

REPORT NO. TRC-90-N01

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

NISSAN MOTOR CO., LTD.

1991 NISSAN SENTRA

4-DOOR SEDAN

NHTSA NO. MM5200

TRC TEST NO. 901211

PREPARED BY:

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FINAL REPORT

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16. Abstract A 35 mph frontal load cell barrier impact test was conducted on a 1991 Nissan Sentra 4-door sedan, NHTSA No. MM5200, at the Transportation Research Center of Ohio on December 11, 1990. 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 26.9 inches. The ambient temperature was 72° F. The driver's head injury criteria (HIC) was 583. The driver's maximum chest deceleration over three (3) milliseconds was 45.6 g. The driver's maximum left and right femur forces were 1117 pounds and 1210 pounds, respectively. The passenger's head injury criteria (HIC) was 681. The passenger's maximum chest deceleration over three (3) milliseconds was 45.3 g. The passenger's maximum left femur force was 475 pounds. The passenger's right femur force was lost. (See DATA ACQUISITION EXPLANATIONS.)					
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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 of Ohio (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 1991 Nissan Sentra 4-door sedan, NHTSA No. MM5200, 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-nine (69) 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 fourteen (14) 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 vehicle, occupant, and camera 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 December 11, 1990.

The test vehicle, a 1991 Nissan Sentra 4-door sedan, NHTSA No. MM5200, was equipped with a 1.6 liter transverse engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 2831 pounds. The vehicle's impact speed was 35.2 mph. The vehicle sustained 26.9 inches of static crush during the impact.

The driver's head injury criteria (HIC) was 583. The driver's maximum chest resultant acceleration over three (3) milliseconds was 45.6 g. The driver's maximum left and right femur forces were 1117 pounds and 1210 pounds, respectively. (See DATA ACQUISITION EXPLANATIONS.)

The passenger's HIC was 681. The passenger's maximum chest resultant acceleration over three (3) milliseconds was 45.3 g. The passenger's maximum left femur force was 475 pounds. The passenger's right femur force was lost. (See DATA ACQUISITION EXPLANATIONS.)

No fluid spilled from the vehicle's fuel system following the impact.

DATA ACQUISITION EXPLANATIONS

The driver's left femur force, LFMF1, data was lost from 43 to 49, 52, to 60, and 66 to 77 milliseconds.

The right front passenger's right femur force, RFMF2, data was lost due to a femur load cell cable connector pin to the onboard data acquisition box losing continuity at 9 milliseconds. The cable connector was repaired following this impact test.

The left brake caliper X-axis accelerometer, BCLXG1, data was lost at 45 milliseconds due to the vehicle's crush cutting the accelerometer's cable.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: MM5200 TEST TYPE: Frontal Load Cell Barrier

TEST DATE: 12/11/90 TEST TIME: 1635 AMBIENT TEMP. (°F): 72

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1991/Nissan/Sentra/4-door sedan

VEHICLE TEST WEIGHT (LBS): 2831

IMPACT ANGLE (DEG)*: 0

IMPACT VELOCITY (MPH)**: PRIMARY = 35.2 SECONDARY = 35.1

MAXIMUM STATIC CRUSH (IN): 26.9

AVERAGE REBOUND (IN): 24.9

DUMMIES:	Driver #826	Passenger #713
TYPE:	Part 572 B	Part 572 B
LOCATION:	Left front	Right front
RESTRAINT:	2-point passive belt manual lap belt	2-point passive belt manual lap belt

NUMBER OF DATA CHANNELS: 69

NUMBER OF CAMERAS: HIGH-SPEED 14 REAL-TIME 2

*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/Sentra

VIN: 1N4EB31B2MC710724

BODY STYLE: 4-door sedan

MODEL YEAR: 1991

NHTSA NO.: MM5200

COLOR: Red

ENGINE DATA: TYPE: Transverse CYLINDERS: 4 DISPLACEMENT: 1.6 liter

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

DATE VEHICLE RECEIVED: 11/05/90

ODOMETER READING: 197.0

DEALER'S NAME AND ADDRESS: Dutro Ford L/M Nissan, Inc.
132 S. Fifth St.
Zanesville, OH 43701

ACCESSORIES:

POWER STEERING Yes

POWER BRAKES Yes

POWER SEATS No

POWER WINDOWS No

TINTED GLASS Yes

RADIO No

CLOCK No

OTHER None

AUTOMATIC TRANSMISSION Yes

AUTOMATIC SPEED CONTROL No

TILTING STEERING WHEEL Yes

TELESCOPING STEERING WHEEL No

AIR CONDITIONING No

ANTI-SKID BRAKE Yes

REAR WINDOW DEFROSTER Yes

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: 09/90

VIN: 1N4EB31B2MC710724

GVWR: 3318 LBS

GAWR: FRONT: 1918 LBS., REAR: 1653 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Michelin XGT 4 P175/70R13

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

SPARE TIRE (MFR., LINE, SIZE): General, Serva-spare, T115/70R14

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manual adjustable

MAXIMUM WIDTH: 65.9 INCHES

WHEELBASE: 95.6 INCHES

LOCATION OF LABEL STATING TIRE & CAPACITY DATA:

The label was located on the left B-pillar.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: P175/70R13

RECOMMENDED COLD TIRE PRESSURE: FRONT: 32 PSI; REAR: 29 PSI

DESIGNATED SEATING CAPACITY: 2 FRONT 3 REAR 5 TOTAL

VEHICLE CAPACITY WEIGHT: 825 LBS.

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE: LF 25.4; RF 25.5; LR 25.0; RR 25.0

PRE-TEST ATTITUDE: LF 25.1; RF 25.2; LR 23.4; RR 23.4

POST-TEST ATTITUDE: LF 25.6; RF 27.0; LR 23.0; RR 23.0

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	746 LBS.	RIGHT REAR	453 LBS.
LEFT FRONT	761 LBS.	LEFT REAR	460 LBS.
TOTAL FRONT WEIGHT	1507 LBS.	(62.3% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	913 LBS.	(37.7% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT 2420 LBS.			

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (2420 LBS)

VCW = VEHICLE CAPACITY WEIGHT (825 LBS)

DSC = DESIGNATED SEATING CAPACITY (5)

$RCLW* = VCW - 150 (DSC) = 825 - 150(5) = 75$

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

TARGET TEST WEIGHT = 2420 + 75 + 328

TARGET TEST WEIGHT = 2823 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 83 LBS. OF CARGO WEIGHT:

RIGHT FRONT	791 LBS.	RIGHT REAR	589 LBS.
LEFT FRONT	829 LBS.	LEFT REAR	622 LBS.
TOTAL FRONT WEIGHT	1620 LBS.	(57.2% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1211 LBS.	(42.8% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	2831 LBS.	(0.3% OVER TARGET TEST WEIGHT)	

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

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: Rear seat belts, bumper, tail lights, side door glass, rear door trim, onboard cameras, trunk lid, muffler, camera battery, 2 onboard lights.

CG = 40.9 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: 901211 NHTSA NO.: MM5200
TEST DATE: 12/11/90 TEST TIME: 1635
TEST TYPE: Frontal load cell barrier IMPACT ANGLE: 0°
AMBIENT TEMPERATURE AT IMPACT AREA: 72° F
TEMPERATURE IN OCCUPANT COMPARTMENT: 70° F
IMPACT VELOCITY: PRIMARY = 35.2 MPH SECONDARY = 35.1 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 166.8; C 170.4; R 166.8
POST-TEST: L 142.0; C 143.9; R 140.2
TOTAL CRUSH: L 24.8; C 26.5; R 26.6
AVERAGE CRUSH: 26.0

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

DISTANCE FROM TEST VEHICLE TO BARRIER: L 25.2; C 23.2; R 26.2; AVG. 24.9

TABLE 4 FUEL SYSTEM DATA

MAKE/MODEL: Nissan/Sentra

NHTSA NO.: MM5200

FUEL SYSTEM CAPACITY: 13.2 GALLONS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 13.2 GALLONS (FURNISHED BY COTR)

TEST VOLUME RANGE: 12.1 GALLONS TO 12.4 GALLONS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 12.3 GALLONS (WITH ENTIRE FUEL SYSTEM FILLED)

TEST FLUID TYPE: STODDARD SOLVENT

SPECIFIC GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

TEST FLUID COLOR: PURPLE

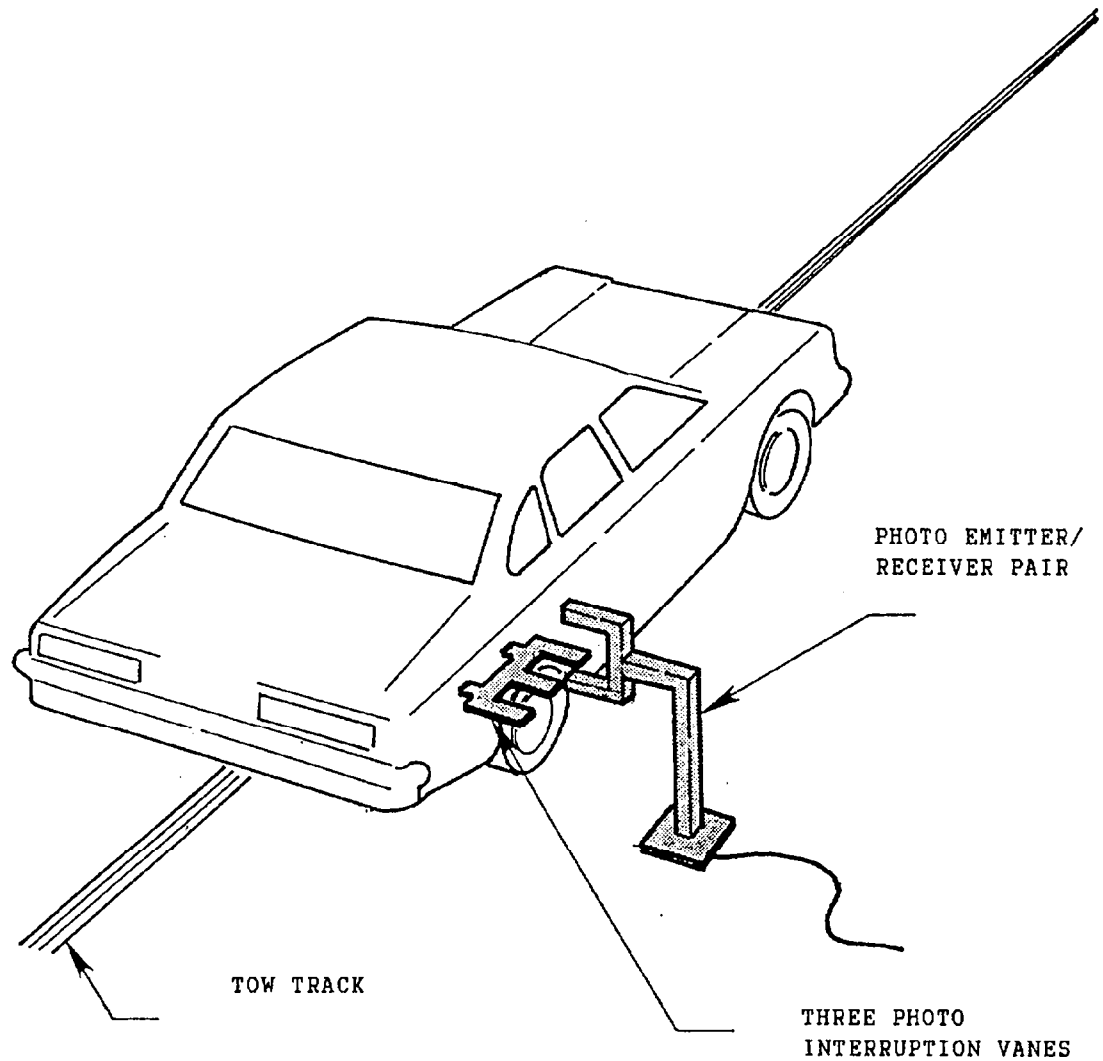
DETAILS OF FUEL SYSTEM: The fuel tank is located in front of the rear
axle. The fuel filler neck is located on the left side. The fuel lines
run along the left frame rail to the front.

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/Sentra/4-door sedan

VEHICLE NHTSA NO.: MM5200; VIN: 1N4EB31B2MC710724

MODEL YEAR: 1991; BUILD DATE: 09/90; TEST DATE: 12/11/90

VEHICLE SIZE CATEGORY: Subcompact; TEST WEIGHT: 2831 LBS.

VEHICLE WHEELBASE: 95.6 INCHES

MAXIMUM WIDTH: 65.9 INCHES

FRONT OVERHANG: 34.5 INCHES

COLLISION DEFORMATION
CLASSIFICATION (CDC) CODE: 12FDEW3

CRUSH DEPTH
MEASUREMENTS:

C1 = 24.8 INCHES

C2 = 25.5 INCHES

C3 = 26.6 INCHES

C4 = 26.9 INCHES

C5 = 26.8 INCHES

C6 = 26.6 INCHES

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE
(LONGITUDINAL)

LENGTH OF DAMAGED
REGION: L = 52.0 INCHES

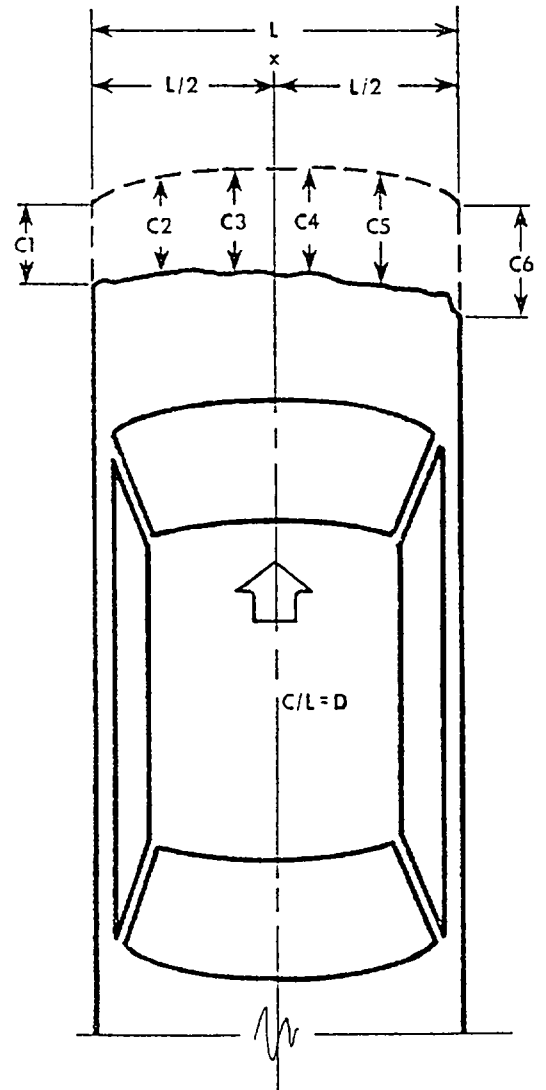
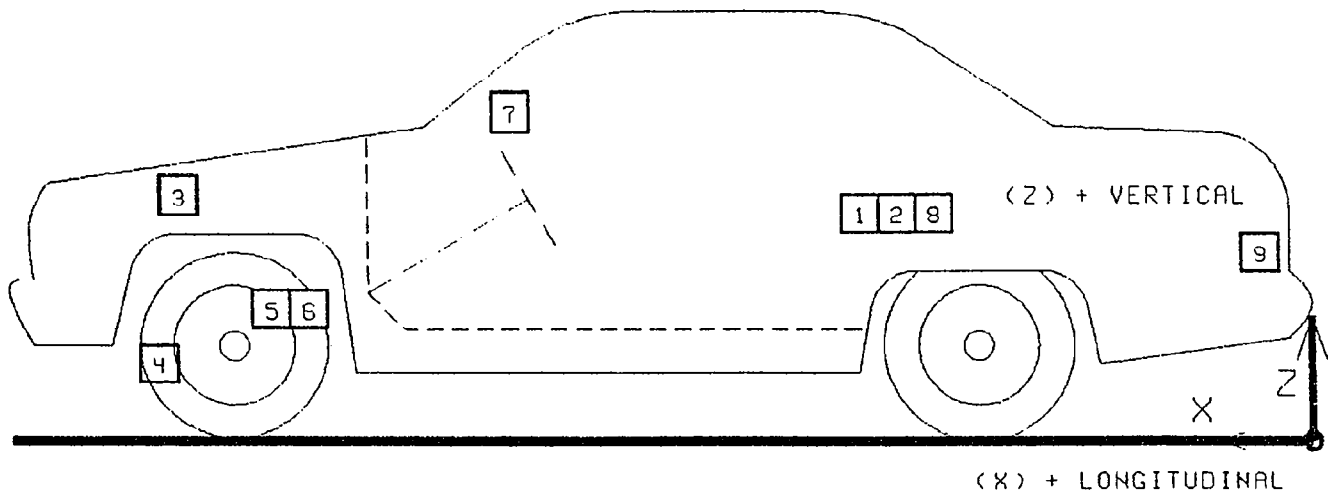
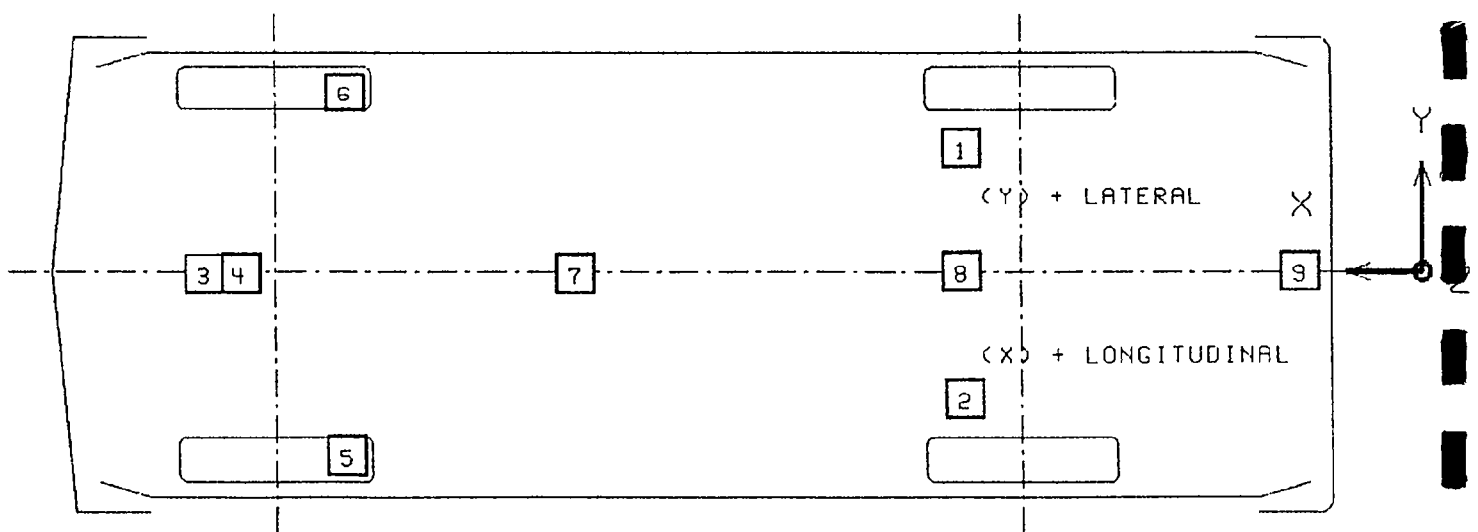


FIGURE 3
VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 5

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 901211

No.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX G MSEC		MAX G MSEC	
1	LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	103.0	19.4	13.1	2.8	114.3	40.2	42.4
2	RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	103.0	-19.4	13.0	3.7	113.4	37.9	41.4
3	ENGINE TOP LONGITUDINAL	23.0	-1.0	29.5	122.7	43.4	182.5	31.1
4	ENGINE BOTTOM LONGITUDINAL	26.4	10.8	5.8	86.9	41.4	169.4	34.4
5	RIGHT BRAKE CALIPER LONGITUDINAL	29.4	-24.9	11.5	92.3	65.5	139.9	47.3
6	LEFT BRAKE CALIPER LONGITUDINAL	29.0	24.9	11.2	---	--- Y	---	--- Y
7	INSTRUMENT PANEL CENTER LONGITUDINAL	54.9	2.4	35.8	45.1	84.8	86.7	74.5
8	REAR SEAT CROSSMEMBER CENTER VERTICAL	103.6	-0.5	14.2	10.6	29.3	13.1	45.3
9	VEHICLE REAR CENTER VERTICAL	161.4	0.0	15.2	22.6	52.4	18.6	31.3

* 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

Y See DATA ACQUISITION EXPLANATIONS

TABLE 6 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #826	PASSENGER #713
HEAD	<u>Chest</u>	<u>Chest</u>
CHEST	<u>Steering wheel rim</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>Passenger's seat shifted one notch rearward</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: 1991/Nissan/Sentra/4-door sedan

VEH. NHTSA NO.: MM5200; TEST DATE: 12/11/90

<u>MAXIMUM ACCELERATIONS (G):</u>	<u>DRIVER DUMMY #</u>	<u>PASSENGER DUMMY #</u>
HEAD X-AXIS	-25.1	-32.1
HEAD Y-AXIS	17.0	-19.5
HEAD Z-AXIS	-58.1	-58.8
HEAD RESULTANT	59.6	61.0
 CHEST X-AXIS	 -48.8	 -48.0
CHEST Y-AXIS	9.0	-16.0
CHEST Z-AXIS	8.5	22.1
CHEST RESULTANT*	45.6	45.3
CHEST RESULTANT TIME INTERVAL (SEC.)*	.003	.003

HEAD INJURY CRITERIA (HIC) VALUES:

HIC**	583	681
HIC STARTING TIME (SEC.)	62.2	60.5
HIC ENDING TIME (SEC.)	98.2	96.5
AVG. HEAD RESULTANT ACCEL. DURING HIC TIME INTERVAL (G)	48.2	51.3

MAXIMUM CHEST DEFLECTIONS (IN):

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

MAXIMUM FEMUR FORCES (LBS):

LEFT FEMUR	1117 ^Y	475
RIGHT FEMUR	1210	---- ^Y

MAXIMUM SEAT BELT FORCES (LBS):

LAP BELT	792	1234
SHOULDER BELT	2206	2093

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.

^Y See DATA ACQUISITION EXPLANATIONS

DUMMY KINEMATIC SUMMARY

DRIVER DUMMY

Upon impact, the driver dummy translated forward on the seat, impacting both knees into the instrument panel. The dummy's head rotated forward, contacting the dummy's chest. The dummy's chest impacted the steering wheel rim. The dummy's torso rotated clockwise as it was restrained by the two-point passive belt and manual lap belt. The dummy's head rotated rearward as the dummy rebounded into the right portion of the seat back. The dummy came to rest seated in the driver's seat, leaning to the right, 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, contacting the dummy's chest. 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 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
<u>BELT LENGTH DATA:</u>		
BELT LENGTH FROM TRIM PANEL EXIT TO BOLT HOLE ANCHOR POINT FOR CONTINUOUS WEBBING SYSTEMS.	46.7	46.9
SHOULDER BELT LENGTH AS MEASURED ON PART 572 DUMMY.	36.0	36.2
LAP BELT LENGTH AS MEASURED ON PART 572 DUMMY.	30.5	31.5
<u>SHOULDER BELT SPOOL-OFF LENGTH:</u>		
AS DETERMINED BY FILM ANALYSIS	NA*	NA*
AS DETERMINED MECHANICALLY	3.5	3.9
AS DETERMINED ELECTRONICALLY	3.8	4.1
<u>BELT STRETCH LENGTH (IN/FT):</u>		
AS MEASURED MECHANICALLY	.14	.12
AS MEASURED ELECTRONICALLY	.38	.35
<u>RETRACTOR LOCK-UP TIME (MS):</u>		
AS DETERMINED BY SHOULDER BELT SPOOL-OFF	NA*	NA*

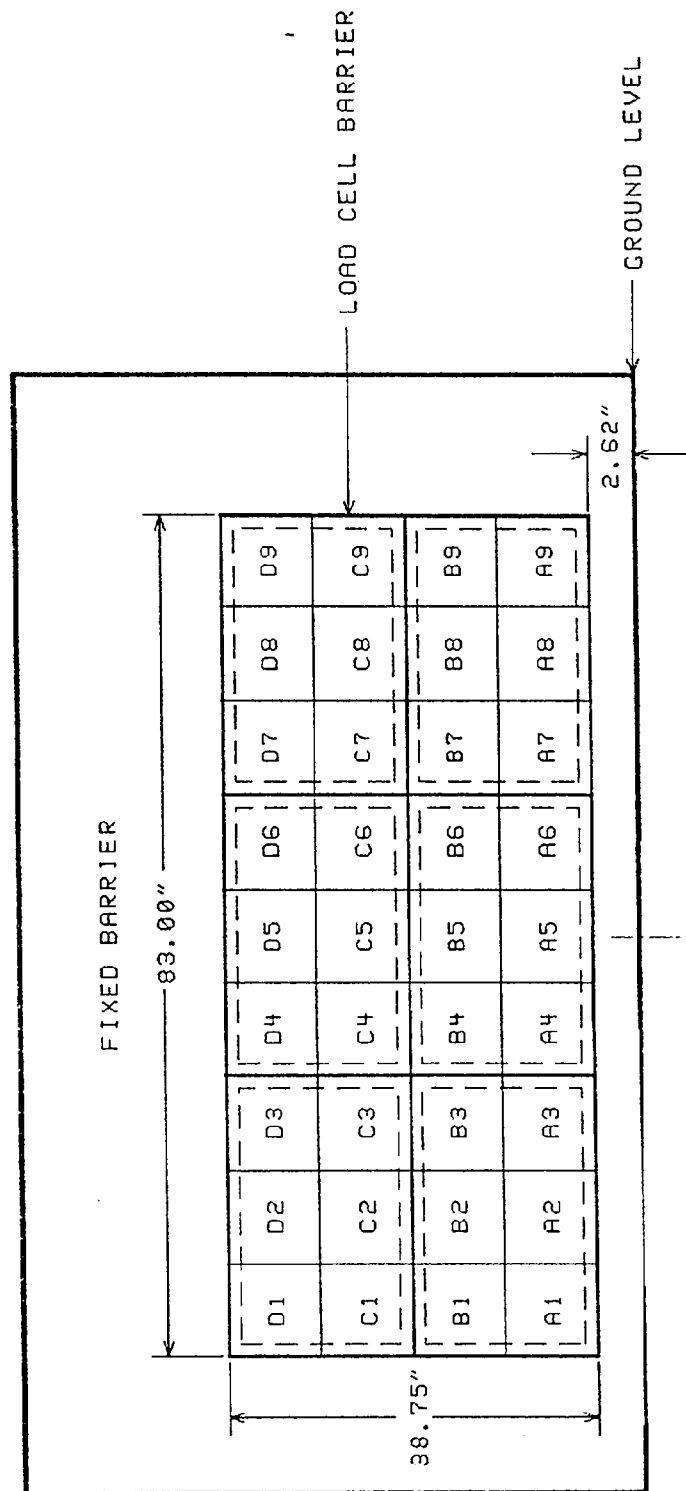
ALL MEASUREMENTS ARE IN INCHES UNLESS OTHERWISE NOTED.

