

REPORT NO. TRC-93-N10

NEW CAR ASSESSMENT PROGRAM (NCAP)

FRONTAL BARRIER IMPACT TEST

TOYOTA MOTOR MANUFACTURING USA INC.

1994 TOYOTA CAMRY

4-DOOR SEDAN

NHTSA NO. MR5100

TRC TEST NO. 940309

PREPARED BY:

TRANSPORTATION RESEARCH CENTER INC.

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MARCH 30, 1994

FINAL REPORT

PREPARED FOR:

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16. Abstract A 56 kph (35 mph) frontal load cell barrier impact test was conducted on a 1994 Toyota Camry 4-door sedan, NHTSA No. MR5100, at Transportation Research Center Inc. on March 9, 1994. This test was conducted to obtain new car assessment and research data indicant of FMVSS 208, 212, 219 (partial), and 301 performance. The barrier impact velocity was 56.3 kph. The vehicle's maximum static crush was 544 millimeters. The ambient temperature was 22° C. The driver's Head Injury Criteria (HIC) was 607. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 50.6 g. The driver's chest maximum deflection was 53 millimeters (See DATA ACQUISITION EXPLANATIONS. The driver's left and right femur maximum axial forces were 2457 N and 1578 N, respectively. The passenger's HIC was 881. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 50.1 g. The passenger's chest maximum deflection was 39 millimeters. The passenger's left and right femur maximum axial forces were 2211 N and 3878 N, respectively.					
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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
Thsp	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 m = 3.284 (exact). 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

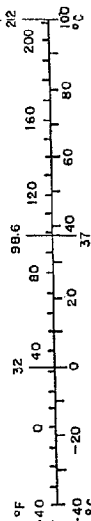


TABLE OF CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
1.0	PURPOSE AND TEST PROCEDURE	1-1
2.0	FRONTAL BARRIER IMPACT TEST SUMMARY	2-1
3.0	FMVSS 212, 219 (PARTIAL), AND 301 DATA	3-1
4.0	OCCUPANT, CAMERA AND VEHICLE INFORMATION	4-1
APPENDIX A	PHOTOGRAPHS	A-1
APPENDIX B	DATA PLOTS	B-1
APPENDIX C	DUMMY CERTIFICATION DATA	C-1
APPENDIX D	MISCELLANEOUS TEST INFORMATION	D-1
APPENDIX E	RESTRAINT SYSTEM INSTRUCTIONS FROM OWNER'S MANUAL	E-1

LIST OF TABLES

<u>NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
1	CRASH TEST SUMMARY	2-4
2	TEST VEHICLE INFORMATION	2-5
3	POST-IMPACT DATA	2-8
4	VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY	2-12
5	POST-IMPACT DUMMY/VEHICLE DATA	2-13
6	FMVSS 208 DATA SUMMARY	2-14
7	HYBRID III NECK DATA SUMMARY	2-15
8	SEAT BELT PERFORMANCE ASSESSMENT TEST DATA	2-17
9	LOAD CELL BARRIER DATA SUMMARY	2-19
10	FUEL SYSTEM DATA	3-4
11	FMVSS 301 POST-IMPACT TEST DATA	3-5
12	DUMMY MEASUREMENT DATA FOR FRONT SEAT OCCUPANTS	4-3
13	MOTION PICTURE CAMERA LOCATIONS	4-7
14	IMPACTED VEHICLE MEASUREMENTS	4-10

LIST OF FIGURES

<u>NUMBER</u>	<u>TITLE</u>	<u>PAGE</u>
1	IMPACT VELOCITY MEASUREMENT SYSTEM	2-9
2	ACCIDENT INVESTIGATION DIVISION DATA FOR 56 KPH (35 MPH) FRONTAL BARRIER IMPACT	2-10
3	VEHICLE ACCELEROMETER PLACEMENT	2-11
4	LOAD CELL BARRIER CONFIGURATION	2-18
5	FMVSS 212 TEST DATA	3-2
6	FMVSS 219 TEST DATA	3-3
7	FMVSS 301 STATIC ROLLOVER TEST DATA	3-6
8	DUMMY MEASUREMENT LOCATIONS FOR FRONT SEAT OCCUPANTS	4-2
9	SEAT BELT POSITIONING DATA	4-4
10	CAMERA POSITIONS	4-5
11	VEHICLE TARGET LOCATIONS	4-8
12	PRE-TEST AND POST-TEST MEASUREMENT POINTS	4-9

LIST OF PHOTOGRAPHS

<u>DESCRIPTION</u>	<u>FIGURE</u>
PRE-TEST FRONT VIEW	A-1
POST-TEST FRONT VIEW	A-2
PRE-TEST LEFT SIDE VIEW	A-3
POST-TEST LEFT SIDE VIEW	A-4
PRE-TEST REAR VIEW	A-5
POST-TEST REAR VIEW	A-6
PRE-TEST RIGHT SIDE VIEW	A-7
POST-TEST RIGHT SIDE VIEW	A-8
PRE-TEST RIGHT FRONT THREE-QUARTER VIEW	A-9
POST-TEST RIGHT FRONT THREE-QUARTER VIEW	A-10
PRE-TEST LEFT REAR THREE-QUARTER VIEW	A-11
POST-TEST LEFT REAR THREE-QUARTER VIEW	A-12
PRE-TEST WINDSHIELD VIEW	A-13
POST-TEST WINDSHIELD VIEW	A-14
PRE-TEST ENGINE COMPARTMENT VIEW	A-15
POST-TEST ENGINE COMPARTMENT VIEW	A-16
PRE-TEST FUEL FILLER CAP VIEW	A-17
POST-TEST FUEL FILLER CAP VIEW	A-18
PRE-TEST FUEL FILLER NECK AND FUEL TANK VIEW	A-19
POST-TEST FUEL FILLER NECK AND FUEL TANK VIEW	A-20
PRE-TEST FRONT UNDERBODY VIEW	A-21
POST-TEST FRONT UNDERBODY VIEW	A-22
PRE-TEST REAR UNDERBODY VIEW	A-23
POST-TEST REAR UNDERBODY VIEW	A-24
PRE-TEST DRIVER DUMMY POSITION VIEW	A-25
POST-TEST DRIVER DUMMY POSITION VIEW	A-26
PRE-TEST PASSENGER DUMMY POSITION VIEW	A-27
POST-TEST PASSENGER DUMMY POSITION VIEW	A-28
PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1	A-29
POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1	A-30
PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2	A-31
POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2	A-32
PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1	A-33

LIST OF PHOTOGRAPHS, CONT'D.

<u>DESCRIPTION</u>	<u>FIGURE</u>
POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1	A-34
PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2	A-35
POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2	A-36
POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 1	A-37
POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 2	A-38
POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1	A-39
POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2	A-40
POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 1	A-41
POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 2	A-42
POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 3	A-43
POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1	A-44
POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2	A-45
PRE-TEST VEHICLE CERTIFICATION LABEL VIEW	A-46
PRE-TEST RECOMMENDED TIRE PRESSURE LABEL VIEW	A-47
POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE VIEW	A-48

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 Market Incentives by Transportation Research Center Inc. (TRC) under Contract No. DTNH22-90-D-22121.

The purpose of this test was to obtain new car assessment and research data for vehicle crashworthiness and occupant restraint system performance for the subject vehicle, a 1994 Toyota Camry 4-door sedan, NHTSA No. MR5100, at an impact speed in excess of the current 48 kph (30 mph) FMVSS 208 requirements.

TEST PROCEDURE

This test was conducted in accordance with NHTSA's Laboratory Indicant Test Procedure, New Car Assessment Program, dated January 1, 1990. 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 four (4) seat belt load cells to measure lap belt tension and shoulder belt tension, two (2) string potentiometers to measure shoulder belt displacement, and two (2) linear potentiometers to measure shoulder belt stretch. 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 Appendices VII and VIII of the Laboratory Indicant Test Procedure. This test was the first use of the driver dummy and the passenger dummy.

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations, and with left and right femur load cells to measure axial forces. Each Part 572E dummy's instrumentation also included a chest potentiometer to measure longitudinal deflection and a six-axis neck load cell to measure longitudinal, lateral, and vertical forces and moments.

The eighty-three (83) data channels were multiplexed and recorded on two (2) 14-track tape drives. The data was digitally sampled at 12,500 samples per second and processed per section IP11 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 March 9, 1994.

The test vehicle, a 1994 Toyota Camry 4-door sedan, NHTSA No. MR5100, was equipped with a 2.2-liter transverse engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 1639 KG. The vehicle's impact speed was 56.3 kph. The vehicle sustained 544 mm of static crush during the impact.

The driver's Head Injury Criteria (HIC) was 607. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 50.6 g. The driver's chest maximum deflection was 53 mm (See DATA ACQUISITION EXPLANATIONS). The driver's left and right femur maximum axial forces were 2457 N and 1578 N, respectively.

The passenger's HIC was 881. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 50.1 g. The passenger's chest maximum deflection was 39 mm. The passenger's left and right femur maximum axial forces were 2211 N and 3878 N, respectively.

There was no 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 any portion of the static rollover test.

DATA ACQUISITION EXPLANATIONS

The driver dummy's chest deflection data channel, CSTXD1, recorded questionable data spikes between 70 and 120 milliseconds. The data channel was checked after the test. No cause for the data spikes could be found.

The passenger's seat belt stretch potentiometer, SBED2, recorded questionable data. The data channel was checked after the test. No cause for the questionable data could be found.

The engine bottom X-axis acceleration data channel, ENGXG2, stopped recording data after 72 milliseconds as a result of the device's cable being cut by the vehicle crush on impact.

The passenger lap belt outboard force data channel, LBOF2, recorded questionable data spikes between 20 and 40 milliseconds. The data channel was checked after the test. No cause for the questionable data could be found.

The vehicle's right brake caliper X-axis acceleration data channel, BCRXG1, recorded questionable data throughout the impact event. The data channel was checked after the test. No cause for the questionable data could be found.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: MR5100 TEST TYPE: Frontal Load Cell Barrier

TEST DATE: 03/09/94 TEST TIME: 1559 AMBIENT TEMP.: 22° C

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1994/Toyota/Camry/4-door sedan

VEHICLE TEST WEIGHT (KG): 1639

IMPACT ANGLE (DEG)¹: 0

IMPACT VELOCITY (KPH)²: PRIMARY = 56.3 SECONDARY = 56.3

MAXIMUM STATIC CRUSH (MM): 544

AVERAGE REBOUND (MM): 916

DUMMIES:	Driver #192	Passenger #142
TYPE:	Part 572 E	Part 572 E
LOCATION:	Left front	Right front
RESTRAINT:	Airbag and 3-point unbelt	Airbag and 3-point unbelt

NUMBER OF DATA CHANNELS: 83

NUMBER OF CAMERAS: HIGH-SPEED 16 REAL-TIME 2

¹With respect to tow track centerline.

²Speed trap measurement ($\pm$.08 kph accuracy)

TABLE 2 TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Toyota Motor Manufacturing USA Inc.

MAKE/MODEL: Toyota Camry VIN: 4T1SK12E5RU348332

BODY STYLE: 4-door sedan MODEL YEAR: 1994

NHTSA NO.: MR5100 COLOR: Black

ENGINE DATA: TYPE: transverse CYLINDERS: 4 DISPLACEMENT: 2.2-liter

TRANSMISSION DATA: 3 SPEED, MANUAL, X AUTOMATIC, X FWD, RWD, 4WD

DATE VEHICLE RECEIVED: 03/02/94 ODOMETER READING: 418

DEALER'S NAME AND ADDRESS: Northtown World Auto Centre
3900 Sheridan Drive
Amherst, NY 14226

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	Yes
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	Yes
POWER SEATS	No	TILTING STEERING WHEEL	Yes
POWER WINDOWS	Yes	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	Yes	ANTI-SKID BRAKE	No
CLOCK	Yes	REAR WINDOW DEFROSTER	Yes
OTHER	None		

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? Yes
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? No
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

CERTIFICATION DATA FROM VEHICLE'S LABEL:

VEHICLE MANUFACTURED BY: Toyota Motor Manufacturing USA Inc.

DATE OF MANUFACTURE: 10/93 VIN: 4T1SK12E5RU348332

GVWR: 4150 lb

GAWR: FRONT: 2400 lb, REAR: 2400 lb

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Dunlop, P195/70R14

TIRE PRESSURE WITH MAXIMUM CAPACITY VEHICLE LOAD: FRONT: 240 kPa
REAR: 240 kPa

SPARE TIRE (MFR., SIZE): Dunlop, P195/70R14

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually adjustable

MAXIMUM WIDTH: 1790 MM

WHEELBASE: 2605 MM

LOCATION OF LABEL STATING TIRE DATA:

The label was located on the glove box.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: 195/70R14

RECOMMENDED COLD TIRE PRESSURE: FRONT: 200 kPa; REAR: 200 kPa

DESIGNATED SEATING CAPACITY: 2 FRONT 3 REAR
5 TOTAL

VEHICLE CAPACITY WEIGHT: 410 KG

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN MILLIMETERS):

DELIVERED ATTITUDE: LF 692; RF 692; LR 691; RR 694

PRE-TEST ATTITUDE: LF 671; RF 674; LR 642; RR 645

POST-TEST ATTITUDE: LF 782; RF 769; LR 631; RR 633

TABLE 2 TEST VEHICLE INFORMATION CONT'D

WEIGHT OF TEST VEHICLE AS RECEIVED (WITH MAXIMUM FLUIDS):

RIGHT FRONT	446.5 KG	RIGHT REAR	281.0 KG
LEFT FRONT	422.5 KG	LEFT REAR	269.0 KG
TOTAL FRONT WEIGHT	869.0 KG	(61.2% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	550.0 KG	(38.8% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	1419.0 KG		

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW¹ = RATED CARGO AND LUGGAGE WEIGHT

UDW = UNLOADED DELIVERED WEIGHT (1419 KG)

VCW = VEHICLE CAPACITY WEIGHT (410 KG)

DSC = DESIGNATED SEATING CAPACITY (5)

RCLW¹ = VCW - 68 (DSC) = 70 KG

TARGET TEST WEIGHT=UDW + RCLW¹ + (NO. OF HYBRID III DUMMIES X 76 KG/DUMMY)

TARGET TEST WEIGHT = 1419 + 70 + 152

TARGET TEST WEIGHT = 1641 KG

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 68 KG OF CARGO WEIGHT:

RIGHT FRONT	465.0 KG	RIGHT REAR	345.5 KG
LEFT FRONT	476.0 KG	LEFT REAR	352.5 KG
TOTAL FRONT WEIGHT	941.0 KG	(57.4% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	698.0 KG	(42.6% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	1639.0 KG	(0.1% UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE: 0 KG

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: Rear bumper, tail light, power antenna, trunk lid, rear seat belts

CG = 1109 MM REARWARD OF FRONT WHEEL CENTERLINE

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

TABLE 3 POST-IMPACT DATA

TEST NUMBER: 940309 NHTSA NO.: MR5100
TEST DATE: 03/09/94 TEST TIME: 1559
TEST TYPE: Frontal load cell barrier IMPACT ANGLE: 0°
AMBIENT TEMPERATURE AT IMPACT AREA: 22° C
TEMPERATURE IN OCCUPANT COMPARTMENT: 21° C
IMPACT VELOCITY: PRIMARY = 56.3 KPH SECONDARY = 56.3 KPH

(SPECIFIED RANGE = 55.5 TO 57.1 KPH)

DISTANCE FROM VEHICLE TO BARRIER: ENTERING VELOCITY TRAP = 356 MM
EXITING VELOCITY TRAP = 51 MM

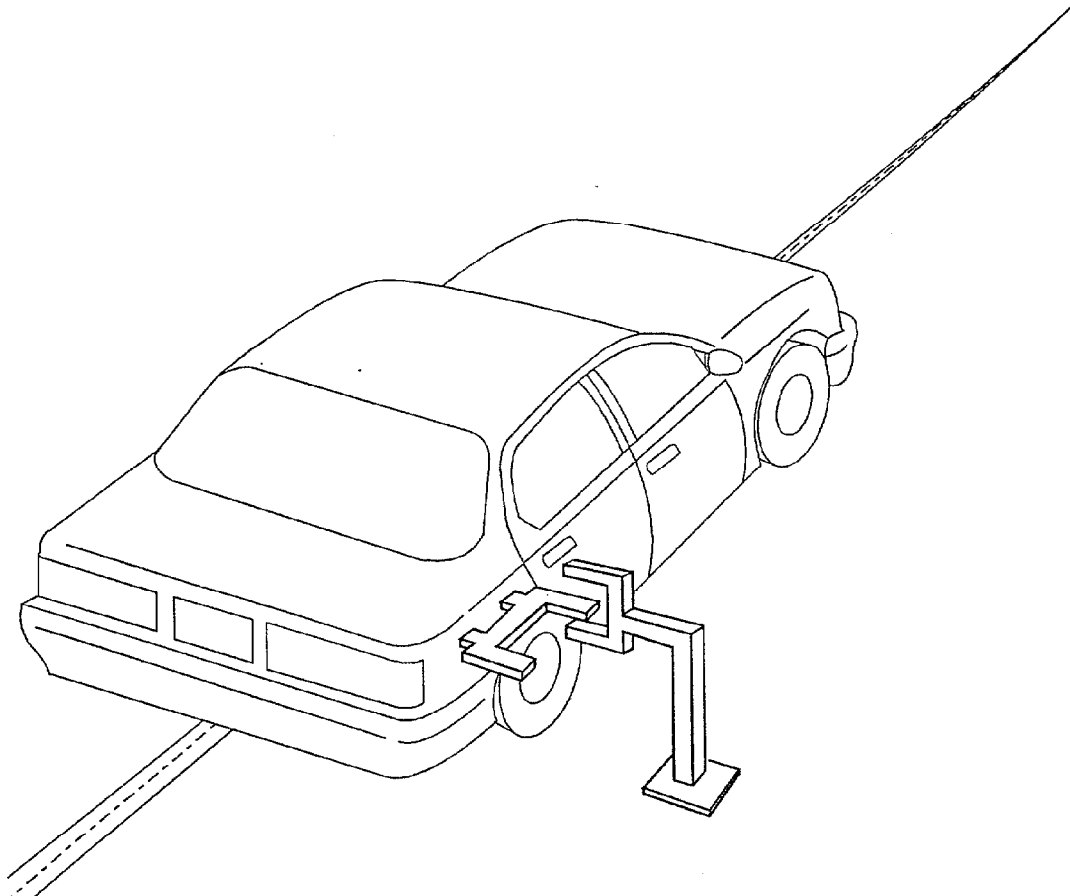
TEST VEHICLE STATIC CRUSH (ALL MEASUREMENTS ARE IN MILLIMETERS):

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 4645; C 4761; R 4645
POST-TEST: L 4183; C 4220; R 4192
TOTAL CRUSH: L 462; C 541; R 453
AVERAGE CRUSH: 485

TEST VEHICLE REBOUND FROM FLAT BARRIER
(ALL MEASUREMENTS ARE IN MILLIMETERS):

DISTANCE FROM TEST VEHICLE TO BARRIER: L 940; C 899; R 909; AVG. 916

FIGURE 1 IMPACT VELOCITY MEASUREMENT SYSTEM



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

The vanes have 305-millimeter spacing.

FIGURE 2 ACCIDENT INVESTIGATION DIVISION DATA
FOR 56 KPH (35 MPH) FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Toyota/Camry/4-door sedan

VEHICLE NHTSA NO.: MR5100 ; VIN: 4T1SK12E5RU348332

MODEL YEAR: 1994 ; BUILD DATE: 10/93 ; TEST DATE: 03/09/94

VEHICLE SIZE CATEGORY: Mid-size ; TEST WEIGHT: 1639 KG

VEHICLE WHEELBASE: 2605 MM

MAXIMUM WIDTH: 1790 MM

FRONT OVERHANG: 980 MM

COLLISION DEFORMATION
 CLASSIFICATION (CDC) CODE: 12FDEW2

CRUSH DEPTH
 MEASUREMENTS:

C1 =	<u>462</u>	MM
C2 =	<u>529</u>	MM
C3 =	<u>540</u>	MM
C4 =	<u>544</u>	MM
C5 =	<u>541</u>	MM
C6 =	<u>453</u>	MM

VEHICLE CENTERLINE
 MIDPOINT OF DAMAGE: D = (LONGITUDINAL)

LENGTH OF DAMAGED
 REGION: L = 1530 MM

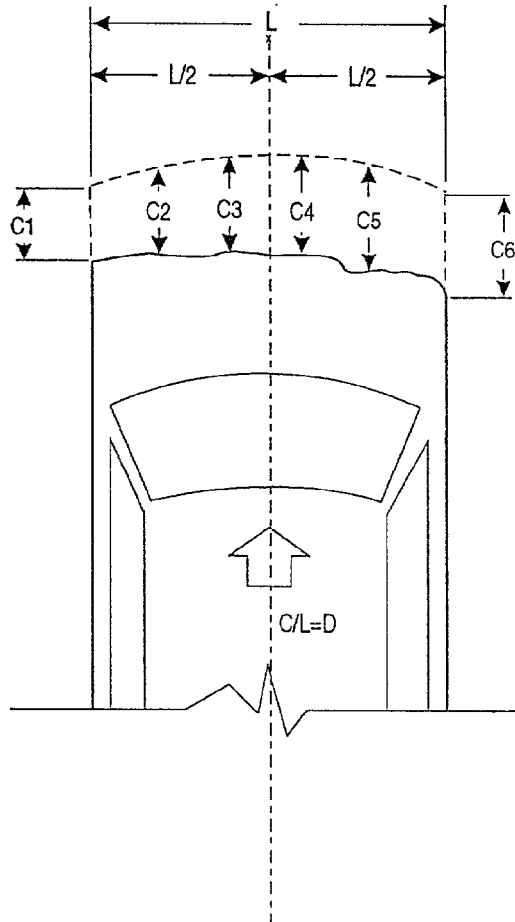
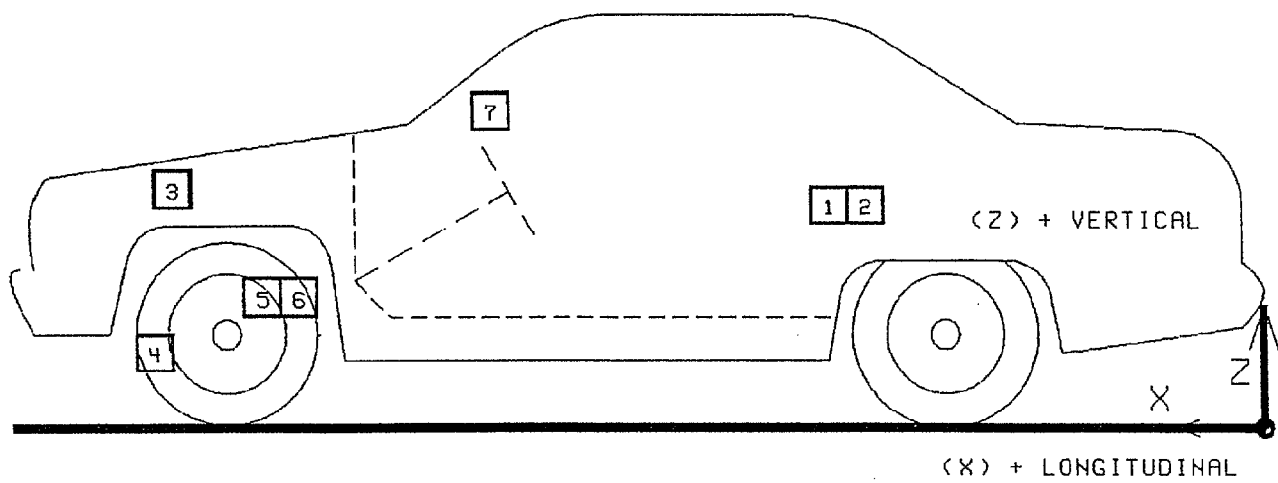
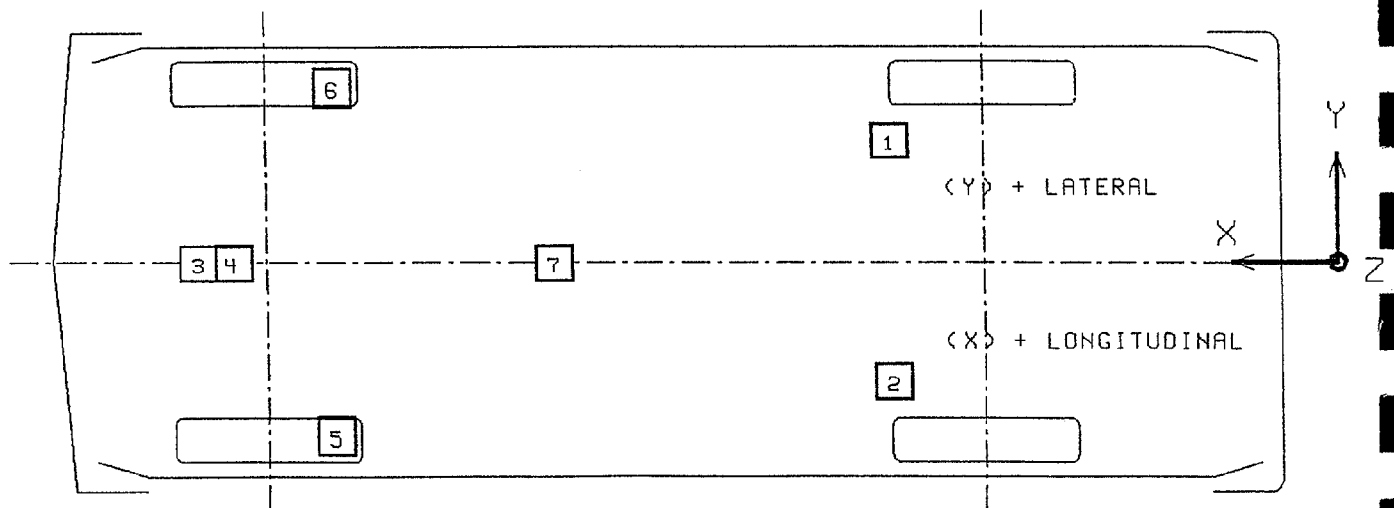


FIGURE 3 VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 4 VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
1 LEFT REAR SEAT CROSSMEMBER LONGITUDINAL REDUNDANT	3110 mm	691 mm	333 mm	2.9 g @ 137.6 ms 2.7 g @ 137.4 ms	30.2 g @ 42.6 ms 30.1 g @ 42.5 ms
2 RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL REDUNDANT	3109 mm	-690 mm	337 mm	2.5 g @ 143.2 ms 2.5 g @ 143.1 ms	33.3 g @ 43.4 ms 32.8 g @ 43.4 ms
3 ENGINE TOP LONGITUDINAL	919 mm	-89 mm	783 mm	80.5 g @ 46.5 ms	152.6 g @ 37.2 ms
4 ENGINE BOTTOM LONGITUDINAL ¹	799 mm	293 mm	175 mm	---	101.0 g @ 32.1 ms
5 RIGHT BRAKE CALIPER LONGITUDINAL ¹	885 mm	-673 mm	295 mm	38.1 g @ 70.4 ms	205.6 g @ 118.5 ms
6 LEFT BRAKE CALIPER LONGITUDINAL	890 mm	673 mm	295 mm	43.1 g @ 64.6 ms	129.7 g @ 47.4 ms
7 INSTRUMENT PANEL CENTER LONGITUDINAL	1574 mm	0 mm	940 mm	54.4 g @ 60.9 ms	74.1 g @ 22.1 ms

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN MILLIMETERS. X-AXIS
LOCATIONS ARE MEASURED REARWARD FROM THE FRONT BUMPER.

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

¹ See DATA ACQUISITION EXPLANATIONS

TABLE 5 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #192	PASSENGER #142
HEAD	<u>Airbag and head restraint</u>	<u>Airbag and head restraint</u>
CHEST	<u>Airbag</u>	<u>Airbag</u>
ABDOMEN	<u>None</u>	<u>None</u>
LEFT KNEE	<u>Instrument panel</u>	<u>Instrument panel</u>
RIGHT KNEE	<u>Instrument panel</u>	<u>Instrument panel</u>

DOOR OPENING:

	LEFT	RIGHT
FRONT	<u>Easy</u>	<u>Easy</u>
REAR	<u>Easy</u>	<u>Easy</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
FRONT	<u>None</u>	<u>None</u>
REAR	<u>NA</u>	<u>NA</u>

GLAZING DAMAGE:

The entire windshield cracked on impact.

OTHER NOTABLE IMPACT EFFECTS:

None

TABLE 6 FMVSS 208 DATA SUMMARY

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1994/Toyota/Camry/4-door sedan

VEHICLE NHTSA NO.: MR5100 ; TEST DATE: 03/09/94

	DRIVER	PASSENGER
MAXIMUM ACCELERATIONS (G):	DUMMY #192	DUMMY #142
HEAD X-AXIS	-65.9	-81.2
HEAD Y-AXIS	-9.5	32.9
HEAD Z-AXIS	-13.3	-13.3
HEAD RESULTANT	66.2	84.5
CHEST X-AXIS	-51.6	-51.7
CHEST Y-AXIS	-5.8	7.2
CHEST Z-AXIS	13.0	15.3
CHEST RESULTANT ¹	50.6	50.1
CHEST RESULTANT TIME INTERVAL (SEC.) ¹	.003	.003

HEAD INJURY CRITERIA (HIC) VALUES:

HIC ²	607	881
HIC STARTING TIME (SEC.)	.050	.056
HIC ENDING TIME (SEC.)	.082	.082
AVG. HEAD RESULTANT ACCEL. DURING HIC TIME INTERVAL (G)	43.9	52.5

MAXIMUM CHEST DEFLECTIONS (MM):

CHEST X-AXIS ³	53	39
MAXIMUM CHEST DEFLECTION TIME (SEC)	.086	.072

MAXIMUM COMPRESSIVE FEMUR FORCES (N):

LEFT FEMUR	2457	2211
RIGHT FEMUR	1578	3878

MAXIMUM SEAT BELT FORCES (N):

LAP BELT ³	6365	5743
SHOULDER BELT	6603	6862

NOTE: ALL VALUES LISTED MUST BE OCCURRING DURING PRIMARY IMPACT EVENT.
(HEAD ACCELERATIONS LISTED MUST BE DURING HIC TIME INTERVAL.)

¹0.003 SEC. MINIMUM DURATION.

²THE MAXIMUM HIC TIME INTERVAL IS 36 MILLISECONDS.

³See DATA ACQUISITION EXPLANATIONS

TABLE 7 HYBRID III NECK DATA SUMMARY

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1994/Toyota/Camry/4-door sedan

VEHICLE NHTSA NO.: MR5100; TEST DATE: 03/09/94

<u>MAXIMUM VALUES:</u>	<u>DRIVER DUMMY #192</u>	<u>PASSENGER DUMMY #142</u>
NECK X-AXIS FORCE (N)	291	397
NECK Y-AXIS FORCE (N)	-190	-1338
NECK Z-AXIS FORCE (N)	1979	1905
NECK MOMENT ABOUT X AXIS (N-M)	-18	25
NECK MOMENT ABOUT Y AXIS (N-M)	-14	-48
NECK MOMENT ABOUT Z AXIS (N-M)	14	46

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 upper torso rotated slightly forward with the dummy's head and chest impacting the airbag. The driver dummy was restrained by the airbag and the three-point unbelt. The dummy rebounded rearward into the seat back with the dummy's head contacting the head restraint. The driver dummy came to rest in the driver's seat, restrained by the three-point unbelt.

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 and chest impacted the airbag with the dummy's head rotating rearward and to the left. The right front passenger dummy was restrained by the airbag and three-point unbelt. The dummy rebounded rearward into the seat back as the dummy's head, still rotated rearward and to the left, contacted the head restraint. The right front passenger dummy came to rest in the right front passenger's seat restrained by the three-point unbelt.

TABLE 8 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

	<u>DRIVER</u>	<u>PASSENGER</u>
<u>BELT LENGTH DATA:</u>		
BELT LENGTH FROM TRIM PANEL EXIT TO BOLT HOLE ANCHOR POINT FOR CONTINUOUS WEBBING SYSTEMS.	2423	2495
SHOULDER BELT LENGTH AS MEASURED ON PART 572 DUMMY.	870	865
LAP BELT LENGTH AS MEASURED ON PART 572 DUMMY.	840	850
<u>SHOULDER BELT SPOOL-OFF LENGTH:</u>		
AS DETERMINED BY FILM ANALYSIS ¹	71	64
AS DETERMINED MECHANICALLY	65	65
AS DETERMINED ELECTRONICALLY	68	70
<u>BELT STRETCH LENGTH (MM/M):</u>		
AS MEASURED MECHANICALLY	0	6
AS MEASURED ELECTRONICALLY ²	0	76
<u>RETRACTOR LOCK-UP TIME (MS):</u>		
AS DETERMINED BY SHOULDER BELT SPOOL-OFF	62	67

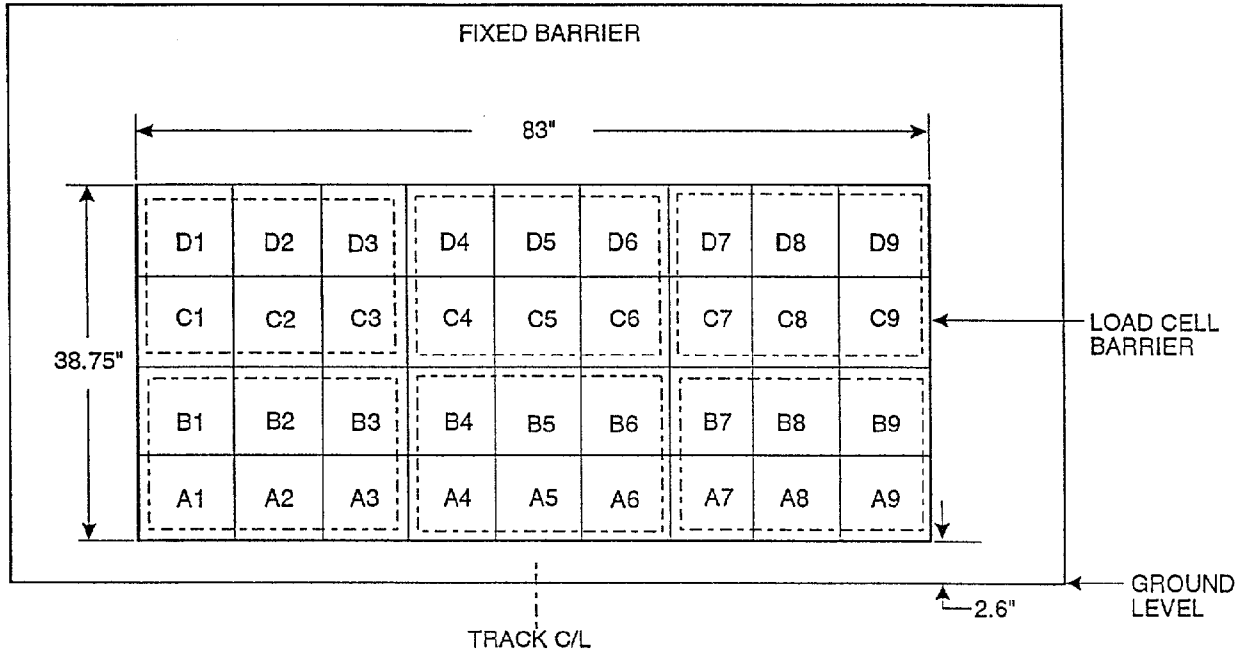
ALL MEASUREMENTS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

¹An accurate determination of belt spool-off could not be made because of poor film quality.

²See DATA ACQUISITION EXPLANATIONS

FIGURE 4 LOAD CELL BARRIER CONFIGURATION

36 LOAD CELLS
4 ROWS
9 COLUMNS
FRONT VIEW



GROUP 1: D1 thru C3
GROUP 2: D4 thru C6
GROUP 3: D7 thru C9
GROUP 4: B1 thru A3
GROUP 5: B4 thru A6
GROUP 6: B7 thru A9

TABLE 9 LOAD CELL BARRIER DATA SUMMARY

LOCATION	POSITIVE DIRECTION				NEGATIVE DIRECTION			
TOTAL GROUP 1	1.4	kN	@	0.9 ms	130.2	kN	@	19.2
TOTAL GROUP 2	0.8	kN	@	267.8 ms	271.7	kN	@	37.1
TOTAL GROUP 3	0.9	kN	@	0.5 ms	120.5	kN	@	19.5
TOTAL GROUP 4	1.1	kN	@	0.3 ms	50.4	kN	@	43.0
TOTAL GROUP 5	0.9	kN	@	226.7 ms	44.4	kN	@	30.8
TOTAL GROUP 6	1.1	kN	@	226.9 ms	23.1	kN	@	40.8
TOTAL LOAD CELL FORCE	3.5	kN	@	293.1 ms	547.6	kN	@	36.6

TENSION IS POSITIVE
COMPRESSION IS NEGATIVE

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.:

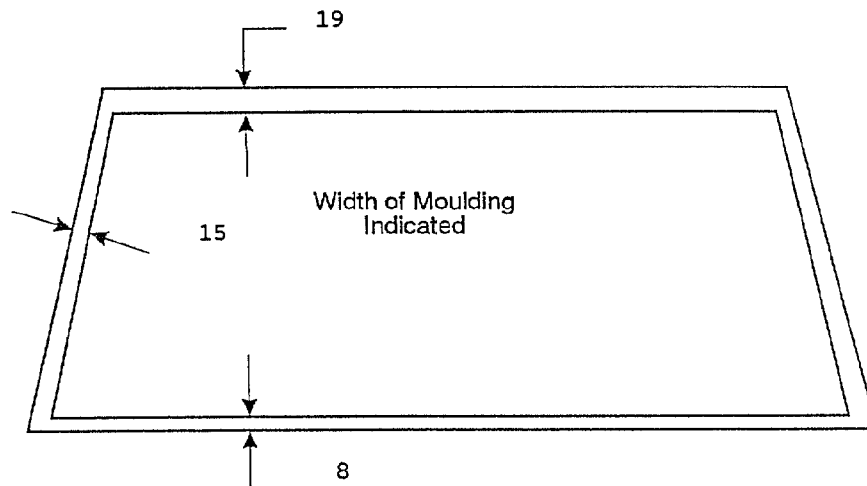
Plastic trim around outer perimeter, adhesive around inner perimeter.

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:

	<u>PRE-TEST</u>	<u>POST-TEST</u>	<u>PERCENT RETENTION</u>
RIGHT SIDE	2031	2031	100.0
LEFT SIDE	2031	2031	100.0
TOTAL	4062	4062	100.0

PRE-TEST WINDSHIELD MOUNTING MATERIAL TEMPERATURE: 21° C



FRONT VIEW OF WINDSHIELD¹

LOSS OF WINDSHIELD RETENTION LENGTHS:

There was no loss of windshield periphery retention

ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

¹INDICATE AREAS OF LOSS OF RETENTION, IF ANY, ON WINDSHIELD DIAGRAM.

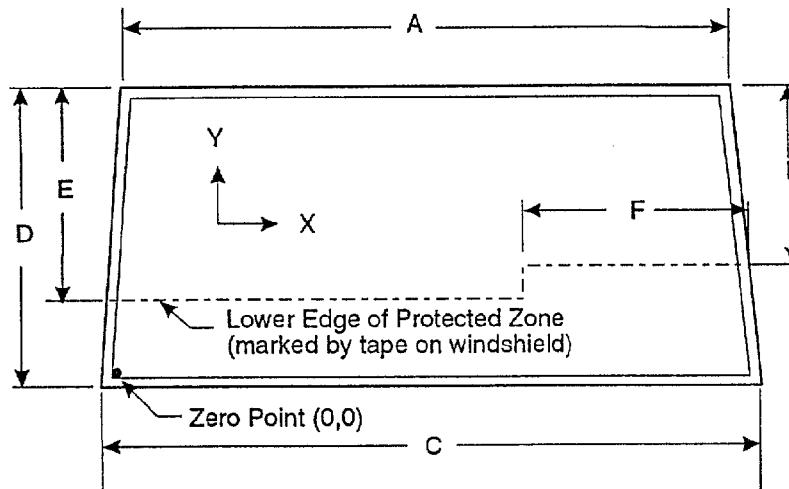
FIGURE 6 FMVSS 219 TEST DATA

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 = 1194
 B = 411
 C = 1539
 D = 716
 E = 472
 F = 765



FRONT VIEW

METHOD OF ADHERING PROTECTED ZONE TEMPLATE TO WINDSHIELD: NA

AREAS OF WINDSHIELD TEMPLATE PENETRATION
GREATER THAN 6.0 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.

ALL MEASUREMENTS ARE IN MILLIMETERS.

TABLE 10 FUEL SYSTEM DATA

MAKE/MODEL: Toyota/Camry

NHTSA NO.: MR5100

FUEL SYSTEM CAPACITY: 70.0 LITERS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 70.0 LITERS (FURNISHED BY COTR)

TEST VOLUME RANGE: 64.4 LITERS TO 65.8 LITERS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 65.1 LITERS (WITH ENTIRE FUEL SYSTEM FILLED)

TEST FLUID TYPE: STODDARD SOLVENT

SPECIFIC GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

TEST FLUID COLOR: PURPLE

DETAILS OF FUEL SYSTEM: The fuel tank is located in front of the rear axle. The fuel filler neck is located on the left side. The fuel lines run along the left side to the front.

ELECTRIC FUEL PUMP: Yes FUEL INJECTION: Yes

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING? No

TABLE 11 FMVSS 301 POST-IMPACT TEST DATA

TEST VEHICLE NHTSA NO.: MR5100 ; TEST DATE: 03/09/94

VEHICLE MAKE/MODEL/BODY STYLE: Toyota/Camry/4-door sedan

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:

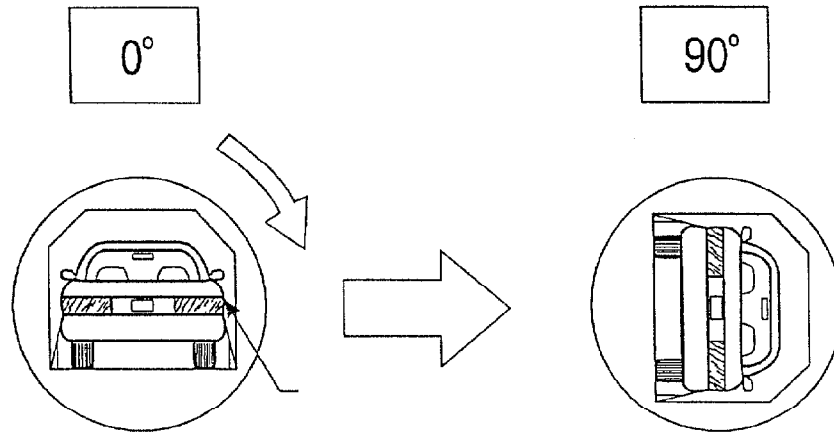
	<u>TEST</u> <u>RESULTS</u>	<u>MAXIMUM</u> <u>ALLOWABLE</u>
1. FROM IMPACT UNTIL VEHICLE MOTION CEASES - - -	0 G	28 G
2. 5 MINUTE PERIOD AFTER VEHICLE MOTION CEASES -	0 G	142 G
3. NEXT 25 MINUTES AFTER 5 MINUTE PERIOD - - - -	0 G	28 G/MN

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 7 FMVSS 301 STATIC ROLLOVER TEST DATA

NHTSA NO.: MR5100
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQUIRED FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
 FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
 TOTAL - - - - - = 7 minutes, 00 seconds
 NEXT WHOLE MINUTE INTERVAL - - - - - = 7 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

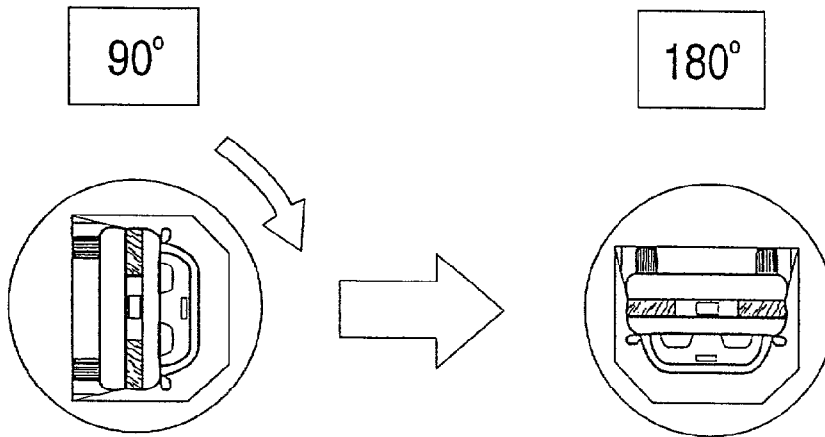
<u>0° TO 90° ROTATION (FUEL FILLER CAP DOWN)</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 7 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: MR5100
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQUIRED FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
TOTAL - - - - - = 7 minutes, 00 seconds
NEXT WHOLE MINUTE INTERVAL - - - - - = 14 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

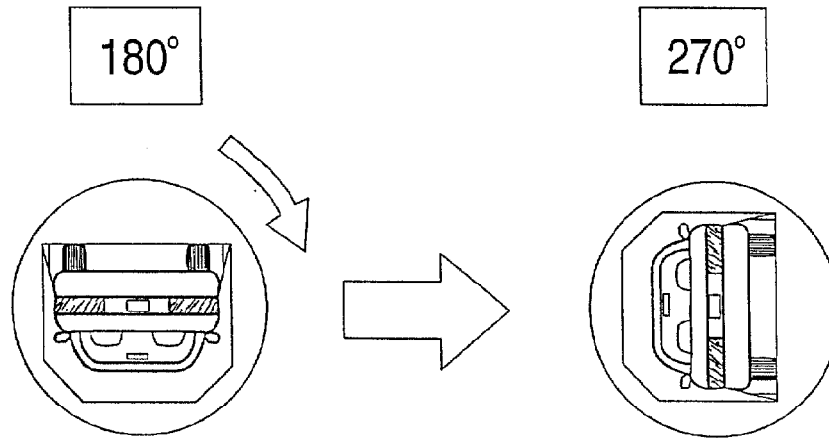
<u>90° TO 180° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 7 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: MR5100
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQUIRED FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
TOTAL - - - - - = 7 minutes, 00 seconds
NEXT WHOLE MINUTE INTERVAL - - - - - = 21 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

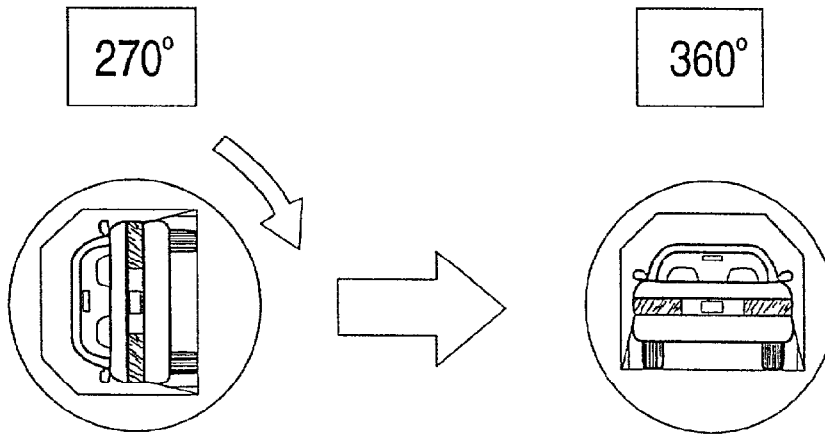
<u>180° TO 270° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 7 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: MR5100
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQUIRED FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds
FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds
TOTAL - - - - - = 7 minutes, 00 seconds
NEXT WHOLE MINUTE INTERVAL - - - - - = 28 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

<u>270° TO 360° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

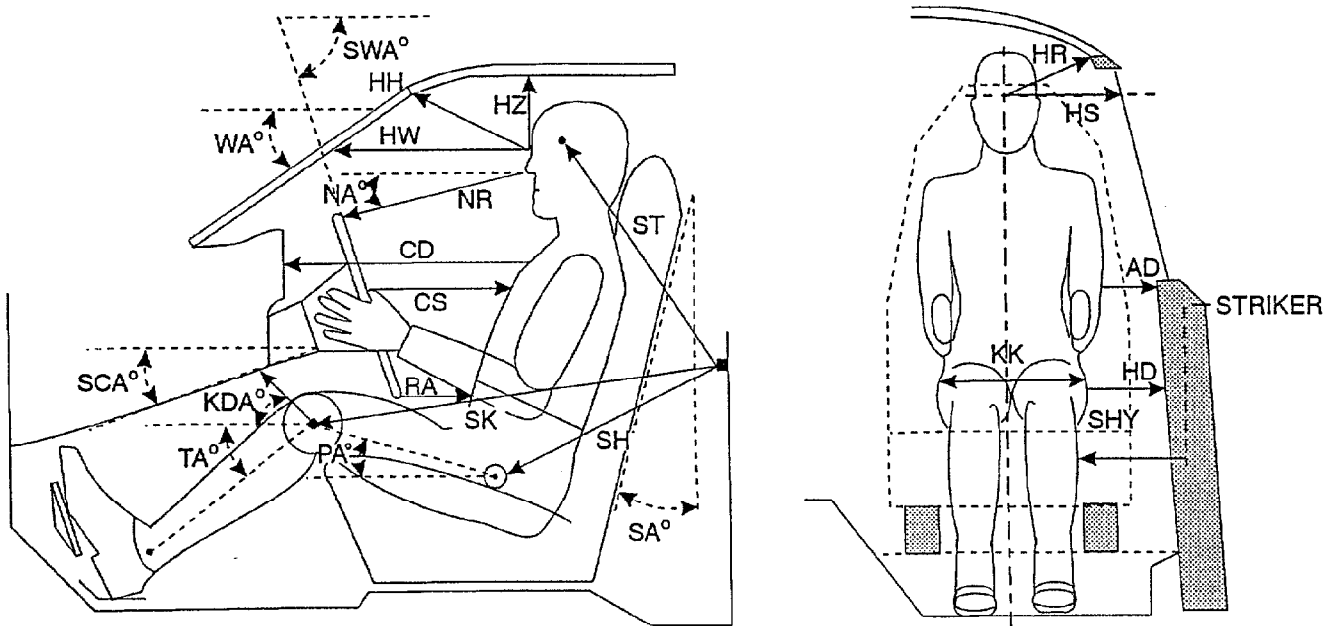
FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

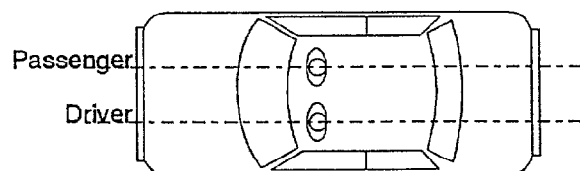
SECTION 4.0

VEHICLE, OCCUPANT, AND CAMERA INFORMATION

FIGURE 8 DUMMY MEASUREMENT LOCATIONS FOR FRONT SEAT OCCUPANTS



VERTICAL LONGITUDINAL PLANE



VERTICAL TRANSVERSE PLANE

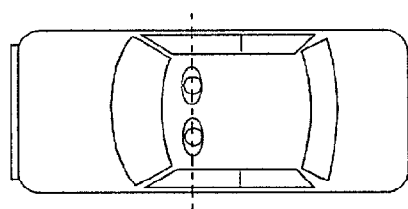


TABLE 12 DUMMY MEASUREMENT DATA FOR FRONT SEAT OCCUPANTS

DESIGNATION	TYPE OF MEASUREMENT	DRIVER (SERIAL #192)	PASSENGER (SERIAL #142)
WA°	WINDSHIELD ANGLE	32	NA
SWA°	STEERING WHEEL ANGLE	25	NA
SCA°	STEERING COLUMN ANGLE	25	NA
SA°	SEAT BACK ANGLE ¹	11	11
HZ	HEAD TO ROOF	165	159
HH	HEAD TO HEADER	300	306
HW	HEAD TO WINDSHIELD	489	491
HR	HEAD TO SIDE HEADER	193	215
NR	NOSE TO RIM	365	NA
NA	NOSE TO RIM ANGLE	15	NA
CD	CHEST TO DASH	543	536
CS	STEERING WHEEL TO CHEST	300	NA
RA	RIM TO ABDOMEN	180	NA
KDL	LEFT KNEE TO DASH	203	197
KDR	RIGHT KNEE TO DASH	156	194
KDA	OUTBOARD KNEE TO DASH ANGLE	27	17
PA°	PELVIC ANGLE	24	22
TA°	TIBIAL ANGLE	39	35
KK	KNEE TO KNEE	372	275
ST	STRIKER TO HEAD	477	477
	STRIKER TO HEAD ANGLE	-77	-82
SK	STRIKER TO KNEE	606	625
	STRIKER TO KNEE ANGLE	8	14
SH	STRIKER TO H-POINT	290	290
	STRIKER TO H-POINT ANGLE	42	38
SHY	STRIKER TO H-POINT (Y DIR.)	208	237
HS	HEAD TO SIDE WINDOW	287	290
HD	H-POINT TO DOOR	158	154
AD	ARM TO DOOR	103	104

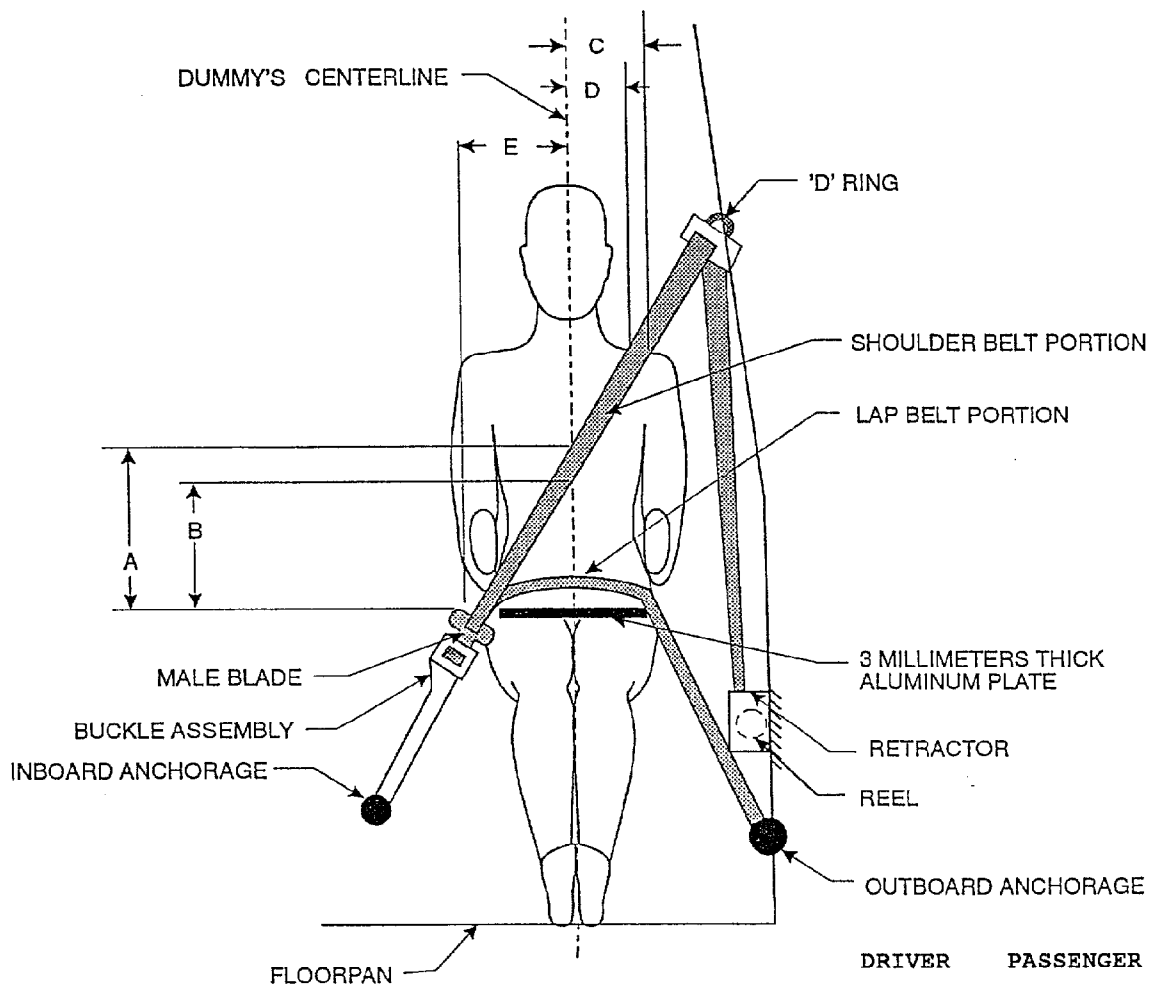
THE SEAT BACK ANGLE (SA°) IS MEASURED RELATIVE TO VERTICAL, ALL OTHER ANGLES ARE MEASURED RELATIVE TO HORIZONTAL.

ALL ANGLE MEASUREMENTS ARE IN DEGREES.

ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

¹Angle measured from head restraint support.

FIGURE 9 SEAT BELT POSITIONING DATA



	DRIVER	PASSENGER
A - TOP SURFACE OF ALUMINUM PLATE TO BELT UPPER EDGE	330	342
B - TOP SURFACE OF ALUMINUM PLATE TO BELT LOWER EDGE	252	250
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	103	110
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	37	48
LAPBELT TENSION (N)	13	13
SHOULDER BELT TENSION (N)	9	13
ADJUSTABLE SEAT BELT ANCHORAGE POSITION	1st position down from uppermost	1st position down from uppermost

ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

FIGURE 10 CAMERA POSITIONS

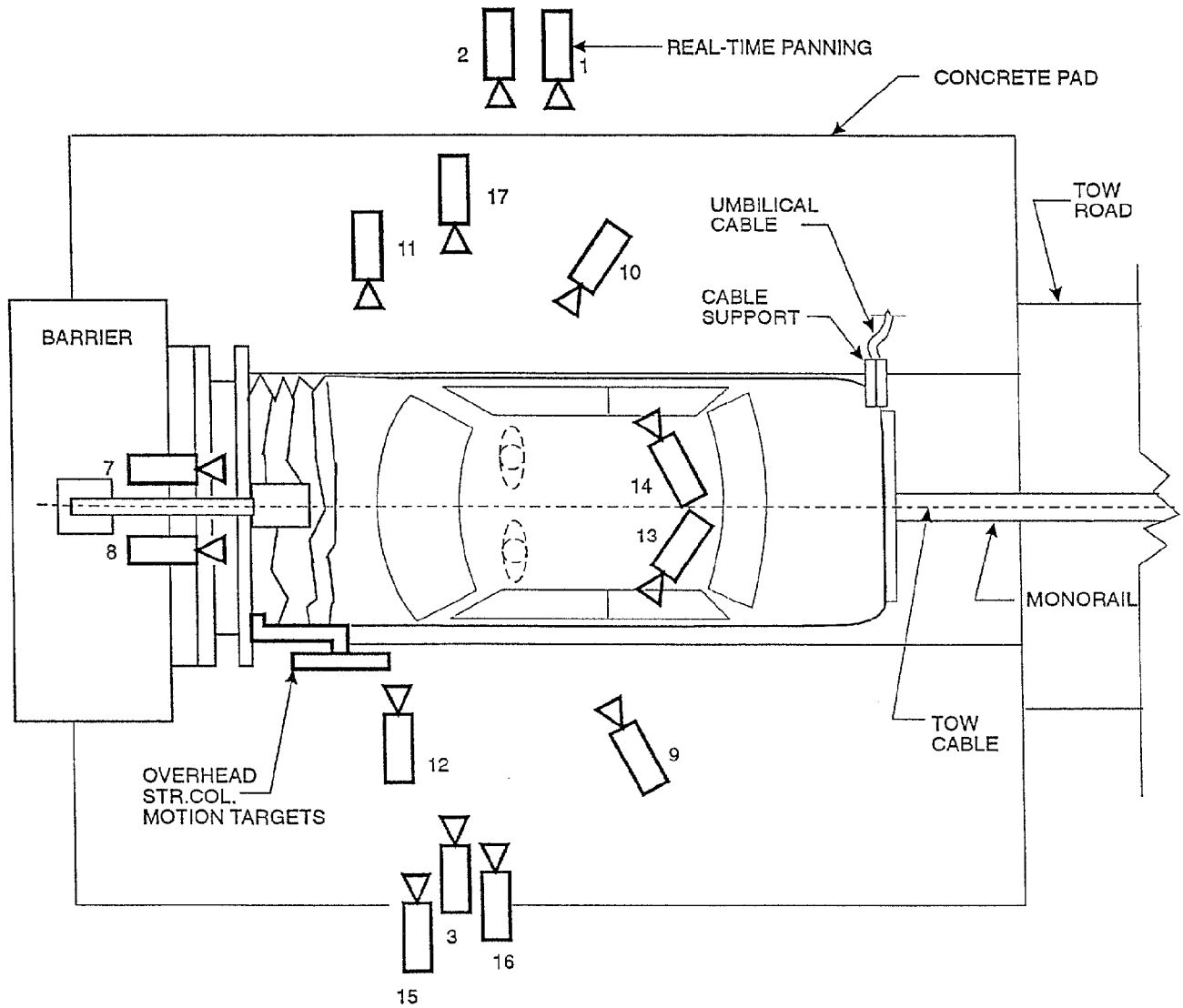


FIGURE 10 CAMERA POSITIONS, CONT'D.

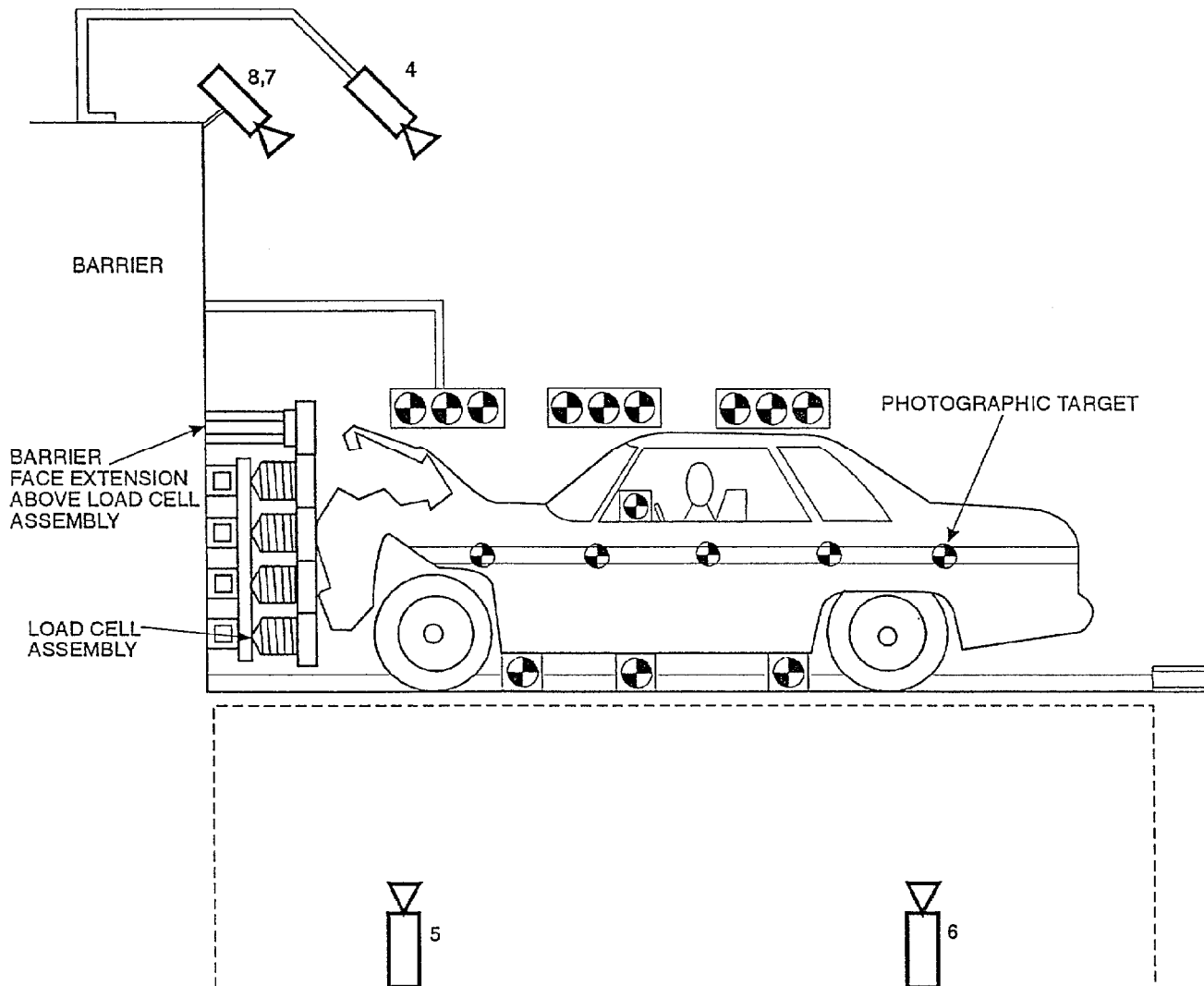


TABLE 13 MOTION PICTURE CAMERA LOCATIONS

TEST NO.:		940309		VEHICLE:		1994 Toyota Camry		FILM PLANE			FILM SPEED (FPS)
CAMERA NO.	VIEW	CAMERA POSITIONS (MM) ¹			ANGLE ² (DEG)	TO HEAD TARGET (MM)	LENS (MM)				
		X	Y	Z							
1	Real-time panning	-3607	-12802	1549	NA	NA	16	24			
2	Vehicle crush	-2065	-6767	942	-2	NA	13	505			
3	Dummy kinematics	-1054	7493	1118	-12	6020	25	992			
4	Windshield damage	-925	0	2489	-40	NA	13	507			
5	Crush & fluid spillage	-1283	0	-2347	90	NA	13	1000			
6	Fluid spillage	-2522	0	-2515	90	NA	13	987			
7	Passenger kinematics	-114	-351	2159	-40	NA	17	500			
8	Driver kinematics	-173	368	2159	-41	NA	17	485			
9	Driver kinematics	-4572	1854	2591	-27	2388	25	475			
10	Passenger kinematics	-4674	-1880	2540	-26	1930	25	490			
11	Windshield intrusion	-968	-7775	1118	0	NA	50	500			
12	Windshield intrusion	-1346	7859	1074	0	NA	50	502			
13	Driver seat belt movement	NA	NA	NA	NA	NA	13	917			
14	passenger seat belt movement	NA	NA	NA	NA	NA	13	1008			
15	Column movement	-2032	7264	2616	-14	NA	25	505			
16	Column movement	-2032	7264	1908	-9	NA	25	502			
17	Passenger kinematics	-986	-5354	1151	7	5715	25	985			

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

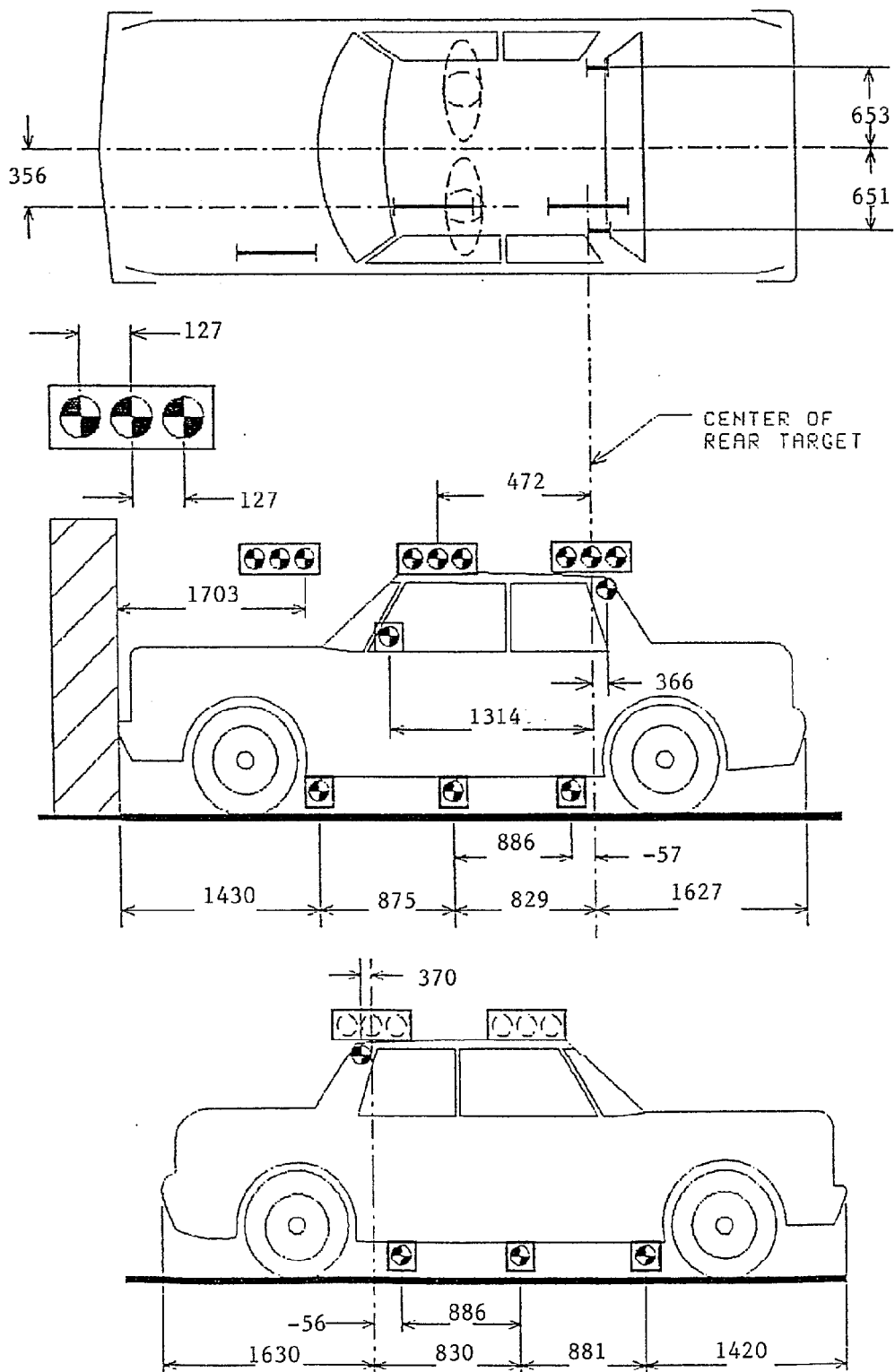


FIGURE 12 PRE-TEST AND POST-TEST MEASUREMENT POINTS

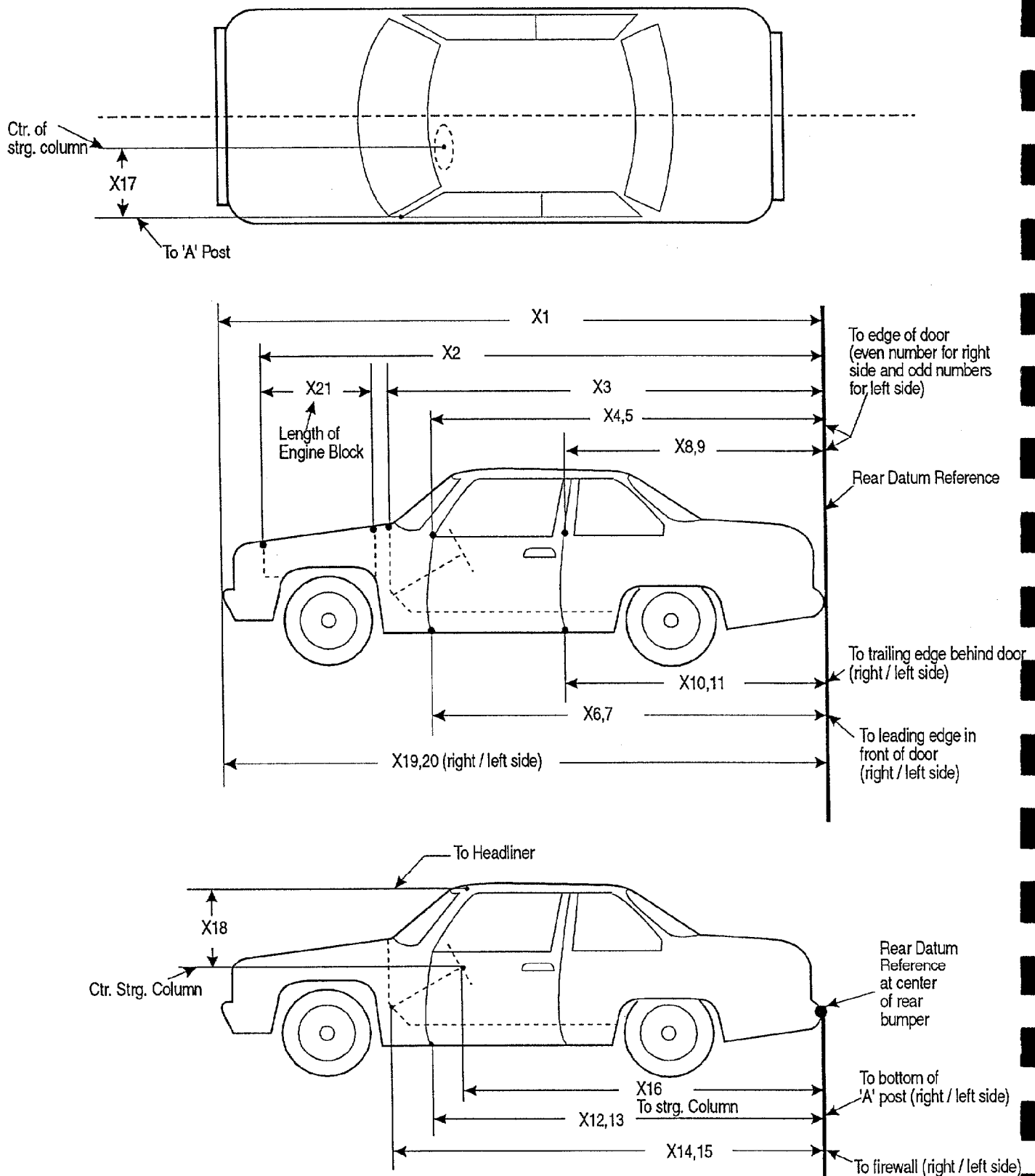


TABLE 14 IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL: Toyota/Camry TEST NUMBER: 940309

NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	4761	4220	541
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	3890	3715	175
X3	REAR SURFACE OF VEHICLE TO FIREWALL	3521	3507	14
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	3207	3213	-6
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	3199	3210	-11
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	3231	3235	-4
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	3227	3231	-4
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	2183	2193	-10
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	2180	2191	-11
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	2198	2206	-8
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	2195	2198	-3
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	3214	3217	-3
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	3210	3214	-4
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	3489	3487	2
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	3481	3468	13
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	2806	2750	56
X17	CENTER OF STEERING COLUMN TO "A" POST	280	385	-105
X18	CENTER OF STEERING COLUMN TO HEADLINER	399	414	-15
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	4645	4192	453
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	4645	4183	462
X21	LENGTH OF ENGINE BLOCK	409	409	0

All measurements are in millimeters.

