

REPORT NO. TRC-91-N05

NEW CAR ASSESSMENT PROGRAM (NCAP)  
FRONTAL BARRIER IMPACT TEST

NISSAN MOTOR COMPANY, LTD.

1992 NISSAN MAXIMA

4-DOOR SEDAN

NHTSA NO. MN5200

TRC TEST NO. 920129

PREPARED BY:

TRANSPORTATION RESEARCH CENTER INC.

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EAST LIBERTY, OHIO 43319



FEBRUARY 14, 1992

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
OFFICE OF MARKET INCENTIVES  
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| 16. Abstract<br><br><p>A 35 mph frontal load cell barrier impact test was conducted on a 1992 Nissan Maxima 4-sedan, NHTSA No. MN5200, at the Transportation Research Center Inc. on January 29, 1992. This test was conducted to obtain new car assessment and research data indicant of FMVSS No. 208 performance. The barrier impact velocity was 35.2 mph. The vehicle's maximum crush was 21.9 inches. The ambient temperature was 70° F.</p> <p>The driver's head injury criteria (HIC) was 818. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 52.8 g. The driver's left and right femur maximum axial forces were 1398 pounds and 684 pounds, respectively.</p> <p>The passenger's head injury criteria (HIC) was 864. The passenger's chest maximum resultant accceleration with three (3) milliseconds minimum duration was 48.0 g. The passenger's left and right femur maximum axial forces were 708 pounds and 634 pounds, respectively.</p> |                                                      |                                                                                                                                                                                                                           |           |
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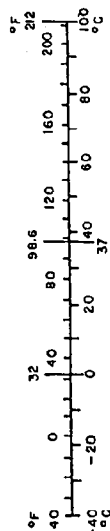
# METRIC CONVERSION FACTORS

## Approximate Conversions to Metric Measures

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

## Approximate Conversions from Metric Measures

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



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



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SECTION 1.0

PURPOSE AND TEST PROCEDURE

#### PURPOSE

This 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 the 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 1992 Nissan Maxima 4-door sedan, NHTSA No. MN5200, at an impact speed in excess of the current 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" performance.

The test vehicle was instrumented with seven (7) accelerometers to measure longitudinal axis accelerations and two (2) accelerometers to measure vertical 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 34.5 to 35.5 mph.

The test vehicle contained two (2) Part 572 B 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.

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.

The sixty (60) data channels were multiplexed and recorded on two (2) 14-track tape drives. The data was digitally sampled at 8000 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 29, 1992.

The test vehicle, a 1992 Nissan Maxima 4-door sedan, NHTSA No. MNS200, was equipped with a 3.0 liter transverse engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 3651 pounds. The vehicle's impact speed was 35.2 mph. The vehicle sustained 21.9 inches of static crush during the impact.

The driver's head injury criteria (HIC) was 818. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 52.8 g. The driver's left and right femur maximum axial forces were 1398 pounds and 684 pounds, respectively.

The passenger's HIC was 864. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 48.0 g. The passenger's left and right femur maximum axial forces were 708 pounds and 634 pounds, respectively.

No fluid spilled from the vehicle's fuel system following the crash test event.

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\*With respect to tow track centerline.  
\*\*Speed trap measurement ( $\pm .05$  mph accuracy)

TABLE 2 TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Nissan Motor Co., Ltd.

MAKE/MODEL: Nissan/Maxima

VIN: JN1HJ01F7NT002291

BODY STYLE: 4-door sedan

MODEL YEAR: 1992

NHTSA NO.: MN5200

COLOR: White

ENGINE DATA: TYPE: transverse CYLINDERS: 6 DISPLACEMENT: 3.0 liter

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

DATE VEHICLE RECEIVED: 01/16/92

ODOMETER READING: 80.0

DEALER'S NAME AND ADDRESS: Buckeye Nissan  
3820 Parkway Lane  
Hilliard, OH 43020

ACCESSORIES:

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

REMARKS:

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

CERTIFICATION DATA FROM VEHICLE'S LABEL:

VEHICLE MANUFACTURED BY: Nissan Motor Co., Ltd.

DATE OF MANUFACTURE: 11/91

VIN: JN1HJ01F7NT002291

GVWR: 4167 LBS

GAWR: FRONT: 2315 LBS., REAR: 2183 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Toyo i A04 P205/65R15 92H

TIRE PRESSURE WITH MAXIMUM CAPACITY VEHICLE LOAD: FRONT: 35 PSI  
REAR: 35 PSI

SPARE TIRE (MFR., LINE, SIZE): Toyo, Temporary, T125/70D16

TYPE OF SEATS: FRONT: Bucket  
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually adjustable

MAXIMUM WIDTH: 69.2 INCHES

WHEELBASE: 104.5 INCHES

LOCATION OF LABEL STATING TIRE DATA:

The label was located on the center console's lid.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: P205/65R15 92H

RECOMMENDED COLD TIRE PRESSURE: FRONT: 29 PSI; REAR: 29 PSI

DESIGNATED SEATING CAPACITY: 2 FRONT 3 REAR 5 TOTAL

VEHICLE CAPACITY WEIGHT: 900 LBS.

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE: LF 28.5; RF 28.5; LR 29.0; RR 29.1

PRE-TEST ATTITUDE: LF 27.4; RF 27.5; LR 26.2; RR 26.2

POST-TEST ATTITUDE: LF 30.2; RF 28.6; LR 25.2; RR 25.3

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

|                                  |           |                                 |          |
|----------------------------------|-----------|---------------------------------|----------|
| RIGHT FRONT                      | 985 LBS.  | RIGHT REAR                      | 617 LBS. |
| LEFT FRONT                       | 1020 LBS. | LEFT REAR                       | 570 LBS. |
| TOTAL FRONT WEIGHT               | 2005 LBS. | (62.8% OF TOTAL VEHICLE WEIGHT) |          |
| TOTAL REAR WEIGHT                | 1187 LBS. | (37.2% OF TOTAL VEHICLE WEIGHT) |          |
| TOTAL DELIVERED WEIGHT 3192 LBS. |           |                                 |          |

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT\*

UDW = UNLOADED DELIVERED WEIGHT (3192 LBS)

VCW = VEHICLE CAPACITY WEIGHT (900 LBS)

DSC = DESIGNATED SEATING CAPACITY (5)

$RCLW* = VCW - 150 (DSC) = 900 - 150 (5) = 150$

TARGET TEST WEIGHT = UDW + RCLW\* + (NO. OF HYBRID II DUMMIES X 164 LBS/DUMMY)

TARGET TEST WEIGHT = 3192 + 150 + 328

TARGET TEST WEIGHT = 3670 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 131 LBS. OF CARGO WEIGHT:

|                    |           |                                 |          |
|--------------------|-----------|---------------------------------|----------|
| RIGHT FRONT        | 1054 LBS. | RIGHT REAR                      | 762 LBS. |
| LEFT FRONT         | 1073 LBS. | LEFT REAR                       | 762 LBS. |
| TOTAL FRONT WEIGHT | 2127 LBS. | (58.3% OF TOTAL VEHICLE WEIGHT) |          |
| TOTAL REAR WEIGHT  | 1524 LBS. | (41.7% OF TOTAL VEHICLE WEIGHT) |          |
| TOTAL TEST WEIGHT  | 3651 LBS. | (0.5% UNDER TARGET TEST WEIGHT) |          |

WEIGHT OF BALLAST SECURED IN VEHICLE CARGO AREA: 0 LBS.

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: Tail lights, rear door inner trim, rear seat belts, rear deck

CG = 43.6 INCHES REARWARD OF FRONT WHEEL CENTERLINE

\*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 300 pounds, whichever is less.

TABLE 3 POST-IMPACT DATA

TEST NUMBER: 920129 NHTSA NO.: MN5200  
TEST DATE: 01/29/92 TEST TIME: 1612  
TEST TYPE: Frontal load cell barrier IMPACT ANGLE: 0°  
AMBIENT TEMPERATURE AT IMPACT AREA: 70° F  
TEMPERATURE IN OCCUPANT COMPARTMENT: 71° F  
IMPACT VELOCITY: PRIMARY = 35.2 MPH SECONDARY = 35.2 MPH  
(SPECIFIED RANGE = 34.5 TO 35.5 MPH)  
DISTANCE FROM VEHICLE TO BARRIER: ENTERING VELOCITY TRAP = 26.0 IN.

EXITING VELOCITY TRAP = 2.0 IN.

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

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 181.5; C 187.8; R 182.0  
POST-TEST: L 162.2; C 166.4; R 164.6  
TOTAL CRUSH: L 19.3; C 21.4; R 17.4  
AVERAGE CRUSH: 19.4

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

DISTANCE FROM TEST VEHICLE TO BARRIER: L 24.4; C 20.6; R 21.4; AVG. 22.1



TABLE 4 FUEL SYSTEM DATA

MAKE/MODEL: Nissan/Maxima

NHTSA NO.: MN5200

FUEL SYSTEM CAPACITY: 18.5 GALLONS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 17.7 GALLONS (FURNISHED BY COTR)

TEST VOLUME RANGE: 16.3 GALLONS TO 16.6 GALLONS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 16.4 GALLONS (WITH ENTIRE FUEL SYSTEM FILLED)

TEST FLUID TYPE: STODDARD SOLVENT

SPECIFIC GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

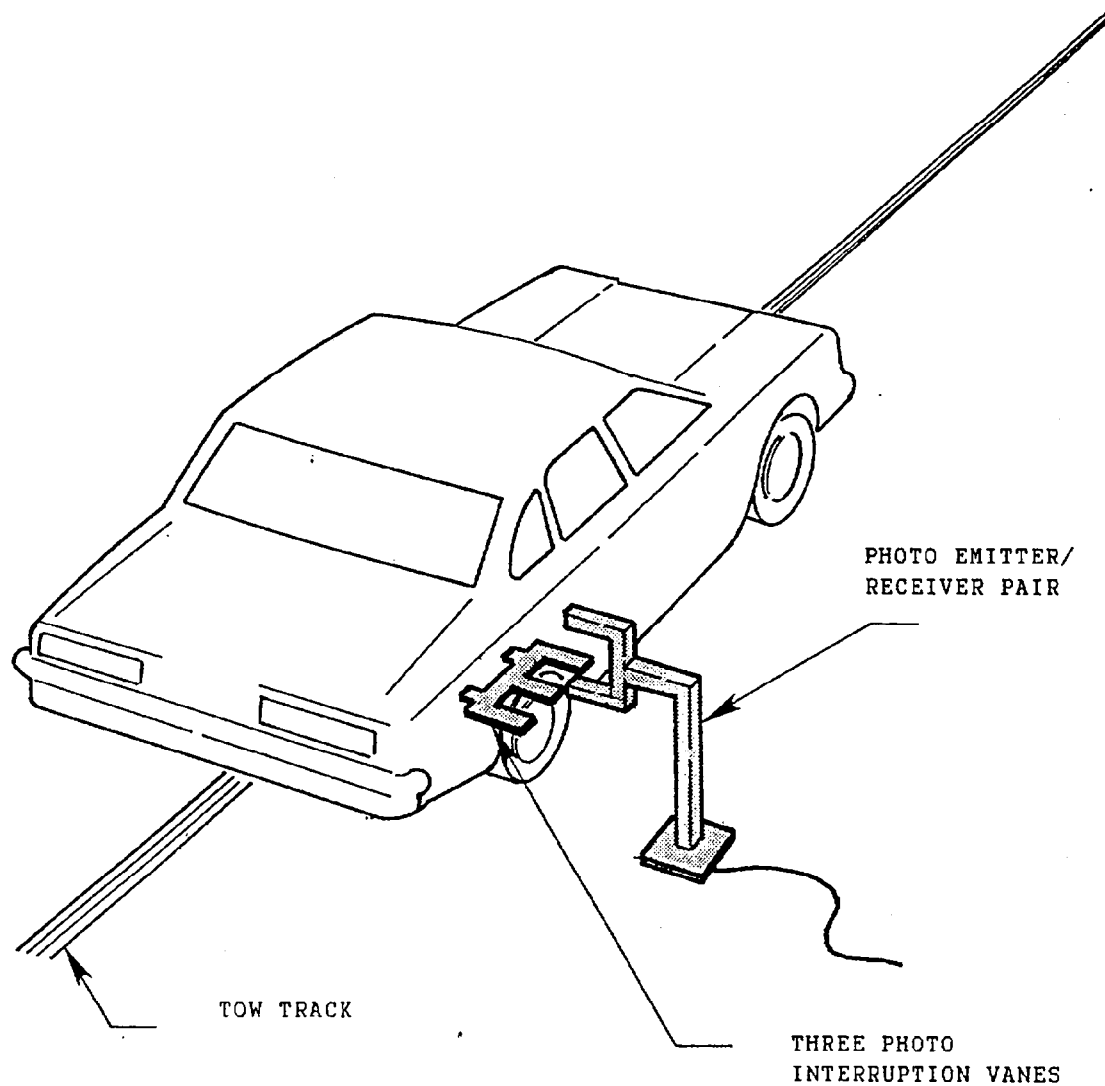
TEST FLUID COLOR: PURPLE

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

ELECTRIC FUEL PUMP: Yes FUEL INJECTION: Yes

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

FIGURE 1 IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears emitter/receiver two inches before impact.

The vanes have one foot spacing.

FIGURE 2 ACCIDENT INVESTIGATION DIVISION DATA  
FOR 35 MPH FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Nissan/Maxima/4-door sedan

VEHICLE NHTSA NO.: MN5200; VIN: JN1HJ01F7NT002291

MODEL YEAR: 1992; BUILD DATE: 11/91; TEST DATE: 01/29/92

VEHICLE SIZE CATEGORY: Mid-size; TEST WEIGHT: 3651 LBS.

VEHICLE WHEELBASE: 104.5 INCHES

MAXIMUM WIDTH: 69.2 INCHES

FRONT OVERHANG: 40.5 INCHES

COLLISION DEFORMATION

CLASSIFICATION (CDC) CODE: 12FDEW3

CRUSH DEPTH  
MEASUREMENTS:

C1 = 19.3 INCHES

C2 = 21.6 INCHES

C3 = 21.9 INCHES

C4 = 21.5 INCHES

C5 = 20.9 INCHES

C6 = 17.4 INCHES

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE  
(LONGITUDINAL)

LENGTH OF DAMAGED  
REGION: L = 59.0 INCHES

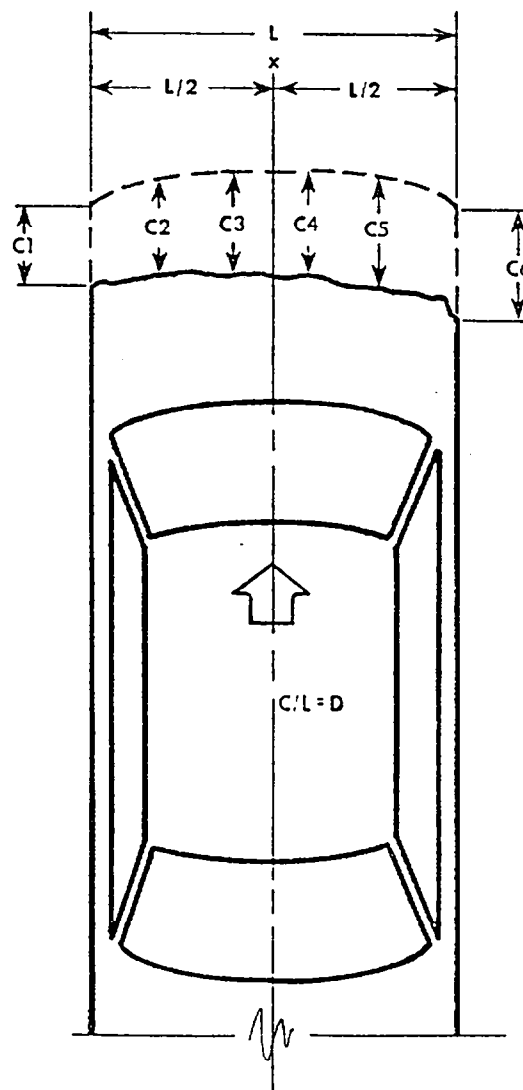
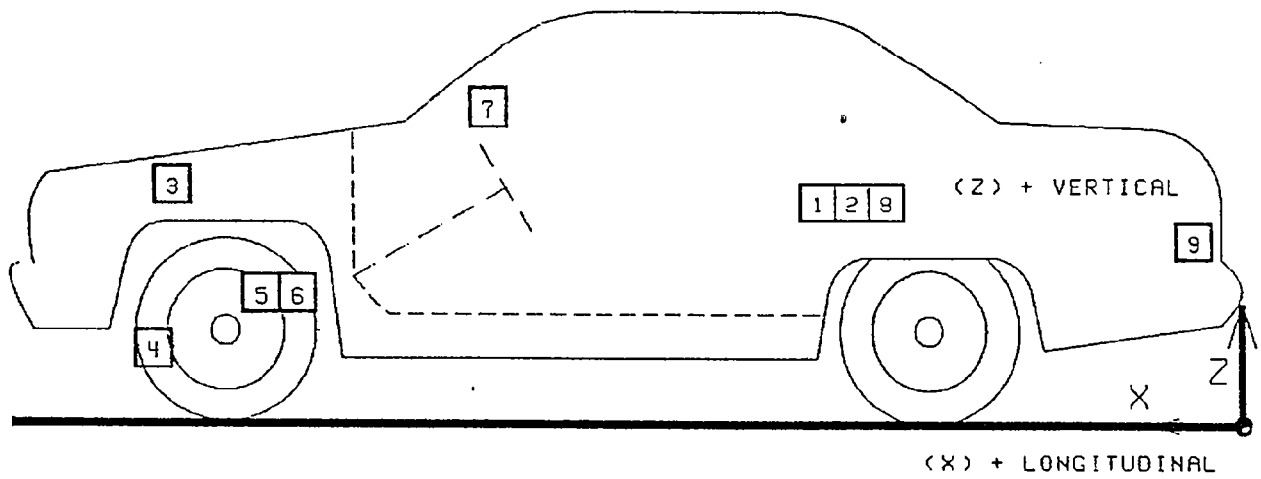
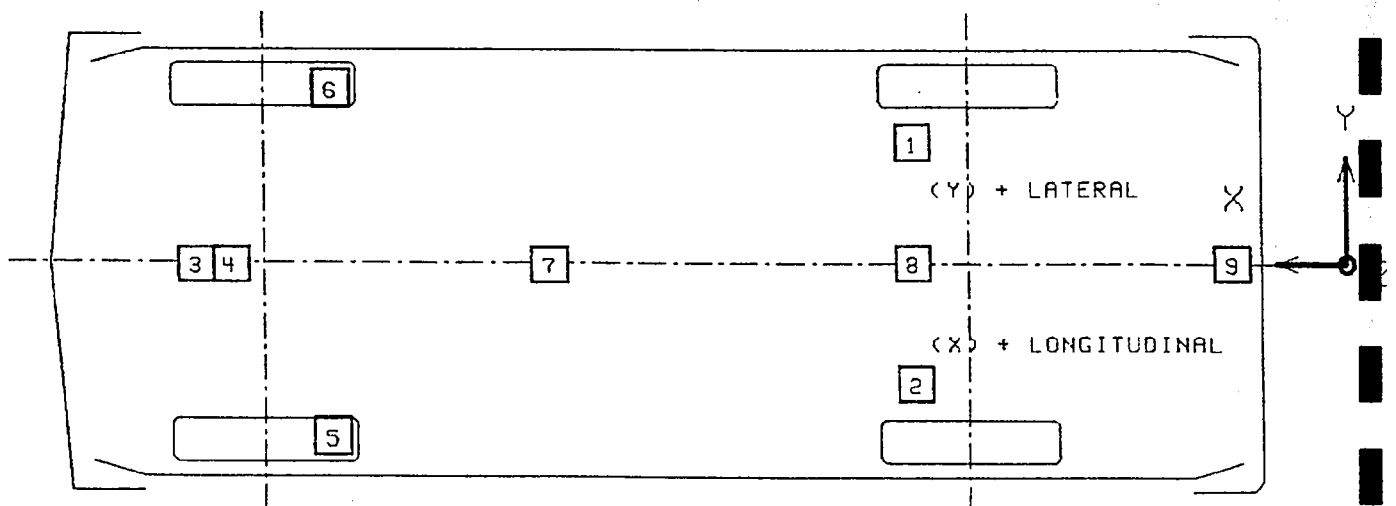


FIGURE 3

VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 5

## VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 920129

| No. | LOCATION                                       | X*    | Y*    | Z*   | POSITIVE<br>DIRECTION |        | NEGATIVE<br>DIRECTION |        |
|-----|------------------------------------------------|-------|-------|------|-----------------------|--------|-----------------------|--------|
|     |                                                |       |       |      | MAX                   | G MSEC | MAX                   | G MSEC |
| 1   | LEFT REAR SEAT<br>CROSSMEMBER<br>LONGITUDINAL  | 119.3 | 26.0  | 12.6 | 1.4                   | 154.3  | 52.7                  | 39.8   |
| 2   | RIGHT REAR SEAT<br>CROSSMEMBER<br>LONGITUDINAL | 118.8 | -25.9 | 13.1 | 1.4                   | 142.4  | 36.2                  | 42.0   |
| 3   | ENGINE TOP<br>LONGITUDINAL                     | 39.8  | -5.0  | 30.0 | 36.2                  | 43.4   | 171.6                 | 31.5   |
| 4   | ENGINE BOTTOM<br>LONGITUDINAL                  | 29.6  | -11.2 | 6.5  | 25.5                  | 43.5   | 124.9                 | 33.5   |
| 5   | RIGHT BRAKE CALIPER<br>LONGITUDINAL            | 31.8  | -26.2 | 12.1 | 43.0                  | 66.5   | 98.4                  | 48.1   |
| 6   | LEFT BRAKE CALIPER<br>LONGITUDINAL             | 31.8  | 26.2  | 12.6 | 35.5                  | 70.4   | 80.9                  | 44.3   |
| 7   | INSTRUMENT PANEL<br>CENTER<br>LONGITUDINAL     | 61.7  | 0.5   | 37.2 | 27.4                  | 66.4   | 80.8                  | 70.6   |
| 8   | REAR SEAT CROSSMEMBER<br>CENTER<br>VERTICAL    | 118.2 | -0.5  | 15.6 | 24.4                  | 30.0   | 12.1                  | 40.6   |
| 9   | VEHICLE REAR CENTER<br>VERTICAL                | 179.2 | 0.2   | 20.6 | 15.7                  | 54.3   | 12.8                  | 95.8   |

\* 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 6 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

|            | DRIVER #713             | PASSENGER #826          |
|------------|-------------------------|-------------------------|
| HEAD       | <u>Airbag</u>           | <u>Chest</u>            |
| CHEST      | <u>Airbag</u>           | <u>None</u>             |
| ABDOMEN    | <u>None</u>             | <u>None</u>             |
| LEFT KNEE  | <u>Instrument panel</u> | <u>Instrument panel</u> |
| RIGHT KNEE | <u>Instrument panel</u> | <u>Instrument panel</u> |

DOOR OPENING:

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

SEAT MOVEMENT:

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

GLAZING DAMAGE:

The entire windshield was cracked upon impact.

\_\_\_\_\_

\_\_\_\_\_

OTHER NOTABLE IMPACT EFFECTS:

None

\_\_\_\_\_

\_\_\_\_\_

TABLE 7 FMVSS 208 DATA SUMMARY

VEH. YR./MAKE/MODEL/BODY STYLE: 1992/Nissan/Maxima/4-door sedan

VEH. NHTSA NO.: MN5200; TEST DATE: 01/29/92

|                                       | DRIVER<br>DUMMY #713 | PASSENGER<br>DUMMY #826 |
|---------------------------------------|----------------------|-------------------------|
| <u>MAXIMUM ACCELERATIONS (G):</u>     |                      |                         |
| HEAD X-AXIS                           | -53.4                | -31.3                   |
| HEAD Y-AXIS                           | -8.1                 | -18.6                   |
| HEAD Z-AXIS                           | -57.0                | -72.8                   |
| HEAD RESULTANT                        | 68.4                 | 74.1                    |
|                                       |                      |                         |
| CHEST X-AXIS                          | -53.5                | -54.9                   |
| CHEST Y-AXIS                          | -5.8                 | -18.3                   |
| CHEST Z-AXIS                          | 13.9                 | 15.6                    |
| CHEST RESULTANT*                      | 52.8                 | 48.0                    |
| CHEST RESULTANT TIME INTERVAL (SEC.)* | .004                 | .003                    |

HEAD INJURY CRITERIA (HIC) VALUES:

|                                                            |       |       |
|------------------------------------------------------------|-------|-------|
| HIC**                                                      | 818   | 864   |
| HIC STARTING TIME (SEC.)                                   | 66.5  | 71.1  |
| HIC ENDING TIME (SEC.)                                     | 102.5 | 107.1 |
| AVG. HEAD RESULTANT ACCEL. DURING<br>HIC TIME INTERVAL (G) | 55.2  | 56.5  |

MAXIMUM CHEST DEFLECTIONS (IN):

|                                      |    |    |
|--------------------------------------|----|----|
| CHEST X-AXIS                         | NA | NA |
| MAXIMUM CHEST DEFLECTION TIME (SEC.) | NA | NA |

MAXIMUM COMPRESSIVE FEMUR FORCES (LBS):

|             |      |     |
|-------------|------|-----|
| LEFT FEMUR  | 1398 | 708 |
| RIGHT FEMUR | 684  | 634 |

MAXIMUM SEAT BELT FORCES (LBS):

|               |      |      |
|---------------|------|------|
| LAP BELT      | 886  | 1144 |
| SHOULDER BELT | 1900 | 2325 |

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

\*0.003 SEC. MINIMUM DURATION.

\*\*THE MAXIMUM HIC TIME INTERVAL IS 36 MILLISECONDS.

## 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 forward as the dummy's head and chest were restrained by the driver's airbag. The dummy's torso was restrained by the two-point passive belt and manual lap belt. The dummy's head rotated rearward into the head restraint as the dummy rebounded into the seat back. The dummy came to rest seated in the driver's seat, restrained by the two-point passive belt and manual lap belt.

### RIGHT FRONT PASSENGER DUMMY

Upon impact, the right front passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head rotated forward and contacted the dummy's chest. The dummy's head and torso rotated clockwise as the dummy was restrained by the two-point passive belt and manual lap belt. The dummy's head rotated rearward into the head restraint as the dummy rebounded into the seat back. The dummy came to rest seated in the right front passenger's seat, restrained by the two-point passive belt and manual lap belt.



TABLE 8 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

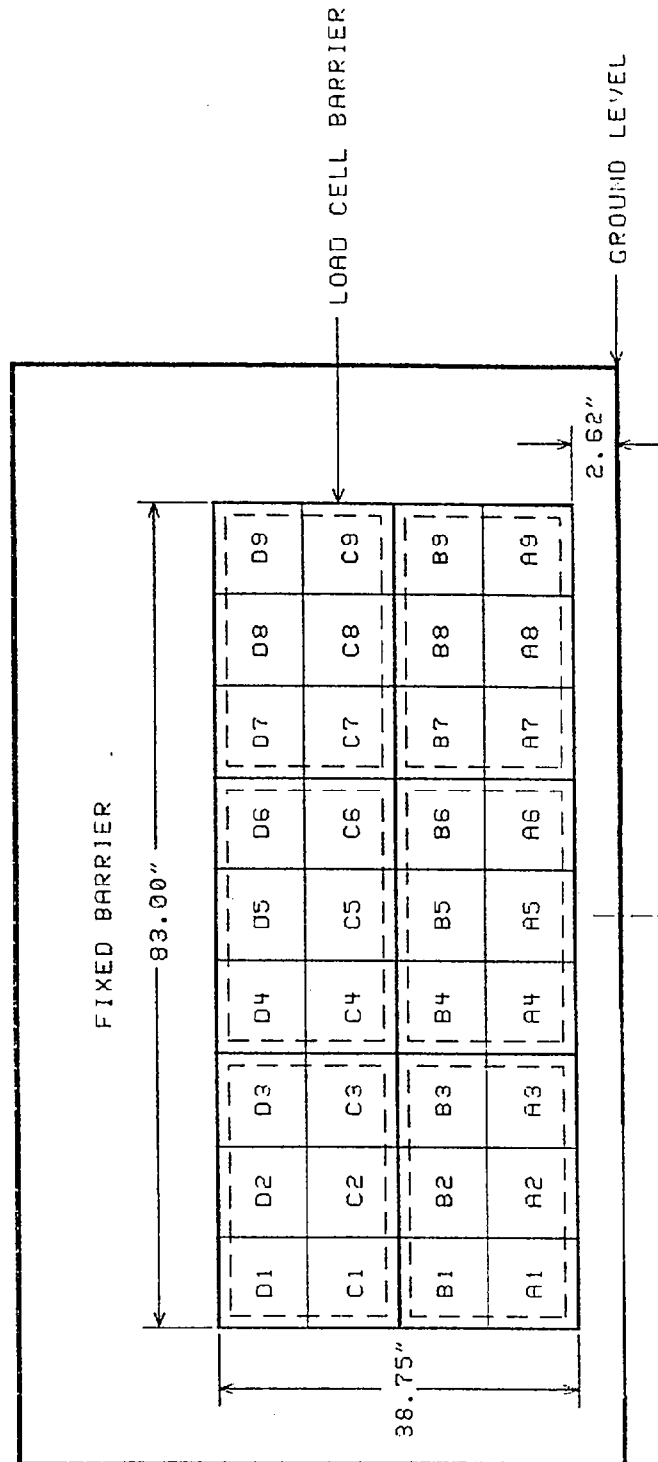
|                                                                                                  | DRIVER | PASSENGER |
|--------------------------------------------------------------------------------------------------|--------|-----------|
| <hr/>                                                                                            |        |           |
| <u>BELT LENGTH DATA:</u>                                                                         |        |           |
| BELT LENGTH FROM TRIM PANEL<br>EXIT TO BOLT HOLE ANCHOR POINT<br>FOR CONTINUOUS WEBBING SYSTEMS. | 56.5   | 56.3      |
| SHOULDER BELT LENGTH AS MEASURED<br>ON PART 572 DUMMY.                                           | 37.5   | 36.5      |
| LAP BELT LENGTH AS MEASURED ON<br>PART 572 DUMMY.                                                | 31.5   | 32.8      |
| <hr/>                                                                                            |        |           |
| <u>SHOULDER BELT SPOOL-OFF LENGTH:</u>                                                           |        |           |
| AS DETERMINED BY FILM ANALYSIS                                                                   | NA *   | 2.0       |
| AS DETERMINED MECHANICALLY                                                                       | 2.2    | 1.7       |
| AS DETERMINED ELECTRONICALLY                                                                     | 2.0    | 1.8       |
| <hr/>                                                                                            |        |           |
| <u>BELT STRETCH LENGTH (IN/FT):</u>                                                              |        |           |
| AS MEASURED MECHANICALLY                                                                         | 0.3    | 0.8       |
| AS MEASURED ELECTRONICALLY                                                                       | 0.6    | 1.4       |
| <hr/>                                                                                            |        |           |
| <u>RETRACTOR LOCK-UP TIME (MS):</u>                                                              |        |           |
| AS DETERMINED BY SHOULDER<br>BELT SPOOL-OFF                                                      | NA *   | 76        |
| <hr/>                                                                                            |        |           |

ALL MEASUREMENTS ARE IN INCHES UNLESS OTHERWISE NOTED.

\*The driver's shoulder belt spoolout camera did not run during the crash test event.

FIGURE 4  
LOAD CELL BARRIER CONFIGURATION  
FRONT VIEW

36 LOAD CELLS  
4 ROWS  
9 COLUMNS



- GROUP 1: A1 THRU B3
- GROUP 2: A4 THRU B6
- GROUP 3: A7 THRU B9
- GROUP 4: C1 THRU D3
- GROUP 5: C4 THRU D6
- GROUP 6: C7 THRU D9

TABLE 9

## LOAD CELL BARRIER DATA SUMMARY

TEST NUMBER 920129

| LOCATION              | POSITIVE<br>DIRECTION<br>LB | MSEC  | NEGATIVE<br>DIRECTION<br>LB | MSEC |
|-----------------------|-----------------------------|-------|-----------------------------|------|
| TOTAL GROUP 1         | 221                         | 145.6 | 18378                       | 17.3 |
| TOTAL GROUP 2         | 331                         | 198.5 | 40338                       | 54.6 |
| TOTAL GROUP 3         | 274                         | 214.0 | 36255                       | 32.8 |
| TOTAL GROUP 4         | 337                         | 143.0 | 7386                        | 34.9 |
| TOTAL GROUP 5         | 215                         | 208.9 | 30829                       | 33.1 |
| TOTAL GROUP 6         | 241                         | 145.3 | 17928                       | 33.4 |
| TOTAL LOAD CELL FORCE | 1182                        | 145.3 | 136103                      | 33.0 |

TENSION IS POSITIVE  
COMPRESSION IS NEGATIVE

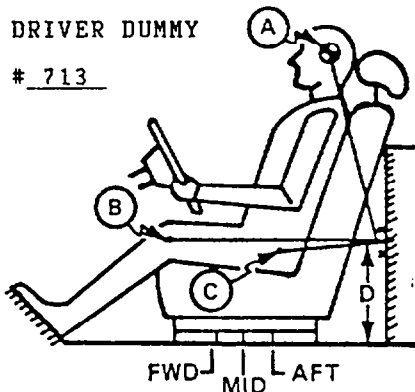
SECTION 3.0

OCCUPANT, CAMERA, & VEHICLE MEASUREMENTS.

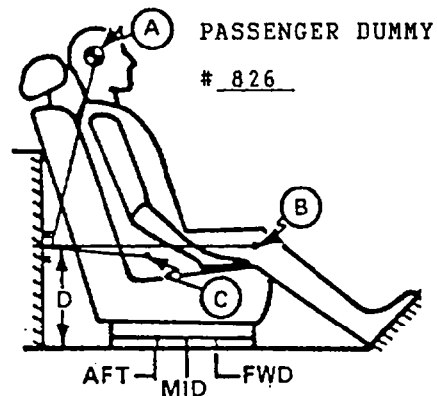
FIGURE 5 DUMMY AND SEAT POSITIONING DATA

TEST NO.: 920129; VEHICLE: 1992 Nissan Maxima

|                           |                       |                                   |
|---------------------------|-----------------------|-----------------------------------|
| <u>SEAT TYPE:</u>         | <u>ADJUSTER TYPE:</u> | <u>FRONT SEAT BACK TYPE:</u>      |
| <u>      </u> BENCH       | <u>  X  </u> MANUAL   | <u>      </u> NON-ADJUSTABLE      |
| <u>  X  </u> BUCKET       | <u>      </u> POWER   | <u>  X  </u> ADJUSTABLE RECLINING |
| <u>      </u> SPLIT BENCH |                       |                                   |



MEASUREMENT  
LOCATION  
A - HEAD TARGET  
B - KNEE JOINT  
C - APPROXIMATE  
'H' POINT  
D - SILL TO DOOR  
STRIKER  
REFERENCE  
POINT

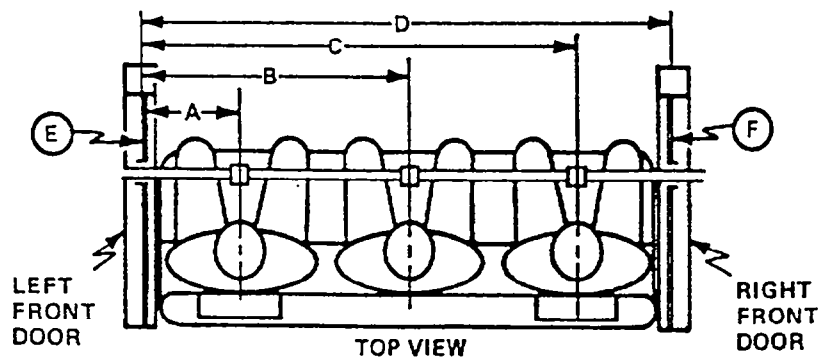


A = 21.7 IN. -5 DEGREES  
B = 22.7 IN. 93 DEGREES  
C = 8.5 IN. 125 DEGREES  
D = 10.5 IN.

A = 21.0 IN. -9 DEGREES  
B = 22.5 IN. 92 DEGREES  
C = 7.5 IN. 125 DEGREES  
D = 10.5 IN.

SEAT TRACK REARWARD: 11 NOTCHES

SEAT TRACK REARWARD: 11 NOTCHES



|                                                           |                 |
|-----------------------------------------------------------|-----------------|
| A = LEFT DOOR TO DRIVER CENTERLINE                        | <u>13.5</u> IN. |
| B = LEFT DOOR TO CENTER PASSENGER CENTERLINE              | <u>NA</u> IN.   |
| C = LEFT DOOR TO RIGHT PASSENGER CENTERLINE               | <u>41.2</u> IN. |
| D = LEFT DOOR TO RIGHT DOOR                               | <u>54.4</u> IN. |
| E, F = WINDOW GLASS HEIGHT (RIGHT AND LEFT MUST BE EQUAL) | <u>10.2</u> IN. |

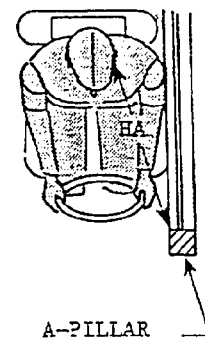
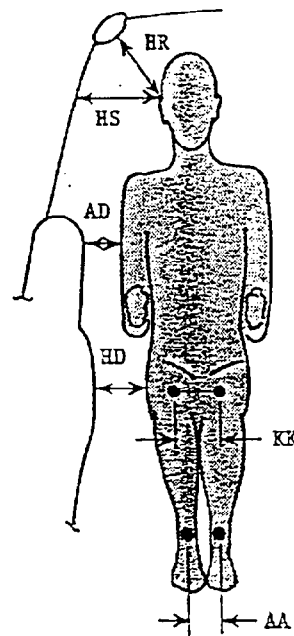
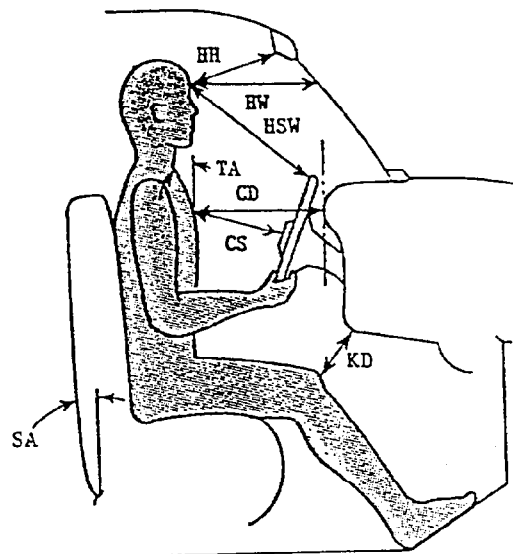
ALL ANGLES ARE RELATIVE TO VERTICAL PLANE THROUGH DOOR STRIKER.

FIGURE 6 DUMMY IN-VEHICLE POSITIONING DATA

|     | DRIVER | PASSENGER |
|-----|--------|-----------|
| HH  | 16.6   | 17.9      |
| HW  | 25.1   | 24.8      |
| CD  | 24.8   | 25.9      |
| CS  | 15.7   | NA        |
| KDL | 7.8    | 6.3       |
| KDR | 8.2    | 6.6       |
| TA  | 27°    | 34°       |
| SA  | 22.5°  | 21°       |
| HSW | 23.8   | NA        |

|    | DRIVER | PASSENGER |
|----|--------|-----------|
| HR | 6.3    | 7.0       |
| HS | 10.0   | 10.8      |
| AD | 4.8    | 5.1       |
| HD | 7.1    | 7.1       |
| KK | 10.8   | 7.8       |
| AA | 12.0   | 8.5       |
| HA | 25.0   | 25.9      |

KNEE OUTER BOLT HEAD TO OUTER  
BOLT HEAD SPACING:  
DRIVER = 14.5  
PASSENGER = 11.8

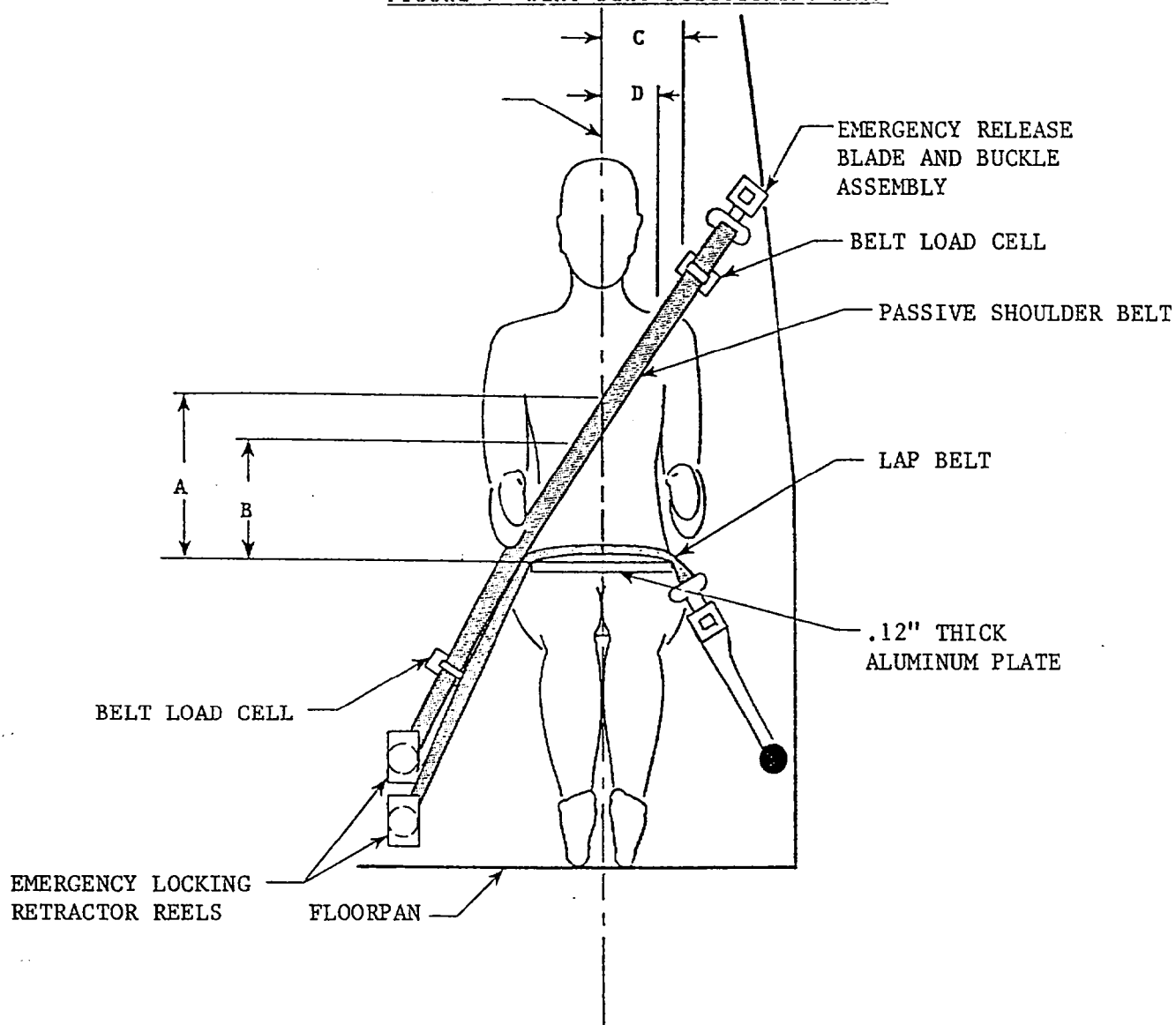


HH = HEAD TO WINDSHIELD HEADER  
HW = HEAD TO WINDSHIELD  
CD = CHEST TO DASH  
CS = CHEST TO STEERING WHEEL  
KD = KNEE TO DASH  
TA = TORSO ANGLE  
SA = SEAT BACK ANGLE  
HSW = HEAD TO STEERING WHEEL

HR = HEAD C.G. TARGET TO SIDE ROOF HEADER  
HS = HEAD C.G. TARGET TO SIDE WINDOW  
AD = ARM TO DOOR  
HD = HIP TO DOOR  
KK = KNEE TO KNEE  
AA = ANKLE TO ANKLE  
HA = HEAD C.G. TARGET TO A-PILLAR

TORSO AND SEAT BACK ANGLES ARE RELATIVE TO VERTICAL.  
ALL. DISTANCE MEASUREMENTS ARE IN INCHES.

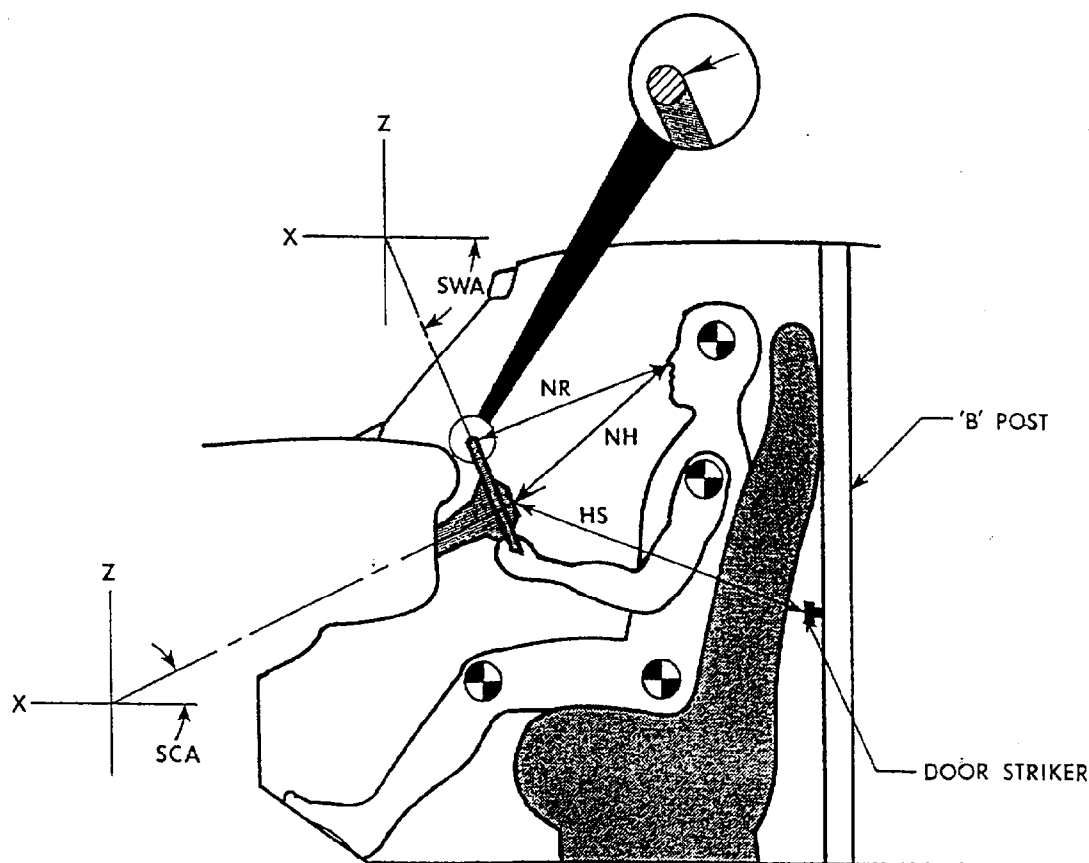
FIGURE 7 SEAT BELT POSITIONING DATA



|                                                                  | DRIVER<br>DUMMY | PASSENGER<br>DUMMY |
|------------------------------------------------------------------|-----------------|--------------------|
| A - TOP SURFACE OF ALUMINUM PLATE TO BELT UPPER EDGE             | 14.0            | 13.0               |
| B - TOP SURFACE OF ALUMINUM PLATE TO BELT LOWER EDGE             | 11.0            | 10.0               |
| C - DUMMY CENTERLINE TO OUTER EDGE OF BELT<br>AT CHEST FLESH TOP | 7.8             | 6.5                |
| D - DUMMY CENTERLINE TO INNER EDGE OF BELT<br>AT CHEST FLESH TOP | 5.0             | 4.0                |
| LAP BELT TENSION (LBS)                                           | 4               | 4                  |

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 8 DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSEMBLY DATA



POSITION OF STEERING COLUMN TILTING AND TELESOPING ADJUSTMENTS, IF ANY:  
The steering column was positioned in the mid-point of the infinitely adjustable tilt range.

MEASUREMENTS

|     |                                                                                                    |      |
|-----|----------------------------------------------------------------------------------------------------|------|
| NR  | - DISTANCE FROM TIP OF DUMMY'S NOSE TO TOP REAR SURFACE OF STEERING WHEEL RIM.                     | 21.9 |
| NH  | - DISTANCE FROM TIP OF DUMMY'S NOSE TO CENTER OF STEERING COLUMN HUB.                              | 21.5 |
| HS  | - DISTANCE FROM CENTER OF STEERING COLUMN HUB TO THE FORWARD SURFACE OF THE DOOR LOCK STRIKER PIN. | 24.8 |
| SCA | - ANGLE OF STEERING COLUMN RELATIVE TO THE HORIZONTAL X AXIS                                       | 24°  |
| SWA | - ANGLE OF STEERING WHEEL RELATIVE TO THE HORIZONTAL X AXIS                                        | 66°  |

ALL DISTANCE MEASUREMENTS ARE IN INCHES.



FIGURE 9  
CAMERA POSITIONS

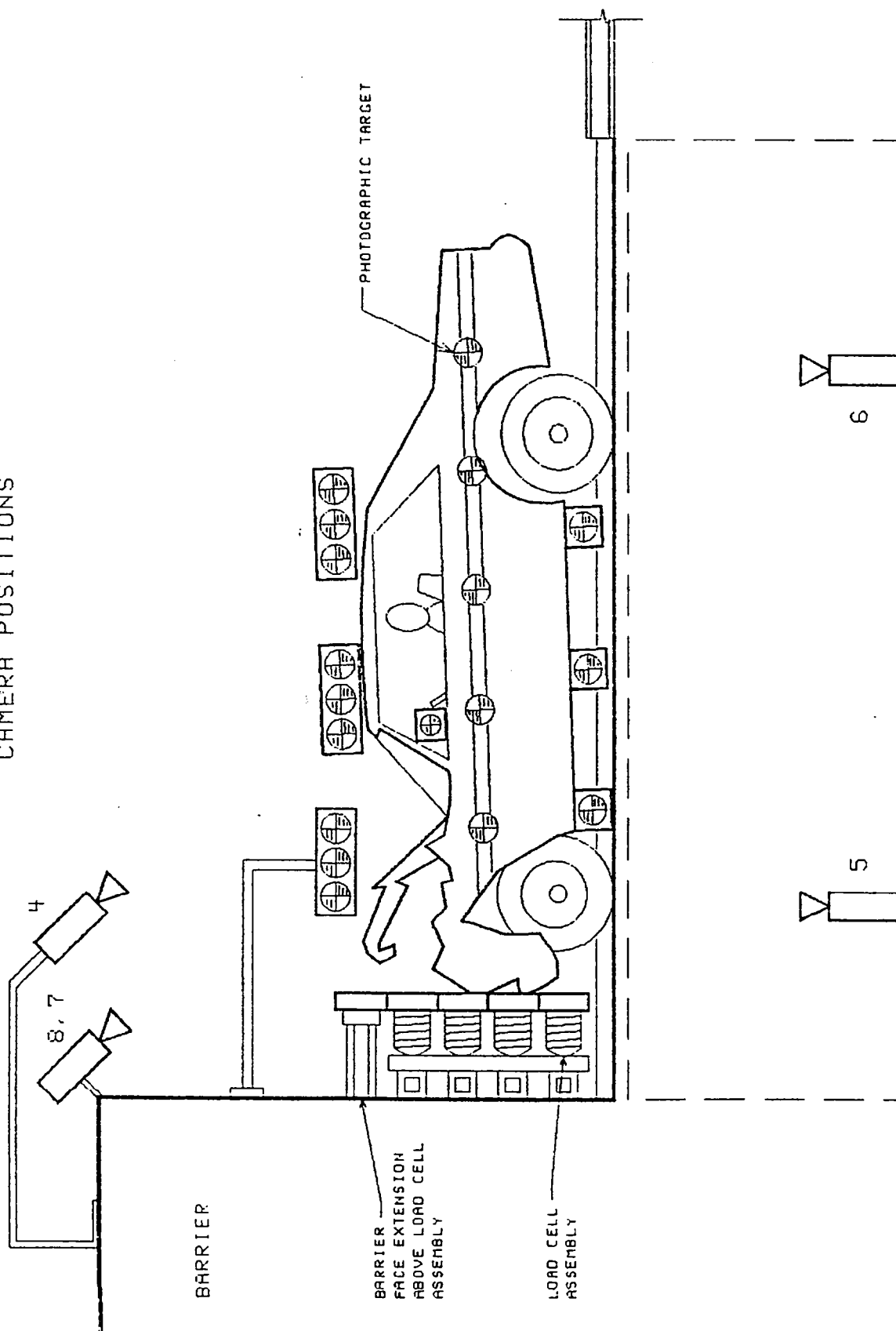


FIGURE 9

CAMERA POSITIONS, CONTINUED

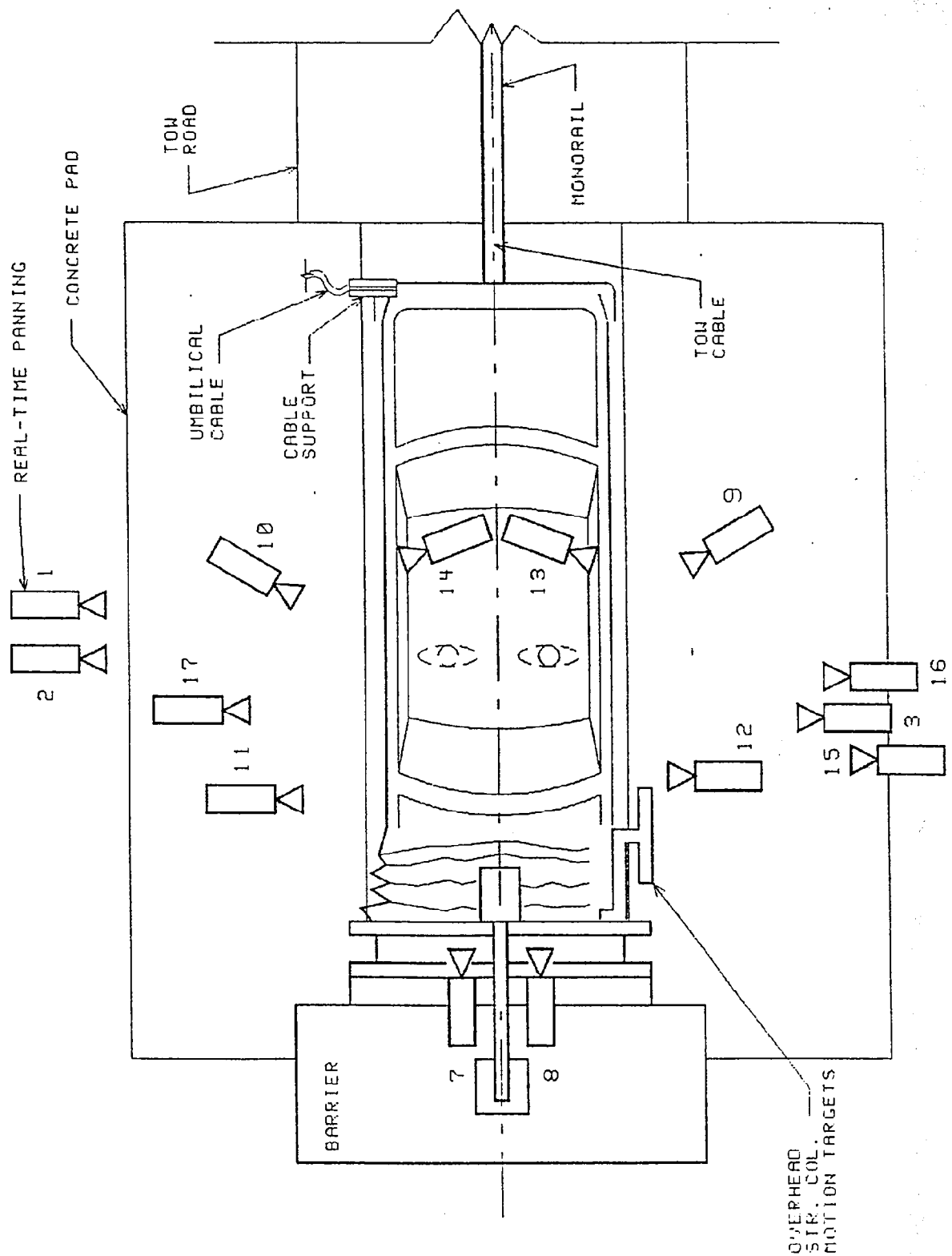


TABLE 10 MOTION PICTURE CAMERA LOCATIONS

| TEST NO.: 920129 |                             | VEHICLE: Nissan Maxima 4-door sedan |        |       |       | CAMERA POSITIONS (IN)* |             | ANGLE**   | FILM PLANE  |  | FILM |
|------------------|-----------------------------|-------------------------------------|--------|-------|-------|------------------------|-------------|-----------|-------------|--|------|
| CAMERA NO.       | VIEW                        | X                                   | Y      | Z     | (DEG) | TO HEAD                | TARGET (IN) | LENS (MM) | SPEED (FPS) |  |      |
| 1                | Real-time panning           | -142.0                              | -504.0 | 61.0  | NA    | NA                     | NA          | 16        | 24          |  |      |
| 2                | Right side                  | -81.3                               | -266.4 | 37.1  | -2    | NA                     | NA          | 13        | 493         |  |      |
| 3                | Left side                   | -41.5                               | 295.0  | 44.0  | -12   | 217.0                  | 25          | 25        | 493         |  |      |
| 4                | Overhead                    | -36.4                               | 0.0    | 98.0  | -40   | NA                     | 13          | 13        | 505         |  |      |
| 5                | Pit - engine                | -50.5                               | 0.0    | -92.4 | 90    | NA                     | 13          | 13        | 1000        |  |      |
| 6                | Pit - fuel tank             | -99.3                               | 0.0    | -99.0 | 90    | NA                     | 13          | 13        | 992         |  |      |
| 7                | Front - passenger           | -4.5                                | -13.8  | 85.0  | -40   | NA                     | 17          | 17        | 500         |  |      |
| 8                | Front - driver              | -6.8                                | 14.5   | 85.0  | -41   | NA                     | 17          | 17        | 495         |  |      |
| 9                | Left side - driver          | -180.0                              | 73.0   | 102.0 | -27   | 103.0                  | 25          | 25        | 435         |  |      |
| 10               | Right side - passenger      | -184.0                              | -74.0  | 100.0 | -26   | 105.0                  | 25          | 25        | 500         |  |      |
| 11               | Right side - A-pillar       | -38.1                               | -306.1 | 44.0  | 0     | NA                     | 50          | 50        | 498         |  |      |
| 12               | Left side - A-pillar        | -53.0                               | 309.4  | 42.3  | 0     | NA                     | 50          | 50        | 505         |  |      |
| 13               | Onboard - left side         | NA                                  | NA     | NA    | NA    | NA                     | 13          | 13        | NA***       |  |      |
| 14               | Onboard - right side        | NA                                  | NA     | NA    | NA    | NA                     | 13          | 13        | 500         |  |      |
| 15               | Left side - steering column | -102.0                              | 286.0  | 103.0 | -14   | NA                     | 25          | 25        | 495         |  |      |
| 16               | Left side - steering column | -102.0                              | 286.0  | 75.1  | -9    | NA                     | 25          | 25        | 500         |  |      |
| 17               | Right side - passenger      | -38.8                               | -210.8 | 45.3  | 7     | 215.0                  | 25          | 25        | 512         |  |      |

\*X = Film plane forward of barrier face

+Y = Film plane to left of monorail centerline

+Z = Film plane above ground level

\*\*\*Angle = Film plane angled upward from horizontal plane

\*\*\*The driver's shoulder belt spoolout camera did not run during the crash test event.

FIGURE 10  
VEHICLE TARGET LOCATIONS

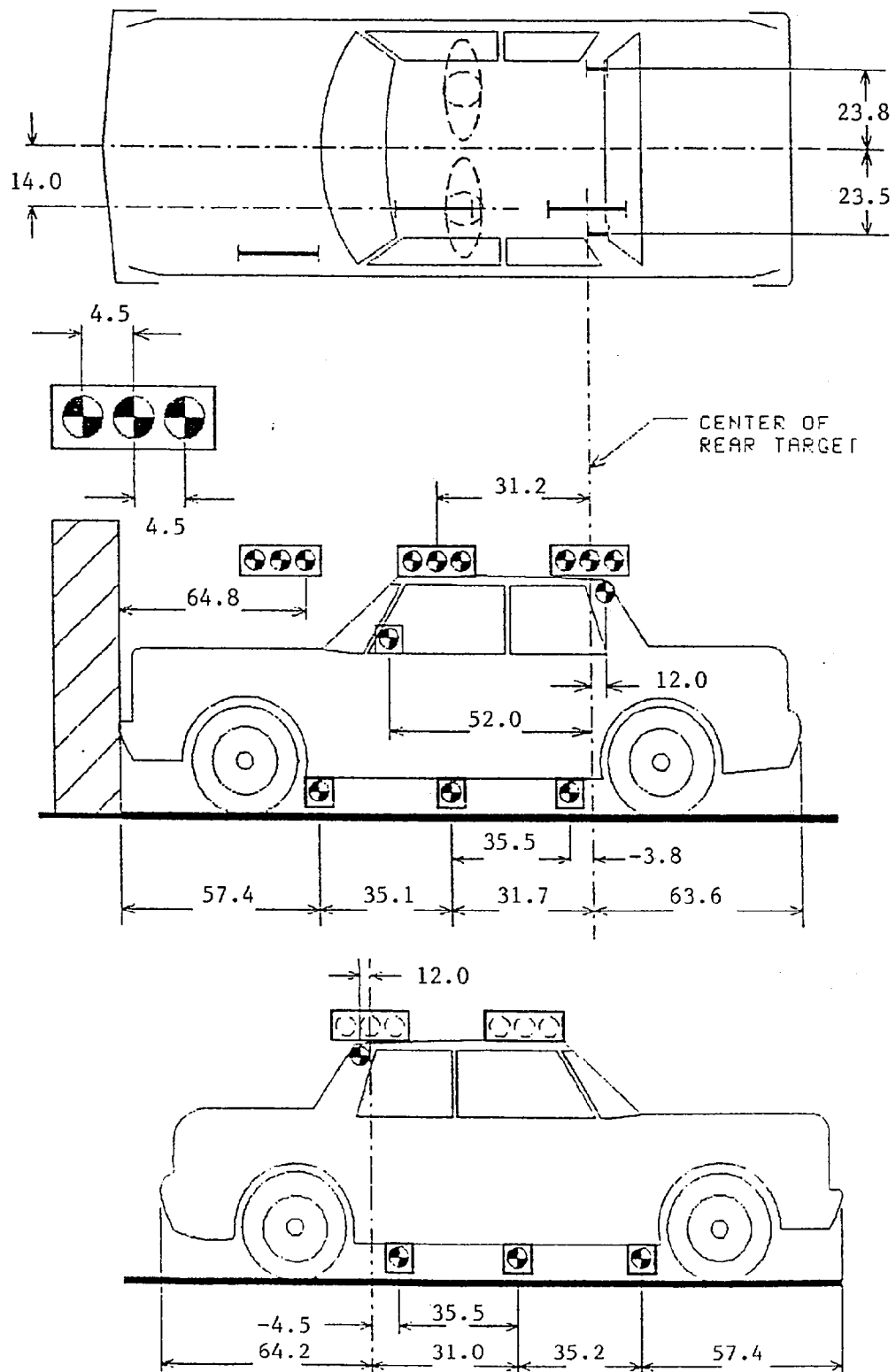


FIGURE 11

PRE-TEST AND POST-TEST MEASUREMENT POINTS

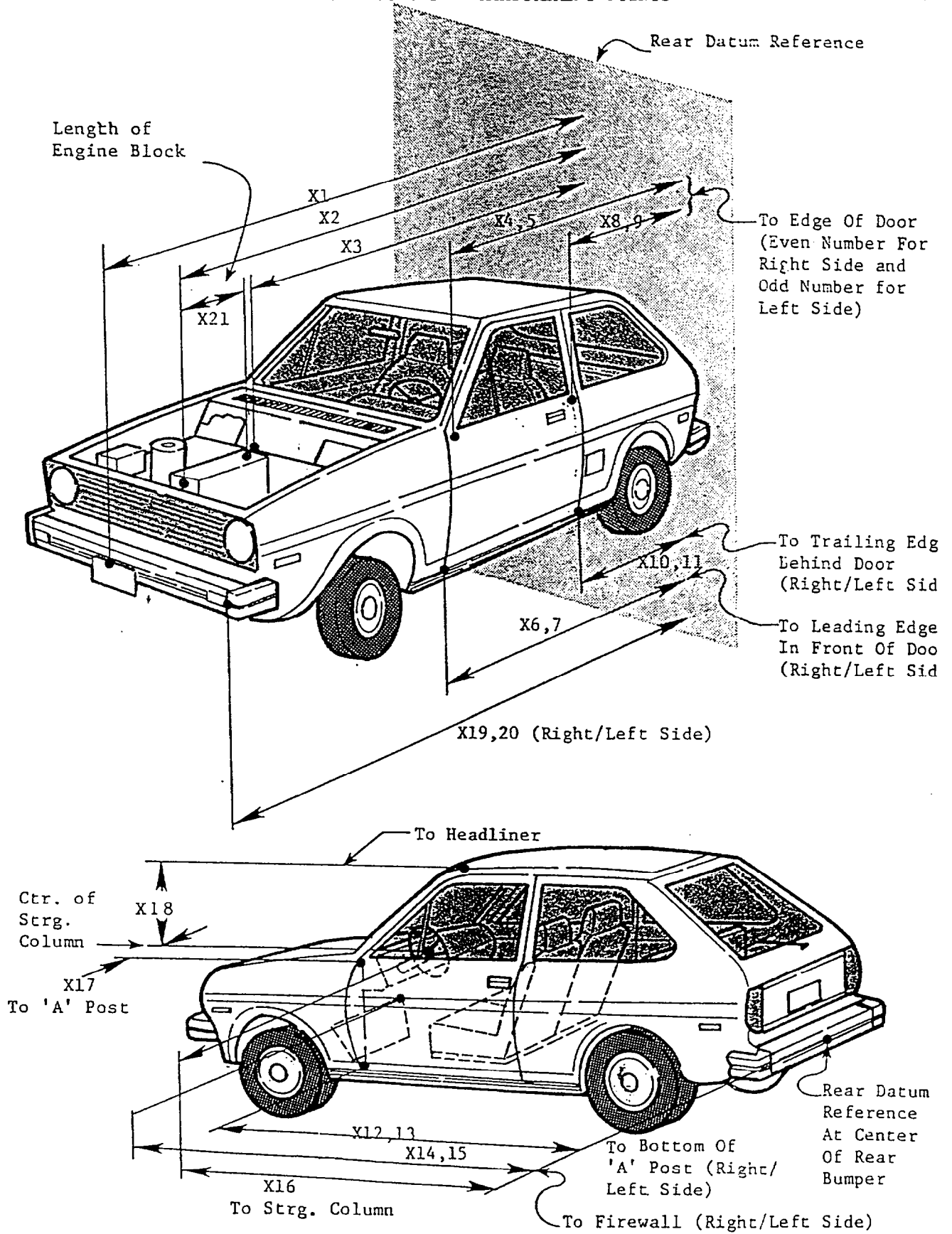


TABLE 11 IMPACTED VEHICLE MEASUREMENTS

| VEHICLE MAKE/MODEL: Nissan/Maxima |                                                              | TEST NUMBER: 920129 | ALL MEASUREMENTS ARE IN INCHES |           |       |  |
|-----------------------------------|--------------------------------------------------------------|---------------------|--------------------------------|-----------|-------|--|
| NO.                               | TYPE OF MEASUREMENT                                          |                     | PRE-TEST                       | POST-TEST | DIFF. |  |
| X1                                | TOTAL LENGTH OF VEHICLE AT CENTERLINE                        |                     | 187.8                          | 166.4     | 21.4  |  |
| X2                                | REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK             |                     | 170.8                          | 157.5     | 13.3  |  |
| X3                                | REAR SURFACE OF VEHICLE TO FIREWALL                          |                     | 137.2                          | 135.1     | 2.1   |  |
| X4                                | REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR  |                     | 127.2                          | 127.0     | 0.2   |  |
| X5                                | REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR   |                     | 127.5                          | 127.4     | 0.1   |  |
| X6                                | REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR  |                     | 126.6                          | 126.1     | 0.5   |  |
| X7                                | REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR   |                     | 127.2                          | 126.8     | 0.4   |  |
| X8                                | REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR |                     | 84.6                           | 84.5      | 0.1   |  |
| X9                                | REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR  |                     | 84.8                           | 84.9      | -0.1  |  |
| X10                               | REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR |                     | 84.2                           | 83.9      | 0.3   |  |
| X11                               | REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR  |                     | 85.0                           | 84.5      | 0.5   |  |
| X12                               | REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE  |                     | 126.8                          | 126.2     | 0.6   |  |
| X13                               | REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE   |                     | 127.0                          | 126.9     | 0.1   |  |
| X14                               | REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE             |                     | 136.7                          | 134.1     | 2.6   |  |
| X15                               | REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE              |                     | 137.8                          | 135.7     | 2.1   |  |
| X16                               | REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER             |                     | 111.2                          | 111.0     | 0.2   |  |
| X17                               | CENTER OF STEERING COLUMN TO "A" POST                        |                     | 11.0                           | 11.8      | -0.8  |  |
| X18                               | CENTER OF STEERING COLUMN TO HEADLINER                       |                     | 18.8                           | 16.4      | 2.4   |  |
| X19                               | REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER        |                     | 182.0                          | 164.6     | 17.4  |  |
| X20                               | REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER         |                     | 181.5                          | 162.2     | 19.3  |  |
| X21                               | LENGTH OF ENGINE BLOCK                                       |                     | 20.0                           | 20.0      | 0.0   |  |

APPENDIX A

PHOTOGRAPHS

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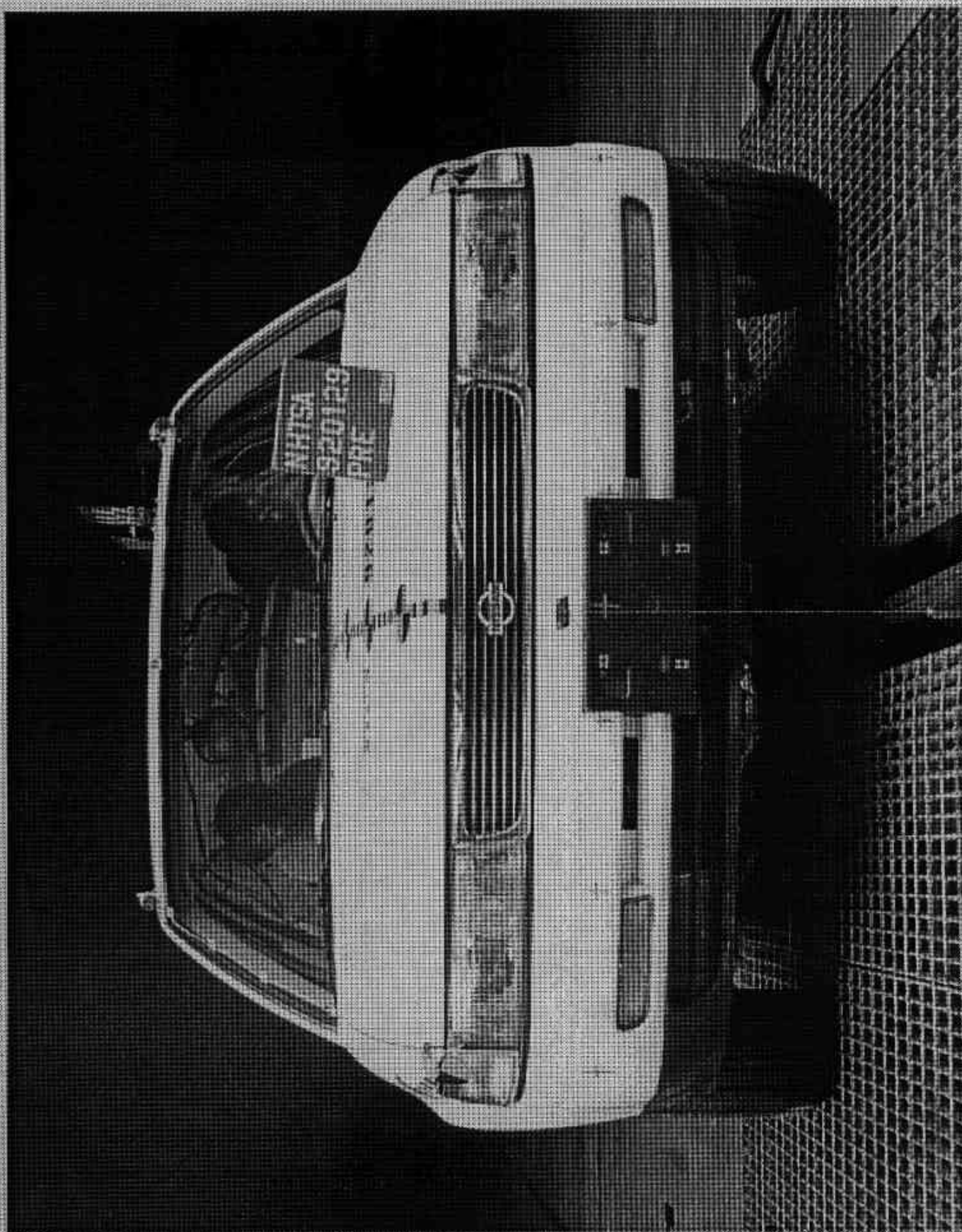