*The onboard cameras were not installed to reduce the vehicle's test weight to the target test weight.

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 901211

LOCATION	POSITIVE DIRECTION		NEGATIVE DIRECTION	
	LBS	MSEC	LBS	MSEC
TOTAL GROUP 1	276	271.4	16556	22.8
TOTAL GROUP 2	273	168.5	56644	33.5
TOTAL GROUP 3	220	236.0	21369	50.3
TOTAL GROUP 4	217	113.8	6754	29.9
TOTAL GROUP 5	256	2.3	14208	33.1
TOTAL GROUP 6	299	219.1	7400	35.6
TOTAL LOAD CELL FORCE1	1182	219.1	112028	33.4
TENSION IS POSITIVE				
COMPRESSION IS NEGATIVE				

SECTION 3.0

VEHICLE, OCCUPANT, AND CAMERA MEASUREMENTS

FIGURE 5 DUMMY AND SEAT POSITIONING DATA

TEST NO.: 901211 ; VEHICLE: 1991 Nissan Sentra

SEAT TYPE: ADJUSTER TYPE: FRONT SEAT BACK TYPE:

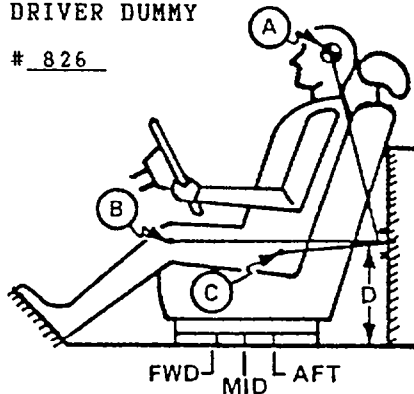
 BENCH X MANUAL NON-ADJUSTABLE

 X BUCKET POWER X ADJUSTABLE RECLINING

 SPLIT BENCH

DRIVER DUMMY

826

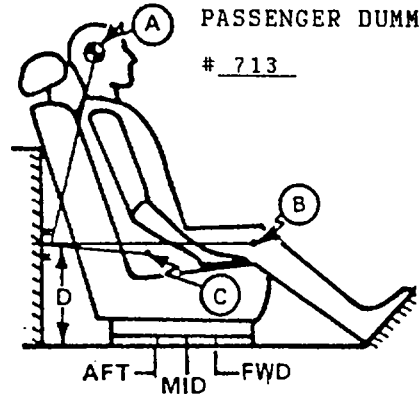


MEASUREMENT
LOCATION

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

PASSENGER DUMMY

713



A = 20.6 IN. -7 DEGREES

B = 21.4 IN. 92 DEGREES

C = 7.9 IN. 127 DEGREES

D = 10.6 IN.

SEAT TRACK REARWARD: 9 NOTCHES

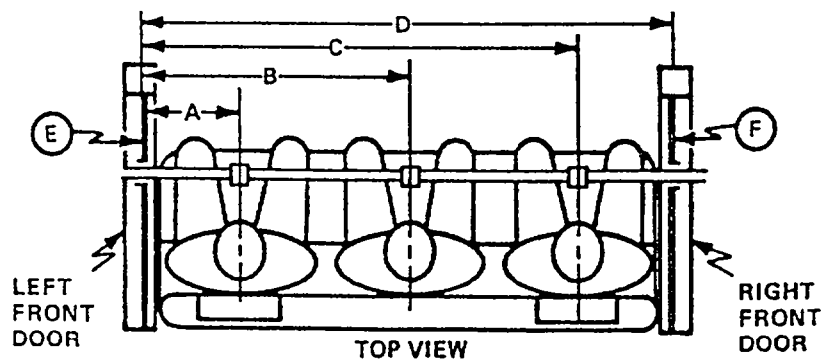
A = 20.8 IN. -9 DEGREES

B = 21.1 IN. 91 DEGREES

C = 7.3 IN. 129 DEGREES

D = 10.5 IN.

SEAT TRACK REARWARD: 9 NOTCHES



A = LEFT DOOR TO DRIVER CENTERLINE 15.2 IN.

B = LEFT DOOR TO CENTER PASSENGER CENTERLINE NA IN.

C = LEFT DOOR TO RIGHT PASSENGER CENTELRINE 41.4 IN.

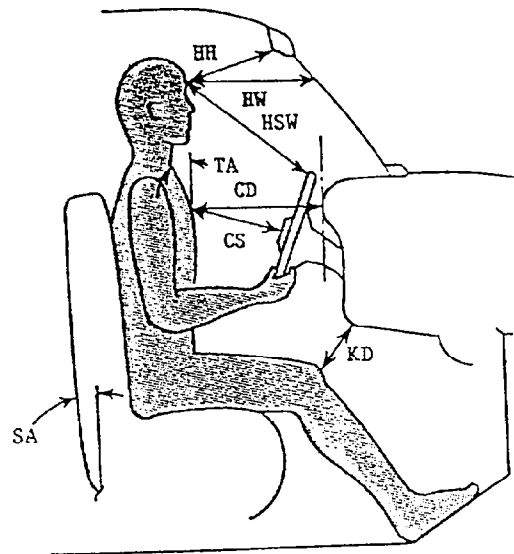
D = LEFT DOOR TO RIGHT DOOR 56.8 IN.

E,F = WINDOW GLASS HEIGHT (RIGHT AND LEFT MUST BE EQUAL) 9.0 IN.

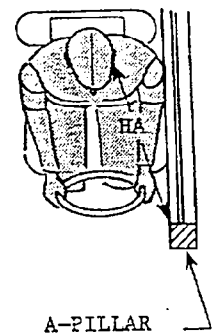
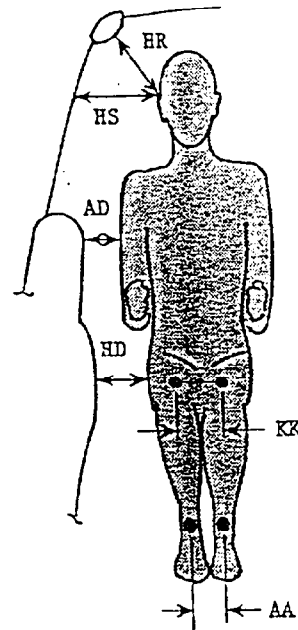
ALL ANGLES ARE RELATIVE TO VERTICAL PLANE THROUGH DOOR STRIKER.

FIGURE 6 DUMMY IN-VEHICLE POSITIONING DATA

	DRIVER	PASSENGER
HH	14.9	14.6
HW	20.4	20.8
CD	21.6	22.0
CS	14.7	NA
KDL	5.1	7.4
KDR	7.1	6.7
TA	23°	23°
SA	25°	25°
HSW	21.9	NA



	DRIVER	PASSENGER
HR	5.6	5.1
HS	9.1	9.0
AD	3.9	3.9
HD	4.9	4.6
KK	10.0	8.0
AA	11.5	7.2
HA	20.6	21.1



KNEE OUTER BOLT HEAD TO OUTER
BOLT HEAD SPACING:

DRIVER = 14.5

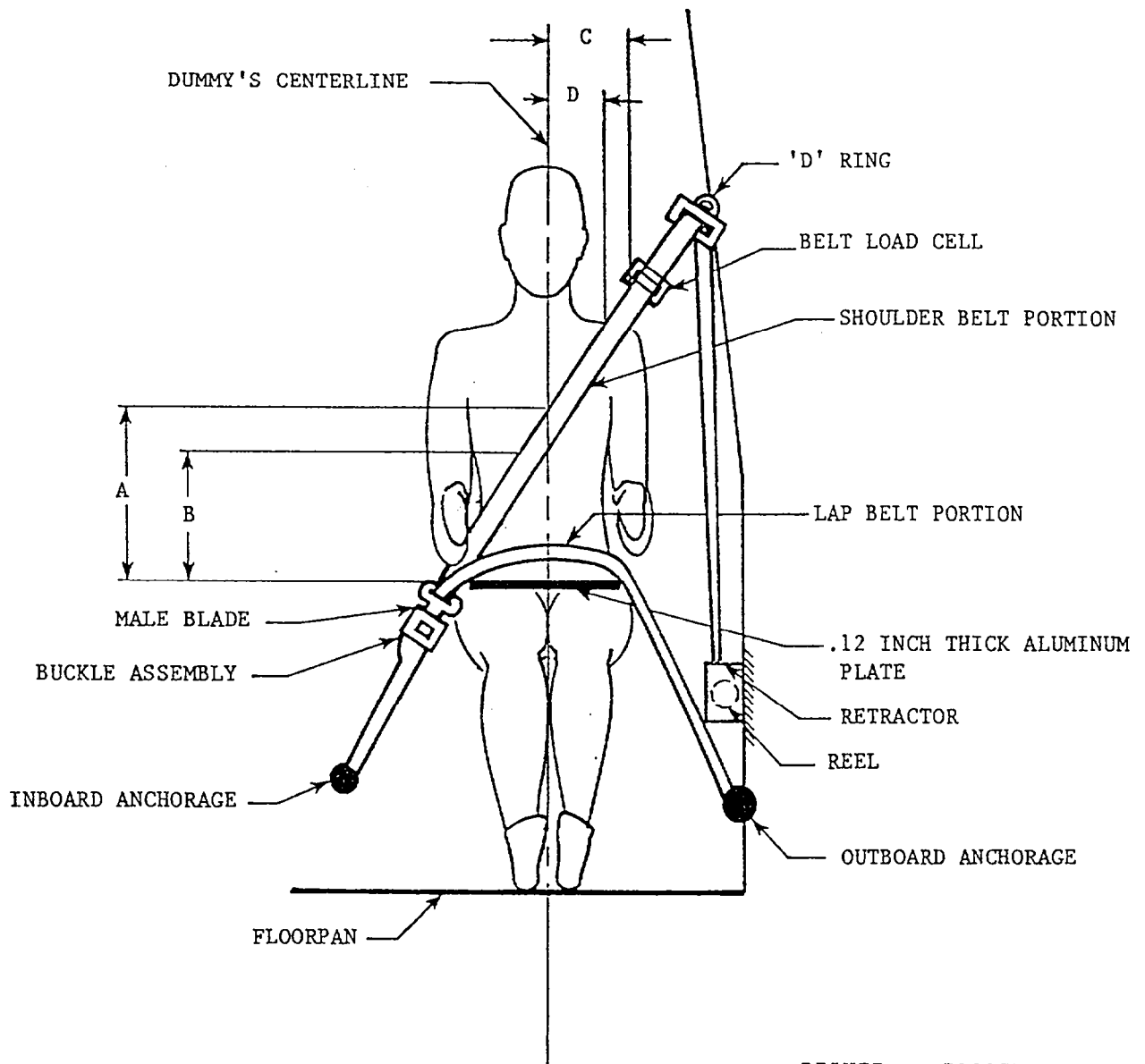
PASSENGER = 11.8

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.

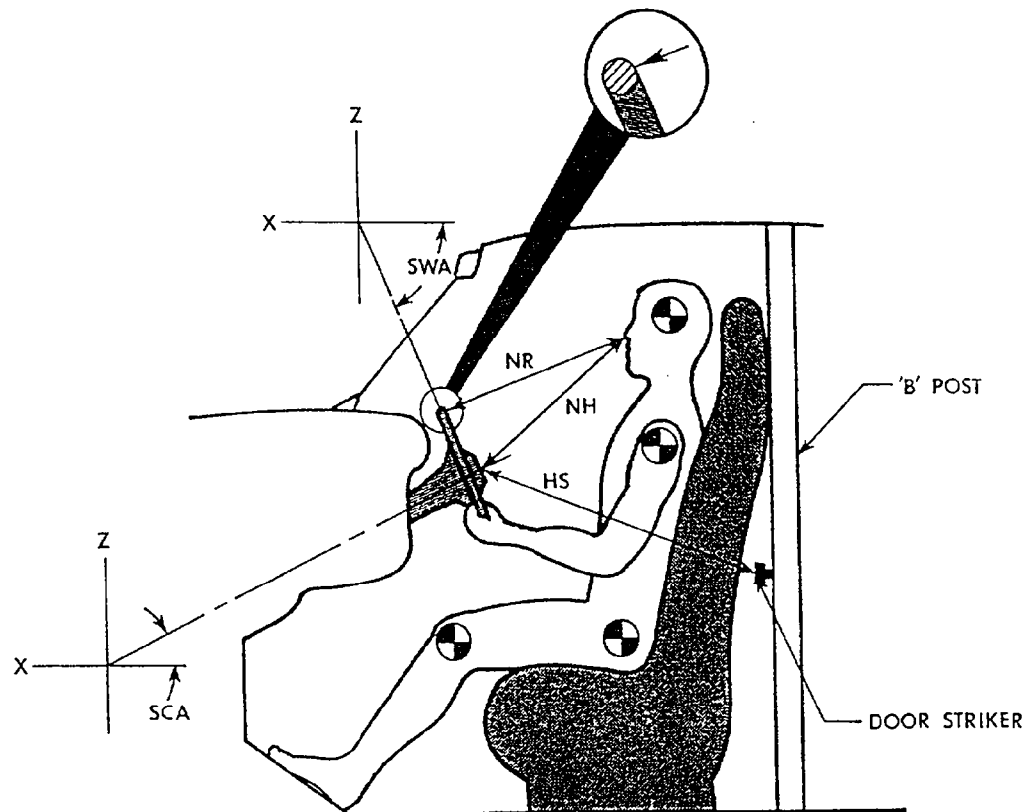
FIGURE 7 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - TOP SURFACE OF ALUMINUM PLATE TO BELT UPPER EDGE	13.5	13.2
B - TOP SURFACE OF ALUMINUM PLATE TO BELT LOWER EDGE	10.8	10.2
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	6.8	7.0
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	4.0	4.8

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 8 DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSEMBLY DATA



POSITION OF STEERING COLUMN TILTING AND TELESCOPING ADJUSTMENTS, IF ANY:

The tilt steering column was adjusted at the mid angle of the infinitely-adjustable tilt range

	MEASUREMENTS
NR - DISTANCE FROM TIP OF DUMMY'S NOSE TO TOP REAR SURFACE OF STEERING WHEEL RIM.	18.5
NH - DISTANCE FROM TIP OF DUMMY'S NOSE TO CENTER OF STEERING COLUMN HUB.	19.5
HS - DISTANCE FROM CENTER OF STEERING COLUMN HUB TO THE FORWARD SURFACE OF THE DOOR LOCK STRIKER PIN.	20.8
SCA - ANGLE OF STEERING COLUMN RELATIVE TO THE HORIZONTAL X AXIS	23°
SWA - ANGLE OF STEERING WHEEL RELATIVE TO THE HORIZONTAL X AXIS	67°

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 9
CAMERA POSITIONS

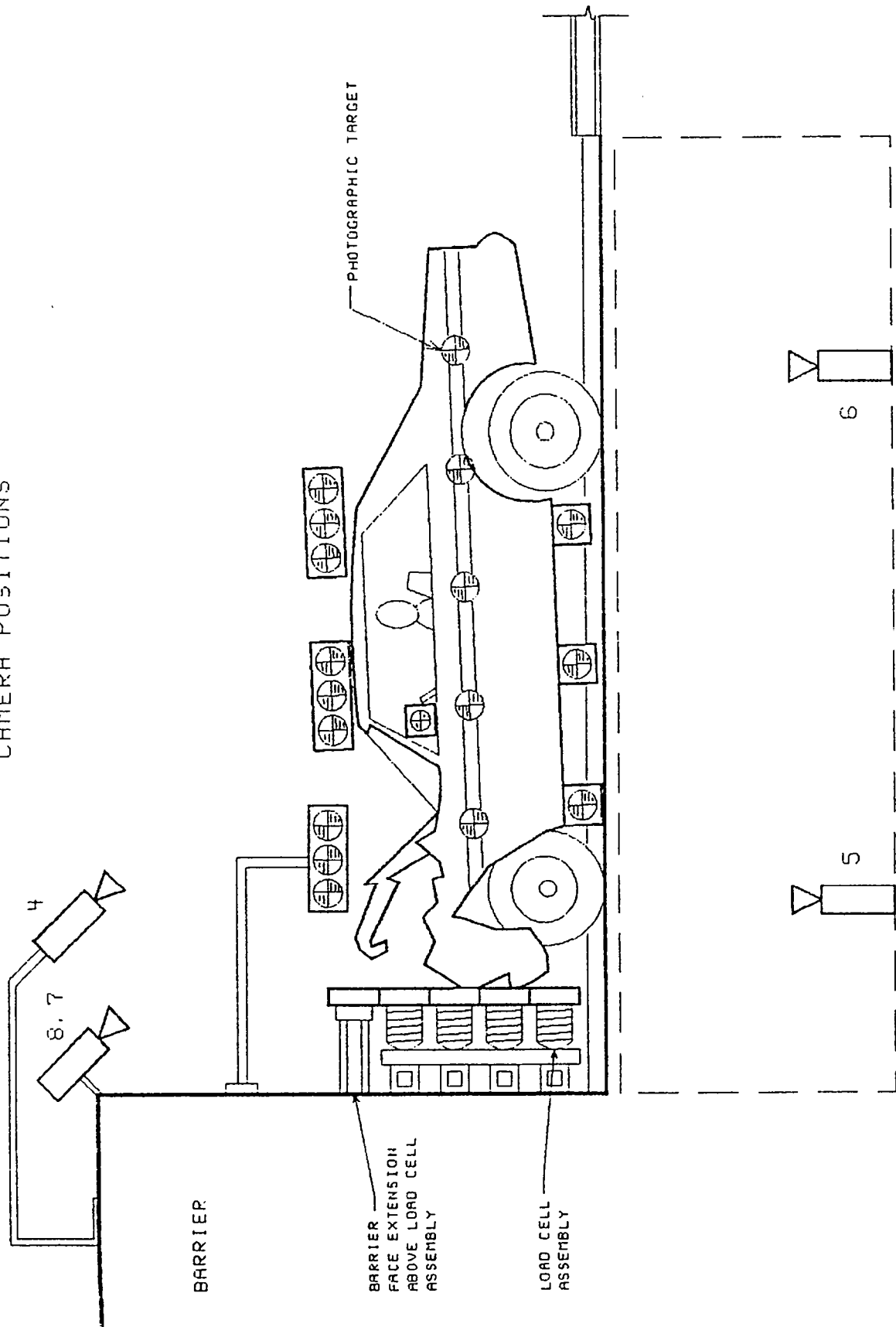


FIGURE 9

CAMERA POSITIONS: CONTINUED

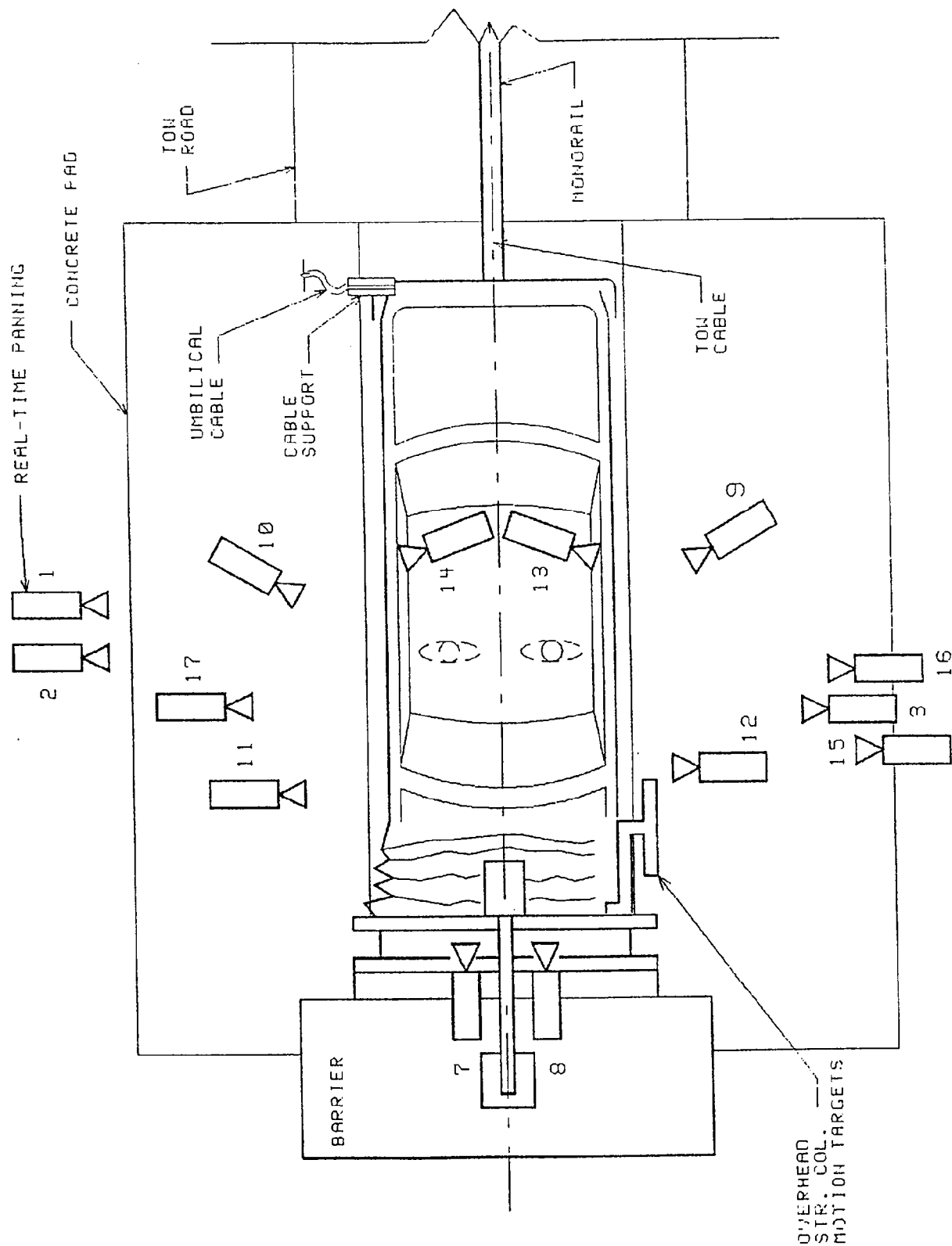


TABLE 10 MOTION PICTURE CAMERA LOCATIONS

TEST NO.: 901211		VEHICLE: Nissan Sentra 4-door sedan						
CAMERA NO.	VIEW	CAMERA POSITIONS (IN)*			ANGLE** (DEG)	FILM PLANE TO HEAD TARGET (IN)	LENS (MM)	FILM SPEED (FPS)
		X	Y	Z				
1	Real-time panning	-142.0	-504.0	61.0	NA	NA	16	24
2	Right side	-81.3	-266.4	37.1	-2	NA	13	490
3	Left side	-41.5	295.0	44.0	-12	227.0	25	507
4	Overhead	-36.4	0.0	98.0	-40	NA	13	500
5	Pit - engine	-50.5	0.0	-92.4	90	NA	13	1000
6	Pit - fuel tank	-99.3	0.0	-99.0	90	NA	13	998
7	Front - passenger	-4.5	-13.8	85.0	-40	NA	17	500
8	Front - driver	-6.8	14.5	85.0	-41	NA	17	498
9	Left side - driver	-180.0	73.0	102.0	-27	101.0	25	498
10	Right side - passenger	-184.0	-74.0	100.0	-26	90.0	25	502
11	Right side - A-pillar	-38.1	-306.1	44.0	0	NA	50	500
12	Left side - A-pillar	-53.0	309.4	42.3	0	NA	50	500
13	Onboard - left side	NA	NA	NA	NA	NA	NA	NA***
14	Onboard - right side	NA	NA	NA	NA	NA	NA	NA***
15	Left side - steering column	-136.0	286.0	103.0	-14	NA	25	500
16	Left side - steering column	-136.0	286.0	75.1	-9	NA	25	498
17	Right side - passenger	-38.8	-210.8	45.3	7	239.0	25	490
18	Real-time documentation	NA	NA	NA	NA	NA	12-120	24

**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 onboard cameras were not installed to reduce the vehicle's test weight to the target test weight.