APPENDIX A

PHOTOGRAPHS

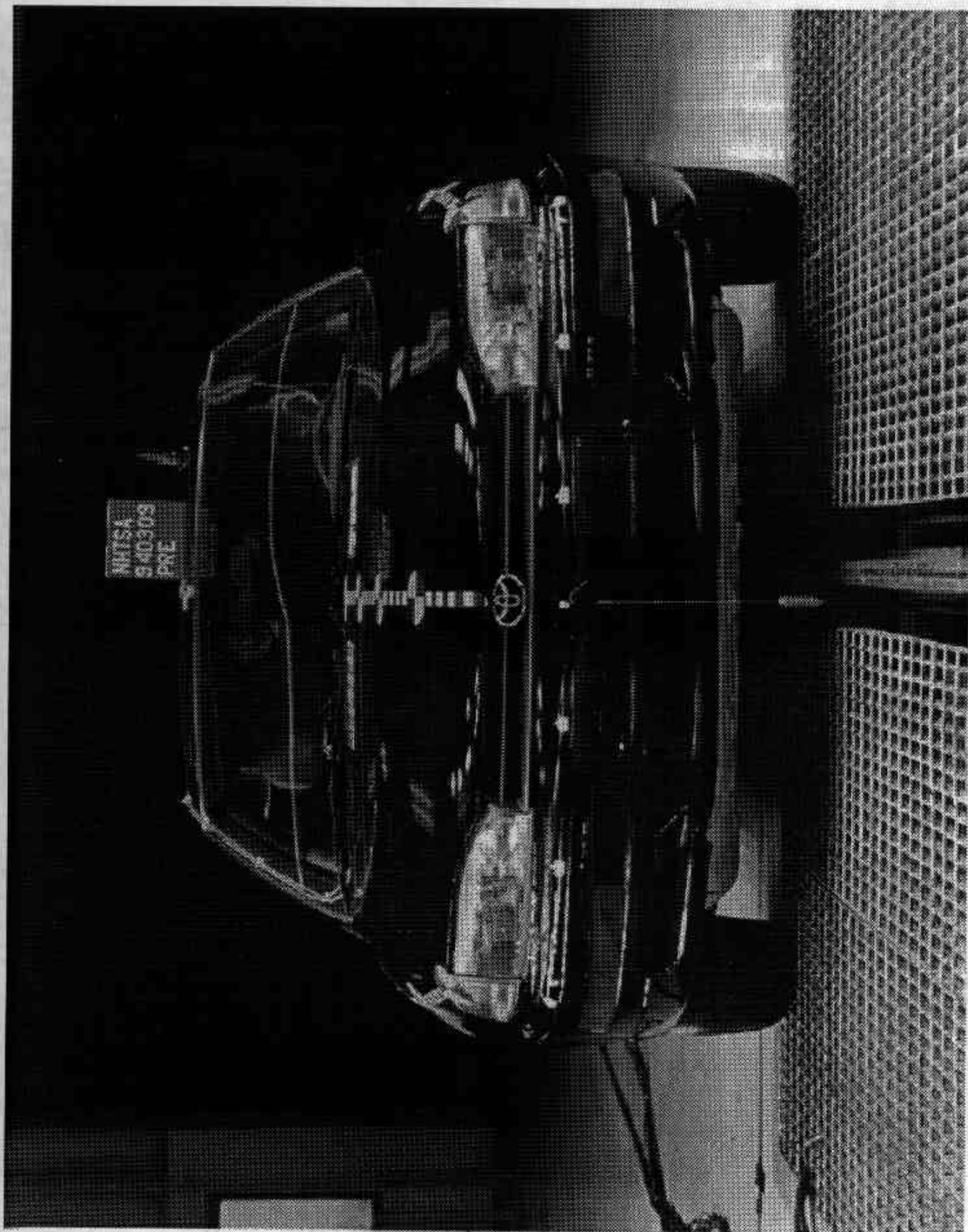


Figure A-1. PRE-TEST FRONT VIEW

A-2

940309

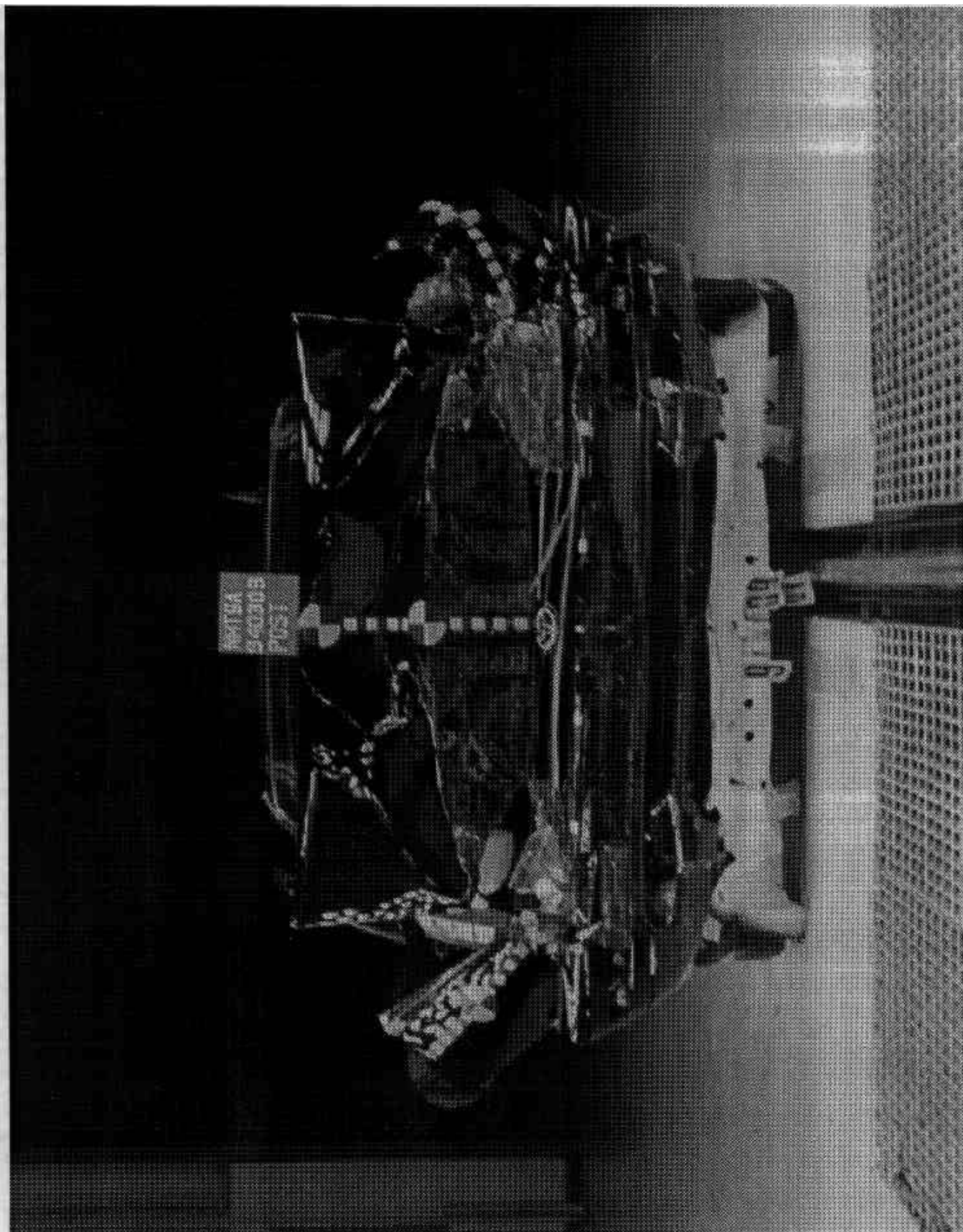


Figure A-2. POST-TEST FRONT VIEW
A-3

940309

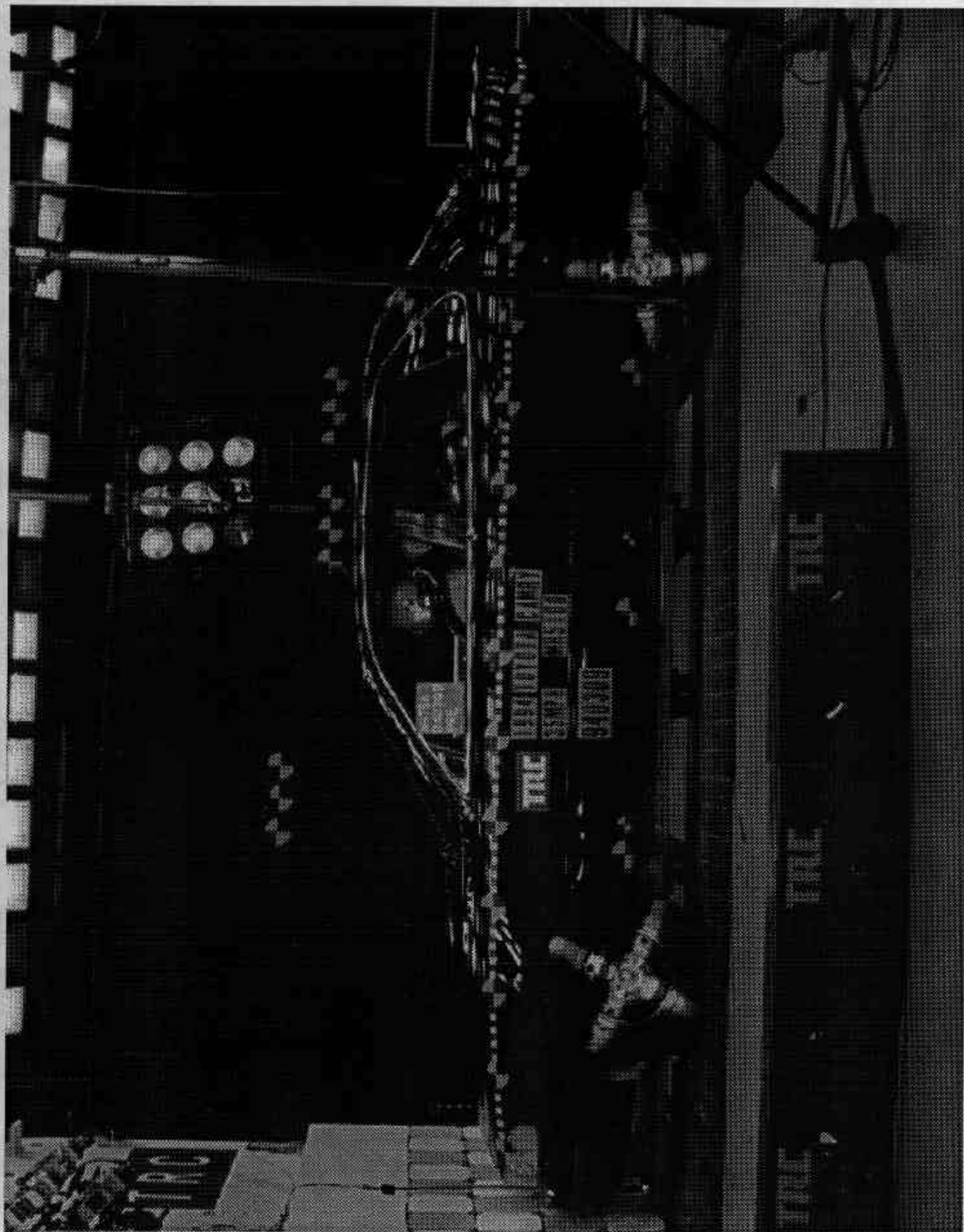


Figure A-3. PRE-TEST LEFT SIDE VIEW
A-4

940309

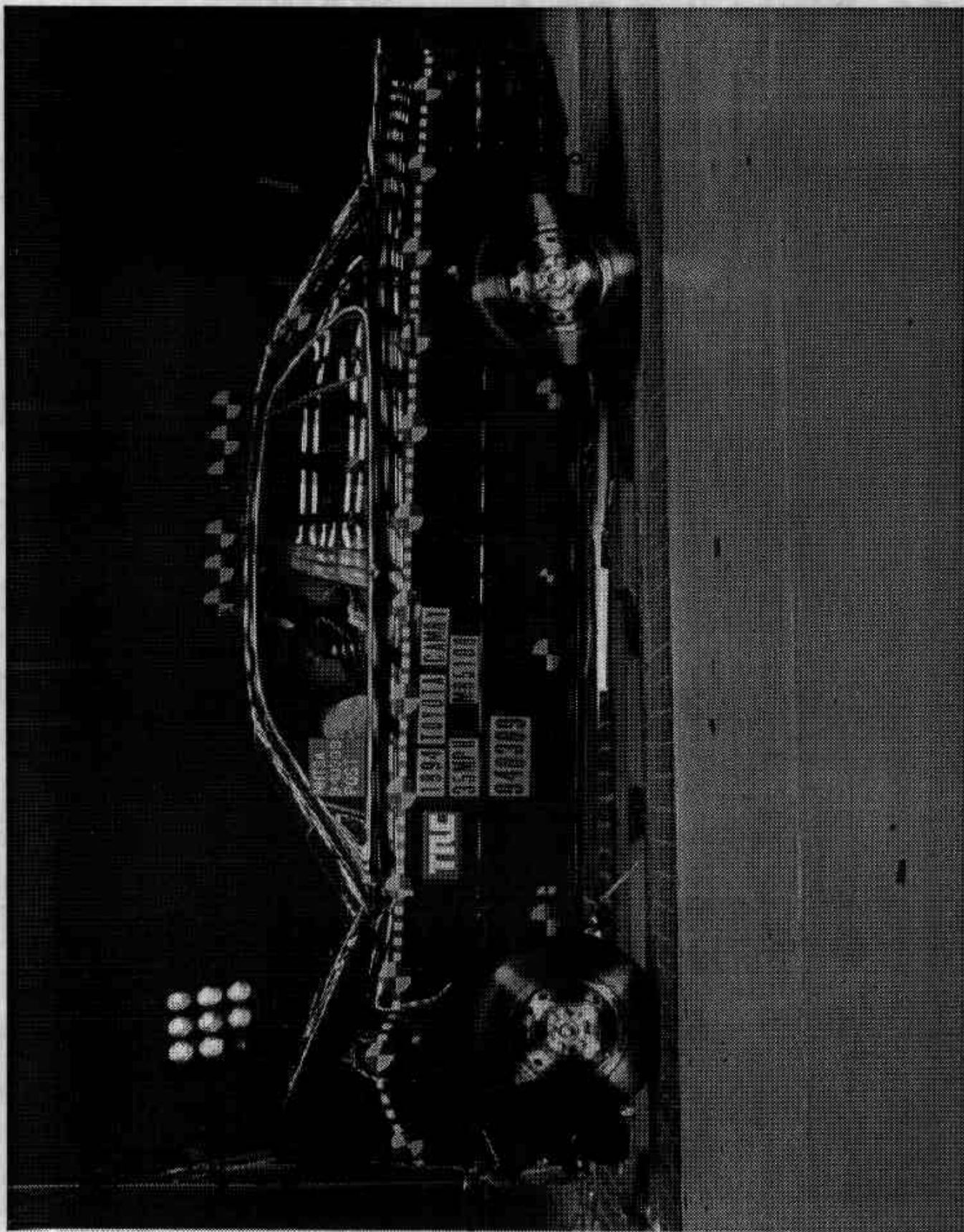


Figure A-4. POST-TEST LEFT SIDE VIEW
A-5

940309

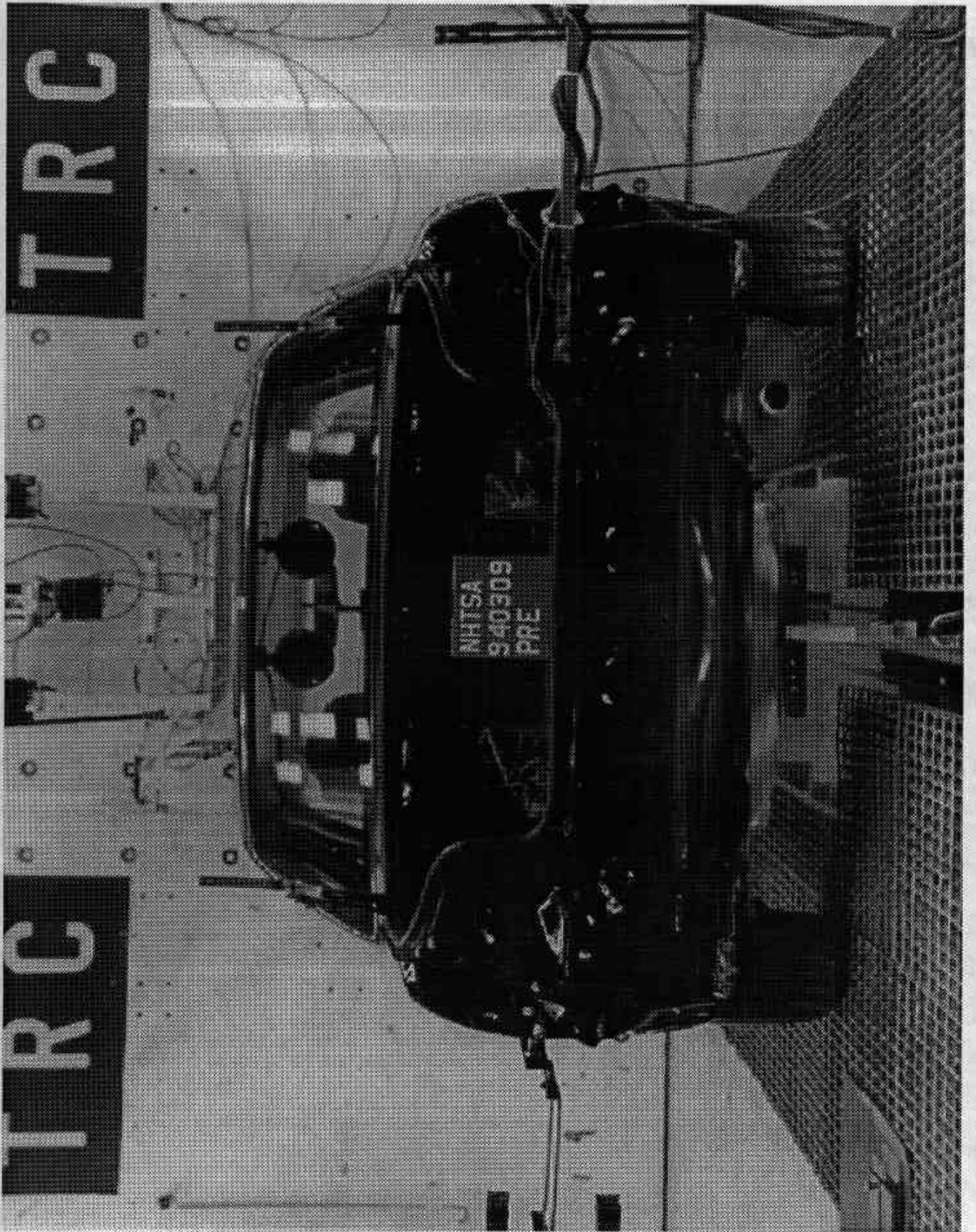


Figure A-5. PRE-TEST REAR VIEW
A-6

940309

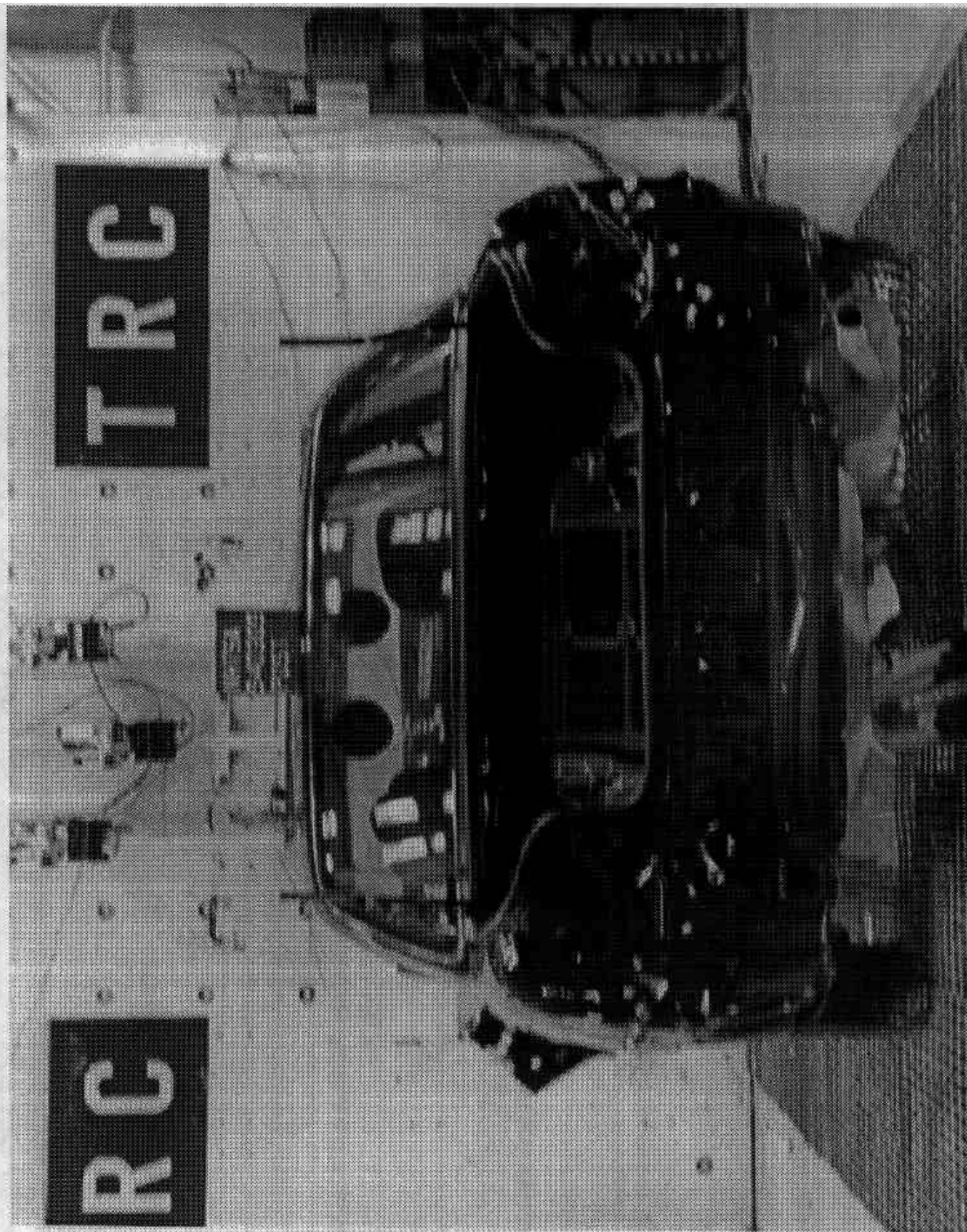


Figure A-6. POST-TEST REAR VIEW
A-7

940309

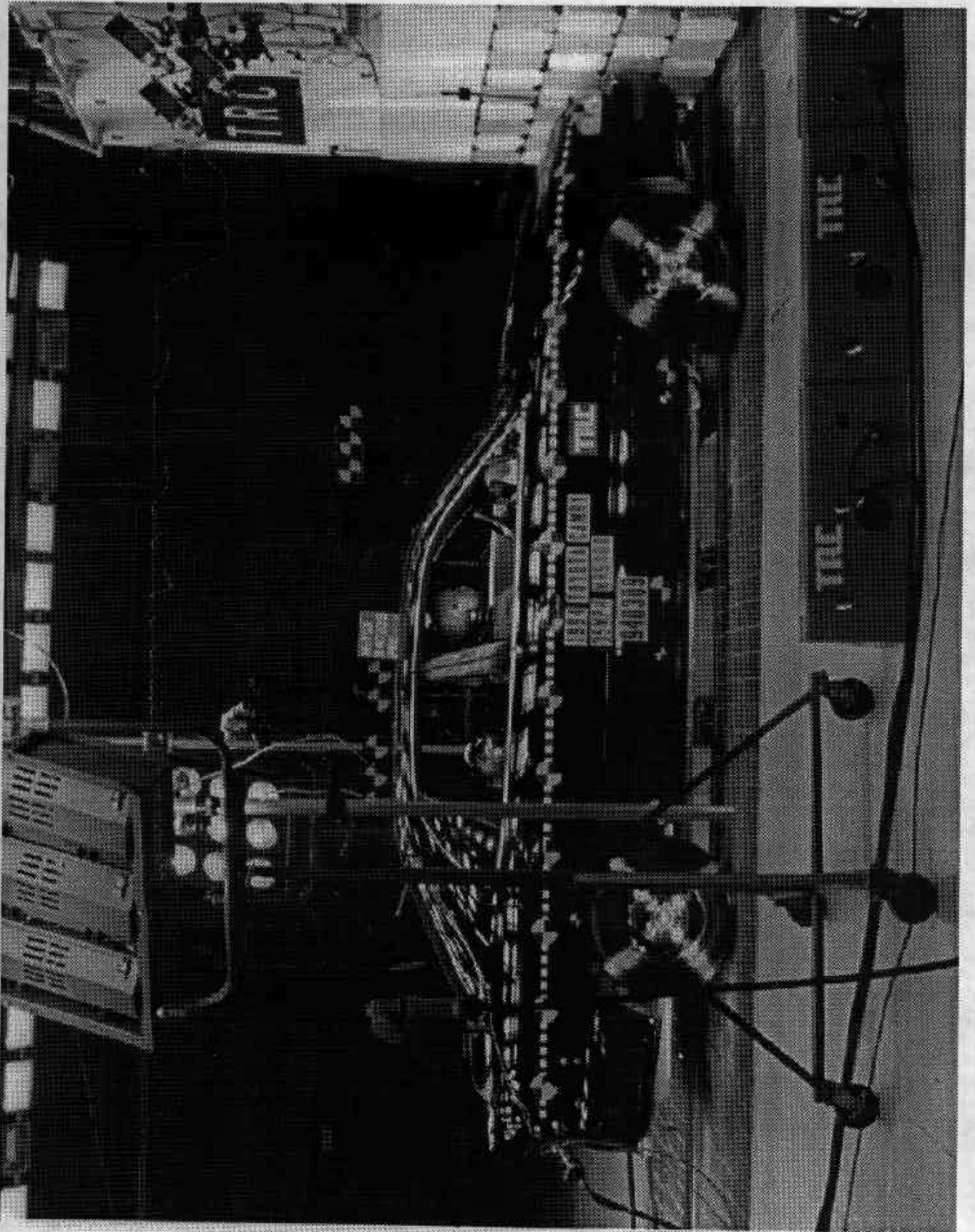


Figure A-7. PRE-TEST RIGHT SIDE VIEW

A-8

940309

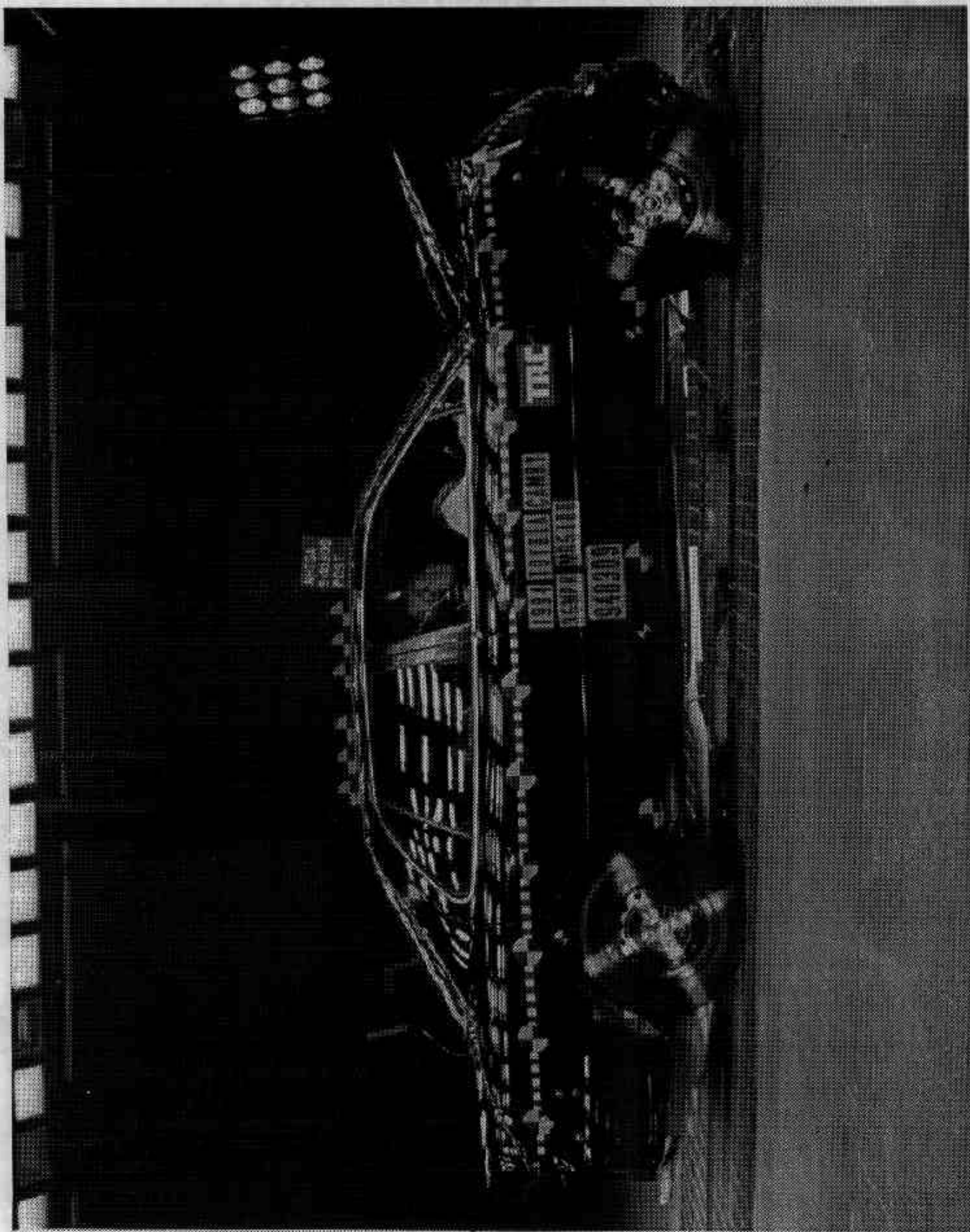


Figure A-8. POST-TEST RIGHT SIDE VIEW

A-9

940309

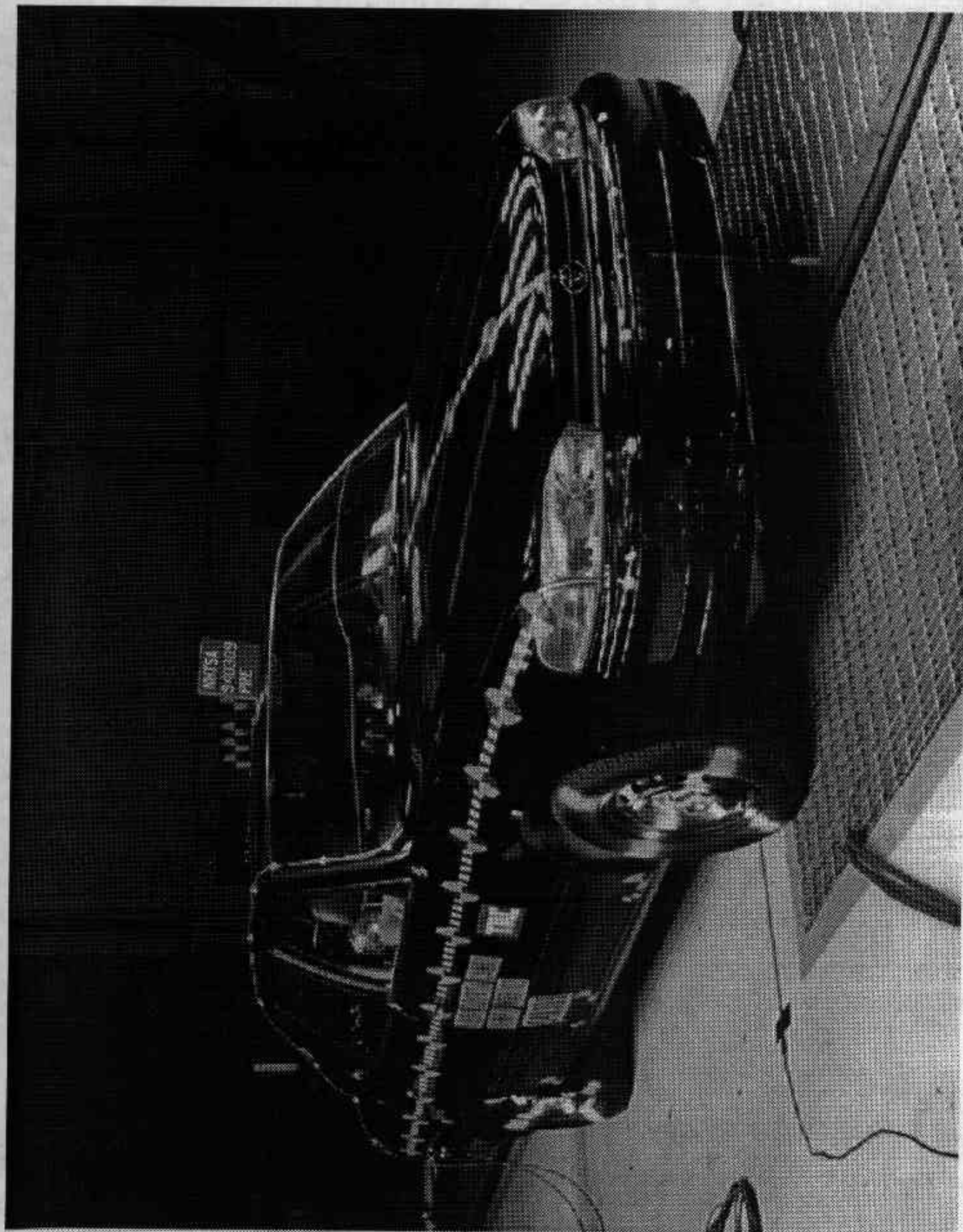


Figure A-9. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW
A-10

940309

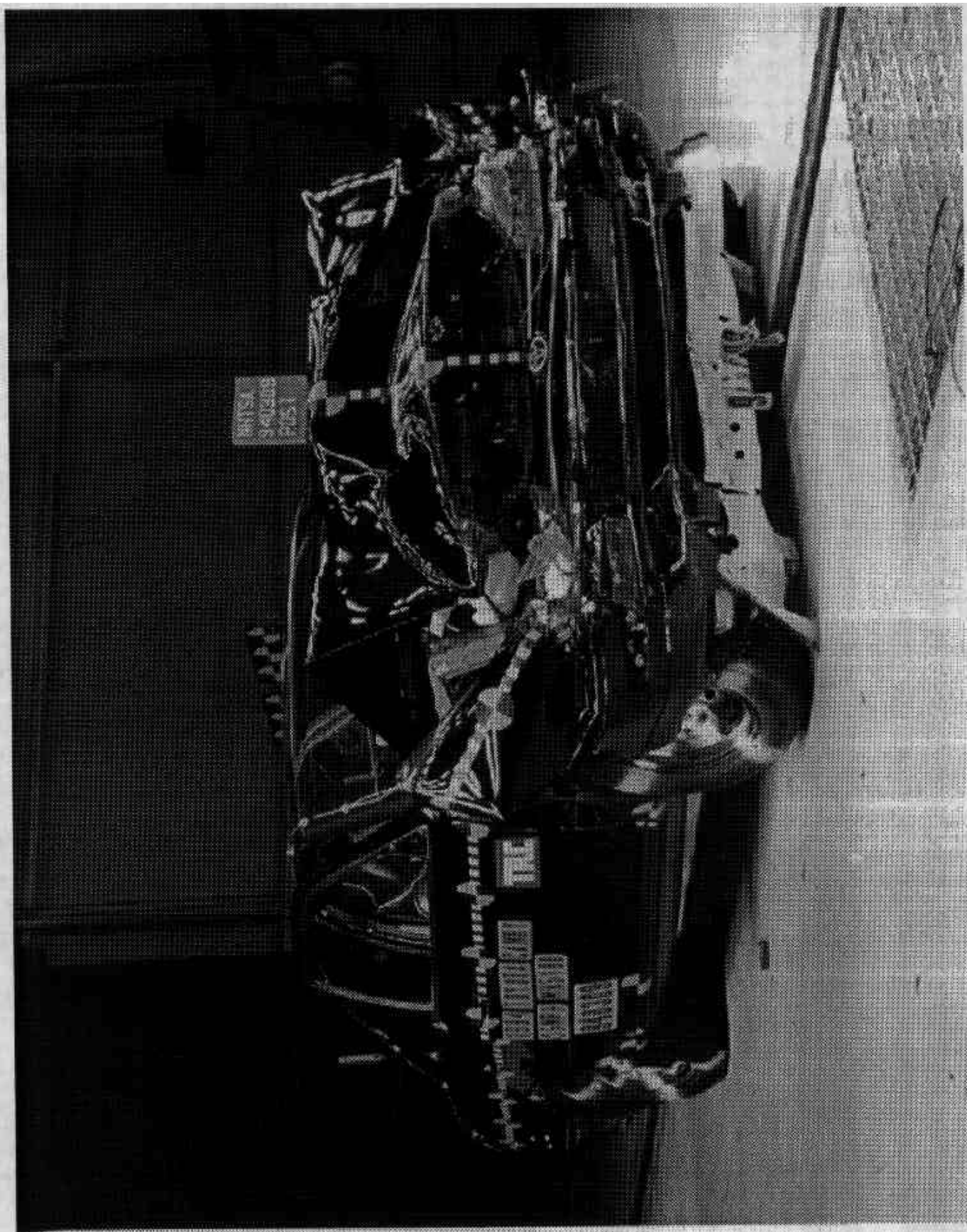


Figure A-10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW

A-11

940309

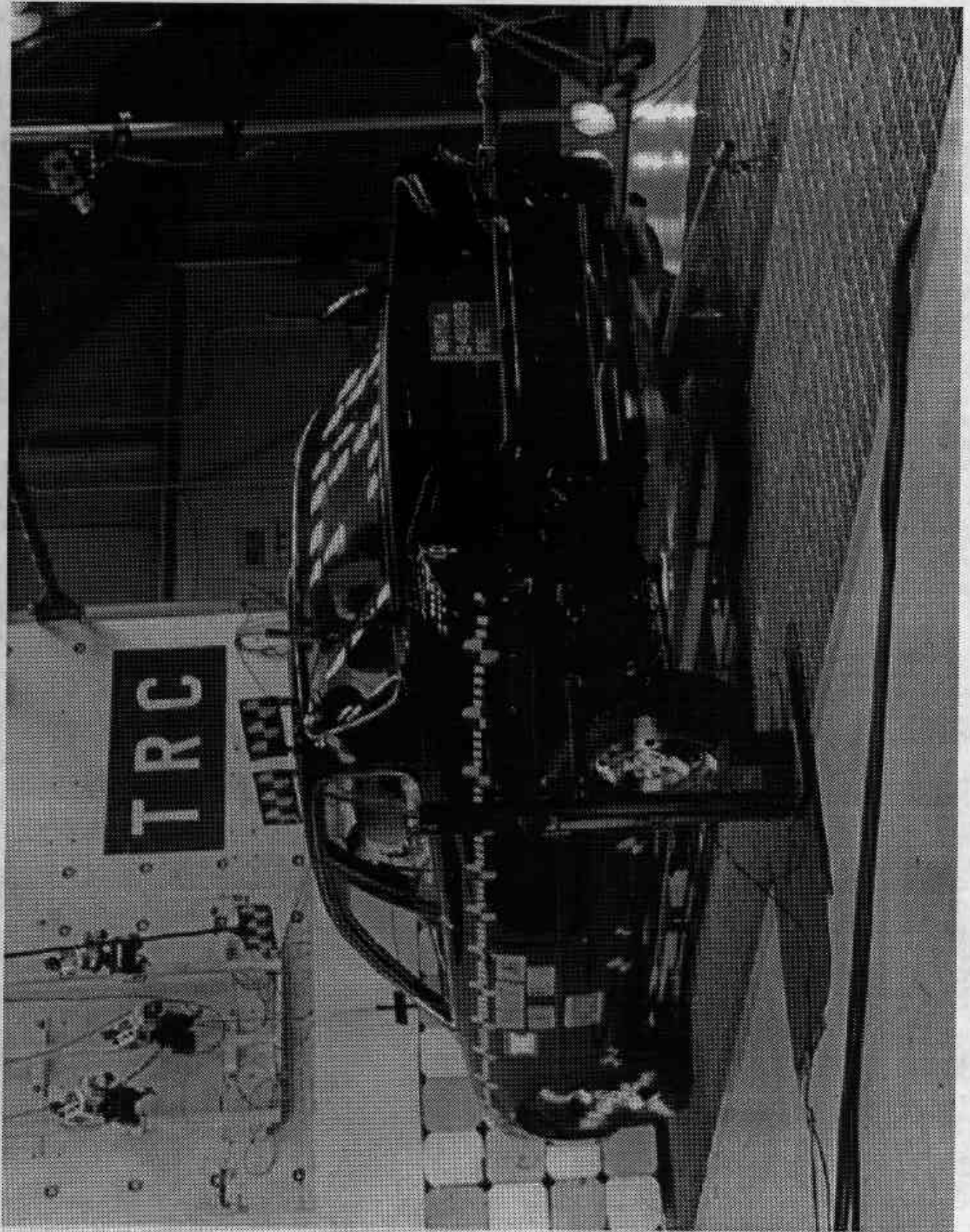


Figure A-11. PRE-TEST LEFT REAR THREE-QUARTER VIEW

A-12

940309

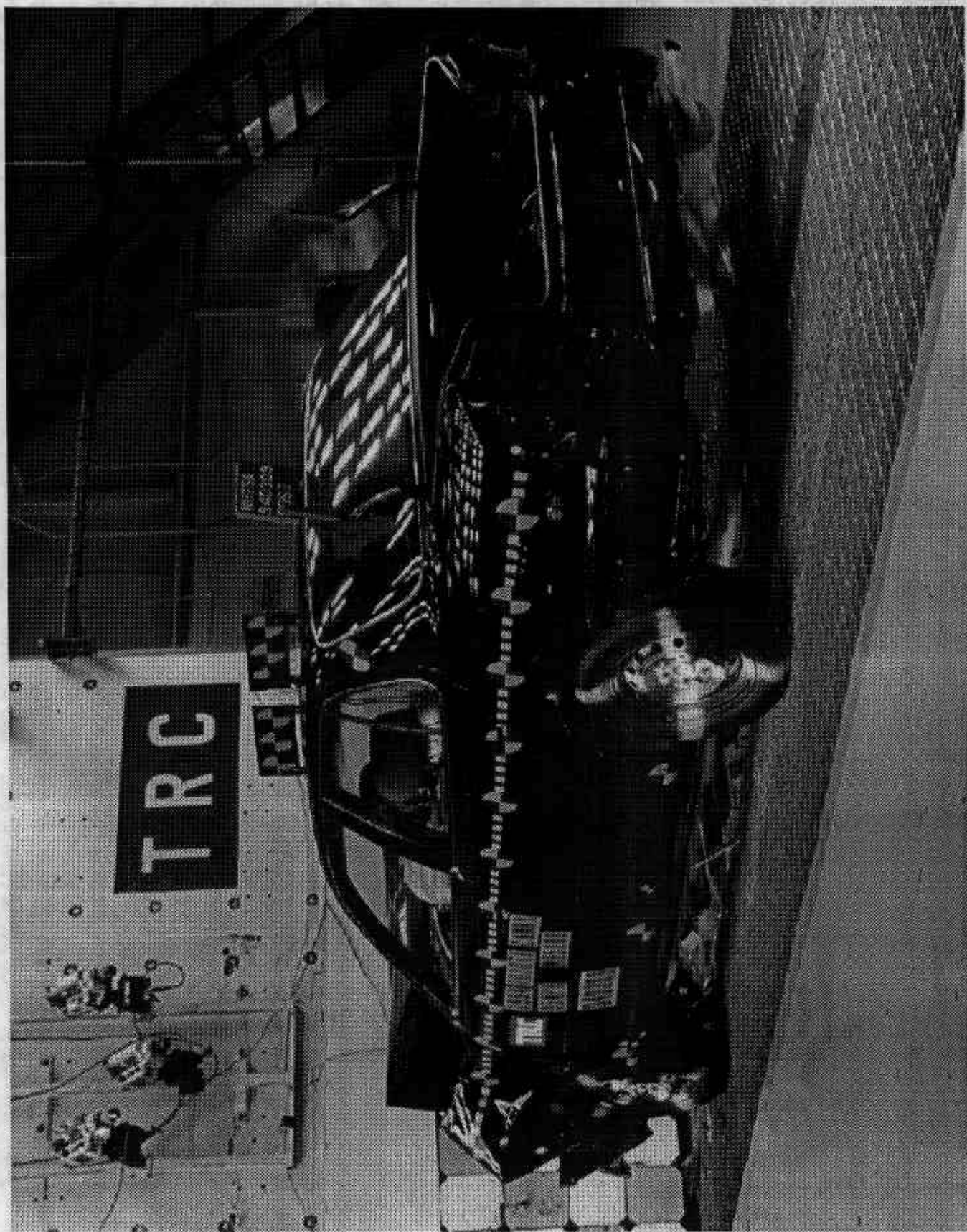


Figure A-12. POST-TEST LEFT REAR THREE-QUARTER VIEW

A-13

940309

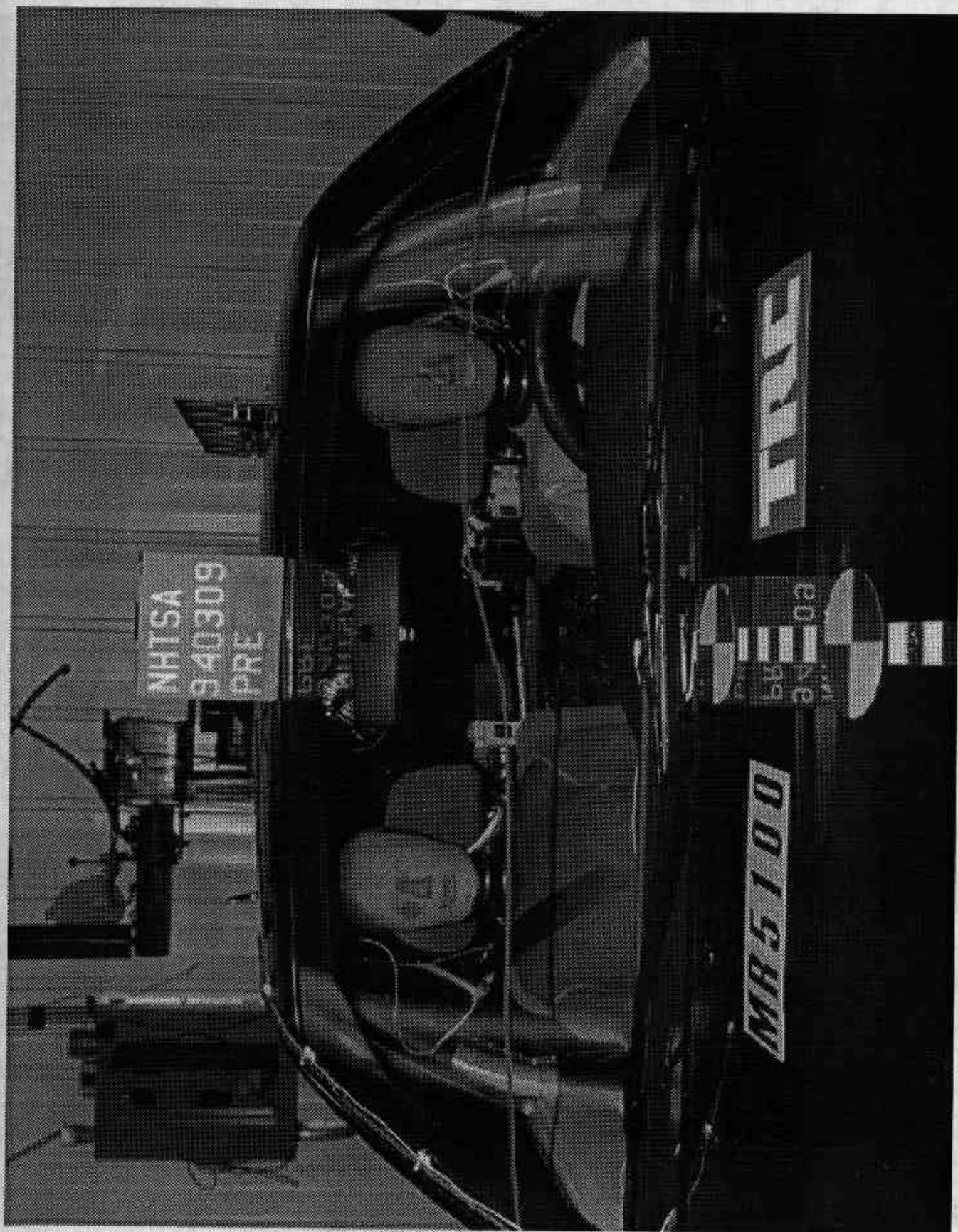


Figure A-13. PRE-TEST WINDSHIELD VIEW
A-14

940309

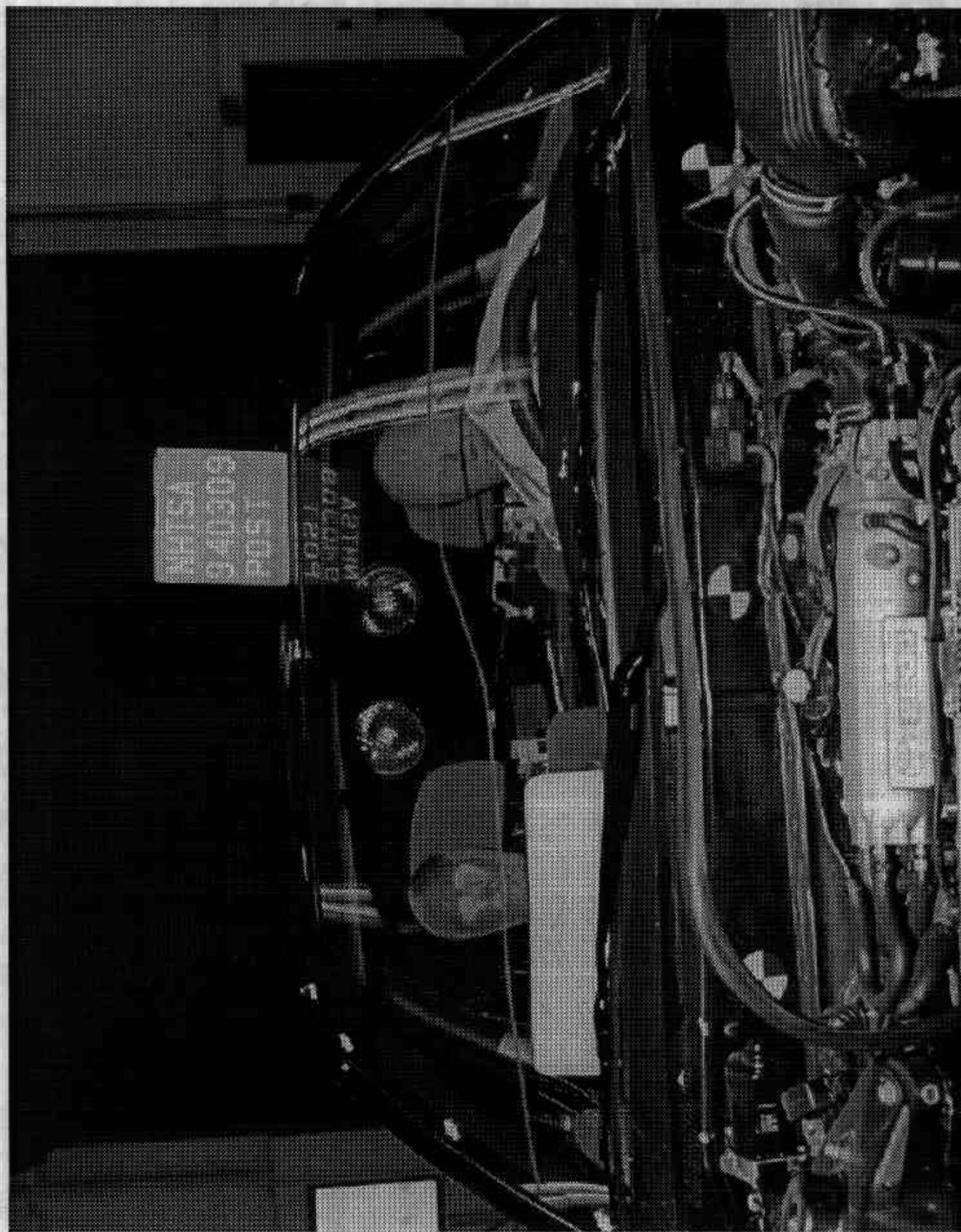


Figure A-14. POST-TEST WINDSHIELD VIEW
A-15

940309



Figure A-15. PRE-TEST ENGINE COMPARTMENT VIEW
A-16

940309

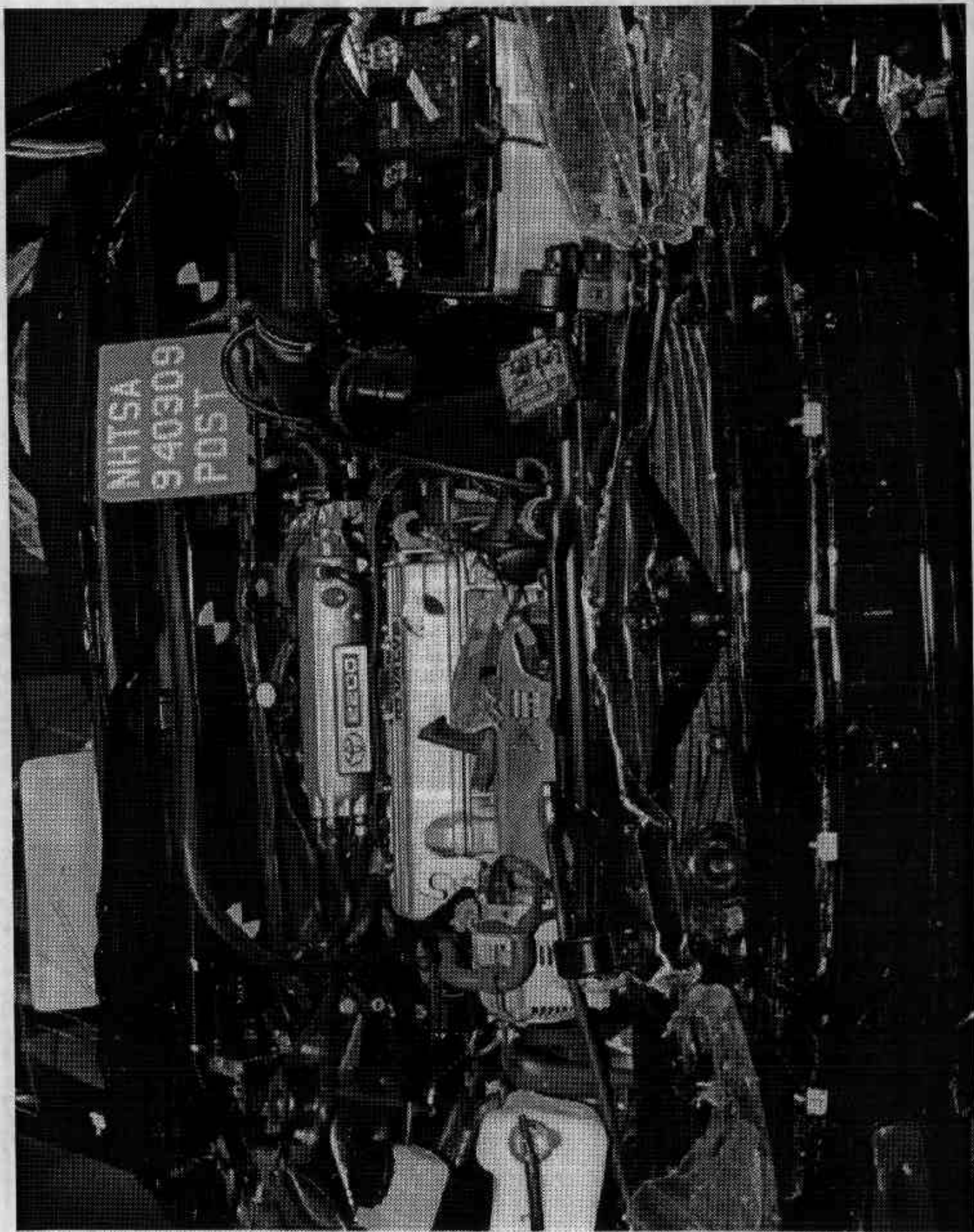


Figure A-16. POST-TEST ENGINE COMPARTMENT VIEW

A-17

940309



Figure A-17. PRE-TEST FUEL FILLER CAP VIEW
A-18

940309

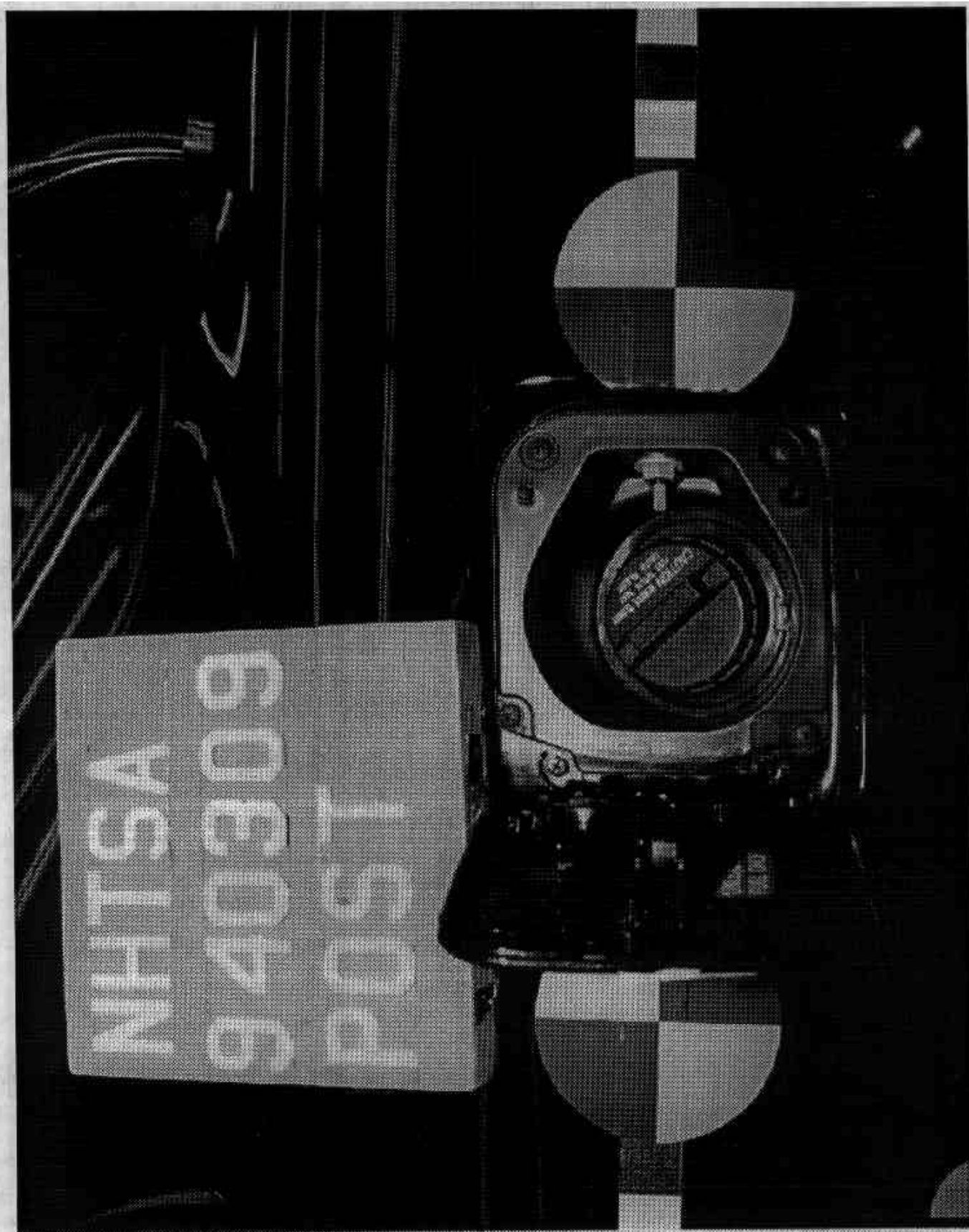


Figure A-18. POST-TEST FUEL FILLER CAP VIEW

A-19

940309

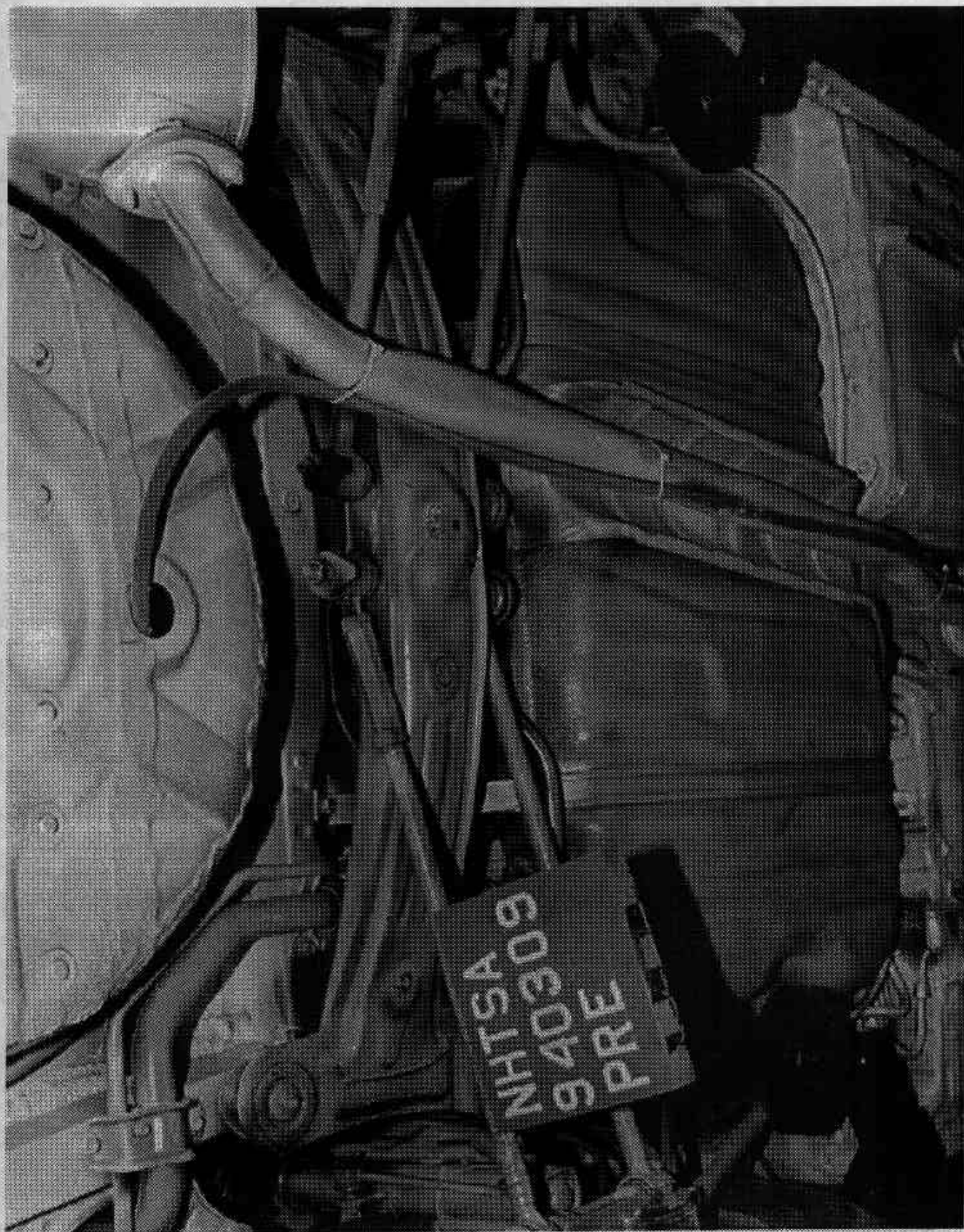


Figure A-19 PRE-TEST FUEL FILLER NECK AND FUEL TANK VIEW

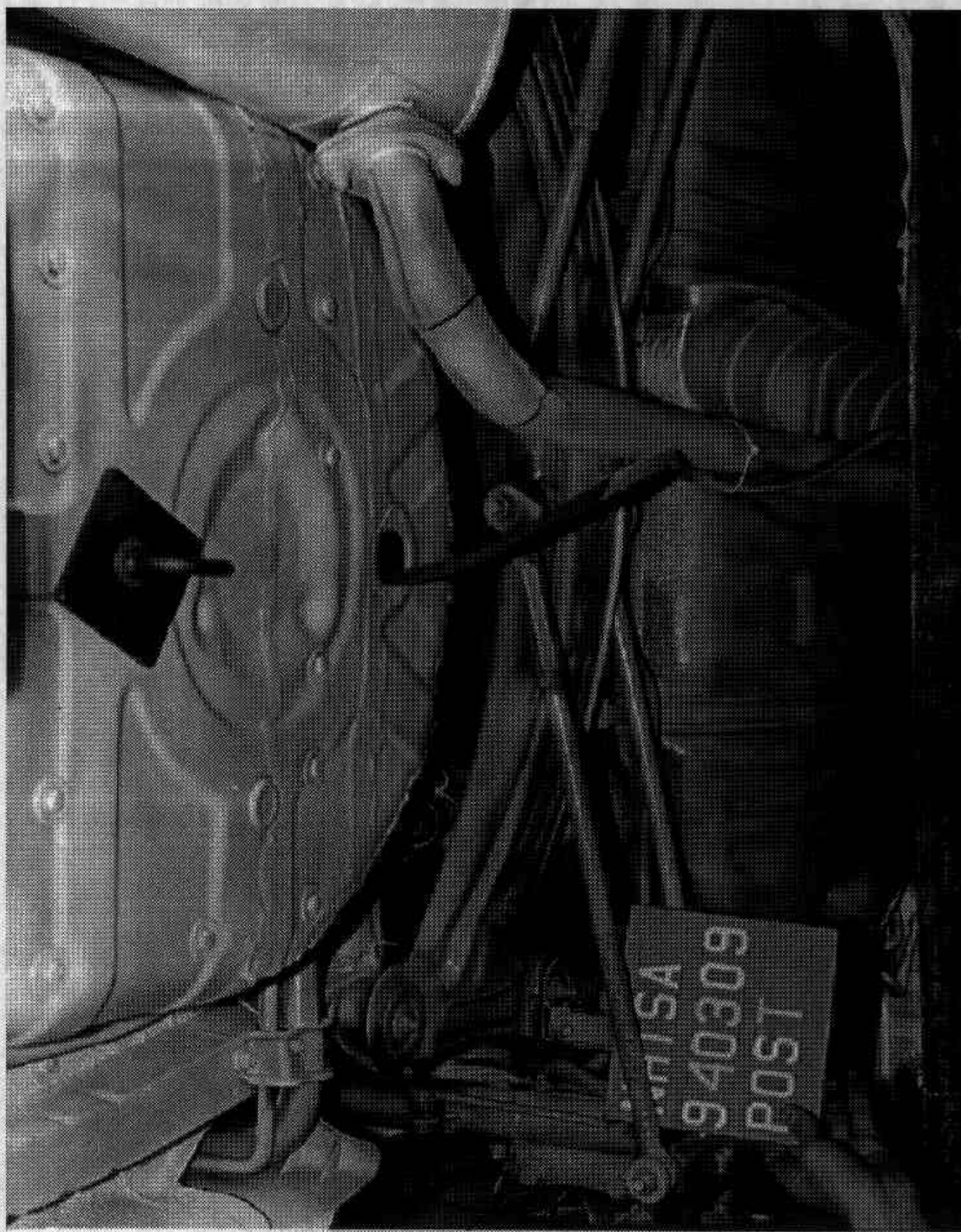


Figure A-20. POST-TEST FUEL FILLER NECK AND FUEL TANK VIEW

A-21

940309

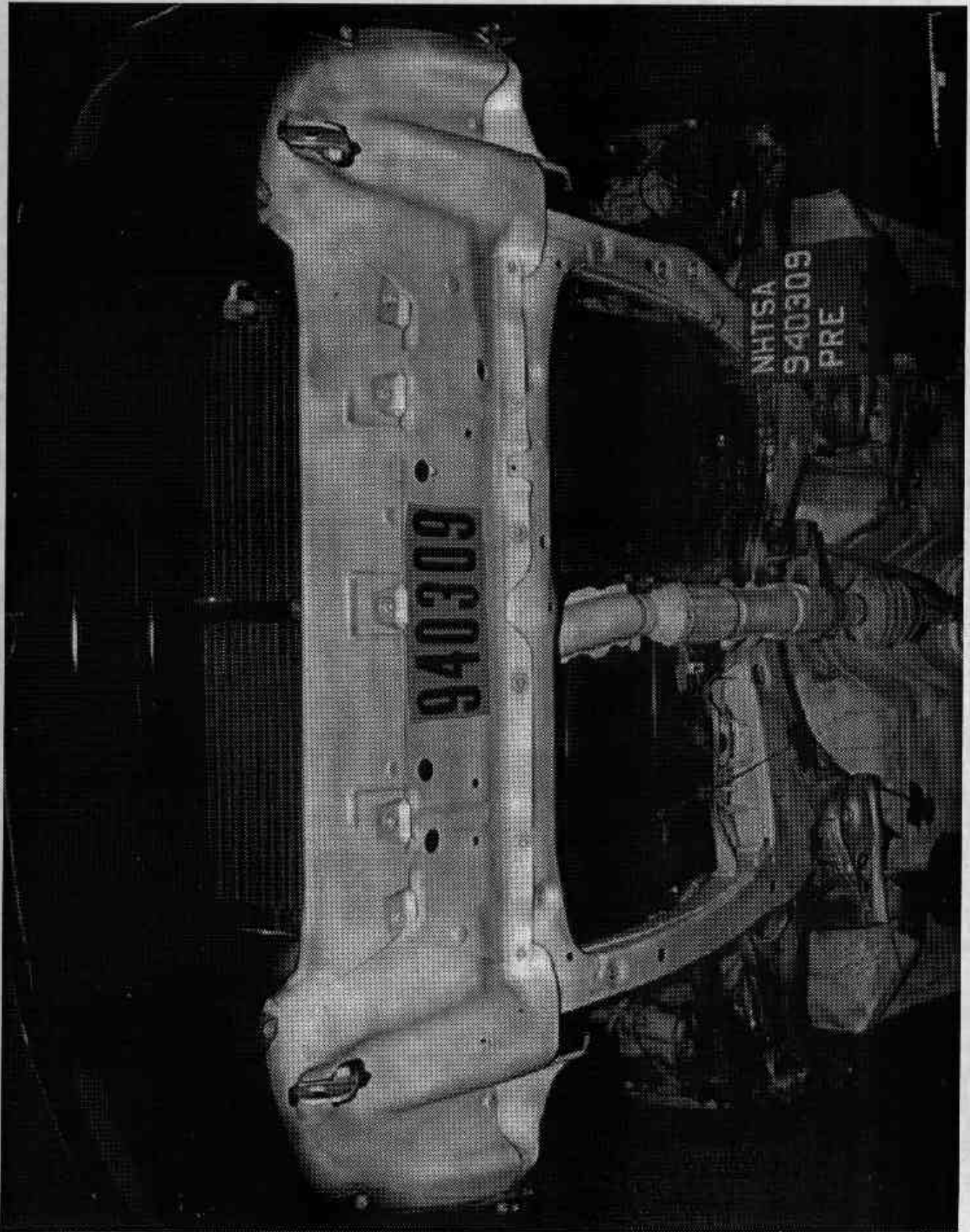


Figure A-21. PRE-TEST FRONT UNDERBODY VIEW
A-22

940309

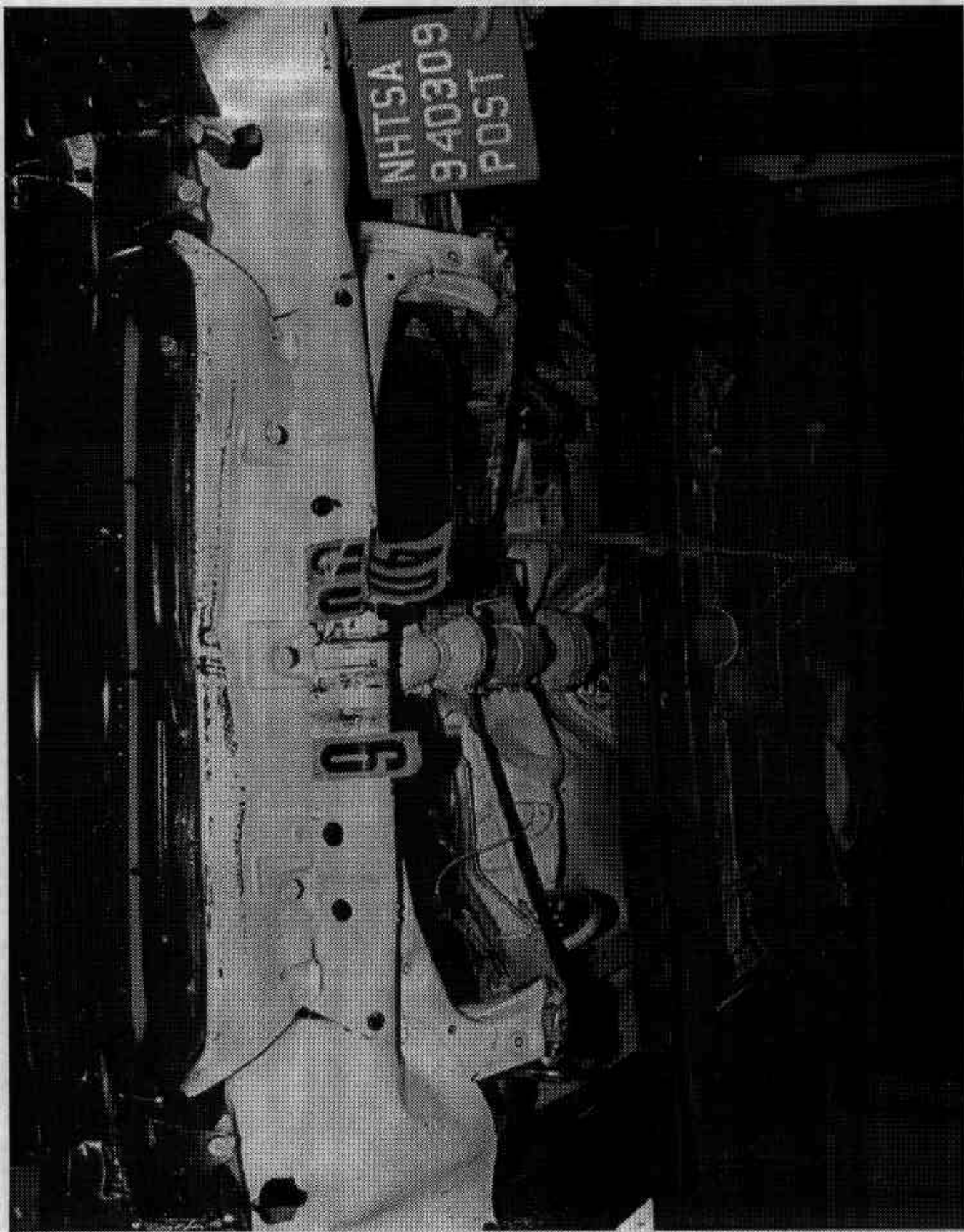


Figure A-22. POST-TEST FRONT UNDERBODY VIEW

A-23

940309



Figure A-23. PRE-TEST REAR UNDERBODY VIEW
A-24

940309

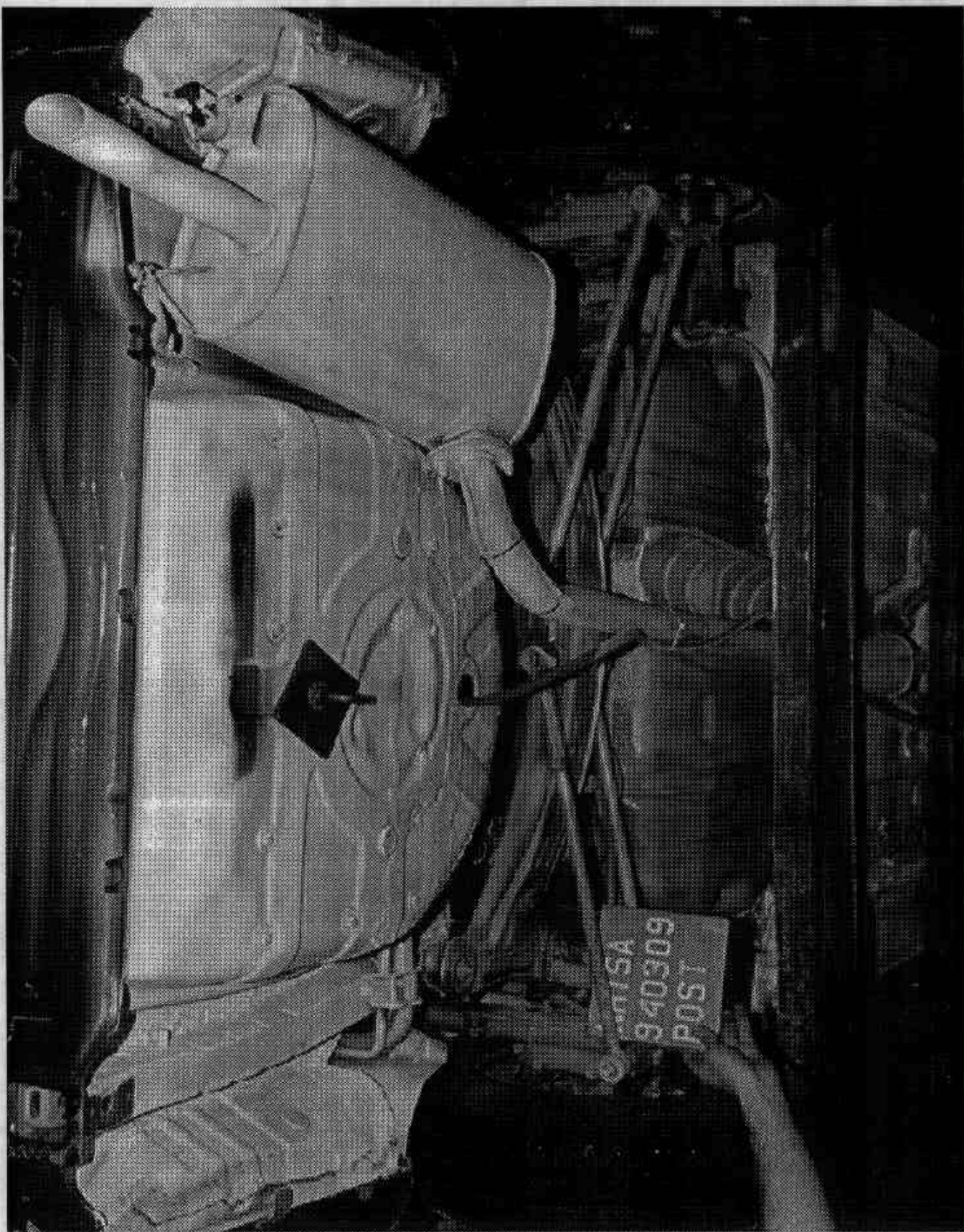


Figure A-24. POST-TEST REAR UNDERBODY VIEW
A-25

940309

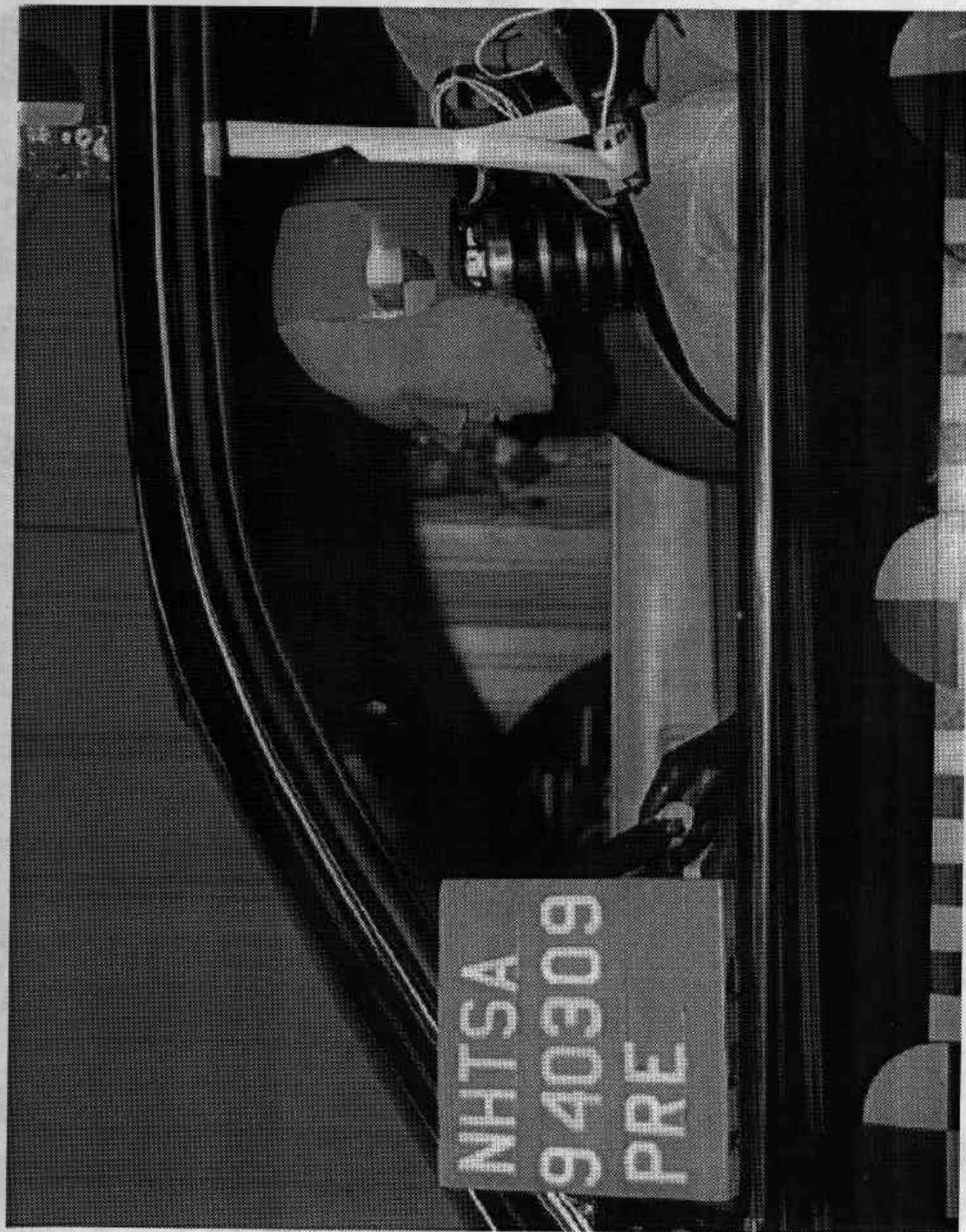


Figure A-25. PRE-TEST DRIVER DUMMY POSITION VIEW

A-26

940309

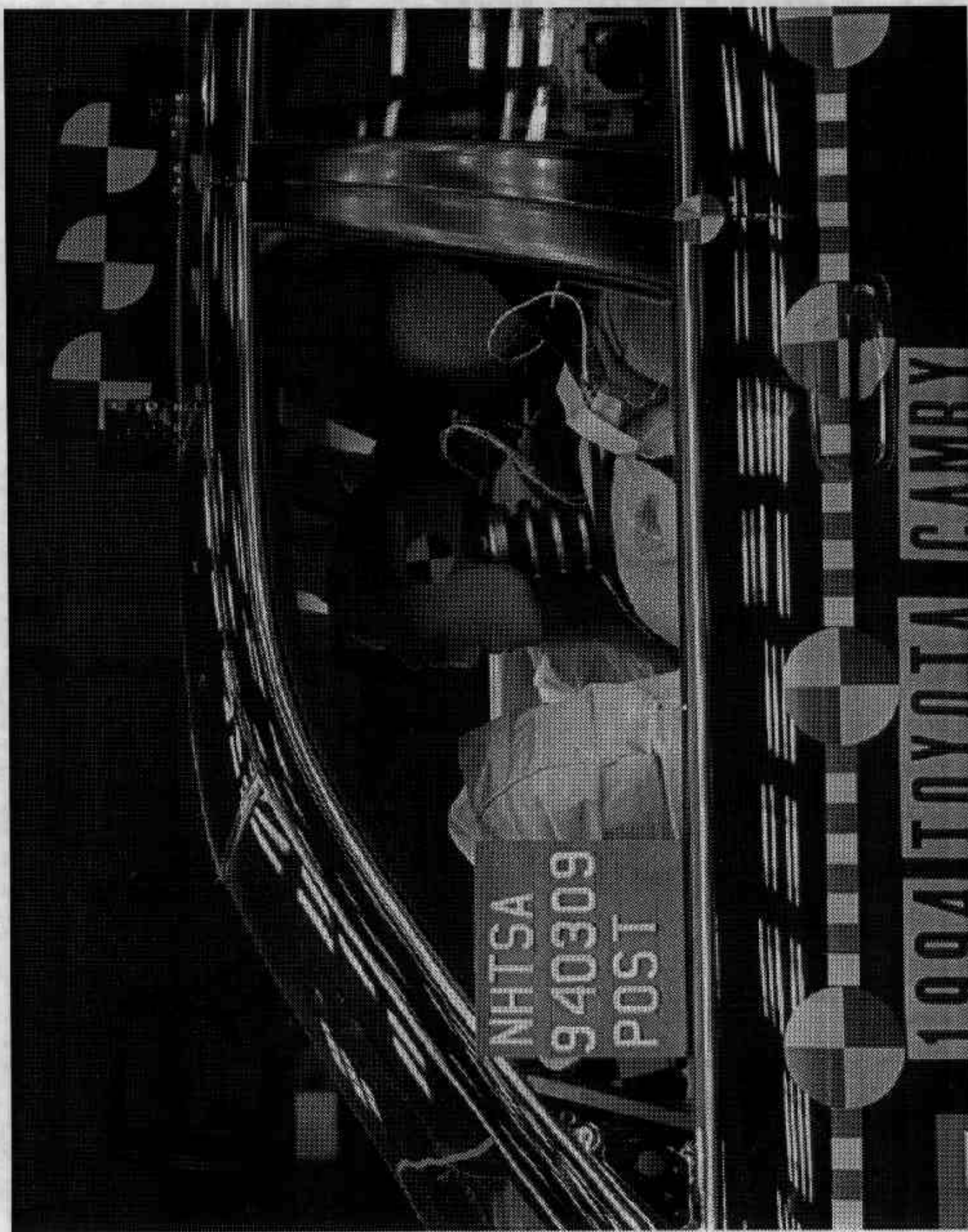


Figure A-26. POST-TEST DRIVER DUMMY POSITION VIEW

A-27

940309



Figure A-27. PRE-TEST PASSENGER DUMMY POSITION VIEW

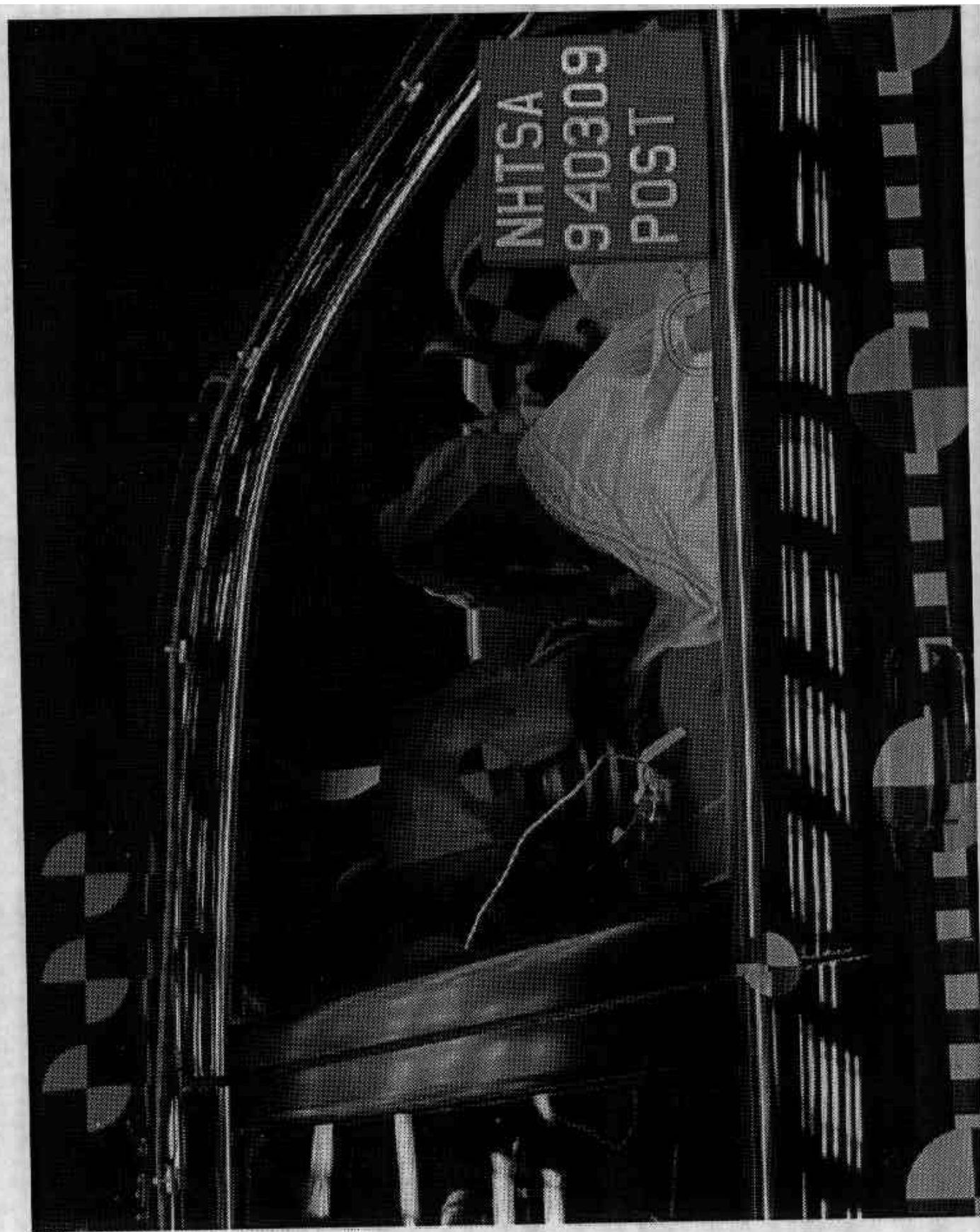


Figure A-28. POST-TEST PASSENGER DUMMY POSITION VIEW

A-29

940309

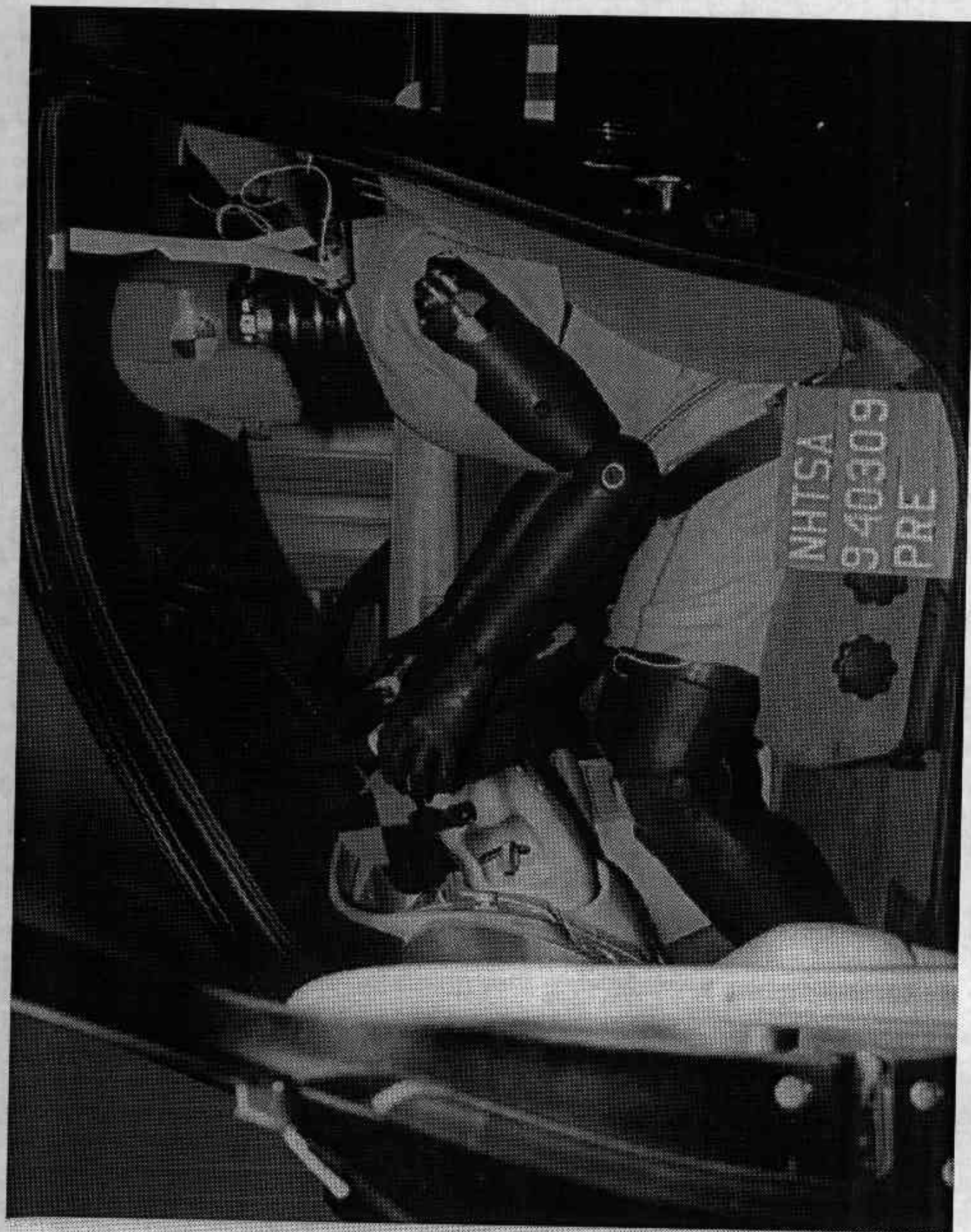


Figure A-29. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

A-30

940309

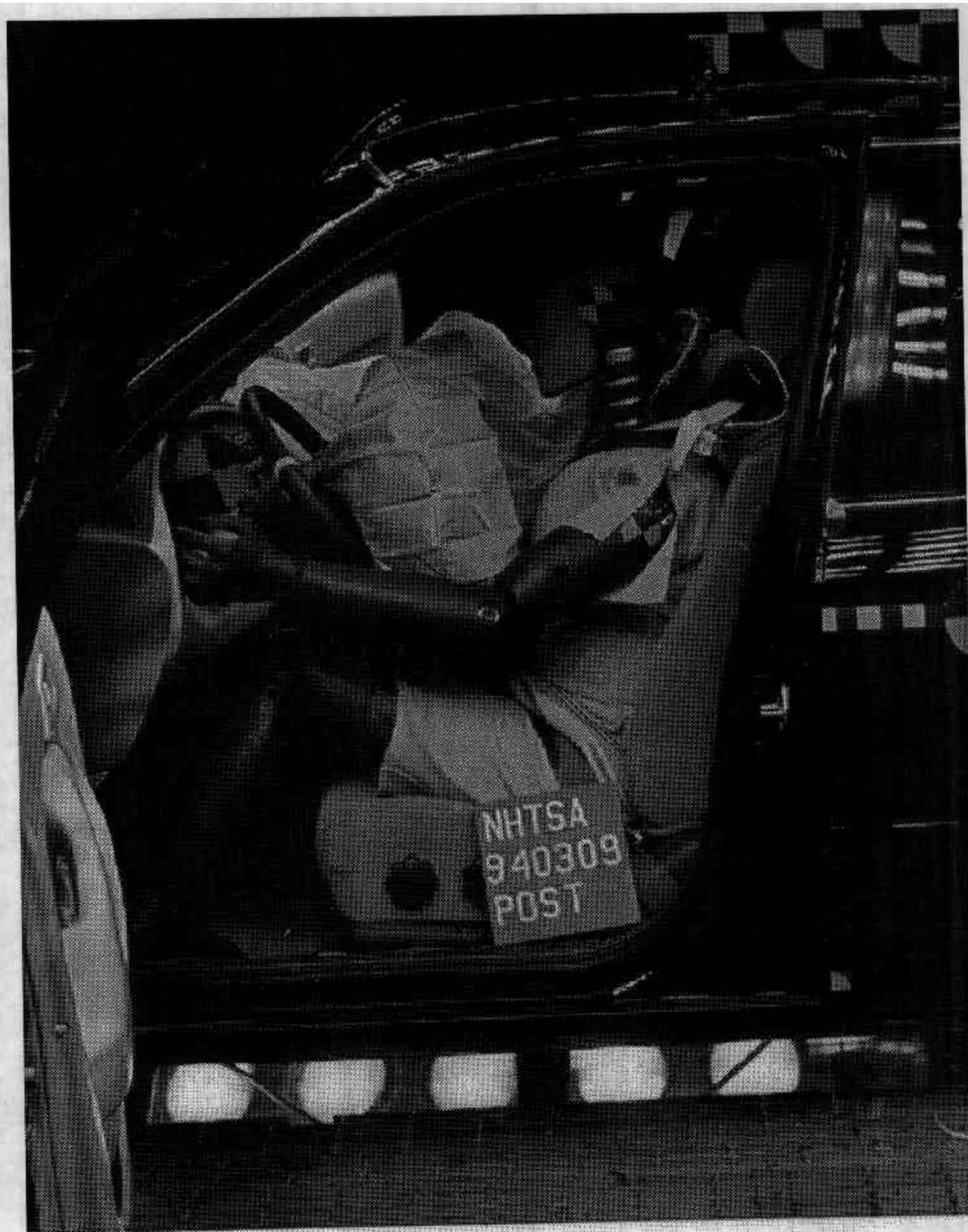


Figure A-30. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

A-31

940309

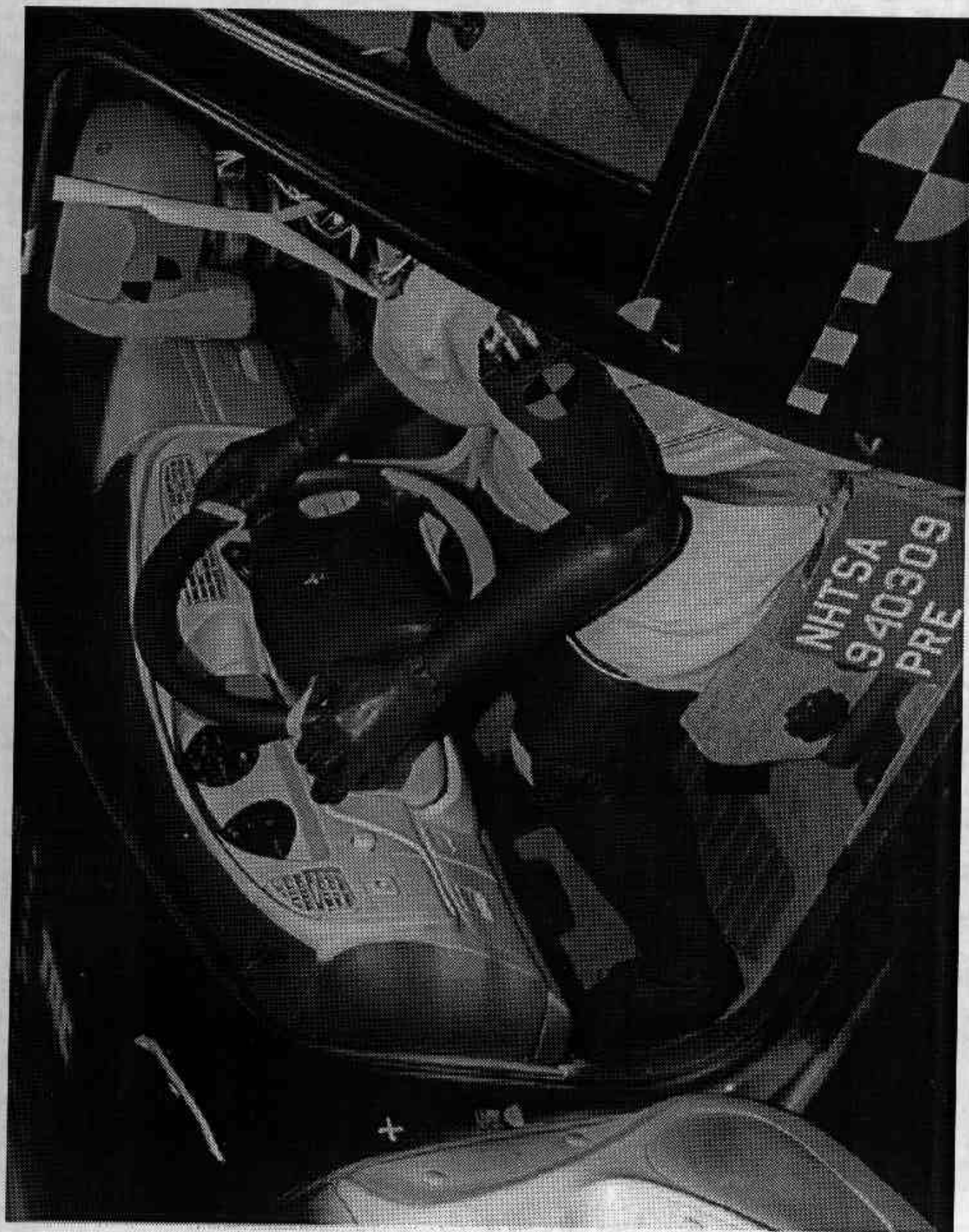


Figure A-31. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2
A-32 940309

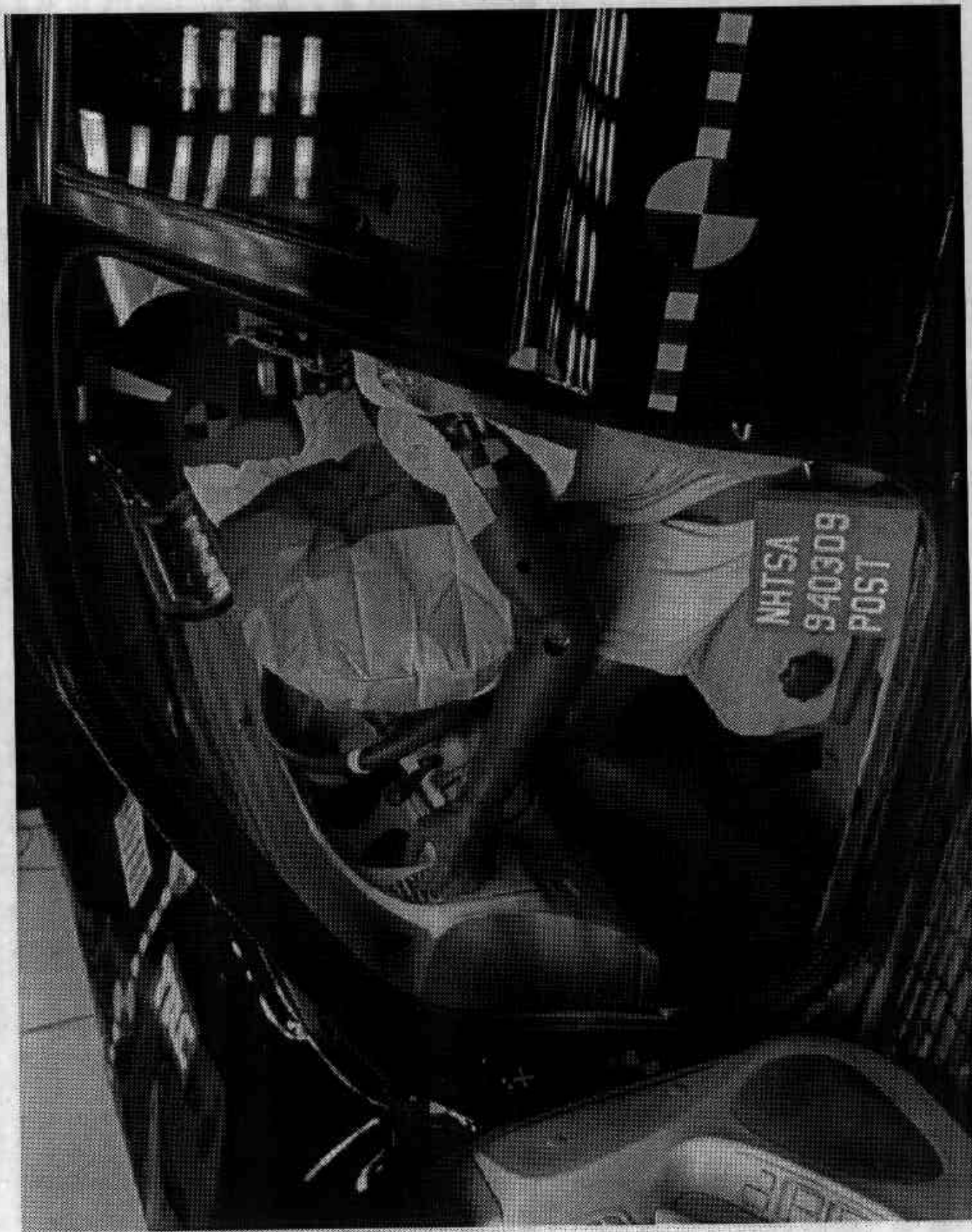


Figure A-32. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2
A-33 940309

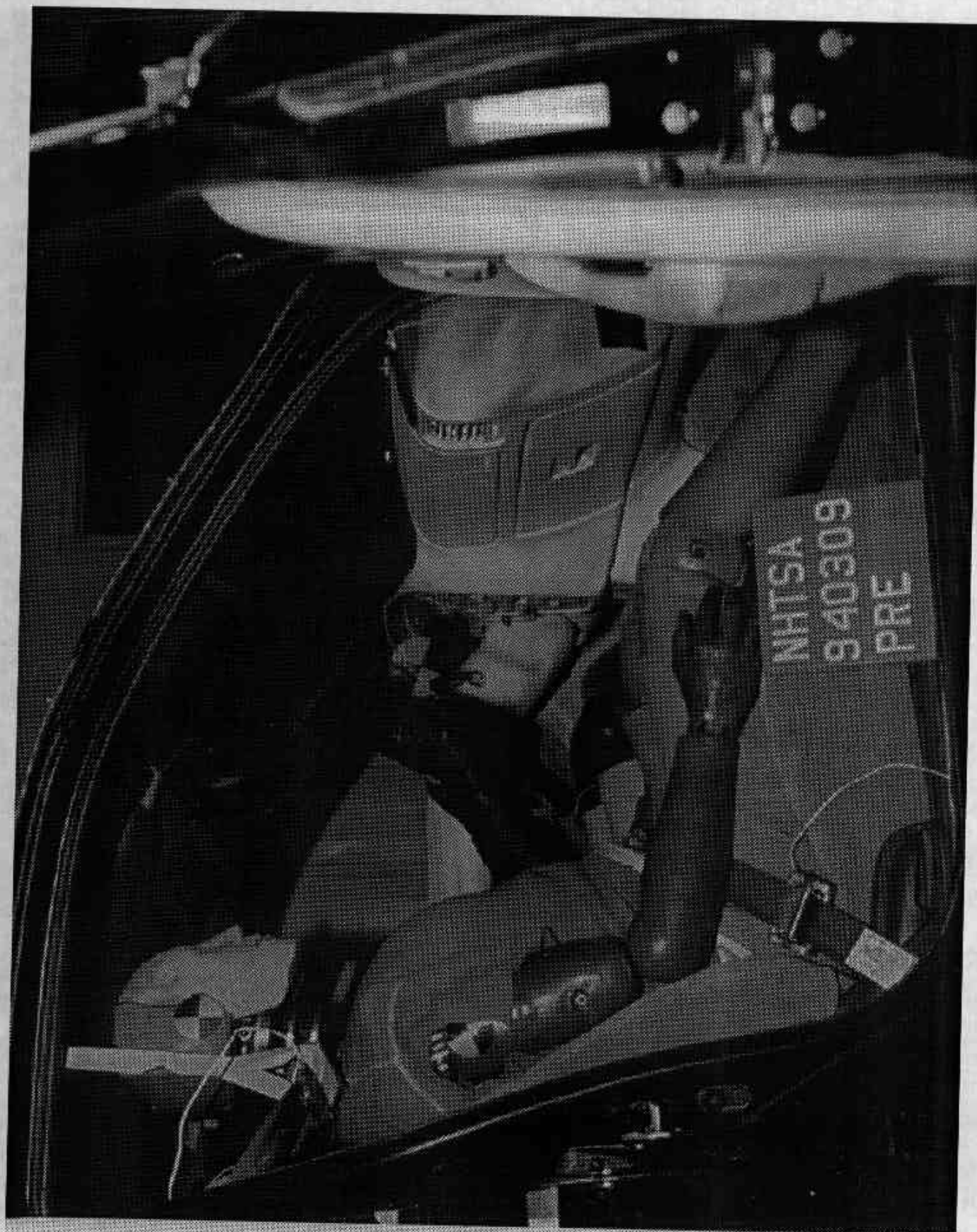


Figure A-33. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1

A-34

940309



Figure A-34. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1
A-35 940309



Figure A-35. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

A-36

940309



Figure A-36. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2
A-37 940309

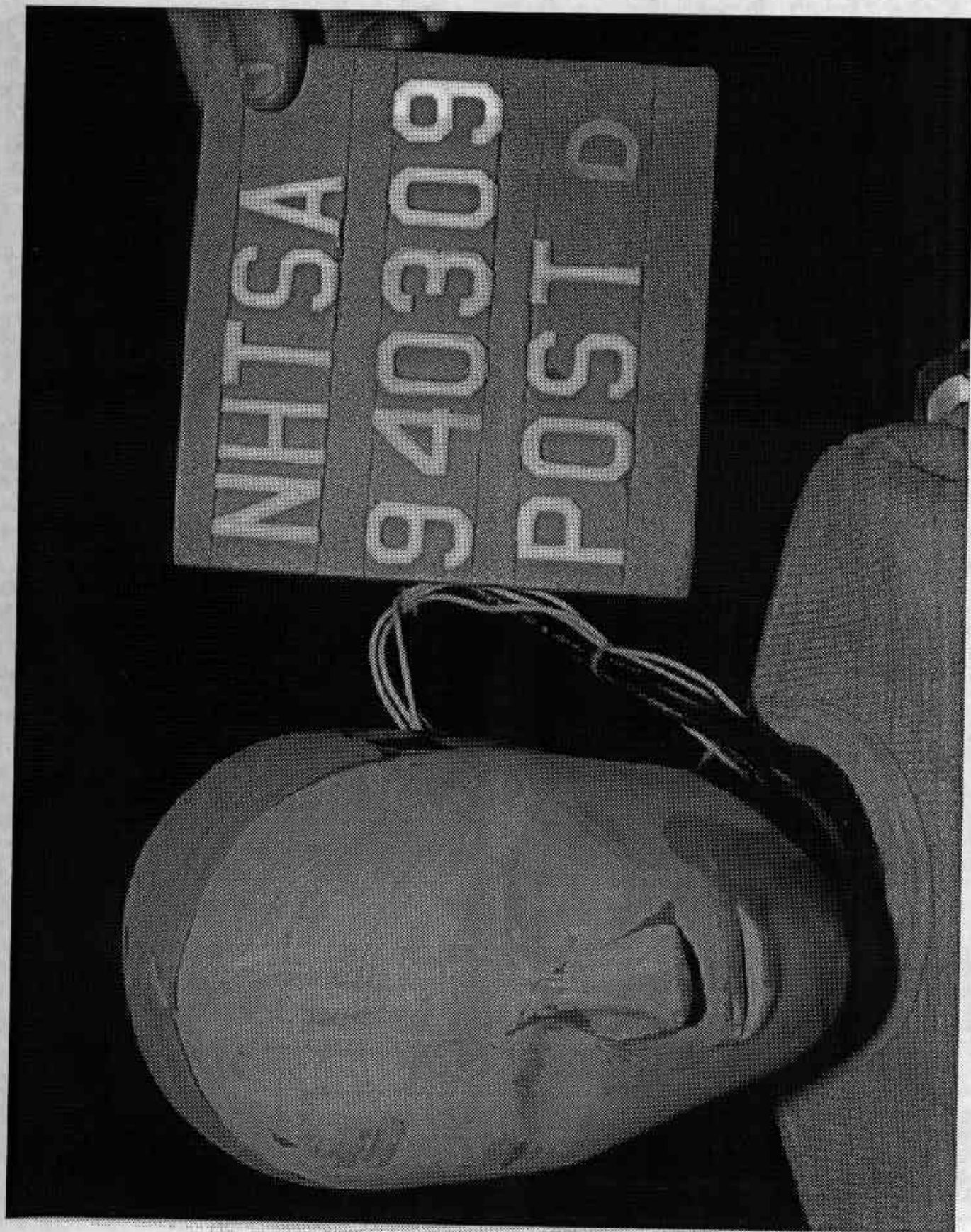


Figure A-37. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 1

A-38

940309



Figure A-38. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 2

A-39

940309

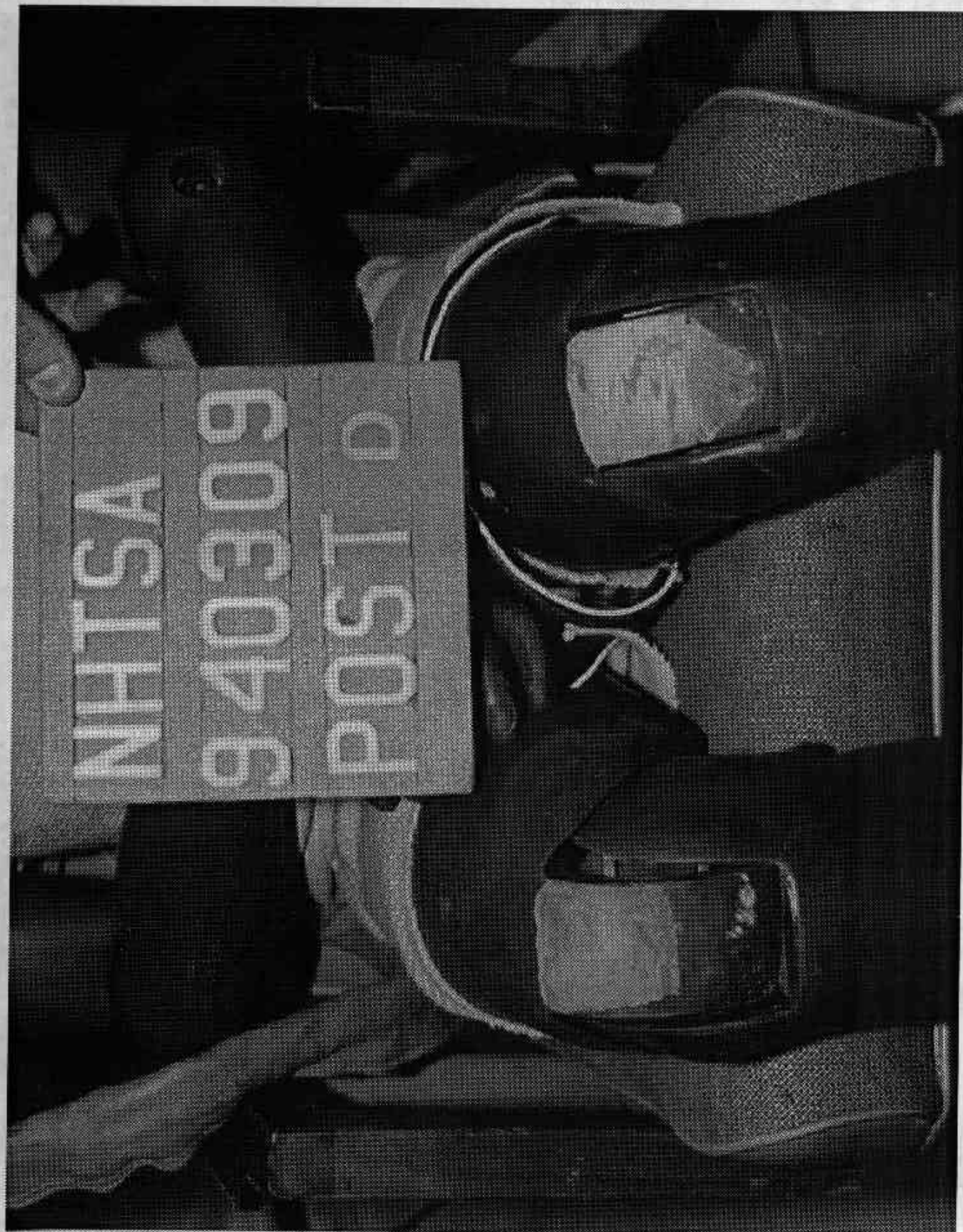


Figure A-39. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1

A-40

940309

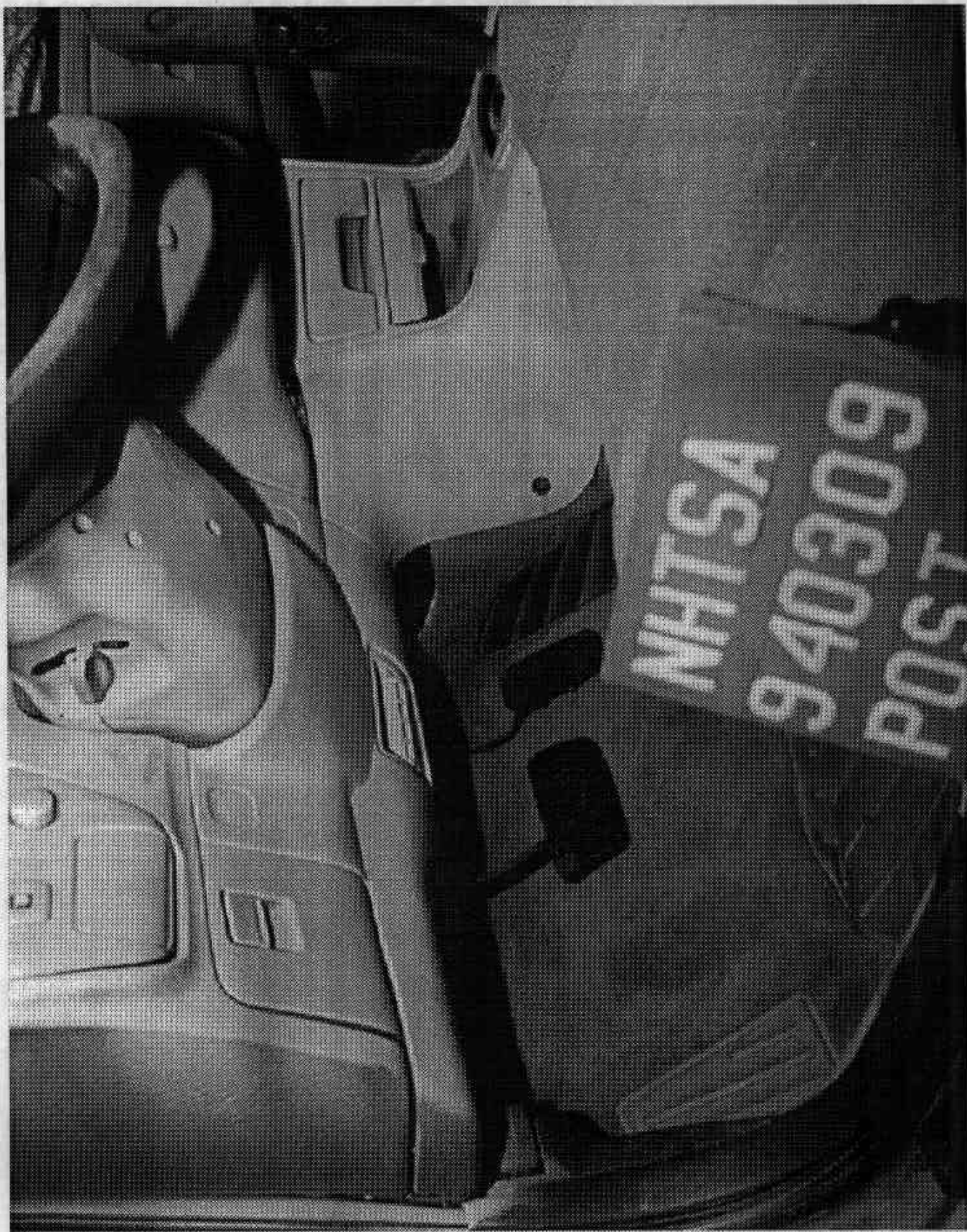


Figure A-40. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2

A-41

940309

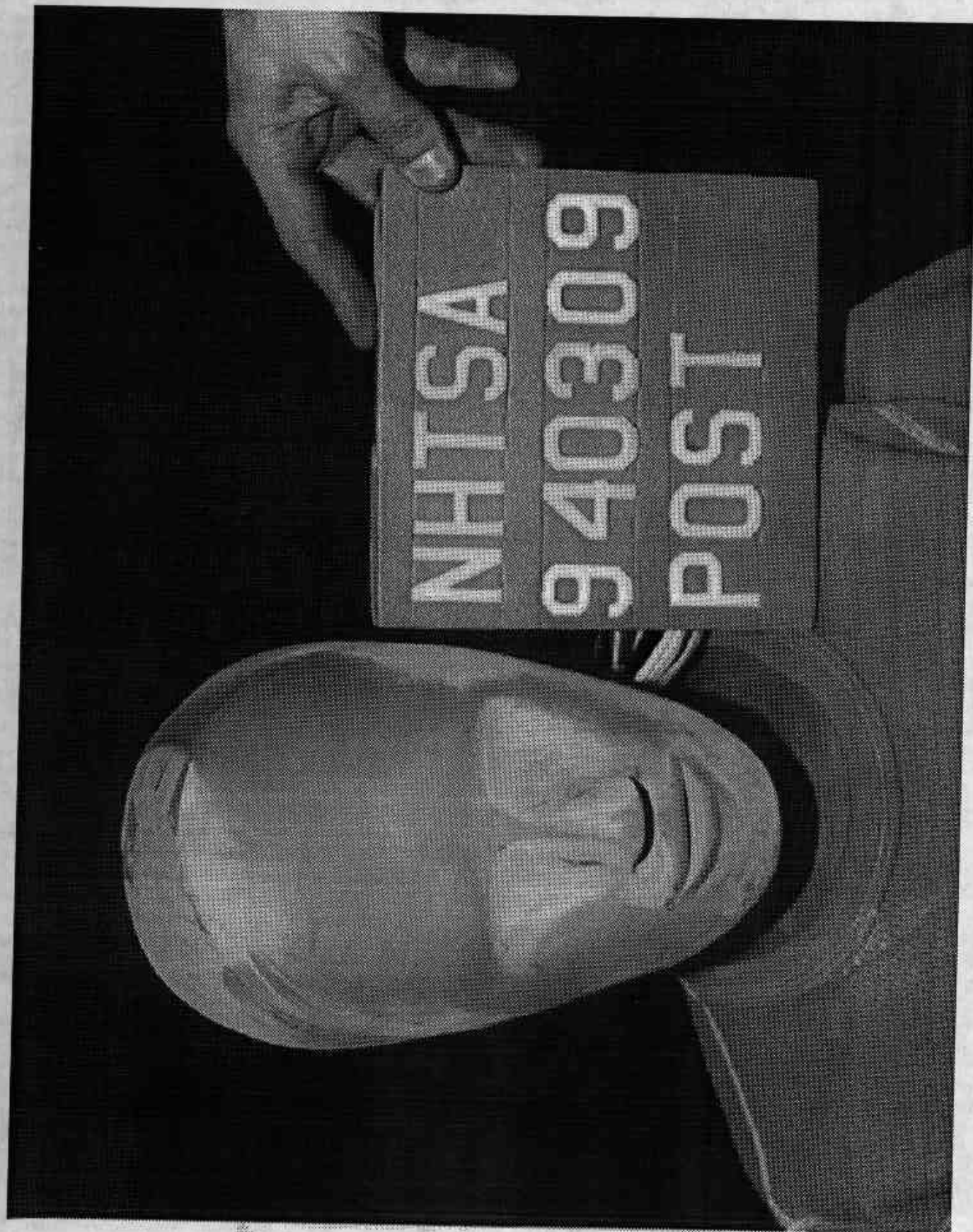


Figure A-41. POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 1
A-42 940309

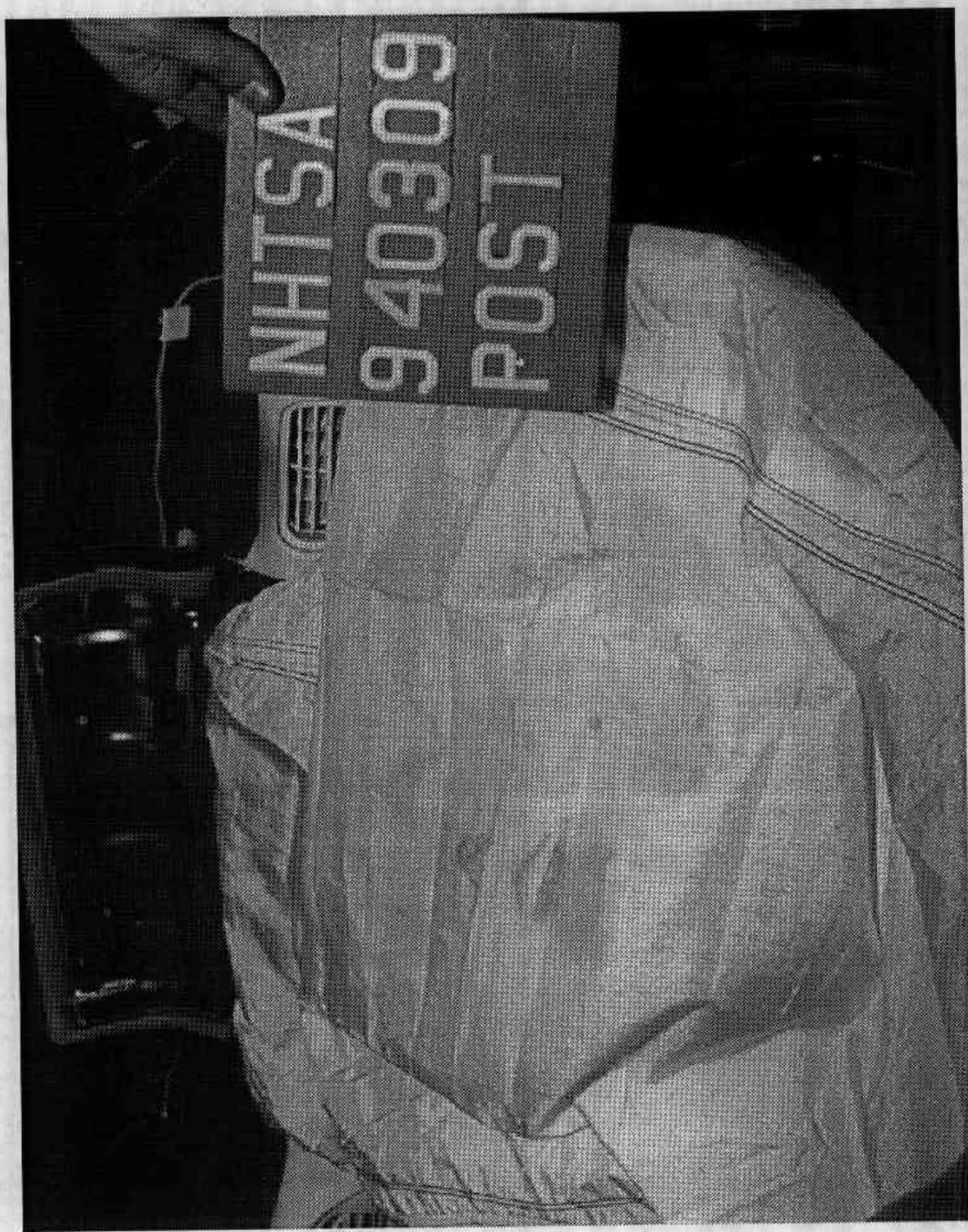


Figure A-42. POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 2
A-43 940309

