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REPORT NO. TRC-93-N07

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

CHRYSLER CORPORATION
1994 DODGE RAM 1500
PICKUP
NHTSA NO. MR0306
TRC TEST NO. 940105

PREPARED BY:
TRANSPORTATION RESEARCH CENTER INC.
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JANUARY 28, 1994

FINAL REPORT

PREPARED FOR:
U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF MARKET INCENTIVES
ROOM NO. 5313 (NRM-22)
400 SEVENTH STREET, S.W.
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1. Report No. TRC-93-N07	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle NEW CAR ASSESSMENT PROGRAM (NCAP), FRONTAL BARRIER IMPACT TEST OF A 1994 DODGE RAM 1500 PICKUP NHTSA NO. MRO306		5. Report Date JANUARY 28, 1994	
		6. Performing Organization Code TRC	
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9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, OH 43319		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTNH22-90-D-22121	
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Market Incentives 400 Seventh St., S.W., Washington, DC 20590		13. Type of Report and Period Covered FINAL REPORT DEC. 1993 - JAN. 1994	
		14. Sponsoring agency Code NRM-22	
15. Supplemental Notes			
16. Abstract A 56 kph (35 mph) frontal load cell barrier impact test was conducted on a 1994 Dodge Ram 1500 pickup, NHTSA No. MRO306, at Transportation Research Center Inc. on January 5, 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 56.5 kph. The vehicle's maximum static crush was 759 millimeters. The ambient temperature was 20° C. The driver's Head Injury Criteria (HIC) was 586. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 38.6 g. The driver's chest maximum deflection was 35 millimeters. The driver's left and right femur maximum axial forces were 2962 N and 2935 N, respectively. The passenger's HIC, chest maximum resultant acceleration with three (3) milliseconds minimum duration, chest maximum deflection, and femur maximum axial forces are not reported as a result of the passenger's seat belt buckle failing on impact.			
17. Key Words 56.3 KPH (35 MPH) Frontal Barrier Impact Test: New Car Assessment Program (NCAP) FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Retention" FMVSS 219, "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity"		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Reference Division Nassif Building, Room 5108 400 Seventh Street, S.W. Washington, DC 20590	
19. Security Classif. (of this report) UNCLASSIFIED	20. Security Classif. (of this page) UNCLASSIFIED	21. No. of Pages 296	22. Price

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures				Approximate Conversions from Metric Measures			
Symbol	When You Know	Multiply by	To Find	Symbol	When You Know	Multiply by	To Find
LENGTH				LENGTH			
in	inches	2.54	centimeters	mm	millimeters	0.04	inches
ft	feet	30	centimeters	cm	centimeters	0.4	inches
yd	yards	0.9	meters	m	meters	3.3	feet
mi	miles	1.6	kilometers	km	kilometers	0.6	miles
AREA				AREA			
in ²	square inches	6.5	square centimeters	cm ²	square centimeters	0.16	square inches
ft ²	square feet	0.09	square meters	m ²	square meters	1.2	square yards
yd ²	square yards	0.8	square meters	km ²	square kilometers	0.4	square miles
mi ²	square miles	2.6	square kilometers	ha	hectares (10,000 m ²)	2.5	acres
MASS (weight)				MASS (weight)			
oz	ounces	28	grams	g	grams	0.035	ounces
lb	pounds	0.45	kilograms	kg	kilograms	2.2	pounds
	short tons (2000 lb)	0.9	tonnes	t	tonnes (1000 kg)	1.1	short tons
VOLUME				VOLUME			
tsp	teaspoons	5	milliliters	ml	milliliters	0.03	fluid ounces
Tbsp	tablespoons	15	milliliters	l	liters	2.1	pints
fl oz	fluid ounces	30	milliliters	qt	quarts	1.06	gallons
c	cups	0.24	liters	l	liters	0.26	gallons
pt	pints	0.47	liters	m ³	cubic meters	35	cubic feet
qt	quarts	0.95	liters	m ³	cubic meters	1.3	cubic yards
gal	gallons	3.8	liters				
ft ³	cubic feet	0.03	cubic meters				
yd ³	cubic yards	0.76	cubic meters				
TEMPERATURE (exact)				TEMPERATURE (exact)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature

* 1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.25, SO Catalog No. C73.13/286.

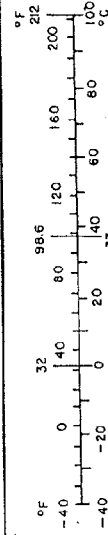


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SECTION 1.0

PURPOSE AND TEST PROCEDURE

PURPOSE

This 56 kph (35 mph) frontal barrier impact test is part of the New Car Assessment Program (NCAP) conducted for the National Highway Traffic Safety Administration's (NHTSA) Office of 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 Dodge Ram 1500, NHTSA No. MR0306, 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 second use of the driver dummy which was previously used in the NHTSA No. MR0204 test, and the third use of the passenger dummy which was previously used in the NHTSA No. MP5108 and MR5103 tests.

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 January 5, 1994.

The test vehicle, a 1994 Dodge Ram 1500, NHTSA No. MR0306, was equipped with a 5.2-liter inline engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 2305 KG. The vehicle's impact speed was 56.5 kph. The vehicle sustained 759 mm of static crush during the impact.

The driver's Head Injury Criteria (HIC) was 586. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 38.6 g. The driver's chest maximum deflection was 35 mm. The driver's left and right femur maximum axial forces were 2962 N and 2935 N, respectively.

The passenger's HIC, chest maximum resultant acceleration with three (3) milliseconds minimum duration, chest maximum deflection, and femur maximum axial forces are not reported as a result of the passenger's seat belt buckle failing on impact.

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 following data channels recorded questionable repeating wave forms prior to and after the impact event. The data acquisition system was checked after the test. No cause for the questionable repeating wave forms could be found.

NEKXF1 - Driver's neck X-axis shear force load cell
NEKYF1 - Driver's neck Y-axis shear force load cell
NEKZF1 - Driver's neck Z-axis axial force load cell
NEKXM1 - Driver's neck moment about X-axis load cell
NEKYM1 - Driver's neck moment about Y-axis load cell
NEKZM1 - Driver's neck moment about Z-axis load cell
NEKXF2 - Passenger's neck X-axis shear force load cell
NEKYF2 - Passenger's neck Y-axis shear force load cell
NEKZF2 - Passenger's neck Z-axis axial force load cell
NEKXM2 - Passenger's neck moment about X-axis load cell
NEKYM2 - Passenger's neck moment about Y-axis load cell
NEKZM2 - Passenger's neck moment about Z-axis load cell
LBOF1 - Driver's lap belt outboard force load cell
SHBF1 - Driver's shoulder belt force load cell
SHBD1 - Driver's shoulder belt displacement
SBED1 - Driver's seat belt extension
LBOF2 - Passenger's lap belt outboard force load cell
SHBF2 - Passenger's shoulder belt force load cell
SHBD2 - Passenger's shoulder belt displacement
SBED2 - Passenger's seat belt extension

The force load cell at position B4 of the load cell barrier exceeded the full scale of the load cell at 36 milliseconds. The data exceeding full scale affected the load cell barrier group No. 2 force total and the total load cell barrier force calculations.

TEST NOTES

The passenger's seat belt buckle failed on impact.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: MRO306 TEST TYPE: Frontal Load Cell Barrier

TEST DATE: 01/05/94 TEST TIME: 1603 AMBIENT TEMP.: 20° C

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1994/Dodge/Ram 1500/pickup

VEHICLE TEST WEIGHT (KG): 2305

IMPACT ANGLE (DEG)¹: 0

IMPACT VELOCITY (KPH)²: PRIMARY = 56.5 SECONDARY = 56.5

MAXIMUM STATIC CRUSH (MM): 759

AVERAGE REBOUND (MM): 756

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

MAKE/MODEL: Dodge/Ram 1500 VIN: 1B7HC16Y7RS549483

BODY STYLE: Pickup MODEL YEAR: 1994

NHTSA NO.: MR0306 COLOR: Red

ENGINE DATA: TYPE: inline CYLINDERS: 8 DISPLACEMENT: 5.2-liter

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

DATE VEHICLE RECEIVED: 12/22/93 ODOMETER READING: 249

DEALER'S NAME AND ADDRESS: Dinovo's Inc.
126 E. Chillicothe Ave.
Bellefontaine, OH 43311

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	Yes
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	No	AIR CONDITIONING	No
RADIO	Yes	ANTI-SKID BRAKE	Yes
CLOCK	Yes	REAR WINDOW DEFROSTER	No
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: Chrysler Corporation

DATE OF MANUFACTURE: 10/93 VIN: 1B7HC16Y7RS549483

GVWR: 2903 LBS.

GAWR: FRONT: 1497 LBS., REAR: 1724 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Goodyear Wrangler AP, P225/75R16

TIRE PRESSURE WITH MAXIMUM CAPACITY VEHICLE LOAD: FRONT: 300 kPa
REAR: 300 kPa

SPARE TIRE (MFR., SIZE): Goodyear Wrangler AP, P225/75R16

TYPE OF SEATS: FRONT: Split bench
REAR: NA

TYPE OF FRONT SEAT BACKS: Manually adjustable

MAXIMUM WIDTH: 3416 MM

WHEELBASE: 3403 MM

LOCATION OF LABEL STATING TIRE DATA:

The label was located on the driver's B pillar.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: P225/75R16

RECOMMENDED COLD TIRE PRESSURE: FRONT: 35 psi; REAR: 41 psi

DESIGNATED SEATING CAPACITY: NA FRONT NA REAR
NA TOTAL

VEHICLE CAPACITY WEIGHT: NA KG

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN MILLIMETERS):

DELIVERED ATTITUDE:	LF 870;	RF 875;	LR 921;	RR 932
PRE-TEST ATTITUDE:	LF 859;	RF 860;	LR 892;	RR 896
POST-TEST ATTITUDE:	LF 860;	RF 955;	LR 762;	RR 846

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	561 KG	RIGHT REAR	421 KG
LEFT FRONT	609 KG	LEFT REAR	436 KG
TOTAL FRONT WEIGHT	1170 KG	(57.7% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	857 KG	(42.3% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	2027 KG		

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW¹ = RATED CARGO AND LUGGAGE WEIGHT

UDW = UNLOADED DELIVERED WEIGHT (2027 KG)

VCW = VEHICLE CAPACITY WEIGHT (NA)

DSC = DESIGNATED SEATING CAPACITY (NA)

RCLW¹ = VCW - 68 (DSC) = 136 KG

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

TARGET TEST WEIGHT = 2027 + 136 + 152

TARGET TEST WEIGHT = 2315 KG

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 126 KG OF CARGO WEIGHT:

RIGHT FRONT	609 KG	RIGHT REAR	523 KG
LEFT FRONT	643 KG	LEFT REAR	530 KG
TOTAL FRONT WEIGHT	1252 KG	(54.3% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1053 KG	(45.7% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	2305 KG	(0.4% UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE: 9 KG

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: Spare tire

CG = 1555 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: 940105 NHTSA NO.: MR0306
TEST DATE: 01/05/94 TEST TIME: 1603
TEST TYPE: Frontal load cell barrier IMPACT ANGLE: 0°
AMBIENT TEMPERATURE AT IMPACT AREA: 20° C
TEMPERATURE IN OCCUPANT COMPARTMENT: 21° C
IMPACT VELOCITY: PRIMARY = 56.5 KPH SECONDARY = 56.5 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 5487; C 5707; R 5492

POST-TEST: L 4954; C 4956; R 4907

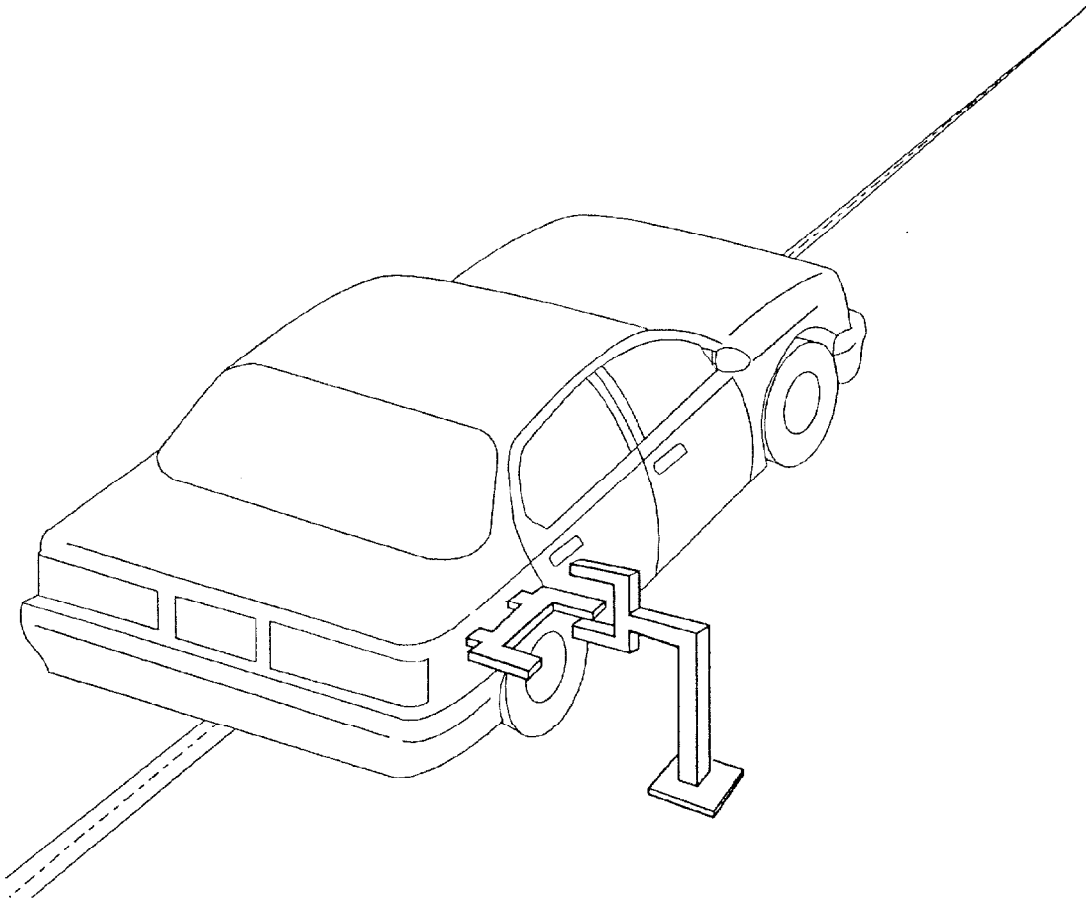
TOTAL CRUSH: L 533; C 751; R 585

AVERAGE CRUSH: 623

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

DISTANCE FROM TEST VEHICLE TO BARRIER: L 761; C 742; R 764; AVG. 756

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: Dodge/Ram 1500/pickup

VEHICLE NHTSA NO.: MR0306; VIN: 1B7HC16Y7RS549483

MODEL YEAR: 1994; BUILD DATE: 10/93; TEST DATE: 01/05/94

VEHICLE SIZE CATEGORY: pickup; TEST WEIGHT: 2305 KG

VEHICLE WHEELBASE: 3403 MM

MAXIMUM WIDTH: 3416 MM

FRONT OVERHANG: 969 MM

COLLISION DEFORMATION

CLASSIFICATION (CDC) CODE: 12FDEW2

CRUSH DEPTH
MEASUREMENTS:

C1 = 533 MM

C2 = 733 MM

C3 = 759 MM

C4 = 755 MM

C5 = 745 MM

C6 = 585 MM

VEHICLE CENTERLINE

MIDPOINT OF DAMAGE: D = (LONGITUDINAL)

LENGTH OF DAMAGED

REGION: L = 1880 MM

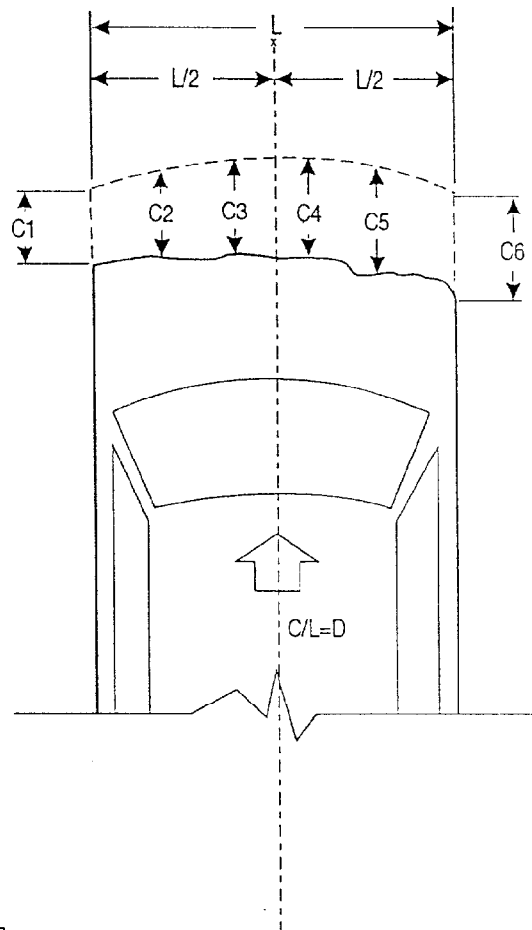
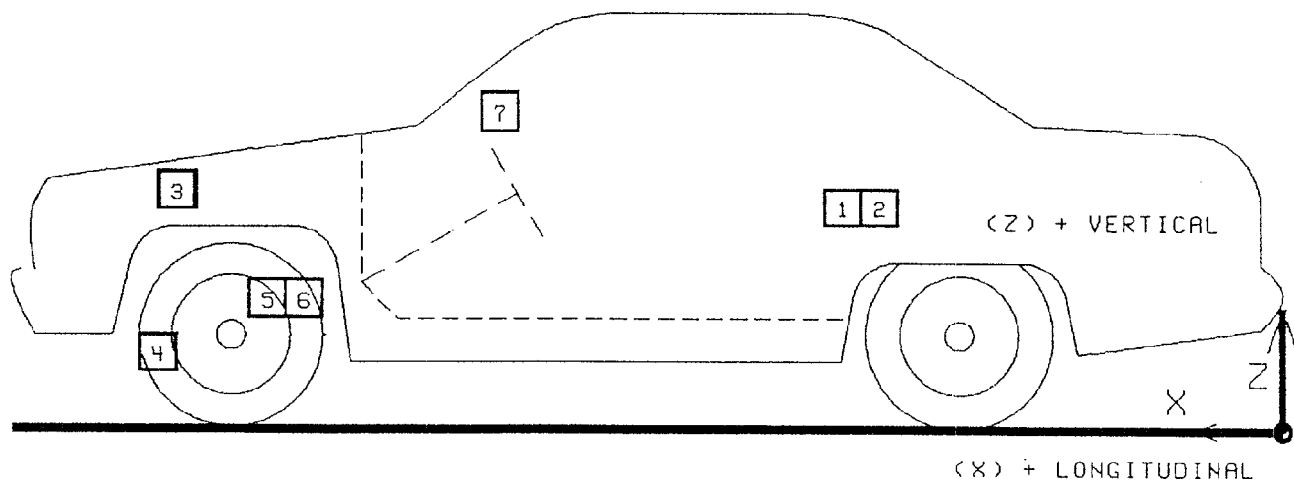
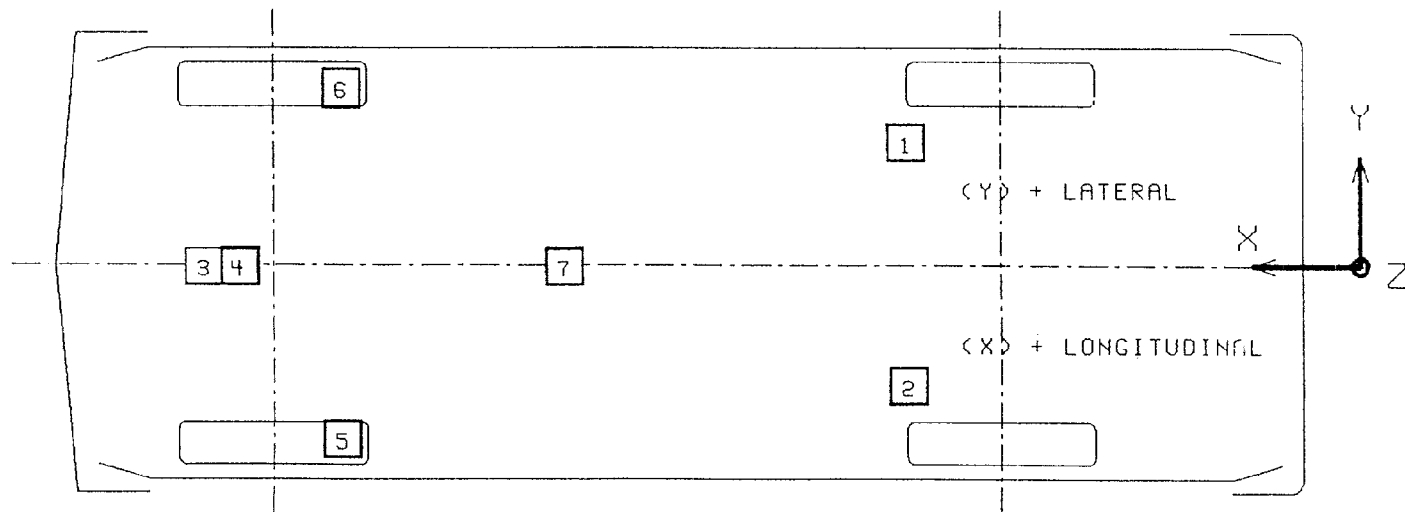


FIGURE 3 VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 940105

No. LOCATION	X*	Y*	Z*	POSITIVE		NEGATIVE	
				DIRECTION		DIRECTION	
				MAX	G MSEC	MAX	G MSEC
1 LEFT REAR SEAT	2697	755	582				
CROSSMEMBER				3.7	153.4	35.3	53.0
LONGITUDINAL				2.3	184.8	32.1	66.3
REDUNDANT							
2 RIGHT REAR SEAT	2625	-715	585				
CROSSMEMBER				2.6	177.4	34.5	56.2
LONGITUDINAL				2.3	177.8	35.1	56.0
REDUNDANT							
3 ENGINE TOP	1052	246	919	12.3	71.0	105.8	47.4
LONGITUDINAL							
4 ENGINE BOTTOM	1198	-31	293	24.2	68.2	86.5	50.6
LONGITUDINAL							
5 RIGHT BRAKE CALIPER	1093	-709	376	24.7	71.6	132.5	54.6
LONGITUDINAL							

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY CONTINUED

TEST NUMBER 940105

No. LOCATION	X*	Y*	Z*	POSITIVE		NEGATIVE	
				DIRECTION		DIRECTION	
				MAX G MSEC		MAX G MSEC	
6 LEFT BRAKE CALIPER LONGITUDINAL	1091	709	388	40.6	23.8	89.3	48.2
7 INSTRUMENT PANEL CENTER LONGITUDINAL	1530	5	1276	11.8	127.8	38.7	89.1

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

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

TABLE 5 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #142	PASSENGER #192
HEAD	<u>Airbag</u>	<u>Windshield and instrument panel</u>
CHEST	<u>Airbag</u>	<u>Knee and instrument panel</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>Difficult - required tools</u>
REAR	<u>NA</u>	<u>NA</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:

The right front tire deflated upon impact.

The right front passenger's three-point unbelt

buckle released, see Figure A-52.

TABLE 6 FMVSS 208 DATA SUMMARY

VEH. YR./MAKE/MODEL/BODY STYLE: 1994/Dodge/Ram 1500/pickup

VEH. NHTSA NO.: MRO306; TEST DATE: 01/05/94

<u>MAXIMUM ACCELERATIONS (G):</u>	<u>DRIVER DUMMY #142</u>	<u>PASSENGER DUMMY #192</u>
HEAD X-AXIS ¹	-60.7	
HEAD Y-AXIS ¹	31.1	
HEAD Z-AXIS ¹	-19.2	
HEAD RESULTANT ¹	64.6	
CHEST X-AXIS ¹	-39.3	
CHEST Y-AXIS ¹	5.0	
CHEST Z-AXIS ¹	-8.7	
CHEST RESULTANT ^{1,2}	38.6	
CHEST RESULTANT TIME INTERVAL (SEC.) ^{1,2}	.003	

HEAD INJURY CRITERIA (HIC) VALUES:

HIC ^{1,3}	586
HIC STARTING TIME (SEC.) ¹	.065
HIC ENDING TIME (SEC.) ¹	.101
AVG. HEAD RESULTANT ACCEL. DURING HIC TIME INTERVAL (G) ¹	48.3

MAXIMUM CHEST DEFLECTIONS (MM):

CHEST X-AXIS ¹	35
MAXIMUM CHEST DEFLECTION TIME (SEC.) ¹	.090

MAXIMUM COMPRESSIVE FEMUR FORCES (N):

LEFT FEMUR ¹	2962
RIGHT FEMUR ¹	2935

MAXIMUM SEAT BELT FORCES (N):

LAP BELT ^{1,4}	6251
SHOULDER BELT ^{1,4}	5662

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

¹ Data was not reported as a result of the passenger's seat belt buckle failing on impact.

² 0.003 SEC. MINIMUM DURATION.

³ THE MAXIMUM HIC TIME INTERVAL IS 36 MILLISECONDS.

⁴ See DATA ACQUISITION EXPLANATIONS

TABLE 7 HYBRID III NECK DATA SUMMARY

VEH. YR./MAKE/MODEL/BODY STYLE: 1994/Dodge/Ram 1500/pickup

VEHICLE NHTSA NO.: MRO306; TEST DATE: 01/05/94

	DRIVER	PASSENGER
<u>MAXIMUM VALUES:</u>	<u>DUMMY #142</u>	<u>DUMMY #192</u>
NECK X-AXIS FORCE (N) ^{1,2}	744	
NECK Y-AXIS FORCE (N) ^{1,2}	-489	
NECK Z-AXIS FORCE (N) ^{1,2}	2839	
NECK MOMENT ABOUT X AXIS (N-M) ^{1,2}	28	
NECK MOMENT ABOUT Y AXIS (N-M) ^{1,2}	-64	
NECK MOMENT ABOUT Z AXIS (N-M) ^{1,2}	43	

NOTE: ALL VALUES LISTED MUST BE OCCURRING DURING PRIMARY IMPACT EVENT.

- ¹ Data was not reported as a result of the passenger's seat belt buckle failing on impact.
- ² See DATA ACQUISITION EXPLANATIONS

DUMMY KINEMATIC SUMMARY

DRIVER DUMMY

Upon impact, the driver dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head rotated rearward as the dummy's head and chest were restrained by the driver's airbag and the dummy's torso was restrained by the three-point unbelt. The dummy rebounded rearward into the seat back. The dummy's head then rotated forward and then rearward into the seatback again. 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's three-point unbelt buckle released as the dummy began to translate forward. The dummy translated forward on the seat until the dummy's knees impacted the instrument panel. The dummy's head and upper torso then rotated forward, the dummy's head impacted the windshield, and the dummy's chest impacted the instrument panel and the dummy's knees. The dummy's head rotated rearward as the dummy rebounded into the seat back. The dummy came to rest with its lower back on the front of the seat cushion, its head against the seat back, and its knees in contact with the instrument panel.

TABLE 8 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

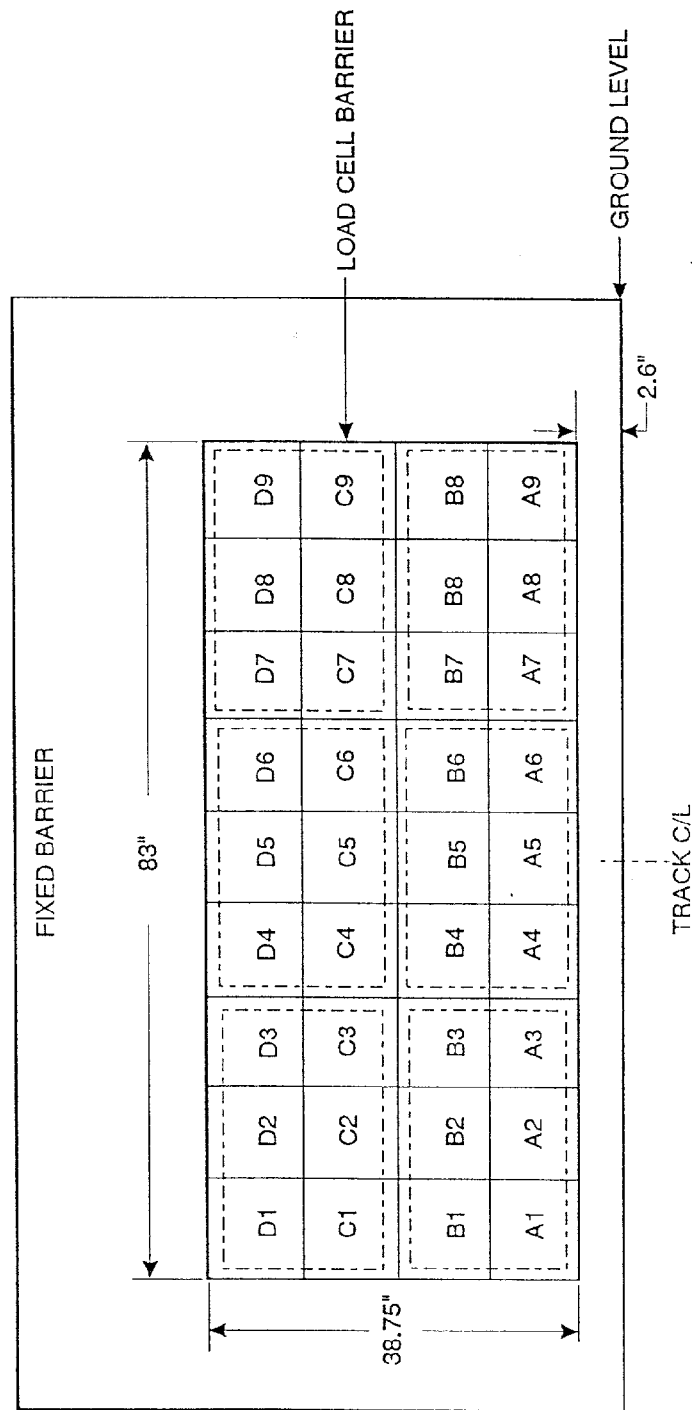
	<u>DRIVER</u>	<u>PASSENGER</u>
<u>BELT LENGTH DATA:</u>		
BELT LENGTH FROM TRIM PANEL EXIT TO BOLT HOLE ANCHOR POINT FOR CONTINUOUS WEBBING SYSTEMS.	2598	2595
SHOULDER BELT LENGTH AS MEASURED ON PART 572 DUMMY.	950	970
LAP BELT LENGTH AS MEASURED ON PART 572 DUMMY.	935	945
<u>SHOULDER BELT SPOOL-OFF LENGTH:</u>		
AS DETERMINED BY FILM ANALYSIS	107	NA
AS DETERMINED MECHANICALLY	NA	NA
AS DETERMINED ELECTRONICALLY ¹	139	65
<u>BELT STRETCH LENGTH (MM/M):</u>		
AS MEASURED MECHANICALLY	NA	NA
AS MEASURED ELECTRONICALLY	0	0
<u>RETRACTOR LOCK-UP TIME (MS):</u>		
AS DETERMINED BY SHOULDER BELT SPOOL-OFF	100	80

ALL MEASUREMENTS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

¹See DATA ACQUISITION EXPLANATIONS.

FIGURE 4

36 LOAD CELLS
4 ROWS
9 COLUMNS
FRONT VIEW



BARRIER LOAD CELL CONFIGURATION

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

TEST NUMBER 940105

LOCATION	POSITIVE DIRECTION KN MSEC		NEGATIVE DIRECTION KN MSEC	
TOTAL GROUP 1	2.8	3.1	144.6	13.4
TOTAL GROUP 2	0.9	213.8	322.2	37.8
TOTAL GROUP 3	2.0	2.8	145.3	13.1
TOTAL GROUP 4	1.2	248.1	57.9	15.5
TOTAL GROUP 5	0.6	27.4	316.1	48.6
TOTAL GROUP 6	1.0	263.2	63.9	51.9

TABLE 9

LOAD CELL BARRIER DATA SUMMARY CONTINUED

TEST NUMBER 940105

LOCATION	POSITIVE		NEGATIVE	
	DIRECTION		DIRECTION	
	KN	MSEC	KN	MSEC
TOTAL LOAD CELL FORCE	1.5	212.9	771.2	48.7
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.:

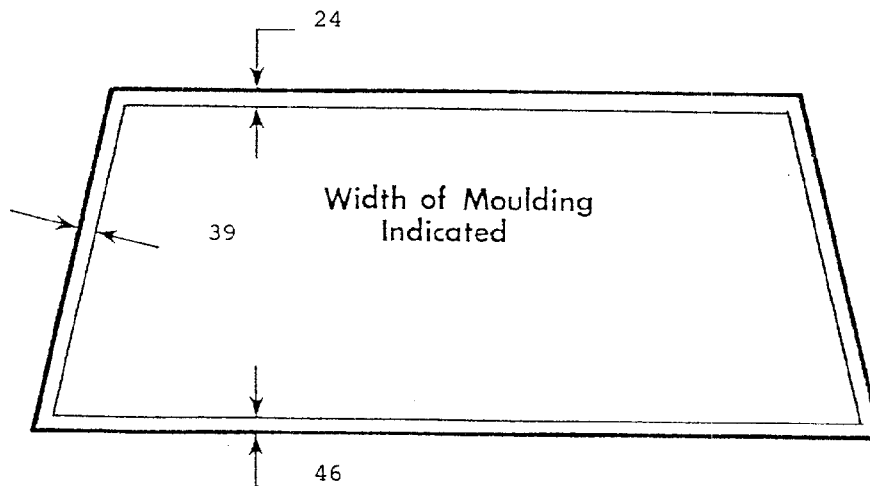
Plastic trim around outer perimeter, adhesive around inner perimeter.

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:

	PRE-TEST	POST-TEST	PERCENT RETENTION
RIGHT SIDE	2303	2303	100.0
LEFT SIDE	2303	2303	100.0
TOTAL	4606	4606	100.0

PRE-TEST WINDSHIELD MOUNTING MATERIAL TEMPERATURE: 21° C



FRONT VIEW OF WINDSHIELD¹

LOSS OF WINDSHIELD RETENTION LENGTHS:

NA

ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

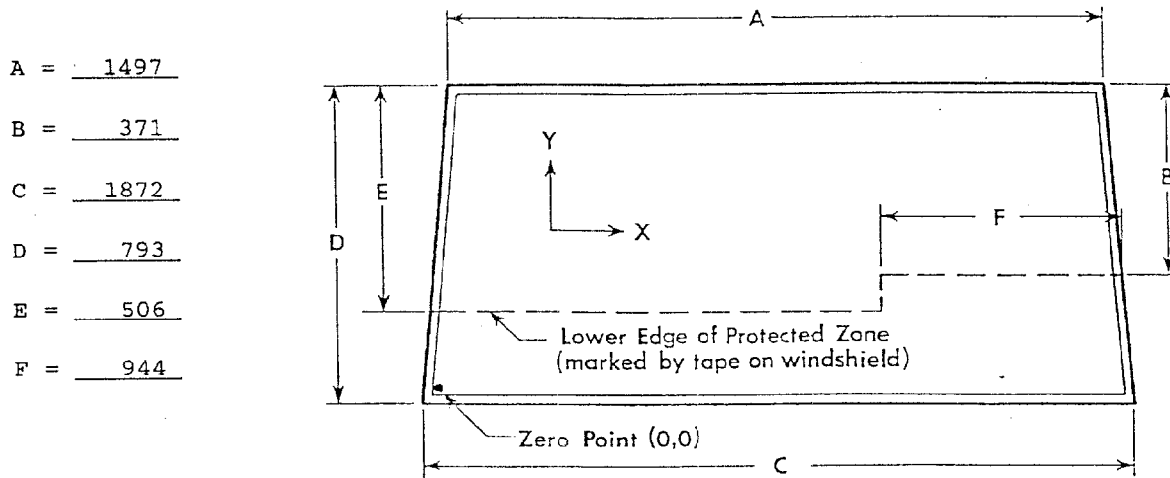
¹INDICATE AREAS OF LOSS OF RETENTION, IF ANY, ON WINDSHIELD DIAGRAM.

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:



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: Dodge/Ram 1500

NHTSA NO.: MR0306

FUEL SYSTEM CAPACITY: 132.0 LITERS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 132.0 LITERS (FURNISHED BY COTR)

TEST VOLUME RANGE: 121.4 LITERS TO 124.1 LITERS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 122.8 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 along the inner side of
the left frame rail in front of the rear axle. The fuel filler neck is
located on the left side. The fuel lines run along the left frame rail.

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.: MR0306; TEST DATE: 01/05/94

VEHICLE MAKE/MODEL/BODY STYLE: Dodge/Ram 1500/pickup

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:

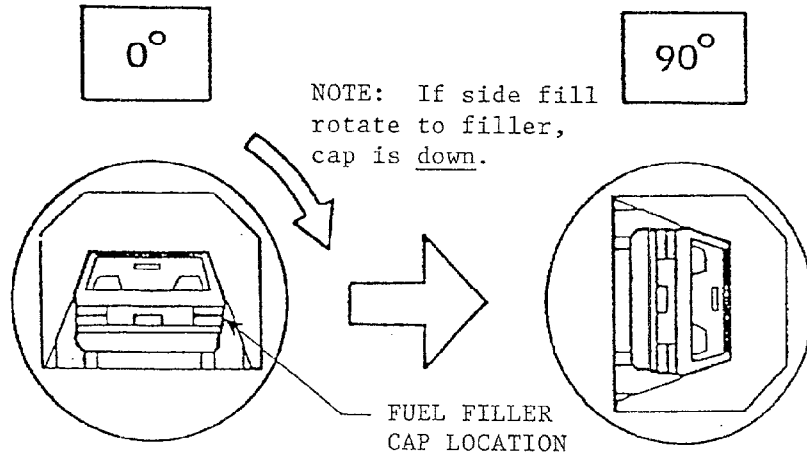
	<u>TEST</u> <u>RESULTS</u>	<u>MAXIMUM</u> <u>ALLOWABLE</u>
1. FROM IMPACT UNTIL VEHICLE MOTION CEASES - - -	0 G	28 G
2. 5 MINUTE PERIOD AFTER VEHICLE MOTION CEASES -	0 G	142 G
3. NEXT 25 MINUTES AFTER 5 MINUTE PERIOD - - - -	0 G	28 G/MN

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 7 FMVSS 301 STATIC ROLLOVER TEST DATA

NHTSA NO.: MR0306
TEST PHASE



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

TIME REQ. 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:

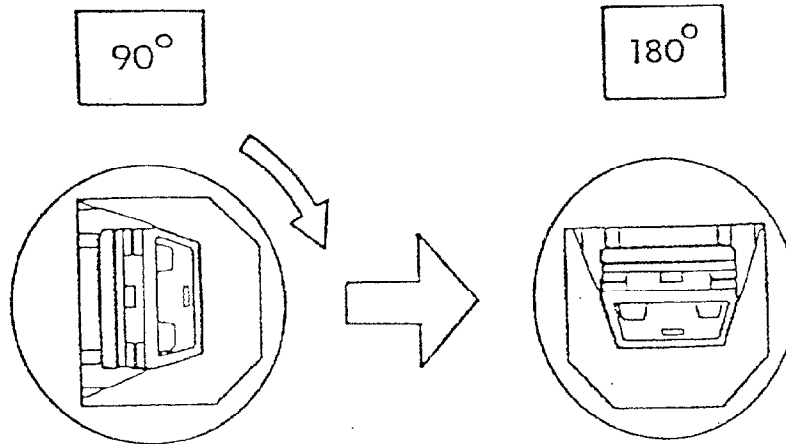
<u>0° TO 90° ROTATION (FUEL FILLER CAP DOWN)</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: MRO306
TEST PHASE



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

TIME REQ. 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:

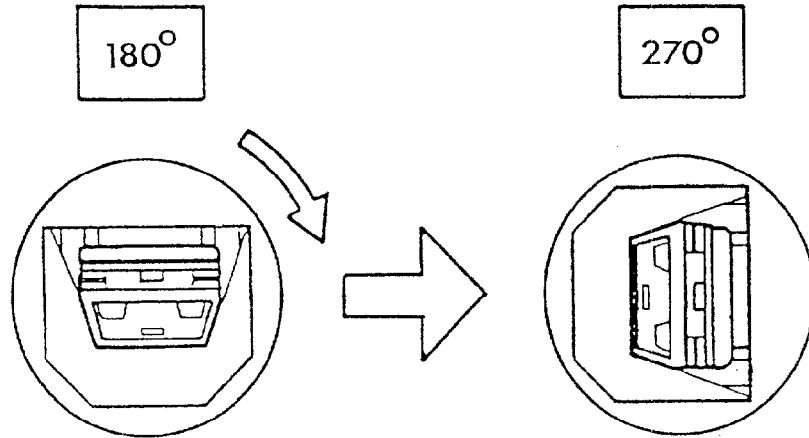
<u>90° TO 180° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: MR0306
TEST PHASE



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

TIME REQ. 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:

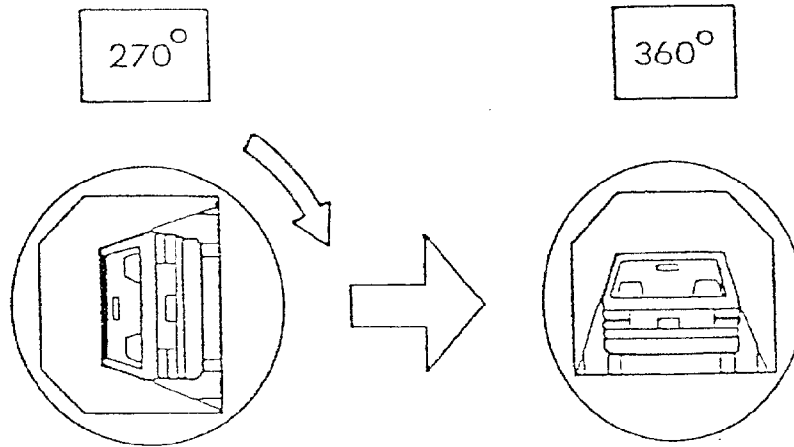
<u>180° TO 270° ROTATION</u>	<u>TEST RESULTS</u>	<u>MAXIMUM ALLOWABLE</u>
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - -	0 G	142 G
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - -	0 G	28 G

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: MR0306
TEST PHASE



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

TIME REQ. 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

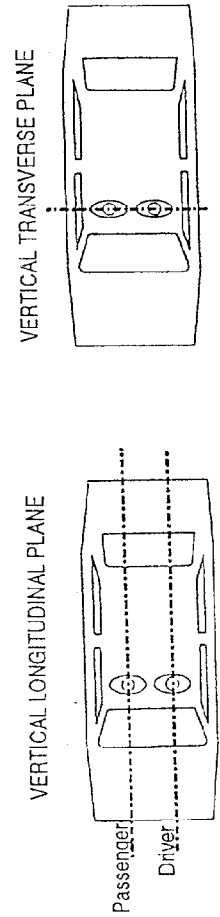
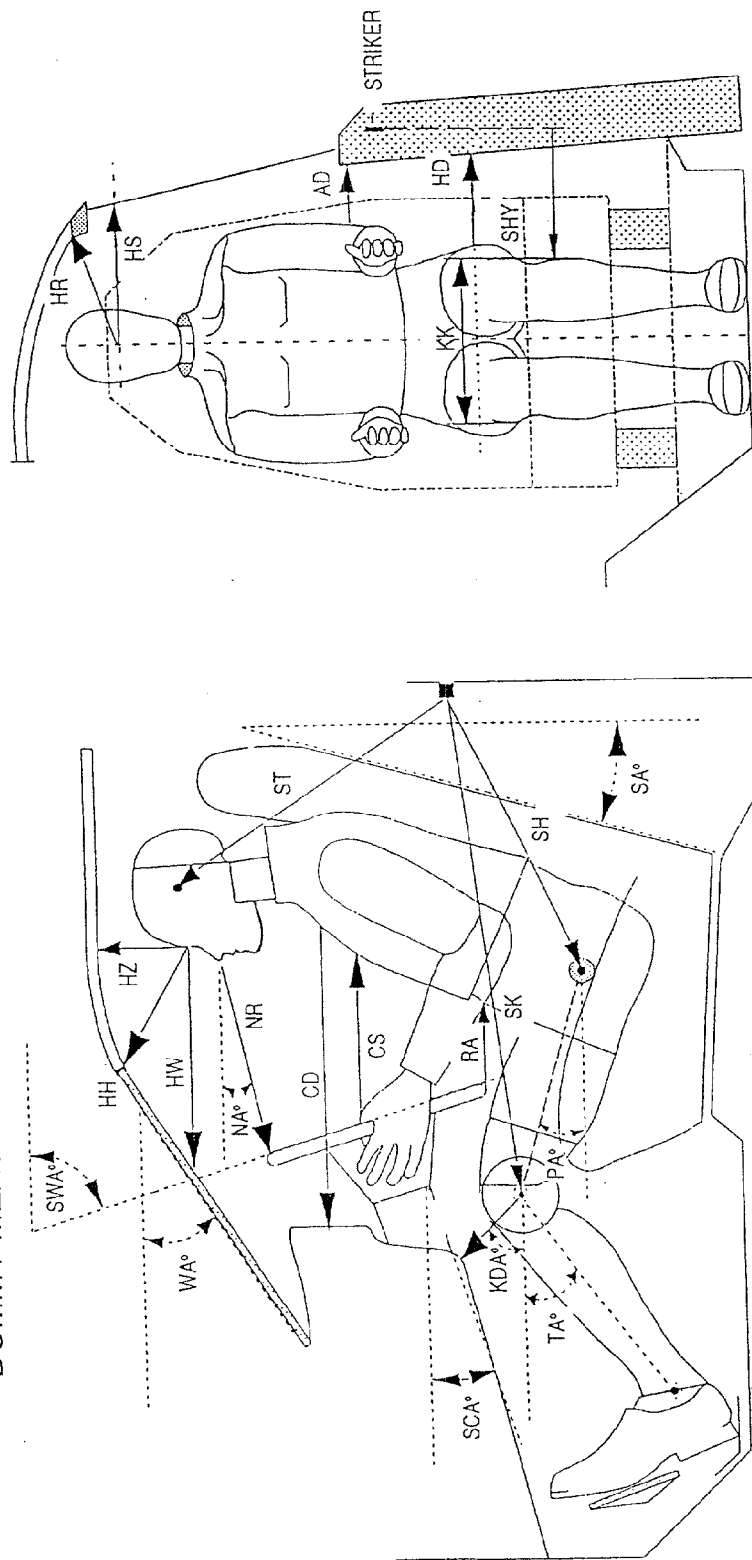
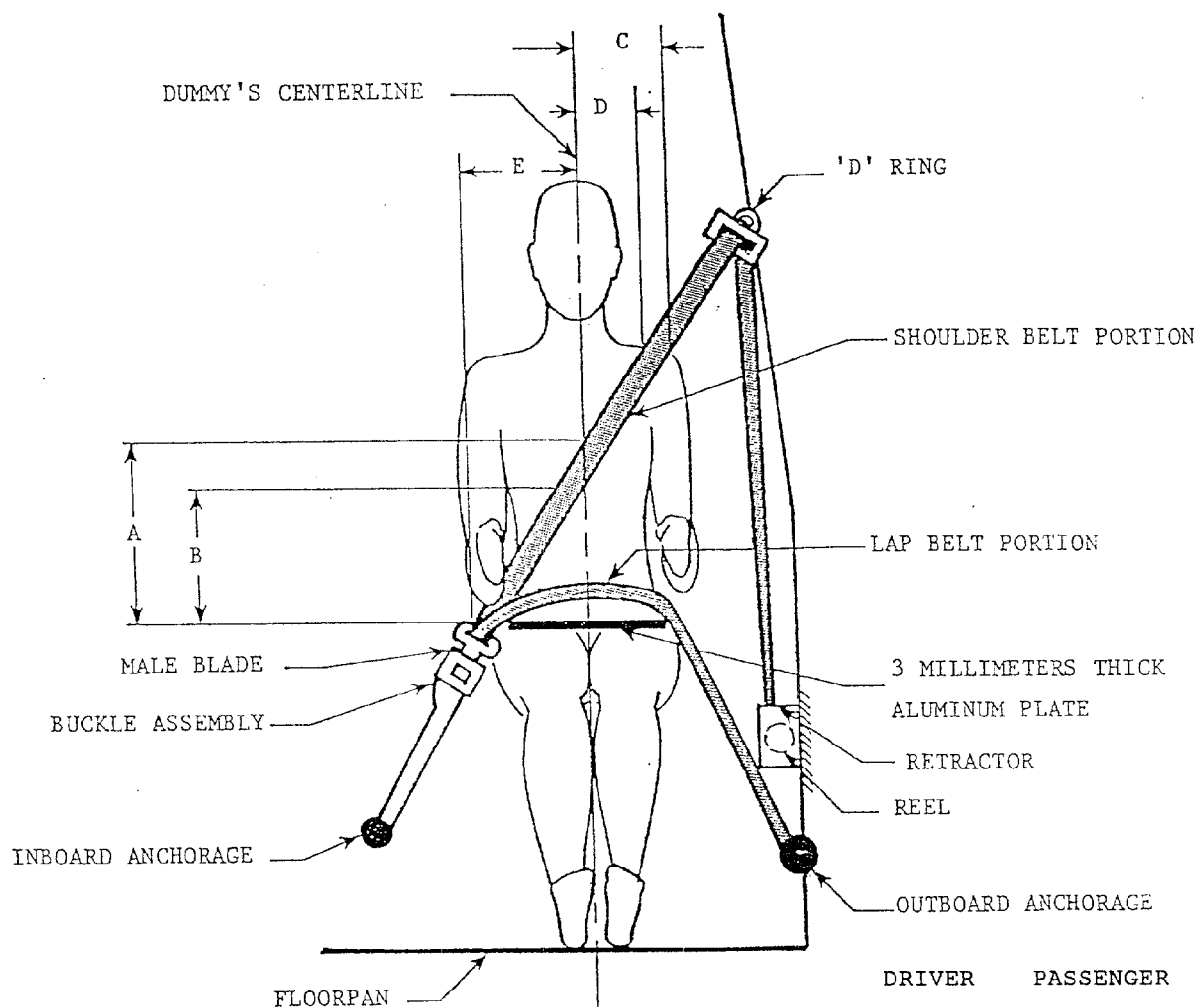


TABLE 12 DUMMY MEASUREMENT DATA FOR FRONT SEAT OCCUPANTS

DESIGNATION	TYPE OF MEASUREMENT	DRIVER (SERIAL #142)	PASSENGER (SERIAL #192)
WA°	WINDSHIELD ANGLE	32	NA
SWA°	STEERING WHEEL ANGLE	25	NA
SCA°	STEERING COLUMN ANGLE	64	NA
SA°	SEAT BACK ANGLE	19	19
HZ	HEAD TO ROOF	232	217
HH	HEAD TO HEADER	453	441
HW	HEAD TO WINDSHIELD	637	600
HR	HEAD TO SIDE HEADER	232	221
NR	NOSE TO RIM	395	NA
NA	NOSE TO RIM ANGLE	18	NA
CD	CHEST TO DASH	534	624
CS	STEERING WHEEL TO CHEST	318	NA
RA	RIM TO ABDOMEN	198	NA
KDL	LEFT KNEE TO DASH	189	235
KDR	RIGHT KNEE TO DASH	198	222
KDA	OUTBOARD KNEE TO DASH ANGLE	39	24
PA°	PELVIC ANGLE	21	20
TA°	TIBIAL ANGLE	42	50
KK	KNEE TO KNEE	290	259
ST	STRIKER TO HEAD	690	682
	STRIKER TO HEAD ANGLE	-69	-71
SK	STRIKER TO KNEE	742	764
	STRIKER TO KNEE ANGLE	-6	-6
SH	STRIKER TO H-POINT	354	351
	STRIKER TO H-POINT ANGLE	-2	-4
SHY	STRIKER TO H-POINT (Y DIR.)	227	228
HS	HEAD TO SIDE WINDOW	342	337
HD	H-POINT TO DOOR	160	181
AD	ARM TO DOOR	119	120

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.

FIGURE 9 SEAT BELT POSITIONING DATA



	DRIVER	PASSENGER
A - TOP SURFACE OF ALUMINUM PLATE TO BELT UPPER EDGE	370	369
B - TOP SURFACE OF ALUMINUM PLATE TO BELT LOWER EDGE	280	261
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	110	122
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	48	61
LAPBELT TENSION (N)	9	13
SHOULDER BELT TENSION (N)	13	13
ADJUSTABLE SEAT BELT ANCHORAGE POSITION	NA	NA

ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

FIGURE 10
CAMERA POSITIONS

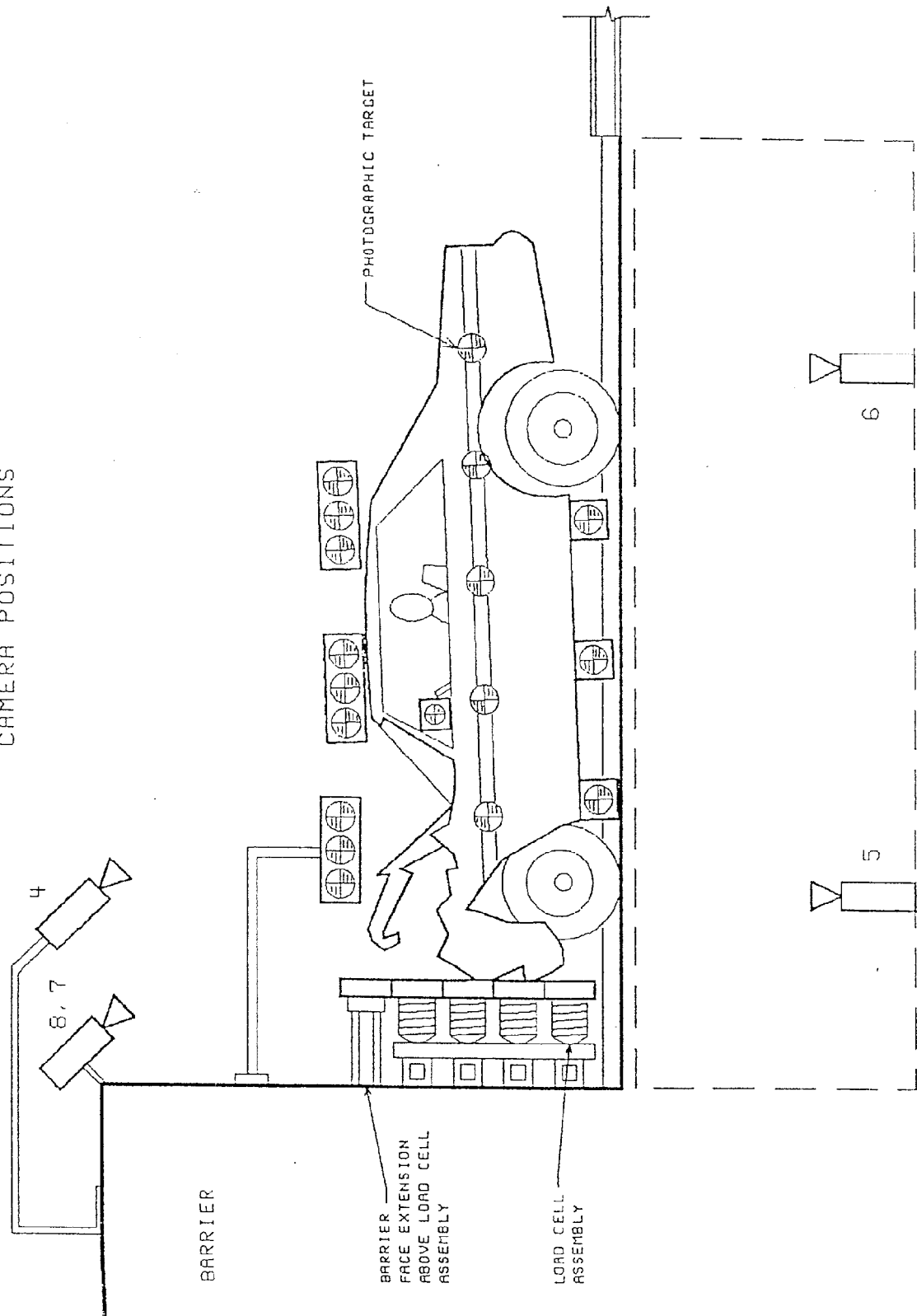


FIGURE 10

CAMERA POSITIONS, CONTINUED

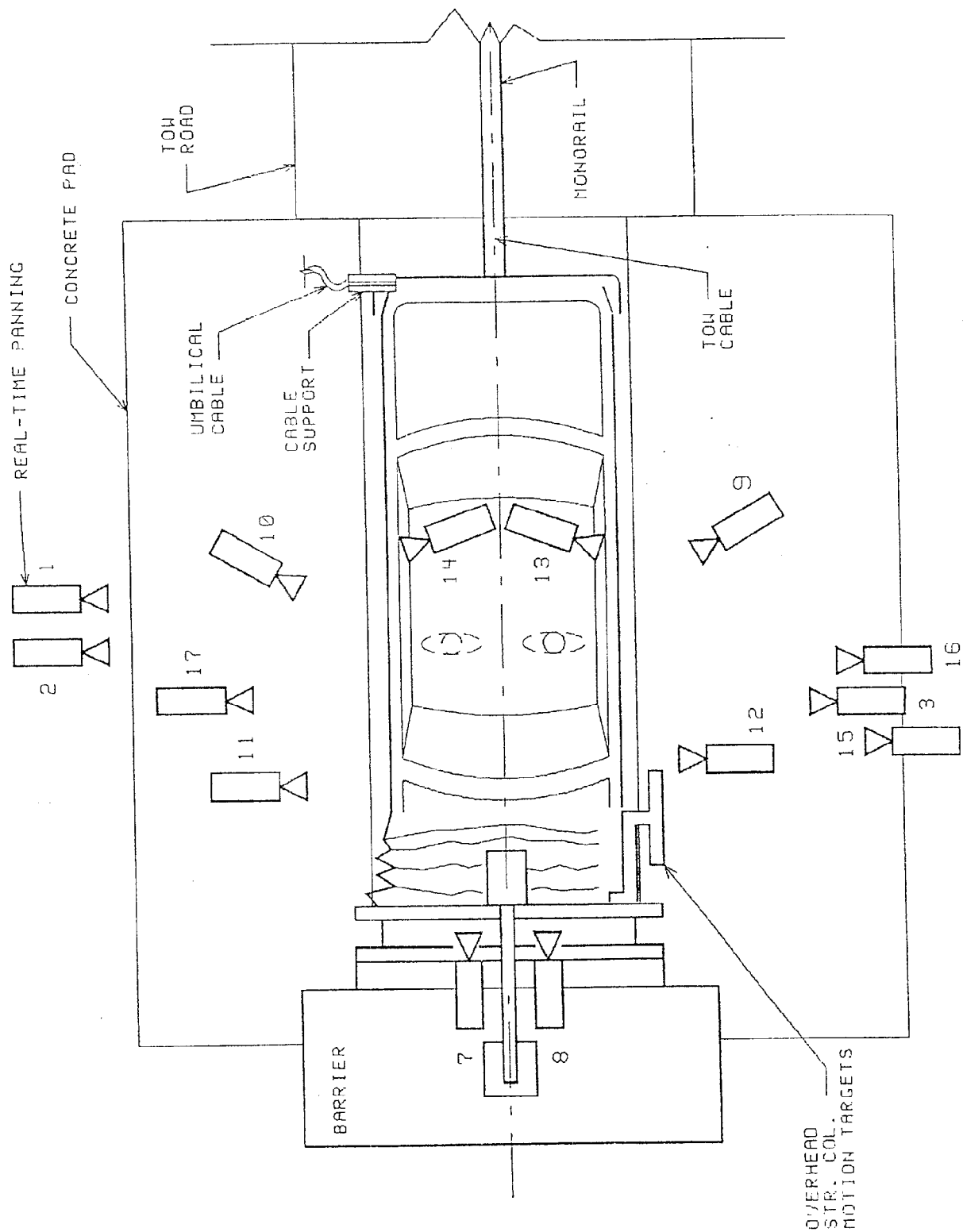


TABLE 13 MOTION PICTURE CAMERA LOCATIONS

TEST NO.: 940105		VEHICLE: 1994 Dodge Ram 1500 pickup					FILM PLANE			FILM SPEED (FPS)
CAMERA NO.	VIEW	CAMERA POSITIONS (MM) ¹			ANGLE ² (DEG)	TO HEAD		LENS (MM)		
		X	Y	Z		TARGET (MM)				
1	Real-time panning	-3607	-12802	1549	NA	NA	16	24		
2	Vehicle crush	-2065	-6767	942	-2	NA	13	492		
3	Dummy kinematics	-1054	7493	1118	-12	5232	25	998		
4	Windshield damage	-925	0	2489	-40	NA	13	492		
5	Crush & fluid spillage	-1283	0	-2347	90	NA	13	998		
6	Fluid spillage	-2522	0	-2515	90	NA	13	998		
7	Passenger kinematics	-114	-351	2159	-40	NA	17	505		
8	Driver kinematics	-173	368	2159	-41	NA	17	500		
9	Driver kinematics	-4572	1854	2591	-27	2565	25	498		
10	Passenger kinematics	-4674	-1880	2540	-26	2769	25	495		
11	Windshield intrusion ³	-968	-7775	1118	0	NA	50	NA		
12	Windshield intrusion	-1346	7859	1074	0	NA	50	502		
13	Driver seat belt movement	NA	NA	NA	NA	NA	13	500		
14	Passenger seat belt movement	NA	NA	NA	NA	NA	13	500		
15	Column movement	-2794	7264	2616	-14	NA	25	508		
16	Column movement	-2794	7264	1908	-9	NA	25	508		
17	Passenger kinematics	-986	-5354	1151	7	5512	25	1025		

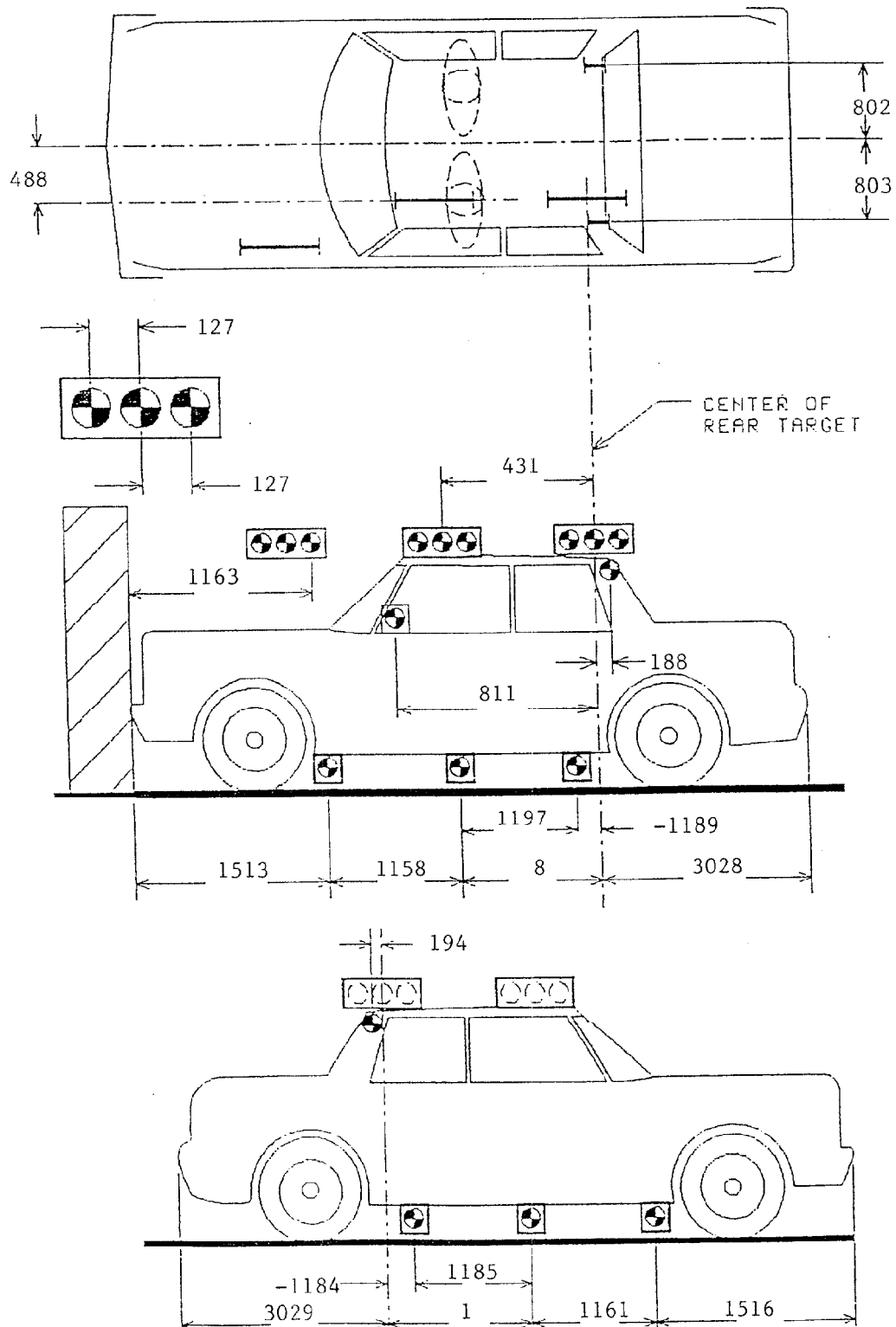
¹ +X = Film plane forward of barrier face

+Y = Film plane to left of monorail centerline

+Z = Film plane above ground level

² +Angle = Film plane angled upward from horizontal plane³ No film as a result of the film breaking in the camera during the test.

FIGURE 11 VEHICLE TARGET LOCATIONS



All measurements are in millimeters.

FIGURE 12 PRE-TEST AND POST-TEST MEASUREMENT POINTS

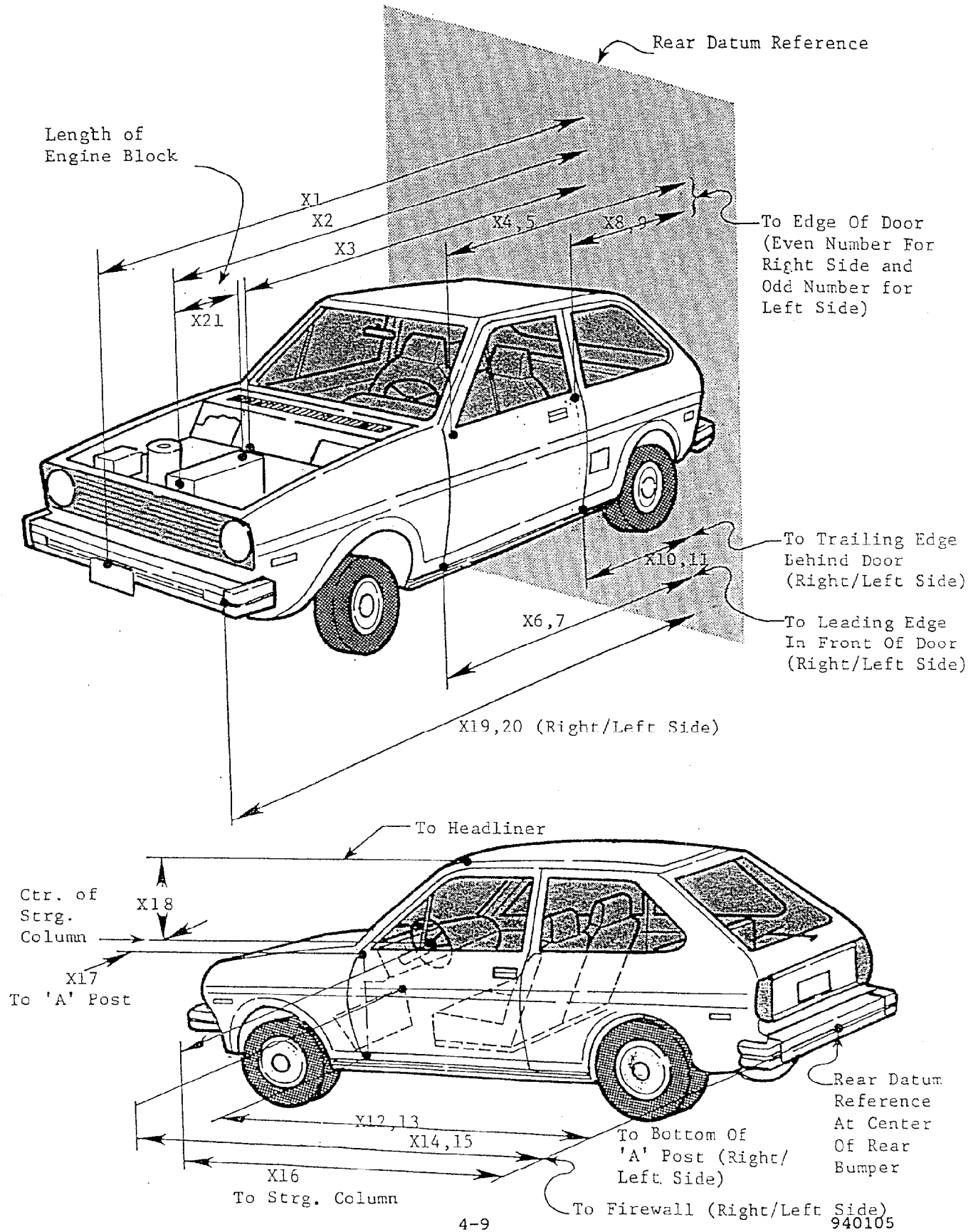


TABLE 14 IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL: Dodge/Ram 1500 TEST NUMBER: 940105

NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	5707	4956	751
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	4790	4609	181
X3	REAR SURFACE OF VEHICLE TO FIREWALL	4567	4523	44
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	4189	4154	35
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	4199	4152	-47
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	4157	4111	46
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	4162	4103	59
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	2882	2850	32
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	2885	2839	46
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	2952	2903	49
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	2961	2907	54
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	4101	4068	33
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	4112	4062	50
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	4476	4445	31
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	4492	4432	60
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	3624	3607	17
X17	CENTER OF STEERING COLUMN TO "A" POST	254	241	13
X18	CENTER OF STEERING COLUMN TO HEADLINER	484	474	10
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	5492	4907	585
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	5487	4954	533
X21	LENGTH OF ENGINE BLOCK	450	450	0

All measurements are in millimeters.

APPENDIX A

PHOTOGRAPHS

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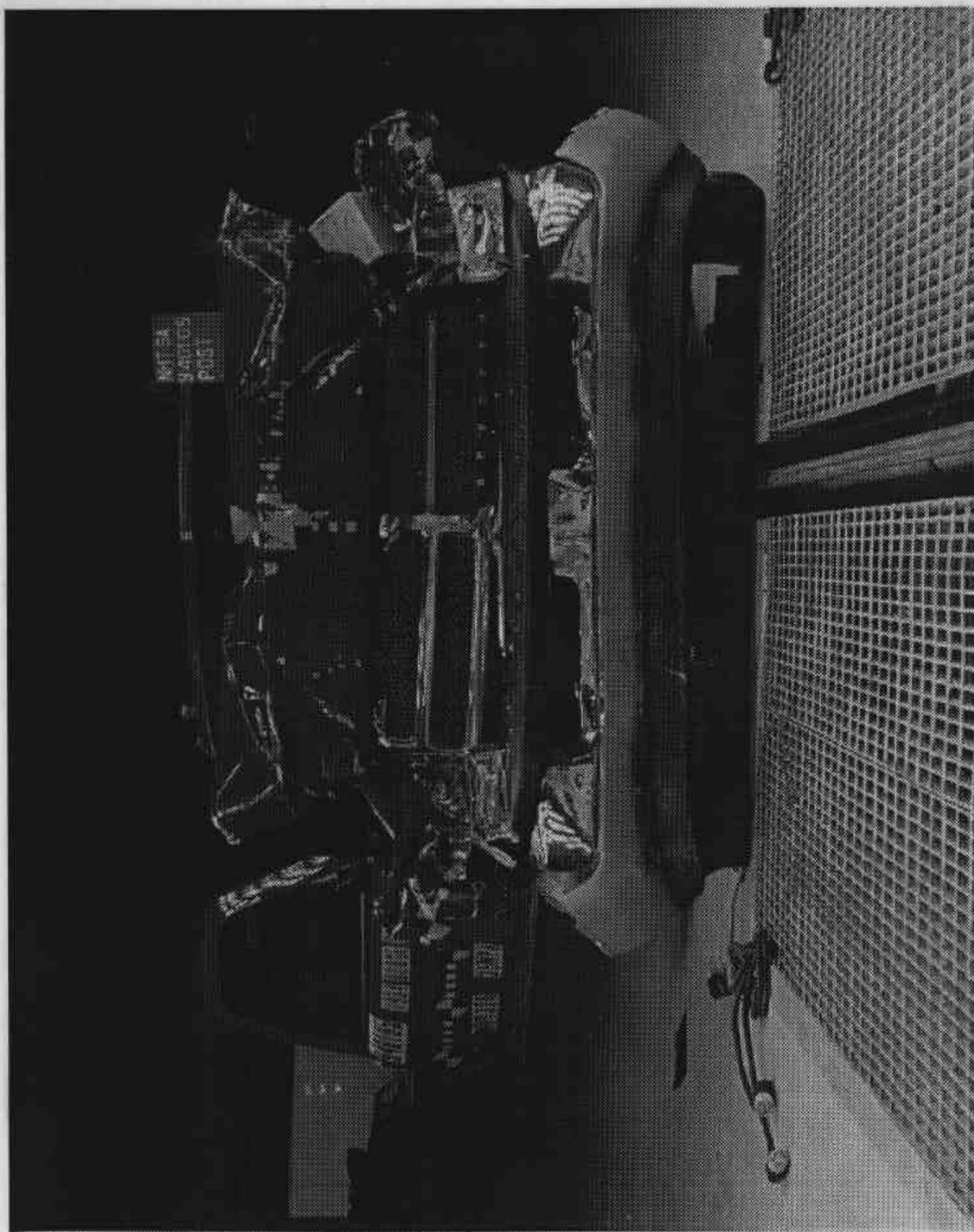