FIGURE 10
VEHICLE TARGET LOCATIONS

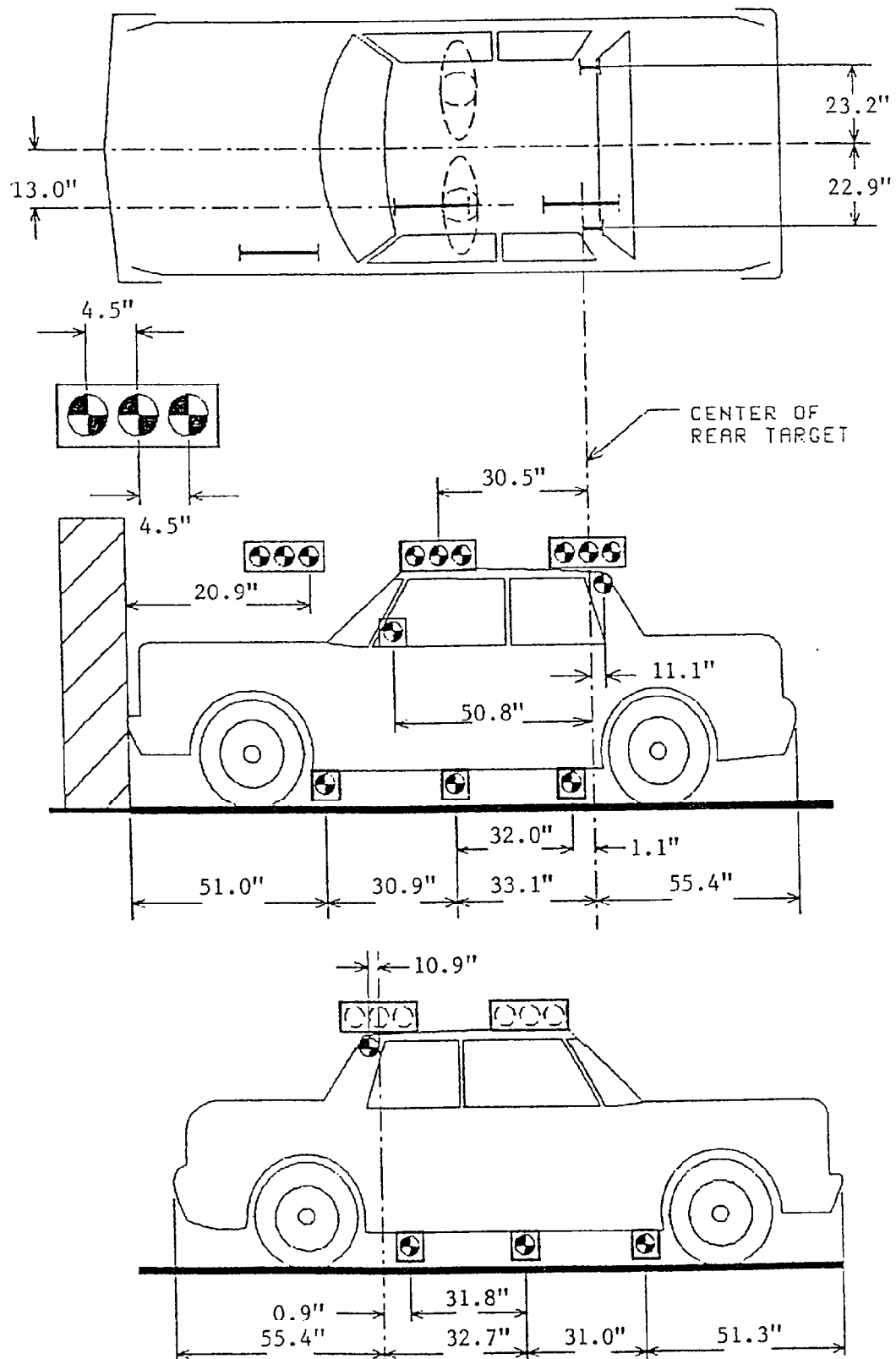


FIGURE 11

PRE-TEST AND POST-TEST MEASUREMENT POINTS

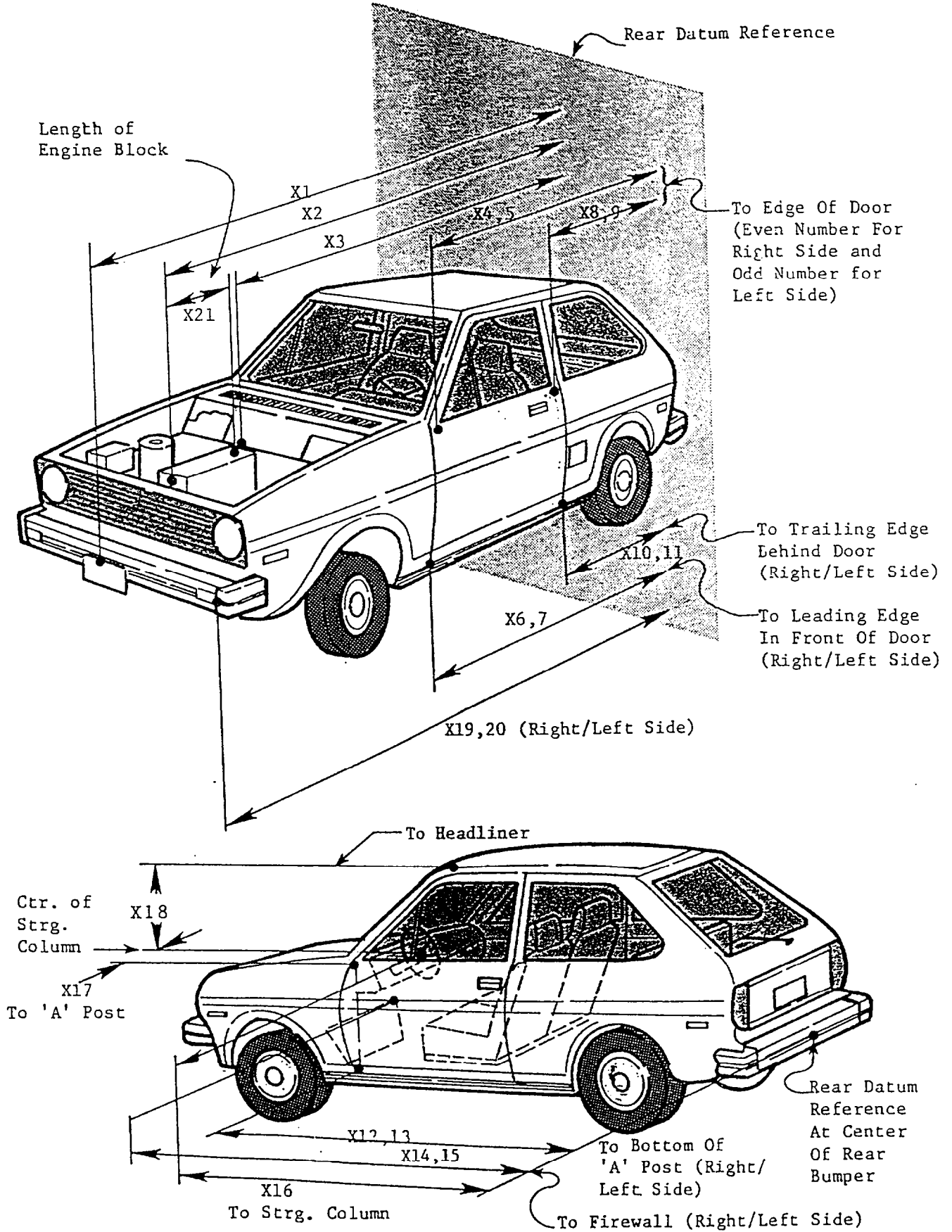


TABLE 11 IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL: Nissan/Sentra		TEST NUMBER: 901211	ALL MEASUREMENTS ARE IN INCHES		
NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.	
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	170.4	143.9	26.5	
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	157.9	133.4	24.5	
X3	REAR SURFACE OF VEHICLE TO FIREWALL	128.8	120.4	8.4	
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	115.9	111.5	4.4	
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	116.0	111.5	4.5	
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	116.4	111.9	4.5	
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	116.8	111.9	4.9	
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	76.0	71.5	4.5	
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	76.0	71.8	4.2	
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	76.6	71.8	4.8	
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	77.2	72.2	5.0	
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	115.6	111.1	4.5	
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	116.0	111.4	4.6	
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	127.8	121.8	6.0	
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	127.8	121.5	6.3	
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	99.6	101.0	-1.4	
X17	CENTER OF STEERING COLUMN TO "A" POST	11.4	11.1	0.3	
X18	CENTER OF STEERING COLUMN TO HEADLINER	18.1	16.0	2.1	
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	166.8	140.2	26.6	
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	166.8	142.0	24.8	
X21	LENGTH OF ENGINE BLOCK	20.0	20.0	0.0	