FIGURE A-1. PRE-TEST FRONT VIEW

A-2

920129

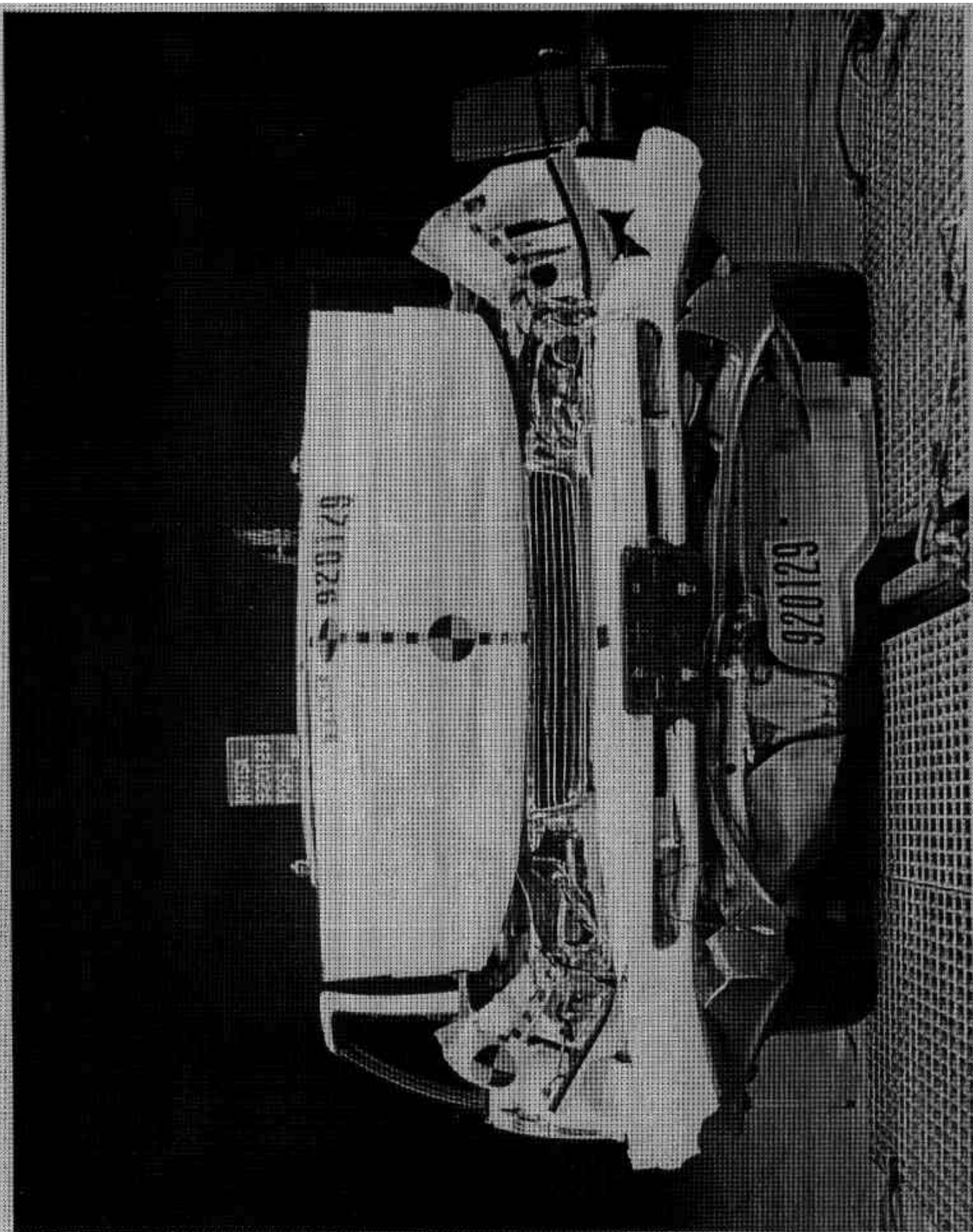


FIGURE A-2. POST-TEST FRONT VIEW

A-3

920129



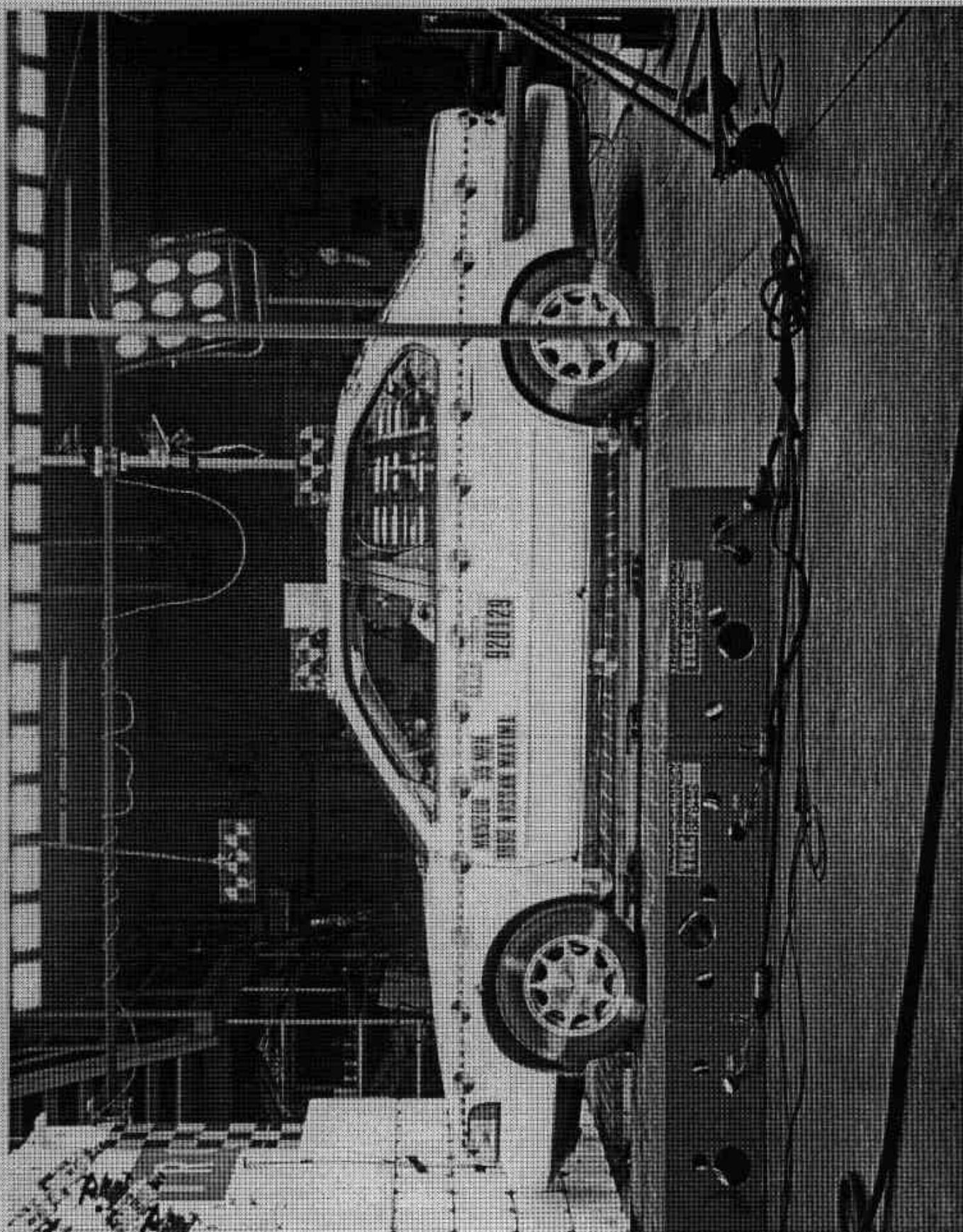


FIGURE A-3. PRE-TEST LEFT SIDE VIEW

A-4

920129

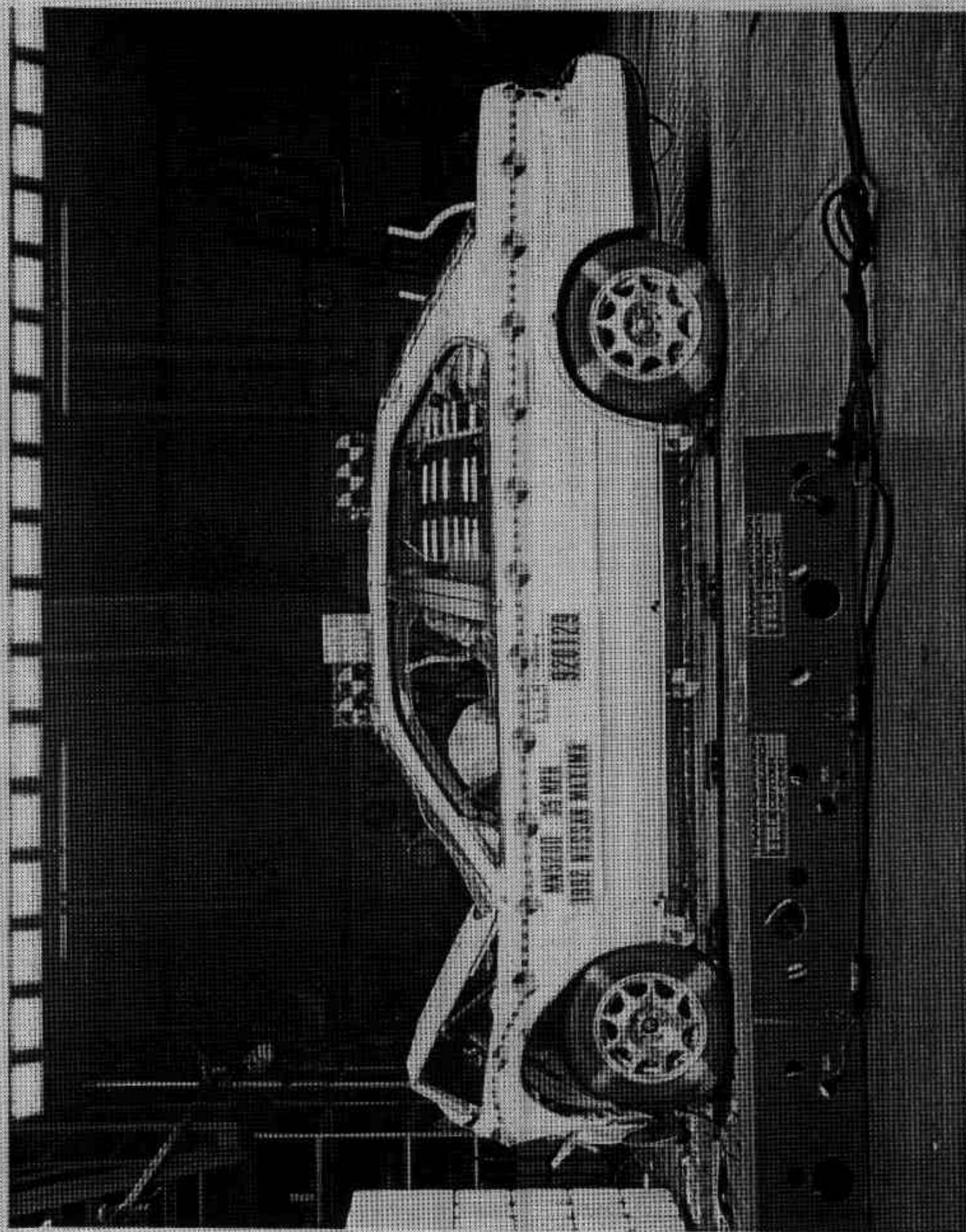


FIGURE A-4. POST-TEST LEFT SIDE VIEW  
A-5

920129



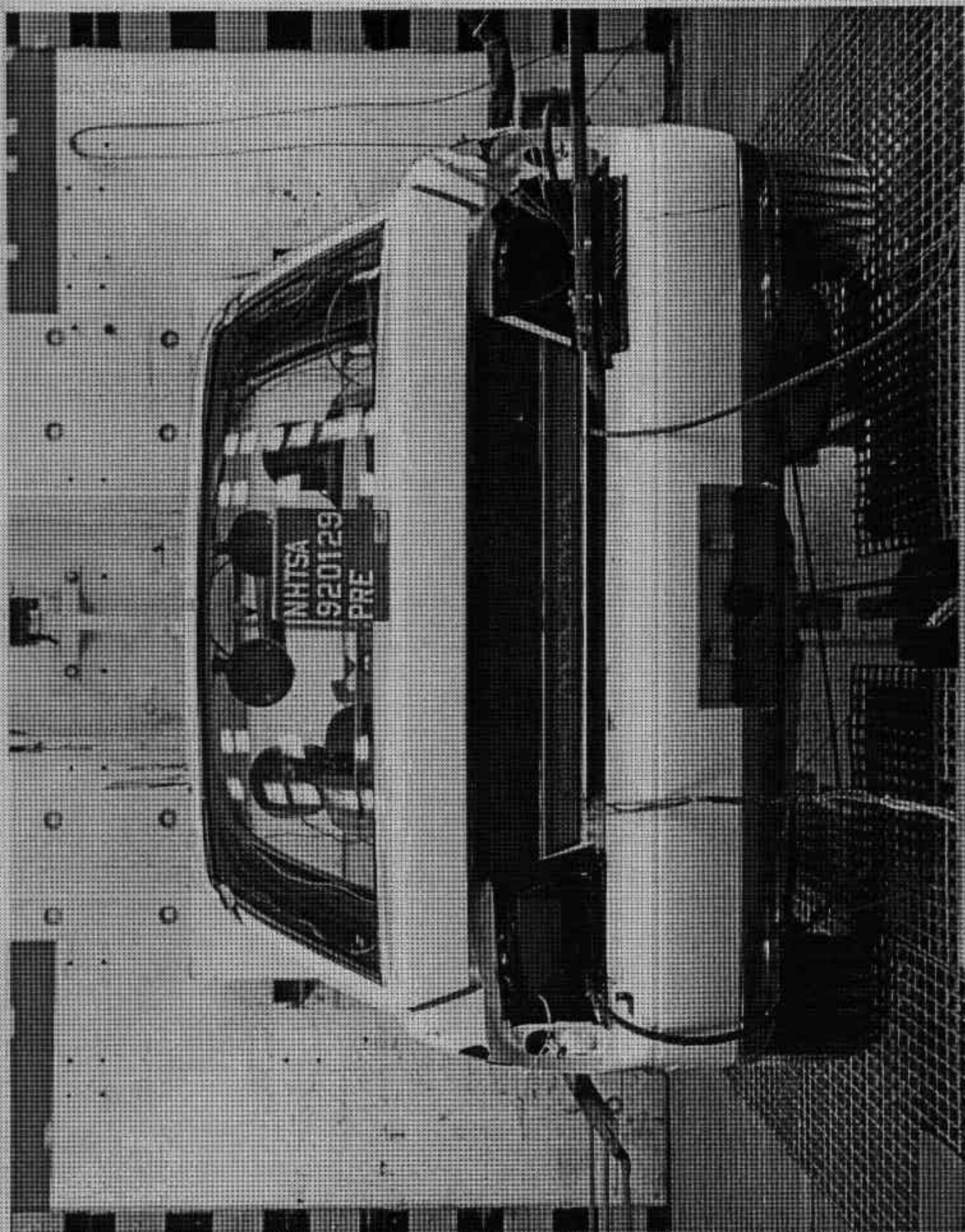


FIGURE A-5. PRE-TEST REAR VIEW

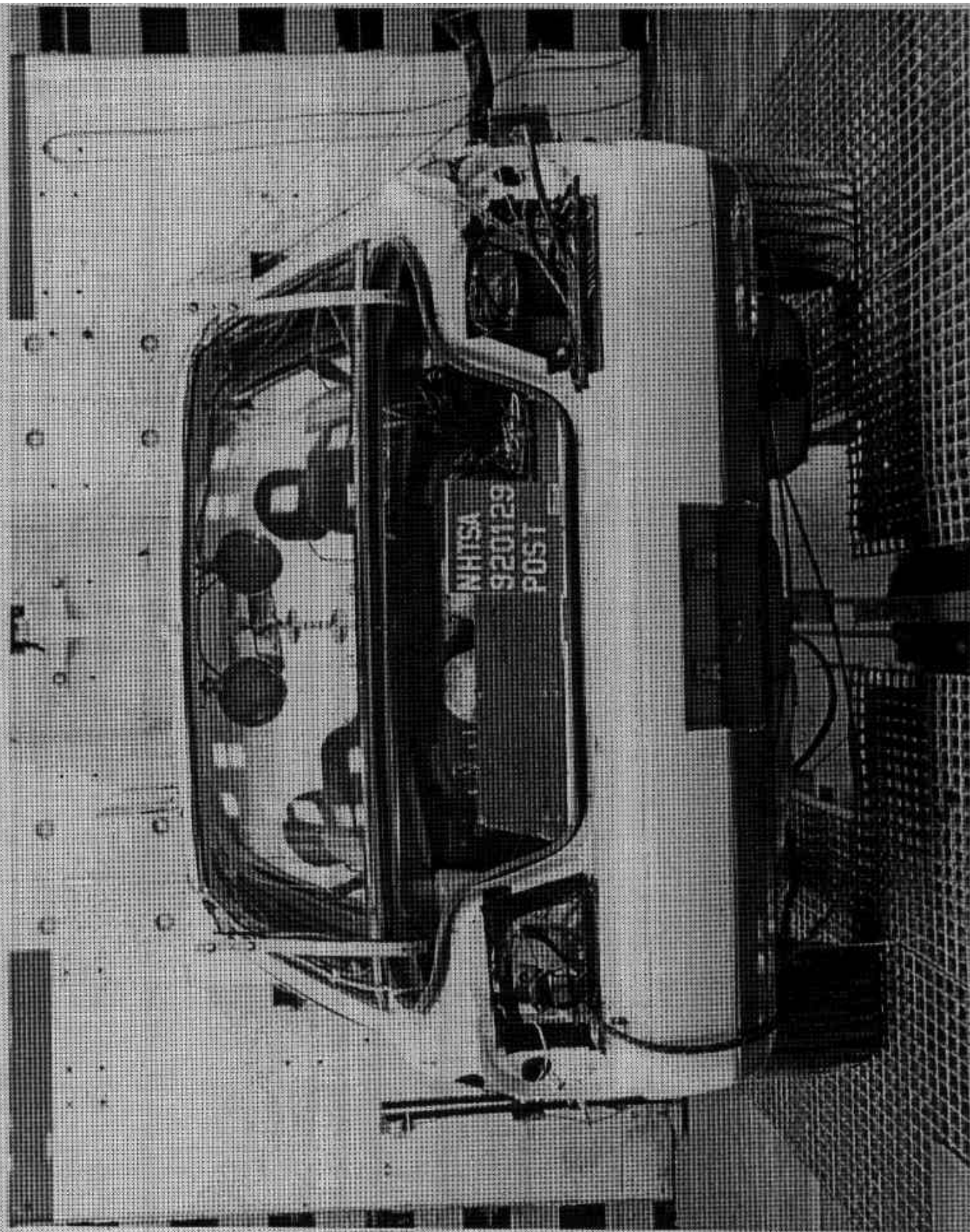


FIGURE A-6. POST-TEST REAR VIEW



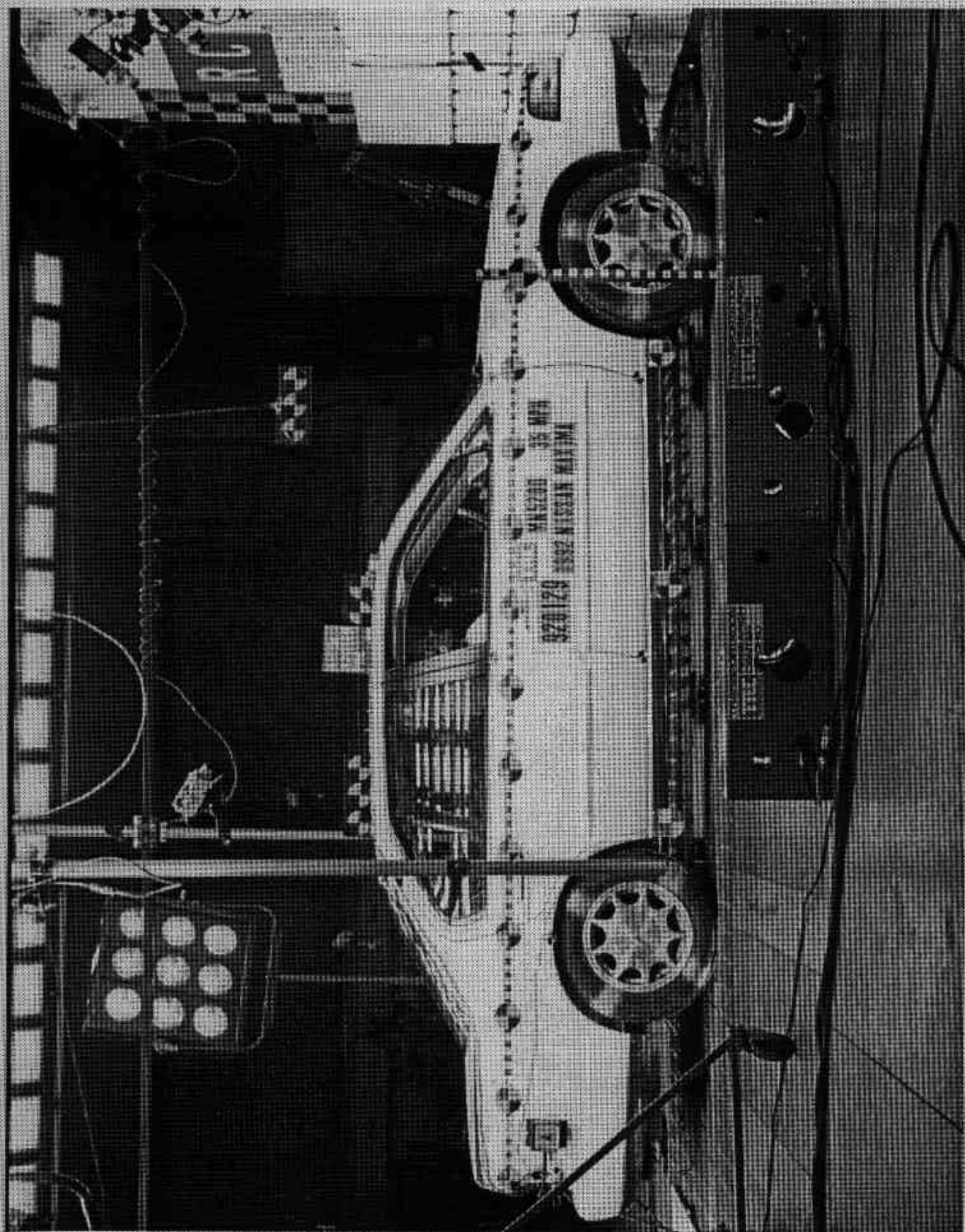


FIGURE A-7. PRE-TEST RIGHT SIDE VIEW  
A-8

920129

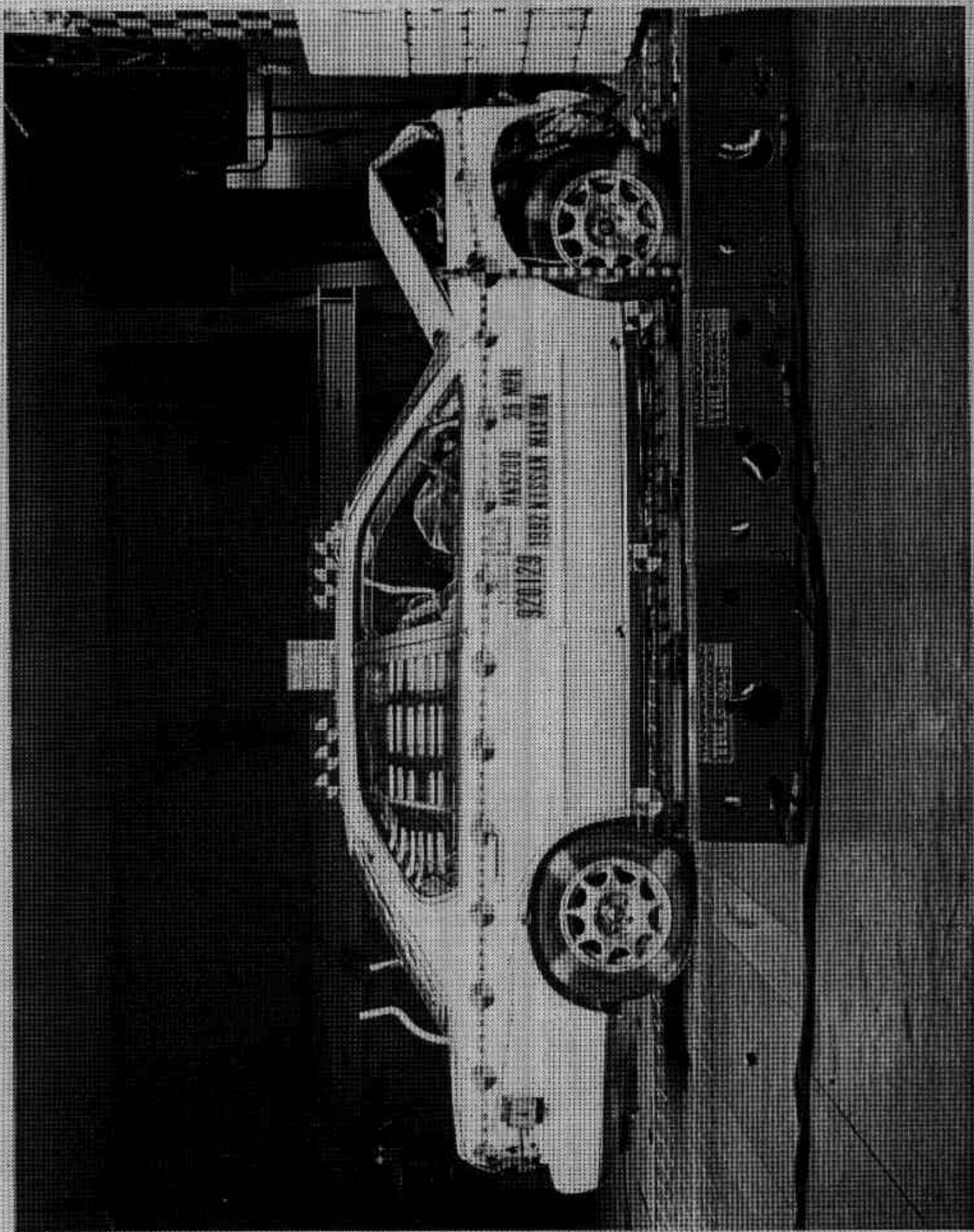


FIGURE A-8. POST-TEST RIGHT SIDE VIEW

A-9

920129



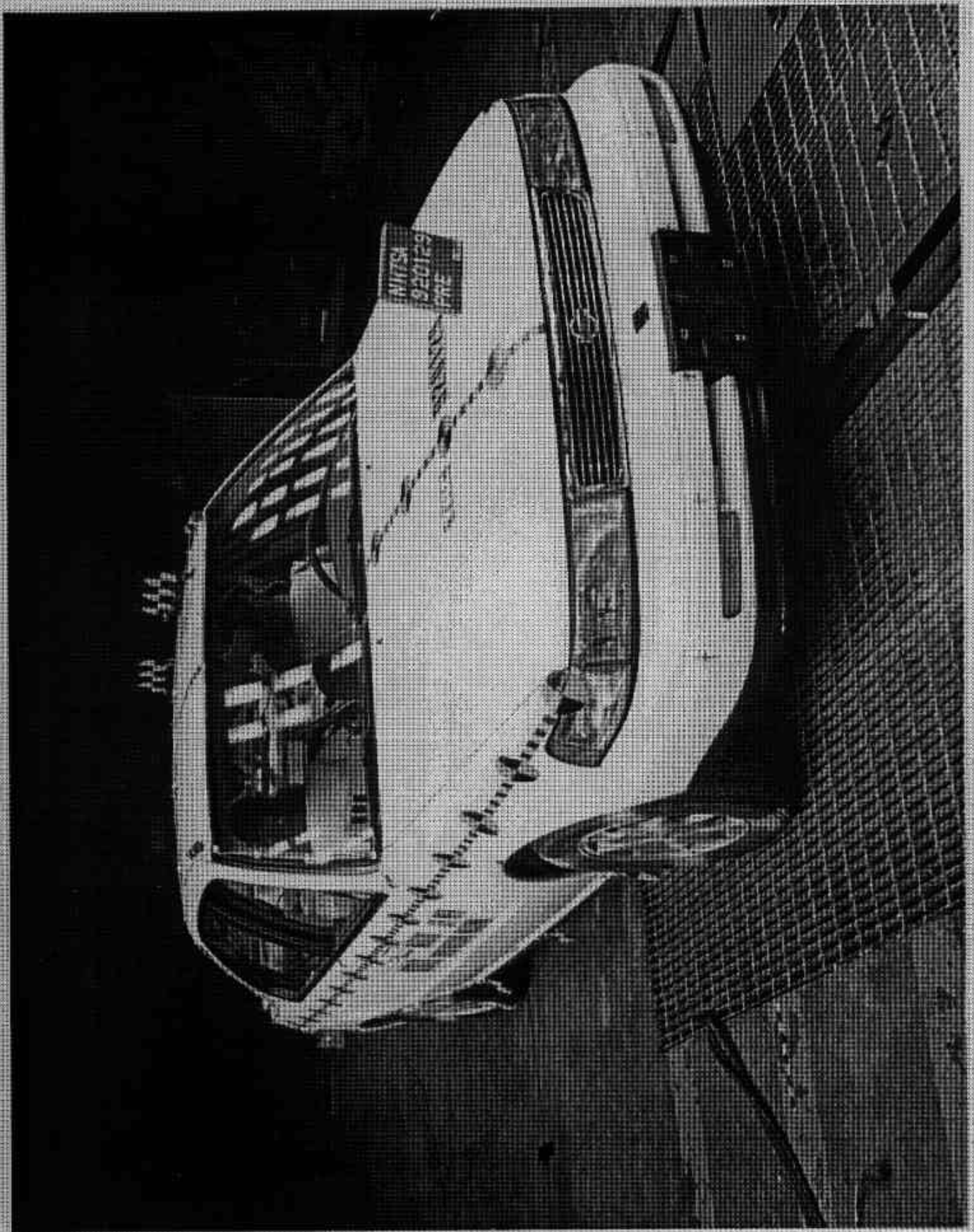


FIGURE A-9, PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

A-10

920129

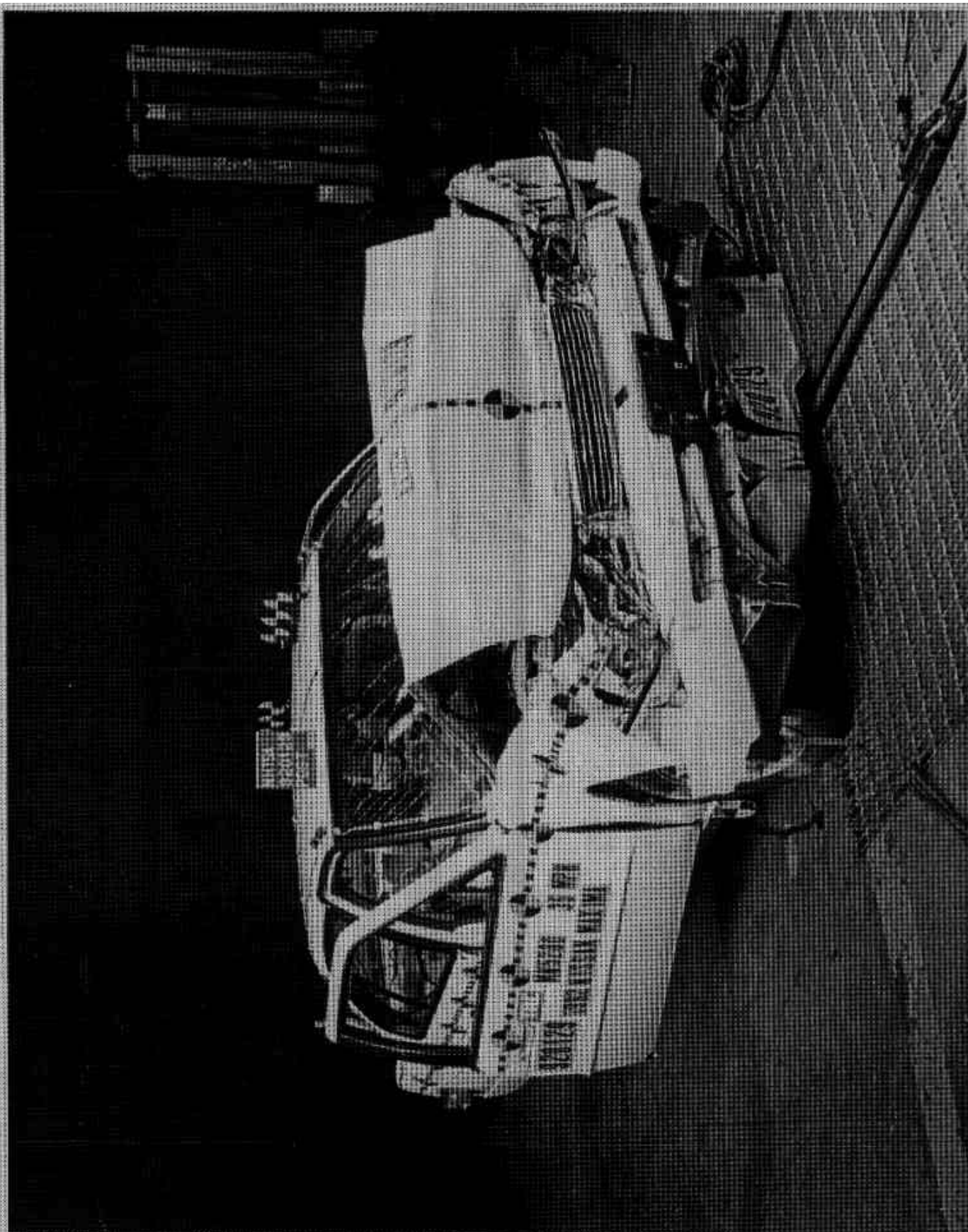


FIGURE A-10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW

A-11

920129





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

A-12

920129



FIGURE A-12, POST-TEST LEFT REAR THREE-QUARTER VIEW

A-13

920129



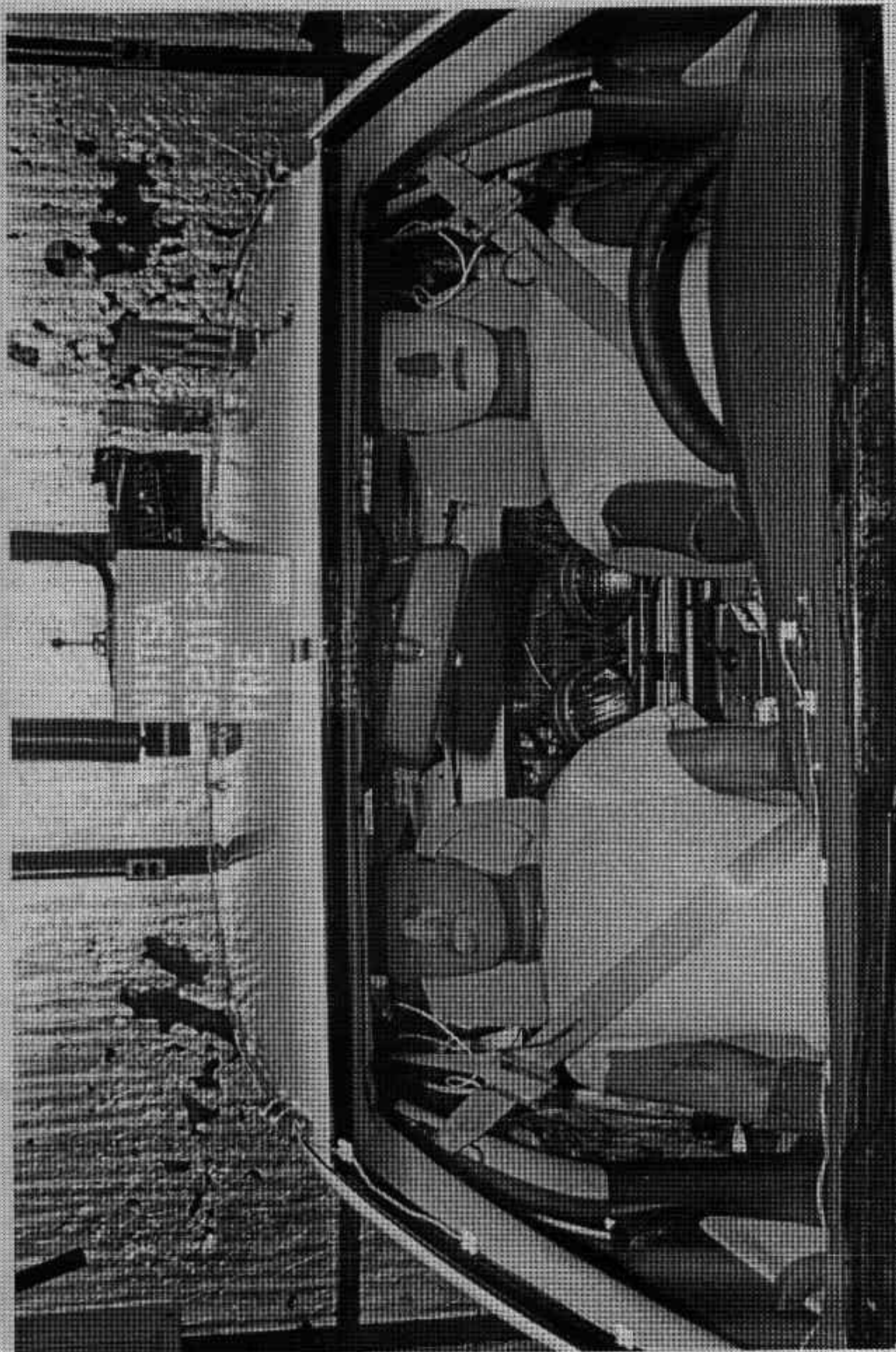


FIGURE A-13. PRE-TEST WINDSHIELD VIEW  
A-14

920129

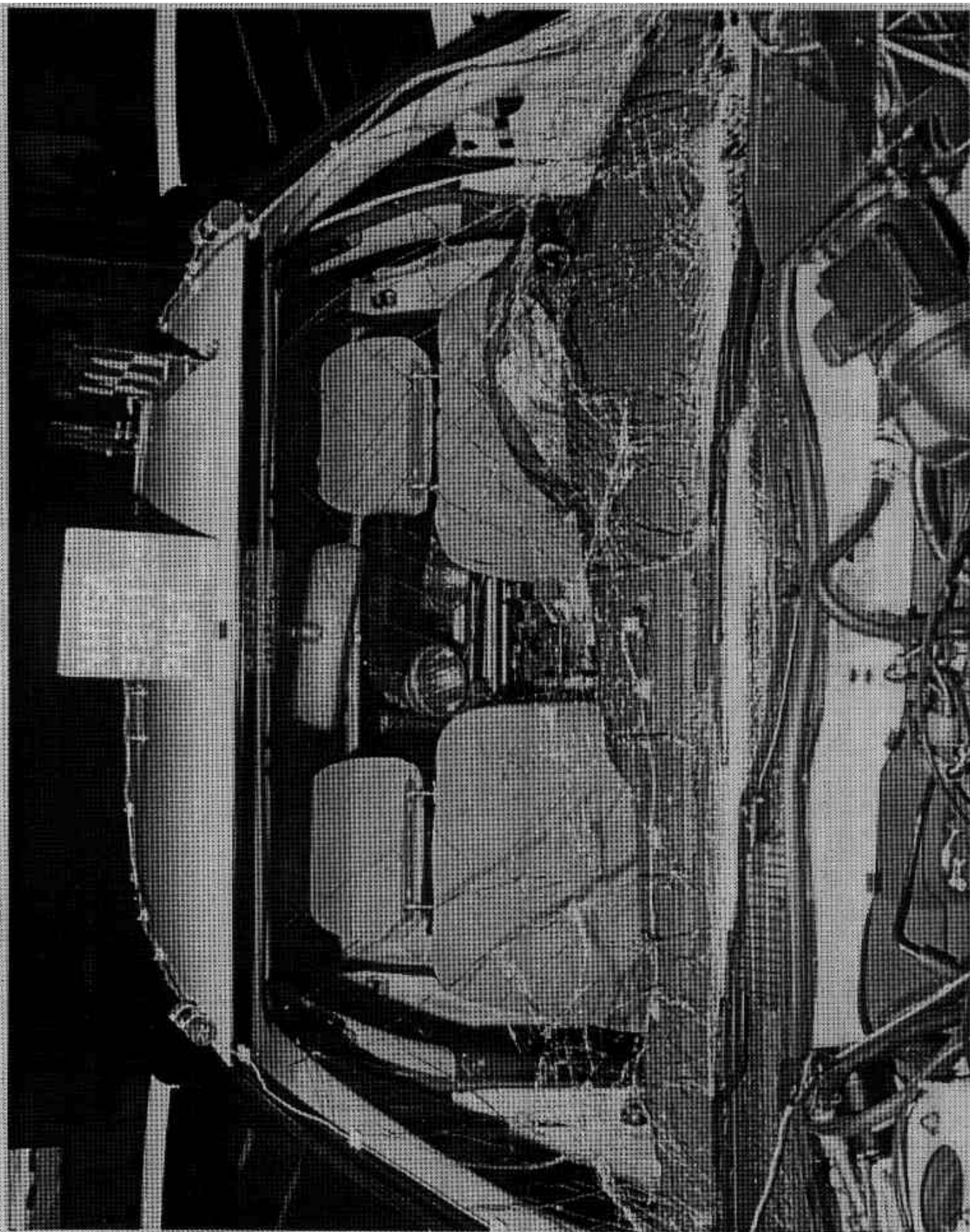


FIGURE A-14. POST-TEST WINDSHIELD VIEW  
A-15

920129



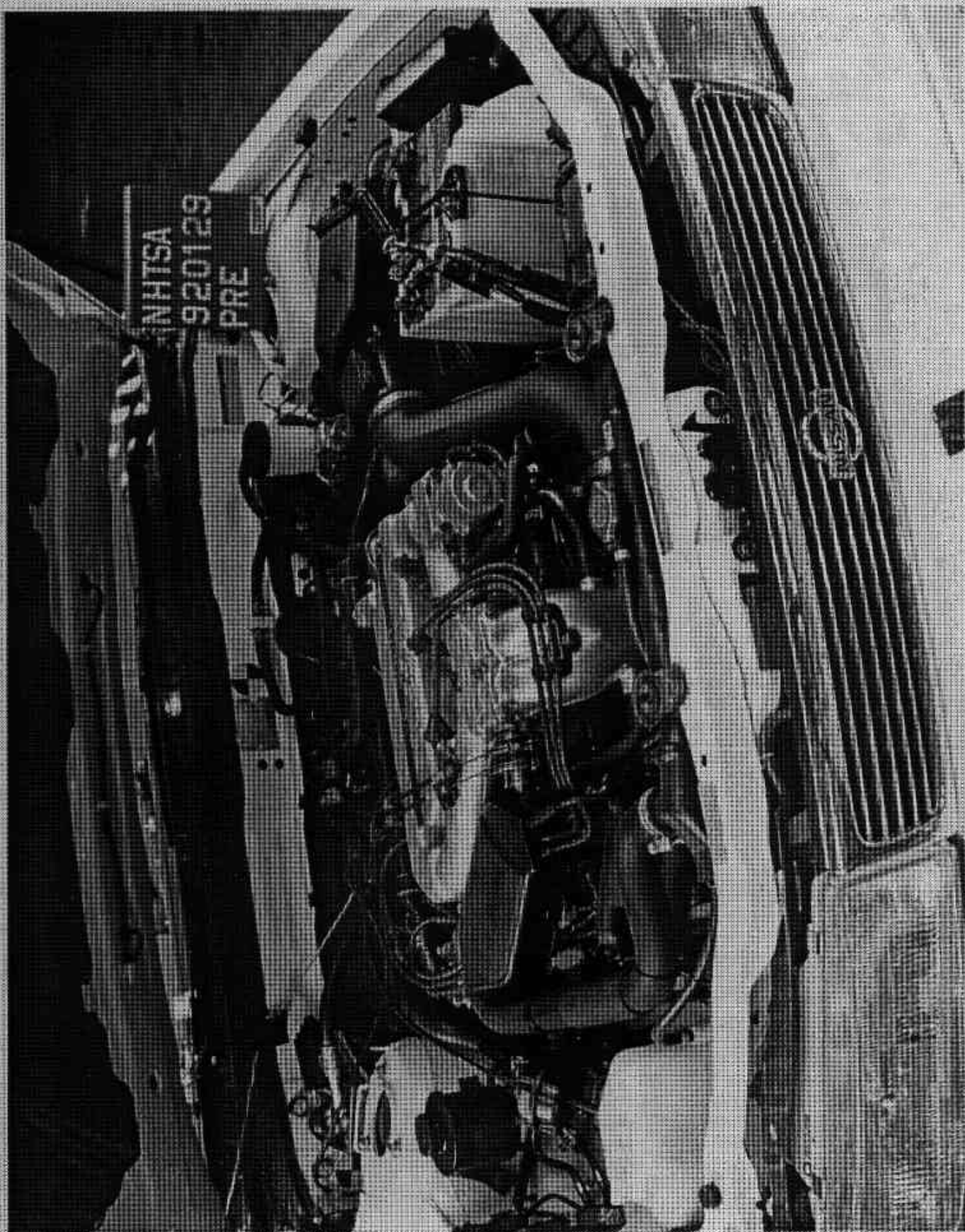


FIGURE A-15. PRE-TEST ENGINE COMPARTMENT VIEW

A-16

920129

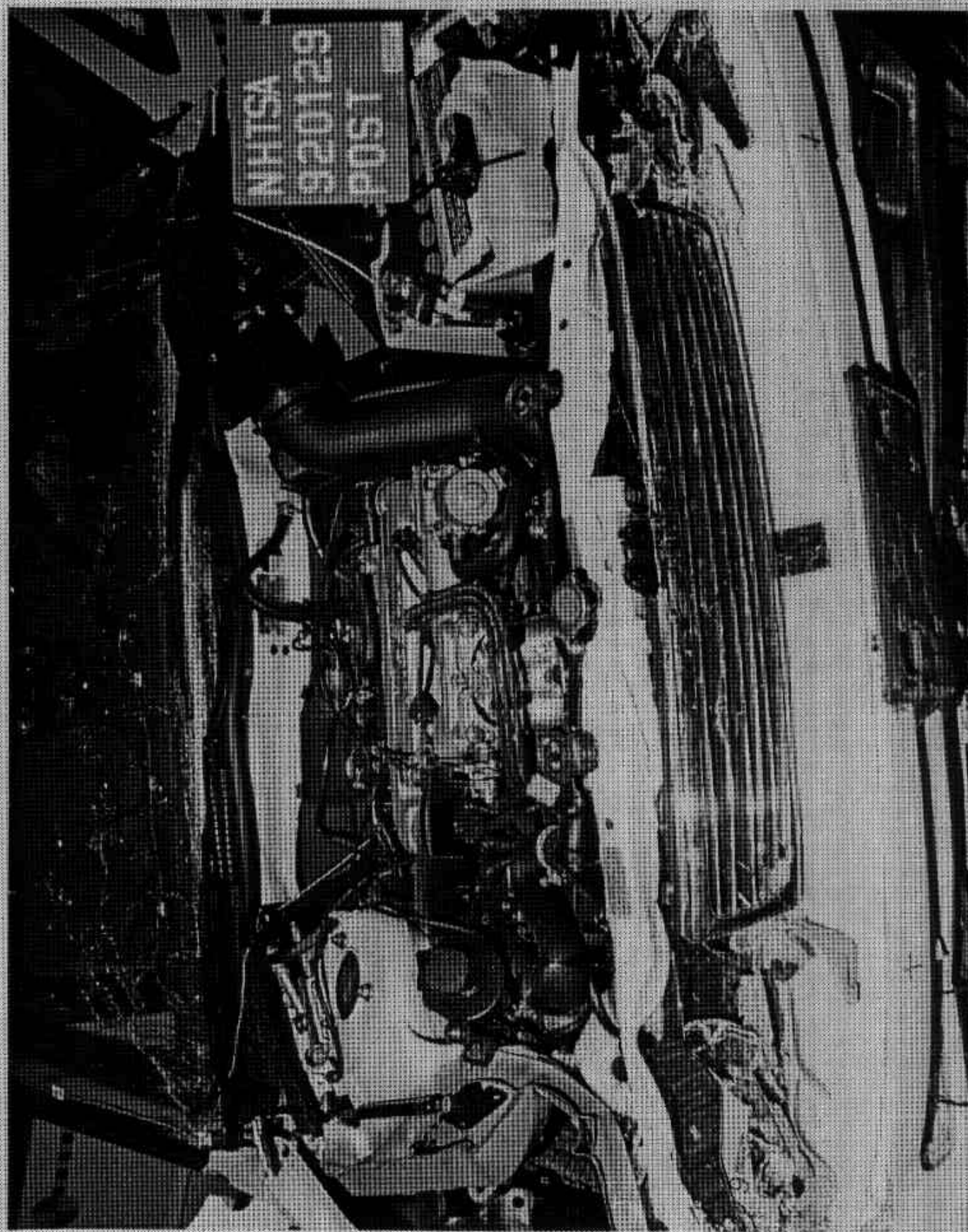


FIGURE A-16. POST-TEST ENGINE COMPARTMENT VIEW

A-17

920129



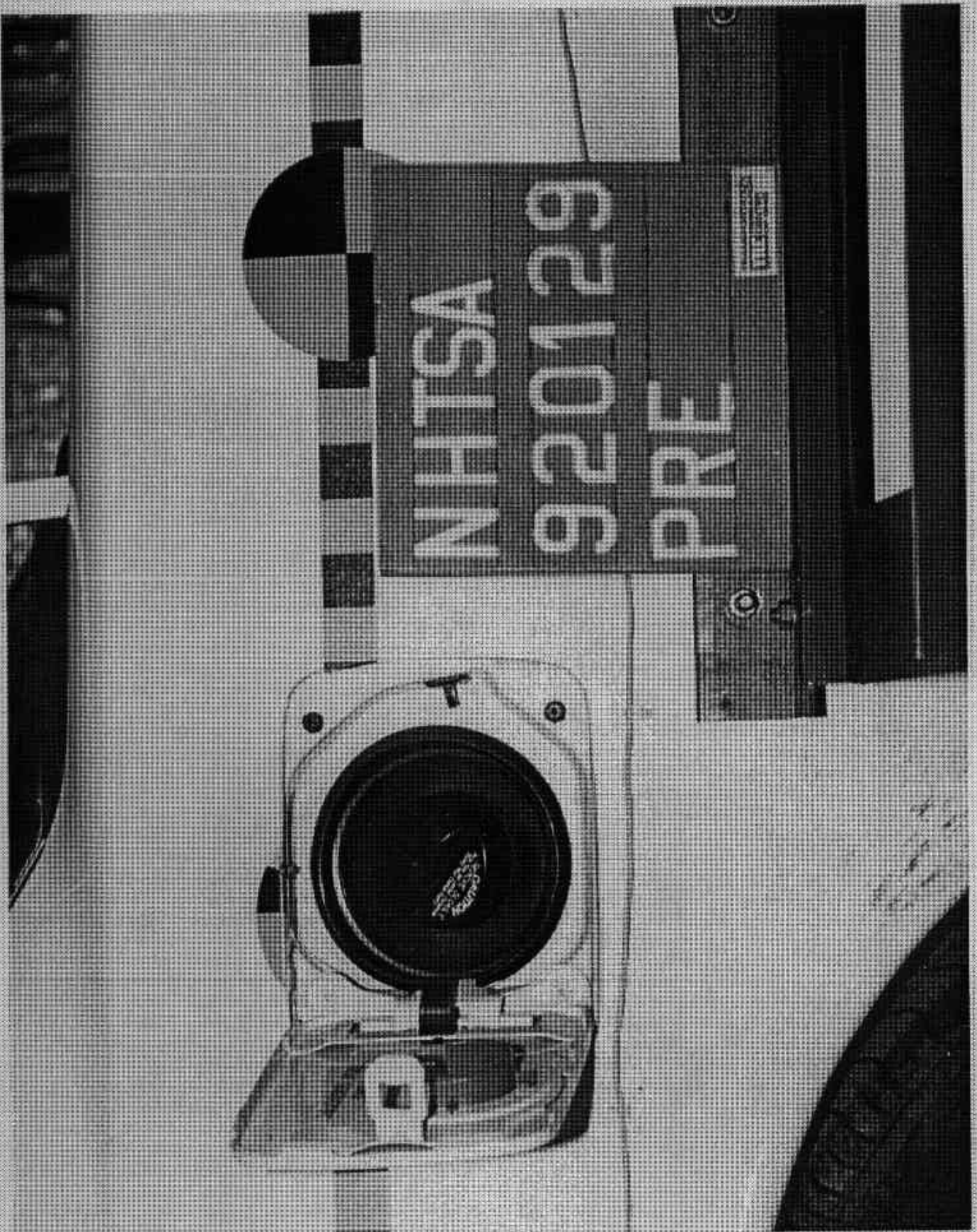


FIGURE A-17. PRE-TEST FUEL FILLER CAP VIEW  
A-18

920129



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

A-19

920129



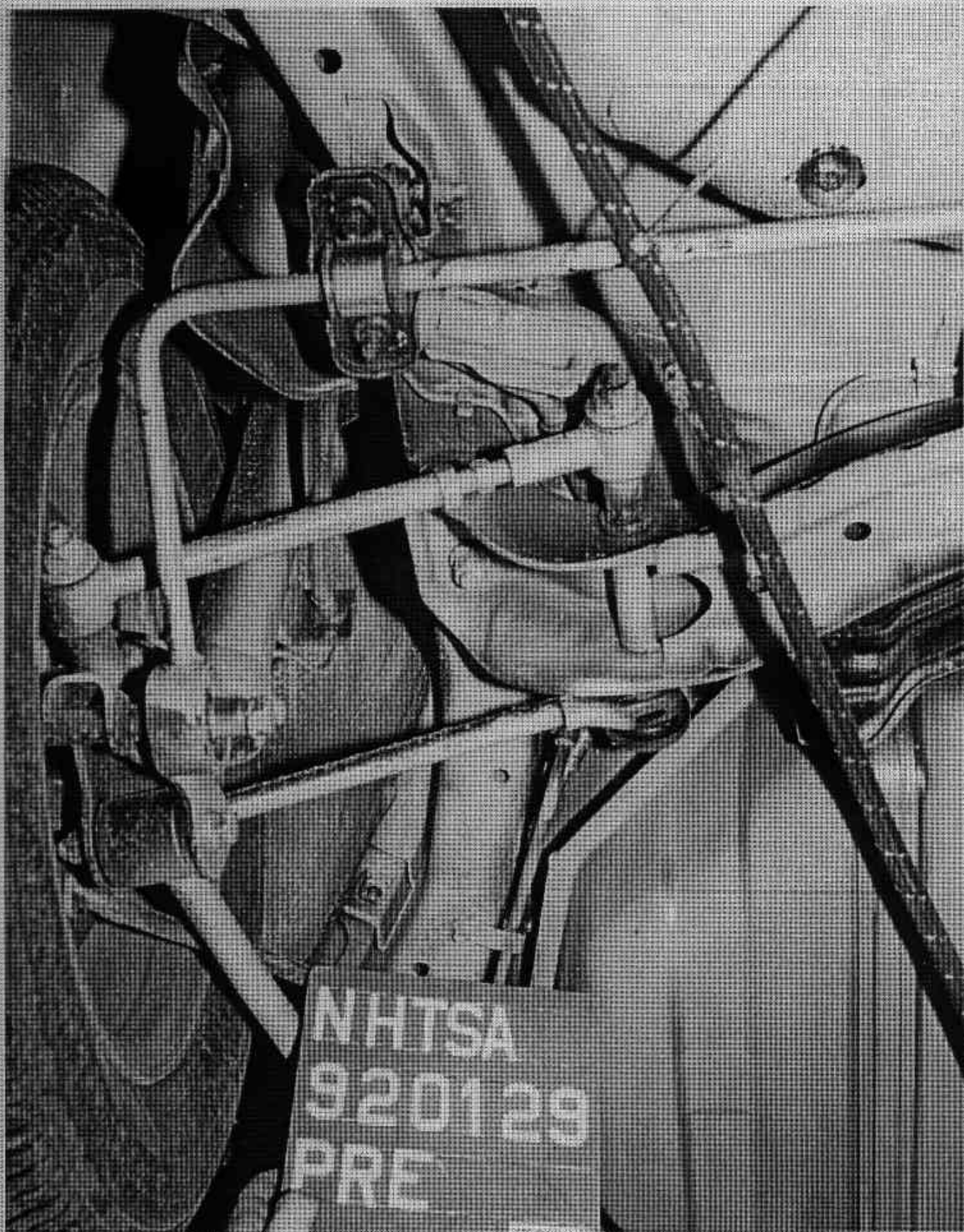


FIGURE A-19. PRE-TEST FUEL FILLER NECK VIEW



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

A-21

920129



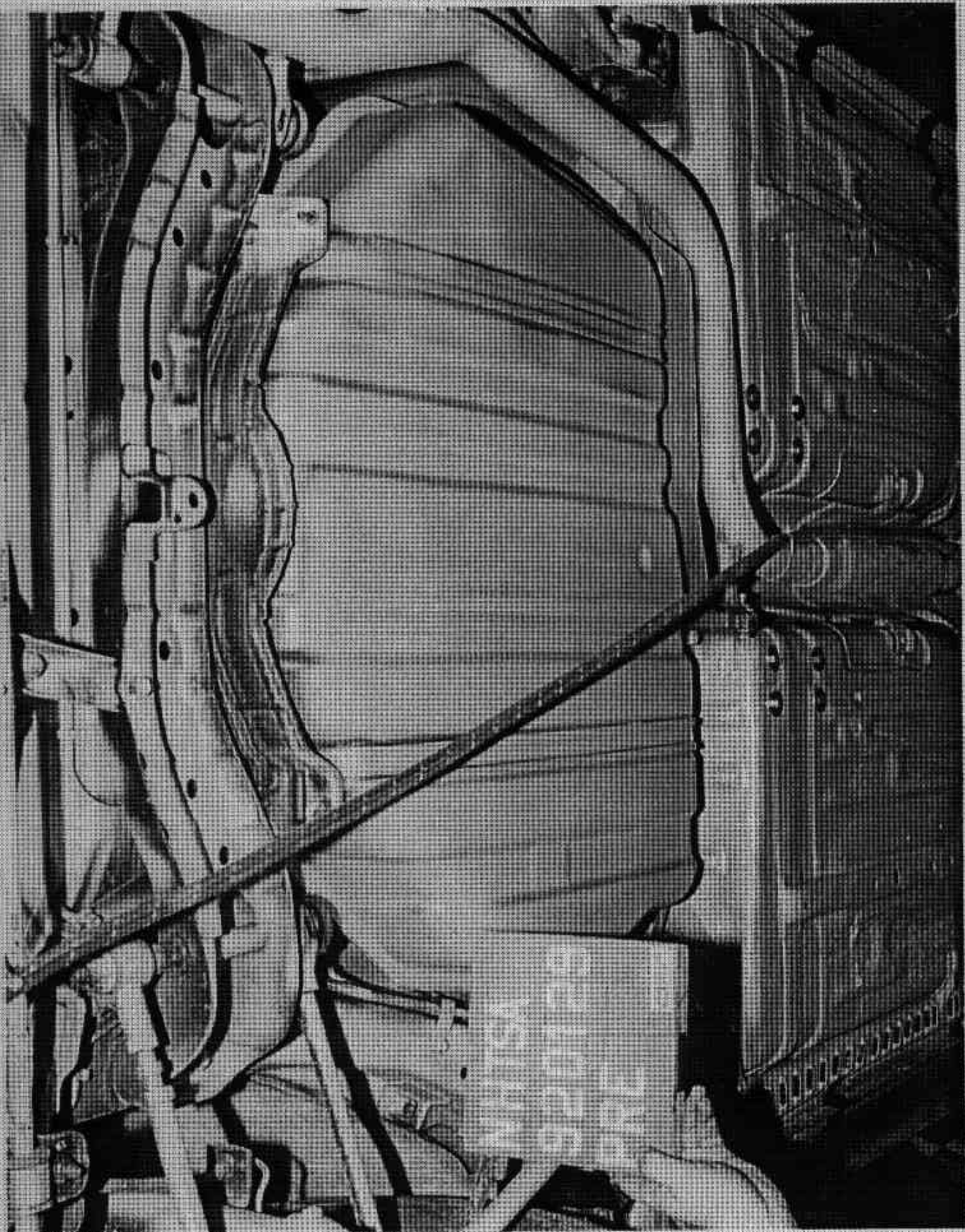


FIGURE A-21. PRE-TEST FUEL TANK VIEW  
A-22

920129



FIGURE A-22. POST-TEST FUEL TANK VIEW  
A-23

920129



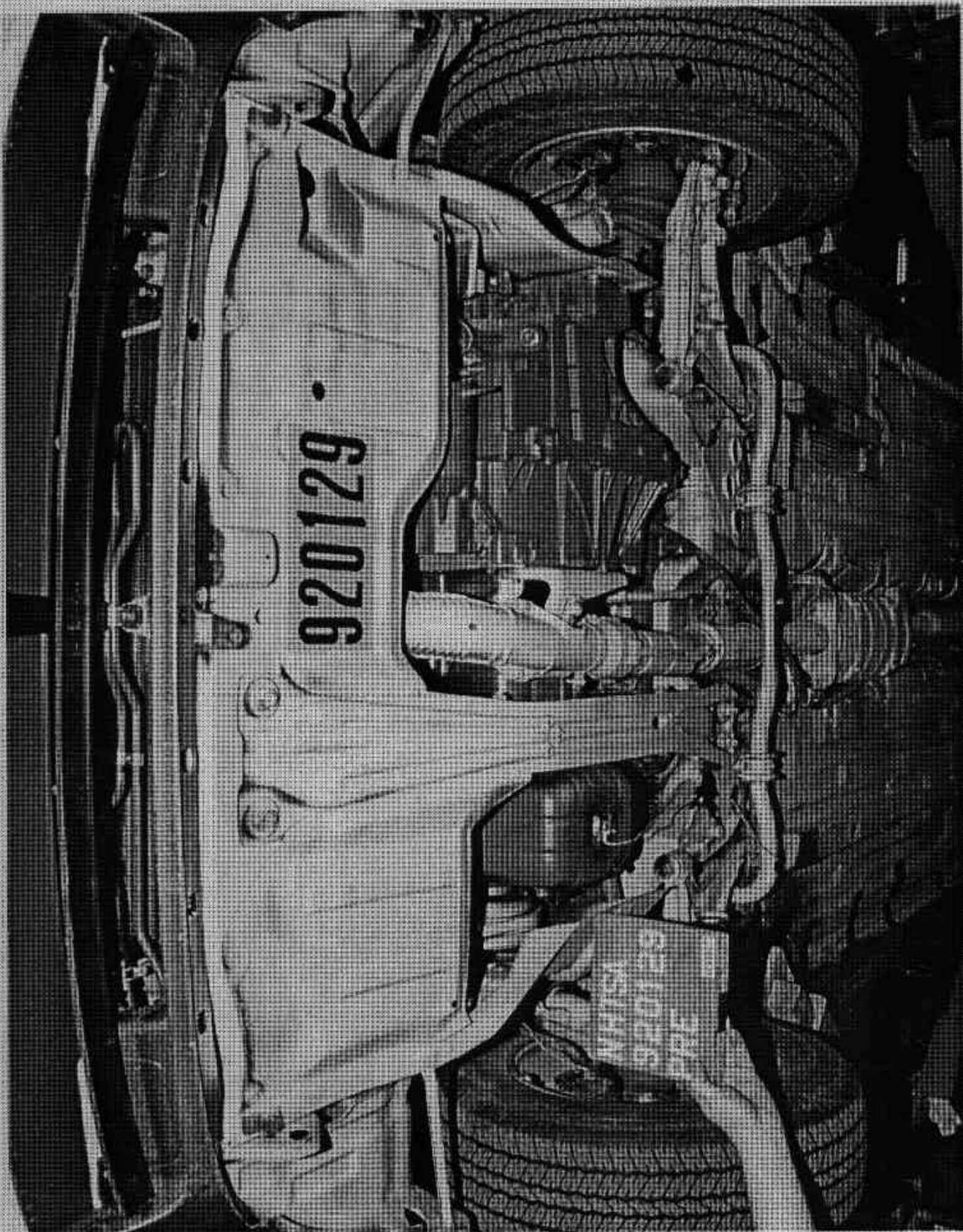


FIGURE A-23. PRE-TEST FRONT UNDERBODY VIEW





FIGURE A-24. POST-TEST FRONT UNDERBODY VIEW

A-25

920129

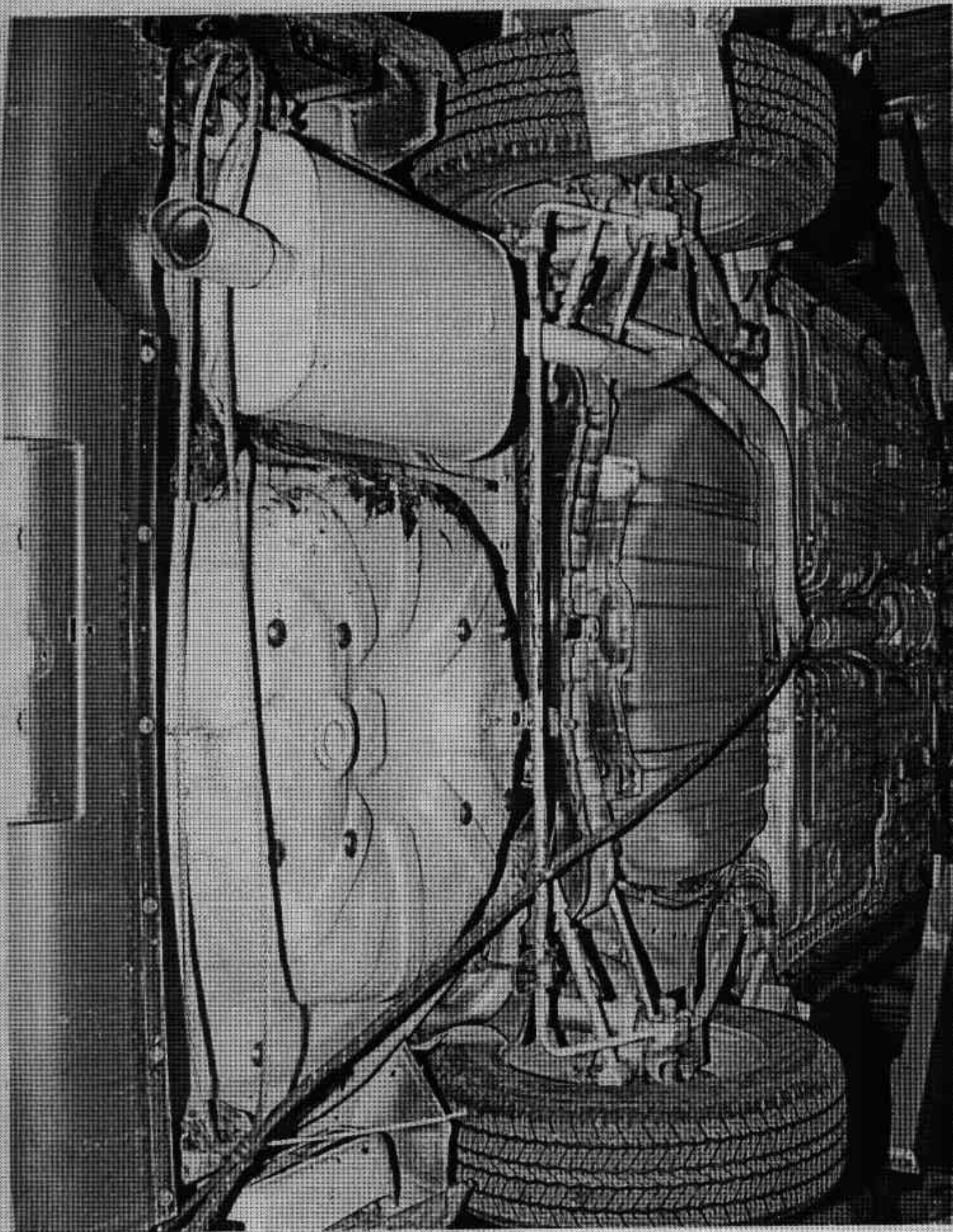


FIGURE A-25. PRE-TEST REAR UNDERBODY VIEW

A-26

920129



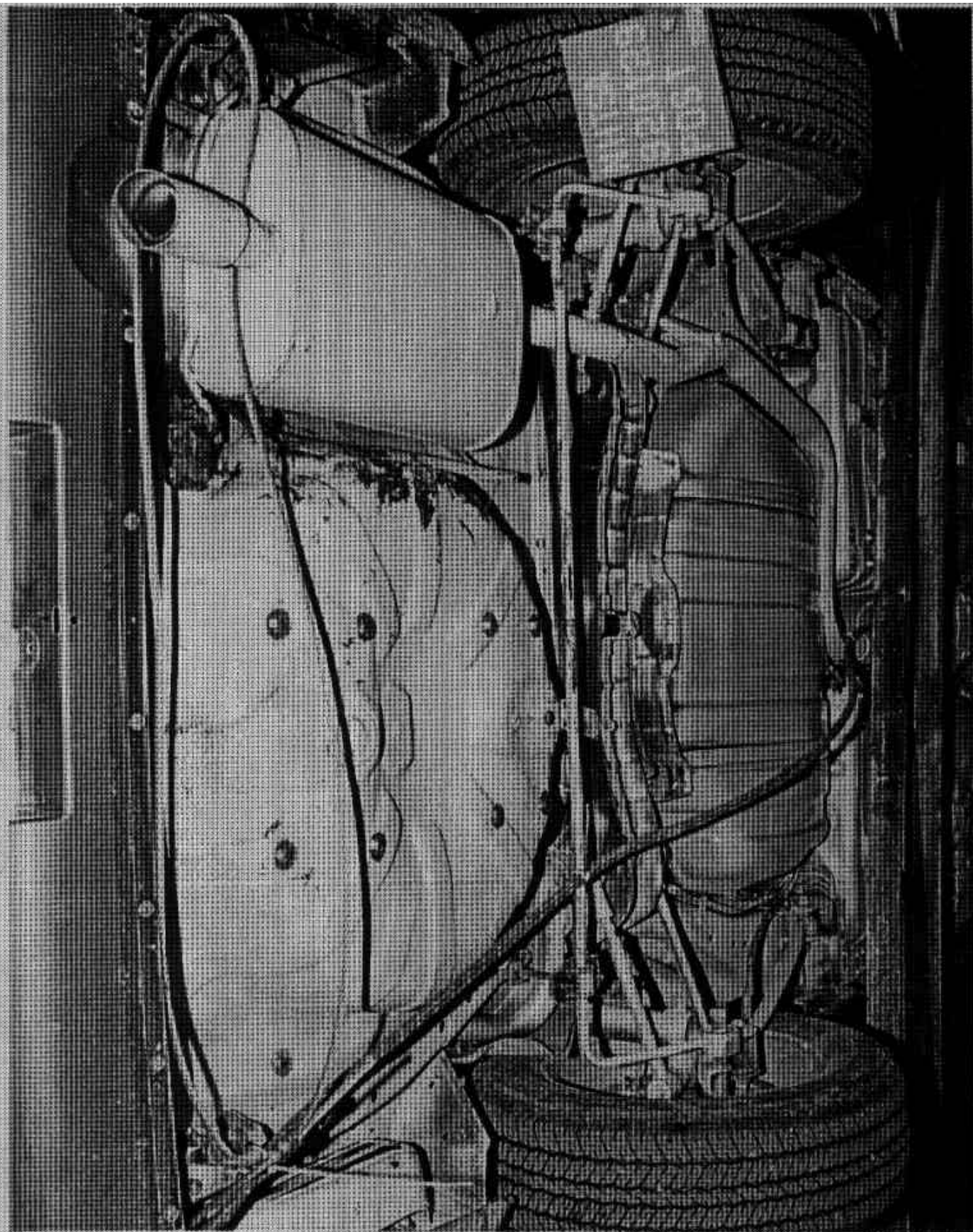


FIGURE A-26. POST-TEST REAR UNDERBODY VIEW

A-27

920129

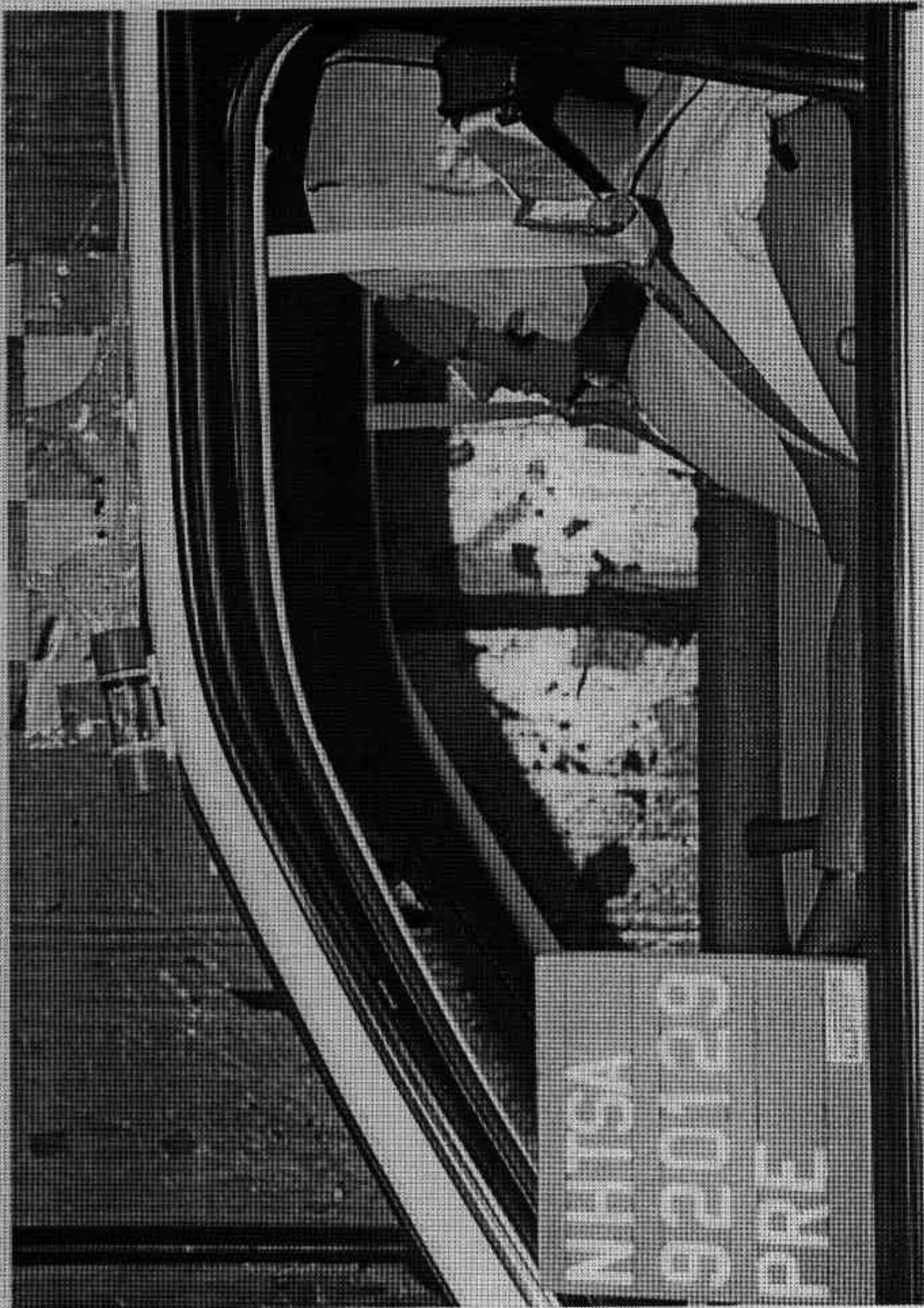


FIGURE A-27. PRE-TEST DRIVER DUMMY POSITION VIEW

A-28

920129



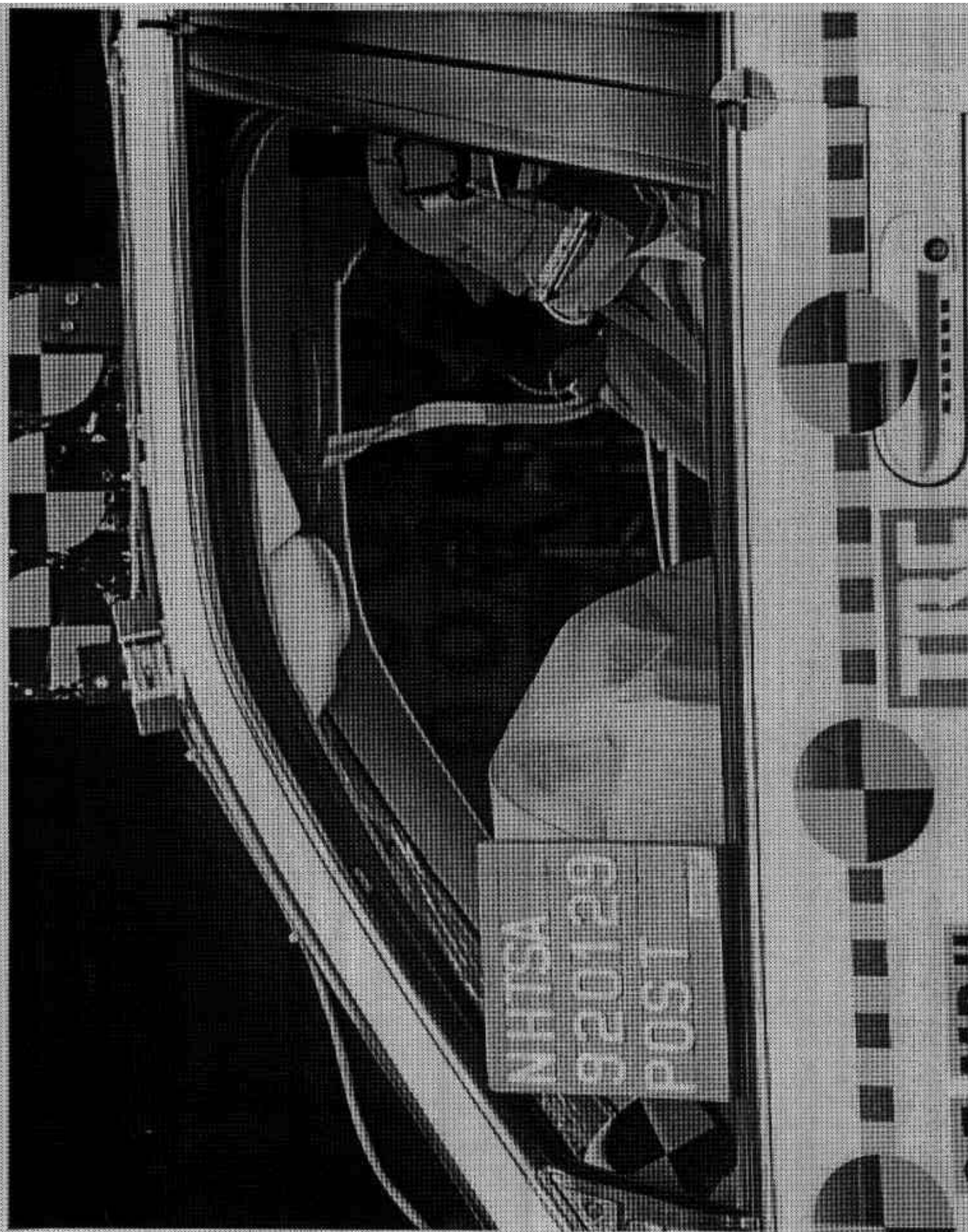


FIGURE A-28. POST-TEST DRIVER DUMMY POSITION VIEW

A-29

920129



FIGURE A-29. PRE-TEST PASSENGER DUMMY POSITION VIEW

A-30

920129



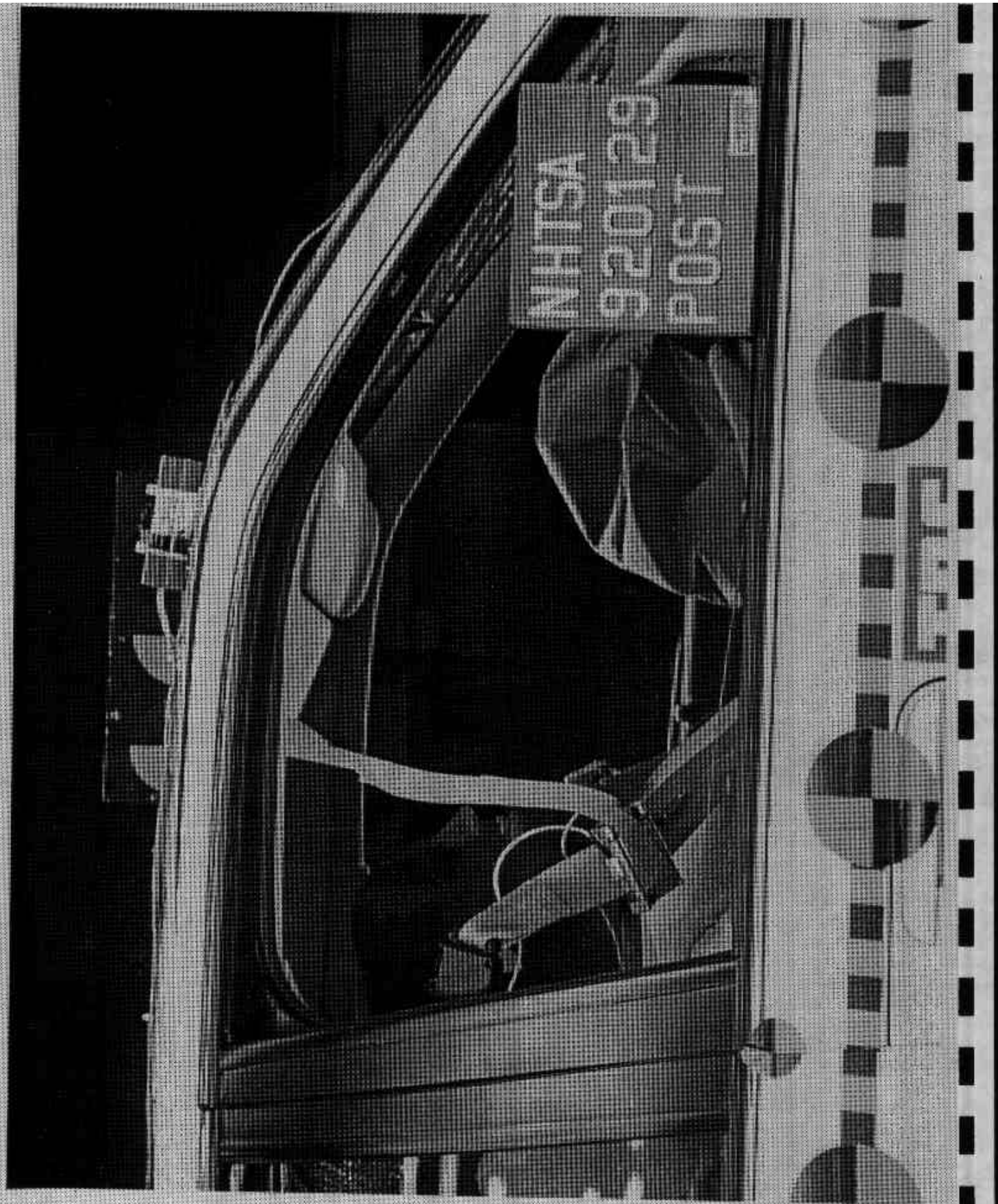


FIGURE A-30. POST-TEST PASSENGER DUMMY POSITION VIEW

A-31

920129

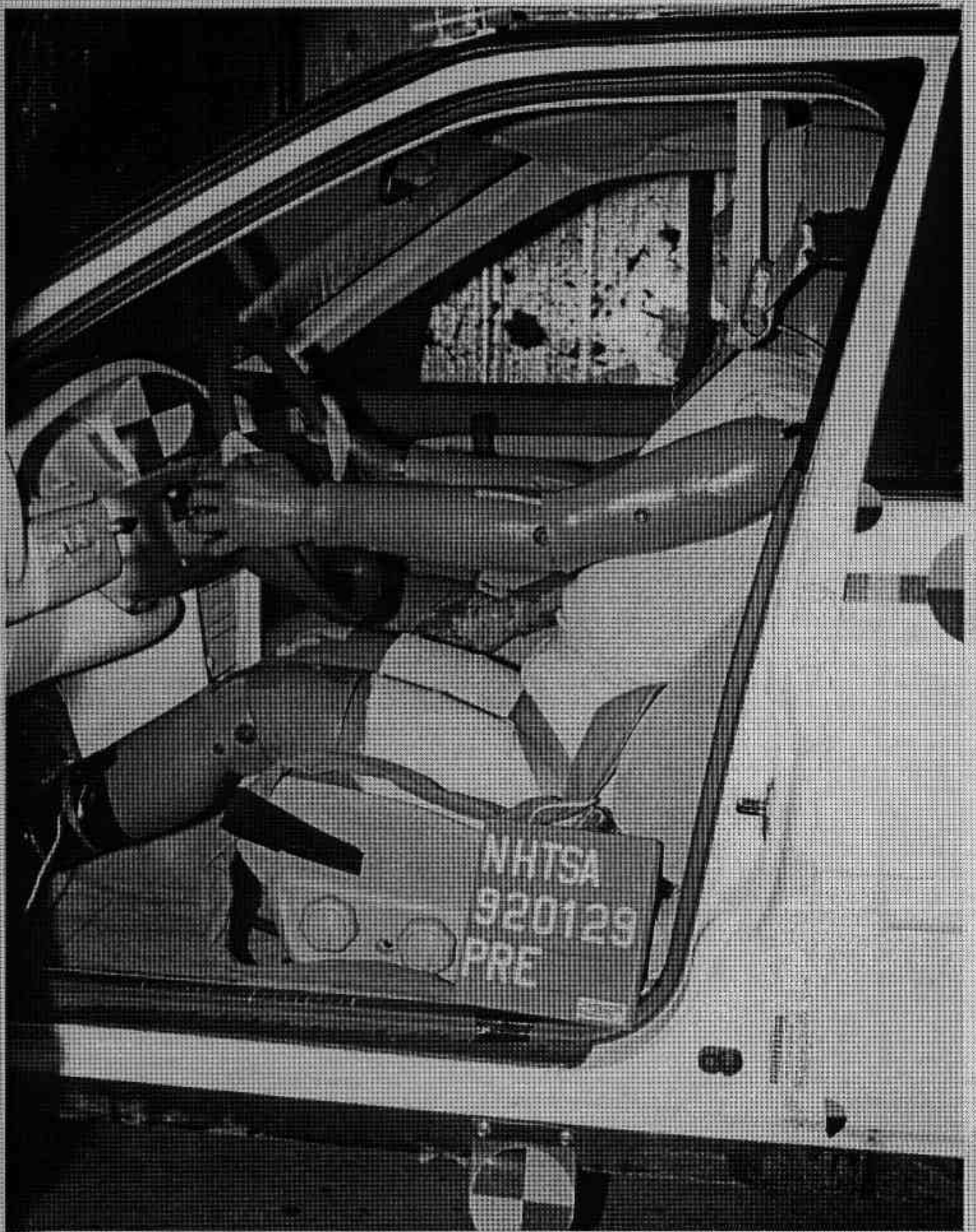


FIGURE A-31. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1



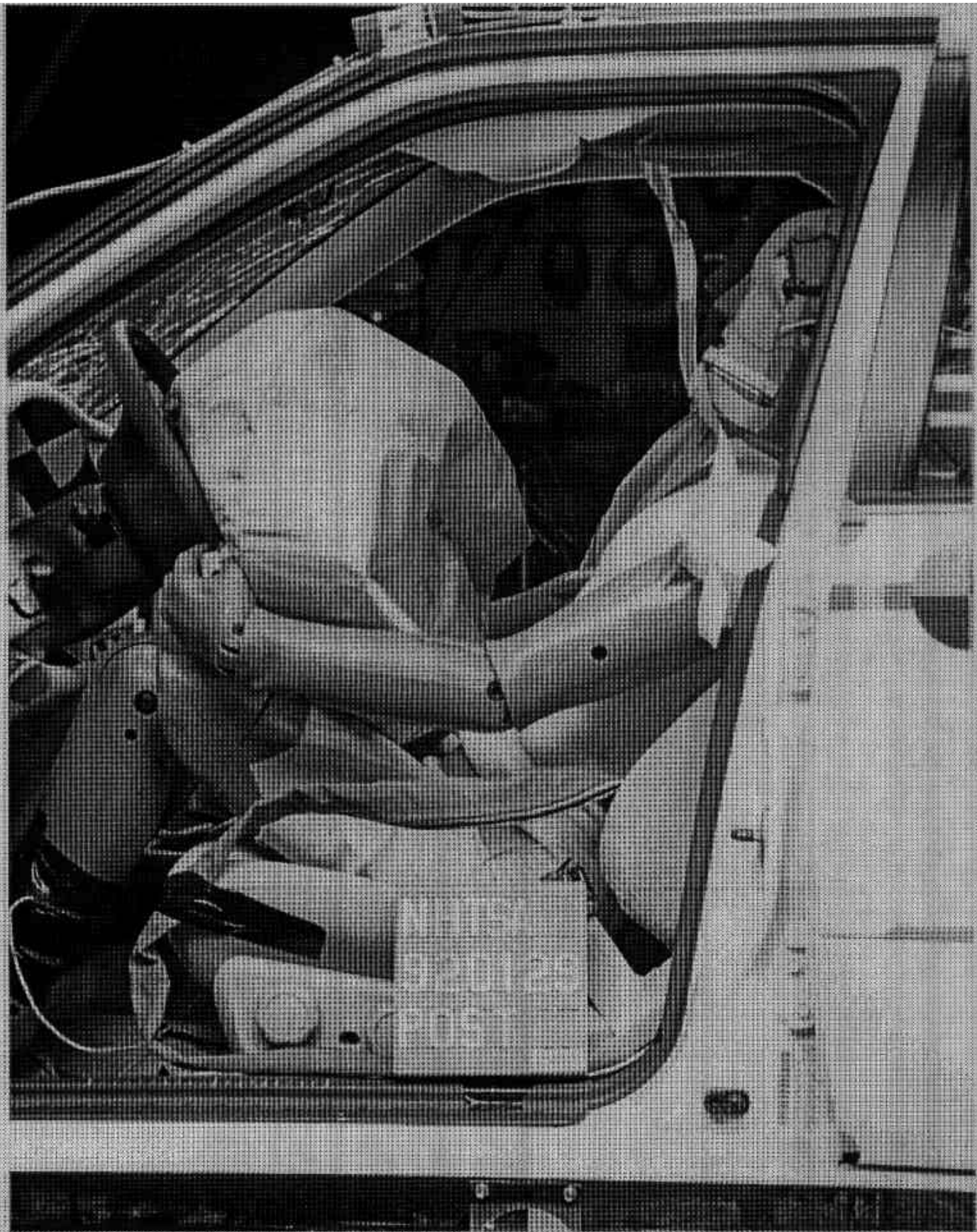


FIGURE A-32, POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

A-33

920129



FIGURE A-33. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2





FIGURE A-34. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

A-35

920129





FIGURE A-35. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1  
A-36 920129



FIGURE A-36. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1  
A-37 920129



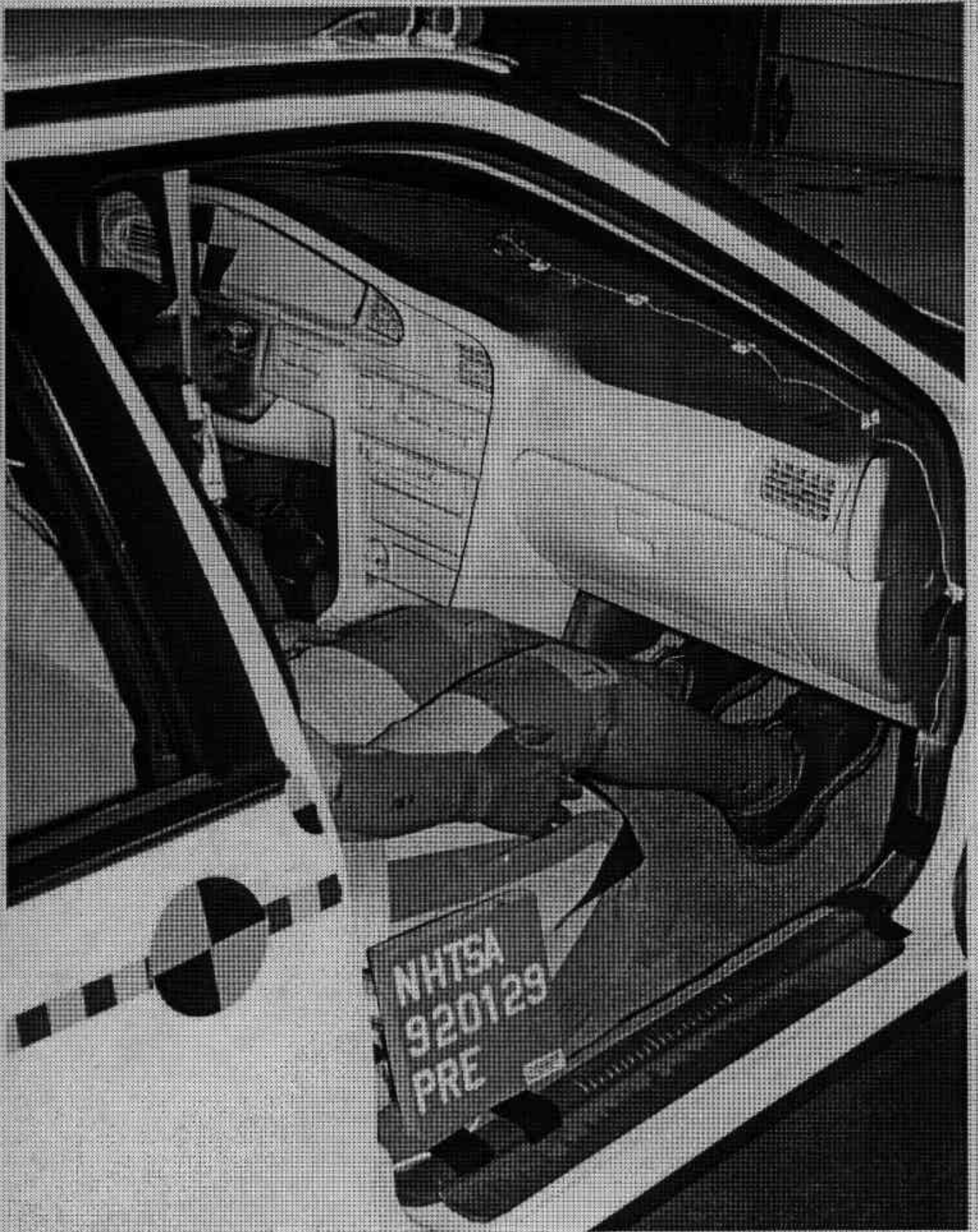


FIGURE A-37. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

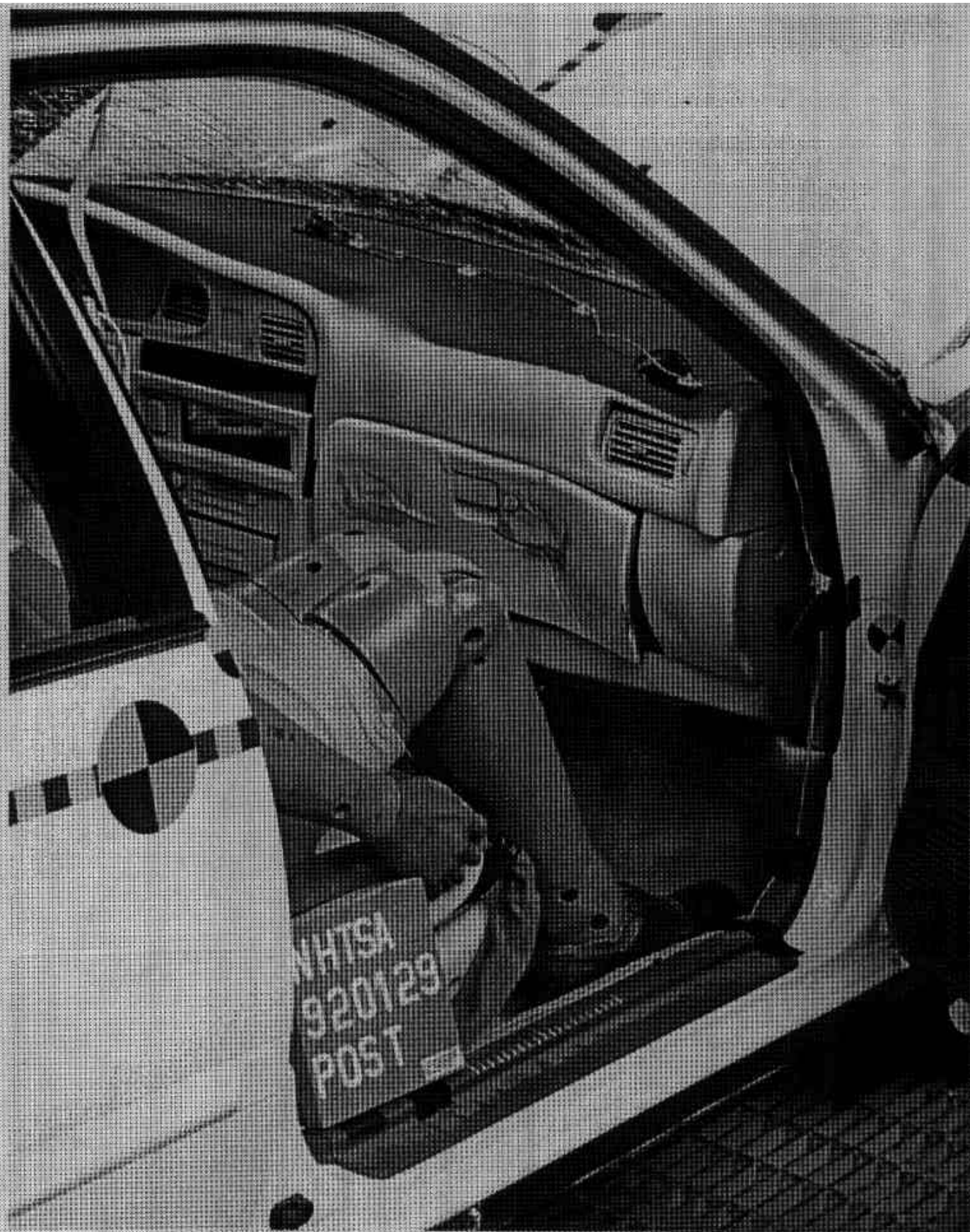


FIGURE A-38. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2  
A-39 920129



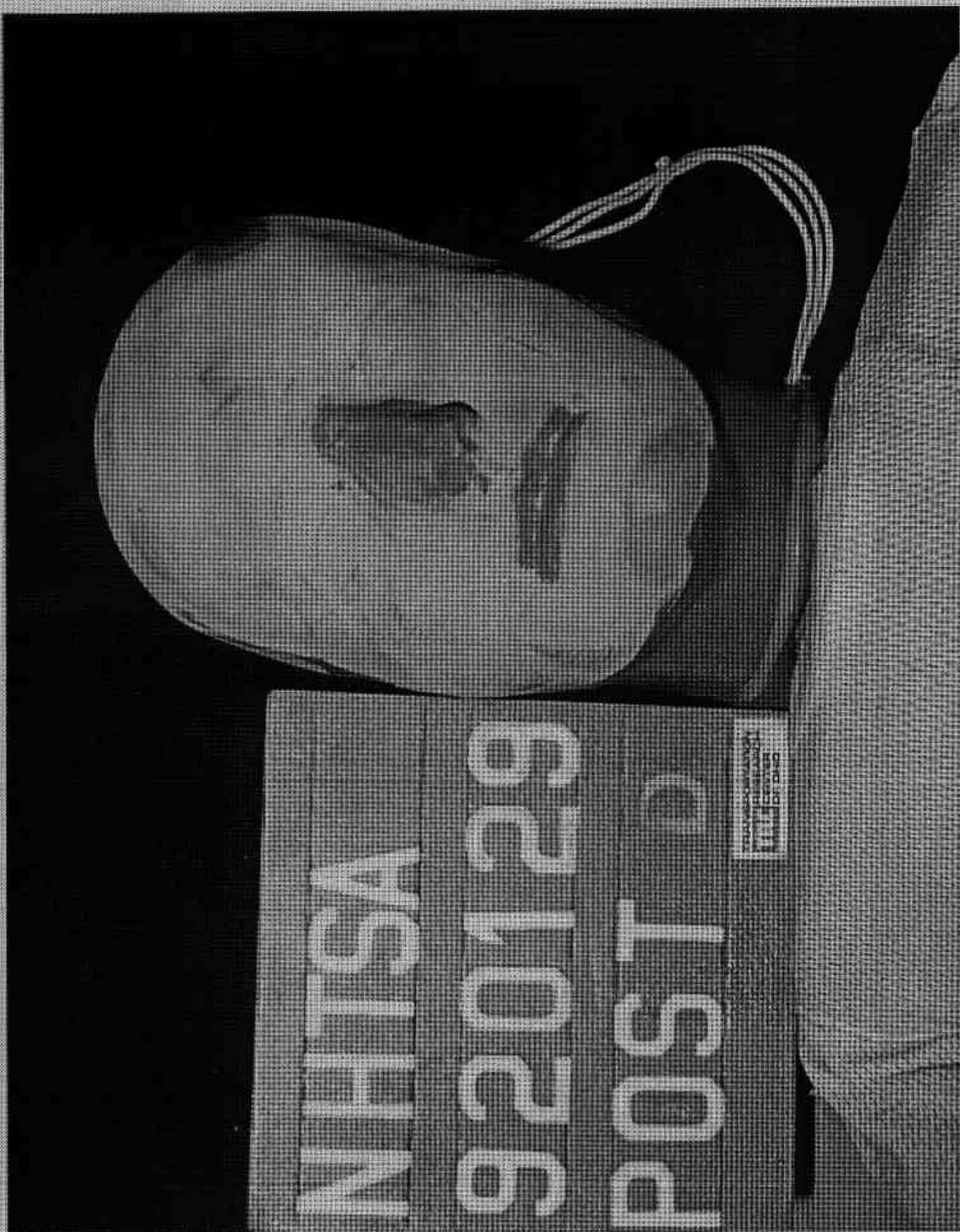


FIGURE A-39. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 1



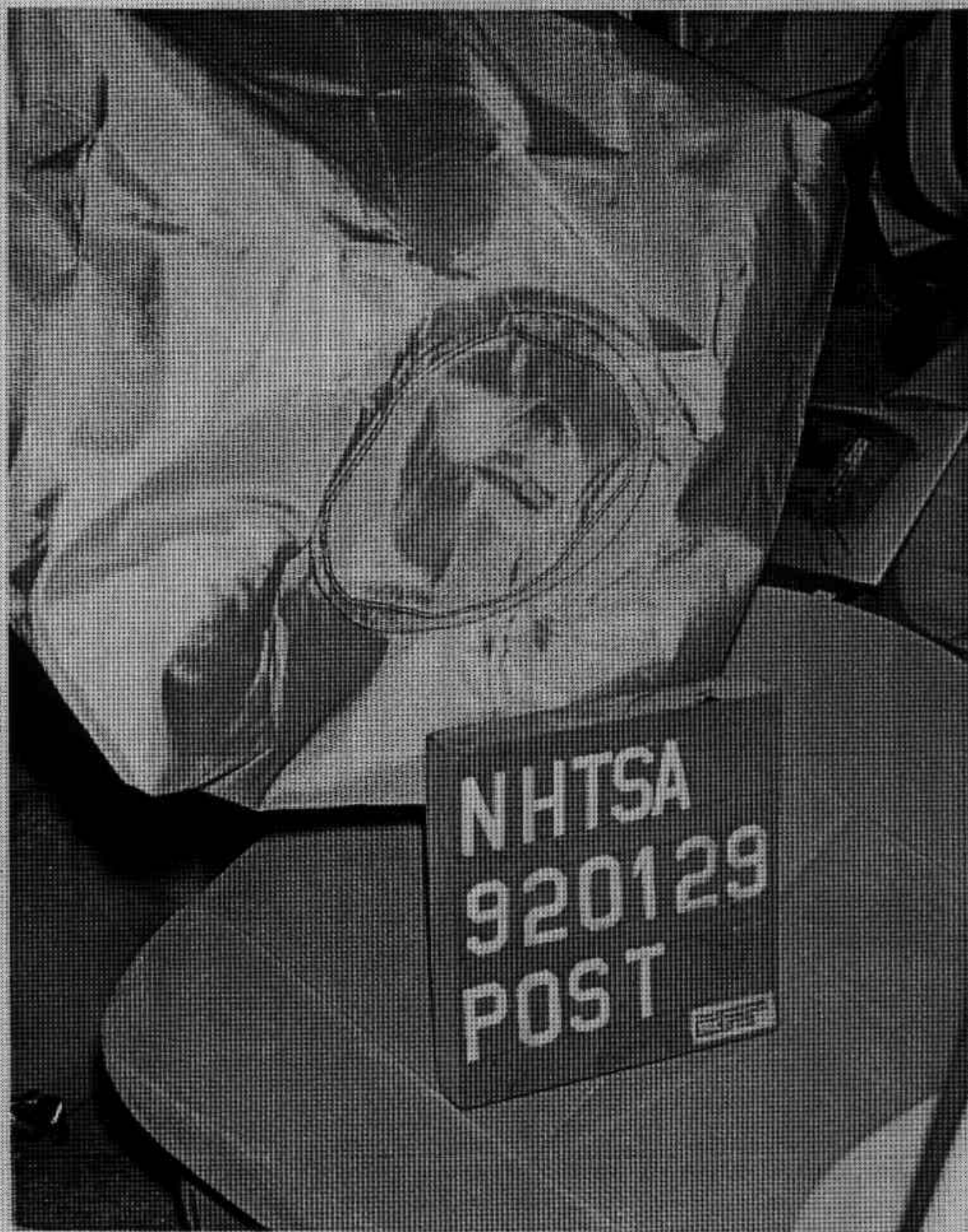


FIGURE A-40. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 2

A-41

920129



FIGURE A-41. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1

A-42

920129





FIGURE A-42. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2

A-43

920129



FIGURE A-43. POST-TEST PASSENGER DUMMY HEAD CONTACT VIEW



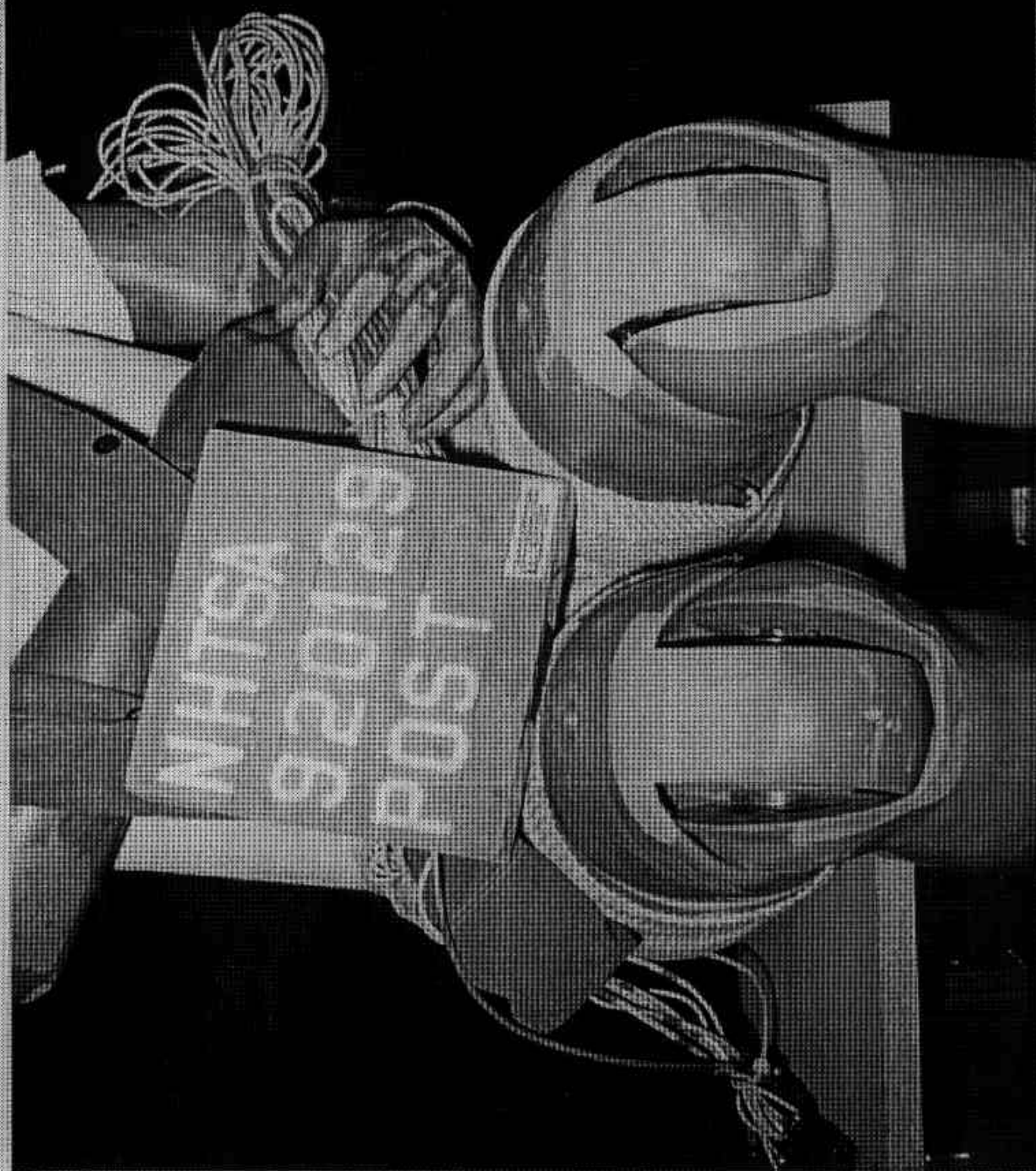


FIGURE A-44, POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1

A-45

920129

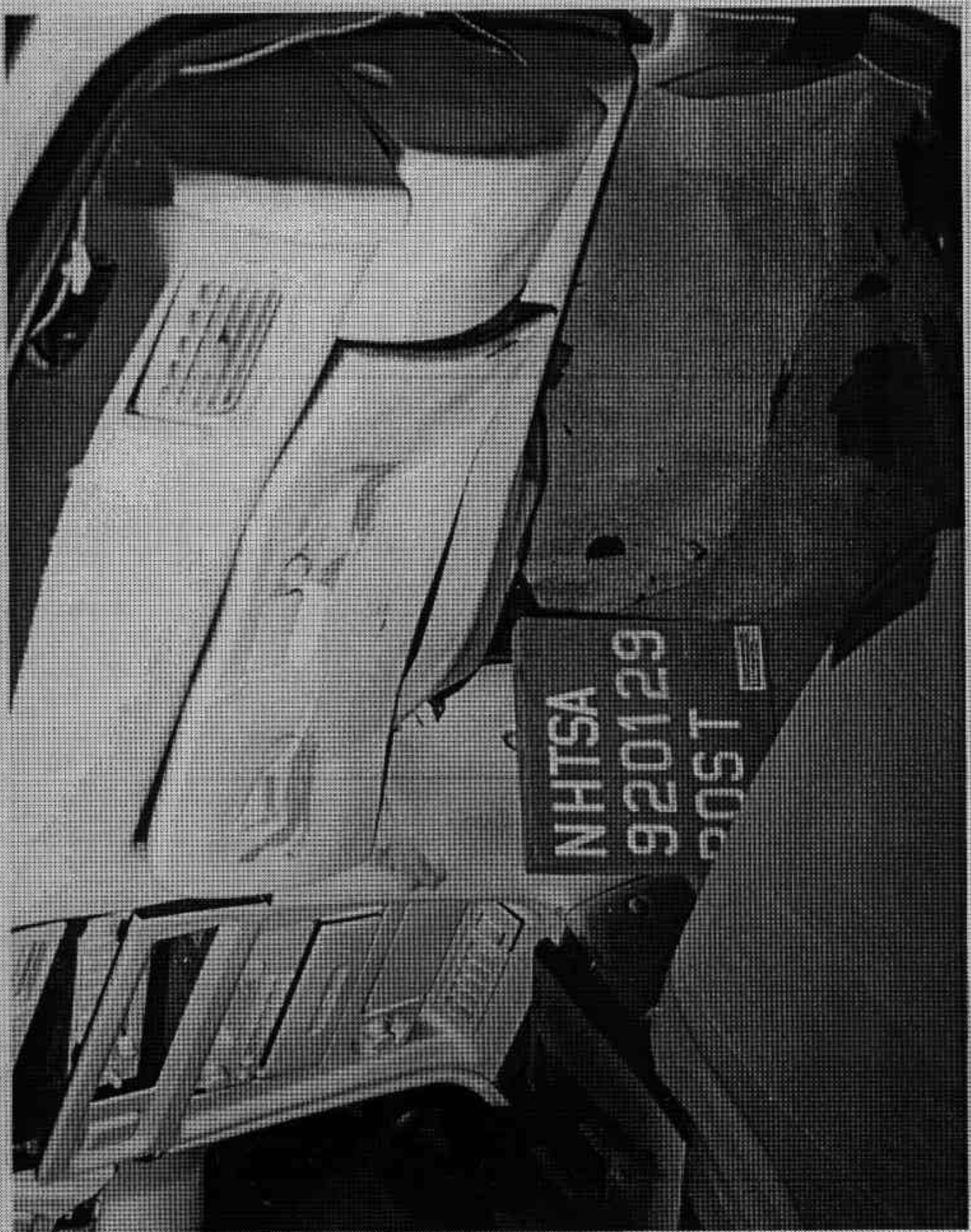


FIGURE A-45. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2



DATE 11/91  
GVWR 4187 LBS.  
GAWR FR 2315 LBS. RR 2183 LBS.  
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL  
MOTOR VEHICLE SAFETY - BUMPER AND THEFT PREVENTION  
STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE  
SHOWN ABOVE.

