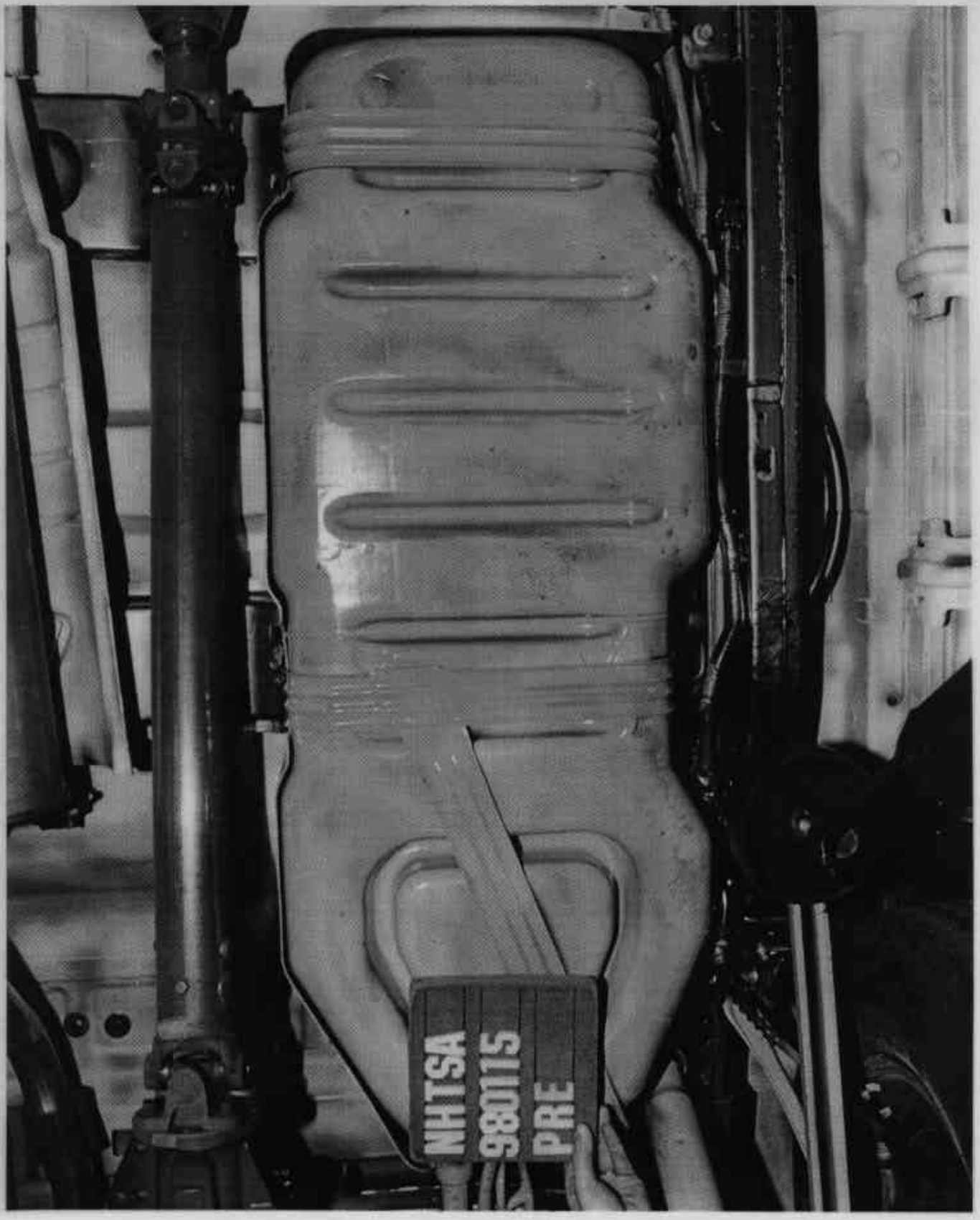


Figure A-21 Pre-Test Fuel Tank View

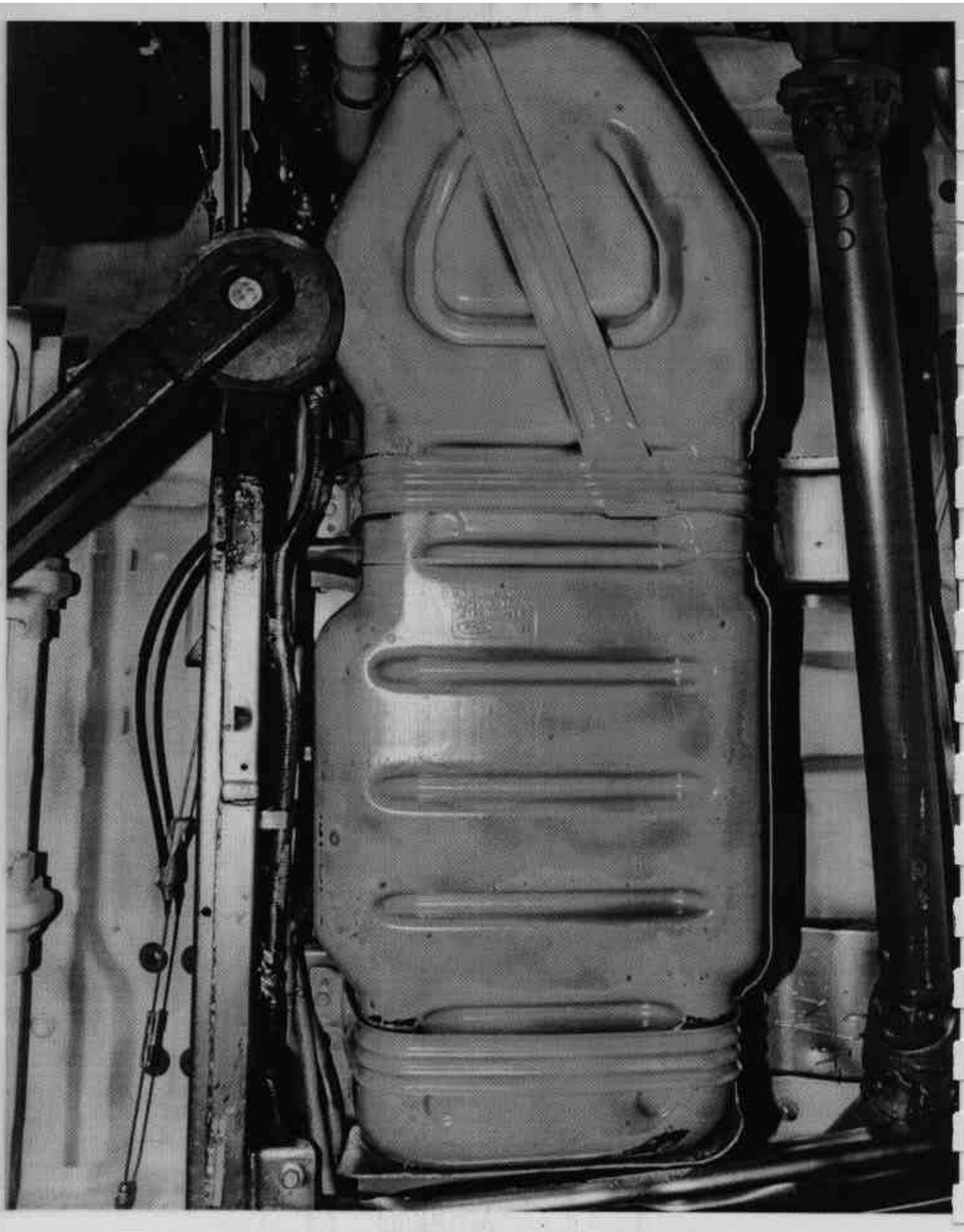


Figure A-22 Post-Test Fuel Tank View

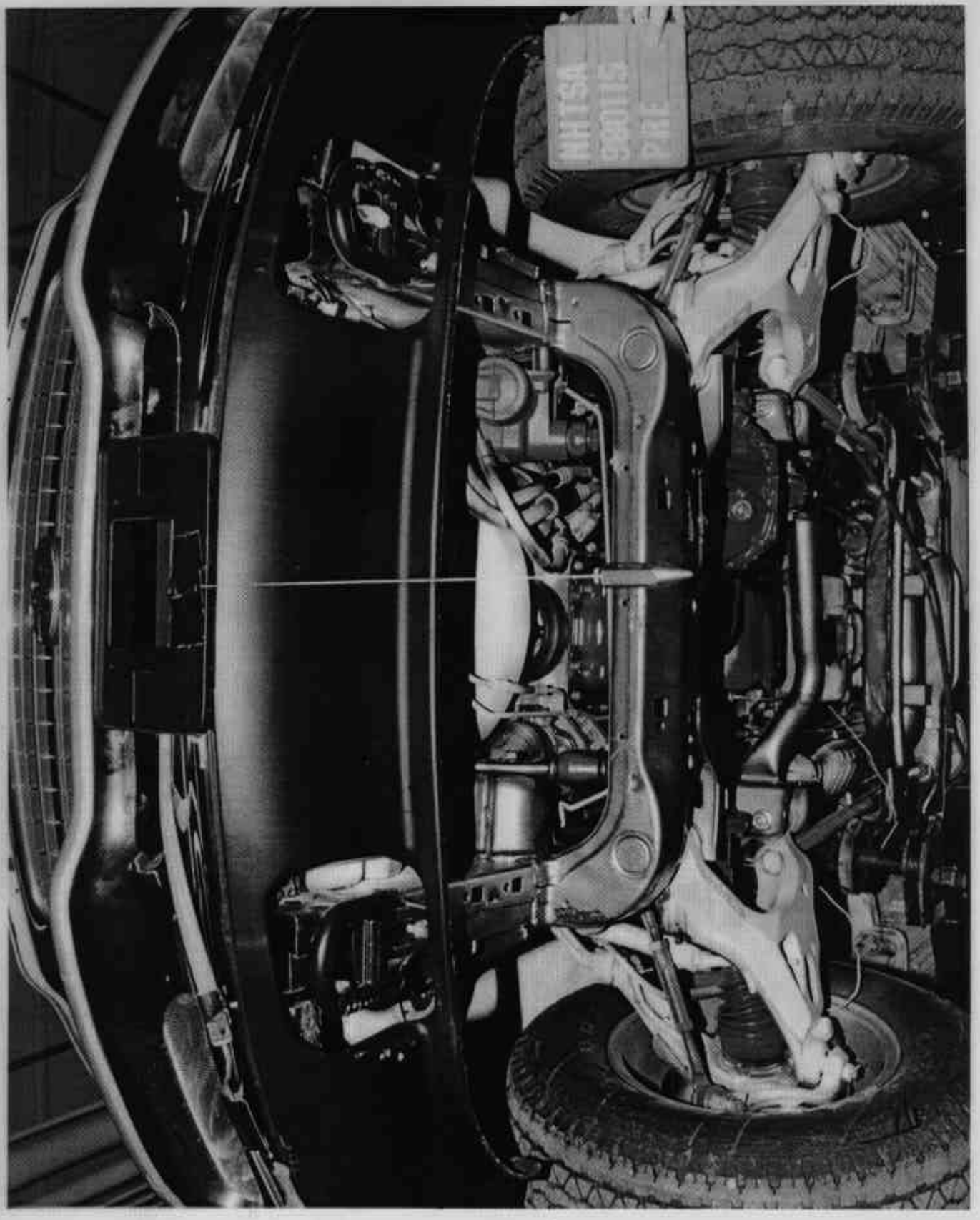


Figure A-23 Pre-Test Front Underbody View

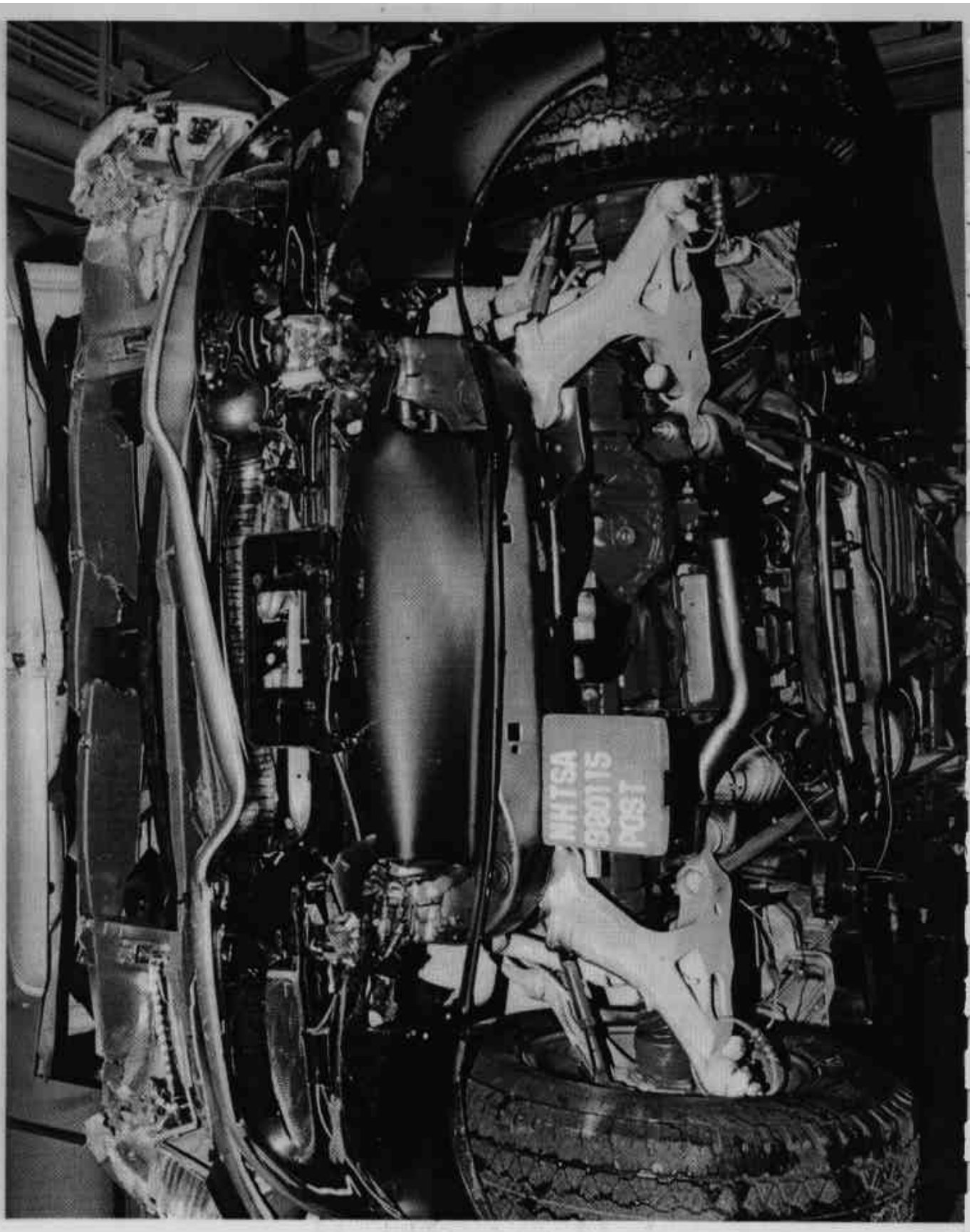


Figure A-24 Post-Test Front Underbody View

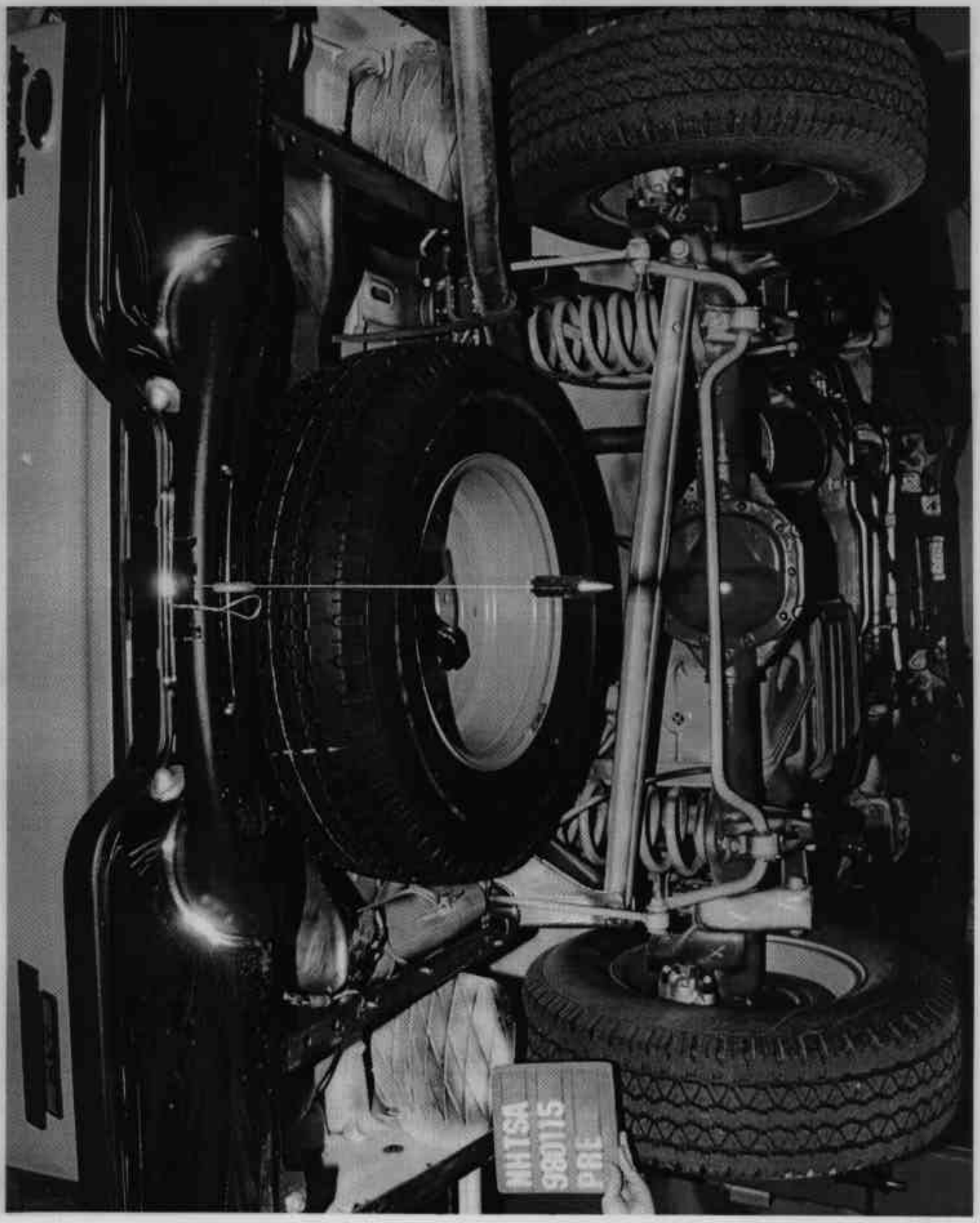


Figure A-25 Pre-Test Rear Underbody View

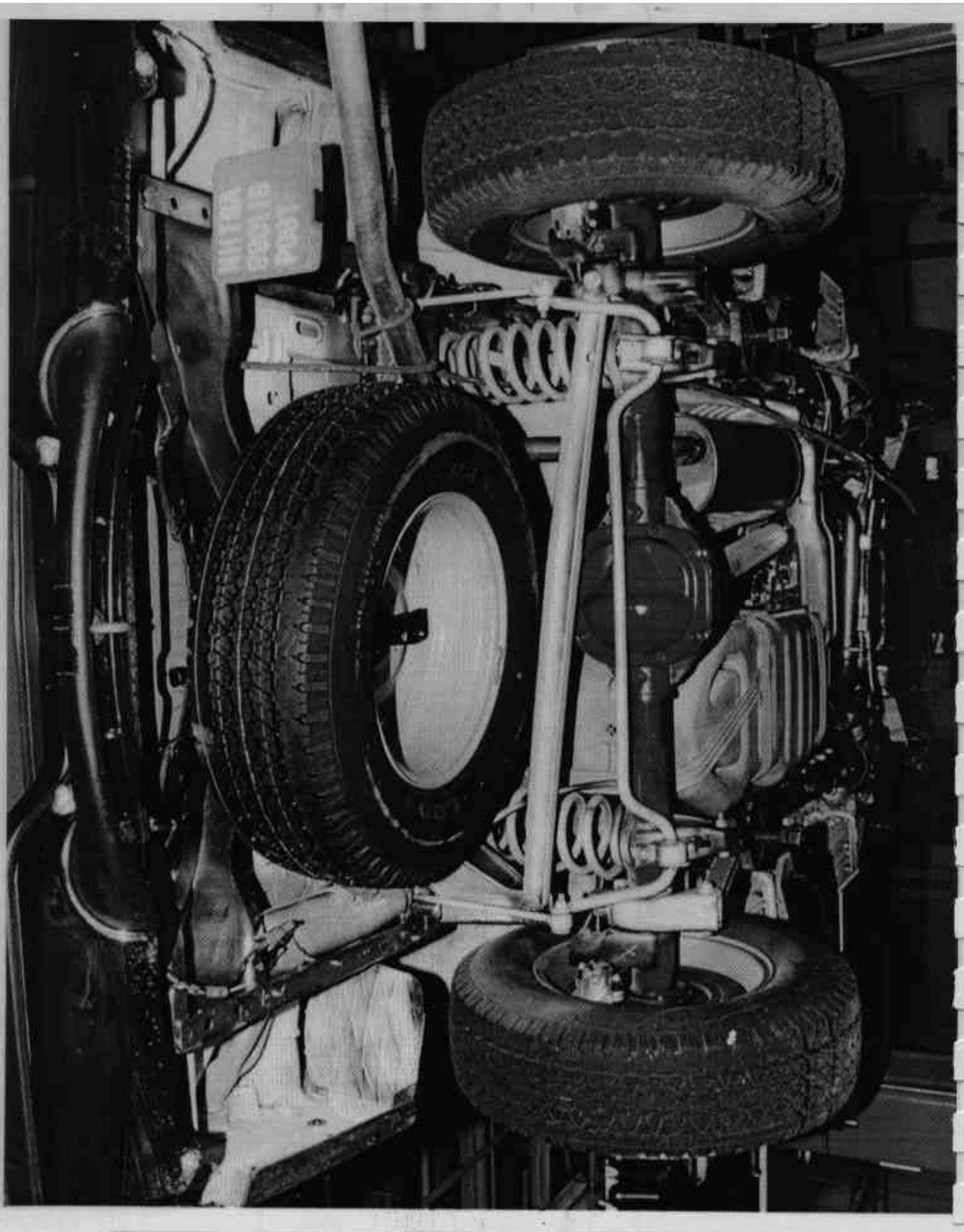


Figure A-26 Post-Test Rear Underbody View

Figure A-27 Pre-Test Steering Column - Exterior View

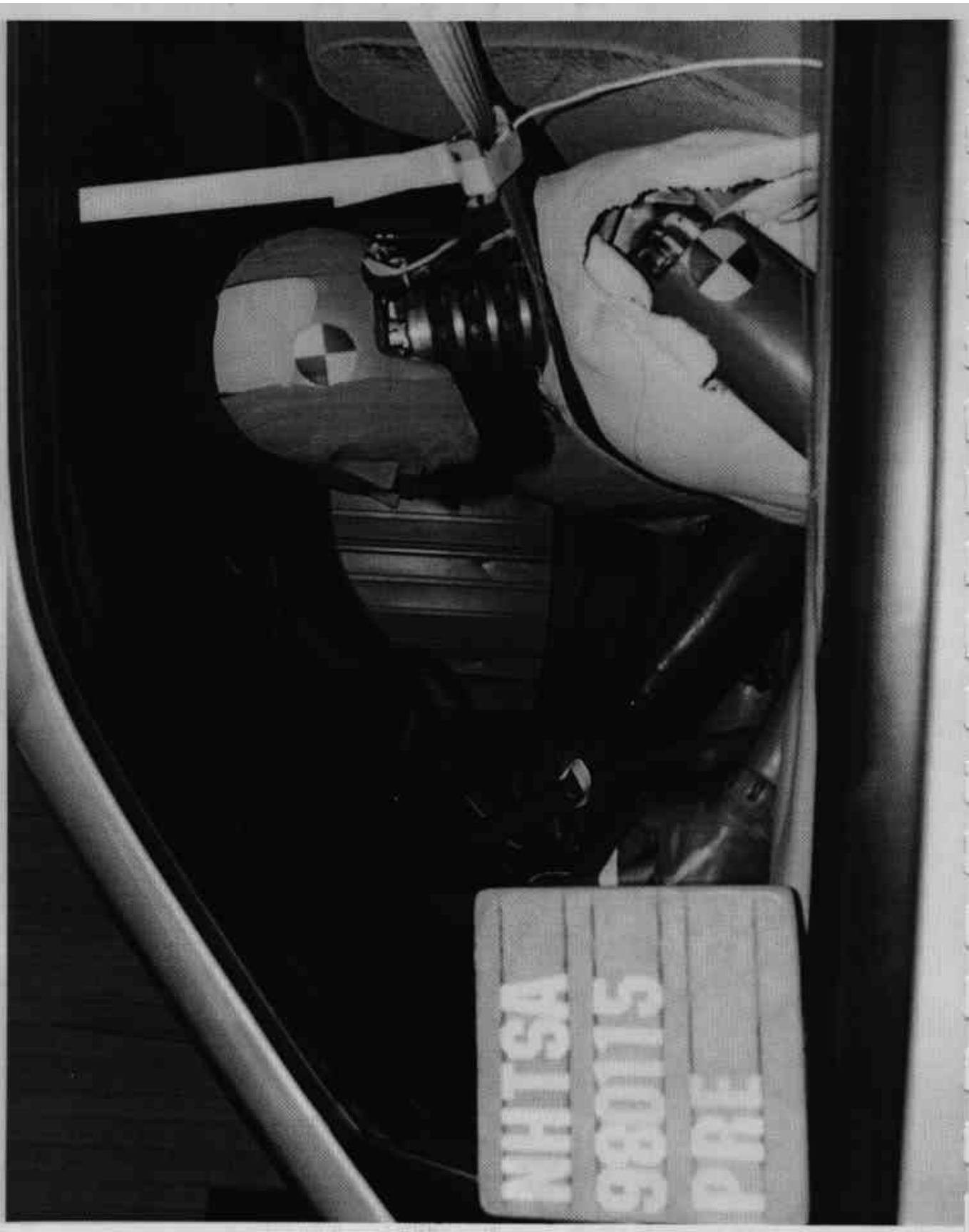


Figure A-28 Pre-Test Driver Dummy Position View

Figure A-29 Post-Test Driver Dummy Position View

Figure A-30 Pre-Test Passenger Dummy Position View

Figure A-31 Post-Test Passenger Dummy Position View

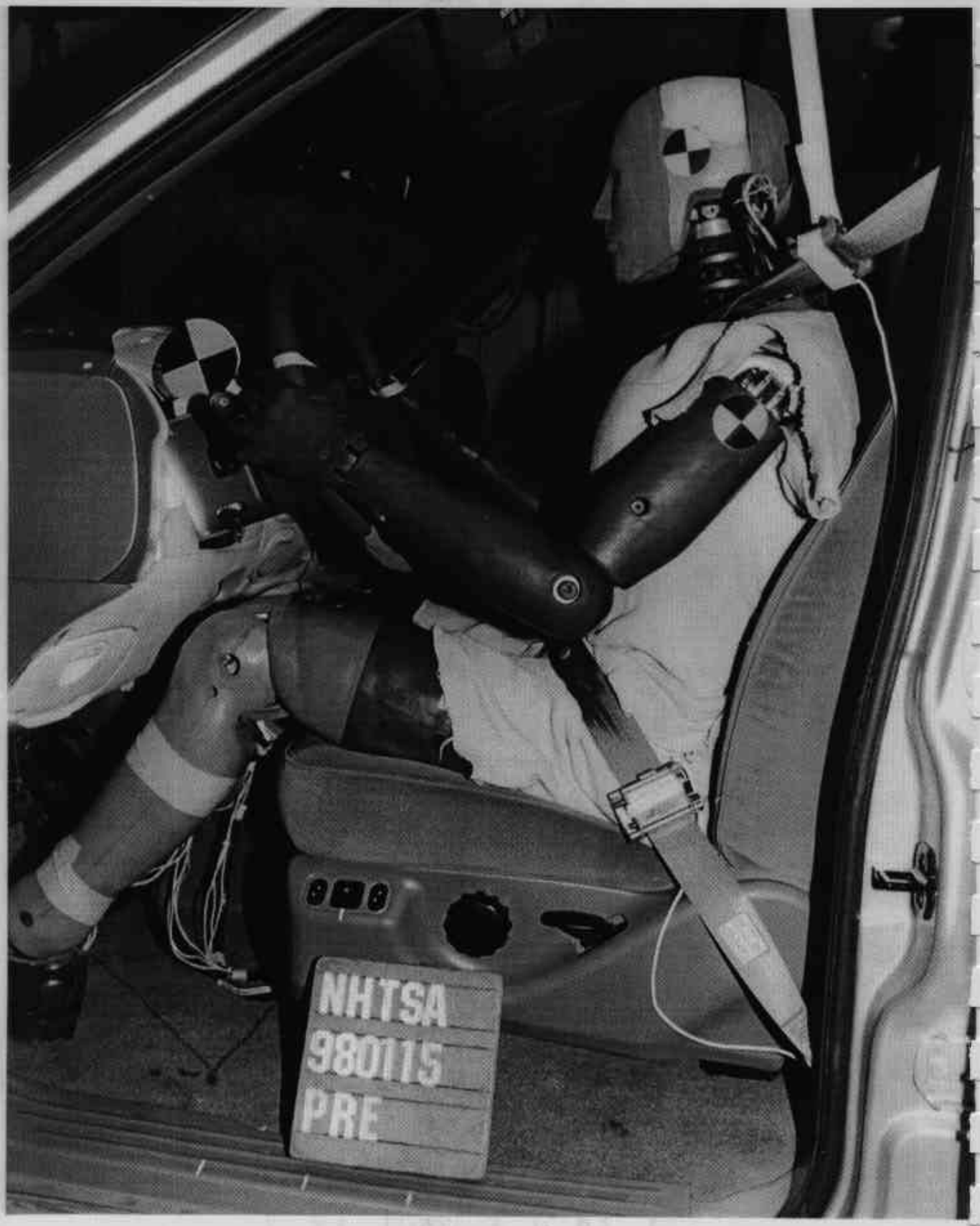


Figure A-32 Pre-Test Driver Dummy and Vehicle Interior - View 1

Figure A-33 Post-Test Driver Dummy and Vehicle Interior - View 1

Figure A-34 Pre-Test Driver Dummy and Vehicle Interior - View 2

Figure A-35 Post-Test Driver Dummy and Vehicle Interior - View 2

Figure A-36 Pre-Test Passenger Dummy and Vehicle Interior - View 1

Figure A-37 Post-Test Passenger Dummy and Vehicle Interior - View 1

Figure A-38 Pre-Test Passenger Dummy and Vehicle Interior - View 2

Figure A-39 Post-Test Passenger Dummy and Vehicle Interior - View 2

Figure A-40 Post-Test Driver Dummy Overall View

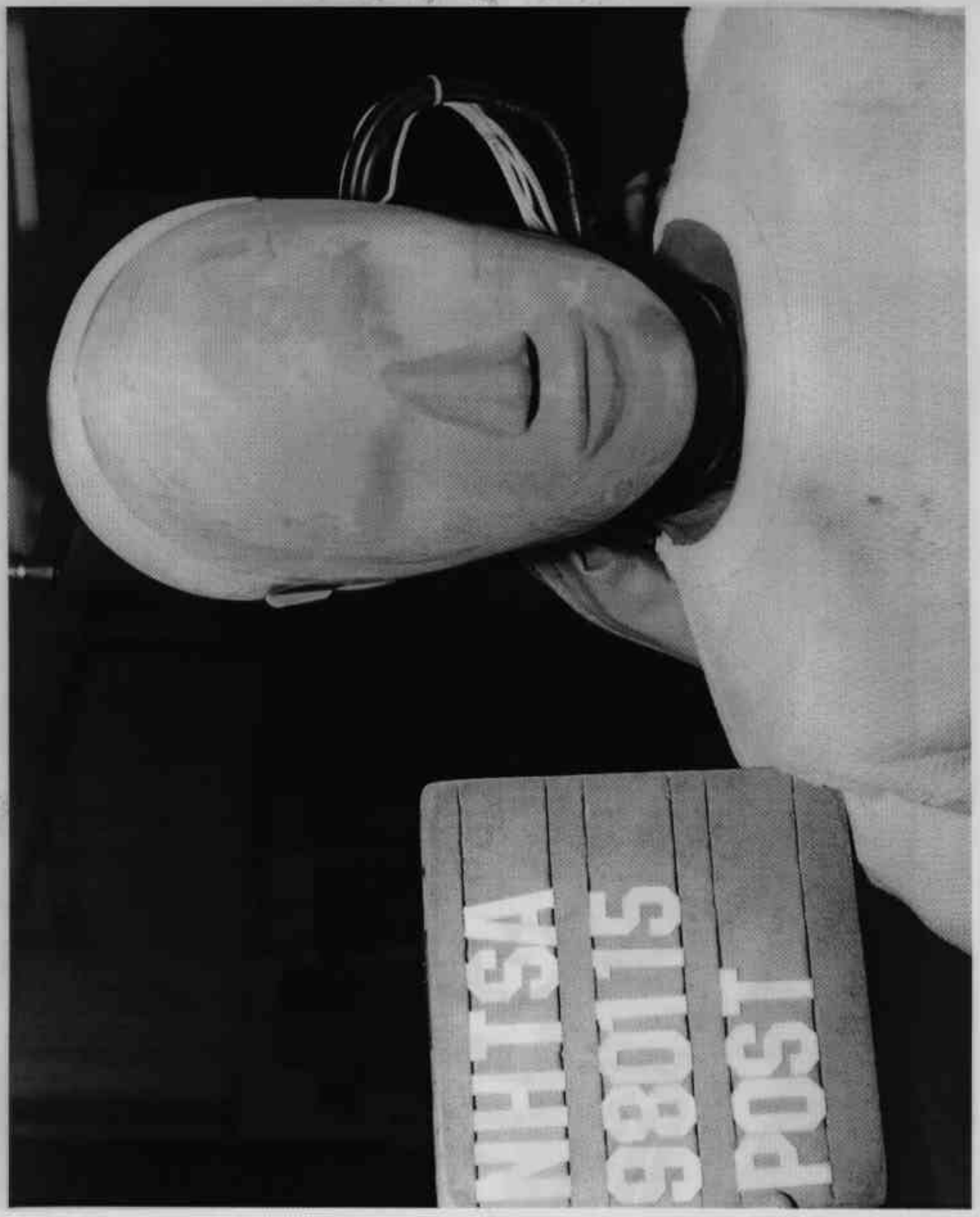


Figure A-41 Post-Test Driver Dummy Head Contact - View 1

Figure A-42 Post-Test Driver Dummy Head Contact - View 2

Figure A-43 Post-Test Driver Dummy Head Contact - View 3

Figure A-44 Post-Test Driver Dummy Knee Contact - View 1

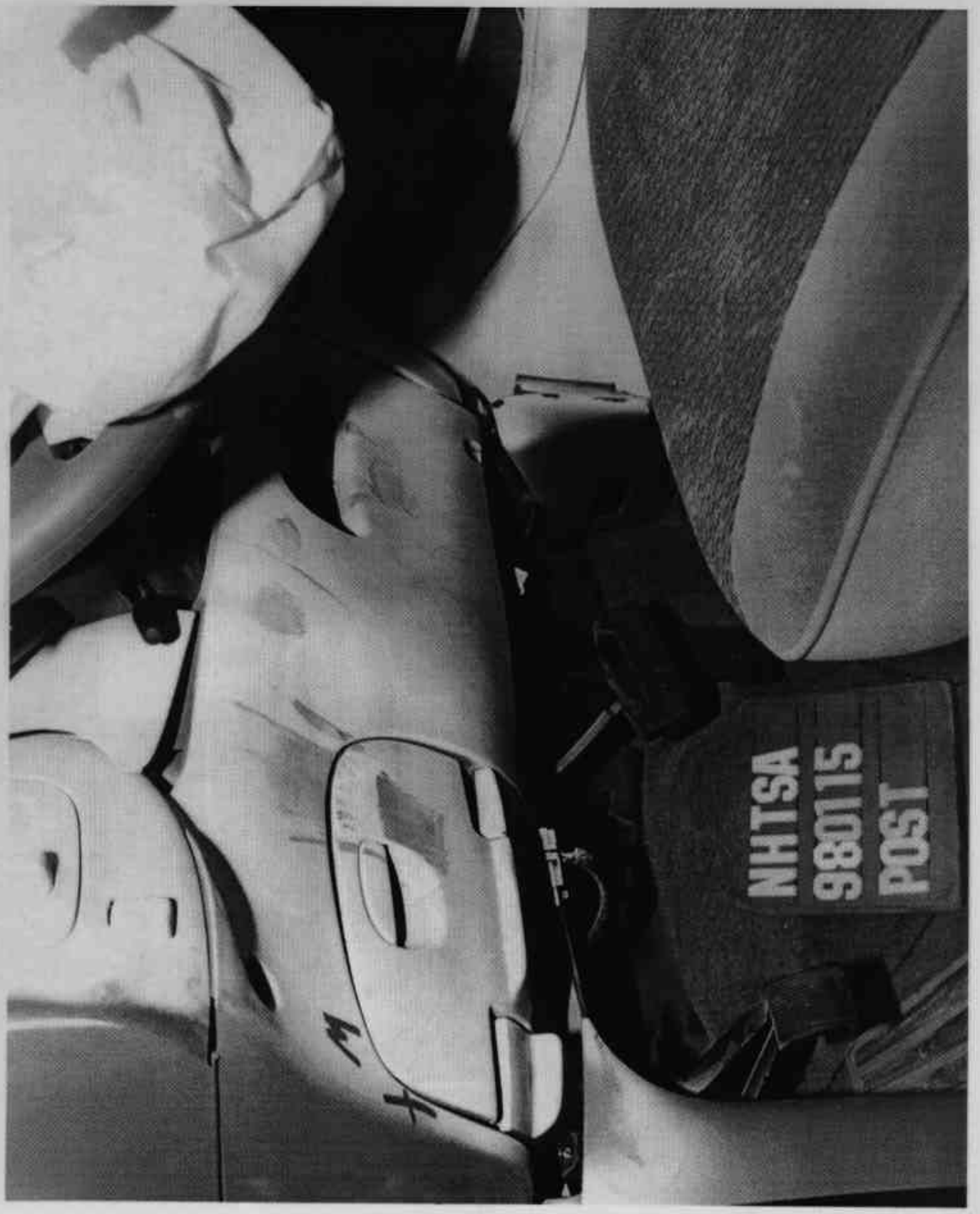


Figure A-45 Post-Test Driver Dummy Knee Contact - View 2

Figure A-46 Post-Test Passenger Dummy Overall View

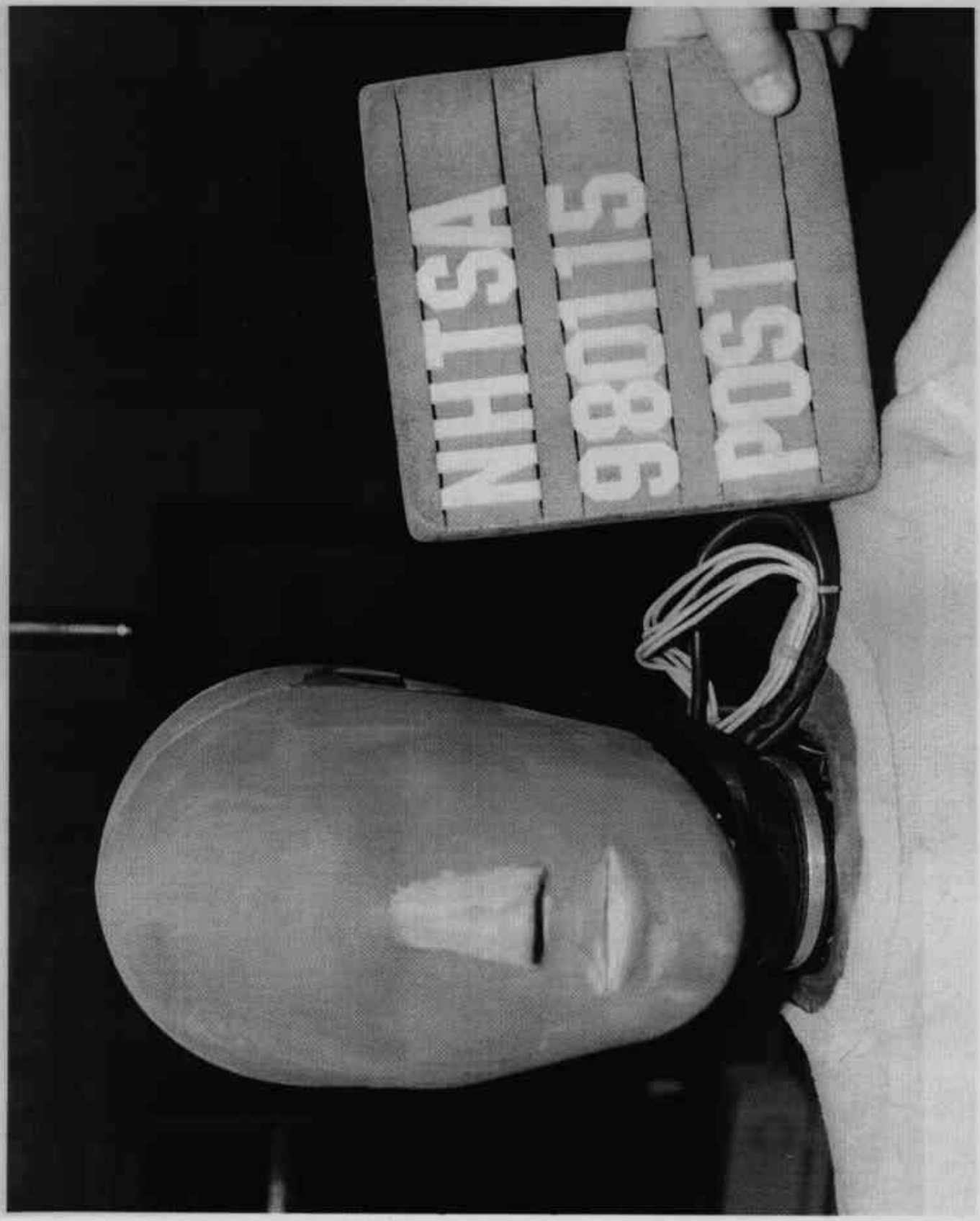


Figure A-47 Post-Test Passenger Dummy Head Contact - View 1

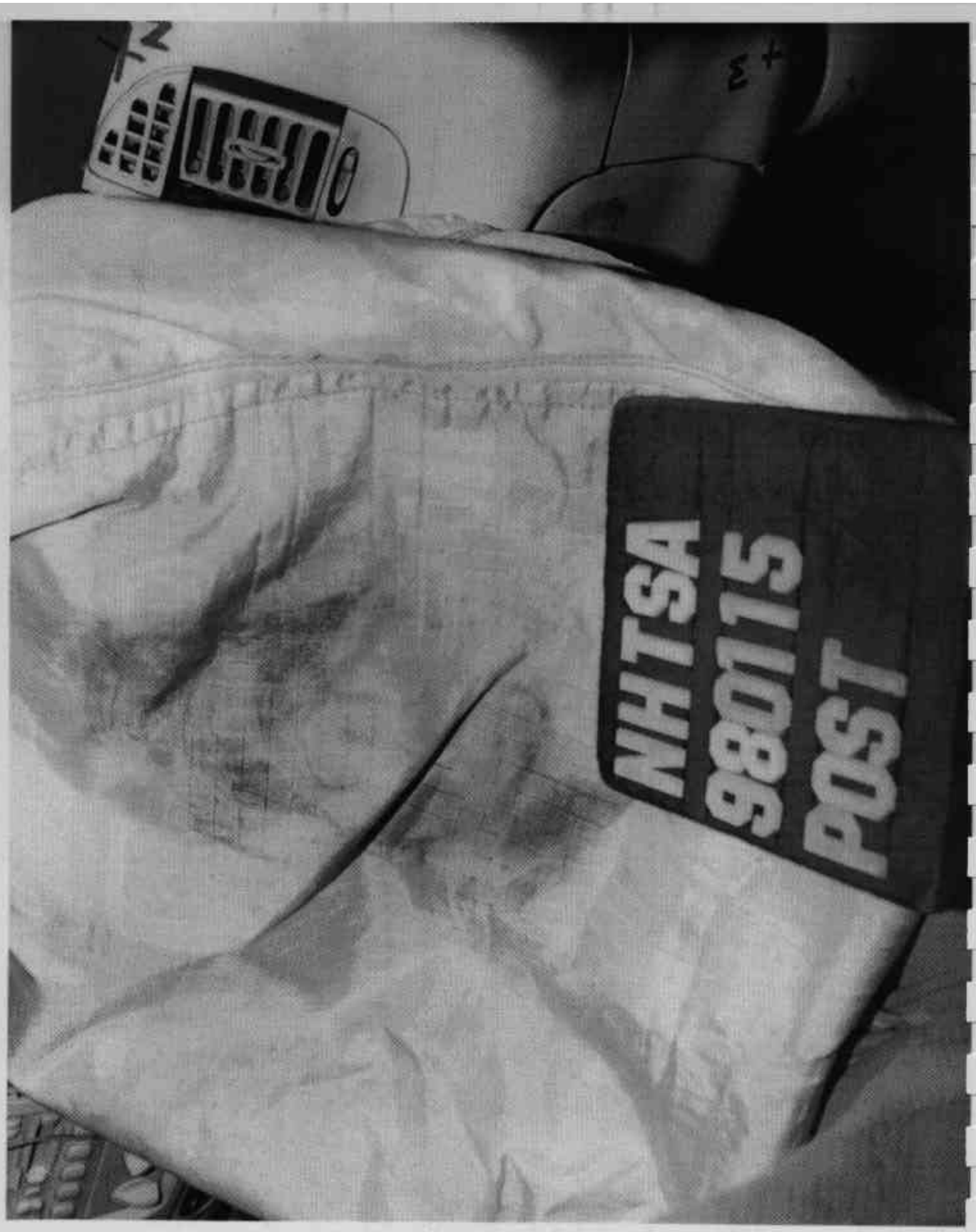


Figure A-48 Post-Test Passenger Dummy Head Contact - View 2

Figure A-49 Post-Test Passenger Dummy Head Contact - View 3

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

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

Figure A-52 Pre-Test Vehicle Certification Label View

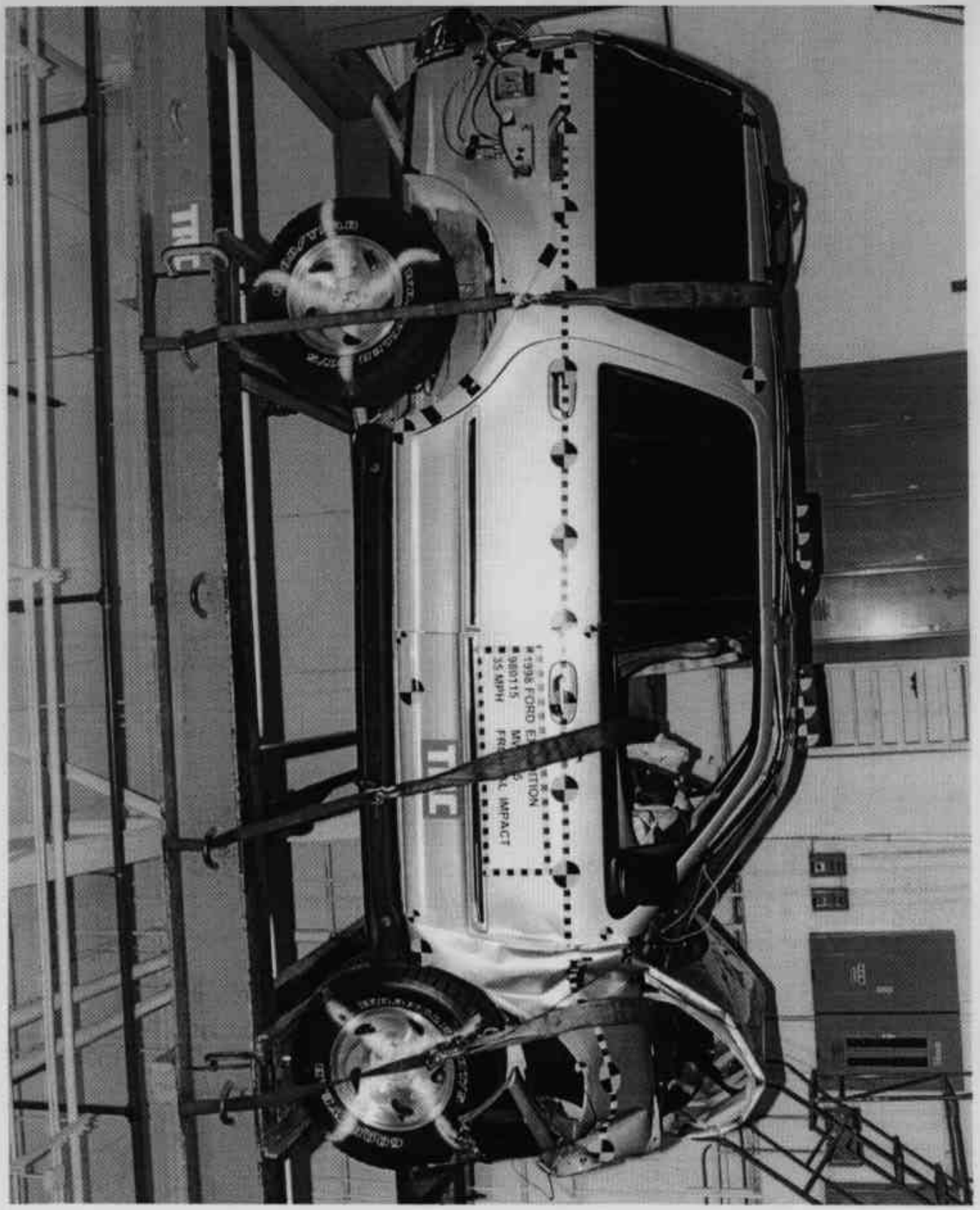
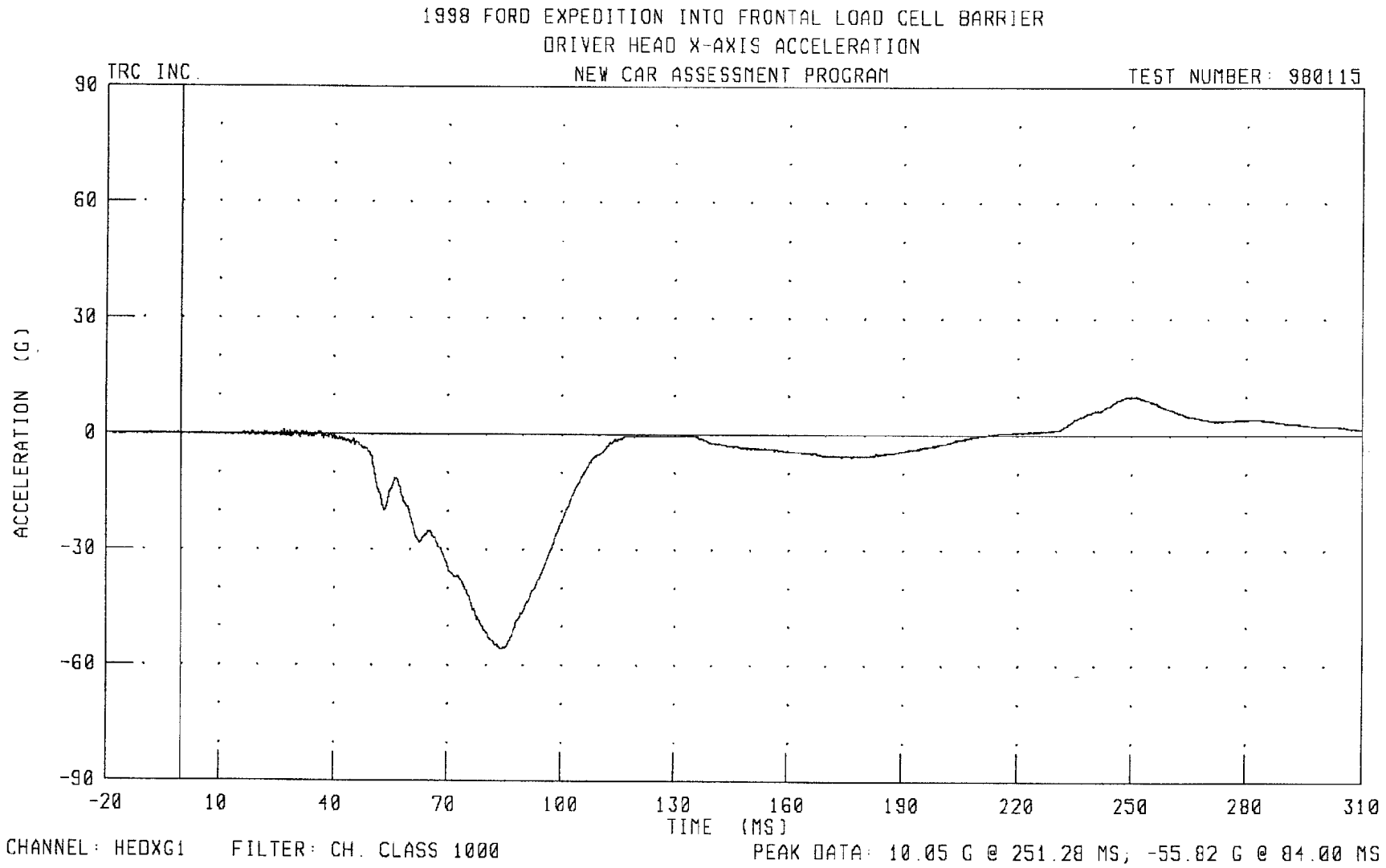
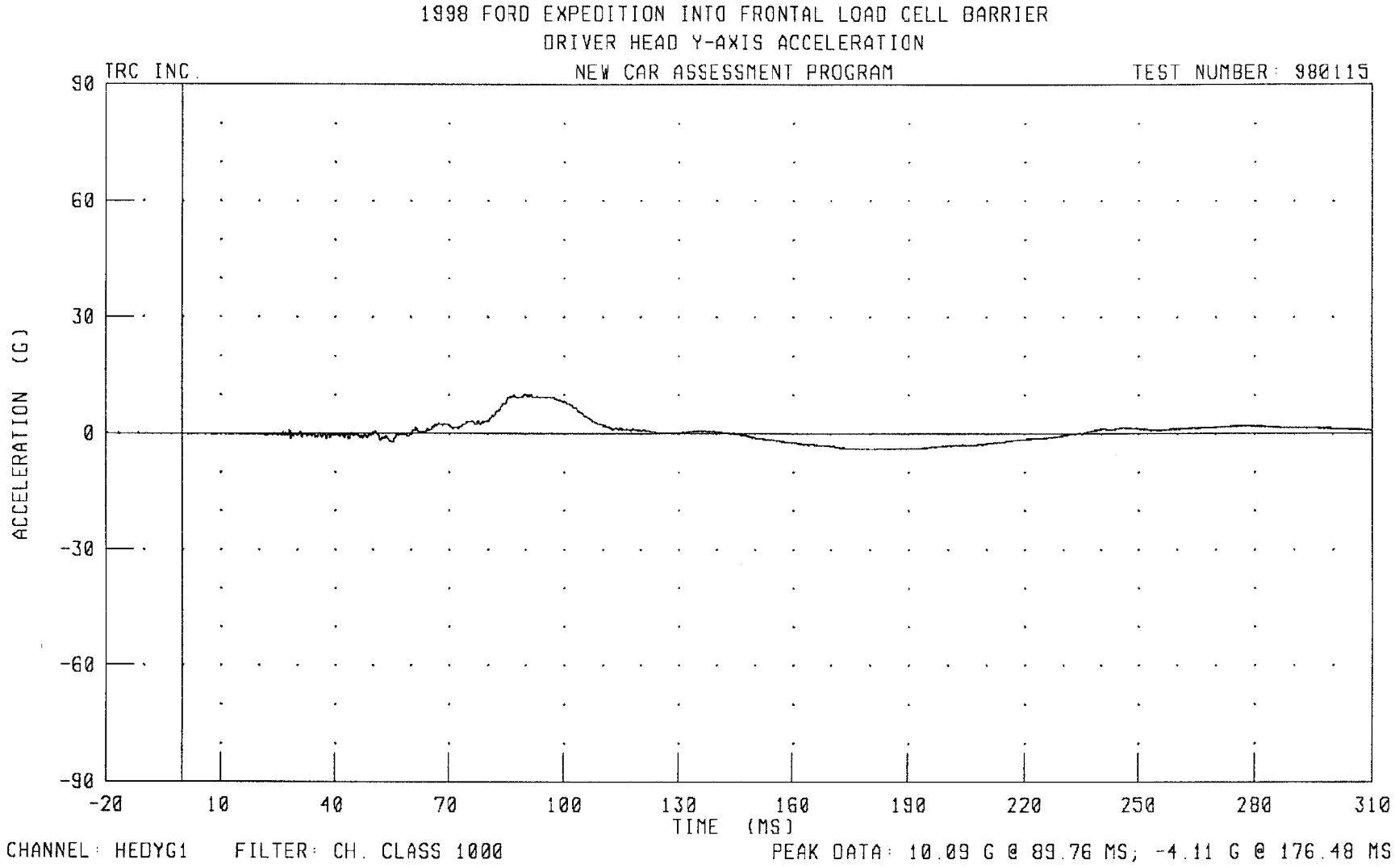


Figure A-53 Post-Test Vehicle on Static Rollover Machine View


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
90
60
30
0
-30
-60
-90
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDXG1
FILTER: CH. CLASS 1000
PEAK DATA: 10.05 G @ 251.28 MS, -55.82 G @ 84.00 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
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30
0
-30
-60
-90
ACCELERATION (G)
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10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
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FILTER: CH. CLASS 1000
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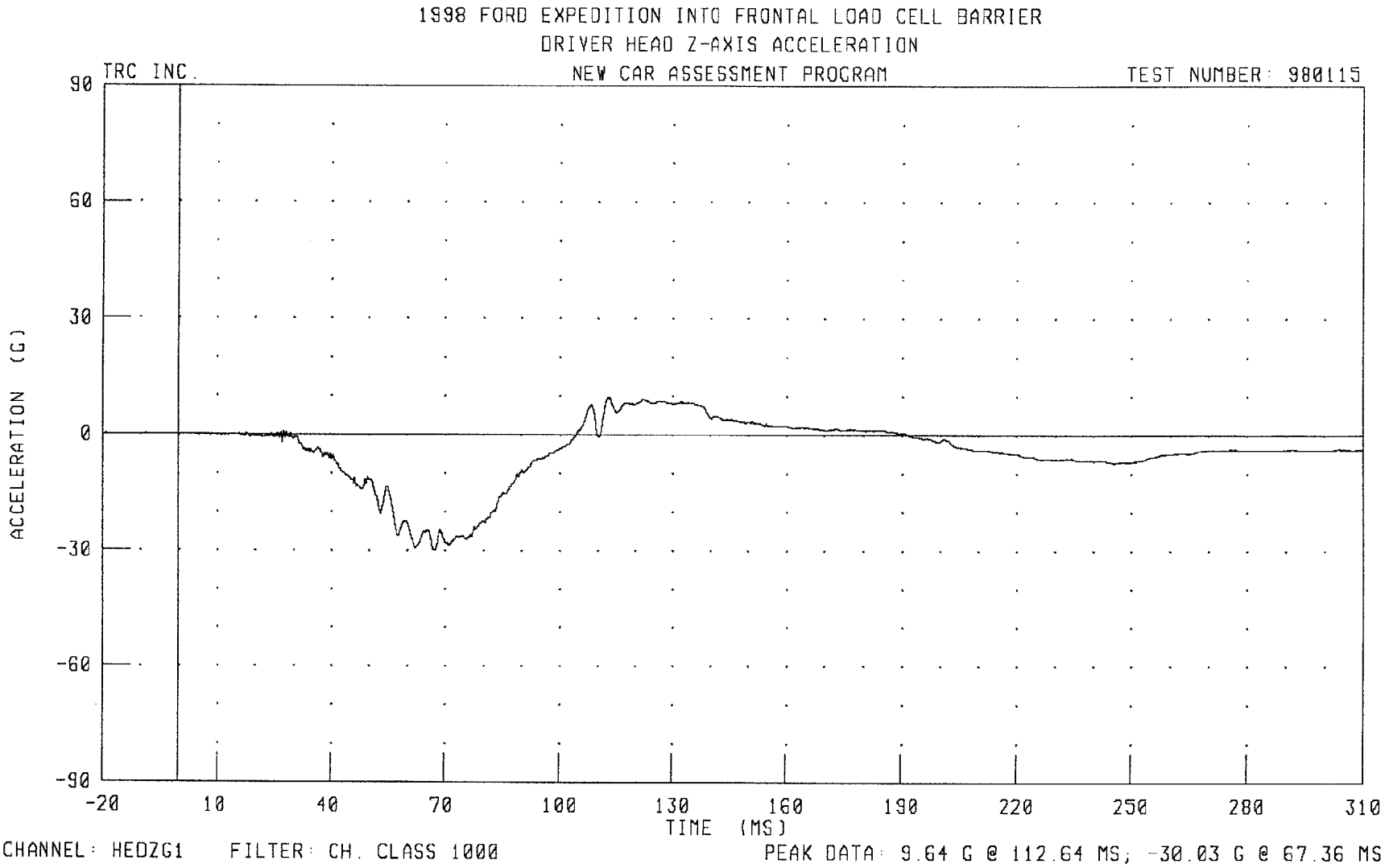
980115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DRIVER HEAD Z-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
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0
-30
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-90
ACCELERATION (G)
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10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDZG1
FILTER: CH. CLASS 1000
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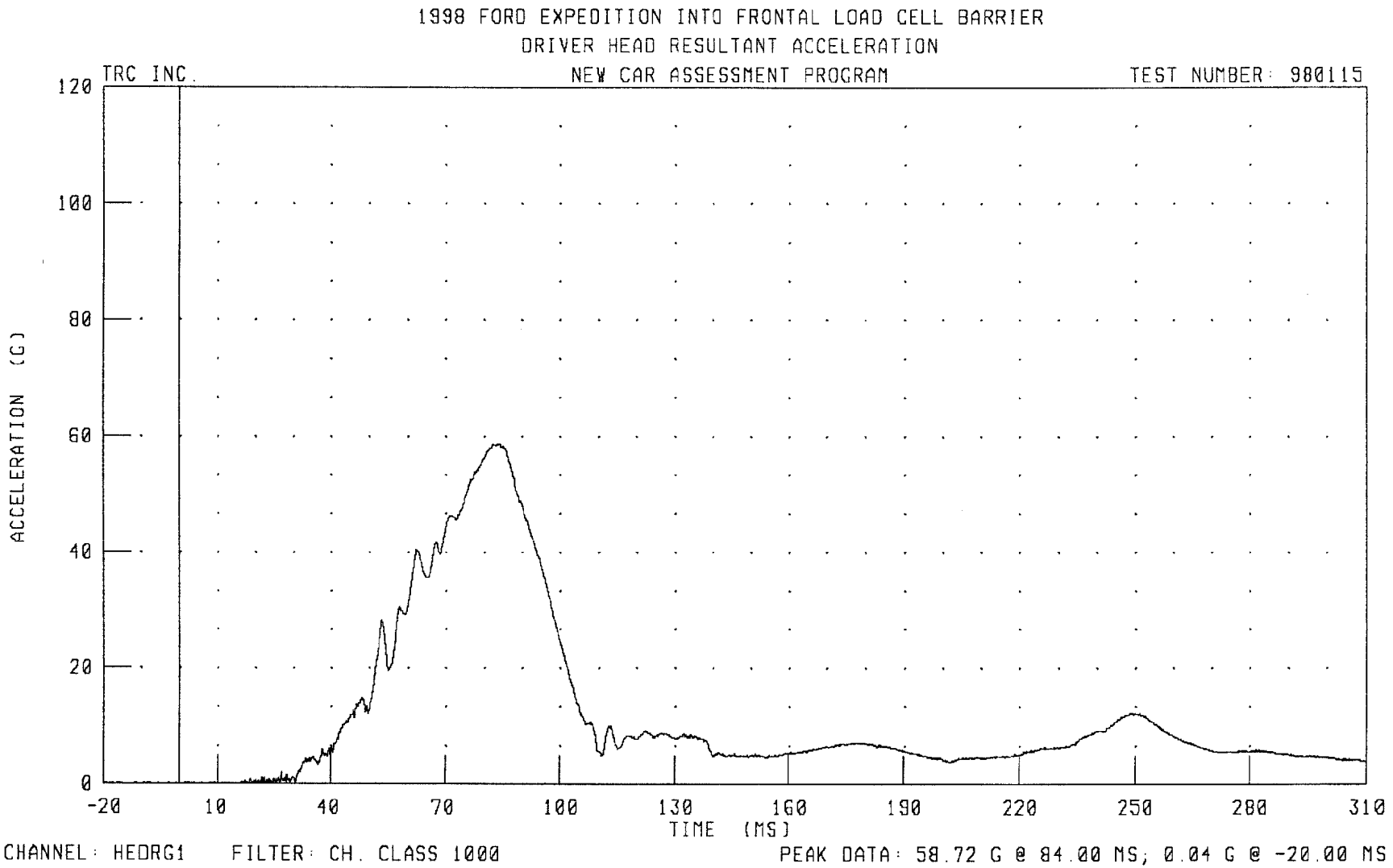
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD RESULTANT ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
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100
80
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40
20
0
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10
40
70
100
130
160
190
220
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TIME (MS)
CHANNEL: HEDRG1
FILTER: CH. CLASS 1000
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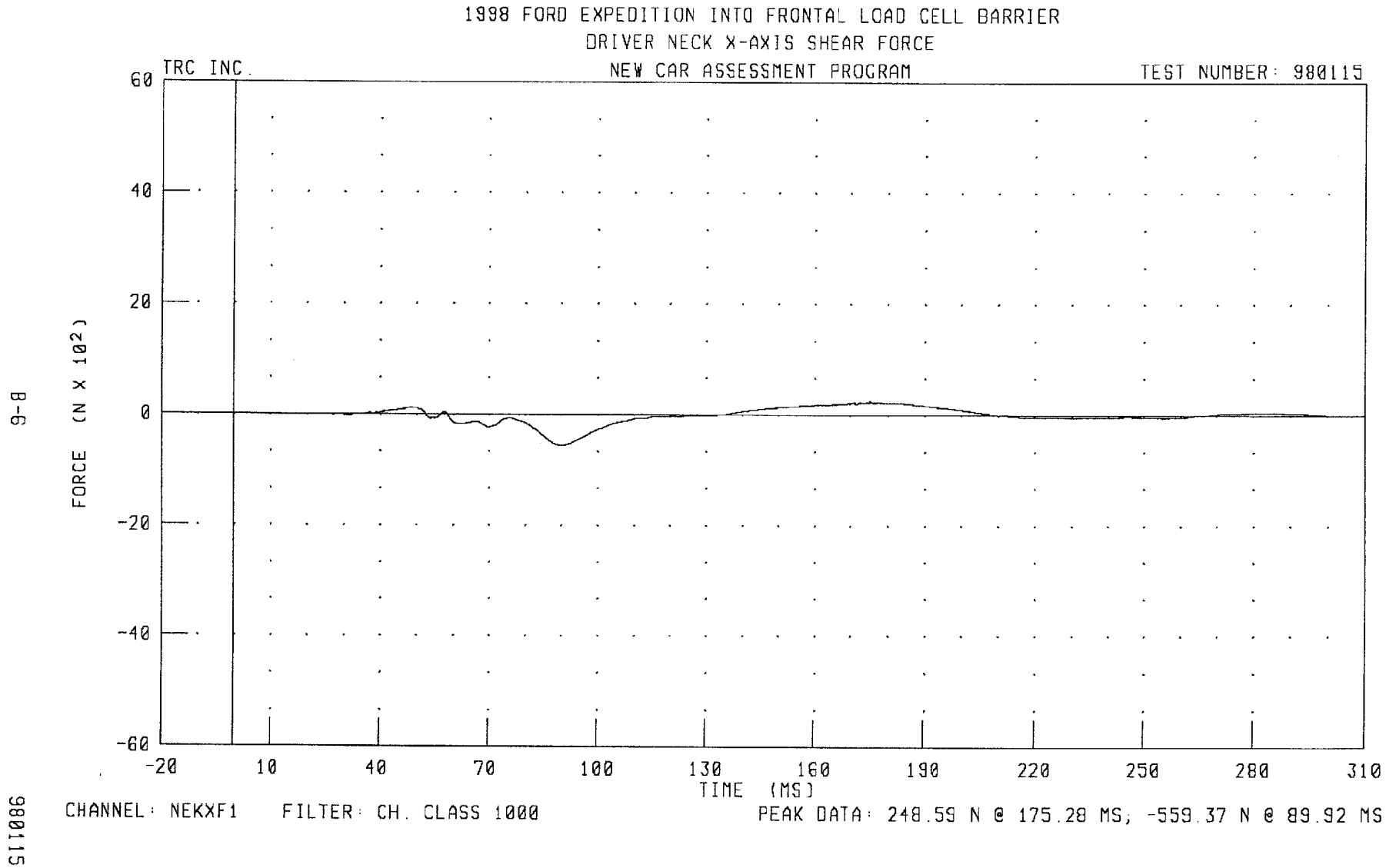
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK X-AXIS SHEAR FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
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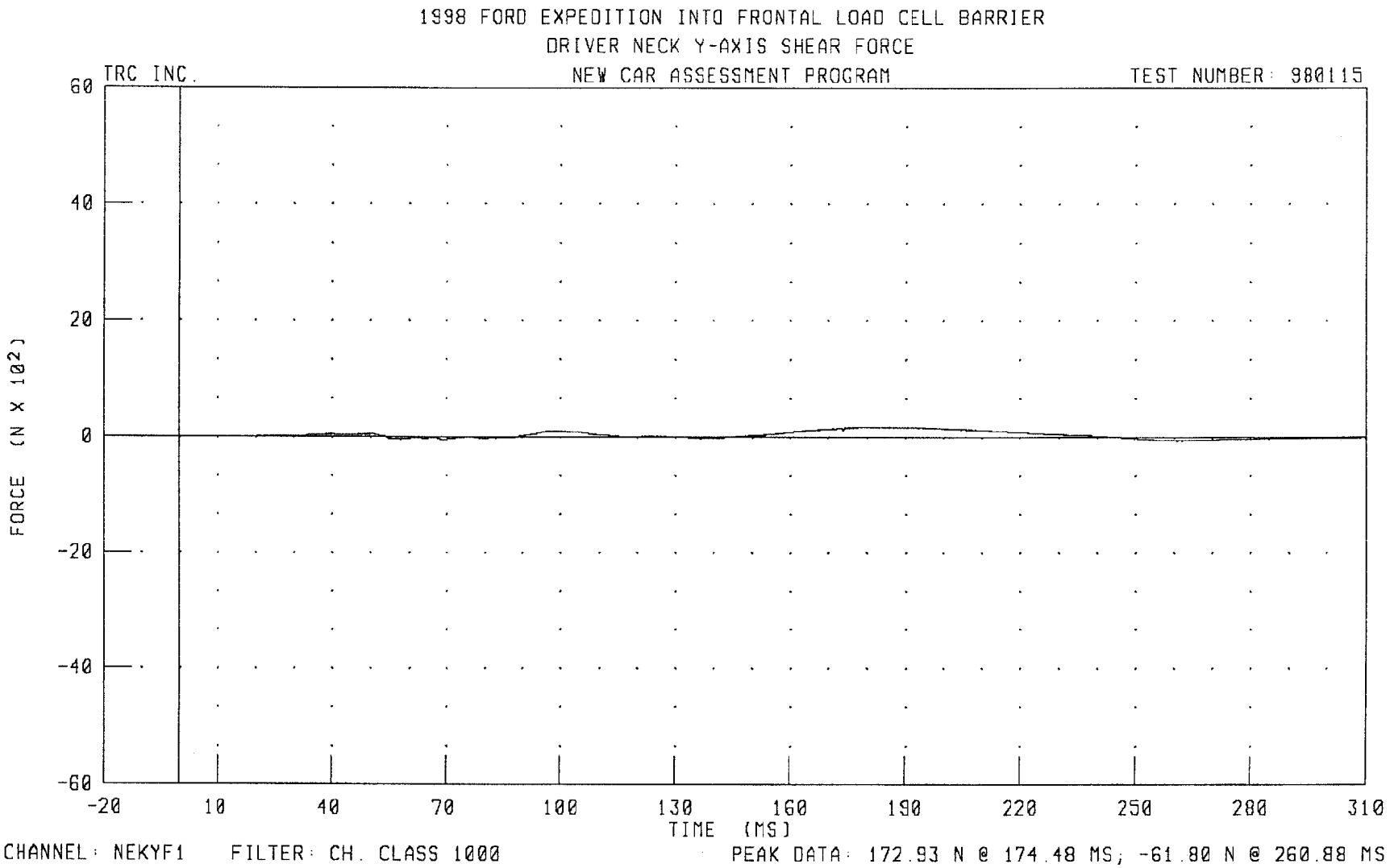
40
20
0
-20
-40
-60
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKXF1
FILTER: CH. CLASS 1000
PEAK DATA: 248.59 N @ 175.28 MS; -559.37 N @ 89.92 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK Y-AXIS SHEAR FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
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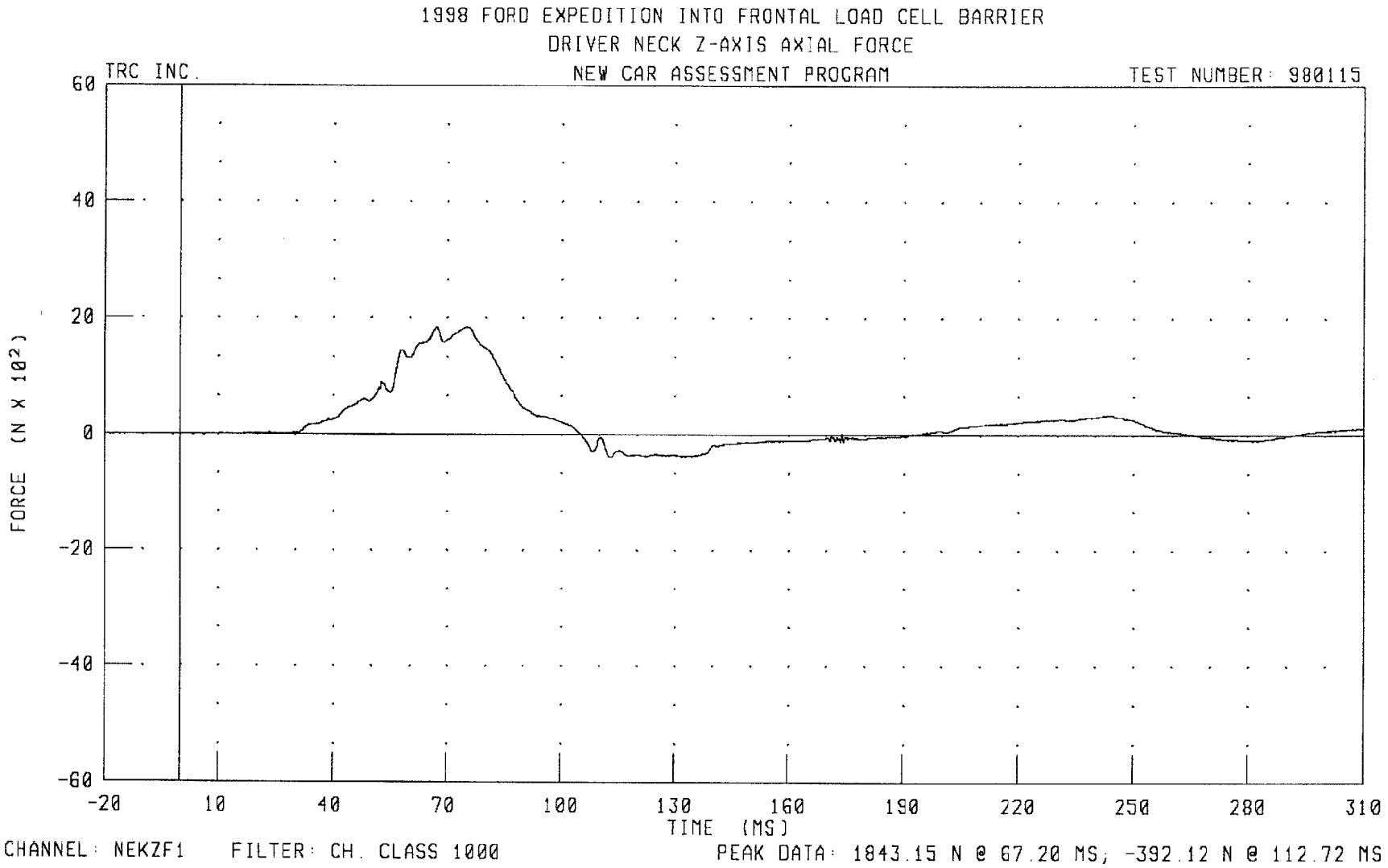
40
20
0
-20
-40
-60
FORCE (N X 10^2)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKYF1
FILTER: CH. CLASS 1000
PEAK DATA: 172.93 N @ 174.48 MS; -61.80 N @ 260.88 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK Z-AXIS AXIAL FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
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20
0
-20
-40
-60
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKZF1
FILTER: CH. CLASS 1000
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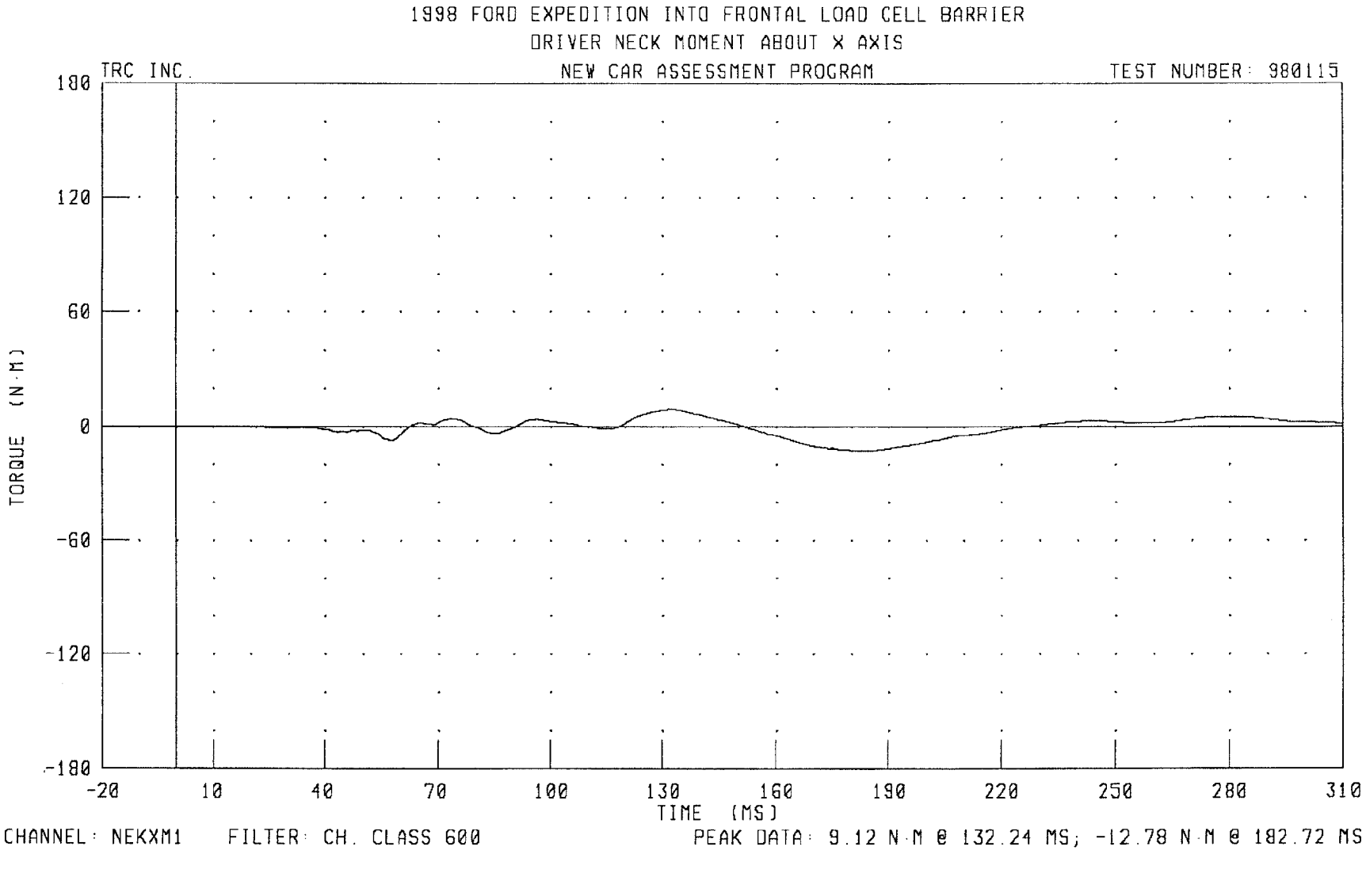
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT X AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
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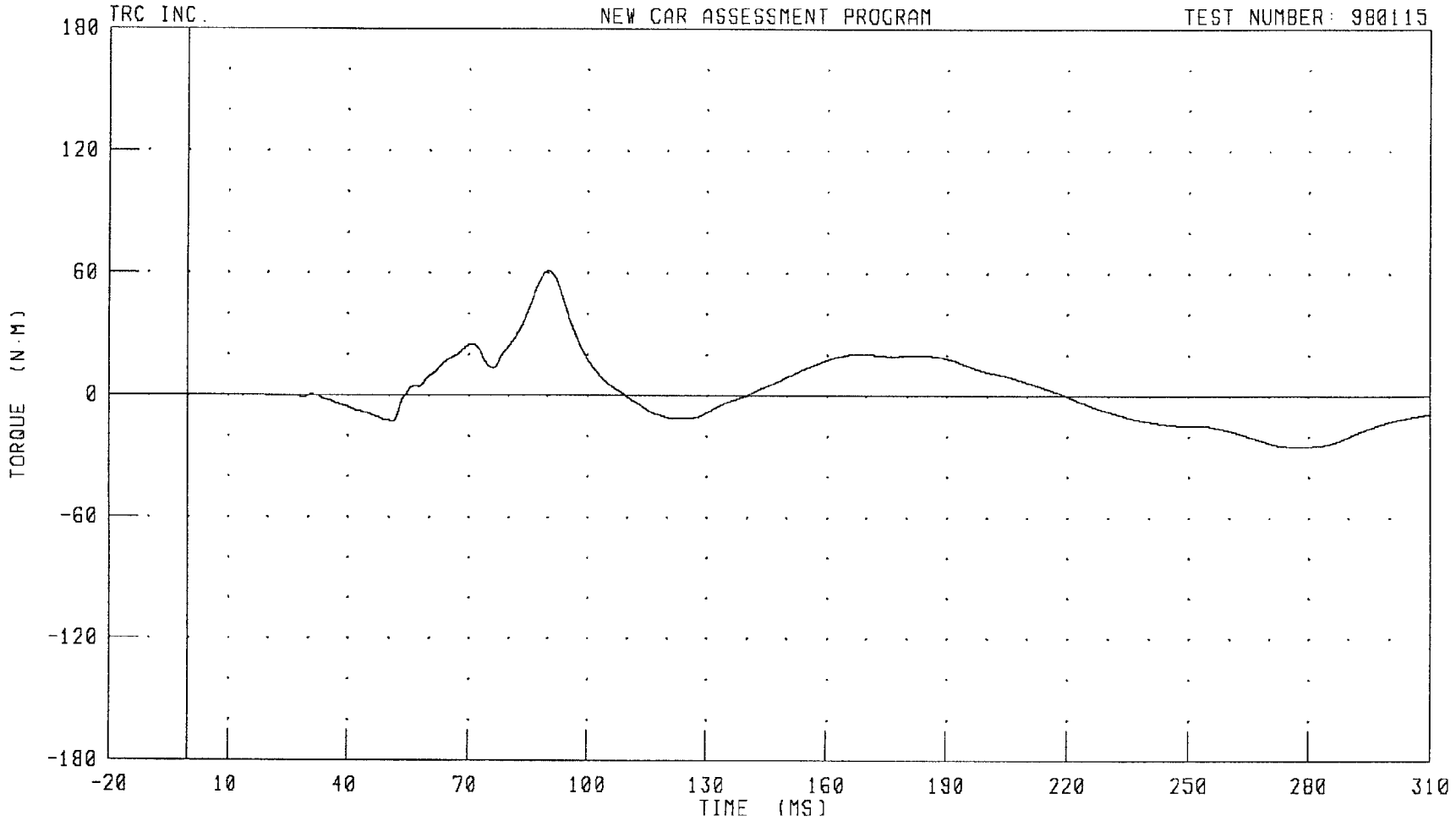
0
-60
-120
-180
TORQUE (N-M)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKXM1
FILTER: CH. CLASS 600
PEAK DATA: 9.12 N-M @ 132.24 MS; -12.78 N-M @ 182.72 MS

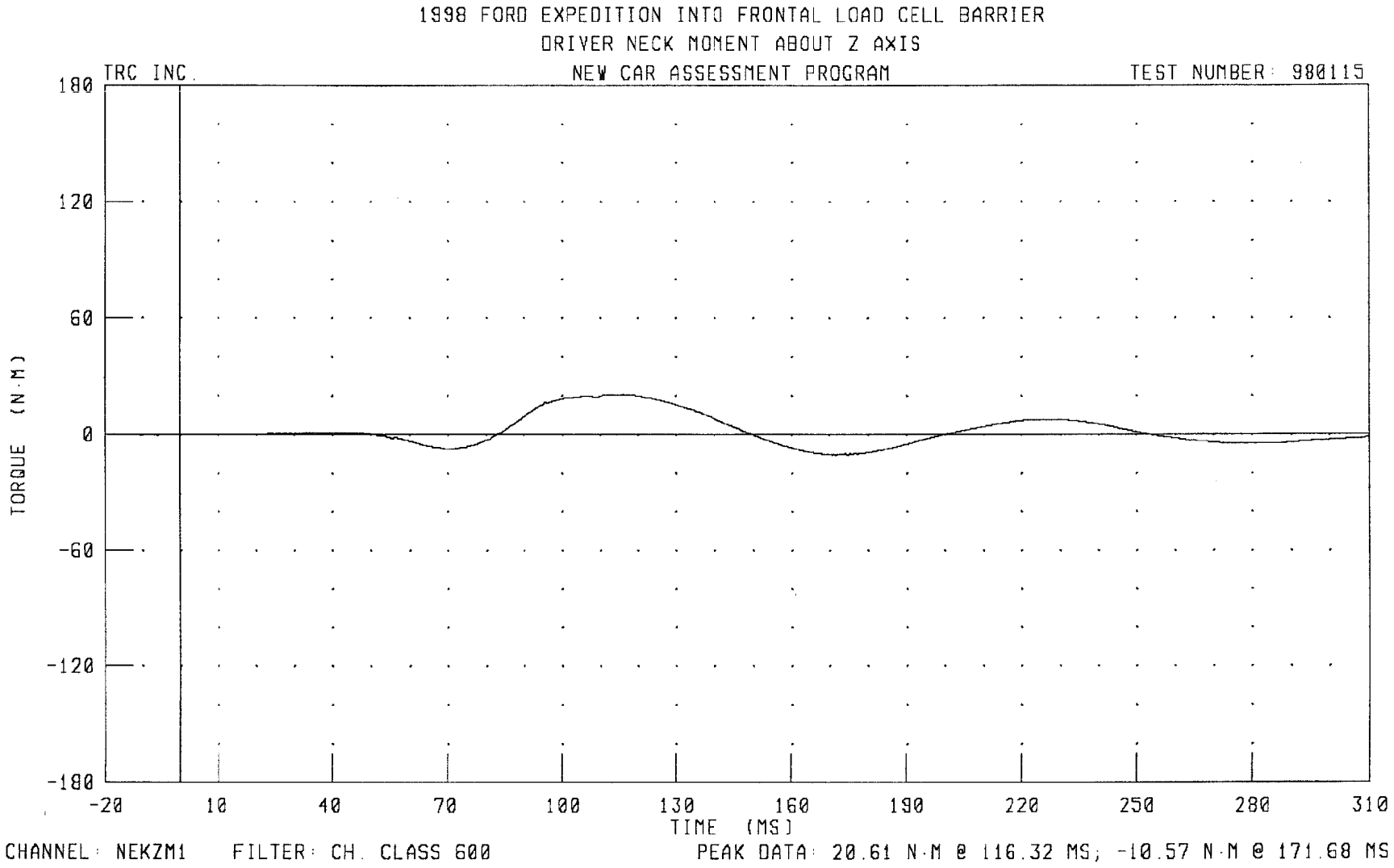
980115

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT Y AXIS



CHANNEL: NEKYM1 FILTER: CH. CLASS 600 PEAK DATA: 60.92 N-M @ 90.32 MS; -24.84 N-M @ 279.36 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT Z AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
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120
60
0
-60
-120
-180
TORQUE (N-M)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKZM1
FILTER: CH. CLASS 600
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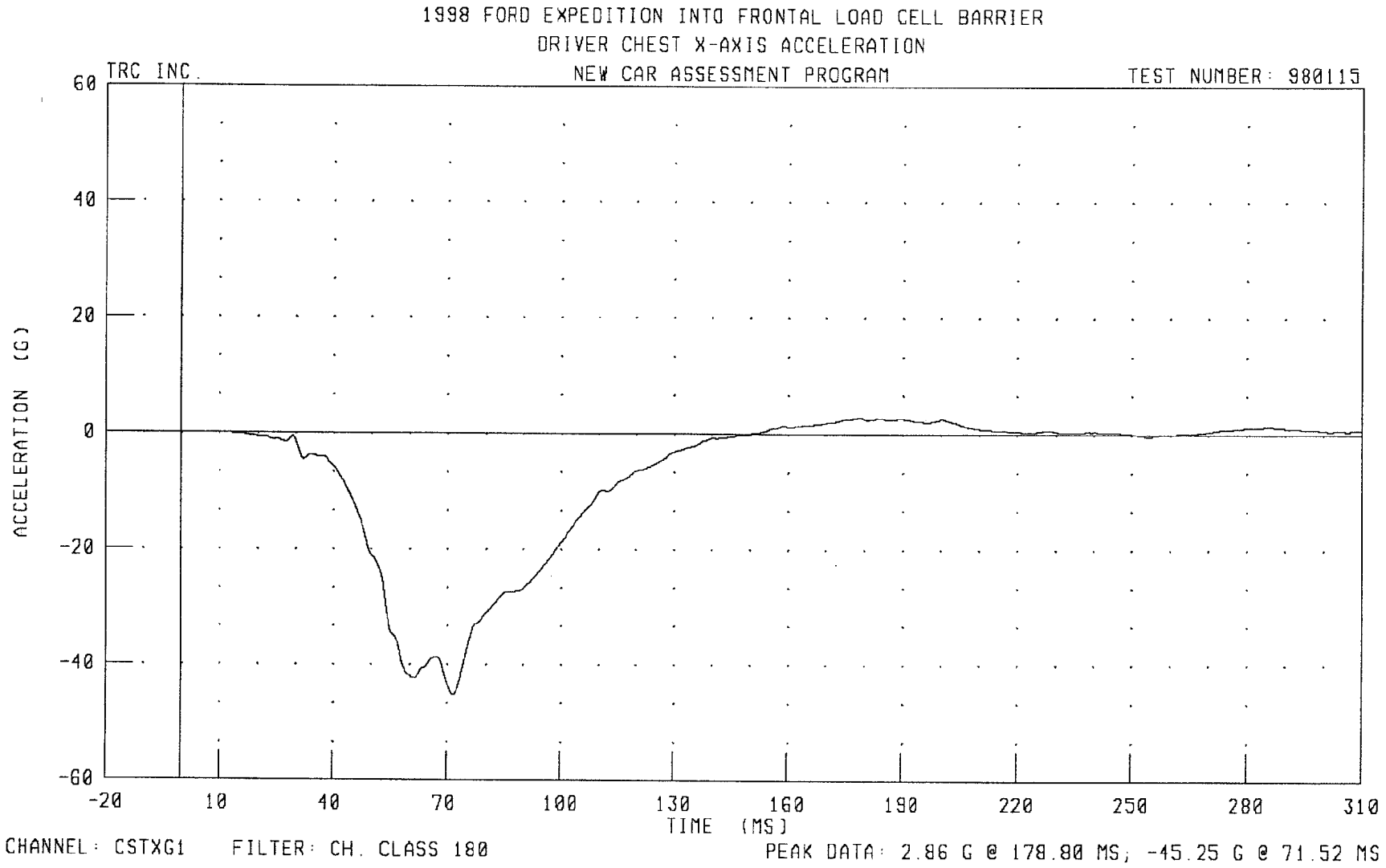
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
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0
-20
-40
-60
ACCELERATION (G)
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10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTXG1
FILTER: CH. CLASS 180
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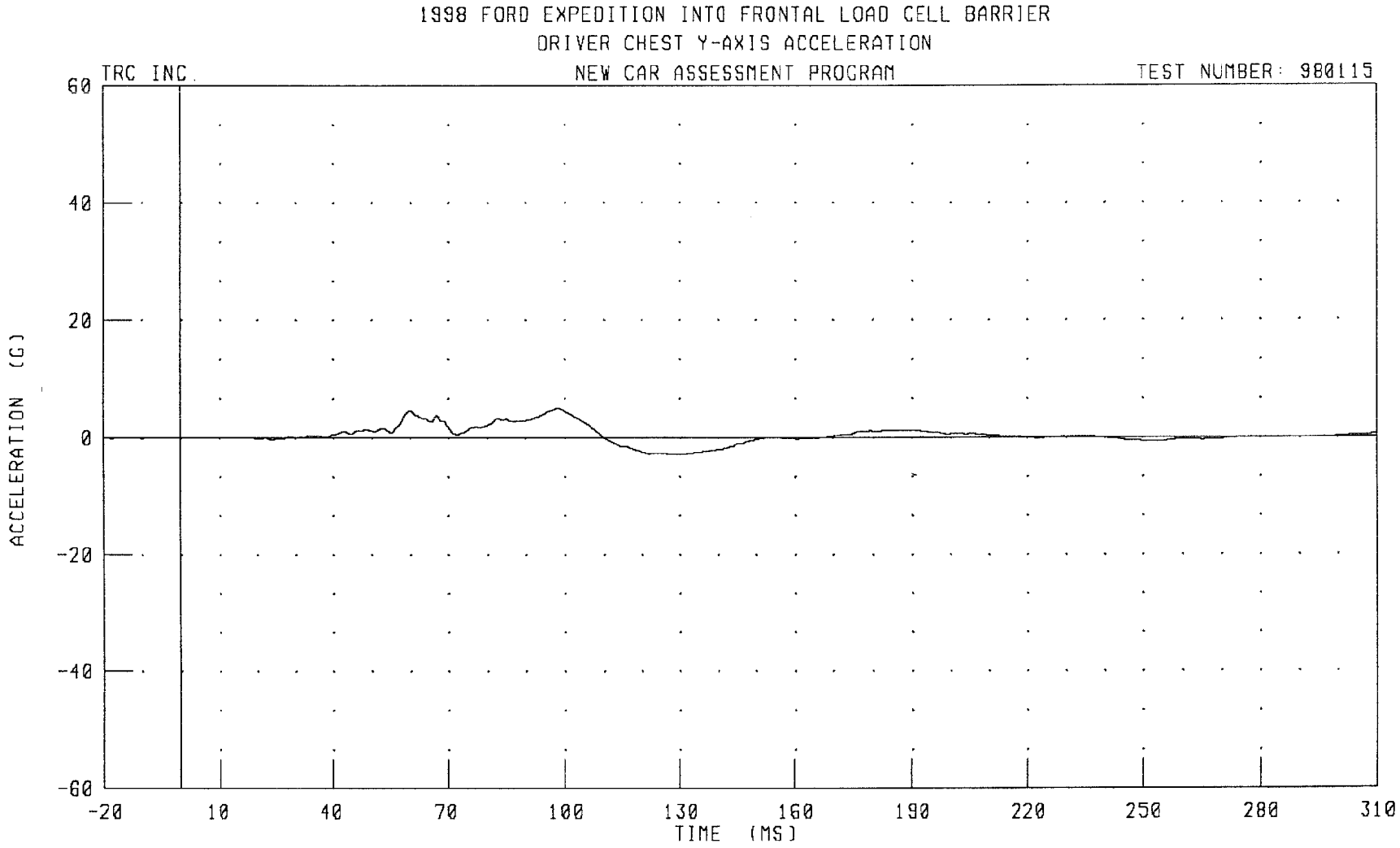
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
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40
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0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
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310
TIME (MS)
CHANNEL: CSTYG1
FILTER: CH. CLASS 180
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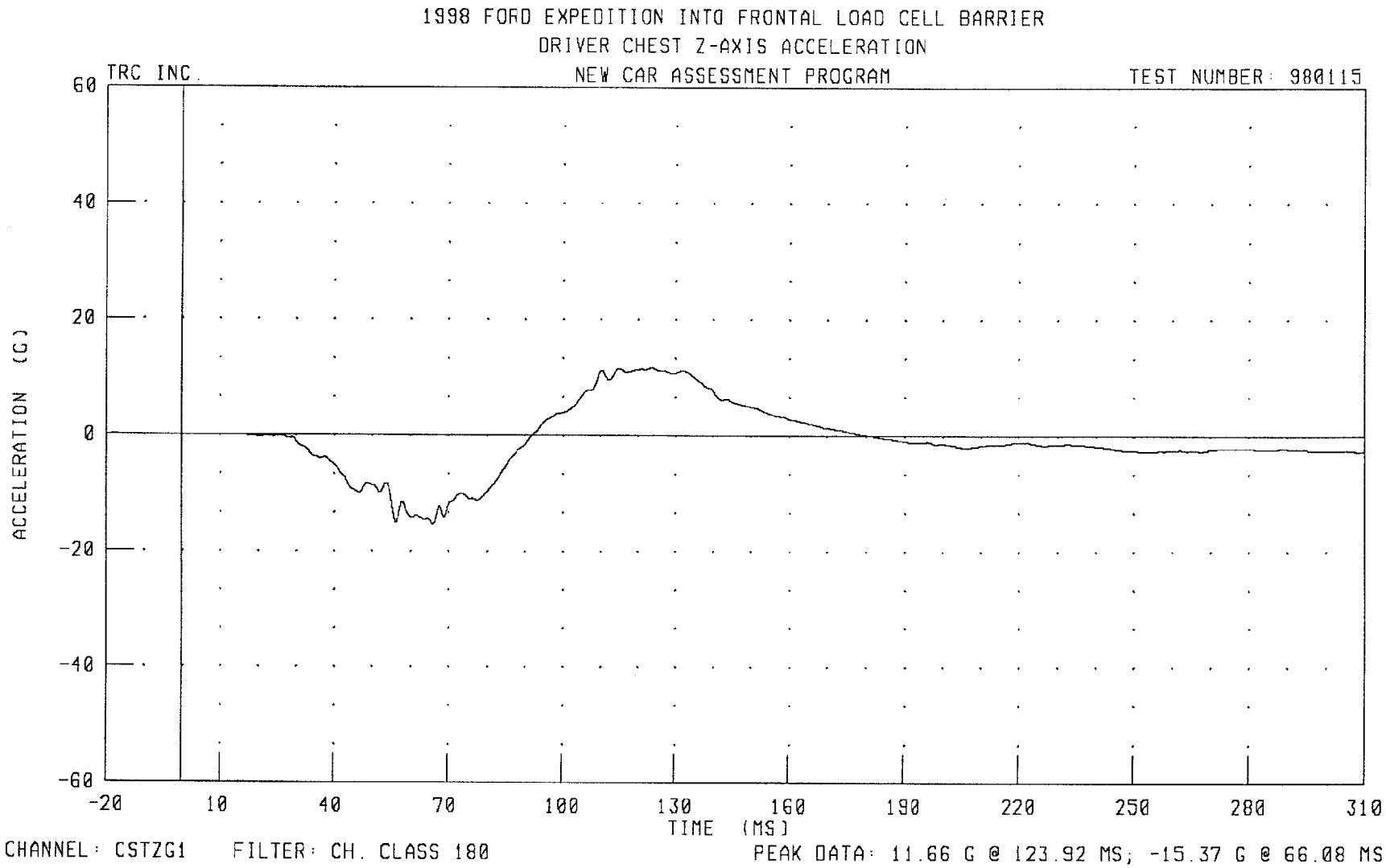
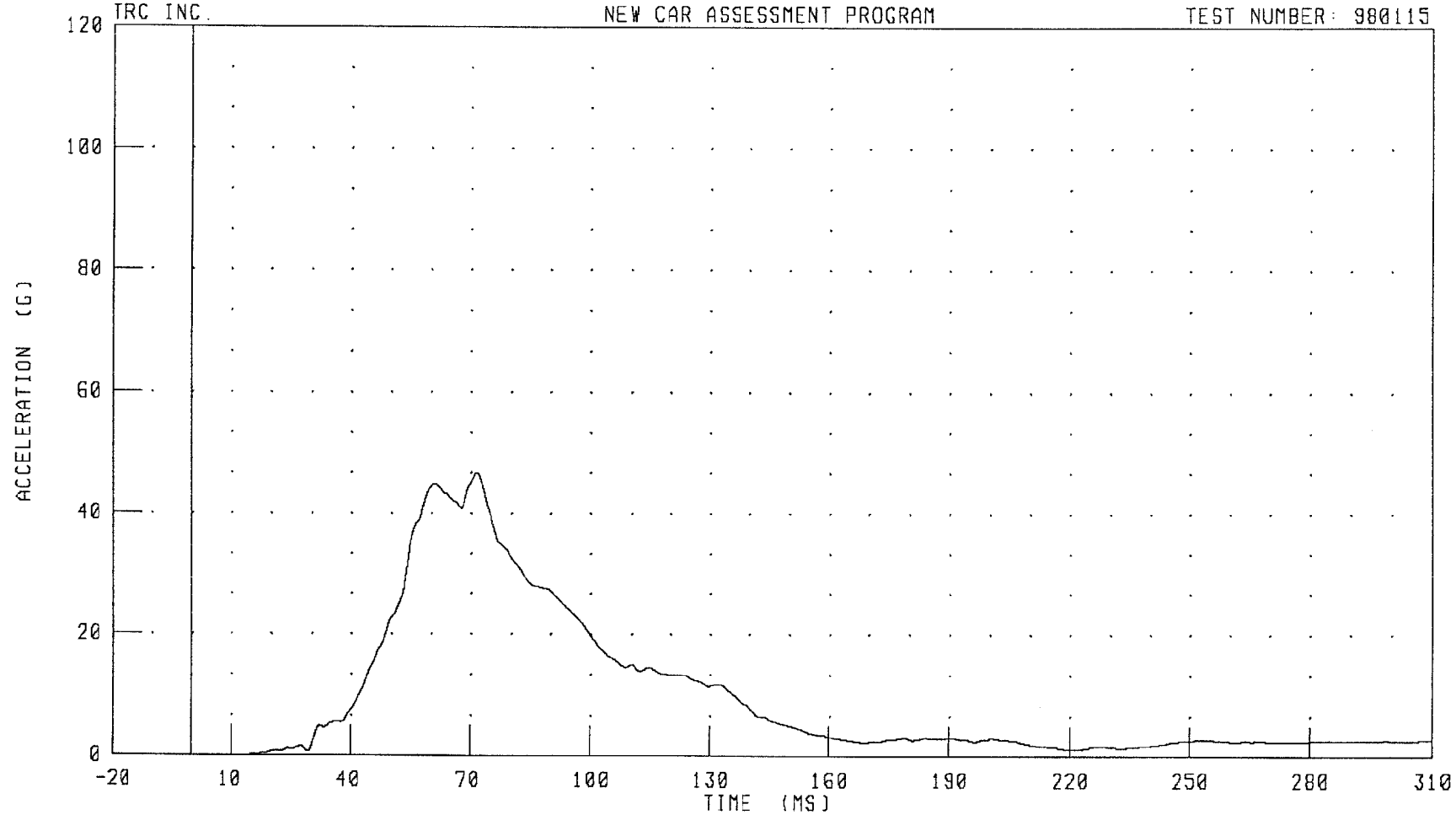
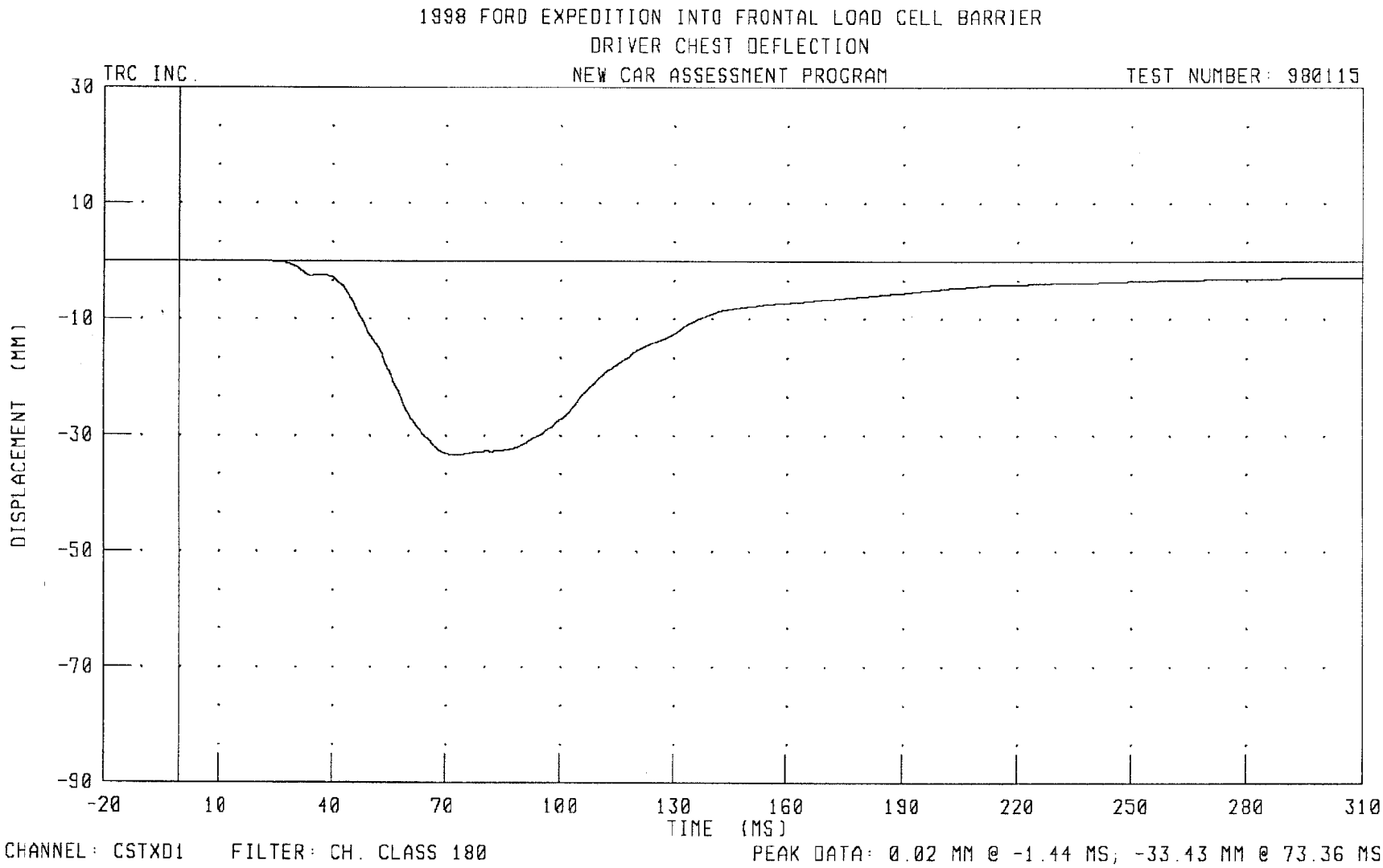

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTZG1
FILTER: CH. CLASS 180
PEAK DATA: 11.66 G @ 123.92 MS; -15.37 G @ 66.08 MS

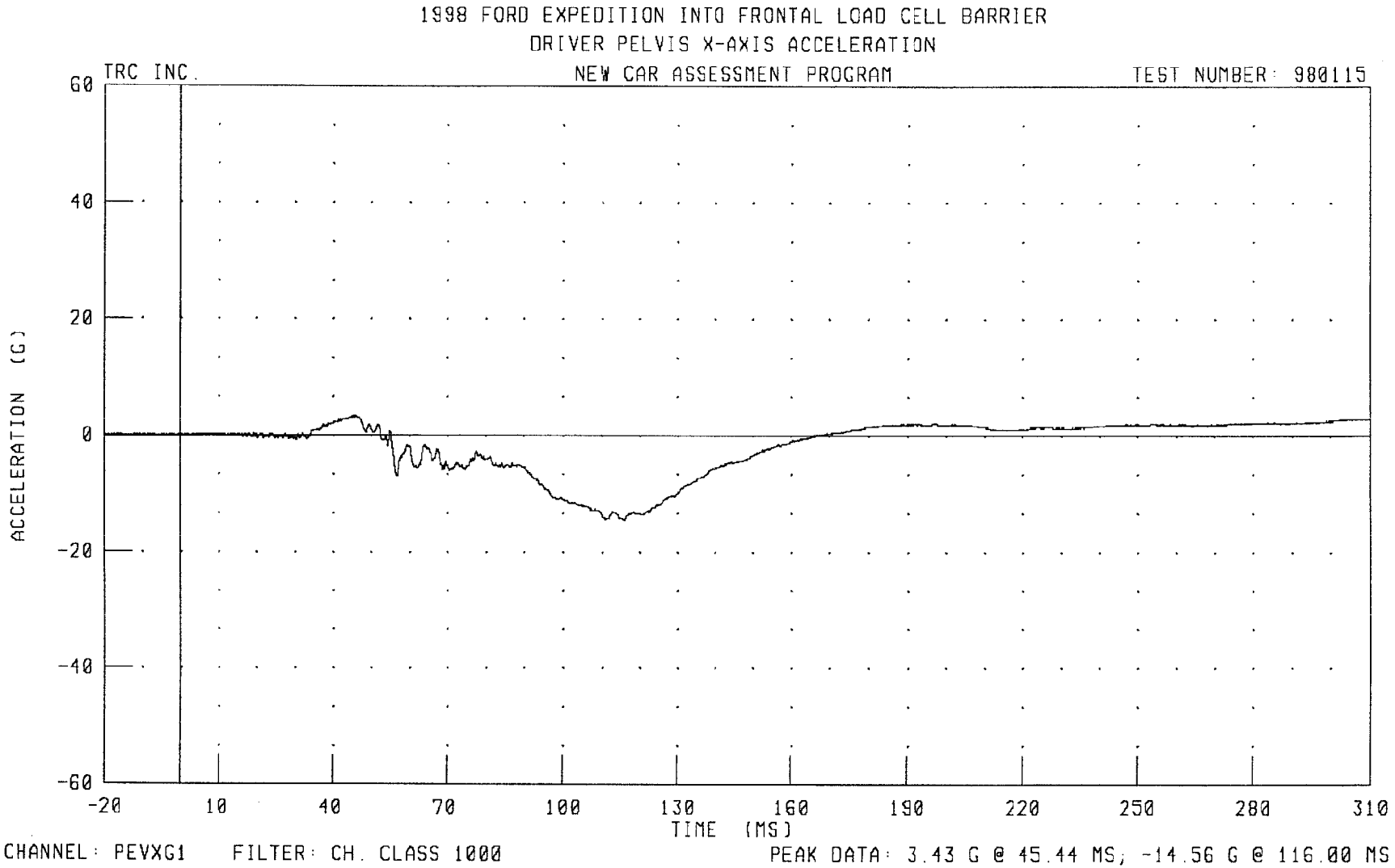
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST RESULTANT ACCELERATION

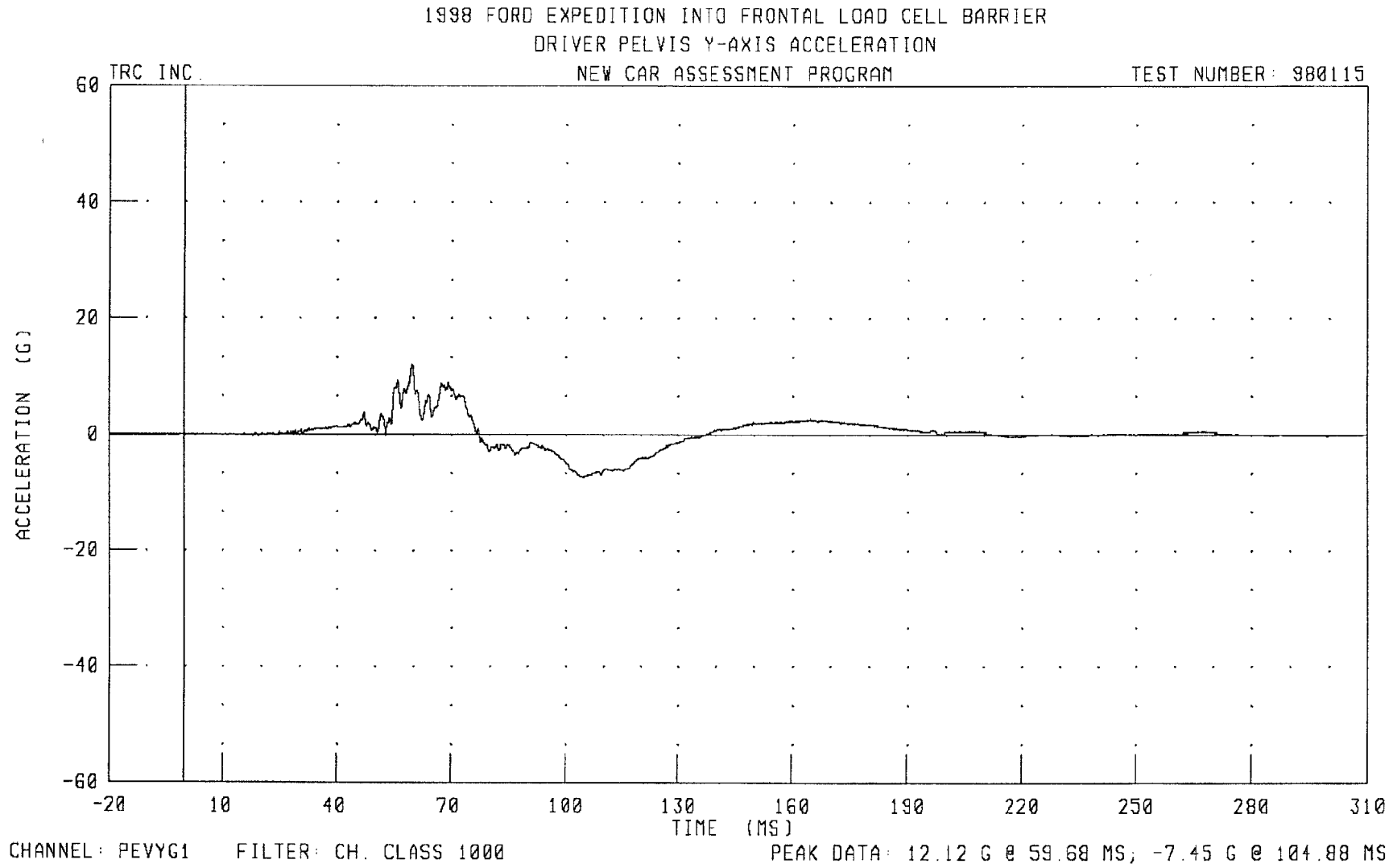


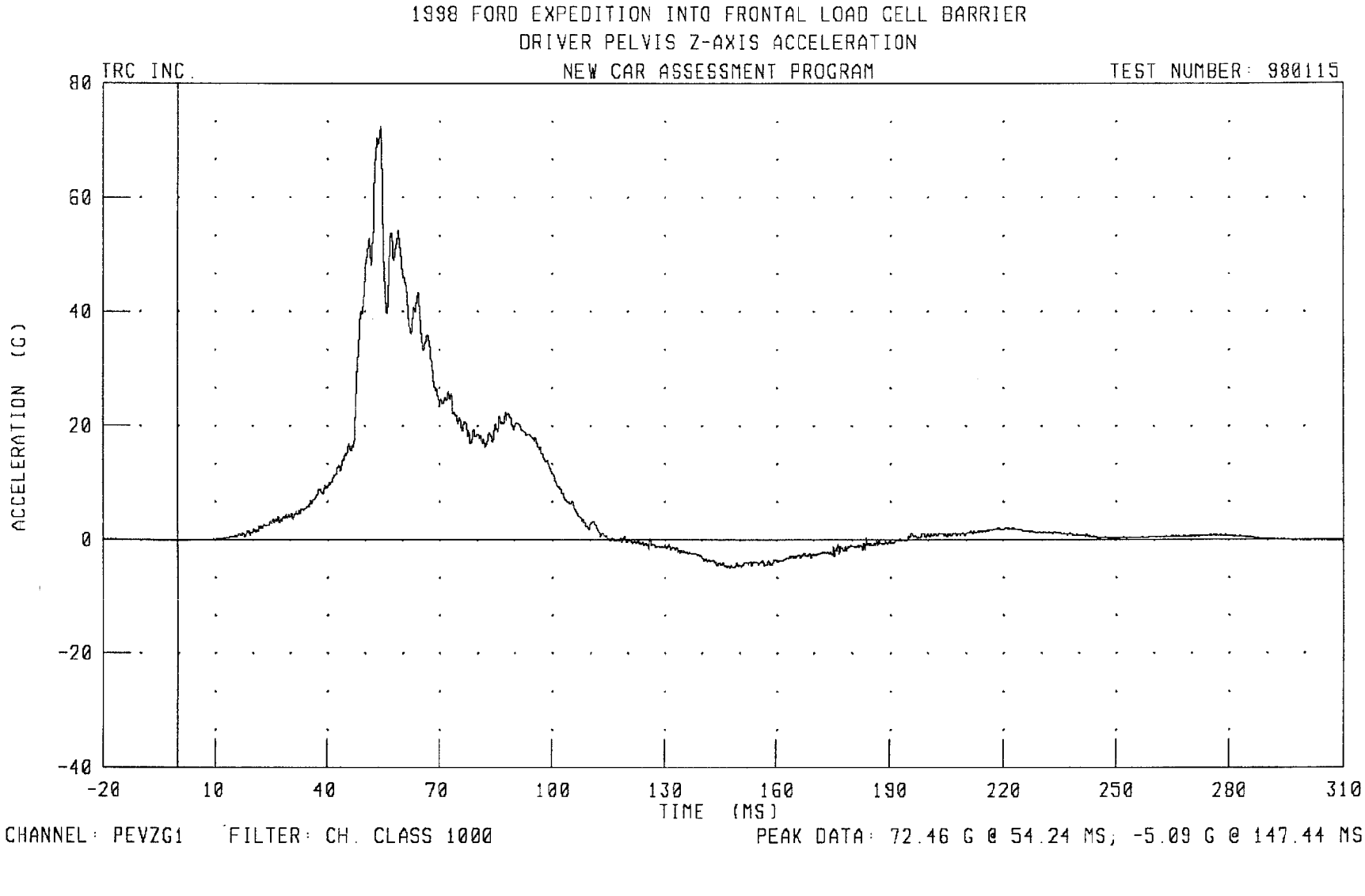
CHANNEL: CSTRG1 FILTER: CH. CLASS 180 PEAK DATA: 46.61 G @ 71.44 MS; 0.00 G @ -19.92 MS

980115

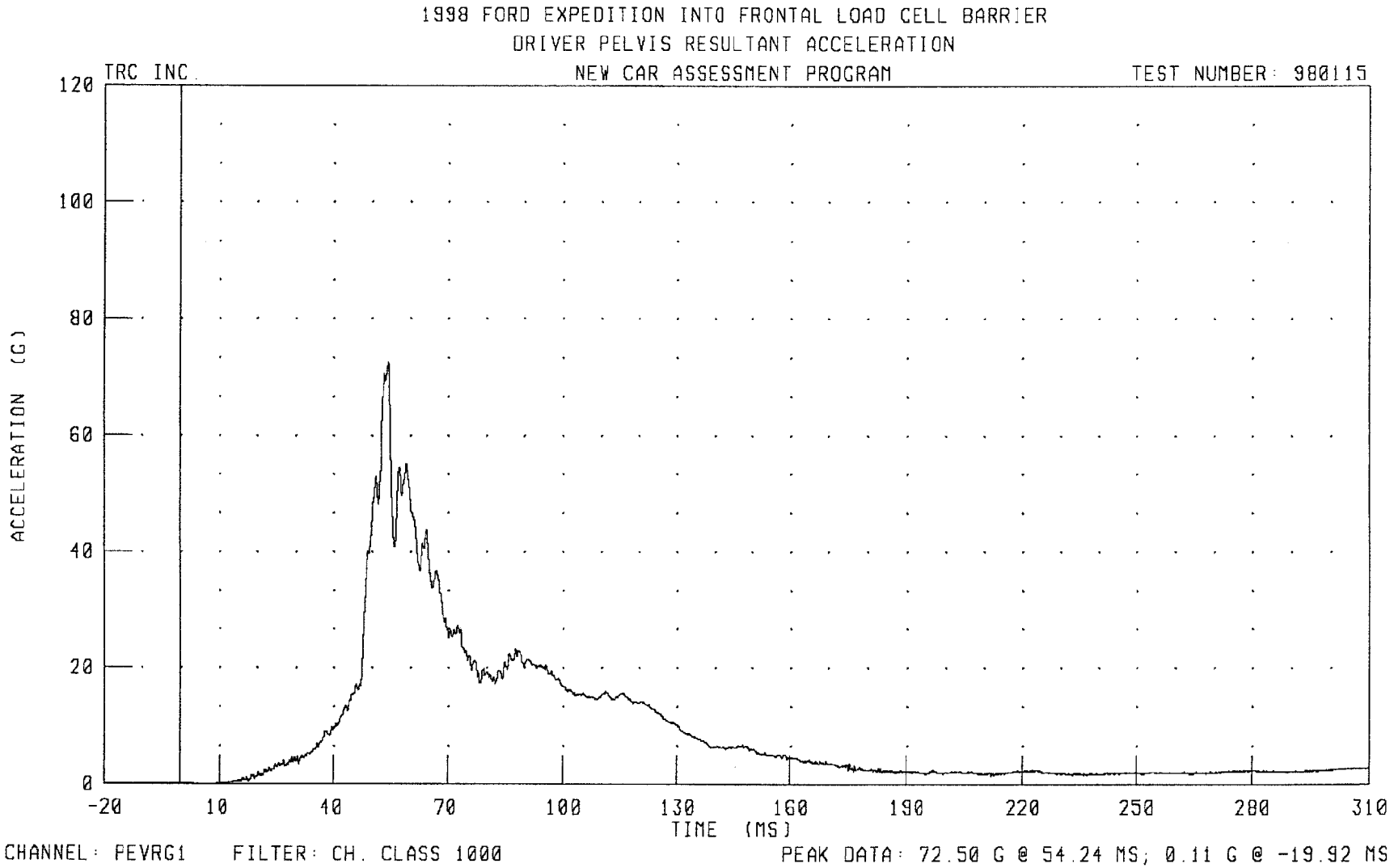

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST DEFLECTION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
10
-10
-30
-50
-70
-90
DISPLACEMENT (MM)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTXD1
FILTER: CH. CLASS 180
PEAK DATA: 0.02 MM @ -1.44 MS; -33.43 MM @ 73.36 MS