Figure A-2. POST-TEST FRONT VIEW
A-3

940105



Figure A-1. PRE-TEST FRONT VIEW

A-2

940105

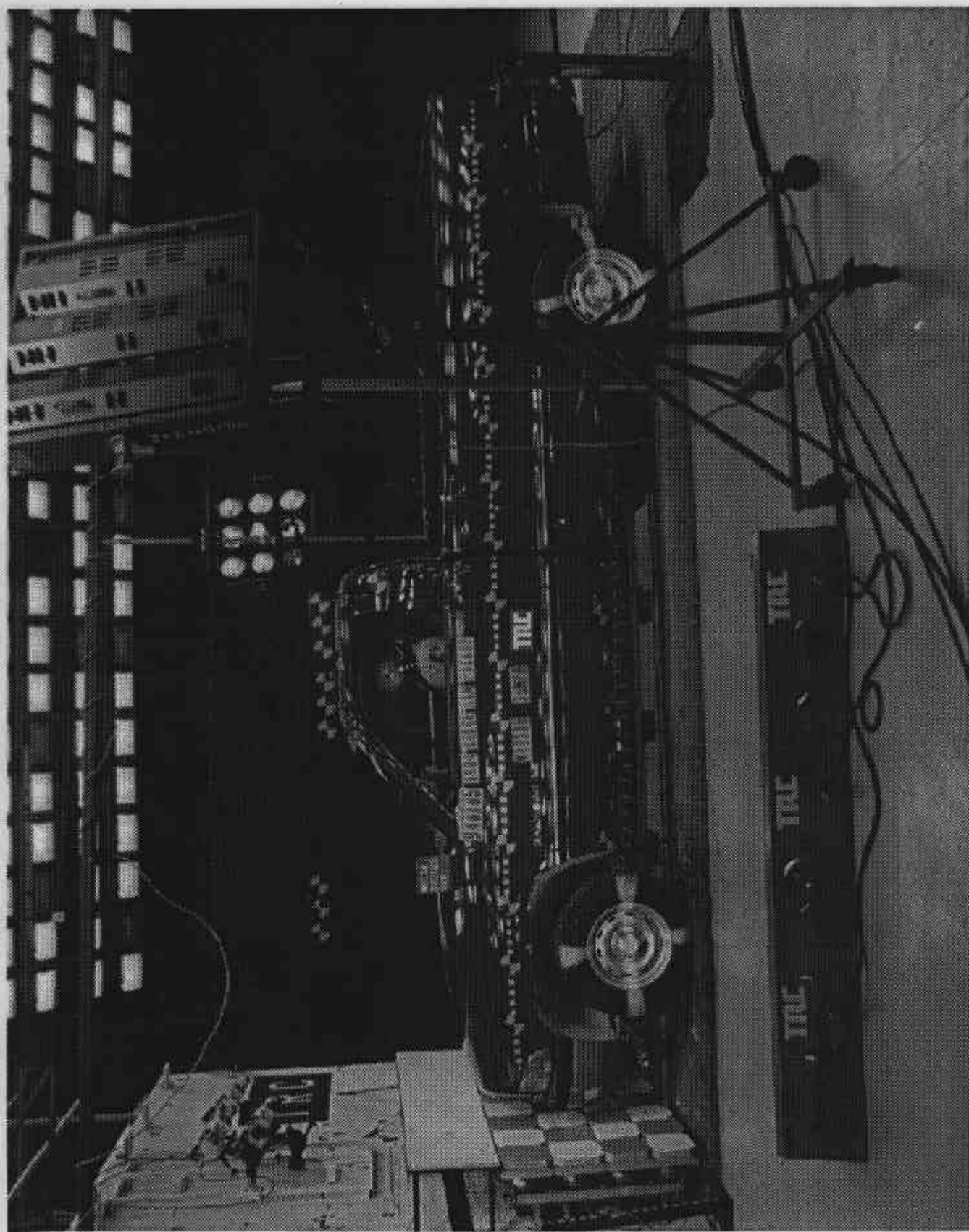


Figure A-3. PRE-TEST LEFT SIDE VIEW

A-4

940105

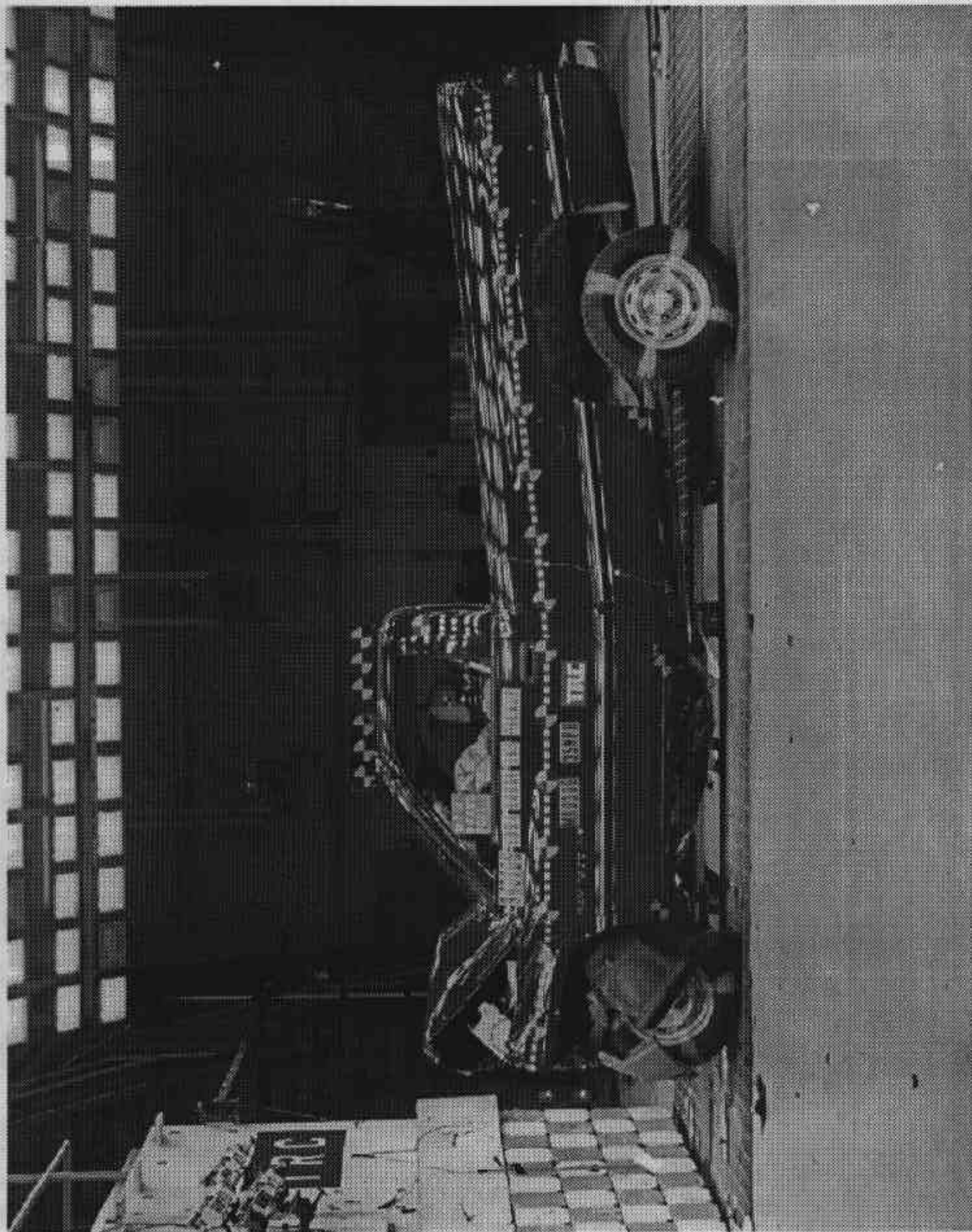


Figure A-4. POST-TEST LEFT SIDE VIEW
A-5

940105

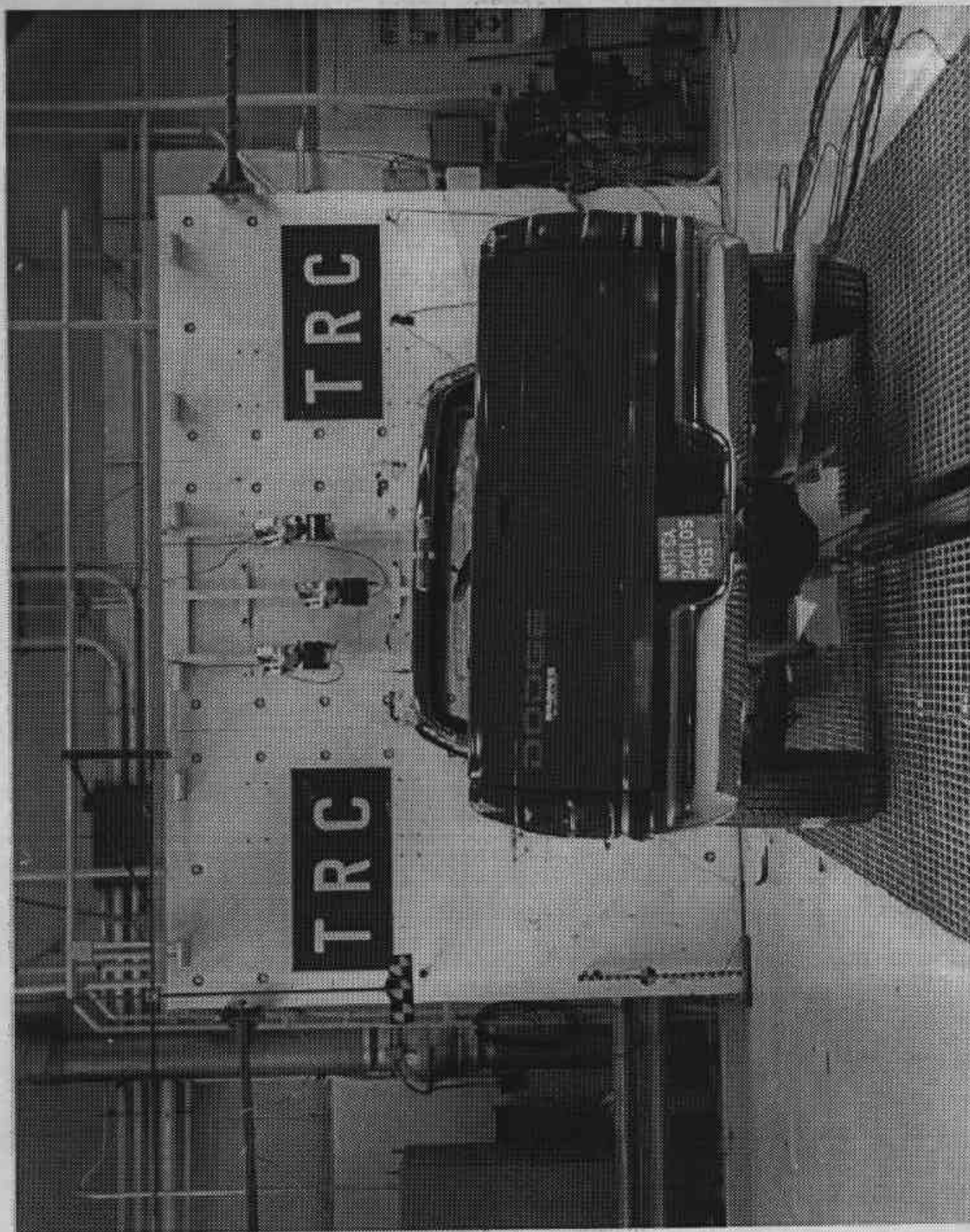


Figure A-6. POST-TEST REAR VIEW
A-7

940105

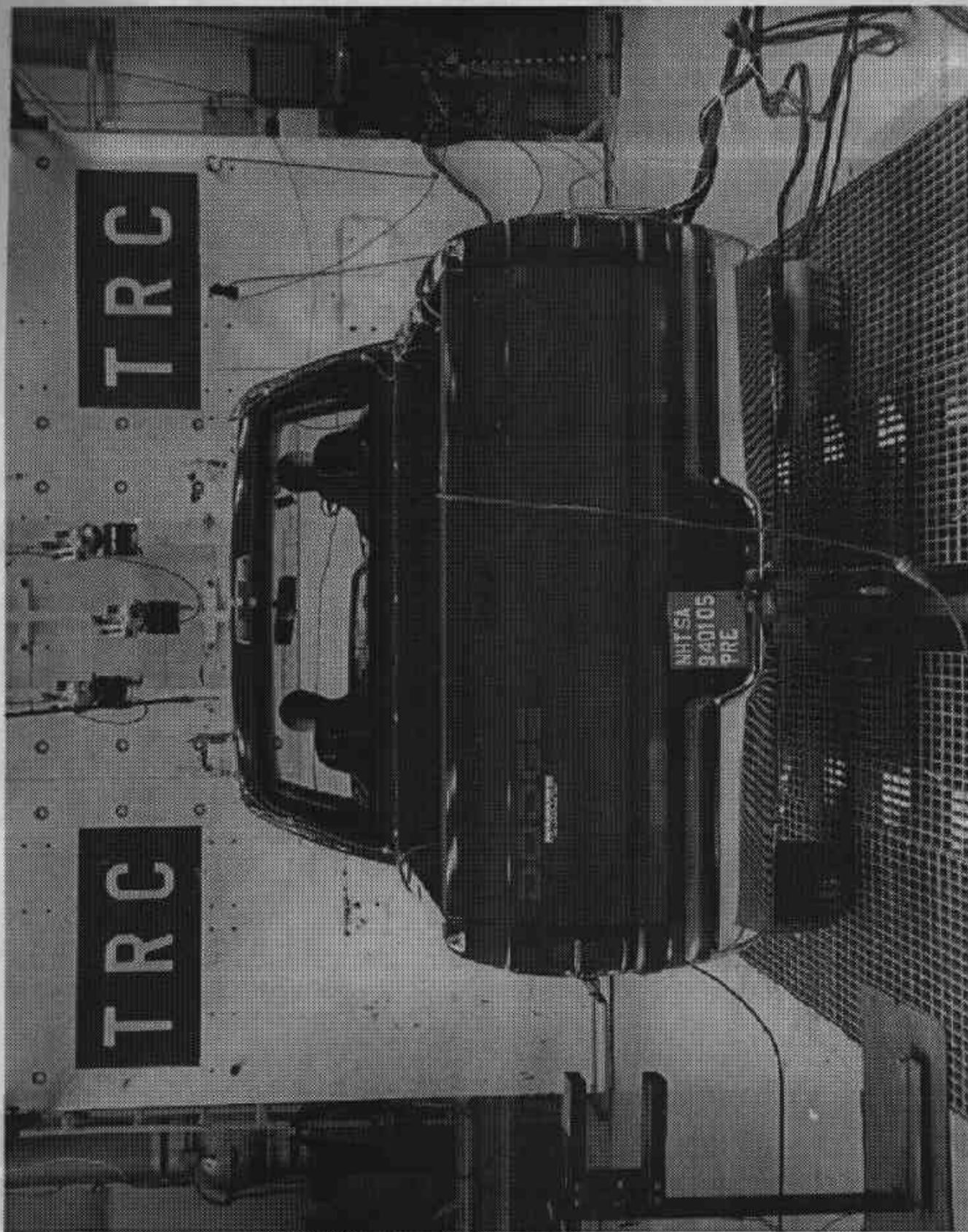


Figure A-5. PRE-TEST REAR VIEW

A-6

940105

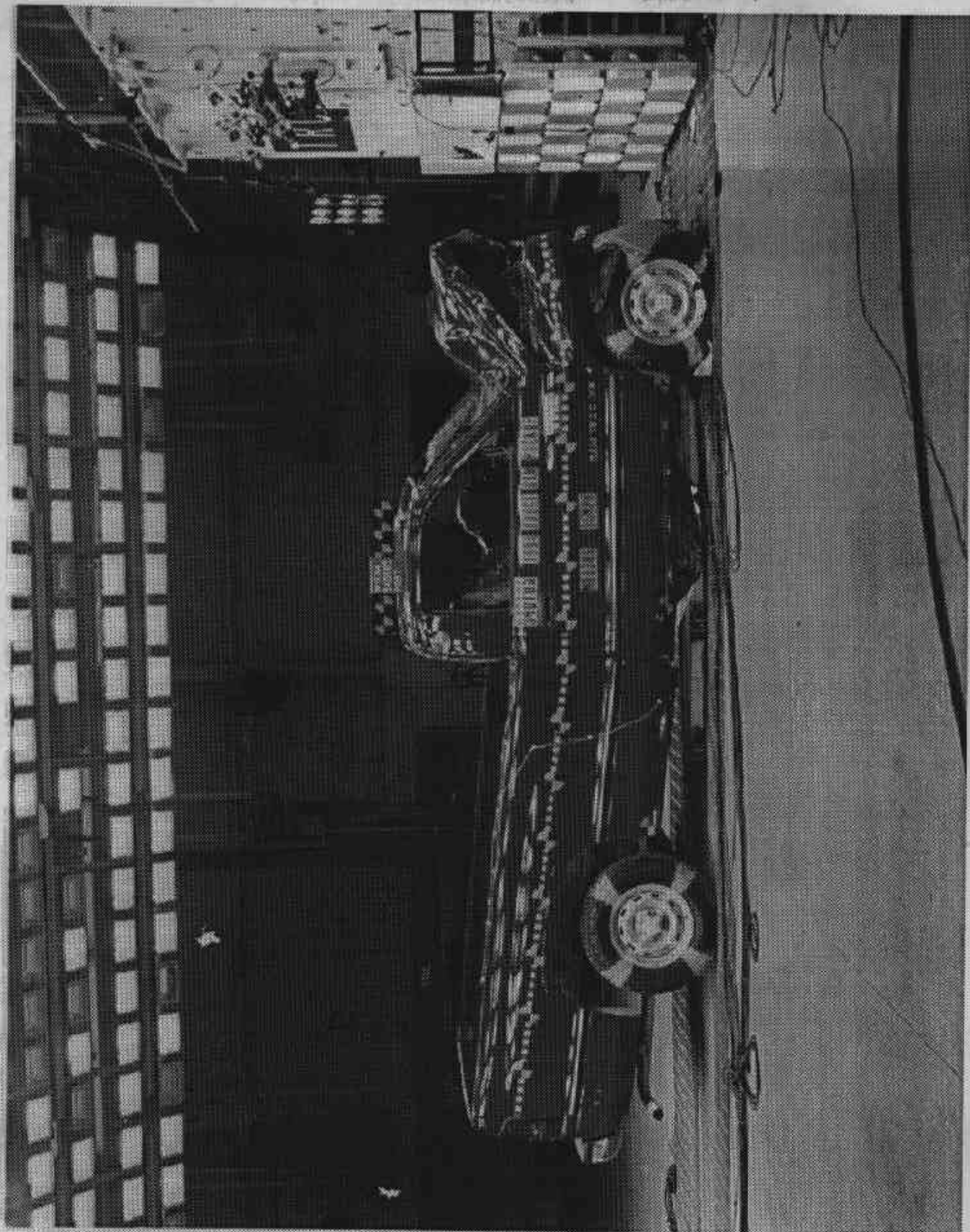


Figure A-8. POST-TEST RIGHT SIDE VIEW

A-9

940105

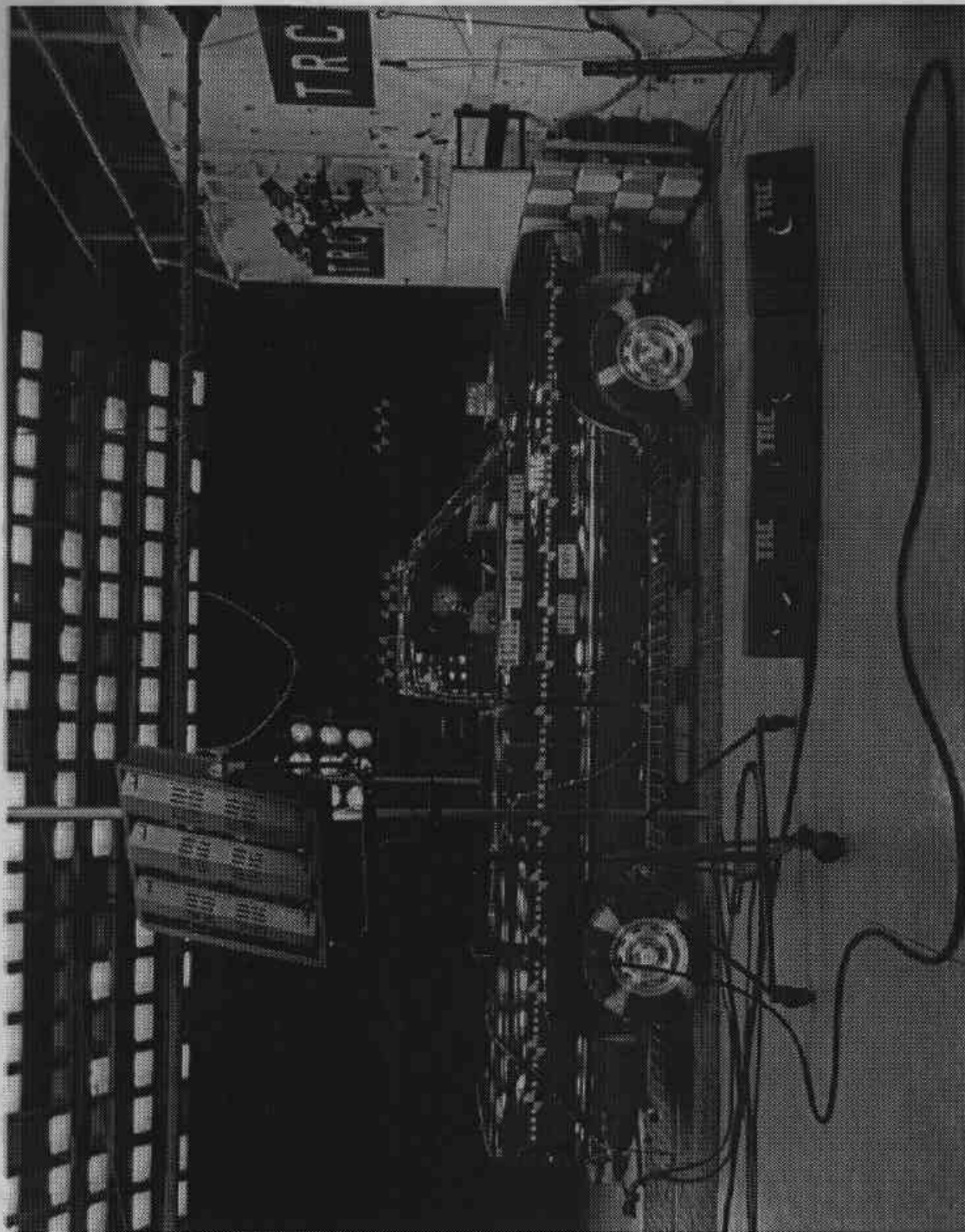


Figure A-7. PRE-TEST RIGHT SIDE VIEW
A-8

940105

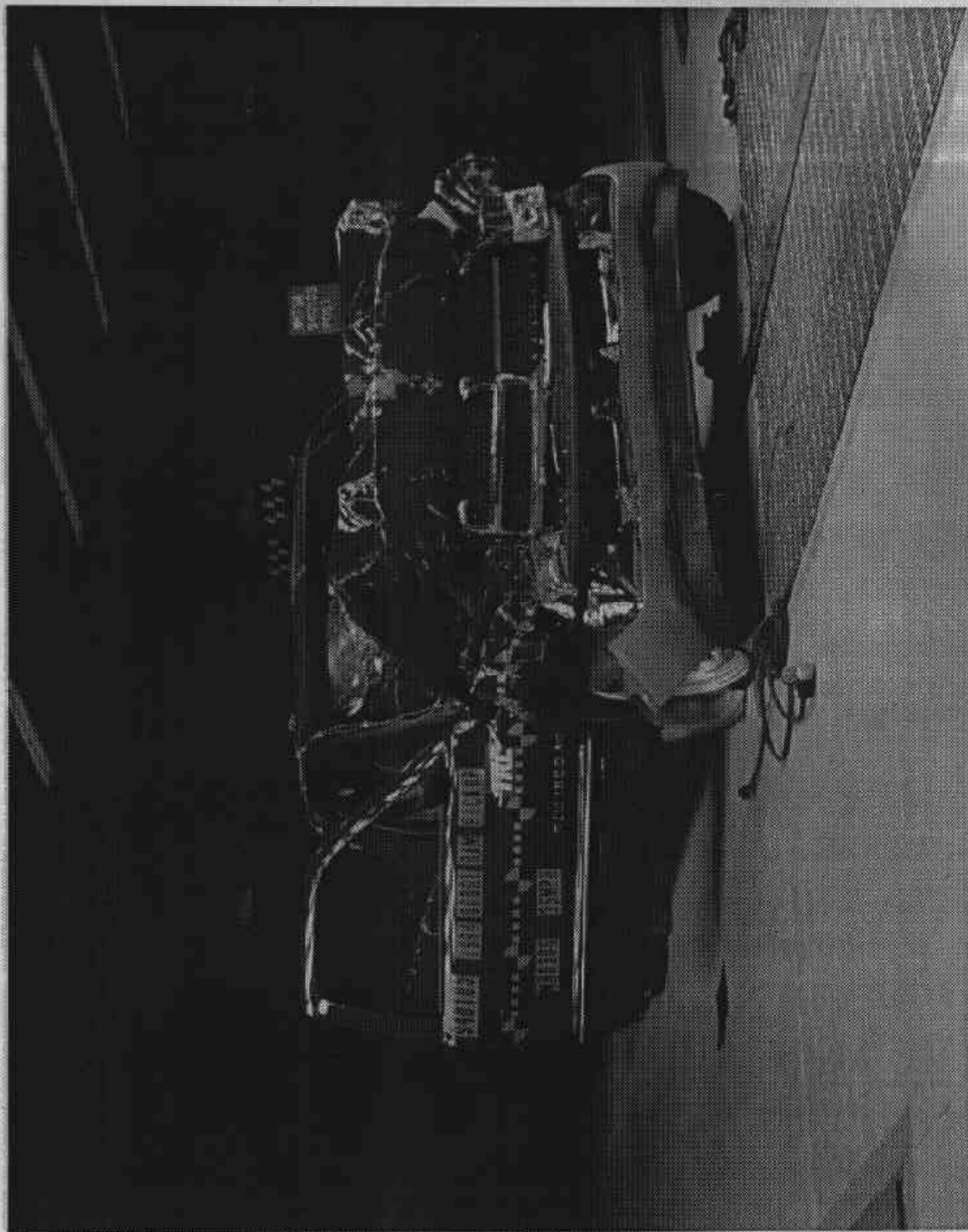


Figure A-10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW

A-11

940105

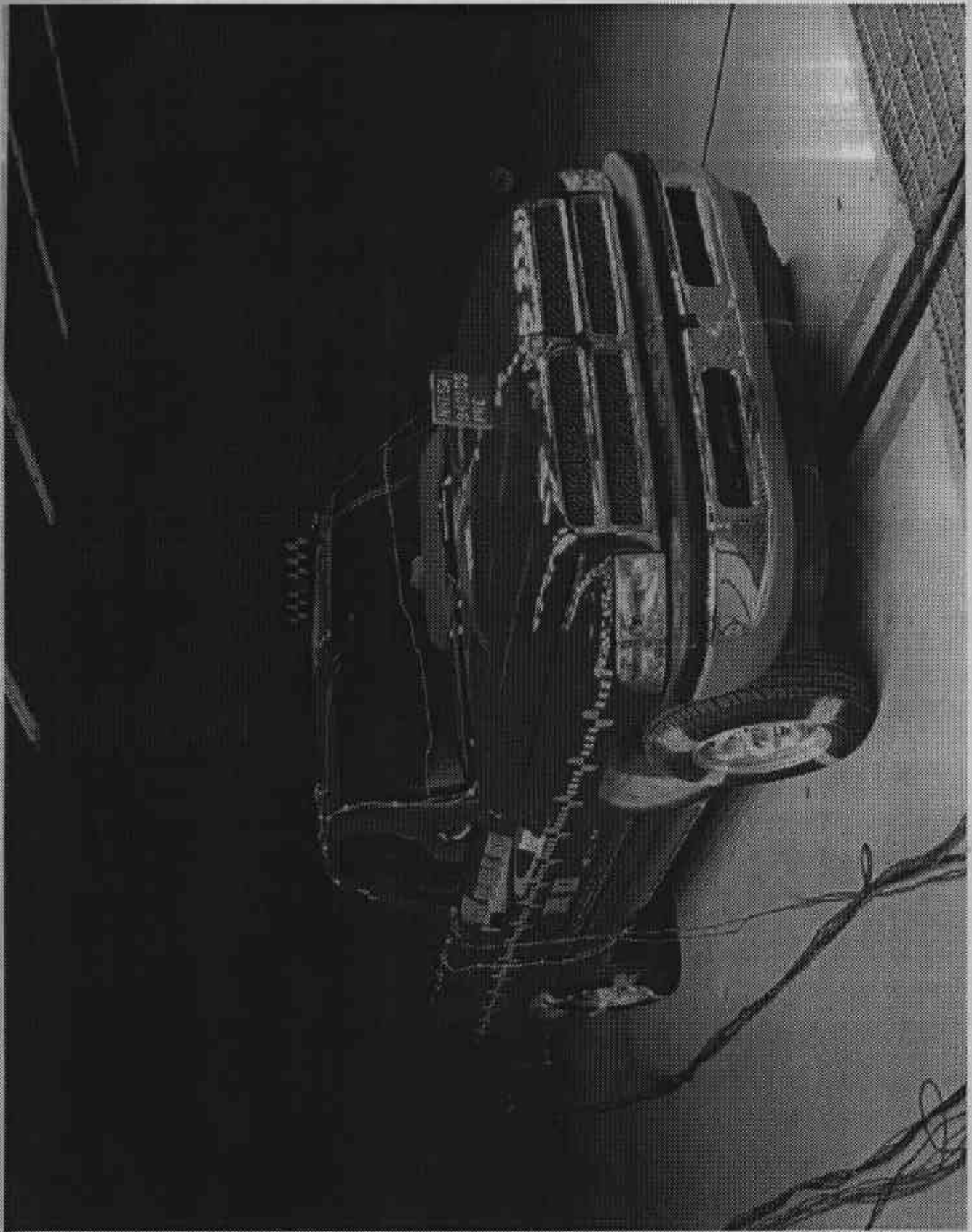


Figure A-9. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

A-10

940105

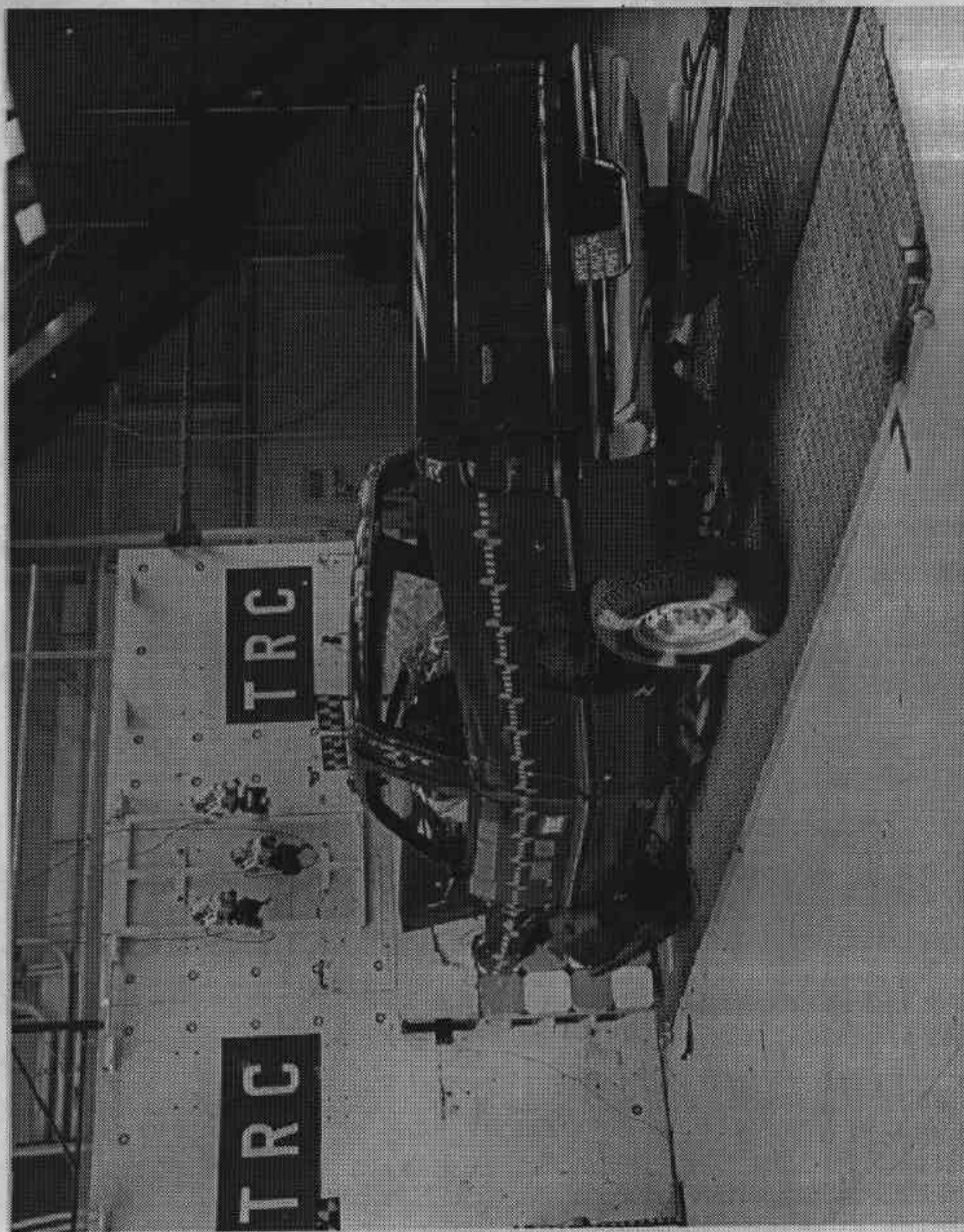


Figure A-12. POST-TEST LEFT REAR THREE-QUARTER VIEW

A-13

940105

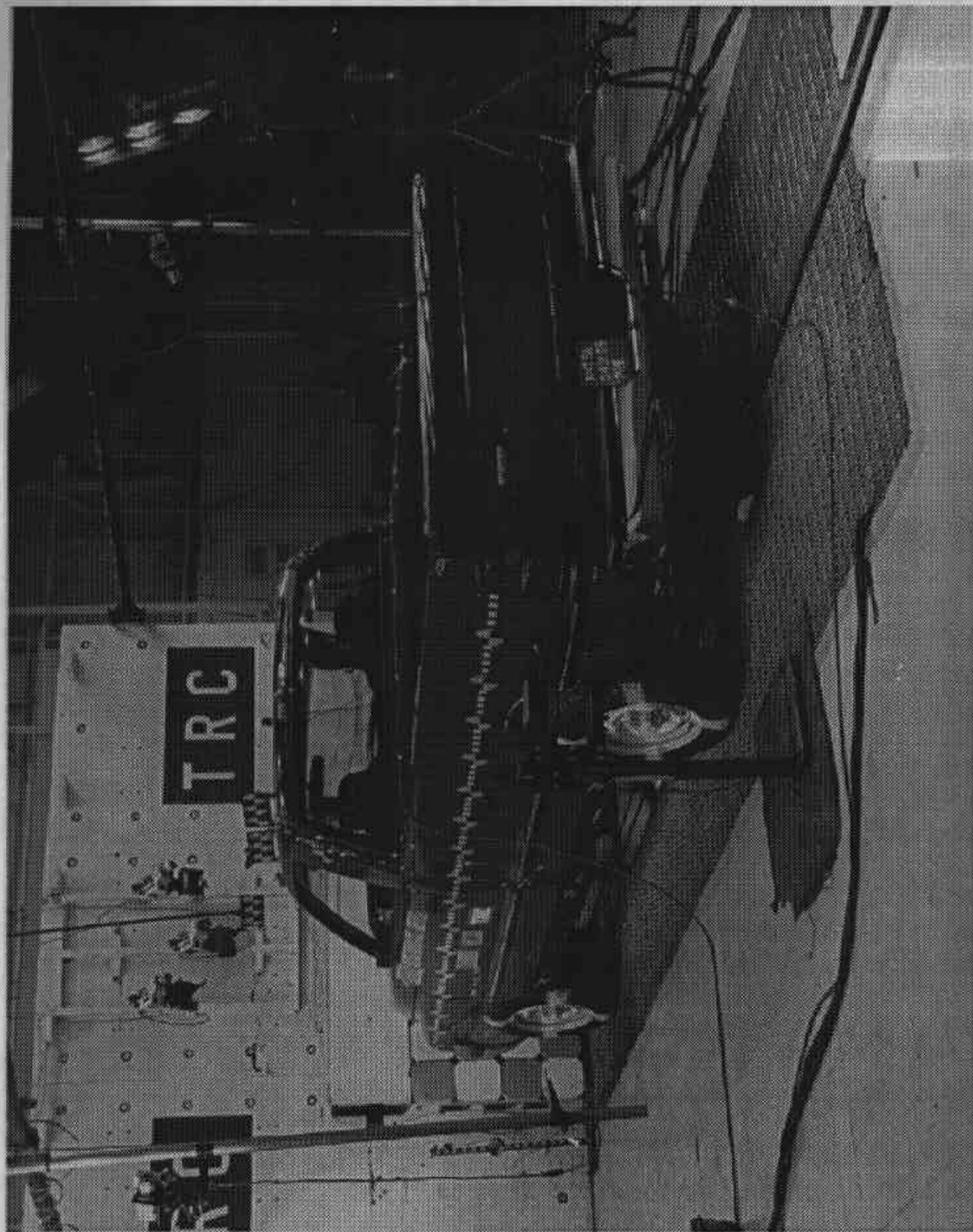


Figure A-11. PRE-TEST LEFT REAR THREE-QUARTER VIEW

A-12

940105

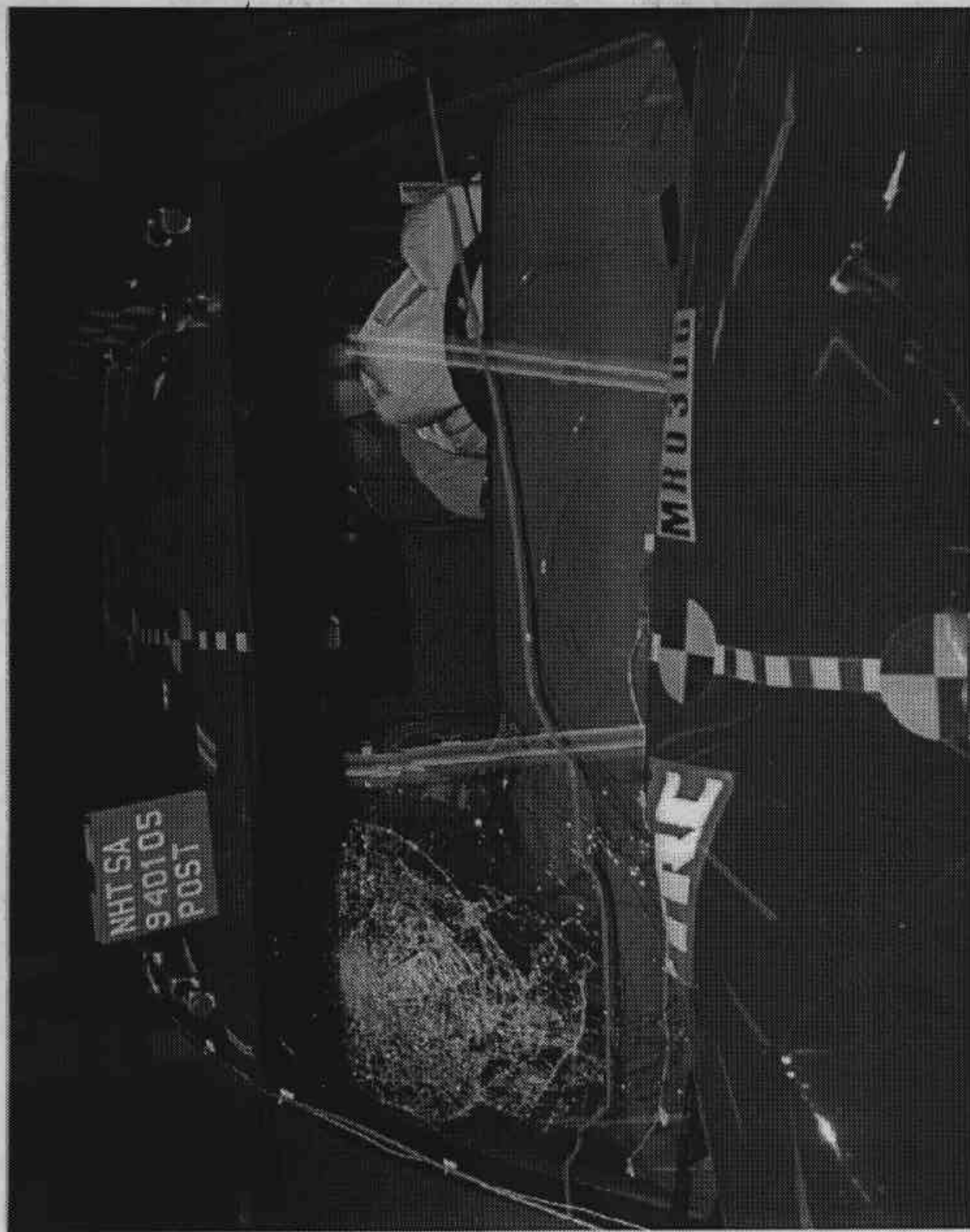


Figure A-14. POST-TEST WINDSHIELD VIEW
A-15

940105

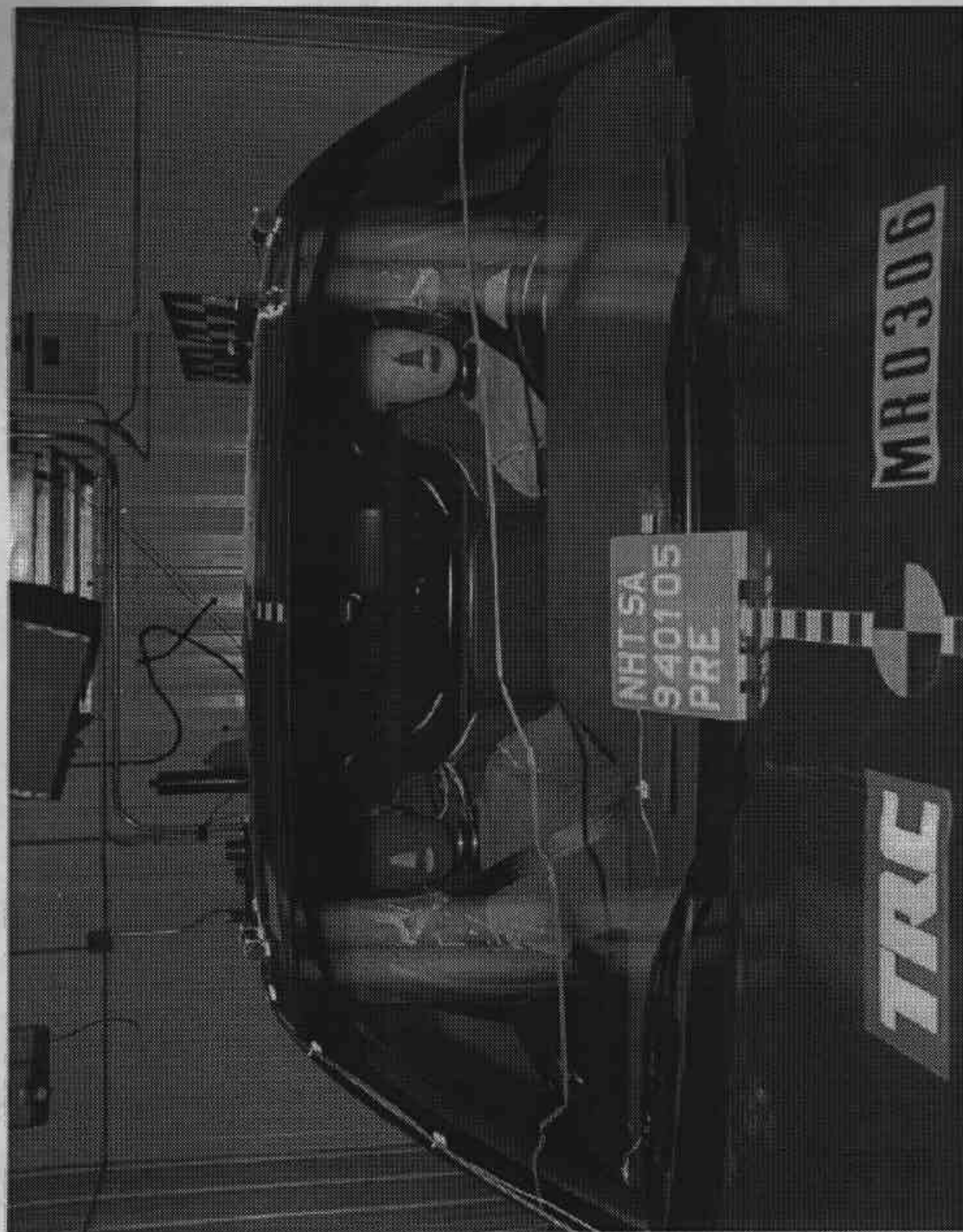


Figure A-13. PRE-TEST WINDSHIELD VIEW

A-14

940105



Figure A-16. POST-TEST ENGINE COMPARTMENT VIEW

A-17

940105

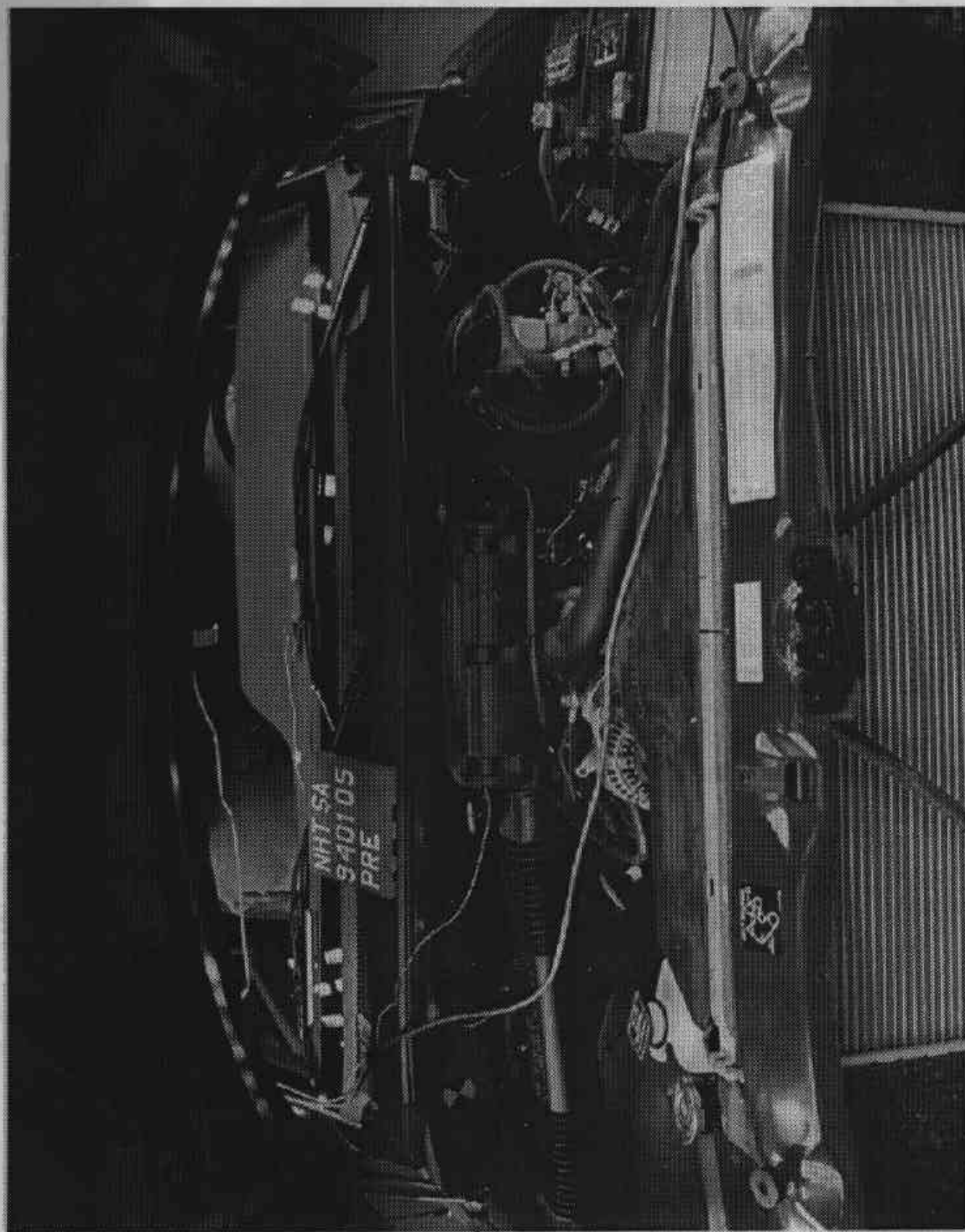


Figure A-15. PRE-TEST ENGINE COMPARTMENT VIEW

A-16

940105



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

A-19

940105



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

A-18

940105



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

A-21

940105



Figure A-19. PRE-TEST FUEL FILLER NECK VIEW
A-20

940105



Figure A-22. POST-TEST FUEL FILLER NECK & TANK VIEW

A-23

940105



Figure A-21. PRE-TEST FUEL TANK VIEW
A-22

940105

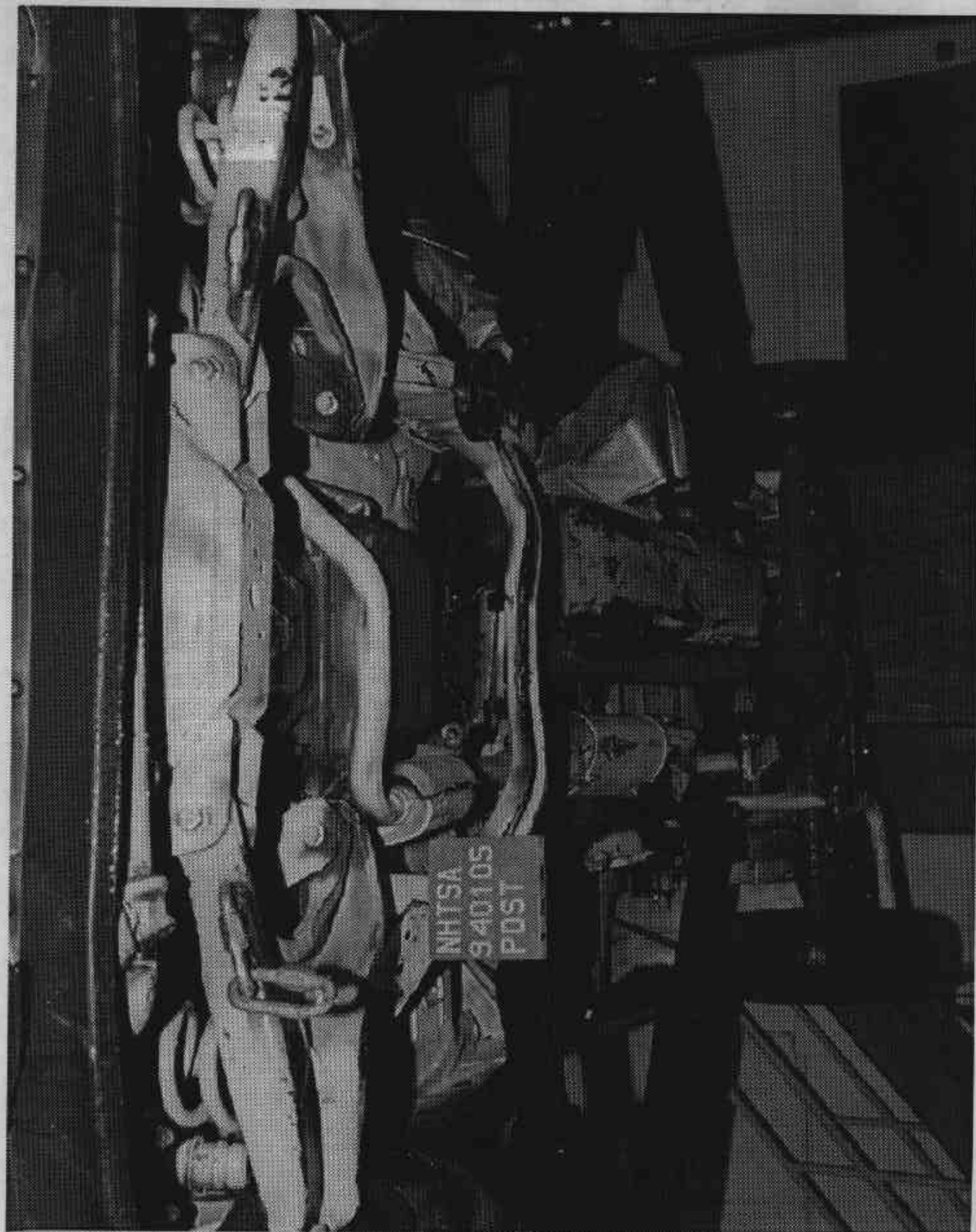


Figure A-24. POST-TEST FRONT UNDERBODY VIEW

A-25

940105

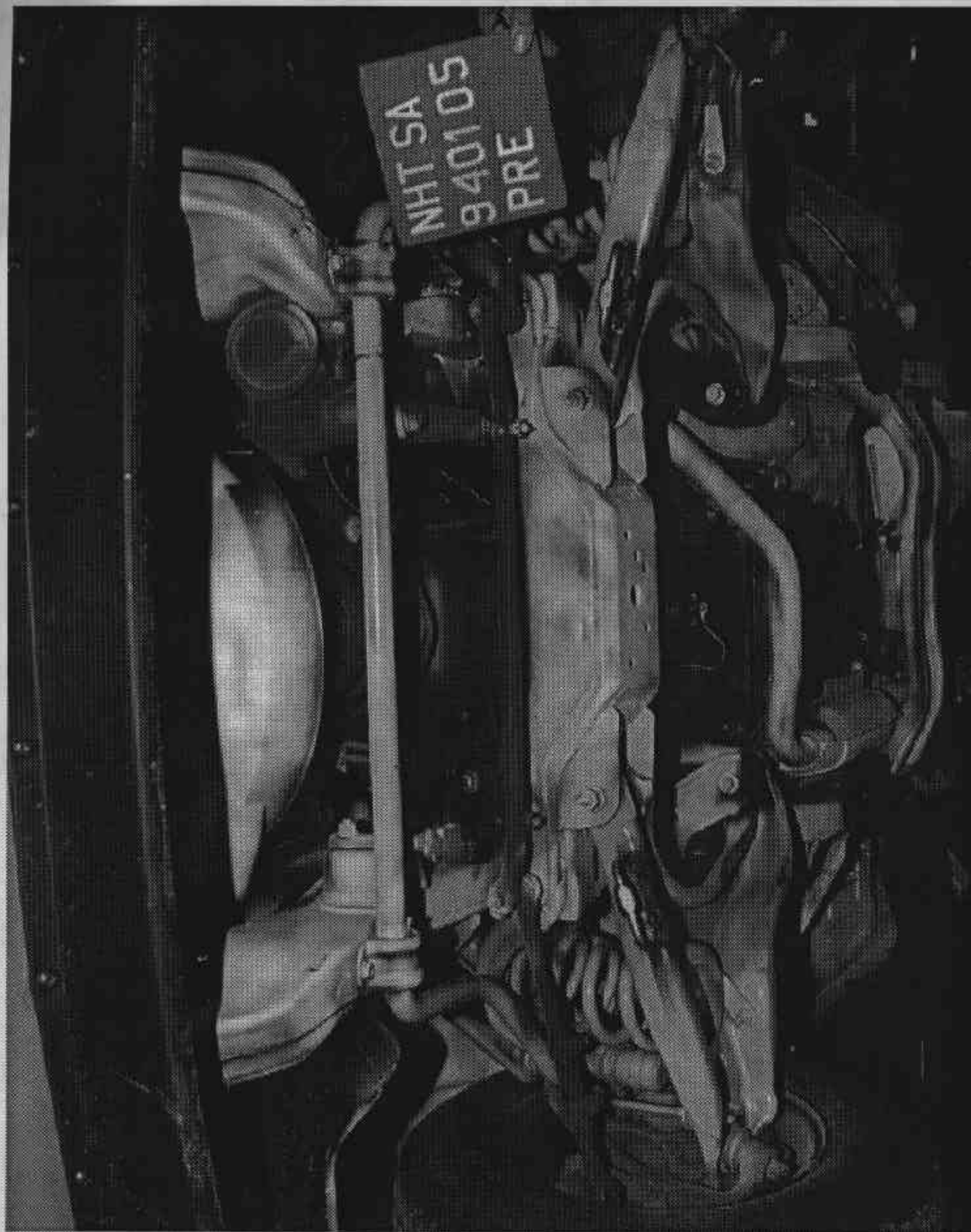


Figure A-23. PRE-TEST FRONT UNDERBODY VIEW

A-24

940105

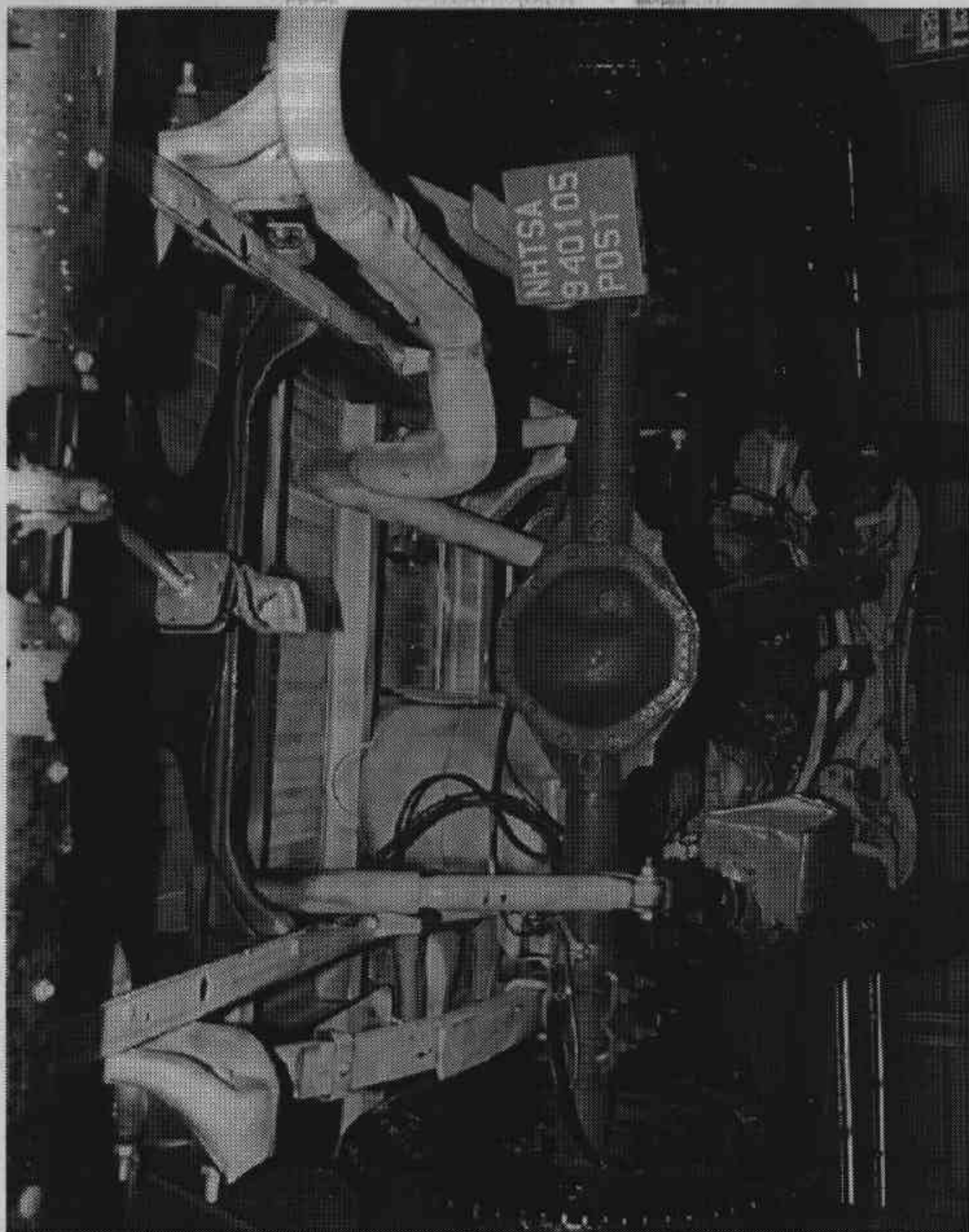


Figure A-26. POST-TEST REAR UNDERBODY VIEW

A-27

940105

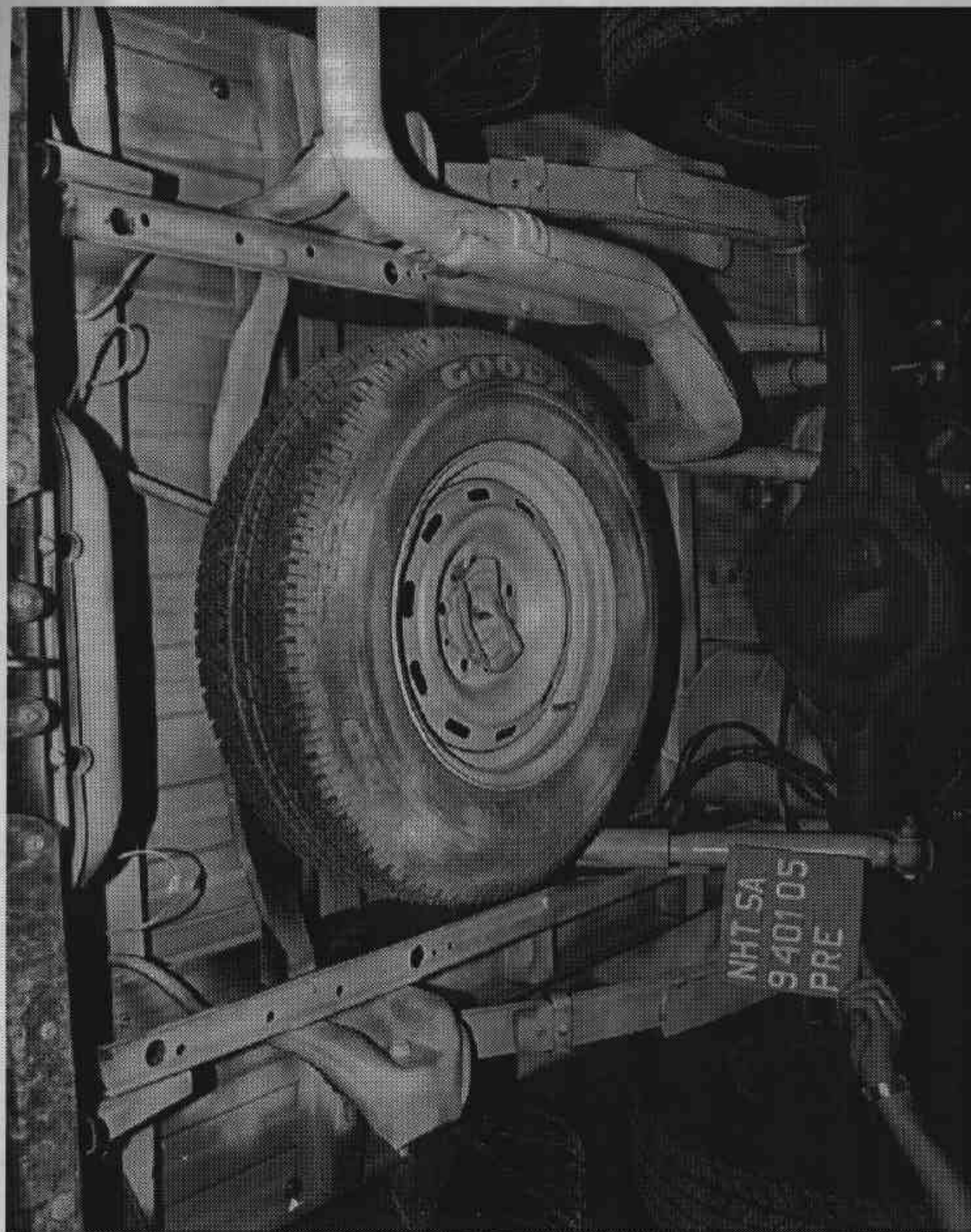


Figure A-25. PRE-TEST REAR UNDERBODY VIEW

A-26

940105

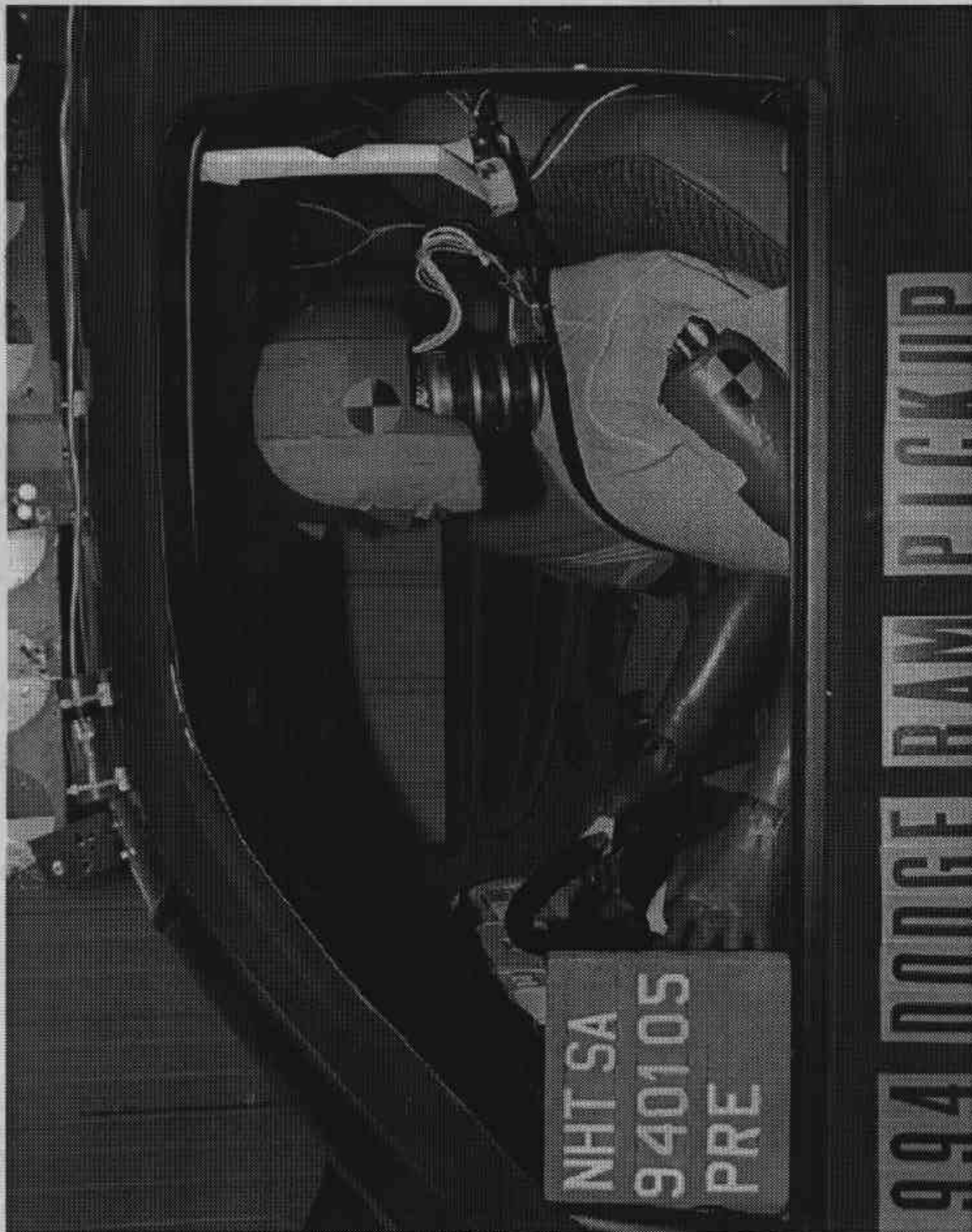


Figure A-28. PRE-TEST DRIVER DUMMY POSITION VIEW



Figure A-27. POST-TEST BALLAST LOCATION VIEW
A-28

940105

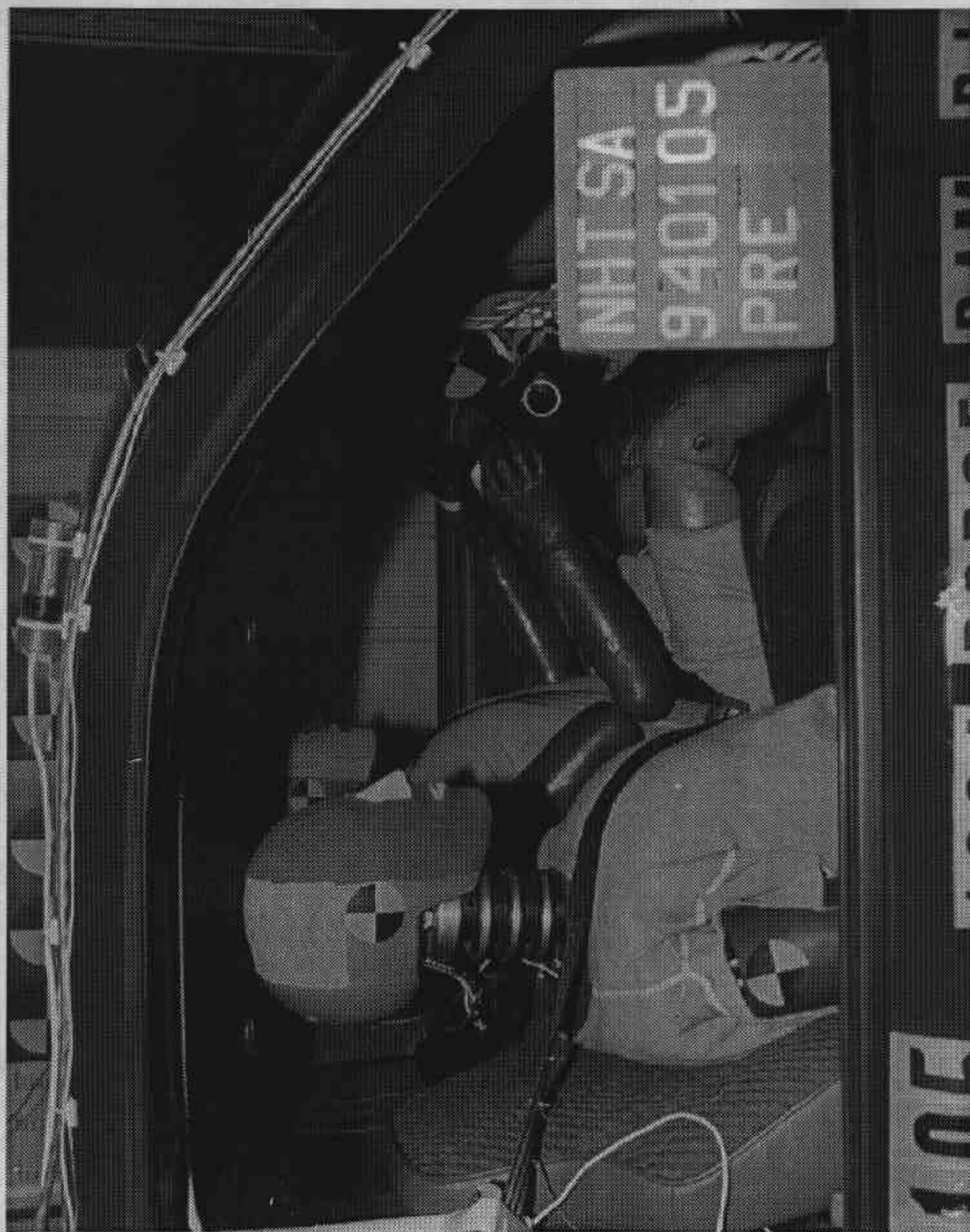


Figure A-30. PRE-TEST PASSENGER DUMMY POSITION VIEW

A-31

940105



Figure A-29. POST-TEST DRIVER DUMMY POSITION VIEW



Fig. A-32. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1
A-33 940105

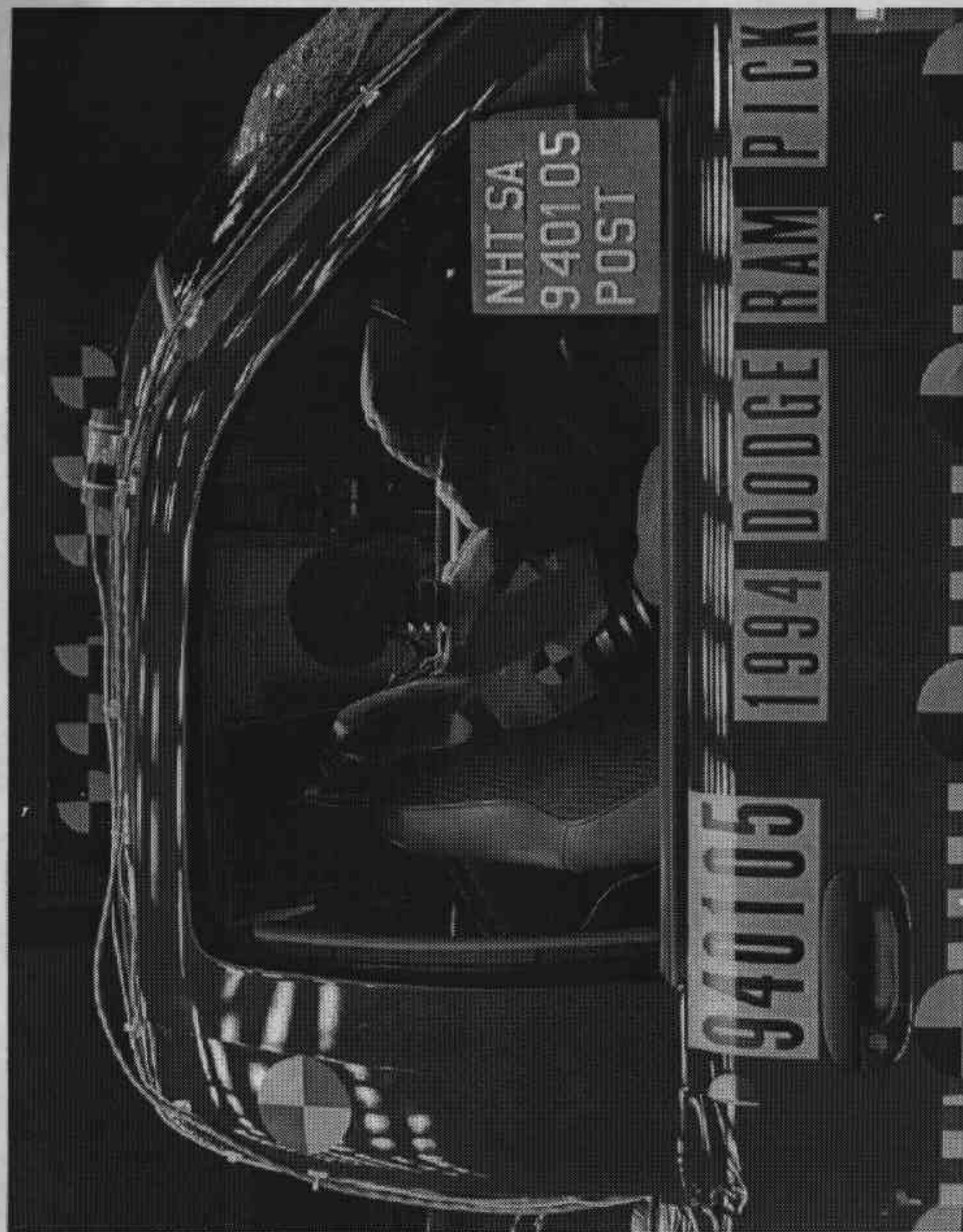


Figure A-31. POST-TEST PASSENGER DUMMY POSITION VIEW

A-32

940105

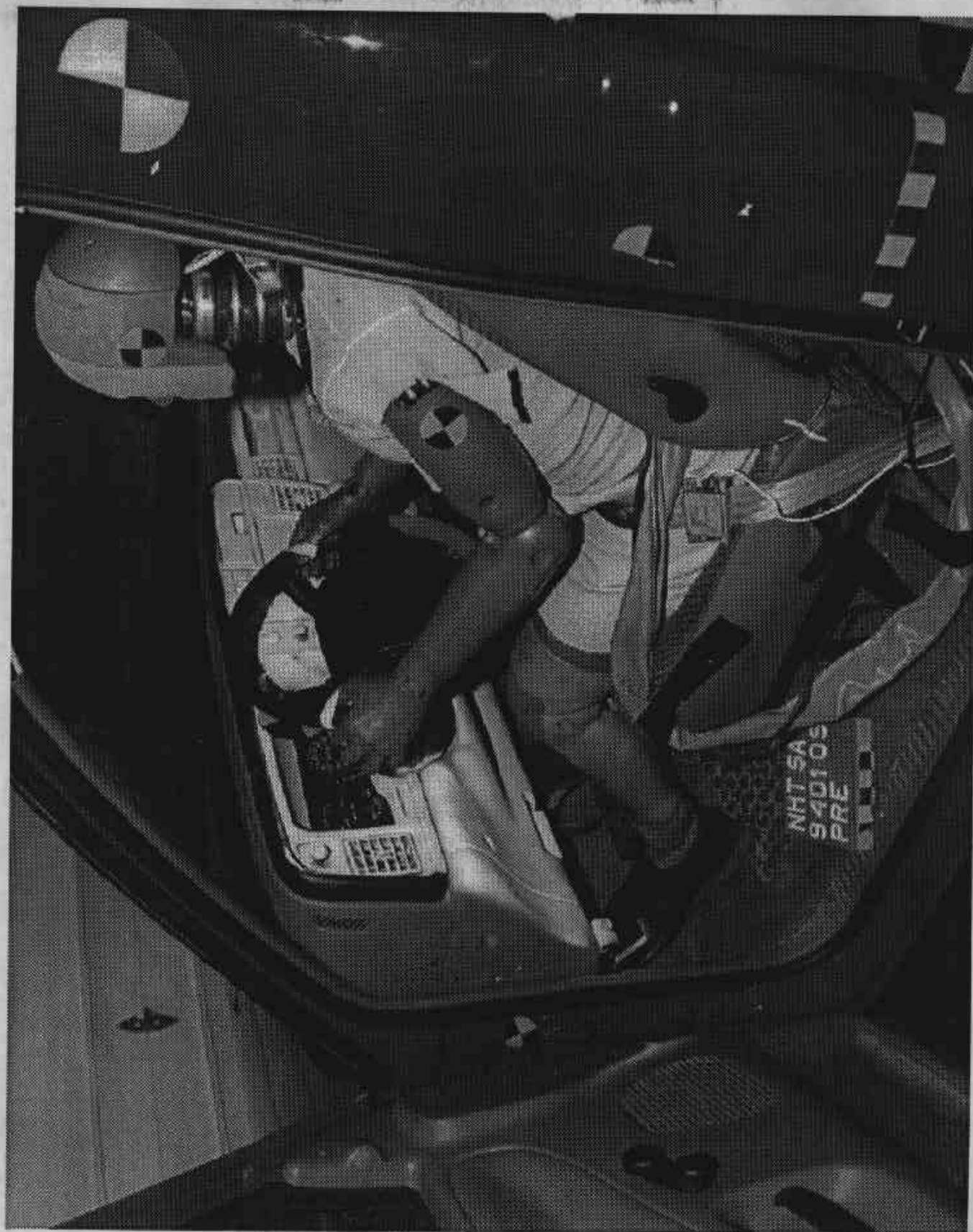


Fig. A-34. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2
A-35 940105

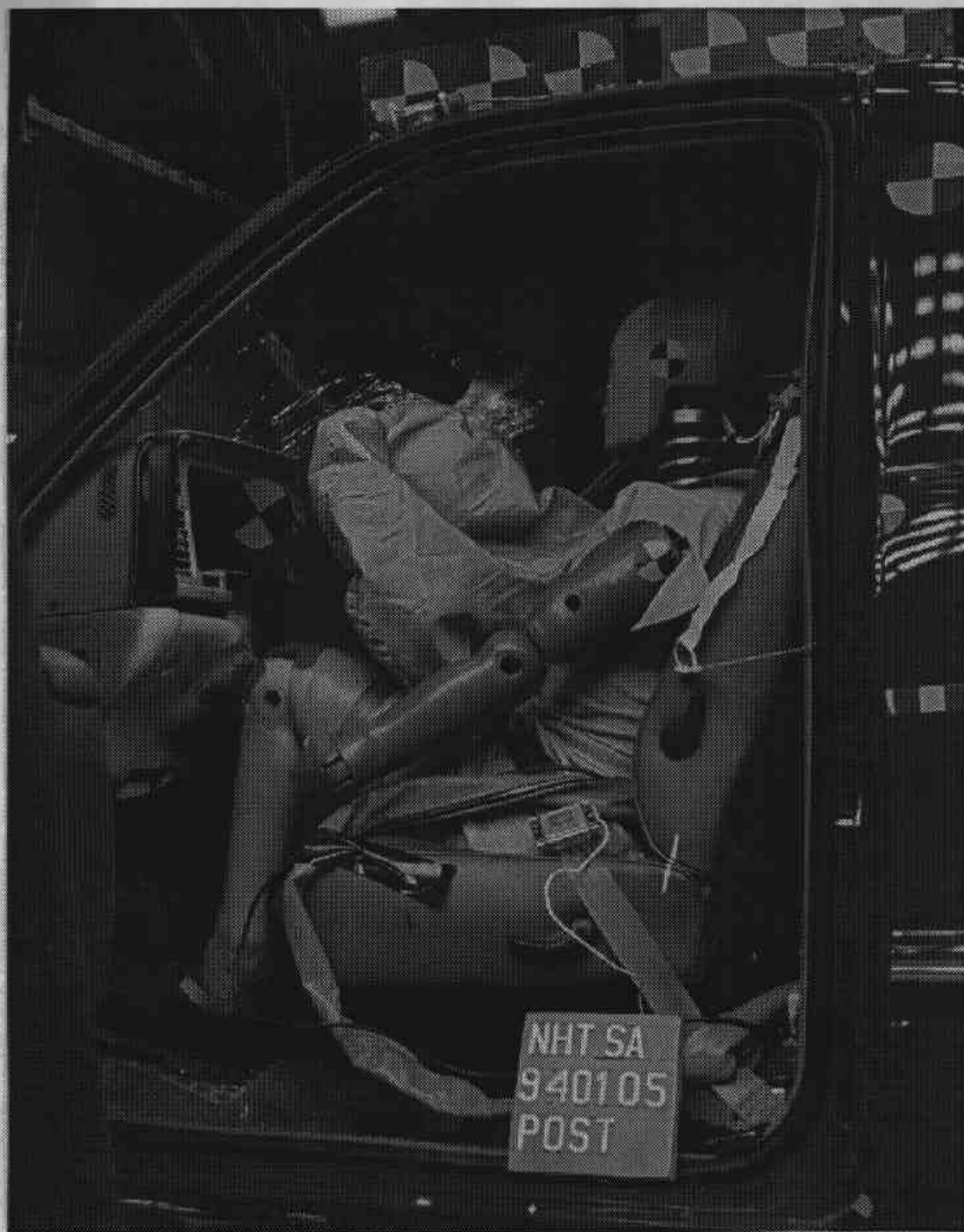


Fig A-33. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW I
A-34 940105



Fig. A-36. PRE-TEST PASS.DUMMY & VEHICLE INTERIOR - VIEW 1

A-37

940105

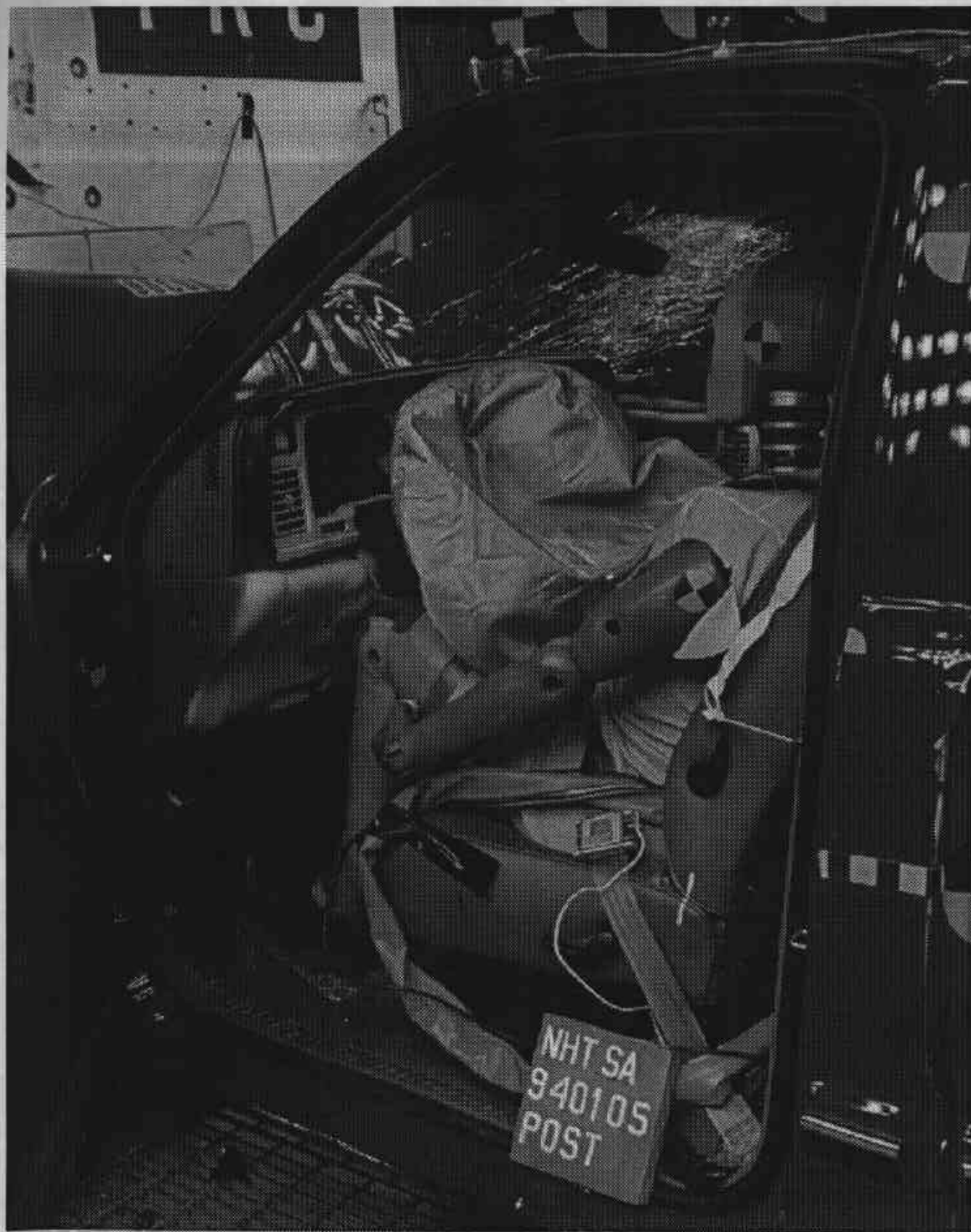


Fig A-35. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2
A-36 940105



Fig. A-38. PRE-TEST PASS. DUMMY & VEHICLE INTERIOR - VIEW 2
A-39 940105



Fig. A-37. POST-TEST PASS. DUMMY & VEHICLE INTERIOR - VIEW 1
A-38 940105

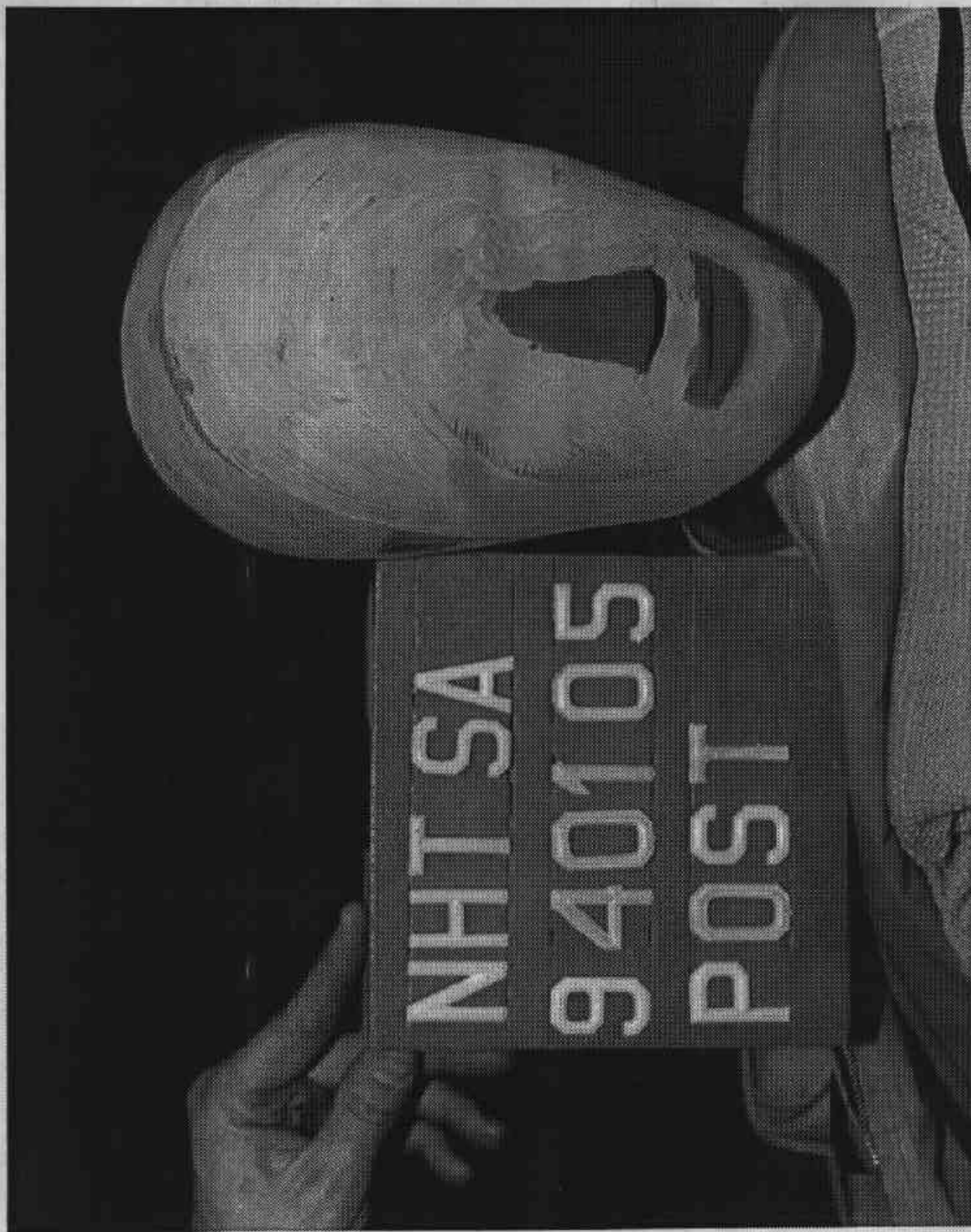


Fig. A-40. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 1

A-41

940105



Fig. A-39. POST-TEST PASS, DUMMY & VEHICLE INTERIOR - VIEW 2
A-40 940105



Figure A-42. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1

A-43

940105



Figure A-41. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 2
A-42 940105



Figure A-44. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 3

A-45

940105



Figure A-43. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2

A-44

940105



Figure A-46. POST-TEST PASSENGER DUMMY HEAD CONTACT-VIEW 2
A-47 940105

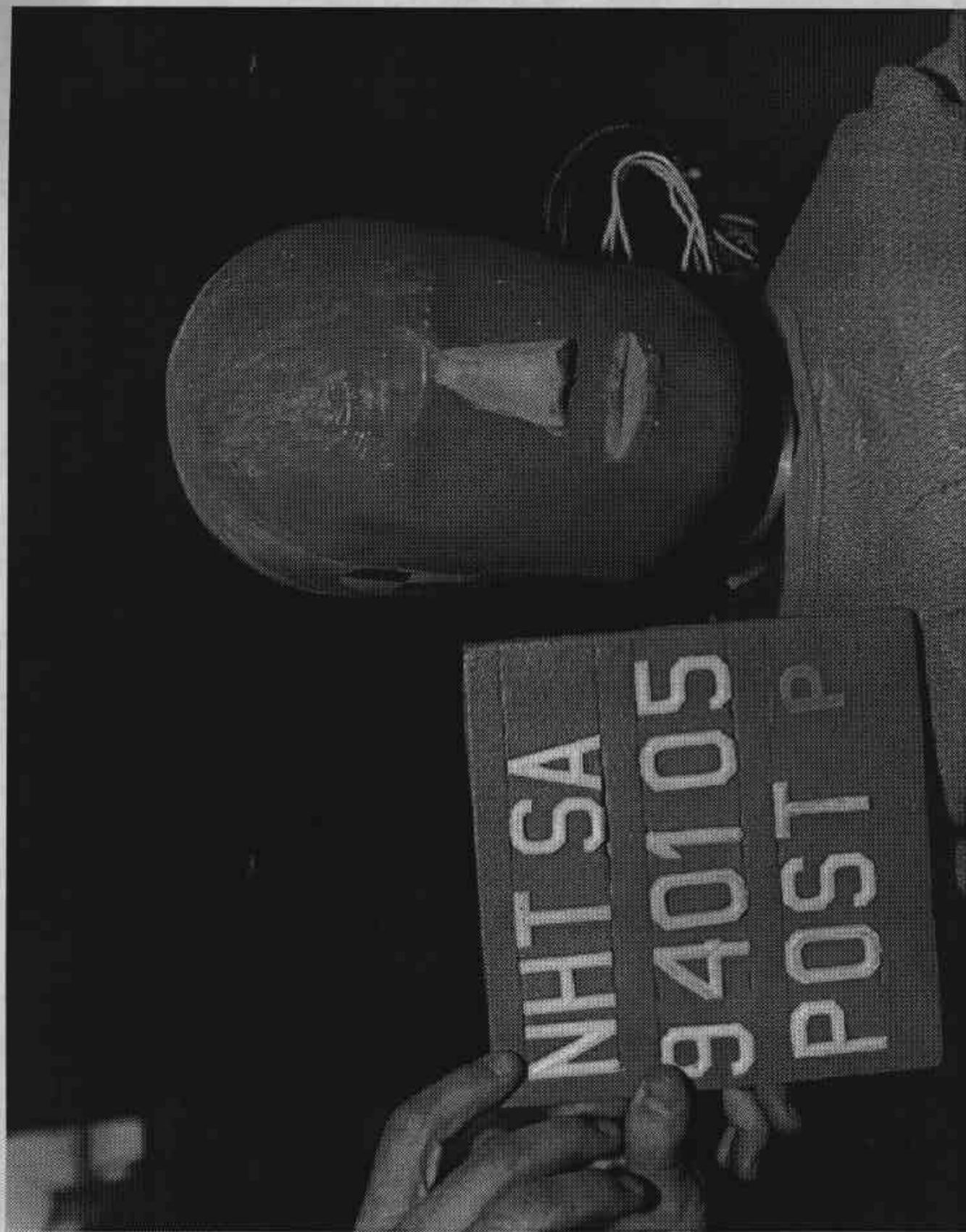


Figure A-45. POST-TEST PASSENGER DUMMY HEAD CONTACT-VIEW 1

A-46

940105

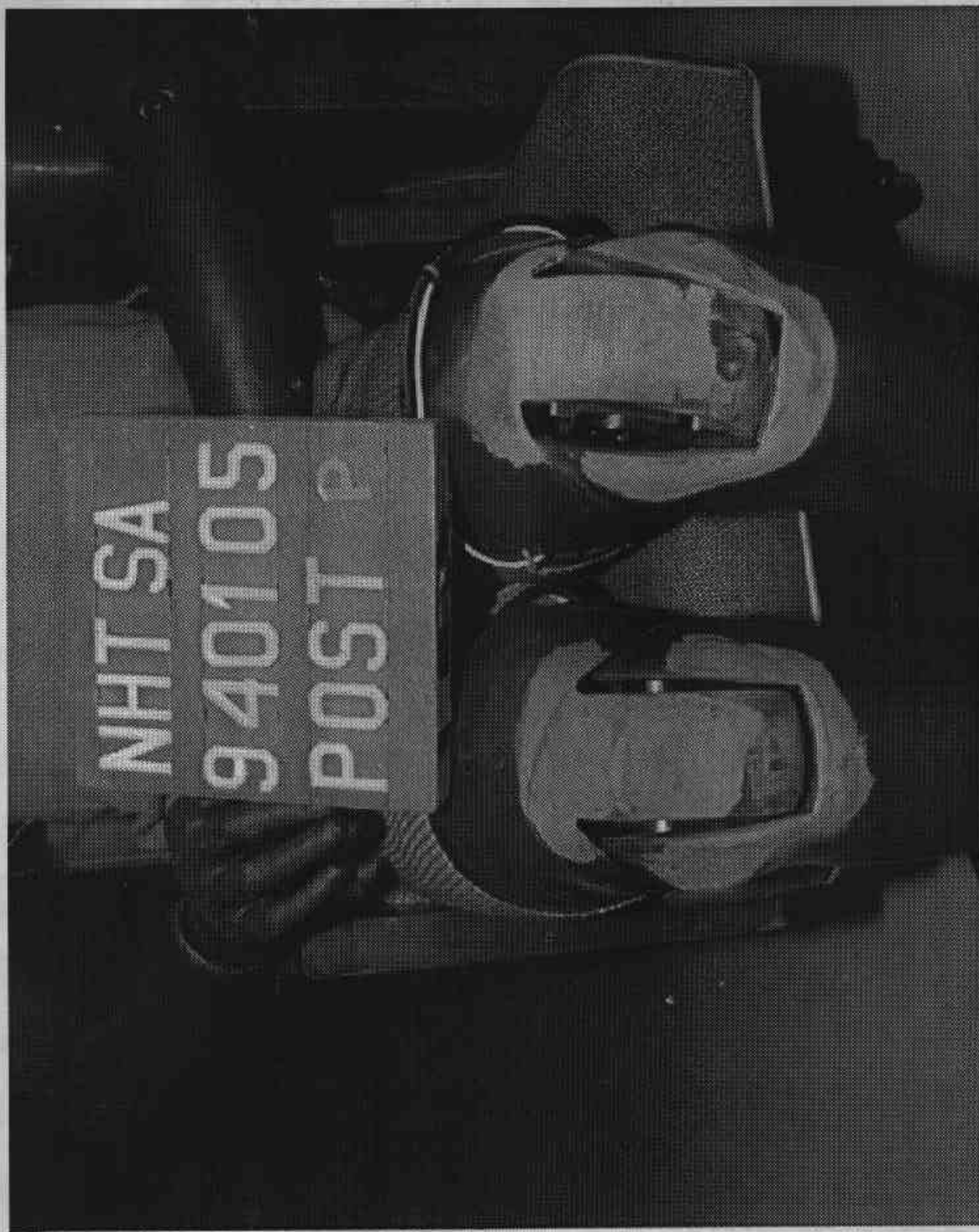


Fig. A-48. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1

A-49

940105

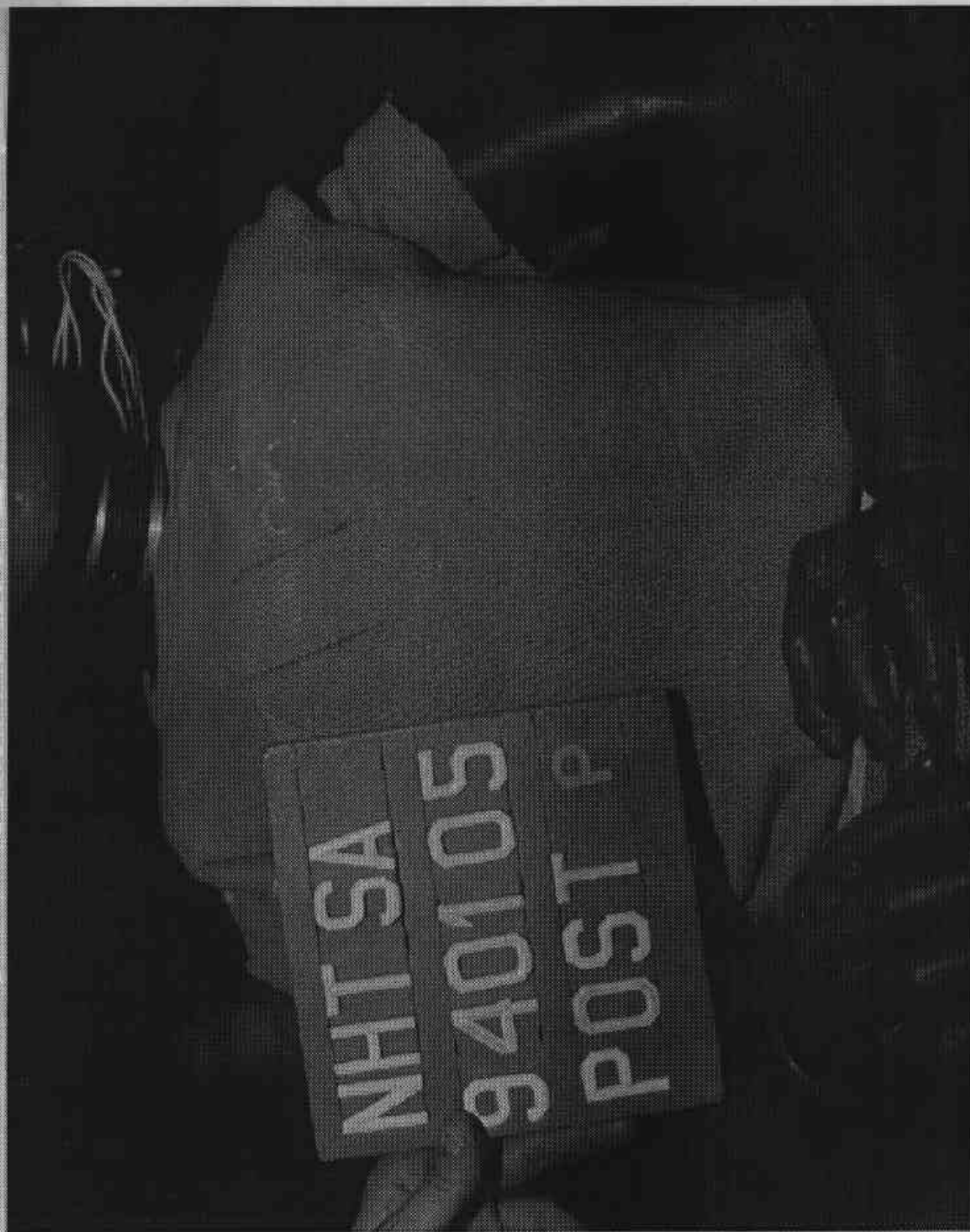
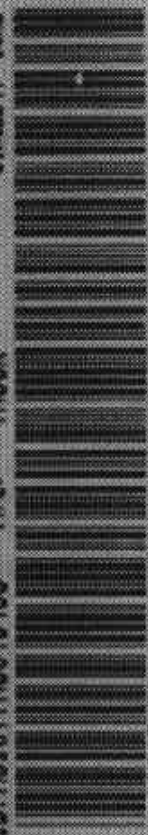


Figure A-47. POST-TEST PASSENGER DUMMY CHEST CONTACT VIEW
A-48 940105

MFD BY	CHRYSLER CORPORATION	DATE OF MFR	10-93	GWR	66400 LB	2983 KG
GWR FRONT		WITH TIRES		RIMS AT		PSI COLD
3300 LB	1497 KG	P225/75R16XL		16 X 7.0		35
GWR REAR		WITH TIRES		RIMS AT		PSI COLD
3000 LB	1724 KG	P225/75R16XL		16 X 7.0		41

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: 1B7HC16Y7RS549483 TYPE: TRUCK SINGLE X DUAL



VEHICLE MADE IN U.S.A.

MOH: 102985 224

4846503

Fig. A-50. PRE-TEST VEH. CERTIFICATION & TIRE PRESSURE LABEL

A-51

940105

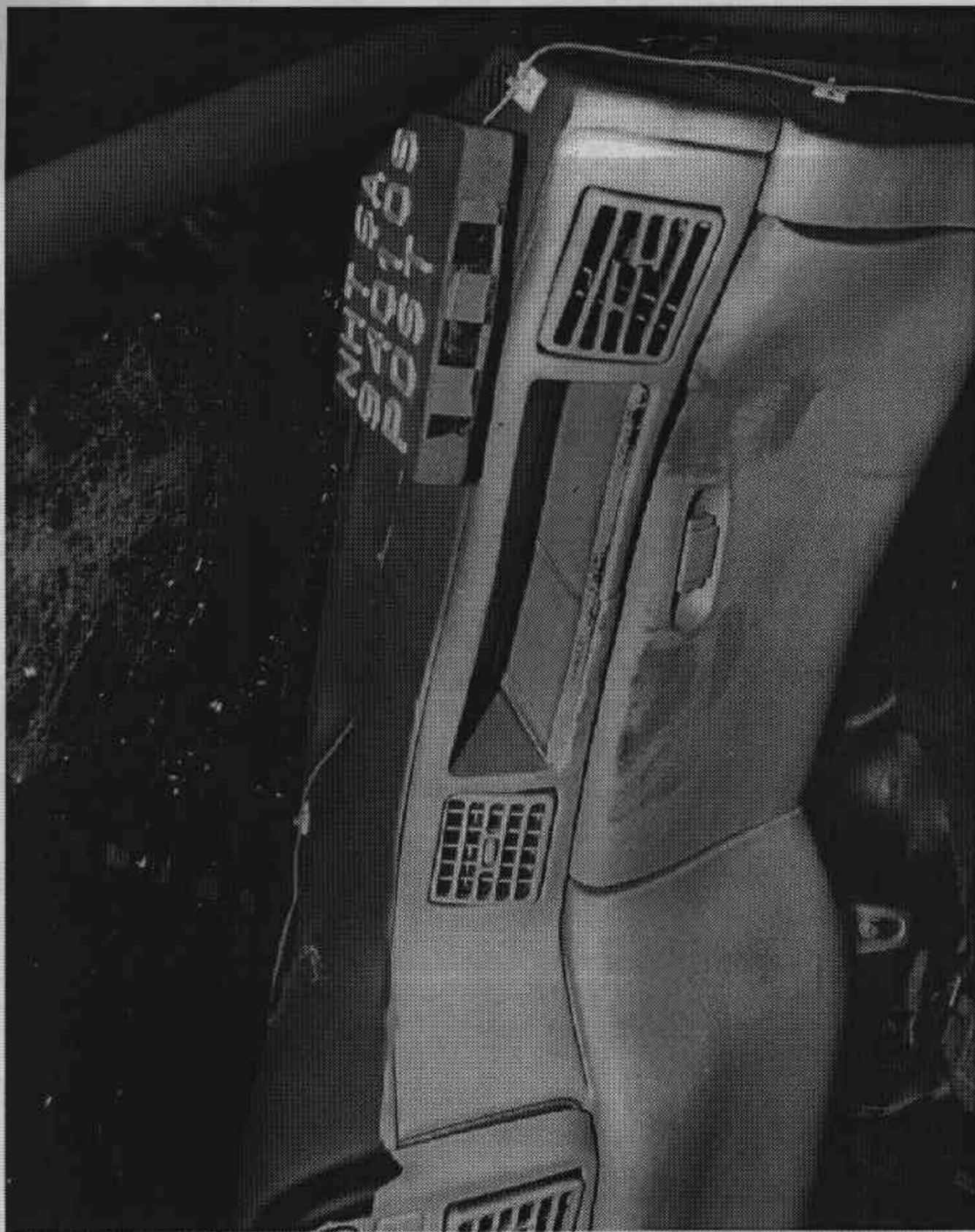


Fig. A-49. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2

A-50

940105

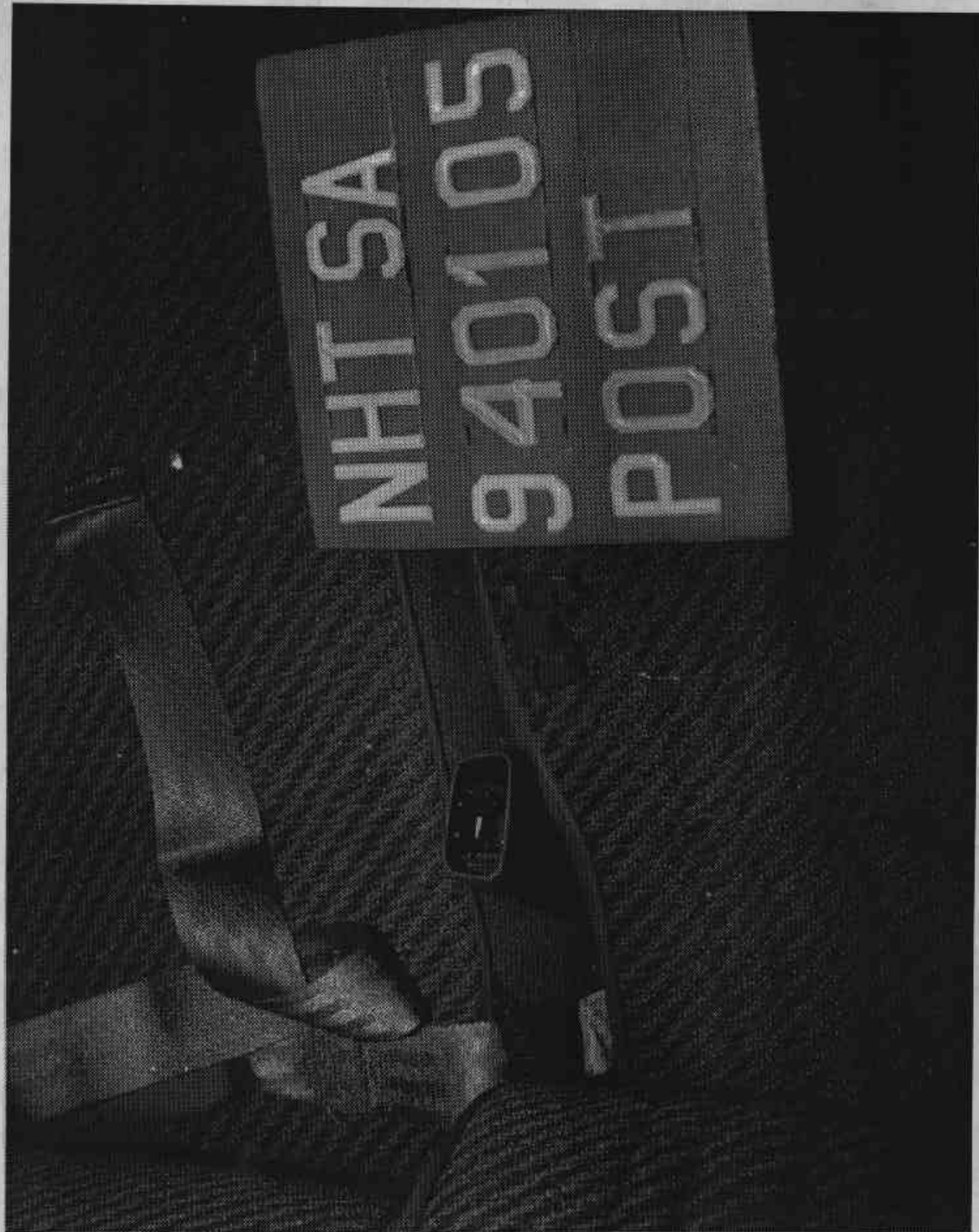


Figure A-52. POST-TEST PASSENGER SEAT BELT BUCKLE VIEW

A-53

940105

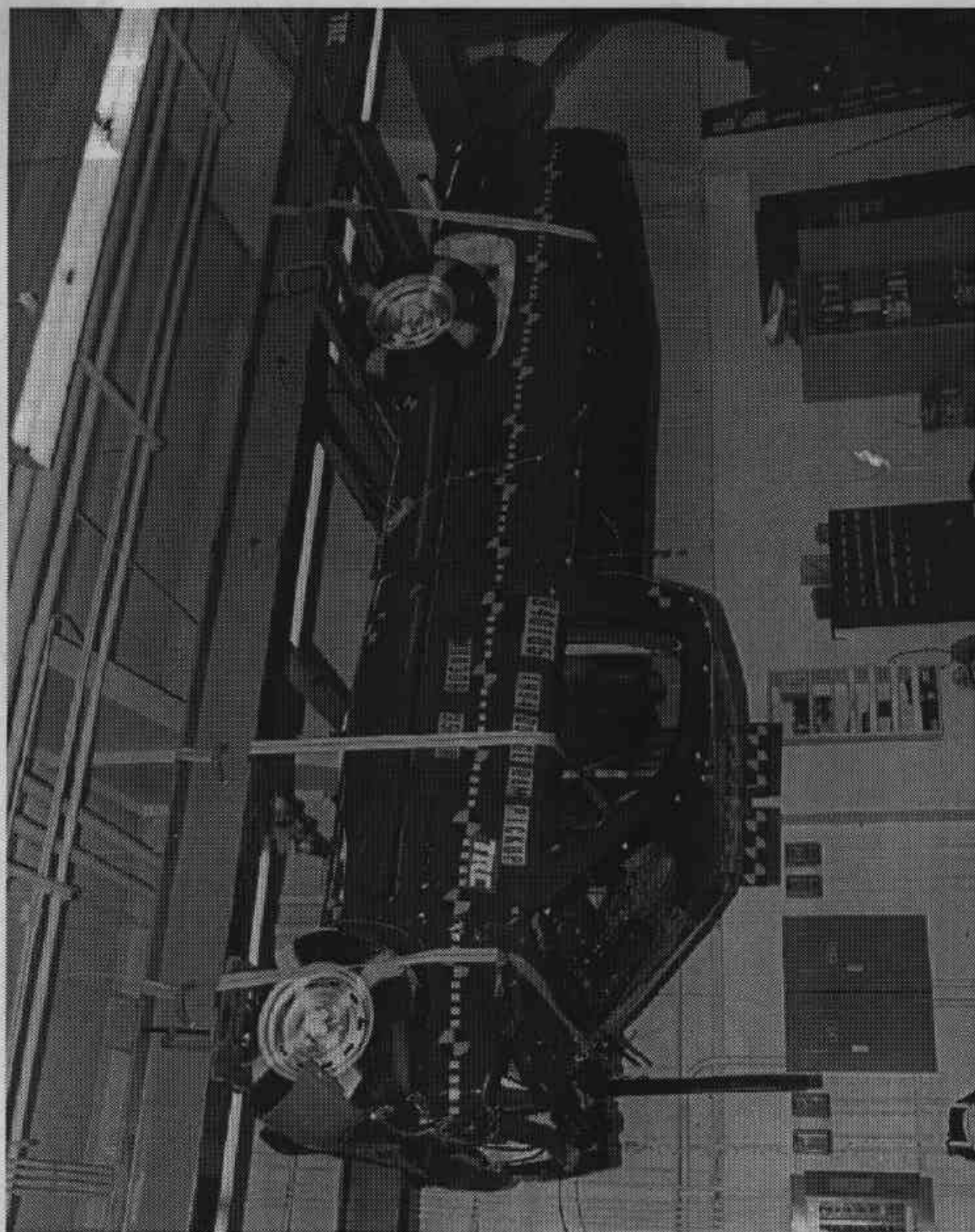


Fig A-51. POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE

A-52

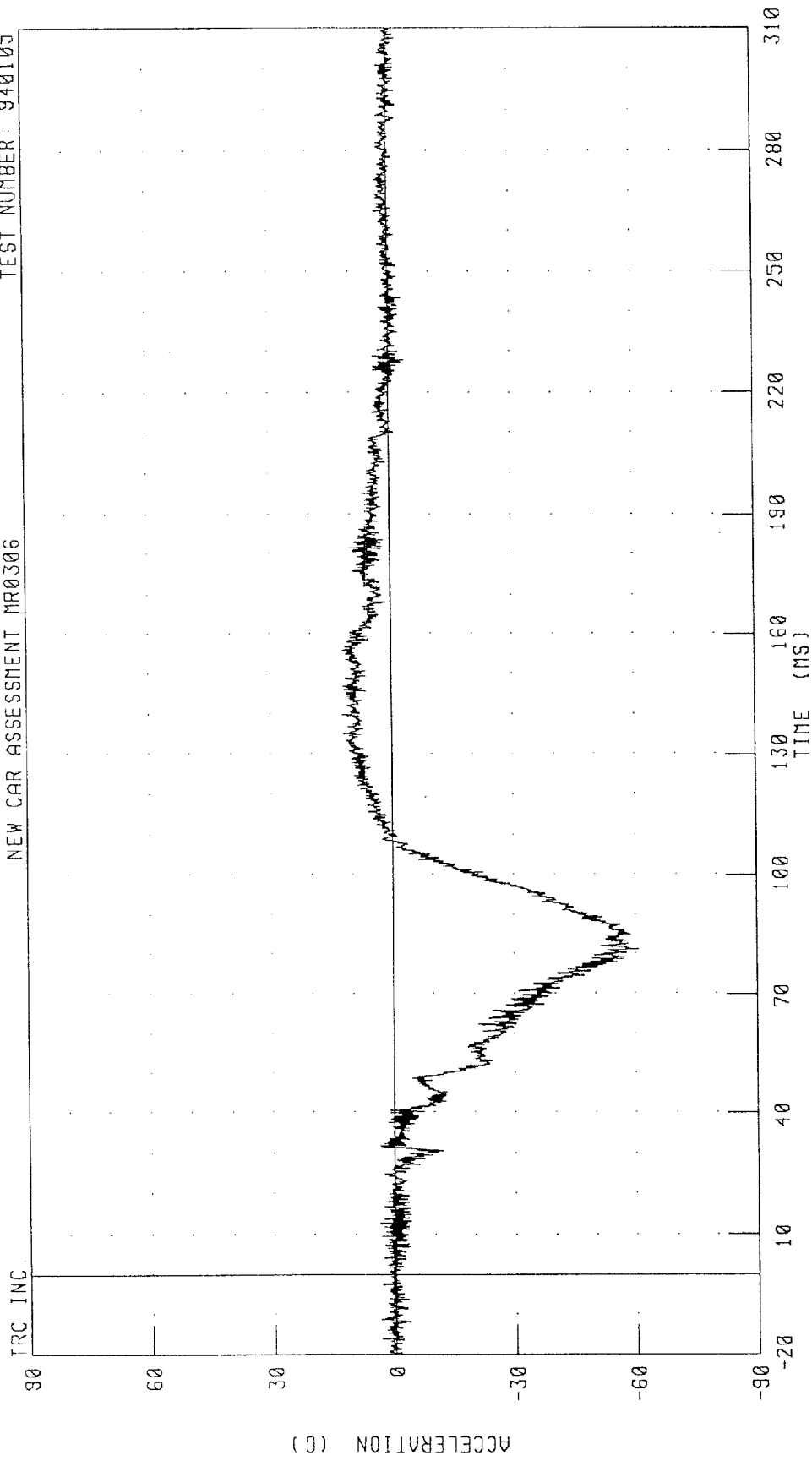
940105

APPENDIX B

DATA PLOTS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD X-AXIS ACCELERATION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



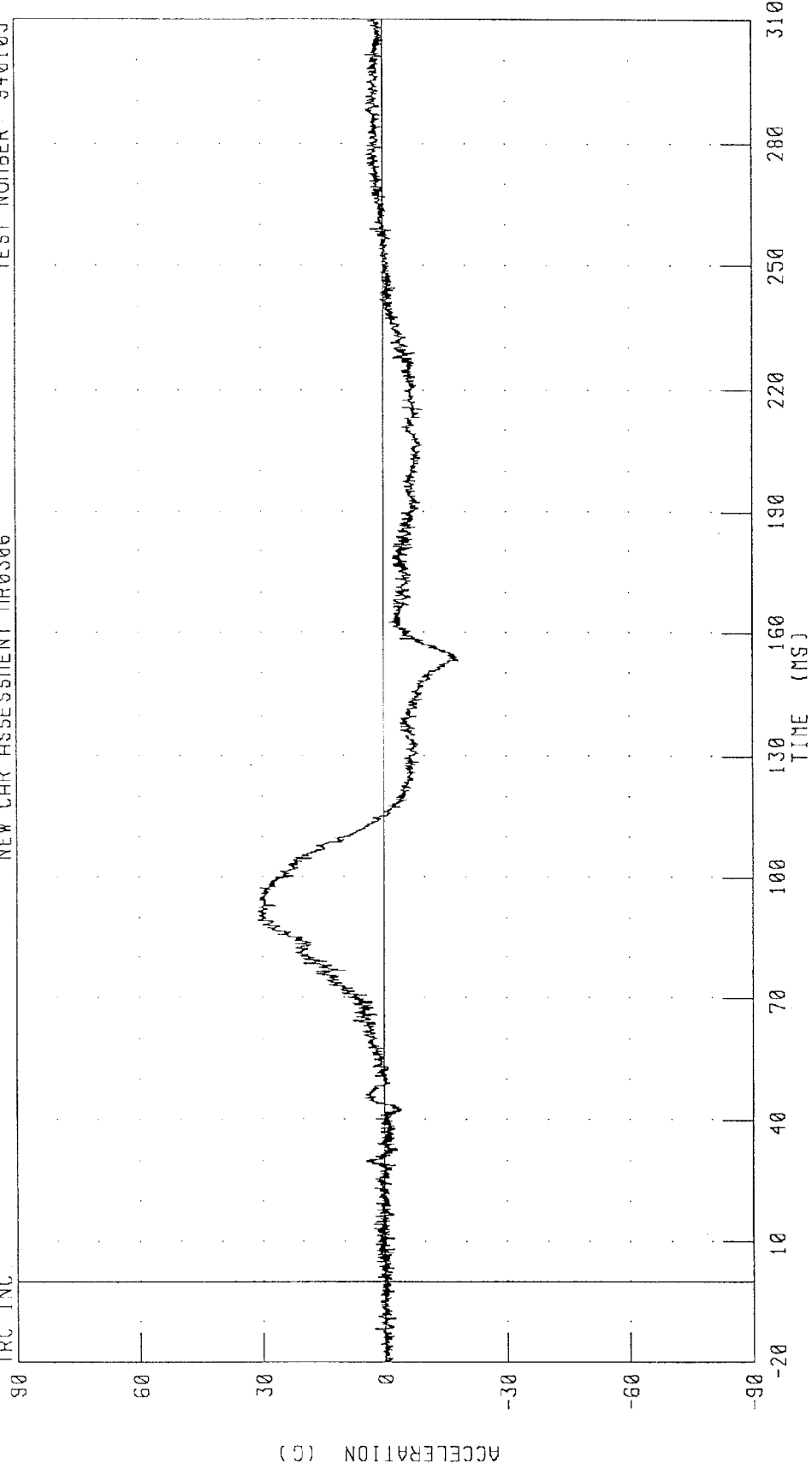
PEAK DATA: 12.19 G @ 139.76 MS; -60.74 G @ 81.12 MS

CHANNEL: HEDXC1 FILTER: CH. CLASS 1000

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.