JN1HJ01F7NT002291

PASSENGER CAR



JN1HJ01F7NT002291

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

|                                                                                                                                                                                                                                        |             |                      |                       |                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|-----------------------|----------------|
| VEHICLE CAPACITY WEIGHT                                                                                                                                                                                                                | 3000 LBS    | SEATING CAPACITY     | FRONT 2<br>AVALANT 2  | TOTAL<br>TOTAL |
| WEIGHTS PER VEHICLE                                                                                                                                                                                                                    | 400 LBS     | NUMBER OF PLACES     | REAR 3<br>ARRIERE 3   | 5              |
| RECOMMENDED COLD TIRE INFLATION PRESSURE                                                                                                                                                                                               |             |                      |                       |                |
| PRESSION DE GONFLAGE RECOMMANDEE DES PNEUS FROIDS                                                                                                                                                                                      |             |                      |                       |                |
| TIRE SIZE<br>DIMENSIONS                                                                                                                                                                                                                |             | FRONT<br>AVANT (KPA) | REAR<br>ARRIERE (KPA) |                |
| P205/65 R15 92H                                                                                                                                                                                                                        |             | 78 (200)             | 29 (200)              |                |
| SPARE TIRE<br>PNEU DE RESERVE                                                                                                                                                                                                          | 112S/70 D16 | 60 (420)             | 60 (420)              |                |
| DO NOT USE IN EXCESS OF 50 MPH (80 KPH)<br>NE PAS EXCÉDER 50 MPH (80 KPH)<br>SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION<br>VOIR LE MANUEL D'UTILISATION POUR PLUS D'INFORMATIONS<br>FOR DETAILS SEE REFRER TO MANUAL, DU CONDUCTEUR |             |                      |                       |                |

FIGURE A-47. PRE-TEST VEHICLE RECOMMENDED TIRE PRESSURE LABEL VIEW

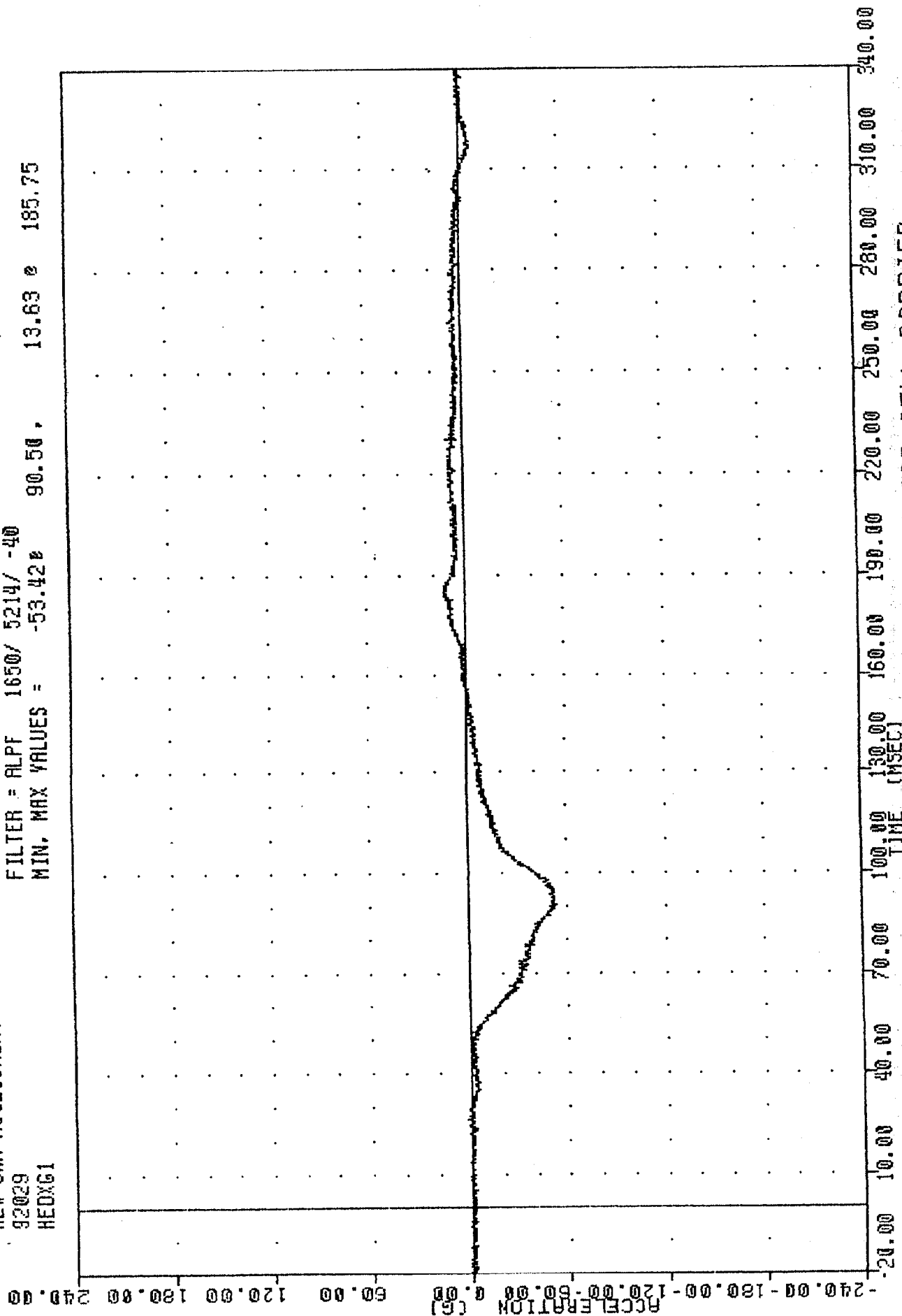


APPENDIX B

DATA PLOTS

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 HEDXG1

FILTER = ALPF 1650/ 5214/ -40  
 MIN, MAX VALUES = -53.42 90.50, 13.63 185.75



B-2

920129

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 DRIVER HEAD Y-AXIS ACCELERATION

NEW CAR ASSESSMENT PROGRAM

92029

HEDY61

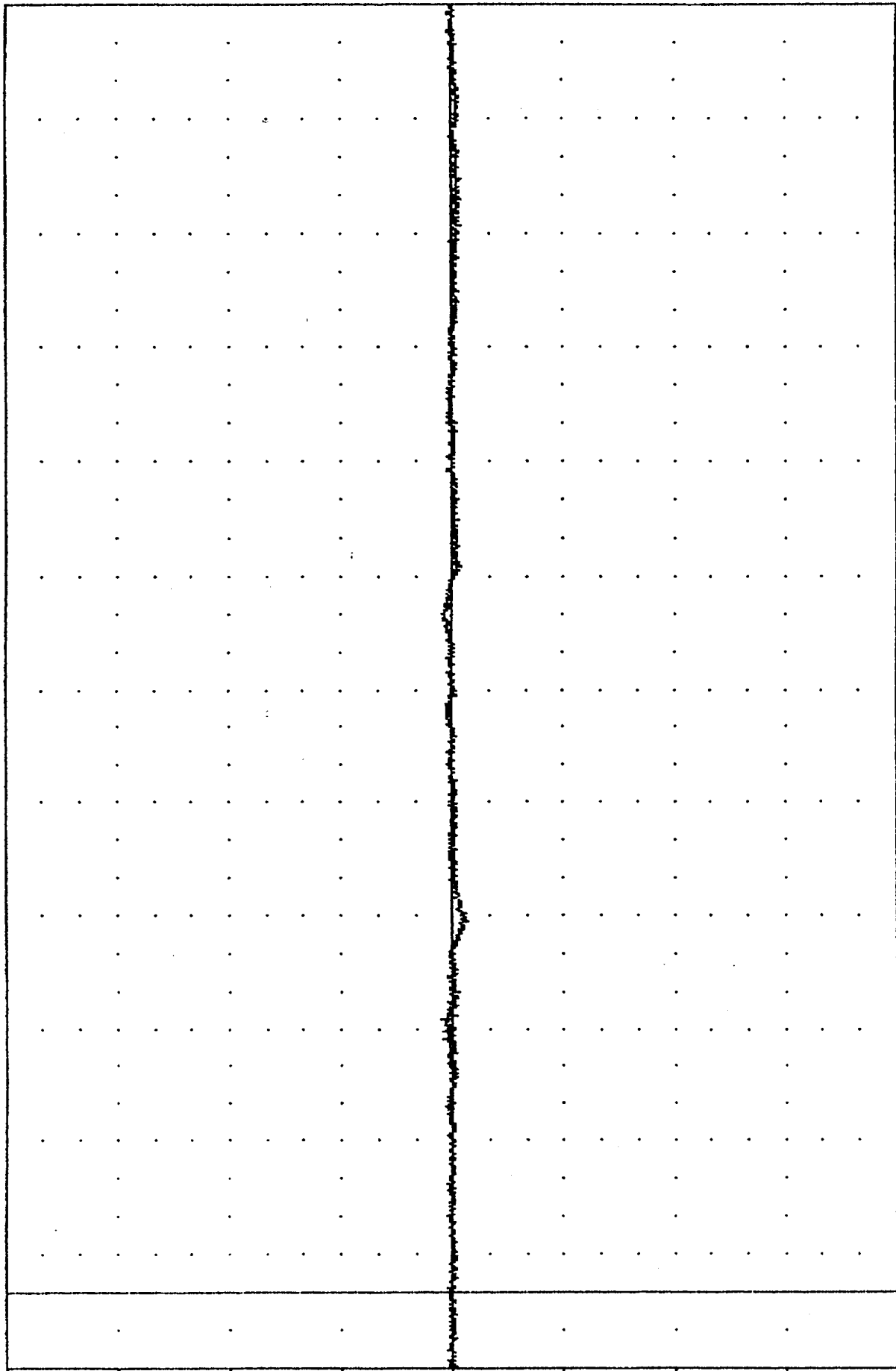
FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = -8.10#

6.25 # 72.25

98.63 ,

ACCELERATION (G)



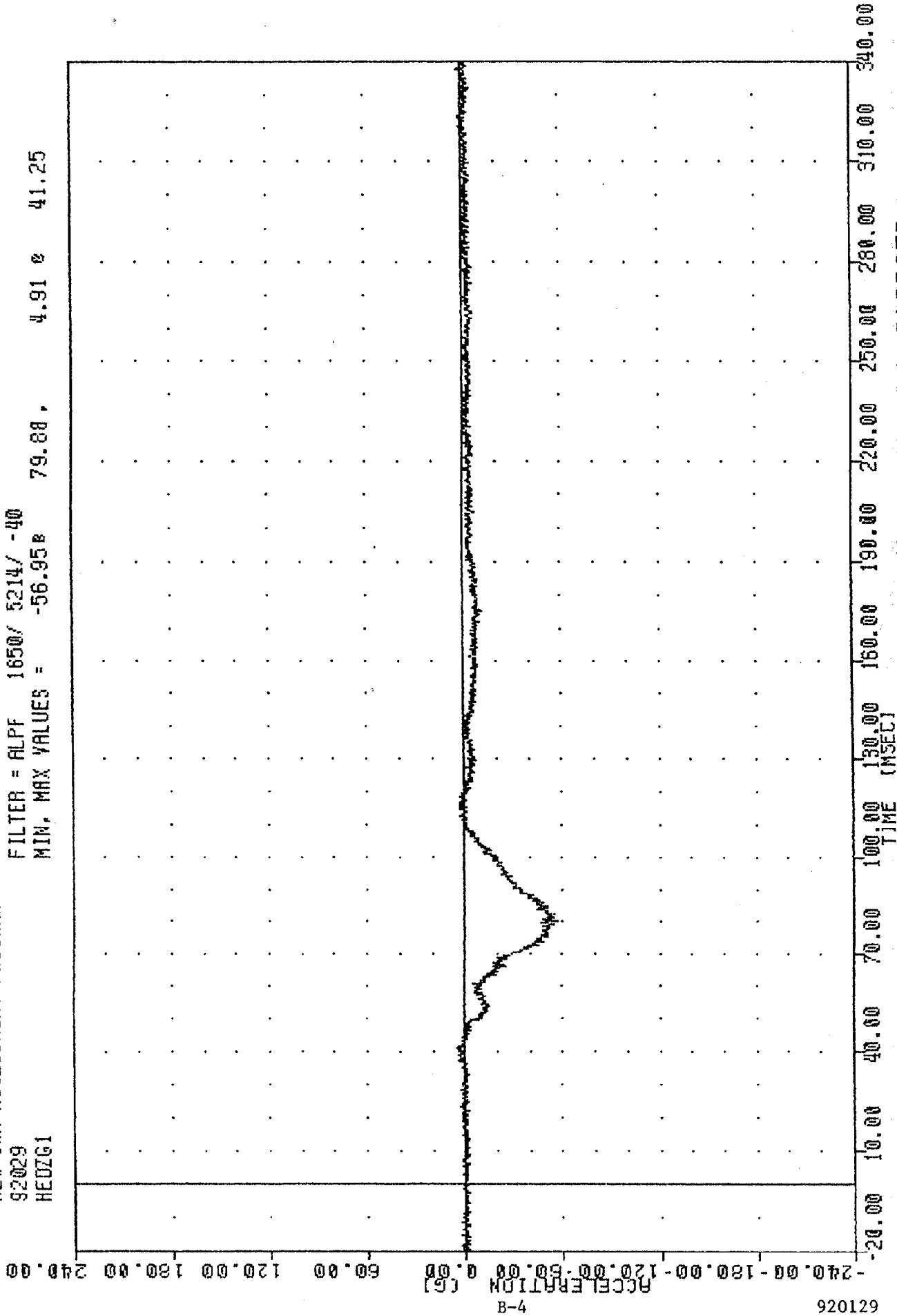
0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER

DRIVER HEAD Y-AXIS ACCELERATION

TAC , 920129  
 NEW CRA ASSESSMENT PROGRAM  
 92029  
 HEDZG1

FILTER = ALPF 1650/ 5214/ -40  
 MIN. MAX VALUES = -56.958 79.88 , 4.91 0 41.25





NEW CAR ASSESSMENT PROGRAM

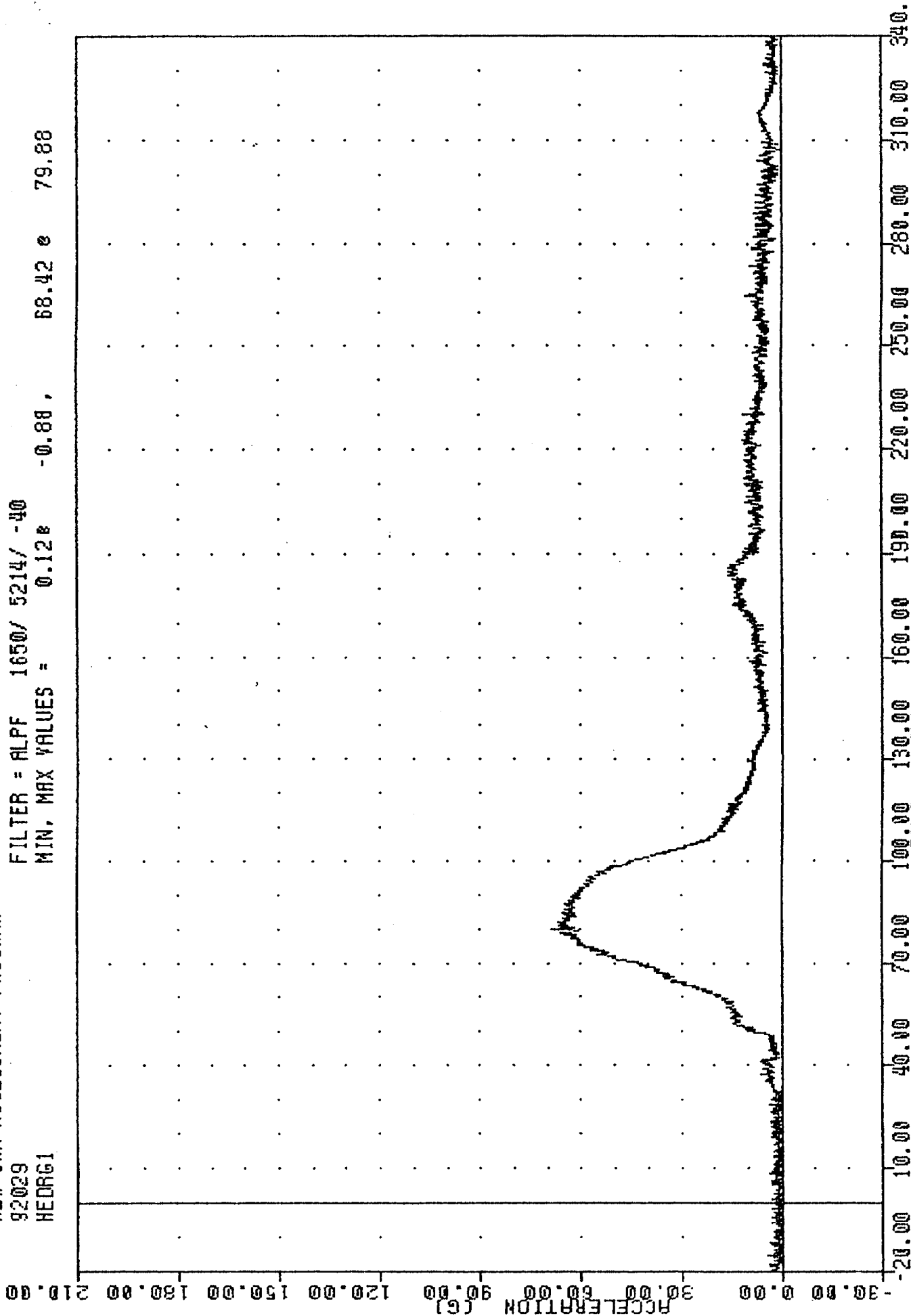
92029

HEDRG1

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = 0.128 -0.88 ,

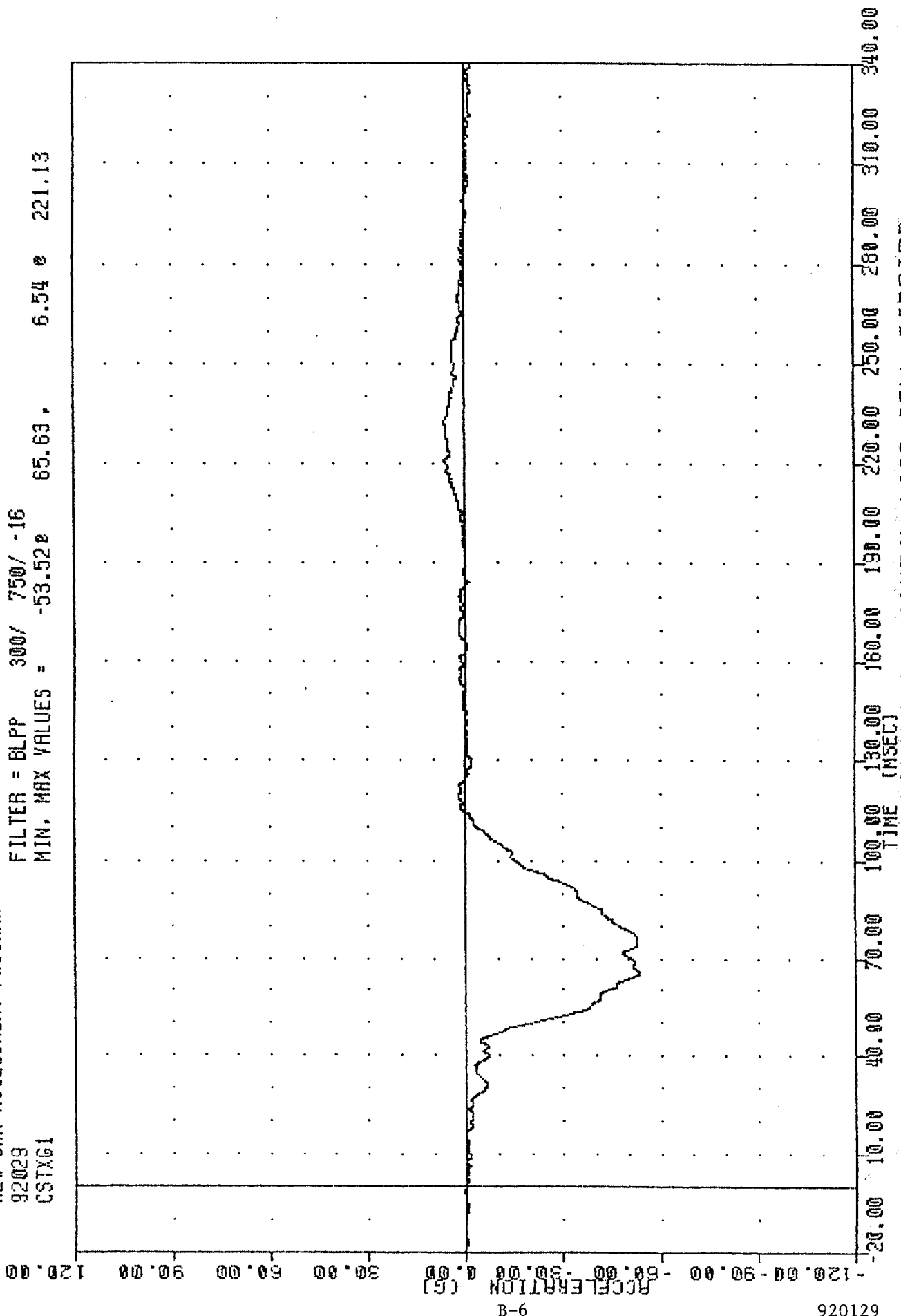
68.42 @ 79.88



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
DRIVER HEAD RESULTANT ACCELERATION

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 CSTXG1

FILTER = BLPP 300/ 750/ -16  
 MIN. MAX VALUES = -53.52 65.63 6.54 221.13



NEW CAR ASSESSMENT PROGRAM

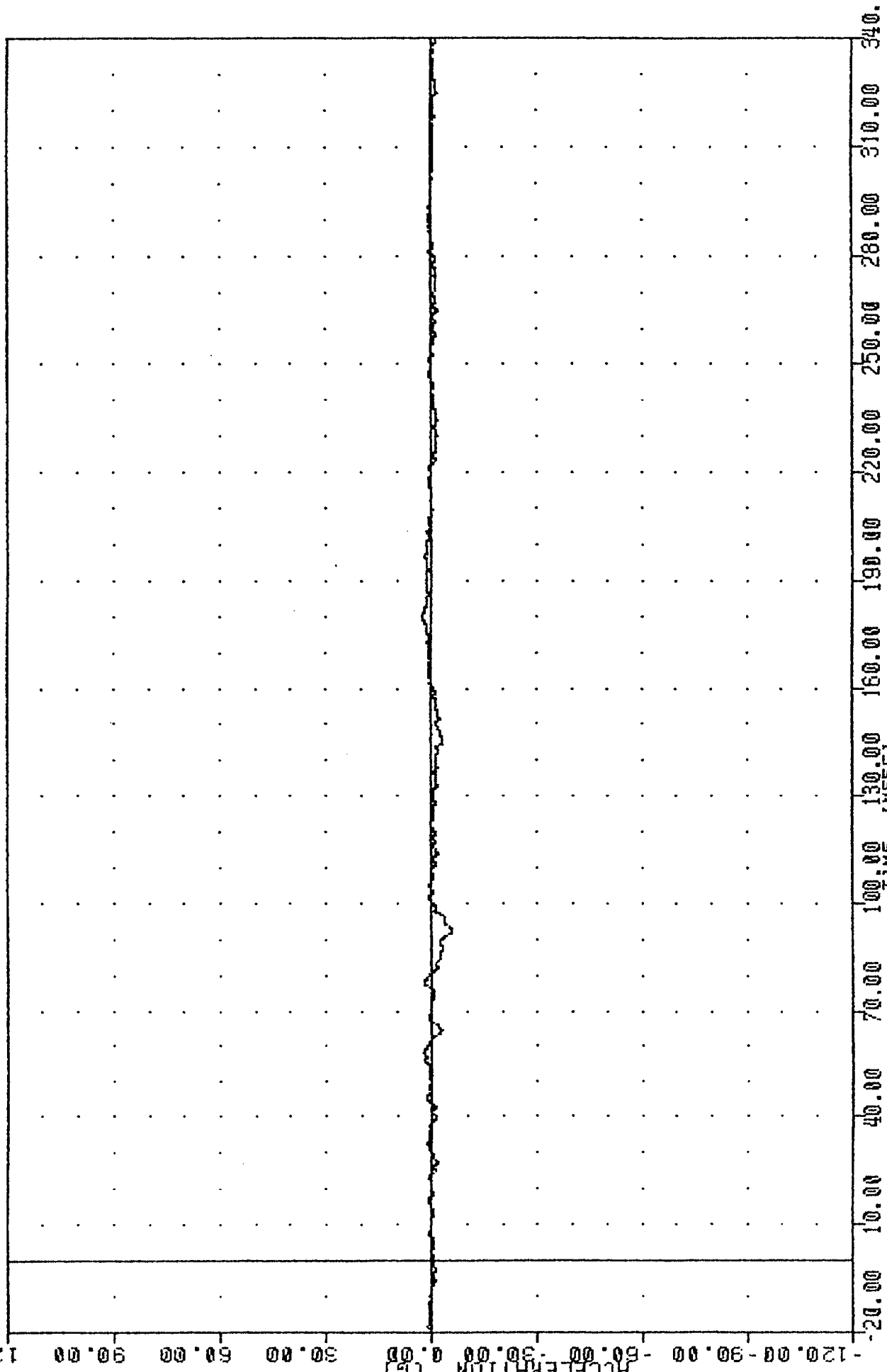
92029  
CSTYG1

FILTER = BLPP 300/ 750/ -16  
MIN. MAX VALUES = -5.850 92.25 , 2.77 0 179.88

ACCELERATION (G)

B-7

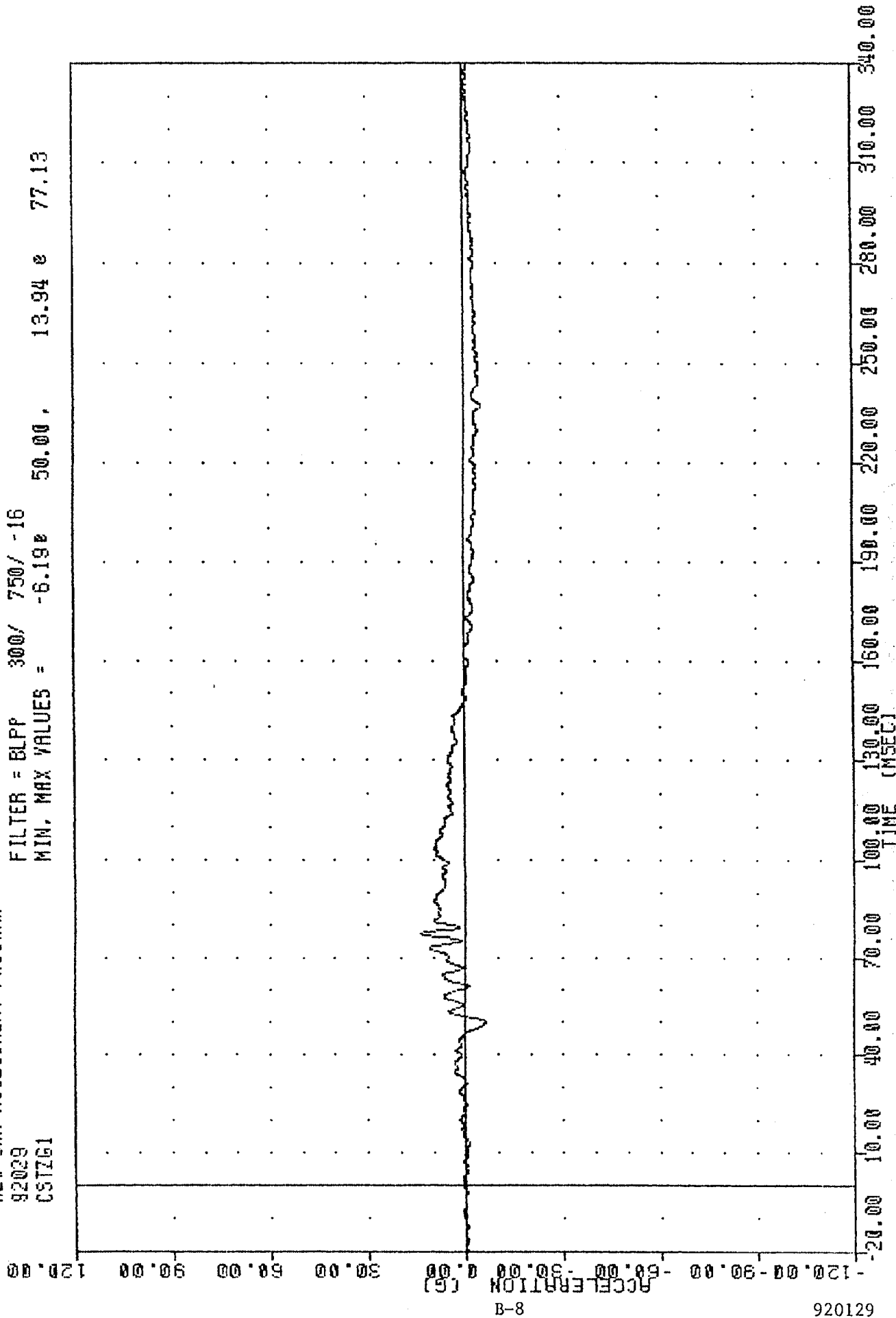
920129



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
DRIVER CHEST Y-AXIS ACCELERATION

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 CSTZG1

FILTER = BLPP 300/ 750/ -16  
 MIN, MAX VALUES = -6.190 50.00 , 13.94 e 77.13



B-8

920126

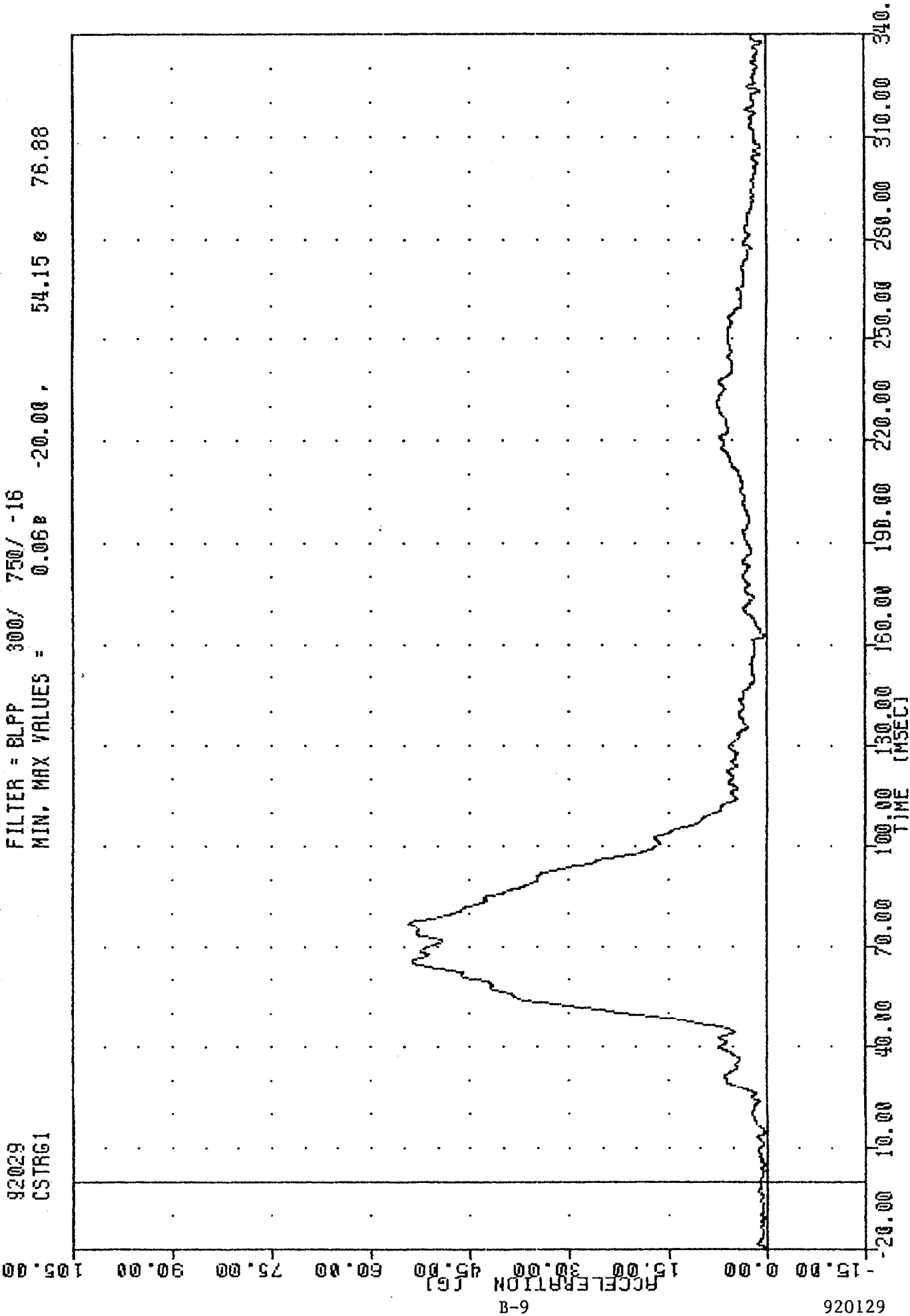
1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 DRIVER CHEST Z-AXIS ACCELERATION



# NEW CAR ASSESSMENT PROGRAM

92029  
CSTRG1

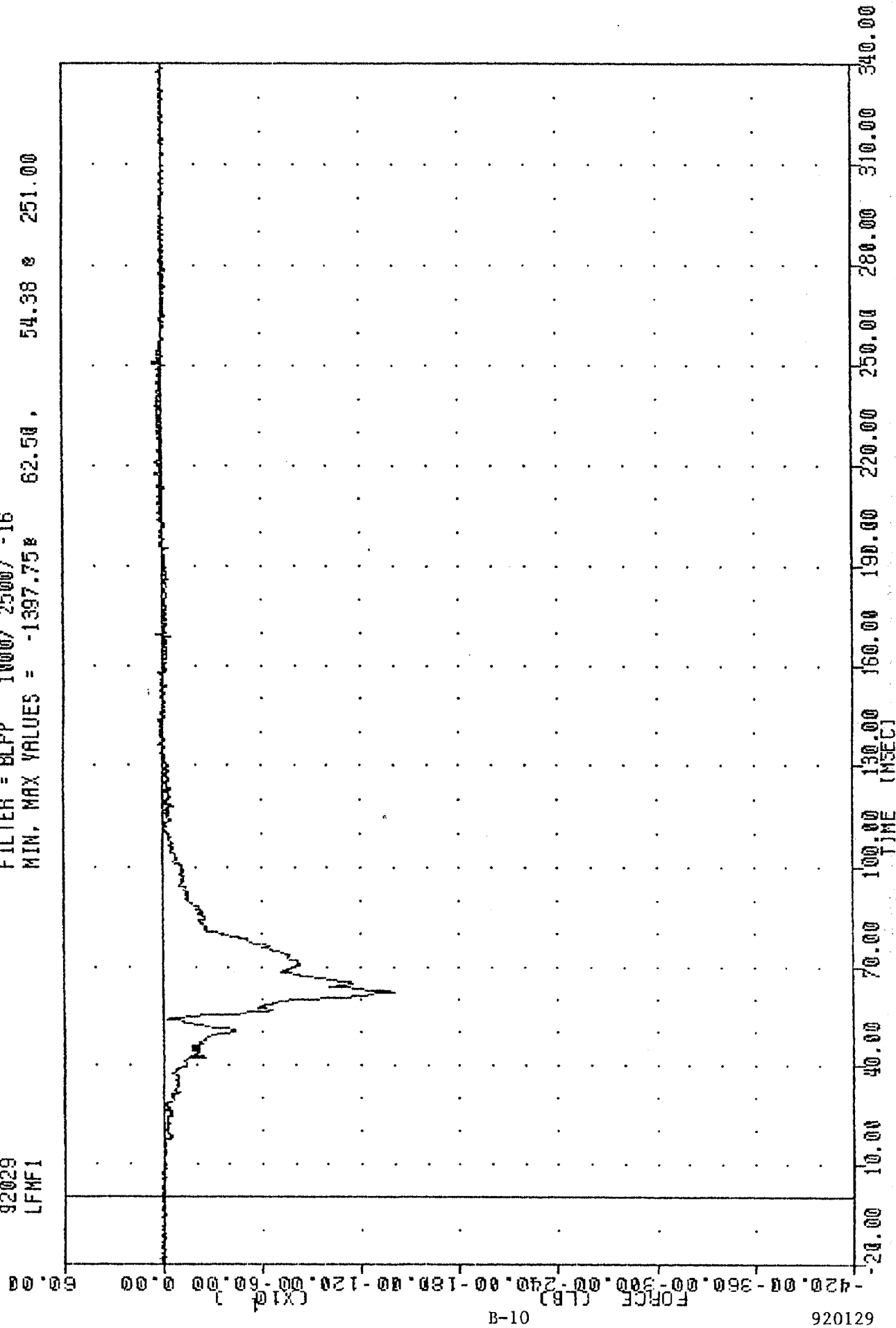
FILTER = BLPP 300/ 750/ -16  
MIN, MAX VALUES = 0.06g -20.00 , 54.15 g 76.88



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
DRIVER CHEST RESULTANT ACCELERATION

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 LFMF1

FILTER = BLPP 1000/ 2500/ -16  
 MIN, MAX VALUES = -1397.75% 62.50 , 54.38 @ 251.00



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 DRIVER LEFT FEMUR FORCE

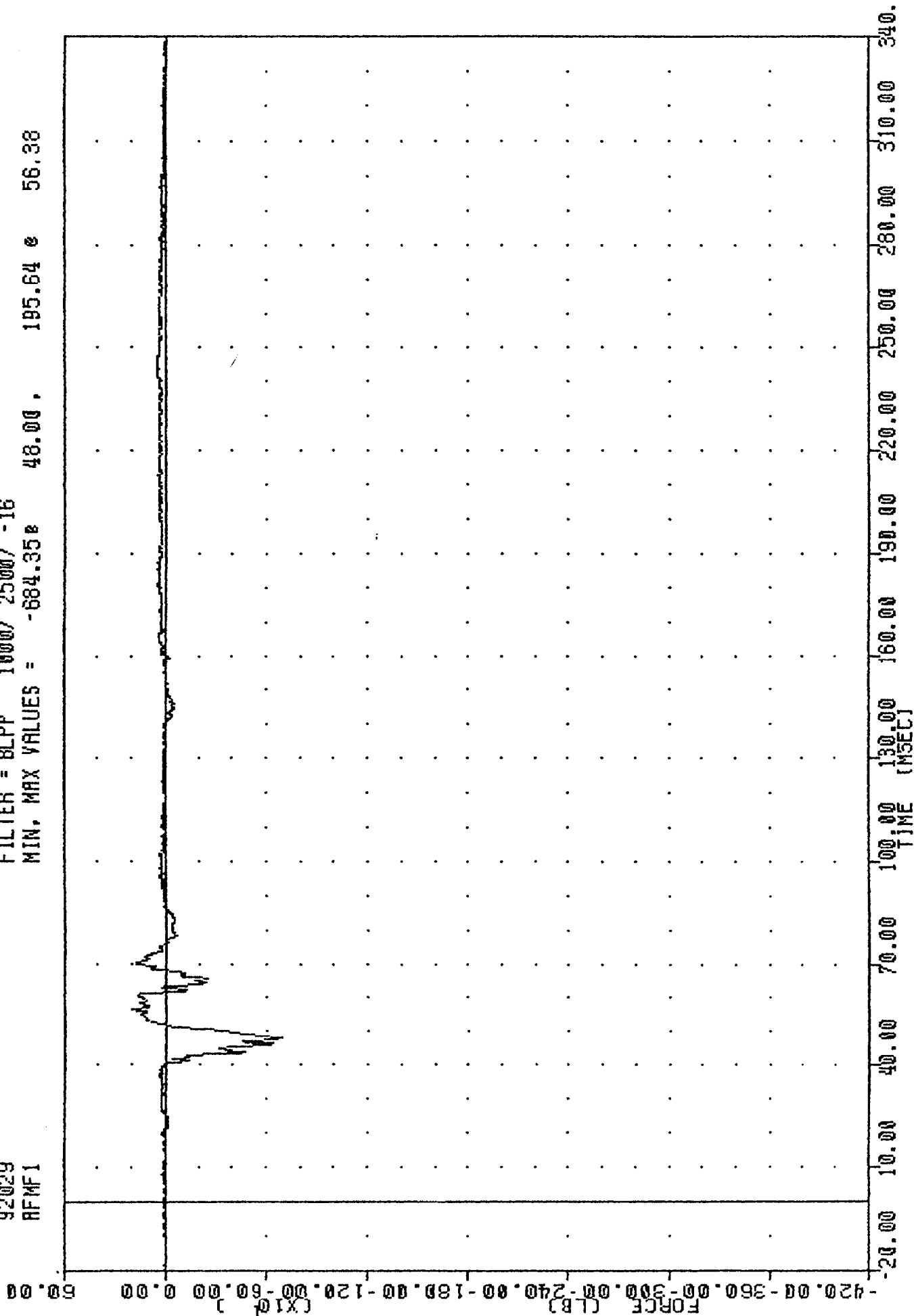
# NEW CAR ASSESSMENT PROGRAM

92029

RFMF1

FILTER = BLPP 1000/ 2500/ -16

MIN, MAX VALUES = -684.35 48.00 , 195.64 56.38

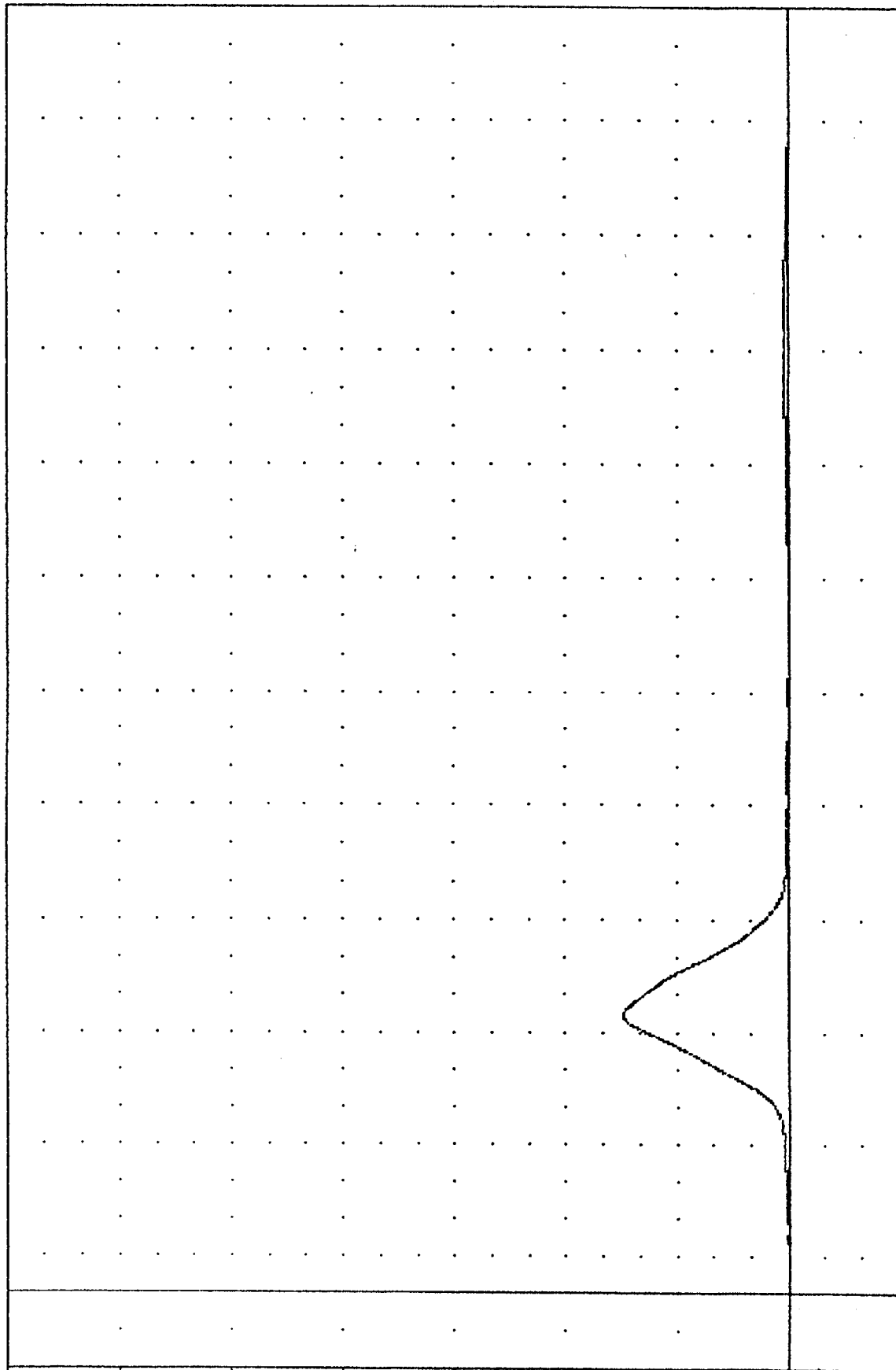


1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
DRIVER RIGHT FEMUR FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 LBOF1

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -4.43B 334.13 , 885.99 e 74.38

420.00  
 360.00  
 300.00  
 240.00  
 180.00  
 120.00  
 60.00  
 0.00  
 -60.00



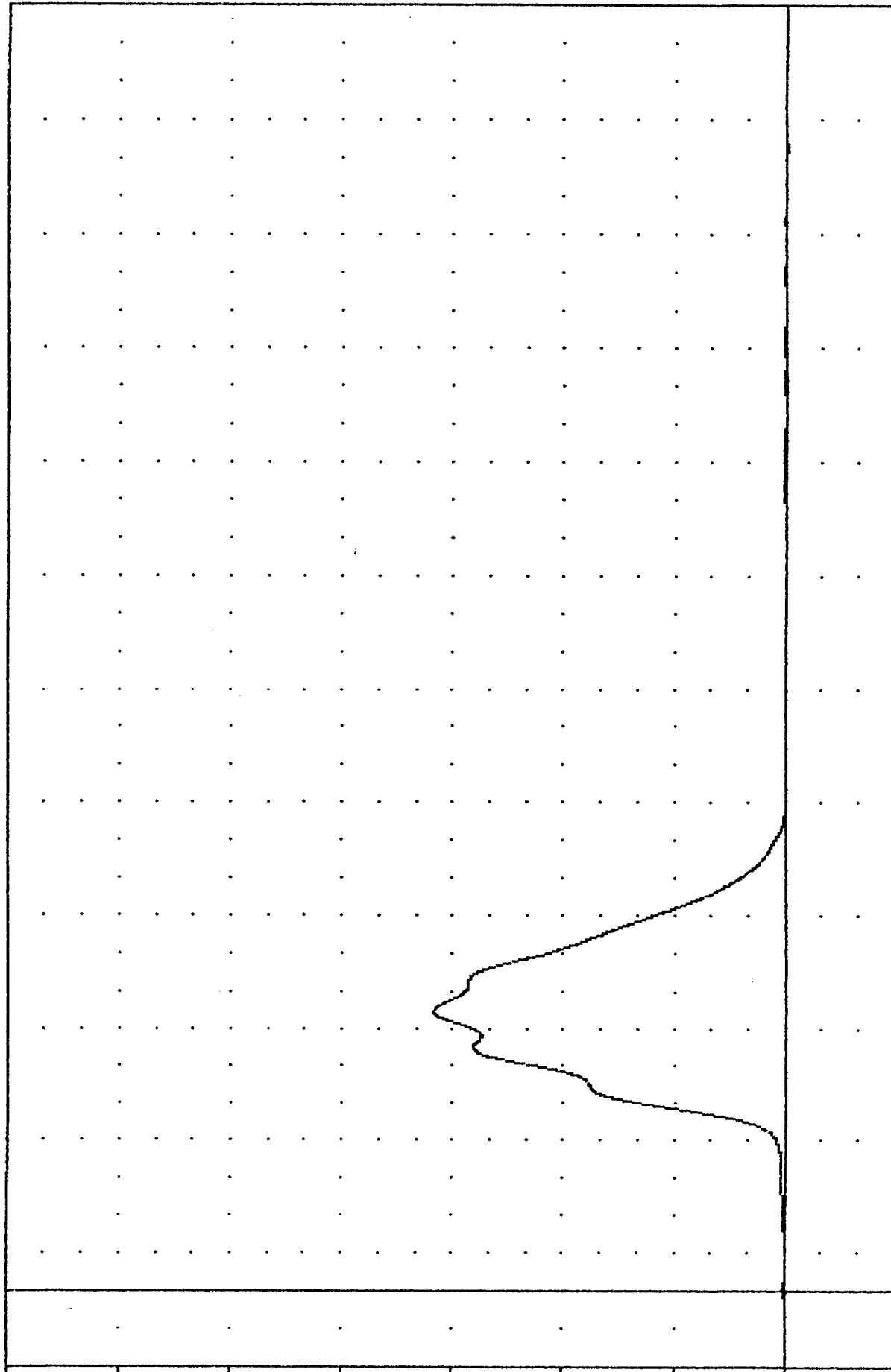
1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 DRIVER LAP BELT OUTBOARD FORCE



FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -12.11e 302.88 , 1899.66 e 74.50

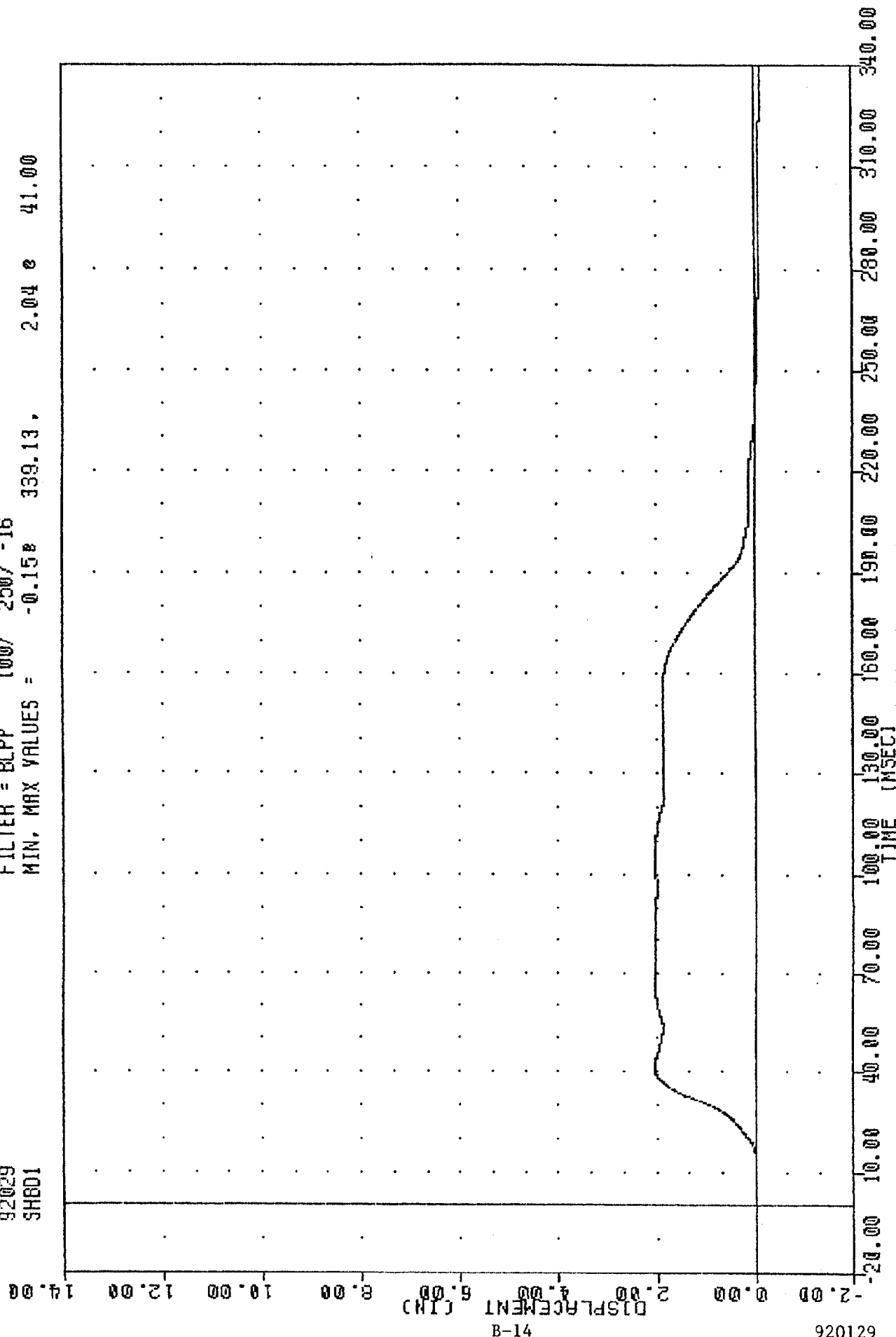
FORCE (LB)  
(X10<sup>3</sup>)



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
DRIVER SHOULDER BELT FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 SHBD1

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -0.15 339.13 , 2.04 41.00



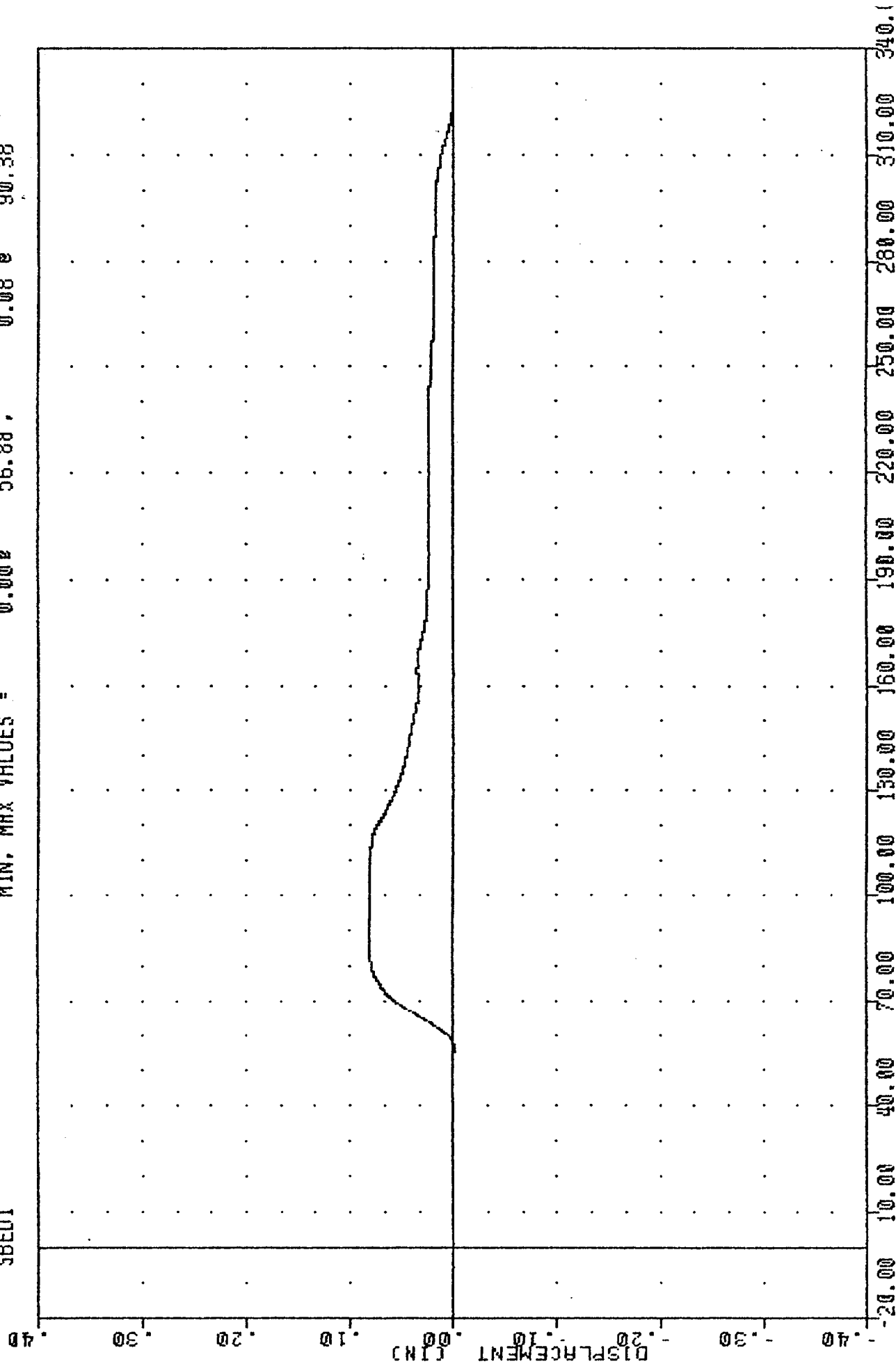
B-14

920129

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 DRIVER SHOULDER BELT DISPLACEMENT

FILTER = BLPP 100/ 250/ -16

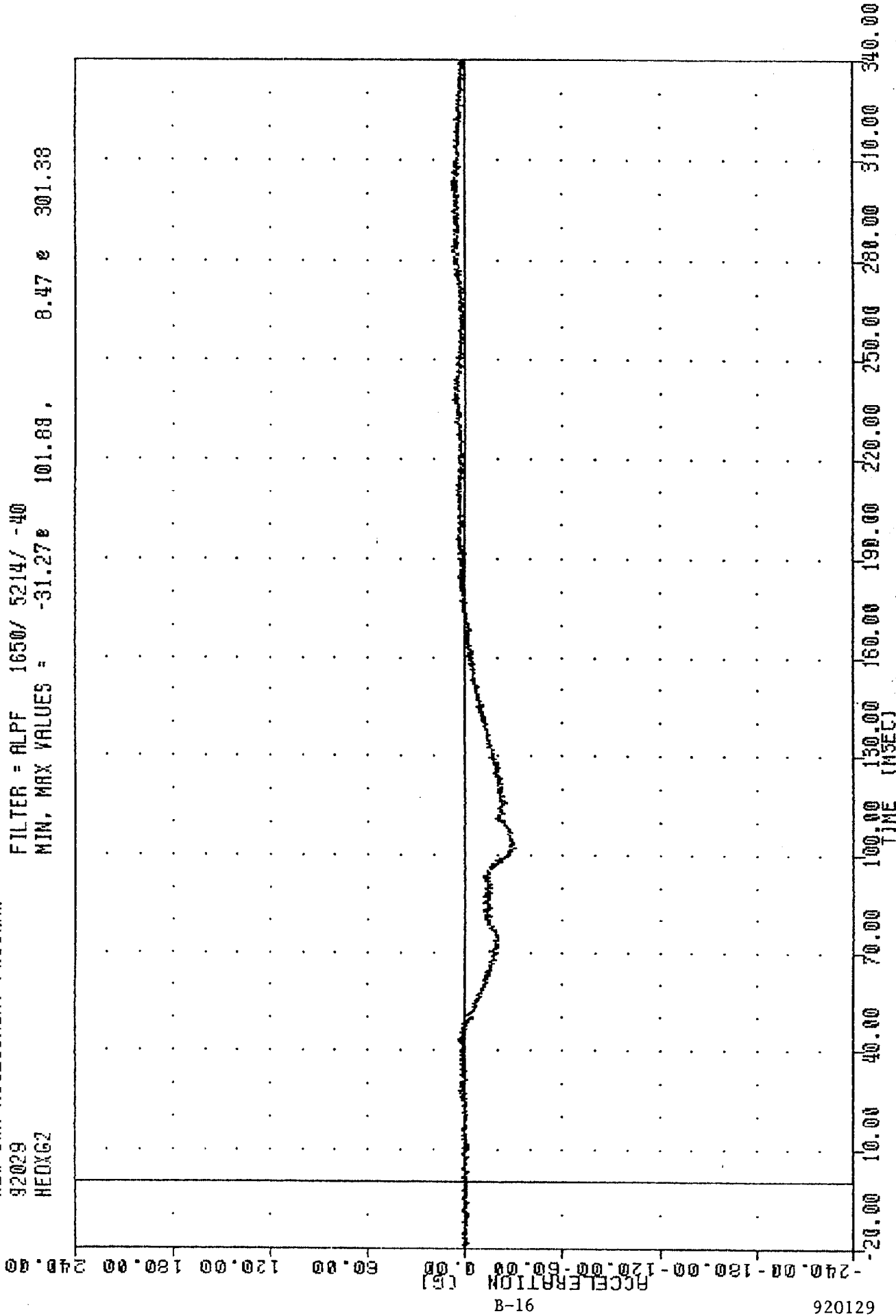
MIN, MAX VALUES = 0.00 56.88, 0.08 e 90.38



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
DRIVER SEAT BELT EXTENSION

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 HEDXG2

FILTER = ALPF 1650/ 5214/ -40  
 MIN, MAX VALUES = -31.27e 101.88, 8.47 e 301.38





NEW CAR ASSESSMENT PROGRAM

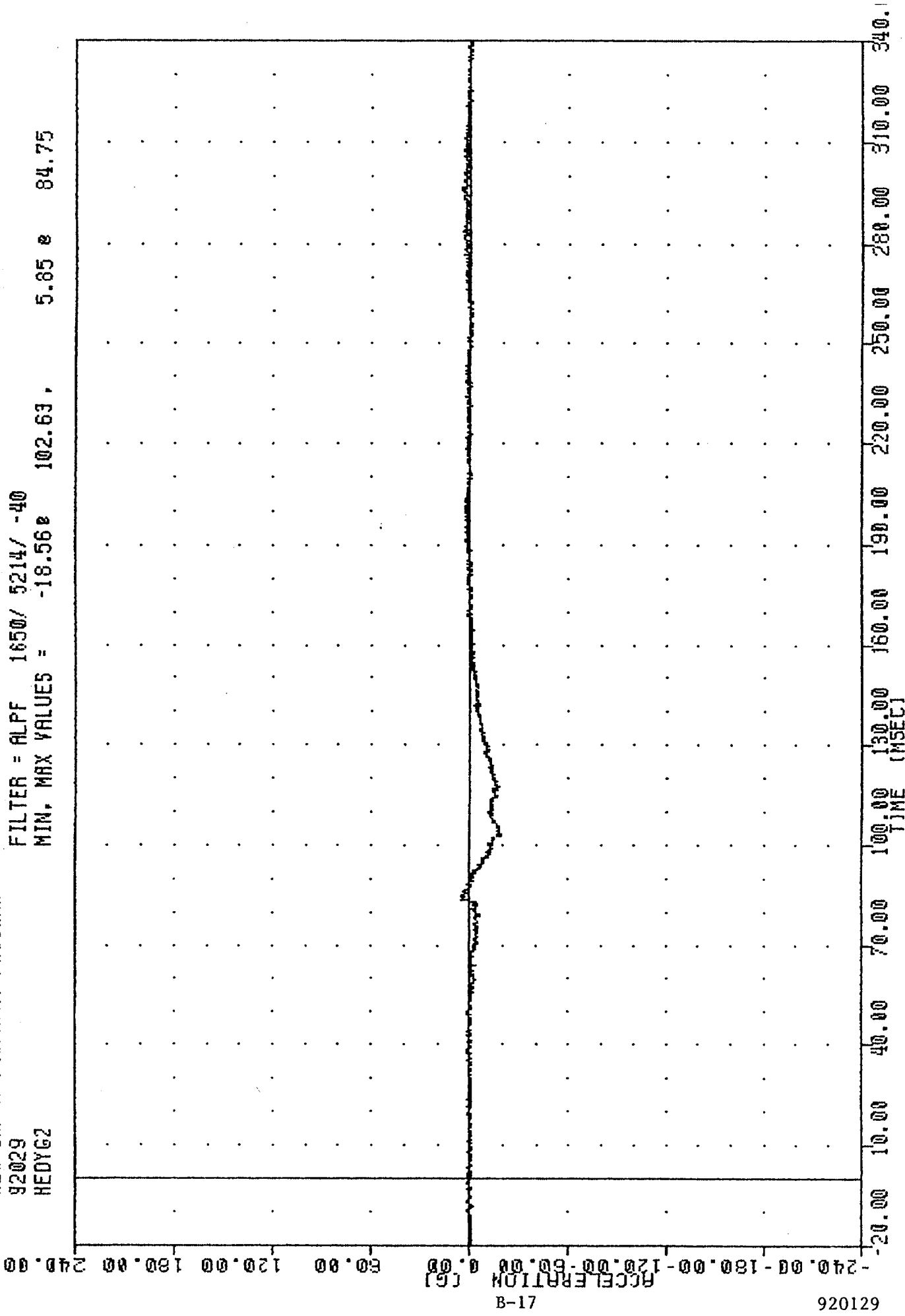
92029

HEDYG2

FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = -18.56 102.63 ,

5.85 84.75

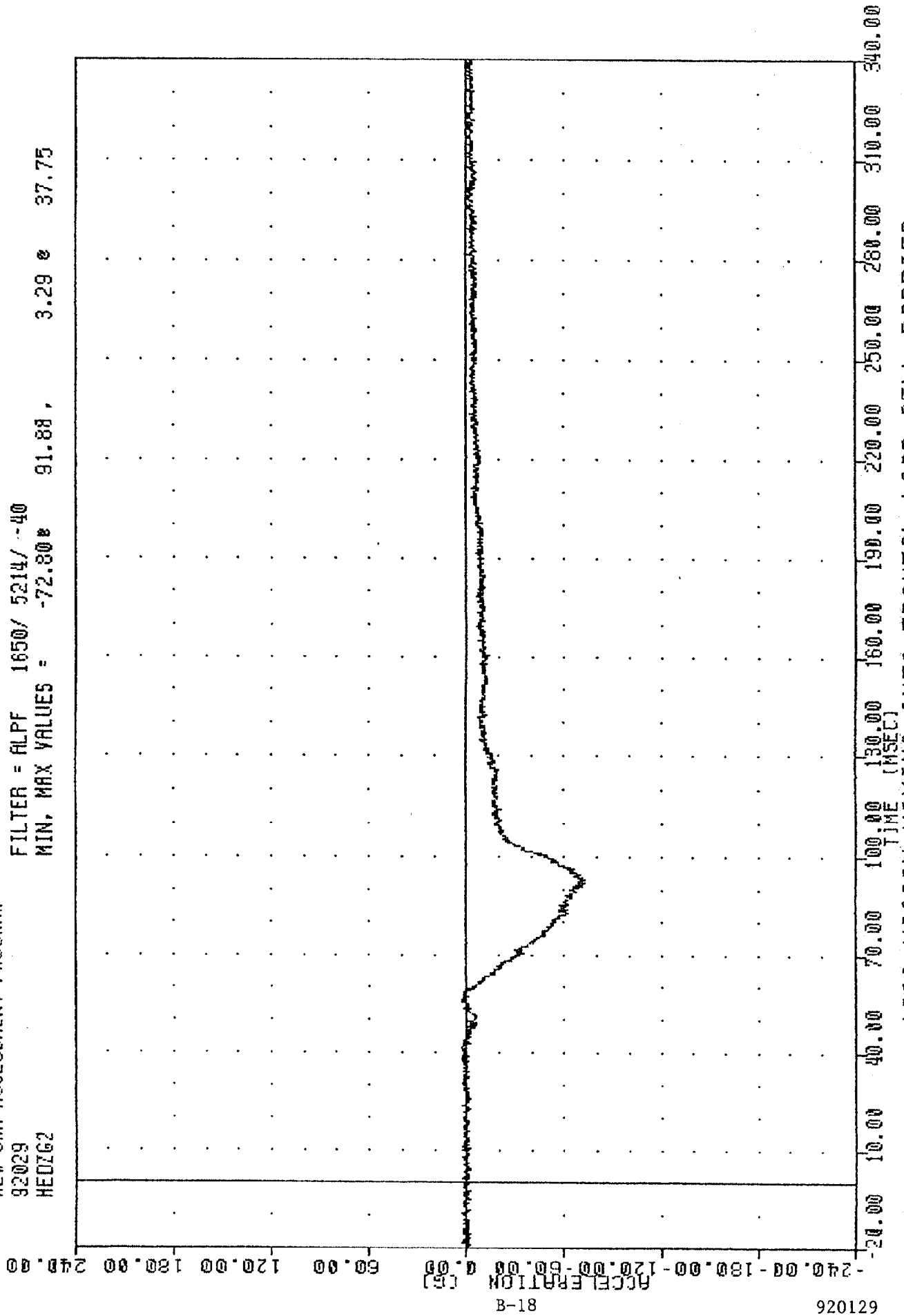


1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER

PASSENGER HEAD Y-AXIS ACCELERATION

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 HEDZ62

FILTER = ALPF 1650/ 5214/ -40  
 MIN, MAX VALUES = -72.80 91.88 , 3.29 37.75



# NEW CHH ASSESSMENT PROGRAM

92029

HEDRG2

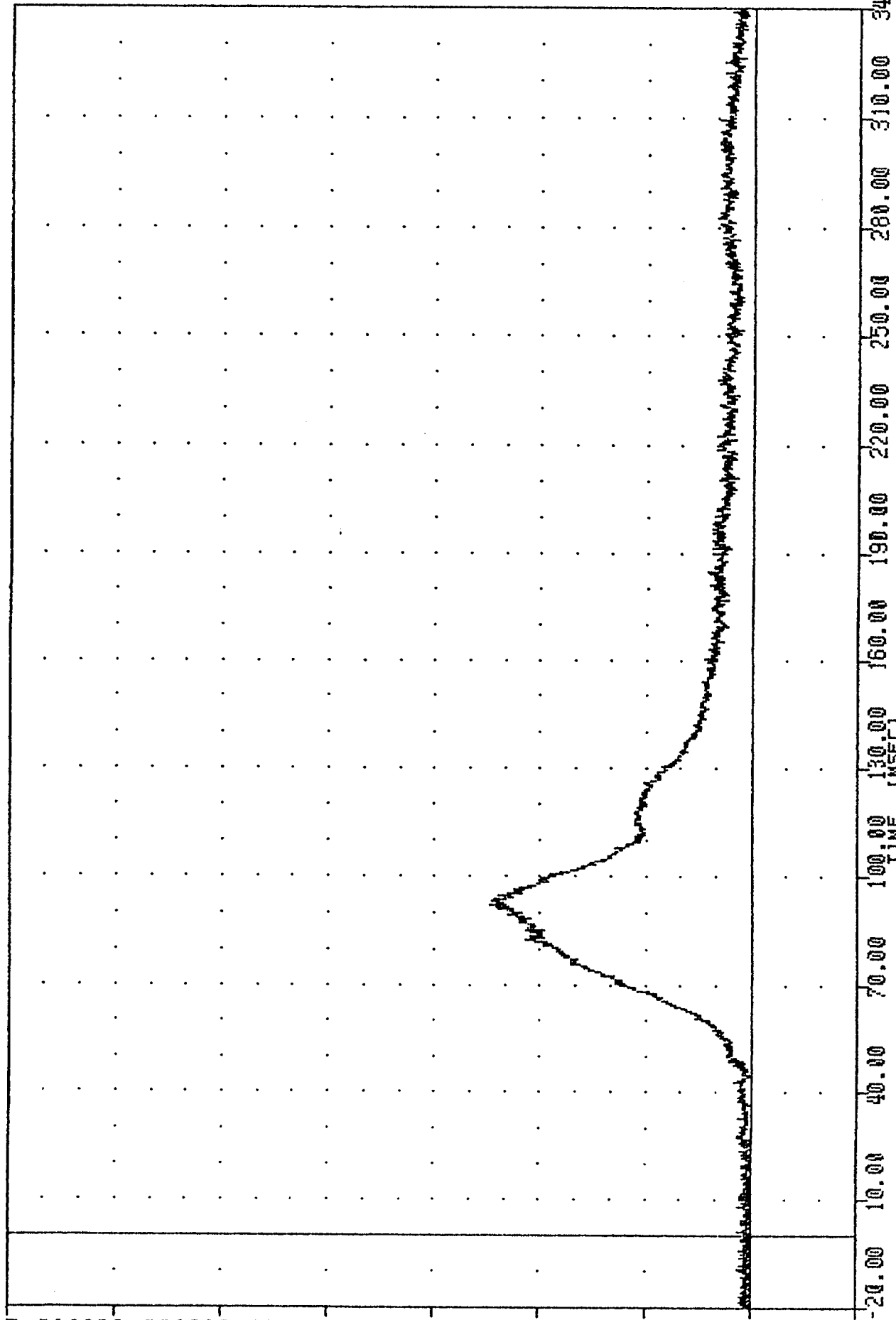
FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = 0.028 -15.00 , 74.14 e 91.88

ACCELERATION (G)

B-19

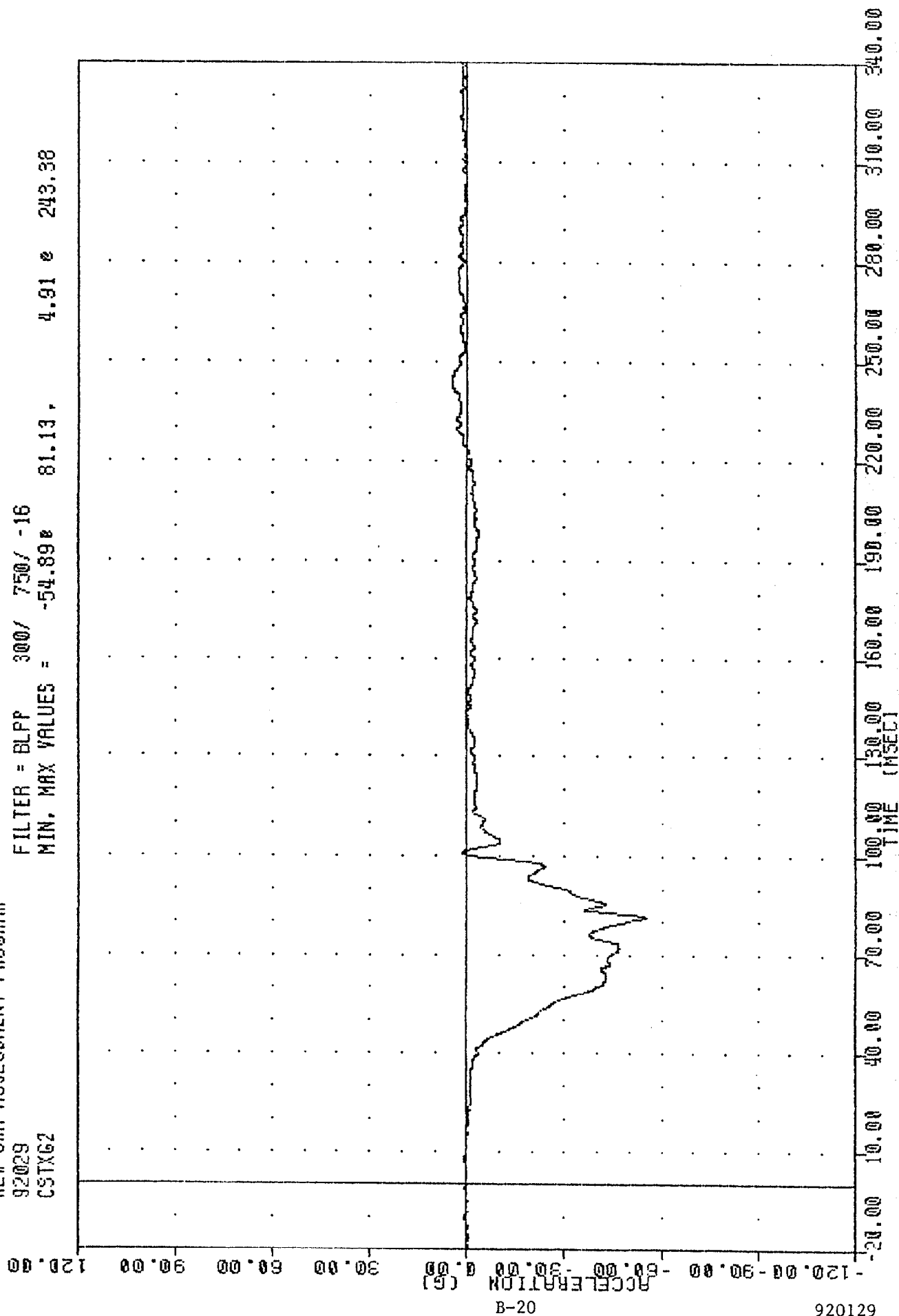
920129



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
PASSENGER HEAD RESULTANT ACCELERATION

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 CSTXG2

FILTER = BLPP 300/ 750/ -16  
 MIN. MAX VALUES = -54.89 81.13, 4.91 243.38



920129

B-20

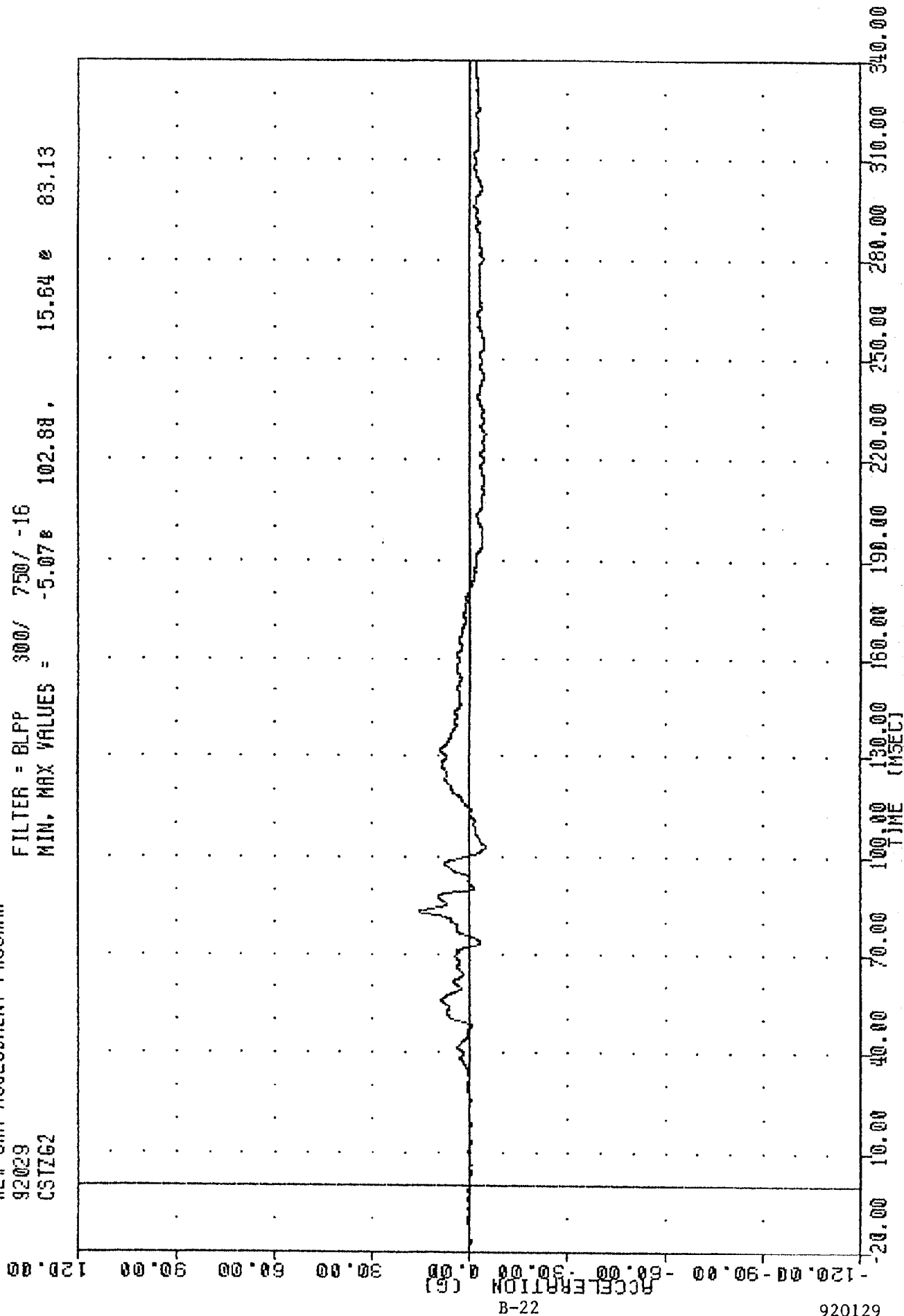
1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 PASSENGER CHEST X-AXIS ACCELERATION





TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 CSTZG2

FILTER = BLPP 300/ 750/ -16  
 MIN, MAX VALUES = -5.07e 102.88, 15.64 e 83.13



B-22

920129

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 PASSENGER CHEST Z-AXIS ACCELERATION

# NEW CAR ASSESSMENT PROGRAM

92029

CSTRG2

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = 0.07e 14.38, 56.10 e 81.38

105.00

90.00

75.00

60.00

45.00

30.00

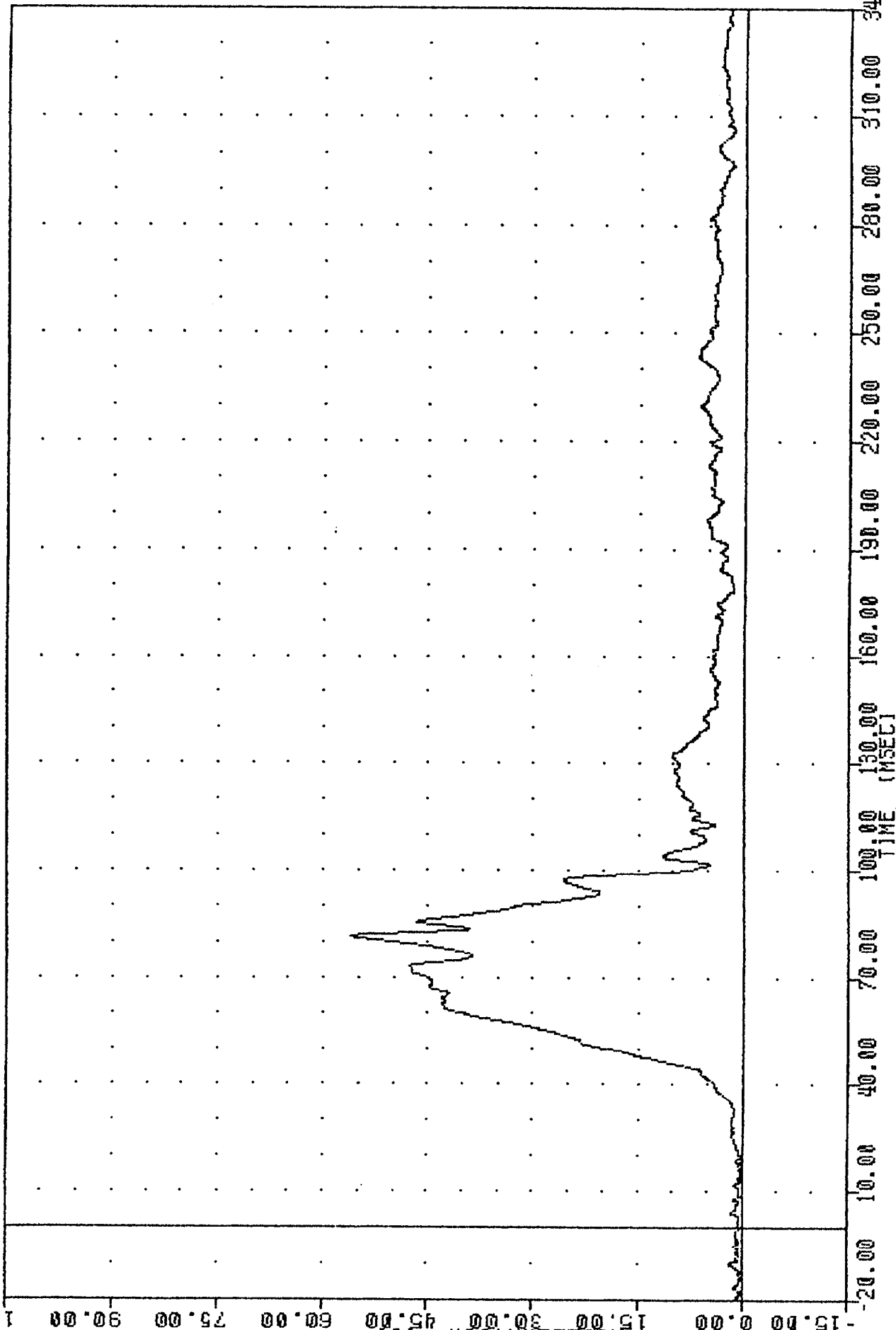
15.00

0.00

-15.00

B-23

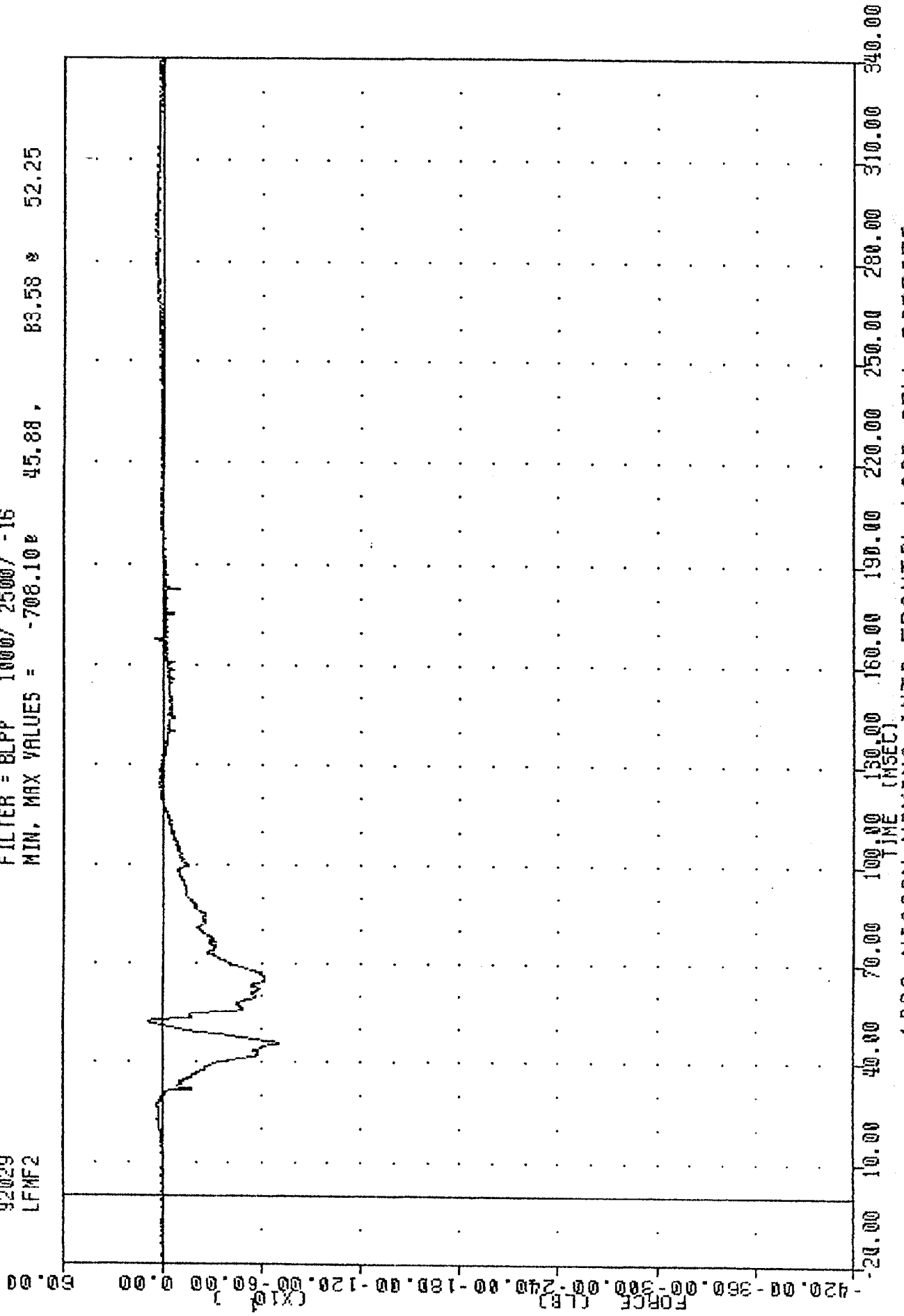
920129



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
PASSENGER CHEST RESULTANT ACCELERATION

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 LFMF2

FILTER = BLPP 1000/ 2500/ -16  
 MIN, MAX VALUES = -708.10 45.88, 83.58 52.25



# NEW CAR ASSESSMENT PROGRAM

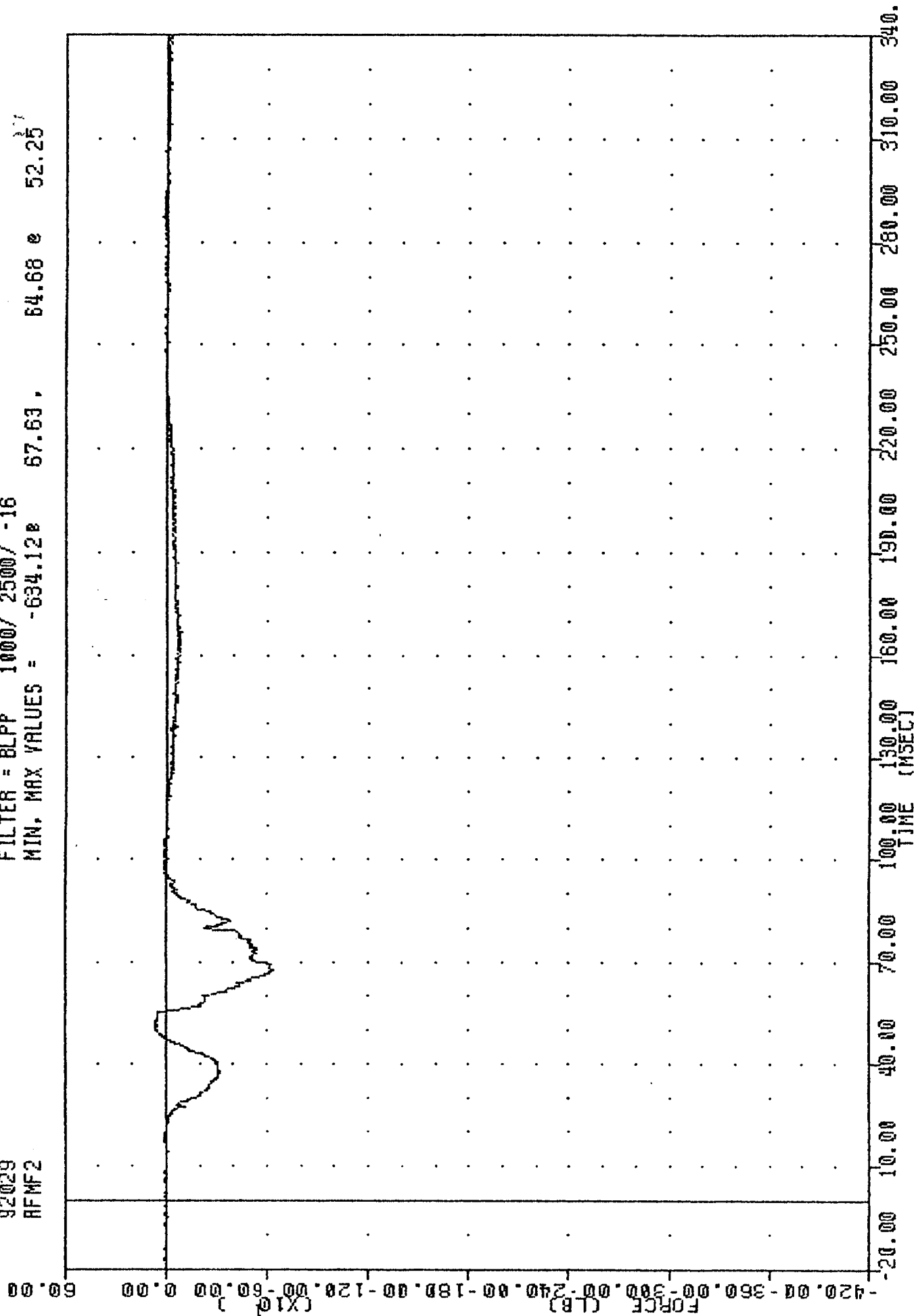
92029

RFMF2

FILTER = BLPP 1000/ 2500/ -16

MIN, MAX VALUES = -634.120 67.63 ,

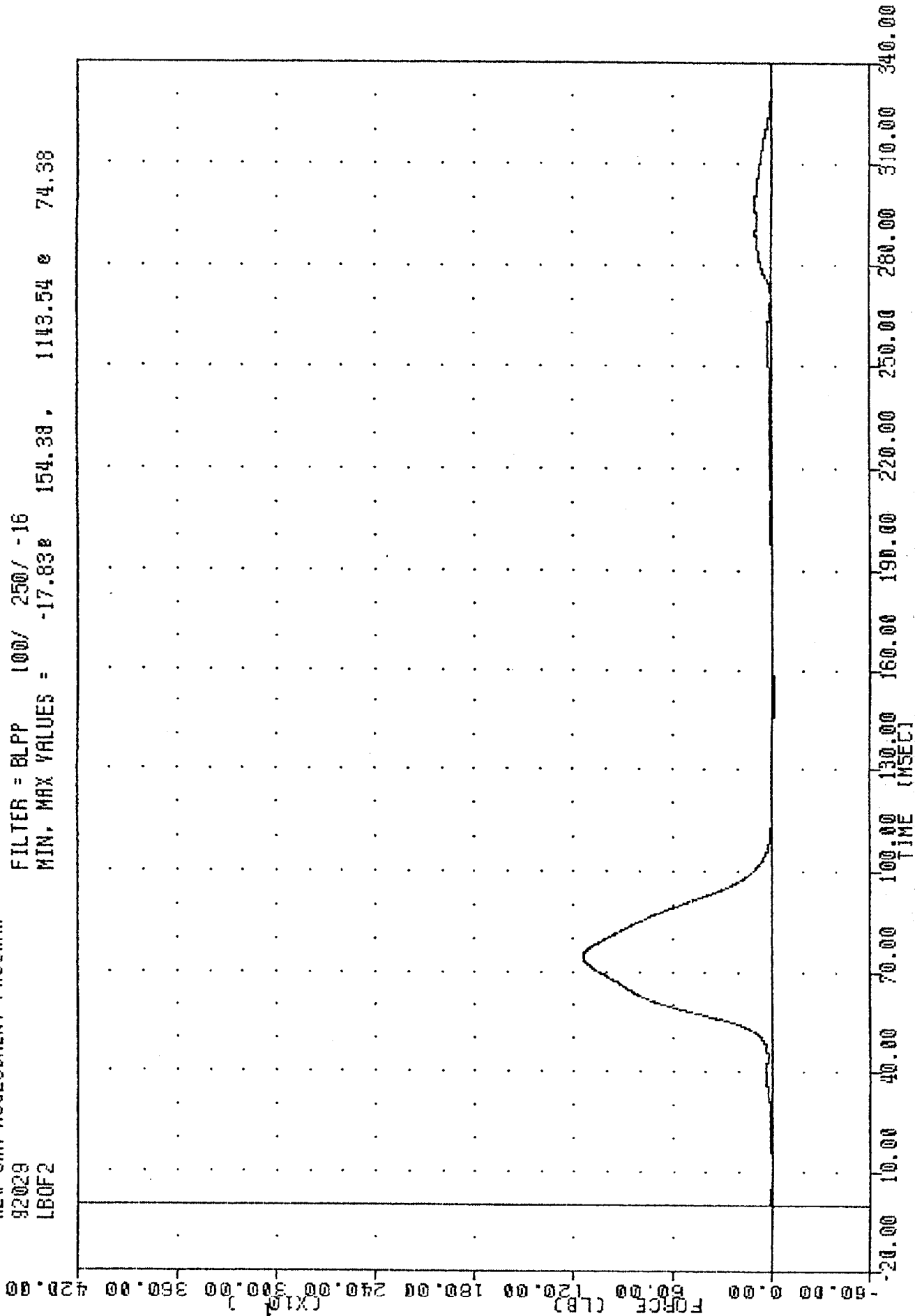
64.68 @ 52.25



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
PASSENGER RIGHT FEMUR FORCE

TRC  
 NEW CHR ASSESSMENT PROGRAM  
 92028  
 LBOF2

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -17.83 154.38 1143.54 74.38



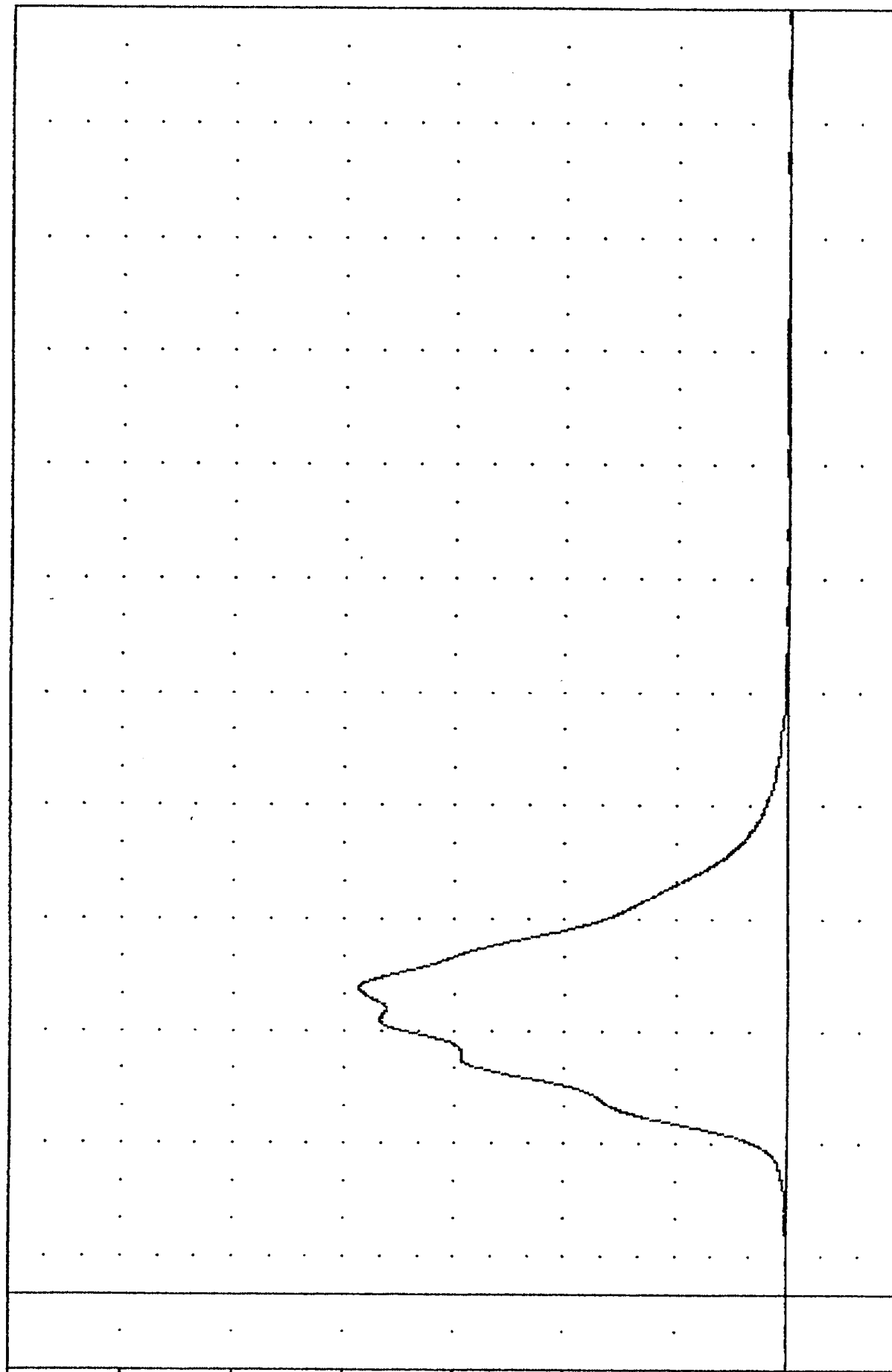
1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 PASSENGER LAP BELT OUTBOARD FORCE



FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -3.52e 264.75, 2324.68 e 81.50

FORCE (LB) (X10<sup>3</sup>)

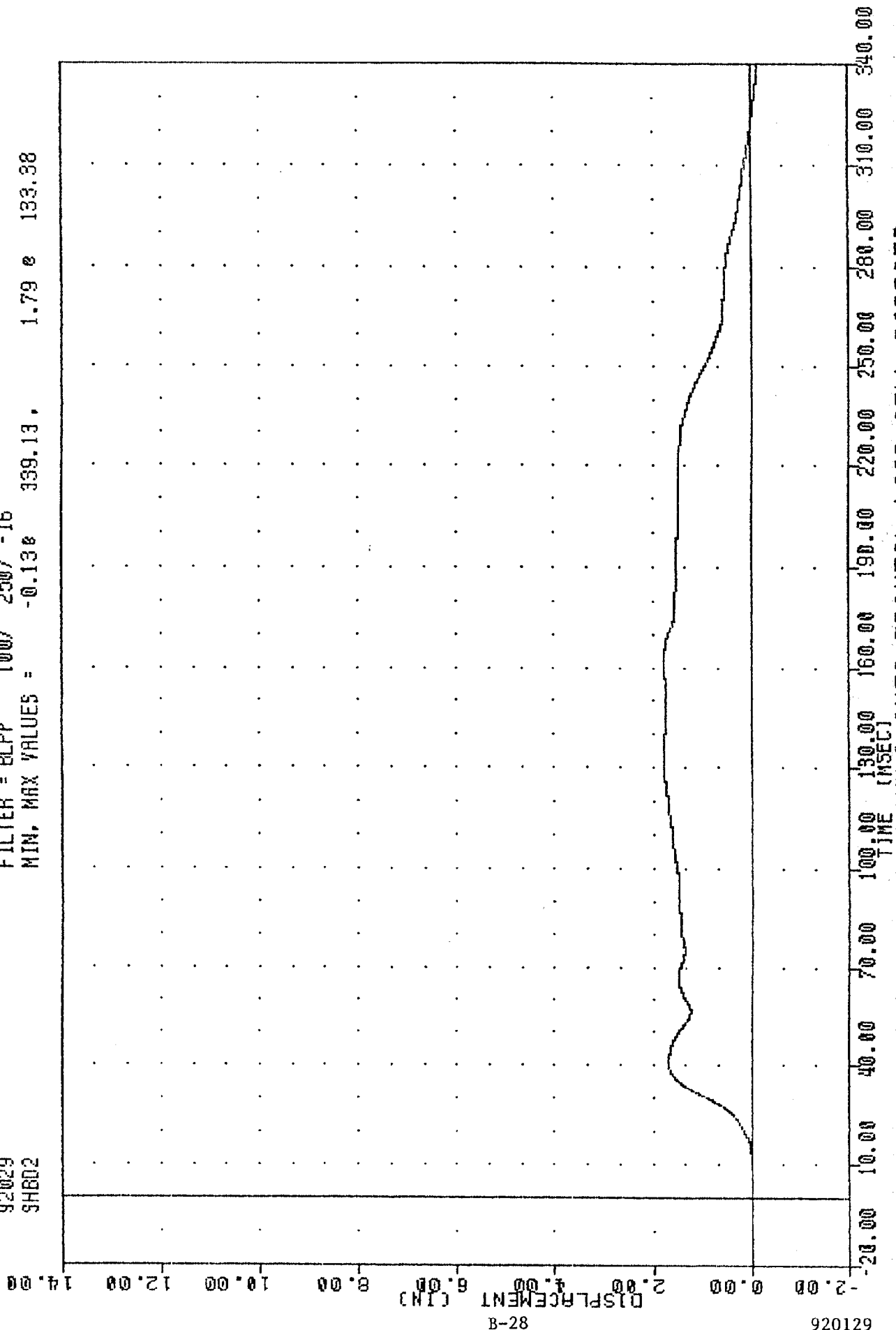


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
PASSENGER SHOULDER BELT FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 SH02