APPENDIX A

PHOTOGRAPHS

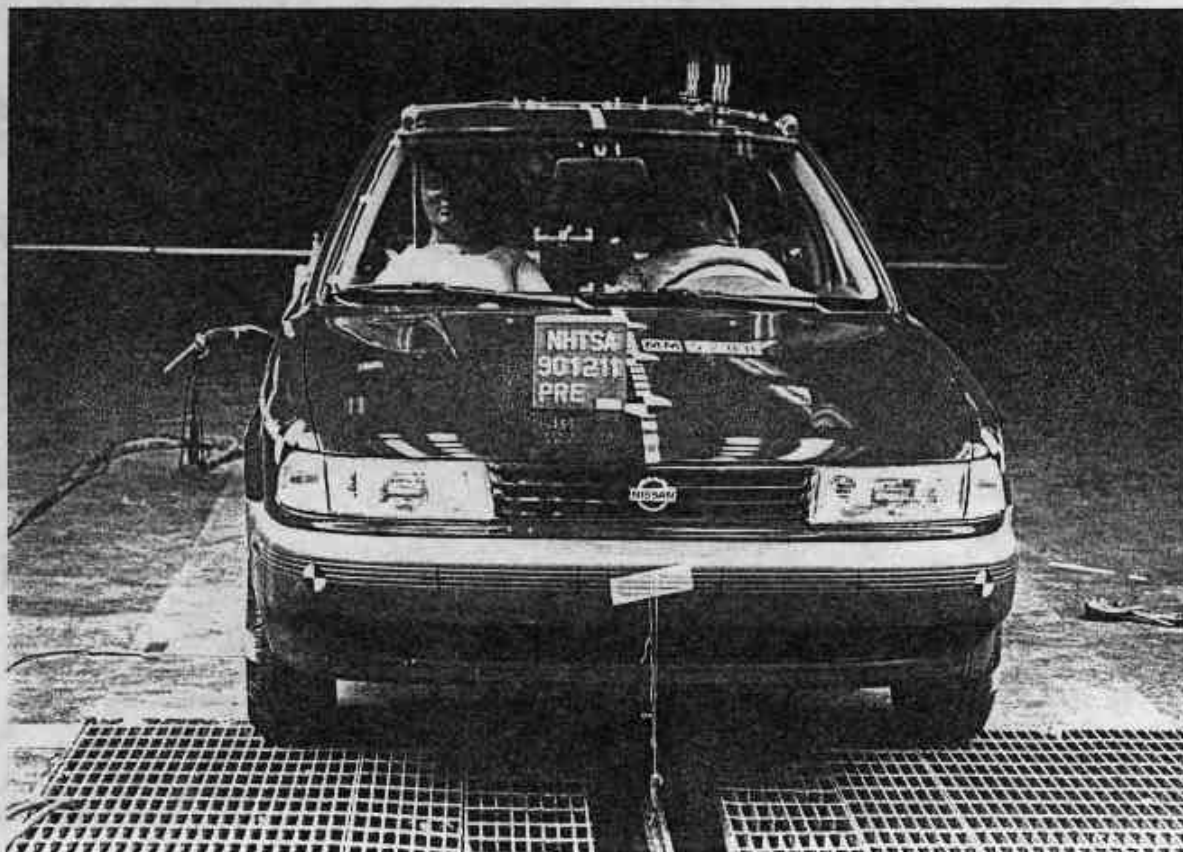


Figure A-1. PRE-TEST FRONT VIEW

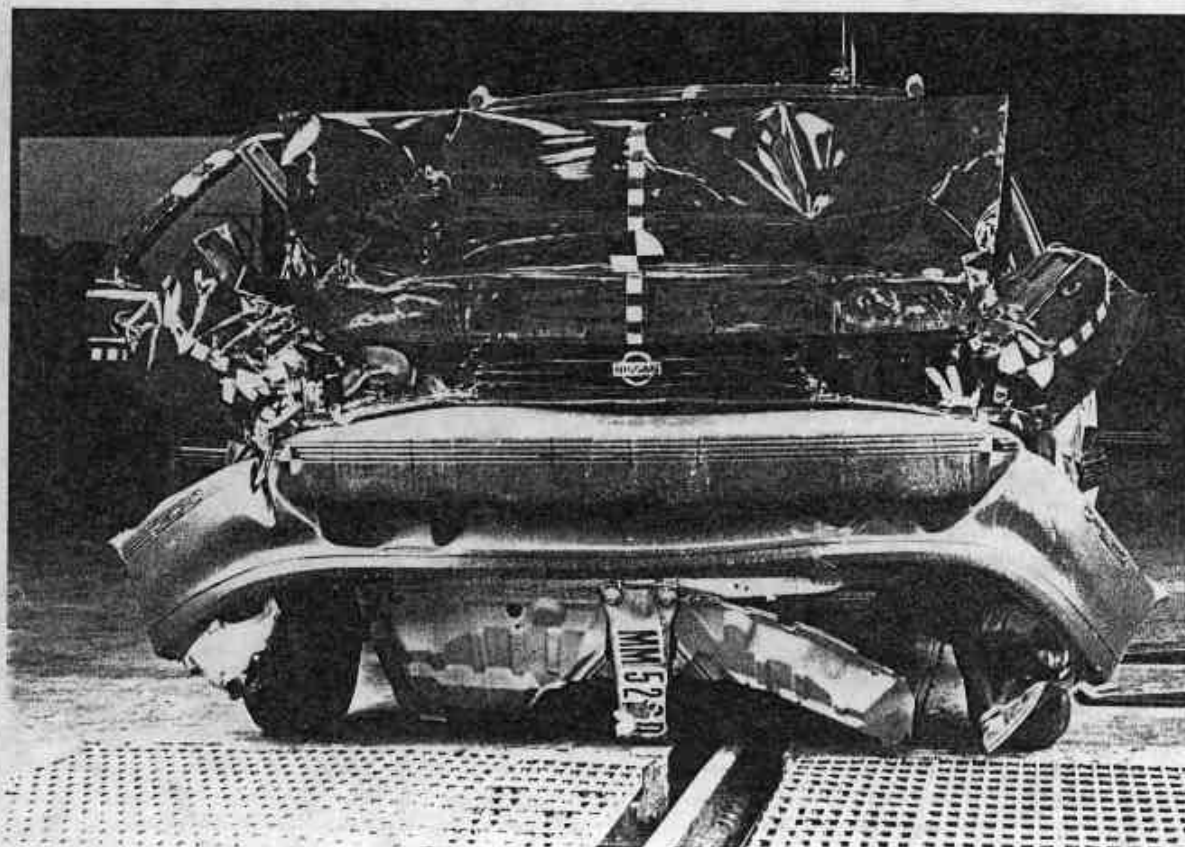


Figure A-2. POST-TEST FRONT VIEW
A-2

901211

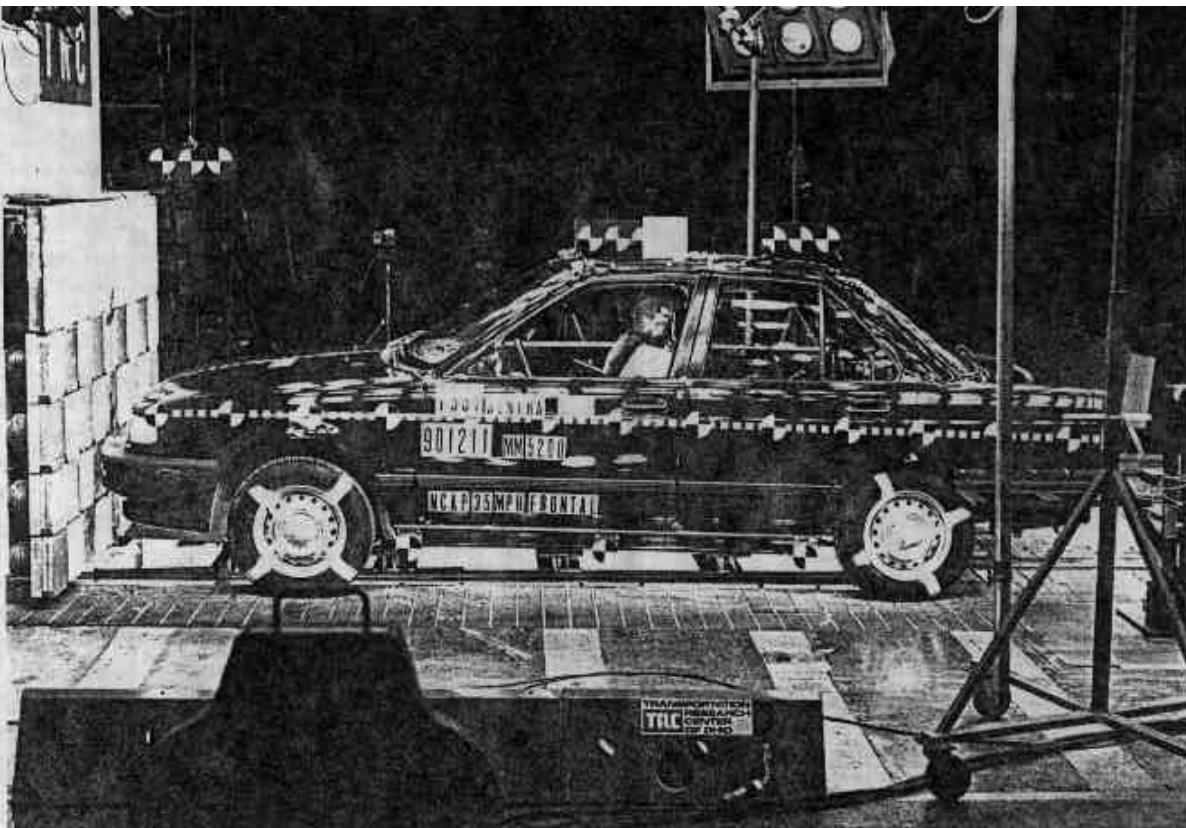


Figure A-3. PRE-TEST LEFT SIDE VIEW

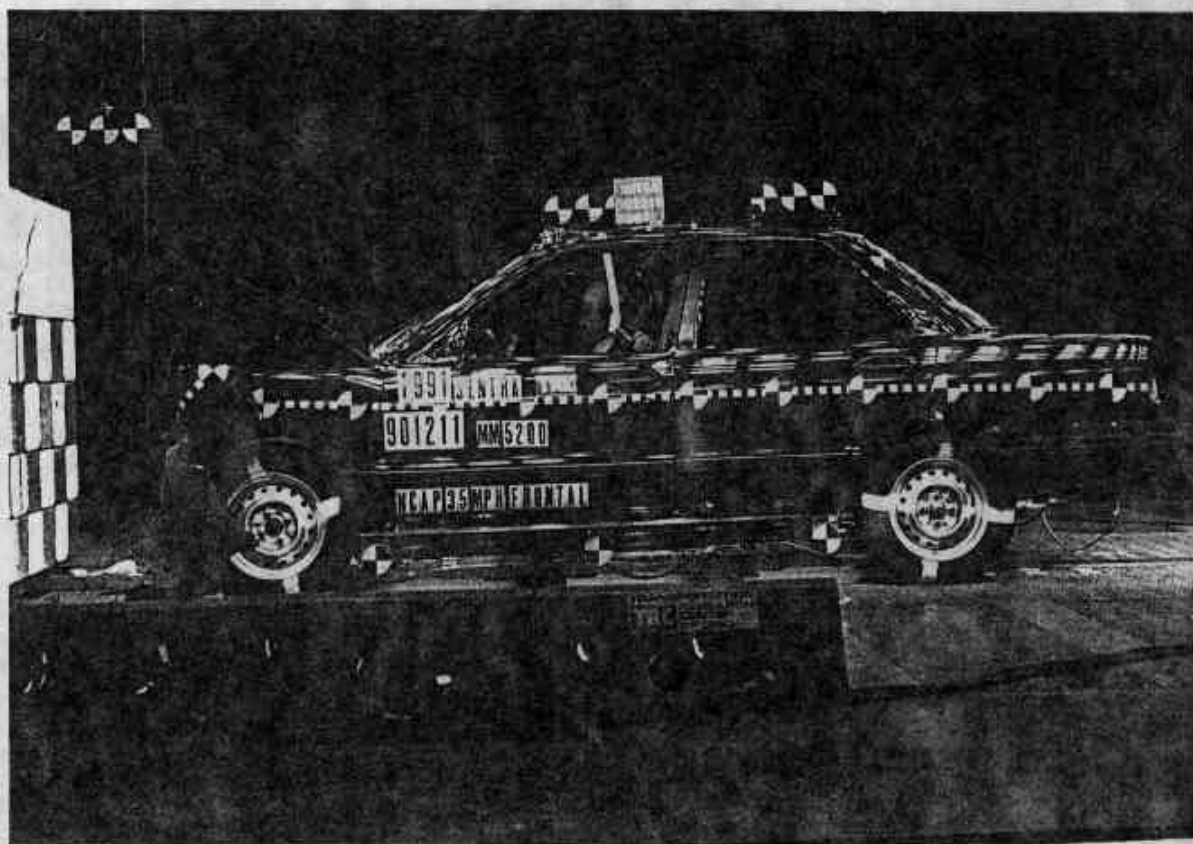


Figure A-4. POST-TEST LEFT SIDE VIEW
A-3

901211

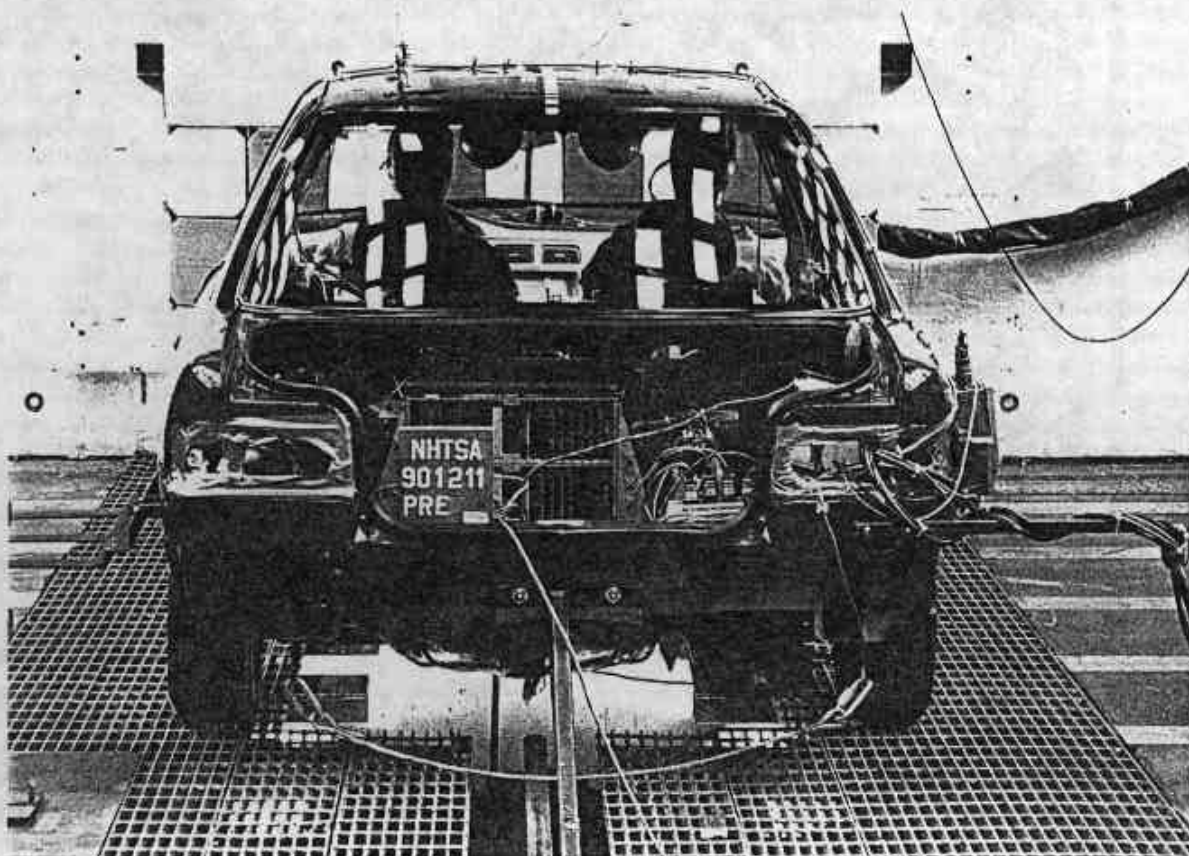


Figure A-5. PRE-TEST REAR VIEW



Figure A-6. POST-TEST REAR VIEW

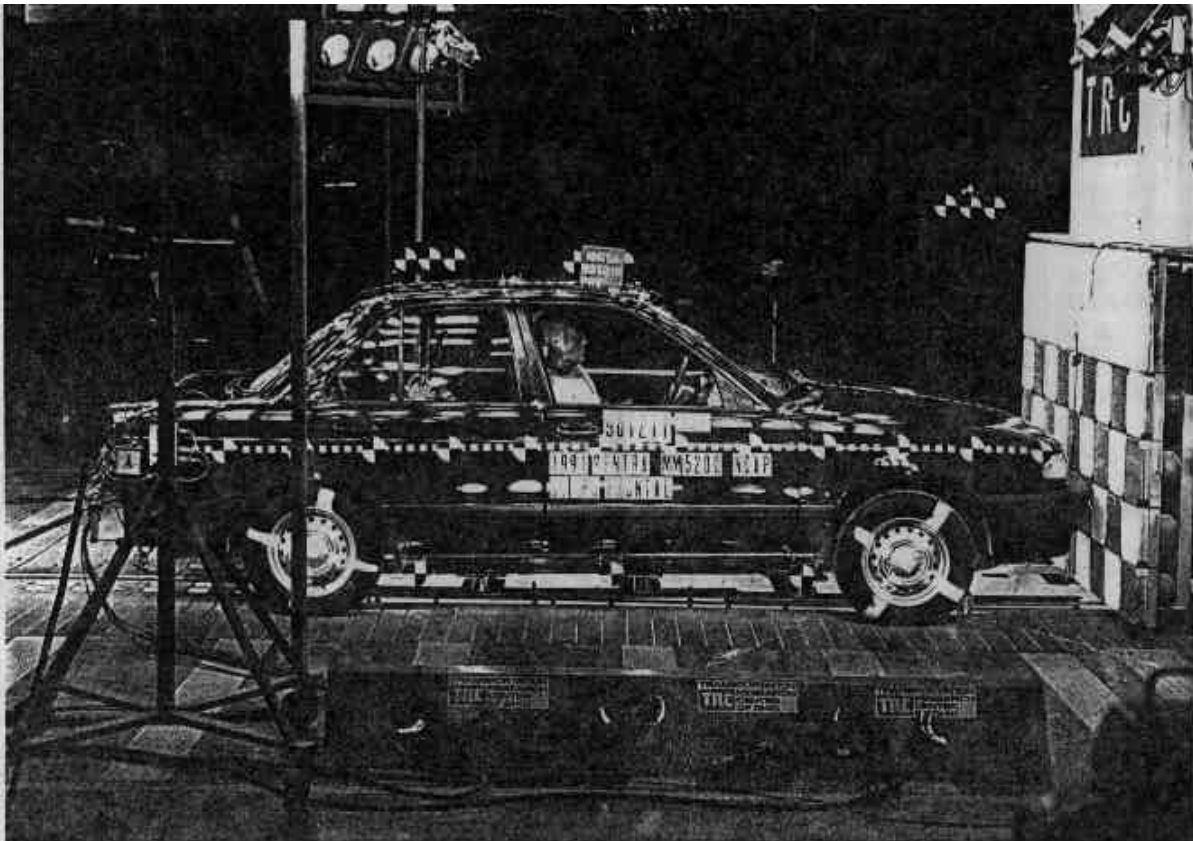


Figure A-7. PRE-TEST RIGHT SIDE VIEW

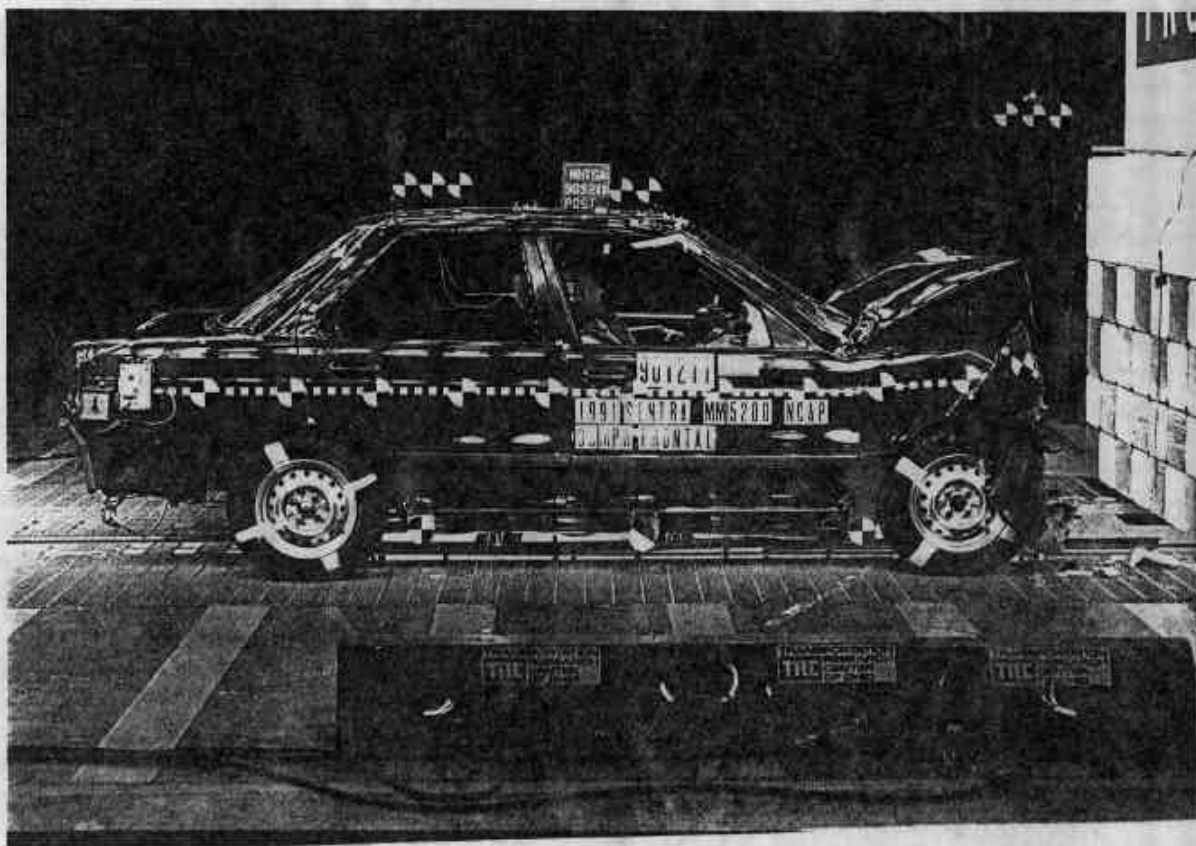


Figure A-8. POST-TEST RIGHT SIDE VIEW



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



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

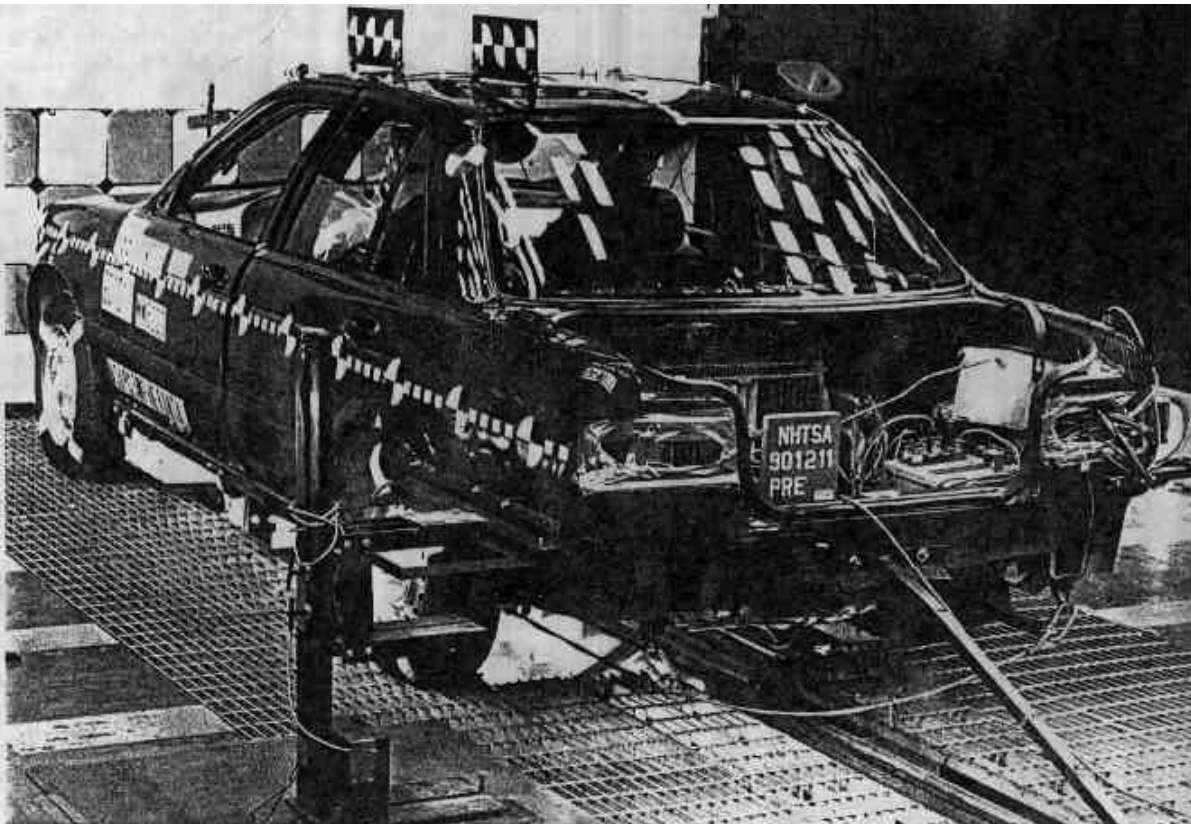


Figure A-11. PRE-TEST LEFT REAR THREE-QUARTER VIEW

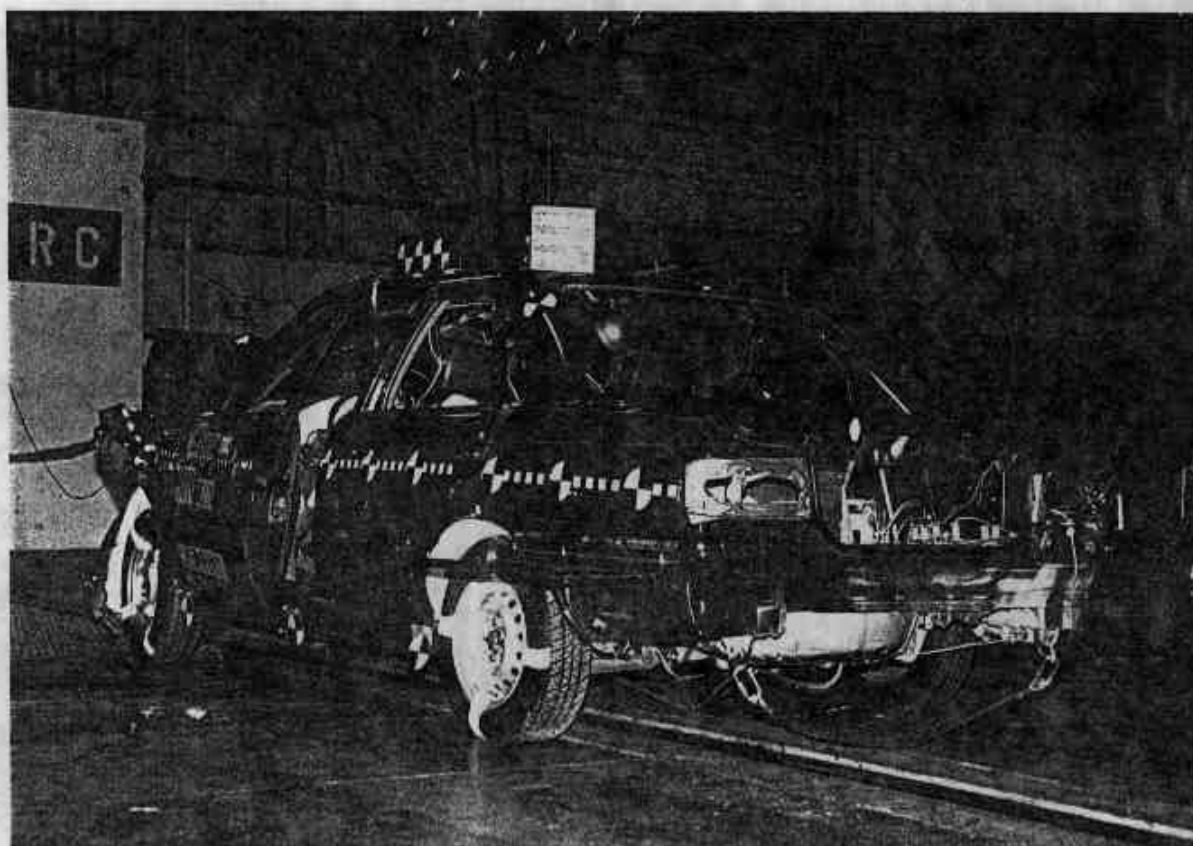


Figure A-12. POST-TEST LEFT REAR THREE-QUARTER VIEW
A-7

901211

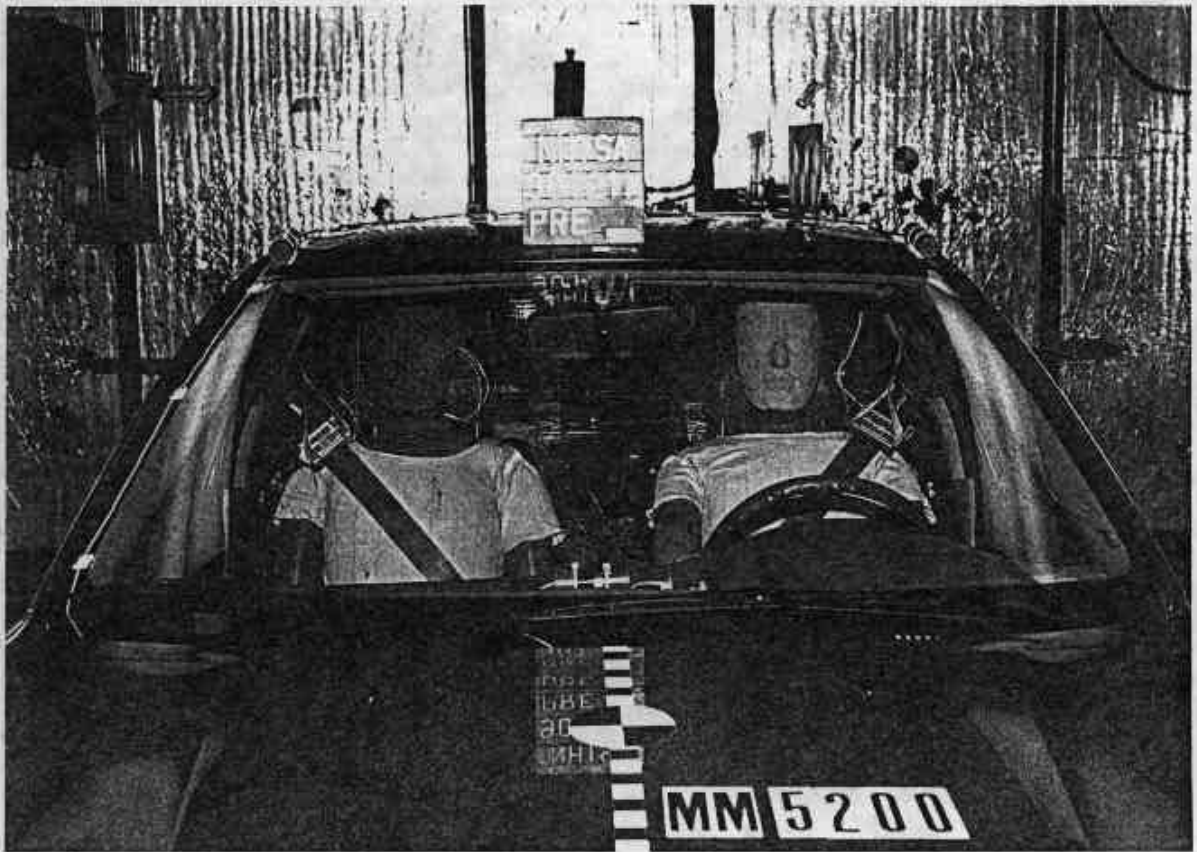


Figure A-13. PRE-TEST WINDSHIELD VIEW

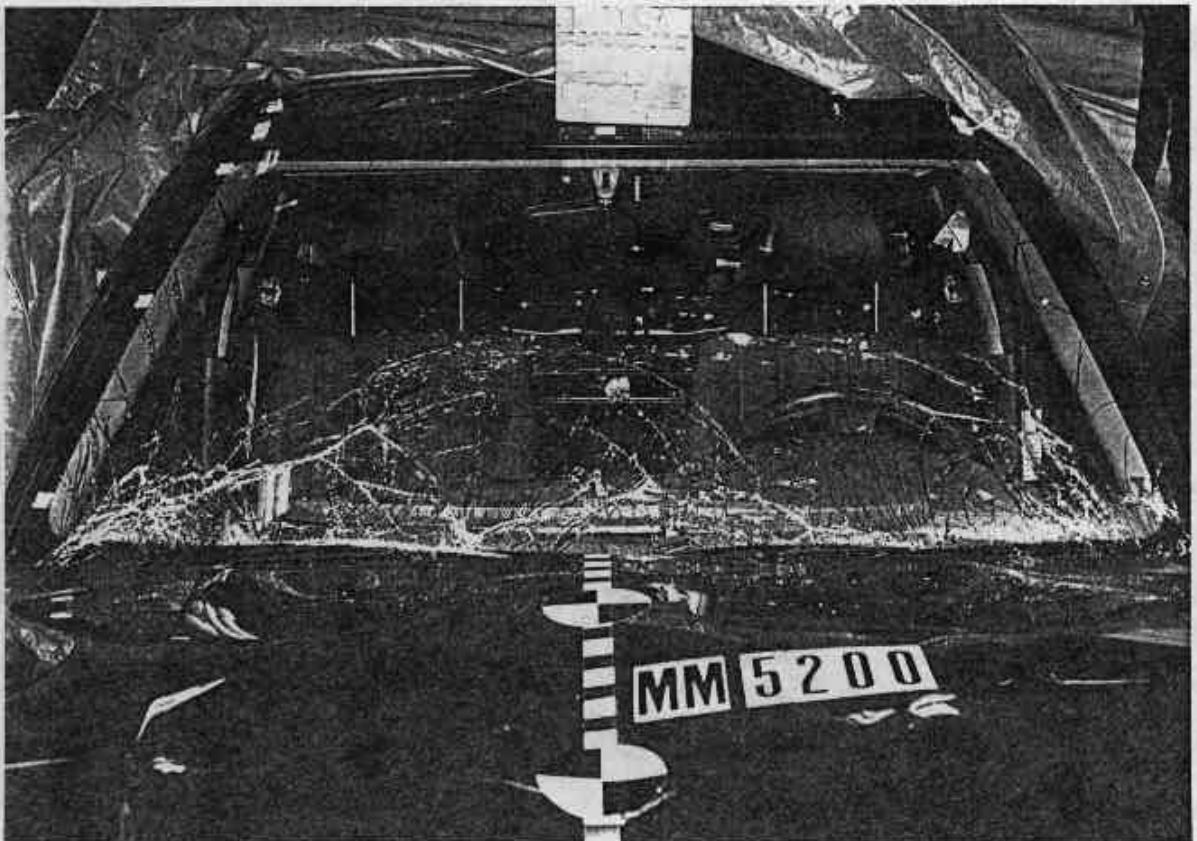


Figure A-14. POST-TEST WINDSHIELD VIEW
A-8

901211

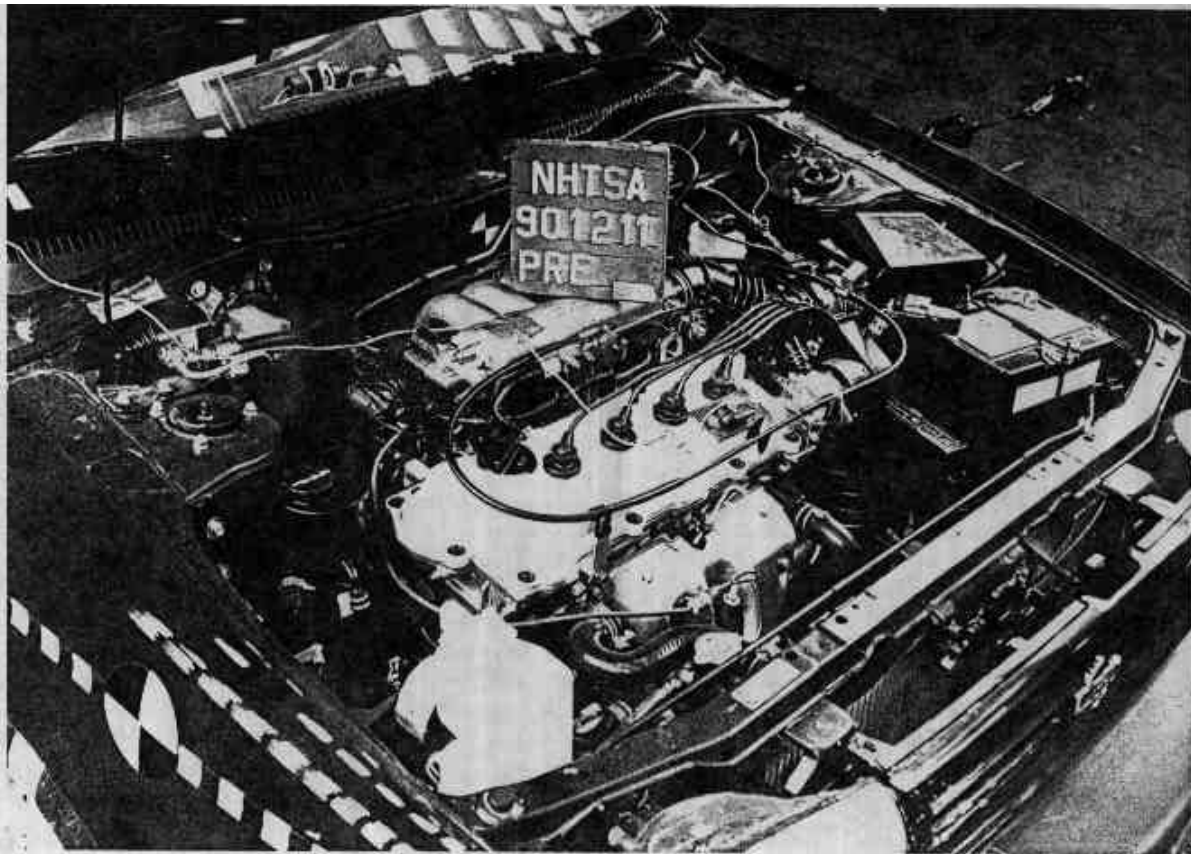


Figure A-15. PRE-TEST ENGINE COMPARTMENT VIEW

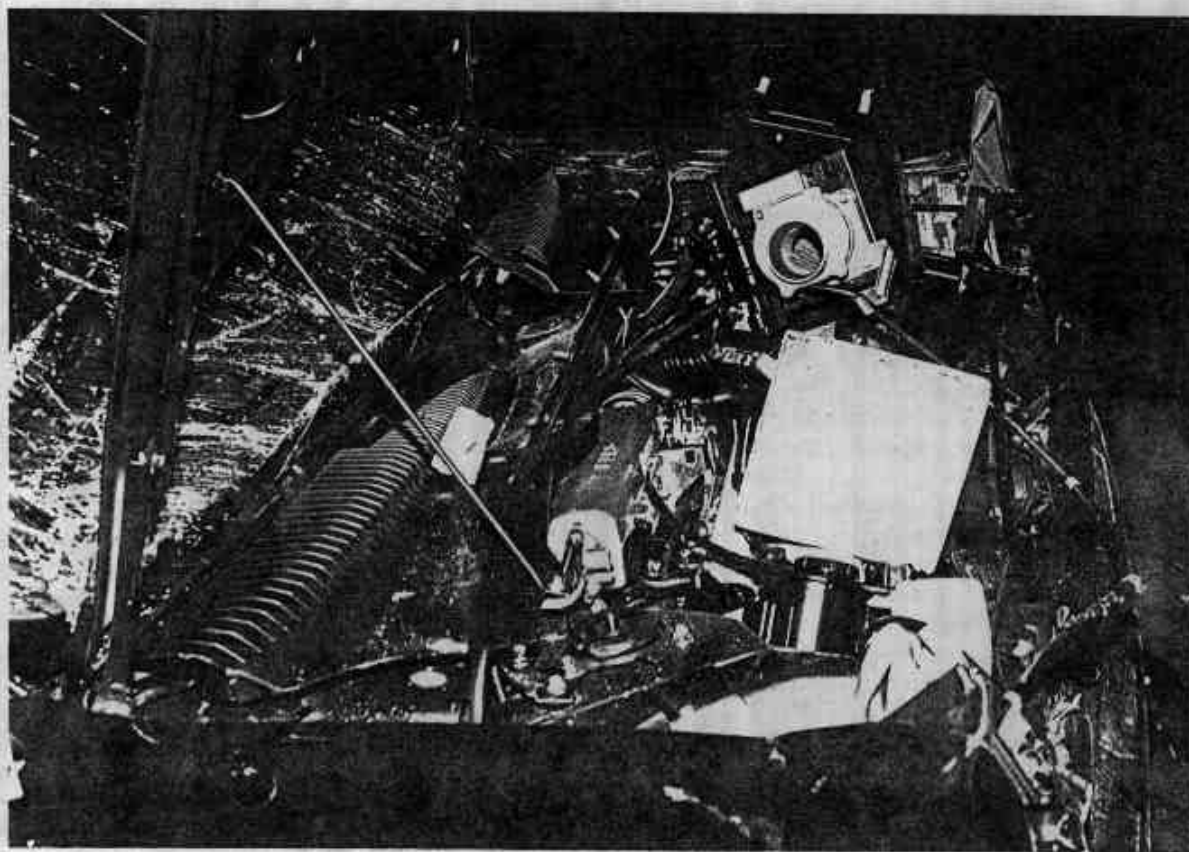


Figure A-16. POST-TEST ENGINE COMPARTMENT VIEW



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

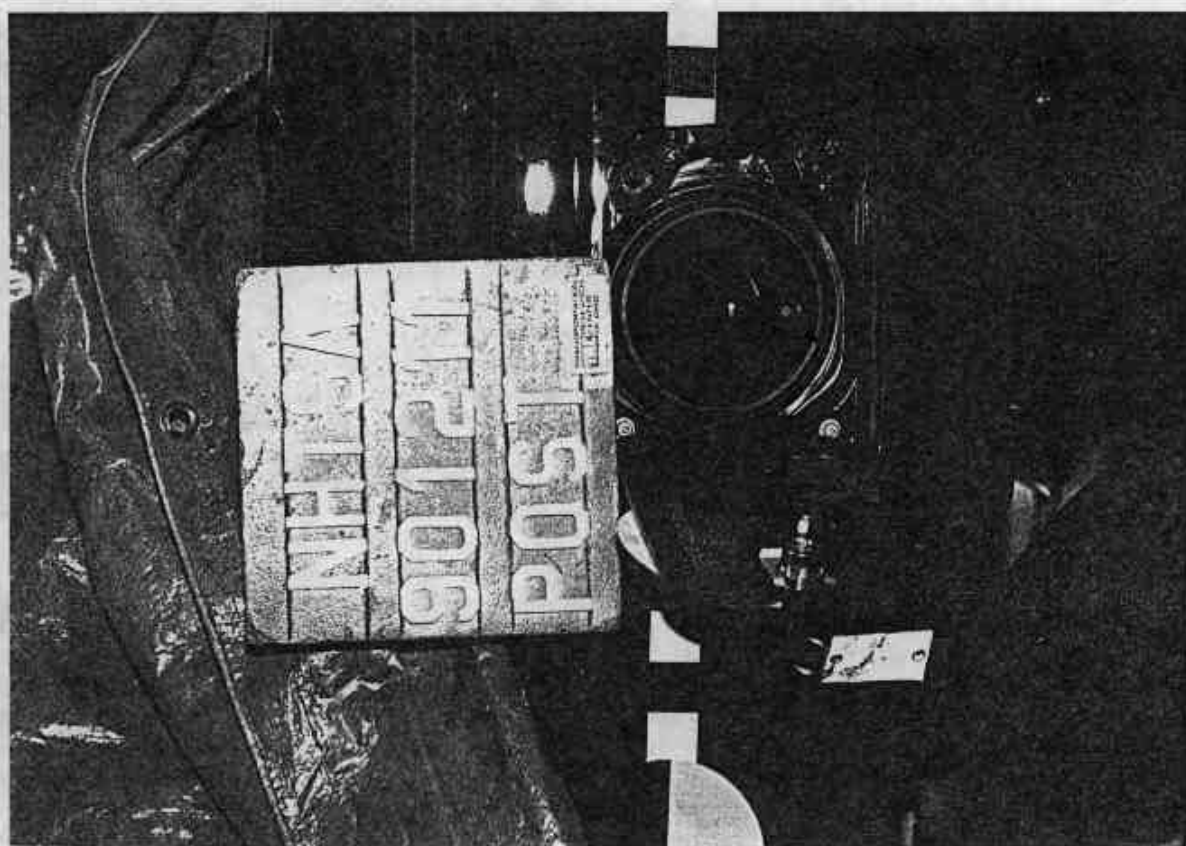


Figure A-18. POST-TEST FUEL FILLER CAP VIEW