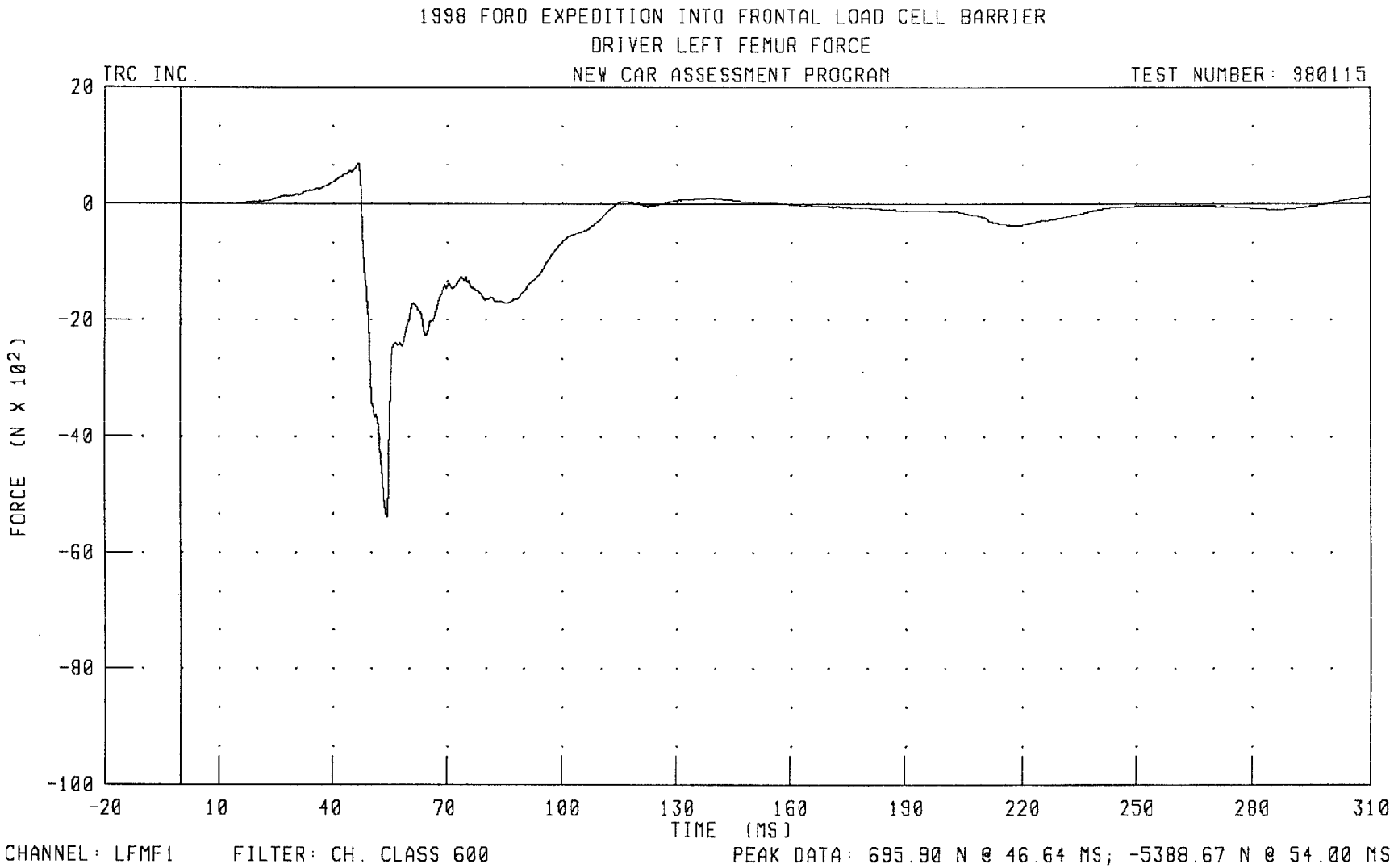

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: PEVXG1
FILTER: CH. CLASS 1000
PEAK DATA: 3.43 G @ 45.44 MS; -14.56 G @ 116.00 MS

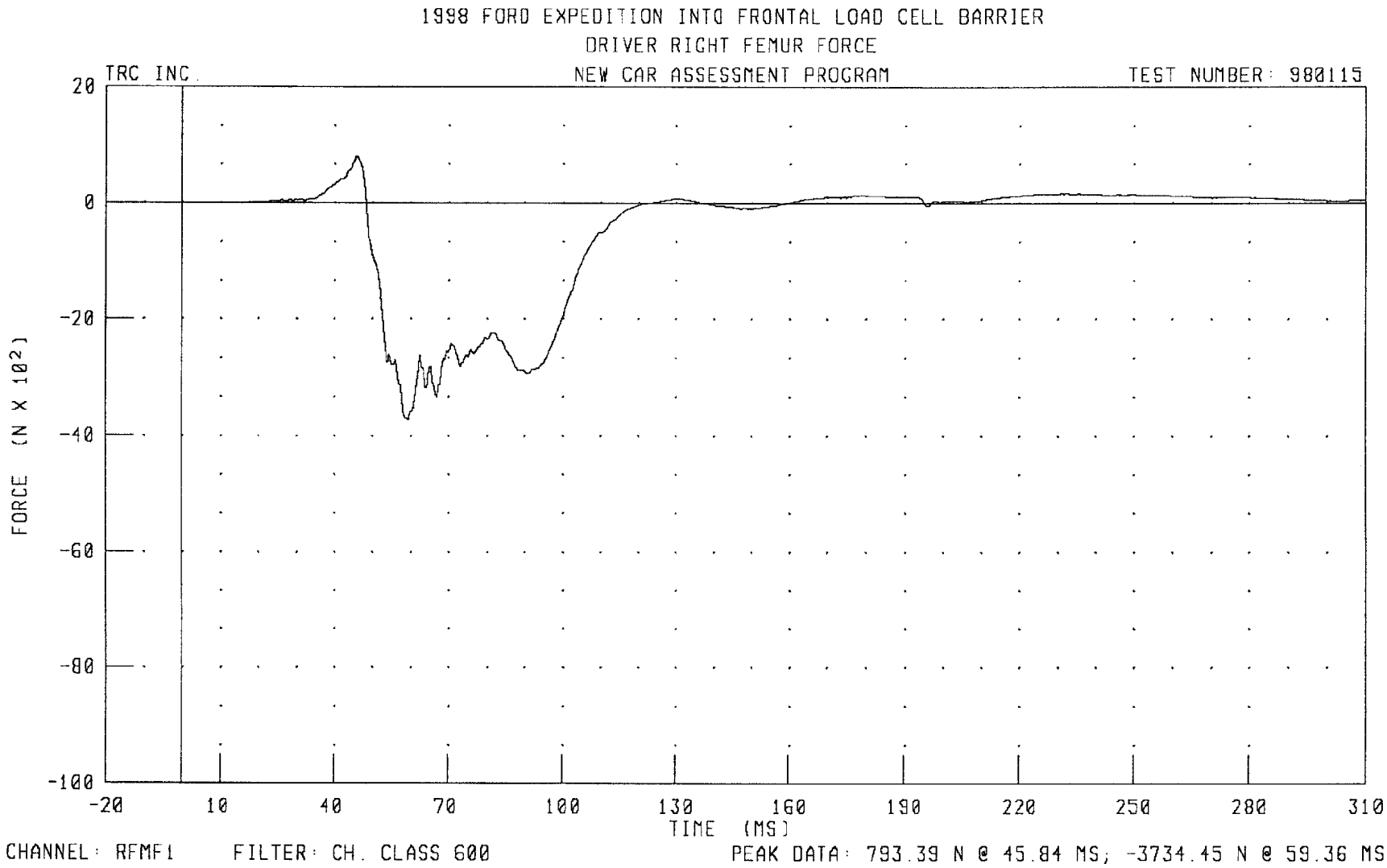

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS Y-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: PEVYG1
FILTER: CH. CLASS 1000
PEAK DATA: 12.12 G @ 59.68 MS; -7.45 G @ 104.88 MS

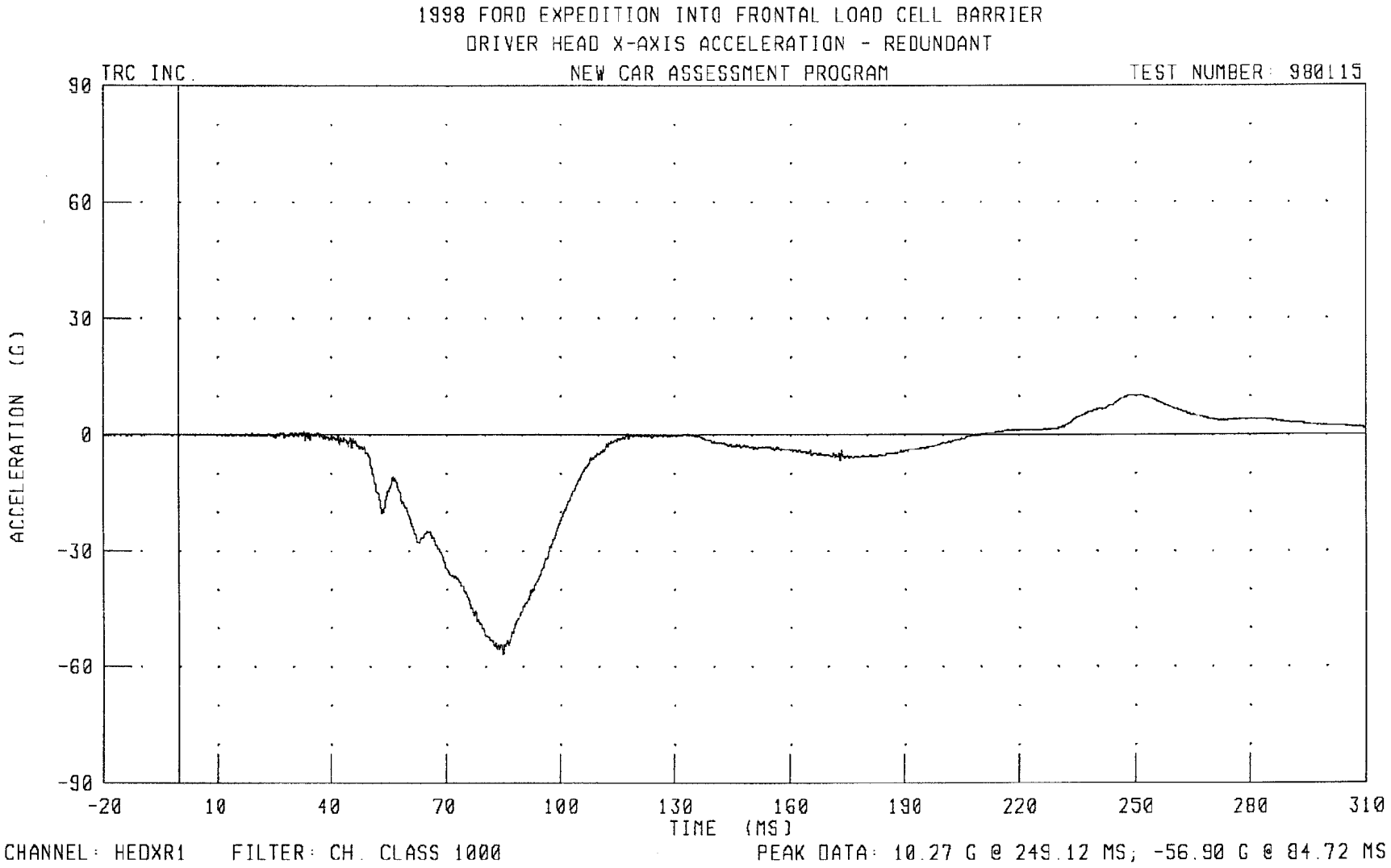

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS Z-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
80
60
40
20
0
-20
-40
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: PEVZG1
FILTER: CH. CLASS 1000
PEAK DATA: 72.46 G @ 54.24 MS; -5.09 G @ 147.44 MS

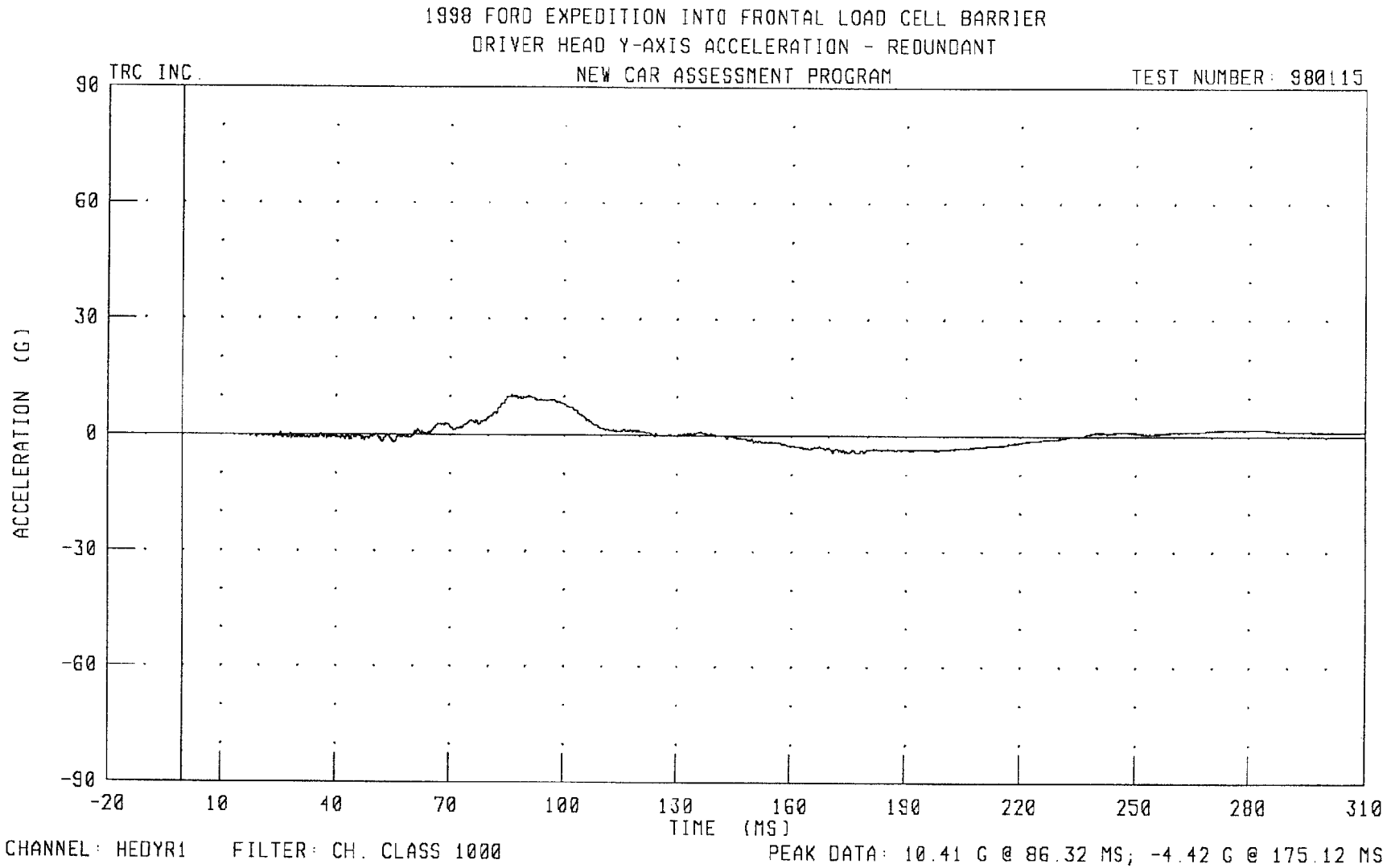
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER PELVIS RESULTANT ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
120
100
80
60
40
20
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: PEVRG1
FILTER: CH. CLASS 1000
PEAK DATA: 72.50 G @ 54.24 MS; 0.11 G @ -19.92 MS

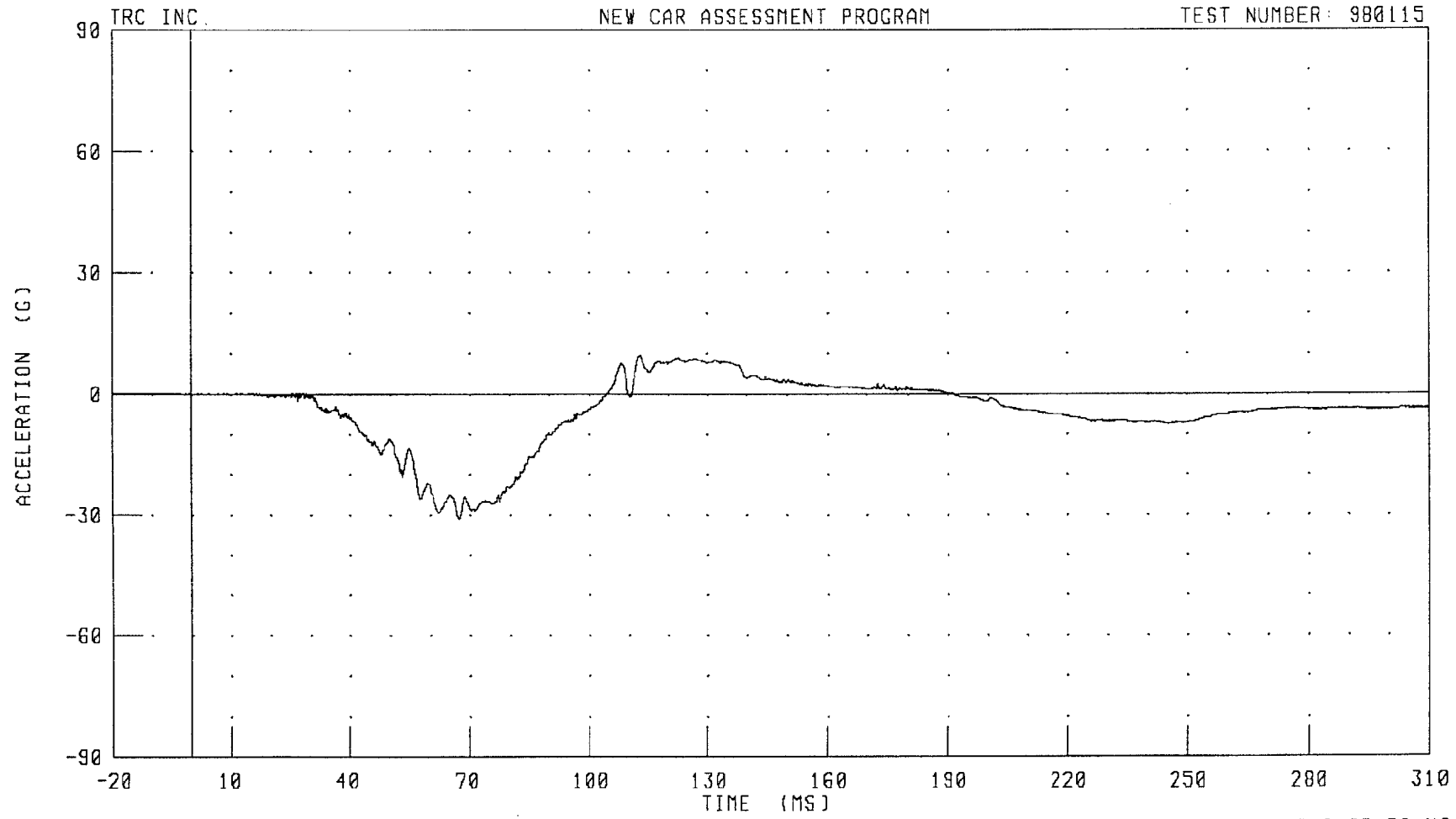

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FEMUR FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
20
0
-20
-40
-60
-80
-100
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LFMF1
FILTER: CH. CLASS 600
PEAK DATA: 695.90 N @ 46.64 MS; -5388.67 N @ 54.00 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FEMUR FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
20
0
-20
-40
-60
-80
-100
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: RFMF1
FILTER: CH. CLASS 600
PEAK DATA: 793.39 N @ 45.84 MS; -3734.45 N @ 59.36 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD X-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
90
60
30
0
-30
-60
-90
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDXR1
FILTER: CH. CLASS 1000
PEAK DATA: 10.27 G @ 249.12 MS; -56.90 G @ 84.72 MS

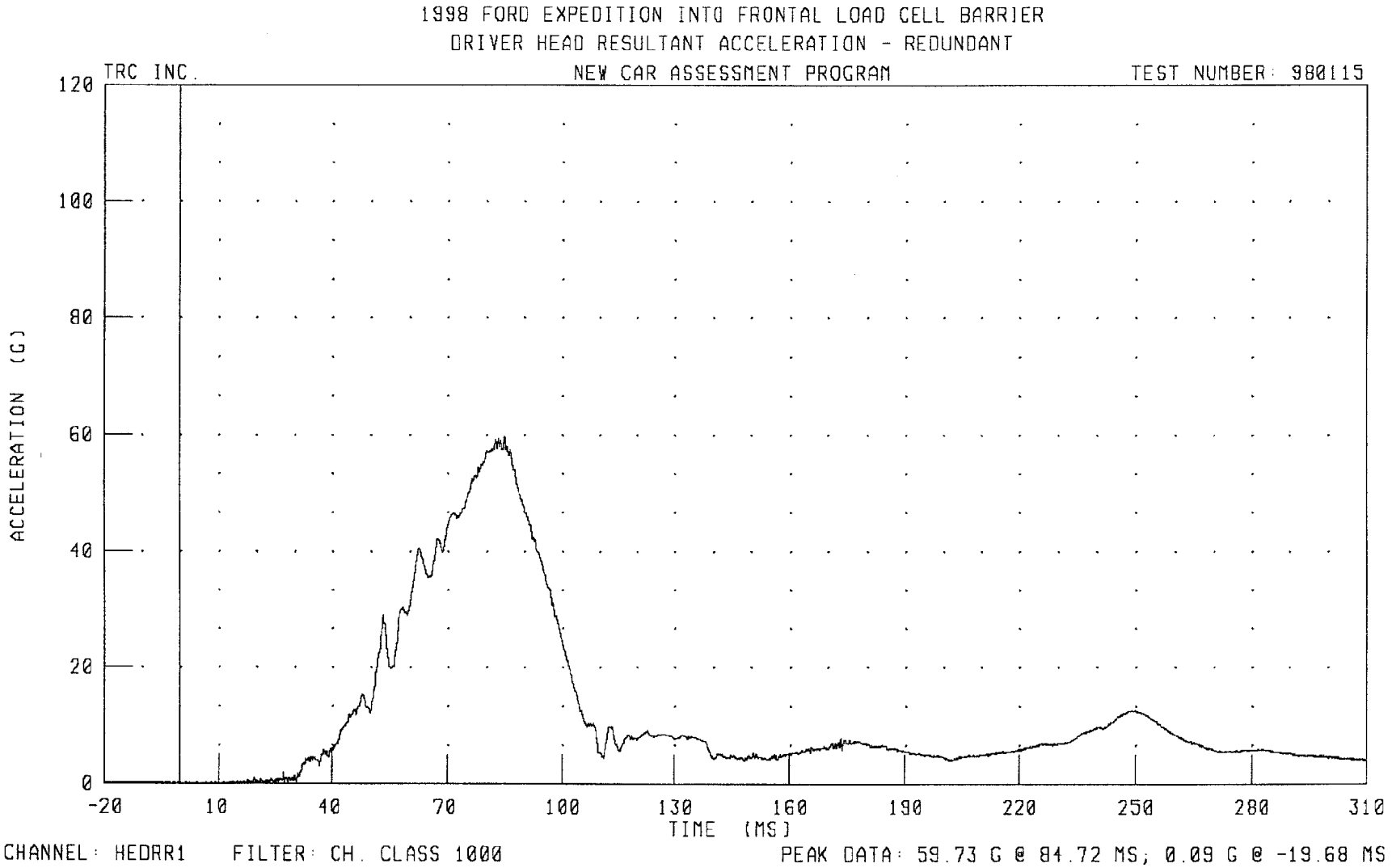

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
90
60
30
0
-30
-60
-90
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDYR1
FILTER: CH. CLASS 1000
PEAK DATA: 10.41 G @ 86.32 MS; -4.42 G @ 175.12 MS

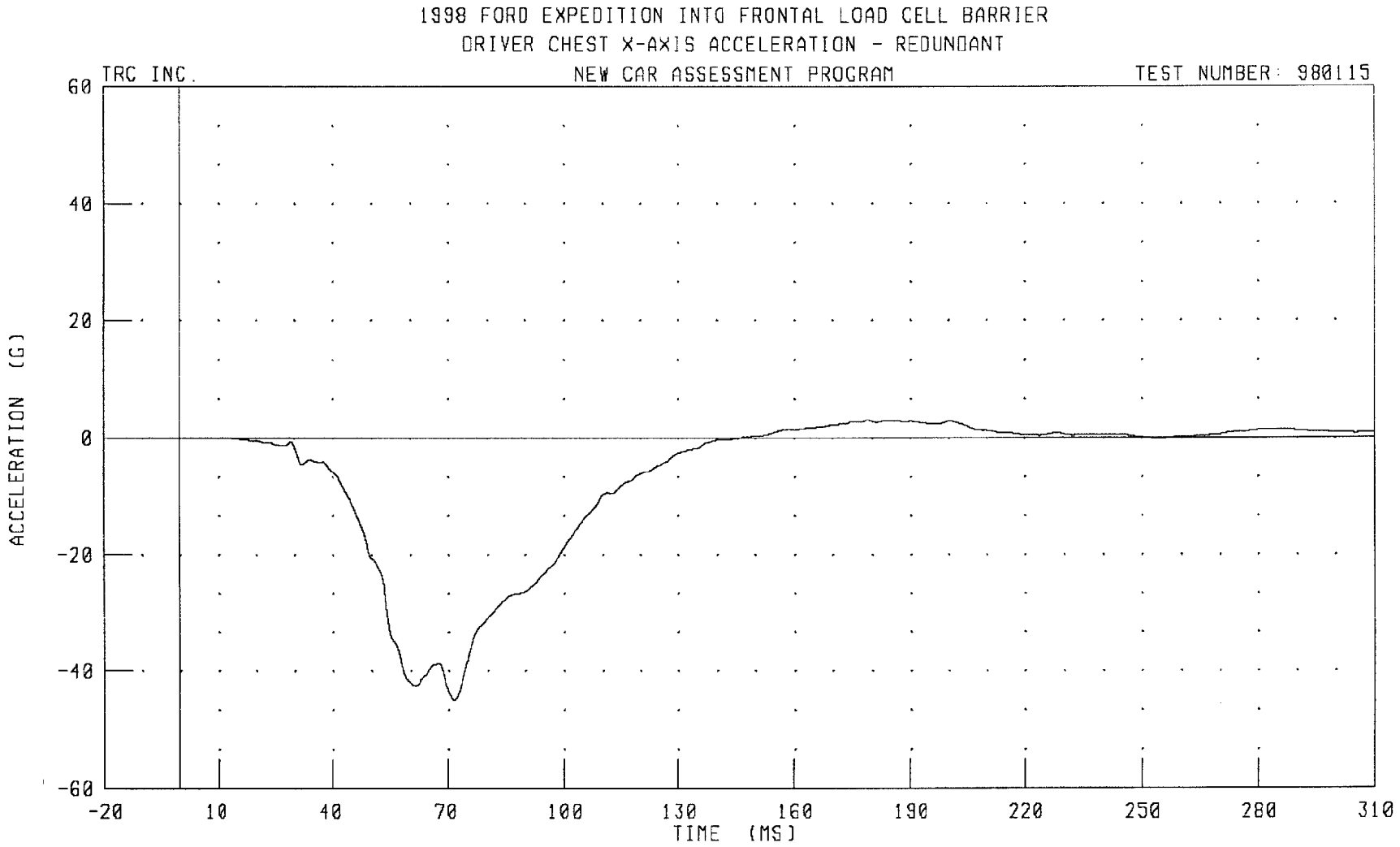
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD Z-AXIS ACCELERATION - REDUNDANT

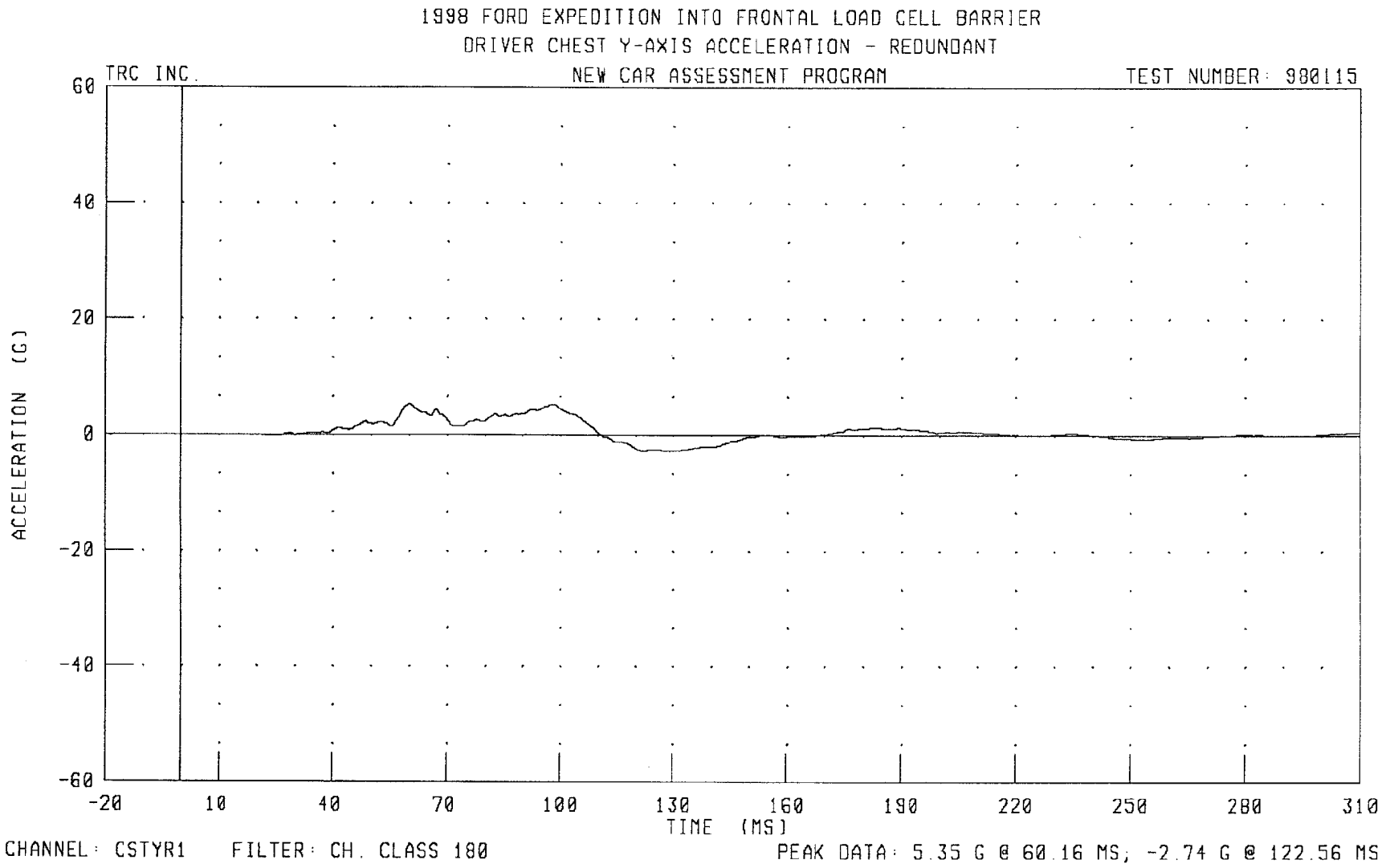


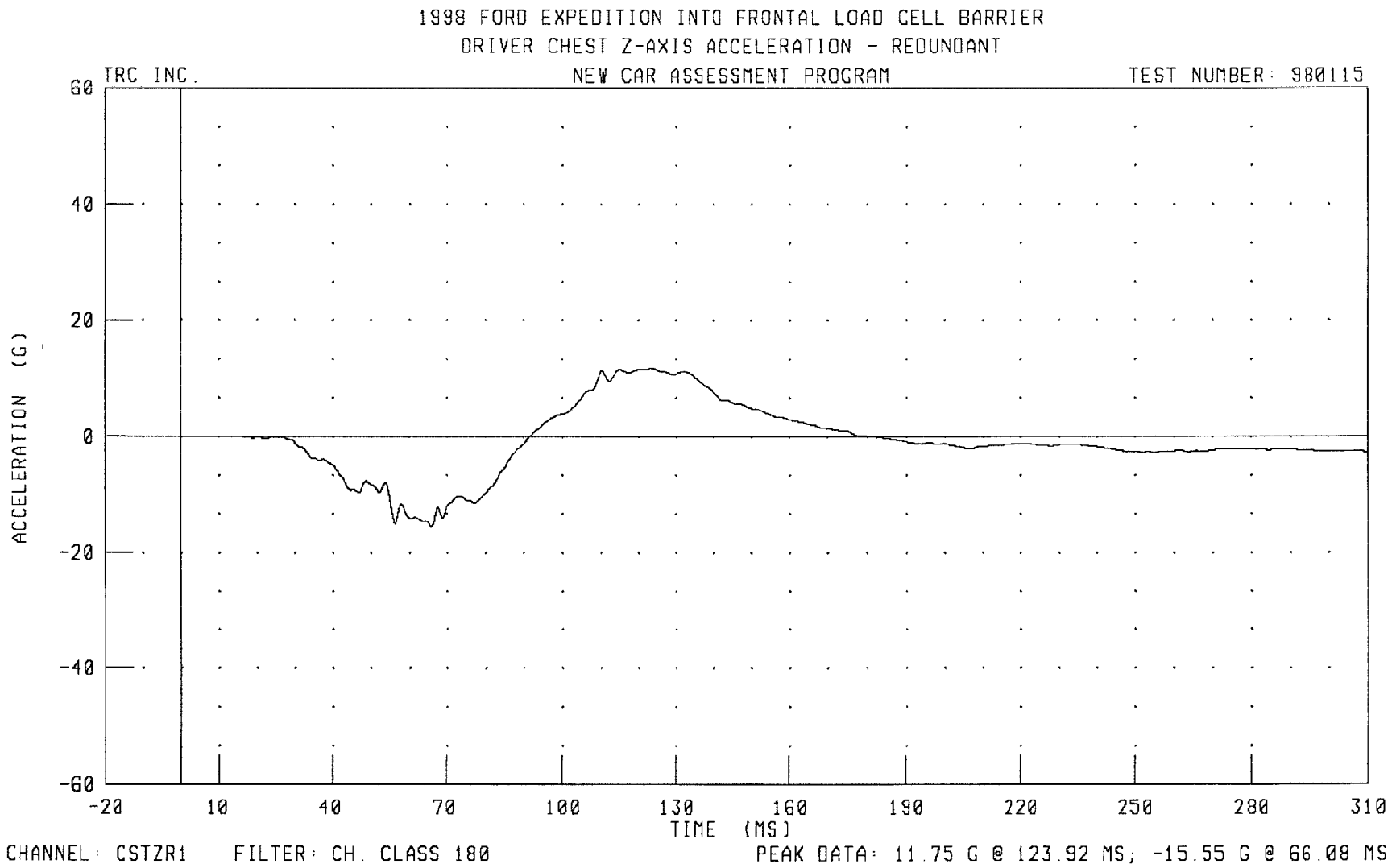
CHANNEL: HEDZR1 FILTER: CH. CLASS 1000 PEAK DATA: 9.58 G @ 113.12 MS; -30.88 G @ 67.36 MS

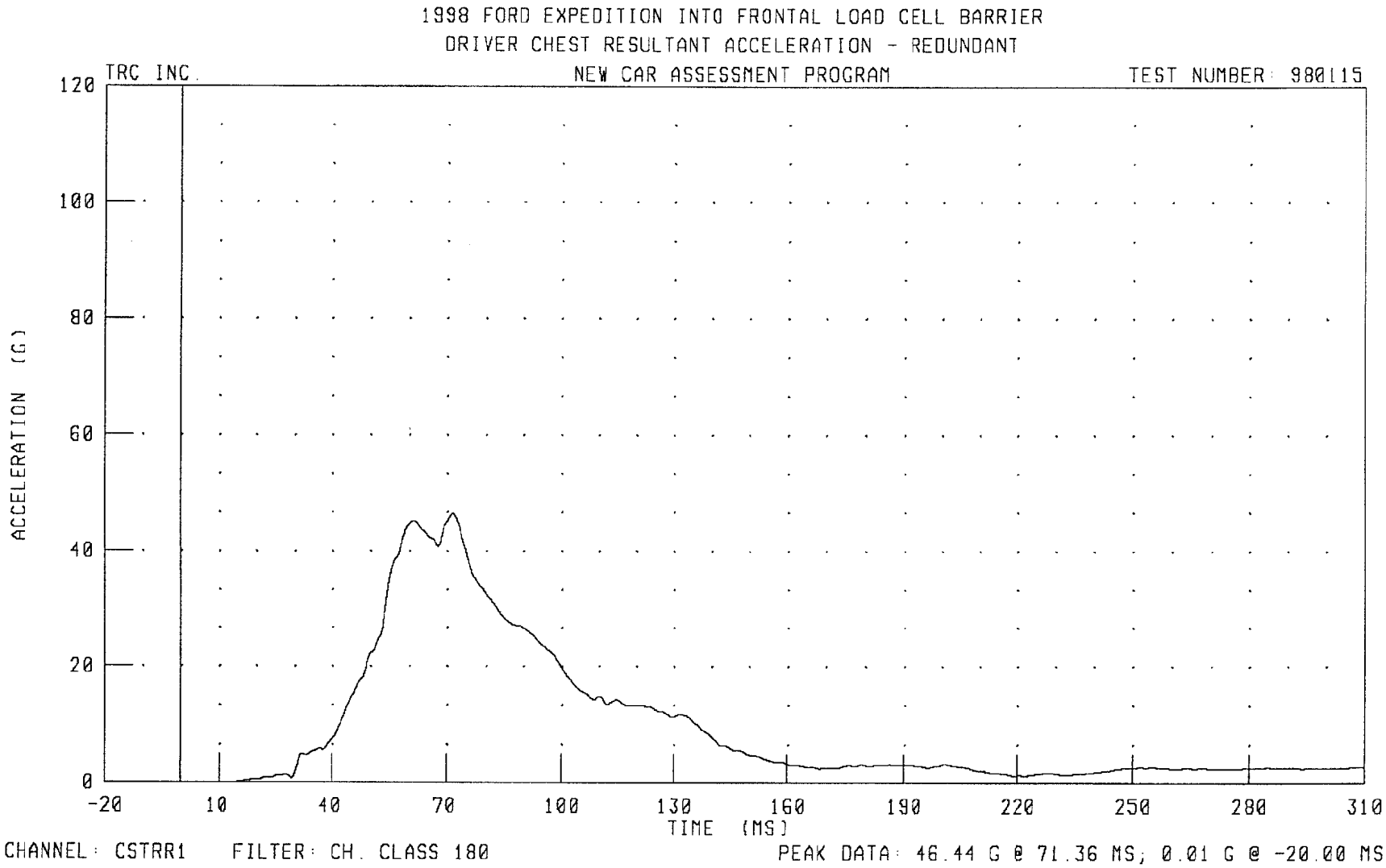
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD RESULTANT ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
120
100
80
60
40
20
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDRR1
FILTER: CH. CLASS 1000
PEAK DATA: 59.73 G @ 84.72 MS; 0.09 G @ -19.68 MS

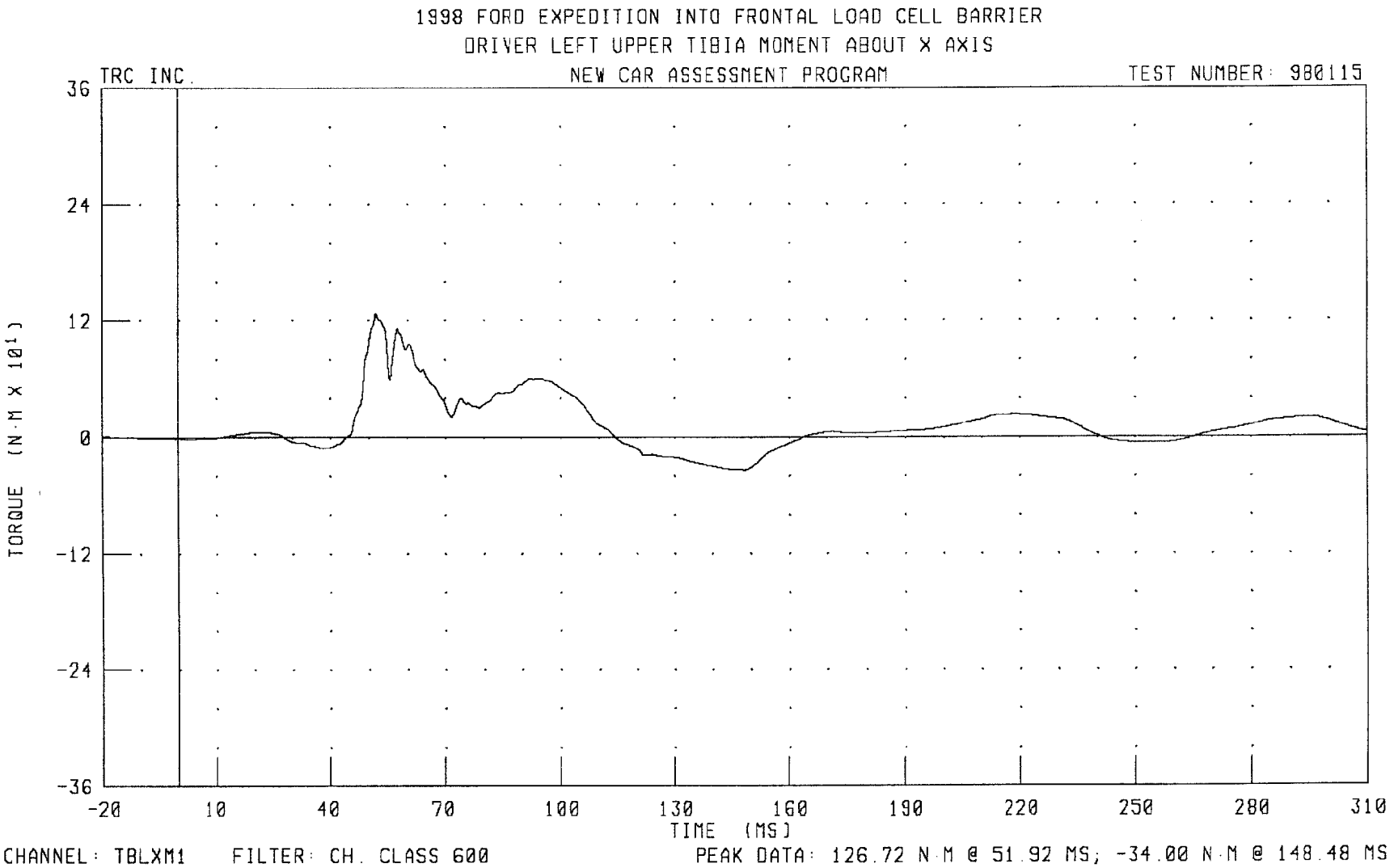

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST X-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTXR1
FILTER: CH. CLASS 180
PEAK DATA: 3.05 G @ 178.96 MS; -45.04 G @ 71.52 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTYR1
FILTER: CH. CLASS 180
PEAK DATA: 5.35 G @ 60.16 MS; -2.74 G @ 122.56 MS

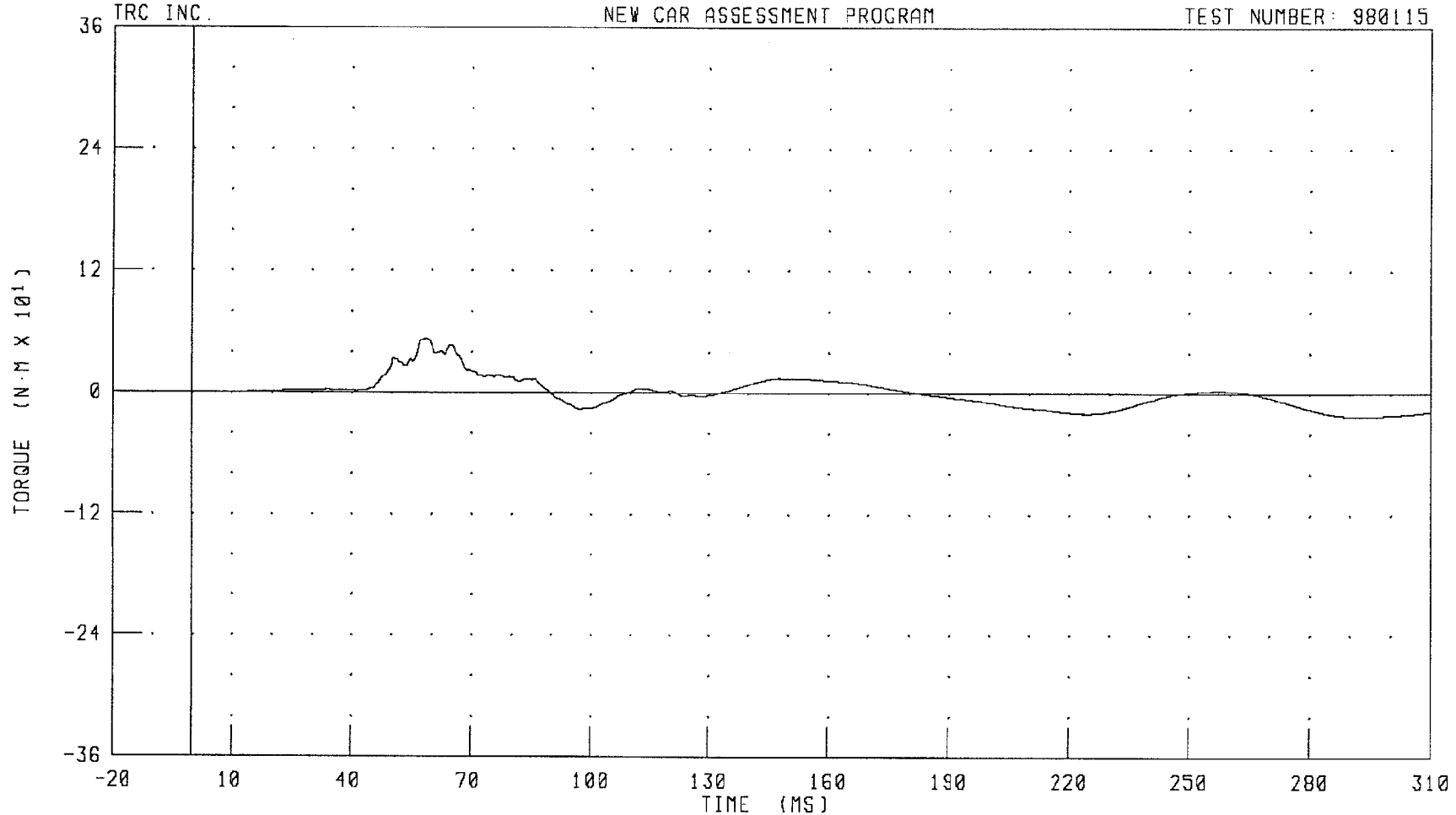

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTZR1
FILTER: CH. CLASS 180
PEAK DATA: 11.75 G @ 123.92 MS; -15.55 G @ 66.08 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST RESULTANT ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
120
100
80
60
40
20
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTRR1
FILTER: CH. CLASS 180
PEAK DATA: 46.44 G @ 71.36 MS; 0.01 G @ -20.00 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT UPPER TIBIA MOMENT ABOUT X AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
TORQUE (N-M X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: TBLXM1
FILTER: CH. CLASS 600
PEAK DATA: 126.72 N-M @ 51.92 MS; -34.00 N-M @ 148.48 MS

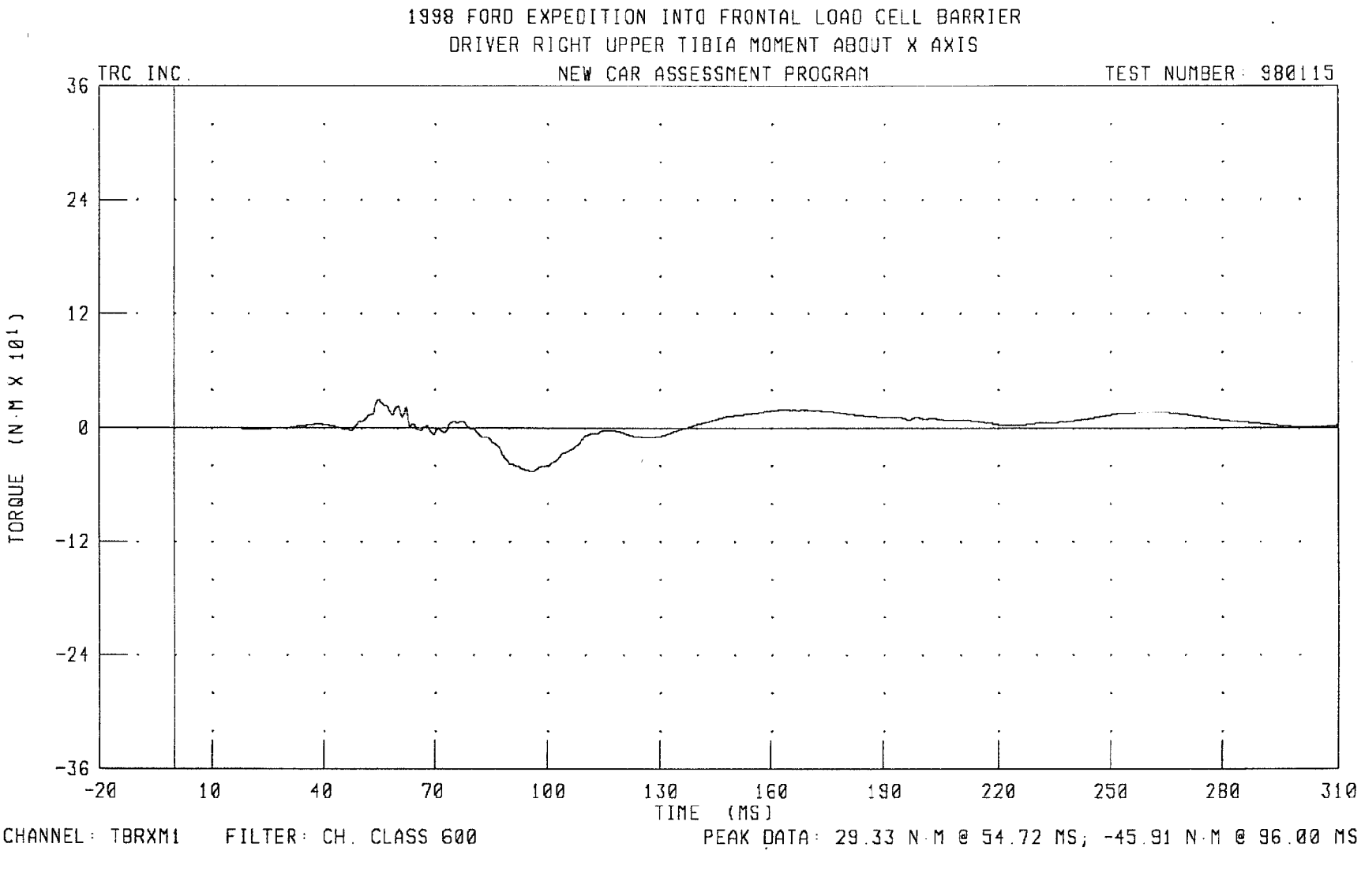
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS



CHANNEL: TBLYM1 FILTER: CH. CLASS 600

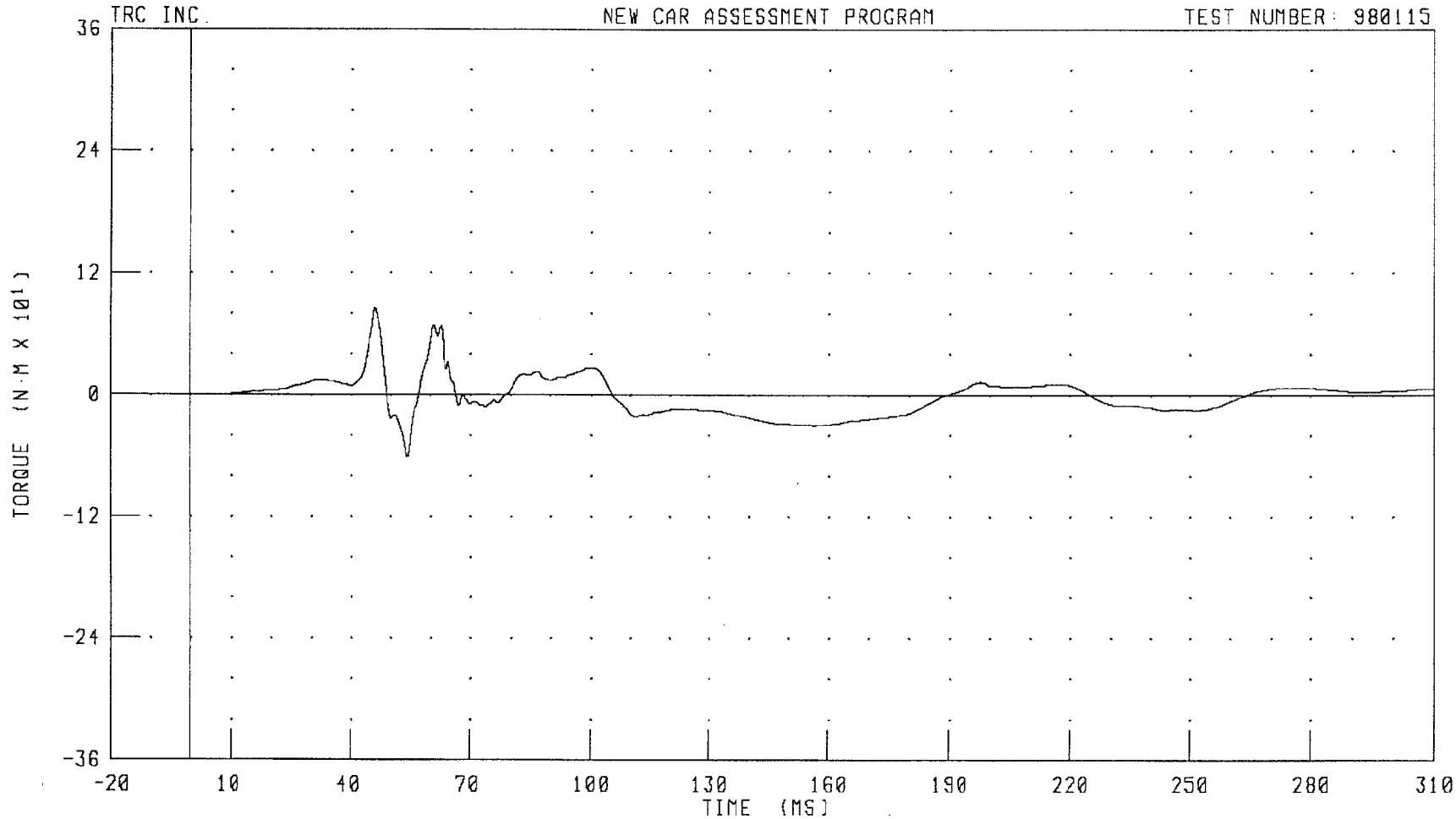
PEAK DATA: 53.37 N-M @ 58.64 MS; -22.65 N-M @ 291.92 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
TORQUE (N-M X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: TBRXM1
FILTER: CH. CLASS 600
PEAK DATA: 29.33 N-M @ 54.72 MS; -45.91 N-M @ 96.00 MS

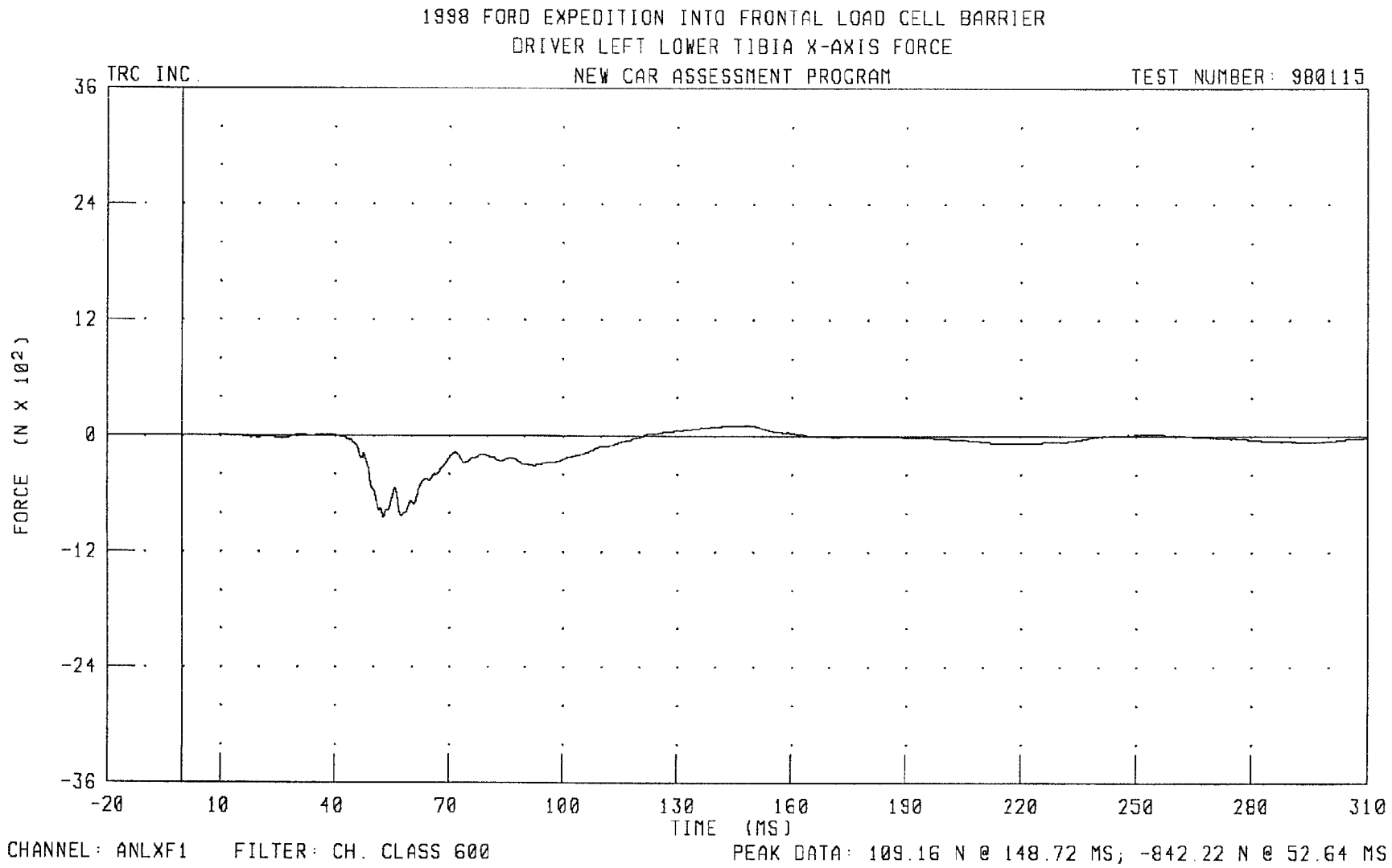
980115

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS

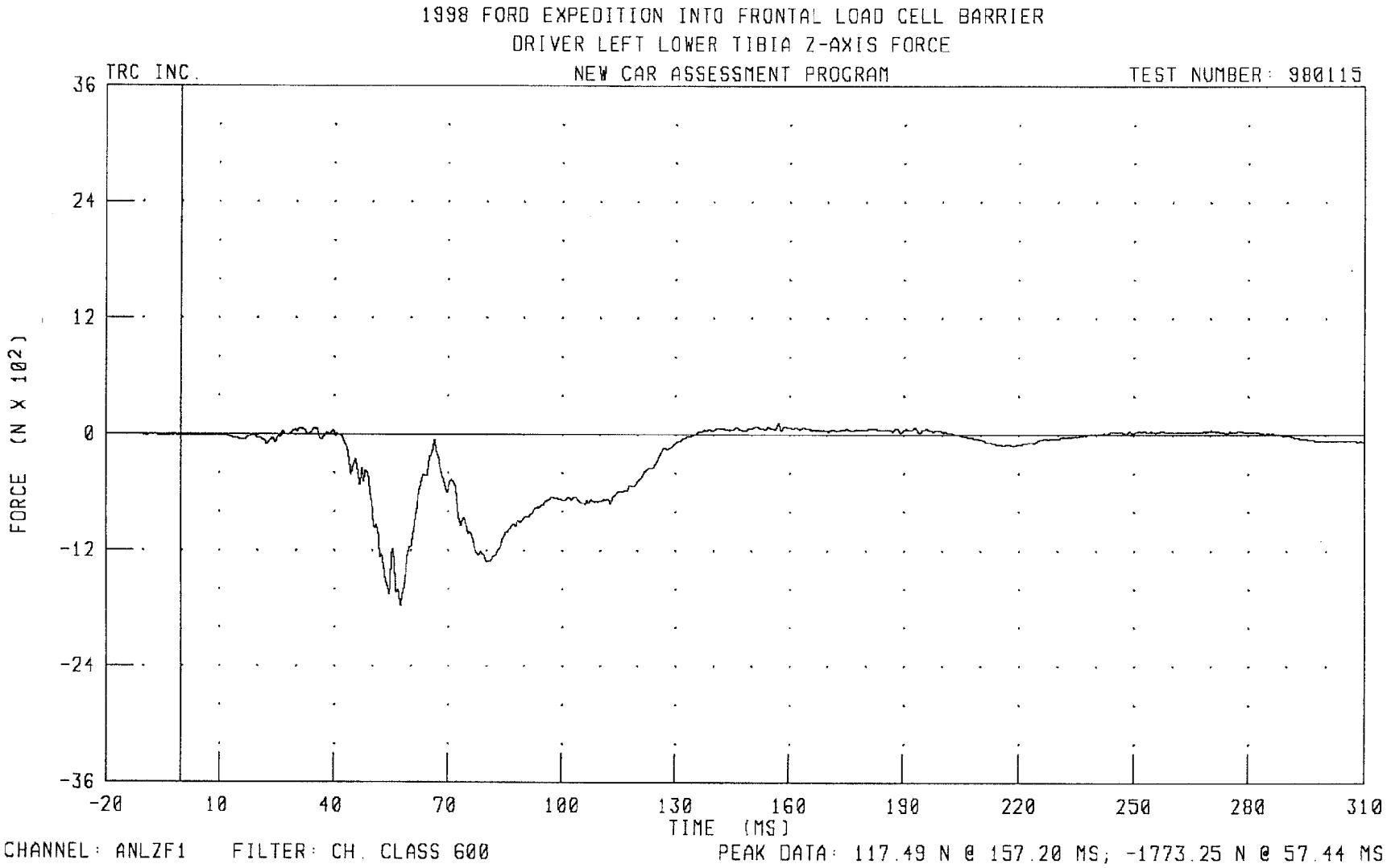


CHANNEL: TBRYM1 FILTER: CH. CLASS 600 PEAK DATA: 85.88 N·M @ 46.00 MS; -61.19 N·M @ 54.24 MS

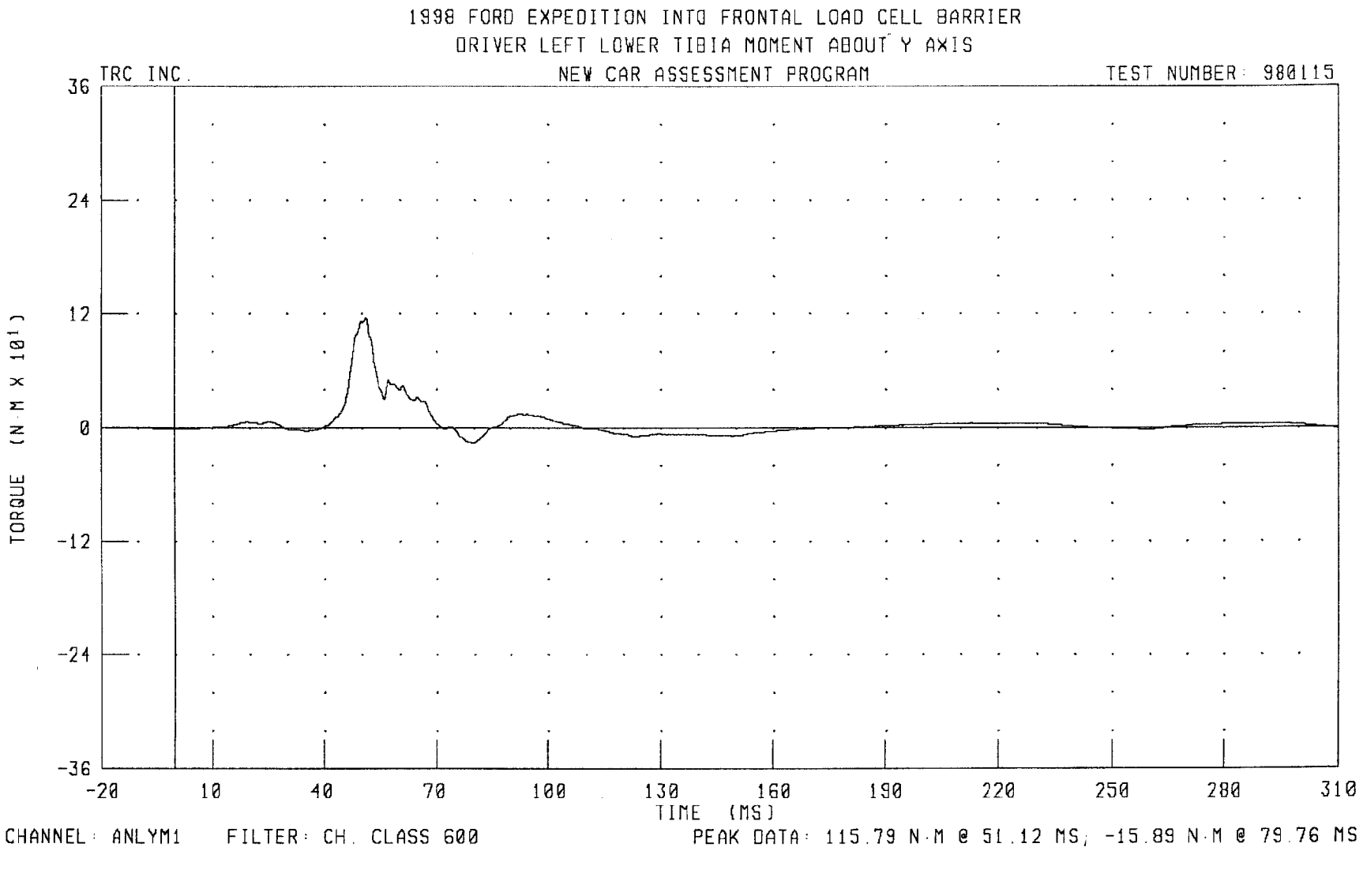
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT LOWER TIBIA X-AXIS FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANLXF1
FILTER: CH. CLASS 600
PEAK DATA: 109.16 N @ 148.72 MS; -842.22 N @ 52.64 MS

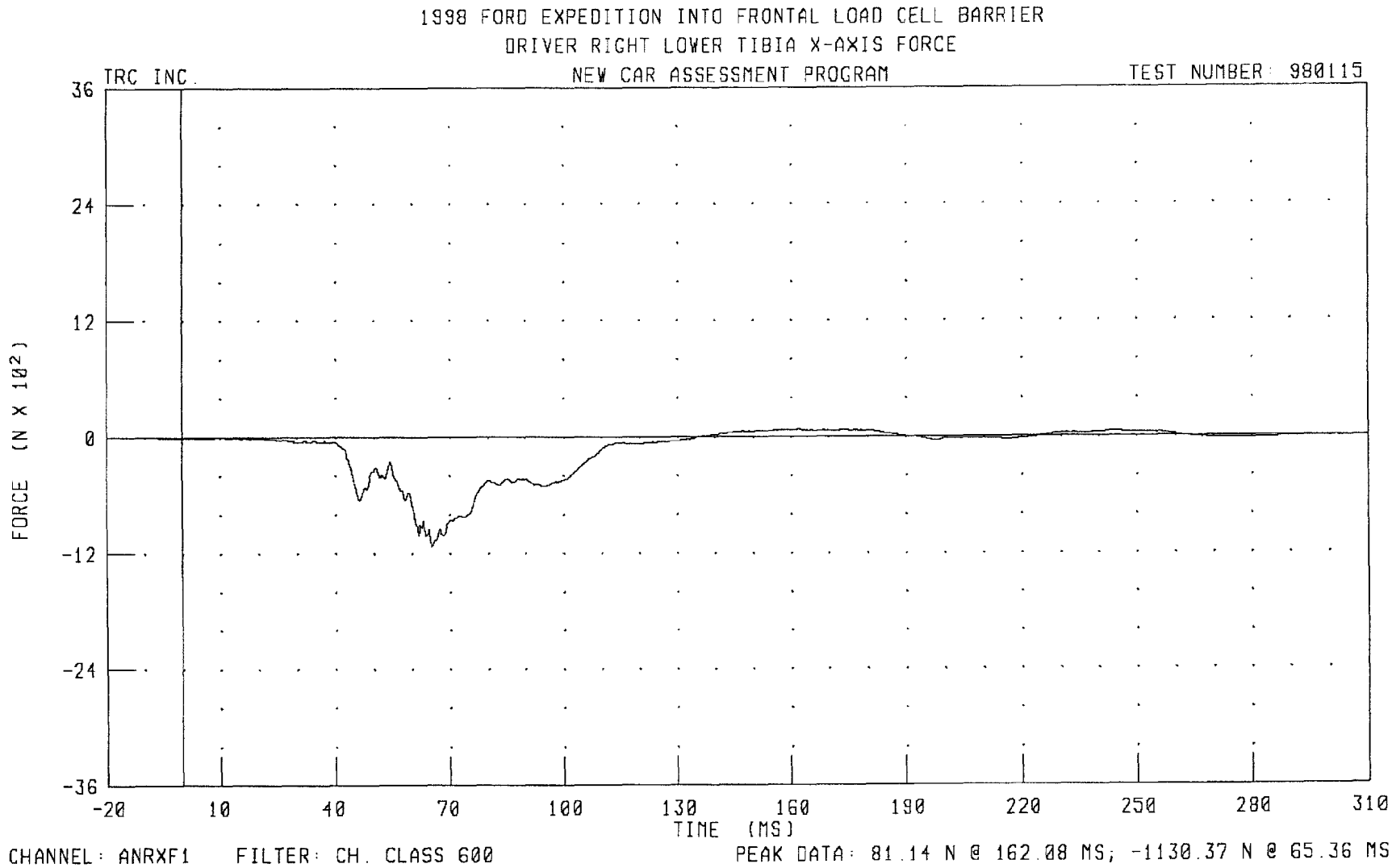
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT LOWER TIBIA Z-AXIS FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
FORCE (N X 10^2)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANLZF1
FILTER: CH. CLASS 600
PEAK DATA: 117.49 N @ 157.20 MS; -1773.25 N @ 57.44 MS

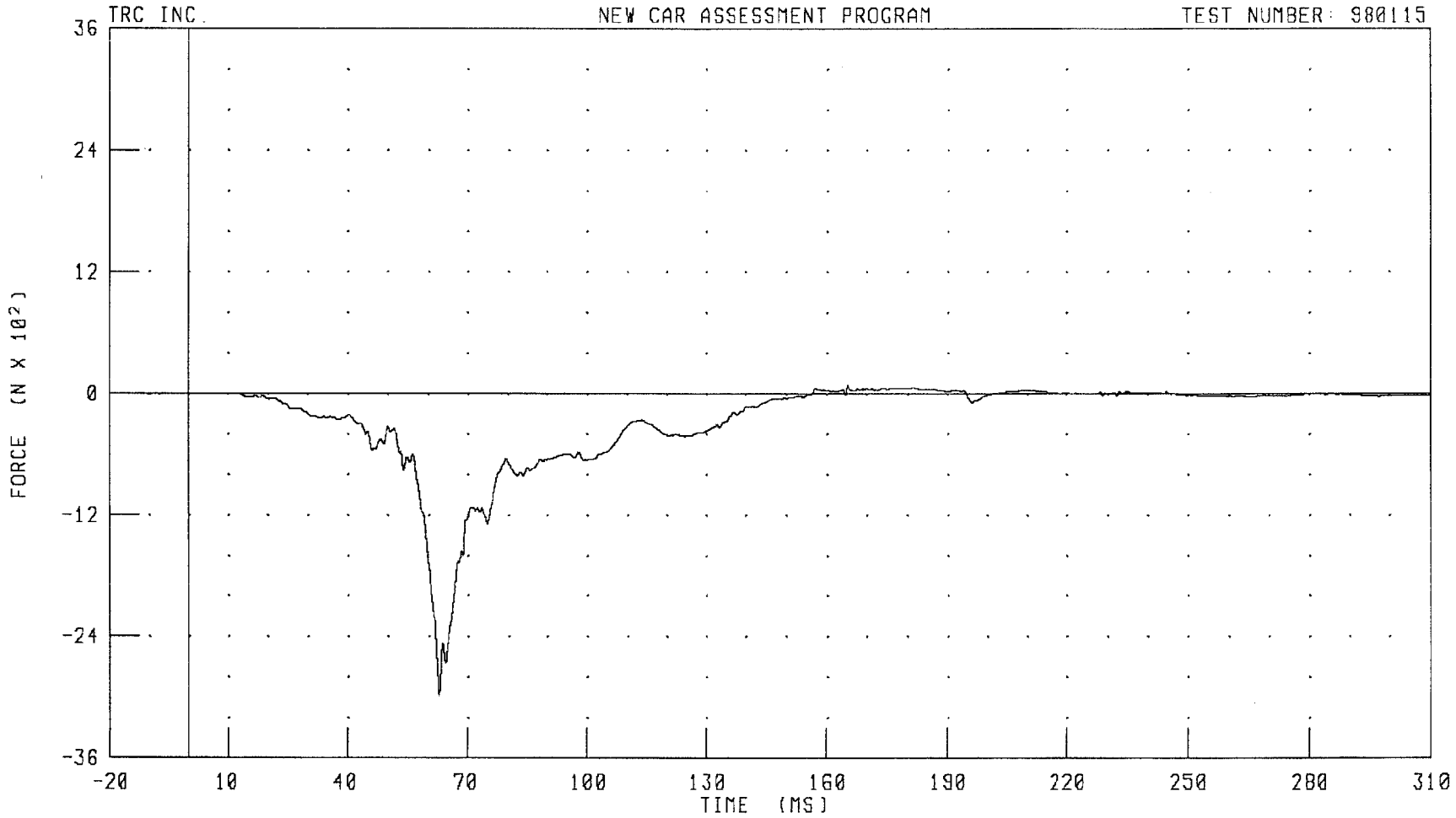
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
TORQUE (N-M X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANLYM1
FILTER: CH. CLASS 600
PEAK DATA: 115.79 N-M @ 51.12 MS, -15.89 N-M @ 79.76 MS

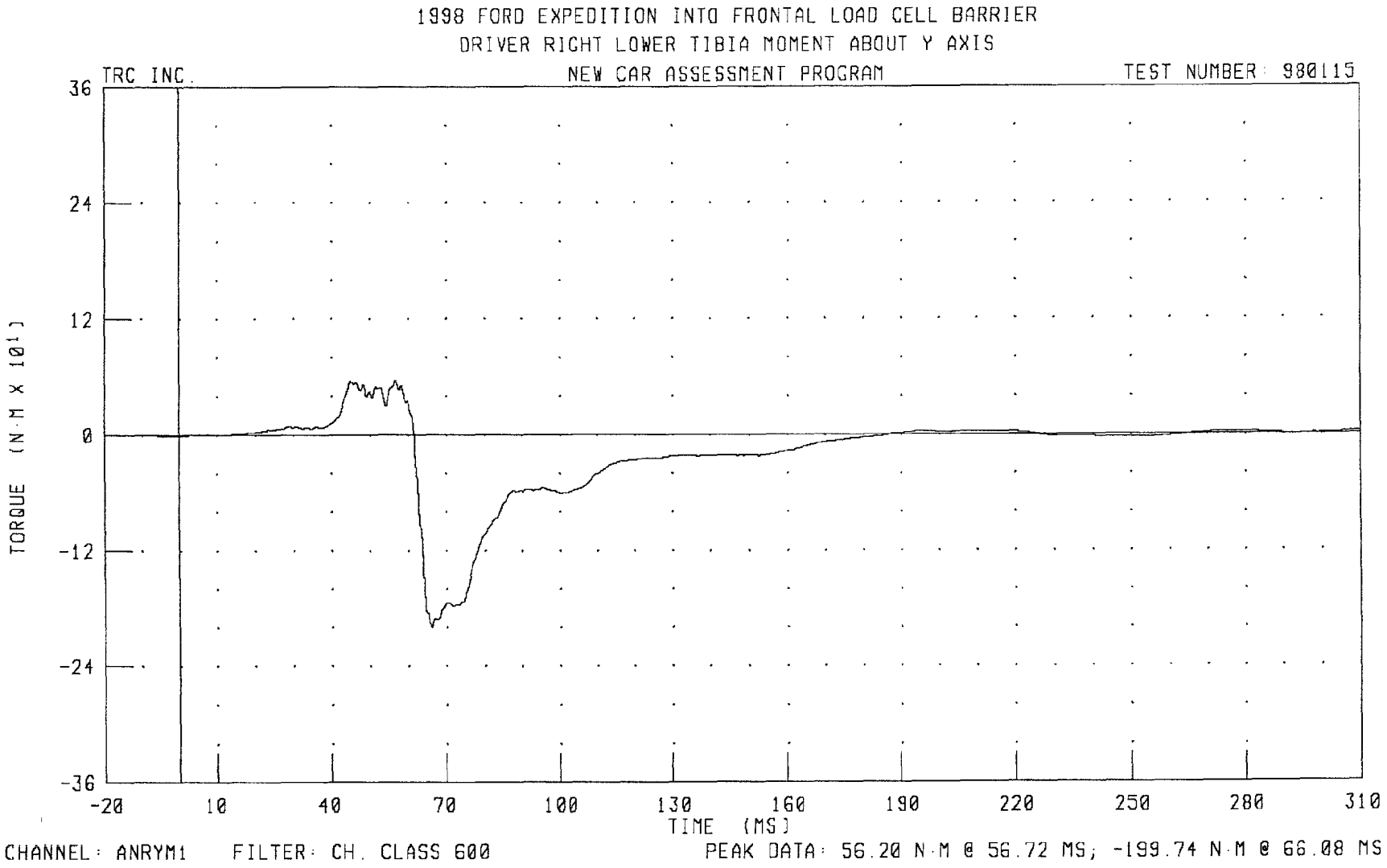
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT LOWER TIBIA X-AXIS FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANRXF1
FILTER: CH. CLASS 600
PEAK DATA: 81.14 N @ 162.08 MS; -1130.37 N @ 65.36 MS

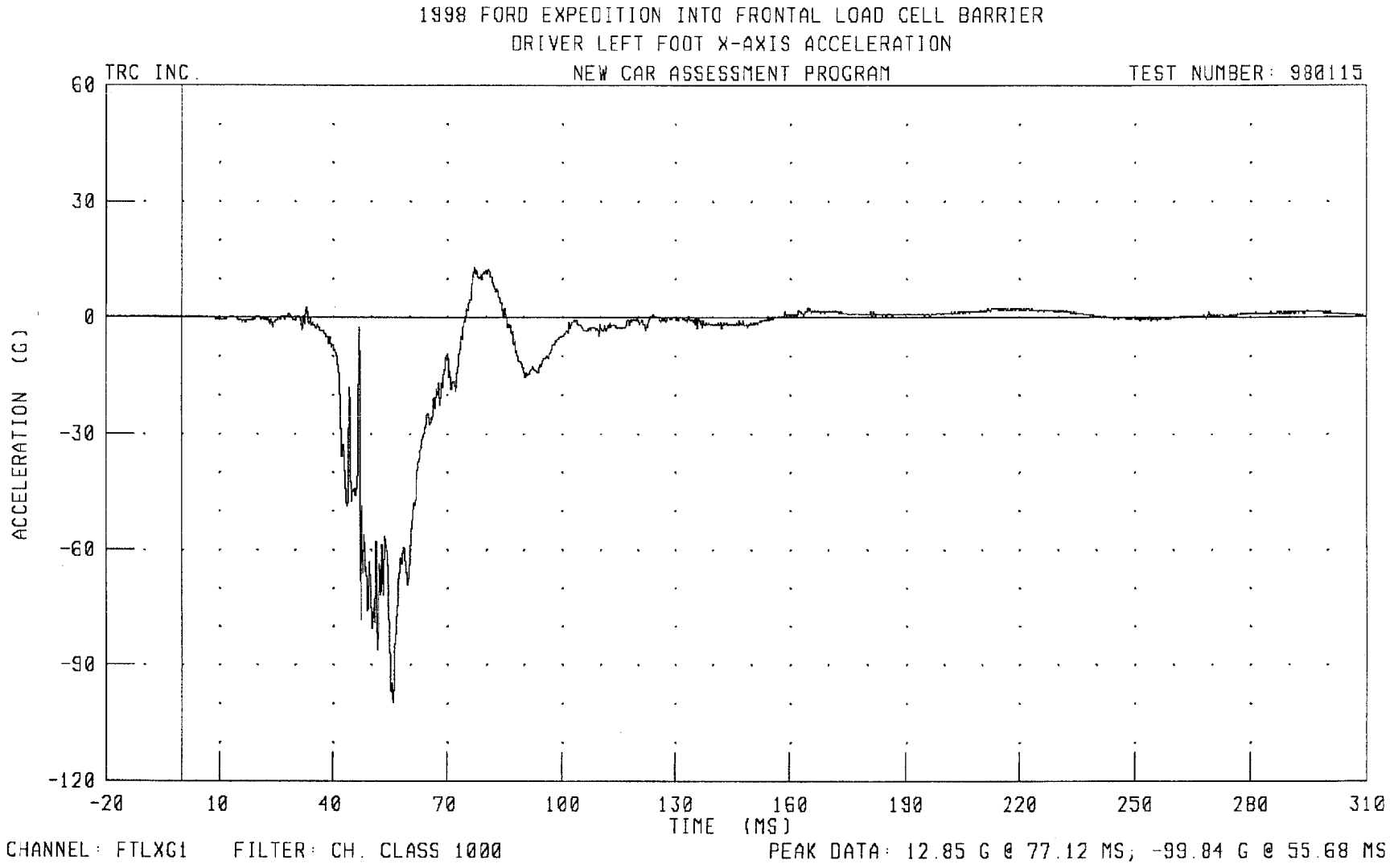
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT LOWER TIBIA Z-AXIS FORCE

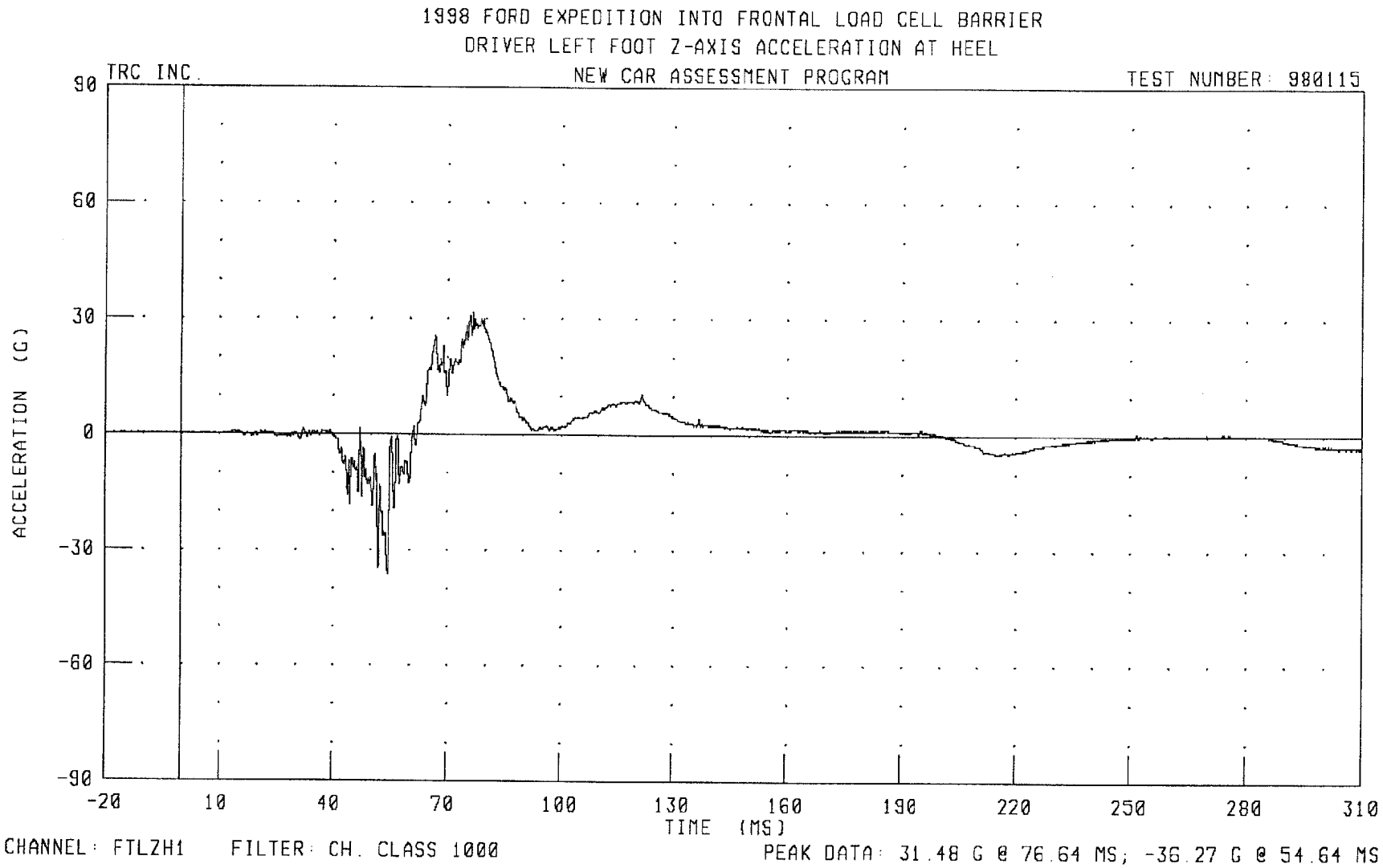


CHANNEL: ANRZF1 FILTER: CH. CLASS 600 PEAK DATA: 83.45 N @ 165.36 MS, -2988.96 N @ 62.80 MS

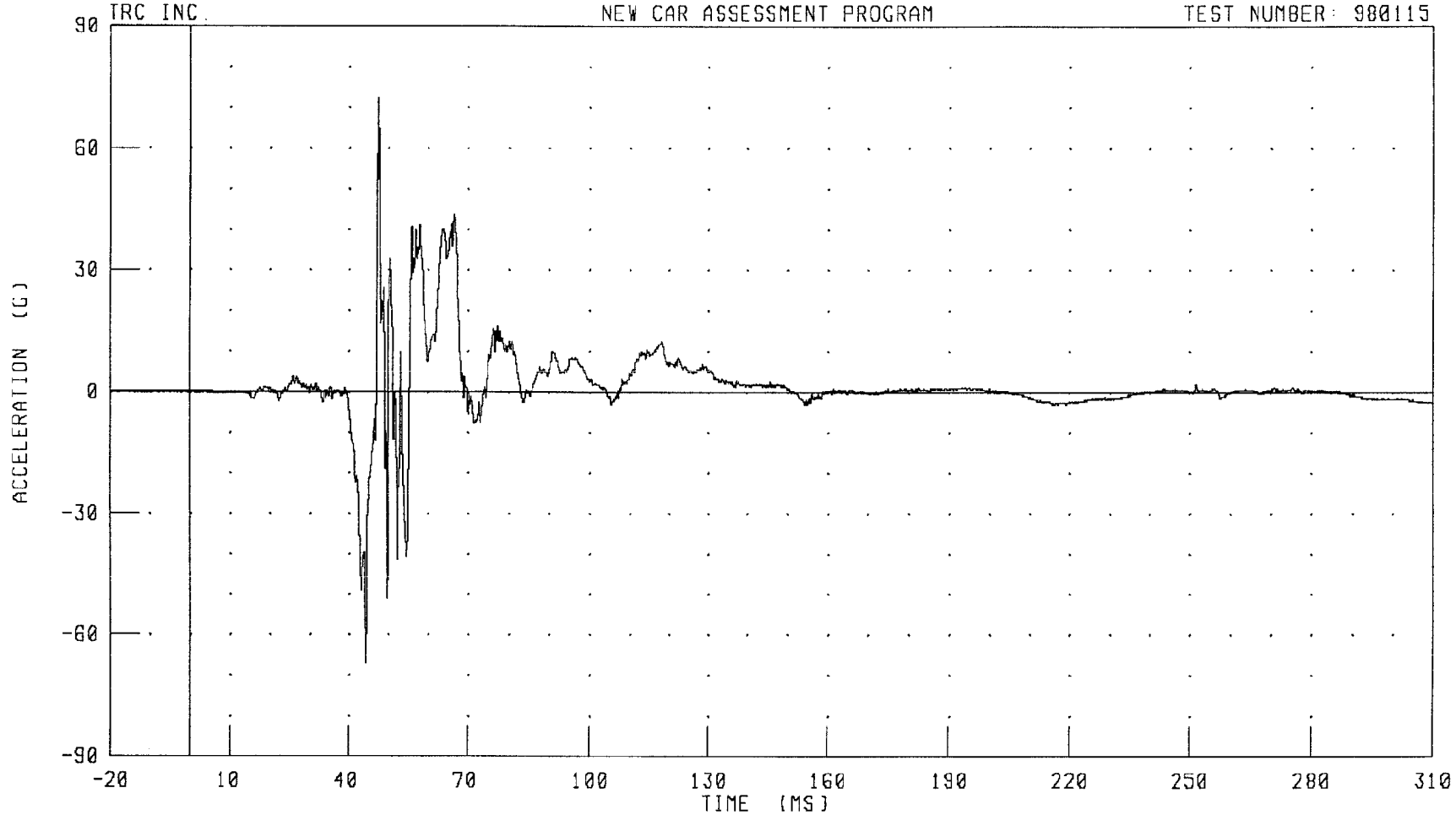

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
TORQUE (N-M X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANRYM1
FILTER: CH. CLASS 600
PEAK DATA: 56.20 N-M @ 56.72 MS; -199.74 N-M @ 66.08 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FOOT X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
30
0
-30
-60
-90
-120
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTLXG1
FILTER: CH. CLASS 1000
PEAK DATA: 12.85 G @ 77.12 MS; -99.84 G @ 55.68 MS

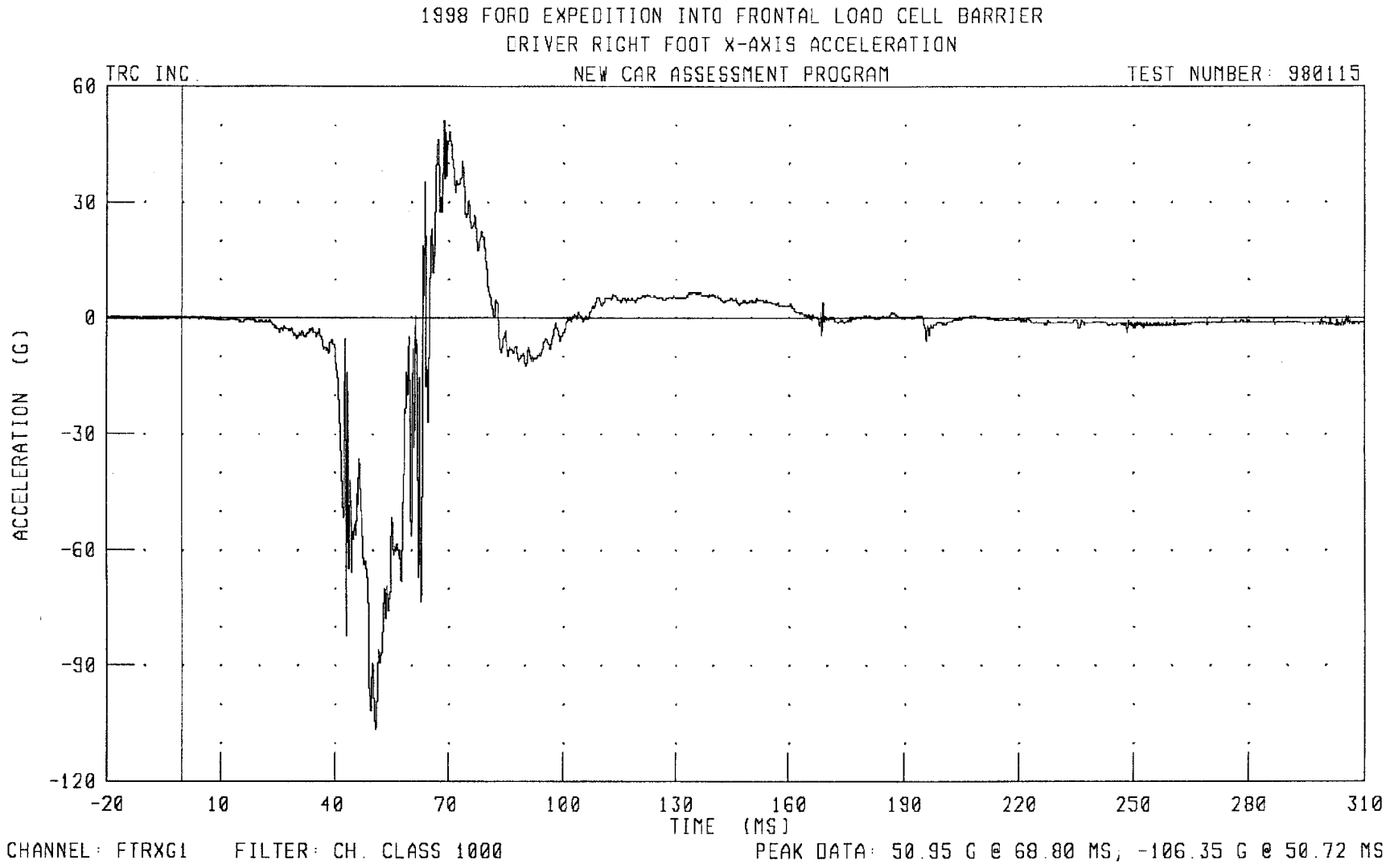

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FOOT Z-AXIS ACCELERATION AT HEEL
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
90
60
30
0
-30
-60
-90
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTLZH1
FILTER: CH. CLASS 1000
PEAK DATA: 31.48 G @ 76.64 MS; -36.27 G @ 54.64 MS

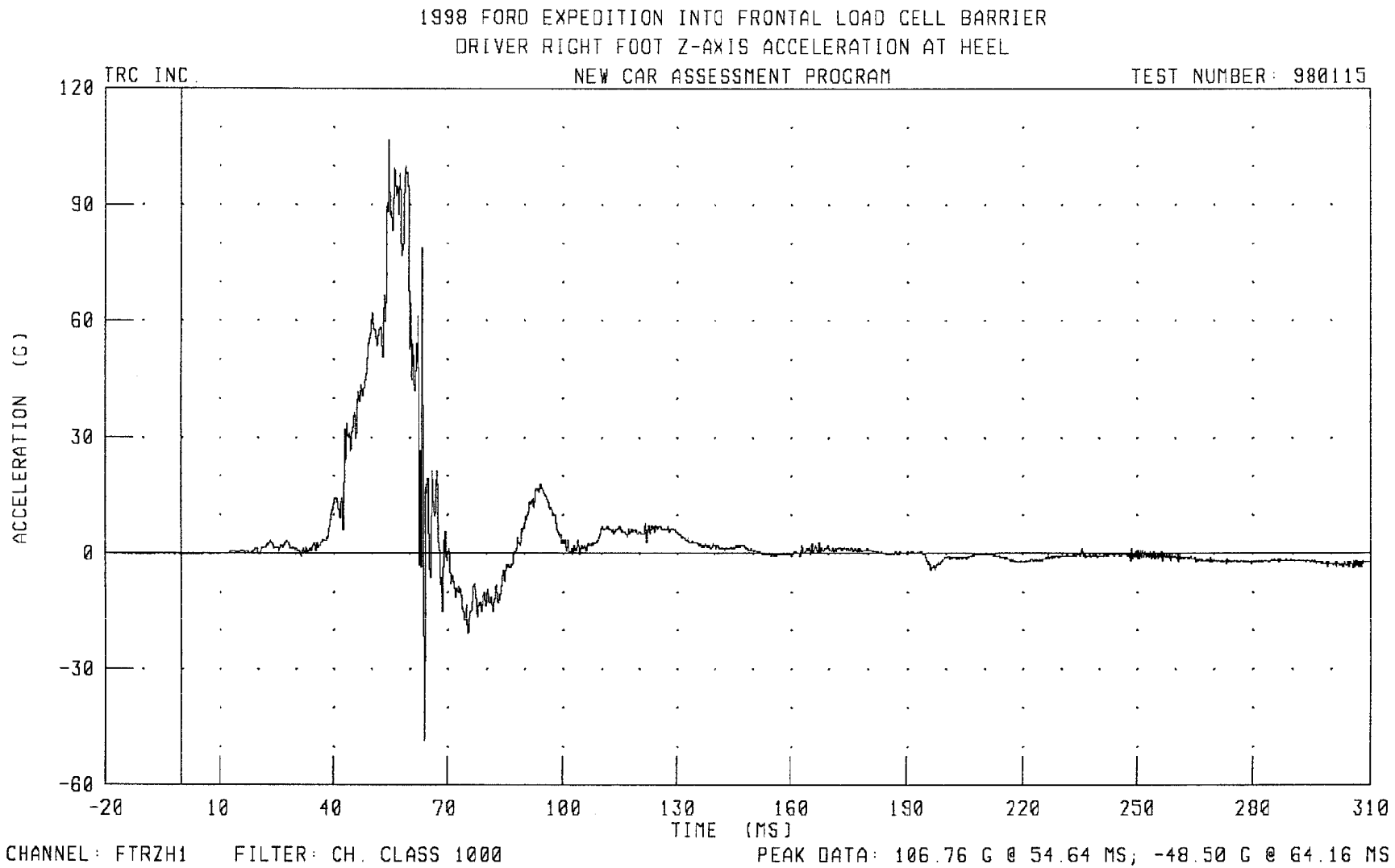
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FOOT Z-AXIS ACCELERATION AT TOE

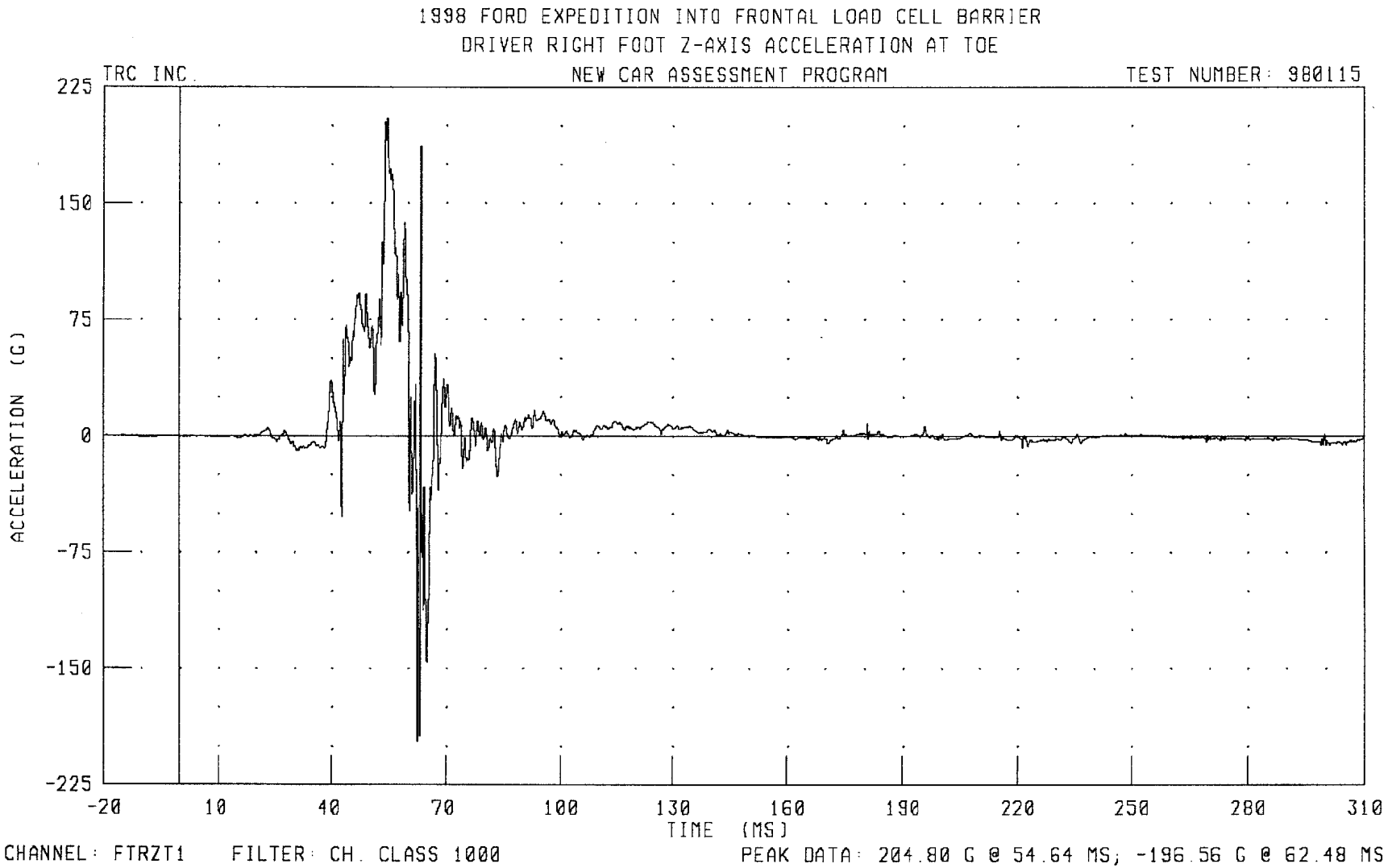


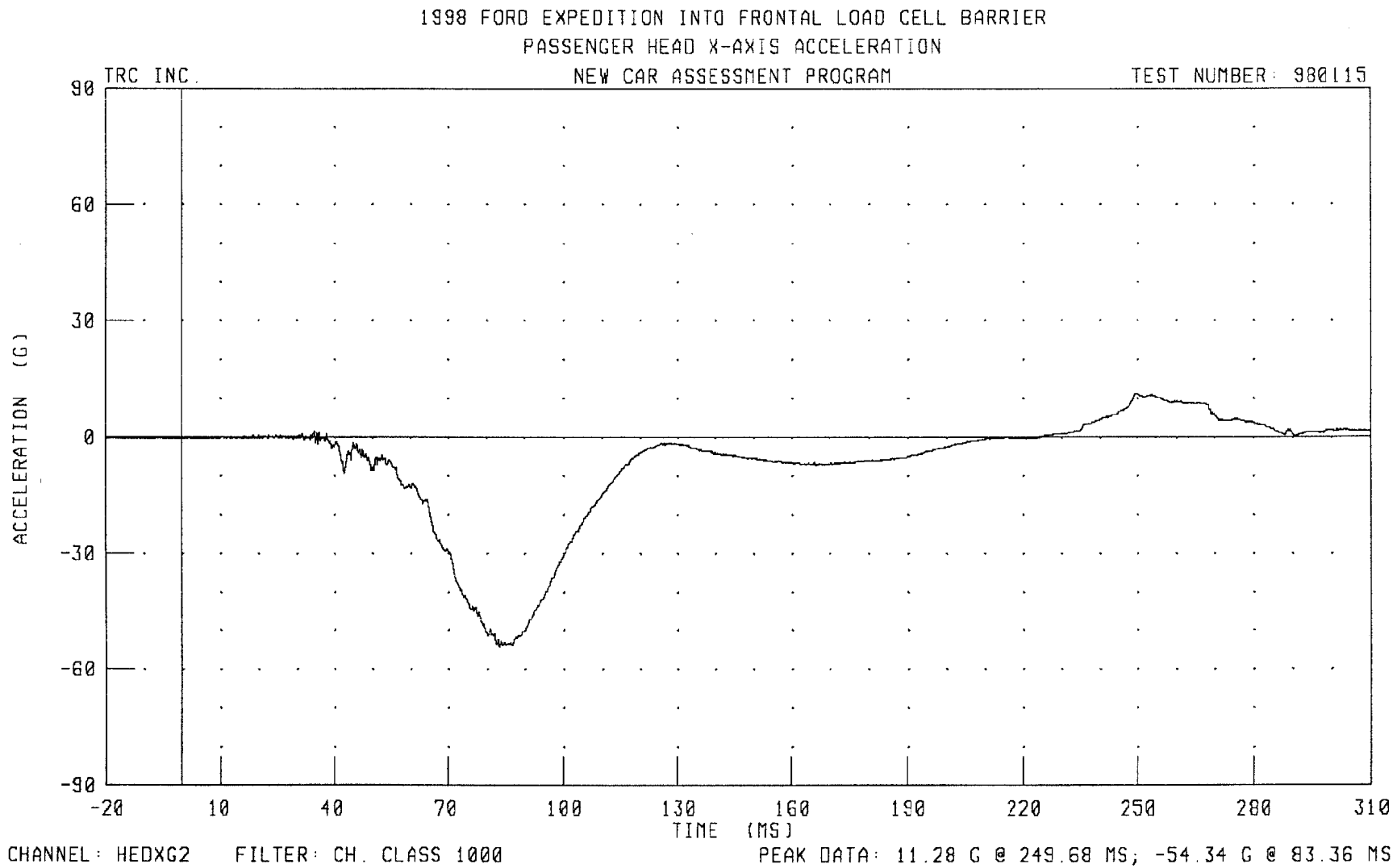
CHANNEL: FTLZT1 FILTER: CH. CLASS 1000 PEAK DATA: 72.51 G @ 47.28 MS; -67.03 G @ 44.32 MS

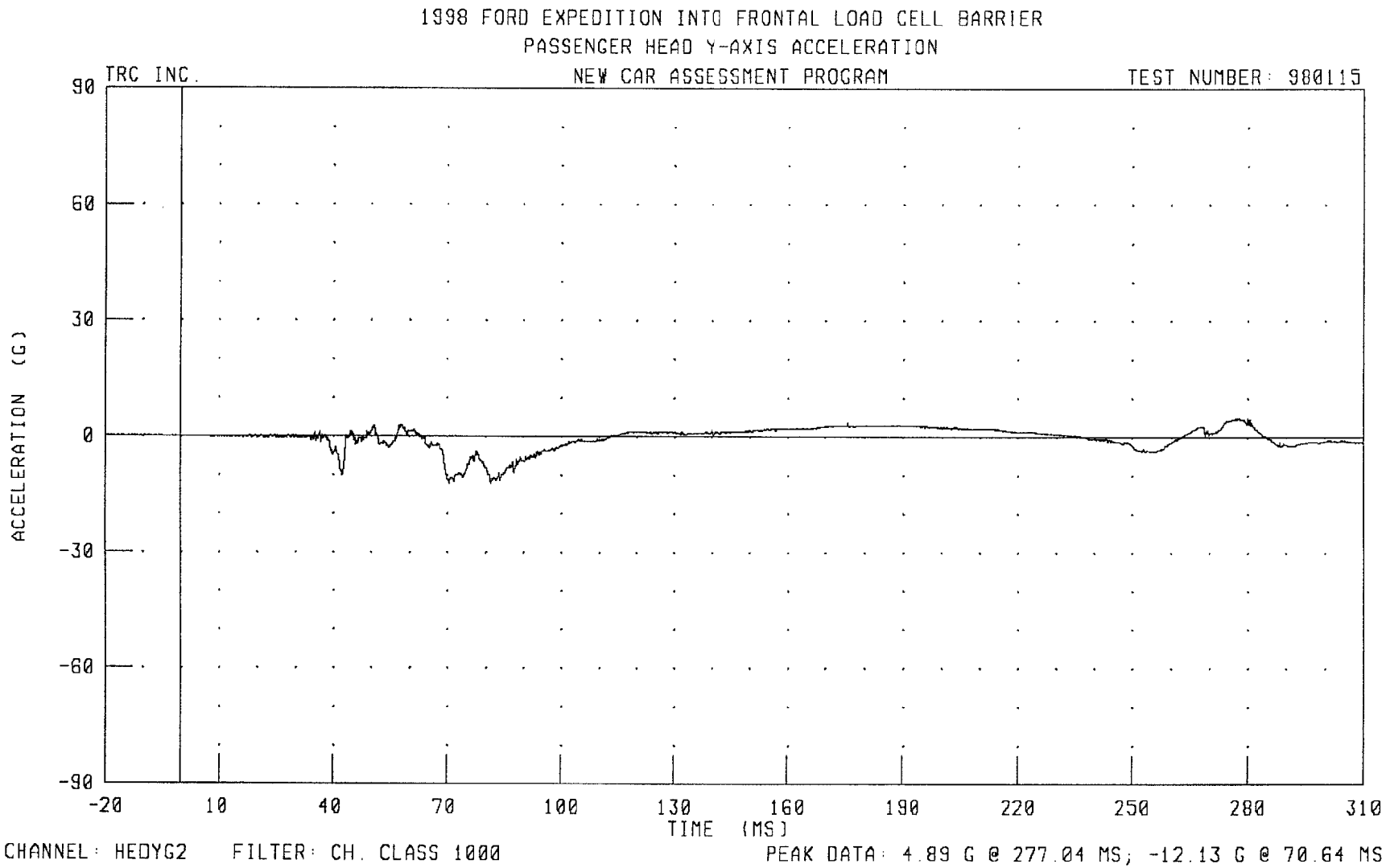
980115

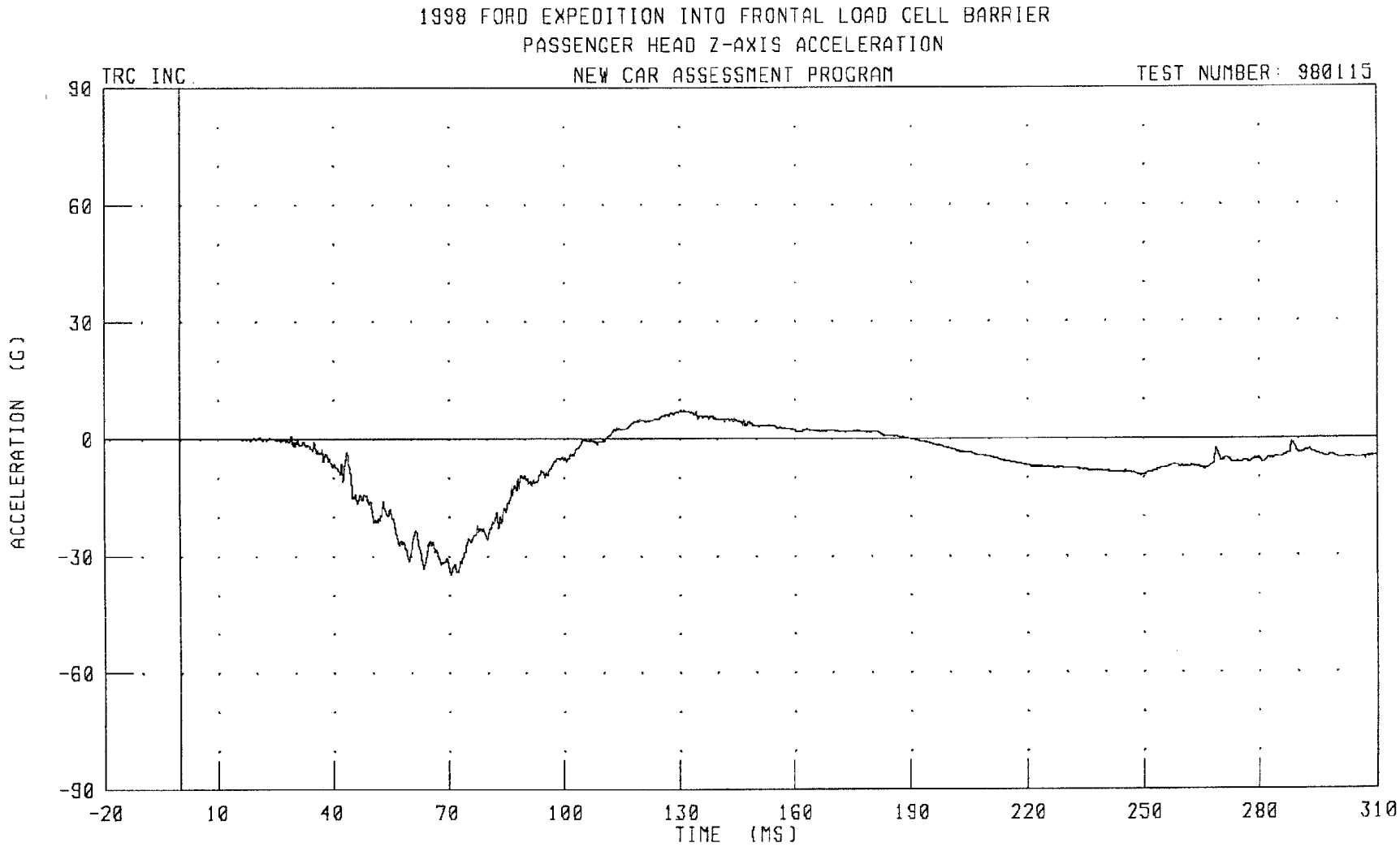

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FOOT X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
30
0
-30
-60
-90
-120
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTRXG1
FILTER: CH. CLASS 1000
PEAK DATA: 50.95 G @ 68.80 MS, -106.35 G @ 50.72 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FOOT Z-AXIS ACCELERATION AT HEEL
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
120
90
60
30
0
-30
-60
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTRZH1
FILTER: CH. CLASS 1000
PEAK DATA: 106.76 G @ 54.64 MS; -48.50 G @ 64.16 MS

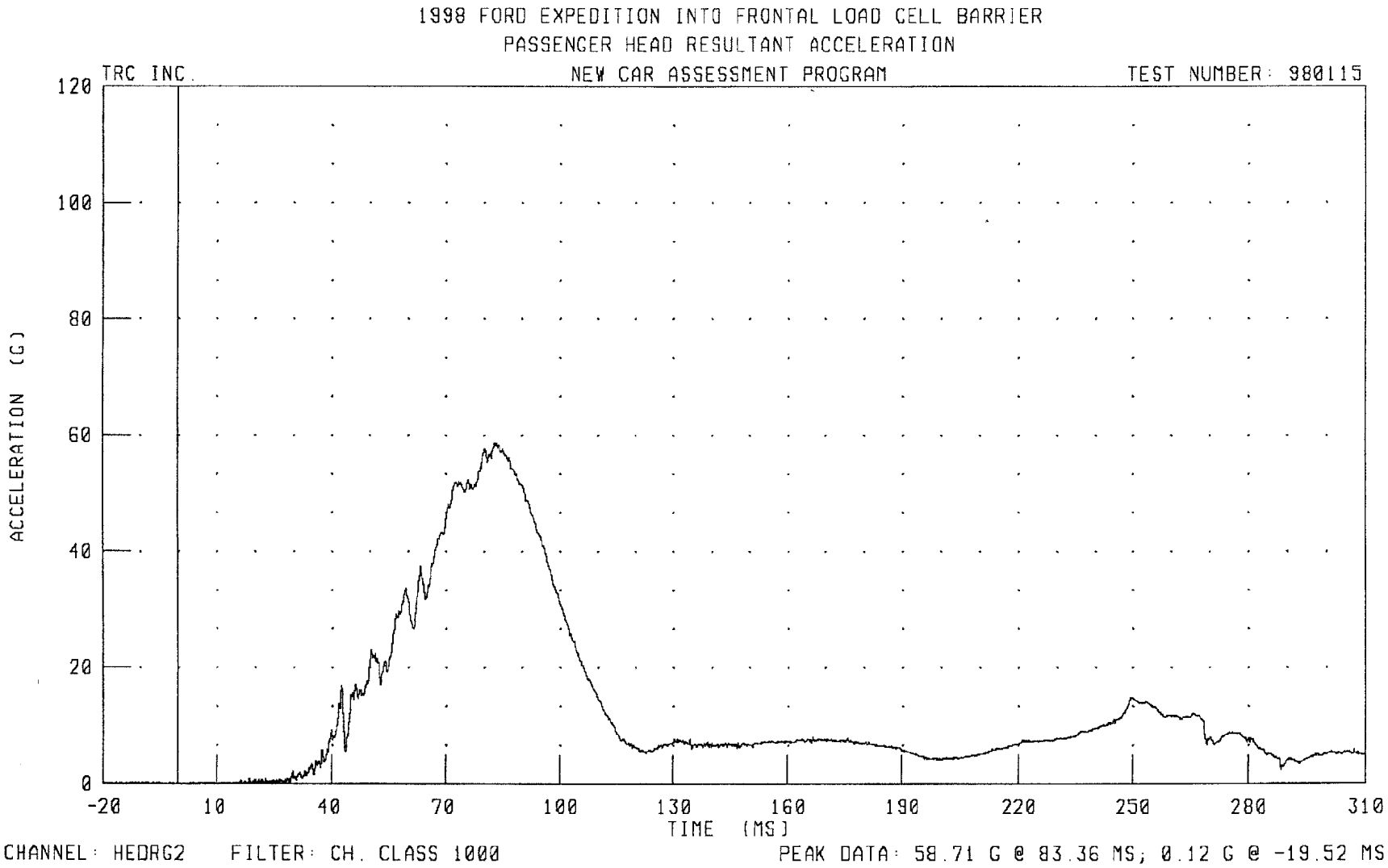

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FOOT Z-AXIS ACCELERATION AT TOE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
225
150
75
0
-75
-150
-225
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTRZT1
FILTER: CH. CLASS 1000
PEAK DATA: 204.80 G @ 54.64 MS; -196.56 G @ 62.48 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
90
60
30
0
-30
-60
-90
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDXG2
FILTER: CH. CLASS 1000
PEAK DATA: 11.28 G @ 249.68 MS; -54.34 G @ 83.36 MS

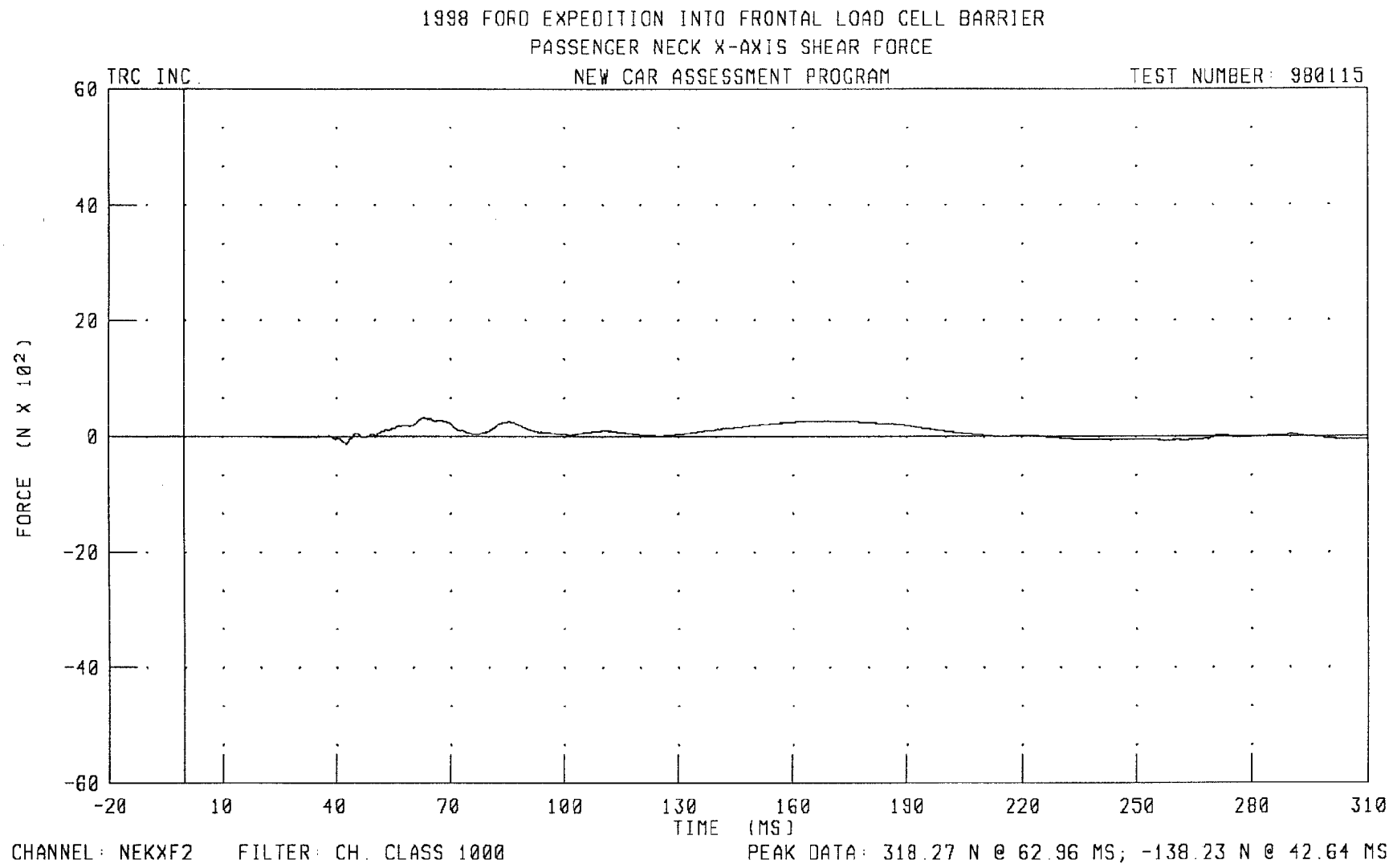

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
90
60
30
0
-30
-60
-90
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDYG2
FILTER: CH. CLASS 1000
PEAK DATA: 4.89 G @ 277.04 MS; -12.13 G @ 70.64 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION
TRC INC
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
90
60
30
0
-30
-60
-90
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDZG2
FILTER: CH. CLASS 1000
PEAK DATA: 7.34 G @ 130.24 MS; -34.89 G @ 70.64 MS