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -0.130 339.13, 1.79 133.38



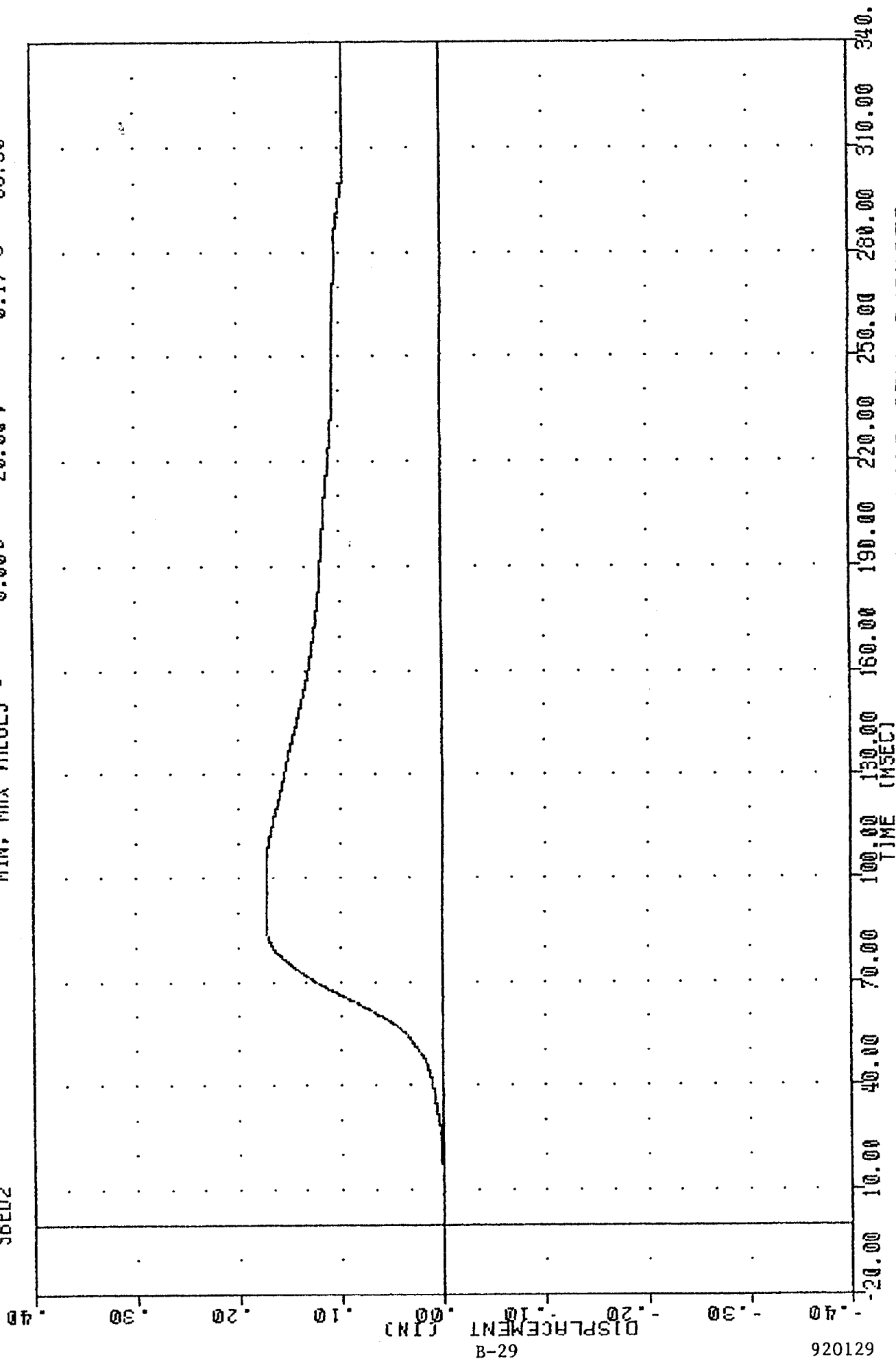
# NEW CAR ASSESSMENT PROGRAM

92029

SBED2

FILTER = BLPP 100/ 250/ -16

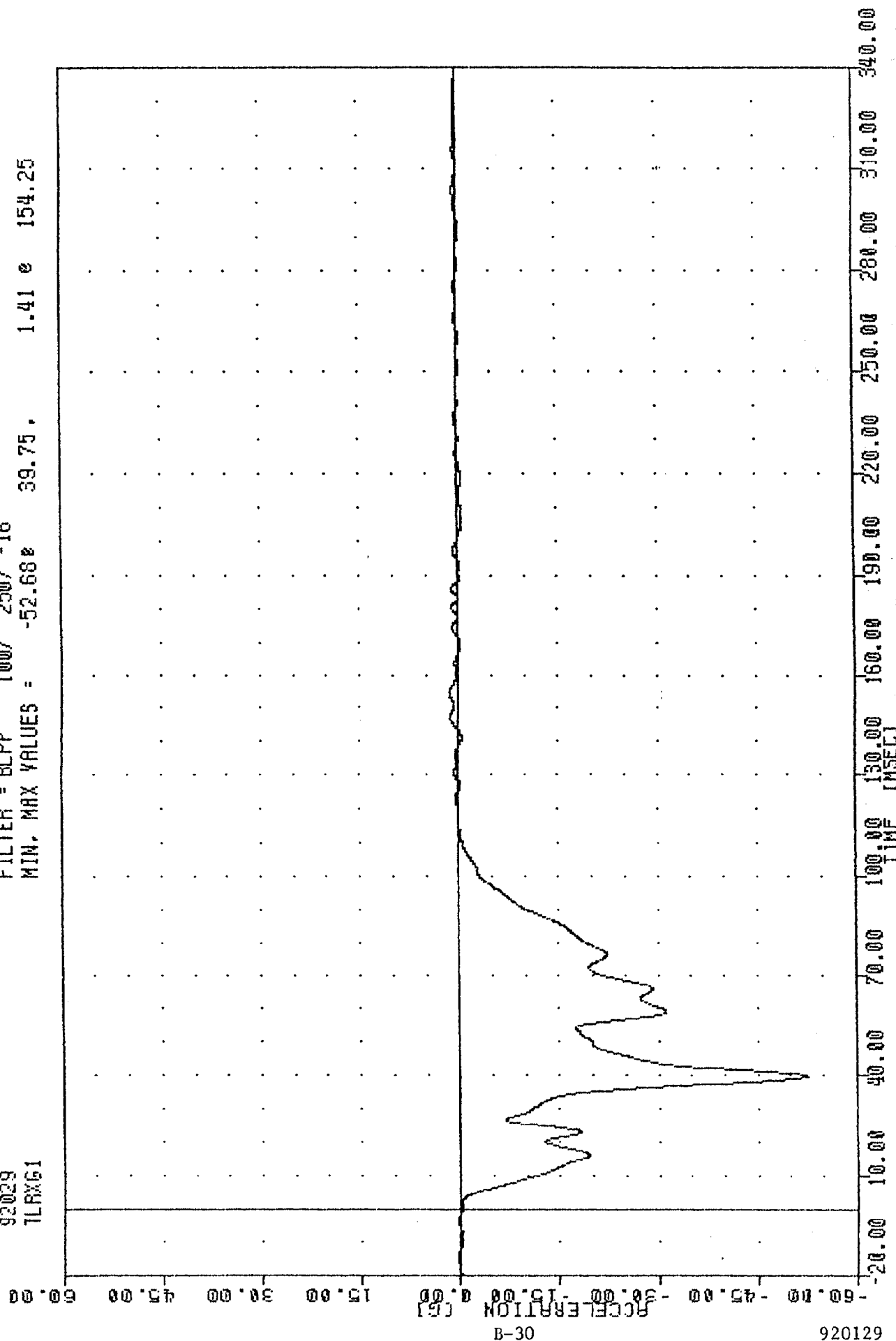
MIN, MAX VALUES = 0.00e -20.00, 0.17 e 88.50



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
PASSENGER SEAT BELT EXTENSION

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 TLRX61

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -52.68 39.75 1.41 e 154.25



B-30

920129

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LEFT REAR SEAT X-AXIS ACCELERATION

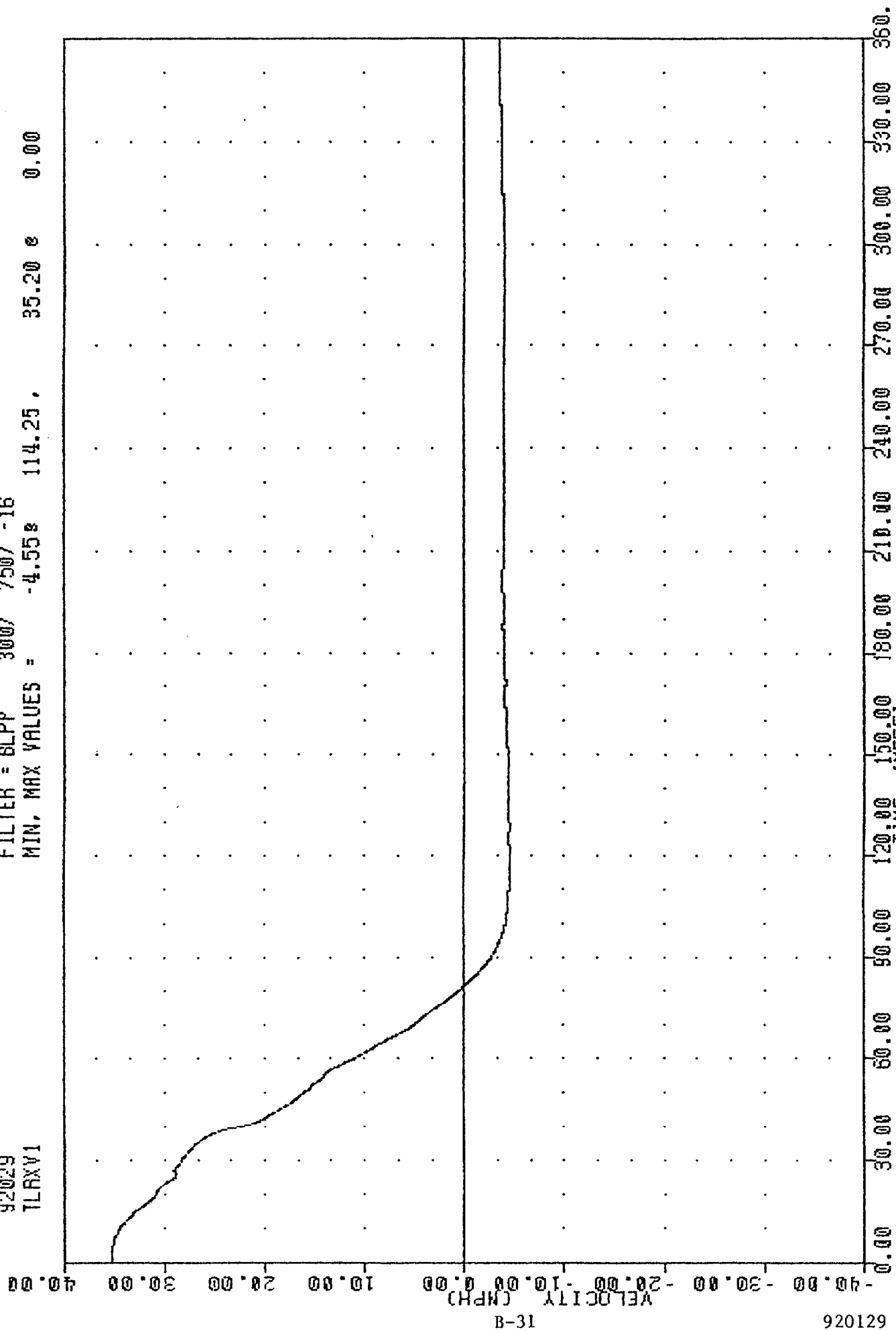
# NEW CAR ASSESSMENT PROGRAM

92029

TLRXV1

FILTER = BLPP 300/ 750/ -16

MIN, MAX VALUES = -4.558 114.25, 35.20 0.00



920129

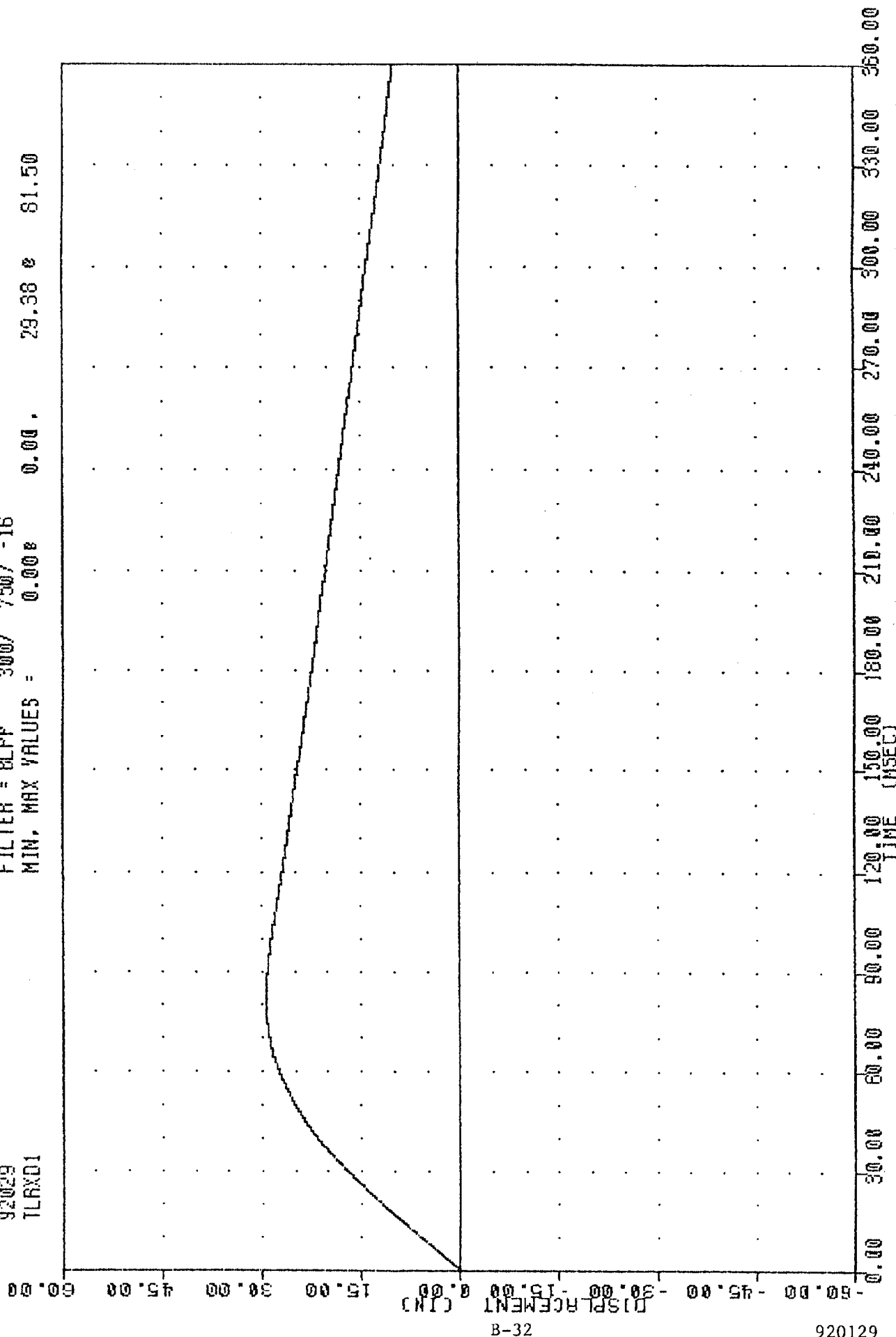
B-31

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LEFT REAR SEAT X-AXIS VELOCITY



TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 TLRXD1

FILTER = BLPF 300/ 750/ -16  
 MIN, MAX VALUES = 0.00 29.38 81.50



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LEFT REAR SEAT X-AXIS DISPLACEMENT

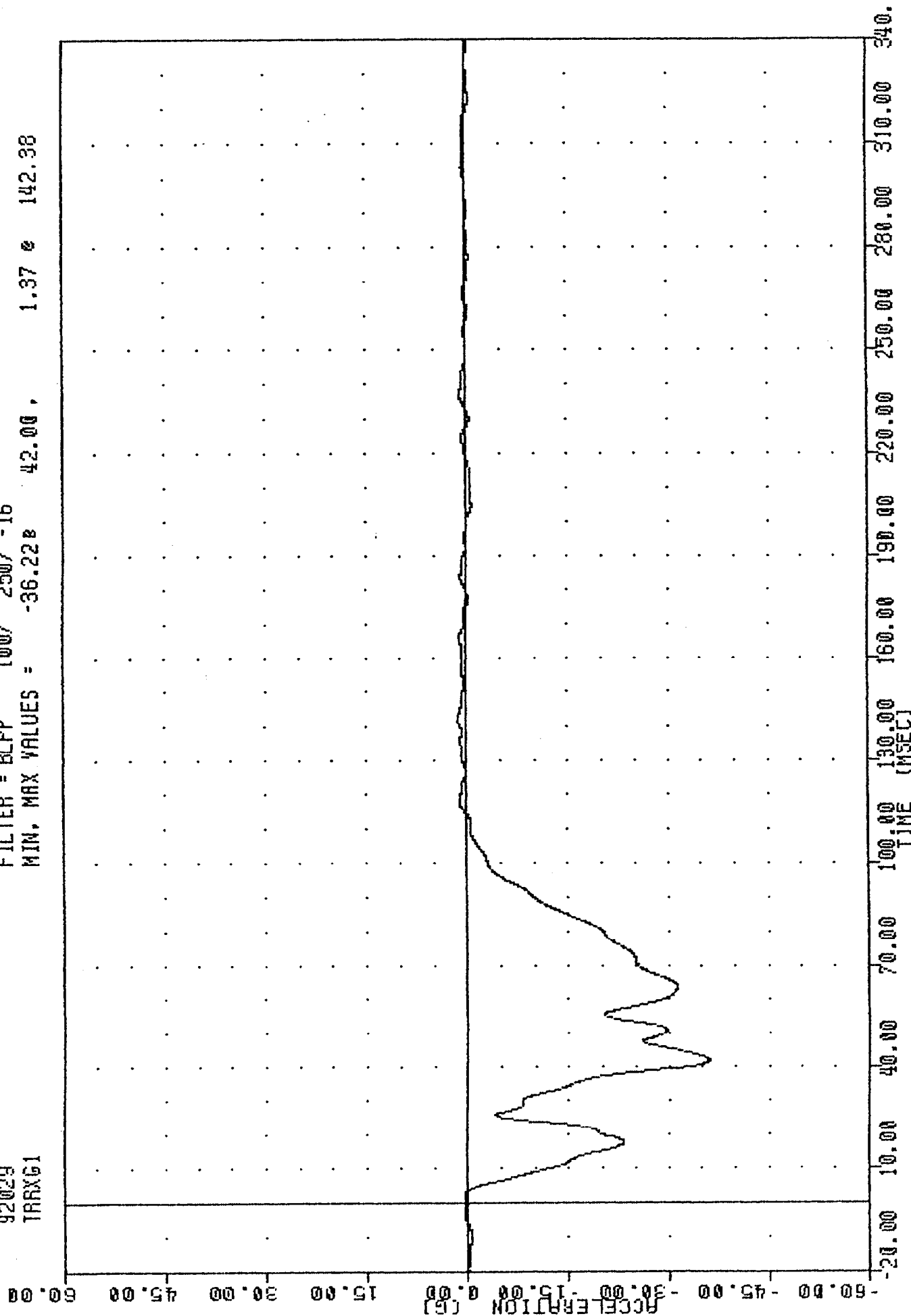
# NEW CAR ASSESSMENT PROGRAM

92029

TRXG1

FILTER = BLPP 100/ 250/ -16

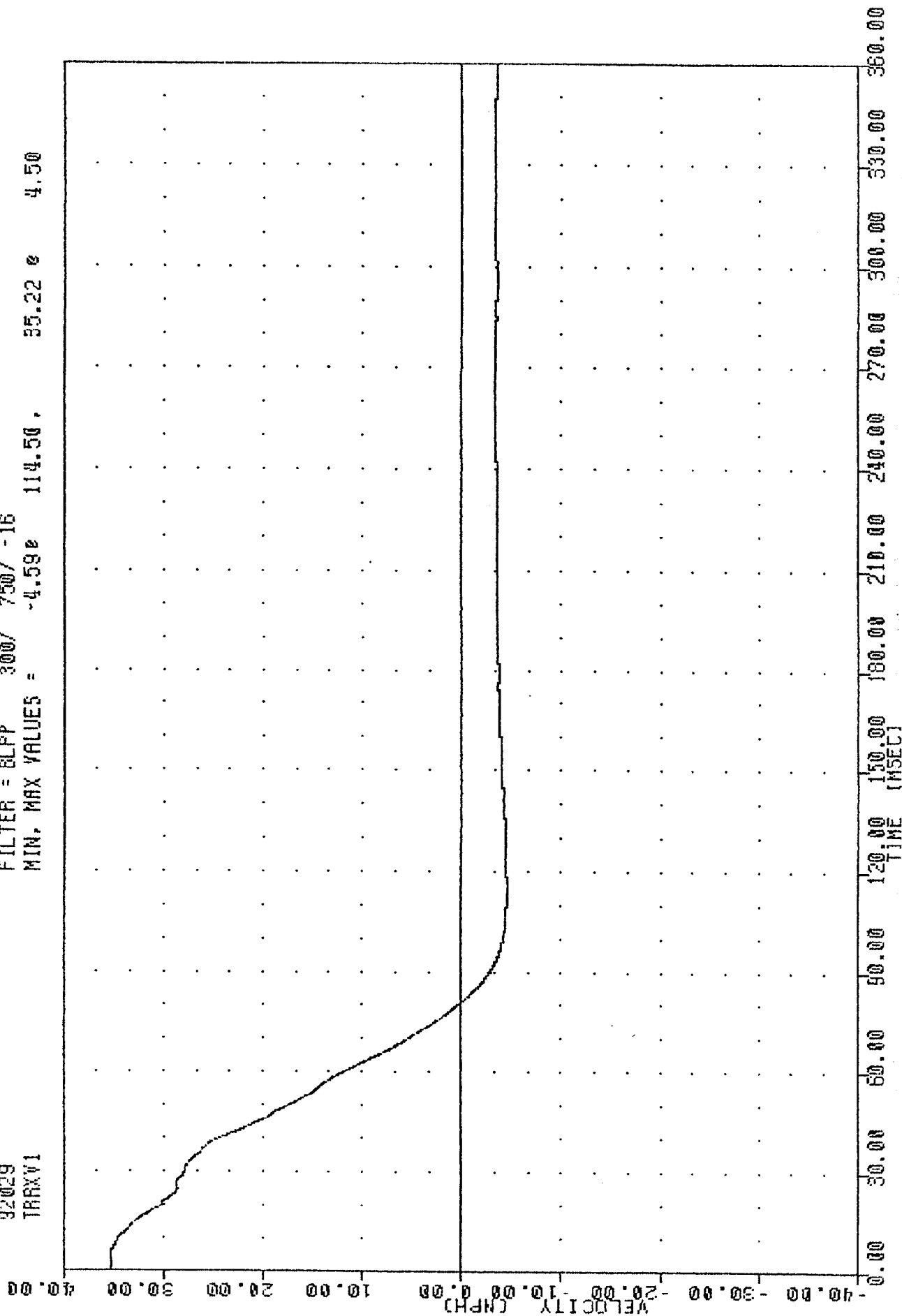
MIN, MAX VALUES = -36.228 42.00 , 1.37 e 142.38



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
RIGHT REAR SEAT X-AXIS ACCELERATION

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 TRXV1

FILTER = BLPP 300/ 750/ -16  
 MIN. MAX VALUES = -4.590 114.50, 35.22 0 4.50



B-34

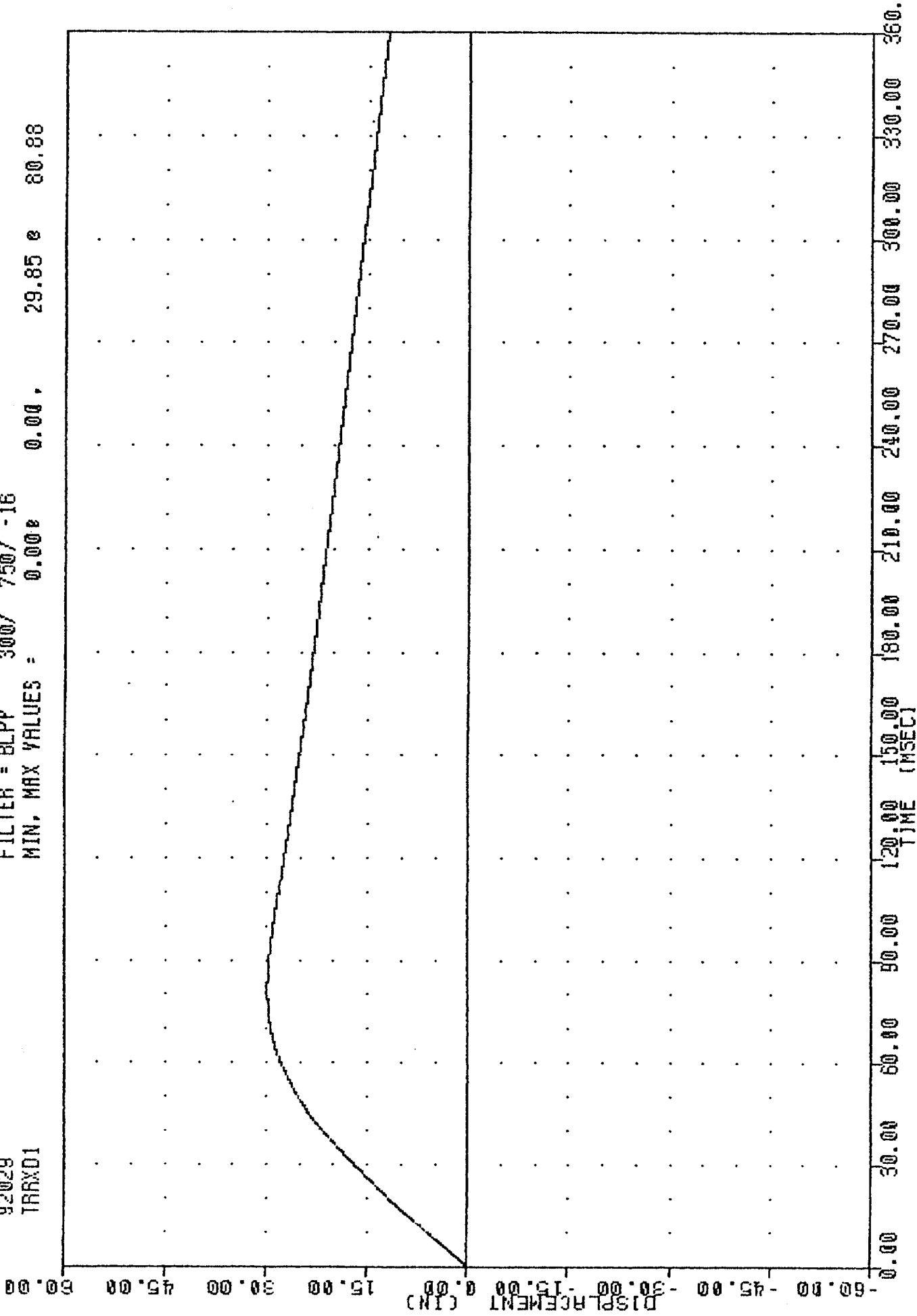
920129

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 RIGHT REAR SEAT X-AXIS VELOCITY

# NEW CAR ASSESSMENT PROGRAM

92029  
TRXD1

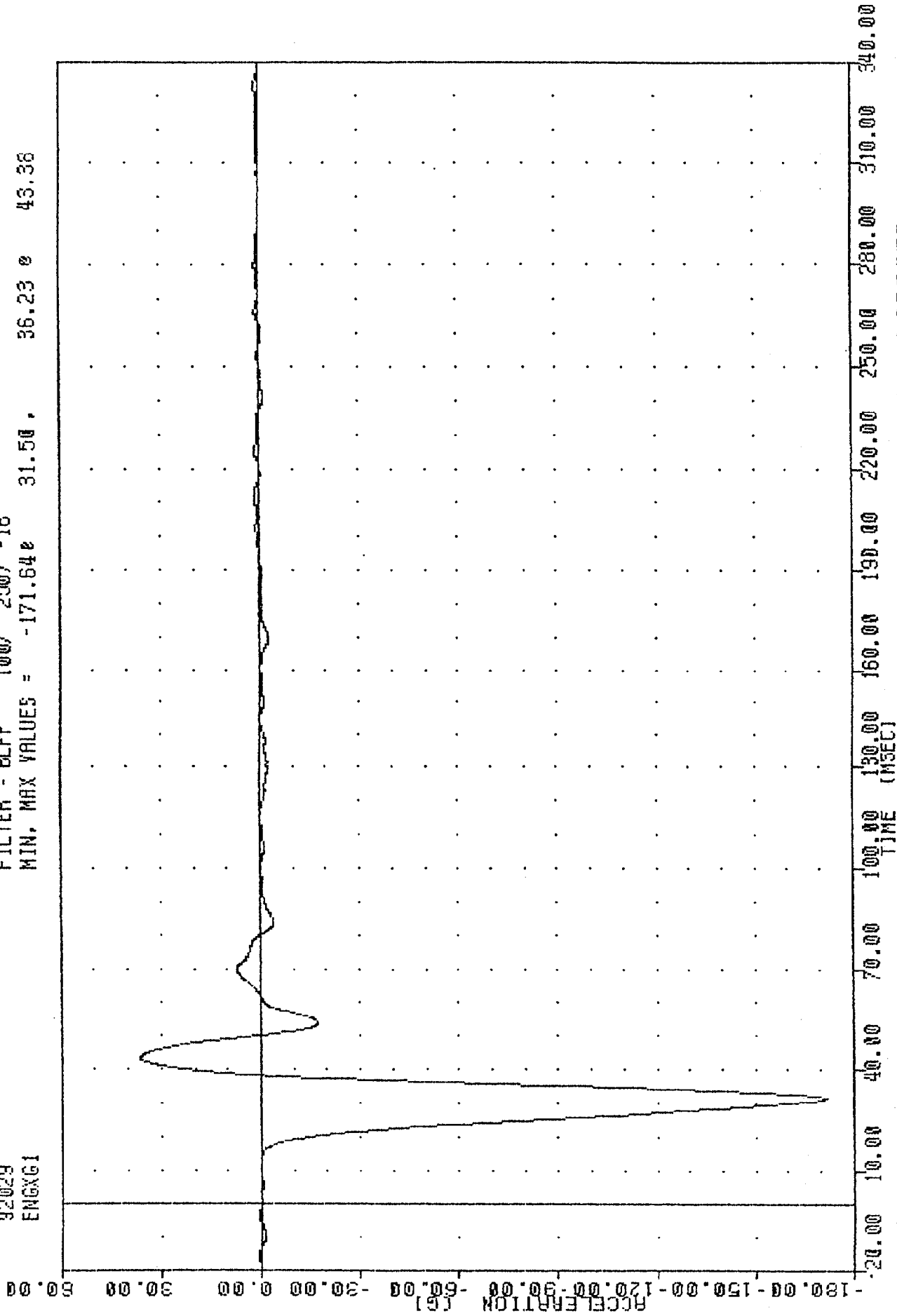
FILTER = BLPP 300/ 750/ -16  
MIN, MAX VALUES = 0.00e 0.00, 29.85 e 80.88



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
RIGHT REAR SEAT X-AXIS DISPLACEMENT

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 ENGCG1

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -171.64e 31.50 36.23 e 43.36



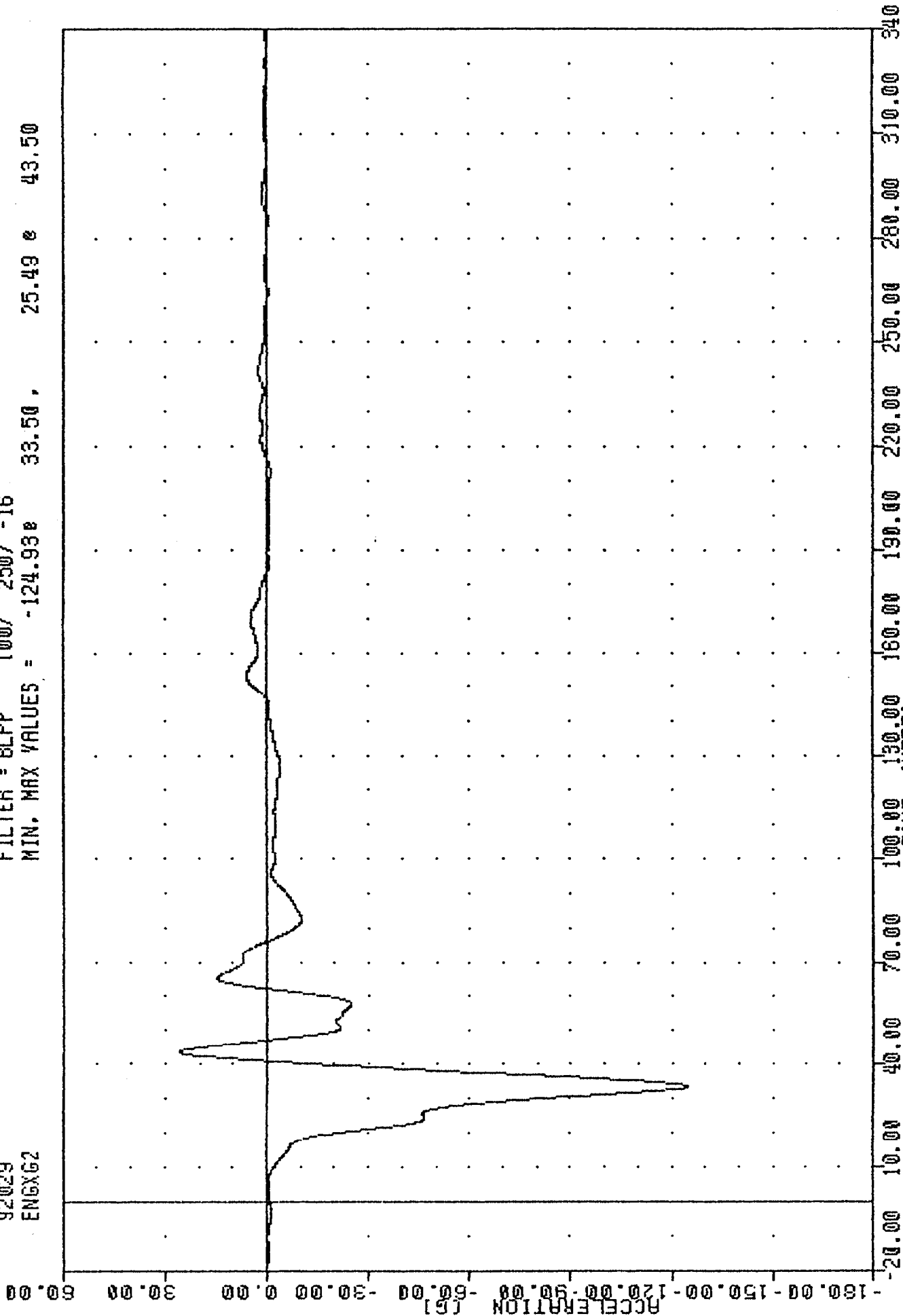


# NEW CAR ASSESSMENT PROGRAM

92029  
ENGXG2

FILTER = BLPP 100/ 250/ -16

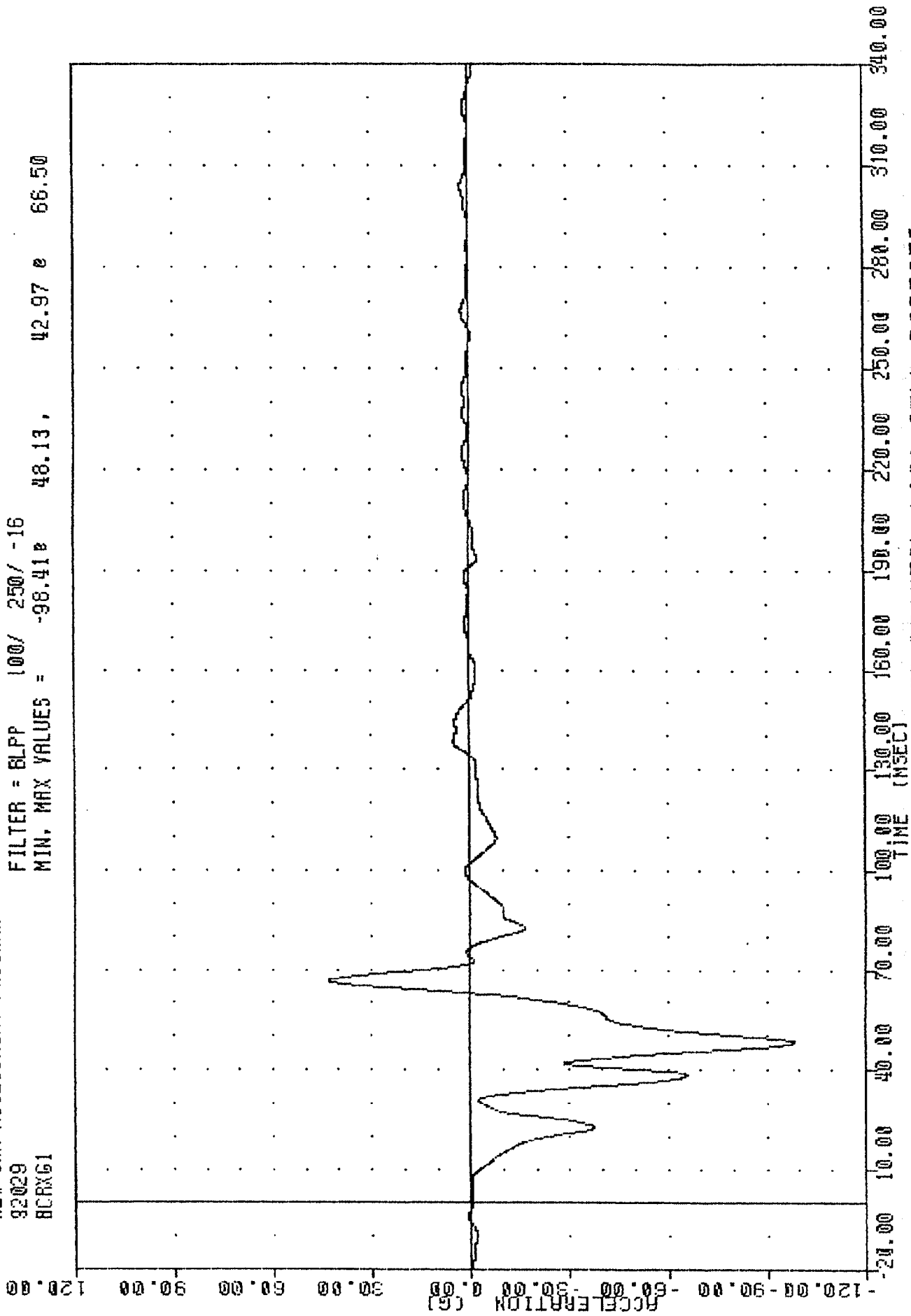
MIN. MAX VALUES = -124.93e 33.50, 25.49 e 43.50



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
ENGINE BOTTOM X-AXIS ACCELERATION

TRC , 920129  
NEW CAR ASSESSMENT PROGRAM  
92029  
BCRXG1

FILTER = BLPP 100/ 250/ -16  
MIN, MAX VALUES = -98.41 48.13, 42.97 66.50



B-38

920129

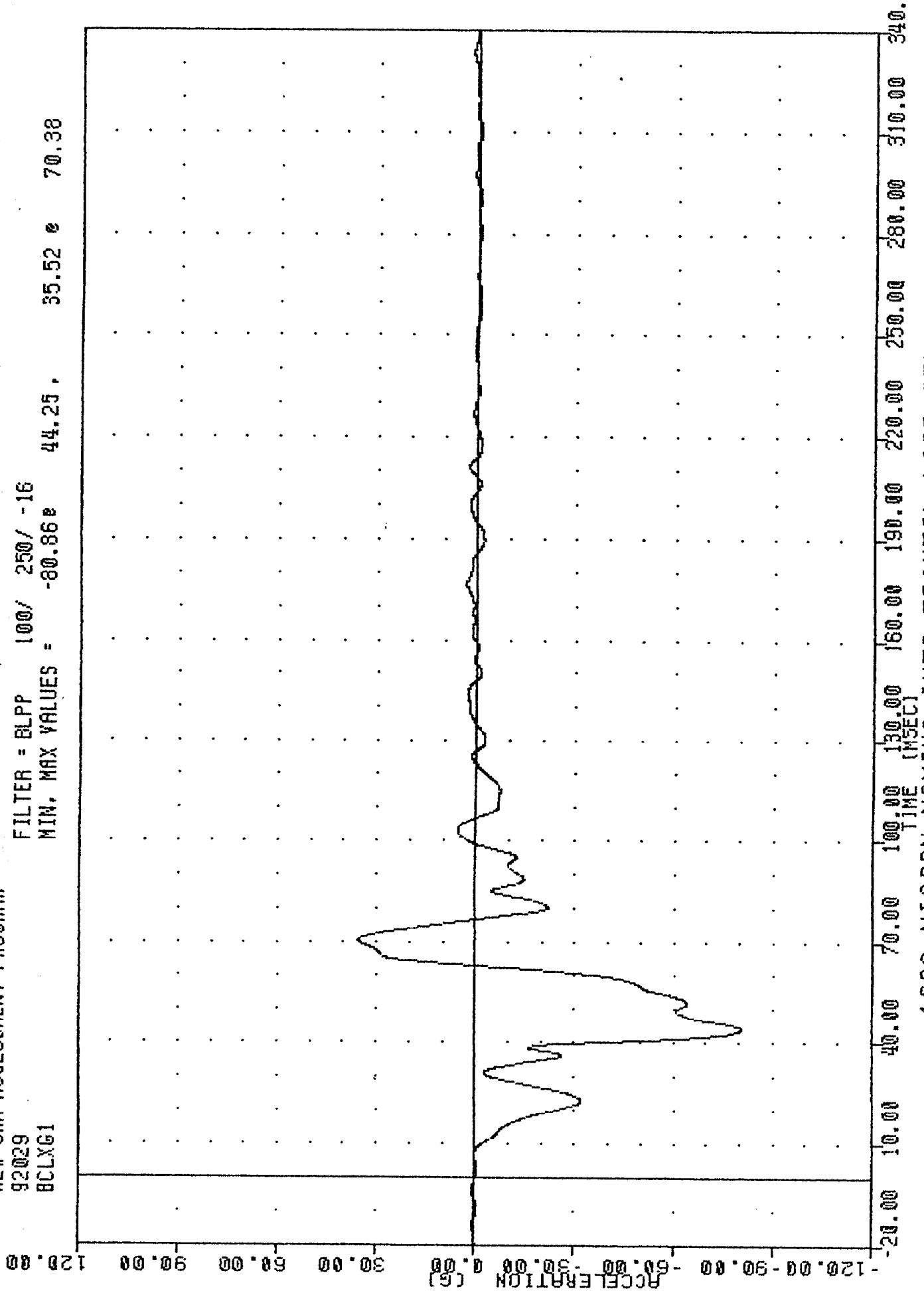
1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

# NEW CAR ASSESSMENT PROGRAM

92029  
BCLXG1

FILTER = BLPP 100/ 250/ -16

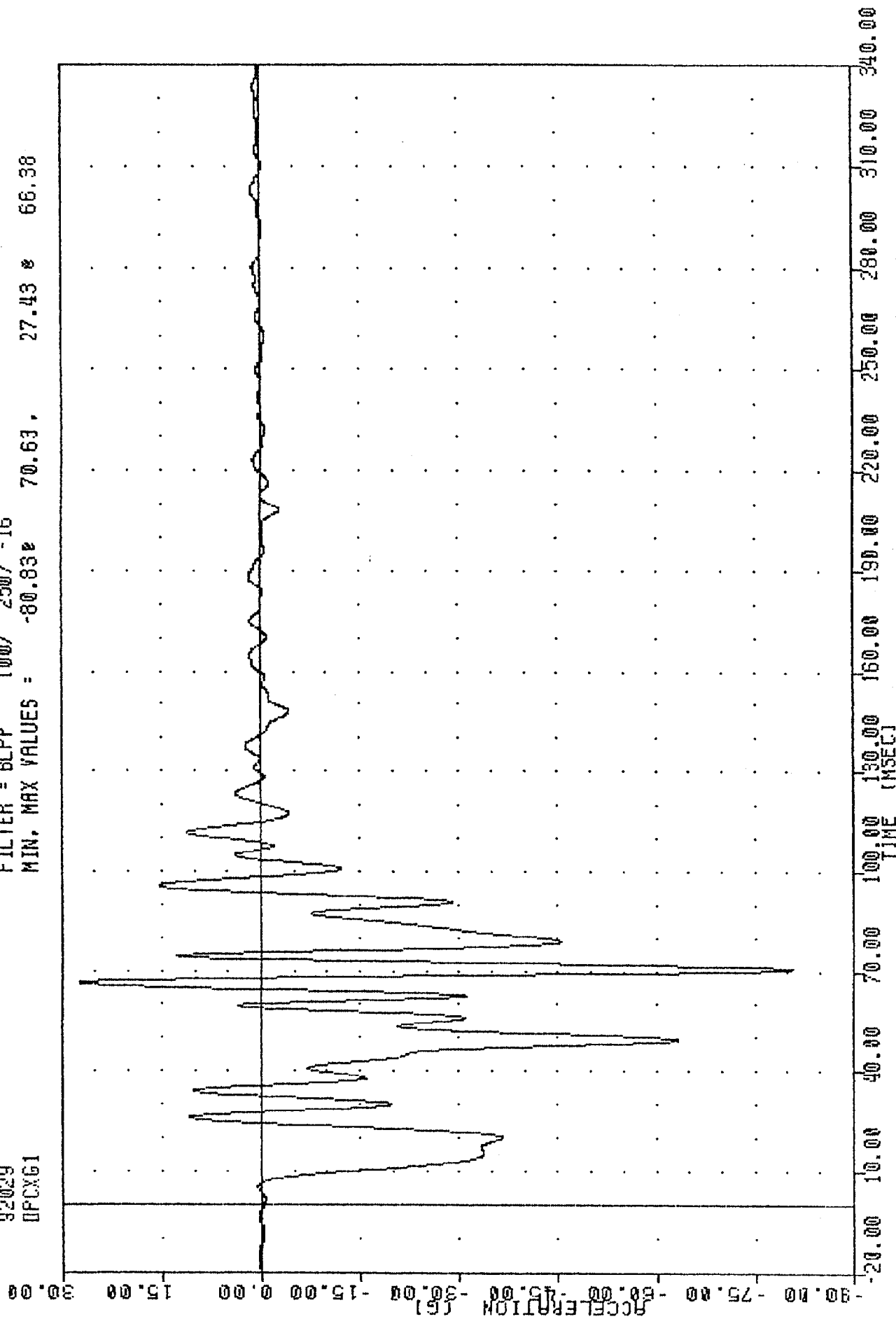
MIN, MAX VALUES = -80.86e 44.25, 35.52 e 70.38



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 DPCXG1

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -80.83 70.63 27.43 66.38



B-40

920129

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 INSTRUMENT PANEL CENTER X-AXIS ACCELERATION

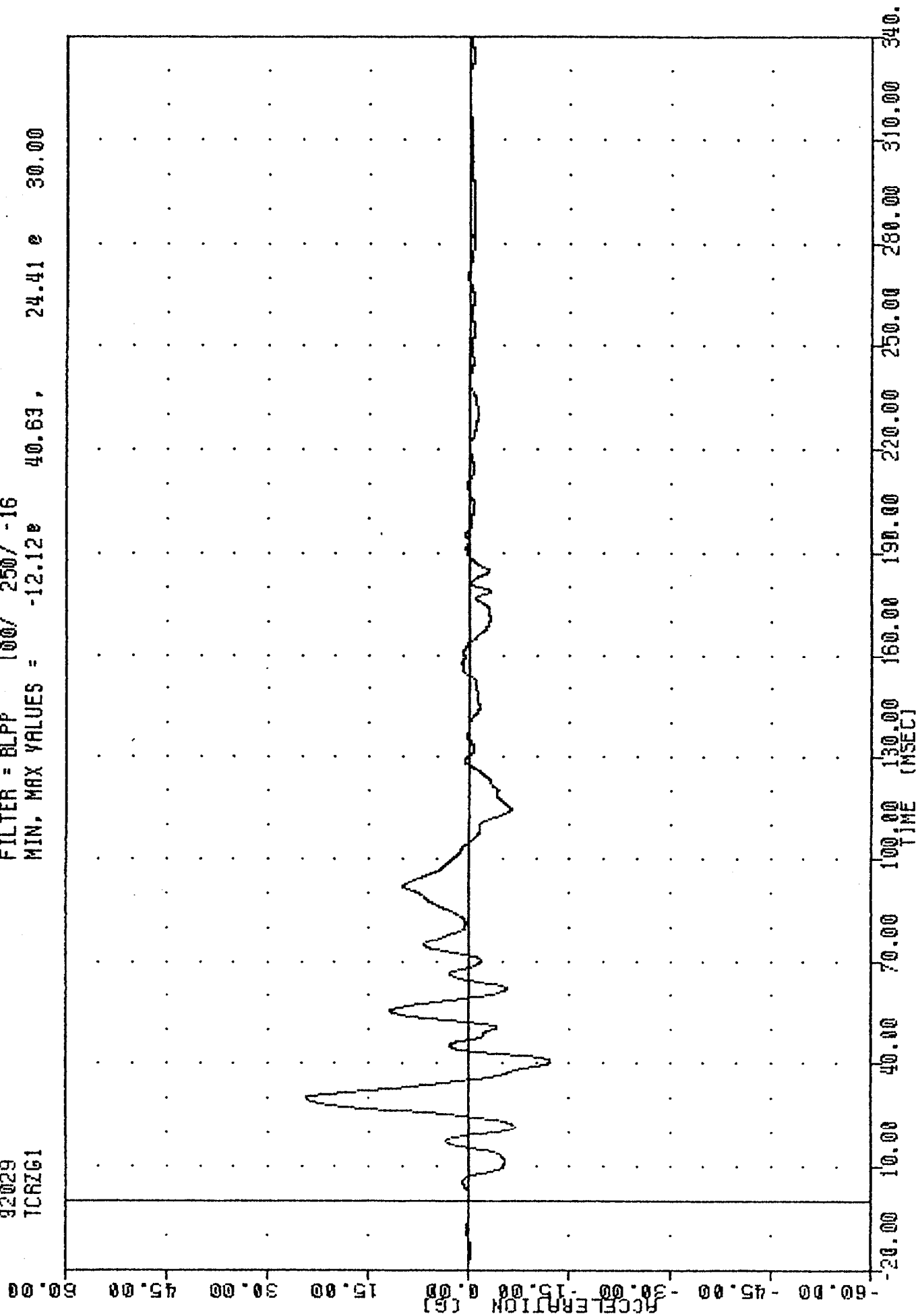
NEW CAR ASSESSMENT PROGRAM

92029

TCRZG1

FILTER = BLPP 100/ 250/ -16

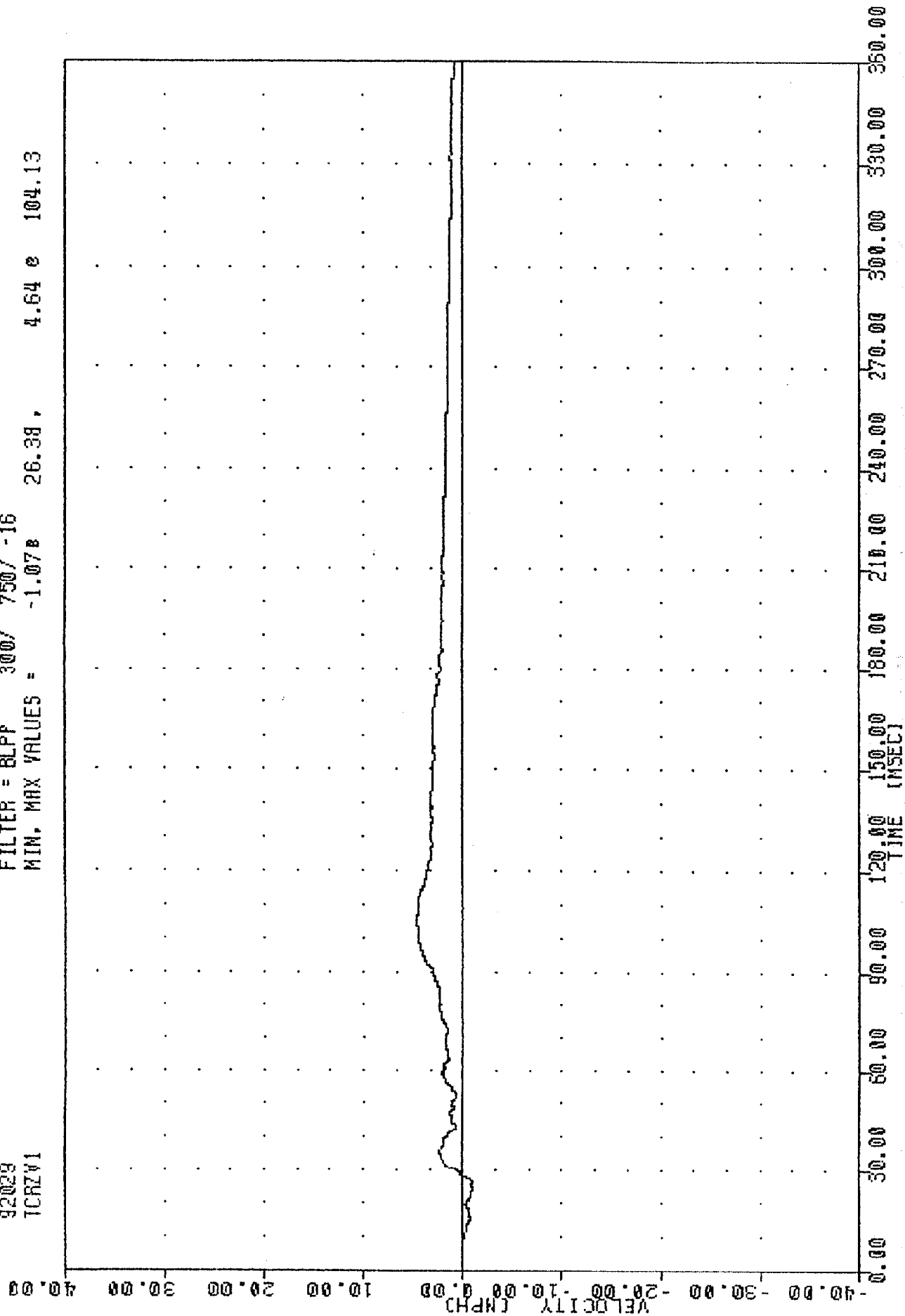
MIN. MAX VALUES = -12.12e 40.63, 24.41 e 30.00





TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 TCRZV1

FILTER = BLPP 300/ 750/ -16  
 MIN. MAX VALUES = -1.078 26.38 , 4.64 e 104.13



B-42

920129

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 REAR SEAT CROSSMEMBER Z-AXIS VELOCITY

92029

TCRZD1

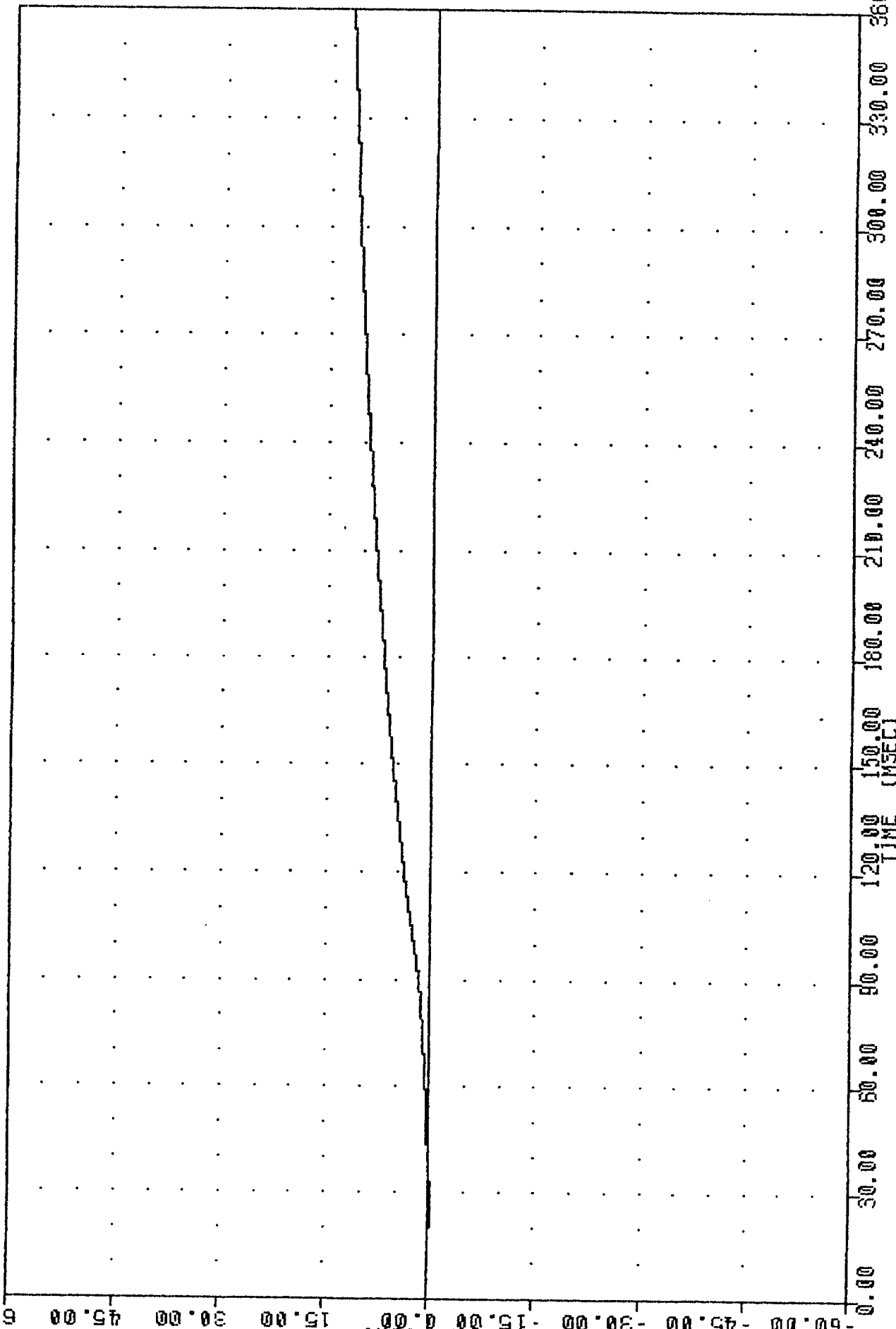
FILTER = BLPP 300/ 750/ -16

MIN, MAX VALUES = -0.19e 28.13, 12.10 e 360.00

DISPLACEMENT (IN)

B-43

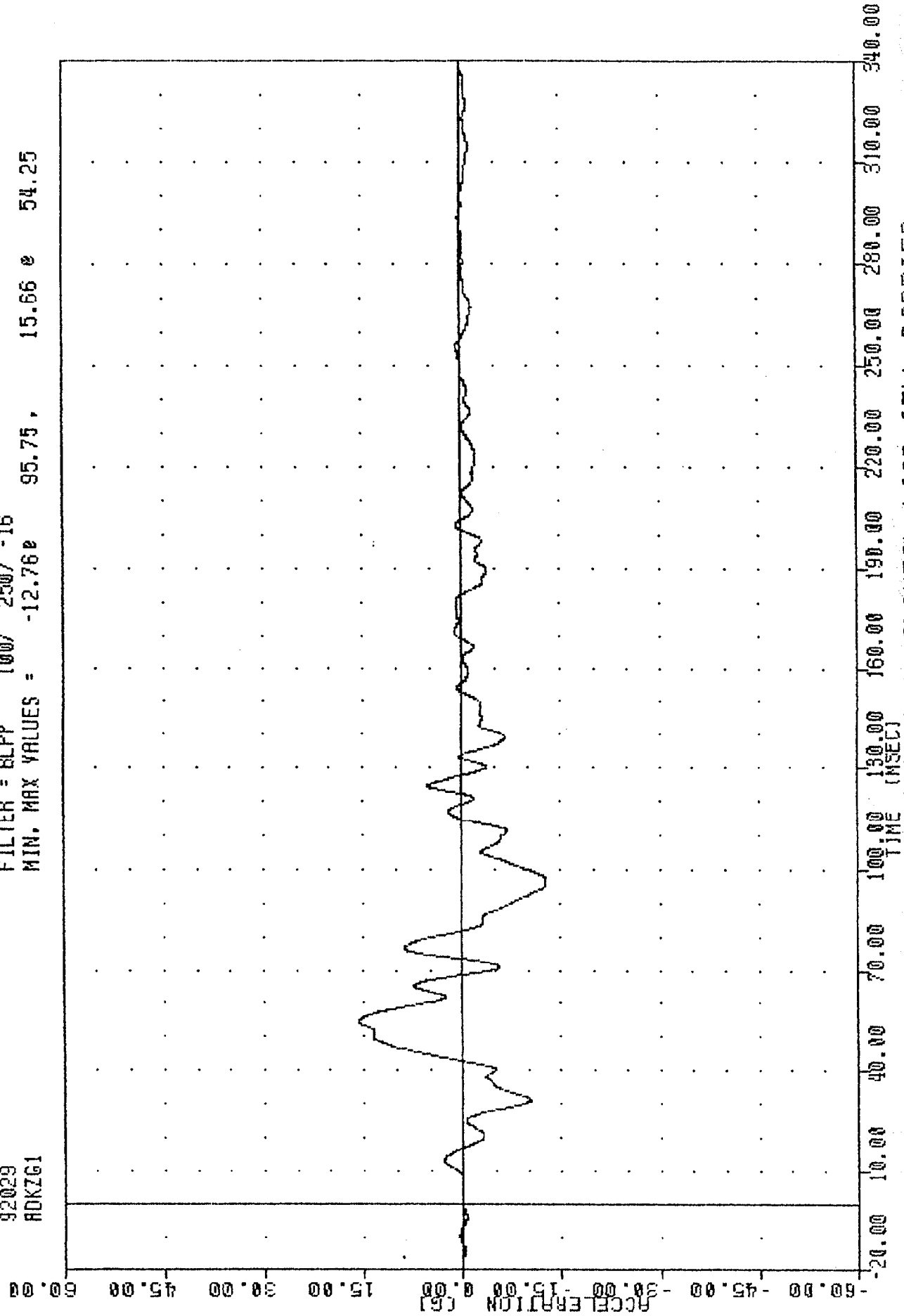
920129



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
REAR SEAT CROSSMEMBER Z-AXIS DISPLACEMENT

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 HDKZG1

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -12.76 95.75 15.66 54.25



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 VEHICLE REAR CENTER Z-AXIS ACCELERATION

# NEW CAR ASSESSMENT PROGRAM

92029

R0KZV1

FILTER = BLPP 300/ 750/ -16

MIN. MAX VALUES = -5.32 338.13, 3.71 82.50

40.00

30.00

20.00

10.00

0.00

-10.00

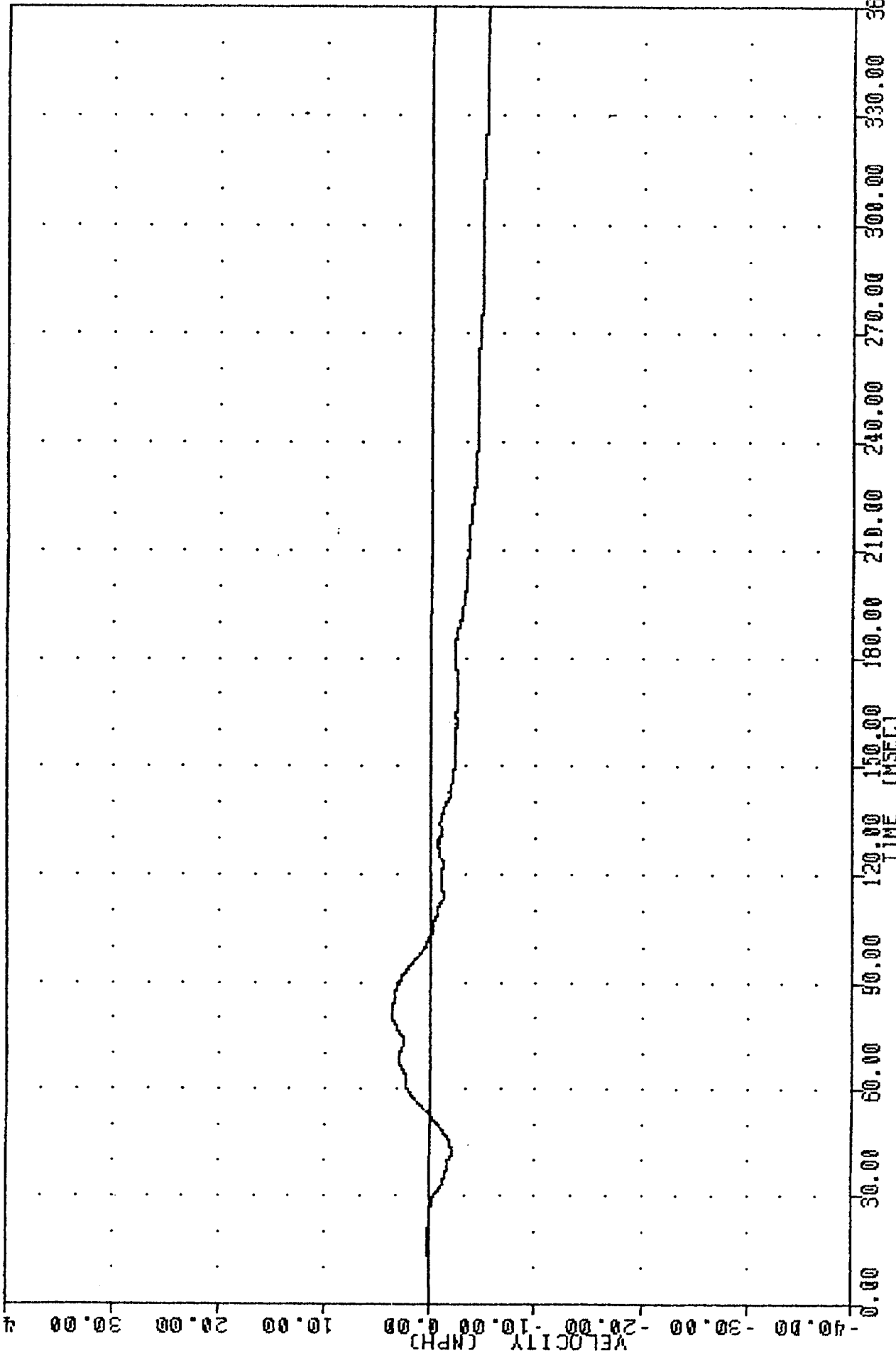
-20.00

-30.00

-40.00

B-45

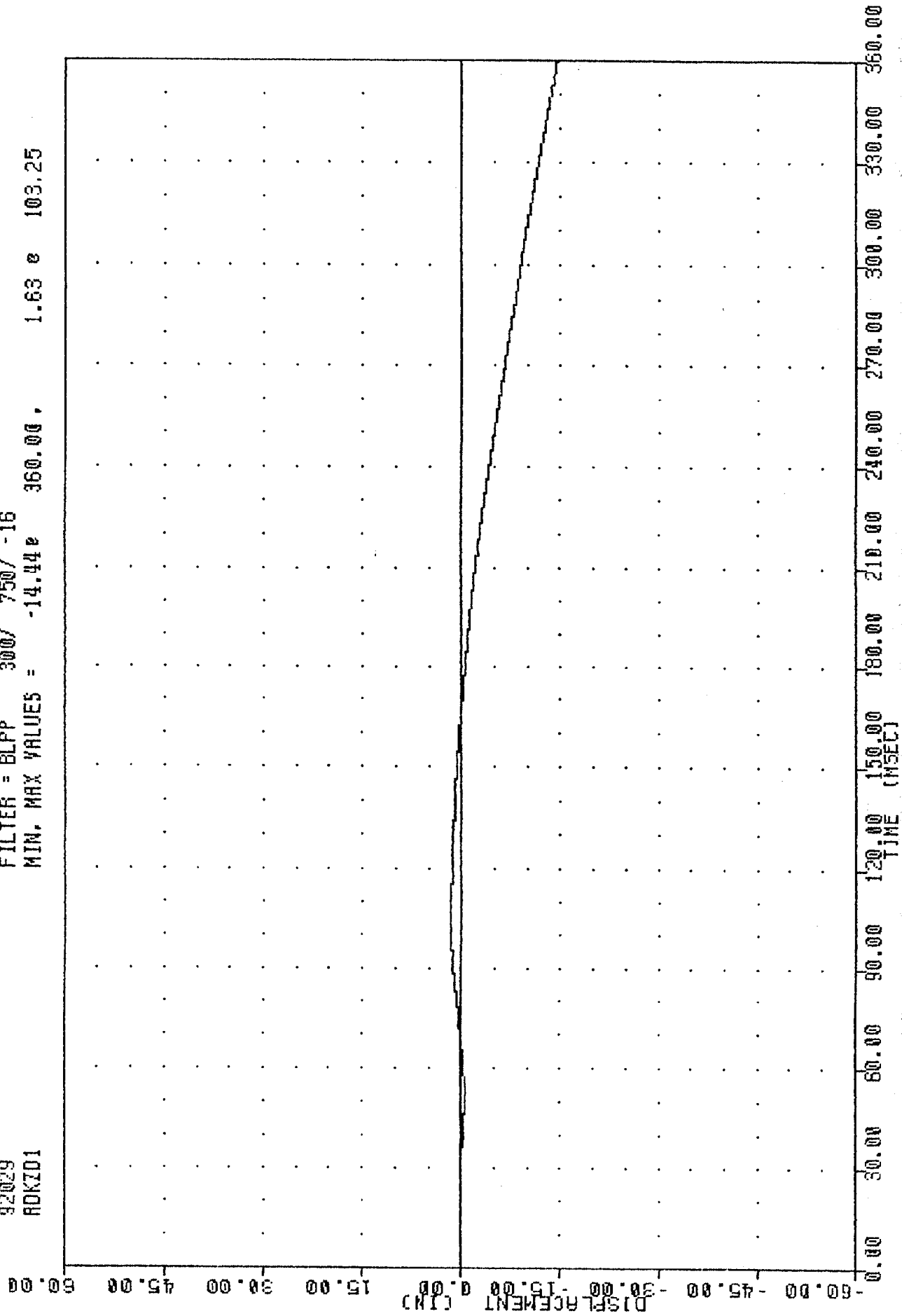
920129



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
VEHICLE REAR CENTER Z-AXIS VELOCITY

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 ADK7D1

FILTER = BLPP 300/ 750/ -16  
 MIN. MAX VALUES = -14.44e 360.00 , 1.63 e 103.25



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 VEHICLE REAR CENTER Z-AXIS DISPLACEMENT

五

FILTER = BLPP 100/ 250/ -16

|               |         |        |        |       |
|---------------|---------|--------|--------|-------|
| MIN. VALUES = | -249.87 | 26.25, | 169.58 | 22.00 |
|---------------|---------|--------|--------|-------|

FORCE (LB)

TIME (MSEC)

0.00 60.00 120.00 180.00 240.00 300.00 360.00 420.00

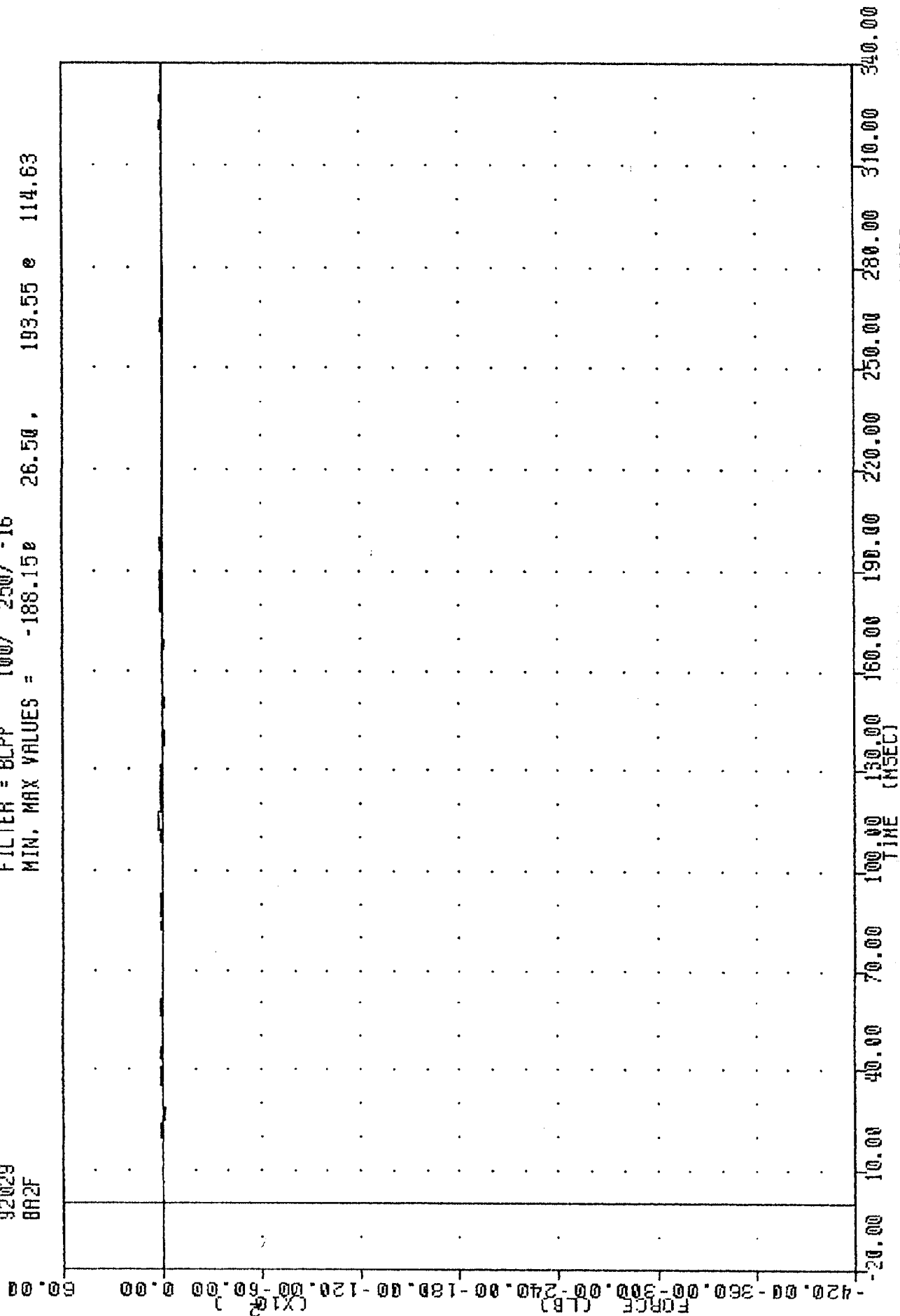
0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION A1 FORCE



TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BA2F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -188.150 26.50 . 193.55 e 114.63



92029

BR3F

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -222.79e 42.13, 132.66 e 15.88

50.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

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0.00

0.00

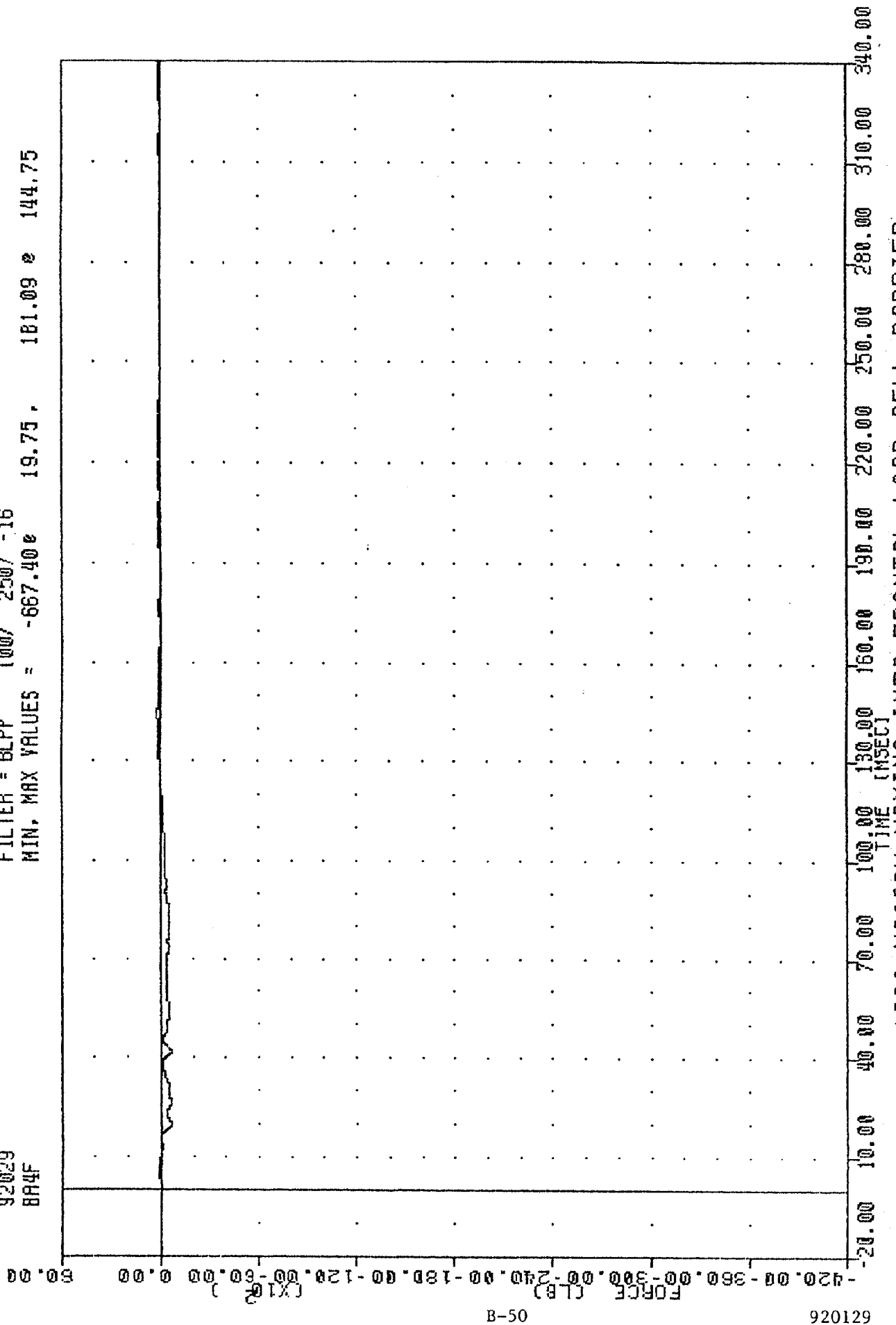
0.00

-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION A3 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BR4F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -667.40e 19.75, 181.09 e 144.75



NEW CAR ASSESSMENT PROGRAM

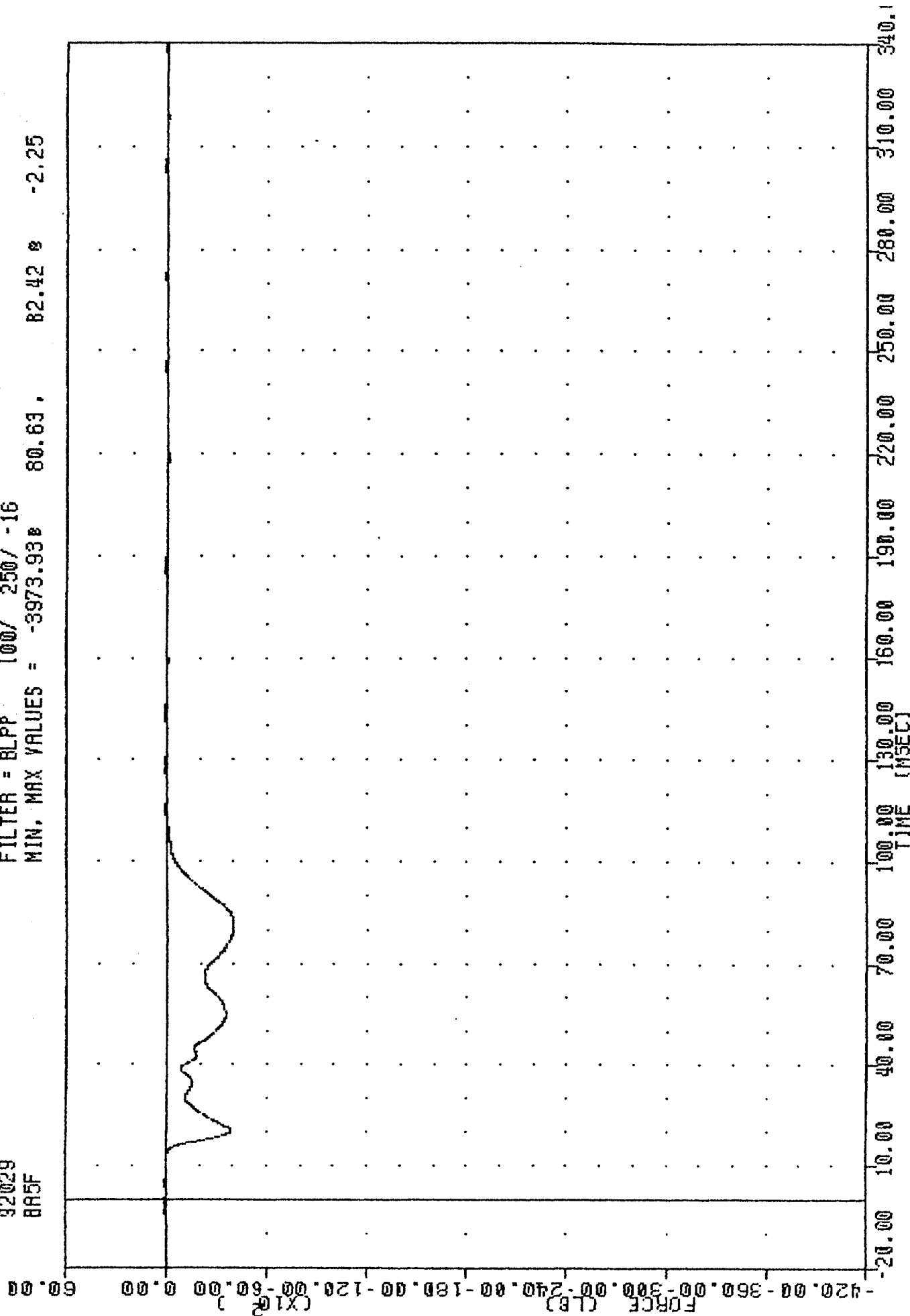
92029

BR5F

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -3973.93# 80.63 ,

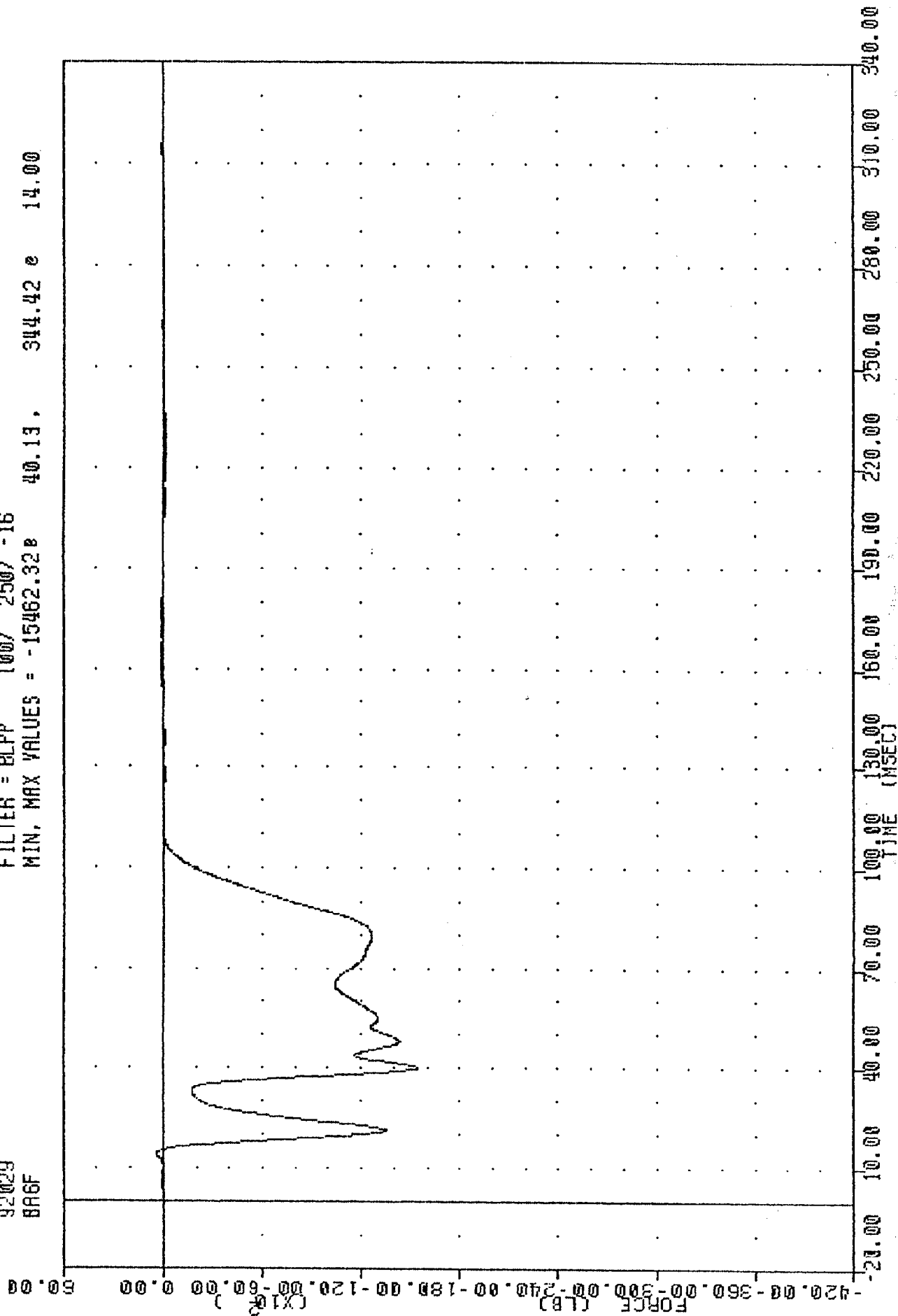
82.42 # -2.25



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION A5 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BR6F

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -15462.328 40.13, 344.42 e 14.00



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER POSITION AS FORCE

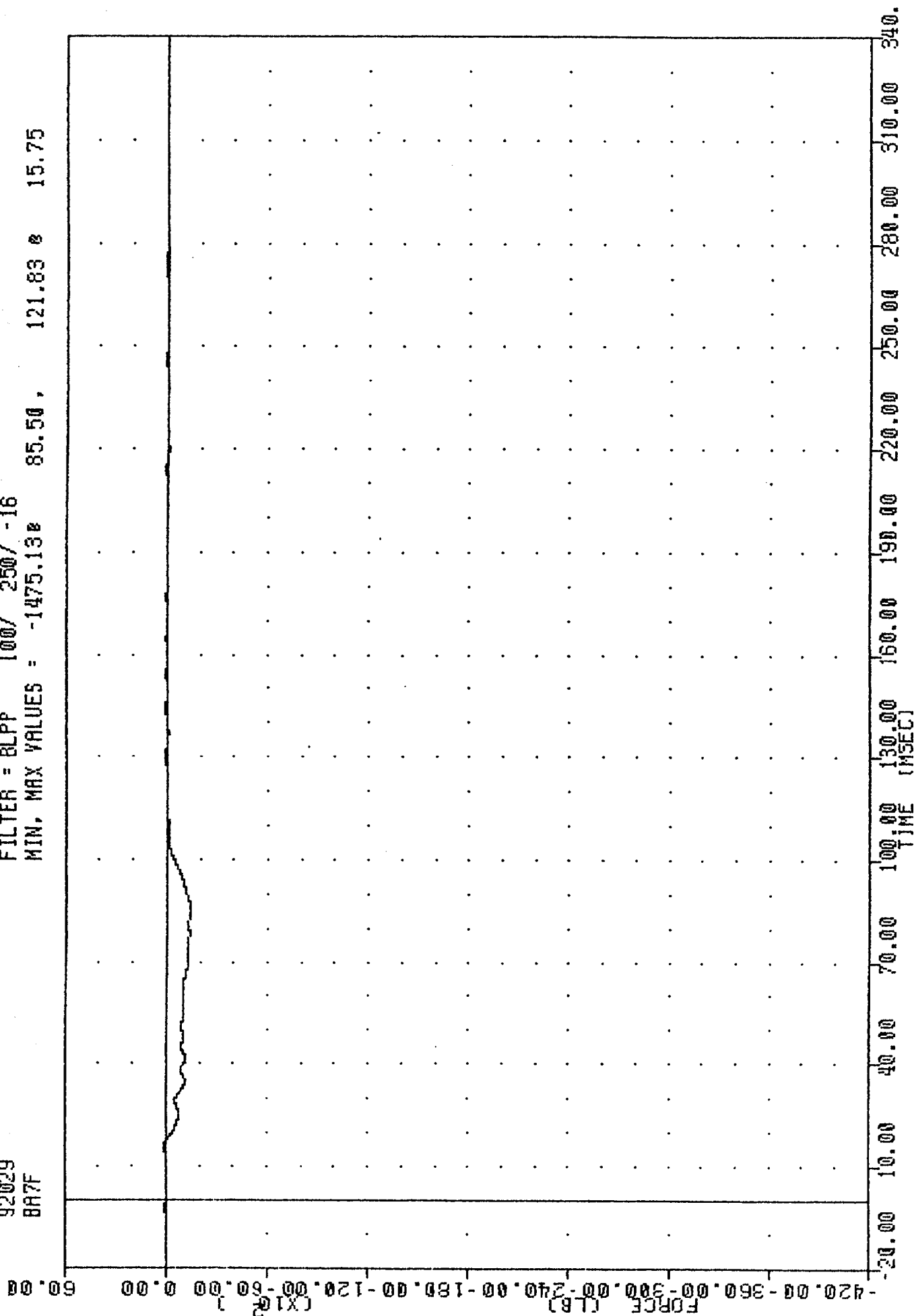
NEW CAR ASSESSMENT PROGRAM

92029

BA7F

FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -1475.13 85.50, 121.83 15.75

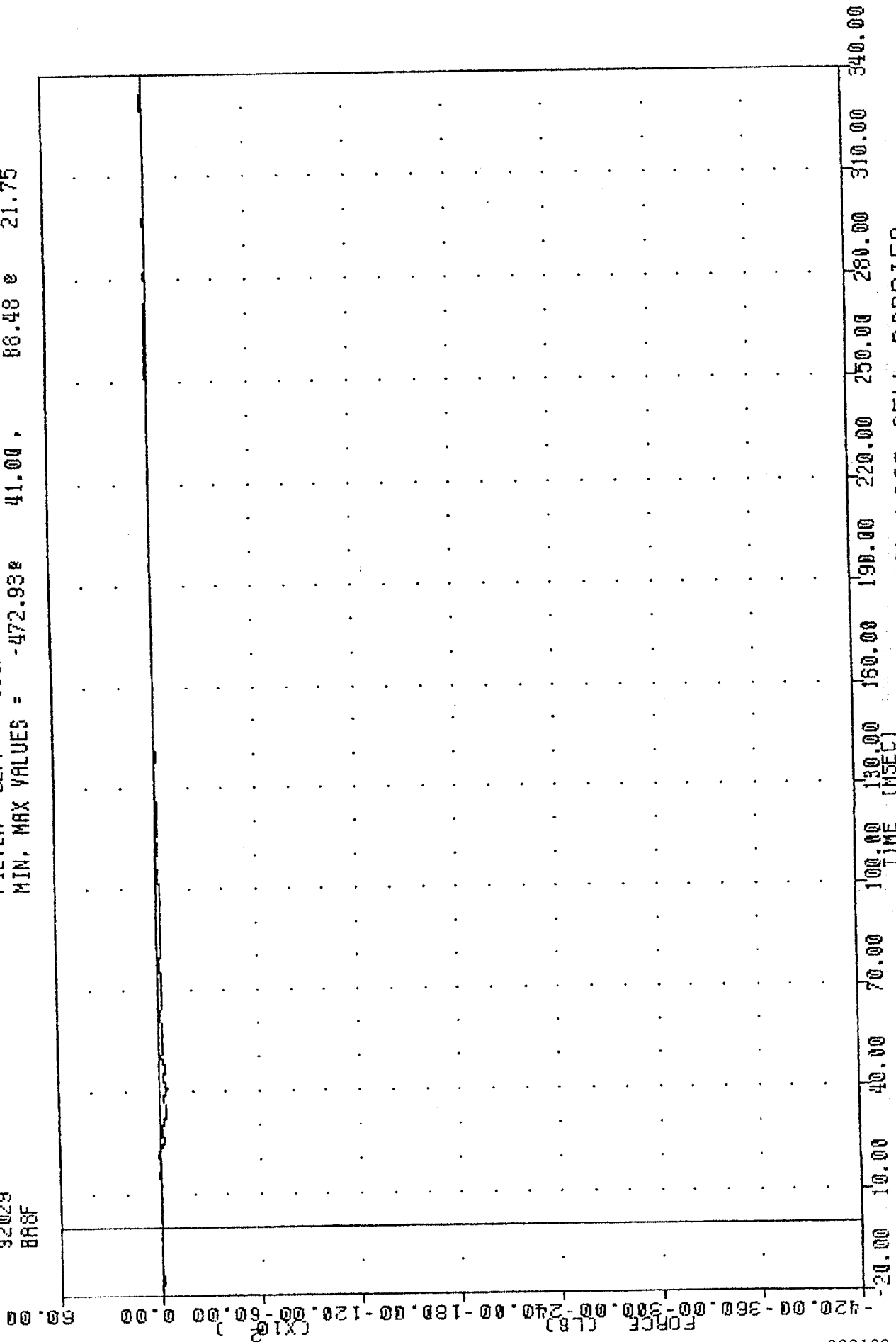


1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION A7 FORCE



TRC  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BR8F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -472.93 41.00 88.48 21.75



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER POSITION 88 FORCE

# KEY CHH ASSESSMENT PROGRAM

92029

BR9F

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -353.30 46.63 197.02 21.88

50.00

0.00

0.00

(X10<sup>2</sup>)

-120.00

-180.00

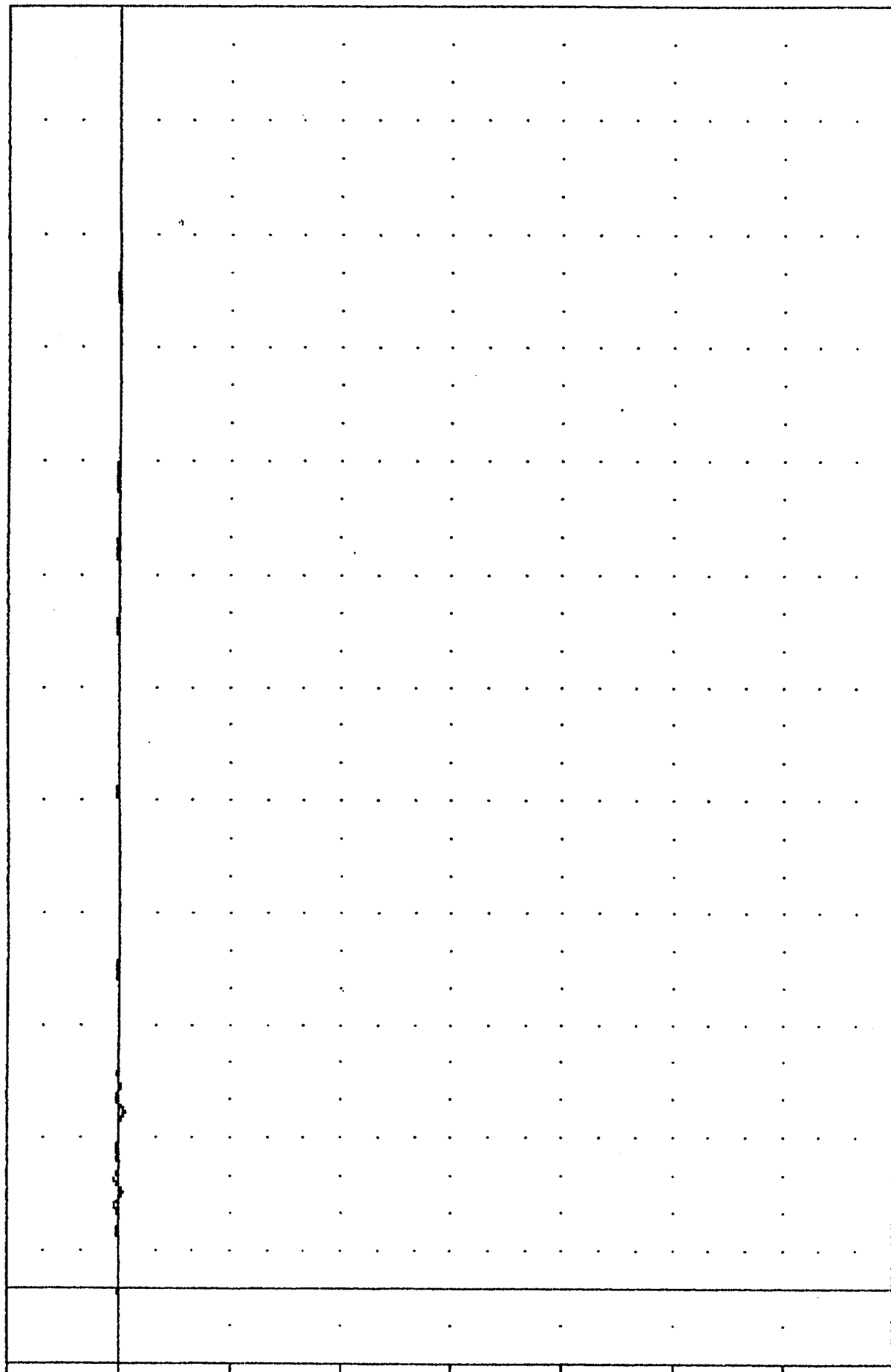
-240.00

-300.00

-360.00

-420.00

FORCE (LB)