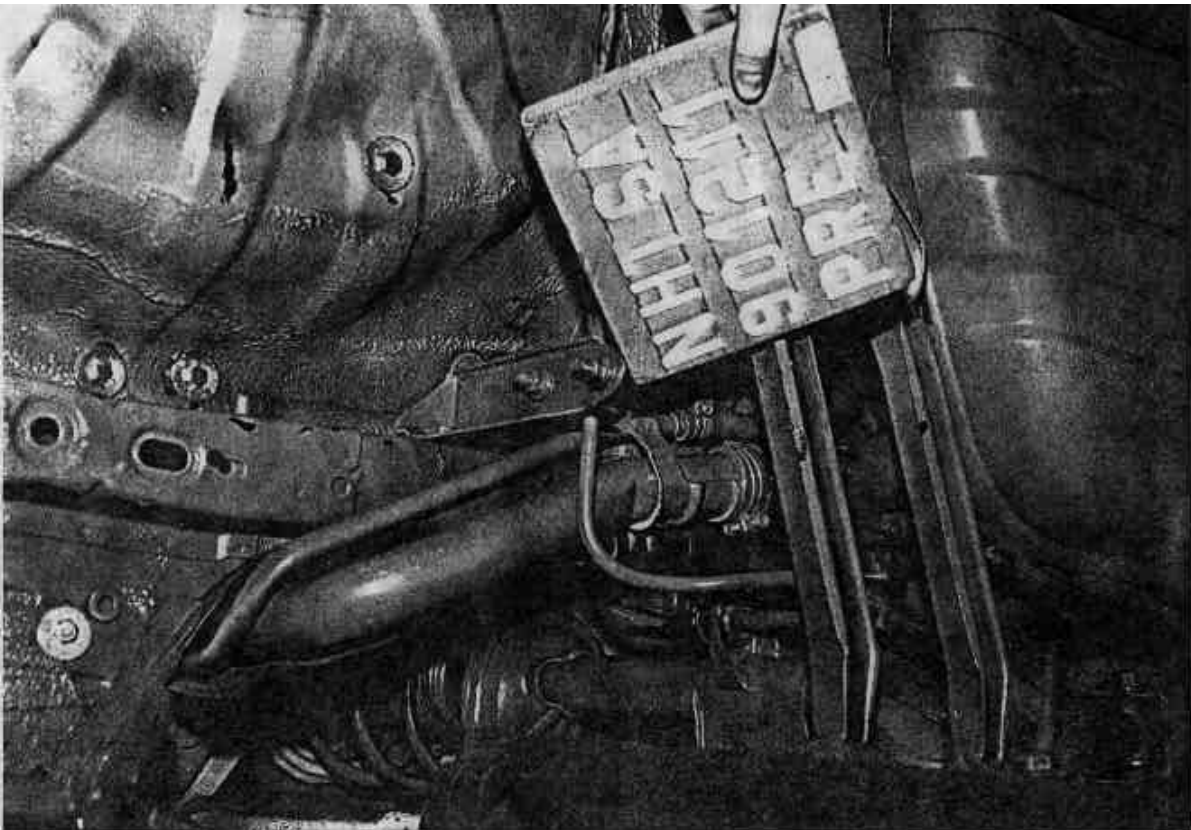


Figure A-19. PRE-TEST FUEL FILLER NECK VIEW



Figure A-20. PRE-TEST FUEL LINES VIEW
A-11

901211

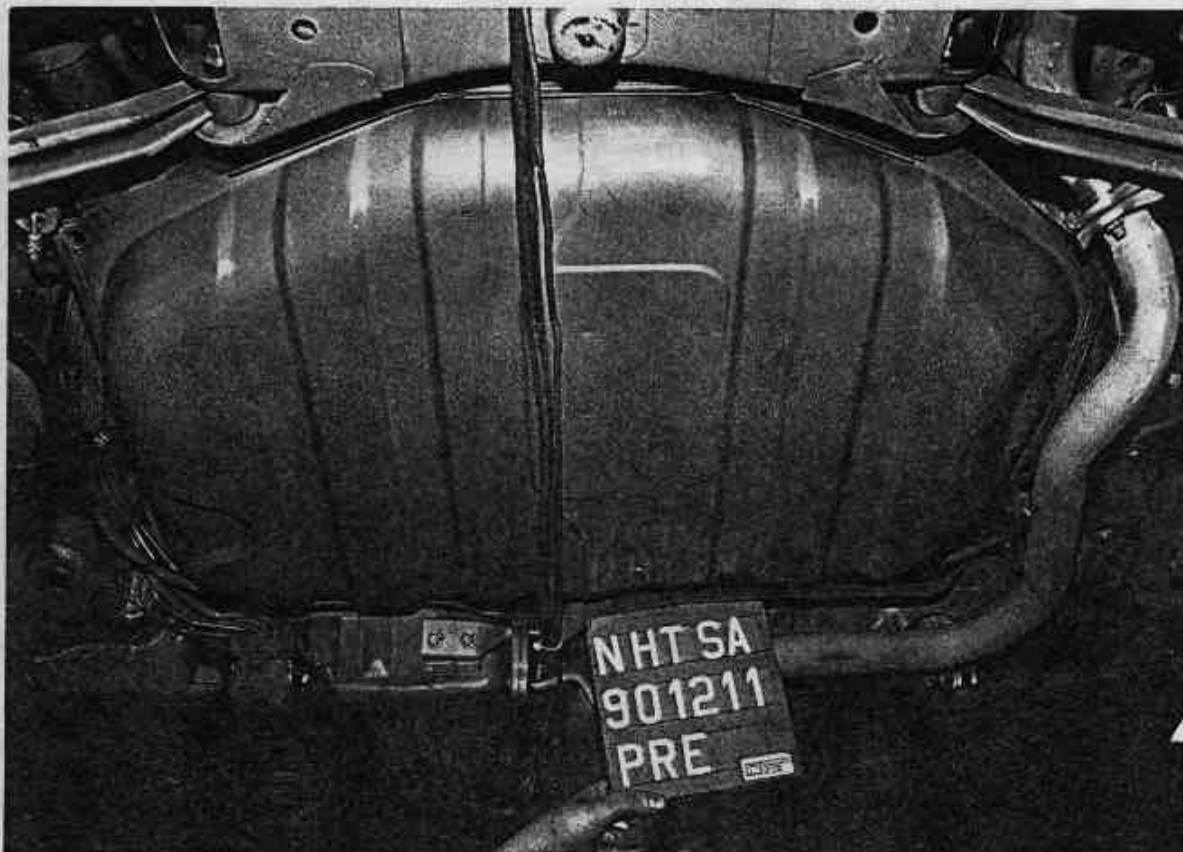


Figure A-21. PRE-TEST FUEL TANK VIEW

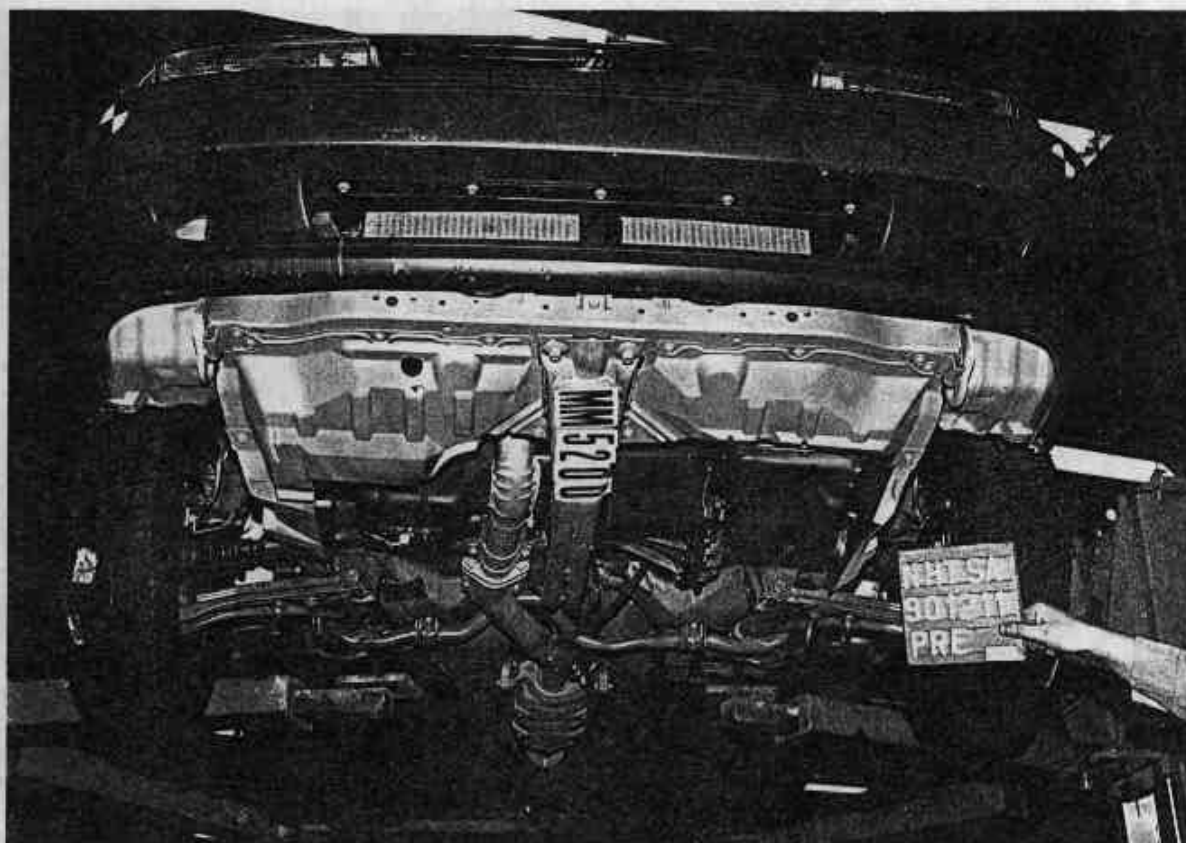


Figure A-22. PRE-TEST FRONT UNDERBODY VIEW
A-12

901211

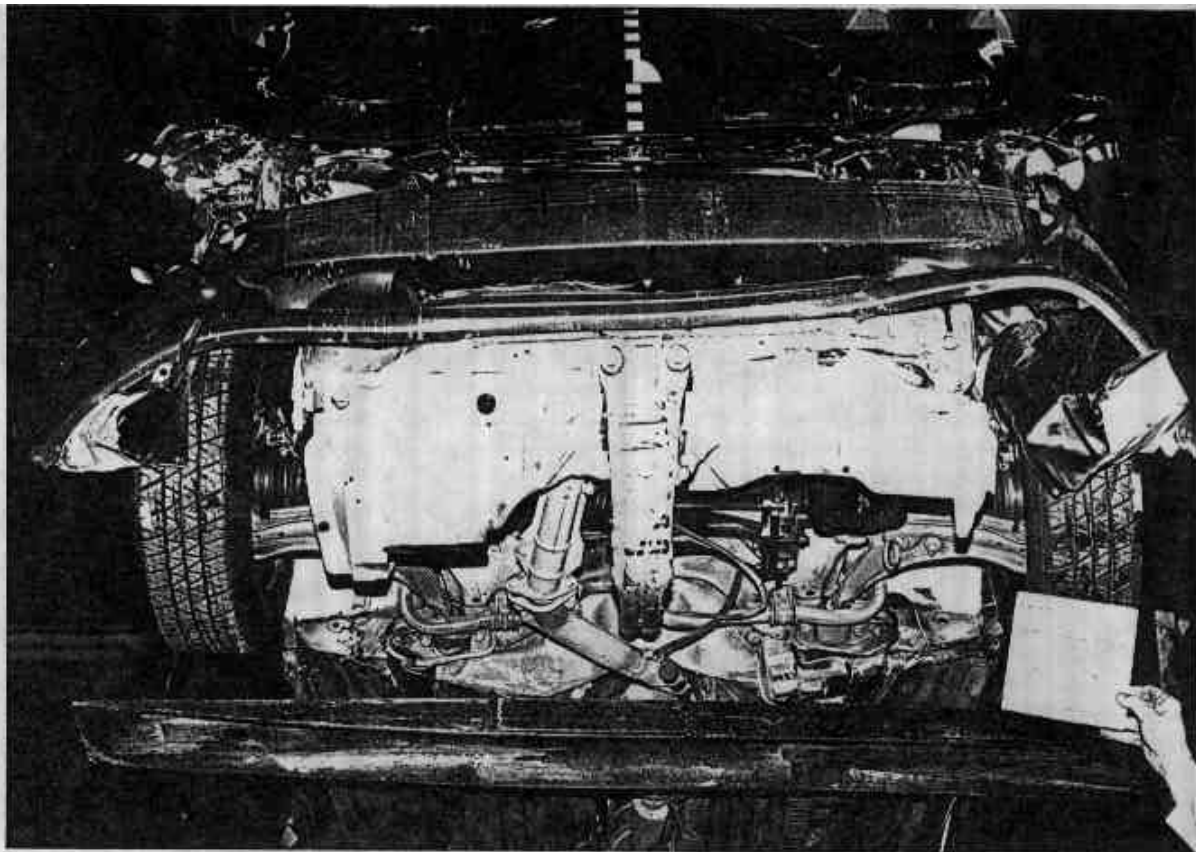


Figure A-23. POST-TEST FRONT UNDERBODY VIEW

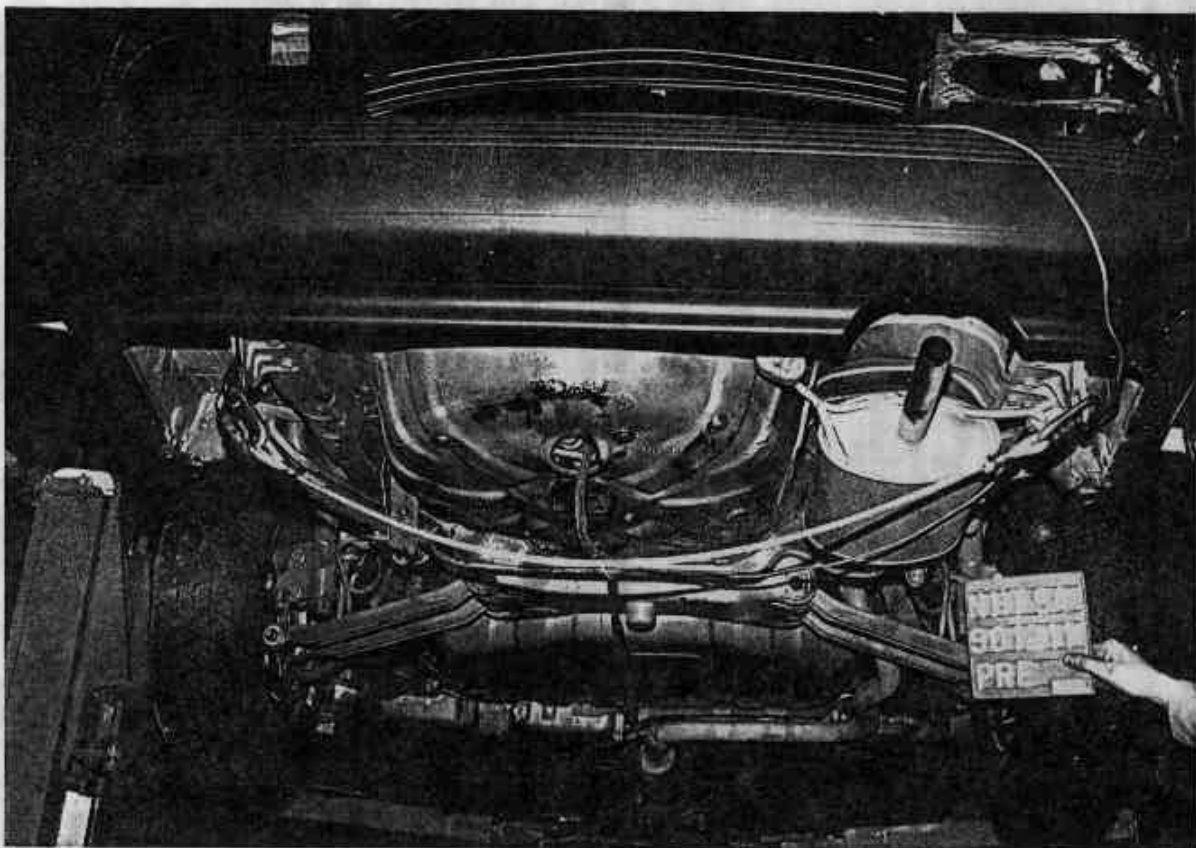


Figure A-24. PRE-TEST REAR UNDERBODY VIEW
A-13

901211

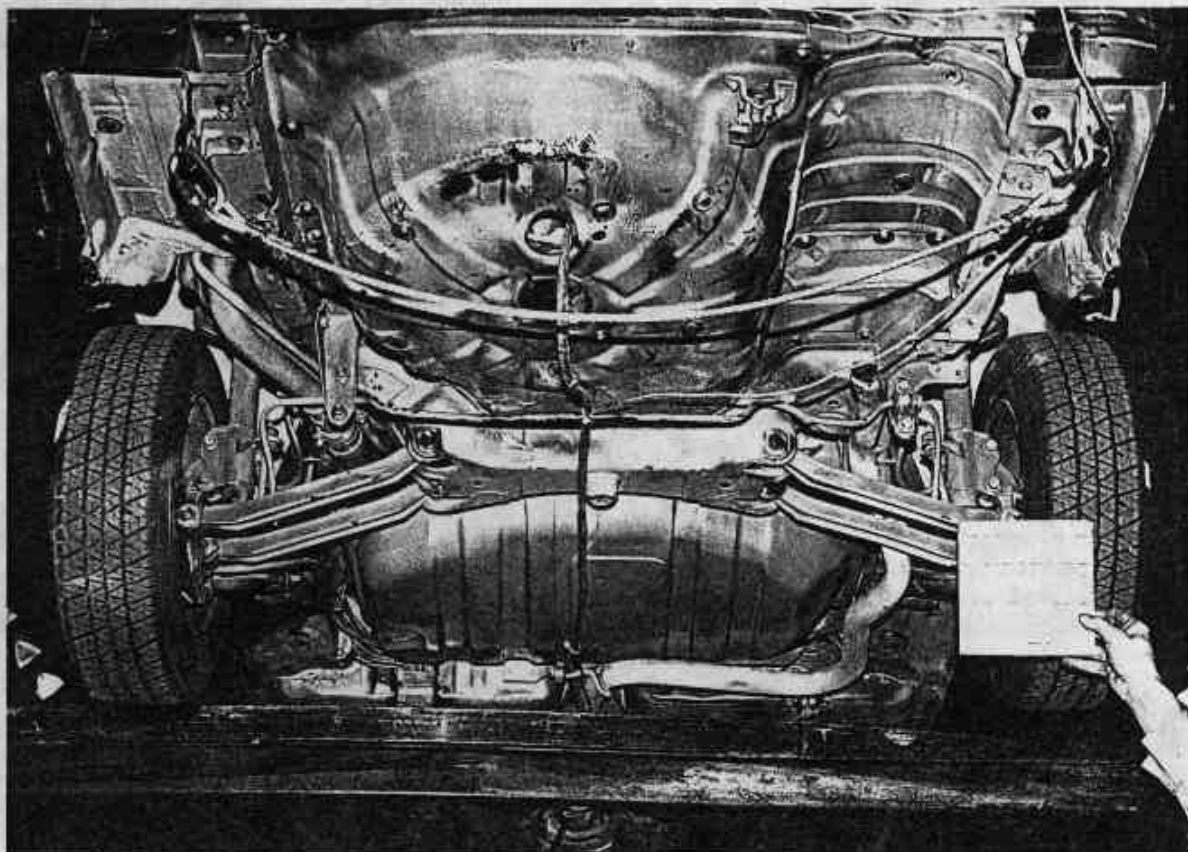


Figure A-25. POST-TEST REAR UNDERBODY VIEW



Figure A-26. PRE-TEST DRIVER DUMMY POSITION VIEW
A-14



Figure A-27. POST-TEST DRIVER DUMMY POSITION VIEW

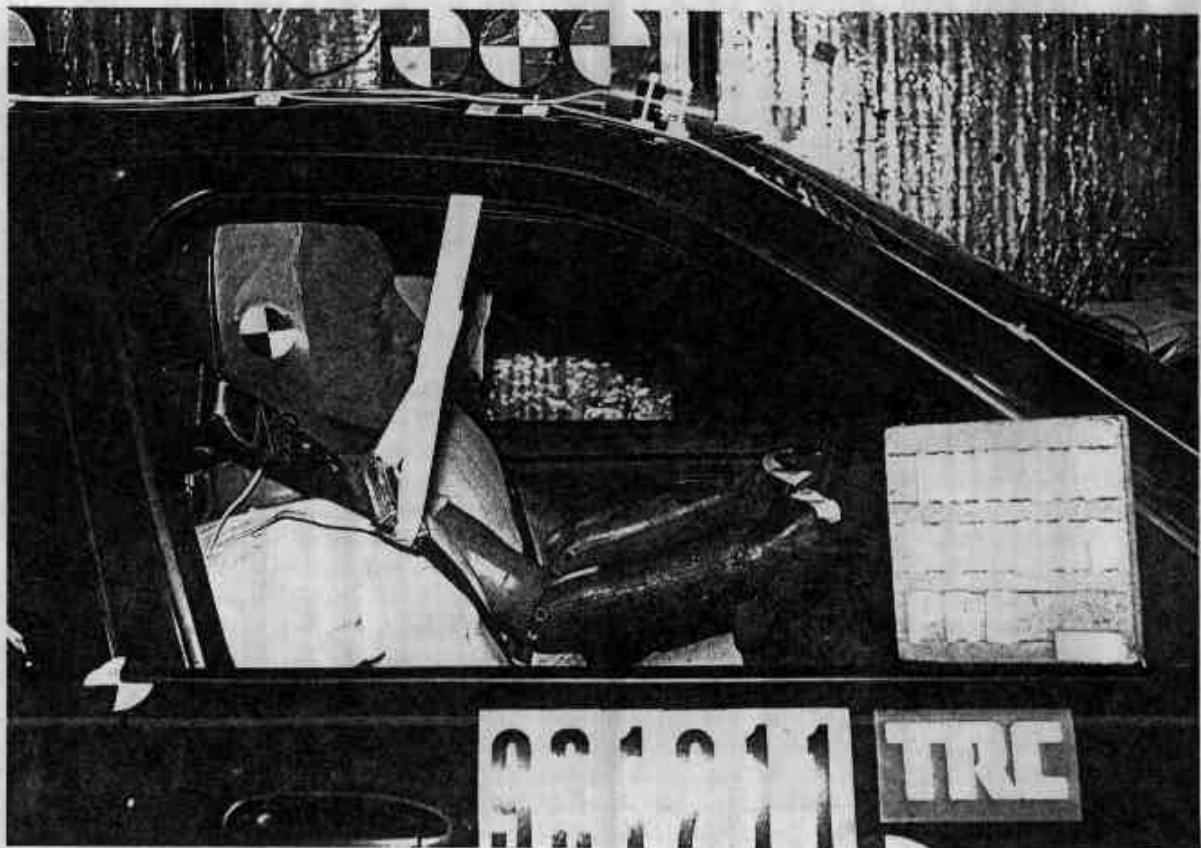


Figure A-28. PRE-TEST PASSENGER DUMMY POSITION VIEW
A-15

901211



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

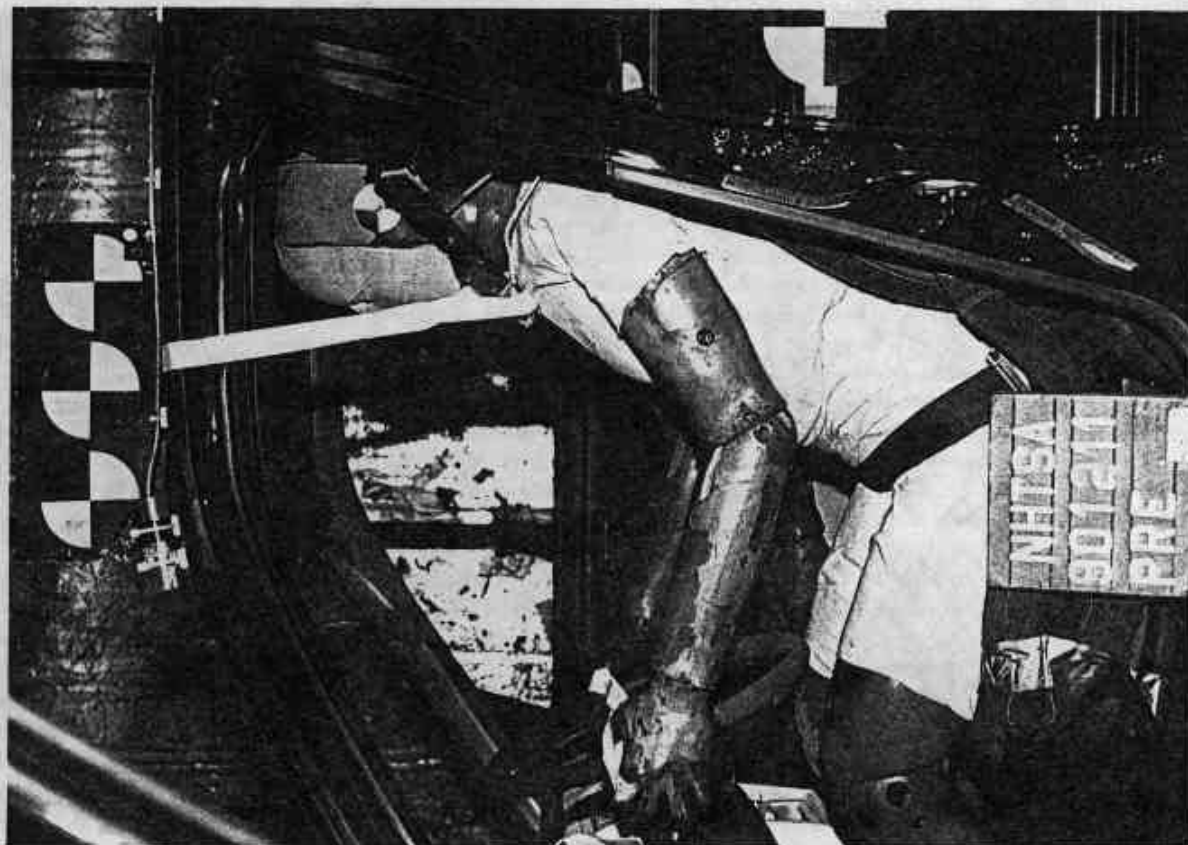


Figure A-30. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

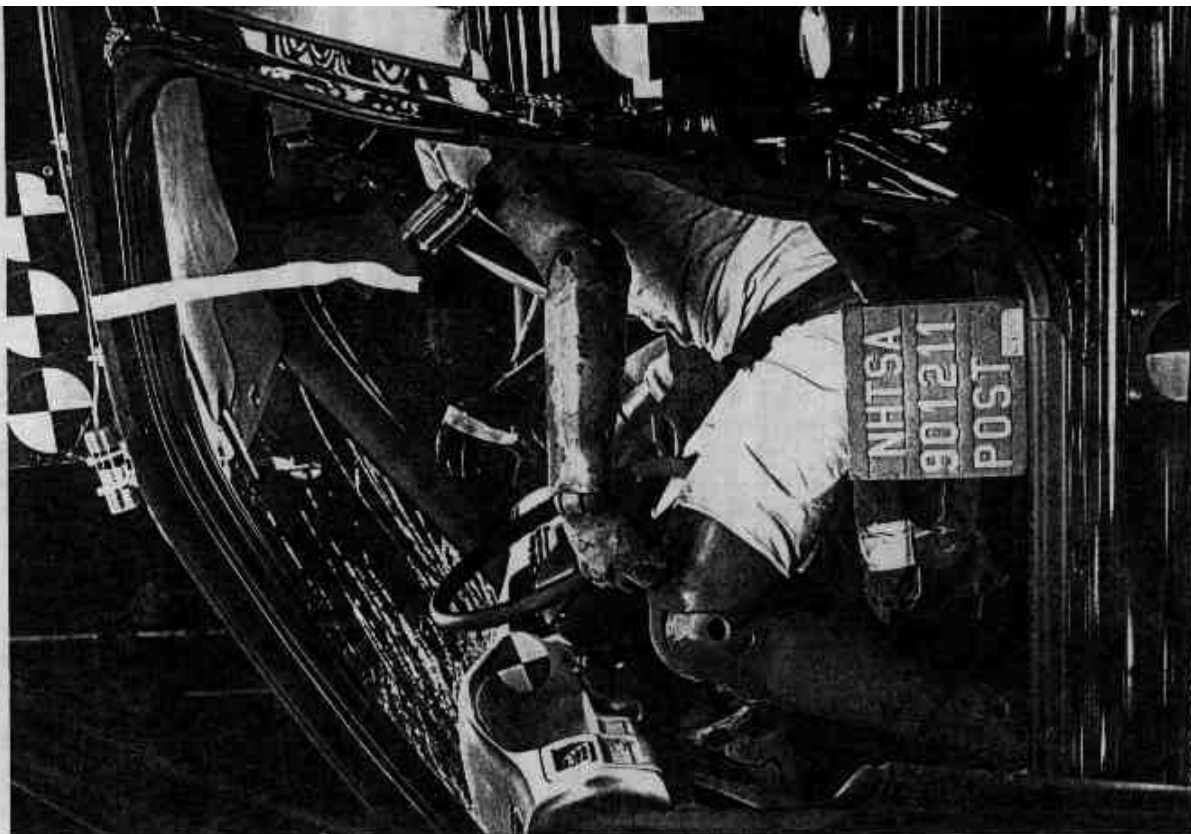


Figure A-31. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

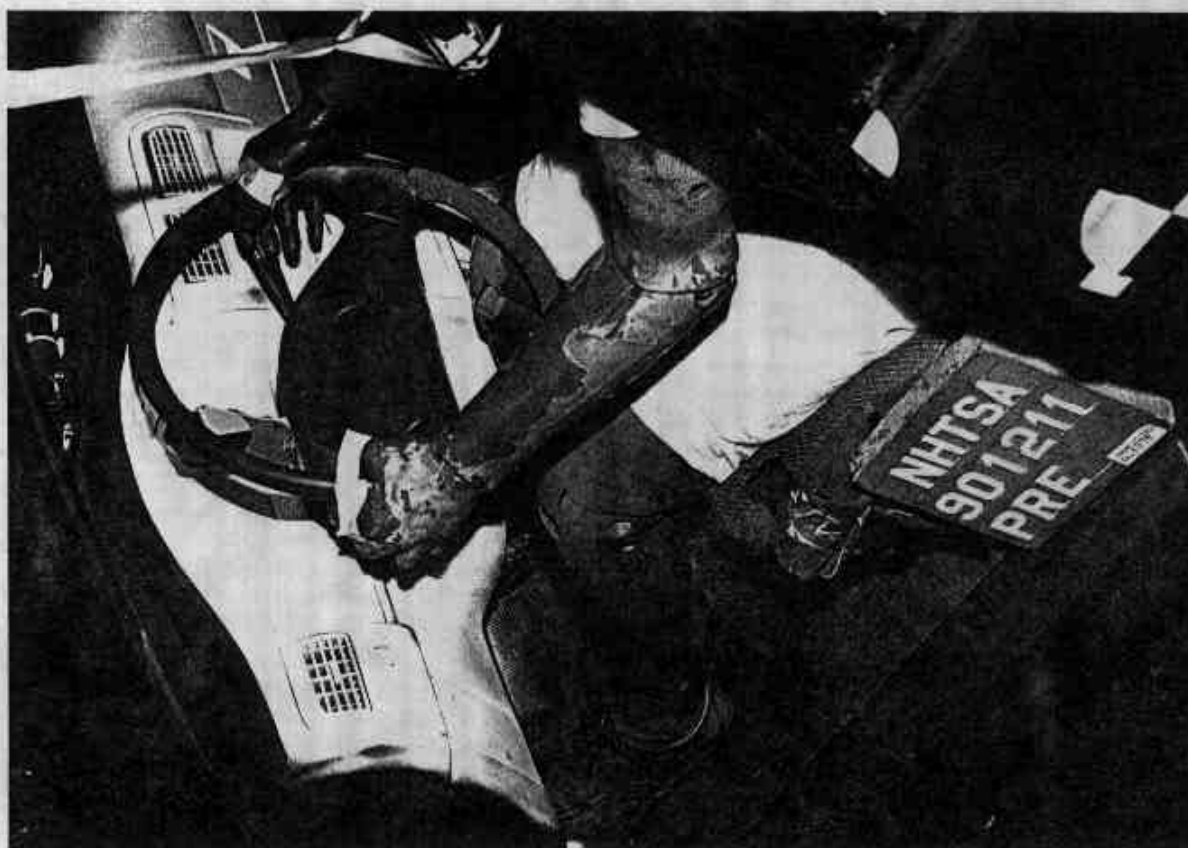


Figure A-32. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

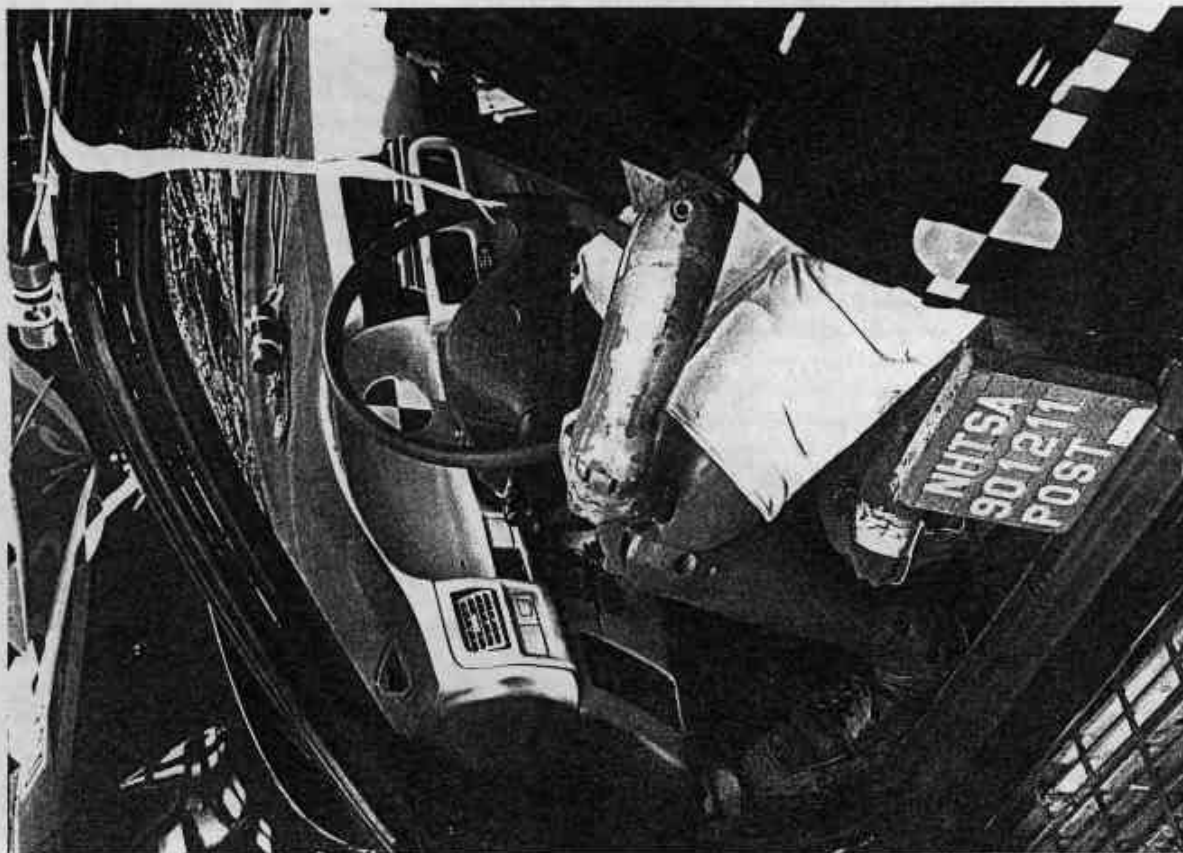


Figure A-33. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

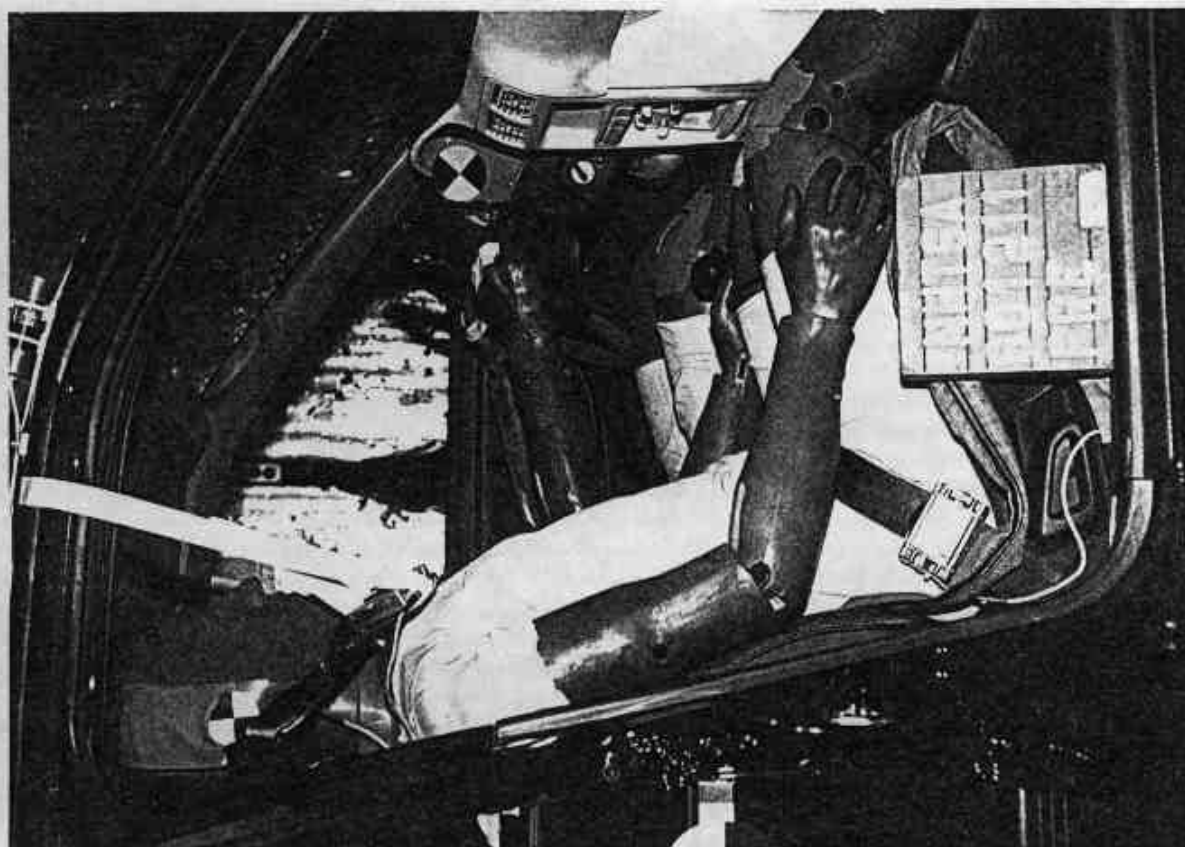


Figure A-34. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1