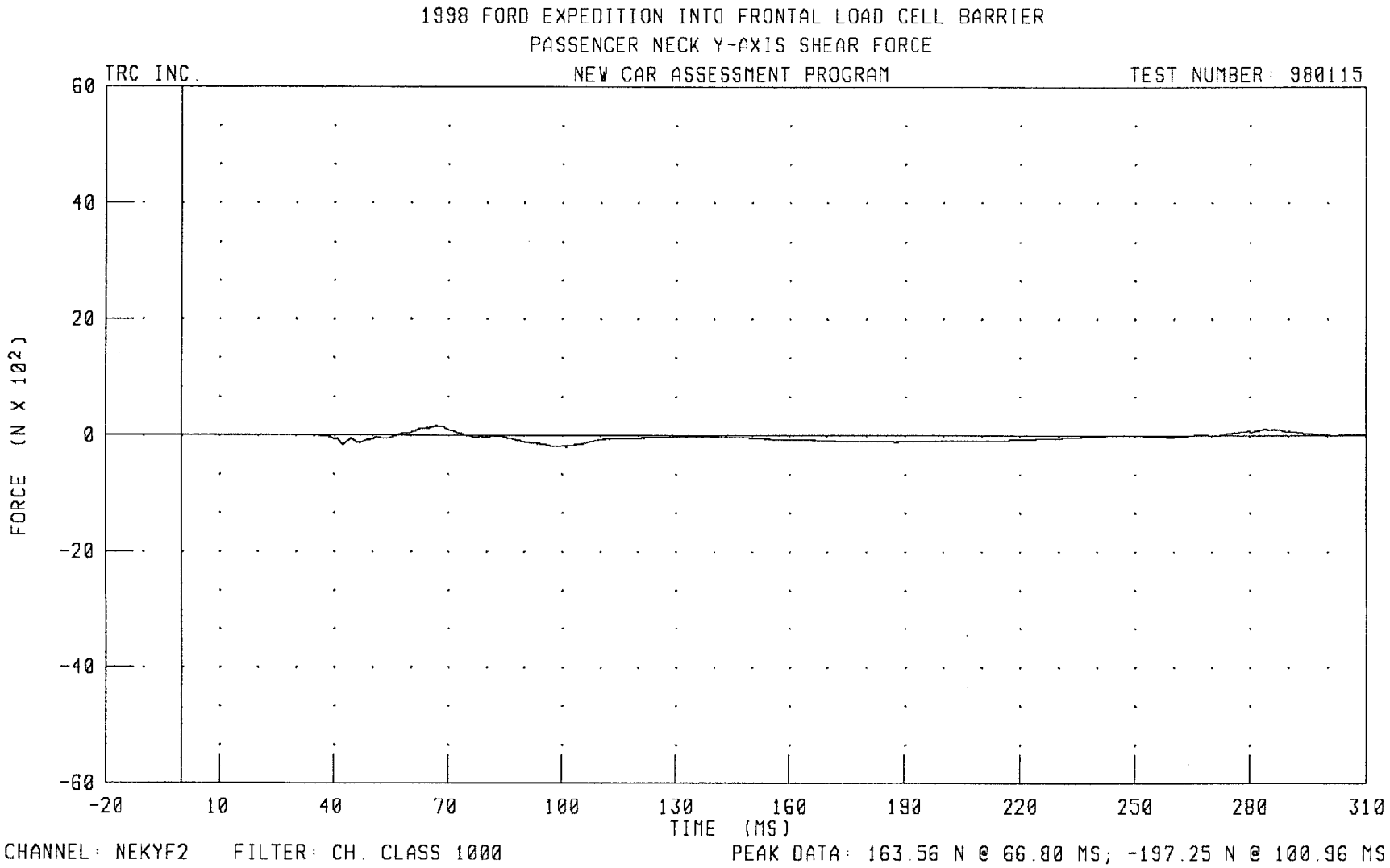
980115

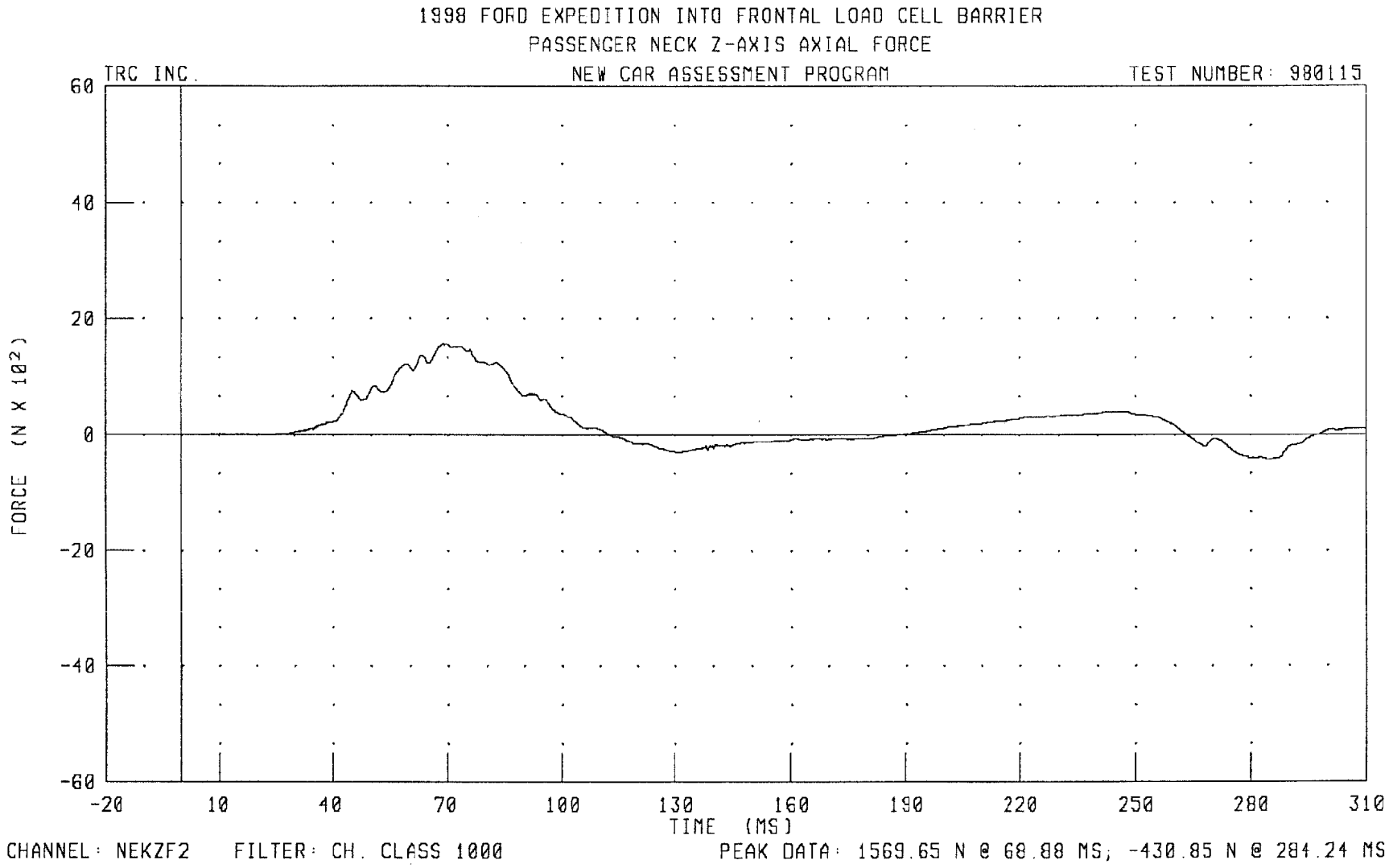

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
120
100
80
60
40
20
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDRG2
FILTER: CH. CLASS 1000
PEAK DATA: 58.71 G @ 83.36 MS; 0.12 G @ -19.52 MS

980115

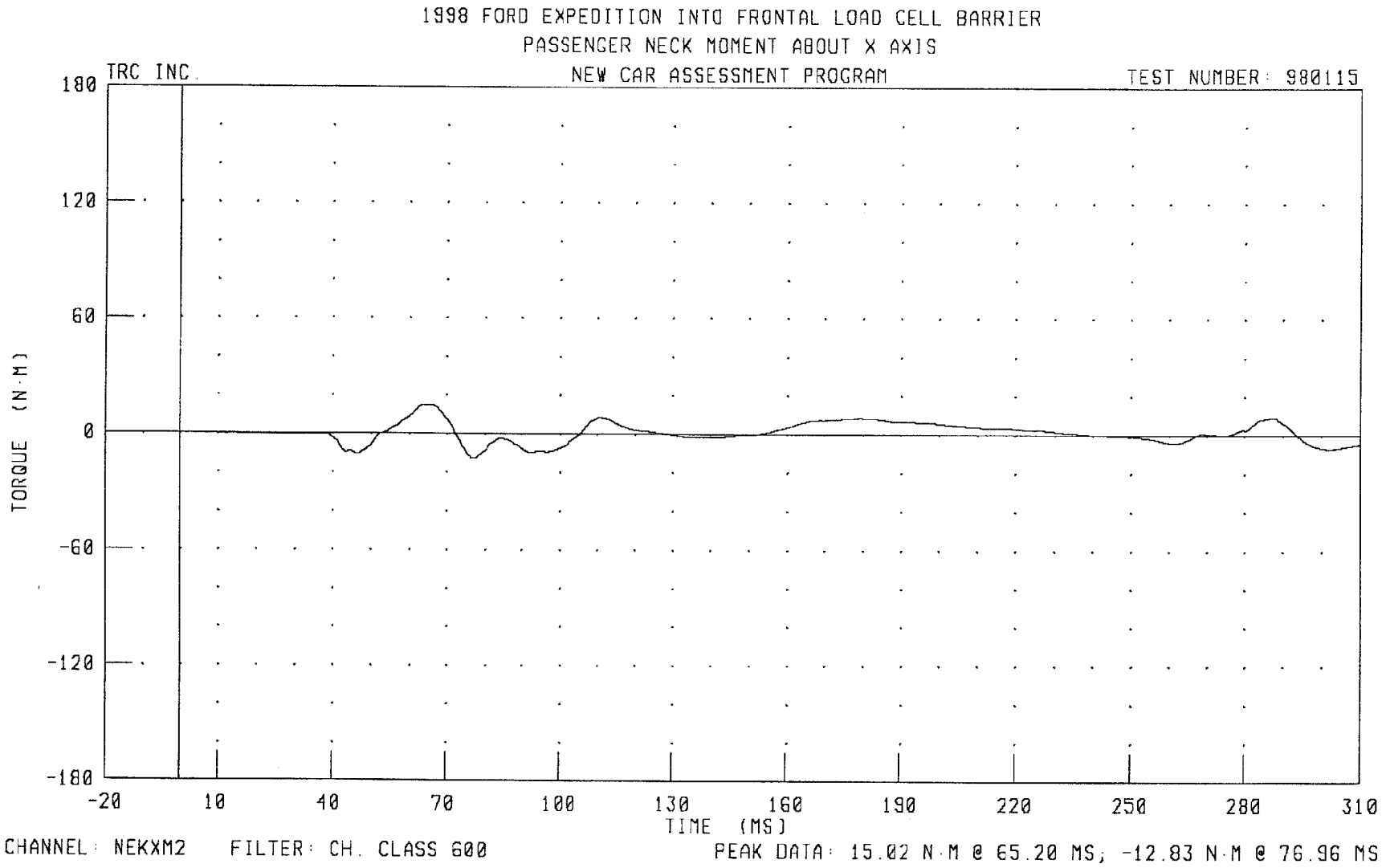

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK X-AXIS SHEAR FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKXF2
FILTER: CH. CLASS 1000
PEAK DATA: 318.27 N @ 62.96 MS; -138.23 N @ 42.64 MS

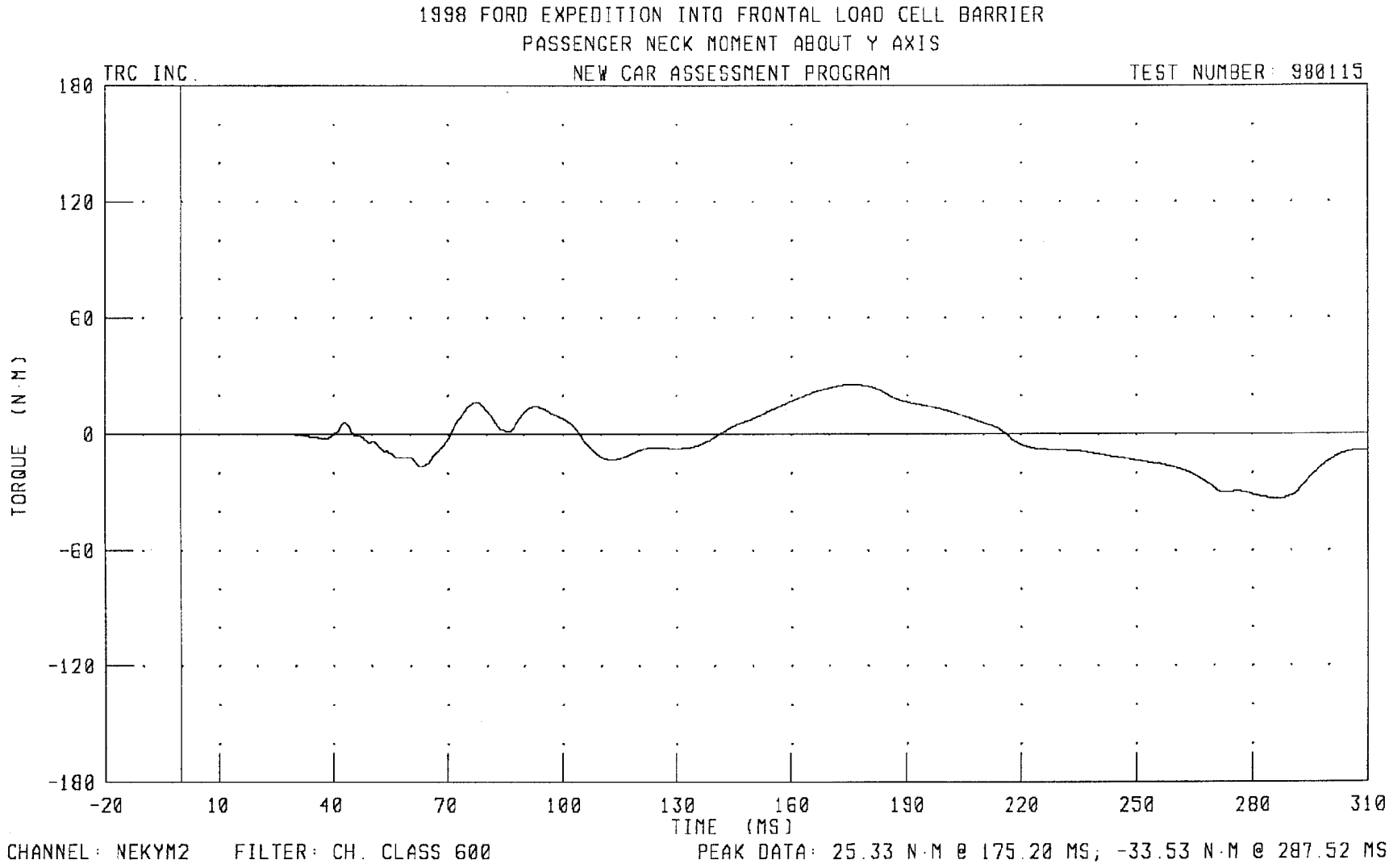
980115

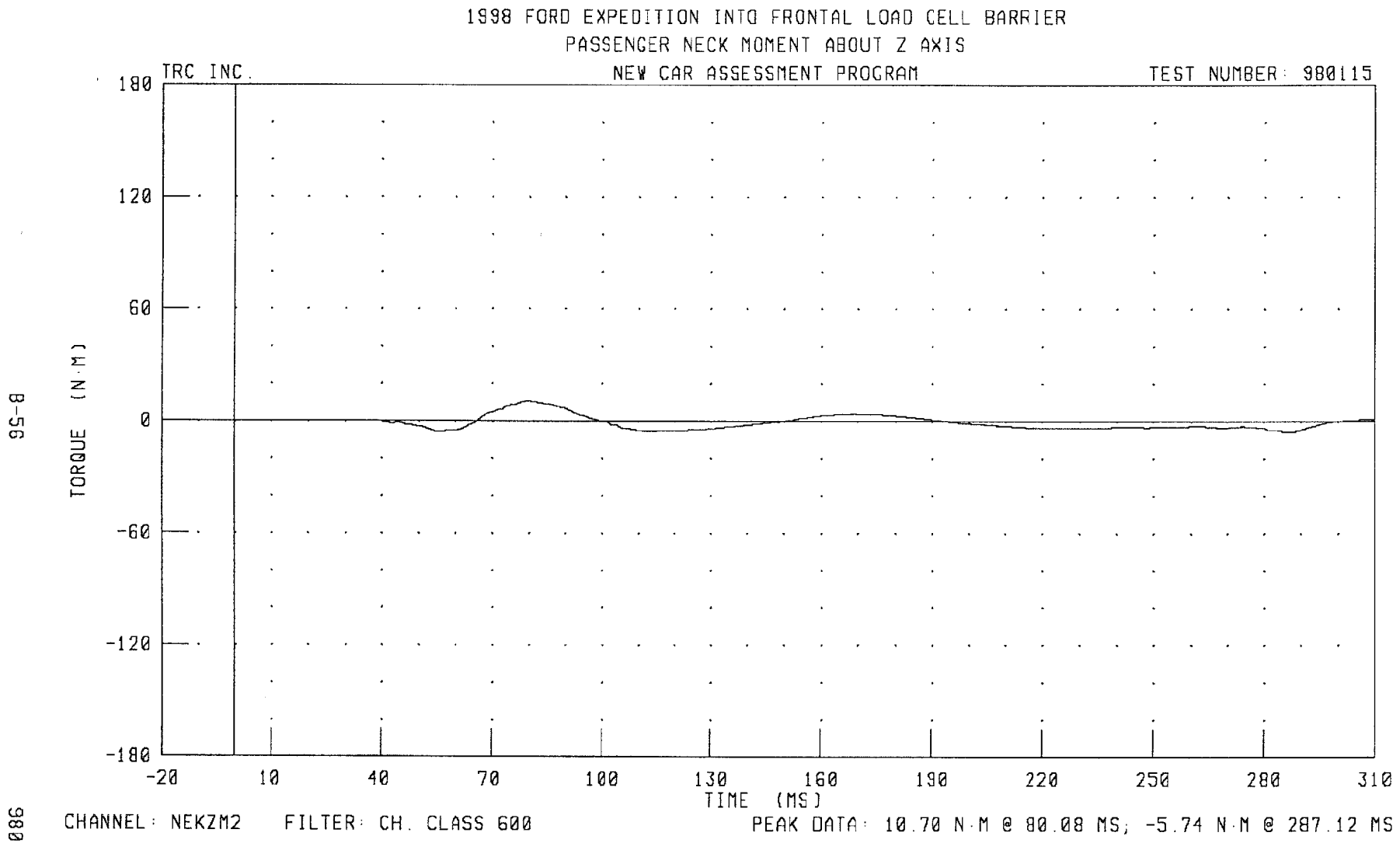

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Y-AXIS SHEAR FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKYF2
FILTER: CH. CLASS 1000
PEAK DATA: 163.56 N @ 66.80 MS; -197.25 N @ 100.96 MS

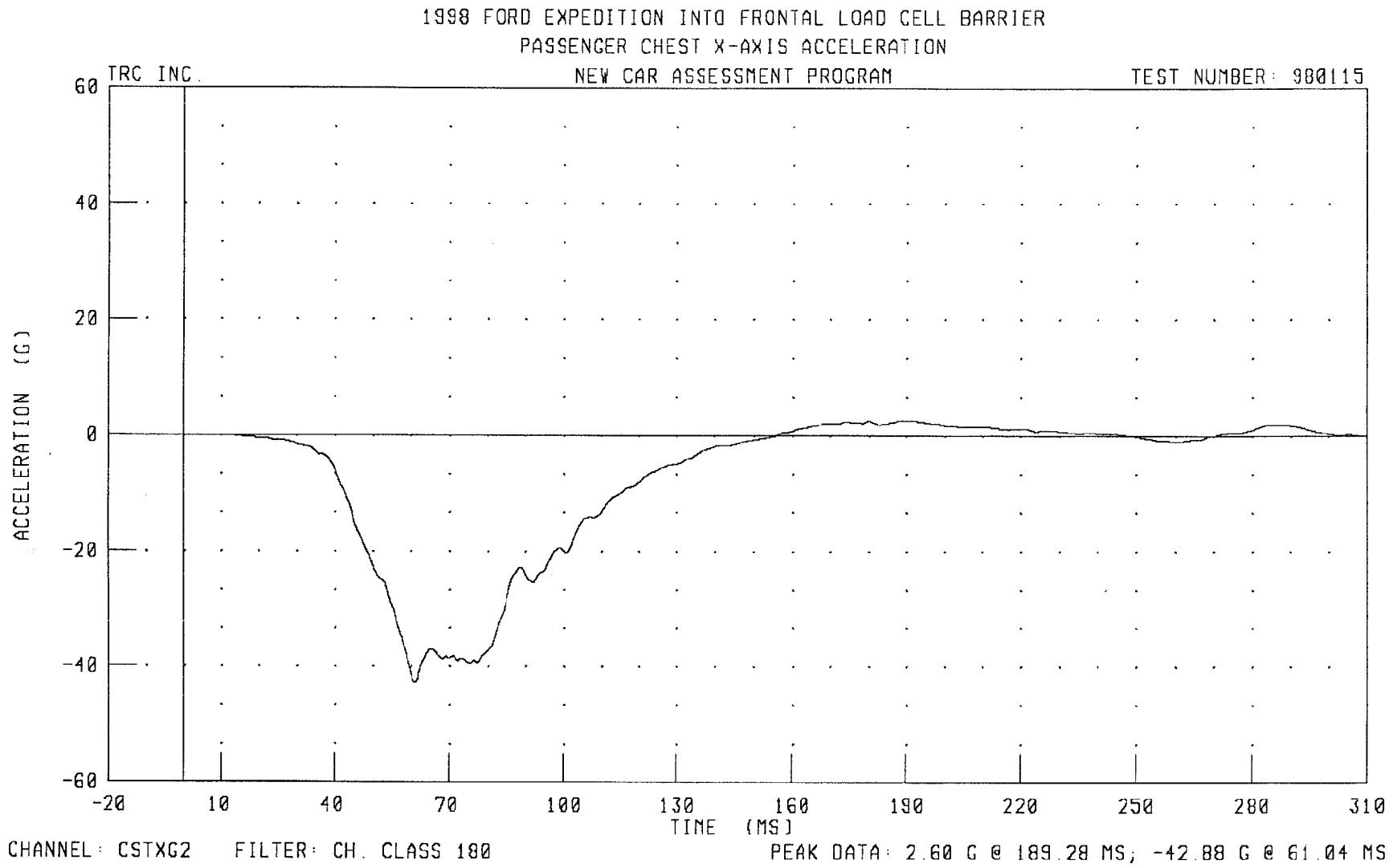

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Z-AXIS AXIAL FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKZF2
FILTER: CH. CLASS 1000
PEAK DATA: 1569.65 N @ 68.88 MS; -430.85 N @ 284.24 MS

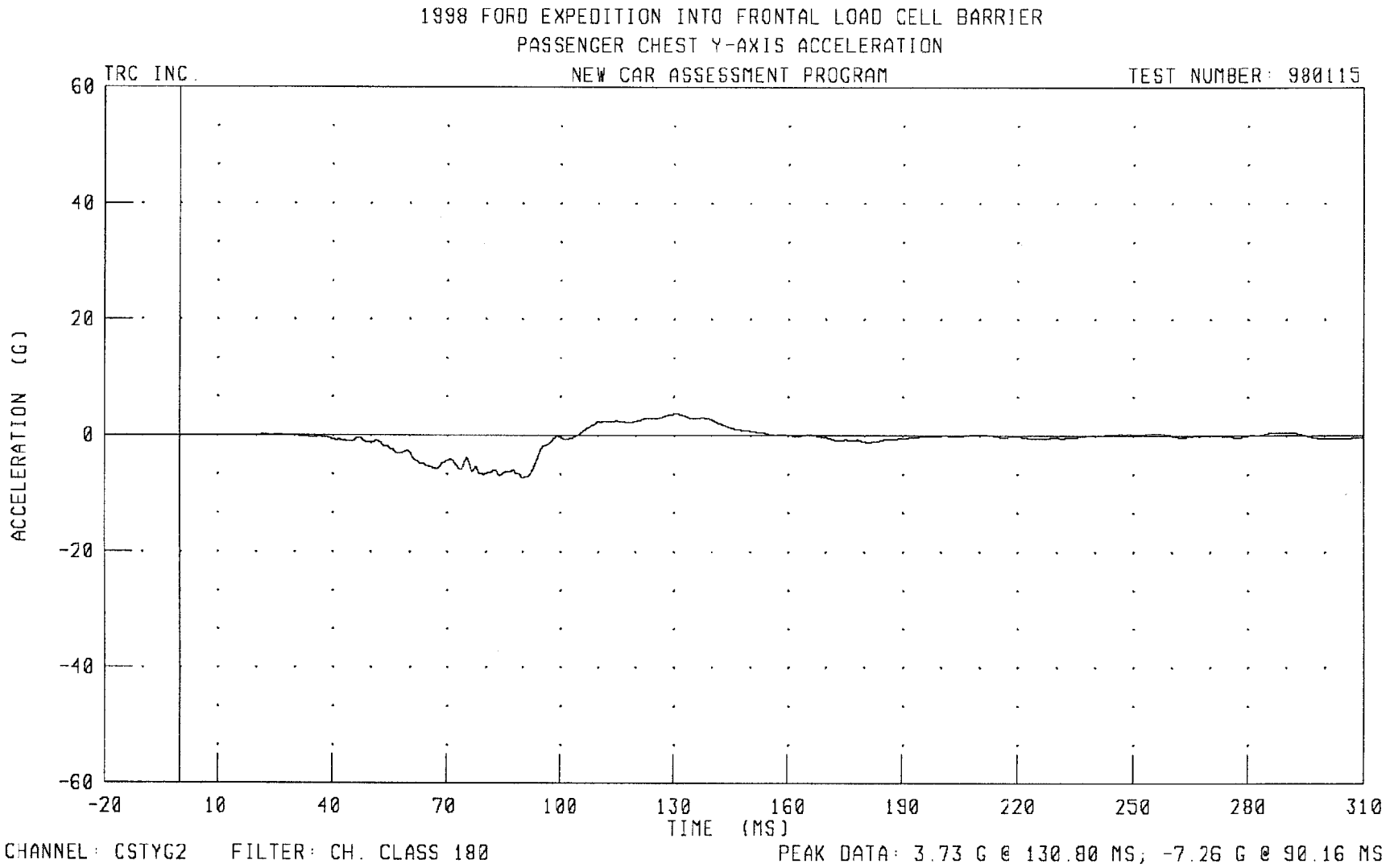
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT X AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
180
120
60
0
-60
-120
-180
TORQUE (N-M)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKXM2
FILTER: CH. CLASS 600
PEAK DATA: 15.02 N-M @ 65.20 MS; -12.83 N-M @ 76.96 MS

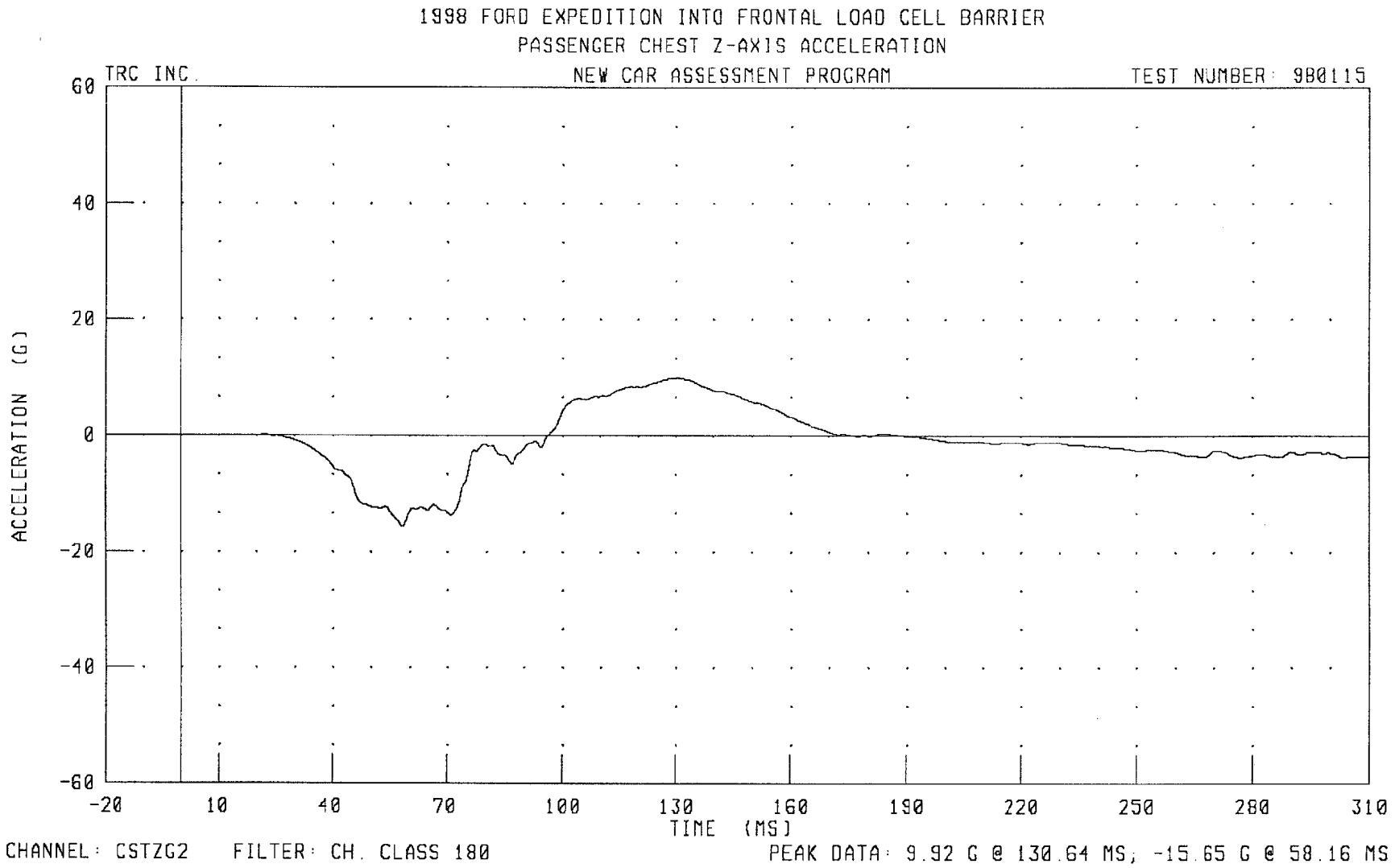

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Y AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
180
120
60
0
-60
-120
-180
TORQUE (N-M)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKYM2
FILTER: CH. CLASS 600
PEAK DATA: 25.33 N-M @ 175.20 MS; -33.53 N-M @ 287.52 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Z AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
180
120
60
0
-60
-120
-180
TORQUE (N-M)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: NEKZM2
FILTER: CH. CLASS 600
PEAK DATA: 10.70 N-M @ 80.08 MS; -5.74 N-M @ 287.12 MS

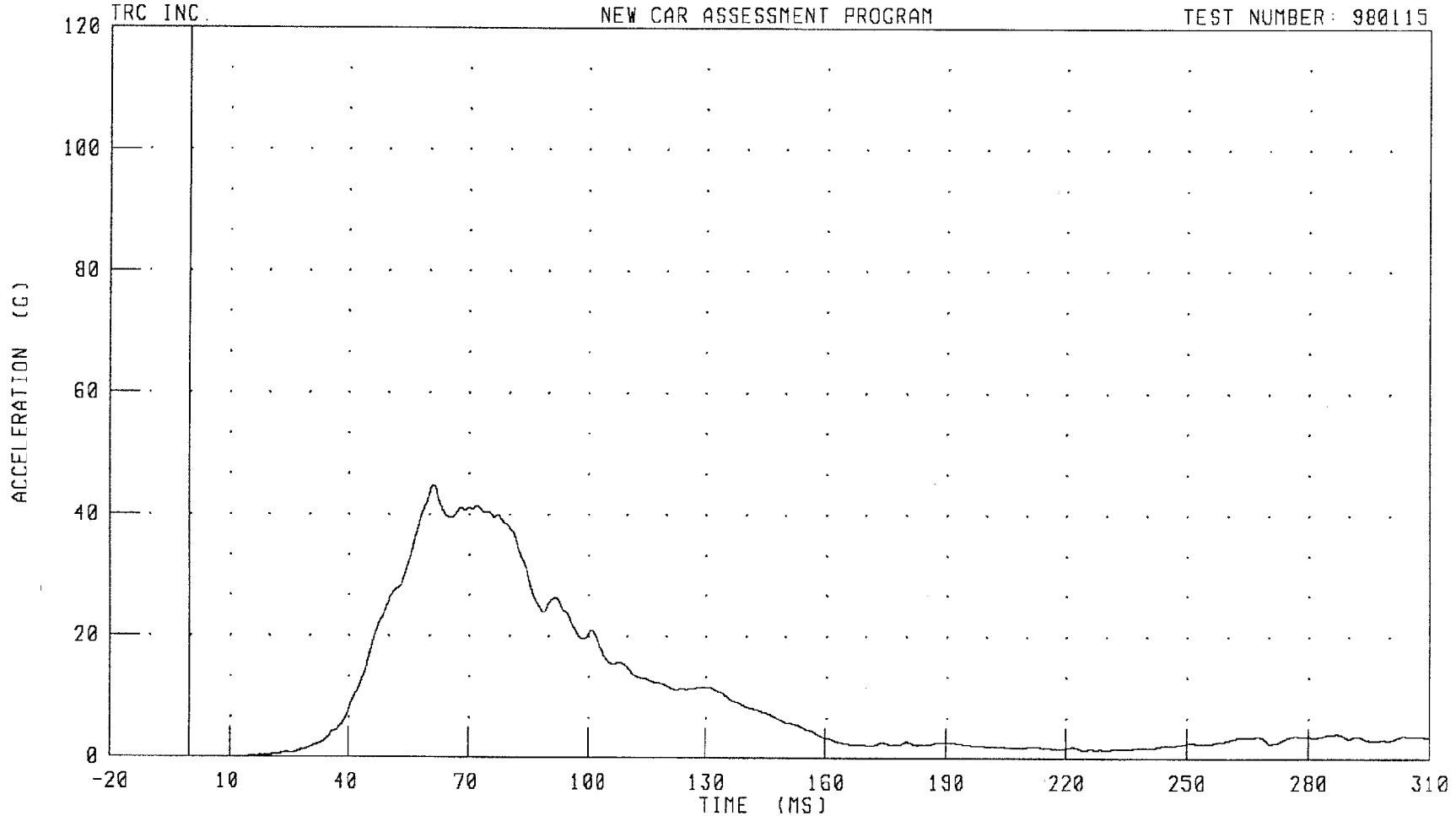

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTXG2
FILTER: CH. CLASS 180
PEAK DATA: 2.60 G @ 189.28 MS; -42.88 G @ 61.04 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Y-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTYG2
FILTER: CH. CLASS 180
PEAK DATA: 3.73 G @ 130.80 MS; -7.26 G @ 90.16 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTZG2
FILTER: CH. CLASS 180
PEAK DATA: 9.92 G @ 130.64 MS, -15.65 G @ 58.16 MS

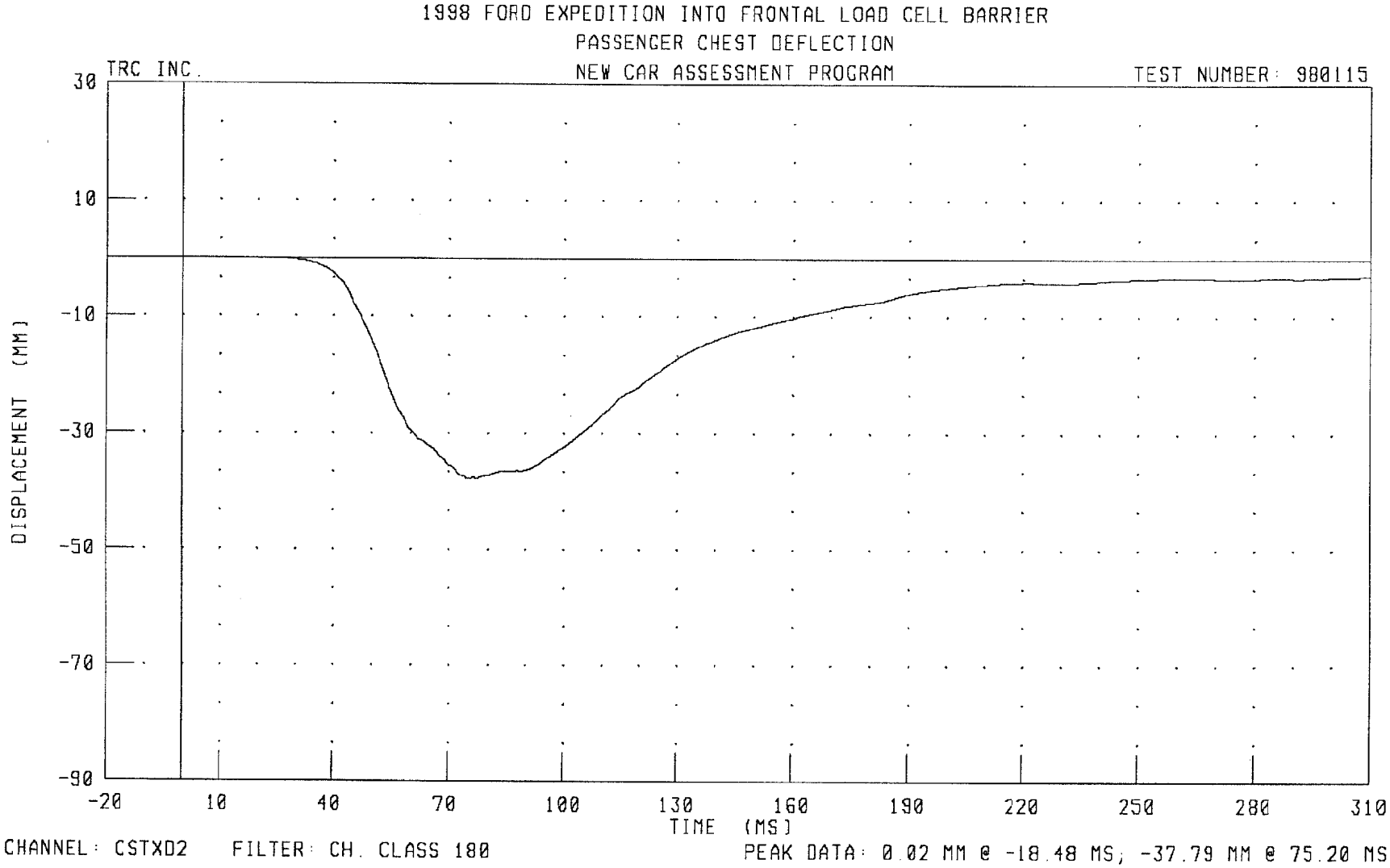
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST RESULTANT ACCELERATION
NEW CAR ASSESSMENT PROGRAM

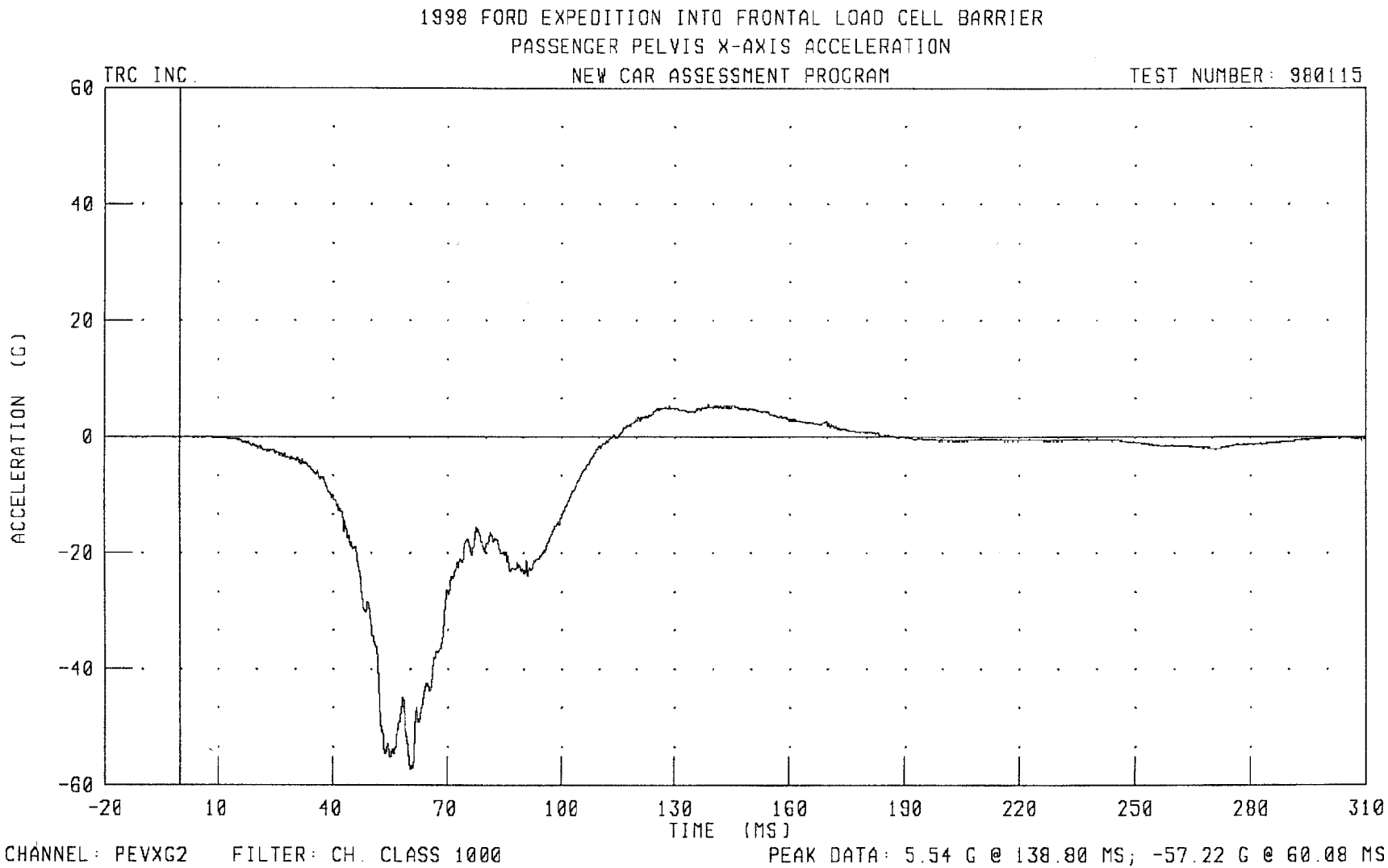


CHANNEL: CSTRG2 FILTER: CH. CLASS 180

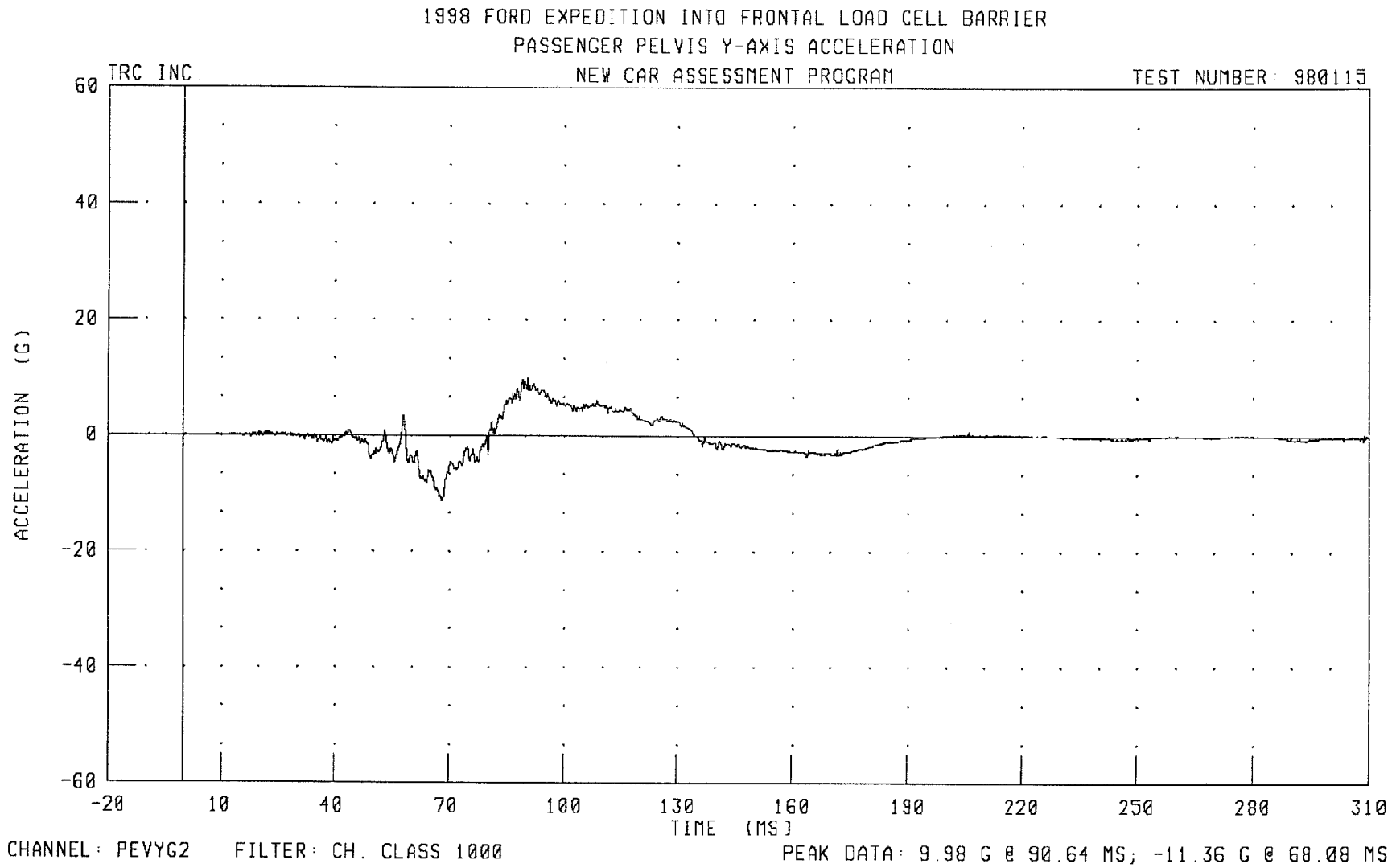
PEAK DATA: 44.84 G @ 61.12 MS; 0.00 G @ -20.00 MS

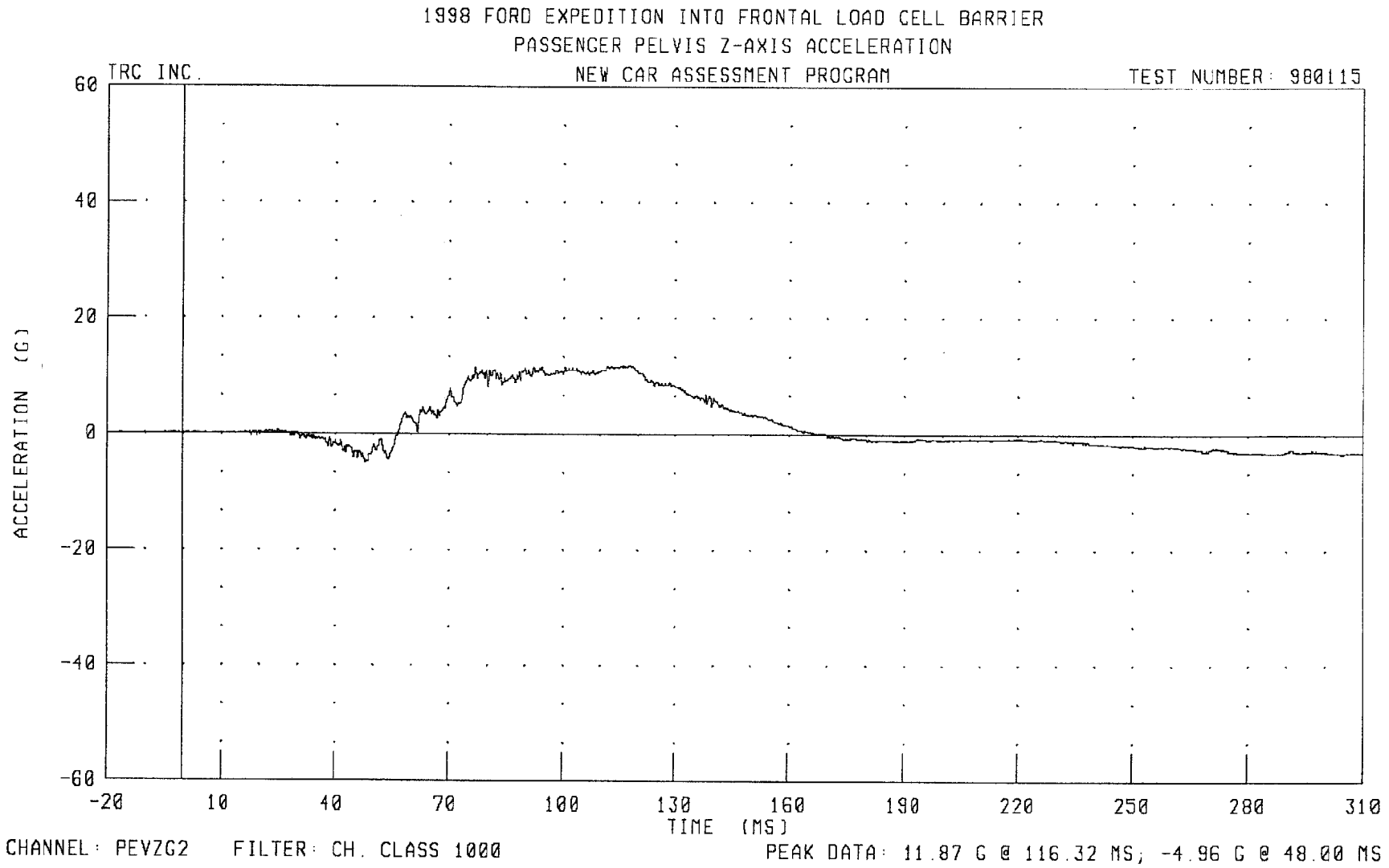
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST DEFLECTION
NEW CAR ASSESSMENT PROGRAM
TRC INC.
TEST NUMBER: 980115
30
10
-10
-30
-50
-70
-90
DISPLACEMENT (MM)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTXD2
FILTER: CH. CLASS 180
PEAK DATA: 0.02 MM @ -18.48 MS; -37.79 MM @ 75.20 MS

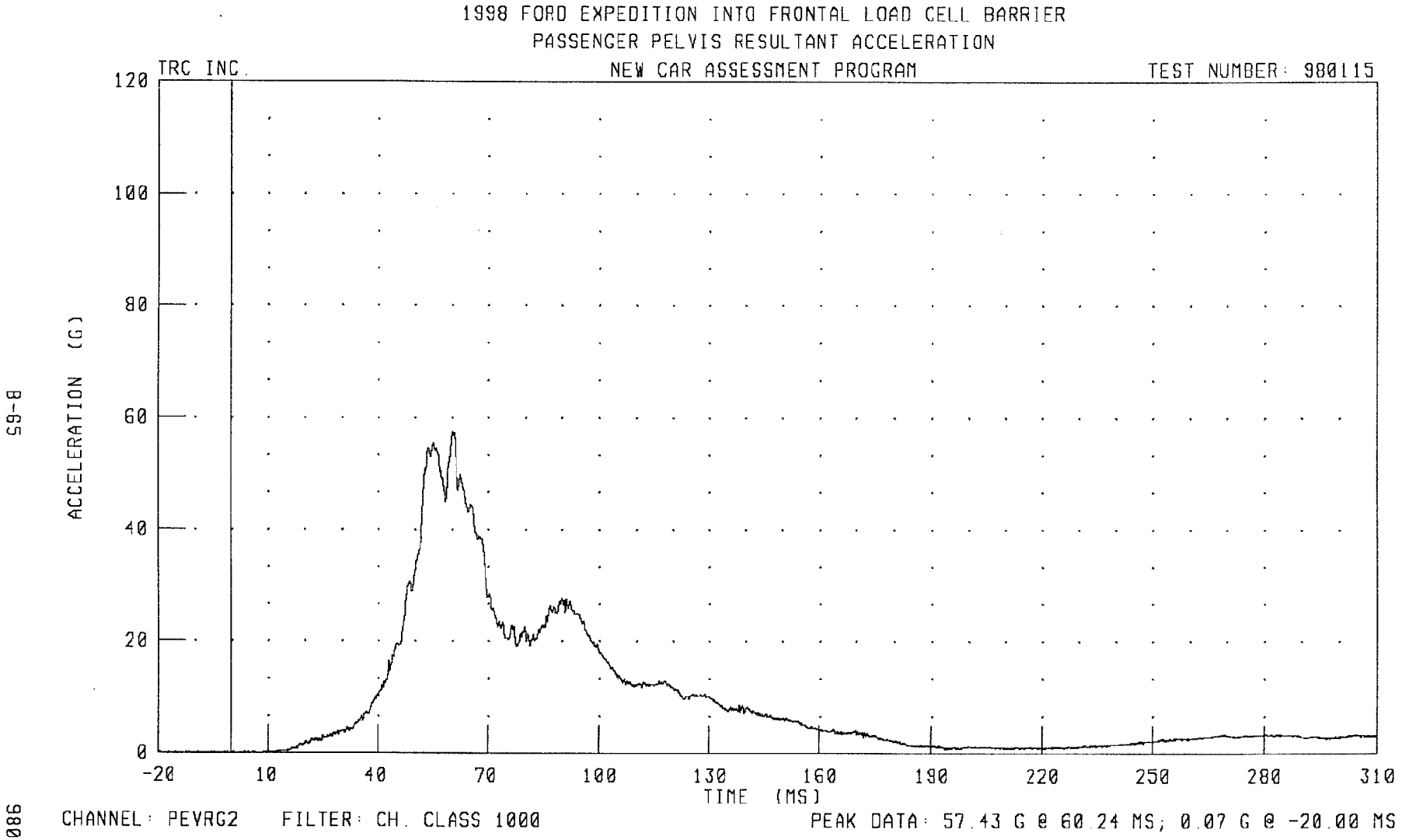

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: PEVXG2
FILTER: CH. CLASS 1000
PEAK DATA: 5.54 G @ 138.80 MS; -57.22 G @ 60.08 MS

980115

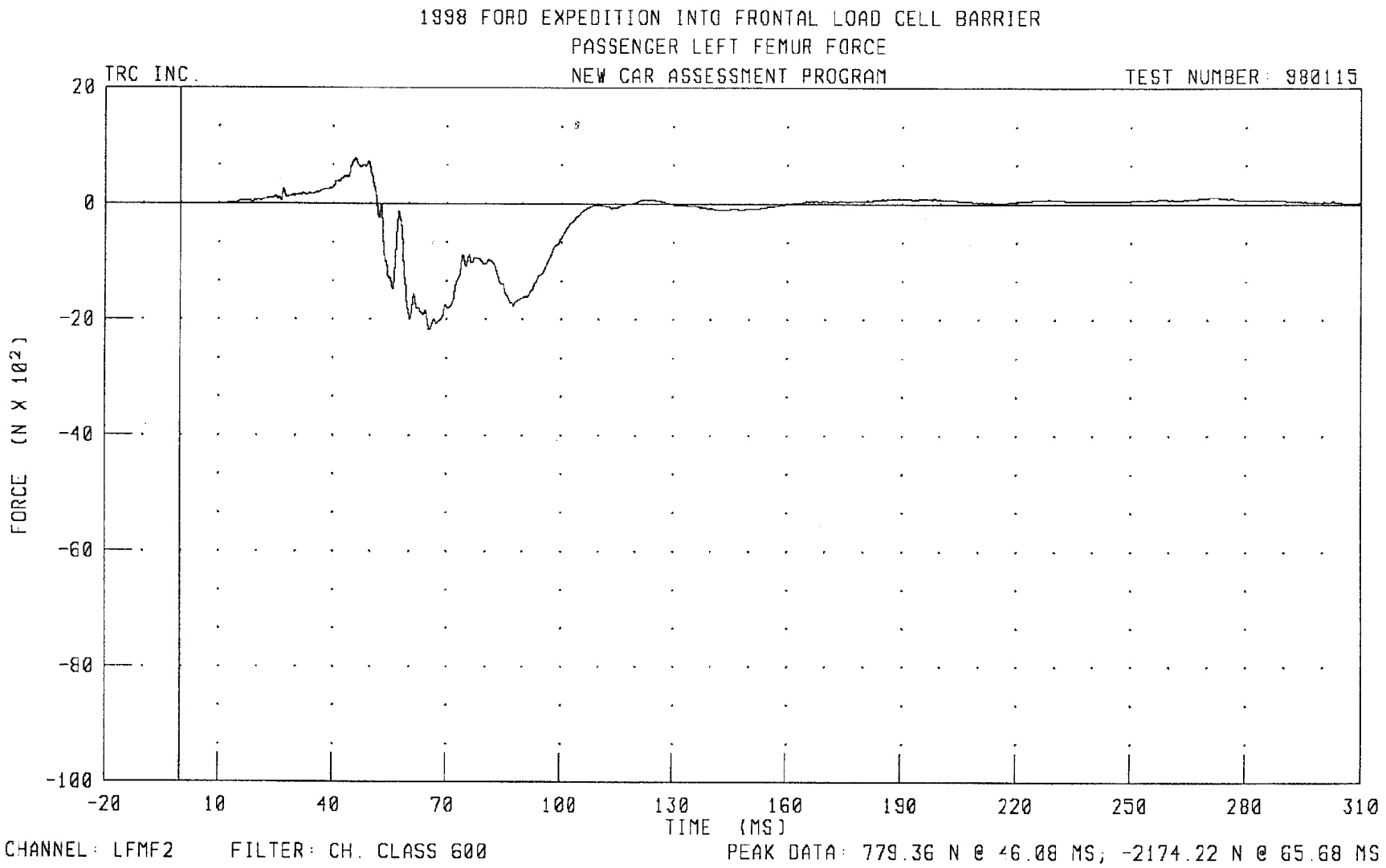

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS Y-AXIS ACCELERATION
TRC INC
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: PEVYG2
FILTER: CH. CLASS 1000
PEAK DATA: 9.98 G @ 90.64 MS; -11.36 G @ 68.08 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS Z-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: PEVZG2
FILTER: CH. CLASS 1000
PEAK DATA: 11.87 G @ 116.32 MS; -4.96 G @ 48.00 MS

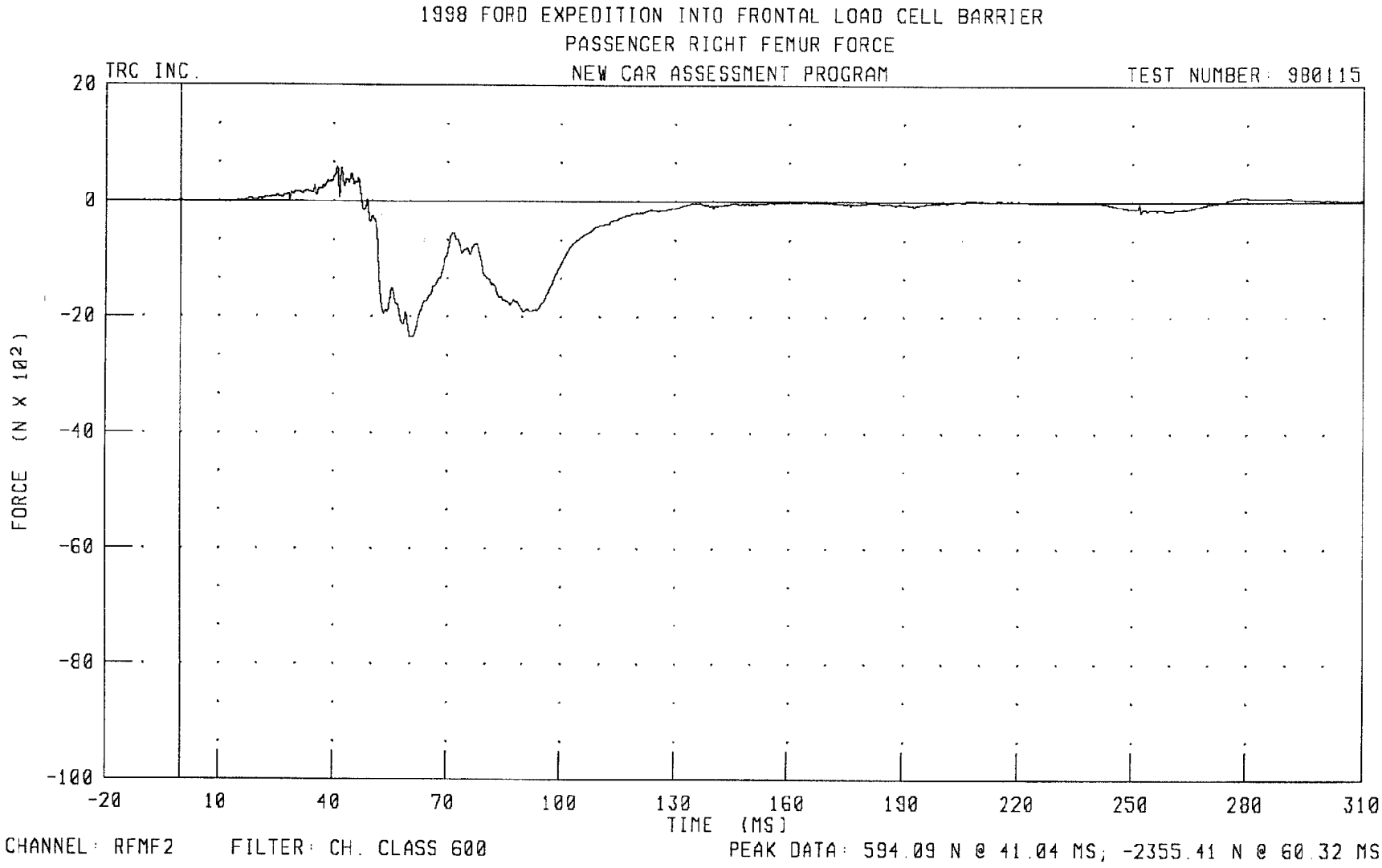
980115

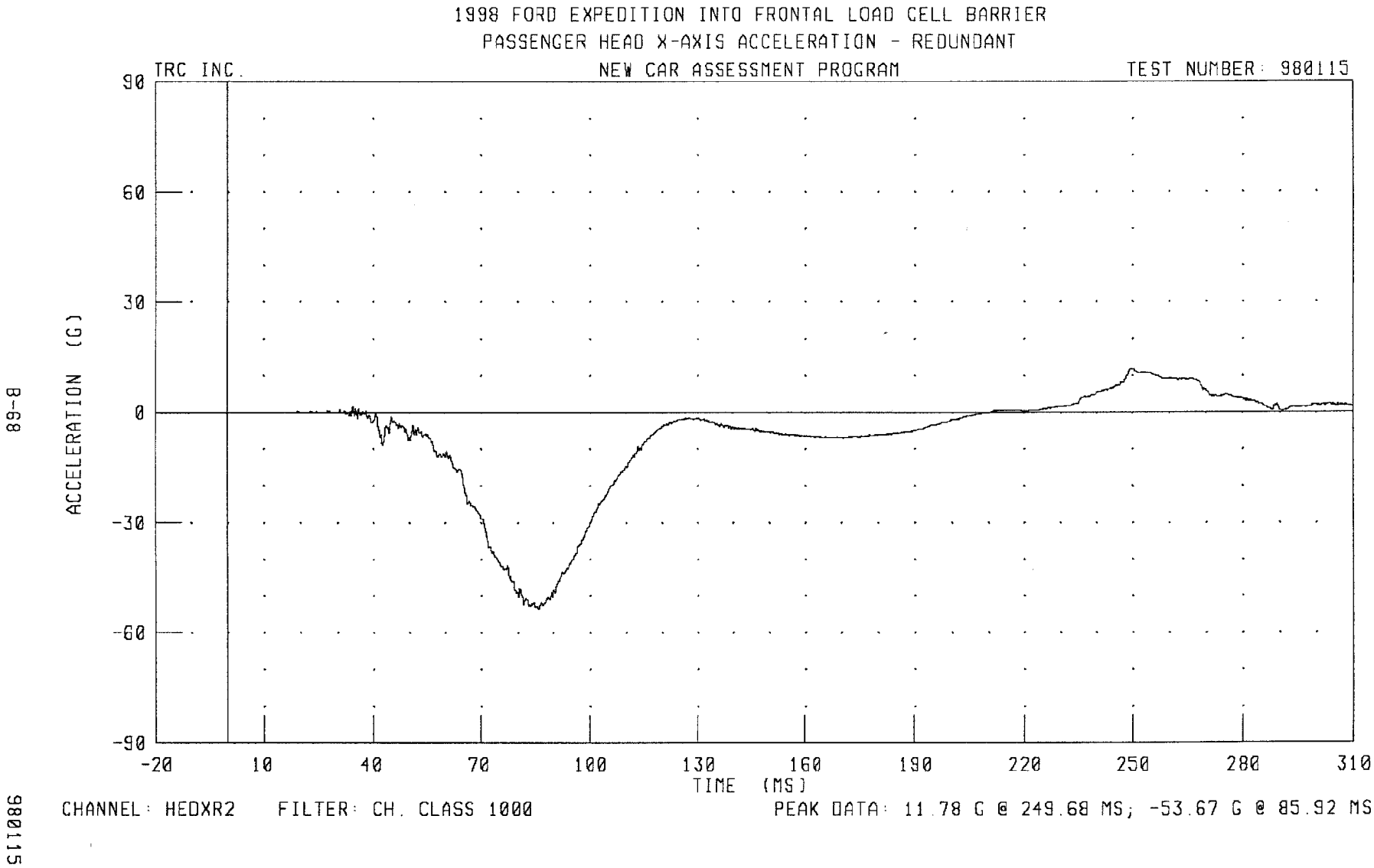

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER PELVIS RESULTANT ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
120
100
80
60
40
20
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: PEVRG2
FILTER: CH. CLASS 1000
PEAK DATA: 57.43 G @ 60.24 MS; 0.07 G @ -20.00 MS

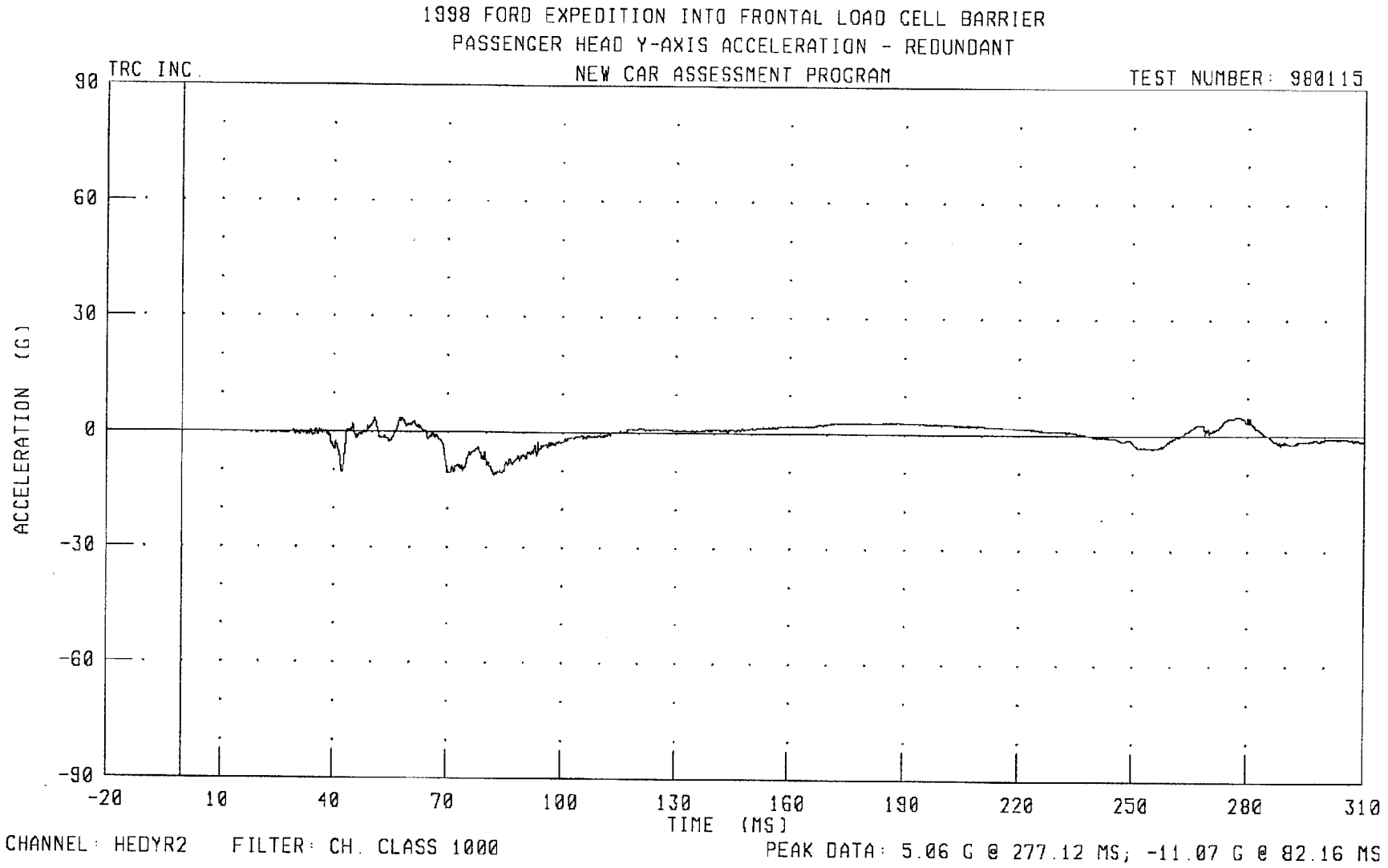
980115

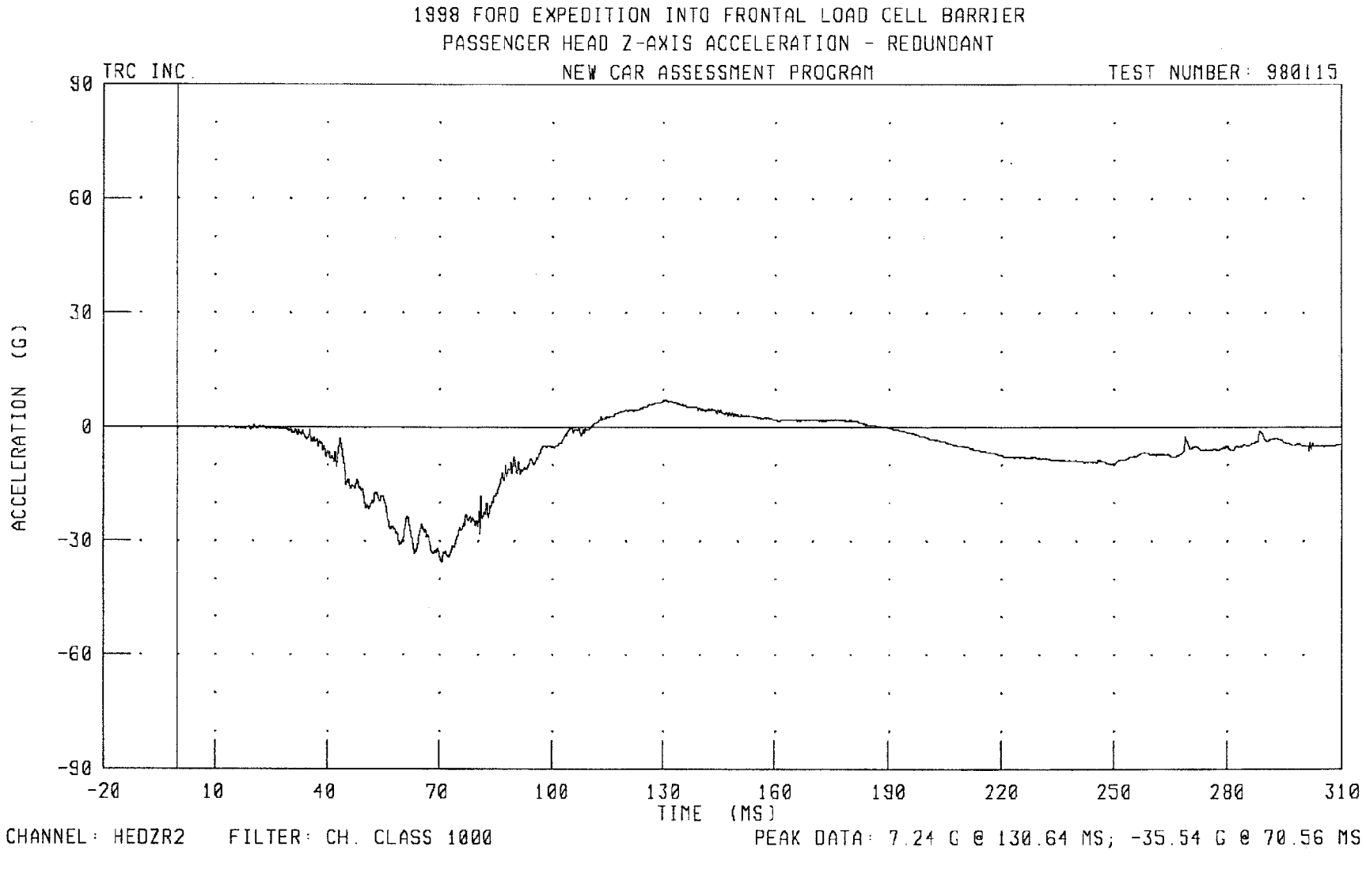

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FEMUR FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
20
0
-20
-40
-60
-80
-100
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LFMF2
FILTER: CH. CLASS 600
PEAK DATA: 779.36 N @ 46.08 MS; -2174.22 N @ 65.68 MS

980115

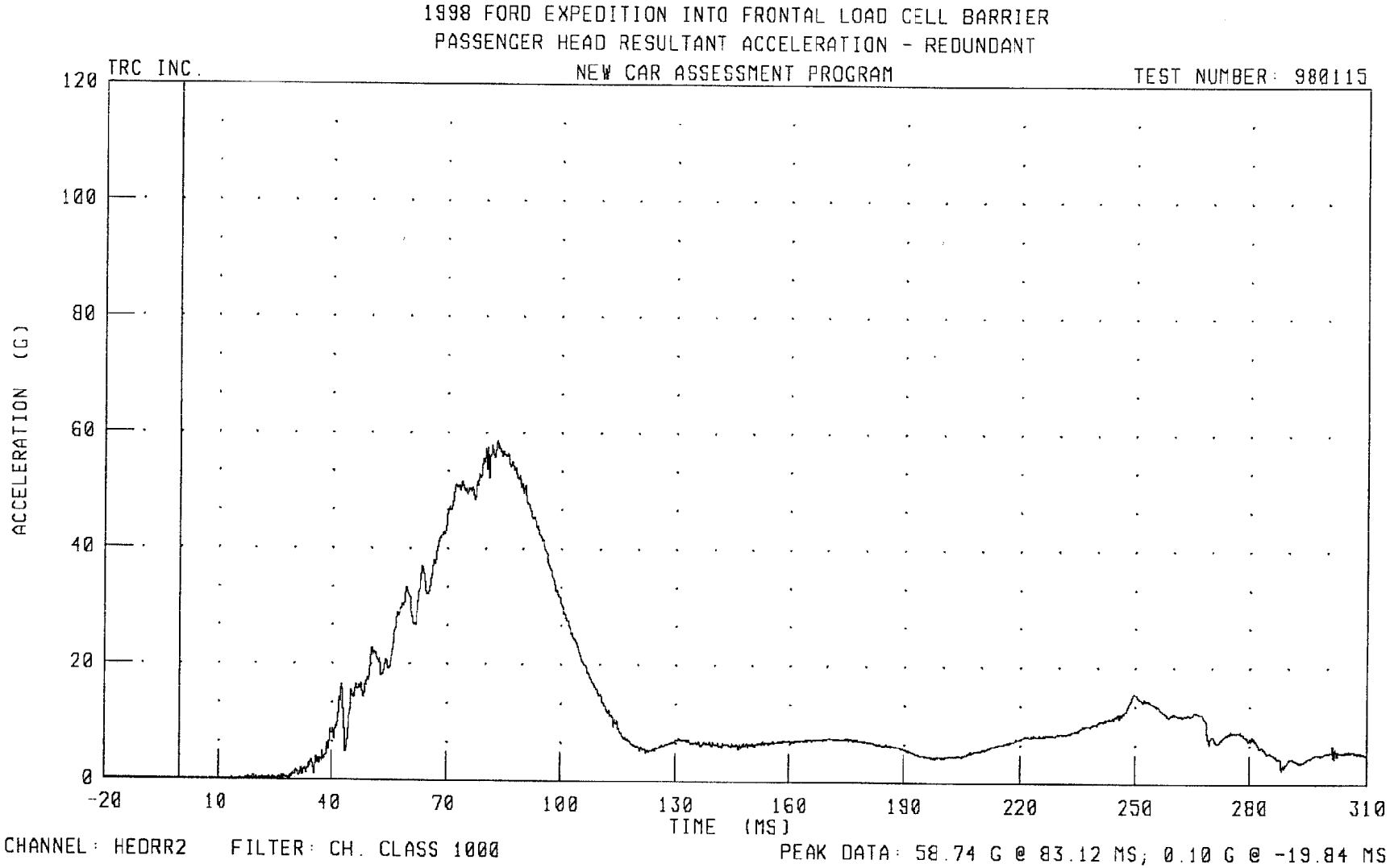

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FEMUR FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
20
0
-20
-40
-60
-80
-100
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: RFMF2
FILTER: CH. CLASS 600
PEAK DATA: 594.09 N @ 41.04 MS; -2355.41 N @ 60.32 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
90
60
30
0
-30
-60
-90
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDXR2
FILTER: CH. CLASS 1000
PEAK DATA: 11.78 G @ 249.68 MS; -53.67 G @ 85.92 MS

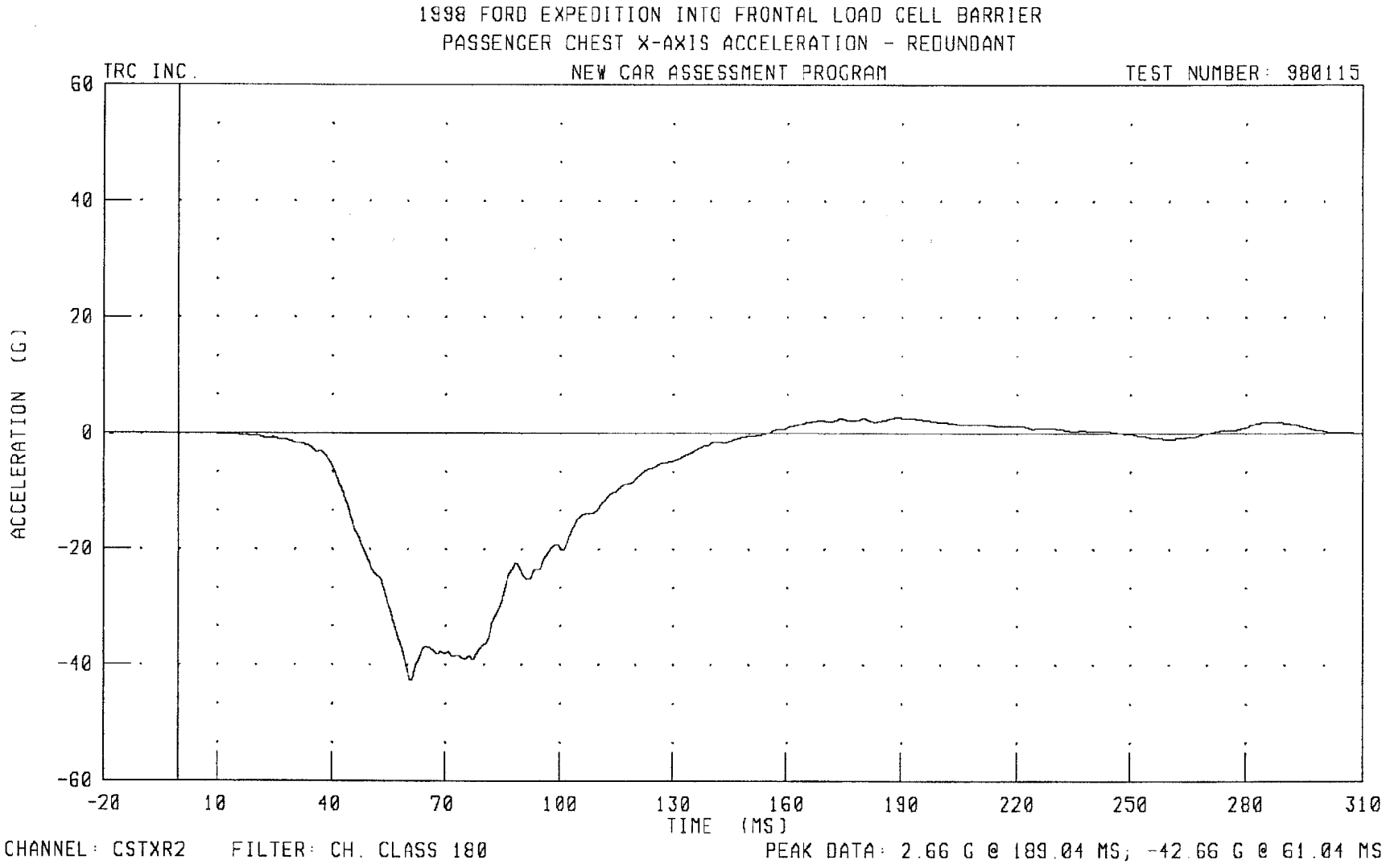

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
90
60
30
0
-30
-60
-90
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDYR2
FILTER: CH. CLASS 1000
PEAK DATA: 5.06 G @ 277.12 MS; -11.07 G @ 82.16 MS

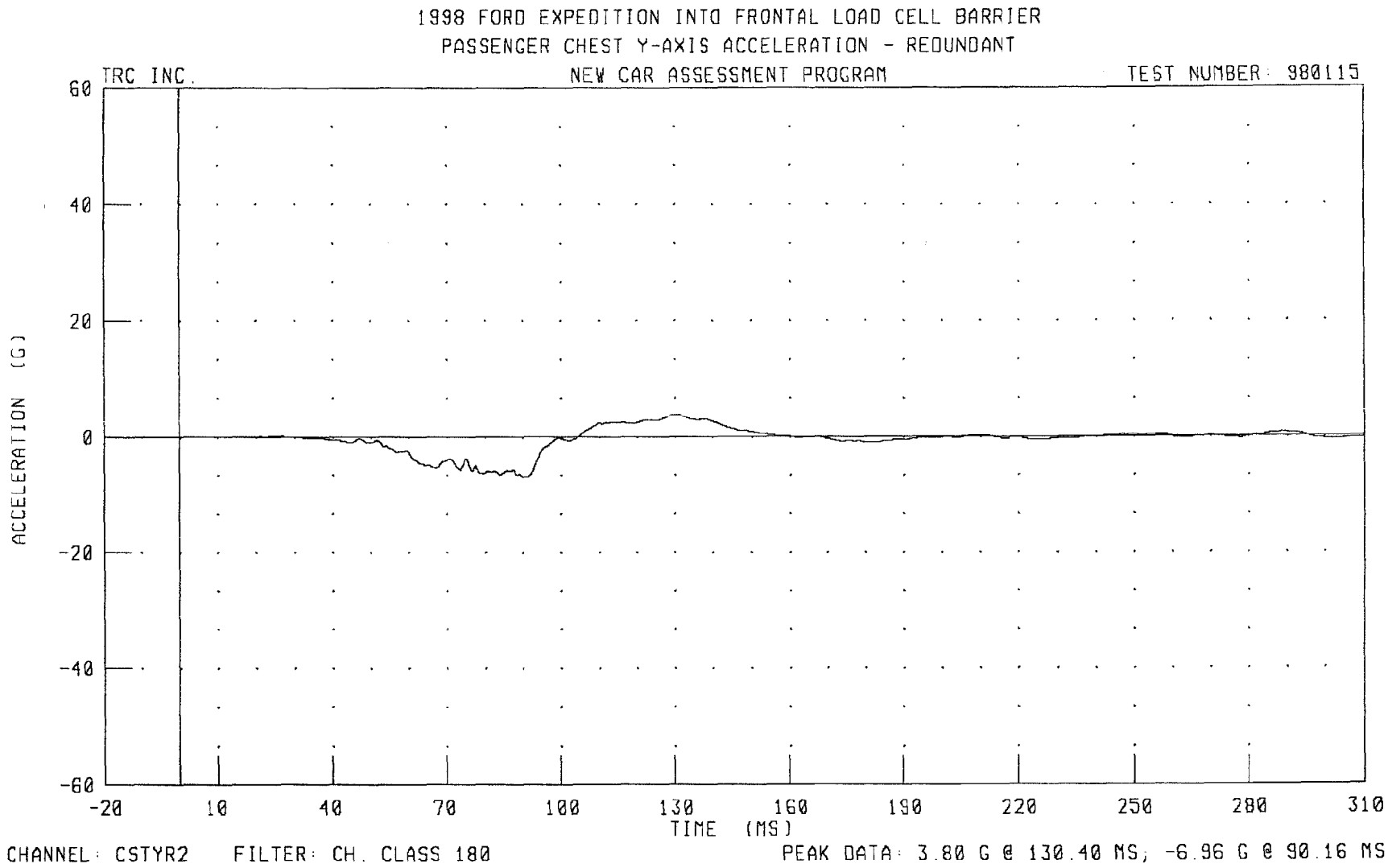

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
90
60
30
0
-30
-60
-90
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDZR2
FILTER: CH. CLASS 1000
PEAK DATA: 7.24 G @ 130.64 MS; -35.54 G @ 70.56 MS

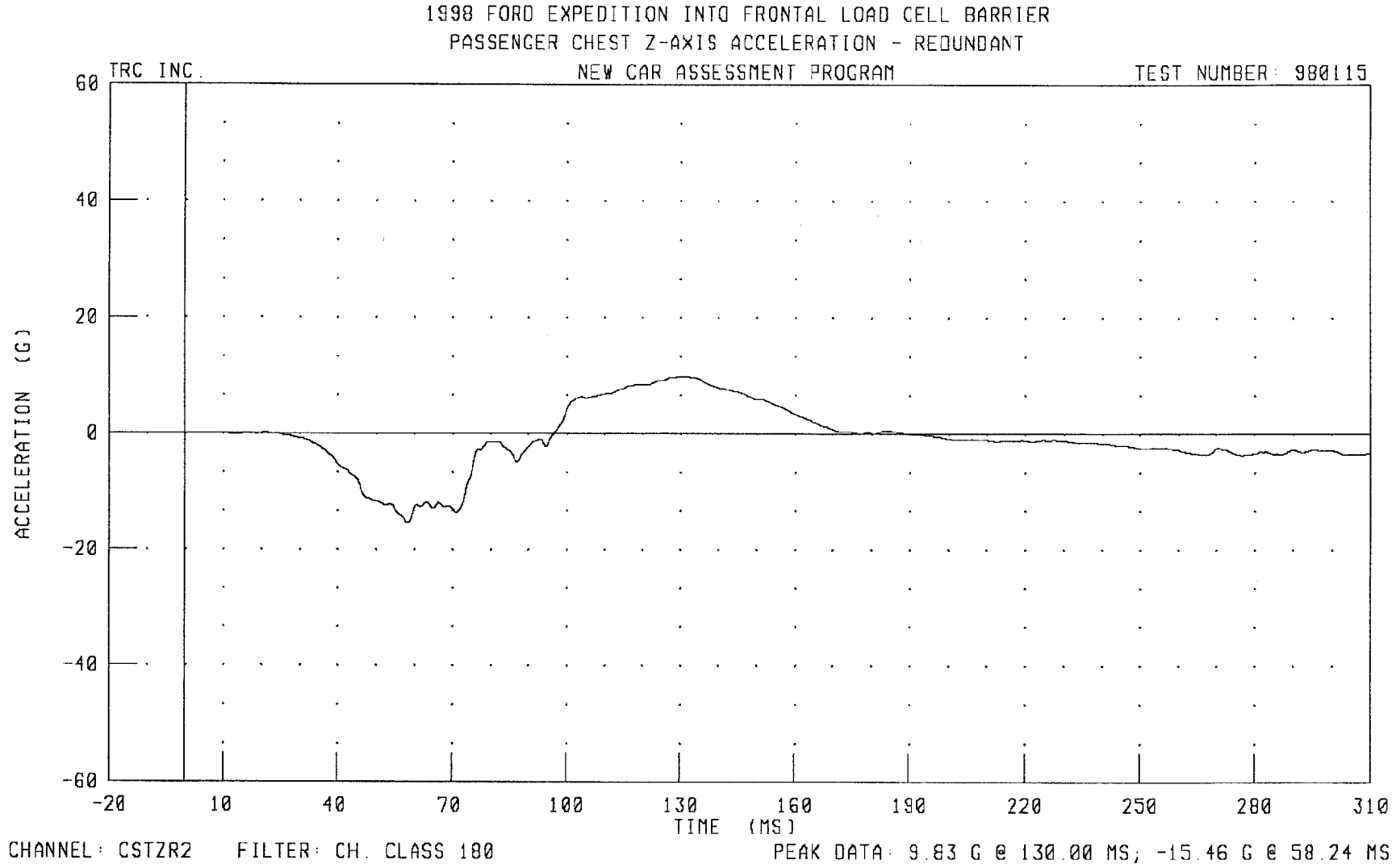
980115

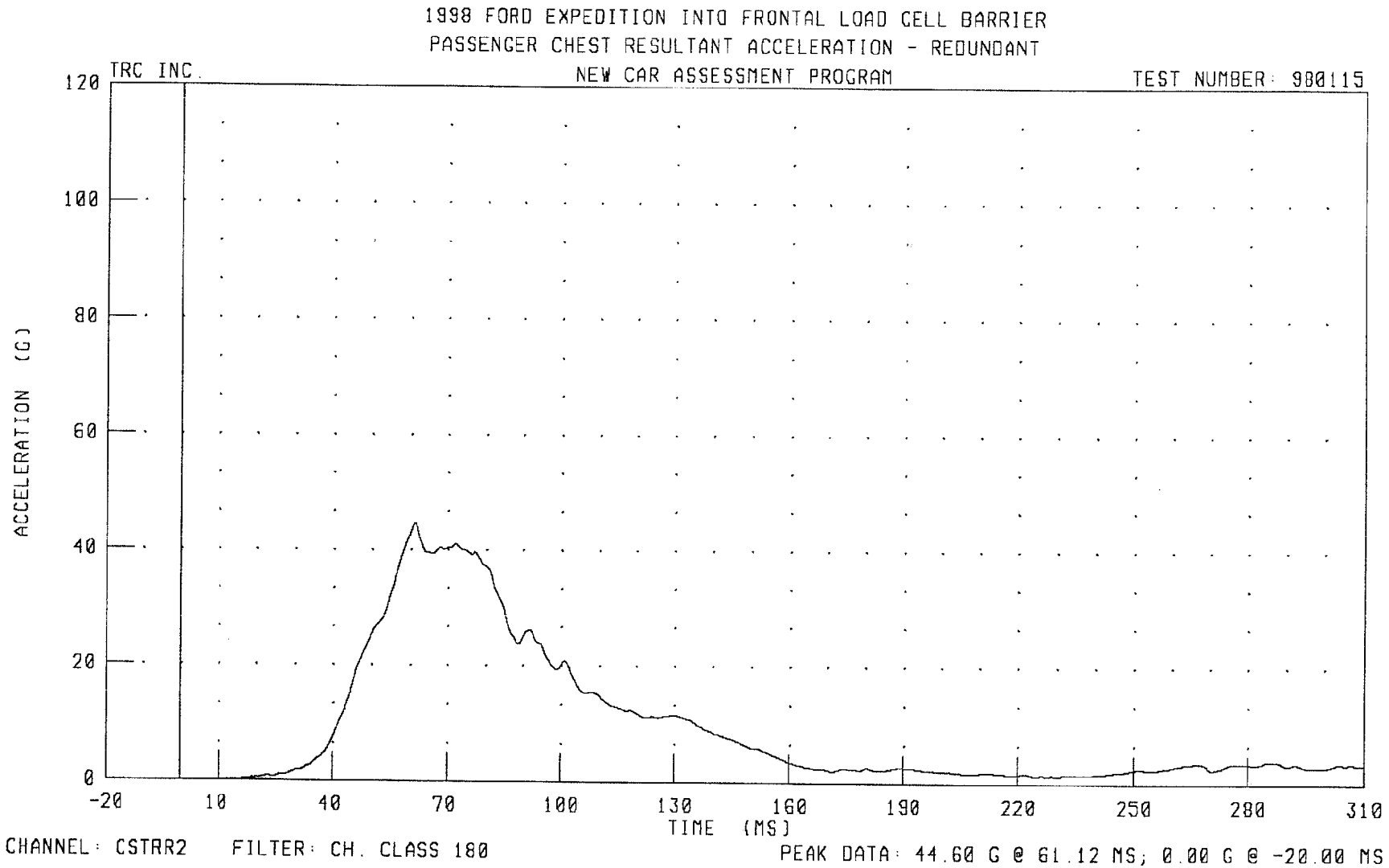

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
120
100
80
60
40
20
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: HEDRR2
FILTER: CH. CLASS 1000
PEAK DATA: 58.74 G @ 83.12 MS; 0.10 G @ -19.84 MS

980115

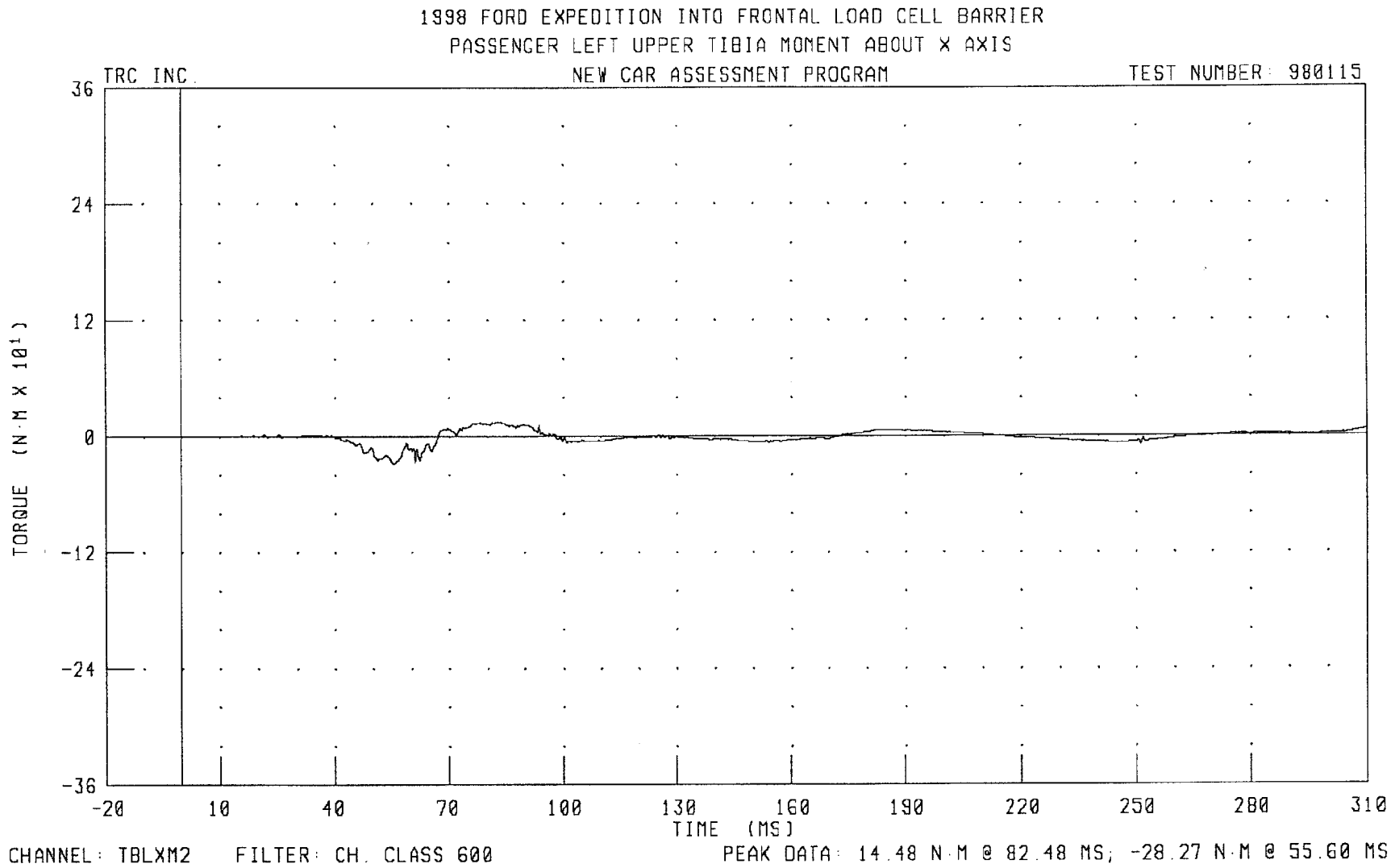

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTXR2
FILTER: CH. CLASS 180
PEAK DATA: 2.66 G @ 189.04 MS; -42.66 G @ 61.04 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Y-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTYR2
FILTER: CH. CLASS 180
PEAK DATA: 3.80 G @ 130.40 MS, -6.96 G @ 90.16 MS

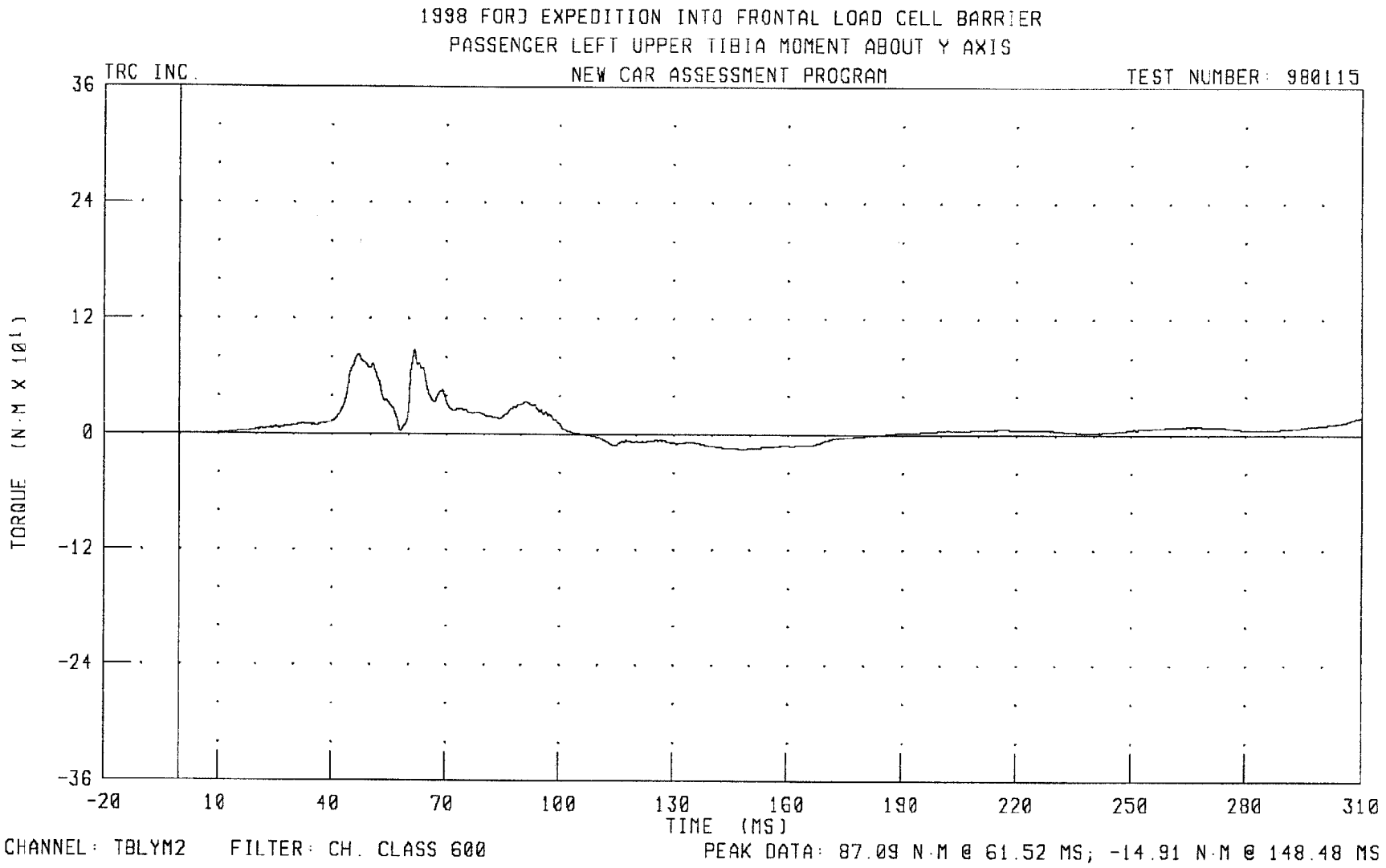

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTZR2
FILTER: CH. CLASS 180
PEAK DATA: 9.83 G @ 130.00 MS; -15.46 G @ 58.24 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST RESULTANT ACCELERATION - REDUNDANT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
120
100
80
60
40
20
0
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: CSTRR2
FILTER: CH. CLASS 180
PEAK DATA: 44.60 G @ 61.12 MS; 0.00 G @ -20.00 MS

980115

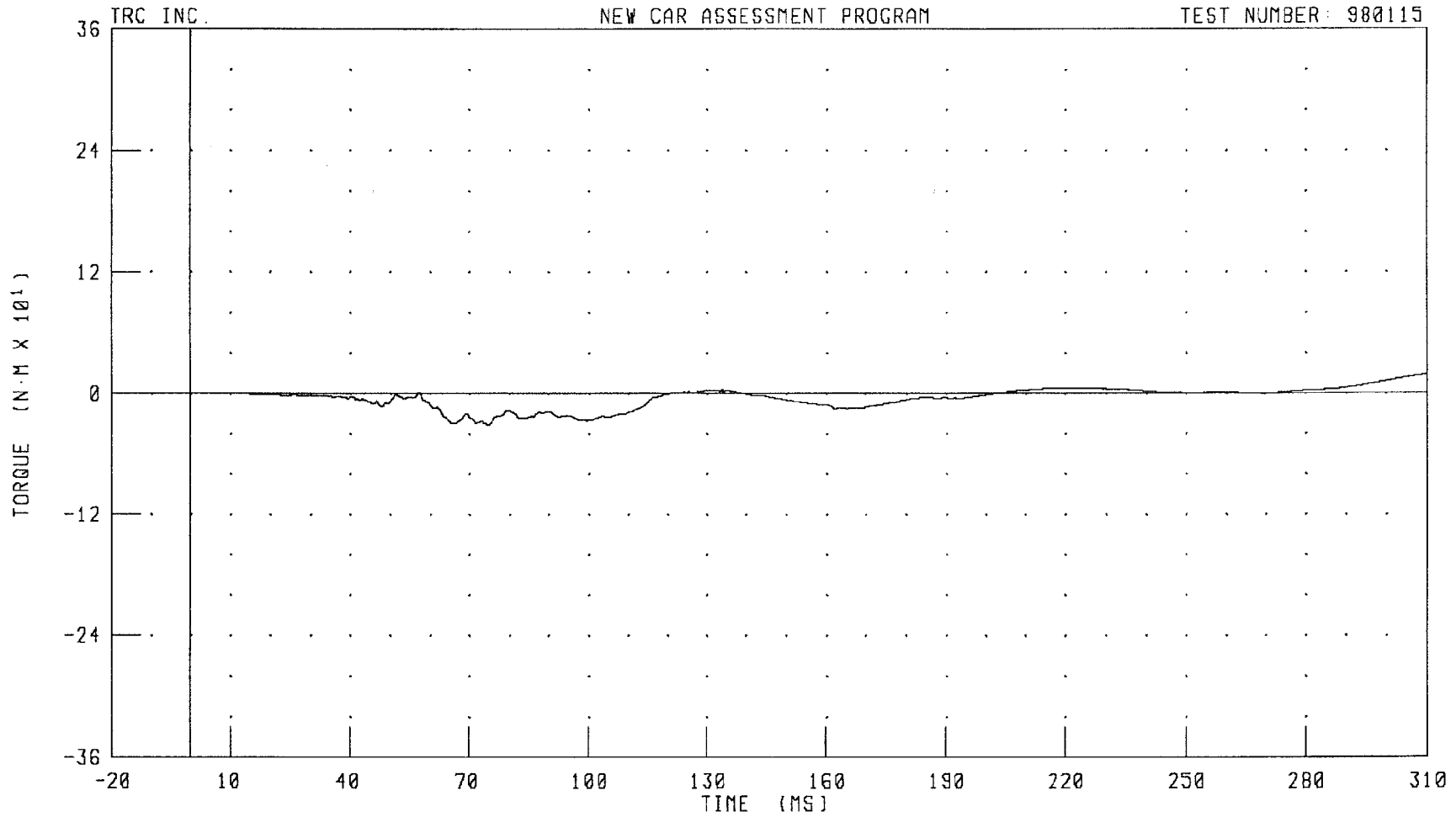

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT UPPER TIBIA MOMENT ABOUT X AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
TORQUE (N·M X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: TBLXM2
FILTER: CH. CLASS 600
PEAK DATA: 14.48 N·M @ 82.48 MS; -28.27 N·M @ 55.60 MS

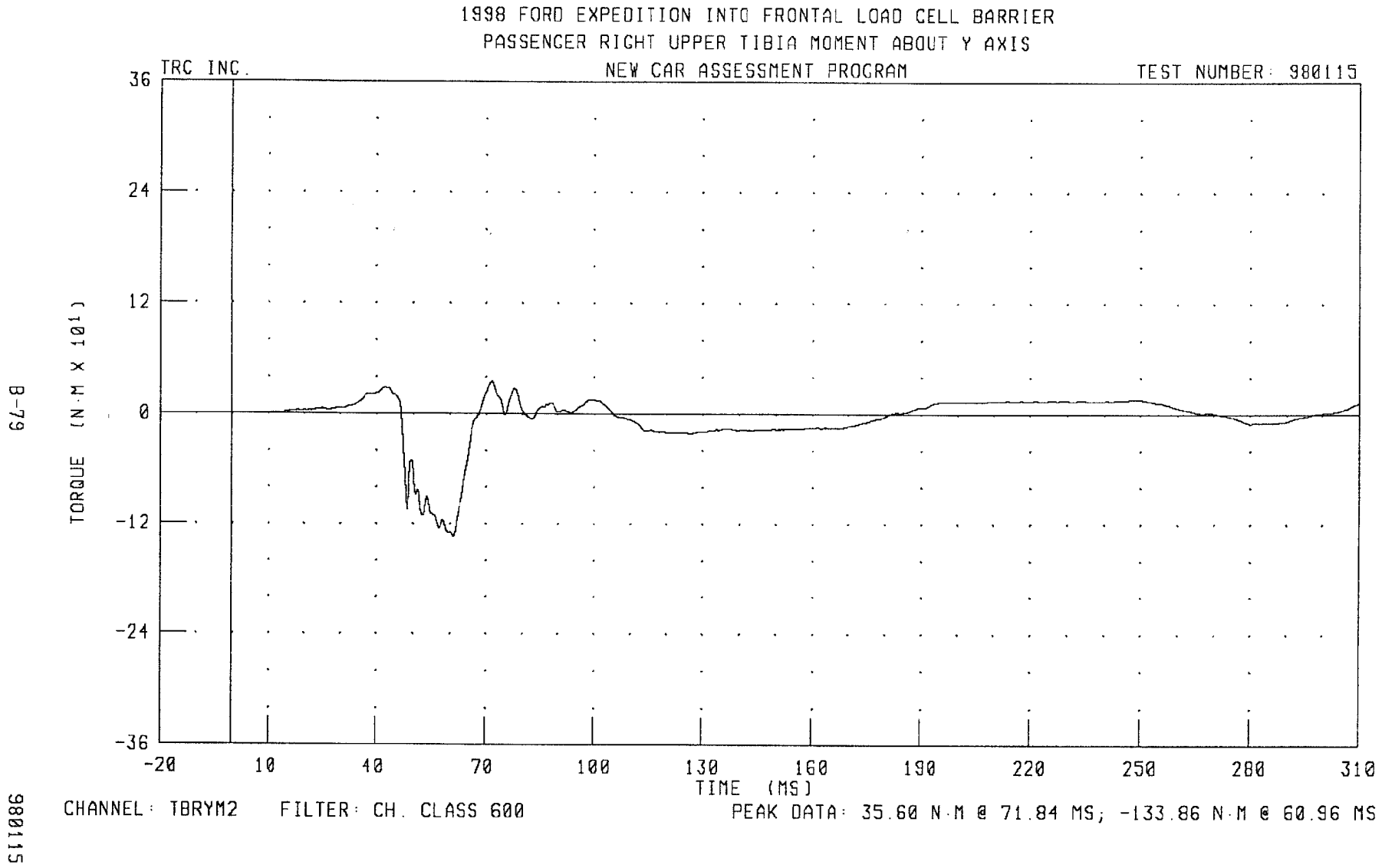
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT UPPER TIBIA MOMENT ABOUT Y AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
TORQUE (N-M X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: TBLYM2
FILTER: CH. CLASS 600
PEAK DATA: 87.09 N-M @ 61.52 MS; -14.91 N-M @ 148.48 MS

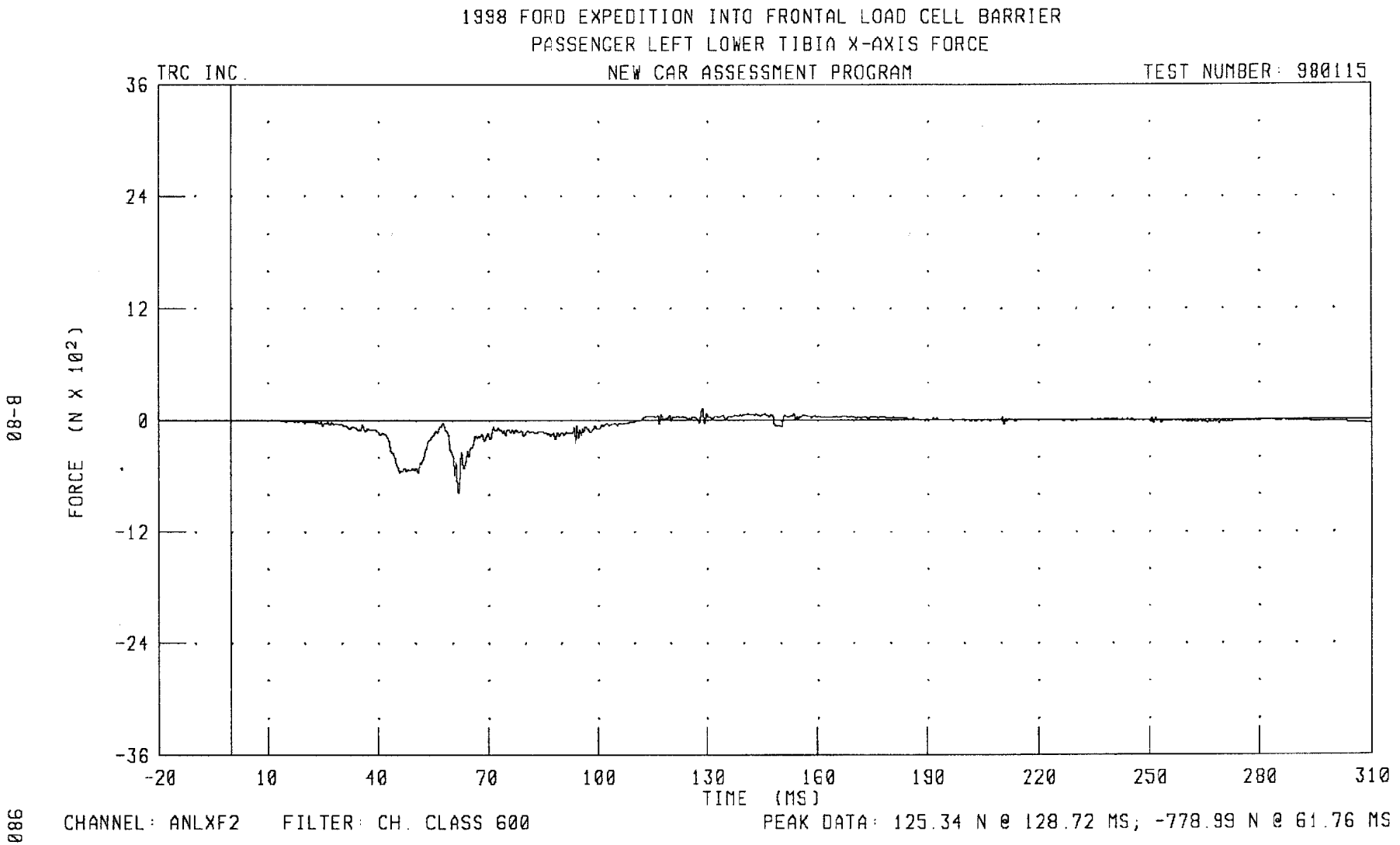
980115

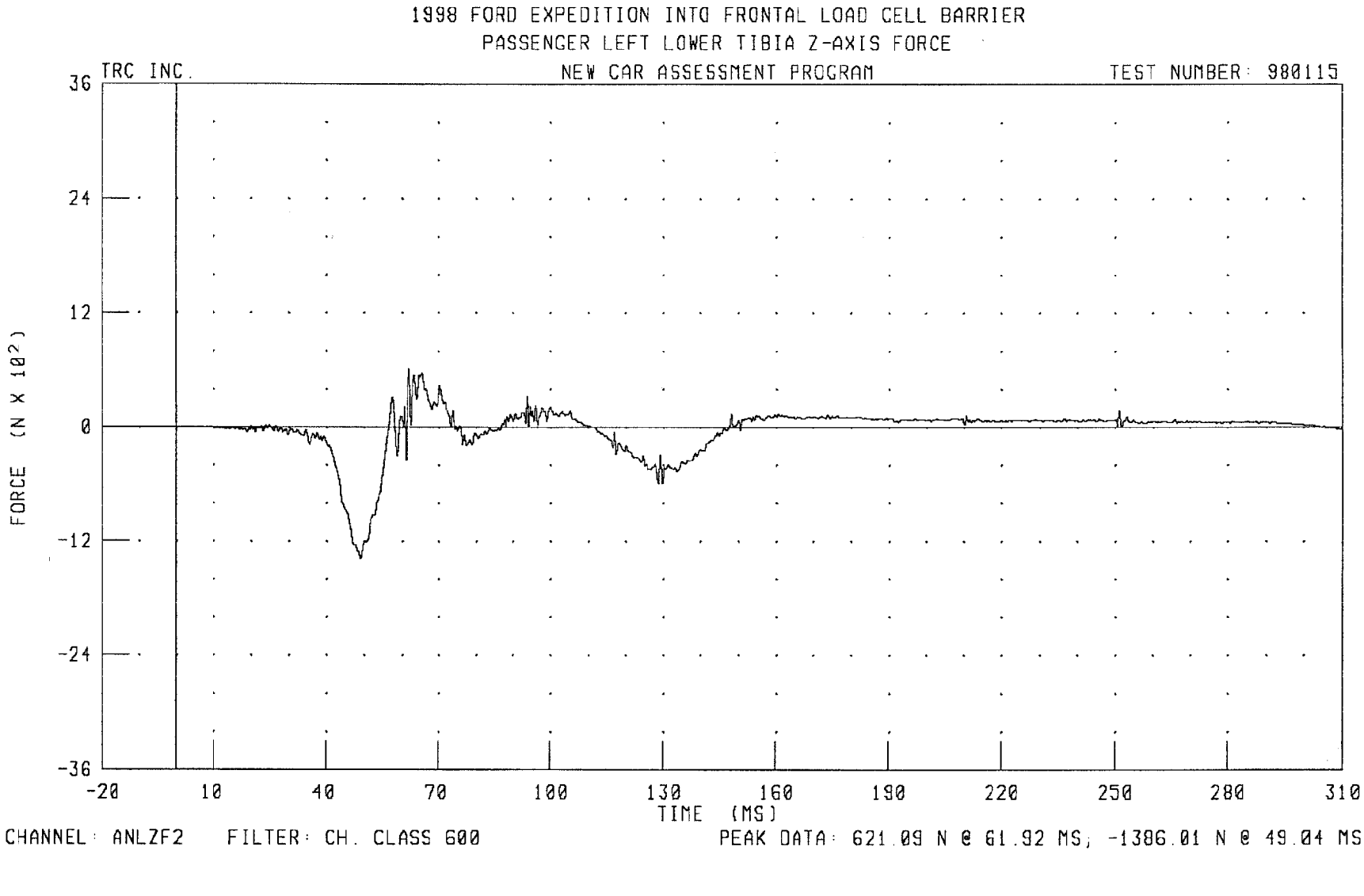
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT X AXIS



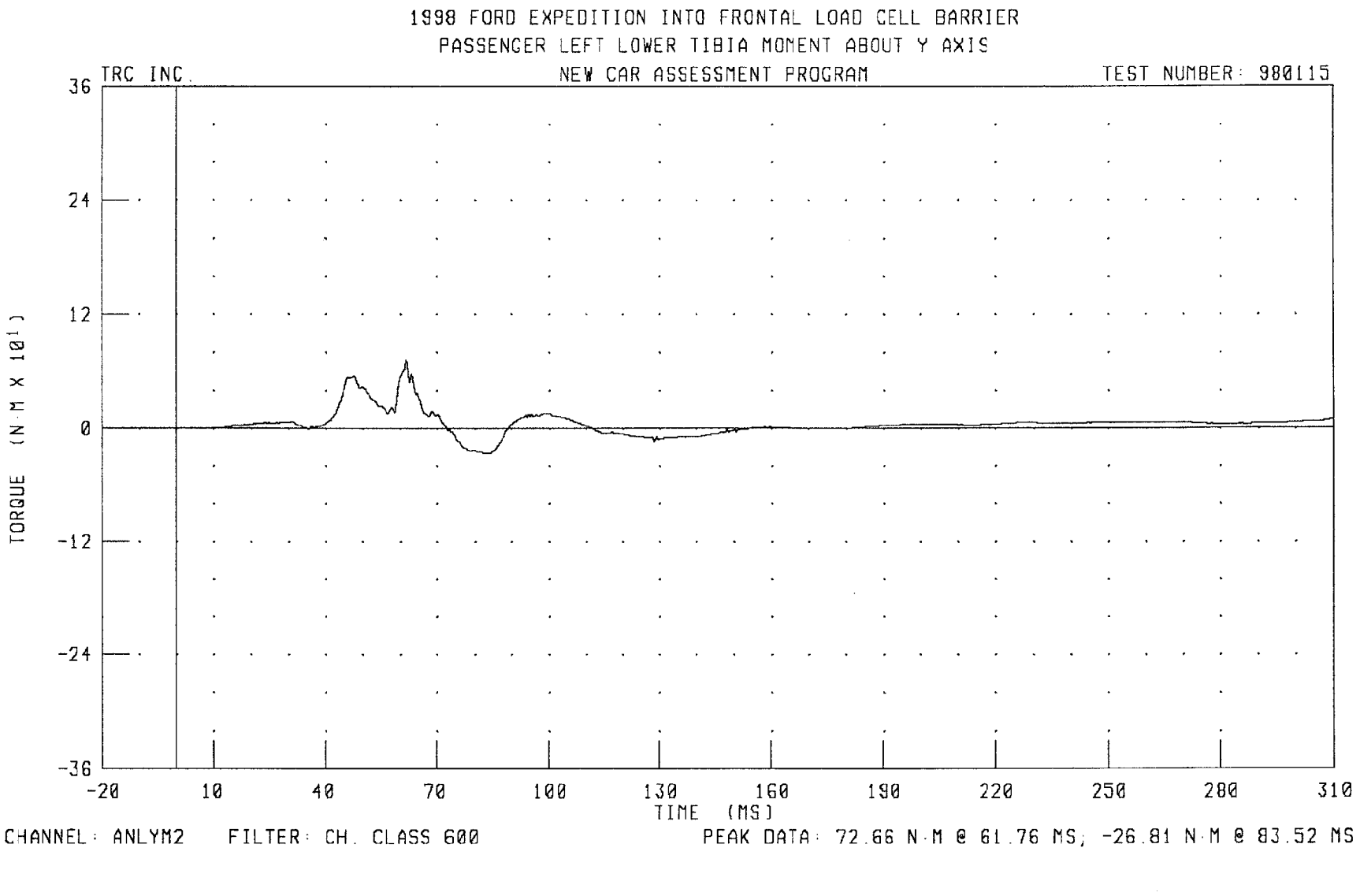

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT UPPER TIBIA MOMENT ABOUT Y AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
TORQUE (N-M X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: TBRYM2
FILTER: CH. CLASS 600
PEAK DATA: 35.60 N-M @ 71.84 MS; -133.86 N-M @ 60.96 MS

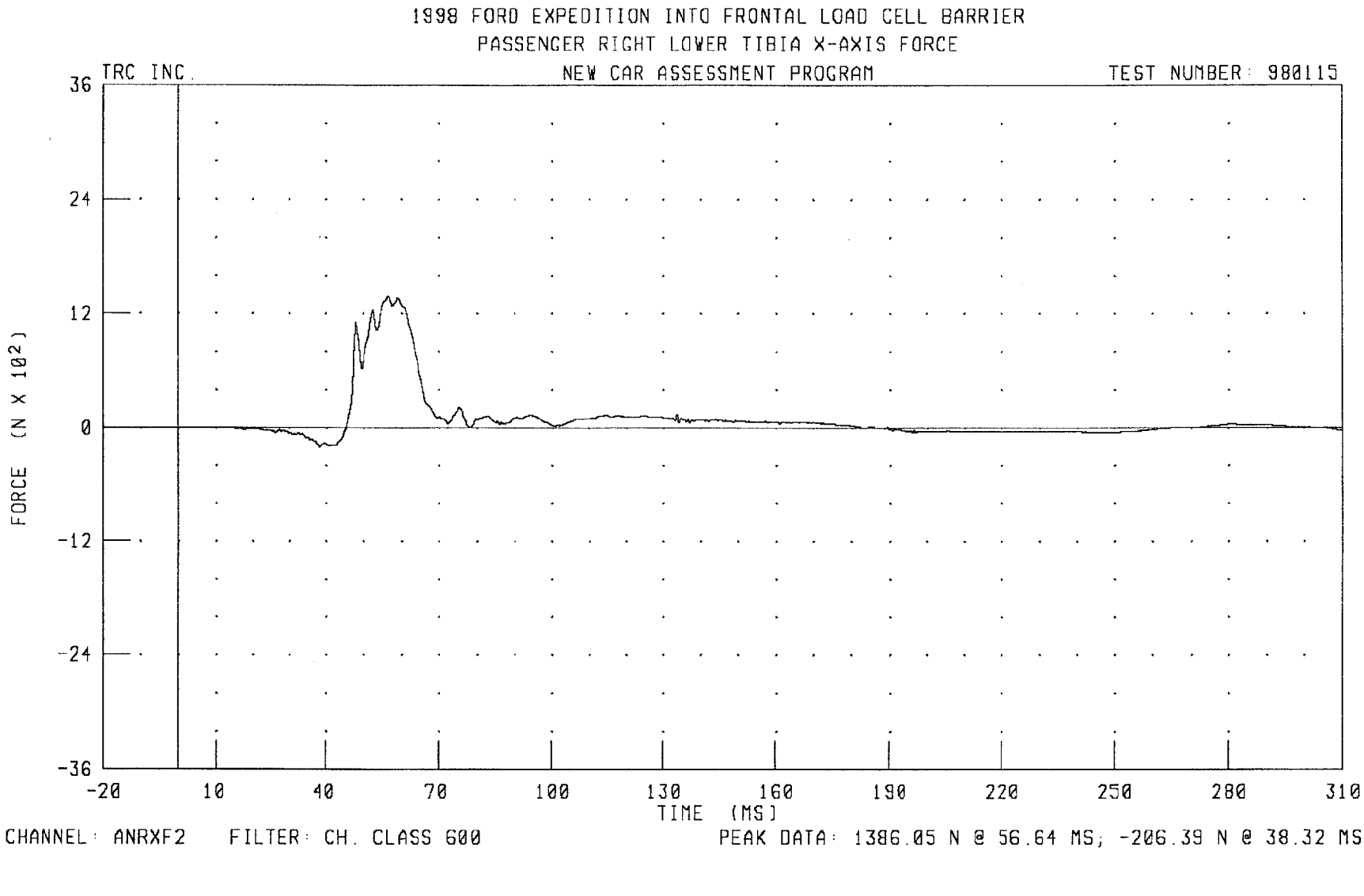
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT LOWER TIBIA X-AXIS FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANLXF2
FILTER: CH. CLASS 600
PEAK DATA: 125.34 N @ 128.72 MS; -778.99 N @ 61.76 MS