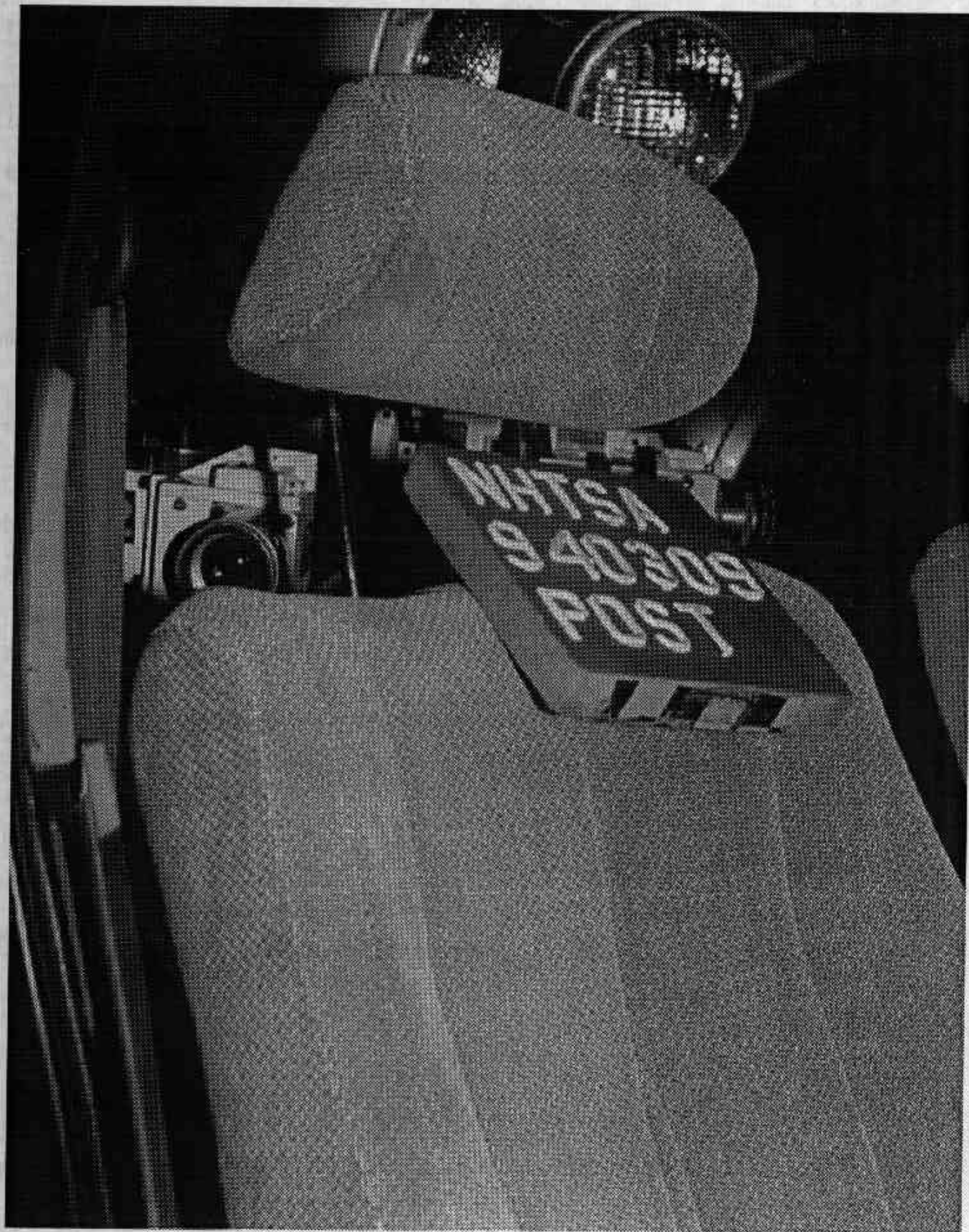


Figure A-43. POST-TEST PASSENGER DUMMY HEAD CONTACT - VIEW 3

A-44

940309

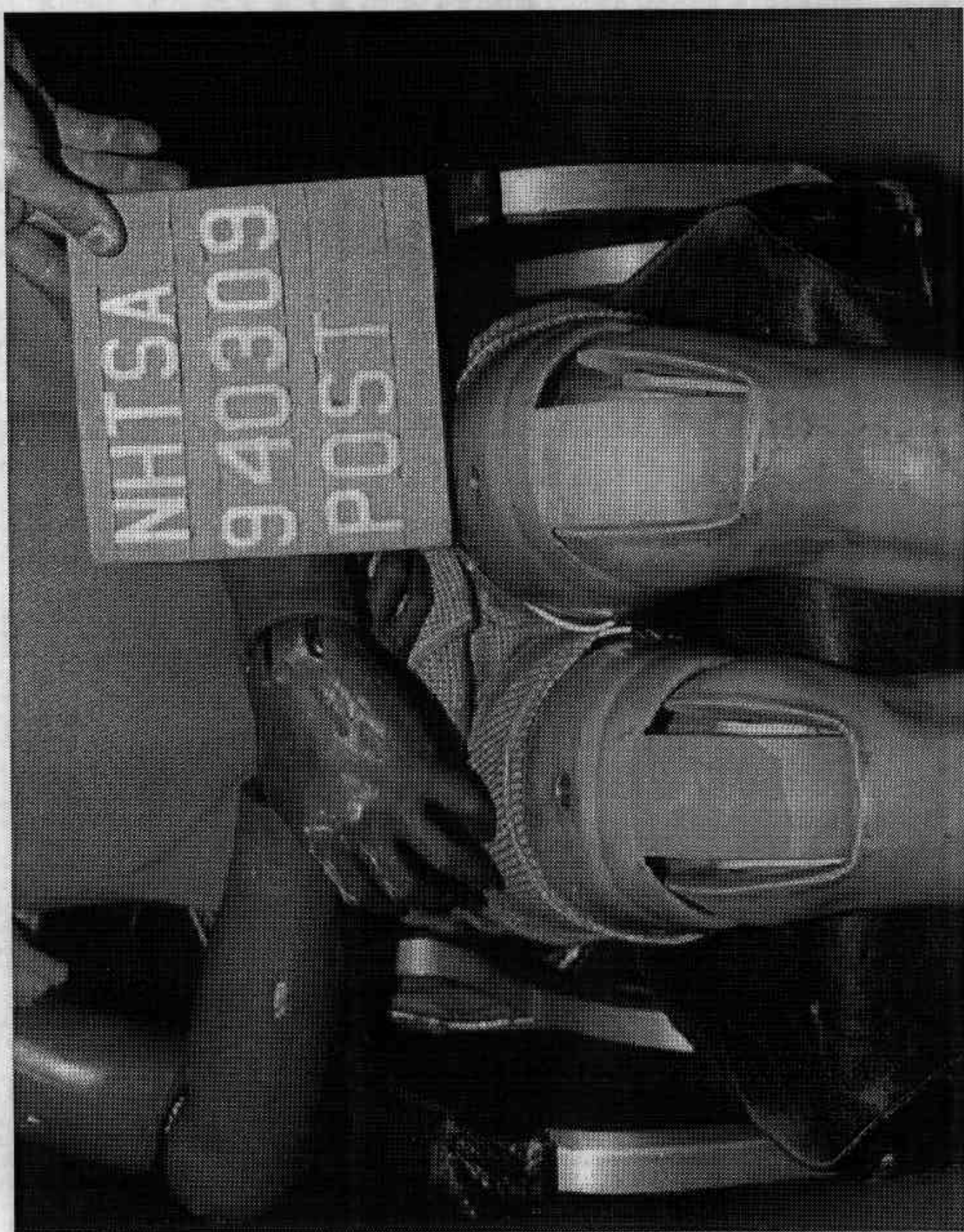


Figure A-44. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1

A-45

940309

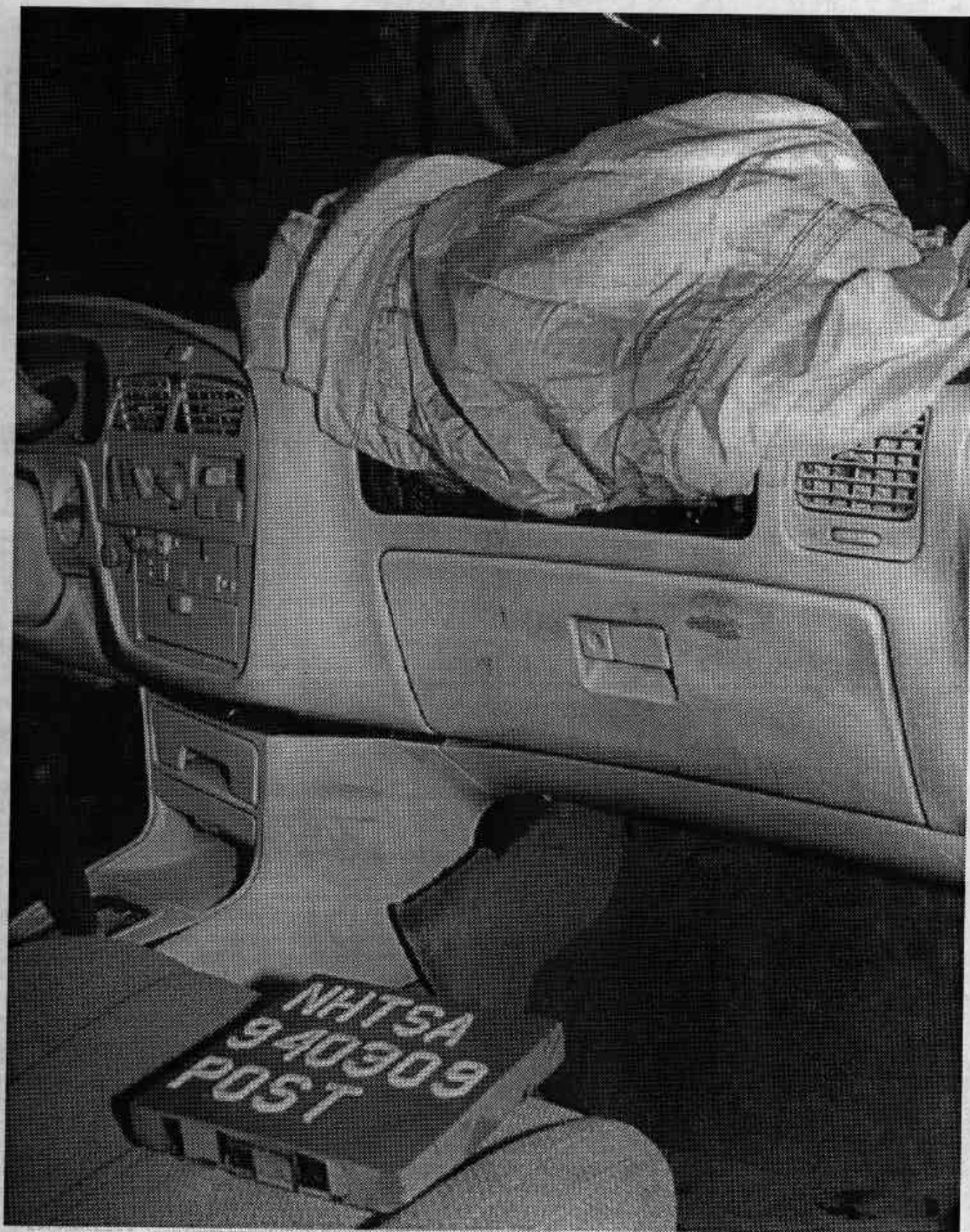


Figure A-45. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2

A-46

940309

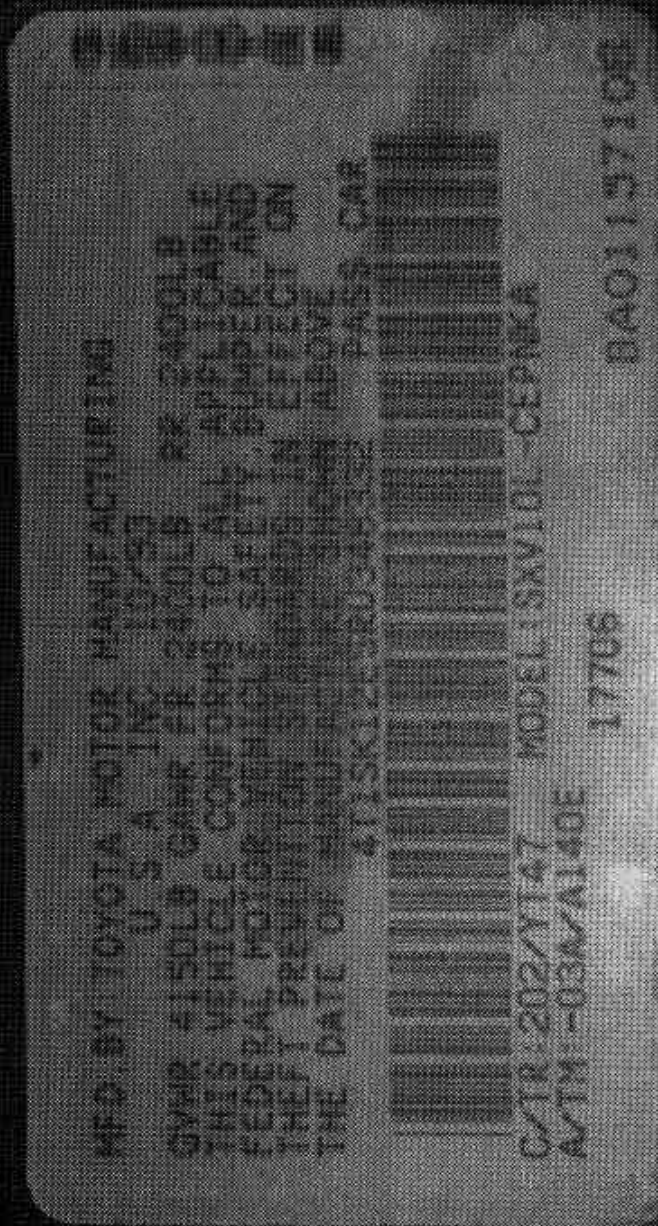


Figure A-46. PRE-TEST VEHICLE CERTIFICATION LABEL VIEW

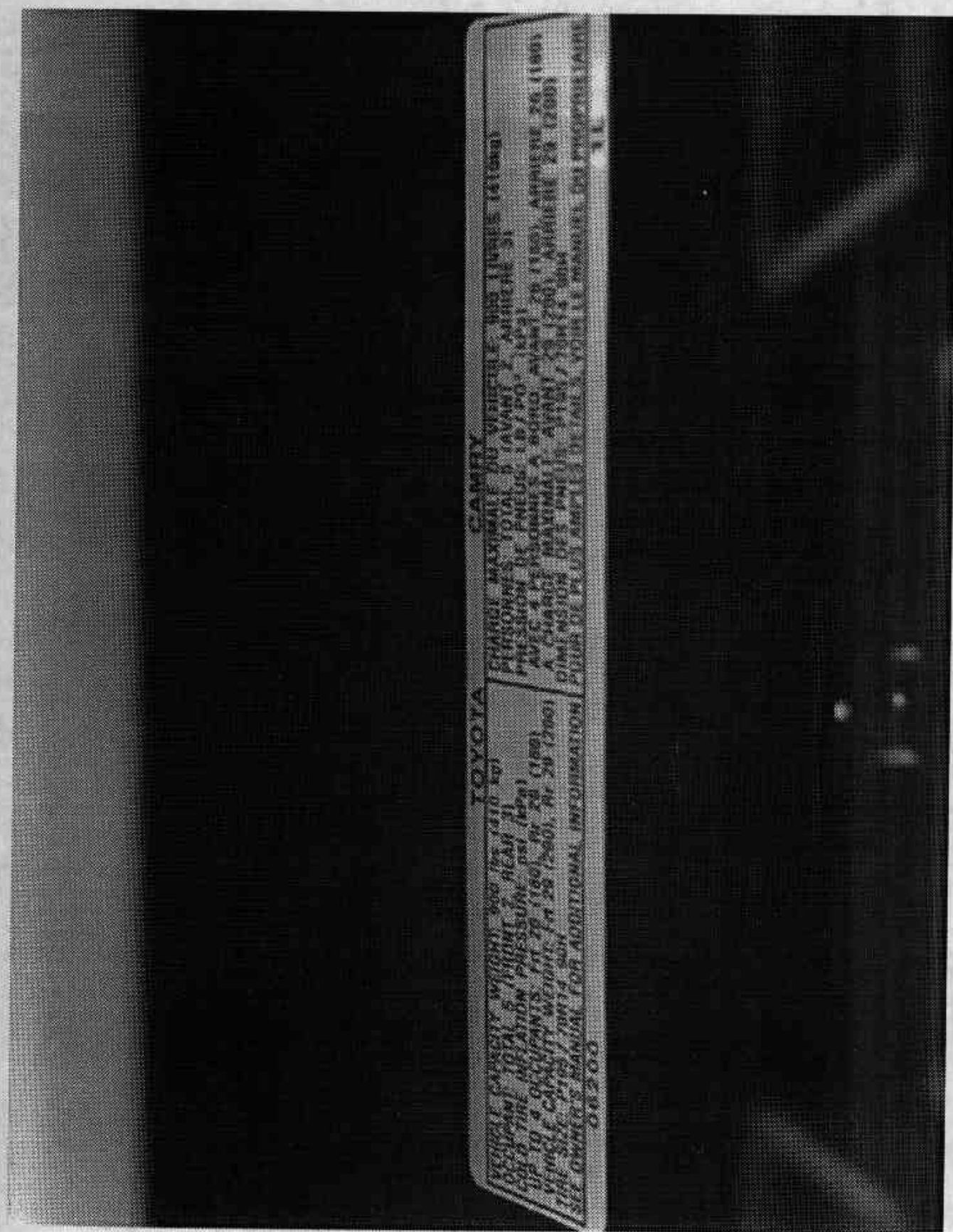


Figure A-47. PRE-TEST RECOMMENDED TIRE PRESSURE LABEL VIEW
A-48 940309

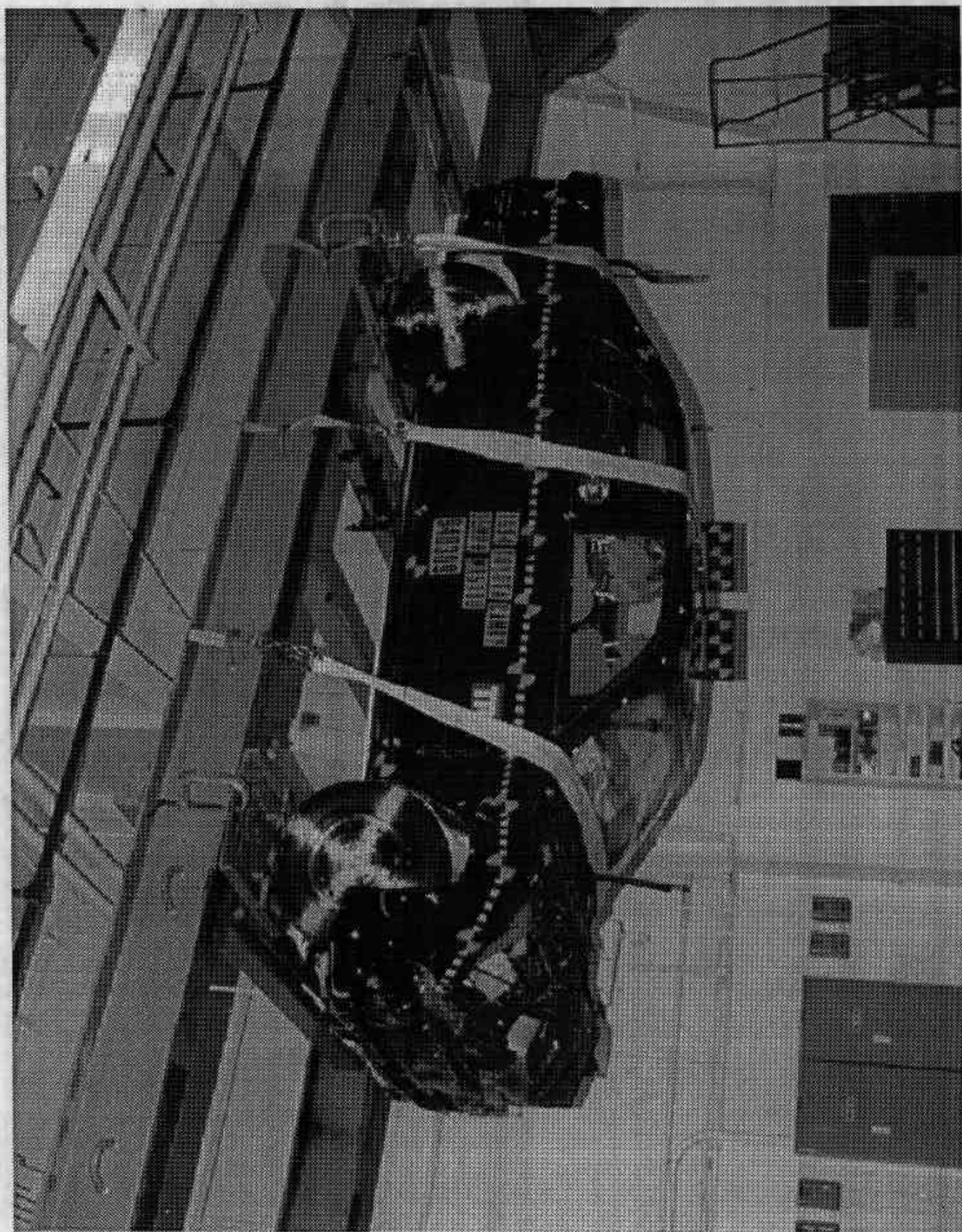


Figure A-48. POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE VIEW

A-49

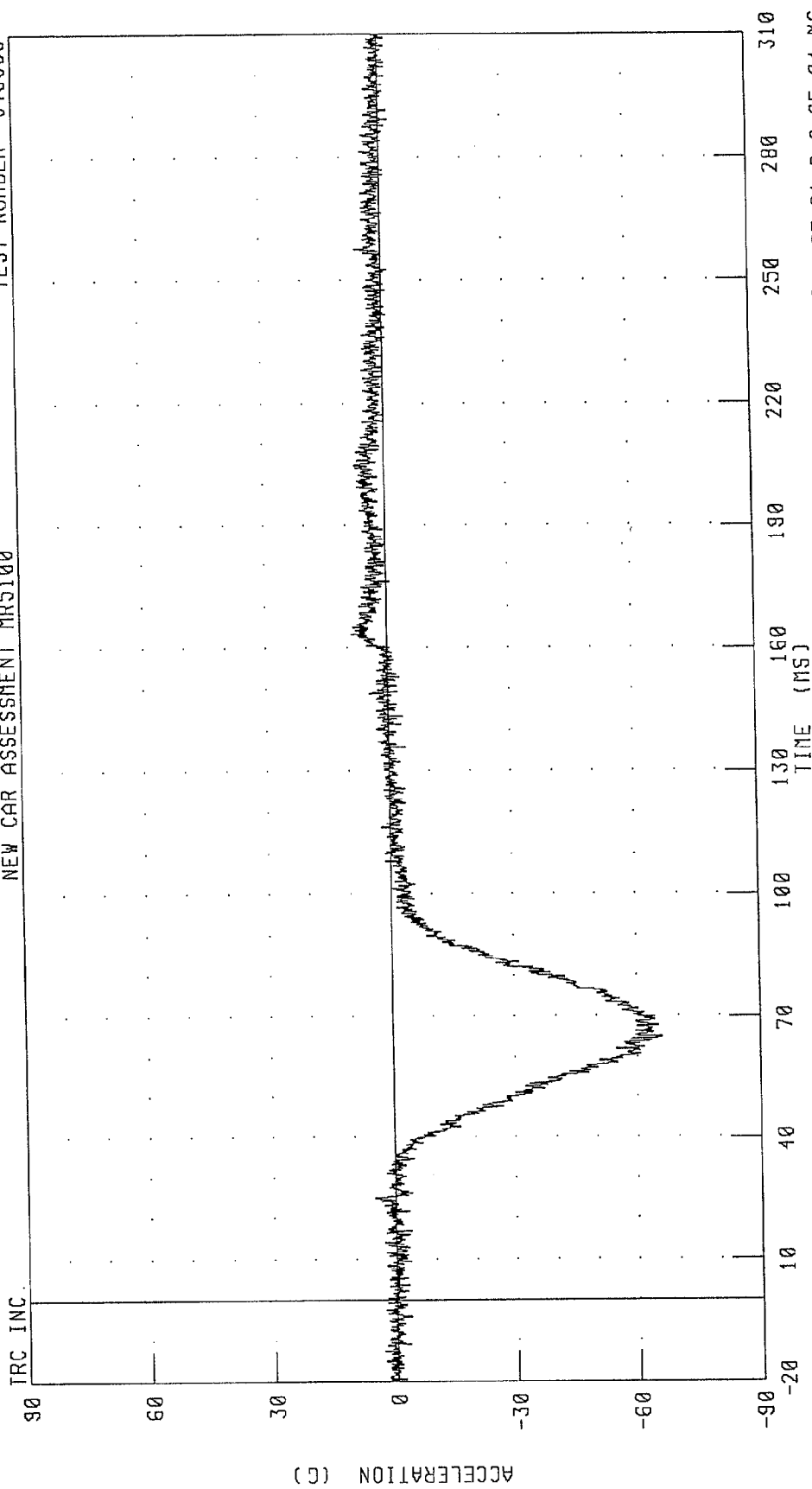
940309

APPENDIX B

DATA PLOTS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD X-AXIS ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER : 940309

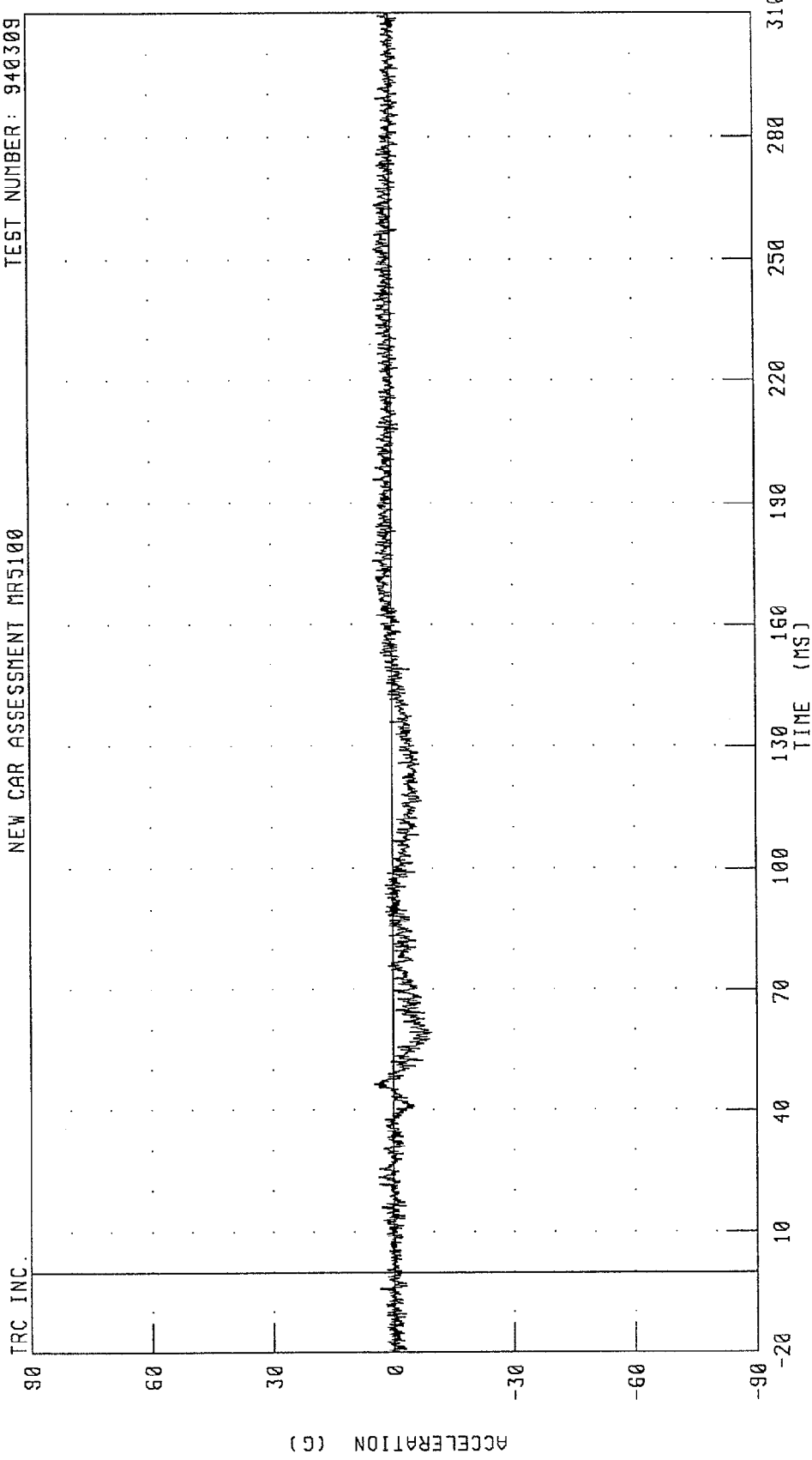


CHANNEL : HEDXG1 FILTER : CH. CLASS 1000

PEAK DATA : 8.88 G @ 163.36 MS; -65.91 G @ 65.04 MS

1894 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Y-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



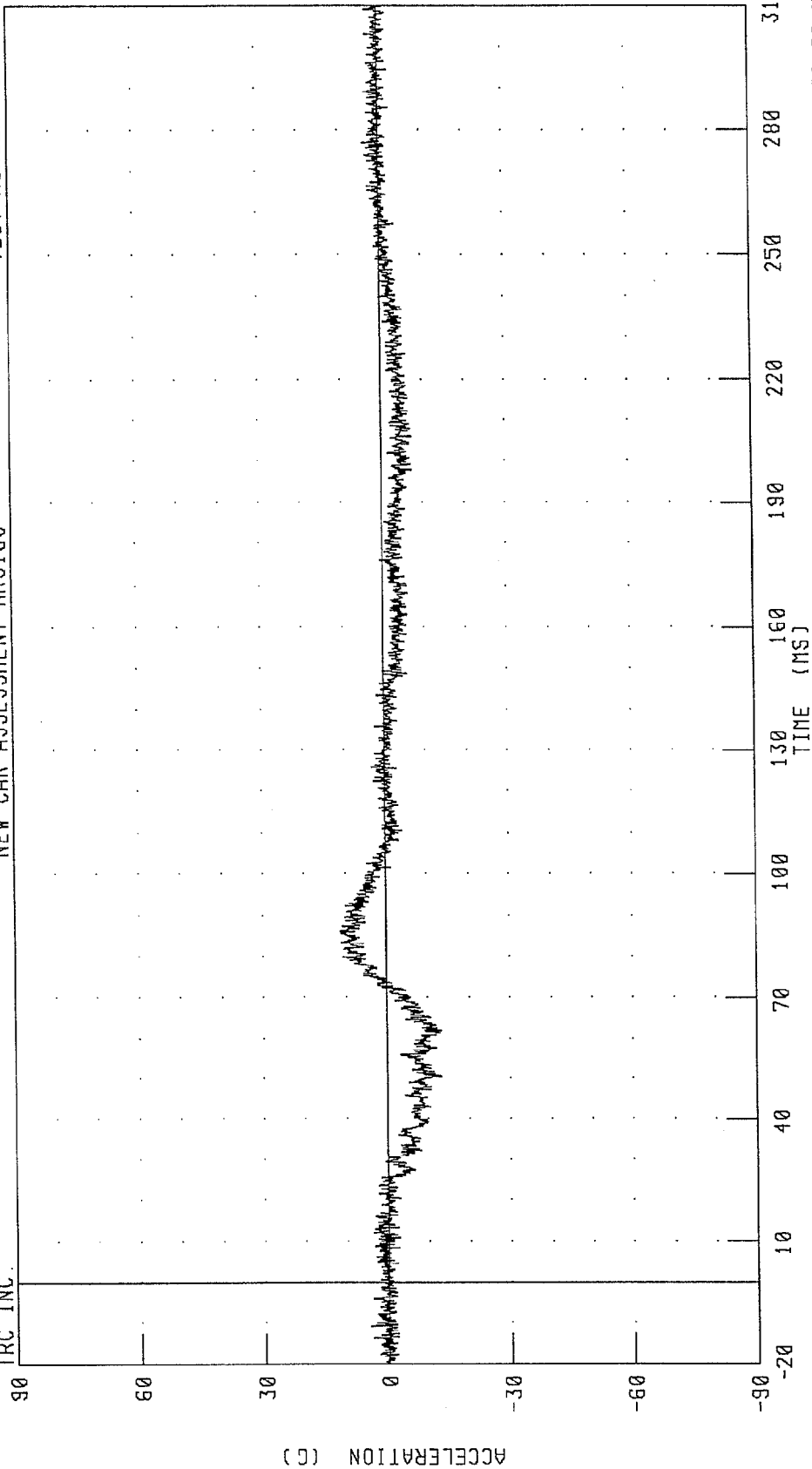
CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

PEAK DATA: 4.76 G @ 46.48 MS; -9.49 G @ 59.28 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Z-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



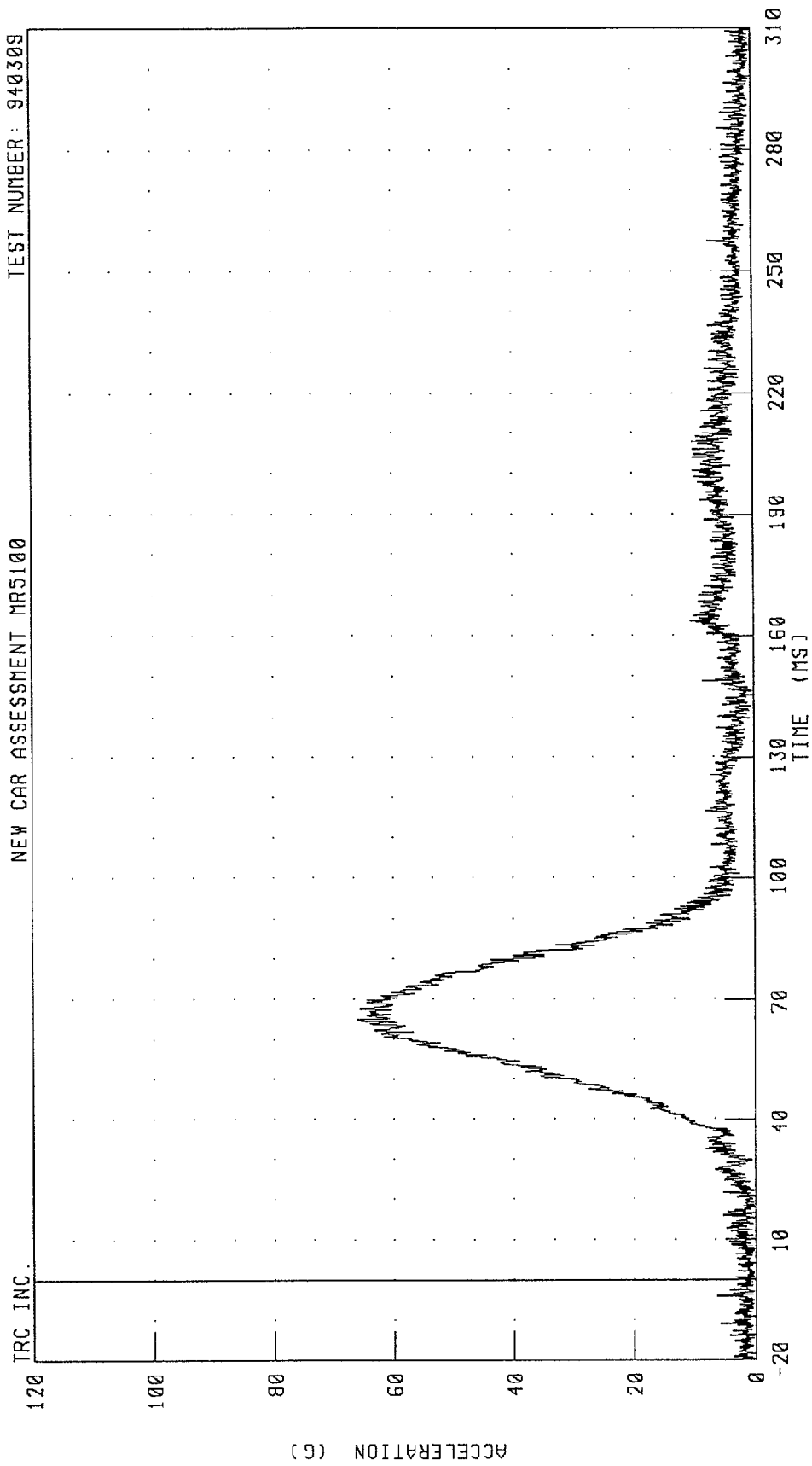
PEAK DATA: 11.41 G @ 86.24 MS; -13.29 G @ 62.00 MS

CHANNEL: HEADZG1 FILTER: CH. CLASS 1000

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



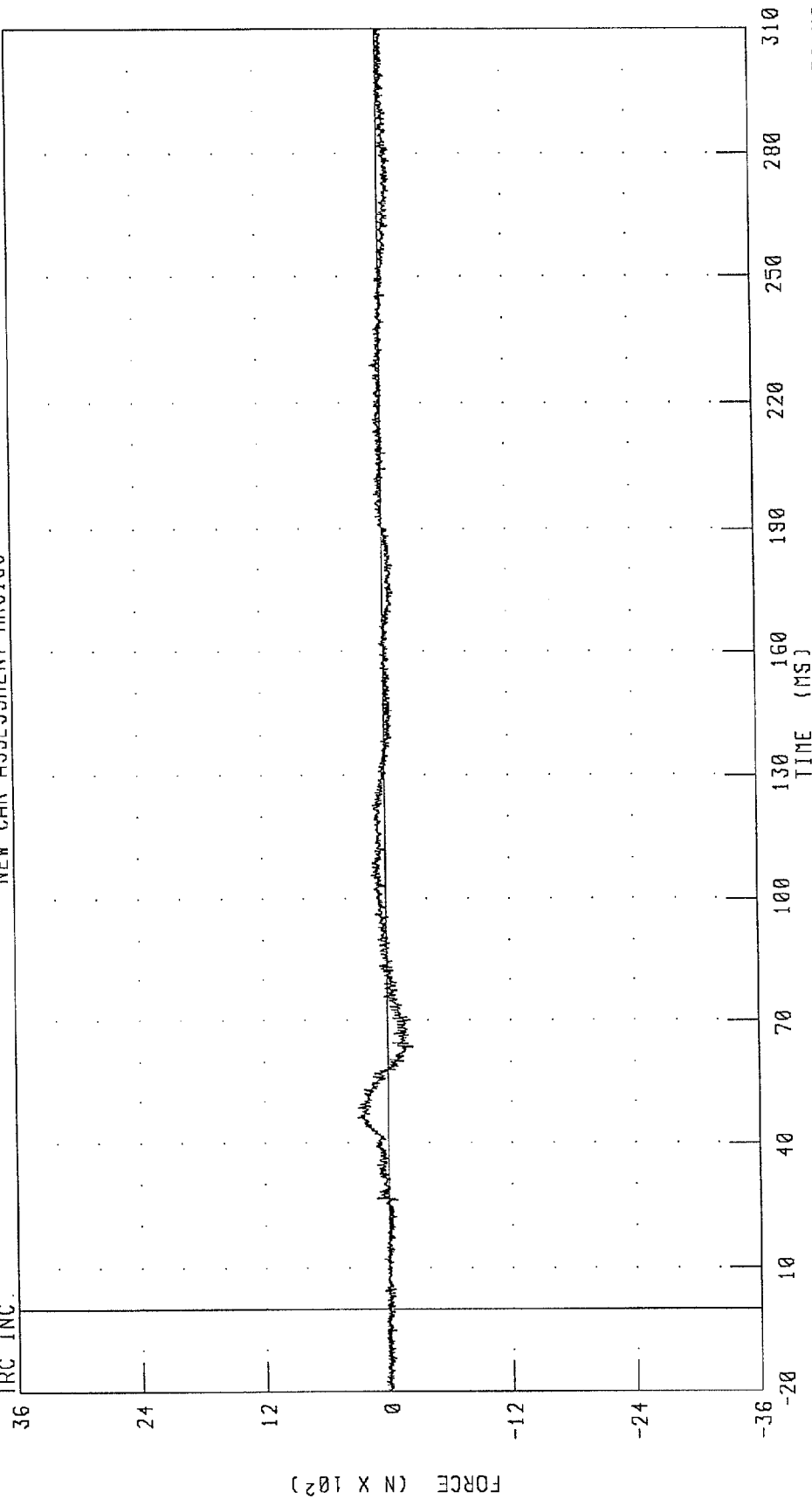
CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

PEAK DATA: 66.18 G @ 65.04 MS; 0.09 G @ 309.60 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK X-AXIS SHEAR FORCE
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



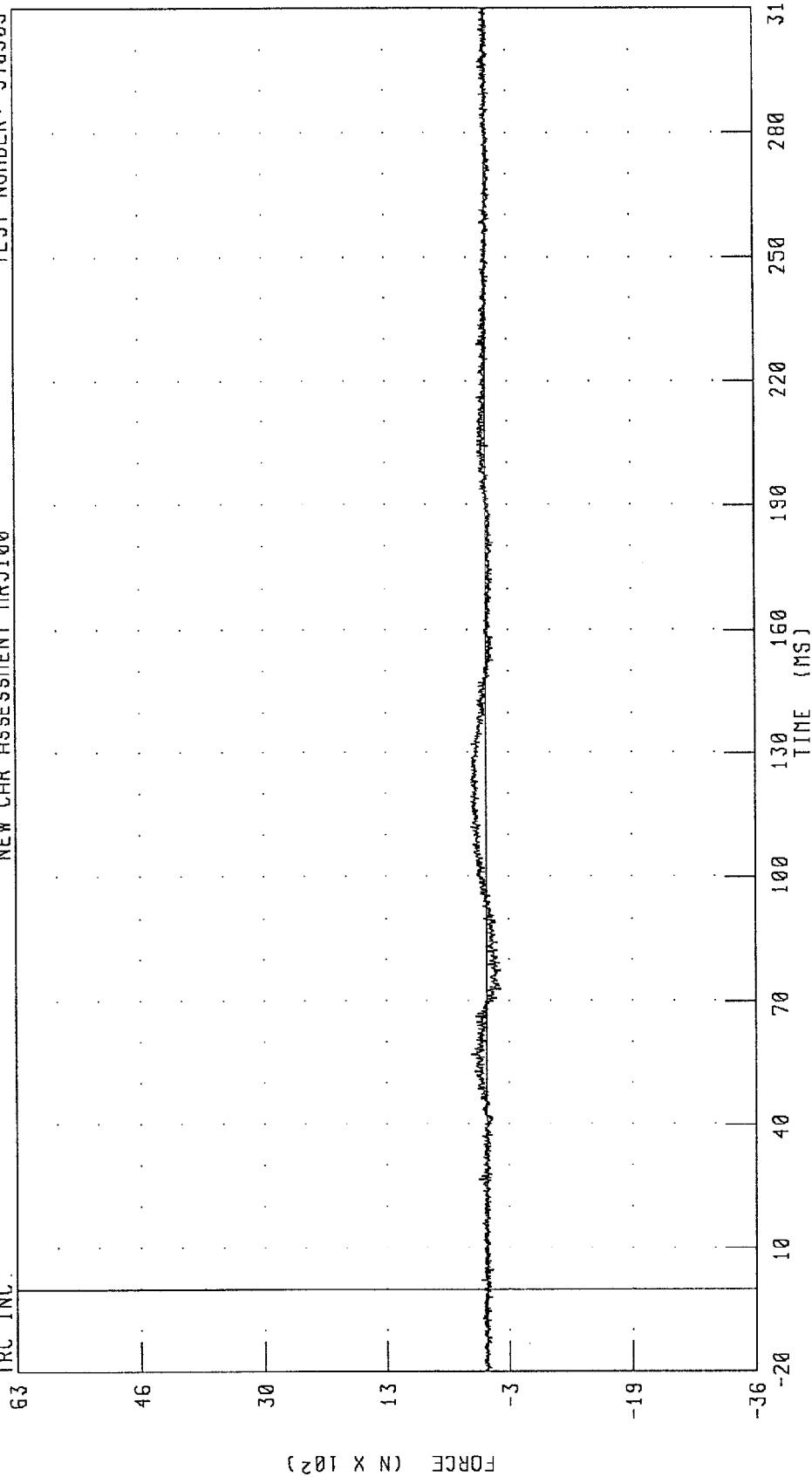
PEAK DATA: 290.82 N @ 46.24 MS; -241.69 N @ 63.76 MS

CHANNEL: NEKXF1 FILTER: CH. CLASS 1000

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK Y-AXIS SHEAR FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

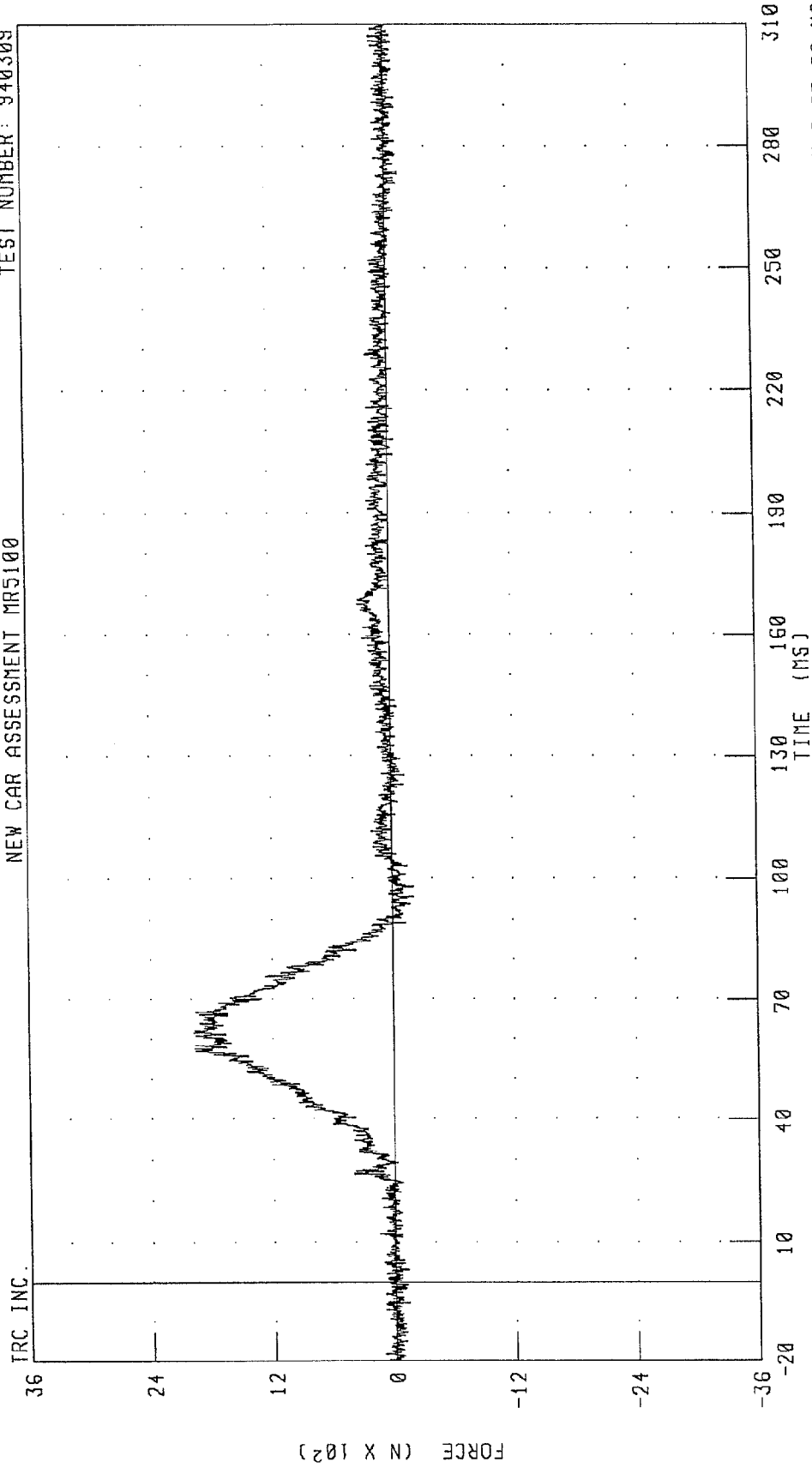


CHANNEL: NEKYF1 FILTER: CH. CLASS 1000

PEAK DATA: 203.08 N @ 123.52 MS; -190.25 N @ 73.20 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK Z-AXIS AXIAL FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

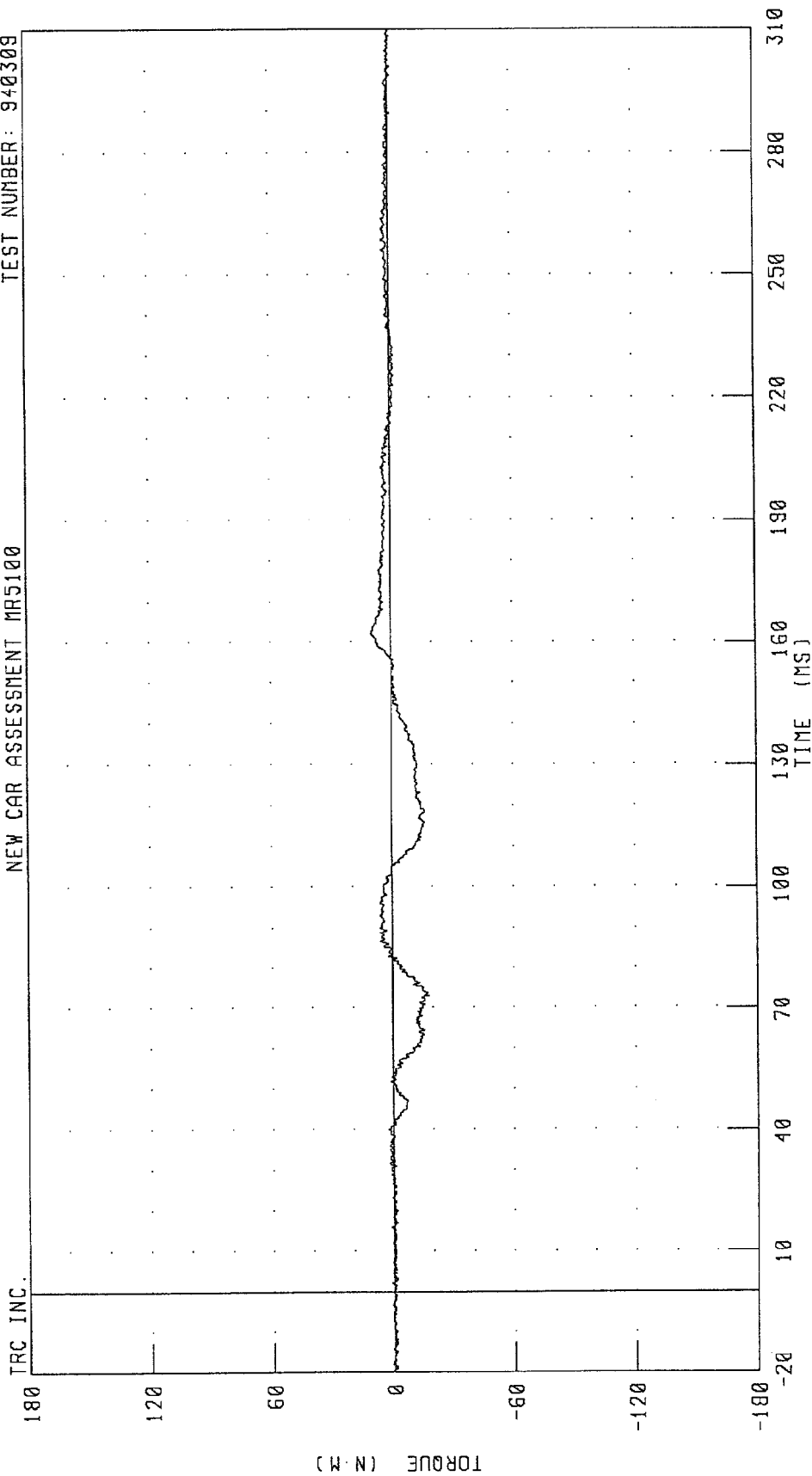


PEAK DATA: 1979.05 N @ 61.60 MS; -217.51 N @ 95.60 MS

CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT X AXIS
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

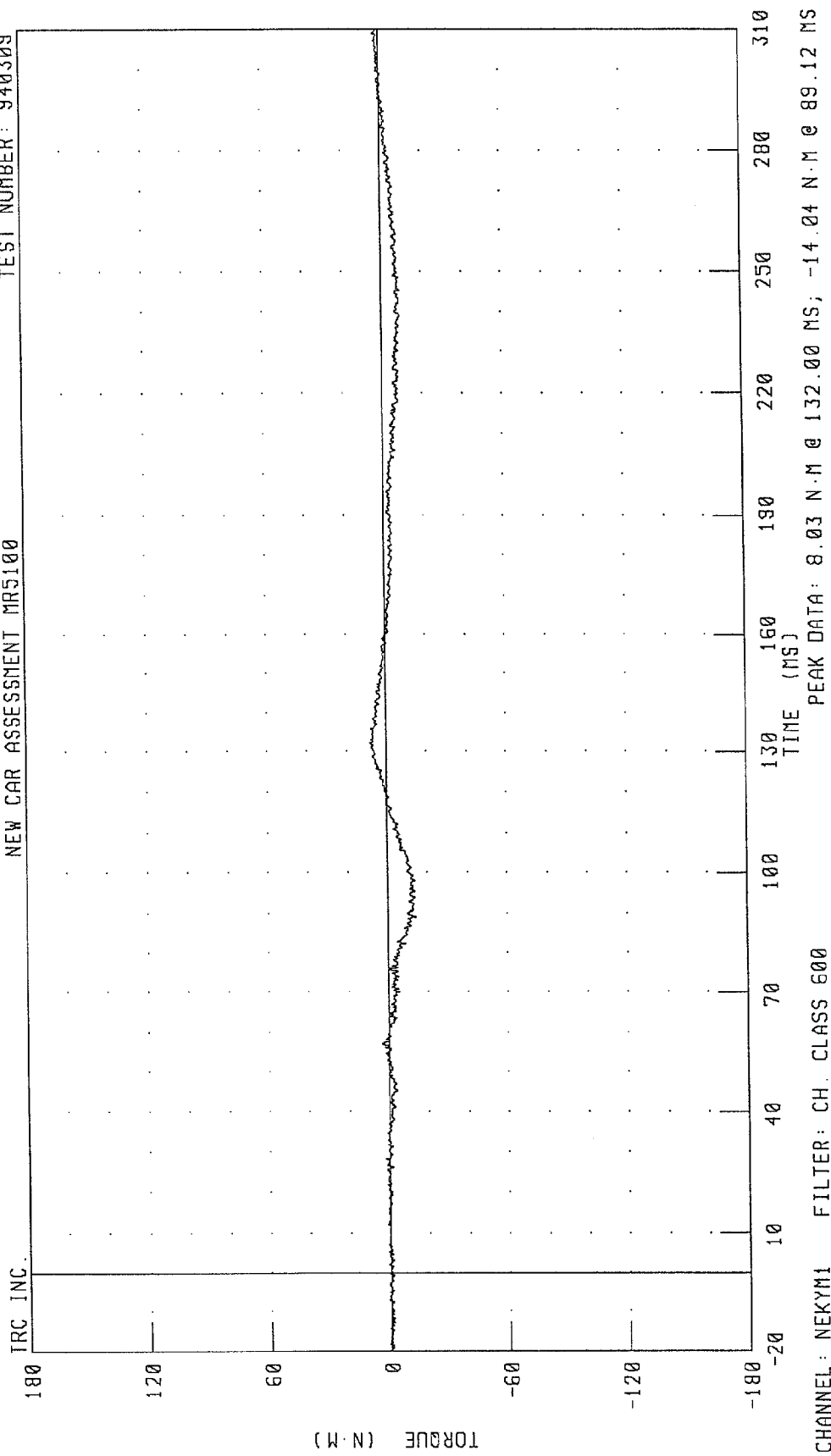


CHANNEL: NEKXMI FILTER: CH. CLASS 600

PEAK DATA: 10.22 N-M @ 162.08 MS; -17.68 N-M @ 73.12 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT Y AXIS
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

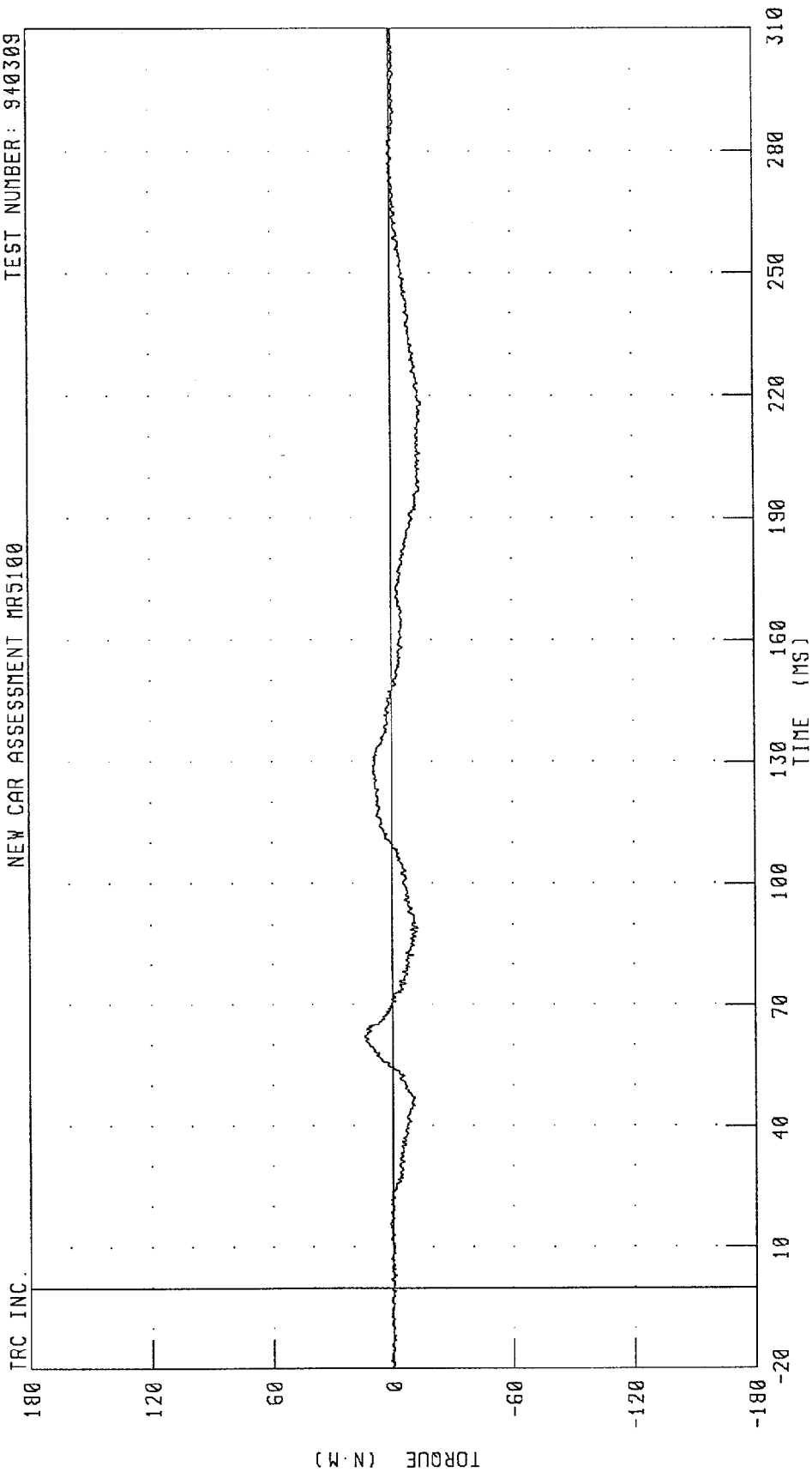


PEAK DATA: 8.03 N.M @ 132.00 MS; -14.04 N.M @ 89.12 MS

CHANNEL: NEKYM1 FILTER: CH. CLASS 600

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT Z AXIS
 NEW CAR ASSESSMENT MR5100

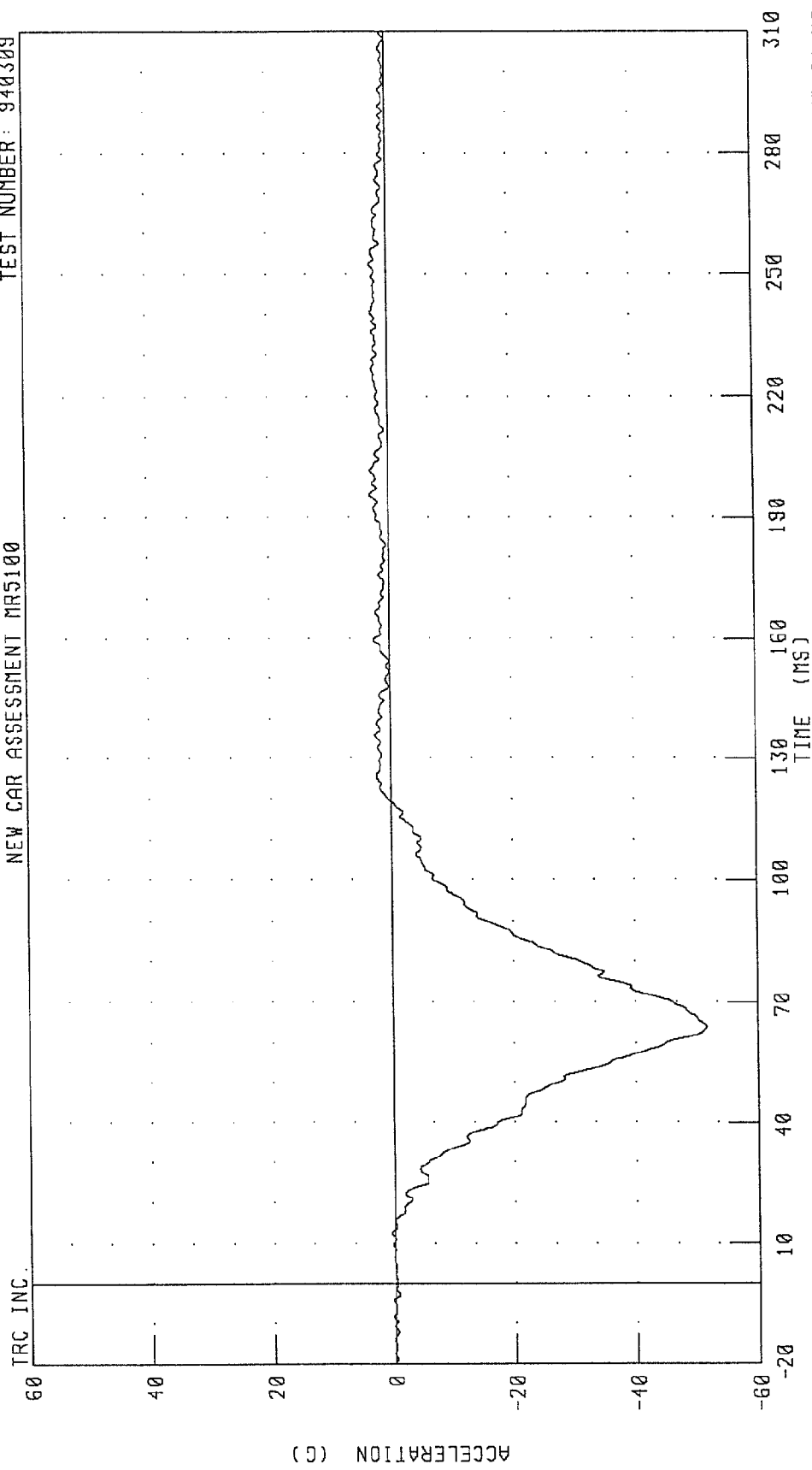
TEST NUMBER: 940309



CHANNEL: NEKZM1 FILTER: CH. CLASS 600 PEAK DATA: 14.40 N.M @ 62.16 MS; -15.22 N.M @ 218.16 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR5100

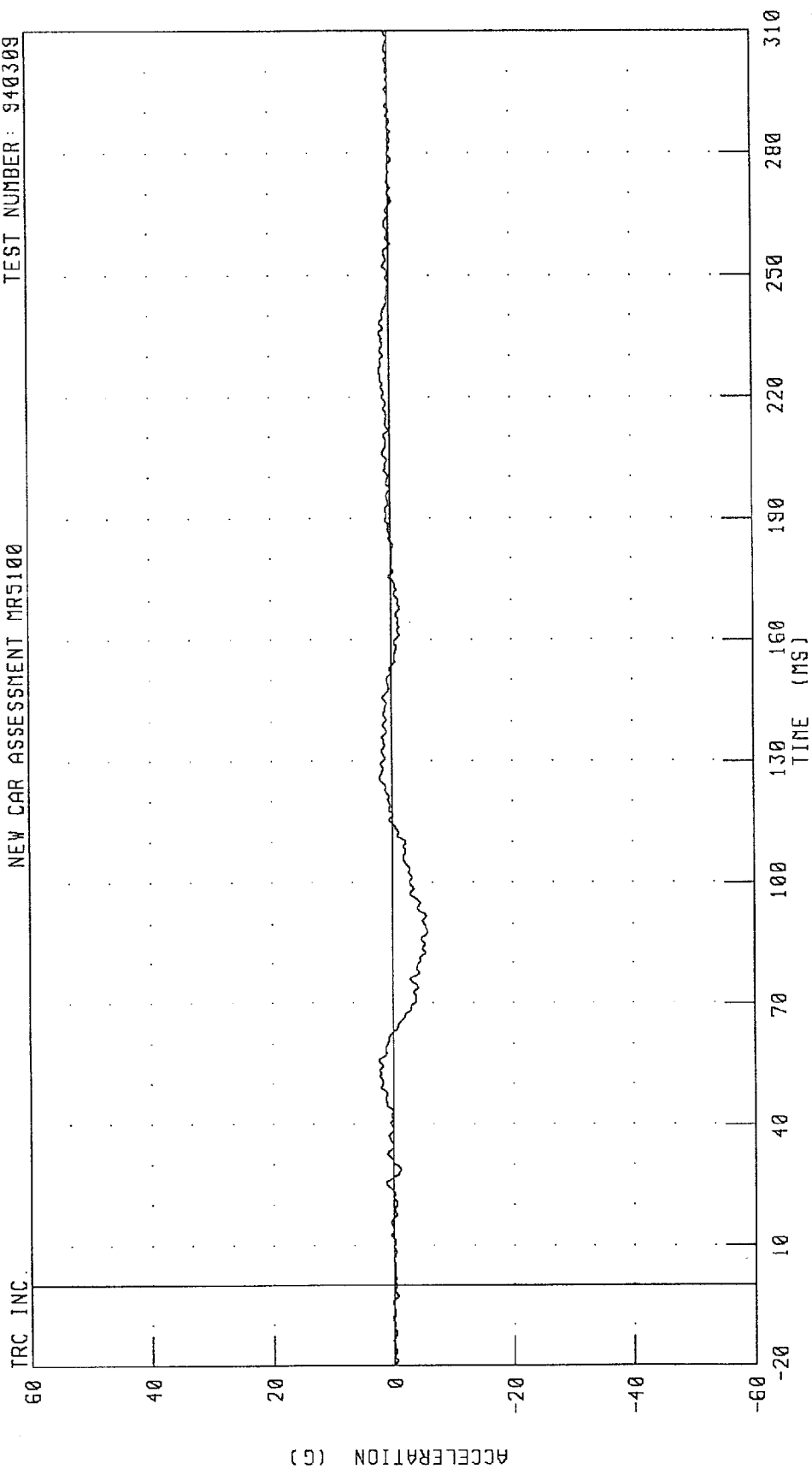
TEST NUMBER: 940309



CHANNEL: CSTXG1 FILTER: CH. CLASS 180
 PEAK DATA: 3.17 G @ 195.92 MS; -51.58 G @ 63.84 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Y-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



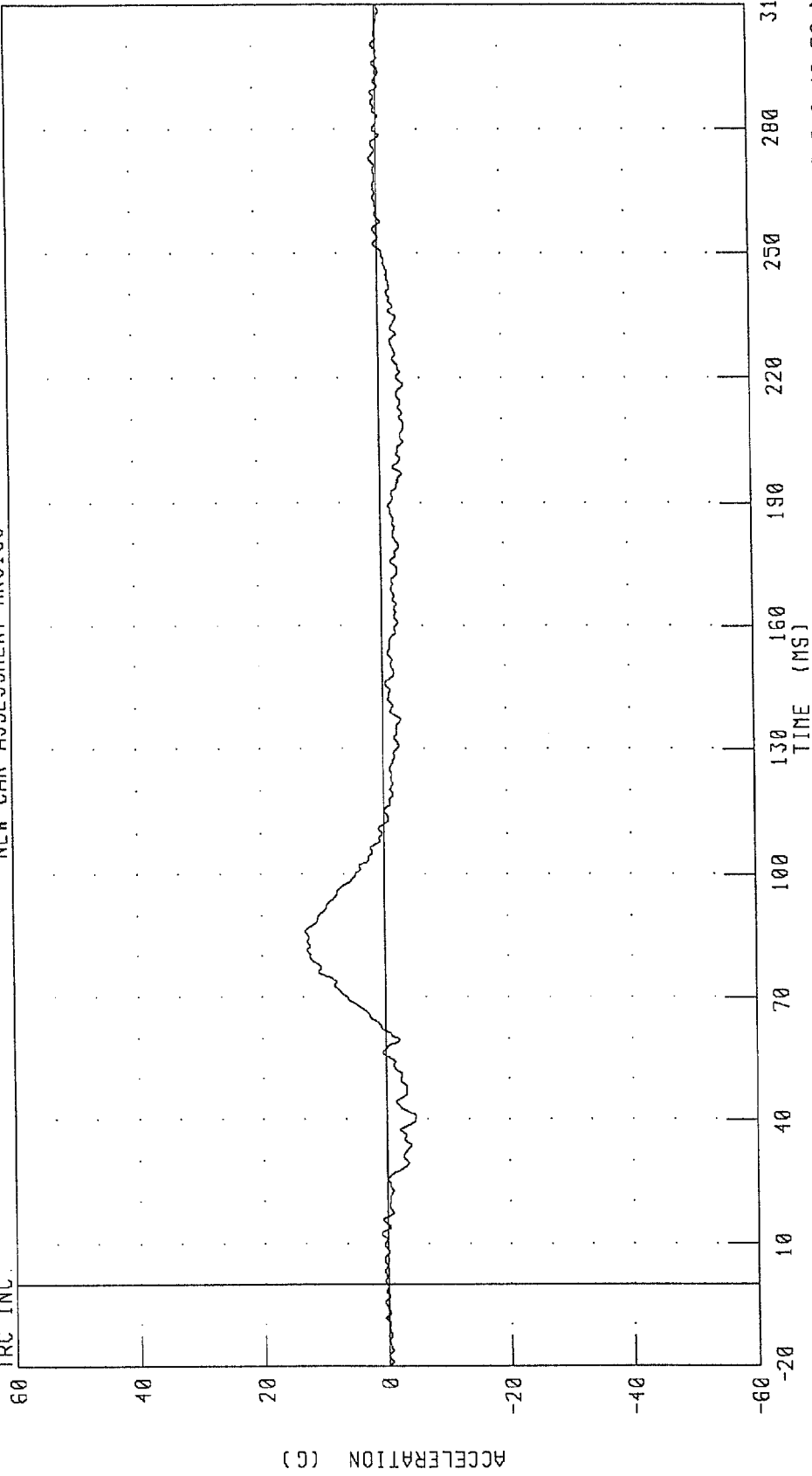
CHANNEL: CSTYG1 FILTER: CH. CLASS 180

PEAK DATA: 2.37 G @ 55.76 MS; -5.77 G @ 88.00 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Z-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

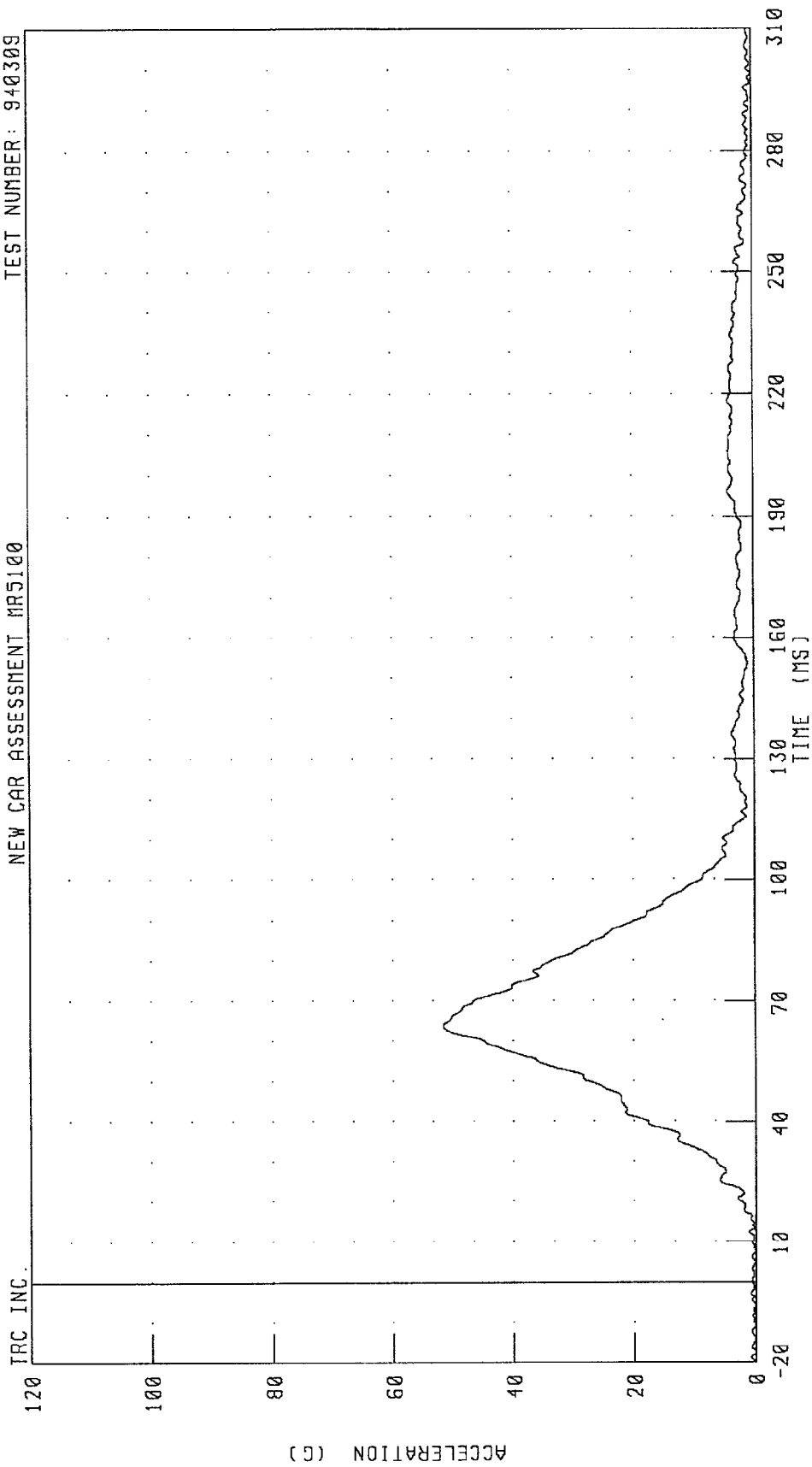


PEAK DATA: 13.03 G @ 86.24 MS; -4.67 G @ 40.72 MS

CHANNEL: CST2G1 FILTER: CH. CLASS 180

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST RESULTANT ACCELERATION
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

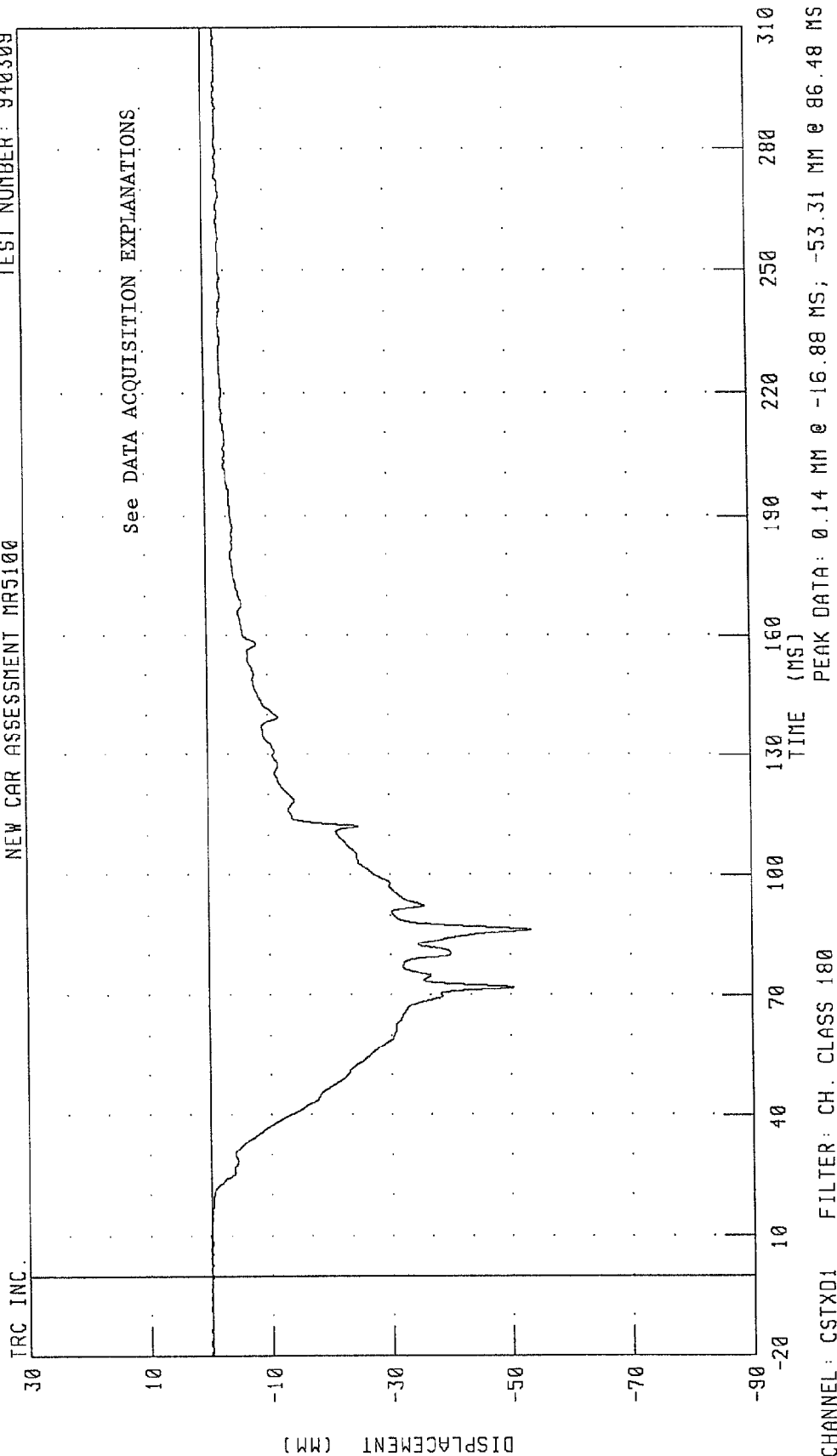


CHANNEL: CSTRG1 FILTER: CH. CLASS 180

PEAK DATA: 51.59 G @ 63.84 MS; 0.03 G @ -7.76 MS

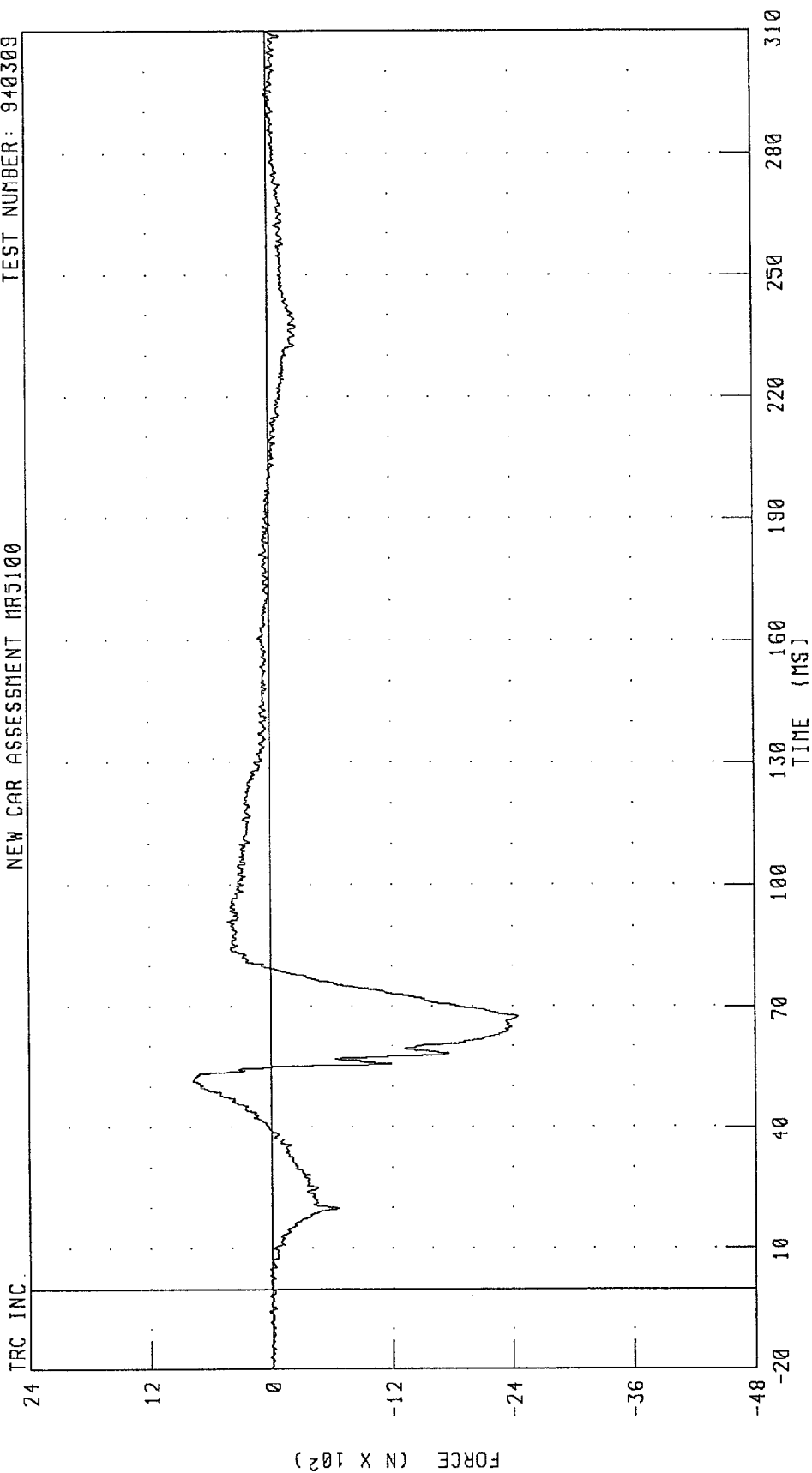
1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST DEFLECTION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT FEMUR FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

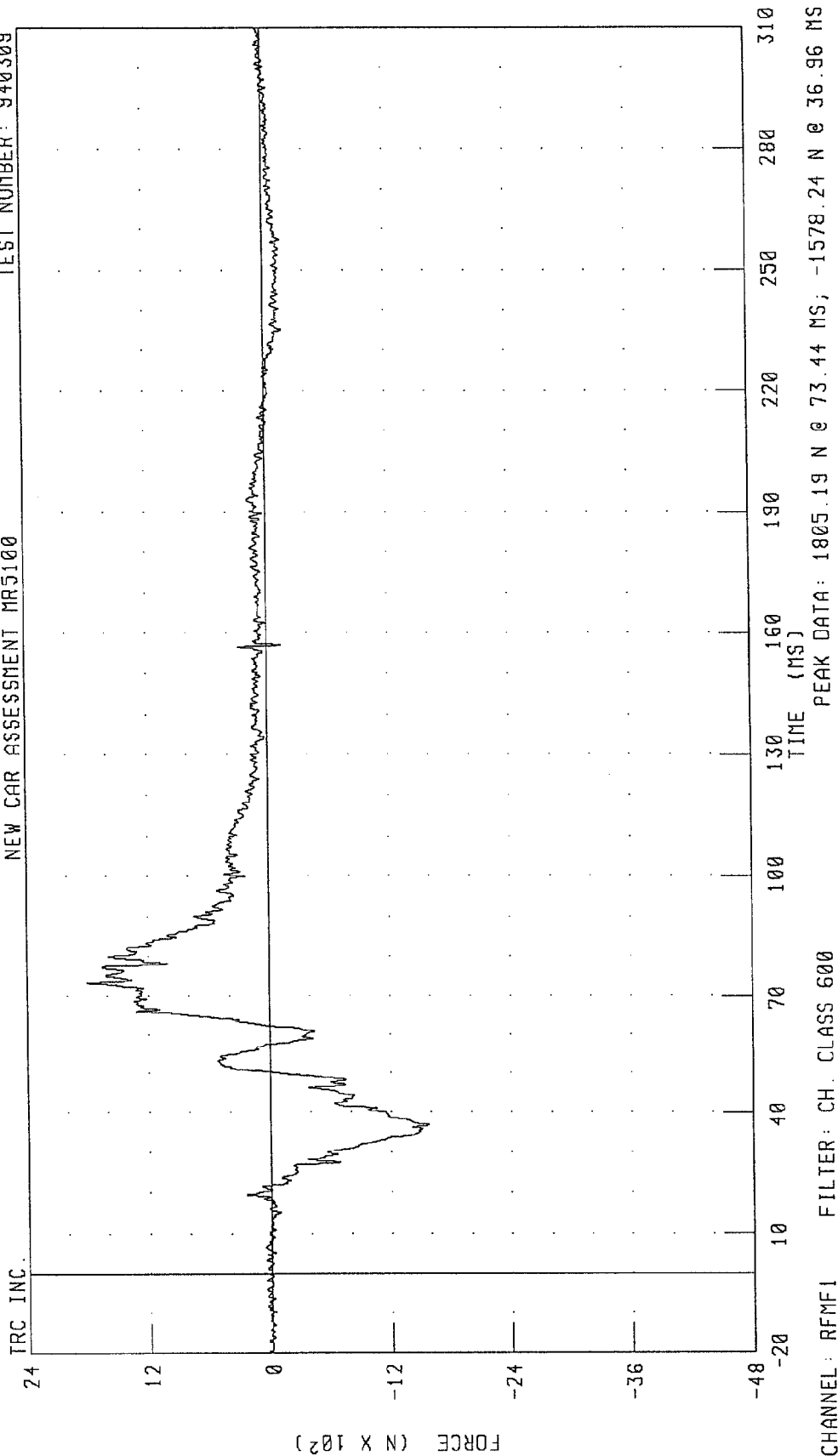


CHANNEL: LFMF1 FILTER: CH. CLASS 600

PEAK DATA: 776.10 N @ 51.44 MS; -2456.70 N @ 67.60 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FEMUR FORCE
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

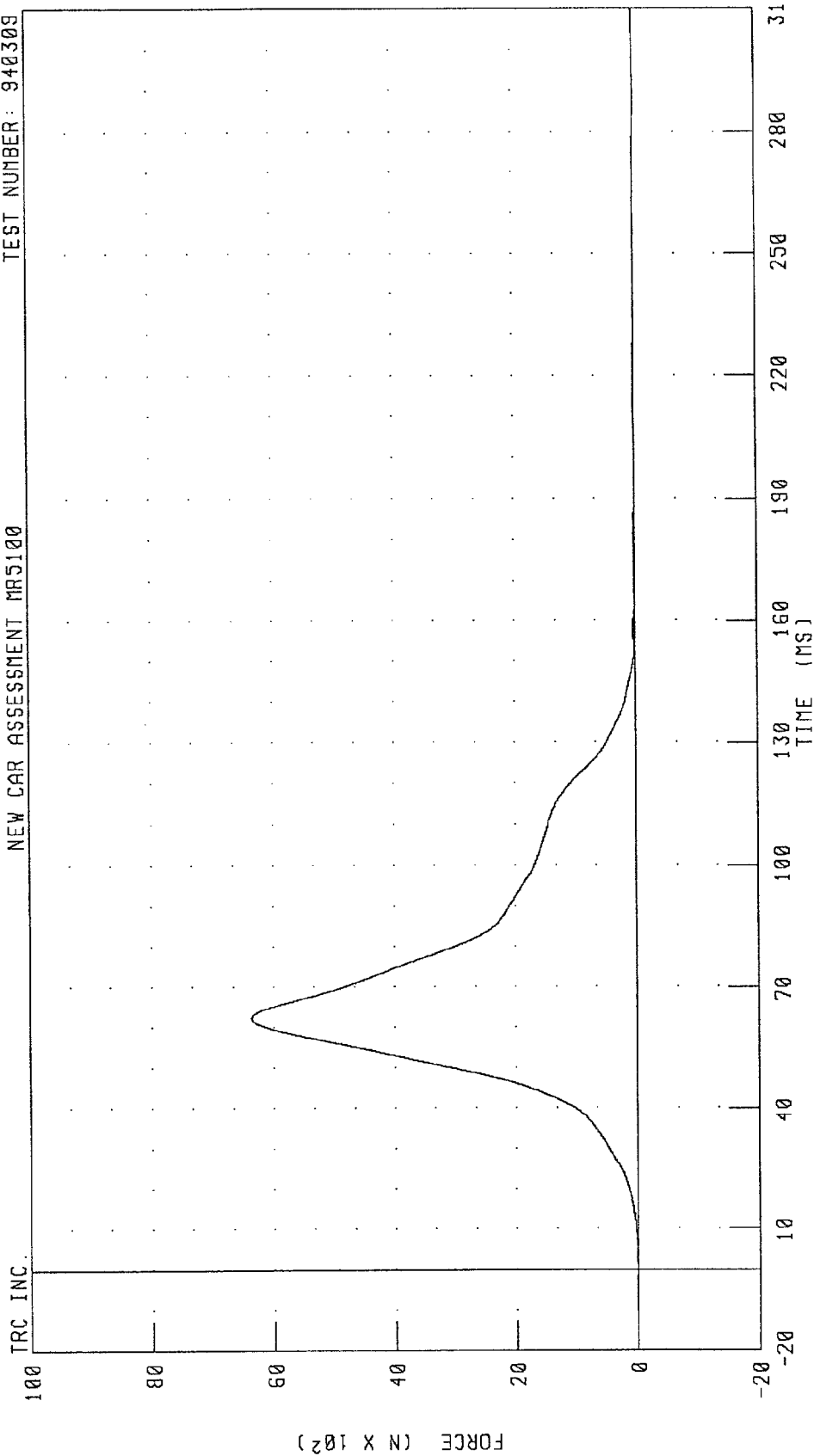


CHANNEL: RFMF1 FILTER: CH. CLASS 600

PEAK DATA: 1805.19 N @ 73.44 MS; -1578.24 N @ 36.96 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER LAP BELT OUTBOARD FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

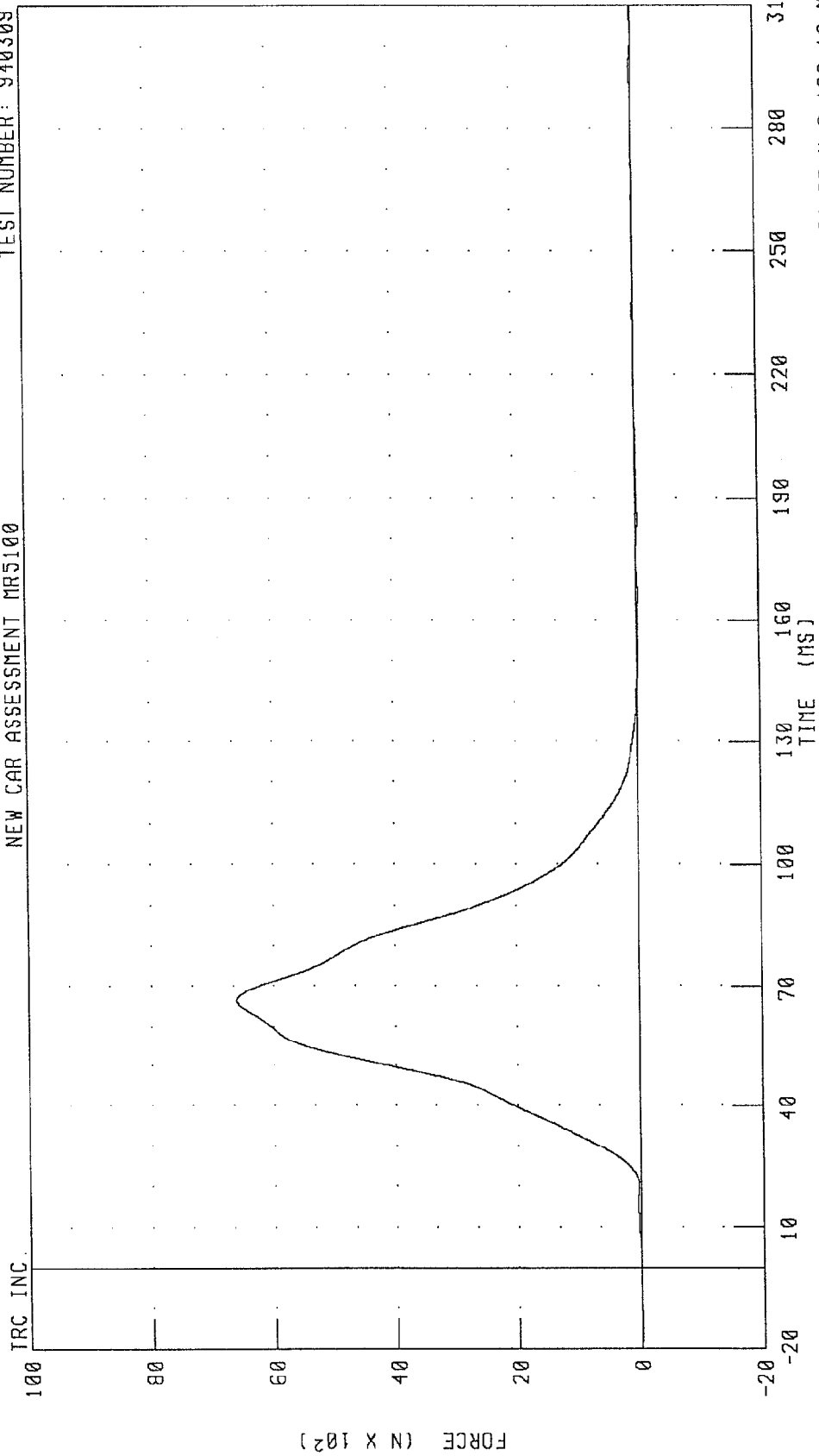


CHANNEL: LBOFI FILTER: CH. CLASS 60

PEAK DATA: 6364.88 N @ 62.32 MS; -14.43 N @ 289.76 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

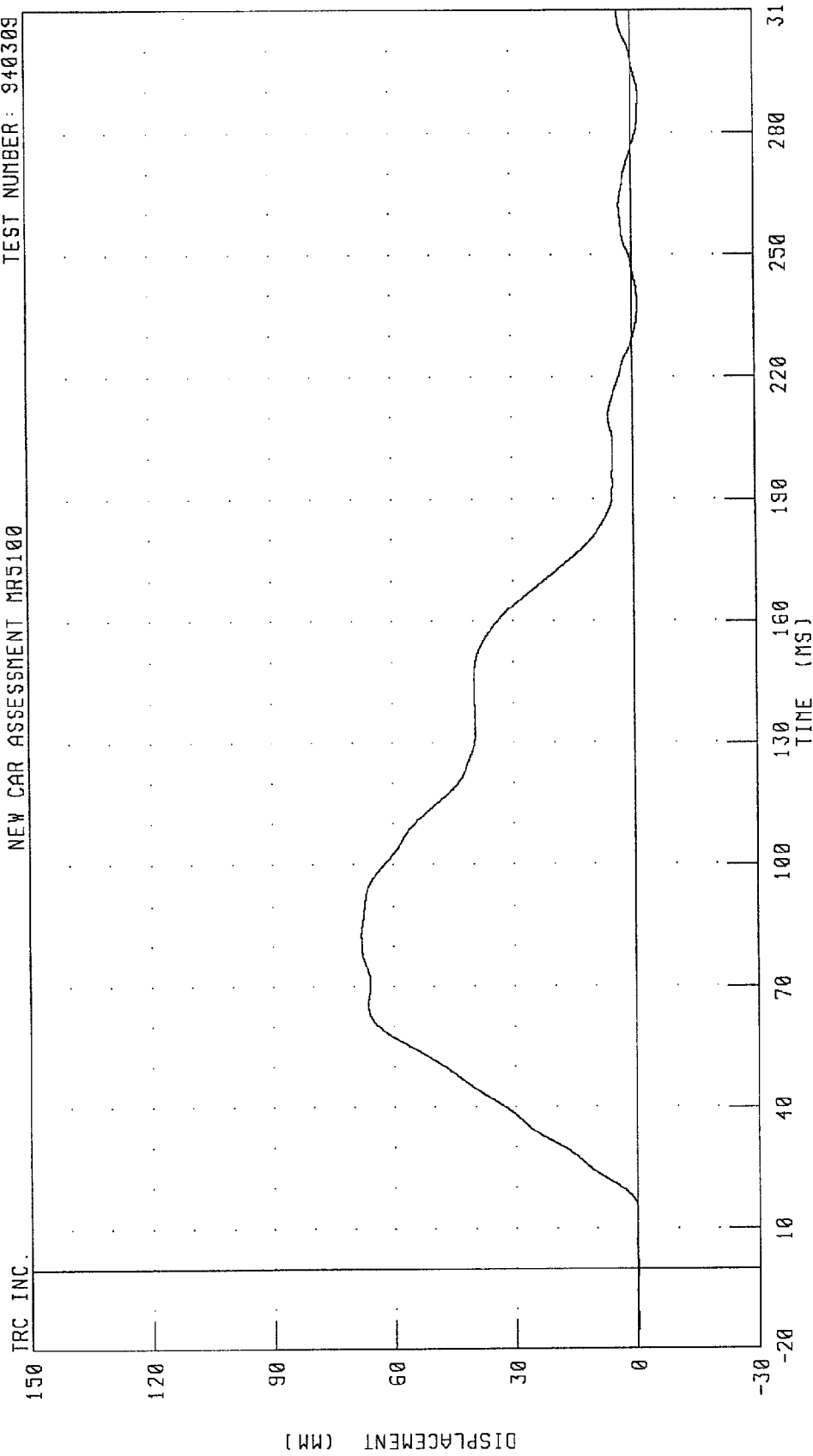


PEAK DATA: 66.56 MS; -24.00 N @ 166.16 MS

CHANNEL: SHBFI FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT DISPLACEMENT
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

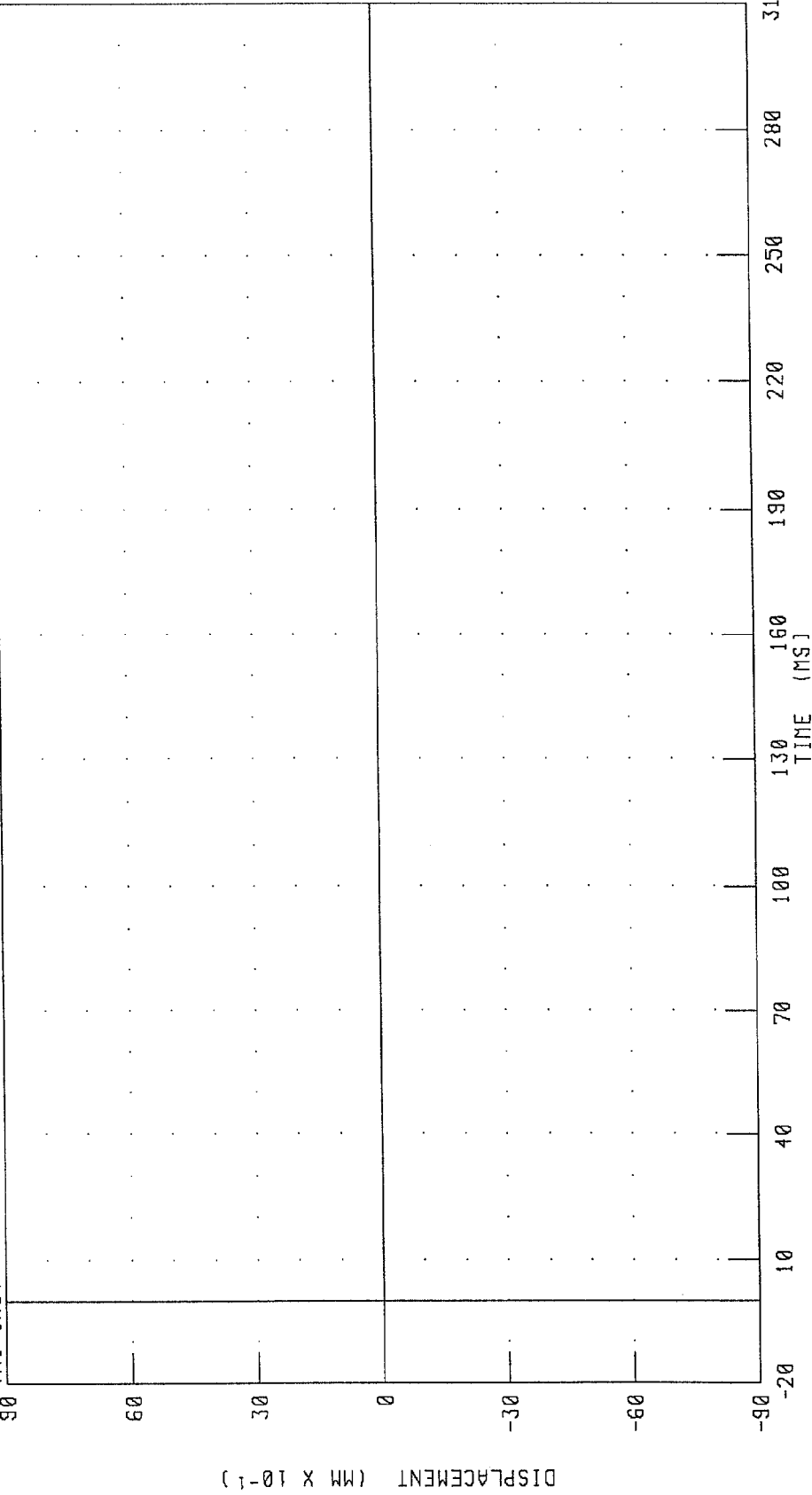


CHANNEL: SH001 FILTER: CH. CLASS 60 PEAK DATA: 68.02 MM @ 82.72 MS; -1.63 MM @ 288.88 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 DRIVER SEAT BELT EXTENSION
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

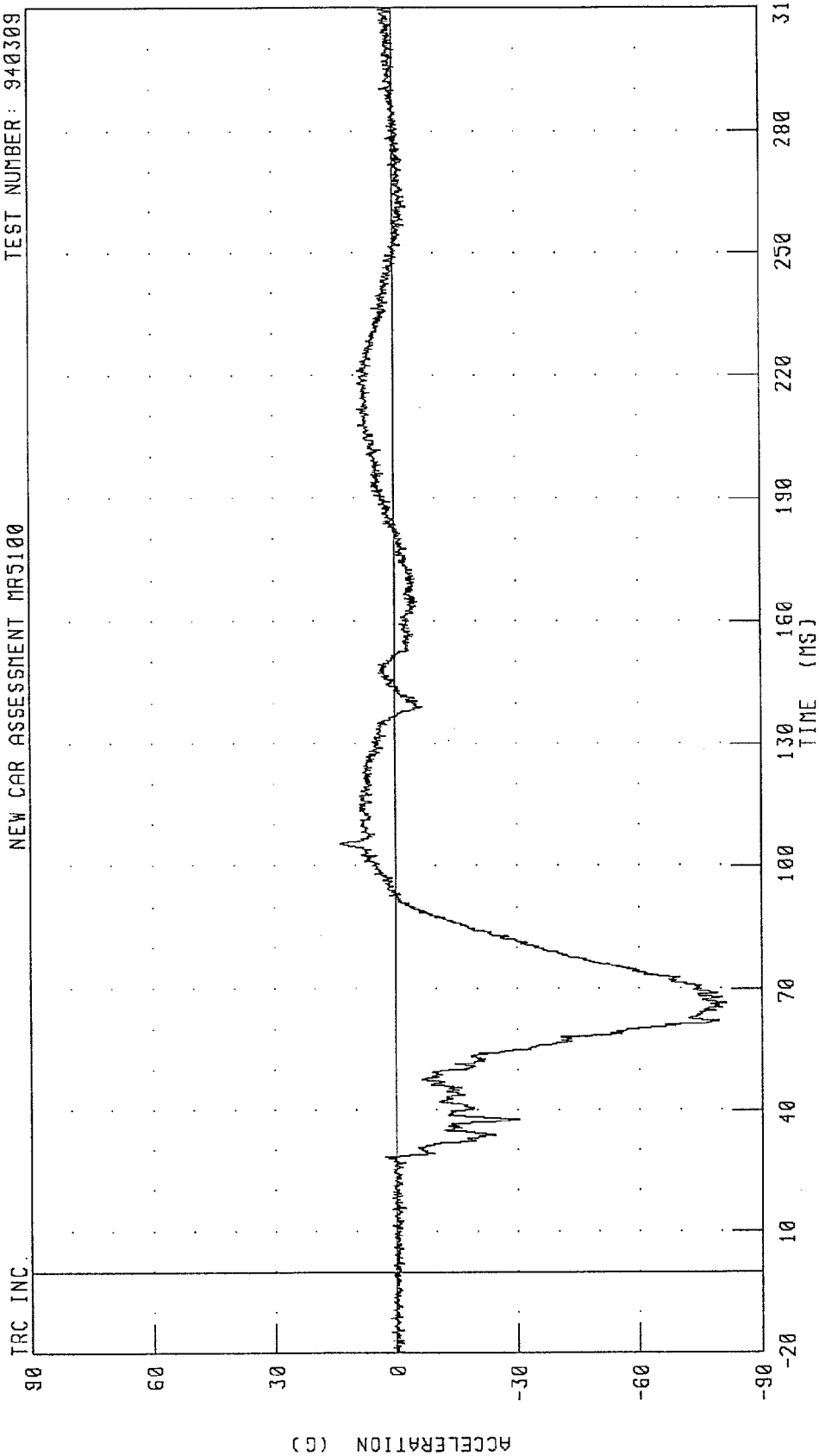


CHANNEL: SBED1 FILTER: CH. CLASS 60

PEAK DATA: 0.00 MM @ 143.44 MS; -0.01 MM @ 151.92 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

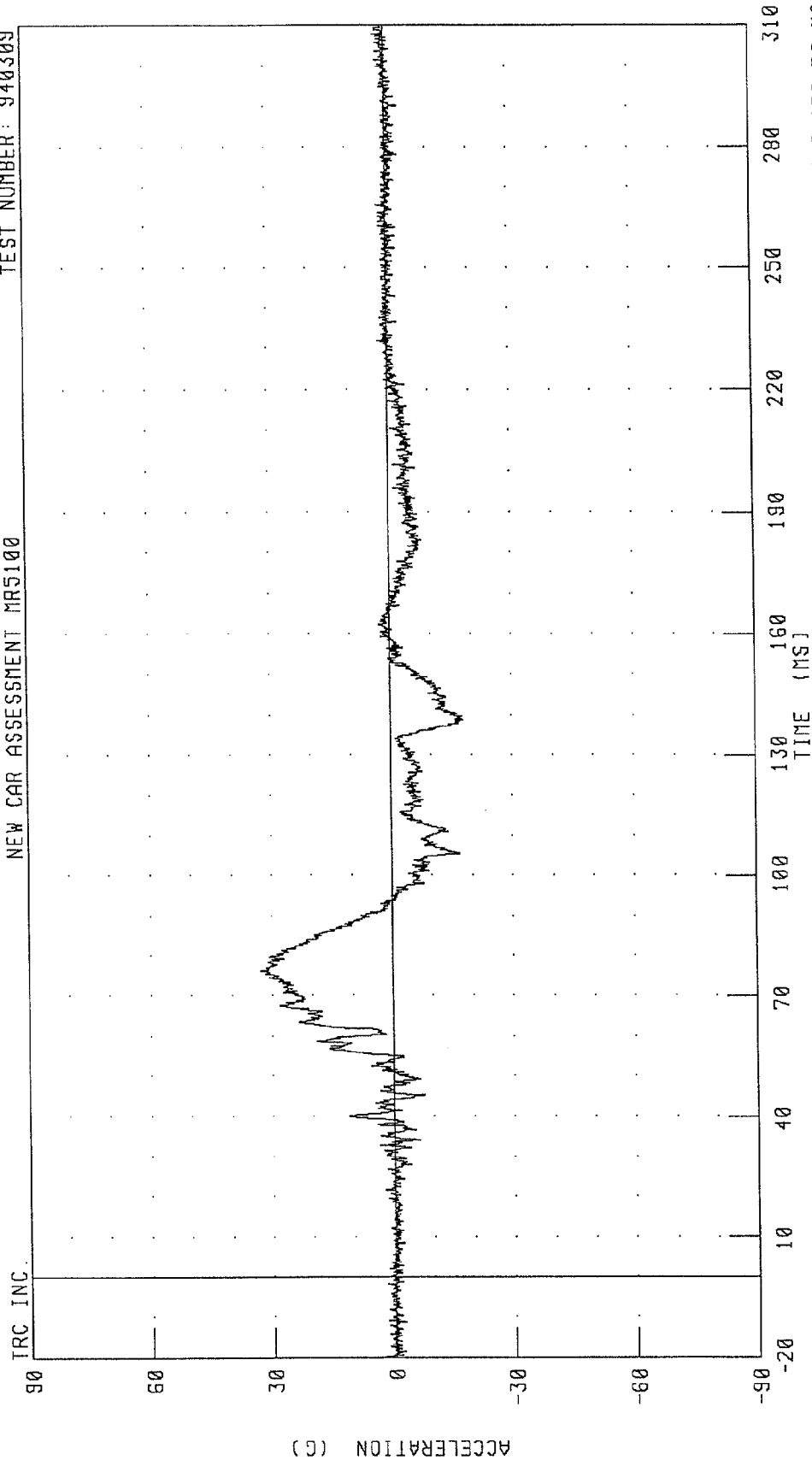


CHANNEL: HEDXG2 FILTER: CH. CLASS 1000

PEAK DATA: 13.73 G @ 105.28 MS; -81.25 G @ 66.56 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y-AXIS ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



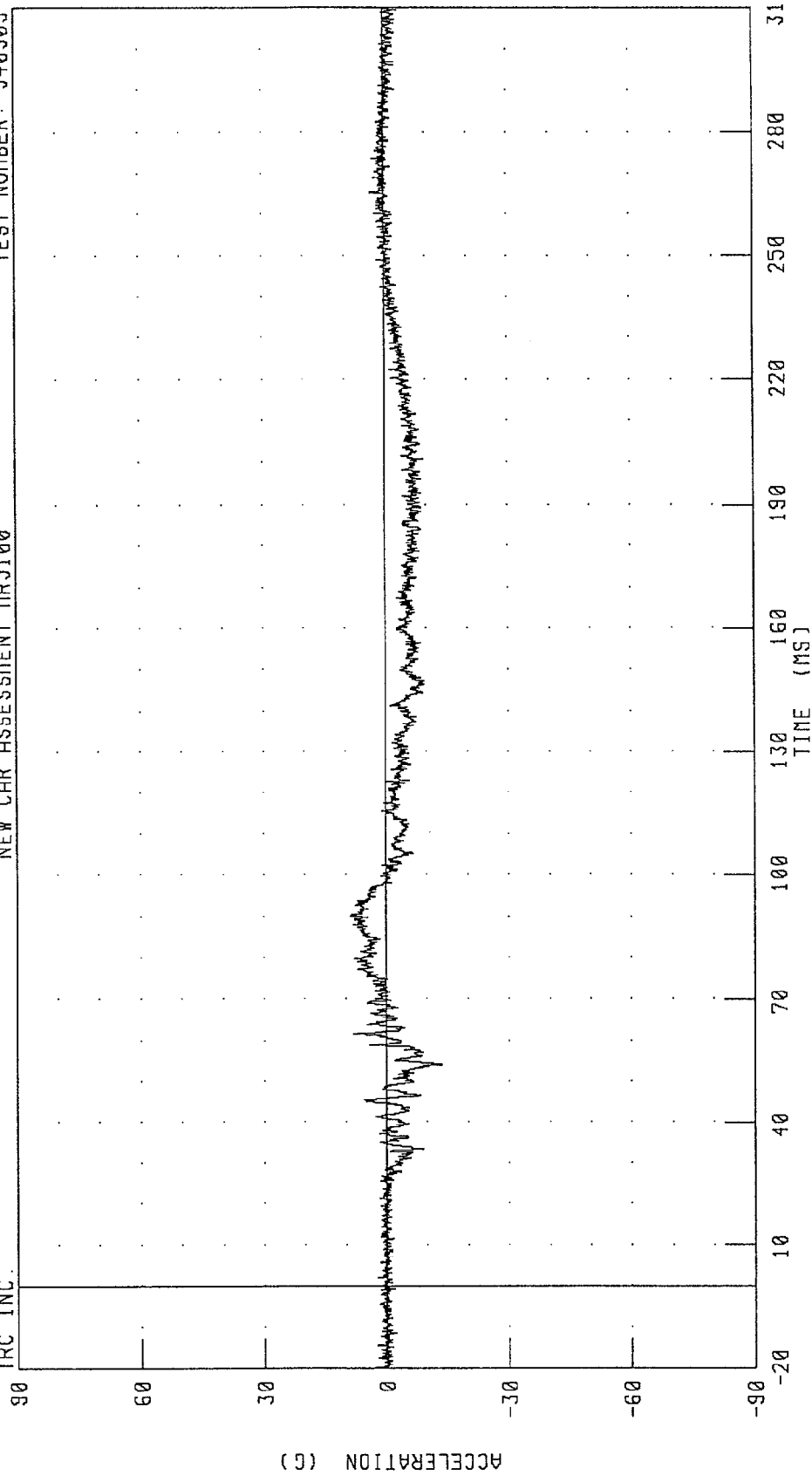
PEAK DATA: 32.87 G @ 76.16 MS; -17.91 G @ 138.72 MS