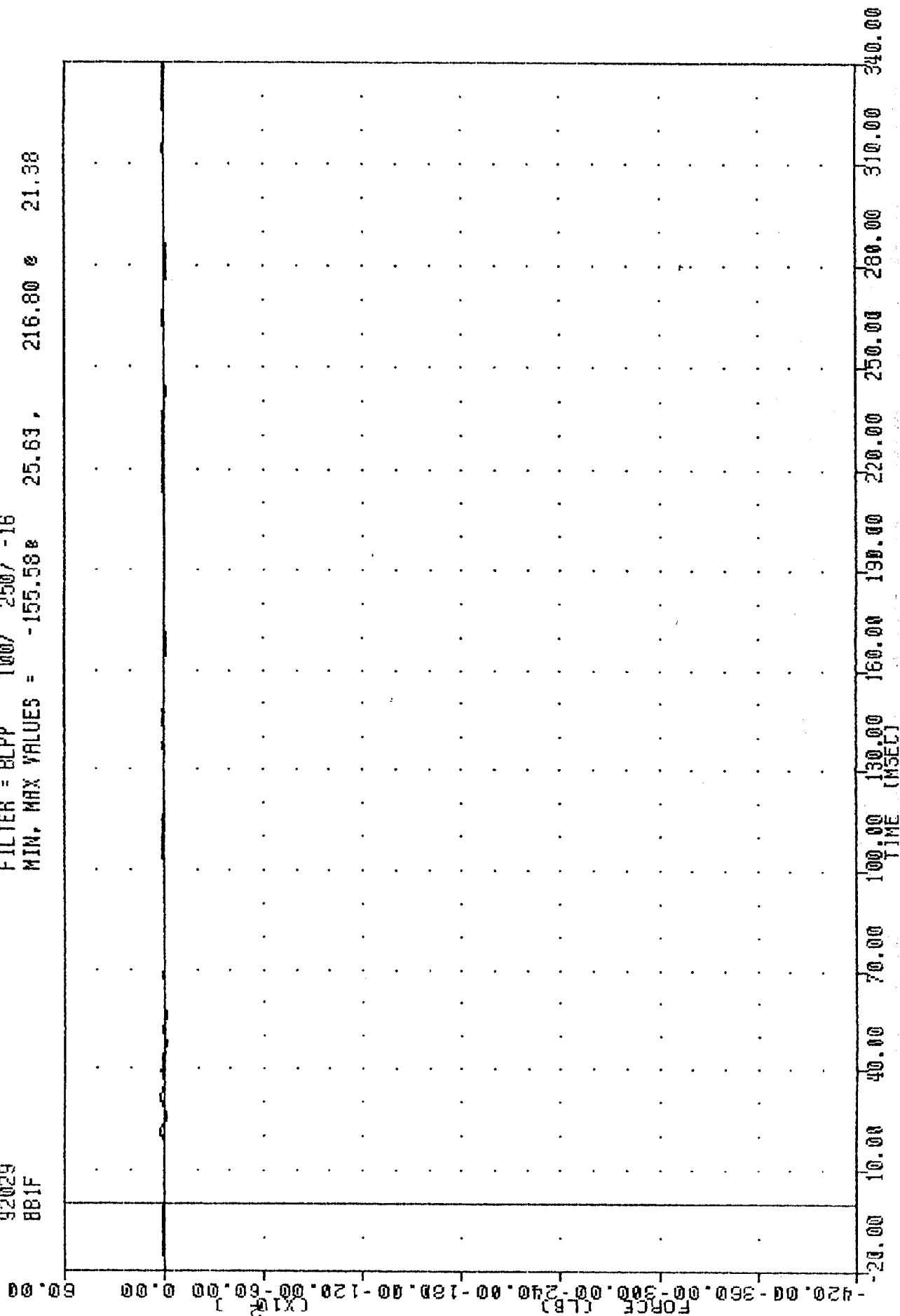


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00  
TIME (MSEC)

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION A9 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BB1F

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -155.58 25.63, 216.80 21.38



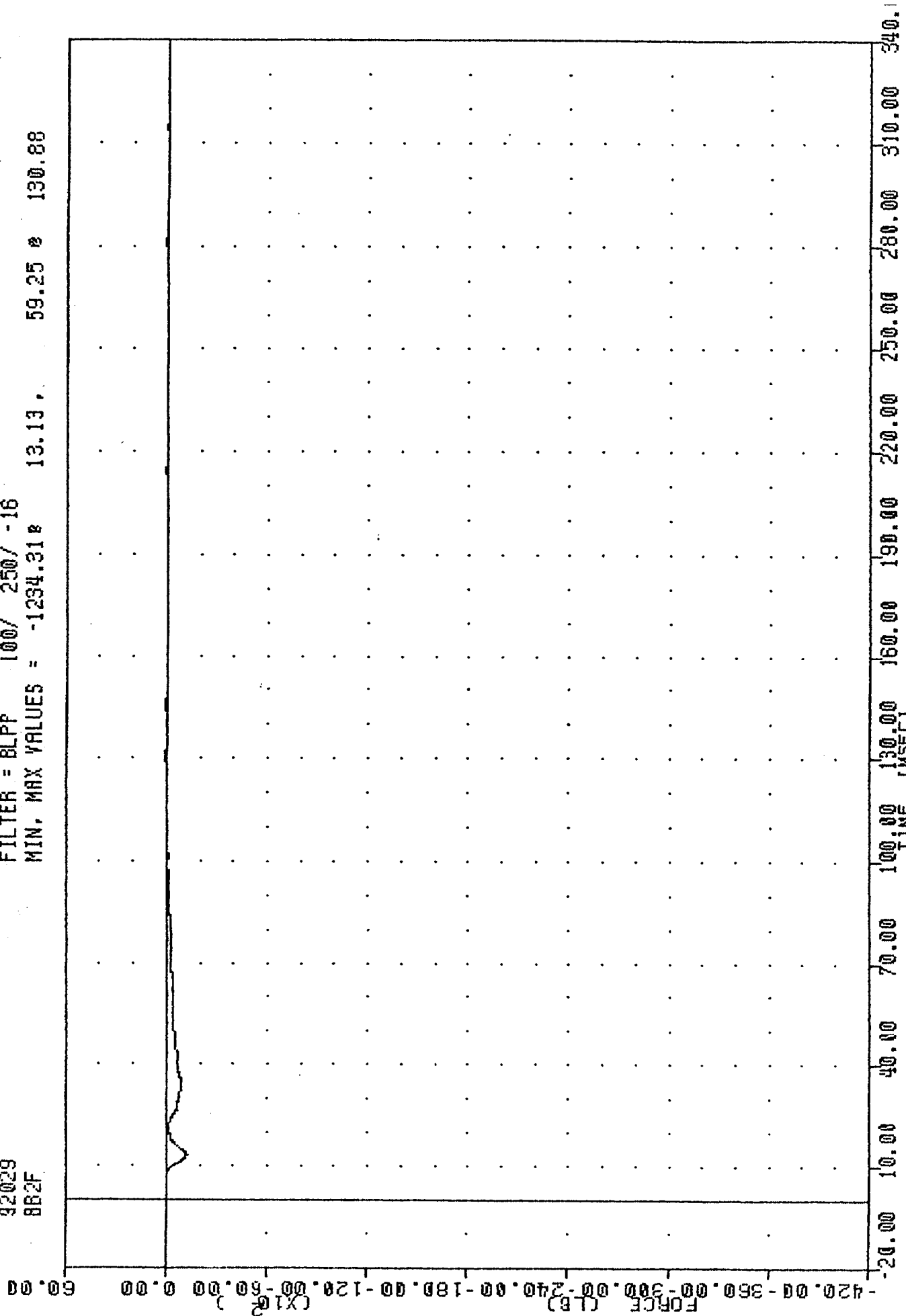
NEW CAR ASSESSMENT PROGRAM

92029

BB2F

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -1234.31# 13.13, 59.25 # 130.88

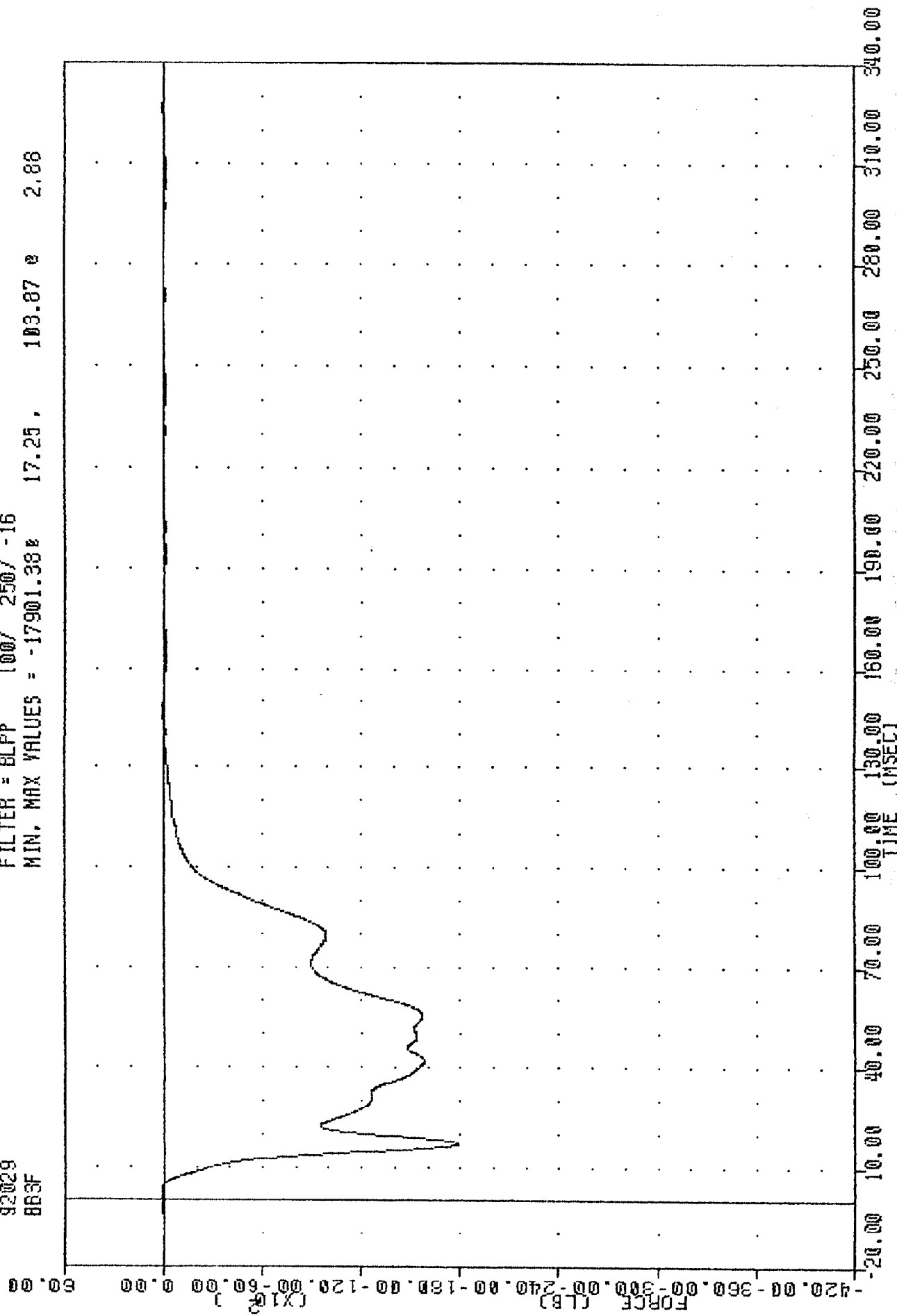


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION B2 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BB3F

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -17901.38 17.25, 103.87 2.88



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER POSITION B3 FORCE

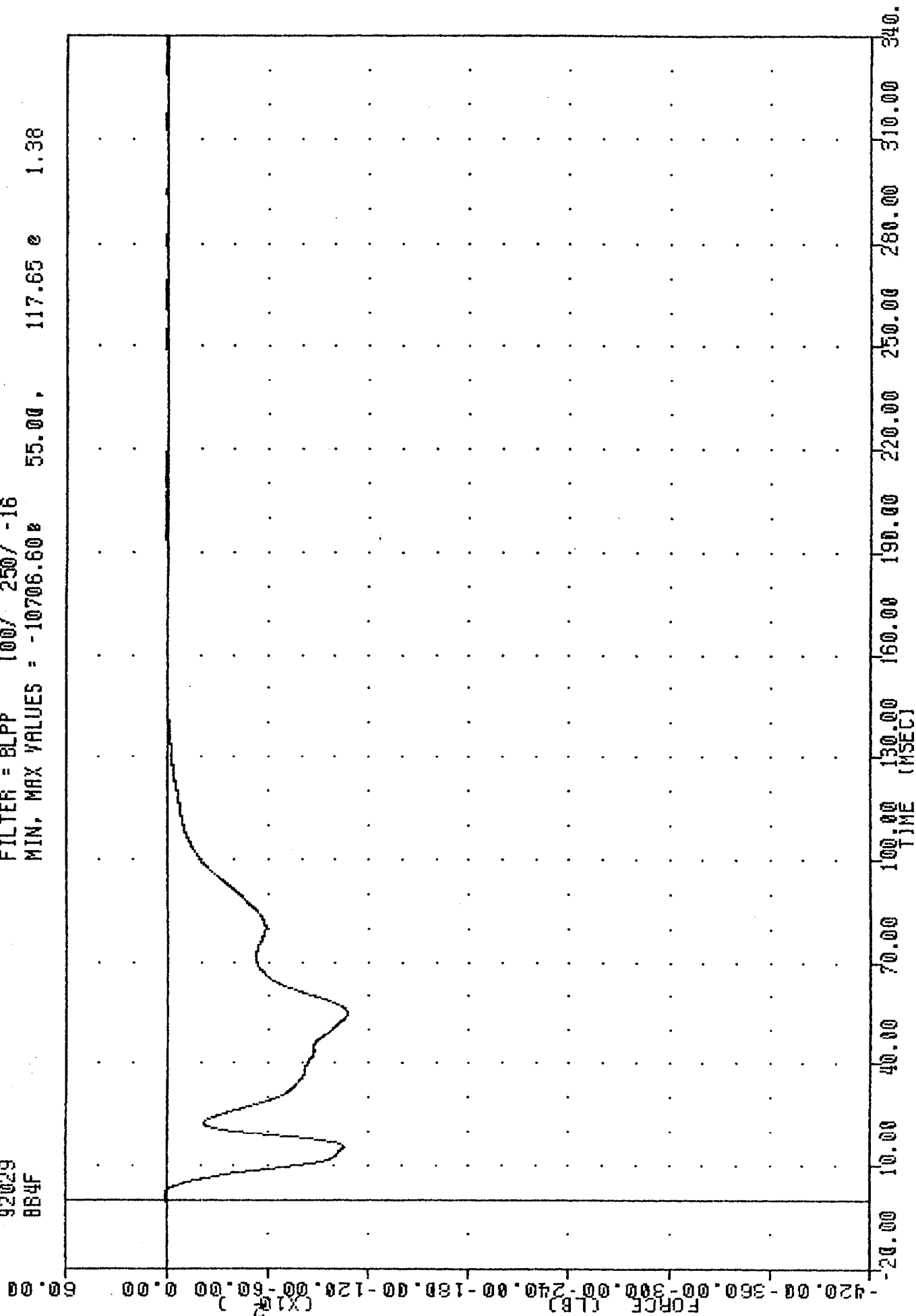
NEW CAR ASSESSMENT PROGRAM

92029

BB4F

FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -10706.60 55.00 117.65 1.38

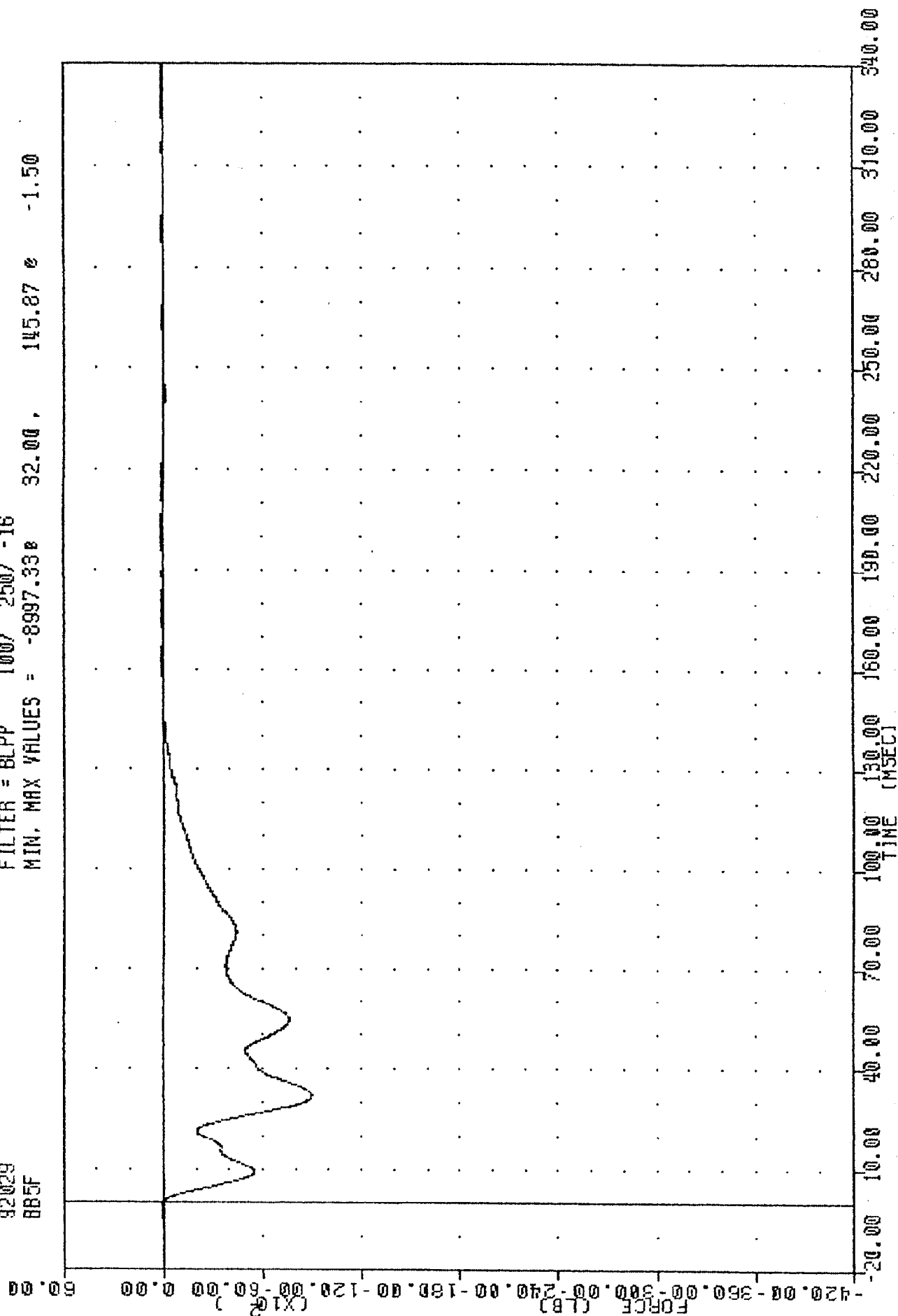


1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION B4 FORCE



TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BB5F

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -8997.338 32.00 , 145.87 e -1.50

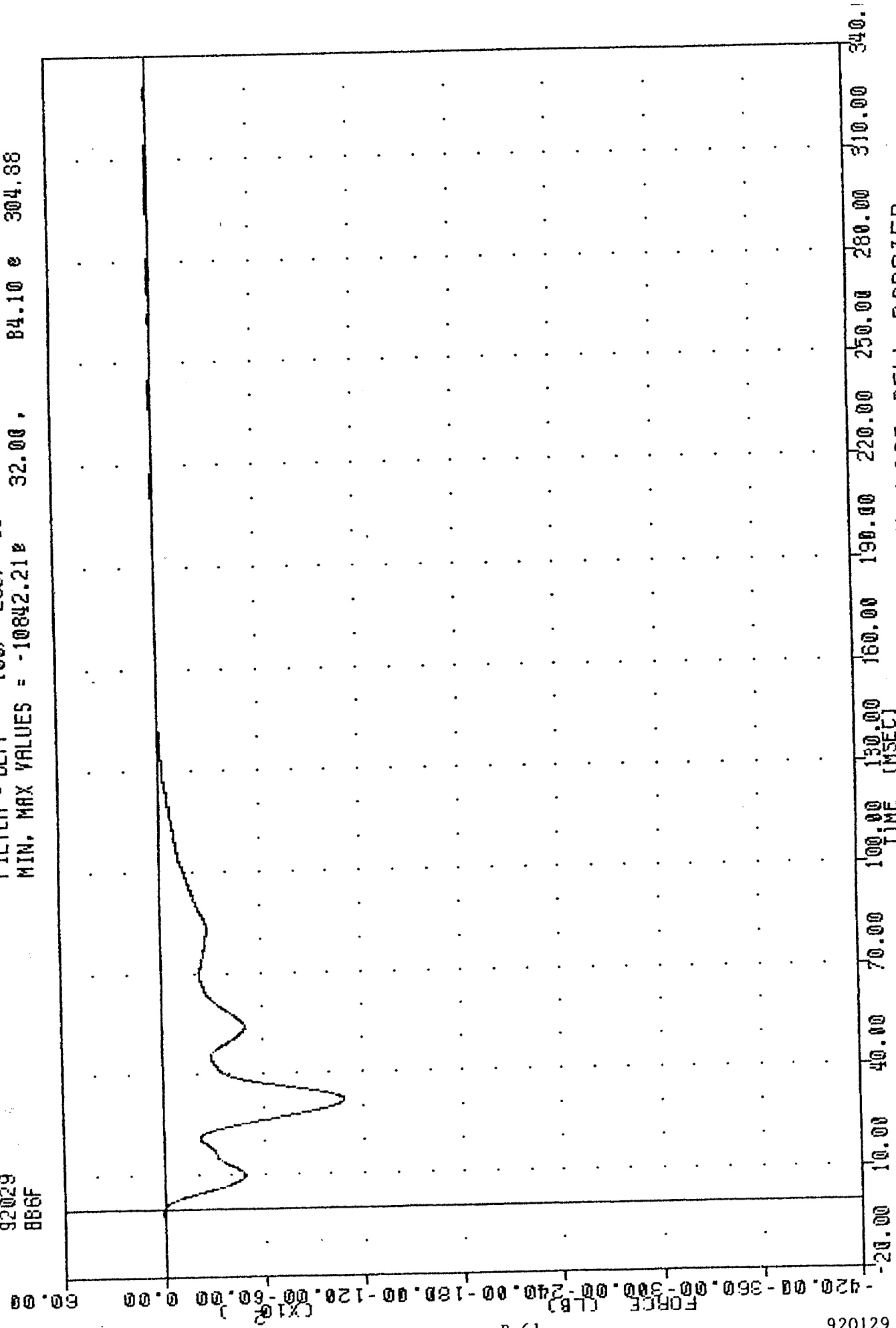


1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER POSITION B5 FORCE

NEW CAR ASSESSMENT PROGRAM

92029  
866F

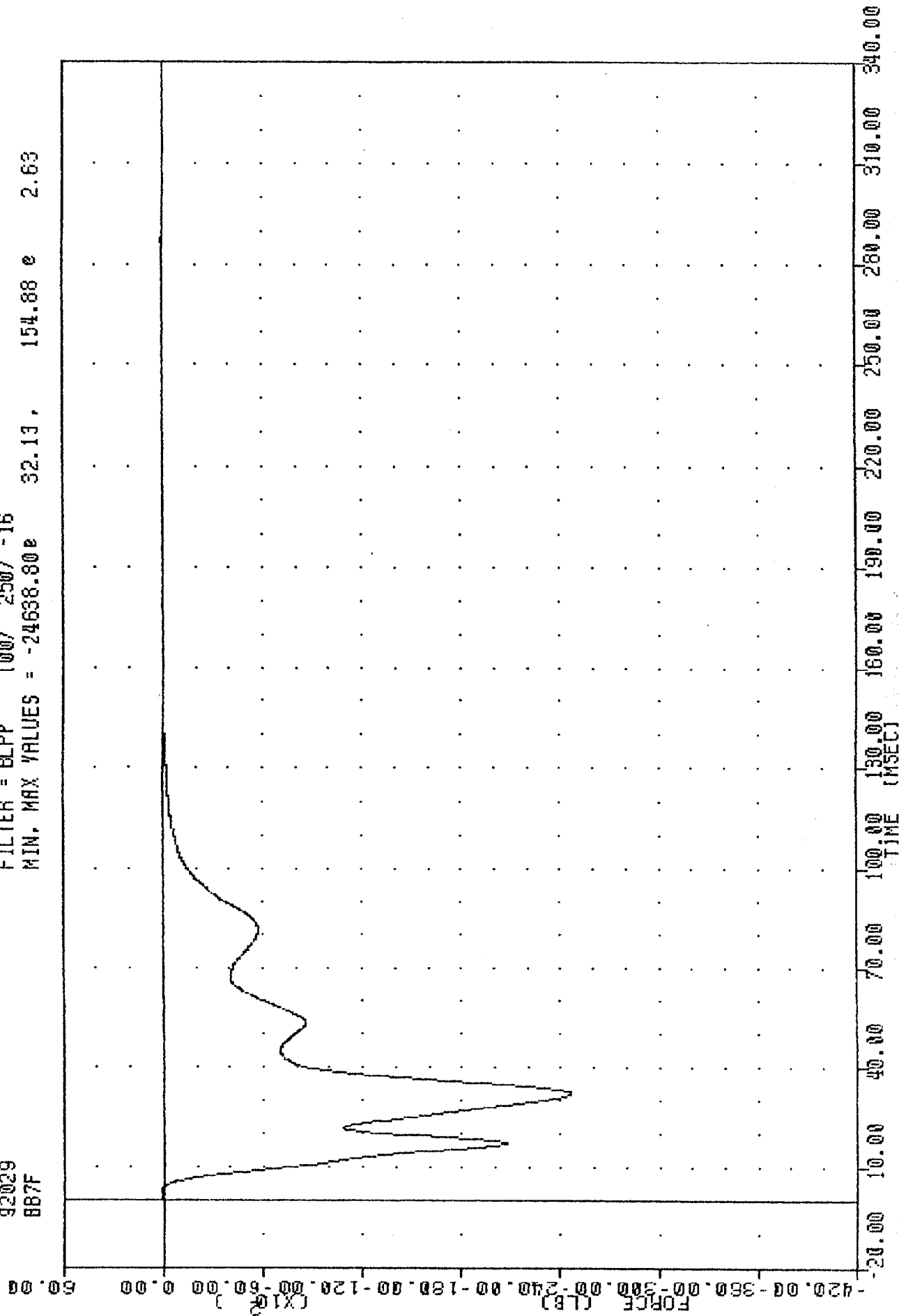
FILTER = BLPP 100/ 250/ -16  
MIN, MAX VALUES = -10842.21 32.00, 84.10 304.88



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION 86 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 887F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -24638.80e 32.13, 154.88 e 2.63



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER POSITION 87 FORCE

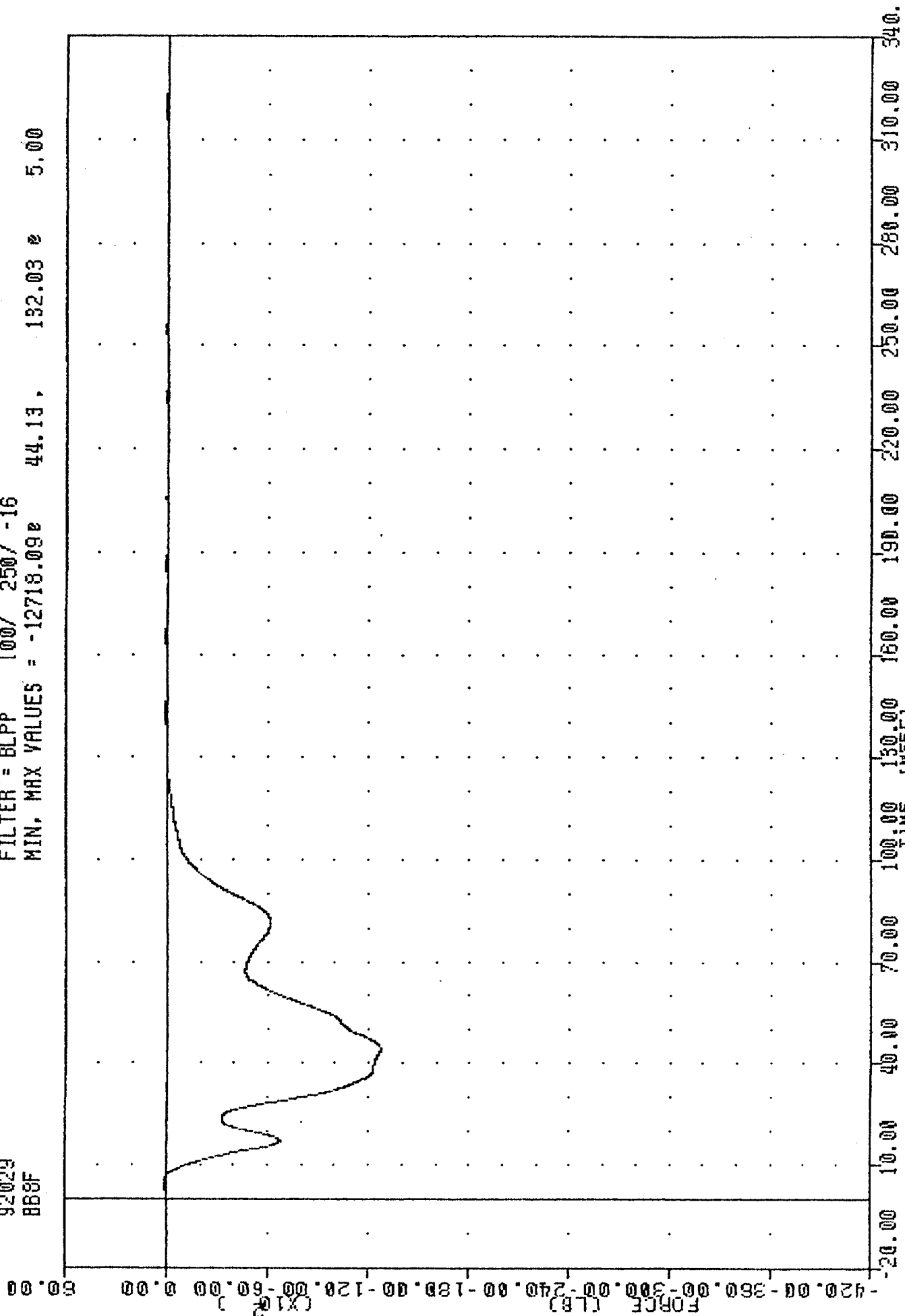
NEW CAR ASSESSMENT PROGRAM

92029

BB5F

FILTER = BLPP 100/ 250/ -16

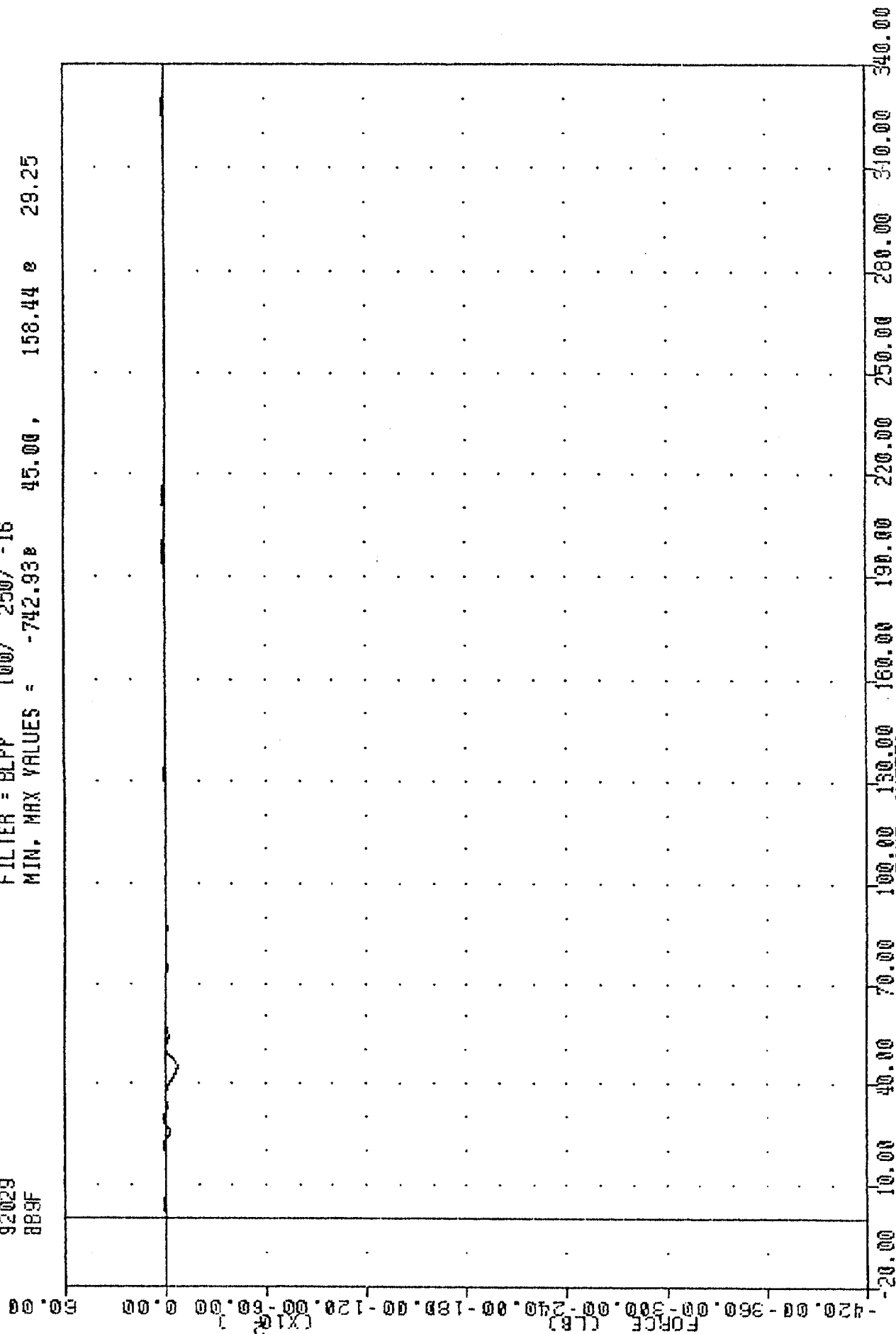
MIN. MAX VALUES = -12718.090 44.13, 132.03 5.00



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION B8 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 889F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -742.93 45.00 , 158.44 29.25



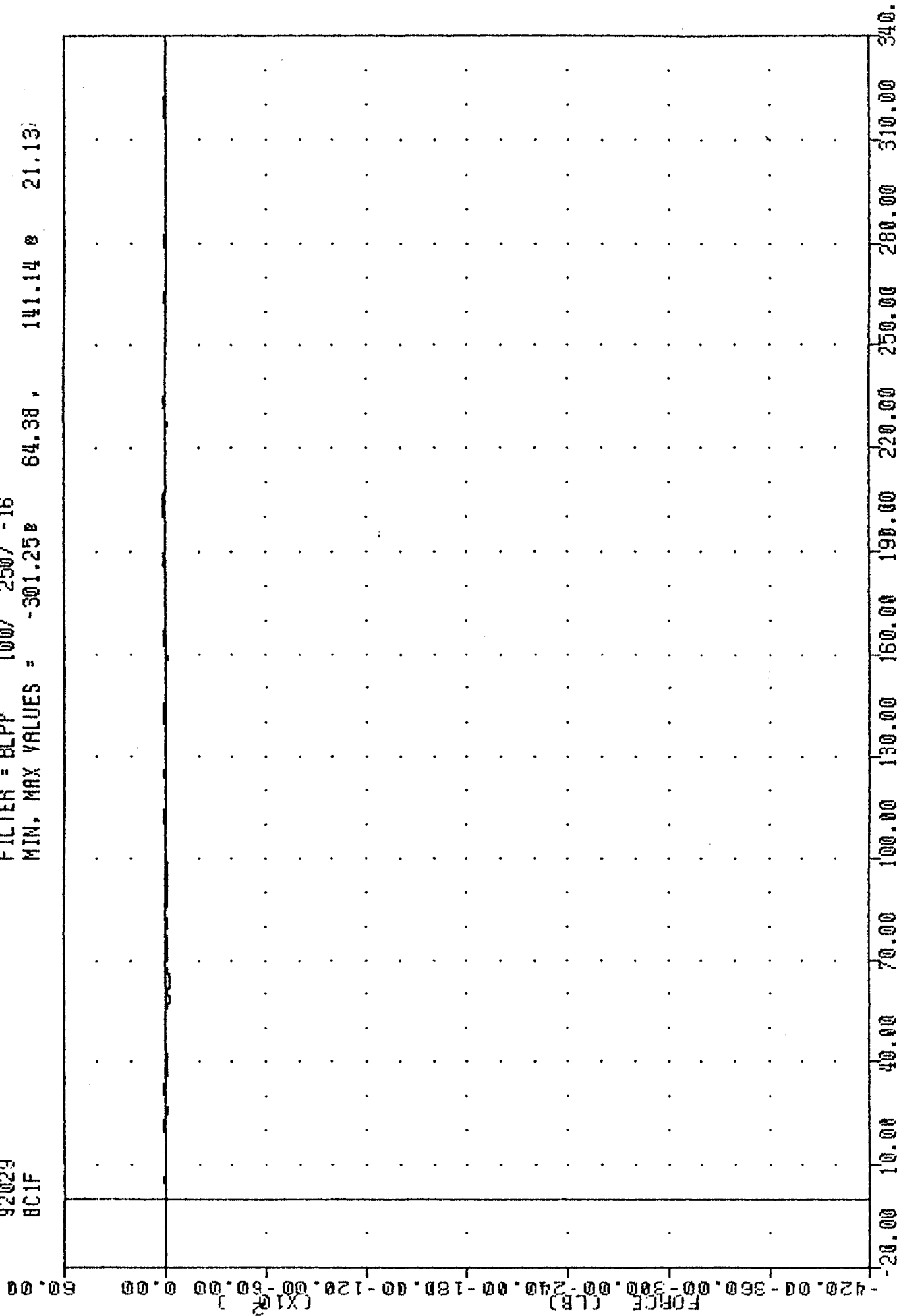
NEW CAR ASSESSMENT PROGRAM

92029

BC1F

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -301.25 64.38 , 141.14 21.13

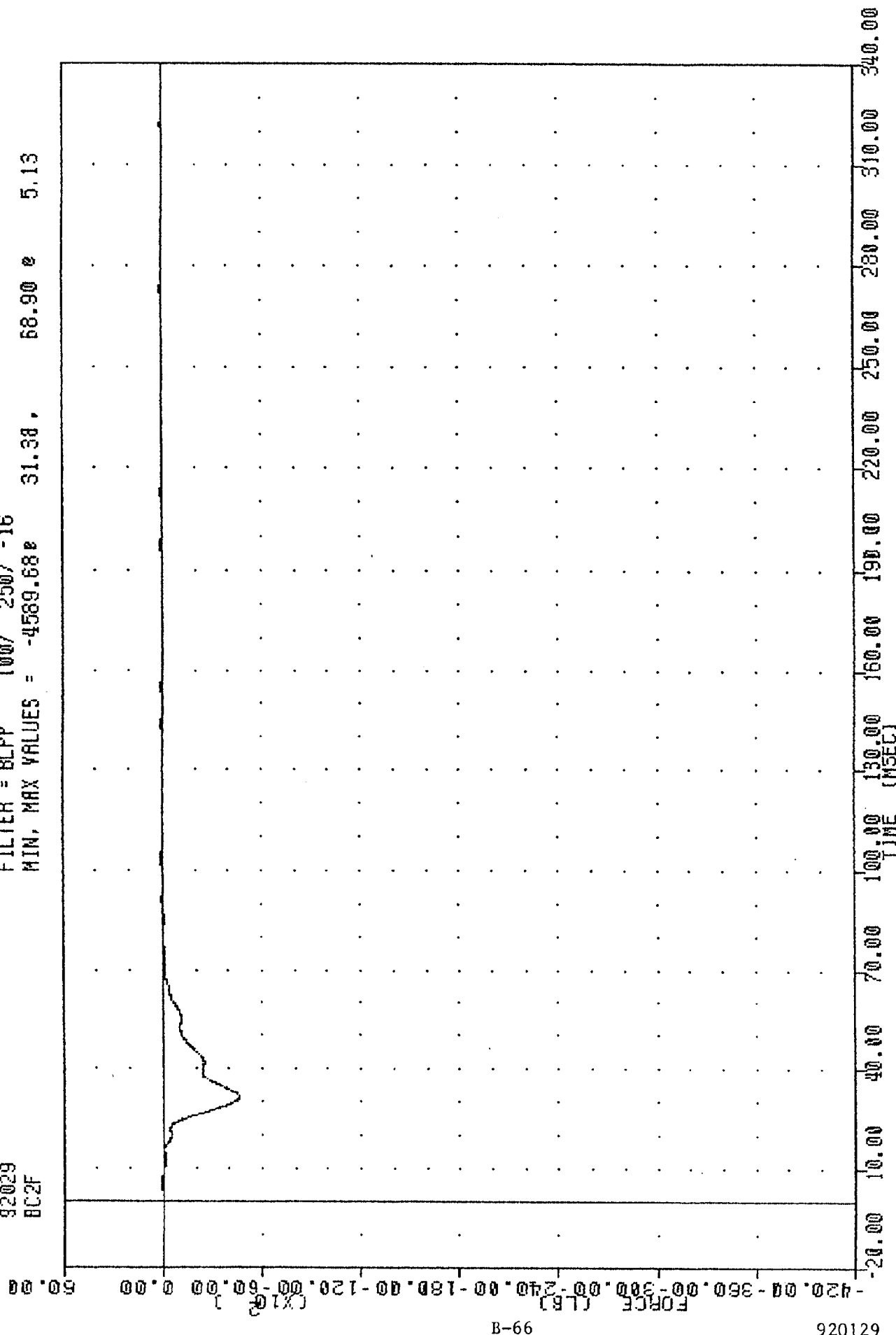


1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION C1 FORCE



TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BC2F

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -4589.68 31.38 68.90 5.13



60.00

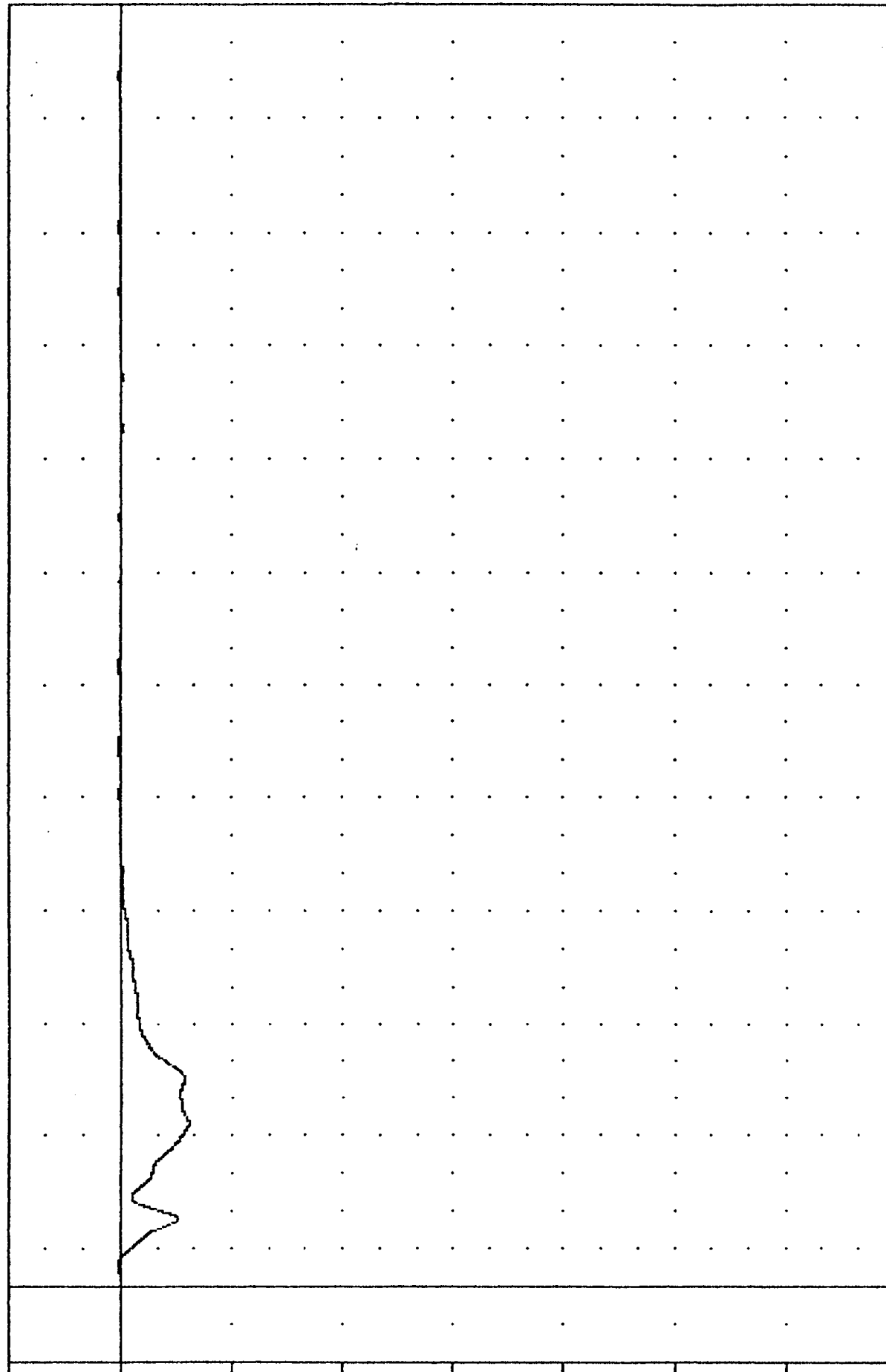
0.00

(X10<sup>3</sup>)

FORCE (LB)

B-67

920129

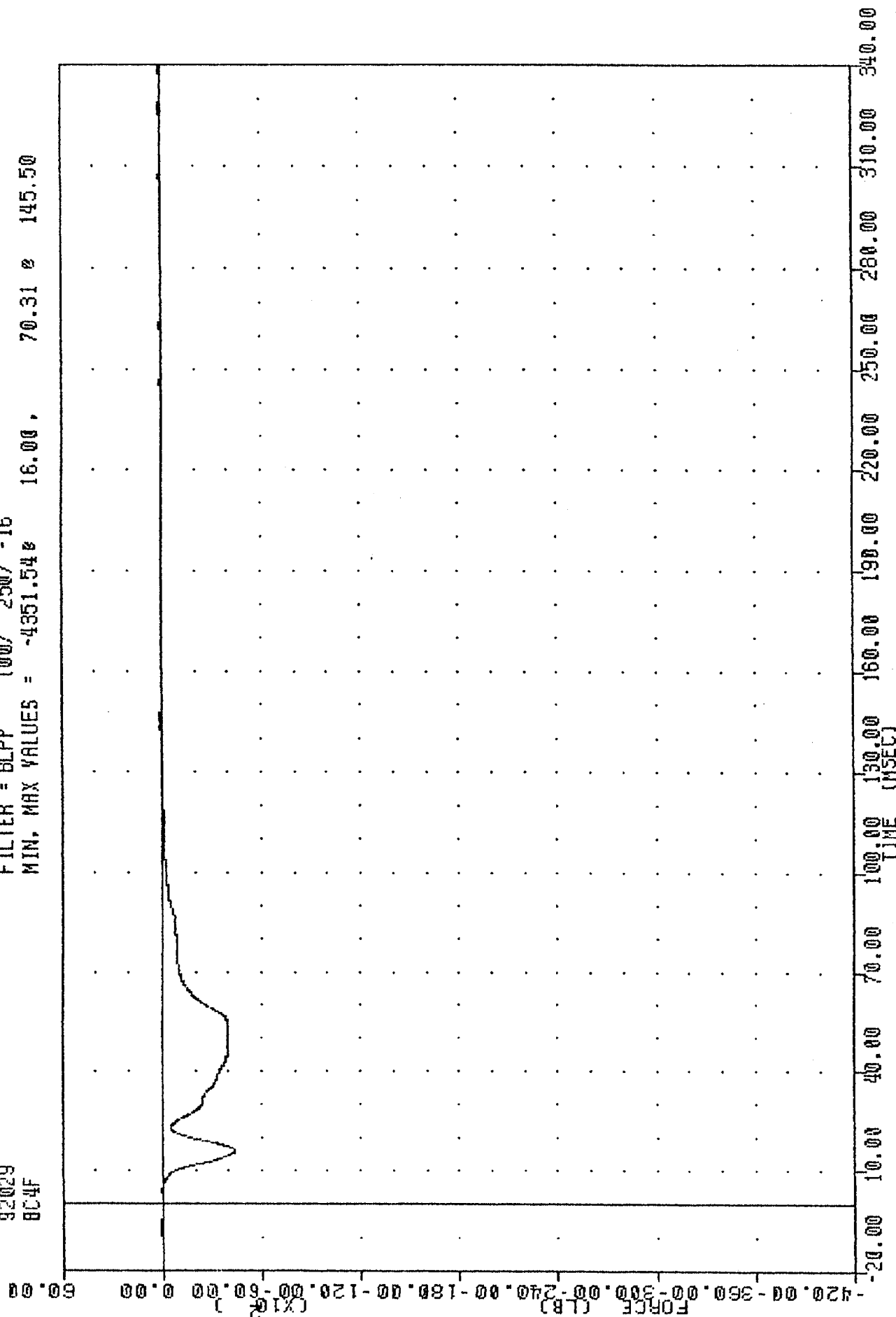


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

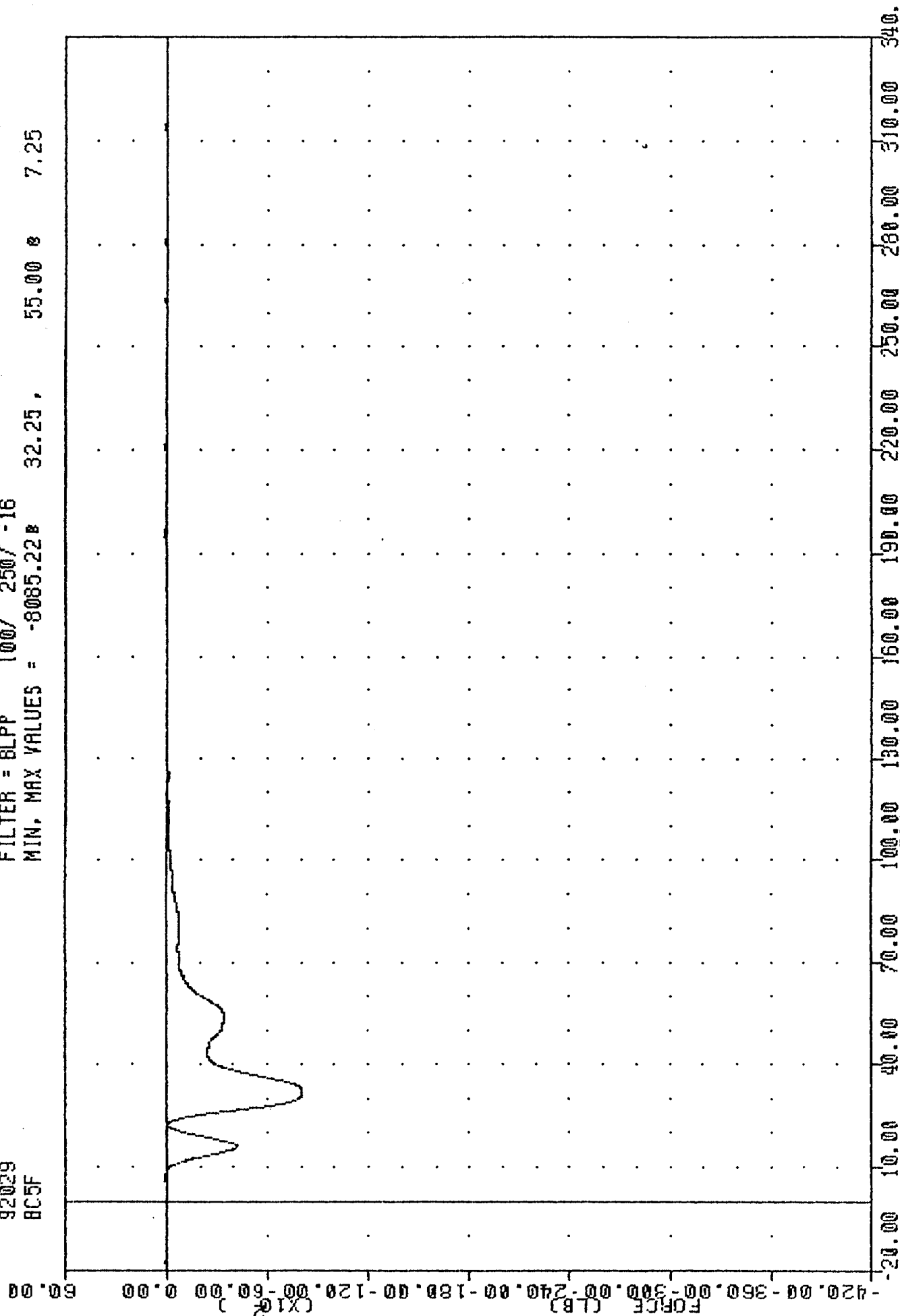
1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION C3 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BC4F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -4351.548 16.00 , 70.31 2 145.50



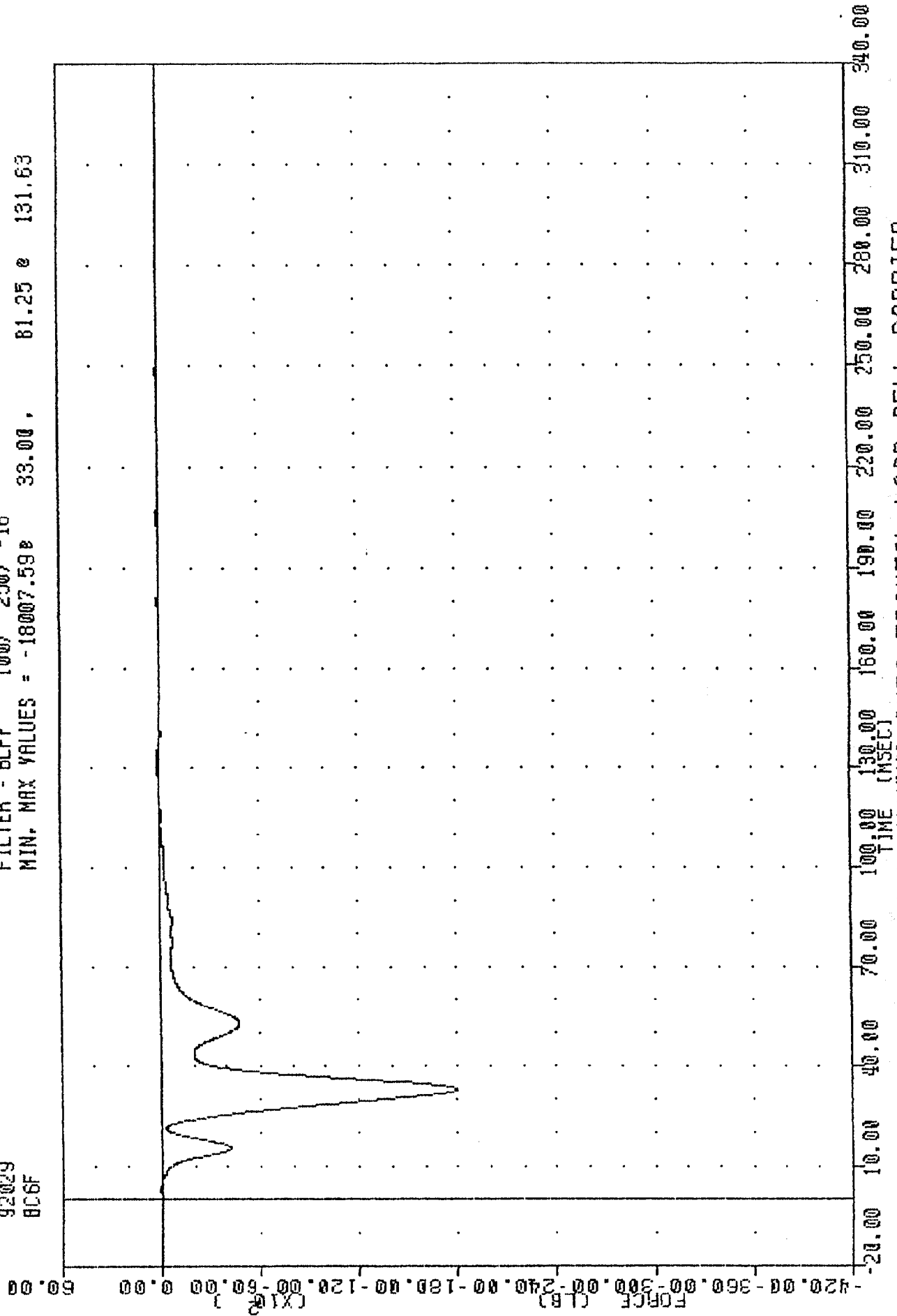
1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER POSITION C4 FORCE



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION C5 FORCE

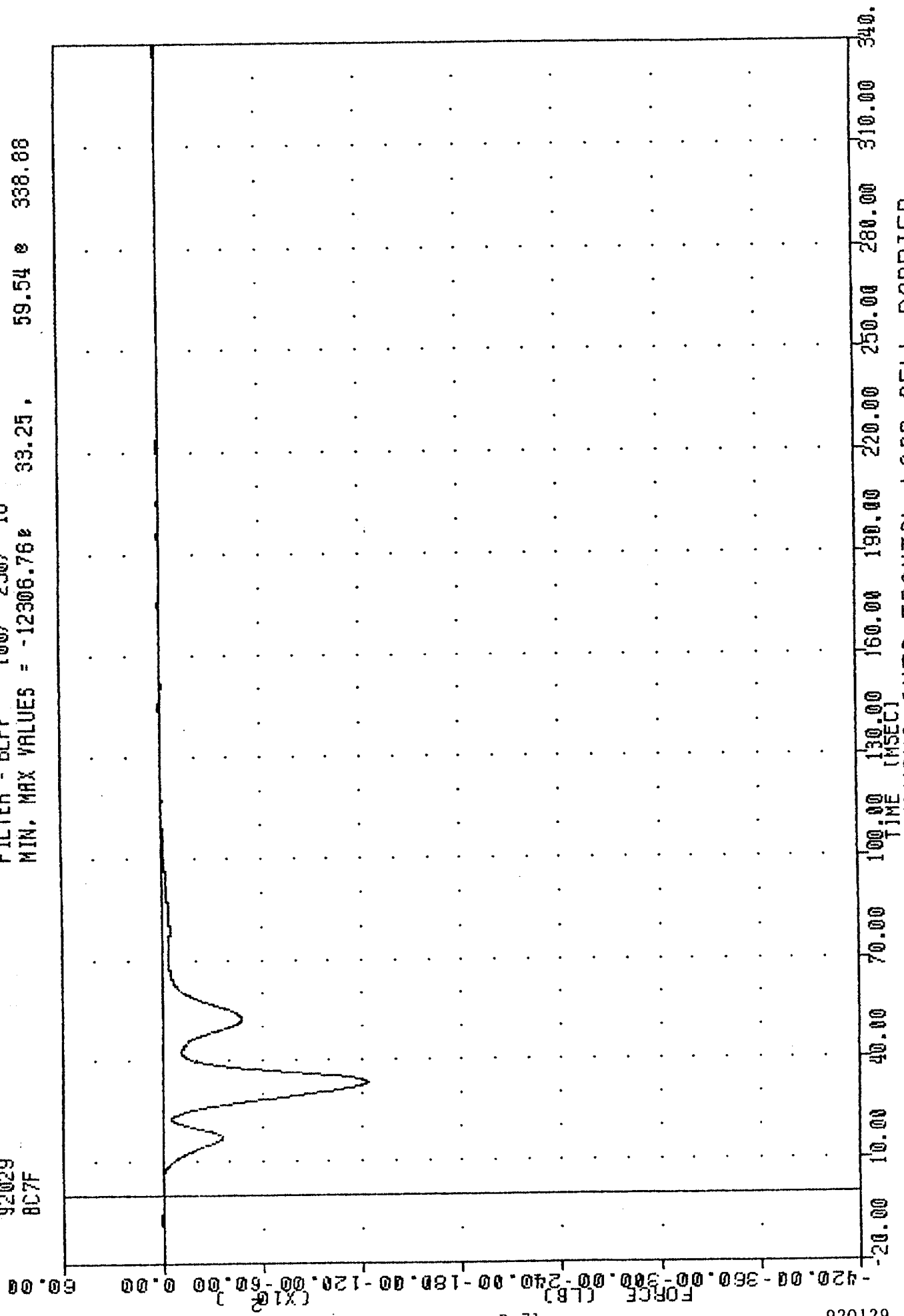
TRC . 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BCSF

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -18007.590 33.00 81.25 e 131.63



NEW CAR ASSESSMENT PROGRAM  
 92029  
 BC7F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -12306.76 33.25 59.54 338.88

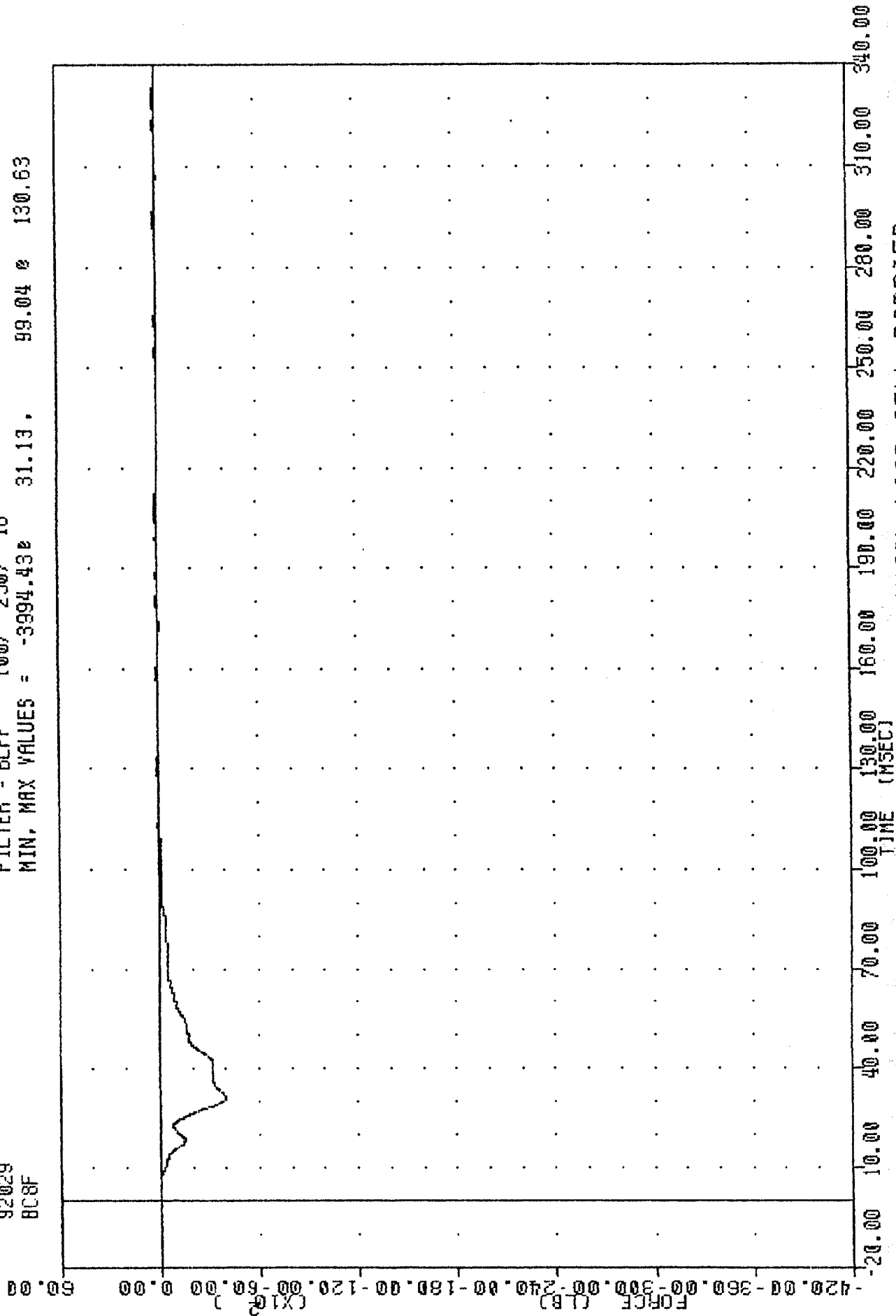


1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER POSITION C7 FORCE



TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BC8F

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -3994.430 31.13, 99.04 130.63



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER POSITION OR FORCE

NEW CAR ASSESSMENT PROGRAM

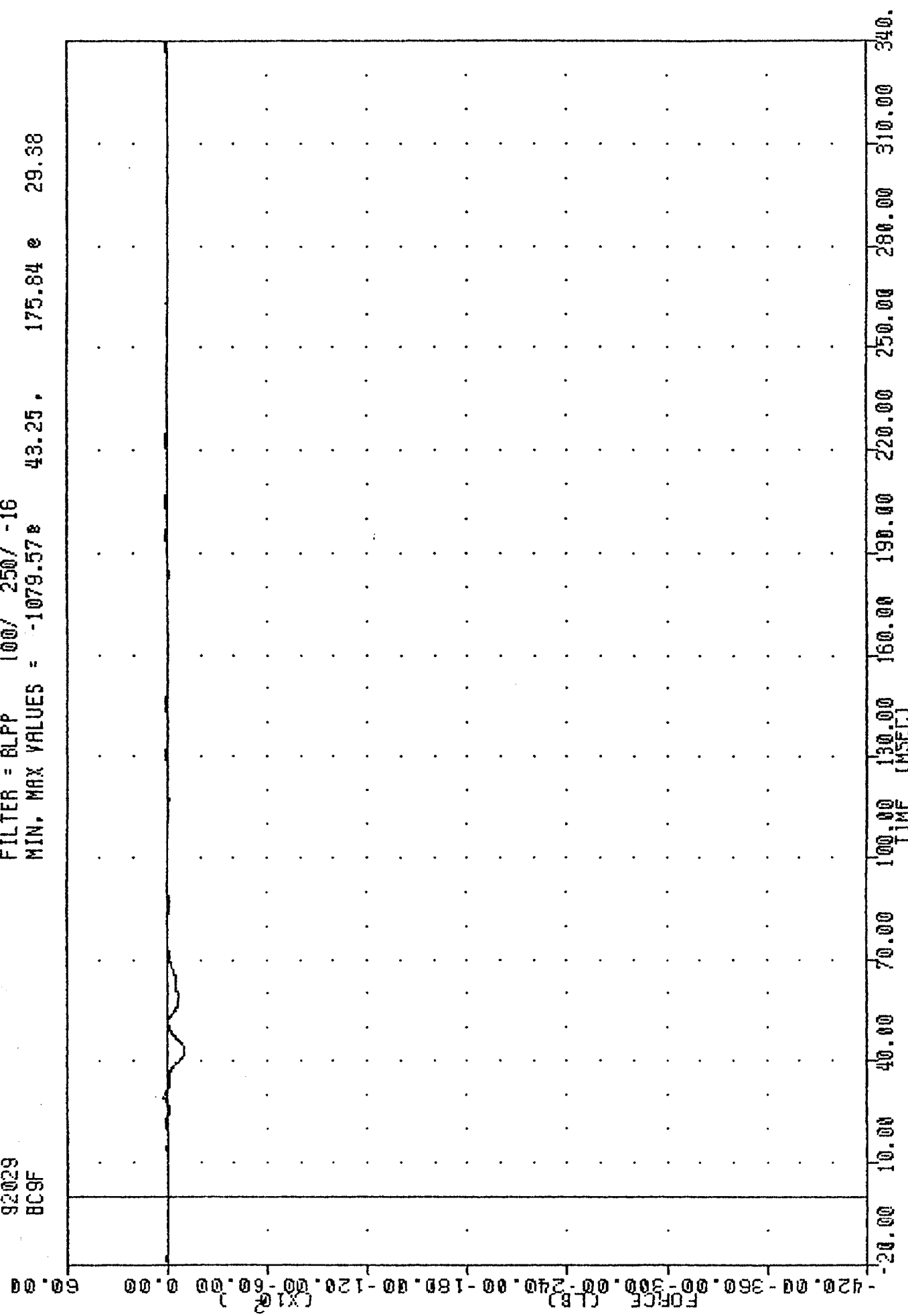
92029

BC9F

FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -1079.57#

43.25, 175.84 @ 29.38

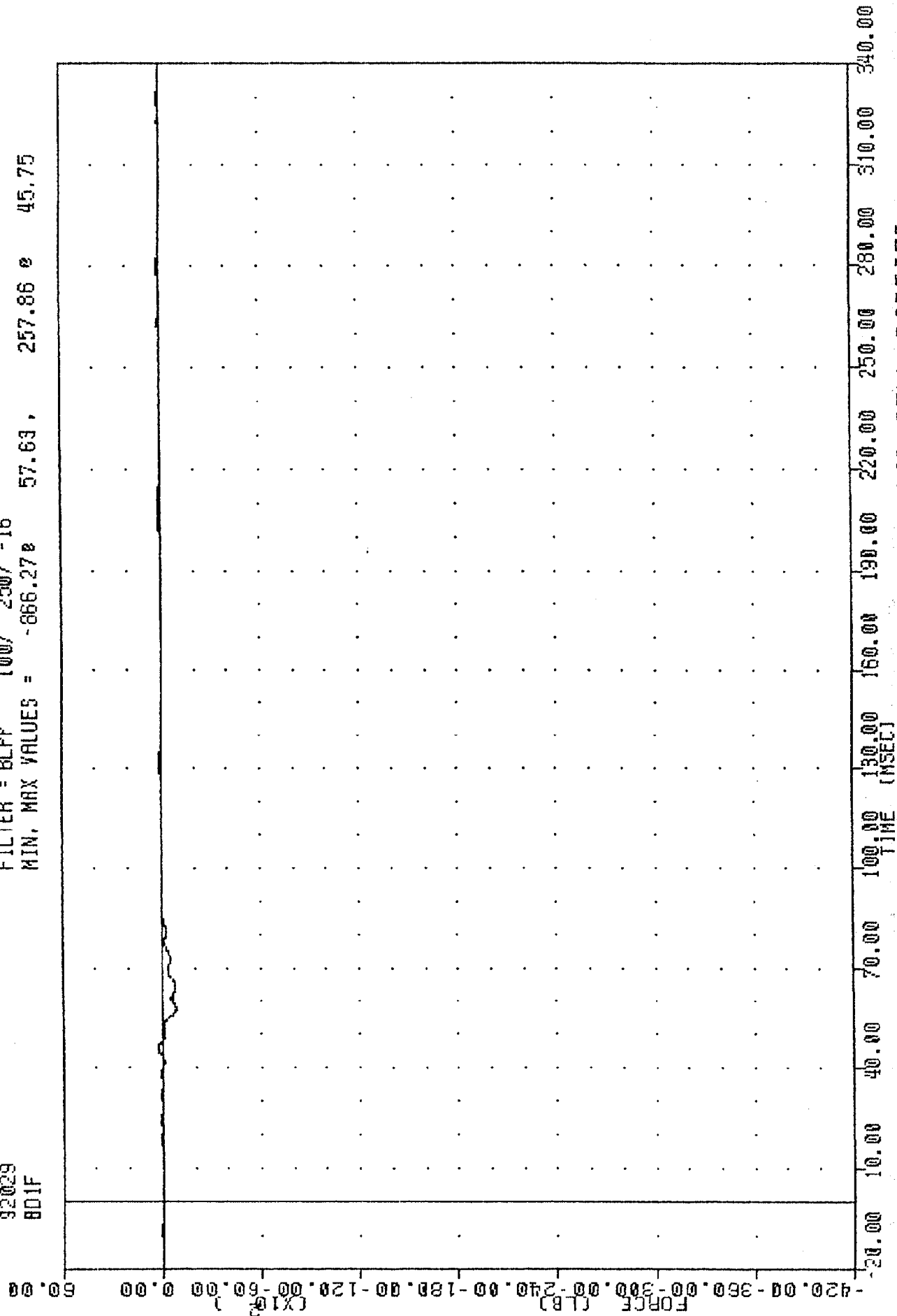


1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER

LOAD CELL BARRIER POSITION C9 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 8D1F

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -866.270 57.63 , 257.86 0 45.75

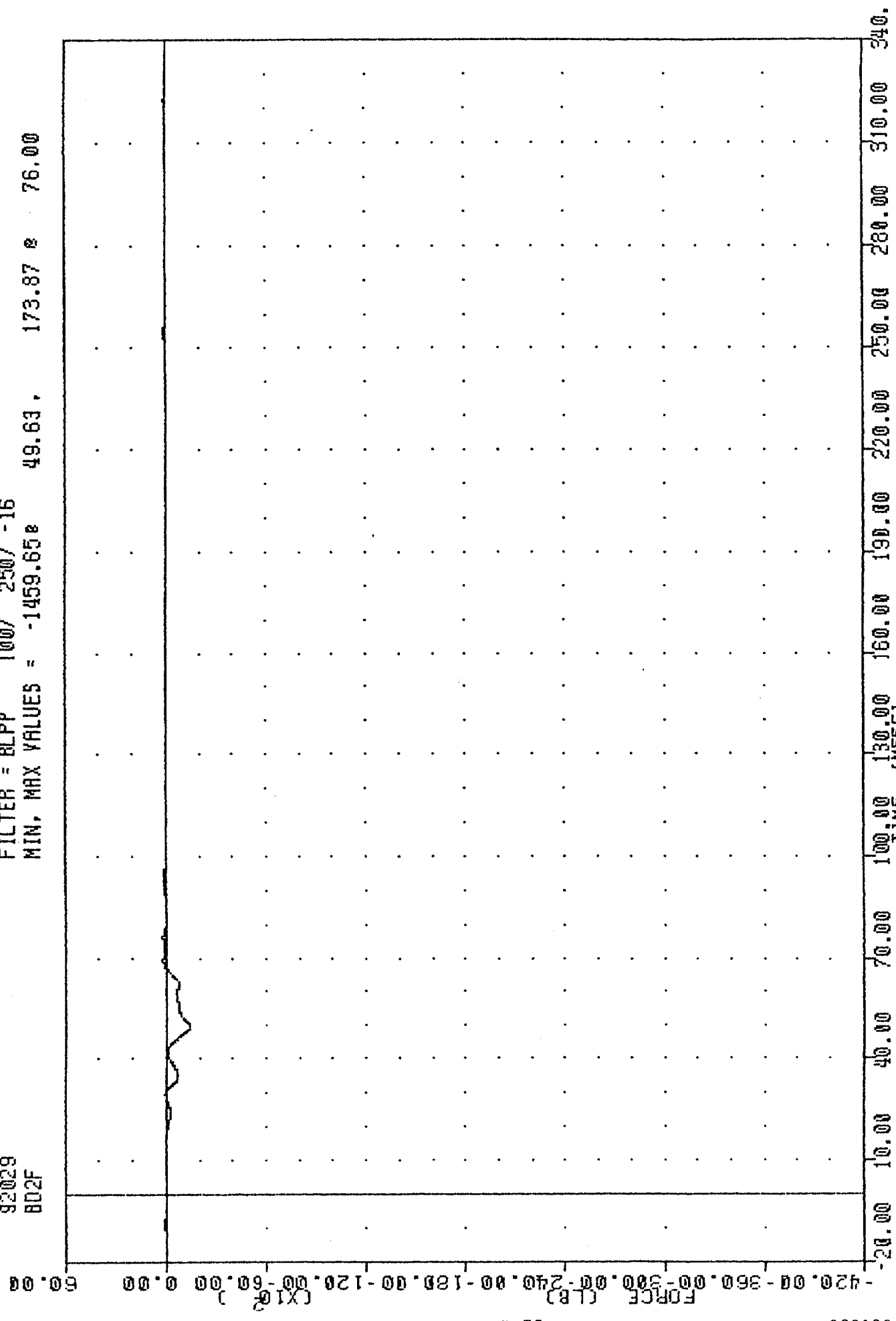


NEW CAR ASSESSMENT PROGRAM

92029  
802F

FILTER = BLPP 100/ 250/ -16

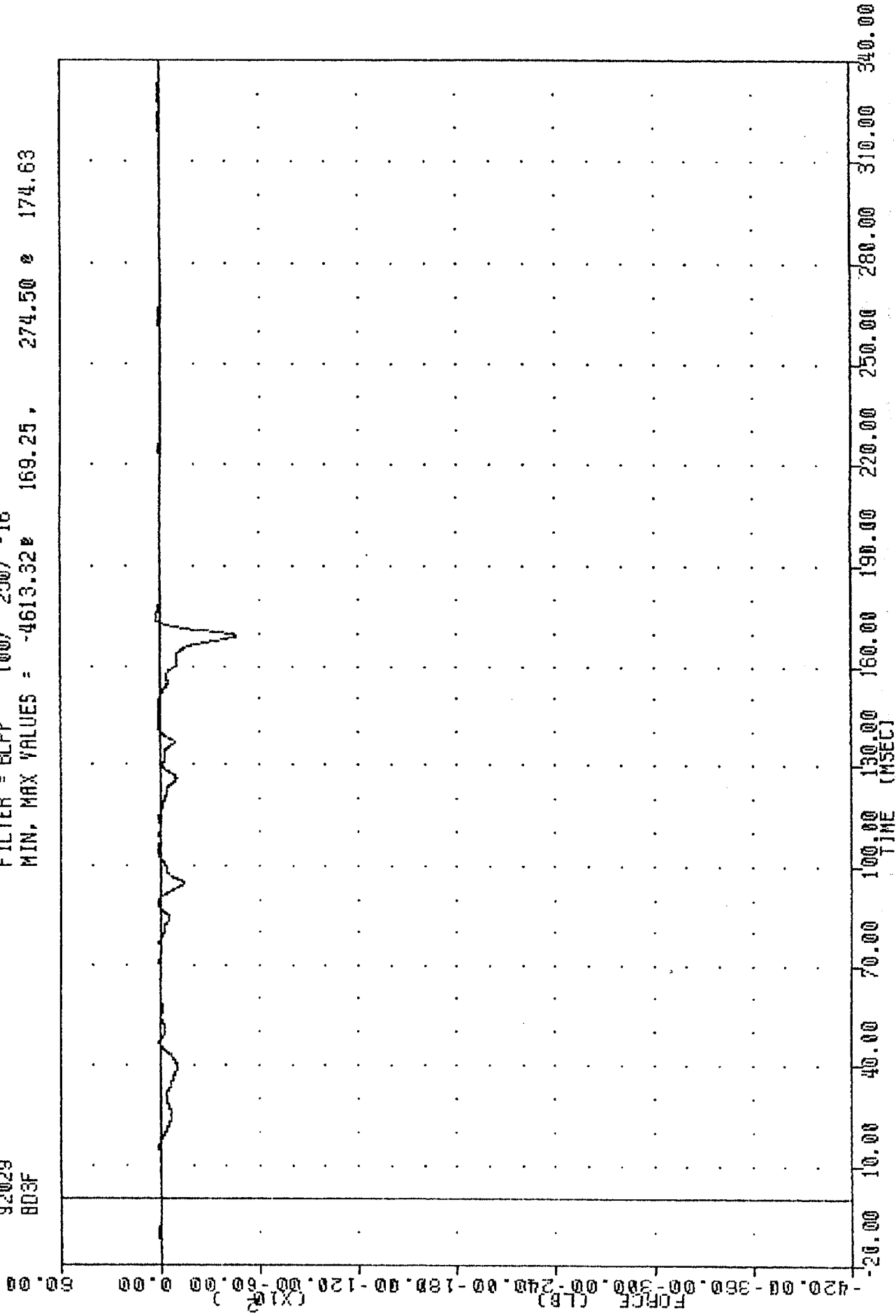
MIN, MAX VALUES = -1459.65e 49.63, 173.87 e 76.00



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION D2 FORCE

TRC 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 803F

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -4613.32 169.25, 274.50 174.63



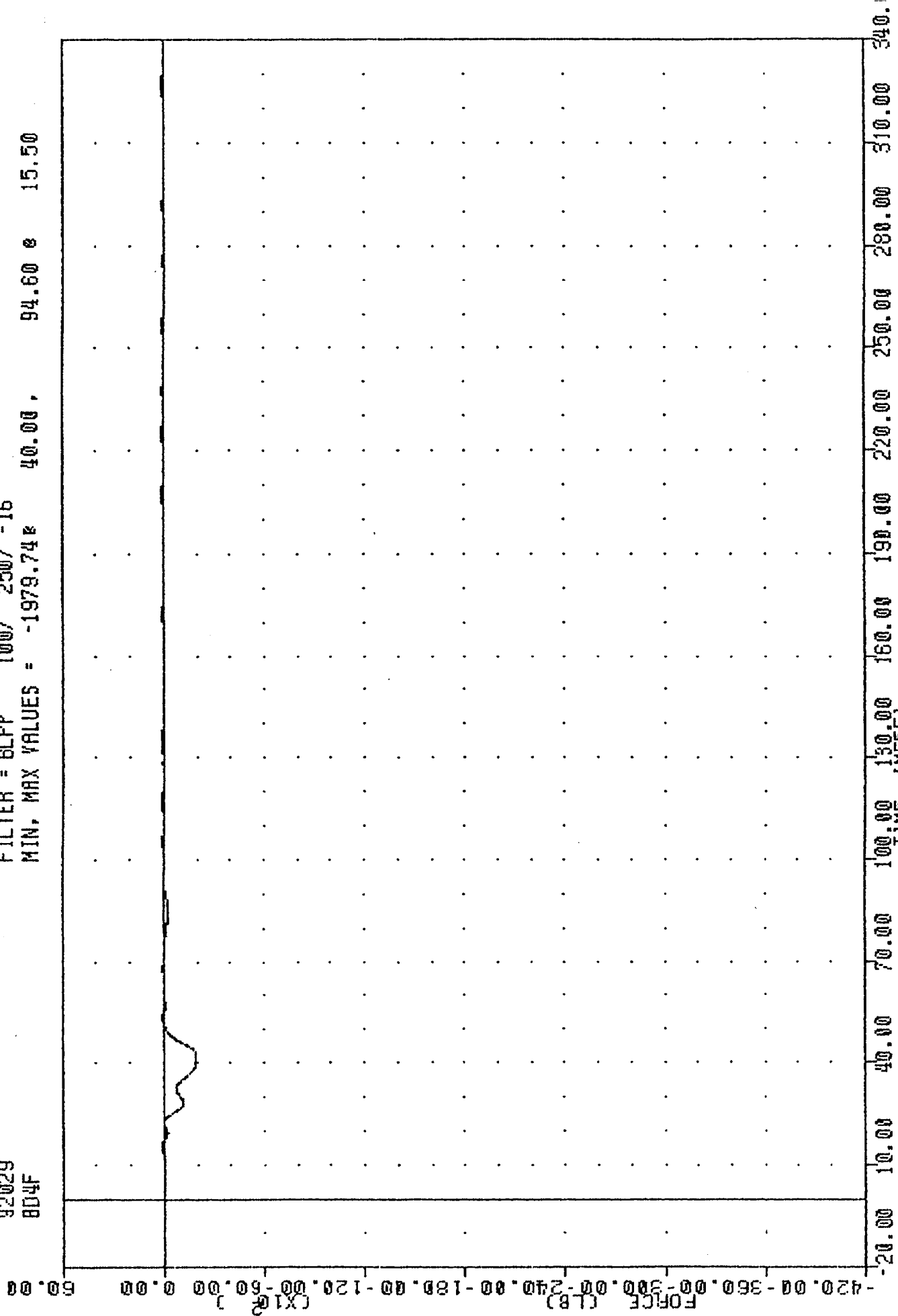
NEW CAR ASSESSMENT PROGRAM

92029

BD4F

FILTER = BLPP 100/ 250/ -16

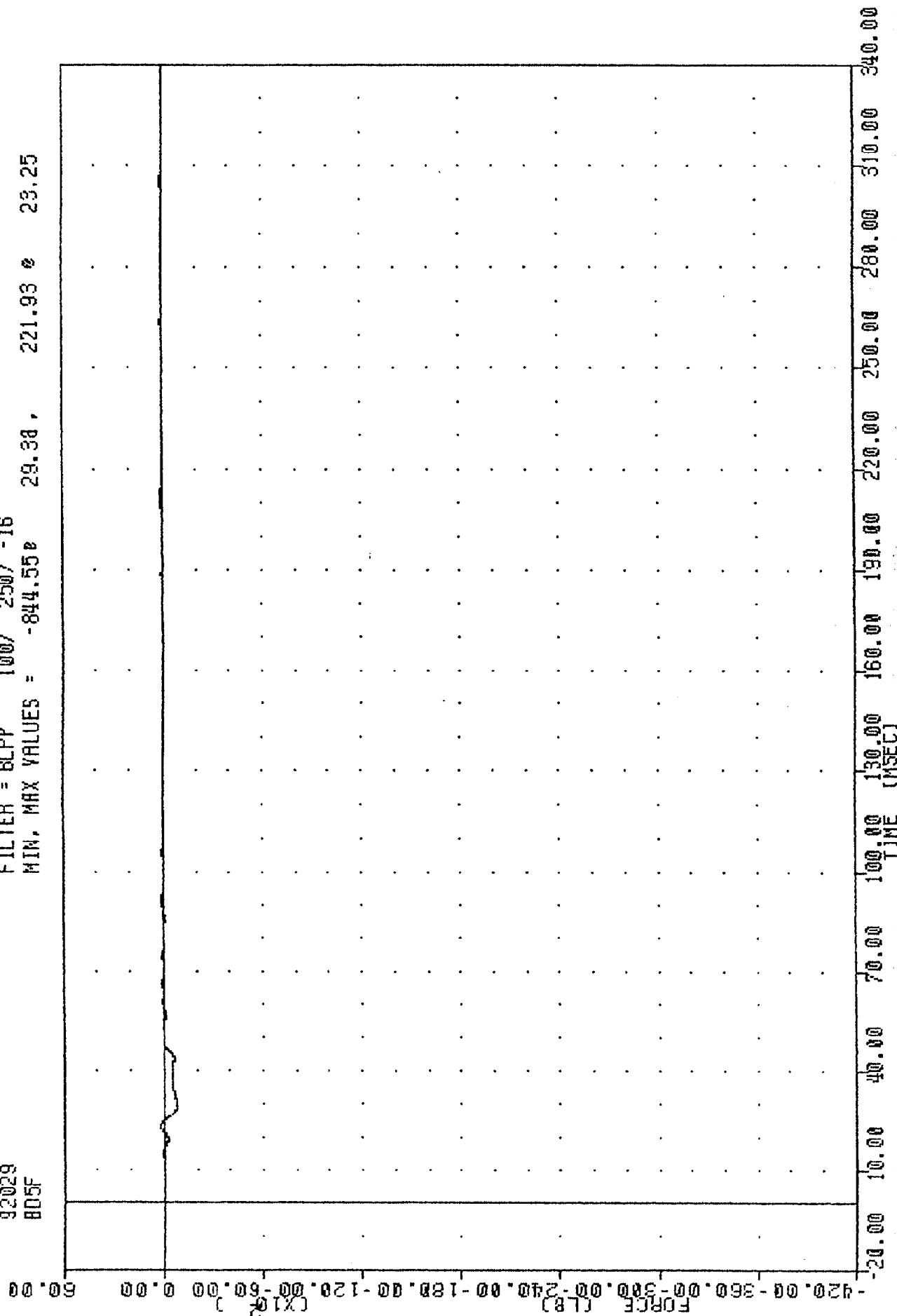
MIN, MAX VALUES = -1979.74 40.00, 94.60 15.50



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION D4 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 BD5F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -844.55 29.38 , 221.93 23.25





NEW CAR ASSESSMENT PROGRAM

92029

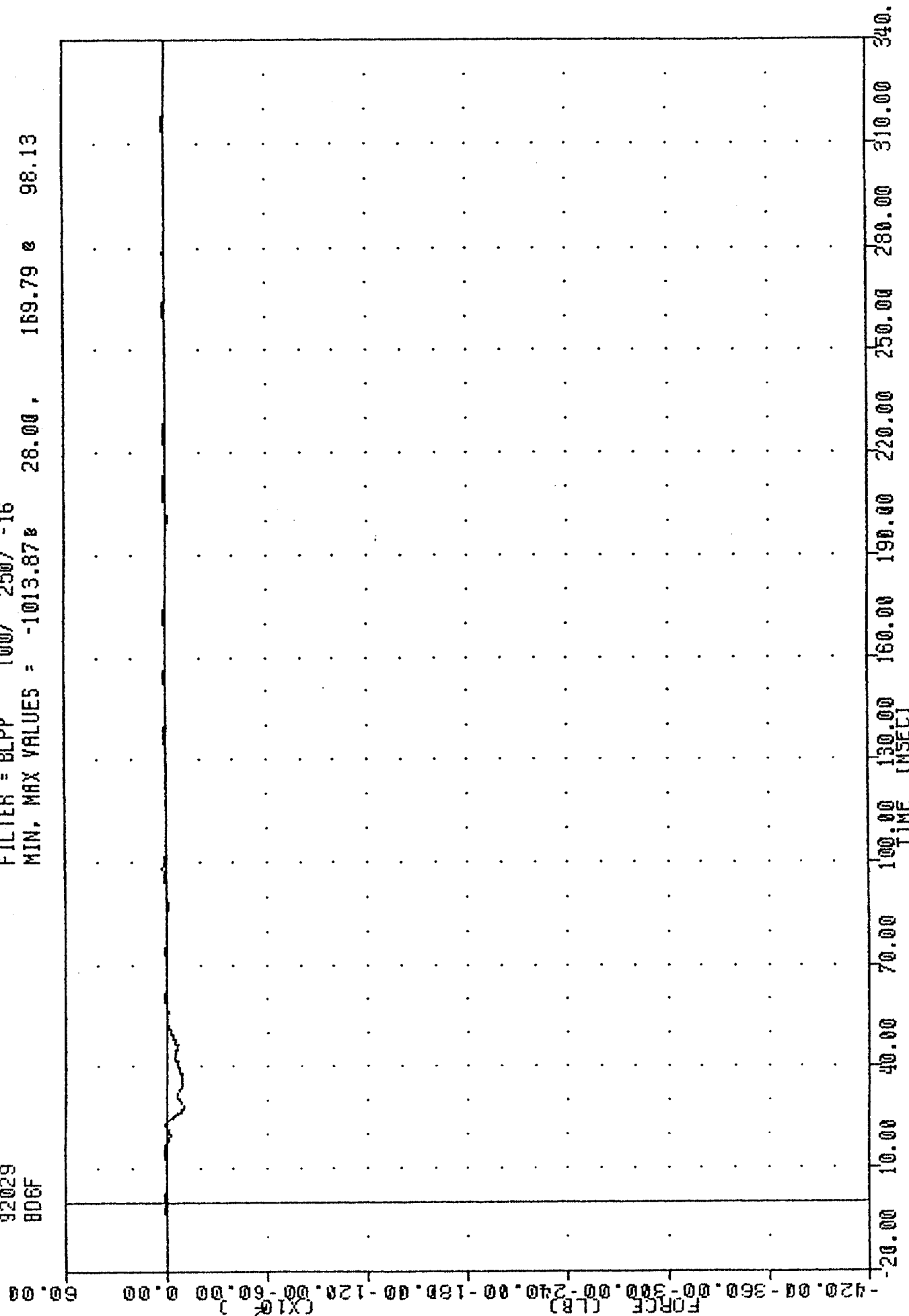
806F

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -1013.878 28.00 , 169.79 98.13

B-79

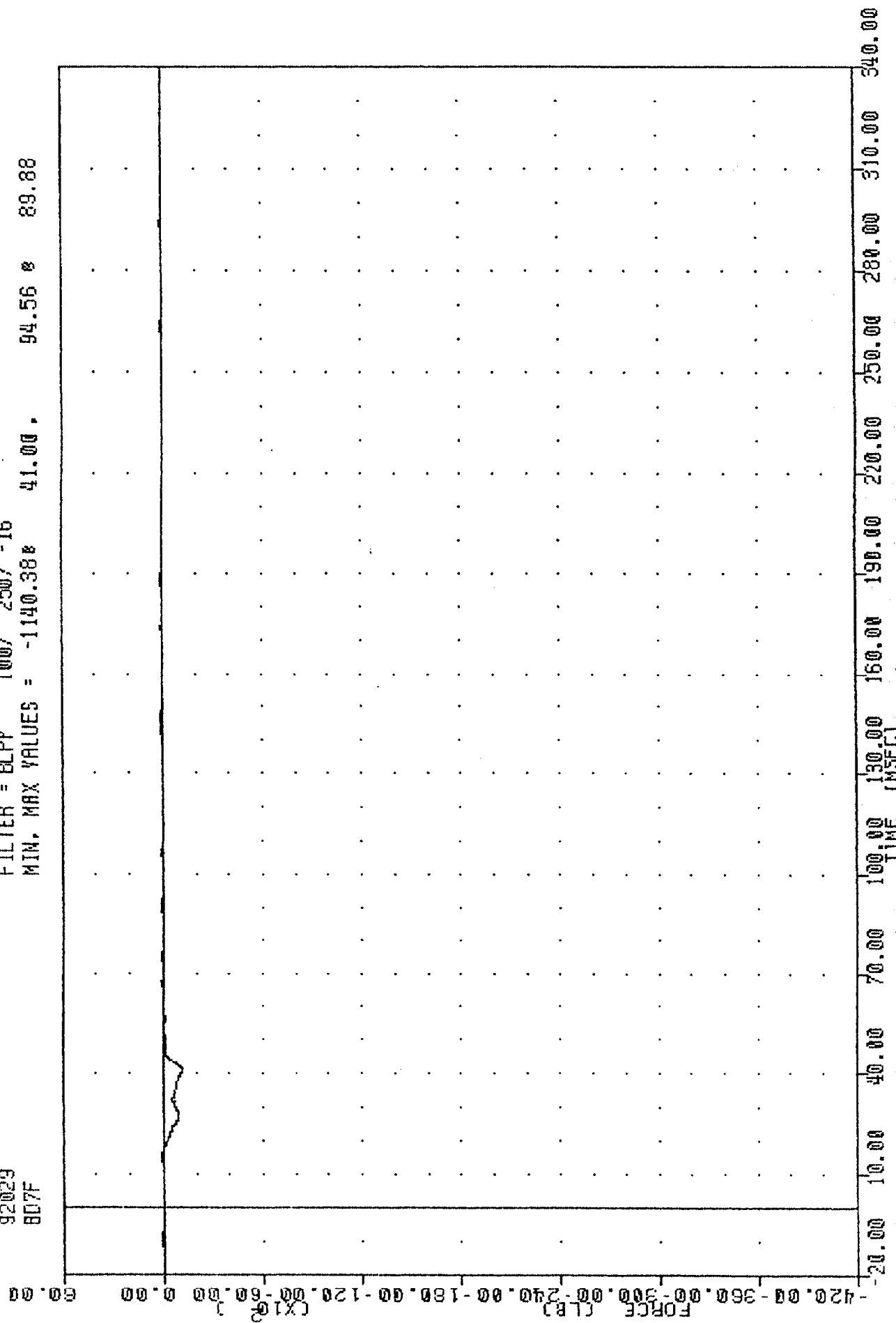
920129



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION D6 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 807F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -1140.38 41.00 . 94.56 8 89.88