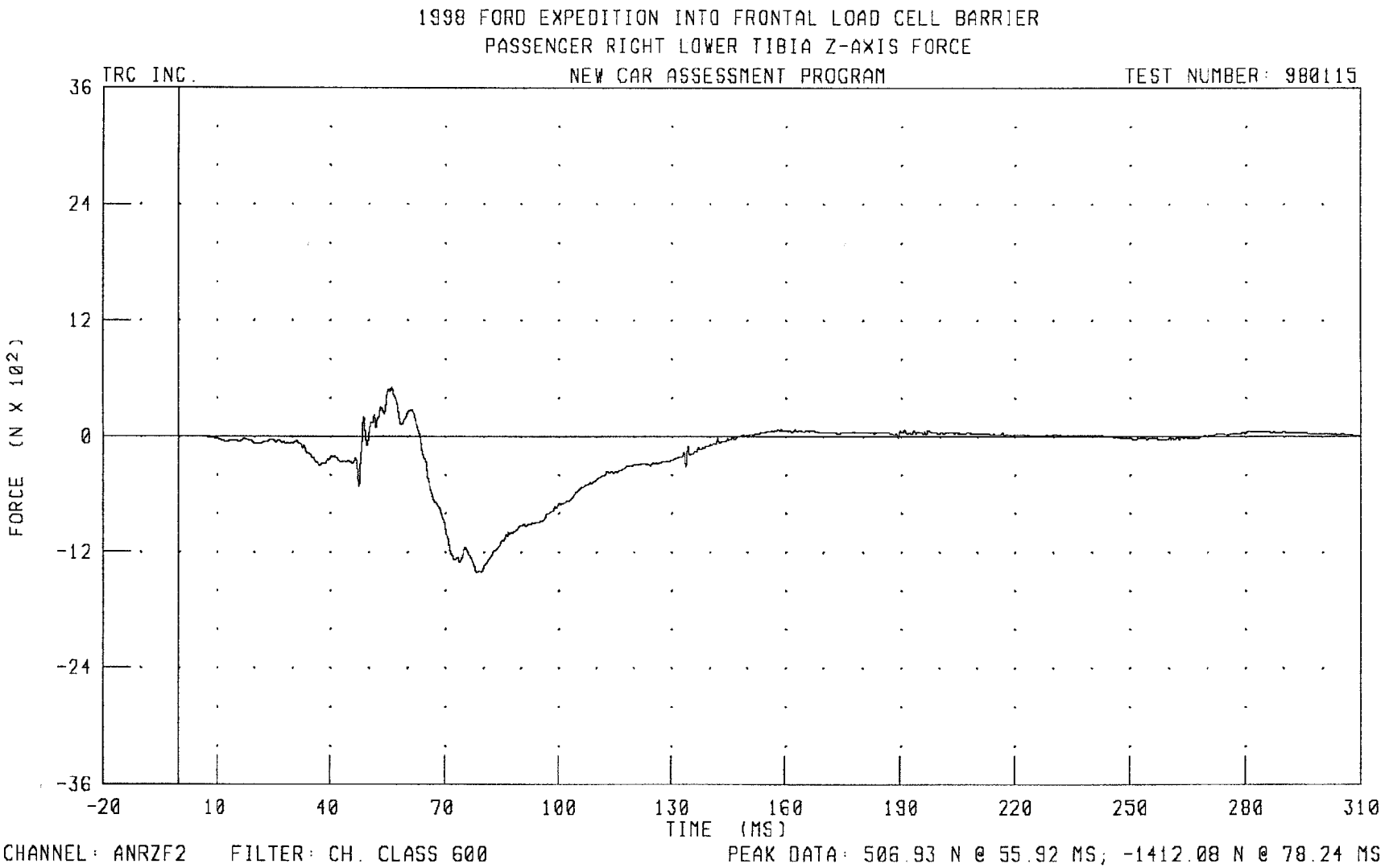

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT LOWER TIBIA Z-AXIS FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANLZF2
FILTER: CH. CLASS 600
PEAK DATA: 621.09 N @ 61.92 MS; -1386.01 N @ 49.04 MS

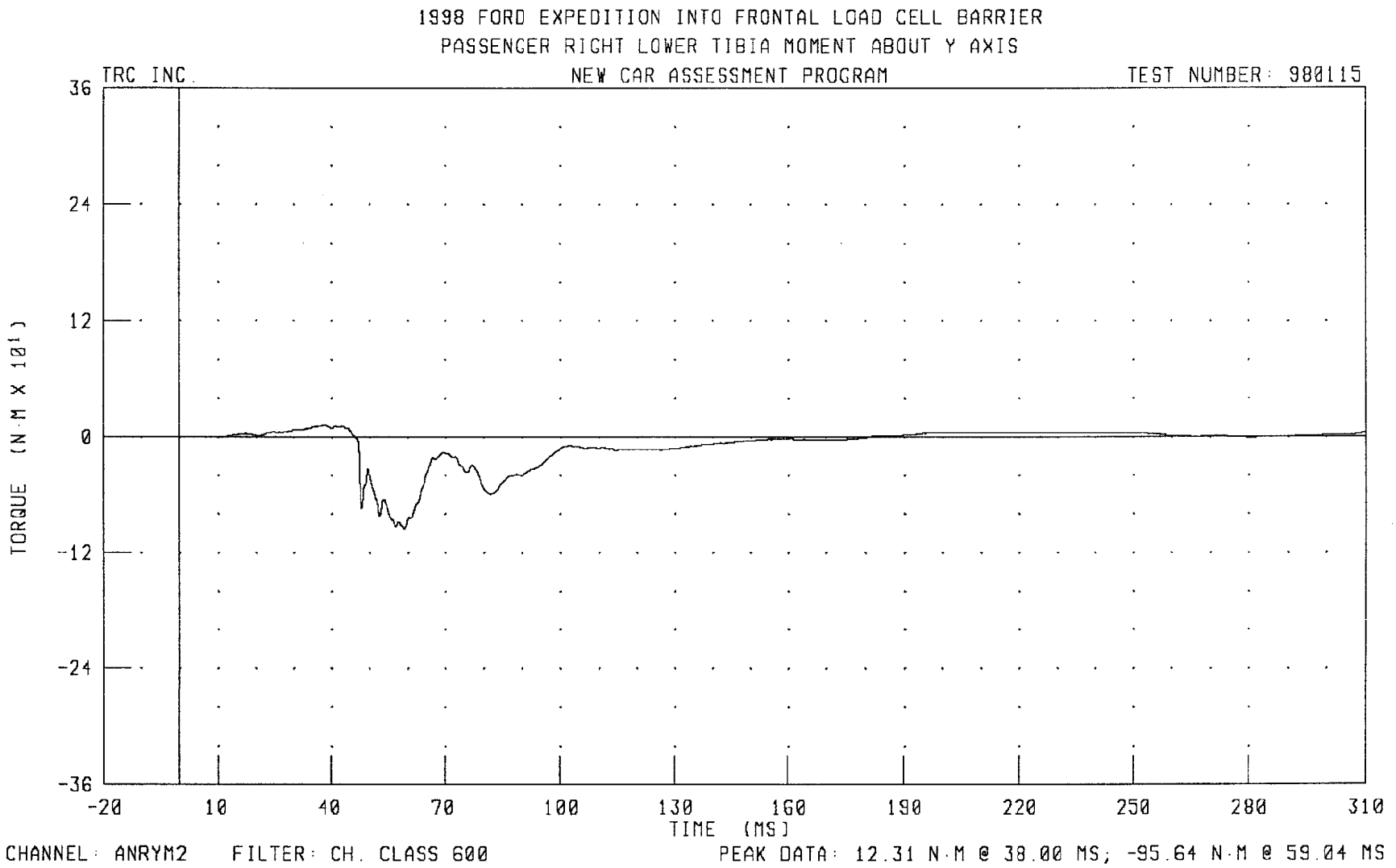
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT LOWER TIBIA MOMENT ABOUT Y AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
TORQUE (N-M X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANLYM2
FILTER: CH. CLASS 600
PEAK DATA: 72.66 N-M @ 61.76 MS; -26.81 N-M @ 83.52 MS

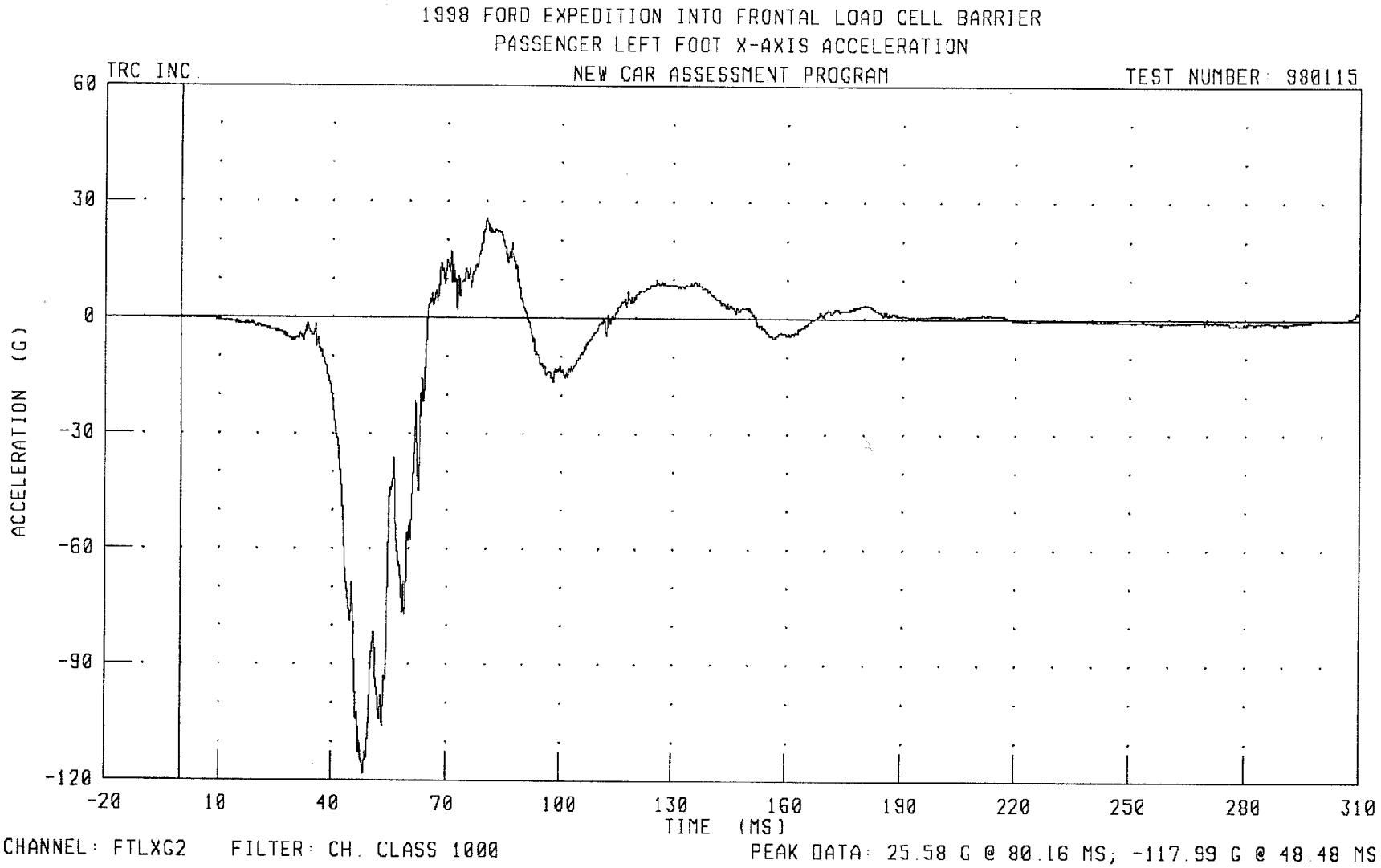

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT LOWER TIBIA X-AXIS FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANRXF2
FILTER: CH. CLASS 600
PEAK DATA: 1386.05 N @ 56.64 MS; -206.39 N @ 38.32 MS

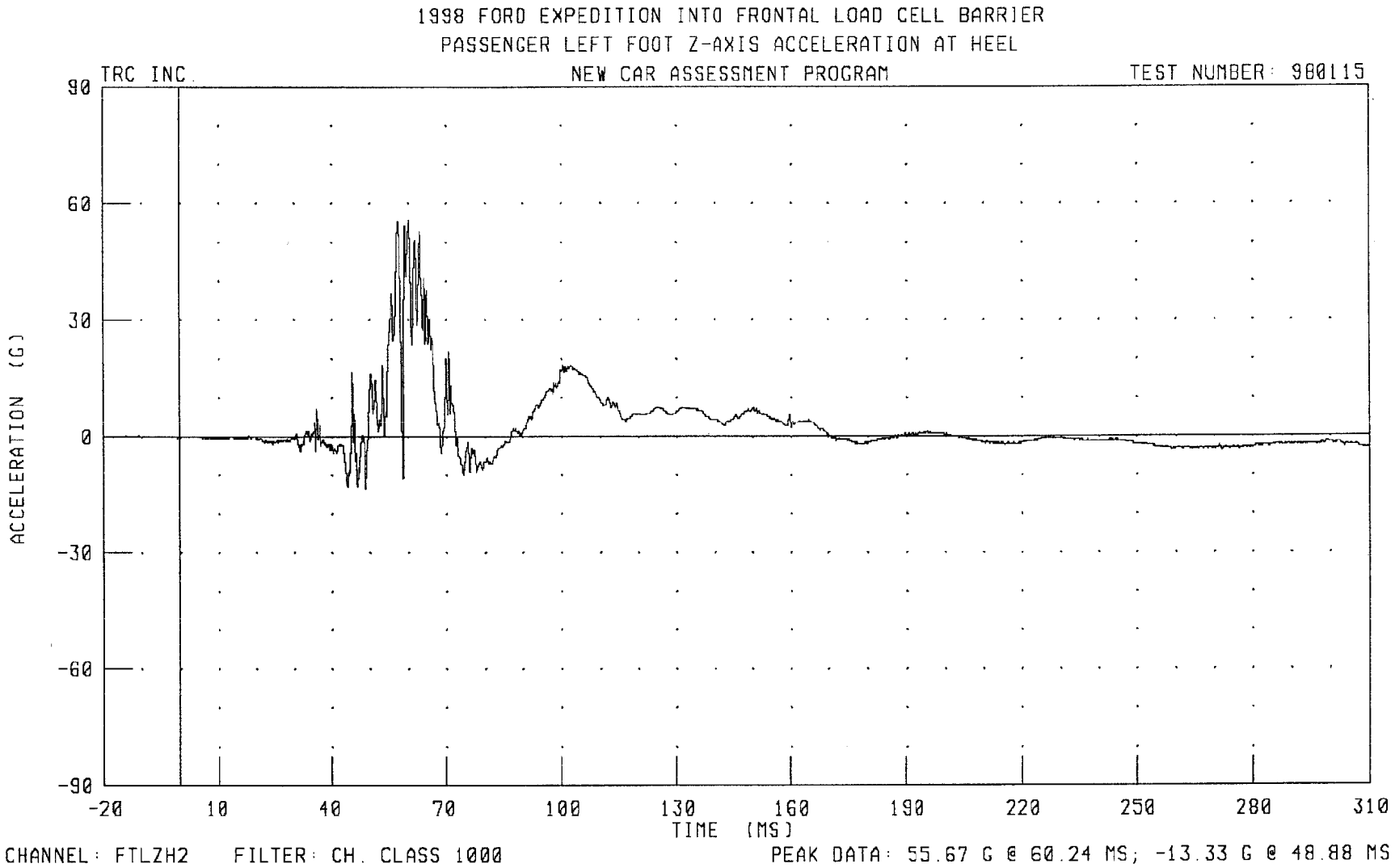
980115

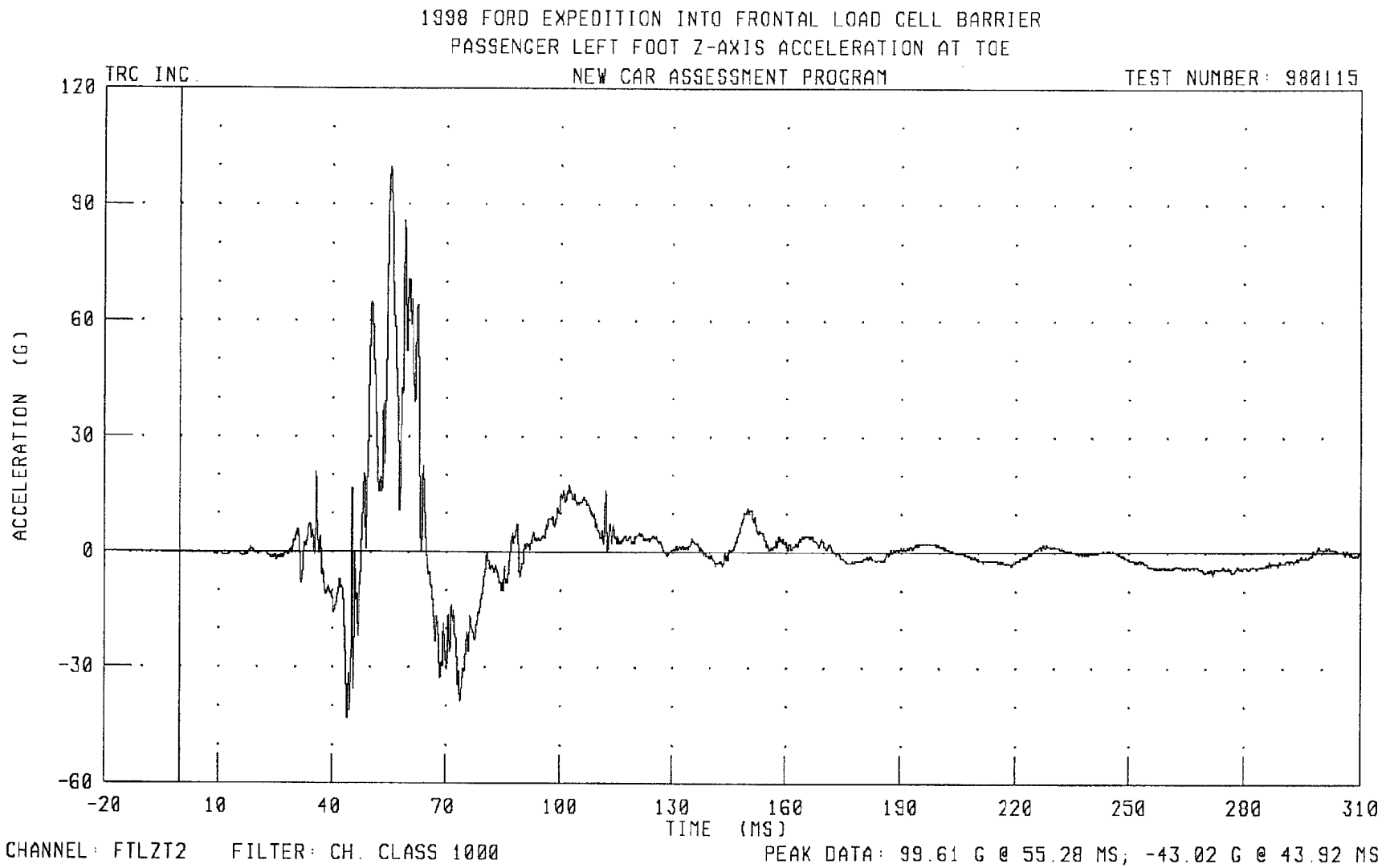

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT LOWER TIBIA Z-AXIS FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANRZF2
FILTER: CH. CLASS 600
PEAK DATA: 506.93 N @ 55.92 MS; -1412.08 N @ 78.24 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT LOWER TIBIA MOMENT ABOUT Y AXIS
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
36
24
12
0
-12
-24
-36
TORQUE (N-M X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ANRYM2
FILTER: CH. CLASS 600
PEAK DATA: 12.31 N-M @ 38.00 MS; -95.64 N-M @ 59.04 MS

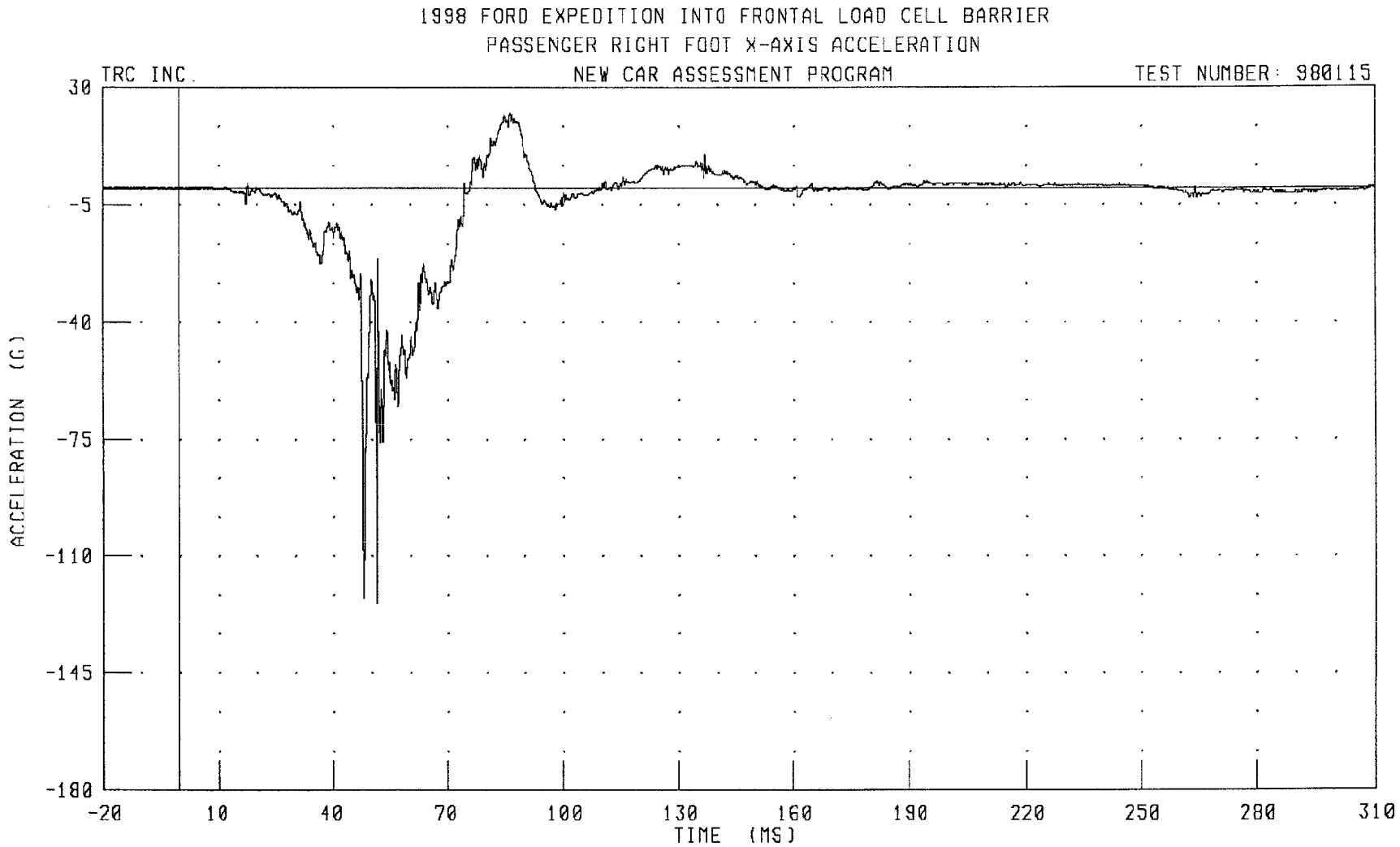
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
30
0
-30
-60
-90
-120
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTLXG2
FILTER: CH. CLASS 1000
PEAK DATA: 25.58 G @ 80.16 MS; -117.99 G @ 48.48 MS
98-8
980115

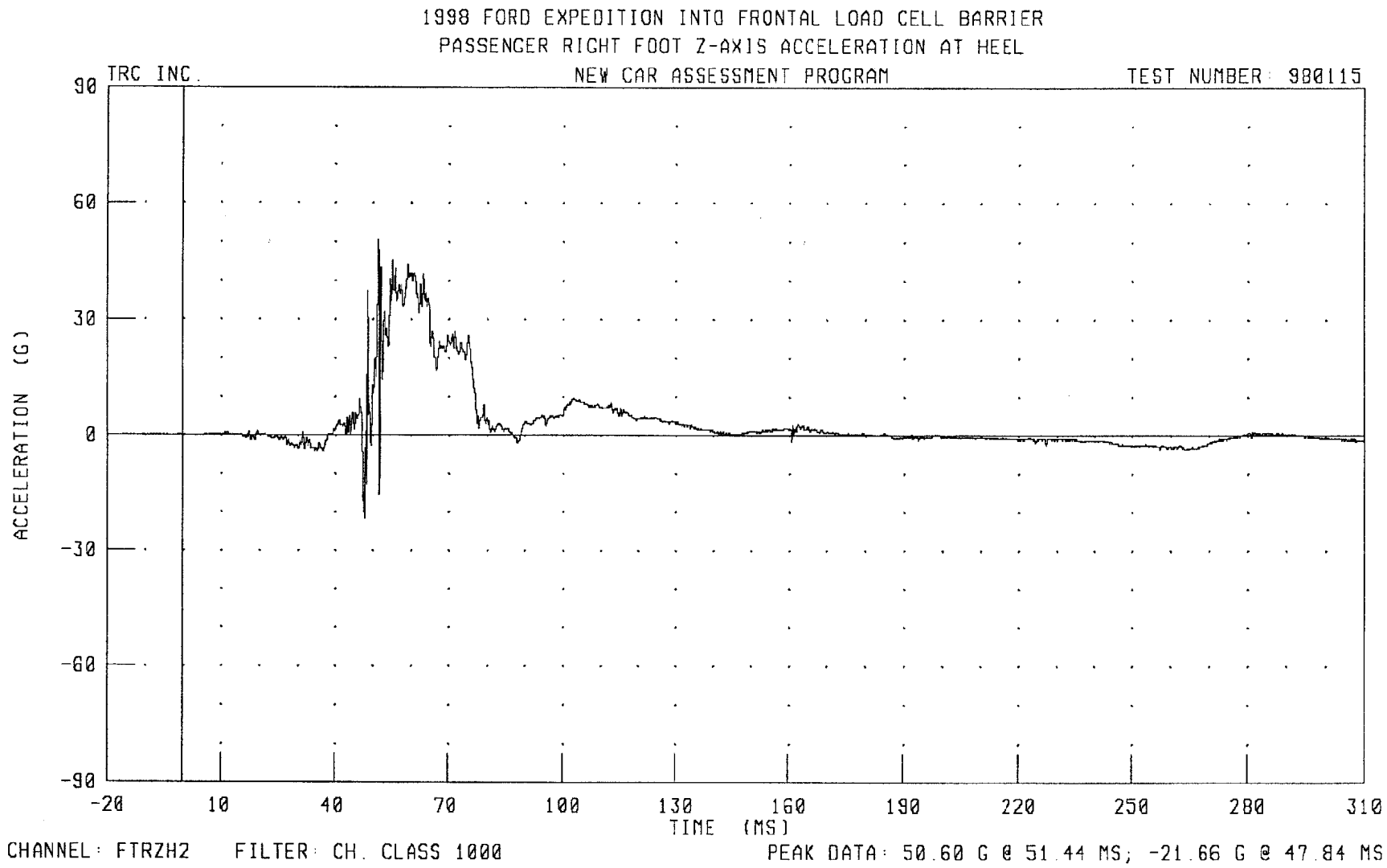

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT Z-AXIS ACCELERATION AT HEEL
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
90
60
30
0
-30
-60
-90
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTLZH2
FILTER: CH. CLASS 1000
PEAK DATA: 55.67 G @ 60.24 MS; -13.33 G @ 48.88 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FOOT Z-AXIS ACCELERATION AT TOE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
120
90
60
30
0
-30
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTLZT2
FILTER: CH. CLASS 1000
PEAK DATA: 99.61 G @ 55.28 MS; -43.02 G @ 43.92 MS

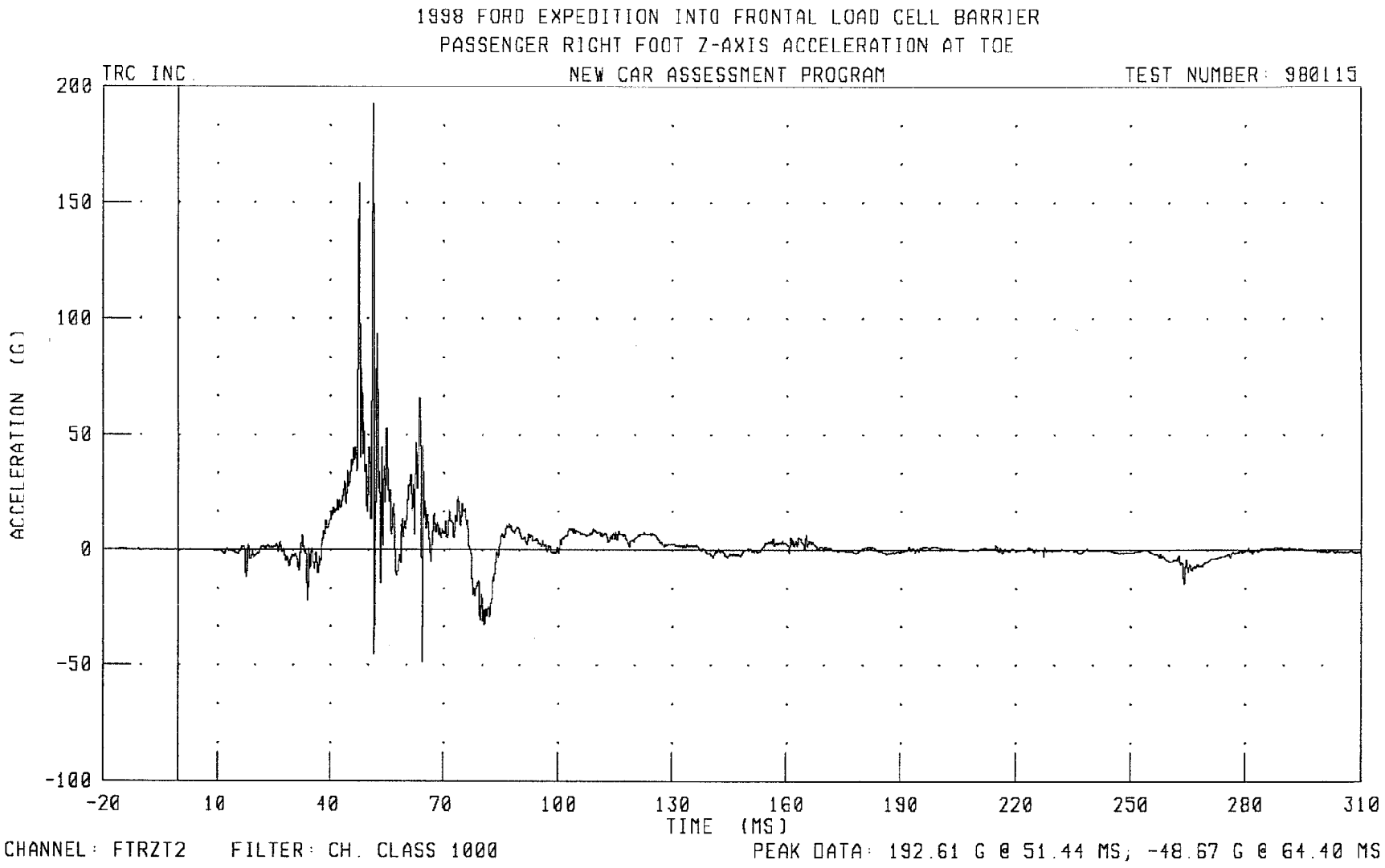
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
-5
-40
-75
-110
-145
-180
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTRXG2
FILTER: CH. CLASS 1000
PEAK DATA: 22.27 G @ 86.16 MS; -124.17 G @ 51.28 MS

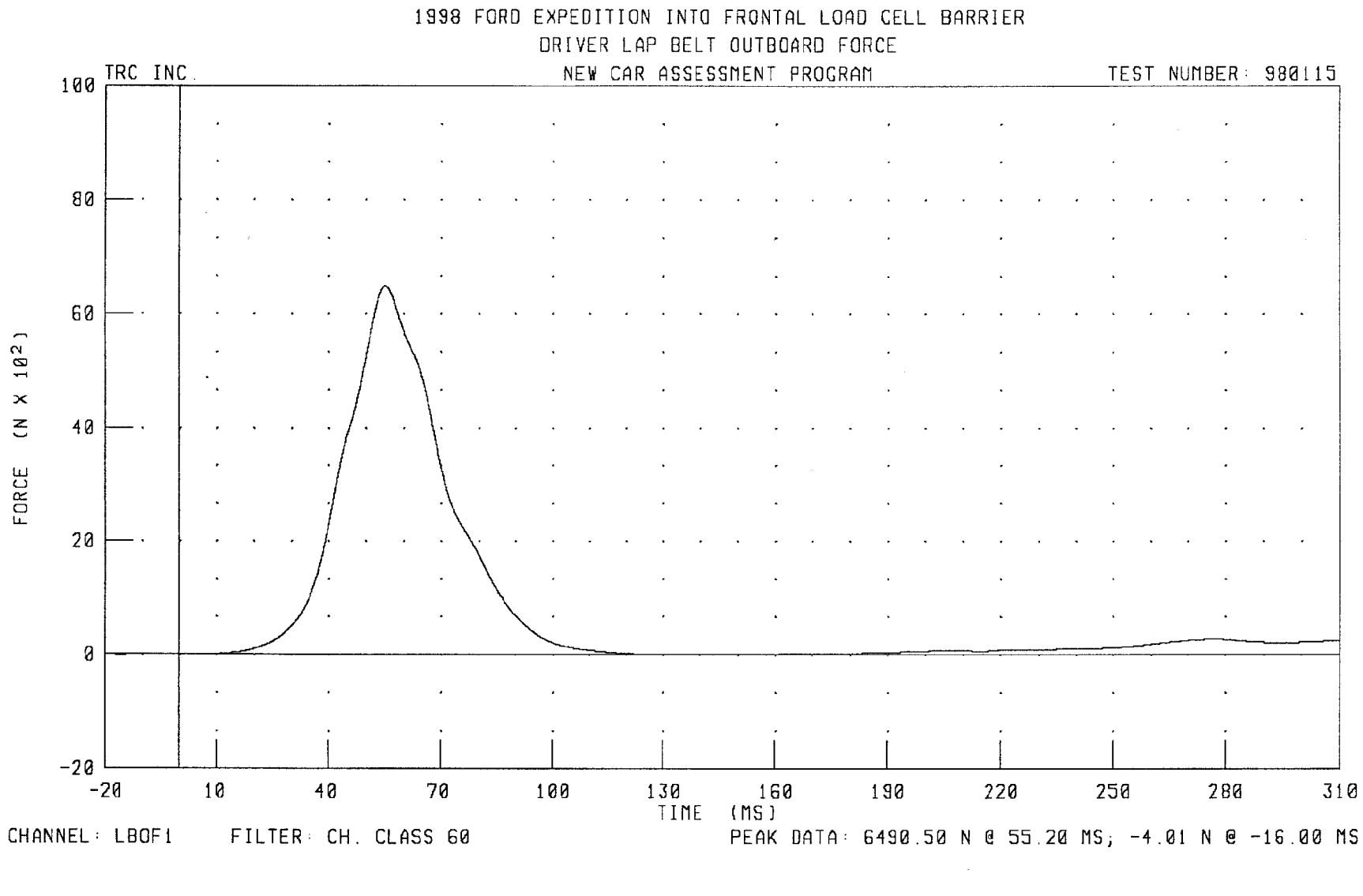
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT Z-AXIS ACCELERATION AT HEEL
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
90
60
30
0
-30
-60
-90
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTRZH2
FILTER: CH. CLASS 1000
PEAK DATA: 50.60 G @ 51.44 MS; -21.66 G @ 47.84 MS

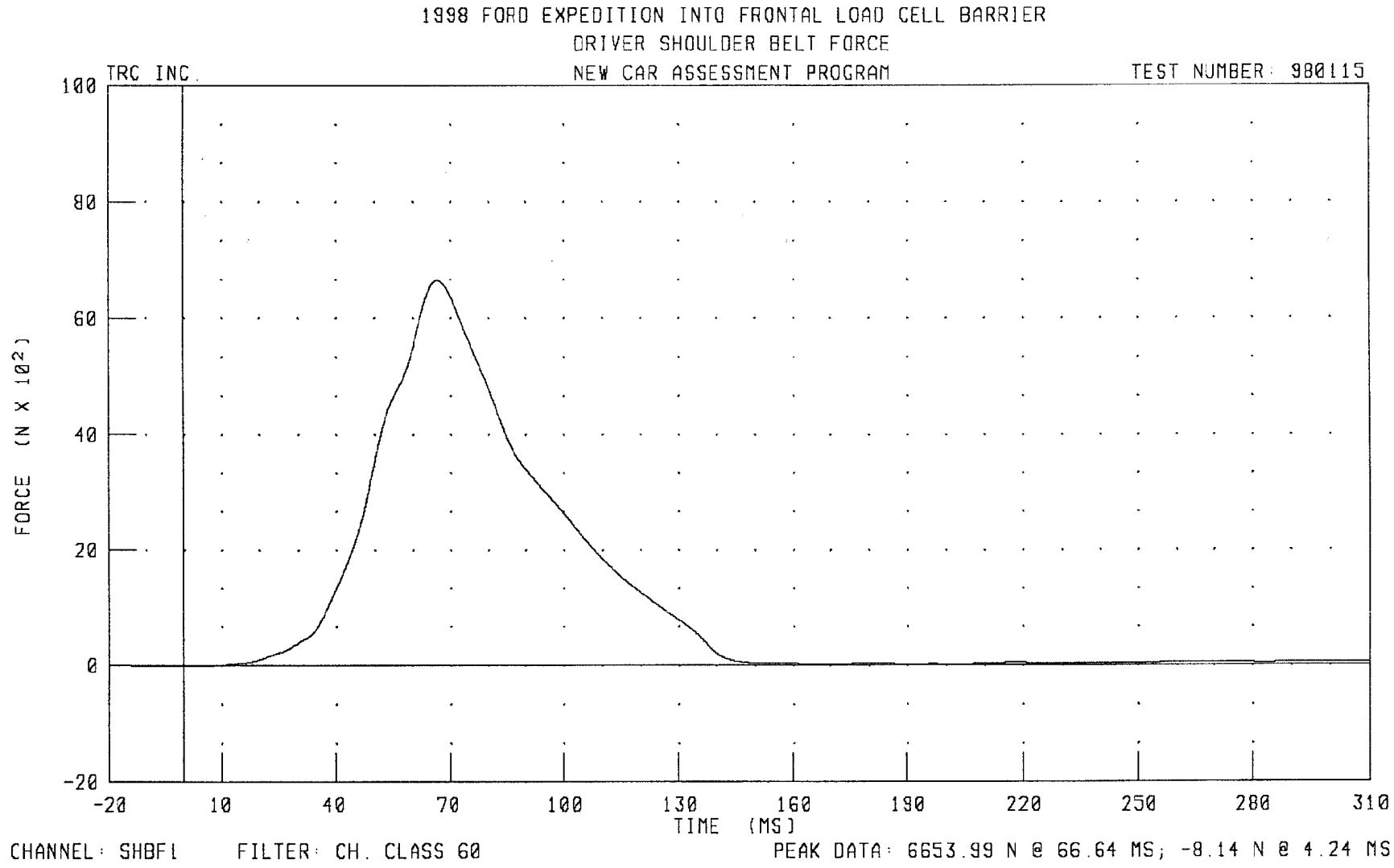
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FOOT Z-AXIS ACCELERATION AT TOE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
200
150
100
50
0
-50
-100
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: FTRZT2
FILTER: CH. CLASS 1000
PEAK DATA: 192.61 G @ 51.44 MS; -48.67 G @ 64.40 MS

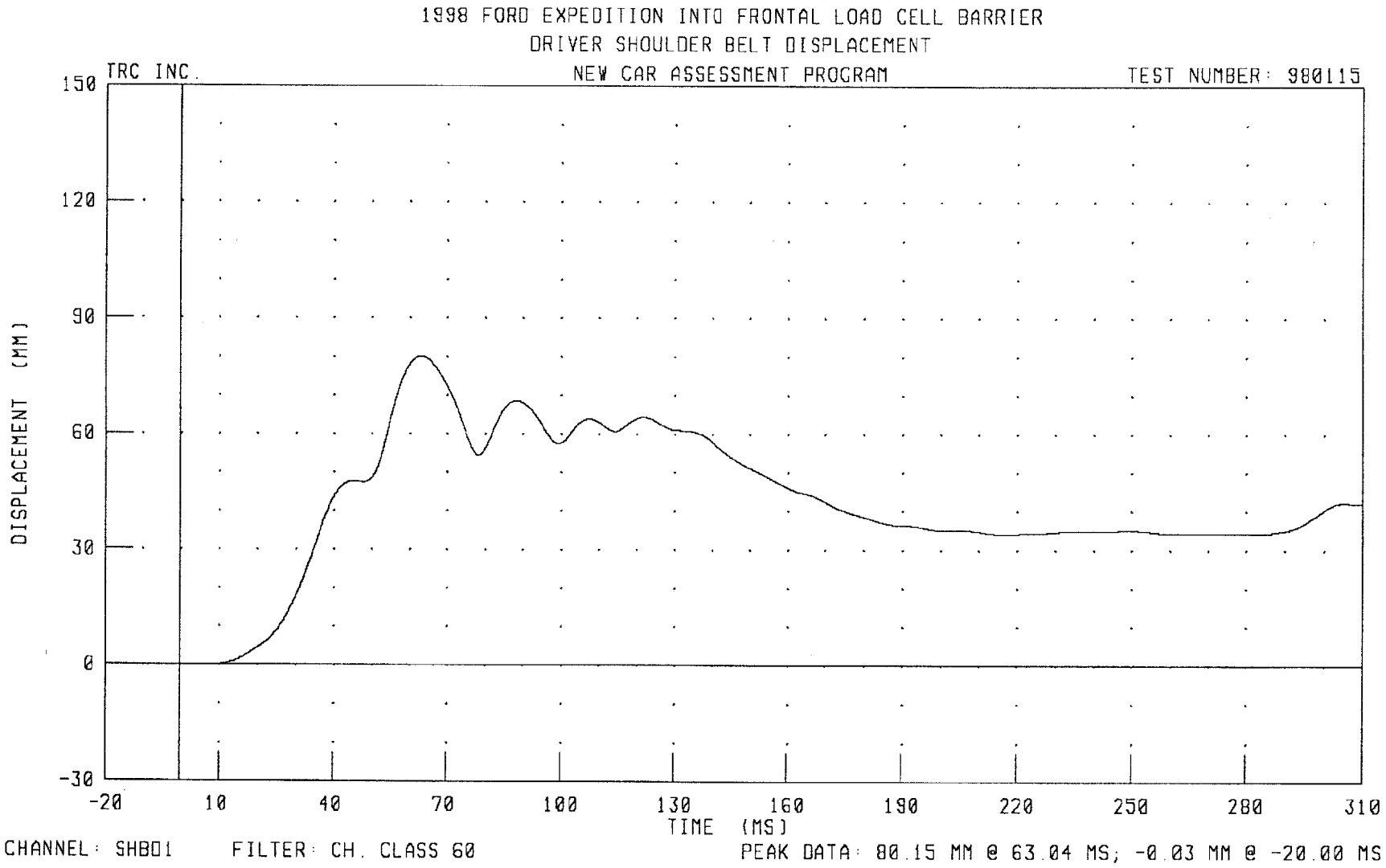
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER LAP BELT OUTBOARD FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
100
80
60
40
20
0
-20
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LBOF1
FILTER: CH. CLASS 60
PEAK DATA: 6490.50 N @ 55.20 MS; -4.01 N @ -16.00 MS

980115

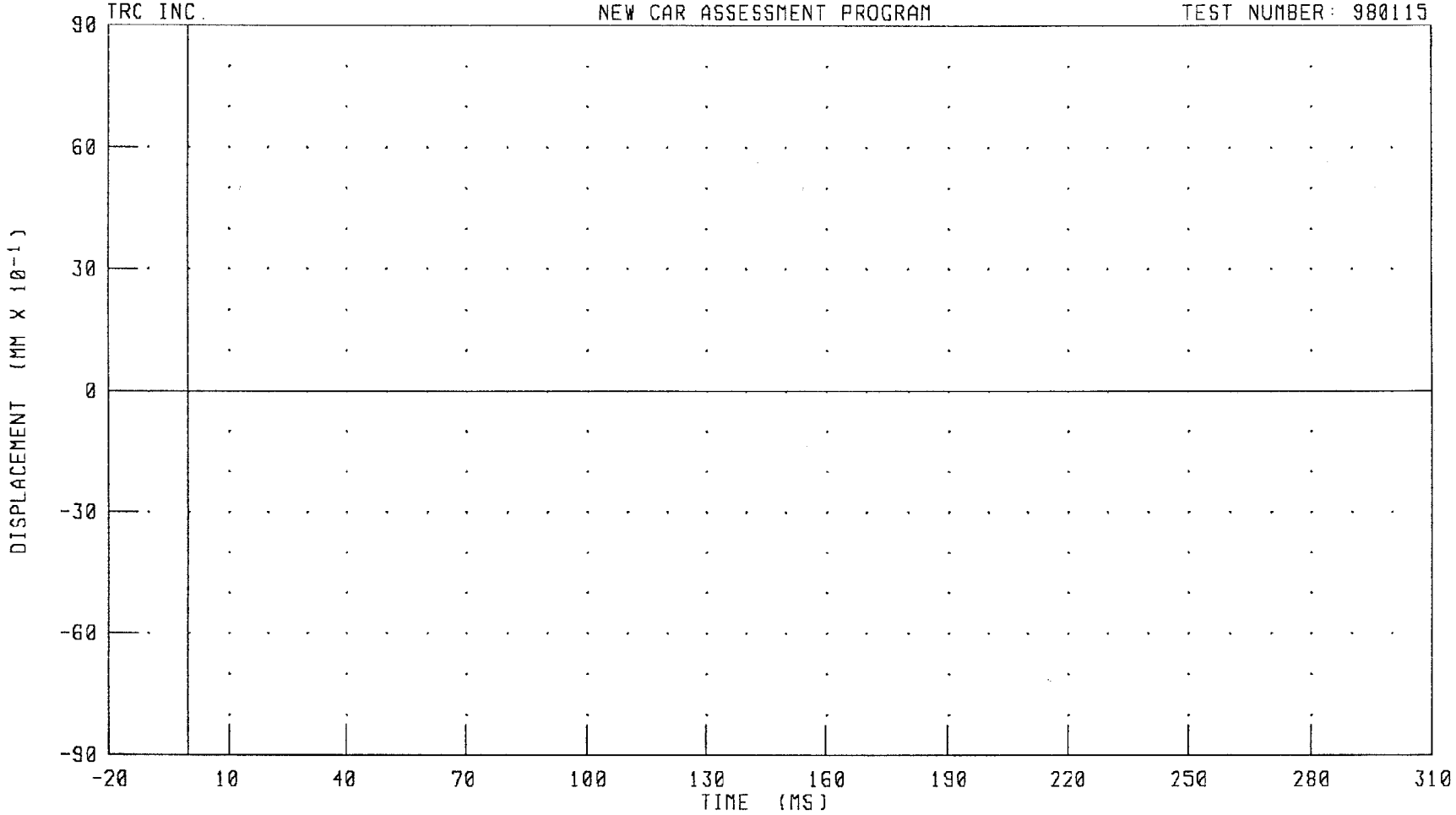

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER SHOULDER BELT FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
100
80
60
40
20
0
-20
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: SHBFL
FILTER: CH. CLASS 60
PEAK DATA: 6653.99 N @ 66.64 MS; -8.14 N @ 4.24 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER SHOULDER BELT DISPLACEMENT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
DISPLACEMENT (MM)
150
120
90
60
30
0
-30
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: SHB01
FILTER: CH. CLASS 60
PEAK DATA: 80.15 MM @ 63.04 MS; -0.03 MM @ -20.00 MS

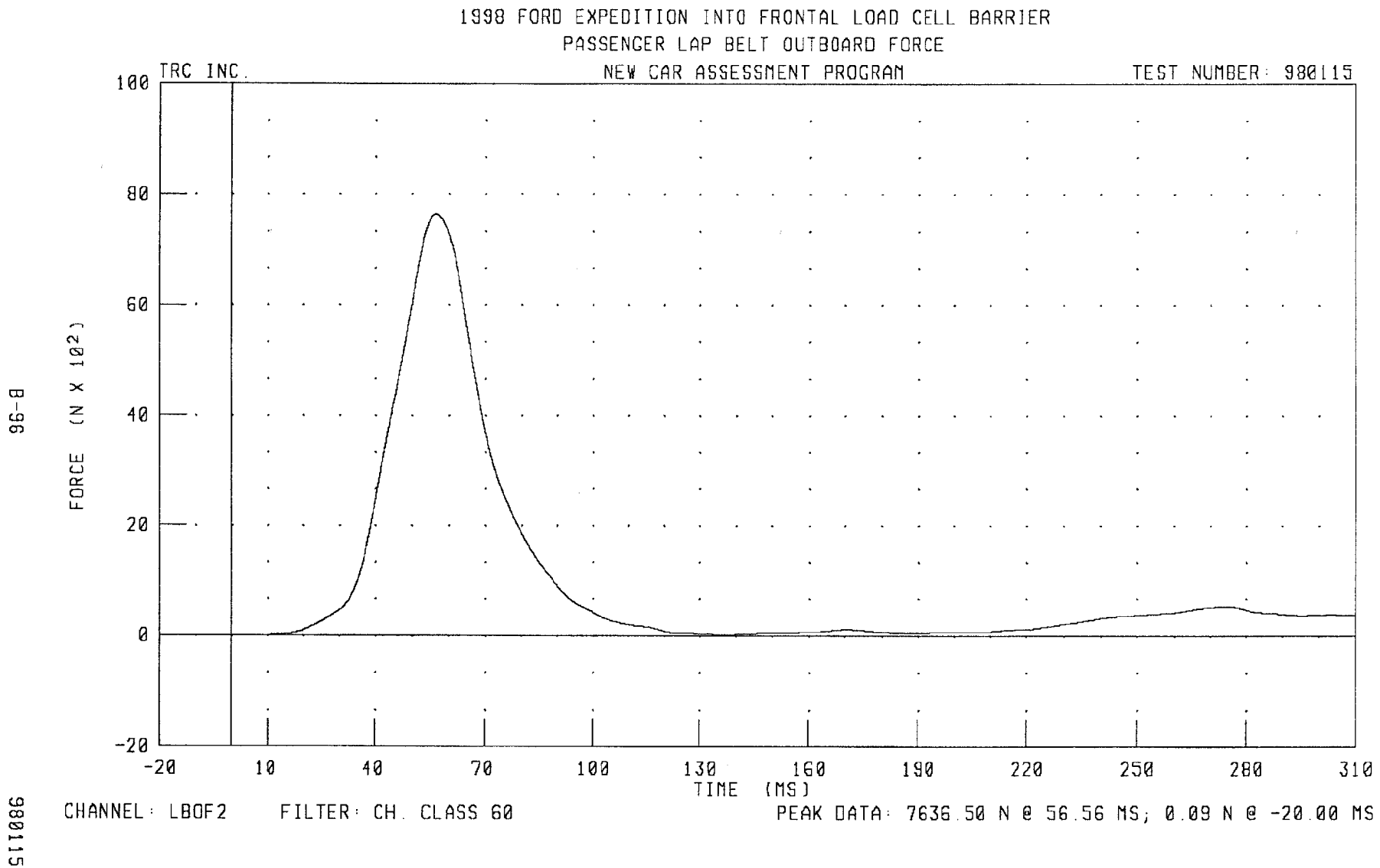
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
DRIVER SEAT BELT EXTENSION
NEW CAR ASSESSMENT PROGRAM

TRC INC. TEST NUMBER: 980115

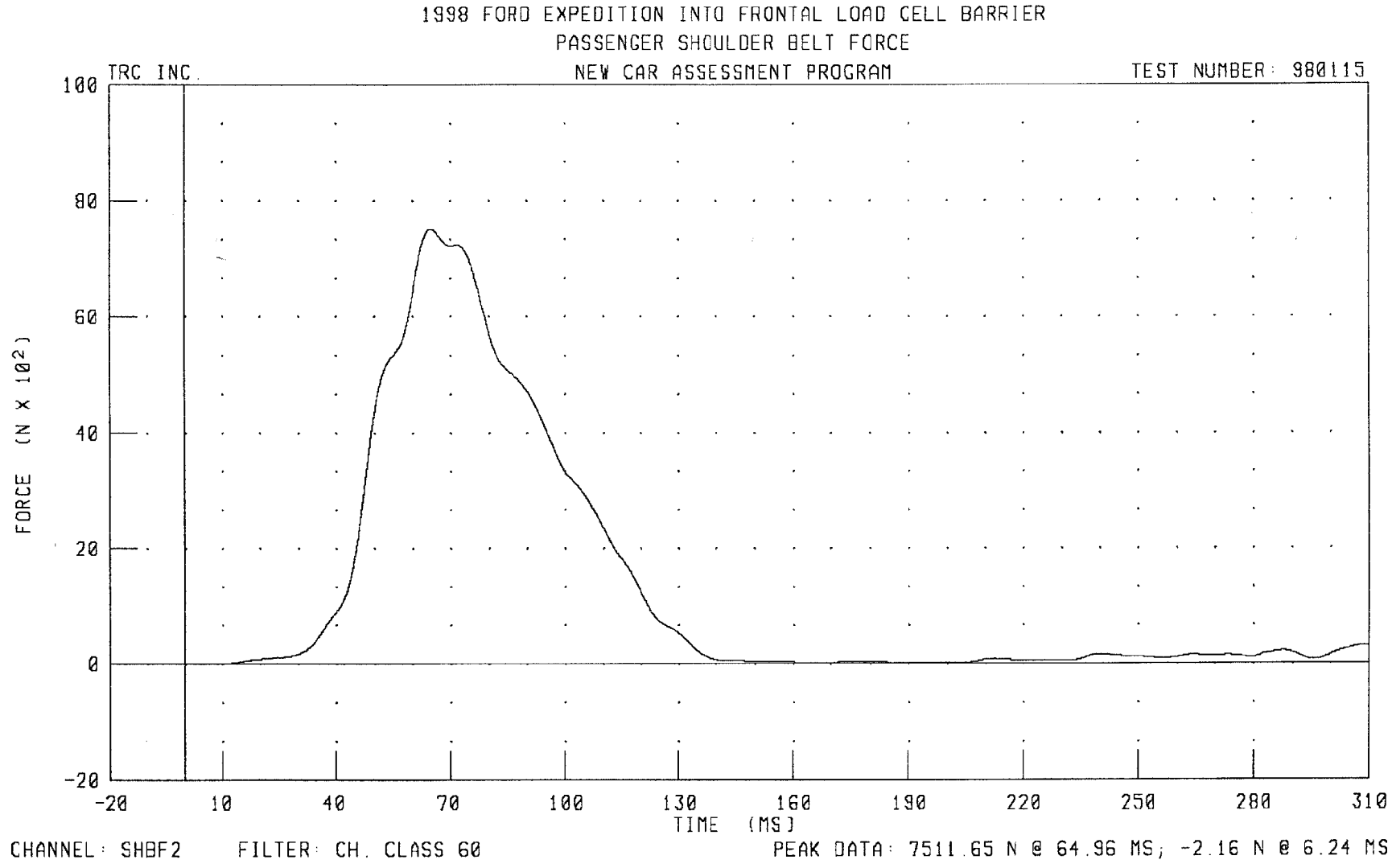


CHANNEL: SBE01 FILTER: CH. CLASS 60 PEAK DATA: 0.00 MM @ 70.40 MS; 0.00 MM @ 246.16 MS

980115

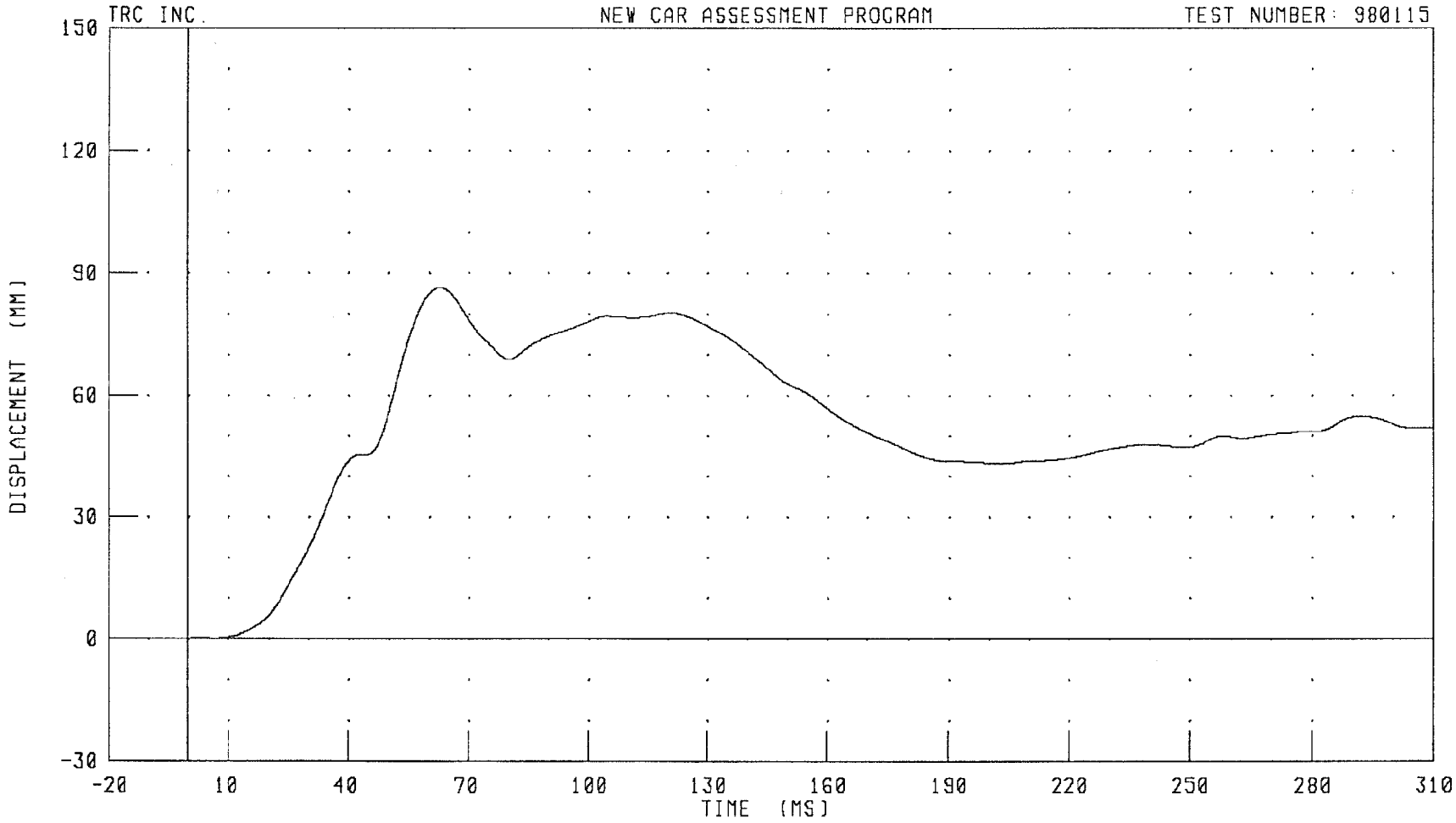

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER LAP BELT OUTBOARD FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
FORCE (N X 10²)
100
80
60
40
20
0
-20
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LBOF2
FILTER: CH. CLASS 60
PEAK DATA: 7636.50 N @ 56.56 MS; 0.09 N @ -20.00 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
100
80
60
40
20
0
-20
FORCE (N X 10²)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: SHBF2
FILTER: CH. CLASS 60
PEAK DATA: 7511.65 N @ 64.96 MS; -2.16 N @ 6.24 MS

980115

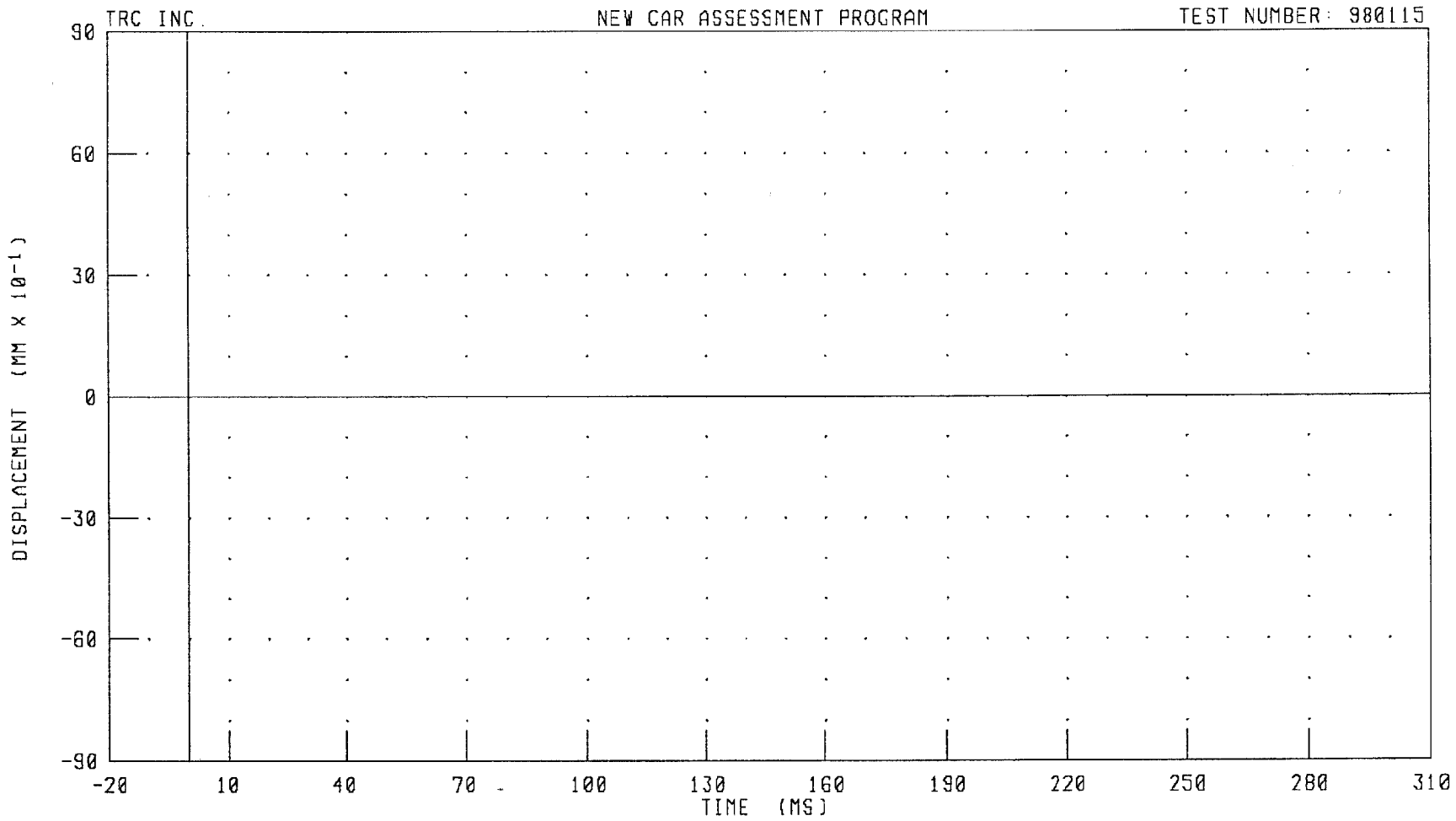
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT DISPLACEMENT



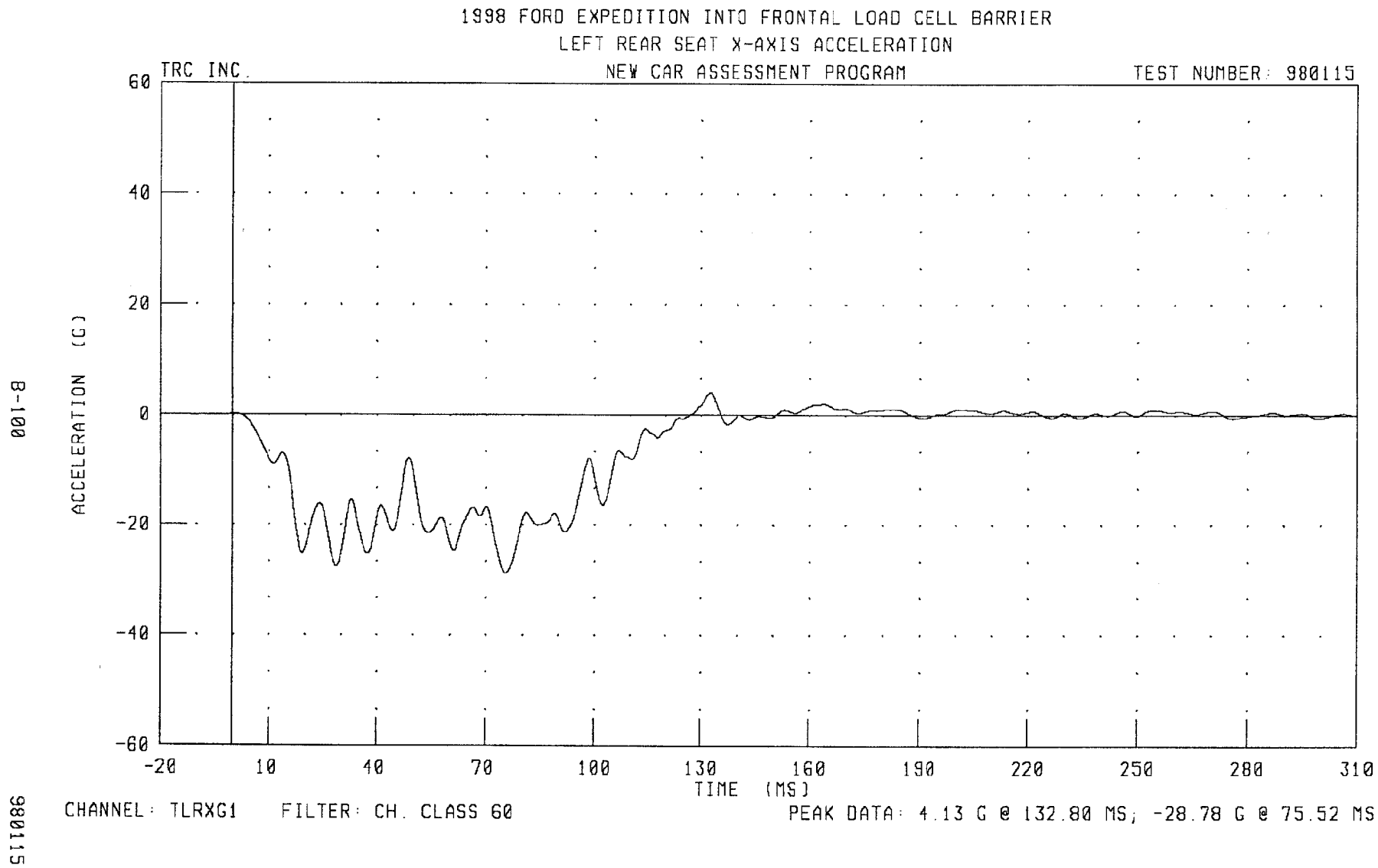
CHANNEL: SHBD2 FILTER: CH. CLASS 60 PEAK DATA: 86.52 MM @ 62.88 MS; -0.01 MM @ -14.08 MS

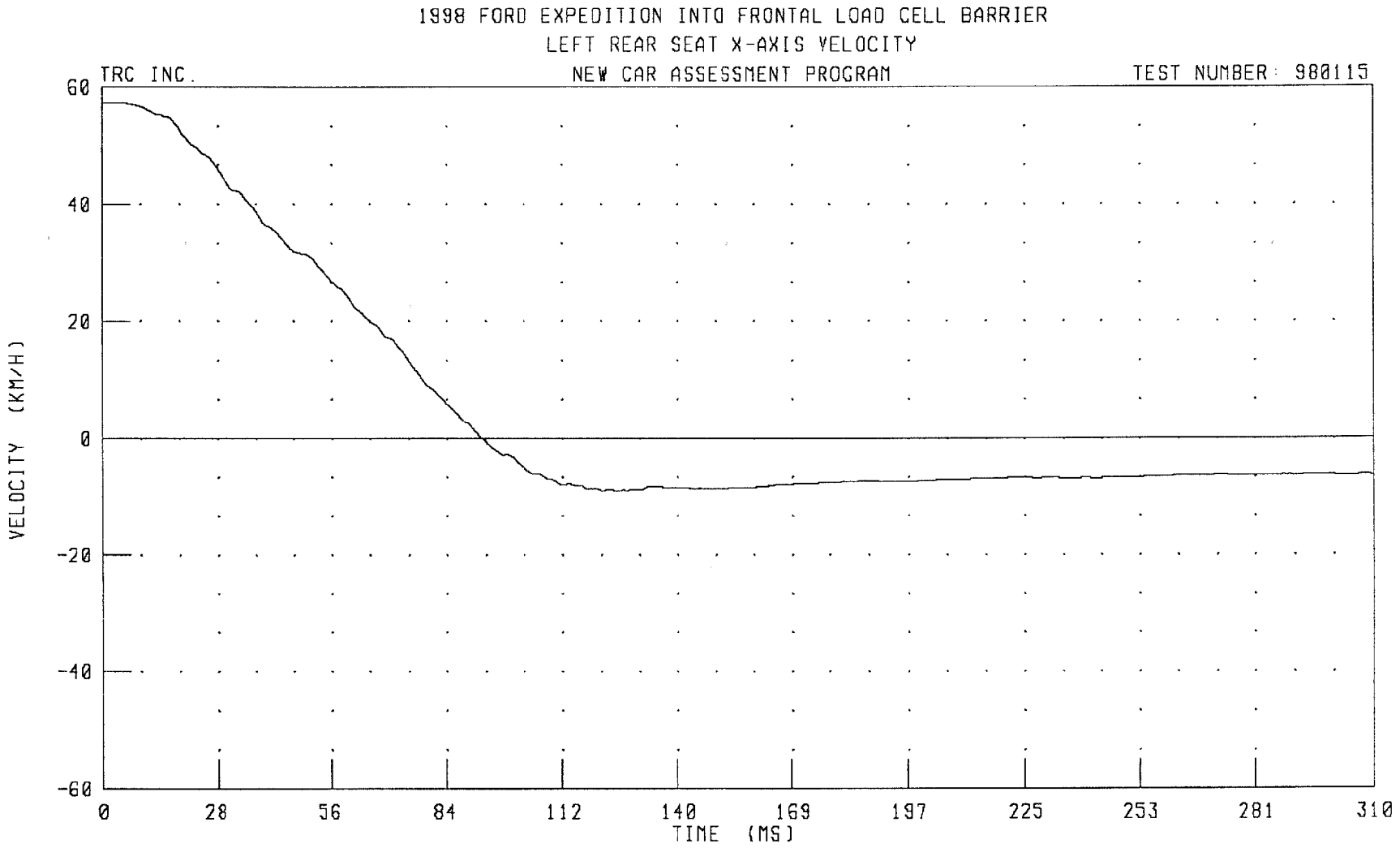
980115

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
PASSENGER SEAT BELT EXTENSION

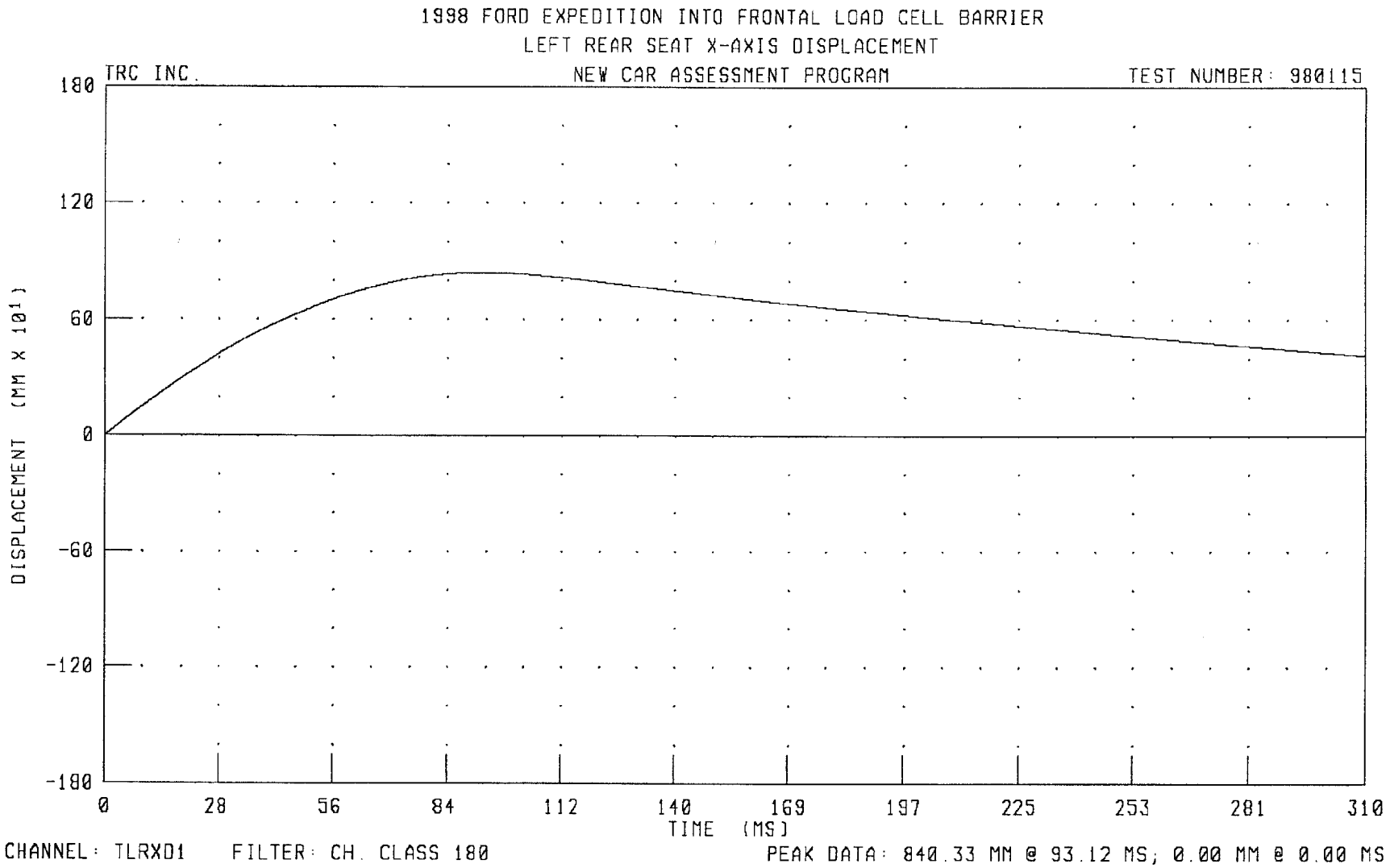


980115

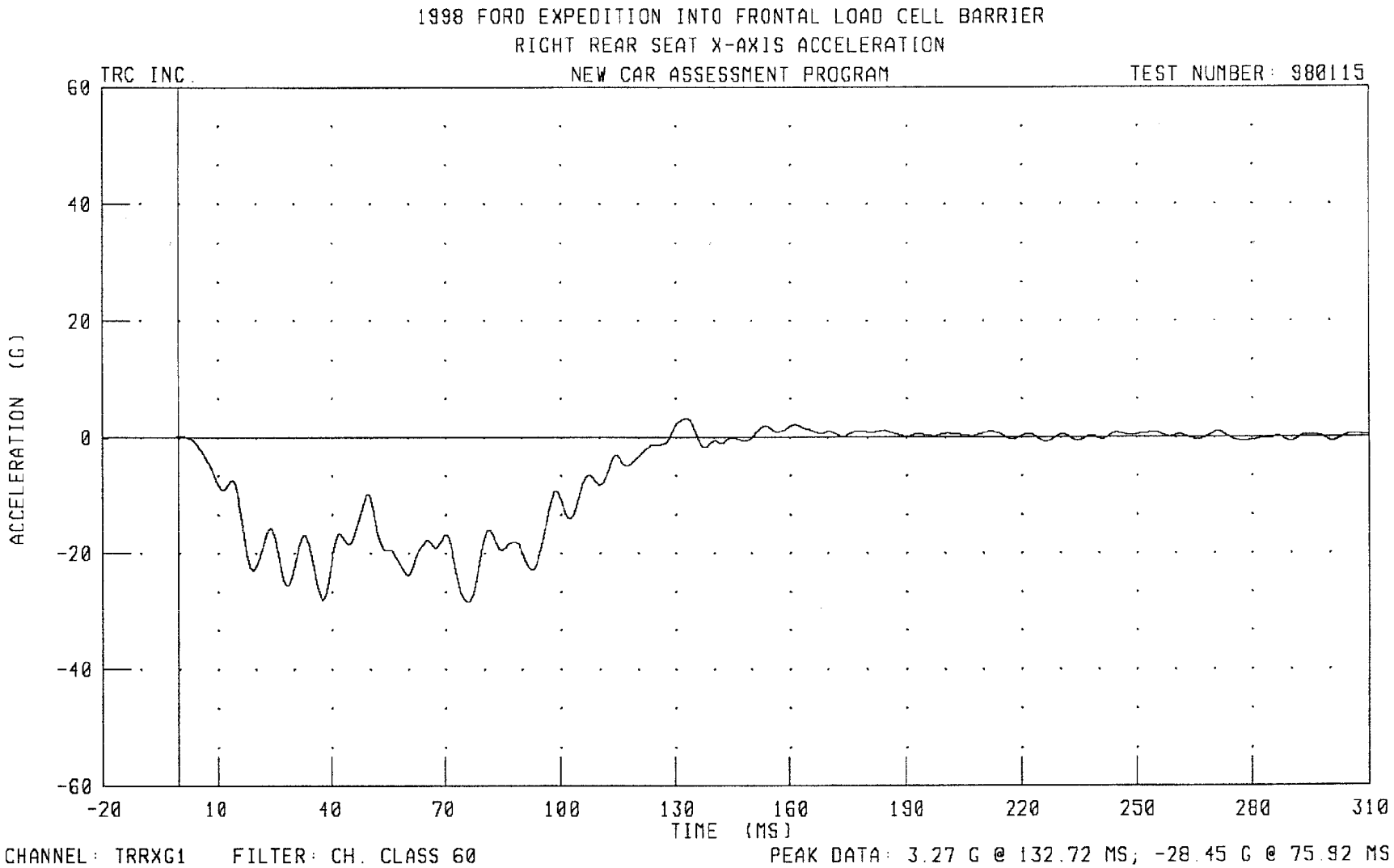

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
60
40
20
0
-20
-40
-60
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: TLRXG1
FILTER: CH. CLASS 60
PEAK DATA: 4.13 G @ 132.80 MS; -28.78 G @ 75.52 MS
8-100
980115

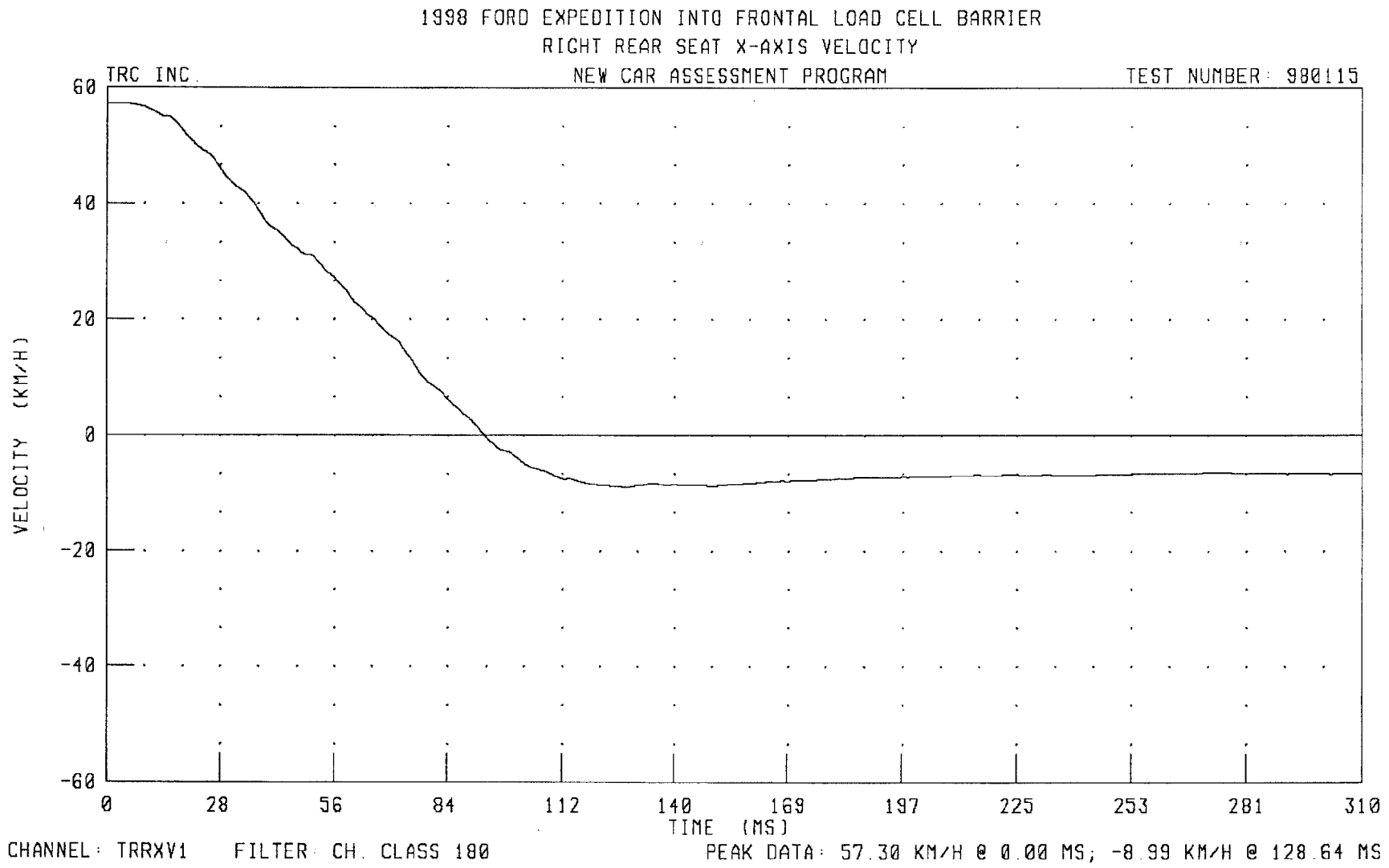

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS VELOCITY
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
VELOCITY (KM/H)
0
28
56
84
112
140
169
197
225
253
281
310
TIME (MS)
CHANNEL: TLRXV1
FILTER: CH. CLASS 180
PEAK DATA: 57.31 KM/H @ 2.16 MS; -8.96 KM/H @ 122.48 MS

980115

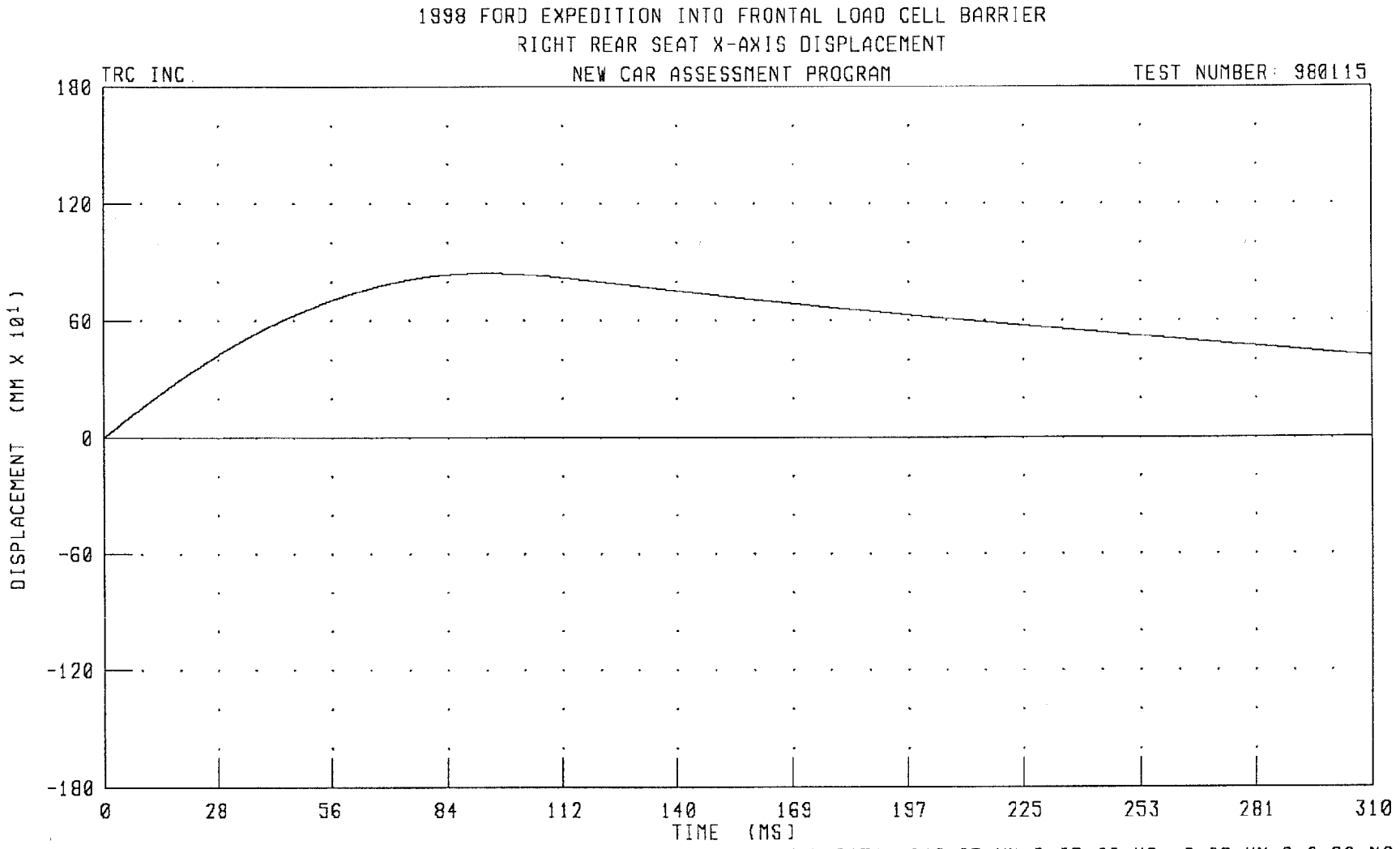

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS DISPLACEMENT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
180
120
60
0
-60
-120
-180
DISPLACEMENT (MM X 10¹)
0
28
56
84
112
140
169
197
225
253
281
310
TIME (MS)
CHANNEL: TLRXD1
FILTER: CH. CLASS 180
PEAK DATA: 840.33 MM @ 93.12 MS; 0.00 MM @ 0.00 MS

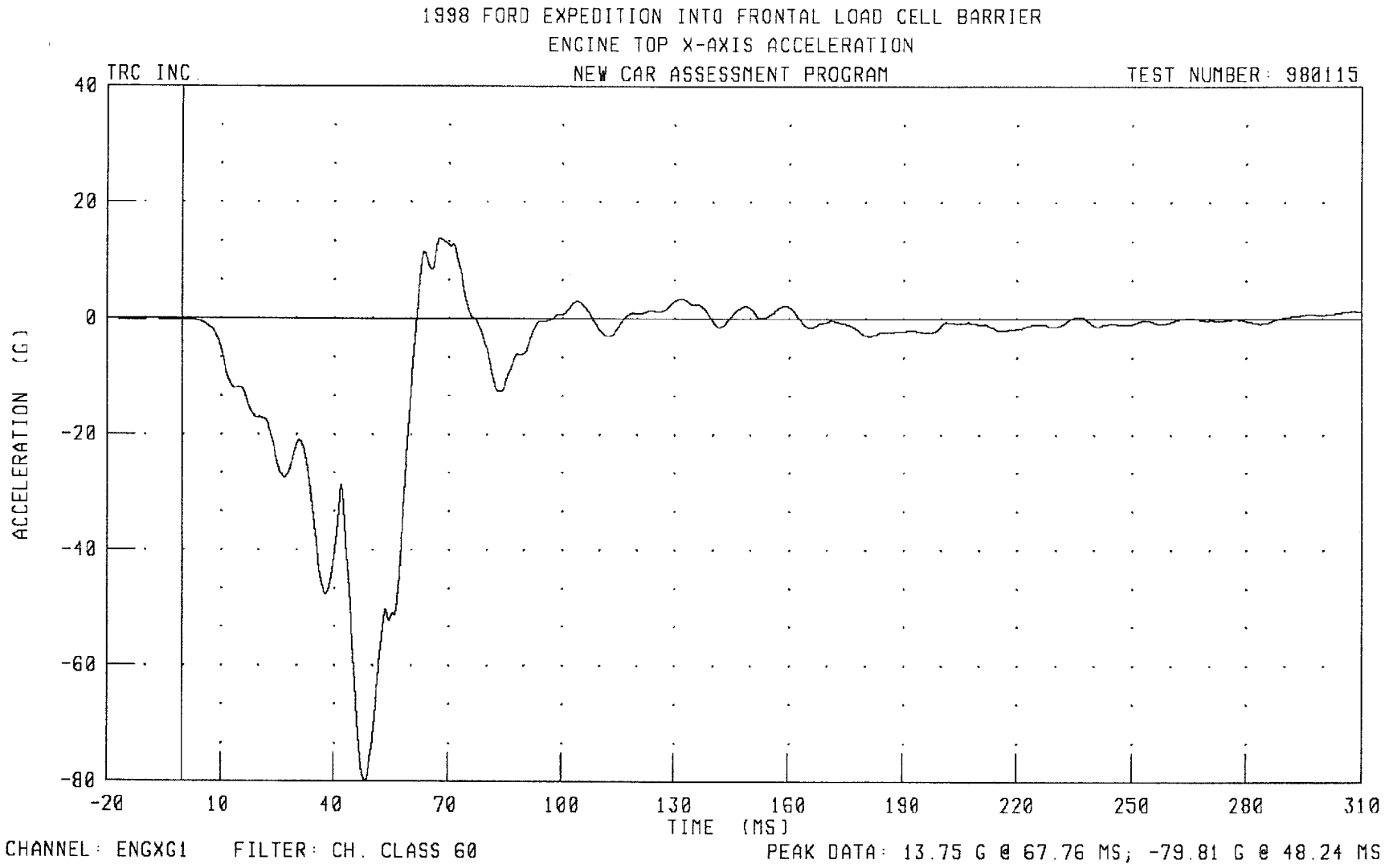
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: TRRXG1
FILTER: CH. CLASS 60
PEAK DATA: 3.27 G @ 132.72 MS; -28.45 G @ 75.92 MS

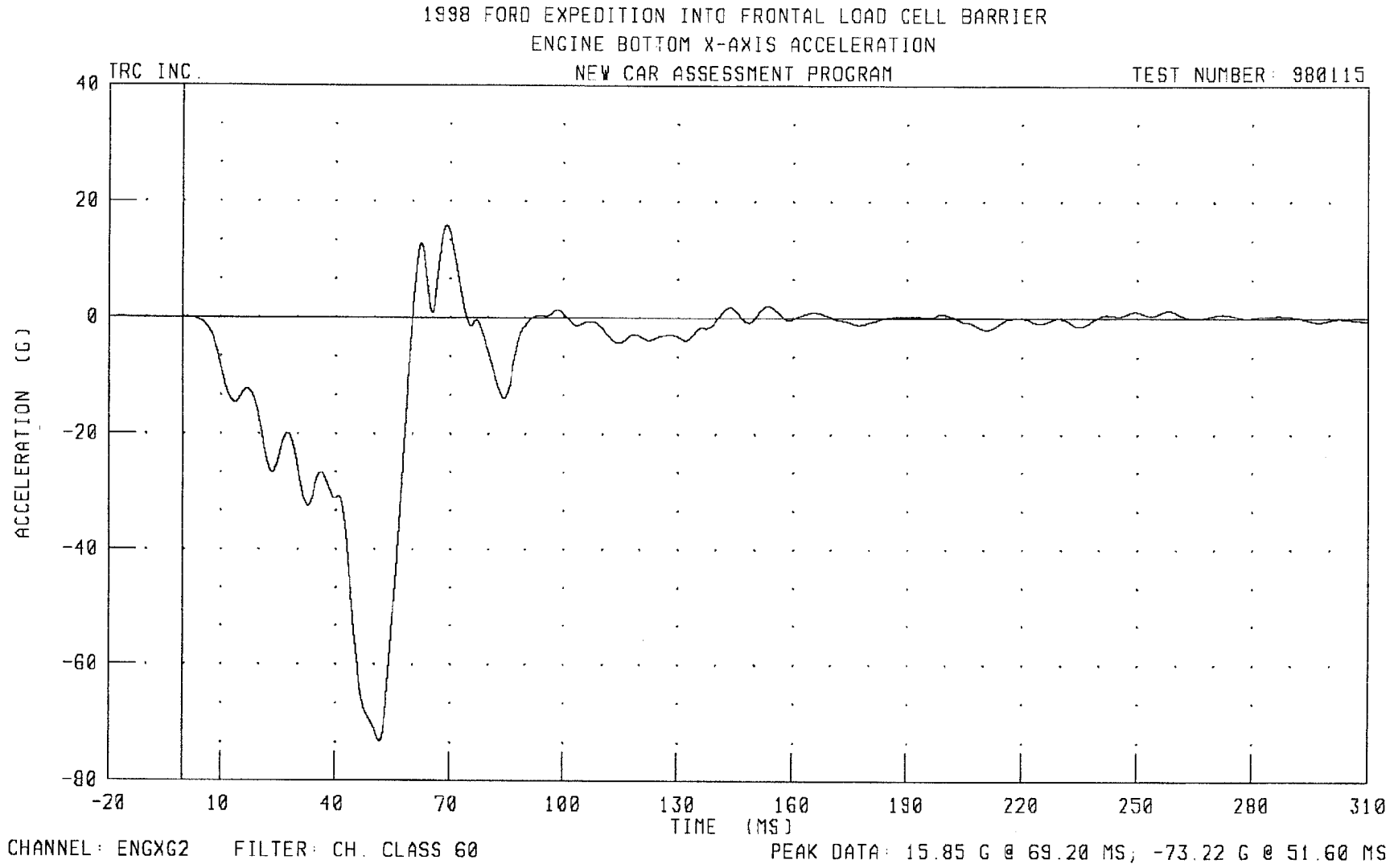

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS VELOCITY
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
VELOCITY (KM/H)
0
28
56
84
112
140
169
197
225
253
281
310
TIME (MS)
CHANNEL: TRRXV1
FILTER: CH. CLASS 180
PEAK DATA: 57.30 KM/H @ 0.00 MS; -8.99 KM/H @ 128.64 MS

980115

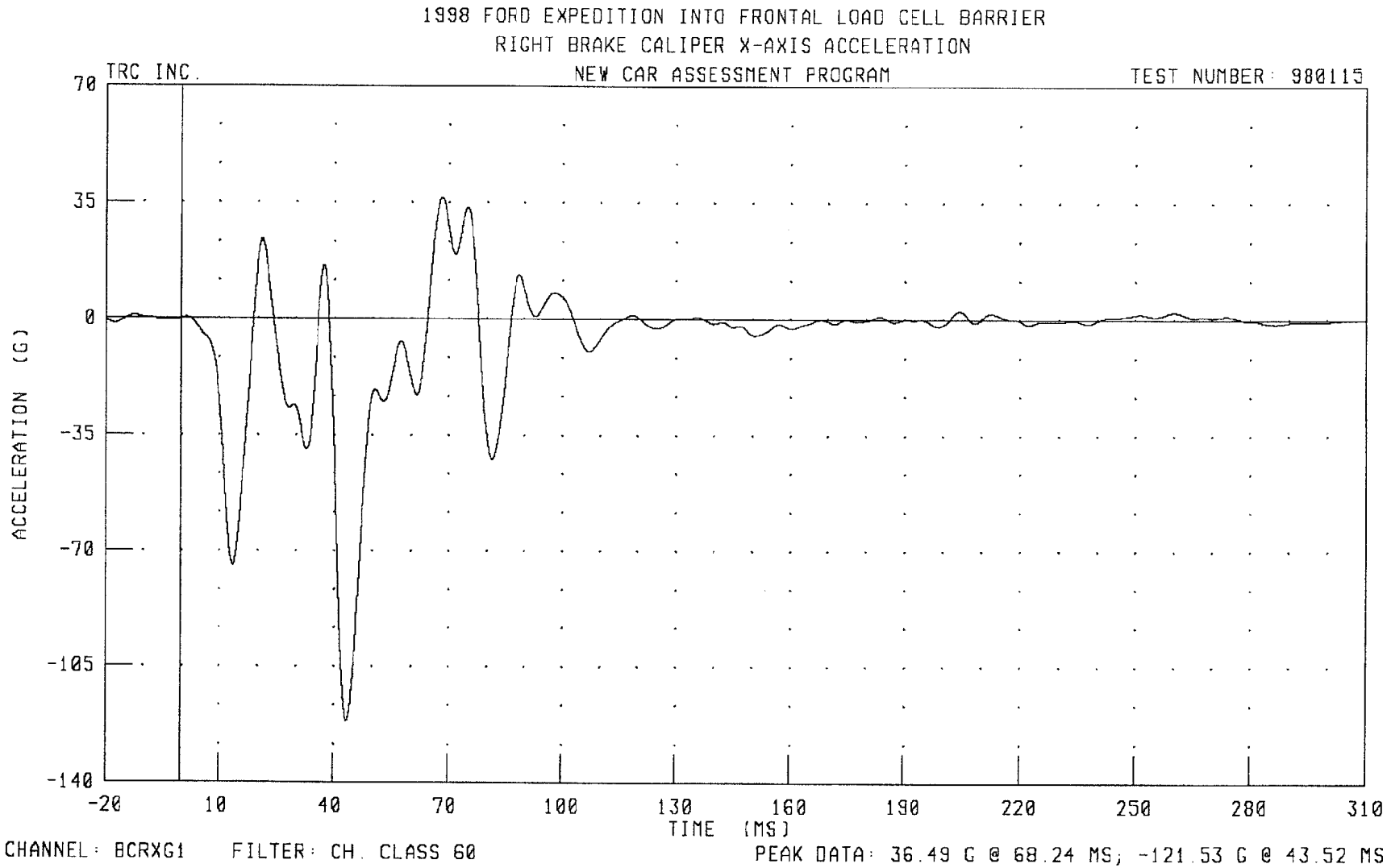

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS DISPLACEMENT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
180
120
60
0
-60
-120
-180
DISPLACEMENT (MM X 10¹)
0
28
56
84
112
140
169
197
225
253
281
310
TIME (MS)
CHANNEL: TRRXD1
FILTER: CH. CLASS 180
PEAK DATA: 842.97 MM @ 93.60 MS; 0.00 MM @ 0.00 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
ENGINE TOP X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
40
20
0
-20
-40
-60
-80
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ENGXG1
FILTER: CH. CLASS 60
PEAK DATA: 13.75 G @ 67.76 MS; -79.81 G @ 48.24 MS

980115

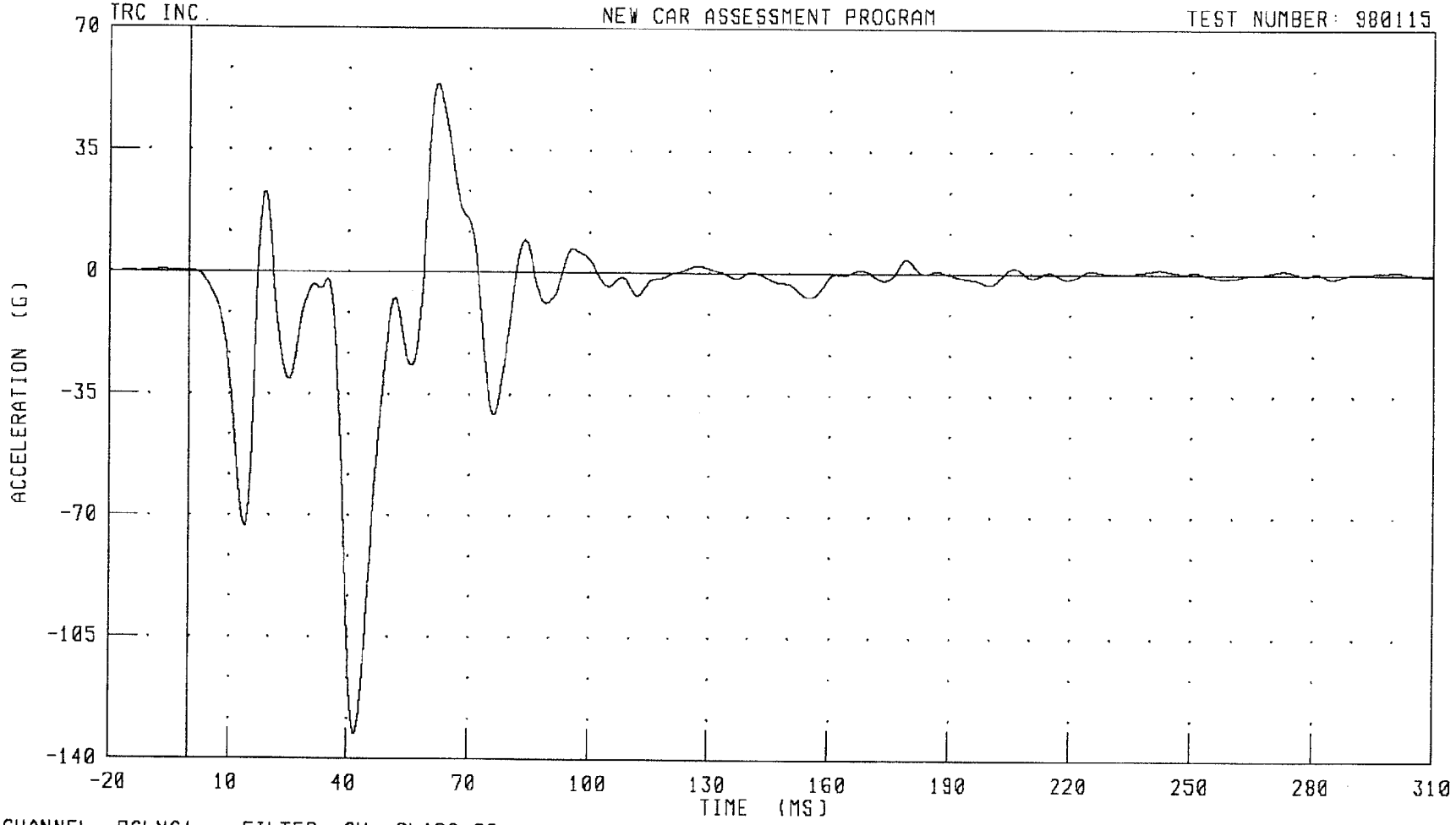

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
ENGINE BOTTOM X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
40
20
0
-20
-40
-60
-80
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: ENGXG2
FILTER: CH. CLASS 60
PEAK DATA: 15.85 G @ 69.20 MS; -73.22 G @ 51.60 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
RIGHT BRAKE CALIPER X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
70
35
0
-35
-70
-105
-140
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BCRXG1
FILTER: CH. CLASS 60
PEAK DATA: 36.49 G @ 68.24 MS; -121.53 G @ 43.52 MS

980115

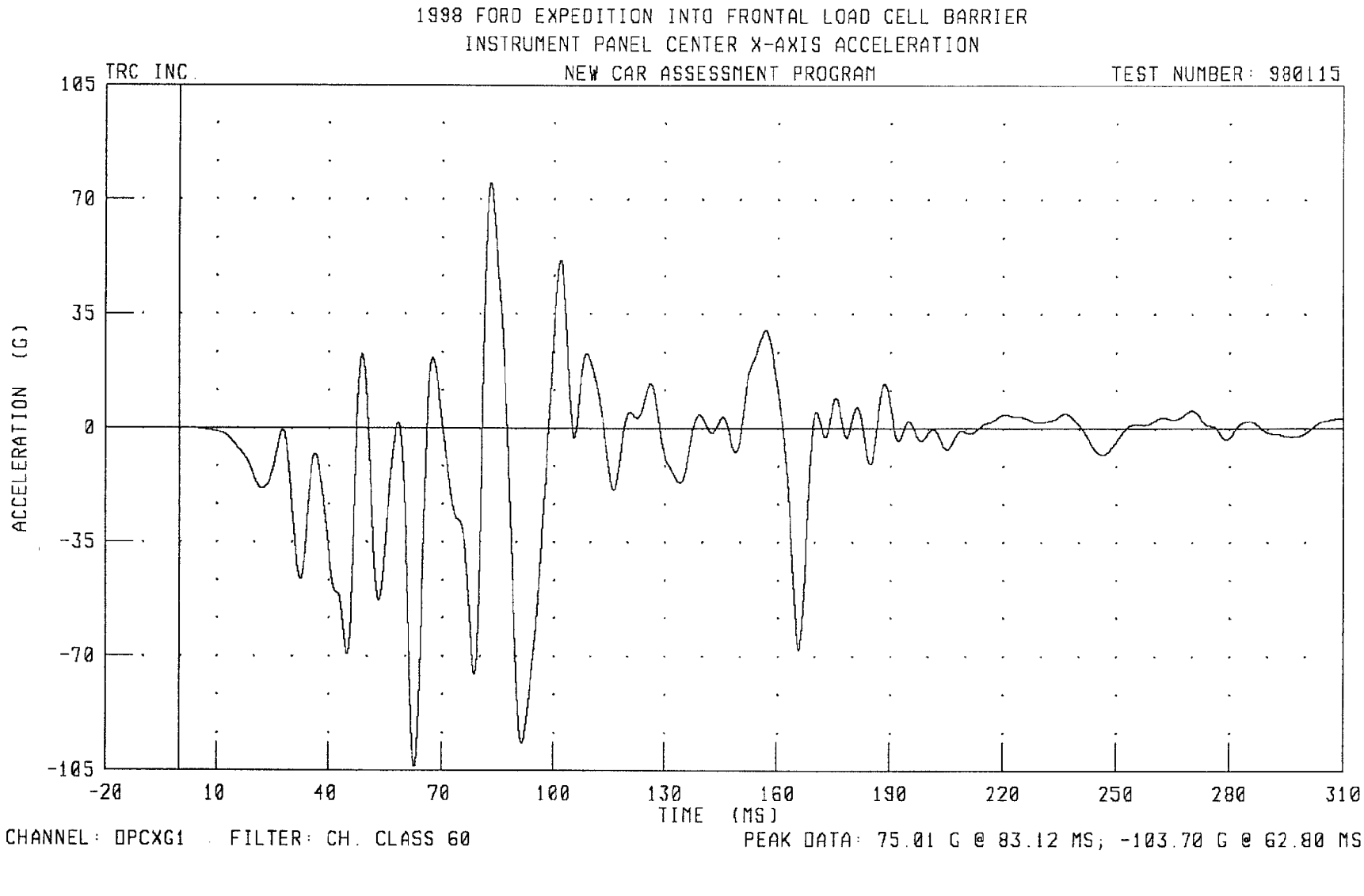
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION



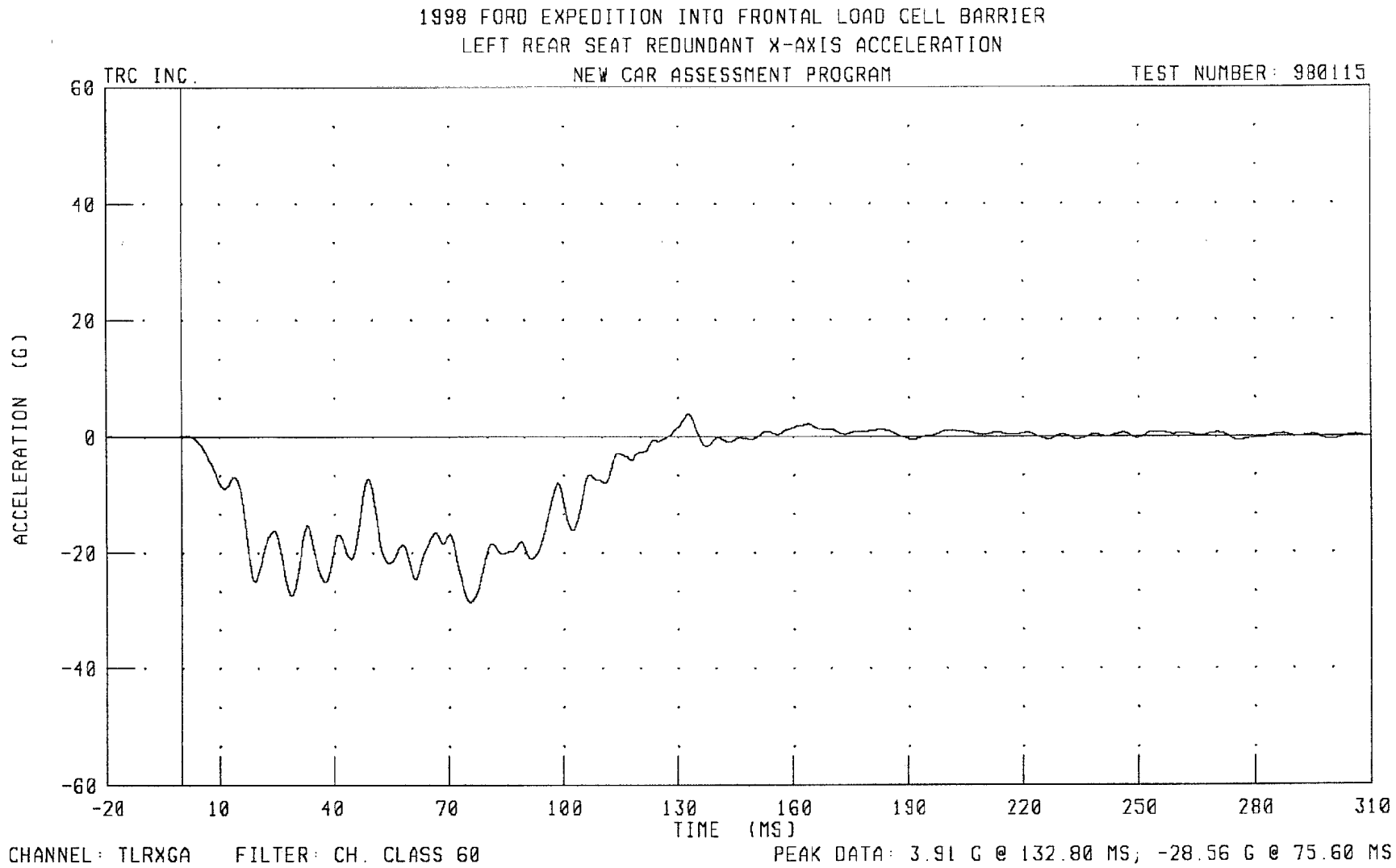
CHANNEL: BCLXG1 FILTER: CH. CLASS 60

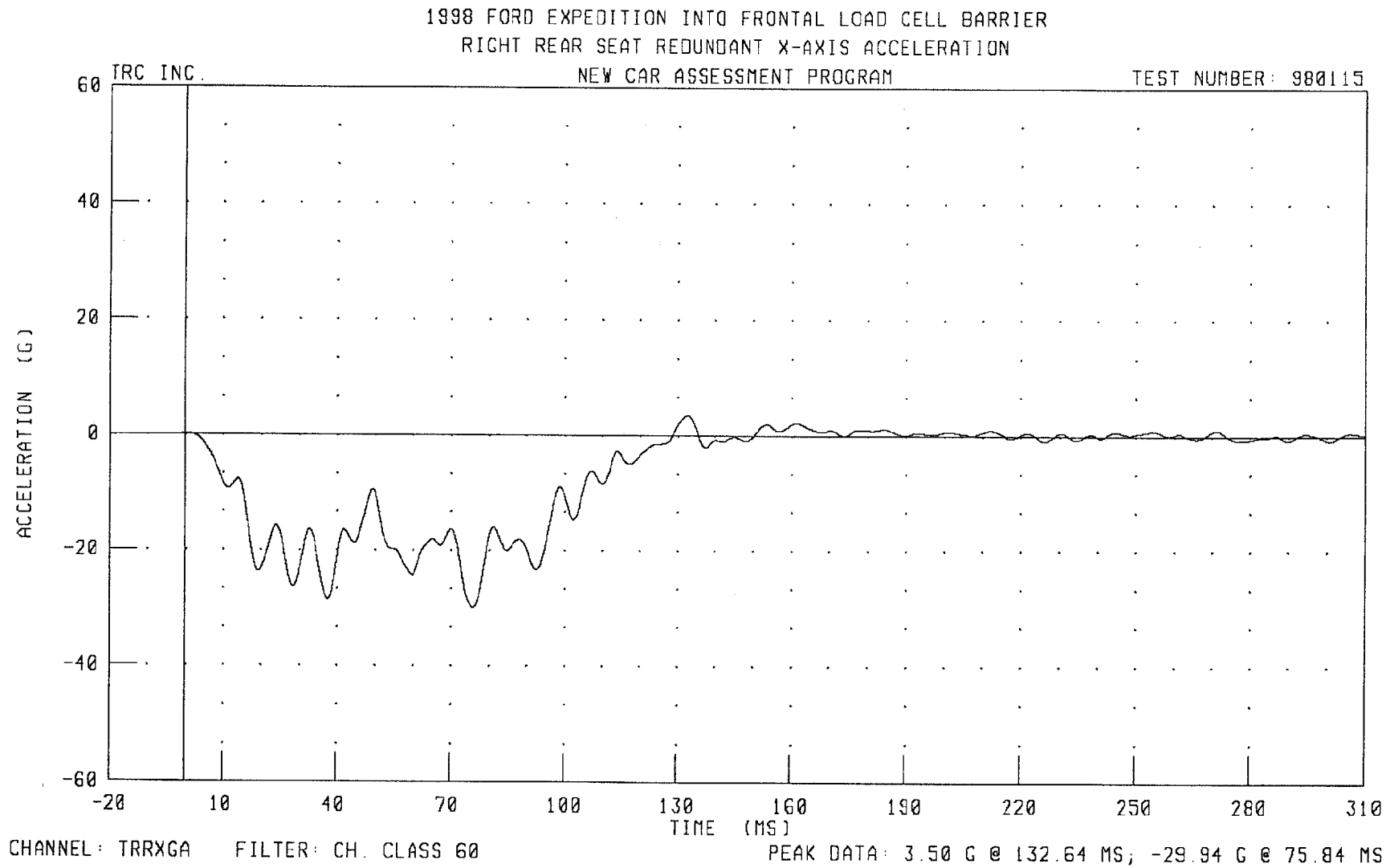
PEAK DATA: 54.04 G @ 62.32 MS; -132.73 G @ 41.84 MS

980115

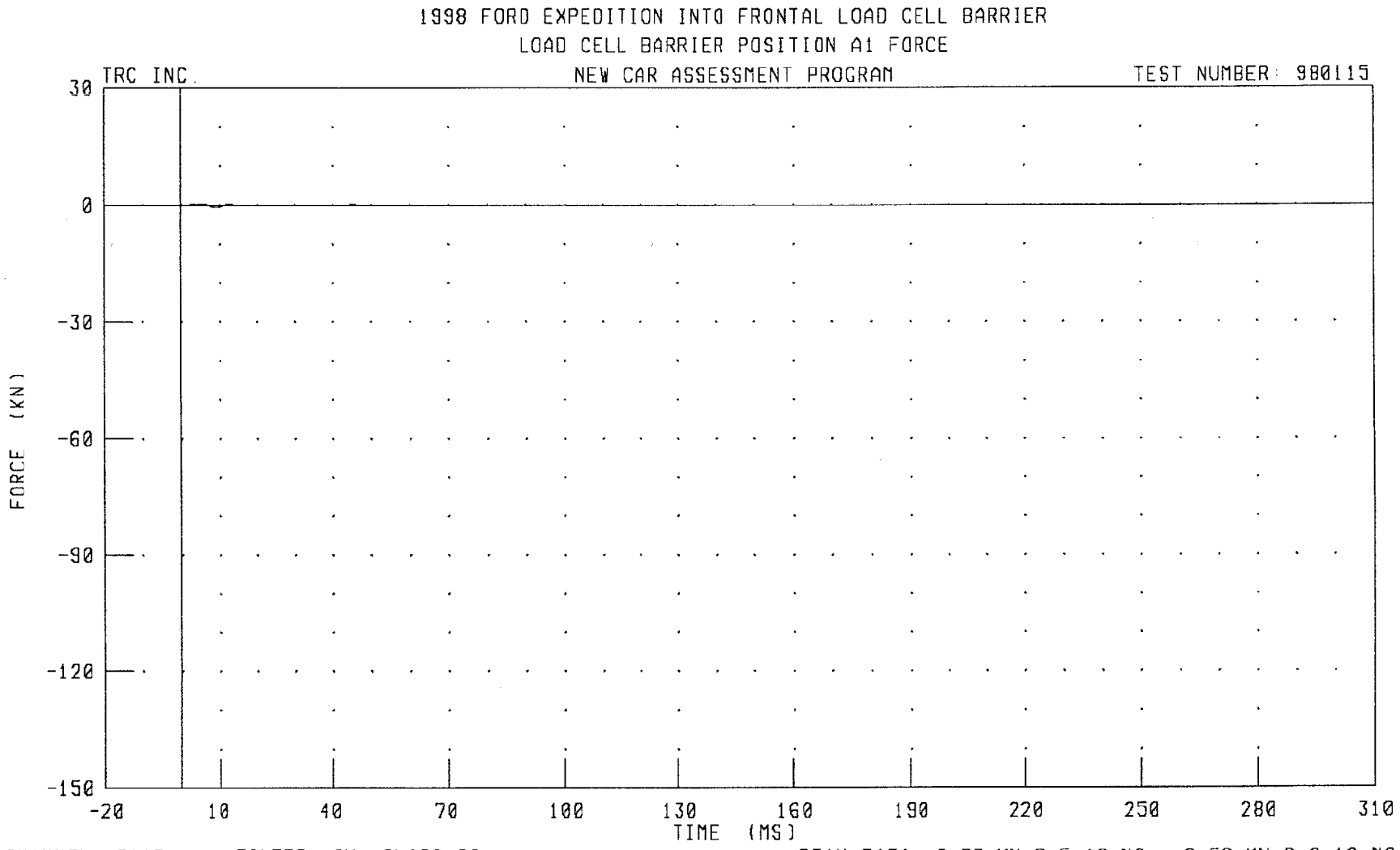

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
105
70
35
0
-35
-70
-105
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: DPCXG1
FILTER: CH. CLASS 60
PEAK DATA: 75.01 G @ 83.12 MS; -103.70 G @ 62.80 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT REDUNDANT X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
ACCELERATION (G)
60
40
20
0
-20
-40
-60
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: TLRXGA
FILTER: CH. CLASS 60
PEAK DATA: 3.91 G @ 132.80 MS; -28.56 G @ 75.60 MS

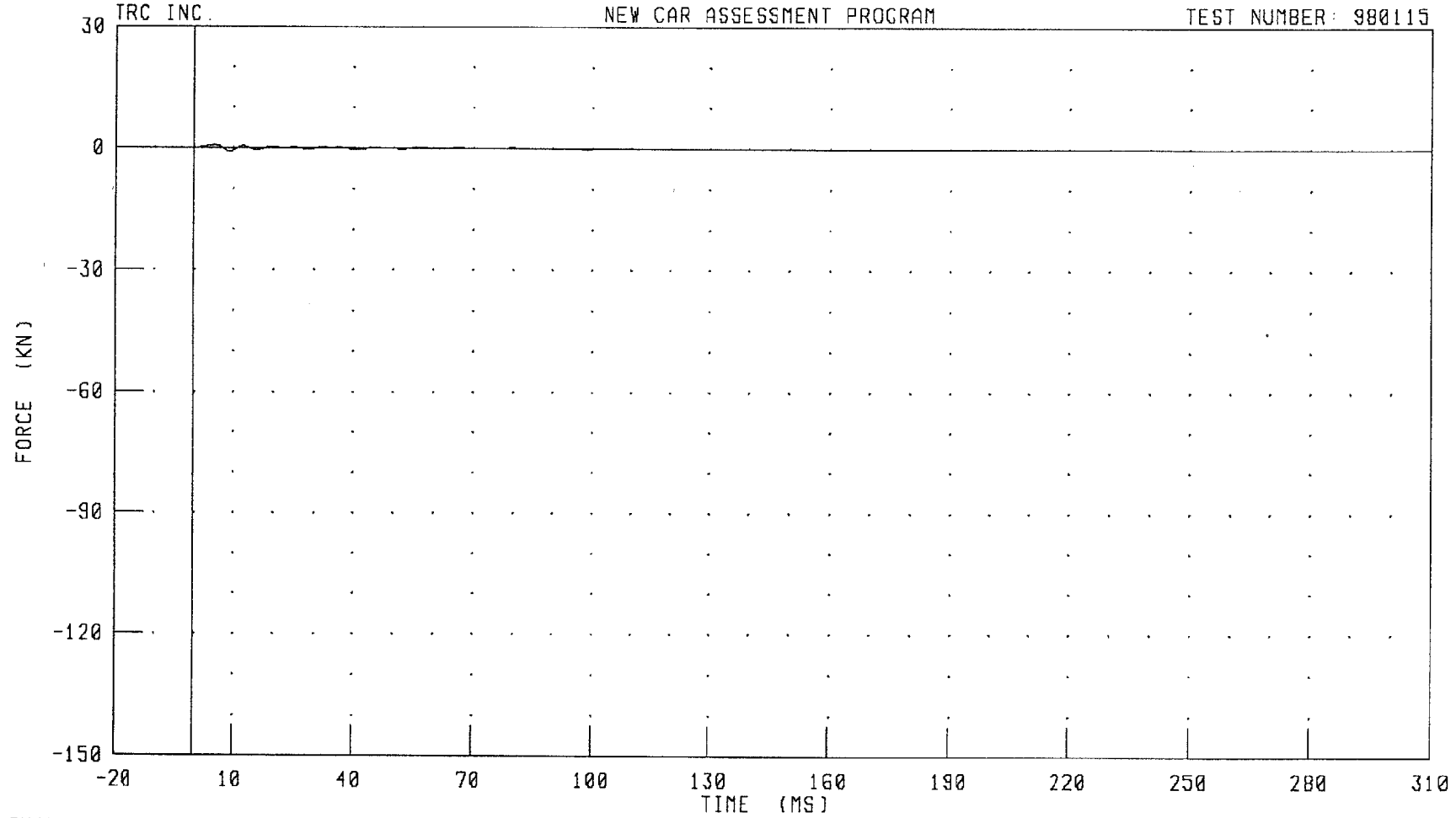

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT REDUNDANT X-AXIS ACCELERATION
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
40
20
0
-20
-40
-60
ACCELERATION (G)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: TRRXGA
FILTER: CH. CLASS 60
PEAK DATA: 3.50 G @ 132.64 MS; -29.94 G @ 75.84 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A1 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BA1F
FILTER: CH. CLASS 60
PEAK DATA: 0.33 KN @ 5.12 MS; -0.59 KN @ 9.12 MS