PEAK DATA: 31.07 G @ 89.36 MS; -18.23 G @ 153.36 MS

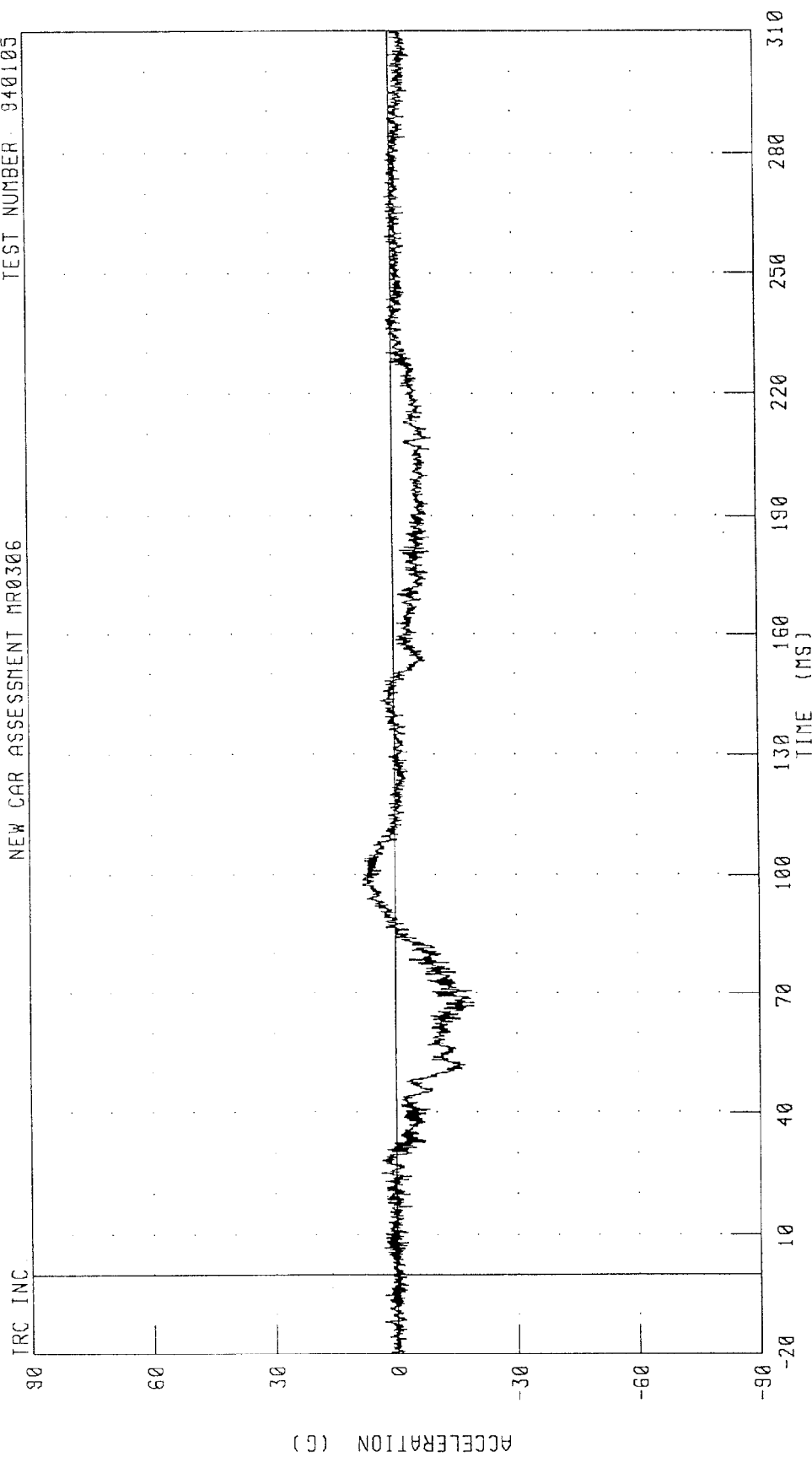
CHANNEL: HEDYG1 FILTER: CH. CLASS 1000

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER

DRIVER HEAD Z-AXIS ACCELERATION

NEW CAR ASSESSMENT MR0306

TEST NUMBER 940105



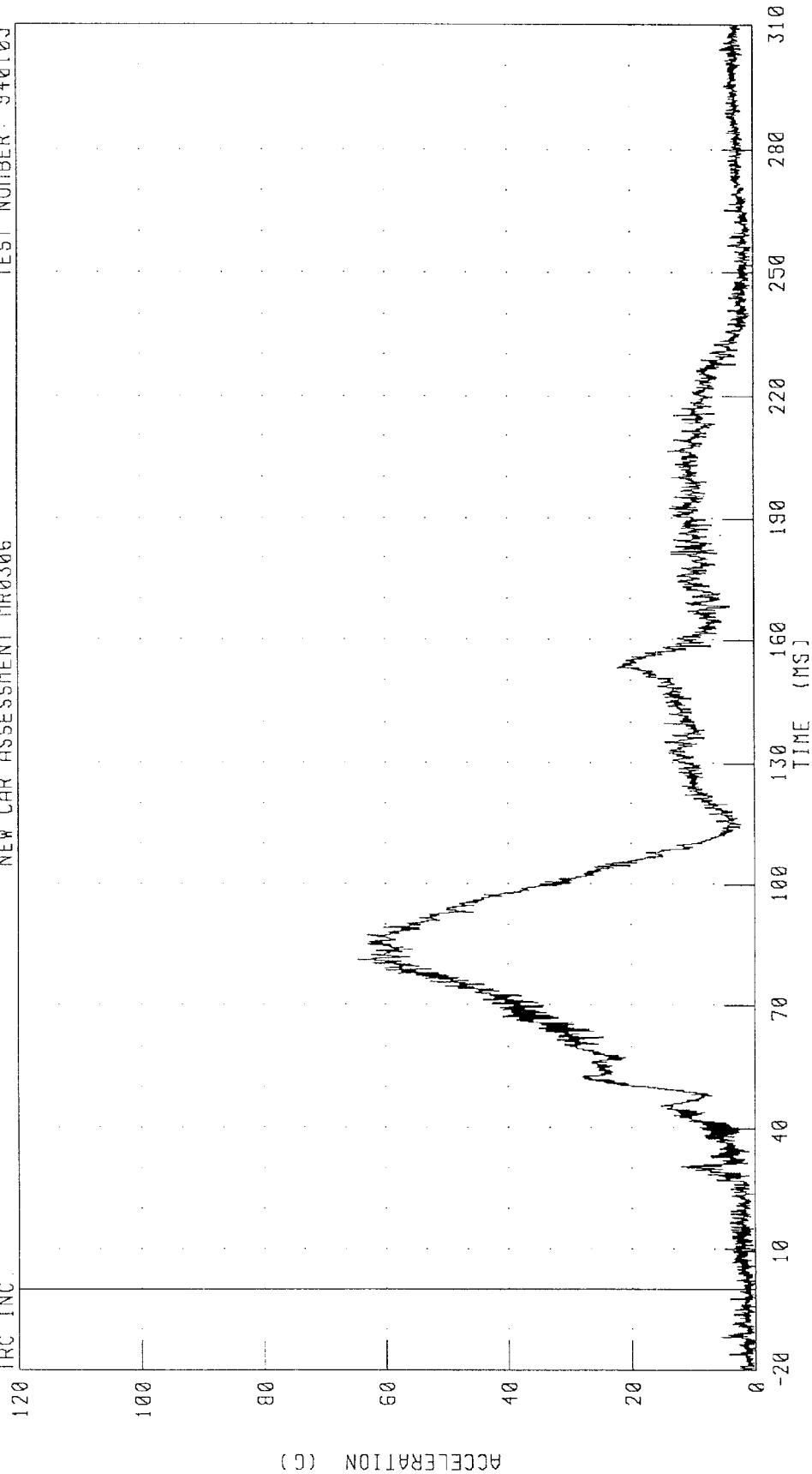
PEAK DATA: 8.16 G @ 97.28 MS; -19.17 G @ 66.96 MS

CHANNEL: HEDZG1 FILTER: CH, CLASS 1000

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD RESULTANT ACCELERATION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.

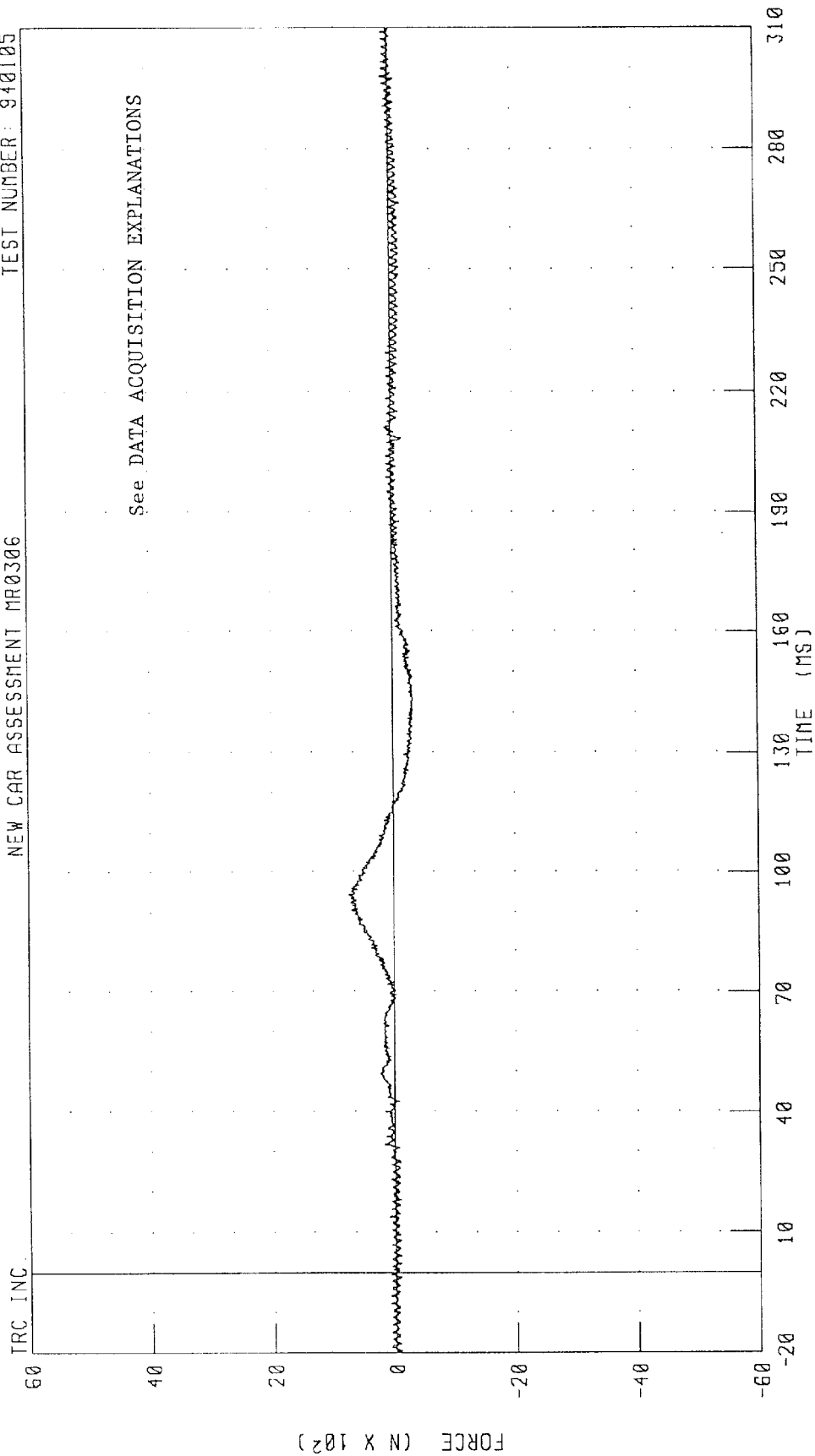


PEAK DATA: 64.58 G @ 81.12 MS; 0.15 G @ -20.00 MS

CHANNEL: HEDRG1 FILTER: CH. CLASS 1000

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK X-AXIS SHEAR FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



See DATA ACQUISITION EXPLANATIONS

PEAK DATA: 744.16 N @ 94.24 MS; -341.31 N @ 143.68 MS

CHANNEL: NEKXF1 FILTER: CH. CLASS 1000

FORCE (N X 10²)

TIME (MS)

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK Y-AXIS SHEAR FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.

60

See DATA ACQUISITION EXPLANATIONS

40

20

FORCE (N X 10²)

-20

-40

-60

TIME (MS)

310

280

250

220

190

160

130

100

70

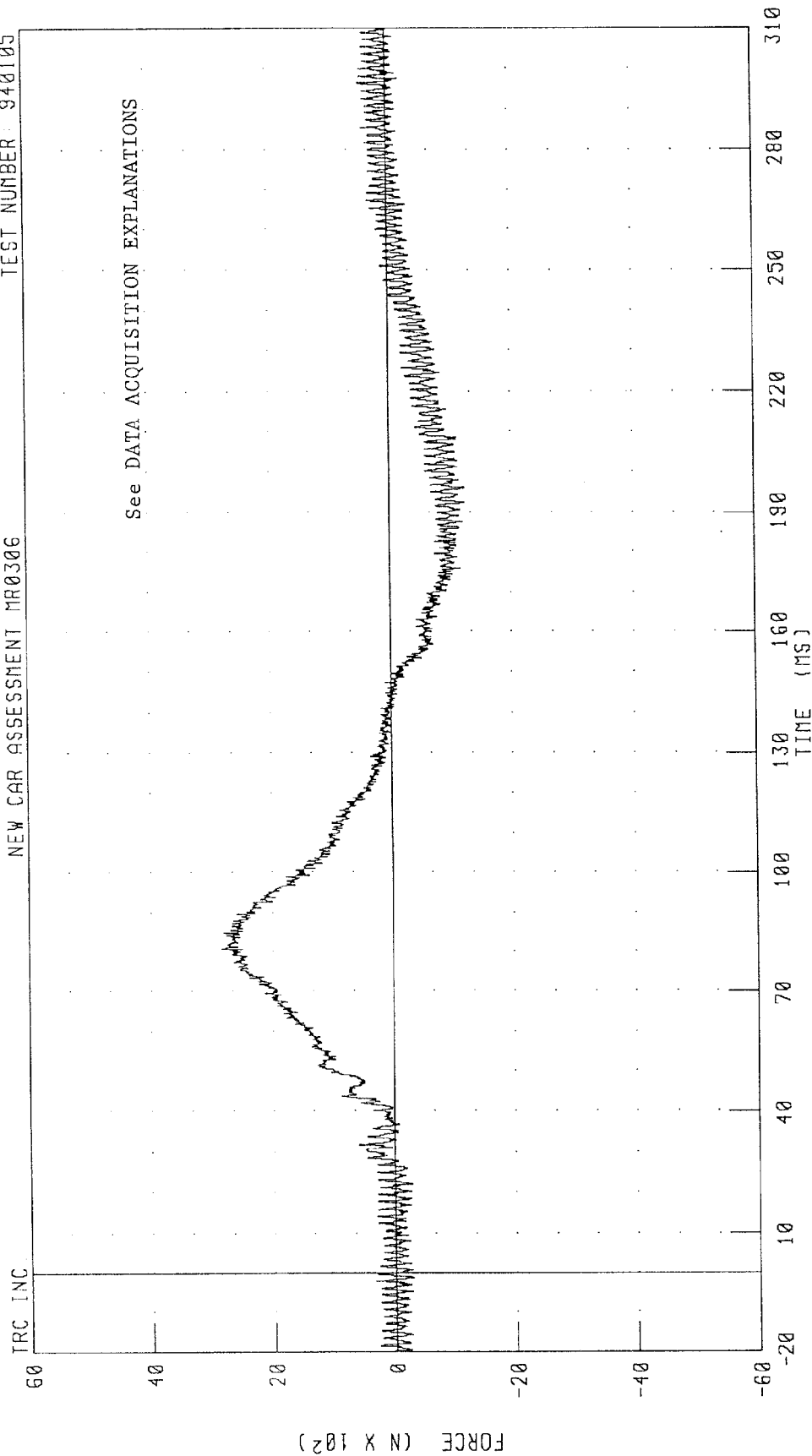
40

10

CHANNEL: NEKYF1 FILTER: CH. CLASS 1000 PEAK DATA: 319.80 N @ 82.32 MS; -489.47 N @ 177.20 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK 2-AXIS AXIAL FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



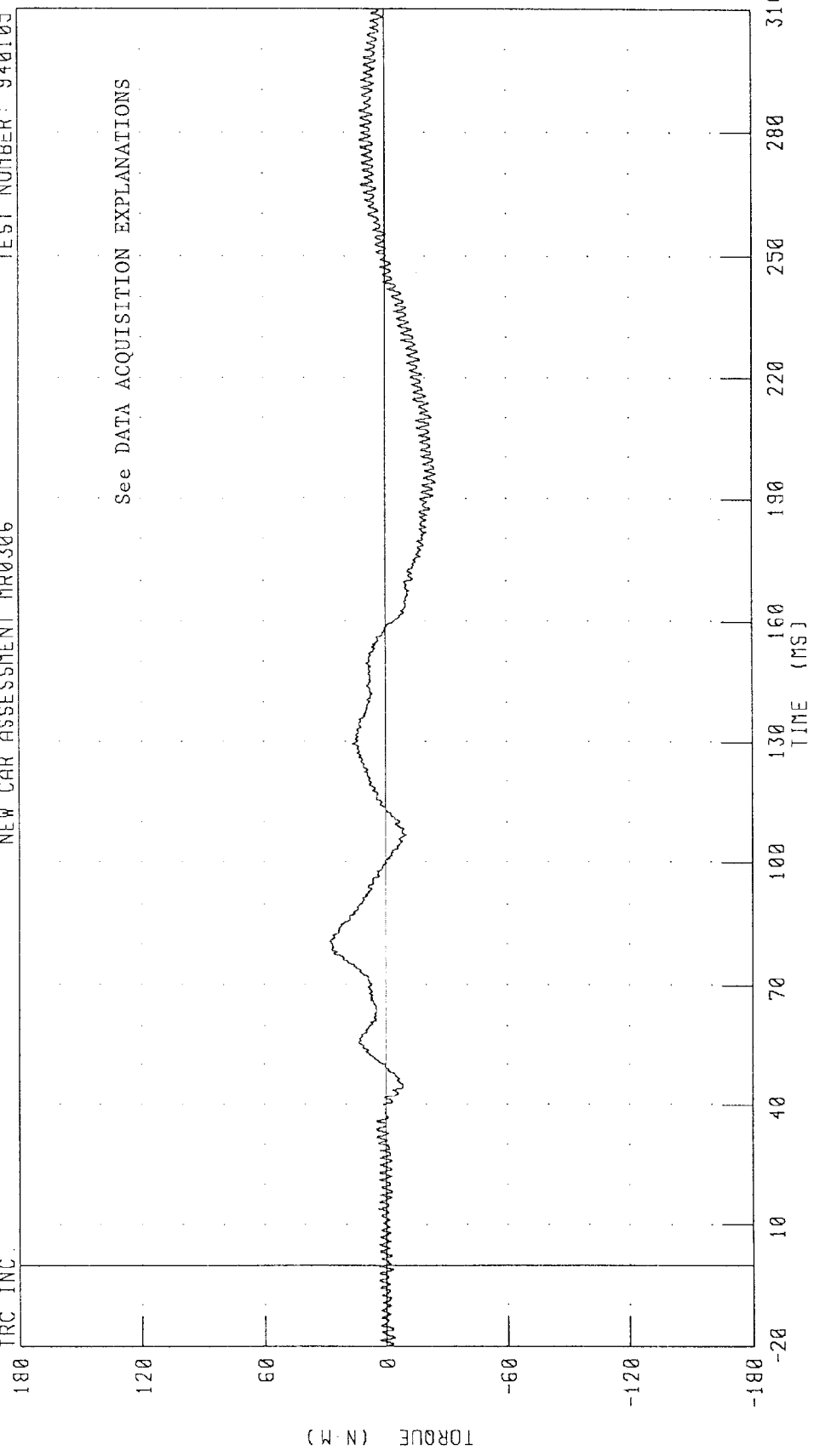
CHANNEL: NEKZF1 FILTER: CH. CLASS 1000

PEAK DATA: 2838.64 N @ 80.80 MS, -1238.53 N @ 196.08 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT X AXIS
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC, INC.

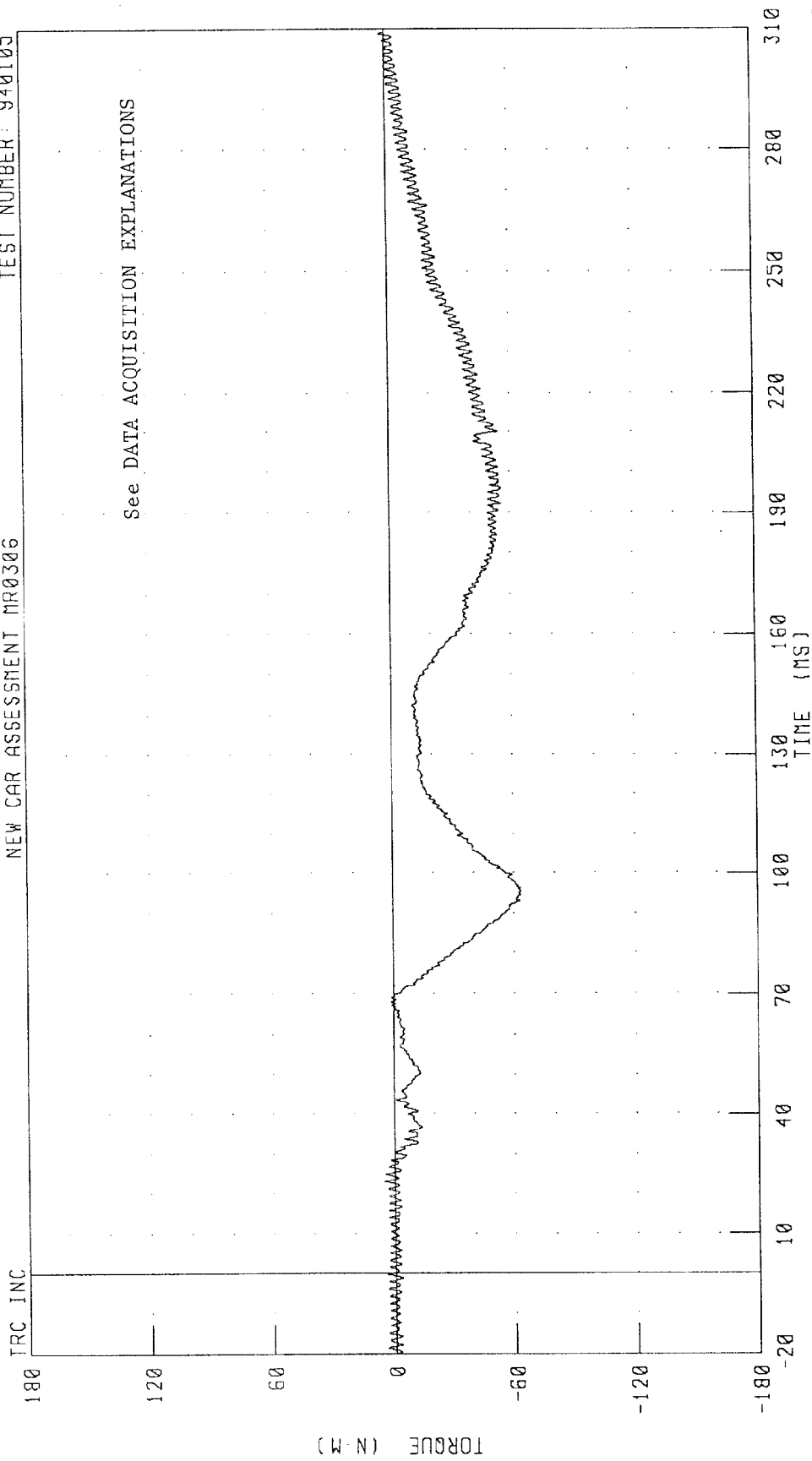


PEAK DATA: 27.86 N-M @ 80.88 MS; -24.84 N-M @ 196.00 MS

CHANNEL: NEKXM1 FILTER: CH. CLASS 600

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT Y AXIS
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



CHANNEL: NEKYH1 FILTER: CH. CLASS 600

PEAK DATA: 4.93 N-M @ 23.12 MS, -63.70 N-M @ 95.36 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT Z AXIS
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.

180

See DATA ACQUISITION EXPLANATIONS

120

60

TORQUE (N·M)

0

-60

-120

-180

TIME (MS)

-20

10

40

70

100

130

160

190

220

250

280

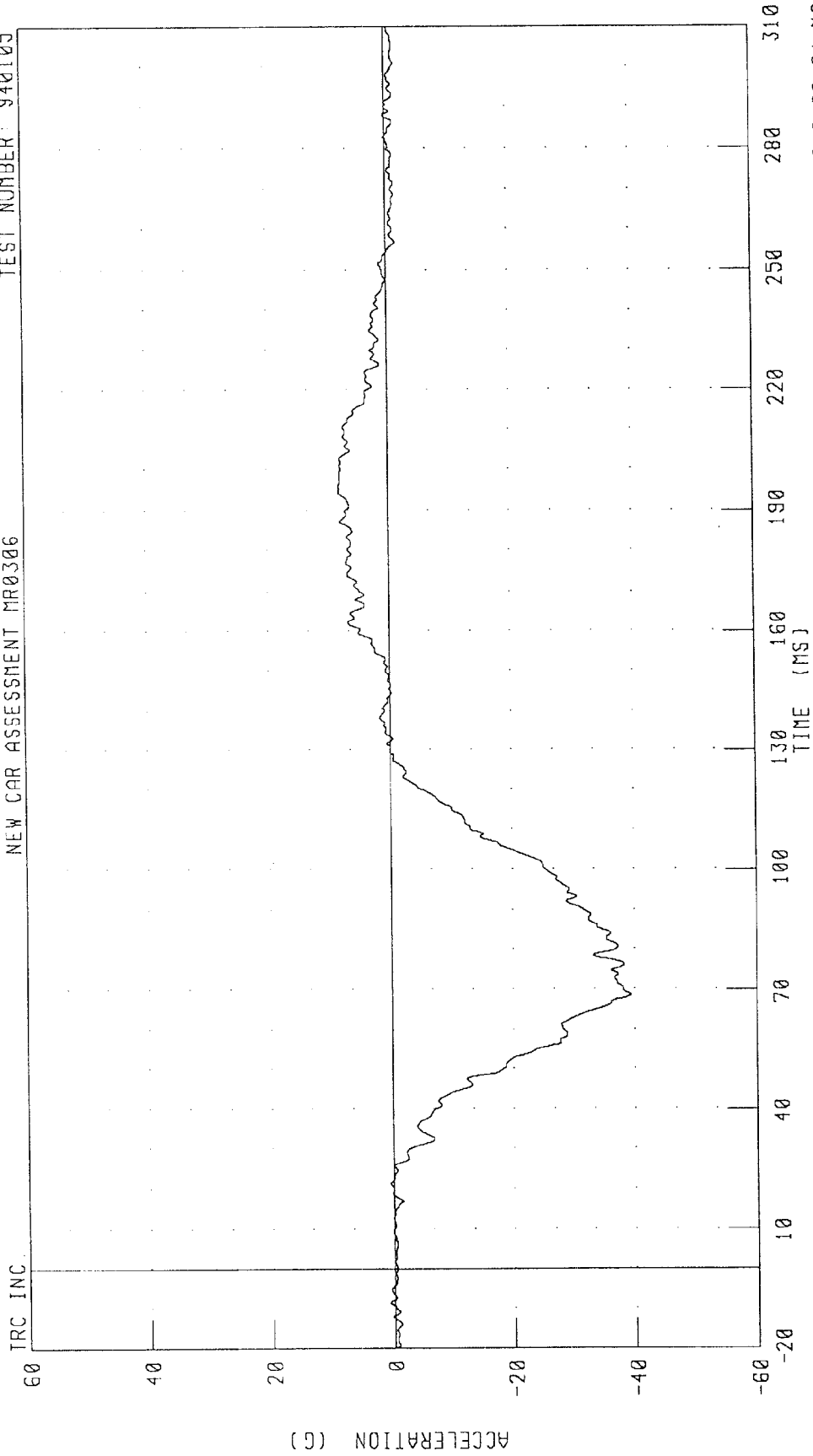
310

CHANNEL: NEKZM1 FILTER: CH. CLASS 600

PEAK DATA: 42.76 N·M @ 109.52 MS; -4.92 N·M @ -1.20 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



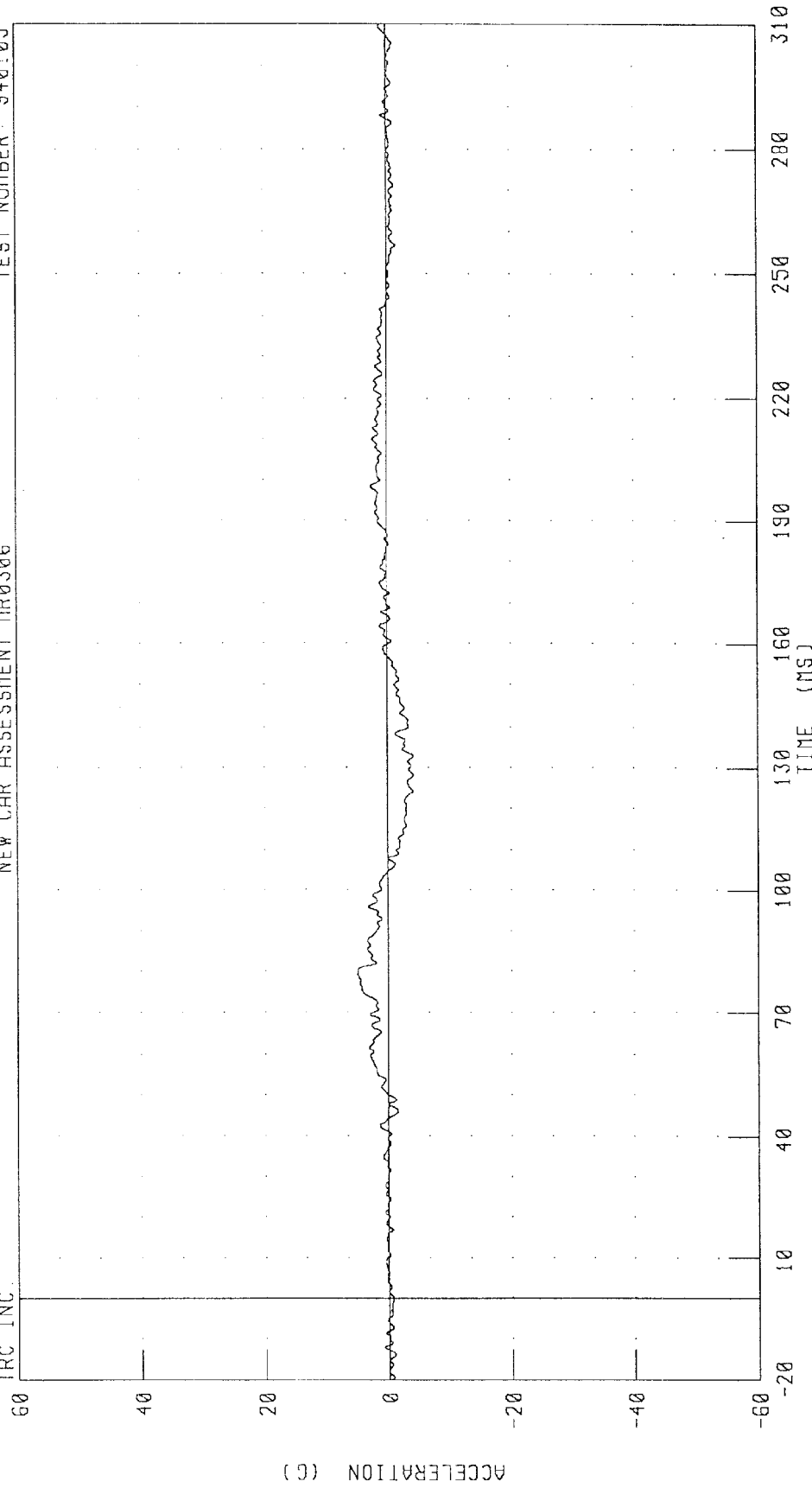
PEAK DATA: 8.20 G @ 194.40 MS; -39.30 G @ 68.64 MS

CHANNEL: CSTXG1 FILTER: CH. CLASS 180

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.

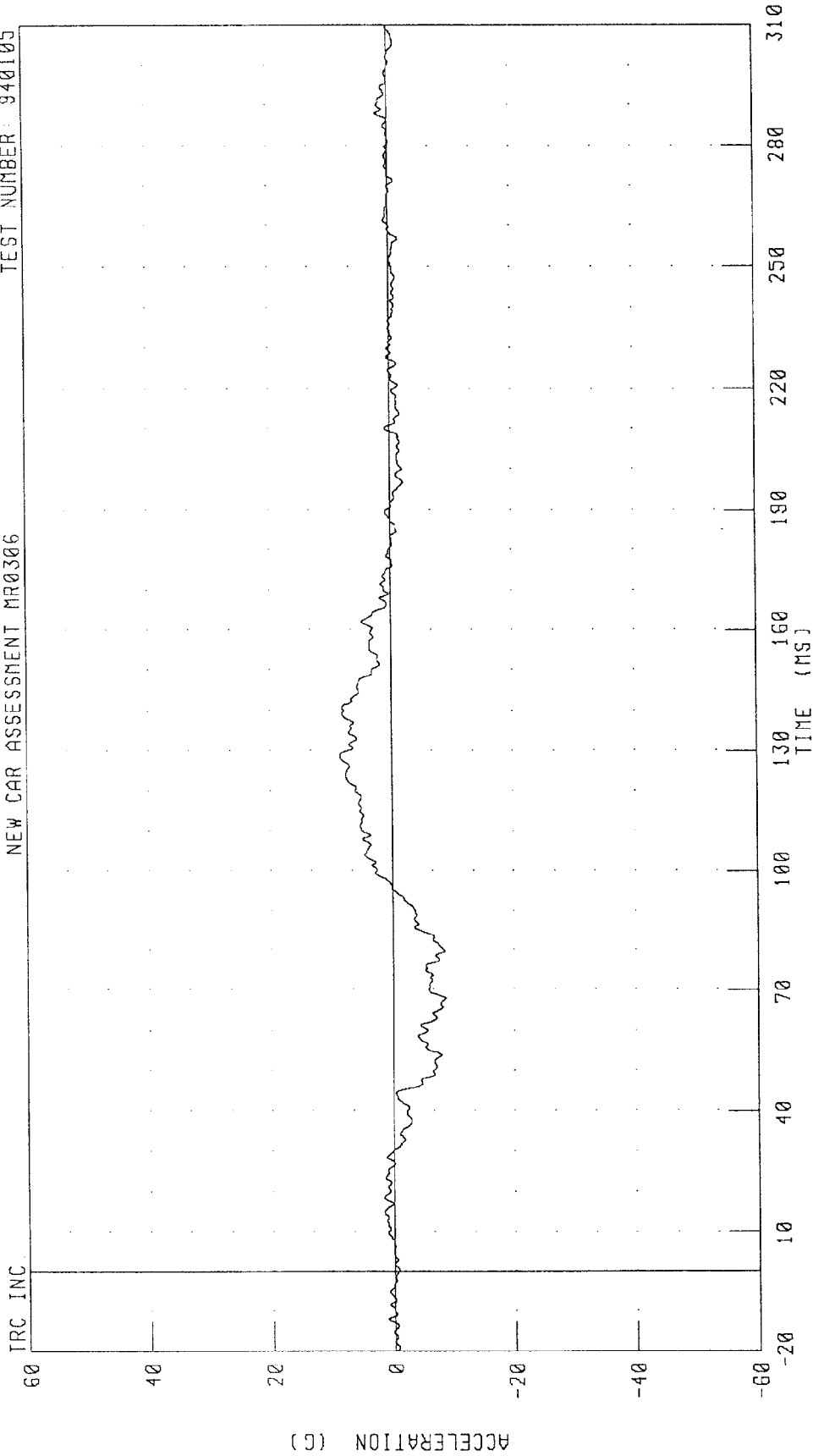


CHANNEL: CSTYG1 FILTER: CH. CLASS 180

PEAK DATA: 5.01 G @ 79.28 MS; -4.16 G @ 128.32 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION
NEW CAR ASSESSMENT MR0306

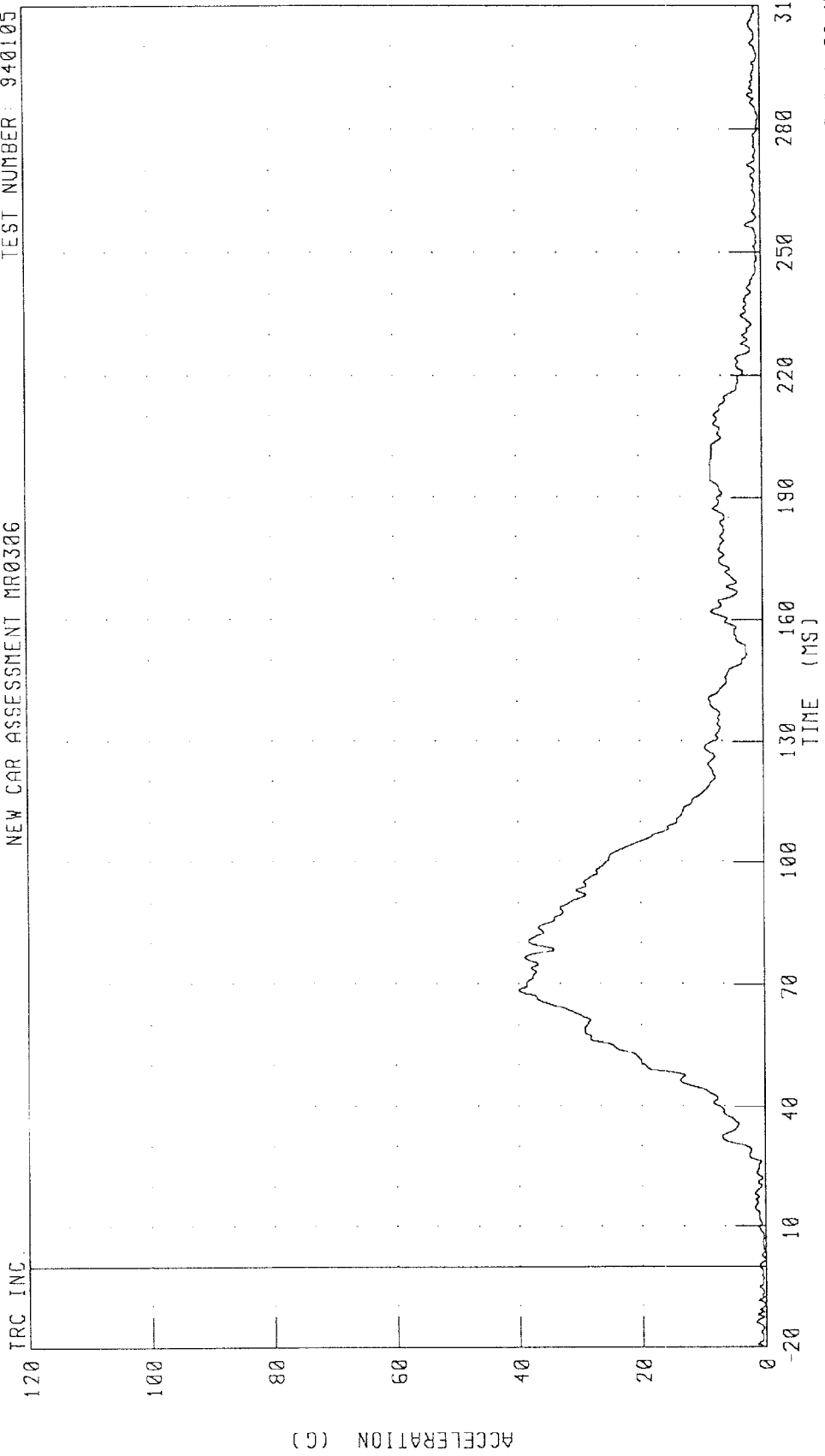
TEST NUMBER: 940105



CHANNEL: CSTZG1 FILTER: CH. CLASS 180

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST RESULTANT ACCELERATION
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



PEAK DATA: 40.03 G @ 68.56 MS; 0.06 G @ 1.60 MS

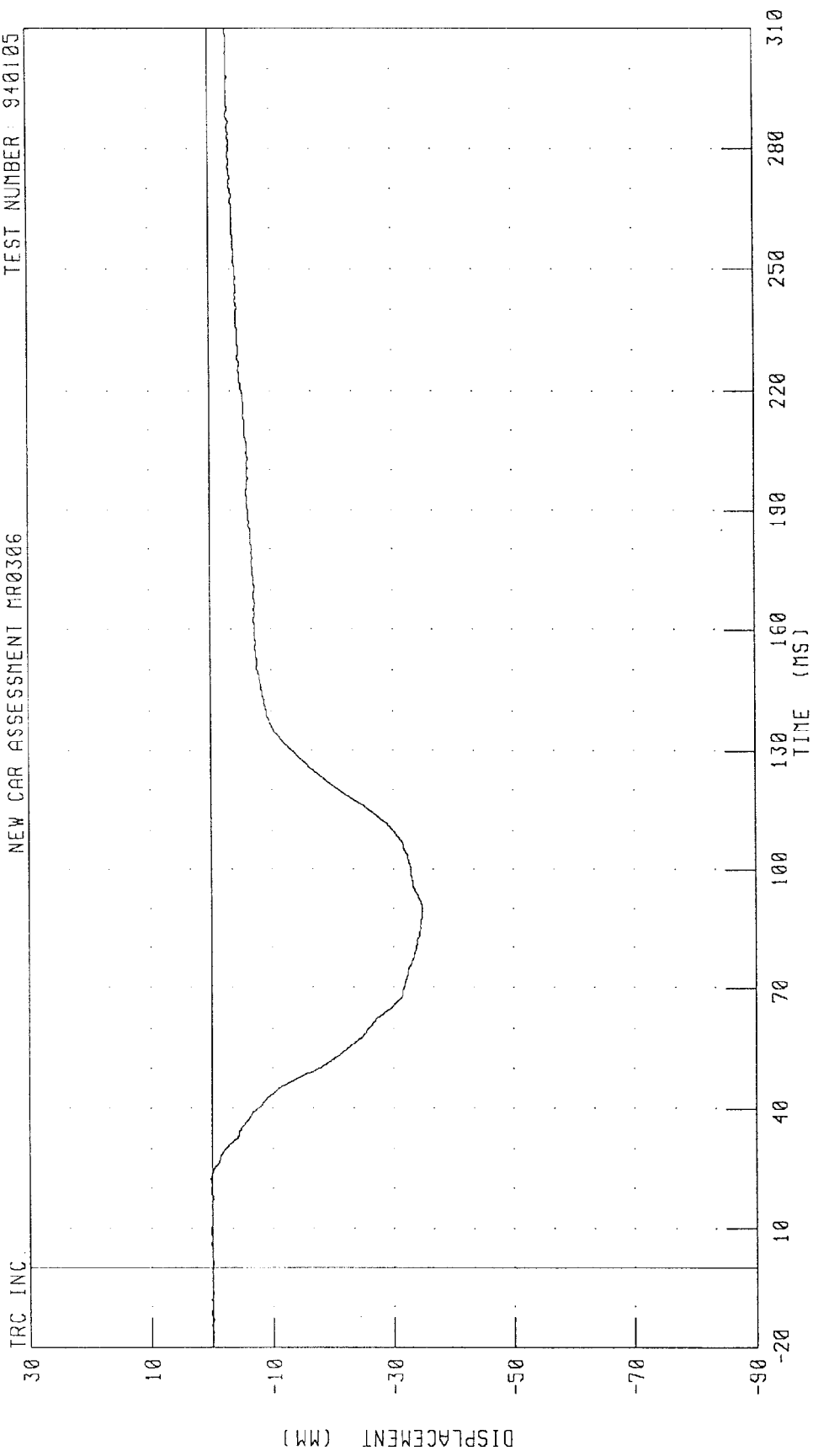
CHANNEL: CSTRG1 FILTER: CH. CLASS 180

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER

DRIVER CHEST DEFLECTION

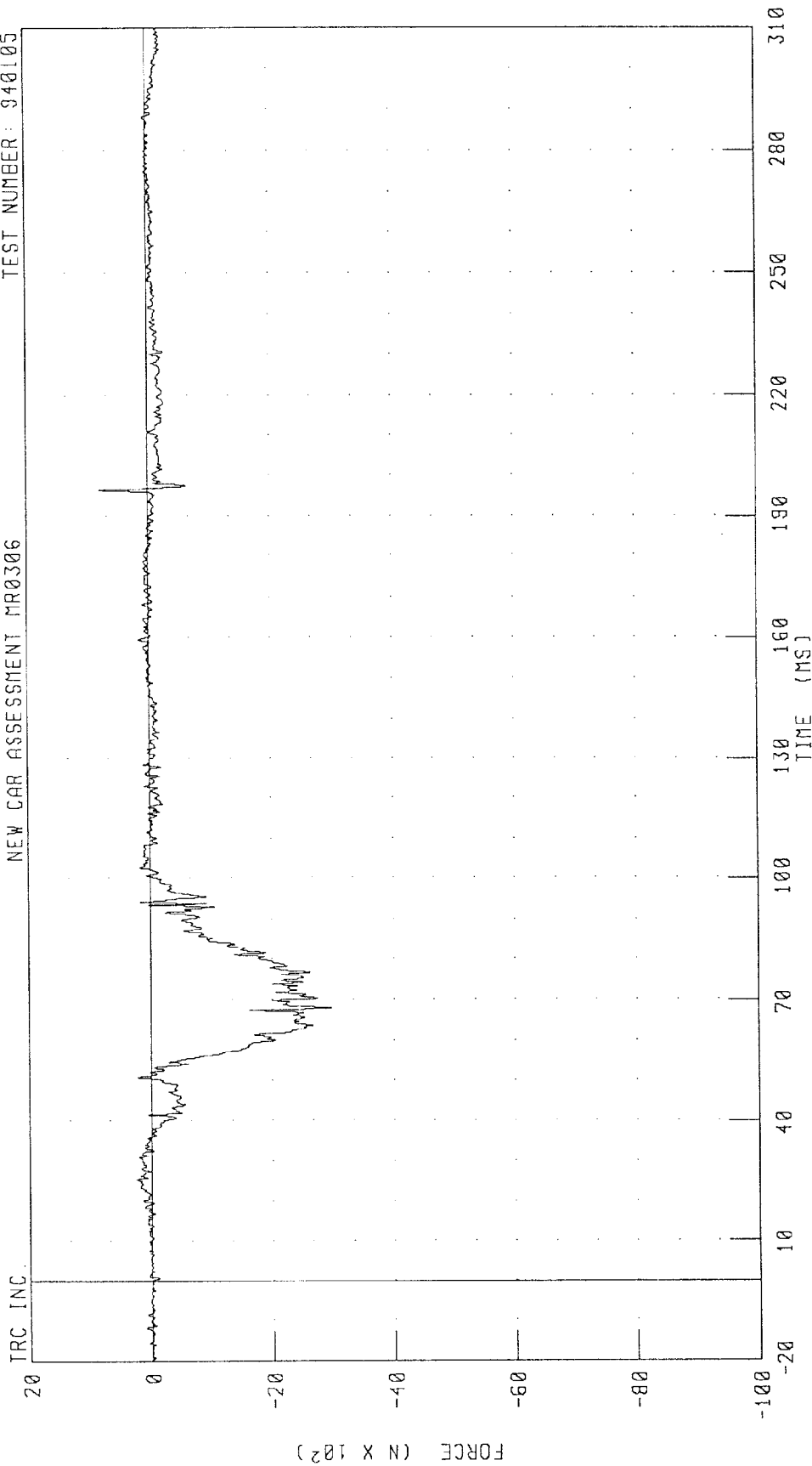
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FEMUR FORCE
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



PEAK DATA: 793.30 N @ 196.40 MS, -2962.09 N @ 68.08 MS

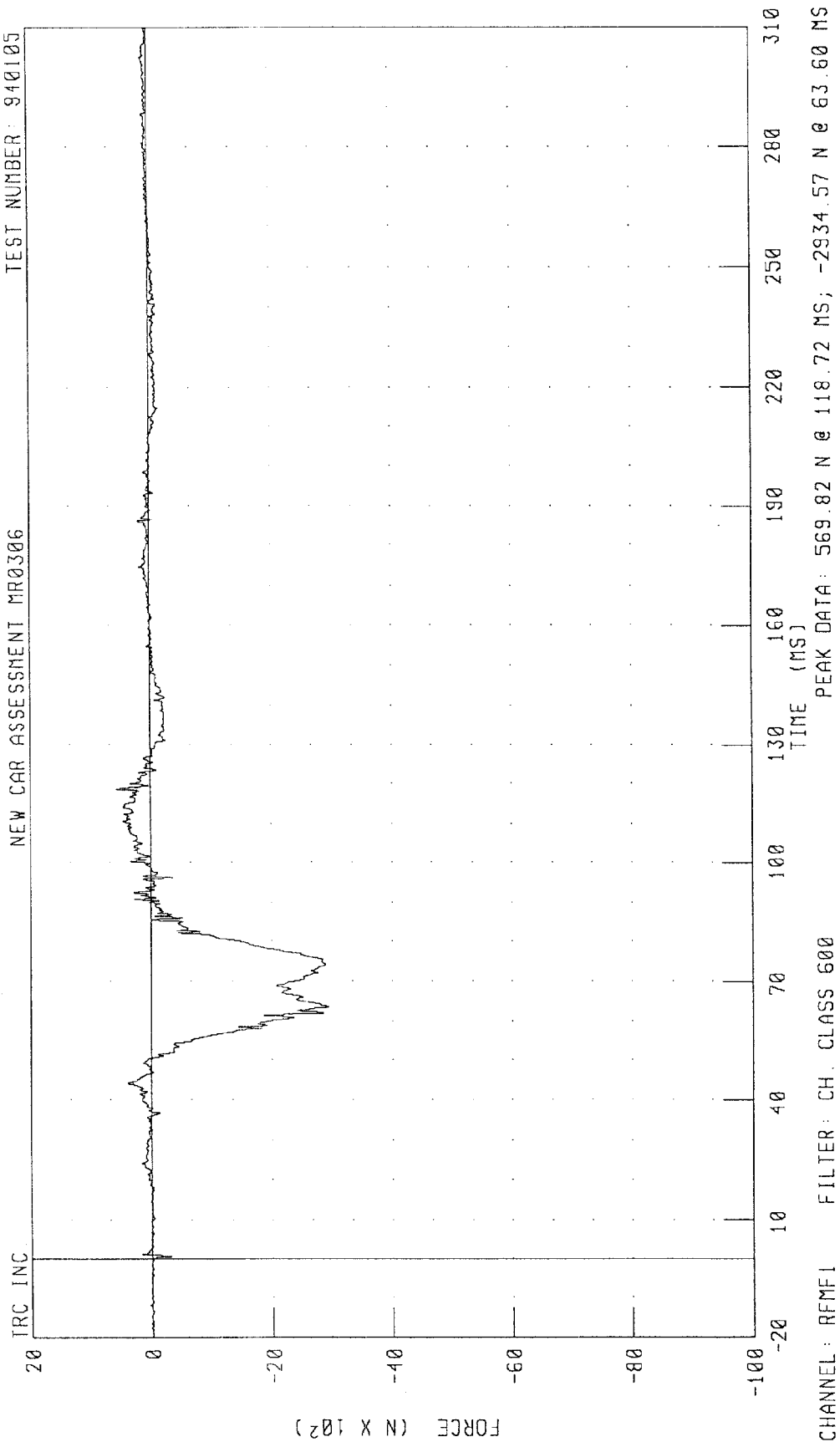
CHANNEL: LFMF1 FILTER: CH. CLASS 600

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER

DRIVER RIGHT FEMUR FORCE

NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 DRIVER LAP BELT OUTBOARD FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.

100

See DATA ACQUISITION EXPLANATIONS

80

60

FORCE (N X 10²)

40

20

0

-20

TIME (MS)

-20

10

40

70

100

130

160

190

220

250

280

310

CHANNEL: LBOFI

FILTER: CH. CLASS 60

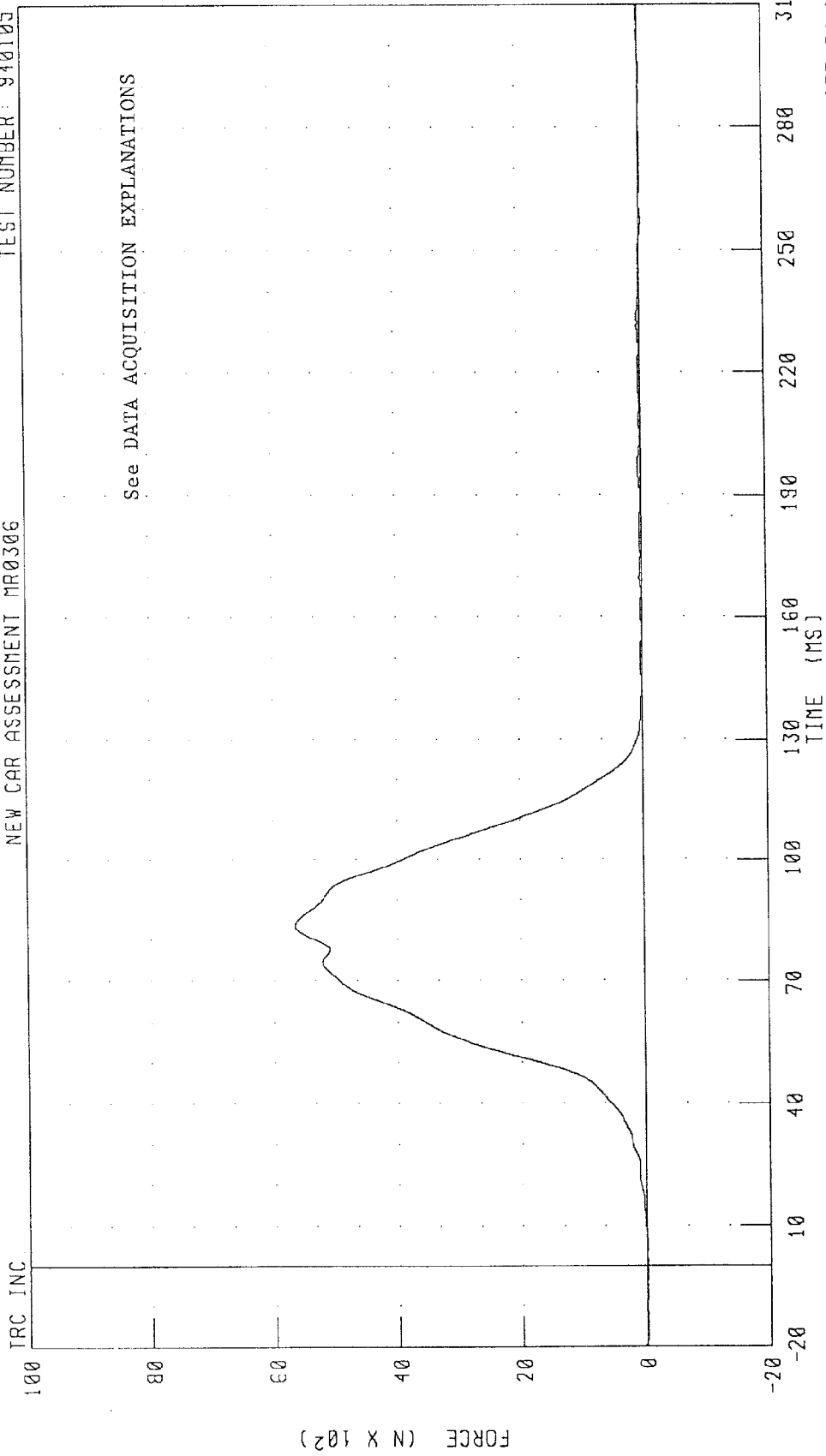
PEAK DATA: 6251.14 N @ 68.72 MS, -20.83 N @ -16.56 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER

DRIVER SHOULDER BELT FORCE

NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

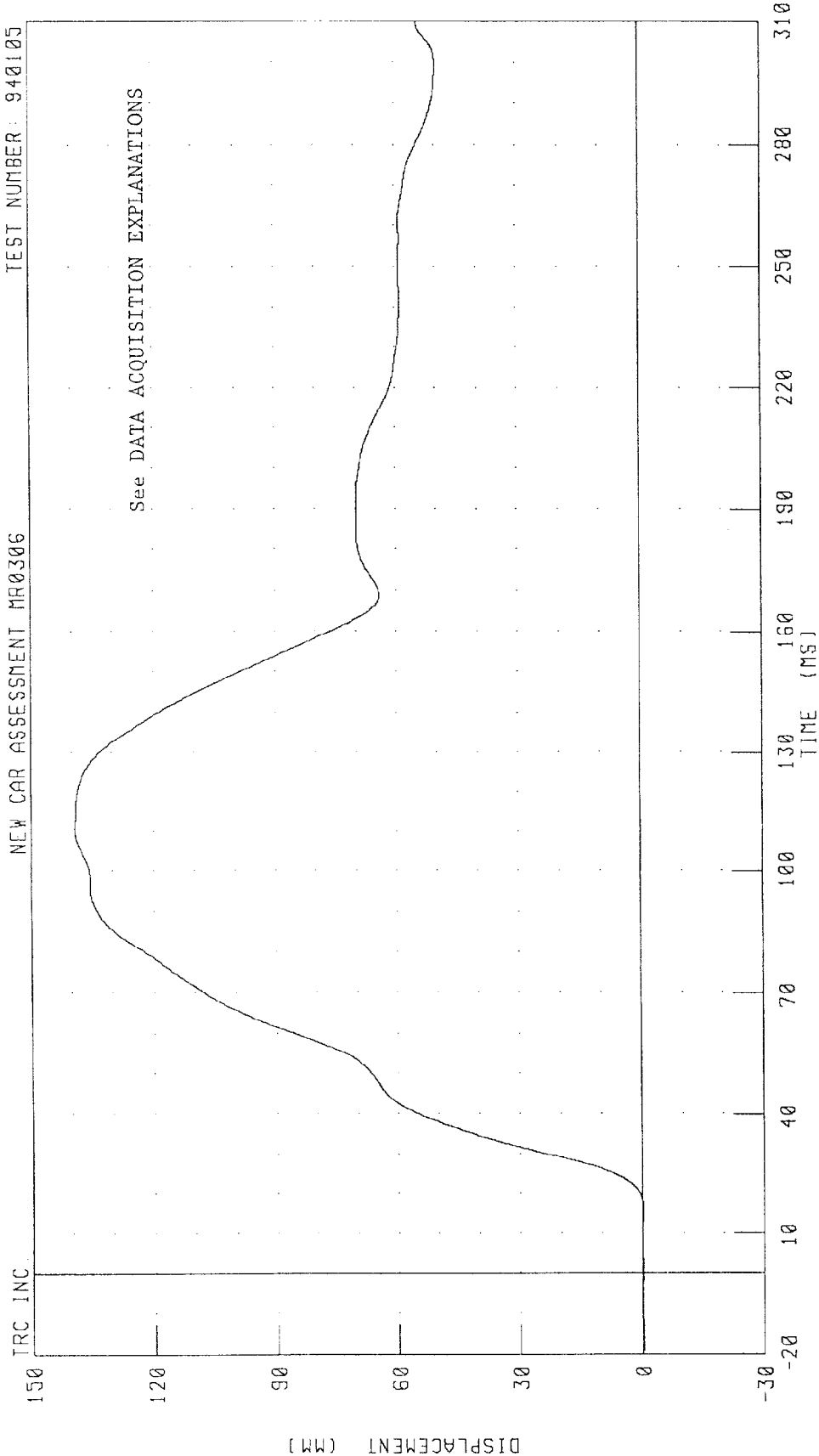


PEAK DATA: 5661.83 N @ 83.68 MS; -23.36 N @ 257.04 MS

CHANNEL: SHBF1 FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT DISPLACEMENT
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

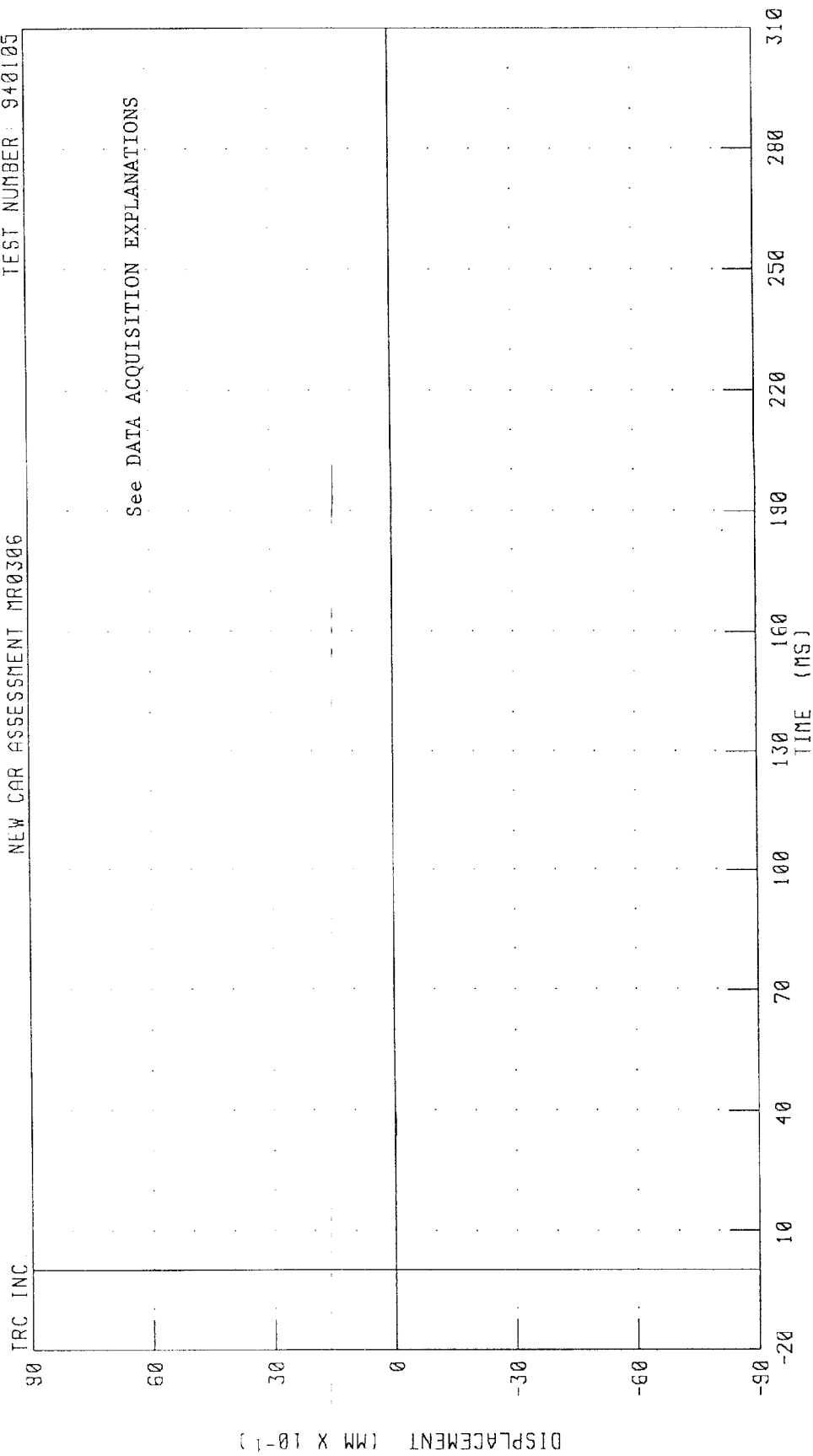


PEAK DATA: 139.24 MM @ 110.56 MS; -0.22 MM @ 15.12 MS

CHANNEL: SHB01 FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
DRIVER SEAT BELT EXTENSION
NEW CAR ASSESSMENT MR0306

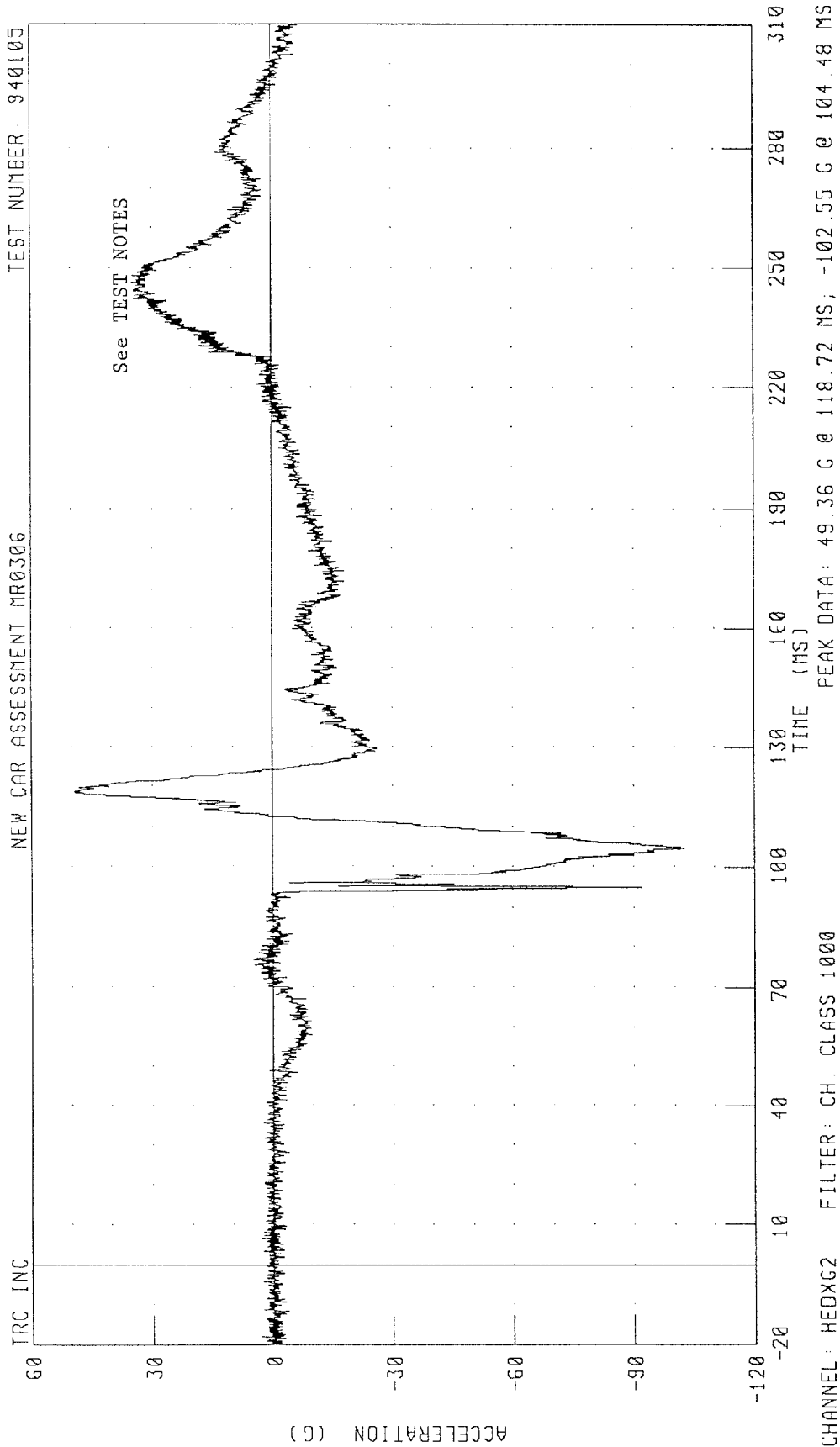
TEST NUMBER: 940105



PEAK DATA: 0.01 MM @ 194.96 MS; -0.03 MM @ 37.12 MS

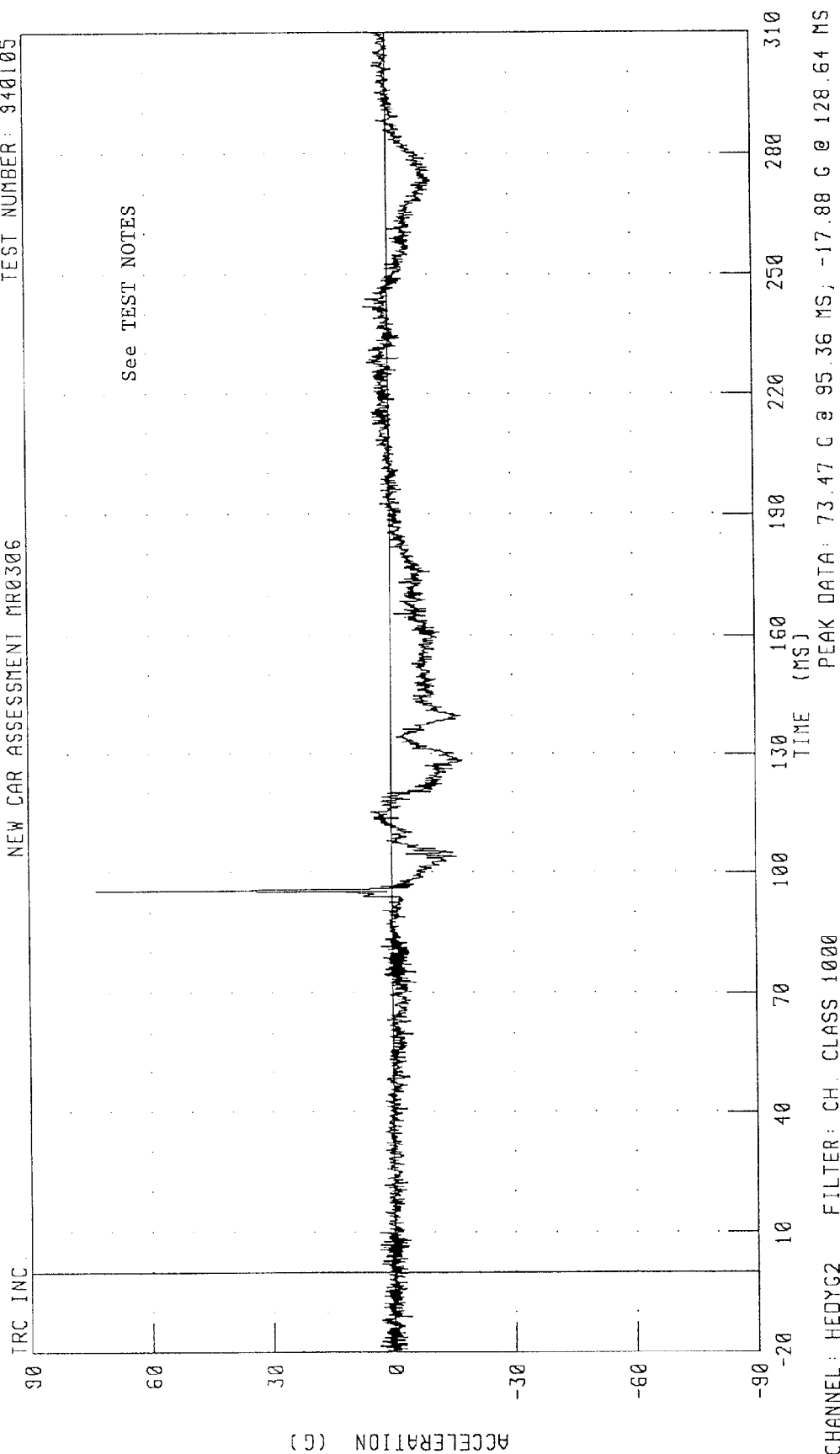
1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 PASSENGER HEAD X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



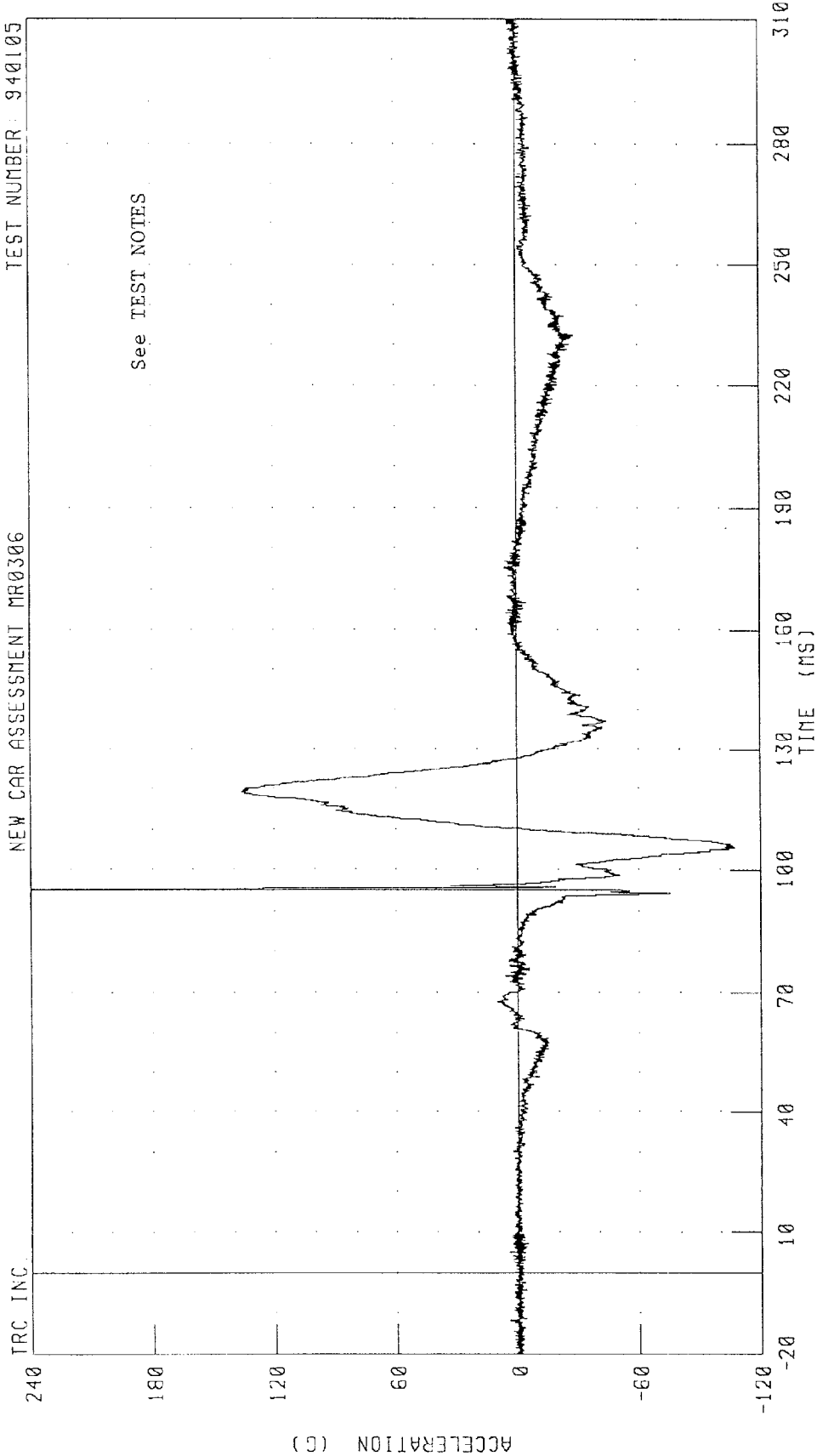
1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y-AXIS ACCELERATION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

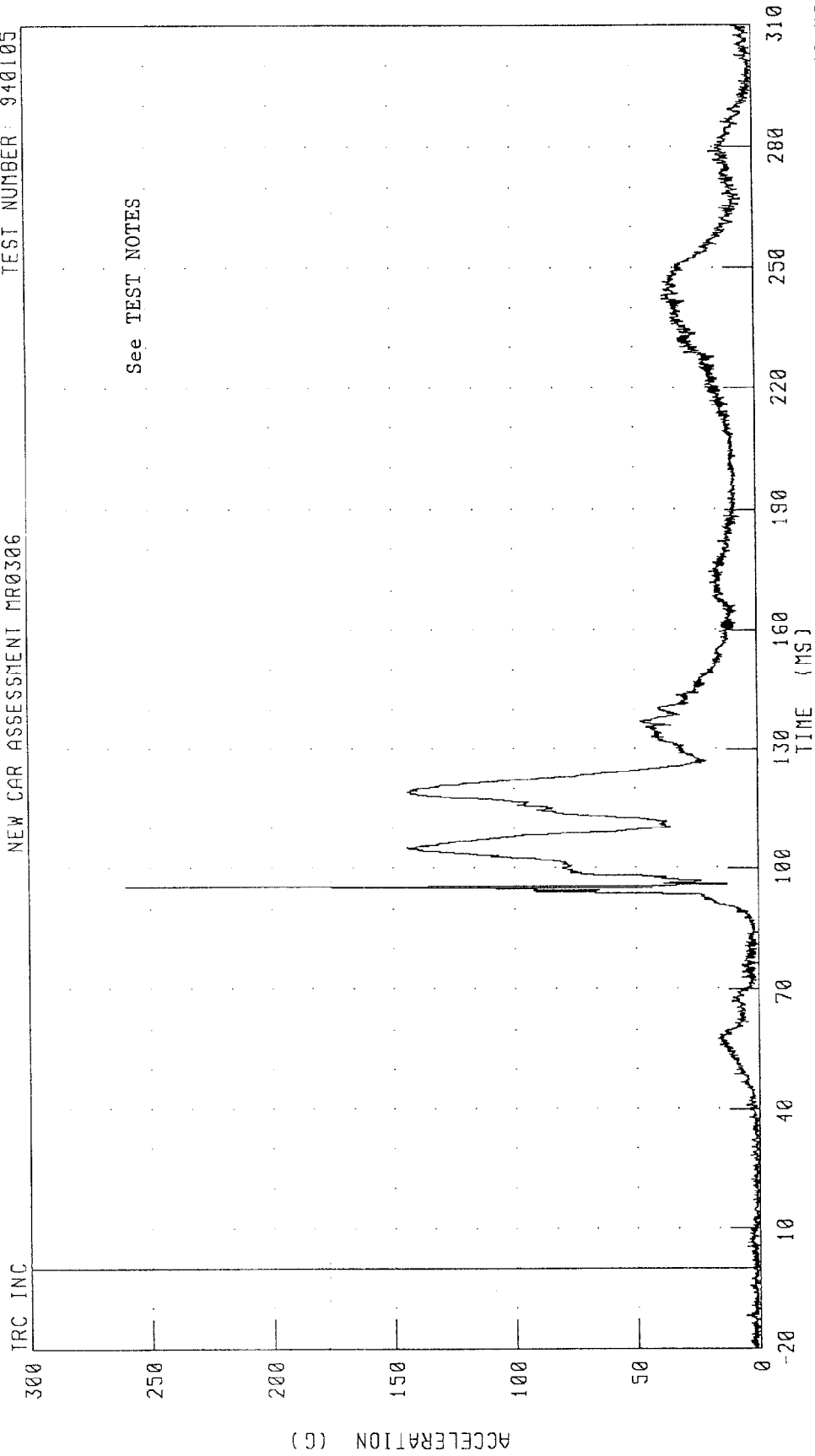


PEAK DATA: 245.84 G @ 95.36 MS; -107.13 G @ 105.28 MS

CHANNEL: HEDZG2 FILTER: CH. CLASS 1000

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

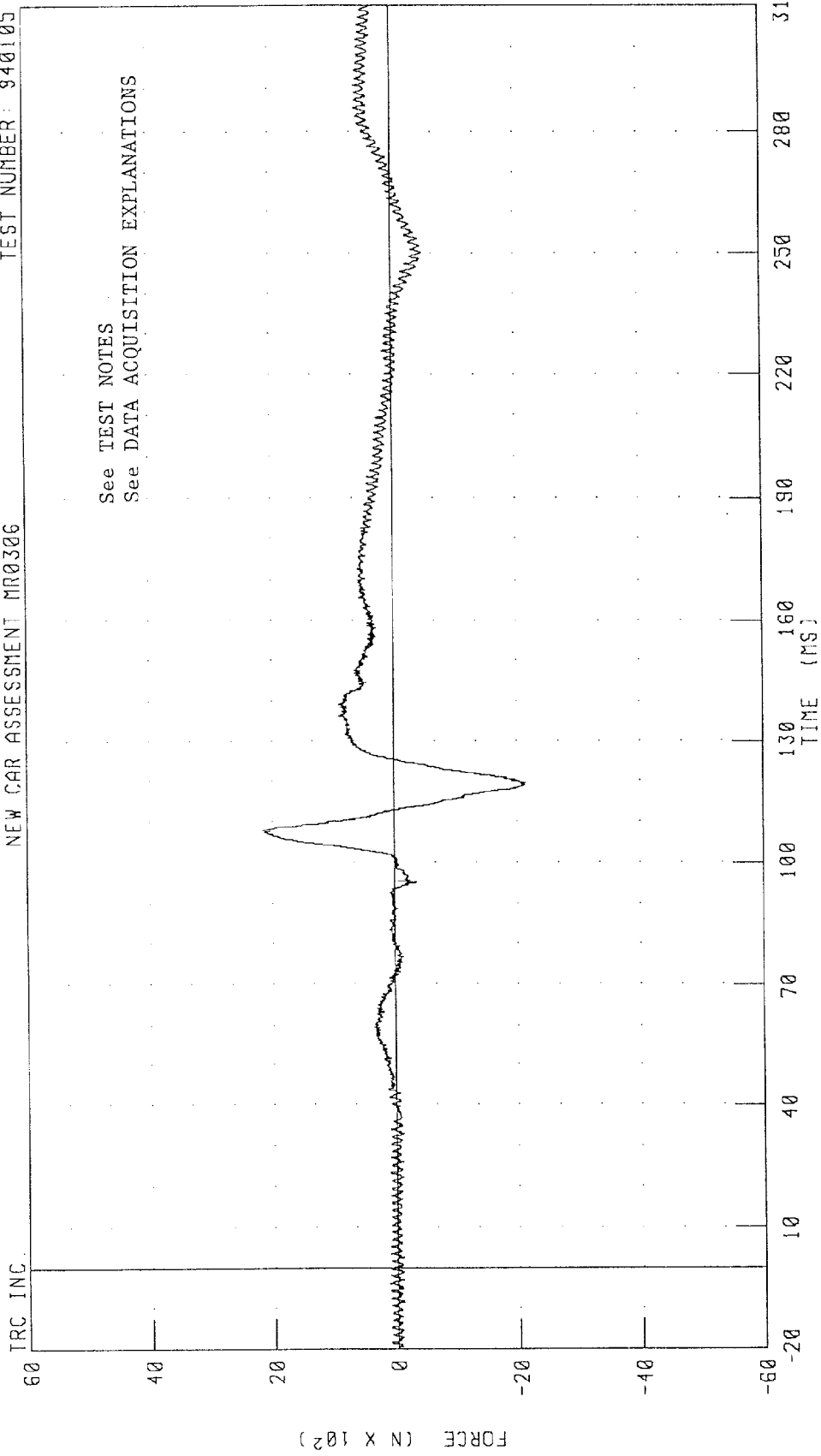


PEAK DATA: 259.91 G @ 95.36 MS; 0.13 G @ 12.88 MS

CHANNEL: HEDRG2 FILTER: CH. CLASS 1000

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK X-AXIS SHEAR FORCE
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Y-AXIS SHEAR FORCE
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 340105

TRC INC

60

40

20

0

-20

-40

-60

FORCE (N X 10²)

See TEST NOTES
See DATA ACQUISITION EXPLANATIONS

TIME (MS)

310

280

250

220

190

160

130

100

70

40

10

PEAK DATA: 360.32 N @ 290.88 MS; -450.04 N @ 159.68 MS

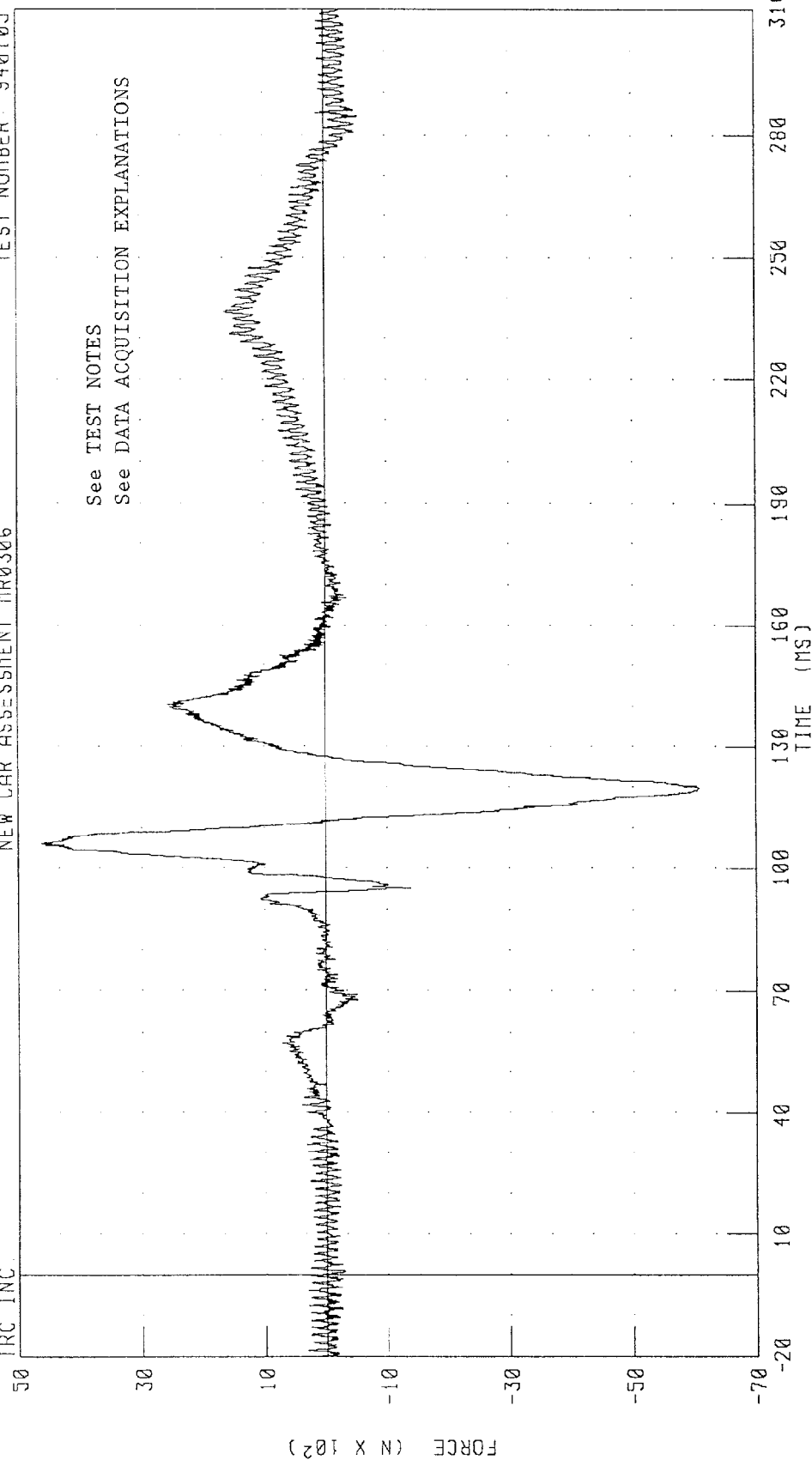
CHANNEL: NEKYF2 FILTER: CH. CLASS 1000

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Z-AXIS AXIAL FORCE
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.