CHANNEL: HEDYG2 FILTER: CH. CLASS 1000

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

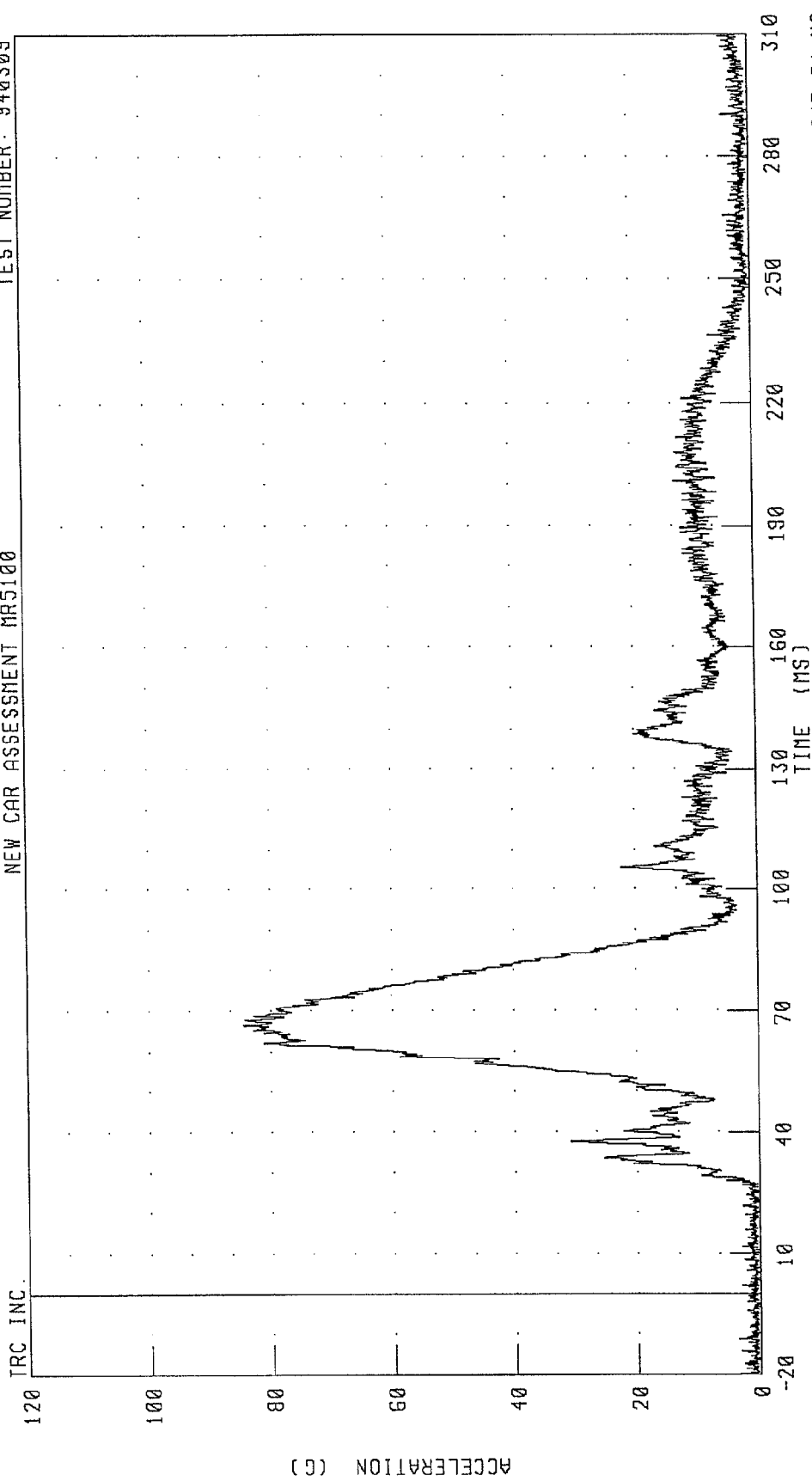


CHANNEL: HEDZG2 FILTER: CH. CLASS 1000

PEAK DATA: 8.96 G @ 90.08 MS; -13.33 G @ 54.08 MS

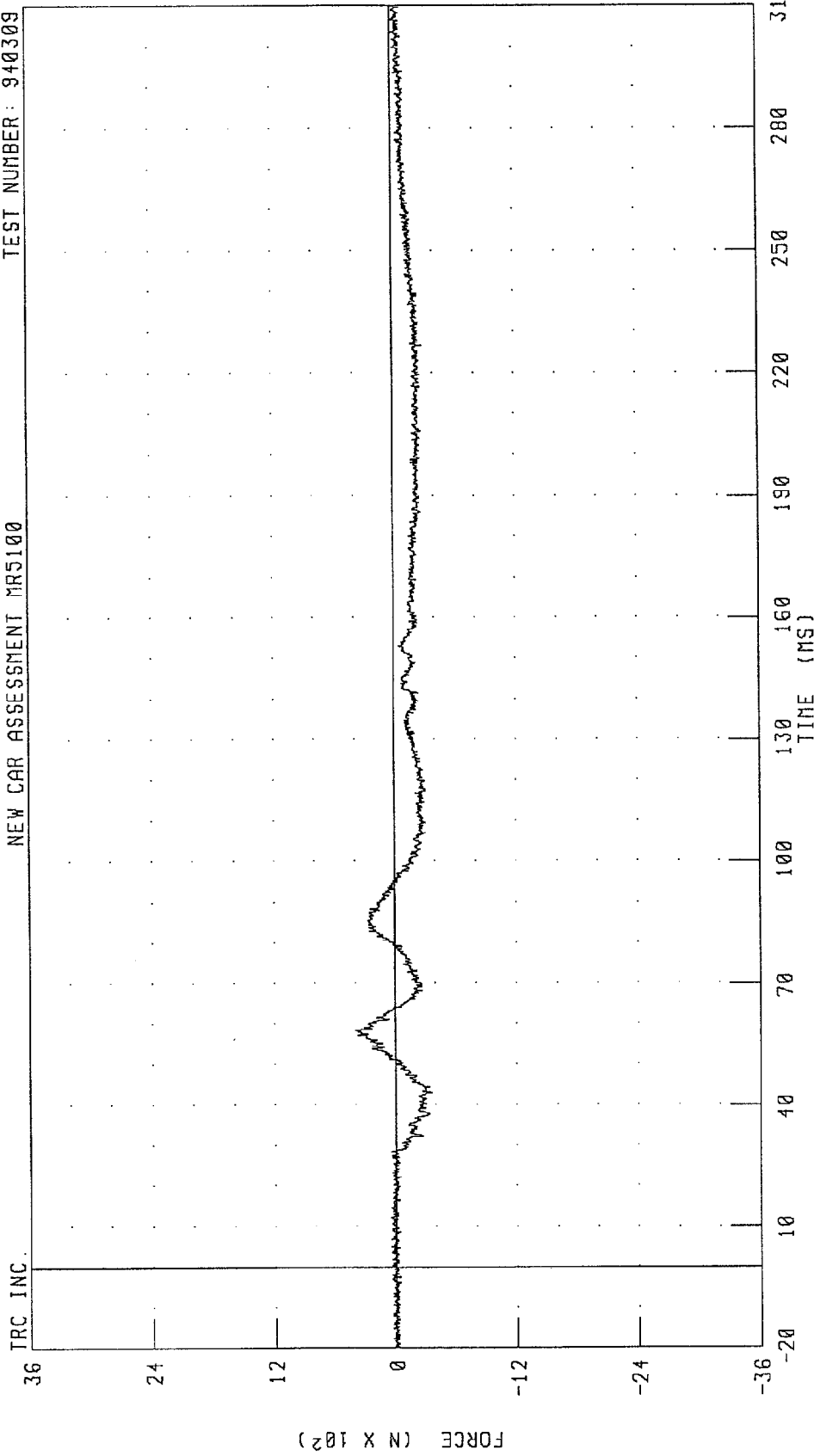
1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK X-AXIS SHEAR FORCE
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

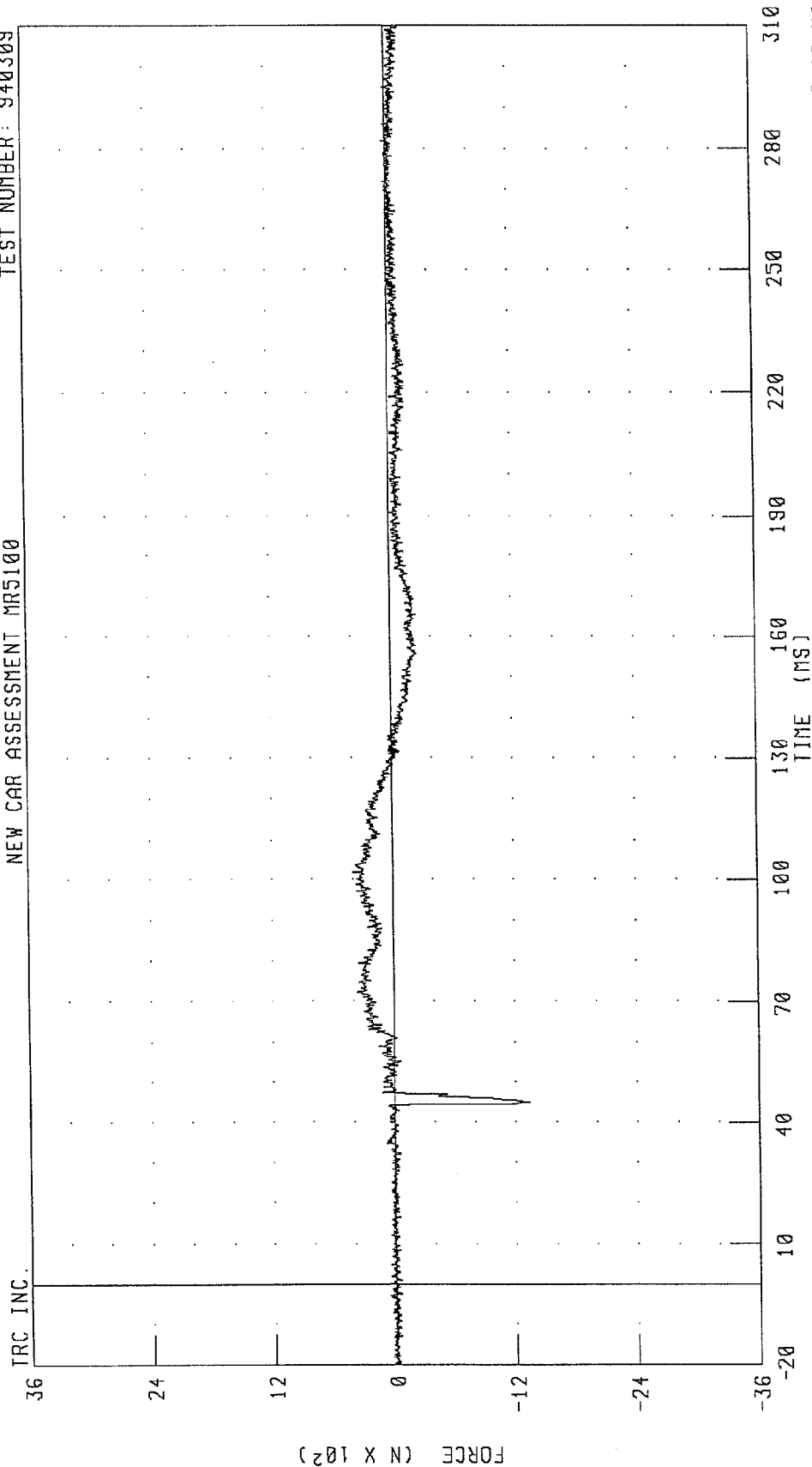


CHANNEL: NEKXF2 FILTER: CH. CLASS 1000

PEAK DATA: 396.84 N @ 58.24 MS; -355.34 N @ 43.12 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Y-AXIS SHEAR FORCE
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



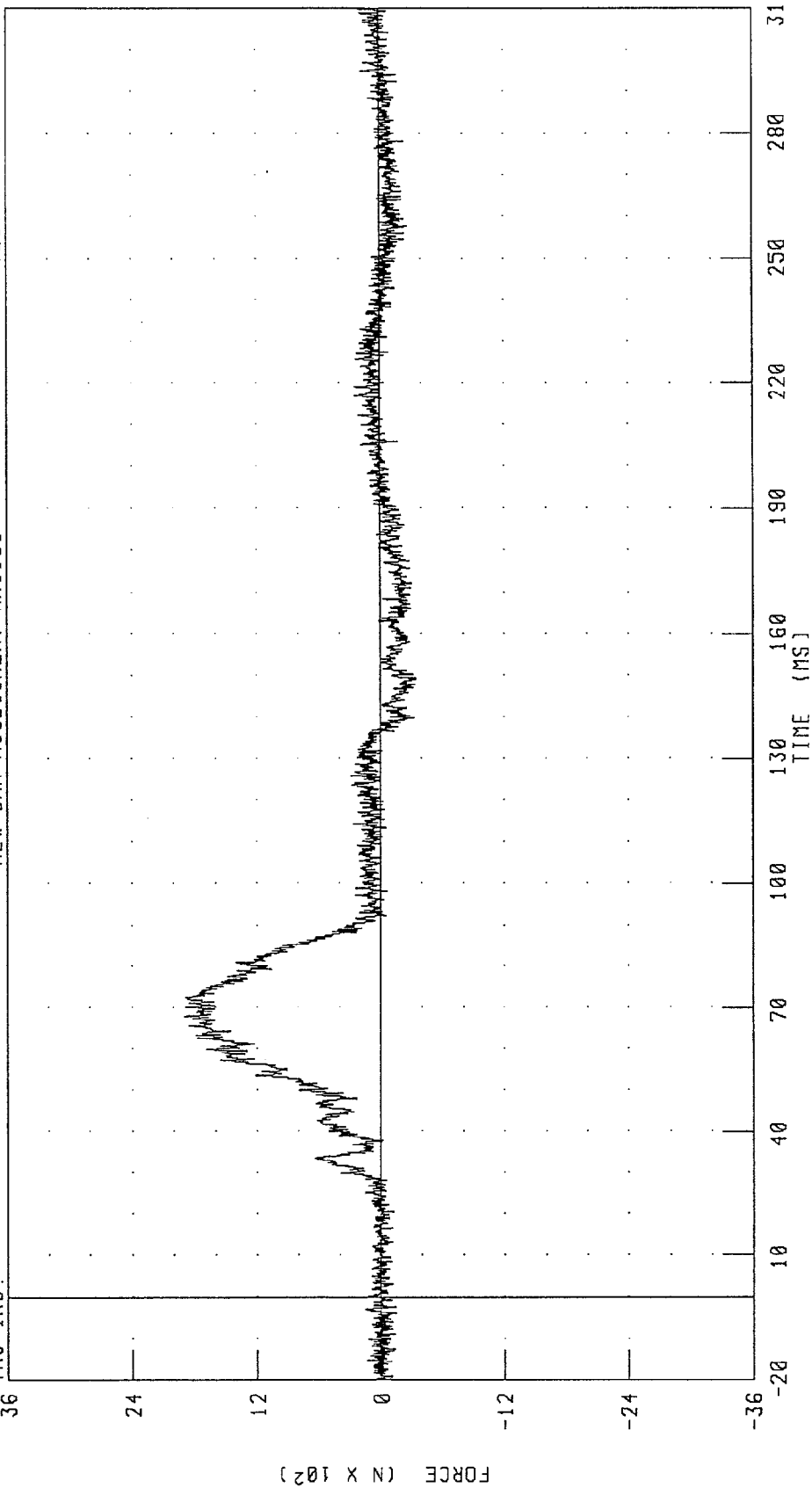
PEAK DATA: 400.51 N @ 101.84 MS; -1338.46 N @ 45.12 MS

CHANNEL: NEKYF2 FILTER: CH. CLASS 1000

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK 2-AXIS AXIAL FORCE
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



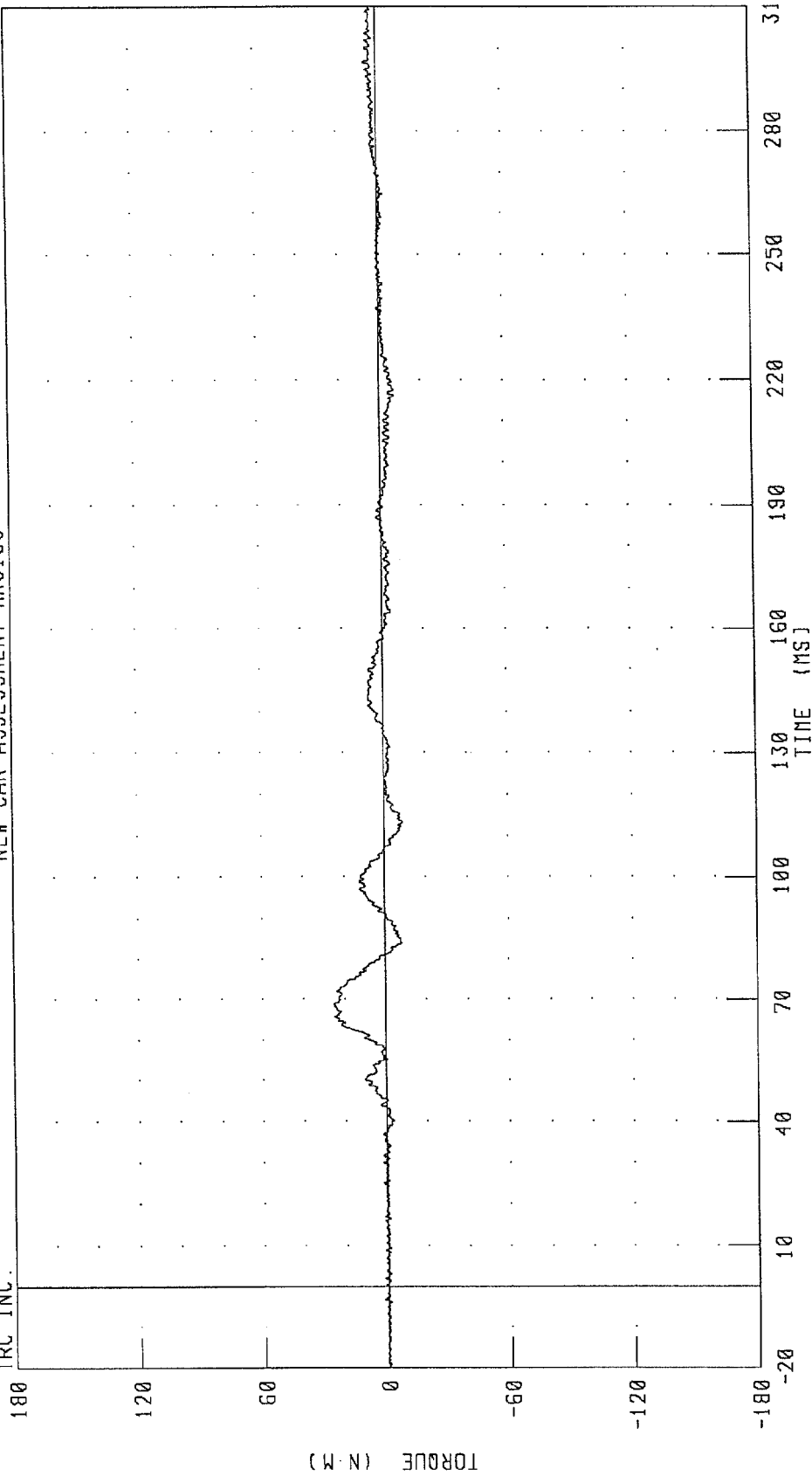
CHANNEL: NEKZF2 FILTER: CH. CLASS 1000

PEAK DATA: 1904.67 N @ 68.00 MS; -342.25 N @ 148.88 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT X AXIS
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

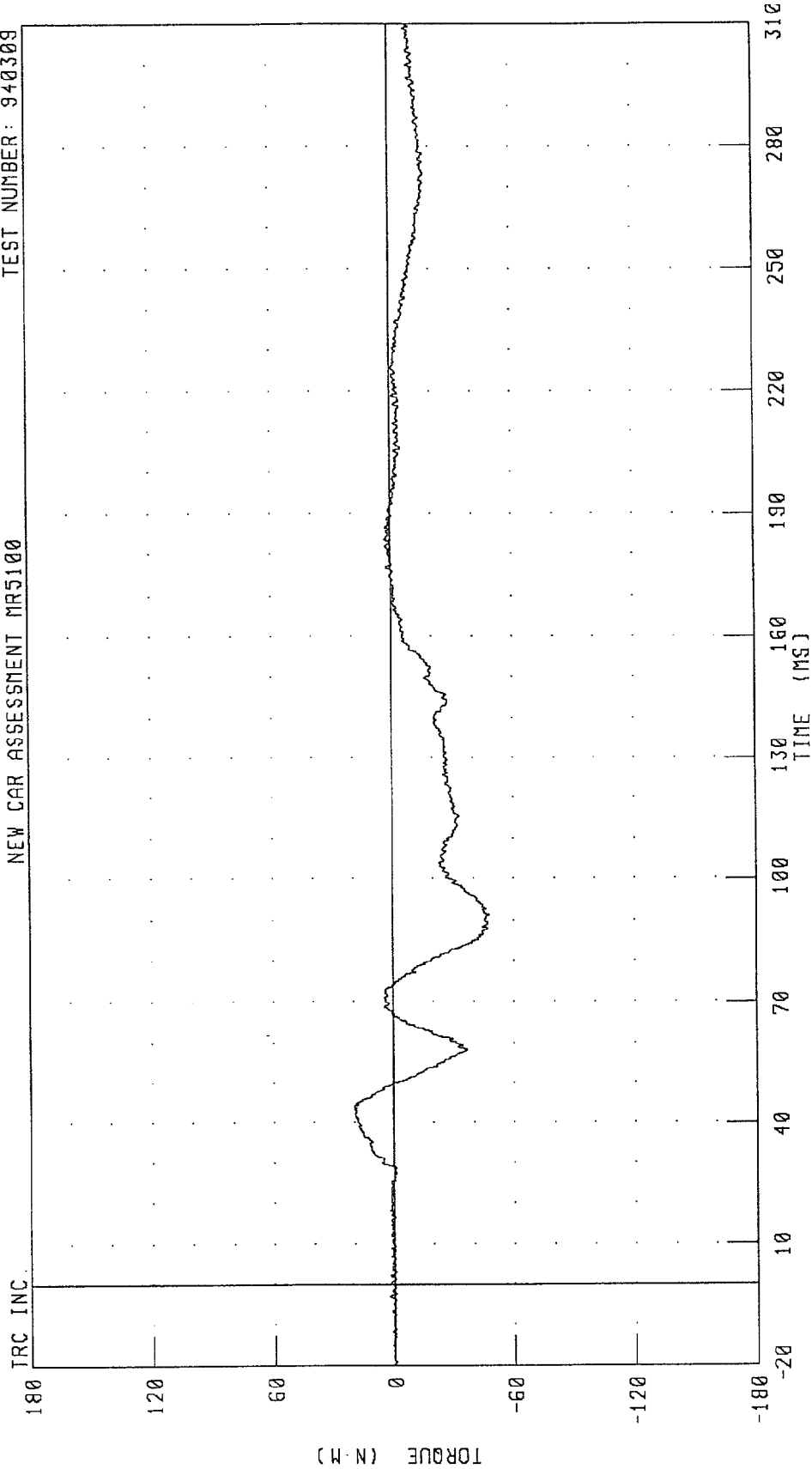


CHANNEL: NEKX2 FILTER: CH. CLASS 600

PEAK DATA: 25.35 N.M @ 68.80 MS; -8.95 N.M @ 113.36 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK MOMENT ABOUT Y AXIS
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



CHANNEL: NEKYM2 FILTER: CH. CLASS 600

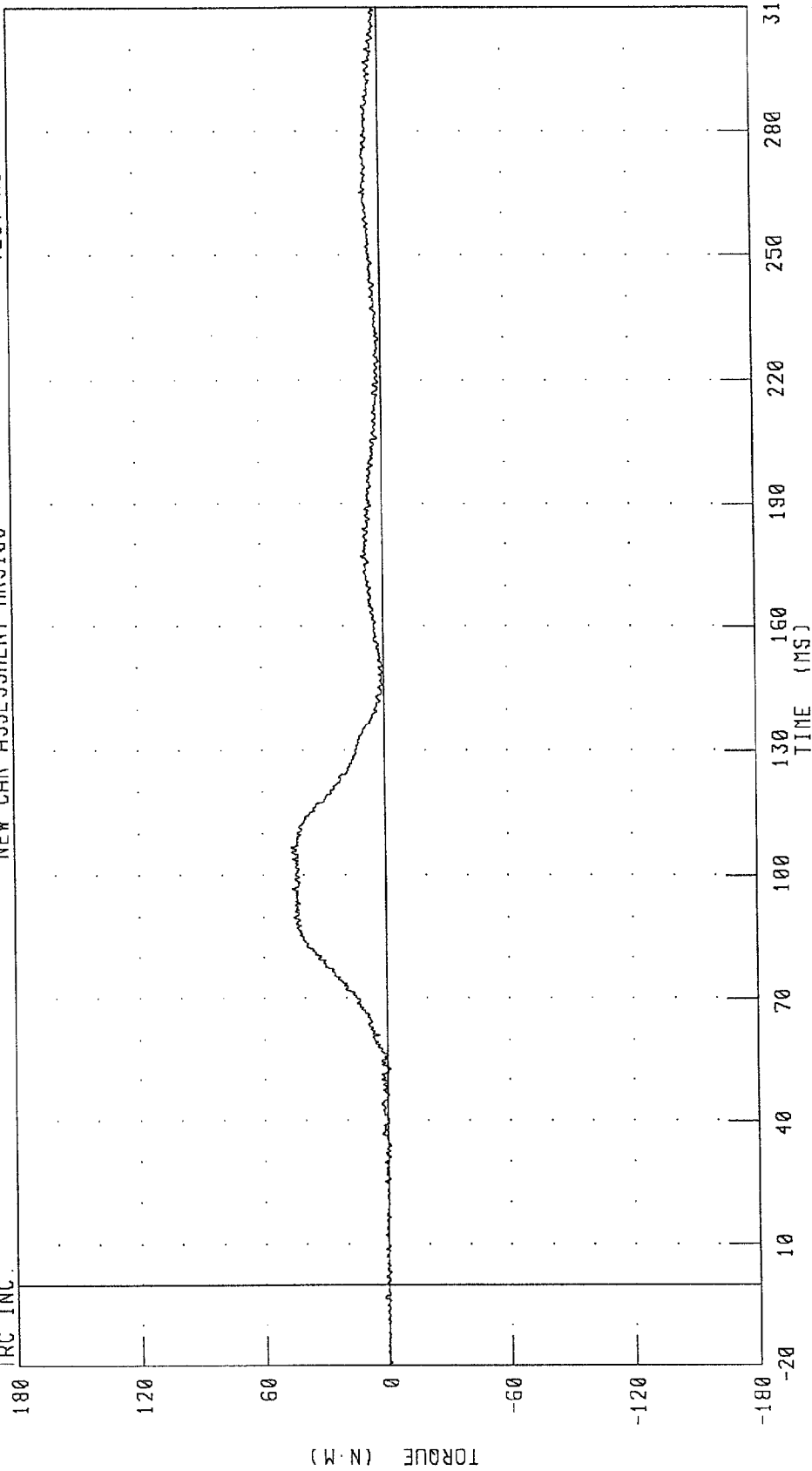
PEAK DATA: 19.87 N-M @ 44.08 MS; -47.74 N-M @ 91.20 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Z AXIS

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



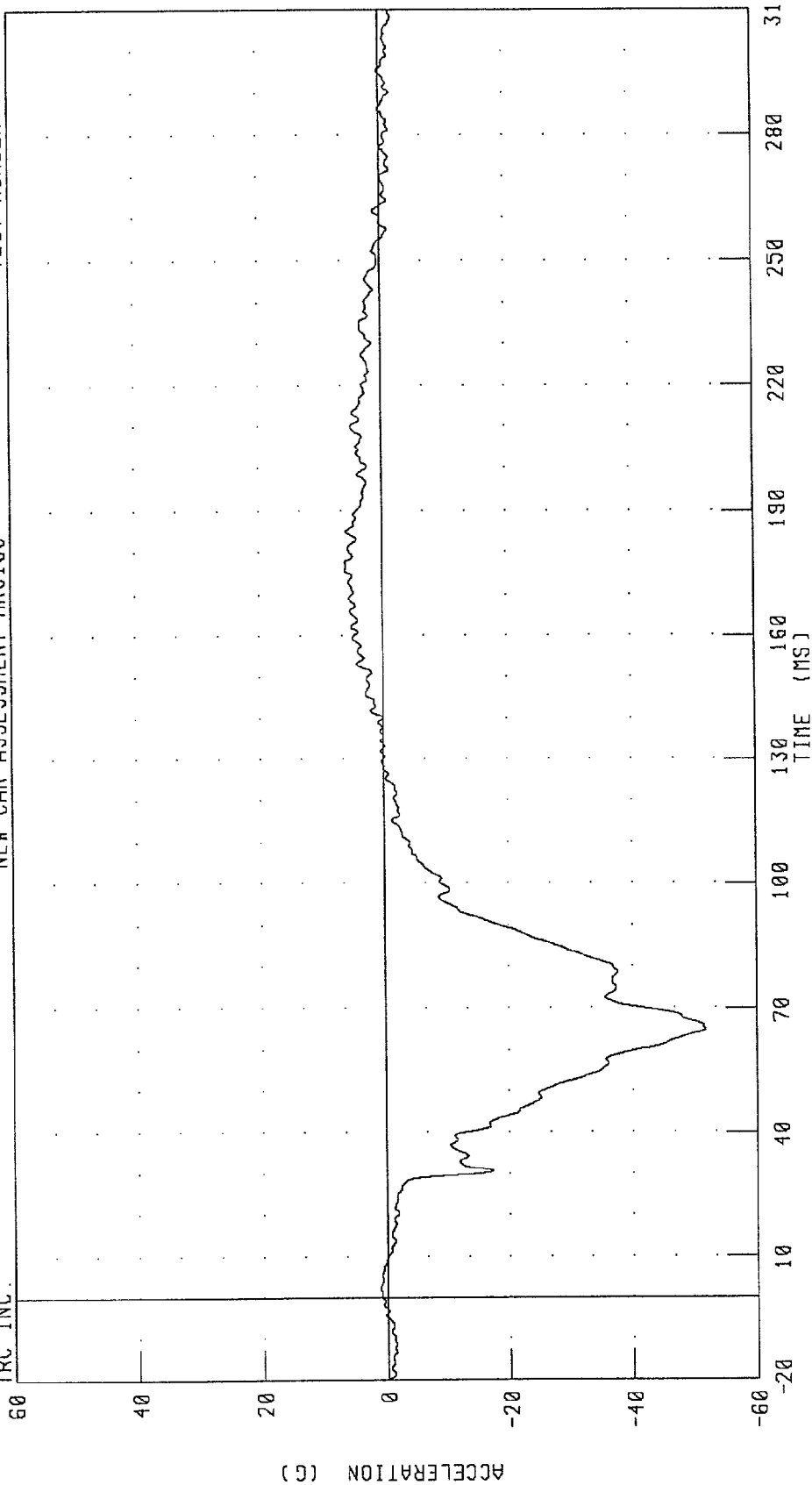
PEAK DATA: 46.31 N.M @ 106.64 MS; -1.49 N.M @ 34.08 MS

CHANNEL: NEKZM2 FILTER: CH. CLASS 600

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



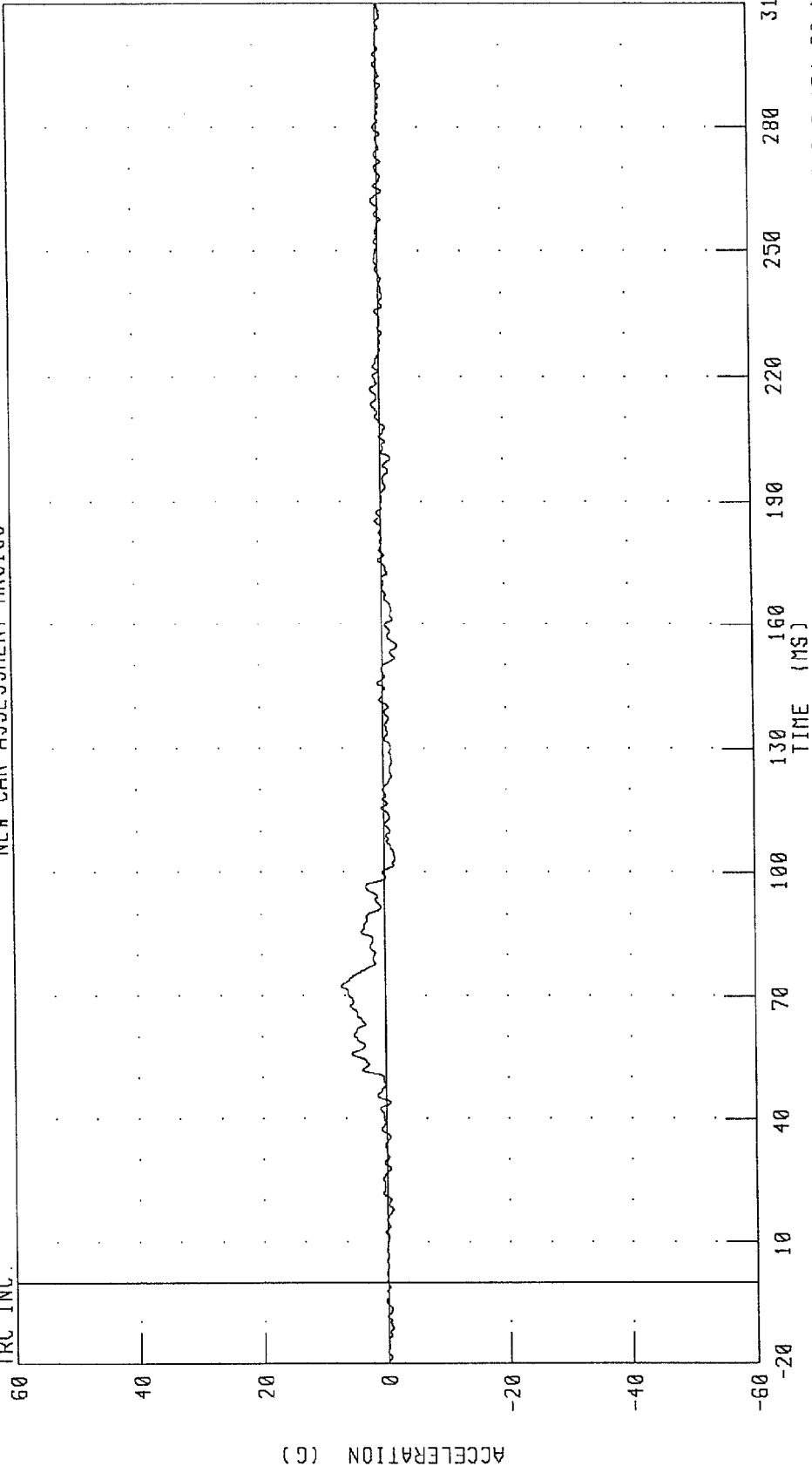
CHANNEL: CSTXC2 FILTER: CH. CLASS 180

PEAK DATA: 6.16 G @ 175.84 MS; -51.72 G @ 64.88 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Y-AXIS ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



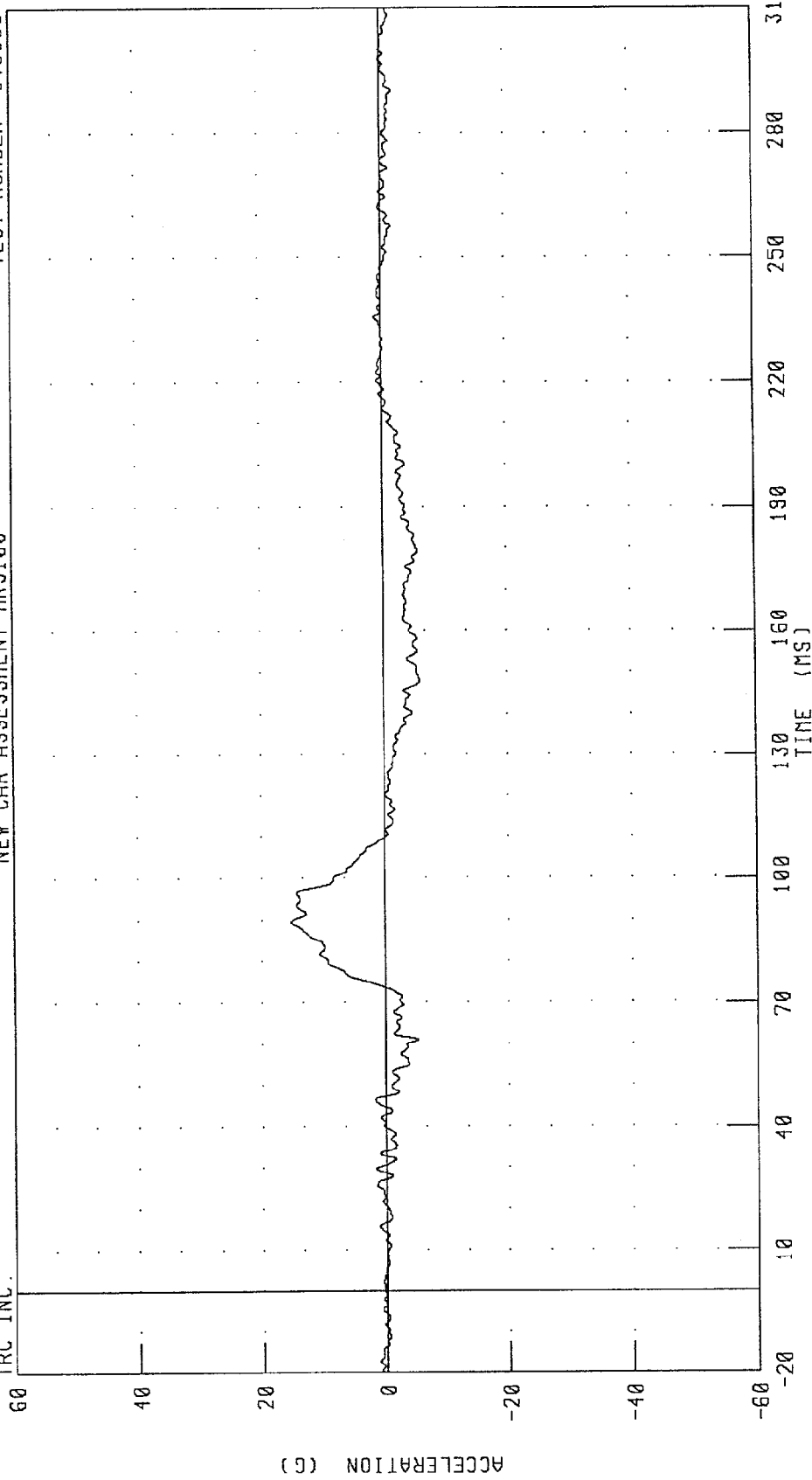
PEAK DATA: 7.18 G @ 72.48 MS; -2.40 G @ 154.80 MS

CHANNEL: CSTYG2 FILTER: CH. CLASS 180

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

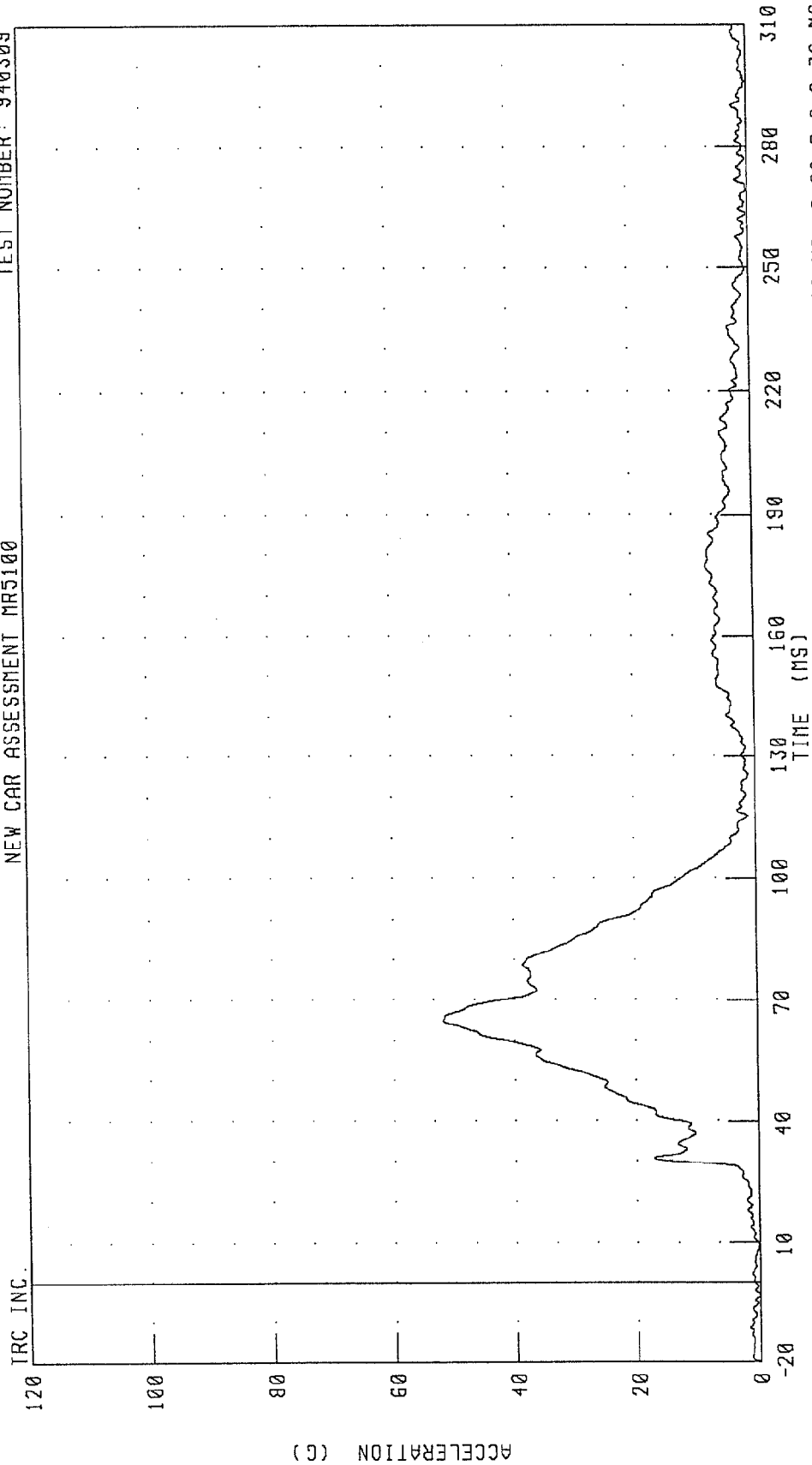


CHANNEL: CSTZG2 FILTER: CH. CLASS 180

PEAK DATA: 15.34 G @ 89.52 MS; -5.84 G @ 148.00 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST RESULTANT ACCELERATION
NEW CAR ASSESSMENT NR5100

TEST NUMBER: 940309



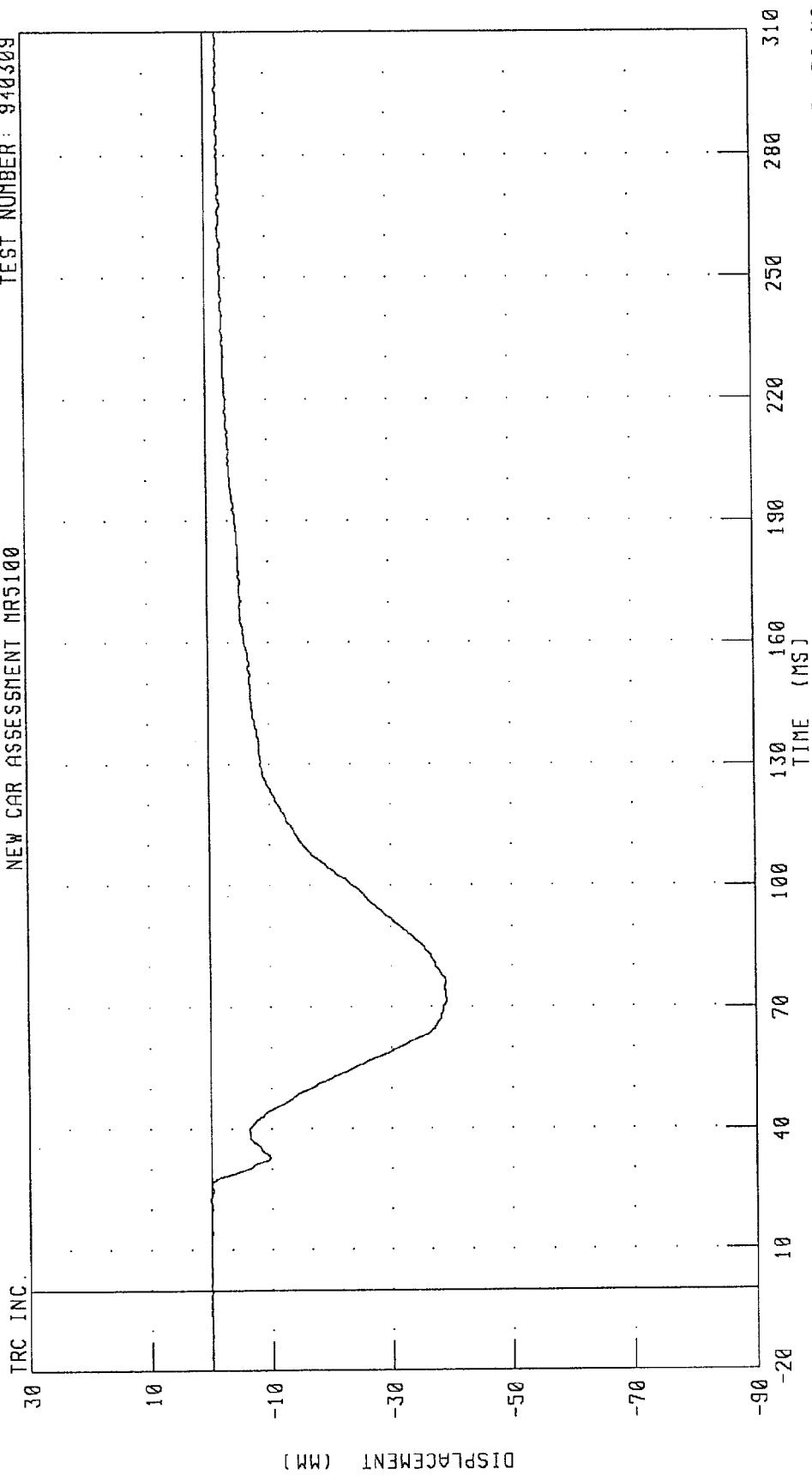
PEAK DATA: 51.94 G @ 64.88 MS; 0.09 G @ 9.36 MS

CHANNEL: CSTRG2 FILTER: CH. CLASS 180

TRC INC.

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST DEFLECTION
NEW CAR ASSESSMENT NR5100

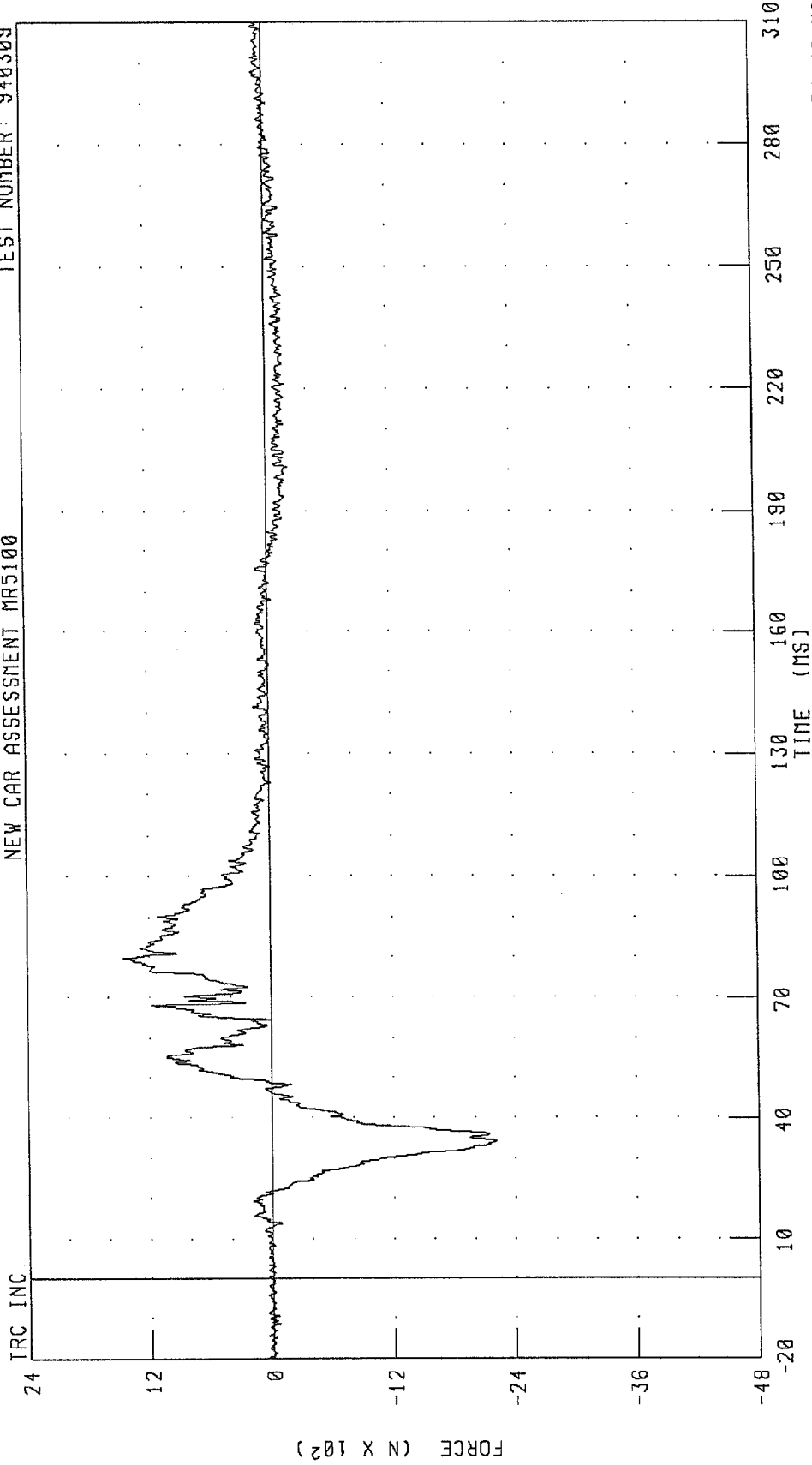
TEST NUMBER: 940309



CHANNEL: CSTXD2 FILTER: CH. CLASS 180 PEAK DATA: 0.21 MM @ 22.32 MS; -39.12 MM @ 71.76 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FEMUR FORCE
NEW CAR ASSESSMENT MR5100

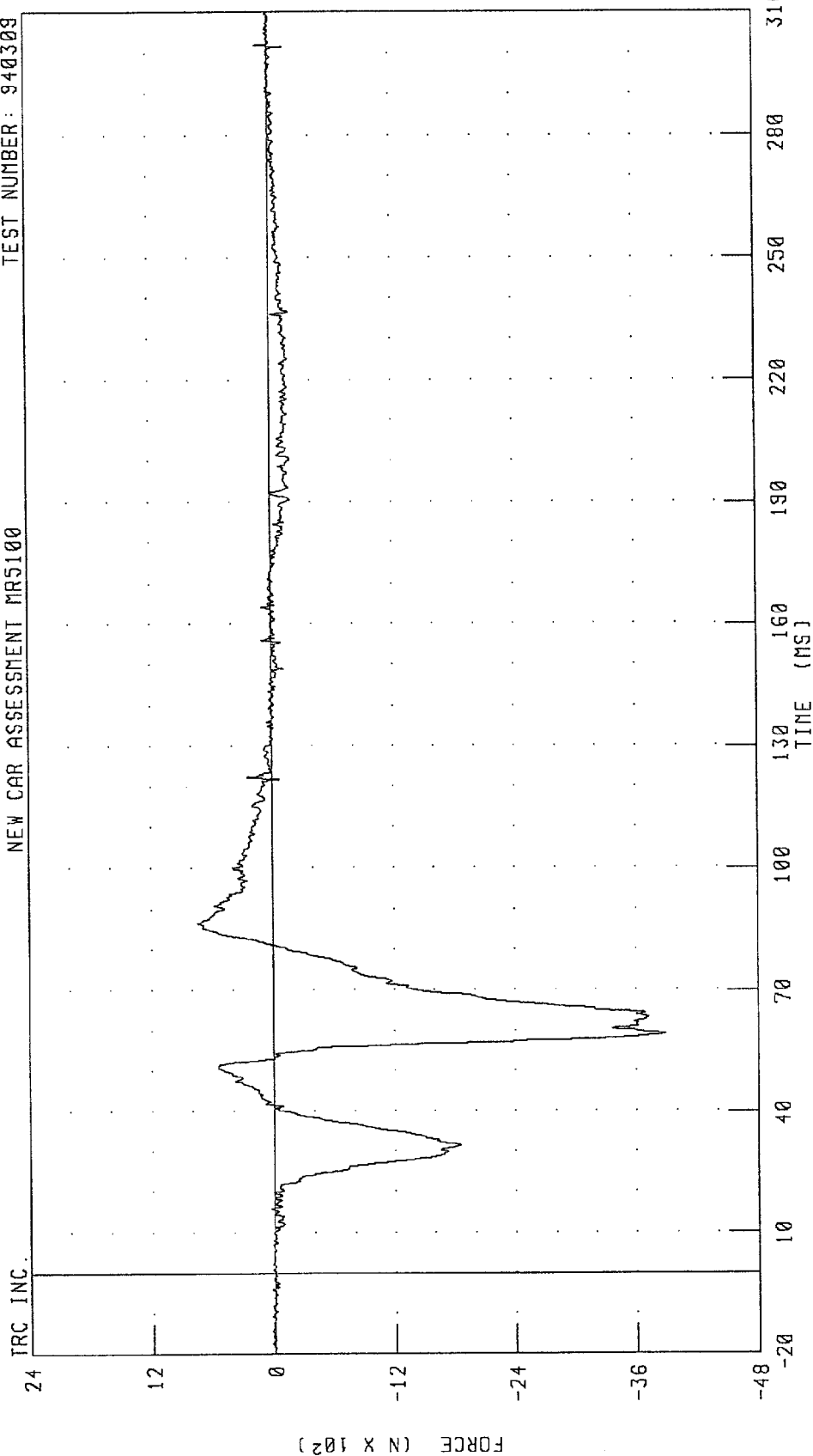
TEST NUMBER: 940309



CHANNEL: LFMF2 FILTER: CH. CLASS 600

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 PASSENGER RIGHT FEMUR FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

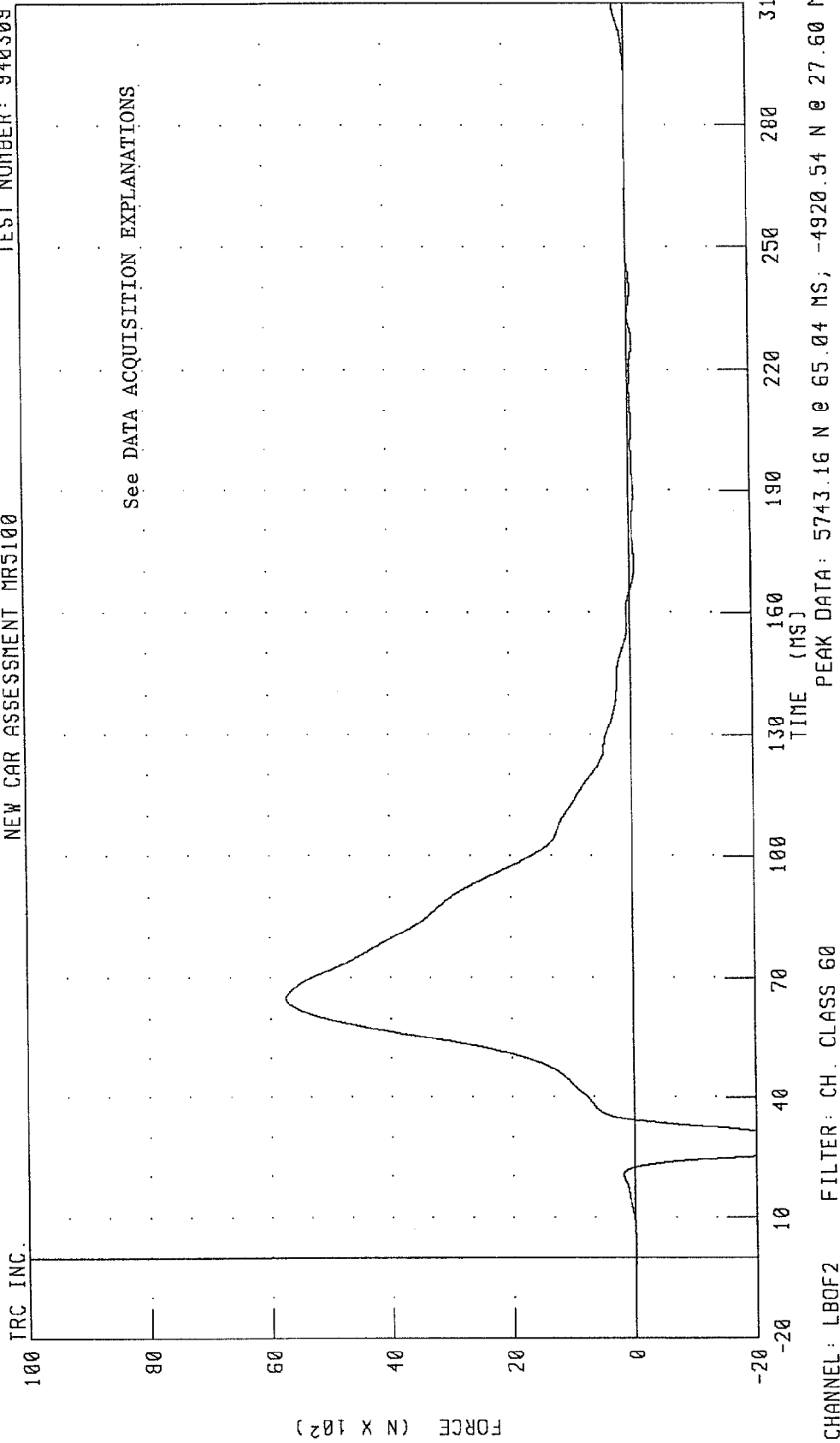


CHANNEL: RFMF2 FILTER: CH. CLASS 600

PEAK DATA: 741.65 N @ 86.56 MS; -3877.96 N @ 59.20 MS

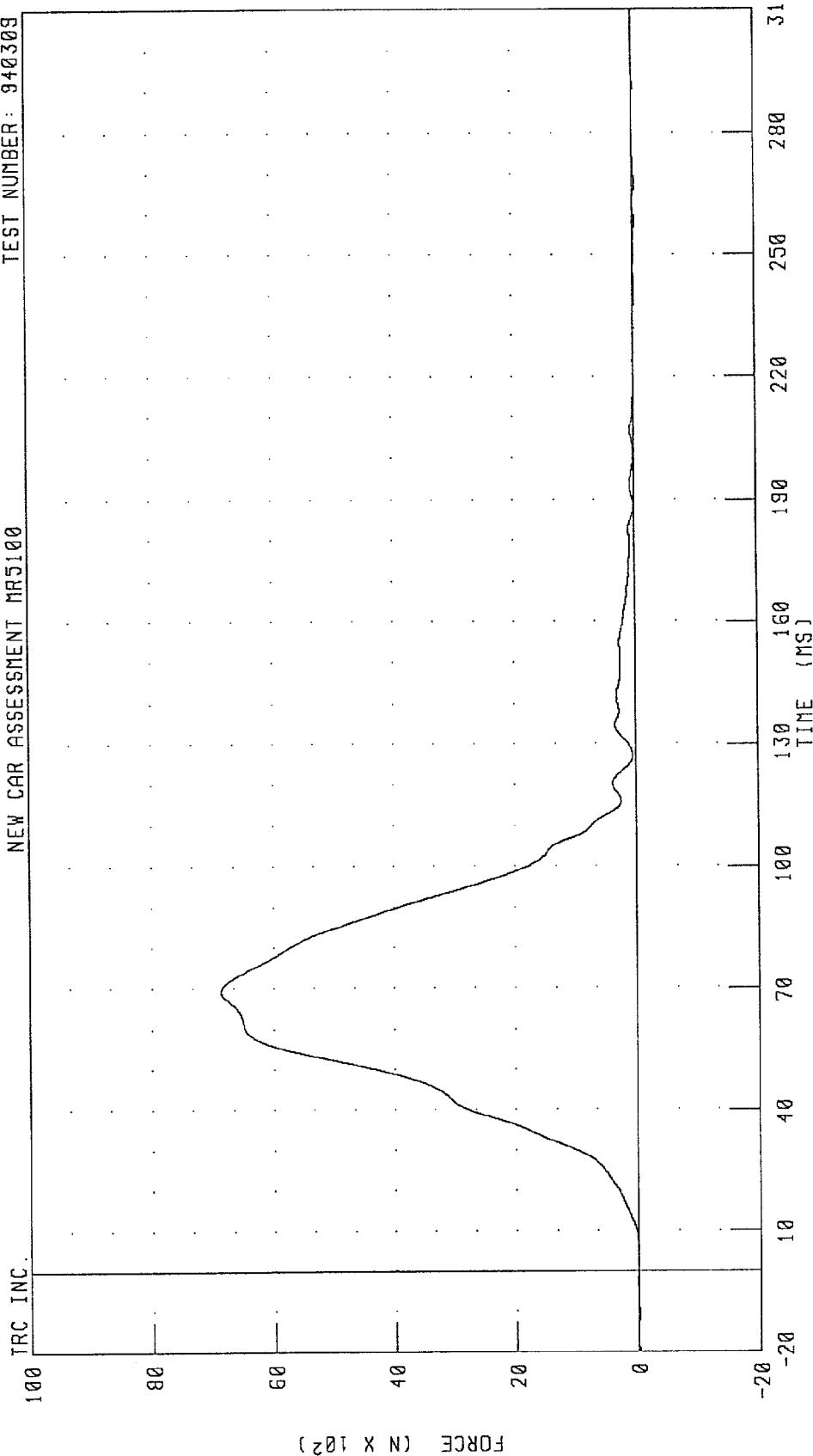
1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER LAP BELT OUTBOARD FORCE
NEW CAR ASSESSMENT MRS100

TEST NUMBER: 940309



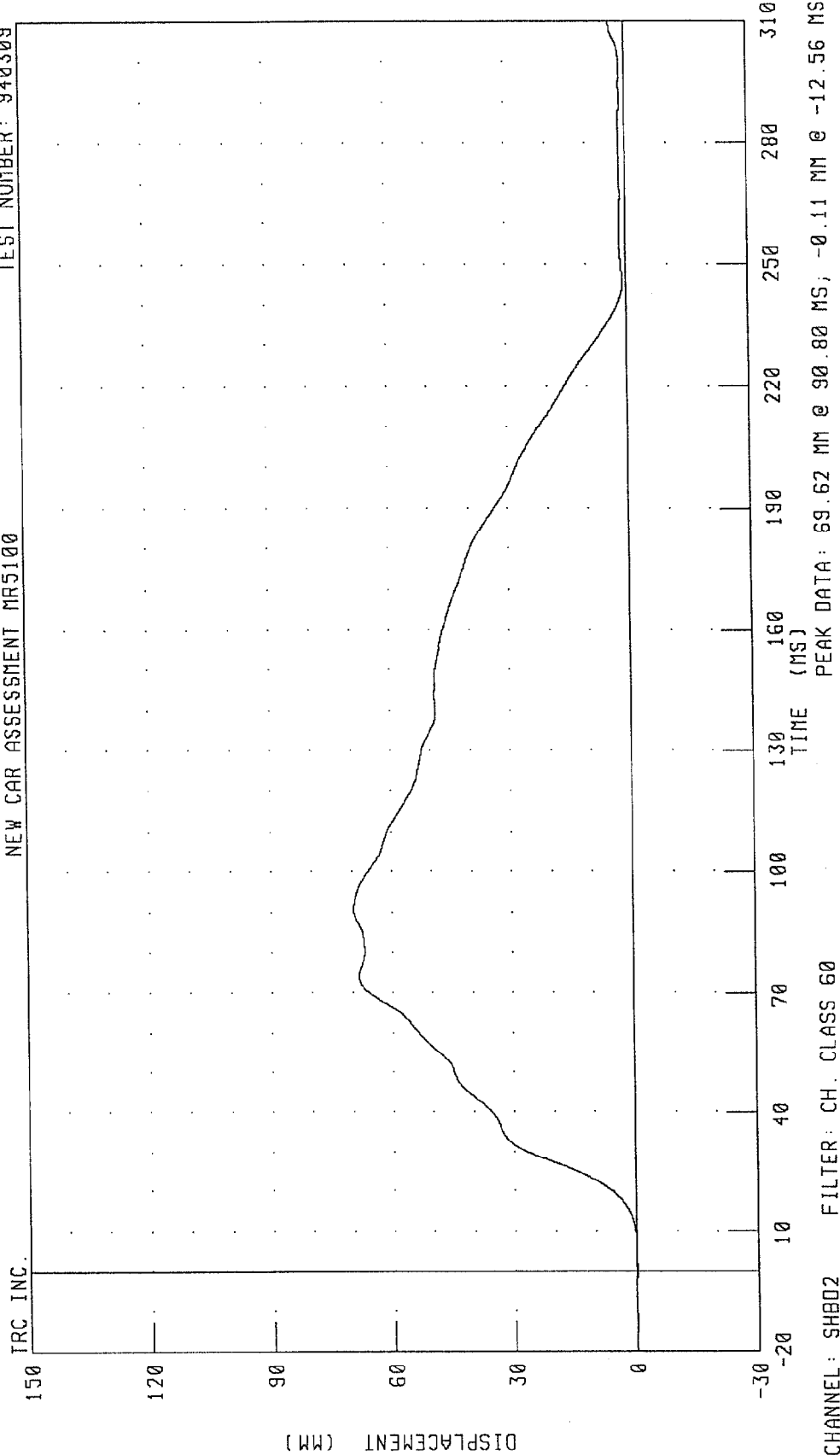
1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT FORCE
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT DISPLACEMENT
NEW CAR ASSESSMENT NR5100

TEST NUMBER: 940309



CHANNEL: SHB02 FILTER: CH. CLASS 60

PEAK DATA: 69.62 MM @ 90.80 MS, -0.11 MM @ -12.56 MS

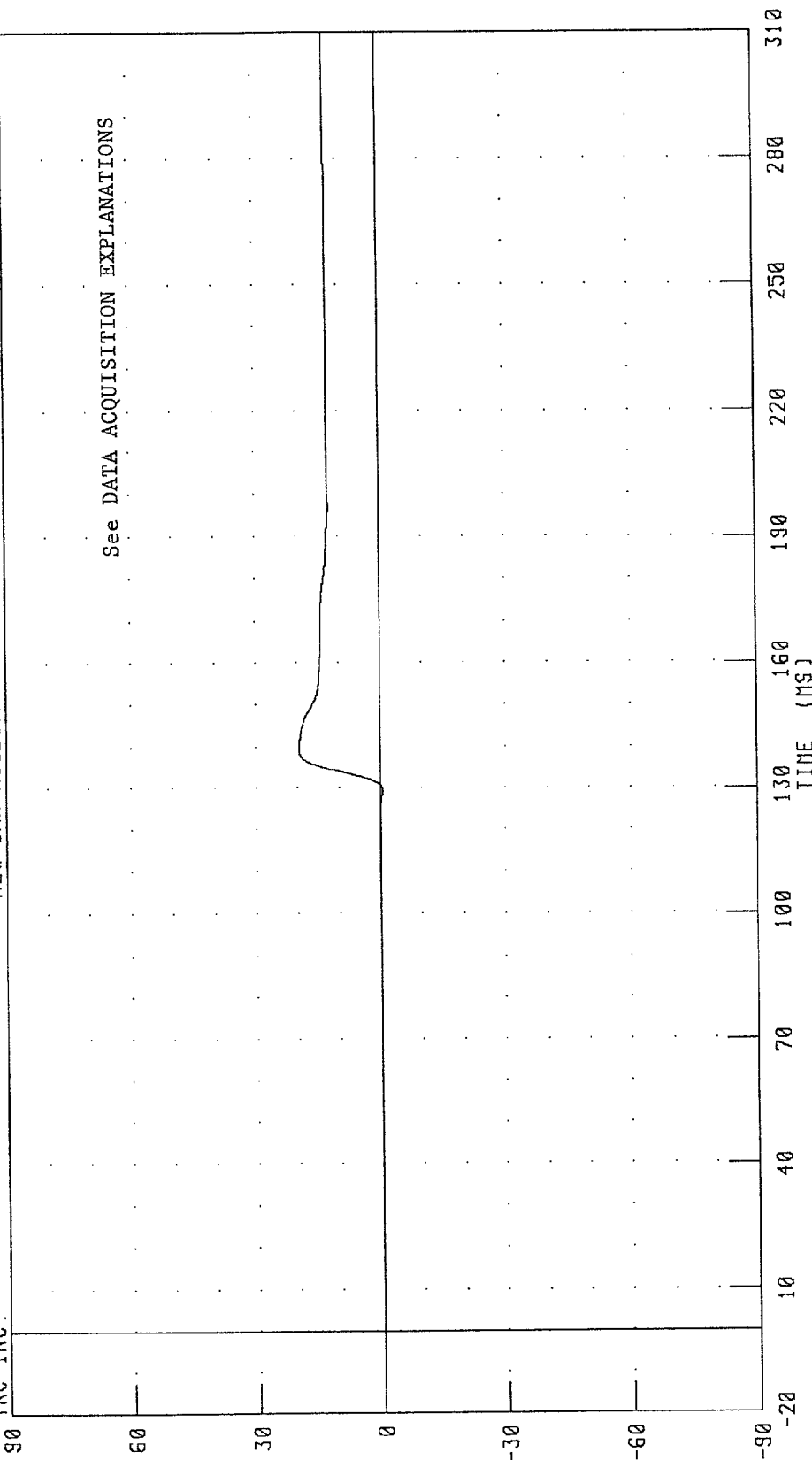
1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
PASSENGER SEAT BELT EXTENSION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

See DATA ACQUISITION EXPLANATIONS

DISPLACEMENT (MM X 10⁻¹)



CHANNEL: SBED2 FILTER: CH. CLASS 60

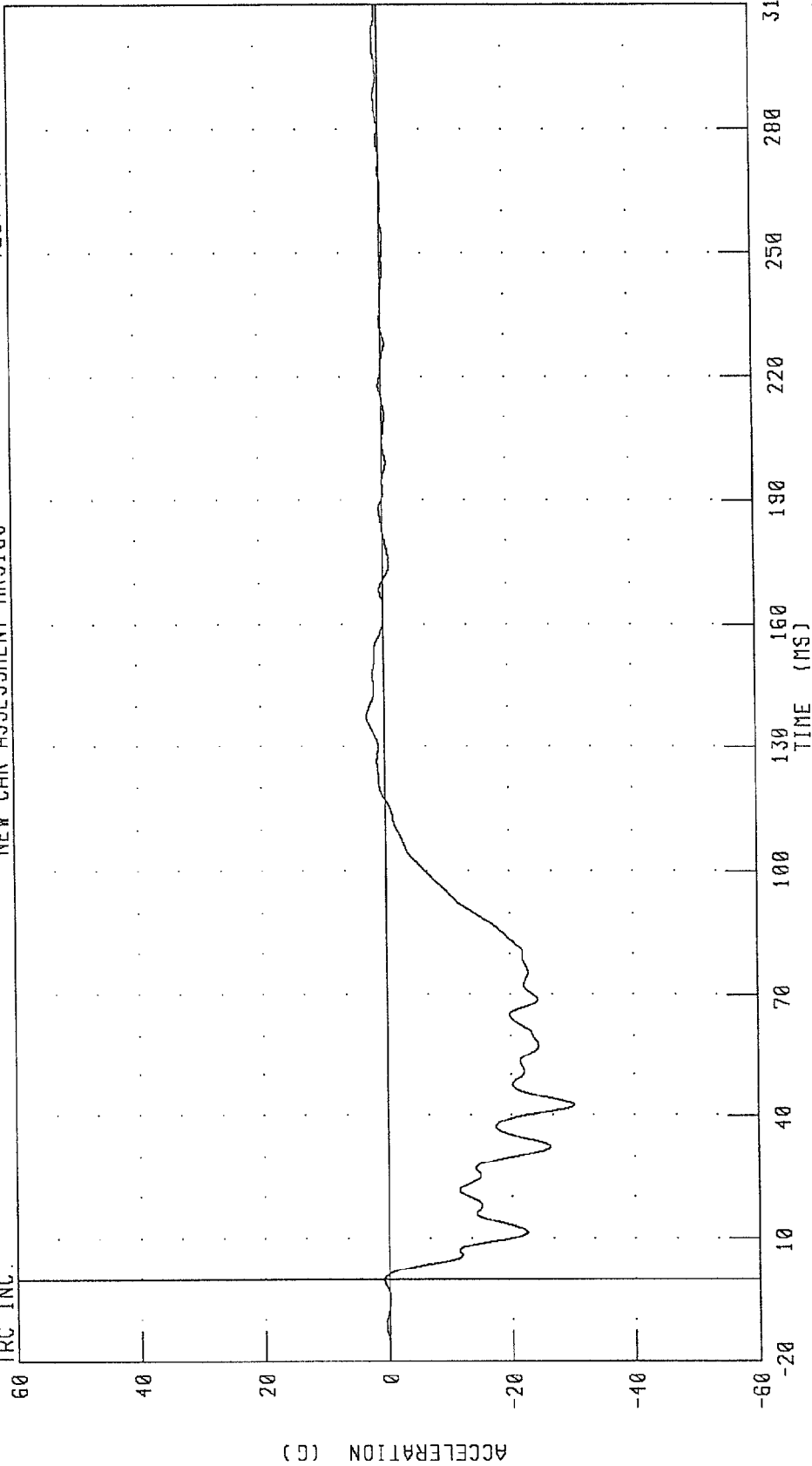
PEAK DATA: 1.97 MM @ 139.44 MS; -0.05 MM @ 129.36 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



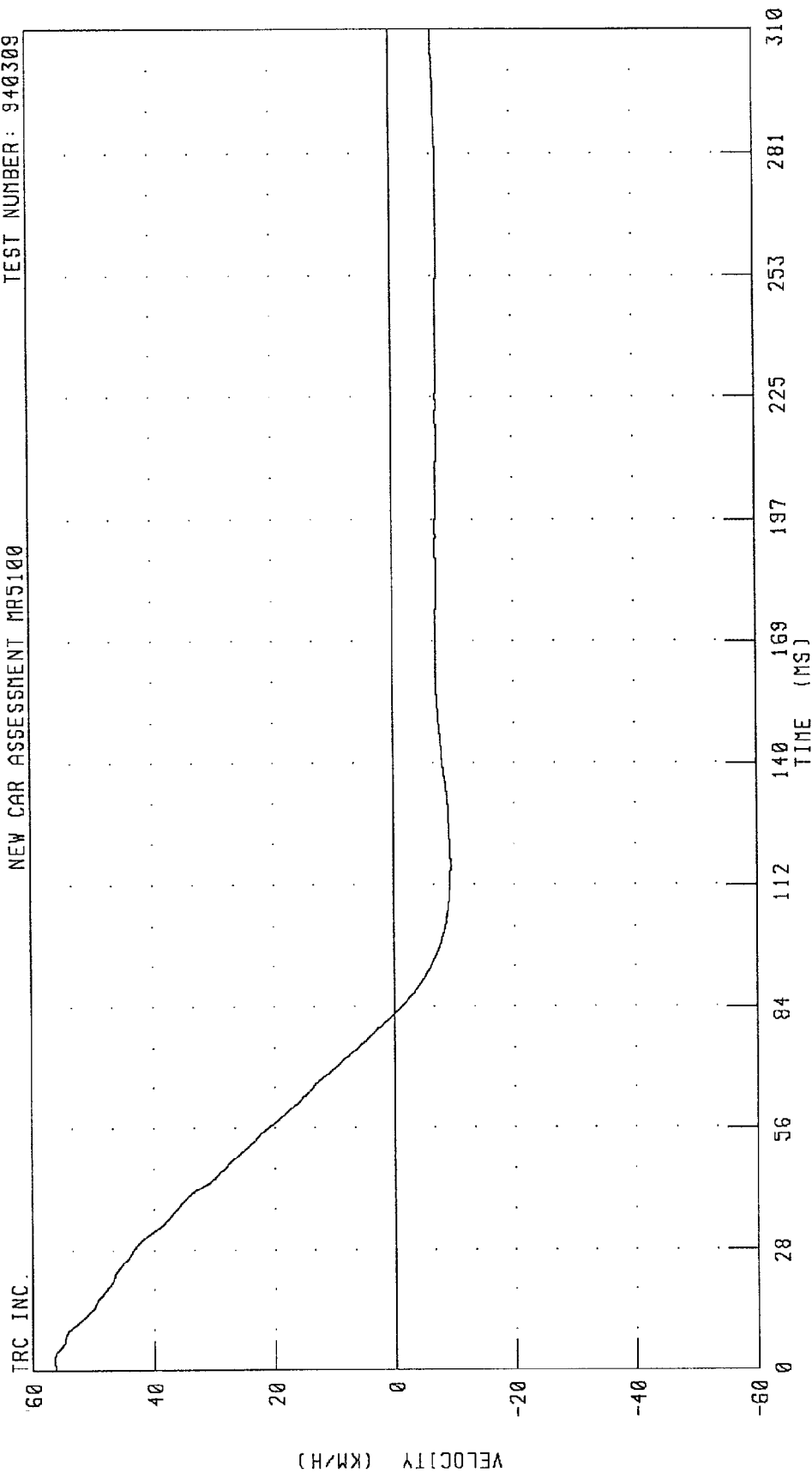
PEAK DATA: 2.88 G @ 137.60 MS; -30.24 G @ 42.64 MS

CHANNEL: TLRXG1 FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS VELOCITY

NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

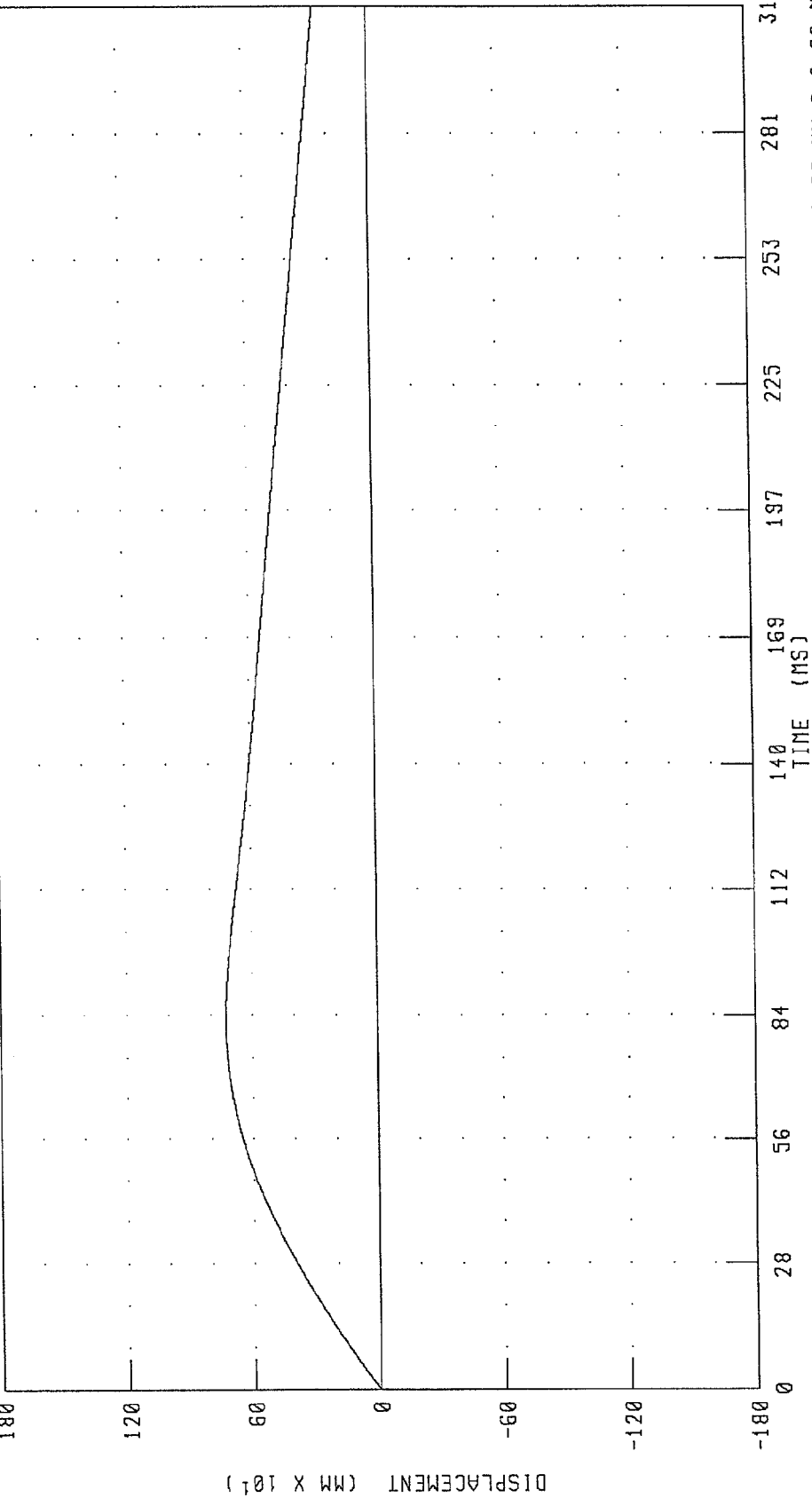


CHANNEL: TLRXY1 FILTER: CH. CLASS 180

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS DISPLACEMENT
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



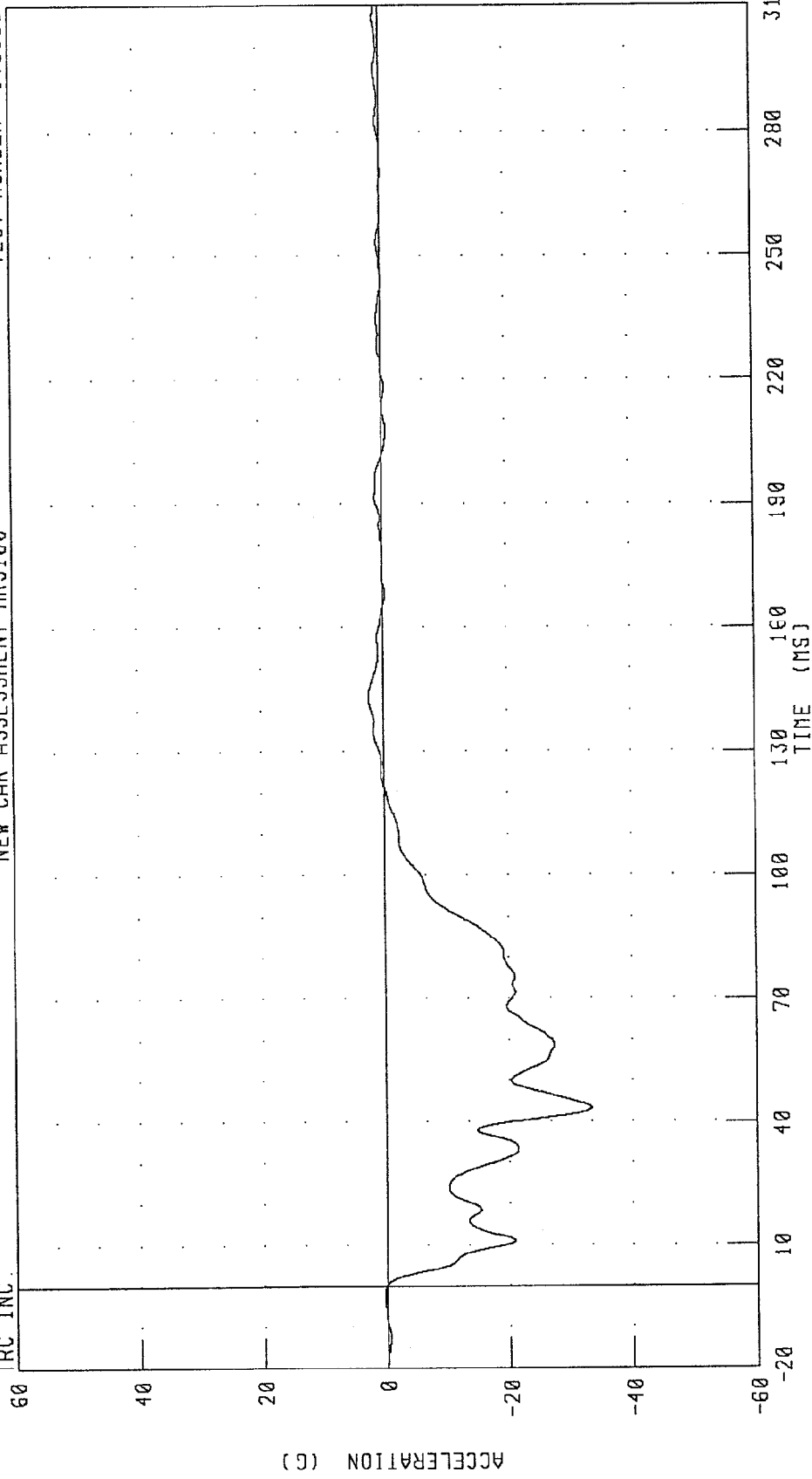
PEAK DATA: 726.57 MM @ 82.96 MS; 0.00 MM @ 0.00 MS

CHANNEL: TLRXD1 FILTER: CH. CLASS 180

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

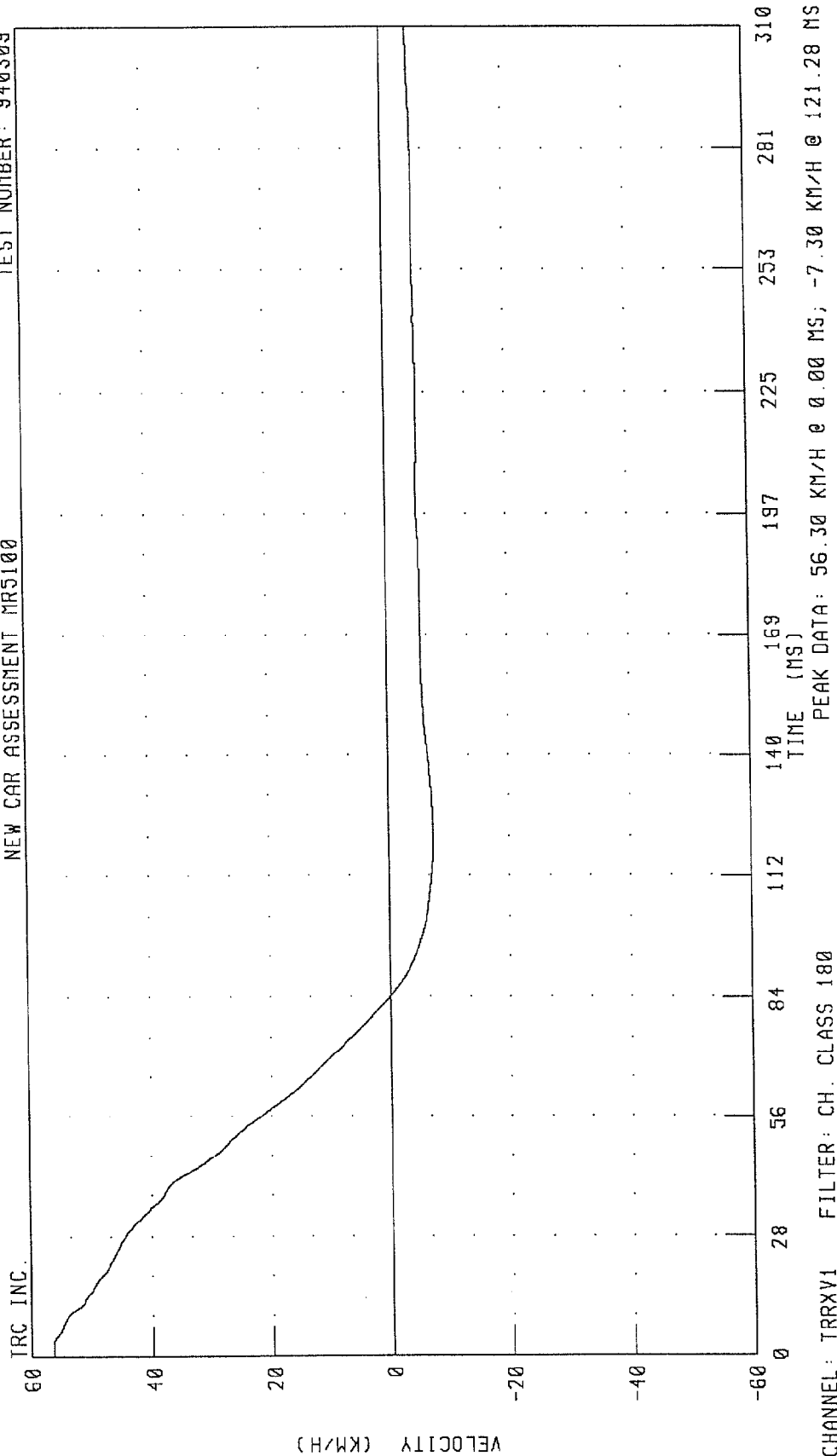


CHANNEL: TRRXG1 FILTER: CH. CLASS 60

PEAK DATA: 2.46 G @ 143.20 MS; -33.28 G @ 143.44 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS VELOCITY
NEW CAR ASSESSMENT MR5100

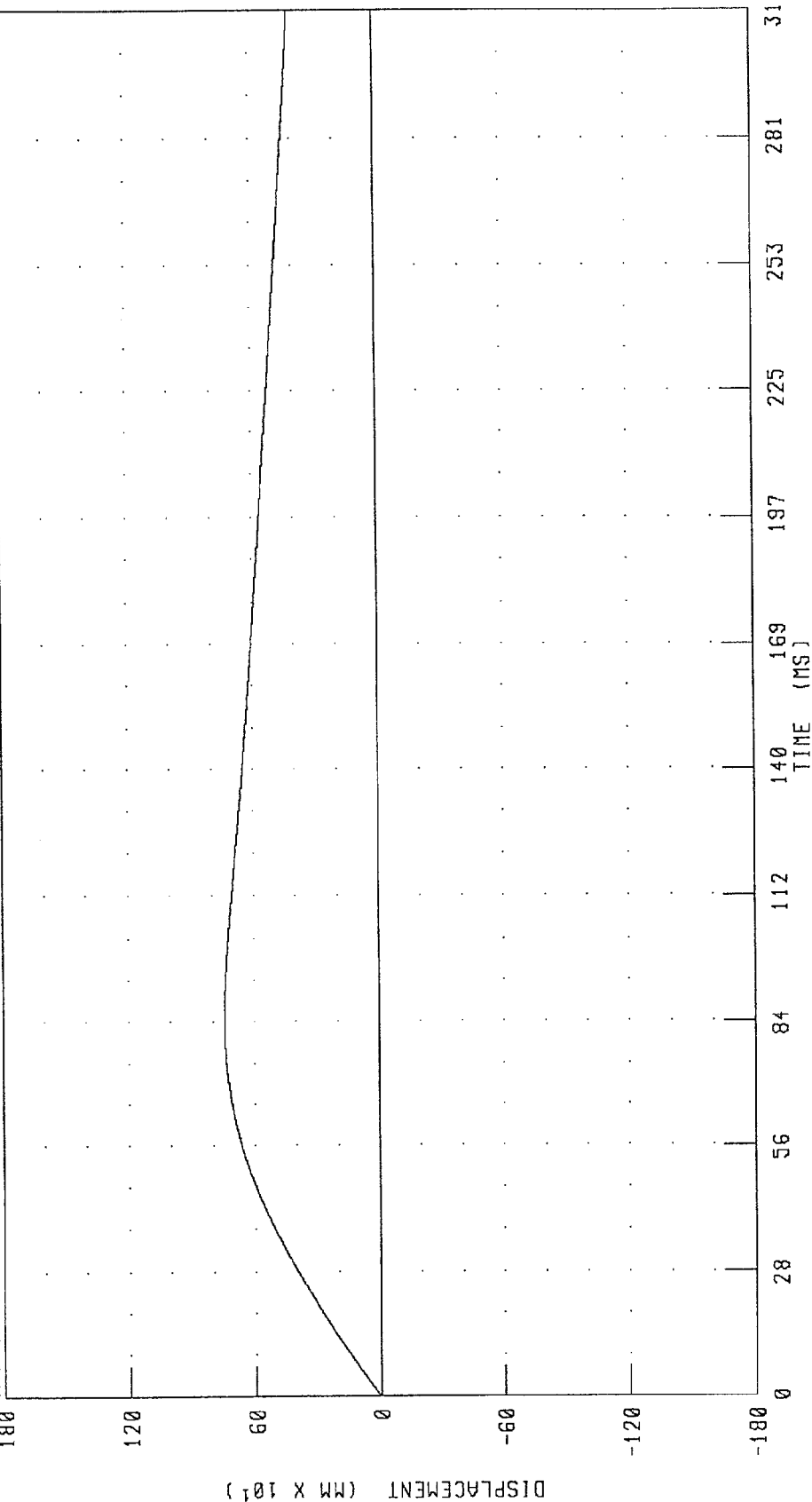
TEST NUMBER: 940309



1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS DISPLACEMENT
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



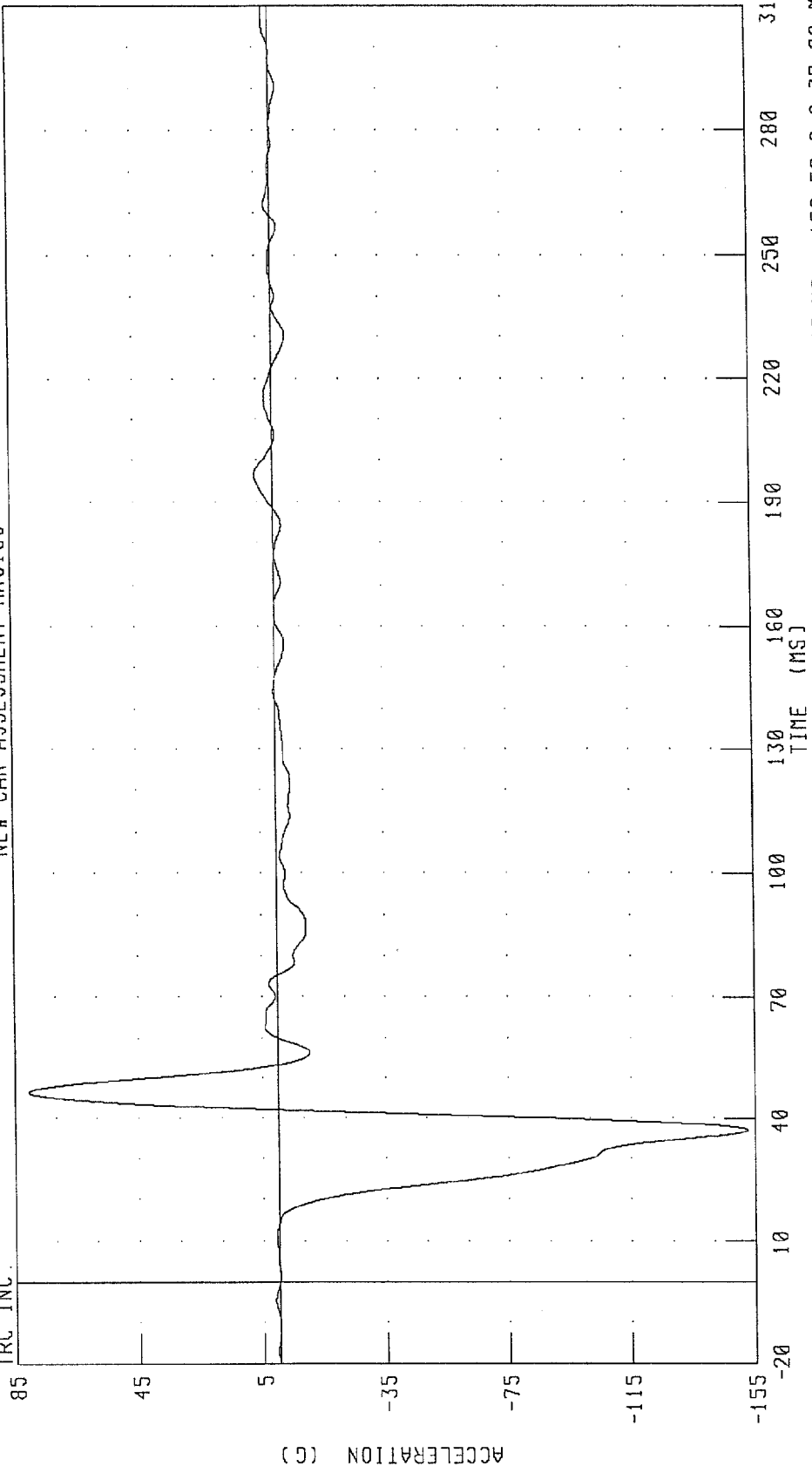
CHANNEL: TRRXD1 FILTER: CH. CLASS 180

PEAK DATA: 743.00 MM @ 84.80 MS; 0.00 MM @ 0.00 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
ENGINE TOP X-AXIS ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

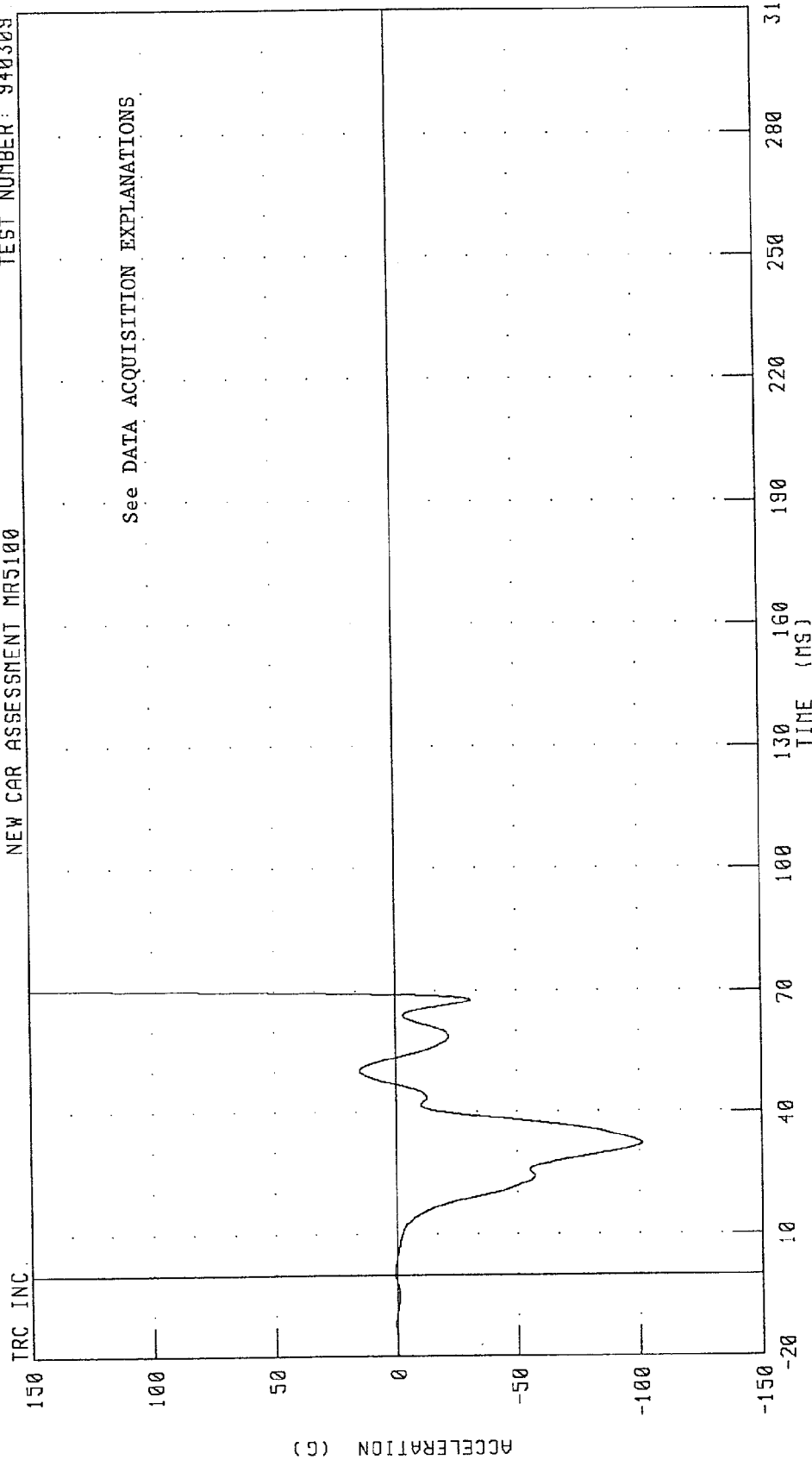


CHANNEL: ENGXG1 FILTER: CH. CLASS 60

PEAK DATA: 80.51 G @ 46.48 MS; -152.58 G @ 37.20 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 ENGINE BOTTOM X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



See DATA ACQUISITION EXPLANATIONS

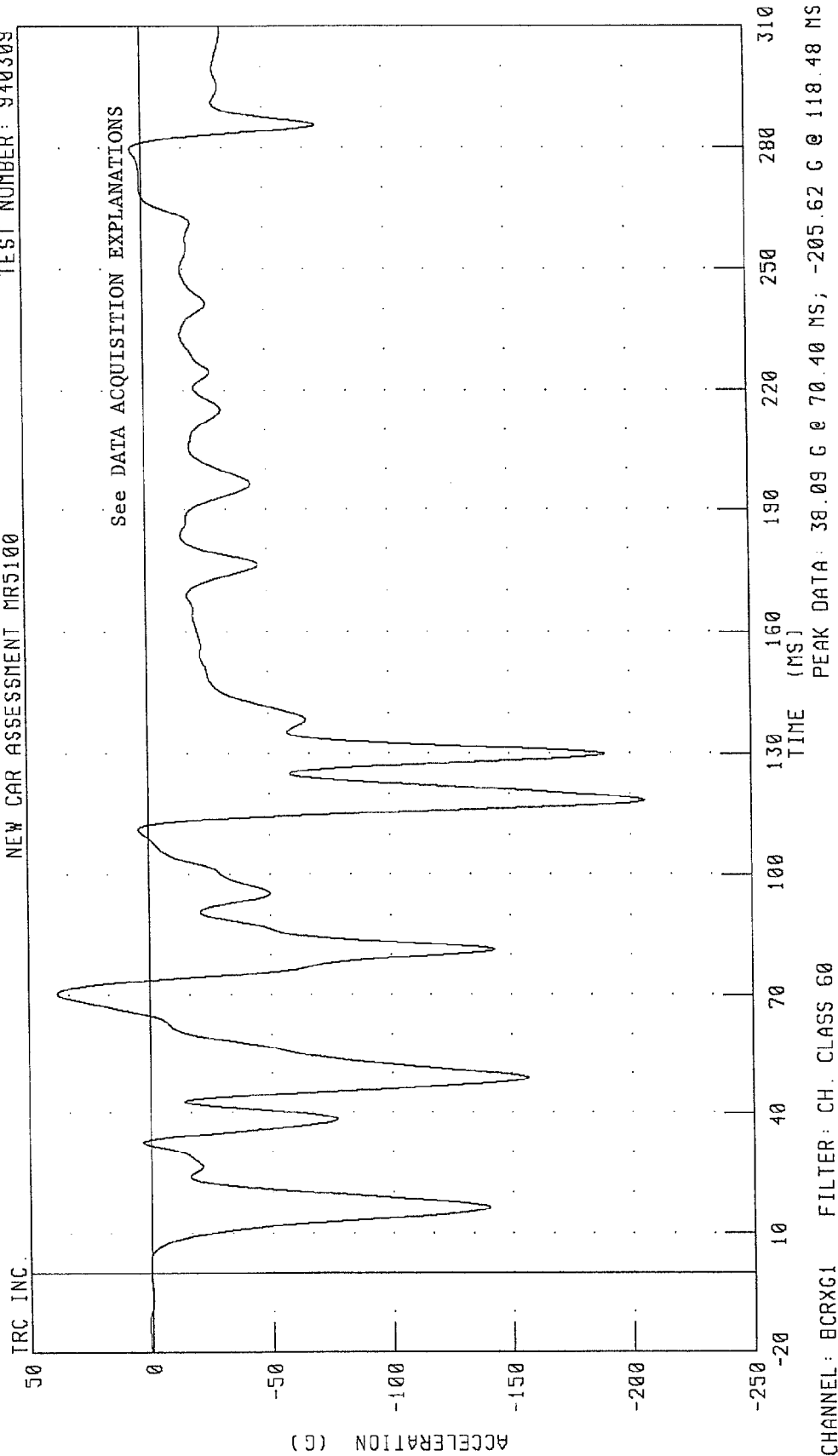
CHANNEL: ENGXC2 FILTER: CH. CLASS 60

PEAK DATA: 1195.43 G @ 76.40 MS; -101.00 G @ 32.08 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

NEW CAR ASSESSMENT MR5100

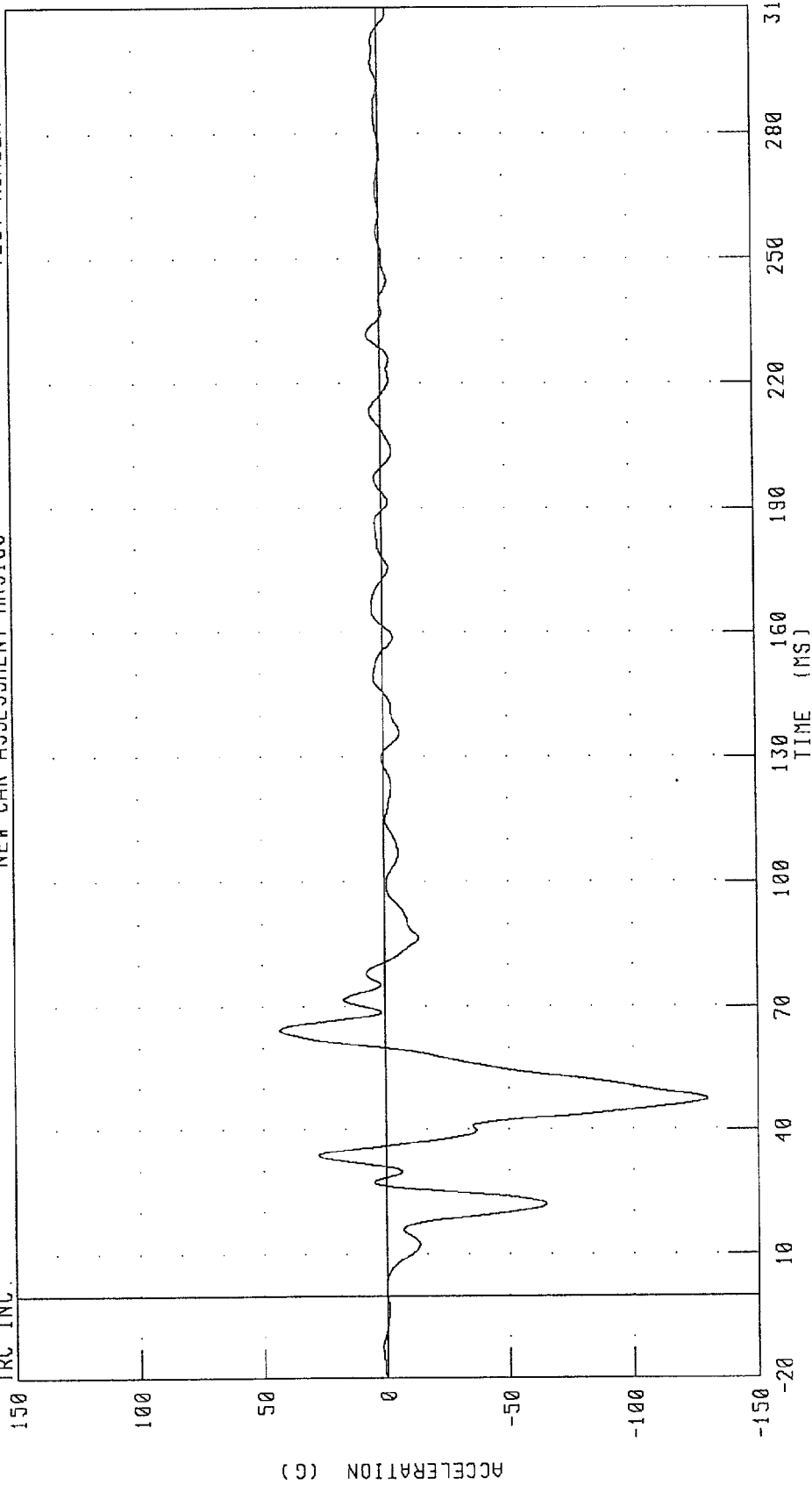
TEST NUMBER: 940309



1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LEFT BRAKE CALIPER X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



CHANNEL: BCLXG1 FILTER: CH. CLASS 60

PEAK DATA: 43.12 G @ 64.56 MS; -129.69 G @ 47.44 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

IRC INC.