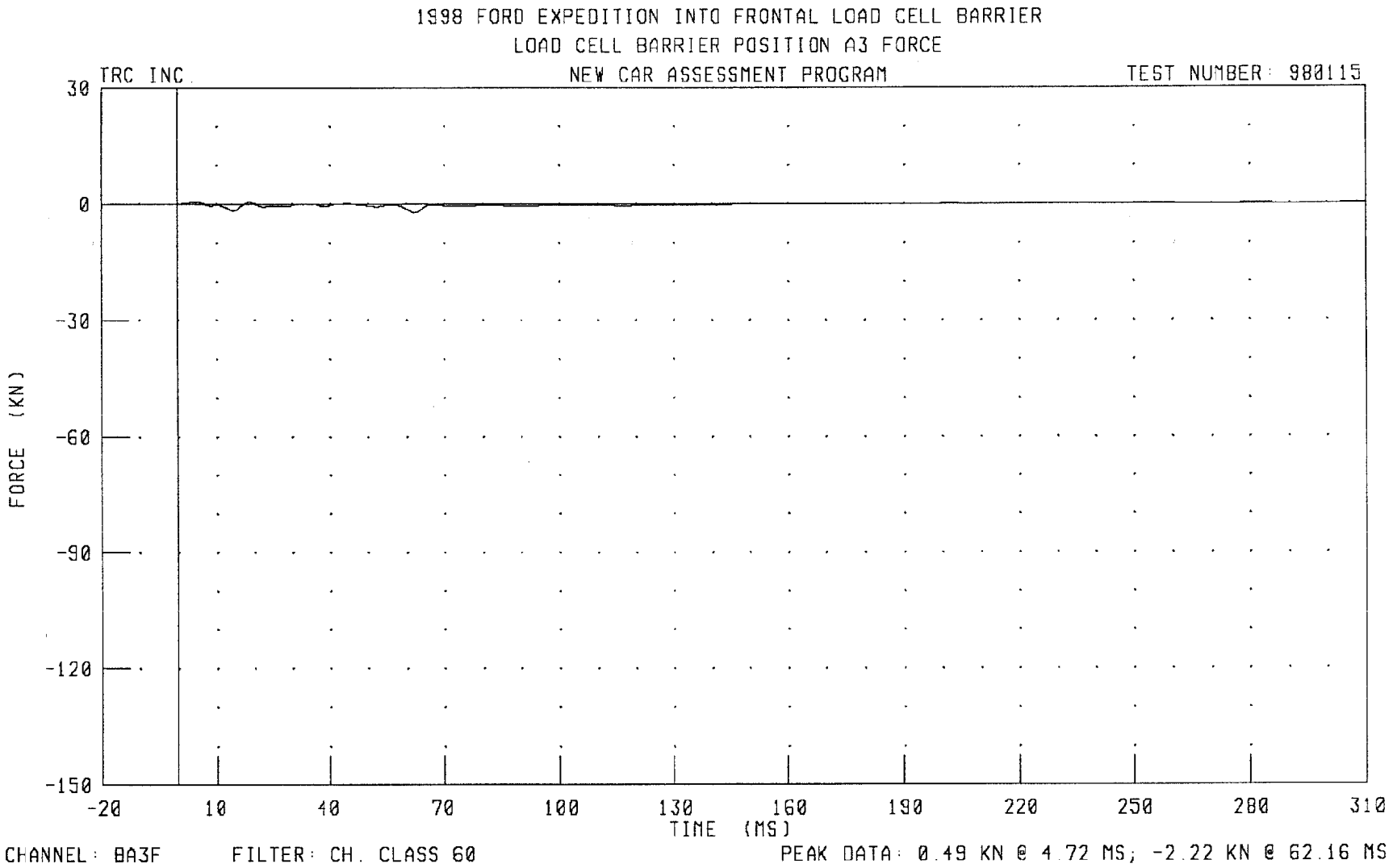
980115

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A2 FORCE



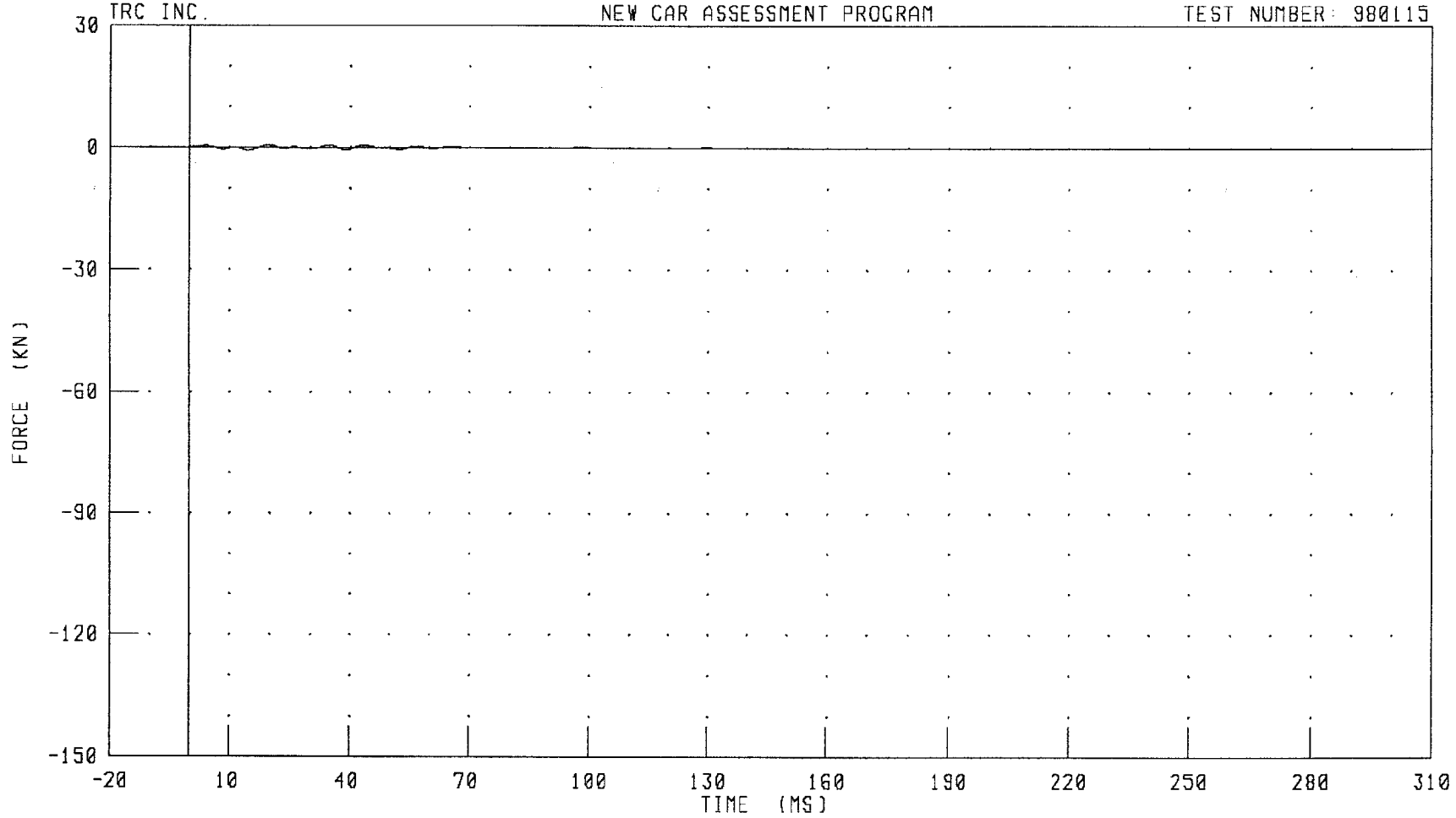
CHANNEL: BA2F FILTER: CH. CLASS 60 PEAK DATA: 0.62 KN @ 4.96 MS; -0.85 KN @ 9.04 MS

980115

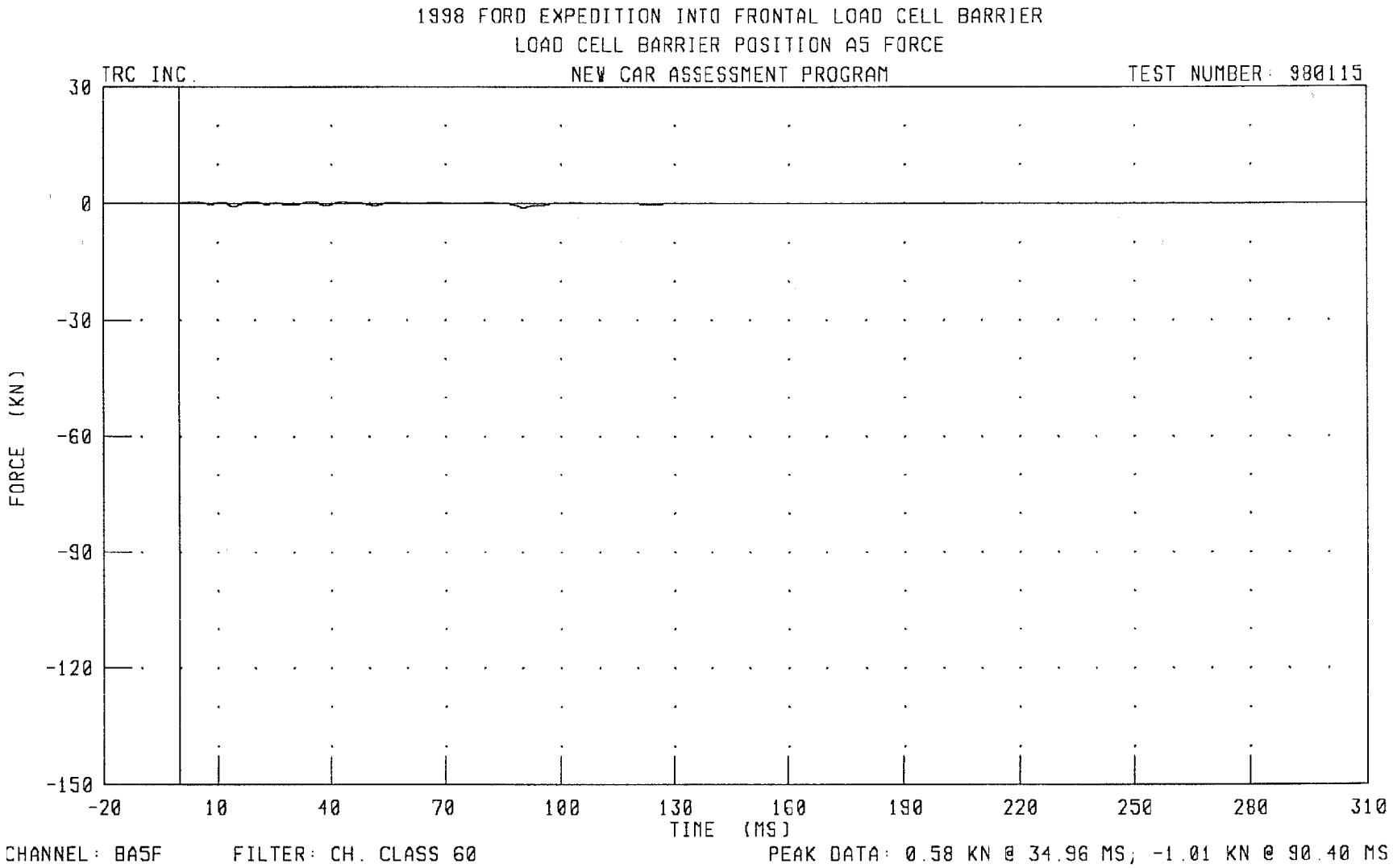

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A3 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BA3F
FILTER: CH. CLASS 60
PEAK DATA: 0.49 KN @ 4.72 MS; -2.22 KN @ 62.16 MS

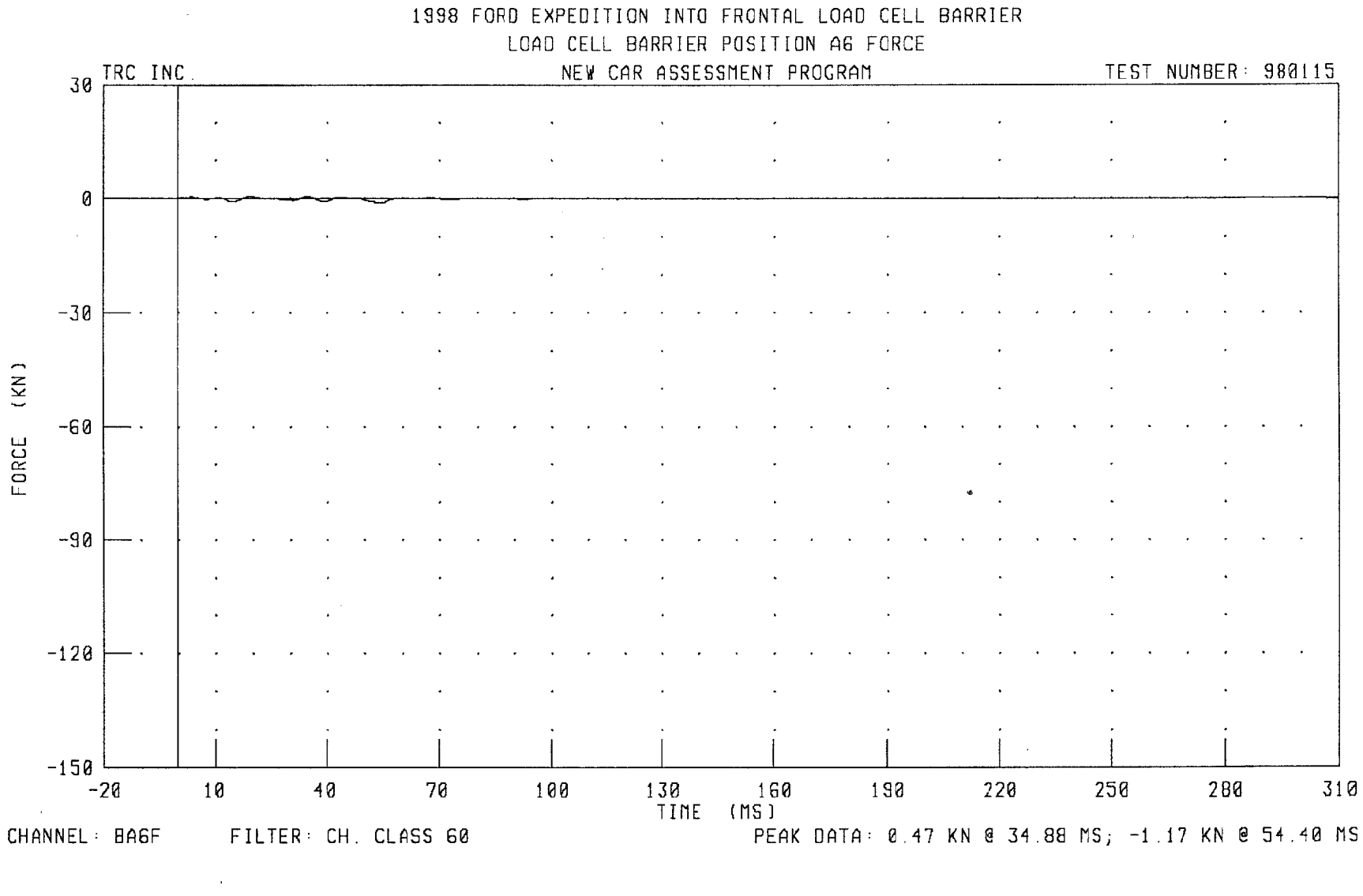
980115

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A4 FORCE



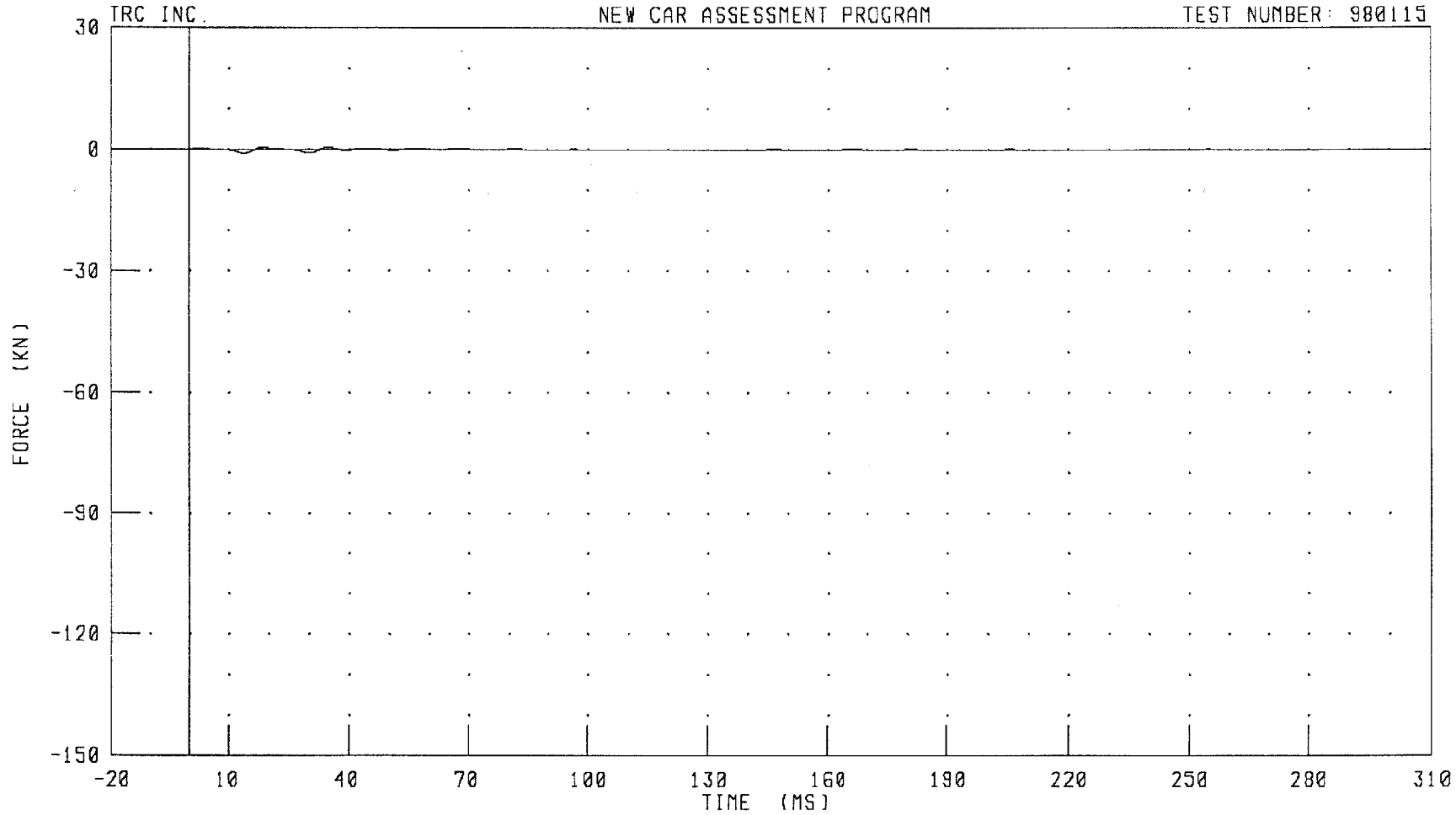
CHANNEL: BA4F FILTER: CH. CLASS 60 PEAK DATA: 0.60 KN @ 19.76 MS; -0.72 KN @ 14.40 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A5 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BA5F
FILTER: CH. CLASS 60
PEAK DATA: 0.58 KN @ 34.96 MS; -1.01 KN @ 90.40 MS

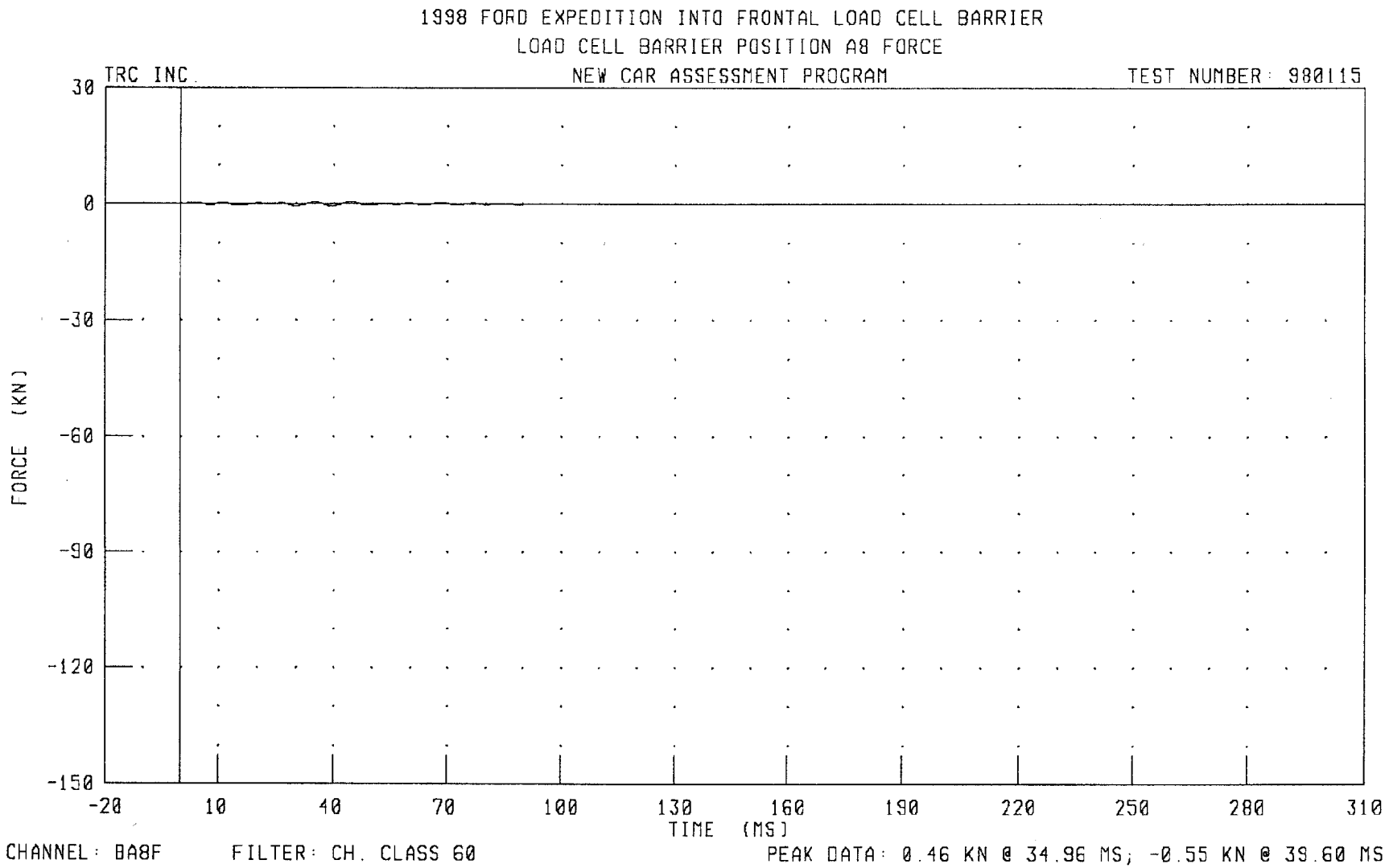

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A6 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BA6F
FILTER: CH. CLASS 60
PEAK DATA: 0.47 KN @ 34.88 MS; -1.17 KN @ 54.40 MS

980115

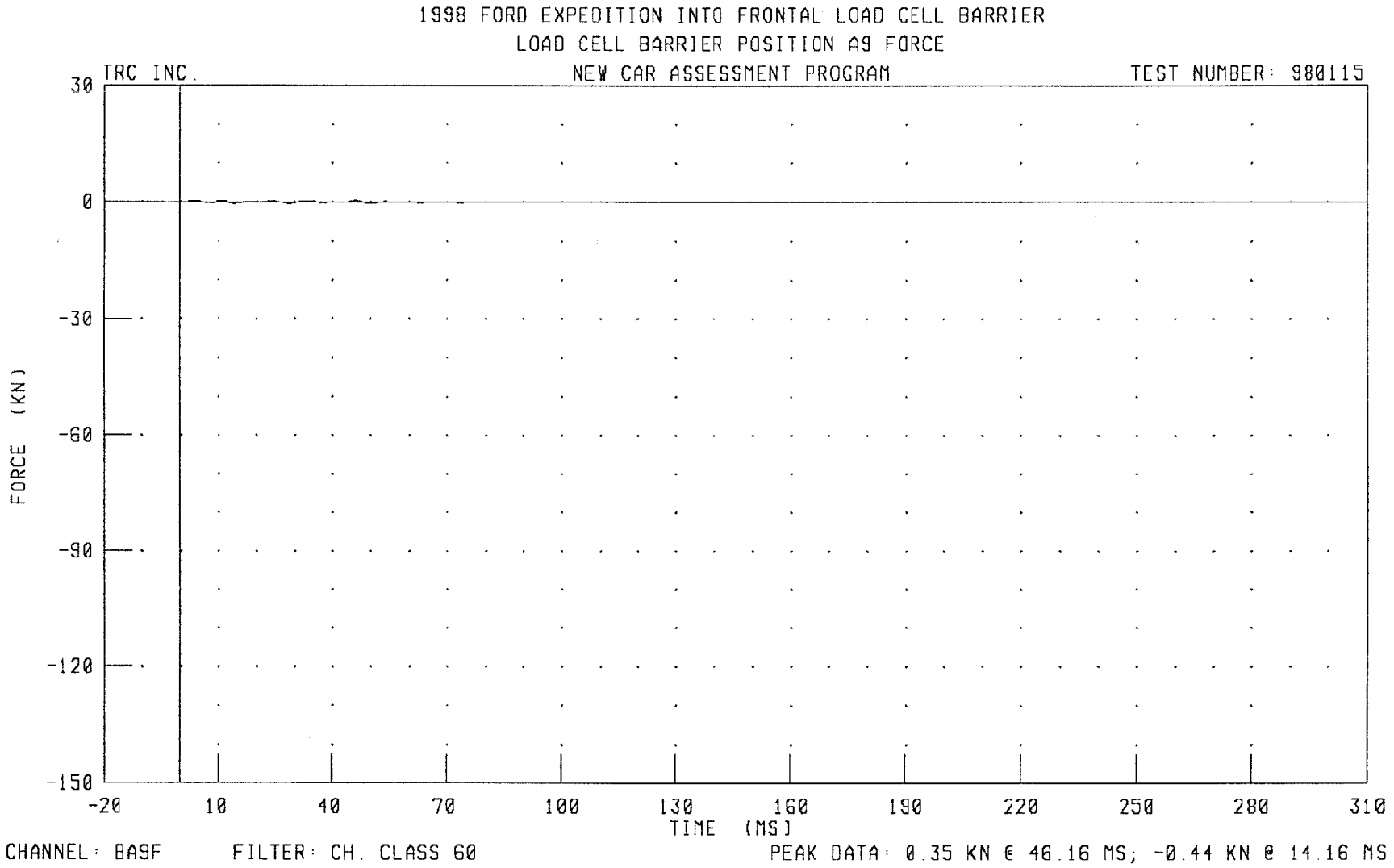
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A7 FORCE



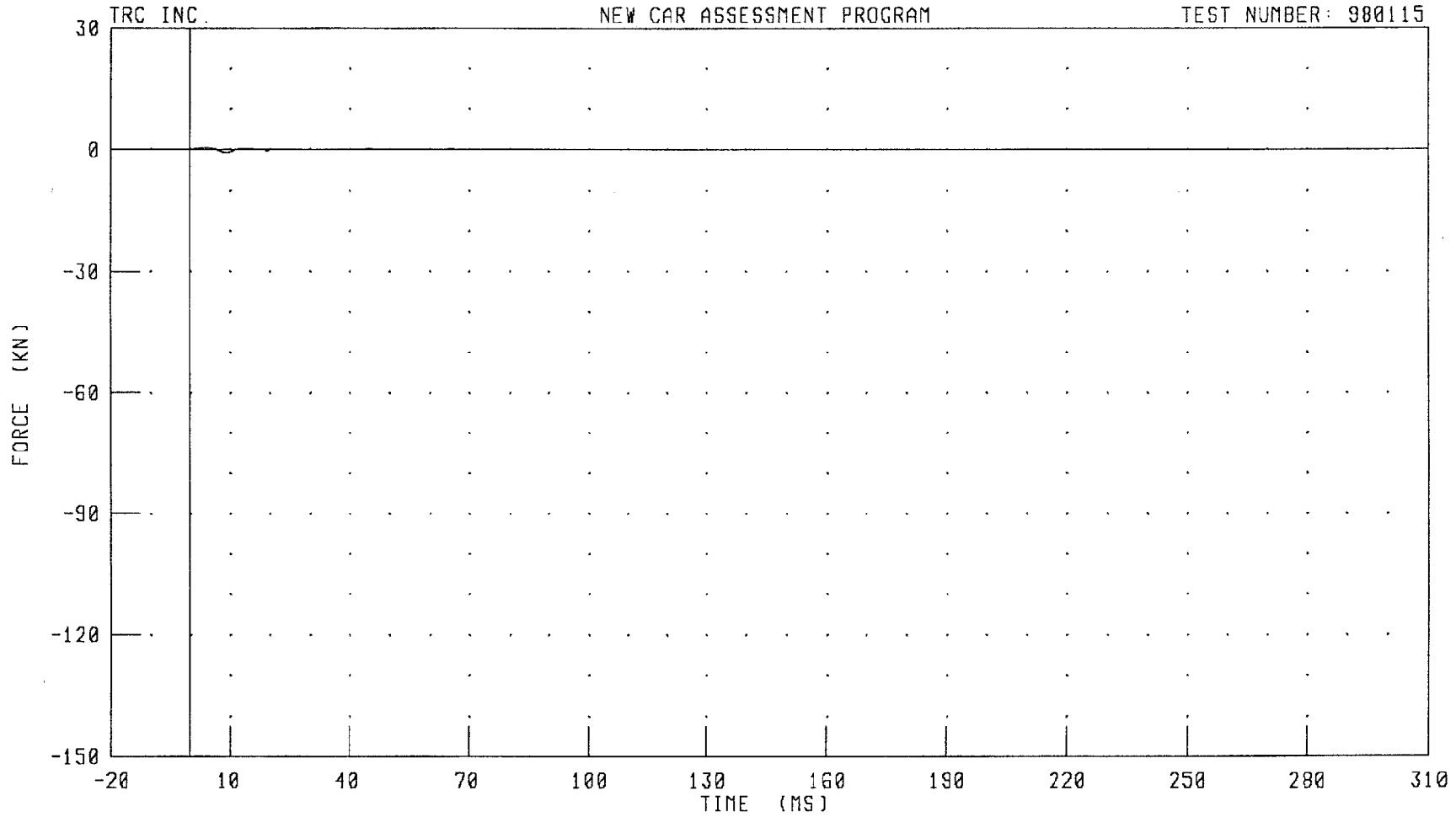
CHANNEL: BA7F FILTER: CH. CLASS 60 PEAK DATA: 0.59 KN @ 34.80 MS; -1.01 KN @ 13.60 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A8 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BA8F
FILTER: CH. CLASS 60
PEAK DATA: 0.46 KN @ 34.96 MS; -0.55 KN @ 39.60 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION AG FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BASF
FILTER: CH. CLASS 60
PEAK DATA: 0.35 KN @ 46.16 MS; -0.44 KN @ 14.16 MS

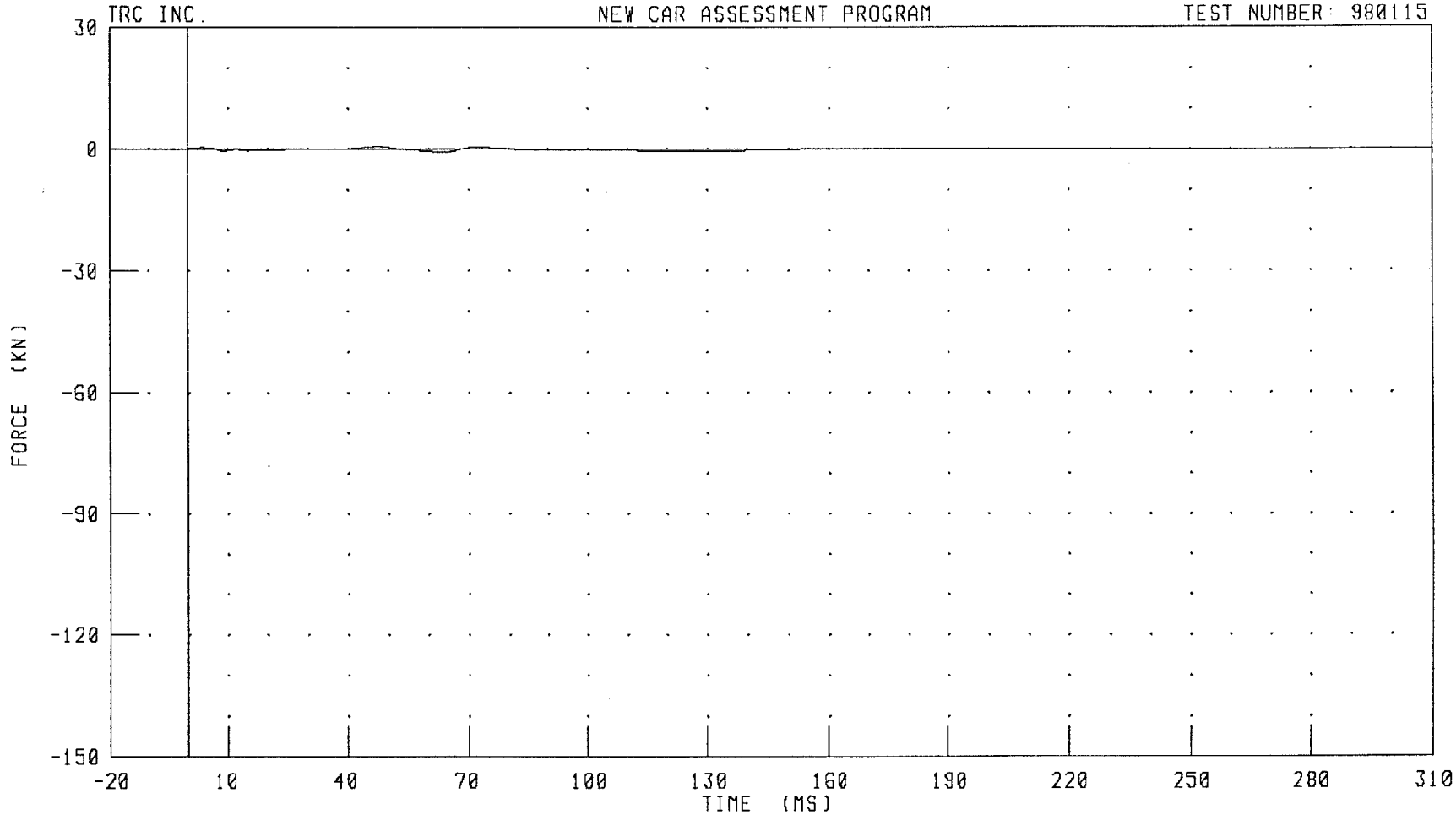
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B1 FORCE



CHANNEL: BB1F FILTER: CH. CLASS 60 PEAK DATA: 0.48 KN @ 4.00 MS; -0.86 KN @ 8.96 MS

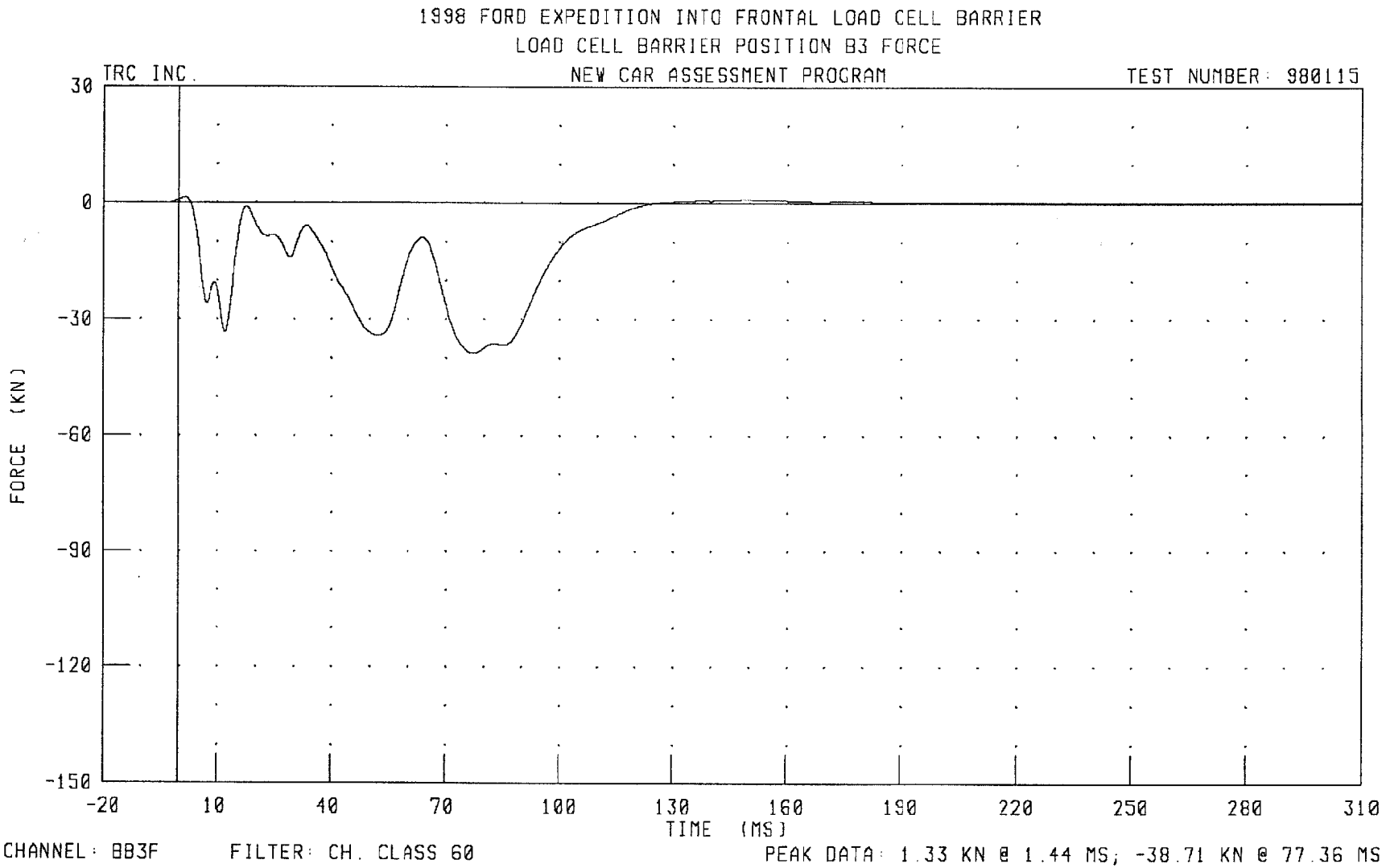
980115

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B2 FORCE

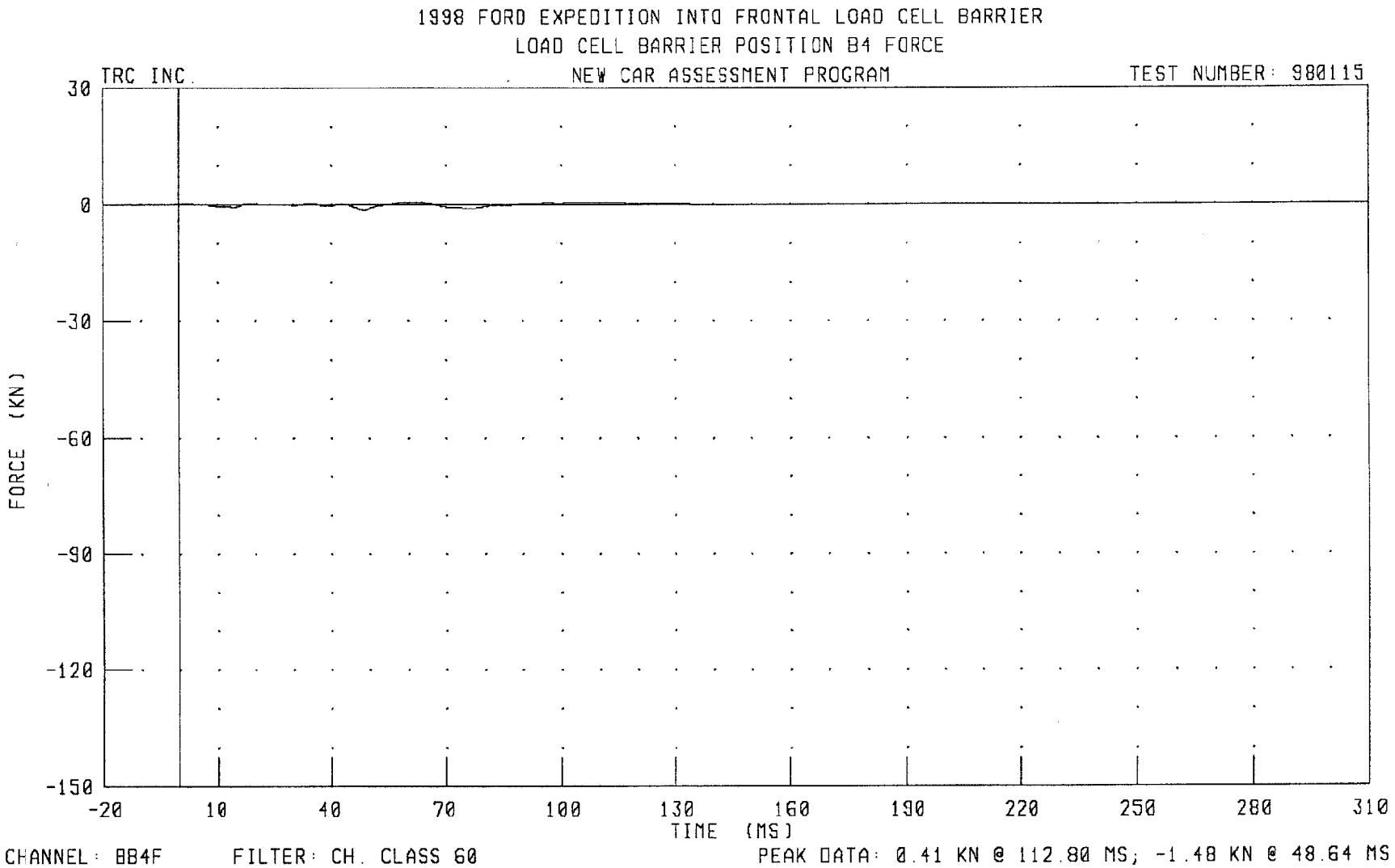


CHANNEL: BB2F FILTER: CH. CLASS 60 PEAK DATA: 0.63 KN @ 47.44 MS; -0.85 KN @ 63.60 MS

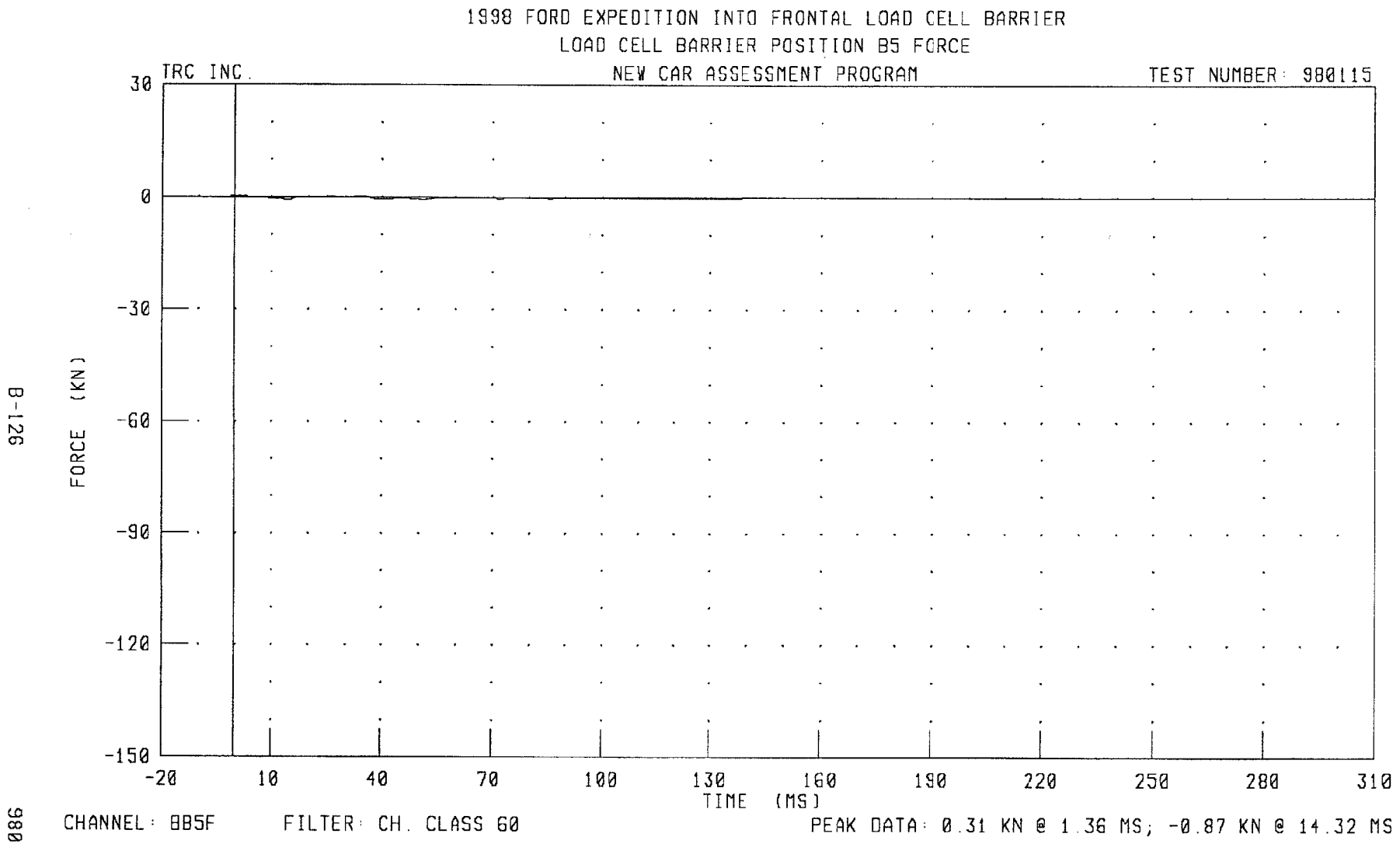
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B3 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BB3F
FILTER: CH. CLASS 60
PEAK DATA: 1.33 KN @ 1.44 MS; -38.71 KN @ 77.36 MS

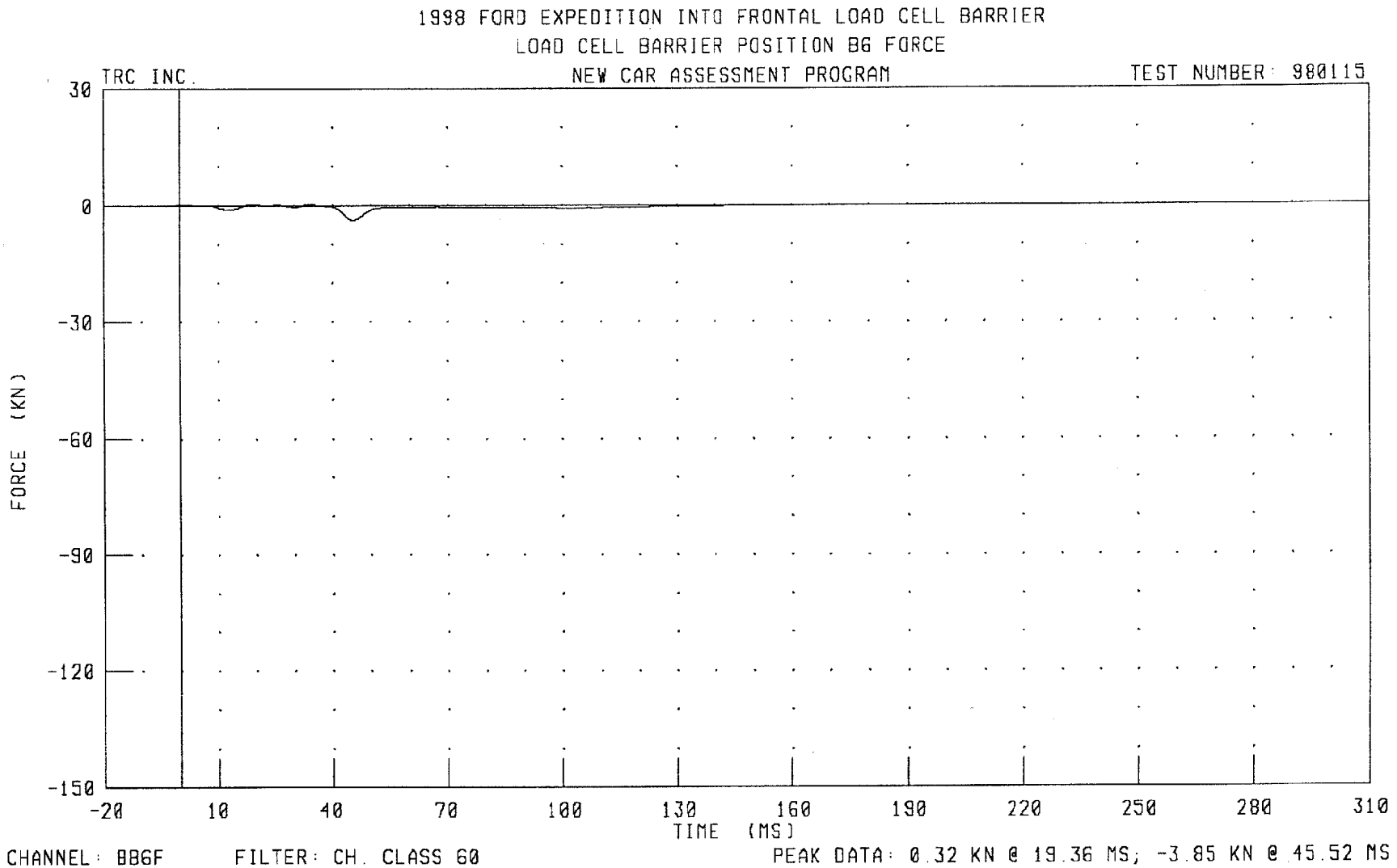
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B4 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BB4F
FILTER: CH. CLASS 60
PEAK DATA: 0.41 KN @ 112.80 MS; -1.48 KN @ 48.64 MS

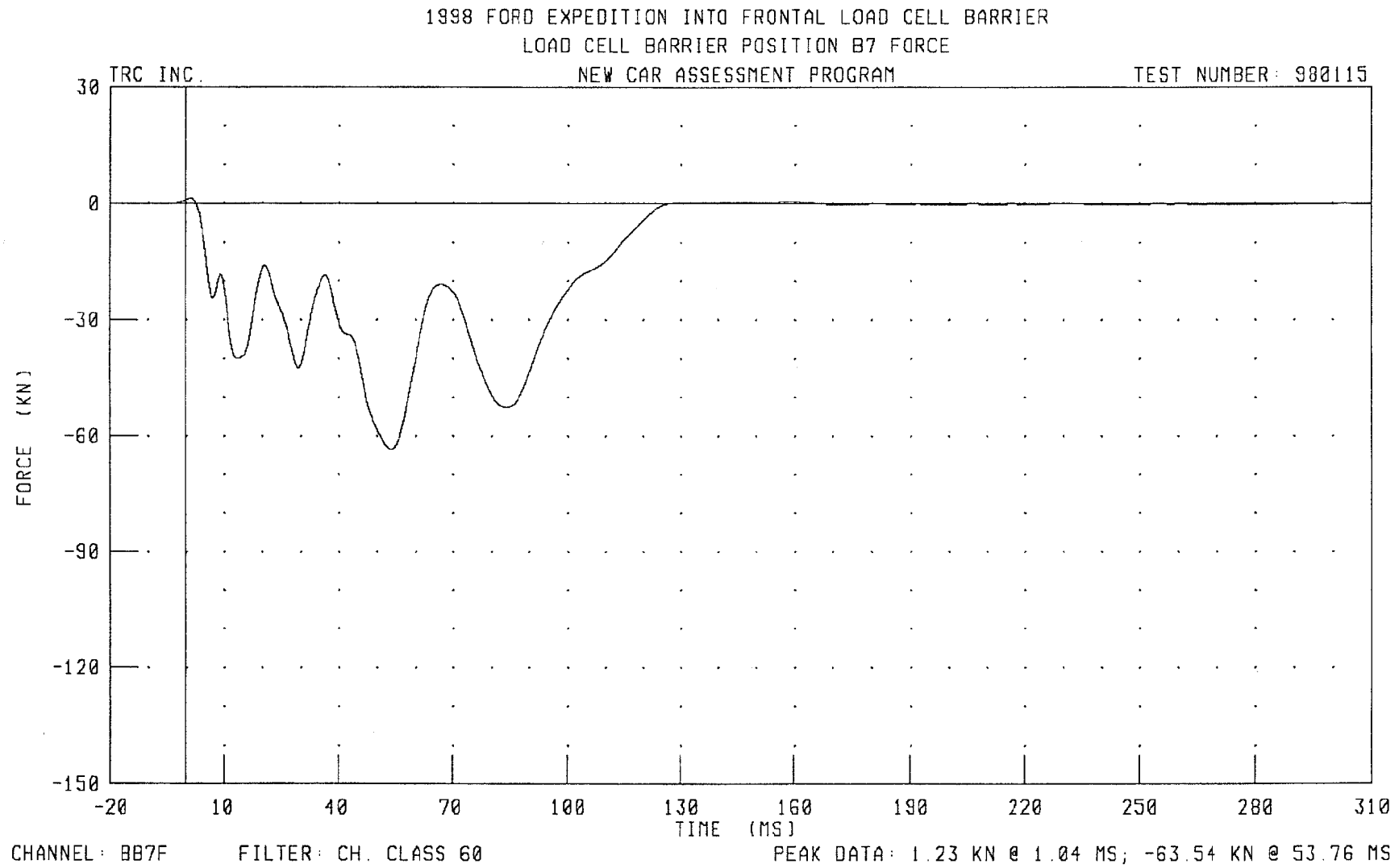
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B5 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: 8B5F
FILTER: CH. CLASS 60
PEAK DATA: 0.31 KN @ 1.36 MS; -0.87 KN @ 14.32 MS

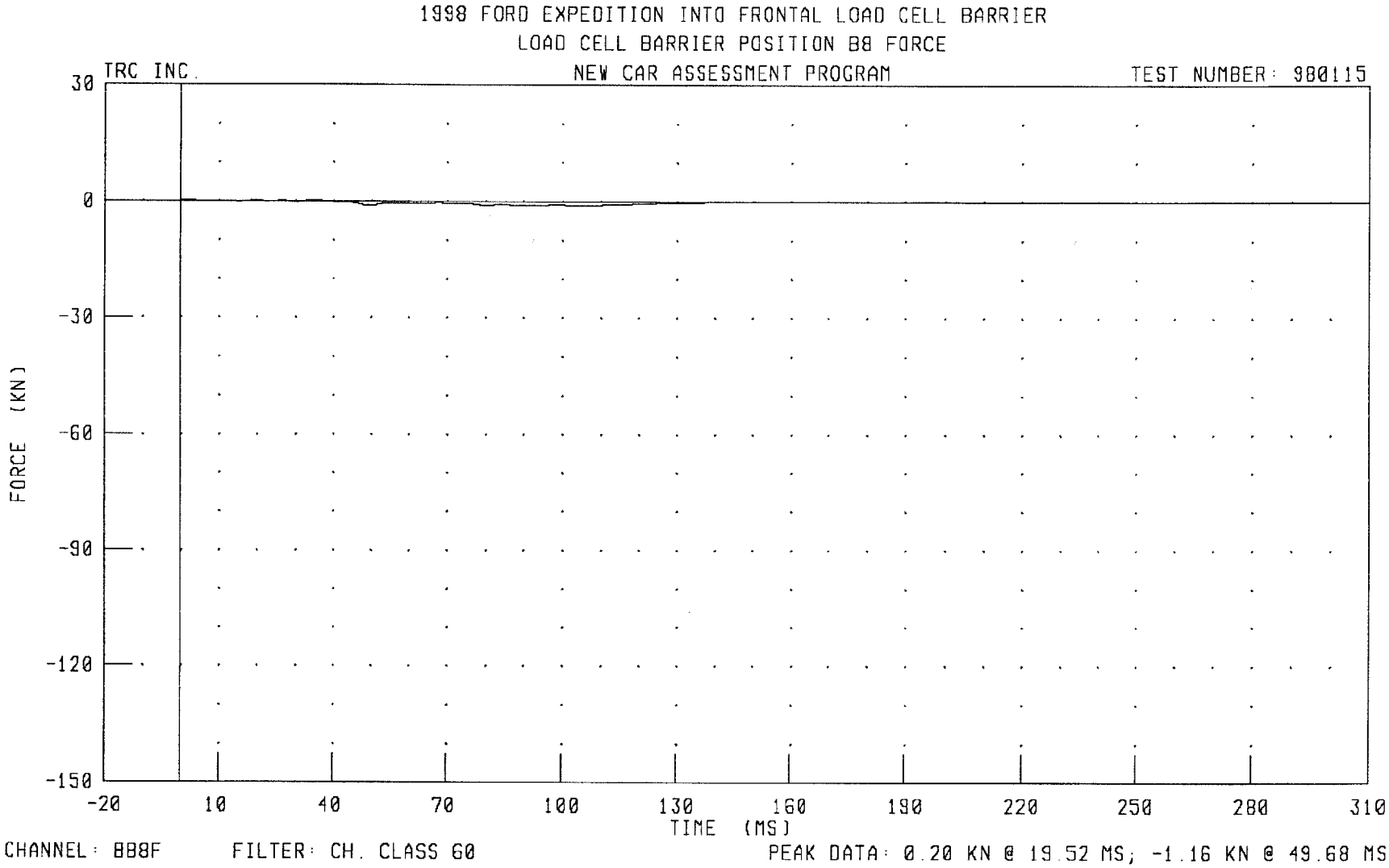
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B6 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: B86F
FILTER: CH. CLASS 60
PEAK DATA: 0.32 KN @ 19.36 MS; -3.85 KN @ 45.52 MS

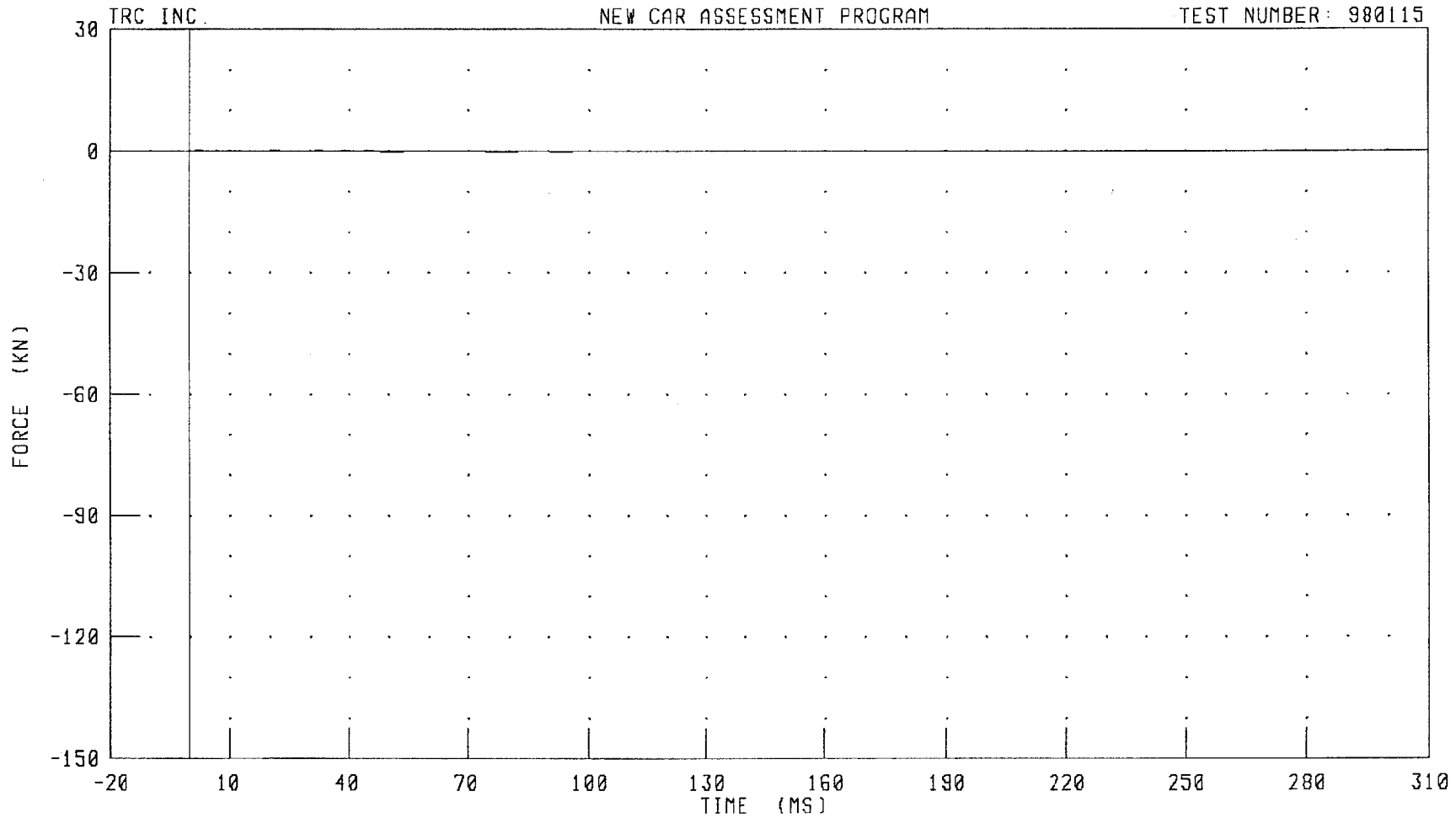
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B7 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BB7F
FILTER: CH. CLASS 60
PEAK DATA: 1.23 KN @ 1.04 MS; -63.54 KN @ 53.76 MS

980115

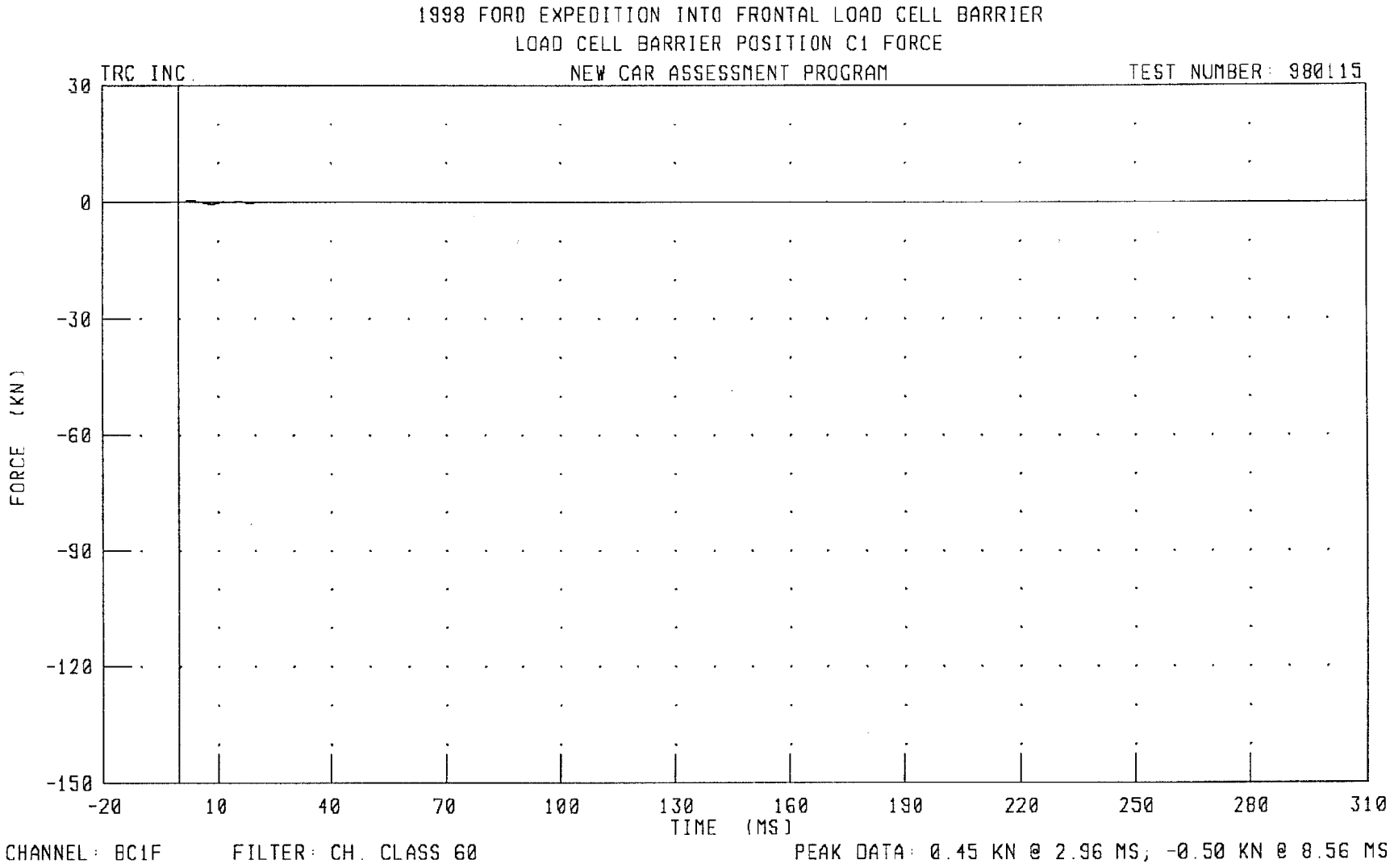

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B8 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: B88F
FILTER: CH. CLASS 60
PEAK DATA: 0.20 KN @ 19.52 MS; -1.16 KN @ 49.68 MS

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B9 FORCE

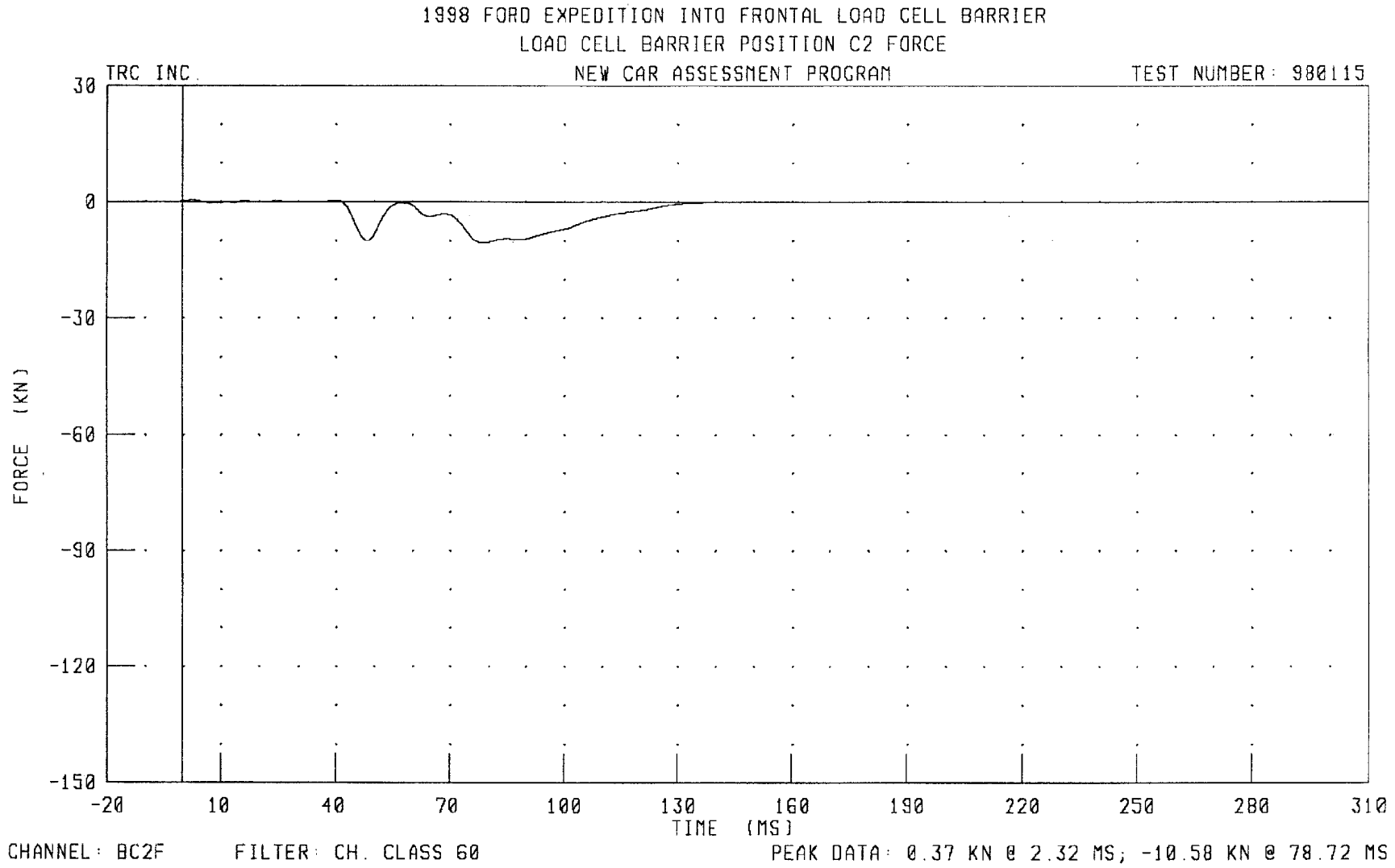


CHANNEL: B89F FILTER: CH. CLASS 60 PEAK DATA: 0.15 KN @ 32.32 MS, -0.34 KN @ 50.48 MS

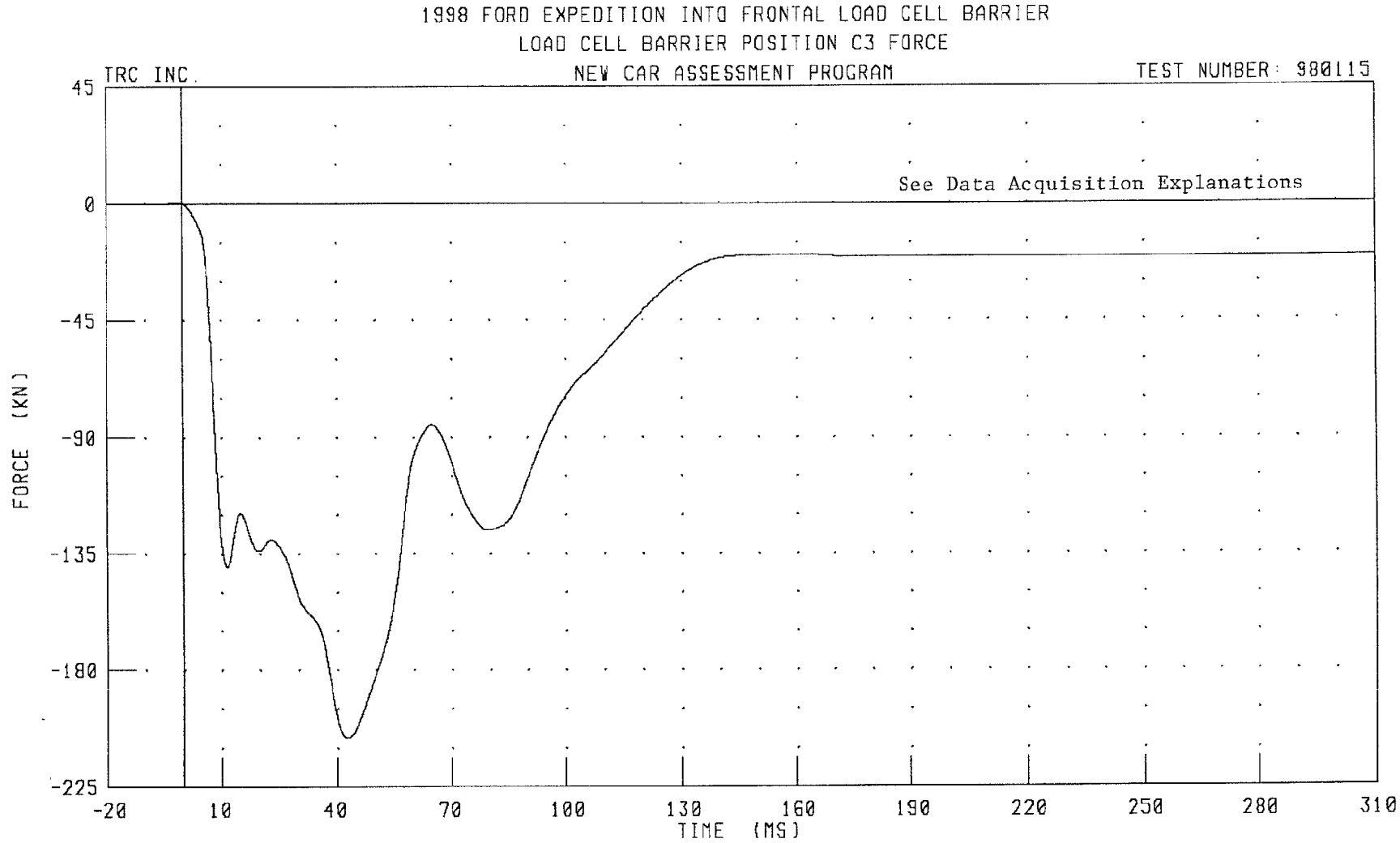
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C1 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BC1F
FILTER: CH. CLASS 60
PEAK DATA: 0.45 KN @ 2.96 MS; -0.50 KN @ 8.56 MS

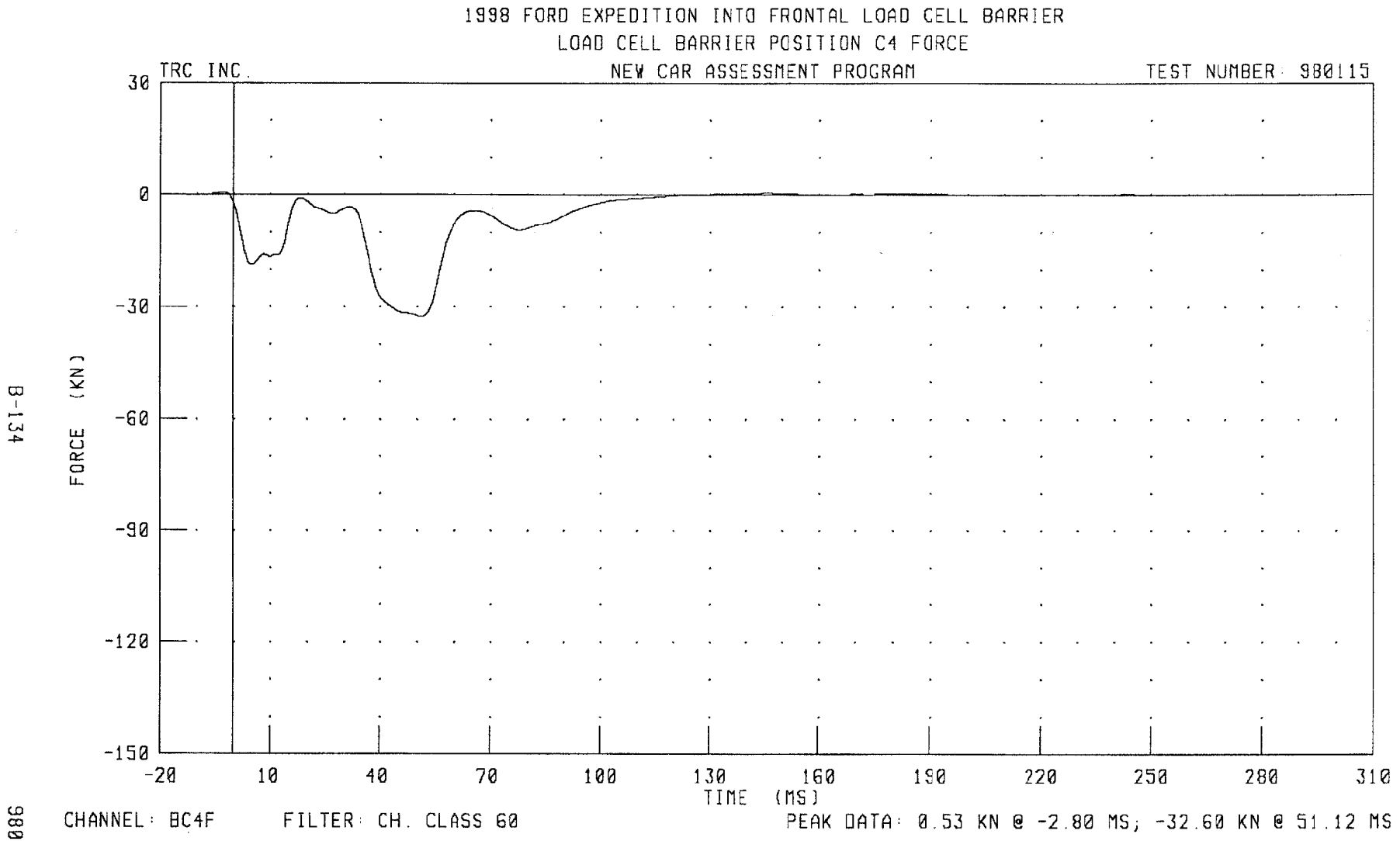
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C2 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BC2F
FILTER: CH. CLASS 60
PEAK DATA: 0.37 KN @ 2.32 MS; -10.58 KN @ 78.72 MS

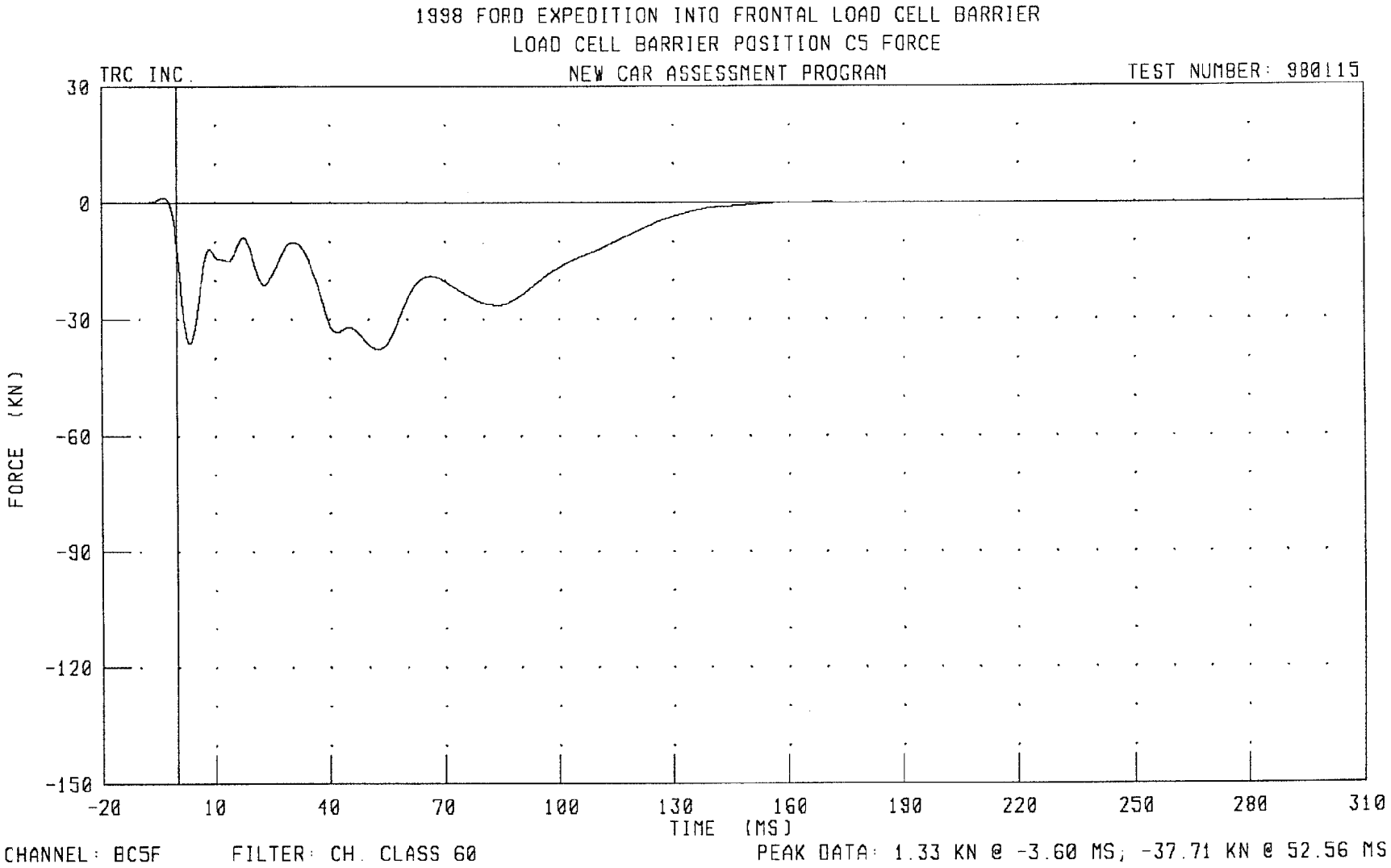
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C3 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
See Data Acquisition Explanations
45
0
-45
-90
-135
-180
-225
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BC3F
FILTER: CH. CLASS 60
PEAK DATA: 0.36 KN @ -1.36 MS; -206.29 KN @ 42.72 MS

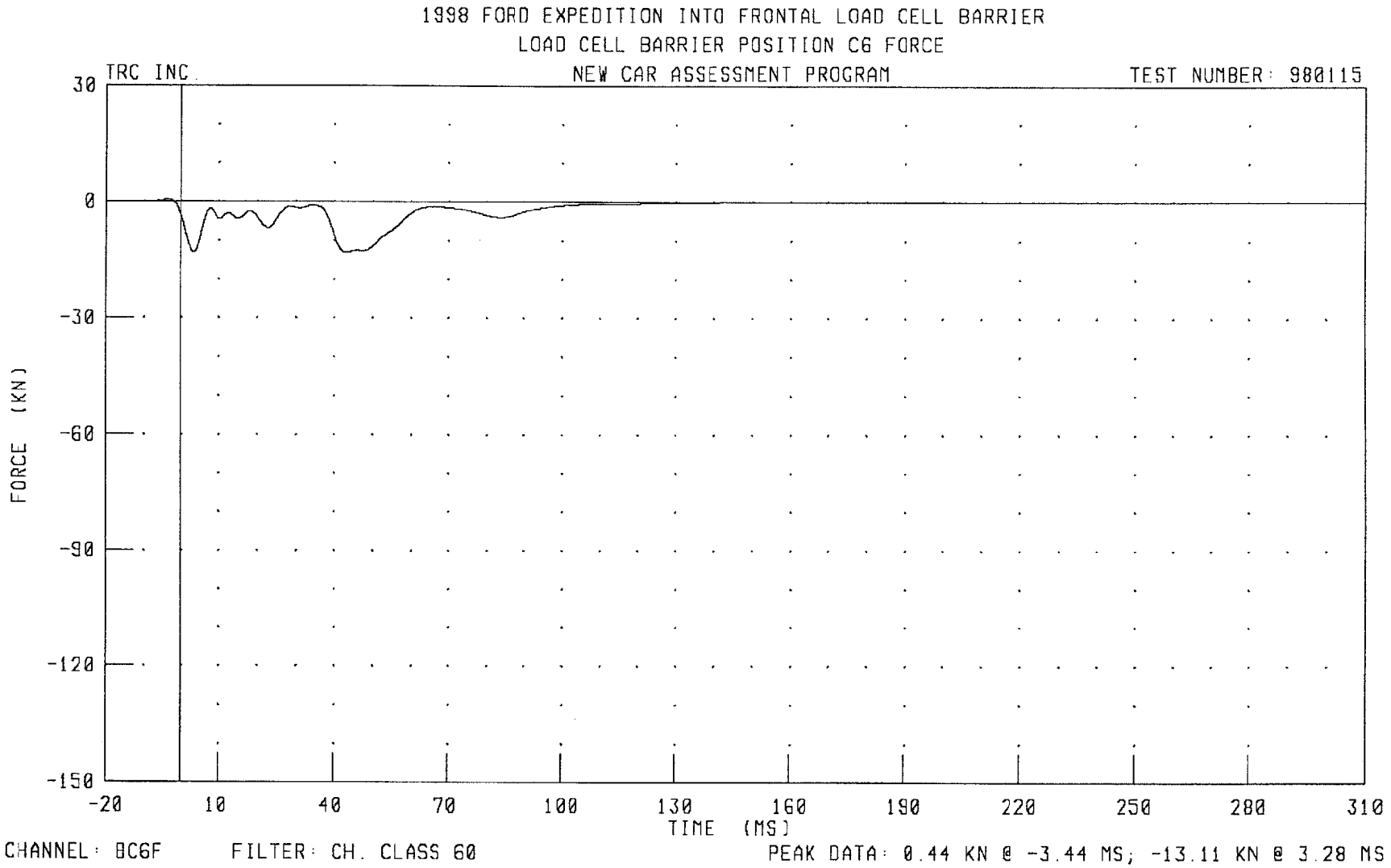
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C4 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BC4F
FILTER: CH. CLASS 60
PEAK DATA: 0.53 KN @ -2.80 MS; -32.60 KN @ 51.12 MS

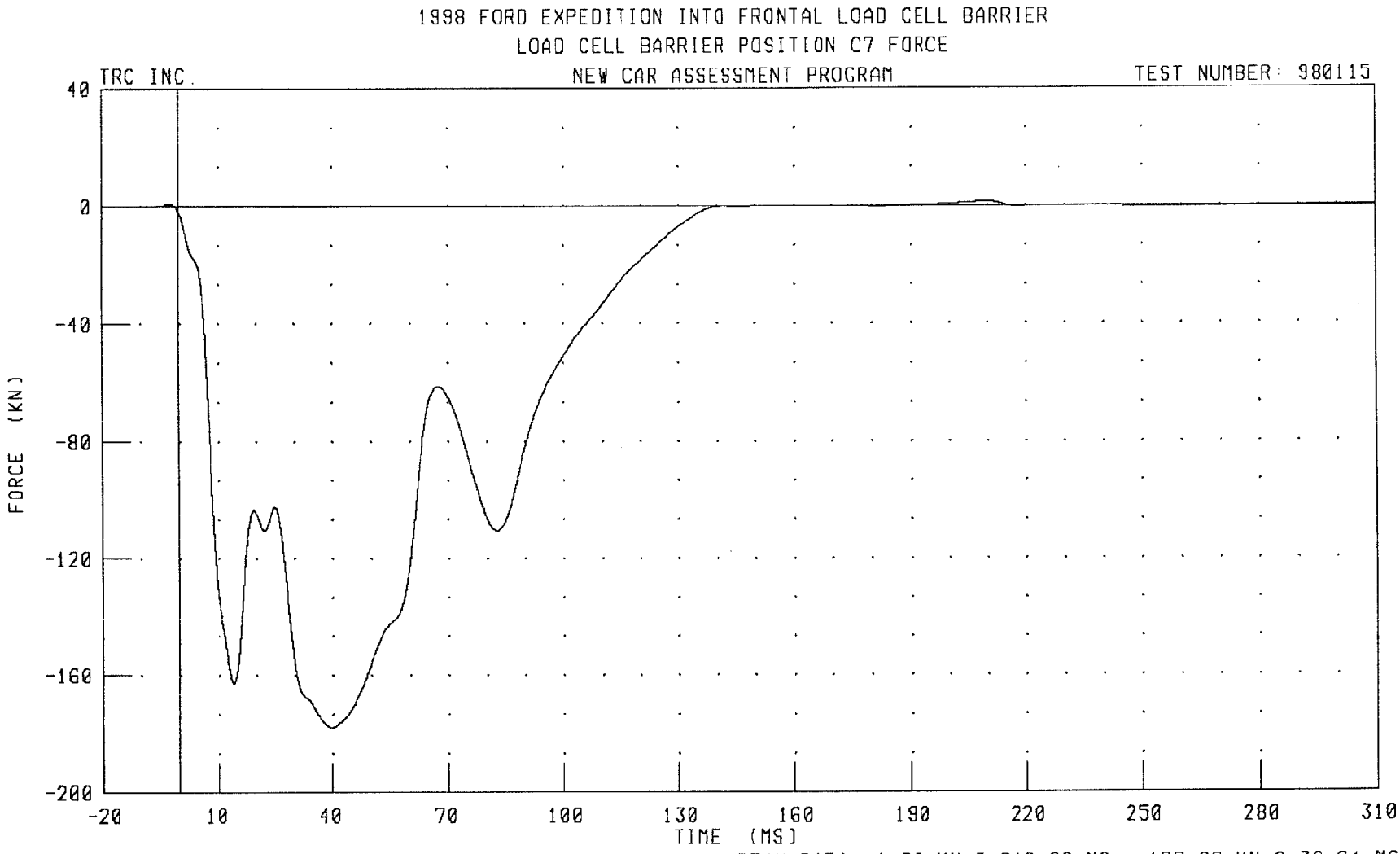
980115

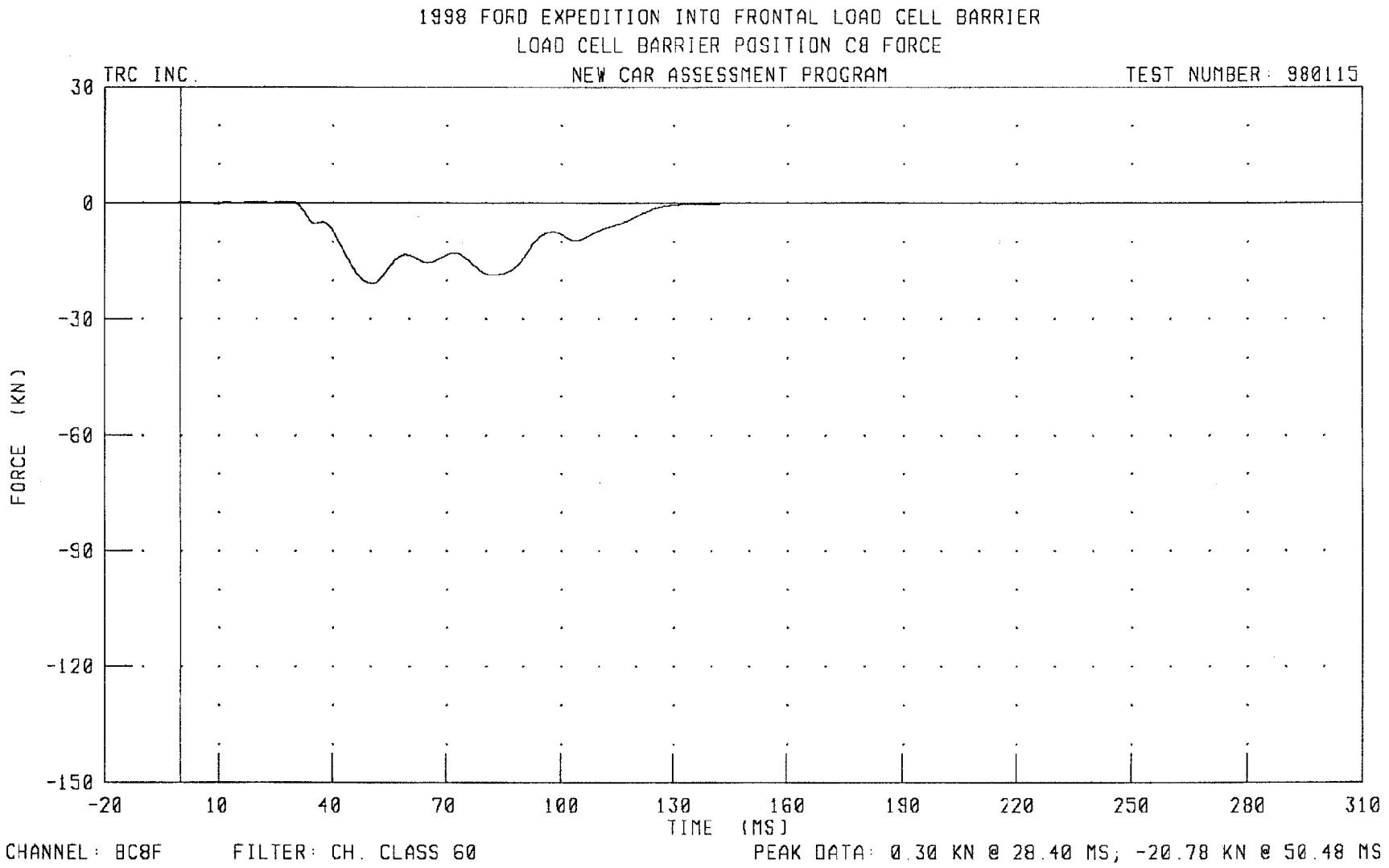

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C5 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BC5F
FILTER: CH. CLASS 60
PEAK DATA: 1.33 KN @ -3.60 MS; -37.71 KN @ 52.56 MS

980115

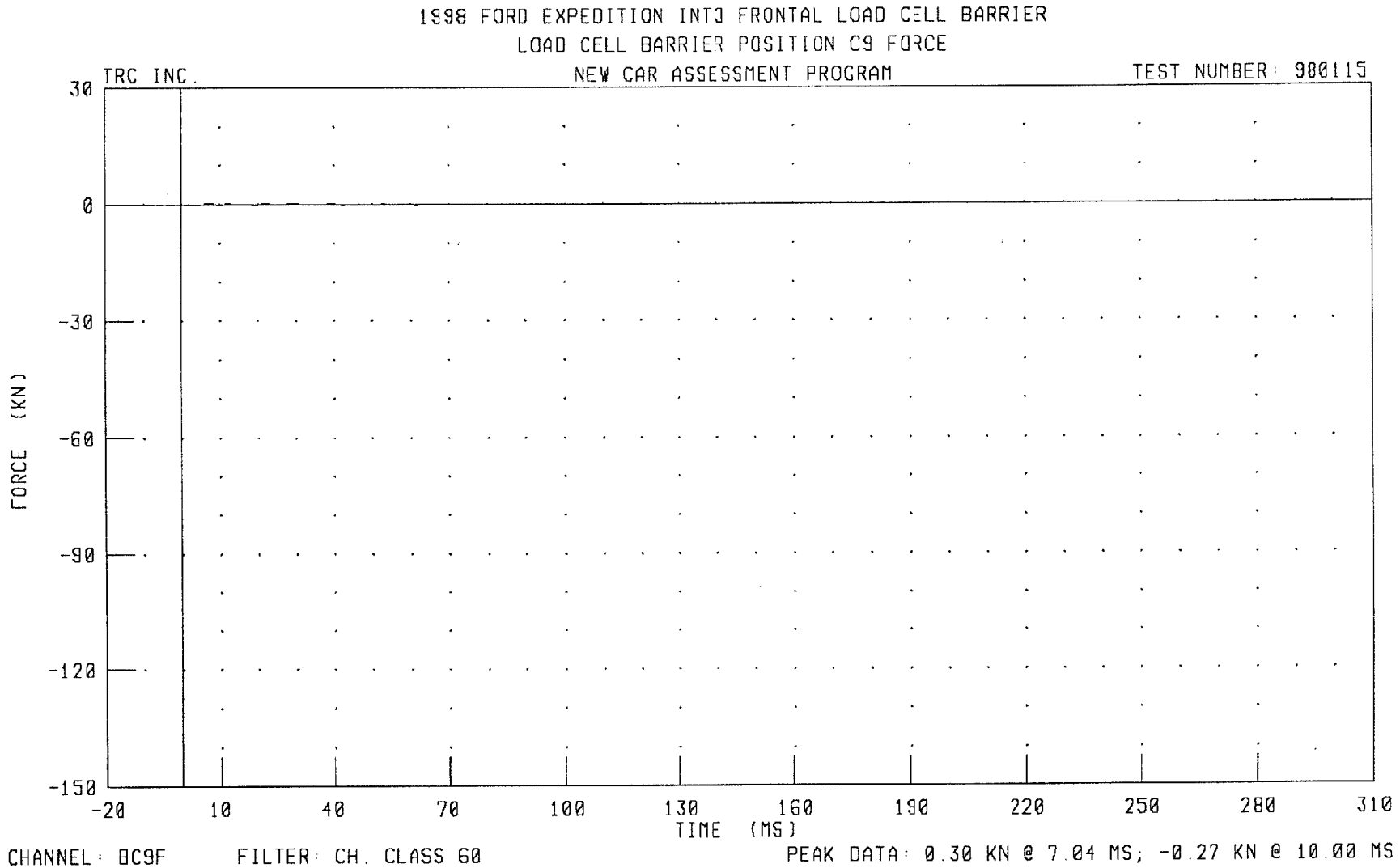

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C6 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BC6F
FILTER: CH. CLASS 60
PEAK DATA: 0.44 KN @ -3.44 MS; -13.11 KN @ 3.28 MS

980115

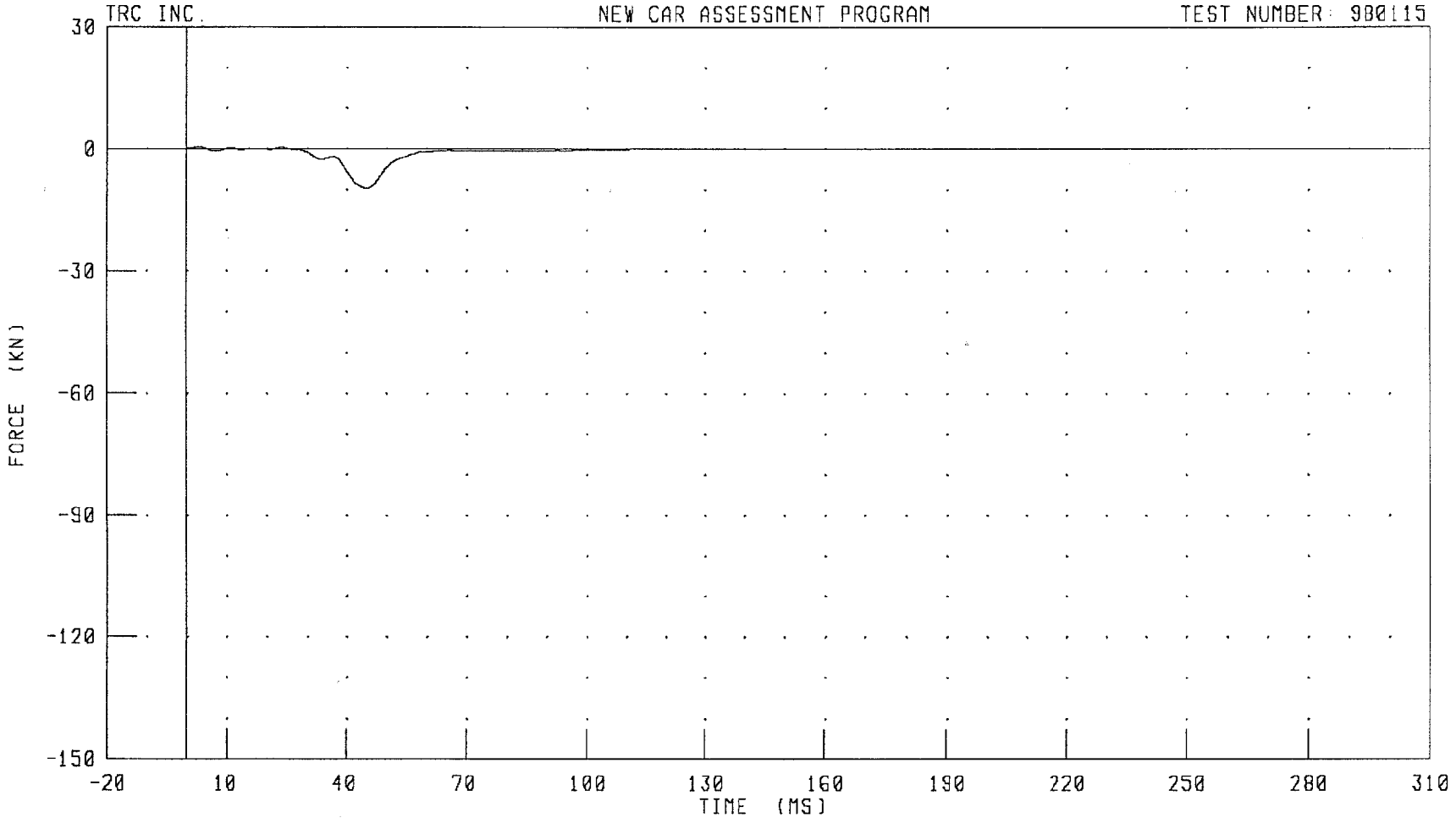

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C7 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
40
0
-40
-80
-120
-160
-200
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BC7F
FILTER: CH. CLASS 60
PEAK DATA: 1.28 KN @ 210.08 MS; -177.87 KN @ 39.84 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C8 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BC8F
FILTER: CH. CLASS 60
PEAK DATA: 0.30 KN @ 28.40 MS; -20.78 KN @ 50.48 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C9 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BC9F
FILTER: CH. CLASS 60
PEAK DATA: 0.30 KN @ 7.04 MS; -0.27 KN @ 10.00 MS

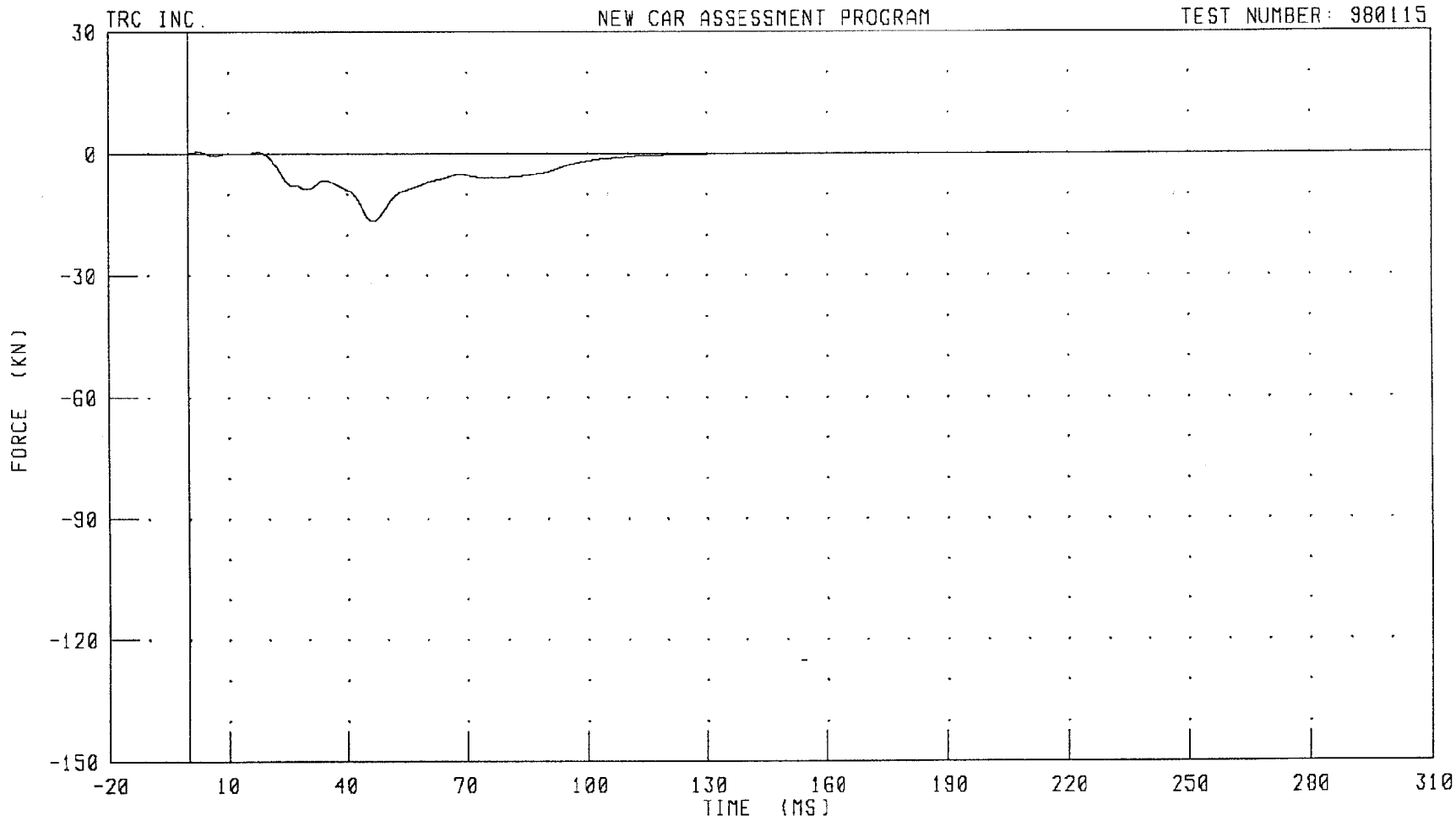
1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D1 FORCE



CHANNEL: BD1F FILTER: CH. CLASS 60 PEAK DATA: 0.49 KN @ 2.96 MS; -9.68 KN @ 45.04 MS

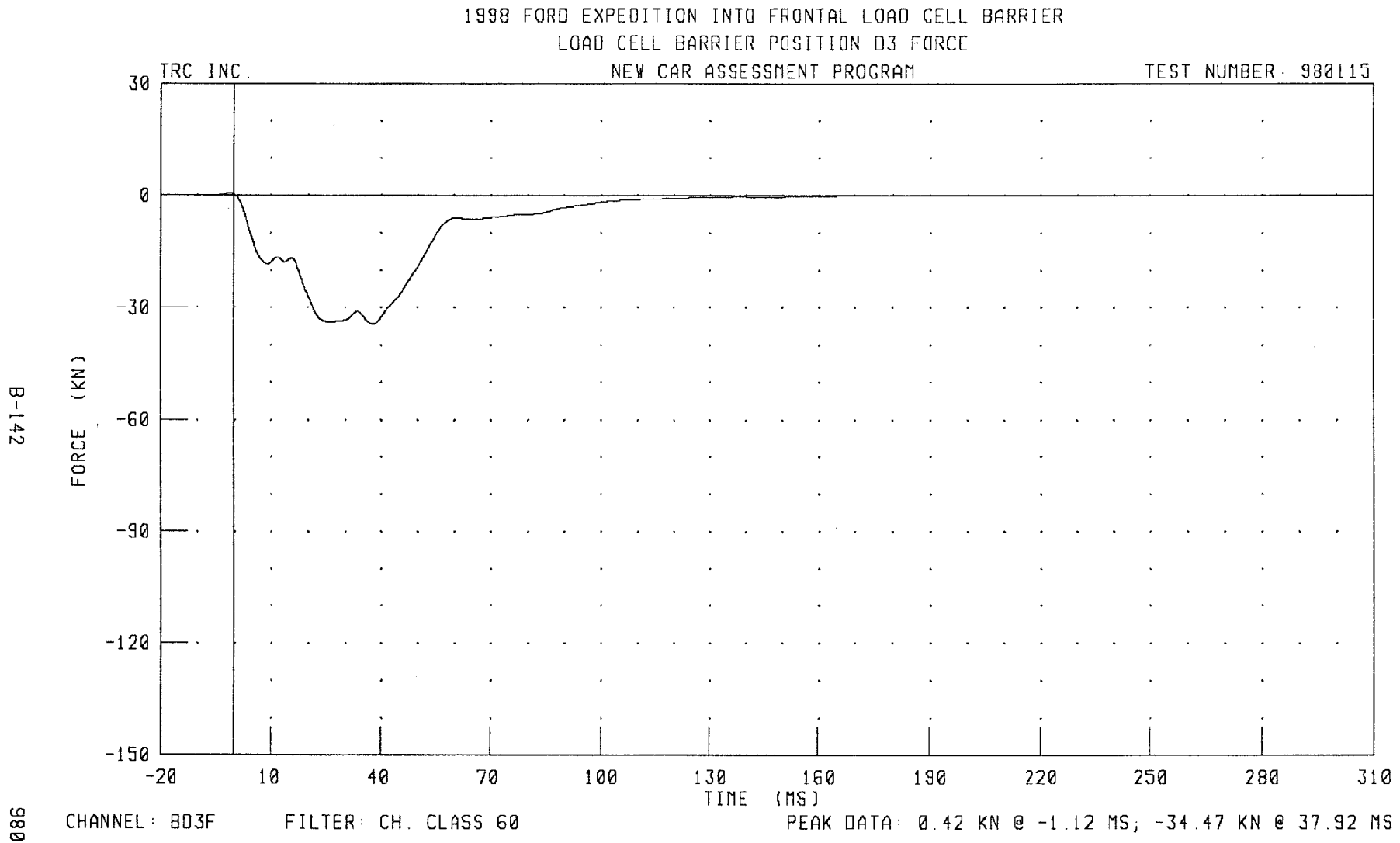
980115

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D2 FORCE

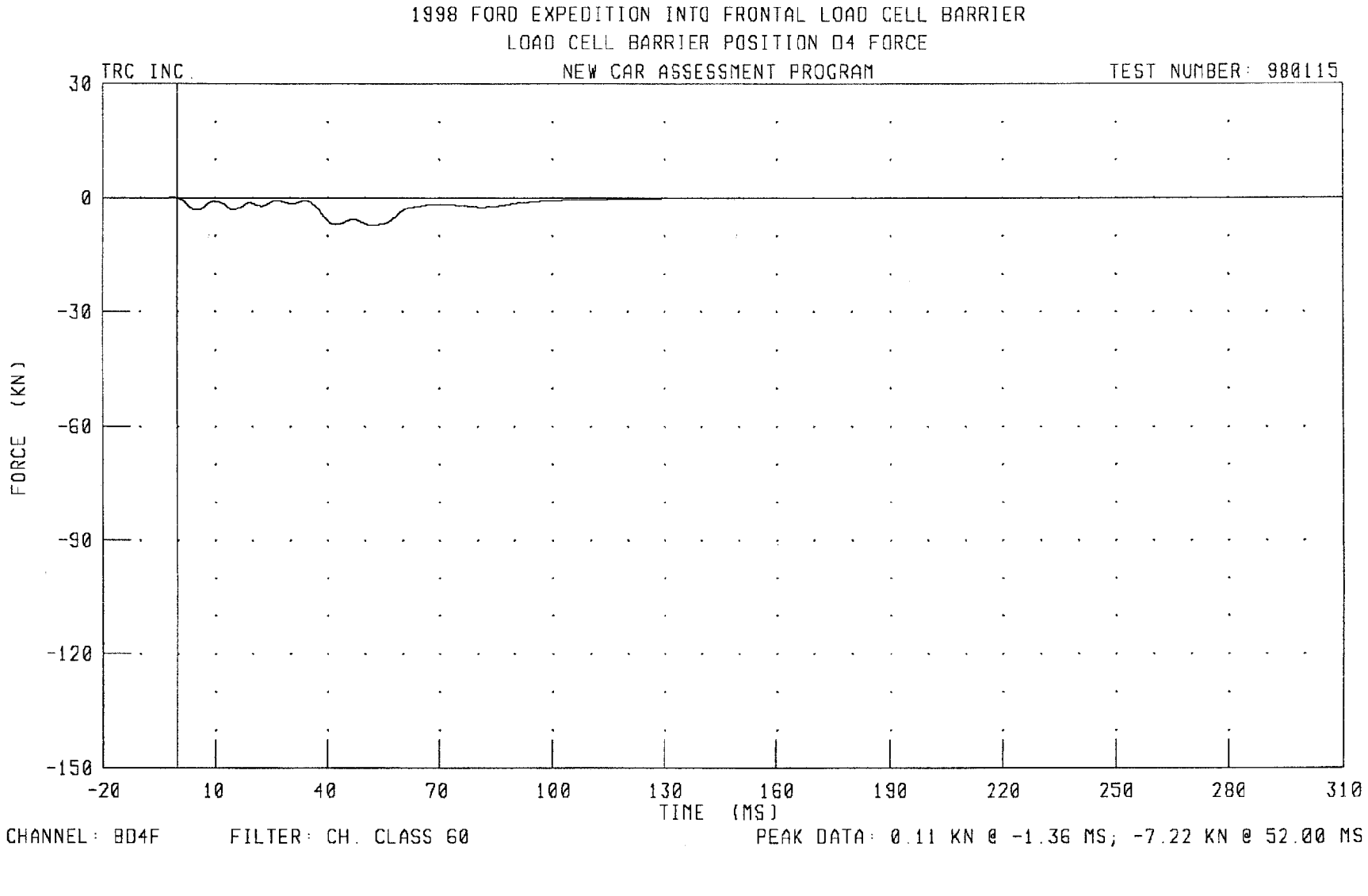


CHANNEL: BD2F FILTER: CH. CLASS 60 PEAK DATA: 0.40 KN @ 2.48 MS; -16.63 KN @ 46.48 MS

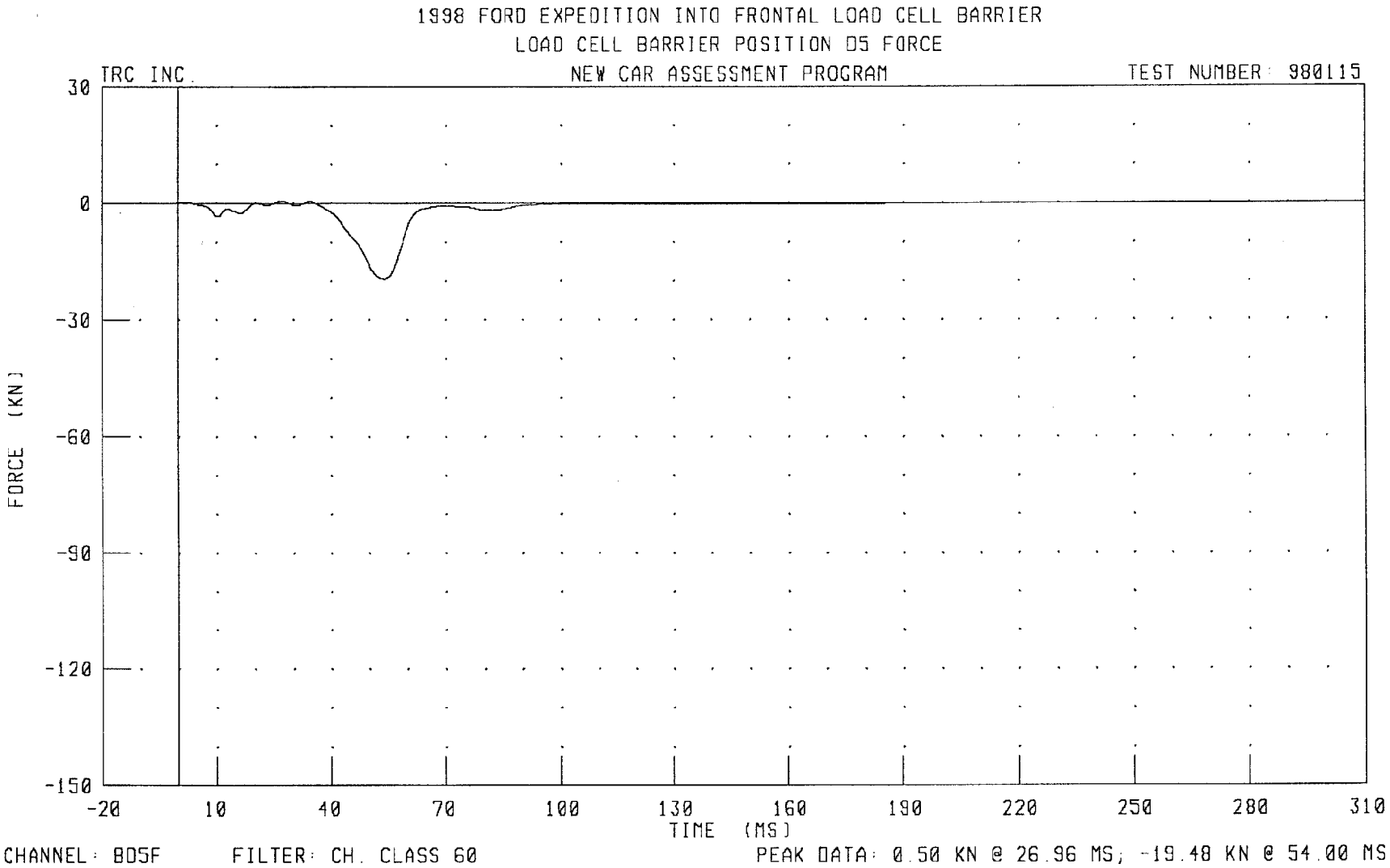
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D3 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BD3F
FILTER: CH. CLASS 60
PEAK DATA: 0.42 KN @ -1.12 MS; -34.47 KN @ 37.92 MS

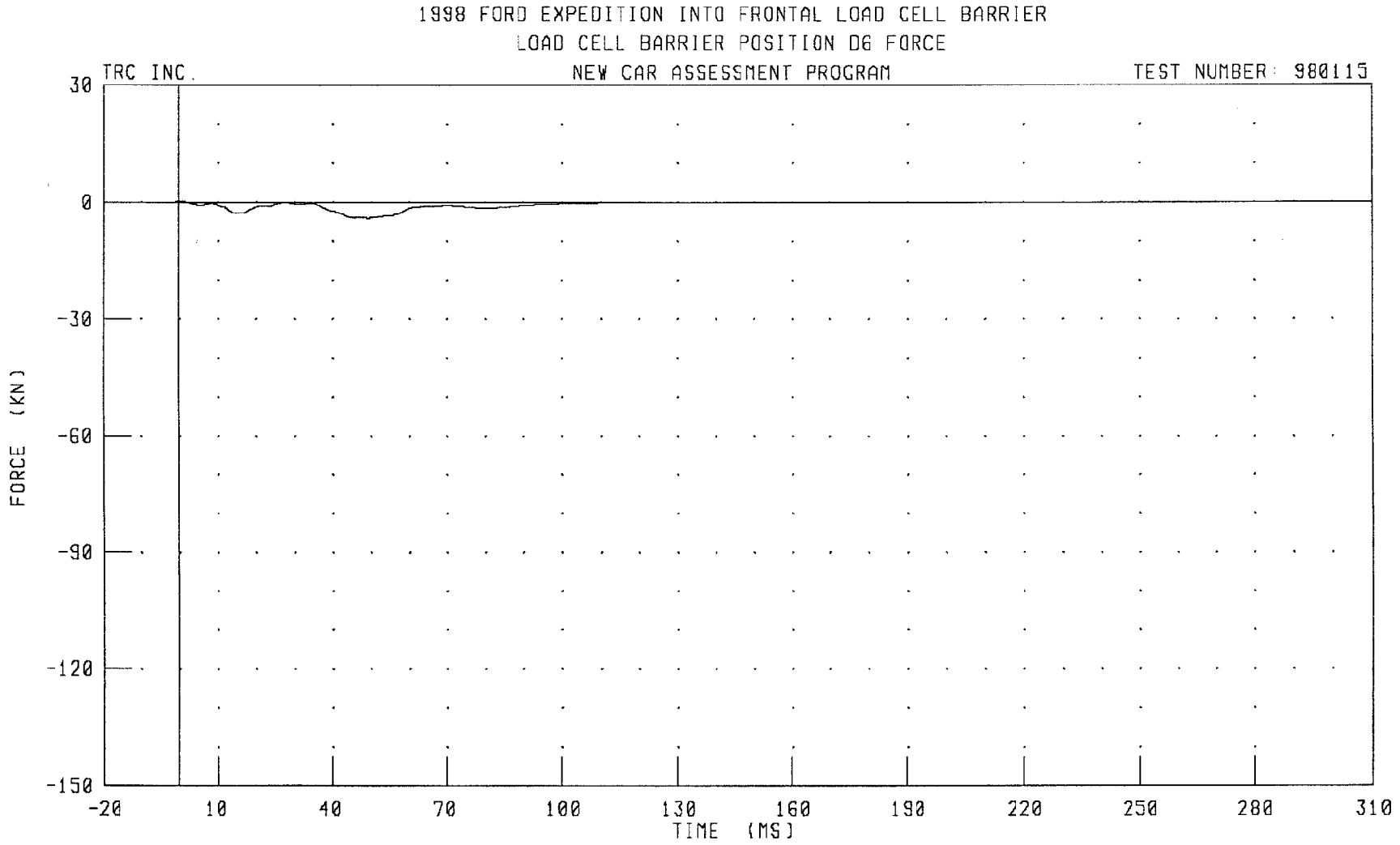
980115

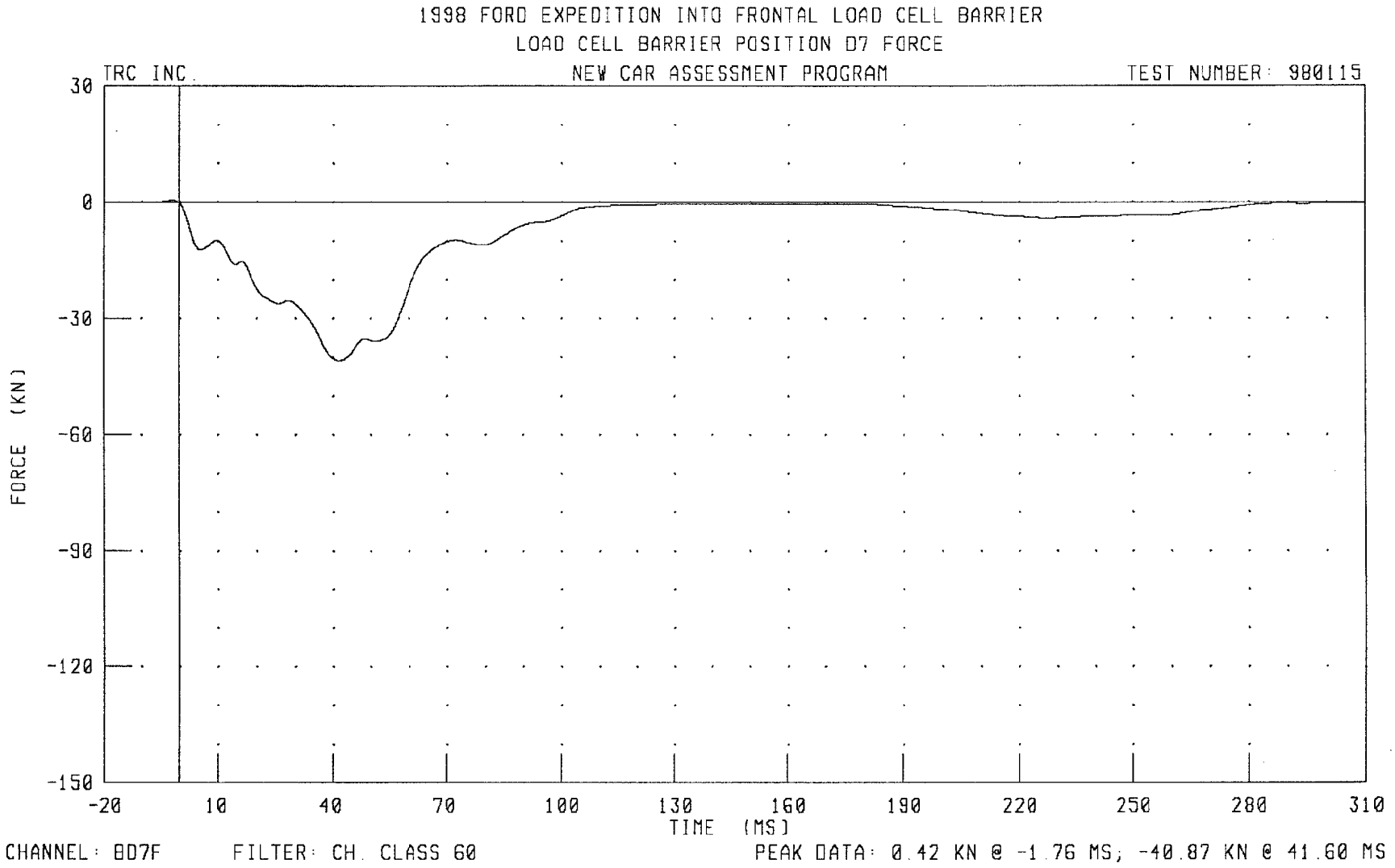

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D4 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BD4F
FILTER: CH. CLASS 60
PEAK DATA: 0.11 KN @ -1.36 MS; -7.22 KN @ 52.00 MS