See TEST NOTES
See DATA ACQUISITION EXPLANATIONS

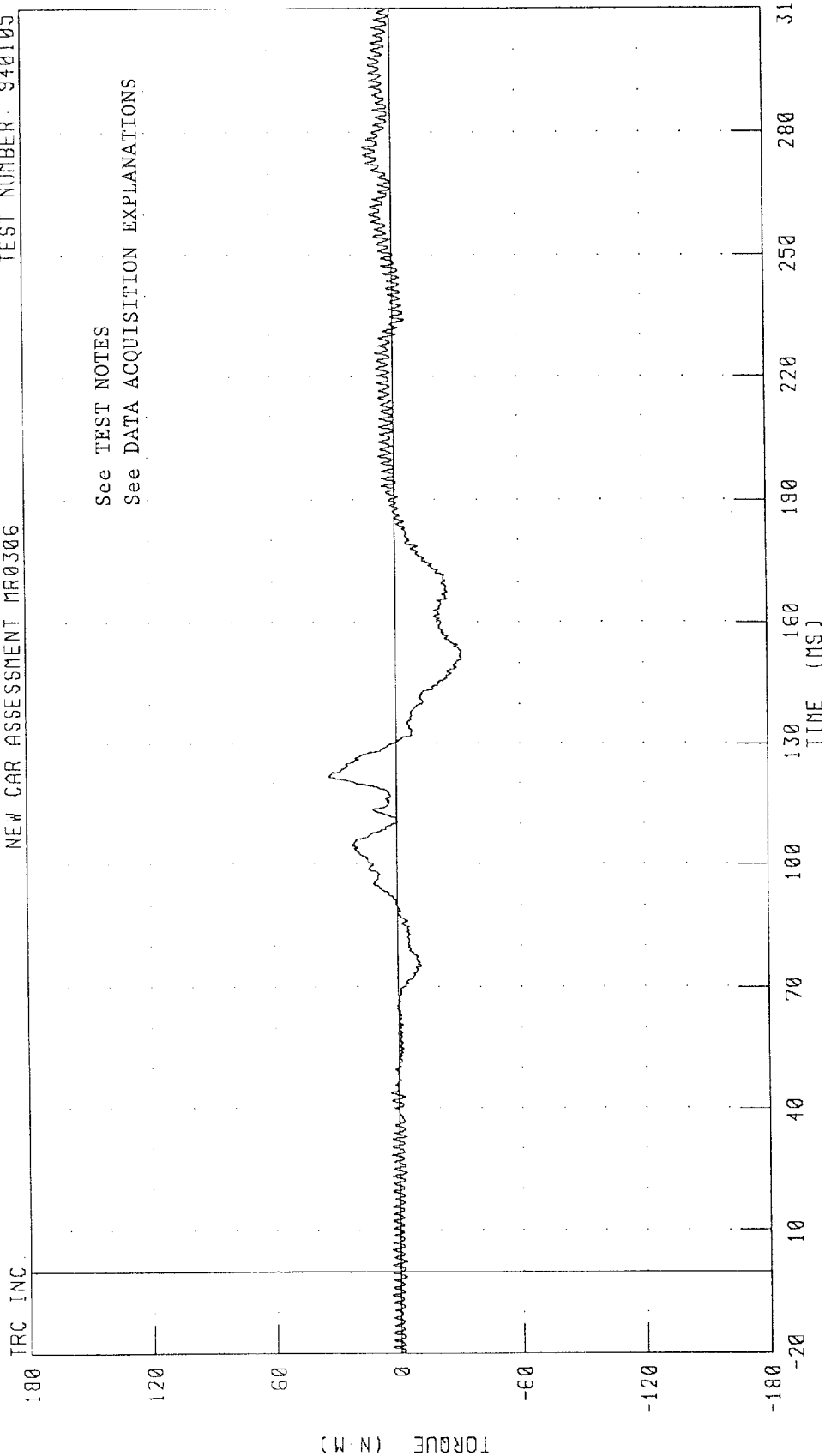


CHANNEL: NEK2F2 FILTER: CH. CLASS 1000

PEAK DATA: 4624.62 N @ 106.00 MS, -6071.29 N @ 119.76 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT X AXIS
NEW CAR ASSESSMENT MR0306

TEST NUMBER: S40105

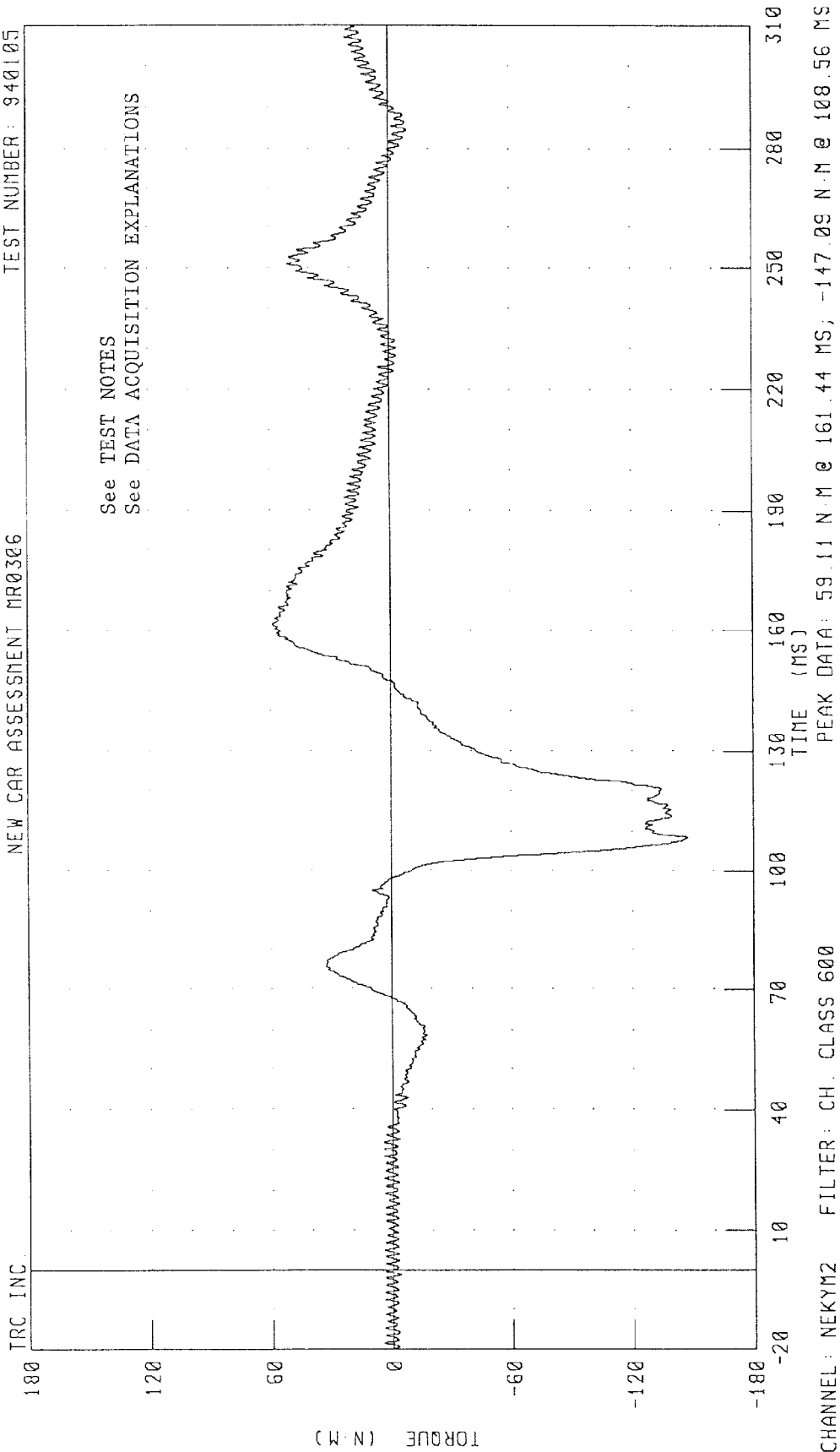


PEAK DATA: 32.88 N·M @ 122.00 MS, -32.21 N·M @ 151.36 MS

CHANNEL: NEKX2 FILTER: CH. CLASS 600

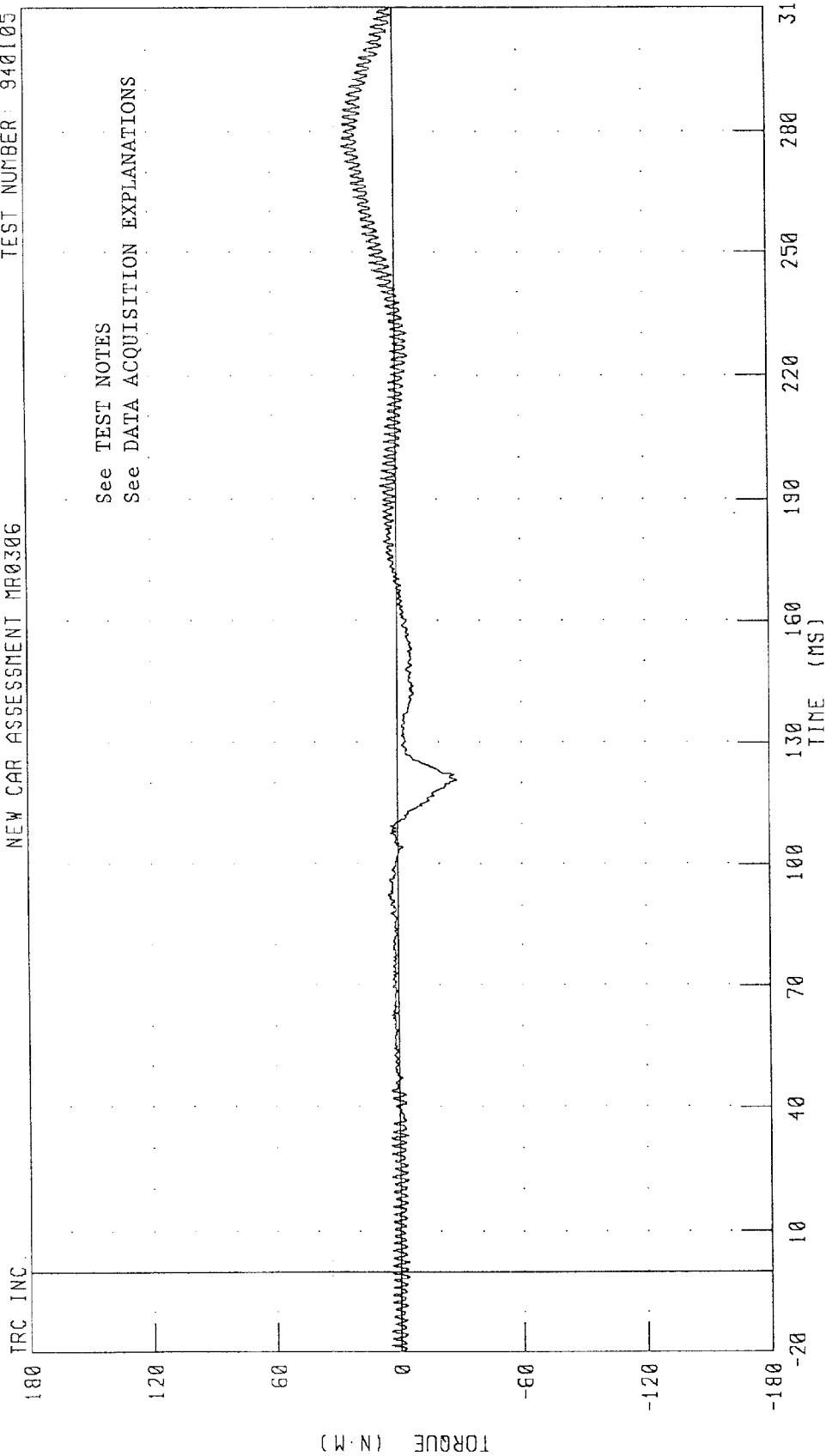
1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Y AXIS
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK MOMENT ABOUT Z AXIS
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

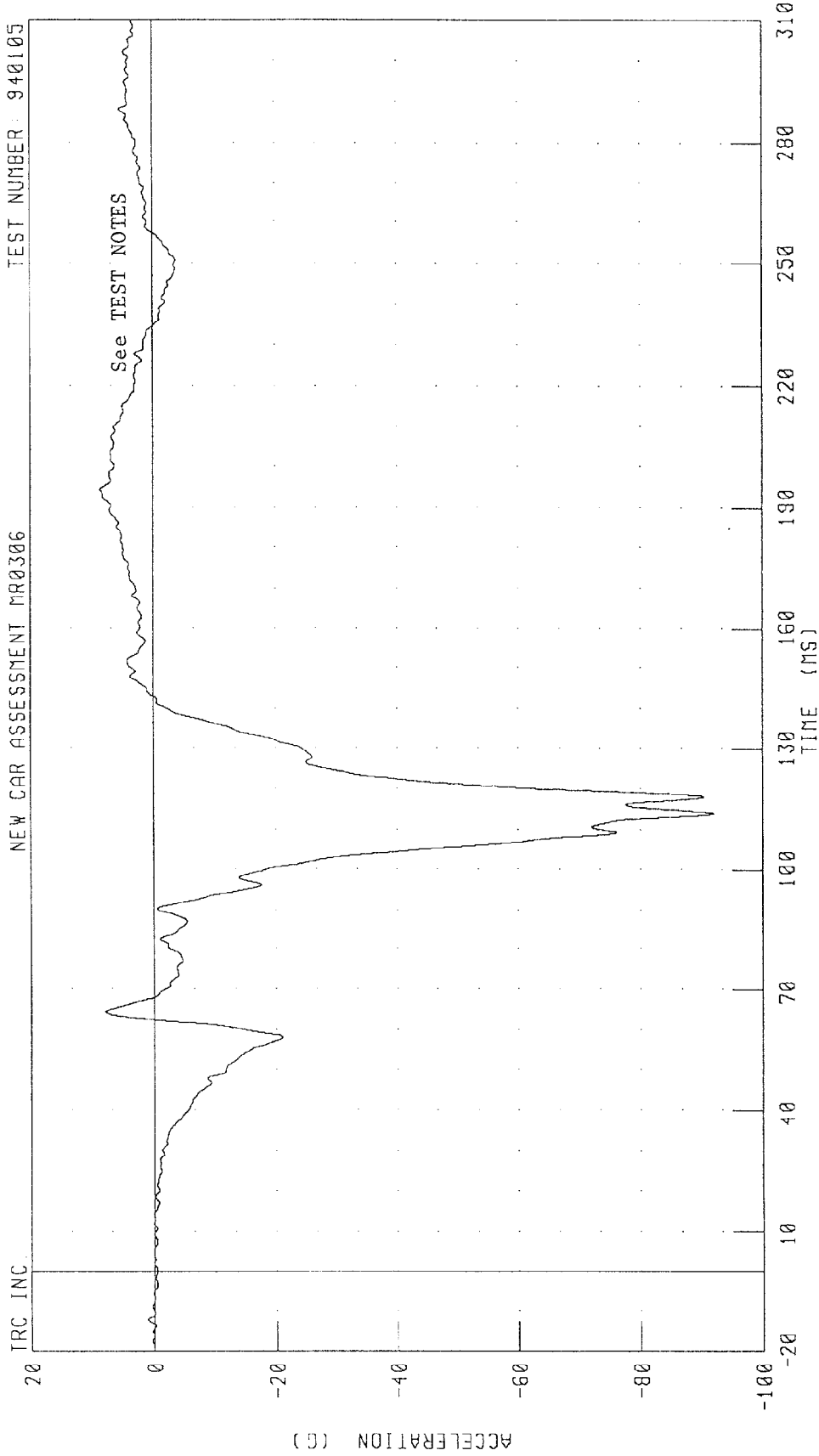


PEAK DATA: 25.66 N·M @ 276.32 MS; -28.34 N·M @ 120.96 MS

CHANNEL: NEKZM2 FILTER: CH. CLASS 600

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

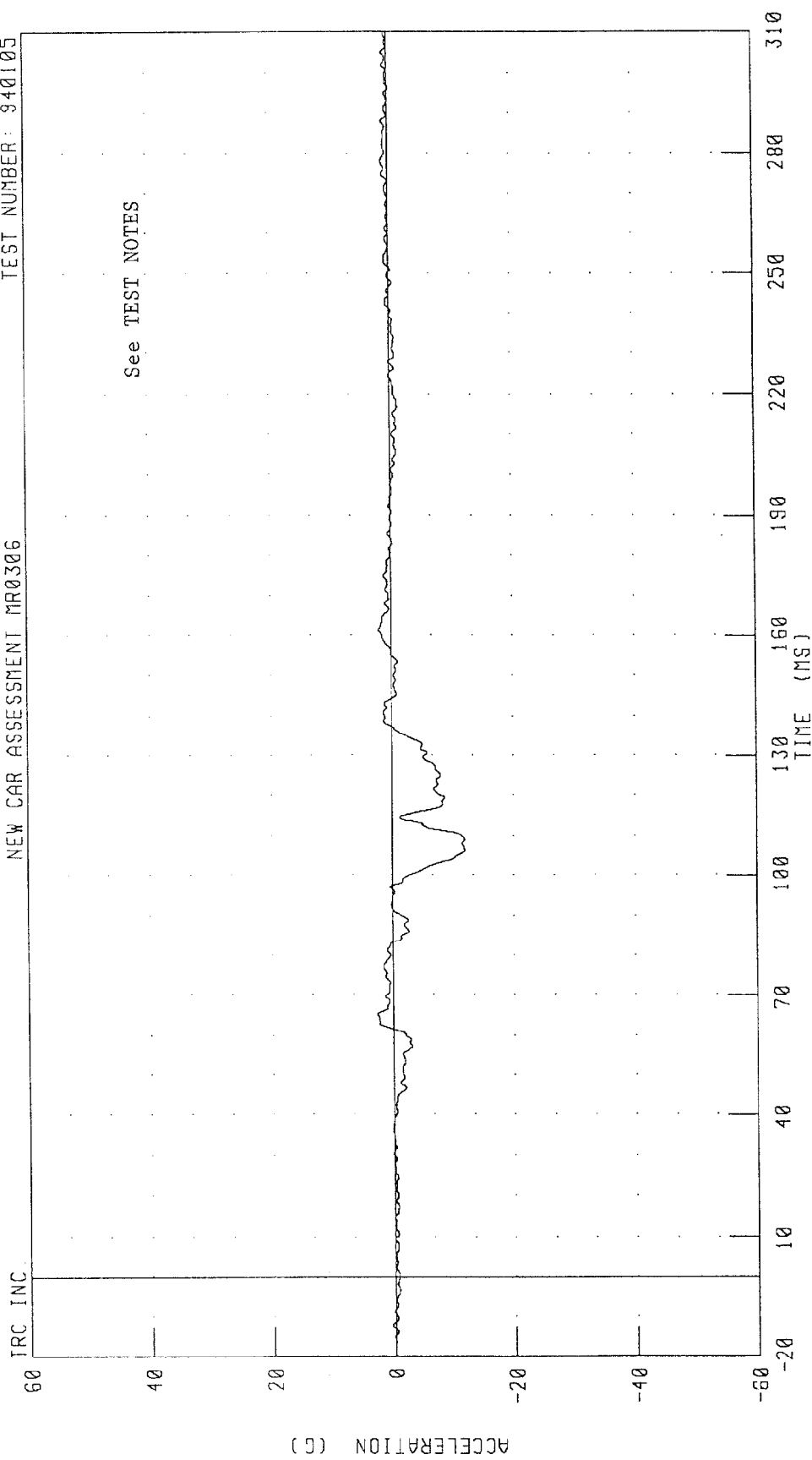


CHANNEL: CSTXG2 FILTER: CH. CLASS 180

PEAK DATA: 8.58 G @ 194.32 MS; -92.01 G @ 114.00 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Y-AXIS ACCELERATION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

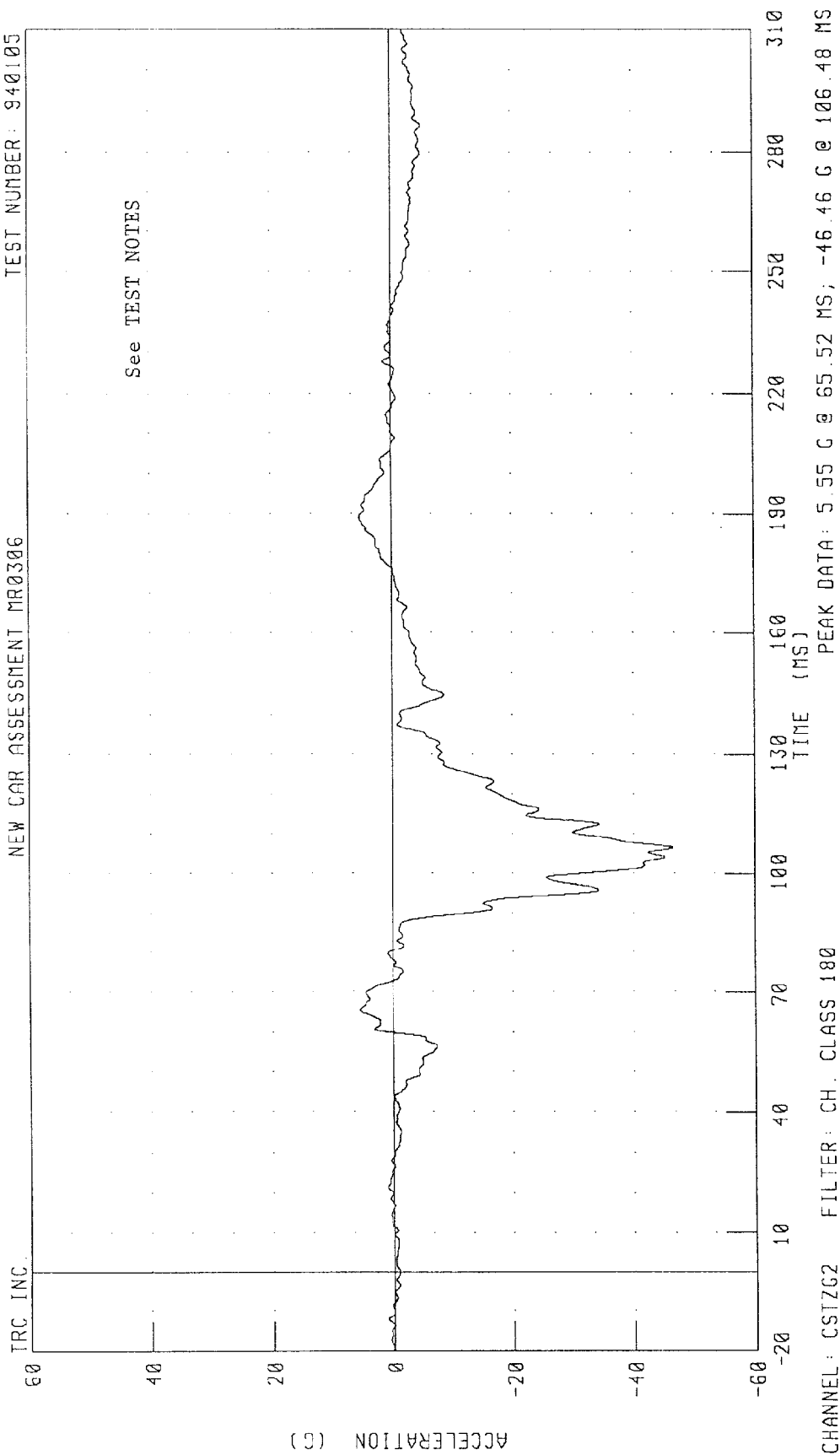


PEAK DATA: 2.74 G @ 65.12 MS; -11.95 G @ 106.24 MS

CHANNEL: CSTYG2 FILTER: CH. CLASS 180

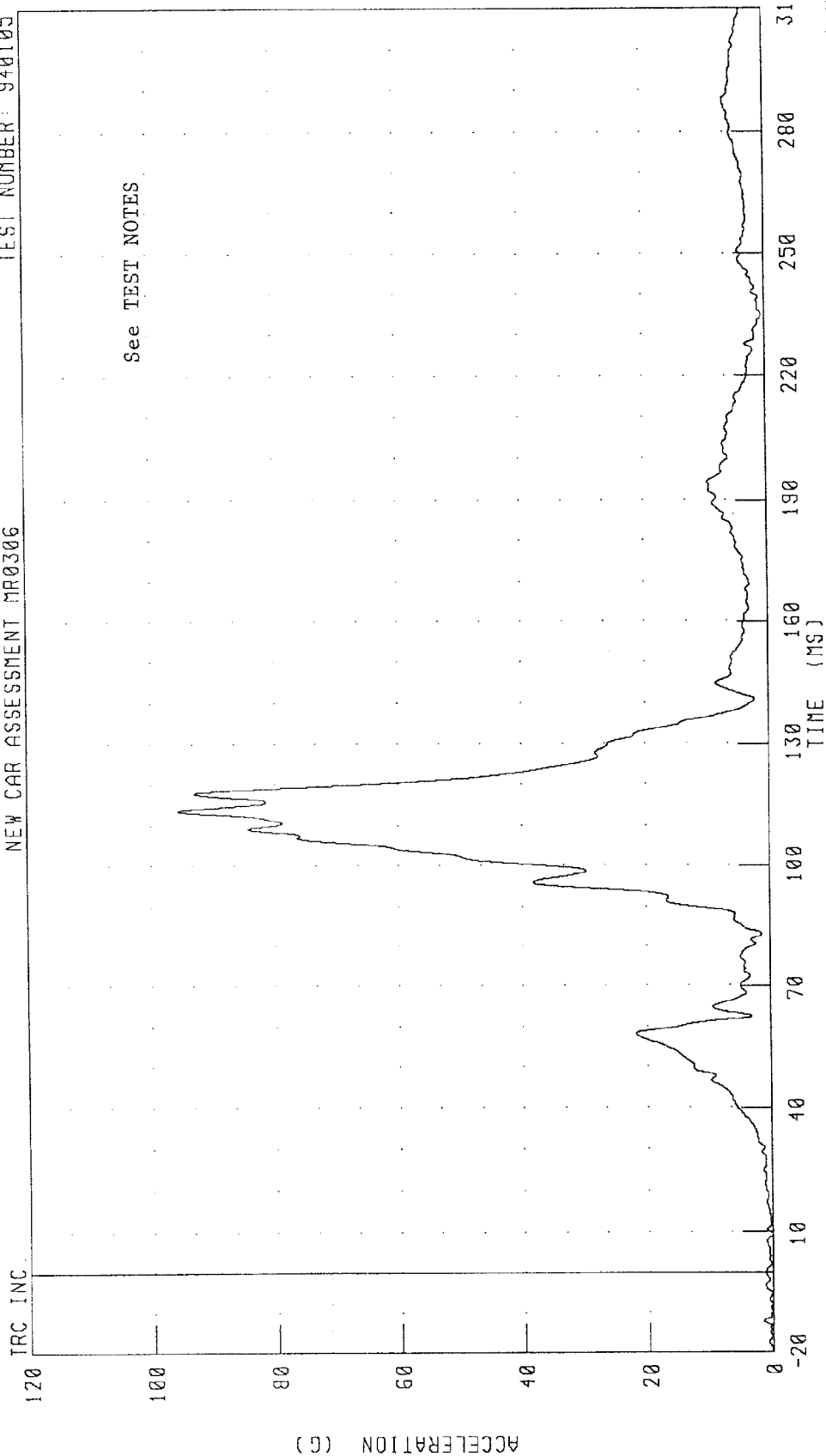
1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST RESULTANT ACCELERATION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

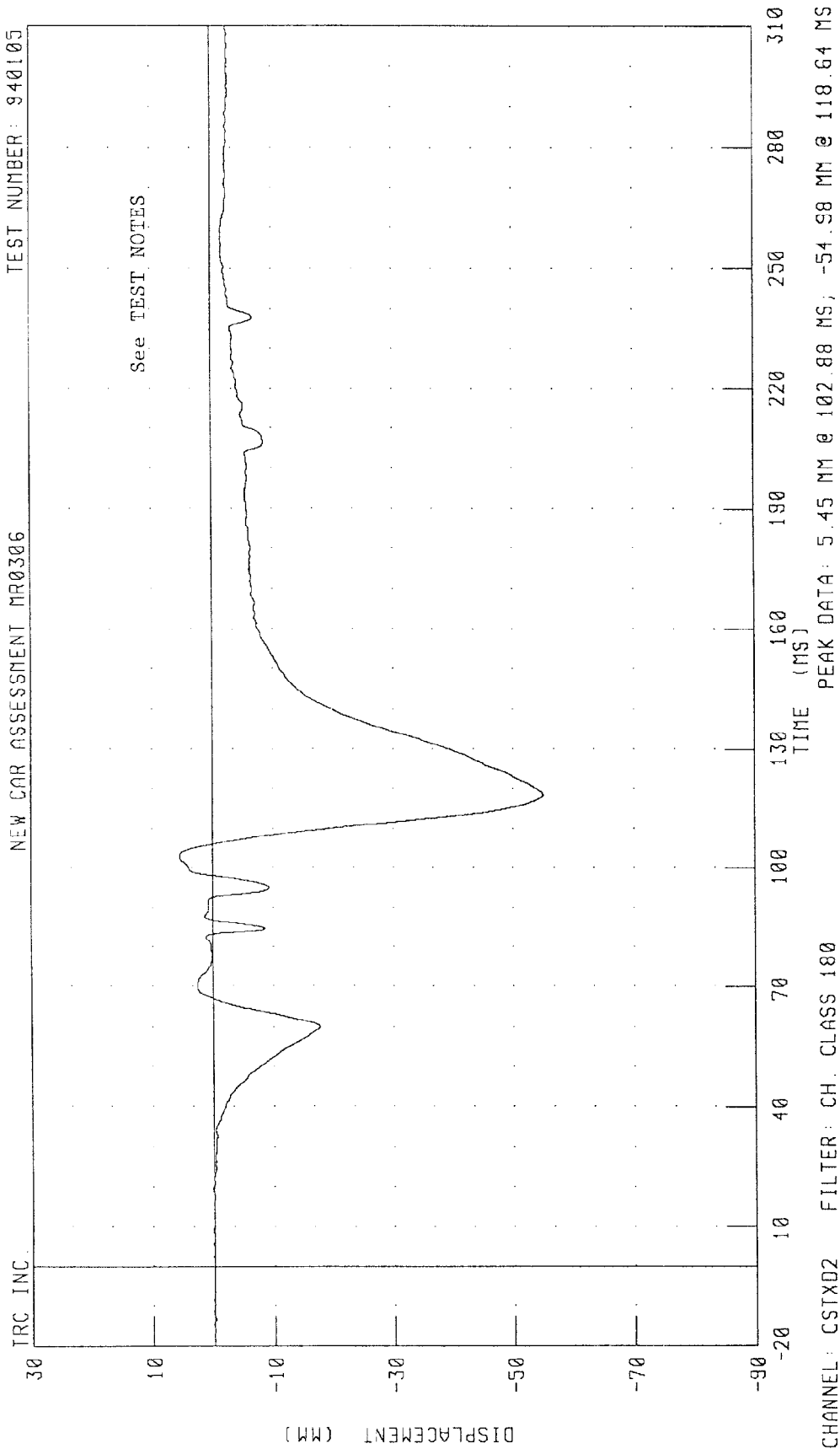


PEAK DATA: 95.73 G @ 113.84 MS; 0.02 G @ 9.60 MS

CHANNEL: CSTRG2 FILTER: CH. CLASS 180

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST DEFLECTION
NEW CAR ASSESSMENT MR0306

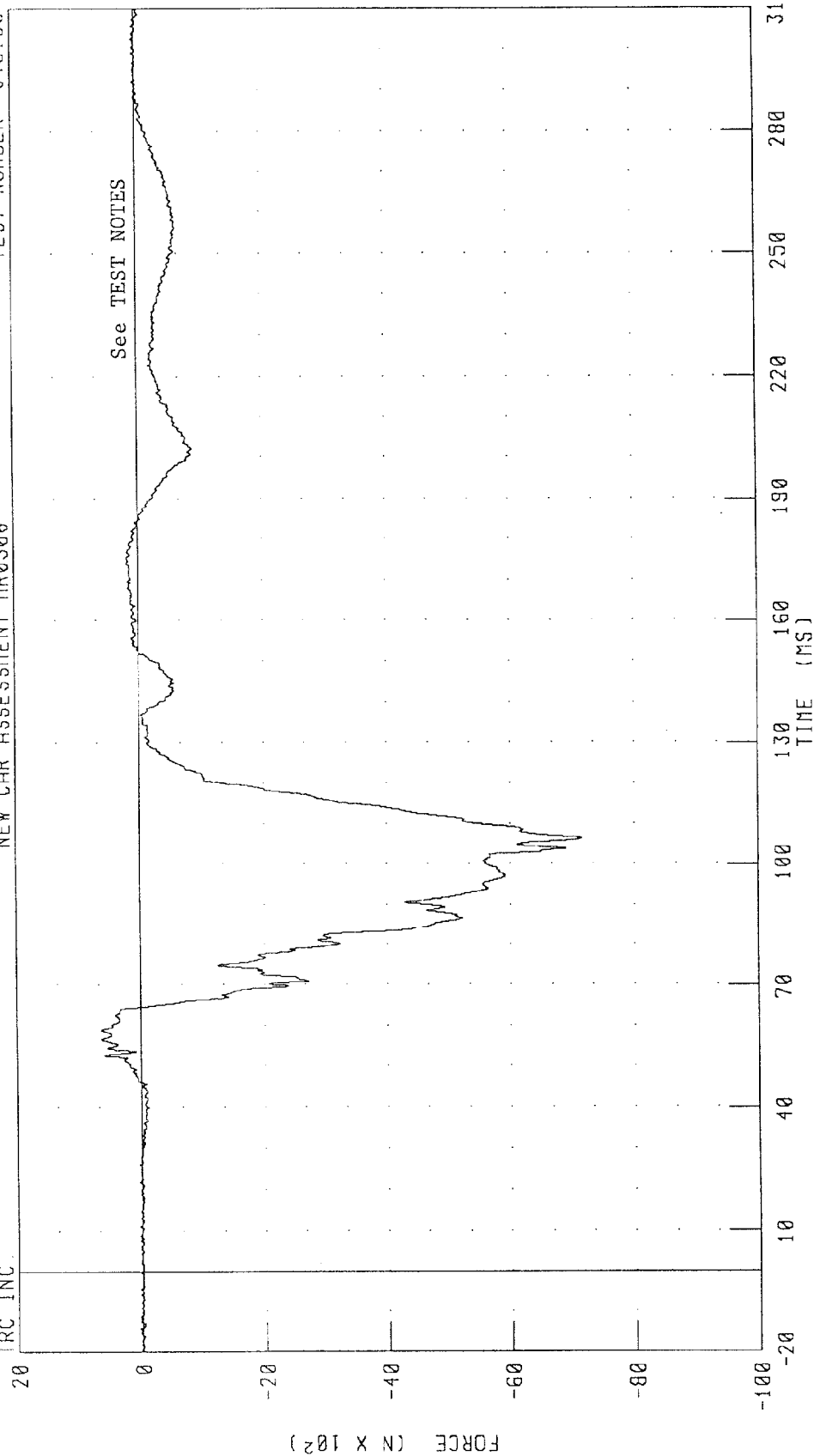
TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER LEFT FEMUR FORCE
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.

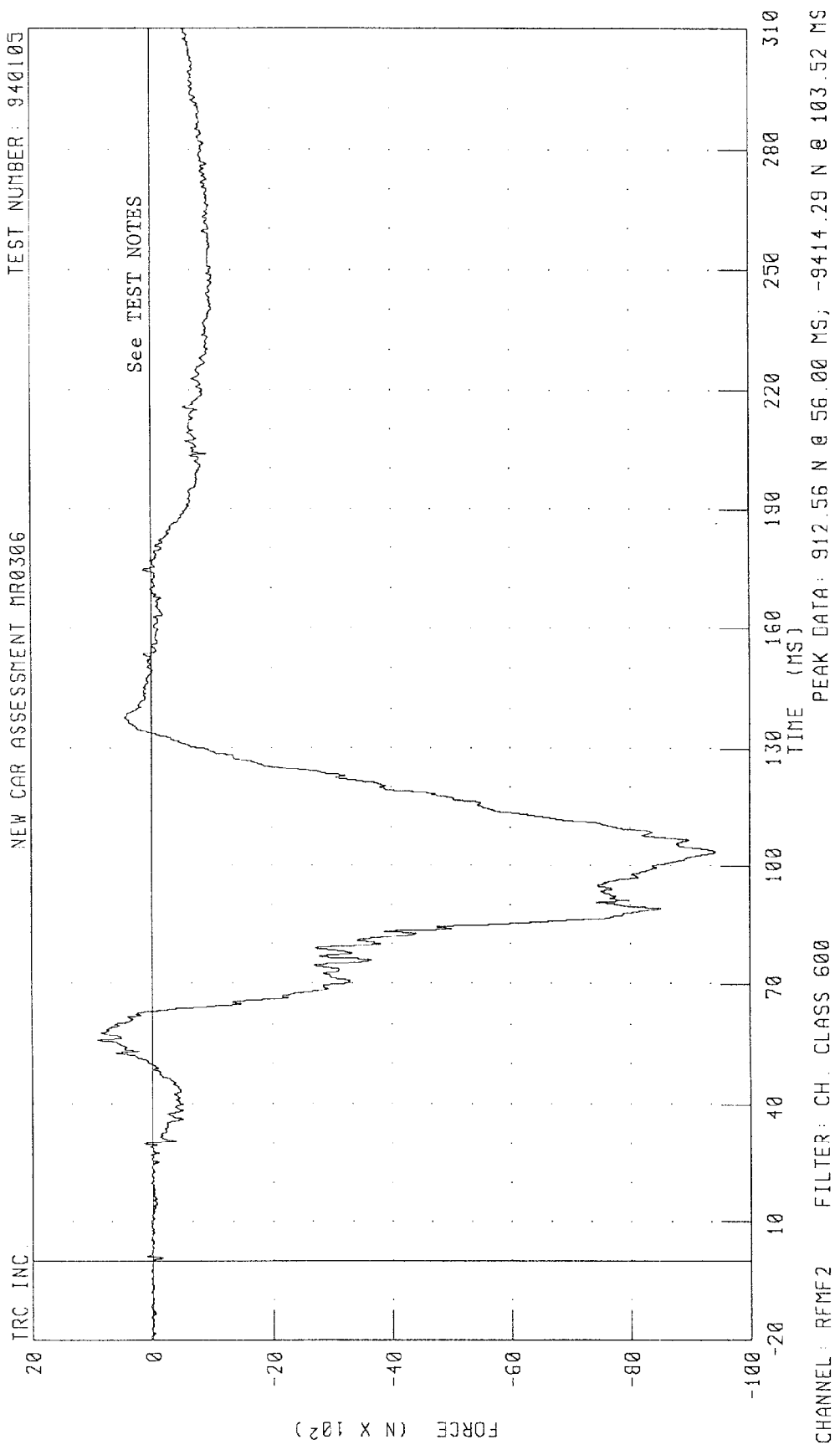


PEAK DATA: 649.22 N @ 58.96 MS; -7153.13 N @ 106.32 MS

CHANNEL: LFMF2 FILTER: CH. CLASS 600

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 PASSENGER RIGHT FEMUR FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



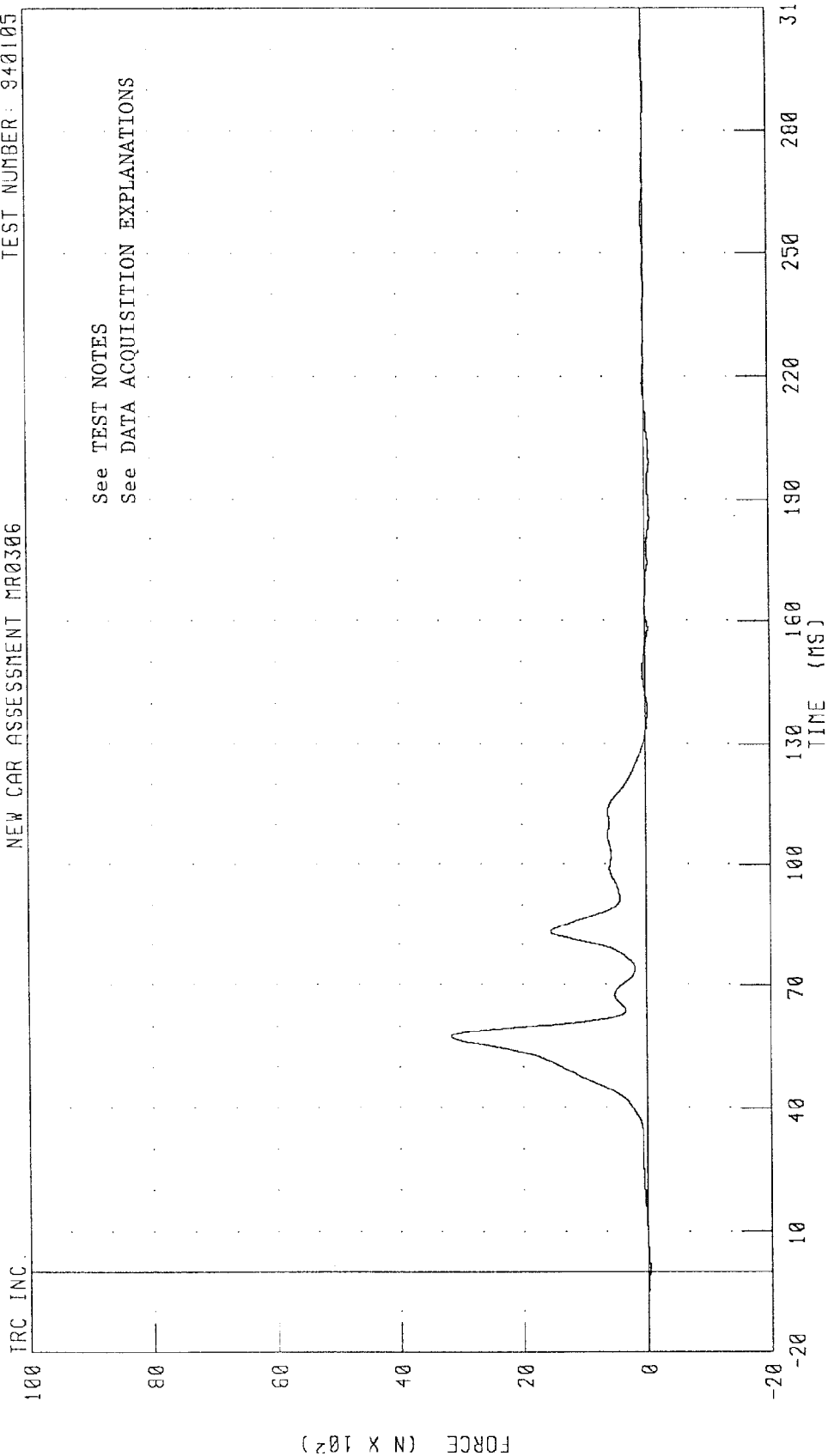
See TEST NOTES

PEAK DATA: 912.56 N @ 56.00 MS; -9414.29 N @ 103.52 MS

CHANNEL: RFMF2 FILTER: CH. CLASS 600

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER LAP BELT OUTBOARD FORCE
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



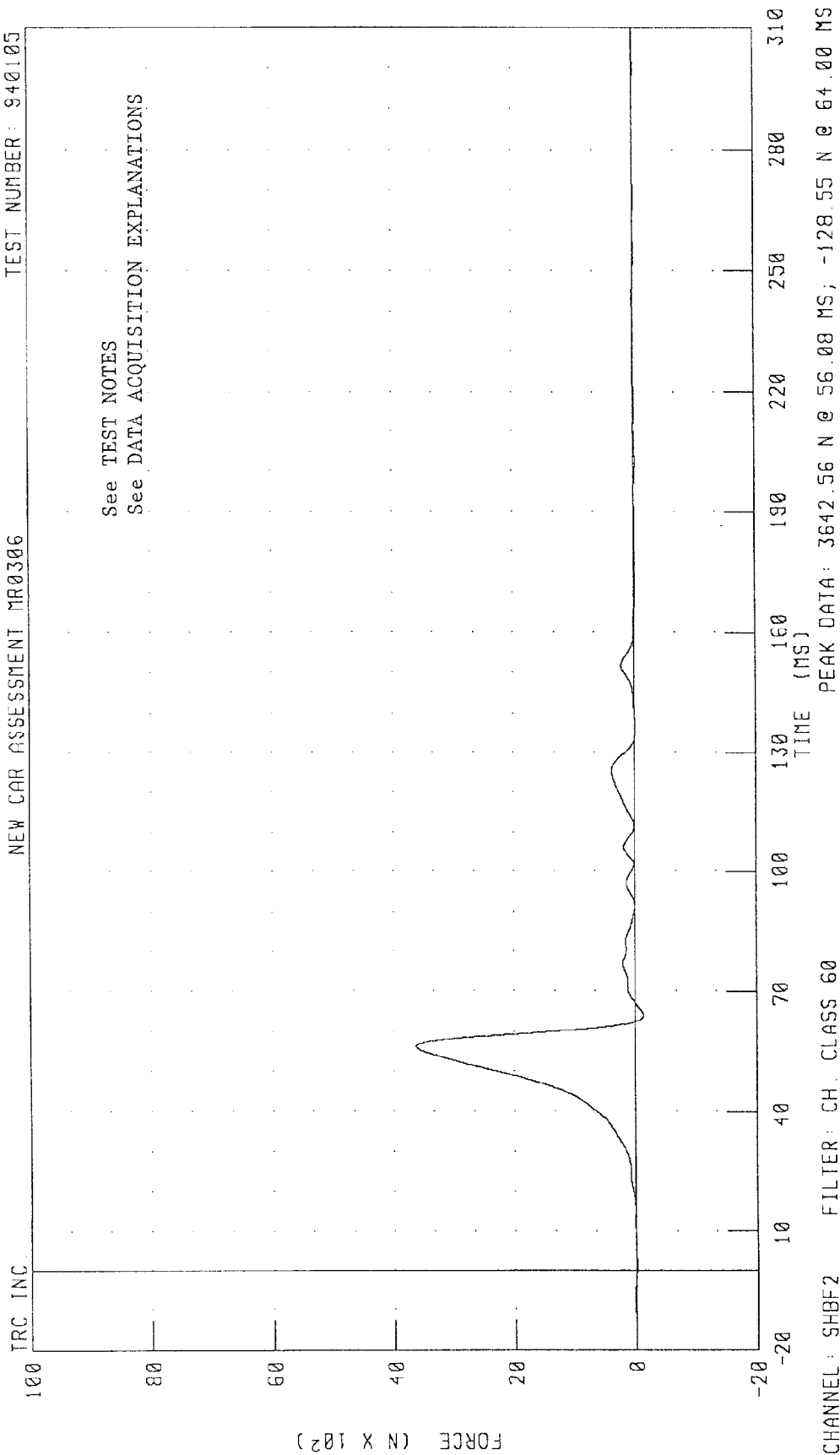
See TEST NOTES
See DATA ACQUISITION EXPLANATIONS

PEAK DATA: 3172.82 N @ 57.44 MS; -72.12 N @ 199.20 MS

CHANNEL: L80F2 FILTER: CH. CLASS 60

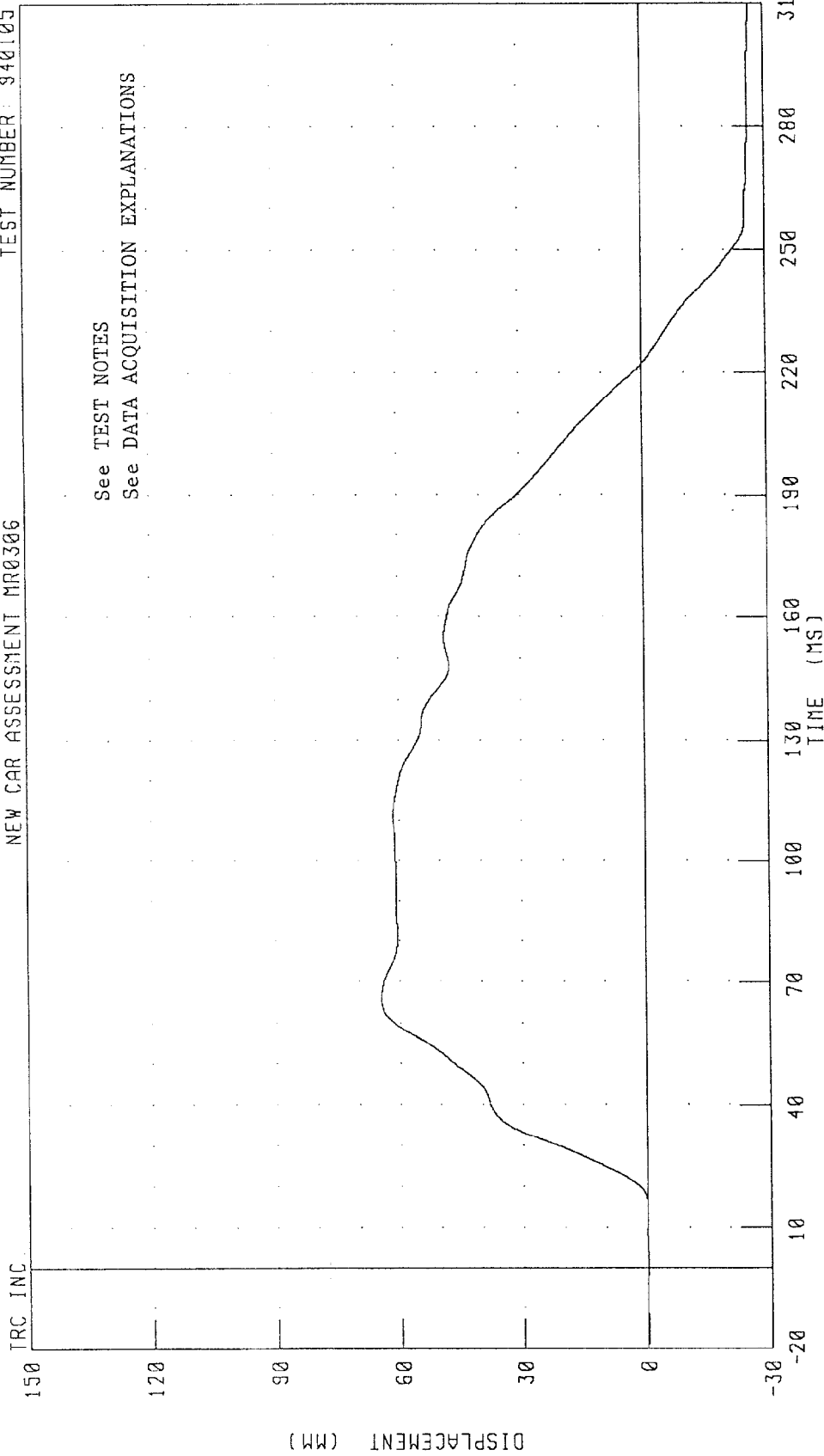
1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SHOULDER BELT FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT DISPLACEMENT
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

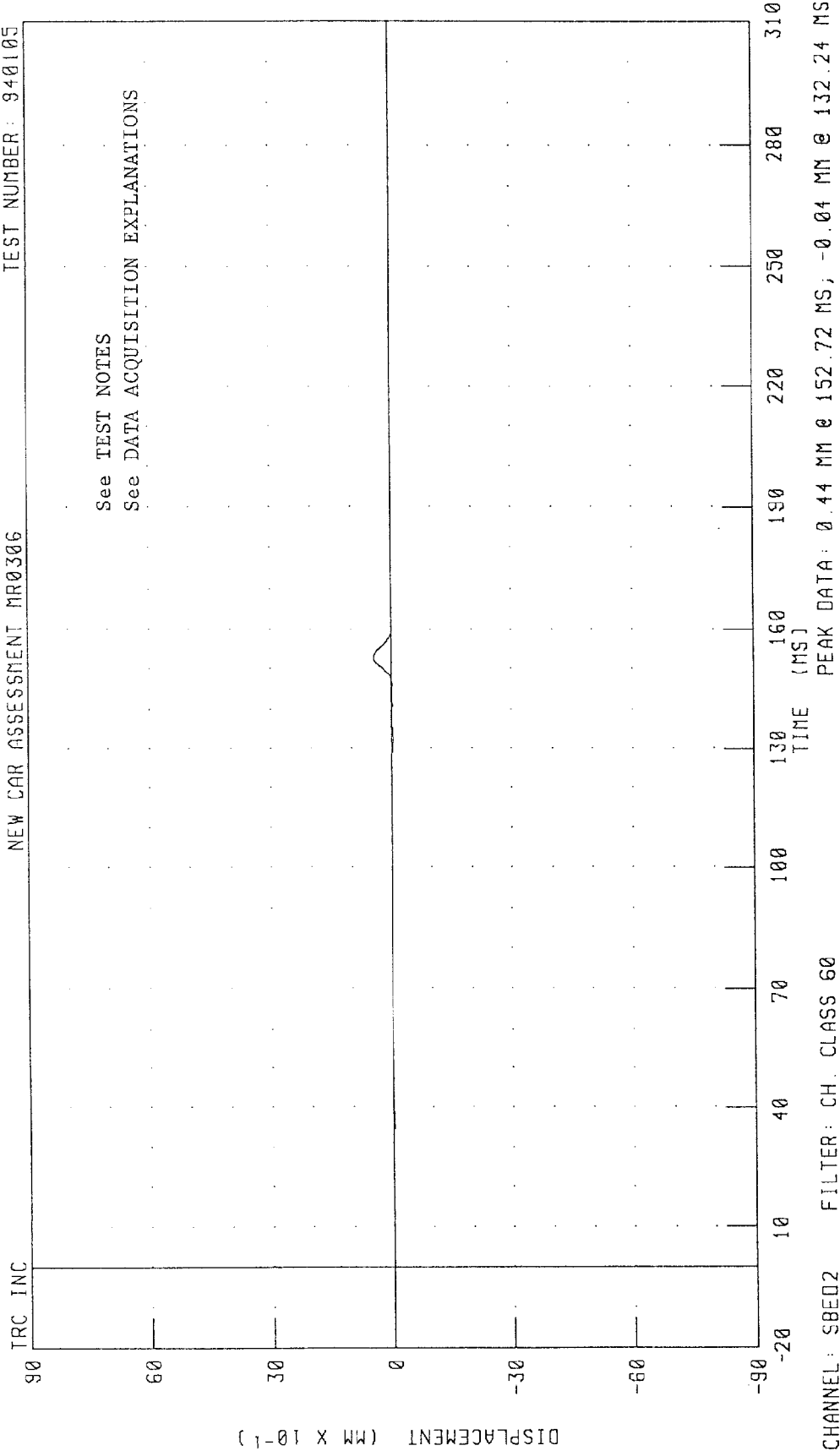


PEAK DATA: 64.53 MM @ 65.76 MS; -26.28 MM @ 308.08 MS

CHANNEL: SH002 FILTER: CH. CLASS 60

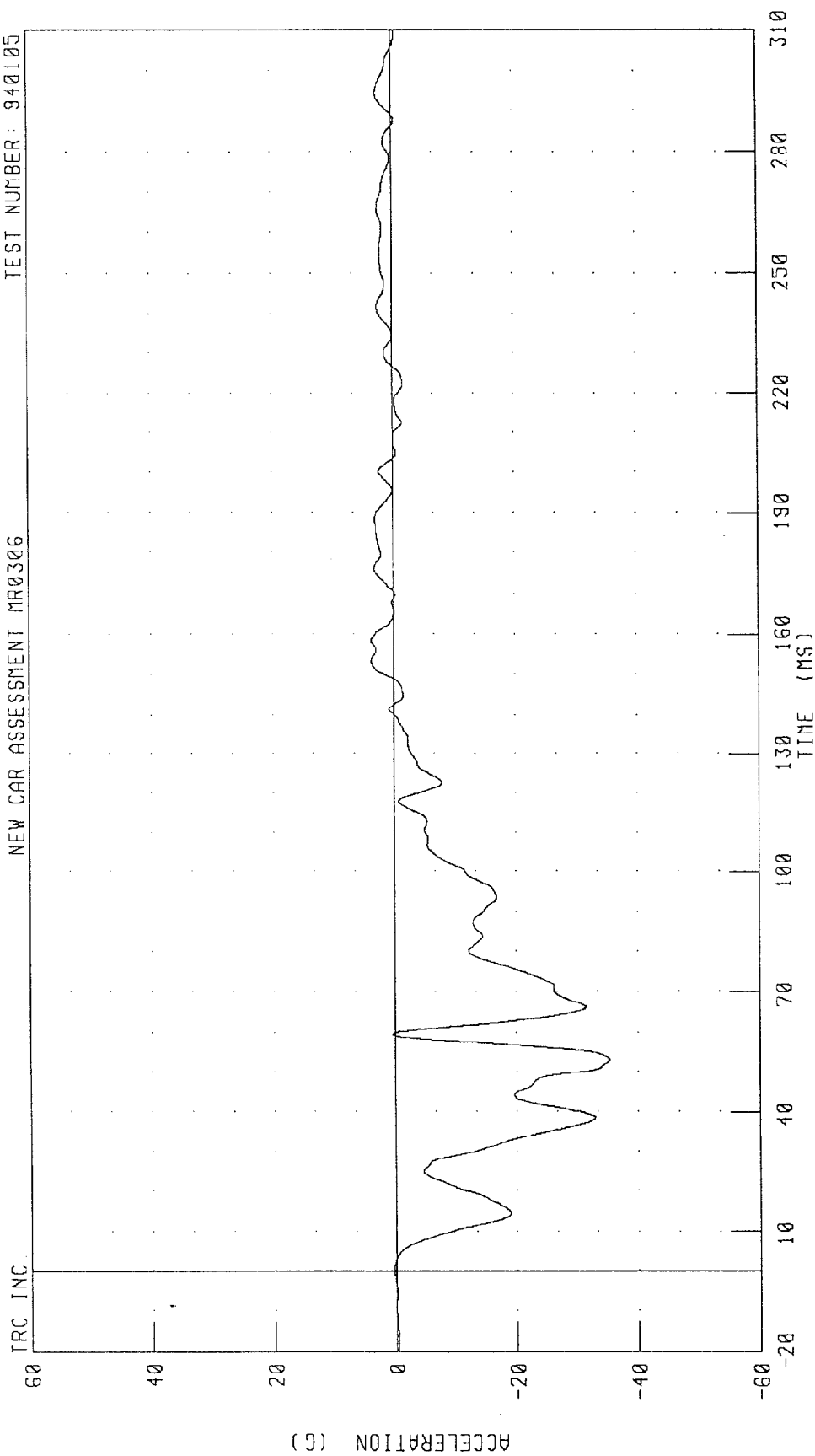
1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
PASSENGER SEAT BELT EXTENSION
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LEFT REAR SEAT X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



PEAK DATA: 3.74 G @ 153.36 MS; -35.32 G @ 53.04 MS

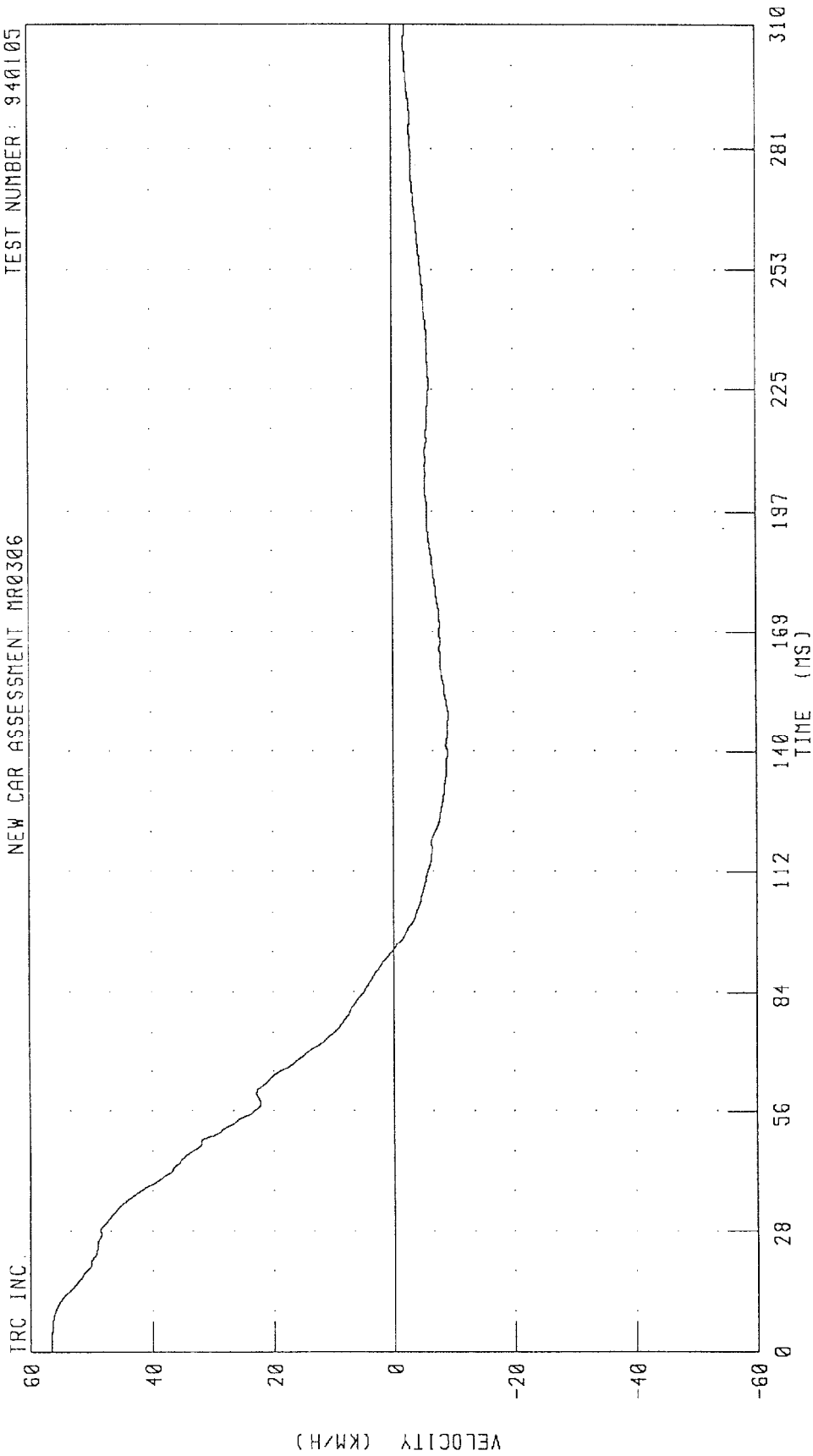
CHANNEL: TLRXG1 FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER

LEFT REAR SEAT X-AXIS VELOCITY

NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

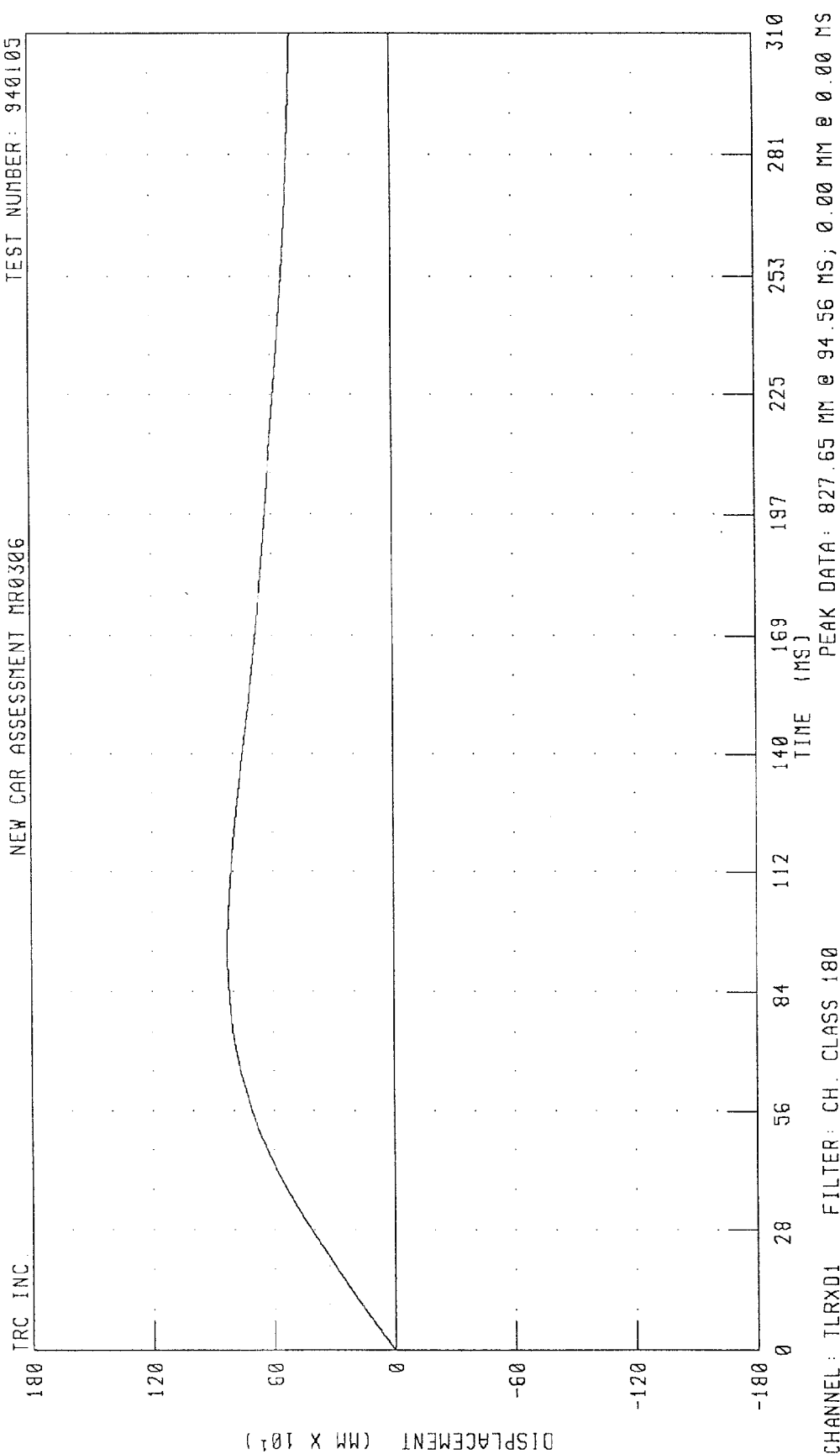


CHANNEL: TLRXV1 FILTER: CH. CLASS 180

PEAK DATA: 56.52 KM/H @ 3.36 MS; -9.16 KM/H @ 149.76 MS

1984 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LEFT REAR SEAT X-AXIS DISPLACEMENT
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

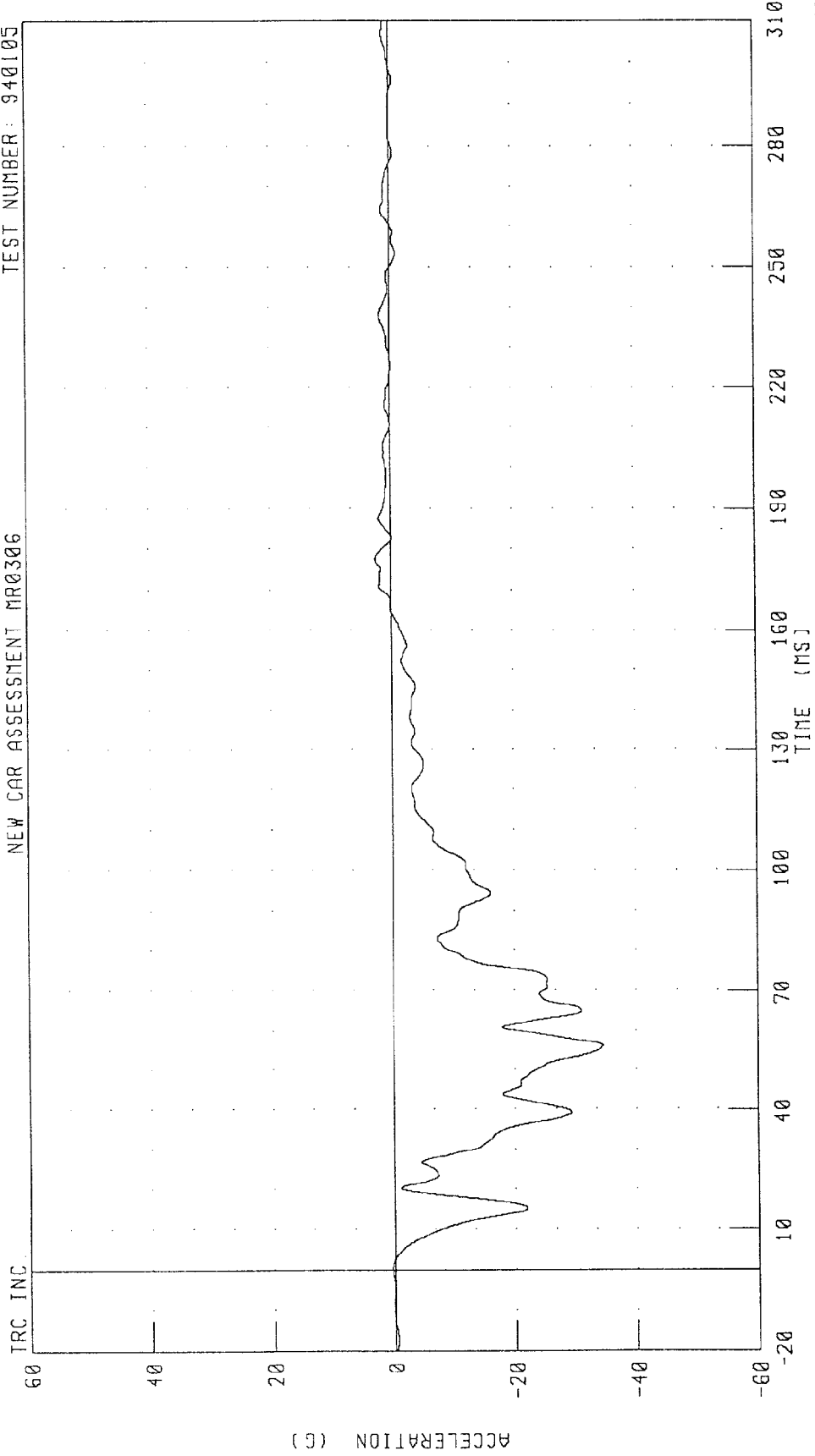


CHANNEL: TLRX01 FILTER: CH. CLASS 180

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

NEW CAR ASSESSMENT MR0306

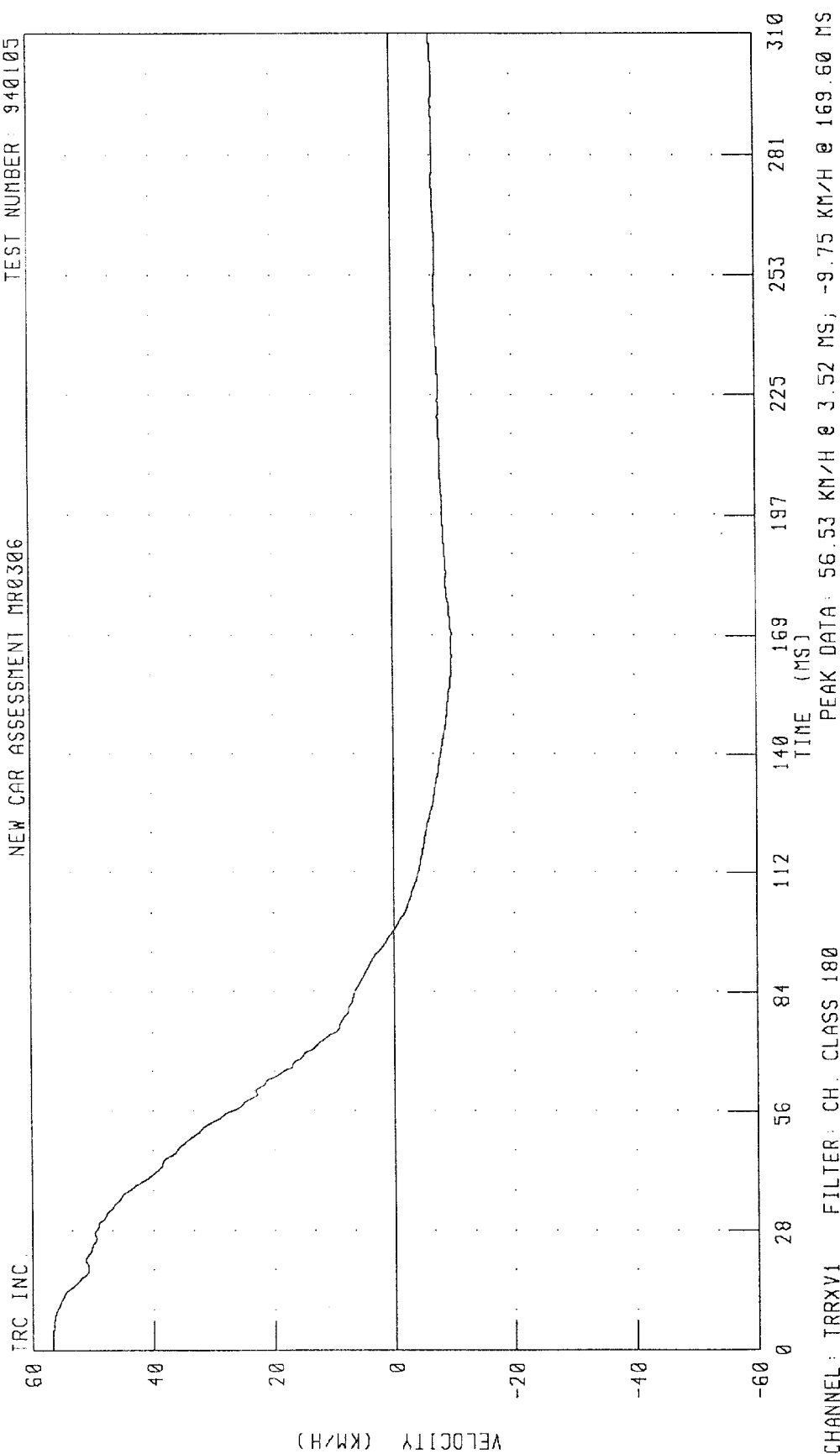
TEST NUMBER: 940105



CHANNEL: TRRXG1 FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS VELOCITY
 NEW CAR ASSESSMENT MR0306

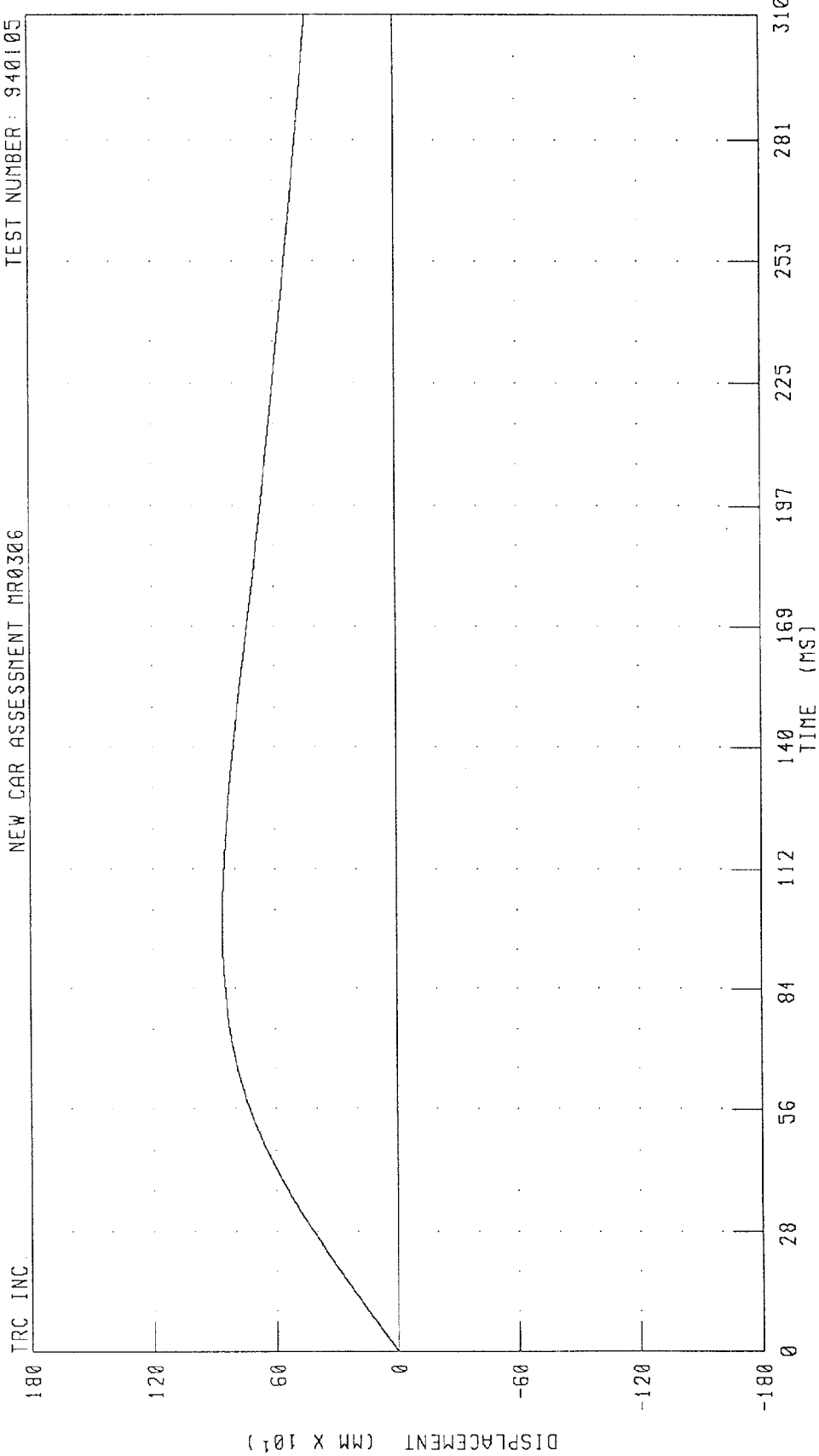
TEST NUMBER 940105



CHANNEL: TRRXV1 FILTER: CH. CLASS 180

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS DISPLACEMENT
 NEW CAR ASSESSMENT MR0306

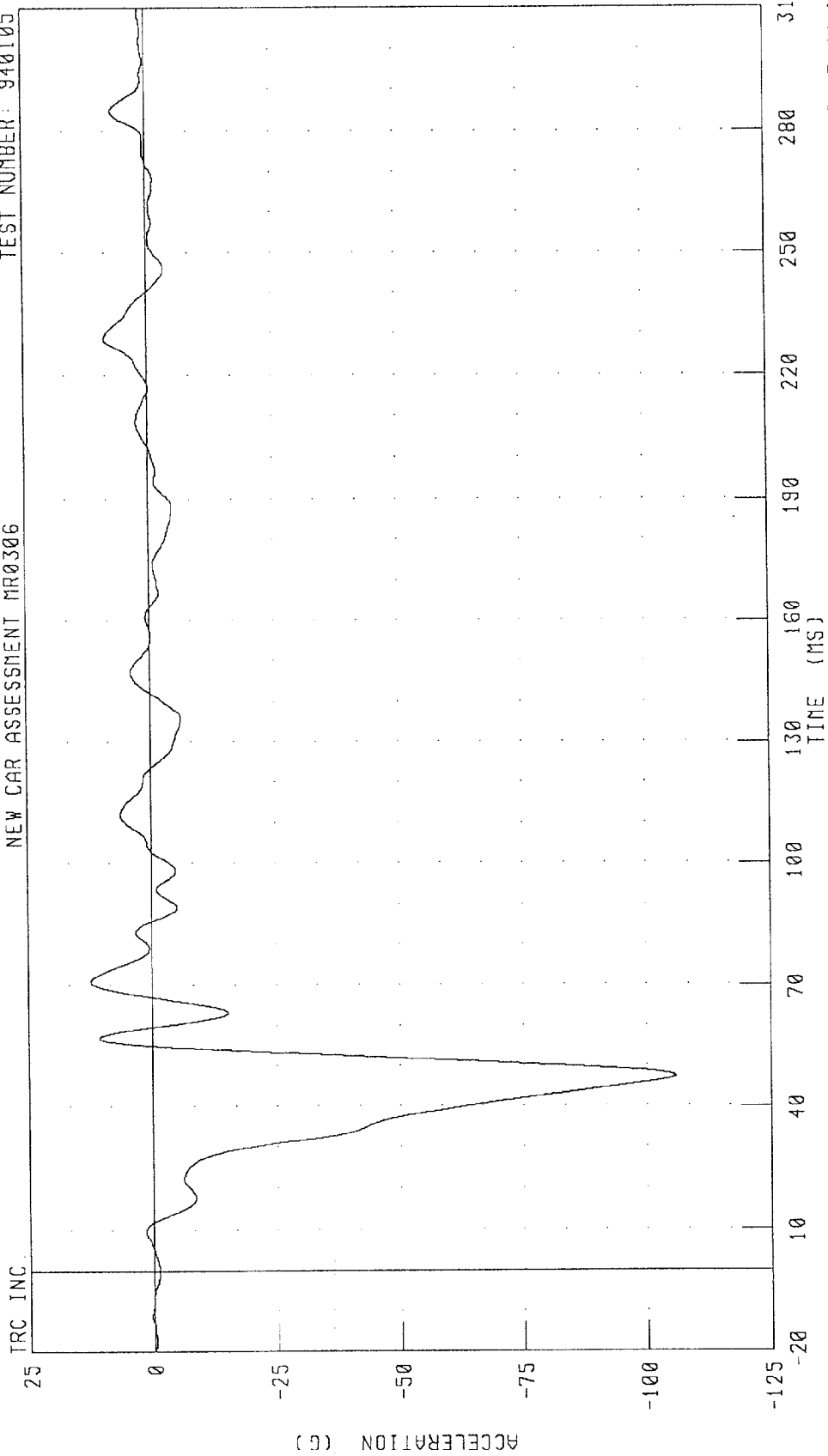
TEST NUMBER: 940105



CHANNEL: TRRXD1 FILTER: CH. CLASS 180
 PEAK DATA: 860.13 MM @ 99.28 MS; 0.00 MM @ 0.00 NS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 ENGINE TOP X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

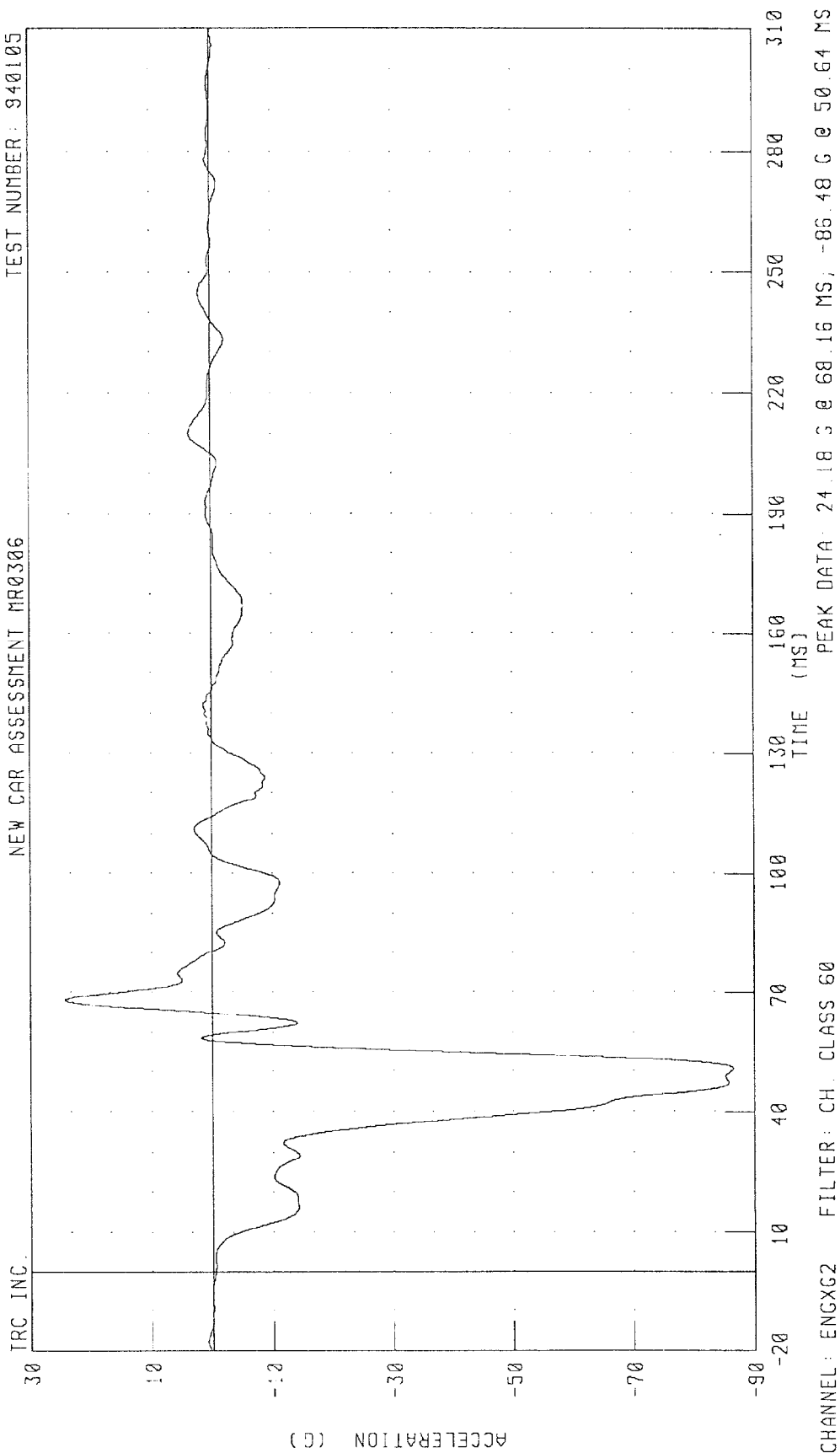


CHANNEL: ENGXC1 FILTER: CH. CLASS 60

PEAK DATA: 12.33 G @ 70.96 MS; -105.77 G @ 47.44 MS

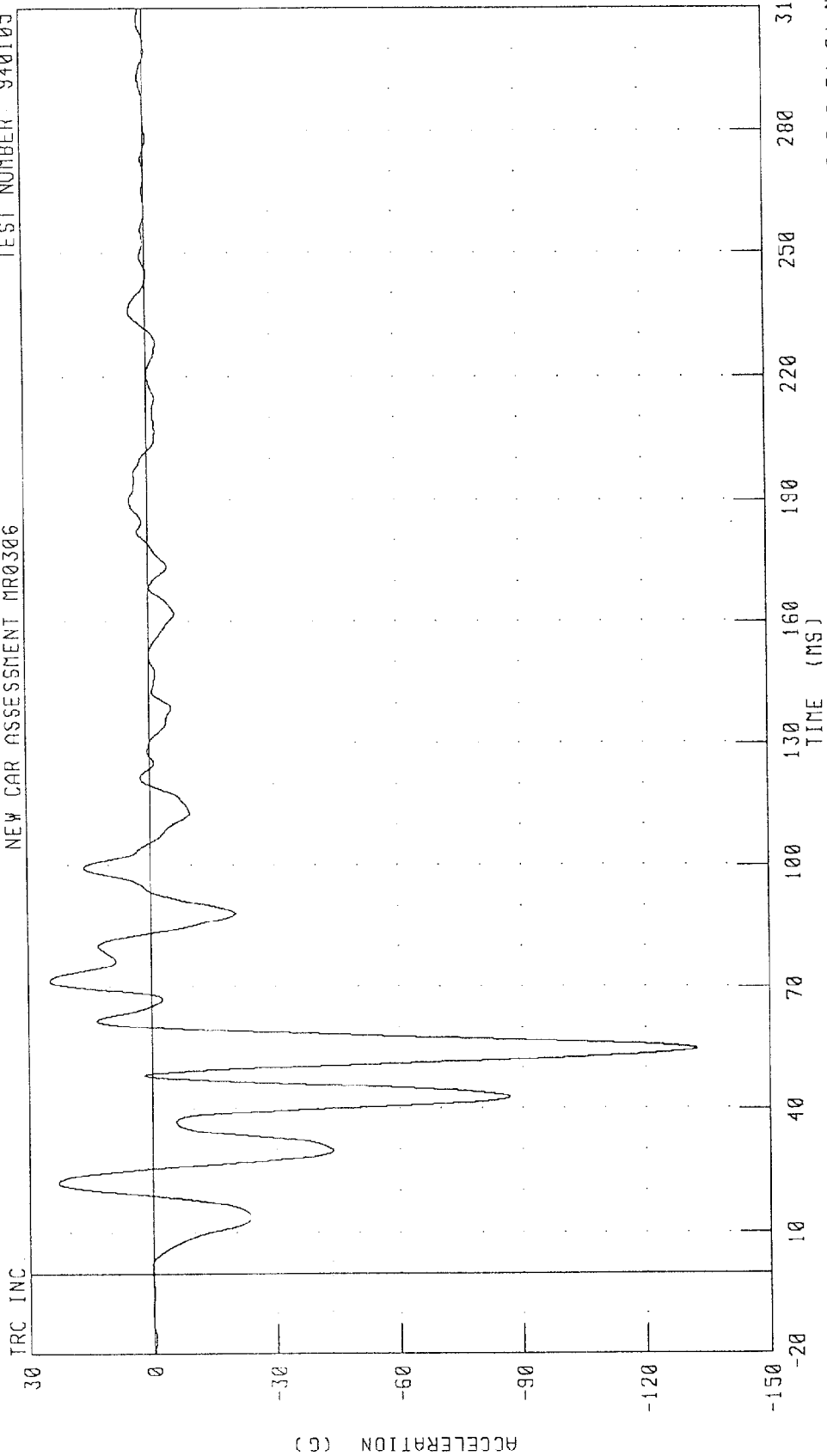
1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 ENGINE BOTTOM X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 RIGHT BRAKE CALIPER X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR0306

TEST NUMBER 940105

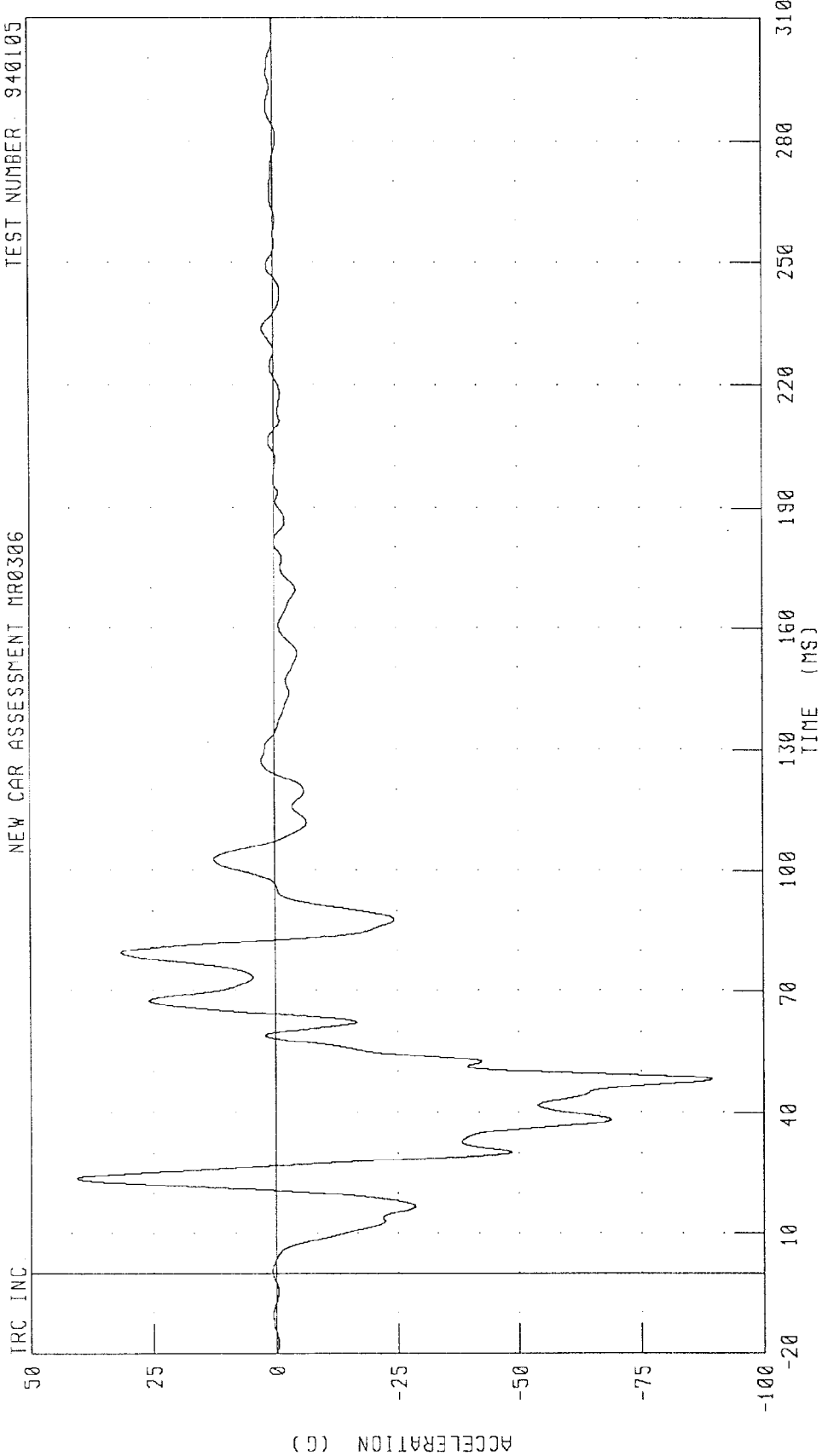


CHANNEL: BCRXG1 FILTER: CH. CLASS 60

PEAK DATA: 24.66 G @ 71.60 MS; -132.49 G @ 54.64 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LEFT BRAKE CALIPER X-AXIS ACCELERATION
 NEW CAR ASSESSMENT NR0306

TEST NUMBER: 940105

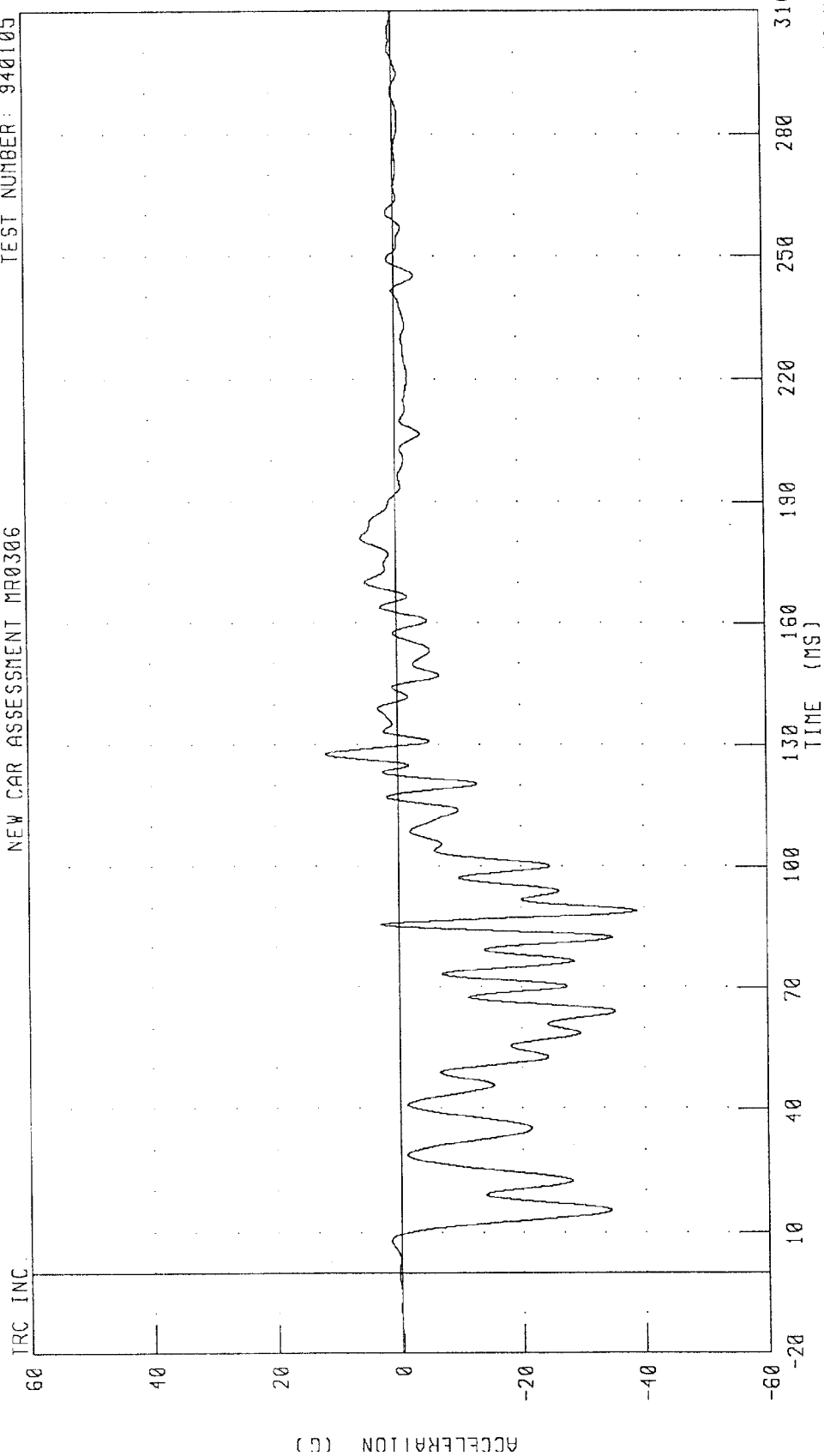


CHANNEL: BCLXG1 FILTER: CH. CLASS 60

PEAK DATA: 40.61 S @ 23.76 MS; -89.31 G @ 48.16 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 INSTRUMENT PANEL CENTER X-AXIS ACCELERATION
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



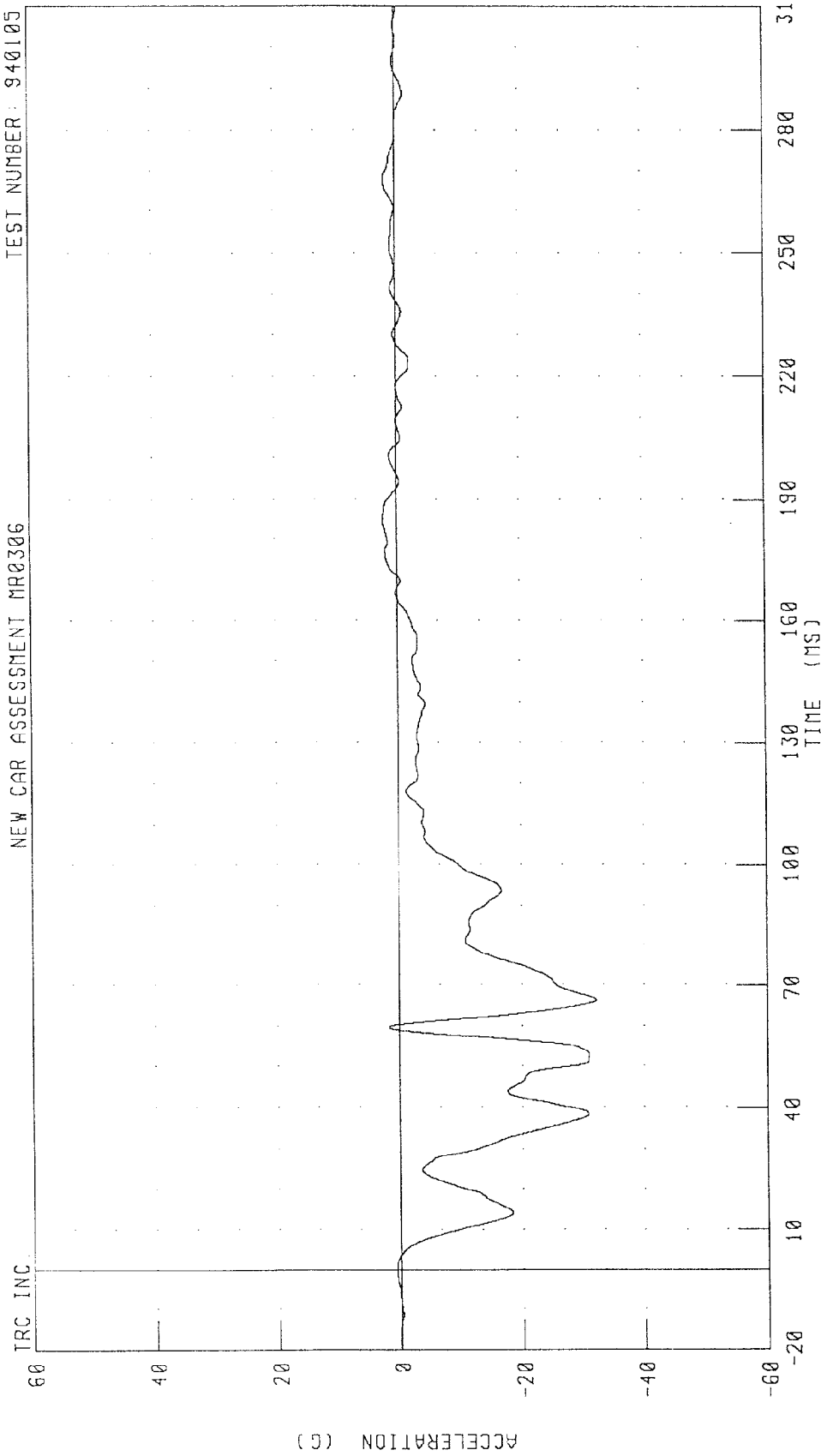
CHANNEL: DPCXG1 FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TEST NUMBER: 940105

NEW CAR ASSESSMENT MR0306

TRC INC.