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER POSITION 07 FORCE

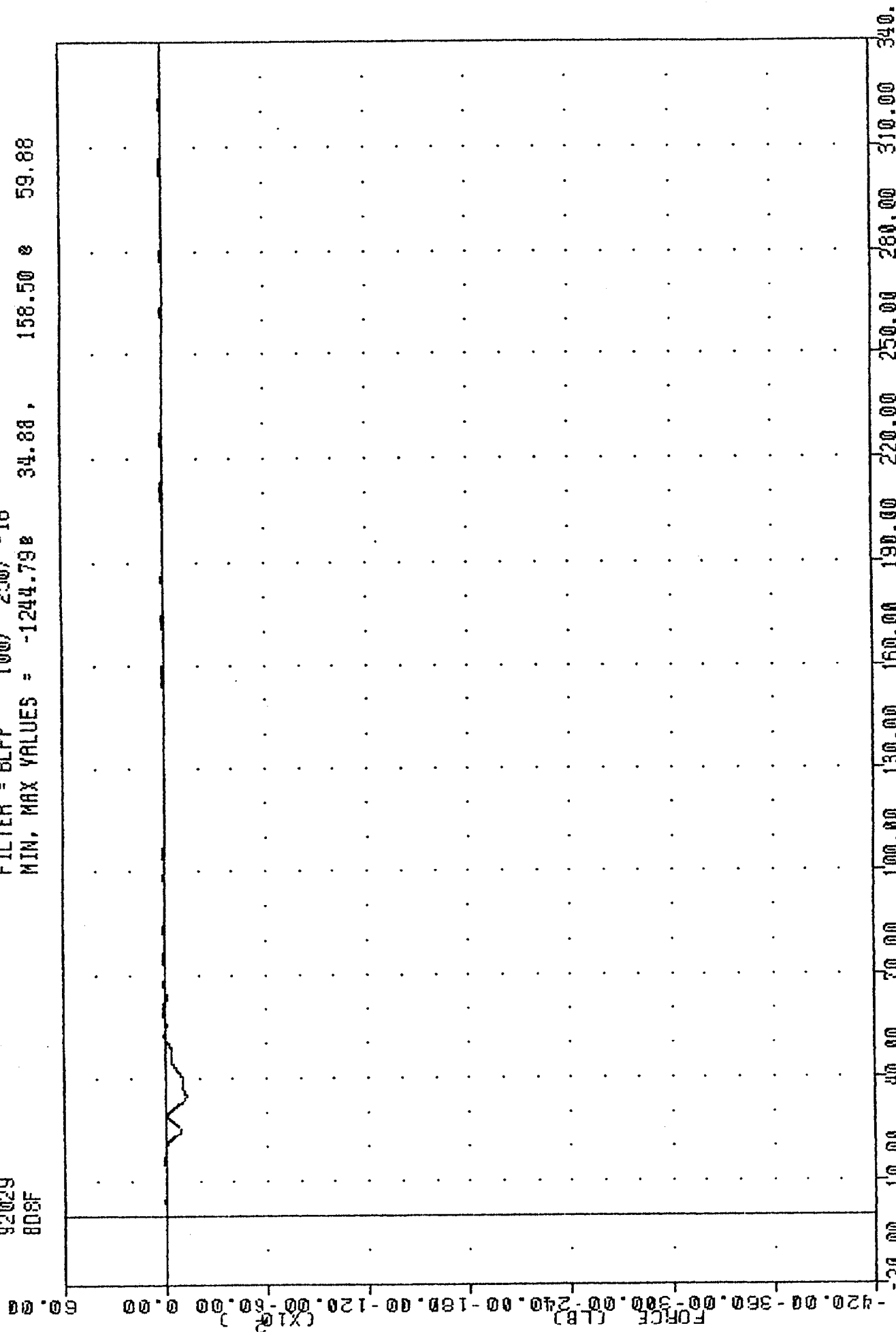
NEW CAR ASSESSMENT PROGRAM

92029

808F

FILTER = BLPP 100/ 250/ -16

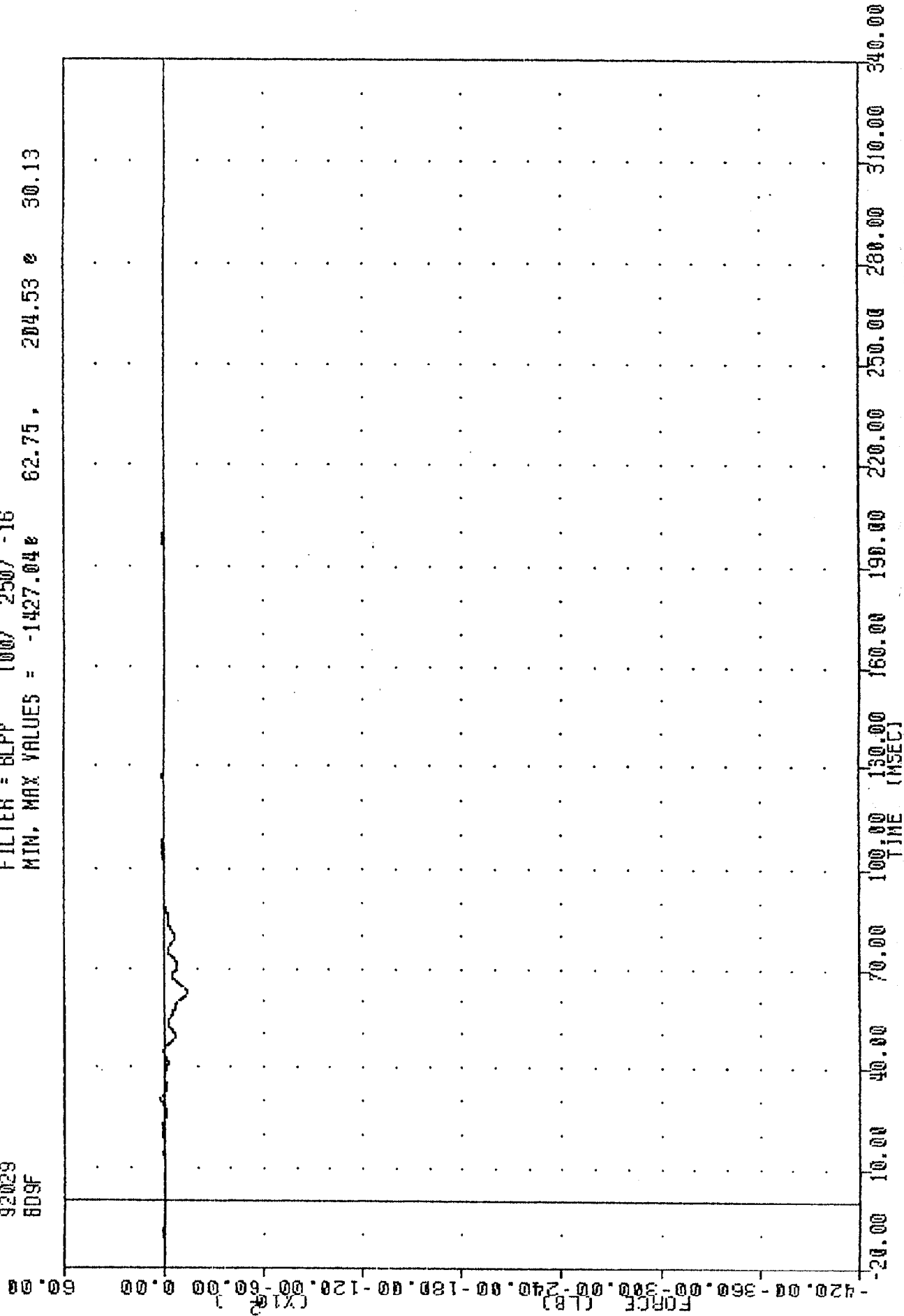
MIN. MAX VALUES = -1244.79 34.88 , 158.50 59.88



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER POSITION 08 FORCE

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 6D9F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -1427.04 62.75 , 204.53 30.13



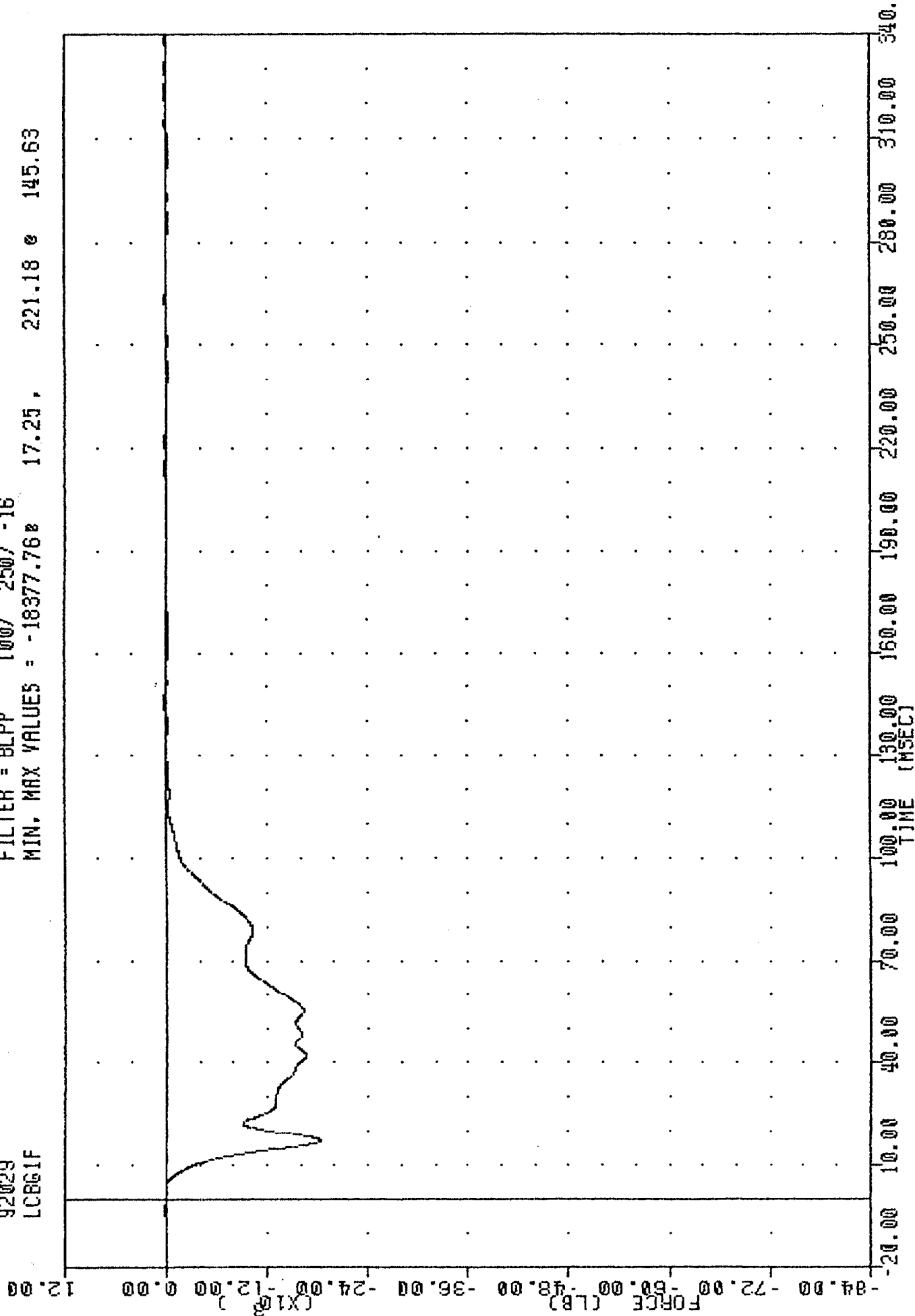
# NEW CAR ASSESSMENT PROGRAM

92029

LCRG1F

FILTER = BLPP 100/ 250/ -16

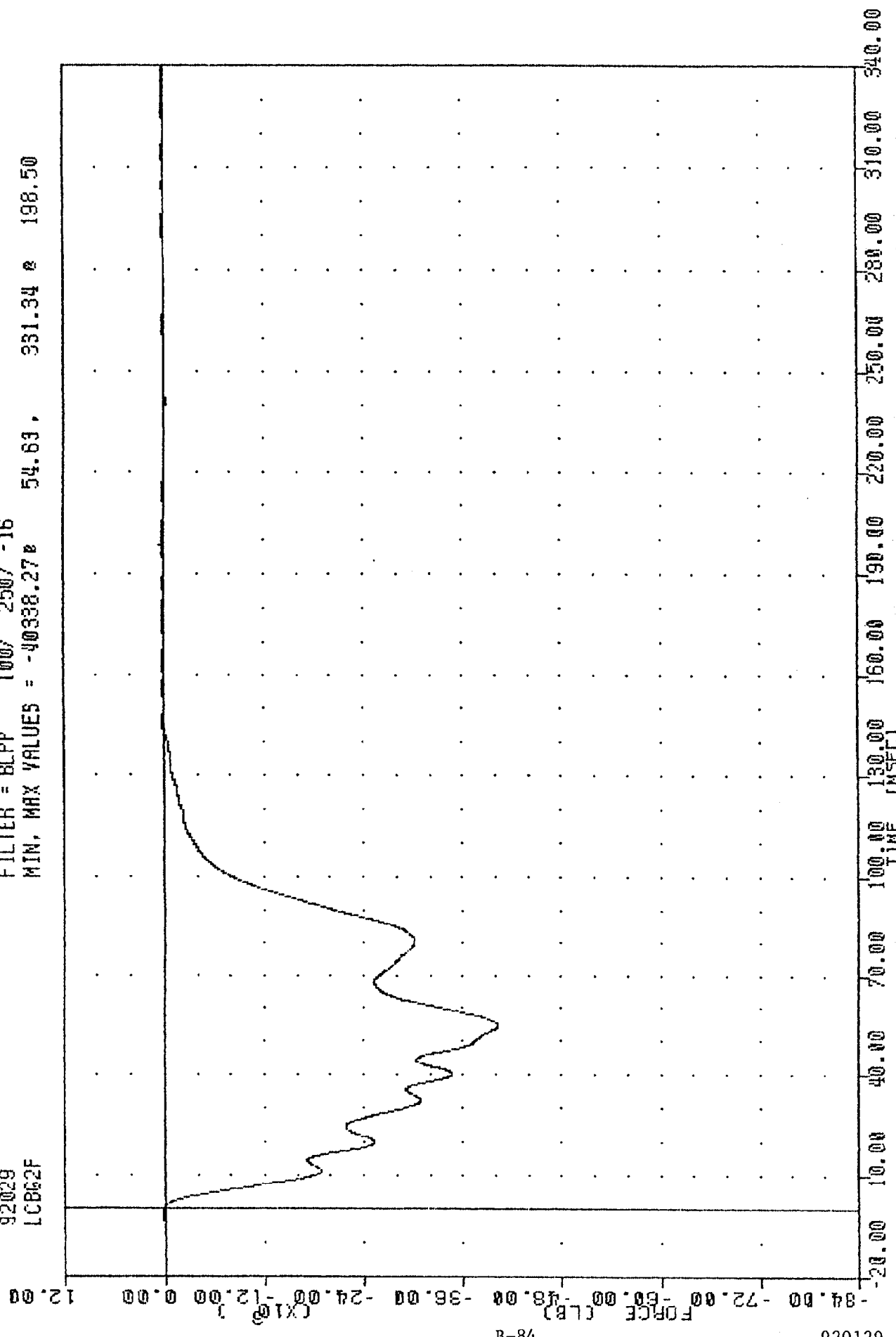
MIN. MAX VALUES = -18377.76 17.25 , 221.18 145.63



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER GROUP - 1 FORCE TOTAL

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 LC862F

FILTER = BLPP 100/ 250/ -16  
 MIN, MAX VALUES = -40338.27 54.63, 331.34 198.50



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER GROUP - 2 FORCE TOTAL

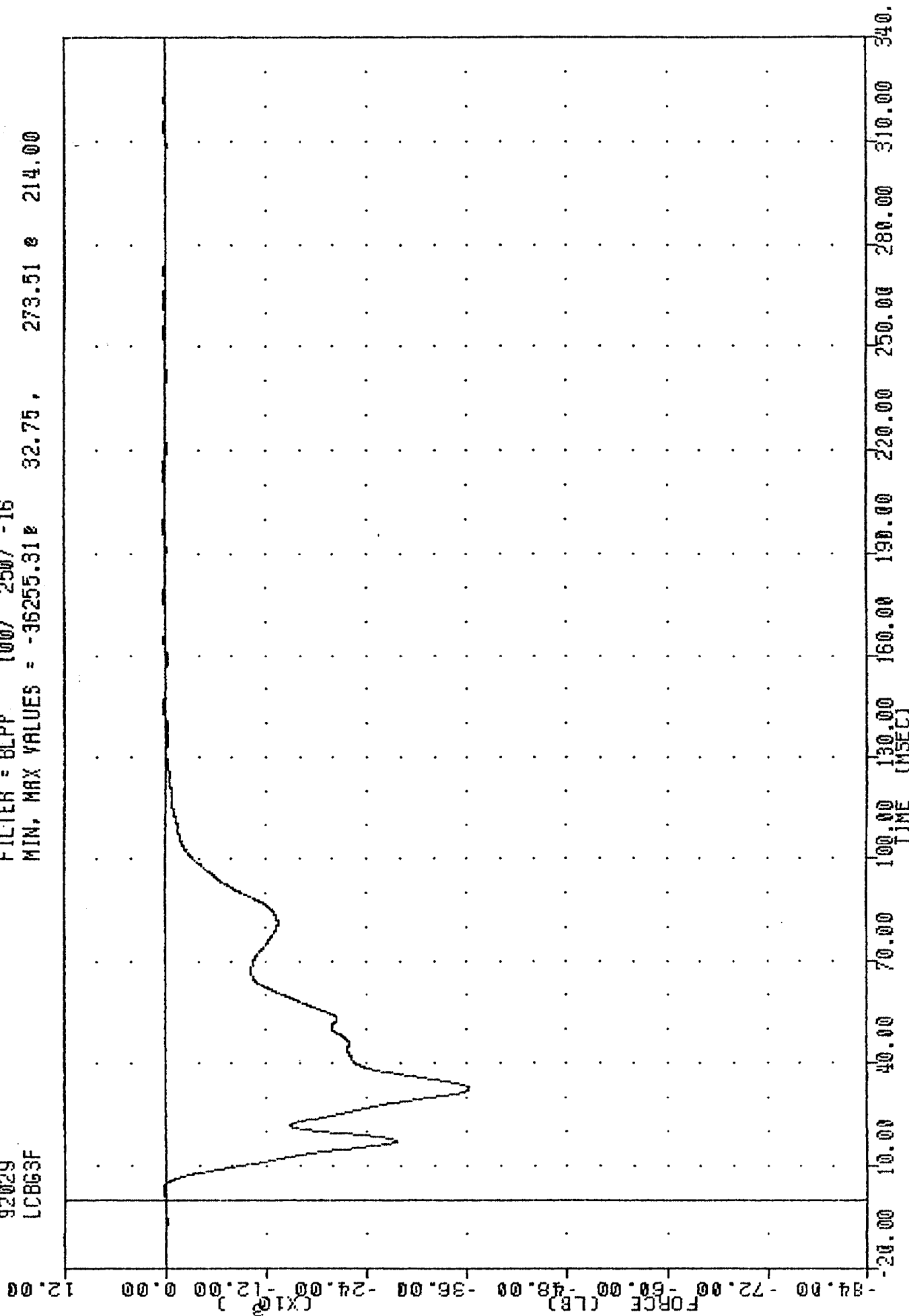
# NEW CAR ASSESSMENT PROGRAM

92029

LCB63F

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -36255.31# 32.75, 273.51 & 214.00

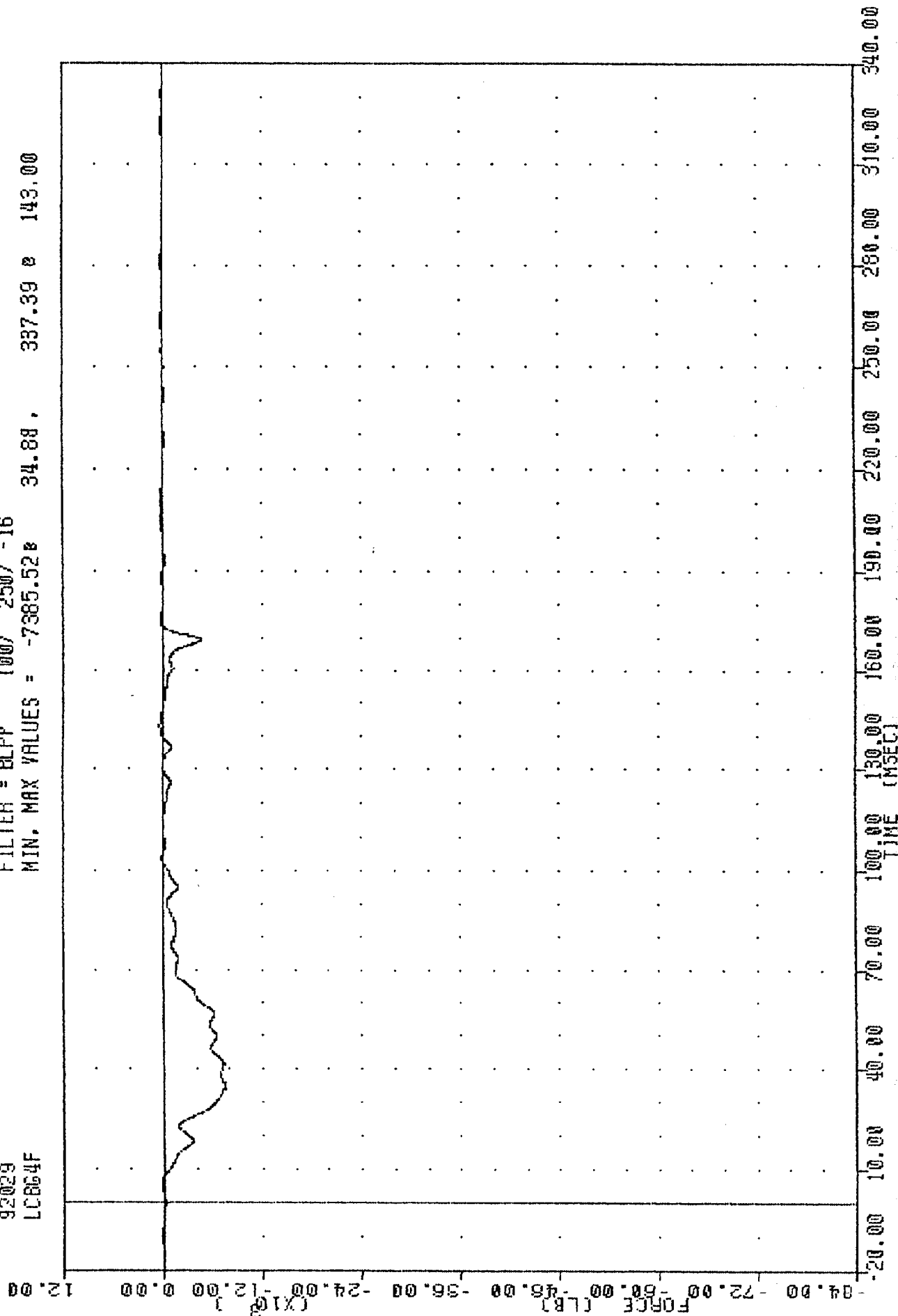


1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER GROUP - 3 FORCE TOTAL



TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 LCB64F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -7385.52B 34.88 , 337.39 B 143.00



B-86

920129

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER GROUP 4 FORCE TOTAL

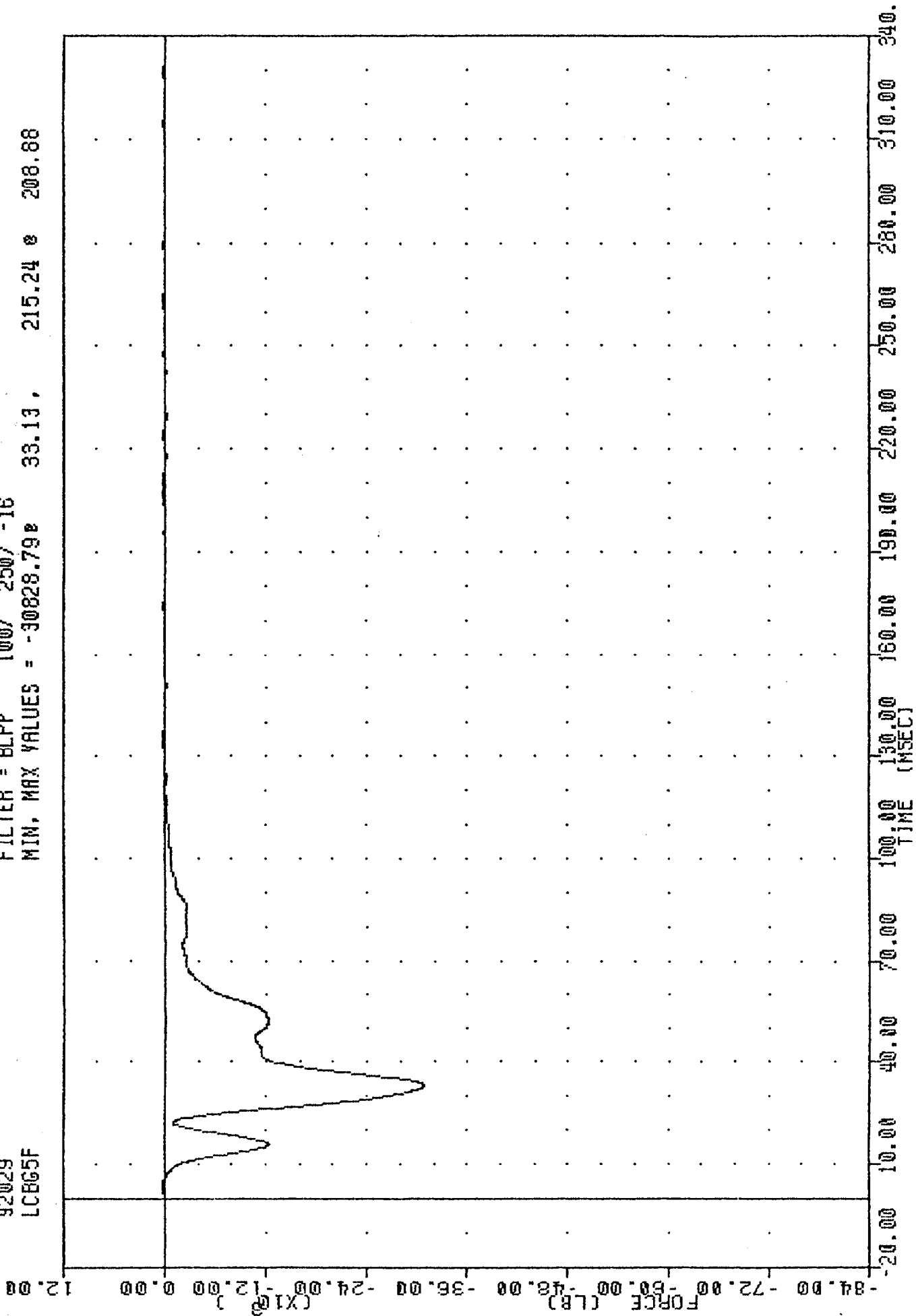
NEW CAR ASSESSMENT PROGRAM

92029

LCB65F

FILTER = BLPP 100/ 250/ -16

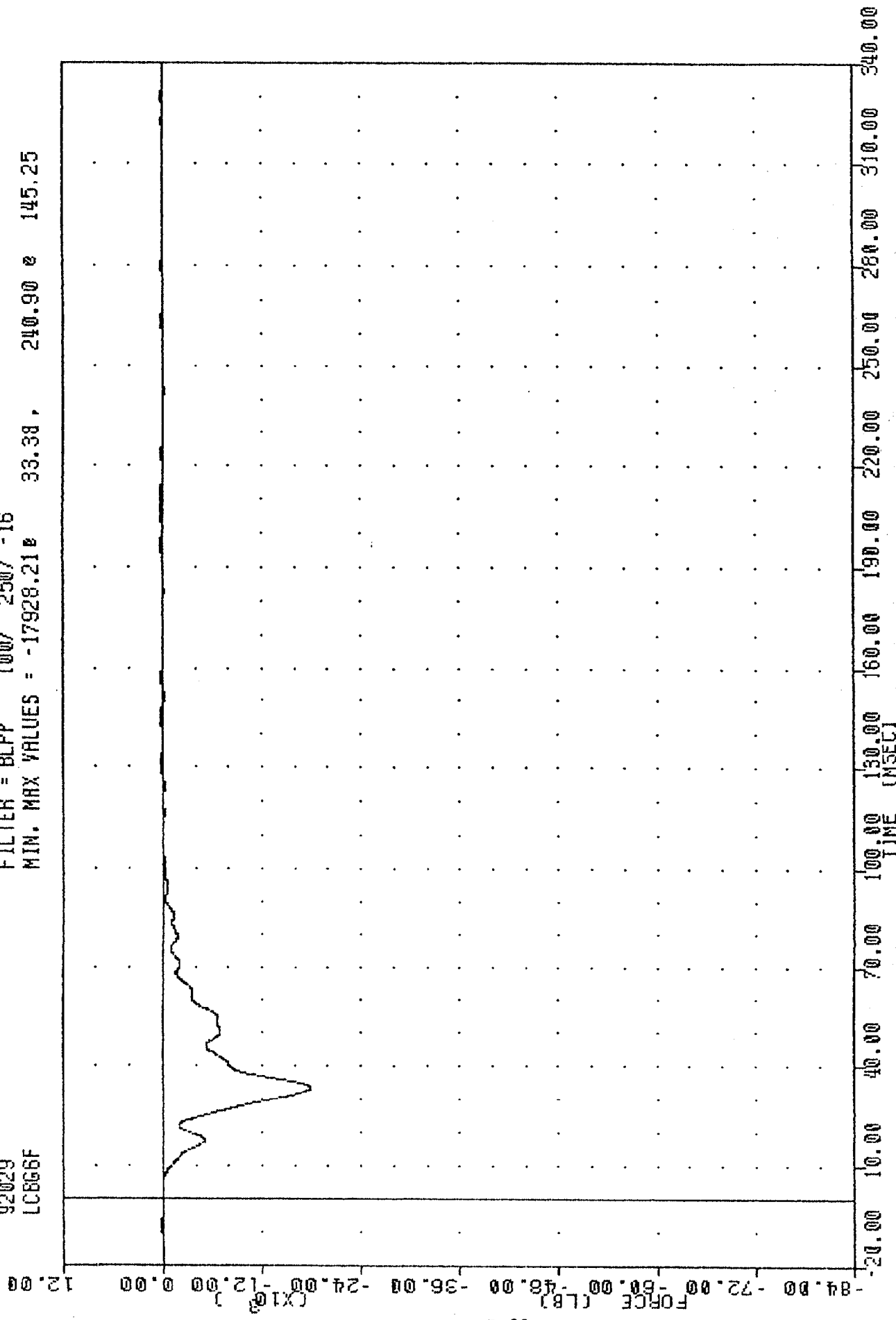
MIN. MAX VALUES = -30828.79# 33.13 , 215.24 # 208.88



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
LOAD CELL BARRIER GROUP - 5 FORCE TOTAL

TRC , 920129  
 NEW CAR ASSESSMENT PROGRAM  
 92029  
 LCBG6F

FILTER = BLPP 100/ 250/ -16  
 MIN. MAX VALUES = -17928.21e 33.38 , 240.90 e 145.25



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 LOAD CELL BARRIER GROUP - 6 FORCE TOTAL

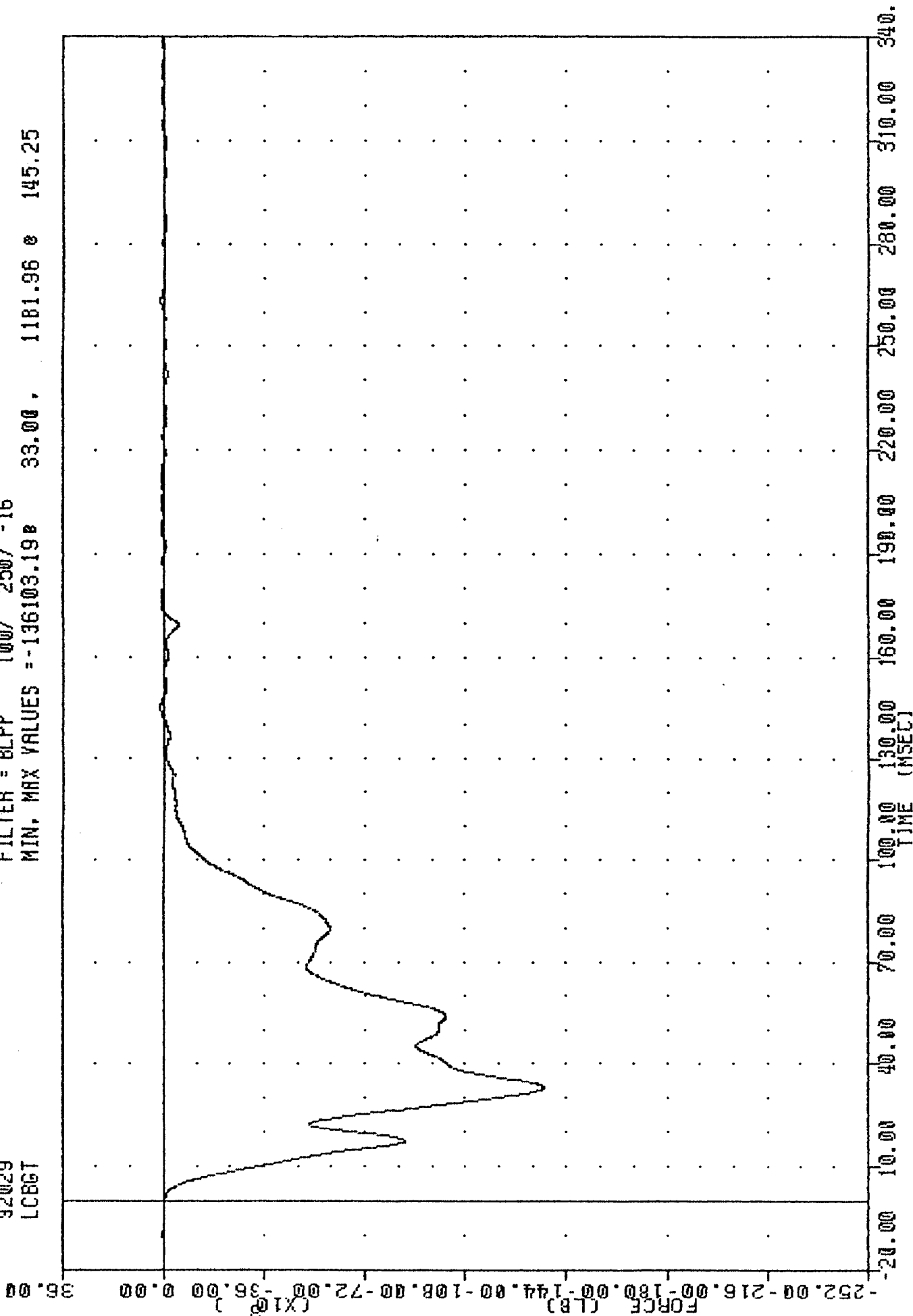
# NEW CAR ASSESSMENT PROGRAM

92029

LC8GT

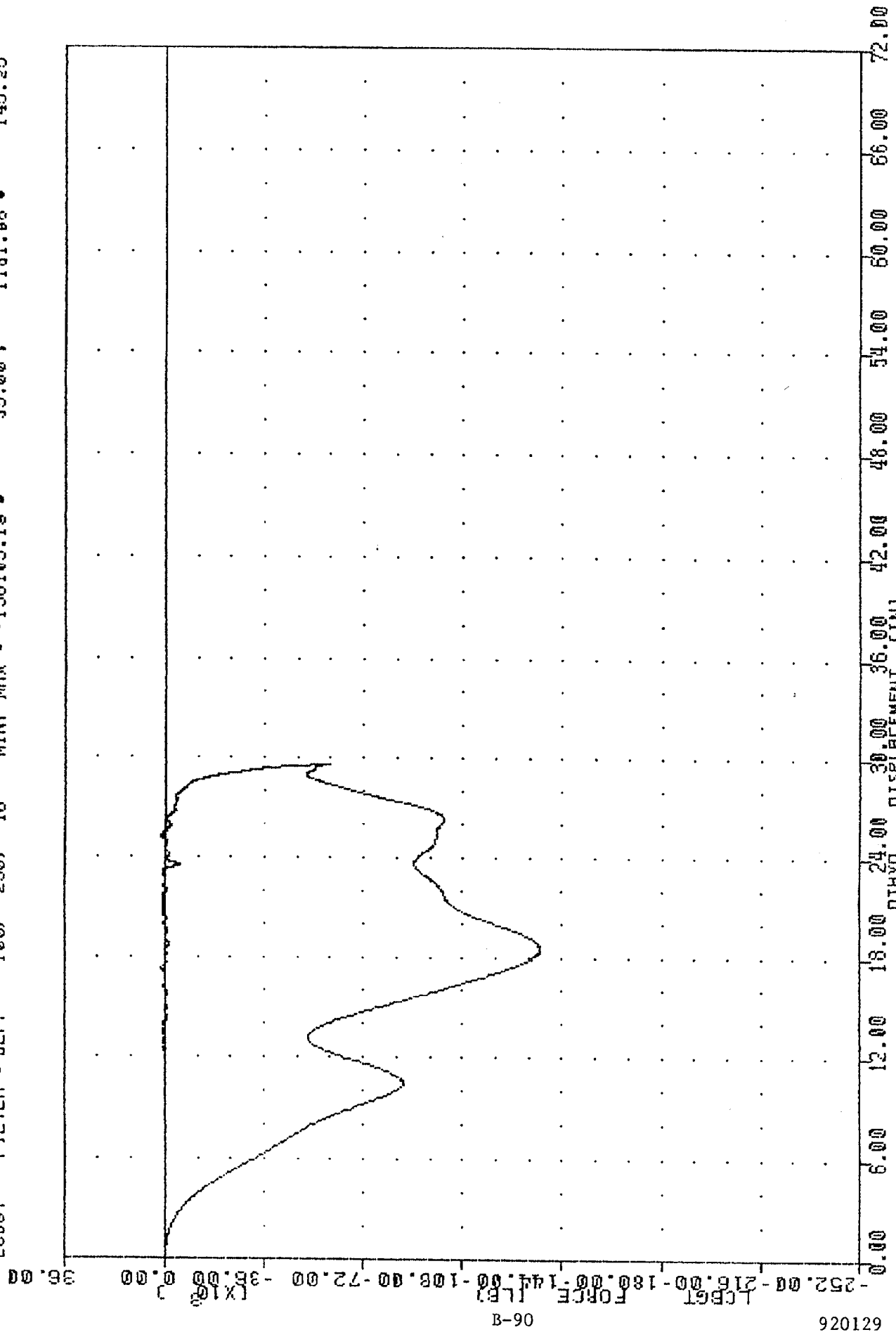
FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -136103.190 33.00 , 1181.96 0 145.25



1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
TOTAL LOAD CELL BARRIER FORCE

TRC 920129 NEW CAR ASSESSMENT PROGRAM 92029  
 UTHXD 300/ 750/ -16 MIN. MAX = 0.00 29.61 81.25  
 LC8GT 100/ 250/ -16 MIN. MAX = -136103.19 33.00 1181.06 145.25



920129

1992 NISSAN MAXIMA INTO FRONTAL LOAD CELL BARRIER  
 TOTAL LOAD CELL BARRIER FORCE VS VEHICLE X-AXIS DISPLACEMENT

APPENDIX C

DUMMY CERTIFICATION DATA

PRE-TEST CERTIFICATION DATA

DRIVER DUMMY S/N: 713



## TRANSPORTATION RESEARCH CENTER OF OHIO

## EXTERNAL DIMENSIONS

PART 572

09-JAN-92

TEMPERATURE 70 F  
TRC ED71302

RELATIVE HUMIDITY 49 %  
572B SN713 EXT. DIMENSION CAL02

| DESCRIPTION                       | SPECIFICATION  | TEST RESULTS |
|-----------------------------------|----------------|--------------|
| SN 713 HUMANOID                   |                |              |
| Sitting Height                    | 35.6 - 35.8 IN | 35.6 IN      |
| Shoulder Pivot Height             | 21.8 - 22.4 IN | 22.1 IN      |
| Hip Pivot Height                  | 3.9 IN         | 3.9 IN       |
| Hip Pivot From Backline           | 4.8 IN         | 4.8 IN       |
| Knee Pivot From Backline          | 20.1 - 20.7 IN | 20.5 IN      |
| Rear of Head From Backline        | 1.7 IN         | 1.7 IN       |
| Chest Depth                       | 9.1 - 9.6 IN   | 9.4 IN       |
| Shoulder Width                    | 17.8 - 18.4 IN | 17.9 IN      |
| Chest Circumference Over Nipples  | 36.8 - 40.0 IN | 37.6 IN      |
| Waist Circumference at Min. Girth | 31.4 - 32.6 IN | 32.5 IN      |
| Hip Width                         | 14.0 - 15.4 IN | 14.6 IN      |
| Knee Pivot From Floor             | 19.3 - 19.9 IN | 19.6 IN      |

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

*Chas. Middleton*

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

PART 572

09-Jan-92

TEMPERATURE 70 F  
TRC HD71302

RELATIVE HUMIDITY 49 %  
572B SN 713 HEAD DROP CAL 02

| TEST PARAMETER                  | SPECIFICATION  | TEST RESULTS |
|---------------------------------|----------------|--------------|
| PEAK RESULTANT ACCELERATION     | 210 - 260 G    | 251.45 G     |
| TIME ABOVE 100 G LEVEL          | 0.9 - 1.5 MSEC | 1.27 MSEC    |
| PEAK LATERAL ACCELERATION       | 10 G MAX       | 6.74 G       |
| IS ACCELERATION CURVE UNIMODAL? | YES            | YES          |

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

*Chas Middleton*

572B SN 713 HEAD DROP CAL 02

92009

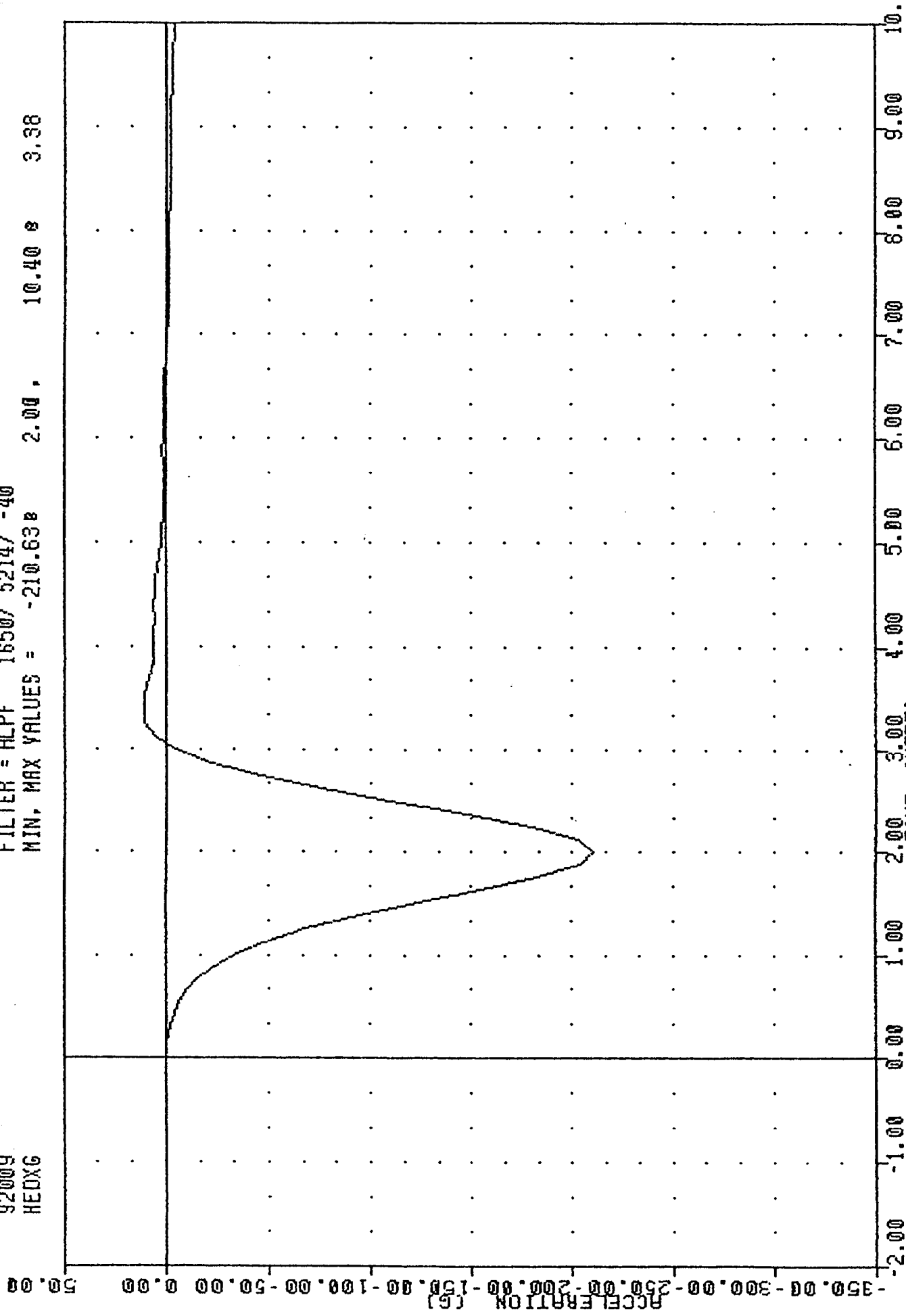
HEDXG

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = -210.638 2.00

10.40 8

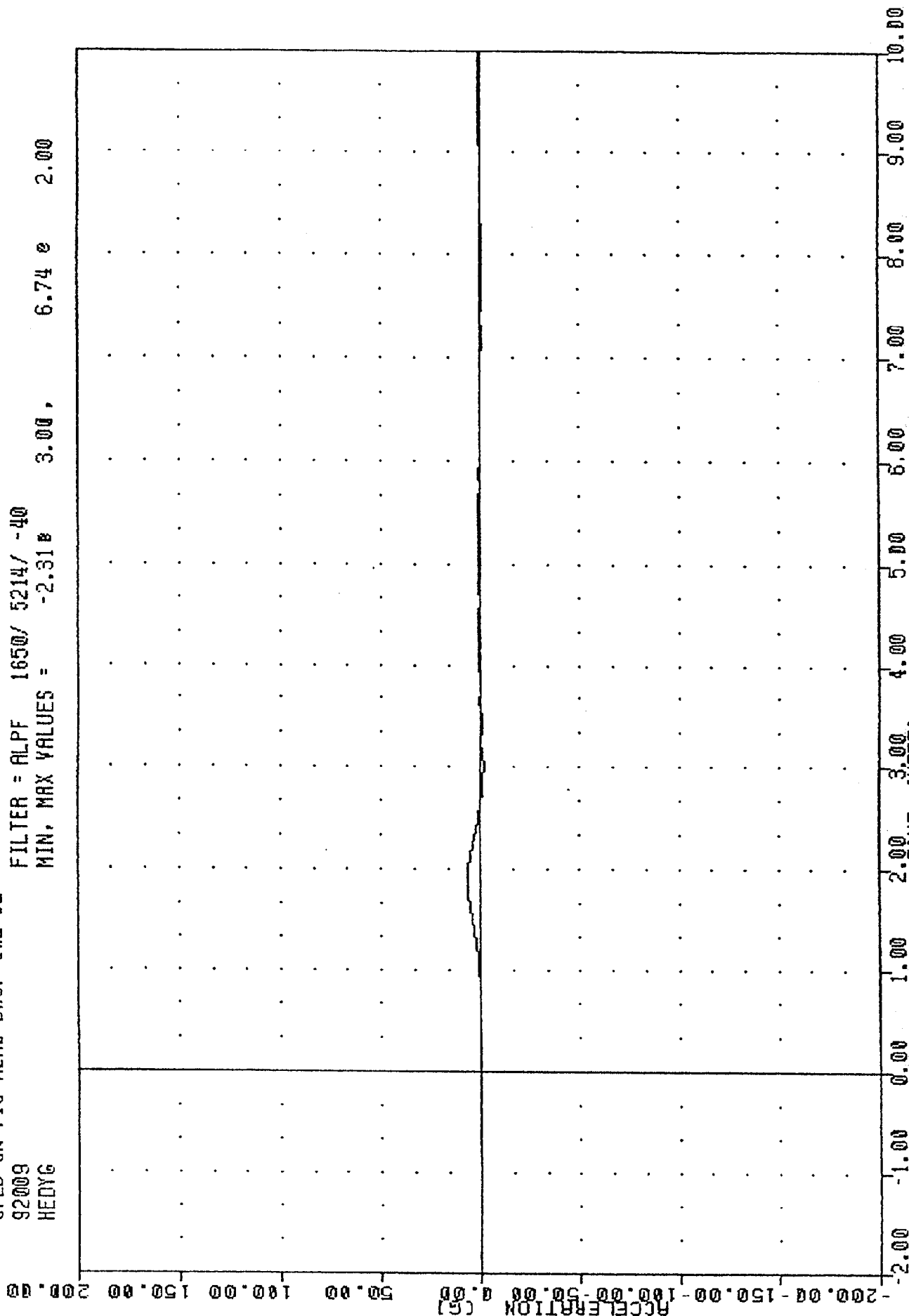
3.38



PART 572-B HYBRID II HEAD DROP CALIBRATION  
HEAD ACCELERATION X AXIS

TRC  
5728 SN 713 HEAD DROP CAL 02  
92009  
HEDYG

FILTER = ALPF 1650/ 5214/ -40  
MIN, MAX VALUES = -2.318 3.00, 6.74 2.00

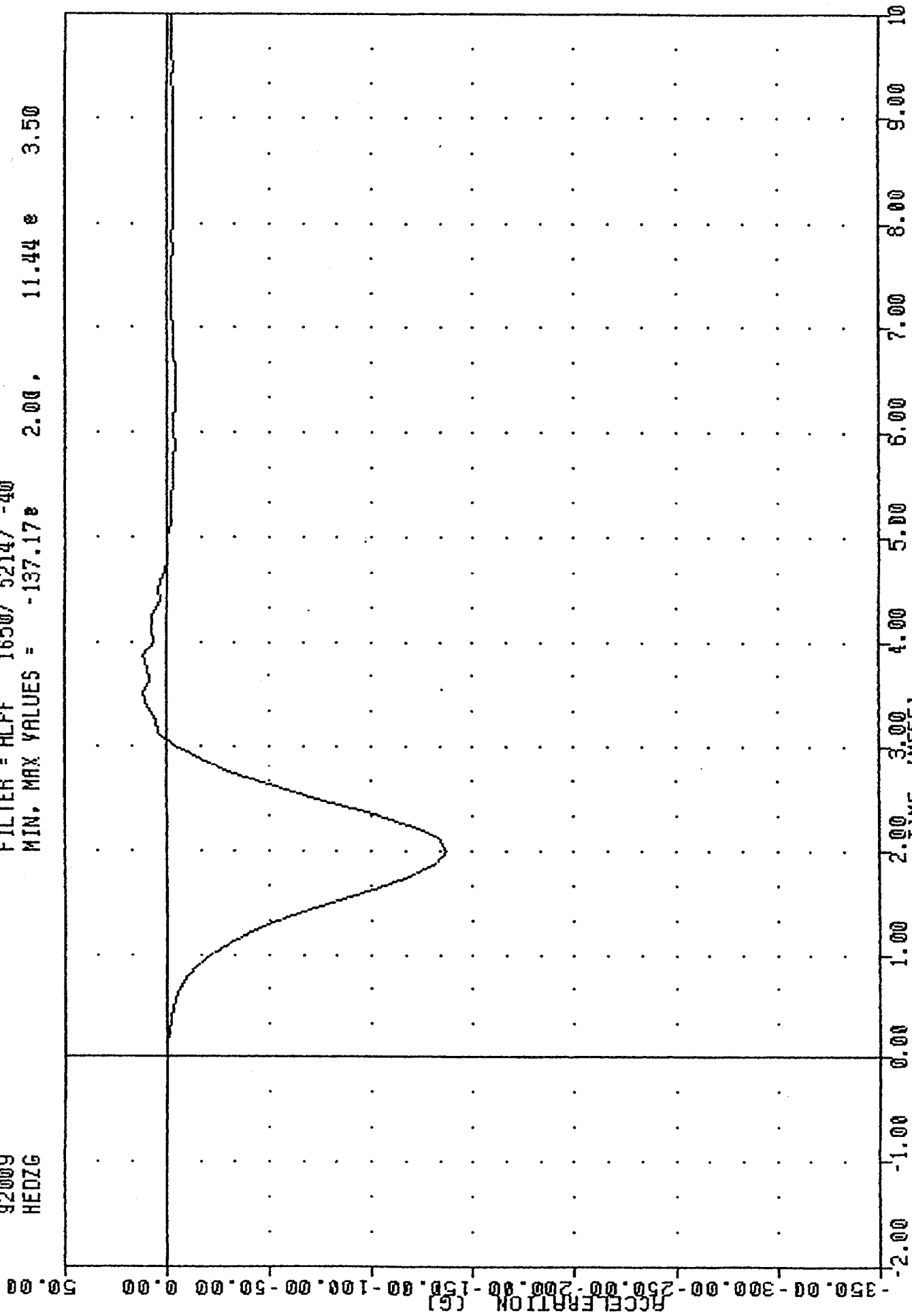


PART 572-8 HYBRID II HEAD DROP CALIBRATION

MEAN ACCELERATION MAX

572B SN 713 HEAD DROP CAL Q2  
 92009  
 HEDZG

FILTER = ALPF 1650/ 5214/ -40  
 MIN, MAX VALUES = -137.17 2.00, 11.44 3.50



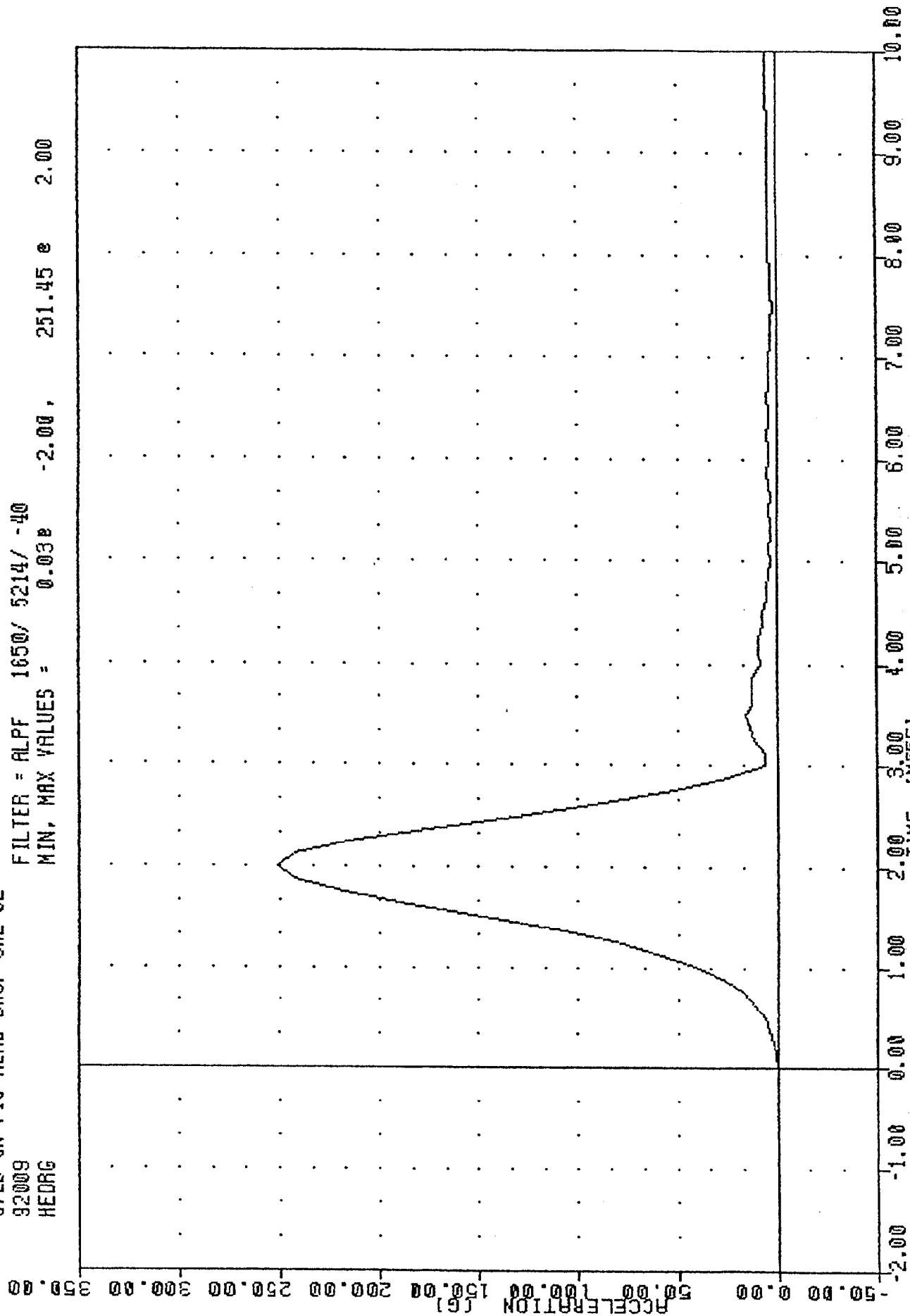
PART 572-B HYBRID II HEAD DROP CALIBRATION  
 HEAD ACCELERATION 7 AXIS

TRC  
5728 3N 713 HEAD DROP CAL 02  
92009  
HEADG

, H071302

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = 0.03e -2.00, 251.45 e 2.00



PART 572-B HYBRID II HEAD DROP CALIBRATION

CONFIRMATION

## TRANSPORTATION RESEARCH CENTER OF OHIO

## NECK PENDULUM TEST

PART 572

10-Jan-92

TEMPERATURE 70 F  
TRC HN71302RELATIVE HUMIDITY 34 %  
572B SN 713 HEAD/NECK CAL 02

| TEST PARAMETER            | SPECIFICATION       | TEST RESULTS |
|---------------------------|---------------------|--------------|
| Pendulum velocity         | 21.5 to 25.5 ft/sec | 23.76 ft/sec |
| Pendulum Deceleration:    |                     |              |
| T1 - T2: 5 - 20 G         | 3 msec max          | 2.42 msec    |
| T2 - T3: 20 - 20 G        | 25 - 30 msec        | 26.32 msec   |
| T3 - T4: 20 - 5 G         | 10 msec max         | 6.17 msec    |
| Avg. G level T2 - T3      | 20 - 24 G           | 23.59 G      |
| Maximum Rotation Angle    | 63 - 73 deg         | 68.42 deg    |
| Peak Head Resultant Accel | 26 G max            | 22.56 G      |

| Test Parameter | Specification | Test Results  |
|----------------|---------------|---------------|
| Rotation Angle | Time          | Chordal Disp. |
| (degrees)      | (msec)        | (in)          |
| 0              | -2.0 - +2.0   | -0.5 - +0.5   |
| 30             | 25.6 - 34.4   | 2.1 - 3.1     |
| 60             | 40.3 - 51.7   | 4.3 - 5.3     |
| max            | 53.2 - 66.8   | 5.0 - 6.0     |
| 60             | 67.0 - 83.0   | 4.3 - 5.3     |
| 30             | 85.4 - 104.6  | 2.1 - 3.1     |
| 0              | 101.0 - 123.0 | -0.5 - +0.5   |

SND: 5.95 in

DUMMY MEETS SPECIFICATIONS

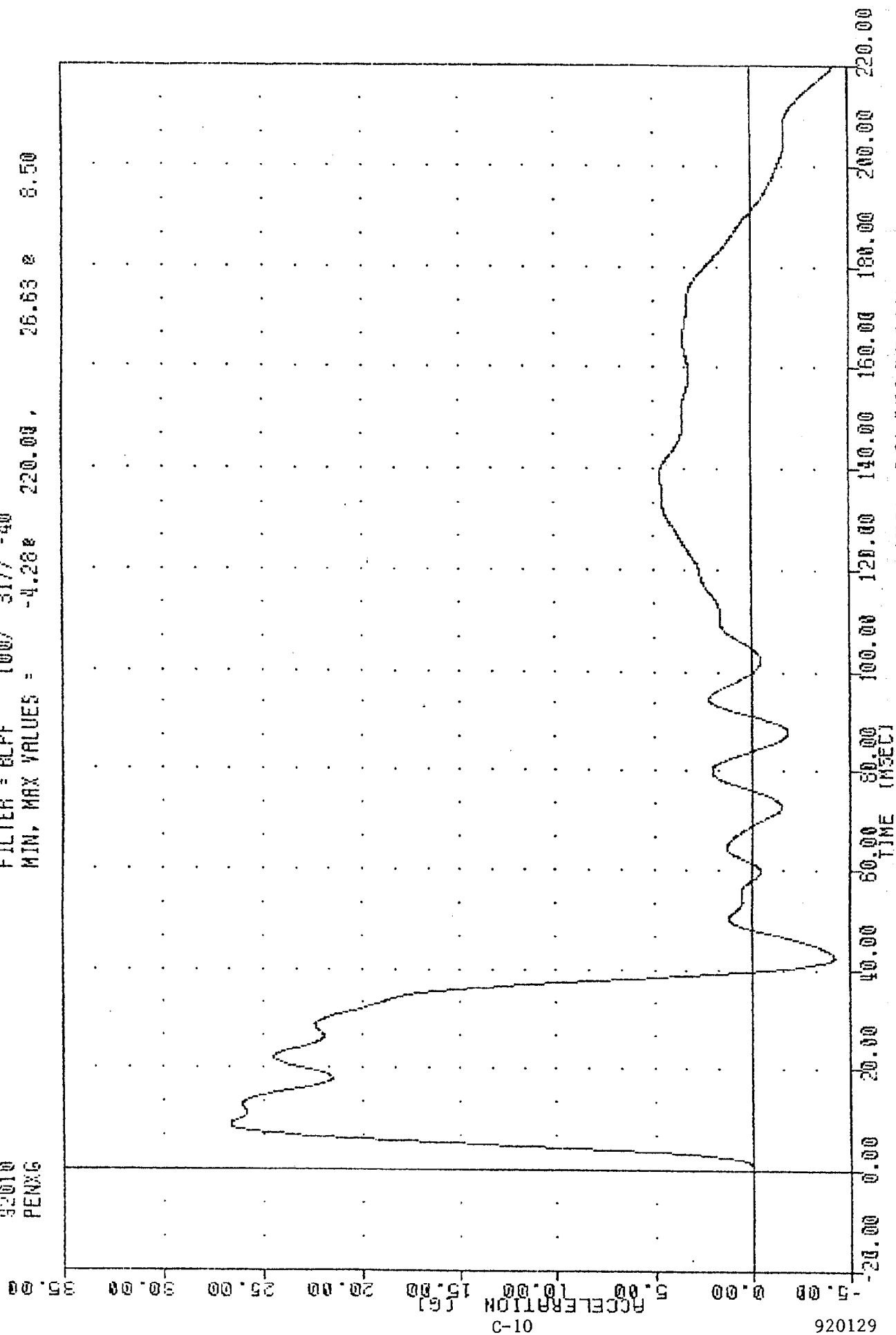
TECHNICIAN *Ch. Middleton*



TRC  
 572B SN 713 HEAD/NECK CAL 02  
 92010  
 PENNG

. HN71302

FILTER = BLPF 100/ 317/ -40  
 MIN, MAX VALUES = -4.28e 26.63 e 8.50



572B SN 713 HEAD/NECK CAL 02

92010

HEDXG

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = -20.65e

49.50,

11.17 e 139.13

15.00

10.00

5.00

0.00

-5.00

-10.00

-15.00

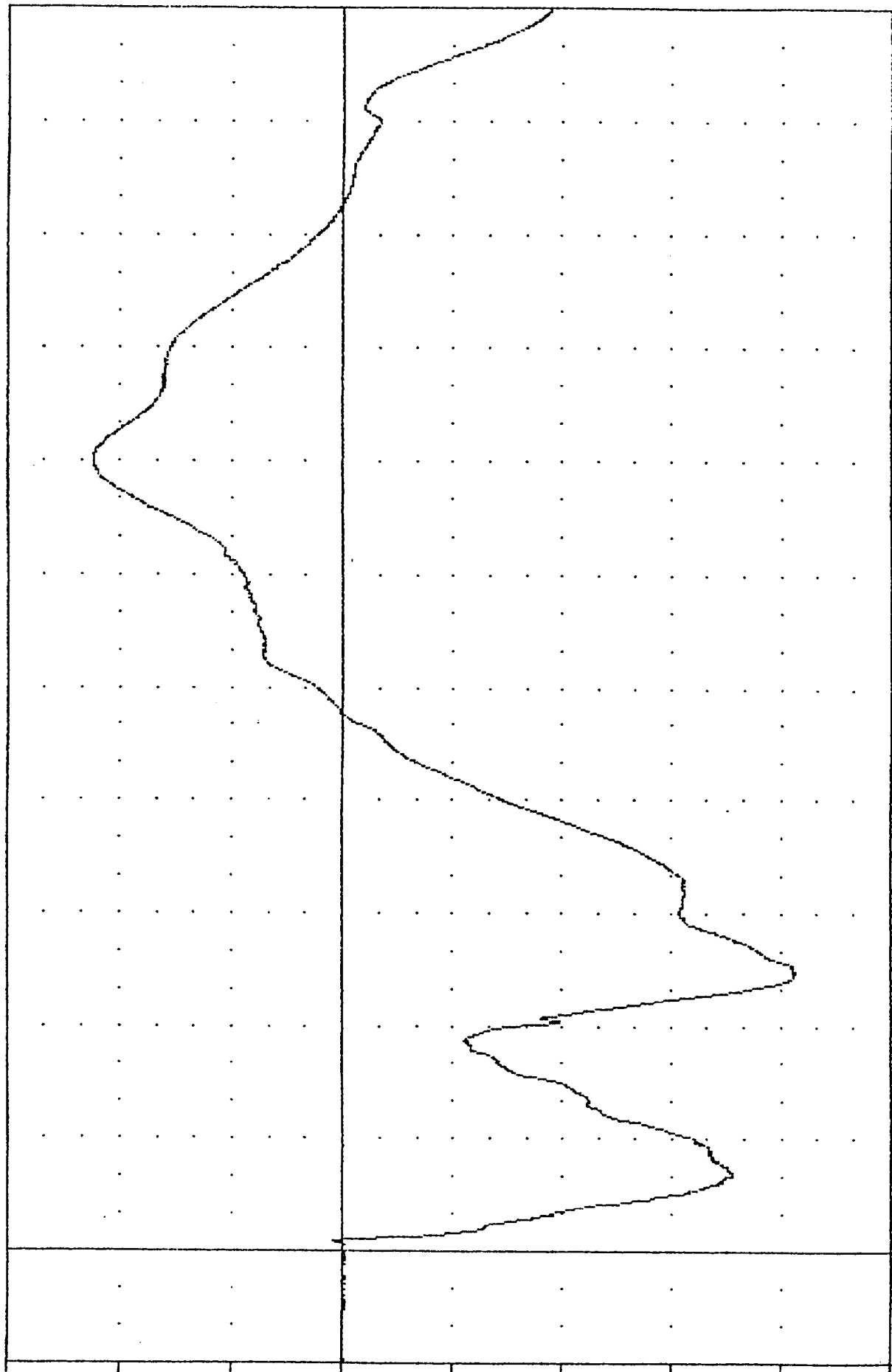
-20.00

-25.00

920129

11-3

ACCELERATION (G)



-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.

TIME (MSEC)

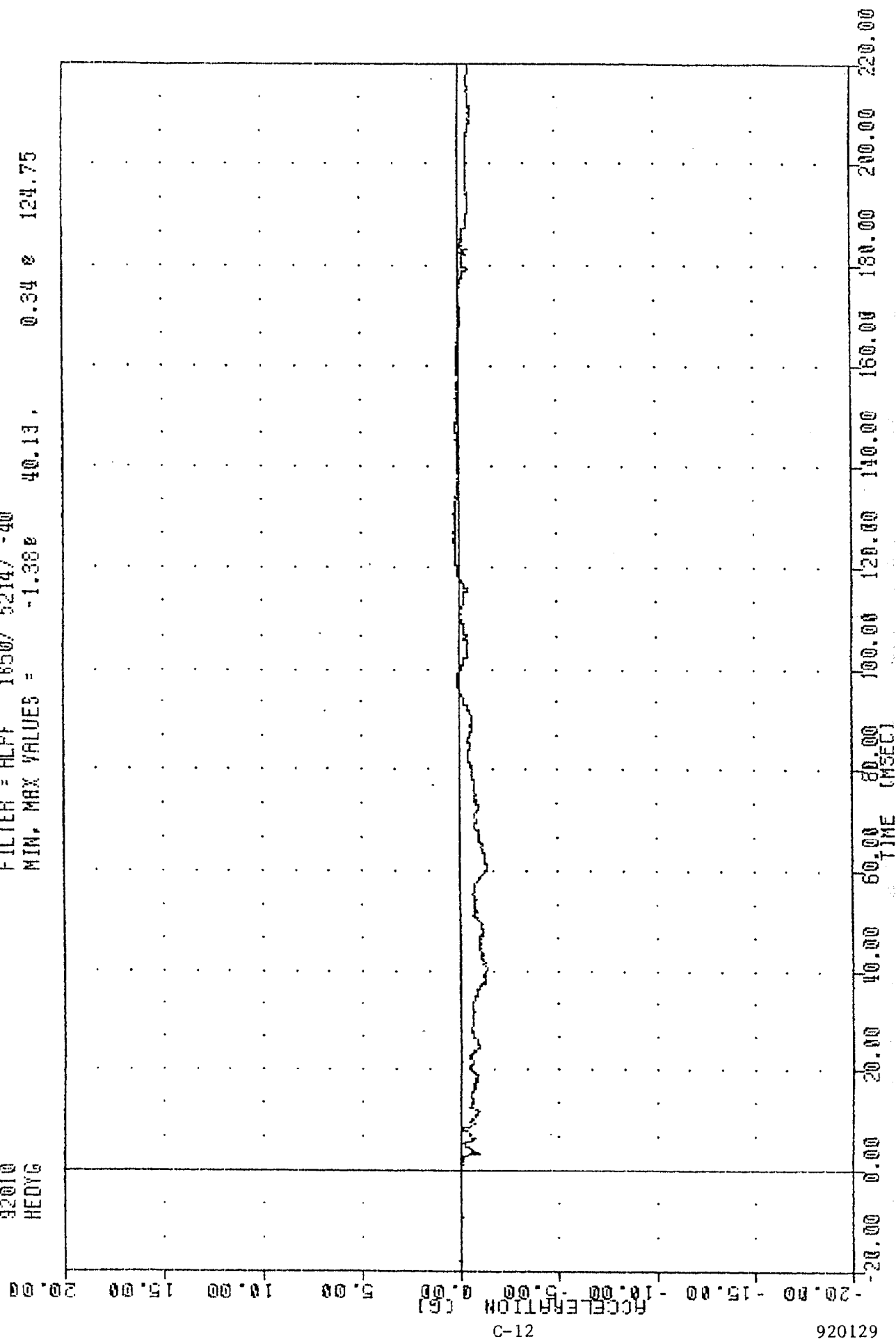
PART 572-B HYBRID II HEAD/NECK CALIBRATION

HEAD ACCELERATION X AXIS

TRC  
5728 SN 713 HEAD/NECK CAL 02  
92010  
HEDYG

, HN71302

FILTER = ALPF 1650/ 5214/ -40  
MIN. MAX VALUES = -1.380 40.13 , 0.34 0 124.75



C-12

920129

HEAD ACCELERATION Y AXIS

572B SN 713 HEAD/NECK CAL 02

92010

HEAD

FILTER = ALPF 1650/ 5214/ -40

MIN. MAX VALUES = -21.07 33.75

5.91 141.63

15.00

10.00

5.00

0.00

-5.00

-10.00

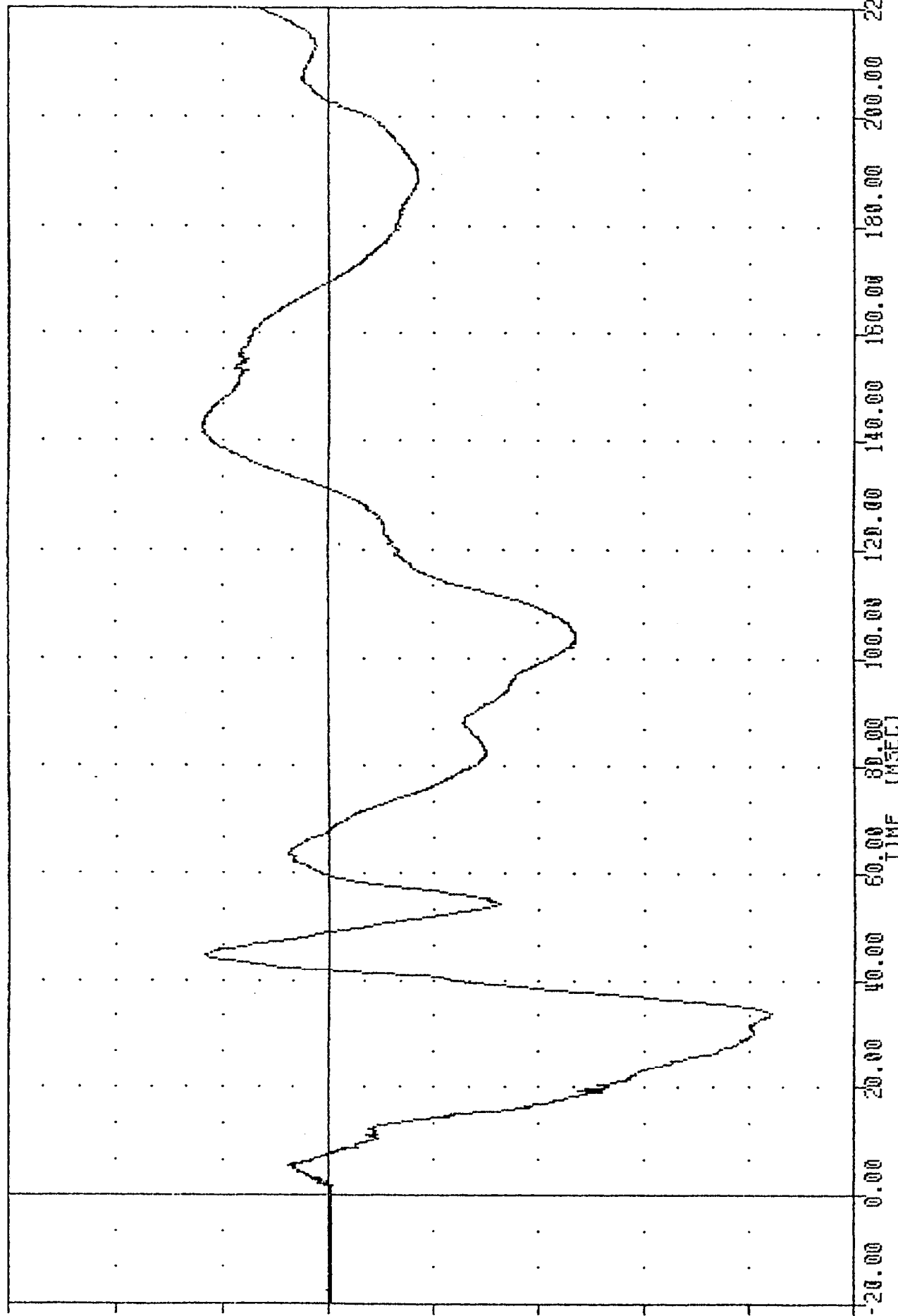
-15.00

-20.00

-25.00

13-C

920129

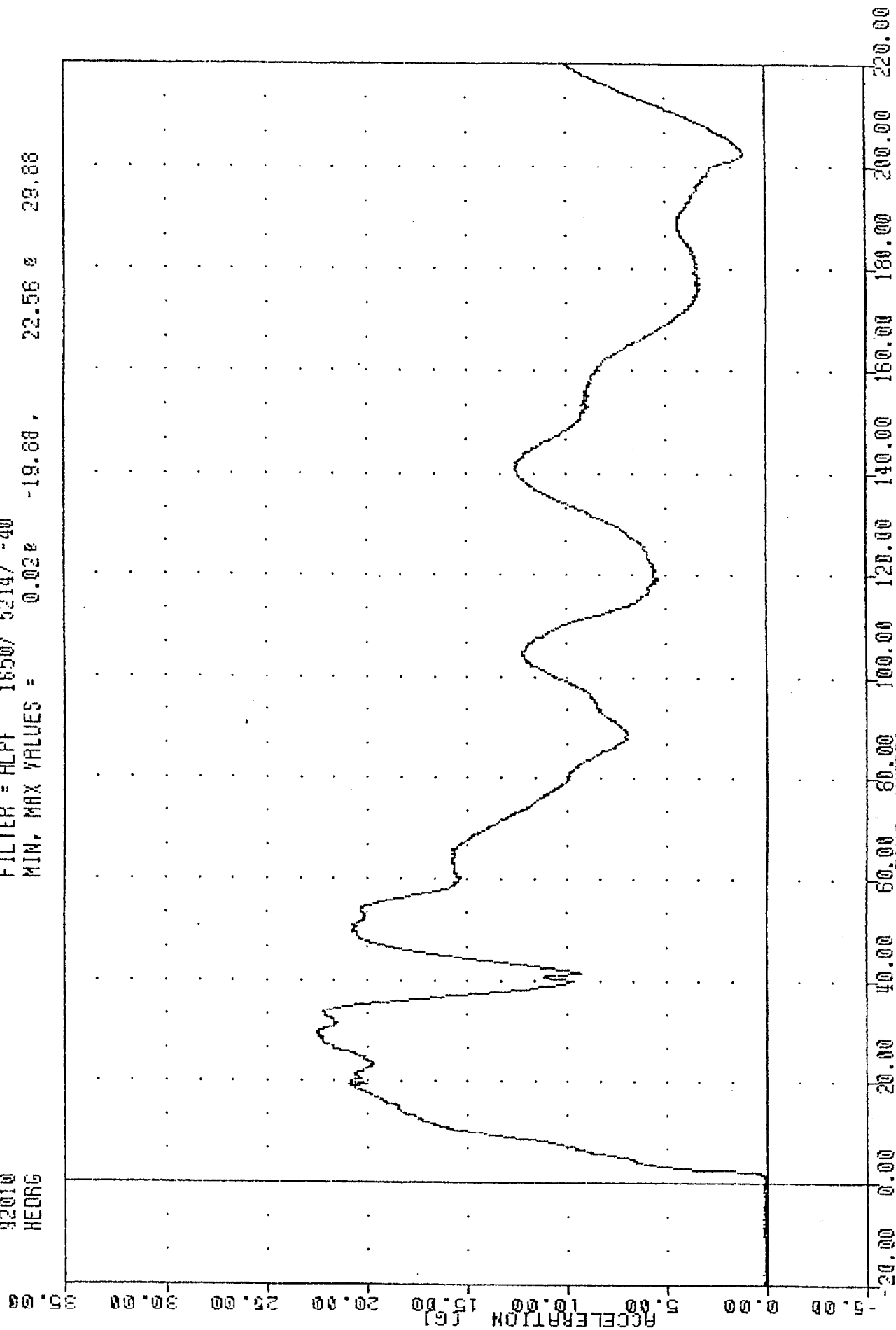


PART 572-B HYBRID II HEAD/NECK CALIBRATION  
HEAD ACCELERATION Z AXIS

TRC  
5728 SN 713 HEAD/NECK CAL 02  
92010  
HEADG

, HW71302

FILTER = ALPF 1650/ 5214/ -40  
MIN. MAX VALUES = 0.02e -19.68, 22.56 e 29.88



C-14

920129

PART 572-B HYBRID II HEAD/NECK CALIBRATION  
HEAD RESULTANT ACCELERATION

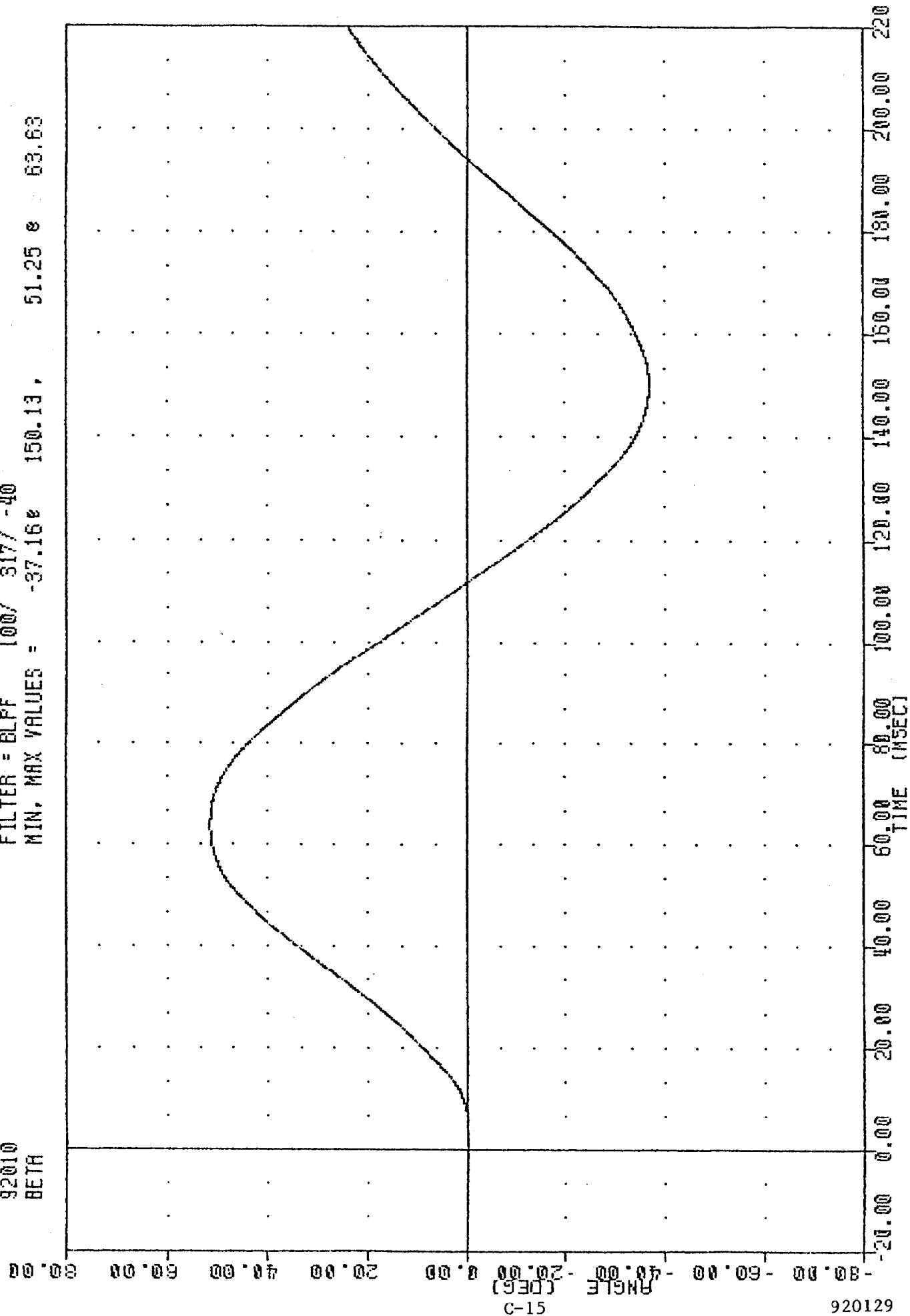
3/25 3M /13 HEAD/NECK CML W2

92010

BETA

FILTER = BLPF 100/ 317/ -40

MIN, MAX VALUES = -37.16 150.13, 51.25 63.63



920129

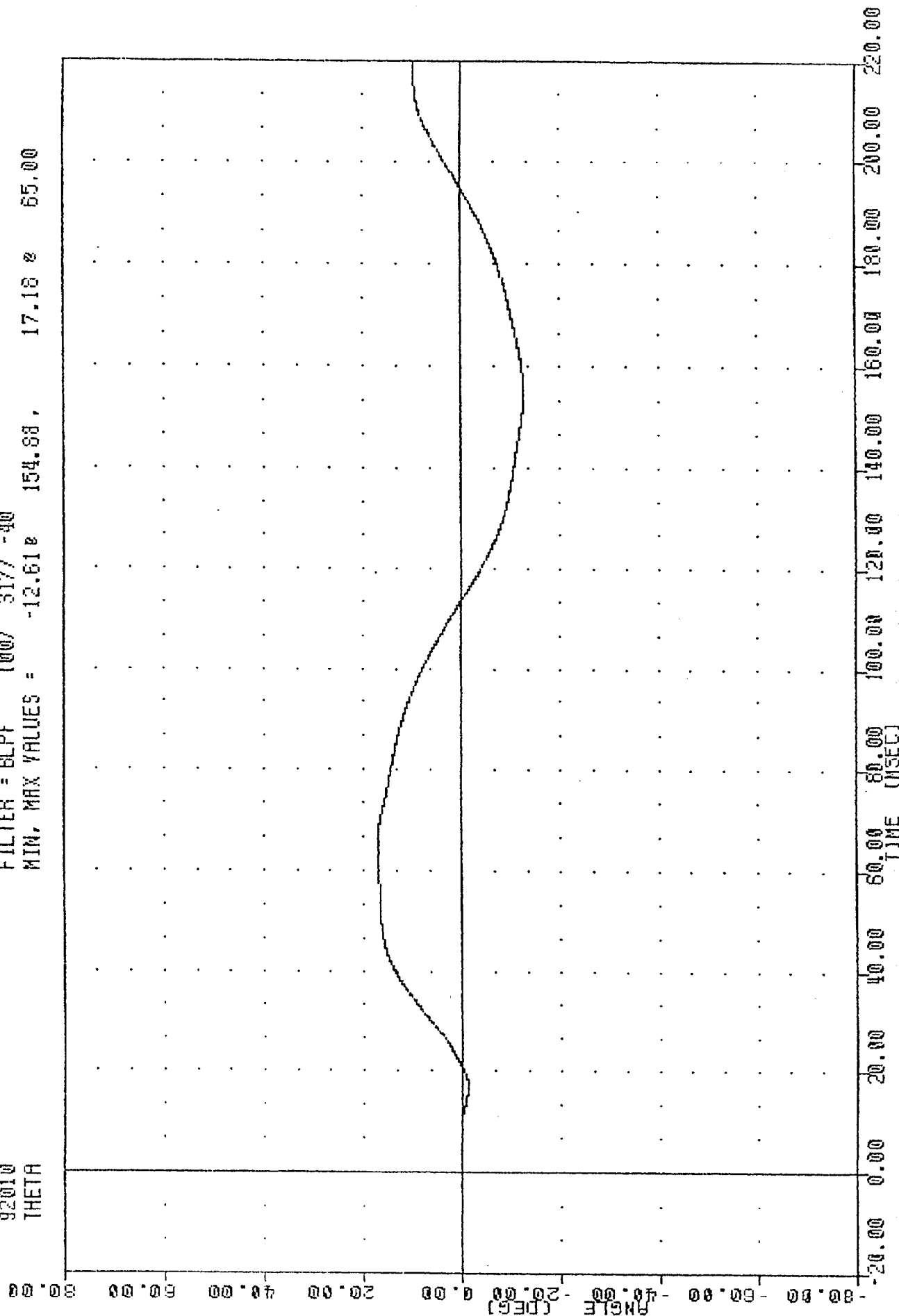
C-15

PART 572-B HYBRID II HEAD/NECK CALIBRATION  
ROTATION ABOUT THE BASE OF THE NECK

TRC  
5728 SN 713 HEAD/NECK CAL 02  
92010  
THETA

, HW71302

FILTER = BLPF 100/ 317/ -40  
MIN, MAX VALUES = -12.61e 154.88, 17.18 e 65.00

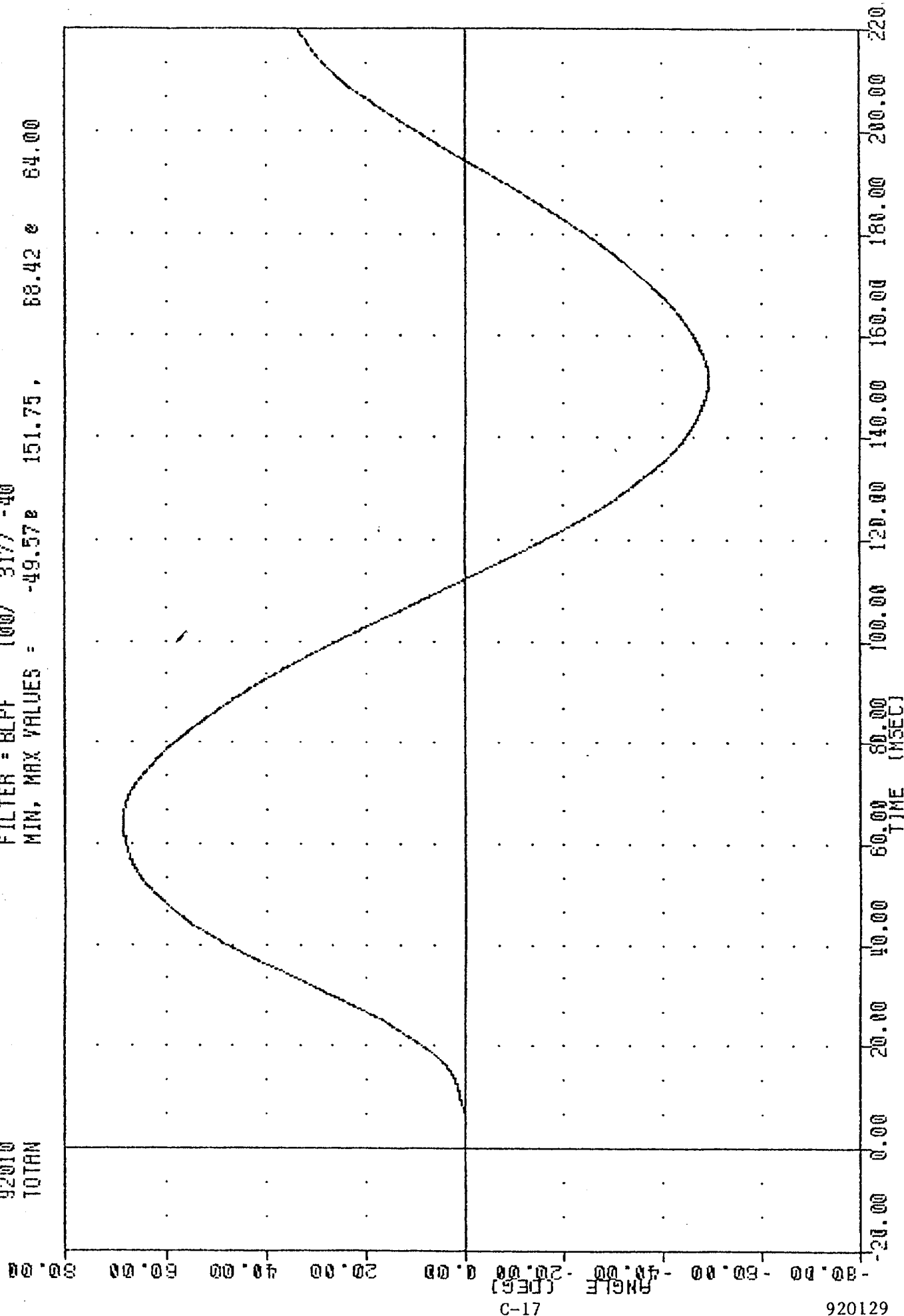


PART 572-B HYBRID II HEAD/NECK CALIBRATION  
ROTATION ABOUT THE HEAD C.G.