980115

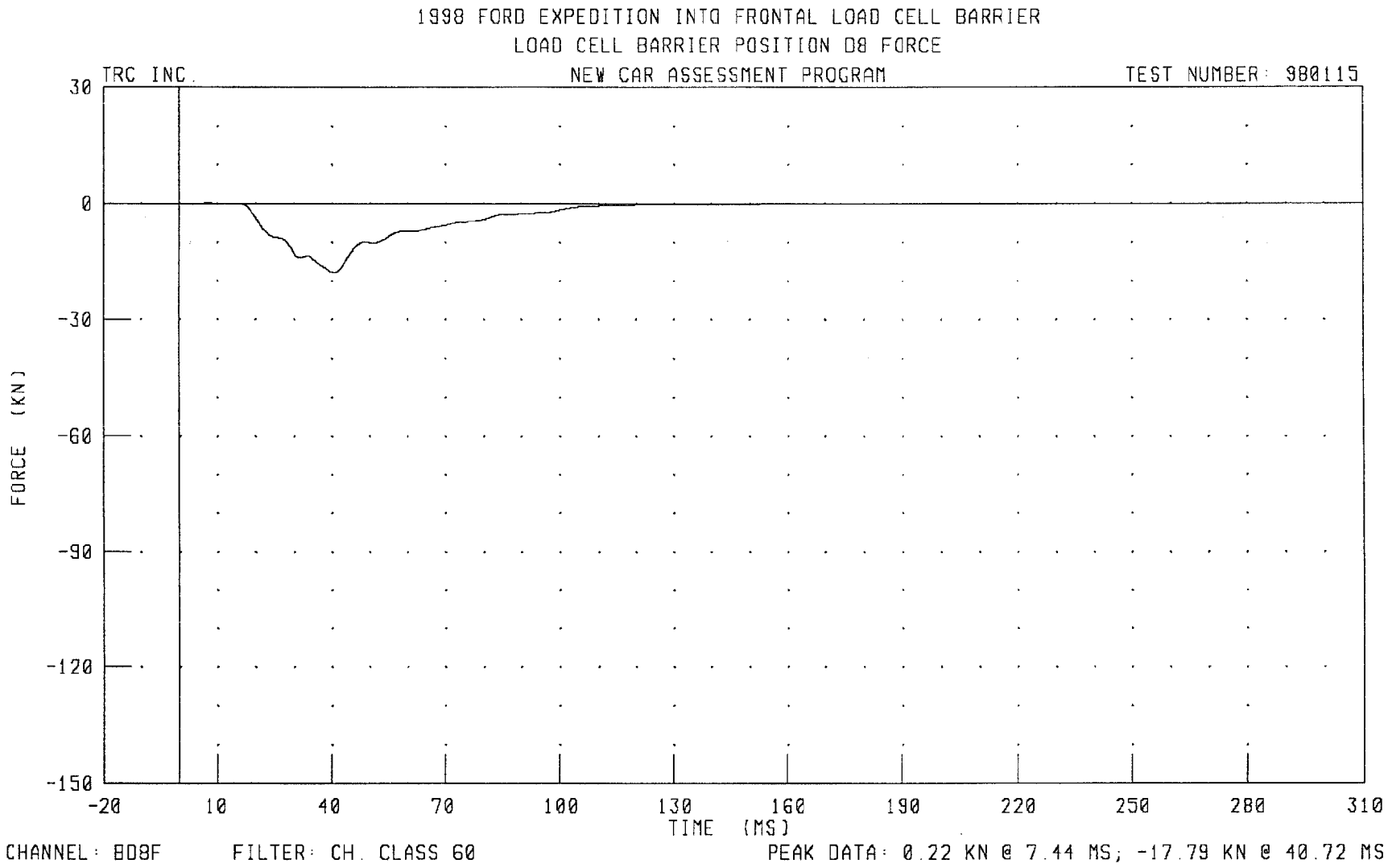

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D5 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BD5F
FILTER: CH. CLASS 60
PEAK DATA: 0.50 KN @ 26.96 MS; -19.48 KN @ 54.00 MS

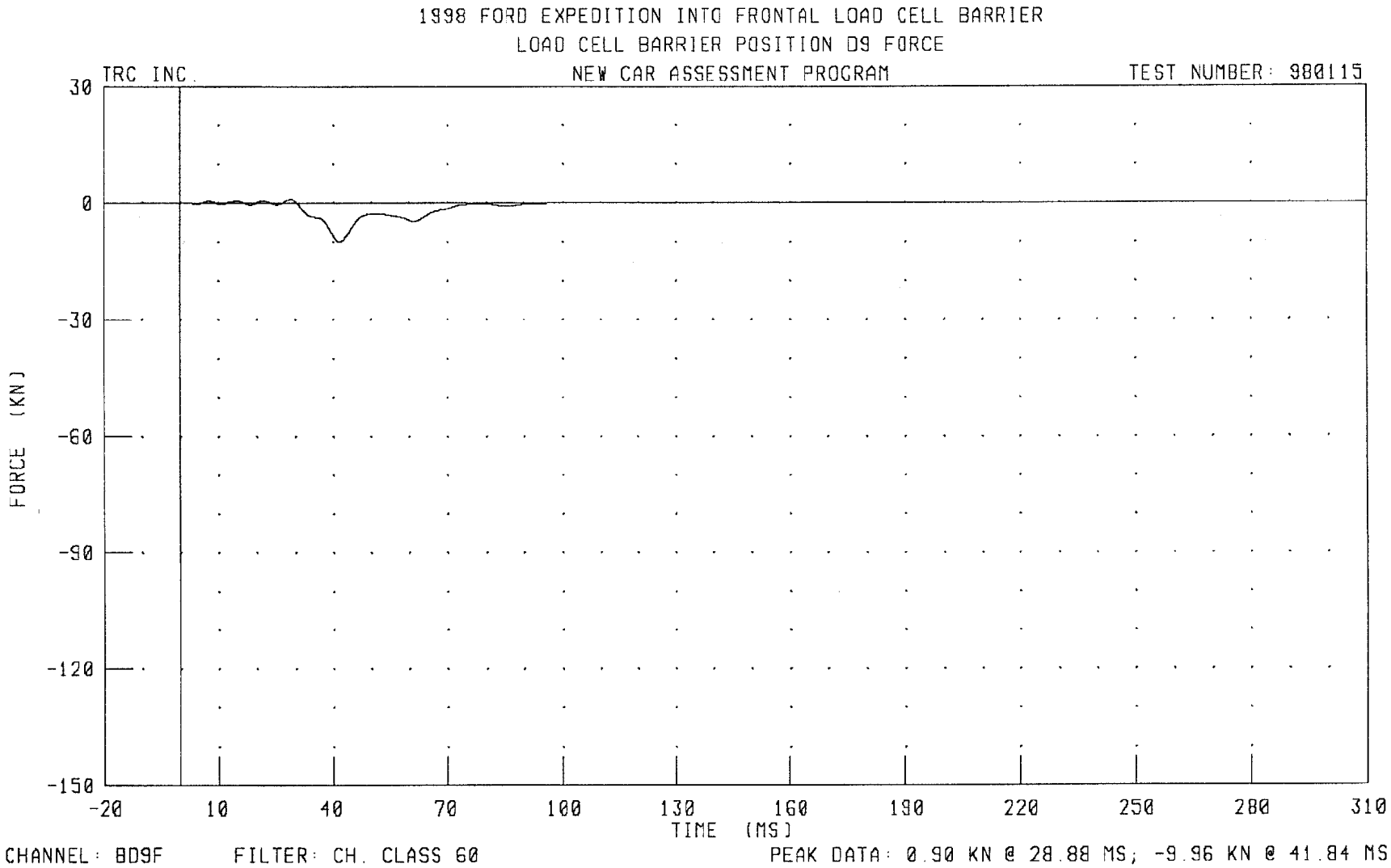
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION DG FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BDGF
FILTER: CH. CLASS 60
PEAK DATA: 0.14 KN @ 0.56 MS; -3.98 KN @ 49.28 MS

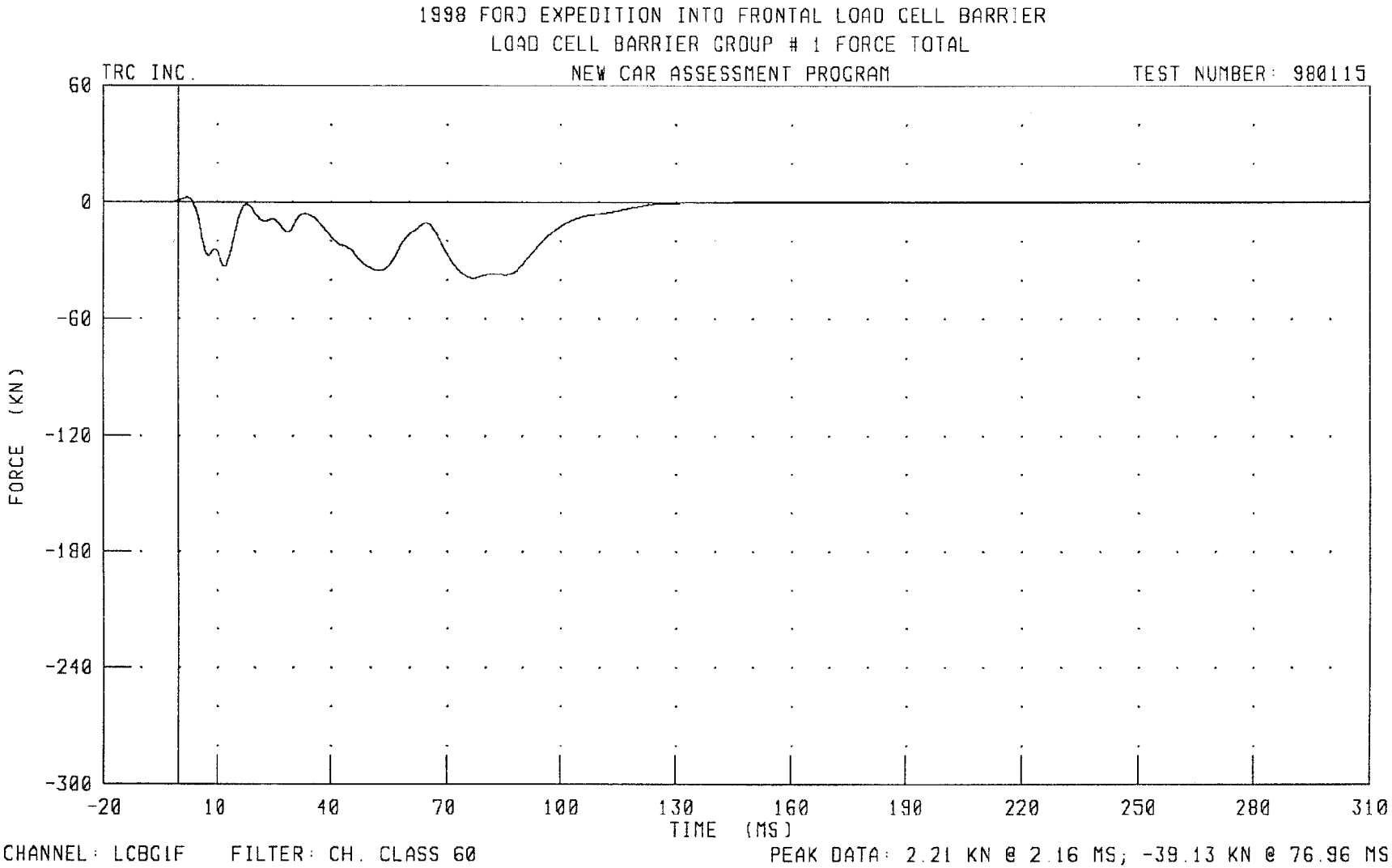

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D7 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BD7F
FILTER: CH. CLASS 60
PEAK DATA: 0.42 KN @ -1.76 MS; -40.87 KN @ 41.60 MS

980115

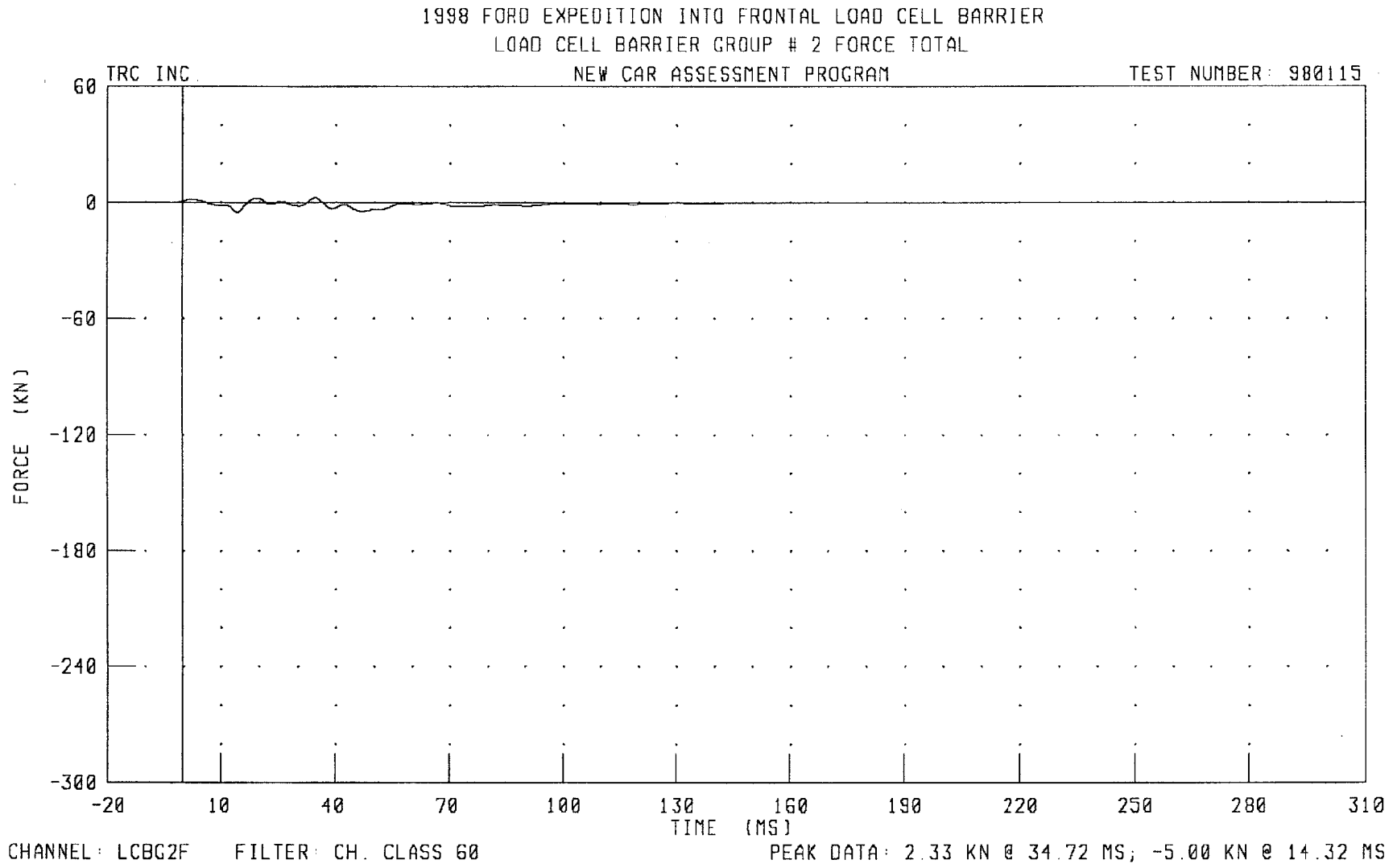

1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D8 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: 8D8F
FILTER: CH. CLASS 60
PEAK DATA: 0.22 KN @ 7.44 MS; -17.79 KN @ 40.72 MS


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D9 FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
30
0
-30
-60
-90
-120
-150
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: BD9F
FILTER: CH. CLASS 60
PEAK DATA: 0.90 KN @ 28.88 MS; -9.96 KN @ 41.84 MS

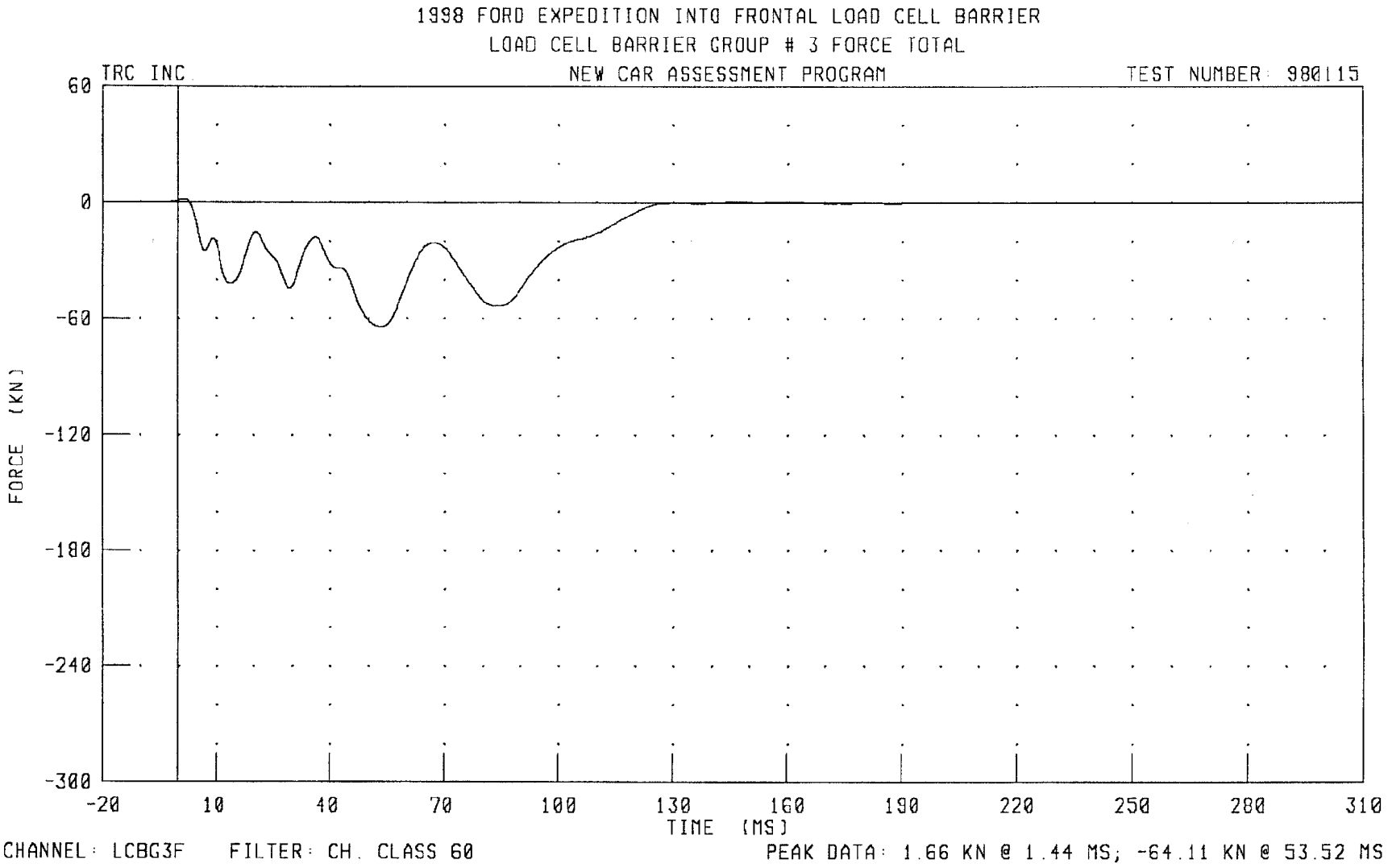
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 1 FORCE TOTAL
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
0
-60
-120
-180
-240
-300
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LCBG1F
FILTER: CH. CLASS 60
PEAK DATA: 2.21 KN @ 2.16 MS; -39.13 KN @ 76.96 MS

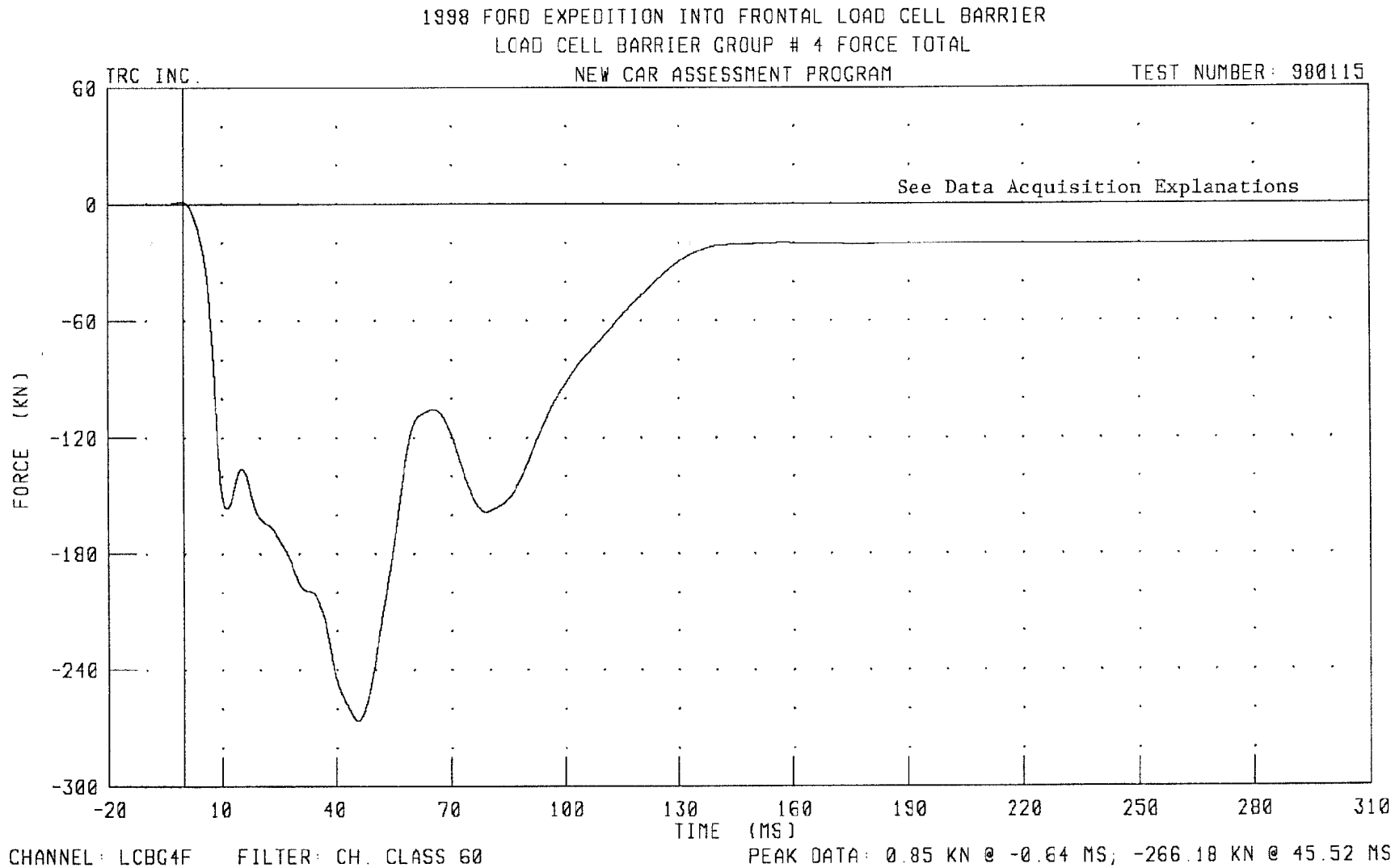
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 2 FORCE TOTAL
TRC INC
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
0
-60
-120
-180
-240
-300
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LCBG2F
FILTER: CH. CLASS 60
PEAK DATA: 2.33 KN @ 34.72 MS; -5.00 KN @ 14.32 MS

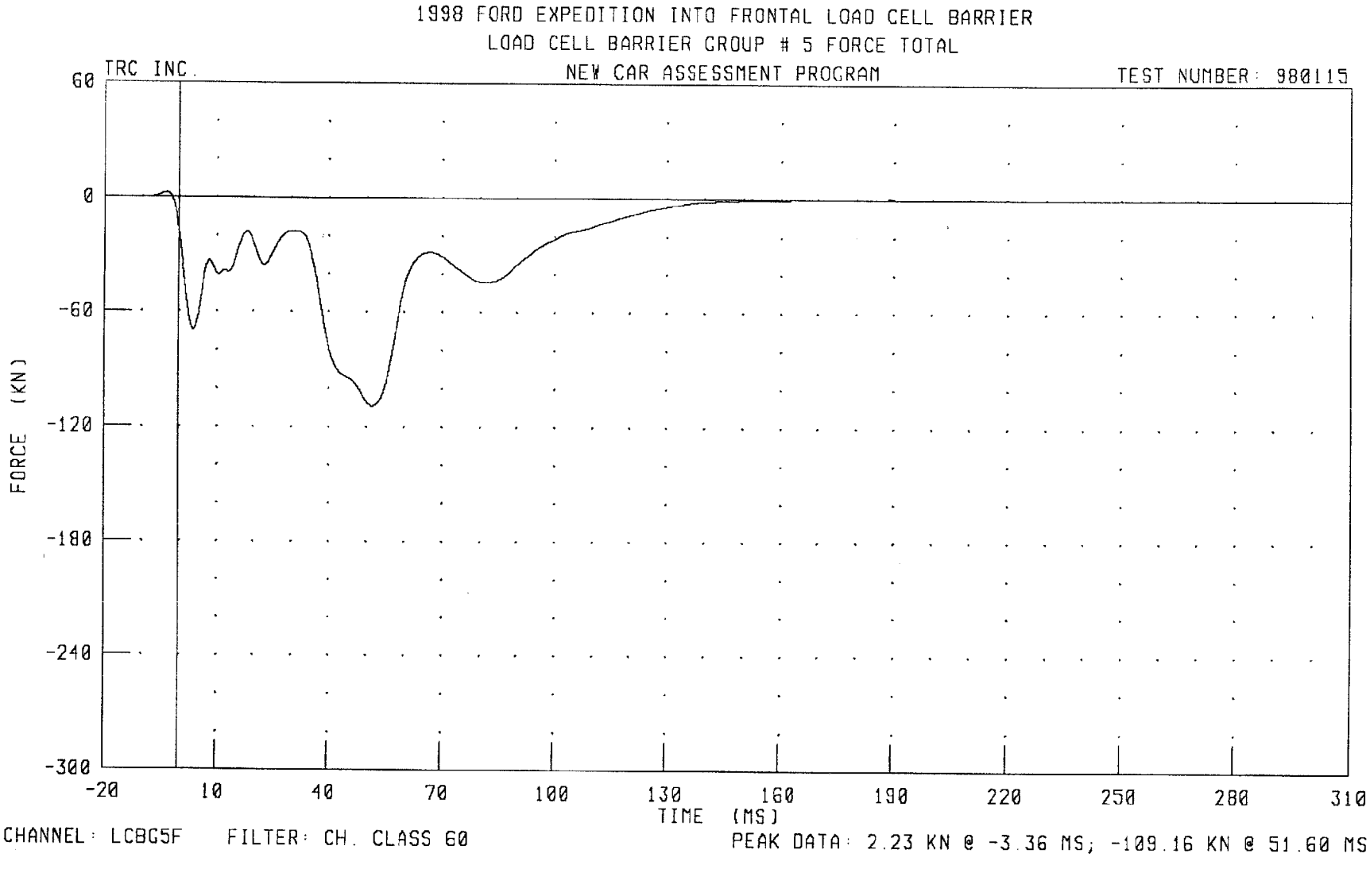
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 3 FORCE TOTAL
TRC INC
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
0
-60
-120
-180
-240
-300
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LCBG3F
FILTER: CH. CLASS 60
PEAK DATA: 1.66 KN @ 1.44 MS; -64.11 KN @ 53.52 MS

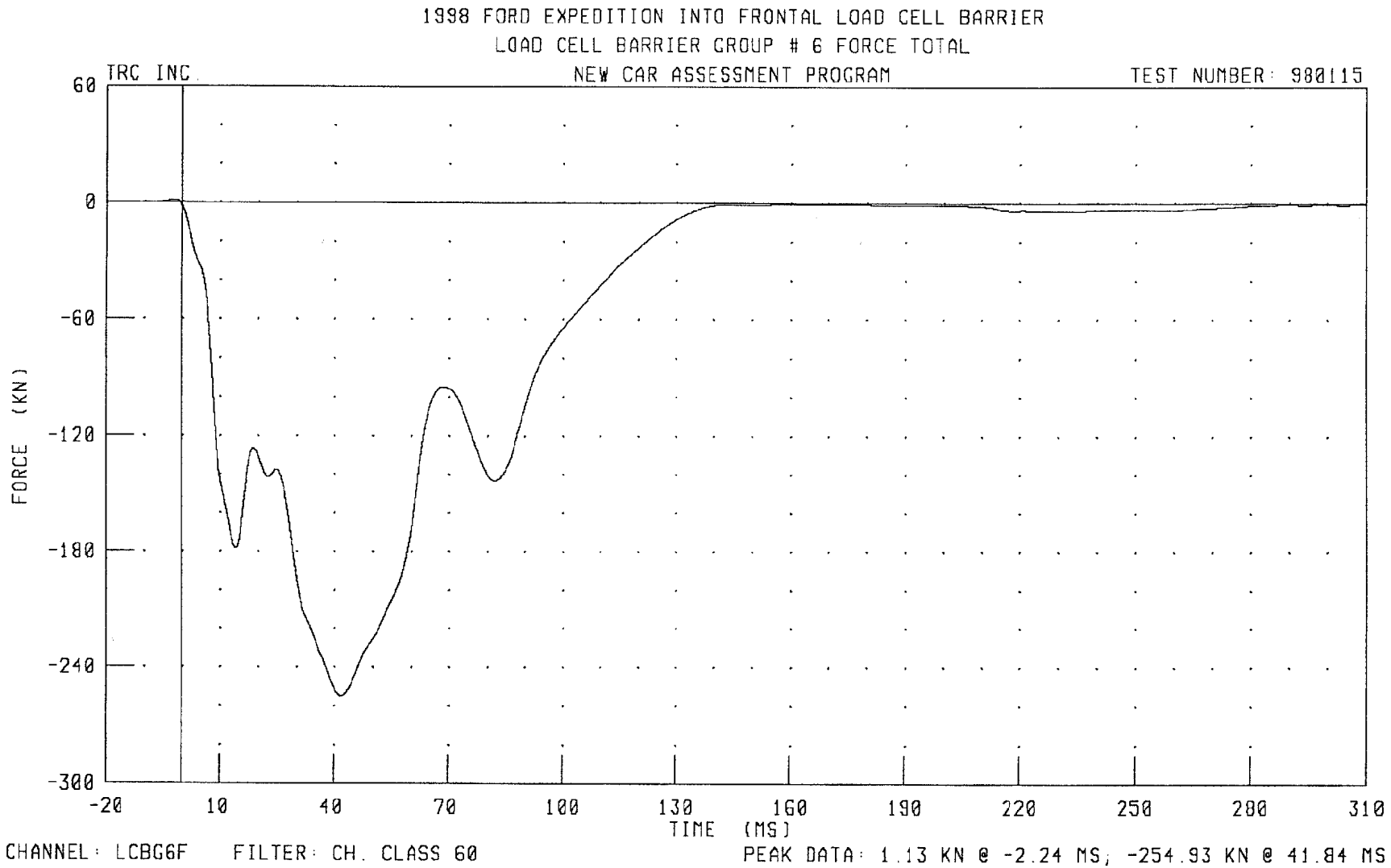
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 4 FORCE TOTAL
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
See Data Acquisition Explanations
60
0
-60
-120
-180
-240
-300
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LCBG4F
FILTER: CH. CLASS 60
PEAK DATA: 0.85 KN @ -0.64 MS; -266.18 KN @ 45.52 MS

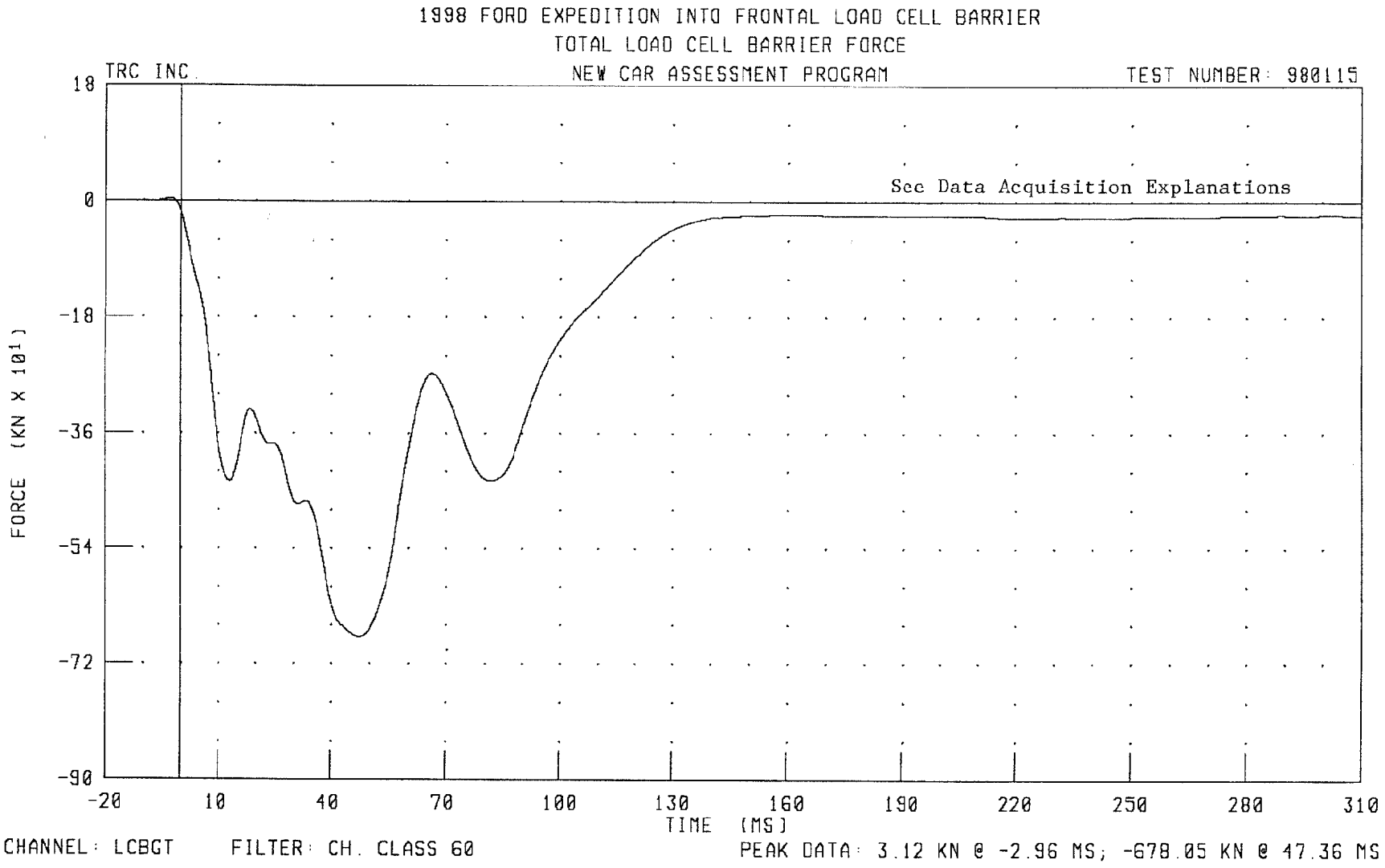
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 5 FORCE TOTAL
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
0
-60
-120
-180
-240
-300
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LCBG5F
FILTER: CH. CLASS 60
PEAK DATA: 2.23 KN @ -3.36 MS; -109.16 KN @ 51.60 MS

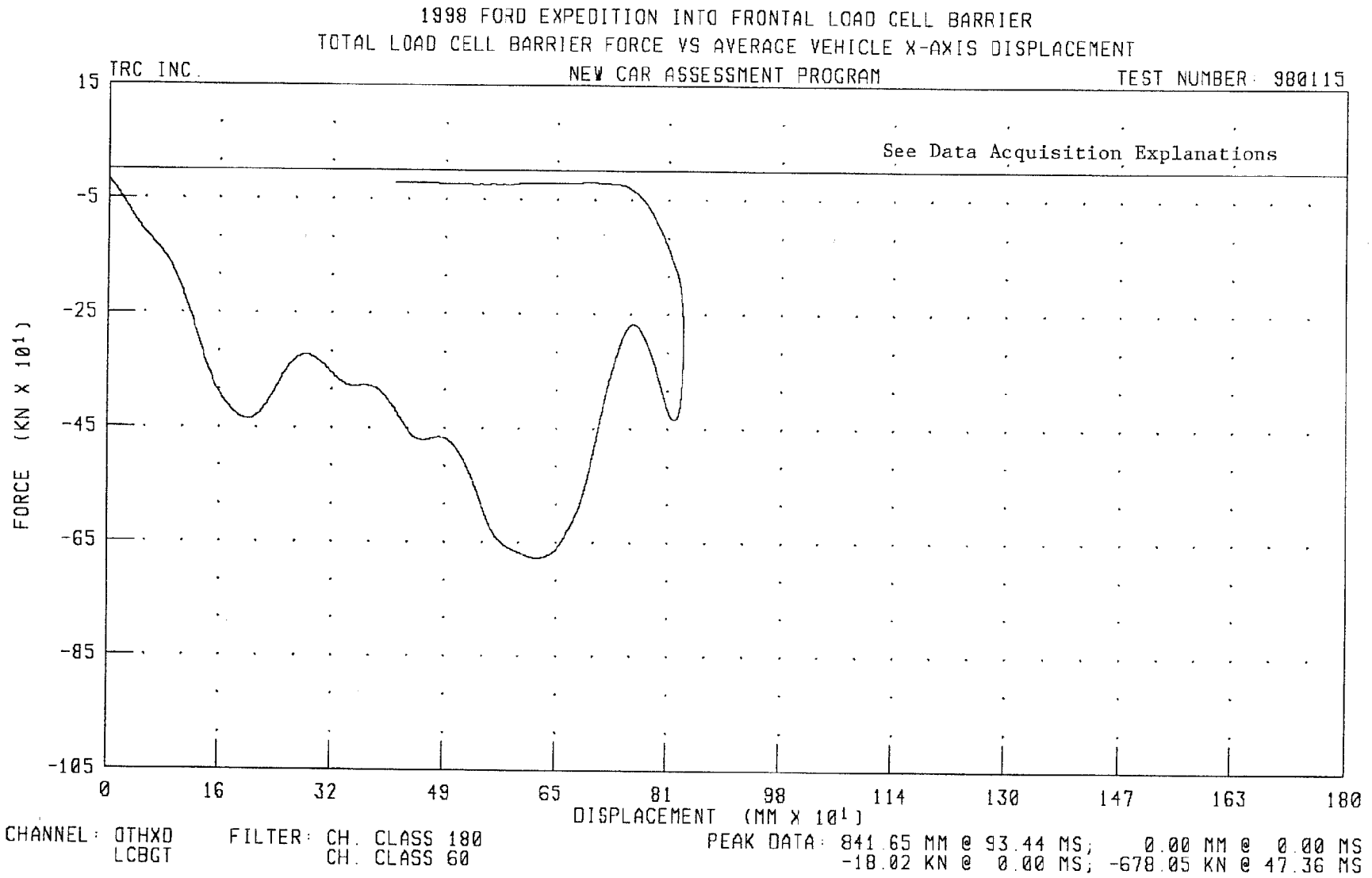
980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 6 FORCE TOTAL
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
60
0
-60
-120
-180
-240
-300
FORCE (KN)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LCBG6F
FILTER: CH. CLASS 60
PEAK DATA: 1.13 KN @ -2.24 MS, -254.93 KN @ 41.84 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
TOTAL LOAD CELL BARRIER FORCE
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
See Data Acquisition Explanations
18
0
-18
-36
-54
-72
-90
FORCE (KN X 10¹)
-20
10
40
70
100
130
160
190
220
250
280
310
TIME (MS)
CHANNEL: LCBGT
FILTER: CH. CLASS 60
PEAK DATA: 3.12 KN @ -2.96 MS; -678.05 KN @ 47.36 MS

980115


1998 FORD EXPEDITION INTO FRONTAL LOAD CELL BARRIER
TOTAL LOAD CELL BARRIER FORCE VS AVERAGE VEHICLE X-AXIS DISPLACEMENT
TRC INC.
NEW CAR ASSESSMENT PROGRAM
TEST NUMBER: 980115
See Data Acquisition Explanations
FORCE (KN X 10¹)
15
-5
-25
-45
-65
-85
-105
0
16
32
49
65
81
98
114
130
147
163
180
DISPLACEMENT (MM X 10¹)
CHANNEL: OTHXD
LCBGT
FILTER: CH. CLASS 180
CH. CLASS 60
PEAK DATA: 841.65 MM @ 93.44 MS; 0.00 MM @ 0.00 MS
-18.02 KN @ 0.00 MS; -678.05 KN @ 47.36 MS

Appendix C

Dummy Certification Data

Pre-test Certification Data

Driver Dummy S/N: 192

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS
SN192 ALDERSON 14-01-98

TRC INC. TEST NO: 192C37ED1 572E SN192 EXT.DIMENSION CAL37

TEST PARAMETER (DIMEN.)	SPECIFICATION	TEST RESULTS
LOCATION FOR CHEST CIRCUMFERENCE (AA)	16.9 - 17.1 IN	17.0 IN
LOCATION FOR WAIST CIRCUMFERENCE (BB)	8.9 - 9.1 IN	9.0 IN
CHEST CIRCUMFERENCE (Y)	38.2 - 39.4 IN	38.6 IN
WAIST CIRCUMFERENCE (Z)	32.9 - 34.1 IN	33.9 IN
CHEST DEPTH (O)	8.4 - 9.0 IN	8.5 IN
H-POINT HEIGHT (C)	3.3 - 3.5 IN	3.5 IN
H-POINT FROM SEATBACK (D)	5.3 - 5.5 IN	5.4 IN
SKULL CAP TO BACKLINE (H)	1.6 - 1.8 IN	1.7 IN
TOTAL SITTING HEIGHT (A)	34.6 - 35.0 IN	34.8 IN
THIGH CLEARANCE (F)	5.5 - 6.1 IN	5.7 IN
BUTTOCK KNEE LENGTH (K)	22.8 - 23.8 IN	23.7 IN
BUTTOCK POPLITEAL LENGTH (N)	17.8 - 18.8 IN	18.7 IN
POPLITEAL HEIGHT (L)	16.9 - 17.9 IN	17.6 IN
KNEE PIVOT HEIGHT (M)	19.1 - 19.7 IN	19.6 IN
FOOT LENGTH (P)	9.9 - 10.5 IN	10.3 IN
FOOT BREADTH (W)	3.6 - 4.2 IN	3.9 IN
SHOULDER PIVOT FROM BACKLINE (E)	3.3 - 3.7 IN	3.7 IN
SHOULDER BREADTH (V)	16.6 - 17.2 IN	16.8 IN
SHOULDER PIVOT HEIGHT (B)	19.9 - 20.5 IN	20.1 IN
ELBOW REST HEIGHT (J)	7.5 - 8.3 IN	8.0 IN
SHOULDER-ELBOW LENGTH (I)	13.0 - 13.6 IN	13.1 IN
BACK OF ELBOW TO WRIST PIVOT (G)	11.4 - 12.0 IN	11.6 IN

DUMMY MEETS SPECIFICATIONS
TECHNICIAN _____ RUN NUMBER: 011598.0726

TRANSPORTATION RESEARCH CENTER INC.

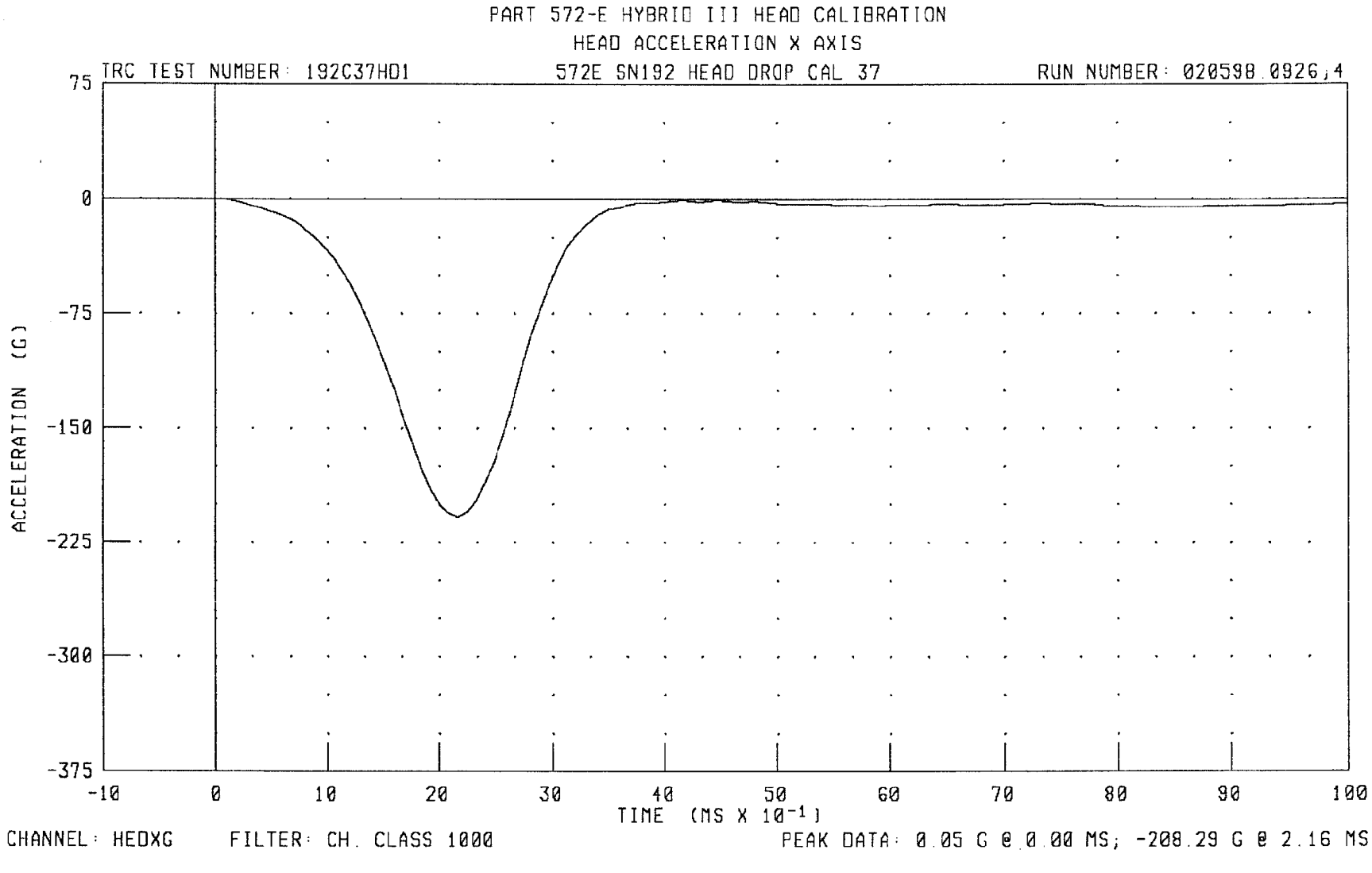
HEAD DROP TEST

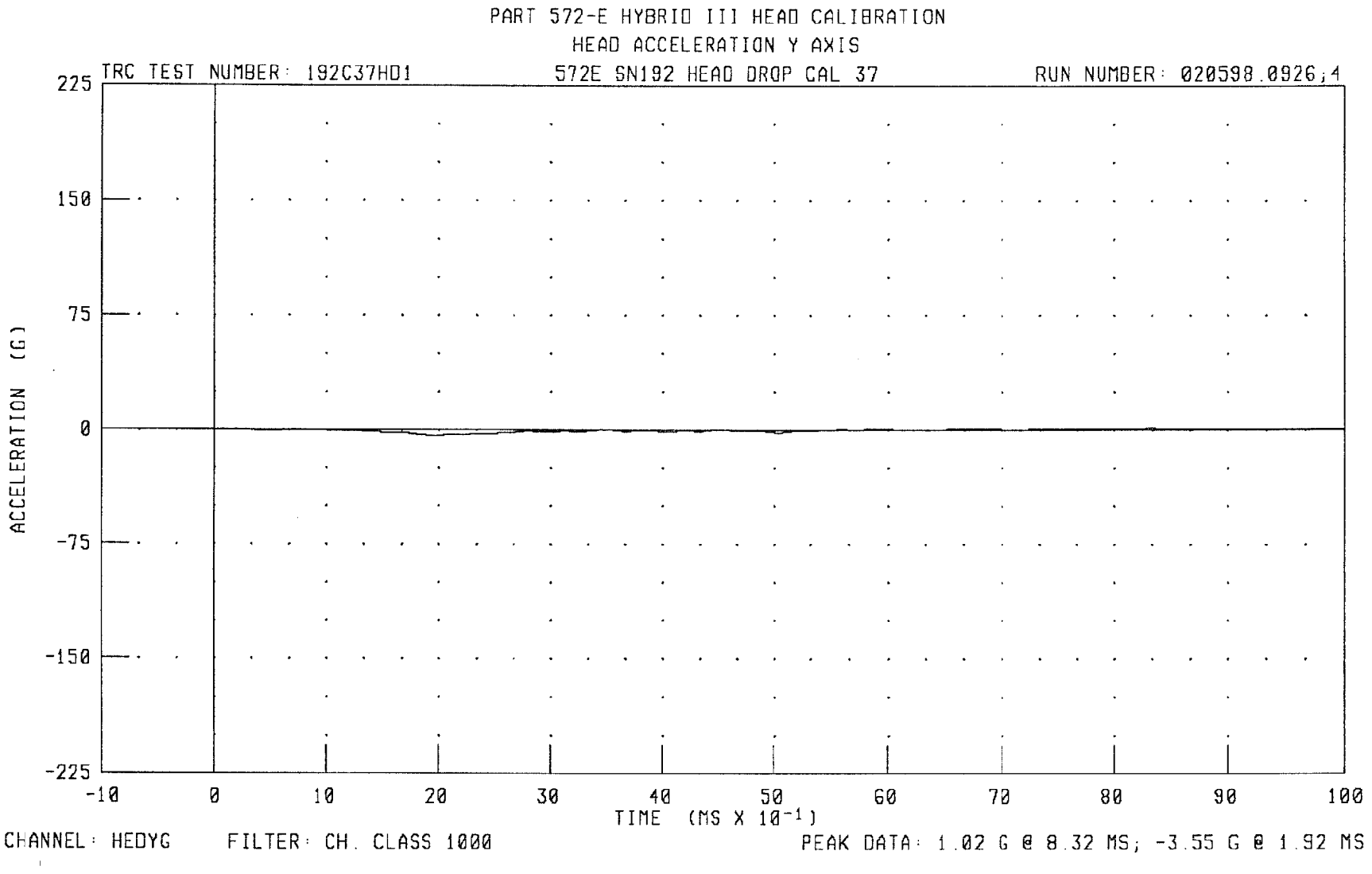
TRC INC. TEST NO: 192C37HD1 572E SN192 HEAD DROP CAL 37

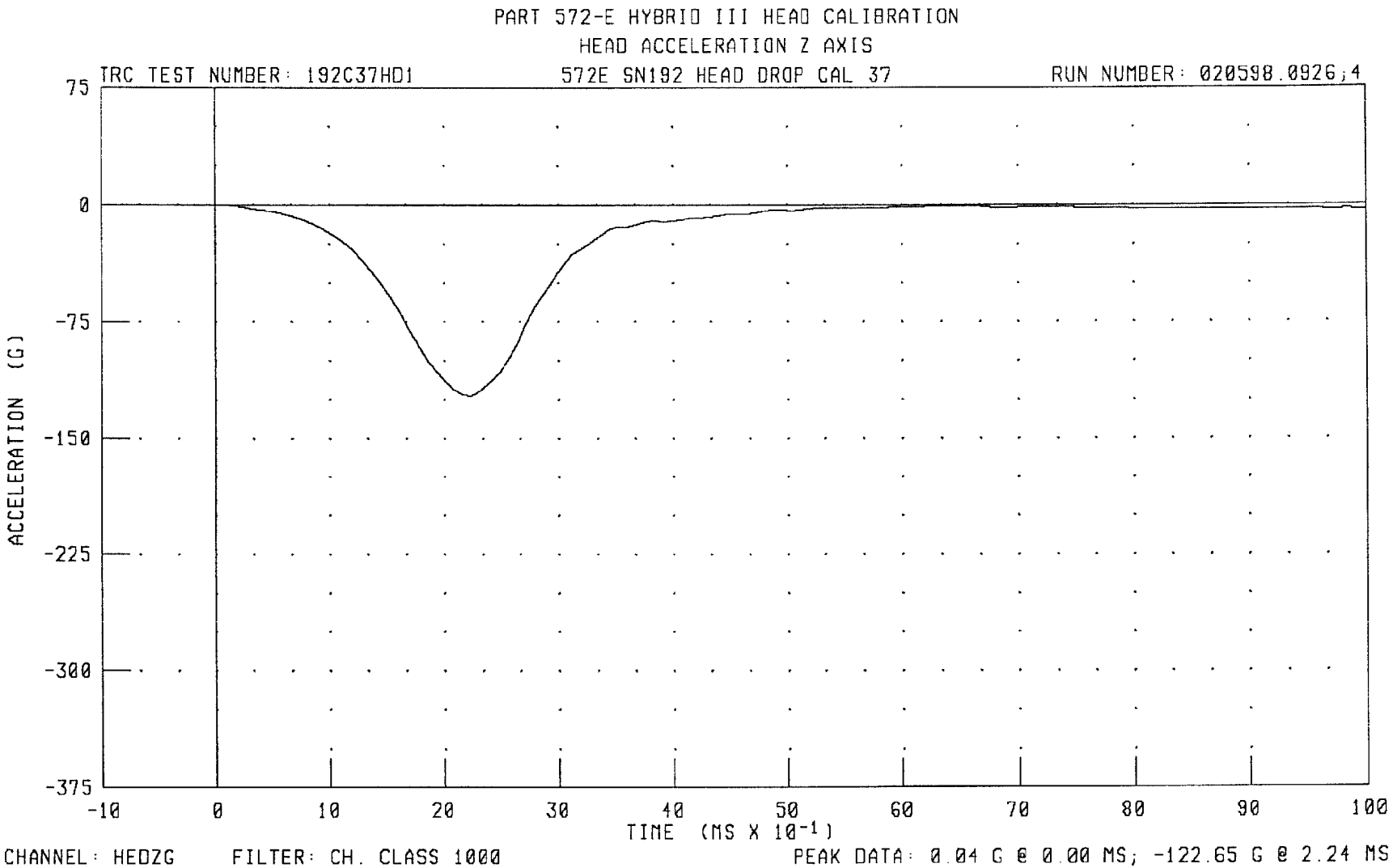
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	46.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	241.45 G
PEAK LATERAL ACCELERATION	15 G MAX	-3.54 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

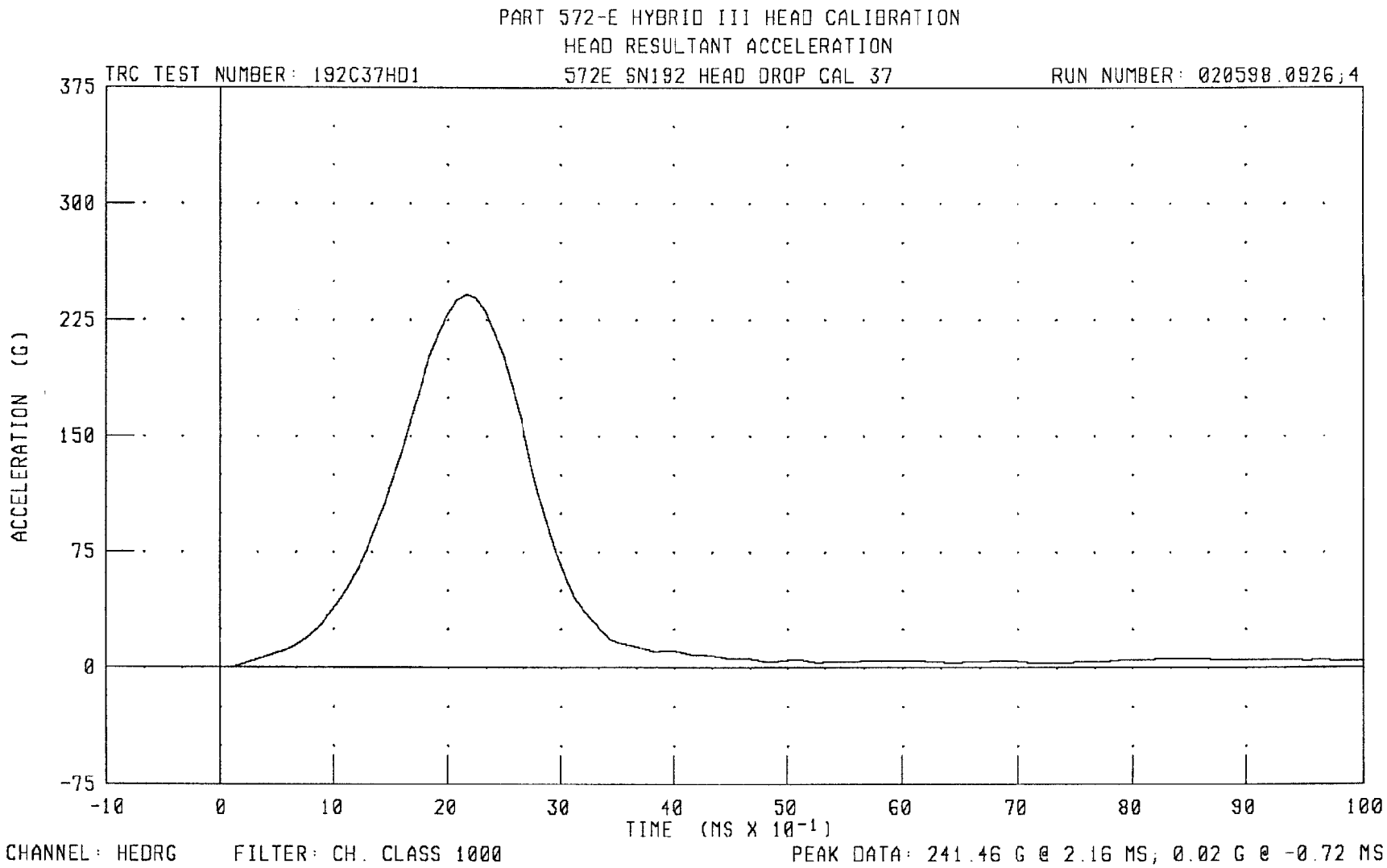
TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins RUN NUMBER: 020598.0925;4


PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS
TRC TEST NUMBER: 192C37HD1
572E SN192 HEAD DROP CAL 37
RUN NUMBER: 020598.0926;4
75
0
-75
-150
-225
-300
-375
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10-1)
CHANNEL: HEDXG
FILTER: CH. CLASS 1000
PEAK DATA: 0.05 G @ 0.00 MS; -208.29 G @ 2.16 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Y AXIS
TRC TEST NUMBER: 192C37HD1
572E SN192 HEAD DROP CAL 37
RUN NUMBER: 020598.0926;4
225
150
75
0
-75
-150
-225
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10⁻¹)
CHANNEL: HEDYG
FILTER: CH. CLASS 1000
PEAK DATA: 1.02 G @ 8.32 MS; -3.55 G @ 1.92 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS
TRC TEST NUMBER: 192C37HD1
572E SN192 HEAD DROP CAL 37
RUN NUMBER: 020598.0926;4
75
0
-75
-150
-225
-300
-375
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10-1)
CHANNEL: HEDZG
FILTER: CH. CLASS 1000
PEAK DATA: 0.04 G @ 0.00 MS; -122.65 G @ 2.24 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION
TRC TEST NUMBER: 192C37HD1
572E SN192 HEAD DROP CAL 37
RUN NUMBER: 020598.0926;4
375
300
225
150
75
0
-75
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10-1)
CHANNEL: HEDRG
FILTER: CH. CLASS 1000
PEAK DATA: 241.46 G @ 2.16 MS; 0.02 G @ -0.72 MS

TRANSPORTATION RESEARCH CENTER INC.

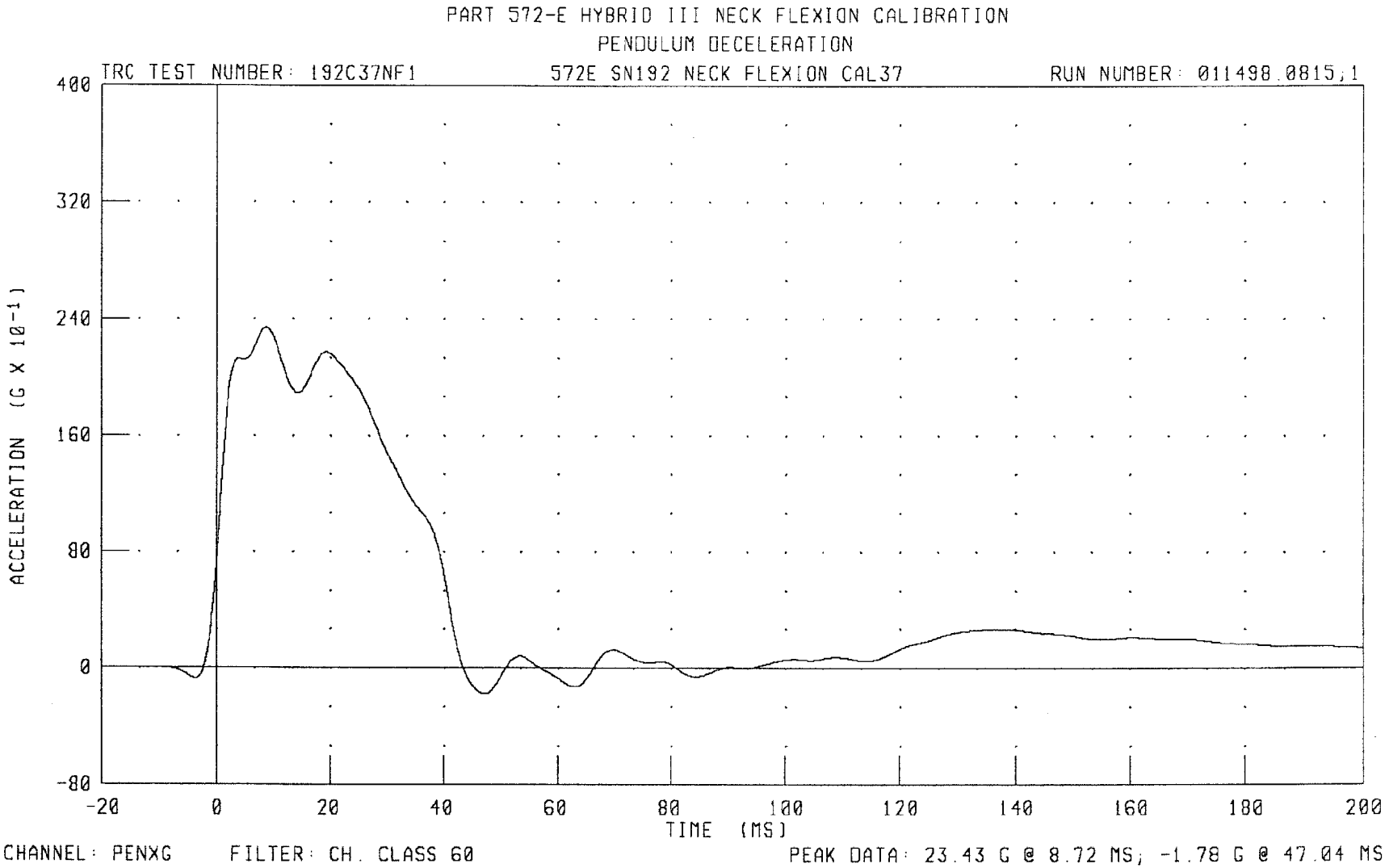
NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

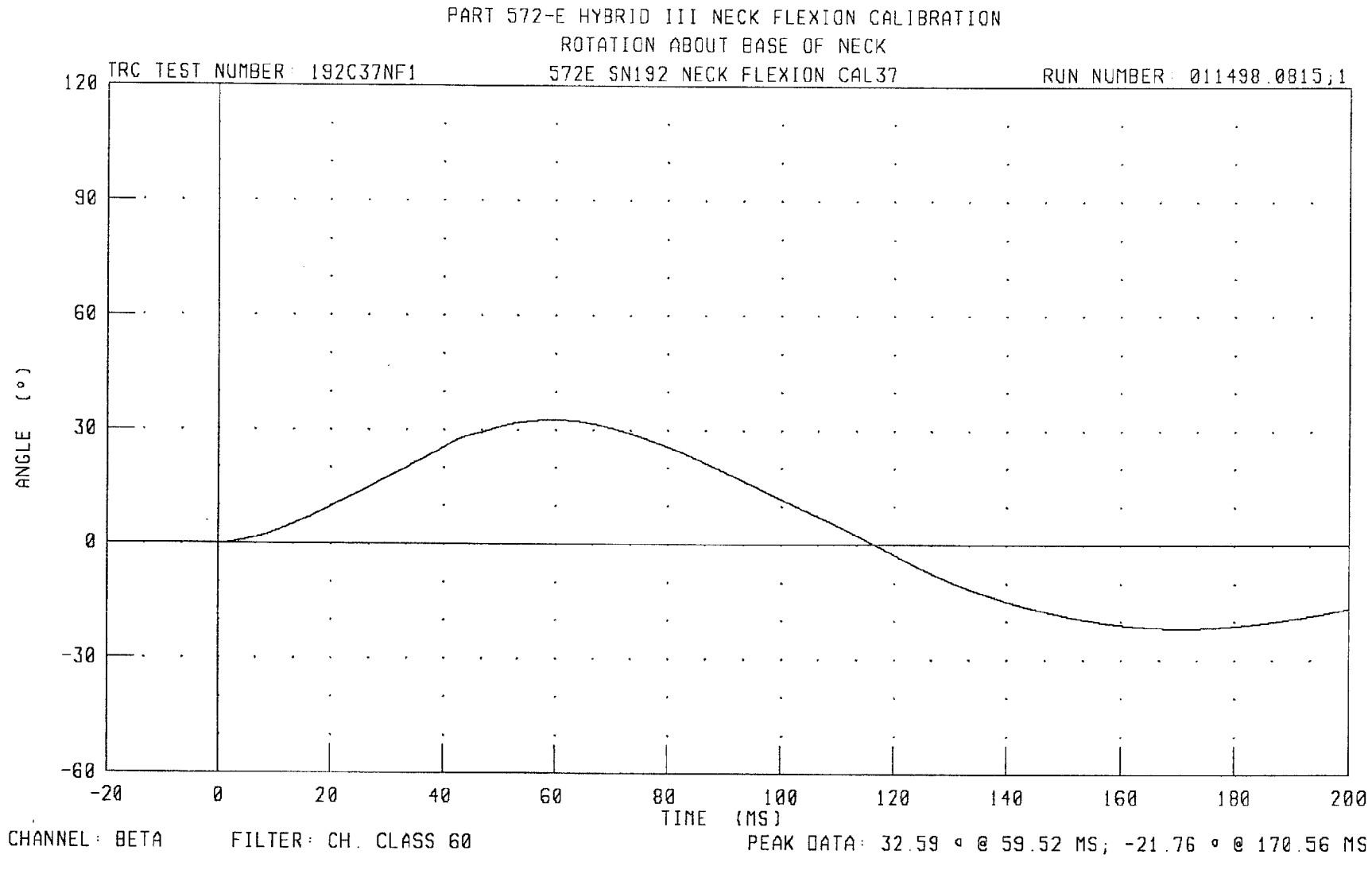
TRC INC. TEST NO: 192C37NF1 572E SN192 NECK FLEXION CAL37

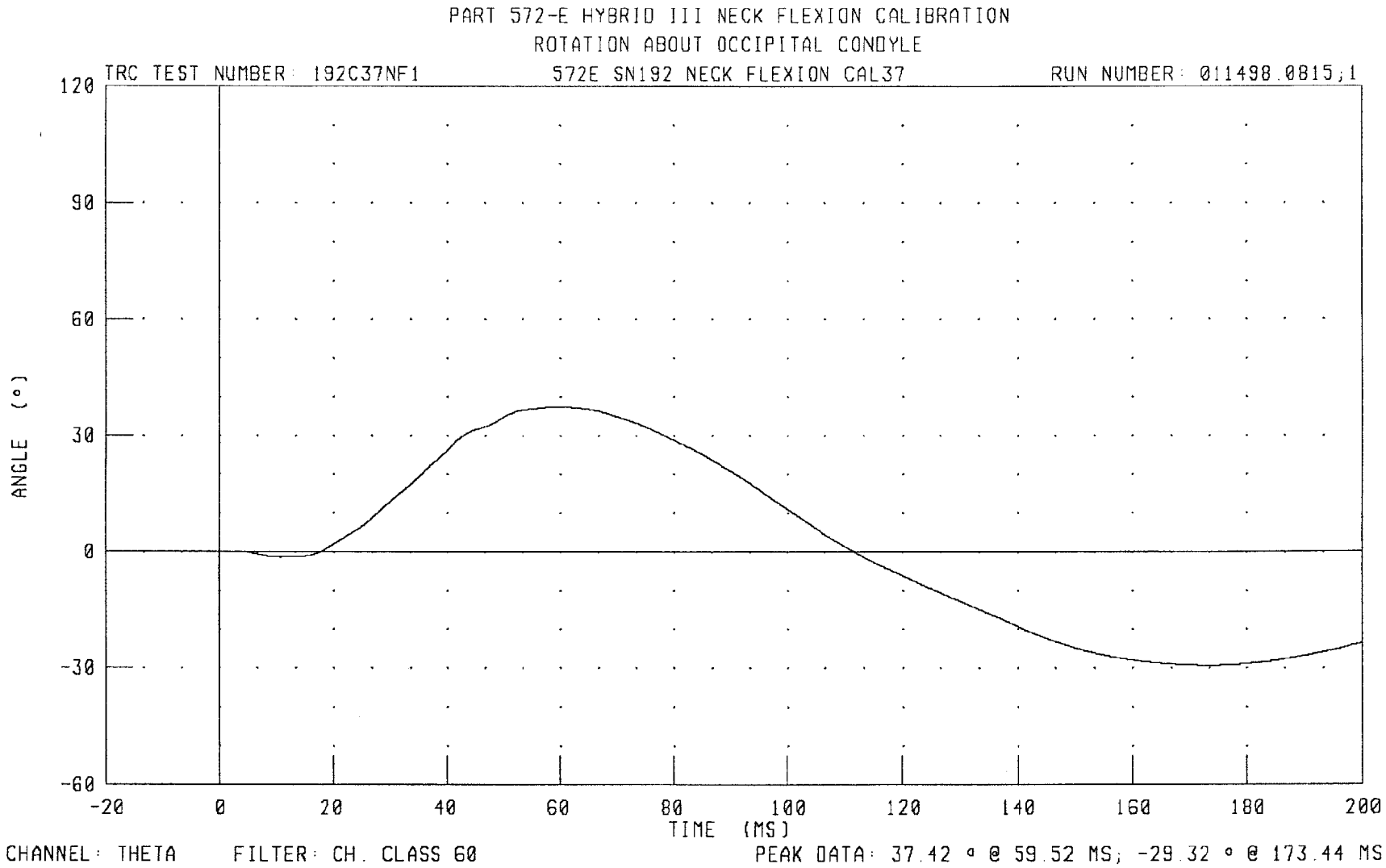
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	20.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.12 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	22.83 G
	20 MS	17.60 - 22.60 G	21.61 G
	30 MS	12.50 - 18.50 G	14.73 G
MAX PENDULUM G		29 G MAX	23.42 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	14.67 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	40.64 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	70.01 DEG.
	TIME	57 - 64 MS	59.52 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	96.08 NM
	TIME	47 - 58 MS	53.28 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	114.16 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	101.60 MS

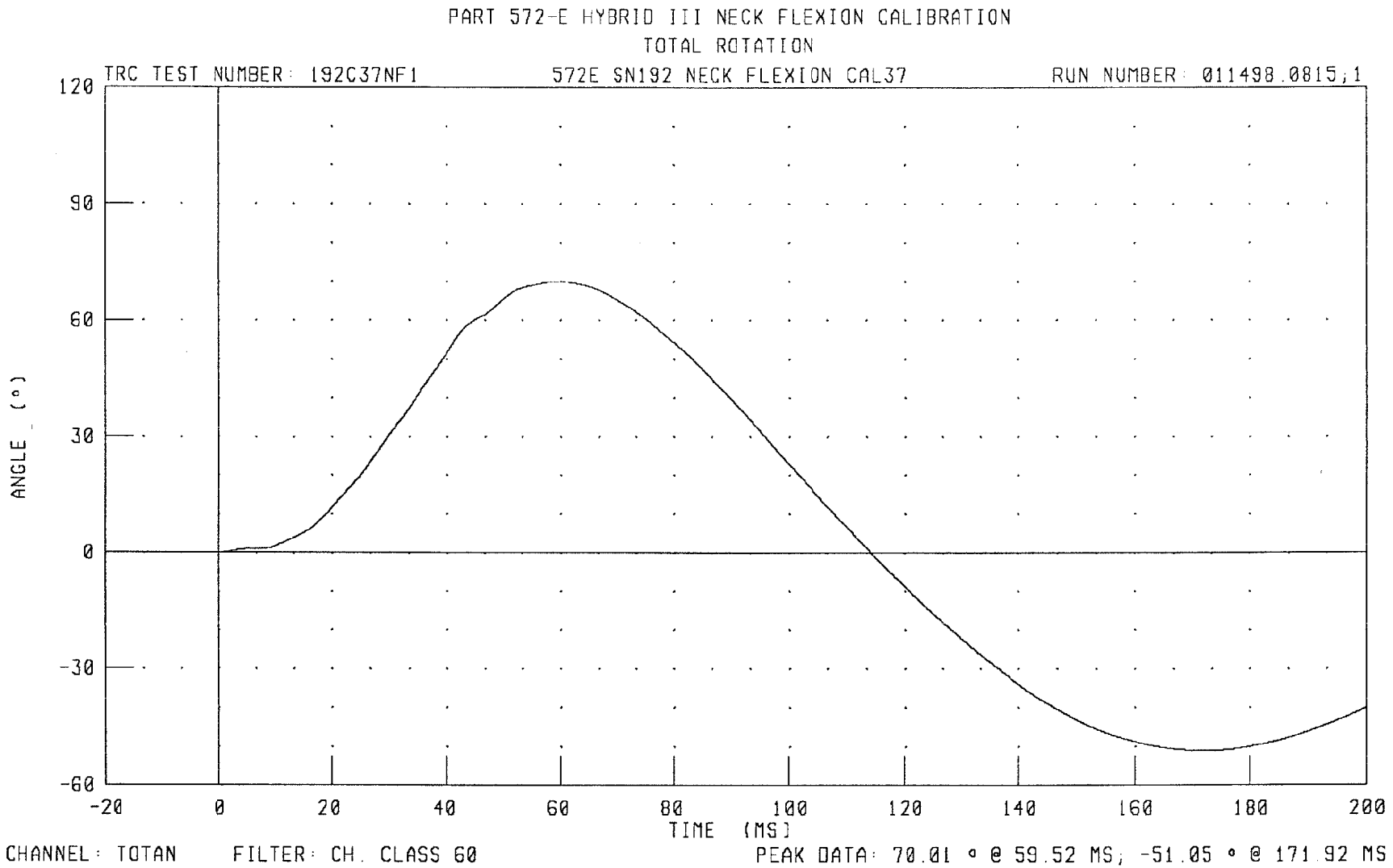
TEST MEETS SPECIFICATIONS

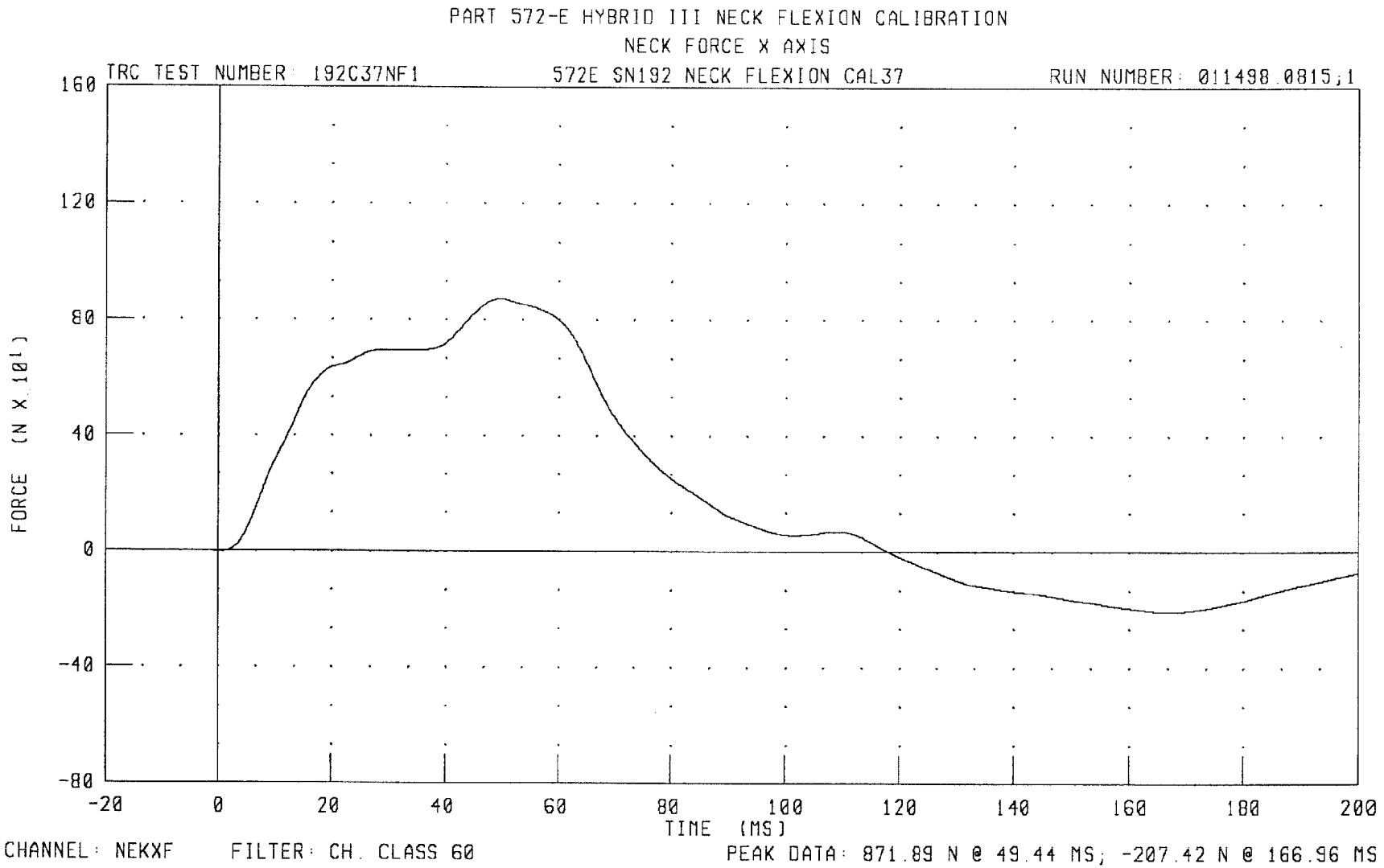
TECHNICIAN Kevin Watkins RUN NUMBER: 011498.0815;1

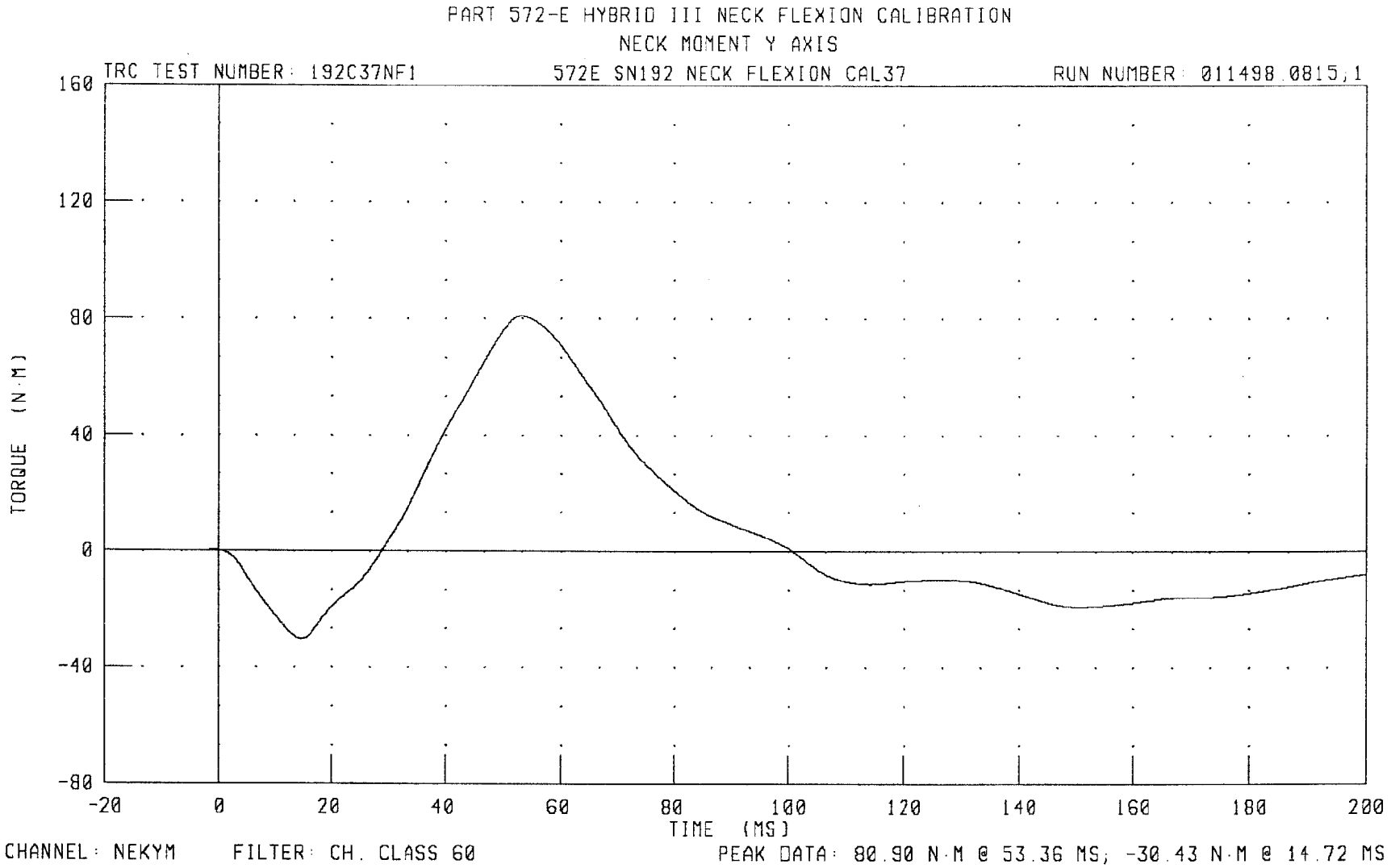

PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 192C37NF1
572E SN192 NECK FLEXION CAL37
RUN NUMBER: 011498.0815,1
ACCELERATION (G X 10-1)
400
320
240
160
80
0
-80
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 60
PEAK DATA: 23.43 G @ 8.72 MS; -1.78 G @ 47.04 MS

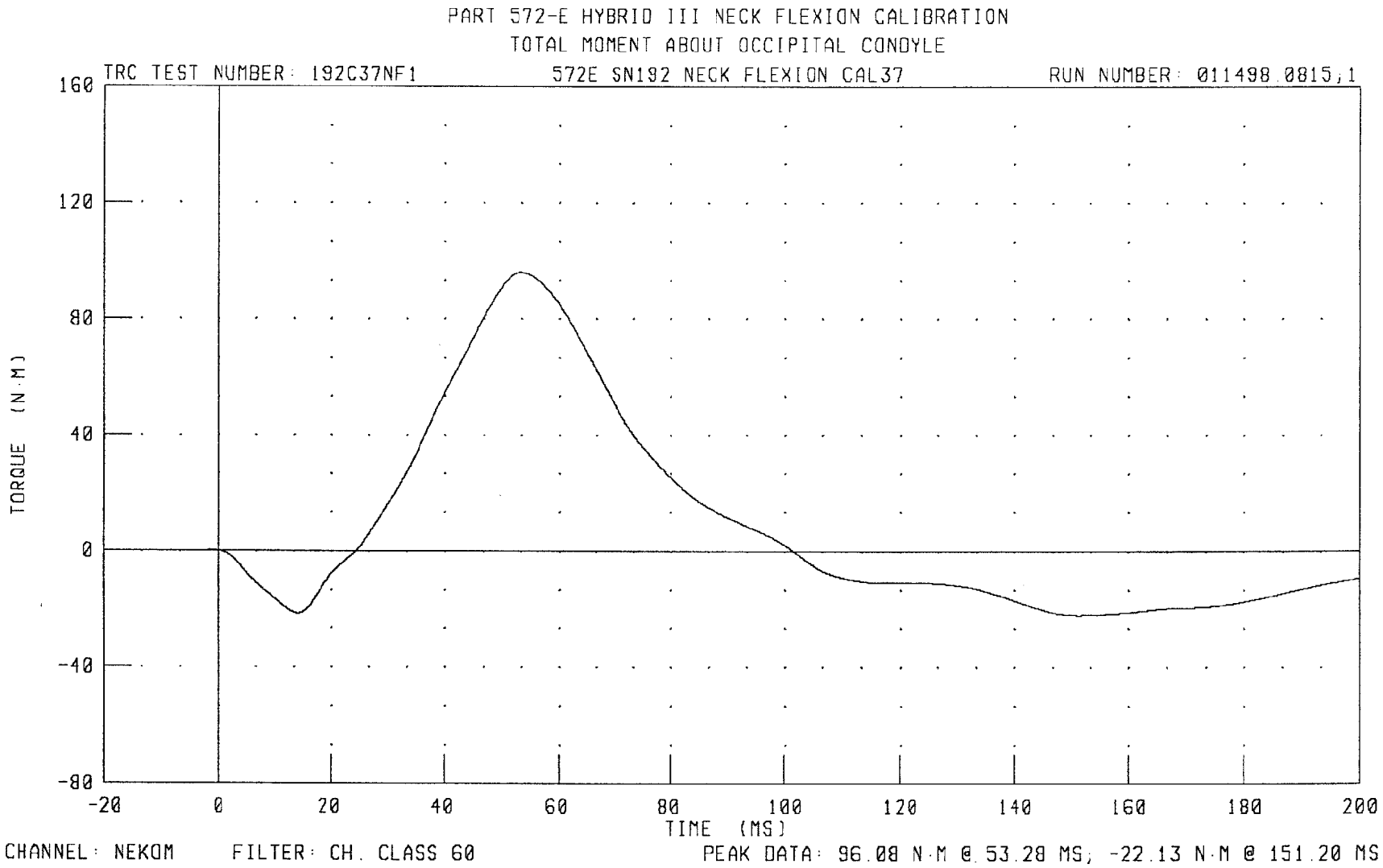

PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT BASE OF NECK
TRC TEST NUMBER: 192C37NF1
572E SN192 NECK FLEXION CAL37
RUN NUMBER: 011498.0815;1
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: BETA
FILTER: CH. CLASS 60
PEAK DATA: 32.59 ° @ 59.52 MS; -21.76 ° @ 170.56 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 192C37NF1
572E SN192 NECK FLEXION CAL37
RUN NUMBER: 011498.0815;1
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: THETA
FILTER: CH. CLASS 60
PEAK DATA: 37.42 ° @ 59.52 MS; -29.32 ° @ 173.44 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL ROTATION
TRC TEST NUMBER: 192C37NF1
572E SN192 NECK FLEXION CAL37
RUN NUMBER: 011498.0815;1
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: TOTAN
FILTER: CH. CLASS 60
PEAK DATA: 70.01 ° @ 59.52 MS; -51.05 ° @ 171.92 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK FORCE X AXIS
TRC TEST NUMBER: 192C37NF1
572E SN192 NECK FLEXION CAL37
RUN NUMBER: 011498.0815;1
160
120
80
40
0
-40
-80
FORCE (N X 10¹)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKXF
FILTER: CH. CLASS 60
PEAK DATA: 871.89 N @ 49.44 MS; -207.42 N @ 166.96 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS
TRC TEST NUMBER: 192C37NF1
572E SN192 NECK FLEXION CAL37
RUN NUMBER: 011498.0815,1
160
120
80
40
0
-40
-80
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKYM
FILTER: CH. CLASS 60
PEAK DATA: 80.90 N-M @ 53.36 MS; -30.43 N-M @ 14.72 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 192C37NF1
572E SN192 NECK FLEXION CAL37
RUN NUMBER: 011498.0815,1
160
120
80
40
0
-40
-80
TORQUE (N.M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKOM
FILTER: CH. CLASS 60
PEAK DATA: 96.08 N.M @ 53.28 MS; -22.13 N.M @ 151.20 MS

TRANSPORTATION RESEARCH CENTER INC.

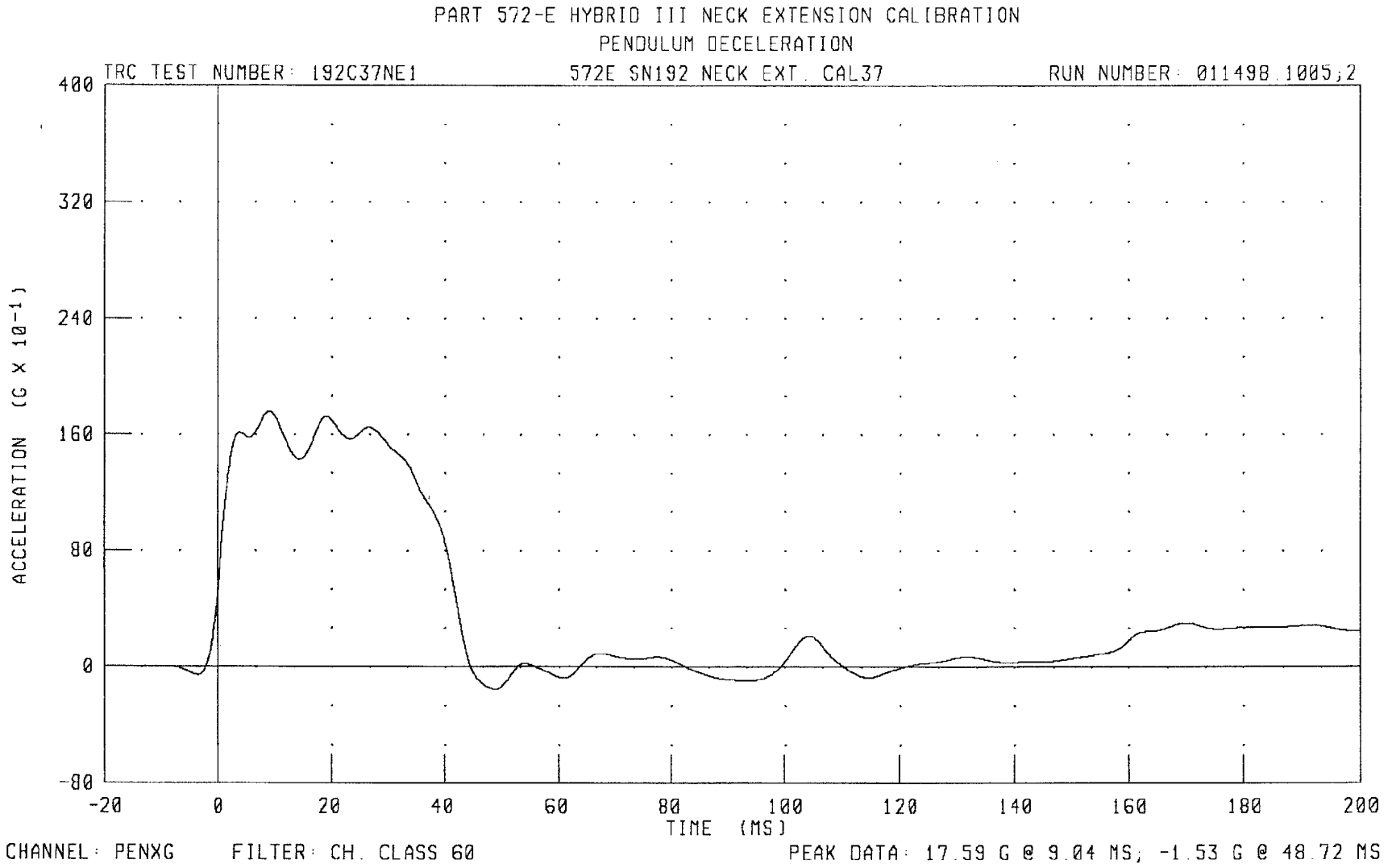
NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

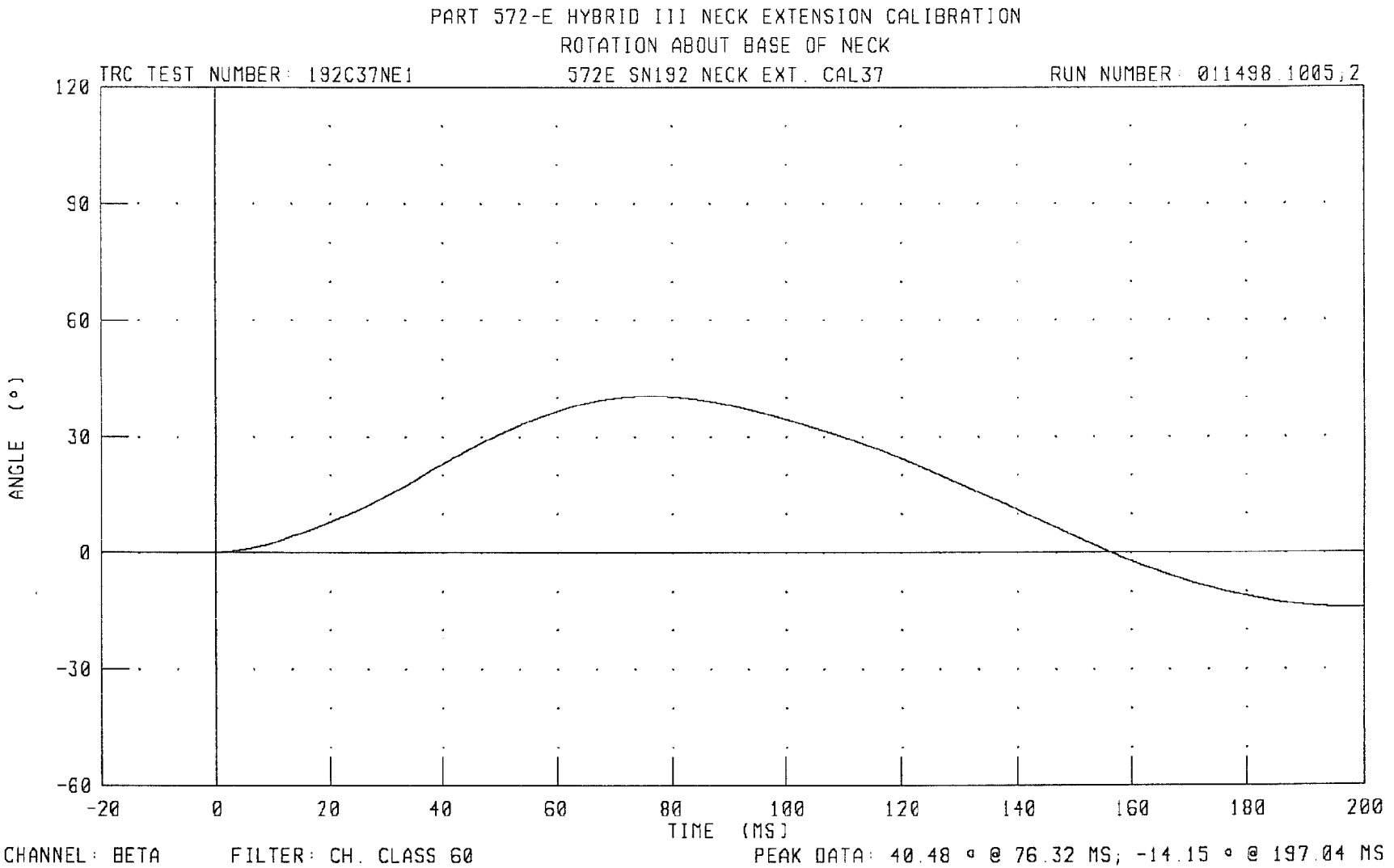
TRC INC. TEST NO: 192C37NE1 572E SN192 NECK EXT. CAL37

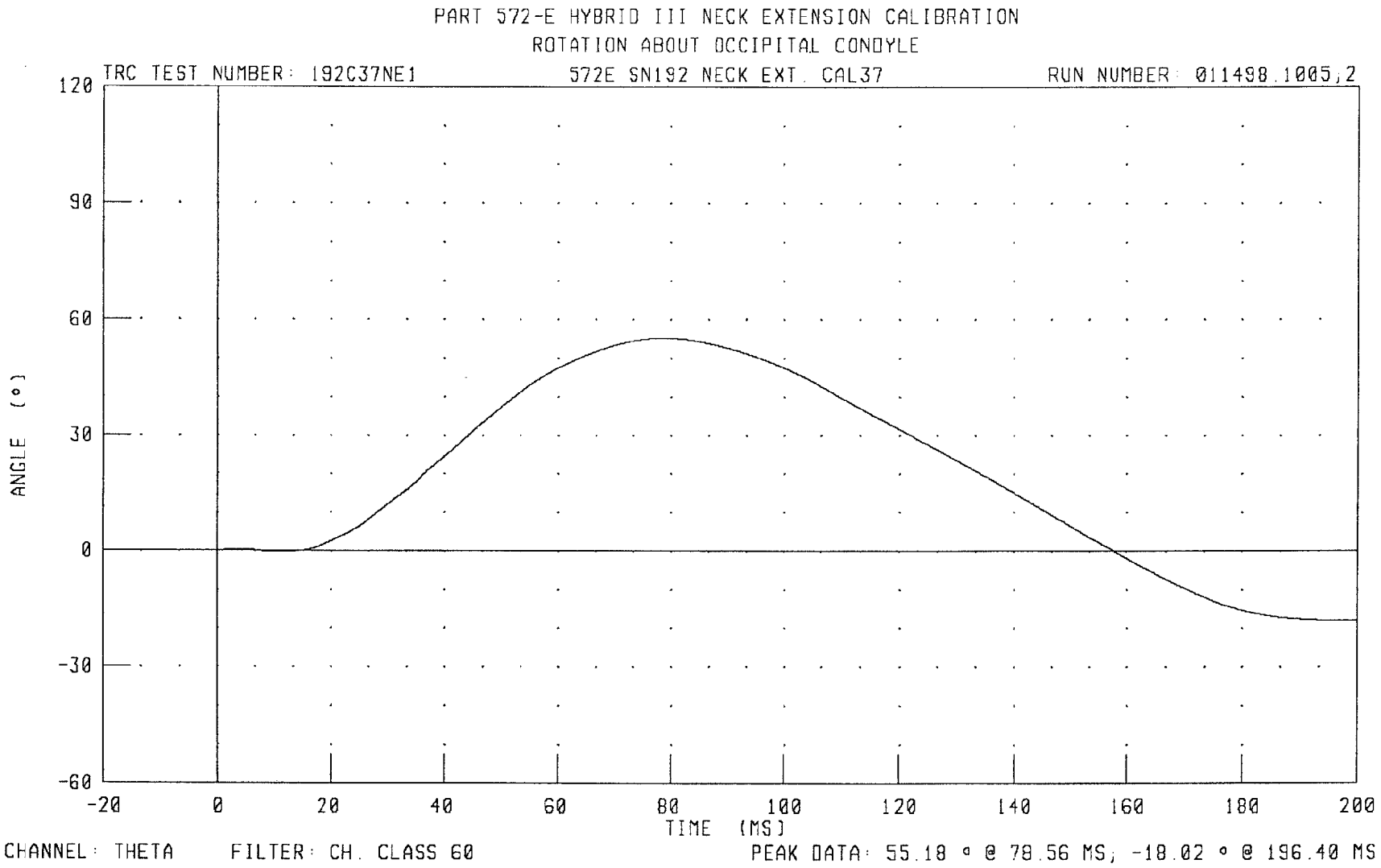
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	20.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	17.24 G
	20 MS	14.00 - 19.00 G	16.97 G
	30 MS	11.00 - 16.00 G	15.25 G
MAX PENDULUM G		22 G MAX	17.58 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	15.21 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	41.76 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	95.60 DEG.
	TIME	72 - 82 MS	77.52 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-62.35 NM
	TIME	65 - 79 MS	72.32 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	157.20 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	140.88 MS

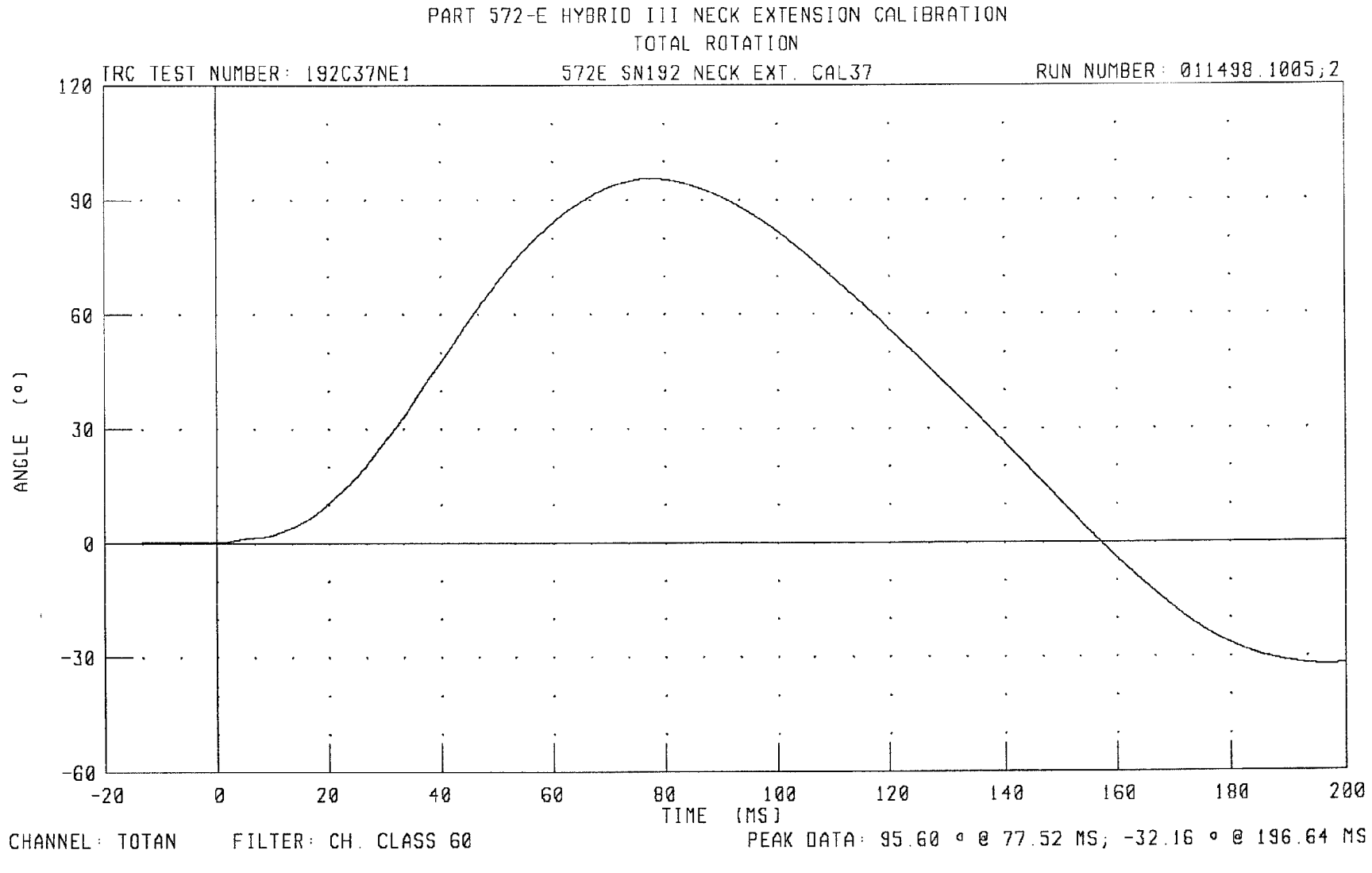
TEST MEETS SPECIFICATIONS

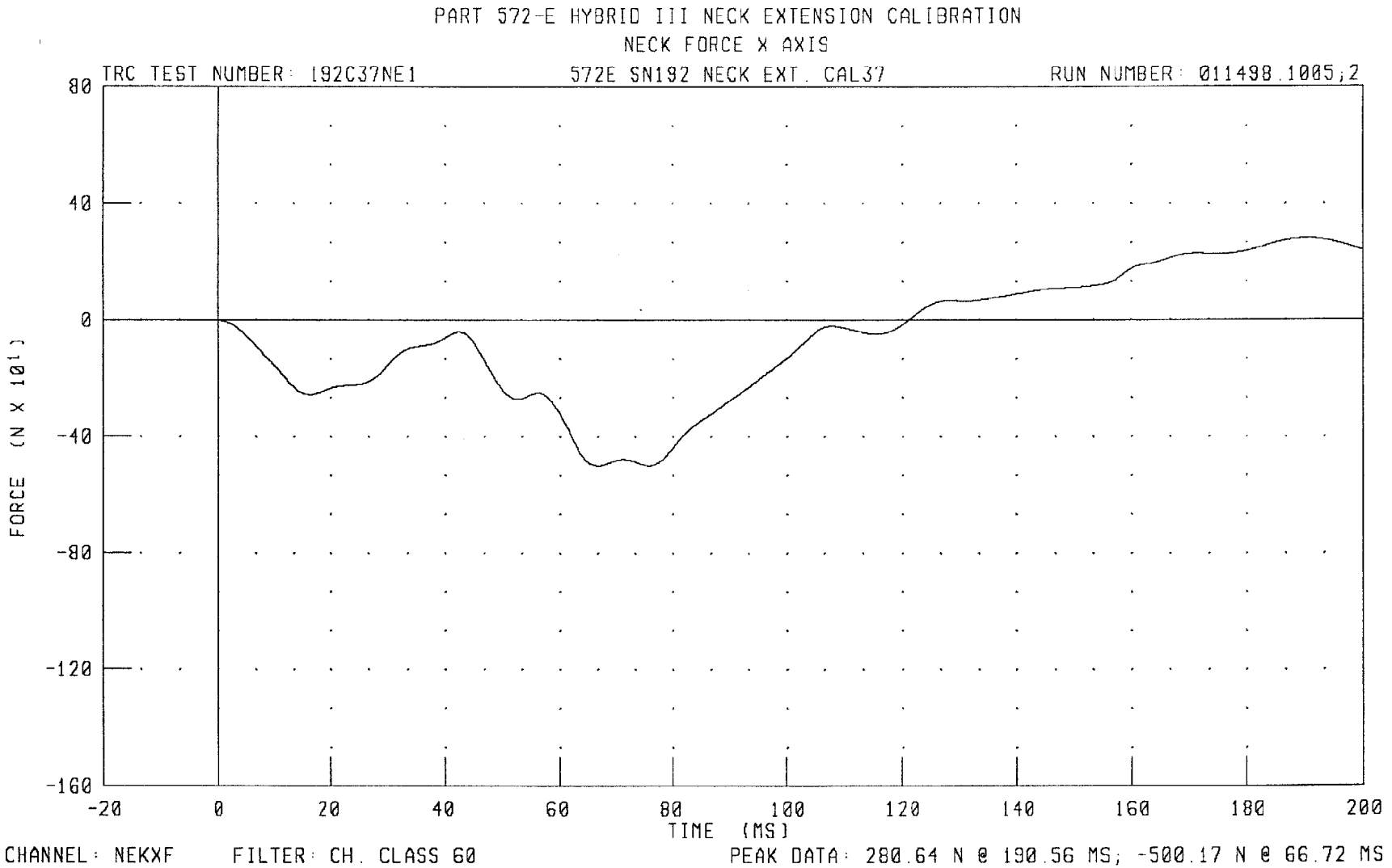
TECHNICIAN Kevin Watkins RUN NUMBER: 011498.1004;2

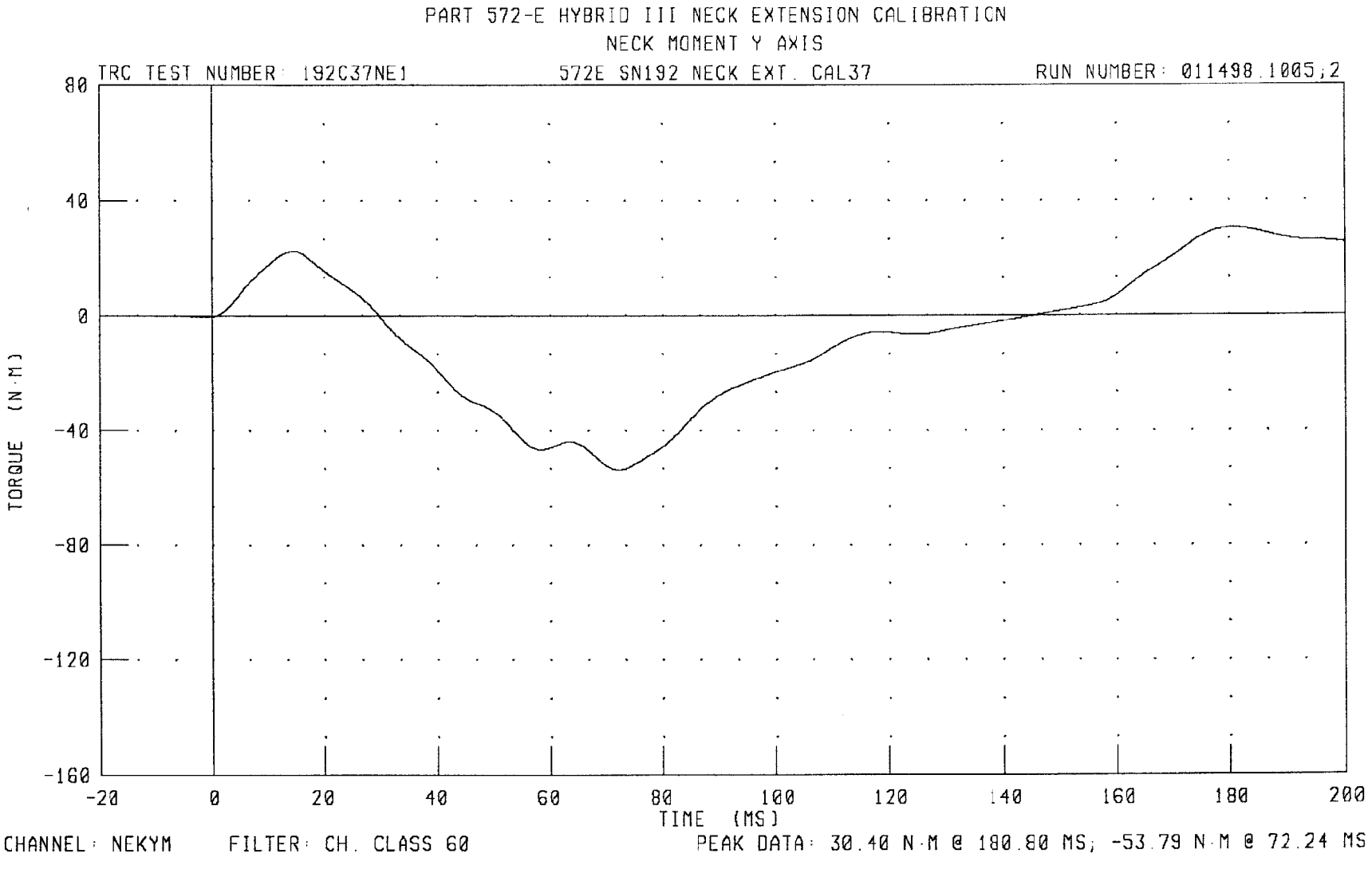

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 192C37NE1
572E SN192 NECK EXT. CAL37
RUN NUMBER: 011498.1005;2
ACCELERATION (G X 10-1)
400
320
240
160
80
0
-80
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 60
PEAK DATA: 17.59 G @ 9.04 MS; -1.53 G @ 48.72 MS

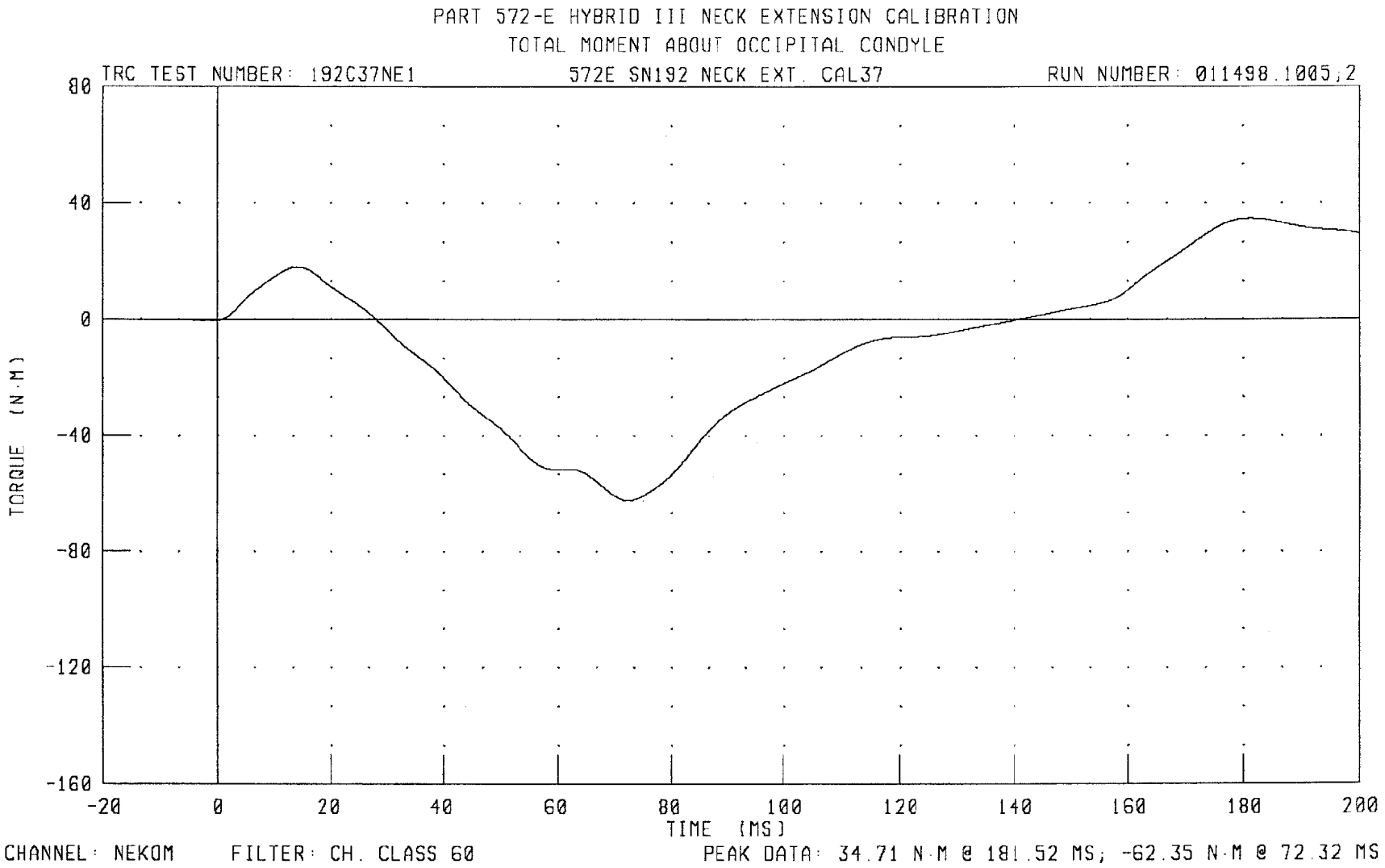

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
ROTATION ABOUT BASE OF NECK
TRC TEST NUMBER: 192C37NE1
572E SN192 NECK EXT. CAL37
RUN NUMBER: 011498.1005,2
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: BETA
FILTER: CH. CLASS 60
PEAK DATA: 40.48 ° @ 76.32 MS; -14.15 ° @ 197.04 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 192C37NE1
572E SN192 NECK EXT. CAL37
RUN NUMBER: 011498.1005;2
ANGLE (°)
120
90
60
30
0
-30
-60
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: THETA
FILTER: CH. CLASS 60
PEAK DATA: 55.18 ° @ 78.56 MS; -18.02 ° @ 196.40 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL ROTATION
TRC TEST NUMBER: 192C37NE1
572E SN192 NECK EXT. CAL37
RUN NUMBER: 011498.1005;2
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: TOTAN
FILTER: CH. CLASS 60
PEAK DATA: 95.60 ° @ 77.52 MS; -32.16 ° @ 196.64 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK FORCE X AXIS
TRC TEST NUMBER: 192C37NE1
572E SN192 NECK EXT. CAL37
RUN NUMBER: 011498.1005;2
80
40
0
-40
-80
-120
-160
FORCE (N X 10¹)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKXF
FILTER: CH. CLASS 60
PEAK DATA: 280.64 N @ 190.56 MS; -500.17 N @ 66.72 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS
TRC TEST NUMBER: 192C37NE1
572E SN192 NECK EXT. CAL37
RUN NUMBER: 011498.1005;2
80
40
0
-40
-80
-120
-160
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKYM
FILTER: CH. CLASS 60
PEAK DATA: 30.40 N-M @ 180.80 MS; -53.79 N-M @ 72.24 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 192C37NE1
572E SN192 NECK EXT. CAL37
RUN NUMBER: 011498.1005;2
80
40
0
-40
-80
-120
-160
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKOM
FILTER: CH. CLASS 60
PEAK DATA: 34.71 N-M @ 181.52 MS; -62.35 N-M @ 72.32 MS

TRANSPORTATION RESEARCH CENTER INC.