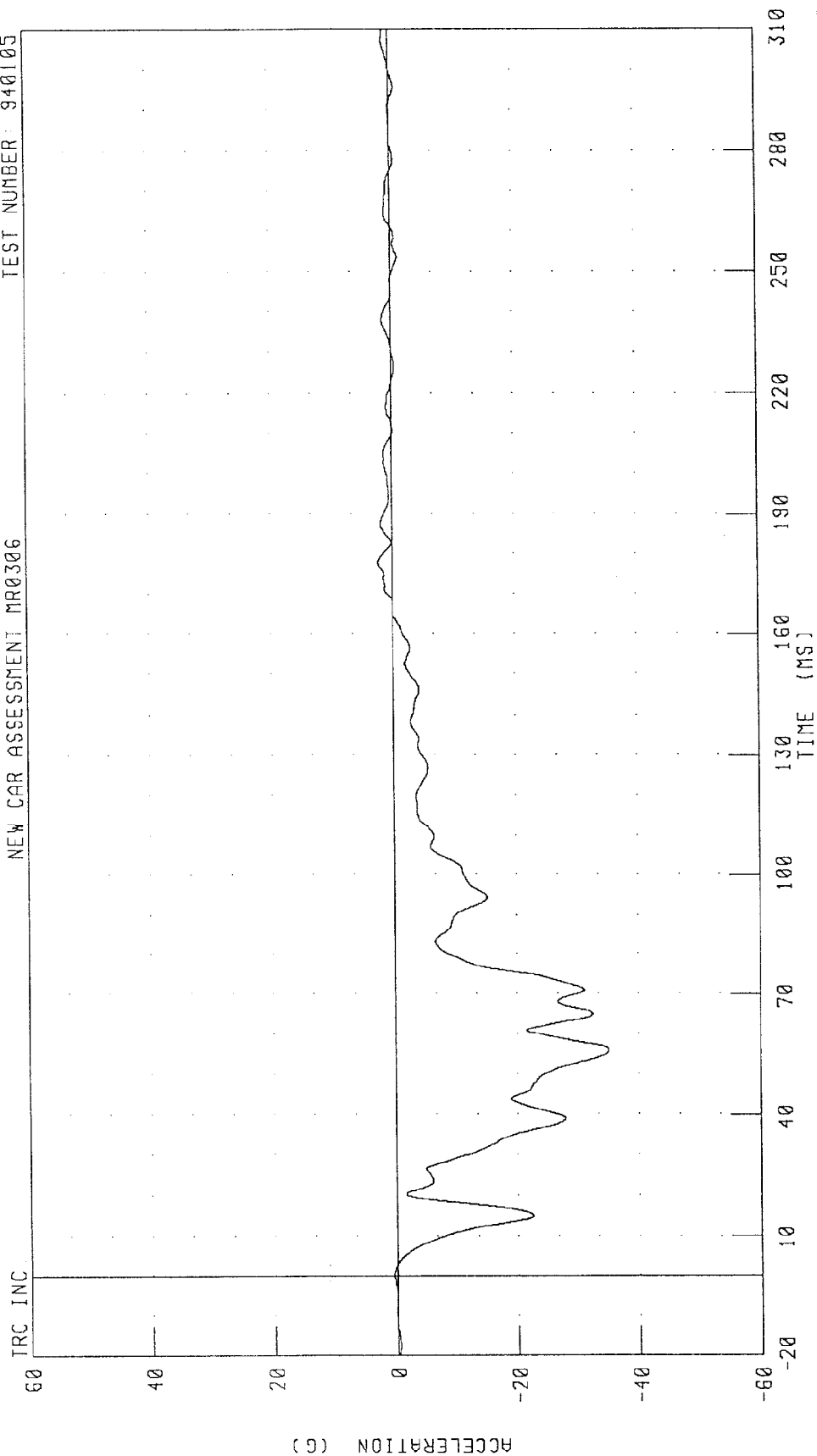
CHANNEL: TLXGA FILTER: CH. CLASS 60

PEAK DATA: 2.28 G @ 184.80 MS; -32.14 G @ 66.32 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT REDUNDANT X-AXIS ACCELERATION

TEST NUMBER: 940105

NEW CAR ASSESSMENT MR0306

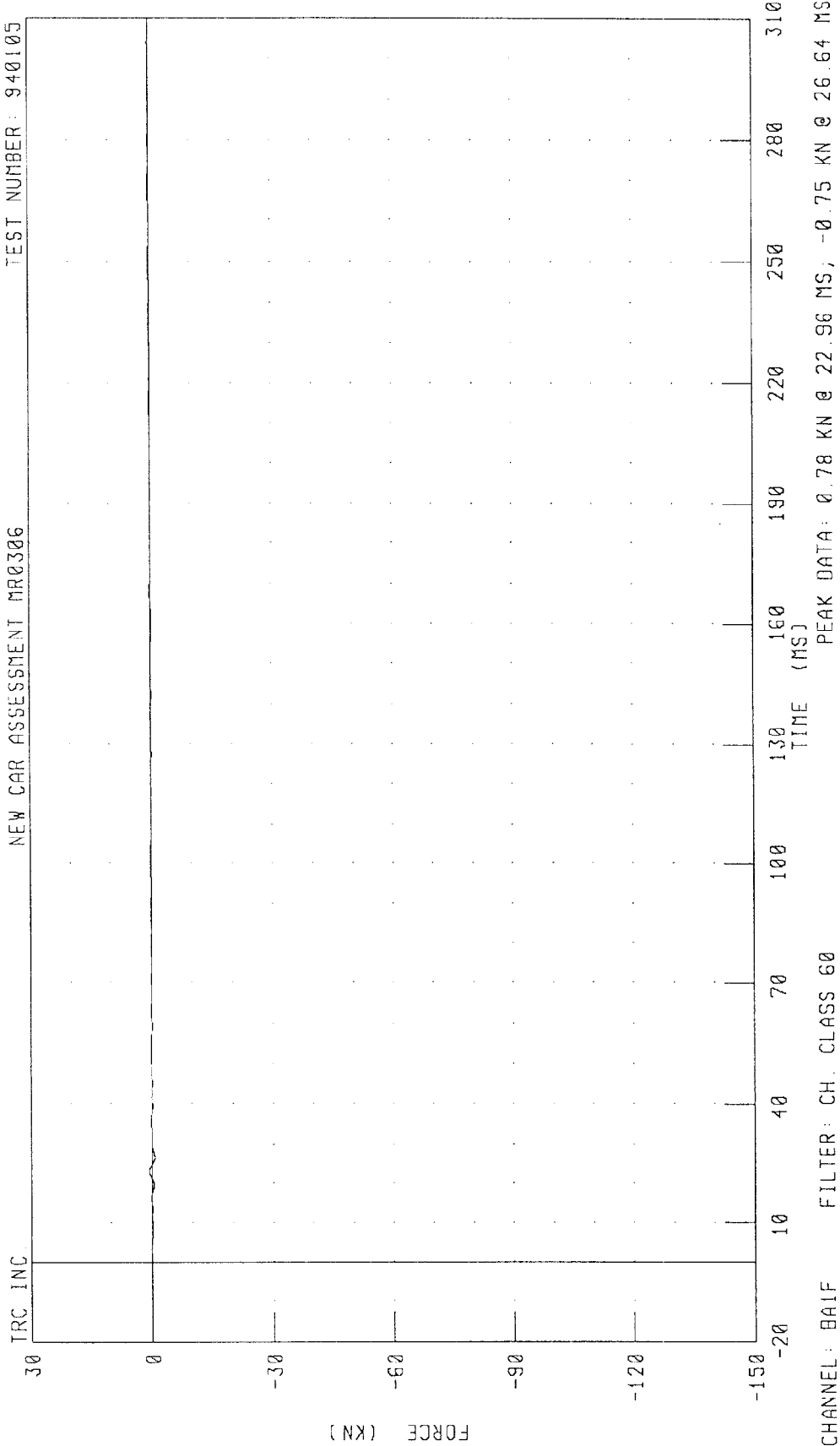


PEAK DATA: 2.33 G @ 177.76 MS; -35.11 G @ 56.00 MS

CHANNEL: TRRXGA FILTER: CH CLASS 60

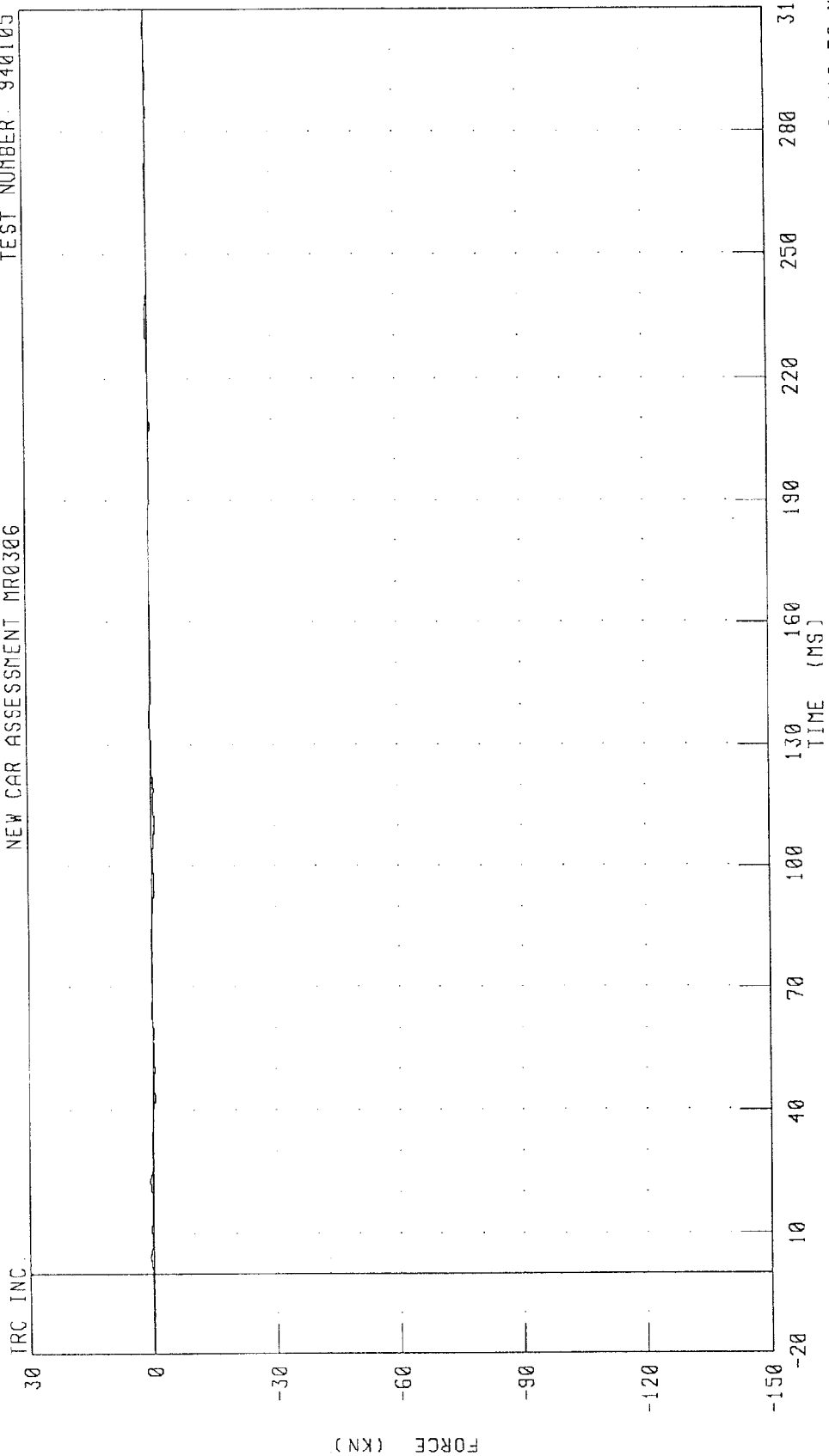
1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A1 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A2 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER 940105



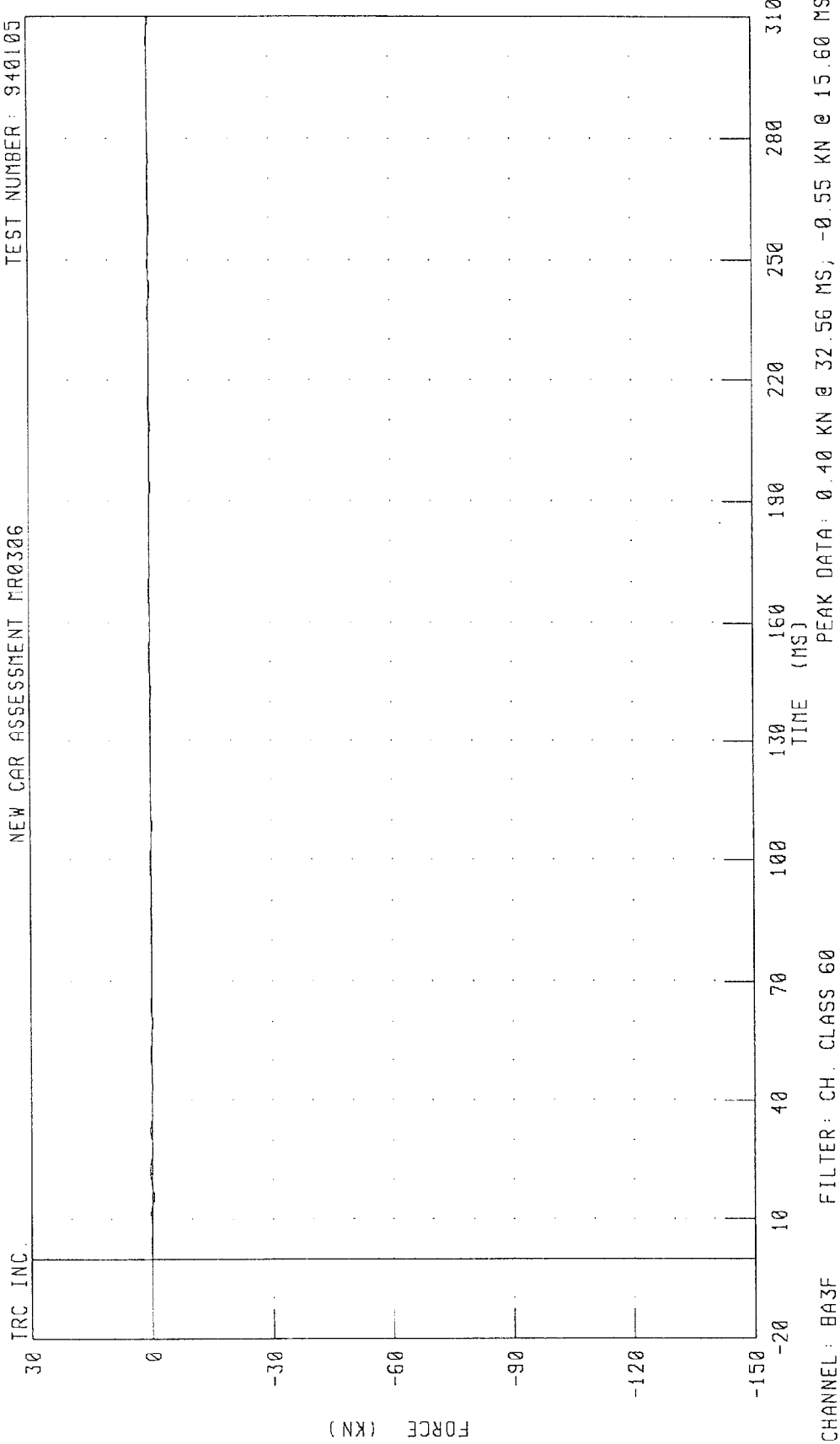
PEAK DATA: 0.64 KN @ 3.84 MS; -0.81 KN @ 110.72 MS

FILTER: CH. CLASS 60

CHANNEL: BA2F

ISS4 JODGE RAY 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A3 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

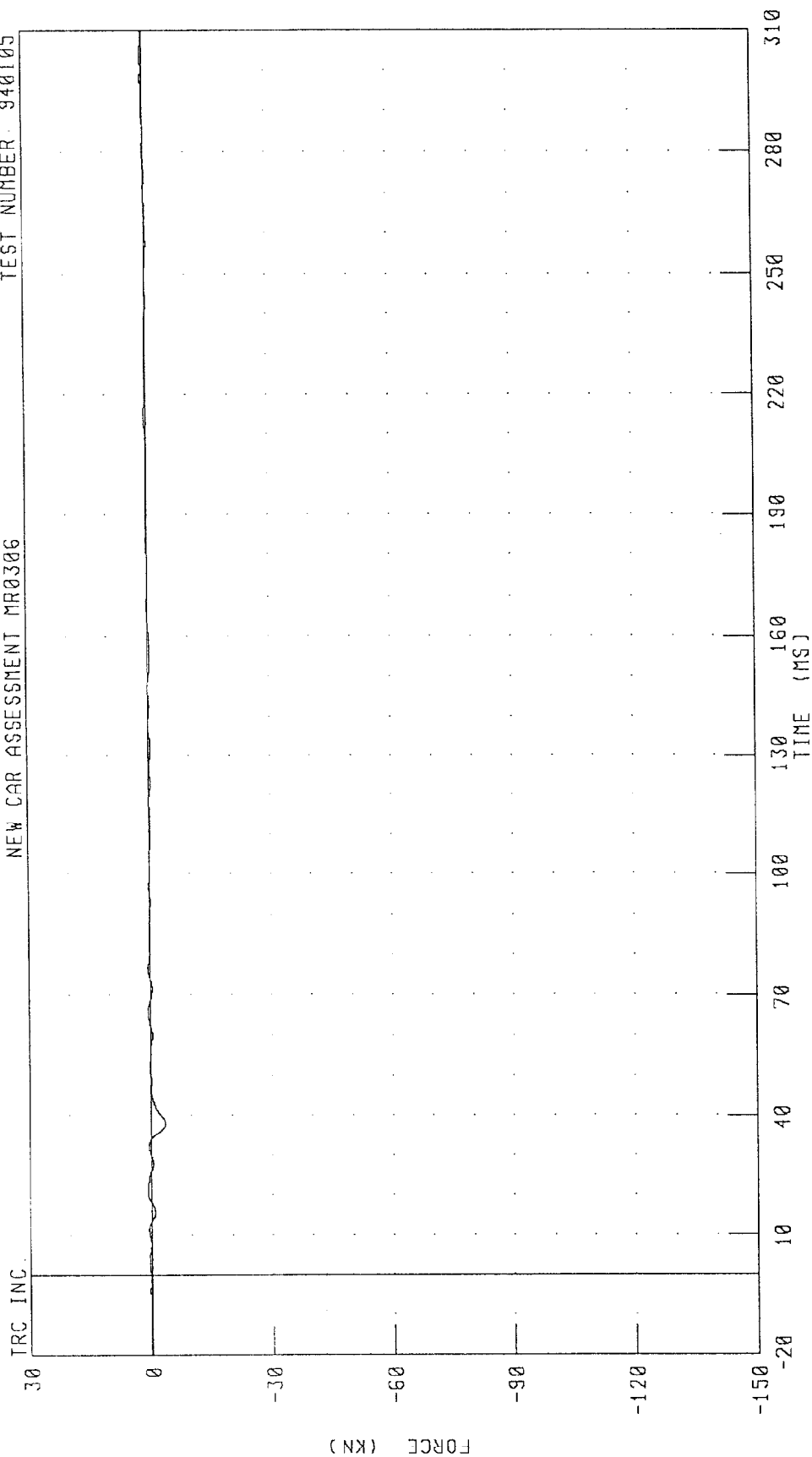


PEAK DATA: 0.40 KN @ 32.56 MS; -0.55 KN @ 15.60 MS

CHANNEL: BA3F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A4 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

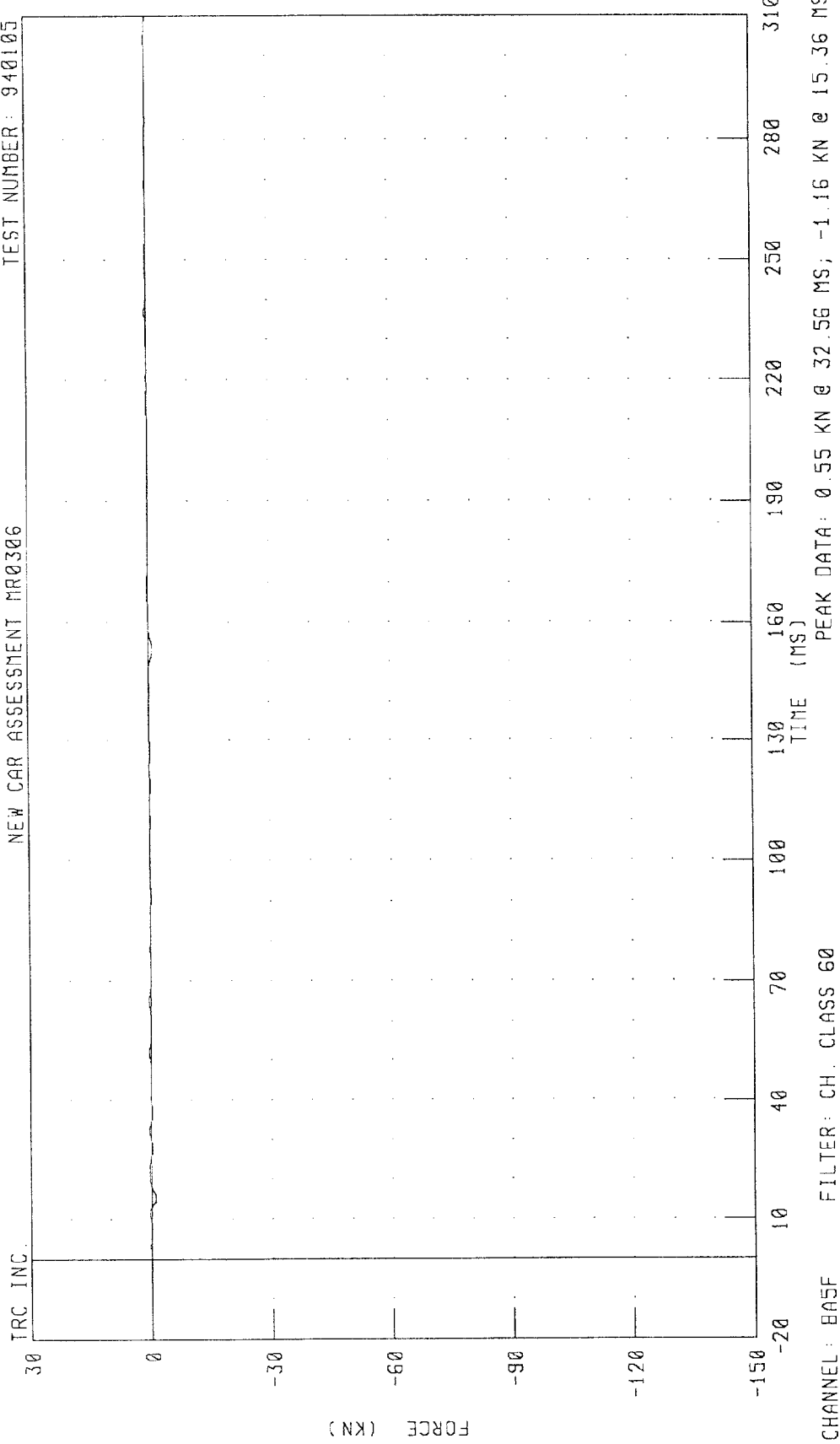


PEAK DATA: 0.83 KN @ 20.64 MS; -3.69 KN @ 38.24 MS

CHANNEL: BA4F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A5 FORCE
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

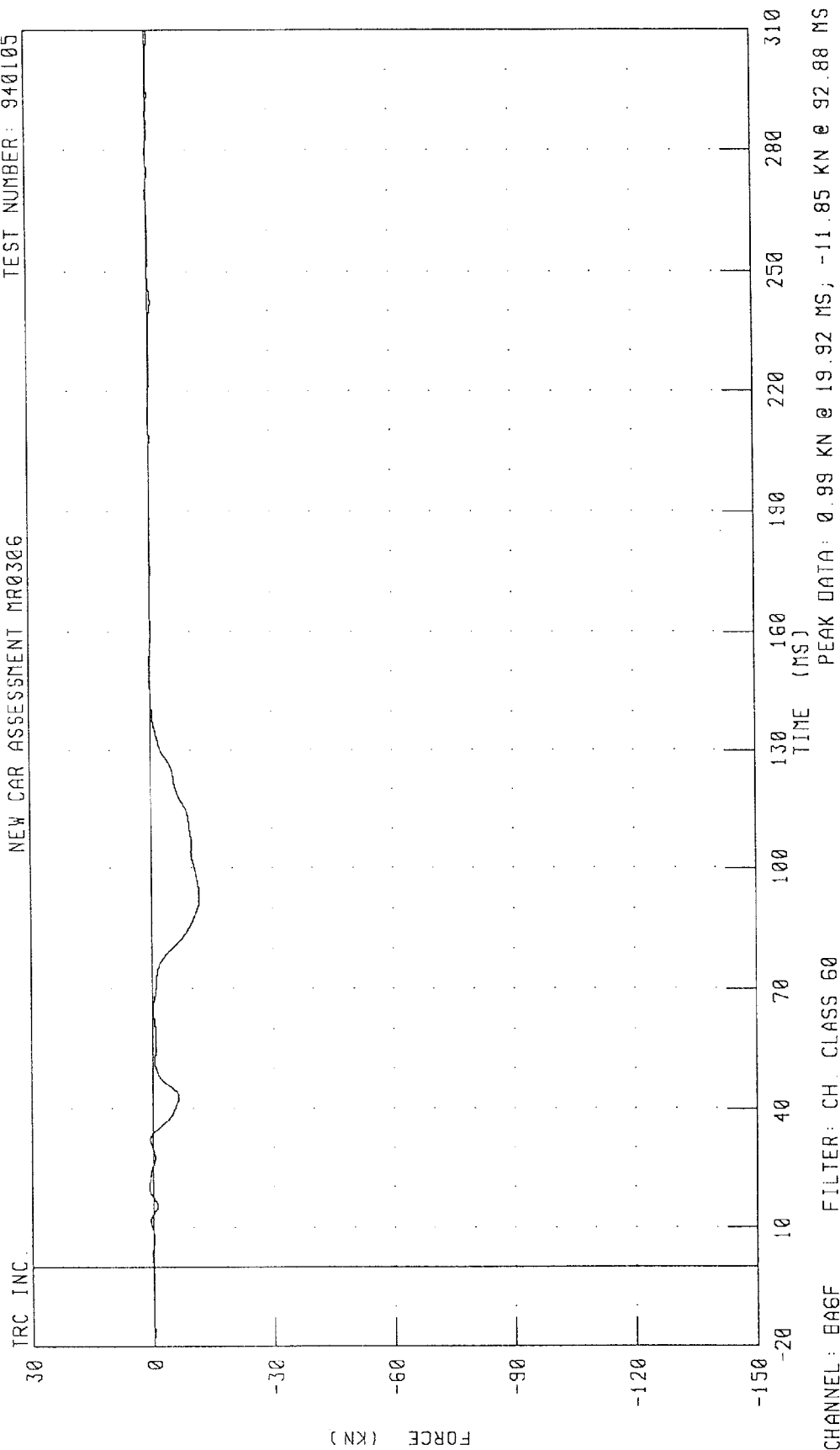


CHANNEL: BA5F

FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A6 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

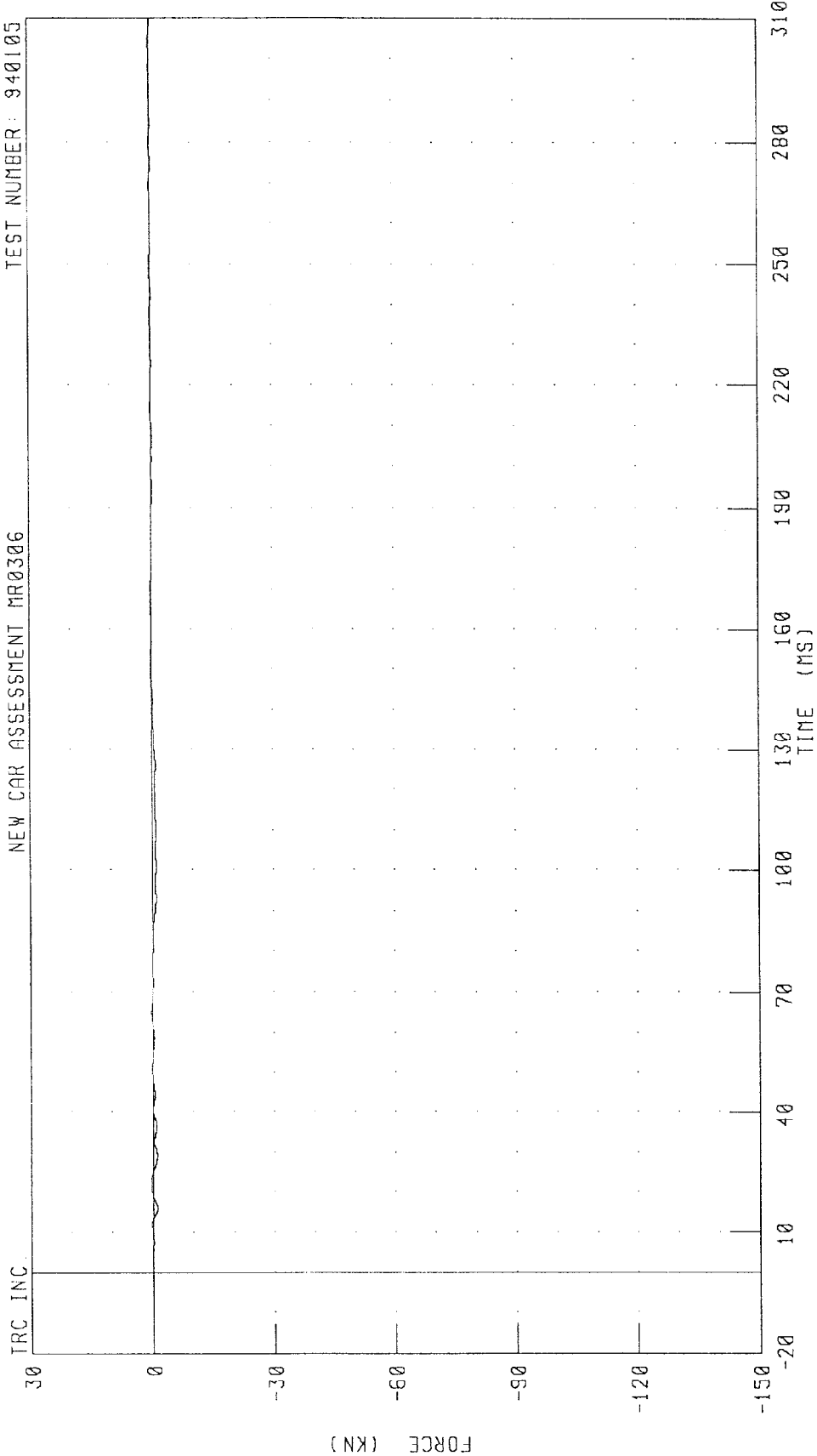


PEAK DATA: 0.99 KN @ 19.92 MS; -11.85 KN @ 92.88 MS

CHANNEL: BAEF FILTER: CH CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A7 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

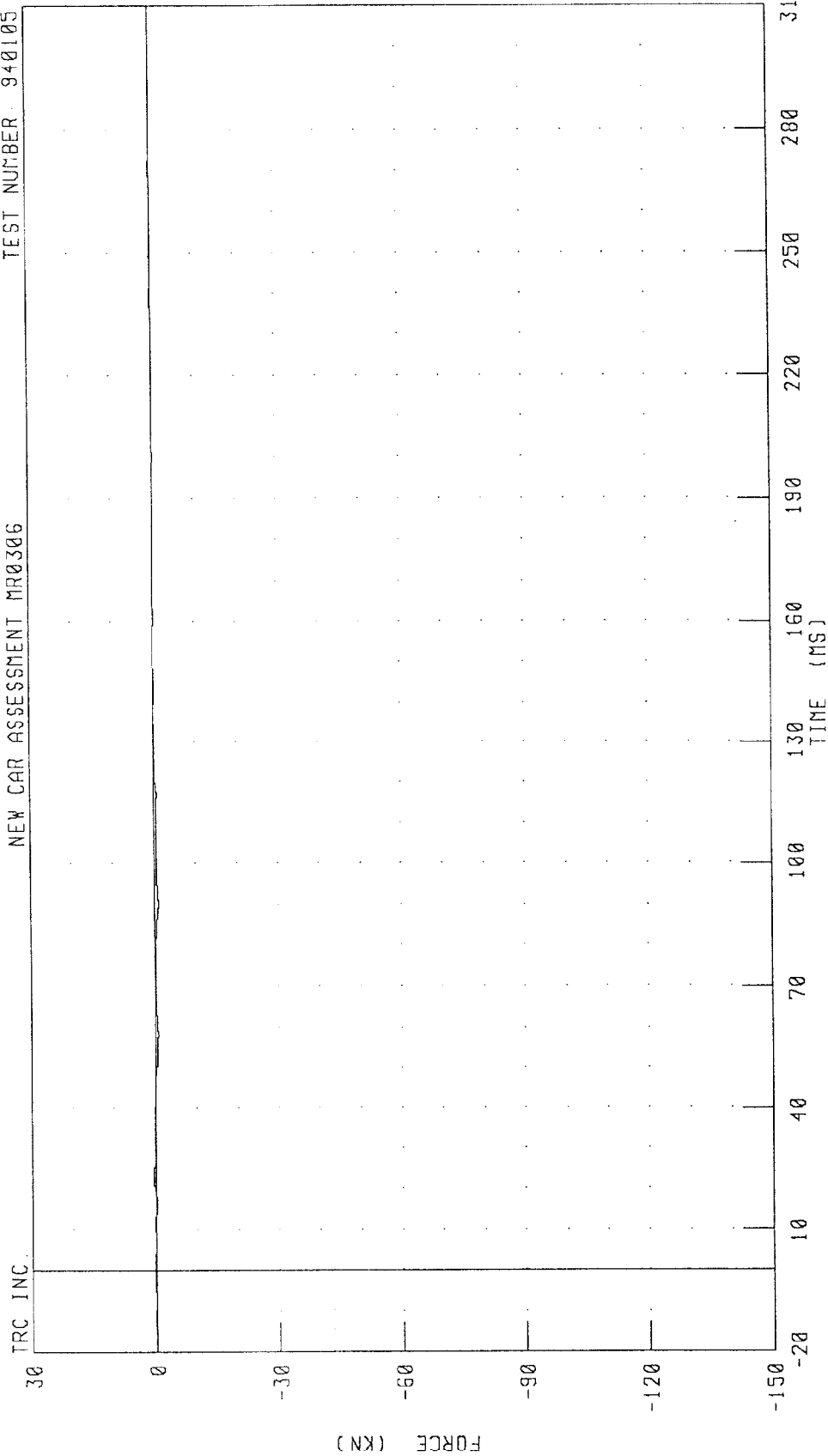


PEAK DATA: 0.48 KN @ 22.48 MS; -1.06 KN @ 15.84 MS

CHANNEL: BA7F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A8 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER 940105



PEAK DATA: 0.58 KN @ 22.72 MS; -0.95 KN @ 90.24 MS

FILTER: CH. CLASS 60

CHANNEL: BA8F

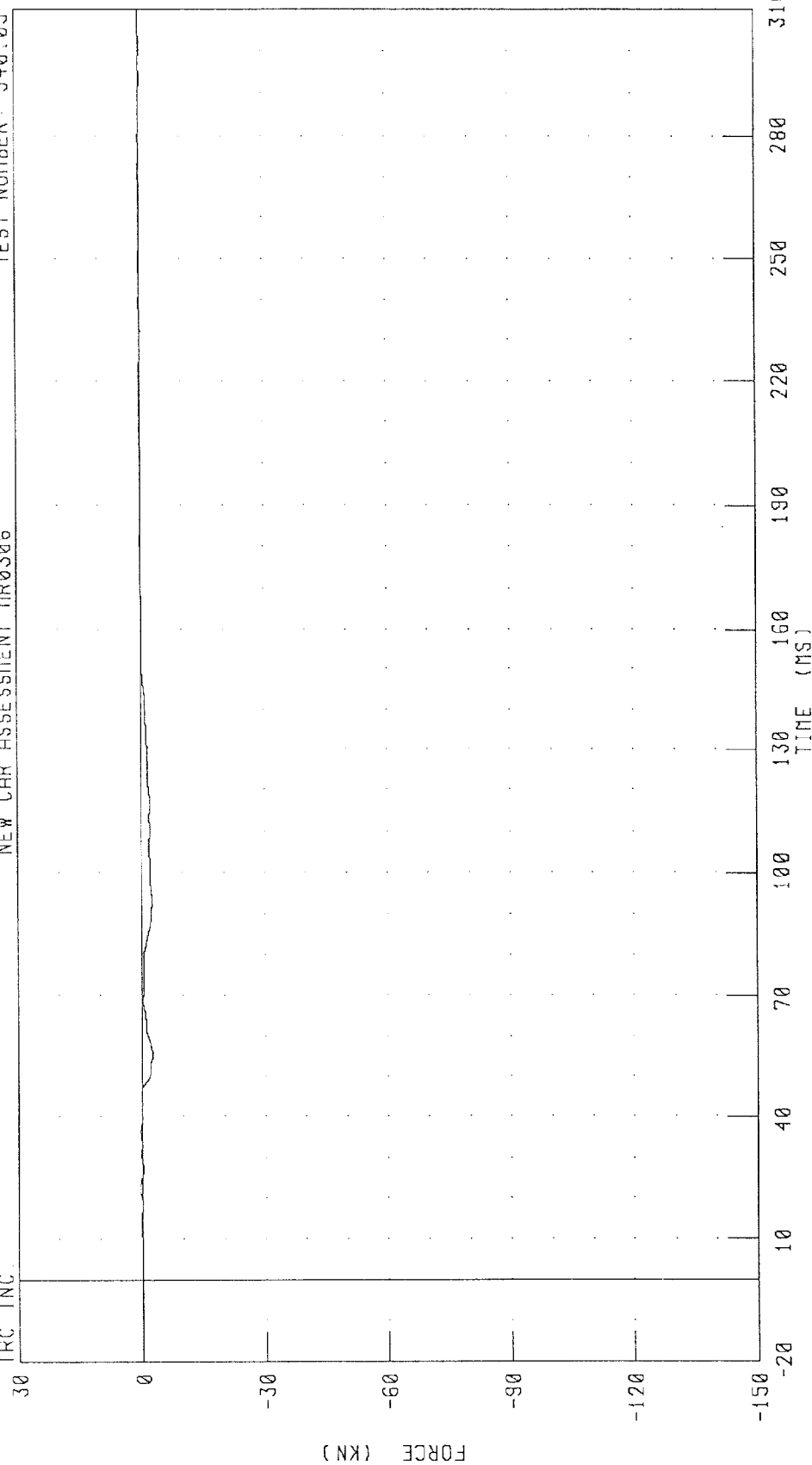
FORCE (KN)

TIME (MS)

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A9 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.



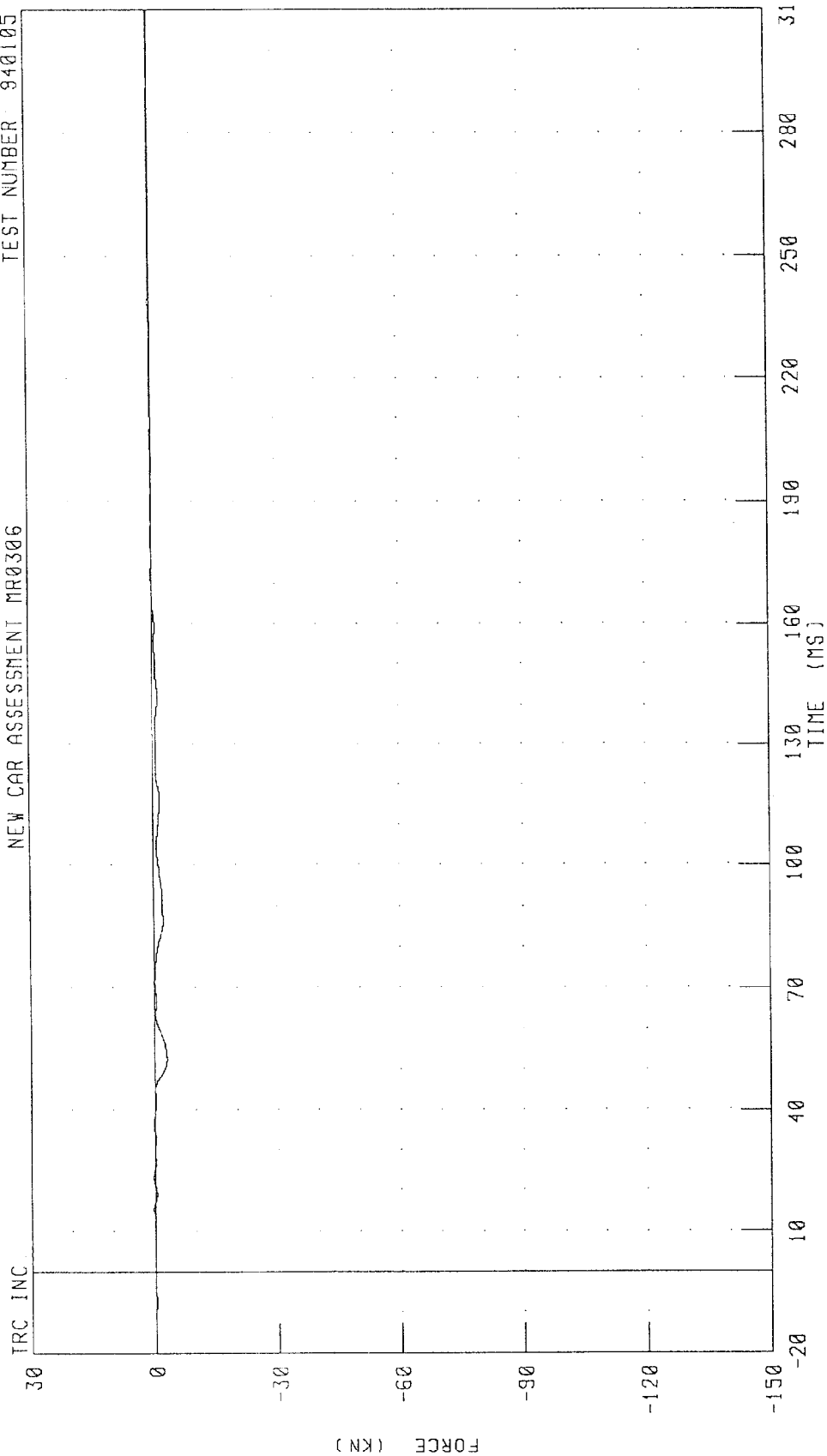
PEAK DATA: 0.57 KN @ 22.24 MS; -2.63 KN @ 55.44 MS

FILTER: CH. CLASS 60

CHANNEL: BASF

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B1 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER 940105



PEAK DATA: 0.37 KN @ 15.28 MS; -2.99 KN @ 52.56 MS

FILTER: CH. CLASS 60

CHANNEL: BB1F

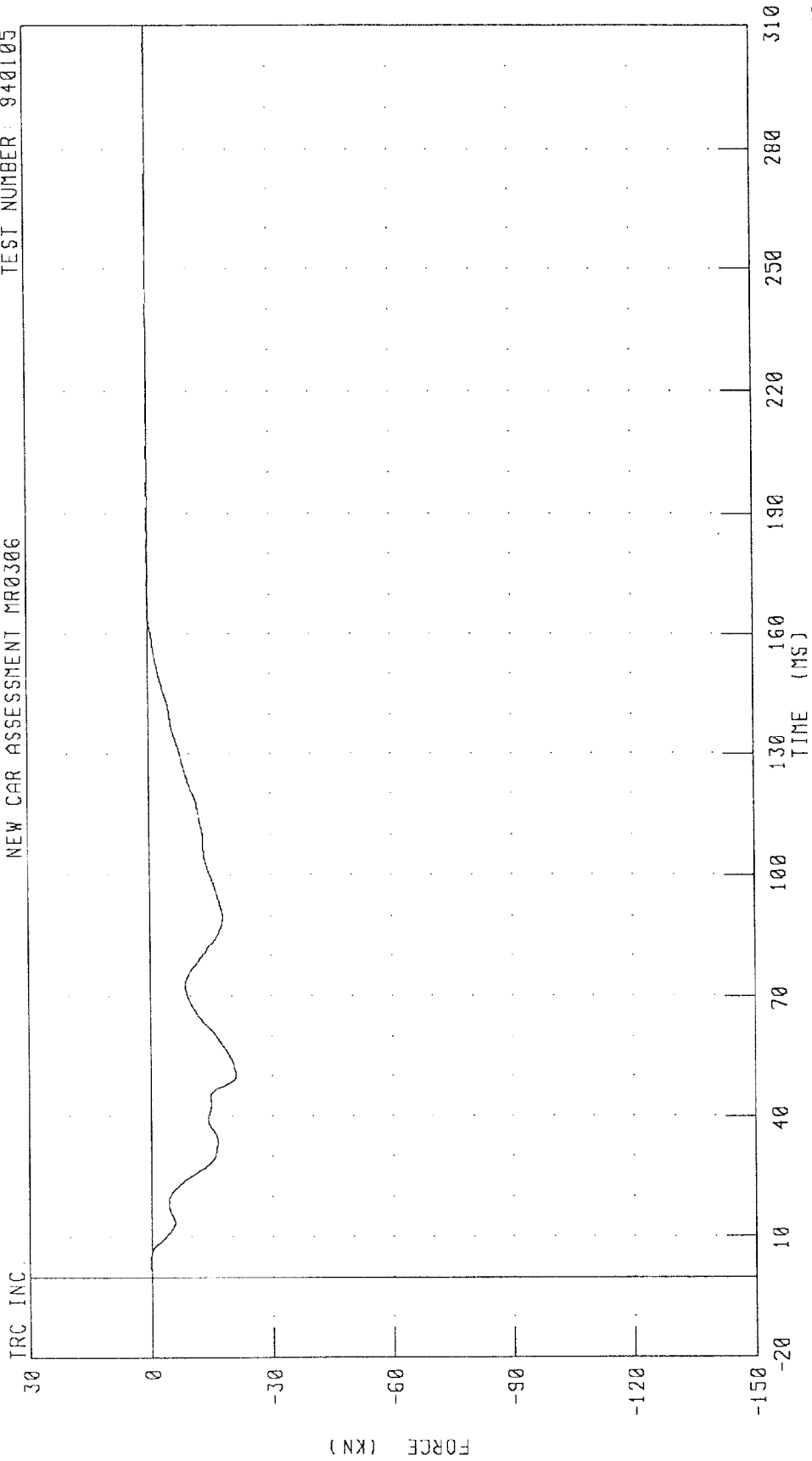
FORCE (KN)

TIME (MS)

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B2 FORCE

NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



PEAK DATA: 0.23 KN @ 238.16 MS; -21.16 KN @ 50.24 MS

FILTER: CH. CLASS 60

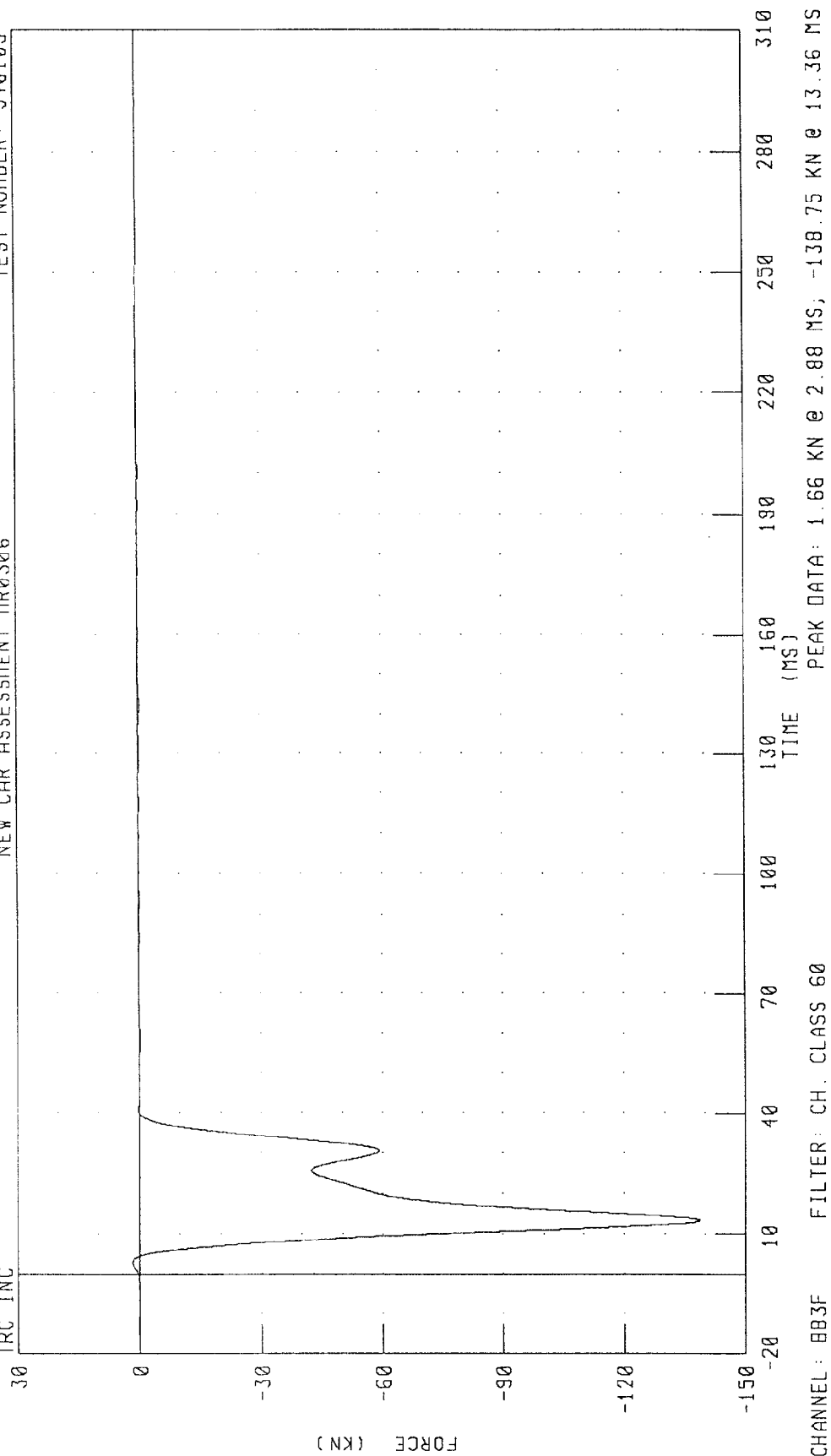
CHANNEL: 882F

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B3 FORCE

TEST NUMBER: 940105

NEW CAR ASSESSMENT MR0306

TRC INC



CHANNEL: BB3F

FILTER: CH. CLASS 60

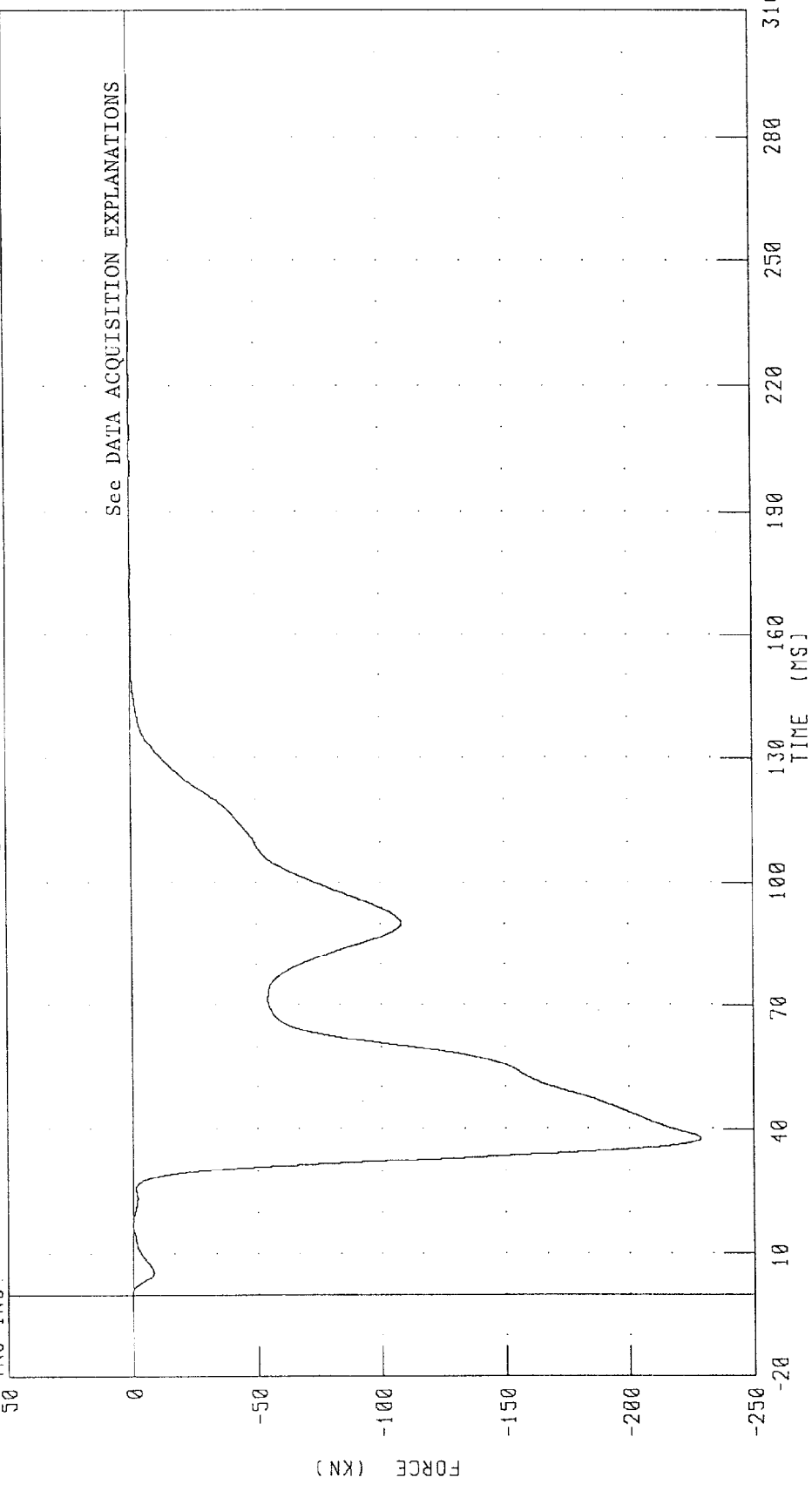
PEAK DATA: 1.66 KN @ 2.88 MS, -138.75 KN @ 13.36 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B4 FORCE

TEST NUMBER: 940105

NEW CAR ASSESSMENT MR0306

TRC INC.



See DATA ACQUISITION EXPLANATIONS

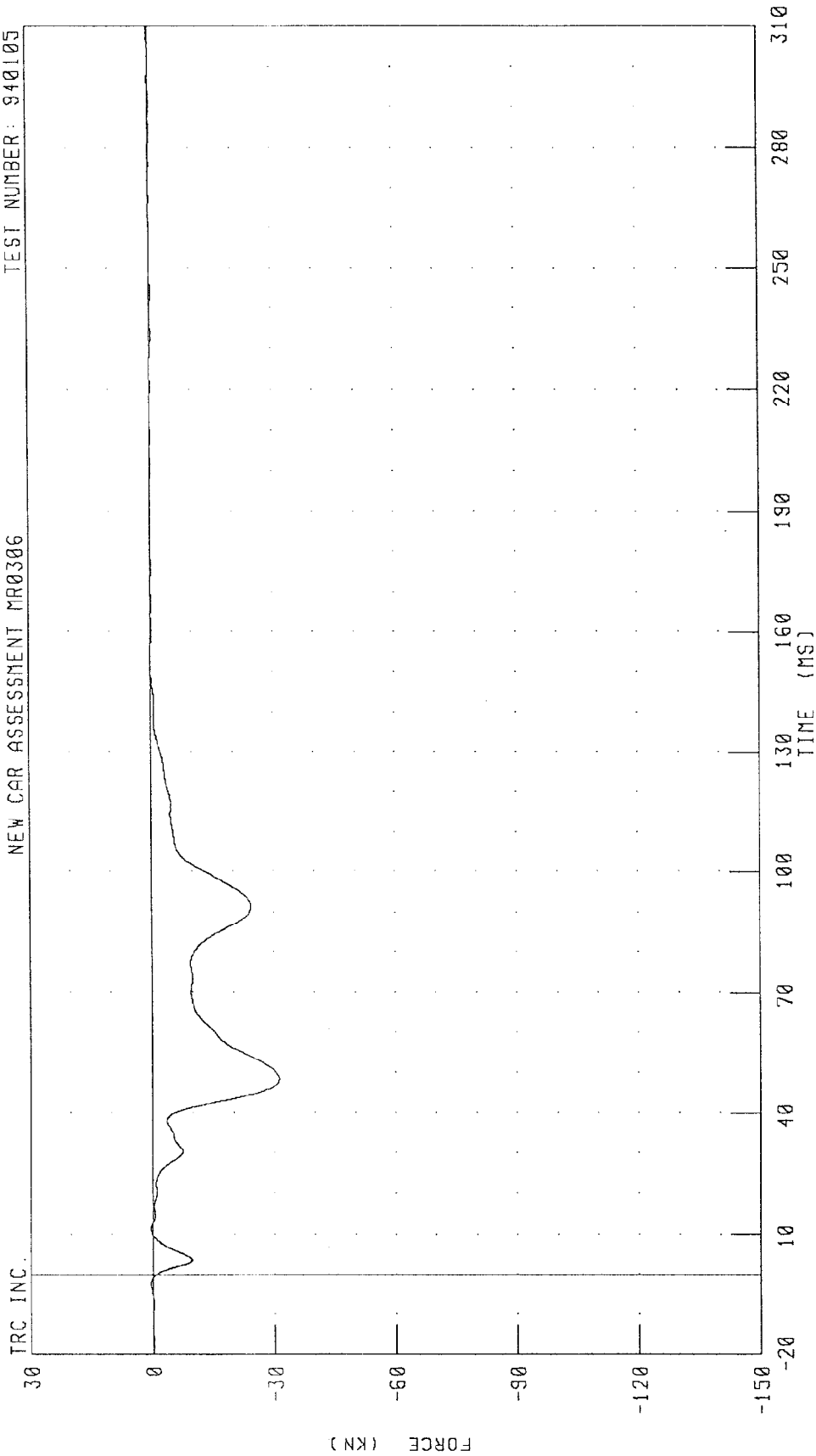
PEAK DATA: 0.45 KN @ -0.72 MS; -228.64 KN @ 37.76 MS

FILTER: CH. CLASS 60

CHANNEL: BB4F

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B5 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

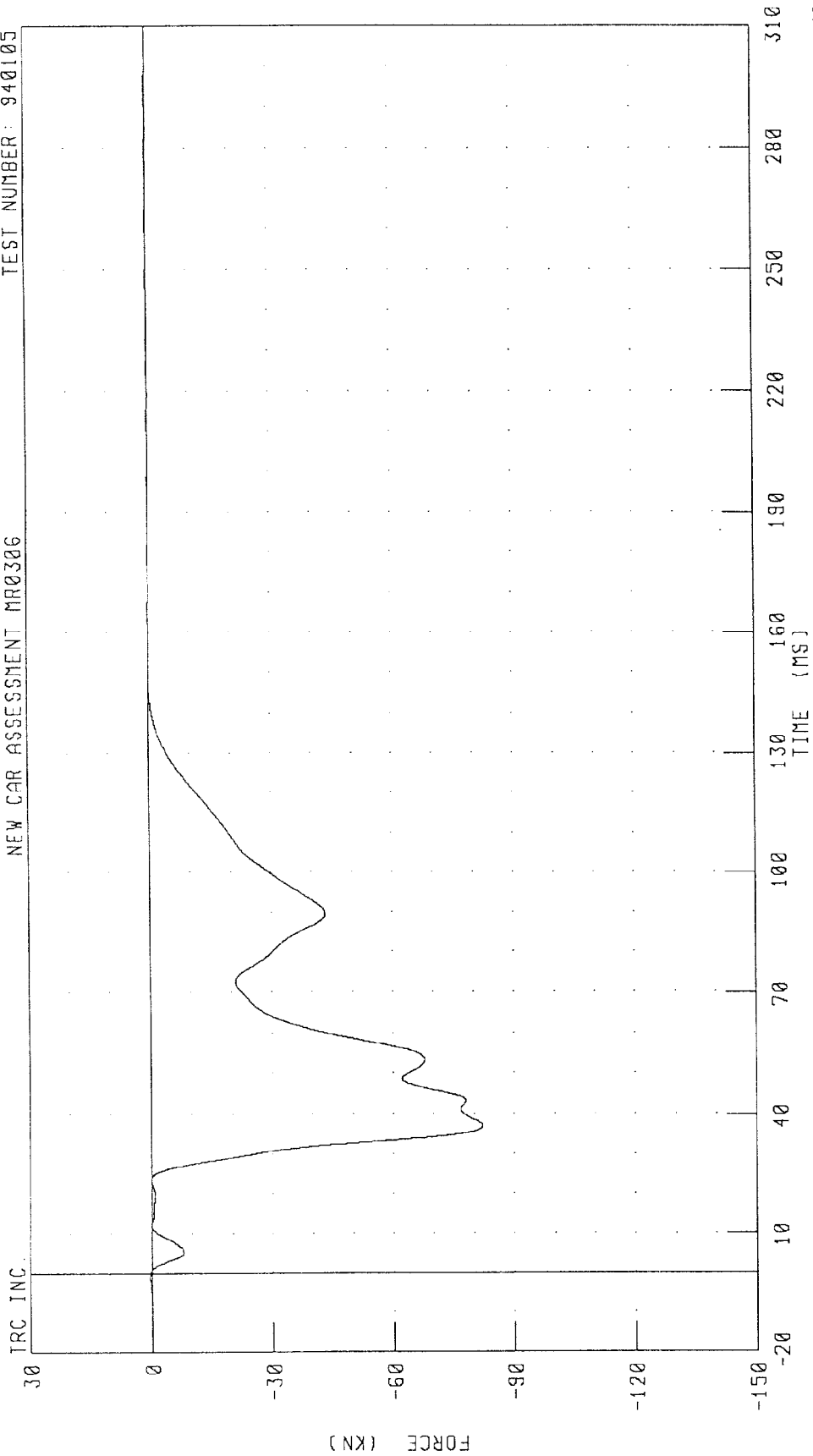


PEAK DATA: 0.47 KN @ -2.24 MS; -31.18 KN @ 48.32 MS

CHANNEL: BB5F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B6 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

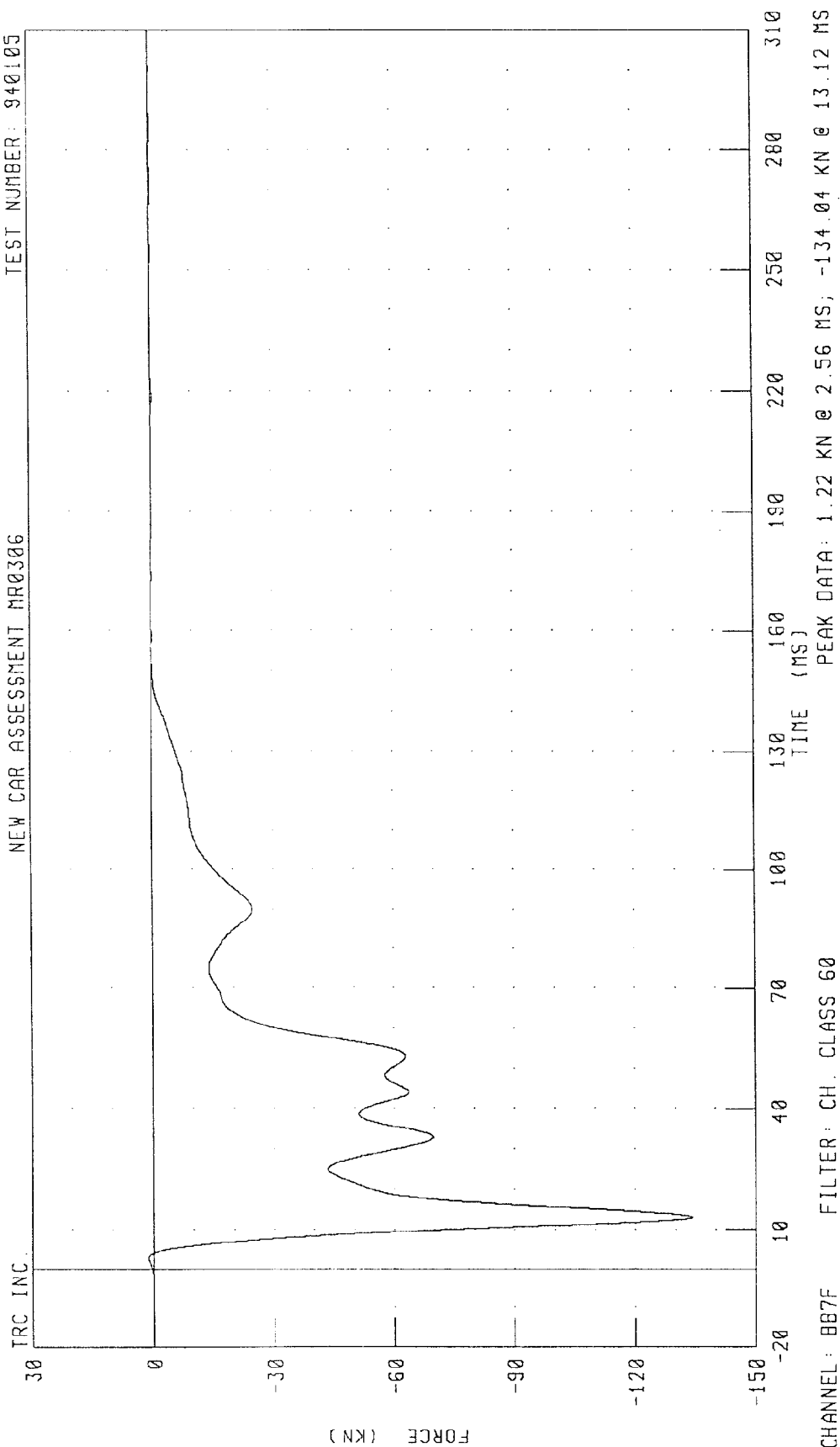


PEAK DATA: 0.37 KN @ -1.12 MS; -82.20 KN @ 37.12 MS

CHANNEL: BB6F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B7 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

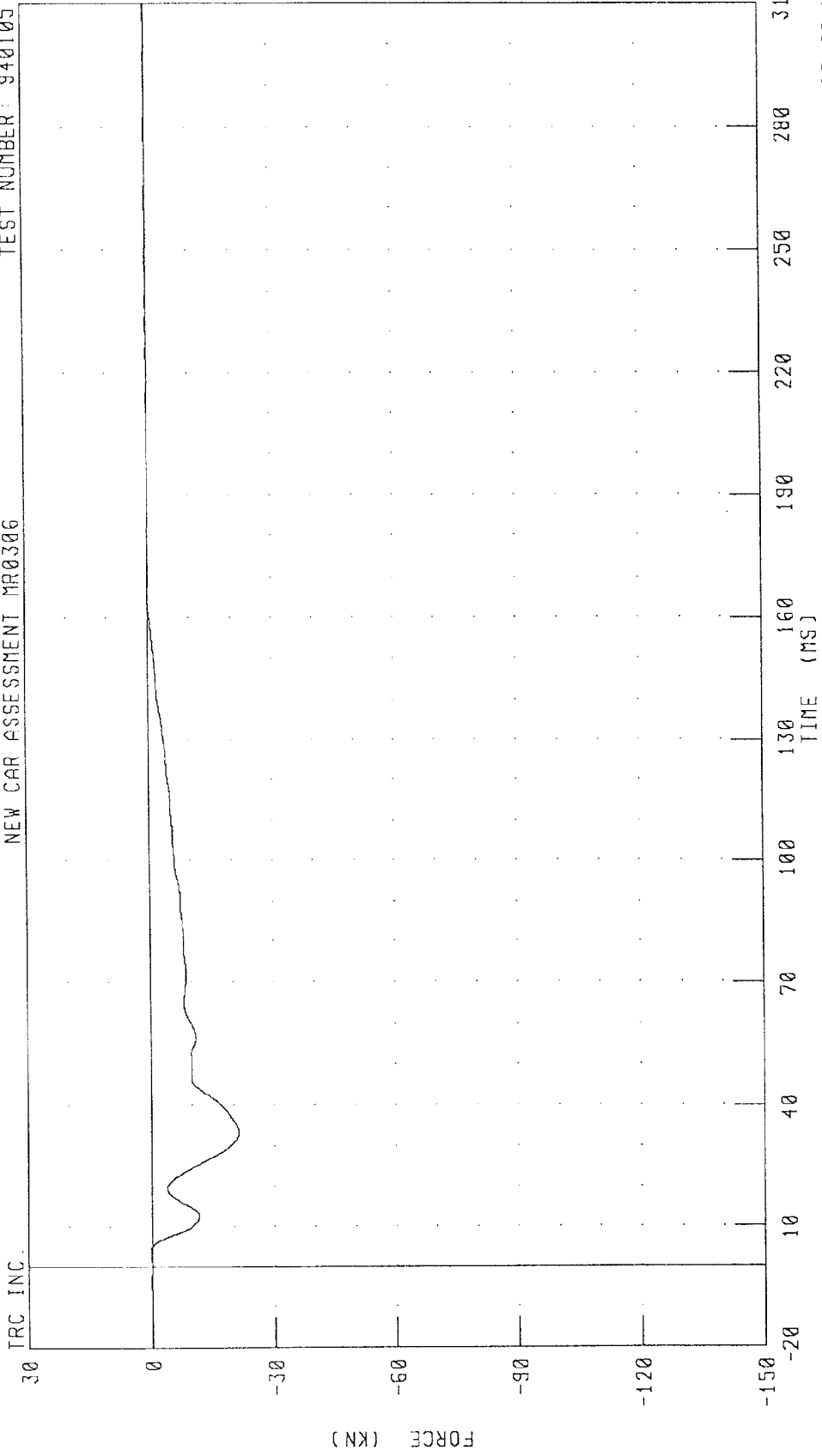


CHANNEL: BB7F FILTER: CH. CLASS 60

PEAK DATA: 1.22 KN @ 2.56 MS; -134.04 KN @ 13.12 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B8 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

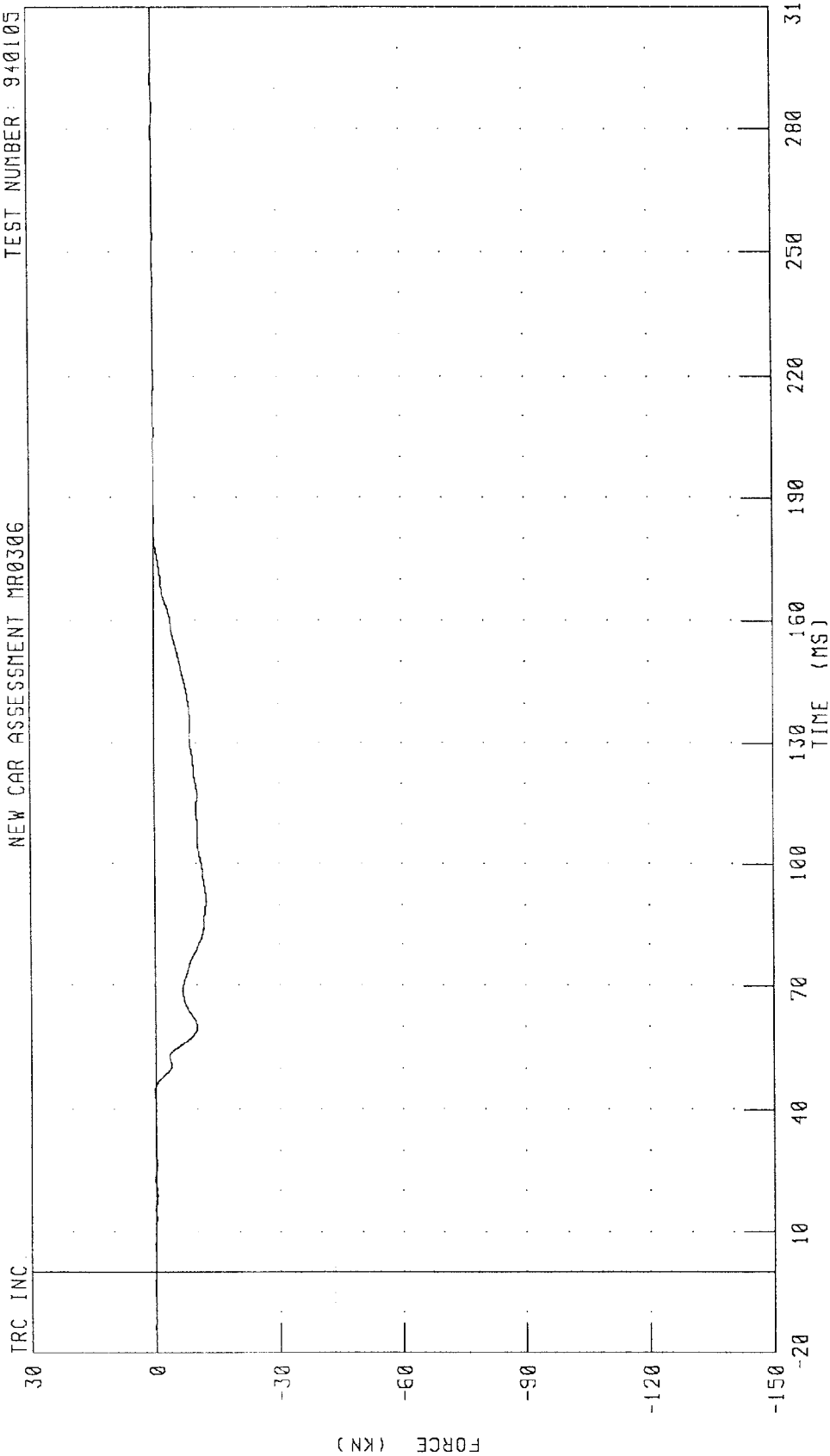


PEAK DATA: 0.29 KN @ 3.28 MS; -21.37 KN @ 33.68 MS

CHANNEL: BB8F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B9 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

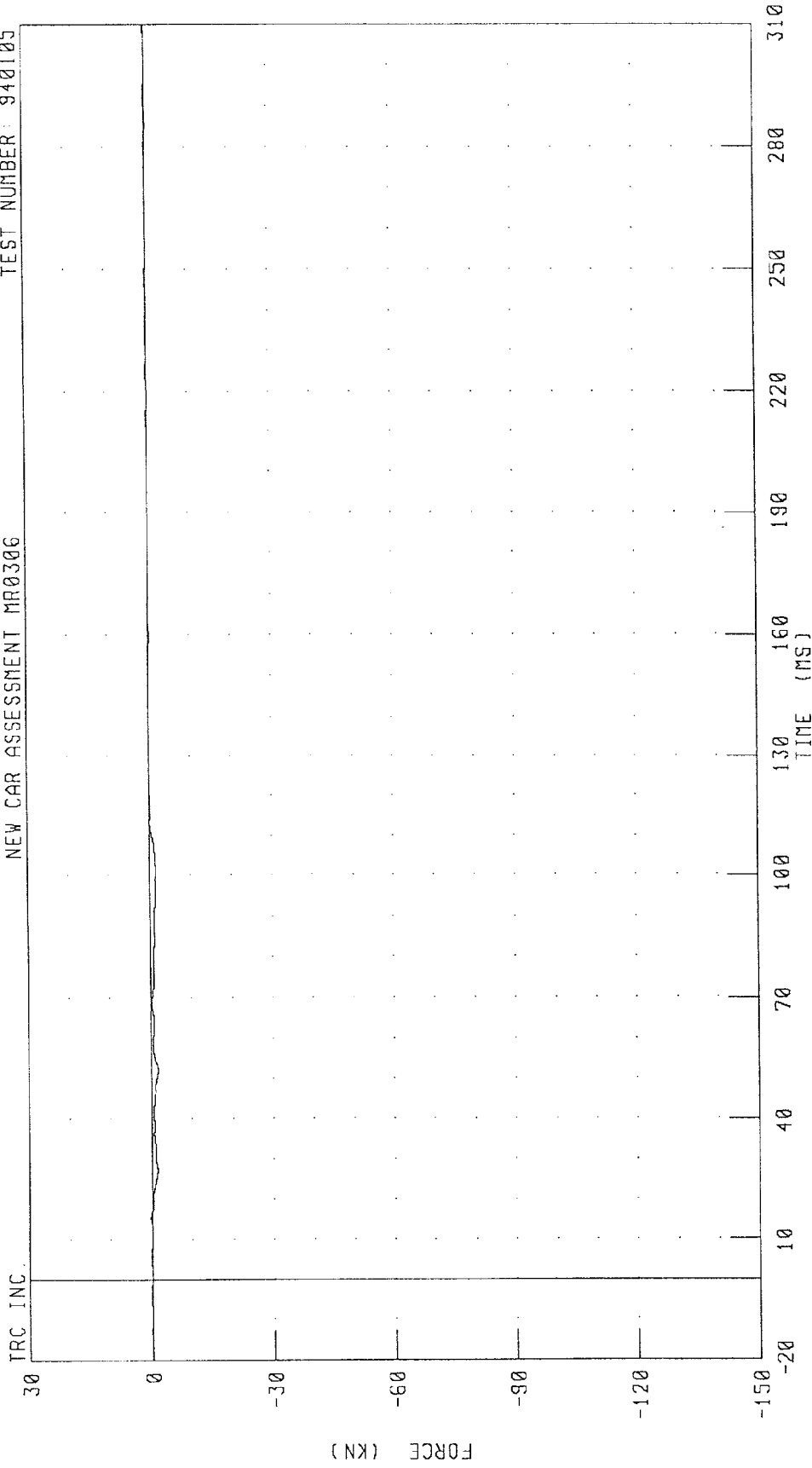


PEAK DATA: 0.21 KN @ 44.24 MS; -12.18 KN @ 91.12 MS

CHANNEL: BB9F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C1 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



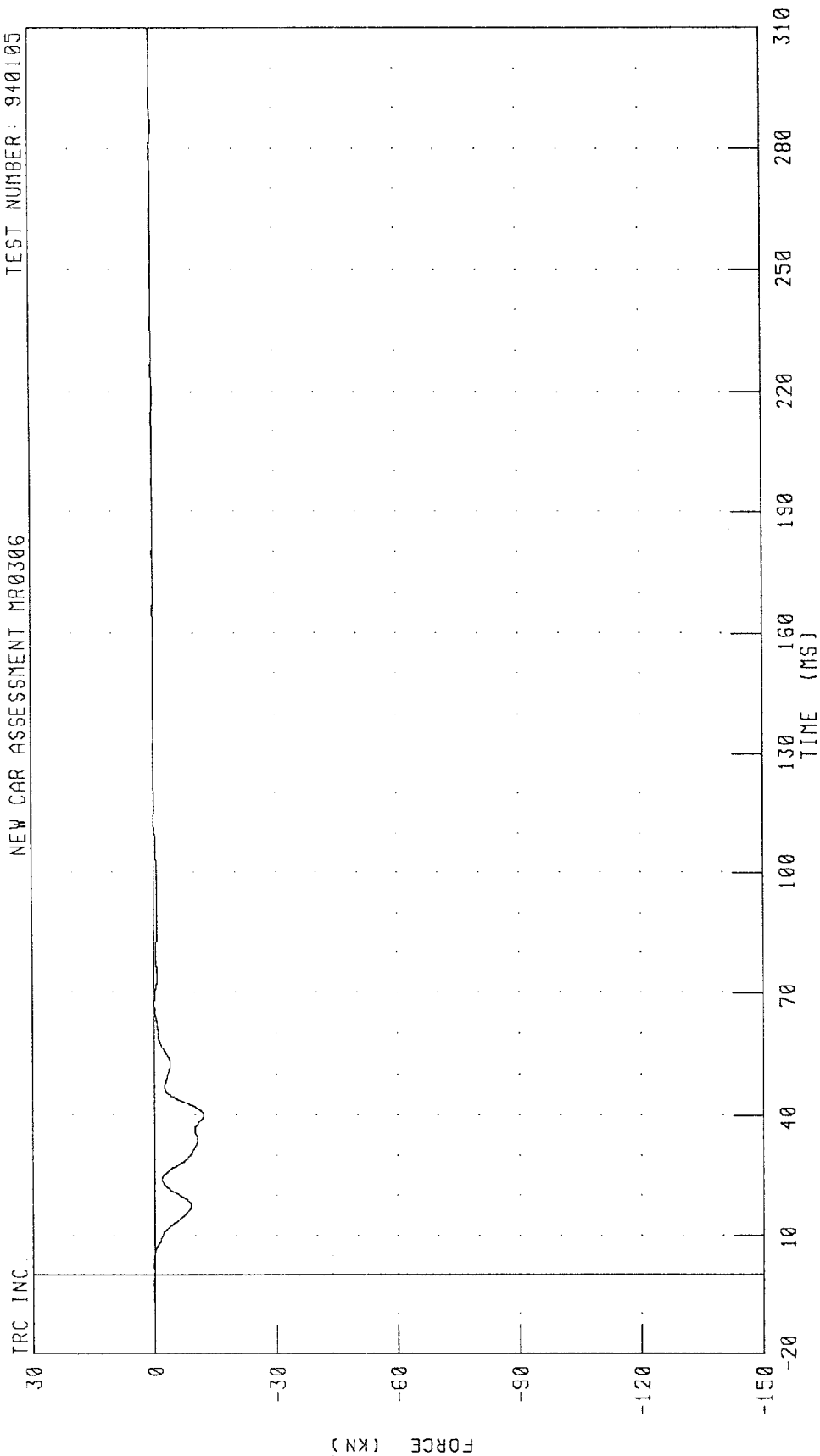
PEAK DATA: 0.35 KN @ 15.44 MS; -1.72 KN @ 52.00 MS

FILTER: CH. CLASS 60

CHANNEL: BC1F

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C2 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

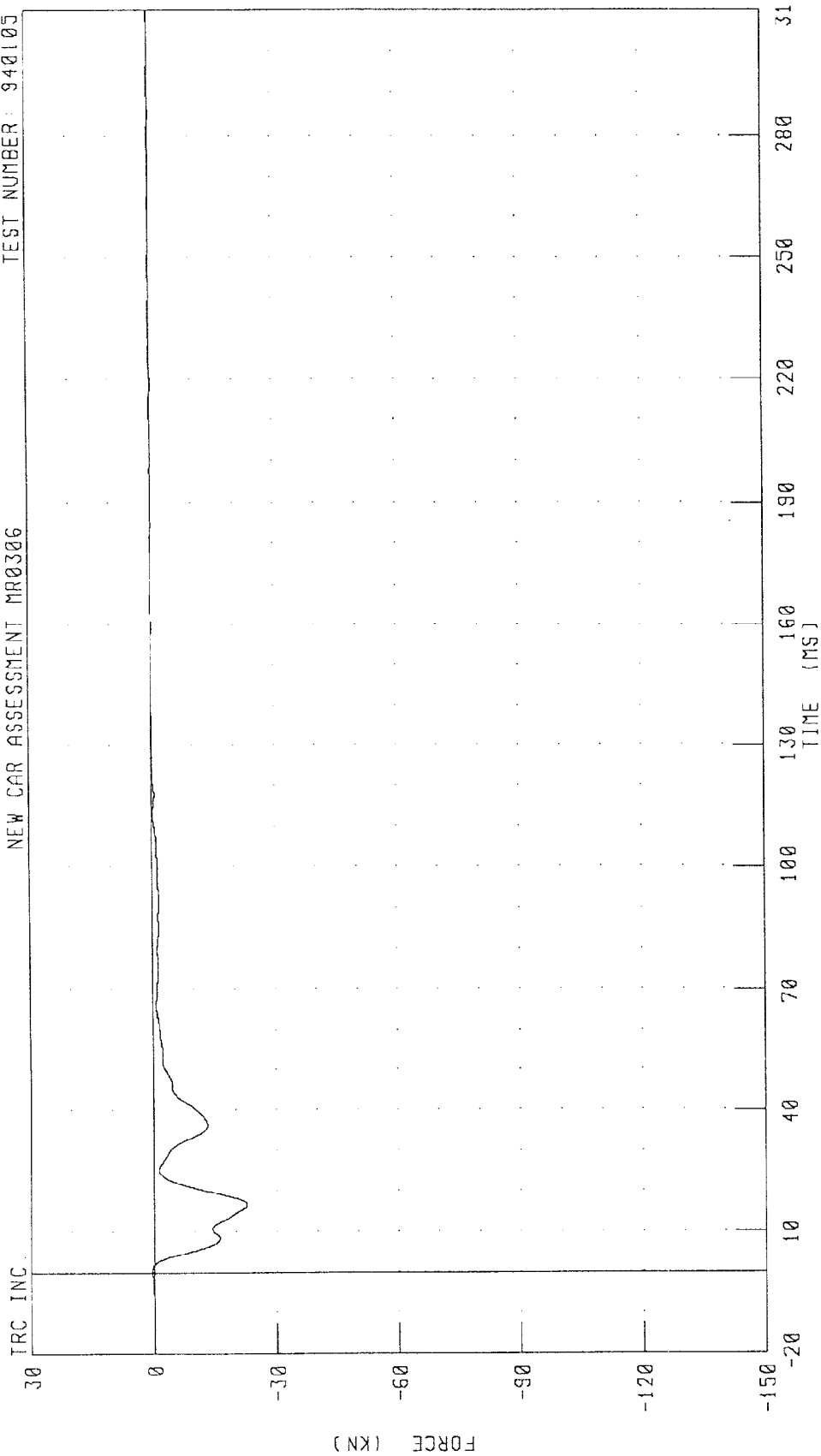


CHANNEL: BC2F FILTER: CH. CLASS 60

PEAK DATA: 0.24 KN @ 248.24 MS; -12.10 KN @ 40.16 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C3 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

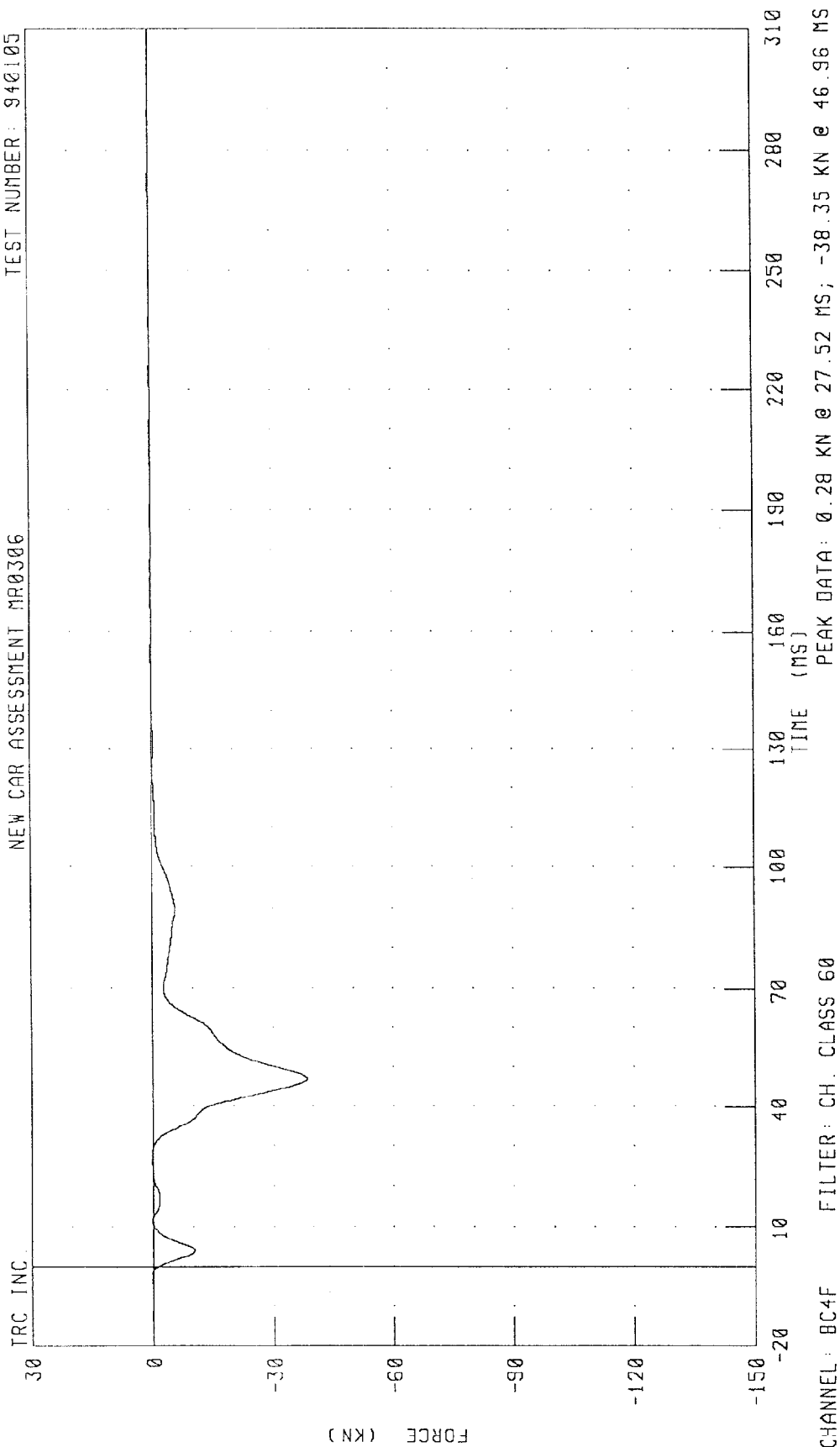


PEAK DATA: 0.44 KN @ 0.16 MS; -22.76 KN @ 16.72 MS

CHANNEL: BC3F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C4 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

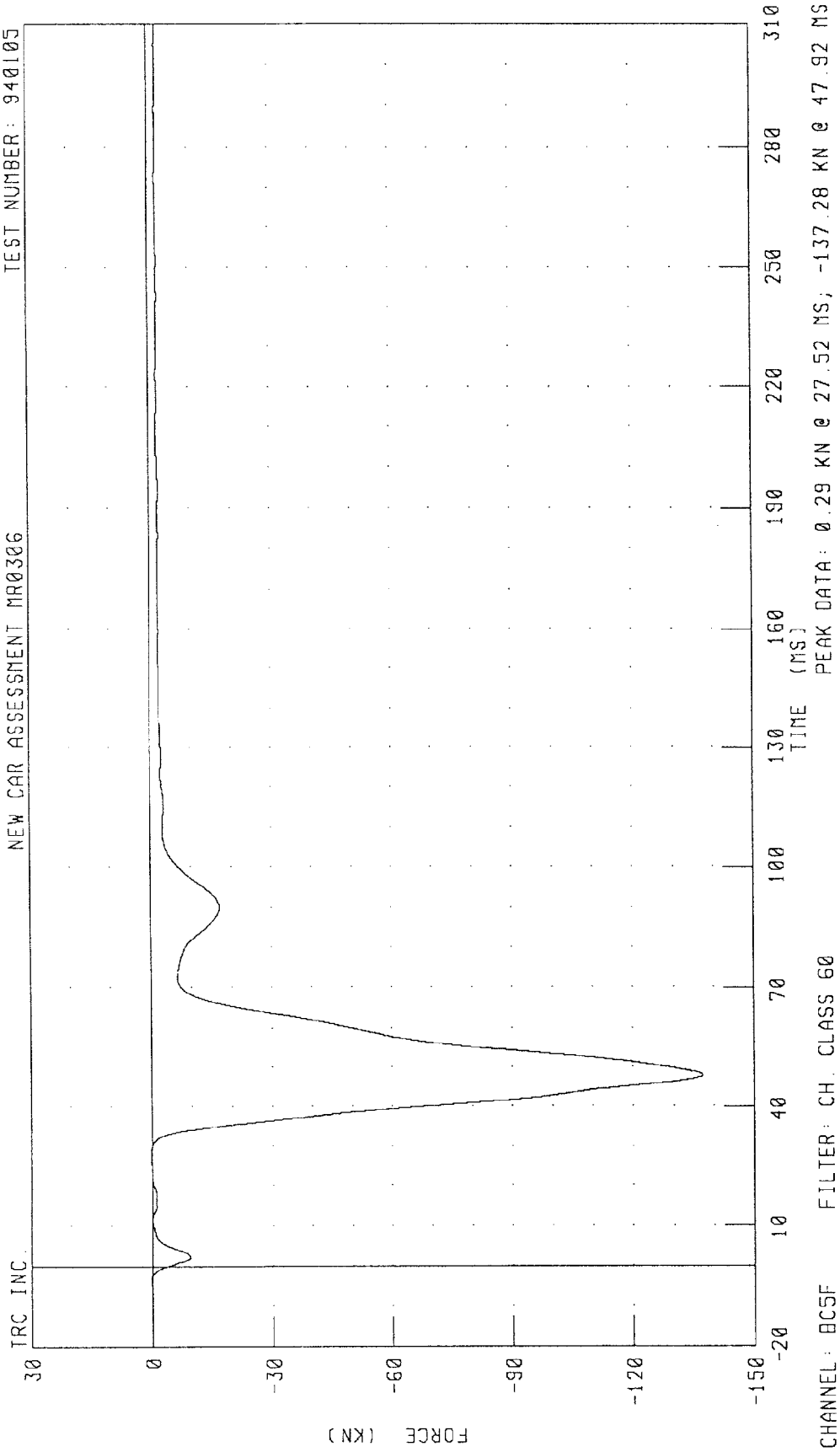


PEAK DATA: 0.28 KN @ 27.52 MS; -38.35 KN @ 46.96 MS

CHANNEL: BC4F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C5 FORCE
 NEW CAR ASSESSMENT MR0306

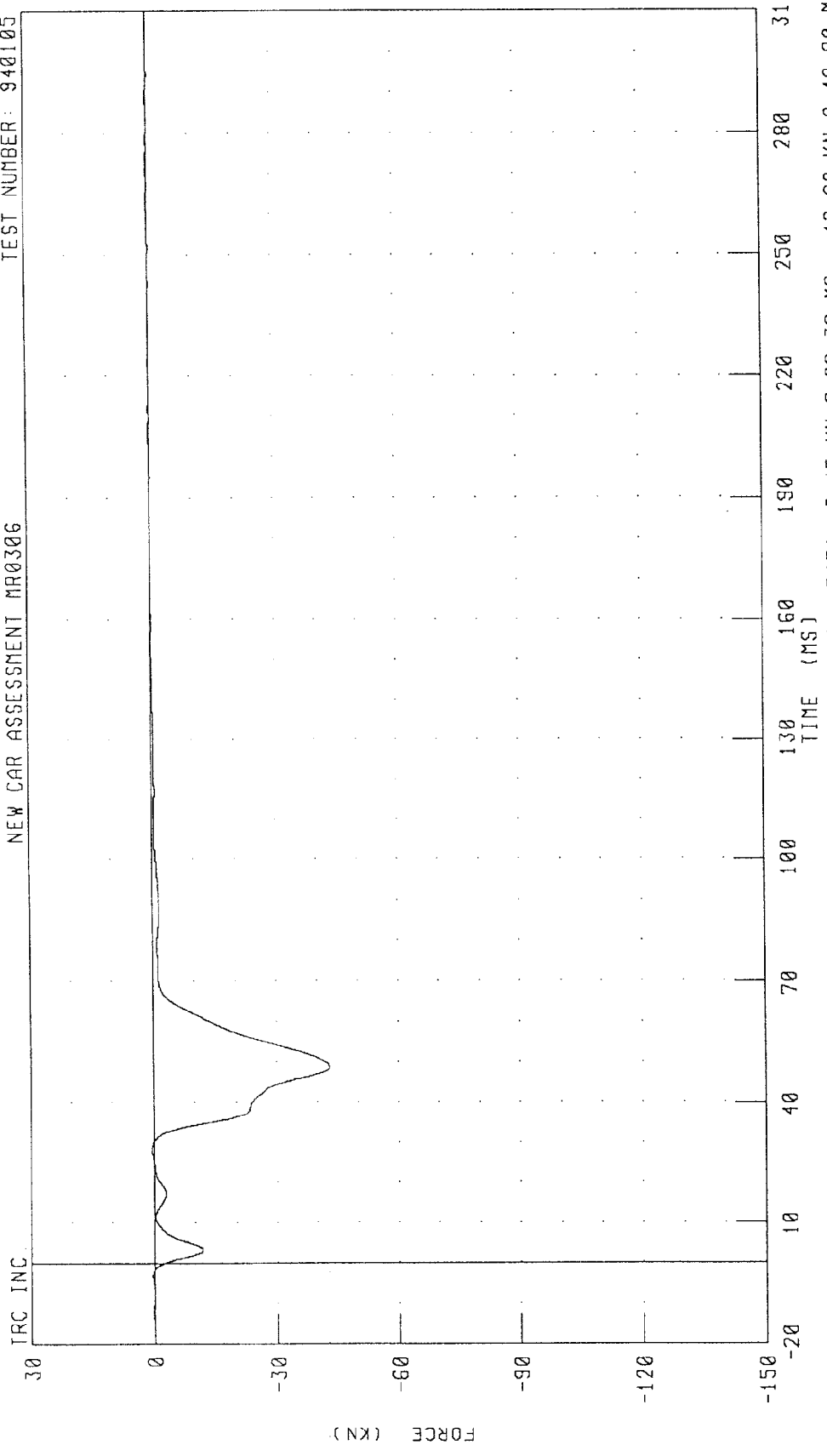
TEST NUMBER: 940105



CHANNEL: BCSF FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C6 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

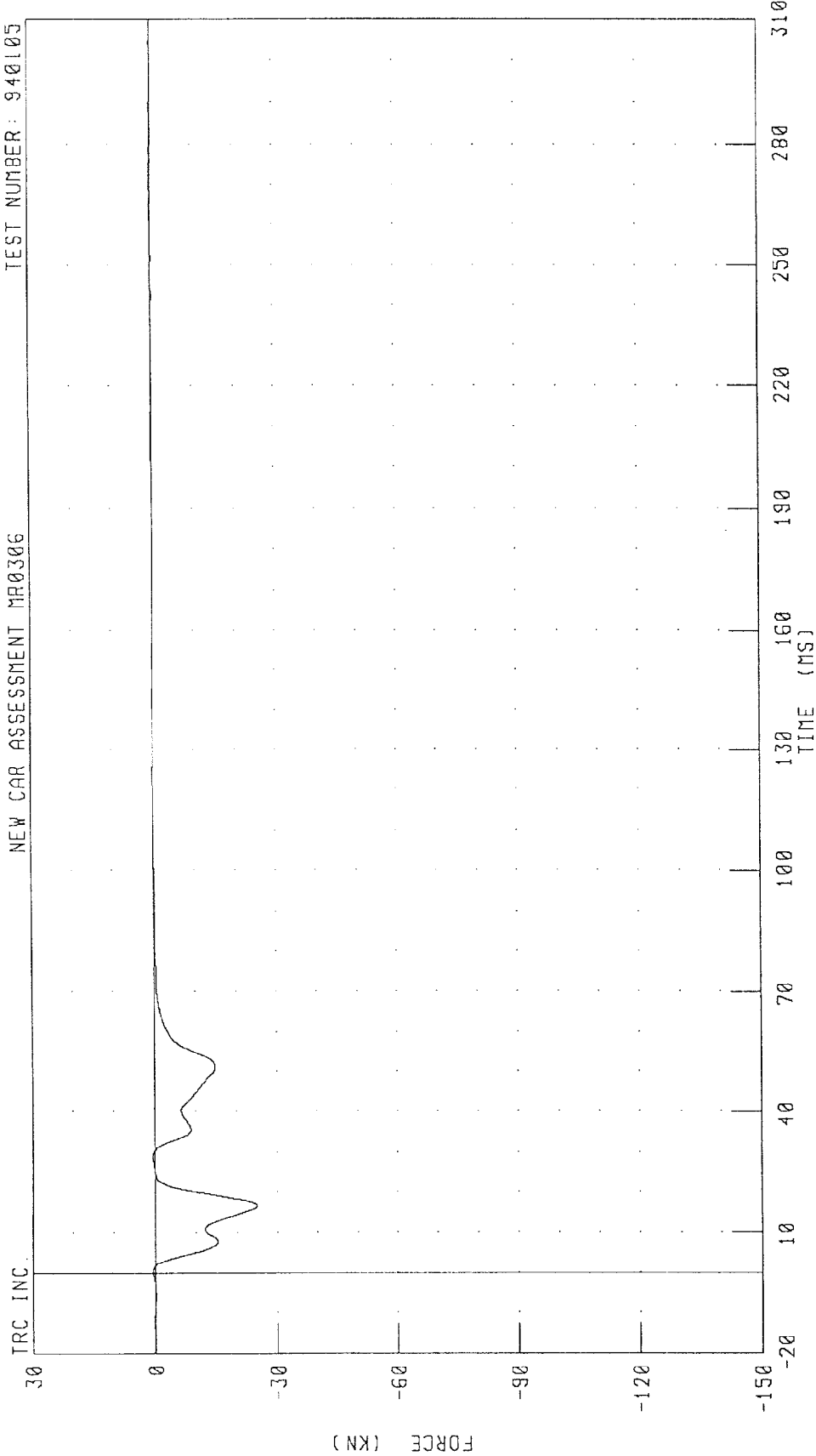


PEAK DATA: 0.45 KN @ 28.32 MS; -42.98 KN @ 48.80 MS

CHANNEL: BC6F FILTER: CH, CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C7 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

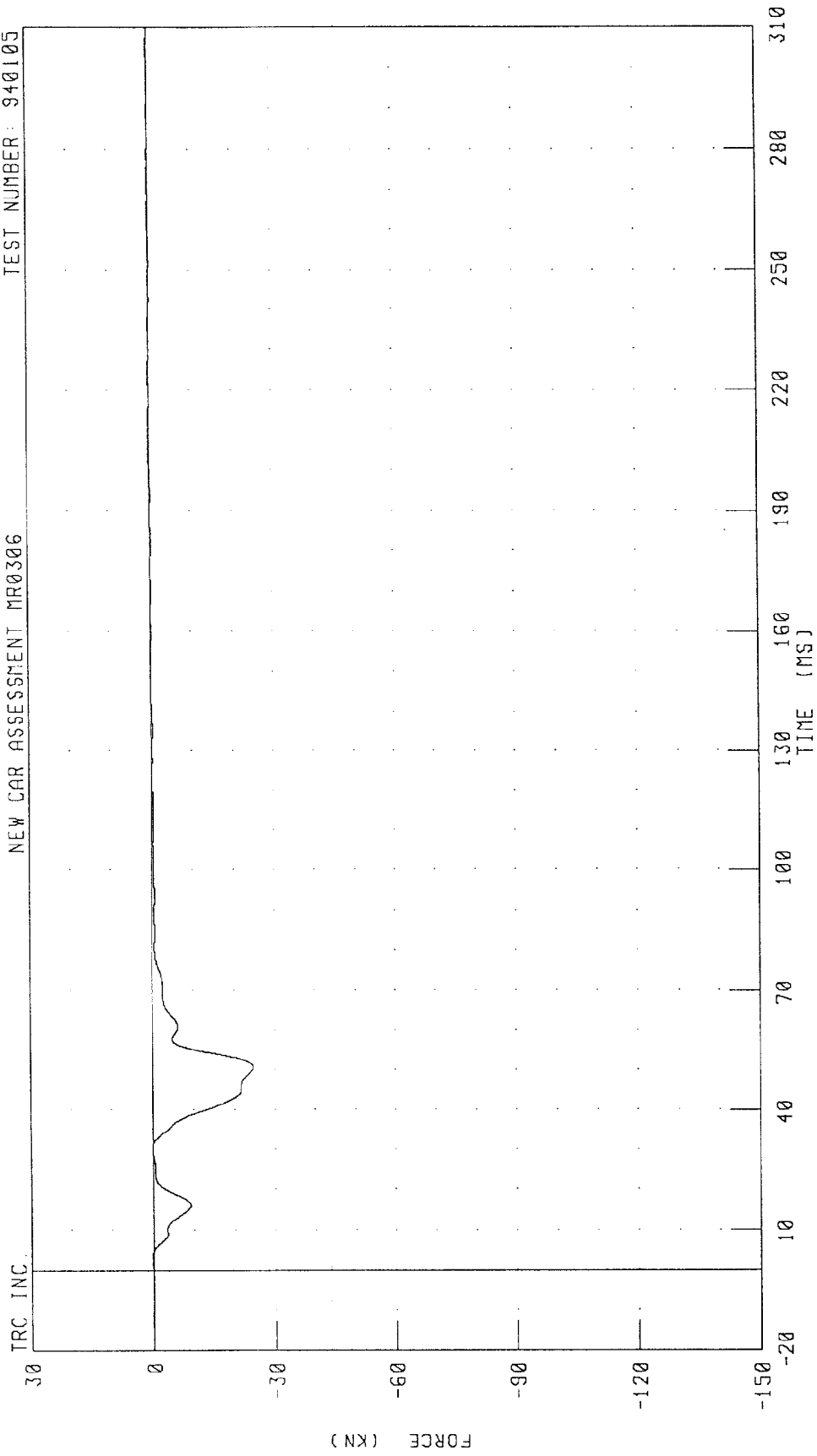


PEAK DATA: 0.49 KN @ 0.32 MS; -25.04 KN @ 16.72 MS

CHANNEL: BC7F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C8 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



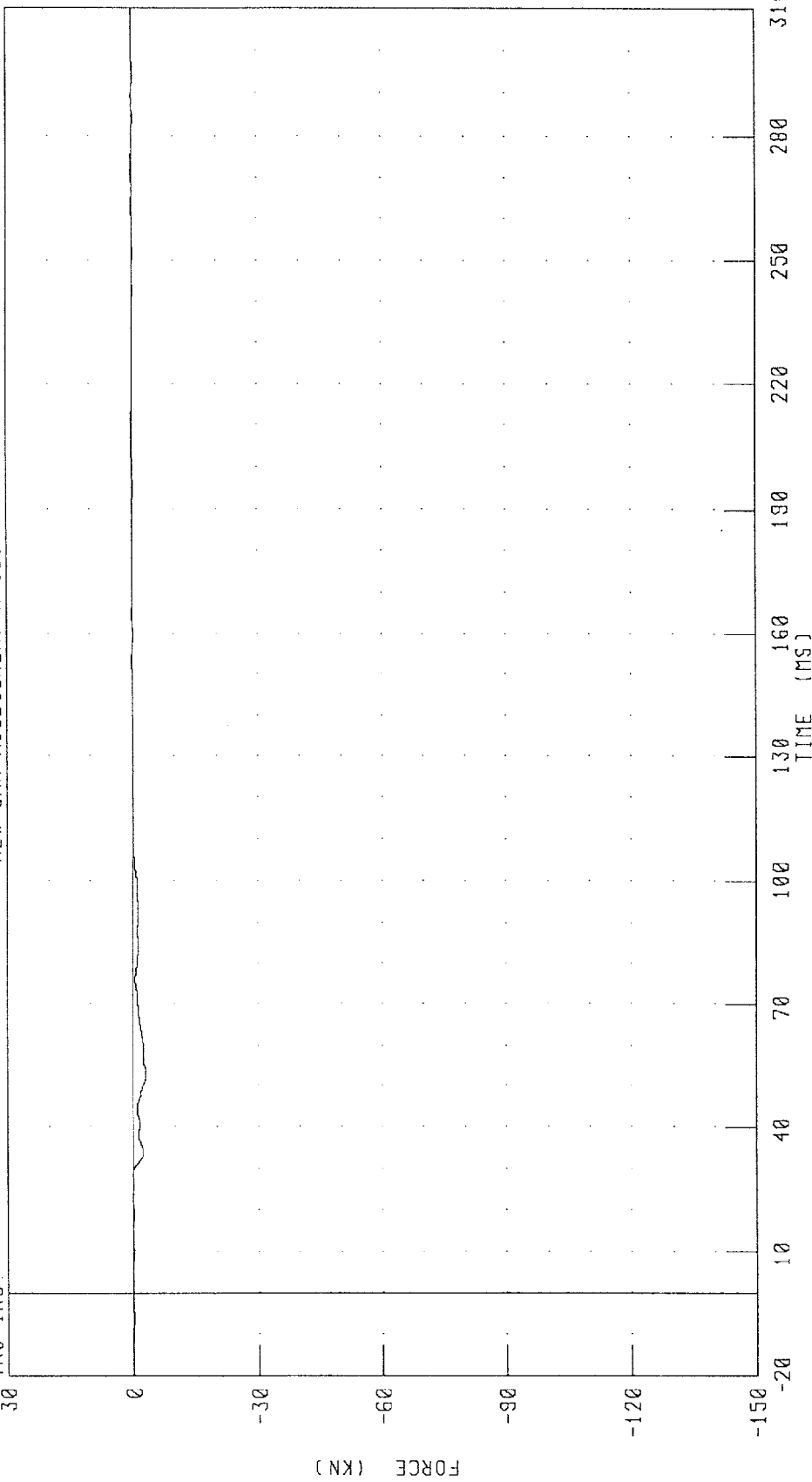
PEAK DATA: 0.27 KN @ 211.92 MS; -24.73 KN @ 50.80 MS

CHANNEL: BC8F FILTER: CH CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C9 FORCE
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.