92010  
TOTAL

FILTER = BLPF 100/ 317/ -40

MIN, MAX VALUES = -49.57° 151.75, 88.42° 64.00



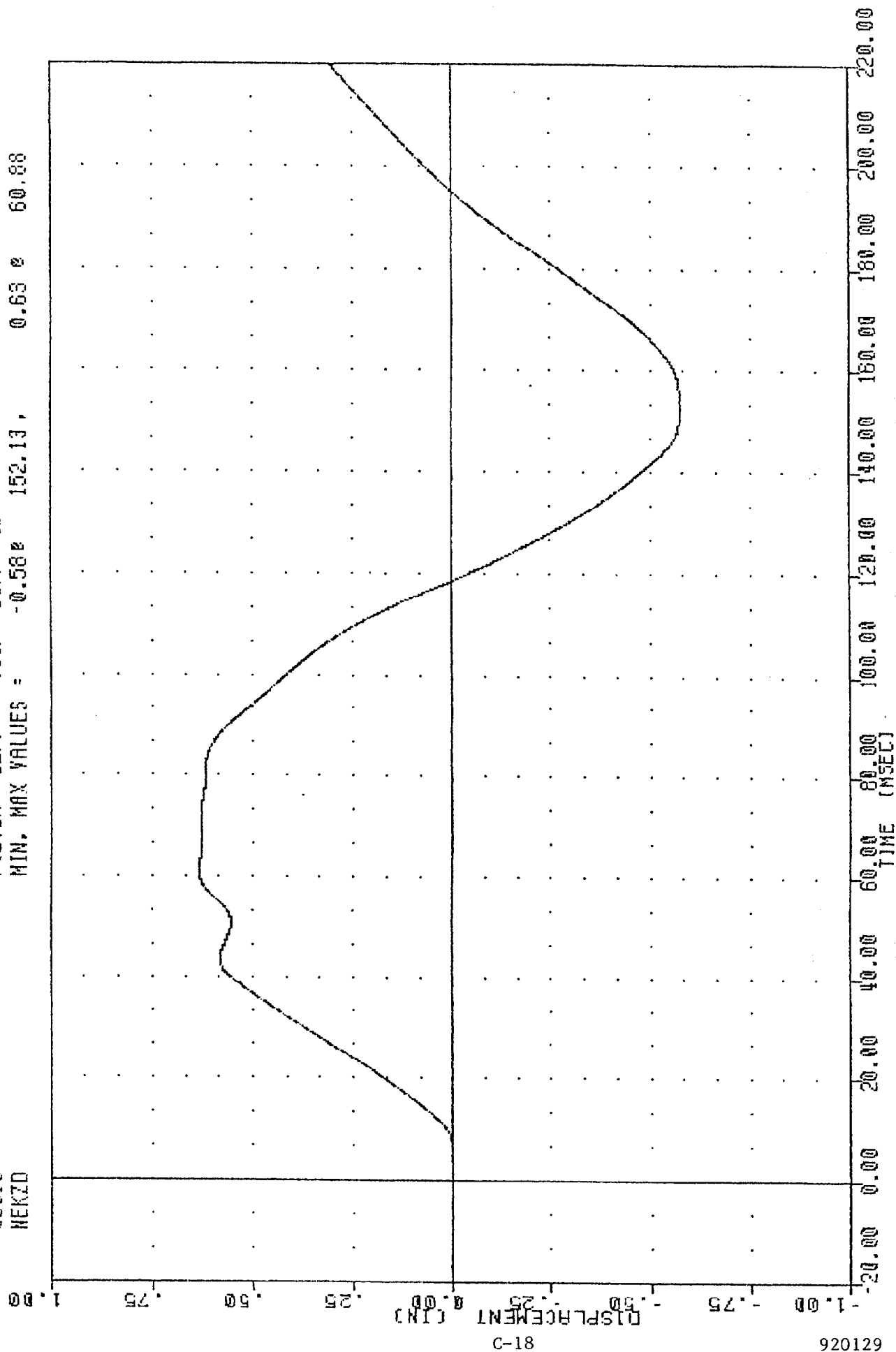
PART 572-B HYBRID II HEAD/NECK CALIBRATION  
TOTAL ROTATION



TRC  
5728 SN 713 HEAD/NECK CAL 02  
92010  
HEKID

, HN71302

FILTER = BLPF 100/ 317/ -40  
MIN. MAX VALUES = -0.58 152.13, 0.63 60.88



920129

18-C

PART 572-B HYBRID II HEAD/NECK CALIBRATION  
NECK DISPLACEMENT Z AXIS

5/28 3M 713 HEAD/NECK LHL W2

92010

NEKCD

FILTER = BLPF 100/ 317/ -40

MIN, MAX VALUES = 0.008 -17.00, 5.45 63.50

7.00

6.00

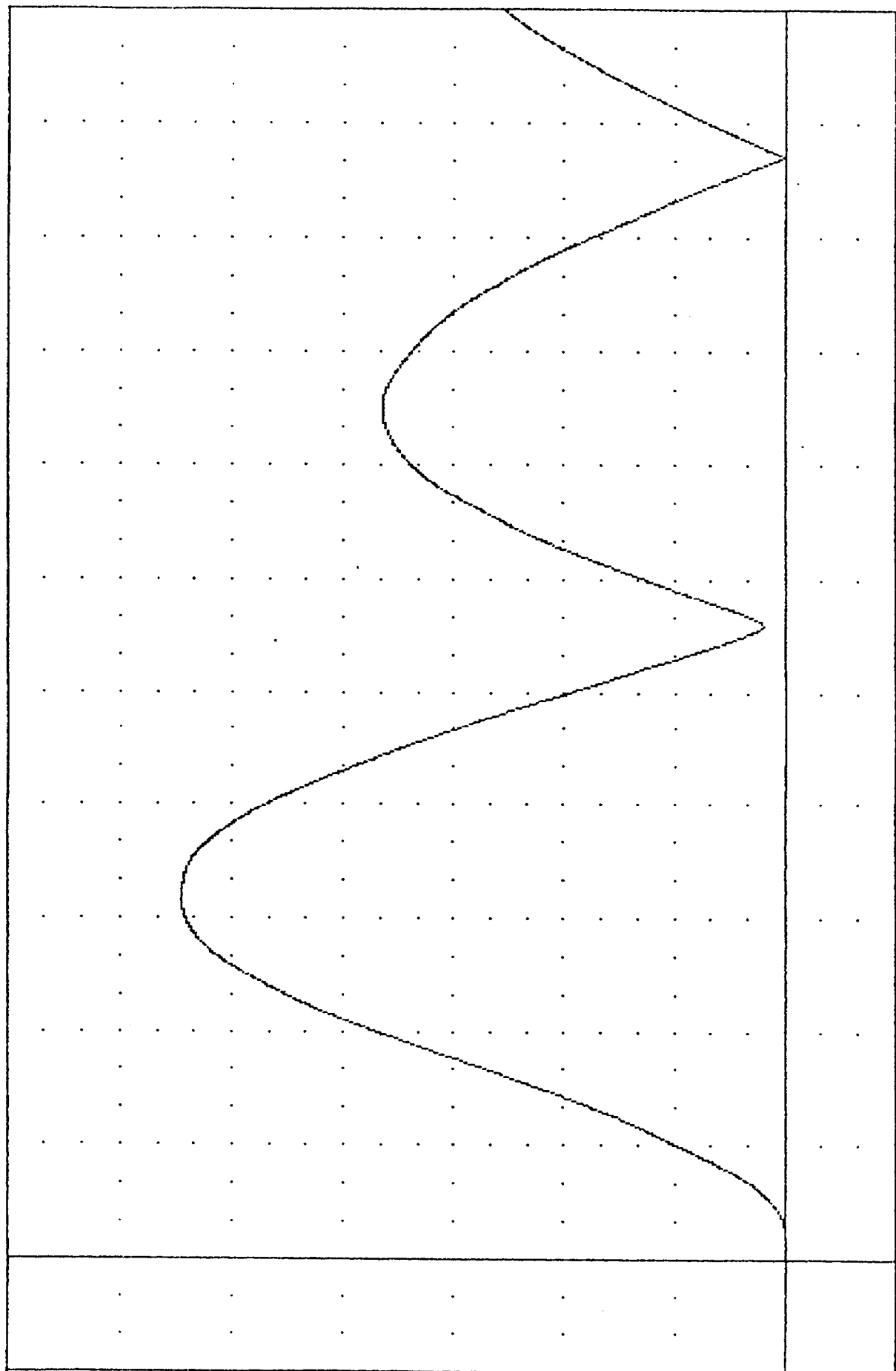
5.00

4.00

DISPLACEMENT (IN)

C-19

920129



-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00

PART 572-B HYBRID II HEAD/NECK CALIBRATION  
NECK CHORDAL DISPLACEMENT

## TRANSPORTATION RESEARCH CENTER OF OHIO

## THORAX IMPACT TEST

PART 572

10-Jan-92

TEMPERATURE 70 F  
TRC TH71302RELATIVE HUMIDITY 40 %  
572B SN 713 H.S. THORAX CAL 02

| HIGH SPEED TEST      |                    |              |
|----------------------|--------------------|--------------|
| TEST PARAMETER       | SPECIFICATION      | TEST RESULTS |
| PENDULUM VELOCITY    | 21.78-22.22 FT/SEC | 21.92 FT/SEC |
| PEAK DEFLECTION      | 1.7 IN max.        | 1.55 IN      |
| PEAK RESISTIVE FORCE | 2,250. LB max.     | 2075. LB     |
| INTERNAL HYSTERESIS  | 50% - 70%          | 64.9%        |

SCD: 2.20 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middle

9/20 04 13 H.S. INDIANA LNL W2

92010

PENXG

FILTER = BLFF 300/ 949/ -40

MIN, MAX VALUES = 0.04e

-6.00,

40.30 e

10.13

70.00

60.00

50.00

40.00

30.00

20.00

10.00

0.00

-10.00

-20.00

-30.00

-40.00

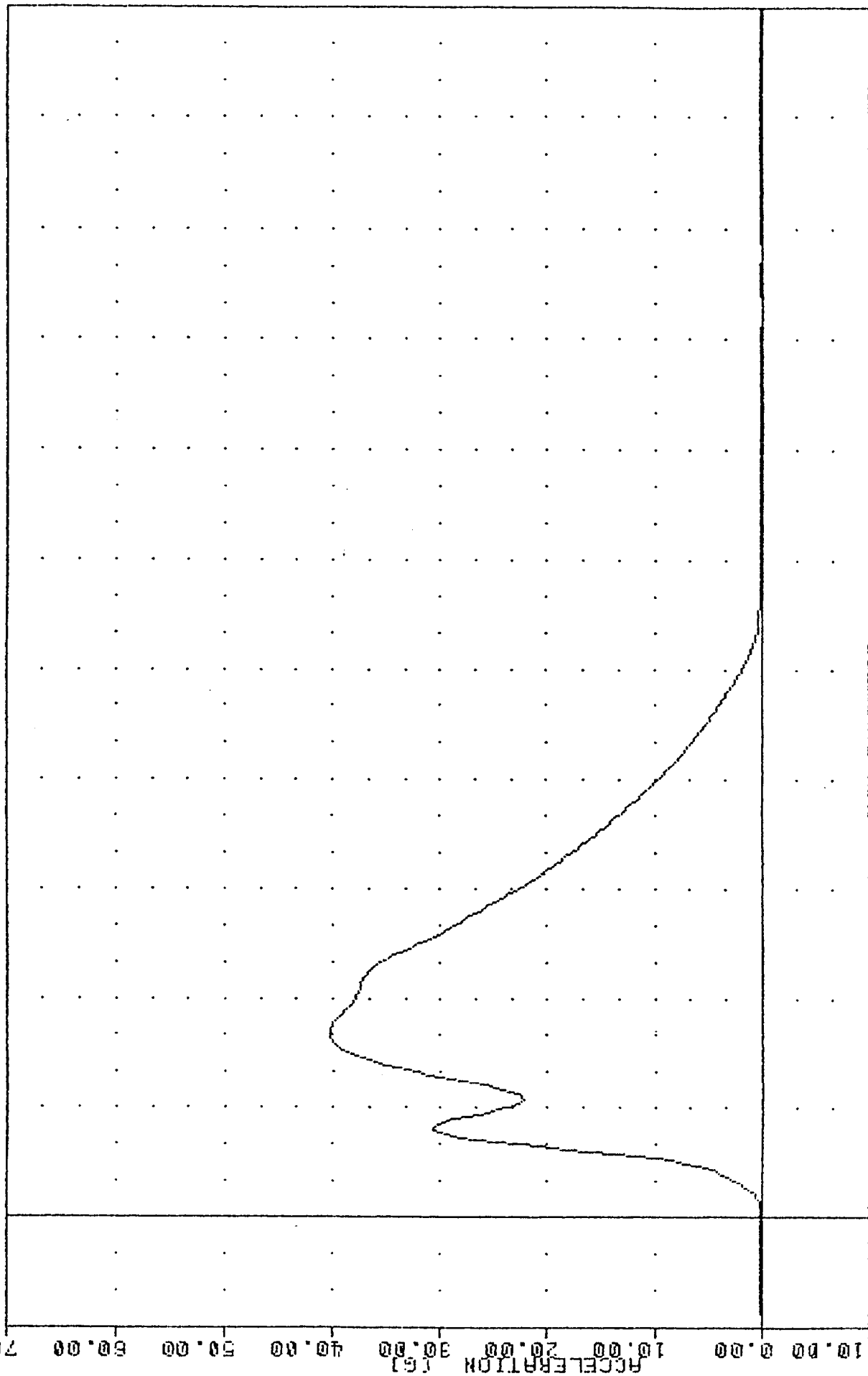
-50.00

-60.00

-70.00

C-21

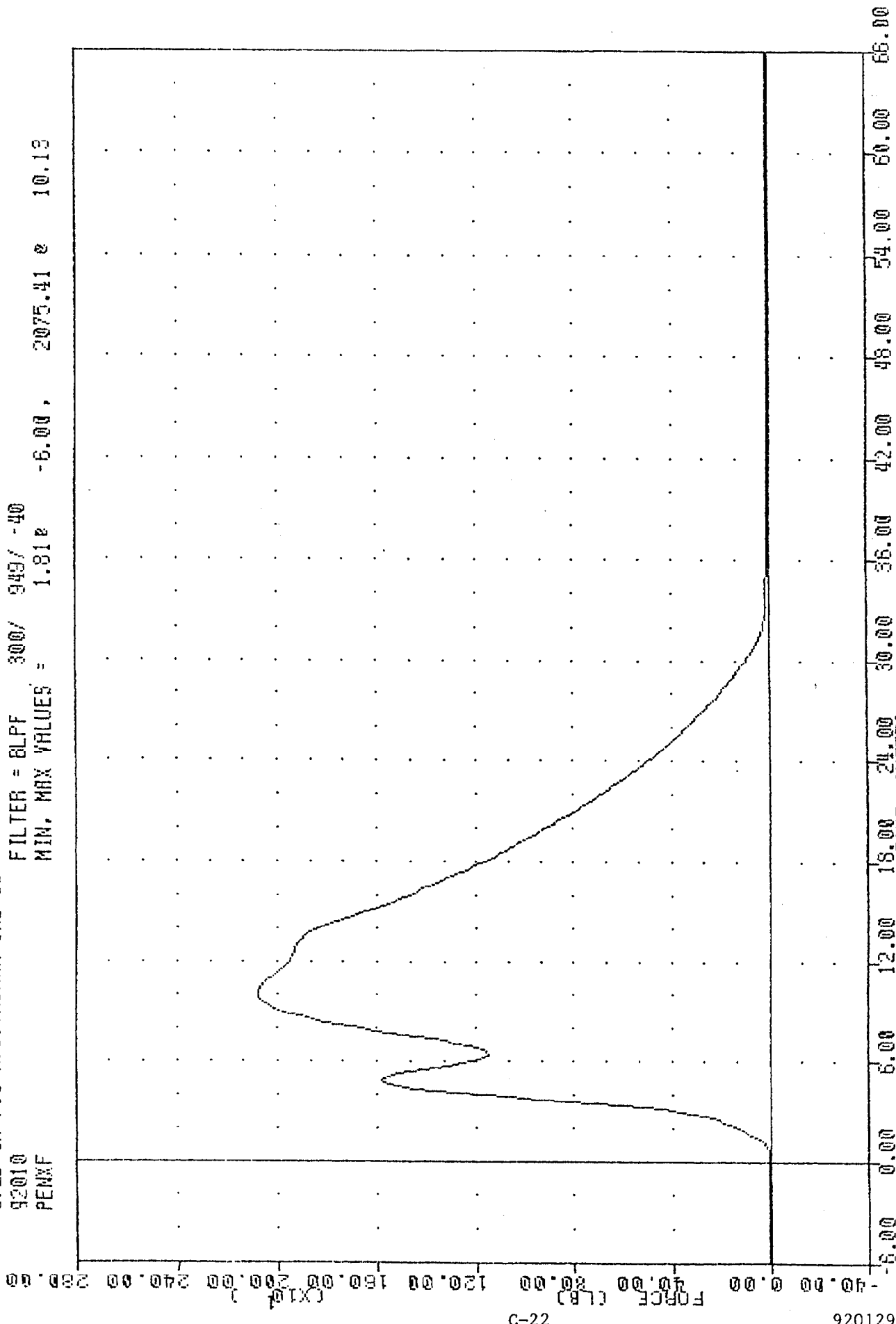
920129



PART 572-B HYBRID II THORAX CALIBRATION 22 FT/SEC  
PENDULUM DECELERATION

TRC , TH71302  
 572B SN 713 H.S. THORAX CAL 02  
 92010  
 PENXF

FILTER = BLPF 300/ 949/ -40  
 MIN, MAX VALUES = 1.81e -6.00, 2075.41 e 10.13



PART 572-B HYBRID II THORAX CALIBRATION 22 FT/SEC  
 PENDULUM FORCE

572B SN 713 H.3.1H0HAK UHL 02

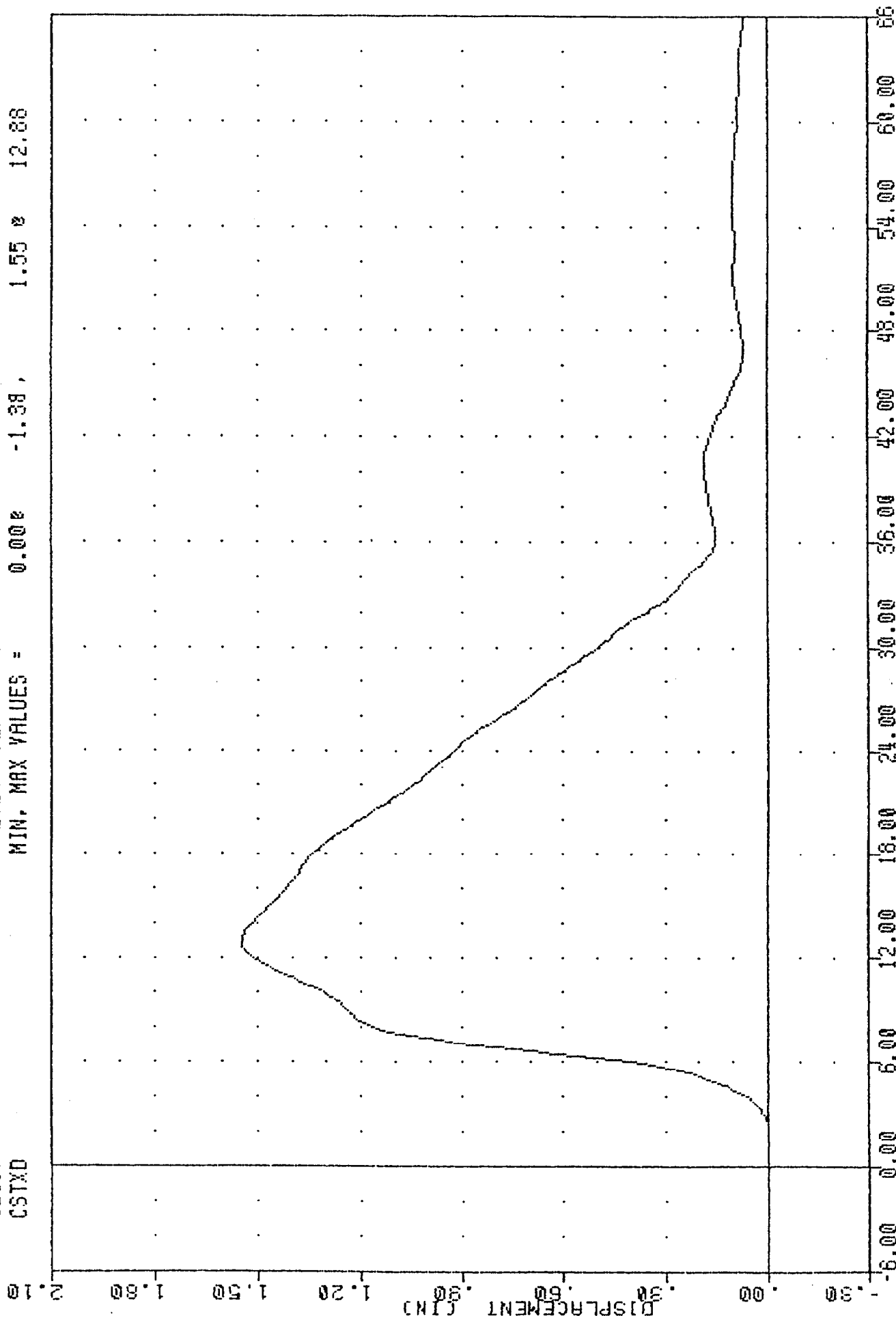
92010

CSTXD

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 0.000

-1.38, 1.55 0 12.88



C-23

920129

PART 572-B HYBRID II THORAX CALIBRATION 22 FT/SEC  
STERNUM DISPLACEMENT

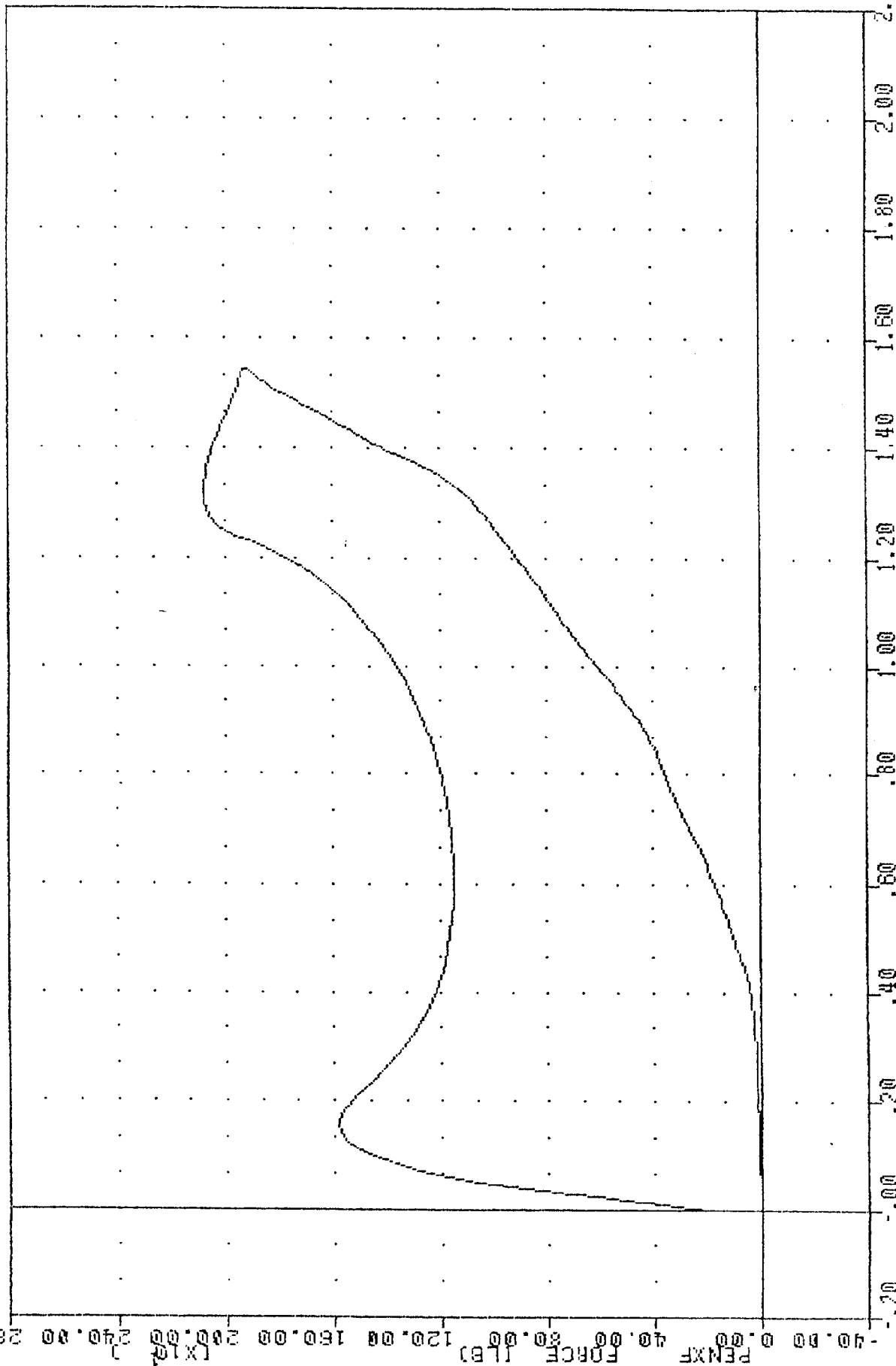
TRC .TH71302 572B SN 713 H.S. THORAX CAL 02 92010  
 CSTXD FILTER = BLPF 300/ 949/ -40 MIN. MAX = 0.00 0  
 PENXF FILTER = BLPF 300/ 949/ -40 MIN. MAX = 0.00 0

-1.38  
 -6.00  
 1.35  
 2075.41  
 12.68  
 10.13

-40.00  
 0.00  
 40.00  
 80.00  
 120.00  
 160.00  
 200.00  
 240.00  
 280.00

[X10<sup>2</sup>]

C-24



920129

PART 572-B HYBRID II THORAX CALIBRATION 22 FT/SEC  
 CHEST DISPLACEMENT VS PENDULUM FORCE

## TRANSPORTATION RESEARCH CENTER OF OHIO

## THORAX IMPACT TEST

PART 572

10-Jan-92

TEMPERATURE 70 F  
TRC TL71302RELATIVE HUMIDITY 40 %  
572B SN 713 L.S.THORAX CAL 02

|                      |                    |              |
|----------------------|--------------------|--------------|
| -----                |                    |              |
|                      | LOW SPEED TEST     |              |
|                      | -----              |              |
| TEST PARAMETER       | SPECIFICATION      | TEST RESULTS |
| =====                |                    |              |
| PENDULUM VELOCITY    | 13.86-14.14 FT/SEC | 13.97 FT/SEC |
| -----                |                    |              |
| PEAK DEFLECTION      | 1.1 IN max.        | 0.96 IN      |
| -----                |                    |              |
| PEAK RESISTIVE FORCE | 1,450. LB max.     | 1348. LB     |
| -----                |                    |              |
| INTERNAL HYSTERESIS  | 50% - 70%          | 64.3%        |
| -----                |                    |              |

SCD: 2.20 IN

DUMMY MEETS SPECIFICATIONS

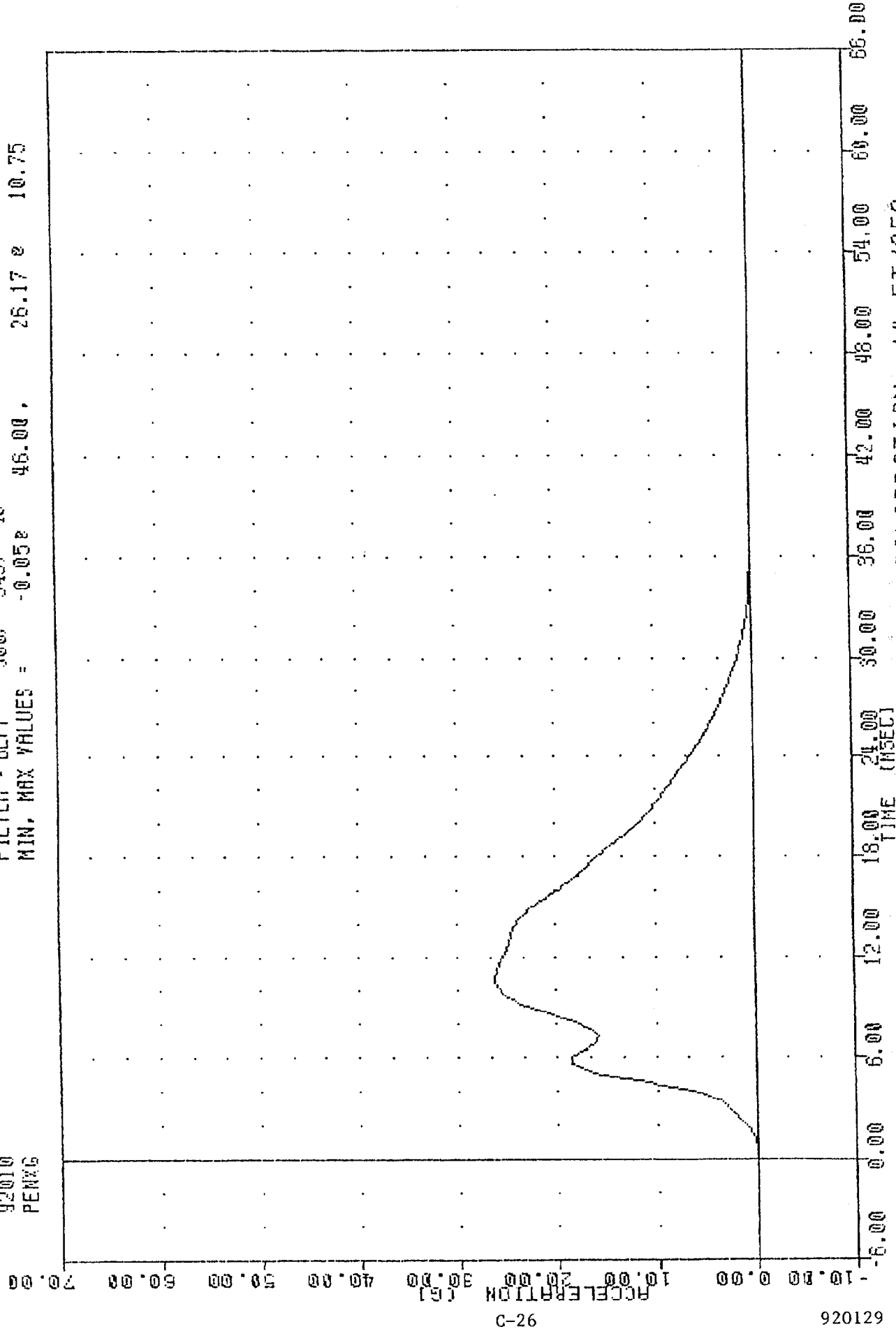
TECHNICIAN Chas. Middleton



TRC  
572B SN 713 L.S. THORAX CAL 02  
92010  
PENXG

TL71302

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = -0.052 46.00, 26.17 2 10.75



920129

PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC  
PENDULUM DECELERATION

572B SN 713 L.S.THORAX CAL 02

92010

PENXF

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES =

-2.65e

48.00,

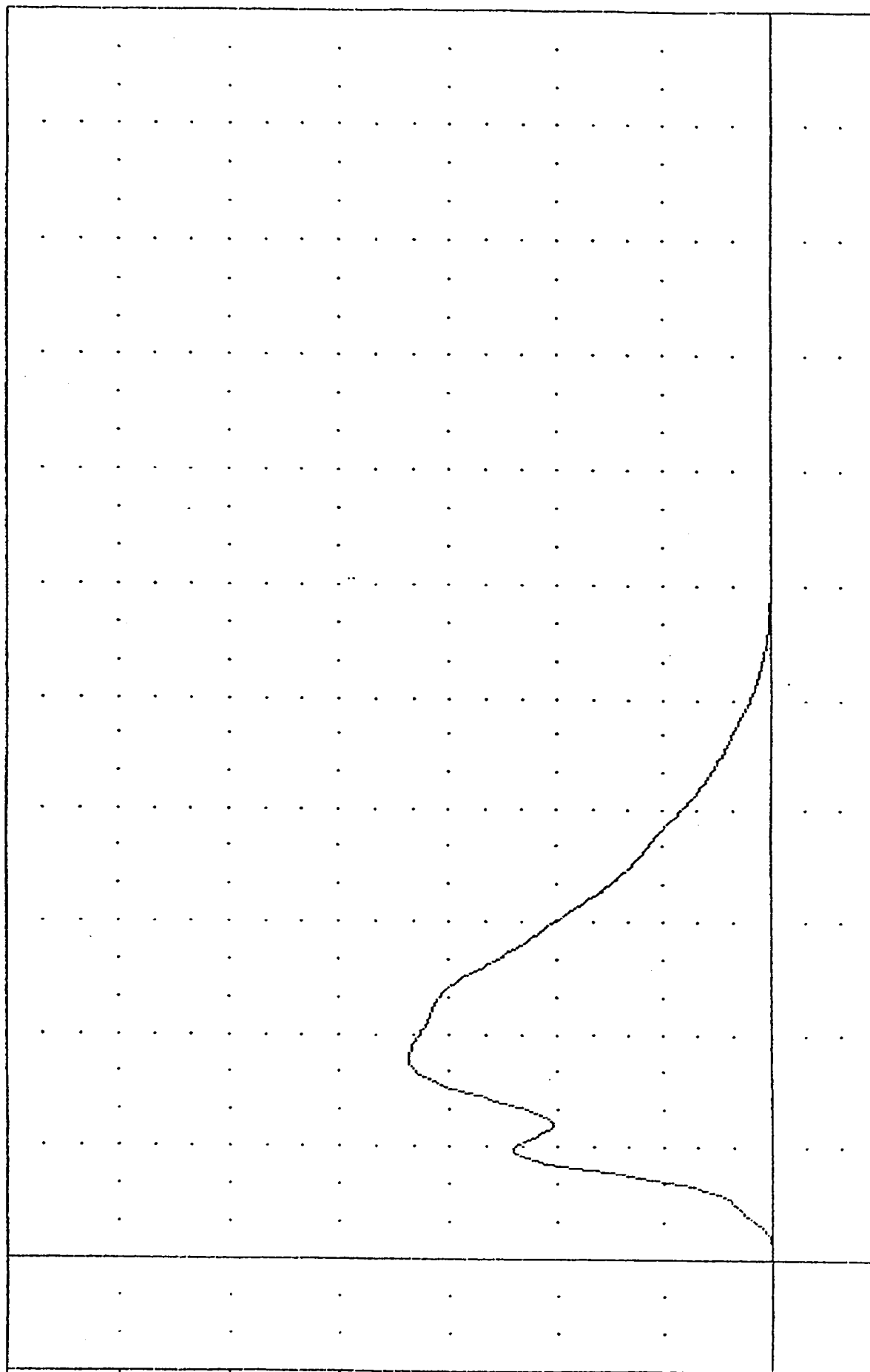
1347.53 e

10.75

FORCE (LB)

C-27

920129

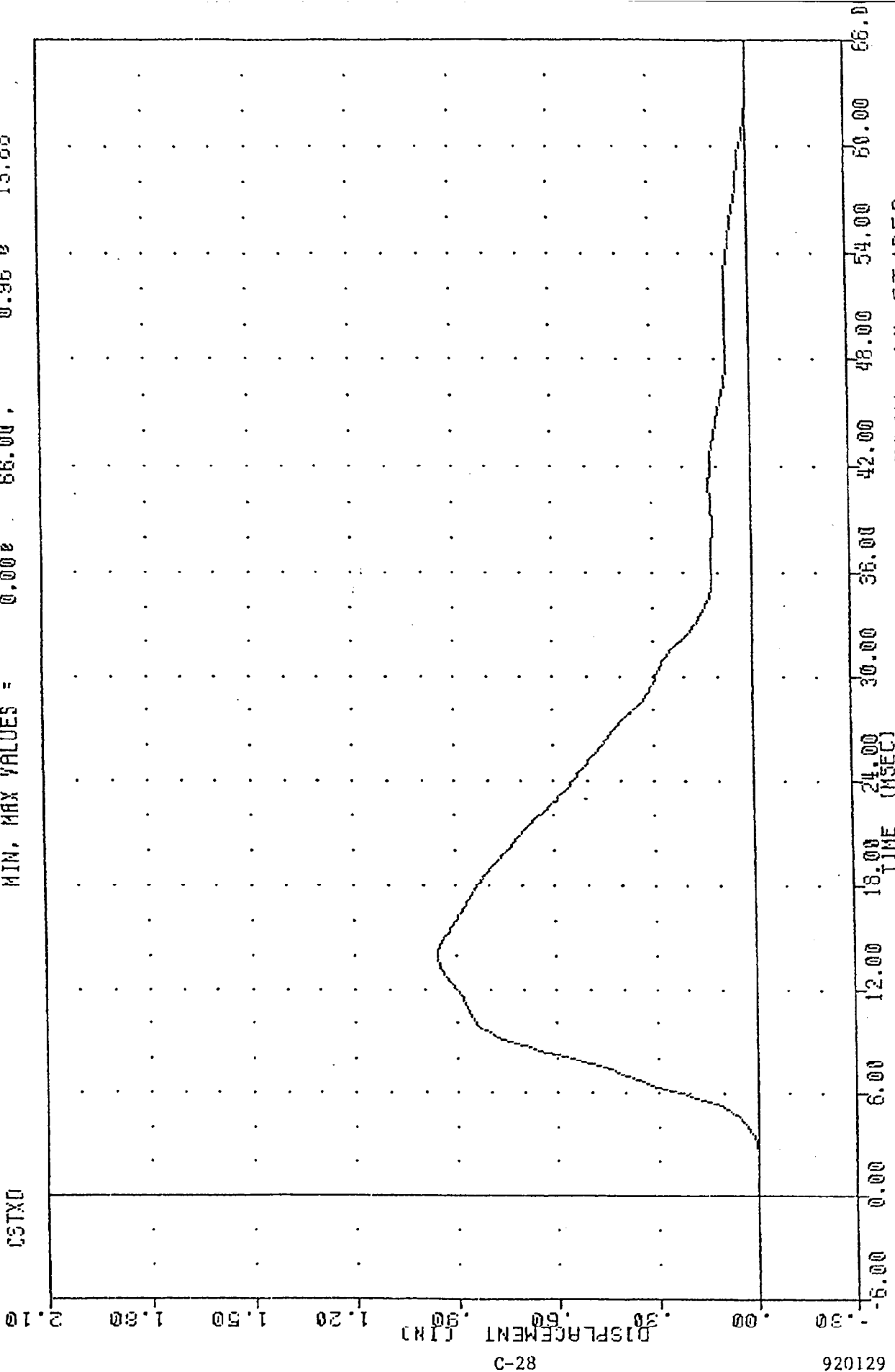


PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC  
PENDULUM FORCE

TRC  
572B SN 713 L.S. THORAX CAL 02  
92010  
CSTXD

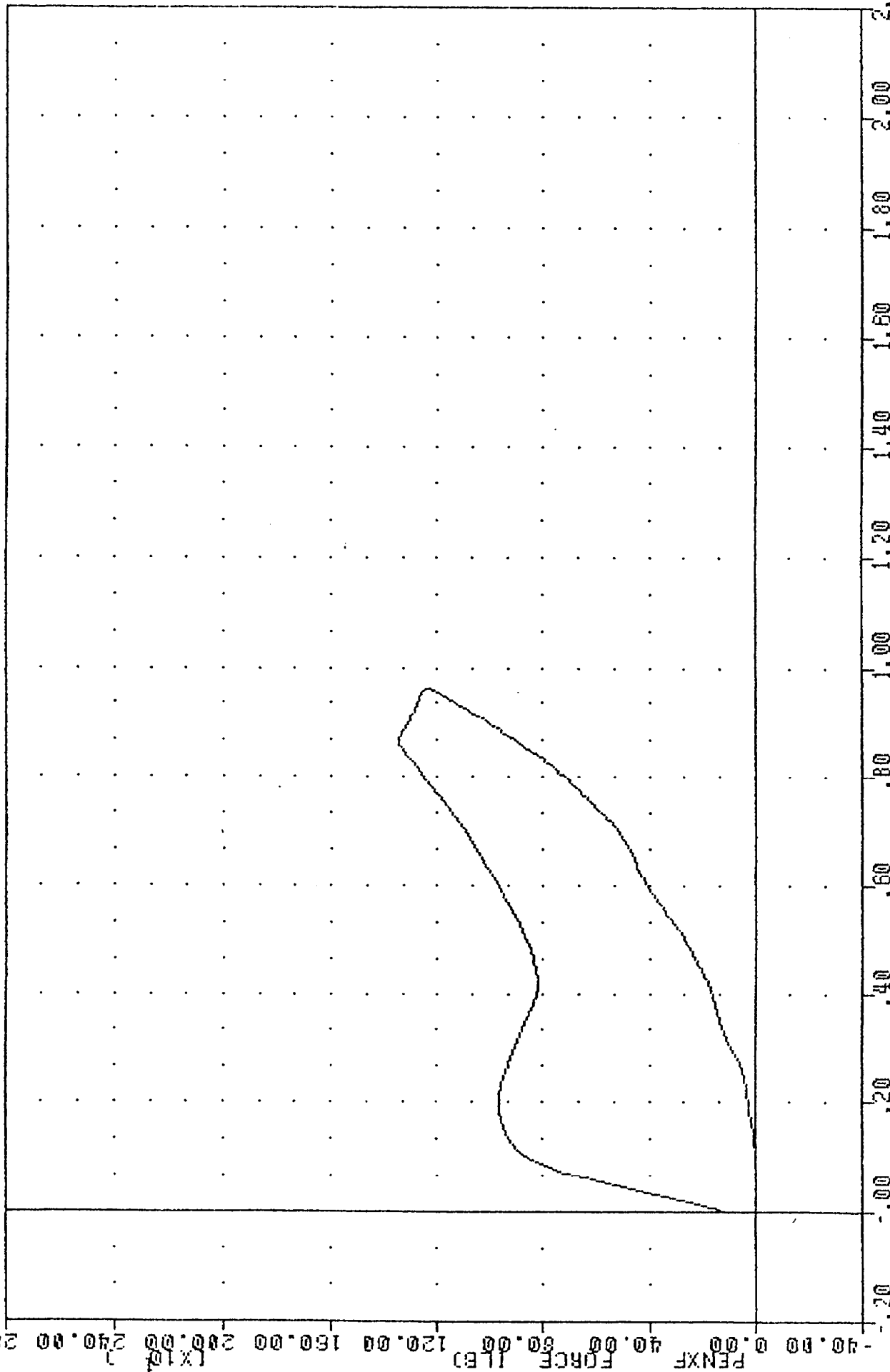
, TL71302

FILTER = BLFF 300/ 949/ -40  
MIN, MAX VALUES = 0.00e 66.00, 0.96 e 13.68



PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC  
STERNUM DISPLACEMENT

PENKX F FILTER = BLPF 300/ 949/ -40 MIN, MAX = -2.65 1347.53 10.75



PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC  
CHEST DISPLACEMENT VS PENDULUM FORCE

## TRANSPORTATION RESEARCH CENTER OF OHIO

## ABDOMEN COMPRESSION TEST

PART 572

10-Jan-92

TEMPERATURE 70 F  
TRC AB71302

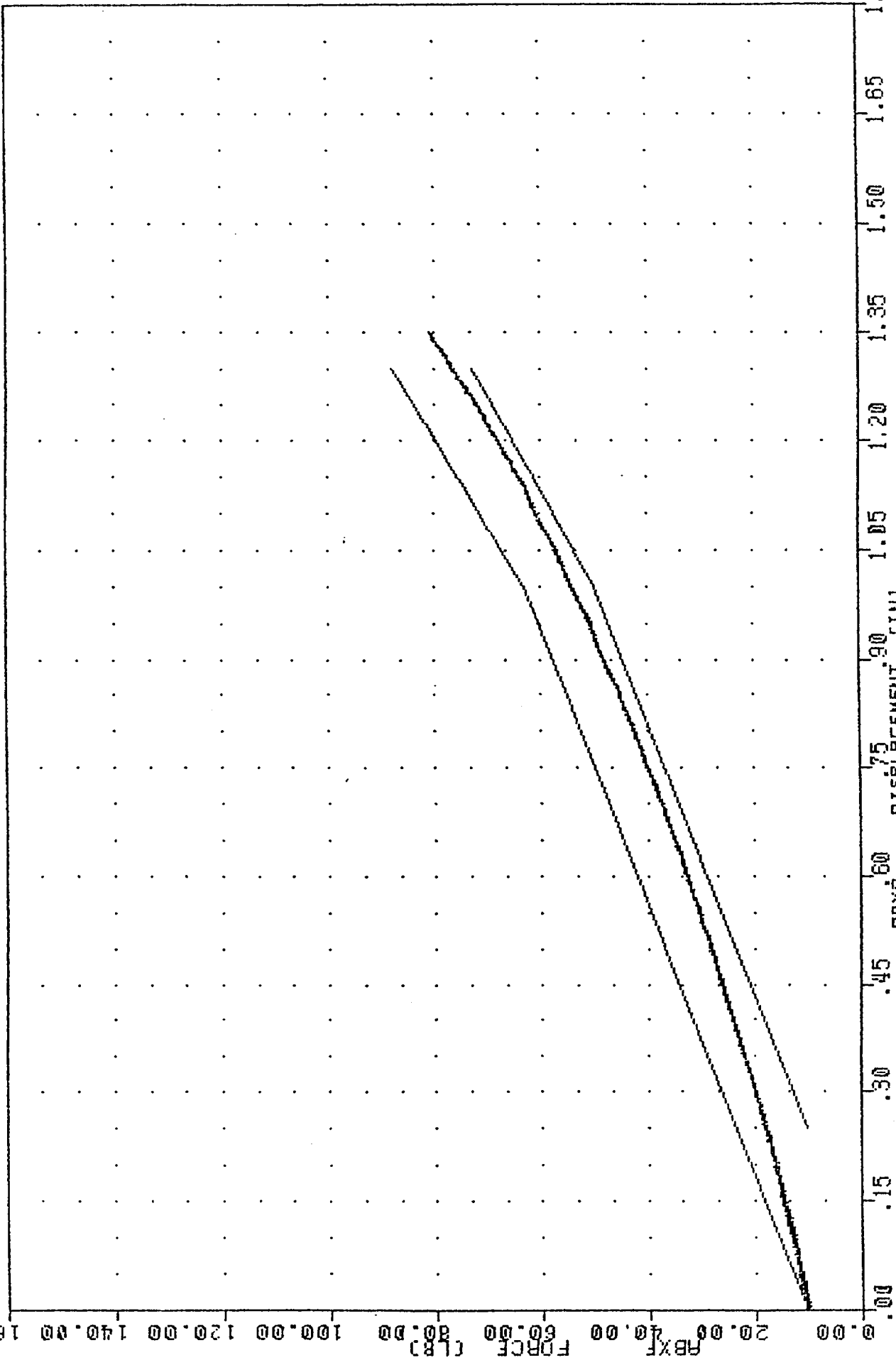
RELATIVE HUMIDITY 34 %  
5728 SN 713 ABDOM COMPR CAL 02

| TEST CORRIDORS |                   |              |
|----------------|-------------------|--------------|
| DISPLACEMENT   | FORCE             | TEST RESULTS |
| 0.00 IN        | 10.00 LBS         | 10.00 LBS    |
| 0.50 IN        | 23.00 - 36.00 LBS | 28.04 LBS    |
| 0.75 IN        | 36.00 - 50.00 LBS | 39.89 LBS    |
| 1.00 IN        | 50.00 - 63.00 LBS | 54.49 LBS    |
| 1.30 IN        | 73.00 - 88.00 LBS | 76.45 LBS    |

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

ABXF 1650/ 5214/ -40 MIN, MAX = 9.57 0.00 80.09 1.35



PART 572-B HYBRID II ABDOMEN CALIBRATION  
ABDOMEN FORCE VS DISPLACEMENT

TRANSPORTATION RESEARCH CENTER OF OHIO

LUMBAR FLEXION TEST

PART 572

10-JAN-92

TEMPERATURE 70 F  
TRC LF71302

RELATIVE HUMIDITY 34 %  
572B SN713 LUMBAR FLEX CAL02

| DEFLECTION       | SPECIFICATION    | TEST RESULTS |
|------------------|------------------|--------------|
| 0 DEG            | 0 LB             | 0.00 LB      |
| 20 DEG           | 22.00 - 34.00 LB | 29.00 LB     |
| 30 DEG           | 34.00 - 46.00 LB | 39.00 LB     |
| 40 DEG           | 46.00 - 58.00 LB | 52.00 LB     |
| NET RETURN ANGLE | < 12 DEG         | 2.23 DEG     |

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

## KNEE IMPACT TEST

PART 572

10-Jan-92

TEMPERATURE 70 F  
LEFT KNEE  
TRC LK71302

RELATIVE HUMIDITY 40 %  
572B SN 713 L.KNEE IMP CAL 02

| TEST PARAMETER         | SPECIFICATION      | TEST RESULTS |
|------------------------|--------------------|--------------|
| PROBE VELOCITY         | 6.76 - 7.04 FT/SEC | 6.97 FT/SEC  |
| PEAK KNEE IMPACT FORCE | 1850 - 2500 LB     | 2301.67 LB   |
| DURATION ABOVE 1000 LB | $\geq 1.7$ MSEC    | 1.78 MSEC    |

## DUMMY MEETS SPECIFICATIONS

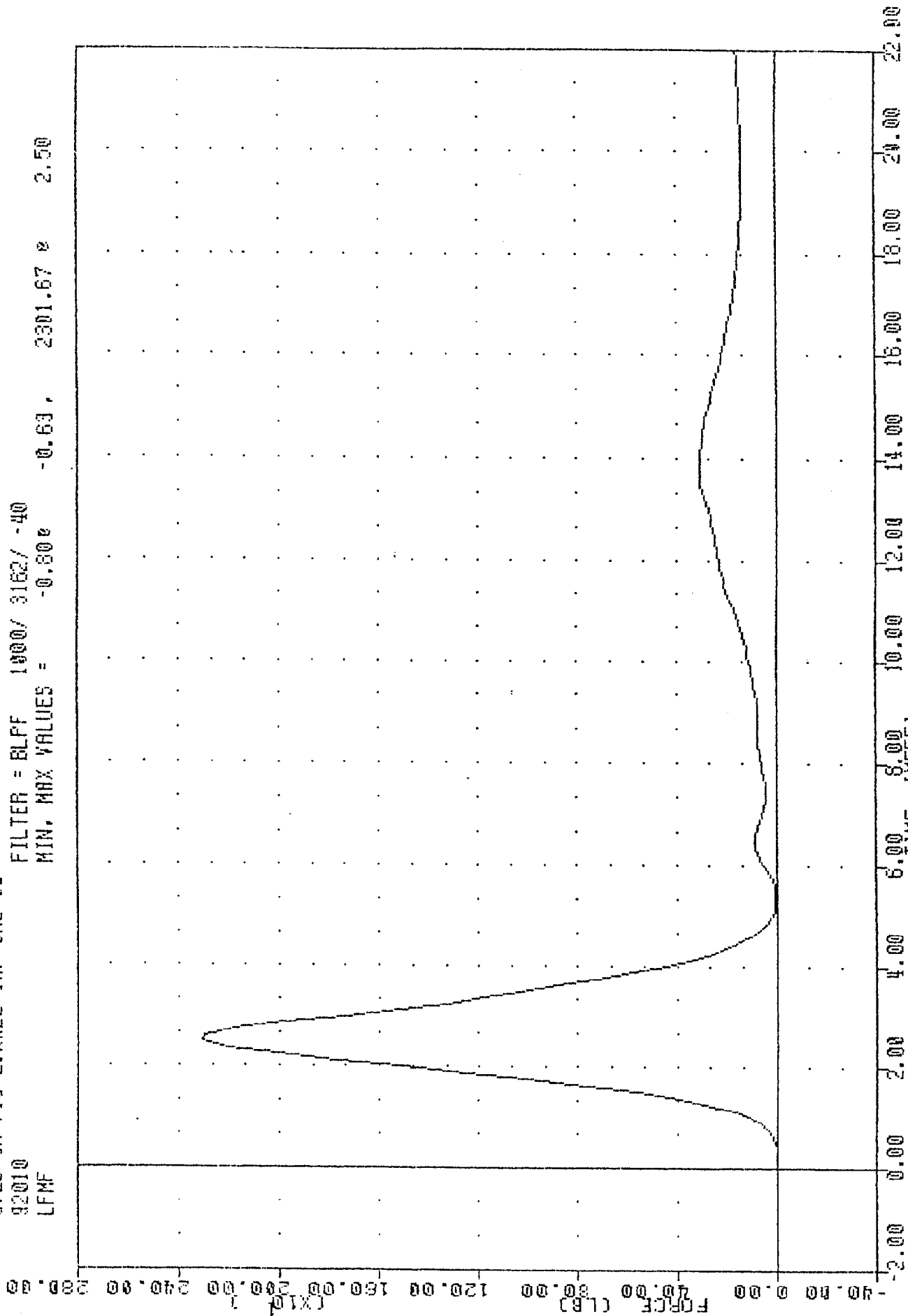
TECHNICIAN

*Chas. Middleton*



TRC , LK71302  
 5728 SN 713 L.KNEE IMP CAL 02  
 92010  
 LFMF

FILTER = BLPF 1000/ 3162/ -40  
 MIN. MAX VALUES = -0.80e 2.50



PART 572-8 HYBRID II LEFT KNEE CALIBRATION  
 LEFT FEMUR FORCE

## TRANSPORTATION RESEARCH CENTER OF OHIO

## KNEE IMPACT TEST

PART 572

10-Jan-92

TEMPERATURE 70 F  
RIGHT KNEE  
TRC RK71302

RELATIVE HUMIDITY 40 %  
572B SN 713 R.KNEE IMP CAL 02

| TEST PARAMETER         | SPECIFICATION      | TEST RESULTS |
|------------------------|--------------------|--------------|
| PROBE VELOCITY         | 6.76 - 7.04 FT/SEC | 6.97 FT/SEC  |
| PEAK KNEE IMPACT FORCE | 1850 - 2500 LB     | 2129.01 LB   |
| DURATION ABOVE 1000 LB | $\geq 1.7$ MSEC    | 1.98 MSEC    |

DUMMY MEETS SPECIFICATIONS

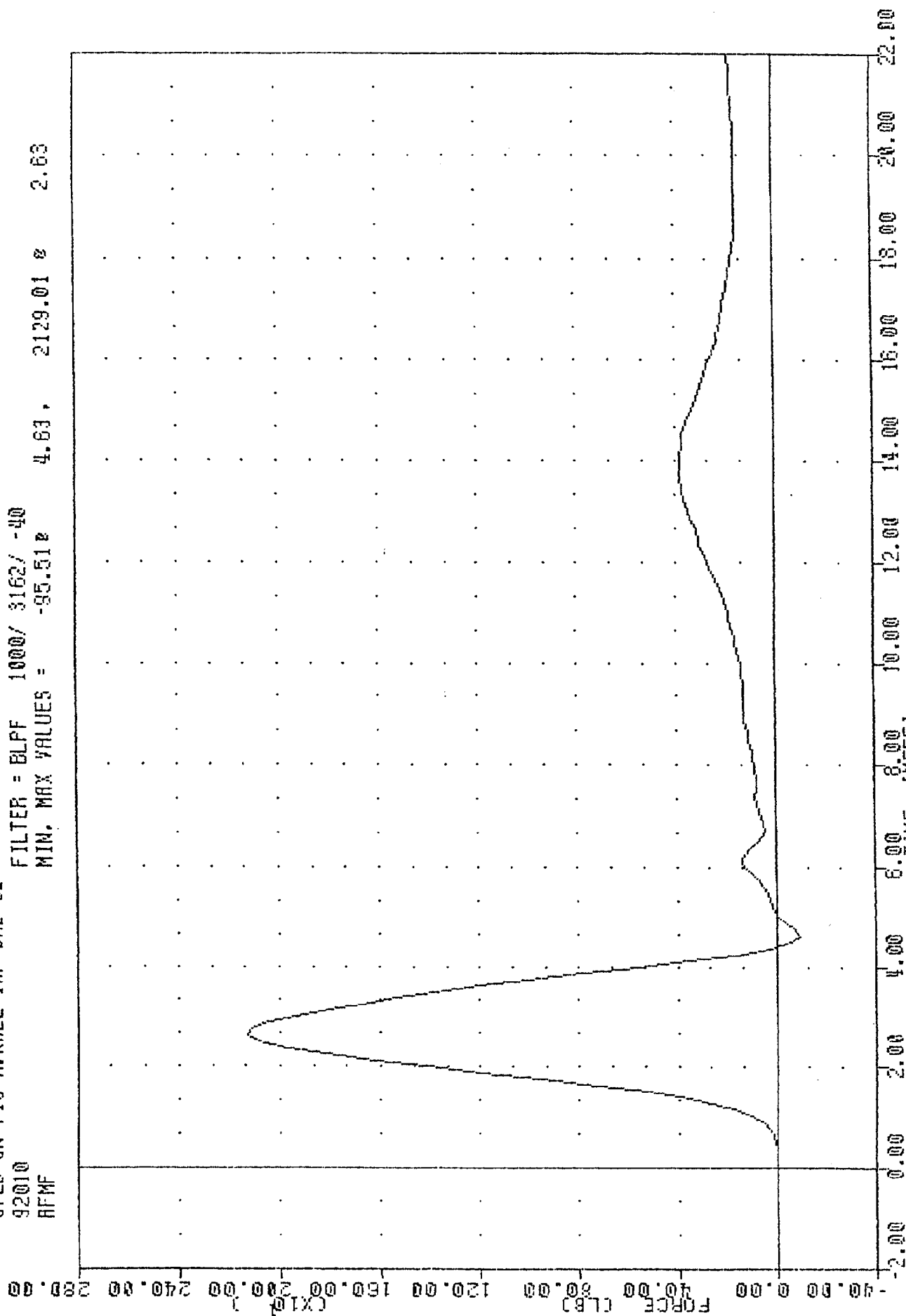
TECHNICIAN

*Chas. Middleton*

TRC  
5728 SN 713 R.KNEE IMP CAL 02  
92010  
AFMF

, RK71302

FILTER = BLPF 1000/ 3162/ -40  
MIN. MAX VALUES = -95.512 4.63, 2129.01 g 2.63



PART 572-8 HYBRID II RIGHT KNEE CALIBRATION  
RIGHT FEMUR FORCE

PRE-TEST CERTIFICATION DATA

PASSENGER DUMMY S/N: 826

## TRANSPORTATION RESEARCH CENTER OF OHIO

## EXTERNAL DIMENSIONS

PART 572

09-JAN-92

TEMPERATURE 70 F  
TRC ED82628RELATIVE HUMIDITY 49 %  
5728 SN826 EXT. DIMENSION CAL28

| DESCRIPTION<br>SN 826 HUMANOID    | SPECIFICATION  | TEST RESULTS |
|-----------------------------------|----------------|--------------|
| Sitting Height                    | 35.6 - 35.8 IN | 35.8 IN      |
| Shoulder Pivot Height             | 21.8 - 22.4 IN | 22.4 IN      |
| Hip Pivot Height                  | 3.9 IN         | 3.9 IN       |
| Hip Pivot From Backline           | 4.8 IN         | 4.8 IN       |
| Knee Pivot From Backline          | 20.1 - 20.7 IN | 20.4 IN      |
| Rear of Head From Backline        | 1.7 IN         | 1.7 IN       |
| Chest Depth                       | 9.1 - 9.6 IN   | 9.4 IN       |
| Shoulder Width                    | 17.8 - 18.4 IN | 18.0 IN      |
| Chest Circumference Over Nipples  | 36.8 - 40.0 IN | 37.6 IN      |
| Waist Circumference at Min. Girth | 31.4 - 32.6 IN | 32.5 IN      |
| Hip Width                         | 14.0 - 15.4 IN | 14.7 IN      |
| Knee Pivot From Floor             | 19.3 - 19.9 IN | 19.3 IN      |

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

*Chae Middleton*

## TRANSPORTATION RESEARCH CENTER OF OHIO

## HEAD DROP TEST

PART 572

09-Jan-92

TEMPERATURE 70 F  
TRC HD82628

RELATIVE HUMIDITY 49 %  
572B SN 826 HEAD DROP CAL 28

| TEST PARAMETER                     | SPECIFICATION  | TEST RESULTS |
|------------------------------------|----------------|--------------|
| PEAK RESULTANT ACCELERATION        | 210 - 260 G    | 218.43 G     |
| TIME ABOVE 100 G LEVEL             | 0.9 - 1.5 MSEC | 1.25 MSEC    |
| PEAK LATERAL ACCELERATION          | 10 G MAX       | 1.53 G       |
| IS ACCELERATION CURVE<br>UNIMODAL? | YES            | YES          |

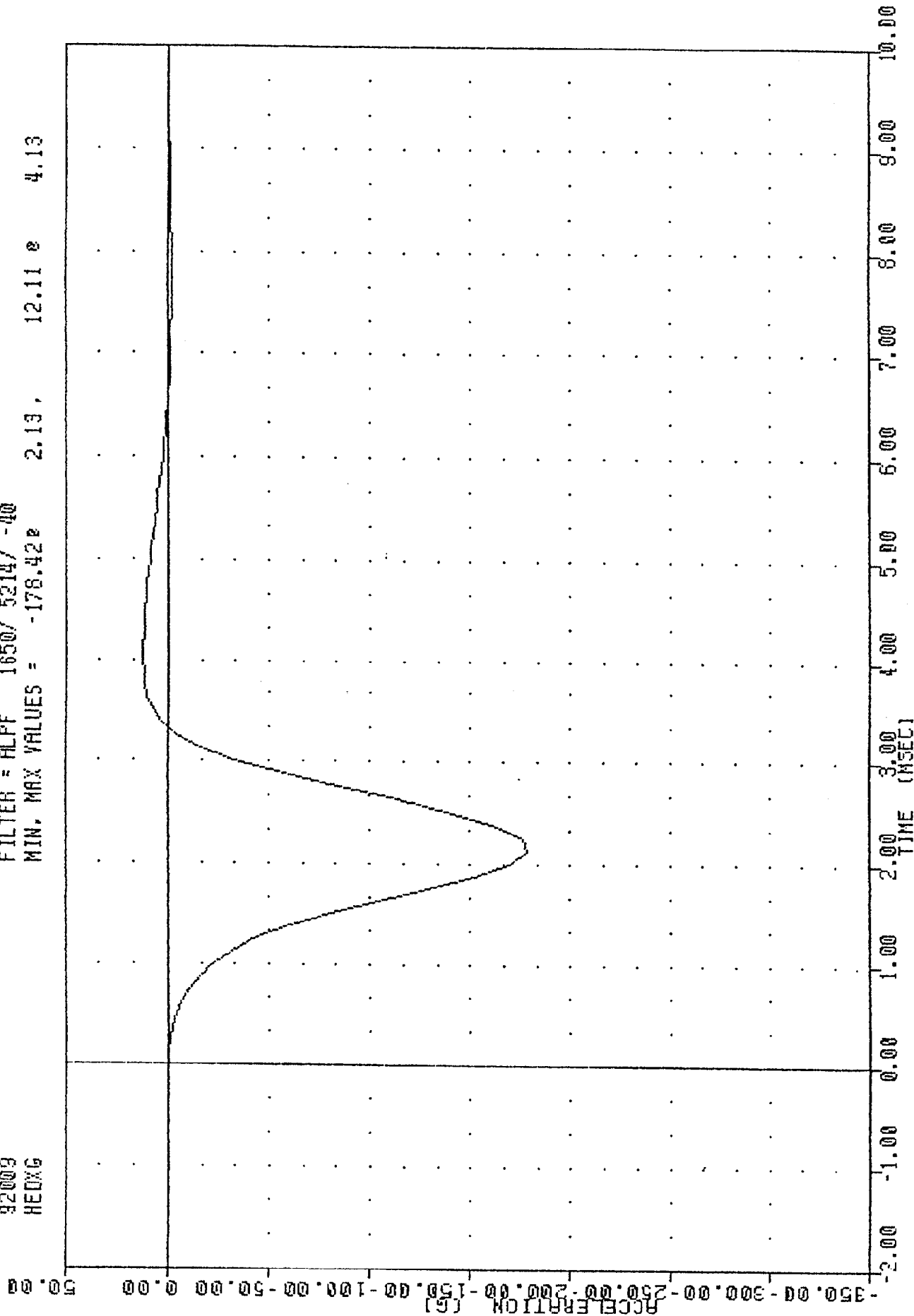
DUMMY MEETS SPECIFICATIONS

TECHNICIAN

*Chas. Middleton*

TRC  
 5728 SN 826 HEAD DROP CAL 28  
 92009  
 HEDXG

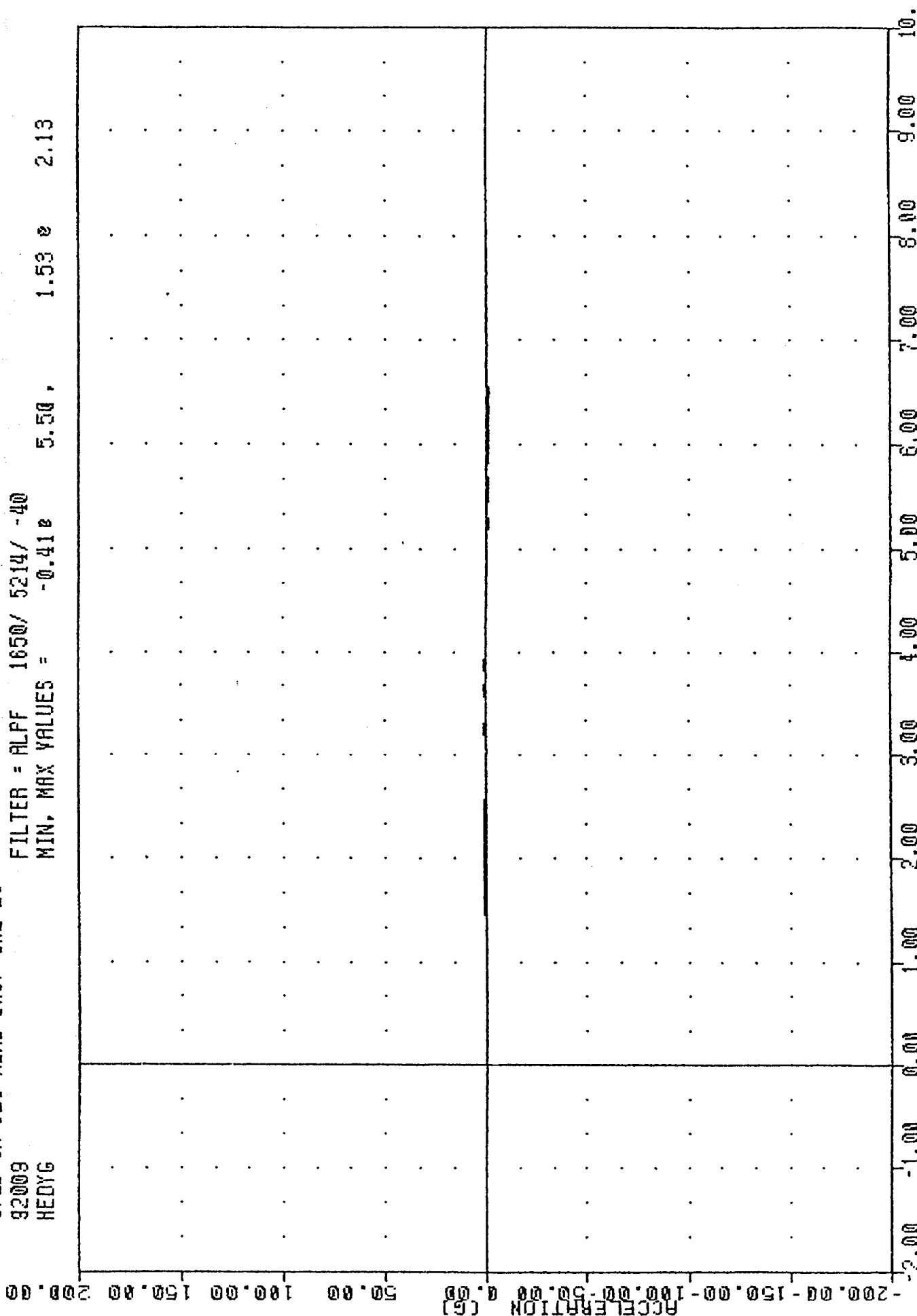
FILTER = ALPF 1650/ 5214/ -40  
 MIN. MAX VALUES = -178.42 2.13 12.11 4.13



PART 572-B HYBRID II HEAD DROP CALIBRATION  
 HEAD ACCELERATION X AXIS

92009  
HEDYG

FILTER = ALPF 1650/ 5214/ -40  
MIN. MAX VALUES = -0.418 5.50 , 1.53 2.13

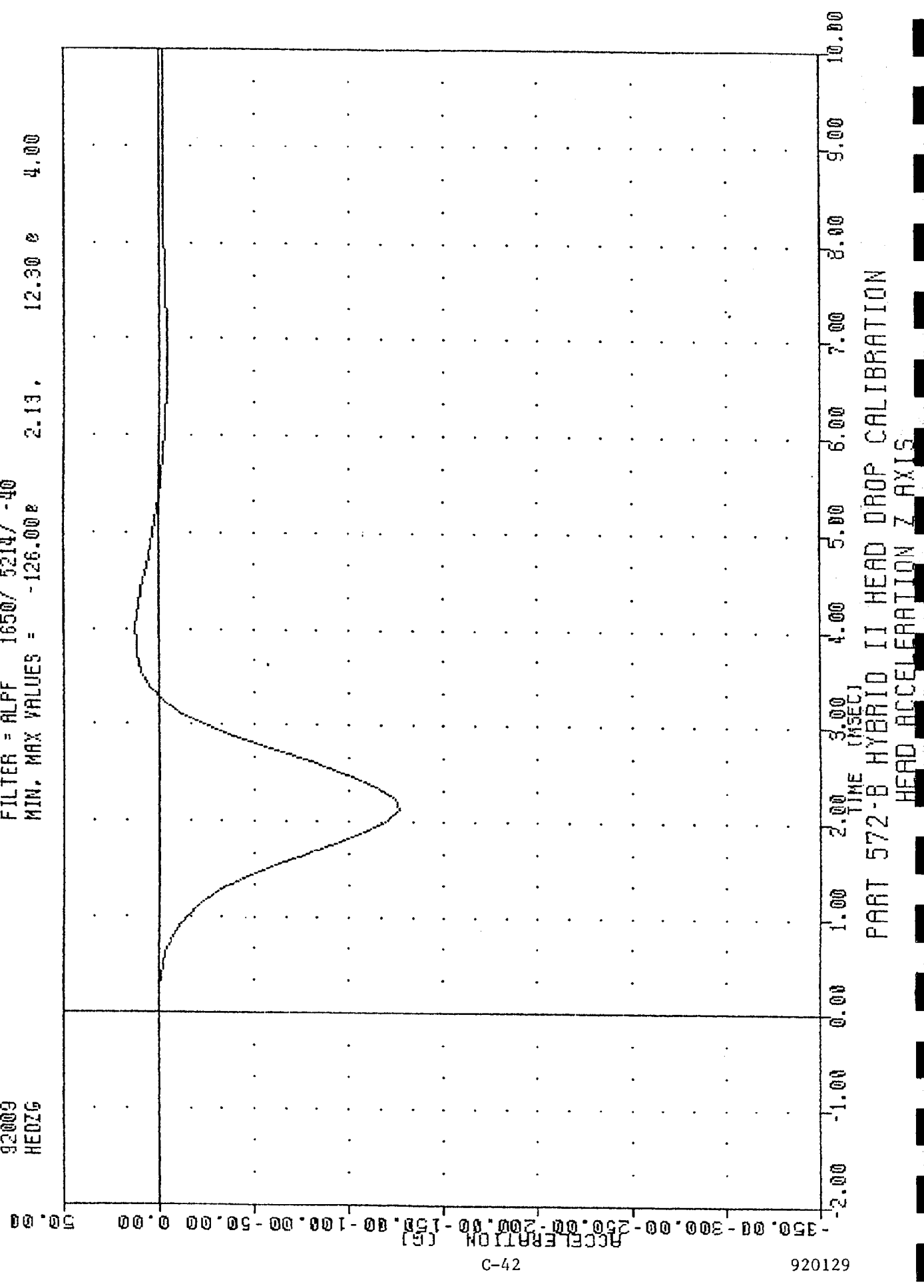


PART 572-B HYBRID II HEAD DROP CALIBRATION  
HEAD ACCELERATION Y AXIS



TRC  
 5728 SN 826 HEAD DROP CAL 28  
 92009  
 HEADZG

FILTER = ALPF 1650/ 5214/ -40  
 MIN. MAX VALUES = -126.00 2.13 12.30 4.00

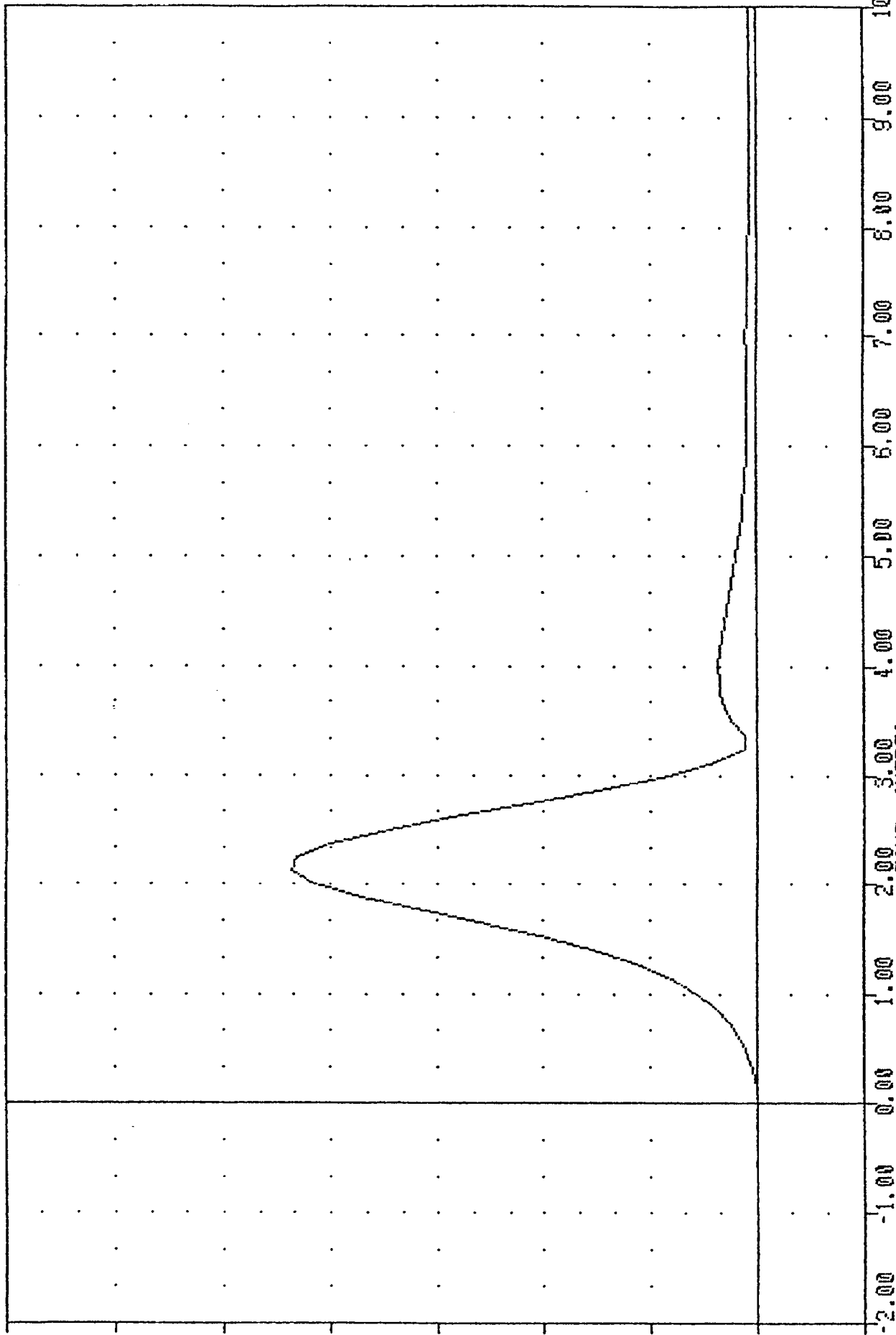


PART 572-B HYBRID II HEAD DROP CALIBRATION  
 HEAD ACCELERATION Z AXIS

92009  
HEDRG

FILTER = ALPF 1650/ 5214/ -40  
MIN, MAX VALUES = 0.068 -1.13, 218.43 2.13

ACCELERATION (G)



PART 572-B HYBRID II HEAD DROP CALIBRATION  
HEAD RESULTANT ACCELERATION

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK PENDULUM TEST

PART 572

10-Jan-92

TEMPERATURE 70 F  
TRC HN82628

RELATIVE HUMIDITY 34 %  
5728 SN 826 HEAD/NECK CAL 28

| TEST PARAMETER            | SPECIFICATION        | TEST RESULTS |
|---------------------------|----------------------|--------------|
| Pendulum velocity         | 121.5 to 25.5 ft/sec | 23.53 ft/sec |
| Pendulum Deceleration:    |                      |              |
| T1 - T2: 5 - 20 G         | 3 msec max           | 2.81 msec    |
| T2 - T3: 20 - 20 G        | 25 - 30 msec         | 25.57 msec   |
| T3 - T4: 20 - 5 G         | 10 msec max          | 6.24 msec    |
| Avg. G level T2 - T3      | 20 - 24 G            | 22.24 G      |
| Maximum Rotation Angle    | 63 - 73 deg          | 66.15 deg    |
| Peak Head Resultant Accel | 26 G max             | 21.91 G      |

| Test Parameter              | Specification  |                       | Test Results   |                       |
|-----------------------------|----------------|-----------------------|----------------|-----------------------|
| Rotation Angle<br>(degrees) | Time<br>(msec) | Chordal Disp.<br>(in) | Time<br>(msec) | Chordal Disp.<br>(in) |
| 0                           | -2.0 - +2.0    | -0.5 - +0.5           | 1.50           | 0.00                  |
| 30                          | 25.6 - 34.4    | 2.1 - 3.1             | 32.68          | 2.40                  |
| 60                          | 40.3 - 51.7    | 4.3 - 5.3             | 49.97          | 4.54                  |
| max                         | 53.2 - 66.8    | 5.0 - 6.0             | 62.38          | 5.12                  |
| 60                          | 67.0 - 83.0    | 4.3 - 5.3             | 74.99          | 4.70                  |
| 30                          | 85.4 - 104.6   | 2.1 - 3.1             | 95.18          | 2.26                  |
| 0                           | 101.0 - 123.0  | -0.5 - +0.5           | 109.84         | 0.15                  |

SND: 5.95 in

DUMMY MEETS SPECIFICATIONS

TECHNICIAN *Chas Middleton*

5728 SN 826 HEAD/NECK CHL 2B

92010

PENXG

FILTER = BLPF 100/ 317/ -40

MIN. MAX VALUES = -4.22e 218.38. 24.86 e 13.25

35.00

30.00

25.00

20.00

15.00

10.00

5.00

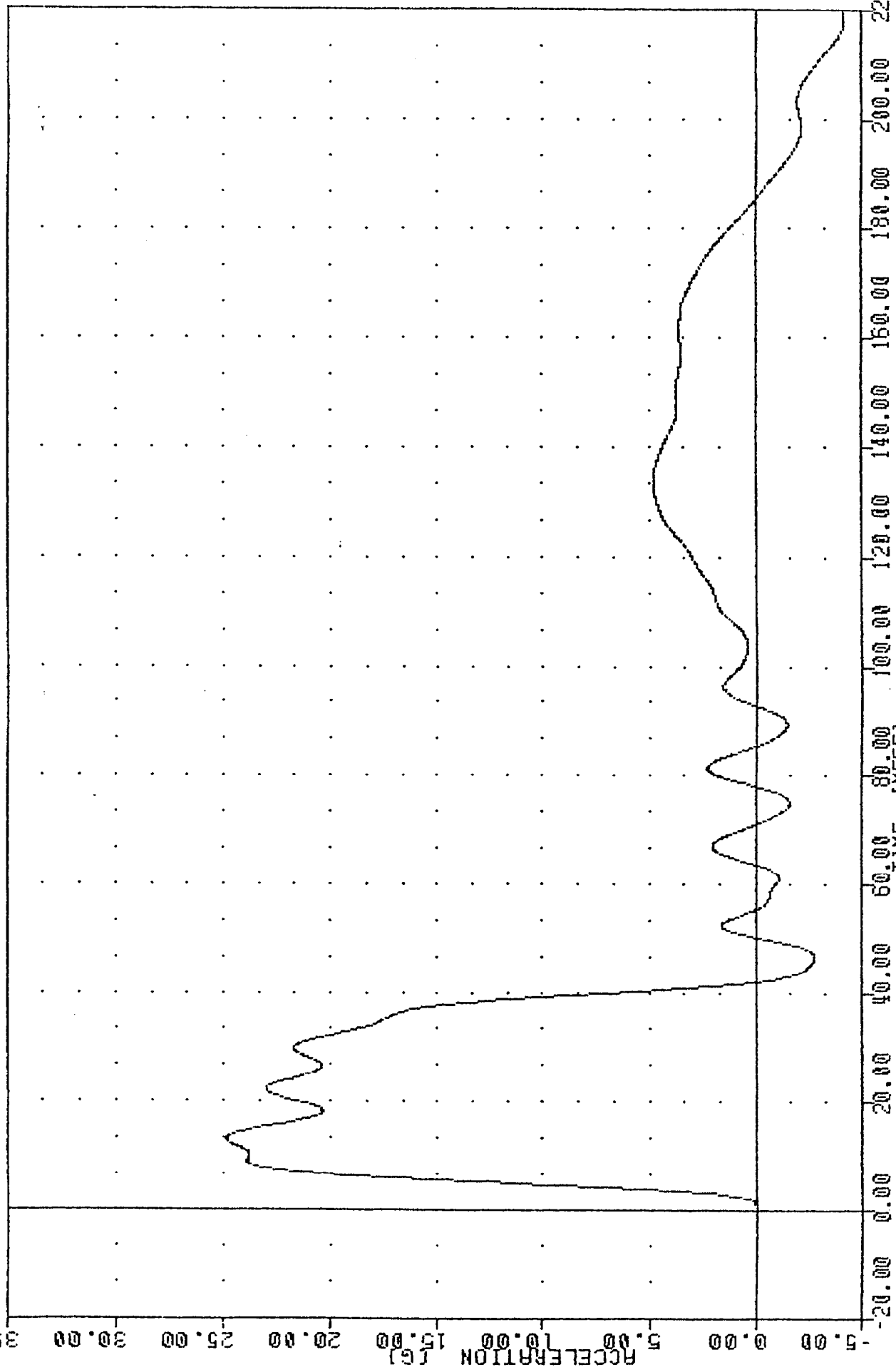
0.00

-5.00

ACCELERATION (G)

C-45

920129



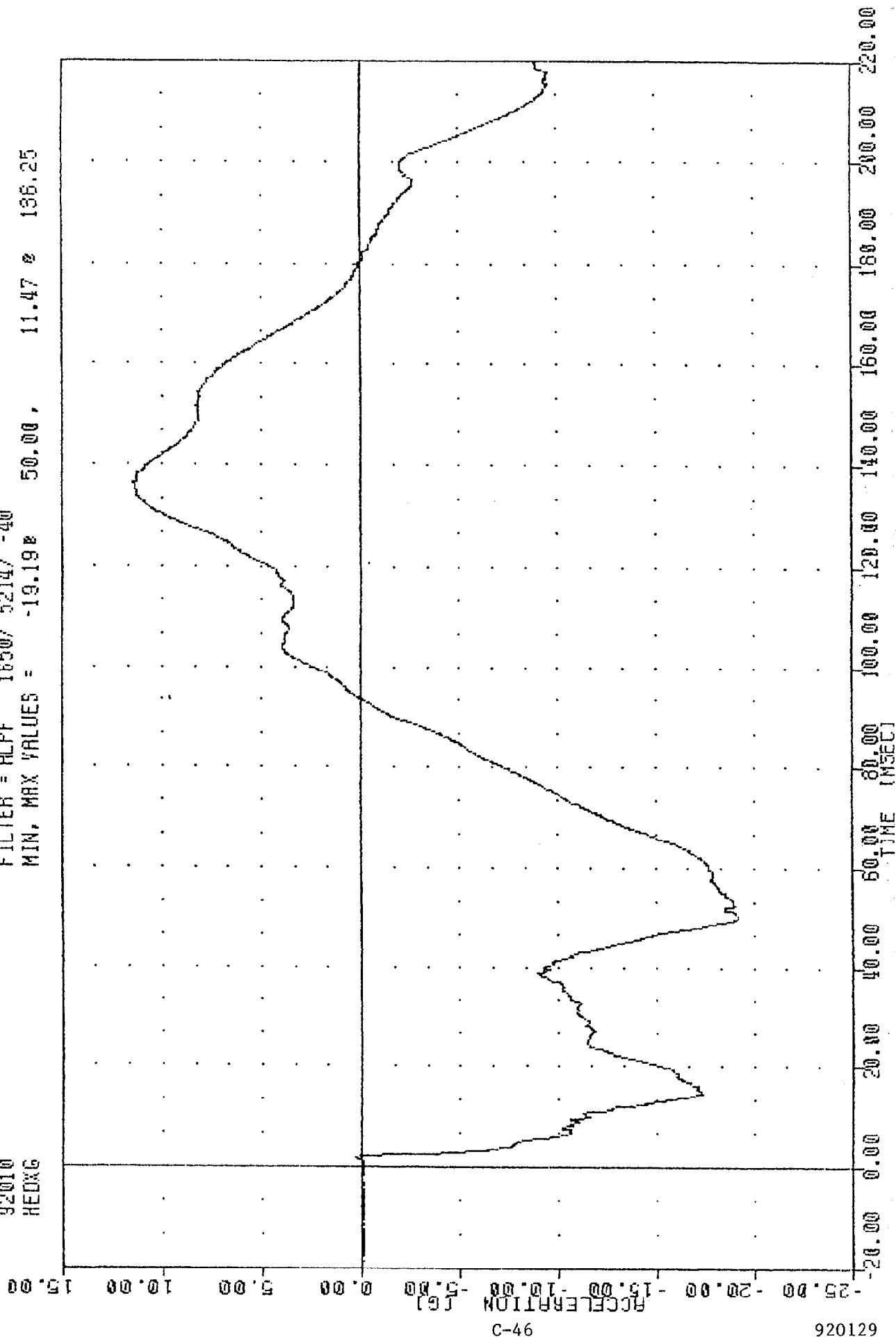
TIME (MSEC)

PART 572-B HYBRID II HEAD/NECK CALIBRATION  
PENDULUM DECELERATION

TRC  
572B 3N 826 HEAD/NECK CAL 20  
92010  
HEDXG

, HN82628

FILTER = ALFF 1850/ 5214/ -40  
MIN, MAX VALUES = -19.19 50.00, 11.47 136.25



C-46

920129

PART 572-B HYBRID II HEAD/NECK CALIBRATION  
HEAD ACCELERATION X AXIS

572B SN 026 HEAD/NECK CAL 20

32010

HEDYG

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = -0.650

2.63, 0.64 0 8.25

20.00

15.00

10.00

5.00

0.00

C-47

920129

ACCELERATION (G)

-10.00

-15.00

-20.00

-20.00

0.00

20.00

40.00

60.00

80.00

100.00

120.00

140.00

160.00

180.00

200.00

220

TIME (MSEC)

PART 572-B HYBRID II HEAD/NECK CALIBRATION

HEAD ACCELERATION Y AXIS

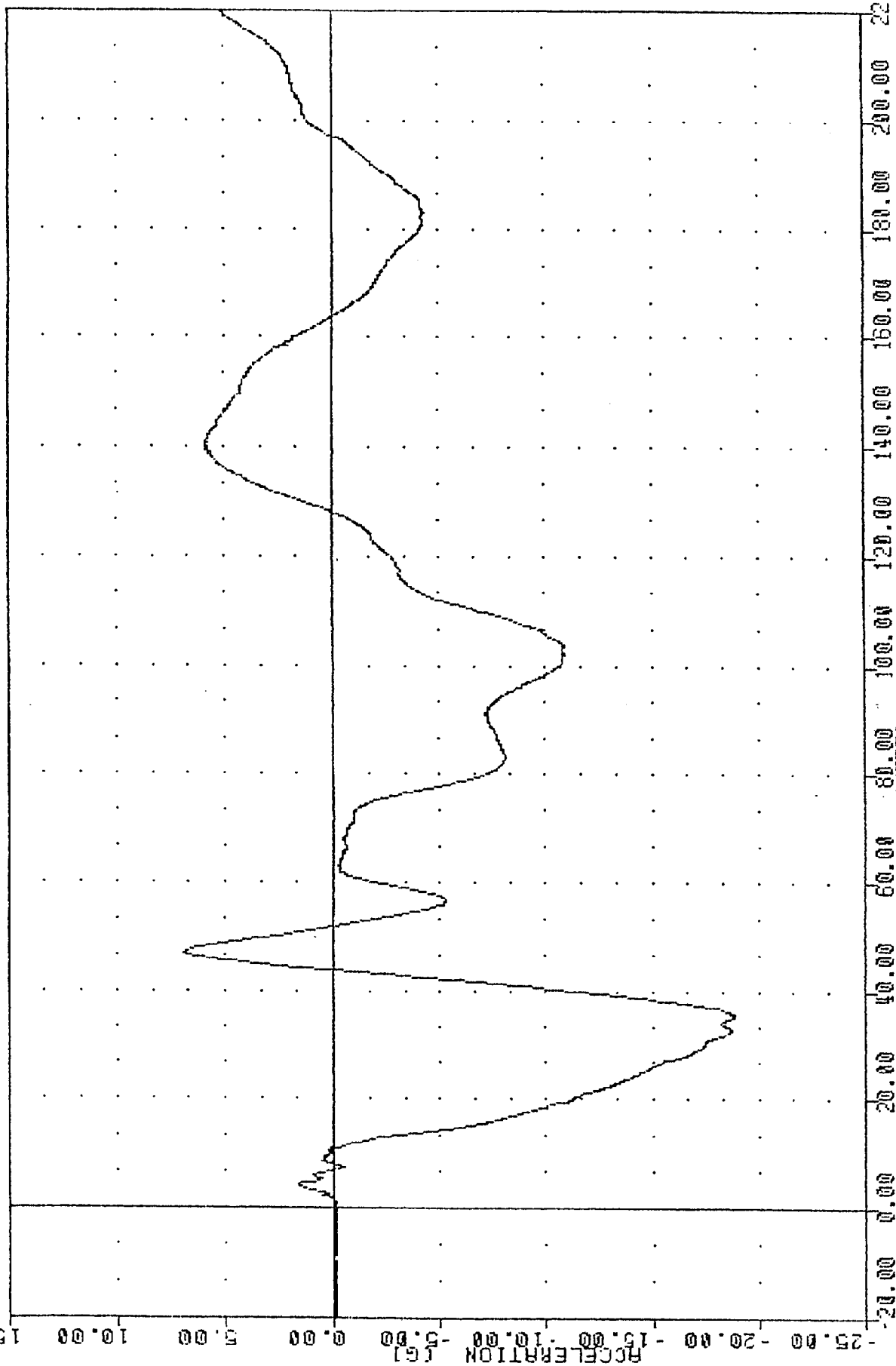
TRC  
572B SN 026 HEAD/NECK CRL 20  
92010  
HEDZG

HM02028

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = -18.88 35.38, 6.92 46.75

ACCELERATION (G)



PART 572-B HYBRID II HEAD/NECK CALIBRATION

HEAD ACCELERATION Z AXIS

572B SN 826 HEAD/NECK CAL 2B

92010

HEADG

FILTER = ALPF 1850/ 5214/ -40

MIN. MAX VALUES = 0.03g

-17.38.

21.81 g

32.75

35.00

30.00

25.00

20.00

15.00

10.00

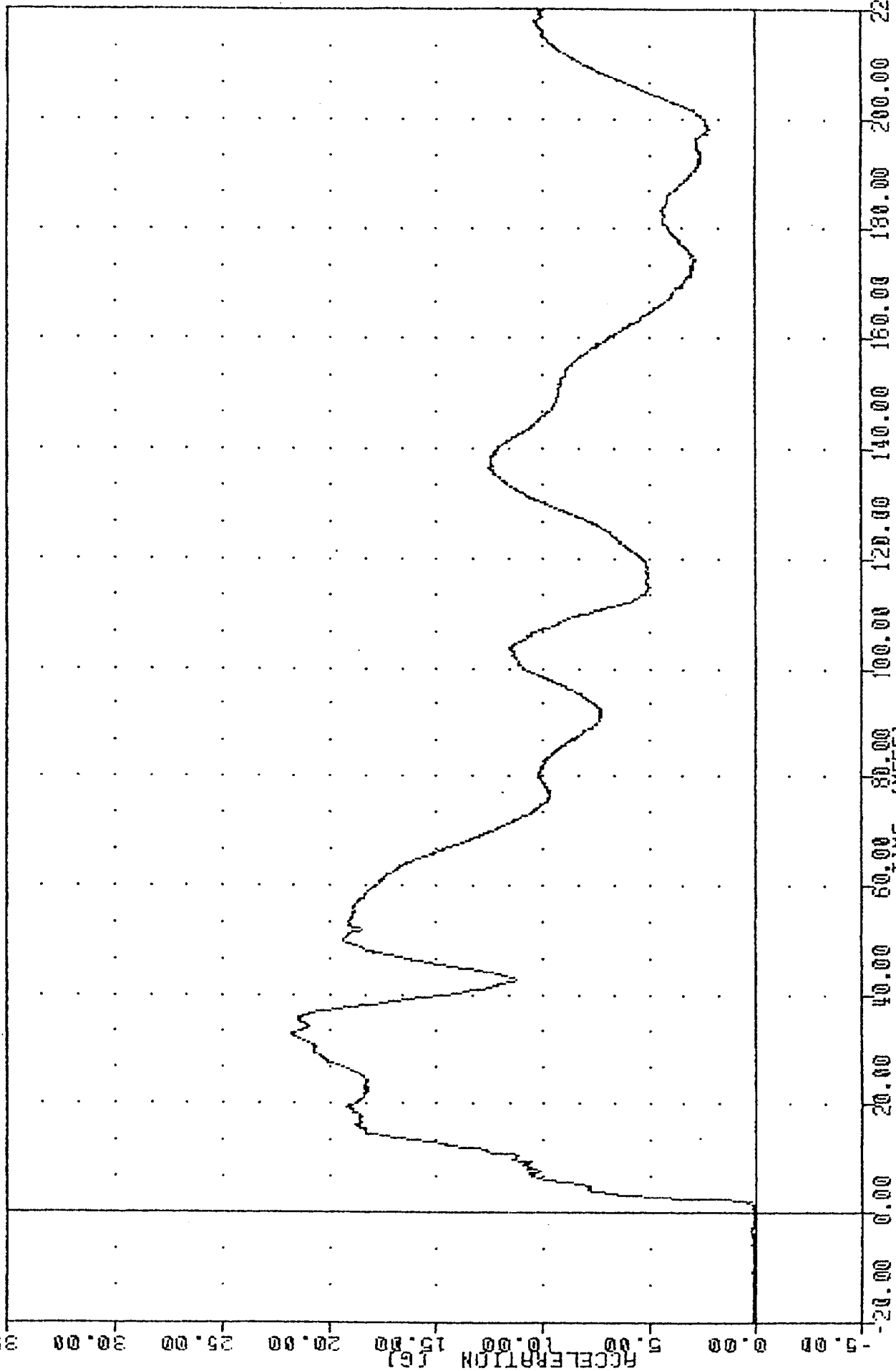
5.00

0.00

-5.00

C-49

920129

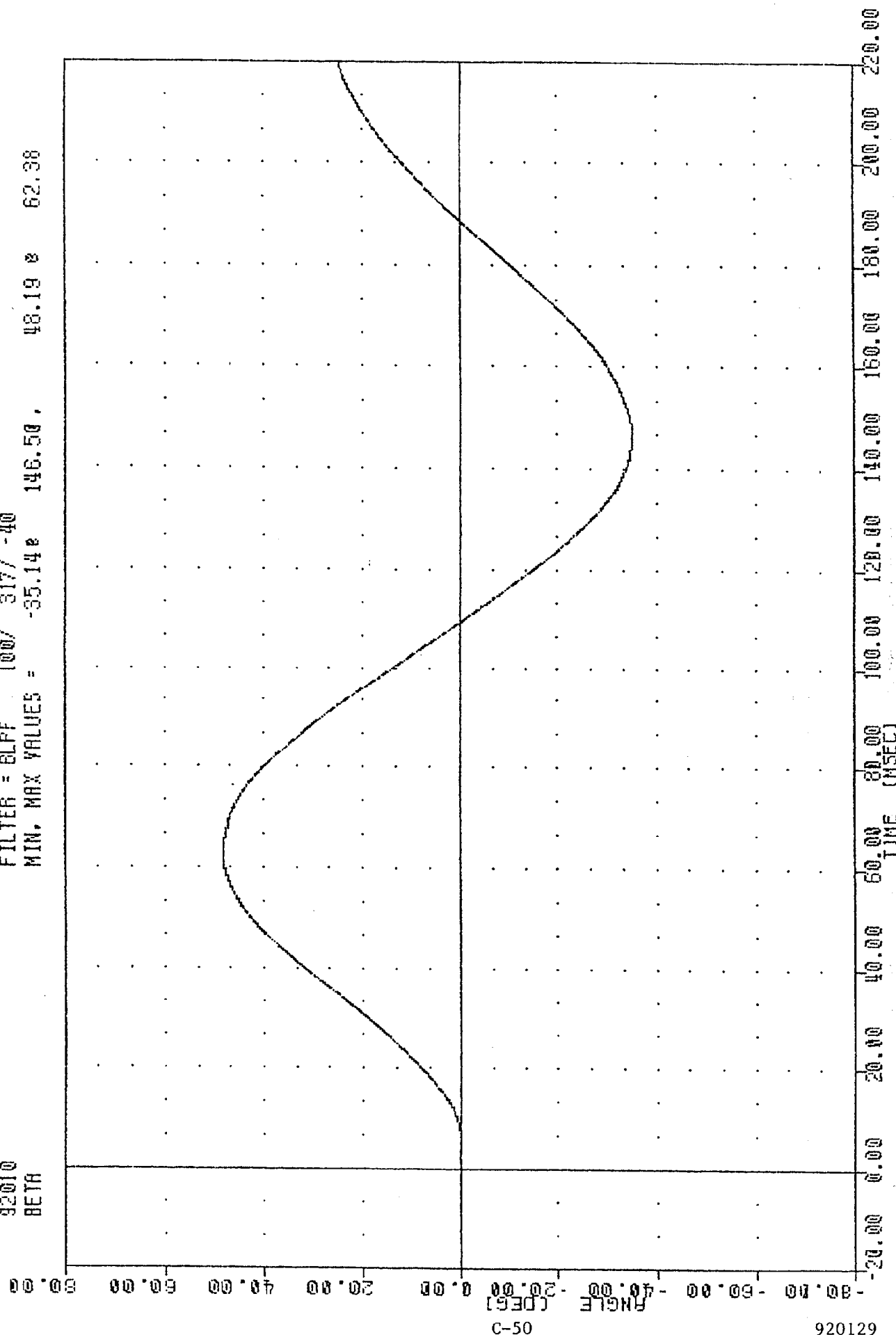




TRC  
5720 SN 828 HEAD/NECK CAL 20  
92010  
BETA

, HH82628

FILTER = BLPF 100/ 317/ -40  
MIN, MAX VALUES = -35.14e 146.50, 48.19 e 62.38



920129

PART 572-8 HYBRID II HEAD/NECK CALIBRATION  
ROTATION ABOUT THE BASE OF THE NECK

572B SN 826 HEAD/NECK CAL 28

92010

THETA

FILTER = ELPF 100/ 317/ -40

MIN. MAX VALUES = -11.79e 150.00 ,

17.98 e 57.25

80.00

60.00

40.00

20.00

0.00

-20.00

-40.00

-60.00

-80.00

-20.00

0.00

20.00

40.00

60.00

80.00

100.00

120.00

140.00

160.00

180.00

200.00

220

C-51

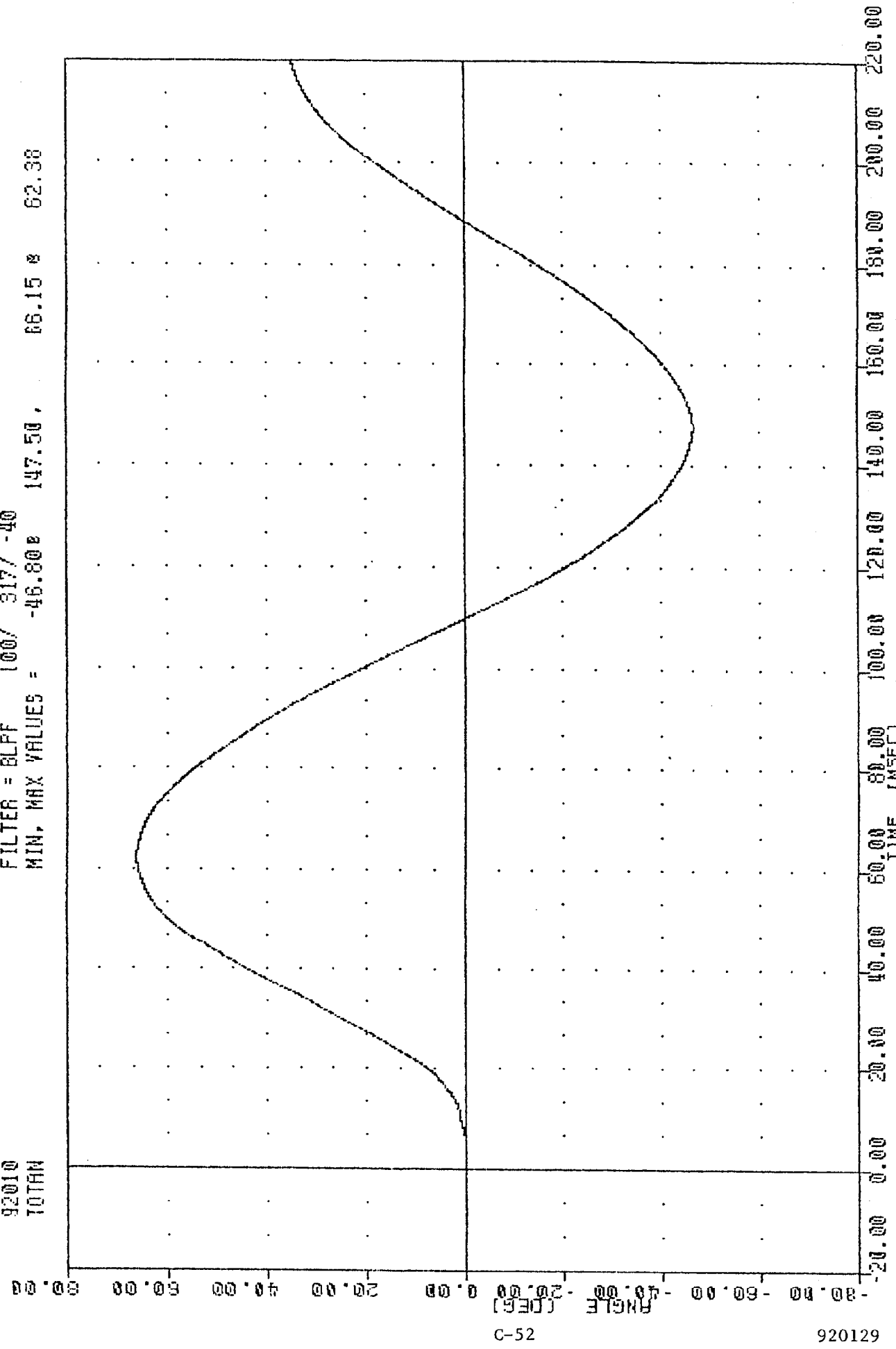
920129

PART 572-B HYBRID II HEAD/NECK CALIBRATION  
ROTATION ABOUT THE HEAD C.G.