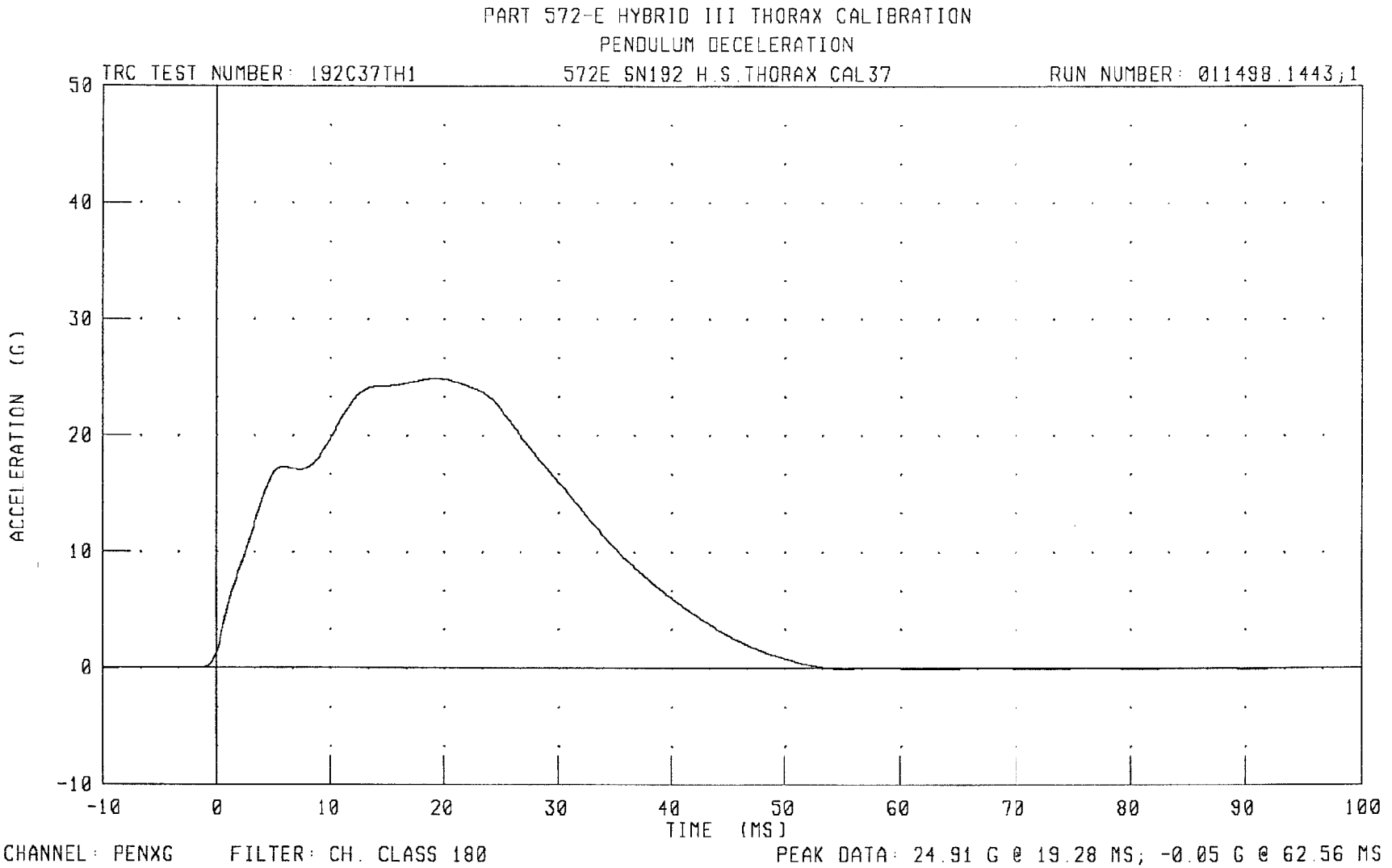
THORAX IMPACT TEST

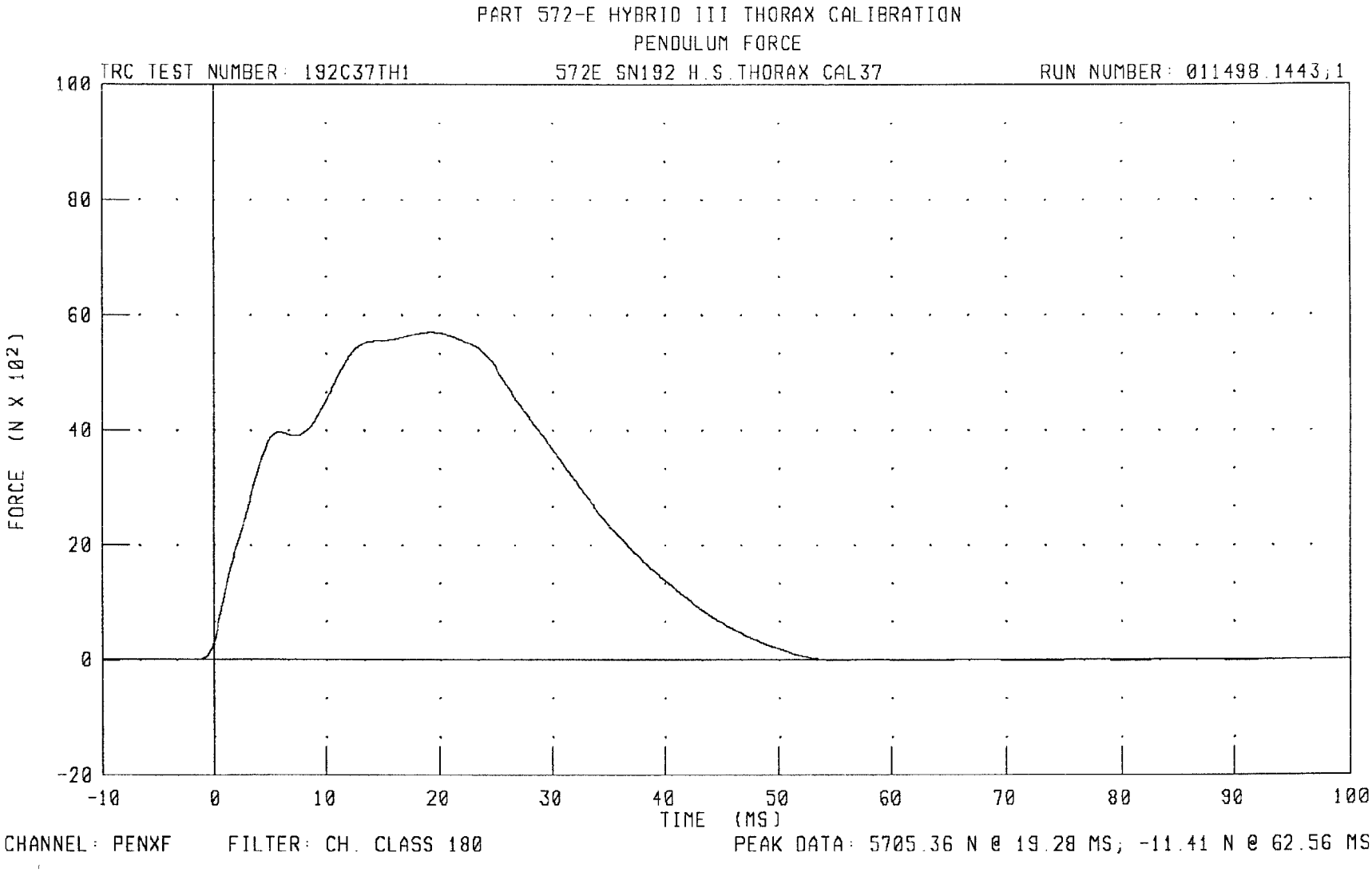
TRC INC. TEST NO: 192C37TH1 572E SN192 H.S.THORAX CAL37

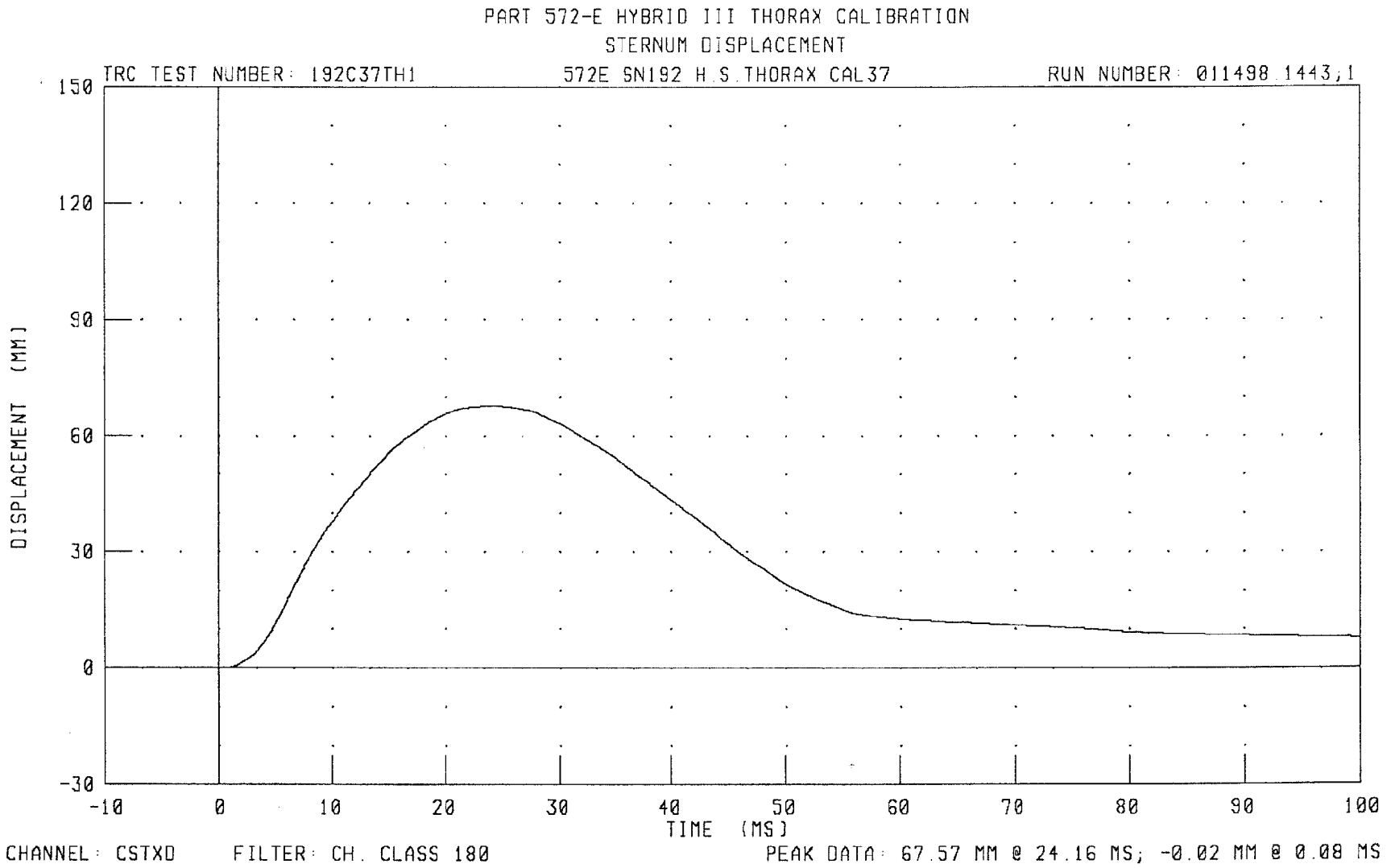
TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	20.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.68 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	67.5 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5705. N
INTERNAL HYSTERESIS	69% - 85%	73.1%

TEST MEETS SPECIFICATIONS

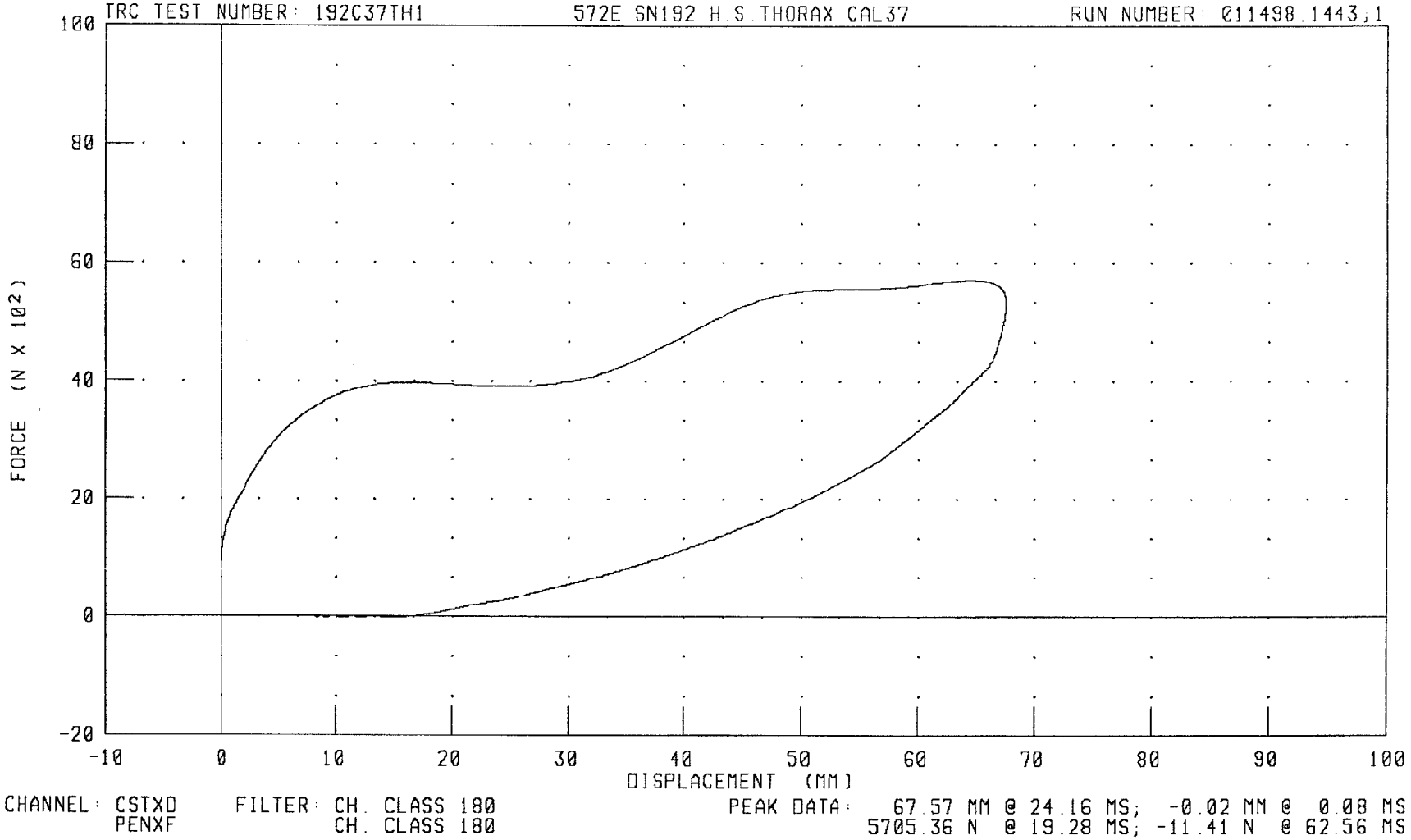
TECHNICIAN Kevin Watkins RUN NUMBER: 011498.1443;1


PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 192C37TH1
572E SN192 H.S.THORAX CAL37
RUN NUMBER: 011498.1443;1
ACCELERATION (G)
50
40
30
20
10
0
-10
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 180
PEAK DATA: 24.91 G @ 19.28 MS; -0.05 G @ 62.56 MS


PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE
TRC TEST NUMBER: 192C37TH1
572E SN192 H.S.THORAX CAL37
RUN NUMBER: 011498.1443;1
FORCE (N X 10²)
100
80
60
40
20
0
-20
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: PENXF
FILTER: CH. CLASS 180
PEAK DATA: 5705.36 N @ 19.28 MS; -11.41 N @ 62.56 MS


PART 572-E HYBRID III THORAX CALIBRATION
STERNUM DISPLACEMENT
TRC TEST NUMBER: 192C37TH1
572E SN192 H.S.THORAX CAL37
RUN NUMBER: 011498.1443;1
DISPLACEMENT (MM)
150
120
90
60
30
0
-30
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: CSTXD
FILTER: CH. CLASS 180
PEAK DATA: 67.57 MM @ 24.16 MS; -0.02 MM @ 0.08 MS

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



CHANNEL: CSTXD
PENXF

FILTER: CH. CLASS 180
CH. CLASS 180

PEAK DATA: 67.57 MM @ 24.16 MS; -0.02 MM @ 0.08 MS
5705.36 N @ 19.28 MS; -11.41 N @ 62.56 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT HIP JOINT FEMUR FLEXION TEST

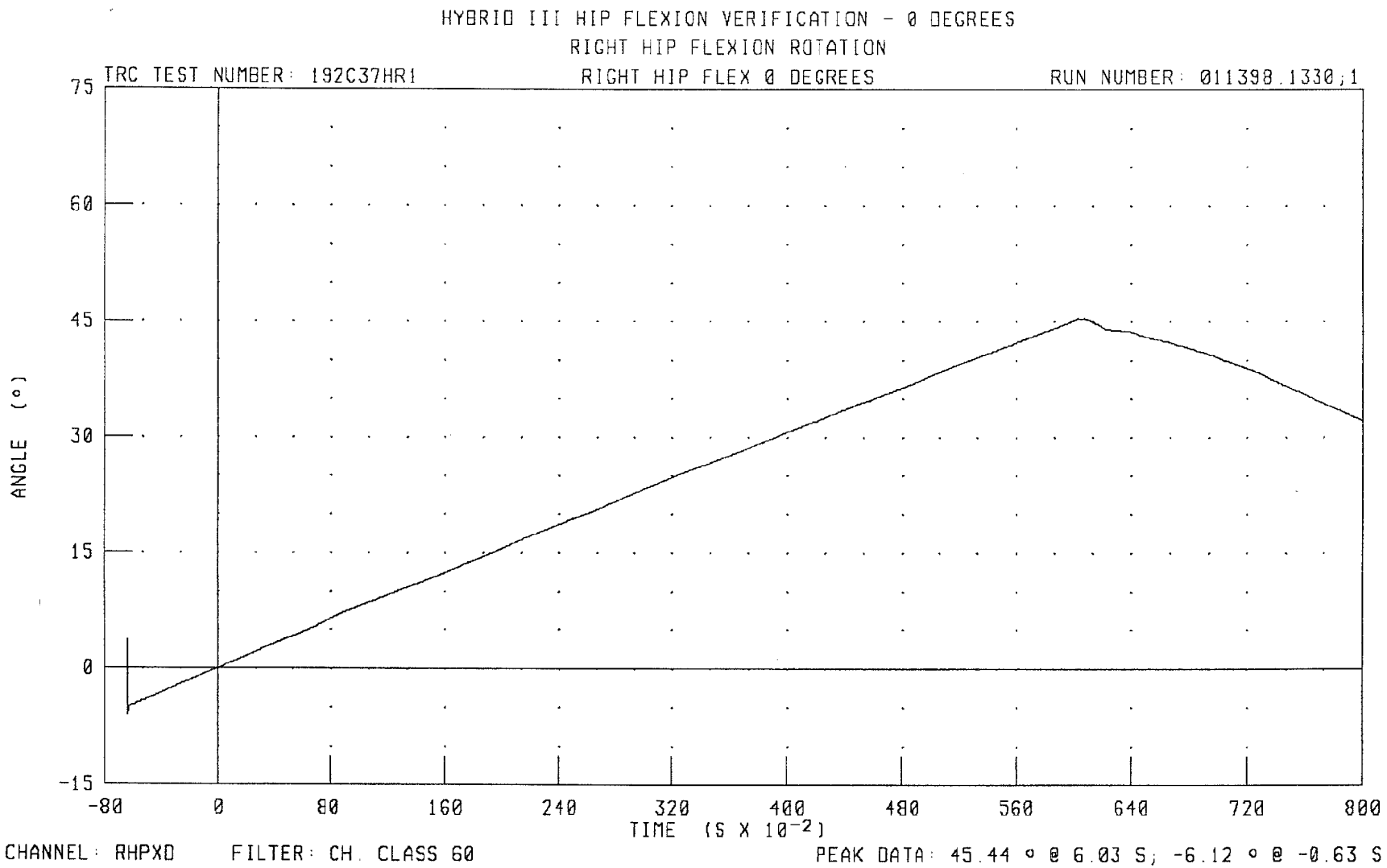
HYBRID III PART 572E 13-JAN-98

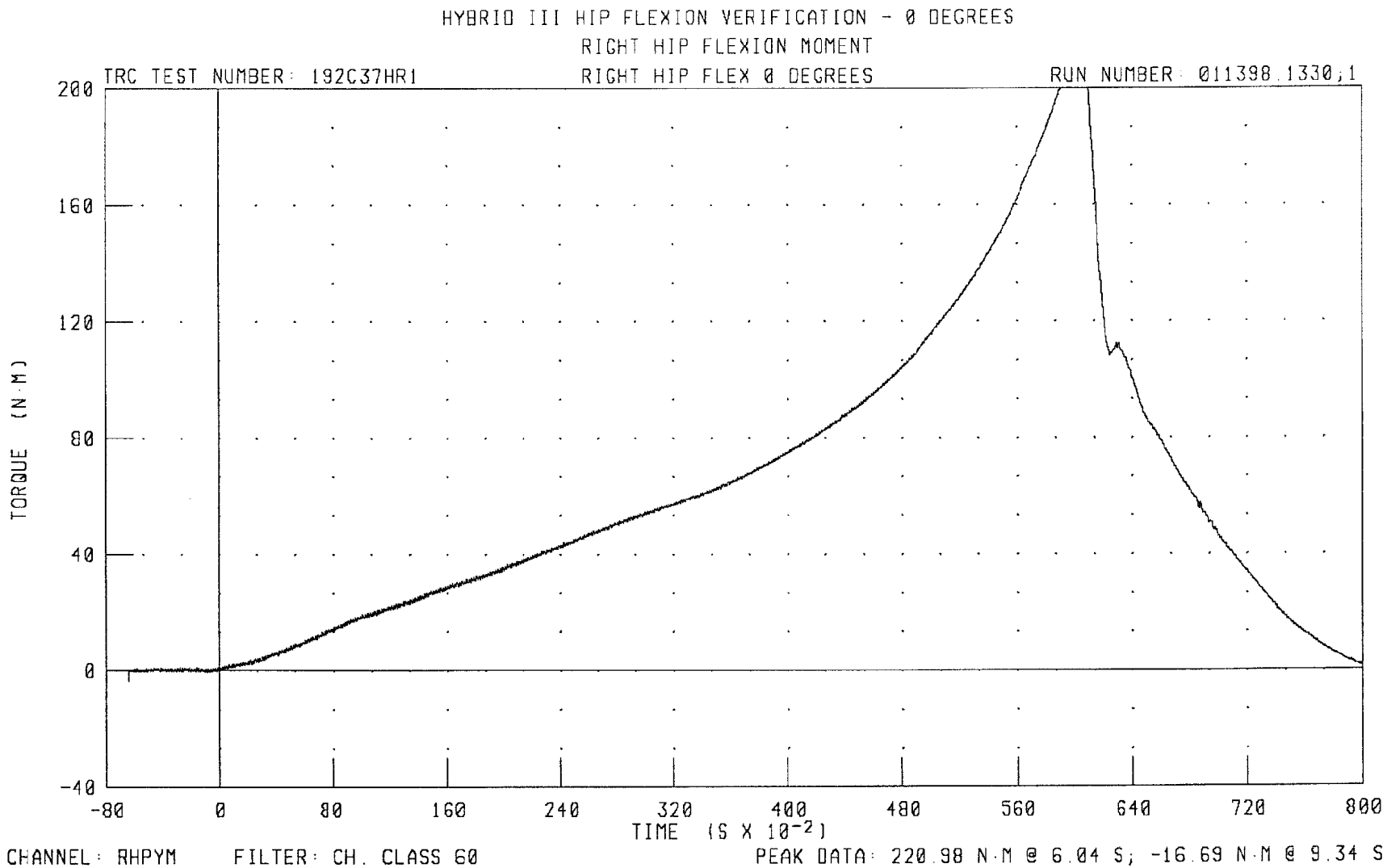
TRC INC. TEST NO: 192C37HR1 RIGHT HIP FLEX 0 DEGREES

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	35.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	72.8 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	44.6 deg.

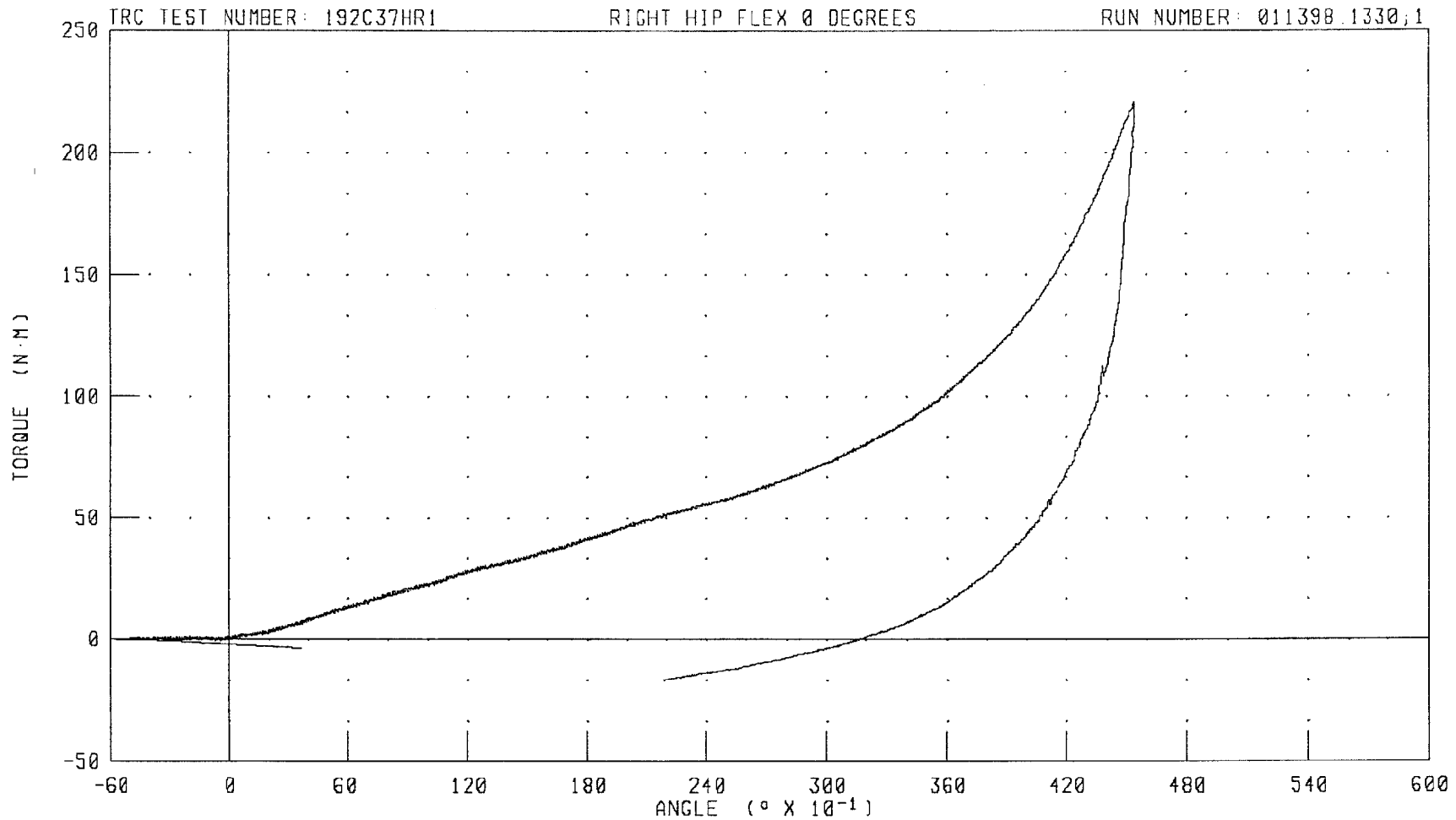
TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins RUN NUMBER: 011398.1329;1


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
RIGHT HIP FLEXION ROTATION
TRC TEST NUMBER: 192C37HR1
RIGHT HIP FLEX 0 DEGREES
RUN NUMBER: 011398.1330;1
ANGLE (°)
75
60
45
30
15
0
-15
-80
0
80
160
240
320
400
480
560
640
720
800
TIME (S X 10-2)
CHANNEL: RHPXD
FILTER: CH. CLASS 60
PEAK DATA: 45.44 ° @ 6.03 S; -6.12 ° @ -0.63 S


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
RIGHT HIP FLEXION MOMENT
TRC TEST NUMBER: 192C37HR1
RIGHT HIP FLEX 0 DEGREES
RUN NUMBER: 011398.1330;1
200
160
120
80
40
0
-40
TORQUE (N-M)
-80
0
80
160
240
320
400
480
560
640
720
800
TIME (S X 10-2)
CHANNEL: RHPYM
FILTER: CH. CLASS 60
PEAK DATA: 220.98 N-M @ 6.04 S; -16.69 N-M @ 9.34 S

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
RIGHT HIP FLEXION MOMENT VS ROTATION ANGLE



TRANSPORTATION RESEARCH CENTER INC.

LEFT HIP JOINT FEMUR FLEXION TEST

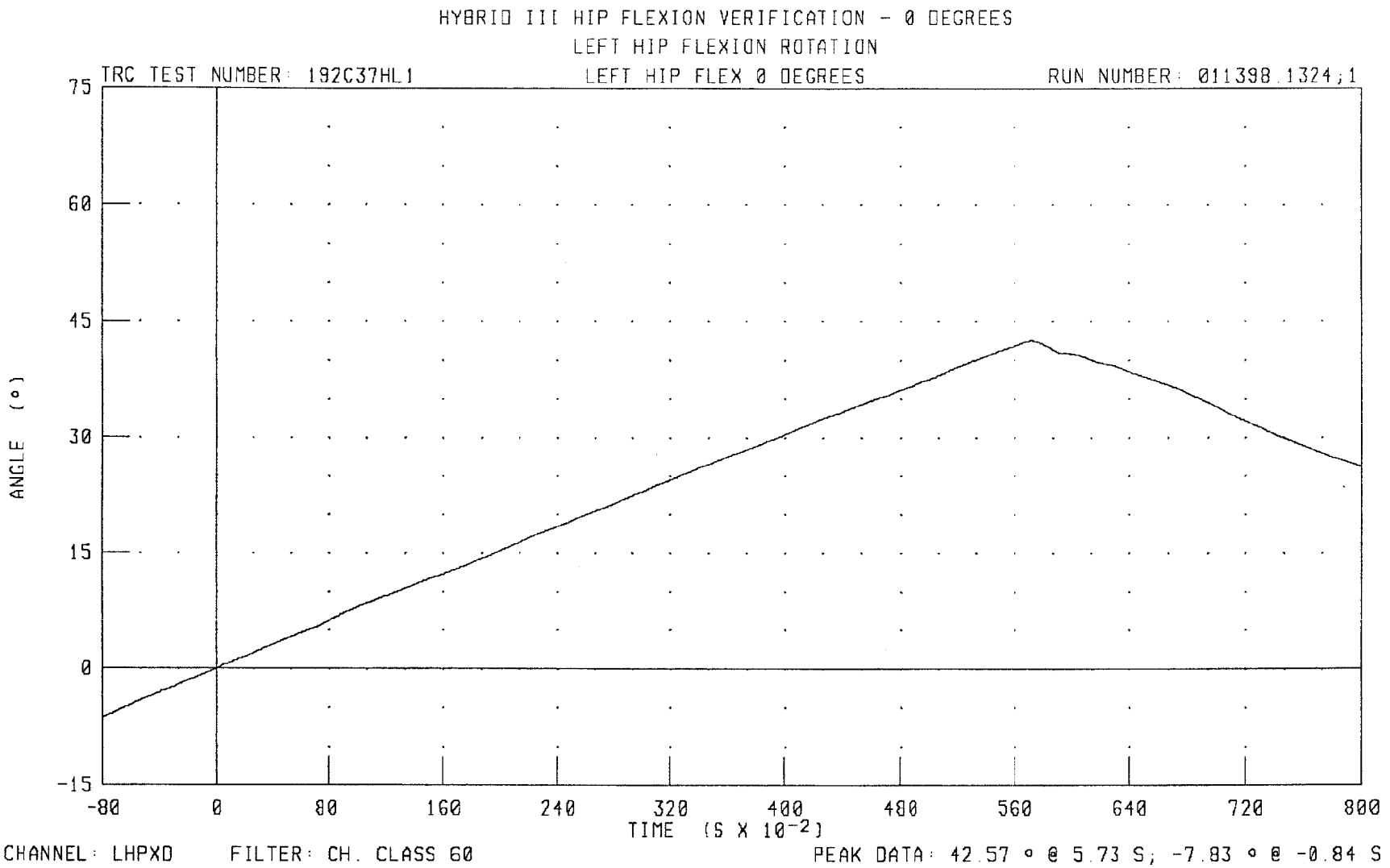
HYBRID III PART 572E 13-JAN-98

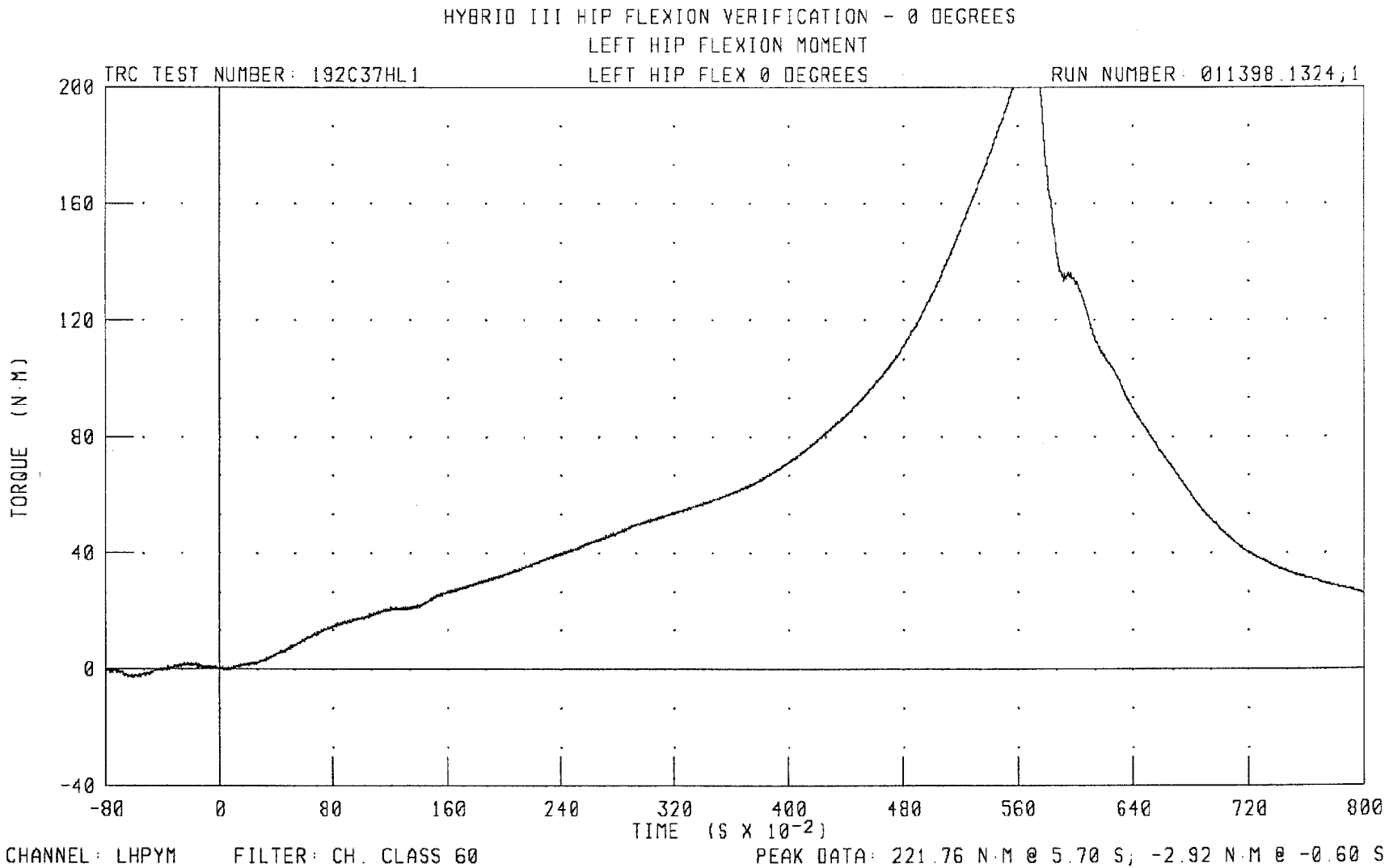
TRC INC. TEST NO: 192C37HL1 LEFT HIP FLEX 0 DEGREES

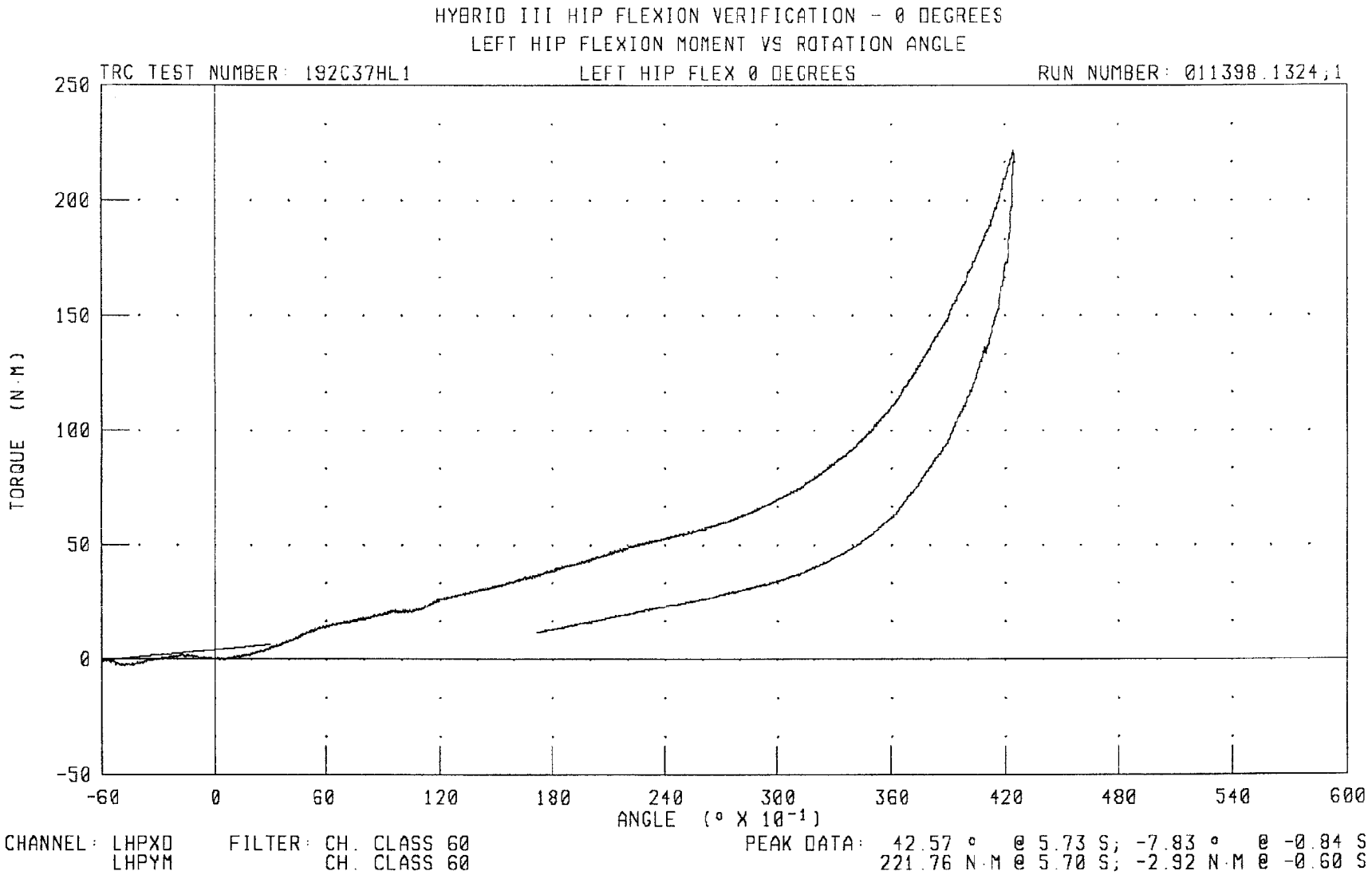
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	35.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	69.6 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	41.7 deg.

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins RUN NUMBER: 011398.1324;1


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
LEFT HIP FLEXION ROTATION
TRC TEST NUMBER: 192C37HL1
LEFT HIP FLEX 0 DEGREES
RUN NUMBER: 011398.1324;1
75
60
45
30
15
0
-15
ANGLE (°)
-80
0
80
160
240
320
400
480
560
640
720
800
TIME (S X 10-2)
CHANNEL: LHPXD
FILTER: CH. CLASS 60
PEAK DATA: 42.57 ° @ 5.73 S; -7.83 ° @ -0.84 S


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
LEFT HIP FLEXION MOMENT
LEFT HIP FLEX 0 DEGREES
TRC TEST NUMBER: 192C37HL1
RUN NUMBER: 011398.1324;1
TORQUE (N·M)
200
160
120
80
40
0
-40
-80
0
80
160
240
320
400
480
560
640
720
800
TIME (S X 10⁻²)
CHANNEL: LHPYM
FILTER: CH. CLASS 60
PEAK DATA: 221.76 N·M @ 5.70 S; -2.92 N·M @ -0.60 S


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
LEFT HIP FLEXION MOMENT VS ROTATION ANGLE
TRC TEST NUMBER: 192C37HL1
LEFT HIP FLEX 0 DEGREES
RUN NUMBER: 011398.1324;1
TORQUE (N.M)
250
200
150
100
50
0
-50
-60
0
60
120
180
240
300
360
420
480
540
600
ANGLE (° X 10⁻¹)
CHANNEL: LHPXD
LHPYM
FILTER: CH. CLASS 60
CH. CLASS 60
PEAK DATA: 42.57 ° @ 5.73 S; -7.83 ° @ -0.84 S
221.76 N.M @ 5.70 S; -2.92 N.M @ -0.60 S

TRANSPORTATION RESEARCH CENTER INC.

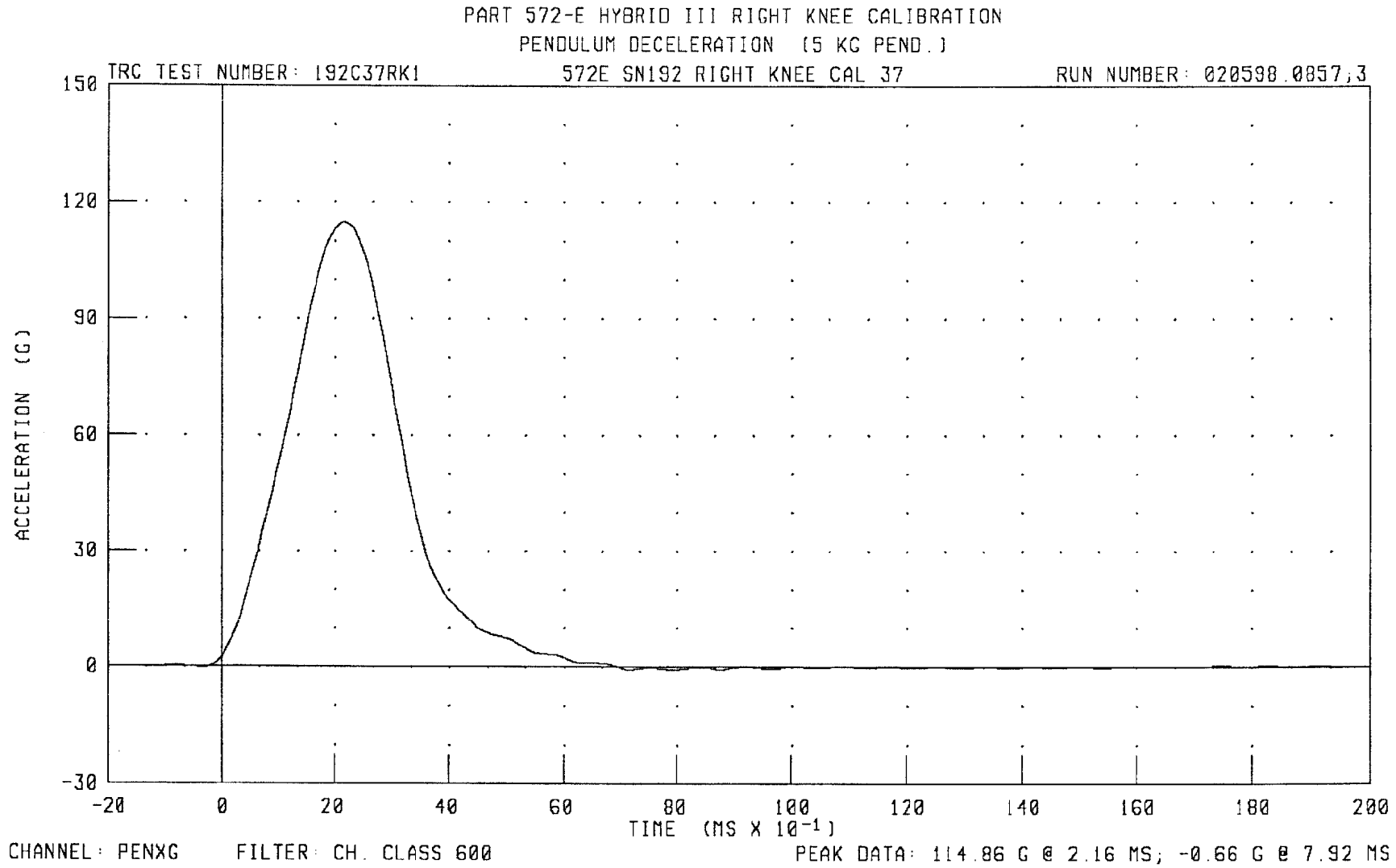
RIGHT KNEE IMPACT TEST

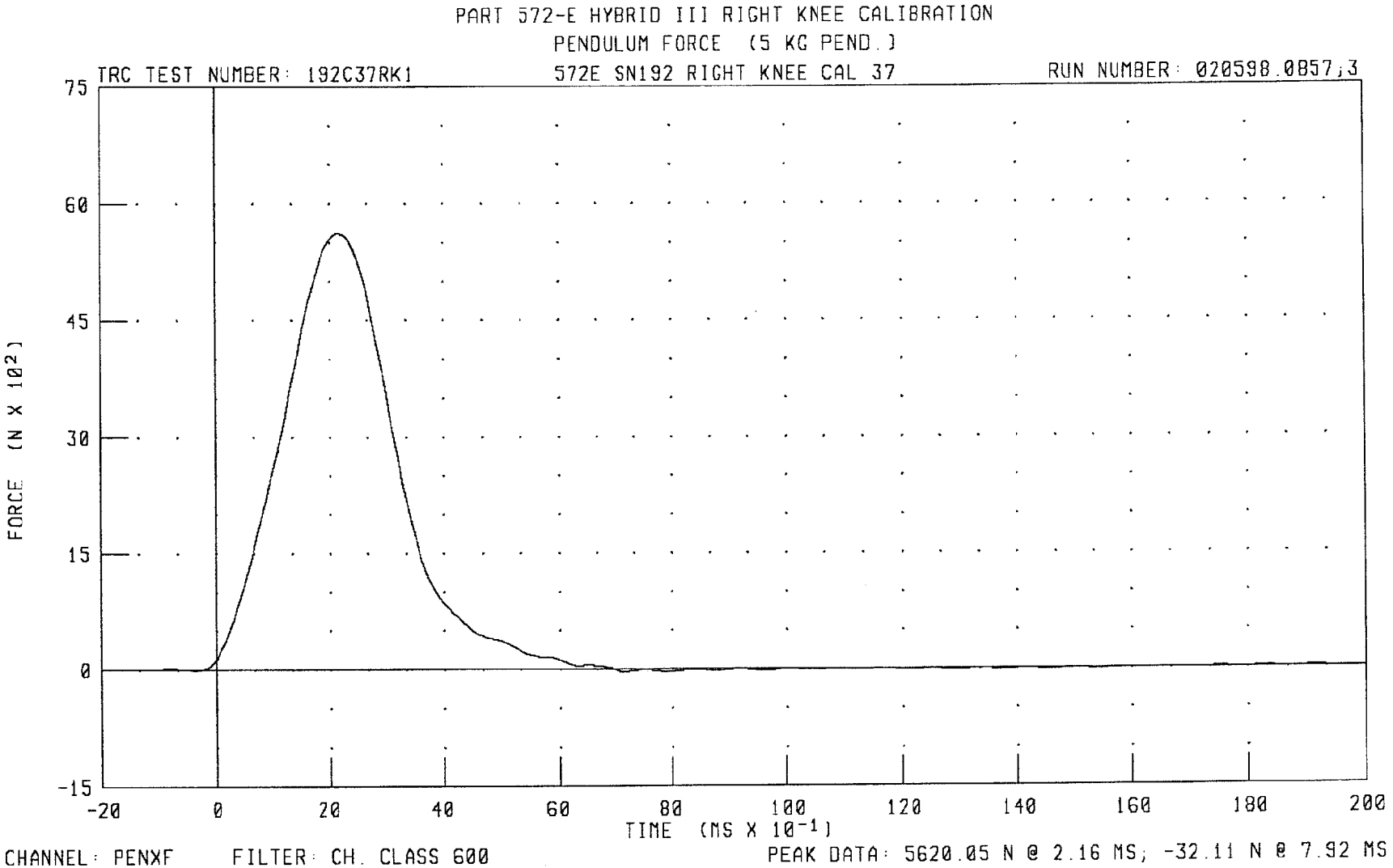
TRC INC. TEST NO: 192C37RK1 572E SN192 RIGHT KNEE CAL 37

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	45.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.08 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5620.0 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins RUN NUMBER: 020598.0856;3


PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)
TRC TEST NUMBER: 192C37RK1
572E SN192 RIGHT KNEE CAL 37
RUN NUMBER: 020598.0857;3
ACCELERATION (G)
150
120
90
60
30
0
-30
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXG
FILTER: CH. CLASS 600
PEAK DATA: 114.86 G @ 2.16 MS; -0.66 G @ 7.92 MS


PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)
TRC TEST NUMBER: 192C37RK1
572E SN192 RIGHT KNEE CAL 37
RUN NUMBER: 020598.0857;3
75
60
45
30
15
0
-15
FORCE (N X 10²)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXF
FILTER: CH. CLASS 600
PEAK DATA: 5620.05 N @ 2.16 MS; -32.11 N @ 7.92 MS

TRANSPORTATION RESEARCH CENTER INC.

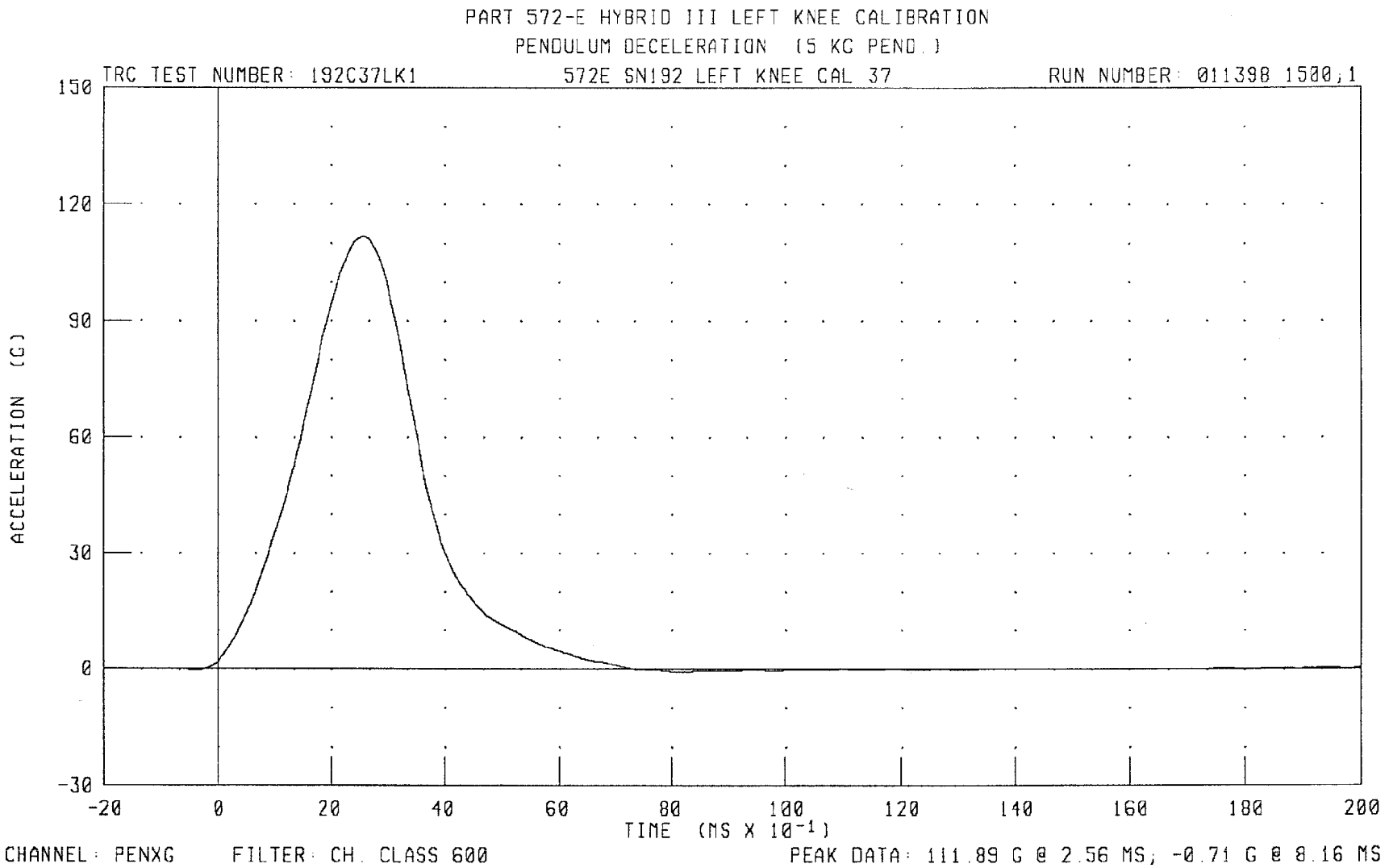
LEFT KNEE IMPACT TEST

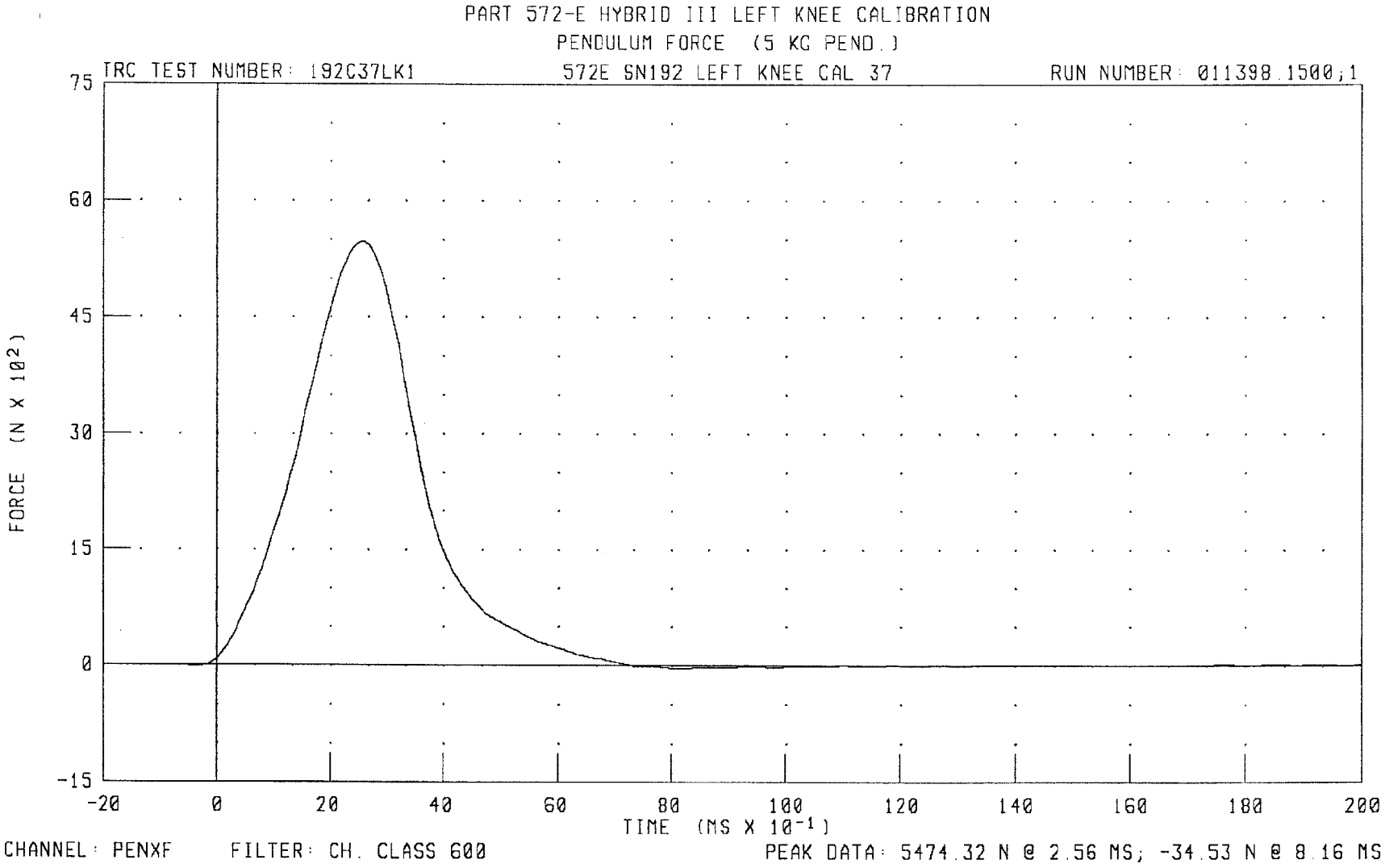
TRC INC. TEST NO: 192C37LK1 572E SN192 LEFT KNEE CAL 37

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	35.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.08 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5474.3 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins RUN NUMBER: 011398.1500;1


PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)
TRC TEST NUMBER: 192C37LK1
572E SN192 LEFT KNEE CAL 37
RUN NUMBER: 011398 1500,1
ACCELERATION (G)
150
120
90
60
30
0
-30
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXG
FILTER: CH. CLASS 600
PEAK DATA: 111.89 G @ 2.56 MS; -0.71 G @ 8.16 MS


PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)
TRC TEST NUMBER: 192C37LK1
572E SN192 LEFT KNEE CAL 37
RUN NUMBER: 011398.1500;1
FORCE (N X 10²)
75
60
45
30
15
0
-15
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXF
FILTER: CH. CLASS 600
PEAK DATA: 5474.32 N @ 2.56 MS; -34.53 N @ 8.16 MS

Pre-test Certification Data

Passenger Dummy S/N: 142

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS
SN142 HUMANOID

TRC INC. TEST NO: 142C38ED1 572E SN142 EXT.DIMENSION CAL38 14-01-98

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
LOCATION FOR CHEST CIRCUMFERENCE	(AA)	16.9 - 17.1 IN	17.0 IN
LOCATION FOR WAIST CIRCUMFERENCE	(BB)	8.9 - 9.1 IN	9.0 IN
CHEST CIRCUMFERENCE	(Y)	38.2 - 39.4 IN	38.8 IN
WAIST CIRCUMFERENCE	(Z)	32.9 - 34.1 IN	33.5 IN
CHEST DEPTH	(O)	8.4 - 9.0 IN	8.6 IN
H-POINT HEIGHT	(C)	3.3 - 3.5 IN	3.4 IN
H-POINT FROM SEATBACK	(D)	5.3 - 5.5 IN	5.4 IN
SKULL CAP TO BACKLINE	(H)	1.6 - 1.8 IN	1.7 IN
TOTAL SITTING HEIGHT	(A)	34.6 - 35.0 IN	34.6 IN
THIGH CLEARANCE	(F)	5.5 - 6.1 IN	6.0 IN
BUTTOCK KNEE LENGTH	(K)	22.8 - 23.8 IN	22.9 IN
BUTTOCK POPLITEAL LENGTH	(N)	17.8 - 18.8 IN	17.8 IN
POPLITEAL HEIGHT	(L)	16.9 - 17.9 IN	17.4 IN
KNEE PIVOT HEIGHT	(M)	19.1 - 19.7 IN	19.5 IN
FOOT LENGTH	(P)	9.9 - 10.5 IN	10.1 IN
FOOT BREADTH	(W)	3.6 - 4.2 IN	3.9 IN
SHOULDER PIVOT FROM BACKLINE	(E)	3.3 - 3.7 IN	3.6 IN
SHOULDER BREADTH	(V)	16.6 - 17.2 IN	17.0 IN
SHOULDER PIVOT HEIGHT	(B)	19.9 - 20.5 IN	20.2 IN
ELBOW REST HEIGHT	(J)	7.5 - 8.3 IN	7.8 IN
SHOULDER-ELBOW LENGTH	(I)	13.0 - 13.6 IN	13.3 IN
BACK OF ELBOW TO WRIST PIVOT	(G)	11.4 - 12.0 IN	11.5 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN _____ RUN NUMBER: 011598.0717

TRANSPORTATION RESEARCH CENTER INC.

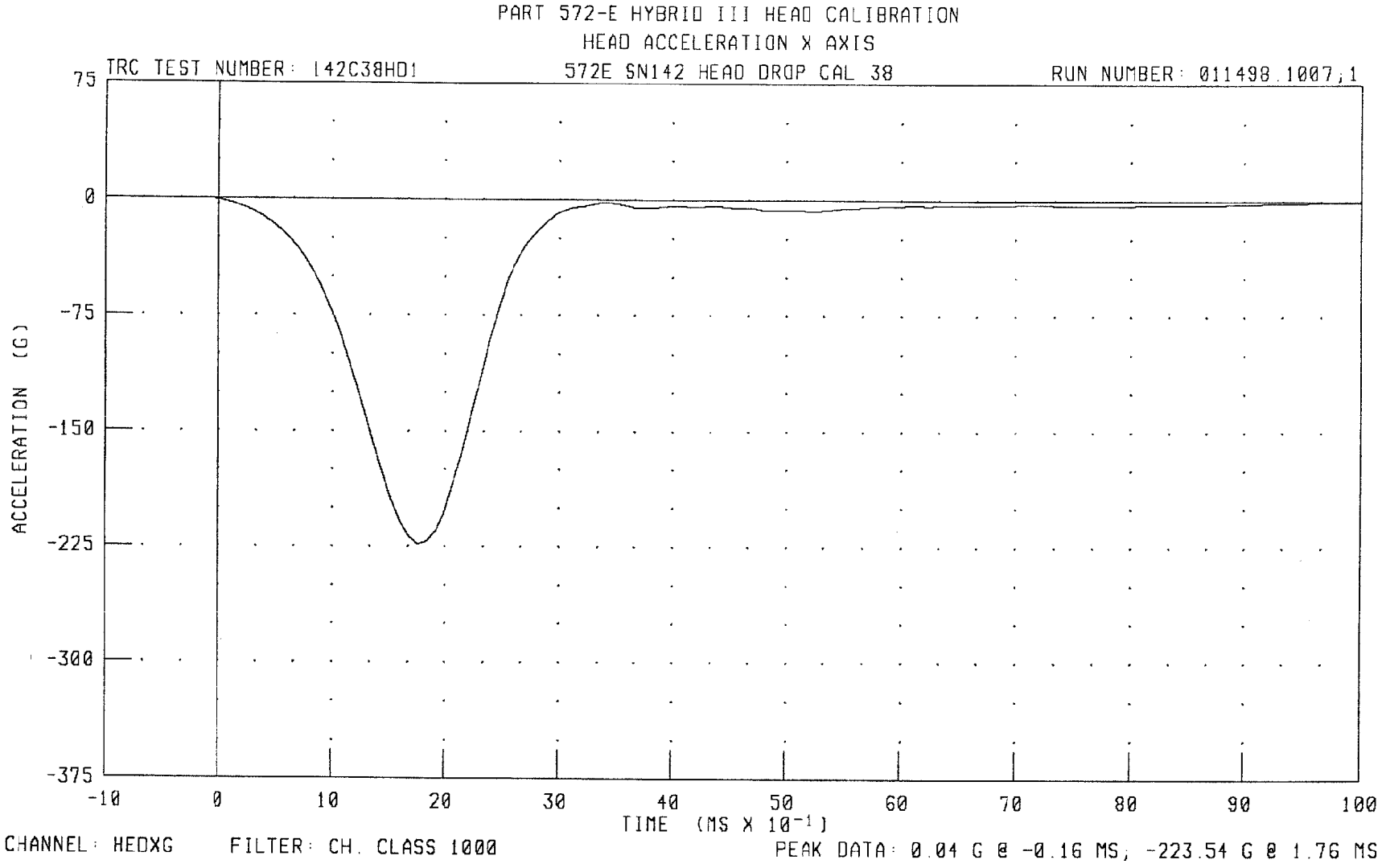
HEAD DROP TEST

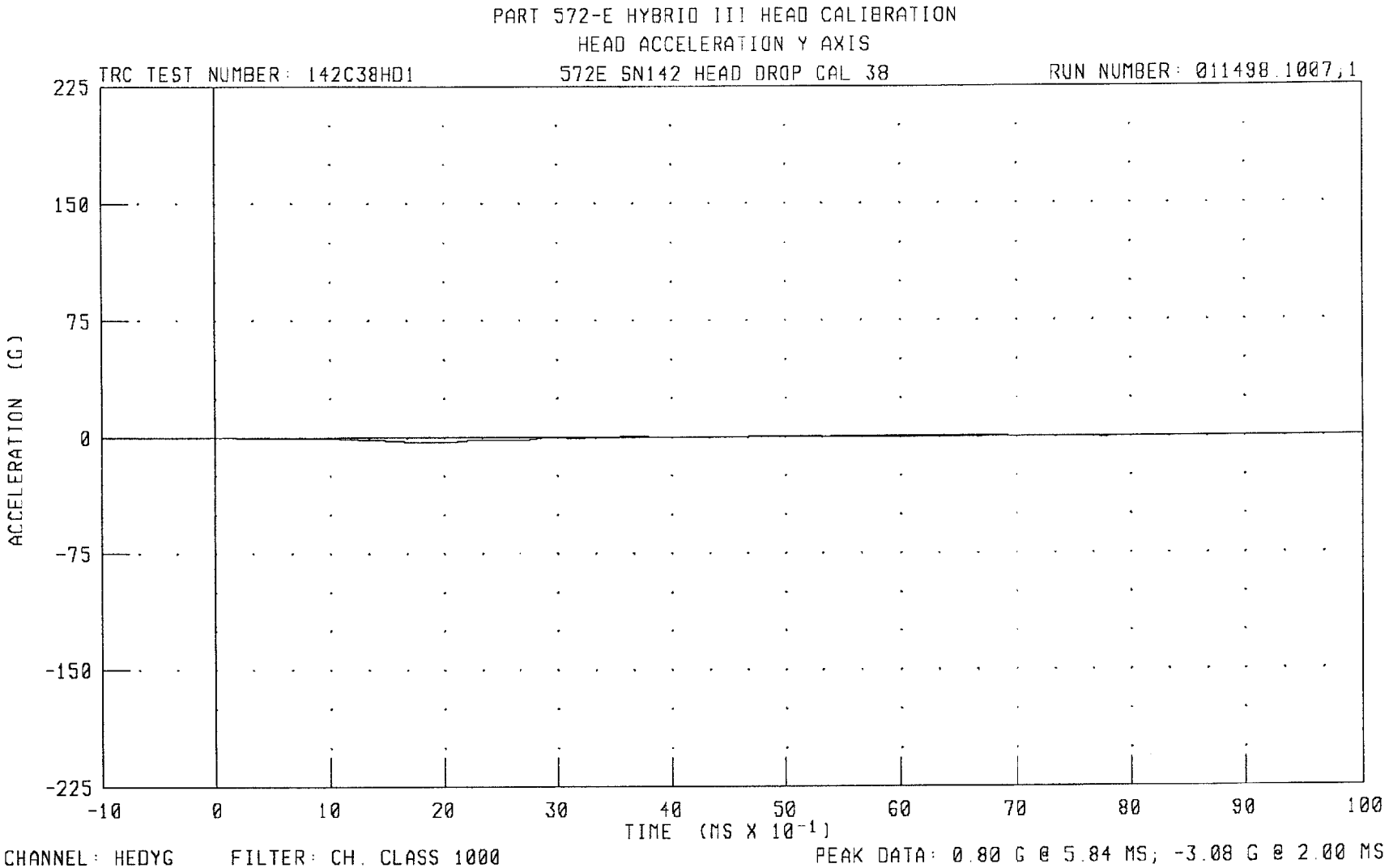
TRC INC. TEST NO: 142C38HD1 572E SN142 HEAD DROP CAL 38

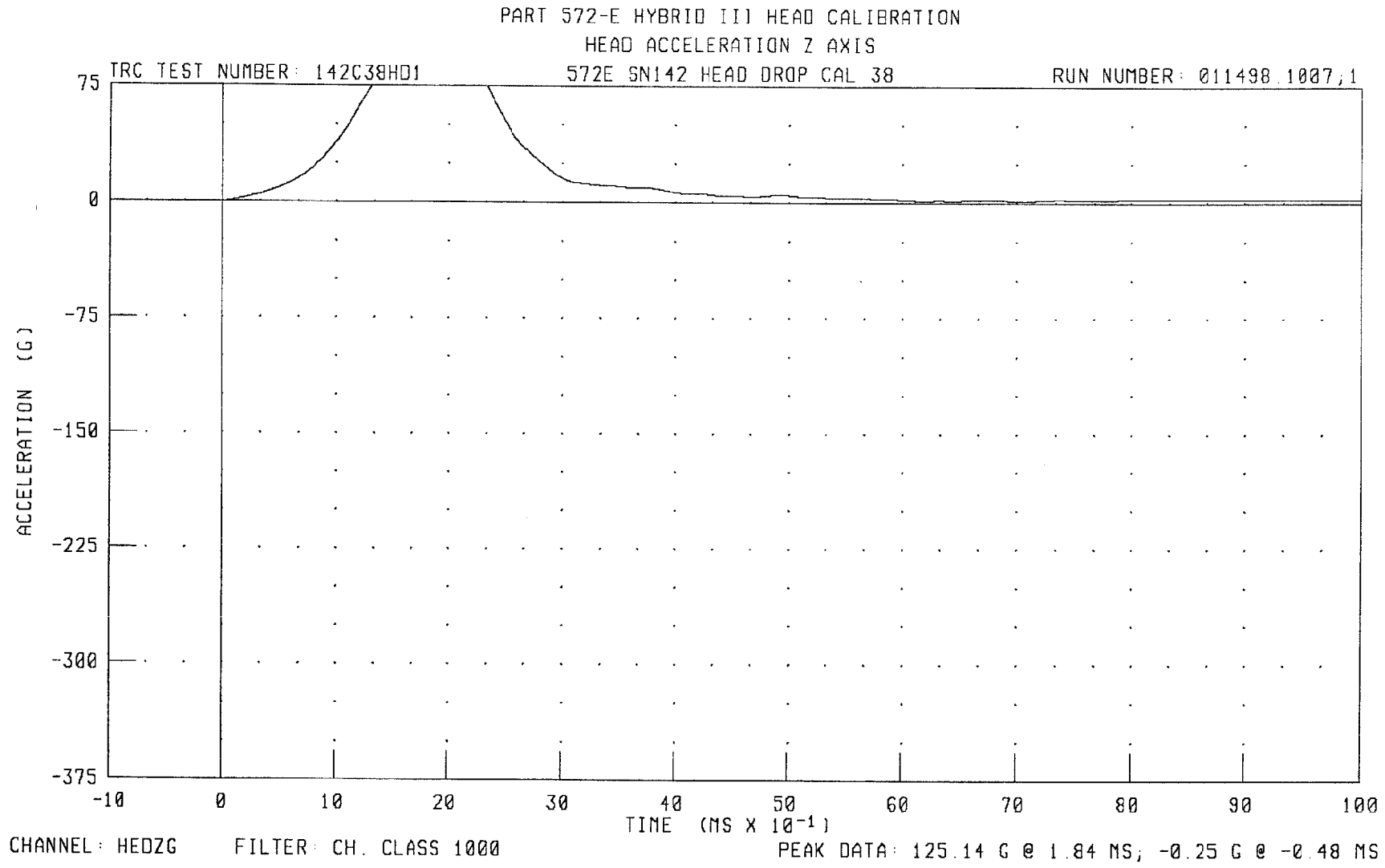
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	20.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	255.53 G
PEAK LATERAL ACCELERATION	15 G MAX	-3.07 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

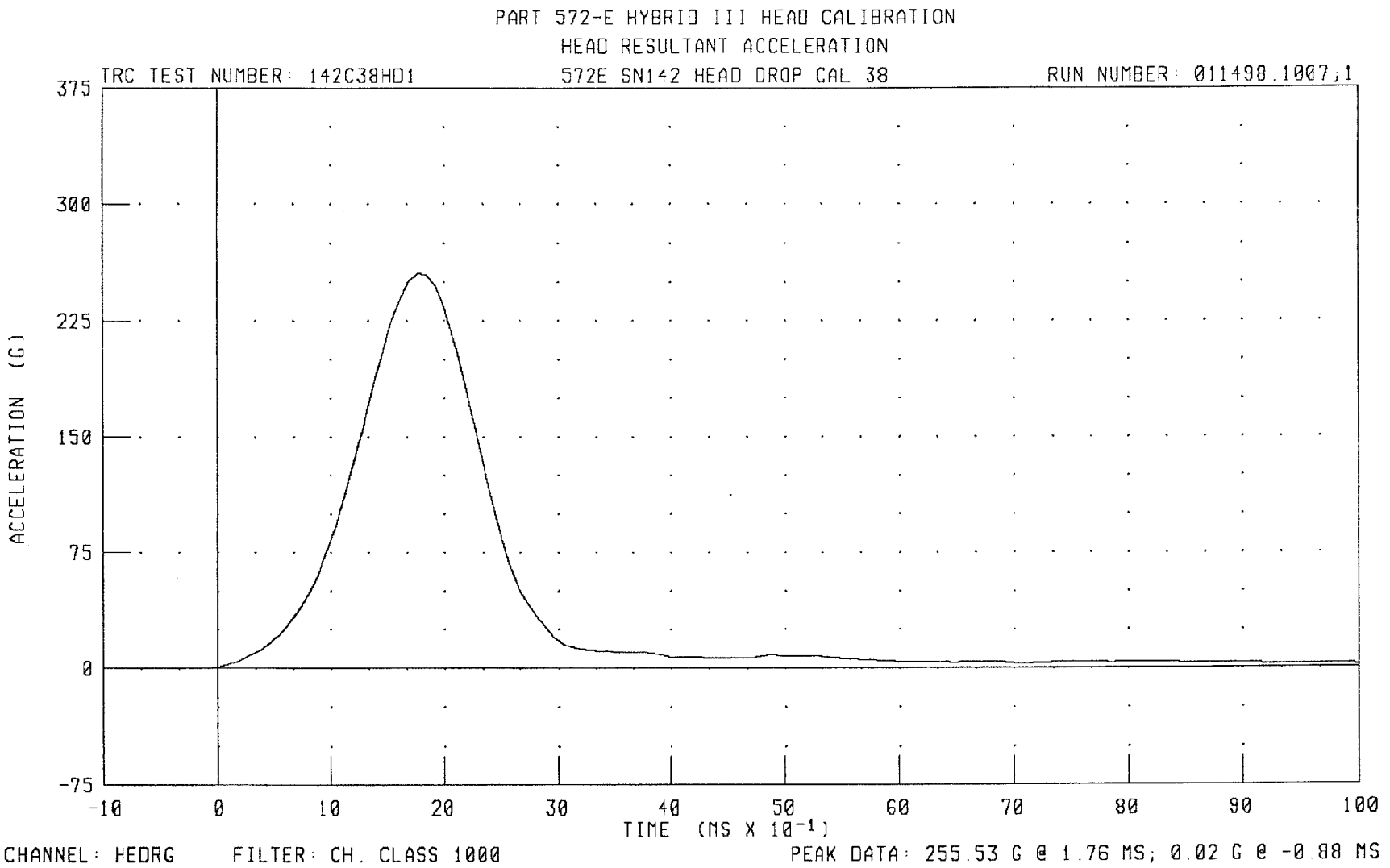
TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins RUN NUMBER: 011498.1006;1


PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS
TRC TEST NUMBER: I42C38HD1
572E SN142 HEAD DROP CAL 38
RUN NUMBER: 011498.1007;1
75
0
-75
-150
-225
-300
-375
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10⁻¹)
CHANNEL: HEDXG
FILTER: CH. CLASS 1000
PEAK DATA: 0.04 G @ -0.16 MS, -223.54 G @ 1.76 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Y AXIS
TRC TEST NUMBER: 142C38HD1
572E SN142 HEAD DROP CAL 38
RUN NUMBER: 011498.1007,1
225
150
75
0
-75
-150
-225
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10⁻¹)
CHANNEL: HEDYG
FILTER: CH. CLASS 1000
PEAK DATA: 0.80 G @ 5.84 MS; -3.08 G @ 2.00 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS
TRC TEST NUMBER: 142C38HD1
572E SN142 HEAD DROP CAL 38
RUN NUMBER: 011498.1007;1
75
0
-75
-150
-225
-300
-375
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10⁻¹)
CHANNEL: HEDZG
FILTER: CH. CLASS 1000
PEAK DATA: 125.14 G @ 1.84 MS; -0.25 G @ -0.48 MS


PART 572-E HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION
TRC TEST NUMBER: 142C38HD1
572E SN142 HEAD DROP CAL 38
RUN NUMBER: 011498.1007;1
375
300
225
150
75
0
-75
ACCELERATION (G)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS X 10-1)
CHANNEL: HEDRG
FILTER: CH. CLASS 1000
PEAK DATA: 255.53 G @ 1.76 MS; 0.02 G @ -0.88 MS

TRANSPORTATION RESEARCH CENTER INC.

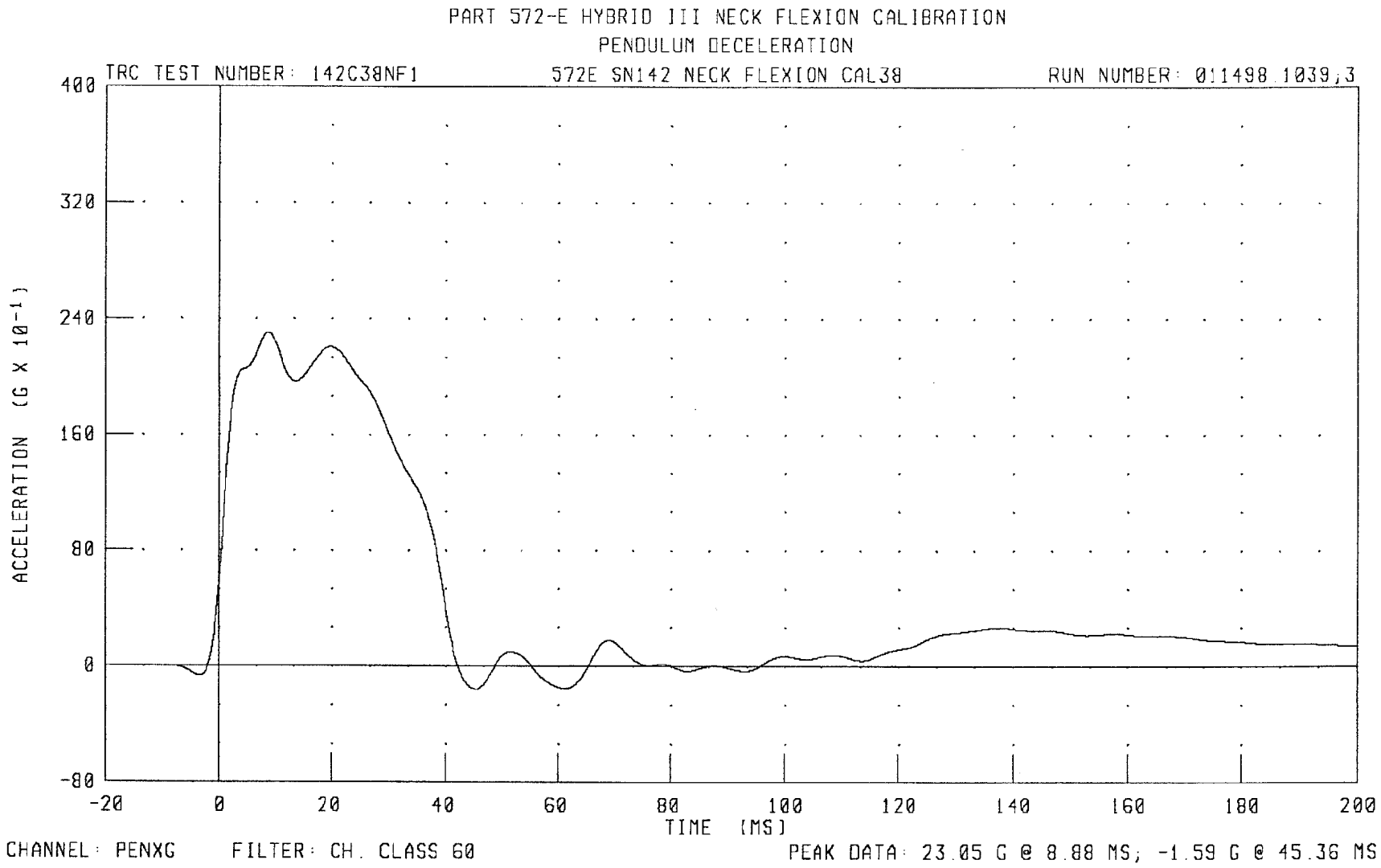
NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

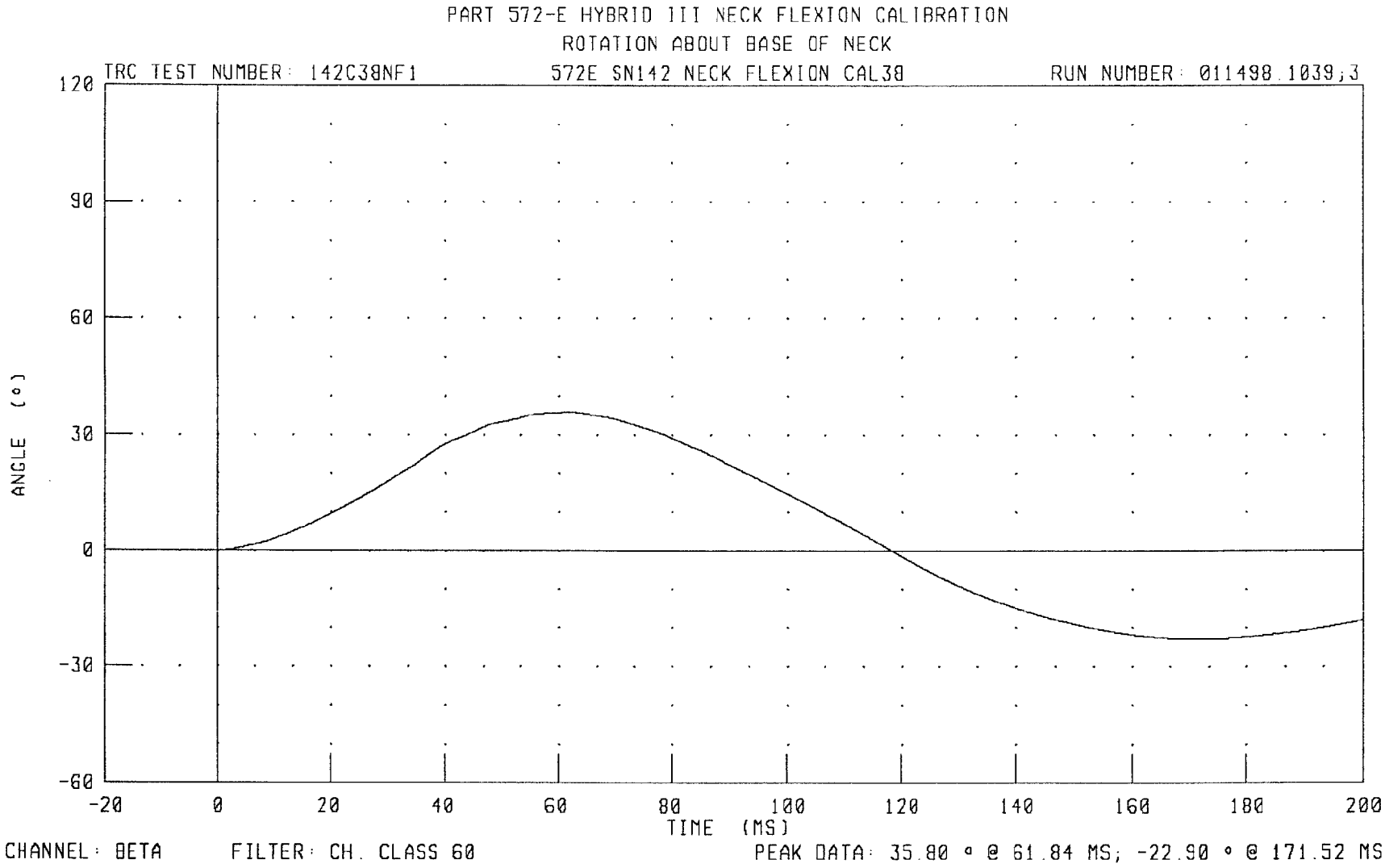
TRC INC. TEST NO: 142C38NF1 572E SN142 NECK FLEXION CAL38

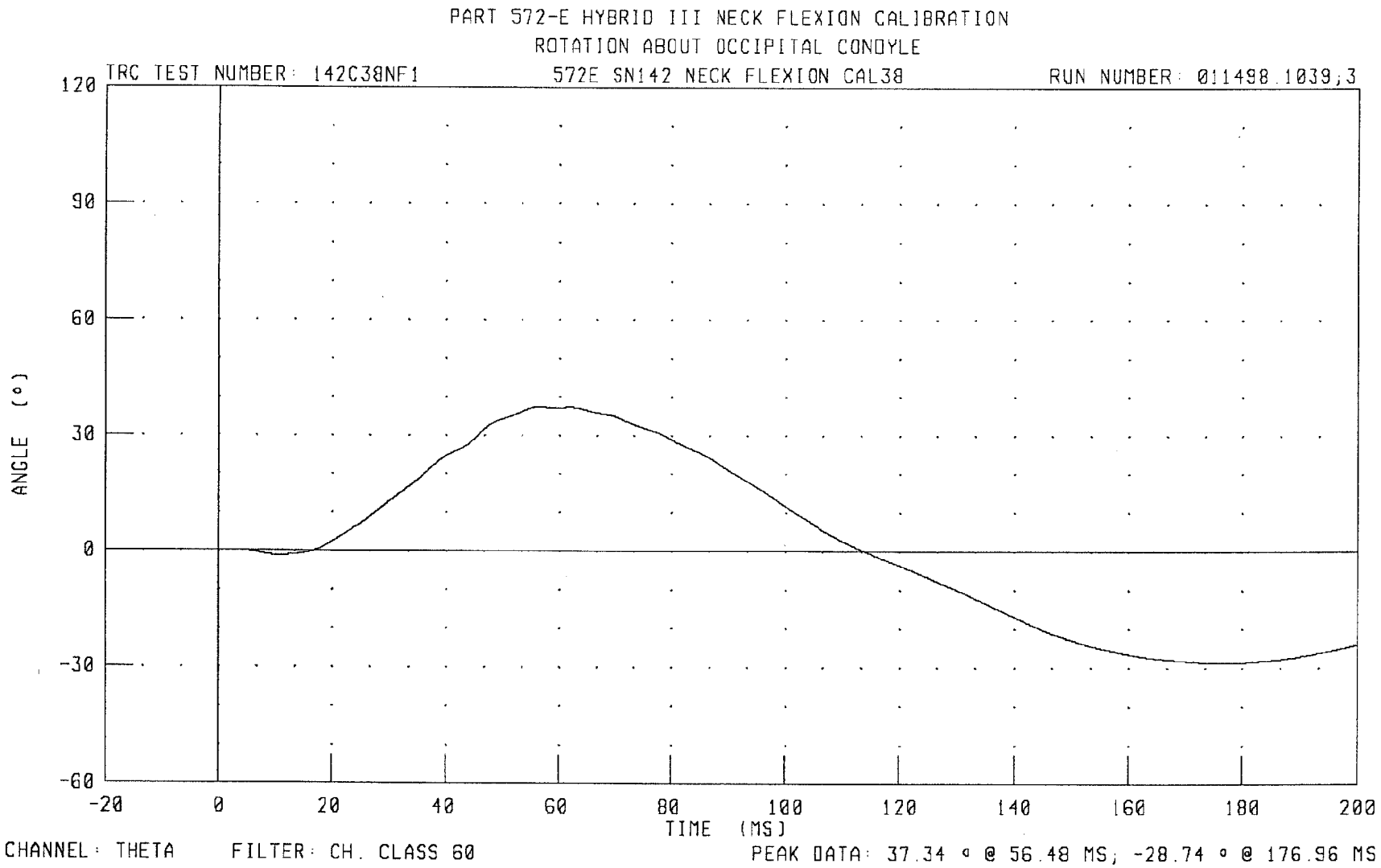
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	20.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.12 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	22.53 G
	20 MS	17.60 - 22.60 G	22.07 G
	30 MS	12.50 - 18.50 G	16.02 G
MAX PENDULUM G		29 G MAX	23.05 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	15.94 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	39.60 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	73.08 DEG.
	TIME	57 - 64 MS	61.84 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	96.58 NM
	TIME	47 - 58 MS	53.44 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	116.48 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	101.36 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins RUN NUMBER: 011498.1039;3


PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 142C38NF1
572E SN142 NECK FLEXION CAL38
RUN NUMBER: 011498 1039,3
ACCELERATION (G X 10⁻¹)
400
320
240
160
80
0
-80
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 60
PEAK DATA: 23.05 G @ 8.88 MS; -1.59 G @ 45.36 MS

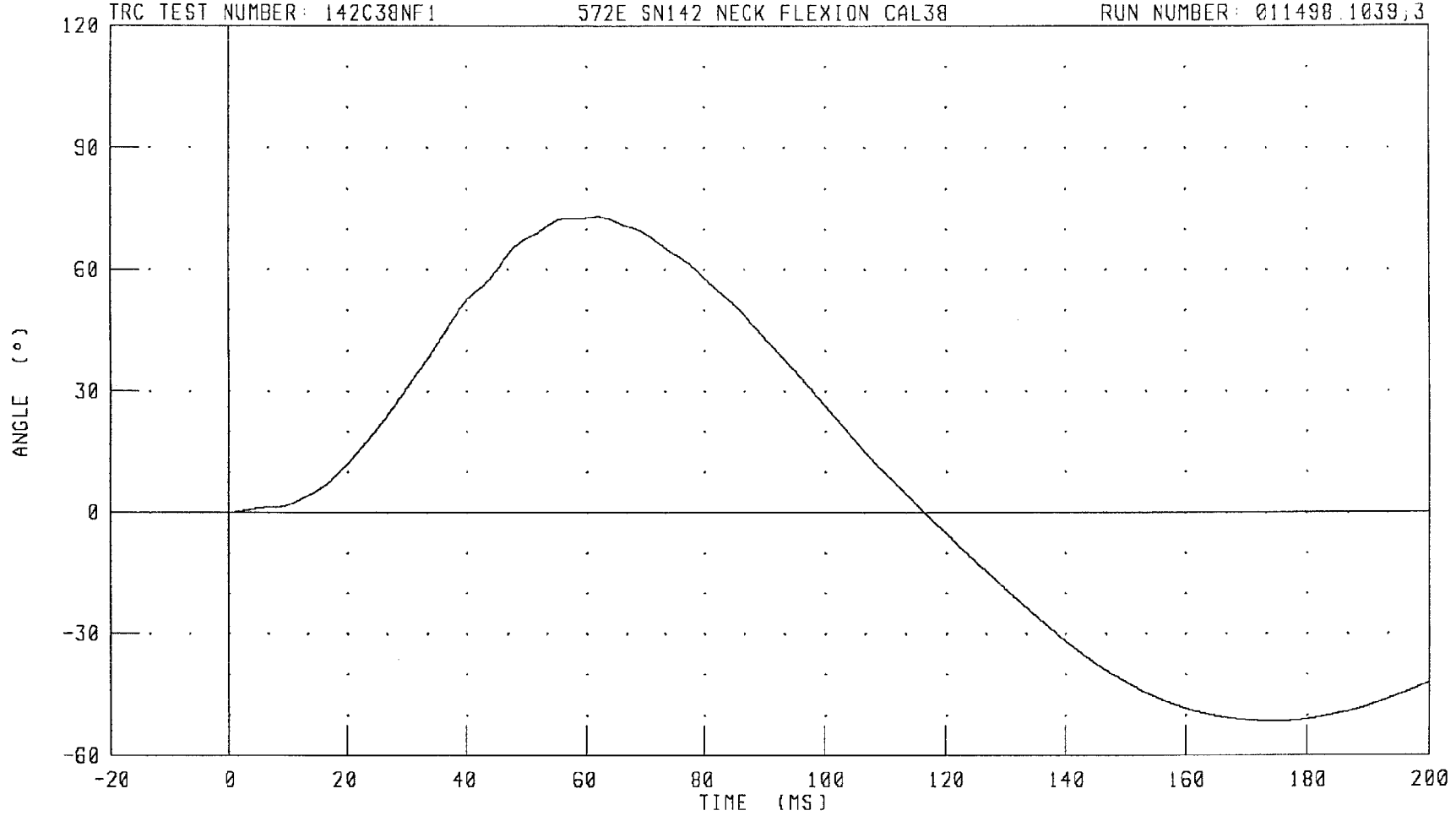

PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT BASE OF NECK
TRC TEST NUMBER: 142C38NF1
572E SN142 NECK FLEXION CAL38
RUN NUMBER: 011498.1039;3
ANGLE (°)
120
90
60
30
0
-30
-60
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: BETA
FILTER: CH. CLASS 60
PEAK DATA: 35.80 ° @ 61.84 MS; -22.90 ° @ 171.52 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 142C38NF1
572E SN142 NECK FLEXION CAL38
RUN NUMBER: 011498.1039;3
120
90
60
30
0
-30
-60
ANGLE (°)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: THETA
FILTER: CH. CLASS 60
PEAK DATA: 37.34 ° @ 56.48 MS; -28.74 ° @ 176.96 MS

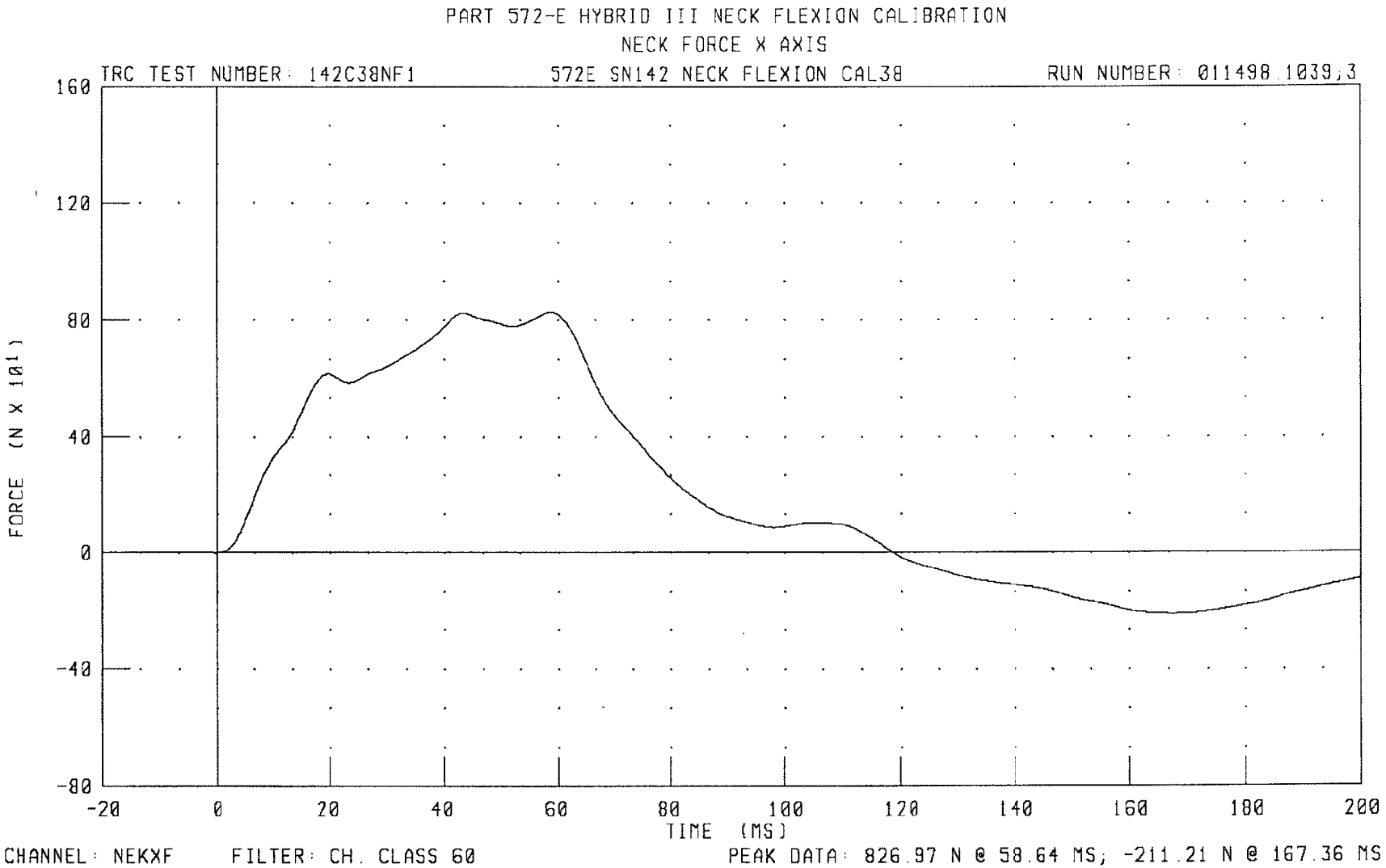
PART 572-E HYBRID III NECK FLEXION CALIBRATION

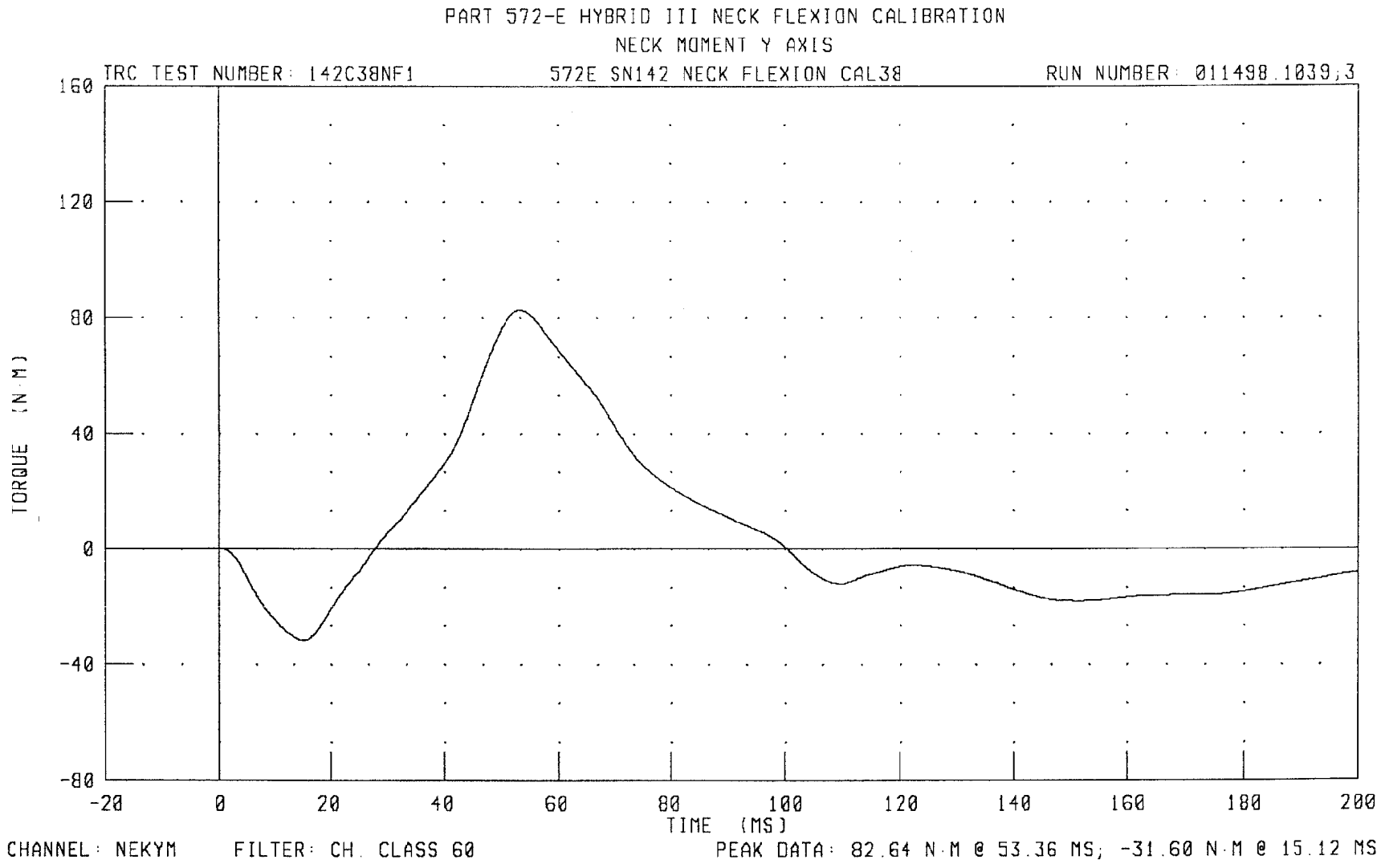
TOTAL ROTATION

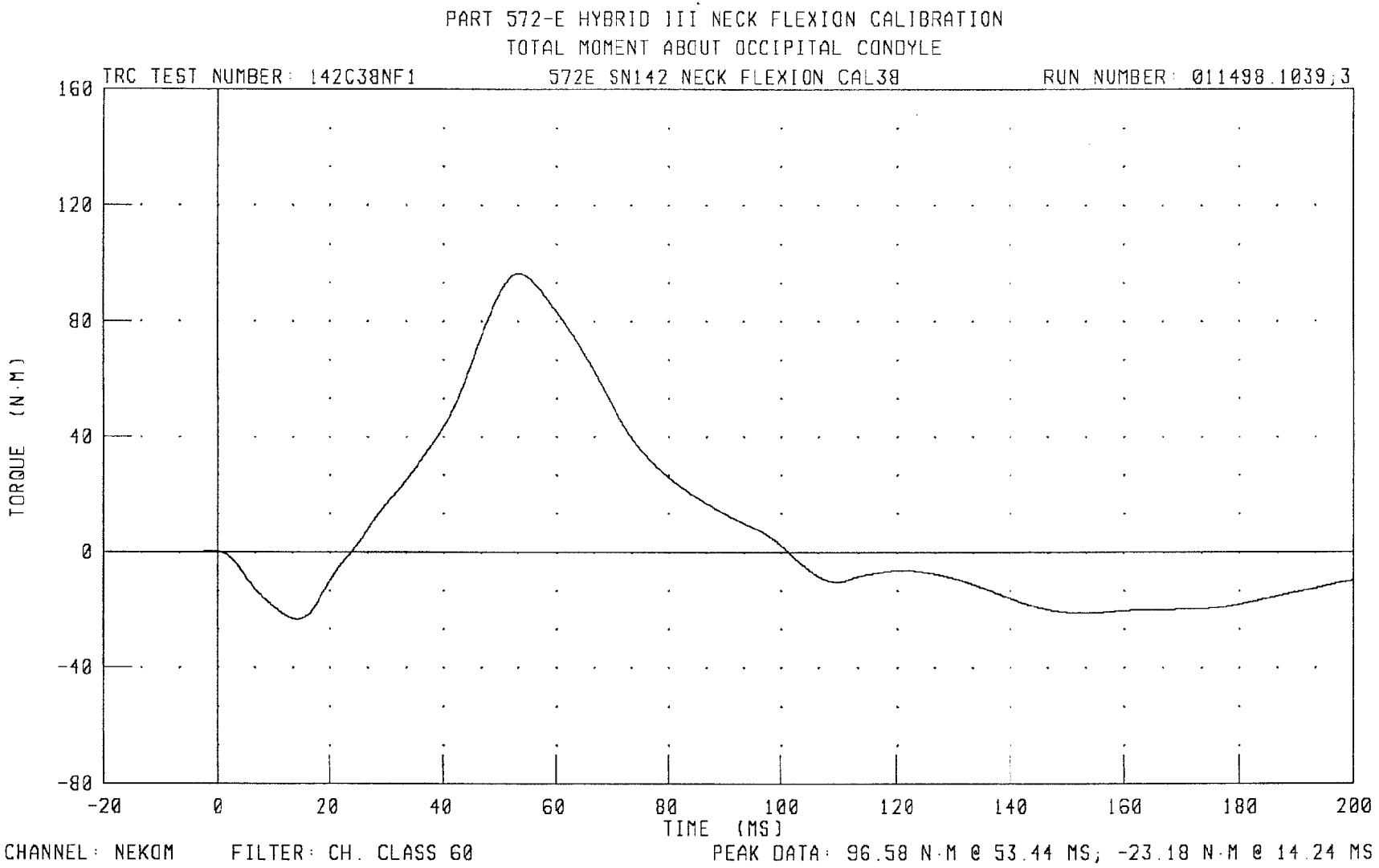
TRC TEST NUMBER: 142C38NF1 572E SN142 NECK FLEXION CAL38 RUN NUMBER: 011498.1039.3



CHANNEL: TOTAN FILTER: CH. CLASS 60 PEAK DATA: 73.09 ° @ 61.84 MS; -51.51 ° @ 174.88 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK FORCE X AXIS
TRC TEST NUMBER: 142C38NF1
572E SN142 NECK FLEXION CAL38
RUN NUMBER: 011498.1039,3
160
120
80
40
0
-40
-80
FORCE (N X 10¹)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKXF
FILTER: CH. CLASS 60
PEAK DATA: 826.97 N @ 58.64 MS; -211.21 N @ 167.36 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS
TRC TEST NUMBER: 142C38NF1
572E SN142 NECK FLEXION CAL38
RUN NUMBER: 011498.1039;3
160
120
80
40
0
-40
-80
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKYM
FILTER: CH. CLASS 60
PEAK DATA: 82.64 N-M @ 53.36 MS; -31.60 N-M @ 15.12 MS


PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 142C38NF1
572E SN142 NECK FLEXION CAL38
RUN NUMBER: 011498.1039;3
160
120
80
40
0
-40
-80
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKOM
FILTER: CH. CLASS 60
PEAK DATA: 96.58 N-M @ 53.44 MS; -23.18 N-M @ 14.24 MS

TRANSPORTATION RESEARCH CENTER INC.

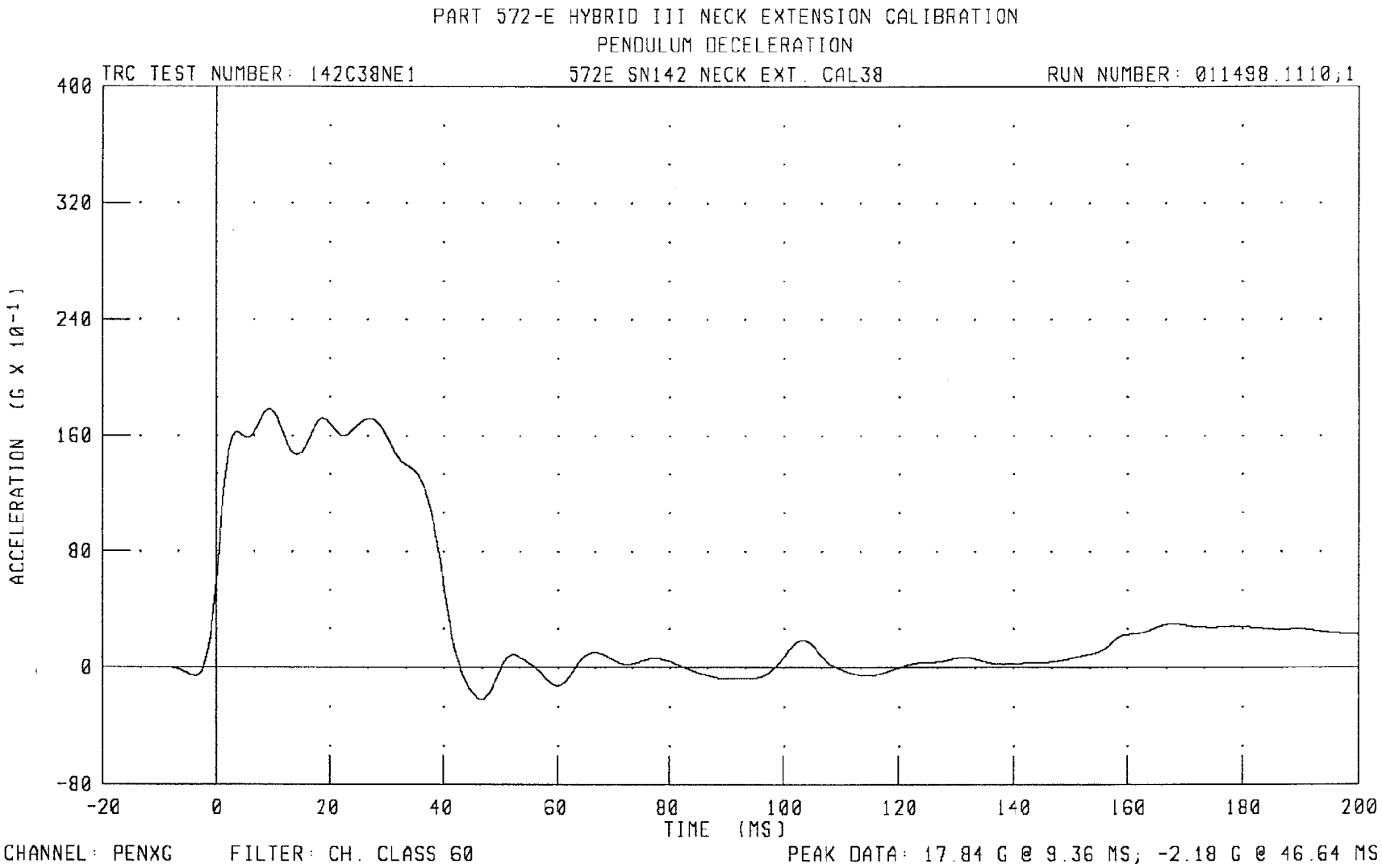
NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

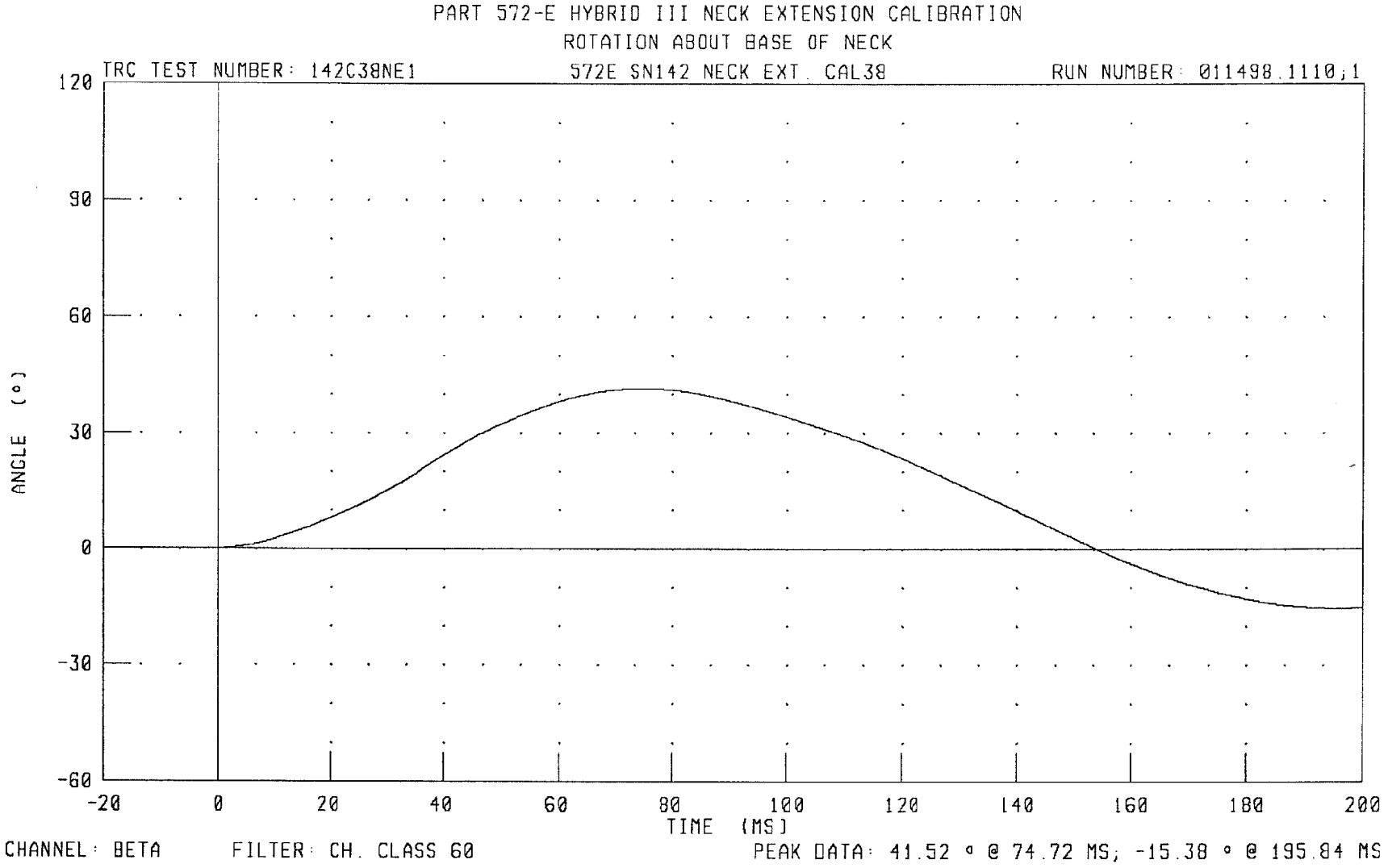
TRC INC. TEST NO: 142C38NE1 572E SN142 NECK EXT. CAL38

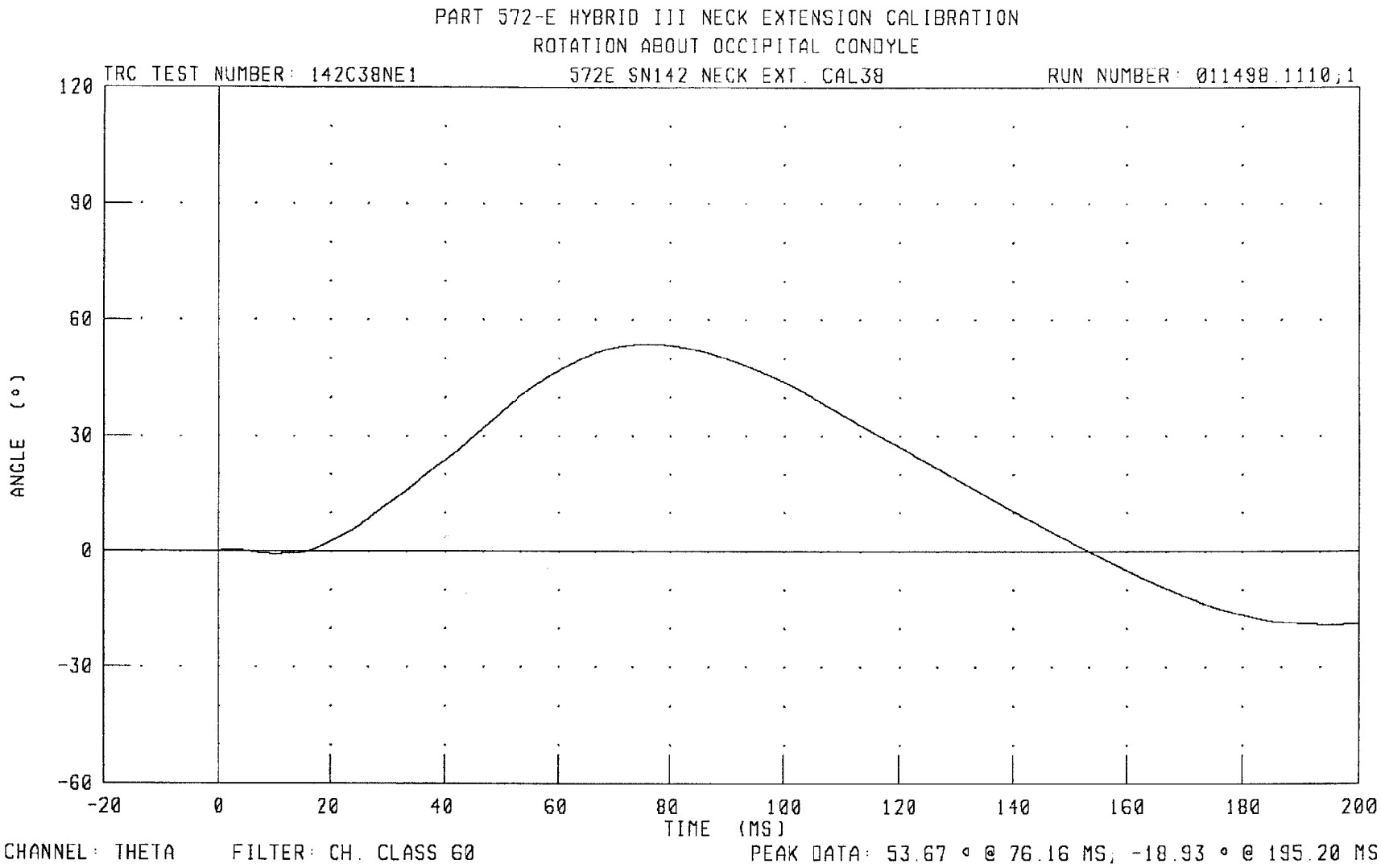
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	20.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.05 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	17.68 G
	20 MS	14.00 - 19.00 G	16.86 G
	30 MS	11.00 - 16.00 G	15.92 G
MAX PENDULUM G		22 G MAX	17.84 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	15.86 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	40.24 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	95.16 DEG.
	TIME	72 - 82 MS	75.52 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-71.20 NM
	TIME	65 - 79 MS	70.24 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	153.60 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	137.44 MS

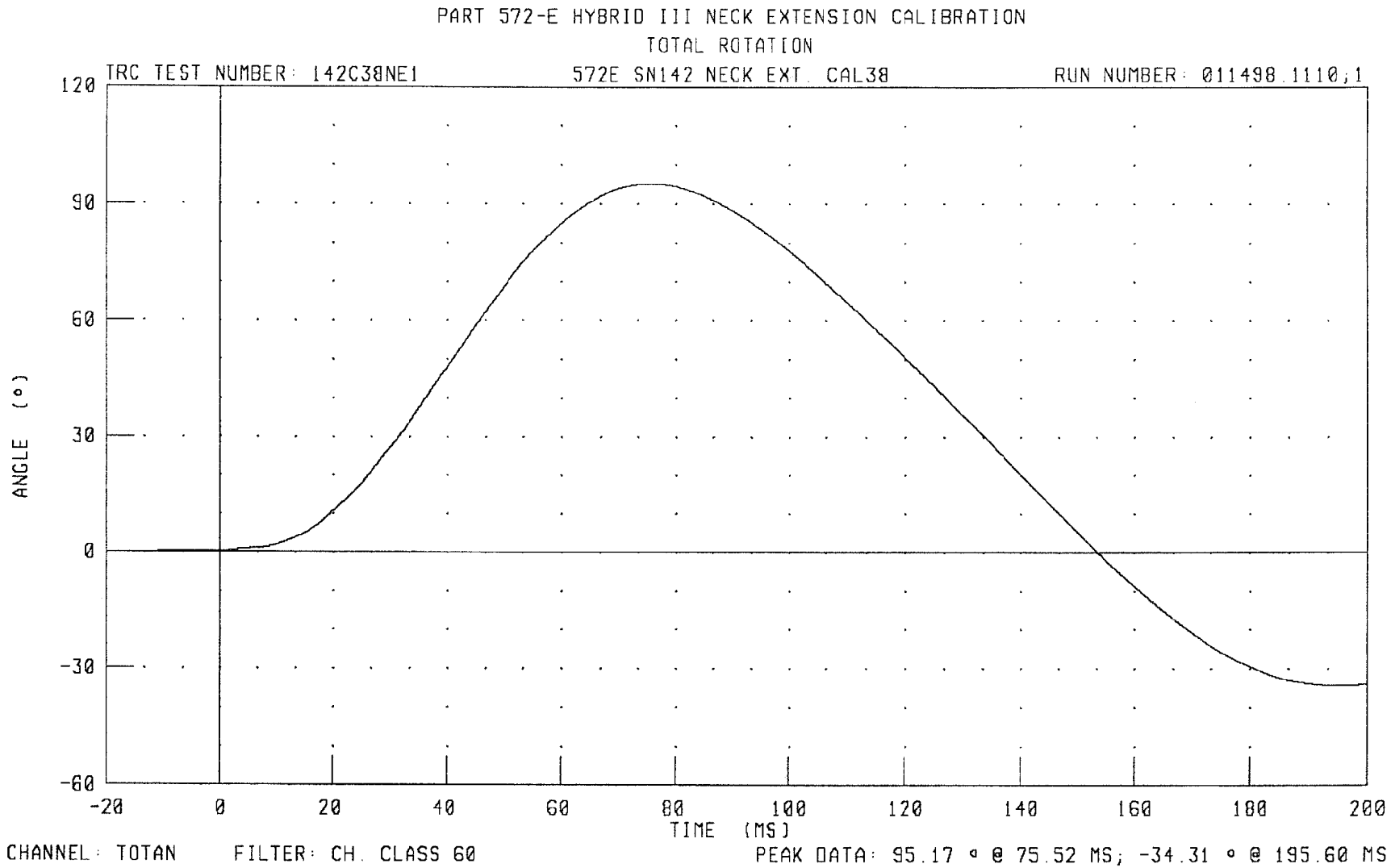
TEST MEETS SPECIFICATIONS

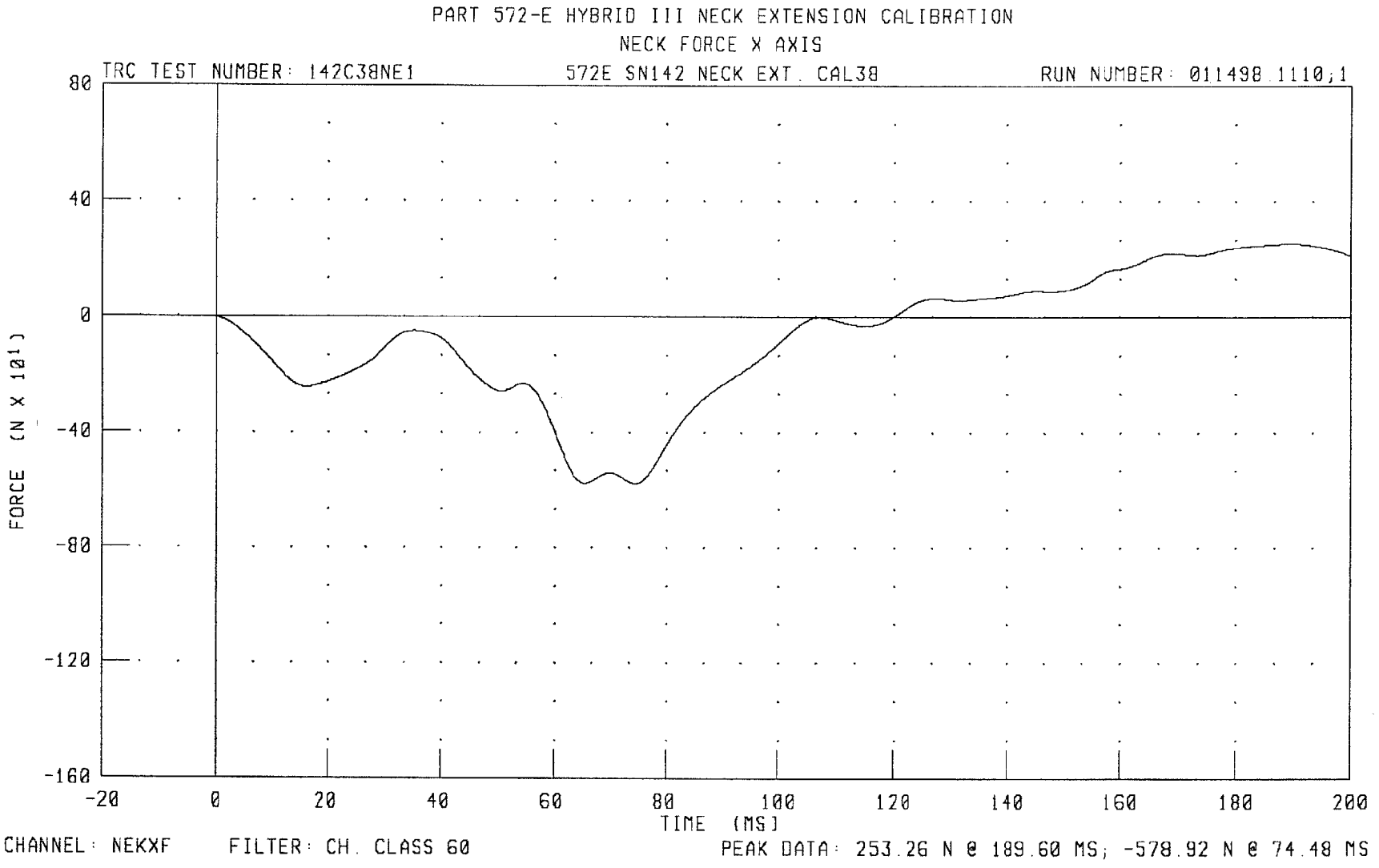
TECHNICIAN Kevin Watkins RUN NUMBER: 011498.1109;1

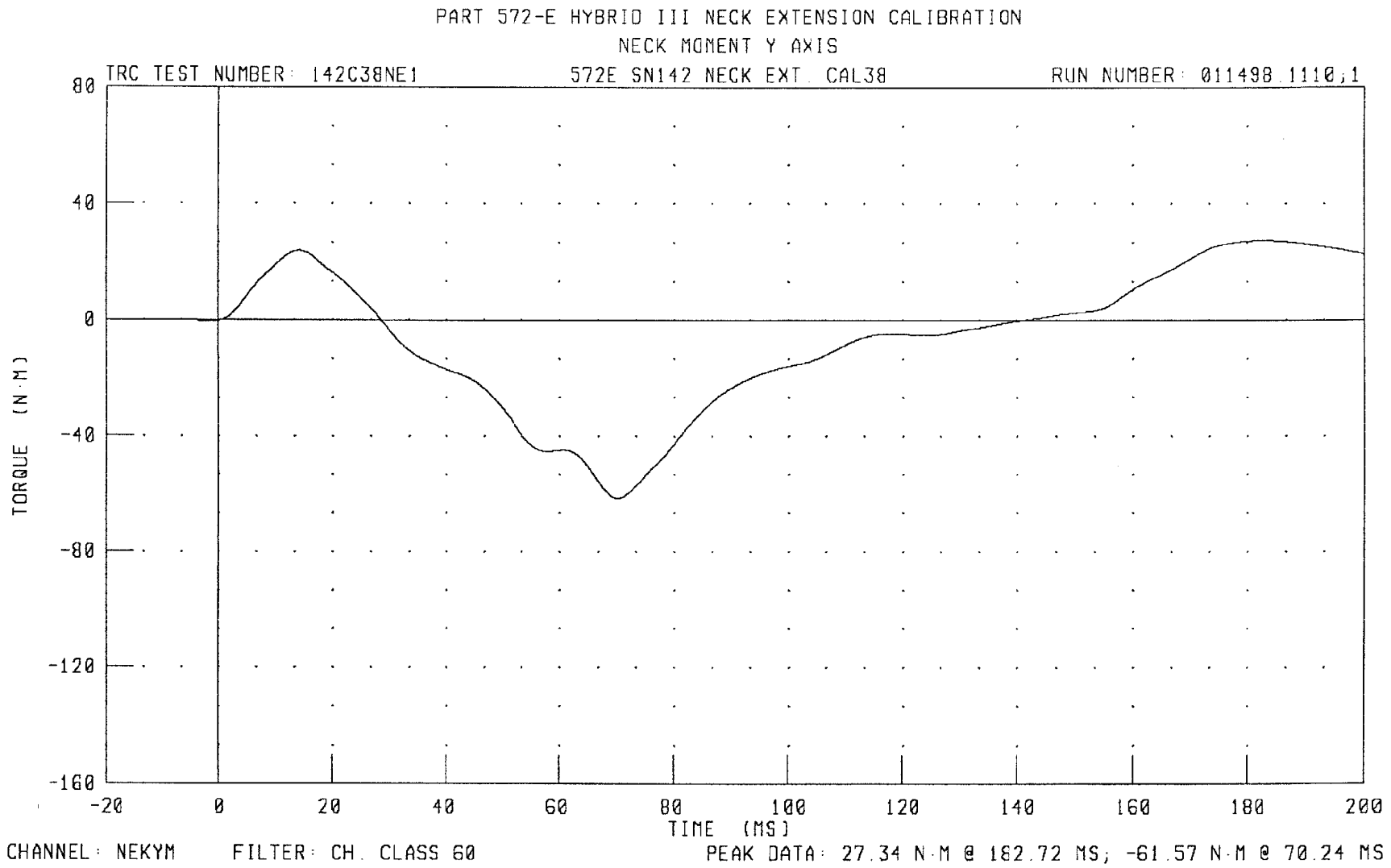

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 142C38NE1
572E SN142 NECK EXT. CAL38
RUN NUMBER: 011498.1110;1
400
320
240
160
80
0
-80
ACCELERATION (G X 10-1)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 60
PEAK DATA: 17.84 G @ 9.36 MS; -2.18 G @ 46.64 MS

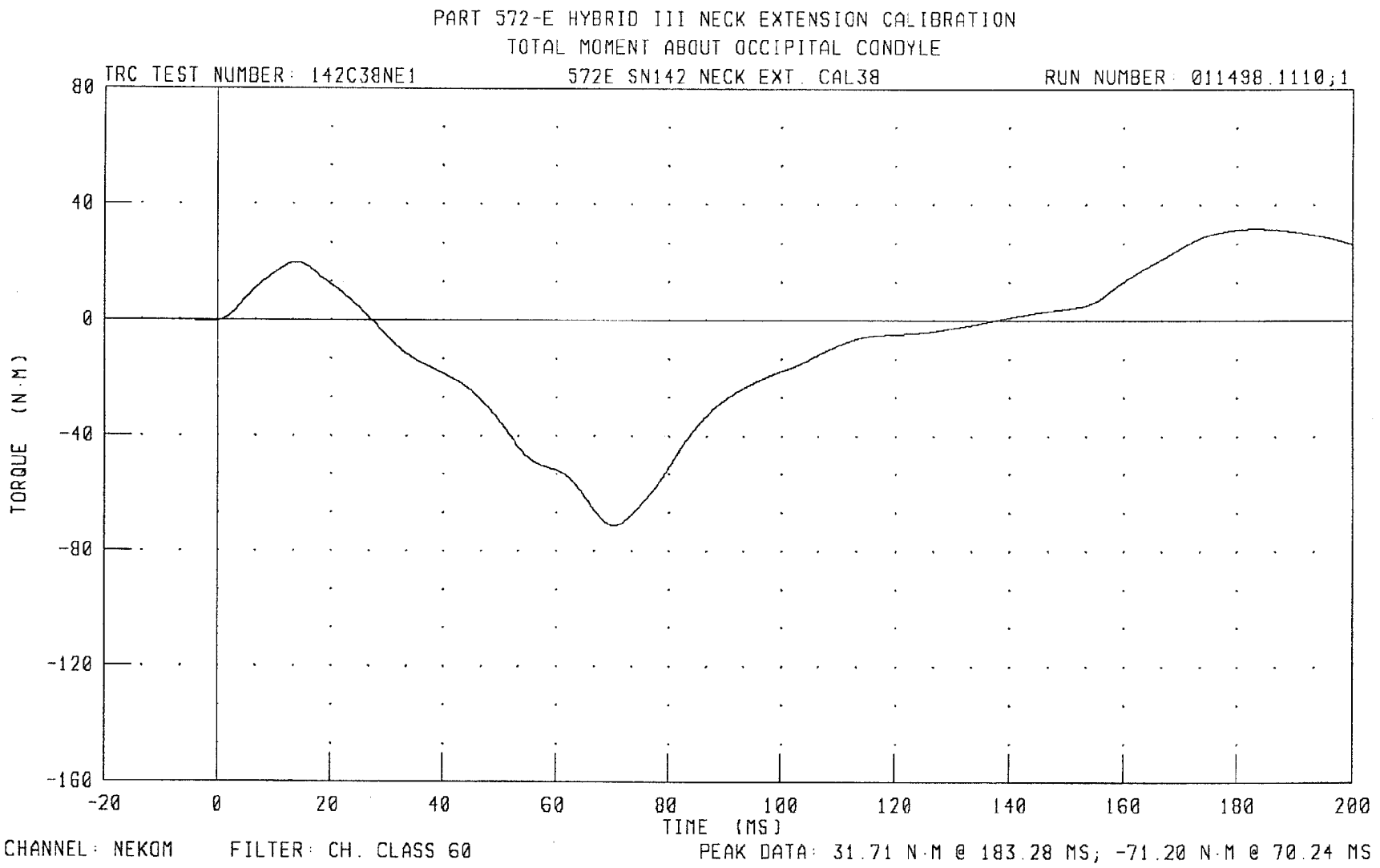

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
ROTATION ABOUT BASE OF NECK
TRC TEST NUMBER: 142C38NE1
572E SN142 NECK EXT. CAL38
RUN NUMBER: 011498.1110;1
ANGLE (°)
120
90
60
30
0
-30
-60
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: BETA
FILTER: CH. CLASS 60
PEAK DATA: 41.52 ° @ 74.72 MS; -15.38 ° @ 195.84 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
ROTATION ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 142C38NE1
572E SN142 NECK EXT. CAL38
RUN NUMBER: 011498.1110;1
ANGLE (°)
120
90
60
30
0
-30
-60
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: THETA
FILTER: CH. CLASS 60
PEAK DATA: 53.67 ° @ 76.16 MS, -18.93 ° @ 195.20 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL ROTATION
TRC TEST NUMBER: 142C38NE1
572E SN142 NECK EXT. CAL38
RUN NUMBER: 011498.1110;1
ANGLE (°)
120
90
60
30
0
-30
-60
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: TOTAN
FILTER: CH. CLASS 60
PEAK DATA: 95.17 ° @ 75.52 MS; -34.31 ° @ 195.60 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK FORCE X AXIS
TRC TEST NUMBER: 142C38NE1
572E SN142 NECK EXT. CAL38
RUN NUMBER: 011498 1110;1
80
40
0
-40
-80
-120
-160
FORCE (N X 10¹)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKXF
FILTER: CH. CLASS 60
PEAK DATA: 253.26 N @ 189.60 MS; -578.92 N @ 74.48 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS
TRC TEST NUMBER: 142C38NE1
572E SN142 NECK EXT. CAL38
RUN NUMBER: 011498.1110;1
80
40
0
-40
-80
-120
-160
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKYM
FILTER: CH. CLASS 60
PEAK DATA: 27.34 N-M @ 182.72 MS; -61.57 N-M @ 70.24 MS


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE
TRC TEST NUMBER: 142C38NE1
572E SN142 NECK EXT. CAL38
RUN NUMBER: 011498.1110;1
80
40
0
-40
-80
-120
-160
TORQUE (N-M)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS)
CHANNEL: NEKOM
FILTER: CH. CLASS 60
PEAK DATA: 31.71 N-M @ 183.28 MS; -71.20 N-M @ 70.24 MS

TRANSPORTATION RESEARCH CENTER INC.