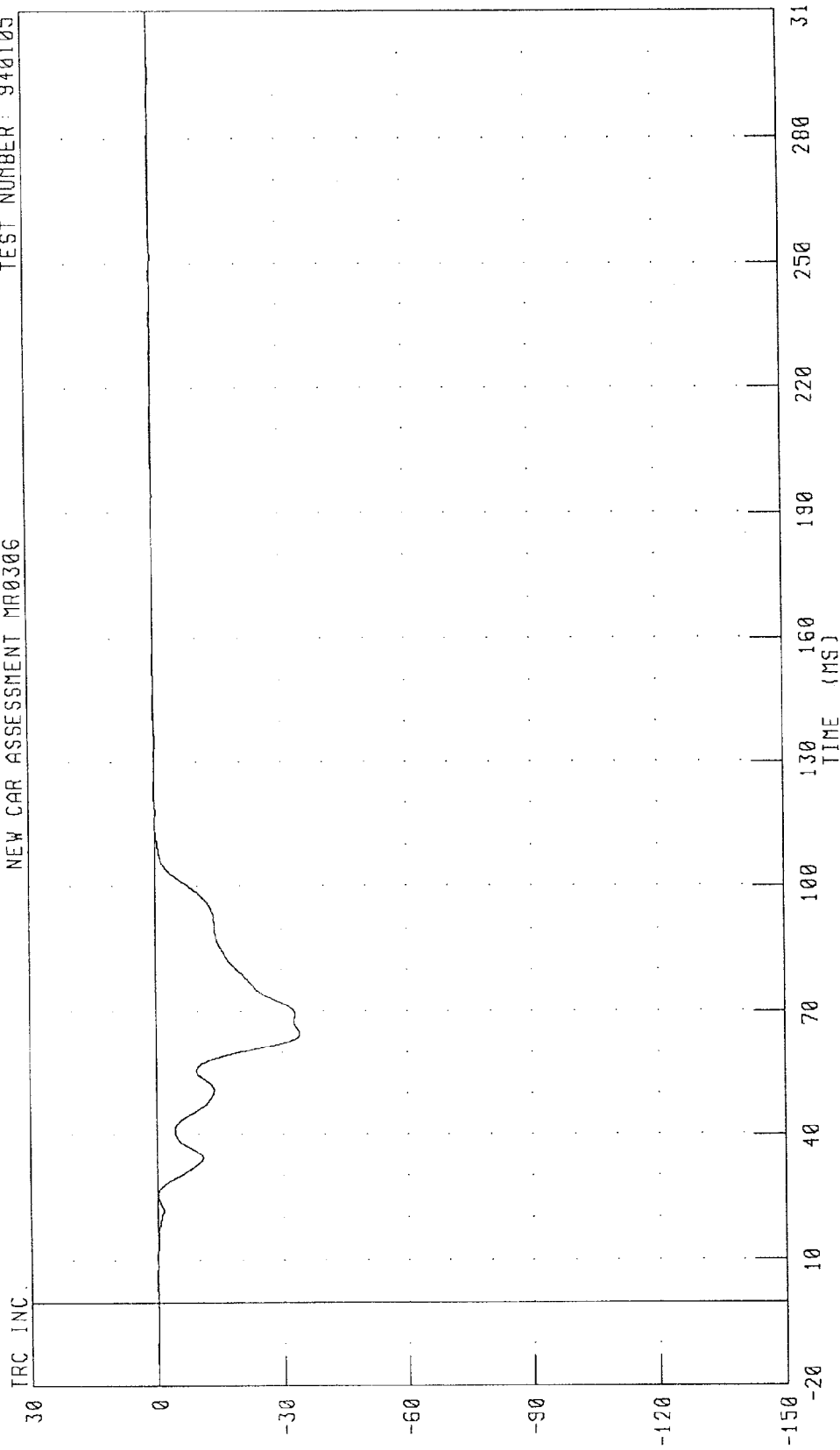


CHANNEL: BC9F FILTER: CH. CLASS 60

PEAK DATA: 0.22 KN @ 5.52 MS; -3.20 KN @ 52.80 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 01 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



PEAK DATA: 0.30 KN @ 263.60 MS; -34.14 KN @ 64.72 MS

FILTER: CH. CLASS 60

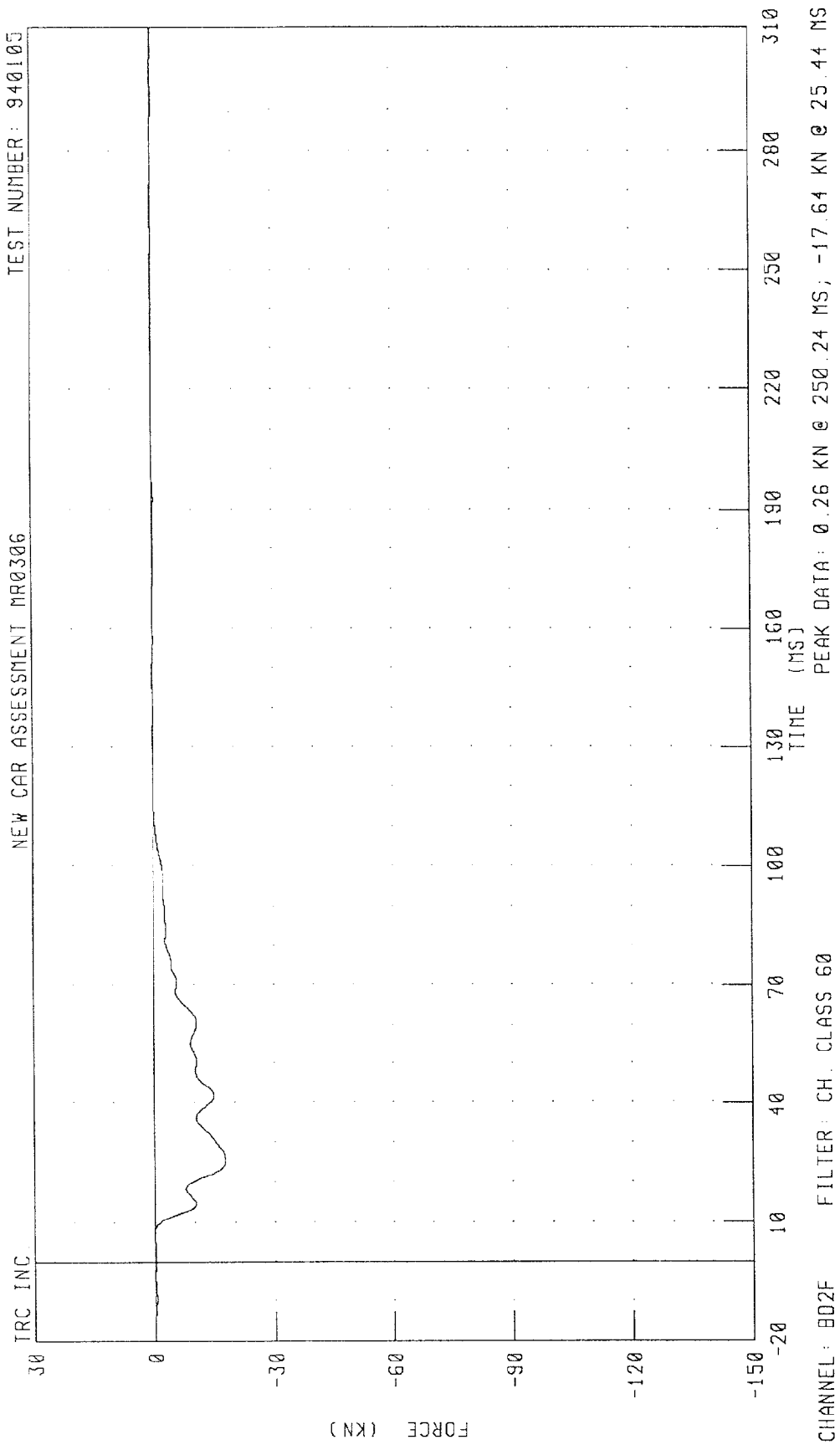
CHANNEL: 801F

FORCE (KN)

TIME (MS)

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D2 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

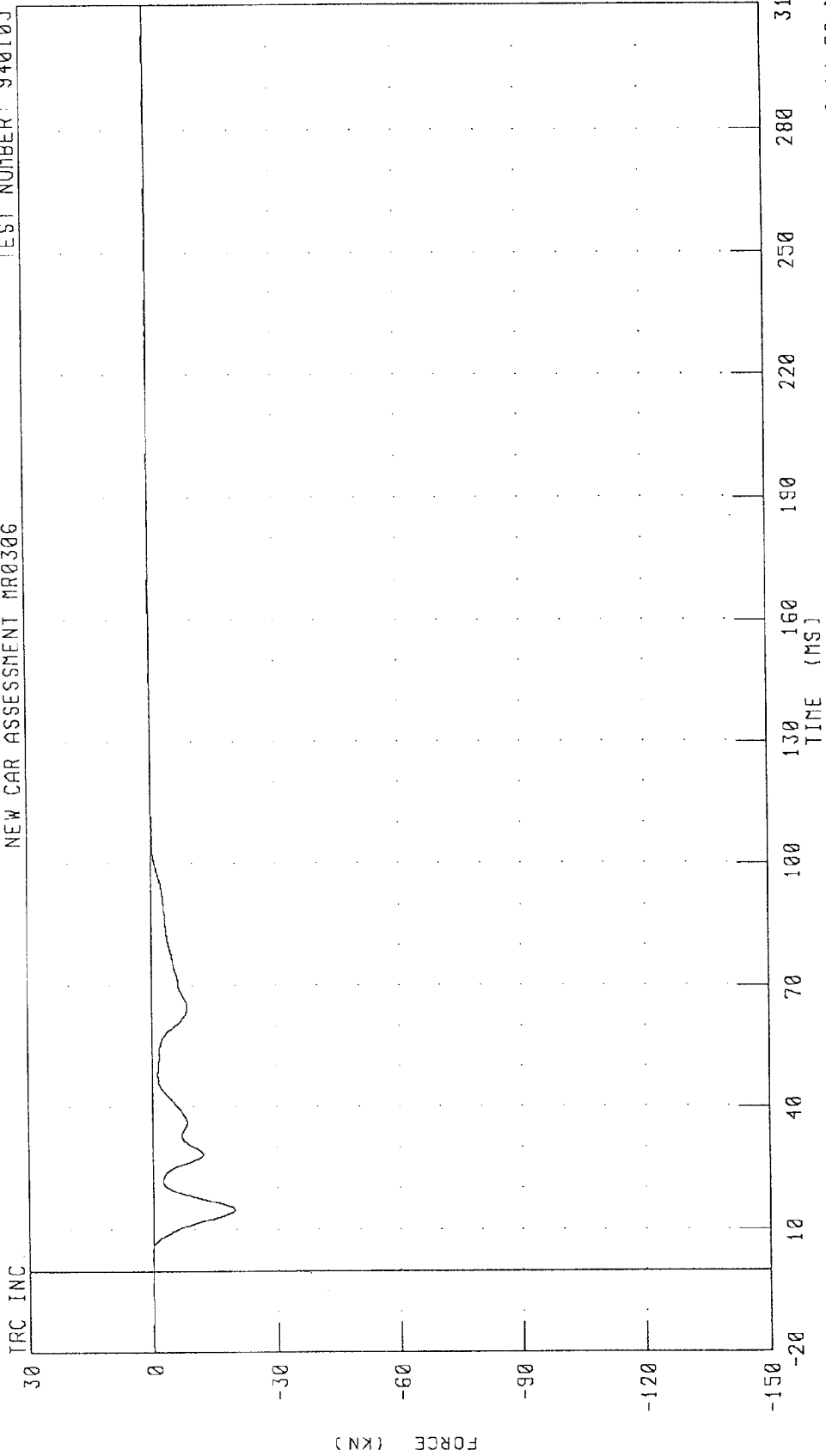


CHANNEL: B02F FILTER: CH. CLASS 60

PEAK DATA: 0.26 KN @ 250.24 MS; -17.64 KN @ 25.44 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D3 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

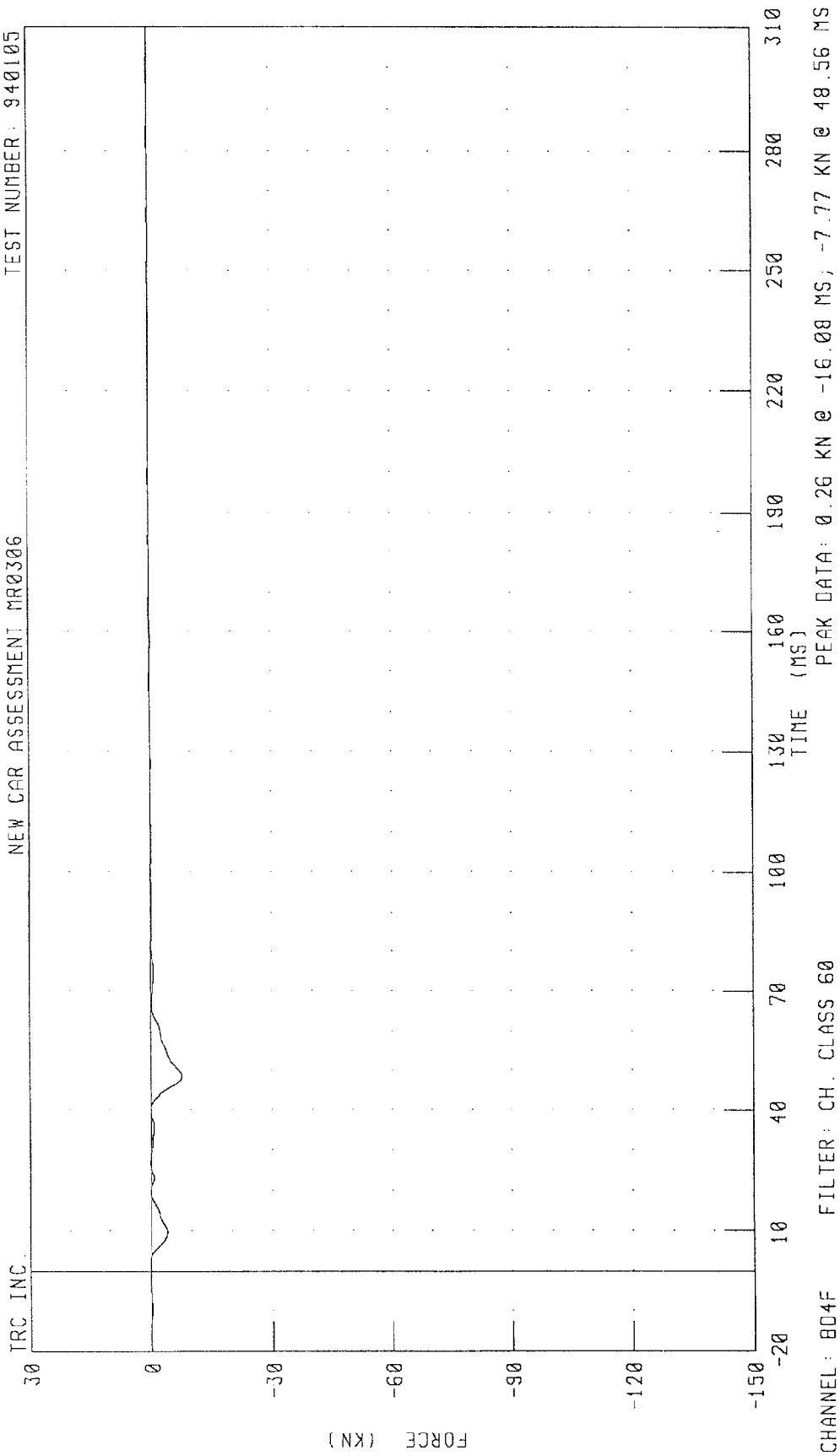


CHANNEL: 803F FILTER: CH. CLASS 60

PEAK DATA: 0.24 KN @ 15.92 MS; -19.58 KN @ 14.80 MS

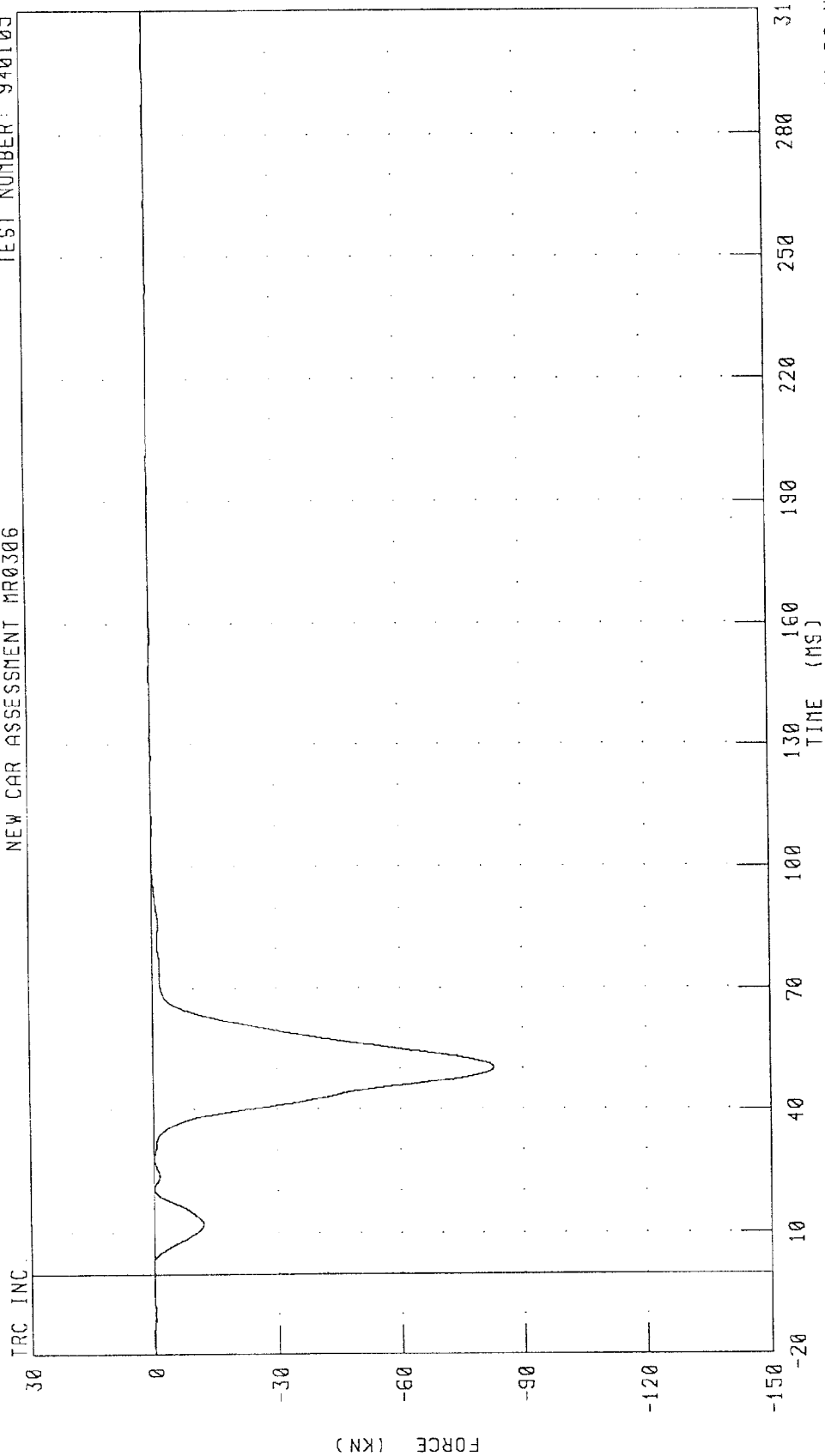
1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D4 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D5 FORCE
 NEW CAR ASSESSMENT MR0306

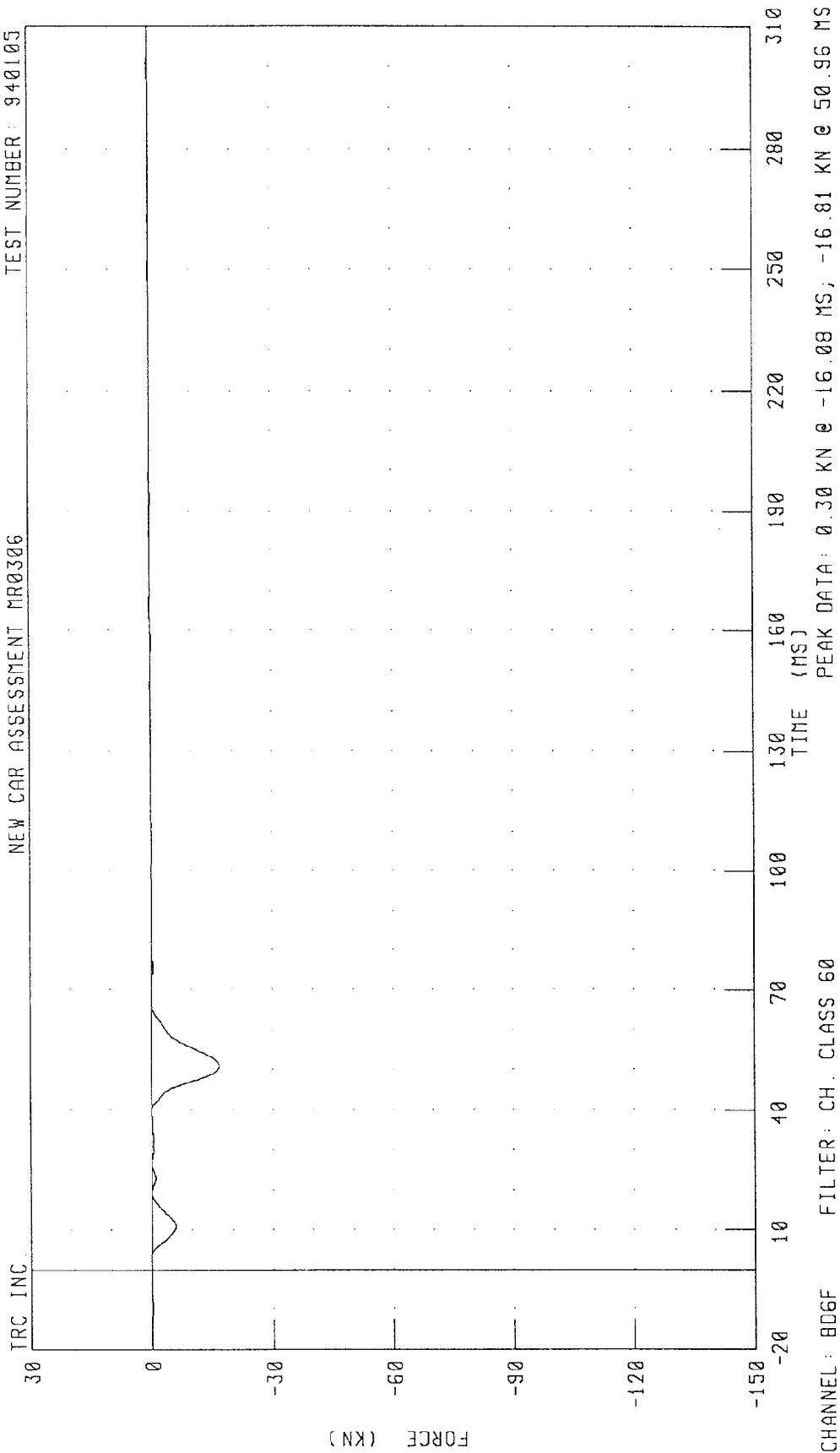
TEST NUMBER: 940105



CHANNEL: B05F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D6 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



PEAK DATA: 0.30 KN @ -16.08 MS; -16.81 KN @ 50.96 MS

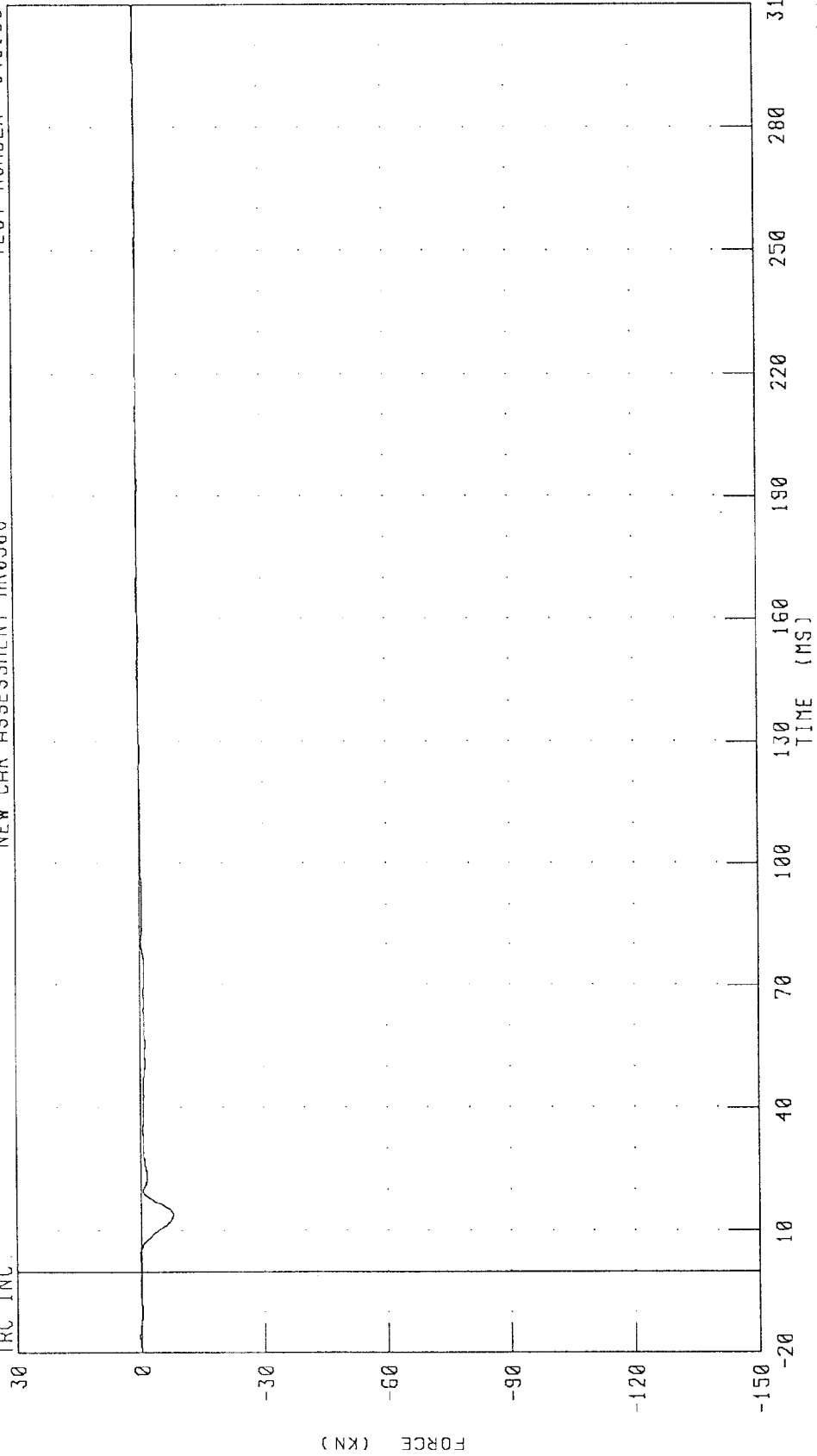
CHANNEL: BD6F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D7 FORCE

TEST NUMBER: 940105

NEW CAR ASSESSMENT MR0306

IRC INC.

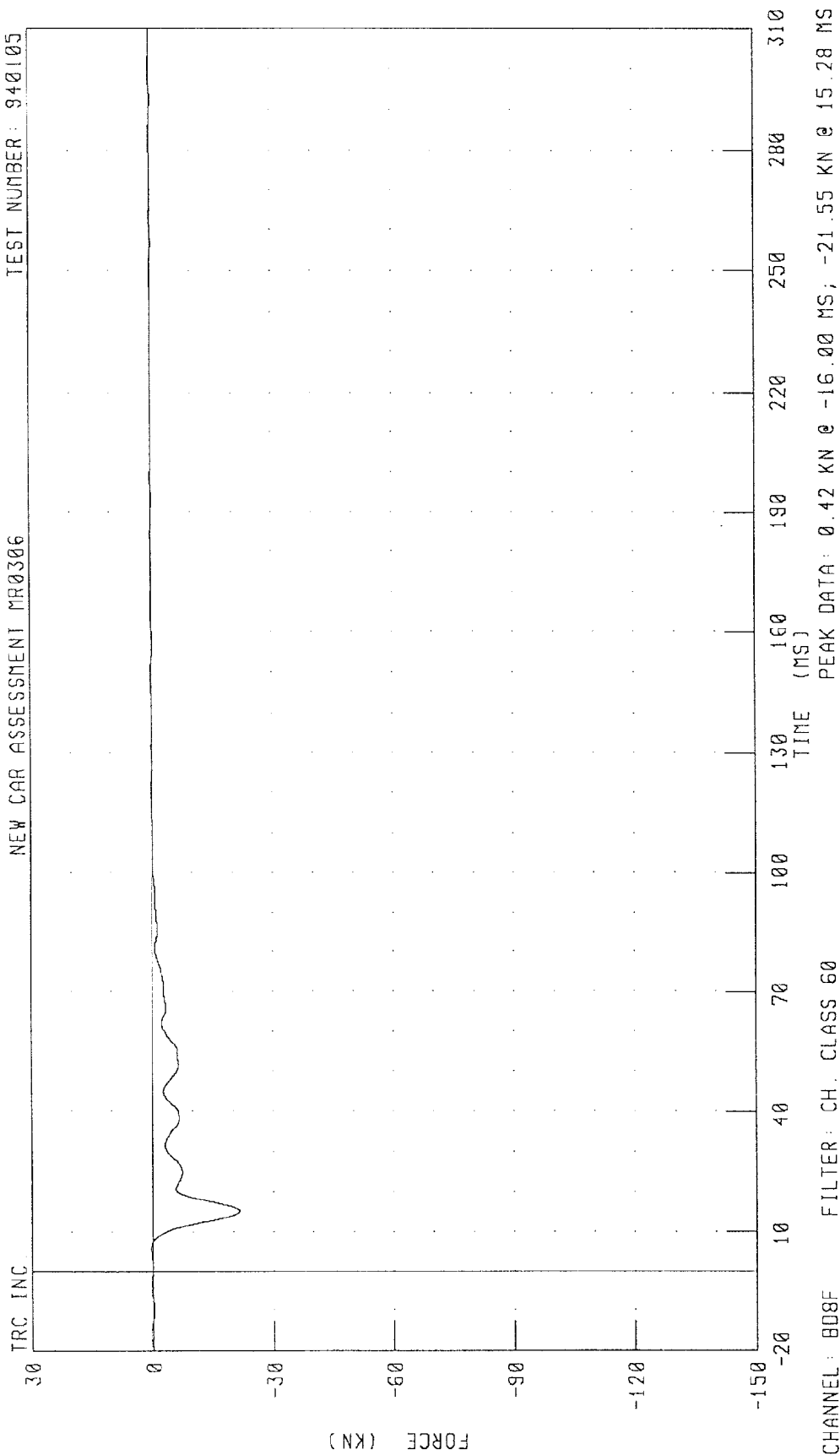


PEAK DATA: 0.35 KN @ -16.00 MS; -7.87 KN @ 13.92 MS

CHANNEL: B07F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D8 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

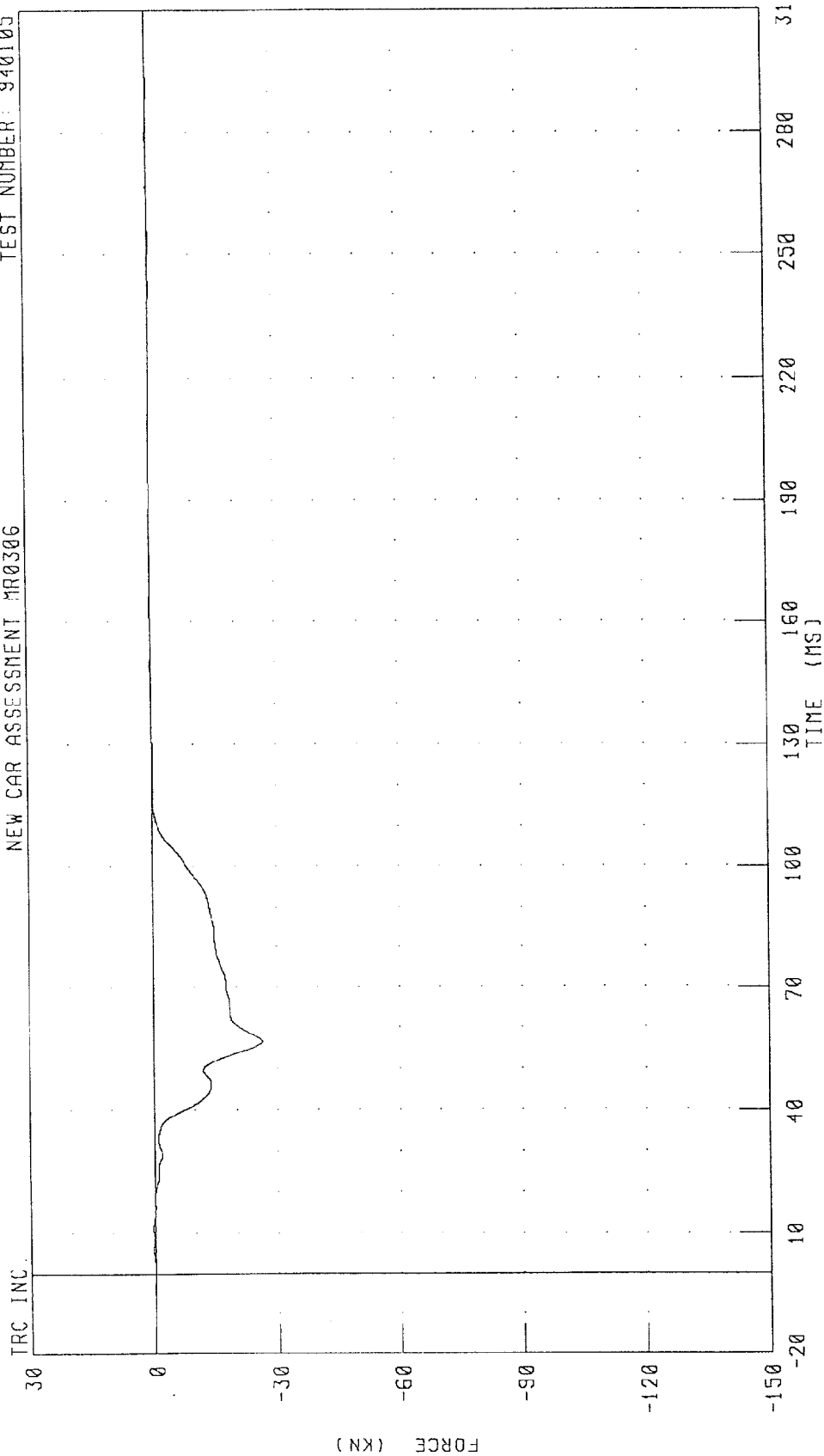


PEAK DATA: 0.42 KN @ -16.00 MS; -21.55 KN @ 15.28 MS

CHANNEL: B08F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D9 FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

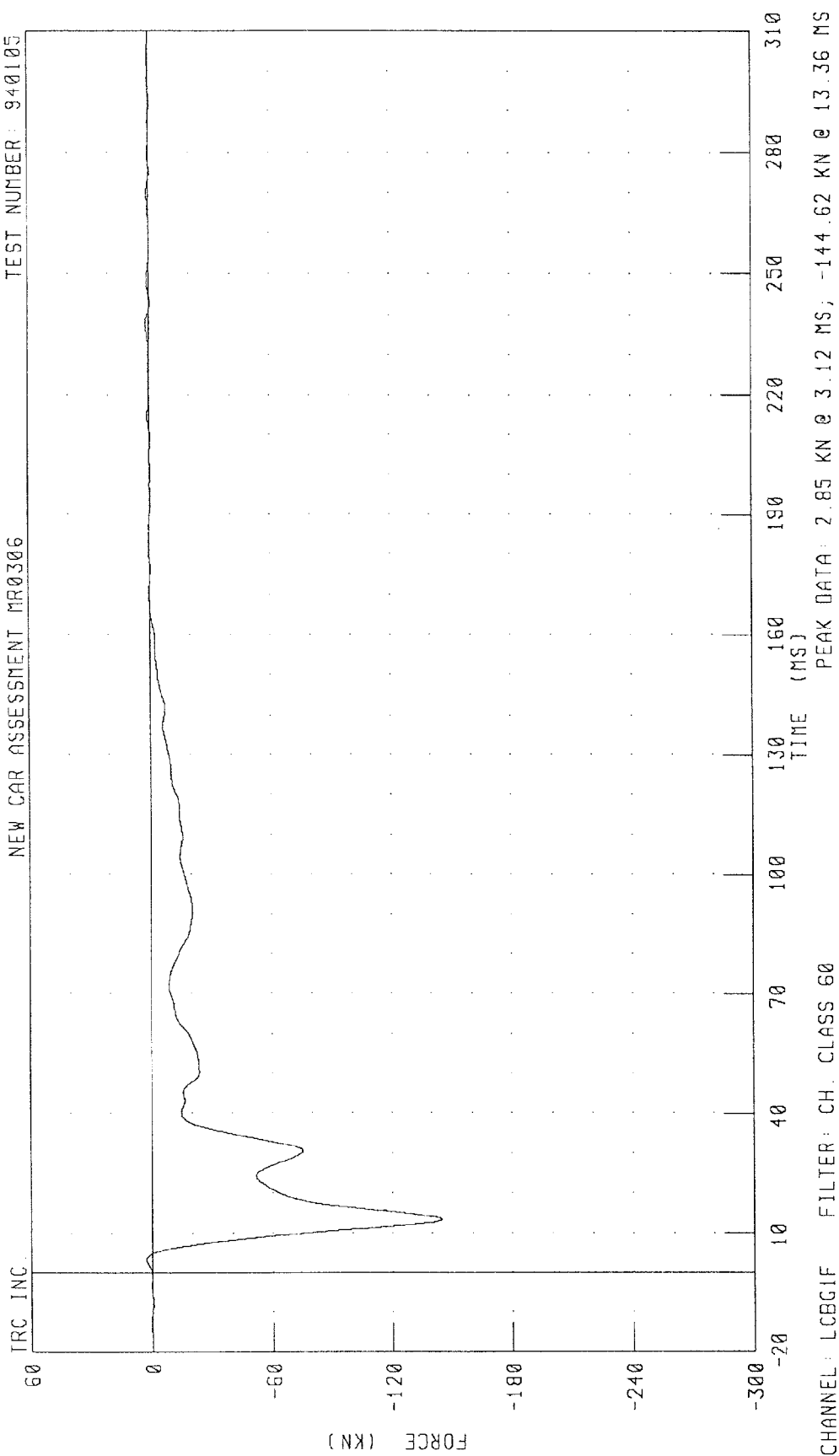


CHANNEL: BD9F FILTER: CH. CLASS 60

PEAK DATA: 0.45 KN @ 11.36 MS; -26.34 KN @ 56.56 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP # 1 FORCE TOTAL
NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105



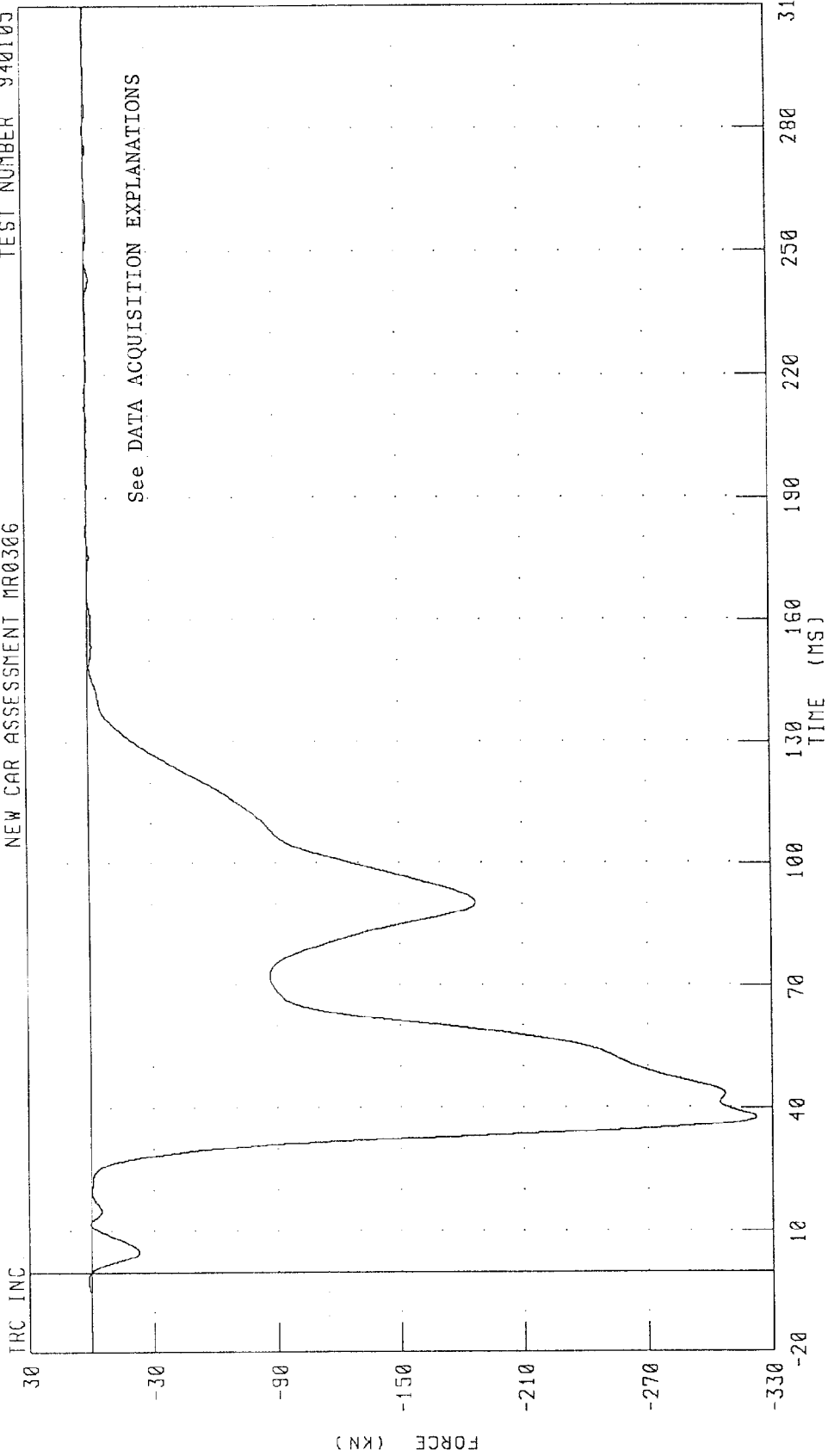
CHANNEL: LCBGIF FILTER: CH. CLASS 60

PEAK DATA: 2.85 KN @ 3.12 MS; -144.62 KN @ 13.36 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 2 FORCE TOTAL

TEST NUMBER 940105

NEW CAR ASSESSMENT MR0306



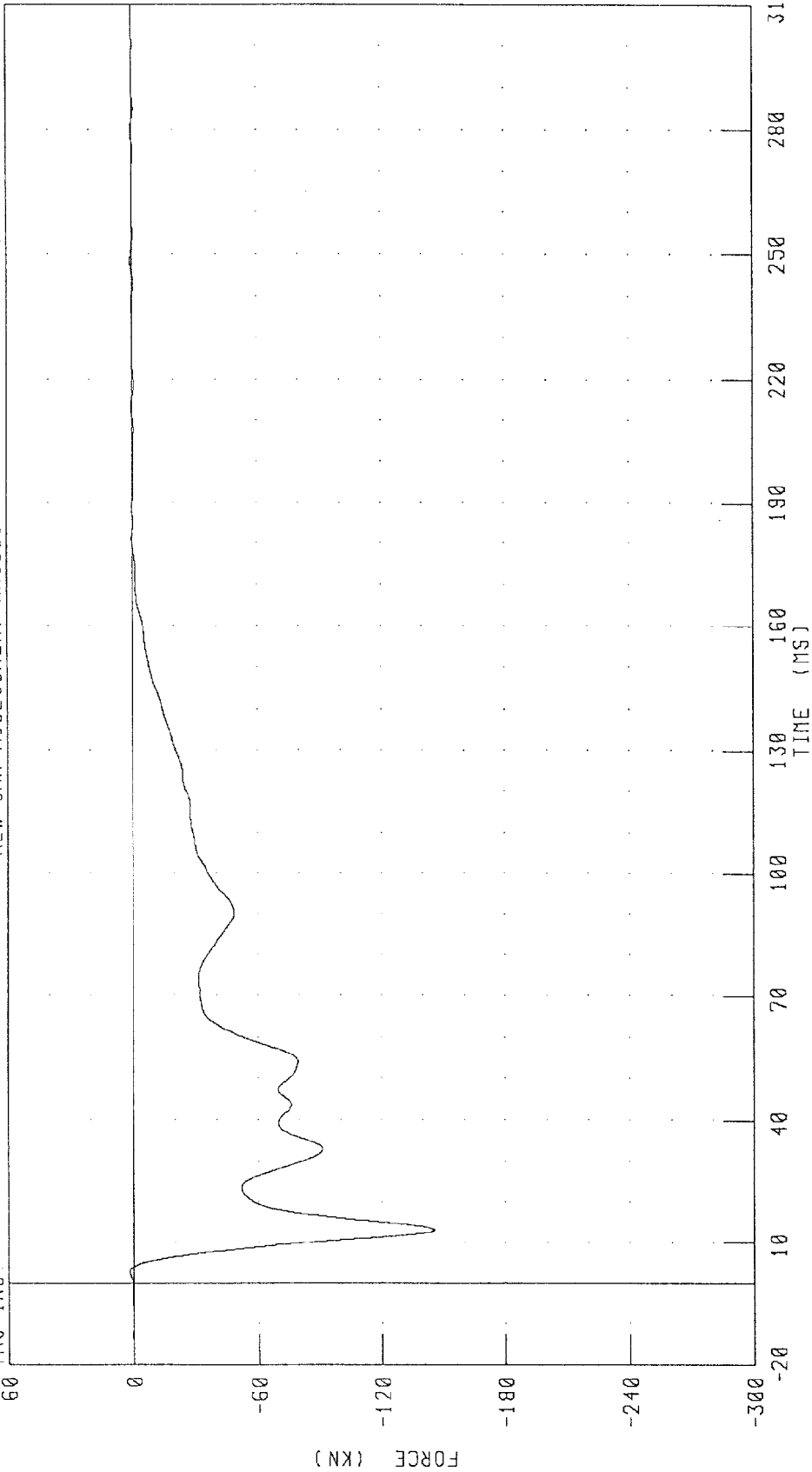
CHANNEL: LCBG2F FILTER: CH. CLASS 60

PEAK DATA: 1.47 KN @ -1.84 MS; -322.15 KN @ 37.76 MS

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 3 FORCE TOTAL
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

TRC INC.

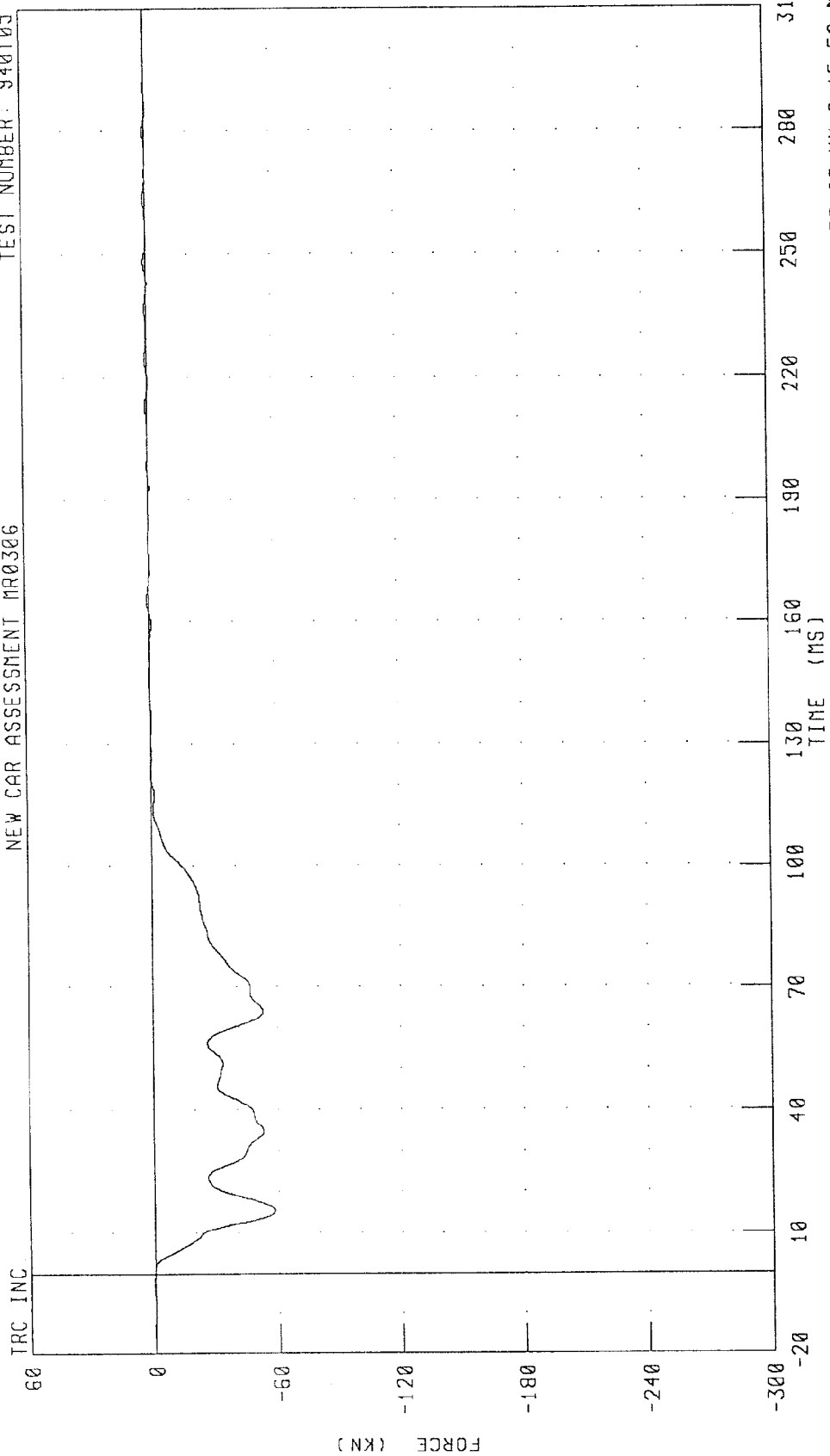


PEAK DATA: 1.95 KN @ 2.80 MS, -145.33 KN @ 13.12 MS

CHANNEL: LCBG3F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 4 FORCE TOTAL
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

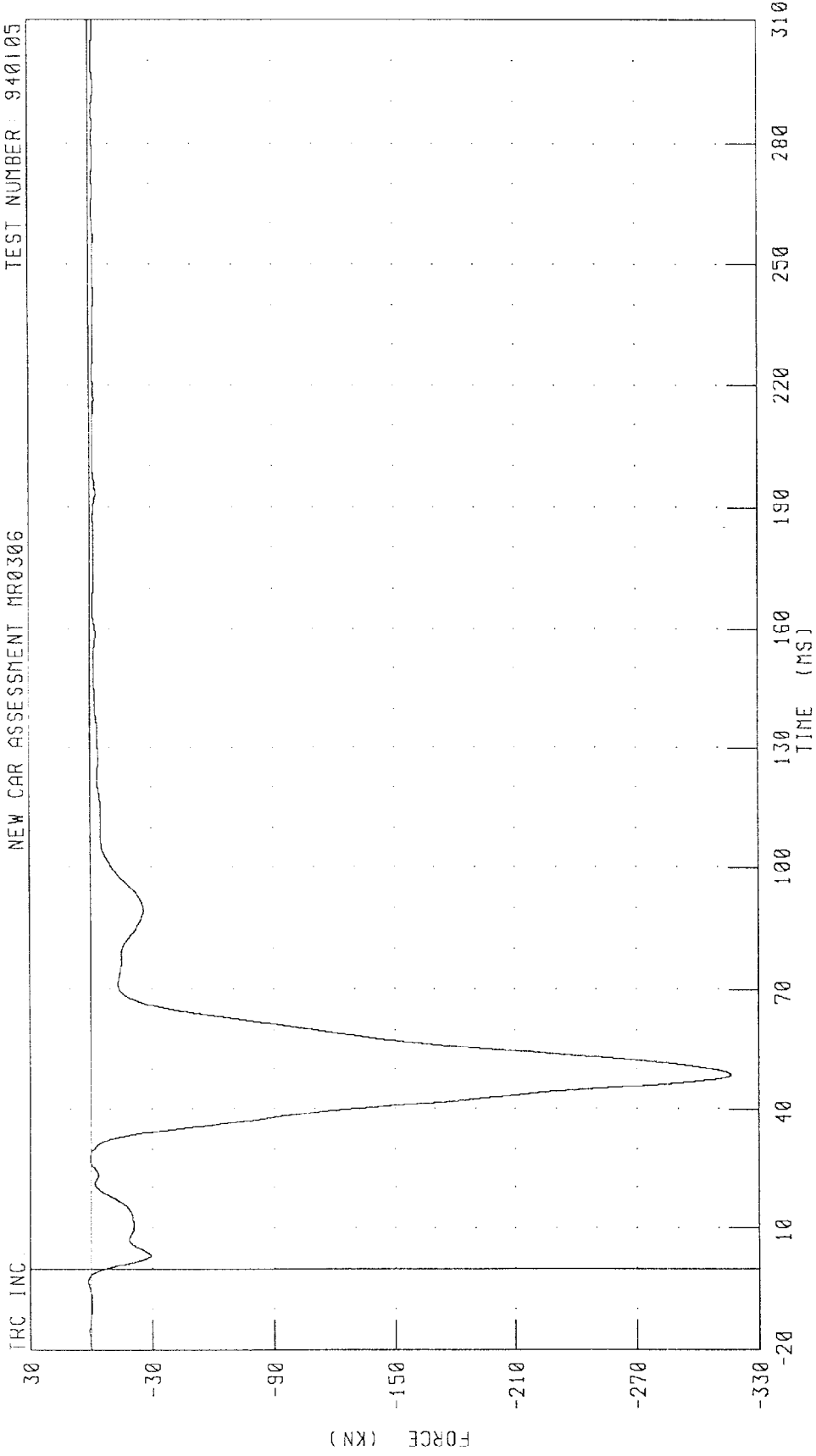


CHANNEL: LCBG4F FILTER: CH. CLASS 60

PEAK DATA: 1.25 KN @ 248.08 MS; -57.87 KN @ 15.52 MS

1984 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 5 FORCE TOTAL
 NEW CAR ASSESSMENT MR0306

TEST NUMBER 940105

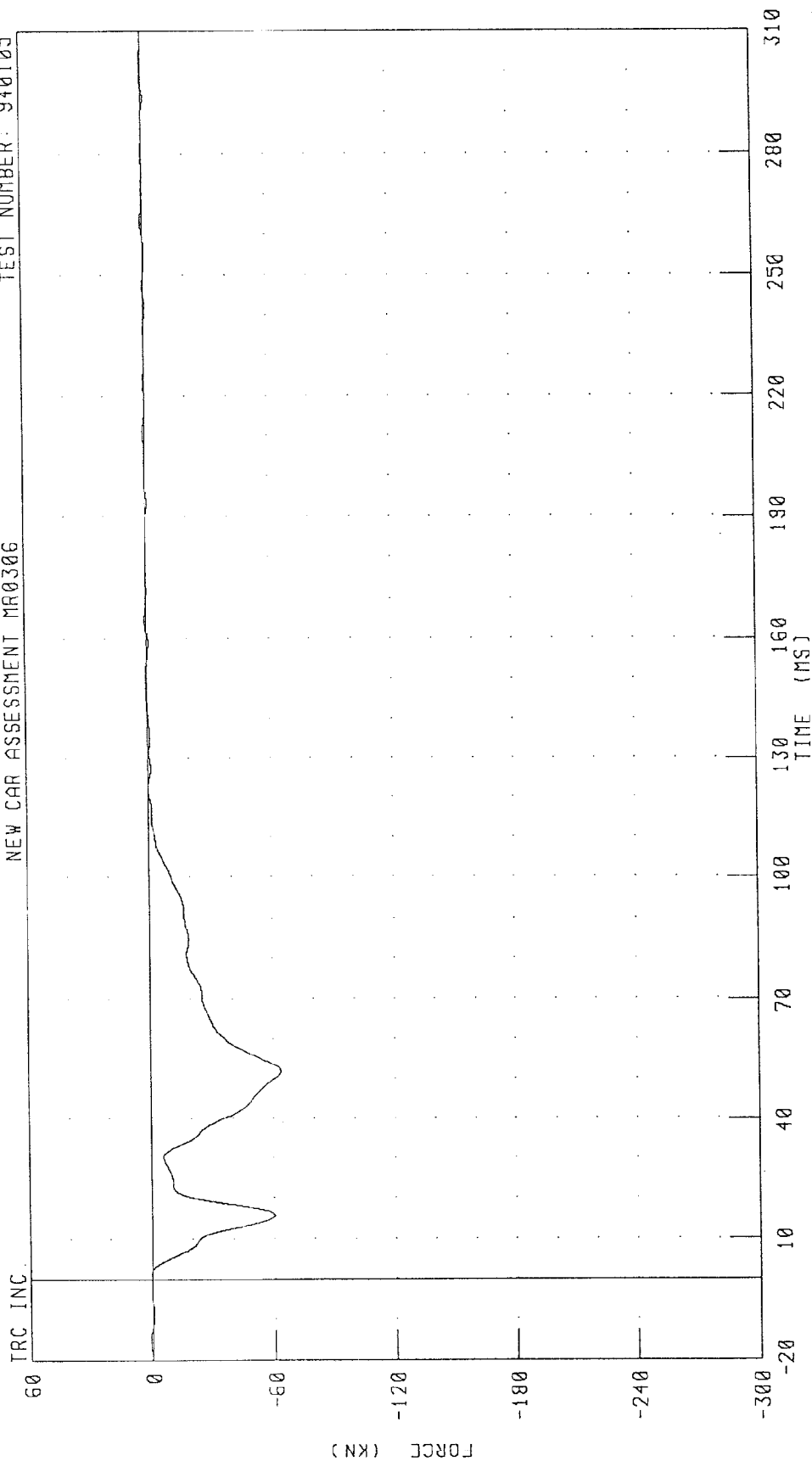


PEAK DATA: 1.31 KN @ -3.28 MS; -316.10 KN @ 48.64 MS

CHANNEL: LCBG5F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP # 6 FORCE TOTAL
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

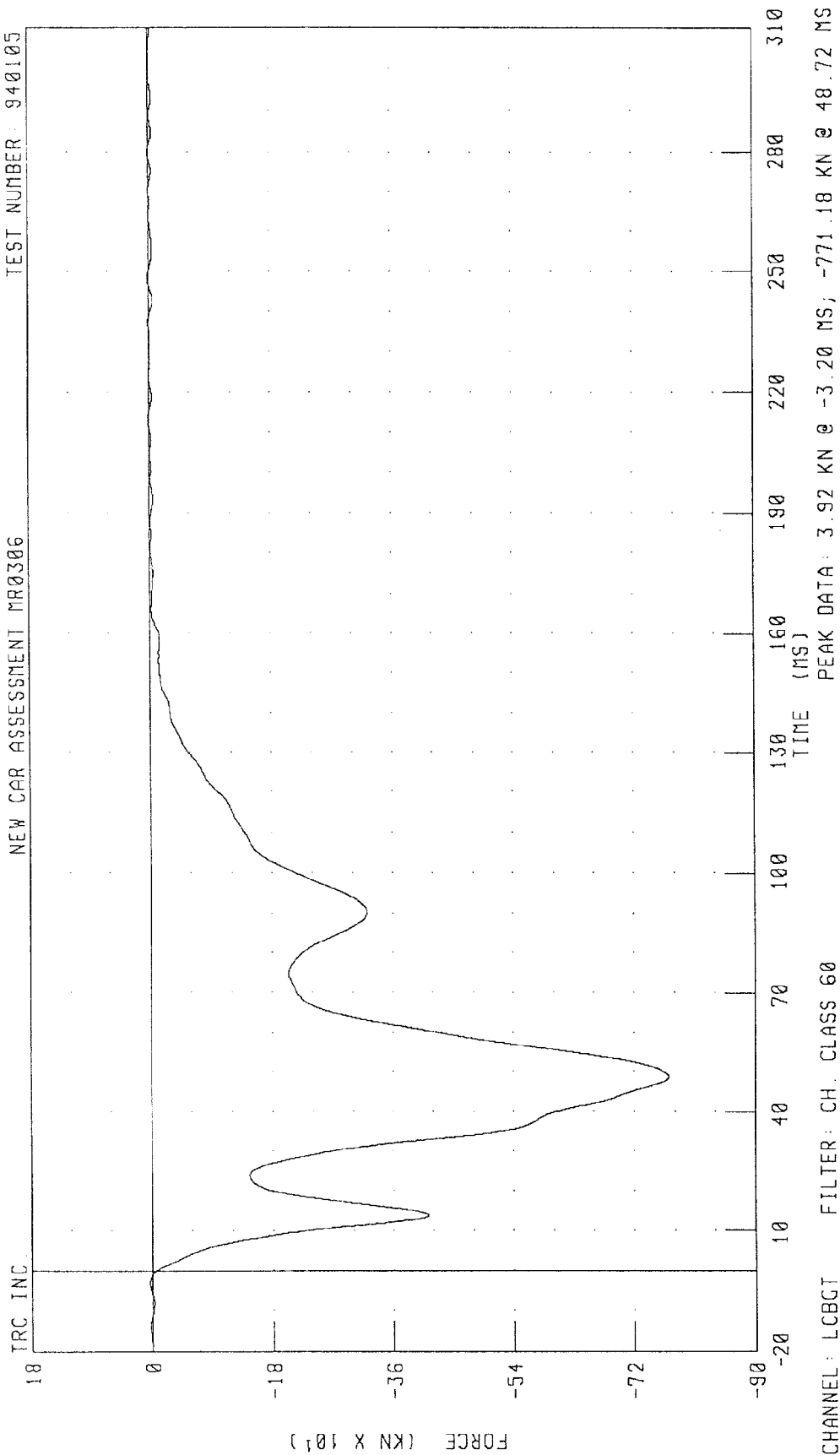


PEAK DATA: 1.01 KN @ -15.36 MS; -63.89 KN @ 51.92 MS

CHANNEL: LCBG6F FILTER: CH. CLASS 60

1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 TOTAL LOAD CELL BARRIER FORCE
 NEW CAR ASSESSMENT MR0306

TEST NUMBER: 940105

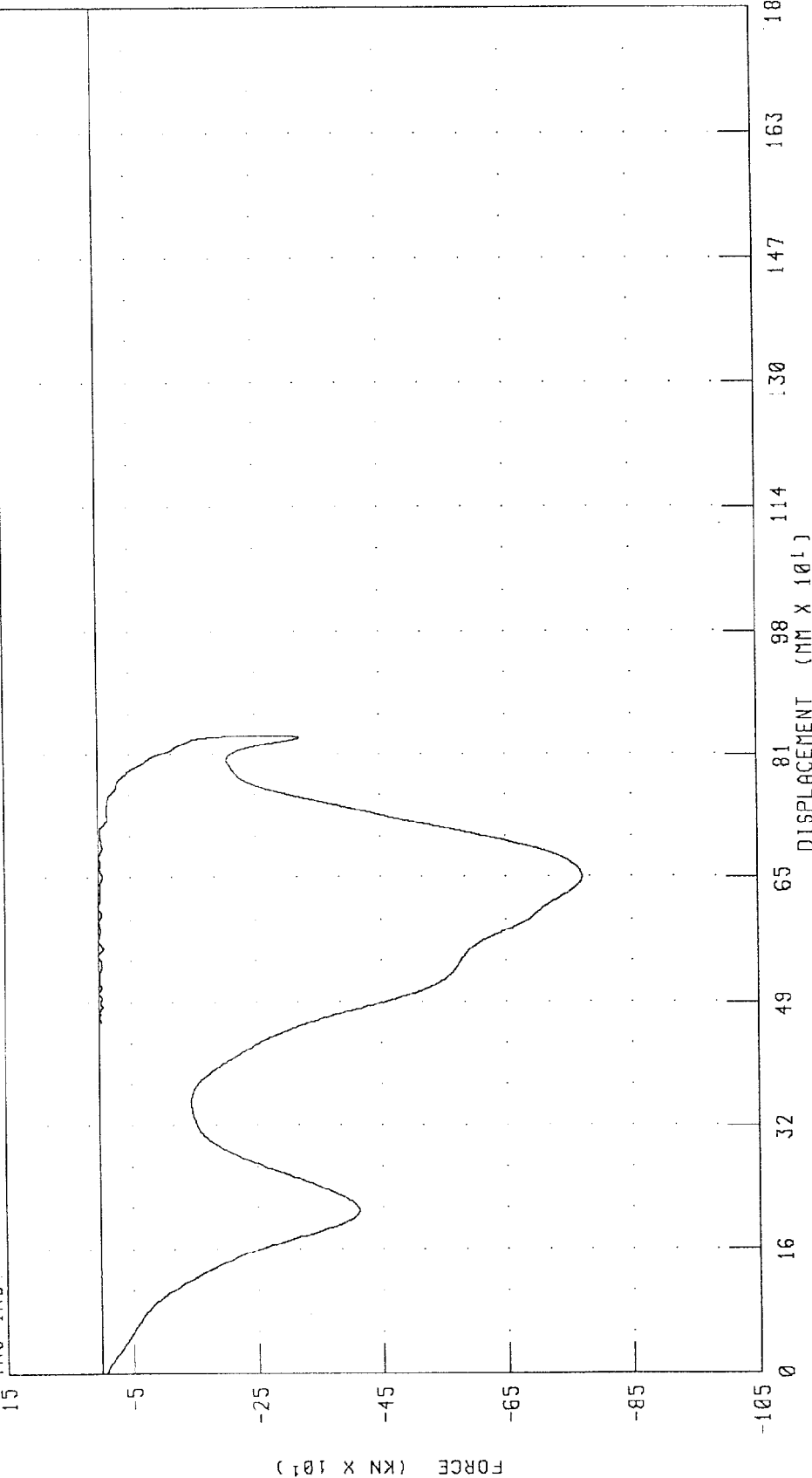


1994 DODGE RAM 1500 INTO FRONTAL LOAD CELL BARRIER
 TOTAL LOAD CELL BARRIER FORCE VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

TEST NUMBER 940105

NEW CAR ASSESSMENT MR0306

TRC INC.



CHANNEL: QTHXD FILTER: CH. CLASS 180
 LCBGT CH. CLASS 60
 PEAK DATA: 843.49 MM @ 96.56 MS; 0.00 MM @ 0.00 MS
 1.52 KN @ 212.88 MS; -771.18 KN @ 48.72 MS

APPENDIX C

DUMMY CERTIFICATION DATA

PRE-TEST CERTIFICATION DATA

DRIVER DUMMY S/N: 142

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS
142 HUMANOID

19-NOV-93

TRC INC. 142C18ED1 572E SN142 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	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

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete F. Smith

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III

19-NOV-93

TRC INC.

142C18HD1

572E SN142 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	226.03 G
PEAK LATERAL ACCELERATION	15 G MAX	2.19 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

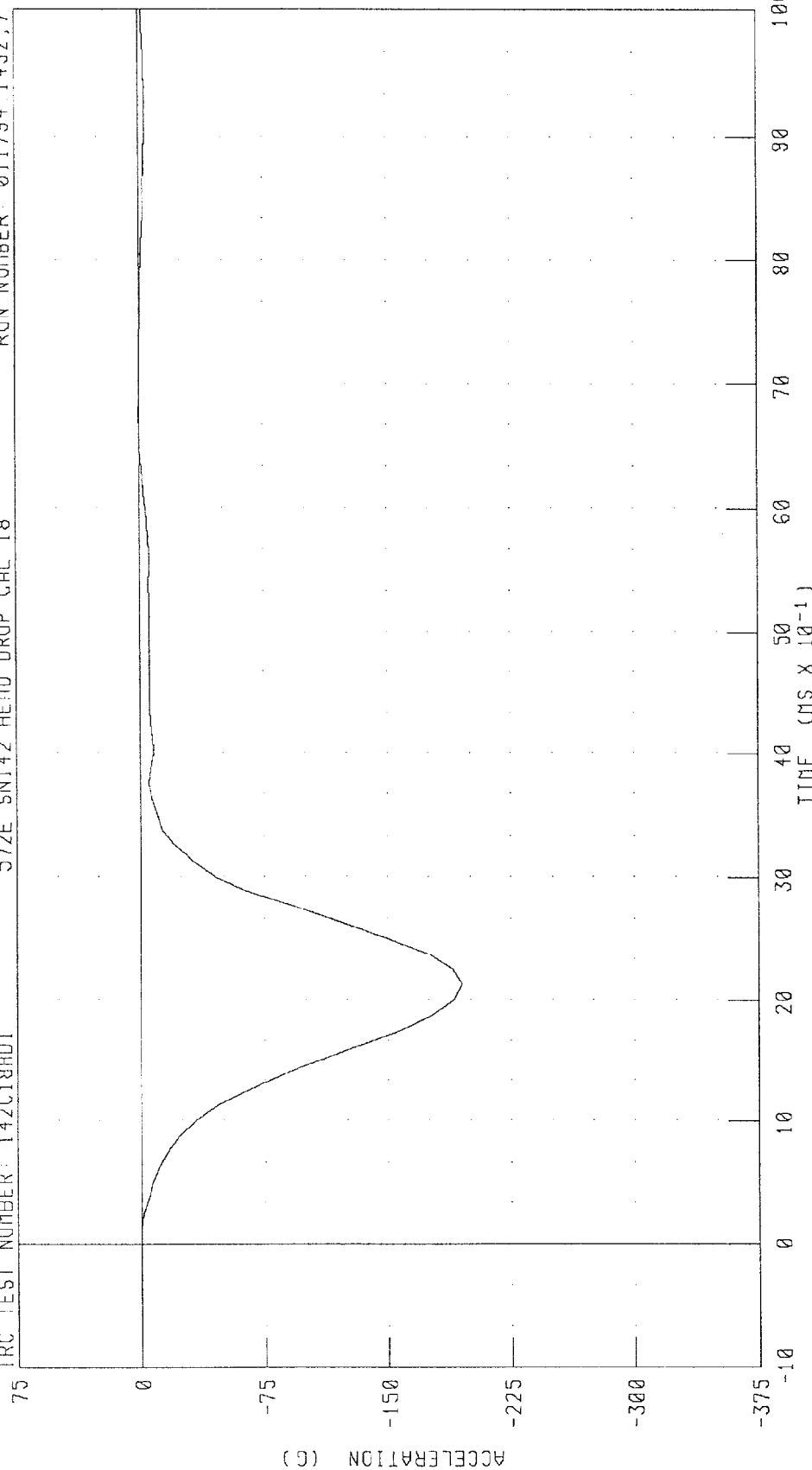
TECHNICIAN Pete Foust

PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

572E SN142 HEAD DROP CAL 18 RUN NUMBER: 011794 1432.7

TRC TEST NUMBER: 142C18HD1

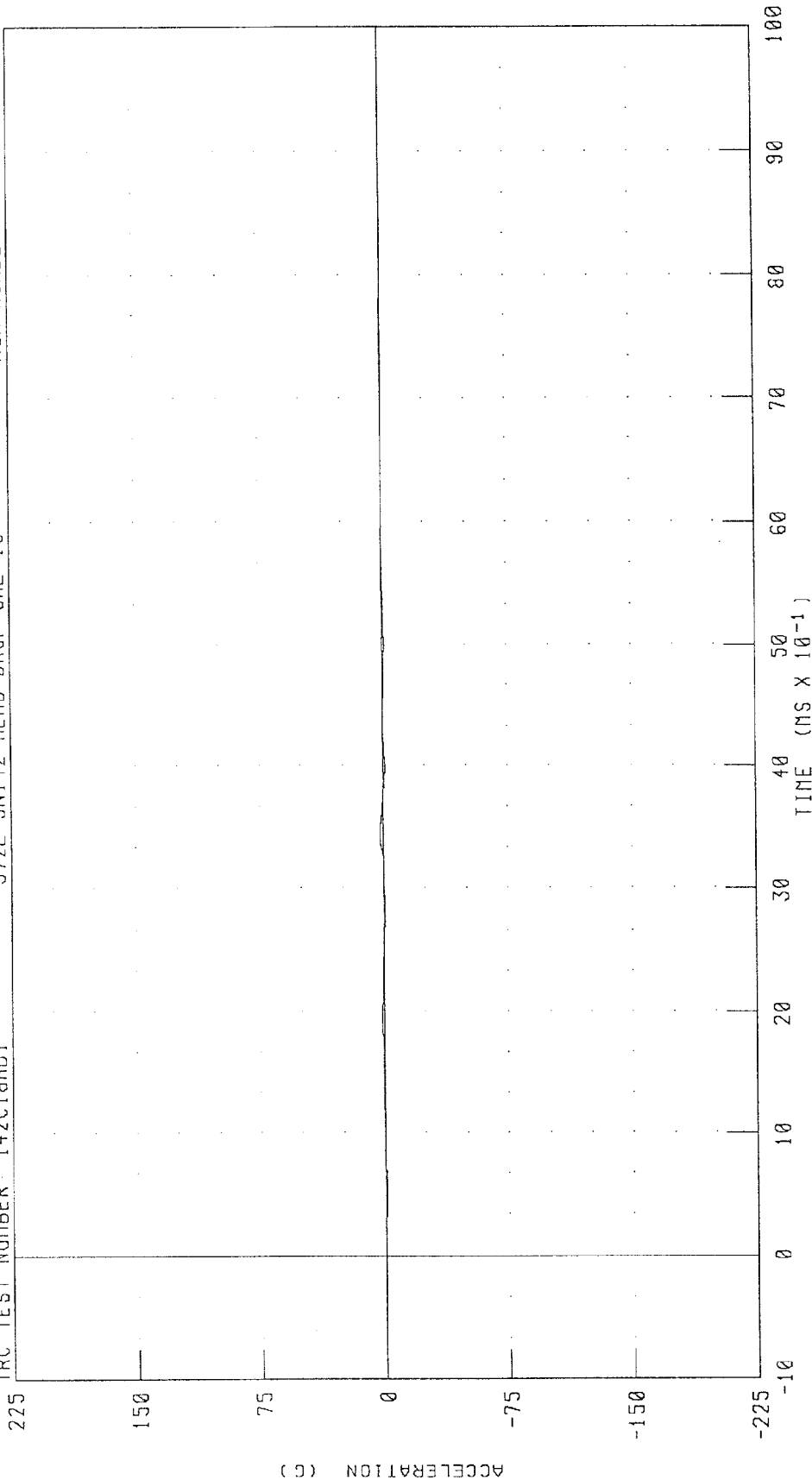


PEAK DATA: 0.30 G @ 6.75 MS; -195.06 G @ 2.13 MS

CHANNEL: HEDXC FILTER: CH. CLASS 1000

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

TRC TEST NUMBER: 142C18HD1 572E SN142 HEAD DROP CAL 18 RUN NUMBER: 011794 1432;7

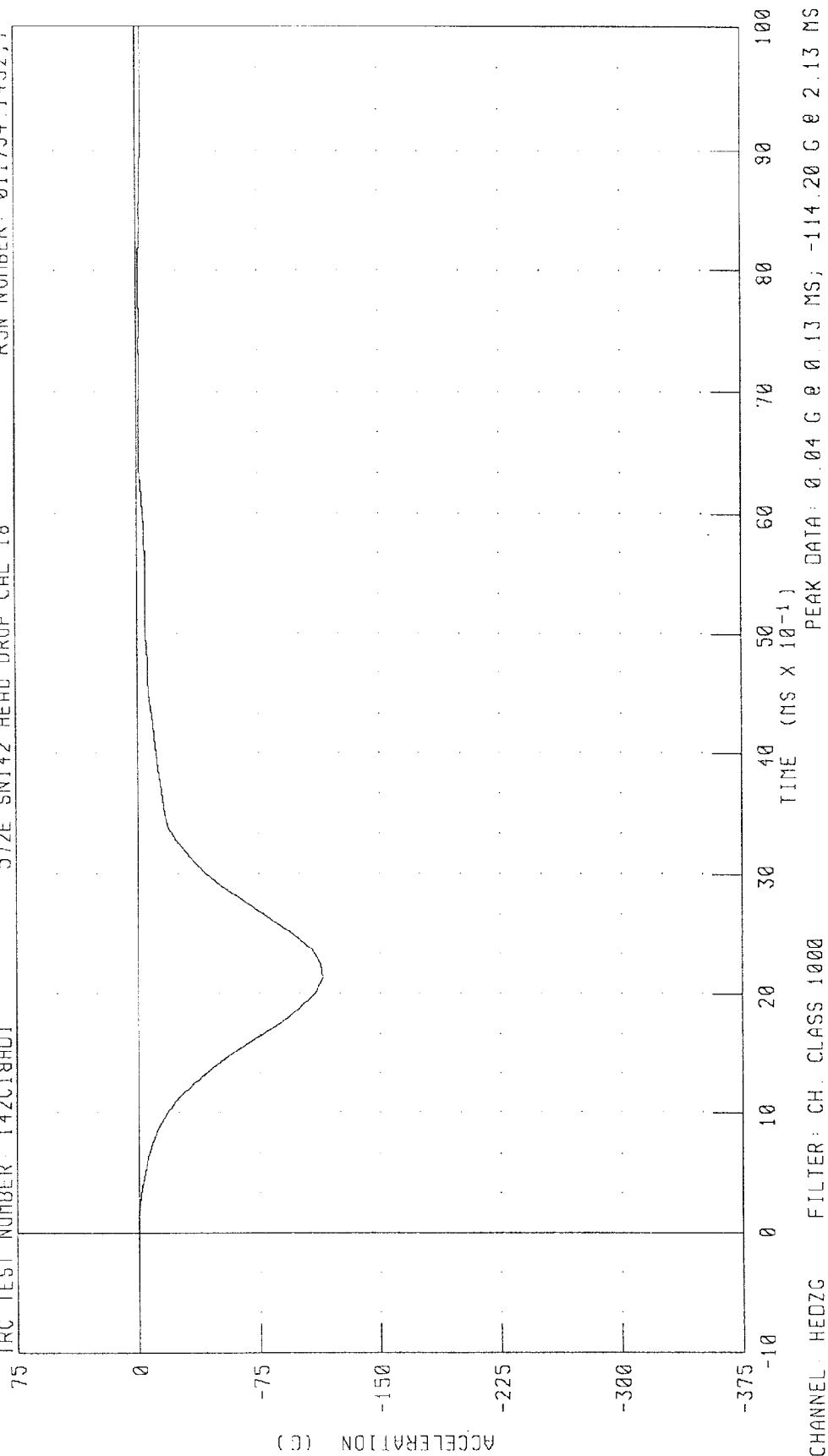


PEAK DATA: 2.20 G @ 3.50 MS; -1.16 G @ 5.00 MS

CHANNEL: HEDYG FILTER: CH. CLASS 1000

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

IRC TEST NUMBER 142C18HD1 572E SN142 HEAD DROP CAL 18 RUN NUMBER: 011794.1432.7

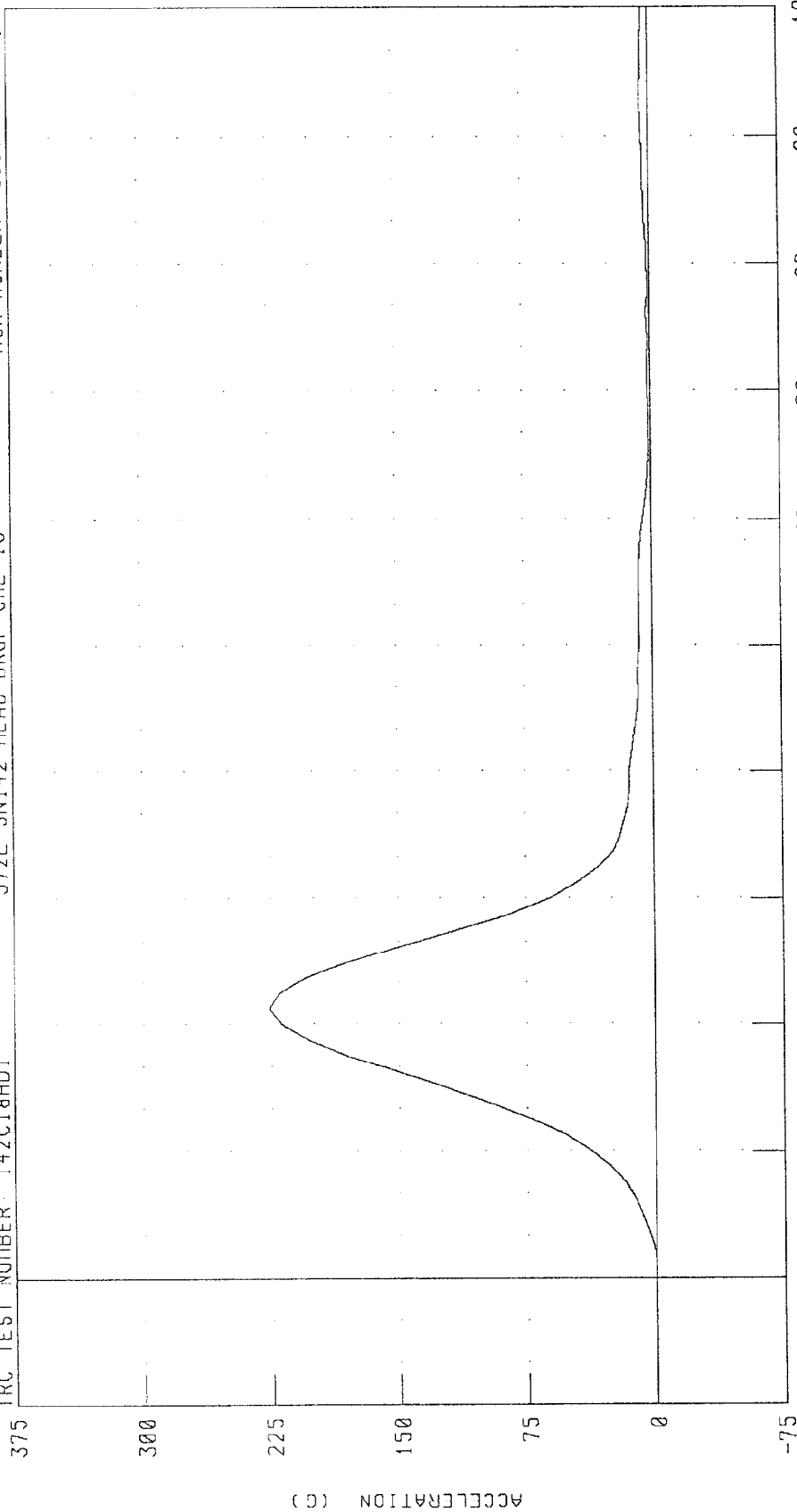


PART 572-E HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

572E SN142 HEAD DROP CAL 18 RUN NUMBER: 011794.1432.7

TRC TEST NUMBER: 142C18HD1



PEAK DATA: 226.03 G @ 2.13 MS; 0.05 G @ -0.88 MS

CHANNEL: HEDRG FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST

HYBRID III

22-NOV-93

6 AXIS NECK TRANSDUCER
TRC INC. 142C18NF1

572E SN142 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	25.65 G
	20 MS	17.60 - 22.60 G	21.89 G
	30 MS	12.50 - 18.50 G	16.99 G
MAX PENDULUM G		29 G MAX	26.44 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	16.93 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	35.84 MS
D PLANE	MAX	64 - 78 DEG.	74.09 DEG.
ROTATION	TIME	57 - 64 MS	59.04 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	91.77 NM
	TIME	47 - 58 MS	49.44 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	114.56 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	101.20 MS

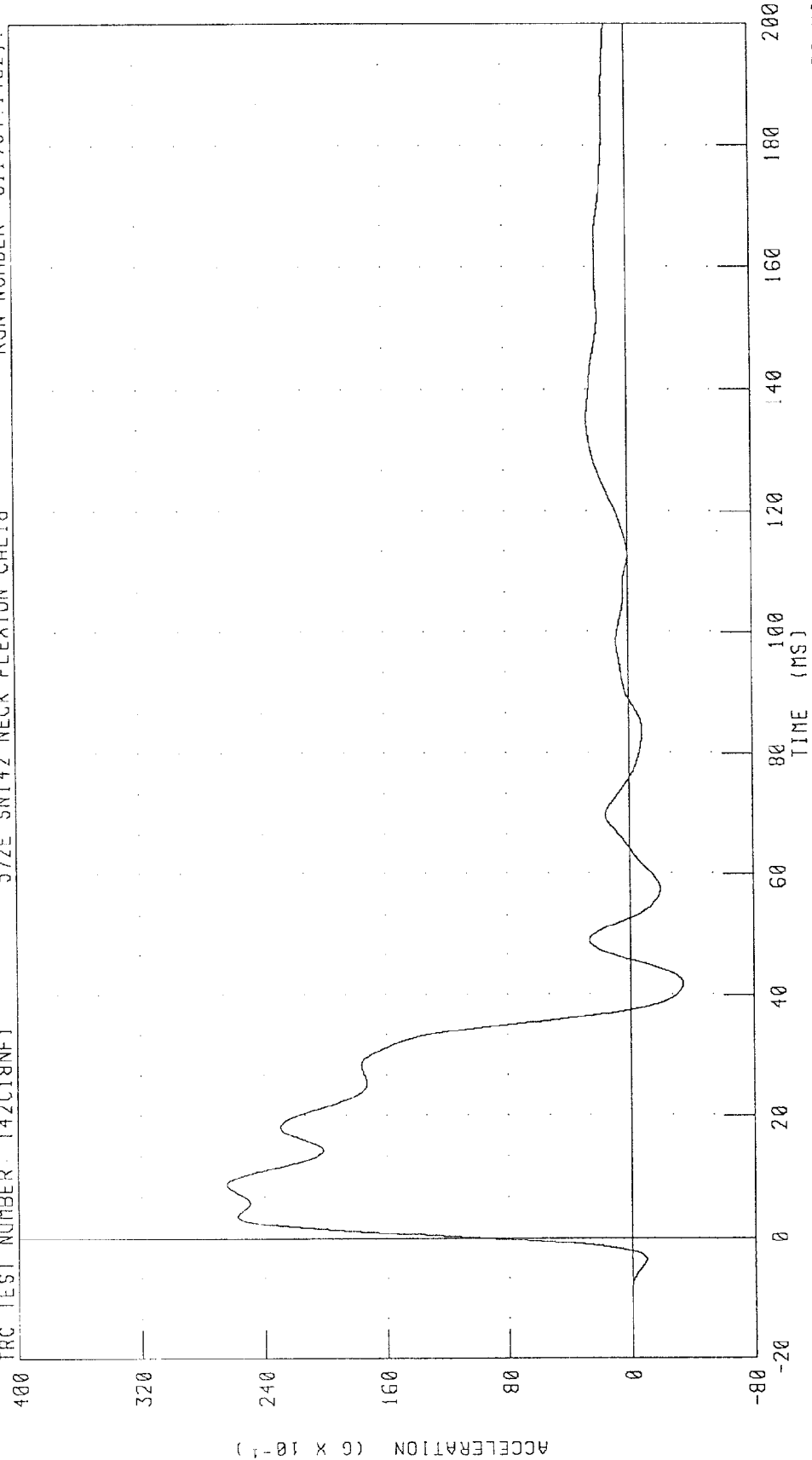
TEST MEETS SPECIFICATIONS

TECHNICIAN

Pete R. Smith

PART 572-E HYBRID III NECK FLEXION CALIBRATION
 PENDULUM DECELERATION

TRC TEST NUMBER: 142C18NF1 572E SN142 NECK FLEXION CAL18 RUN NUMBER: 011794.1432.1



PEAK DATA: 26.45 G @ 8.80 MS; -3.37 G @ 41.76 MS

CHANNEL: PENXG FILTER CH. CLASS 60

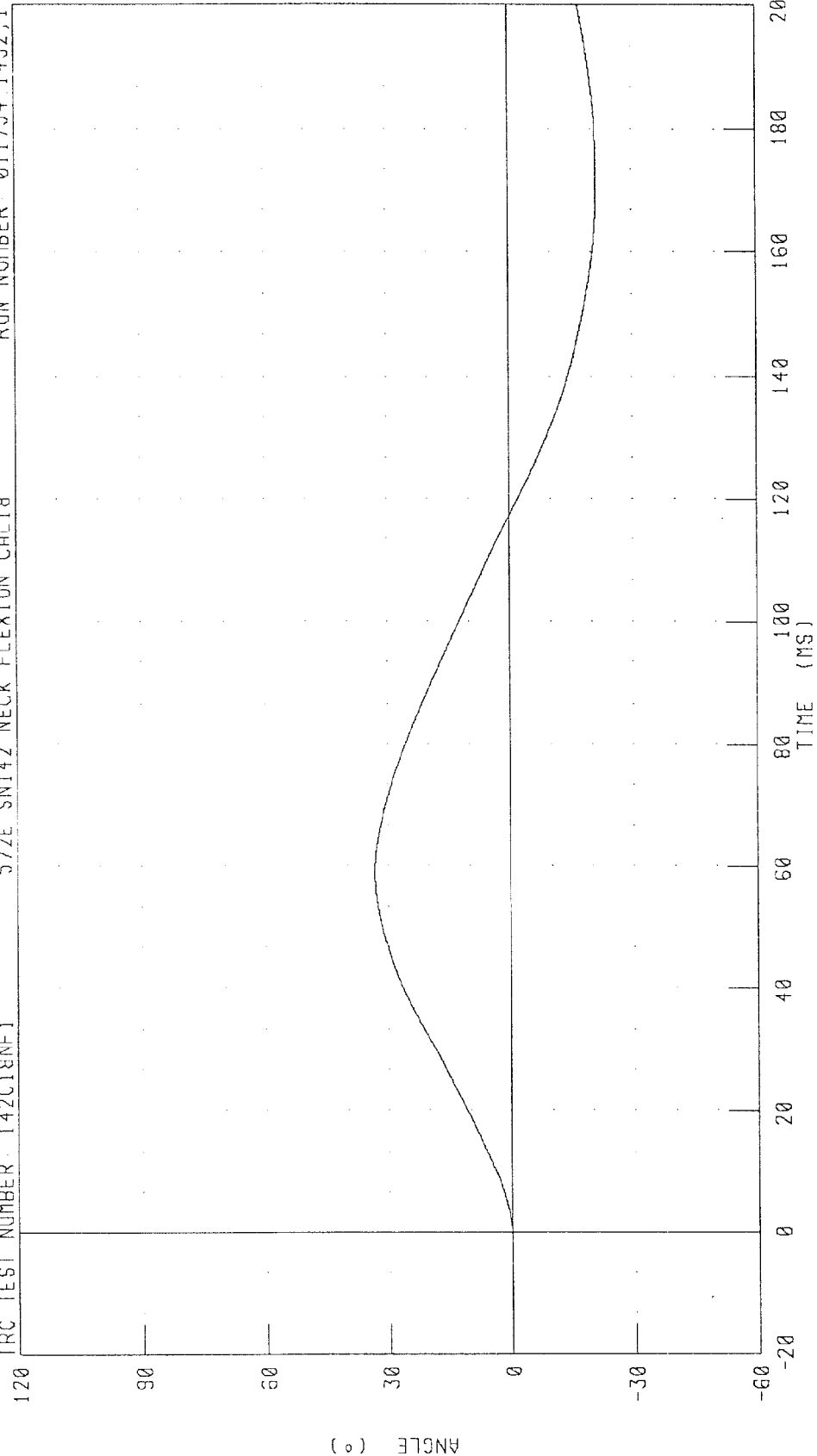
PORT 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN142 NECK FLEXION CAL18

RUN NUMBER: 011794.1432,1

TRC TEST NUMBER: 142C18NF1



PEAK DATA: 33.26 ° @ 58.96 MS; -21.41 ° @ 171.84 MS

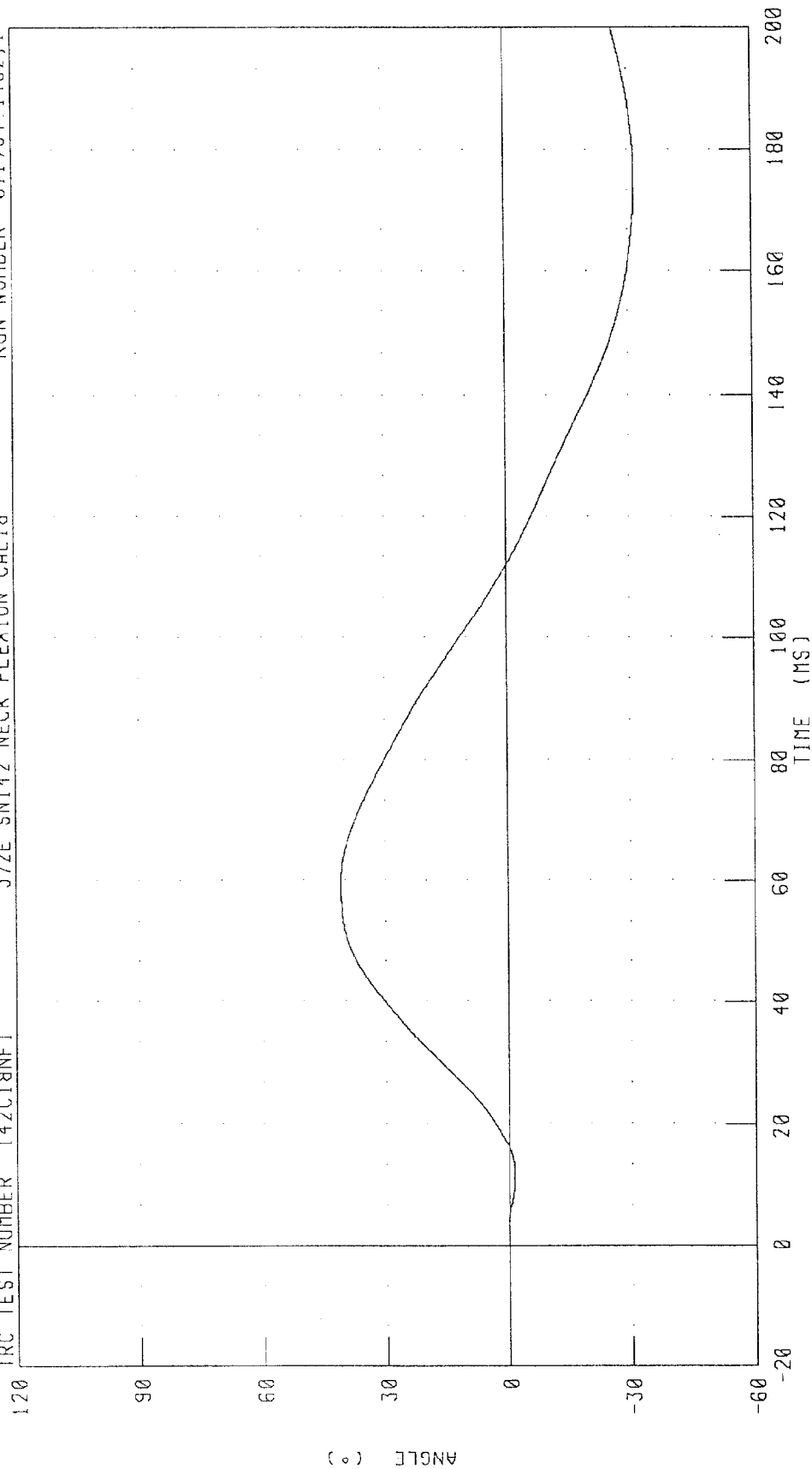
CHANNEL: BETA FILTER: CH. CLASS 60

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

TRC TEST NUMBER 142C18NF1

572E SN142 NECK FLEXION CAL18

RUN NUMBER: 011794.1432.1

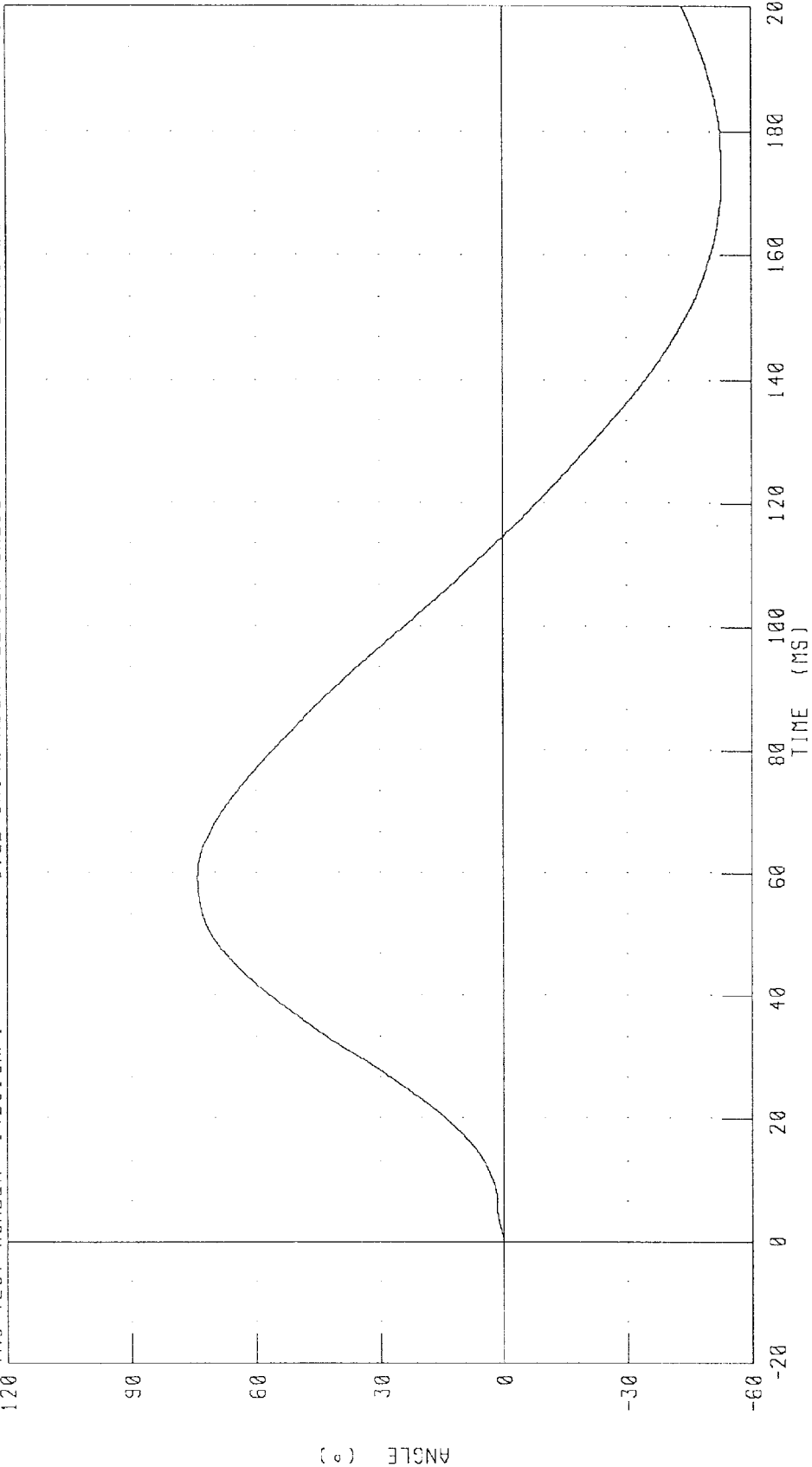


CHANNEL: THETA FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER 142C18NF1 572E SN142 NECK FLEXION CAL18 RUN NUMBER: 011794 1432,1