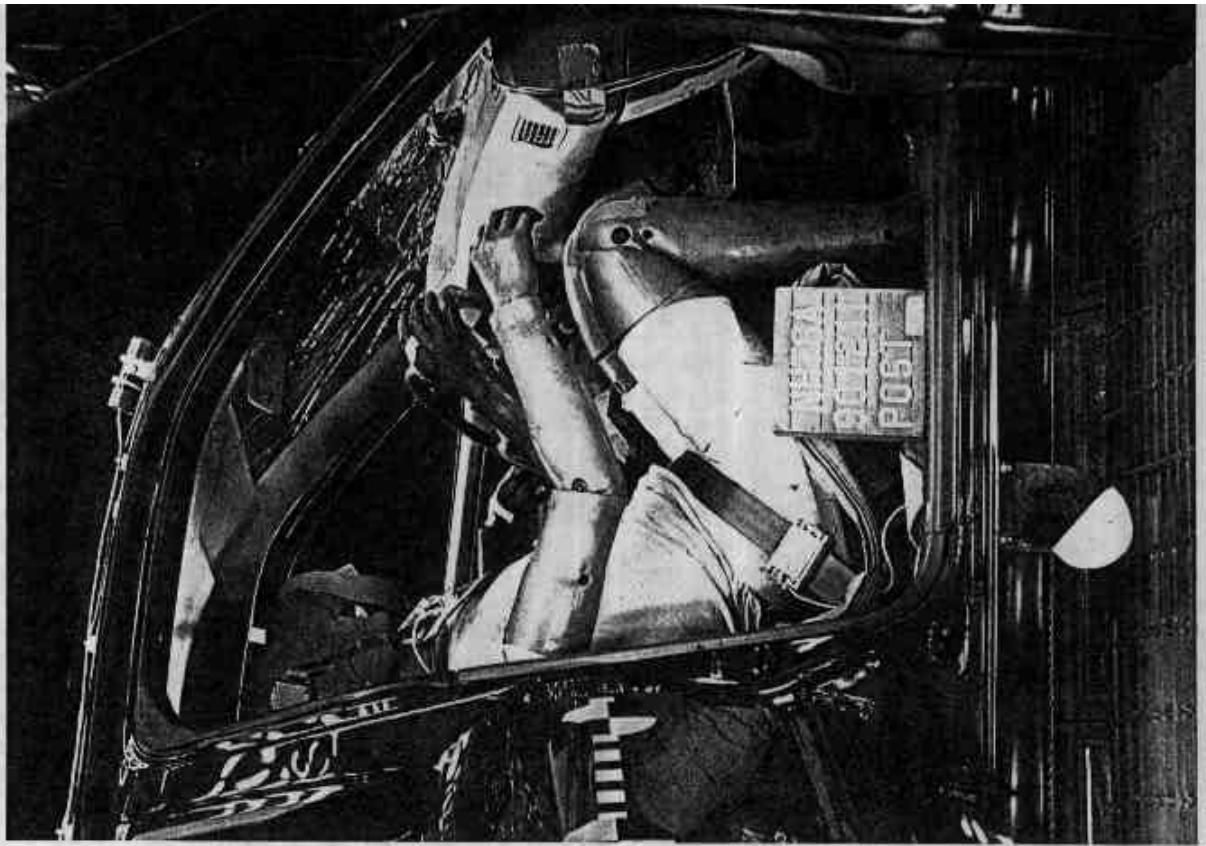


Figure A-35. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1



Figure A-36. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

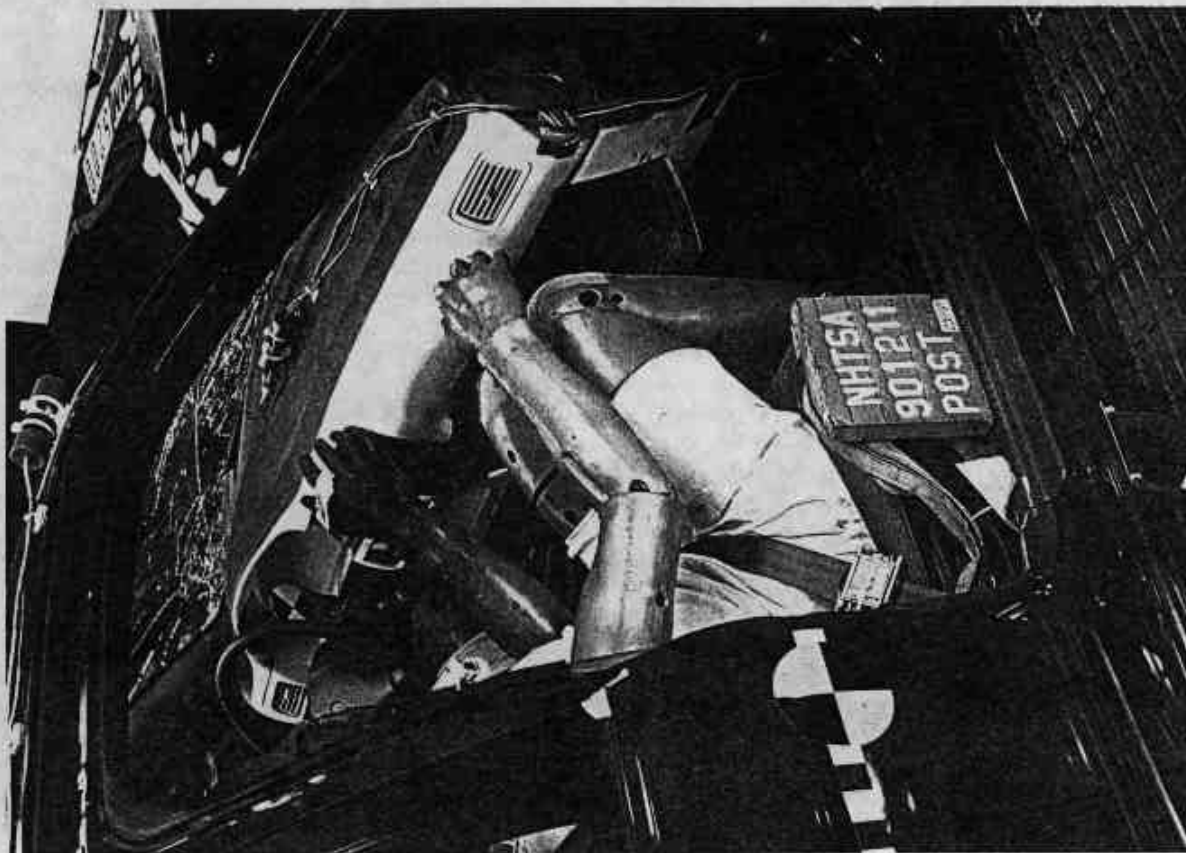


Figure A-37. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2



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



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



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



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



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



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

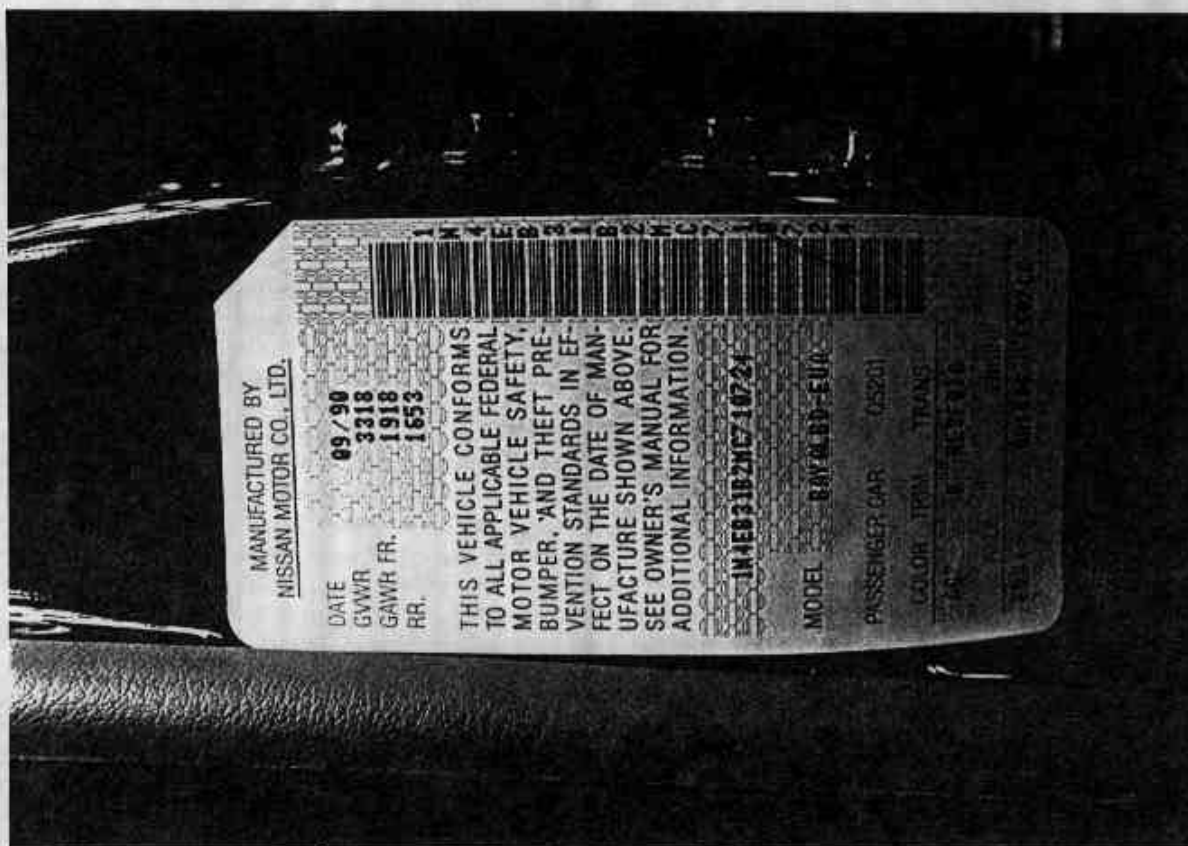


Figure A-44. PRE-TEST VEHICLE CERTIFICATION LABEL VIEW

VEHICLE CAPACITY WEIGHT	825 lbs	SEATING CAPACITY	FRONT AVANT 2	TOTAL TOTAL	SPARE TIRE ROUE DE SECOURS	psi (kPa)
POIDS UTILE DU VEHICULE	374 kg	NOMBRE DE PLACES	REAR ARRIERE 3	5	T115/70R14	60 (420)
RECOMMENDED COLD TIRE INFLATION PRESSURE. PRESSION DE GONFLAGE RECOMMANDEE DES PNEUS FROIDS.					DO NOT USE IN EXCESS OF 50 mph, 80 km/h. SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION. UTILISATION A UNE VITESSE MAX 50 mph, 80 km/h. POUR LES DETAILS SE REFERER AU MANUEL DU CONDUCTEUR.	
TIRE SIZE DIMENSIONS	FRONT AVANT	psi (kPa)	REAR ARRIERE	psi (kPa)		
P175/70R13 82S	32	(220)	29	(200)		

Q5600

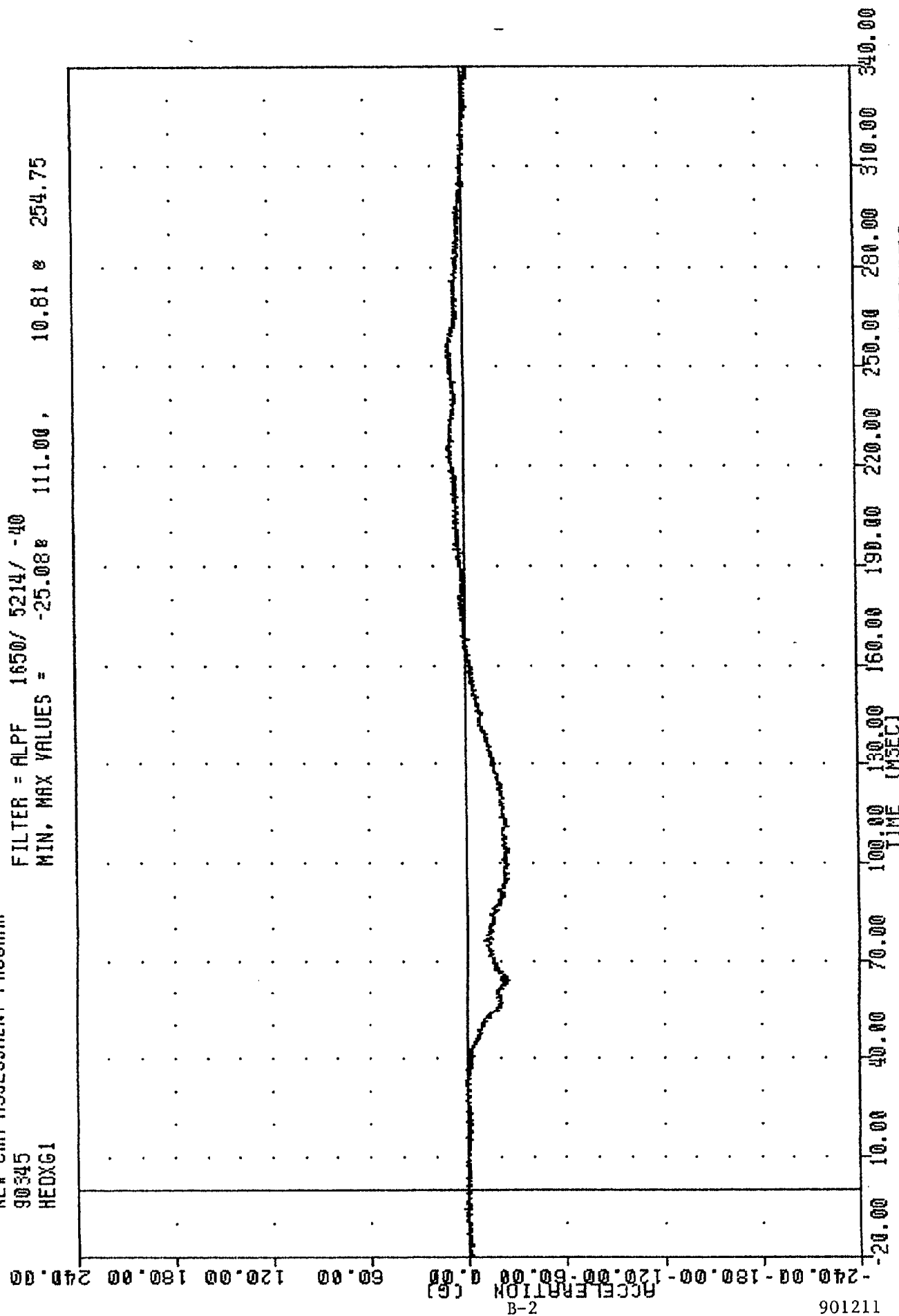
Figure A-45. PRE-TEST VEHICLE RECOMMENDED TIRE PRESSURE LABEL VIEW