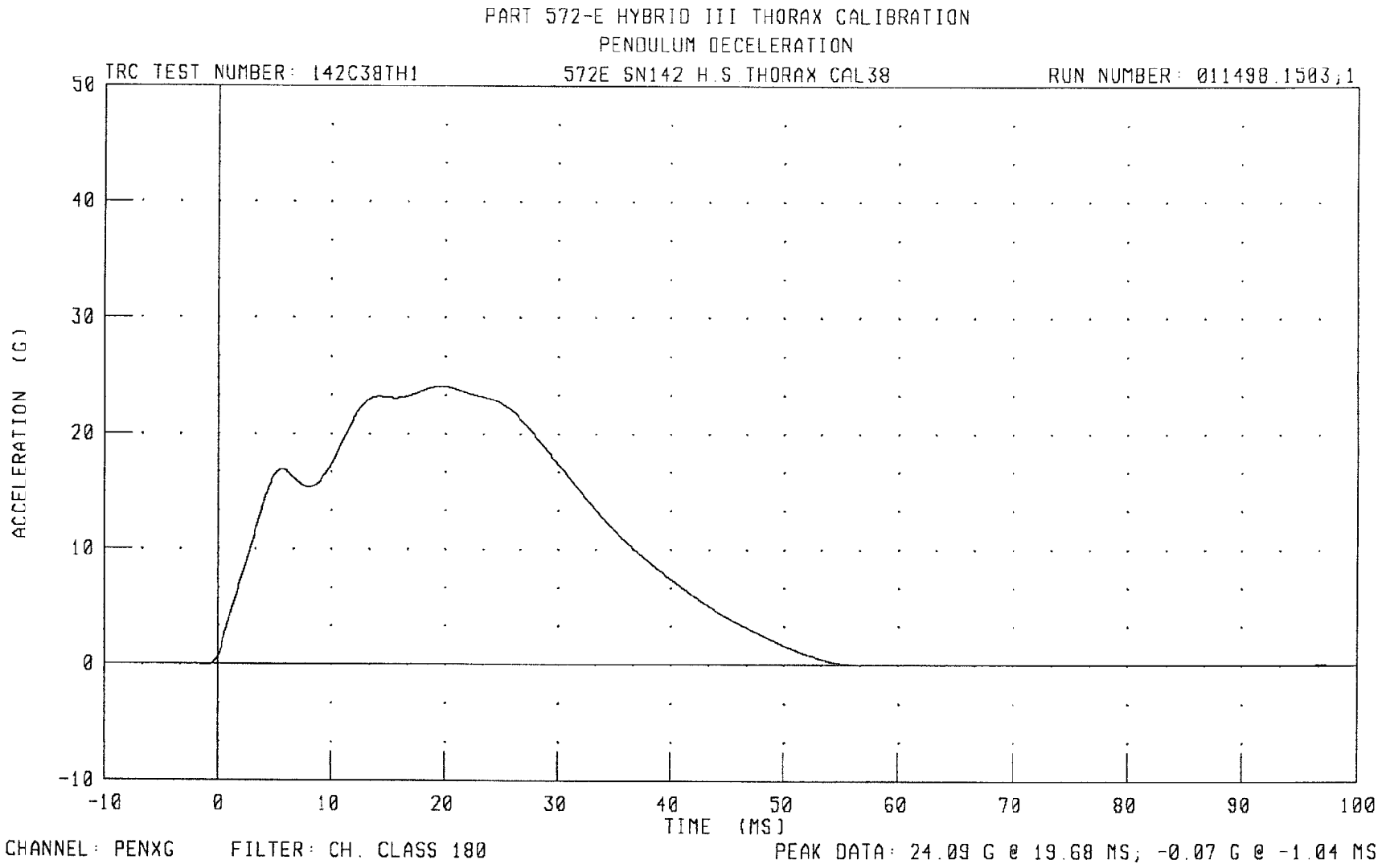
THORAX IMPACT TEST

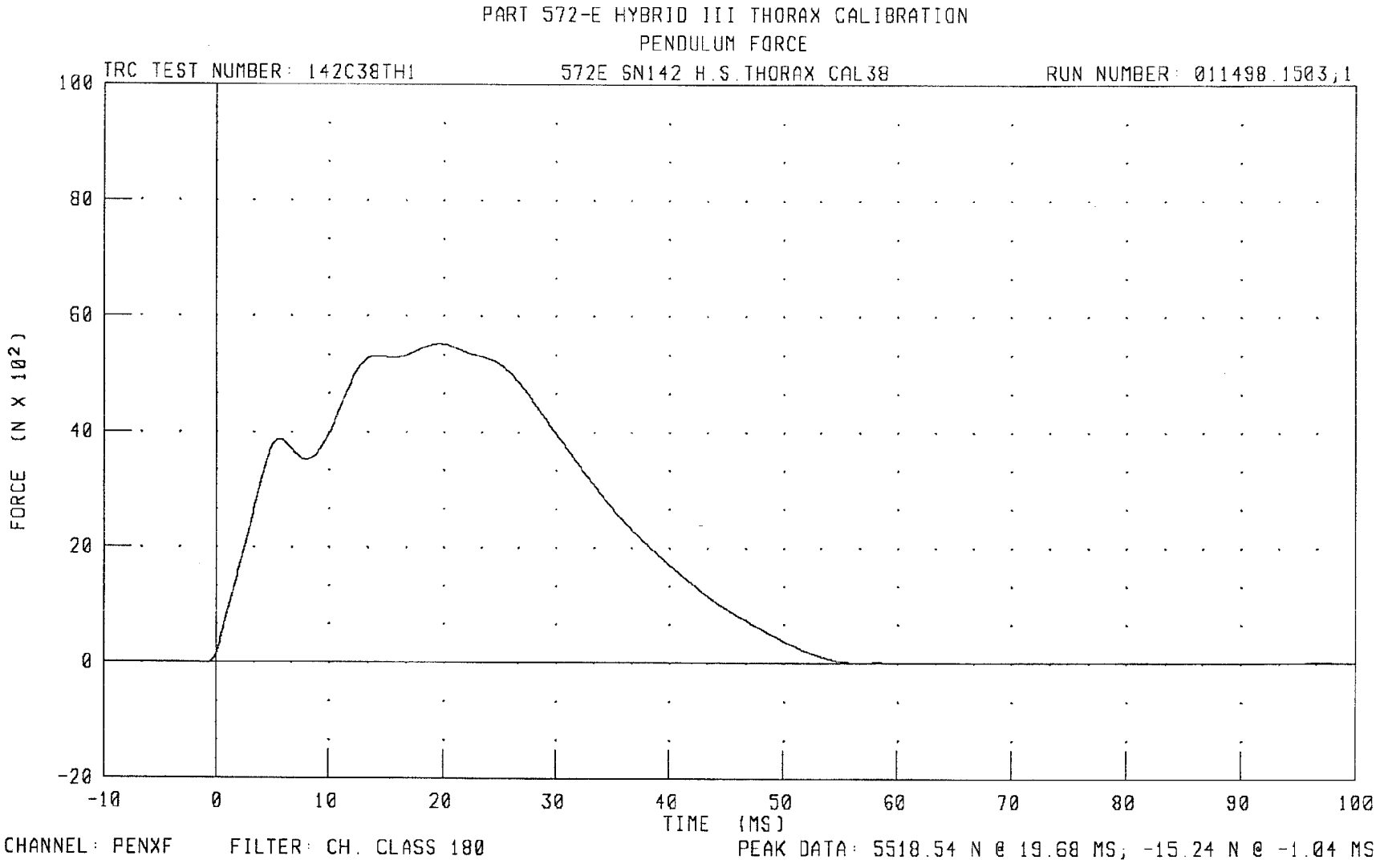
TRC INC. TEST NO: 142C38TH1 572E SN142 H.S.THORAX CAL38

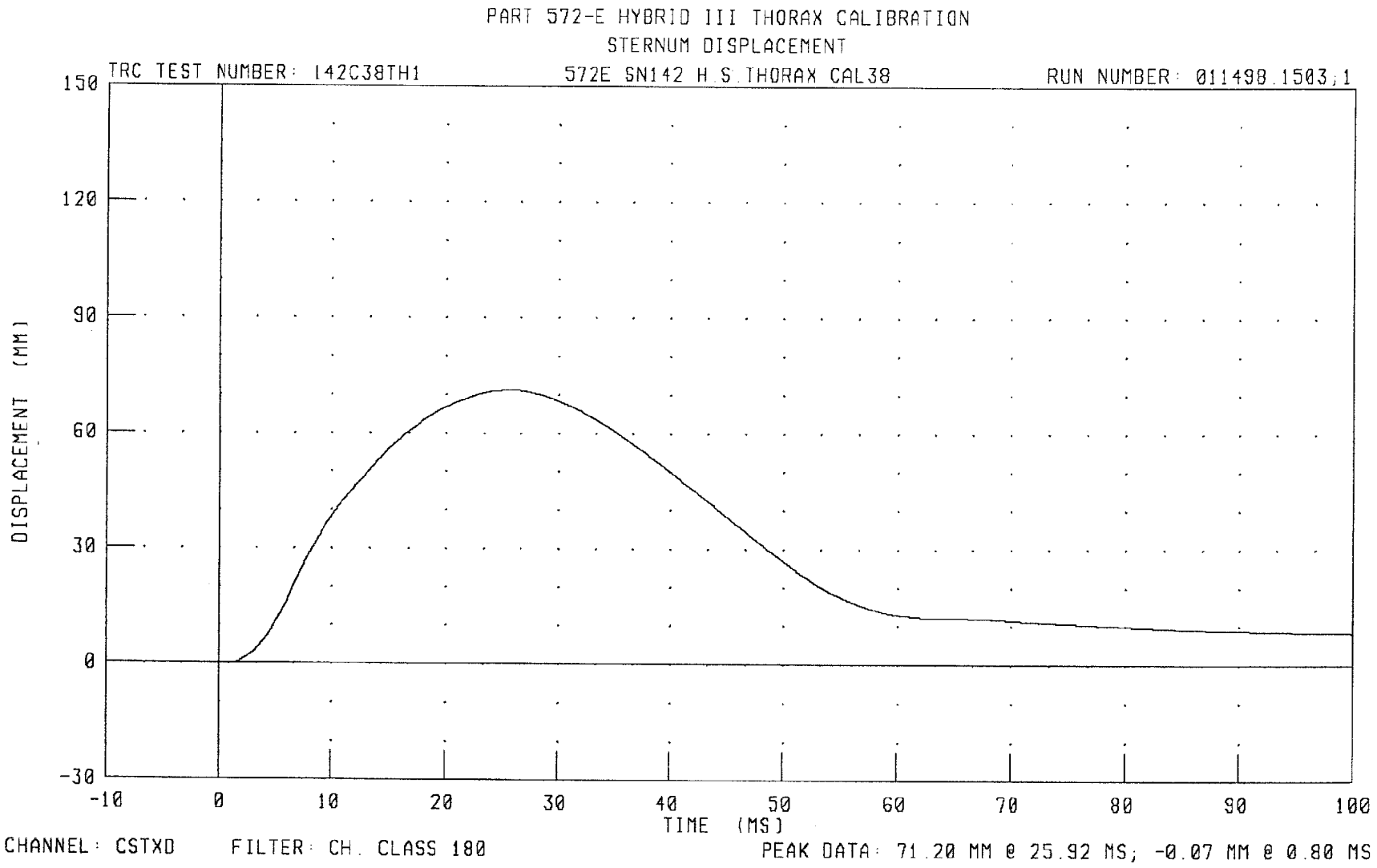
TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	20.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.68 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	71.1 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5518. N
INTERNAL HYSTERESIS	69% - 85%	71.7%

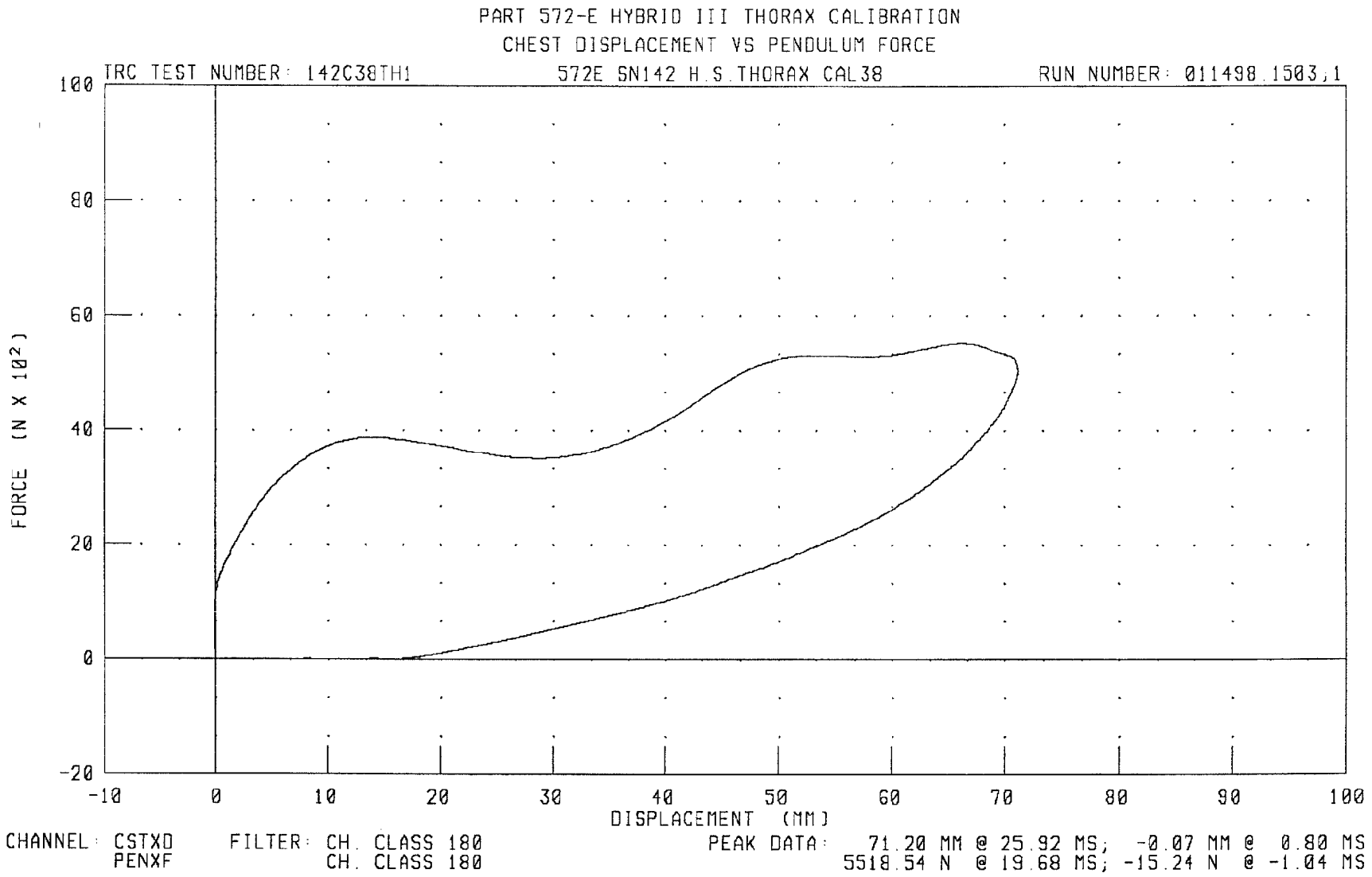
TEST MEETS SPECIFICATIONS

TECHNICIAN John Cartridge RUN NUMBER: 011498.1502;1


PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM DECELERATION
TRC TEST NUMBER: 142C38TH1
572E SN142 H.S THORAX CAL38
RUN NUMBER: 011498.1503;1
ACCELERATION (G)
50
40
30
20
10
0
-10
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: PENXG
FILTER: CH. CLASS 180
PEAK DATA: 24.09 G @ 19.68 MS; -0.07 G @ -1.04 MS


PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE
TRC TEST NUMBER: 142C38TH1
572E SN142 H.S.THORAX CAL38
RUN NUMBER: 011498.1503;1
100
80
60
40
20
0
-20
FORCE (N X 10²)
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: PENXF
FILTER: CH. CLASS 180
PEAK DATA: 5518.54 N @ 19.68 MS; -15.24 N @ -1.04 MS


PART 572-E HYBRID III THORAX CALIBRATION
STERNUM DISPLACEMENT
TRC TEST NUMBER: I42C38TH1
572E SN142 H S.THORAX CAL38
RUN NUMBER: 011498.1503;1
DISPLACEMENT (MM)
150
120
90
60
30
0
-30
-10
0
10
20
30
40
50
60
70
80
90
100
TIME (MS)
CHANNEL: CSTXD
FILTER: CH. CLASS 180
PEAK DATA: 71.20 MM @ 25.92 MS; -0.07 MM @ 0.80 MS


PART 572-E HYBRID III THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE
TRC TEST NUMBER: 142C38TH1
572E SN142 H.S.THORAX CAL38
RUN NUMBER: 011498.1503;1
FORCE (N X 10²)
100
80
60
40
20
0
-20
-10
0
10
20
30
40
50
60
70
80
90
100
DISPLACEMENT (MM)
CHANNEL: CSTXD
PENXF
FILTER: CH. CLASS 180
CH. CLASS 180
PEAK DATA: 71.20 MM @ 25.92 MS; -0.07 MM @ 0.80 MS
5518.54 N @ 19.68 MS; -15.24 N @ -1.04 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT HIP JOINT FEMUR FLEXION TEST

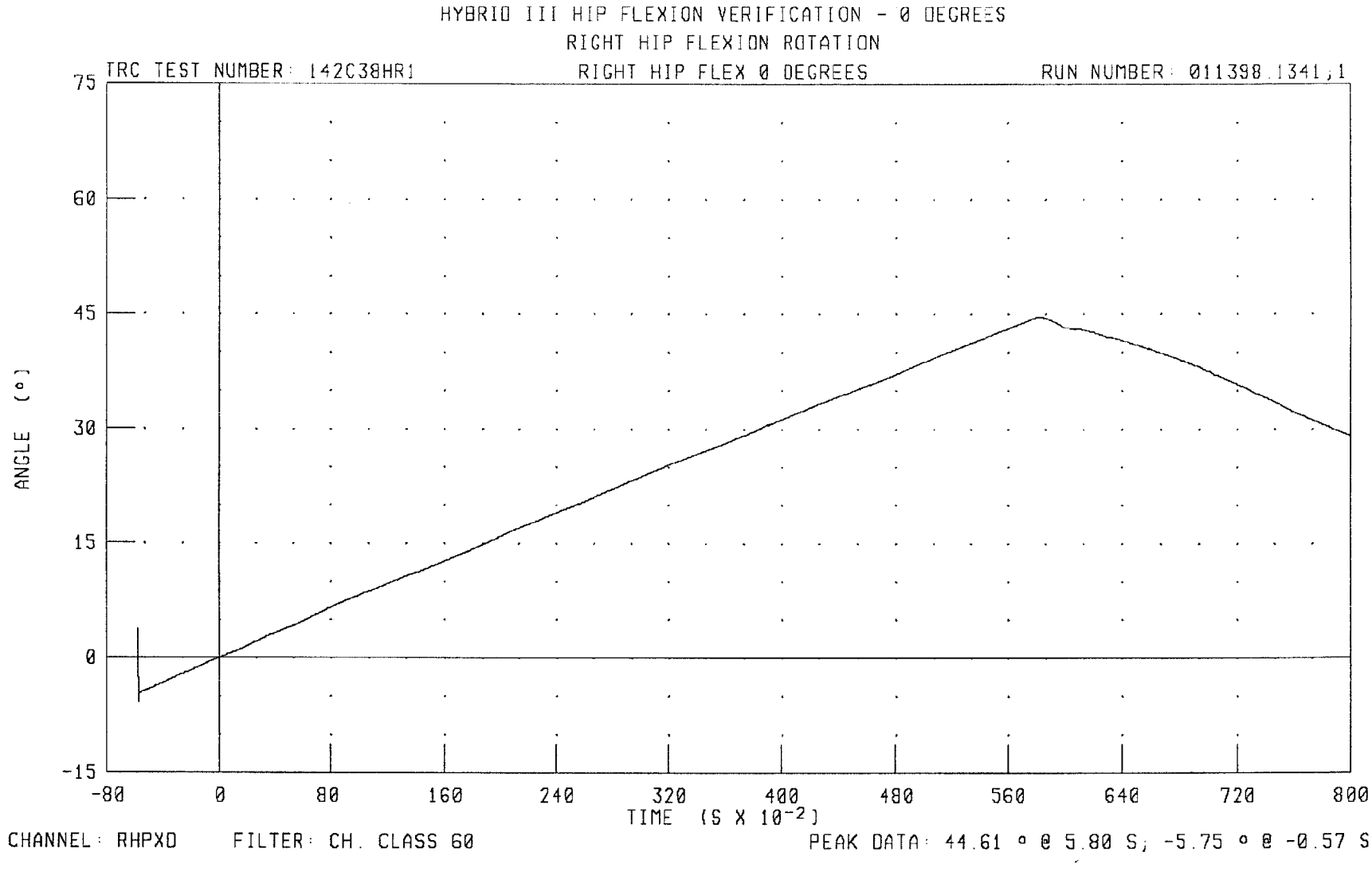
HYBRID III PART 572E 13-JAN-98

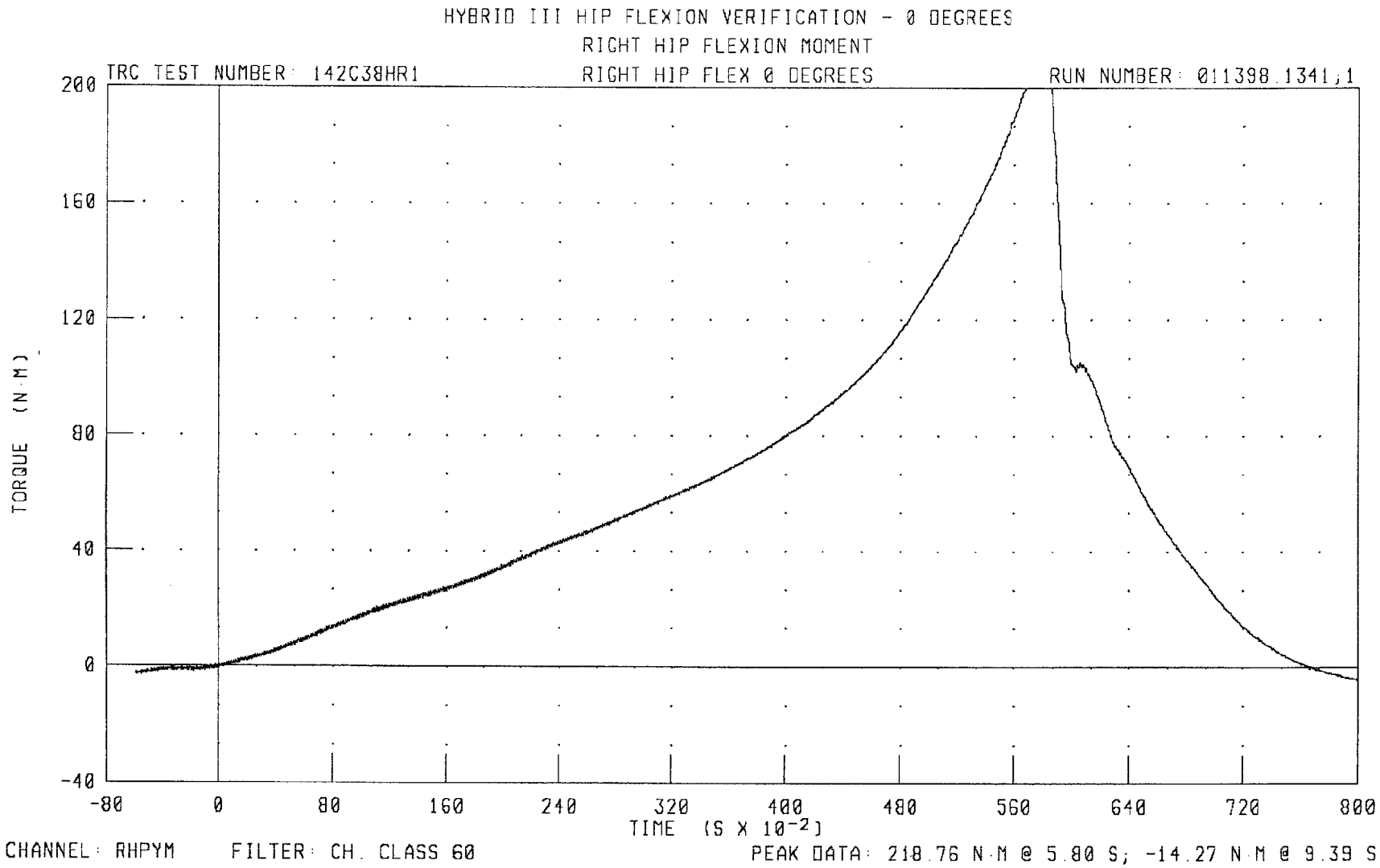
TRC INC. TEST NO: 142C38HR1 RIGHT HIP FLEX 0 DEGREES

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	35.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	75.1 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	43.8 deg.

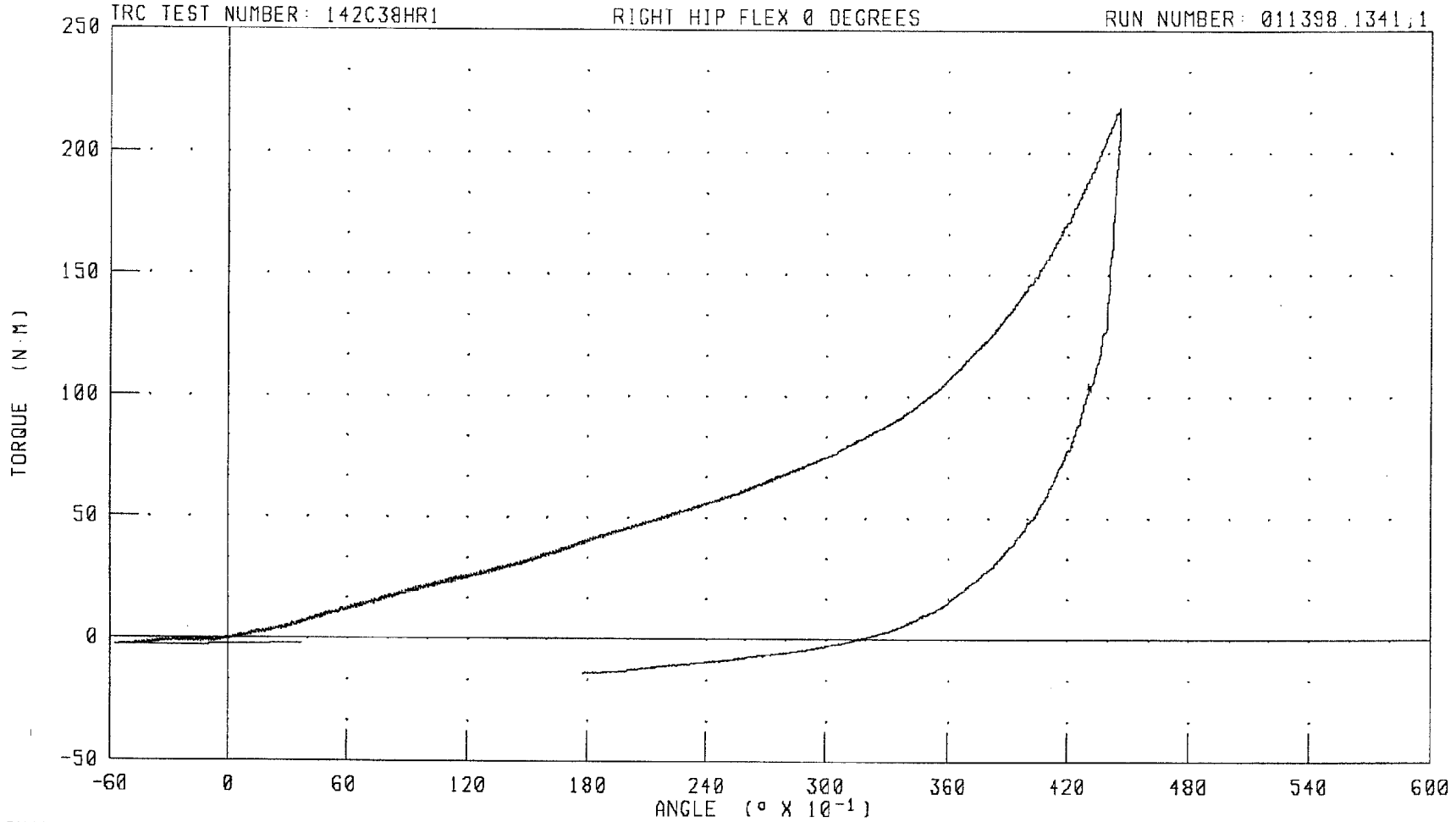
TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins RUN NUMBER: 011398.1341;1


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
RIGHT HIP FLEXION ROTATION
TRC TEST NUMBER: 142C38HR1
RIGHT HIP FLEX 0 DEGREES
RUN NUMBER: 011398.1341,1
ANGLE (°)
75
60
45
30
15
0
-15
-80
0
80
160
240
320
400
480
560
640
720
800
TIME (S X 10-2)
CHANNEL: RHPXD
FILTER: CH. CLASS 60
PEAK DATA: 44.61 ° @ 5.80 S; -5.75 ° @ -0.57 S


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
RIGHT HIP FLEXION MOMENT
RIGHT HIP FLEX 0 DEGREES
TRC TEST NUMBER: 142C38HR1
RUN NUMBER: 011398.1341;1
TORQUE (N-M)
200
160
120
80
40
0
-40
-80
0
80
160
240
320
400
480
560
640
720
800
TIME (S X 10-2)
CHANNEL: RHPYM
FILTER: CH. CLASS 60
PEAK DATA: 218.76 N-M @ 5.80 S; -14.27 N-M @ 9.39 S

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
RIGHT HIP FLEXION MOMENT VS ROTATION ANGLE



CHANNEL: RHPXD FILTER: CH. CLASS 60
RHPYM CH. CLASS 60

PEAK DATA: 44.61 ° @ 5.80 S; -5.75 ° @ -0.57 S
218.76 N-M @ 5.80 S; -14.27 N-M @ 9.39 S

TRANSPORTATION RESEARCH CENTER INC.

LEFT HIP JOINT FEMUR FLEXION TEST

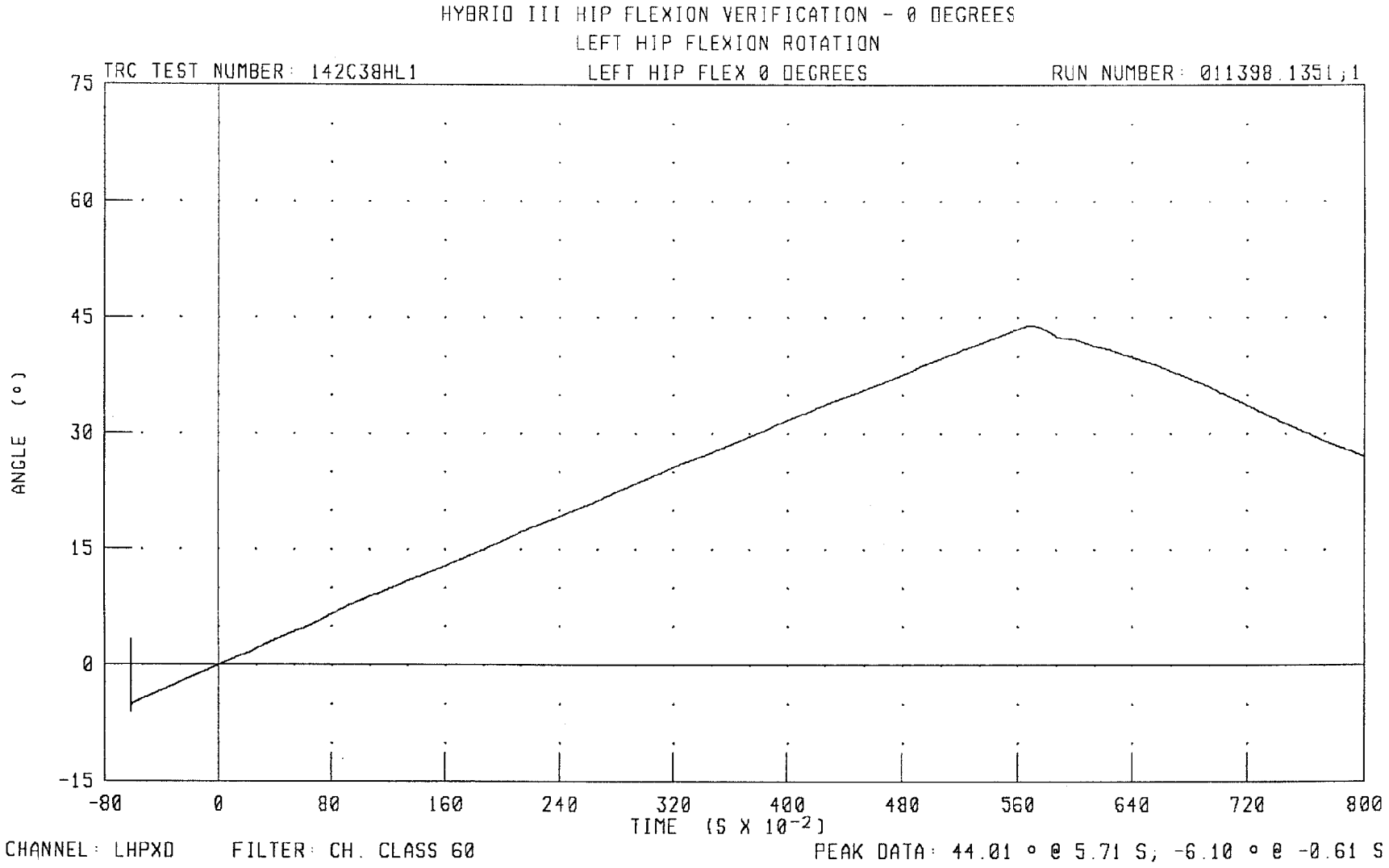
HYBRID III PART 572E 13-JAN-98

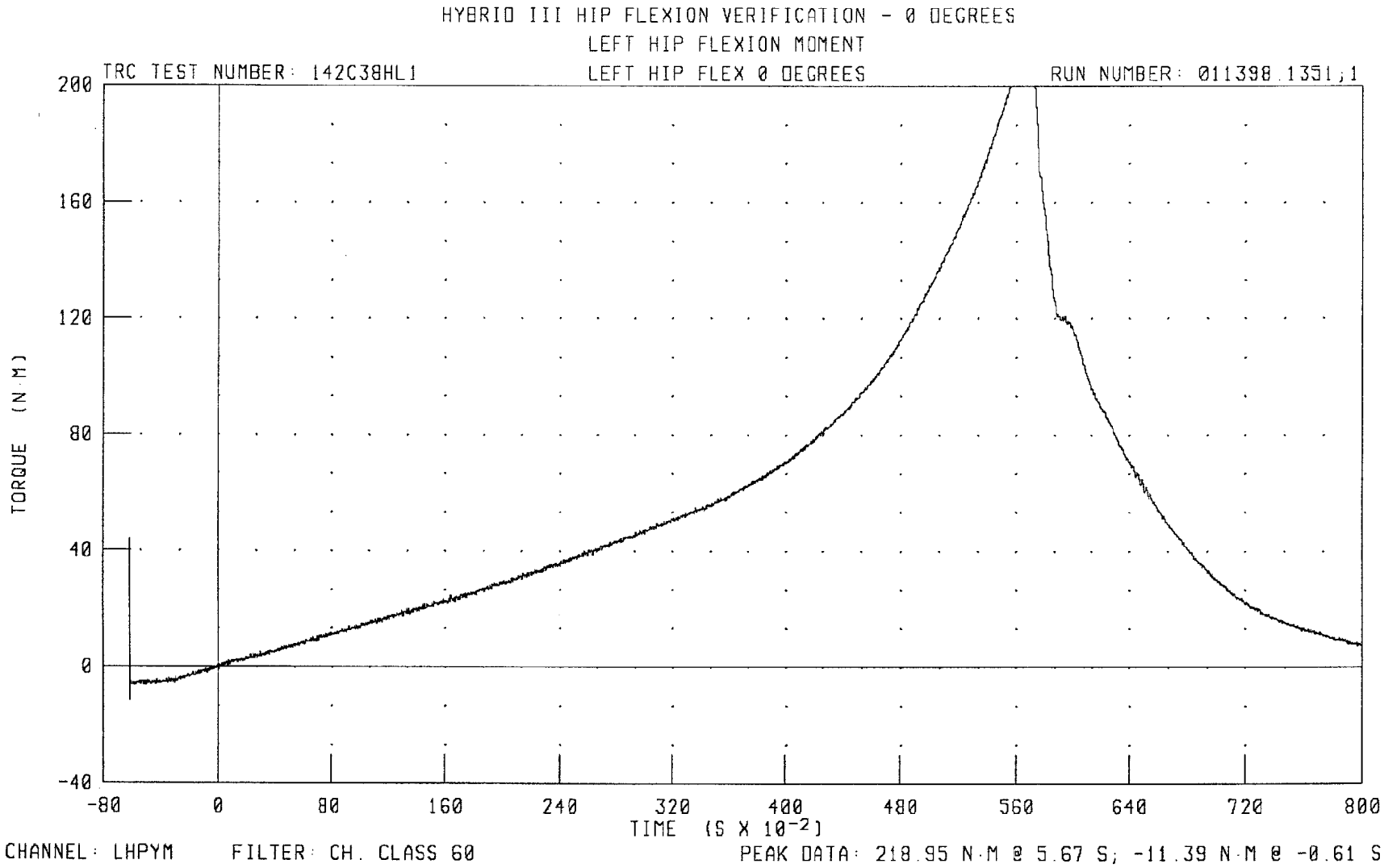
TRC INC. TEST NO: 142C38HL1 LEFT HIP FLEX 0 DEGREES

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	35.0 %
ROTATION RATE	5 - 10 deg/sec	YES
TORQUE @ 30 deg ROTATION	<= 94.9 Nm	64.4 Nm
ROTATION @ 203.4 Nm TORQUE	40 - 50 deg.	43.3 deg.

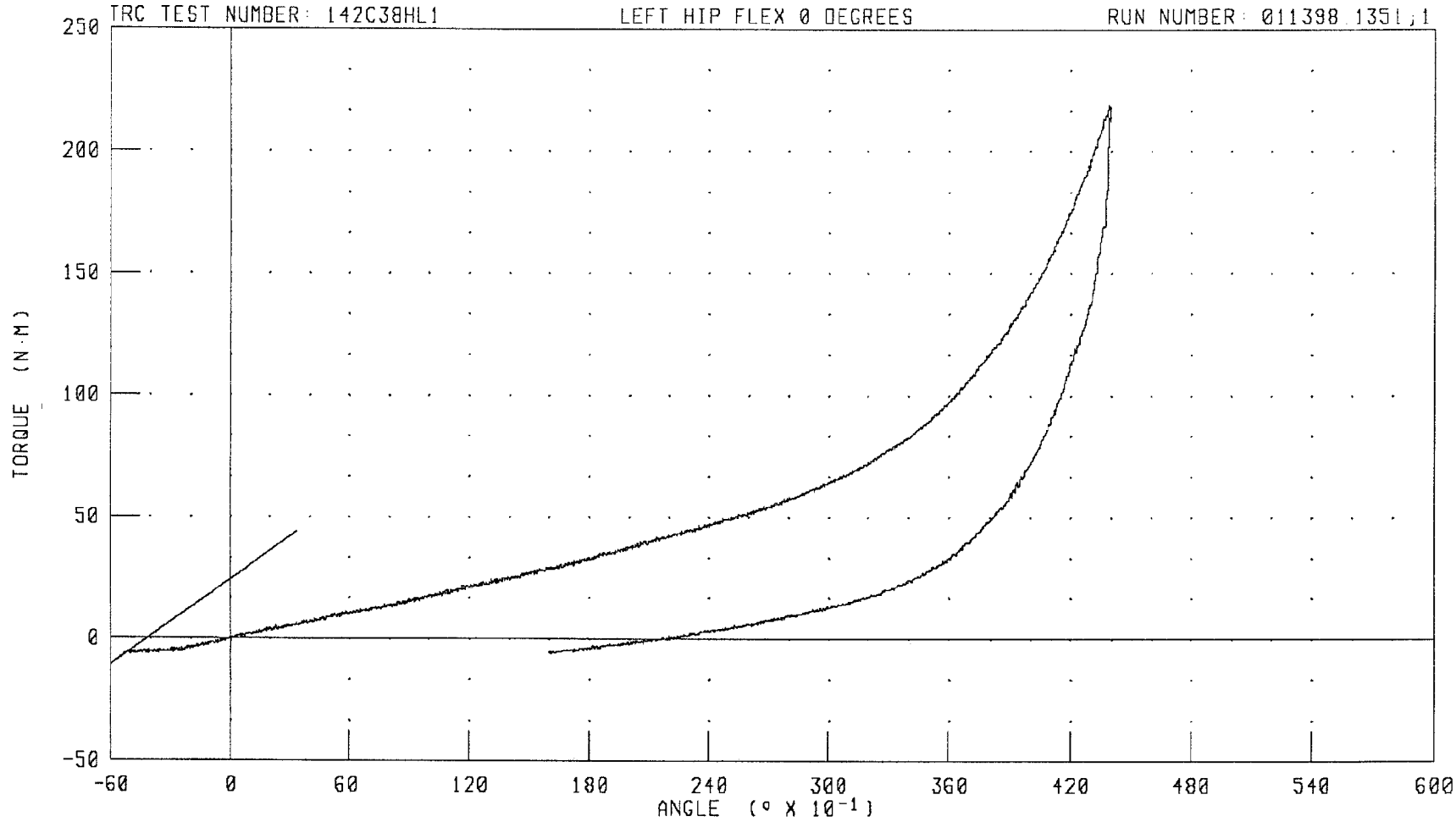
TEST MEETS SPECIFICATIONS

TECHNICIAN Karin Watkins RUN NUMBER: 011398.1350;1


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
LEFT HIP FLEXION ROTATION
TRC TEST NUMBER: 142C38HL1
LEFT HIP FLEX 0 DEGREES
RUN NUMBER: 011398.1351;1
ANGLE (°)
75
60
45
30
15
0
-15
-80
0
80
160
240
320
400
480
560
640
720
800
TIME (S X 10-2)
CHANNEL: LHPXD
FILTER: CH. CLASS 60
PEAK DATA: 44.01 ° @ 5.71 S; -6.10 ° @ -0.61 S


HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
LEFT HIP FLEXION MOMENT
TRC TEST NUMBER: 142C38HL1
LEFT HIP FLEX 0 DEGREES
RUN NUMBER: 011398.1351;1
TORQUE (N.M)
200
160
120
80
40
0
-40
-80
0
80
160
240
320
400
480
560
640
720
800
TIME (S X 10-2)
CHANNEL: LHPYM
FILTER: CH. CLASS 60
PEAK DATA: 218.95 N-M @ 5.67 S; -11.39 N-M @ -0.61 S

HYBRID III HIP FLEXION VERIFICATION - 0 DEGREES
LEFT HIP FLEXION MOMENT VS ROTATION ANGLE



CHANNEL: LHPXD FILTER: CH. CLASS 60
LHPYM CH. CLASS 60

PEAK DATA: 44.01 ° @ 5.71 S; -6.10 ° @ -0.61 S
218.95 N·M @ 5.67 S; -11.39 N·M @ -0.61 S

TRANSPORTATION RESEARCH CENTER INC.

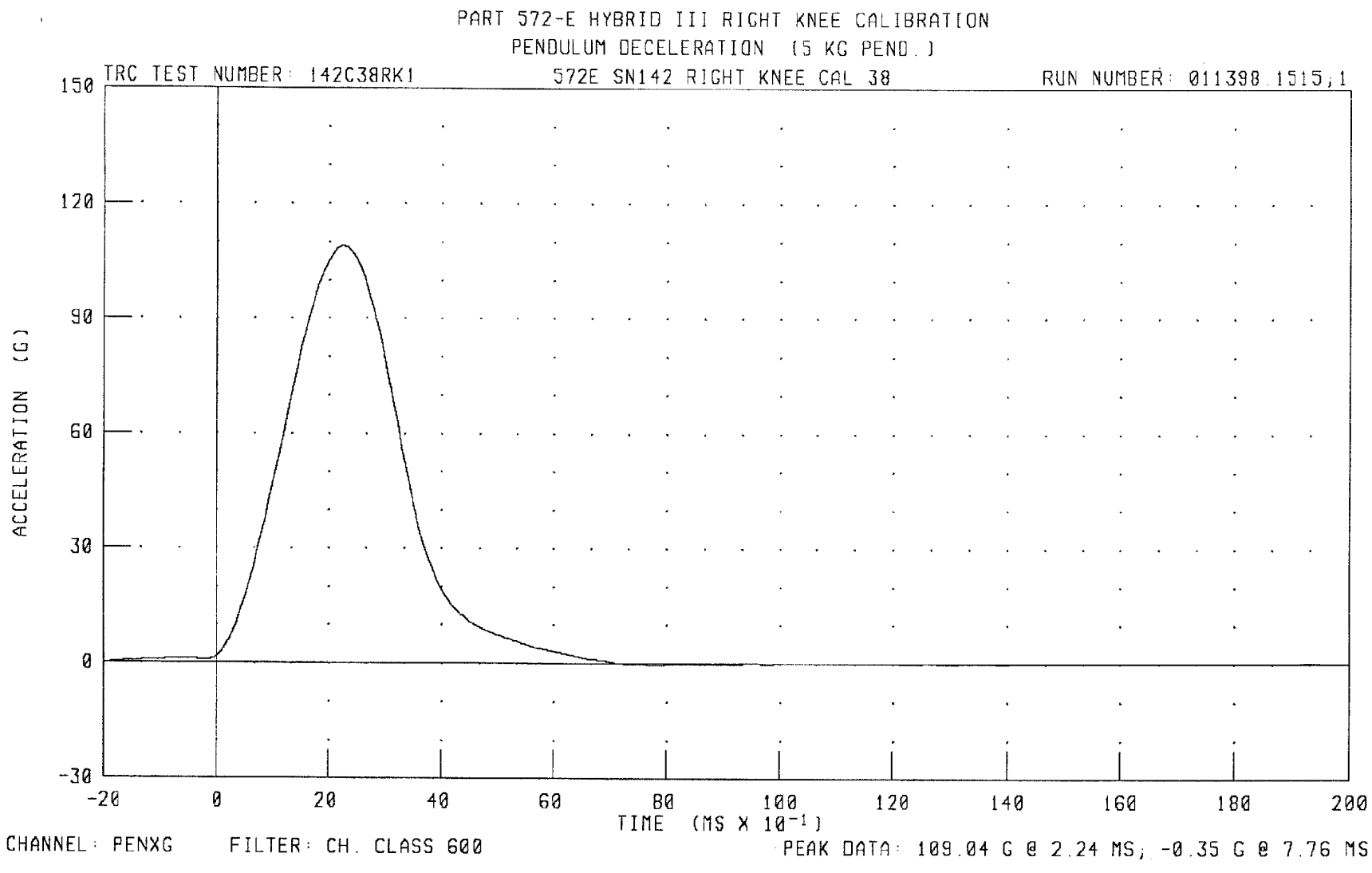
RIGHT KNEE IMPACT TEST

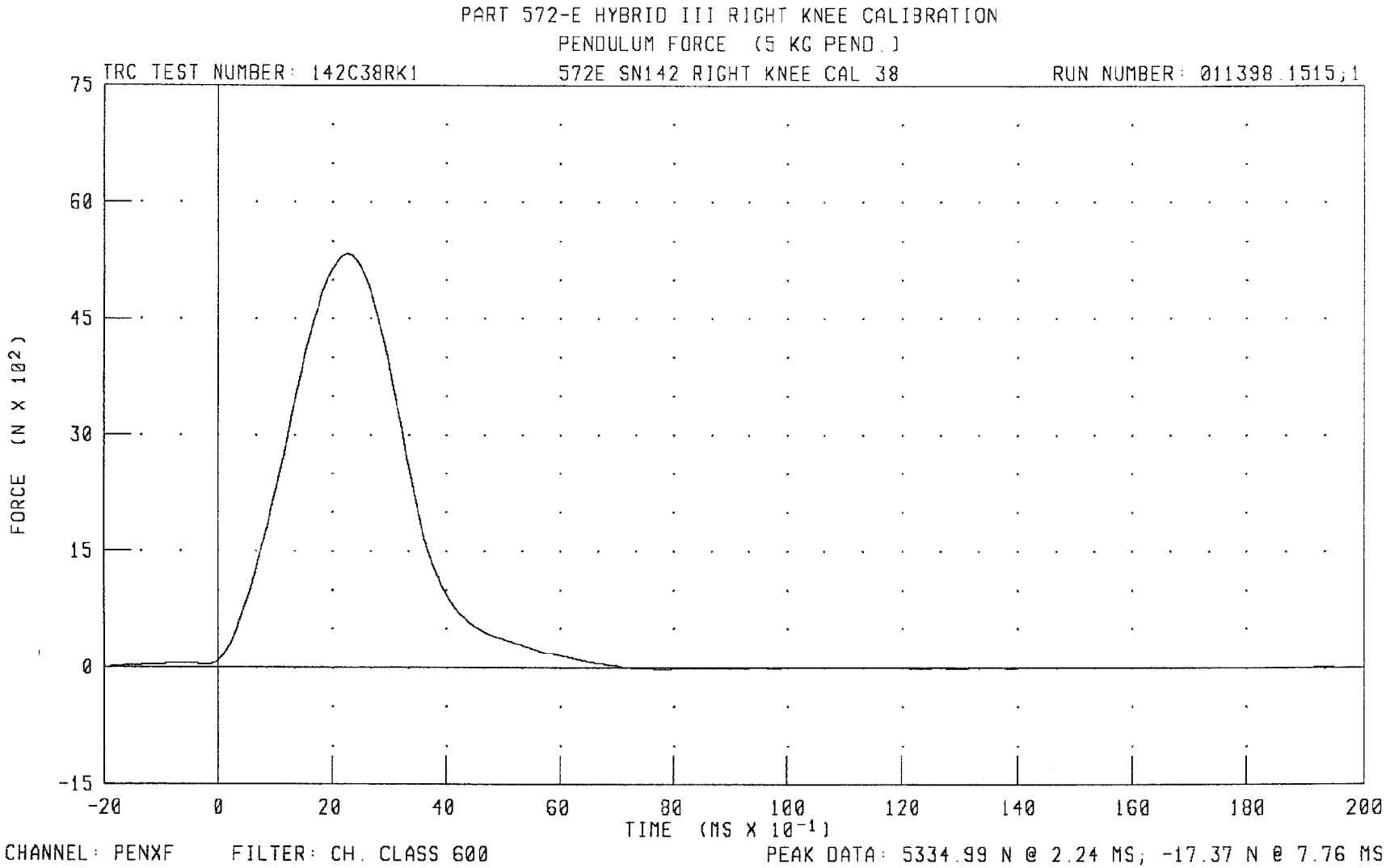
TRC INC. TEST NO: 142C38RK1 572E SN142 RIGHT KNEE CAL 38

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	35.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.07 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5334.9 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins RUN NUMBER: 011398.1515;1


PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)
TRC TEST NUMBER: 142C38RK1
572E SN142 RIGHT KNEE CAL 38
RUN NUMBER: 011398.1515;1
ACCELERATION (G)
150
120
90
60
30
0
-30
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXG
FILTER: CH. CLASS 600
PEAK DATA: 109.04 G @ 2.24 MS; -0.35 G @ 7.76 MS


PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)
TRC TEST NUMBER: 142C38RK1
572E SN142 RIGHT KNEE CAL 38
RUN NUMBER: 011398.1515;1
75
60
45
30
15
0
-15
FORCE (N X 10²)
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXF
FILTER: CH. CLASS 600
PEAK DATA: 5334.99 N @ 2.24 MS; -17.37 N @ 7.76 MS

TRANSPORTATION RESEARCH CENTER INC.

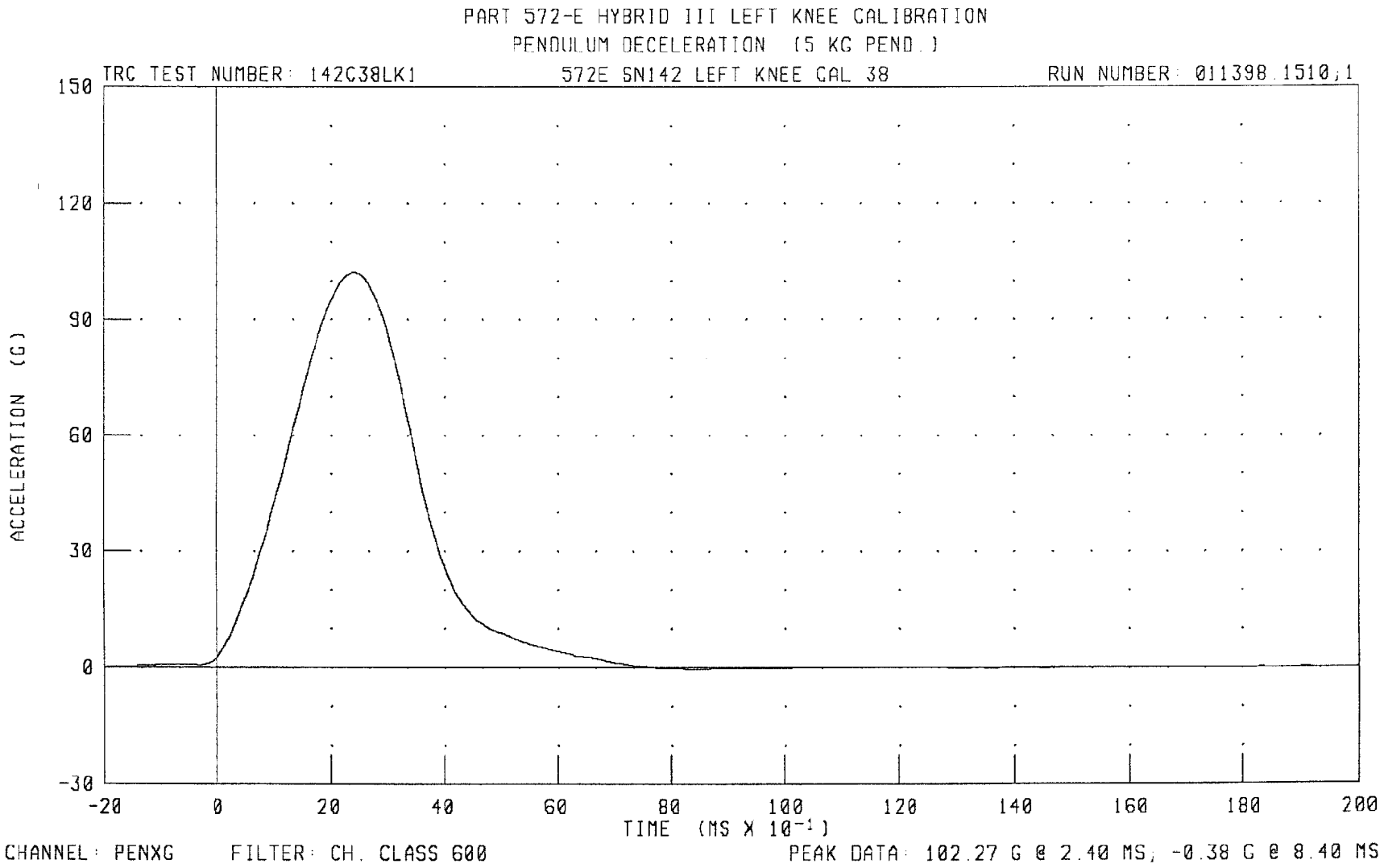
LEFT KNEE IMPACT TEST

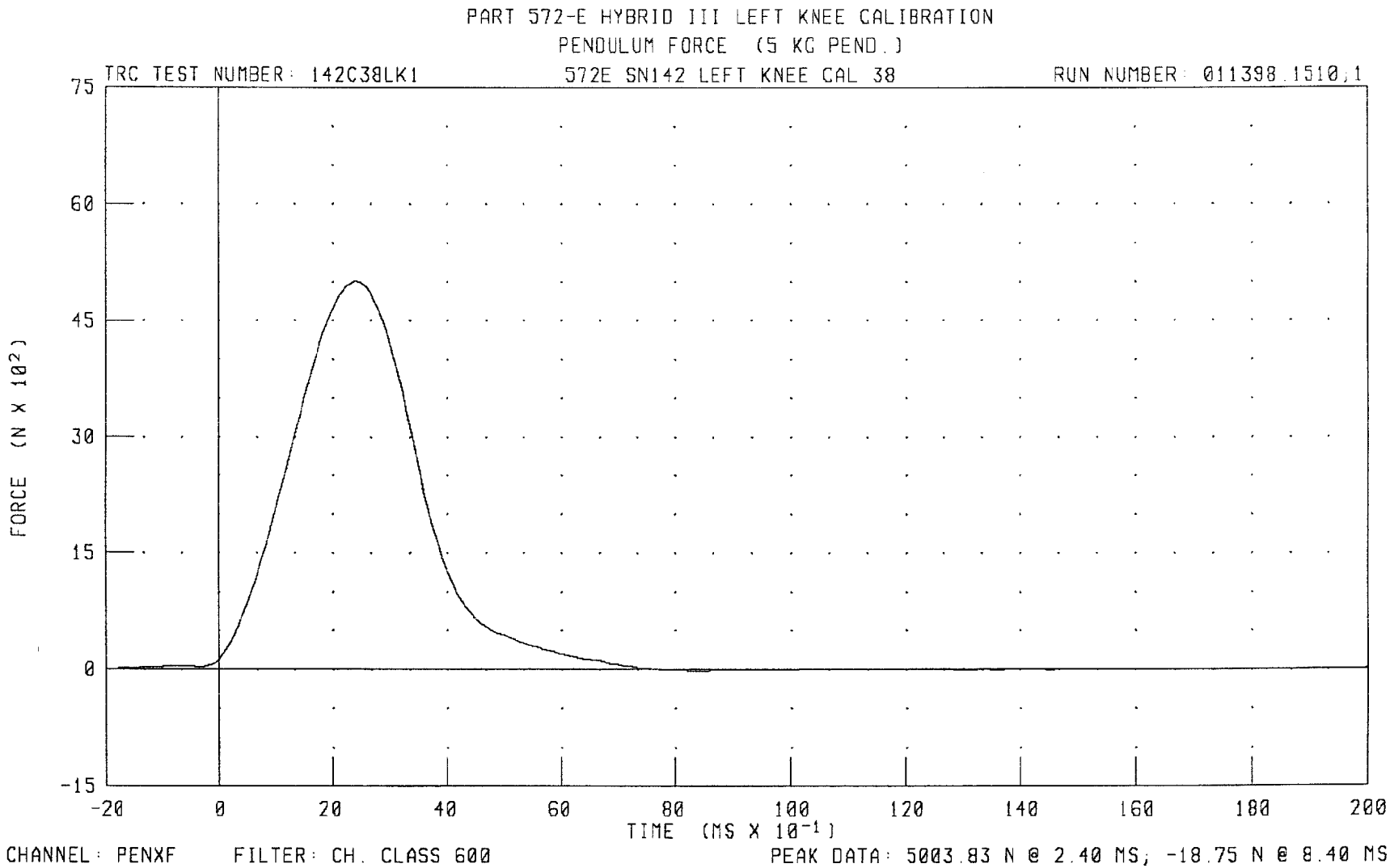
TRC INC. TEST NO: 142C38LK1 572E SN142 LEFT KNEE CAL 38

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	35.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.07 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4715 - 5782 N	5003.8 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins RUN NUMBER: 011398.1510;1


PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)
TRC TEST NUMBER: 142C38LK1
572E SN142 LEFT KNEE CAL 38
RUN NUMBER: 011398.1510;1
ACCELERATION (G)
150
120
90
60
30
0
-30
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXG
FILTER: CH. CLASS 600
PEAK DATA: 102.27 G @ 2.40 MS; -0.38 G @ 8.40 MS


PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)
TRC TEST NUMBER: 142C38LK1
572E SN142 LEFT KNEE CAL 38
RUN NUMBER: 011398.1510;1
FORCE (N X 10²)
75
60
45
30
15
0
-15
-20
0
20
40
60
80
100
120
140
160
180
200
TIME (MS X 10⁻¹)
CHANNEL: PENXF
FILTER: CH. CLASS 600
PEAK DATA: 5003.83 N @ 2.40 MS; -18.75 N @ 8.40 MS

Appendix D

Miscellaneous Test Information

Dummy Instrument Calibrations
Driver Dummy #192

	Serial Number	Model Number	Manufacturer	Calibration Date Last	Due
Head X-axis accelerometer	AAL54	7264	Endevco	01/05/98	07/05/98
Head X-axis accelerometer-redundant	AJ8J7	7264	Endevco	01/05/98	07/05/98
Head Y-axis accelerometer	AAMP5	7264	Endevco	01/05/98	07/05/98
Head Y-axis accelerometer-redundant	J15391	7264	Endevco	01/05/98	07/05/98
Head Z-axis accelerometer	ACB35	7264	Endevco	01/05/98	07/05/98
Head Z-axis accelerometer-redundant	AC8W6	7264	Endevco	01/05/98	07/05/98
Chest X-axis accelerometer	ACCD0	7264	Endevco	01/05/98	07/05/98
Chest X-axis accelerometer-redundant	A79GJ	7264	Endevco	01/05/98	07/05/98
Chest Y-axis accelerometer	ACC82	7264	Endevco	01/05/98	07/05/98
Chest Y-axis accelerometer-redundant	AGR69	7264	Endevco	01/05/98	07/05/98
Chest Z-axis accelerometer	ACC59	7264	Endevco	01/05/98	07/05/98
Chest Z-axis accelerometer-redundant	AAL82	7264	Endevco	01/05/98	07/05/98
Left femur force load cell	263	2121	Denton	01/05/98	07/05/98
Right femur force load cell	264	2121	Denton	01/05/98	07/05/98
Neck X-axis force load cell	445	1716	Denton	10/01/97	04/01/98
Neck Y-axis force load cell	445	1716	Denton	10/01/97	04/01/98
Neck Z-axis force load cell	445	1716	Denton	10/01/97	04/01/98
Neck Moment about X-axis load cell	445	1716	Denton	10/01/97	04/01/98
Neck Moment about Y-axis load cell	445	1716	Denton	10/01/97	04/01/98
Neck Moment about Z-axis load cell	445	1716	Denton	10/01/97	04/01/98
Pelvis X-axis accelerometer	AJ694	7264	Endevco	01/05/98	07/05/98
Pelvis Y-axis accelerometer	J15376	7264	Endevco	01/05/98	07/05/98
Pelvis Z-axis accelerometer	AJ788	7264	Endevco	01/05/98	07/05/98
Chest deflection potentiometer	87313-96	14CB1-2981	Vernitech	01/05/98	07/05/98
Lap belt force load cell	615	3419	Lebow	08/01/97	02/01/98
Shoulder belt force load cell	616	3419	Lebow	07/15/97	01/15/98

Dummy Instrument Calibrations, Cont'd.
Driver Dummy #192

	Serial Number	Model Number	Manufacturer	Calibration Date Last	Due
Left upper tibia moment about X-axis load cell	039-MX	1583	Denton	09/26/97	03/26/98
Left upper tibia moment about Y-axis load cell	039-MY	1583	Denton	09/26/97	03/26/98
Right upper tibia moment about X-axis load cell	036-MX	1583	Denton	09/26/97	03/26/98
Right upper tibia moment about Y-axis load cell	036-MY	1583	Denton	09/26/97	03/26/98
Left Lower tibia X-axis force load cell	033-FY	1584	Denton	09/26/97	03/26/98
Left Lower tibia Z-axis force load cell	033-FZ	1584	Denton	09/26/97	03/26/98
Left Lower tibia moment about Y-axis load cell	033-MX	1584	Denton	09/26/97	03/26/98
Right Lower tibia X-axis force load cell	040-FY	1584	Denton	09/26/97	03/26/98
Right Lower tibia Z-axis force load cell	040-FZ	1584	Denton	09/26/97	03/26/98
Right Lower tibia moment about Y-axis load cell	040-MY	1584	Denton	09/26/97	03/26/98
Left foot X-axis accelerometer	10073	7264	Endevco	01/05/98	07/05/98
Left foot heel Z-axis accelerometer	10263	7264	Endevco	01/05/98	07/05/98
Left foot toe Z-axis accelerometer	10101	7264	Endevco	01/05/98	07/05/98
Right foot X-axis accelerometer	APYT4	7264	Endevco	01/05/98	07/05/98
Right foot heel Z-axis accelerometer	AP0R8	7264	Endevco	01/05/98	07/05/98
Right foot toe Z-axis accelerometer	10076	7264	Endevco	01/05/98	07/05/98

Dummy Instrument Calibrations, Cont'd.
Driver Dummy #192

	Serial Number	Model Number	Manufacturer	Calibration Date Last	Due
Left knee left sensor	036	1587	Denton	09/26/97	03/26/98
Left knee right sensor	036	1587	Denton	09/26/97	03/26/98
Right knee left sensor	043	1587	Denton	09/26/97	03/26/98
Right knee right sensor	043	1587	Denton	09/26/97	03/26/98

Dummy Instrument Calibrations, Cont'd.
Passenger Dummy #142

	Serial Number	Model Number	Manufacturer	Calibration Date Last	Due
Head X-axis accelerometer	ACC63	7264	Endevco	01/05/98	07/05/98
Head X-axis accelerometer-redundant	AC8L5	7264	Endevco	01/05/98	07/05/98
Head Y-axis accelerometer	ACC02	7264	Endevco	01/05/98	07/05/98
Head Y-axis accelerometer-redundant	ACCR7	7264	Endevco	01/05/98	07/05/98
Head Z-axis accelerometer	ACCF3	7264	Endevco	01/05/98	07/05/98
Head Z-axis accelerometer-redundant	A68JJ	7264	Endevco	01/05/98	07/05/98
Chest X-axis accelerometer	ACC14	7264	Endevco	01/05/98	07/05/98
Chest X-axis accelerometer-redundant	A65JJ	7264	Endevco	01/05/98	07/05/98
Chest Y-axis accelerometer	ACCR0	7264	Endevco	01/05/98	07/05/98
Chest Y-axis accelerometer-redundant	FH14J	7264	Endevco	01/05/98	07/05/98
Chest Z-axis accelerometer	ACCT5	7264	Endevco	01/05/98	07/05/98
Chest Z-axis accelerometer-redundant	AC745	7264	Endevco	01/05/98	07/05/98
Left femur force load cell	257	2121	Denton	01/05/98	07/05/98
Right femur force load cell	258	2121	Denton	01/05/98	07/05/98
Neck X-axis force load cell[1]	441	1716	Denton	10/01/97	04/01/98
Neck Y-axis force load cell[1]	441	1716	Denton	10/01/97	04/01/98
Neck Z-axis force load cell[1]	441	1716	Denton	10/01/97	04/01/98
Neck Moment about X-axis load cell[1]	441	1716	Denton	10/01/97	04/01/98
Neck Moment about Y-axis load cell[1]	441	1716	Denton	10/01/97	04/01/98
Neck Moment about Z-axis load cell[1]	441	1716	Denton	10/01/97	04/01/98
Pelvis X-axis accelerometer	CY63H	7264	Endevco	01/05/98	07/05/98
Pelvis Y-axis accelerometer	AMWA9	7264	Endevco	01/05/98	07/05/98
Pelvis Z-axis accelerometer	ANA55	7264	Endevco	01/05/98	07/05/98
Chest deflection potentiometer	142	14CB1-2981	Vernitech	01/05/98	07/05/98
Lap belt force load cell	674	3419	Lebow	07/15/97	01/15/98
Shoulder belt force load cell	234	3419	Lebow	01/12/98	07/02/98

Dummy Instrument Calibrations, Cont'd.
Passenger Dummy #142

	Serial Number	Model Number	Manufacturer	Calibration Date Last	Due
Left upper tibia moment about X-axis load cell	023-MX	1583	Denton	09/26/97	03/26/98
Left upper tibia moment about Y-axis load cell	023-MY	1583	Denton	09/26/97	03/26/98
Right upper tibia moment about X-axis load cell	040-MX	1583	Denton	09/26/97	03/26/98
Right upper tibia moment about Y-axis load cell	040-MY	1583	Denton	09/26/97	03/26/98
Left Lower tibia X-axis force load cell	019-FY	1584	Denton	09/26/97	03/26/98
Left Lower tibia Z-axis force load cell	019-FZ	1584	Denton	09/26/97	03/26/98
Left Lower tibia moment about Y-axis load cell	019-MX	1584	Denton	09/26/97	03/26/98
Right Lower tibia X-axis force load cell	034-FY	1584	Denton	09/26/97	03/26/98
Right Lower tibia Z-axis force load cell	034-FZ	1584	Denton	09/26/97	03/26/98
Right Lower tibia moment about Y-axis load cell	034-MX	1584	Denton	09/26/97	03/26/98
Left foot X-axis accelerometer	APA01	7264	Endevco	01/05/98	07/05/98
Left foot heel Z-axis accelerometer	J14136	7264	Endevco	01/05/98	07/05/98
Left foot toe Z-axis accelerometer	DW58JC	7264	Endevco	01/05/98	07/05/98
Right foot X-axis accelerometer	10088	7264	Endevco	01/05/98	07/05/98
Right foot heel Z-axis accelerometer	10089	7264	Endevco	01/05/98	07/05/98
Right foot toe Z-axis accelerometer	10087	7264	Endevco	01/05/98	07/05/98

Dummy Instrument Calibrations, Cont'd.
Passenger Dummy #142

	Serial Number	Model Number	Manufacturer	Calibration Date Last	Due
Left knee left sensor	045	1587	Denton	09/26/97	03/26/98
Left knee right sensor	045	1587	Denton	09/26/97	03/26/98
Right knee left sensor	037	1587	Denton	09/26/97	03/26/98
Right knee right sensor	037	1587	Denton	09/26/97	03/26/98

Vehicle and Calibration Laboratory Instrument Calibrations

Vehicle Accelerometers

	Serial Number	Model Number	Manufacturer	Calibration Date Last	Due
Left rear seat crossmember X-axis	J22078	7264	Endevco	01/09/98	07/09/98
Left rear seat crossmember X-axis redundant	J19954	7264	Endevco	08/15/97	02/15/97
Right rear seat crossmember X-axis	J20566	7264	Endevco	01/08/98	07/08/98
Right rear seat crossmember X-axis redundant	J20265	7264	Endevco	08/15/97	02/15/97
Engine top X-axis	J20036	7264	Endevco	10/13/97	04/13/97
Engine bottom X-axis	J19697	7264	Endevco	01/02/98	07/02/98
Right brake caliper X-axis	A29DJ	7264	Endevco	10/15/97	04/15/98
Left brake caliper X-axis	J18844	7264	Endevco	11/13/97	05/13/98
Instrument panel center X-axis	J15389	7264	Endevco	08/20/97	02/20/98

Calibration Laboratory Instruments

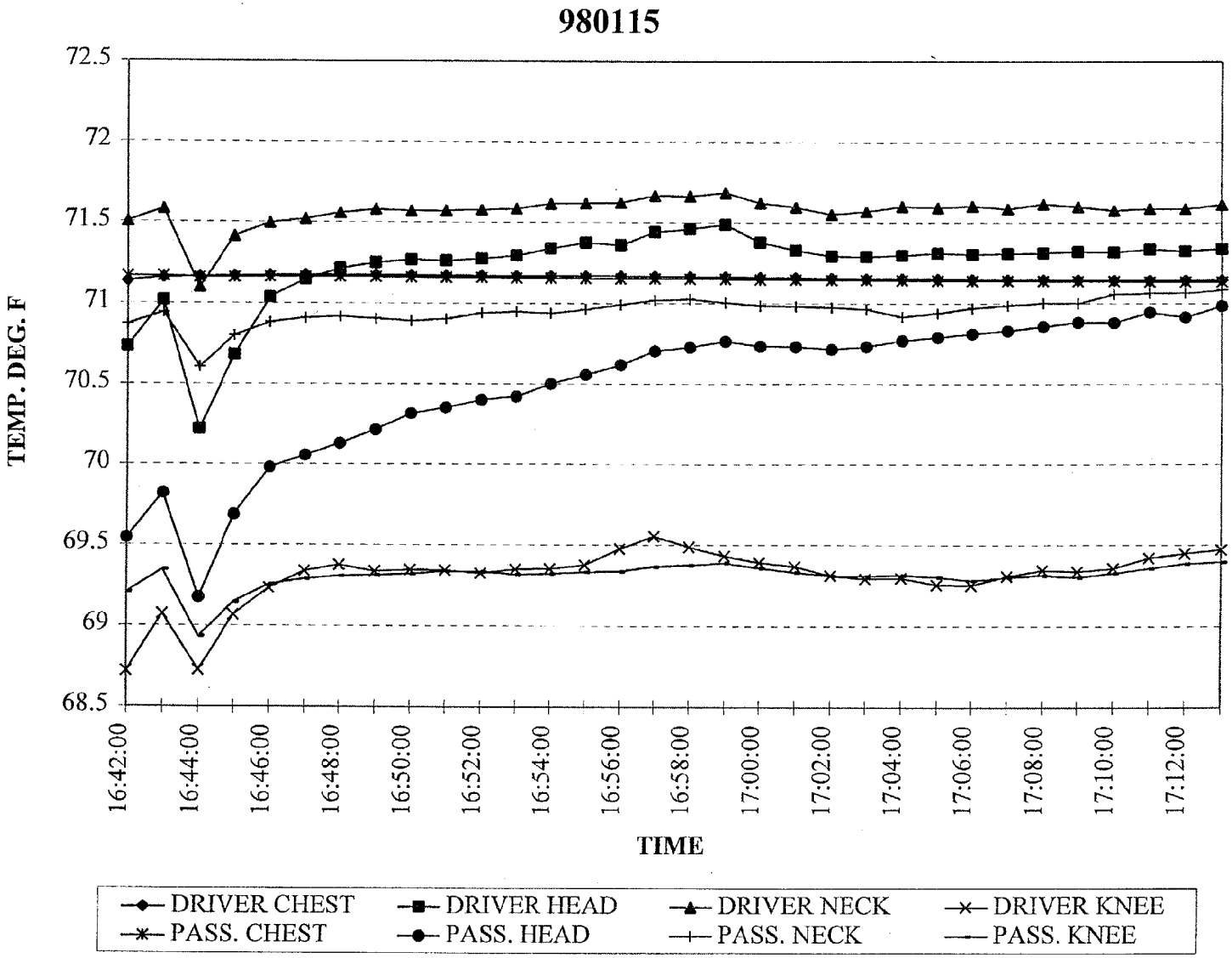
	Serial Number	Model Number	Manufacturer	Calibration Date Last	Due
Neck bending pendulum accelerometer	CB27	7232	Endevco	09/18/97	03/18/98
Neck bending rotary potentiometer	6	6657S	Bournes	08/04/97	02/04/98
Neck bending rotary potentiometer	7	6657S	Bournes	08/04/97	02/04/98
Thorax/Hybrid III femur pendulum accelerometer	CC64	7232	Endevco	09/18/97	03/18/98
Hybrid III femur pendulum accelerometer	CB35	7232	Endevco	09/18/97	03/18/98

Sign Convention
NHTSA Data Tape Reference Guide

Accelerometers:	+X: Forward	
	+Y: Leftward	
	+Z: Upward	
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)
Load cells:	+Femur force:	Tension
	+Seat belt force:	Tension
	+Barrier force:	Tension
Neck load cells:	+X force:	Head pushed forward
	+Y force:	Head pushed leftward
	+Z force:	Head pulled upward (tension on neck)
	+X moment:	Right ear rotating toward right shoulder
	+Y moment:	Chin rotating toward chest
	+Z moment:	Chin rotating toward left shoulder
Tibia load cells:	+X force:	Tension
	+Y force:	Tension
	+Z force:	Tension
	+X moment:	Bottom of tibia moving leftward
	+Y moment:	Bottom of tibia moving rearward

Frequency Response Classes
SAE J211 OCT88

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


980115
72.5
72
71.5
71
70.5
70
69.5
69
68.5
TEMP. DEG. F
16:42:00
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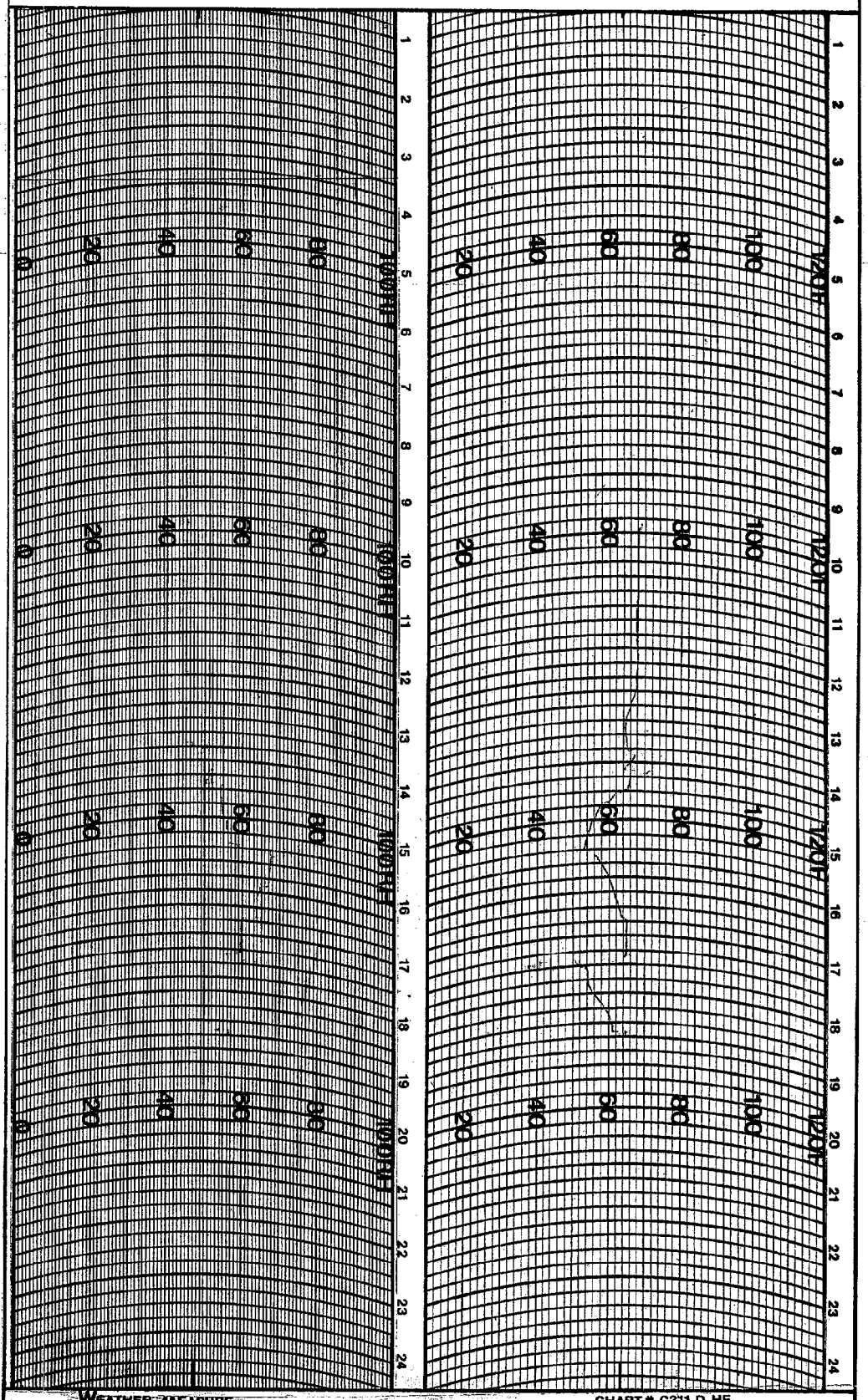
16:46:00
16:48:00
16:50:00
16:52:00
16:54:00
16:56:00
16:58:00
17:00:00
17:02:00
17:04:00
17:06:00
17:08:00
17:10:00
17:12:00
TIME
DRIVER CHEST
DRIVER HEAD
DRIVER NECK
DRIVER KNEE
PASS. CHEST
PASS. HEAD
PASS. NECK
PASS. KNEE



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

HYGROTHERMOGRAPH
1 DAY

CHART # C311 D HF
PART # 699123

STATION _____ DATE ON _____ DATE OFF _____

Appendix E

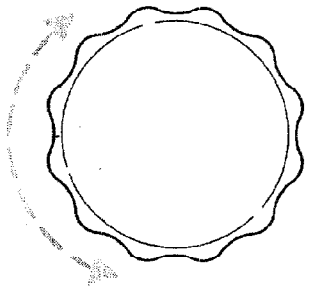
Restraint System Instructions from Owner's Manual

SEATING

Using the manual lumbar support

Turn the lumbar support control counterclockwise to increase firmness.

Turn the lumbar support control clockwise to increase softness.



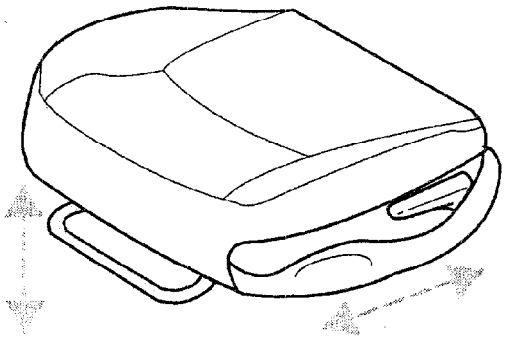
Front seats

Never adjust the driver's seat or seatback when the vehicle is moving.

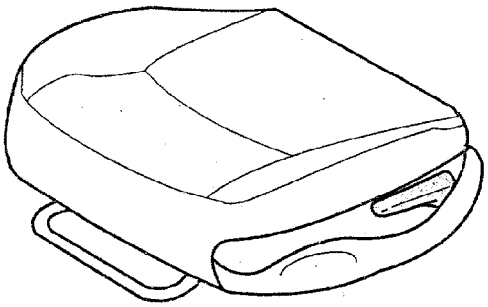
Do not pile cargo higher than the seatbacks to avoid injuring people in a collision or sudden stop.

Always drive and ride with your seatback upright and the lap belt snug and low across the hips.

Lift handle to move seat forward or backward.



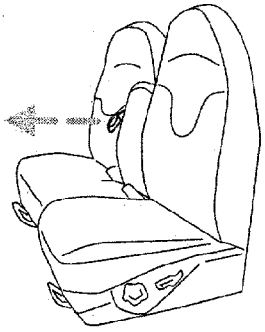
Pull lever up to adjust seatback.



Using the armrest (if equipped)

Pull the strap to move the armrest down.

To move the armrest up, lift it until it latches in the upright position.



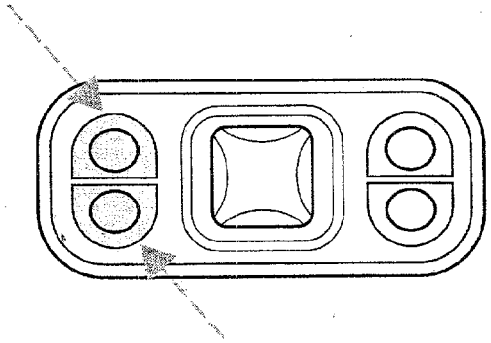
Adjusting the front power seat (if equipped)

⚠ Never adjust the driver's seat or seatback when the vehicle is moving.

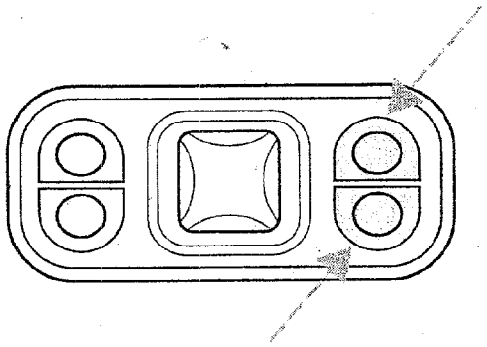
⚠ Do not pile cargo higher than the seatbacks to avoid injuring people in a collision or sudden stop.

⚠ Always drive and ride with your seatback upright and the lap belt snug and low across the hips.

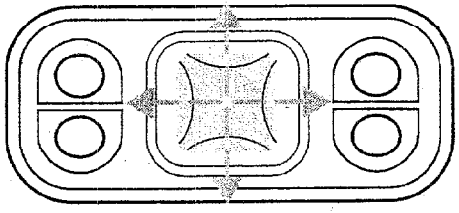
Press to raise or lower the front portion of the seat cushion.



Press to raise or lower the rear portion of the seat cushion.



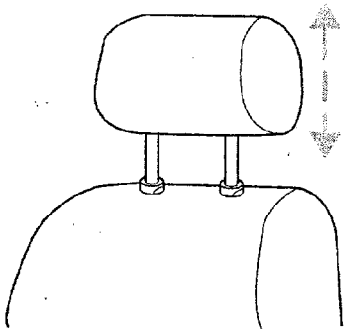
Press the control to move the seat forward, backward, up or down.



REAR SEATS

Head restraints

Push or pull the head rests to the desired position.



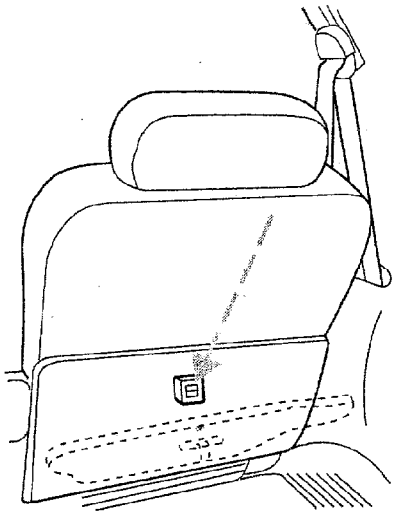
Rear folding bench seat (if equipped)

Folding down the rear seats

Ensure that no objects such as books, purses or briefcases are on the floor in front of the second row seats before folding them down.

Move front passenger seat forward so that the second row seat head rest clears the front seat.

For assistance, refer to the label located on the lower position of the opening.



1. Locate handle below the seat cushion near the bottom of the door side cushion (this handle is marked "A").

2. Lift the handle and push the seatback toward the front of the vehicle.

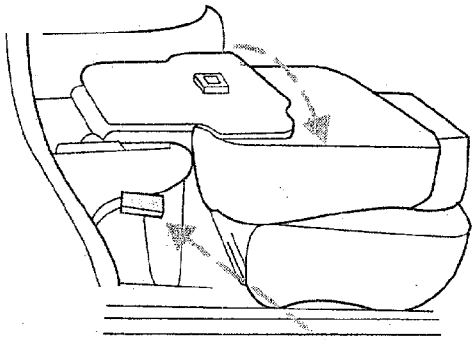
3. Press the green control on the seatback to release the closeout panel. Rotate the panel to closeout the space in the floor.

4. Once the second row seats are in the down position, the front seats may be readjusted.

Returning the seat to upright

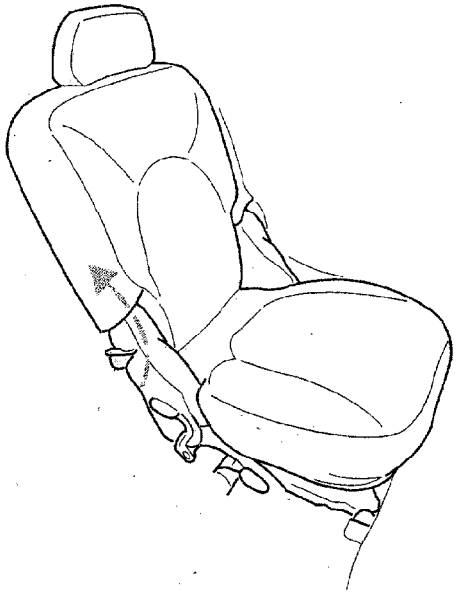
⚠ Always latch the vehicle seat to the floor, whether the seat is occupied or empty. If not latched, the seat may cause injury during a sudden stop.

1. Rotate the closeout panel onto the seatback and press the black control (adjacent to the green control) to lock.
2. Locate and lift the handle marked "A".
3. Pull on the seatback while lifting the handle to lift the seat into the upright position.



Reclining the seatback

Locate the lever at the bottom of the seatback marked "1". Pull the lever upwards to recline the seatback.

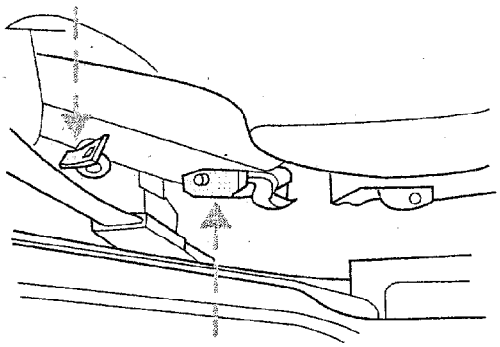


Third row seat (if equipped)

The third row seat is equipped with combination lap and shoulder belts in the outboard seating positions and a manual adjust tongue lap belt in the center seating position. For information on the proper operation of the safety restraints, refer to *Safety Restraints* in this chapter.

The third row seat may be removed from the vehicle for additional cargo space.

Acessing the third row seat



Your vehicle is equipped with an easy entry second row seat feature which allows ready access to the third row seat. You may enter the third row seat:

- through the passenger side rear door if your vehicle has a second row bench seat
- through either rear door if your vehicle has second row bucket seats

Ensure that the second row seat is in the upright position in order to achieve optimum access to the third row.

To minimize the risk of personal injury, the third row seat should not be left in the forward, stowed position while the vehicle is in motion. Please ensure that the seat is in the upright, fully latched position before putting the vehicle in motion.

1. Locate the lever at the bottom of the seatback marked "1".

2. Press down on the front of lever "1" while pressing the seatback down onto the cushion.

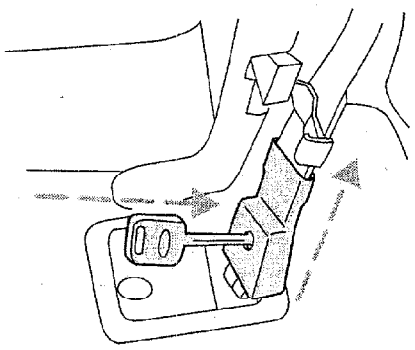
3. Locate and lift the lever marked "2" while rotating the seat toward the front row seat.

4. After entering the seat, reverse this procedure; ensure that the latch tub and surrounding areas are clear.

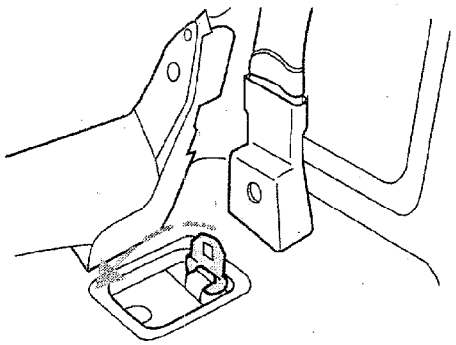
Removing the third row seat

From the rear of the vehicle, with the liftgate open:

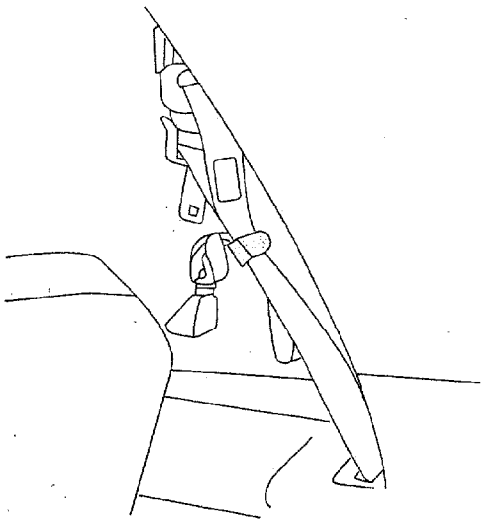
1. Disengage the lap/shoulder belt from the floor by inserting a key or small screwdriver through the hole in the boot of the detachable anchor. Then, press the release button to separate the detachable anchor from the anchor tongue.



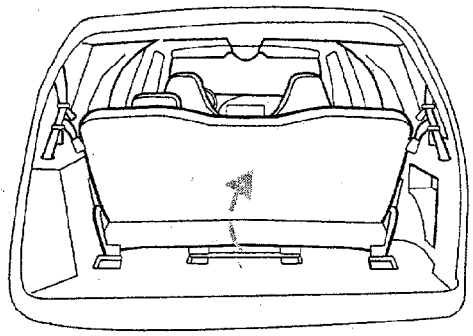
2. Before removing the seat, be sure that the detachable anchor tongue is stowed flat into the vehicle floor.



3. Use the black plastic clip (located just above the detachable anchor) to stow the loose seat belt.



- Pull the seat release lever located on the lower right side of the seatback while pushing the seatback down into the seat cushion.
- The seatback will latch onto the cushion.



4. Lift the seat release bar located at the center of the seat near the floor to release the floor latches.

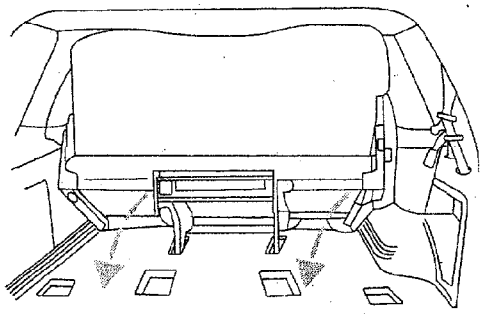
5. While pulling up on the release bar, lift the seat up and out of the floor tubs.

6. With assistance, lift the seat out of the vehicle.

Installing the third row seat

⚠ Always latch the vehicle seat to the floor, whether the seat is occupied or empty. If not latched, the seat may cause injury during a sudden stop.

When reinstalling a rear seat in your vehicle it must be placed in its original position. Improper installation of the seat will prevent correct use of the safety belts and could increase the risk of injury. Refer to the warning label on the seat belt.



Before installing your third row seat, ensure that the detachable anchor tongues are stowed into the floor and the loose belts are stored out of the way. For proper latching, ensure that the floor tubs are clear of debris.

From the rear of the vehicle, with the liftgate open:

1. With assistance, lift the seat into the rear of the vehicle and guide the seat positioners over the front pins of the floor tubs.
2. Guide the positioners around each pin and lower the seat.
- When the rear of the seat is 10–13 cm (4–5 in) above the rear pins, let the seat drop. This will ensure that the seat will properly latch into the floor.
3. Locate the seat belt anchor tongue in the plastic housing on the floor.
4. Disconnect the detachable anchor from its stowage location and connect it to the anchor tongue (making sure that the label on the detachable anchor is pointing toward the outside of the vehicle (left side) and that the belts are not twisted or jammed).
5. Insert the seat detachable anchor into detachable anchor tongue until you hear a "click" and feel the latch engage.
6. Push up on the seat to verify that it is latched into the floor.
7. Verify that the safety belts can move freely on either side of the seat.

Seating and safety restraints

SAFETY RESTRAINTS

Safety restraints precautions

⚠ Always drive and ride with your seatback upright and the lap belt snug and low across the hips.

⚠ To prevent the risk of injury, make sure children sit where they can be properly restrained.

⚠ Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

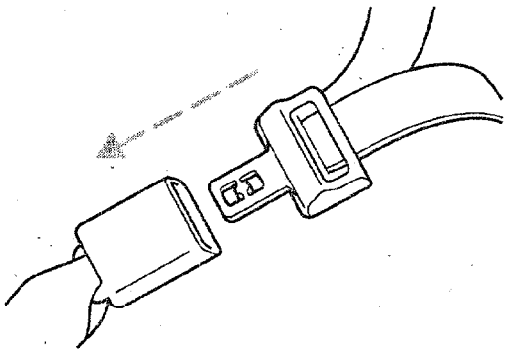
⚠ All occupants of the vehicle, including the driver, should always wear their safety belts.

⚠ It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed. Do not allow people to ride in any area of your vehicle that is not equipped with seats and safety belts. Be sure everyone in your vehicle is in a seat and using a safety belt properly.

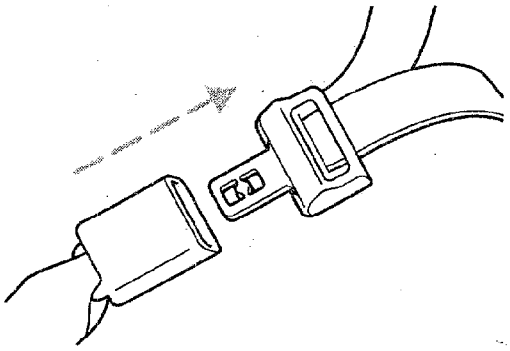
⚠ Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue that are designed to be used as a pair. 1) Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. 2) Never swing it around your neck over the inside shoulder. 3) Never use a single belt for more than one person.

Combination lap and shoulder belts

1. To fasten, insert the tongue into the slot in the buckle.



2. To unfasten, push the red release button and remove the tongue from the buckle.



The front and rear outboard safety restraints in the vehicle are combination lap and shoulder belts. The front and rear seat passenger outboard safety belts have two types of locking modes described below:

Vehicle sensitive mode

The vehicle sensitive mode is the normal retractor mode, allowing free shoulder belt length adjustment to your movements and locking in response to vehicle movement. For example, if the driver brakes suddenly or turns a corner sharply, or the vehicle receives an impact of 8 km/h (5 mph) or more, the combination safety belts will lock to help reduce forward movement of the driver and passengers.

Automatic locking mode

In this mode, the shoulder belt is automatically pre-locked. The belt will still retract to remove any slack in the shoulder belt.

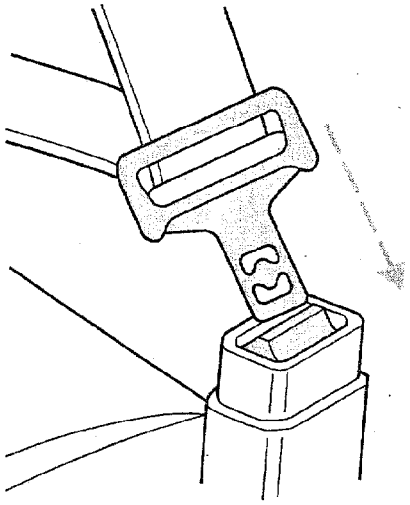
The automatic locking mode is not available on the driver safety belt.

When to use the automatic locking mode

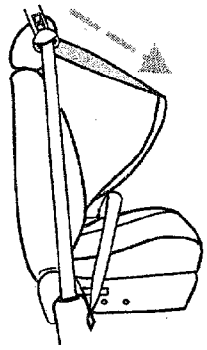
- When a tight lap/shoulder fit is desired.
- **Anytime** a child safety seat is installed in the vehicle. Refer to *Safety Restraints for Children* or *Safety Seats for Children* later in this chapter.

How to use the automatic locking mode

- Buckle the combination lap and shoulder belt.



- Grasp the shoulder portion and pull downward until the entire belt is extracted.



- Allow the belt to retract. As the belt retracts, you will hear a clicking sound. This indicates the safety belt is now in the automatic locking mode.

How to disengage the automatic locking mode

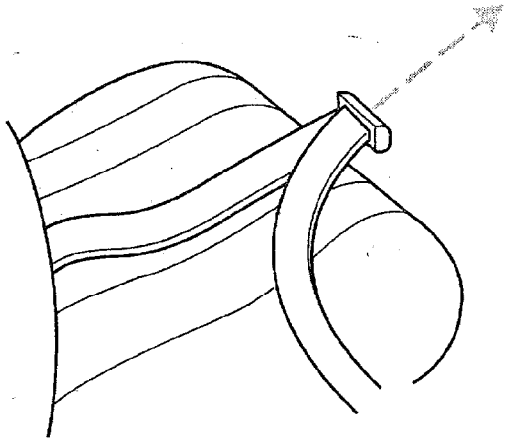
Disconnect the combination lap/shoulder belt and allow it to retract completely to disengage the automatic locking mode and activate the vehicle sensitive (emergency) locking mode.

Lap belts

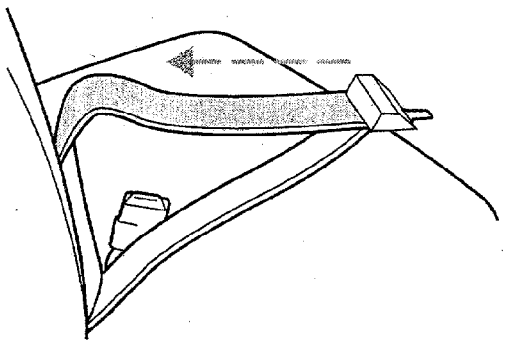
Adjusting the lap belt

The lap belt does not adjust automatically. Adjust to fit snugly and as low as possible around your hips. Do not wear the lap belt around your waist.

Insert the tongue into the correct buckle. To lengthen the belt, turn the tongue at a right angle to the belt and pull across your lap until it reaches the buckle. To tighten the belt, pull the loose end of the belt through the tongue until it fits snugly across the hips.

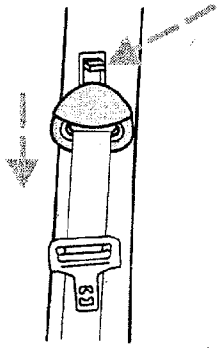


Shorten and fasten the belt when not in use.



Front and second row safety belt height adjustment

Your vehicle has safety belt height adjustments for the driver, front passenger and second row passengers. Adjust the height of the shoulder belt so the belt rests across the middle of your shoulder.



To lower the shoulder belt height, push the button and slide the height control down. To raise the height of the shoulder belt, slide the height adjuster up. Pull down on the height adjustment assembly to make sure it is locked in place.

⚠ Position the shoulder belt height adjuster so that the belt rests across the middle of your shoulder. Failure to adjust the safety belt properly could reduce the effectiveness of the safety belt and increase the risk of injury in a collision.

Safety belt extension assembly

If the safety belt assembly is too short, even when fully extended, 20 cm (8 inches) can be added to the safety belt assembly by adding a safety belt extension assembly (part number 611C22). Safety belt extension assemblies can be obtained from your dealer at no cost.

Use only extensions manufactured by the same supplier as the safety belt. Manufacturer identification is located at the end of the webbing on the label. Also, use the safety belt extension only if the safety belt is too short for you when fully extended. Do not use extensions to change the fit of the shoulder belt across the torso.

Safety belt warning light and indicator chime

The seat belt warning light illuminates in the instrument cluster and a chime sounds to remind the occupants to fasten their safety belts.

Conditions of operation

If...	Then...
The driver's safety belt is not buckled before the ignition key is turned to ON...	The safety belt warning light illuminates for one to two minutes and the warning chime sounds for four to eight seconds.
The driver's safety belt is buckled while the indicator light is illuminated and the warning chime is sounding...	The safety belt warning light and warning chime turn off.
The driver's safety belt is buckled before the ignition key is turned to ON...	The safety belt warning light and indicator chime remain off.

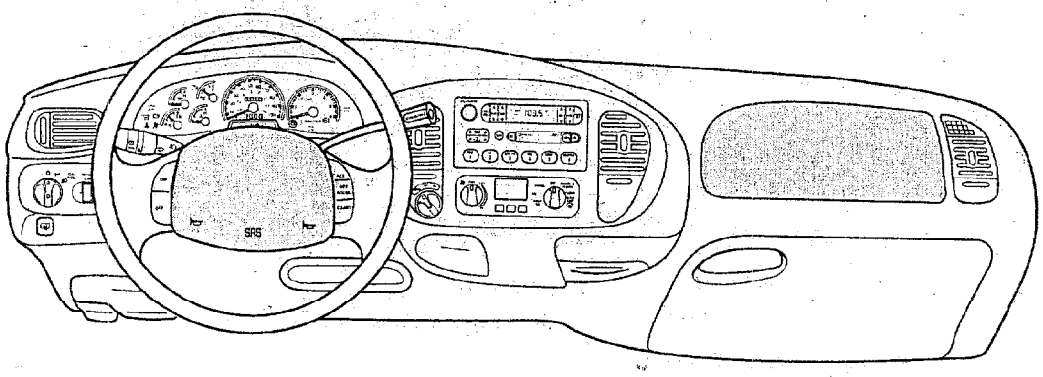
Safety belt maintenance

Check the safety belt systems periodically to make sure they work properly and are not damaged. Check the safety belts to make sure there are no nicks, wears or cuts. All safety belt assemblies, including retractors, buckles, front seat belt buckle assemblies (slide bar) (if equipped), shoulder belt height adjusters (if equipped), child safety seat tether bracket assemblies (if equipped), and attaching hardware, should be inspected after a collision. Ford recommends that all safety belt assemblies used in vehicles involved in a collision be replaced. However, if the collision was minor and a qualified technician finds that the belts do not show damage and continue to operate properly, they do not need to be replaced. Safety belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.

⚠ Failure to replace the safety belt assembly under the above conditions could result in severe personal injuries in the event of a collision.

Refer to *Cleaning and maintaining the safety belts* in the *Maintenance and care* section.

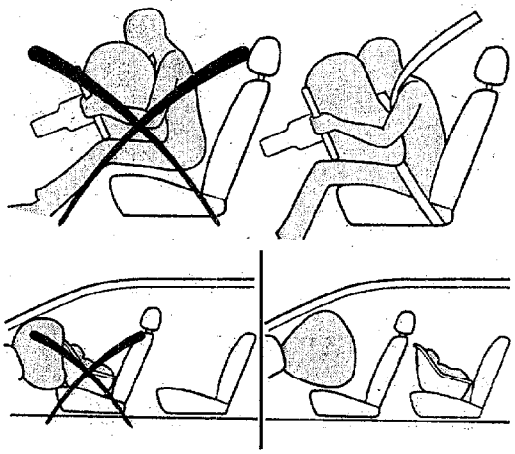
AIR BAG SUPPLEMENTAL RESTRAINT SYSTEM (SRS)



Important supplemental restraint system (SRS) precautions

The supplemental restraint system is designed to:

- work with the safety belt to protect the driver and right front passenger.
- reduce certain upper body injuries.



Failure to follow these instructions will affect the performance of the safety belts and increase the risk of personal injury.

The right front passenger air bag is not designed to restrain occupants in the center front seating position.

Seating and safety restraints

All occupants of the vehicle including the driver should always wear their safety belts even when air bag SRS is provided.

Do not place objects or mount equipment on or near the air bag cover on the steering wheel or in front seat areas that may come into contact with a deploying air bag. Failure to follow this instruction may increase the risk of personal injury in the event of a collision.

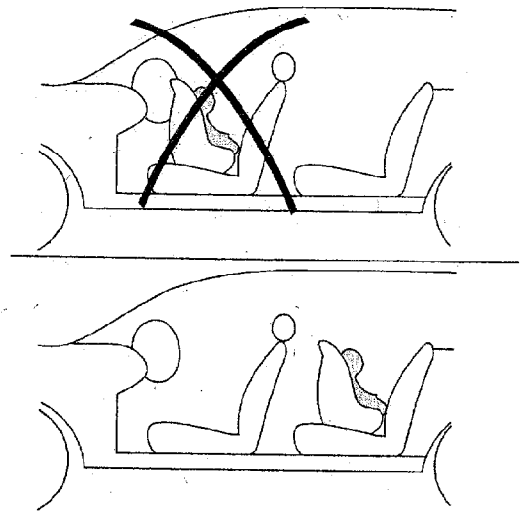
Do not attempt to service, repair, or modify the Air Bag Supplemental Restraint System or its fuses. See your Ford or Lincoln-Mercury dealer.

Children and air bags

For additional important safety information, read all information on safety restraints in this guide.

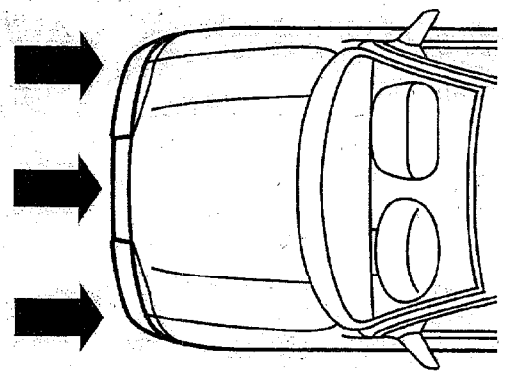
Children should always wear their safety belts. Failure to follow these instructions may increase the risk of injury in a collision.

Air bag can kill or injure a child in a child seat. If you must use a forward-facing child seat in the front seat, move seat all the way back.



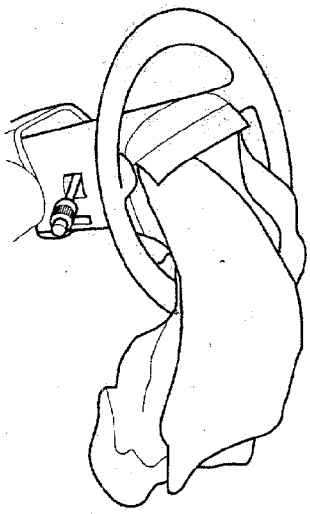
How does the air bag supplemental restraint system work?

The SRS is designed to activate when the vehicle sustains sufficient longitudinal deceleration.



The fact that the air bags did not inflate in a collision does not mean that something is wrong with the system. Rather, it means the forces were not of the type sufficient to cause activation.

The air bags inflate and deflate rapidly upon activation.



After air bag deployment, it is normal to notice a smoke-like, powdery residue or smell the burnt propellant. This may consist of cornstarch, talcum powder (to lubricate the bag) or sodium compounds (e.g., baking soda) that result from the combustion process that inflates the air bag. Small amounts of sodium hydroxide may be present which may irritate the skin and eyes, but none of the residue is toxic.

⚠ Several air bag system components get hot after inflation. Do not touch them after inflation.

If the air bag is inflated, **the air bag will not function again and must be replaced immediately**. If the air bag is not replaced, the unrepaired area will increase the risk of injury in a collision.

The SRS consists of:

- driver and passenger air bag modules (which include the inflators and air bags),
- one or more impact and safing sensors,
- a readiness light and tone
- and the electrical wiring which connects the components.

The diagnostic module monitors its own internal circuits and the supplemental air bag electrical system warning (including the impact sensors), the system wiring, the air bag system readiness light, the air bag back up power and the air bag ignitors.

Determining if the system is operational

The SRS uses a readiness light in the instrument cluster or a tone to indicate the condition of the system. Refer to the *Air bag readiness* section in the *Instrumentation* chapter. Routine maintenance of the air bag is not required.

A difficulty with the system is indicated by one or more of the following:

- The readiness light will either flash or stay lit.
- The readiness light will not illuminate immediately after ignition is turned on.

- A series of five beeps will be heard. The tone pattern will repeat periodically until the problem and light are repaired.

If any of these things happen, even intermittently, have the SRS serviced at your dealership or by a qualified technician immediately. Unless serviced, the system may not function properly in the event of a collision.

Disposal of air bags and air bag equipped vehicles

For disposal of air bags or air bag equipped vehicles, see your local dealership or qualified technician. Air bags MUST BE disposed of by qualified personnel.

SAFETY RESTRAINTS FOR CHILDREN

Important child restraint precautions

You are required by law to use safety restraints for children in the U.S. and Canada. If small children ride in your vehicle (generally children who are four years old or younger and who weigh 18 kg [40 lbs] or less), you must put them in safety seats made especially for children. Check your local and state or provincial laws for specific requirements regarding the safety of children in your vehicle.

⚠ Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

Always follow the instructions and warnings that come with any infant or child restraint you might use.

When possible, place children in the rear seat of your vehicle. Accident statistics suggest that children are safer when properly restrained in the rear seating positions than in the front seating position.

Children and safety belts

Children who are too large for child safety seats (as specified by your child safety seat manufacturer) should always wear safety belts.

Follow all the important safety restraint and air bag precautions that apply to adult passengers in your vehicle.

If the shoulder belt portion of a combination lap and shoulder belt can be positioned so it does not cross or rest in front of the child's face or neck, the child should wear the lap and shoulder belt. Moving the child closer to the center of the vehicle may help provide a good shoulder belt fit.

If the shoulder belt cannot be properly positioned:

- move the child to one of the seats with a lap belt only (if equipped) or
- if the child is the proper size, restrain the child in a safety seat.

Do not leave children, unreliable adults, or pets unattended in your vehicle.

To improve the fit of lap and shoulder belts on children who have outgrown child safety seats, Ford recommends use of a belt-positioning booster seat that is labelled as conforming to all Federal motor vehicle safety standards. Belt-positioning booster seats raise the child and provide a shorter, firmer seating cushion that encourages safer seating posture and better fit of lap and shoulder belts on the child.

A belt-positioning booster should be used if the shoulder belt rests in front of the child's face or neck, or if the lap belt does not fit snugly on both thighs, or if the thighs are too short to let the child sit all the way back on the seat cushion when the lower legs hang over the edge of the seat cushion. You may wish to discuss the special needs of your child with your pediatrician.

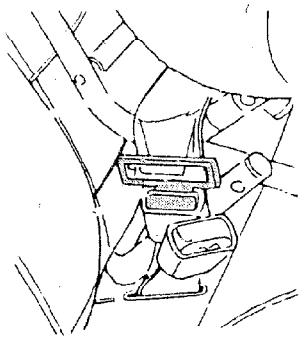
SAFETY SEATS FOR CHILDREN

Child and infant or child safety seats

Use a safety seat that is recommended for the size and weight of the child. Carefully follow all of the manufacturer's instructions with the safety seat you put in your vehicle. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

When installing a child safety seat:

- Use the correct safety belt buckle for that seating position.
- Make sure the tongue is securely fastened in the buckle.
- Keep the buckle release button pointing up and away from the safety seat, with the tongue between the child seat and the release button, to prevent accidental unbuckling.



- Place seat back in upright position.

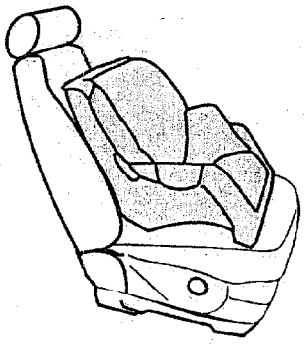
- Put the safety belt in the automatic locking mode. Refer to *Automatic locking mode.*

Ford recommends the use of a child safety seat having a top tether strap. Install the child safety seat in a seating position which is capable of providing a tether anchorage. For more information on top tether straps, refer to *Attaching safety seats with tether straps.*

Carefully follow all of the manufacturer's instructions included with the safety seat you put in your vehicle. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

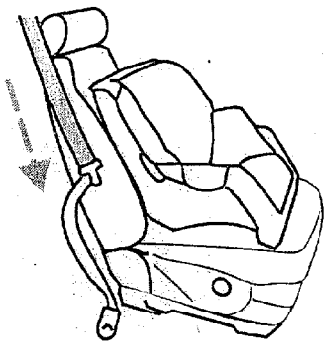
Installing child safety seats in combination lap and shoulder belt seating positions

1. Position the child safety seat in a seat with a combination lap and shoulder belt.

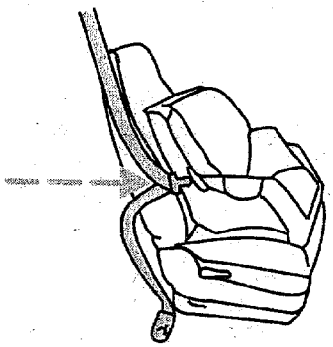


Air bag can kill or injure a child in a child seat. If you must use a forward-facing child seat in the front seat, move seat all the way back.

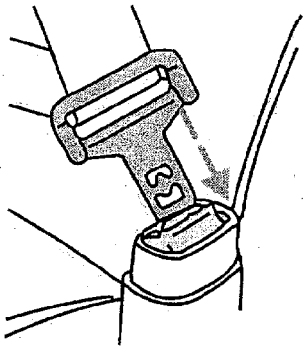
2. Pull down on the shoulder belt and then grasp the shoulder belt and lap belt together.



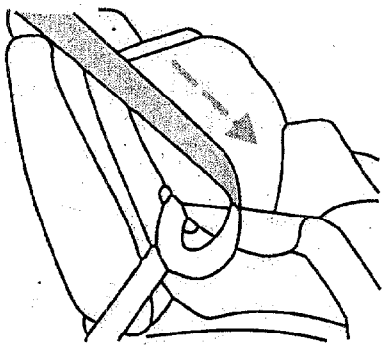
3. While holding the shoulder and lap belt portions together, route the tongue through the child seat according to the child seat manufacturer's instructions. Be sure the belt webbing is not twisted.



4. Insert the belt tongue into the proper buckle for that seating position until you hear and feel the latch engage. Make sure the tongue is latched securely by pulling on it.

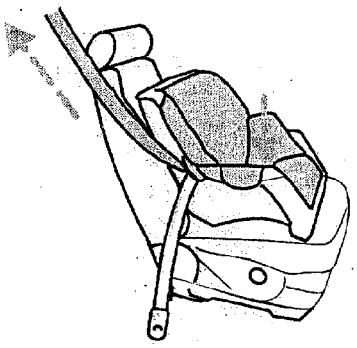


5. To put the retractor in the automatic locking mode, grasp the shoulder portion of the belt and pull downward until all of the belt is extracted and a click is heard.



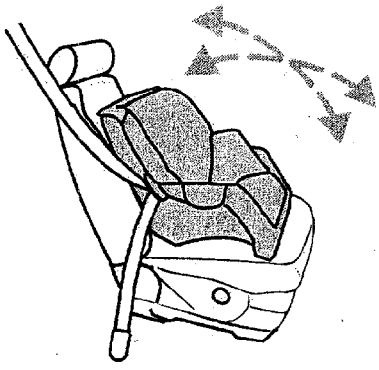
6. Allow the belt to retract. The belt will click as it retracts to indicate it is in the automatic locking mode.

7. Pull the lap belt portion across the child seat toward the buckle and pull up on the shoulder belt while pushing down with your knee on the child seat.



8. Allow the safety belt to retract to remove any slack in the belt.

9. Before placing the child in the seat, forcibly tilt the seat forward and back to make sure the seat is securely held in place.



10. Try to pull the belt out of the retractor to make sure the retractor is in the automatic locking mode (you should not be able to pull more belt out). If the retractor is not locked, unbuckle the belt and repeat steps two through nine.

Check to make sure the child seat is properly secured before each use.

Attaching safety seats with tether straps

Some manufacturers make safety seats that include a tether strap that goes over the back of the vehicle seat and attaches to an anchoring point. Other manufacturers offer the tether strap as an accessory. Contact the manufacturer of your child safety seat for information about ordering a tether strap.

Tether anchorage hardware

A tethered seat can be installed in the front seat. Put the tether strap over the seatback and attach it to an anchor bracket.

An anchor bracket can be installed on the rear edge of the front seat cushion.

The provision (attaching hole) is provided in the rear edge of the front passenger seat cushion frame. The anchor bracket must be installed using the instructions provided with the kit.

Tether anchorage hardware kits (part number 613D74) including instructions, may be obtained at no charge from any Ford or Lincoln-Mercury dealer.

Tether anchor brackets may also be installed to the floor behind the second row seats.

⚠ Tighten the anchor according to specifications. Otherwise, the safety seat may not be properly secured and the child may be injured in a sudden stop or collision.