90

60

30

0

-30

-60

-90

ACCELERATION (G)

-20

10

40

70

100

130

160

190

220

250

280

310

TIME (MS)

PEAK DATA: 54.43 G @ 60.88 MS; -74.06 G @ 22.08 MS

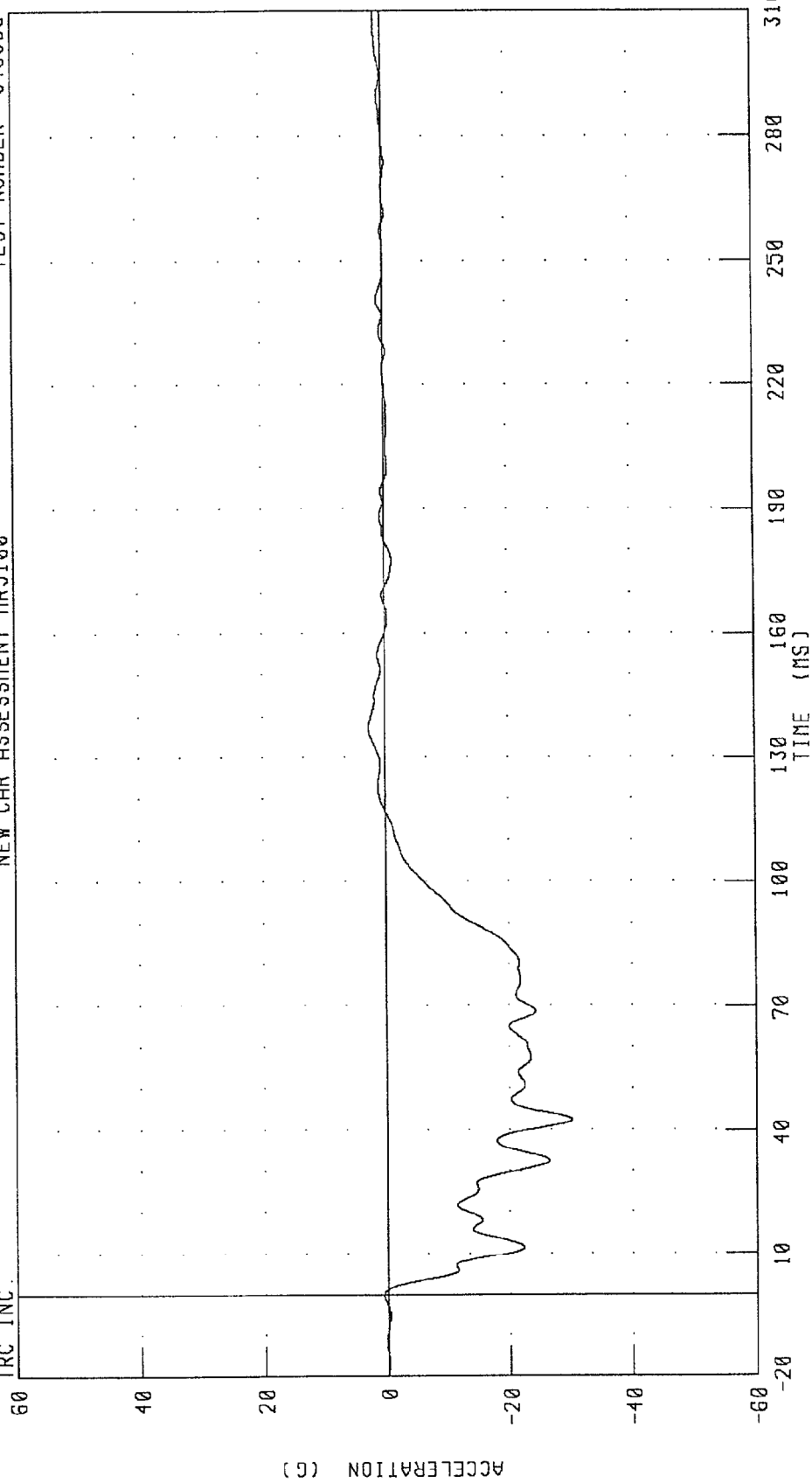
CHANNEL: DPCXG1 FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



CHANNEL: TLRXGA FILTER: CH. CLASS 60

PEAK DATA: 2.68 G @ 137.36 MS; -30.14 G @ 42.48 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TEST NUMBER: 940308

NEW CAR ASSESSMENT MR5100

TRC INC.

60

40

20

0

-20

-40

-60

ACCELERATION (G)

TIME (MS)

130

160

190

220

250

280

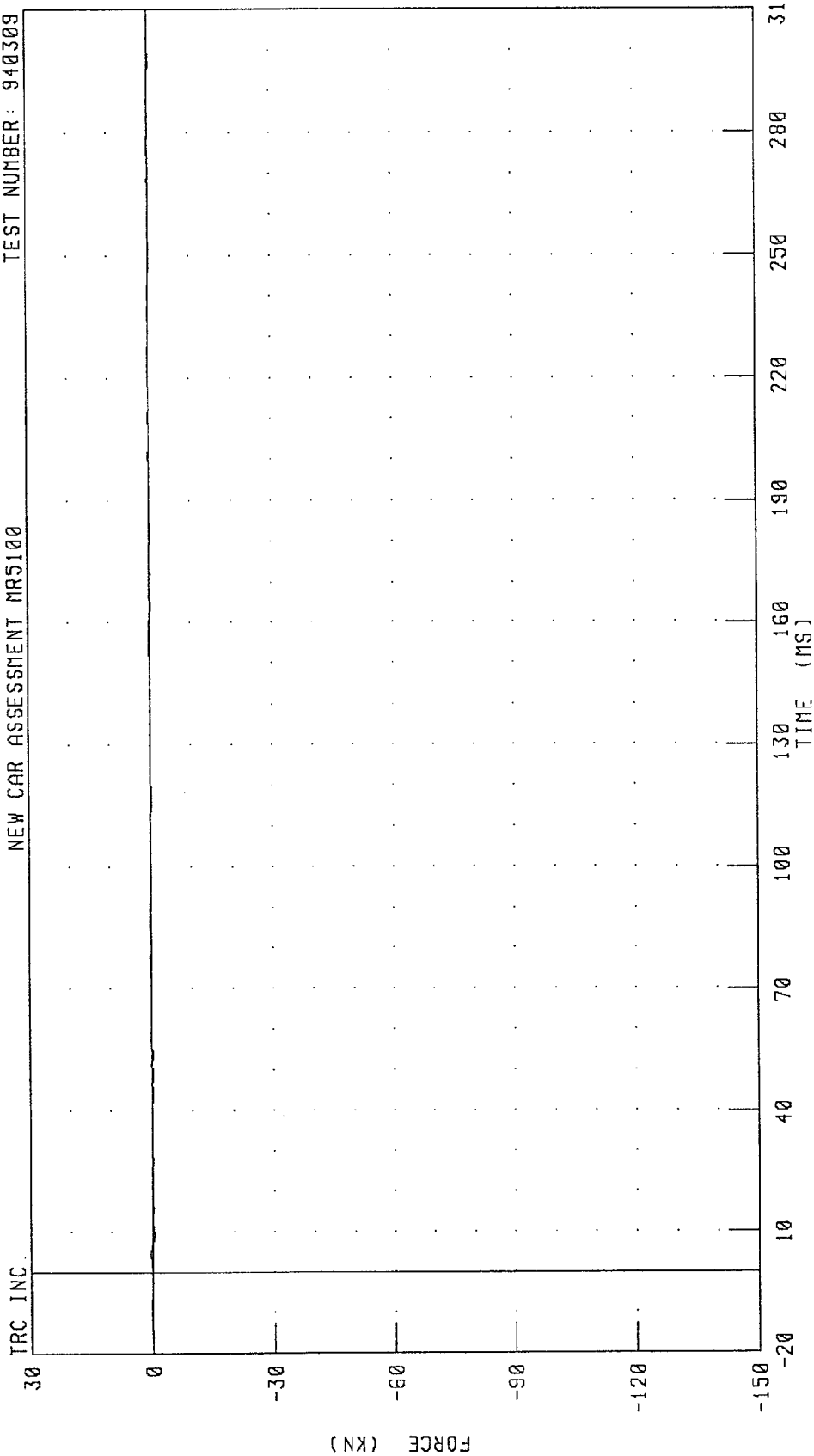
310

CHANNEL: TRRXGA FILTER: CH. CLASS 60

PEAK DATA: 2.51 G @ 143.12 MS; -32.78 G @ 43.36 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A1 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

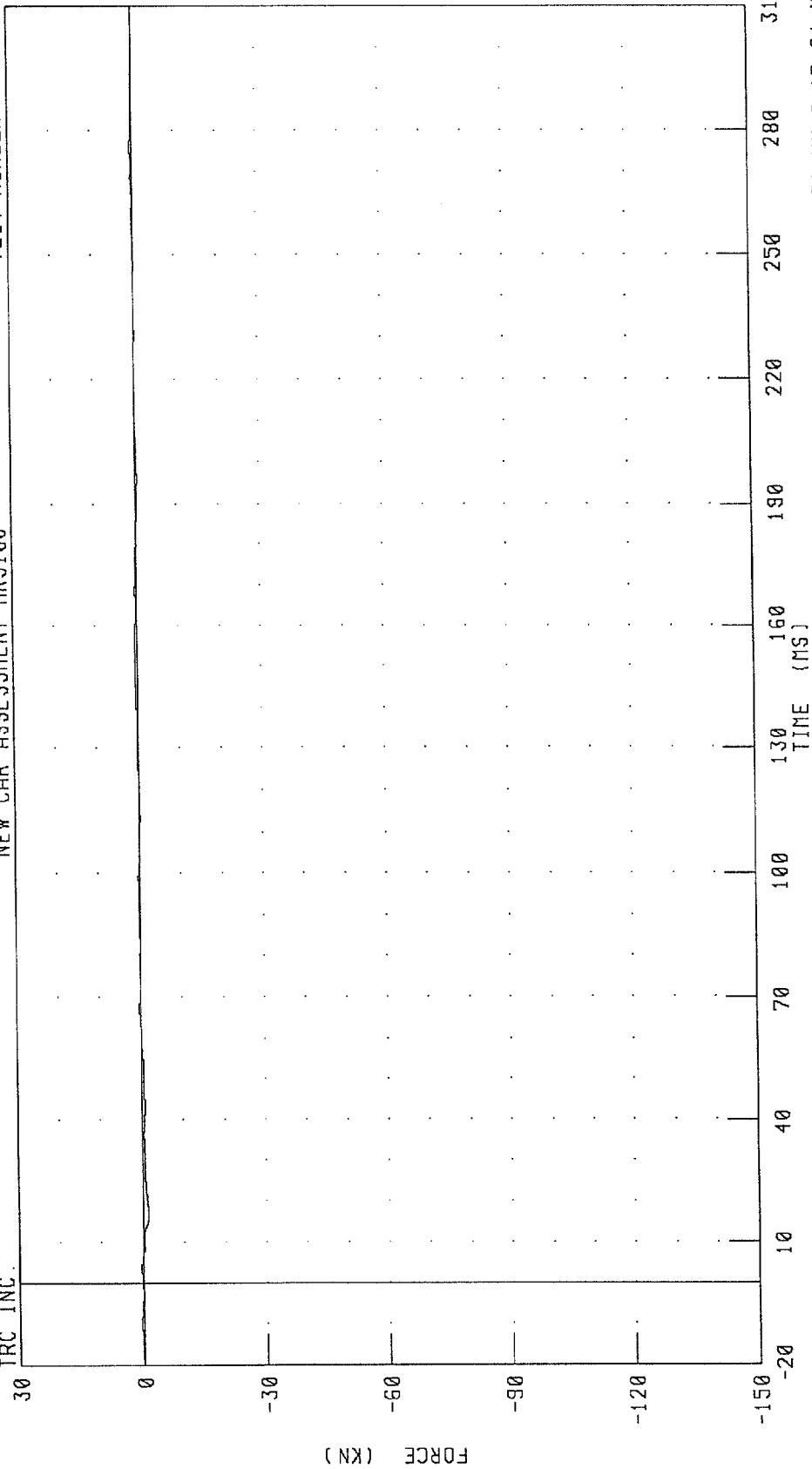


1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A2 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

IRC INC.



PEAK DATA: 0.44 KN @ 157.76 MS; -1.31 KN @ 17.04 MS

CHANNEL: BA2F FILTER: CH. CLASS 60

FORCE (KN)

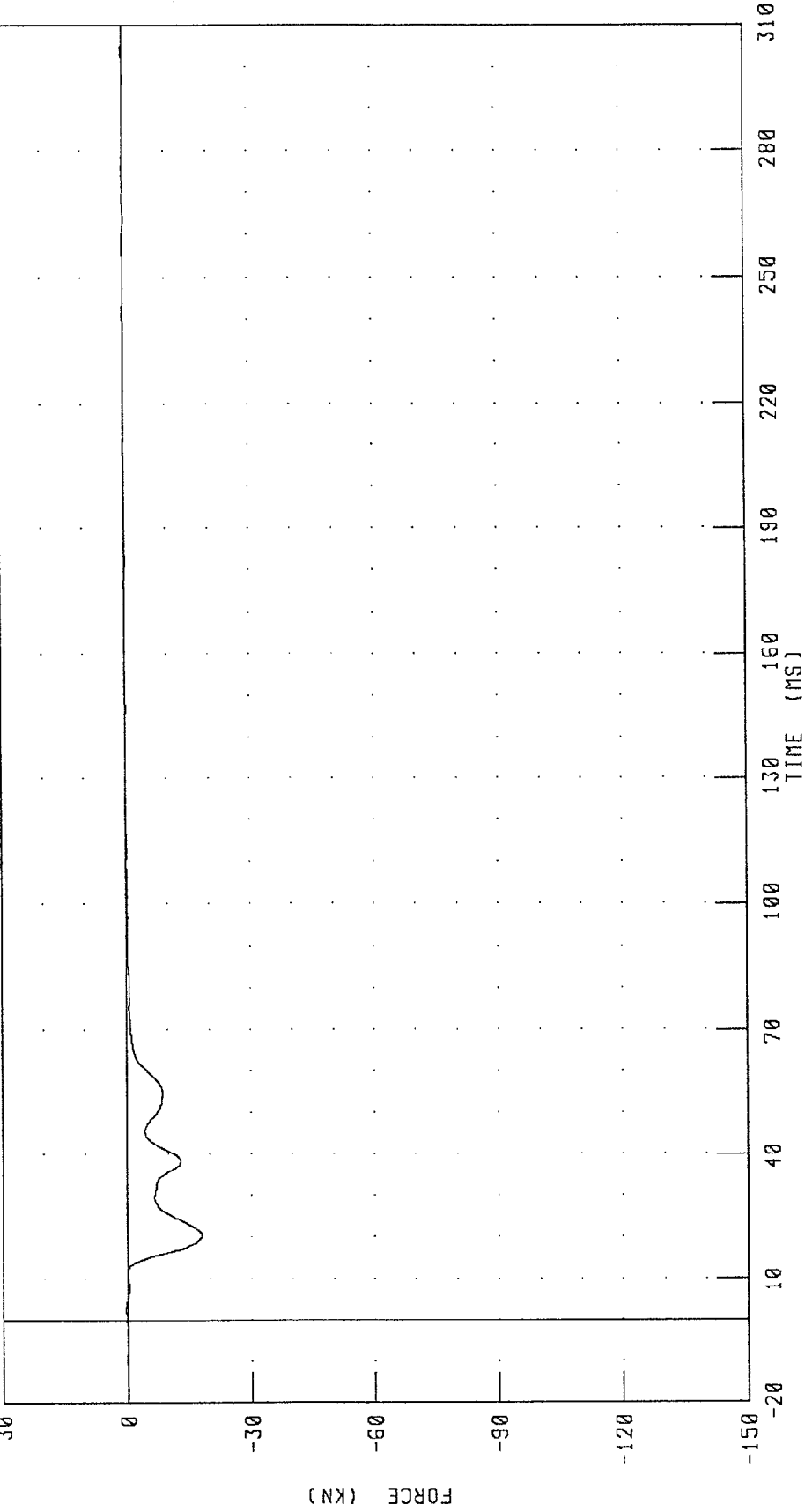
TIME (MS)

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A3 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



CHANNEL: BA3F FILTER: CH. CLASS 60

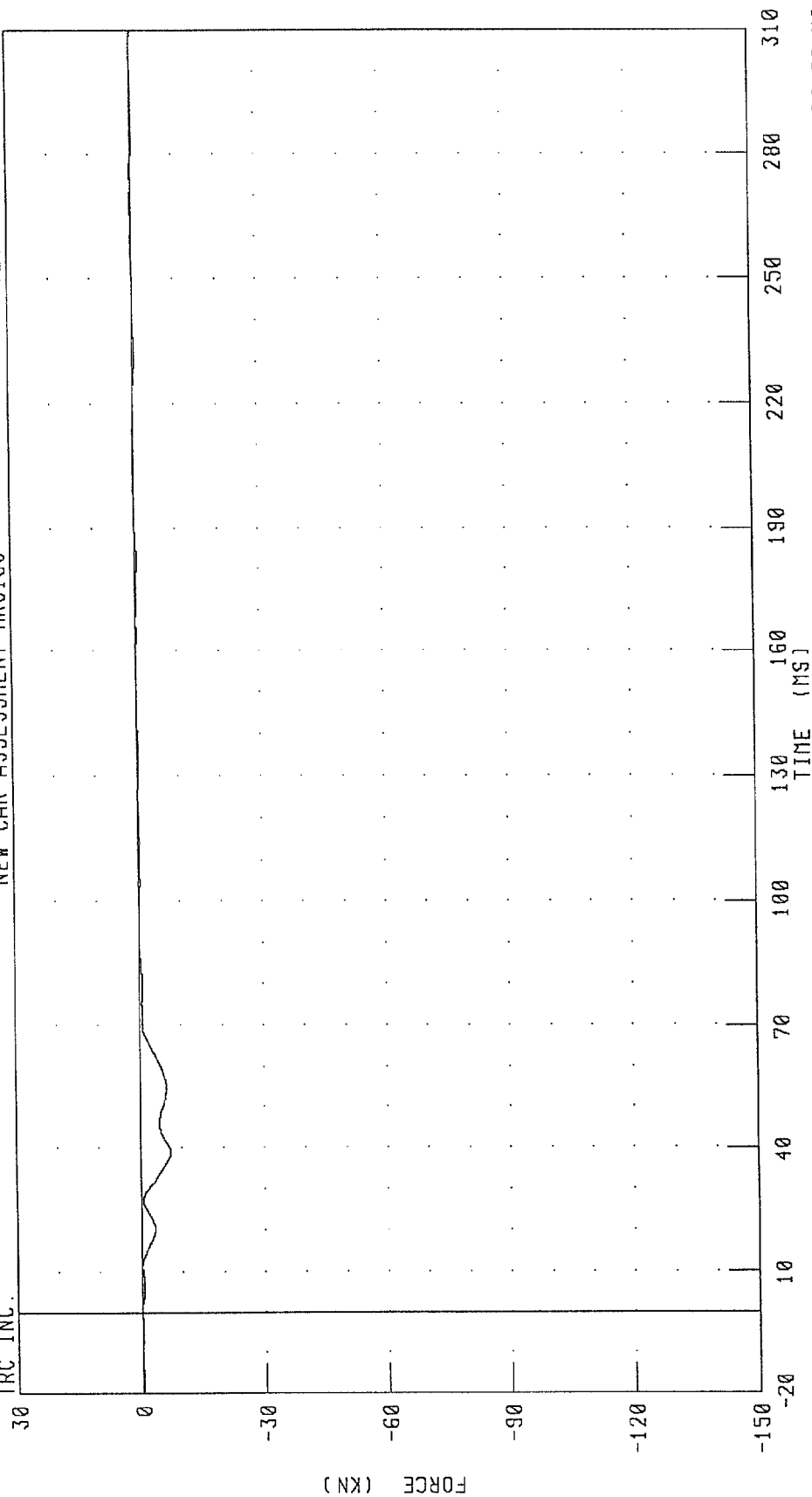
PEAK DATA: 0.36 KN @ 2.48 MS; -18.16 KN @ 20.40 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A4 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



PEAK DATA: 0.31 KN @ 209.68 MS; -7.18 KN @ 38.96 MS

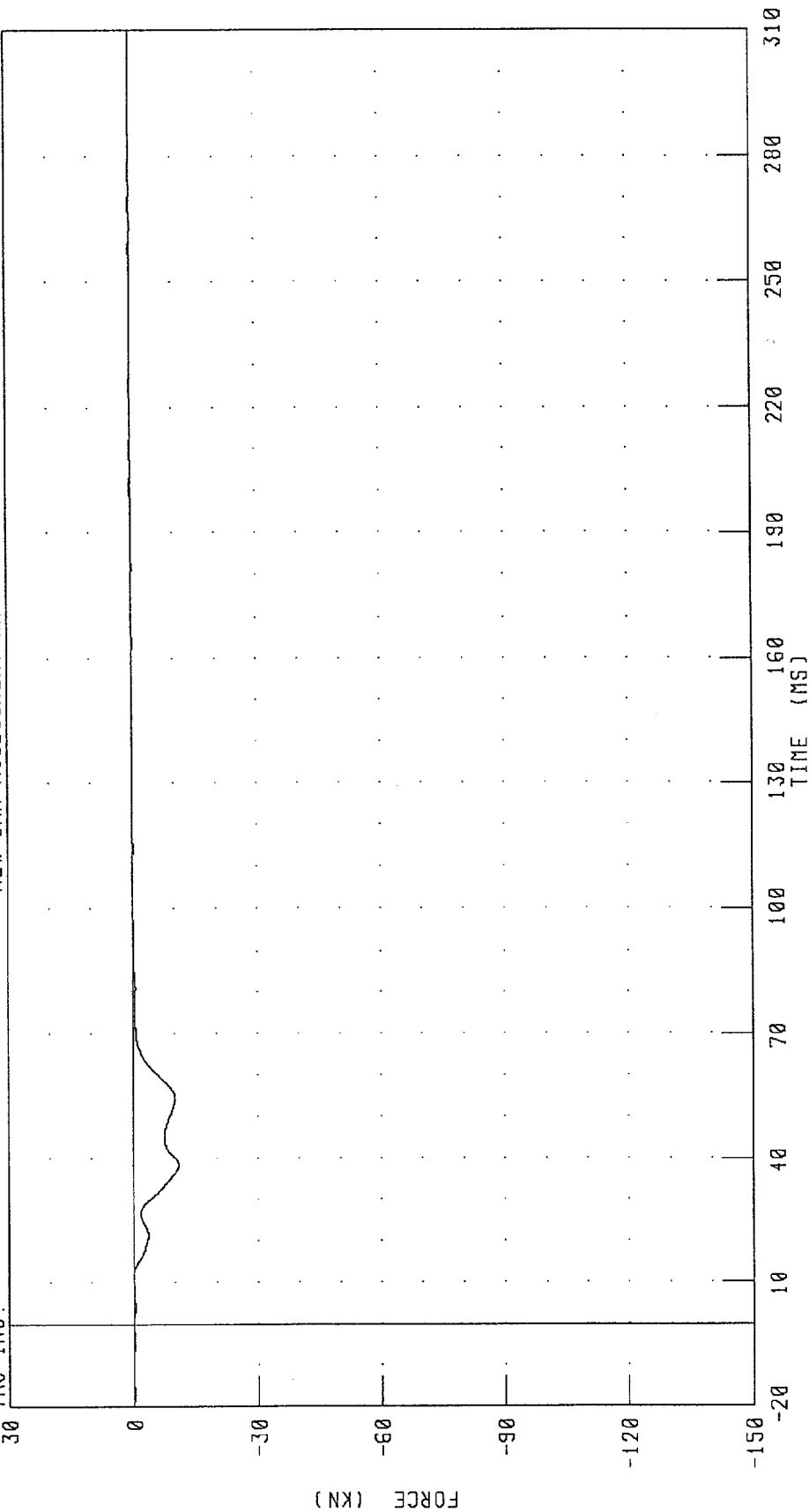
CHANNEL: BA4F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A5 FORCE

NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



CHANNEL: BASF

FILTER: CH. CLASS 60

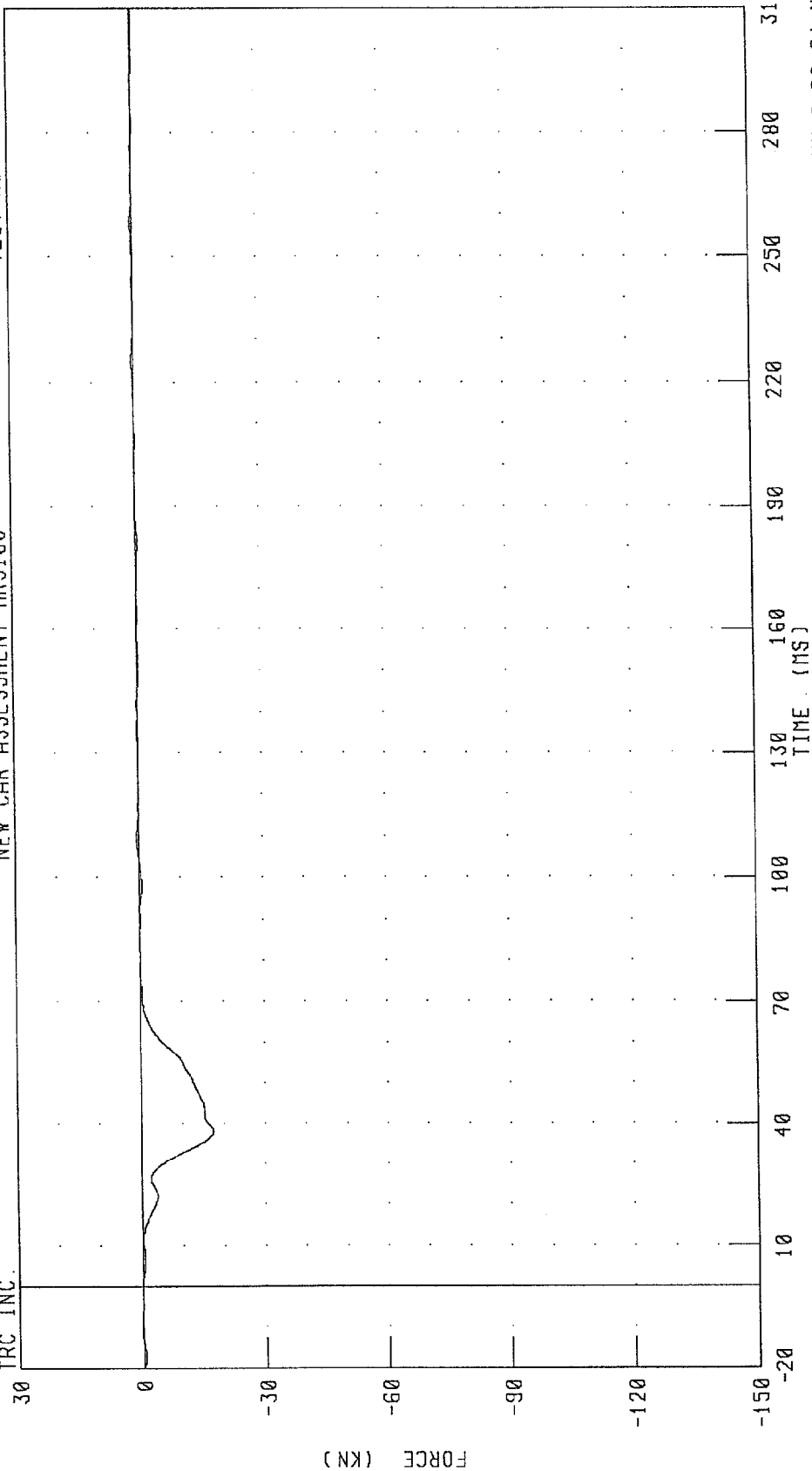
PEAK DATA: 0.22 KN @ 276.48 MS; -11.02 KN @ 38.48 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A6 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



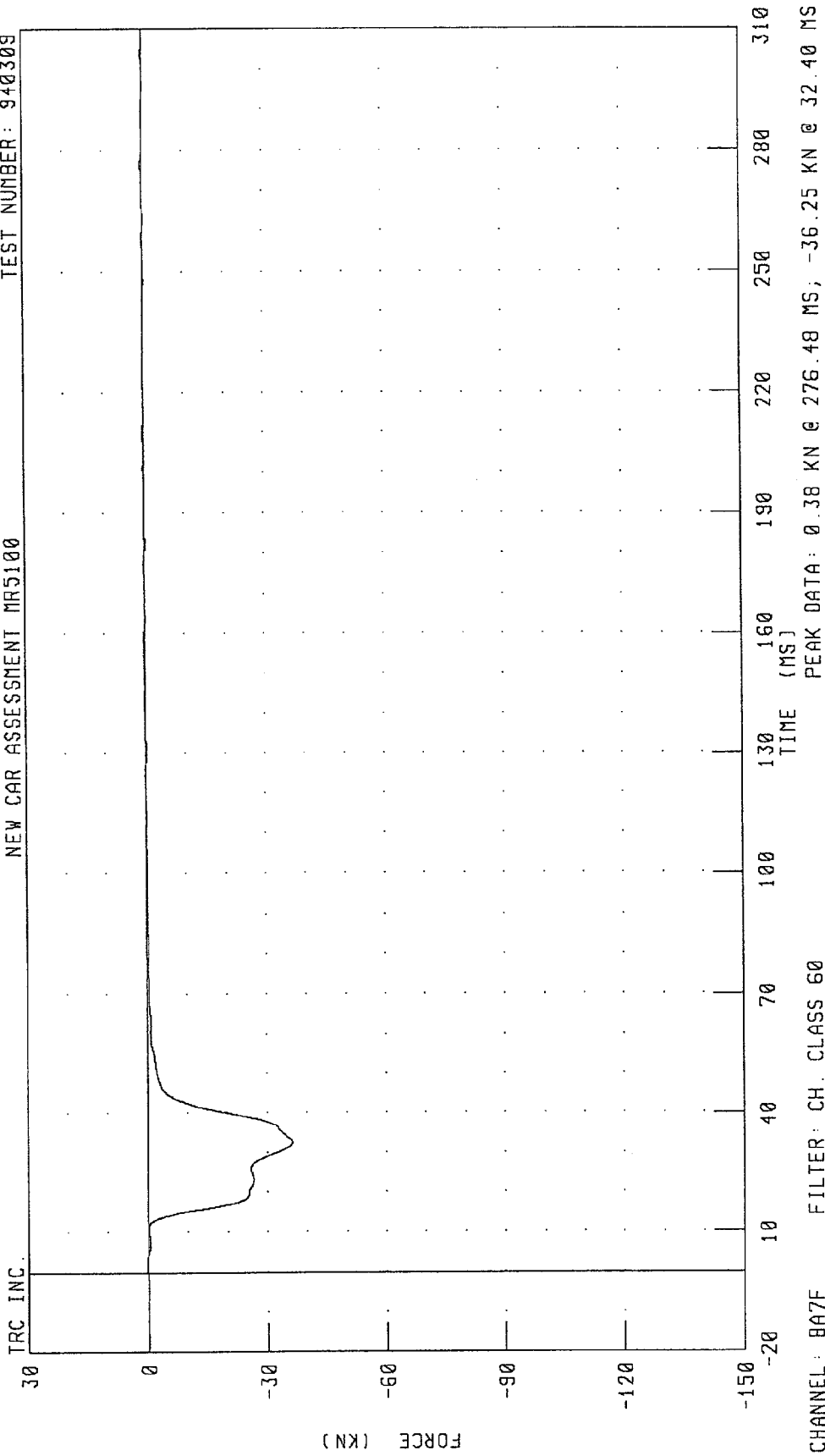
PEAK DATA: 0.48 KN @ 109.52 MS; -17.44 KN @ 38.24 MS

CHANNEL: B6GF FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A7 FORCE

NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



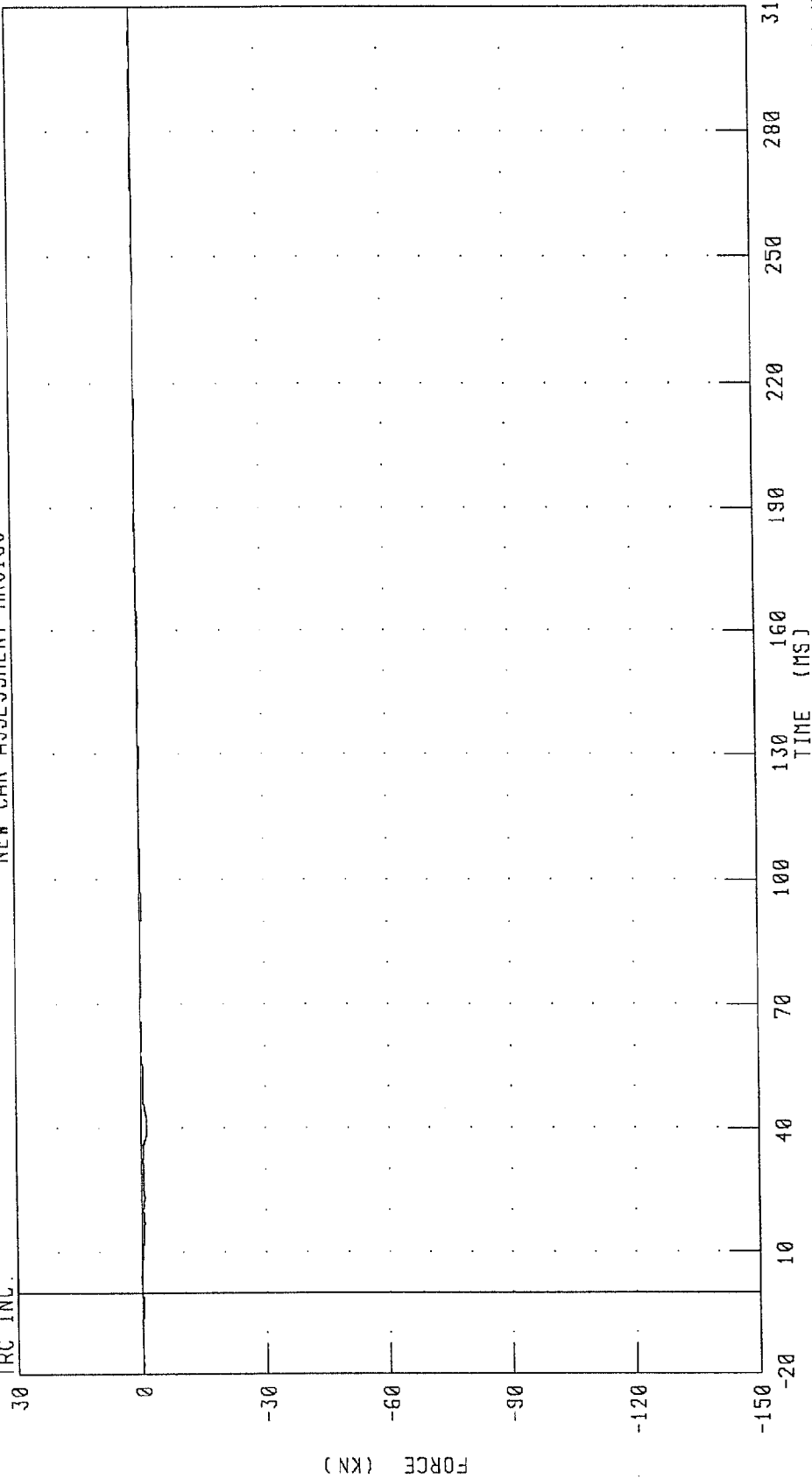
940309

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A8 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



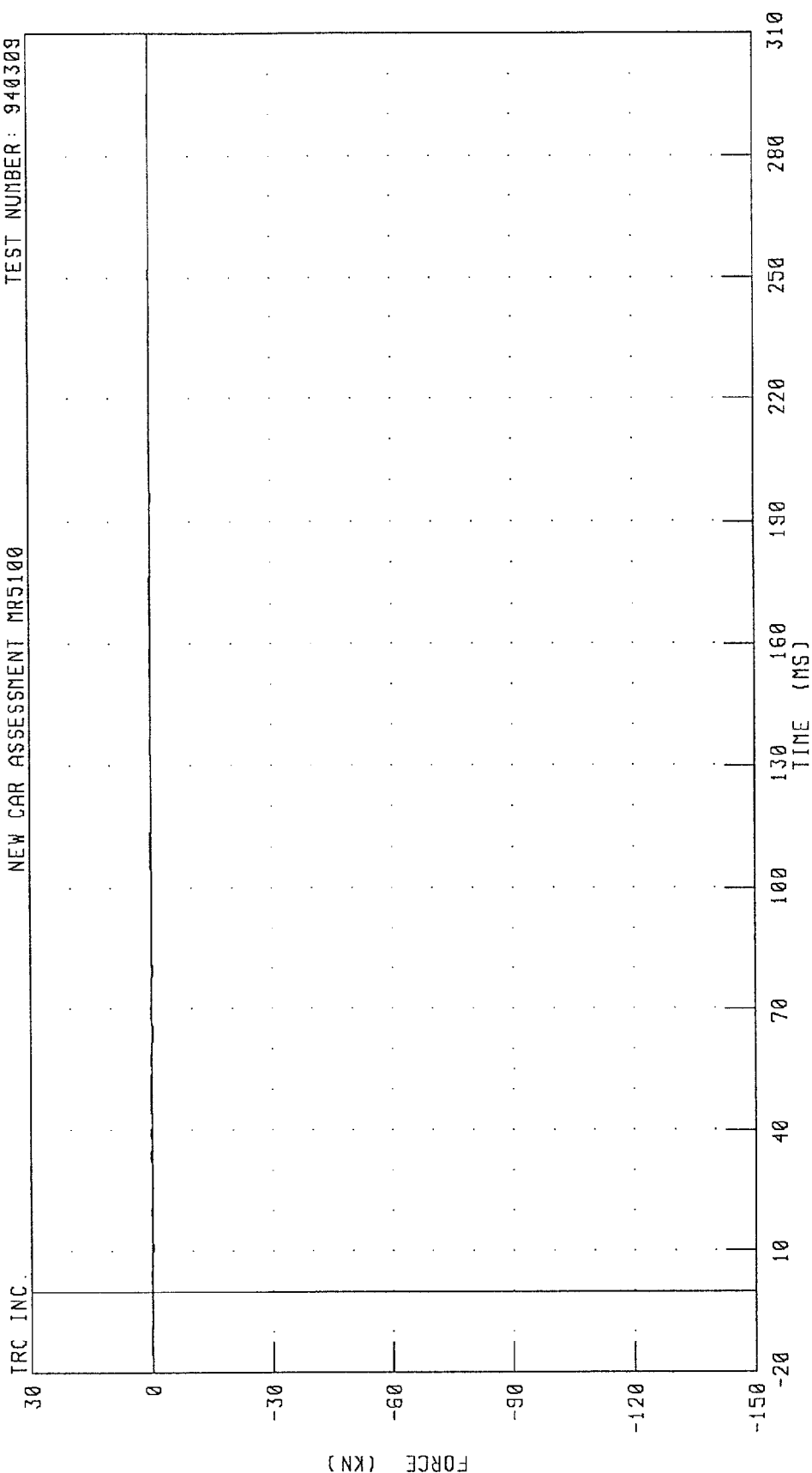
PEAK DATA: 0.21 KN @ 285.68 MS; -1.28 KN @ 39.04 MS

CHANNEL: BA8F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A9 FORCE

NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

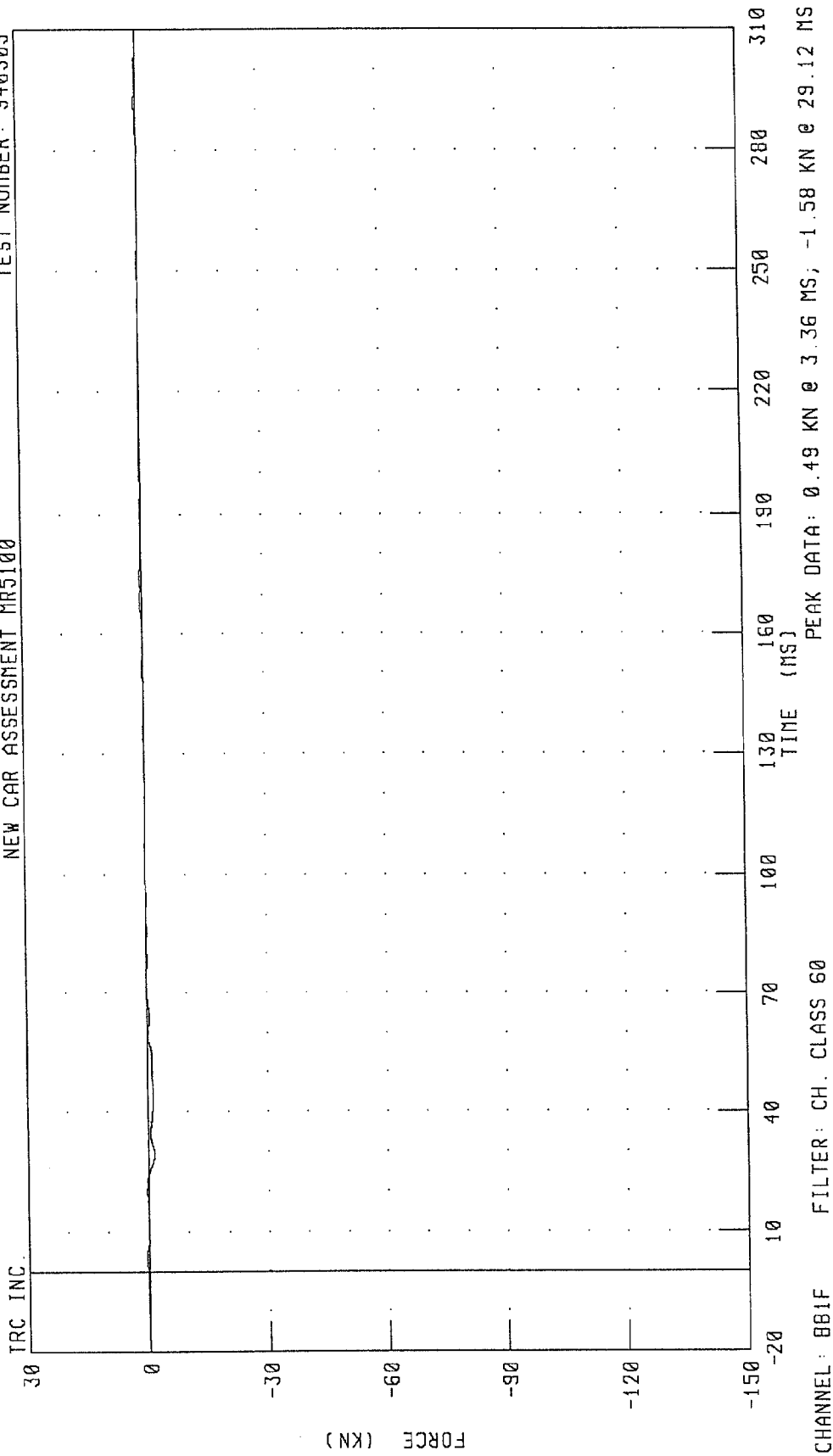


CHANNEL: BASF FILTER: CH. CLASS 60

PEAK DATA: 0.24 KN @ 51.04 MS; -0.25 KN @ 64.24 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B1 FORCE
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

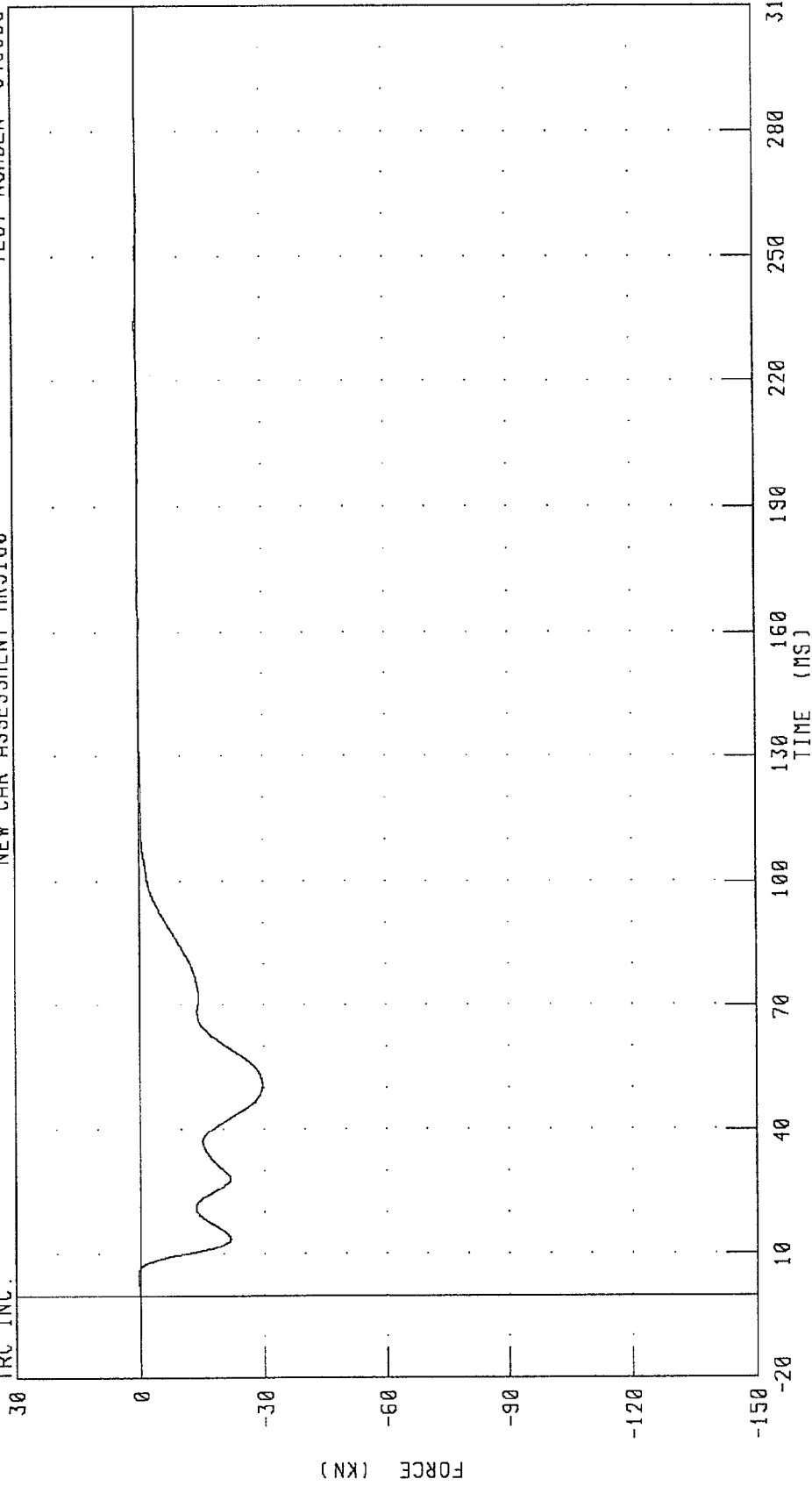


1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B2 FORCE

NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



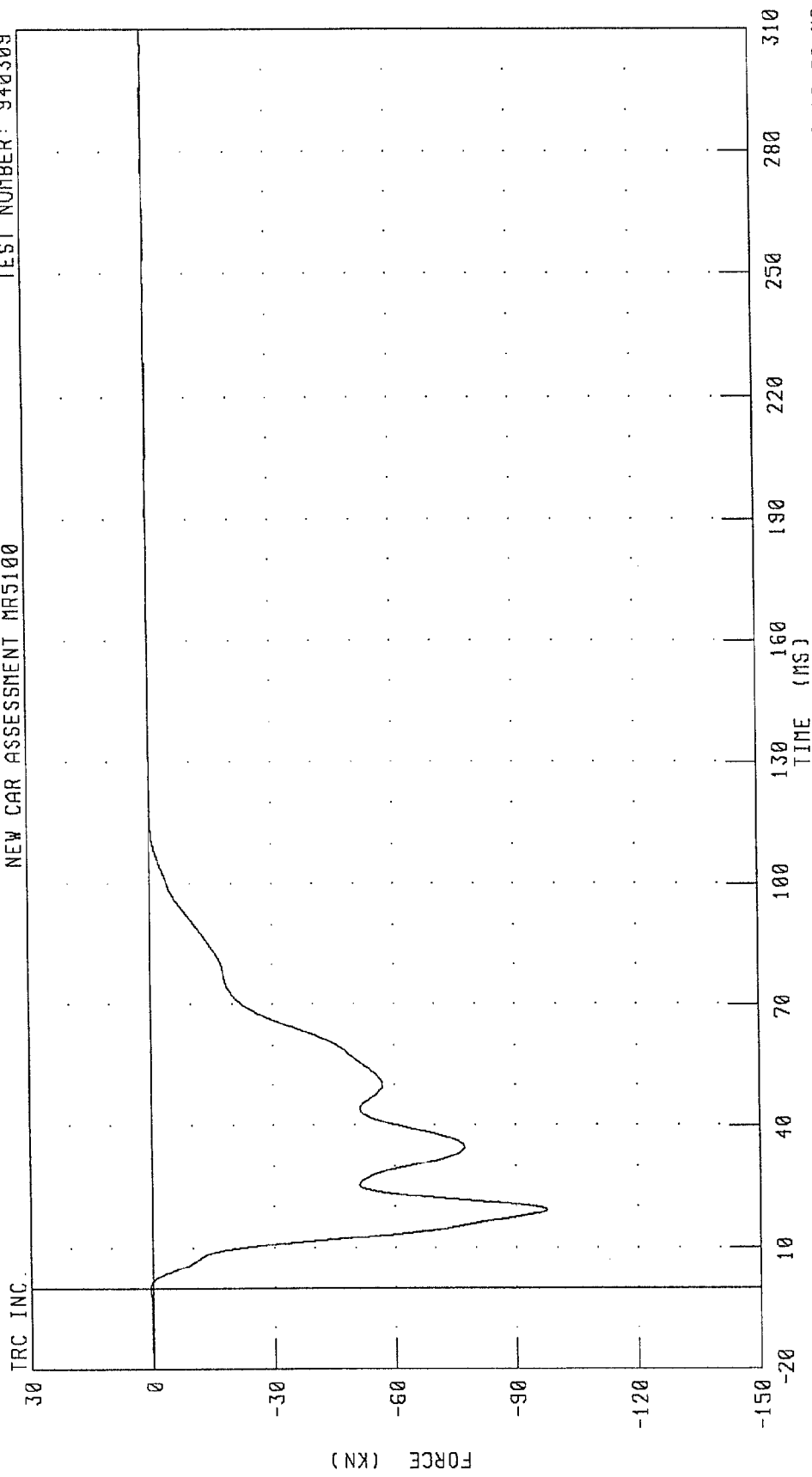
PEAK DATA: 0.56 KN @ 4.88 MS; -29.67 KN @ 50.72 MS

CHANNEL: BB2F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B3 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100



PEAK DATA: 0.55 KN @ -0.32 MS; -97.61 KN @ 19.28 MS

CHANNEL: BB3F FILTER: CH. CLASS 60

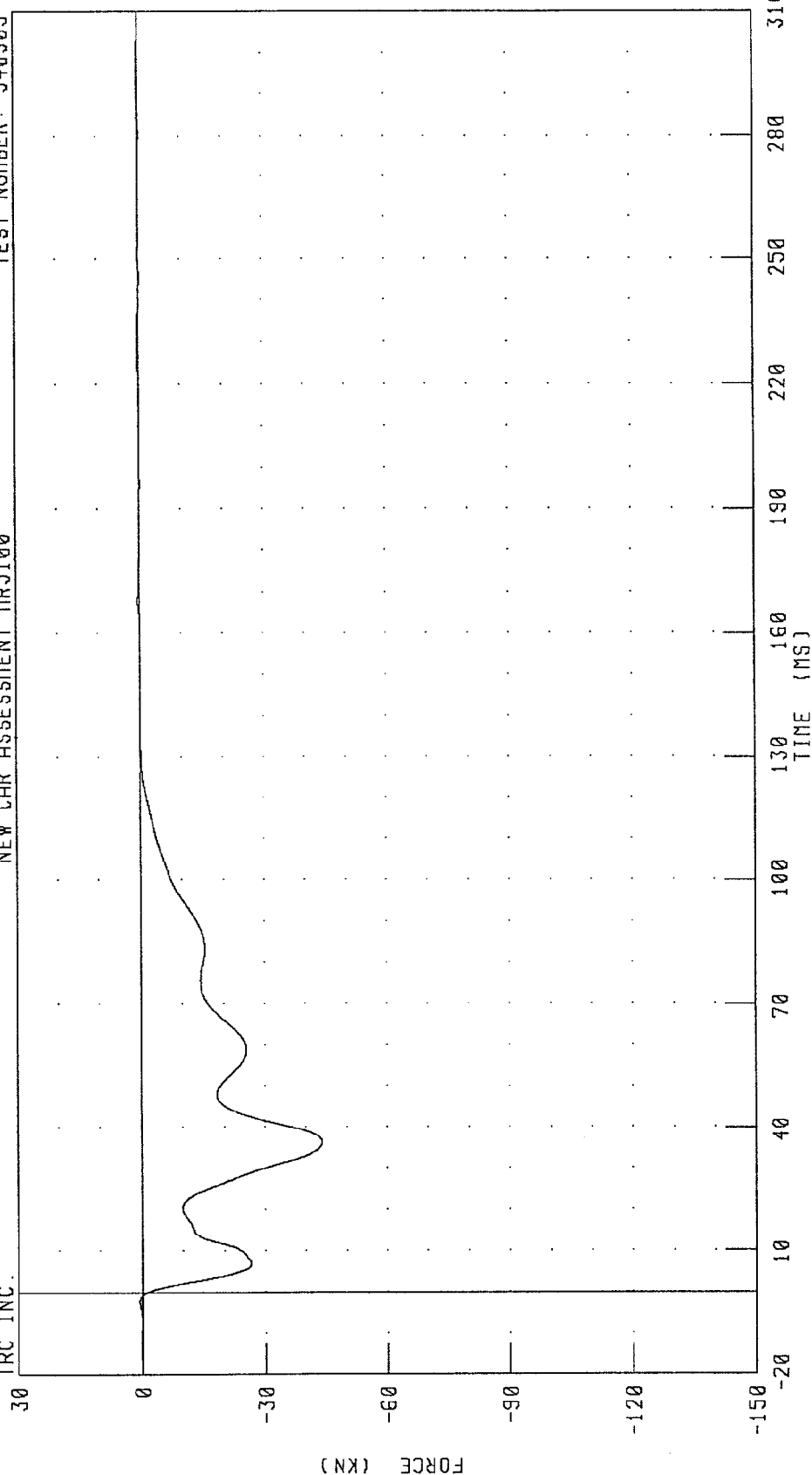
FORCE (KN)

TIME (MS)

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B4 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



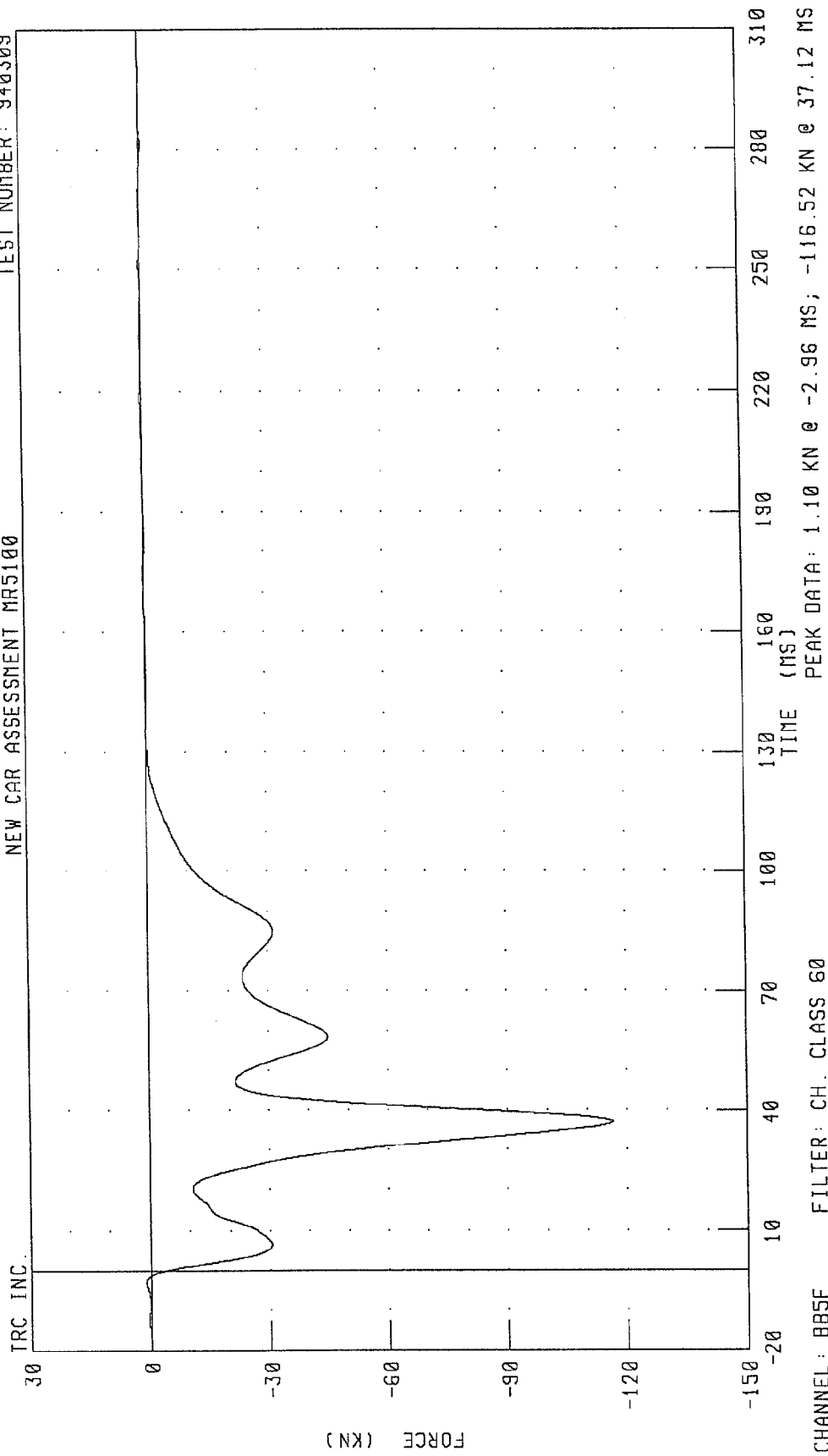
PEAK DATA: 0.62 KN @ -2.24 MS; -44.02 KN @ 36.24 MS

CHANNEL: BB4F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B5 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100



PEAK DATA: 1.10 KN @ -2.96 MS; -116.52 KN @ 37.12 MS

CHANNEL: BB5F FILTER: CH. CLASS 60

FORCE (KN)

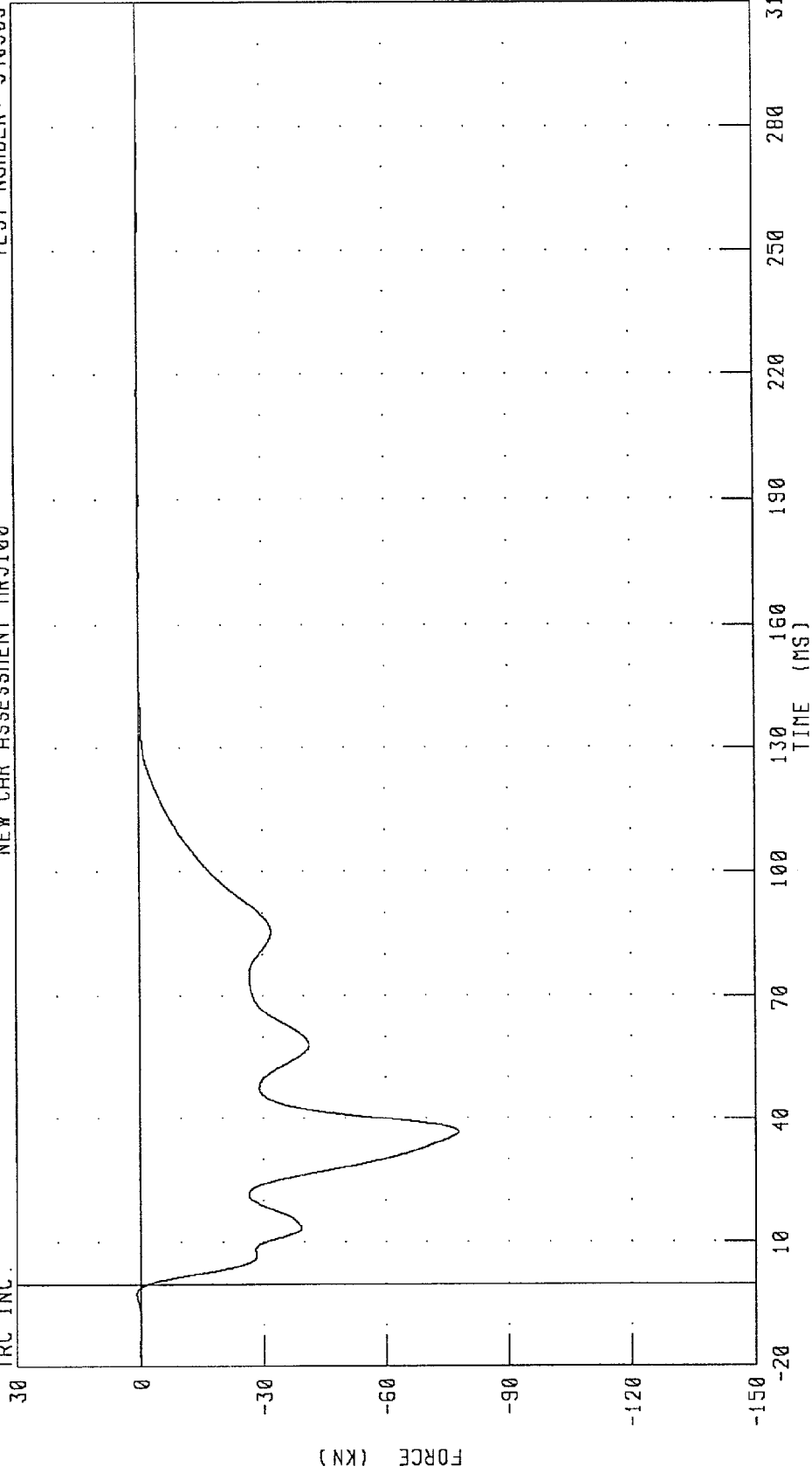
TIME (MS)

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B6 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.

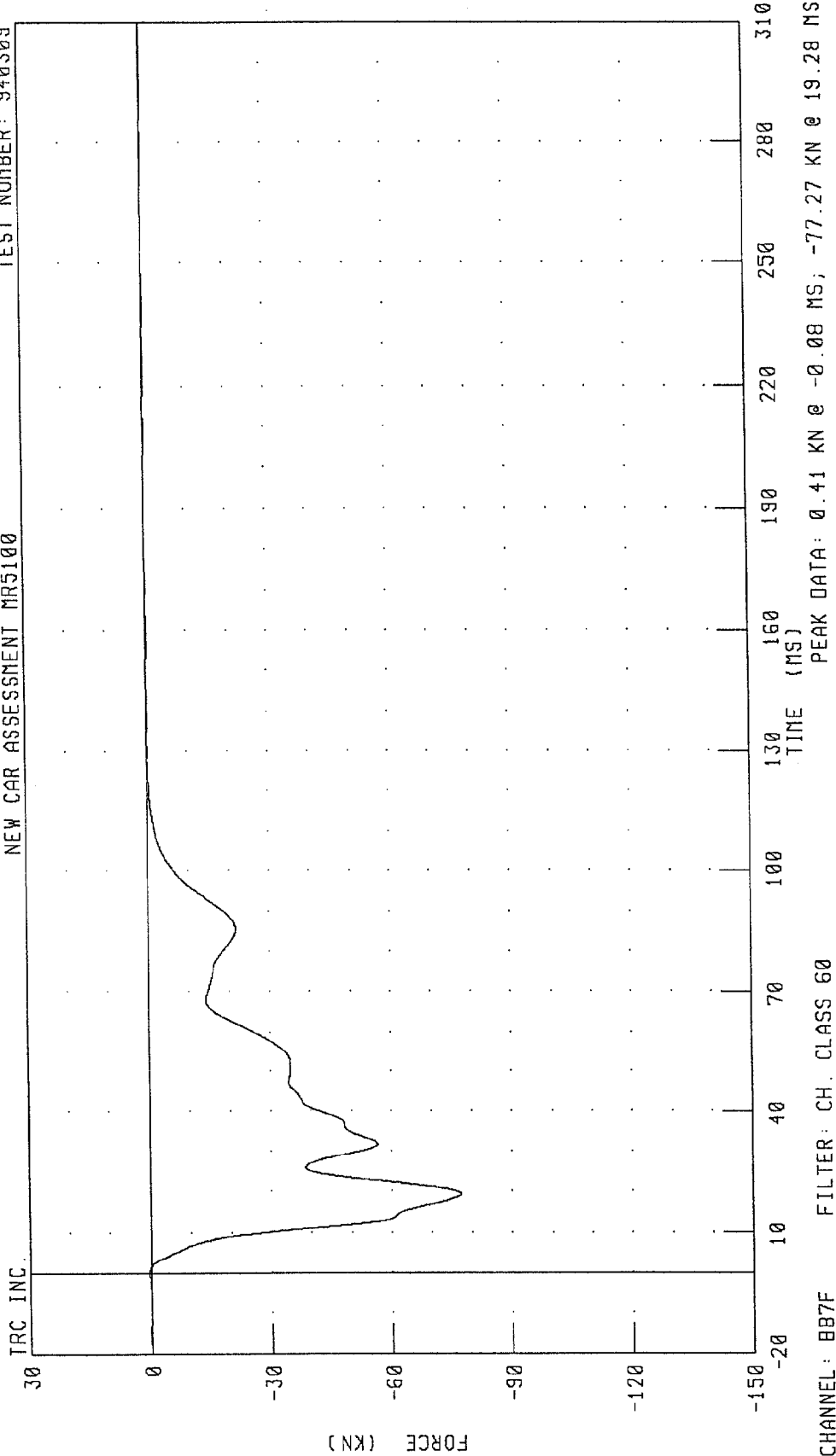


PEAK DATA: 0.87 KN @ -2.48 MS; -77.71 KN @ 36.72 MS

CHANNEL: 886F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B7 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



CHANNEL: BB7F

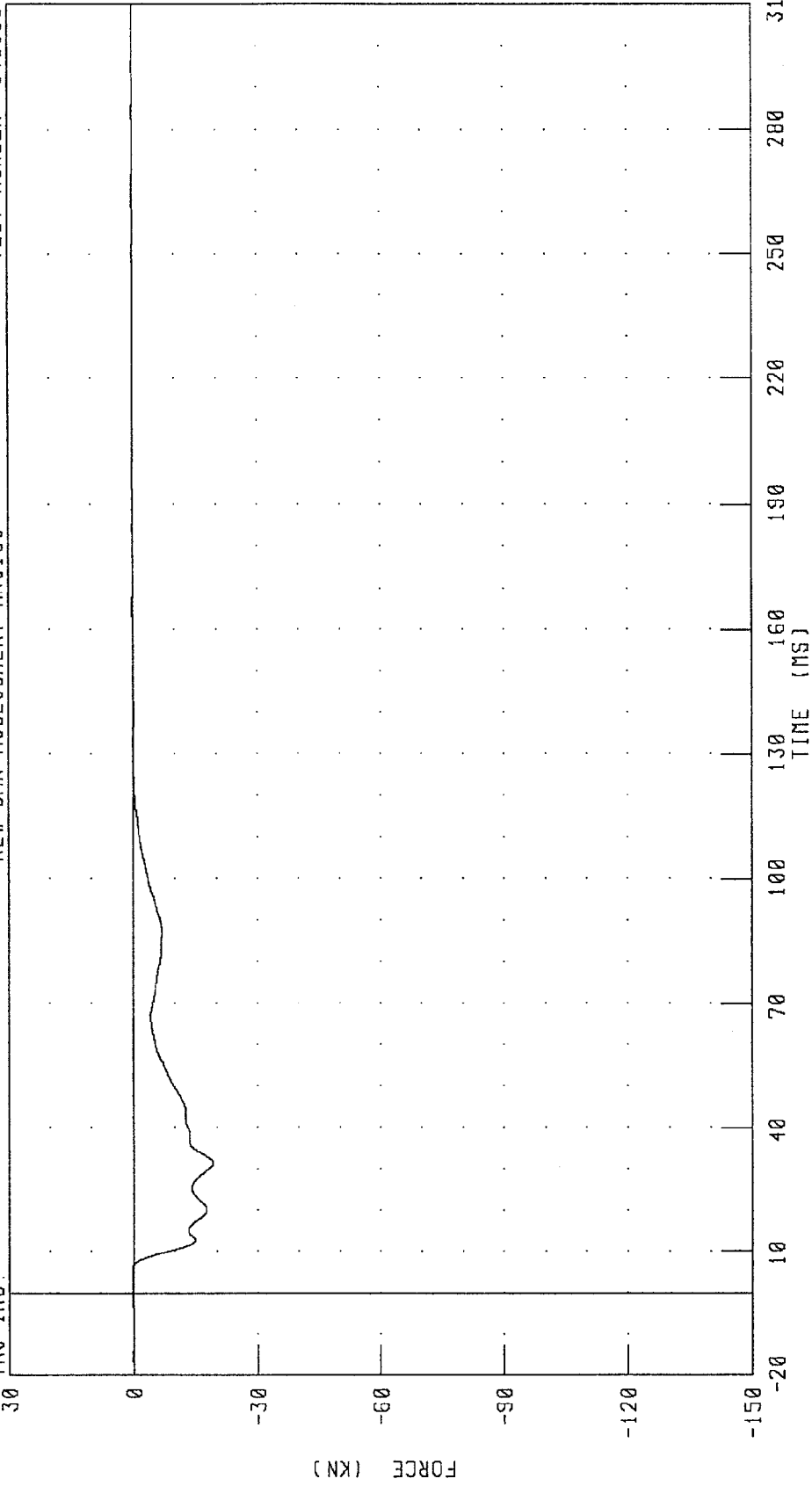
FILTER: CH. CLASS 60

PEAK DATA: 0.41 KN @ -0.08 MS; -77.27 KN @ 19.28 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B8 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



PEAK DATA: 0.31 KN @ 5.20 MS; -19.11 KN @ 31.44 MS

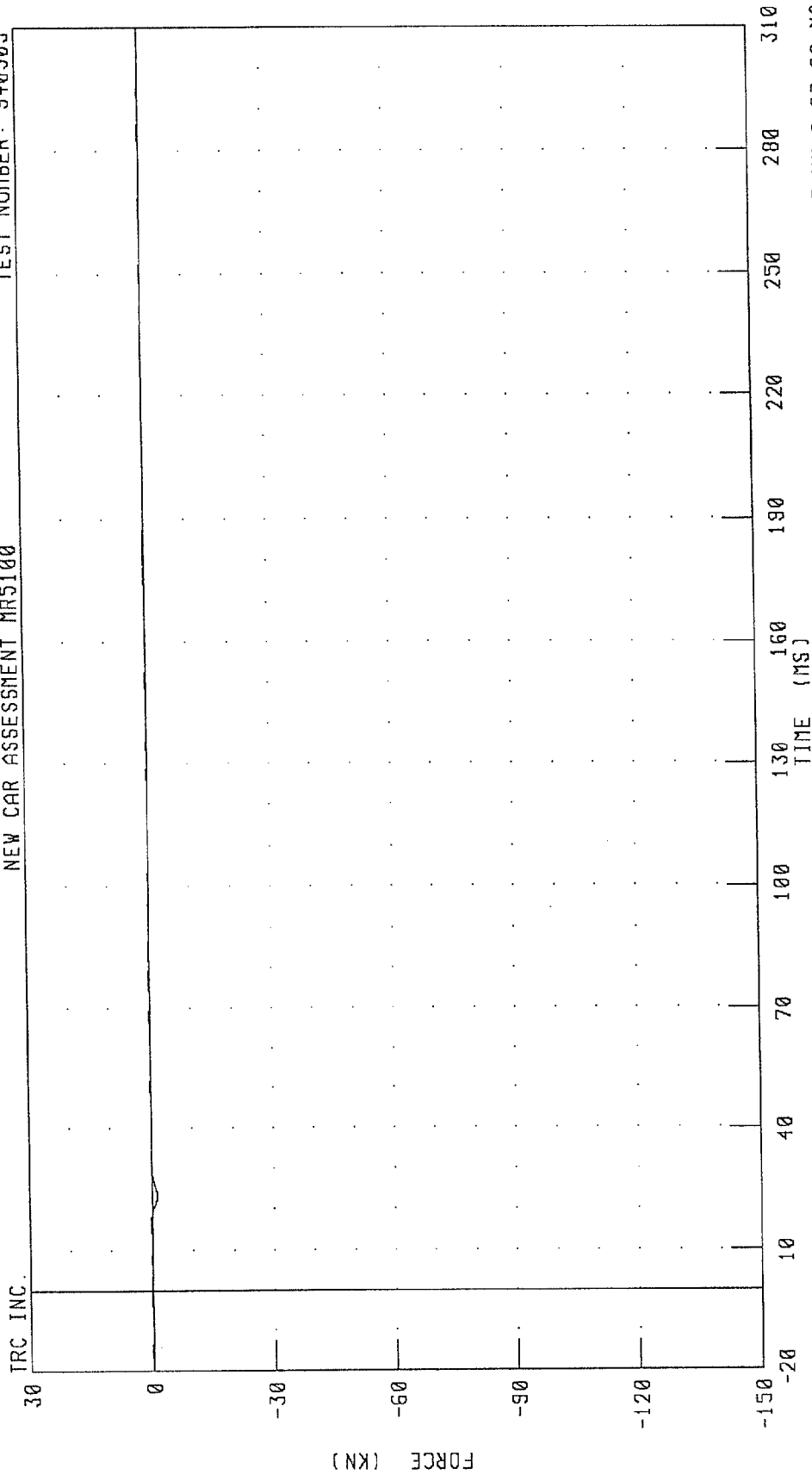
FILTER: CH. CLASS 60

CHANNEL: BB8F

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B9 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100



PEAK DATA: 0.25 KN @ 184.56 MS; -1.43 KN @ 23.20 MS

FILTER: CH. CLASS 60

CHANNEL: BB9F

FORCE (KN)

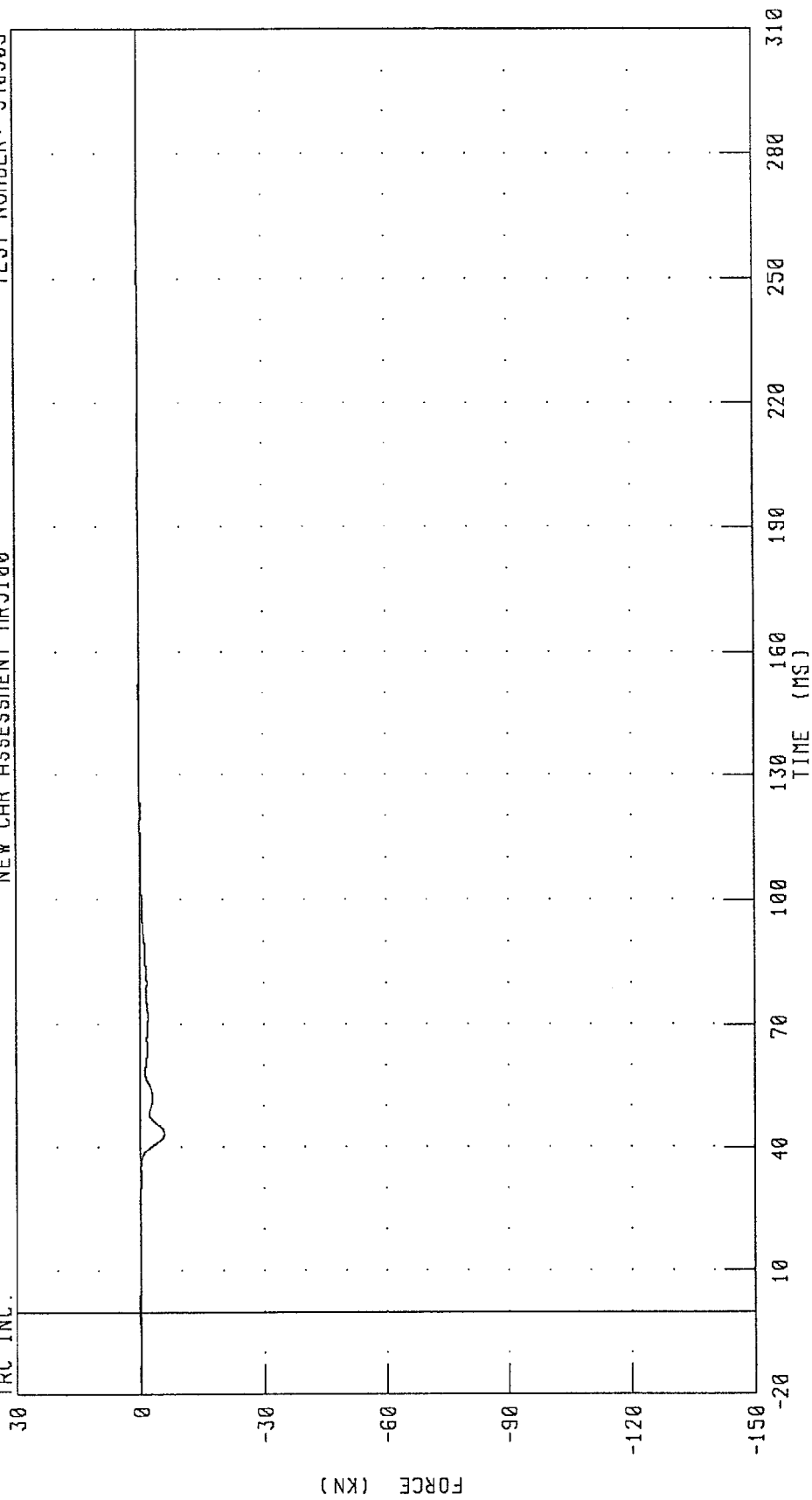
TIME (MS)

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C1 FORCE

NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

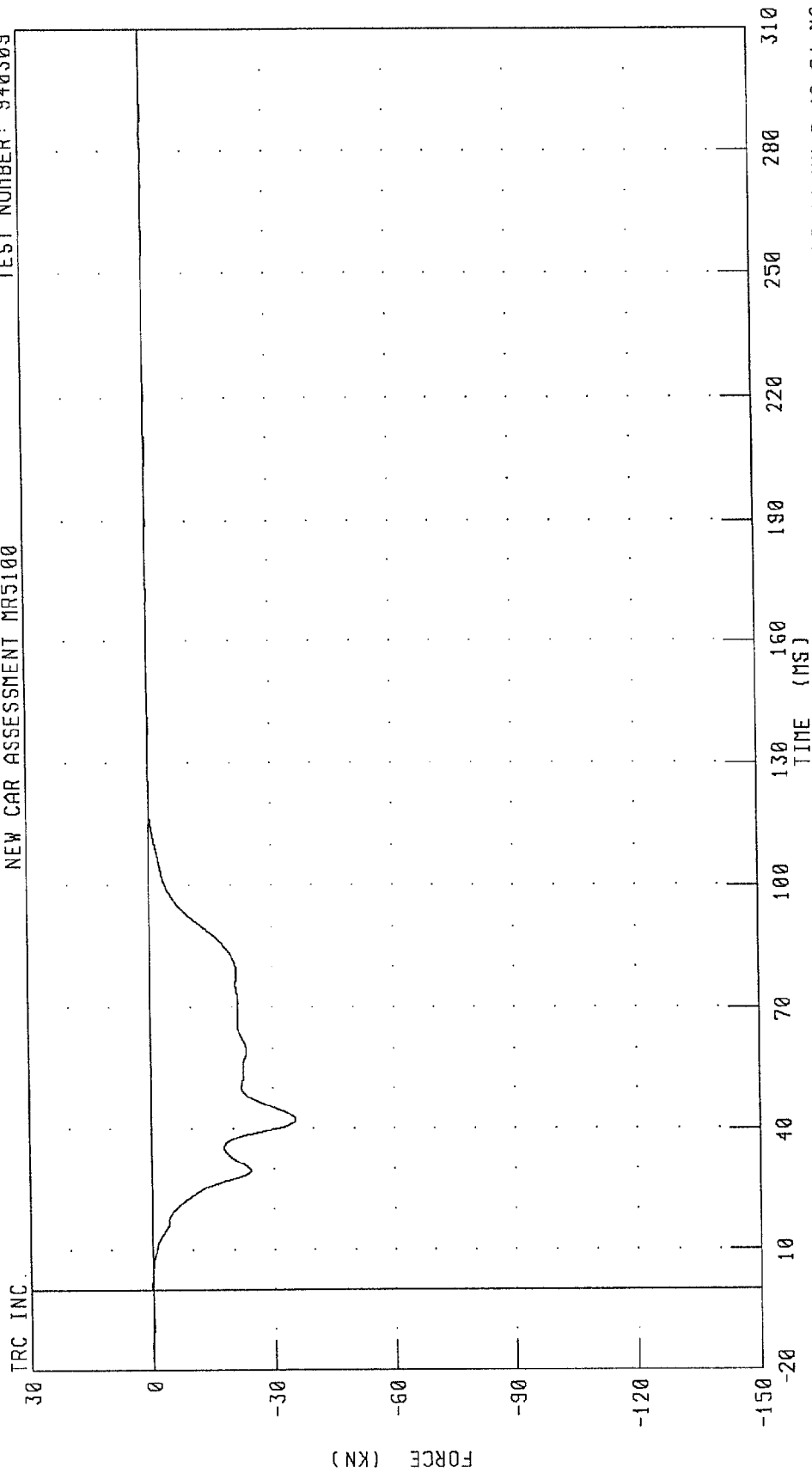


CHANNEL: BC1F FILTER: CH. CLASS 60

PEAK DATA: 0.18 KN @ 284.24 MS; -5.92 KN @ 43.44 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C2 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

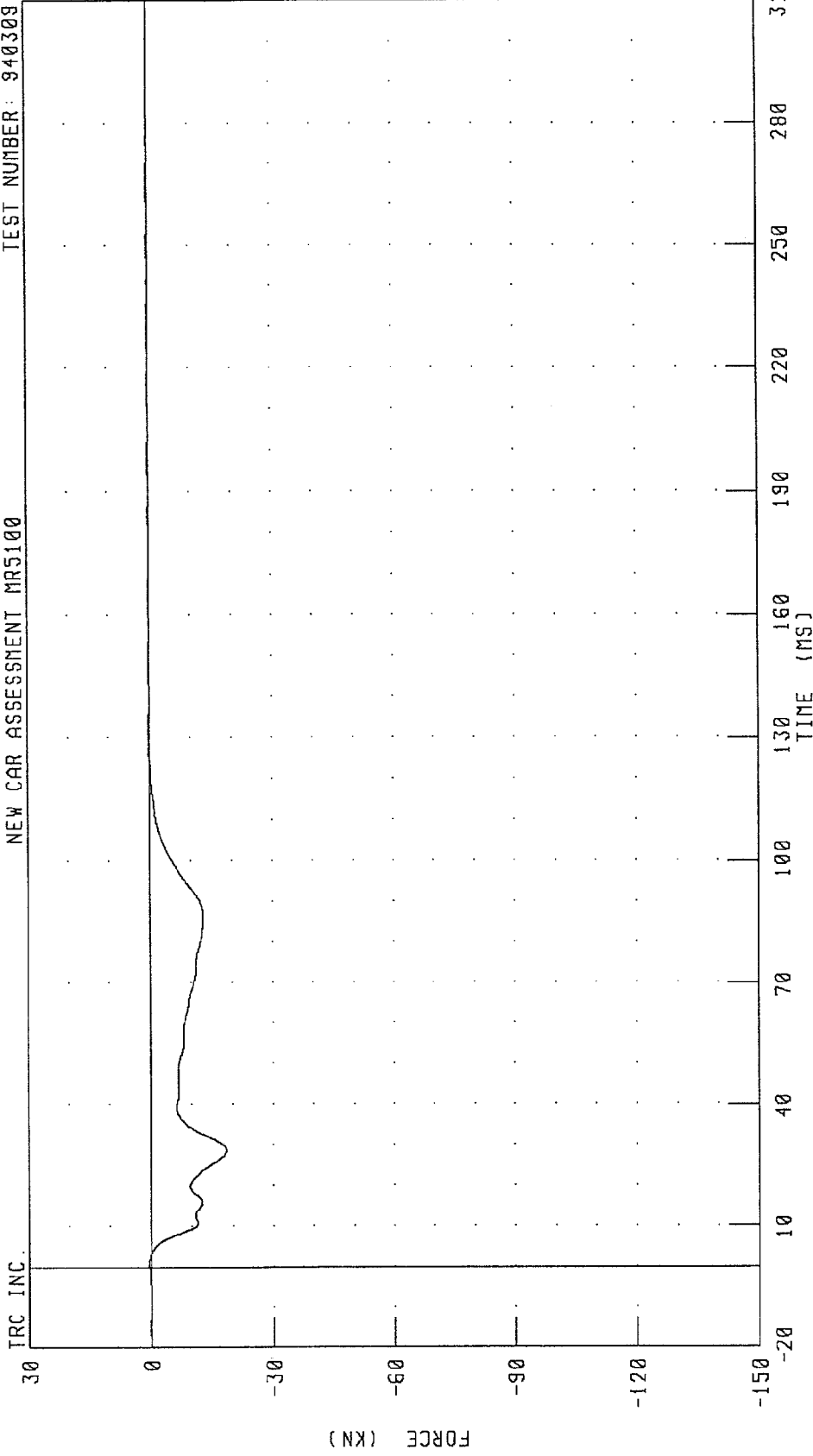


PEAK DATA: 0.23 KN @ -15.52 MS; -35.44 KN @ 42.24 MS

CHANNEL: BC2F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C3 FORCE

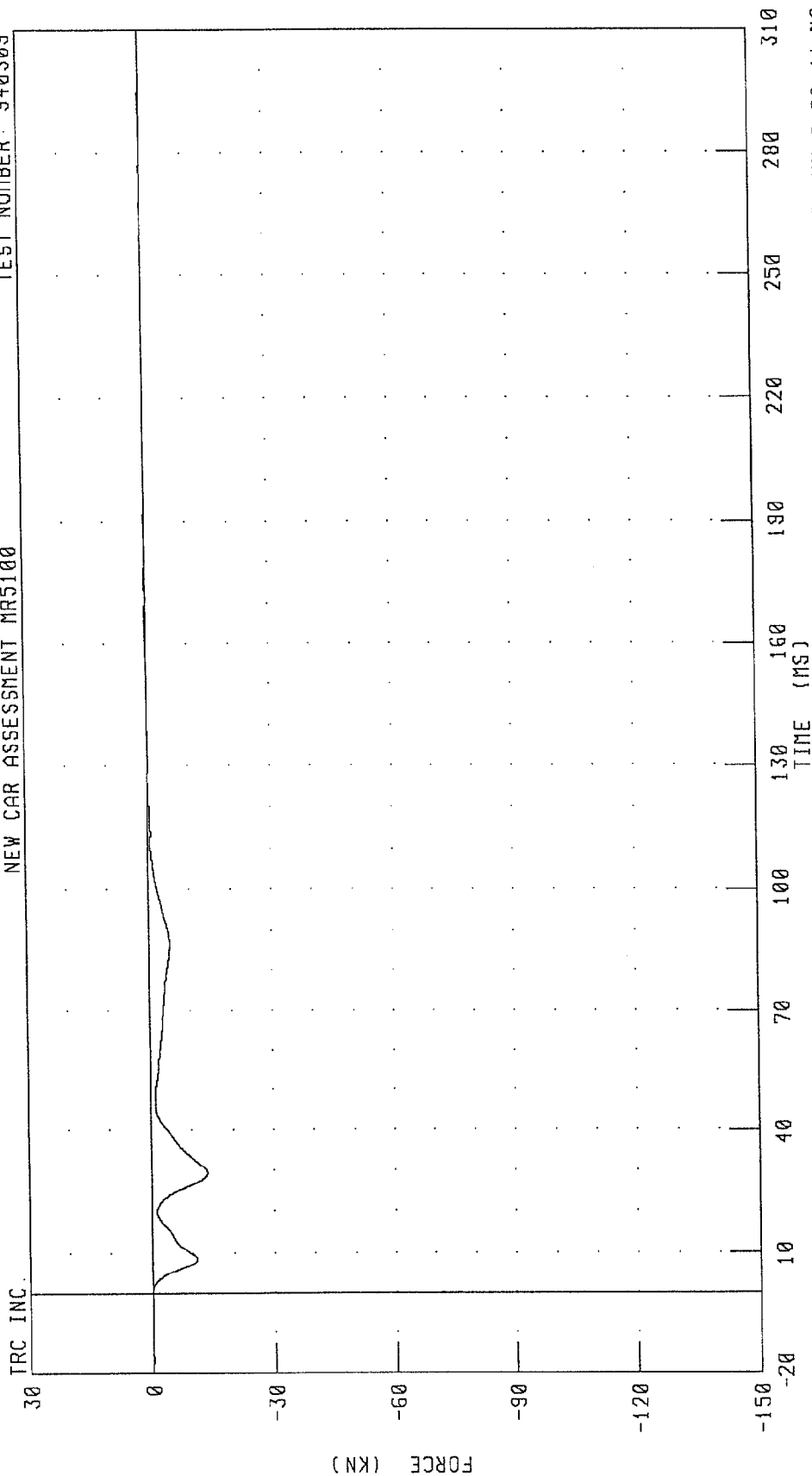
NEW CAR ASSESSMENT MR5100 TEST NUMBER: 940309



CHANNEL: BC3F FILTER: CH. CLASS 60 PEAK DATA: 0.40 KN @ 0.88 MS; -18.52 KN @ 28.56 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C4 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



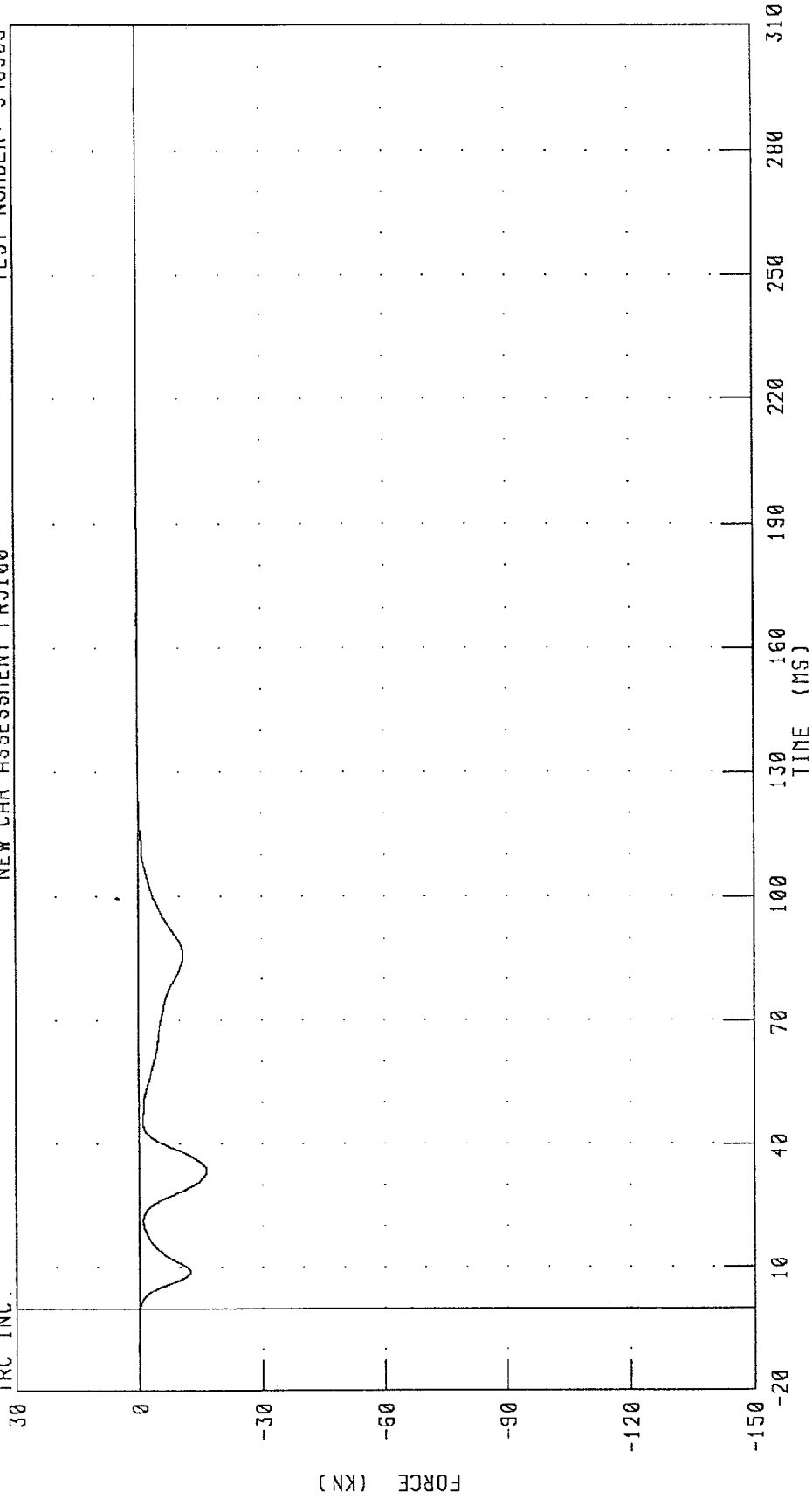
CHANNEL: BC4F FILTER: CH. CLASS 60

PEAK DATA: 0.19 KN @ 160.64 MS; -13.71 KN @ 29.44 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C5 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

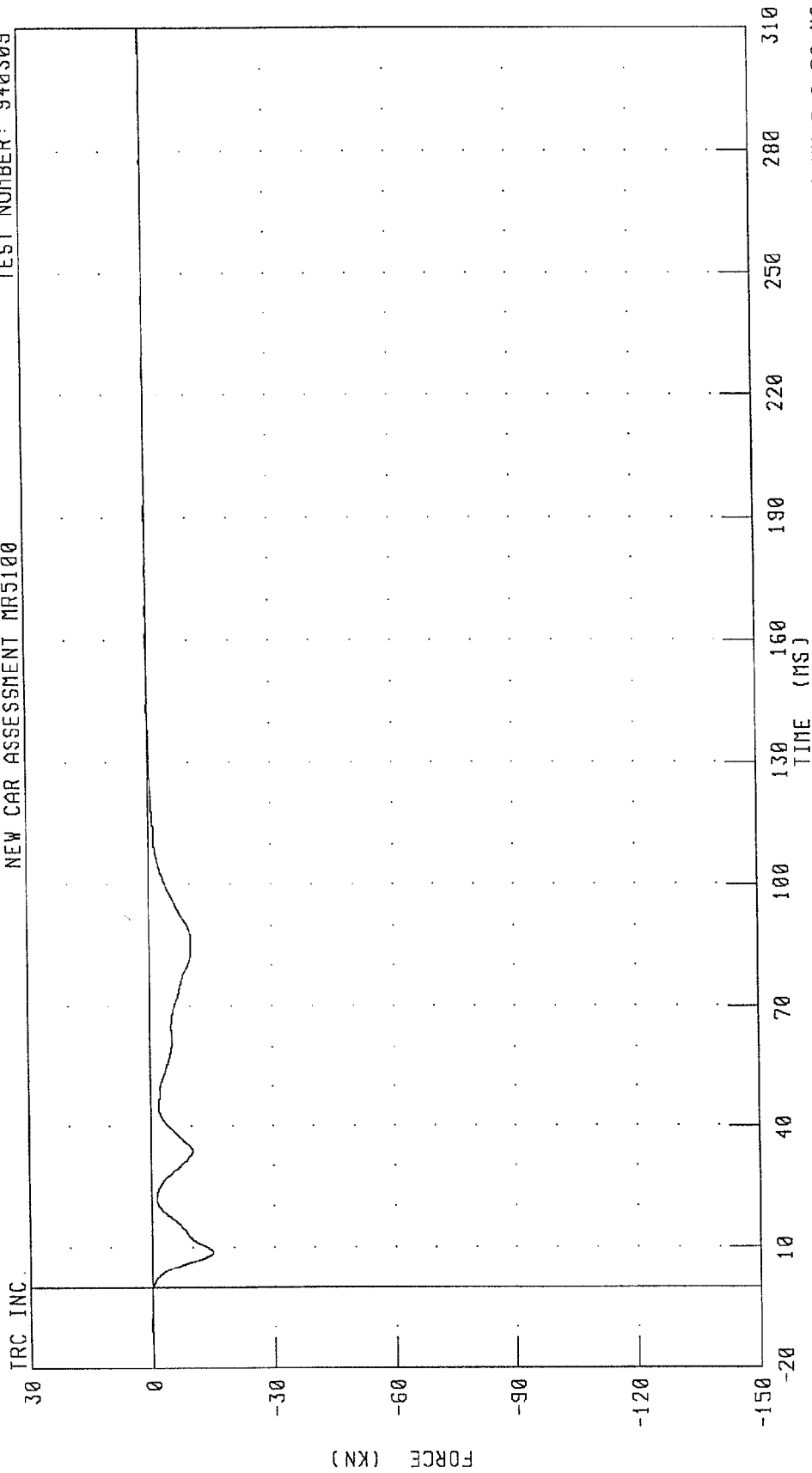
TRC INC.



CHANNEL: BC5F FILTER: CH. CLASS 60 PEAK DATA: 0.21 KN @ 292.16 MS; -16.39 KN @ 33.60 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C6 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



CHANNEL: BC6F FILTER: CH. CLASS 60

FORCE (KN)

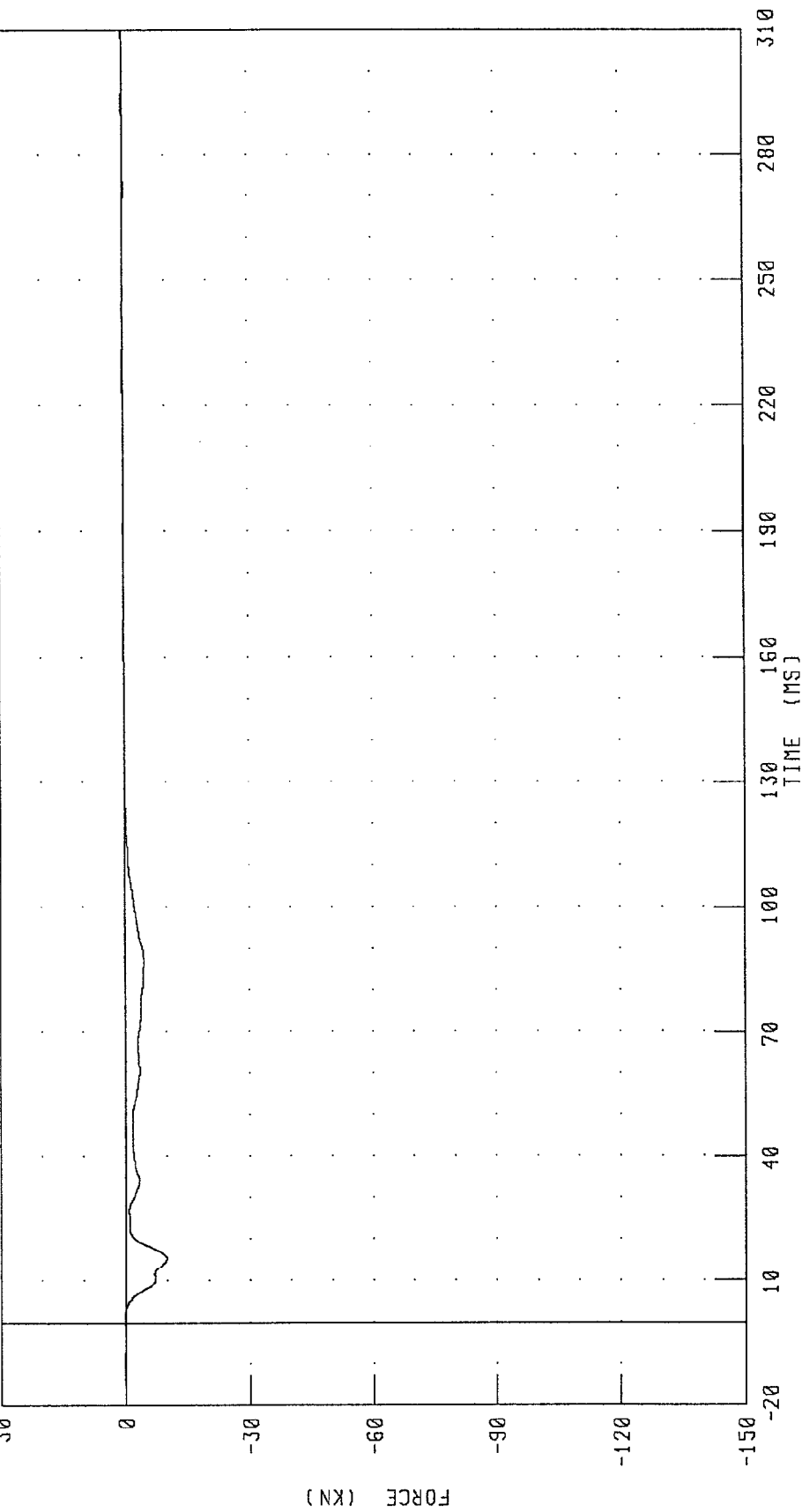
TIME (MS)

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C7 FORCE

TEST NUMBER: 940308

NEW CAR ASSESSMENT MR5100

TRC INC.