APPENDIX B

DATA PLOTS

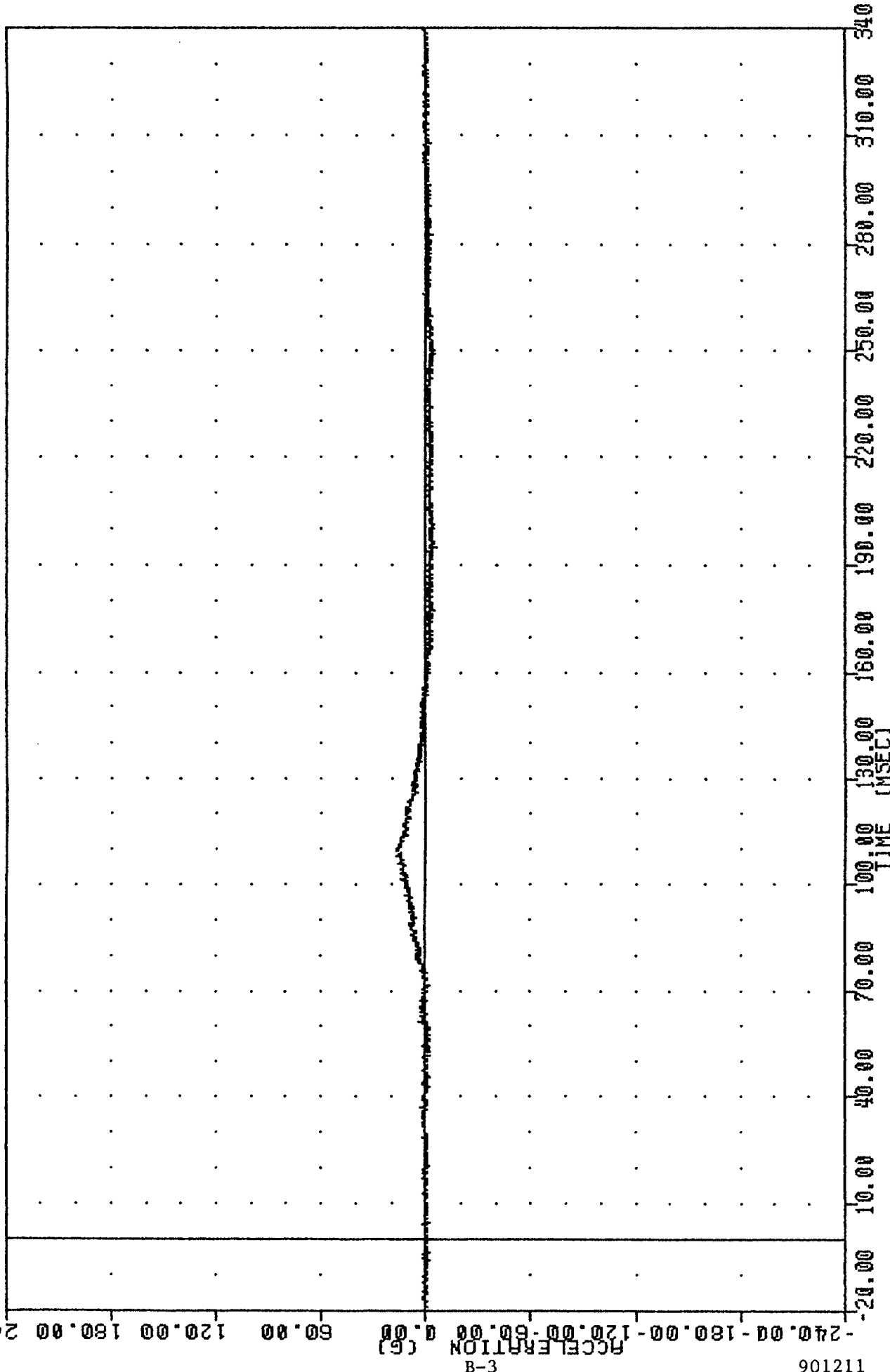
TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 HEDXG1

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -25.08 111.00 , 10.81 254.75



NEW CAR ASSESSMENT PROGRAM
 90345
 HEDYG1

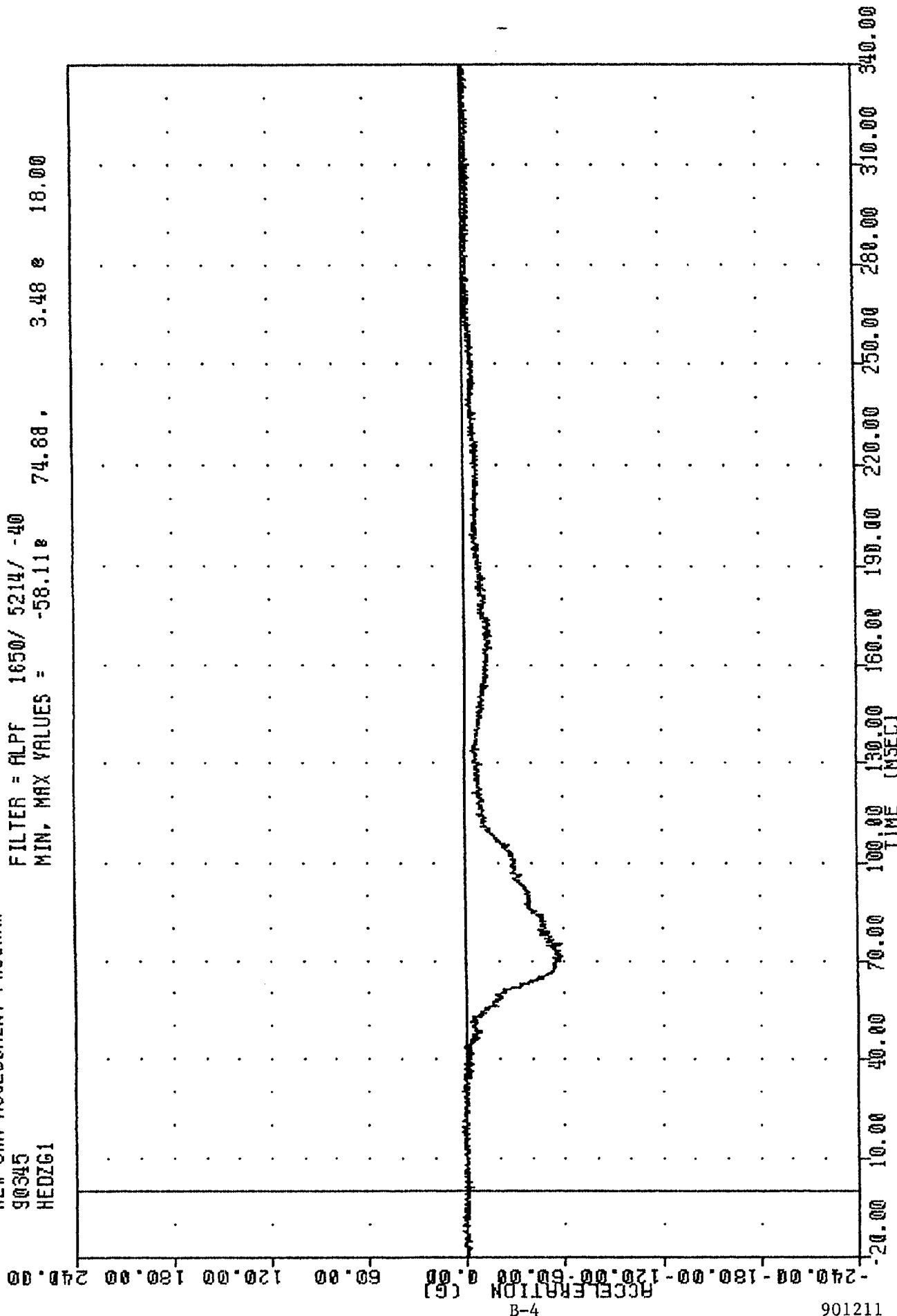
FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -5.50e 194.50, 16.97 e 110.13



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Y-AXIS ACCELERATION

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 HEDZG1

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -58.11e 74.88, 3.48 e 18.00



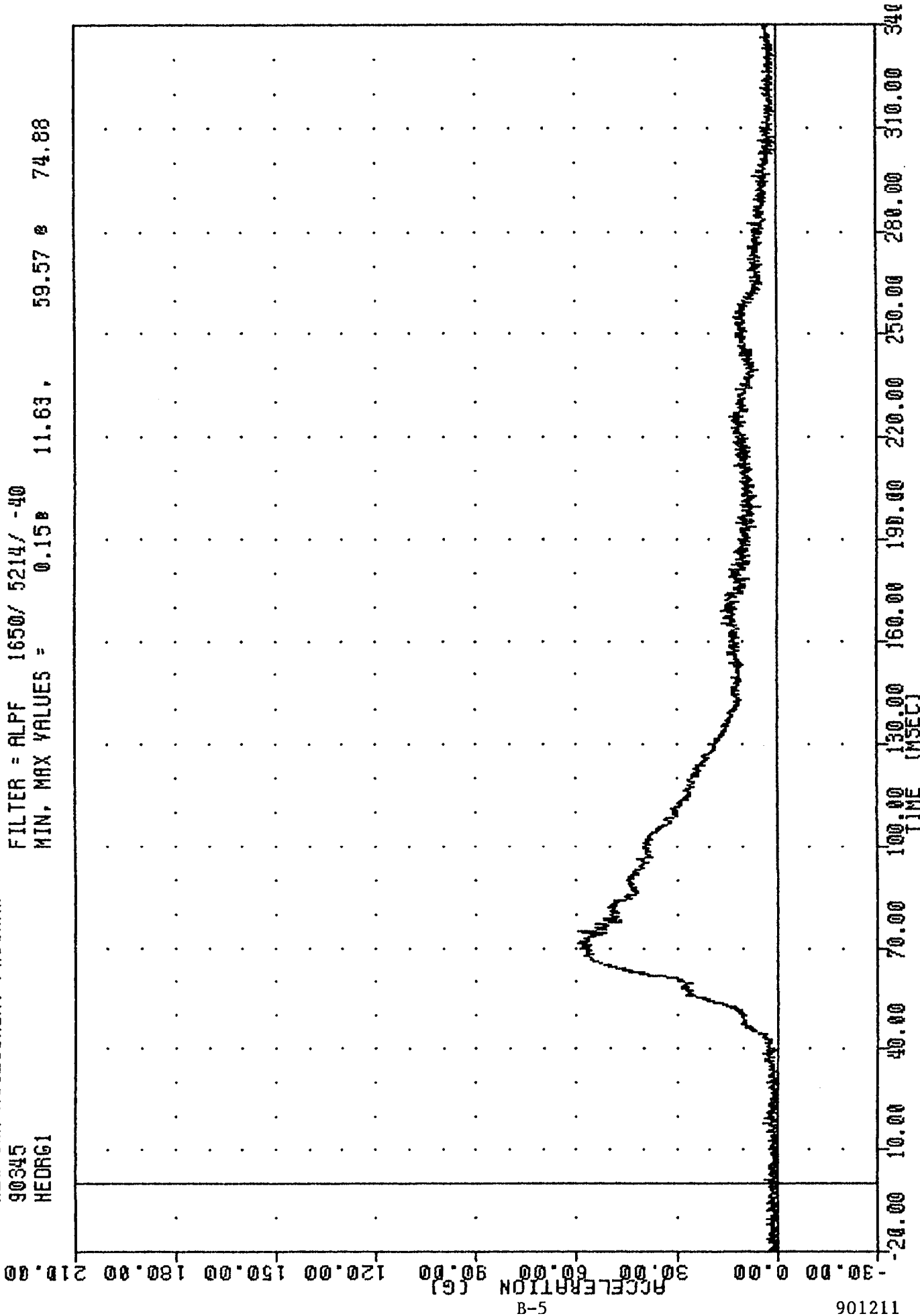
901211

B-4

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Z-AXIS ACCELERATION

NEW CAR ASSESSMENT PROGRAM
 90345
 HEDRG1

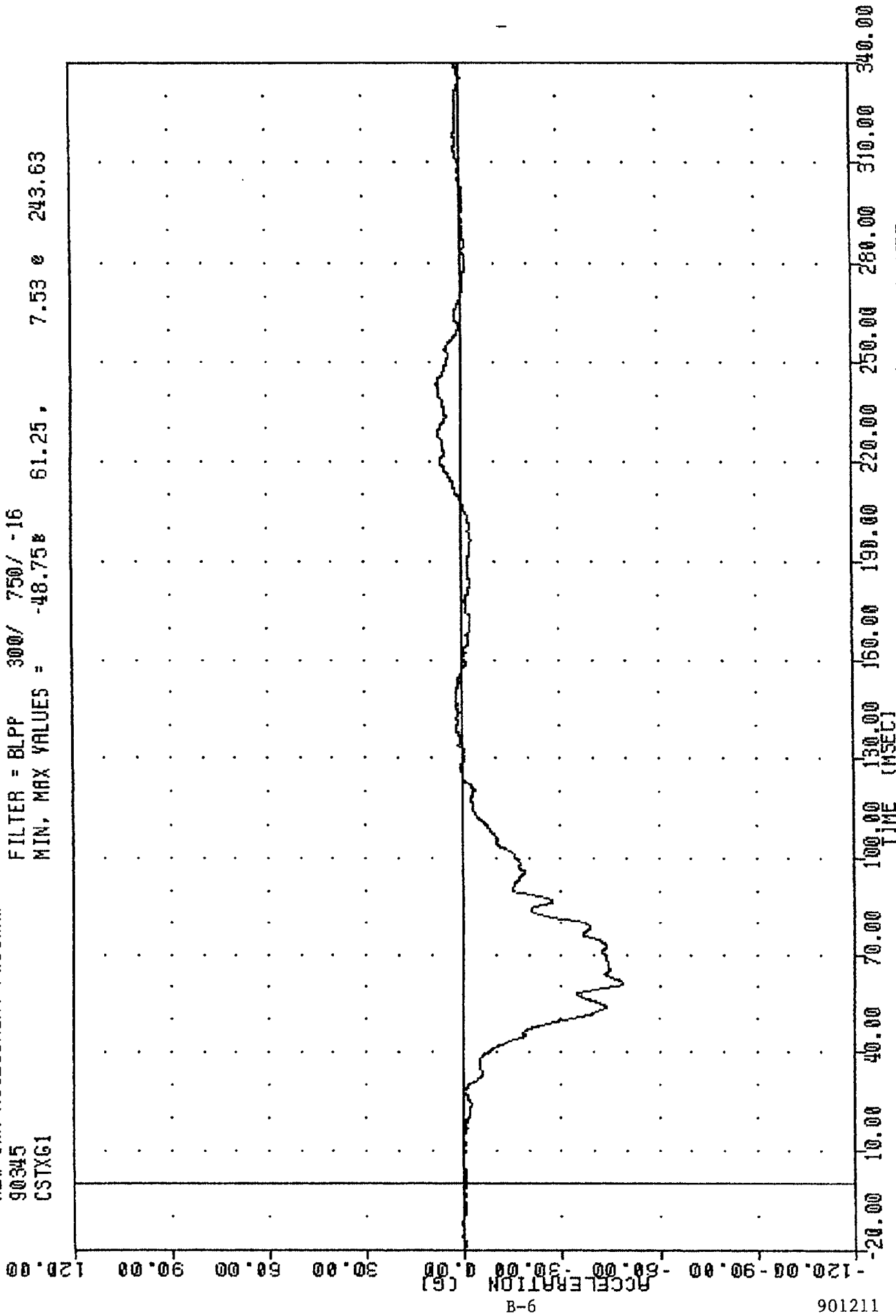
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = 0.15 11.63 59.57 74.88



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD RESULTANT ACCELERATION

TRC , 901211
NEW CAR ASSESSMENT PROGRAM
90345
CSTXG1

FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -48.75% 61.25, 7.53 @ 243.63



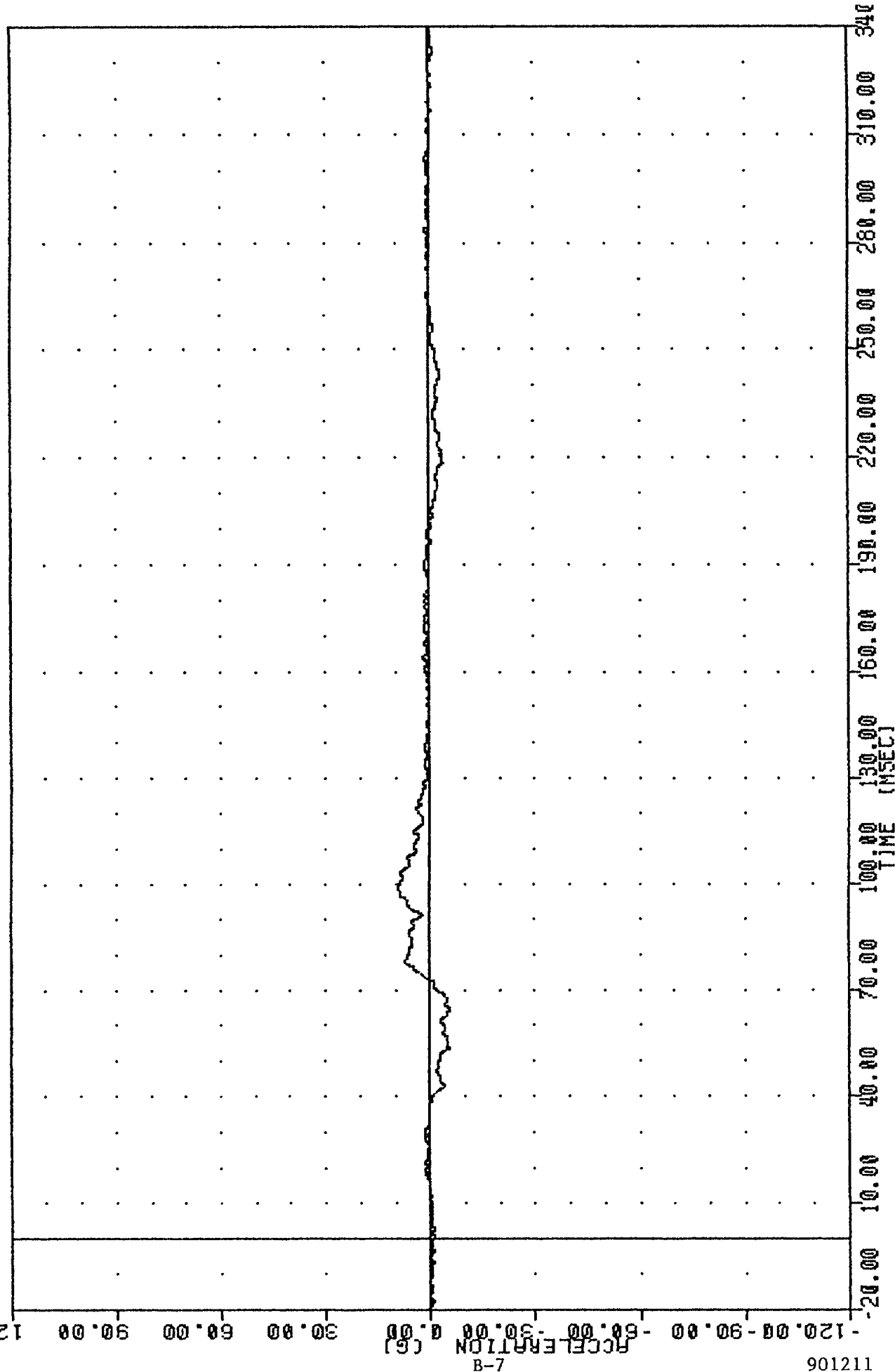
B-6

901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST X-AXIS ACCELERATION

NEW CAR ASSESSMENT PROGRAM
 90345
 CSTYG1

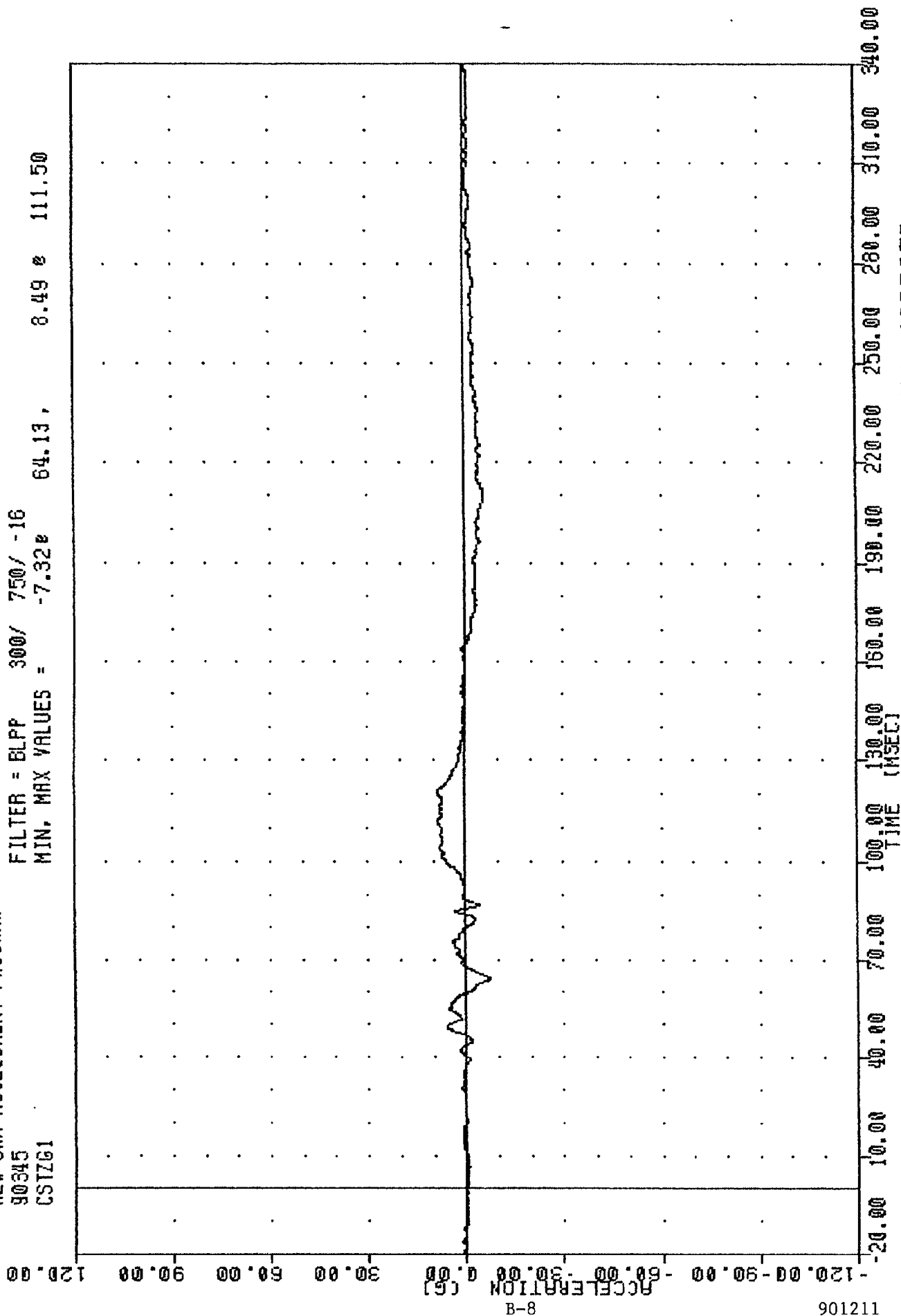
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -5.64 64.50 8.99 99.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Y-AXIS ACCELERATION