PEAK DATA: 74.10 ° @ 59.04 MS; -52.83 ° @ 171.68 MS

CHANNEL: TOTAL FILTER: CH. CLASS 60

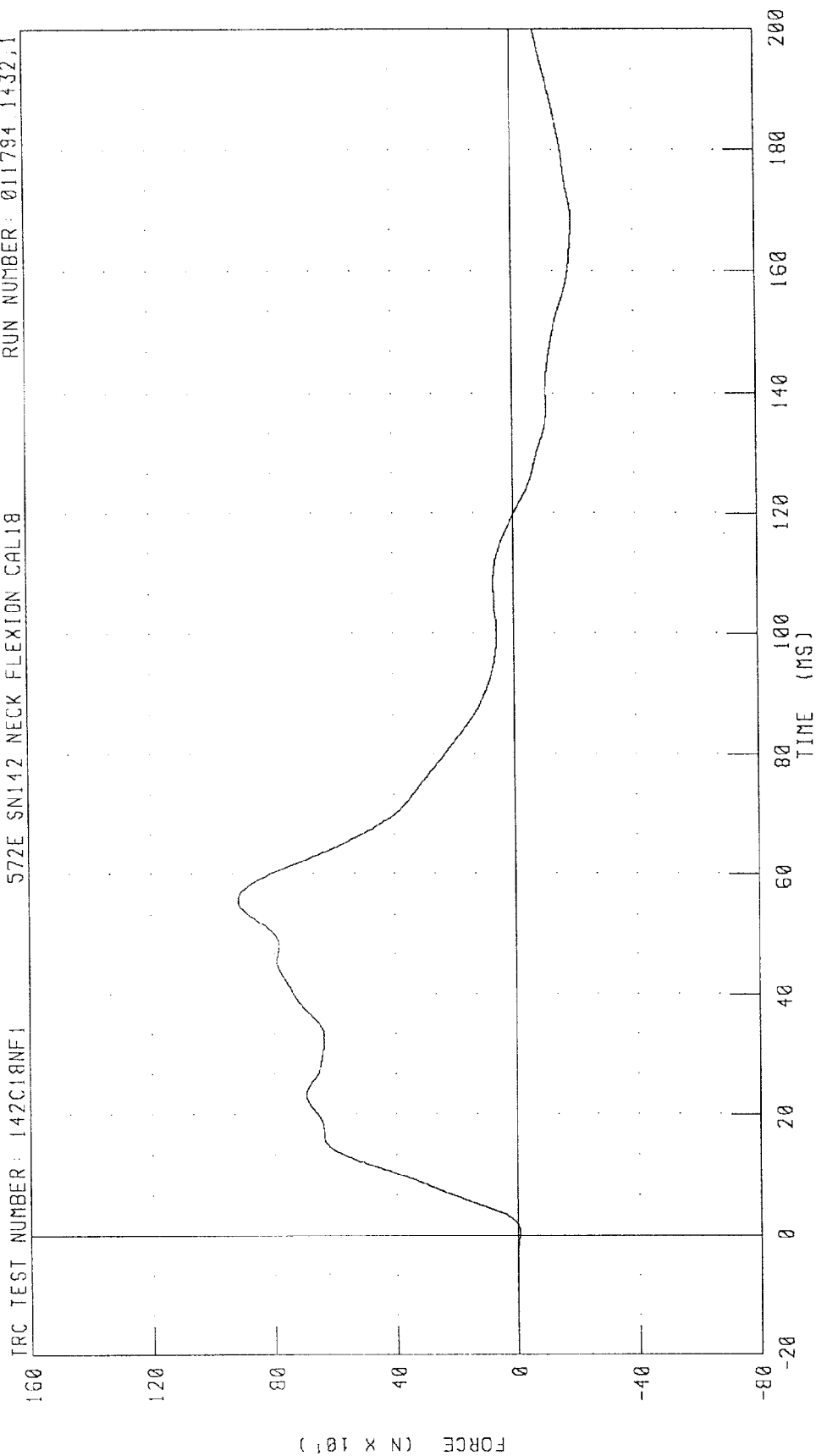
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 142C18NF1

572E SN142 NECK FLEXION CAL18

RUN NUMBER: 011794 1432,1



CHANNEL: NEKXF FILTER: CH. CLASS 60

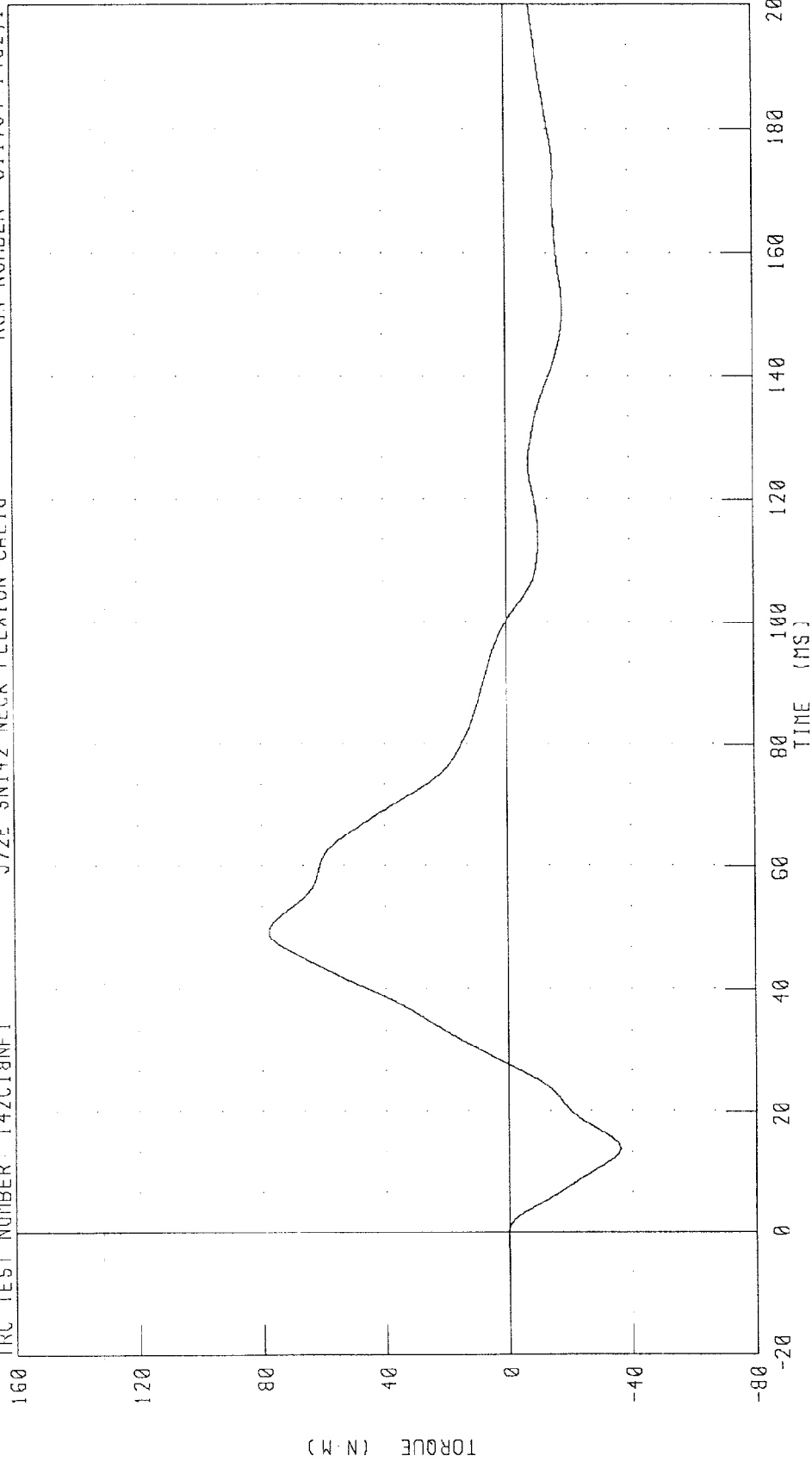
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

RUN NUMBER: 011794 1432,1

572E SN142 NECK FLEXION CAL18

TRC TEST NUMBER: 142C18NF1



PEAK DATA: 77.76 N.M @ 49.28 MS, -36.06 N.M @ 13.92 MS

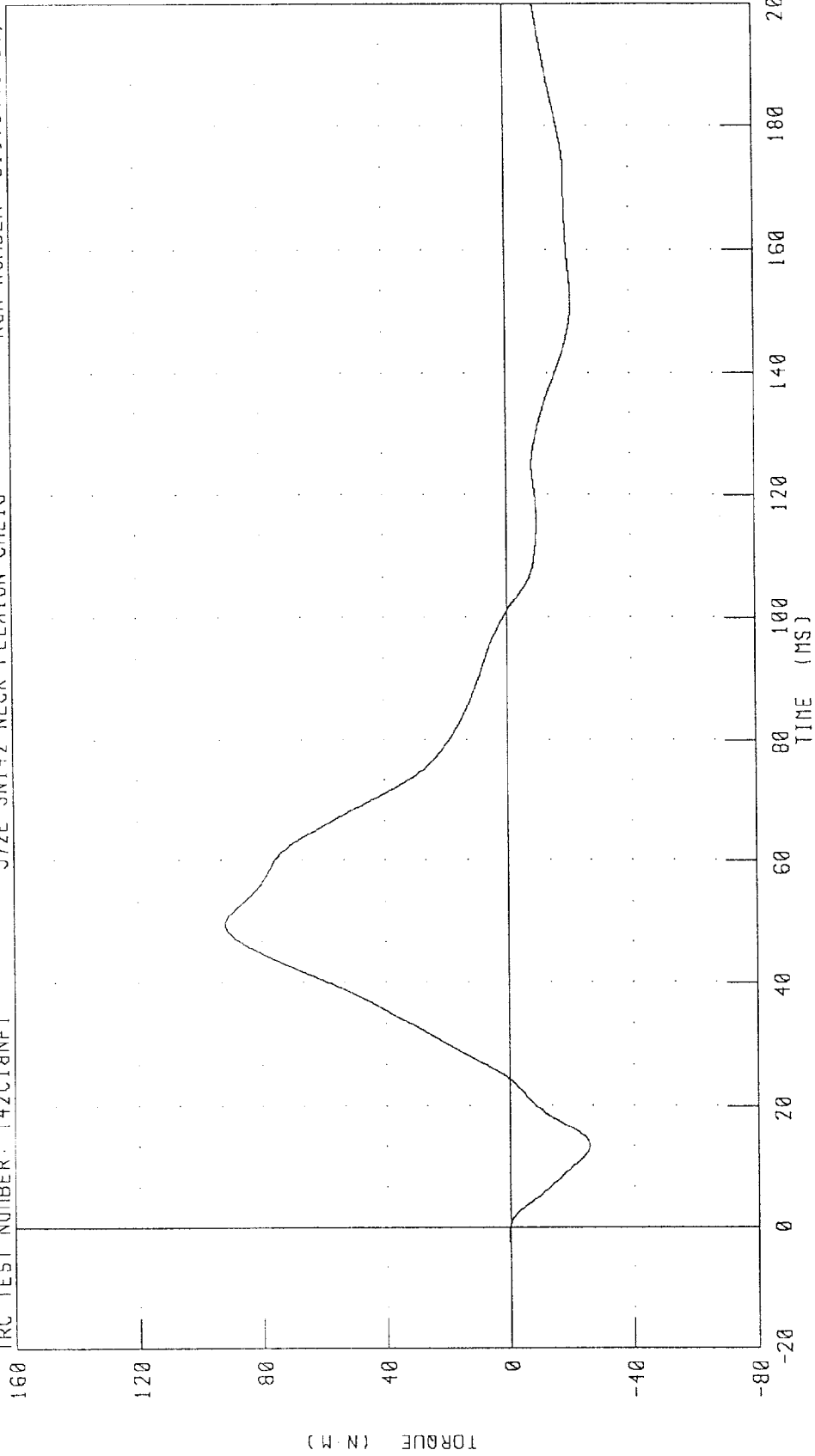
CHANNEL: NEKYM FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 142C18NF1

572E SN142 NECK FLEXION CAL18

RUN NUMBER: 011794.1432.1



PEAK DATA: 91.77 N·M @ 49.44 MS; -25.54 N·M @ 13.44 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST

HYBRID III

22-NOV-93

6 AXIS NECK TRANSDUCER
TRC INC. 142C18NE1

572E SN142 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	20.26 G
	20 MS	14.00 - 19.00 G	17.51 G
	30 MS	11.00 - 16.00 G	13.93 G
MAX PENDULUM G		22 G MAX	21.00 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	13.92 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	38.48 MS
D PLANE	MAX	81 - 106 DEG.	97.69 DEG.
ROTATION	TIME	72 - 82 MS	76.00 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-73.68 NM
	TIME	65 - 79 MS	68.96 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	152.00 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	138.48 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Foust

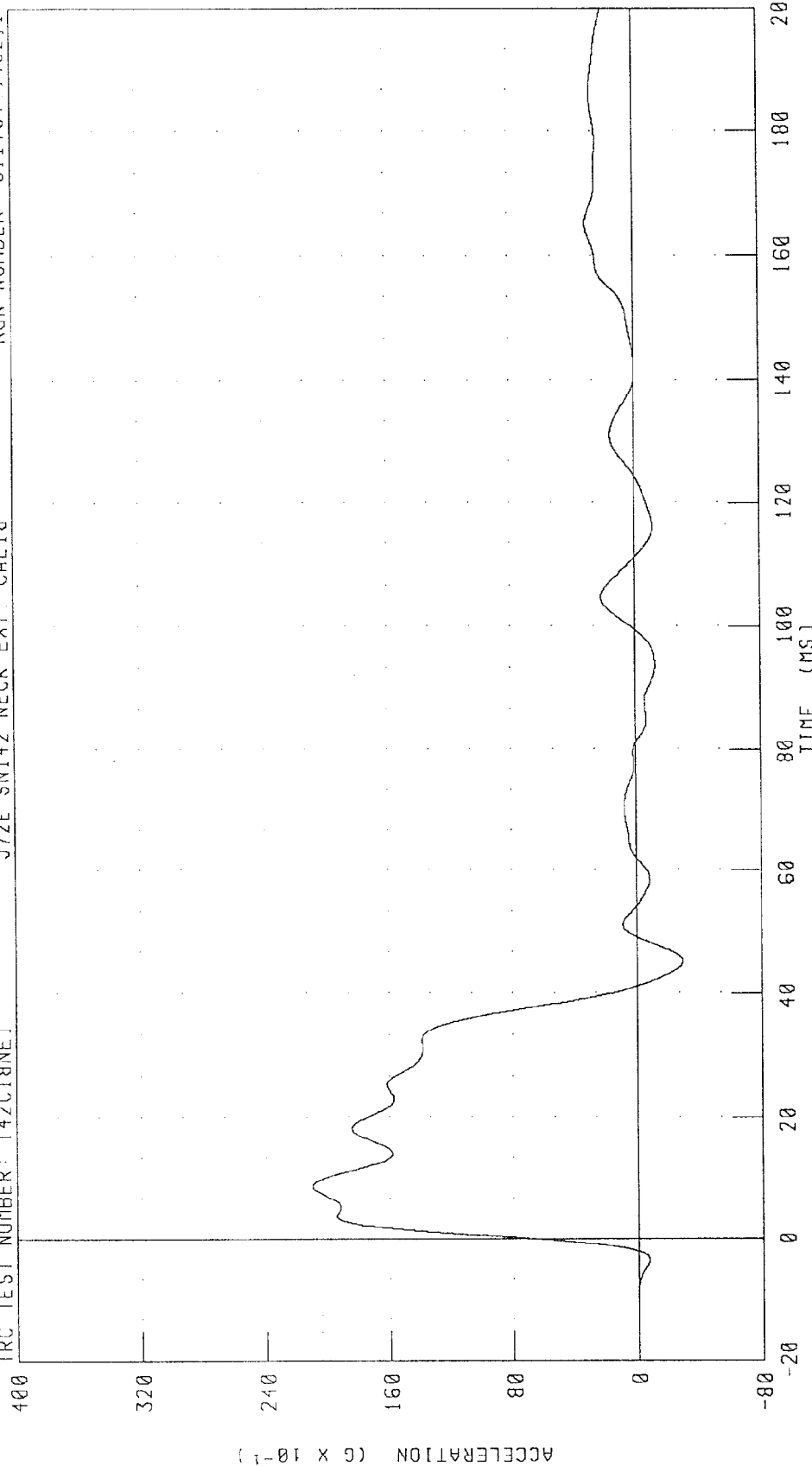
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

PENDULUM DECELERATION

TRC TEST NUMBER: 142C18NE1

572E SM142 NECK EXT CAL18

RUN NUMBER: 011794 1432.1



PEAK DATA: 21.01 G @ 8.72 MS; -2.90 G @ 45.12 MS

CHANNEL: PENXG FILTER: CH. CLASS 60

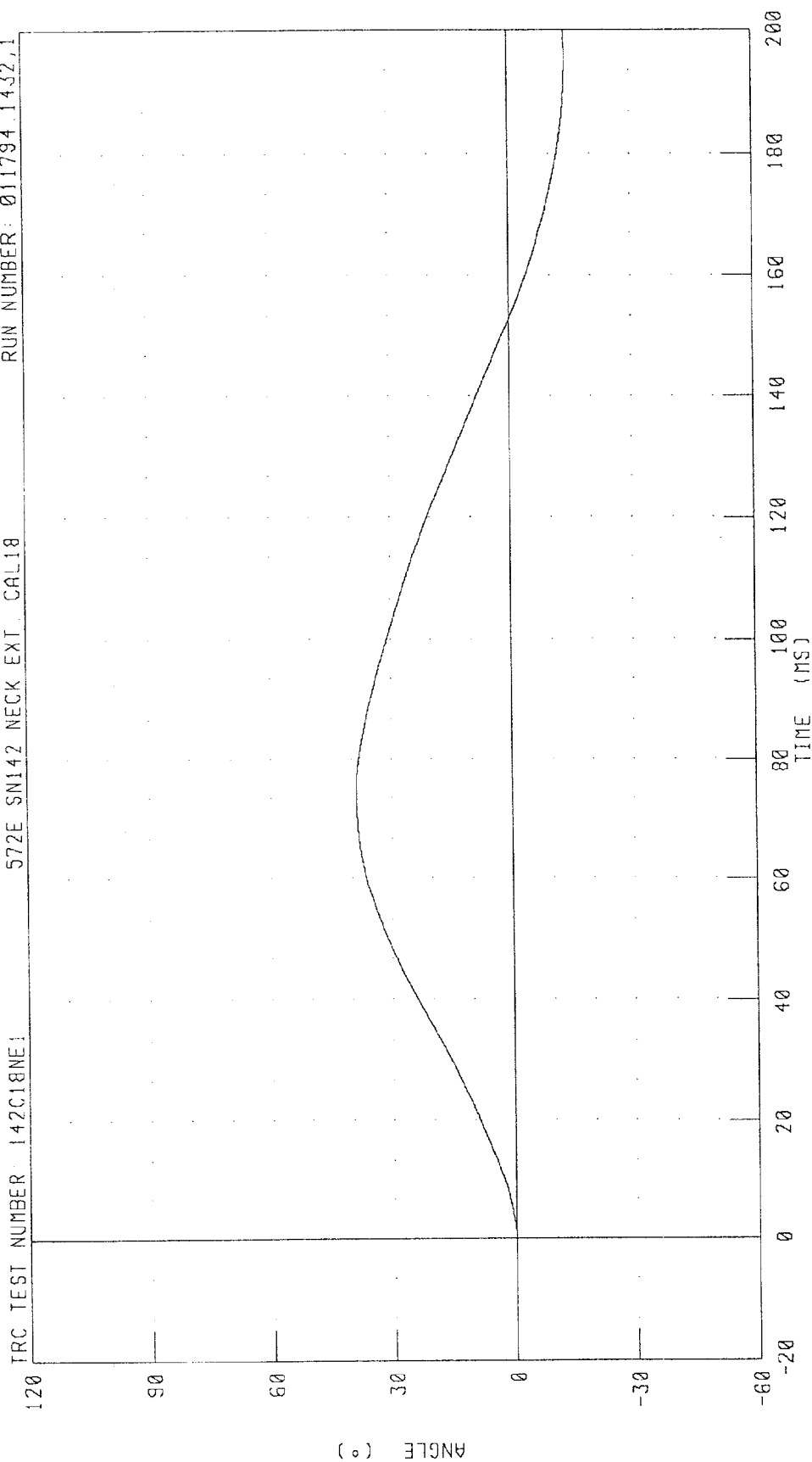
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

572E SN142 NECK EXT. CAL18

IRC TEST NUMBER 142C18NE1

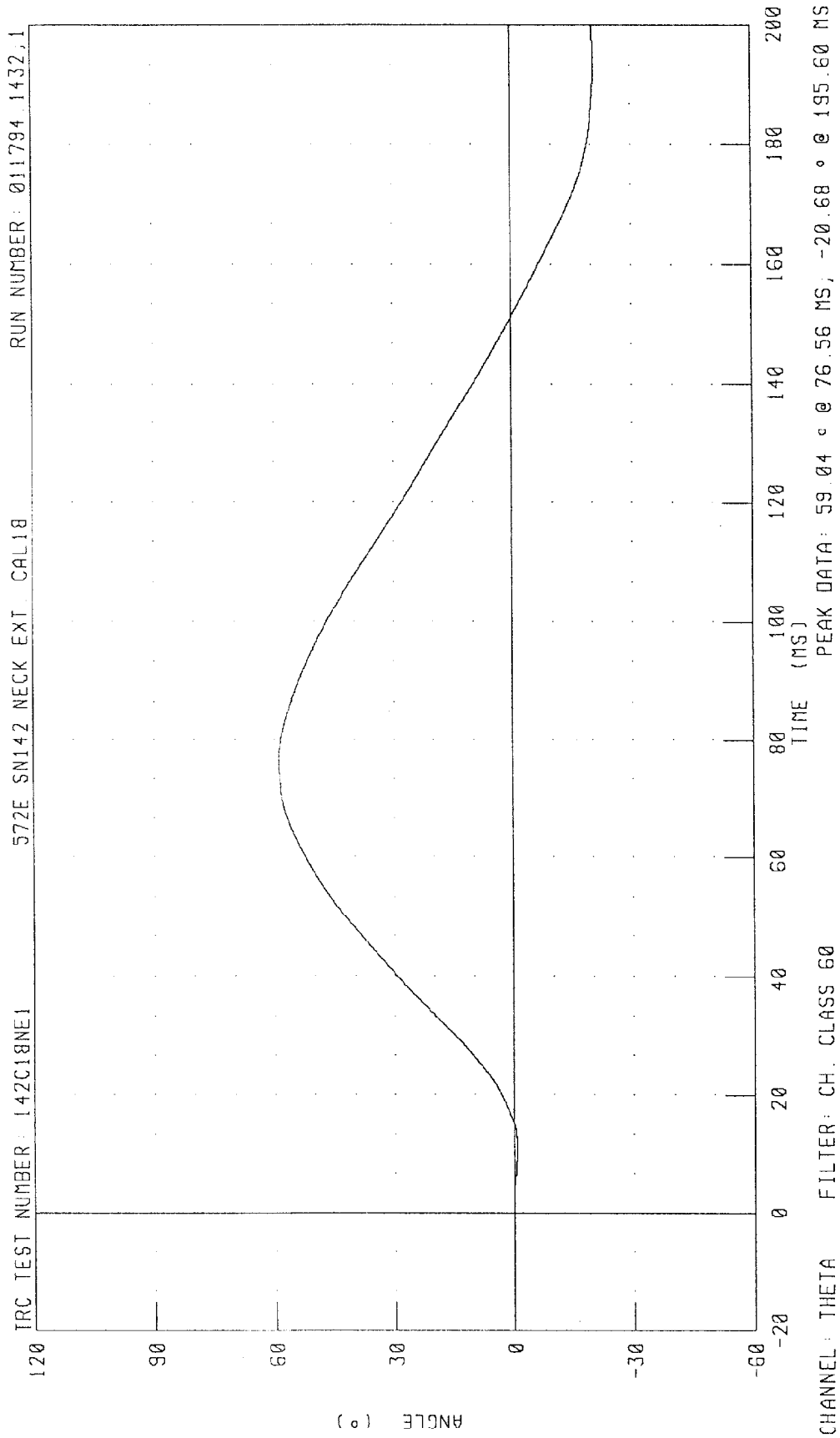
RUN NUMBER: 011794.1432.1



PEAK DATA: 38.70 ° @ 74.16 MS, -14.10 ° @ 195.20 MS

CHANNEL: BETA FILTER: CH. CLASS 60

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



ANGLE (°)

TIME (MS)

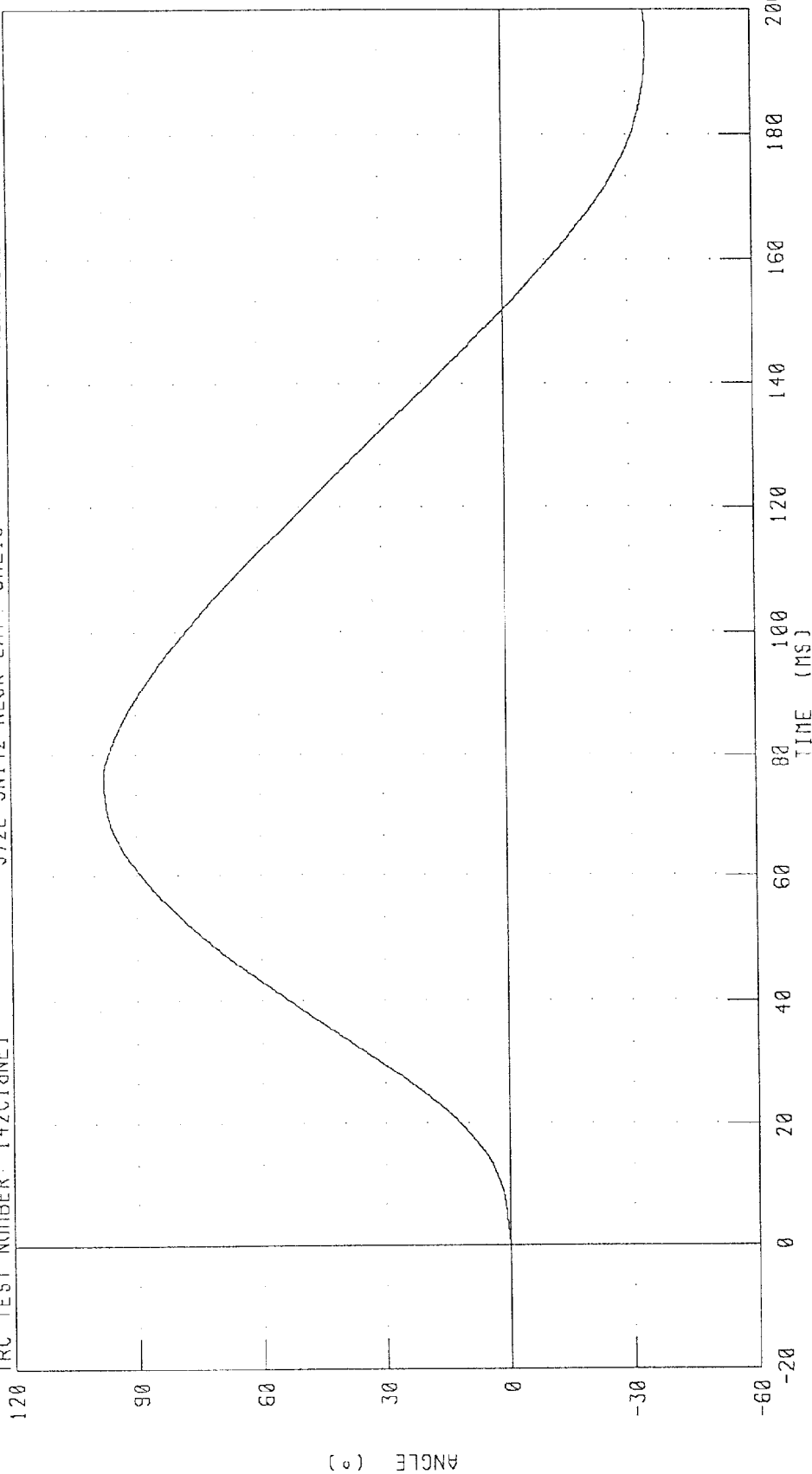
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 142C18NE1

572E SN142 NECK EXT. CAL18

RUN NUMBER: 011794.1432.1



CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 97.69 ° @ 76.00 MS; -34.78 ° @ 195.28 MS

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

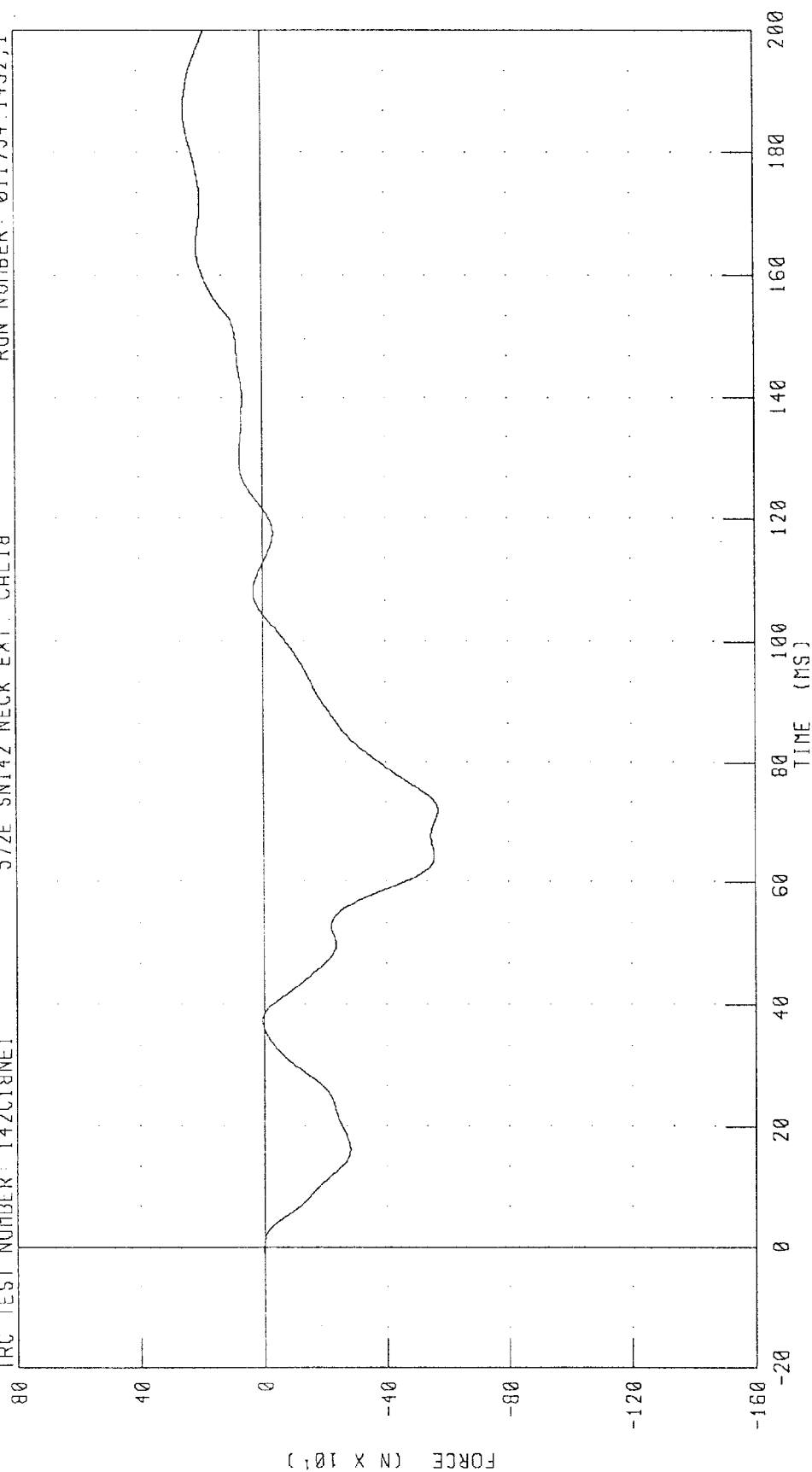
NECK FORCE X AXIS

572E SN142 NECK EXT. CAL18

572E SN142 NECK EXT. CAL18

IRC TEST NUMBER: 142C18NE1

RUN NUMBER: 011794.1432;1



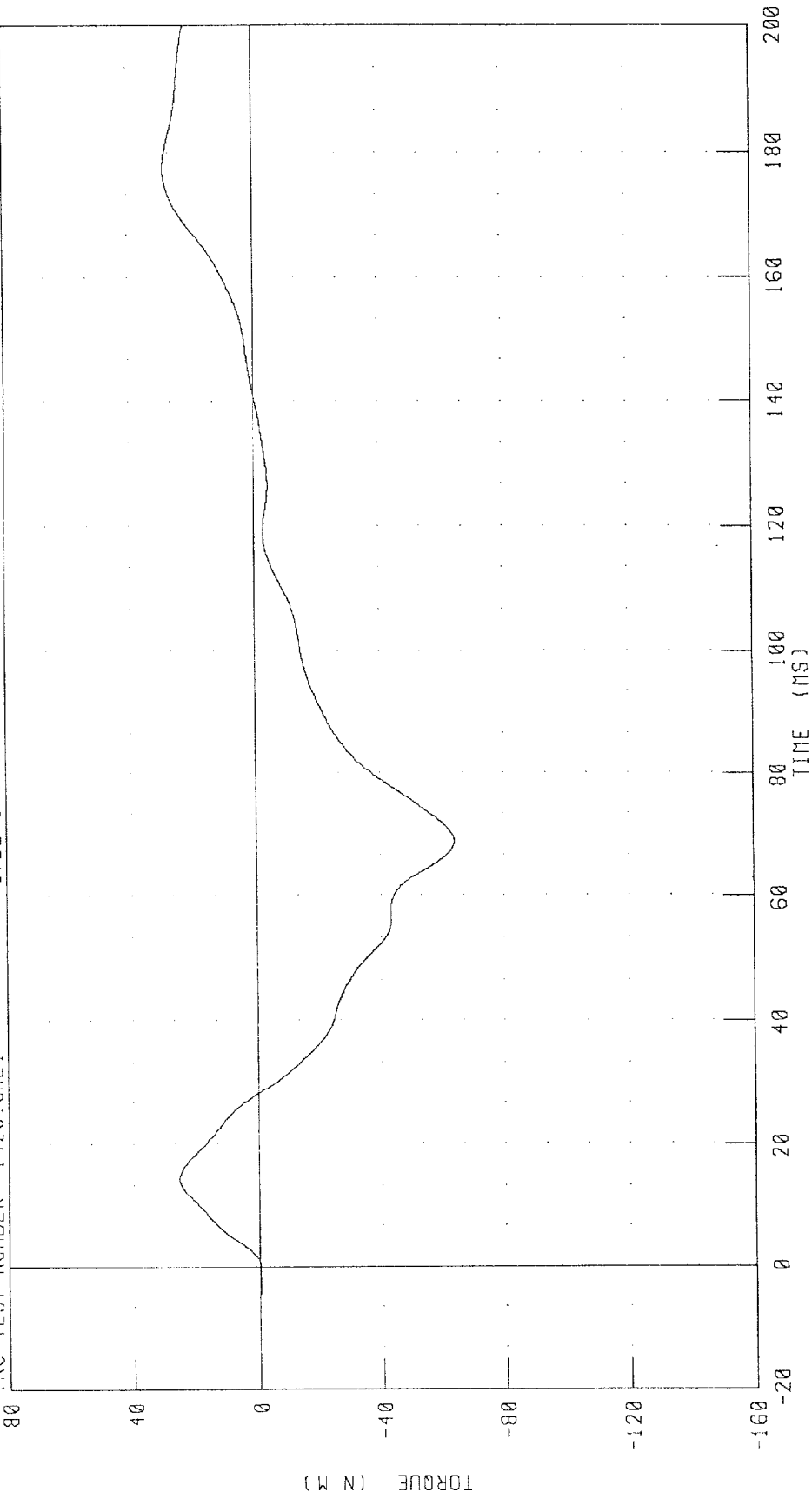
PEAK DATA: 251.38 N @ 186.88 MS, -568.07 N @ 72.08 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

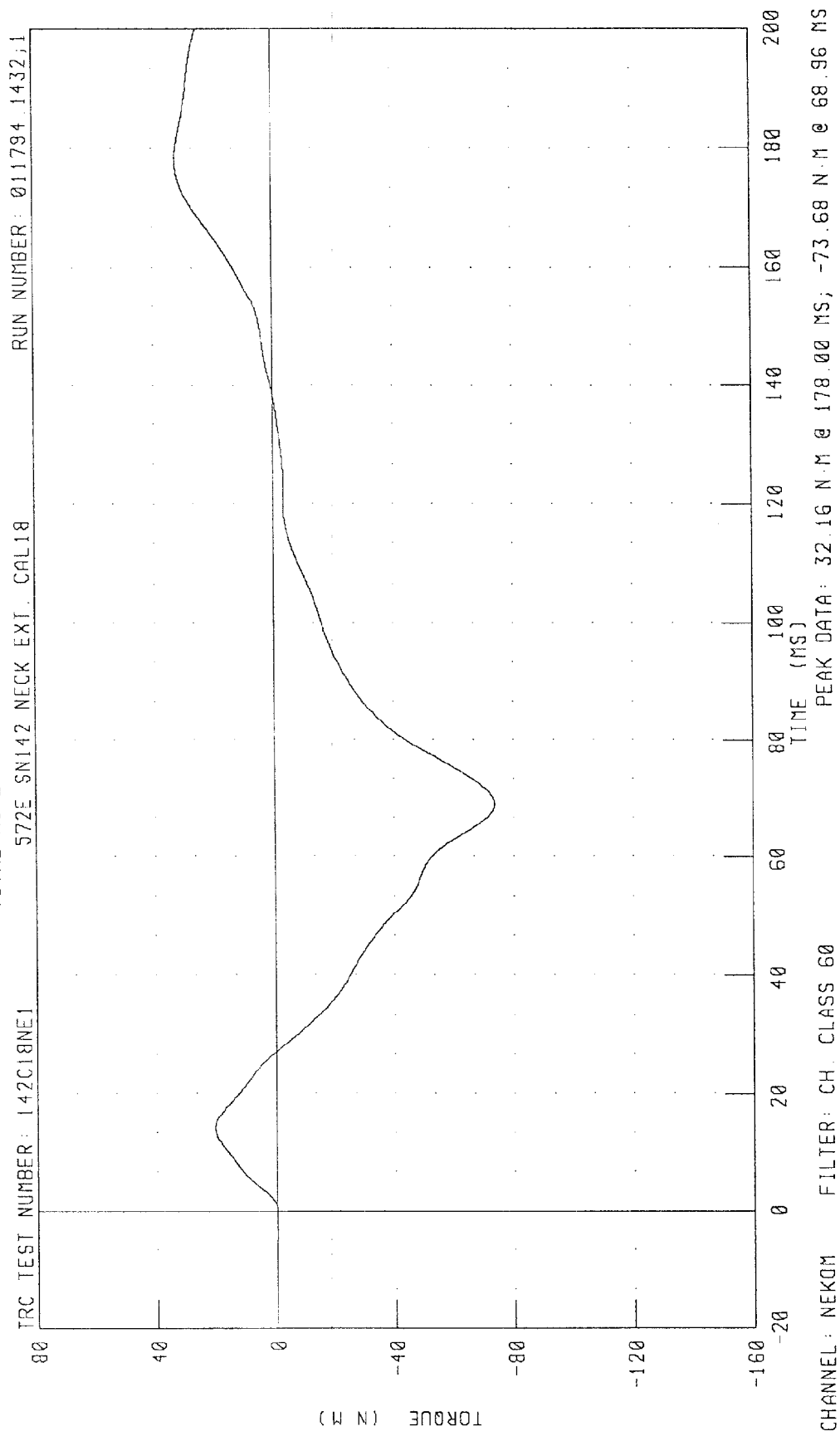
TRC TEST NUMBER: 142C18NE1 572E SN: 42 NECK EXT. CAL18 RUN NUMBER: 011794.1432.1



CHANNEL: NEKYM FILTER: CH. CLASS 60

PEAK DATA: 28.34 N-M @ 177.44 MS, -63.90 N-M @ 68.88 MS

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



TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III

22-NOV-93

TRC INC. 142C18TH1

572E SN142 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 %	55.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.68 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	69.9 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5442. N
INTERNAL HYSTERESIS	69% - 85%	74.0%

TEST MEETS SPECIFICATIONS

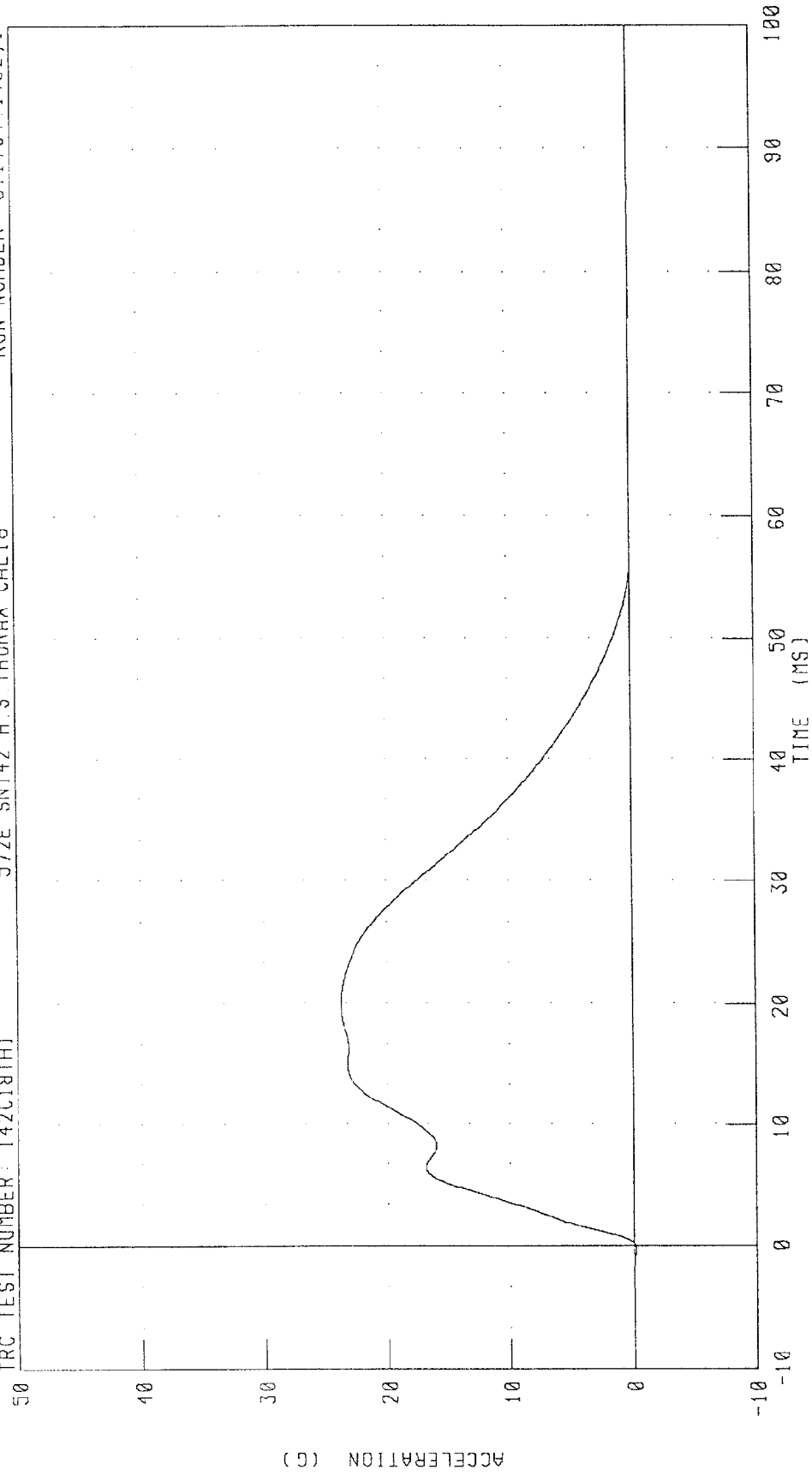
TECHNICIAN Pete Burt

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM DECELERATION

TRC TEST NUMBER: 142C18THJ

572E SN142 H.S THORAX CAL18

RUN NUMBER: 011794.1432.1



CHANNEL: PENXG FILTER: CH. CLASS 180 PEAK DATA: 23.76 G @ 19.92 MS; -0.16 G @ -0.32 MS

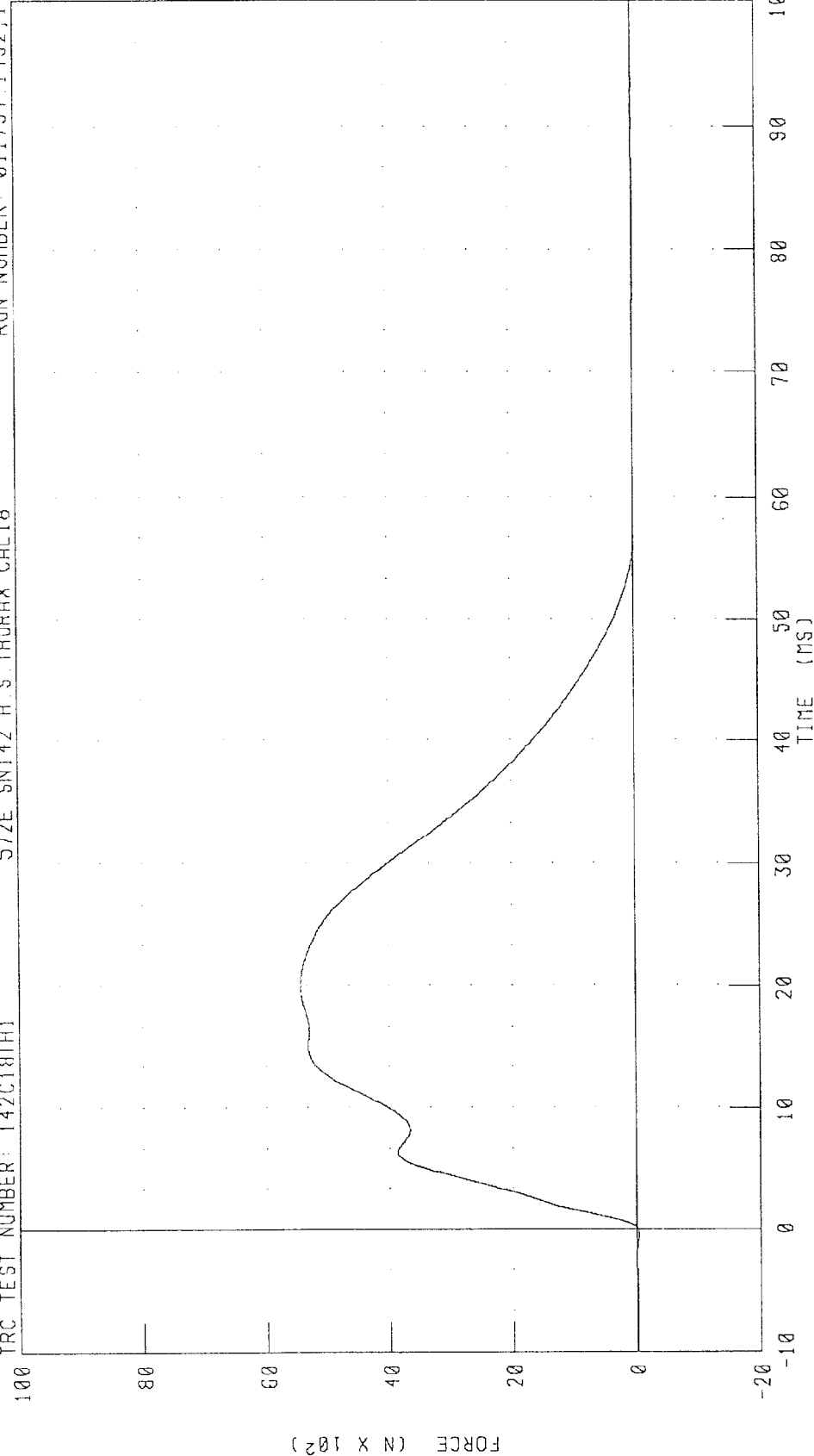
PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER: 142C18TH1

572E SN142 H.S. THORAX CAL18

RUN NUMBER: 011794.1432.1



PEAK DATA: 5442.76 N @ 19.92 MS; -35.75 N @ -0.32 MS

CHANNEL: PENXF FILTER: CH. CLASS 180

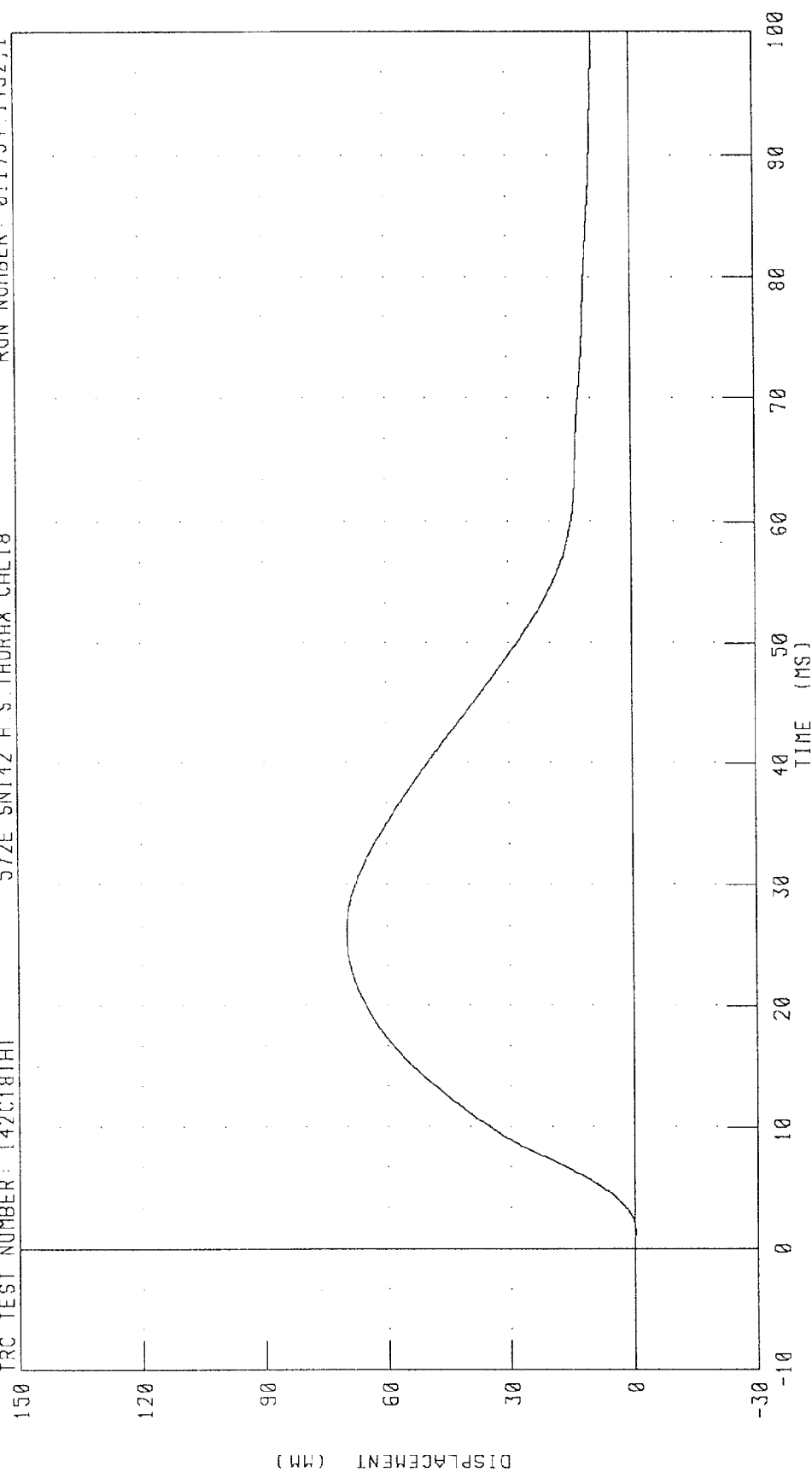
PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

TRC TEST NUMBER: 142C18TH1

572E SN142 H S THORAX CAL18

RUN NUMBER: 011794 1432.11



CHANNEL: CSTXD FILTER: CH. CLASS 180

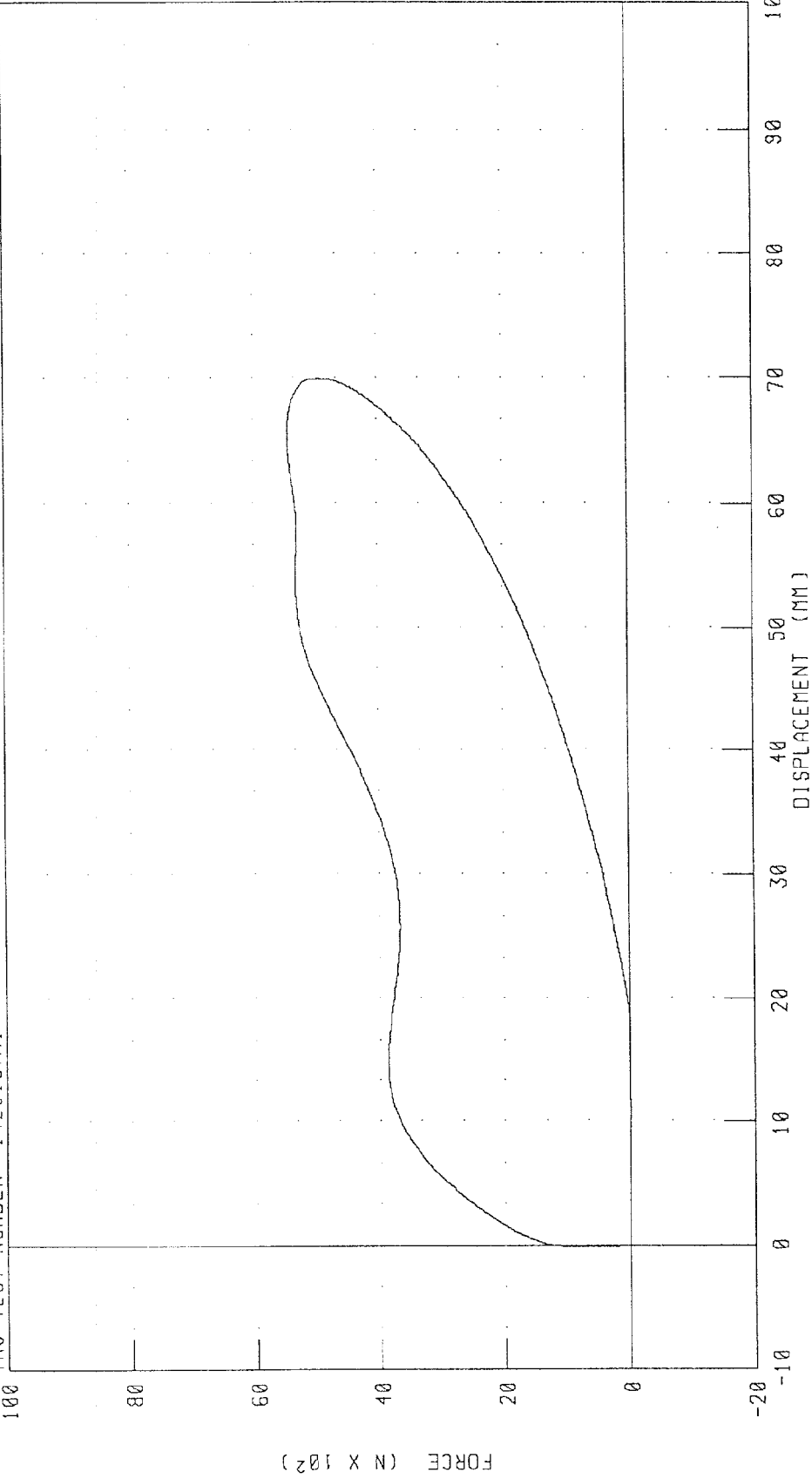
PEAK DATA: 69.91 MM @ 26.08 MS; -0.06 MM @ 1.36 MS

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

TRC TEST NUMBER: 142C18TH1

572E SN142 H S THORAX CAL18

RUN NUMBER: 011794.1432.1



CHANNEL: CSTXD
PENXF
FILTER: CH. CLASS 180
CH. CLASS 180
PEAK DATA: 69.91 mm @ 26.08 ms; -0.06 mm @ 1.36 ms
5442.76 N @ 19.92 ms; -35.75 N @ -0.32 ms

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III

22-NOV-93

TRC INC. 142C18RK1

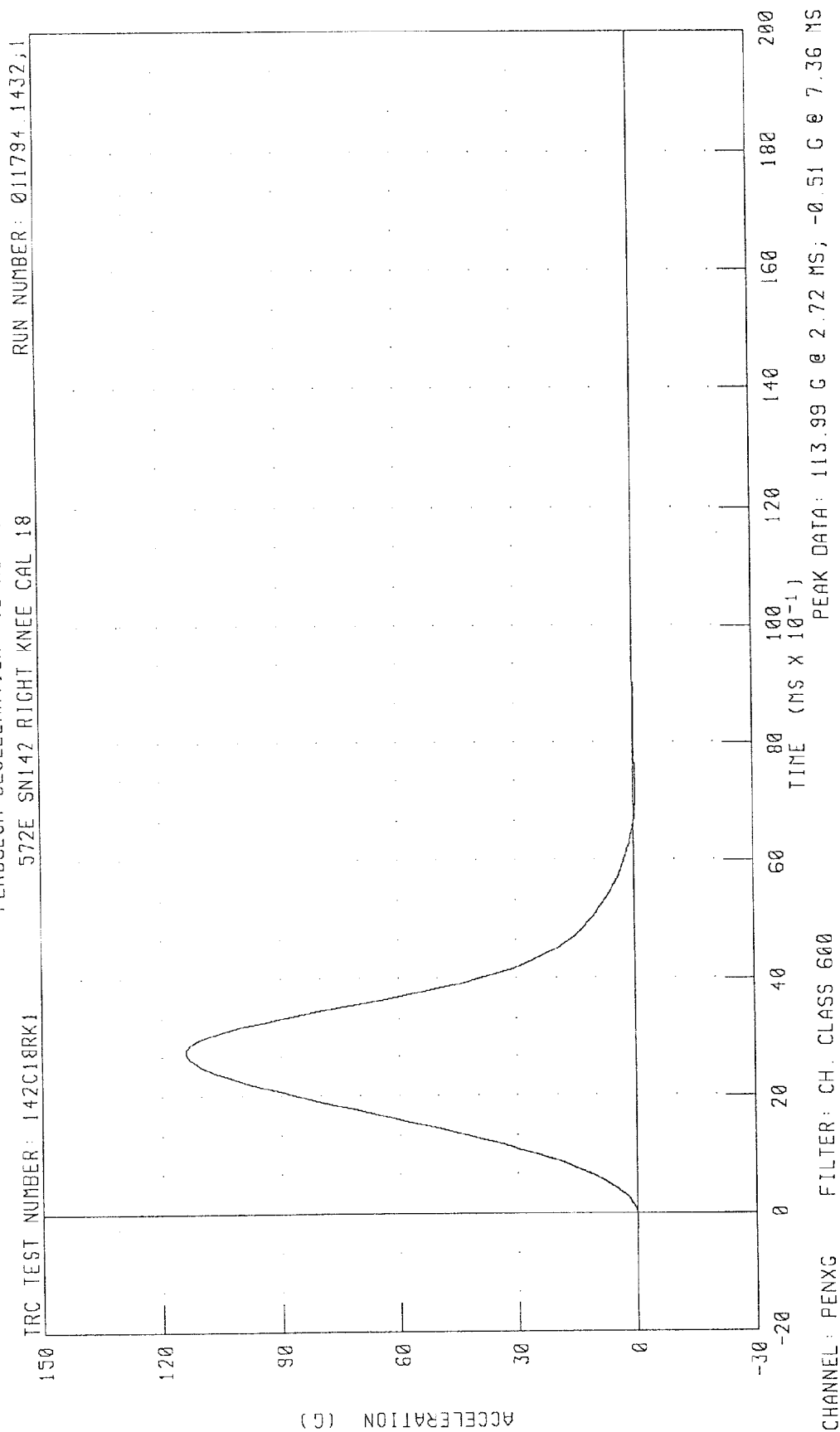
572E SN142 RIGHT KNEE CAL 18

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	2.09 M/S
PEAK KNEE IMPACT FORCE	4714 - 5783 N	5577.3 N
PROBE WEIGHT	5.0 KG	

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete F. S.

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



CHANNEL: PENXG FILTER: CH. CLASS 600

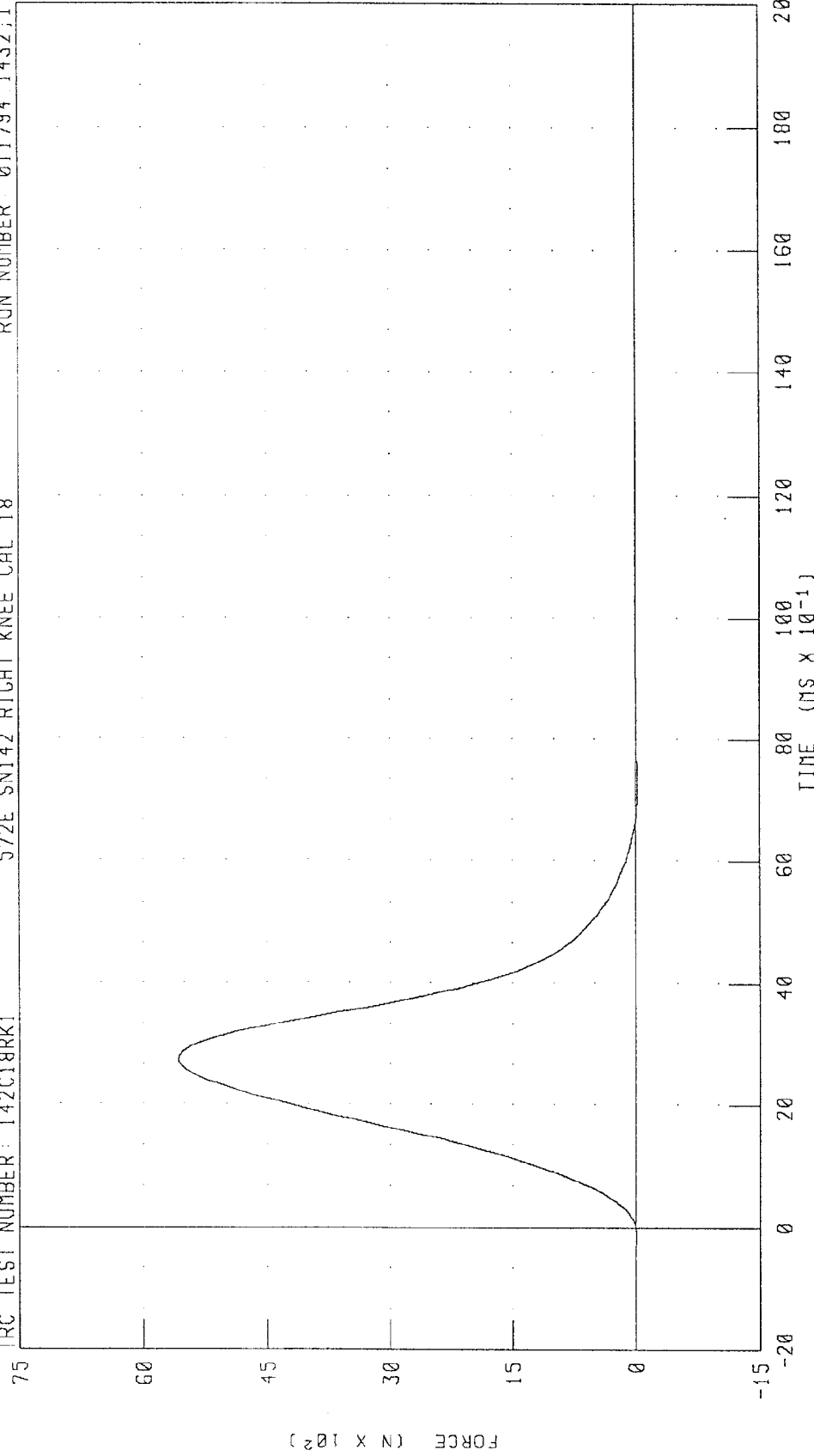
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

572E SN142 RIGHT KNEE CAL 18

RUN NUMBER: 011794.1432.1

TRC TEST NUMBER: 142C18RK1



PEAK DATA: 5577.39 N @ 2.72 MS; -24.85 N @ 7.36 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III

22-NOV-93

TRC INC. 142C18LK1

572E SN142 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	2.08 M/S
PEAK KNEE IMPACT FORCE	4714 - 5783 N	5720.6 N
PROBE WEIGHT	5.0 KG	

TEST MEETS SPECIFICATIONS

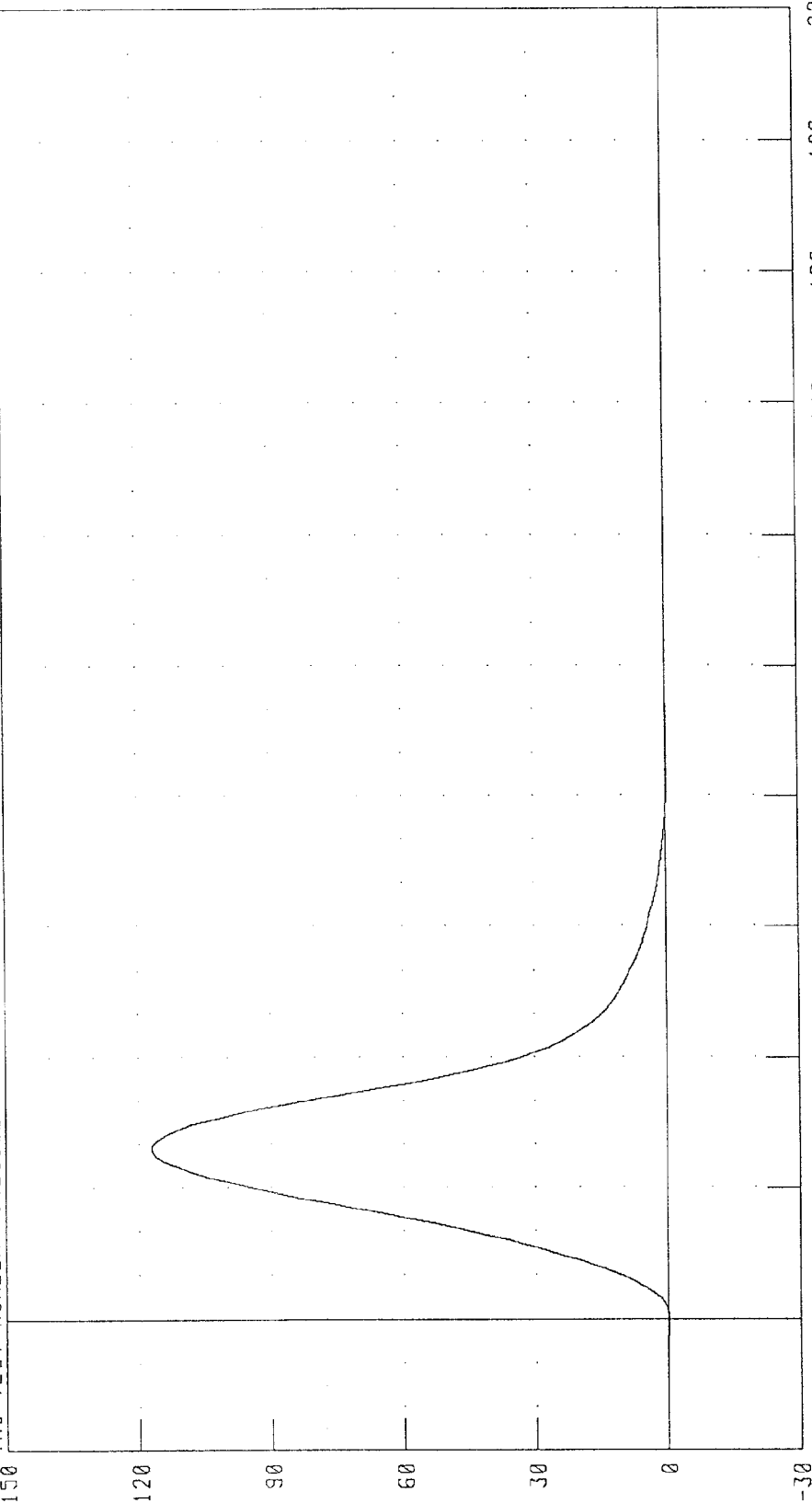
TECHNICIAN Pete B-S

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

TRC TEST NUMBER: 142C18LK1

572E SN142 LEFT KNEE CAL 18

RUN NUMBER: 011794.1432.1



PEAK DATA: 116.92 G @ 2.56 MS; -0.19 G @ 0.00 MS

CHANNEL: PENXG FILTER: CH. CLASS 600

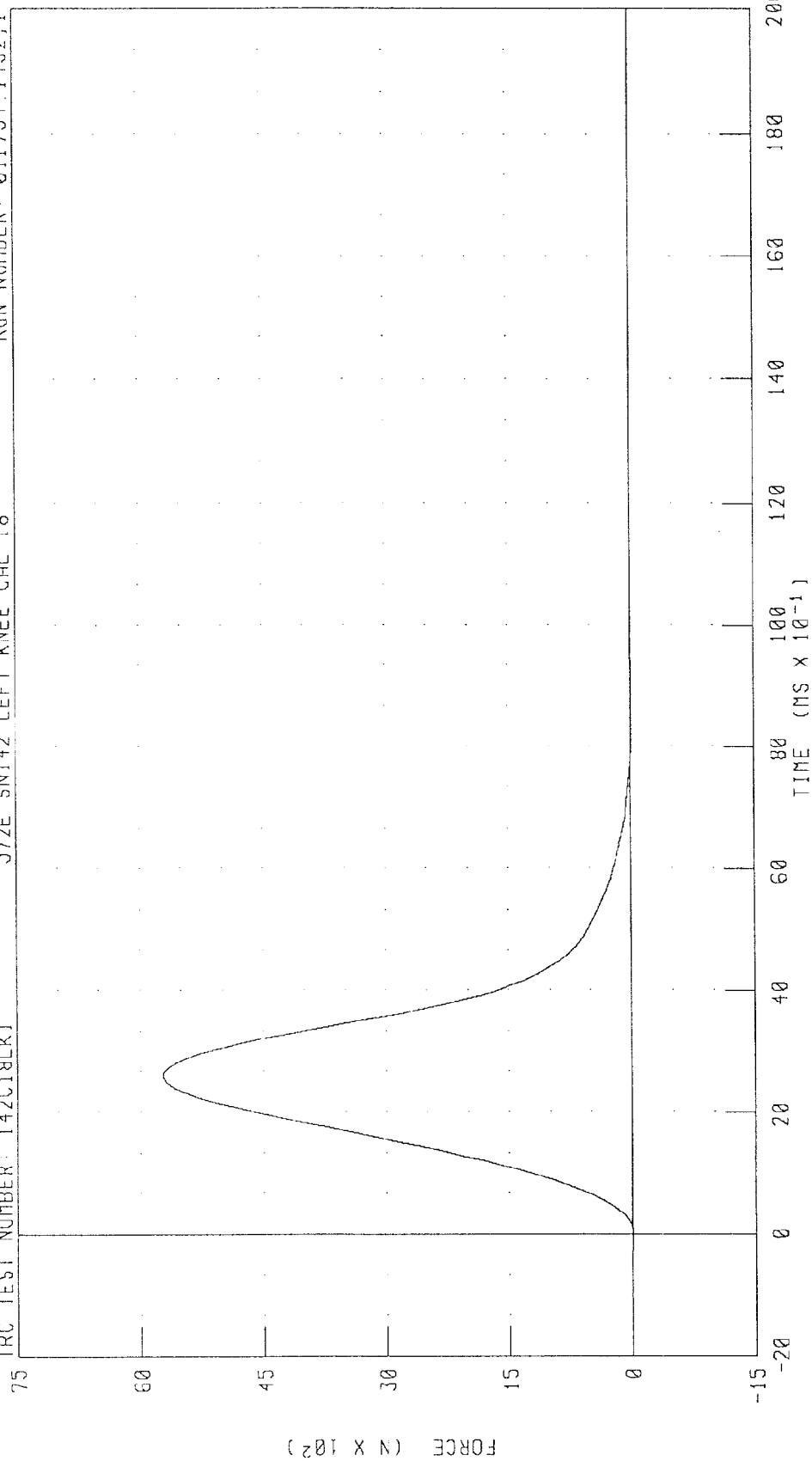
PART 572-E HYBRID II: LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

572E SN142 LEFT KNEE CAL 18

RUN NUMBER: 011794.1432.1

TRC TEST NUMBER: 142C18LK1



CHANNEL: PENXF FILTER: CH. CLASS 600

PEAK DATA: 5720 68 N @ 2.56 MS; -9.13 N @ 0.00 MS

PRE-TEST CERTIFICATION DATA

PASSENGER DUMMY S/N: 192

TRANSPORTATION RESEARCH CENTER INC.
HYBRID III EXTERNAL DIMENSIONS
192 ARL

21-OCT-93

TRC 192C16ED1 572E SN192 EXT.DIMENSION CAL16

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

TEST MEETS SPECIFICATIONS

TECHNICIAN *Pete Smith*

TRANSPORTATION RESEARCH CENTER INC.

HEAD DROP TEST

HYBRID III

25-OCT-93

TRC INC. 192C16HD1

572E SN192 HEAD DROP CAL 16

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	32.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	228.45 G
PEAK LATERAL ACCELERATION	15 G MAX	-2.56 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

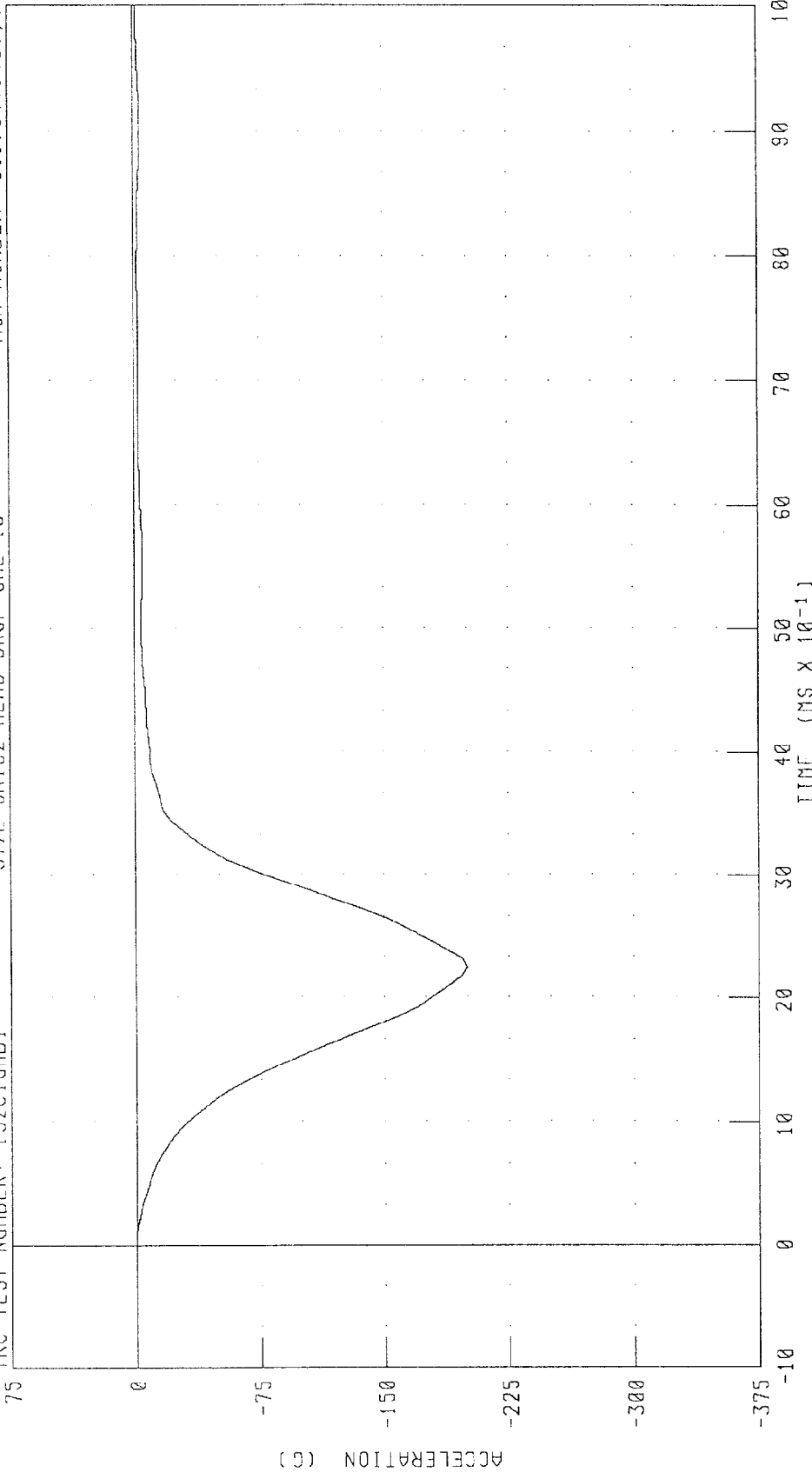
TECHNICIAN Pete Faut

PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION X AXIS

572E SN192 HEAD DROP CAL 16 RUN NUMBER: 011794.1437;2

TRC TEST NUMBER: 192C16HD1



PEAK DATA: 0.03 G @ 0.00 MS; -200.04 G @ 2.24 MS

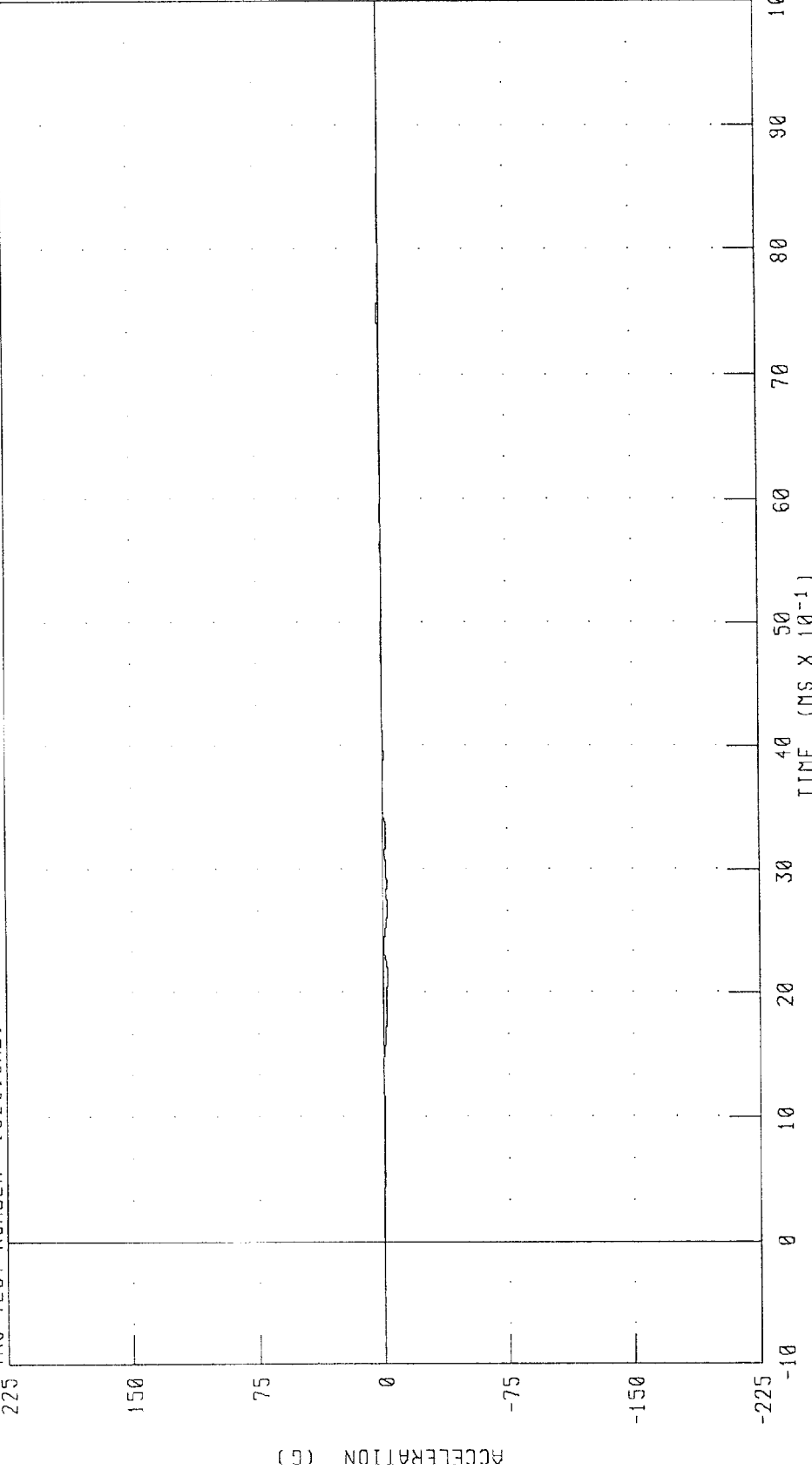
CHANNEL: HEDXG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y AXIS

572E SN192 HEAD DROP CAL 16 RUN NUMBER: 011794.1437,2

TRC TEST NUMBER: 192C16HD1



PEAK DATA: 1.03 G @ 7.52 MS, -2.56 G @ 2.08 MS

CHANNEL: HEDYG FILTER: CH. CLASS 1000

PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Z AXIS

572E SN192 HEAD DROP CAL 16 RUN NUMBER: 011794 1437.2

TRC TEST NUMBER: 192C16HD1

75



PEAK DATA: -0.01 G @ -0.80 MS; -110.32 G @ 2.24 MS

CHANNEL: HED7G FILTER: CH. CLASS 1000

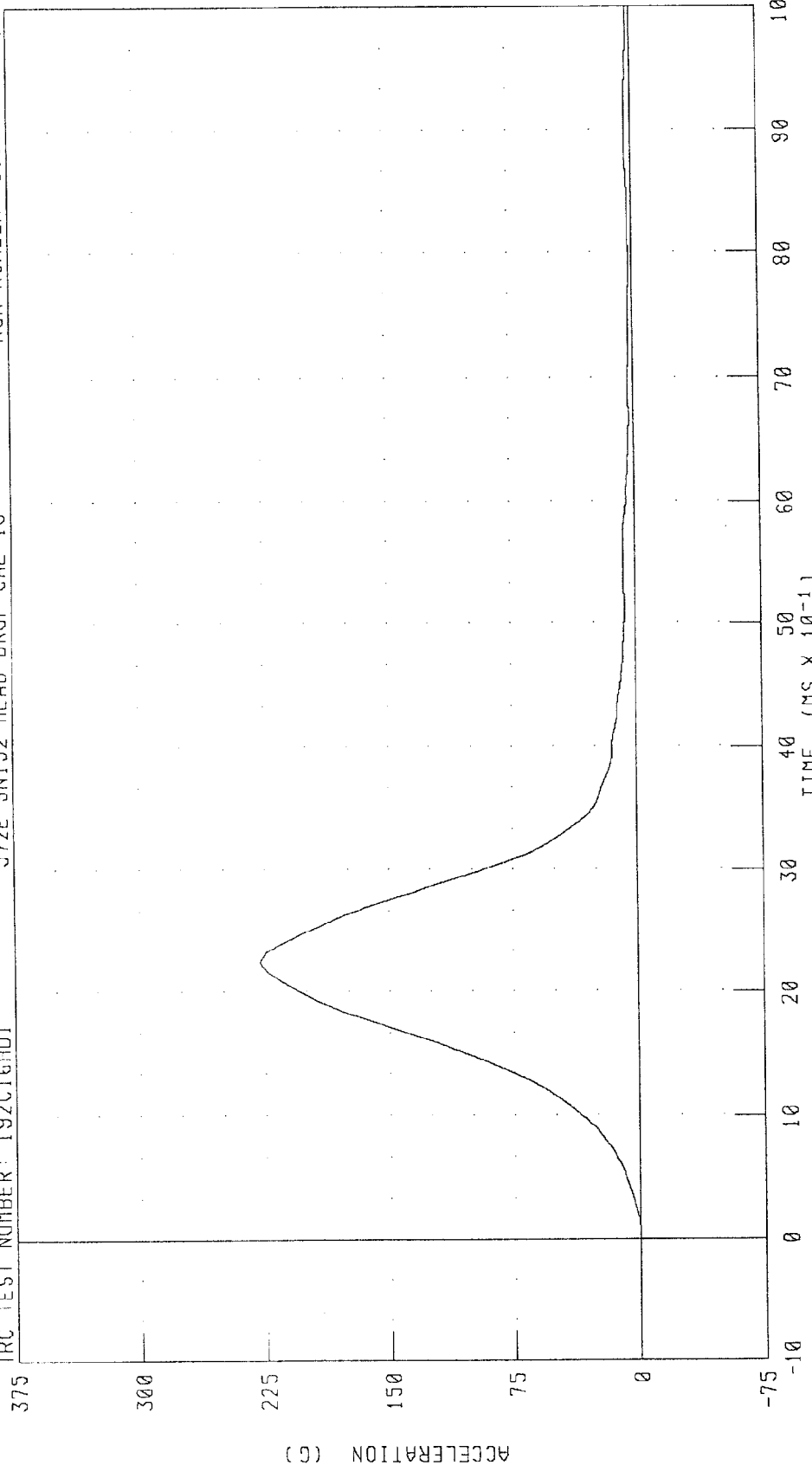
PART 572-E HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

572E SN192 HEAD DROP CAL 16

RUN NUMBER: 011794.1437;2

TRC TEST NUMBER: 192C16HD1



PEAK DATA: 228.45 G @ 2.24 MS; 0.03 G @ -0.72 MS

CHANNEL: HEDRG FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

NECK FLEXION TEST

HYBRID III

21-OCT-93

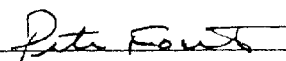
6 AXIS NECK TRANSDUCER
TRC 192C16NF1

572E SN192 NECK FLEXION CAL16

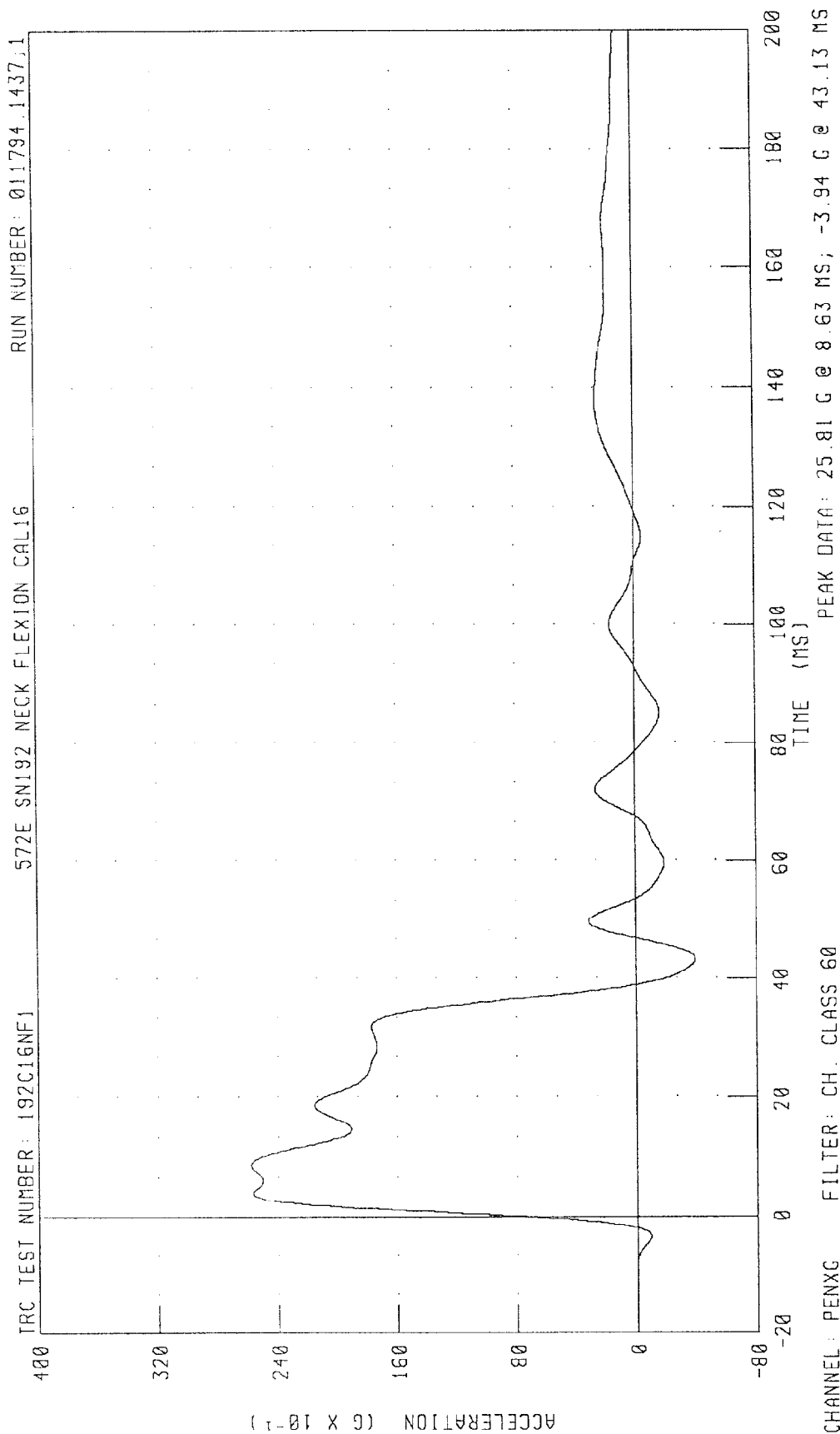
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	51.0 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.03 M/S
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	25.12 G
	20 MS	17.60 - 22.60 G	20.89 G
	30 MS	12.50 - 18.50 G	17.50 G
MAX PENDULUM G		29 G MAX	25.80 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	17.68 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	37.13 MS
D PLANE	MAX	64 - 78 DEG.	68.83 DEG.
ROTATION	TIME	57 - 64 MS	58.38 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	89.01 NM
	TIME	47 - 58 MS	49.50 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	115.38 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	105.63 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



PART 572-E HYBRID III NECK FLEXION CALIBRATION
PENDULUM DECELERATION



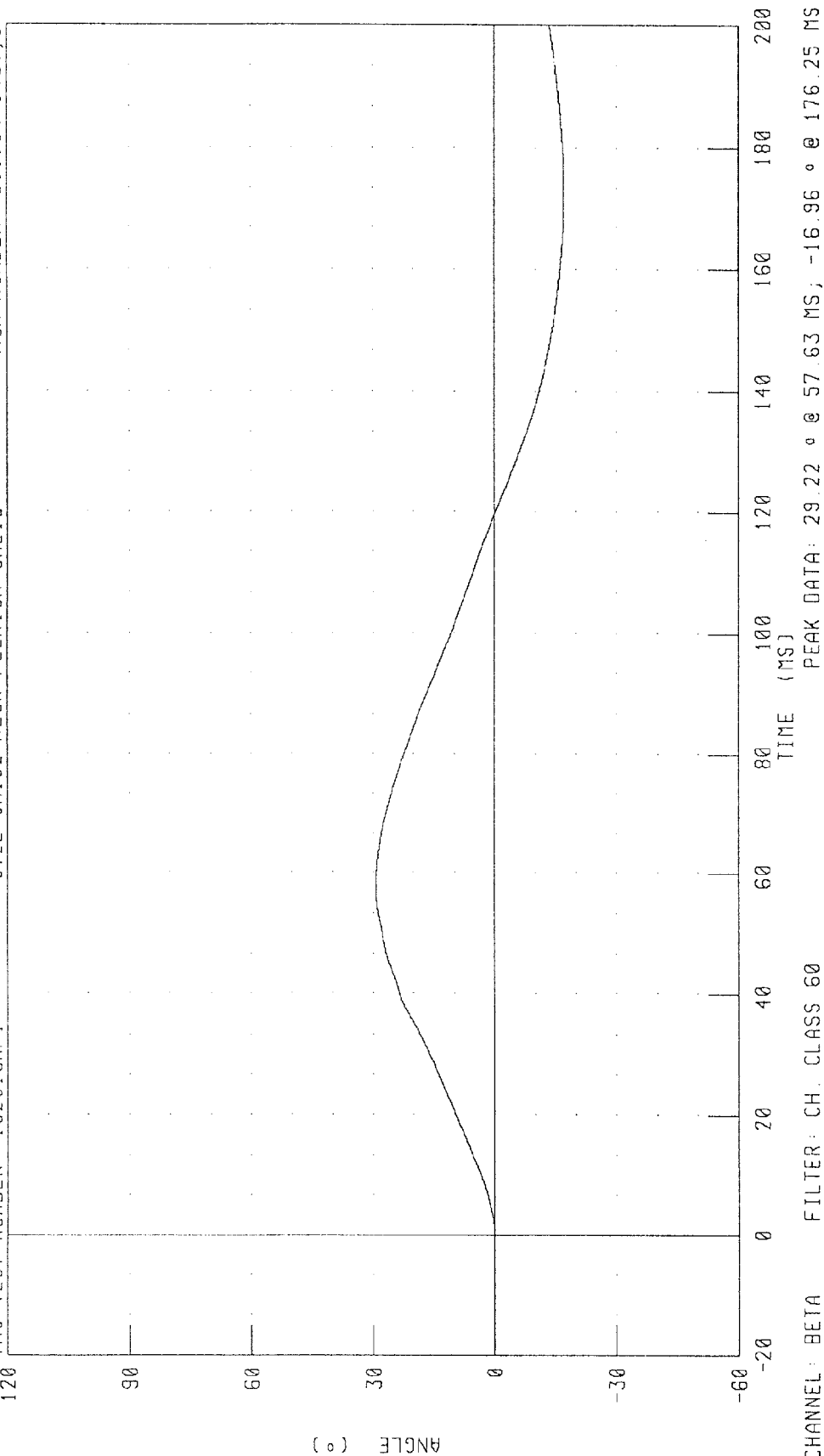
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 192C16NF1

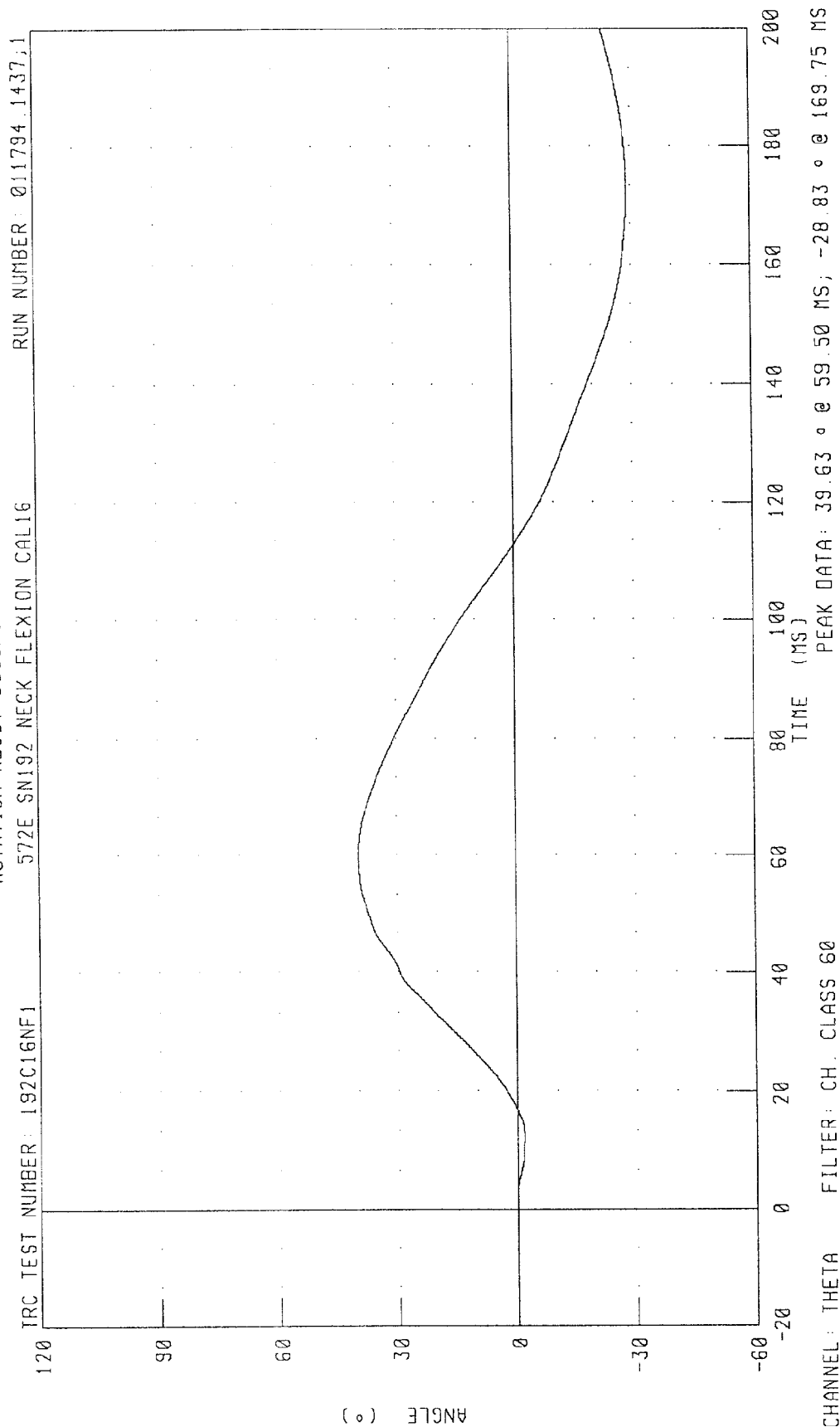
572E SN192 NECK FLEXION CAL16

RUN NUMBER: 011794 1437,1



CHANNEL: BETA FILTER: CH. CLASS 60

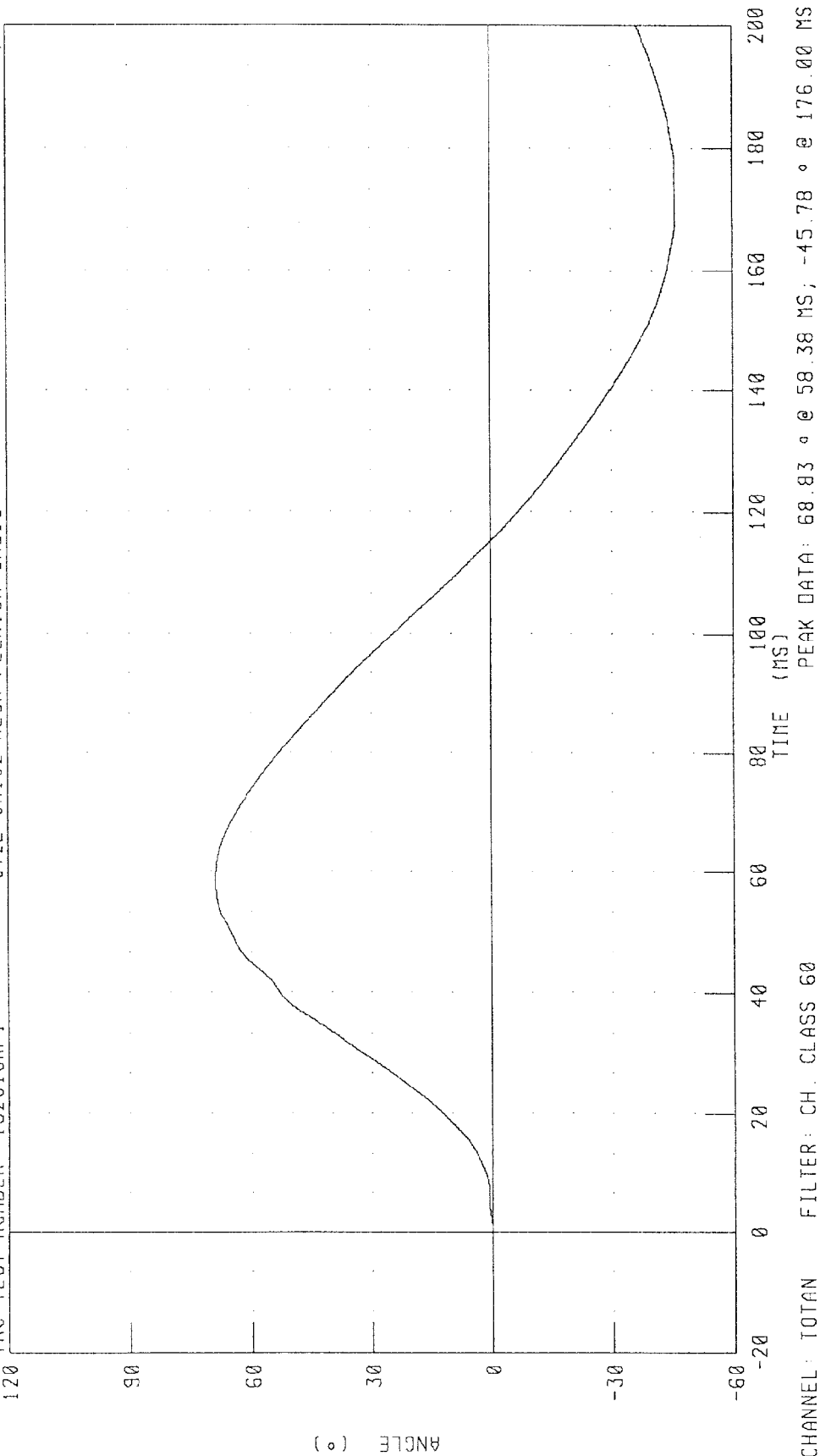
PART 572-E HYBRID J11 NECK FLEXION CALIBRATION
 ROTATION ABOUT OCCIPITAL CONDYLE



PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 192C16NF1 572E SN192 NECK FLEXION CAL16 RUN NUMBER: 011784.1437.1



CHANNEL: TOTAL FILTER: CH. CLASS 60

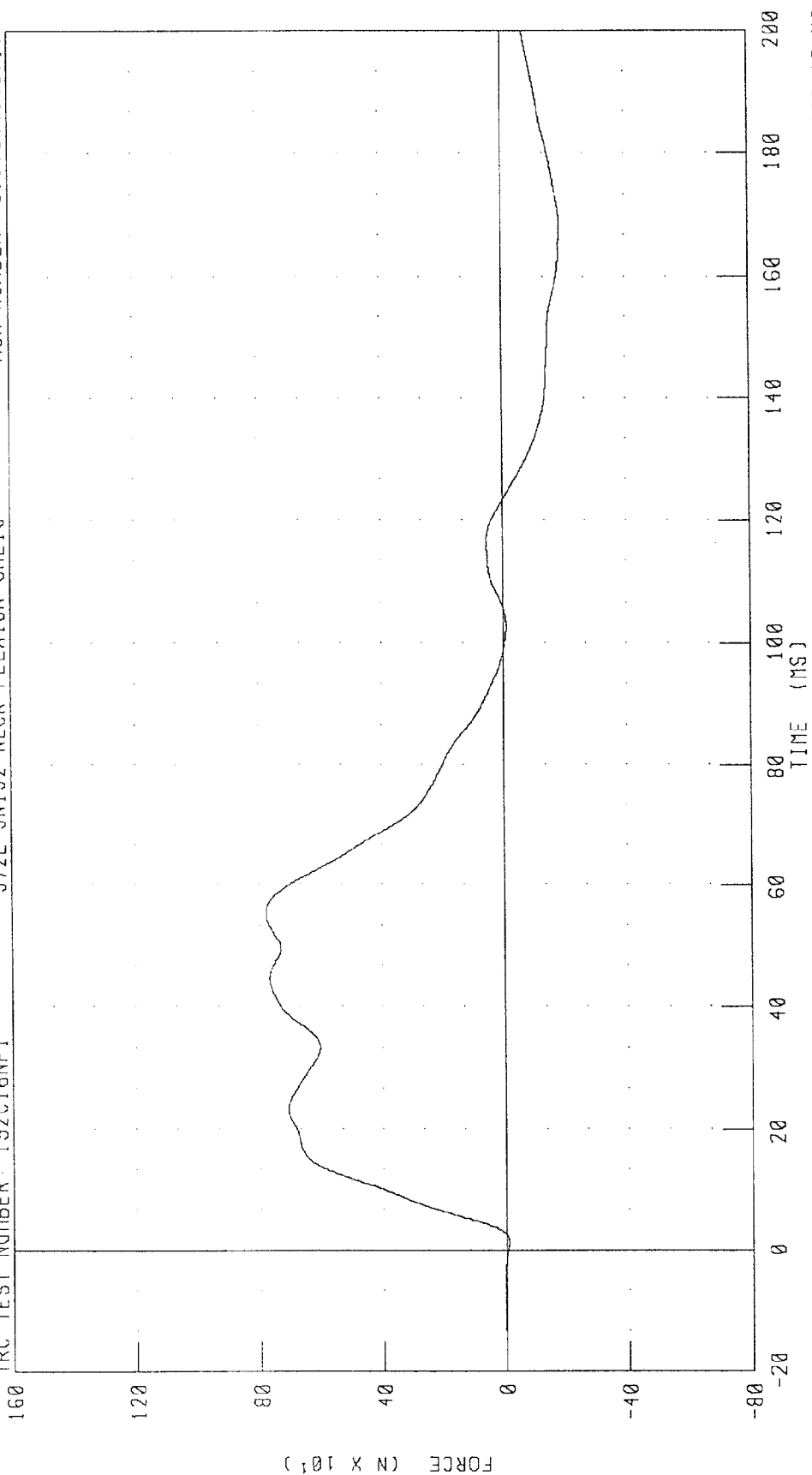
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

572E SN192 NECK FLEXION CAL16

TRC TEST NUMBER: 192C16NF1

RUN NUMBER: 011794.1437.1



PEAK DATA: 777.70 N @ 55.25 MS; -188.60 N @ 168.13 MS

CHANNEL: NEKXF FILTER: CH: CLASS 60

PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK MOMENT Y AXIS

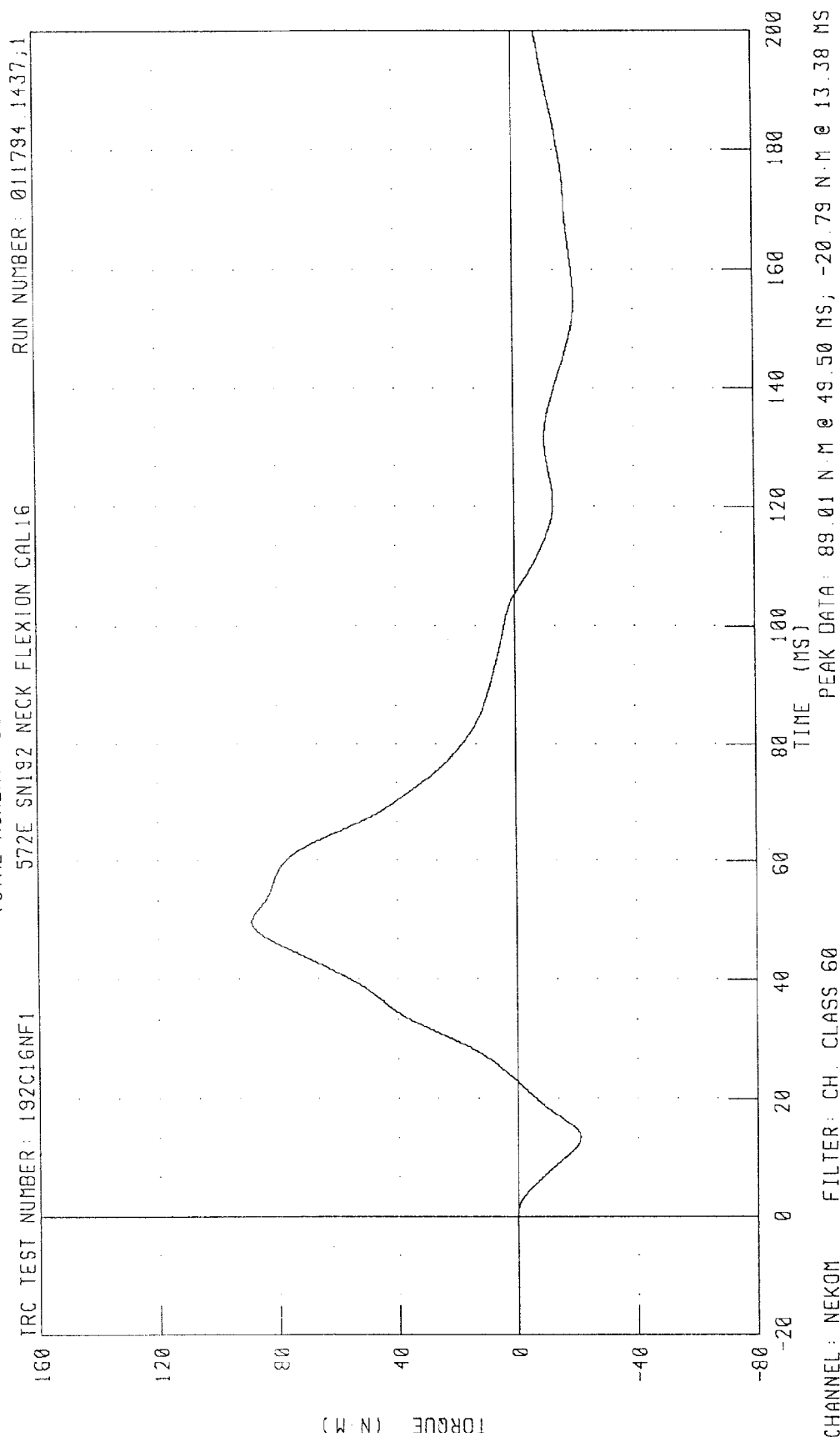
TRC TEST NUMBER: 192C16NF1 572E SN192 NECK FLEXION CAL16 RUN NUMBER: 011784 1437.1



PEAK DATA: 76.01 N-M @ 49.50 MS; -31.50 N-M @ 13.88 MS

CHANNEL: NEKYH FILTER: CH. CLASS 60

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



TRANSPORTATION RESEARCH CENTER INC.