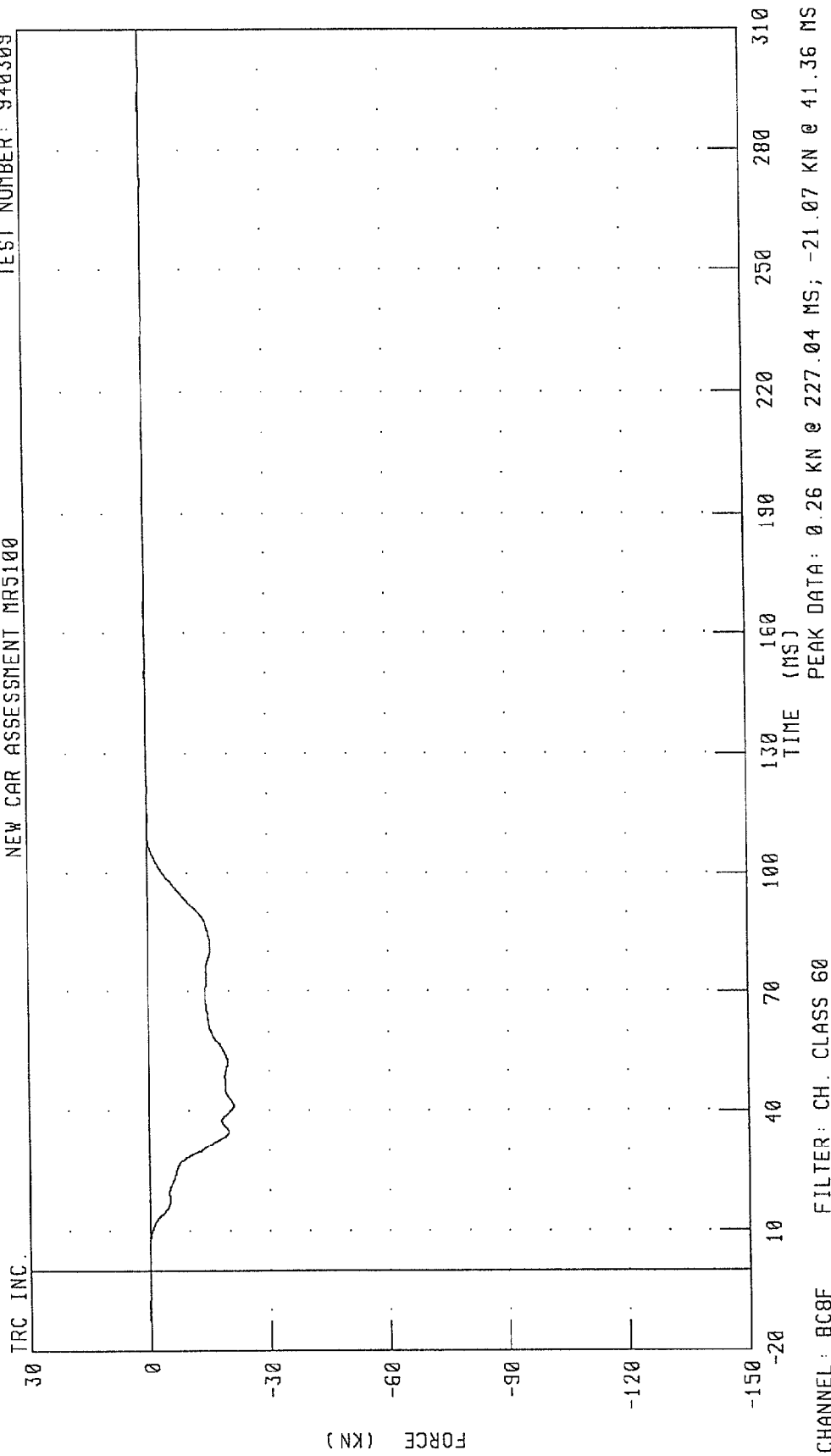


PEAK DATA: 0.23 KN @ 292.16 MS; -9.90 KN @ 15.52 MS

CHANNEL: BC7F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C8 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



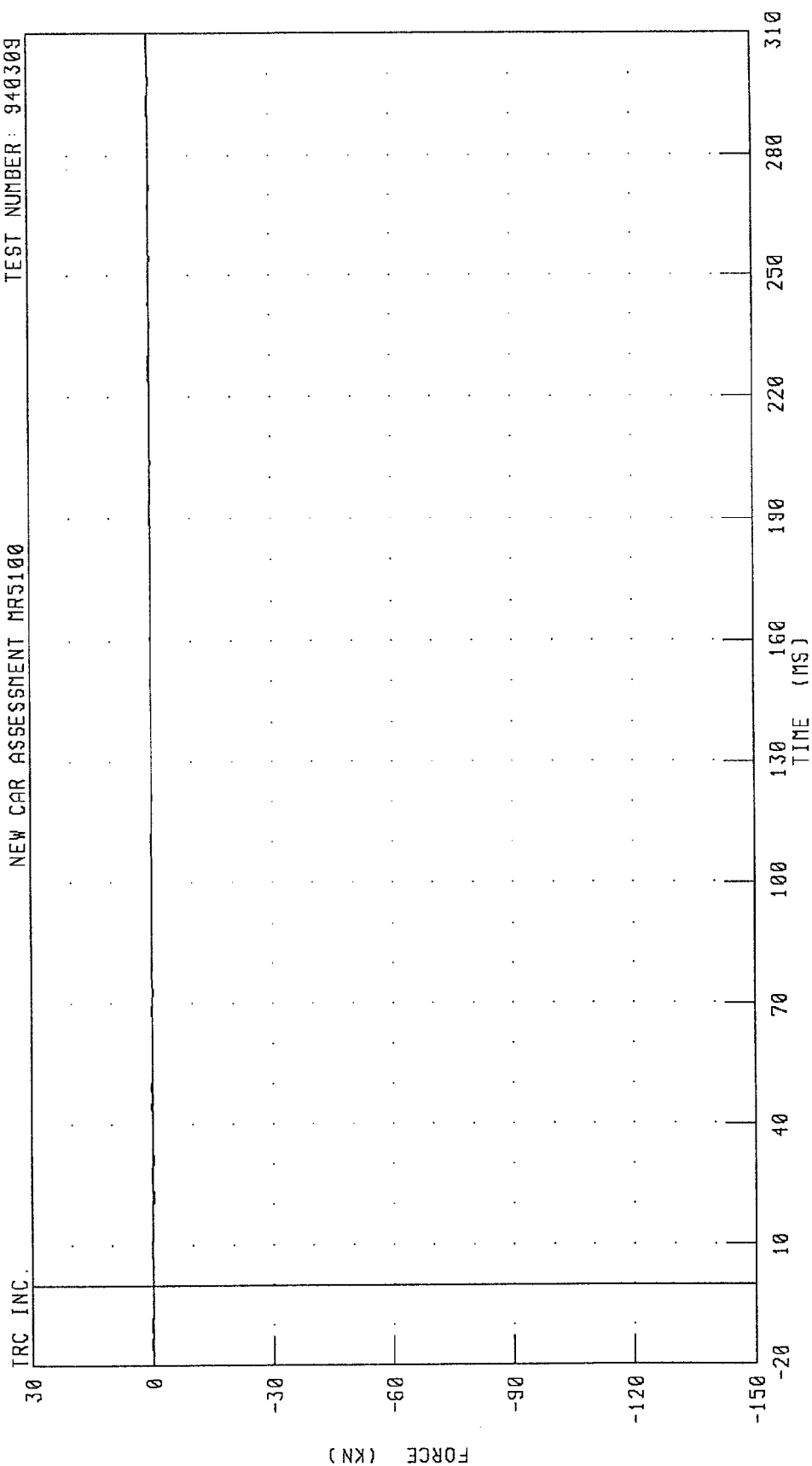
CHANNEL: BC8F FILTER: CH. CLASS 60

FORCE (KN)

TIME (MS)

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C9 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

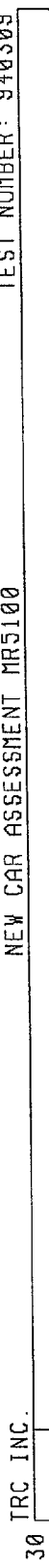


1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D1 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



FORCE (KN)

TIME (MS)

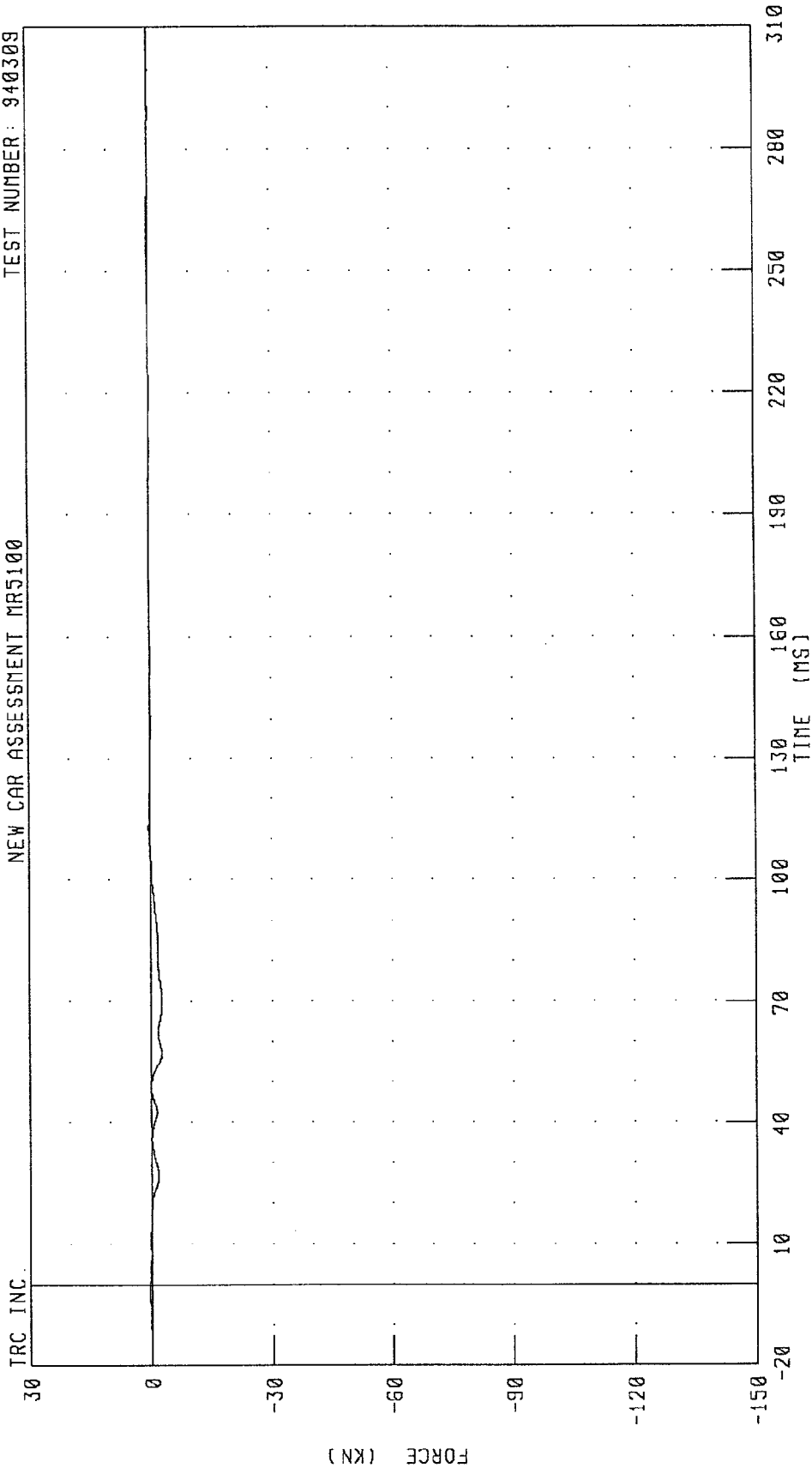
PEAK DATA: 0.56 KN @ 291.92 MS; -4.78 KN @ 55.28 MS

FILTER: CH. CLASS 60

CHANNEL: BD1F

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D2 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



PEAK DATA: 0.41 KN @ -2.40 MS; -2.71 KN @ 69.84 MS

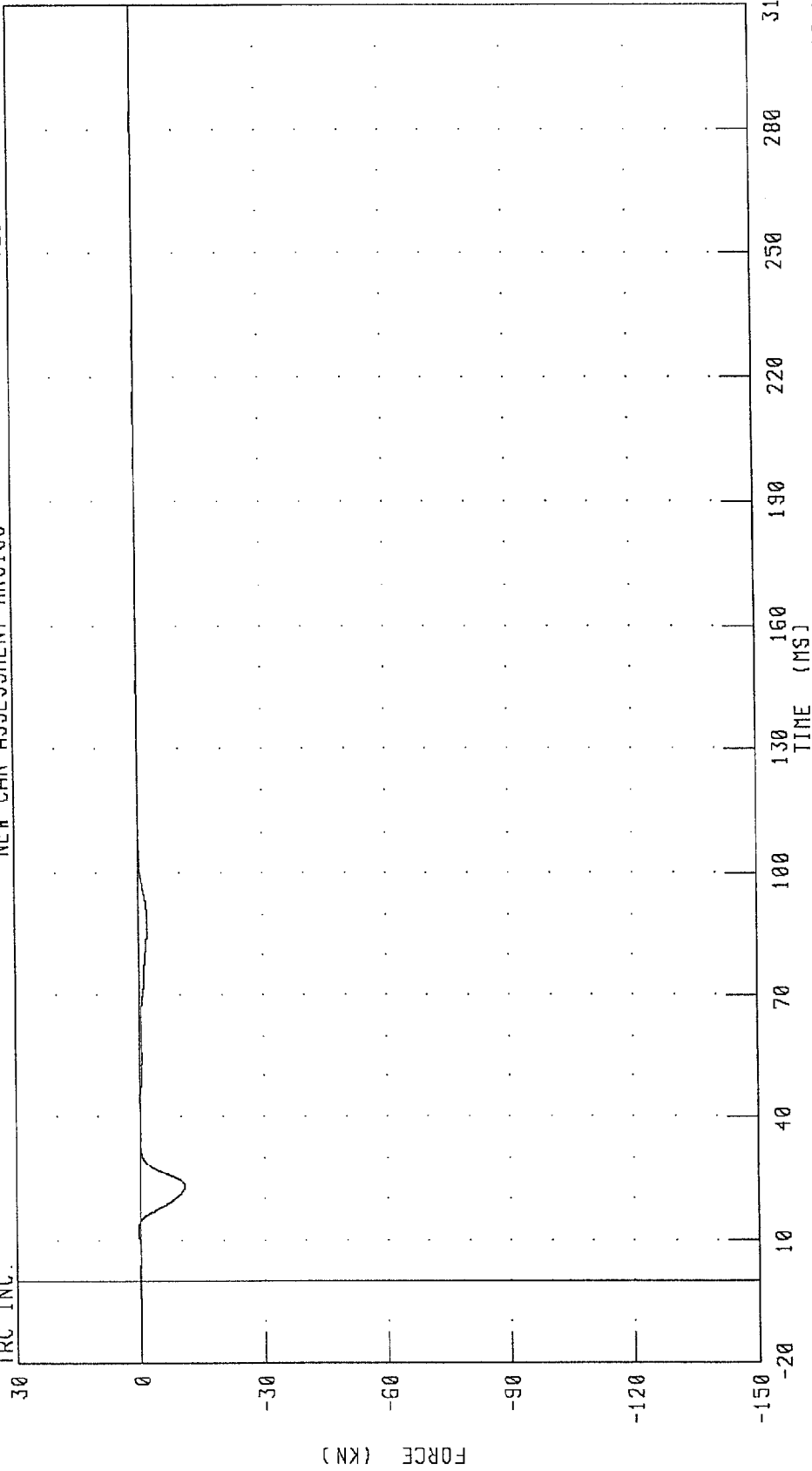
CHANNEL: BD2F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D3 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



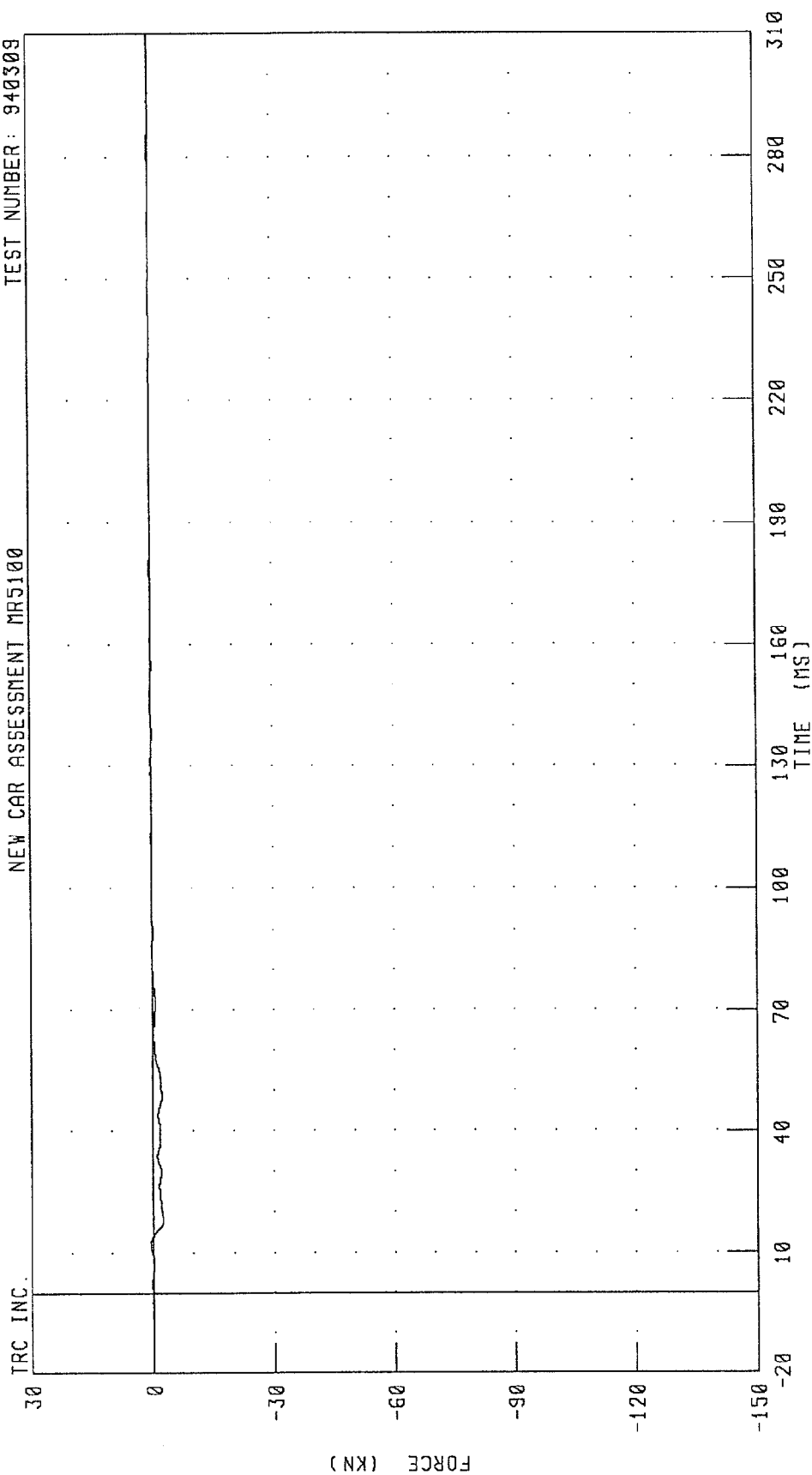
CHANNEL: 803F

FILTER: CH. CLASS 60

PEAK DATA: 0.50 KN @ 12.08 MS; -10.71 KN @ 23.12 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D4 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



PEAK DATA: 0.53 KN @ 11.84 MS; -2.55 KN @ 17.92 MS

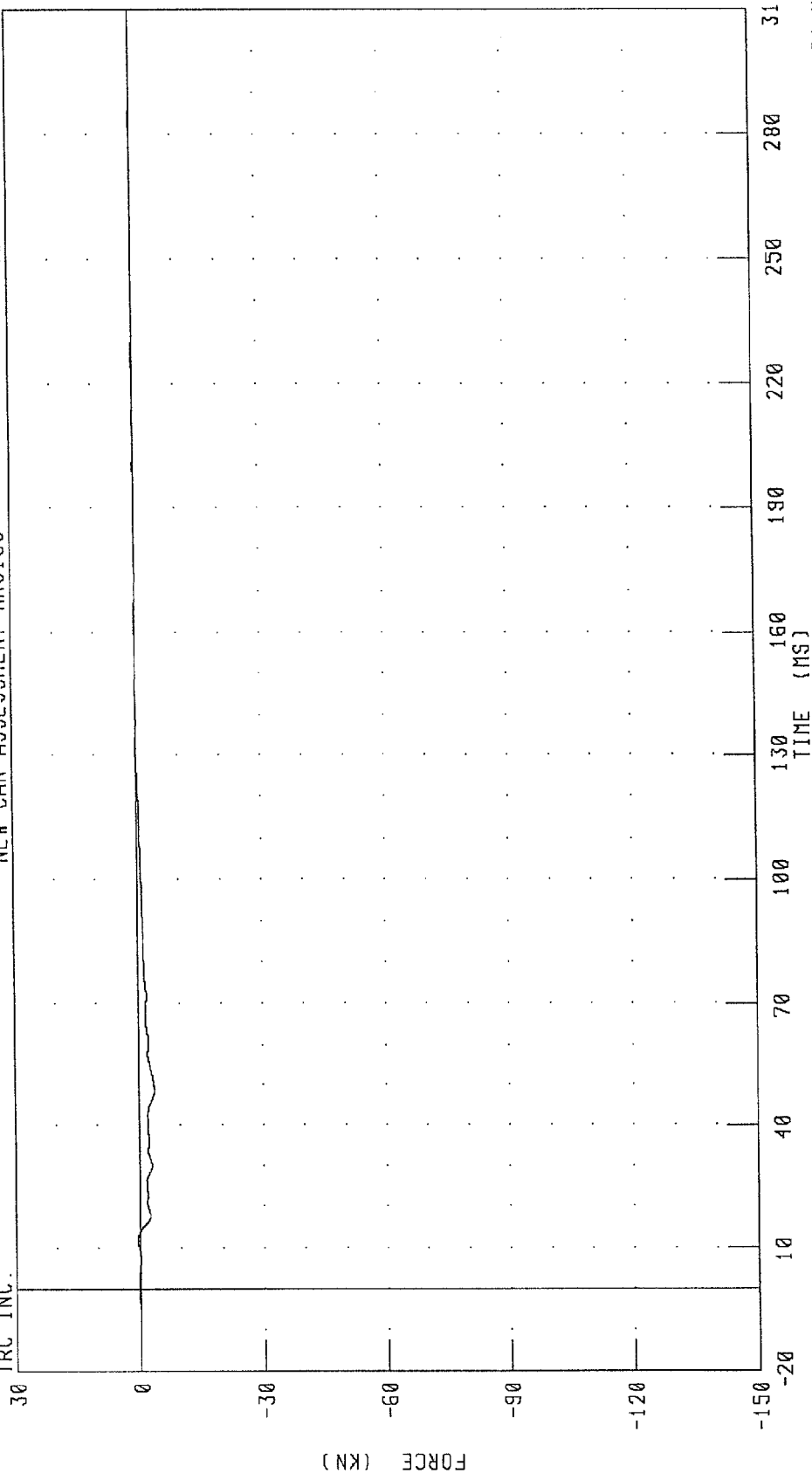
FILTER: CH. CLASS 60

CHANNEL: BD4F

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D5 FORCE
NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



CHANNEL: BDSF

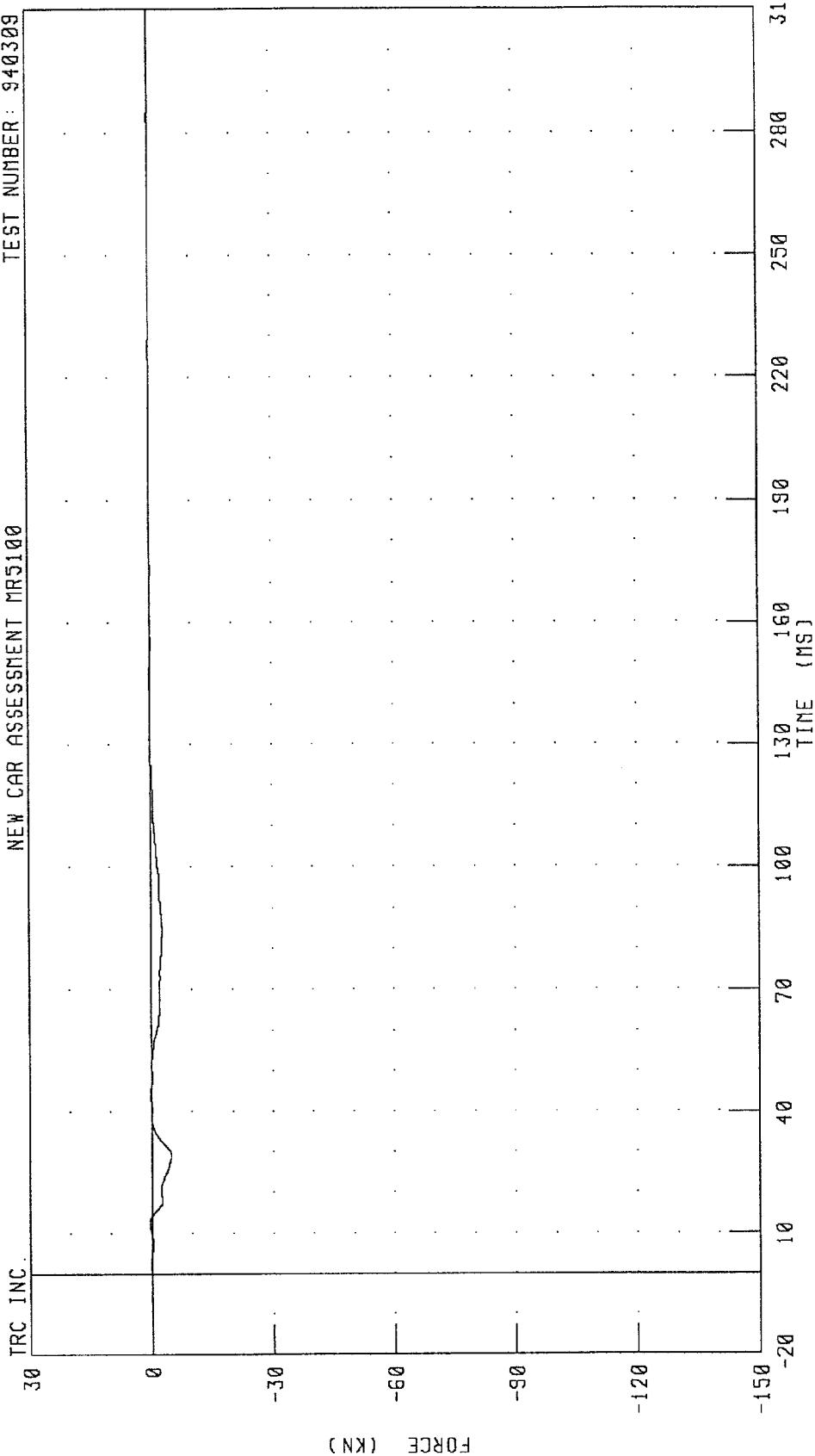
FILTER: CH. CLASS 60

PEAK DATA: 0.54 KN @ 11.84 MS; -3.82 KN @ 48.64 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D6 FORCE

NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

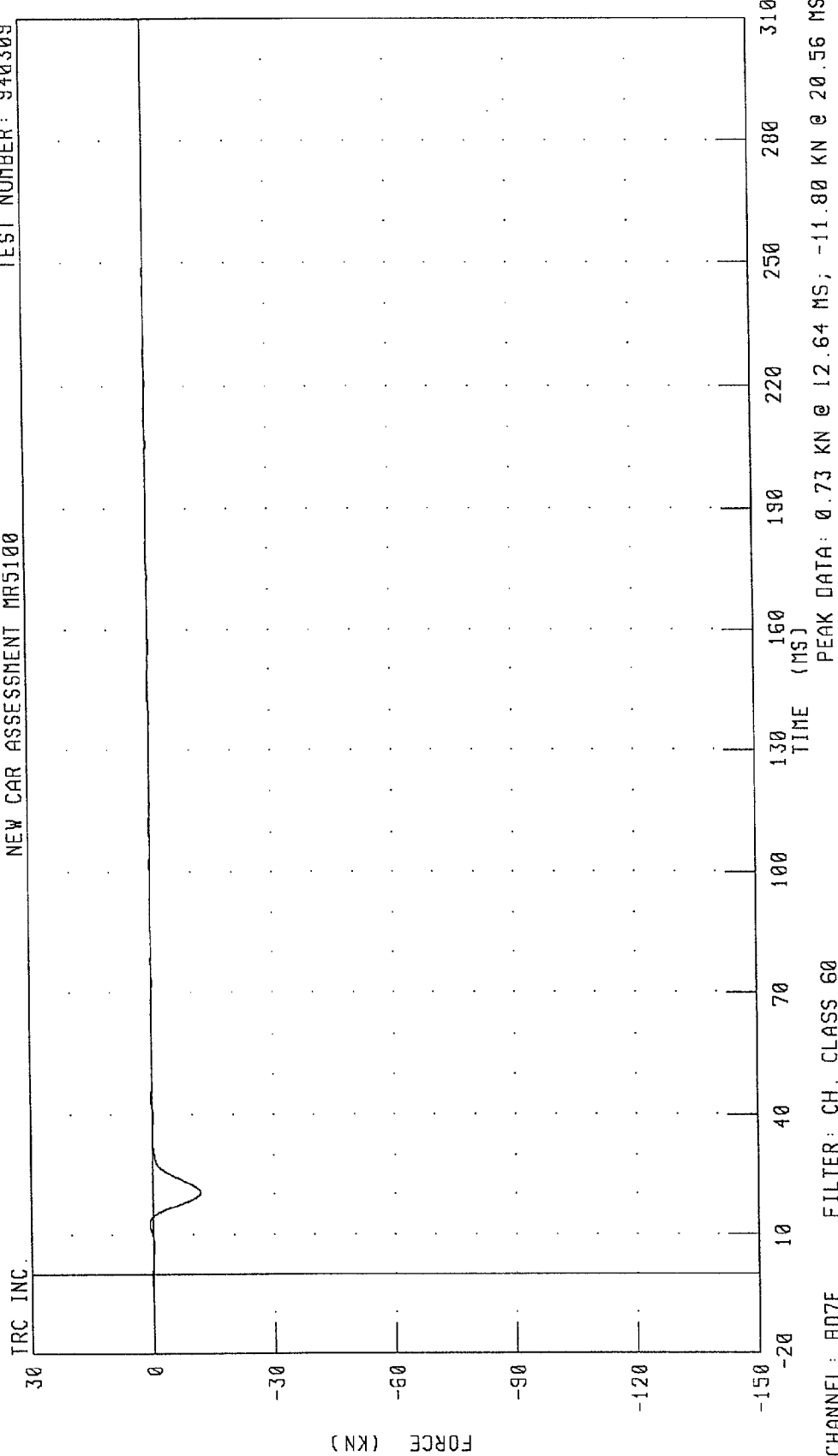


PEAK DATA: 0.55 KN @ 12.40 MS, -4.86 KN @ 29.12 MS

CHANNEL: BD6F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D7 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



CHANNEL: B07F

FILTER: CH. CLASS 60

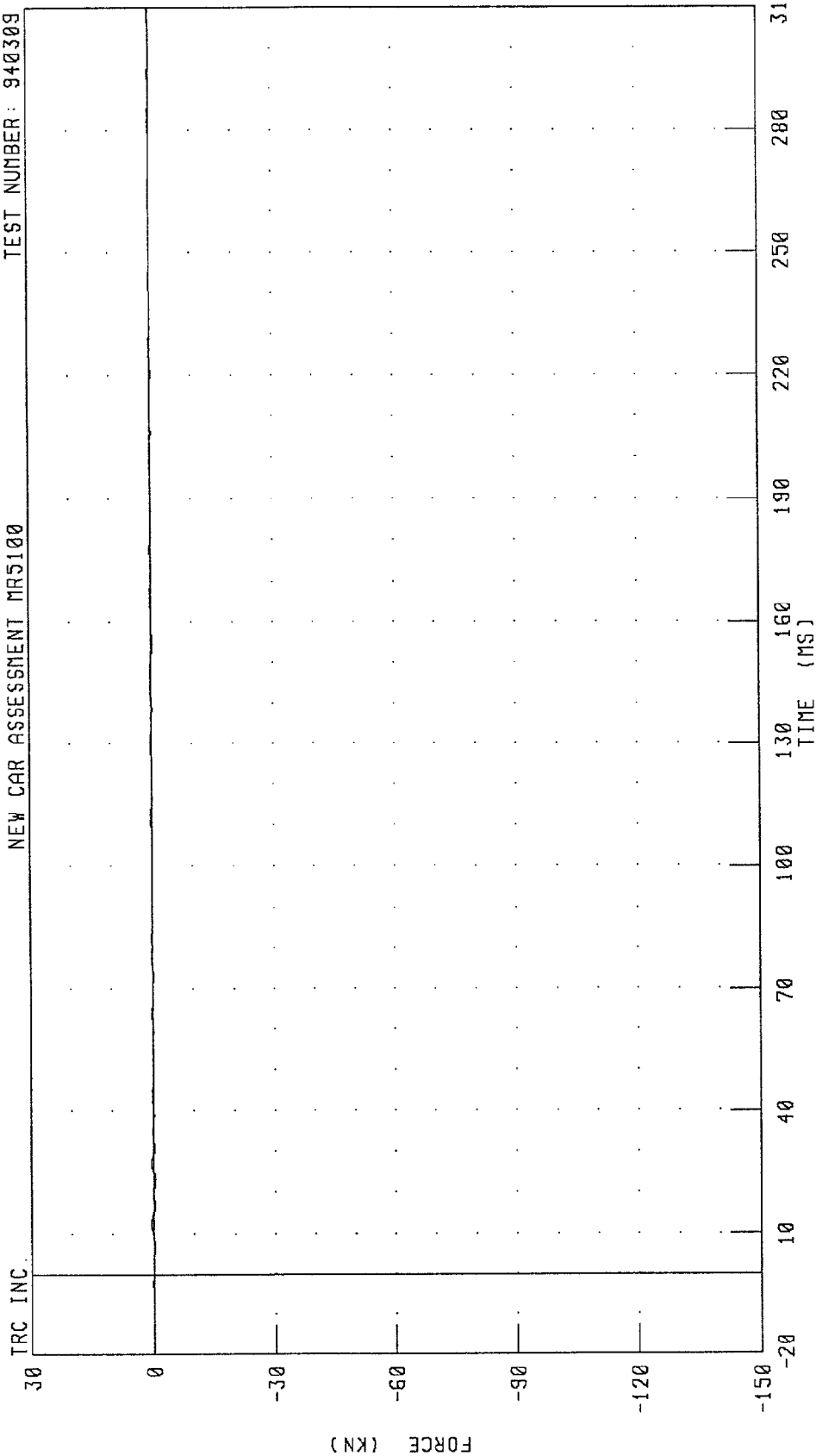
PEAK DATA: 0.73 KN @ 12.64 MS; -11.80 KN @ 20.56 MS

FORCE (KN)

TIME (MS)

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D8 FORCE
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



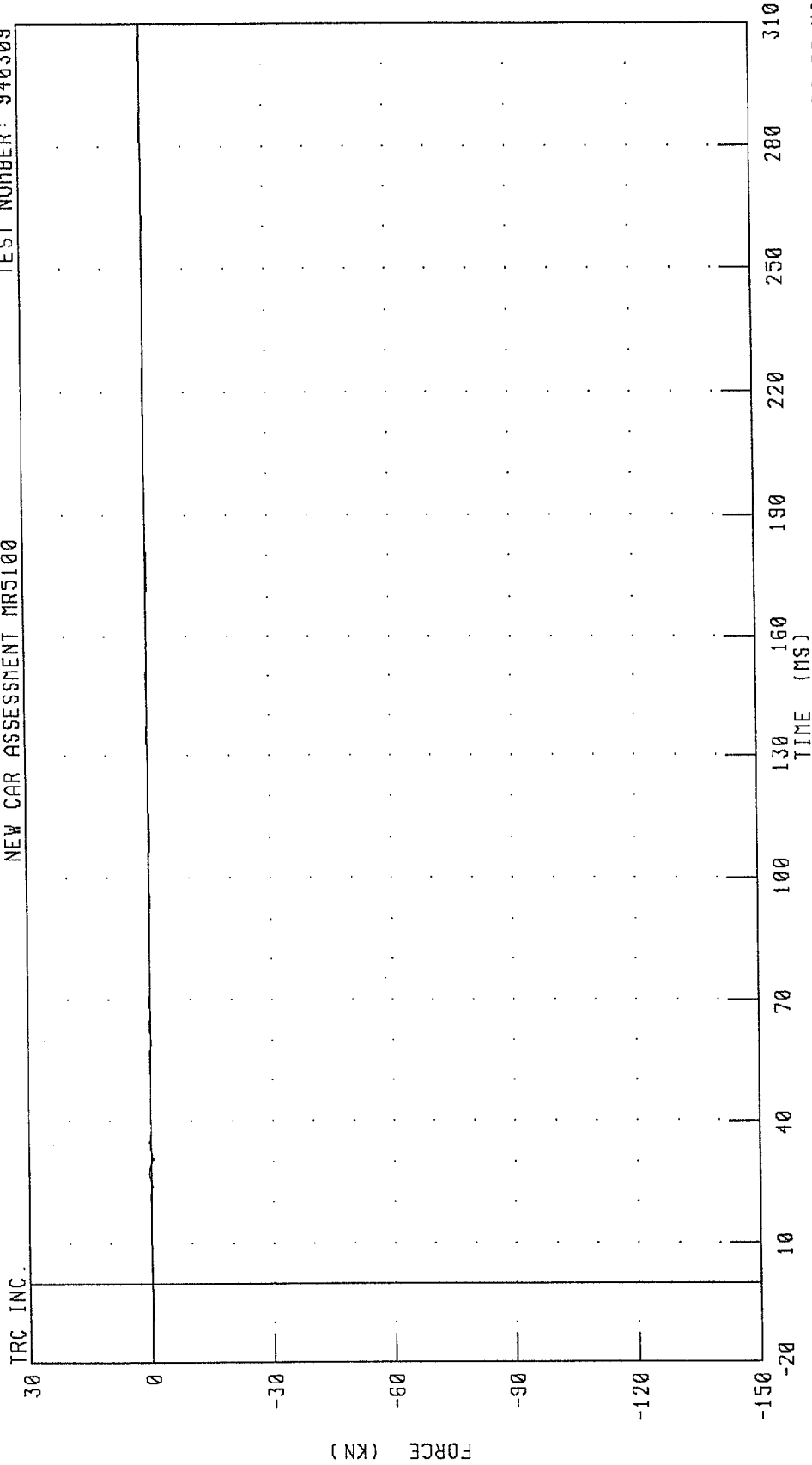
CHANNEL: BD8F FILTER: CH. CLASS 60

PEAK DATA: 0.57 KN @ 27.12 MS; -0.50 KN @ 23.28 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION 09 FORCE

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100



PEAK DATA: 0.60 KN @ 27.44 MS; -0.43 KN @ 30.80 MS

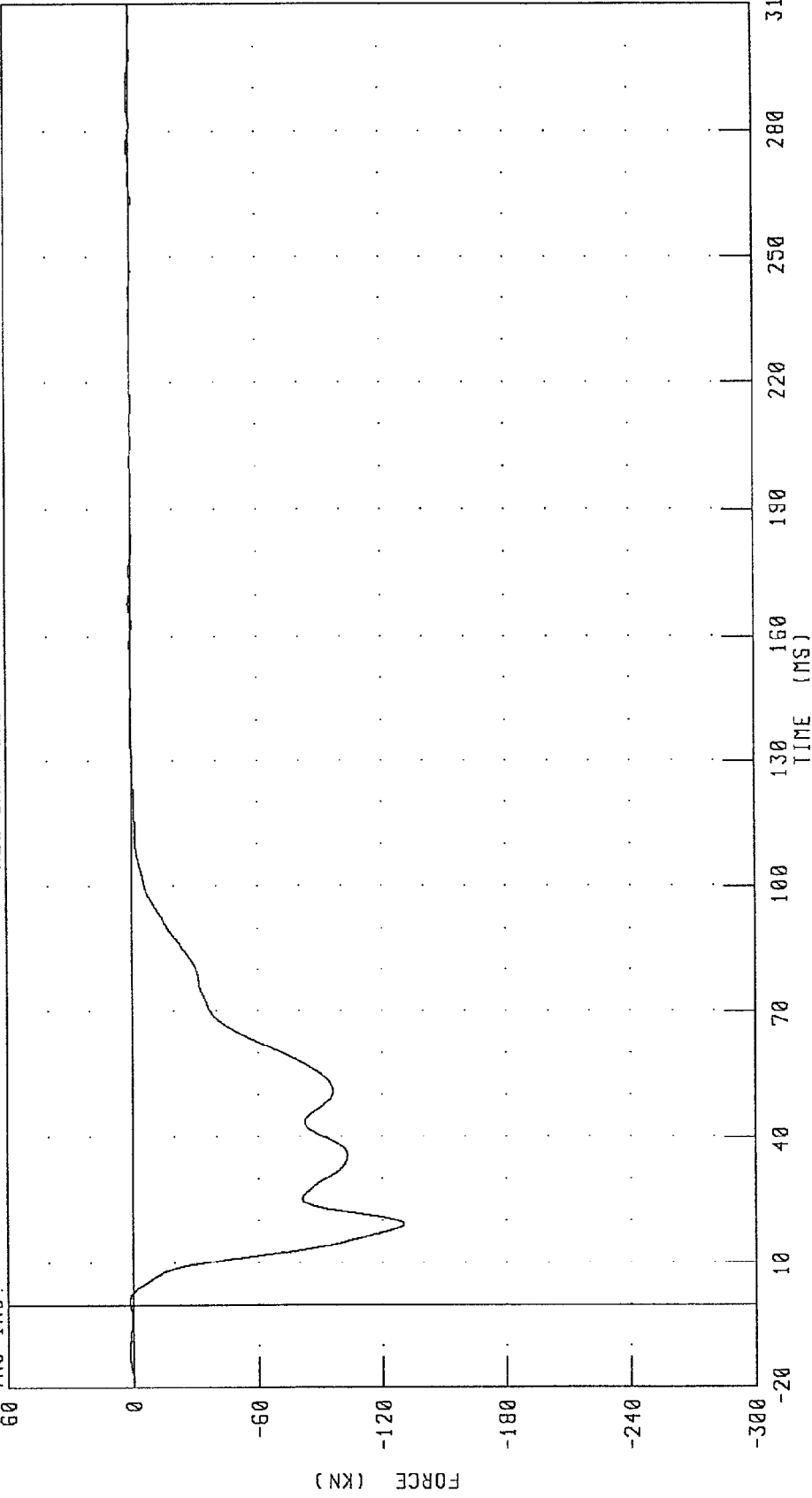
CHANNEL: BD9F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 1 FORCE TOTAL

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



CHANNEL: LCBGIF FILTER: CH. CLASS 60

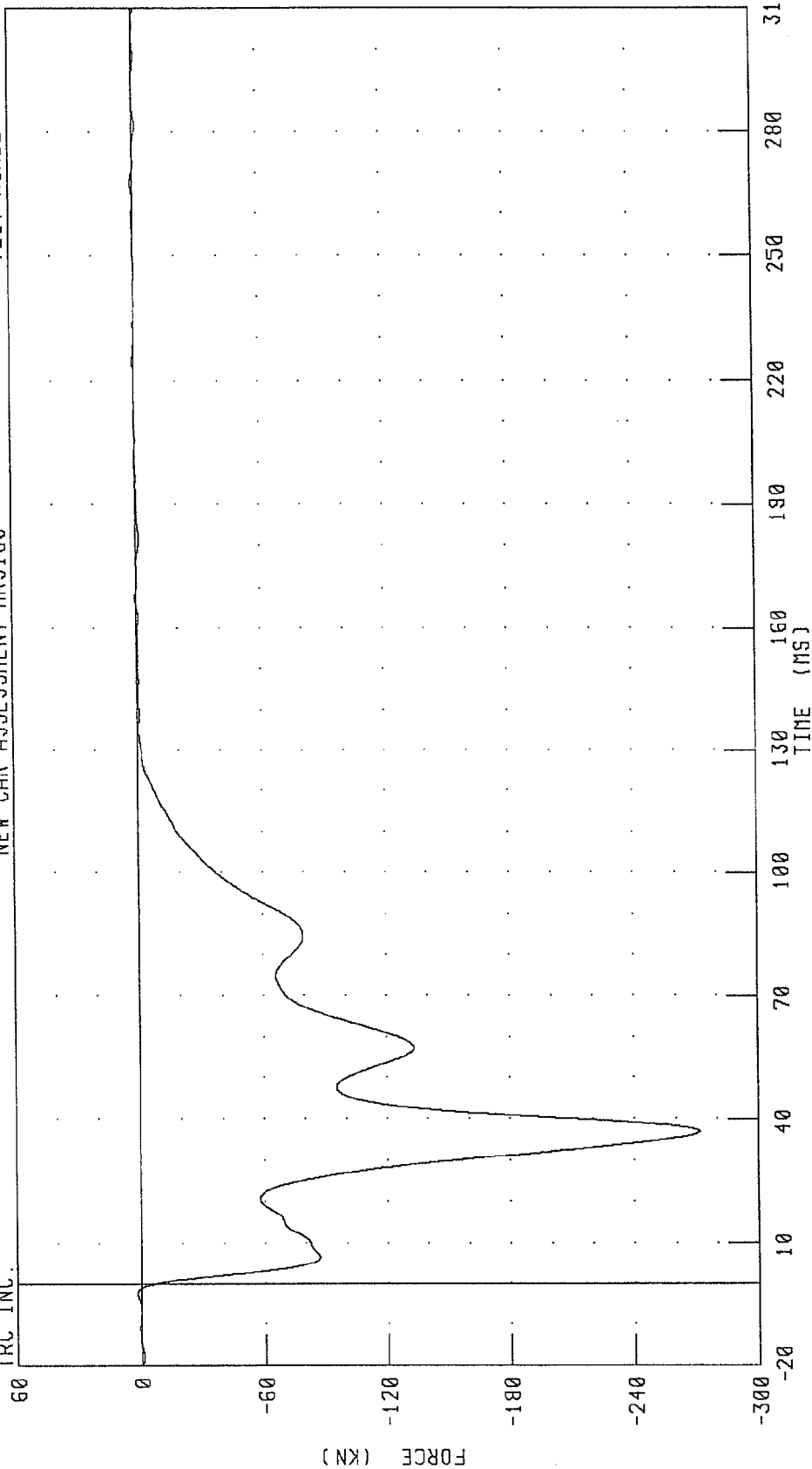
PEAK DATA: 1.41 KN @ 0.88 MS; -130.16 KN @ 19.20 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 2 FORCE TOTAL

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.



PEAK DATA: 1.98 KN @ -2.56 MS; -271.68 KN @ 37.12 MS

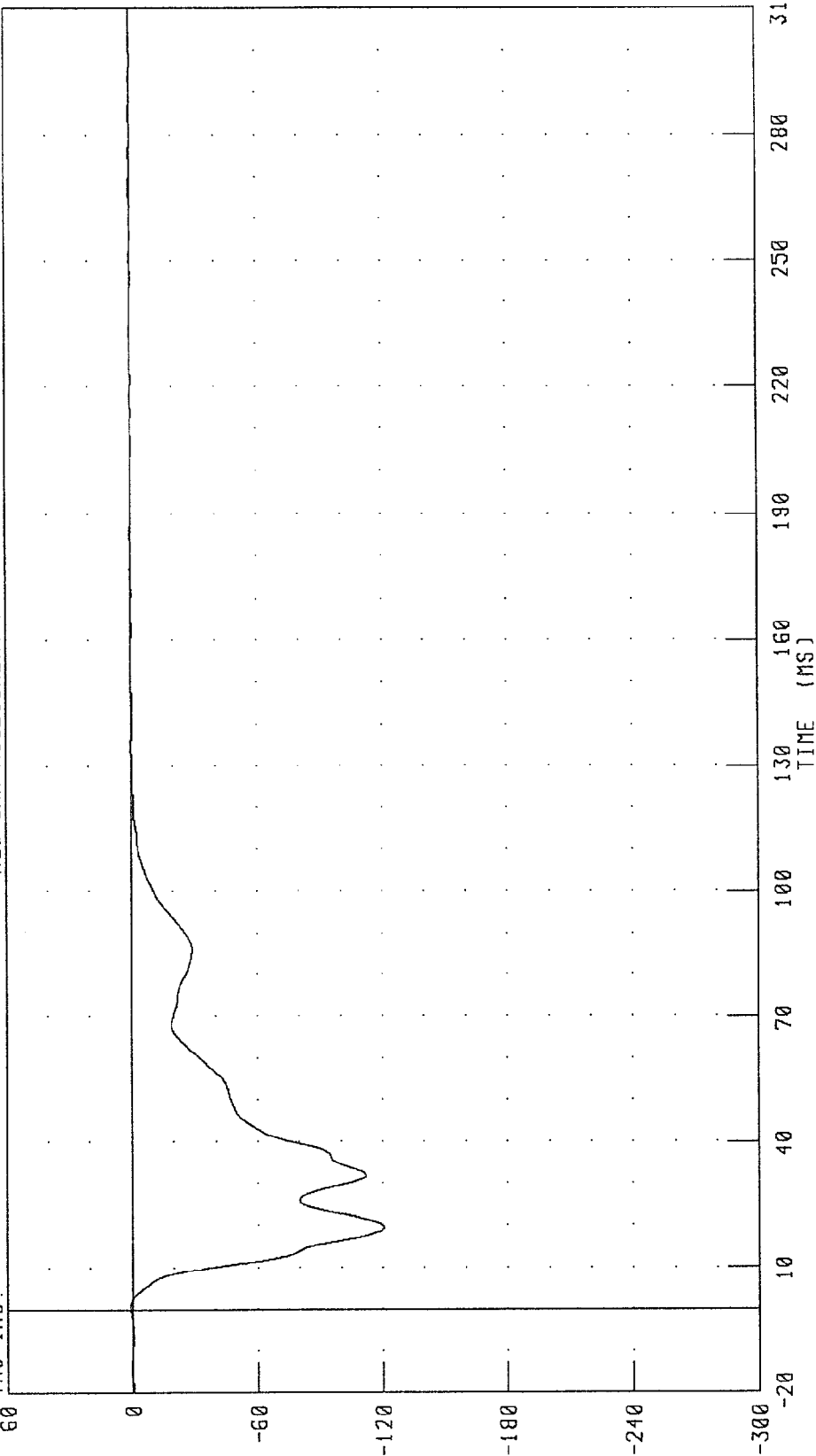
CHANNEL: LCBG2F FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 3 FORCE TOTAL
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.

FORCE (KN)



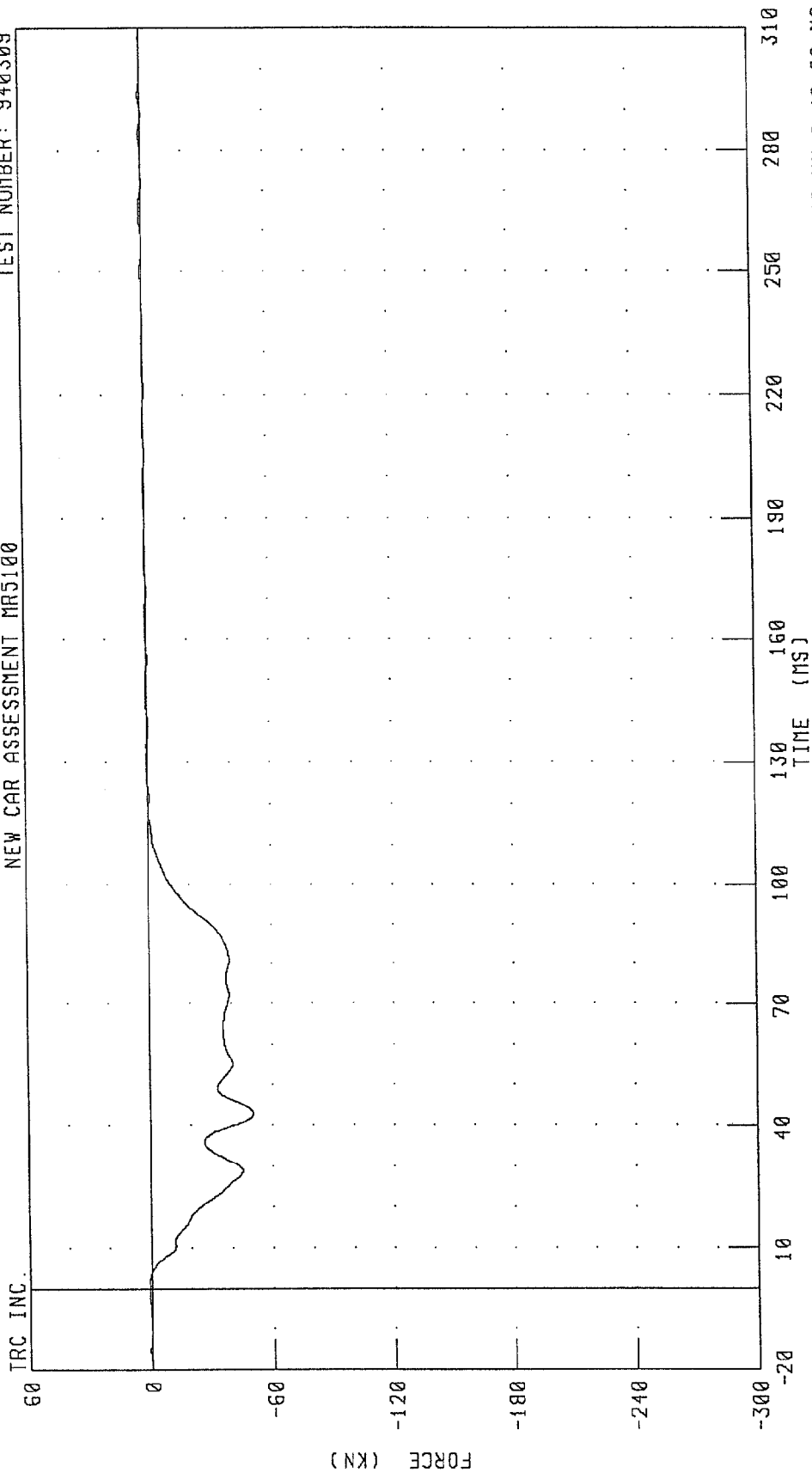
CHANNEL: LCBG3F FILTER: CH. CLASS 60

PEAK DATA: 0.86 KN @ 0.48 MS; -120.52 KN @ 19.52 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 4 FORCE TOTAL

NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



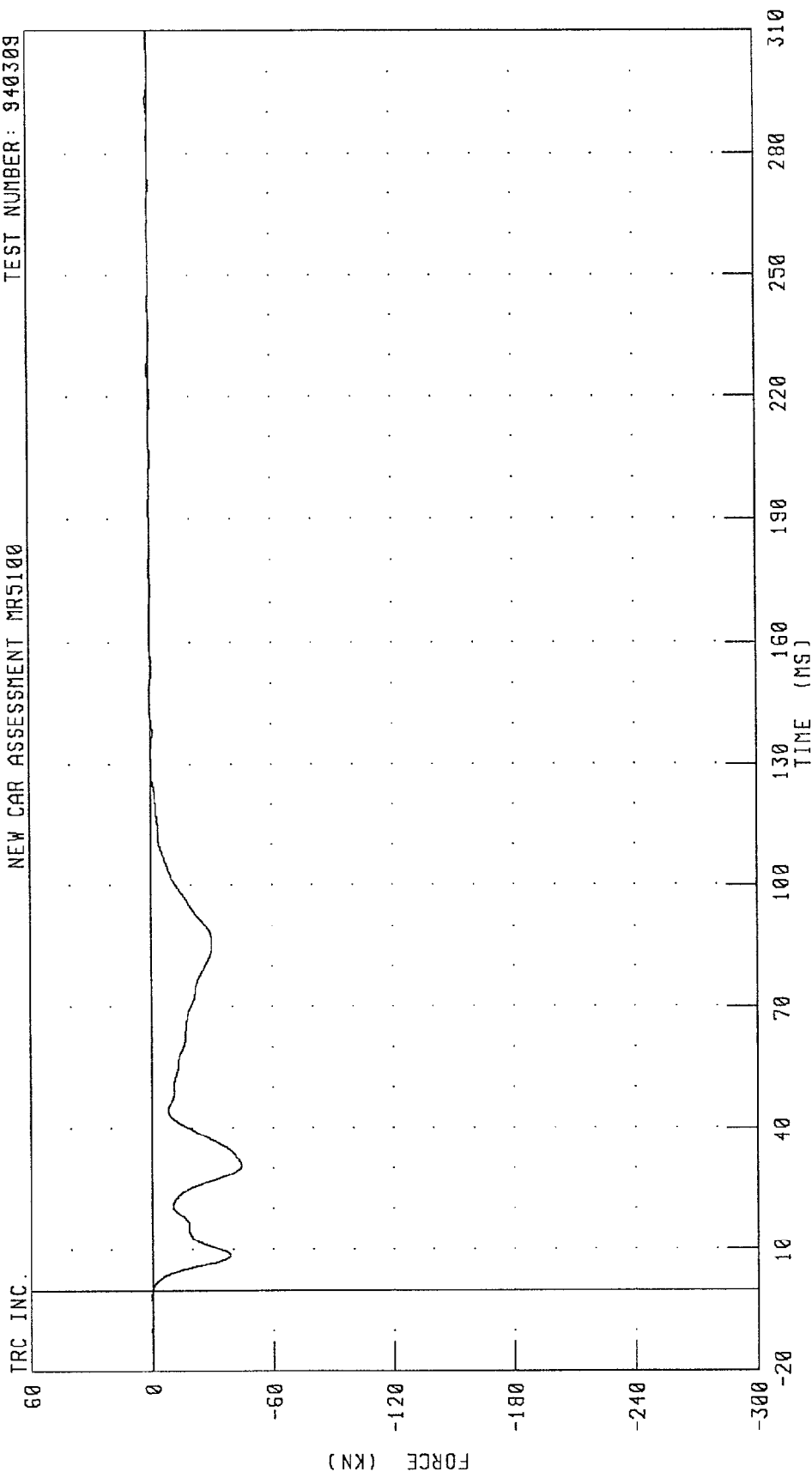
CHANNEL: LCBG4F FILTER: CH. CLASS 60

PEAK DATA: 1.08 KN @ 0.32 MS; -50.40 KN @ 42.96 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 5 FORCE TOTAL

NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309



CHANNEL: LCBG5F FILTER: CH. CLASS 60

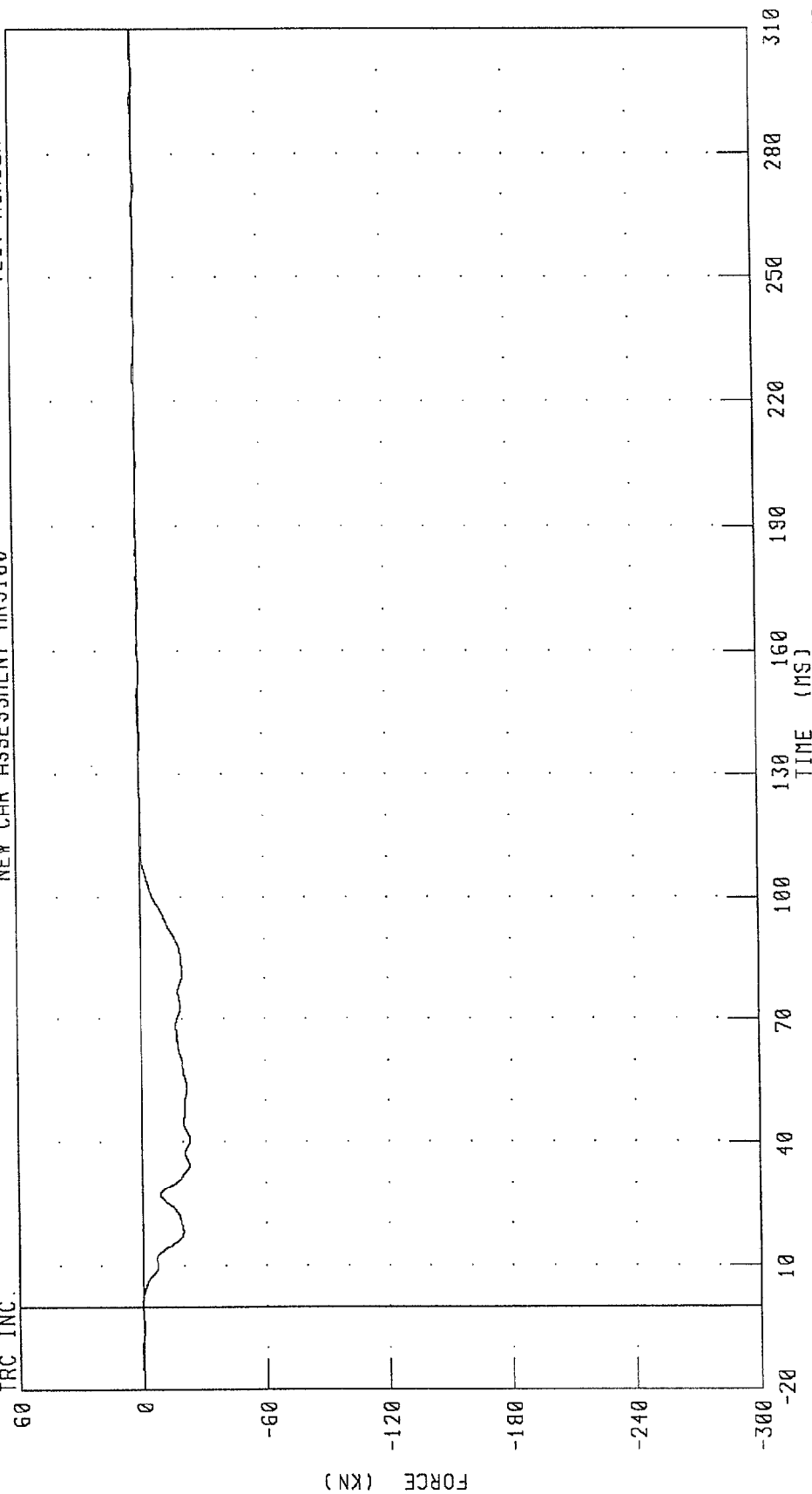
PEAK DATA: 0.86 KN @ 226.72 MS; -44.43 KN @ 30.80 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 6 FORCE TOTAL

TEST NUMBER: 940309

NEW CAR ASSESSMENT MR5100

TRC INC.

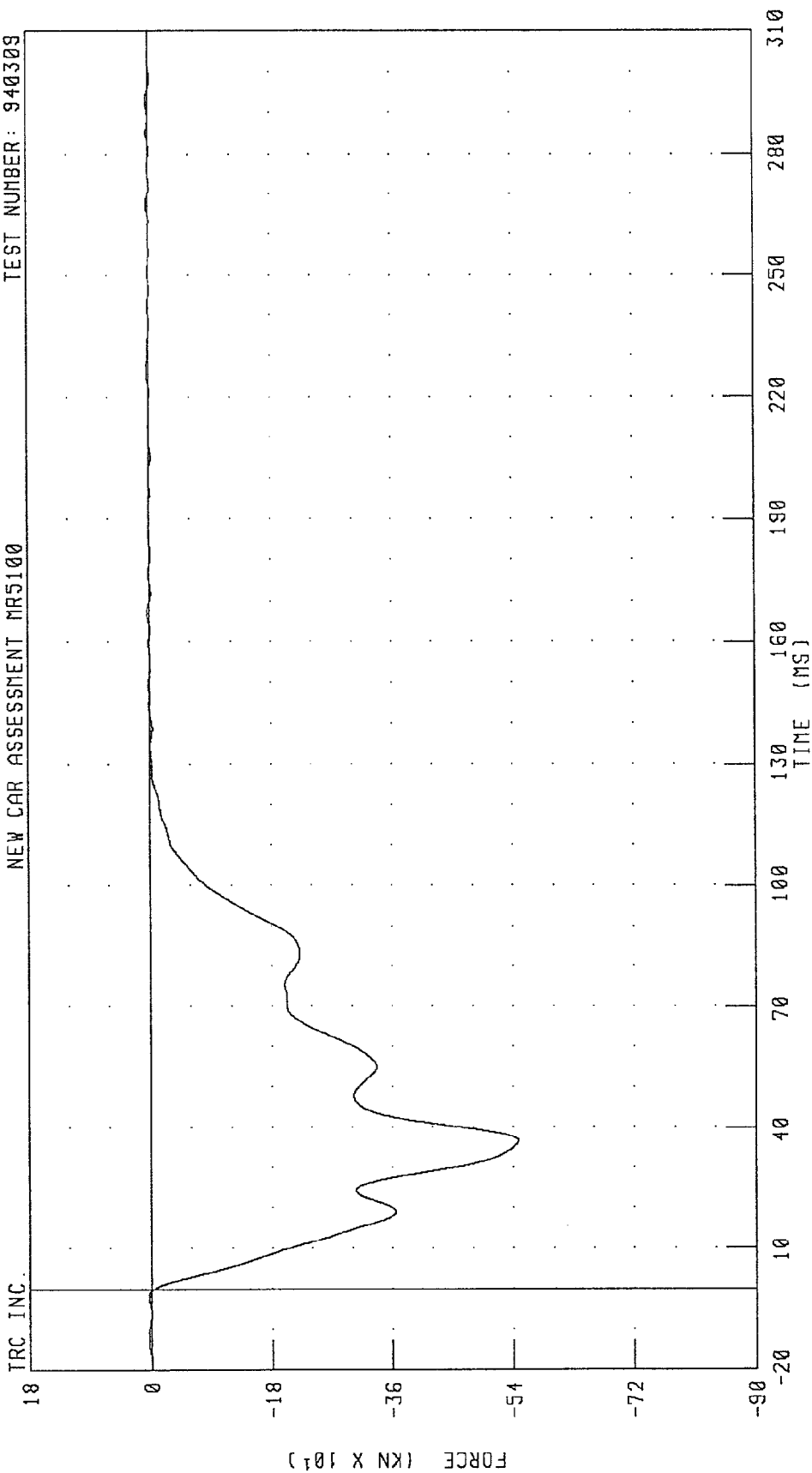


CHANNEL: LCBG6F FILTER: CH. CLASS 60

PEAK DATA: 1.12 KN @ 226.88 MS; -23.11 KN @ 40.80 MS

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 TOTAL LOAD CELL BARRIER FORCE
 NEW CAR ASSESSMENT NR5100

TEST NUMBER: 940309



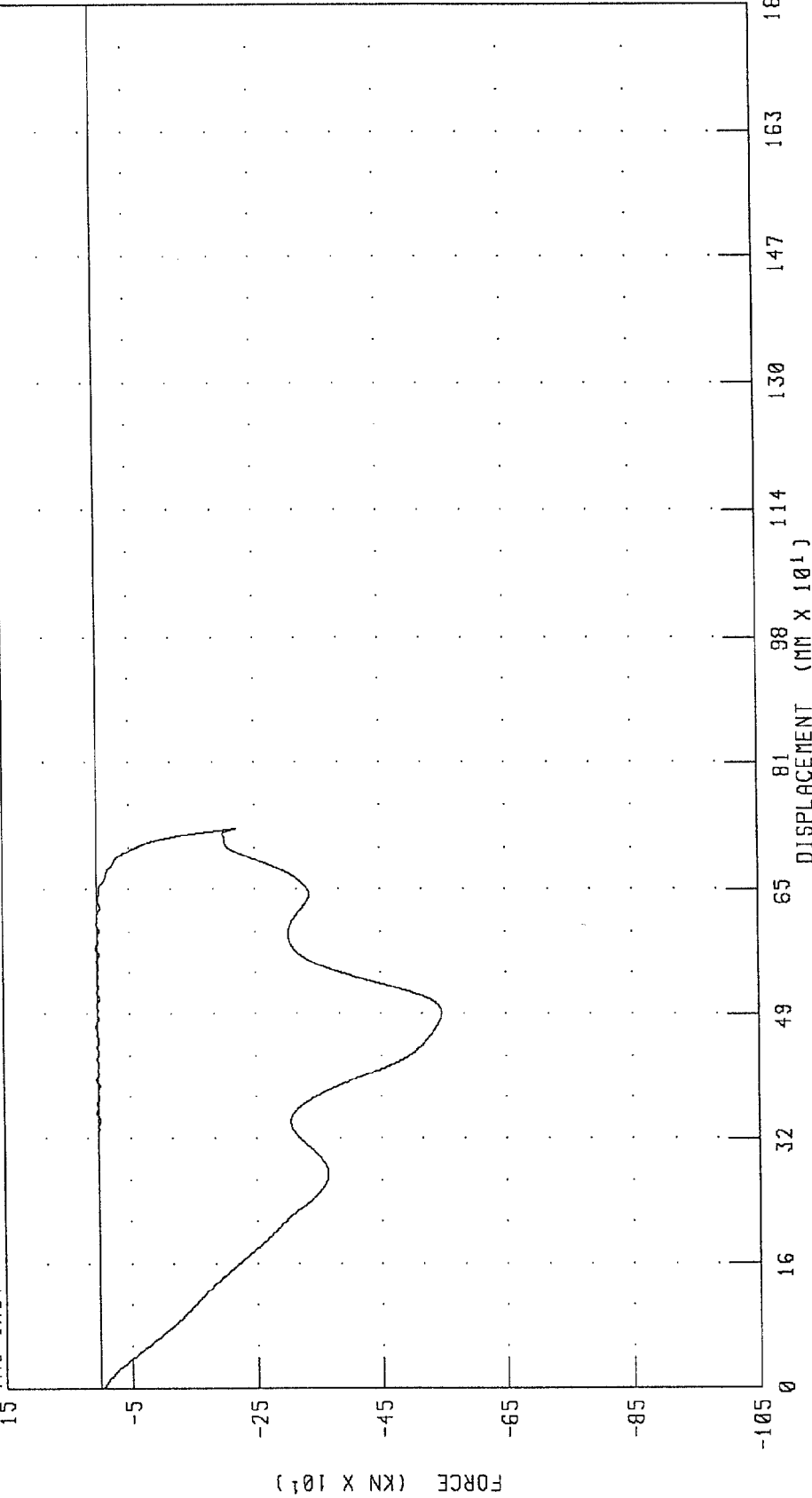
PEAK DATA: 3.53 KN @ 293.12 MS; -547.61 KN @ 36.64 MS

CHANNEL: LCBGT FILTER: CH. CLASS 60

1994 TOYOTA CAMRY INTO FRONTAL LOAD CELL BARRIER
 TOTAL LOAD CELL BARRIER FORCE VS AVERAGE VEHICLE X-AXIS DISPLACEMENT
 NEW CAR ASSESSMENT MR5100

TEST NUMBER: 940309

TRC INC.



PEAK DATA: 734.71 MM @ 83.84 MS;
 3.53 KN @ 293.12 MS; -547.61 KN @ 36.64 MS

CHANNEL: OTHXD FILTER: CH. CLASS 180
 LCBGT CH. CLASS 60

APPENDIX C

DUMMY CERTIFICATION DATA

PRE-TEST CERTIFICATION DATA

DRIVER DUMMY S/N: 192

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS

192 ALDERSON

04-FEB-94

TRC INC. TEST NO: 192C18ED1 572E SN192 EXT.DIMENSION CAL18

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
LOCATION FOR CHEST CIRCUMFERENCE (AA)		429 - 434 MM	432. MM
LOCATION FOR WAIST CIRCUMFERENCE (BB)		226 - 231 MM	229. MM
CHEST CIRCUMFERENCE (Y)		970 -1001 MM	980. MM
WAIST CIRCUMFERENCE (Z)		836 - 866 MM	848. MM
CHEST DEPTH (O)		213 - 229 MM	218. MM
H-POINT HEIGHT (C)		84 - 89 MM	84. MM
H-POINT FROM SEATBACK (D)		135 - 140 MM	136. MM
SKULL CAP TO BACKLINE (H)		41 - 46 MM	43. MM
TOTAL SITTING HEIGHT (A)		879 - 889 MM	884. MM
THIGH CLEARANCE (F)		140 - 155 MM	147. MM
BUTTOCK KNEE LENGTH (K)		579 - 605 MM	602. MM
BUTTOCK POPLITEAL LENGTH (N)		452 - 478 MM	472. MM
POPLITEAL HEIGHT (L)		429 - 455 MM	450. MM
KNEE PIVOT HEIGHT (M)		485 - 500 MM	493. MM
FOOT LENGTH (P)		252 - 267 MM	259. MM
FOOT BREADTH (W)		91 - 107 MM	102. MM
SHOULDER PIVOT FROM BACKLINE (E)		84 - 94 MM	91. MM
SHOULDER BREADTH (V)		422 - 437 MM	427. MM
SHOULDER PIVOT HEIGHT (B)		506 - 521 MM	513. MM
ELBOW REST HEIGHT (J)		191 - 211 MM	206. MM
SHOULDER-ELBOW LENGTH (I)		330 - 345 MM	340. MM
BACK OF ELBOW TO WRIST PIVOT (G)		290 - 305 MM	295. MM

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Pete F. J.

RUN NUMBER: 020794.1243

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III

04-FEB-94

TRC INC.

TEST NO: 192C18HD1

572E SN192 HEAD DROP CAL 18

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	55.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	258.06 G
PEAK LATERAL ACCELERATION	15 G MAX	-2.47 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Felt

RUN NUMBER: 040194.1539;2

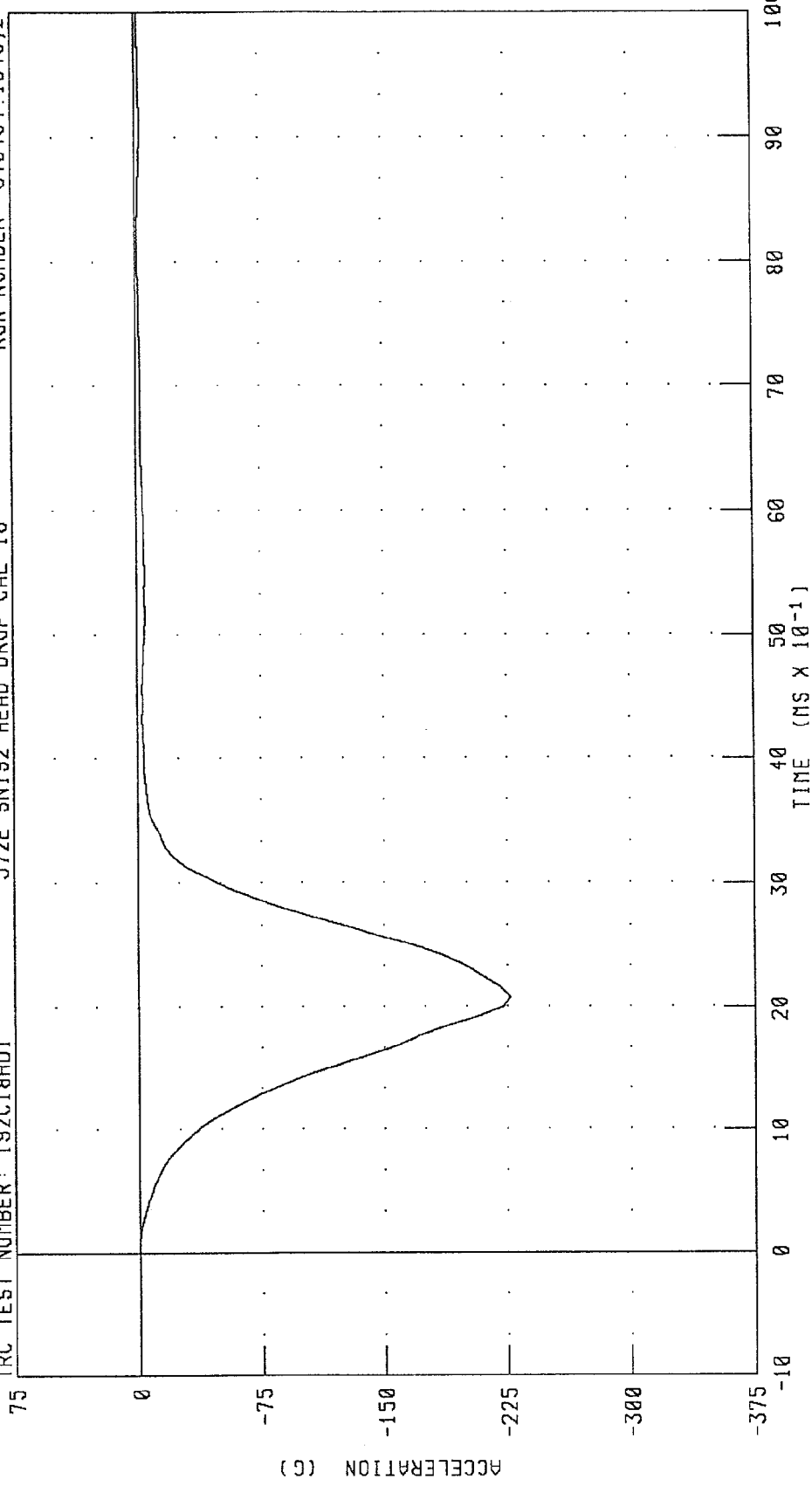
PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

572E SN192 HEAD DROP CAL 18

RUN NUMBER: 040494.1045;2

TRC TEST NUMBER: 192C18HD1



CHANNEL: HEDXG FILTER: CH. CLASS 1000

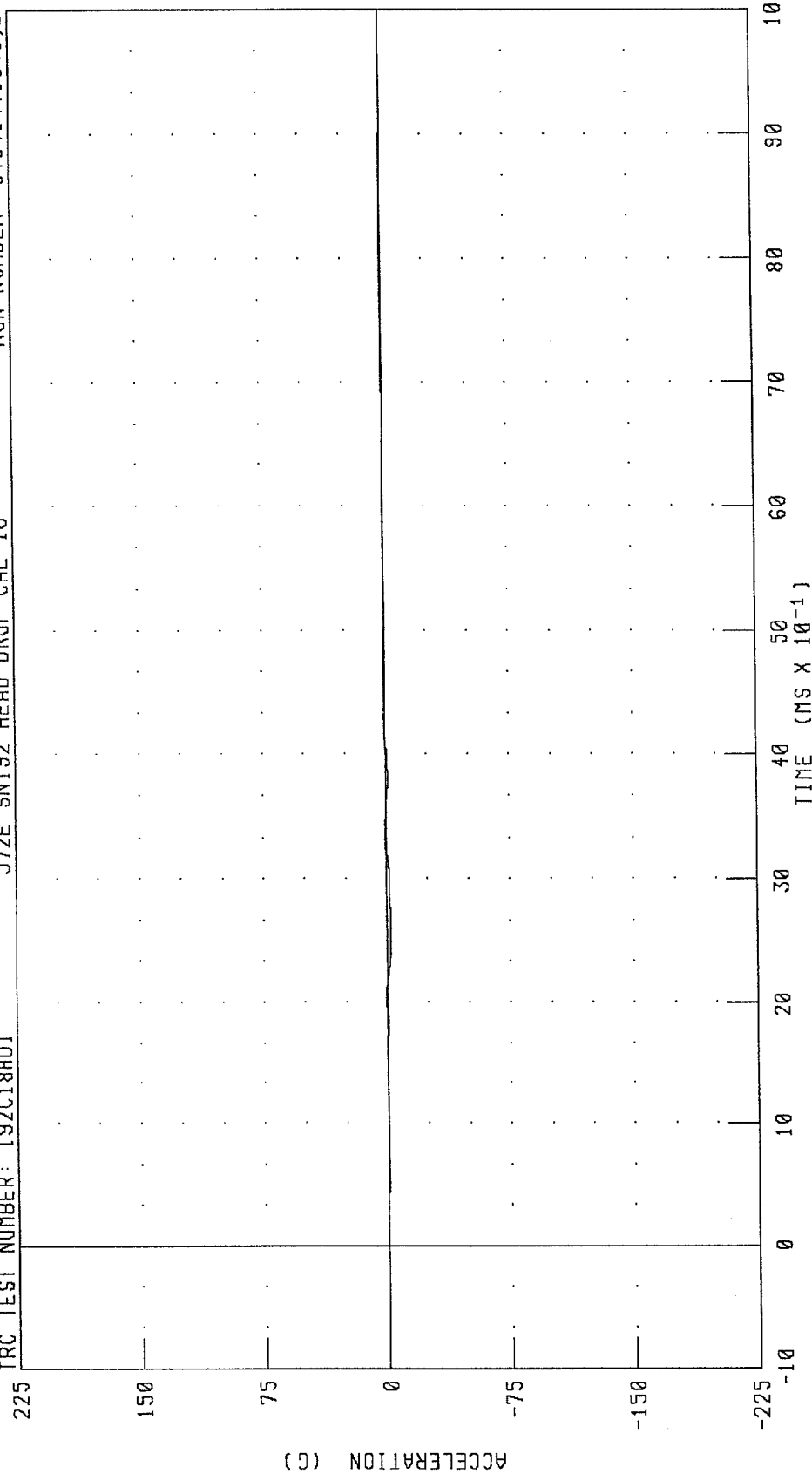
PEAK DATA: 0.00 G @ -0.56 MS; -226.74 G @ 2.08 MS

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Y AXIS

RUN NUMBER: 040494.1045;2

TRC TEST NUMBER: 192C18HD1

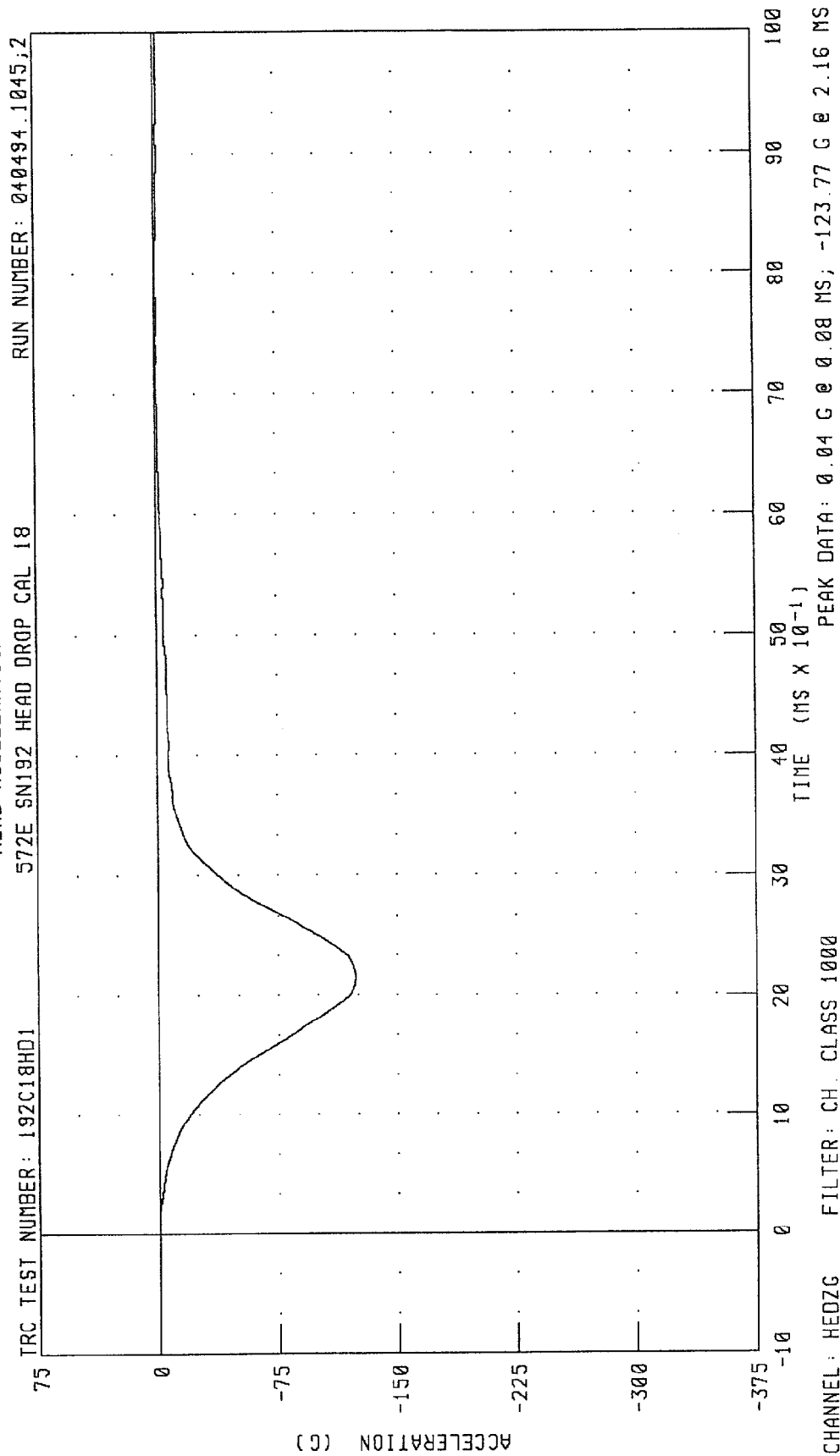
572E SN192 HEAD DROP CAL 18



PEAK DATA: 1.04 G @ 4.32 MS; -2.47 G @ 2.64 MS

CHANNEL: HEDYG FILTER: CH. CLASS 1000

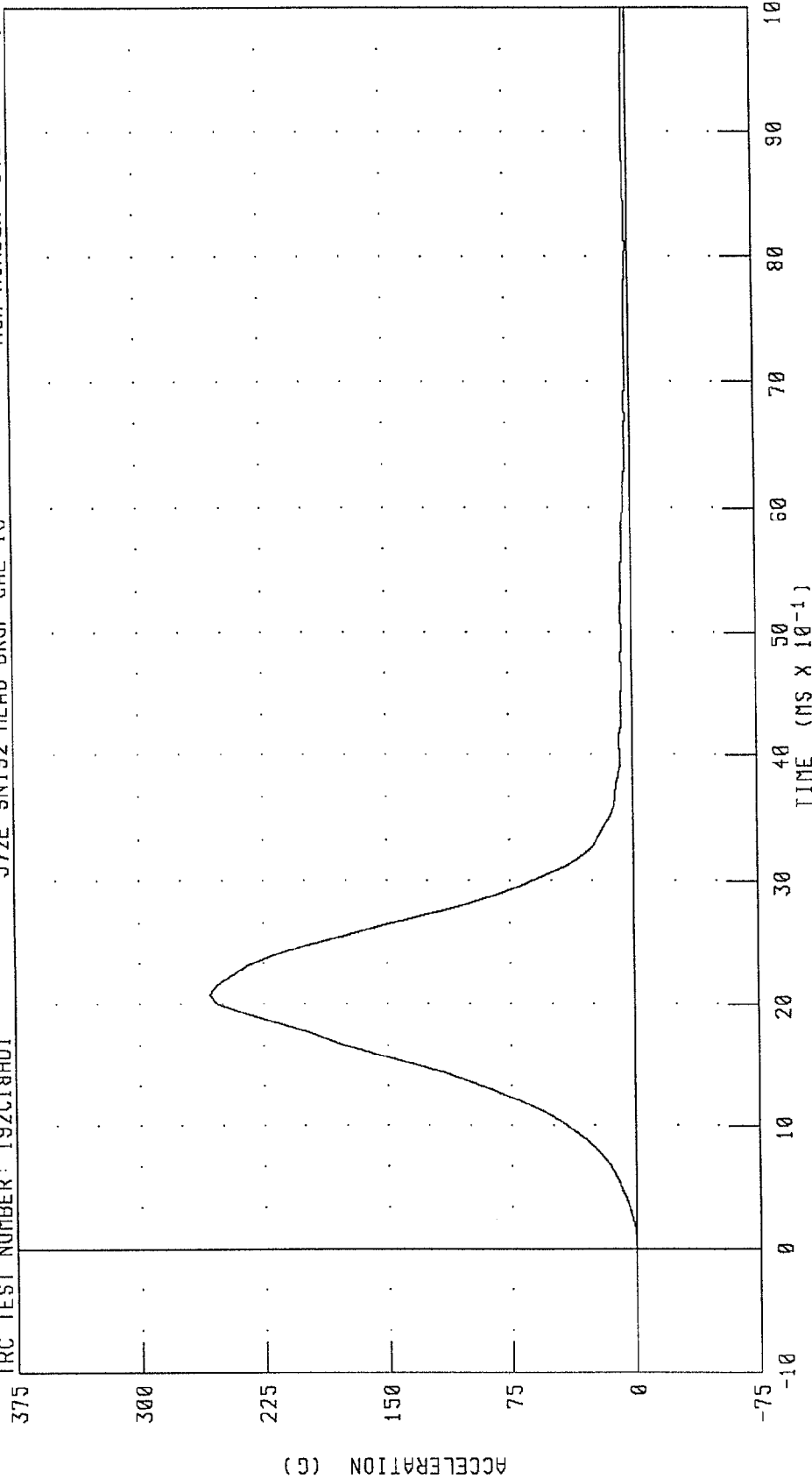
PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS



PART 572-E HYBRID III HEAD CALIBRATION
 HEAD RESULTANT ACCELERATION
 572E SN192 HEAD DROP CAL 18

RUN NUMBER: 040494.1045;2

TRC TEST NUMBER: 192C18HD1



PEAK DATA: 258.06 G @ 2.08 MS; 0.01 G @ -0.56 MS

CHANNEL: HEDRG FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

04-FEB-94

TRC INC. TEST NO: 192C18NF1 572E SN192 NECK FLEXION CAL18

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	55.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.06 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.41 G
	20 MS	17.60 - 22.60 G	19.83 G
	30 MS	12.50 - 18.50 G	16.21 G
MAX PENDULUM G		29 G MAX	24.41 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	16.19 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	39.28 MS
D PLANE	MAX	64 - 78 DEG.	65.32 DEG.
ROTATION	TIME	57 - 64 MS	59.92 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	88.35 NM
	TIME	47 - 58 MS	51.28 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	103.60 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN

Pete Fout

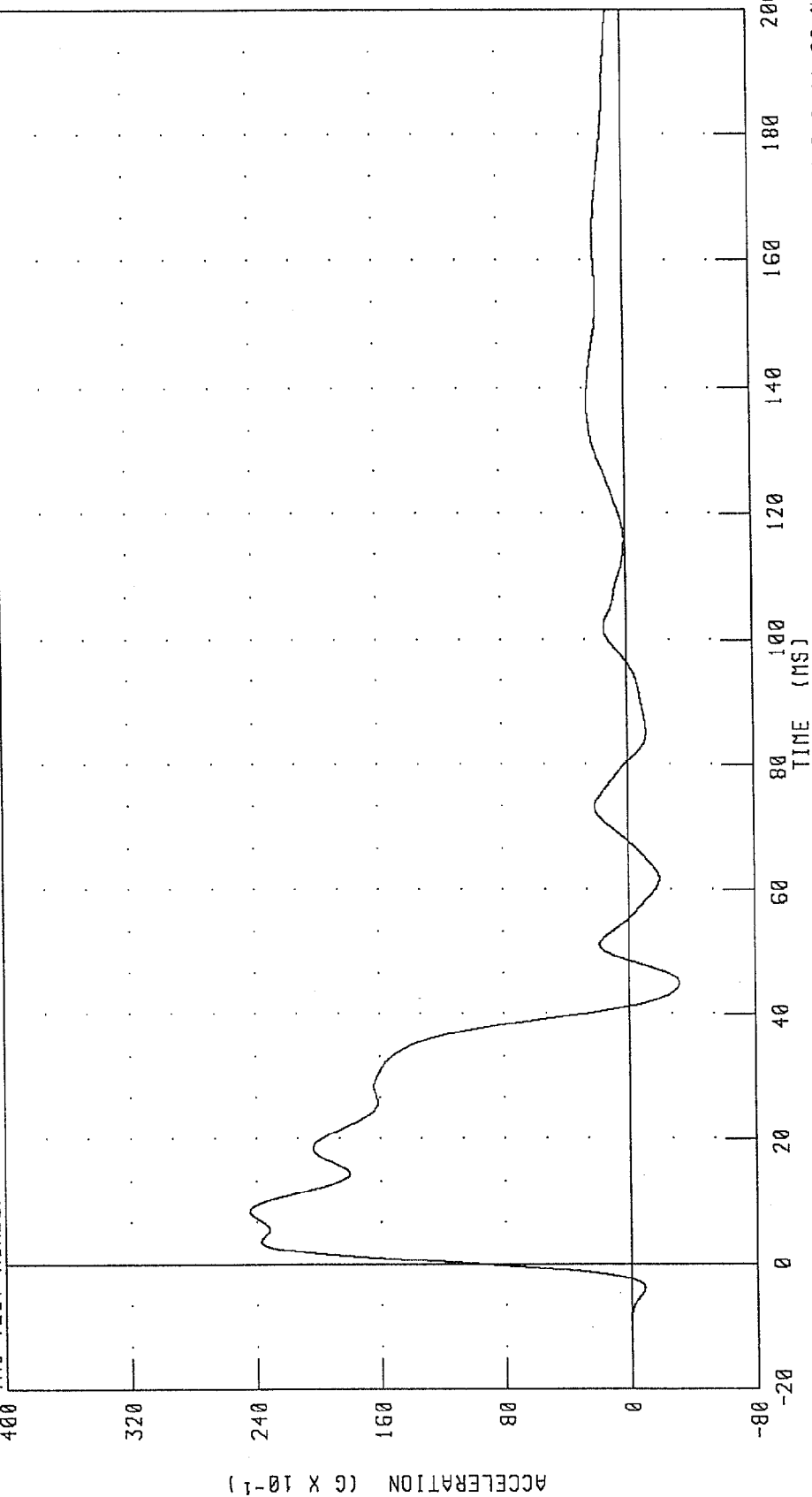
RUN NUMBER: 020494.1338;1

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 192C18NF1

572E SN192 NECK FLEXION CAL18

RUN NUMBER: 040494.1045.1



PEAK DATA: 24.41 G @ 8.48 MS; -3.15 G @ 44.88 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

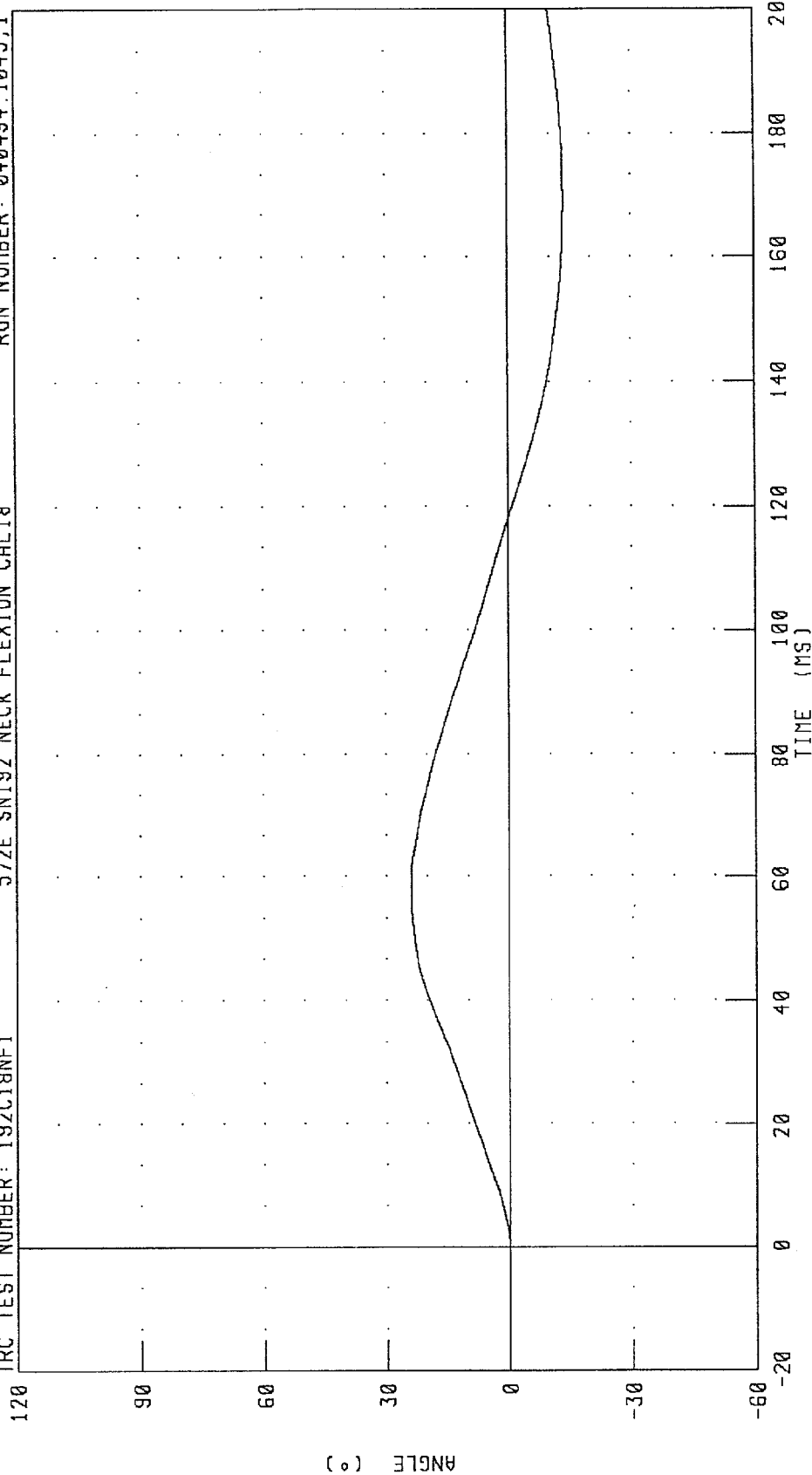
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 192C18NF1

572E SN192 NECK FLEXION CAL18

RUN NUMBER: 040494.1045;1



CHANNEL: BETA FILTER: CH. CLASS 60

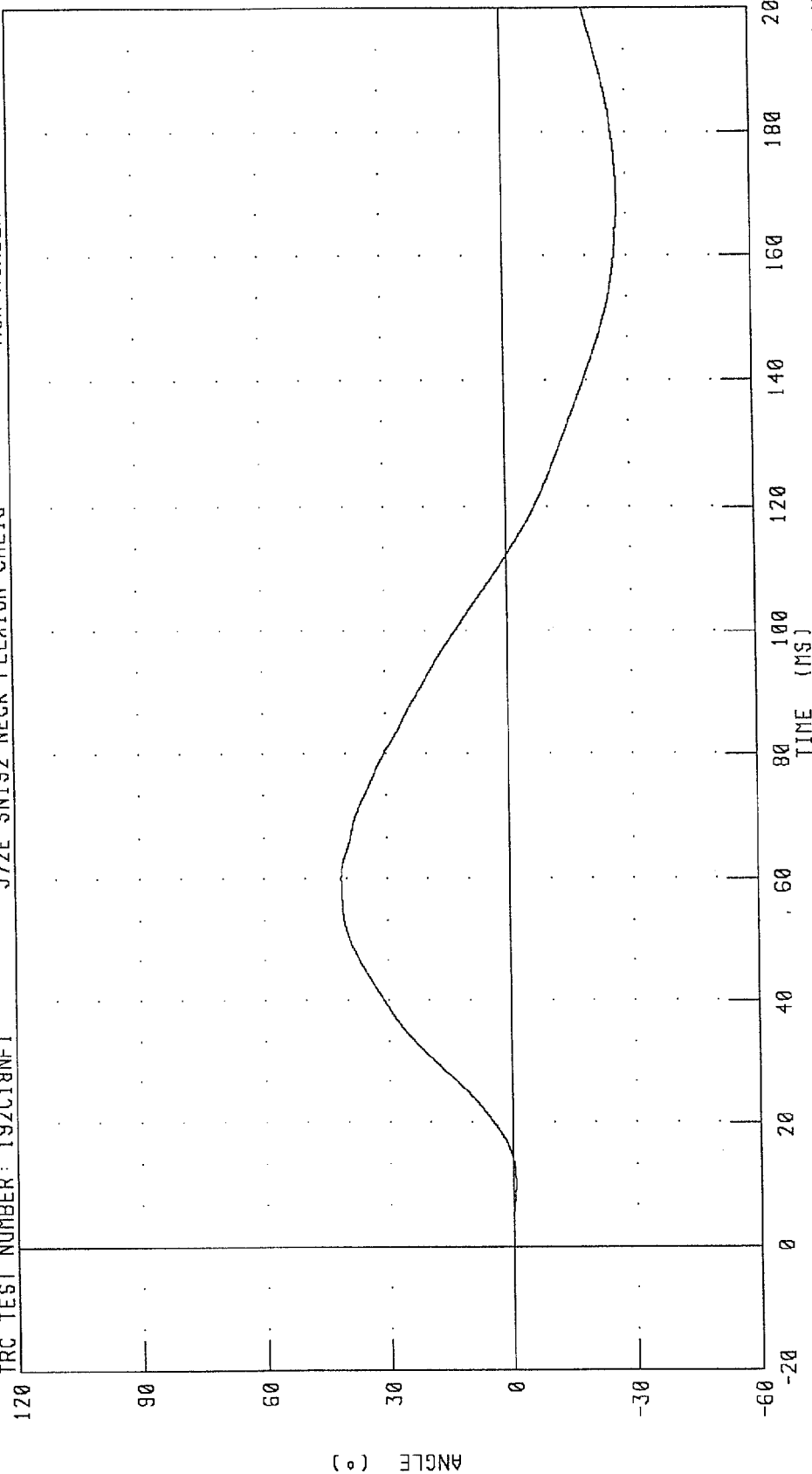
PEAK DATA: 24.00 ° @ 59.36 MS; -13.56 ° @ 168.88 MS