TRC  
 572B SN 828 HEAD/NECK CAL 28  
 92010  
 TOTAN

HH82628

FILTER = BLFF 100/ 317/ -40  
 MIN, MAX VALUES = -46.80 147.50 66.15 62.38



PART 572-B HYBRID II HEAD/NECK CALIBRATION  
 TOTAL ROTATION

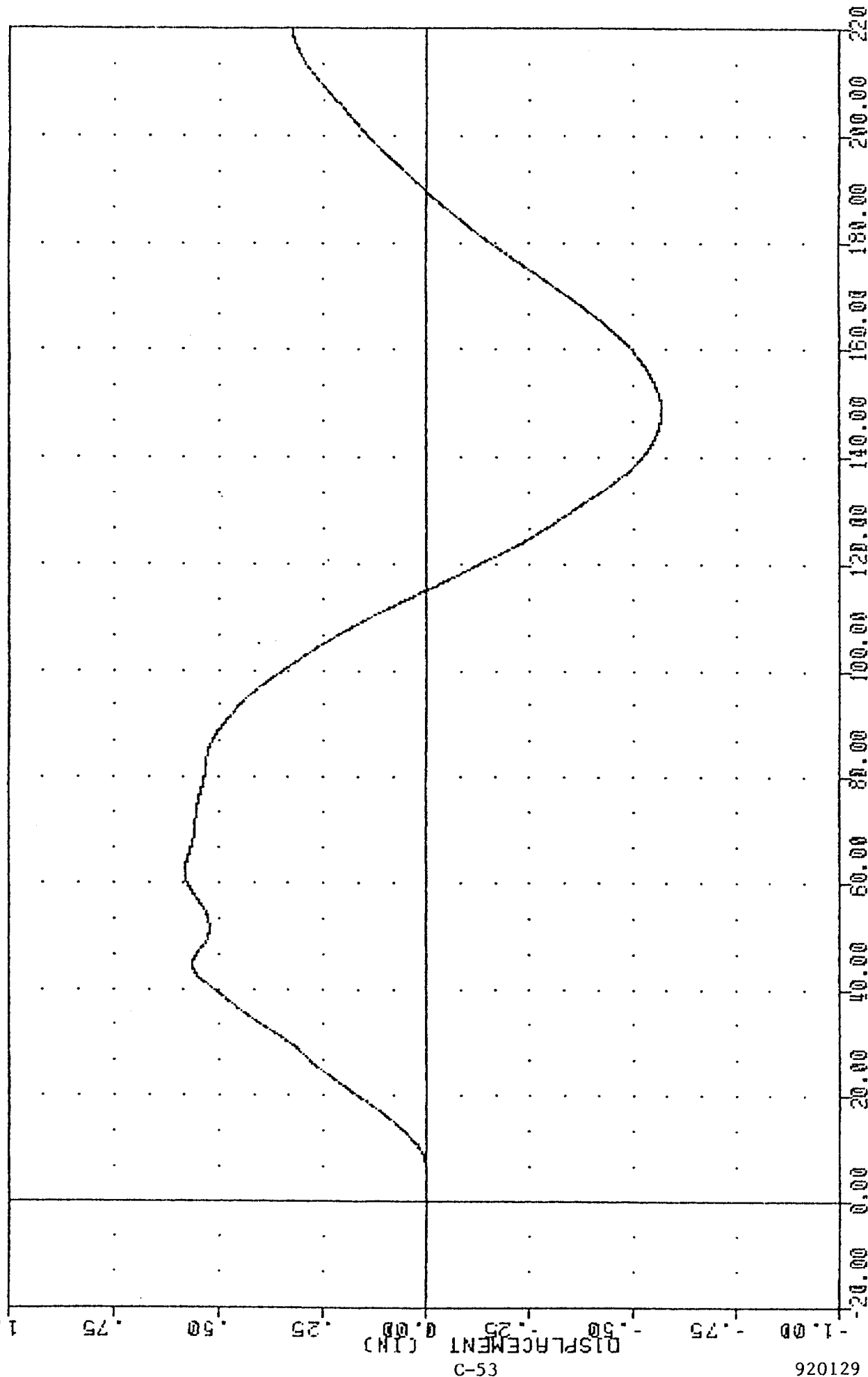
572B SN 026 HEAD/NECK CAL 20

92010

NEK2D

FILTER = BLPF 100/ 317/ -40

MIN. MAX VALUES = -0.572 148.50 , 0.58 0 61.88



920129

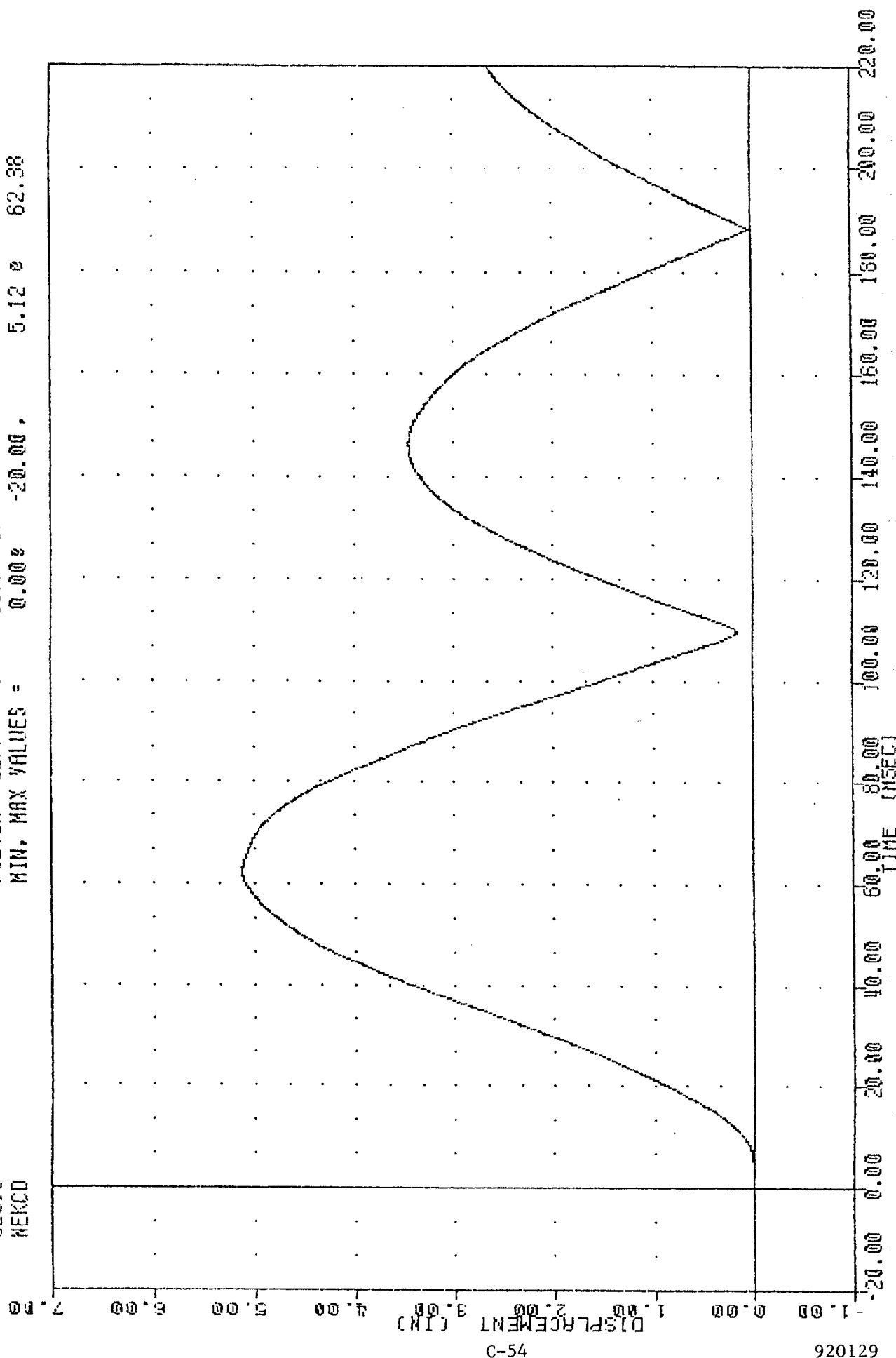
C-53

PART 572-B HYBRID II HEAD/NECK CALIBRATION  
NECK DISPLACEMENT Z AXIS

TAC  
 5728 SN 026 HEAD/NECK CAL 28  
 92010  
 REKCO

HR02028

FILTER = BLPF 100/ 317/ -40  
 MIN, MAX VALUES = 0.00% 5.12 e 62.38  
 -20.00,



## TRANSPORTATION RESEARCH CENTER OF OHIO

## THORAX IMPACT TEST

PART 572

10-Jan-92

TEMPERATURE 70 F  
TRC TH82628RELATIVE HUMIDITY 34 %  
5728 SN 826 H.S. THORAX CAL 28

|                      |                    |              |
|----------------------|--------------------|--------------|
| -----                |                    |              |
|                      | HIGH SPEED TEST    |              |
|                      | -----              |              |
| TEST PARAMETER       | SPECIFICATION      | TEST RESULTS |
| =====                |                    |              |
| PENDULUM VELOCITY    | 21.78-22.22 FT/SEC | 21.92 FT/SEC |
| -----                |                    |              |
| PEAK DEFLECTION      | 1.7 IN max.        | 1.39 IN      |
| -----                |                    |              |
| PEAK RESISTIVE FORCE | 2,250, LB max.     | 2045, LB     |
| -----                |                    |              |
| INTERNAL HYSTERESIS  | 50% - 70%          | 68.1%        |
| -----                |                    |              |

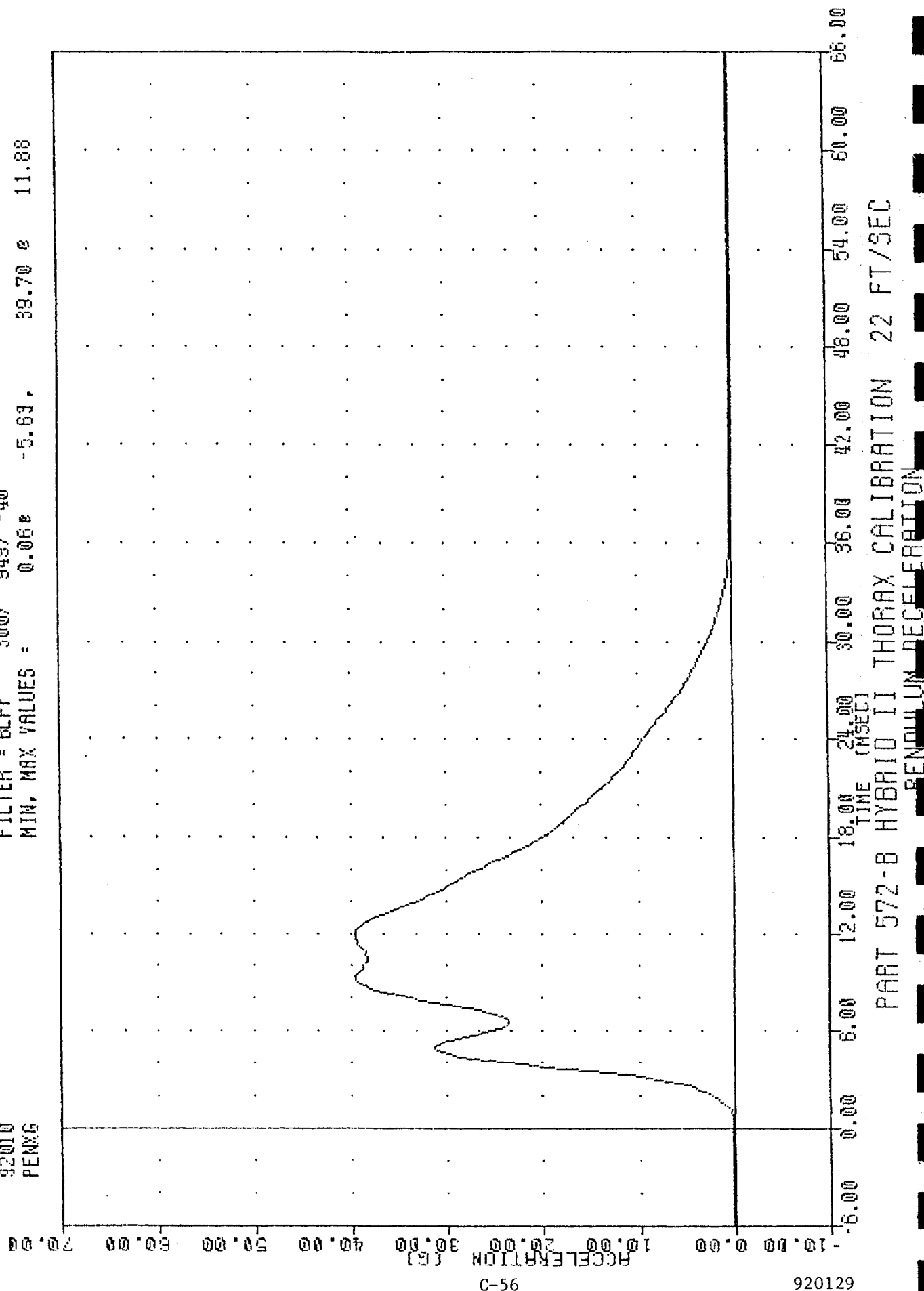
SCD: 2.15 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

TRC  
5720 SN 026 H.S. THORAX CAL 20  
92010  
PENXG

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = 0.068 -5.63, 39.70 0 11.88



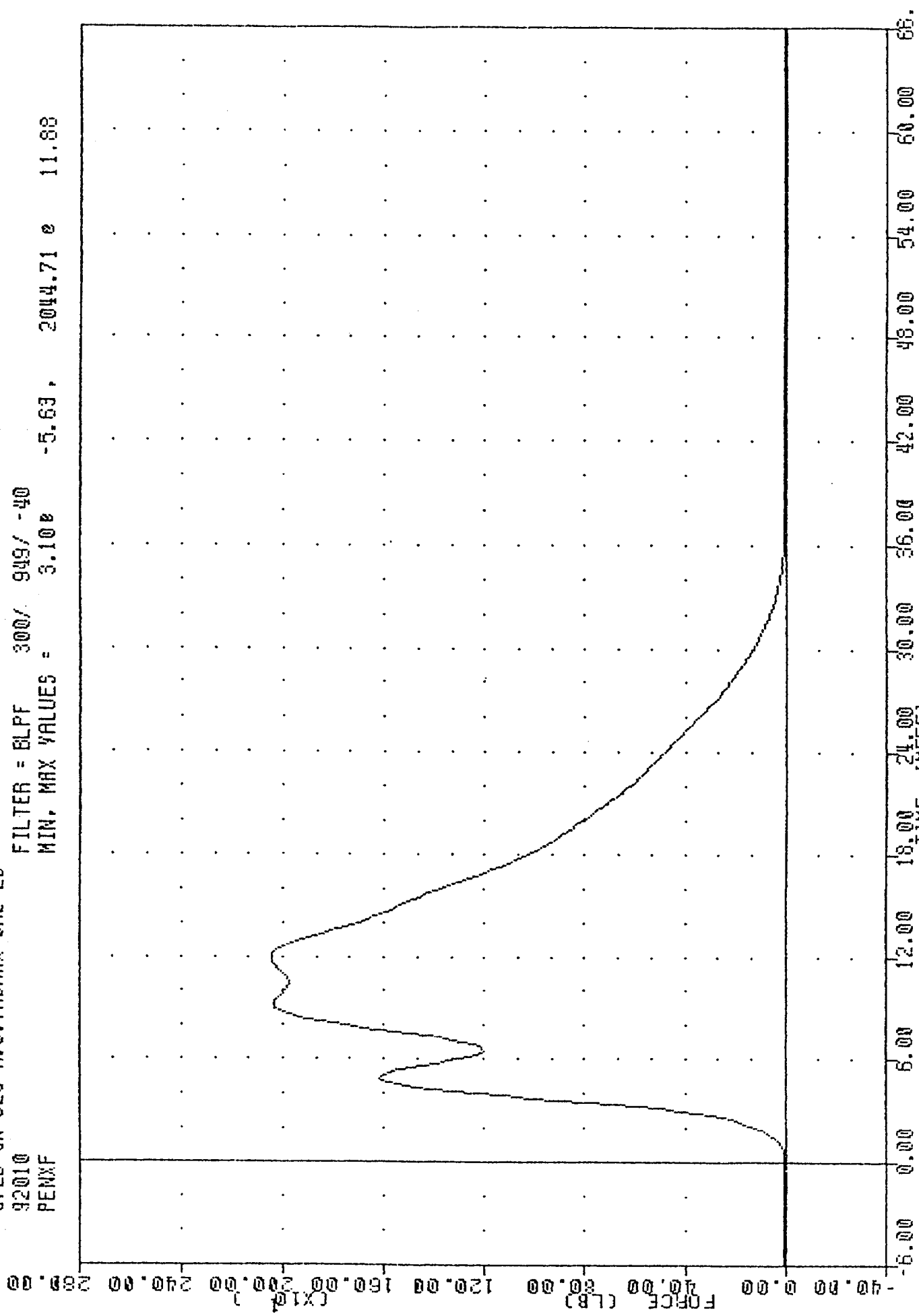
572B SN 026 H.S.THORAX CAL 2B

92010

PENXF

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 3.100 -5.63, 2044.71 0 11.88



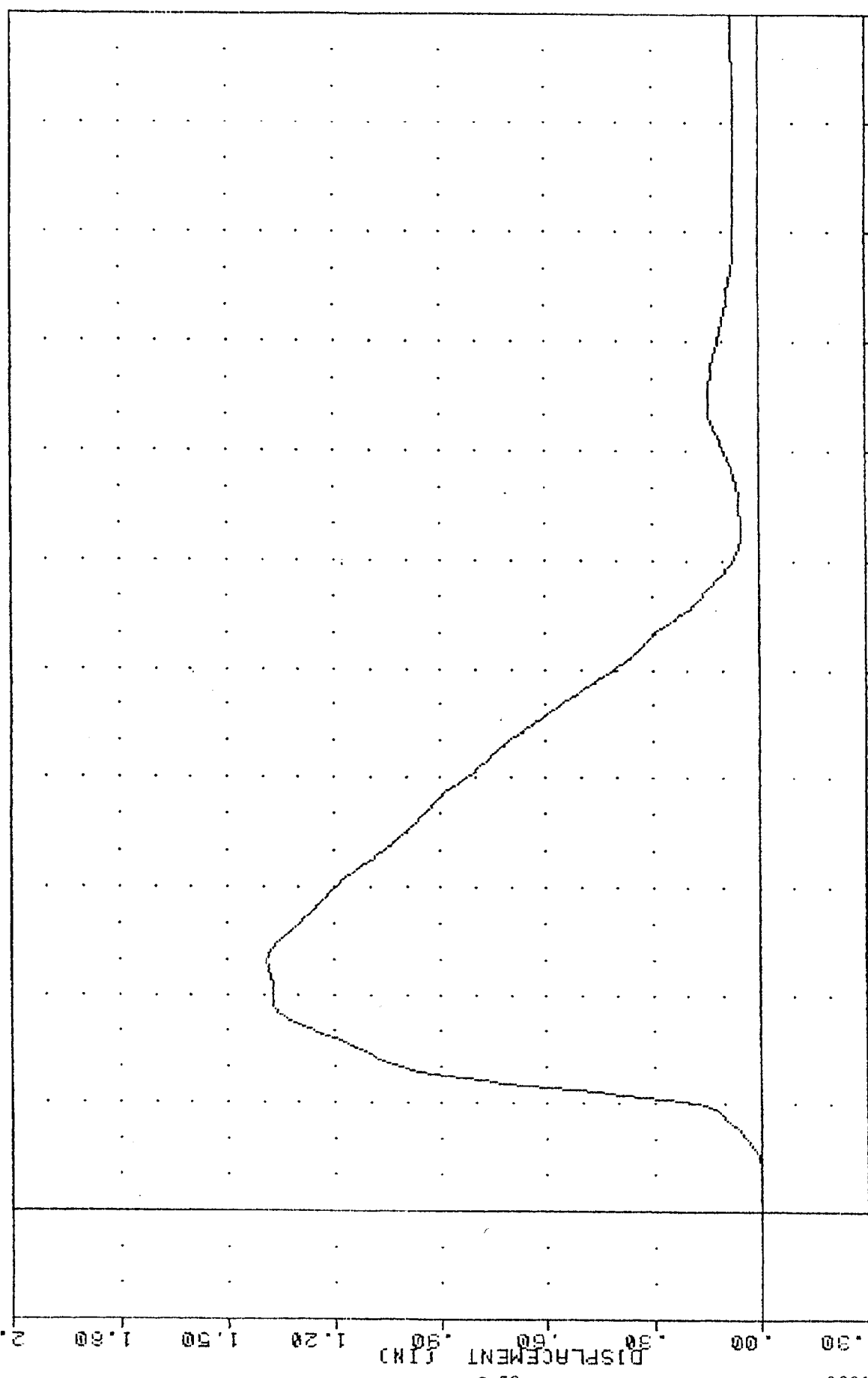
PART 572-B HYBRID II THORAX CALIBRATION 22 FT/SEC  
PENDULUM FORCE



TRC  
 5720 SN 026 H.S. THORAX CAL 20  
 92010  
 CSTXD

FILTER = BLPF 300/ 949/ -40  
 MIN, MAX VALUES = 0.000 -0.13, 1.39 2 13.88

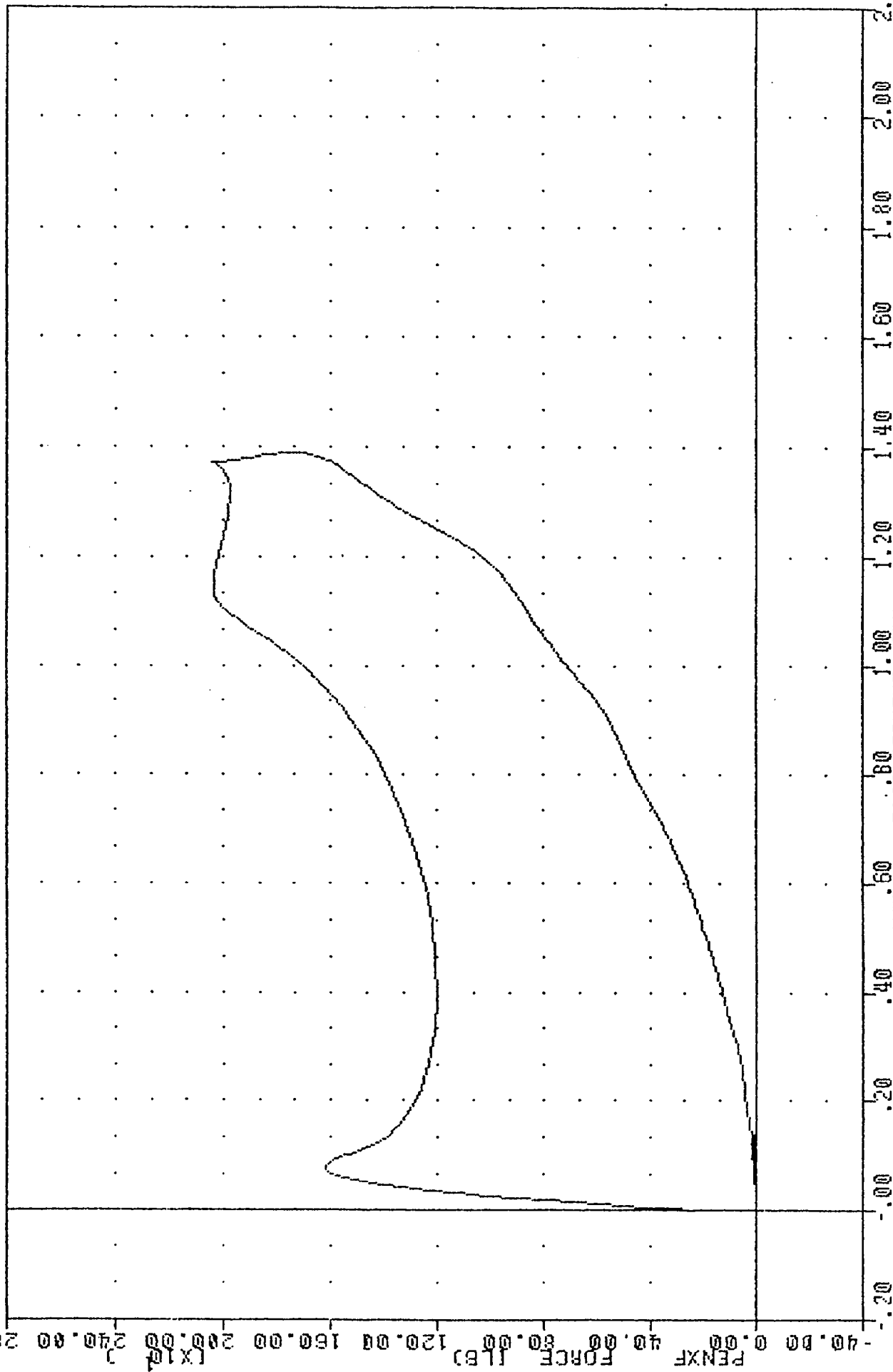
2.10



920129

PART 572-B HYBRID II THORAX CALIBRATION 22 FT/SEC  
 STERNUM DISPLACEMENT

PERCF FILTER = BLPF 300/ 949/ -40 MIN. MAX = 3.10 2044.71 11.88  
 10.00



PART 572-B HYBRID II THORAX CALIBRATION 22 FT/SEC  
 CHEST DISPLACEMENT VS PENDULUM FORCE

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572

10-Jan-92

TEMPERATURE 70 F  
TRC TL82628

RELATIVE HUMIDITY 34 %  
572B SN 826 L. S. THORAX CAL 28

| TEST PARAMETER       | LOW SPEED TEST     |              |
|----------------------|--------------------|--------------|
|                      | SPECIFICATION      | TEST RESULTS |
| PENDULUM VELOCITY    | 13.86-14.14 FT/SEC | 13.97 FT/SEC |
| PEAK DEFLECTION      | 1.1 IN max.        | 0.94 IN      |
| PEAK RESISTIVE FORCE | 1,450. LB max.     | 1368. LB     |
| INTERNAL HYSTERESIS  | 50% - 70%          | 68.1%        |

SCD: 2.15 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas Middleton

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 0.012 44.75, 26.56 & 10.33

PENXG

70.00

60.00

50.00

40.00

30.00

20.00

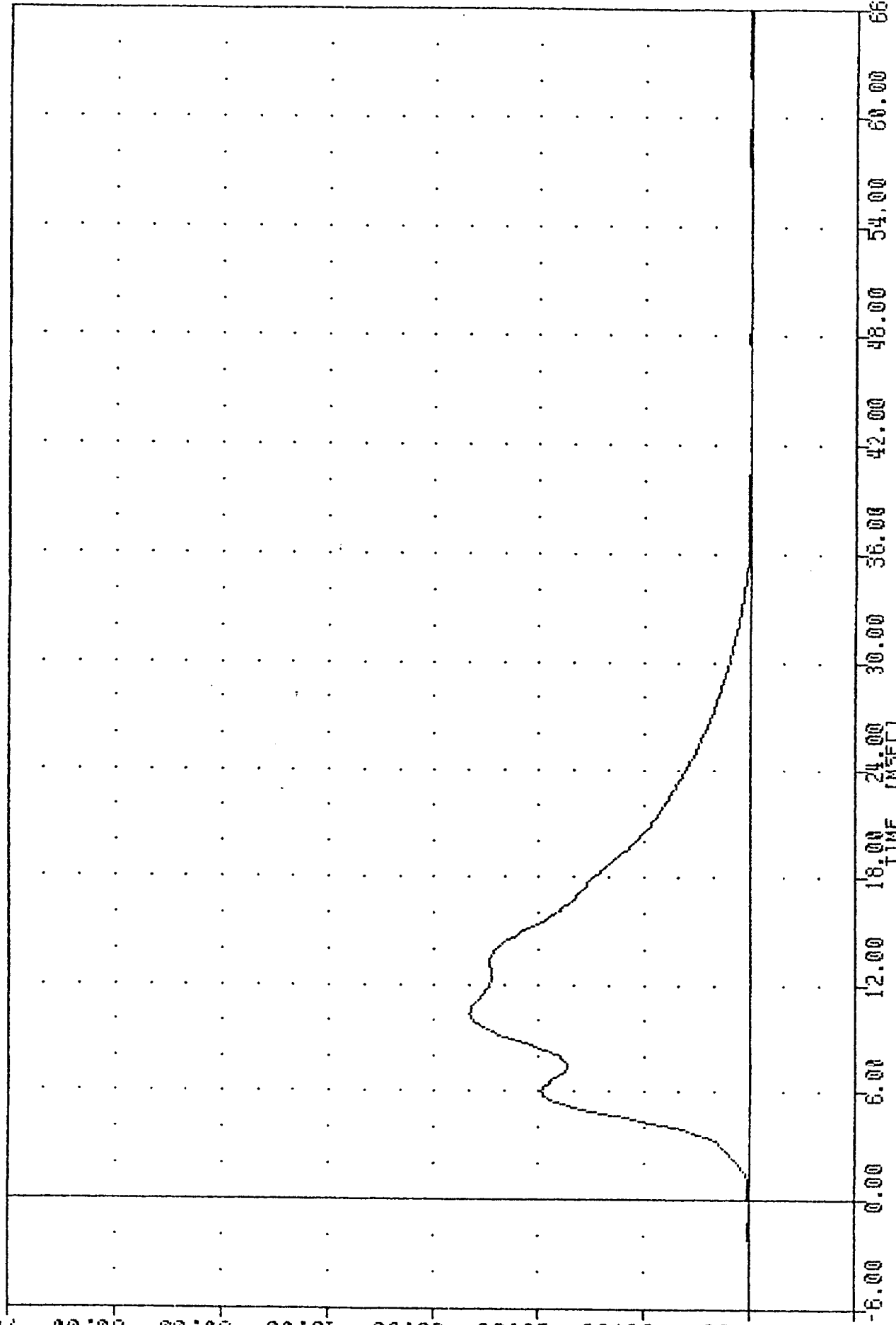
10.00

0.00

ACCELERATION (G)

C-61

920129

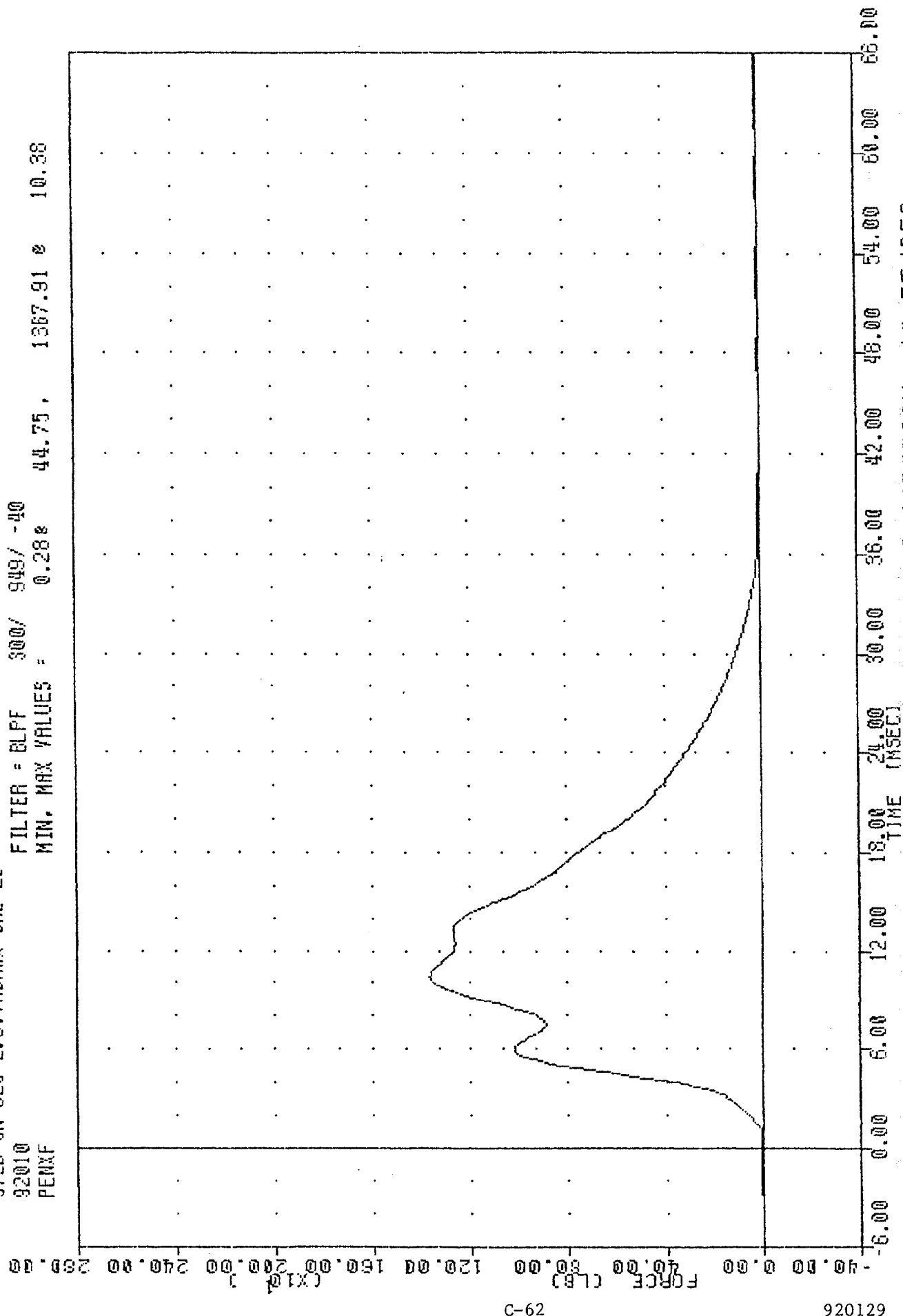


PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC  
PENDULUM DECELERATION

TRC  
572B SN 826 L.S.THORAX CAL 2B  
92010  
PENXF

FILTER = BLPF 300/ 949/ -40  
MIN. MAX VALUES = 0.28e

44.75, 1367.91 e 10.38



PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC  
PENDULUM FORCE

0720 3M 020 L.S.1MURRAY LML 2B

92010

CSTXD

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 0.00e

-4.50, 0.94 e 12.38

2.10

1.80

1.50

1.20

1.00

.90

.60

.30

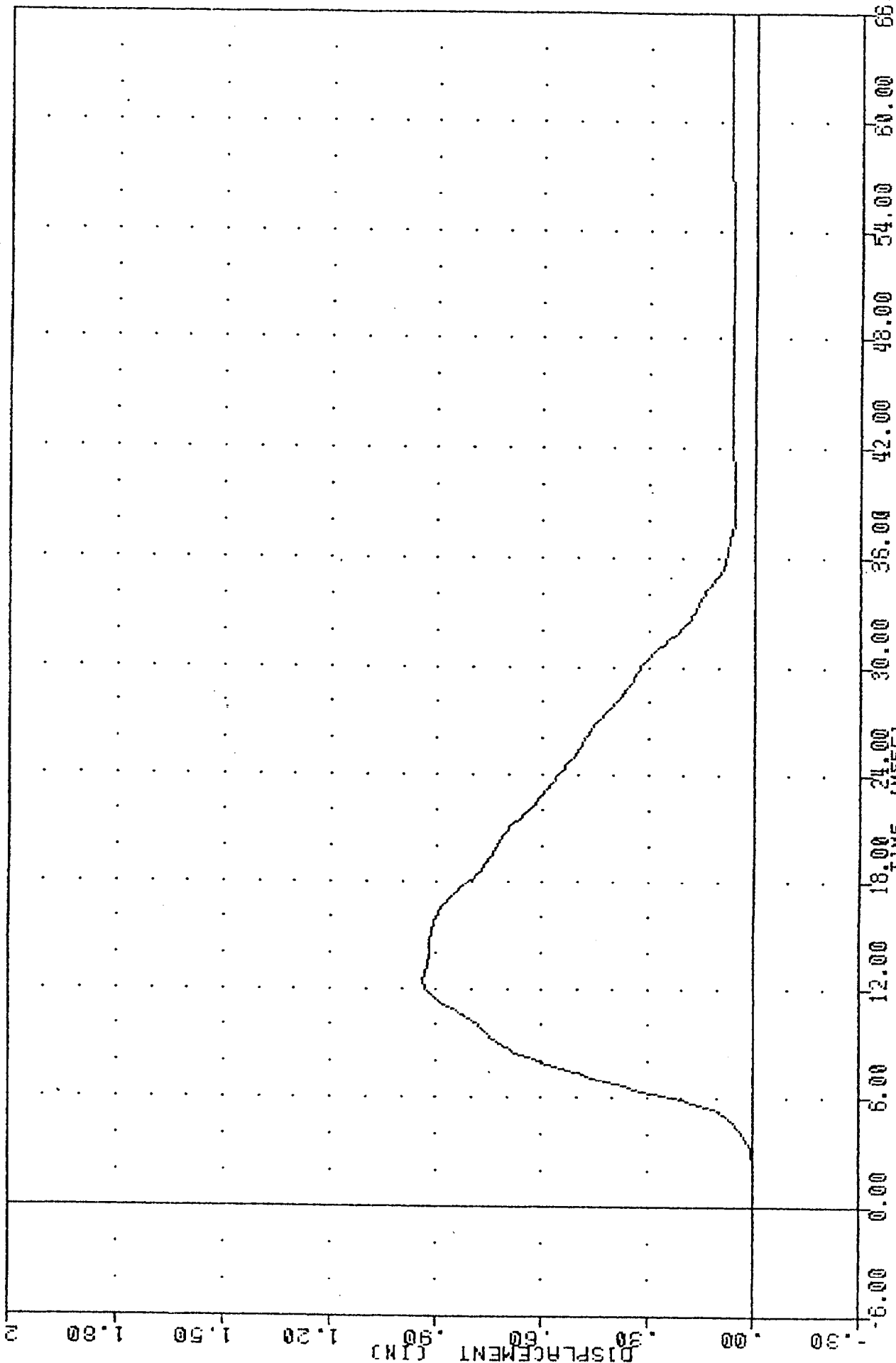
.00

-.30

-.60

C-63

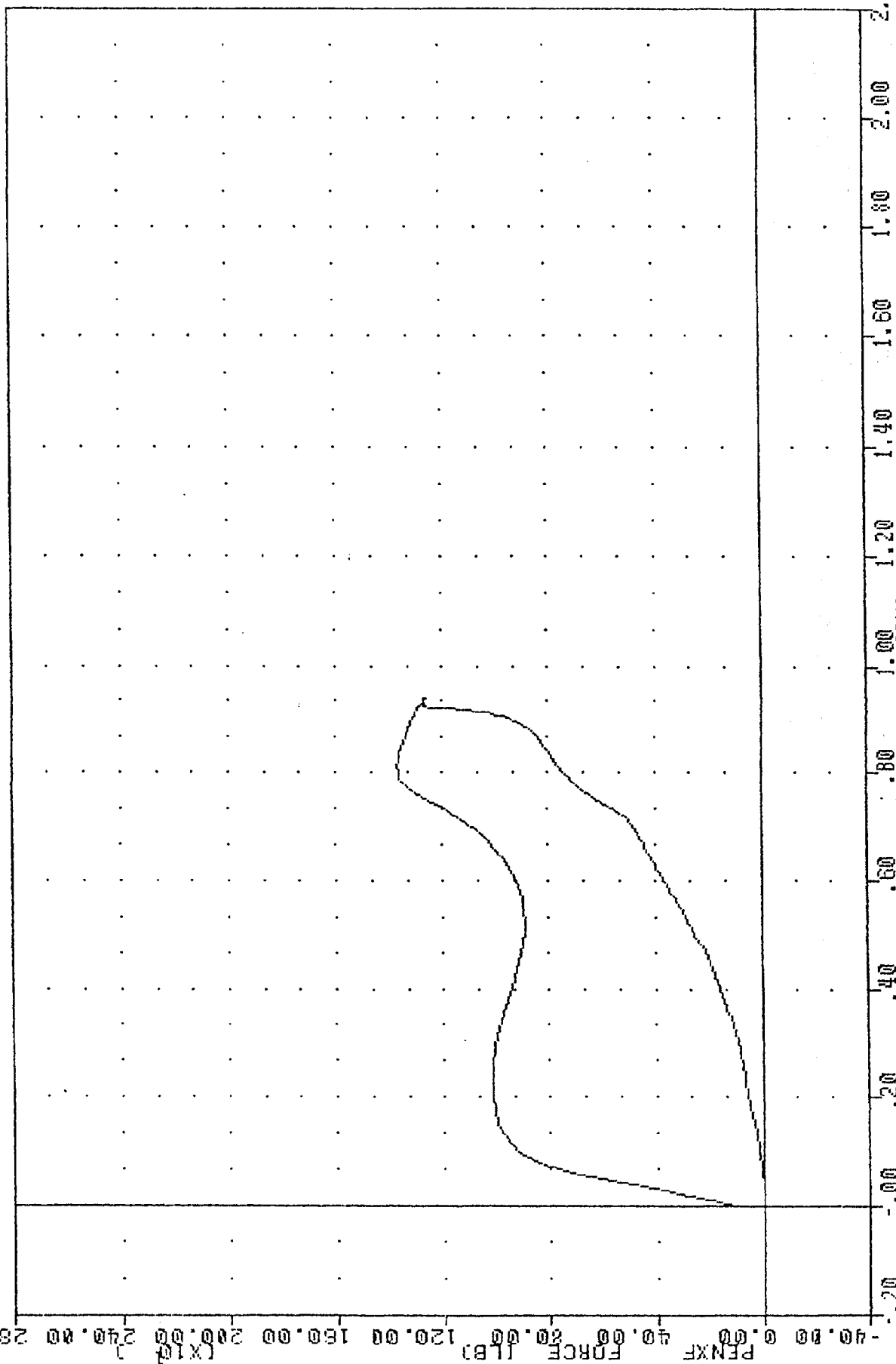
920129



PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC  
STERNUM DISPLACEMENT

T8C  
 CSTXD  
 PENXF  
 FILTER = 8LFF  
 FILTER = 8LFF  
 572B SN 826 L.S. THORAX CAL 28  
 300/ 949/ -40 MIN, MAX =  
 300/ 949/ -40 MIN, MAX =  
 92010  
 0.00  
 0.28  
 -4.50  
 44.75  
 0.94  
 1367.81  
 12.38  
 10.38

-40.00 0.00 40.00 80.00 120.00 160.00 200.00 240.00 280.00  
 (X10<sup>3</sup>)  
 FORCE (LB)  
 PENXF



920129

C-64

PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC  
 CHEST DISPLACEMENT VS PENDULUM FORCE

## ABDOMEN COMPRESSION TEST

PART 572

09-Jan-92

TEMPERATURE 70 F  
TRC AB82628

RELATIVE HUMIDITY 49 %  
572B SN 826 ABDOM COMPR CAL 28

| TEST CORRIDORS |                   |              |
|----------------|-------------------|--------------|
| DISPLACEMENT   | FORCE             | TEST RESULTS |
| 0.00 IN        | 10.00 LBS         | 10.00 LBS    |
| 0.50 IN        | 23.00 - 36.00 LBS | 27.58 LBS    |
| 0.75 IN        | 36.00 - 50.00 LBS | 40.69 LBS    |
| 1.00 IN        | 50.00 - 63.00 LBS | 56.52 LBS    |
| 1.30 IN        | 73.00 - 88.00 LBS | 81.43 LBS    |

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

*Chas Middleton*



TAC  
ABXD  
ABXF

5726 SN 826 ABDOM COMP6 CAL 28  
1650/ 5214/ -40 MIN. MAX =  
1650/ 5214/ -40 MIN. MAX =

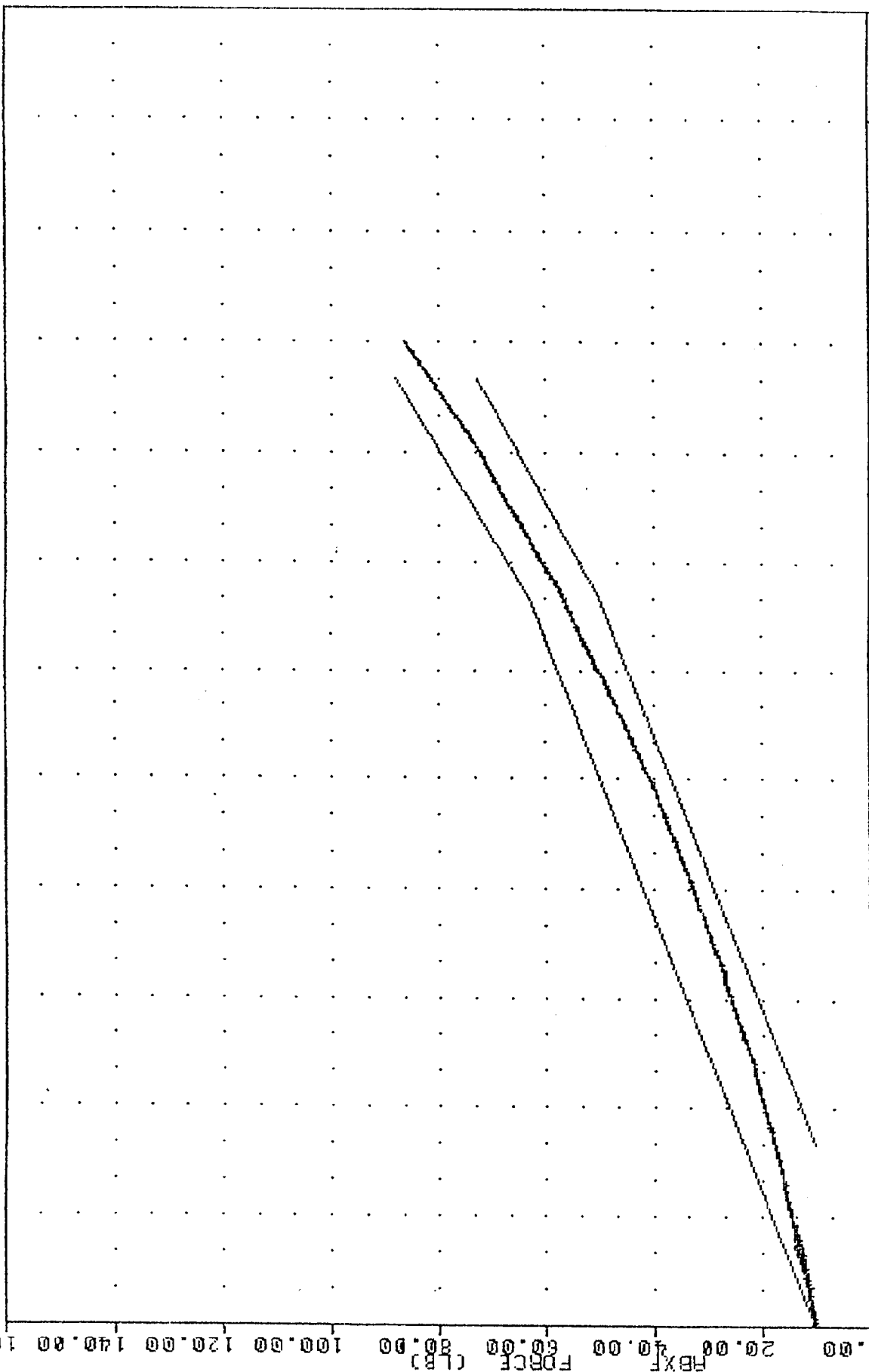
0.00 %  
0.01 %

0.00 %  
0.01 %

1.35 %  
86.65 %

86.43  
1.35

150.00  
140.00  
130.00  
120.00  
110.00  
100.00  
90.00  
80.00  
70.00  
60.00  
50.00  
40.00  
30.00  
20.00  
10.00  
0.00



C-66

920129

PART 572-B HYBRID II ABDOMEN CALIBRATION  
ABDOMEN FORCE VS DISPLACEMENT

## TRANSPORTATION RESEARCH CENTER OF OHIO

## LUMBAR FLEXION TEST

PART 572

10-JAN-92

TEMPERATURE 70 F  
TRC LFB2628RELATIVE HUMIDITY 49 %  
572B 9N826 LUMBAR FLEX CAL28

| DEFLECTION       | SPECIFICATION    | TEST RESULTS |
|------------------|------------------|--------------|
| 0 DEG            | 0 LB             | 0.00 LB      |
| 20 DEG           | 22.00 - 34.00 LB | 28.00 LB     |
| 30 DEG           | 34.00 - 46.00 LB | 39.00 LB     |
| 40 DEG           | 46.00 - 58.00 LB | 53.00 LB     |
| NET RETURN ANGLE | < 12 DEG         | 0.00 DEG     |

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas Middleton

## TRANSPORTATION RESEARCH CENTER OF OHIO

## KNEE IMPACT TEST

PART 572

11-Jan-92

TEMPERATURE 69 F  
LEFT KNEE  
TRC LK92628

RELATIVE HUMIDITY 38 %  
572B SN 826 L.KNEE IMP CAL 28

| TEST PARAMETER         | SPECIFICATION      | TEST RESULTS |
|------------------------|--------------------|--------------|
| PROBE VELOCITY         | 6.76 - 7.04 FT/SEC | 6.93 FT/SEC  |
| PEAK KNEE IMPACT FORCE | 1850 - 2500 LB     | 2034.74 LB   |
| DURATION ABOVE 1000 LB | $\geq 1.7$ MSEC    | 2.06 MSEC    |

DUMMY MEETS SPECIFICATIONS

TECHNICIAN

*Chas Middleton*

5728 SN 026 L.KNEE INP CAL 28

92011

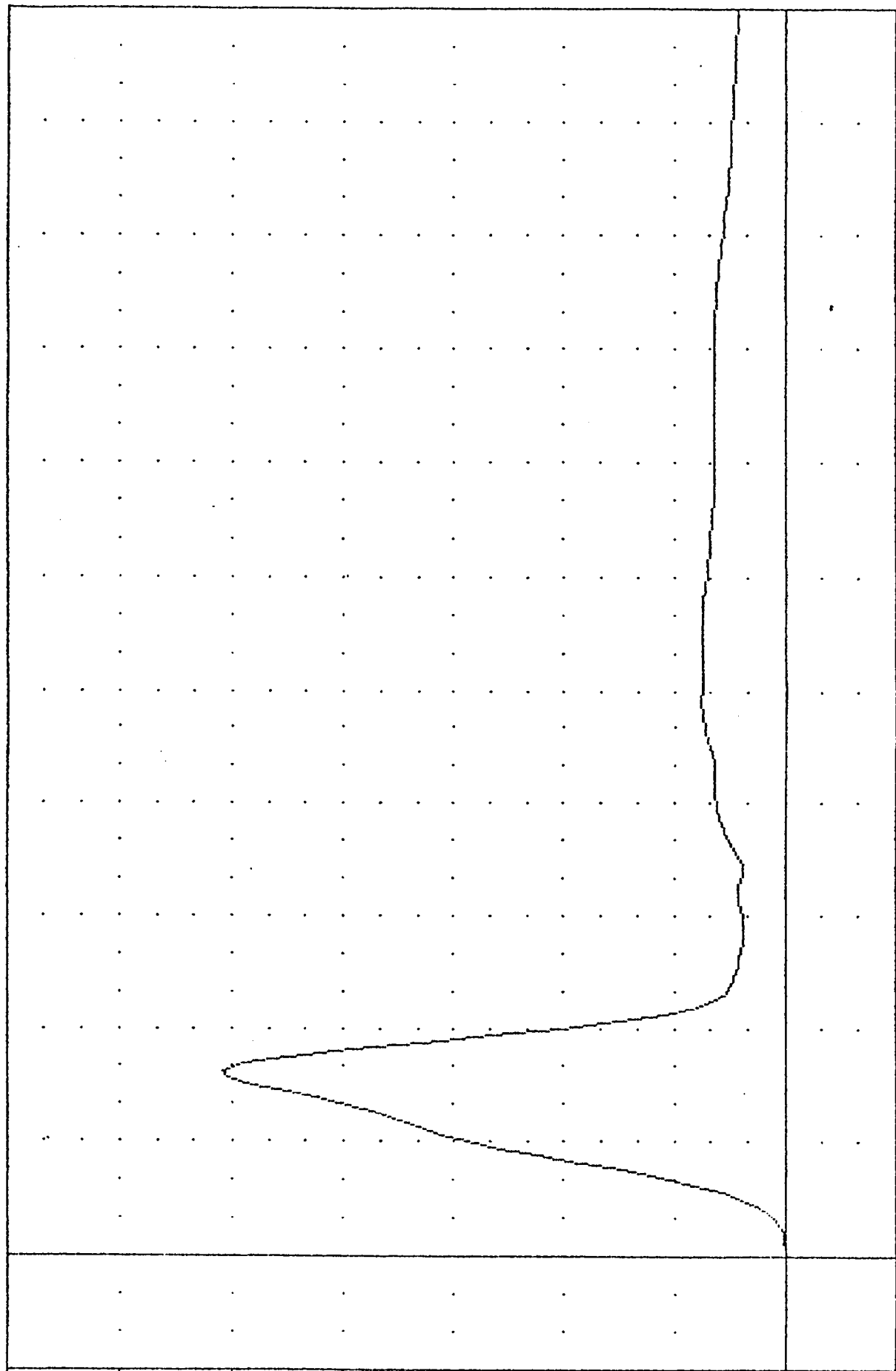
LFMF

FILTER = BLPF 1000/ 3162/ -40

MIN. MAX VALUES = -0.620

-1.80 , 2034.74 0 3.25

FORCE (LB)  
X10<sup>4</sup>



-2.00 0.00 2.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00 18.00 20.00 22.

PART 572-B HYBRID II LEFT KNEE CALIBRATION  
LEFT FEMUR FORCE

## TRANSPORTATION RESEARCH CENTER OF OHIO

## KNEE IMPACT TEST

PART 572

10-Jan-92

TEMPERATURE 70 F  
RIGHT KNEE  
TRC RK82628

RELATIVE HUMIDITY 40 %  
572B SN 826 R.KNEE IMP CAL 28

| TEST PARAMETER         | SPECIFICATION      | TEST RESULTS |
|------------------------|--------------------|--------------|
| PROBE VELOCITY         | 6.76 - 7.04 FT/SEC | 6.97 FT/SEC  |
| PEAK KNEE IMPACT FORCE | 1850 - 2500 LB     | 2233.68 LB   |
| DURATION ABOVE 1000 LB | $\geq 1.7$ MSEC    | 1.97 MSEC    |

## DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

5728 SN 026 R.KNEE INP CAL 20

92010

RFMF

FILTER = BLPF 1000/ 3162/ -40

MIN, MAX VALUES =

-0.300

-0.38,

2233.68 0

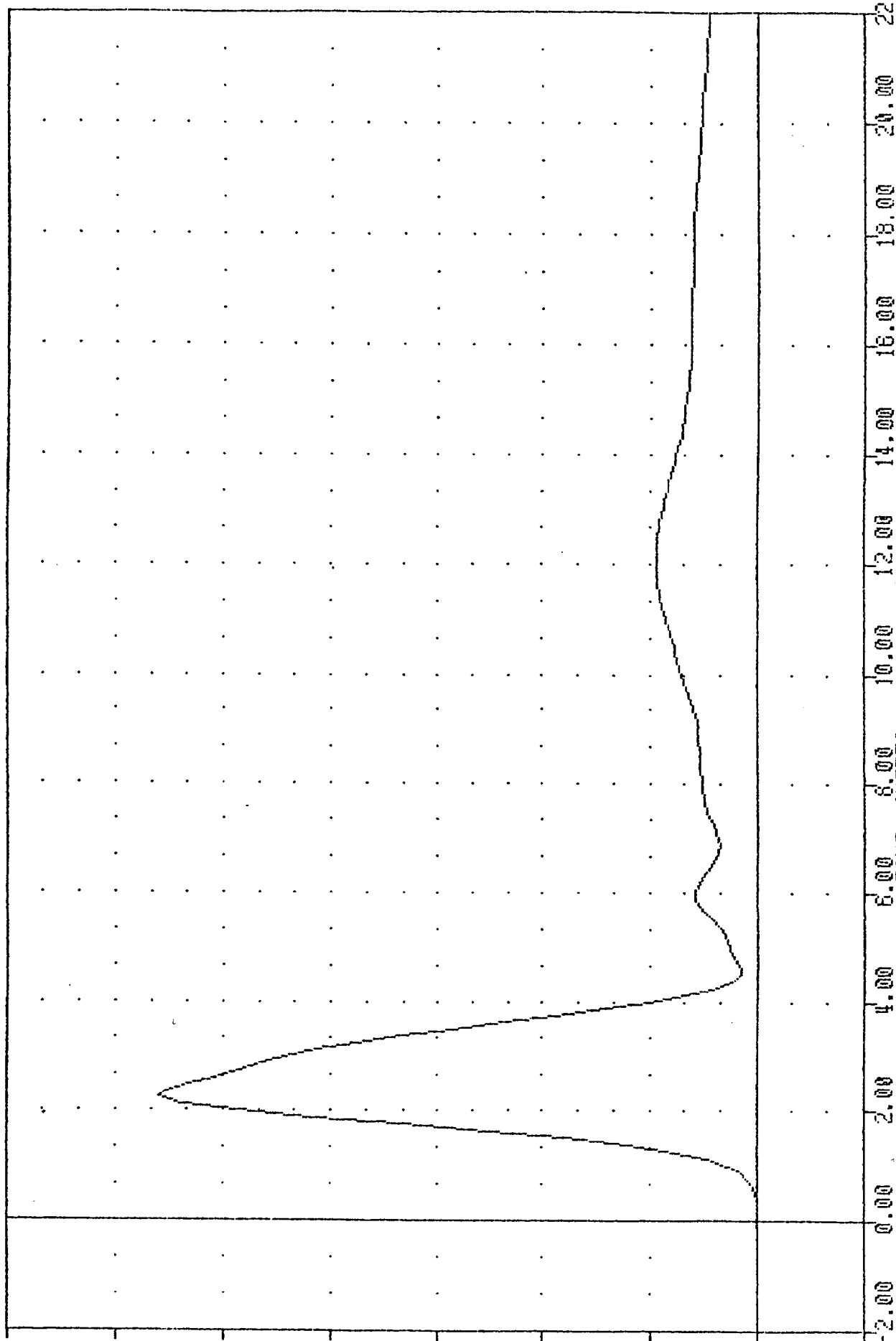
2.25

FORCE (LBS)

(X10<sup>4</sup>)

C-71

920129



PART 572-B HYBRID II RIGHT KNEE CALIBRATION  
RIGHT FEMUR FORCE

APPENDIX D

MISCELLANEOUS TEST INFORMATION

# DUMMY INSTRUMENT CALIBRATIONS

DRIVER DUMMY #713

|                                       | SERIAL NO. | MODEL NO.  | MFR.    | CALIBRATION DATE |          |
|---------------------------------------|------------|------------|---------|------------------|----------|
|                                       |            |            |         | LAST             | DUE      |
| HEAD X-AXIS ACCEL.                    | CW96H      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| Y-AXIS ACCEL.                         | DN99JC     | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| Z-AXIS ACCEL.                         | CR78H      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| CHEST X-AXIS ACCEL.                   | CC71H      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| Y-AXIS ACCEL.                         | CY32H      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| Z-AXIS ACCEL.                         | CG13H      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| LEFT FEMUR FORCE LOAD CELL            | 901        | 2430       | GSE     | 01/09/92         | 07/09/92 |
| RIGHT FEMUR FORCE LOAD CELL           | 902        | 2430       | GSE     | 01/09/92         | 07/09/92 |
| *NECK X-AXIS FORCE LOAD CELL          | NA         |            |         |                  |          |
| Y-AXIS FORCE LOAD CELL                | NA         |            |         |                  |          |
| X-AXIS FORCE LOAD CELL                | NA         |            |         |                  |          |
| *NECK MOMENT ABOUT X-AXIS LOAD CELL   | NA         |            |         |                  |          |
| MOMENT ABOUT Y-AXIS LOAD CELL         | NA         |            |         |                  |          |
| MOMENT ABOUT Z-AXIS LOAD CELL         | NA         |            |         |                  |          |
| *CHEST DEFLECTION POTENTIOMETER       | NA         |            |         |                  |          |
| LAP BELT FORCE LOAD CELL              | 571        | 3419       | LEBOW   | 09/12/91         | 03/12/92 |
| SHOULDER BELT FORCE LOAD CELL         | 616        | 3419       | LEBOW   | 09/12/91         | 03/12/92 |
| SHOULDER BELT SPOOL-OUT POTENTIOMETER | A12899     | PT-101-40A | CELESCO | 11/27/91         | 05/27/92 |
| SHOULDER BELT STRETCH POTENTIOMETER   | 2087       | 2051414101 | BOURNES | 11/27/91         | 05/27/92 |

\*HYBRID III USE ONLY.



# DUMMY INSTRUMENT CALIBRATIONS

## PASSENGER DUMMY #826

|                                       | SERIAL NO. | MODEL NO.  | MFR.    | CALIBRATION DATE |          |
|---------------------------------------|------------|------------|---------|------------------|----------|
|                                       |            |            |         | LAST             | DUE      |
| HEAD X-AXIS ACCEL.                    | CL95H      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| Y-AXIS ACCEL.                         | DW12J      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| Z-AXIS ACCEL.                         | CC11H      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| CHEST X-AXIS ACCEL.                   | DB74H      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| Y-AXIS ACCEL.                         | CY31H      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| Z-AXIS ACCEL.                         | CH67H      | 7264       | ENDEVCO | 01/08/92         | 07/08/92 |
| LEFT FEMUR FORCE LOAD CELL            | 880        | 2430       | GSE     | 01/09/92         | 07/09/92 |
| RIGHT FEMUR FORCE LOAD CELL           | 898        | 2430       | GSE     | 01/09/92         | 07/09/92 |
| *NECK X-AXIS FORCE LOAD CELL          | NA         |            |         |                  |          |
| Y-AXIS FORCE LOAD CELL                | NA         |            |         |                  |          |
| Z-AXIS FORCE LOAD CELL                | NA         |            |         |                  |          |
| *NECK MOMENT ABOUT X-AXIS LOAD CELL   | NA         |            |         |                  |          |
| MOMENT ABOUT Y-AXIS LOAD CELL         | NA         |            |         |                  |          |
| MOMENT ABOUT Z-AXIS LOAD CELL         | NA         |            |         |                  |          |
| *CHEST DEFLECTION POTENTIOMETER       | NA         |            |         |                  |          |
| LAP BELT FORCE LOAD CELL              | 236        | 3419       | LEBOW   | 10/19/91         | 04/19/92 |
| SHOULDER BELT FORCE LOAD CELL         | 615        | 3419       | LEBOW   | 09/12/91         | 03/12/92 |
| SHOULDER BELT SPOOL-OUT POTENTIOMETER | 0586135    | PT-101-40A | CELESCO | 11/27/91         | 05/27/92 |
| SHOULDER BELT STRETCH POTENTIOMETER   | NA         | 2051414101 | BOURNES | 11/27/91         | 05/27/92 |

\*HYBRID III USE ONLY.

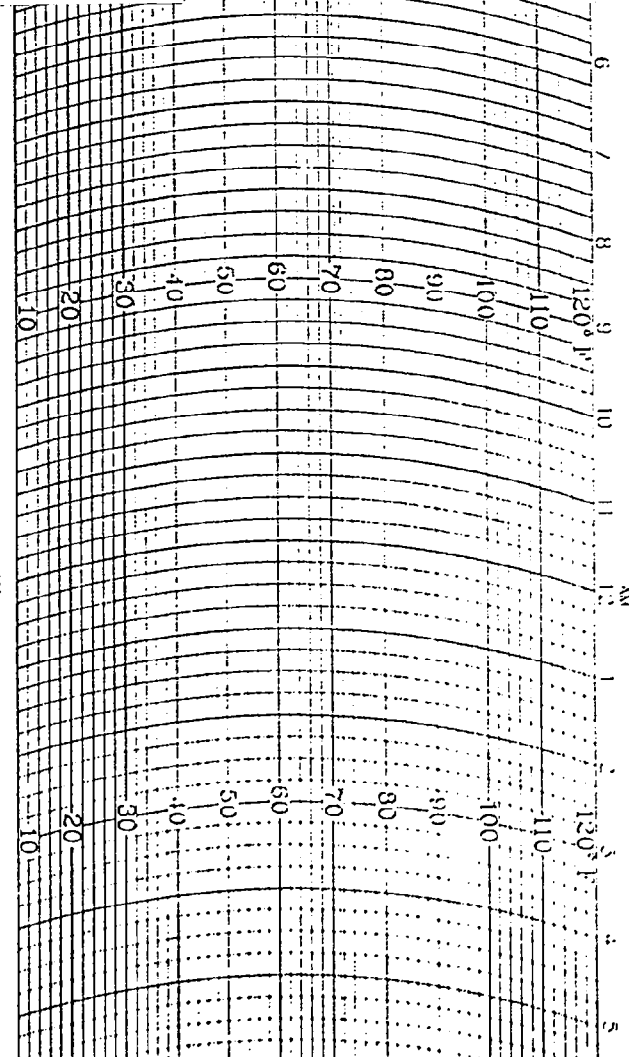
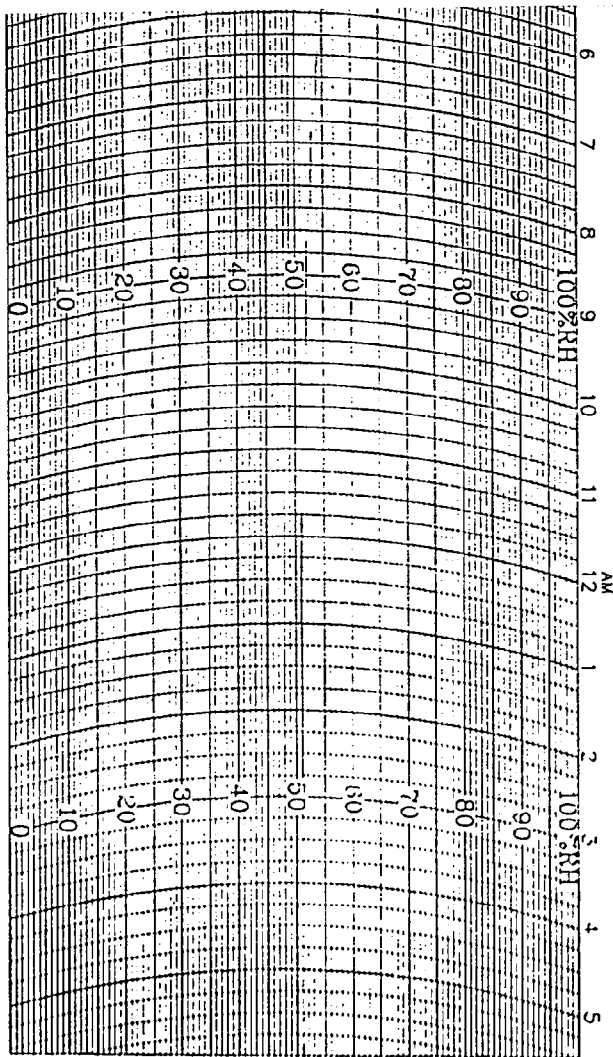
# VEHICLE AND CALIBRATION LABORATORY INSTRUMENT CALIBRATIONS

## VEHICLE ACCELEROMETERS

|                                     | SERIAL NO. | MODEL NO. | MFR.    | CALIBRATION DATE |          |
|-------------------------------------|------------|-----------|---------|------------------|----------|
|                                     |            |           |         | LAST             | DUE      |
| LEFT SEAT REAR CROSSMEMBER X-AXIS   | RY03J      | 7264      | ENDEVCO | 12/02/91         | 06/02/92 |
| RIGHT REAR SEAT CROSSMEMBER X-AXIS  | CJ04H      | 7264      | ENDEVCO | 09/05/91         | 03/05/92 |
| ENGINE TOP X-AXIS                   | CJ16H      | 7264      | ENDEVCO | 09/18/91         | 03/18/92 |
| ENGINE BOTTOM X-AXIS                | CJ81H      | 7264      | ENDEVCO | 10/18/91         | 04/18/92 |
| RIGHT BRAKE CALIPER X-AXIS          | CT68H      | 7264      | ENDEVCO | 09/18/91         | 03/18/92 |
| LEFT BRAKE CALIPER X-AXIS           | DK62J      | 7264      | ENDEVCO | 09/05/91         | 03/05/92 |
| INSTRUMENT PANEL CENTER X-AXIS      | BW77J      | 7264      | ENDEVCO | 11/27/91         | 05/27/92 |
| REAR SEAT CROSSMEMBER CENTER Z-AXIS | CK56H      | 7264      | ENDEVCO | 09/05/91         | 03/05/92 |
| VEHICLE REAR CENTER Z-AXIS          | DK59J      | 7264      | ENDEVCO | 09/04/91         | 03/04/92 |

## CALIBRATION LABORATORY INSTRUMENTS

|                                     | SERIAL NO.  | MODEL NO.        | MFR.       | CALIBRATION DATE   |          |
|-------------------------------------|-------------|------------------|------------|--------------------|----------|
|                                     |             |                  |            | LAST               | DUE      |
| NECK BENDING PENDULUM ACCEL.        | CC59        | 7232             | ENDEVCO    | 10/08/91           | 04/08/92 |
| NECK BENDING ROTARY POTENTIOMETER   | NA          | 35435-1-102      | BOURNES    | MFR. SPECIFICATION |          |
| NECK BENDING LINEAR POTENTIOMETER   | NA          | 5184-2051846003  | BOURNES    | 10/08/91           | 04/08/92 |
| THORAX/HYBRID II FEMUR PEND. ACCEL. | CC64        | 7232             | ENDEVCO    | 10/08/91           | 04/08/92 |
| LUMBAR FLEXION FORCE GAUGE          | NA          | DPPH-50          | CHATTILION | 05/03/89           | REPAIRED |
| LUMBAR FLEXION ROTATION GAUGE       | CP17-0601-1 | 7020             | HUMPHREY   | MFR. SPECIFICATION |          |
| ABDOMEN COMPRESSION DISPL. GAUGE    | 4075-172    | 80294-2051941504 | BOURNES    | 10/08/91           | 04/08/92 |
| ABDOMEN COMPRESSION FORCE GAUGE     | 1261        | 3167             | LEBOW      | 10/08/91           | 04/08/92 |
| HYBRID III FEMUR PEND. ACCEL.       | CG83        | 7232             | ENDEVCO    | 10/08/91           | 04/08/92 |



WeatherMeasure  
WEATHERtronics  
DIVISION of QUALIMETRICS, Inc.  
P.O. BOX 41039  
SACRAMENTO, CA 95841  
PHONE: (916) 923-0955

HYGROTHERMOGRAPH  
1 DAY

CHART NO. M699123  
221-D-HF  
221 2/1/77  
6 5 87

STATION 143000 HAZEN, N. DATE ON 1/28/77 DATE OFF 1/29/77

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: ENLONGATION  
+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 |

APPENDIX E

RESTRAINT SYSTEM INSTRUCTIONS FROM OWNER'S MANUAL

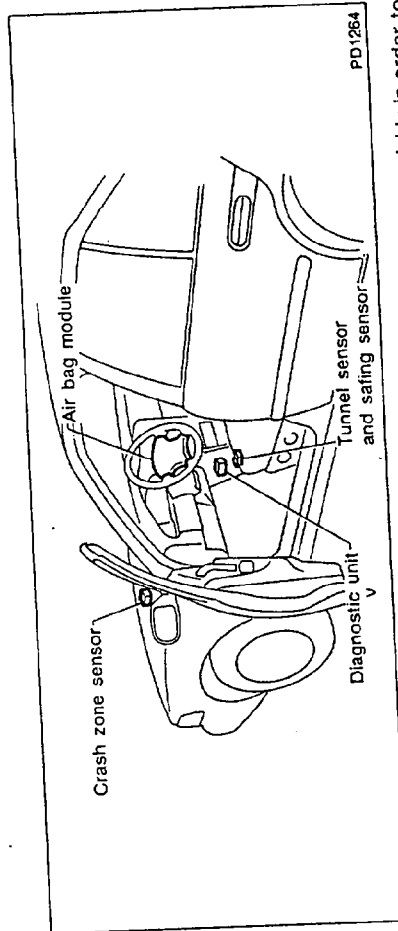
## SUPPLEMENTAL RESTRAINT SYSTEM (AIR BAG SYSTEM)

The information written in this Supplemental Restraint System section contains important points concerning the air bag system installed in some MAXIMA models to help reduce impact force to the driver in certain frontal collisions. The air bag is designed to supplement the accident protection provided by the driver's seat belt and is not a substitute for the three-point seat belt system. The seat belt should be correctly worn and the driver seated a suitable distance from the steering wheel.

**The air bag will operate only when the ignition switch is in the "ON" or "START" position.**

### WARNING:

The seat belts are designed to help reduce the risk or severity of injury in various kinds of accidents and should be worn by all occupants of the vehicle. The seat belt must be worn, as the air bag only assists in reducing the impact force in a frontal collision. (See "Seat belts".)



### Air bag system

The air bag is located in the center of the steering wheel and will deploy in a moderate to severe frontal collision. The air bag will not usually deploy in the event of a side impact, rear impact or a roll-over accident. There are no air bags for the passenger seat. When the air bag system receives a signal from the crash zone sensors, a fairly loud deploying noise will be heard, followed by release of smoke. This smoke is not injurious and does not indicate a fire. The air bag, along with the use of a seat belt, helps to cushion the impact force on the driver's face and chest. The seat belt should be correctly worn and the driver seated a suitable distance from the steering wheel.

Since the air bag deploys quickly in order to protect the driver, the force of the air bag deploying can increase the risk of injury if the driver is too close to or is against the steering wheel during deployment. The air bag will deflate quickly after the collision is over.

**The air bag will operate only when the ignition switch is in the "ON" or "START" position.**

The air bag system consists of 3 sensors, an air bag module inside the steering wheel pad and a diagnostic unit which sends electrical signals to the air bag module. The 3 sensors are as follows:

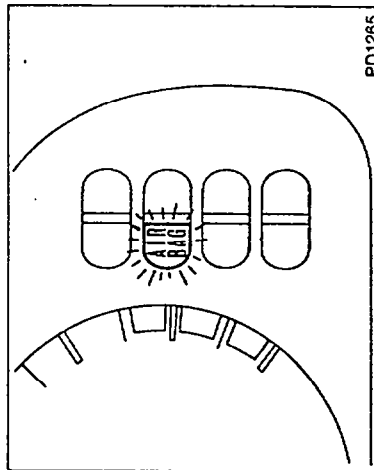
## AIR BAG WARNING LIGHT

1. Crash zone sensor
2. Tunnel sensor
3. Safing sensor

In a moderate to severe frontal impact, the sensors and a diagnostic unit will trigger the deployment of the air bag.

### WARNING:

No unauthorized changes are to be made to any components or wiring of the air bag system. This is to prevent accidental deployment of the air bag or damage to the air bag operation. Tampering with the air bag system may result in serious personal injury. This includes changes to or replacement of the steering wheel, placing material over the steering wheel pad, or installing additional trim material around the air bag system. Objects attached to the steering wheel pad may become dangerous projectiles and cause injury if the air bag deploys. Work around and on the air bag system should be done by an authorized NISSAN dealer. Installation of electrical equipment should also be done by an authorized NISSAN dealer. Unauthorized electrical test equipment and probing devices must not be used on the air bag system.



The air bag light, displaying "AIR BAG" in the instrument panel, monitors the circuits of the air bag. The circuits monitored by the air bag light are the crash zone sensor, tunnel sensor, safing sensor and all related wiring.

When the ignition key is in the "ON" or "START" position, the air bag light will illuminate for about 7 seconds and then turn off. This means the system is operational. If any of the following conditions occur, the air bag needs servicing and must be taken to your nearest authorized NISSAN dealer.

1. The air bag light does not come on for 7 seconds and then go off as described above.

2. The air bag light flashes intermittently or remains on.

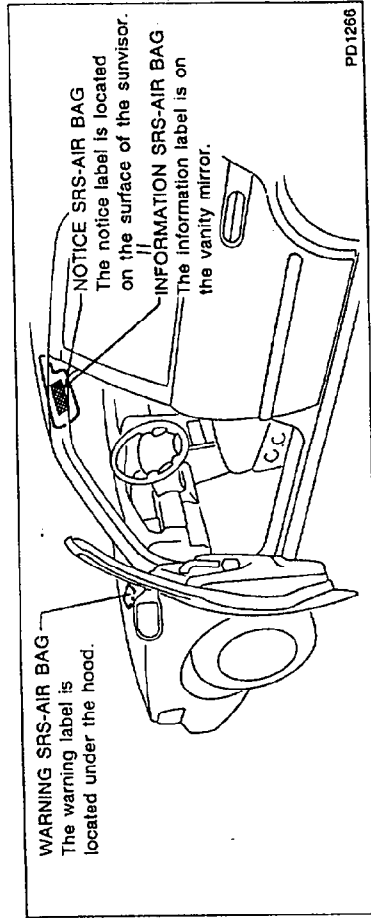
3. The air bag light does not come on at all.
- Under these conditions, the Supplemental Restraint System Air Bag will not operate properly. It must be checked and repaired. Repair and replacement procedure

The air bag system is designed to inflate on a one-time-only basis. As a reminder unless it is damaged, the air bag light will remain illuminated after deployment has occurred. Repair and replacement of the air bag system must be done only by an authorized NISSAN dealer. To ensure long-term functioning, the system must be inspected 10 years after the date of manufacture as noted on the F.M.V.S.S. certification label located on the driver side center pillar.

When maintenance work is required on the vehicle, the air bag system and related parts should be pointed out to the person conducting the maintenance. The ignition key must always be in the "LOCK" position when working under the hood or inside the vehicle.



## AIR BAG INFORMATION AND WARNING LABELS



Information and warning labels about the air bag system are placed in the vehicle.

### WARNING:

- Once the air bag is deployed, the air bag module will not function again and must be replaced. The air bag module cannot be repaired.
- The air bag system must be serviced by an authorized NISSAN dealer if there is any damage made to the front end portion of the vehicle or if the air bag has deployed.
- When selling your vehicle, we request you inform the buyer about the air bag system and guide the buyer to the appropriate sections in this Owner's Manual.
- If you need to dispose of the air bag or scrap the vehicle, contact an authorized NISSAN dealer. Correct air bag disposal procedures are set forth in the appropriate NISSAN Service Manual. Inappropriate disposal procedures could cause personal injury.

## SEAT BELTS

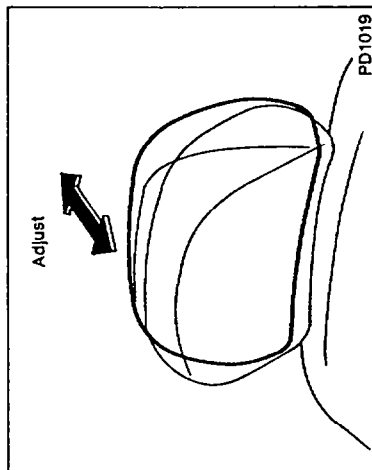
### PRECAUTIONS ON SEAT BELT USAGE

Your chances of being injured in an accident and/or the severity of injury may be greatly reduced if you are wearing your seat belt and it is properly adjusted. NISSAN strongly encourages you and all of your passengers to buckle up every time you drive.

Some states, provinces or territories require that seat belts be worn at all times when a vehicle is being driven.

#### WARNING:

- The belt should be adjusted to a snug fit. Slack in the lap-shoulder belt will reduce the effectiveness of the entire restraint system.
- Never wear the belt inside out or twisted.
- Do not allow more than one person to use the same belt.
- All seat belt assemblies including retractors and attaching hardware should be inspected after any collision at your NISSAN dealer. NISSAN recommends that all seat belt assemblies in use during a collision be replaced unless the collision was minor and the belts show no damage and continue to operate properly. Seat belt assemblies not



To adjust the head restraint, push it forward or rearward as shown (if so equipped).

In use during a collision should also be inspected and replaced if either damage or improper operation is noted.

Be sure to observe the following cautions when using seat belts. Failure to do so could increase the chance and/or severity of injury in an accident.

- Always pass the shoulder belt over your shoulder and across your chest. Never run the belt under your arm. Serious injury can occur if seat belt is not worn properly.
- Position the lap belt as low as possible AROUND THE HIPS, NOT THE WAIST.

#### Infant or small child

Nissan recommends that infants or small children be seated in a child restraint system. You should choose a child restraint system which fits your vehicle and always follow the manufacturer's instructions for installation and use.

#### Children

Children who are too large for child restraint systems should be seated and restrained by the seat belts which are provided.

NISSAN recommends that children sit in the rear seat if available. According to accident statistics, children are safer when properly restrained in the rear seat than in the front seat.

**System malfunction**  
If, while the ignition switch is turned "ON" with either front door open, the seat belt warning light flickers and the chime sounds faster than usual for about 6 seconds, it may indicate a malfunction in the system. Have the system checked by your NISSAN dealer.

## AUTOMATIC SEAT BELT SYSTEM (For U.S.A.)

The Automatic Seat Belt system consists of an automatic shoulder belt and a manual lap belt for the driver and front passenger seat positions. The shoulder belts automatically adjust to the body and seating positions when the door is closed and the ignition key is turned "ON".

- For most effective protection, always fasten the manual lap belt in addition to the automatic shoulder belt.
- To properly operate the automatic seat belt system, the shoulder belt tongue should always remain inserted in the shoulder belt buckle, located in the rail of the door opening.
- NISSAN recommends that children be seated in the rear seats. See Precautions on Seat Belt Usage earlier in this Section.

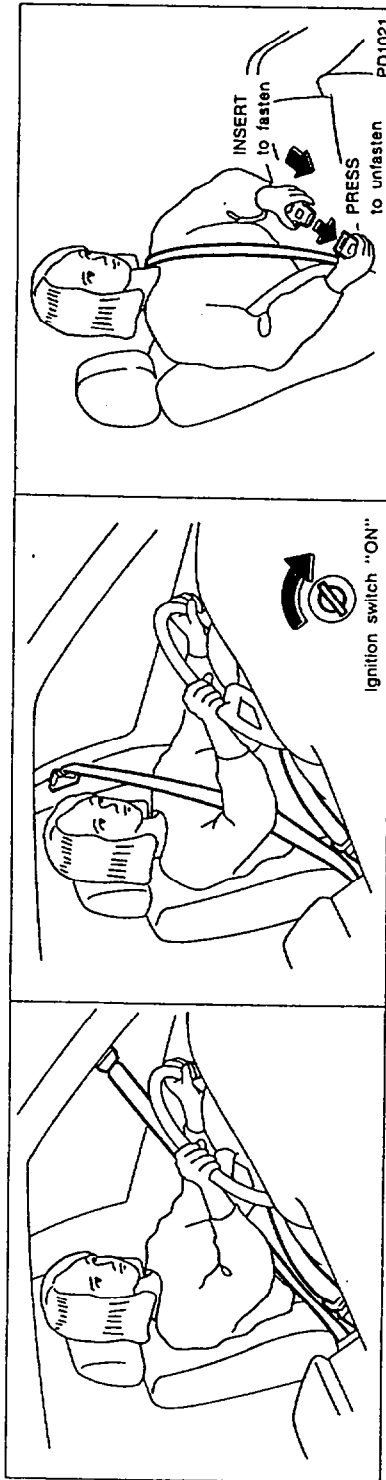
If the child's seating position has a shoulder belt that fits close to the face or neck, the use of a booster seat (commercially available) may help overcome this. The booster seat should raise the child so that the shoulder belt is properly positioned across the top, middle portion of the shoulder and the lap belt is low on the hips. The booster seat should fit the vehicle seat and have a label certifying that it complies with Federal Motor Vehicle Safety Standards or Canadian Motor Vehicle Safety Standards. Once the child has grown so the shoulder belt is no longer on or near the face and neck, use the shoulder belt without the booster seat. Never let a child stand or kneel on any seat and do not allow a child in the cargo areas while the vehicle is moving.

### Pregnant women

Nissan recommends that pregnant women use seat belts. Contact your doctor for specific recommendations. The lap belt should be worn snug and positioned as low as possible around the hips, not the waist.

### Injured persons

Nissan recommends that injured persons use seat belts, depending on the injury. Check with your doctor for specific recommendations.



#### Fastening the belts

1. Open the door and make sure that the shoulder buckle is in the forward position. Then get into the vehicle and close the door.

If the ignition switch is in the "ON" position, the shoulder buckle will move to the rear position when closing the door.

2. Adjust the seat.

The seatback should not be in a reclining position any more than needed for comfort. Seat belts are most effective when the passenger sits well back and straight up in the seat.

3. Turn the ignition switch ON. The shoulder buckle will move to the rear position and will fit across your chest. Pull the shoulder belt toward the retractor to take up extra slack.

Do not touch the door guide rail while the shoulder buckle is moving.

Do not wear the shoulder belt across the neck or under your outer arm. The shoulder belt should be positioned midway over the shoulder for the most effective protection.

4. Slowly pull the lap belt out of the retractor and insert the tongue into the lap buckle until it snaps. Position the lap belt low on the hips and pull the belt toward the retractor to take up extra slack.

Do not wear the lap belt across the shoulder belt.

The retractors are designed to lock during a sudden stop or on impact. A slow pulling motion will permit the belt to move, and allow you some freedom of movement in the seat.

#### Unfastening the belts

1. To unfasten the lap belt, press the button on the lap buckle. The seat belt will automatically retract.

2. Open the door. The shoulder belt buckle will move to the forward position and the shoulder belt will move away from your chest.

- Do not touch the door guide rail while the shoulder buckle is moving.
- Do not unfasten the shoulder belt tongue from the buckle except in emergency. See "Operation in emergency" later in this Section.

How the automatic shoulder belt works

While the ignition switch is on:

The shoulder buckle will move to the forward position when the door is opened, and it will move to the rear position when the door is closed.

While the ignition switch is off:

The shoulder buckle will remain or move to the front position when the door is opened, and it will remain in the front position when the door is closed until the ignition switch is turned "ON".

If the shoulder buckle operates abnormally, have the system checked by your NISSAN dealer.

Seat belt warning light " " and warning chime

When the ignition switch is turned on with the door open (the shoulder buckle is at the front position):

The chime will sound for about 6 seconds, and the warning light will flicker continuously. The warning light will go off when the door is closed and the shoulder buckle reaches the rear position.

When the ignition switch is turned on with the door closed:

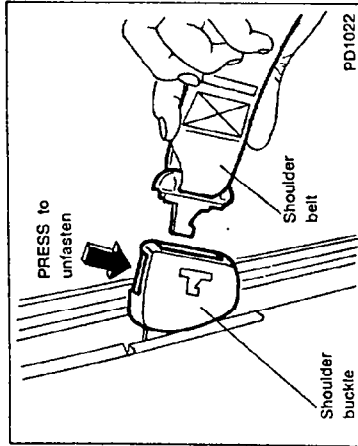
The chime will sound and the warning light will flicker until the shoulder buckle reaches the rear position. The warning light will come on for several seconds after the shoulder buckle reaches the rear position.

If the shoulder belt tongue is disconnected from the buckle:

When the ignition switch is turned on and the shoulder buckle reaches the rear position, the warning light will come on for about 100 seconds and the chime will sound for about 6 seconds until the shoulder belt is connected to the shoulder buckle. Insert the shoulder belt tongue into the shoulder buckle before driving.

If the driver side lap belt is not fastened:

When the ignition switch is turned ON and the shoulder buckle reaches the rear position, the warning light will come on for about 6 seconds and the chime will sound for about 6 seconds until the lap belt is fastened. Fasten the lap belt before driving.

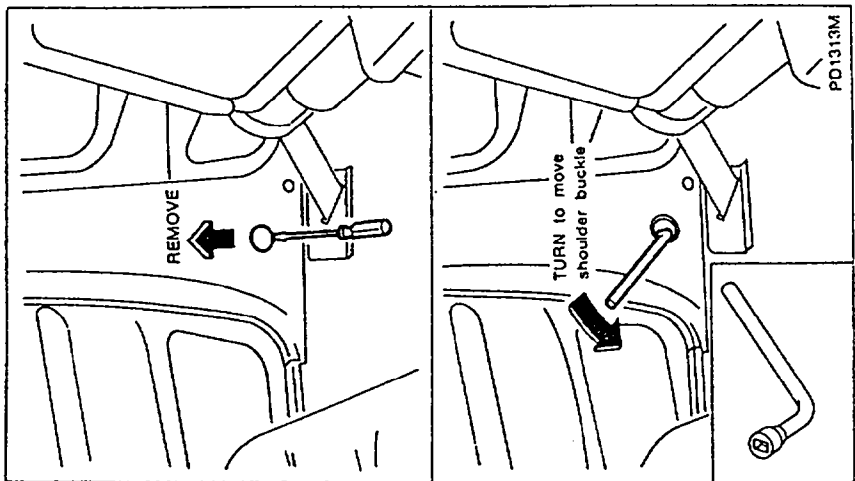


Operation in an accident

Emergency release

If you need to release the shoulder belt from the shoulder belt buckle in an emergency, press the buckle marked with "PRESS EMERGENCY". Use this feature only when the shoulder belt keeps you from leaving the vehicle in an accident.

For normal use, the shoulder belt should always be connected to the buckle.



### Manual operation

If either shoulder belt buckle does not operate

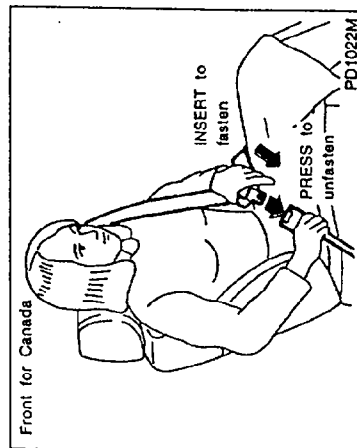
1. Slide the seat forward as far as possible.
2. Remove the blind cap in the lower portion of the center pillar with the screwdriver. The shaft end of the motor will be visible.
3. Using the wrench supplied in the tool bag, turn the shaft of the motor counterclockwise to move the shoulder buckle to the rear position.

Have the automatic seat belt system checked and repaired by your NISSAN dealer.

### Checking seat belt retractor operation (Automatic seat belt)

Your seat belt retractors are designed to lock belt movement only when the vehicle slows down rapidly. Pulling on the belt will not cause the retractor to lock, no matter how fast you pull.

If you wish to have the locking operation of your seat belts checked for you, or if you have any question about belt operation, see your NISSAN dealer.

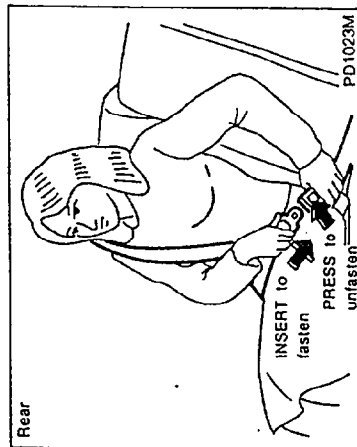


### 3-POINT TYPE WITH RETRACTOR

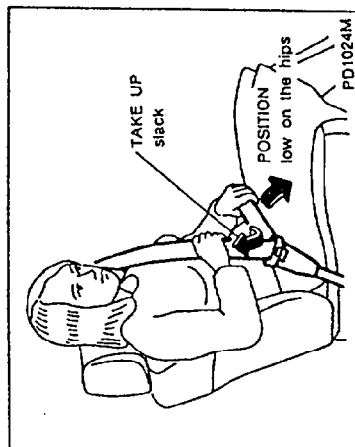
Every person who drives or rides in this vehicle should wear a seat belt at all times.

#### Fastening the belts

1. Adjust the seat.  
The seatback should not be in a reclining position any more than needed for comfort. Seat belts are most effective when the passenger sits well back and straight up in the seat.
2. Slowly pull the seat belt out of the retractor and insert the tongue into the buckle until it snaps.



The retractor is designed to lock during a sudden stop or on impact. A slow pulling motion will permit the belt to move, and allow you some freedom of movement in the seat.



3. Position the lap belt portion low on the hips as shown.
4. Pull the shoulder belt portion toward the retractor to take up extra slack.

#### Unfastening the belts

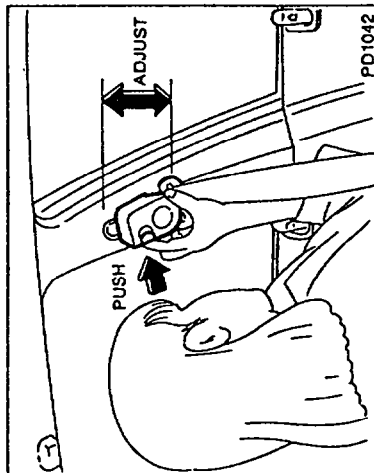
To unfasten the belt, press the button on the buckle. The seat belt will automatically retract.

### Checking seat belt operation (3-point type with retractor)

Your seat belt retractors are designed to lock belt movement by two separate methods:

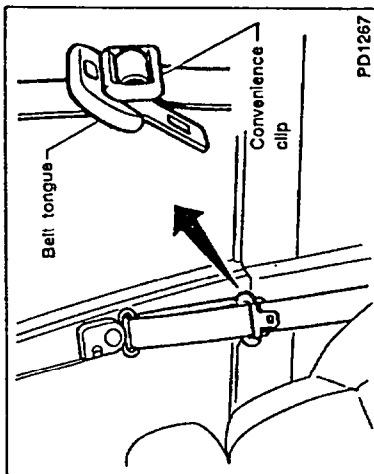
- 1) When the belt is pulled quickly from the retractor.
  - 2) When the vehicle slows down rapidly.
- To increase your confidence in the belts, check the operation as follows:
- Grasp the shoulder belt and pull quickly forward. The retractor should lock and restrict further belt movement.

If the retractor does not lock during this check or if you have any question about belt operation, see your NISSAN dealer.



### Shoulder belt height adjustment (For front seats of Canada models)

The shoulder belt anchor height should be adjusted to the position best for you. To adjust, push the release button, then move it to the desired position, so that the belt passes over the shoulder.



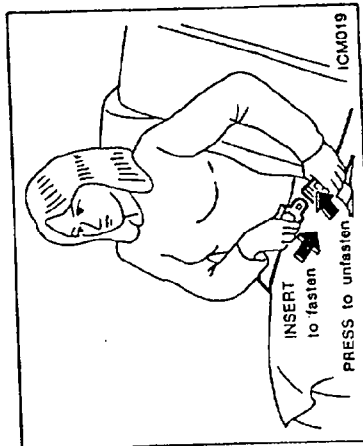
### Convenience clip

The convenience clip is provided to keep the belt tongue in an accessible position when not being used.

Slide the convenience clip down if the clip prevents the belt from being retracted into the retractor.

Slide it away from the buckle if the convenience clip contacts the belt tongue when the belt is in use.

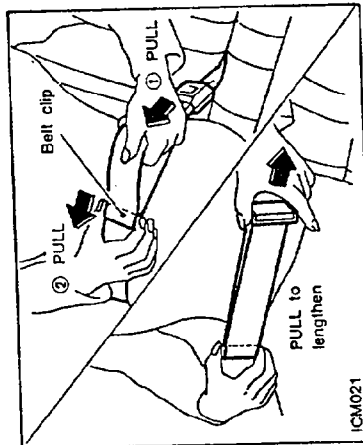




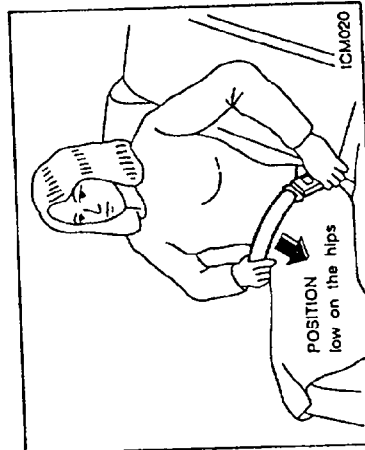
### 2-POINT TYPE WITHOUT RETRACTOR

#### Fastening the belts

1. Insert the tongue into the buckle until it snaps.



2. To lengthen, hold the tongue at a right angle to the belt and pull on the belt. To shorten, pull the free end of the belt away from the tongue, then pull the belt clip to take up the slack.



3. Position the lap belt low on the hips as illustrated.

#### Unfastening the belts

To unfasten the belt, press the button on the buckle.

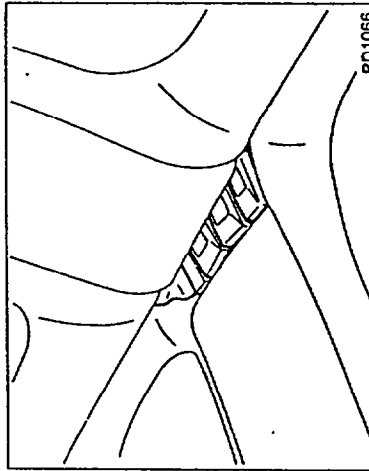
Fasten the seat belts when not in use to prevent them from being caught in the door.

## SEAT BELT EXTENDERS (Except for the automatic seat belt)

If, because of body size or driving position, it is not possible to properly fit the lap-shoulder belt and fasten it, an extender is available which is compatible with the installed seat belts. The extender adds approximately 8 inches (200 mm) of length and may be used for either the driver or front passenger seating position. See your NISSAN dealer for assistance if the extender is required.

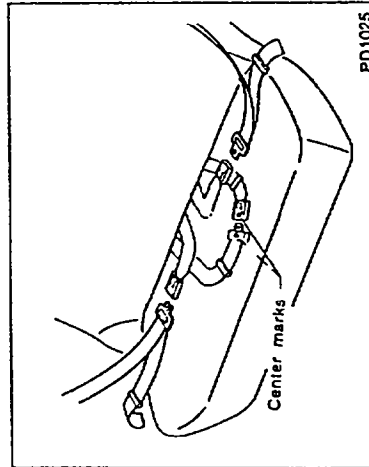
### WARNING:

- Only NISSAN belt extenders, made by the same company which made the original equipment belts, should be used with NISSAN belts.
- Persons who can use the standard seat belt should not use an extender. Such unnecessary use could result in serious personal injury in the event of an accident.



### Rear seat belt buckles

Rear seat belt buckles can be stored, if there are no people riding in the rear seat.



### Selecting correct set of belts

The center seat belt buckle and tongue are identified by the "CENTER" label. The center seat belt tongue can be fastened only into the center seat belt buckle.

#### SEAT BELT MAINTENANCE

- To clean the belt webbing, apply a mild soap solution or any solution recommended for cleaning upholstery or carpets. Then brush it, wipe with a cloth and allow it to dry in the shade. Do not allow the belts to retract until they are completely dry.
- Periodically check to see that the belt and the metal components such as buckles, tongues, retractors, flexible wires and anchors work properly. If loose parts, deterioration, cuts or other damage on the webbing is found, the entire belt assembly should be replaced.

#### CHILD RESTRAINT SYSTEMS FOR INFANTS AND SMALL CHILDREN

Infants and small children should always be placed in an infant or child restraint system while riding in the vehicle.

##### WARNING:

Children and infants should never be carried on your lap. It is not possible for even the strongest adult to resist the forces of an accident. The child could be crushed between the adult and parts of the vehicle. Also, do not put the same seat belt around both your child and yourself. In general, child restraint systems are designed to be installed with a lap belt or the lap portion of a three-point type seat belt. A child restraint system should never be installed with an automatic belt (also known as a "passive" belt), since such a belt will not properly secure the child seat. For Automatic Seat Belt System, a specially designed supplementary genuine NISSAN child restraint buckle is required to properly secure the child seat. Refer to page 2-25.

Nissan recommends that the child restraint system be installed in the rear seat, unless the child is an infant and you are the only adult in the car. According to accident statistics, children are safer when properly restrained in the rear seat than in the front seat.

An improperly installed child restraint could lead to serious injury in an accident.

Child restraint systems specially designed for infants and small children are offered by several manufacturers. Some systems may be used for both infants and small children. When selecting any child restraint system, keep the following points in mind:

- 1) Choose only a system with a label certifying that it complies with Federal Motor Vehicle Safety Standard 213 or Canadian Motor Vehicle Safety Standard 213.
- 2) Place your child in the child restraint and check the various adjustments to be sure the child restraint is compatible with your child. Always follow all recommended procedures.
- 3) Check the child restraint in your vehicle to be sure it is compatible with the vehicle's seat belt system.

##### WARNING:

- Follow all of the child restraint manufacturer's instructions for installation and use. When purchasing a child restraint, be sure to select one which will fit your child and vehicle as it may not be possible to properly install some types of child restraints in your vehicle.