NECK EXTENSION TEST

HYBRID III

21-OCT-93

6 AXIS NECK TRANSDUCER
TRC 192C16NE1

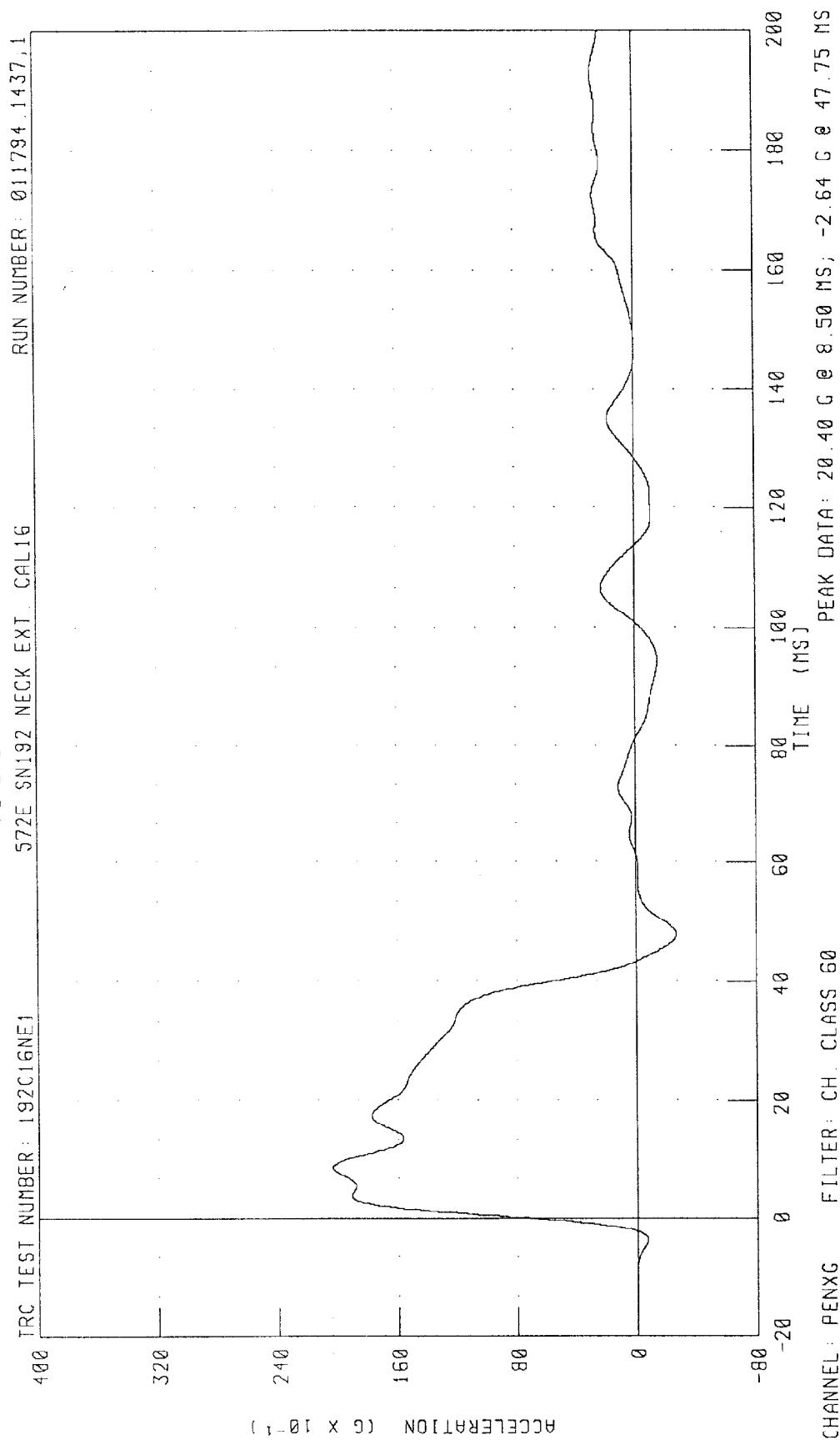
572E SN192 NECK EXT. CAL16

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	51.0 %
IMPACT VELOCITY		5.95 - 6.19 M/S	6.00 M/S
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	19.41 G
	20 MS	14.00 - 19.00 G	16.67 G
	30 MS	11.00 - 16.00 G	13.24 G
MAX PENDULUM G		22 G MAX	20.39 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	13.19 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	40.25 MS
D PLANE	MAX	81 - 106 DEG.	93.31 DEG.
ROTATION	TIME	72 - 82 MS	75.88 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-57.36 NM
	TIME	65 - 79 MS	71.63 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	157.88 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	141.38 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Foss

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 PENOULUM DECELERATION



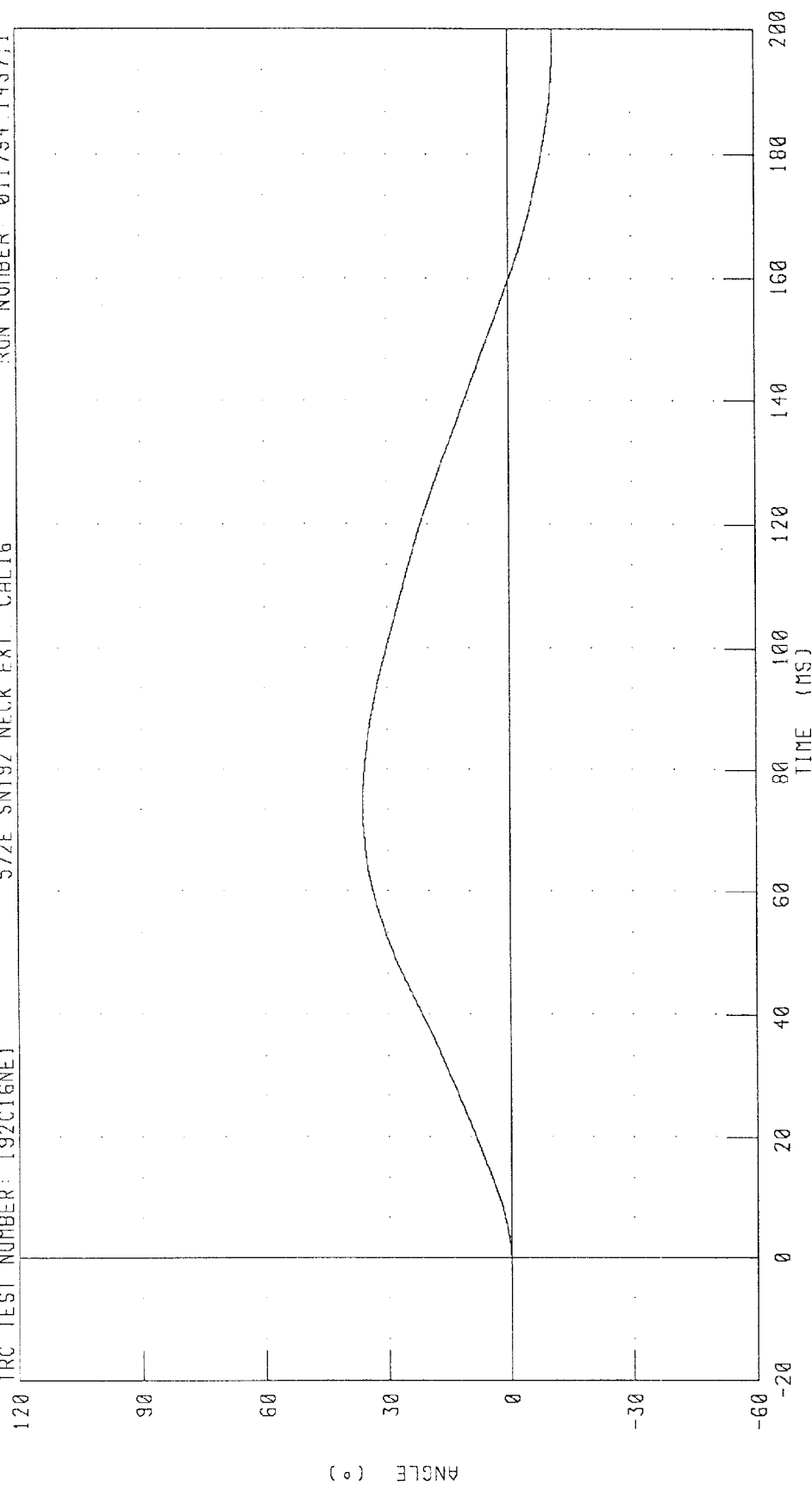
CHANNEL: PENXG FILTER: CH. CLASS 60

PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: 192C16NE1

572E SN192 NECK EXT CAL16

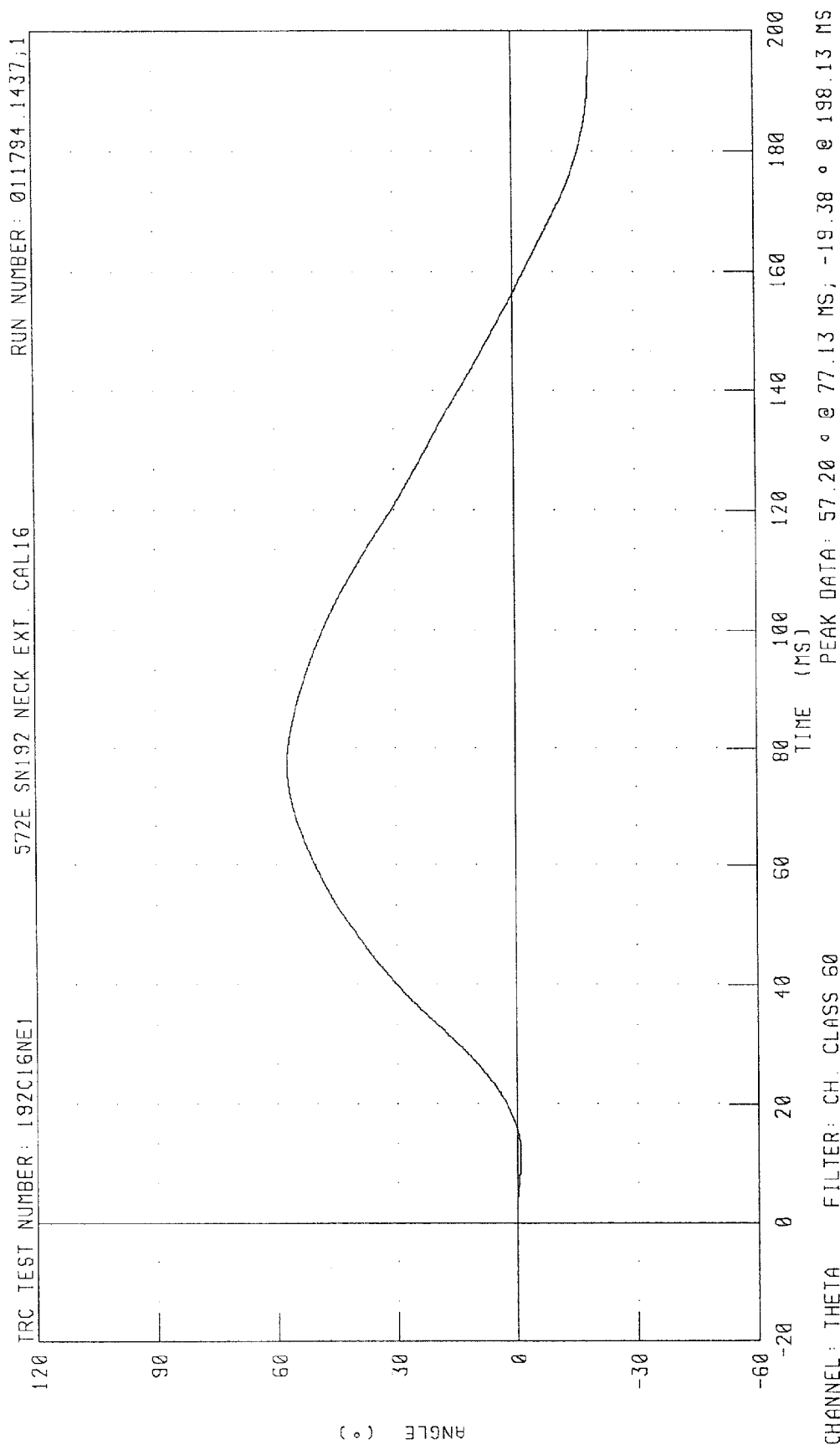
RUN NUMBER 011784 1437.1



CHANNEL: BETA FILTER: CH. CLASS 60

PEAK DATA: 36.22 ° @ 74.13 MS; -10.91 ° @ 198.25 MS

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



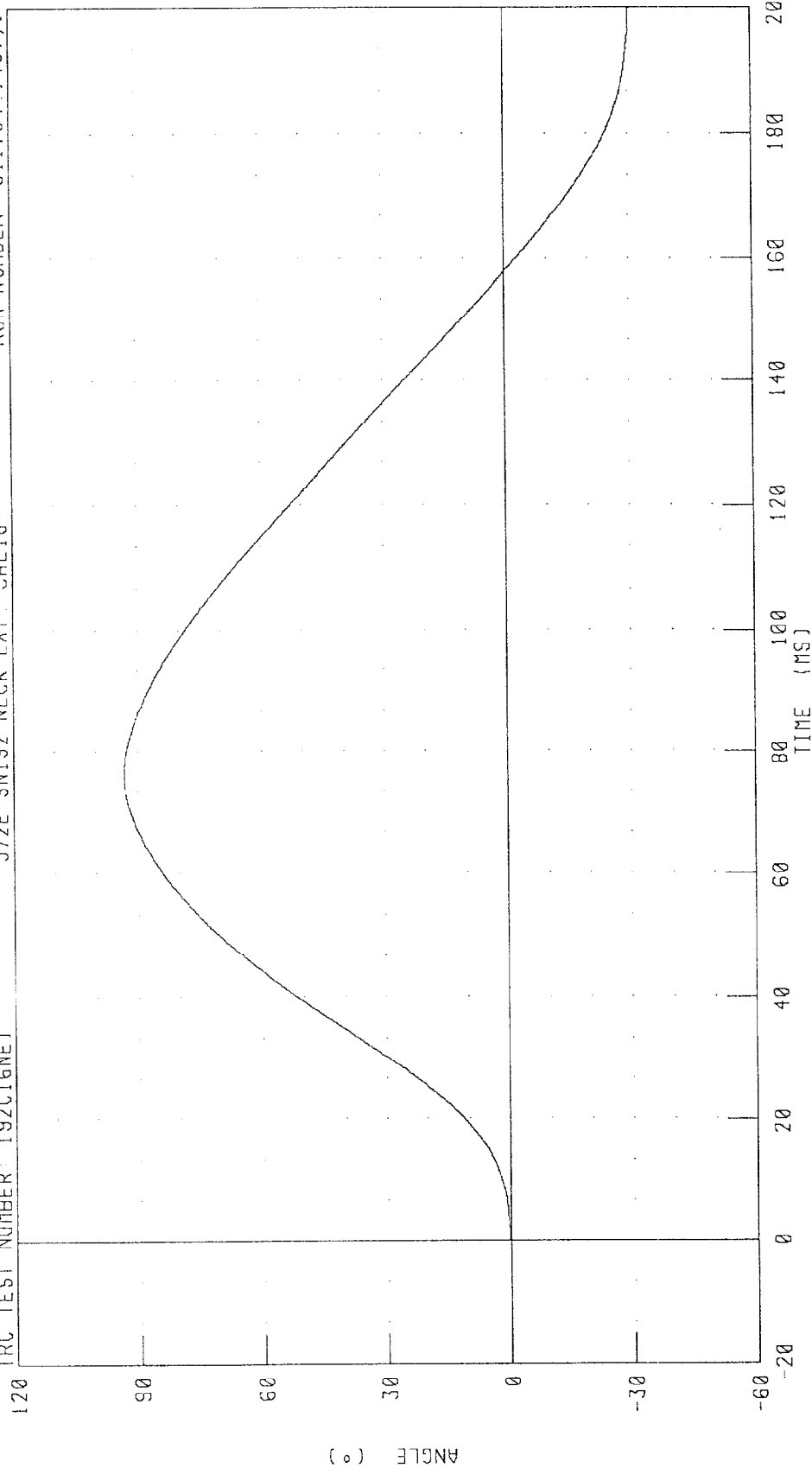
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TOTAL ROTATION

TRC TEST NUMBER: 192C16NE1

572E SN192 NECK EXT. CAL16

RUN NUMBER: 011794.1437.1



CHANNEL: TOTAN FILTER: CH. CLASS 60

PEAK DATA: 93.31 ° @ 75.88 MS; -30.29 ° @ 198.13 MS

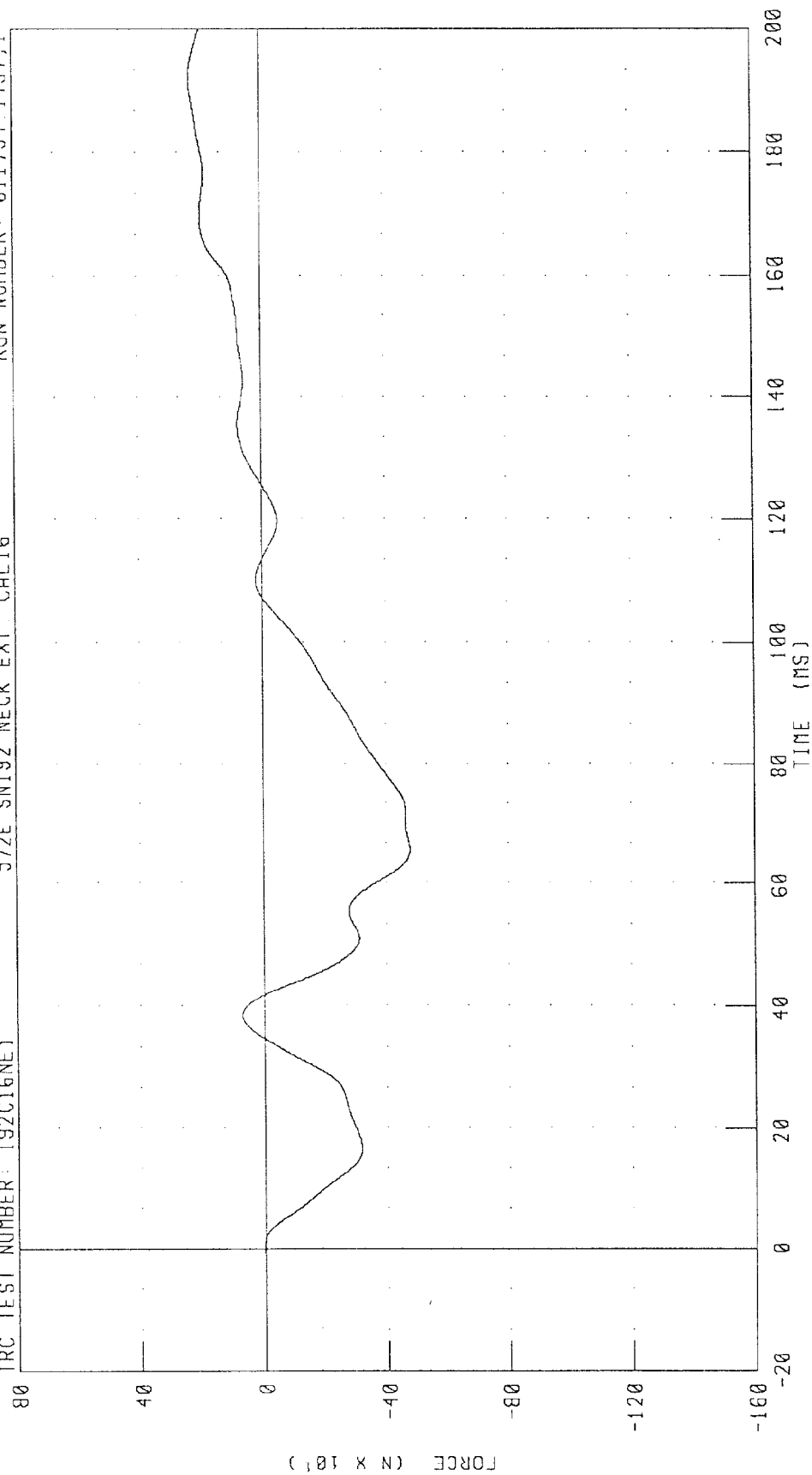
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC TEST NUMBER: 192C16NE1

572E SN192 NECK EXT CAL16

RUN NUMBER: 011794 1437.1



PEAK DATA: 227.48 N @ 192.00 MS; -476.44 N @ 65.50 MS

CHANNEL: NEKXF FILTER: CH. CLASS 60

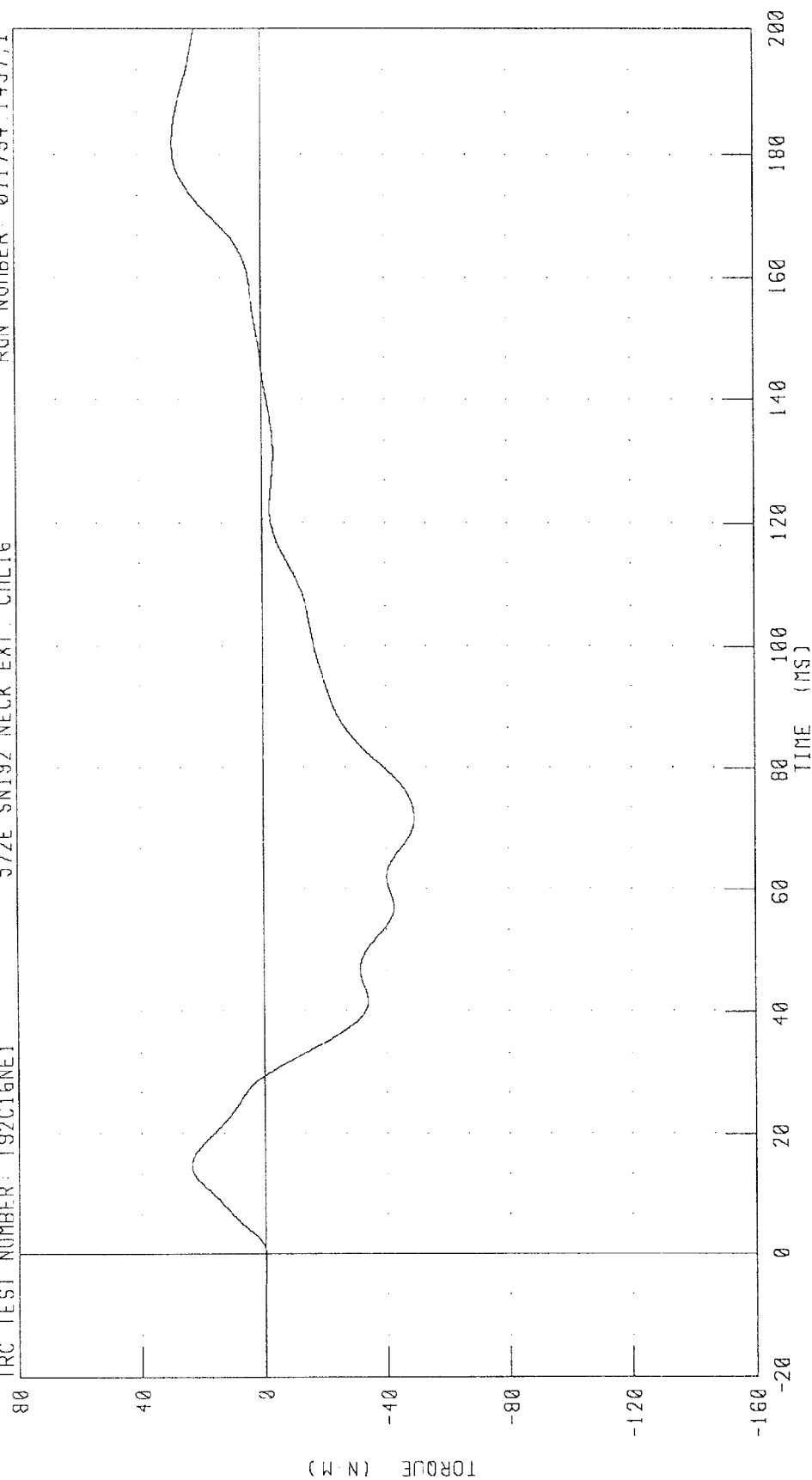
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS

TRC TEST NUMBER: 192C16NE1

572E SN192 NECK EXT. CAL16

RUN NUMBER: 011794 1437.1



PEAK DATA: 28.65 N-M @ 181.75 MS; -49.09 N-M @ 71.63 MS

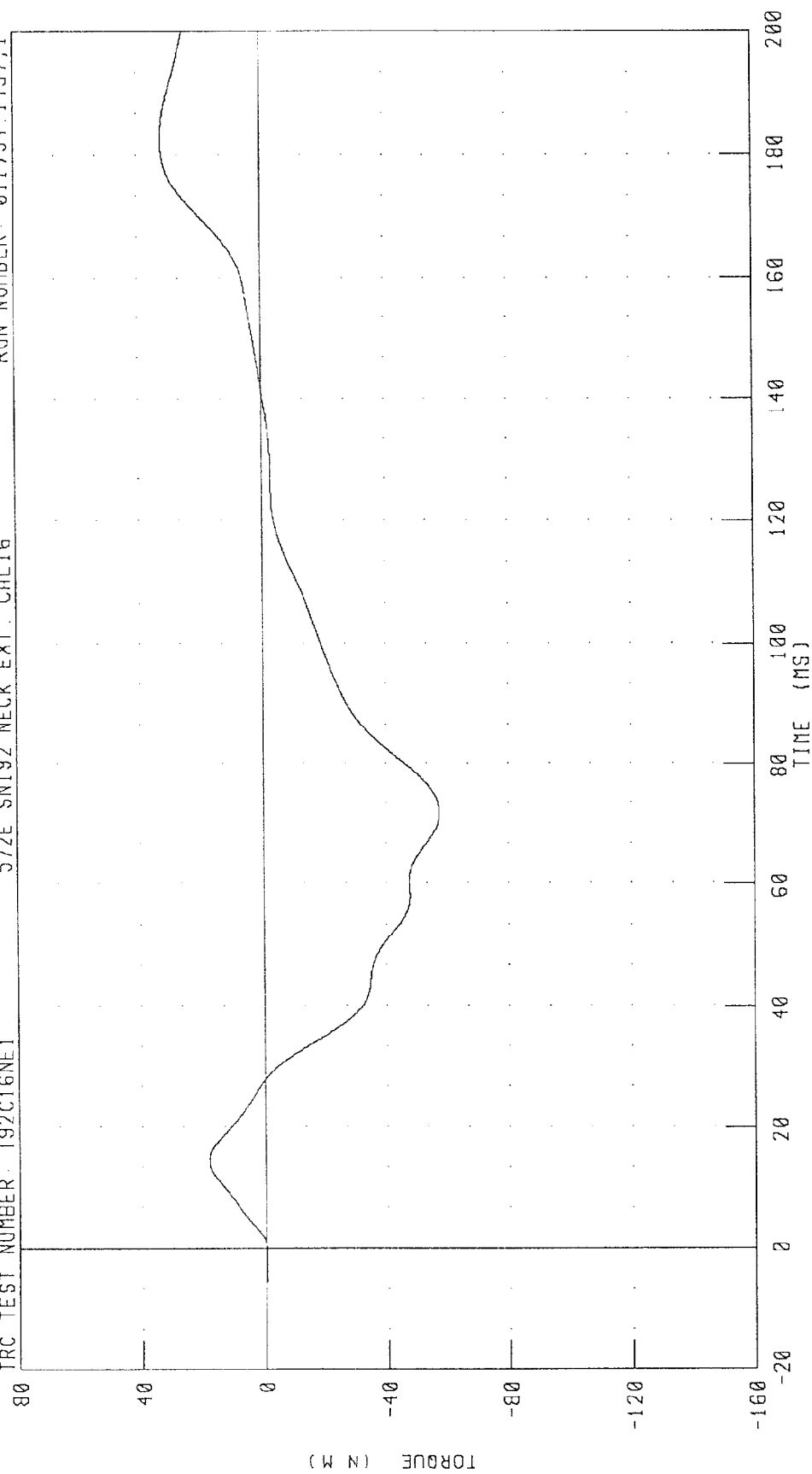
CHANNEL: NEKYM FILTER: CH. CLASS 60

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

TRC TEST NUMBER: 192C16NE1

572E SN192 NECK EXT. CAL16

RUN NUMBER: 011794.1437.1



PEAK DATA: 32.20 N.M @ 182.50 MS; -57.36 N.M @ 71.63 MS

CHANNEL: NEKOM FILTER: CH. CLASS 60

TRANSPORTATION RESEARCH CENTER INC.

THORAX IMPACT TEST

HYBRID III

25-OCT-93

TRC

192C16TH1

572E SN192 H.S.THORAX CAL16

TEST PARAMETER	HIGH SPEED TEST	TEST RESULTS
	SPECIFICATION	
TEMPERATURE	20.6-22.2 DEG. C	20.6 DEG. C
RELATIVE HUMIDITY	10 - 70 %	47.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/S	6.68 M/S
MAXIMUM DEFLECTION	63.5 - 72.6 MM	71.0 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5443. N
INTERNAL HYSTERESIS	69% - 85%	72.4%

TEST MEETS SPECIFICATIONS

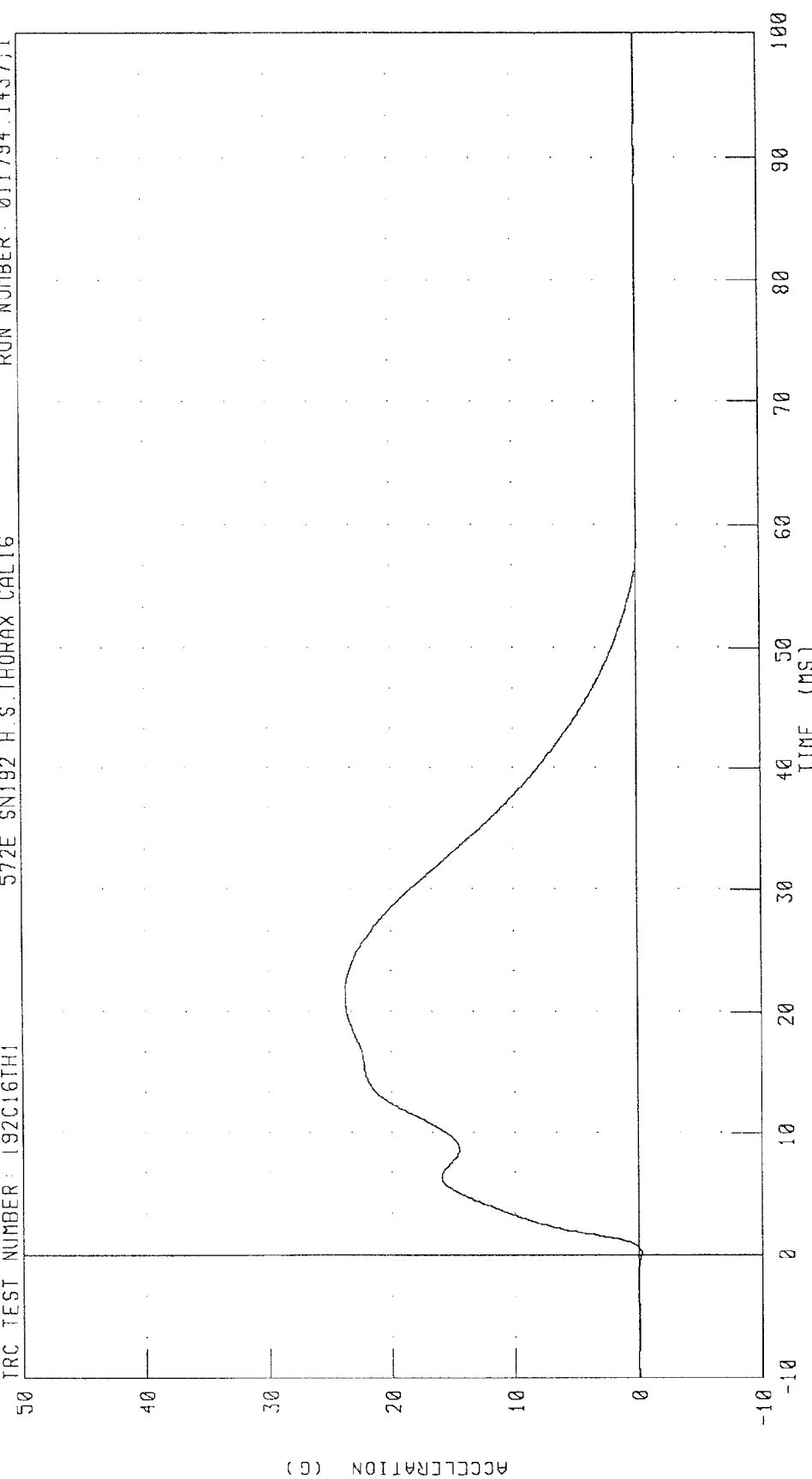
TECHNICIAN Pete Felt

PART 572-E HYBRID III THORAX CALIBRATION PENDULUM DECELERATION

TRC TEST NUMBER: 192C16TH1

572E SN192 H.S.THORAX CAL16

RUN NUMBER: 011794.1437.1



PEAK DATA: 23.76 G @ 21.50 MS; -0.20 G @ 0.13 MS

CHANNEL: PENXG FILTER: CH. CLASS 180

PART 572-E HYBRID III THORAX CALIBRATION

PENDULUM FORCE

TRC TEST NUMBER: 192C16TH1 572E SN192 H S THORAX CAL16 RUN NUMBER: 011794.1437.1



CHANNEL: PENXF FILTER: CH CLASS 180 PEAK DATA: 5443.23 N @ 21.50 MS; -45.31 N @ 0.13 MS

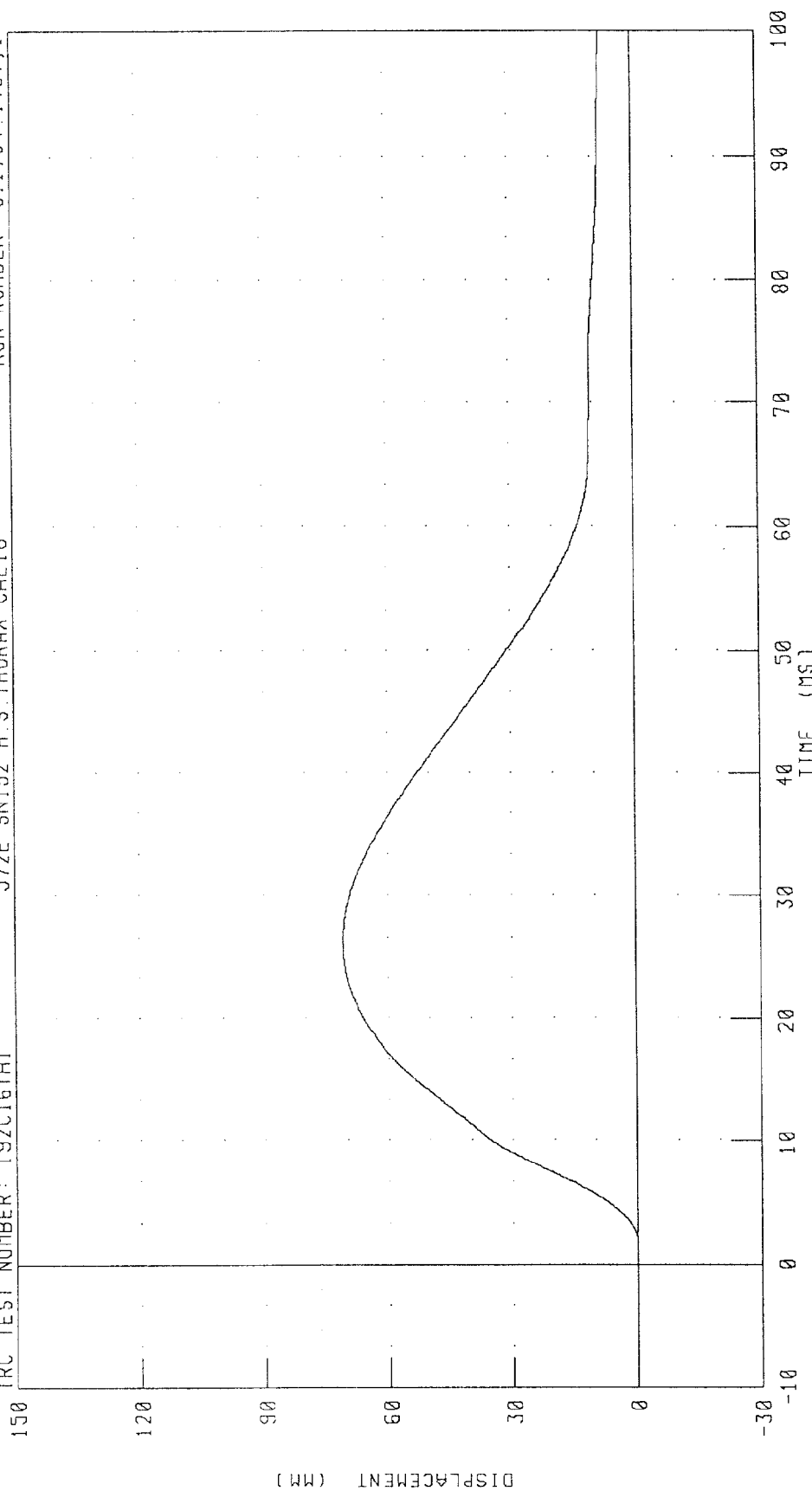
PART 572-E HYBRID III THORAX CALIBRATION

STERNUM DISPLACEMENT

572E SN192 H.S. THORAX CAL16

TRC TEST NUMBER: 192C16TH1

RUN NUMBER: 011794.1437,1



CHANNEL: CSTXD FILTER: CH. CLASS 180 PEAK DATA: 71.06 MM @ 25.88 MS; -0.04 MM @ 1.50 MS

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

TRC TEST NUMBER: 192C16TH1 RUN NUMBER: 011794 1437.1

572E SN192 H S THORAX CAL16

100

80

60

40

20

0

-20

DISPLACEMENT (MM)

70

60

50

40

30

20

10

0

-10

-20

100

90

80

70

60

50

40

30

20

10

0

-10

-20

100

80

60

40

20

0

DISPLACEMENT (MM)

70

60

50

40

30

20

10

0

-10

-20

100

90

80

70

60

50

40

30

20

10

0

-10

-20

100

80

60

40

20

0

DISPLACEMENT (MM)

70

60

50

40

30

20

10

0

-10

-20

100

90

80

70

60

50

40

30

20

10

0

-10

-20

100

80

60

40

20

0

DISPLACEMENT (MM)

70

60

50

40

30

20

10

0

-10

-20

100

90

80

70

60

50

40

30

20

10

0

-10

-20

100

80

60

40

20

0

DISPLACEMENT (MM)

70

60

50

40

30

20

10

0

-10

-20

100

90

80

70

60

50

40

30

20

10

0

-10

-20

100

80

60

40

20

0

DISPLACEMENT (MM)

70

60

50

40

30

20

10

0

-10

-20

100

90

80

70

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30

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0

-10

-20

100

80

60

40

20

0

DISPLACEMENT (MM)

70

60

50

40

30

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-10

-20

100

90

80

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-10

-20

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60

40

20

0

DISPLACEMENT (MM)

70

60

50

40

30

20

10

0

-10

-20

100

90

80

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20

0

DISPLACEMENT (MM)

70

60

50

40

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-10

-20

100

90

80

70

60

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40

30

20

10

0

-10

-20

100

80

60

40

20

0

DISPLACEMENT (MM)

70

60

50

40

30

20

10

0

-10

-20

100

90

80

70

60

50

40

30

20

10

0

-10

-20

100

80

60

40

20

0

DISPLACEMENT (MM)

70

60

50

40

TRANSPORTATION RESEARCH CENTER INC.

RIGHT KNEE IMPACT TEST

HYBRID III

25-OCT-93

TRC

192C16RK1

572E SN192 RIGHT KNEE CAL 16

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	45.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.09 M/S
PEAK KNEE IMPACT FORCE PROBE WEIGHT	4714 - 5783 N 5.0 KG	5513.5 N

TEST MEETS SPECIFICATIONS

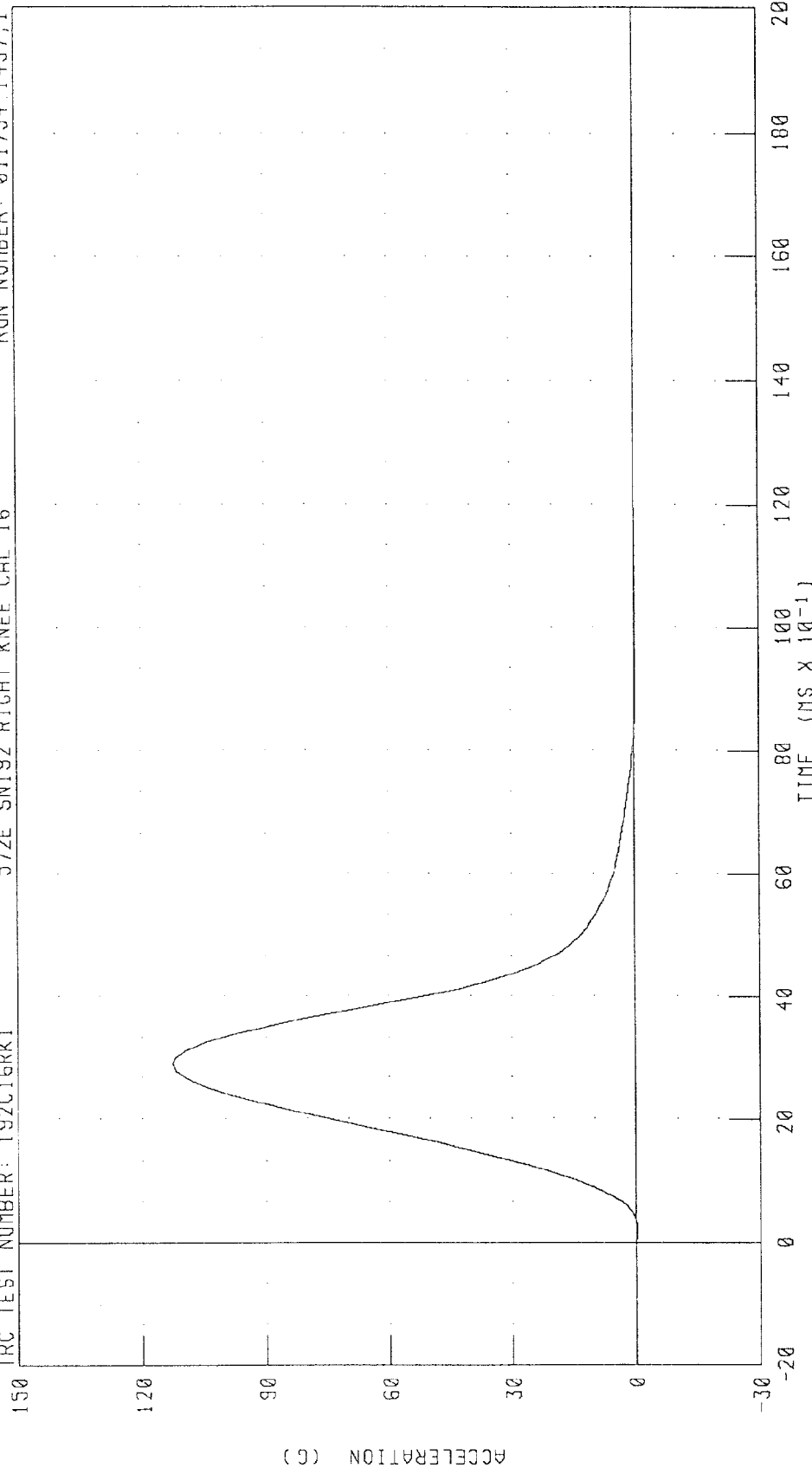
TECHNICIAN *Pete F. Smith*

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

TRC TEST NUMBER: 192C16RK1

572E SN192 RIGHT KNEE CAL 16

RUN NUMBER: 011794.1437.1



CHANNEL: PENXG FILTER: CH. CLASS 600

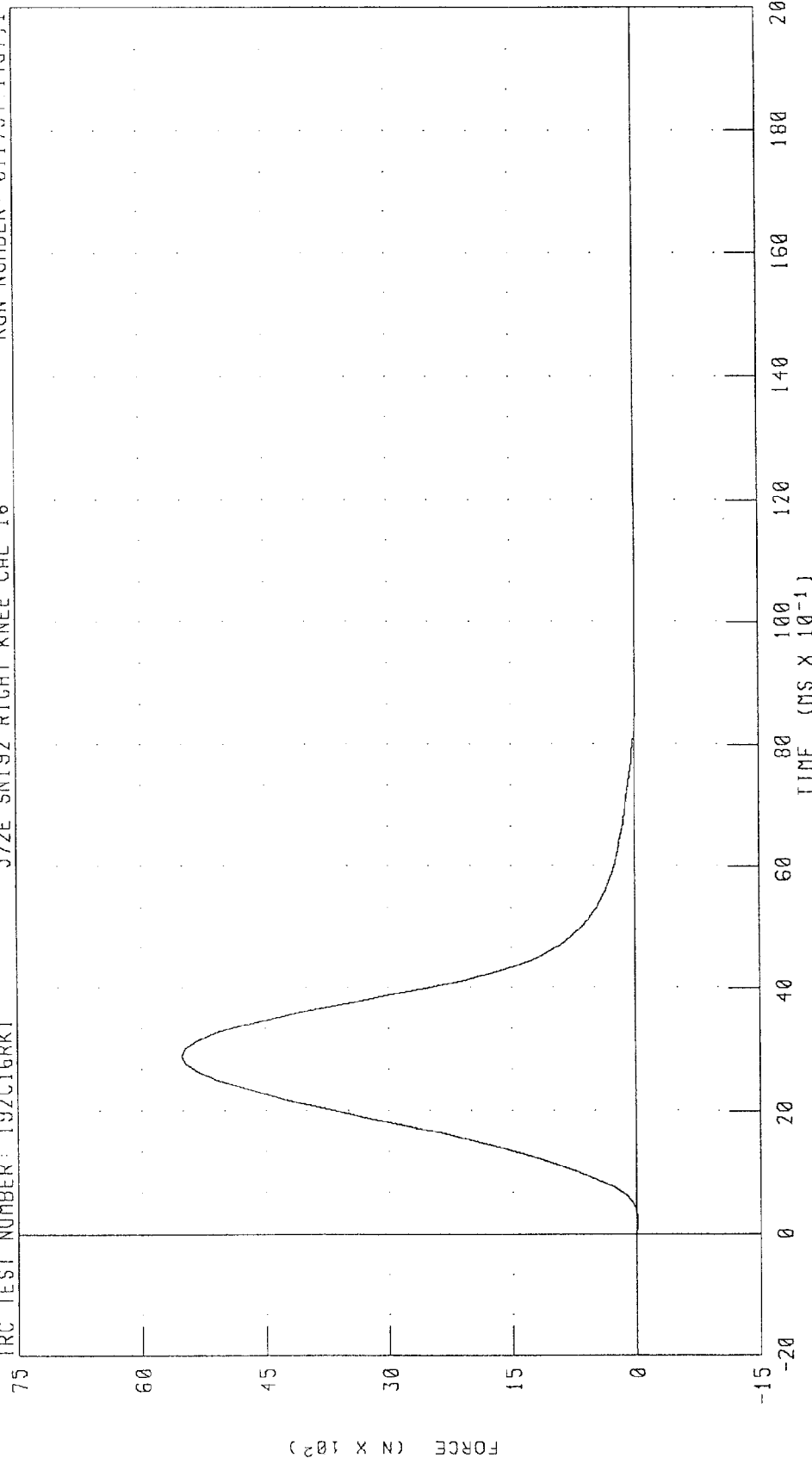
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KC PEND.)

572E SN192 RIGHT KNEE CAL 16

RUN NUMBER: 011794 1437.1

TRC TEST NUMBER: 192C16RK1



PEAK DATA: 5513.57 N @ 2.88 MS; -10.13 N @ 0.25 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LEFT KNEE IMPACT TEST

HYBRID III

25-OCT-93

TRC

192C16LK1

572E SN192 LEFT KNEE CAL 16

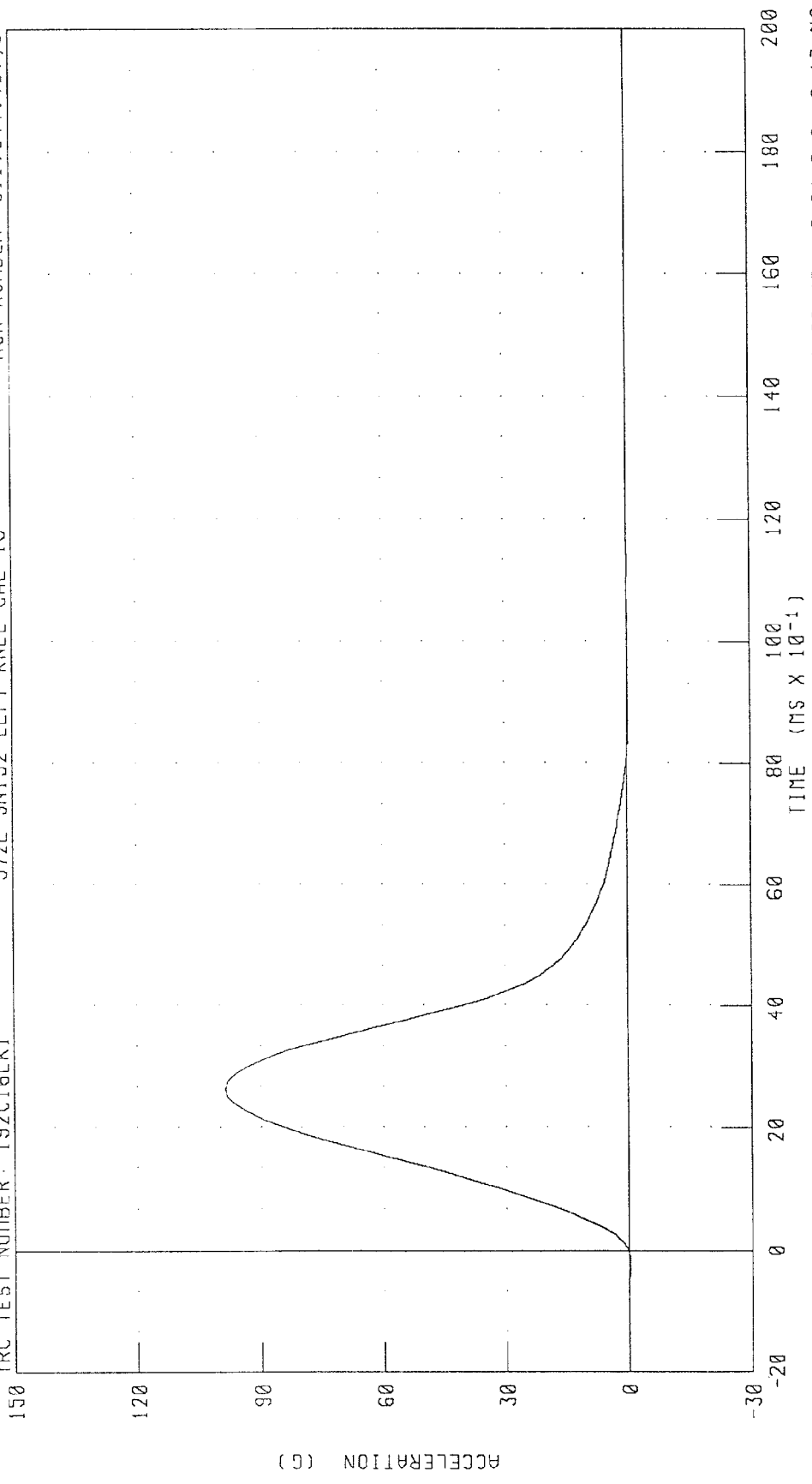
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9-25.6 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10 - 70 %	45.0 %
PROBE VELOCITY	2.07 - 2.13 M/S	2.09 M/S
PEAK KNEE IMPACT FORCE PROBE WEIGHT	4714 - 5783 N 5.0 KG	4831.5 N

TEST MEETS SPECIFICATIONS

TECHNICIAN *Pete Ford*

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

TRC TEST NUMBER: 192C16LK1 572E SN192 LEFT KNEE CAL 16 RUN NUMBER: 011794.1437.2



CHANNEL: PENXG FILTER: CH. CLASS 600 PEAK DATA: 98.75 G @ 2.63 MS; -0.24 G @ -0.13 MS

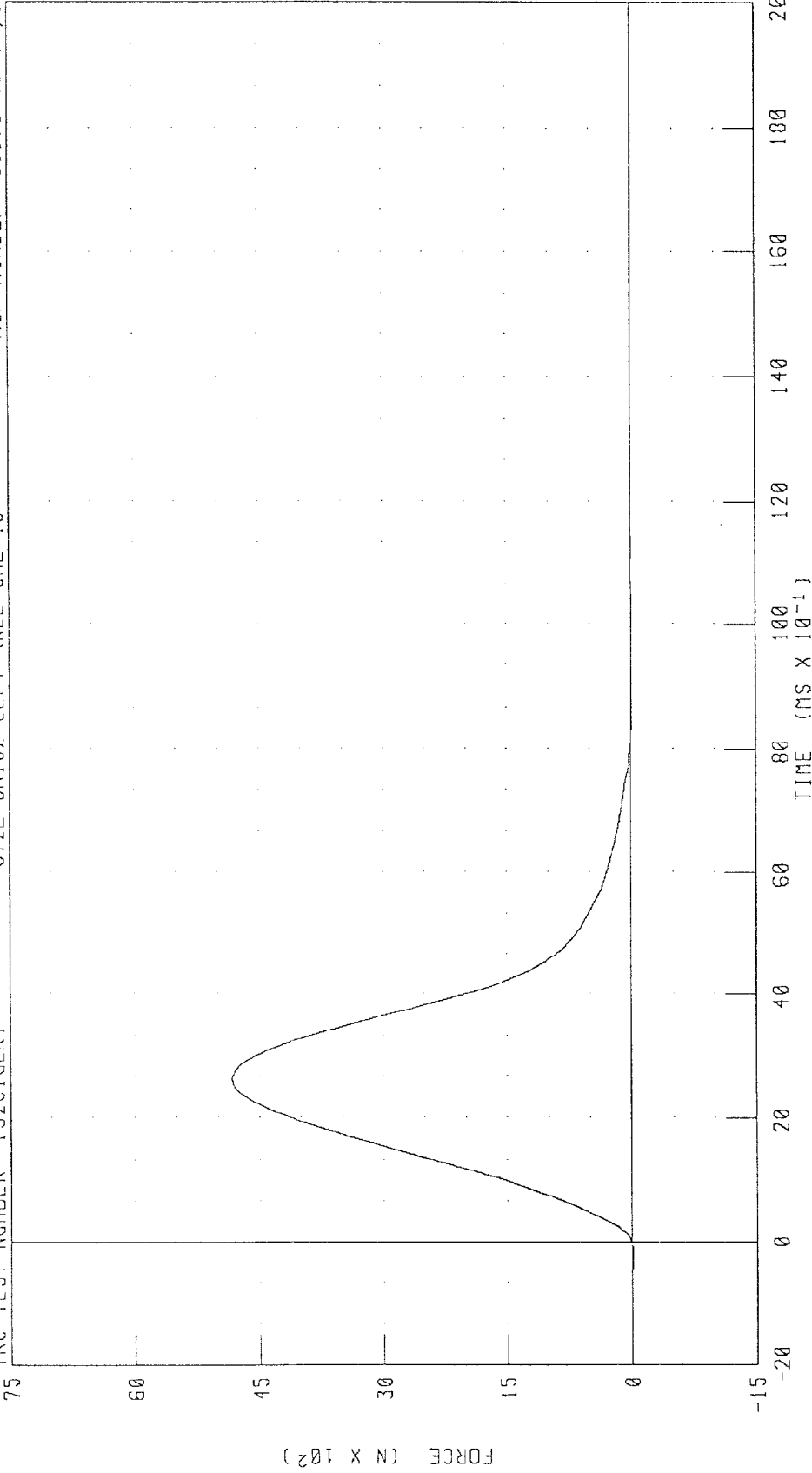
PART 572-E HYBRID III LEFT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

TRC TEST NUMBER: 192C16LK1

572E SN192 LEFT KNEE CAL 16

RUN NUMBER: 011794.1437,2



PEAK DATA: 4831.55 N @ 2.63 MS; -11.75 N @ -0.13 MS

CHANNEL: PENXF FILTER: CH. CLASS 600

APPENDIX D

MISCELLANEOUS TEST INFORMATION

DUMMY INSTRUMENT CALIBRATIONS

DRIVER DUMMY #142

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD					
X-AXIS ACCEL.	FH25J	7264	ENDEVCO	09/14/93	03/14/94
Y-AXIS ACCEL.	CY32H	7264	ENDEVCO	09/24/93	03/24/94
Z-AXIS ACCEL.	DB81H	7264	ENDEVCO	10/19/93	04/19/94
CHEST					
X-AXIS ACCEL.	DR49J7	7264	ENDEVCO	09/14/93	03/14/94
Y-AXIS ACCEL.	AC8W6	7264	ENDEVCO	09/14/93	03/14/94
Z-AXIS ACCEL.	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.

DUMMY INSTRUMENT CALIBRATIONS

RIGHT FRONT PASSENGER DUMMY #192

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCEL.	AAL82	7264	ENDEVCO	09/14/93	03/14/94
Y-AXIS ACCEL.	A84JJ	7264	ENDEVCO	09/14/93	03/14/94
Z-AXIS ACCEL.	A62JJ	7264	ENDEVCO	09/14/93	03/14/94
CHEST X-AXIS ACCEL.	ACCJO	7264	ENDEVCO	09/14/93	03/14/94
Y-AXIS ACCEL.	AC708	7264	ENDEVCO	09/14/93	03/14/94
Z-AXIS ACCEL.	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	674	3419	LEBOW	08/24/93	02/24/94
SHOULDER BELT FORCE LOAD CELL	127	3419	LEBOW	08/24/93	02/24/94
SHOULDER BELT SPOOL-OUT POTENTIOMETER	0586135	PT-101-40A	CELESCO	09/12/93	03/12/94
SHOULDER BELT STRETCH POTENTIOMETER	1291	2051414101	BOURNES	09/23/93	03/23/94

*HYBRID III USE ONLY.

VEHICLE AND CALIBRATION LABORATORY INSTRUMENT CALIBRATIONS

VEHICLE ACCELEROMETERS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
LEFT REAR SEAT CROSSMEMBER X-AXIS	DA88H	7264	ENDEVCO	08/12/93	02/12/94
LEFT REAR SEAT CROSSMEMBER X-AXIS REDUN	DR52J	7264	ENDEVCO	07/19/93	01/19/94
RIGHT REAR SEAT CROSSMEMBER X-AXIS	DA06H	7264	ENDEVCO	10/12/93	04/12/94
RIGHT REAR SEAT CROSSMEMBER X-AXIS REDUN	CW87H	7264	ENDEVCO	11/29/93	05/29/94
ENGINE TOP X-AXIS	CP34H	7264	ENDEVCO	08/13/93	02/13/94
ENGINE BOTTOM X-AXIS	CM27H	7264	ENDEVCO	10/12/93	04/12/94
RIGHT BRAKE CALIPER X-AXIS	CK32H	7264	ENDEVCO	09/01/93	03/01/94
LEFT BRAKE CALIPER X-AXIS	CL60H	7264	ENDEVCO	10/12/93	04/12/94
INSTRUMENT PANEL CENTER X-AXIS	BM06J	7264	ENDEVCO	11/04/93	05/04/94

CALIBRATION LABORATORY INSTRUMENTS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
NECK BENDING PENDULUM ACCEL.	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 PEND. ACCEL.	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 DISPL. 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 PEND. ACCEL.	CG83	7232	ENDEVCO	10/06/93	04/06/94

SIGN CONVENTION
NHTSA DATA TAPE REFERENCE GUIDE

ACCELEROMETERS: +X: FORWARD
 +Y: LEFTWARD
 +Z: UPWARD

POTENTIOMETERS: +CHEST LONGITUDINAL DEFLECTION: OUTWARD
 +CHEST LATERAL DEFLECTION: LEFTWARD
 +SEAT BELT DISPLACEMENT: OUTWARD
 +SEAT BELT EXTENSION: ELONGATION
 +KNEE SLIDER DISPLACEMENT: DISTANCE BETWEEN FEMUR
 AND TIBIA INCREASED
 (IN RELATION TO A
 SEATED DUMMY)

LOAD CELLS: +FEMUR FORCE: TENSION
 +SEAT BELT FORCE: TENSION
 +BARRIER FORCE: TENSION

NECK LOAD CELLS: +X FORCE: HEAD PUSHED FORWARD
 +Y FORCE: HEAD PUSHED LEFTWARD
 +Z FORCE: HEAD PULLED UPWARD (TENSION ON NECK)
 +X MOMENT: RIGHT EAR ROTATING TOWARD RIGHT SHOULDER
 +Y MOMENT: CHIN ROTATING TOWARD CHEST
 +Z MOMENT: CHIN ROTATING TOWARD LEFT SHOULDER

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

FREQUENCY RESPONSE CLASSES

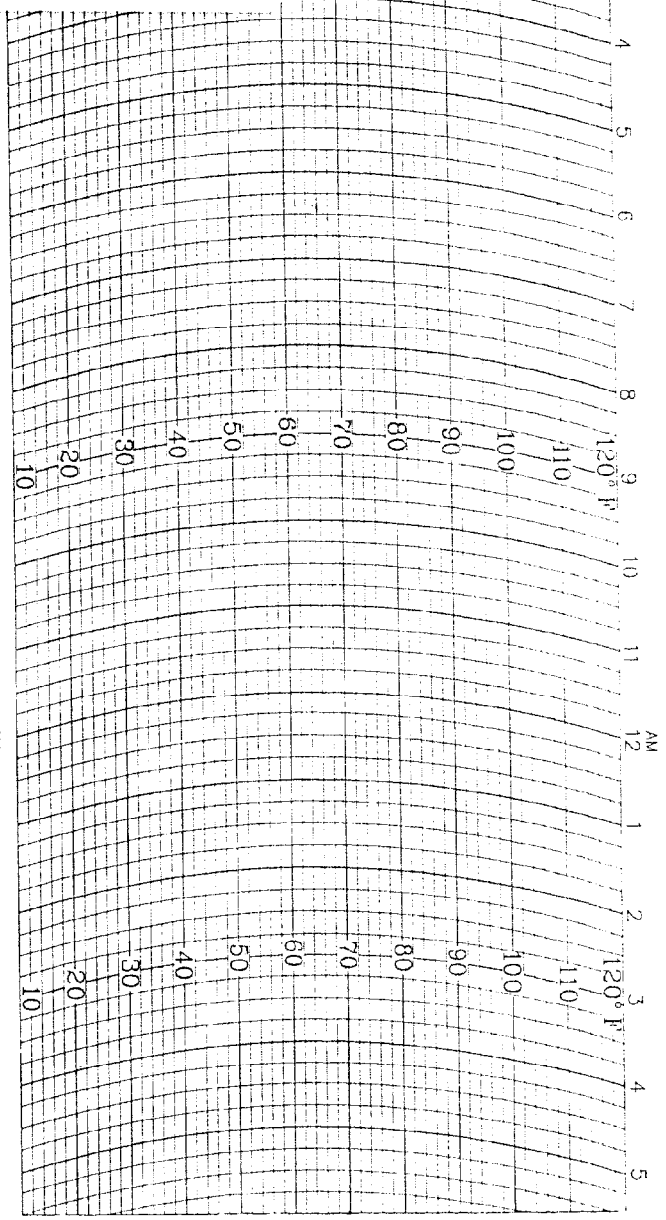
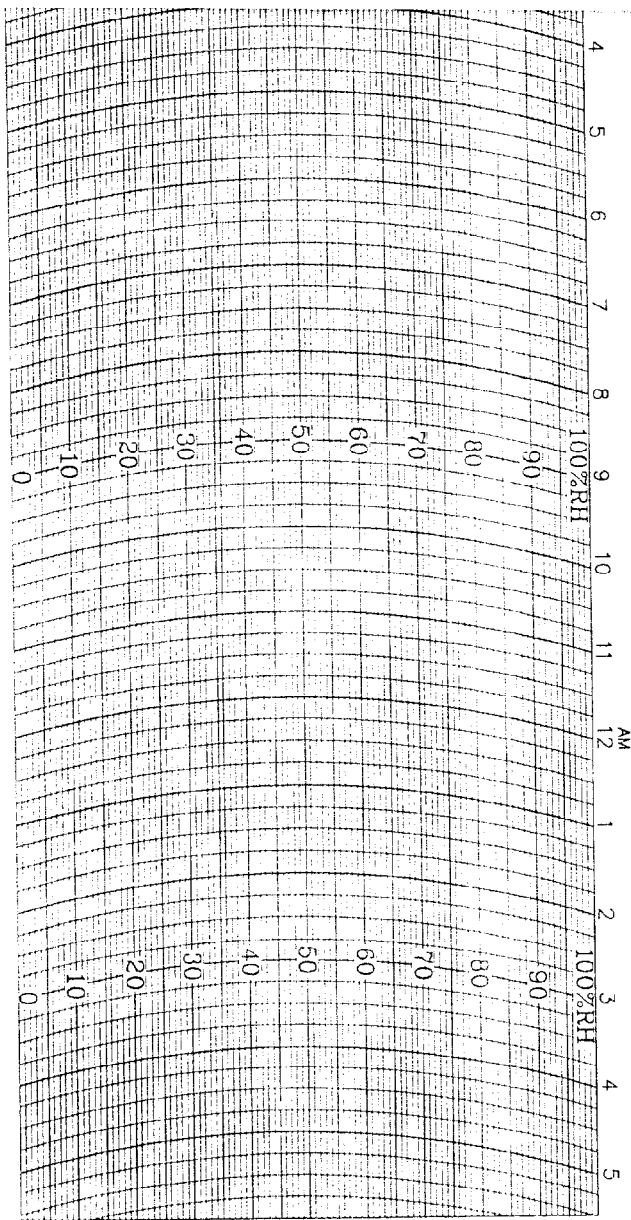
SAE J211 OCT88

TYPICAL TEST MEASUREMENTS

CHANNEL CLASS

Vehicle Structural Accelerations for use in:

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



WeatherMeasure
WEATHERtronic
 Division of QUALIMETRICS, Inc.

P.O. BOX 41039
 SACRAMENTO, CA 95841
 PHONE: (916) 923-0055

HYGROTHERMOGRAPH
 1 DAY

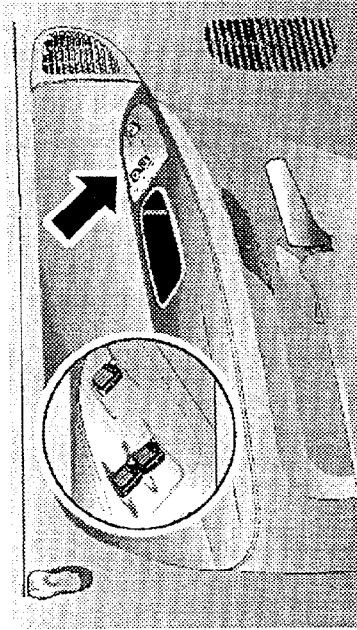
CHART NO. M699123
 C311-D-HF
 ECN 2/17
 6 9-87

STATION _____ DATE ON _____ DATE OFF _____

APPENDIX E

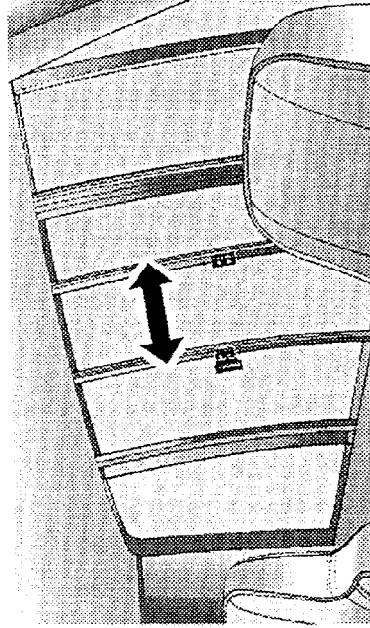
RESTRAINT SYSTEM INSTRUCTIONS FROM OWNER'S MANUAL

WINDOWS



Power Windows (optional)

The control on the left front door has up-down switches that give you finger tip control of both front door windows. There is a single switch on the passenger door for opening and closing passenger window. The windows will operate only when the ignition switch is turned to the ON position.



Sliding Rear Window (optional)

A locking device in the center of the windows helps to prevent entry from the rear of the vehicle. Pull out on the left side of the lock to release the windows.

OCCUPANT RESTRAINTS

One of the most important safety features in your vehicle is the restraint system. Your seat belts can also be used to hold infant and child restraint systems if you will be carrying children too small for adult-size belts.

BEFORE STARTING YOUR VEHICLE

Please pay careful attention to the information in this section. It tells you how to use your restraint system properly to keep you and your passengers as safe as possible.

Buckle up even though you are an excellent driver. Even on short trips. Someone else on the road may be a poor driver and cause a collision which involves you. And this can happen far from home or on your own street.

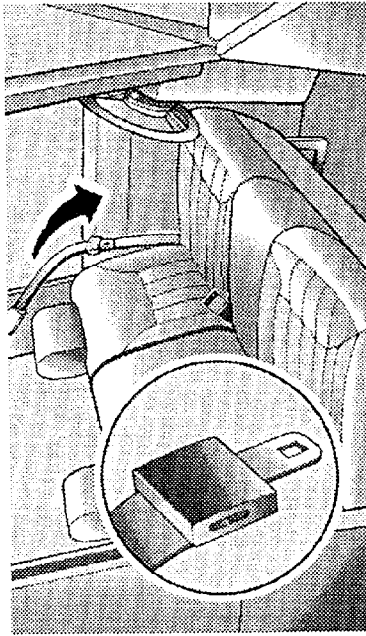
Research has shown that seat belts save lives. And they can reduce the seriousness of injuries in a collision. Some of the worst injuries happen when people are thrown from the vehicle. Seat belts provide protection against that, and they reduce the risk of injury caused by striking the inside of the vehicle. Everyone in a motor vehicle needs to be buckled up all the time.

WARNING!

- In a collision you and your passengers can suffer much greater injuries if you are not properly buckled up. You can strike parts of the inside of the vehicle or other passengers, or you can be thrown out of the vehicle. Always be sure you and others in your vehicle are buckled up properly.
- Wearing a seat belt incorrectly is dangerous. Seat belts are designed to go around the large bones of your body. These are the strongest parts of your body and can take the forces of a collision the best. Wearing your belt in the wrong place could make your injuries in a collision much worse. You might suffer internal injuries, or you could even slide out of part of the belt. Follow these instructions to wear your seat belt safely and to keep your passengers safe, too.

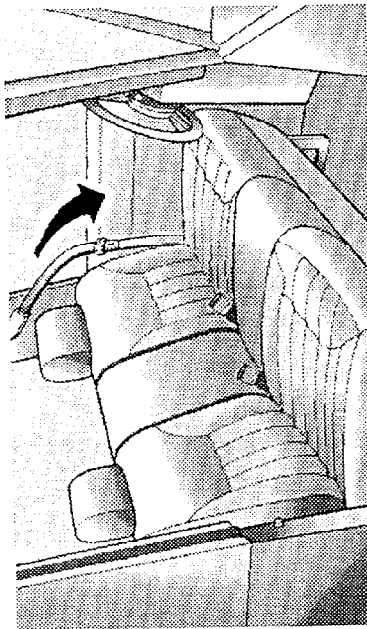
Unibelts

The outboard seats of your vehicle have combination lap/shoulder belts, or unbelt. The retractor is designed to lock during very sudden stops or impacts. This feature allows the shoulder part of the belt to move freely with you under normal conditions. But in a collision, the belt will lock and reduce the risk of your striking the inside of the vehicle or being thrown out.



Unibelt Operating Instructions

1. Enter the vehicle and close the door. Sit back and adjust the seat.
2. Grasp the latch plate and pull out the belt. Slide the latch plate up the webbing as far as necessary to make the belt go around your lap.



3. When the belt is long enough to fit, insert the latch plate into the buckle until you hear a "click."

WARNING!

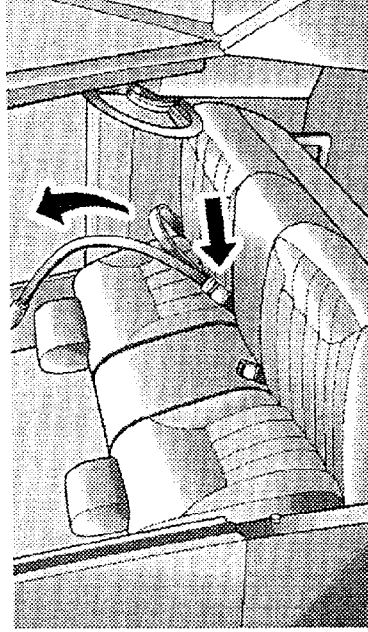
- A belt buckled into the wrong buckle will not protect you properly. The lap portion could ride too high on your body, possibly causing internal injuries. Always buckle your belt into the buckle nearest you.
- A belt that is too loose will not protect you as well. In a sudden stop you could move too far forward, increasing the possibility of injury. Wear your seat belt snugly.
- A shoulder belt worn under your arm is very dangerous. Your body could fall into the inside surfaces of the vehicle in a collision, increasing head and neck injury. And a belt worn under the arm can cause internal injuries. Ribs aren't as strong as shoulder bones. Wear the belt over your shoulder so that your strongest bones will take the force in a collision.

4. Position the lap belt across your thighs, below your abdomen. If you need the lap portion tighter, pull up a bit on the shoulder part. A snug belt reduces the risk of sliding under the belt in a collision.

WARNING!

- A lap belt worn too high can increase the risk of internal injury in a collision. The belt forces won't be at the strong hip and pelvic bones, but across your abdomen. Always wear the lap part as low as possible and keep it snug.
- A twisted belt can't do its job as well. In a collision it could even cut into you. Be sure your belt is straight. If you can't straighten a belt in your vehicle, take it to your dealer and have it fixed.

5. Position the shoulder belt on your chest so that it is comfortable and not resting on your neck. The retractor will withdraw any slack in the belt.



6. To release the belt, push the red button marked "Press" on the buckle. The belt will automatically retract to its stowed position.

If necessary, slide the latch plate down the webbing to allow the belt to retract fully.

BEFORE STARTING YOUR VEHICLE

WARNING!

A frayed or torn belt could rip apart in a collision and leave you with no protection. Inspect the belt system periodically, checking for cuts, frays, or loose parts. Damaged parts must be replaced immediately. Do not disassemble or modify the system. Seat belt assemblies must be replaced after an accident, if they have been damaged (bent retractor, torn webbing, etc.)

Center Lap Belts

Center seating positions have a lap belt only.

To fasten a lap belt, slip the latch plate into the buckle.

To lengthen the lap belt, tilt the latch plate and pull. To shorten the belt, pull the loose end of the webbing.

Wear the lap belt snug against the hips. Sit back and erect in the seat, then adjust the belt as tightly as is comfortable.

WARNING!

- A lap belt worn too loose or too high is dangerous. A belt worn too loose can allow you to slip down and under the belt in a collision. A belt that is too high will apply crash forces to the abdomen, not to the stronger hip bones. In either case, the risk of internal injuries is greater. Wear a lap belt low and snug.
- Belting two people into one seat belt can lead to greater injury. People belted together can crash into one another in an accident, hurting one another badly. Never use a unbelt or lap belt for more than one person, no matter what their size.

Seat Belts and Pregnant Women

We recommend that pregnant women use seat belts throughout their pregnancies. Keeping the mother safe is the best way to keep the baby safe.

Pregnant women should wear the lap part of the belt across the thighs and as snug against the hips as possible. Keep the belt low so that it does not come across the abdomen. That way the strong bones of the hips will take the force if there is a collision.

Seat Belt Extender

If a seat belt is too short, even when fully extended, your dealer can provide you with a seat belt extender. This extender should be used only if the existing belt is not long enough. When it is not required, always remove the extender and stow it.

Child Restraint

When we say that everyone in your vehicle needs to be buckled up all the time, we mean babies and children, too.

Every state in the United States and all Canadian provinces require small children to ride in proper restraint systems. This is the law, and you can be prosecuted for ignoring it.

Infants and Small Children

There are different sizes and types of restraints for children from newborn size to the bigger child almost large enough for an adult safety belt. Use the restraint that is correct for your child.

Two different child restraint systems are generally available.

- The infant carrier for babies weighing up to 20 lbs. (9 kg.)
- The child seat for small children over 20 lbs.

In addition, some manufacturers make systems that can be used first as an infant carrier, and then converted to a child seat as the child grows.

WARNING!

- In a collision, an unrestrained child, even a tiny baby, can become a missile inside the vehicle. The force required to hold even an infant on your lap can become so great that you could not hold the child, no matter how strong you are. The child and others could be badly injured. Any child riding in your vehicle should be in a proper restraint for the child's size.
- Improper installation can lead to failure of an infant or child restraint. It could come loose in a collision. The child could be badly injured or killed. Follow the manufacturer's directions exactly when installing an infant or child restraint.

Here are some tips on getting the most out of your child restraint:

- Before buying any restraint system, make sure that it has a label certifying that it meets Motor Vehicle Safety Standard 213. We also recommend that before you buy a child restraint, you try it in the vehicle in the seats where you will use it.
- The restraint must be appropriate for your child's weight and height. Check the label on the restraint for this, too.
- Carefully follow the instructions that come with the restraint. If you install the restraint improperly it may not work when you need it.
- Infant and child restraints are secured in vehicle seats by the lap belt or the lap part of the lap/shoulder belt. If you have trouble tightening the belt on the child restraint, move the seat forward to re-position the buckle against the side of the child restraint.

BEFORE STARTING YOUR VEHICLE

- Buckle the child into the seat exactly as the seat manufacturer's directions tell you. In the right or center front seat, the cinching latch plate will keep the belt tight.
- When your infant carrier or child seat is not in use, secure it with the seat belt or remove it from the vehicle. Don't leave it loose in the vehicle. In a sudden stop or collision it could strike occupants and injure them.

Children Too Large for Child Seats

Children who are too large for child seats and who can sit upright by themselves should use the available lap/shoulder belts for best protection.

- Make sure that the child is seated upright in the seat.
- The lap belt should be fastened low on the hips and as snug as possible.
- Check belt fit periodically. A child's squirming or slouching can move the belt out of position.

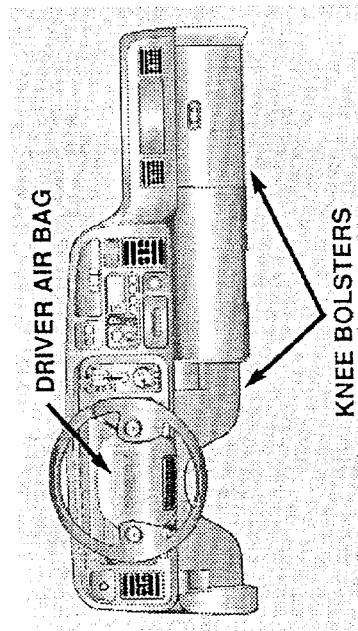
If the shoulder belt contacts the face or neck, move the child closer to the middle of the vehicle.

Booster seats may help overcome this problem and are also available for use with lap/shoulder belts. Before buying a booster seat, make sure it has a label certifying that it meets applicable Motor Vehicle Safety Standards. Make sure it is satisfactory for use in this vehicle.

DRIVER SUPPLEMENTAL RESTRAINT SYSTEM — AIRBAG

This vehicle has an airbag for the driver as a supplement to the seat belt restraint system. The airbag is mounted in the steering wheel. Its job is to inflate in higher speed frontal impacts. It works with the instrument panel knee bolster and the seat belt to provide improved protection for the driver.

BEFORE STARTING YOUR VEHICLE



The seat belt is designed to protect you in many types of collisions. The airbag deploys only in frontal collisions. And it will not deploy in collisions at slow speed. But even in collisions where the airbag does work, you need the seat belt to keep you in the right position for the airbag to protect you properly.

WARNING!

- Relying on the airbag alone could lead to more severe injuries. Wear your seat belt even though you have an airbag.
- Being too close to the steering wheel or instrument panel during airbag deployment could cause serious injury. Airbags need room to inflate. Sit back, comfortably extending your arms to reach the steering wheel or instrument panel.
- Ignoring the AIRBAG light in your instrument panel could mean you won't have the airbag to protect you in a collision. If the light does not come on, stays on after you start the vehicle, or if it comes on as you drive, have the airbag system checked right away.

The airbag system consists of the following:

- Crash Sensors
- Diagnostic Unit

- AIRBAG Light
- Airbag/Inflator Unit
- Unique Steering Wheel and Column
- Interconnecting Wiring
- Knee Impact Bolster

How The Airbag System Works

- **Crash Sensors** in the front of the vehicle and in the occupant compartment determine if a frontal impact is severe enough to require the airbag. The sensors will not detect side, rollover, or rear impacts. Switches in the sensors are connected to the diagnostic unit and to the airbag/inflator unit.

- The **Diagnostic Unit** monitors the readiness of the electronic parts of the system whenever the ignition switch is in the START or RUN position. These include all of the items listed above except the steering wheel and column and the knee bolster. The Diagnostic Unit also turns on the AIRBAG light in the

instrument panel for 6 to 8 seconds when the ignition is first turned on, then turns the light off. If it detects a malfunction in any part of the system, it turns on the light either momentarily or continuously.

- The **Airbag/Inflator Unit** is in the center of the steering wheel. When the crash sensors detect an impact requiring the airbag, they signal the inflator unit. A large quantity of **non-toxic** nitrogen gas is generated to inflate the airbag. The steering wheel hub trim cover separates and folds out of the way as the bag inflates to its full size. The bag fully inflates in about 50 milliseconds. This is about half of the time it takes to blink your eyes. It then quickly deflates by venting the nitrogen gas through holes in the airbag toward the instrument panel. In this way the bag does not interfere with your control of the vehicle.

If A Deployment Occurs

The airbag system is designed to deploy when the impact sensors detect a moderate-to-severe frontal collision, and then immediately deflate.

BEFORE STARTING YOUR VEHICLE

NOTE: A frontal collision that is not severe enough to need airbag protection will not activate the system. This does not mean something is wrong with the airbag system.

If you do have a collision which deploys the airbag, any or all of the following may occur:

- The nylon airbag material may sometimes cause abrasions and/or skin reddening to the driver as the airbag deploys and unfold itself from the steering wheel.

The abrasions are similar to friction rope burns or those you might get sliding along a carpet or gymnasium floor. They are not caused by contact with chemicals. They are not permanent and normally heal quickly. However, if you haven't healed significantly within a few days, or if you have any blistering, see your doctor immediately.

- As the airbag deflates you may see some smoke-like particles. The particles are a normal by-product of the process that generates the non-toxic nitrogen gas used for airbag inflation. These airborne particles may

irritate the skin, eyes, nose, or throat. If you have skin or eye irritation, rinse the area with cool water. For nose or throat irritation, move to fresh air. If the irritation continues, see your doctor.

If these particles settle on your clothing, follow the garment manufacturer's instructions for cleaning.

- Your vehicle may be safely driveable after the airbag deploys. If so, you can tuck the deployed airbag inside the opening in the steering wheel hub trim cover to make driving somewhat easier.

WARNING!

A deployed airbag can't protect you in another collision. Have the airbag replaced by an authorized dealer as soon as possible.

Maintaining Your Airbag System

WARNING!

- Modifications to any part of the airbag system could cause it to fail when you need it. You could be injured because the airbag is not there to protect you. Do not modify the components or wiring, including adding any kind of badges or stickers to the steering wheel hub trim cover. Do not modify the front bumper or vehicle body structure.
- You need proper knee impact protection in a collision. Do not mount or locate any after market equipment on or behind the knee impact bolster.
- It is dangerous to try to repair any part of the airbag system yourself. Be sure to tell anyone who works on your vehicle that it has an airbag.

Airbag Light

You will want to have the airbag ready to inflate for your protection in an impact. While the airbag system is designed to be maintenance free, if any of the following occurs, have an authorized dealer service the system promptly:

- The AIRBAG light does not come on or flickers during the 6 to 8 seconds when the ignition switch is first turned on.
- The light remains on or flickers after the 6 to 8 second interval.
- The light flickers or comes on and remains on while driving.

SEATS

Your new Dodge Ram has the largest cab of any pickup truck in the world. The seating options available in this truck are the result of extensive customer research and evaluations.