PART 572-E HYBRID 111 NECK FLEXION CALIBRATION
 ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 192C18NF1

572E SN192 NECK FLEXION CALIB

RUN NUMBER: 040494.1045,1

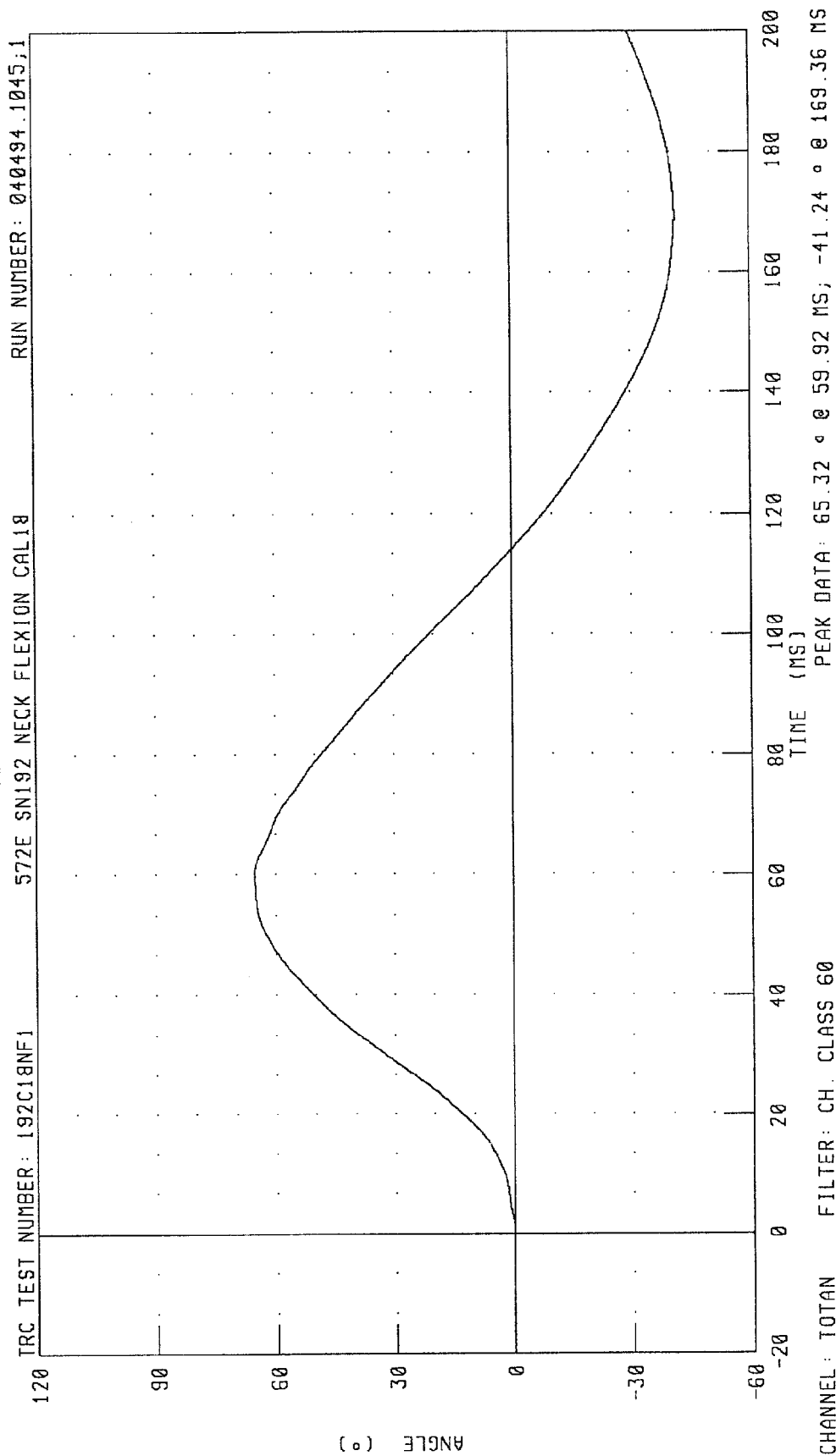


PEAK DATA: 41.33 ° @ 60.08 MS; -27.68 ° @ 169.44 MS

CHANNEL: THETA FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION



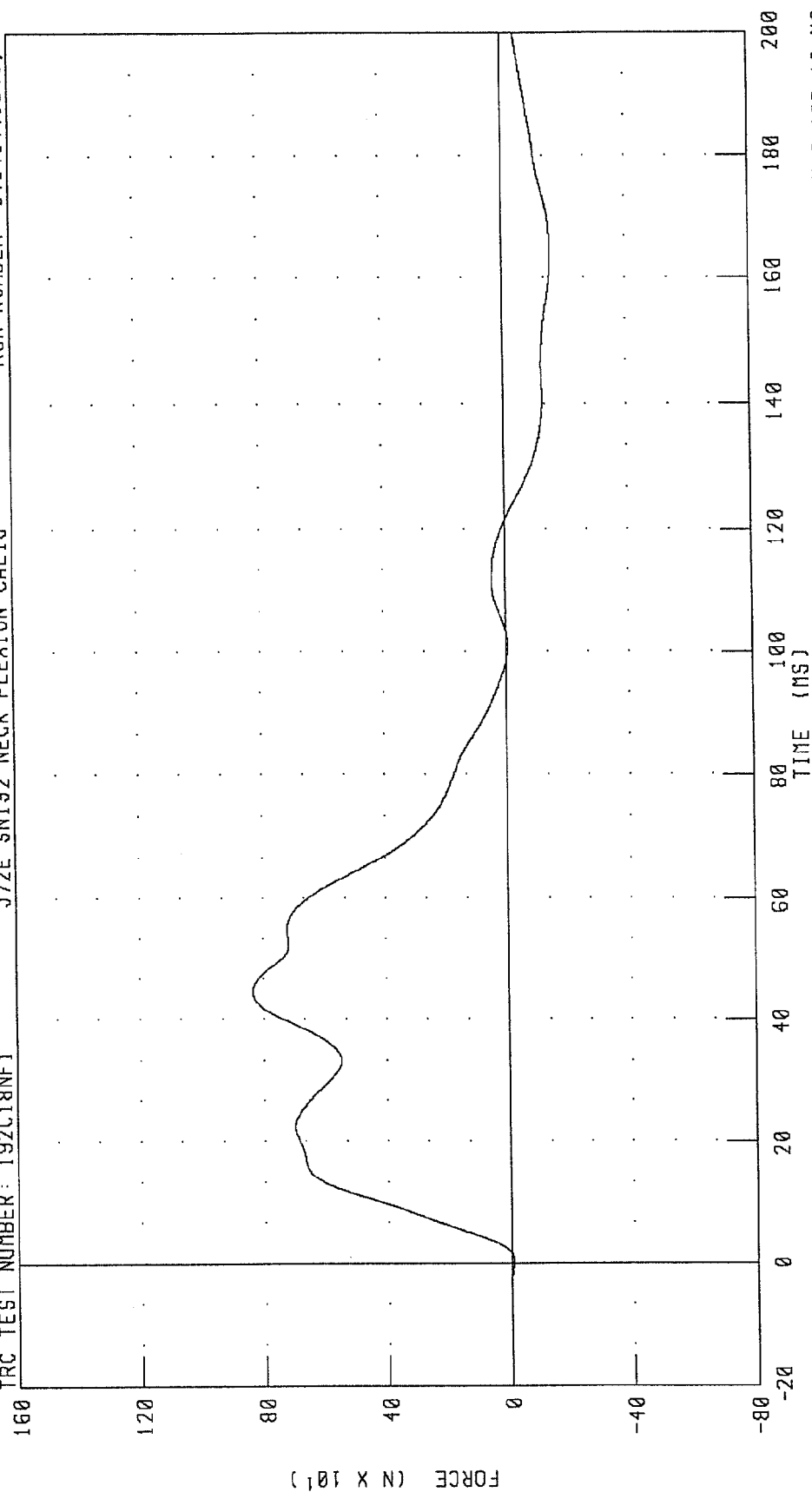
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 192C18NF1

572E SN192 NECK FLEXION CAL18

RUN NUMBER: 040494.1045.1

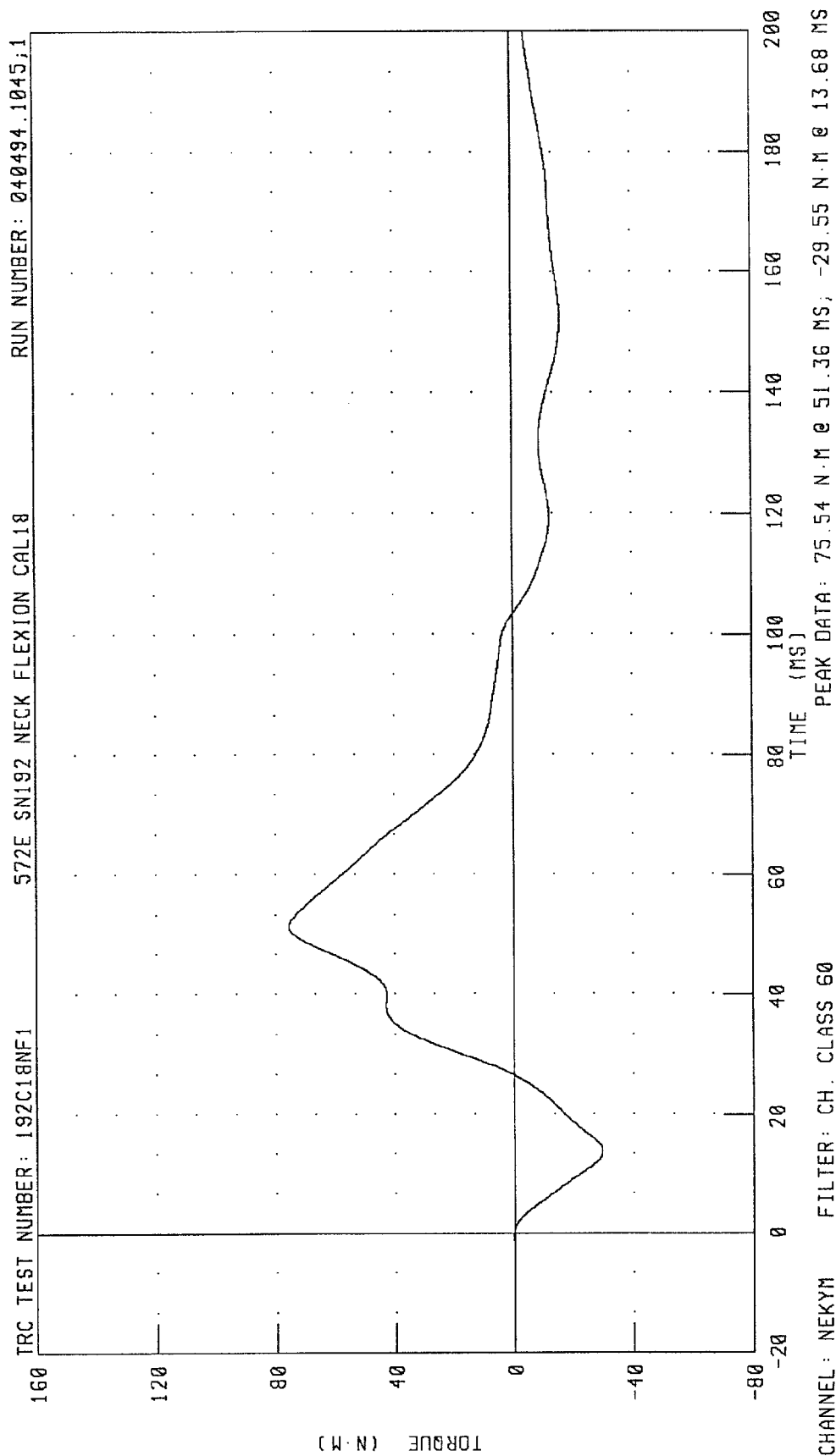


PEAK DATA: 834.14 N @ 44.48 MS; -156.21 N @ 163.12 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

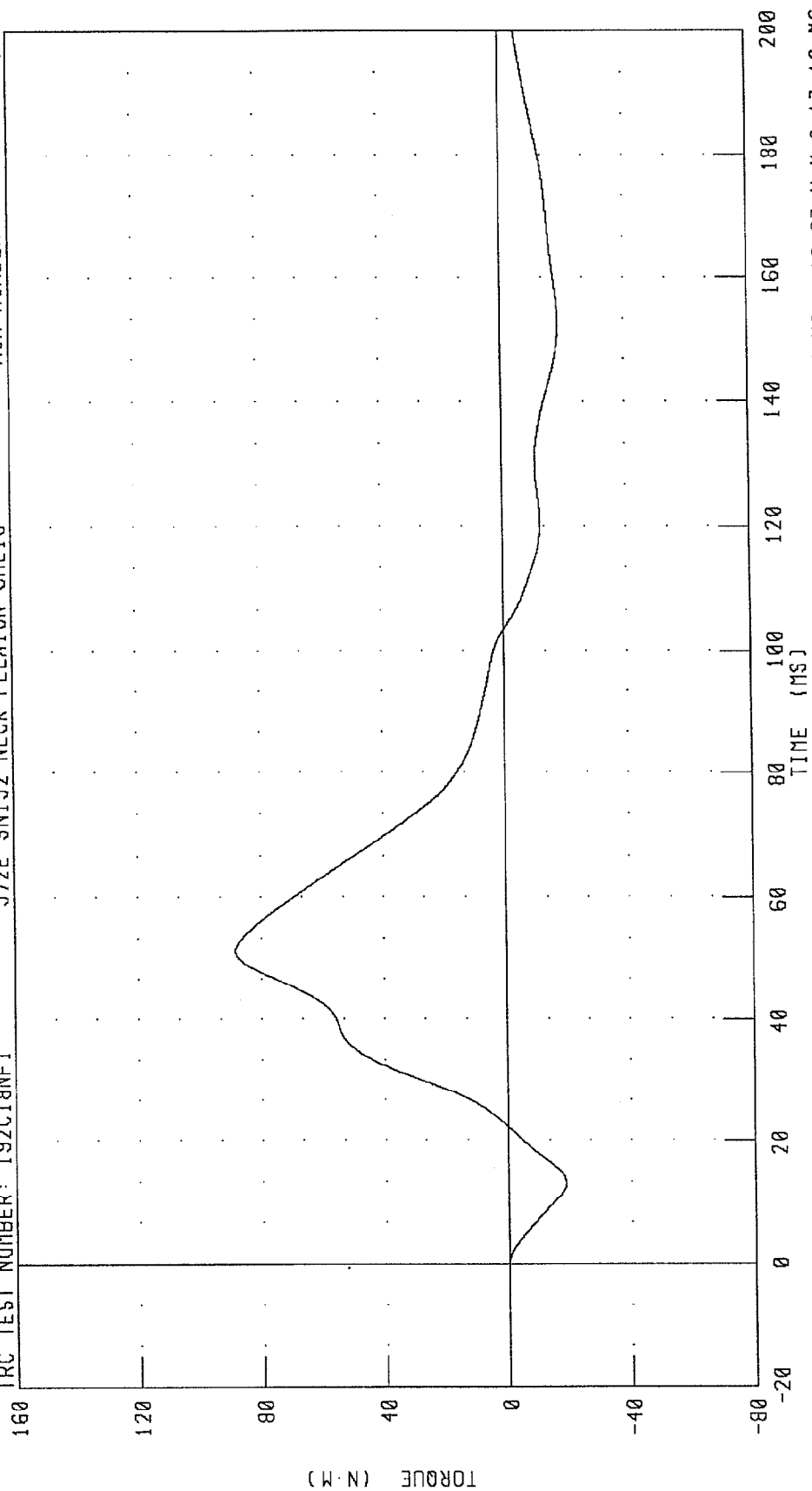


PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 192C18NF1

572E SN192 NECK FLEXION CAL18

RUN NUMBER: 040494.1045.1



PEAK DATA: 88.35 N.M @ 51.28 MS; -18.63 N.M @ 13.12 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

04-FEB-94

TRC INC. TEST NO: 192C18NE1 572E SN192 NECK EXT. CAL18

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	55.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.02 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	19.38 G
	20 MS	14.00 - 19.00 G	16.12 G
	30 MS	11.00 - 16.00 G	13.29 G
MAX PENDULUM G		22 G MAX	20.24 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	13.26 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	40.24 MS
D PLANE	MAX	81 - 106 DEG.	91.81 DEG.
ROTATION	TIME	72 - 82 MS	75.20 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-57.35 NM
	TIME	65 - 79 MS	70.48 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	157.12 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	138.16 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Fouts

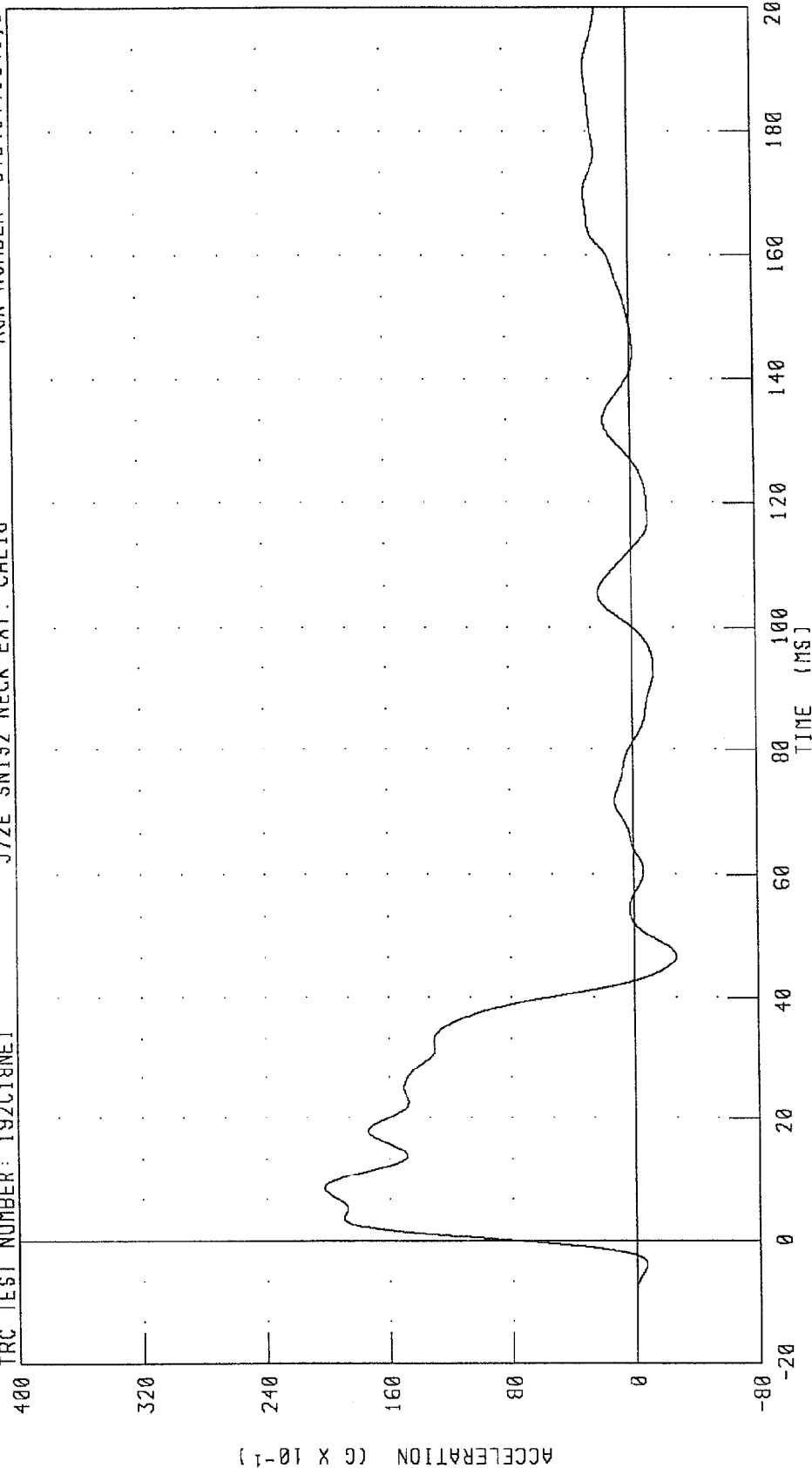
RUN NUMBER: 020494.1345;1

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 PENDULUM DECELERATION

RUN NUMBER: 040494.1045,1

572E SN192 NECK EXT. CAL18

TRC TEST NUMBER: 192C18NE1



PEAK DATA: 20.25 G @ 8.48 MS; -2.70 G @ 46.88 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

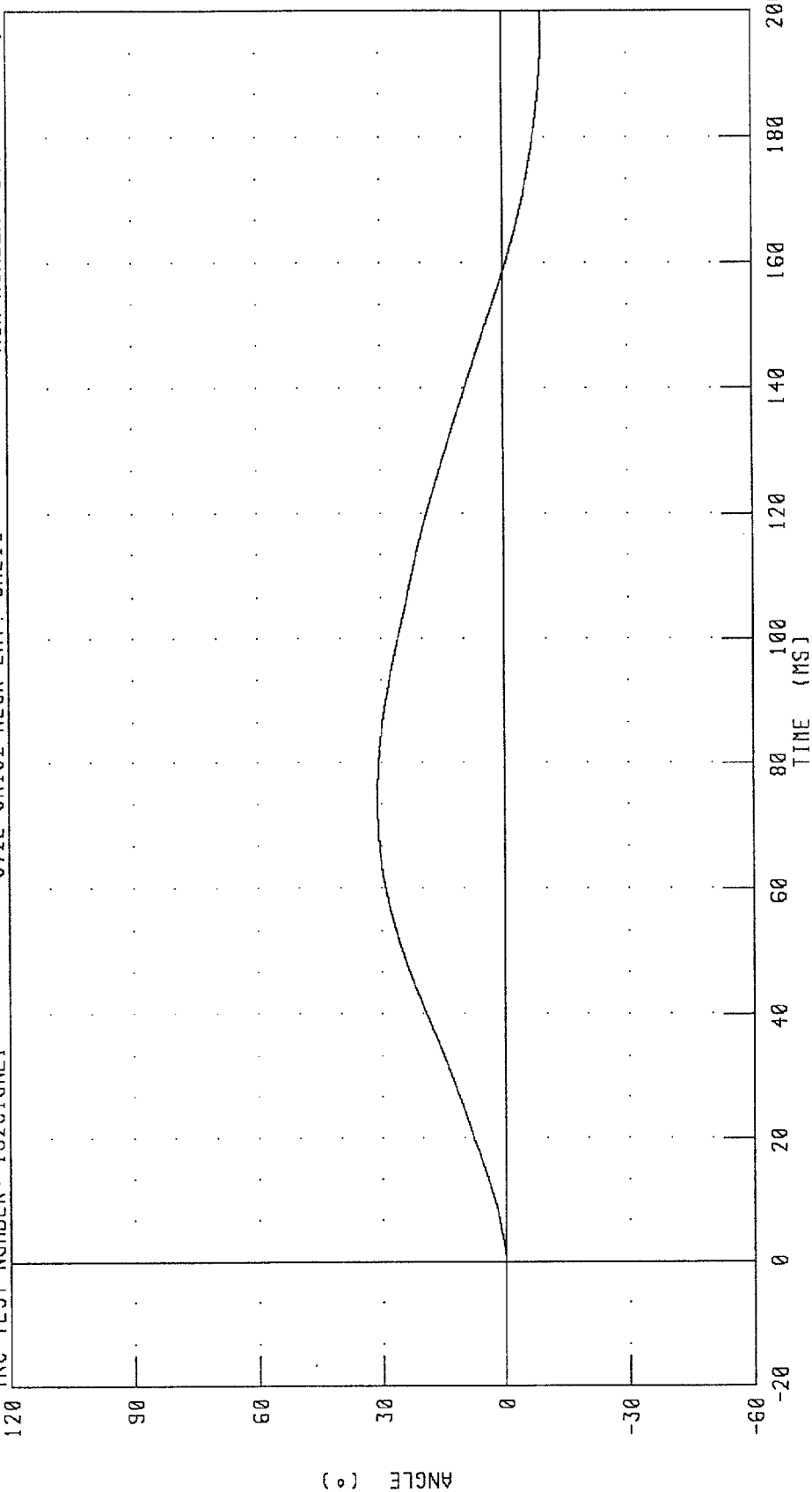
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN192 NECK EXT. CAL18

TRC TEST NUMBER: 192C18NE1

RUN NUMBER: 040494.1045;1



PEAK DATA: 30.97 ° @ 74.08 MS; -9.34 ° @ 196.72 MS

CHANNEL: BETA FILTER: CH. CLASS 60

ANGLE (°)

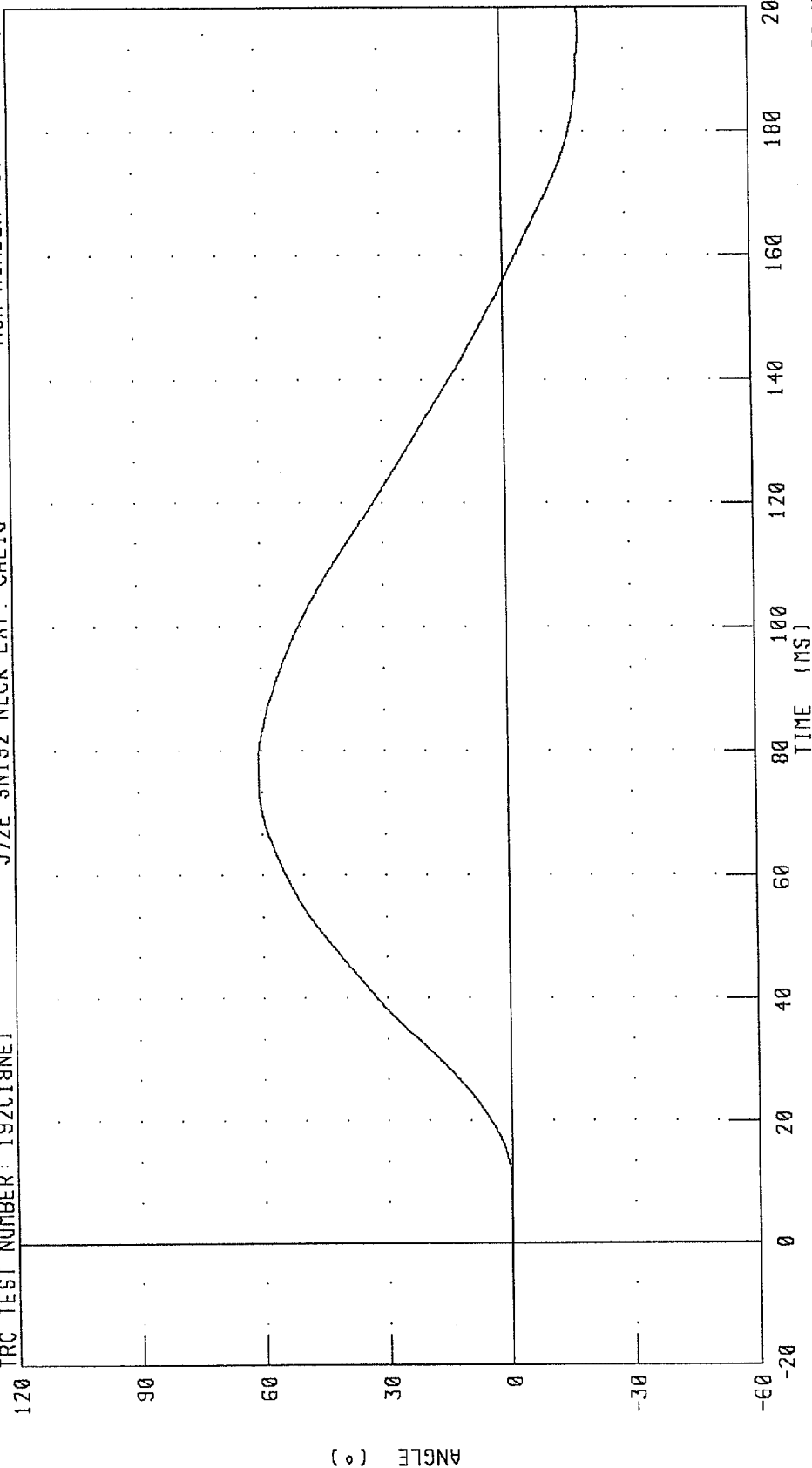
TIME (MS)

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

RUN NUMBER: 040494.1045;1

572E SN192 NECK EXT. CAL18

TRC TEST NUMBER: 192C18NE1



PEAK DATA: 60.85 ° @ 75.52 MS; -19.06 ° @ 196.80 MS

CHANNEL: THETA FILTER: CH. CLASS 60

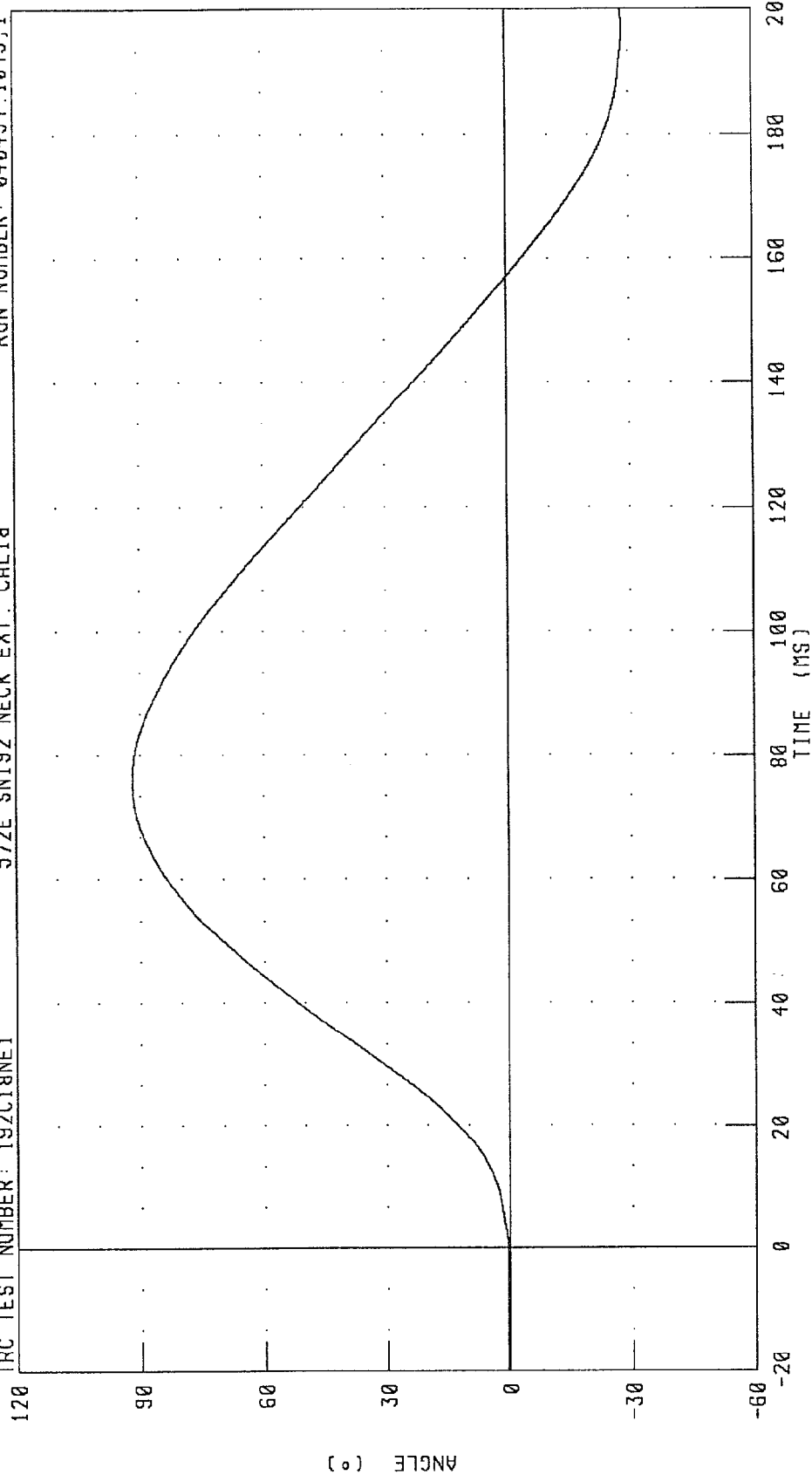
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 192C18NE1

572E SN192 NECK EXT. CAL18

RUN NUMBER: 040494.1045;1



CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 91.81 ° @ 75.20 MS; -28.39 ° @ 196.80 MS

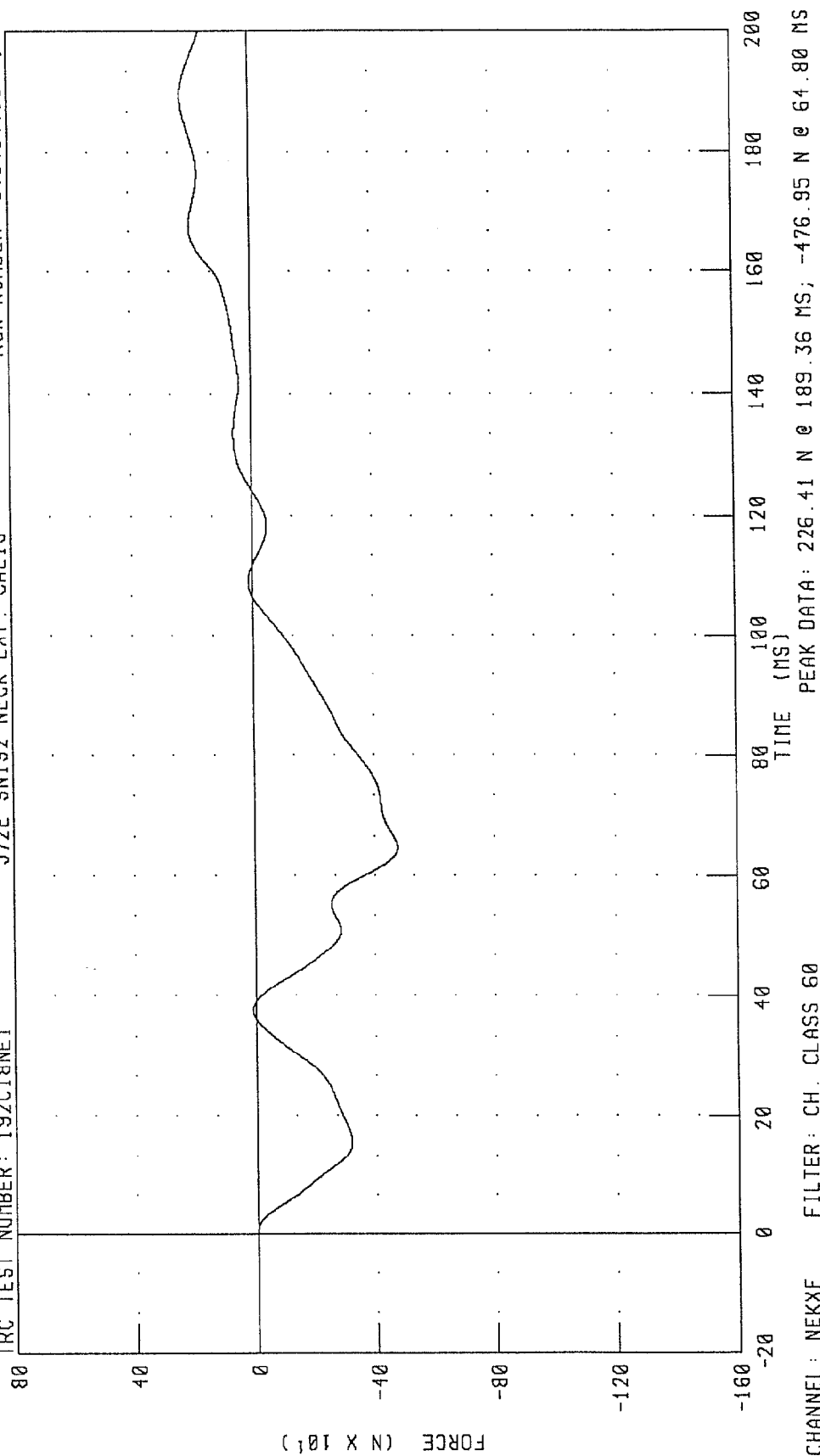
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 192C18NE1

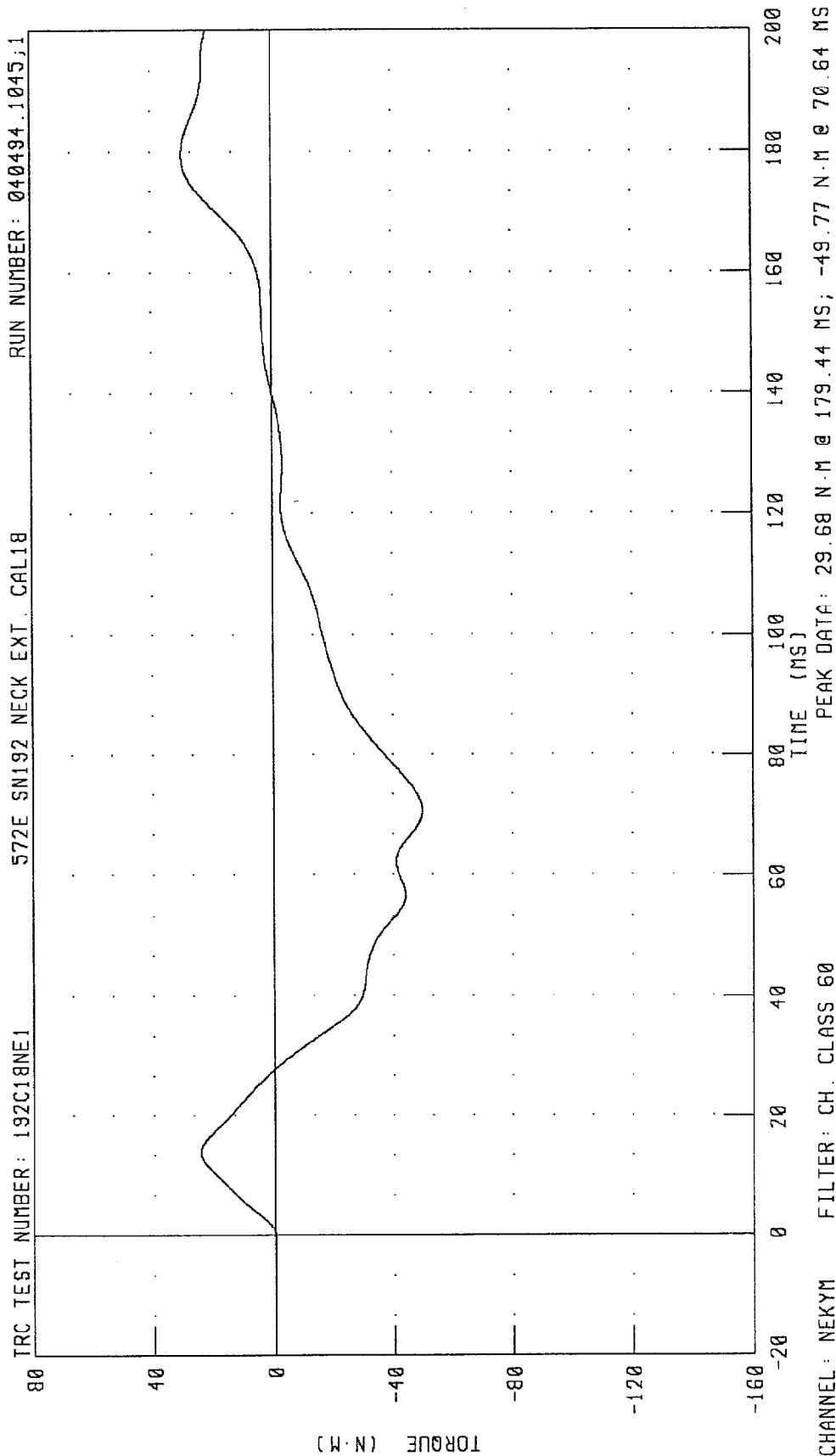
572E SN192 NECK EXT. CAL18

RUN NUMBER: 040494.1045.1



CHANNEL: NEKXF FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION NECK MOMENT Y AXIS

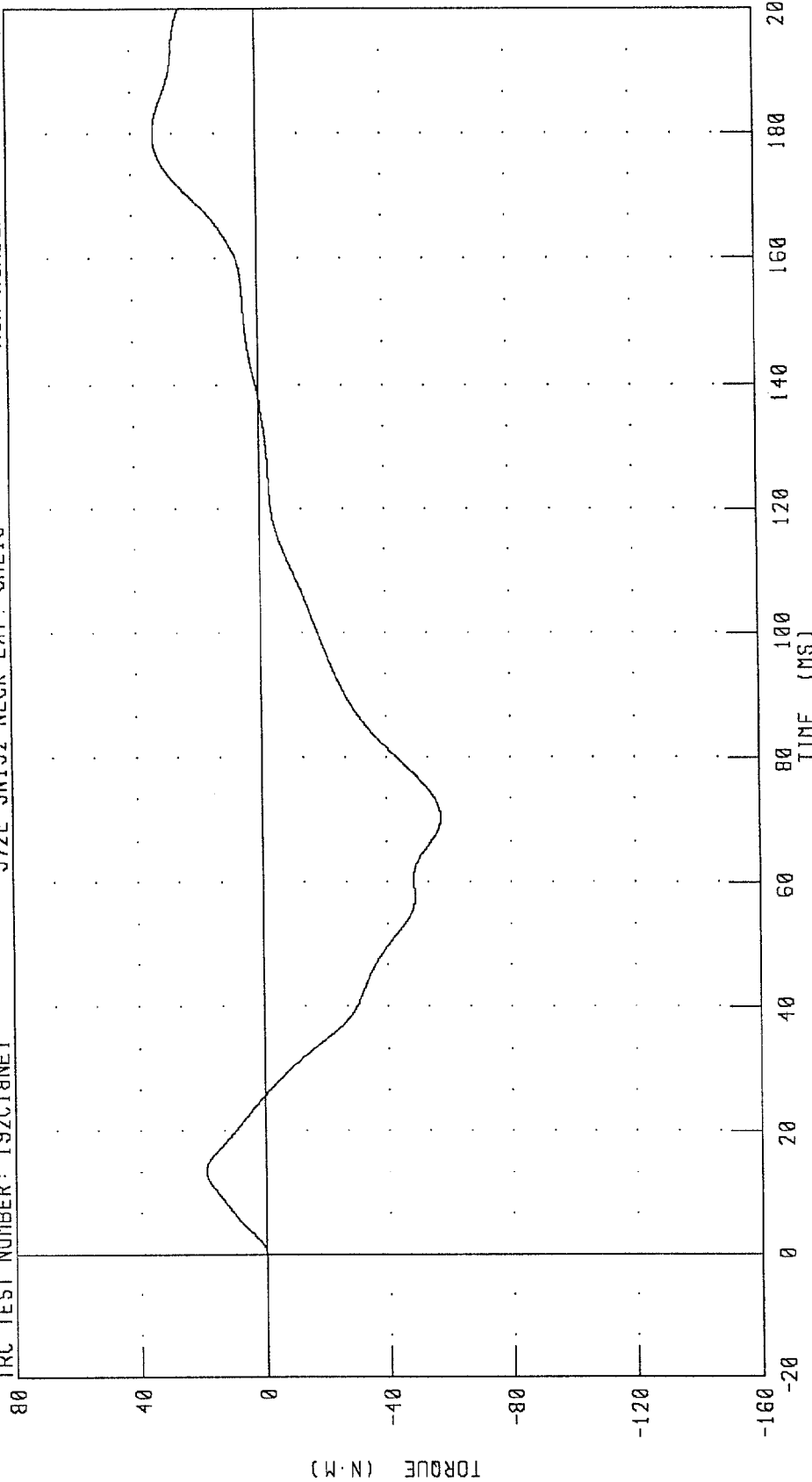


PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: 192C18NE1

572E SN192 NECK EXT. CAL18

RUN NUMBER: 040494.1045;1



PEAK DATA: 32.92 N.M @ 179.92 MS; -57.35 N.M @ 70.48 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III

07-FEB-94

TRC INC.

TEST NO: 192C18TH1

572E SN192 H.S.THORAX CAL18

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	52.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.68 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	69.7 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5550. N
INTERNAL HYSTERESIS	69% - 85%	73.1%

TEST MEETS SPECIFICATIONS

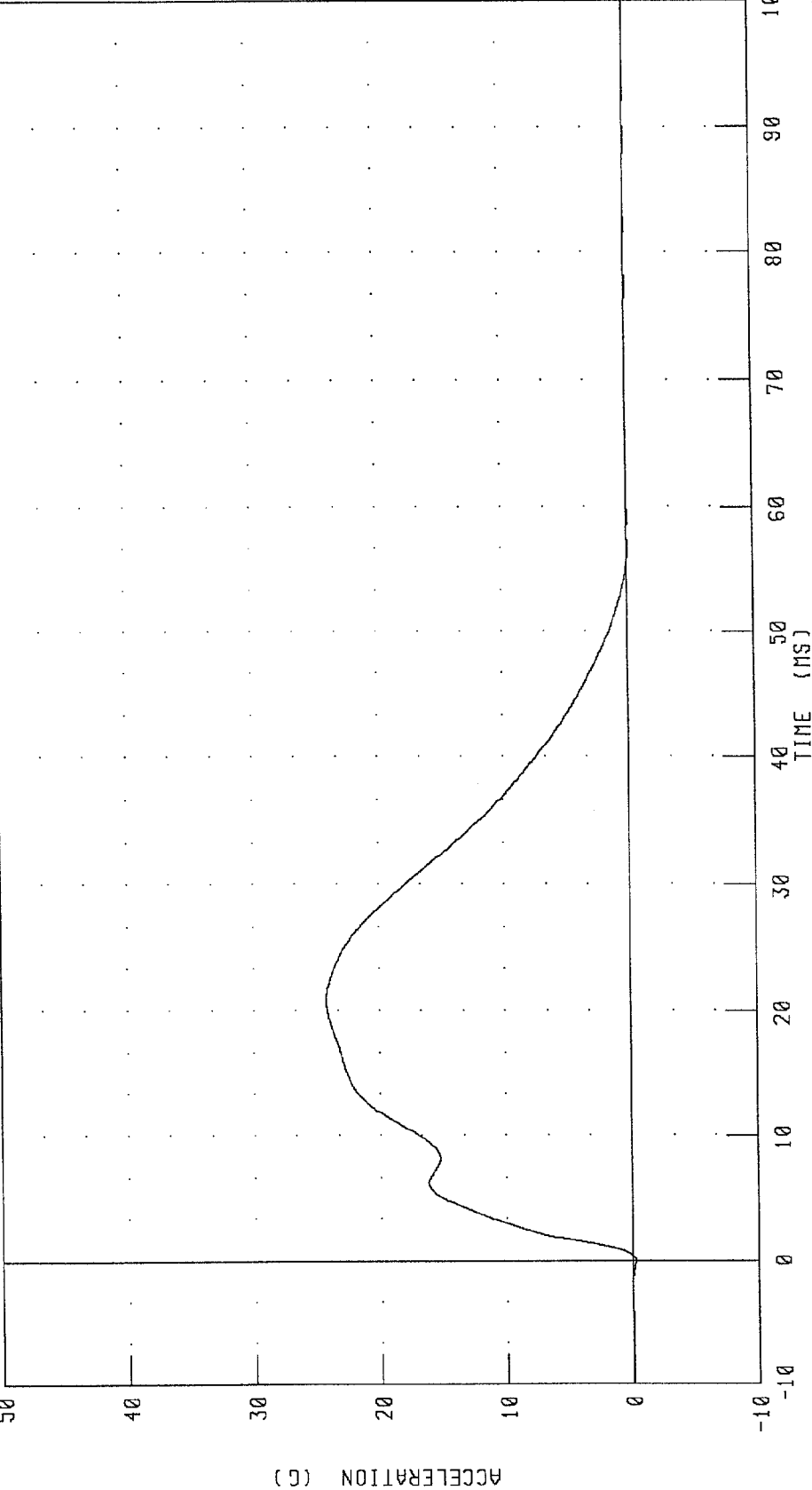
TECHNICIAN

Pete B. St

RUN NUMBER: 020794.0902;1

PART 572-E HYBRID III THORAX CALIBRATION PENDULUM DECELERATION

TRC TEST NUMBER: 192C18TH1 572E SN192 H.S. THORAX CAL18 RUN NUMBER: 040494.1045,1



CHANNEL: PENXG FILTER: CH. CLASS 180 PEAK DATA: 24.23 G @ 20.80 MS; -0.20 G @ -0.08 MS

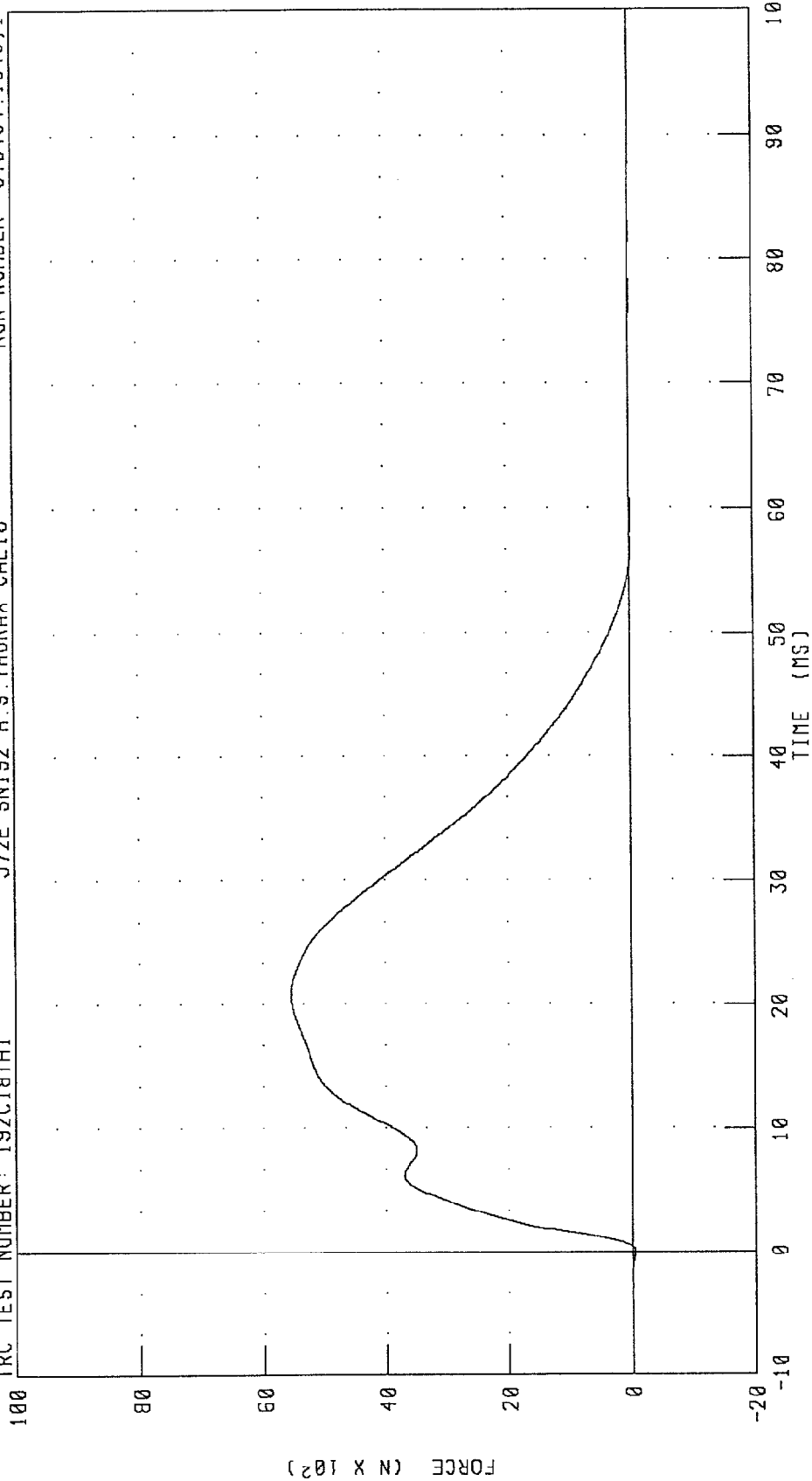
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER: 192C18TH1

572E SN192 H.S. THORAX CAL18

RUN NUMBER: 040494.1045;1



CHANNEL: PENXF FILTER: CH. CLASS 180

PEAK DATA: 5550.11 N @ 20.80 MS; -46.39 N @ -0.08 MS

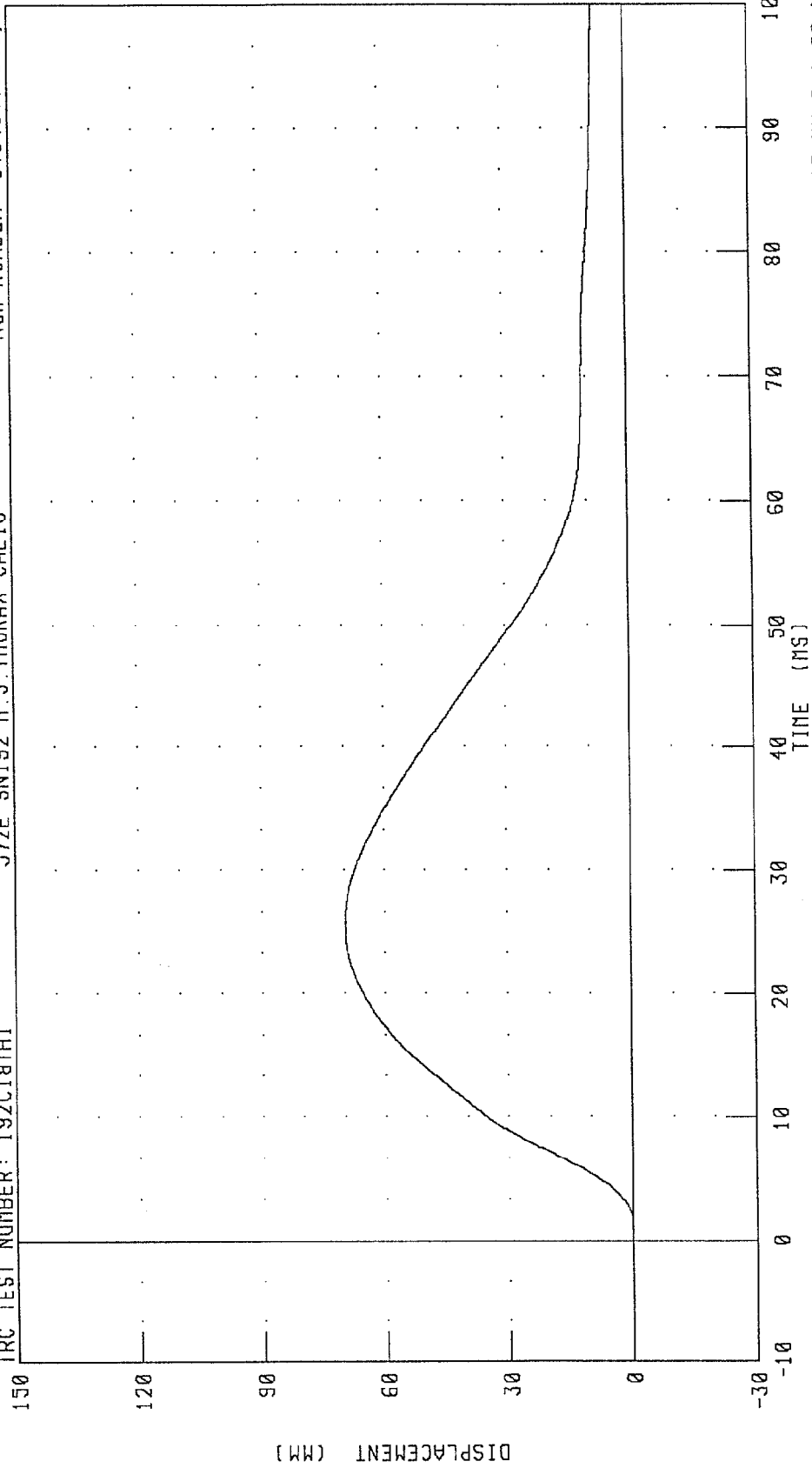
PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

TRC TEST NUMBER: 192C18TH1

572E SN192 H.S. THORAX CAL18

RUN NUMBER: 040494.1045,1



PEAK DATA: 69.73 MM @ 25.44 MS; -0.05 MM @ 1.20 MS

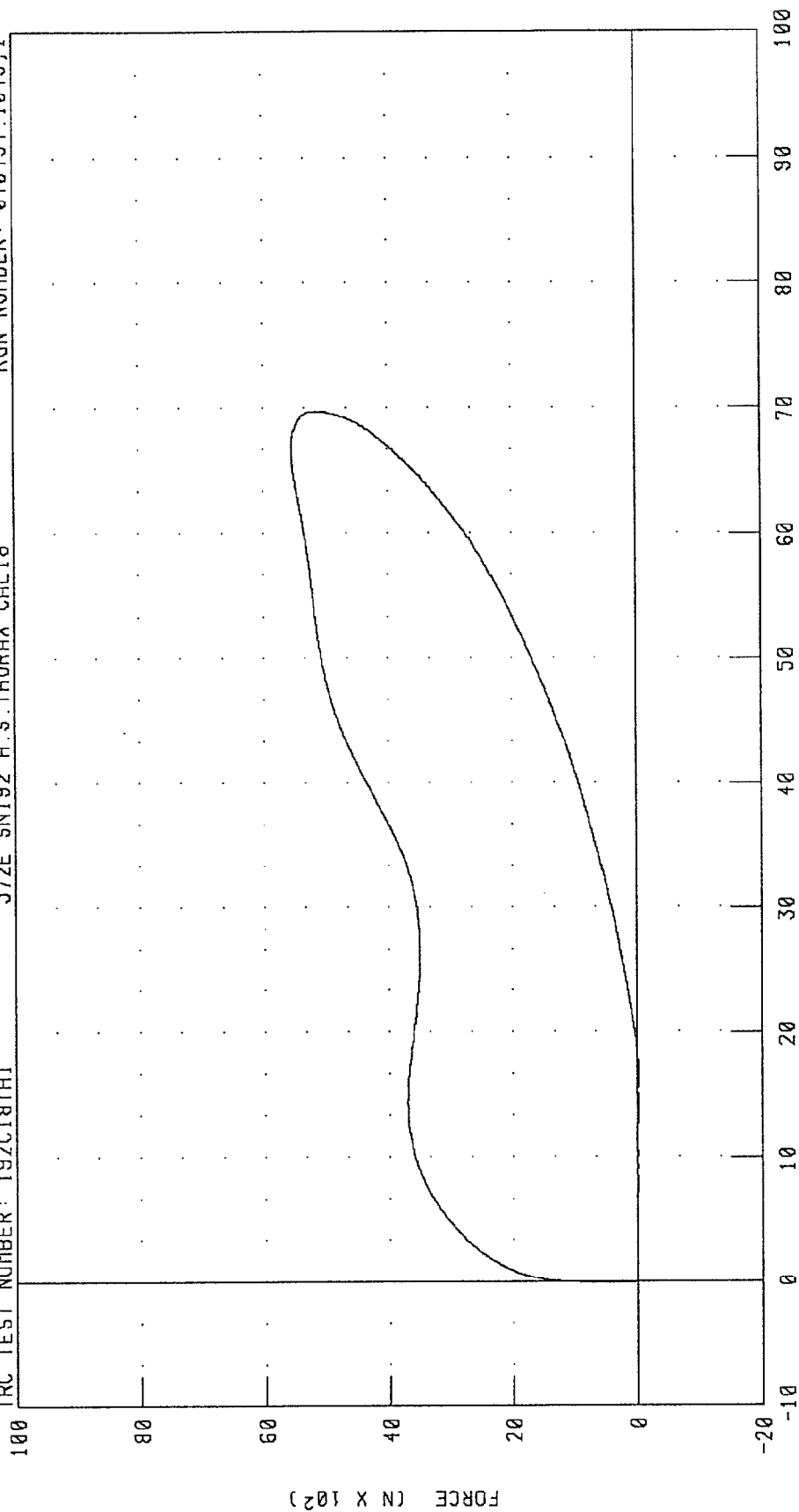
CHANNEL: CSTXD FILTER: CH. CLASS 180

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

572E SN192 H.S. THORAX CAL18

RUN NUMBER: 040494.1045.1

TRC TEST NUMBER: 192C18TH1



CHANNEL: CSTXD
PENXF
FILTER: CH. CLASS 180
CH. CLASS 180
DISPLACEMENT (MM)
PEAK DATA: 69.73 MM @ 25.44 MS; -0.05 MM @ 1.20 MS
5550.11 N @ 20.80 MS; -46.39 N @ -0.08 MS

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III

04-FEB-94

TRC INC.

TEST NO: 192C18RK1

572E SN192 RIGHT KNEE CAL 18

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	55.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.11 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4714 - 5783 N	5408.2 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Dis RJS

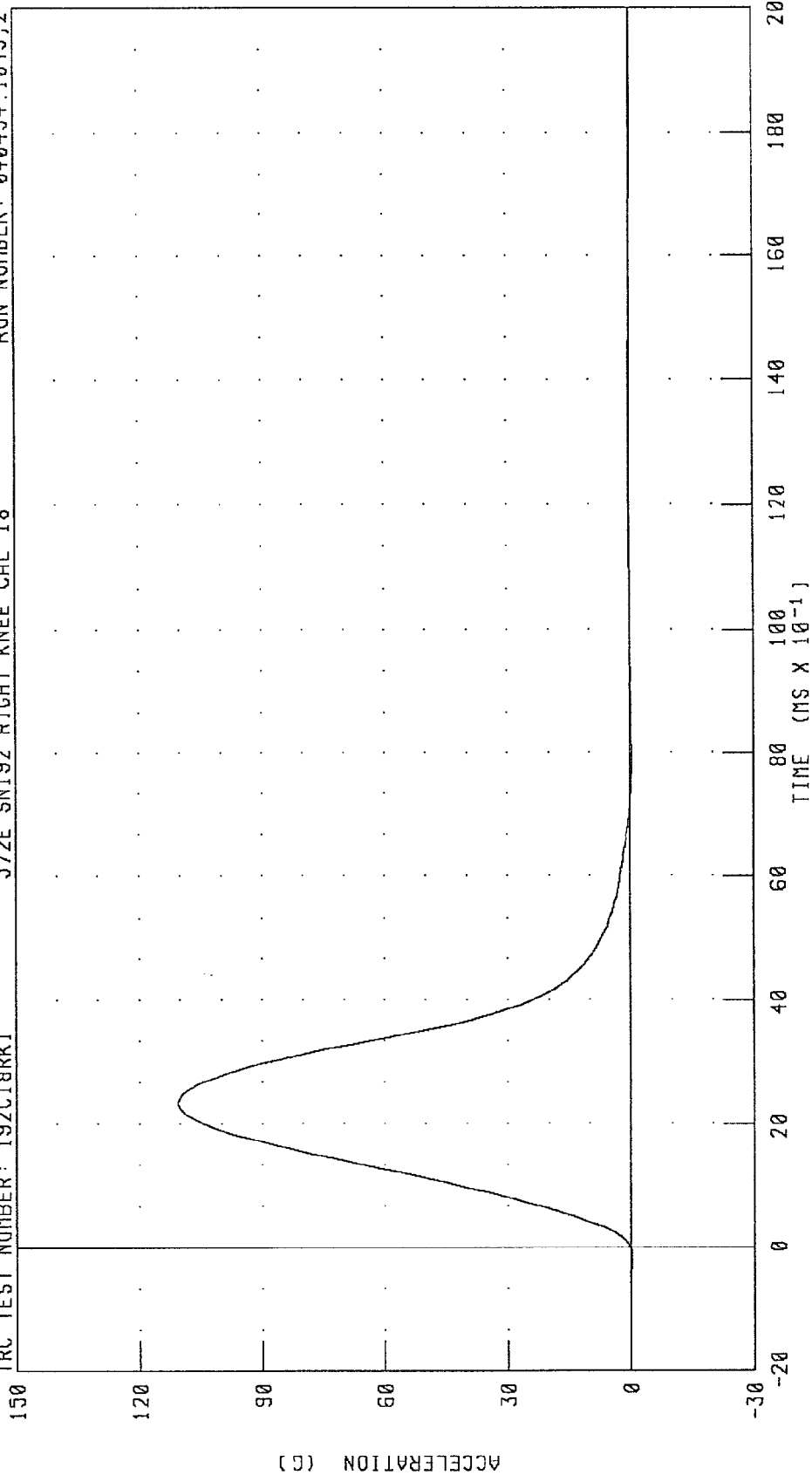
RUN NUMBER: 020494.1429;2

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

TRC TEST NUMBER: 192C18RK1

572E SN192 RIGHT KNEE CAL 18

RUN NUMBER: 040494.1045;2



CHANNEL: PENXG FILTER: CH. CLASS 600

PEAK DATA: 110.53 G @ 2.32 MS; -0.39 G @ 7.84 MS

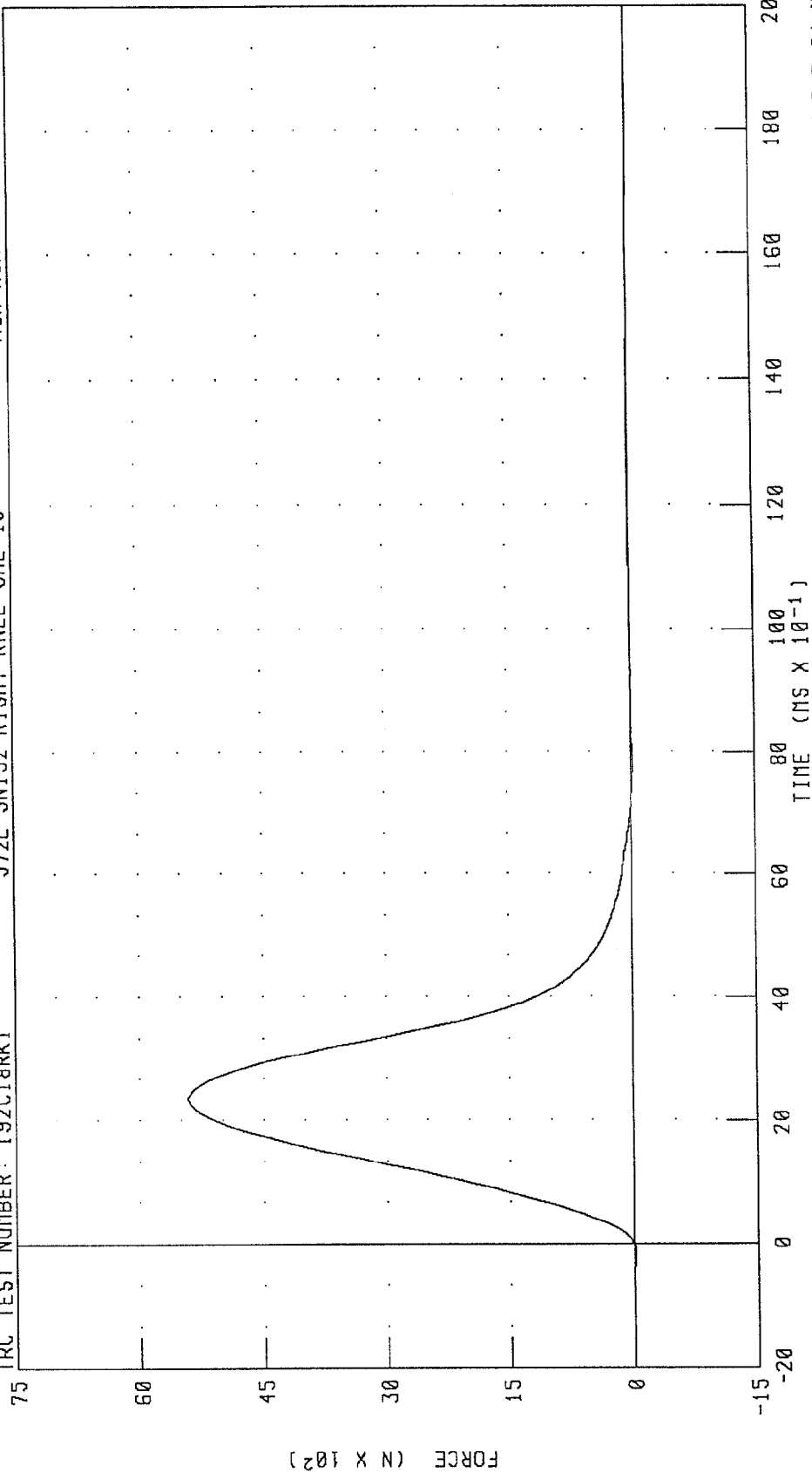
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

RUN NUMBER: 040494.1045,2

572E SN192 RIGHT KNEE CAL 18

TRC TEST NUMBER: 192C18RK1



PEAK DATA: 5408.21 N @ 2.32 MS; -18.87 N @ 7.84 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III

04-FEB-94

TRC INC.

TEST NO: 192C18LK1

572E SN192 LEFT KNEE CAL 18

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	55.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4714 - 5783 N	5194.8 N

TEST MEETS SPECIFICATIONS

TECHNICIAN

Pete R. auto

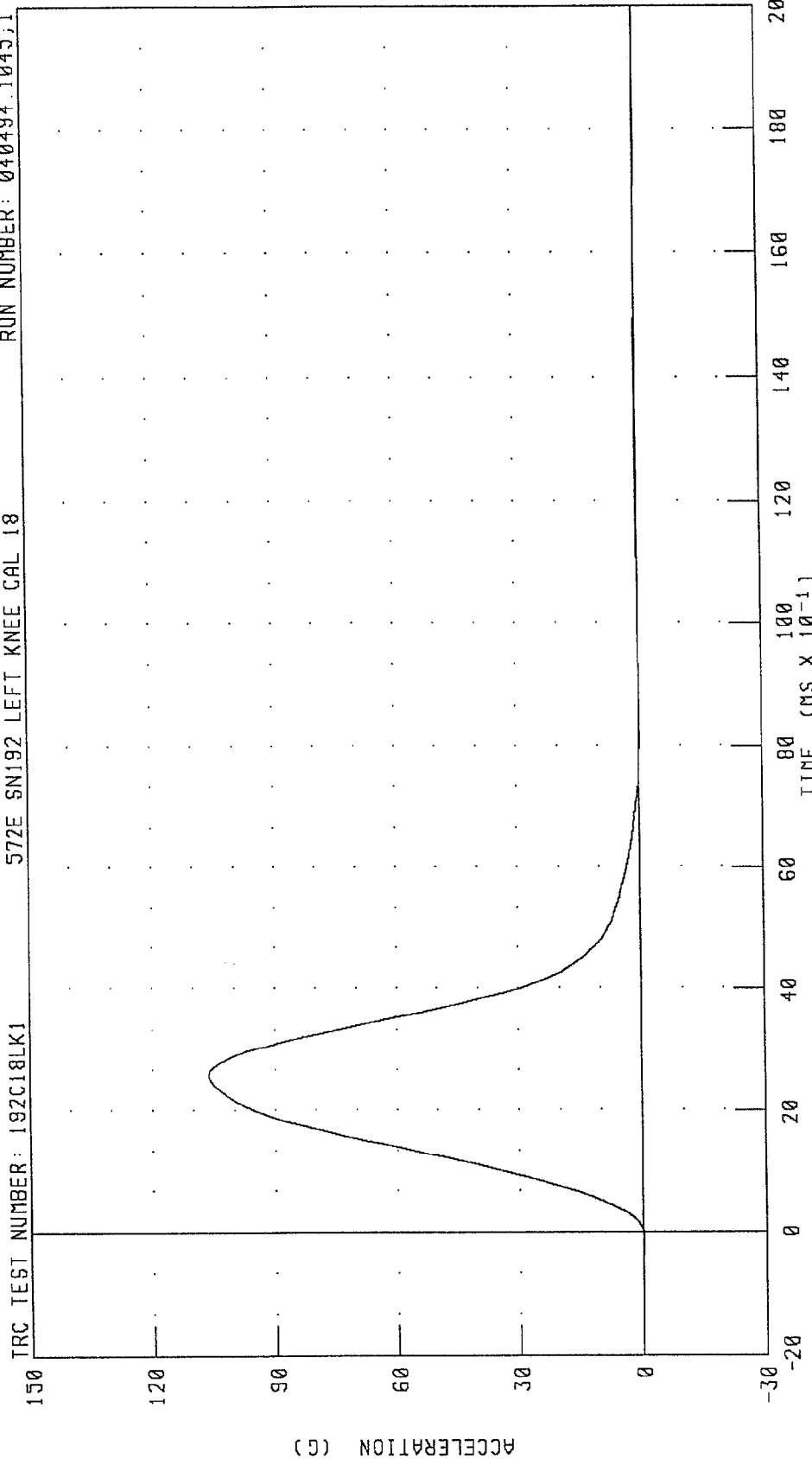
RUN NUMBER: 020494.1324;1

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

RUN NUMBER: 040494.1045.1

572E SN192 LEFT KNEE CAL 18

TRC TEST NUMBER: 192C18LK1



PEAK DATA: 106.17 G @ 2.56 MS; -0.27 G @ 8.32 MS

CHANNEL: PENXG FILTER: CH. CLASS 600

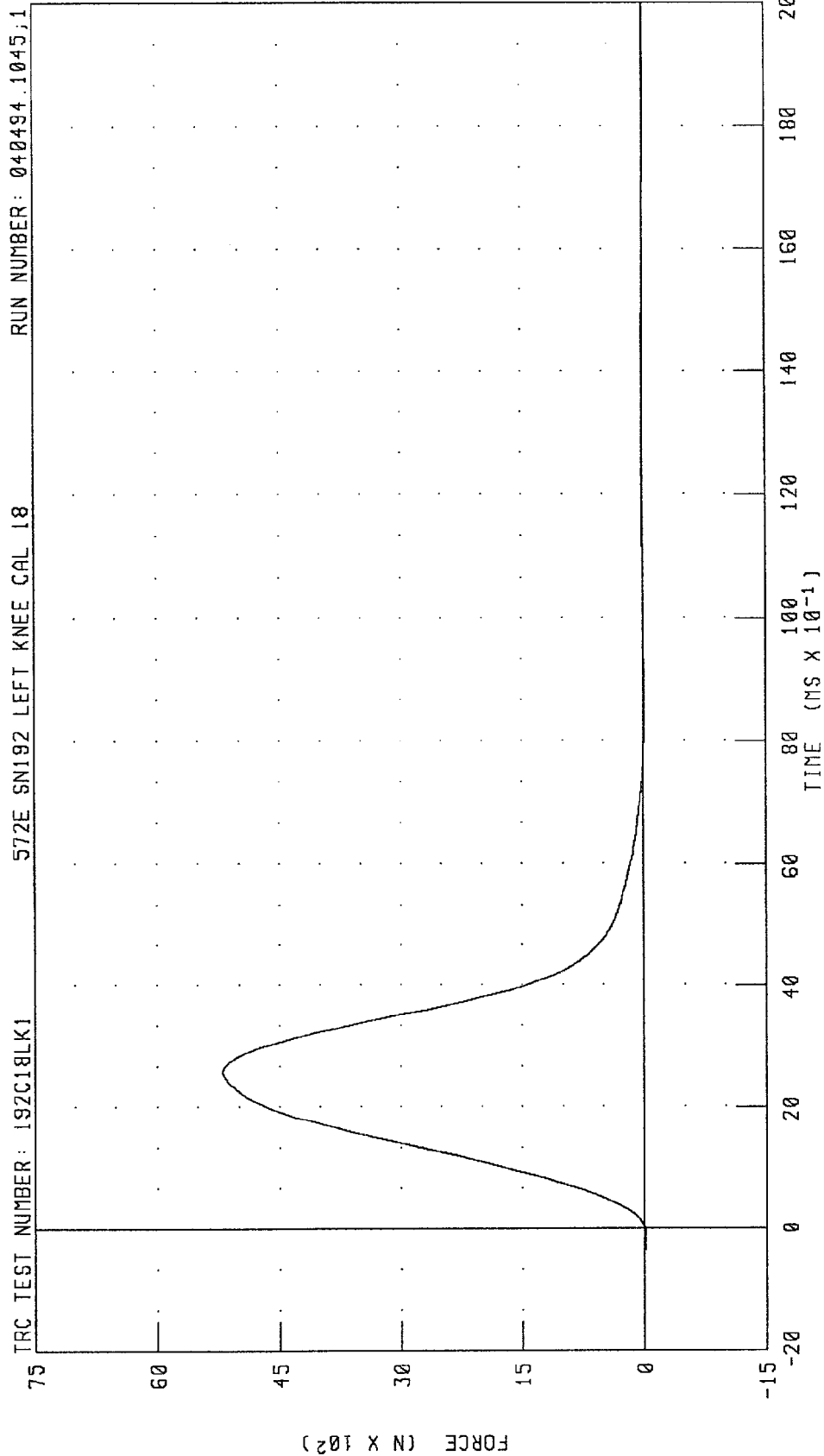
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 192C18LK1

572E SN192 LEFT KNEE CAL 18

RUN NUMBER: 040494.1045;1



CHANNEL: PENXF FILTER: CH. CLASS 600

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

PEAK DATA: 5194.86 N @ 2.56 MS; -13.16 N @ 8.32 MS

PRE-TEST CERTIFICATION DATA

PASSENGER DUMMY S/N: 142

TRANSPORTATION RESEARCH CENTER INC.

HYBRID III EXTERNAL DIMENSIONS

142 HUMANOID

04-FEB-94

TRC INC.

TEST NO: 142C20ED1

572E SN142 EXT.DIMENSION CAL20

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
LOCATION FOR CHEST CIRCUMFERENCE (AA)		429 - 434 MM	432. MM
LOCATION FOR WAIST CIRCUMFERENCE (BB)		226 - 231 MM	229. MM
CHEST CIRCUMFERENCE (Y)		970 - 1001 MM	983. MM
WAIST CIRCUMFERENCE (Z)		836 - 866 MM	846. MM
CHEST DEPTH (O)		213 - 229 MM	218. MM
H-POINT HEIGHT (C)		84 - 89 MM	84. MM
H-POINT FROM SEATBACK (D)		135 - 140 MM	137. MM
SKULL CAP TO BACKLINE (H)		41 - 46 MM	43. MM
TOTAL SITTING HEIGHT (A)		879 - 889 MM	884. MM
THIGH CLEARANCE (F)		140 - 155 MM	145. MM
BUTTOCK KNEE LENGTH (K)		579 - 605 MM	597. MM
BUTTOCK POPLITEAL LENGTH (N)		452 - 478 MM	475. MM
POPLITEAL HEIGHT (L)		429 - 455 MM	452. MM
KNEE PIVOT HEIGHT (M)		485 - 500 MM	490. MM
FOOT LENGTH (P)		252 - 267 MM	257. MM
FOOT BREADTH (W)		91 - 107 MM	97. MM
SHOULDER PIVOT FROM BACKLINE (E)		84 - 94 MM	89. MM
SHOULDER BREADTH (V)		422 - 437 MM	427. MM
SHOULDER PIVOT HEIGHT (B)		506 - 521 MM	508. MM
ELBOW REST HEIGHT (J)		191 - 211 MM	208. MM
SHOULDER-ELBOW LENGTH (I)		330 - 345 MM	345. MM
BACK OF ELBOW TO WRIST PIVOT (G)		290 - 305 MM	292. MM

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

R. E. S.

RUN NUMBER: 020794.1240

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III

07-FEB-94

TRC INC.

TEST NO: 142C20HD1

572E SN142 HEAD DROP CAL 20

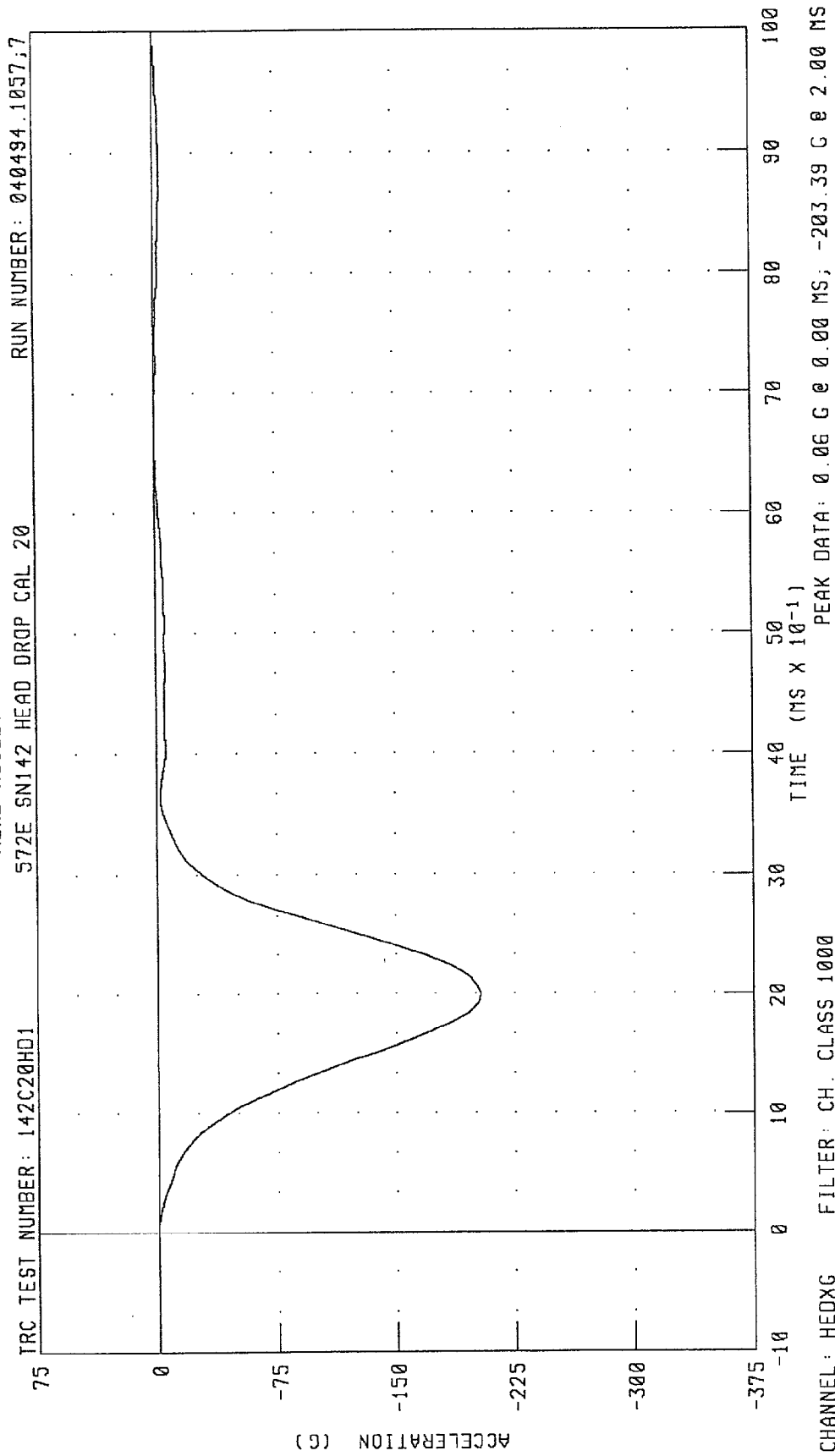
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	52.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	234.45 G
PEAK LATERAL ACCELERATION	15 G MAX	1.69 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Foster

RUN NUMBER: 020794.0915;7

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS

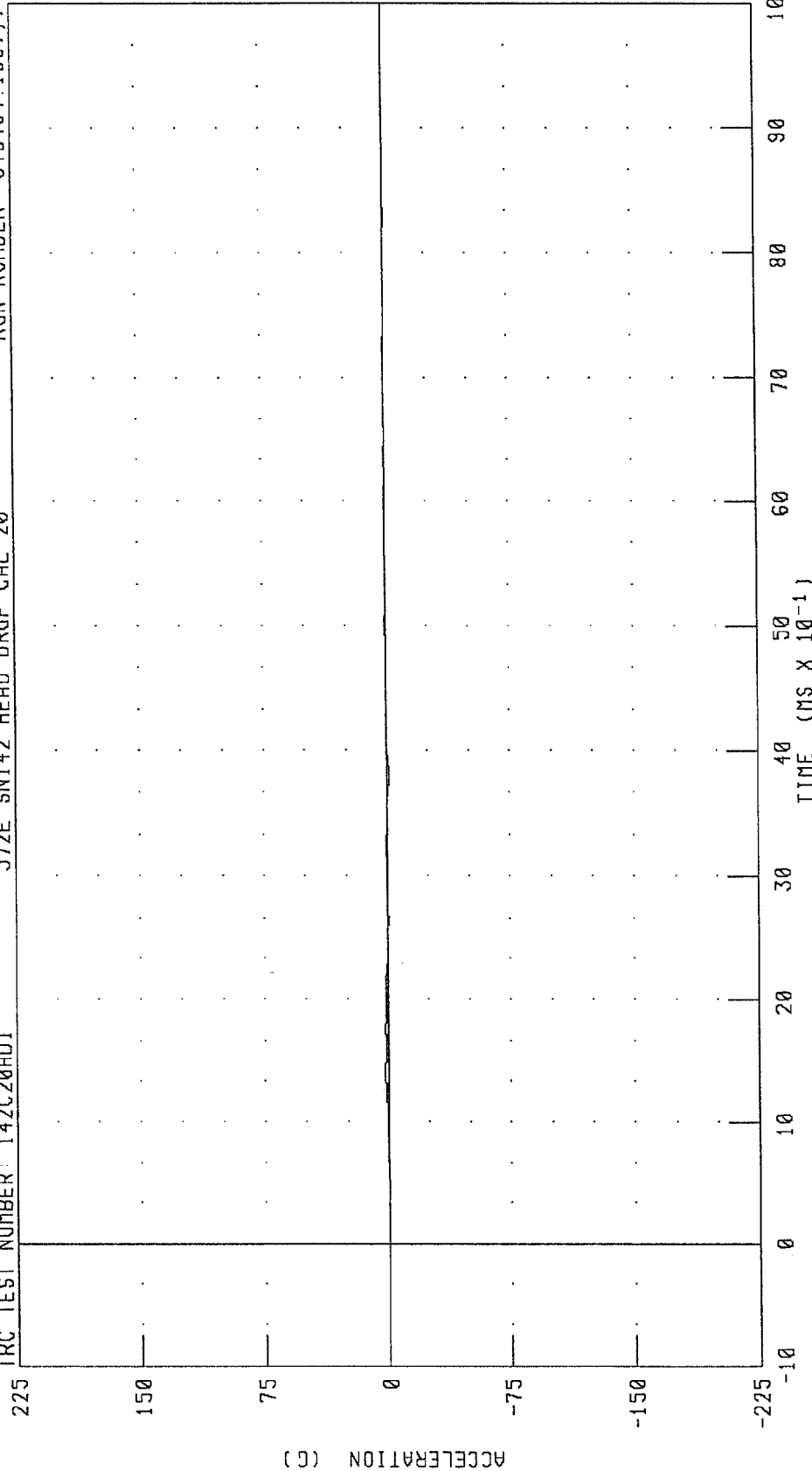


PART 572-E HYBRID III HEAD CALIBRATION HEAD ACCELERATION Y AXIS

TRC TEST NUMBER: 142C20HD1

572E SN142 HEAD DROP CAL 20

RUN NUMBER: 040494.1057;7

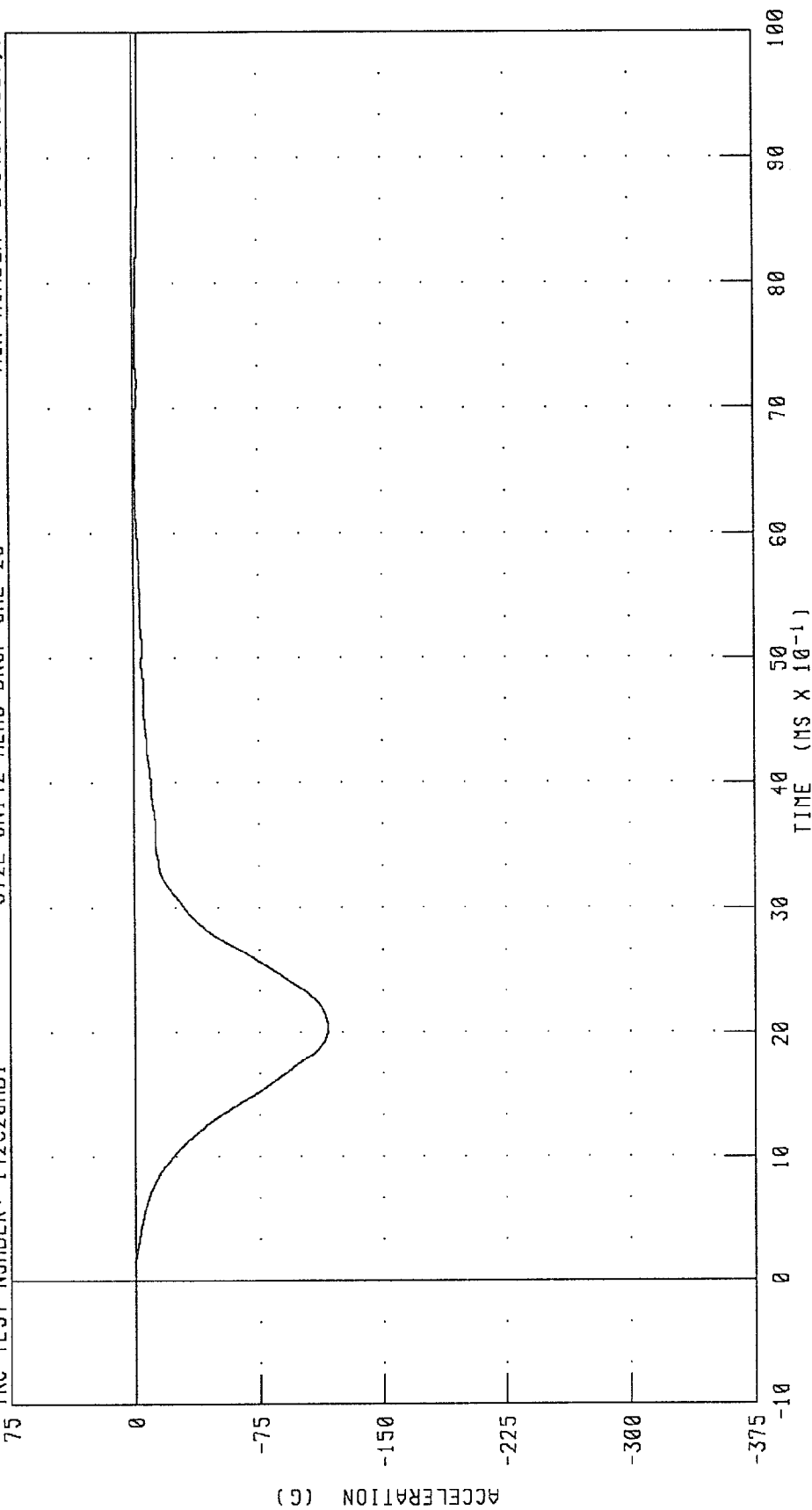


CHANNEL: HEDYG FILTER: CH. CLASS 1000

PEAK DATA: 1.70 G @ 1.76 MS; -1.33 G @ 3.76 MS

PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS

TRC TEST NUMBER: 142C20HD1 572E SN142 HEAD DROP CAL 20 RUN NUMBER: 040494.1057;7



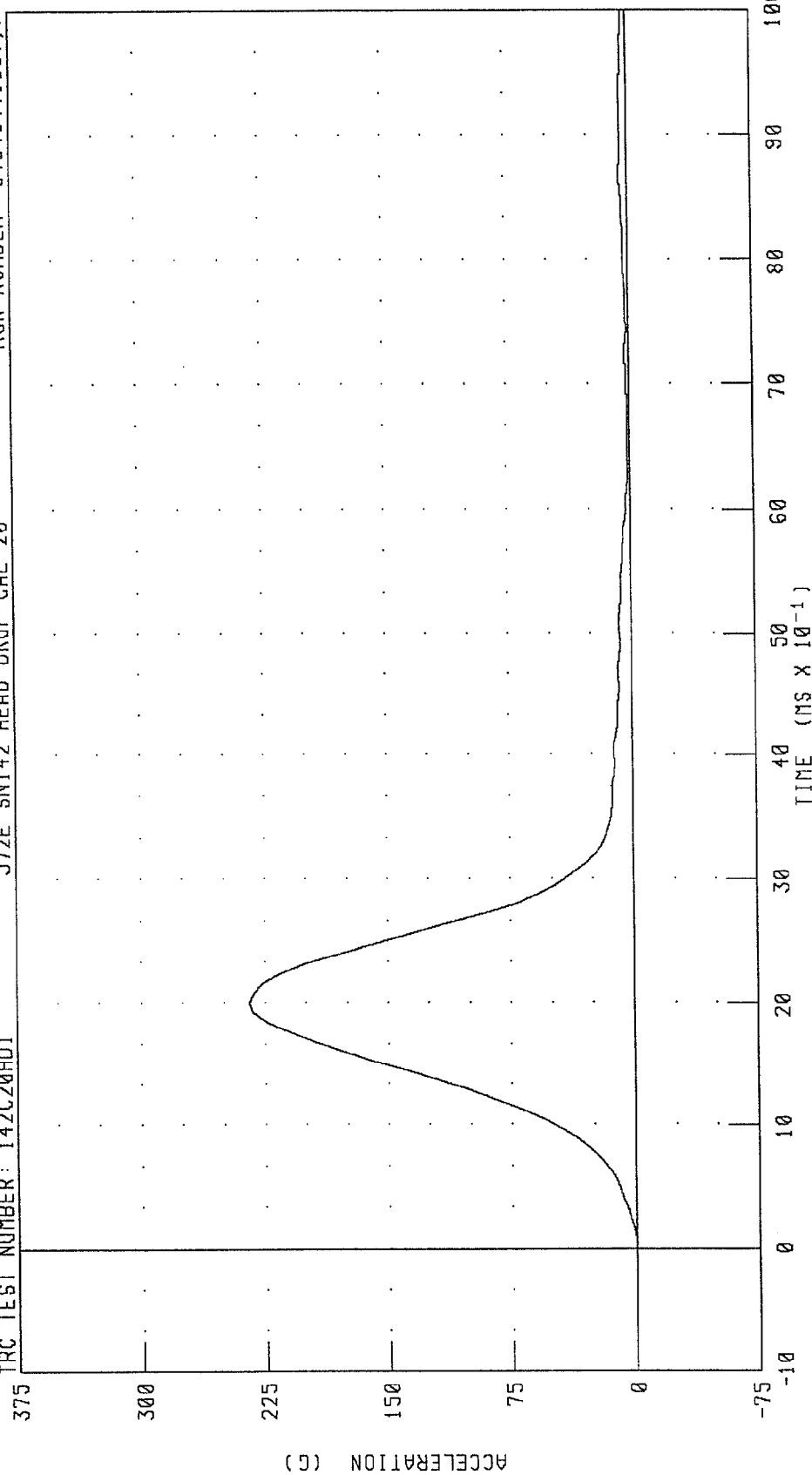
CHANNEL: HEDZG FILTER: CH. CLASS 1000 PEAK DATA: 0.07 G @ -0.24 MS; -116.62 G @ 2.00 MS

PART 572-E HYBRID III HEAD CALIBRATION
HEAD RESULTANT ACCELERATION

RUN NUMBER: 040494.1057;7

IRC TEST NUMBER: 142C20HD1

572E SN142 HEAD DROP CAL 20



PEAK DATA: 234.46 G @ 2.00 MS; 0.01 G @ -0.32 MS

CHANNEL: HEDRG FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

07-FEB-94

TRC INC. TEST NO: 142C20NF1 572E SN142 NECK FLEXION CAL20

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	52.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.01 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	24.85 G
	20 MS	17.60 - 22.60 G	20.44 G
	30 MS	12.50 - 18.50 G	15.23 G
MAX PENDULUM G		29 G MAX	25.98 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	15.21 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	38.32 MS
D PLANE	MAX	64 - 78 DEG.	71.43 DEG.
ROTATION	TIME	57 - 64 MS	58.56 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	91.07 NM
	TIME	47 - 58 MS	51.52 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	102.48 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Faust

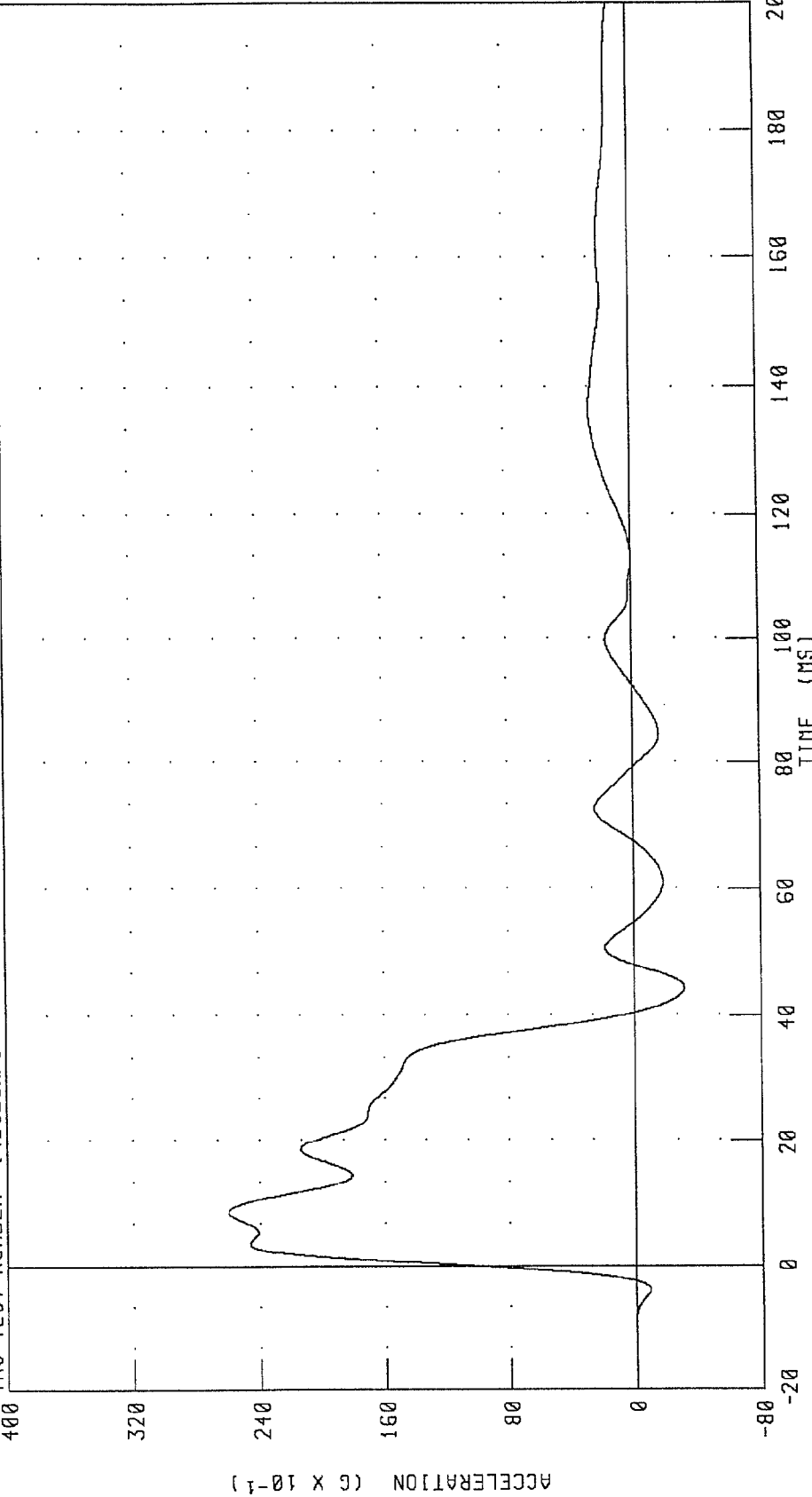
RUN NUMBER: 020794.1005;1

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 142C20NF1

572E SN142 NECK FLEXION CAL20

RUN NUMBER: 040494.1057,1



PEAK DATA: 25.98 G @ 8.48 MS; -3.14 G @ 44.24 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

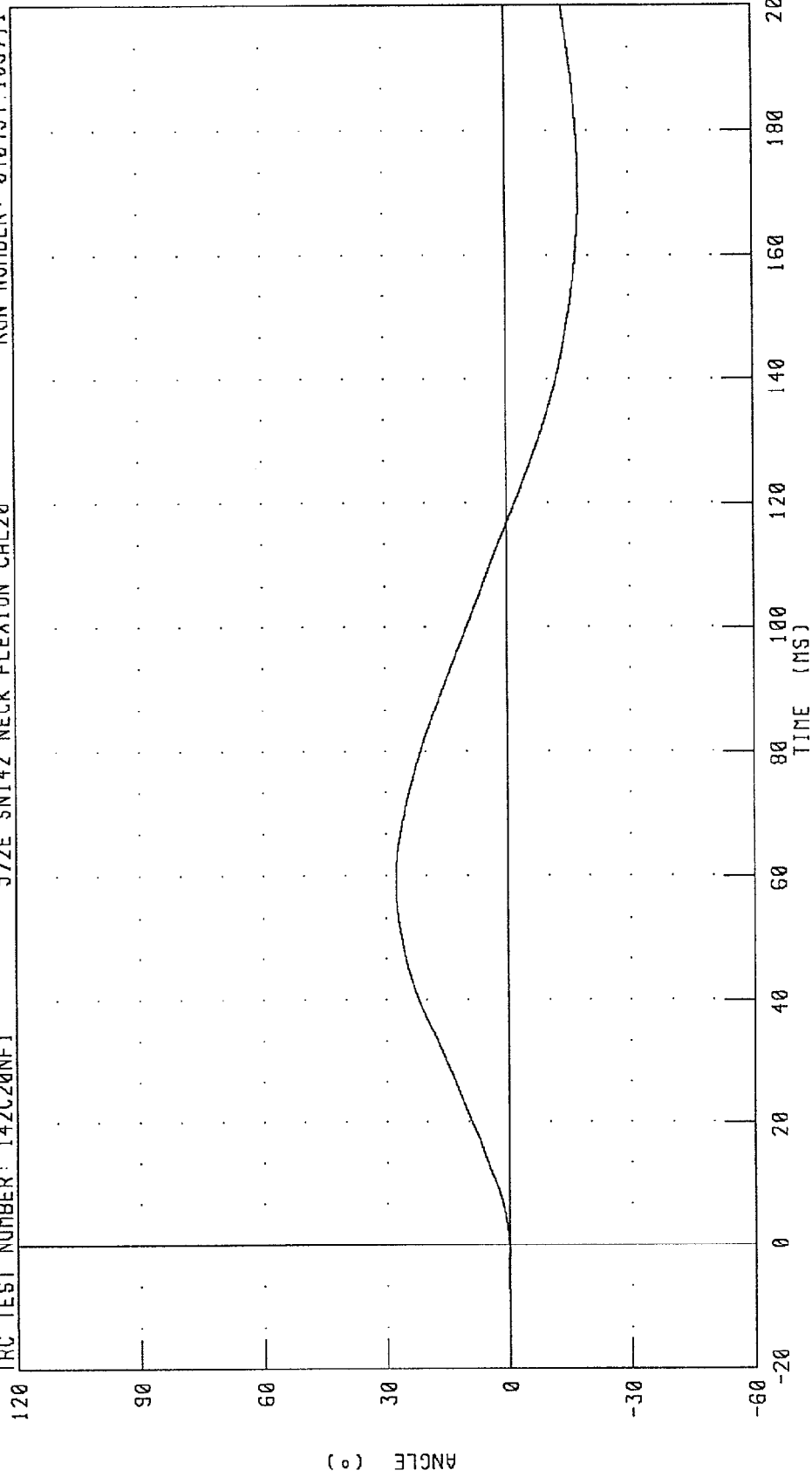
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 142C20NF1

572E SN142 NECK FLEXION CAL20

RUN NUMBER: 040494.1057J.1



CHANNEL: BETA FILTER: CH. CLASS 60

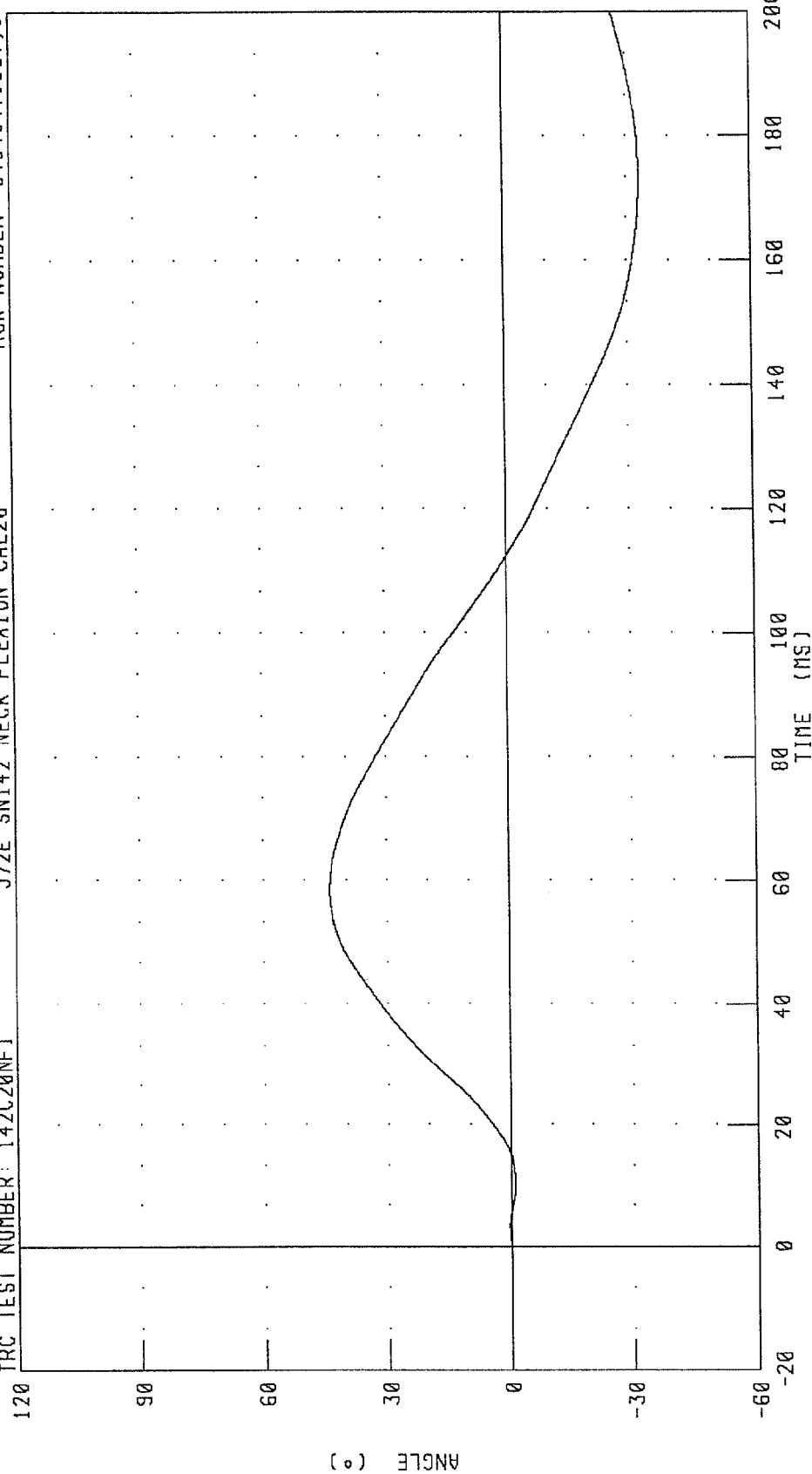
PEAK DATA: 27.53 ° @ 59.12 MS; -17.71 ° @ 170.64 MS

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

RUN NUMBER: 040494.1057;1

TRC TEST NUMBER: 142C20NF1

572E SN142 NECK FLEXION CAL20



PEAK DATA: 43.90 ° @ 58.40 MS; -33.01 ° @ 173.28 MS

CHANNEL: THETA FILTER: CH. CLASS 60

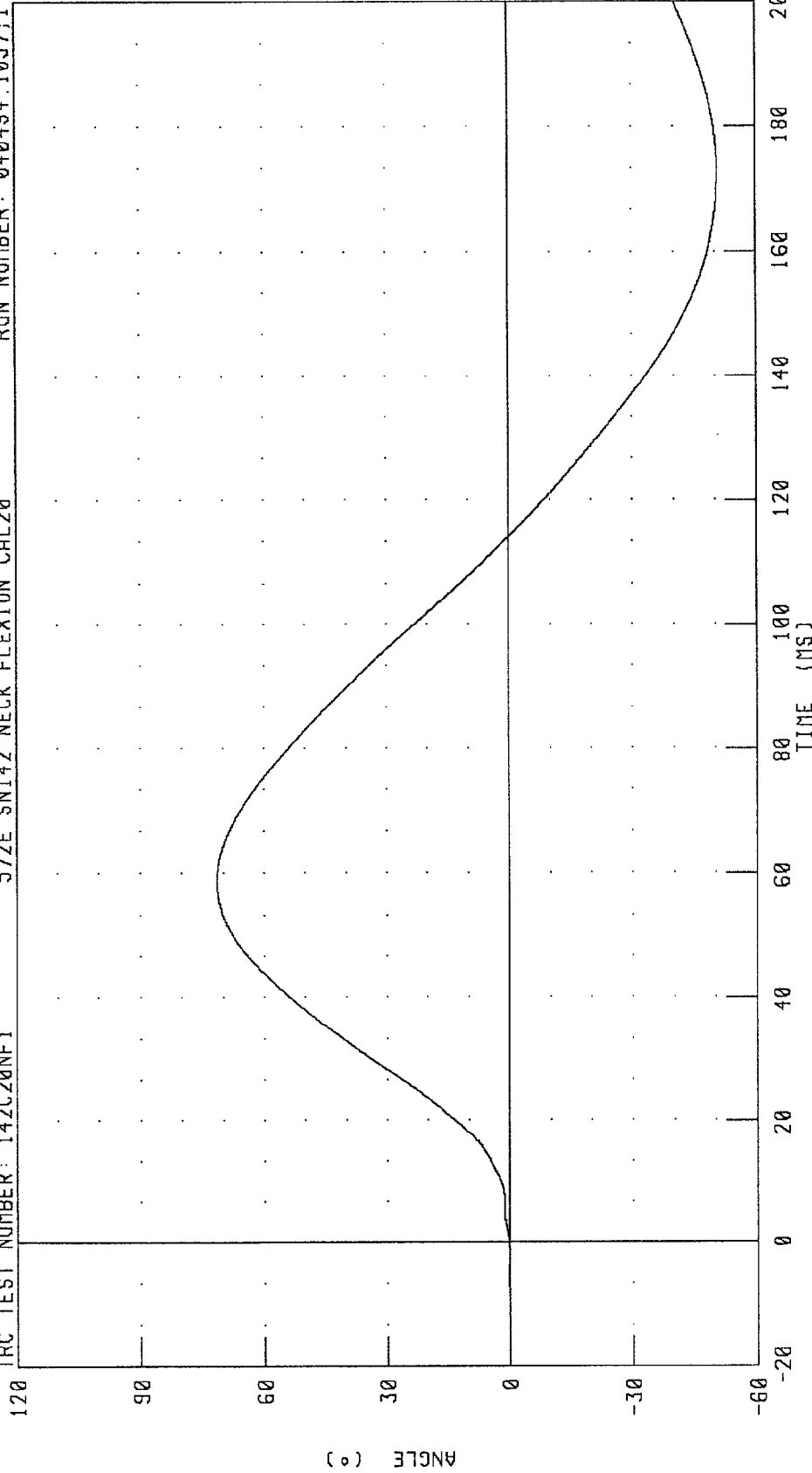
PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 142C20NF1

572E SN142 NECK FLEXION CAL20

RUN NUMBER: 040494.1057,1



CHANNEL: TOTAN FILTER: CH. CLASS 60

PEAK DATA: 71.43 ° @ 58.56 MS; -50.72 ° @ 173.12 MS

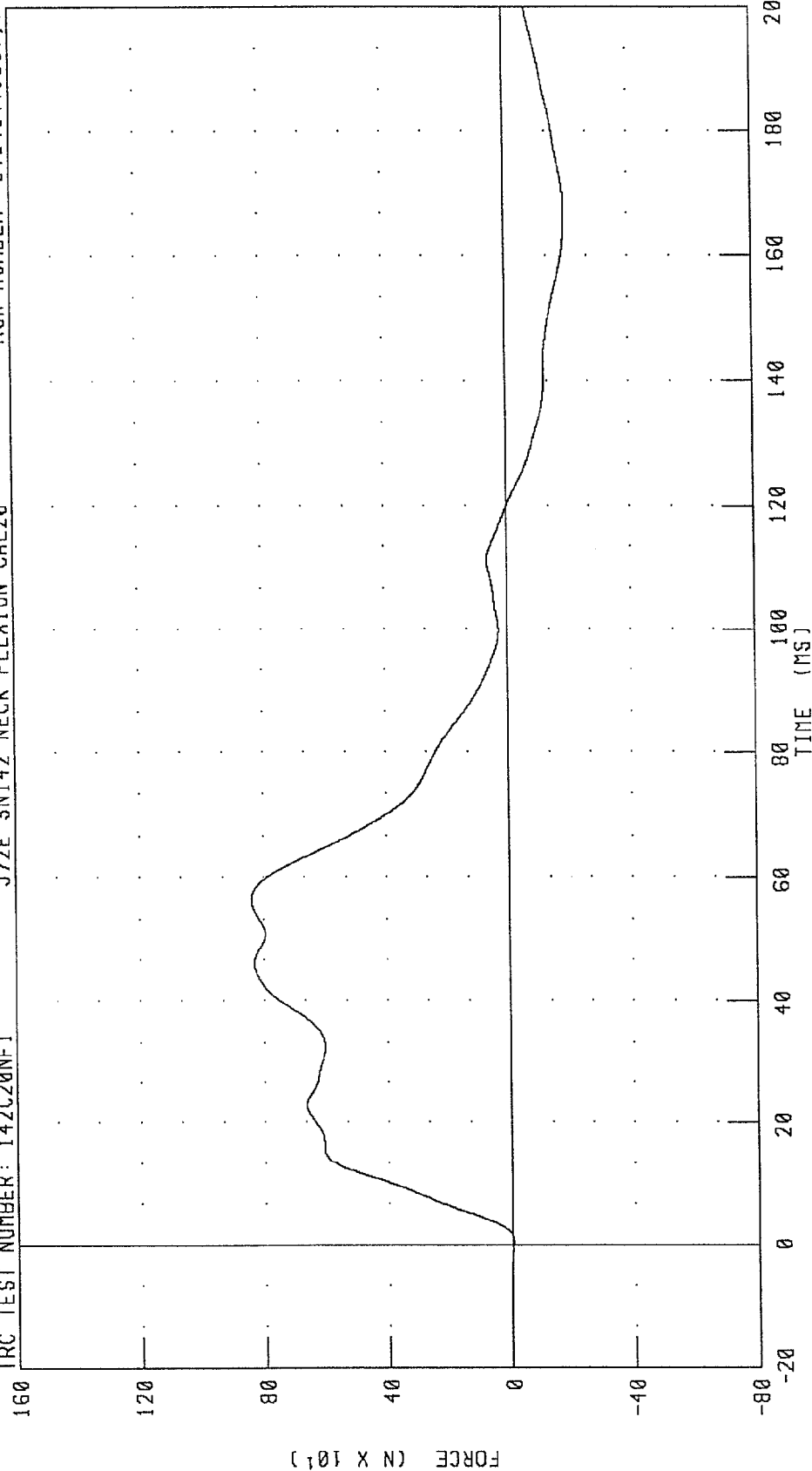
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

RUN NUMBER: 040494.1057;1

572E SN142 NECK FLEXION CAL20

TRC TEST NUMBER: 142C20NF1



PEAK DATA: 838.60 N @ 56.48 MS; -193.84 N @ 167.04 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

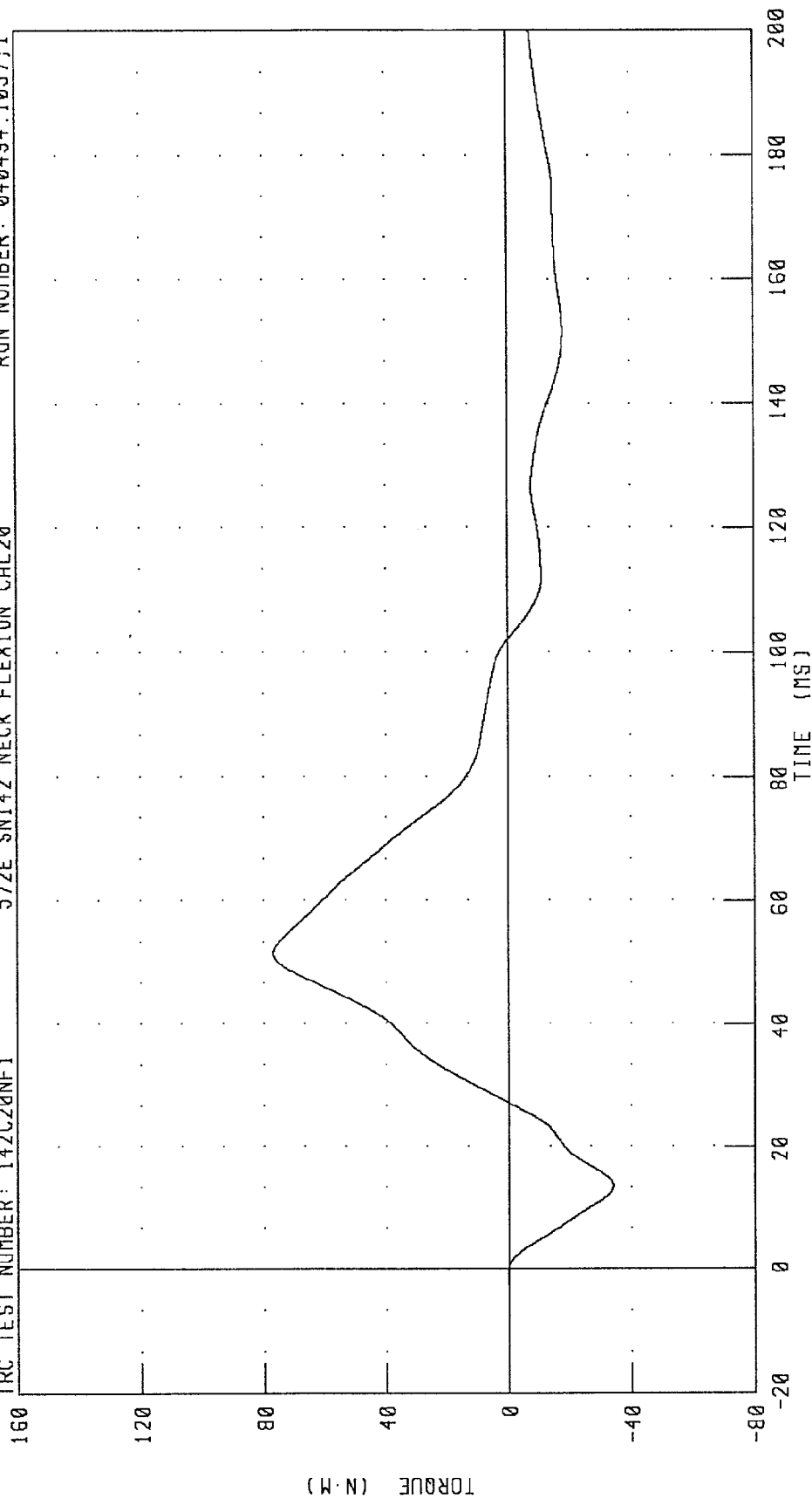
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

572E SN142 NECK FLEXION CAL20

RUN NUMBER: 040494.1057.1

TRC TEST NUMBER: 142C20NF1



PEAK DATA: 76.92 N·M @ 51.44 NS; -34.00 N·M @ 13.44 NS

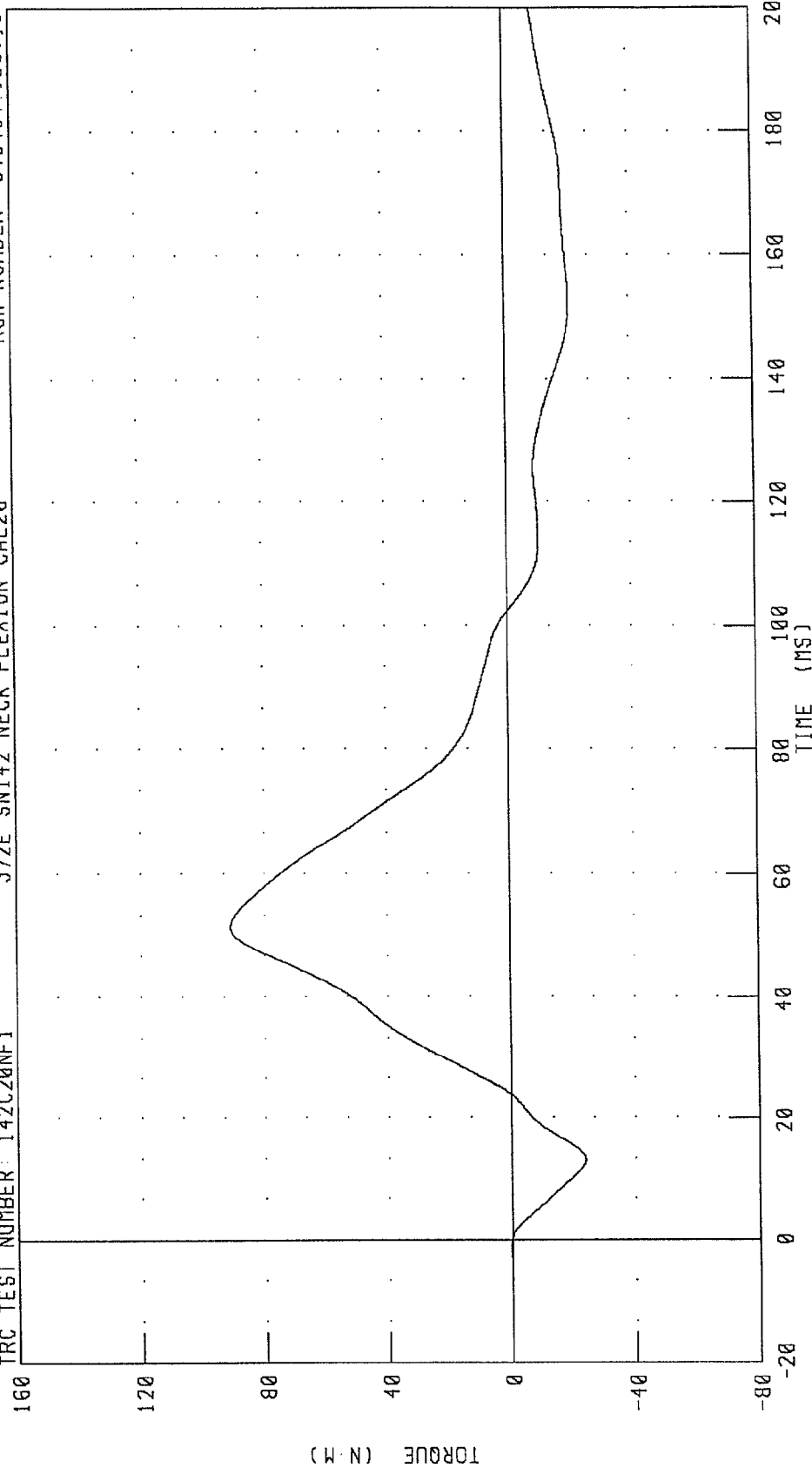
CHANNEL: NEKYM FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

RUN NUMBER: 040494.1057;1

572E SN142 NECK FLEXION CAL20

TRC TEST NUMBER: 142C20NF1



PEAK DATA: 91.07 N.M @ 51.52 MS; -23.85 N.M @ 13.04 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST - 6 CHANNEL TRANSDUCER

HYBRID III

07-FEB-94

TRC INC. TEST NO: 142C20NE1 572E SN142 NECK EXT. CAL20

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10 - 70 %	52.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.02 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	17.99 G
	20 MS	14.00 - 19.00 G	15.95 G
	30 MS	11.00 - 16.00 G	13.08 G
MAX PENDULUM G		22 G MAX	19.22 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	13.60 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	41.36 MS
D PLANE	MAX	81 - 106 DEG.	95.50 DEG.
ROTATION	TIME	72 - 82 MS	73.44 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-69.74 NM
	TIME	65 - 79 MS	70.16 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	152.40 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	139.84 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Font

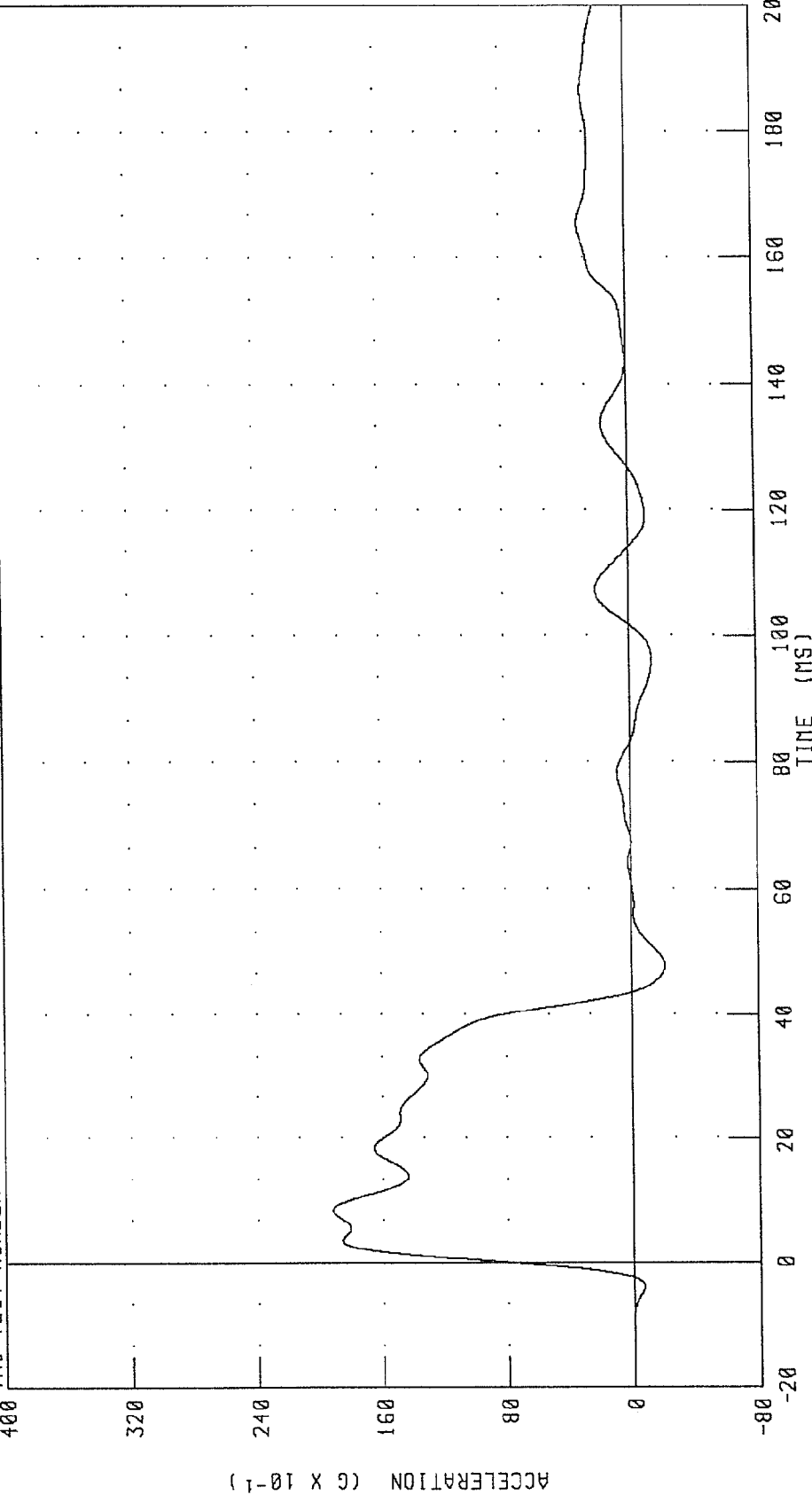
RUN NUMBER: 020794.1052;2

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 142C20NE1

572E SN142 NECK EXT. CAL20

RUN NUMBER: 040494.1057;2



PEAK DATA: 19.23 G @ 8.24 MS; -2.09 G @ 48.00 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

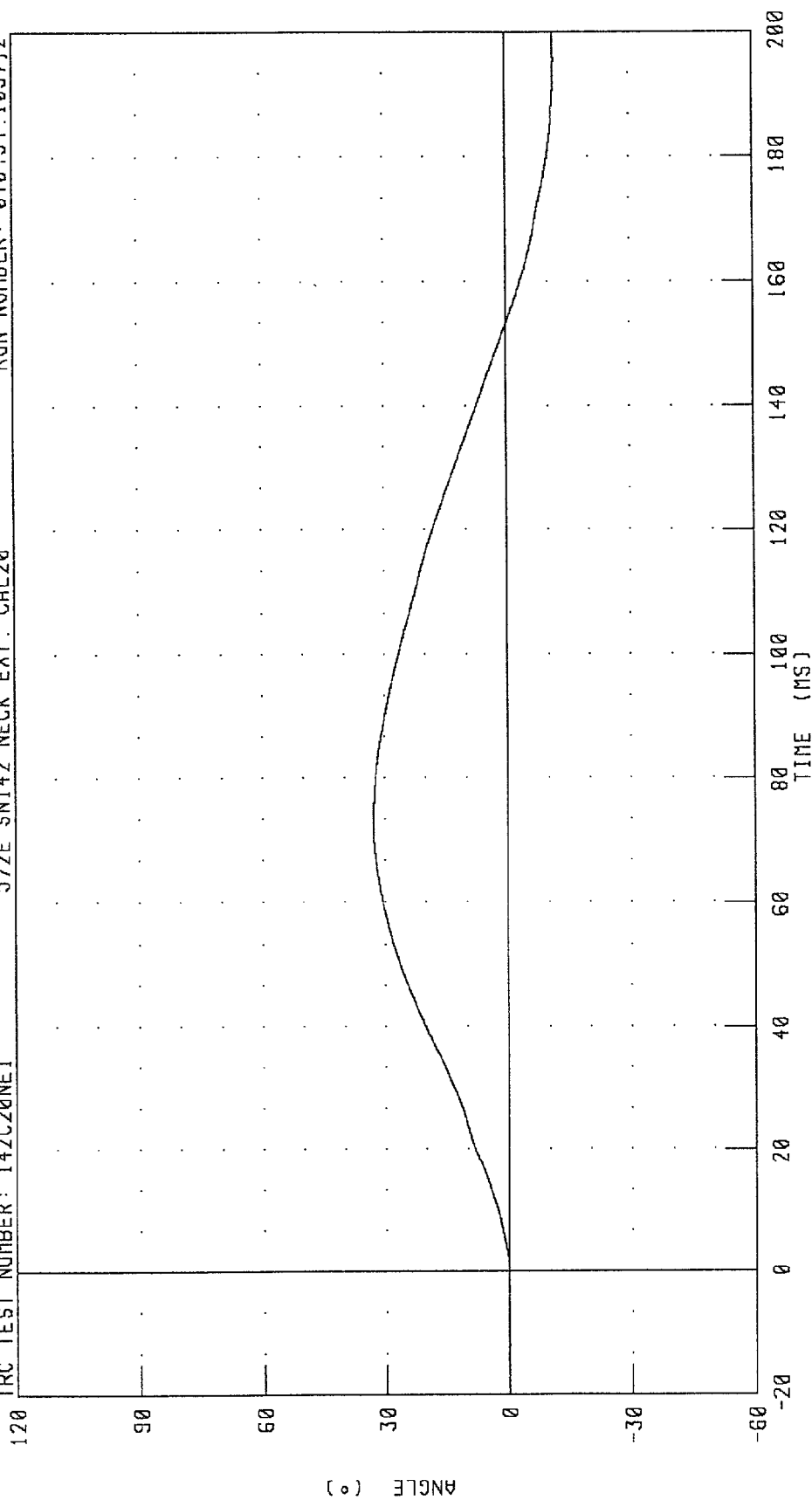
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 142C20NE1

572E SN142 NECK EXT. CAL20

RUN NUMBER: 040494.1057.2



CHANNEL: BETA FILTER: CH. CLASS 60

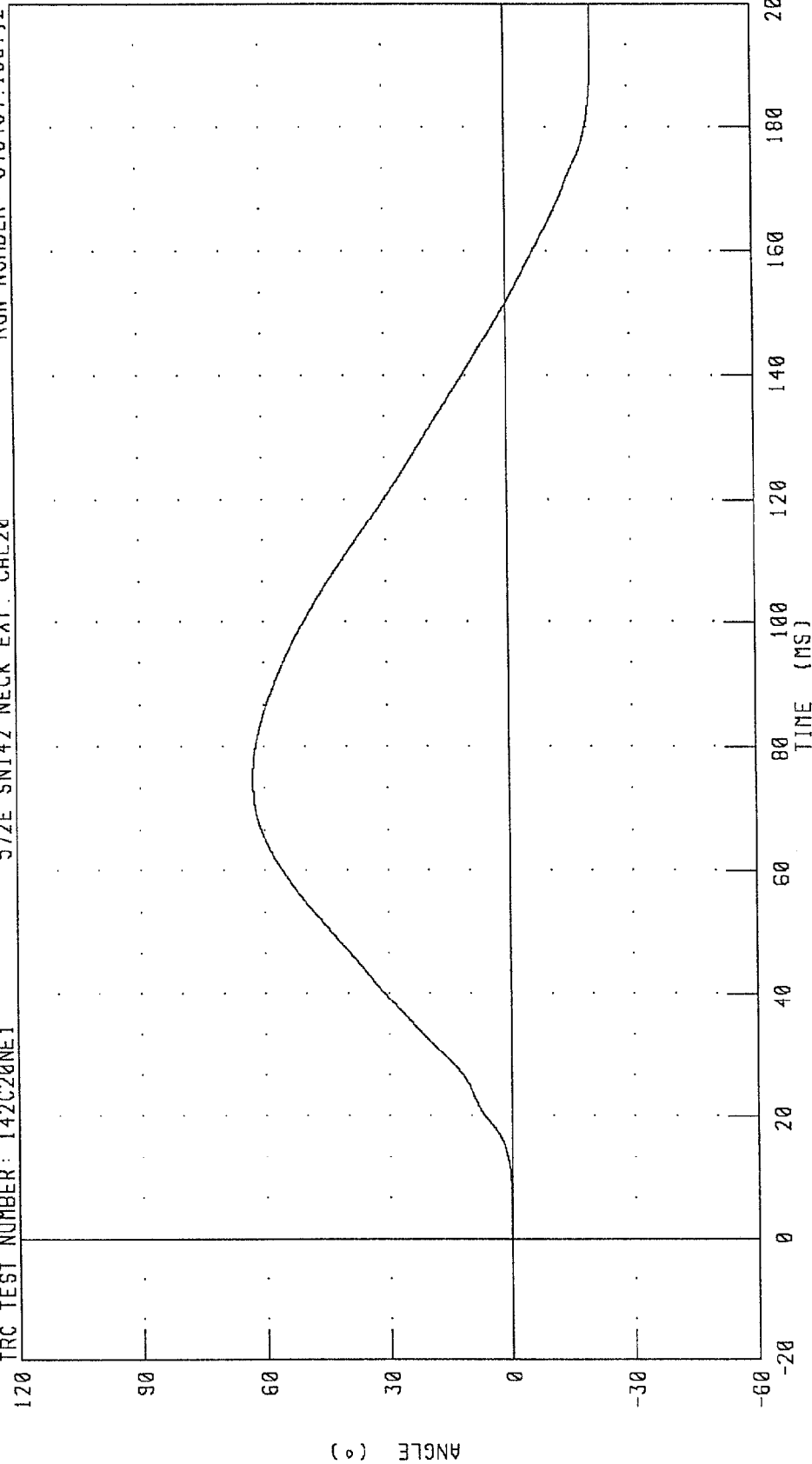
PEAK DATA: 32.85 ° @ 72.56 MS; -11.76 ° @ 195.52 MS

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

RUN NUMBER: 040494.1057;2

TRC TEST NUMBER: 142C20NE1

572E SN142 NECK EXT. CAL20



PEAK DATA: 62.68 ° @ 74.72 MS; -21.03 ° @ 193.12 MS

CHANNEL: THETA FILTER: CH. CLASS 60

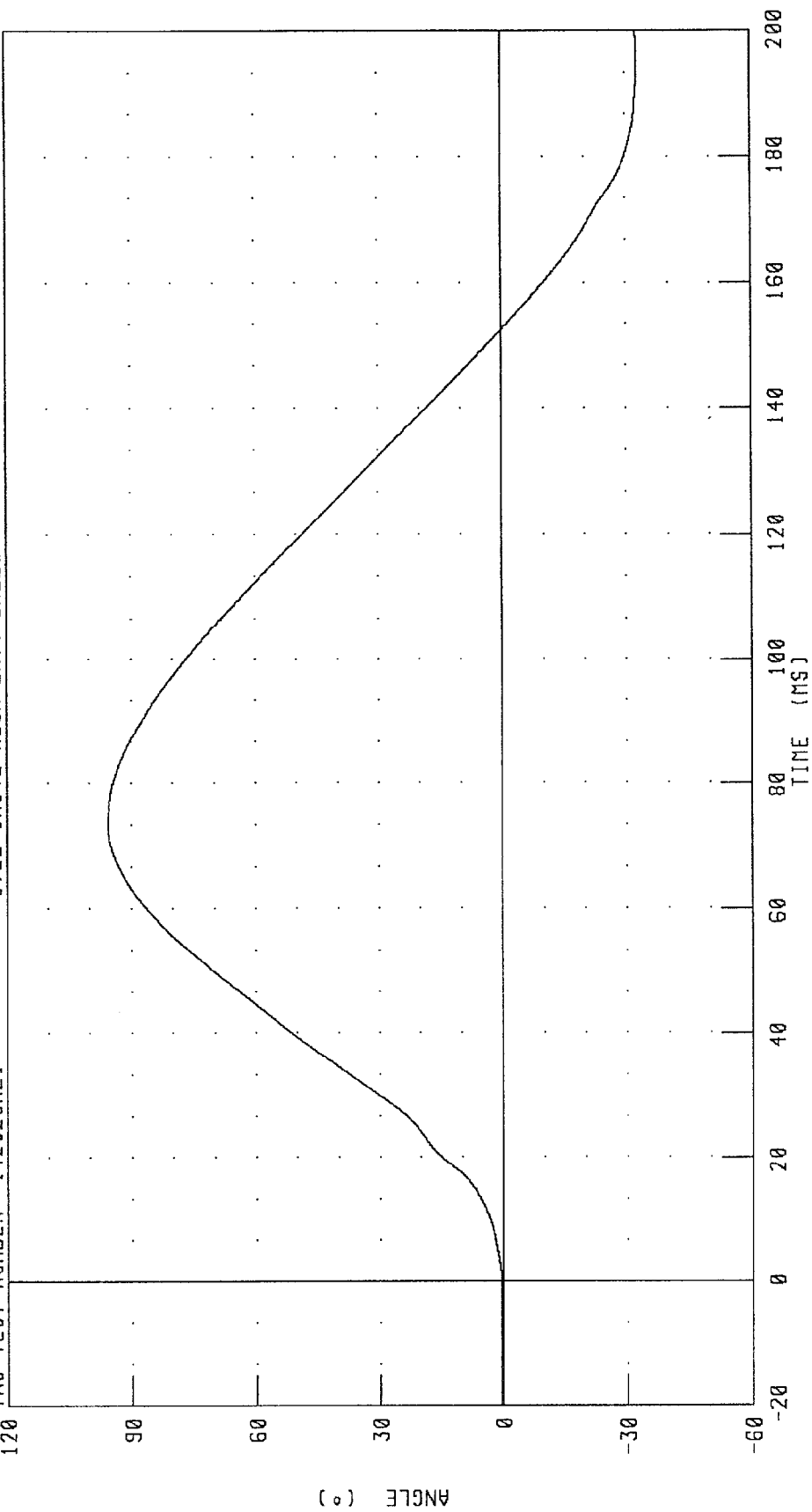
ANGLE (°)

TIME (MS)

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 142C20NE1 572E SN142 NECK EXT. CAL20 RUN NUMBER: 040494.1057;2



CHANNEL: TOTAL FILTER: CH. CLASS 60 PEAK DATA: 95.50 ° @ 73.44 MS; -32.77 ° @ 193.76 MS

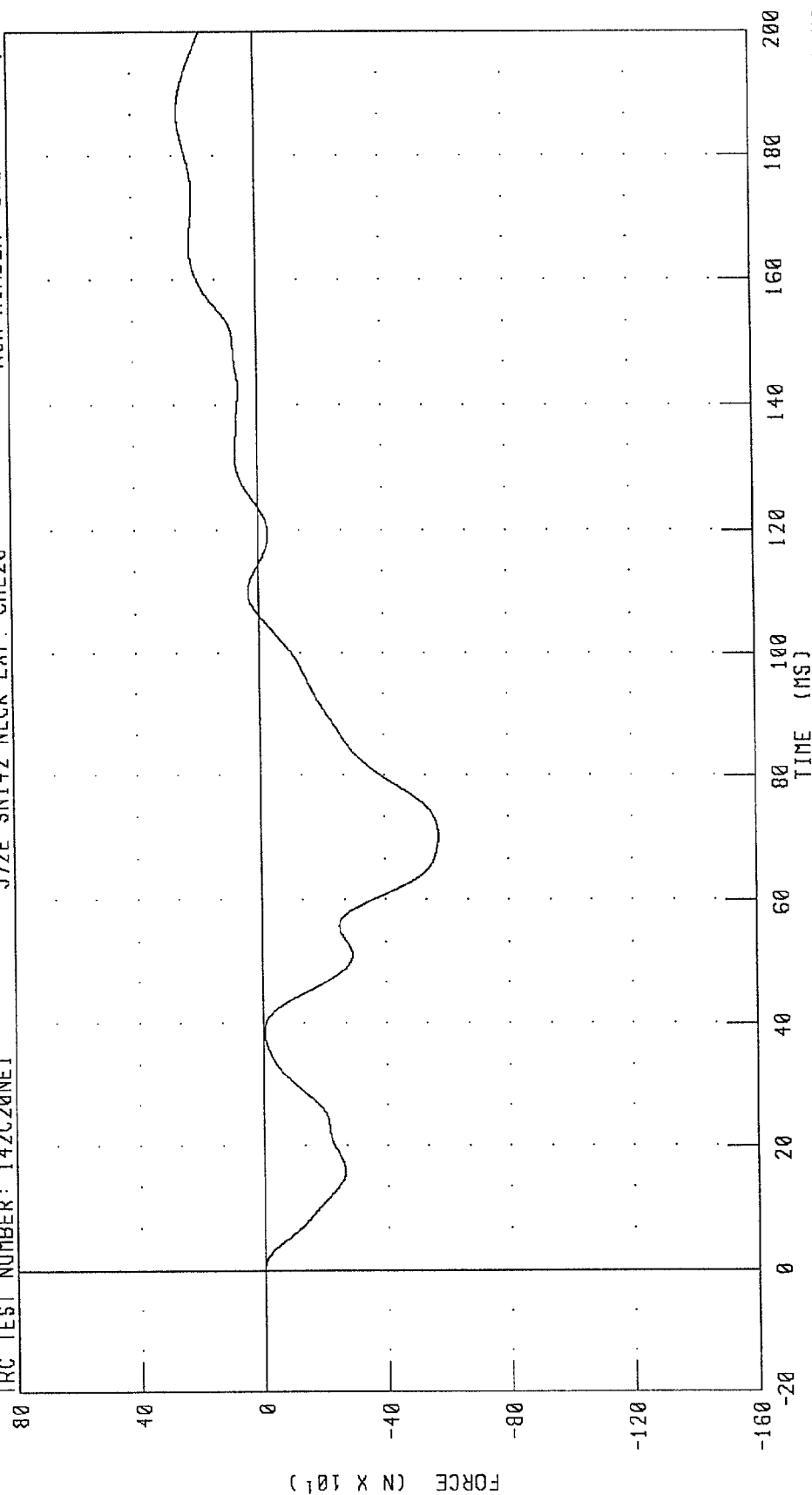
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 142C20NE1

572E SN142 NECK EXT. CAL20

RUN NUMBER: 040494.1057;2

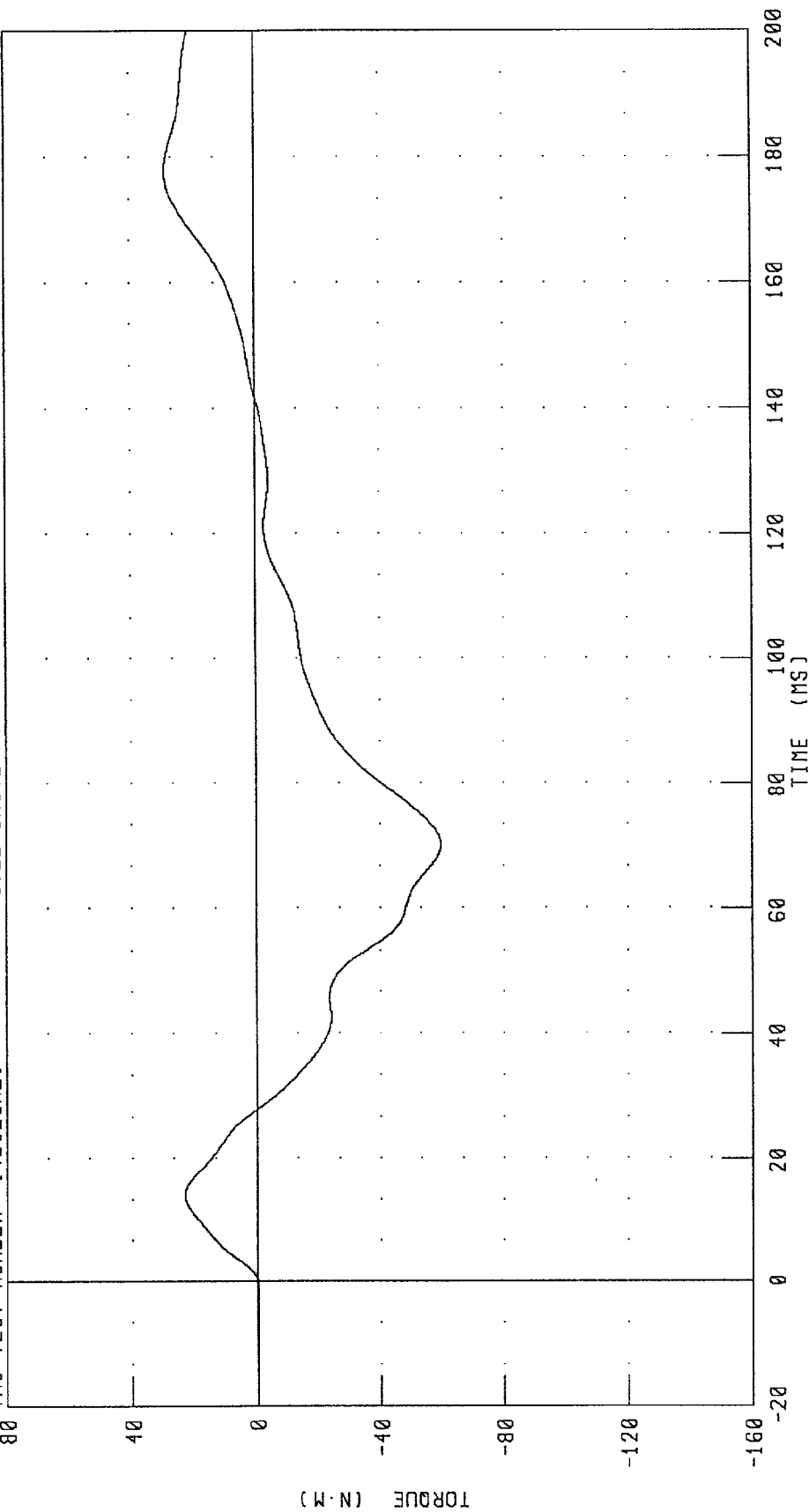


PEAK DATA: 250.30 N @ 186.96 MS; -571.84 N @ 70.40 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS

TRC TEST NUMBER: 142C20NE1 572E SN142 NECK EXT. CAL20 RUN NUMBER: 040494.1057;2



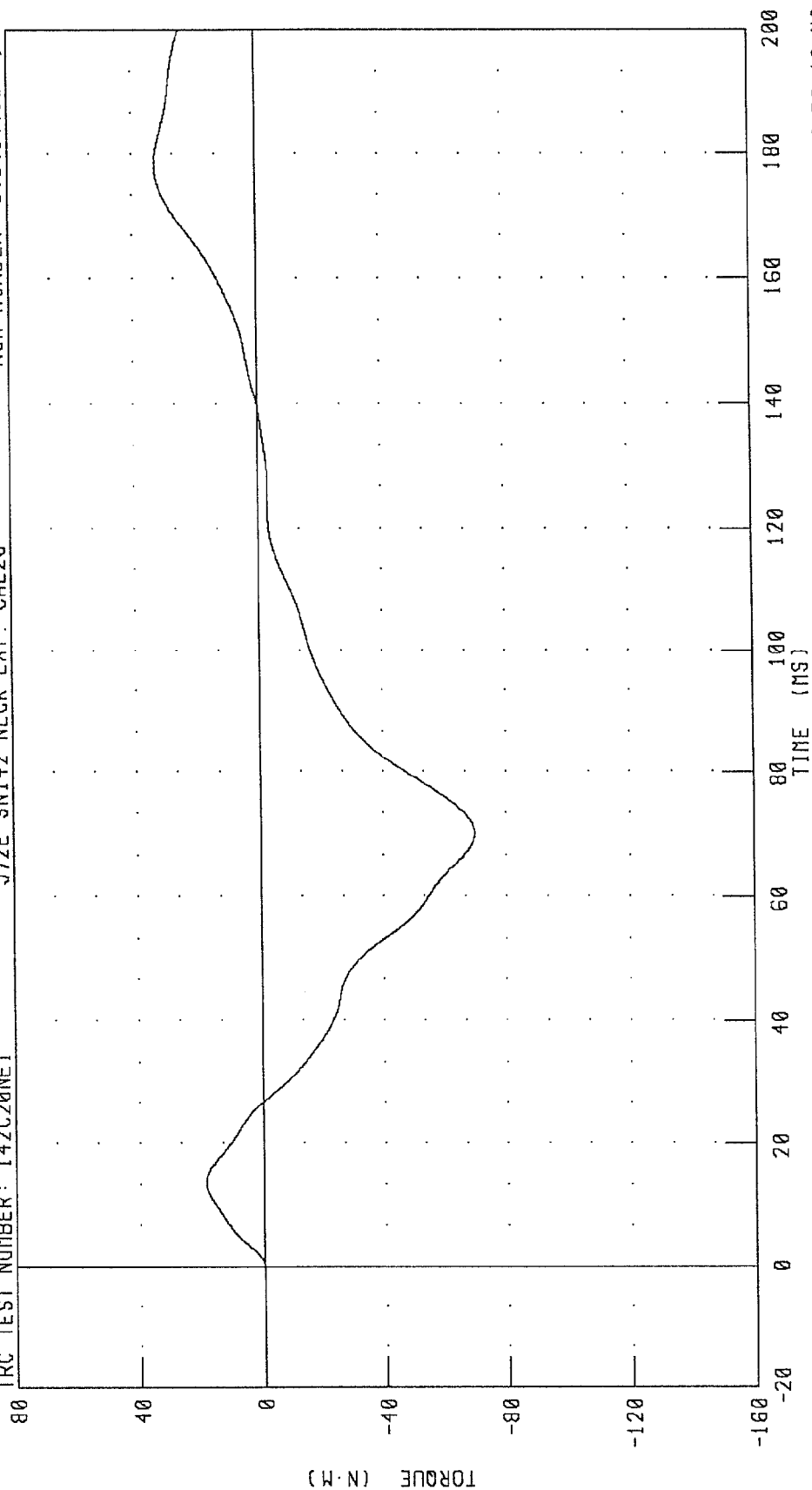
CHANNEL: NEKYM FILTER: CH. CLASS 60 PEAK DATA: 28.74 N·M @ 177.76 MS; -59.57 N·M @ 70.08 MS

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

TRC TEST NUMBER: 142C20NE1

572E SN142 NECK EXT. CAL20

RUN NUMBER: 040494.1057;2



PEAK DATA: 32.55 N·M @ 178.16 MS; -69.74 N·M @ 70.16 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III

07-FEB-94

TRC INC.

TEST NO: 142C20TH1

572E SN142 H.S.THORAX CAL20

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	52.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.71 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	68.6 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5541. N
INTERNAL HYSTERESIS	69% - 85%	74.0%

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Felt

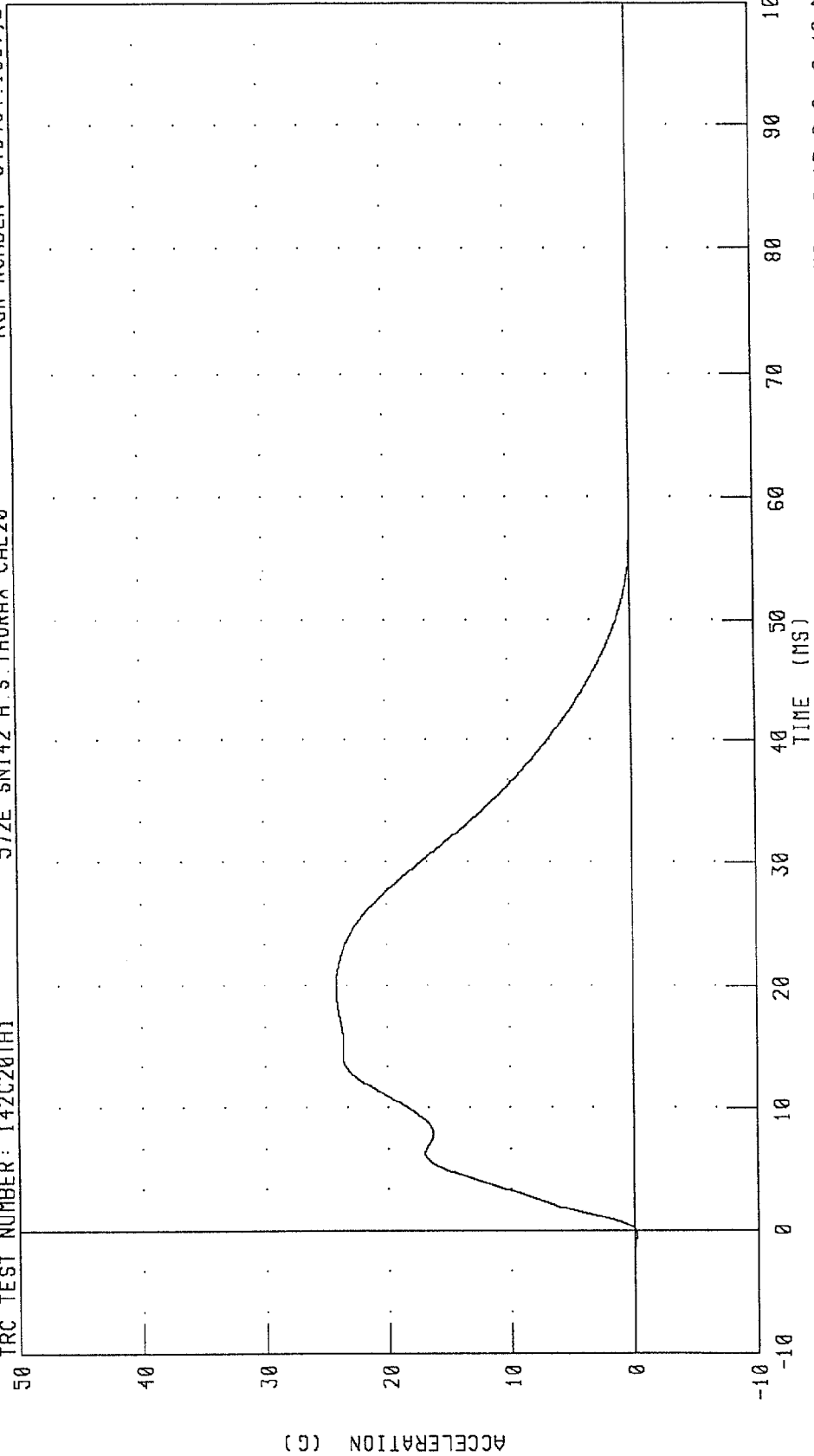
RUN NUMBER: 040194.1501;2

PART 572-E HYBRID III THORAX CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 142C20TH1

572E SN142 H.S. THORAX CAL20

RUN NUMBER: 040494.1057;2



CHANNEL: PENXG

FILTER: CH. CLASS 180

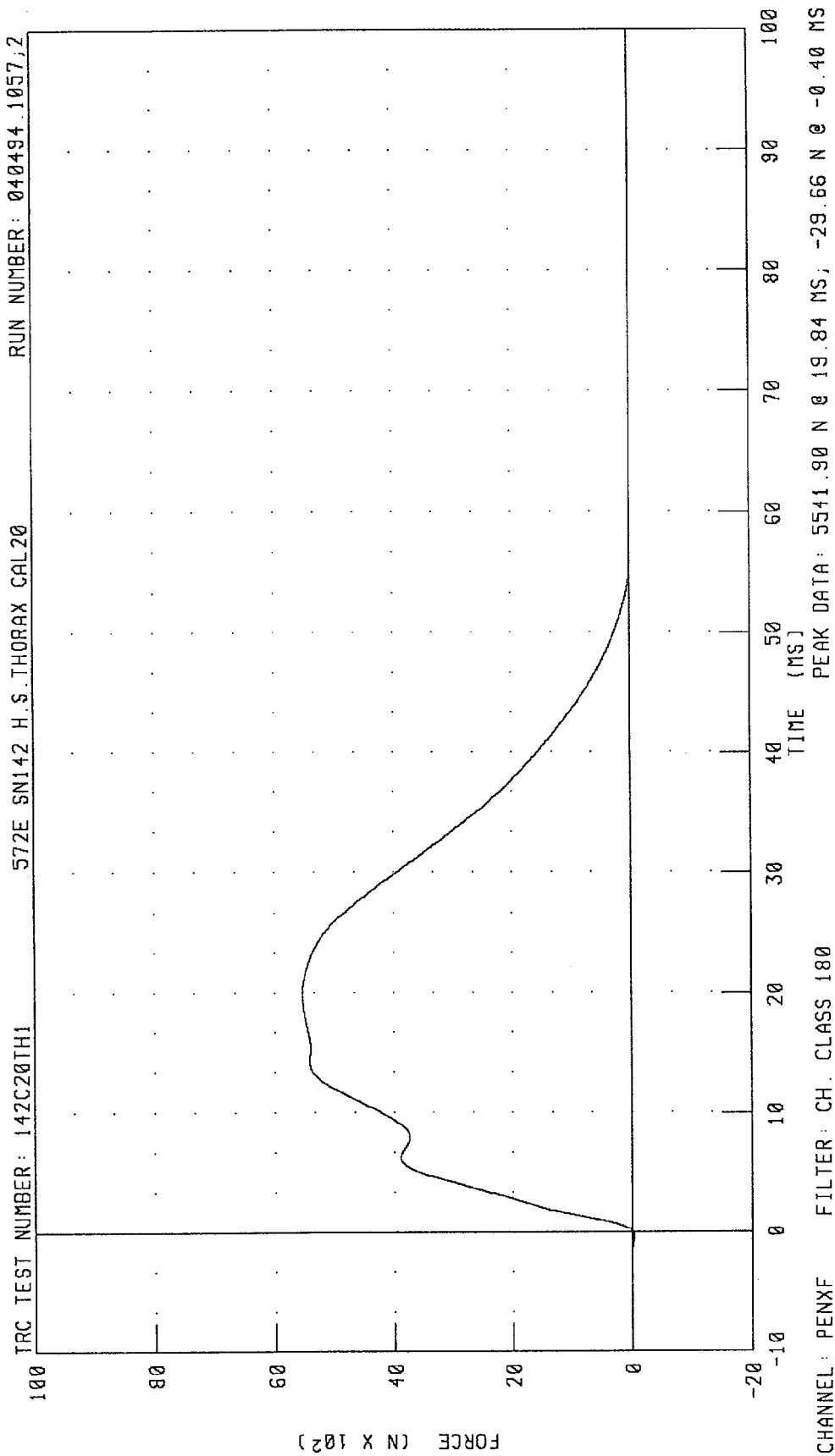
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER: 142C20TH1

572E SN142 H.S. THORAX CAL20

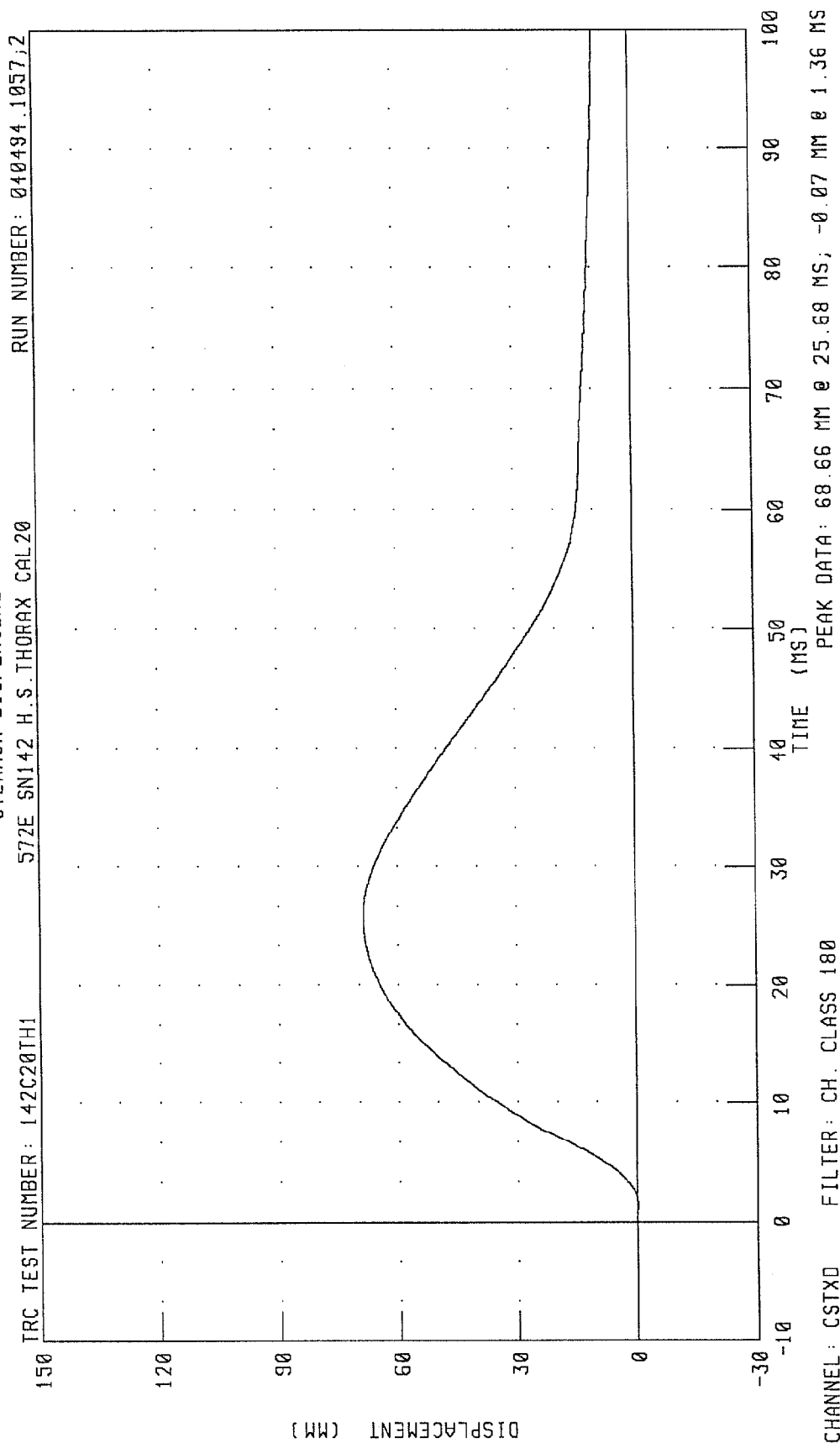
RUN NUMBER: 040494.1057,2



CHANNEL: PENXF FILTER: CH. CLASS 180

PEAK DATA: 5541.90 N @ 19.84 MS; -29.66 N @ -0.40 MS

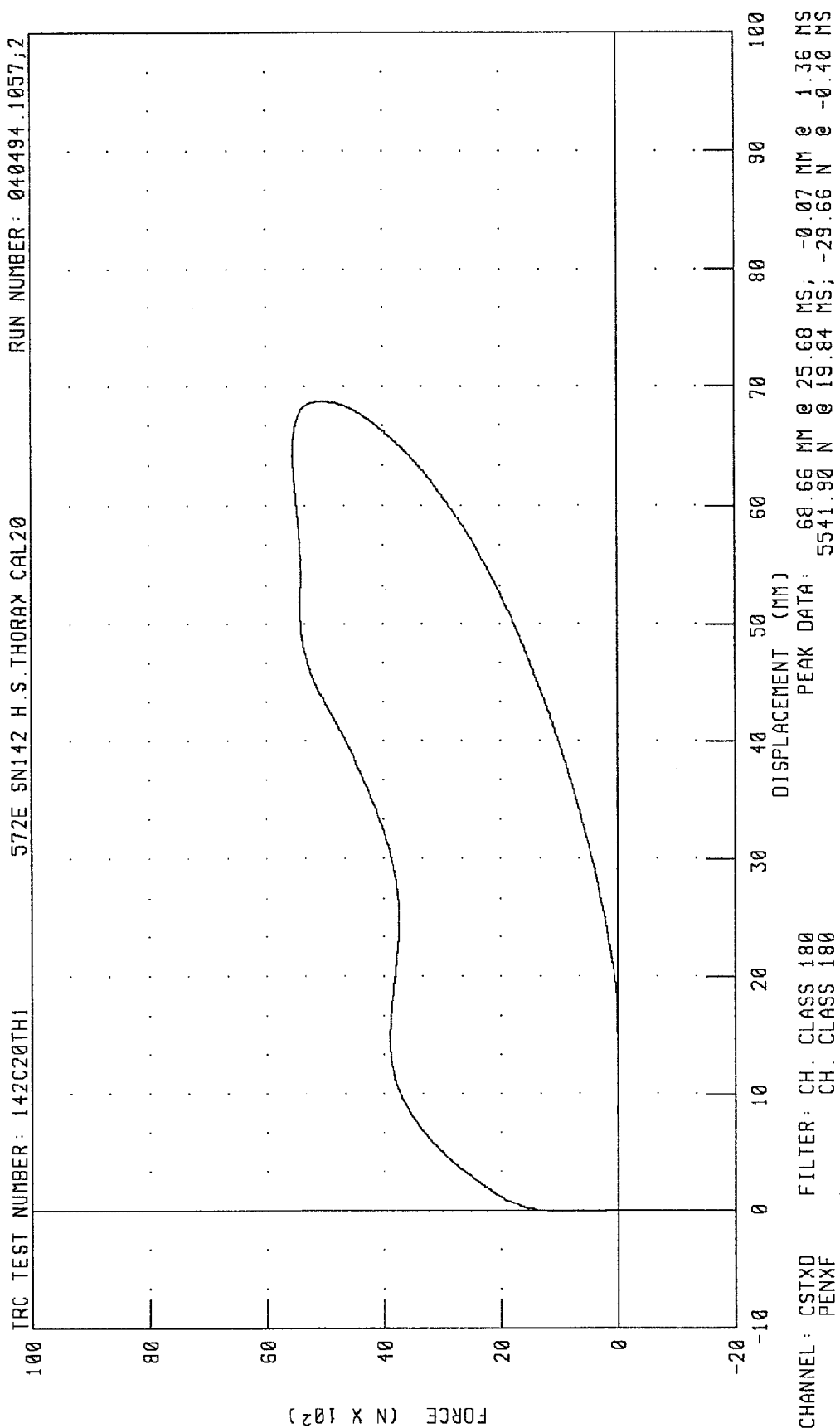
PART 572-E HYBRID III THORAX CALIBRATION STERNUM DISPLACEMENT



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

TRC TEST NUMBER: 142C20TH1 RUN NUMBER: 040494.1057;2

572E SN142 H.S. THORAX CAL20



TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III

04-FEB-94

TRC INC.

TEST NO: 142C20RK1

572E SN142 RIGHT KNEE CAL 20

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	55.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.10 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4714 - 5783 N	5514.6 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete FSA

RUN NUMBER: 020494.1320;1

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

TRC TEST NUMBER: 142C20RK1

572E SN142 RIGHT KNEE CAL 20

RUN NUMBER: 040494.1057;1

150

120

90

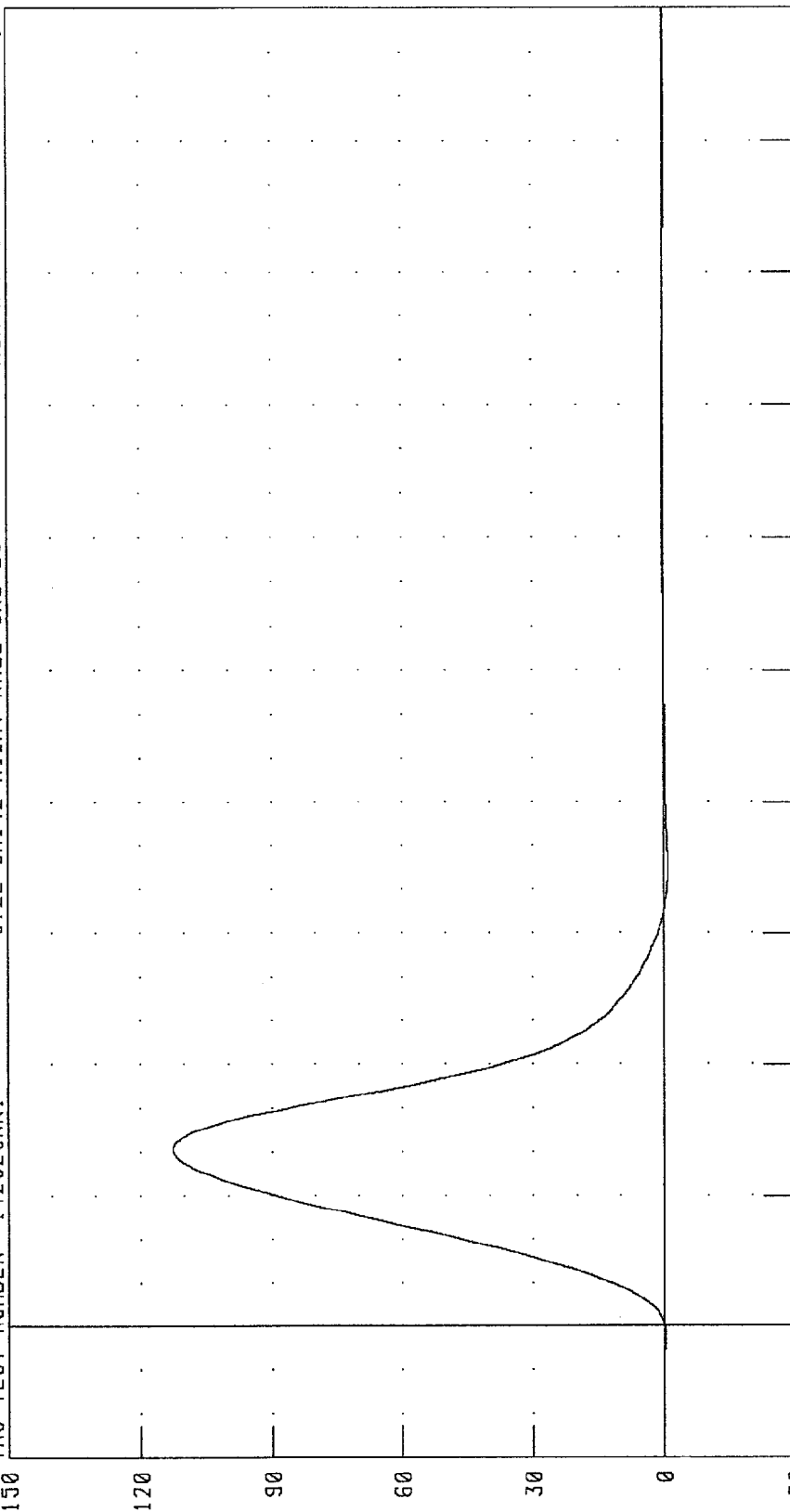
60

30

0

-30

ACCELERATION (G)



TIME (MS X 10⁻¹)

PEAK DATA: 112.71 G @ 2.72 MS; -0.94 G @ 7.04 MS

CHANNEL: PENXG FILTER: CH. CLASS 600

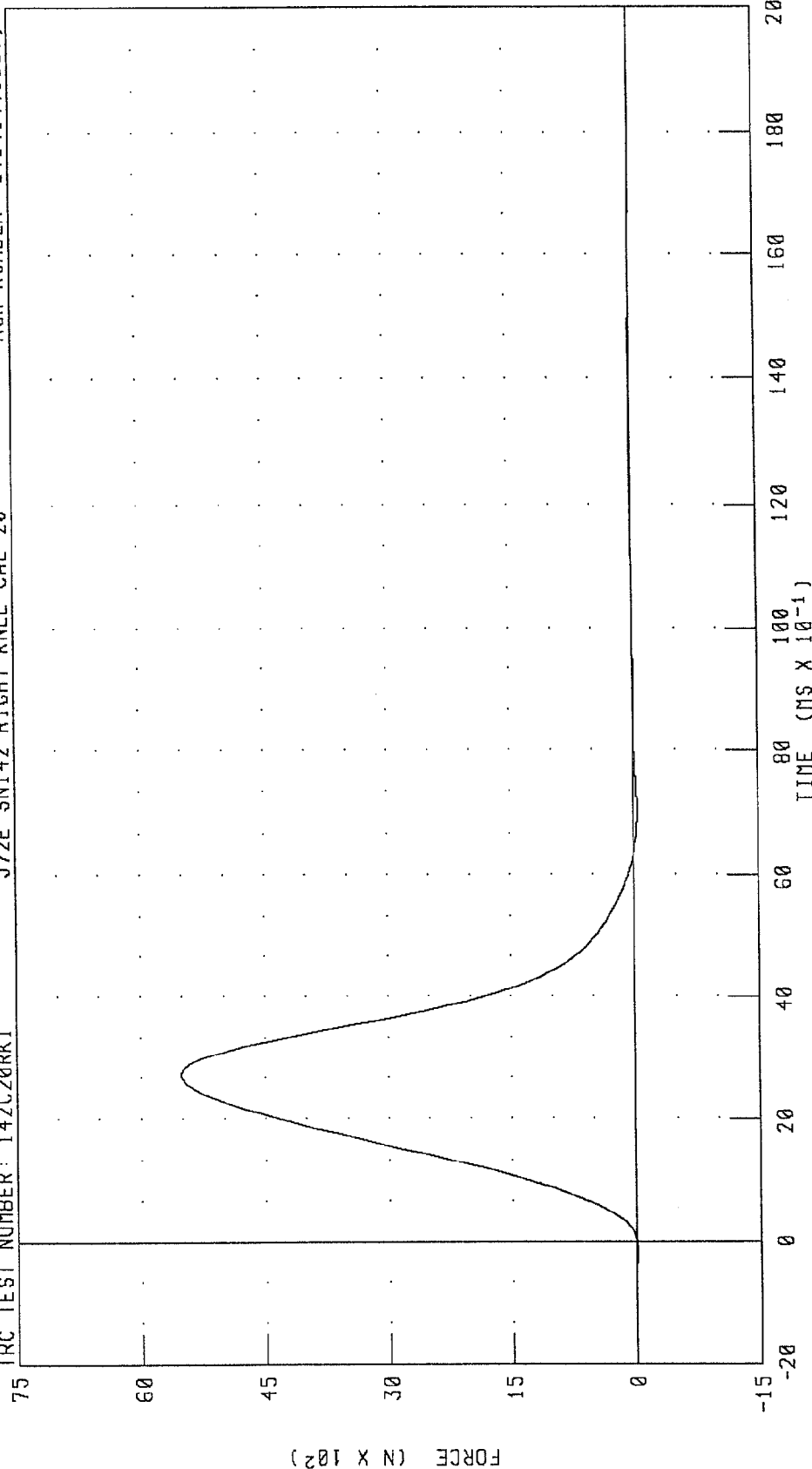
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

RUN NUMBER: 040494.1057;1

572E SN142 RIGHT KNEE CAL 20

TRC TEST NUMBER: 142C20RK1



PEAK DATA: 5514.62 N @ 2.72 MS; -45.91 N @ 7.04 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III

04-FEB-94

TRC INC.

TEST NO: 142C20LK1

572E SN142 LEFT KNEE CAL 20

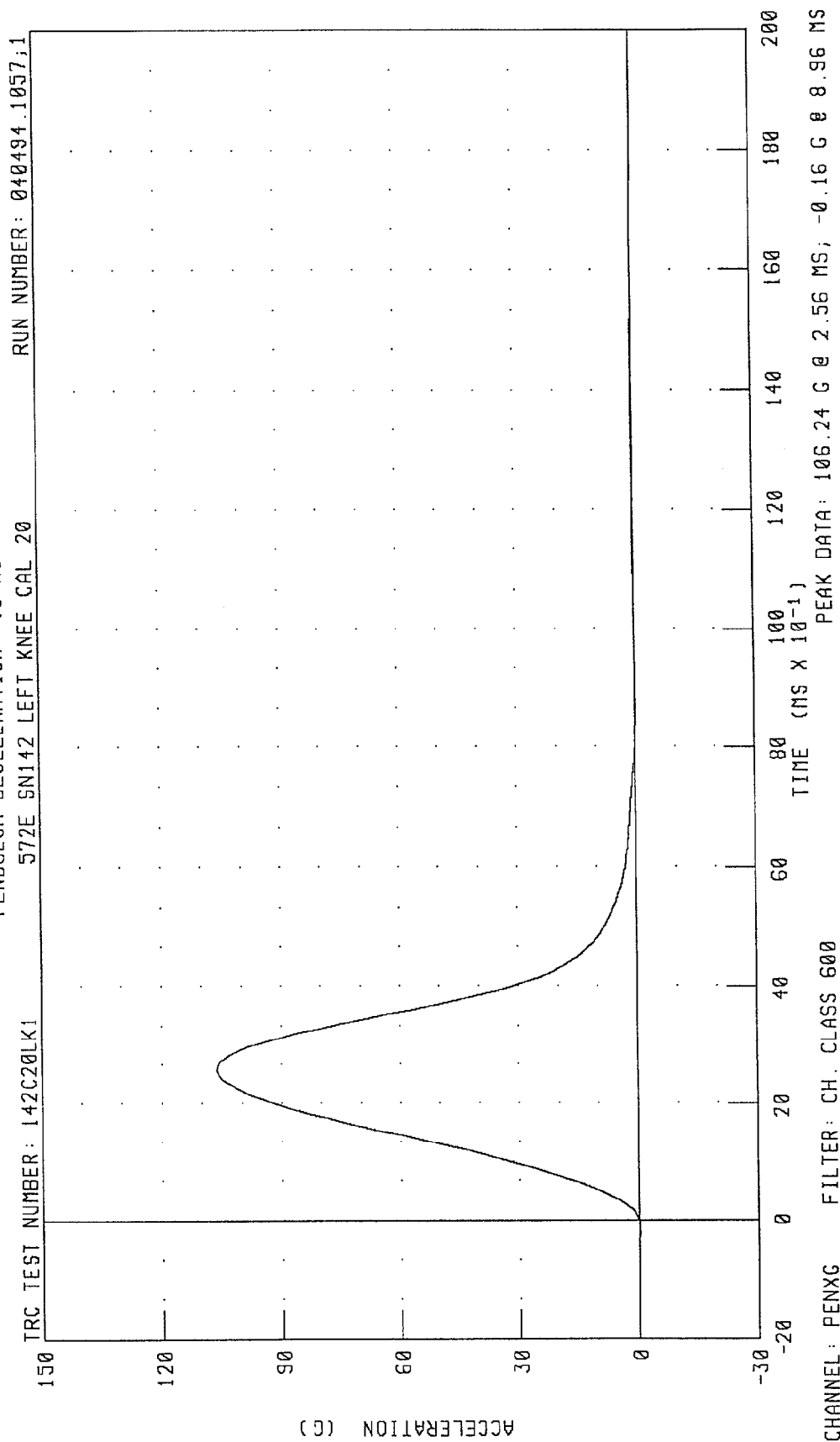
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	55.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.09 M/S
PEAK KNEE IMPACT FORCE 5.0 KG PENDULUM	4714 - 5783 N	5198.0 N

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Felt

RUN NUMBER: 020494.1316;1

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



CHANNEL: PENXG FILTER: CH. CLASS 600

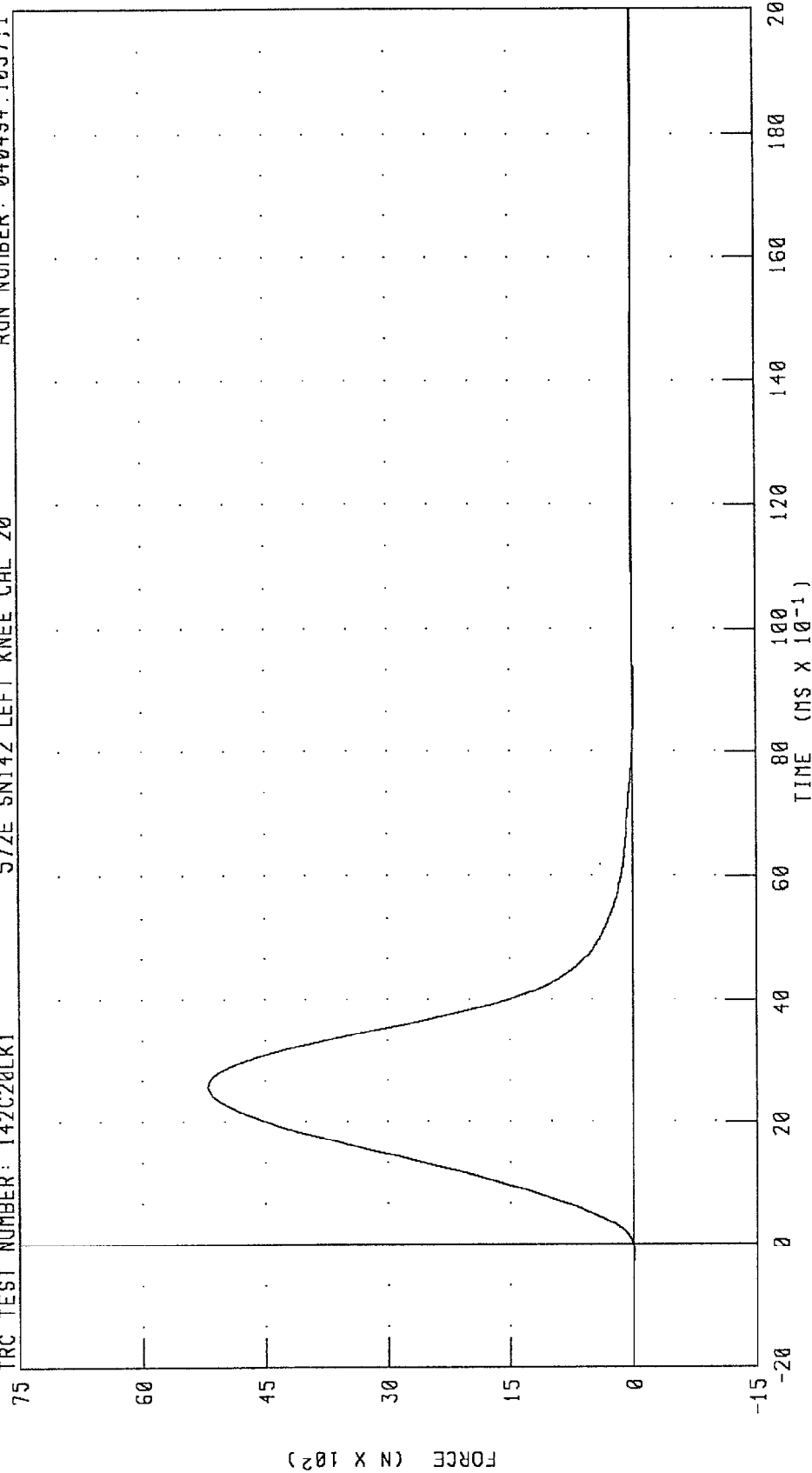
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 142C20LK1

572E SN142 LEFT KNEE CAL 20

RUN NUMBER: 040494.1057;1



CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 5198.02 N @ 2.56 MS; -7.88 N @ 8.96 MS

APPENDIX D

MISCELLANEOUS TEST INFORMATION

DUMMY INSTRUMENT CALIBRATIONS

DRIVER DUMMY #192

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCELEROMETER	AAL82	7264	ENDEVCO	09/14/93	03/14/94
Y-AXIS ACCELEROMETER	A84JJ	7264	ENDEVCO	09/14/93	03/14/94
Z-AXIS ACCELEROMETER	A62FJ	7264	ENDEVCO	09/14/93	03/14/94
CHEST X-AXIS ACCELEROMETER	ACCJO	7264	ENDEVCO	09/14/93	03/14/94
Y-AXIS ACCELEROMETER	AC708	7264	ENDEVCO	09/14/93	03/14/94
Z-AXIS ACCELEROMETER	CW59H	7264	ENDEVCO	09/14/93	03/14/94
LEFT FEMUR FORCE LOAD CELL	986	2430	GSE	09/23/93	03/23/94
RIGHT FEMUR FORCE LOAD CELL	987	2430	GSE	09/23/93	03/23/94
*NECK X-AXIS FORCE LOAD CELL	085	1716	DENTON	09/20/93	03/20/94
Y-AXIS FORCE LOAD CELL	085	1716	DENTON	09/20/93	03/20/94
Z-AXIS FORCE LOAD CELL	085	1716	DENTON	09/20/93	03/20/94
*NECK MOMENT ABOUT X-AXIS LOAD CELL	085	1716	DENTON	09/20/93	03/20/94
MOMENT ABOUT Y-AXIS LOAD CELL	085	1716	DENTON	09/20/93	03/20/94
MOMENT ABOUT Z-AXIS LOAD CELL	085	1716	DENTON	09/20/93	03/20/94
*CHEST DEFLECTION POTENTIOMETER	87313-96	81422A	VERNITECH	09/24/93	03/24/94
LAP BELT FORCE LOAD CELL	612	3419	LEBOW	02/22/94	08/22/94
SHOULDER BELT FORCE LOAD CELL	127	3419	LEBOW	02/22/94	08/22/94
SHOULDER BELT SPOOL-OUT POTENTIOMETER	A128	PT-101-40A	CELESCO	03/09/94	09/09/94
SHOULDER BELT STRETCH POTENTIOMETER	2690	2051414101	BOURNES	03/09/94	09/09/94

*HYBRID III USE ONLY.

DUMMY INSTRUMENT CALIBRATIONS

RIGHT FRONT PASSENGER DUMMY #142

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCELEROMETER	FH25J	7264	ENDEVCO	09/14/93	03/14/94
Y-AXIS ACCELEROMETER	CY32H	7264	ENDEVCO	09/24/93	03/24/94
Z-AXIS ACCELEROMETER	DB81H	7264	ENDEVCO	10/19/93	04/19/94
CHEST X-AXIS ACCELEROMETER	DR49J7	7264	ENDEVCO	09/14/93	03/14/94
Y-AXIS ACCELEROMETER	ACBW6	7264	ENDEVCO	09/14/93	03/14/94
Z-AXIS ACCELEROMETER	CW42H	7264	ENDEVCO	09/14/93	03/14/94
LEFT FEMUR FORCE LOAD CELL	901	2430	GSE	09/23/93	03/23/94
RIGHT FEMUR FORCE LOAD CELL	902	2430	GSE	09/23/93	03/23/94
*NECK X-AXIS FORCE LOAD CELL	0280	1716	DENTON	09/20/93	03/20/94
Y-AXIS FORCE LOAD CELL	0280	1716	DENTON	09/20/93	03/20/94
Z-AXIS FORCE LOAD CELL	0280	1716	DENTON	09/20/93	03/20/94
*NECK MOMENT ABOUT X-AXIS LOAD CELL	0280	1716	DENTON	09/20/93	03/20/94
MOMENT ABOUT Y-AXIS LOAD CELL	0280	1716	DENTON	09/20/93	03/20/94
MOMENT ABOUT Z-AXIS LOAD CELL	0280	1716	DENTON	09/20/93	03/20/94
*CHEST DEFLECTION POTENTIOMETER	90320-B	81422A	VERNITECH	09/22/93	03/22/94
LAP BELT FORCE LOAD CELL	616	3419	LEBOW	08/24/93	02/24/94
SHOULDER BELT FORCE LOAD CELL	610	3419	LEBOW	08/23/93	02/23/94
SHOULDER BELT SPOOL-OUT POTENTIOMETER	A12889	PT-101-50A	CELESCO	09/22/93	03/22/94
SHOULDER BELT STRETCH POTENTIOMETER	2690	2051414101	BOURNES	09/23/93	03/23/94

*HYBRID III USE ONLY.

VEHICLE AND CALIBRATION LABORATORY INSTRUMENT CALIBRATIONS

VEHICLE ACCELEROMETERS

	SERIAL NUMBER	MODEL NUMBER	MFR.	CALIBRATION DATE	
				LAST	DUE
LEFT REAR SEAT CROSSMEMBER X-AXIS	CH22H	7264	ENDEVCO	12/15/93	06/15/94
LEFT REAR SEAT CROSSMEMBER X-AXIS REDUNDANT	CR26H	7264	ENDEVCO	12/30/93	06/30/94
RIGHT REAR SEAT CROSSMEMBER X-AXIS	FH41J	7264	ENDEVCO	01/24/94	07/24/94
RIGHT REAR SEAT CROSSMEMBER X-AXIS REDUNDANT	CJ04H	7264	ENDEVCO	01/24/94	07/24/94
ENGINE TOP X-AXIS	CP29H	7264	ENDEVCO	01/24/94	07/24/94
ENGINE BOTTOM X-AXIS	CW87H	7264	ENDEVCO	11/29/93	05/29/94
RIGHT BRAKE CALIPER X-AXIS	DT83J	7264	ENDEVCO	03/07/94	09/07/94
LEFT BRAKE CALIPER X-AXIS	CY78H	7264	ENDEVCO	03/07/94	09/07/94
INSTRUMENT PANEL CENTER X-AXIS	DR87J	7264	ENDEVCO	01/24/94	07/24/94

CALIBRATION LABORATORY INSTRUMENTS

	SERIAL NUMBER	MODEL NUMBER	MFR.	CALIBRATION DATE	
				LAST	DUE
NECK BENDING PENDULUM ACCELEROMETER	CB27	7232	ENDEVCO	10/04/93	04/04/94
NECK BENDING ROTARY POTENTIOMETER	NA	35435-1-102	BOURNES	MFR. SPECIFICATION	
NECK BENDING LINEAR POTENTIOMETER	NA	5184-2051846003	BOURNES	10/06/93	04/06/94
THORAX/HYBRID II FEMUR PENDULUM ACCELEROMETER	CC64	7232	ENDEVCO	10/06/93	04/06/94
LUMBAR FLEXION FORCE GAUGE	NA	DPPH-50	CHATILLON	05/03/89	REPAIRED
LUMBAR FLEXION ROTATION GAUGE	CP17-0601-1	7020	HUMPHREY	MFR. SPECIFICATION	
ABDOMEN COMPRESSION DISPLACEMENT GAUGE	4075-175	80294-2051941504	BOURNES	10/06/93	04/06/94
ABDOMEN COMPRESSION FORCE GAUGE	3443	3167	LEBOW	10/06/93	04/06/94
HYBRID III FEMUR PENDULUM ACCELEROMETER	CG83	7232	ENDEVCO	10/06/93	04/06/94

1. **Introduction**

2. **Background**

3. **Method**

4. **Results**

5. **Discussion**

6. **Conclusion**

7. **References**

8. **Appendix**

9. **Table 1**

10. **Table 2**

11. **Table 3**

12. **Table 4**

13. **Table 5**

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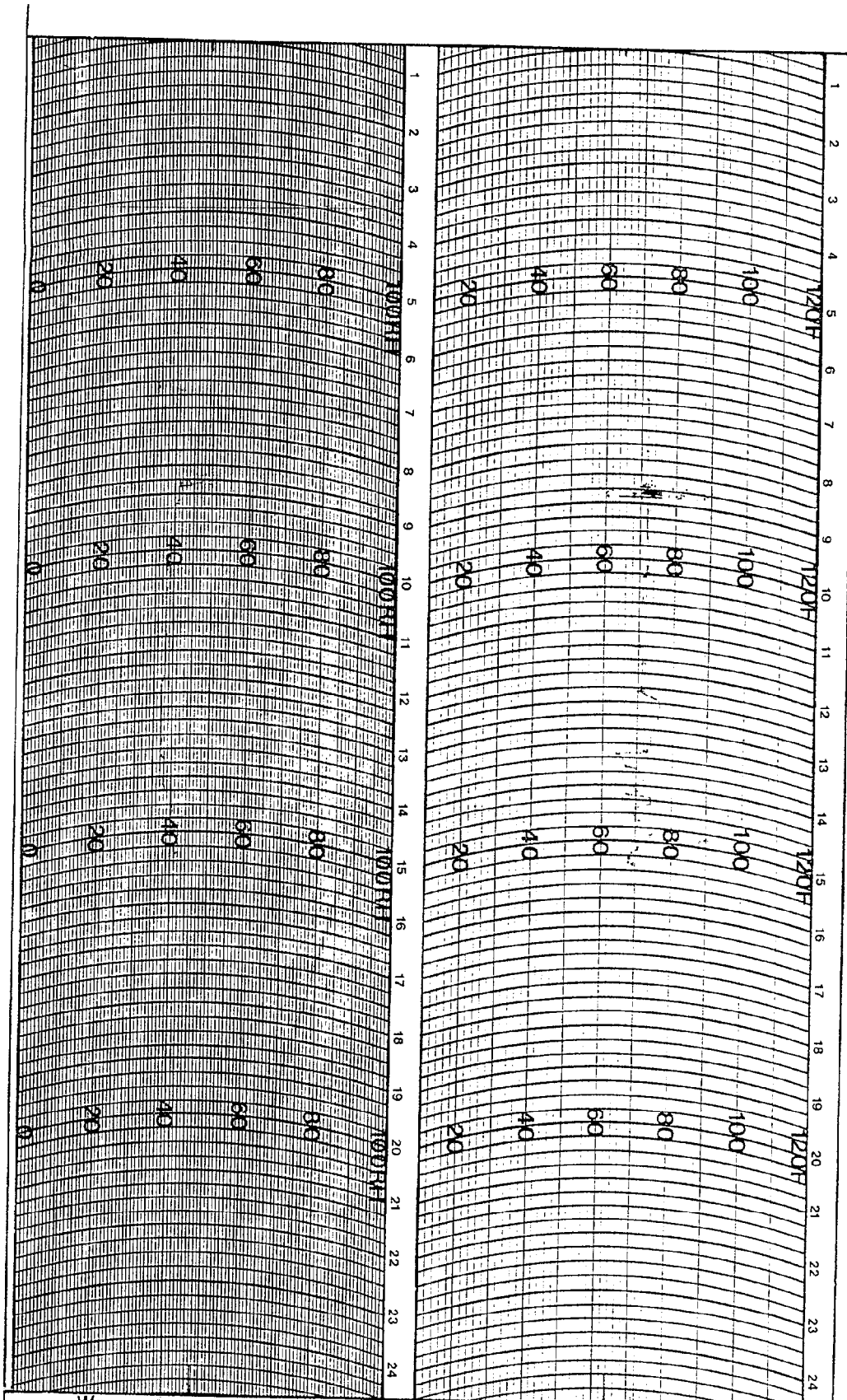
TIBIA LOAD CELLS:  +X FORCE:      TENSION
                       +Y FORCE:      TENSION
                       +Z FORCE:      TENSION
                       +X MOMENT:     BOTTOM OF TIBIA MOVING LEFTWARD
                       +Y MOMENT:     BOTTOM OF TIBIA MOVING REARWARD

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FREQUENCY RESPONSE CLASSES

SAE J211 OCT88

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



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

Seat belts—

—Seat belt precautions

Toyota recommends that the driver and passengers in the vehicle be properly restrained at all times with the seat belts provided. Failure to do so could increase the chance of injury and/or the severity of injury in accidents. Baby or small child. Use a child restraint system which fits your vehicle. See "Child restraint" for details.

Child. If a child is too large for a child restraint system, the child should sit in the rear seat and must be restrained using the vehicle's seat belt. According to accident statistics, the child is safer when properly restrained in the rear seat than in the front seat. Do not allow the child to stand up or kneel on the seat. If the shoulder belt fails across the child's neck or face, move the child to the center position and use the center lap belt.

Pregnant woman. Toyota recommends the use of a seat belt. Ask your doctor for specific recommendations. The lap belt should be worn securely and as low as possible over the hips and not on the waist.

Injured person. Toyota recommends the use of a seat belt. Depending on the injury, however, first check with your doctor.

CAUTION: Persons should ride in their seats properly wearing their seat belts whenever the vehicle is moving. Otherwise, they are much more likely to suffer serious bodily injury in the event of sudden braking or a collision.

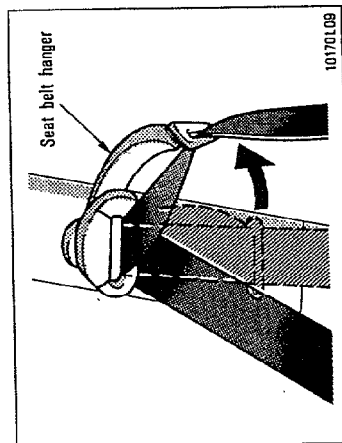
When using the seat belts, observe the following:

- Use the belt for only one person at a time. Do not use a single belt for two or more people—even children.
- Avoid reclining the seatbacks too much. The seat belts provide maximum protection when the seatbacks are in the upright position. (See the seat adjustment instructions.)
- Be careful not to damage the belt webbing or hardware. Take care that they do not get caught or pinched in the seat or doors.
- Inspect the belt system periodically. Check for cuts, fraying, and loose parts. Damaged parts should be replaced. Do not disassemble or modify the system.

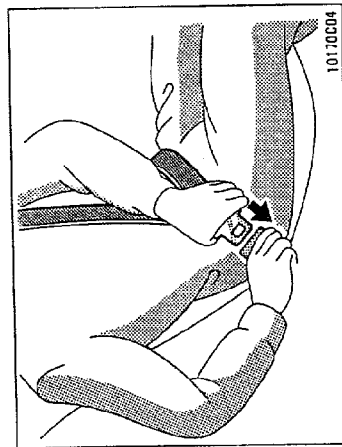
- Keep the belts clean and dry. If they need cleaning, use a mild soap solution or lukewarm water. Never use bleach, dye, or abrasive cleaners—they may severely weaken the belts.
- Replace the belt assembly if it has been used in a severe impact. The entire assembly should be replaced even if damage is not obvious.

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# —Front seat belts and rear outside seat belts



**Seat belts with a seat belt hanger —**  
Make sure that the seat belt hanger is secured in raised position. If it is not, be sure to raise the seat belt hanger until it locks in position.  
You will hear a click when the seat belt hanger locks in position.



**Adjust the seat as needed (front seats only)**  
and sit up straight and well back in the seat.  
To fasten your belt, pull it out of the retractor and insert the tab into the buckle.  
You will hear a click when the tab locks into the buckle.

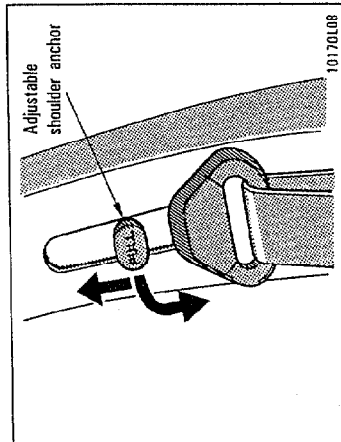
The seat belt length automatically adjusts to your size and the seat position.

The retractor will lock the belt during a sudden stop or on impact. It also may lock if you lean forward too quickly. A slow, easy motion will allow the belt to extend, and you can move around freely.

If the seat belt cannot be pulled out of the retractor, firmly pull the belt and release it. You will then be able to smoothly pull the belt out of the retractor.

When a passenger's shoulder belt is completely extended and is then retracted even slightly, the belt is locked in that position and cannot be extended. This feature is used to hold the child restraint system securely. (For details, see "Child restraint" in this chapter.)  
To free the belt again, fully retract the belt and then pull the belt out once more.

**CAUTION:** After inserting the tab, make sure the connection is secure and that the belt is not twisted.

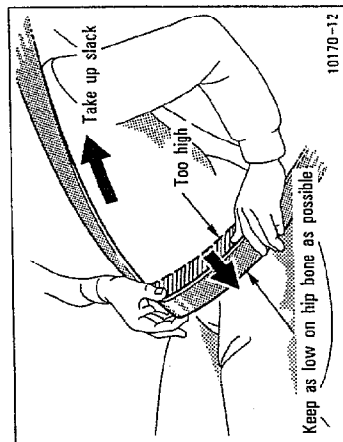


Seat belts with an adjustable shoulder anchor—

Adjust the shoulder anchor position to your size.

To raise the anchor position, push the anchor up. To lower the anchor position, pull the knob and slide the anchor down. After adjustment, make sure the anchor is locked in position.

**CAUTION:** Always be sure that the belt is positioned across your shoulder, as close to your neck as possible; not on your upper arm or neck. Failure to do so could reduce the amount of protection in an accident and increase the chance of injury.



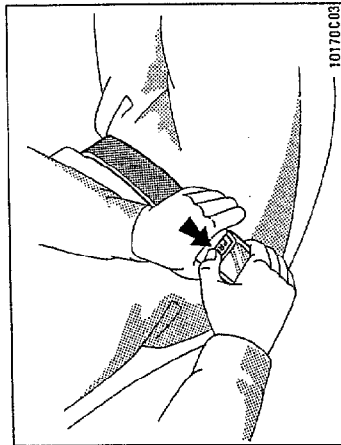
Adjust the position of the lap and shoulder belts.

Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit by pulling the shoulder portion upward through the latch plate.

**CAUTION:**

High-positioned lap belts and loose-fitting shoulder belts both could increase the chance of injury due to sliding under the lap belt during an accident.

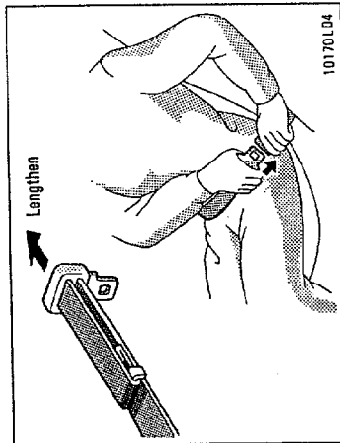
For your safety, do not place the shoulder belt under your arm.



To release the belt, press the buckle-release button and allow the belt to retract.

If the belt does not retract smoothly, pull it out and check for kinks or twists. Then make sure it remains untwisted as it retracts.

# —Rear center seat belt



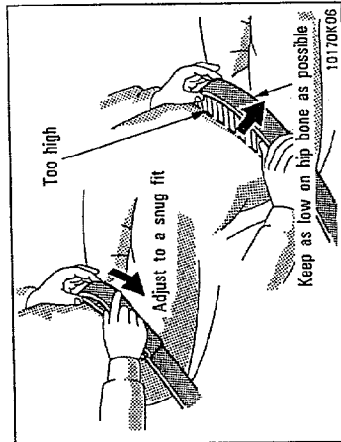
Sit up straight and well back in the seat. To fasten your belt, insert the tab into the buckle.

You will hear a click when the tab locks into the buckle.

If the belt is not long enough for you, hold the tab at a right angle to the belt and pull on the tab.

**CAUTION:** After inserting the tab, make sure the connection is secure and that the belt is not twisted.

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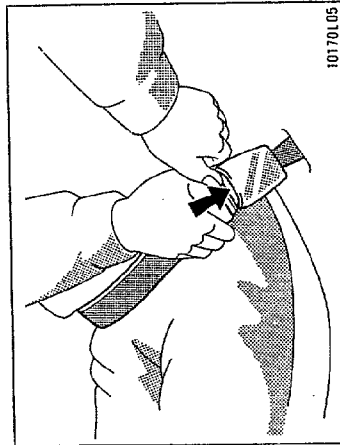
Remove excess length of the belt and adjust the belt position.

To shorten the belt, pull the free end of the belt.

Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit.

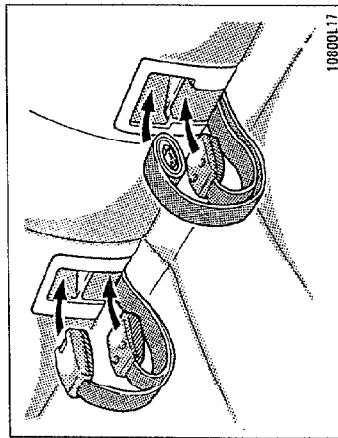
CAUTION: High-positioned lap belt could increase the chance of injury due to sliding under the lap belt during an accident.

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To release the belt, press the buckle-release button.

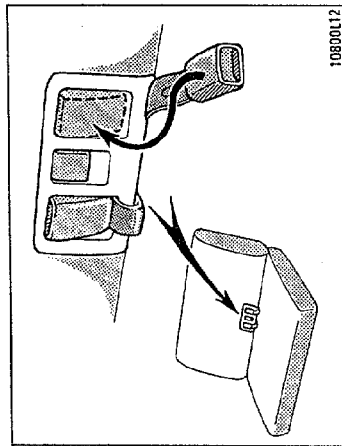
### —Stowing the rear seat belts (wagon)



The rear seat belts can be stowed when not in use.

Seat belts must be stowed before you fold the seatback. (See "Rear seats—Fold-down rear seat in this chapter.")

### —Stowing the third seat belts (wagon)



The third seat belts can be stowed when not in use.

Seat belts must be stowed before you fold the seatback. (See "Rear seats—Take-down third seat" in this chapter.)

### —Seat belt extender

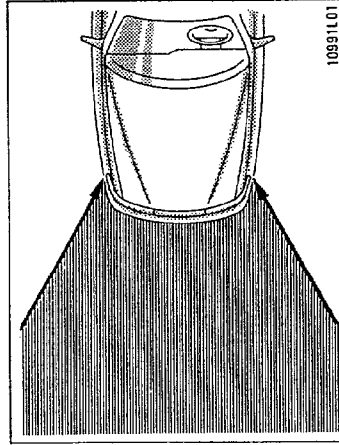
If your seat belt cannot be fastened securely because it is not long enough, a personalized seat belt extender is available from your Toyota dealer free of charge.

Please contact your local Toyota dealer so that the dealer can order the proper required length for the extender. Bring the heaviest coat you expect to wear for proper measurement and selection of length. Additional ordering information is available at your Toyota dealer.

**CAUTION:** When using the seat belt extender, observe the following. Failure to follow these instructions could result in less effectiveness of the seat belt restraint system in case of vehicle accident, increasing the chance of personal injury.

- ⊗ Never use the seat belt extender if you can fasten the seat belt without it.
- ⊗ Remember that the extender provided for you may not be safe when used on a different vehicle, or for another person and at different seating position than the one originally intended for.

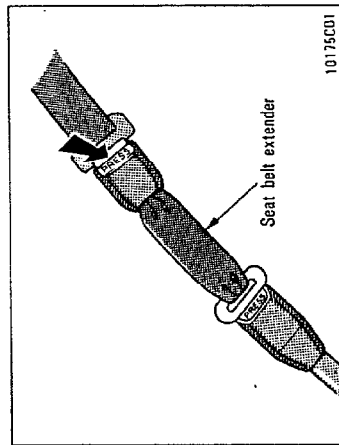
## SRS airbags



The SRS (Supplemental Restraint System) airbags are designed to be activated in response to a severe frontal impact within the shaded area between the arrows in the illustration, and to provide the driver and front passenger with further protection in addition to the protection provided by the seat belts.

The SRS airbag system is not designed to protect the driver and front passenger from an impact from the side or rear, a vehicle overturn or frontal collision at low speeds.

For instructions and precautions concerning the seat belt system, see "Seat belts".



To connect the extender to the seat belt, insert the tab into the seat belt buckle so that the "PRESS" signs on the buckle-release buttons of the extender and the seat belt are both facing outward as shown.

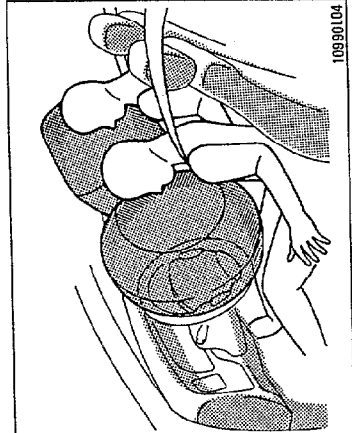
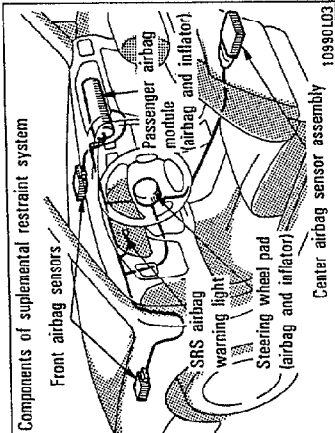
You will hear a click when the tab locks into the buckle.

When releasing the seat belt, press on the buckle-release button on the extender, not on the seat belt. This helps prevent damage to the vehicle interior and extender itself.

When not in use, remove the extender and store in the vehicle for future use.

**CAUTION:** After inserting the tab, make sure the connection is secure and that the seat belt extender is not twisted.

- CAUTION:** ~~~~~
- The SRS airbag system is designed only as a supplement to the seat belt system of the driver and front passenger. The front seat occupants are particularly susceptible to injury if they do not wear their seat belts, when sudden braking or a collision occurs, they may be thrown forward. To obtain further protection in an accident, the driver and all passengers in the vehicle should always wear their seat belts when driving.
  - A baby or small child who is too small to use a seat belt should be properly secured in a rear seat using a child restraint system.
- ~~~~~



The center airbag sensor assembly consists of a safing sensor and center airbag sensor. In the event of a severe frontal impact, a front airbag sensor and safing sensor, or center airbag sensor and safing sensor detect the shock, the center airbag sensor assembly triggers the inflators, and the inflators fill the airbags to help restrain forward motion of the occupants.

When the SRS airbags inflate, an operating noise will be heard and a small amount of smoke-like gas will be released. This gas is harmless and does not indicate that a fire is occurring.

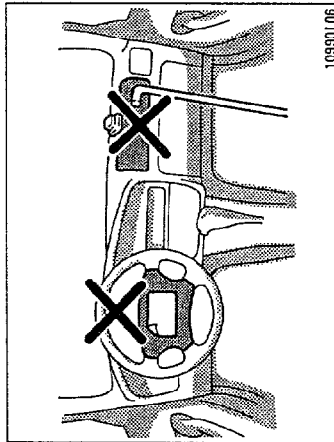
In response to a severe frontal impact, the airbags inflate and reduce the likelihood of the driver and front passenger's heads from directly hitting the steering wheel or instrument panel. The passenger's airbag is activated together with the driver's airbag, even with no passenger sitting in the front seat.

- ⦿ Do not sit on the edge of the seat or lean over the instrument panel when the vehicle is in use. The airbags inflate with considerable speed and force; you may be severely injured. Sit up straight and well back in the seat, and always use the seat belts.
- ⦿ Do not put objects on or in front of the instrument panel that houses the airbag system. They might restrict inflation or cause personal injury.
- ⦿ Do not modify or remove any component or wiring, such as the steering wheel, column cover, front passenger's airbag cover, front passenger's airbag, center airbag sensor assembly or front airbag sensors. Doing any of these may cause sudden SRS airbag inflation or disable the system, which could result in personal injury.

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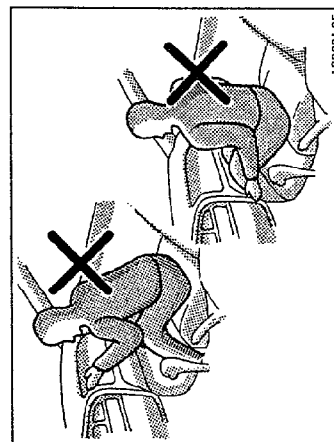
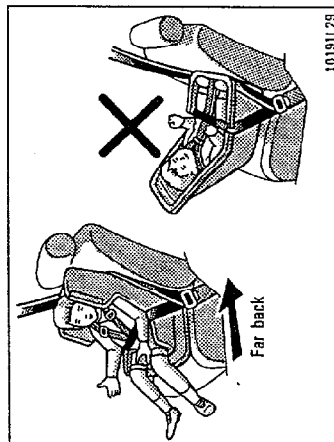
#### NOTICE:

Do not perform any of the following changes without prior approval from Toyota dealers. Repairs or service of this kind can interfere with proper operation of the SRS airbag system in some cases.



#### CAUTION: =====

- ⦿ Do not use a rear-facing child restraint system in the front seat because the force of the rapid inflation of the passenger's airbag may cause severe injury to the child. When using a forward-facing child restraint system in the front seat, the seat must be moved as far back as possible. For instructions concerning the installation of a child restraint system, see "Child restraint" in this chapter.



## Child restraint — —Child restraint precautions

Toyota strongly urges the use of child restraint systems for children small enough to use it.

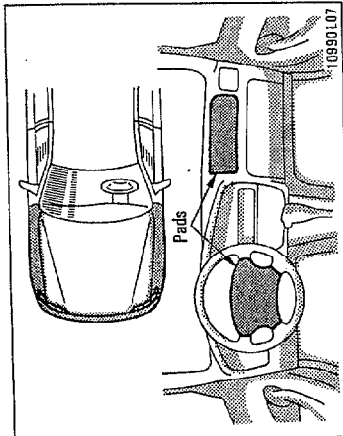
The laws of all fifty states in the U.S.A. and Canada now require the use of a child restraint system.

**CAUTION:** For effective protection in automobile accidents and sudden stops, children must be properly restrained. Holding a child in your arms is not a substitute for a child restraint system. In an accident, the child can be crushed against the windshield, or between you and the vehicle's interior if you are unrestrained.

- The SRS airbags have been inflated.
- The front part of the vehicle (shown in the illustration) was involved in an accident which was not of the extent to cause the SRS airbags to inflate.
- The pad section of the steering wheel or front passenger airbag cover (shown in the illustration) is scratched, cracked, or otherwise damaged.

### NOTICE:

Do not disconnect the battery cables before contacting your Toyota dealer.



- ♦ Installation of electronic items such as a mobile two-way radio, cassette tape player or Compact Disc player.
- ♦ Modifications to the suspension system.
- ♦ Repairs made on or near the front fenders, front and rear console, steering column, steering wheel or instrument panel near the front passenger's airbag.

In the following cases, contact your Toyota dealer as soon as possible:

- The SRS airbag system malfunctions. This SRS airbag system has a warning light to indicate operating problems. See "Service reminder indicators and warning buzzers" in Chapter 1-5.