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 CSTZG1

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -7.32e 64.13, 8.49 e 111.50



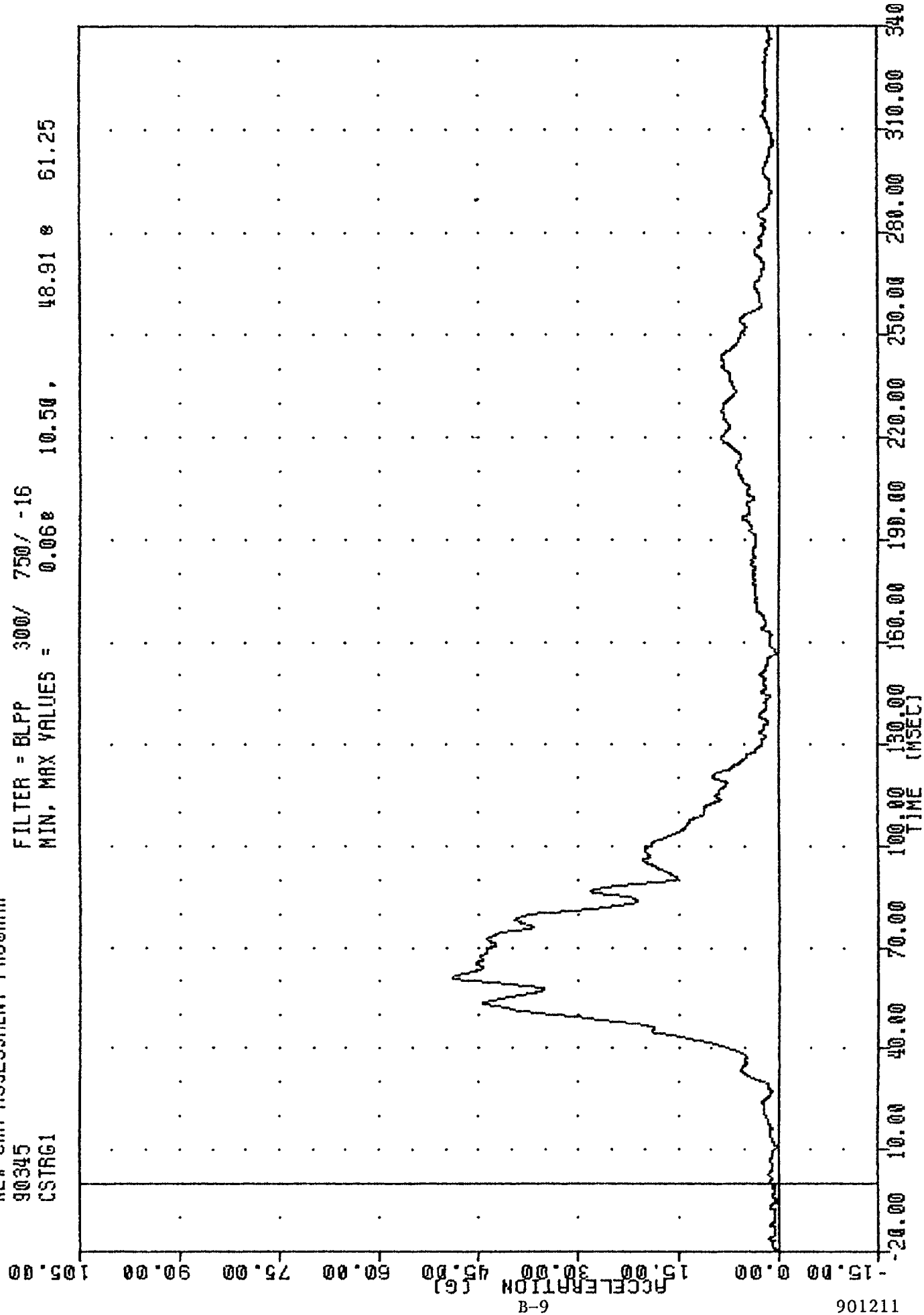
B-8

901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST 7-AXIS ACCELERATION

NEW CAR ASSESSMENT PROGRAM
 90345
 CSTRG1

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = 0.068 10.50 , 48.91 & 61.25

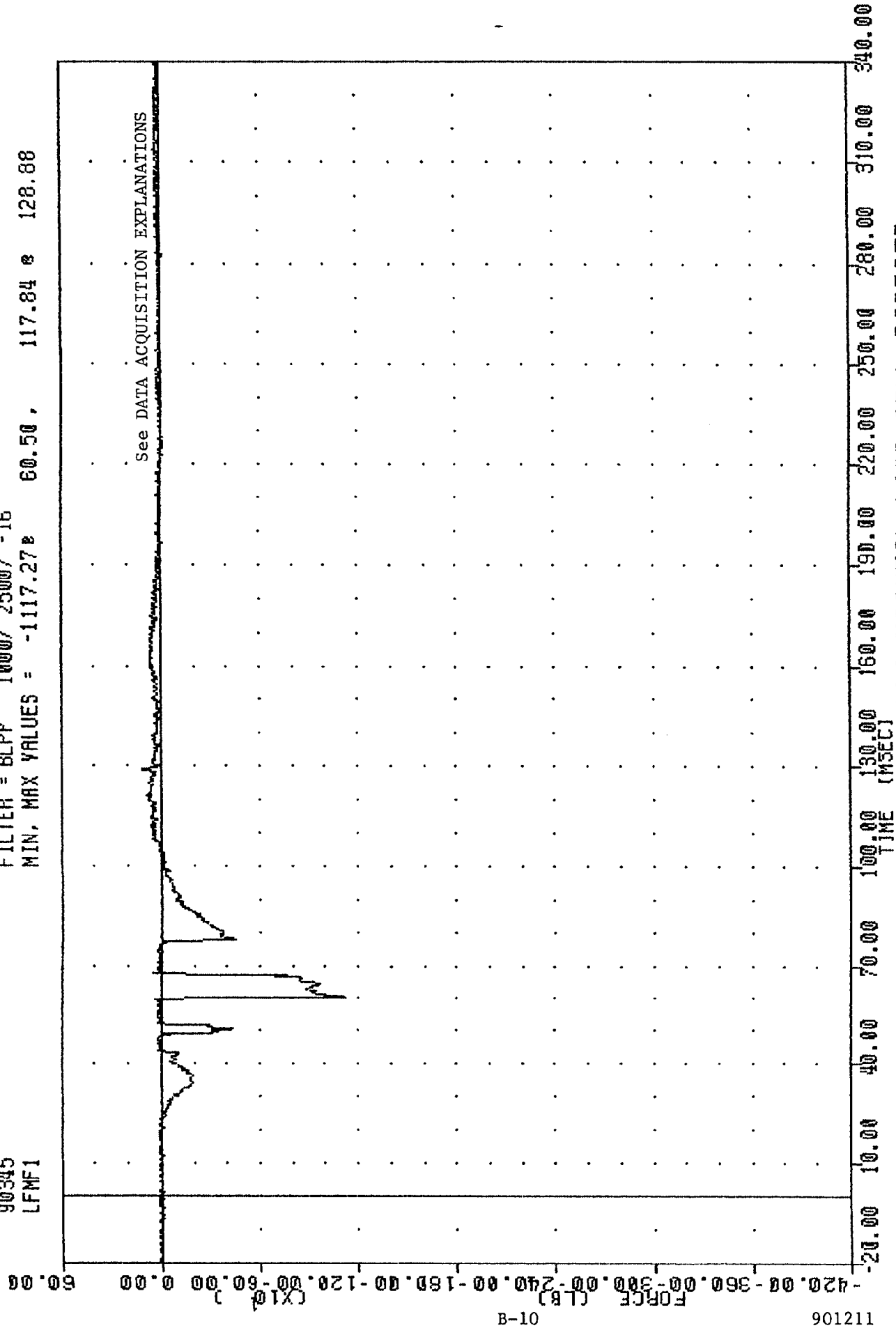


901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST RESULTANT ACCELERATION

TRC .901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 LFMF1

FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -1117.27 60.50, 117.84 128.88



B-10

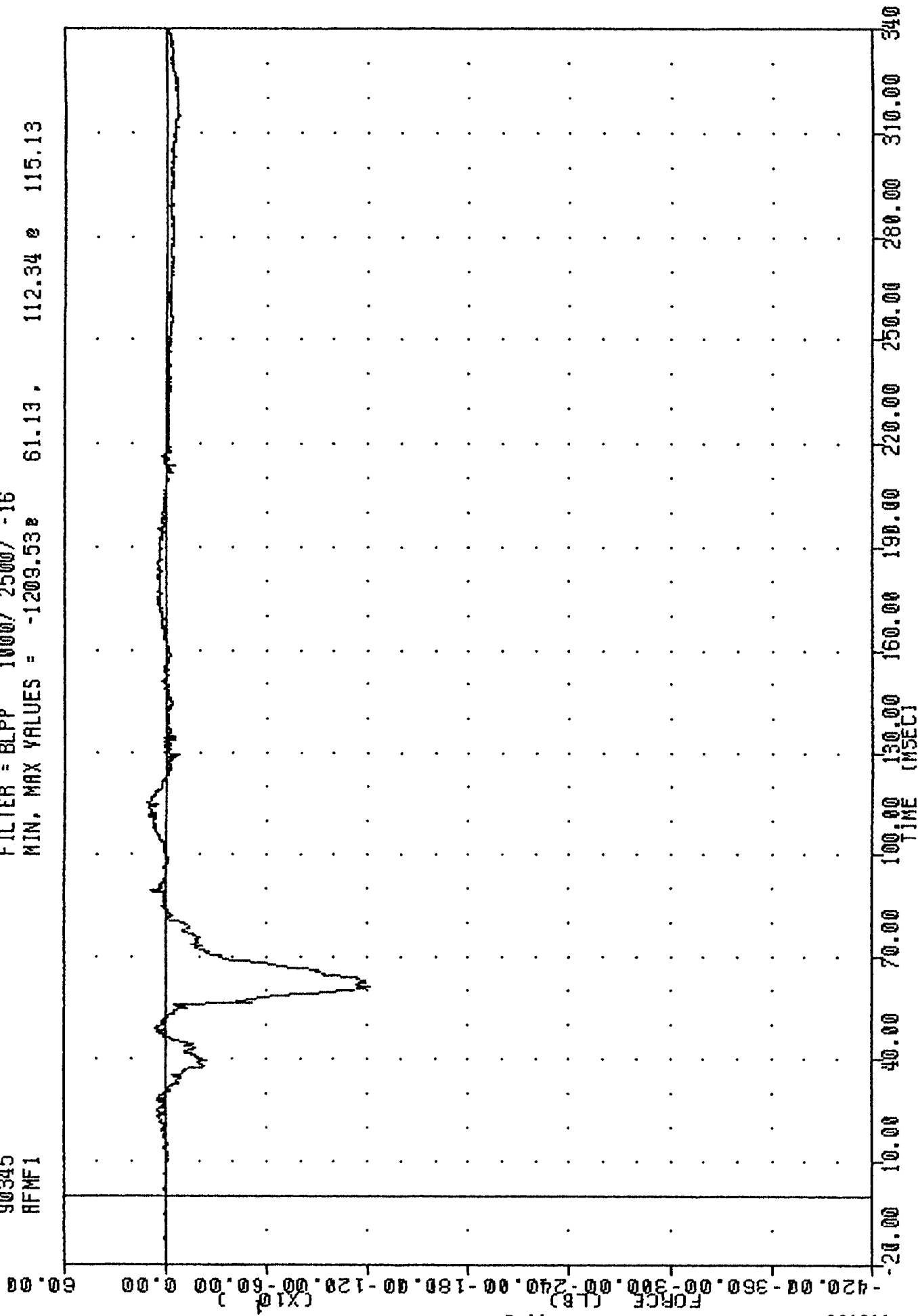
901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 DRIVER LEFT FEMUR FORCE

NEW CAR ASSESSMENT PROGRAM

90345
RFMF1

FILTER = BLPP 1000/ 2500/ -16
MIN. MAX VALUES = -1209.53e 61.13 , 112.34 e 115.13

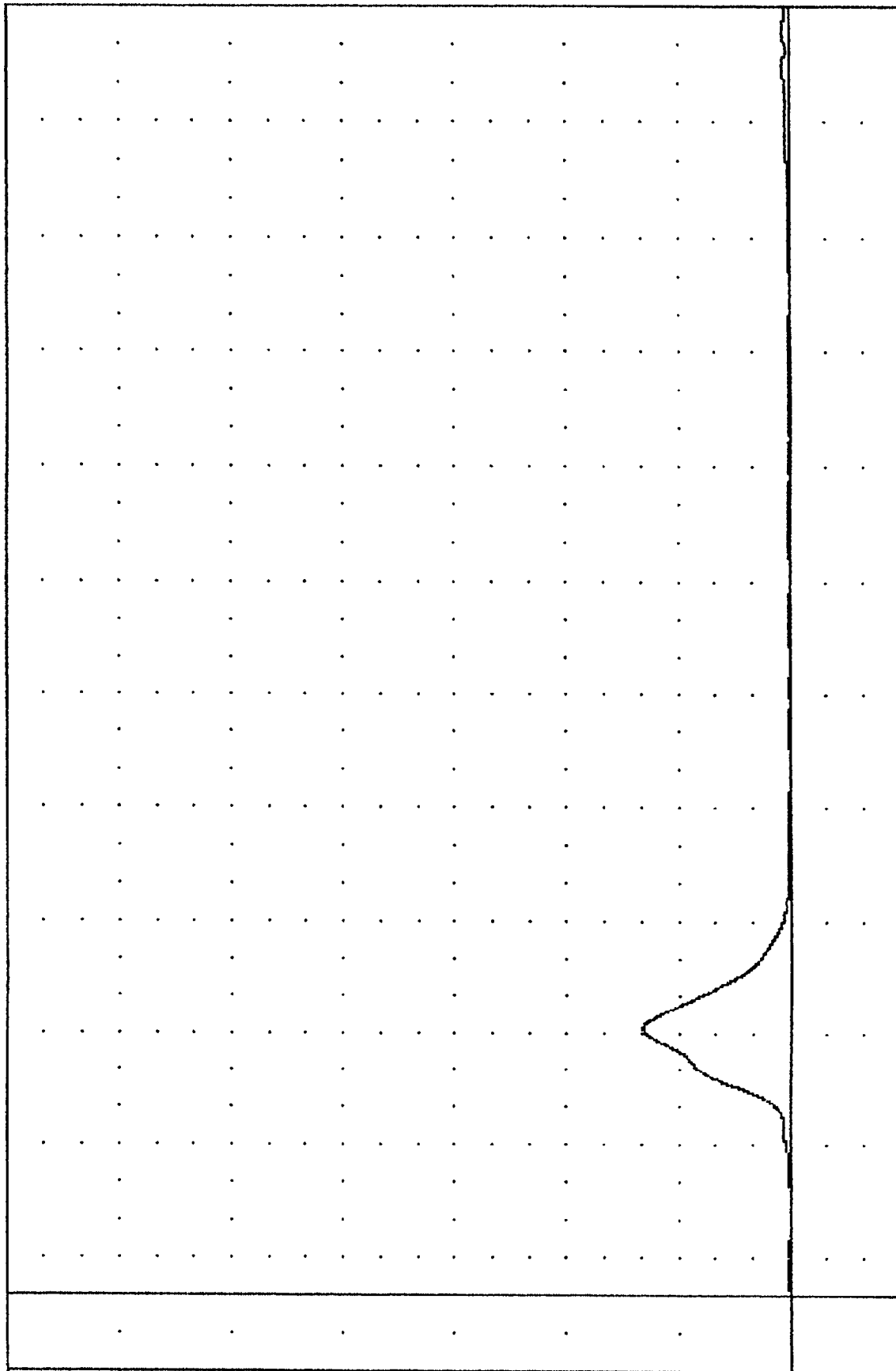


1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
DRIVER RIGHT FEMUR FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 LBQF1

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -2.09e -3.38, 792.07 e 71.13

FORCE (LB)
 (x10⁴)



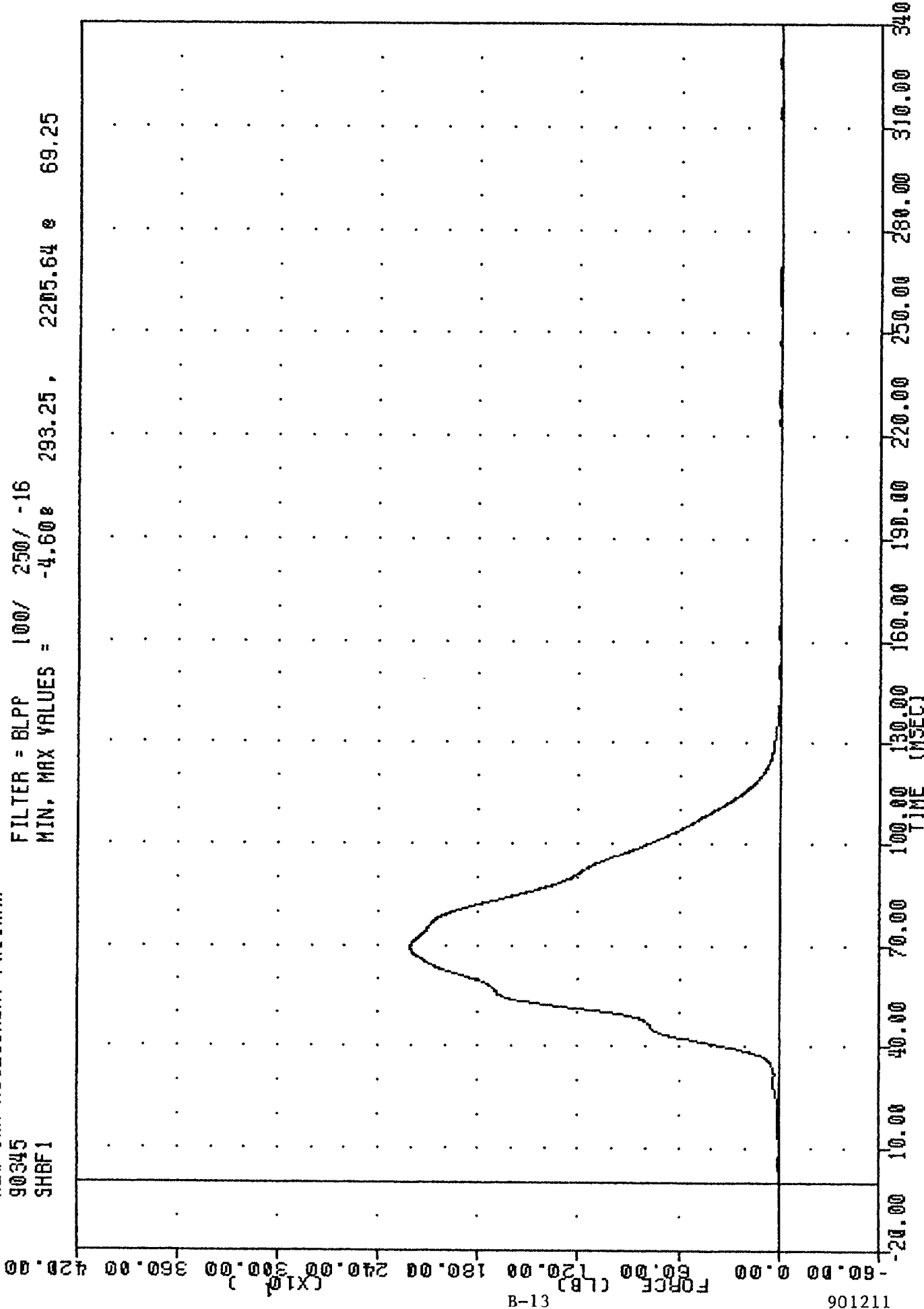
901211

B-12

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 DRIVER LAP BELT OUTBOARD FORCE

NEW CAR ASSESSMENT PROGRAM
 90345
 SHBF1

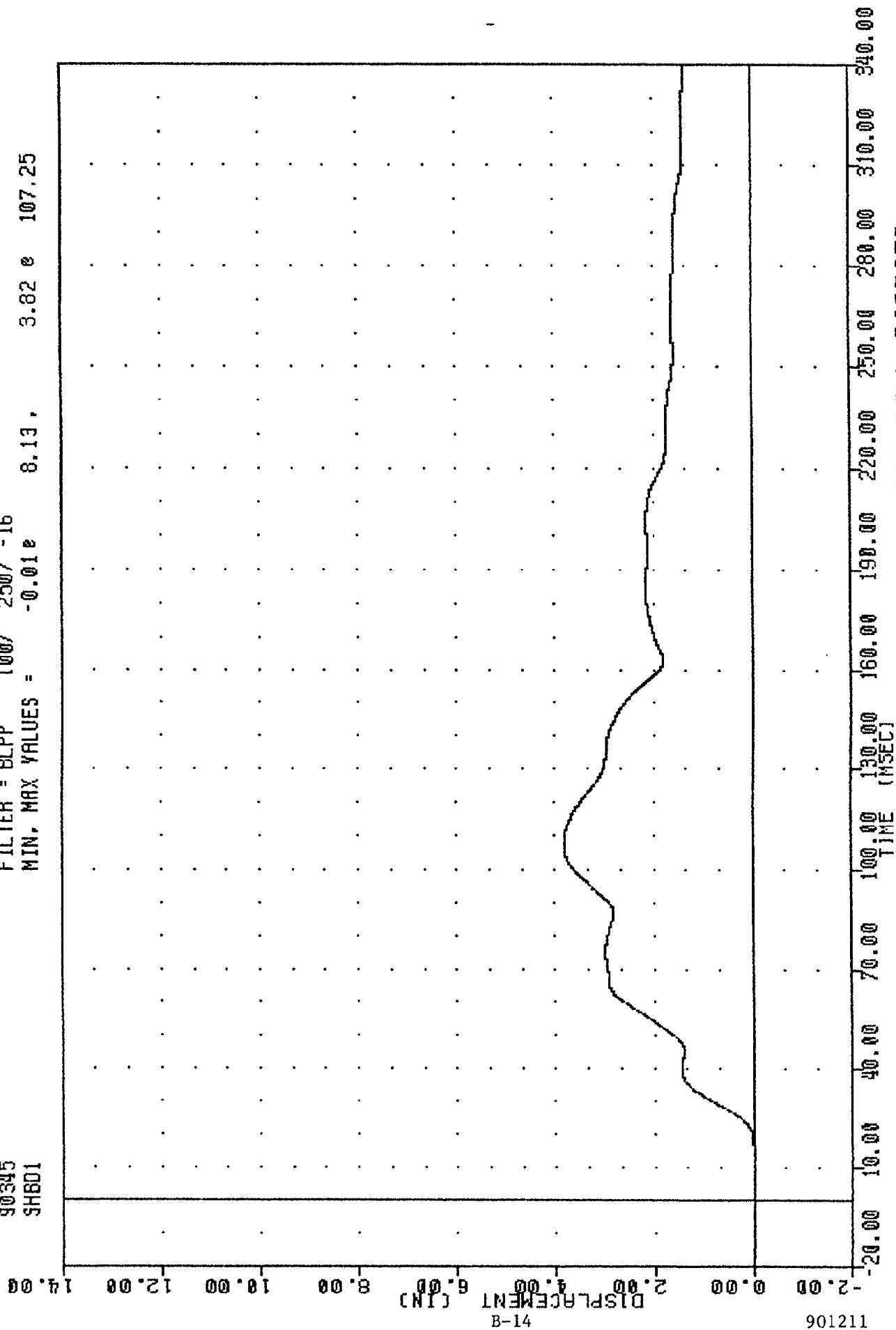
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -4.60e 293.25, 2205.64 e 69.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 SHB01

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -0.01e 8.13, 3.82 e 107.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHAW DEP. BELT DISPLACEMENT

NEW CAR ASSESSMENT PROGRAM

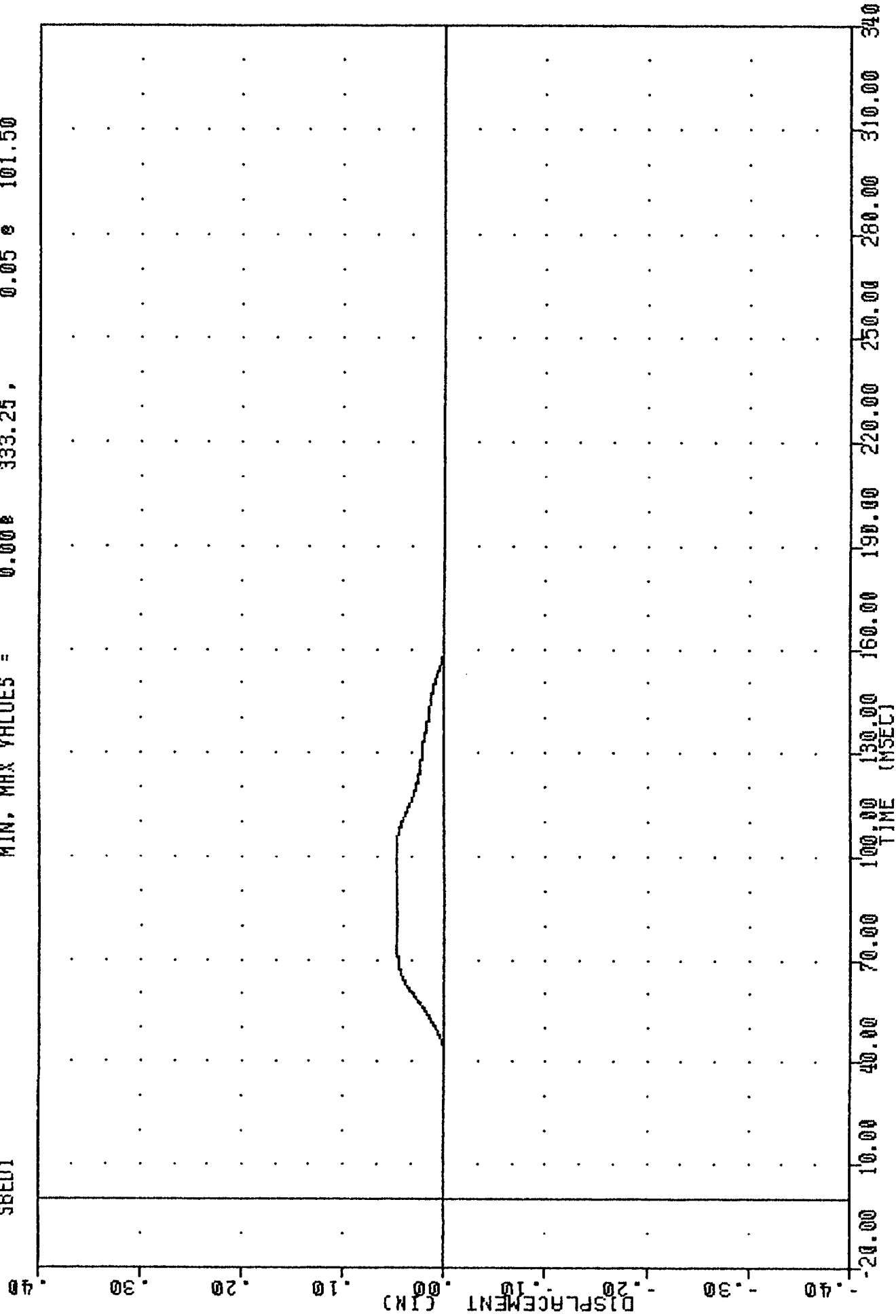
90345

SBED1

FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = 0.000 333.25, 0.05 101.50

901211

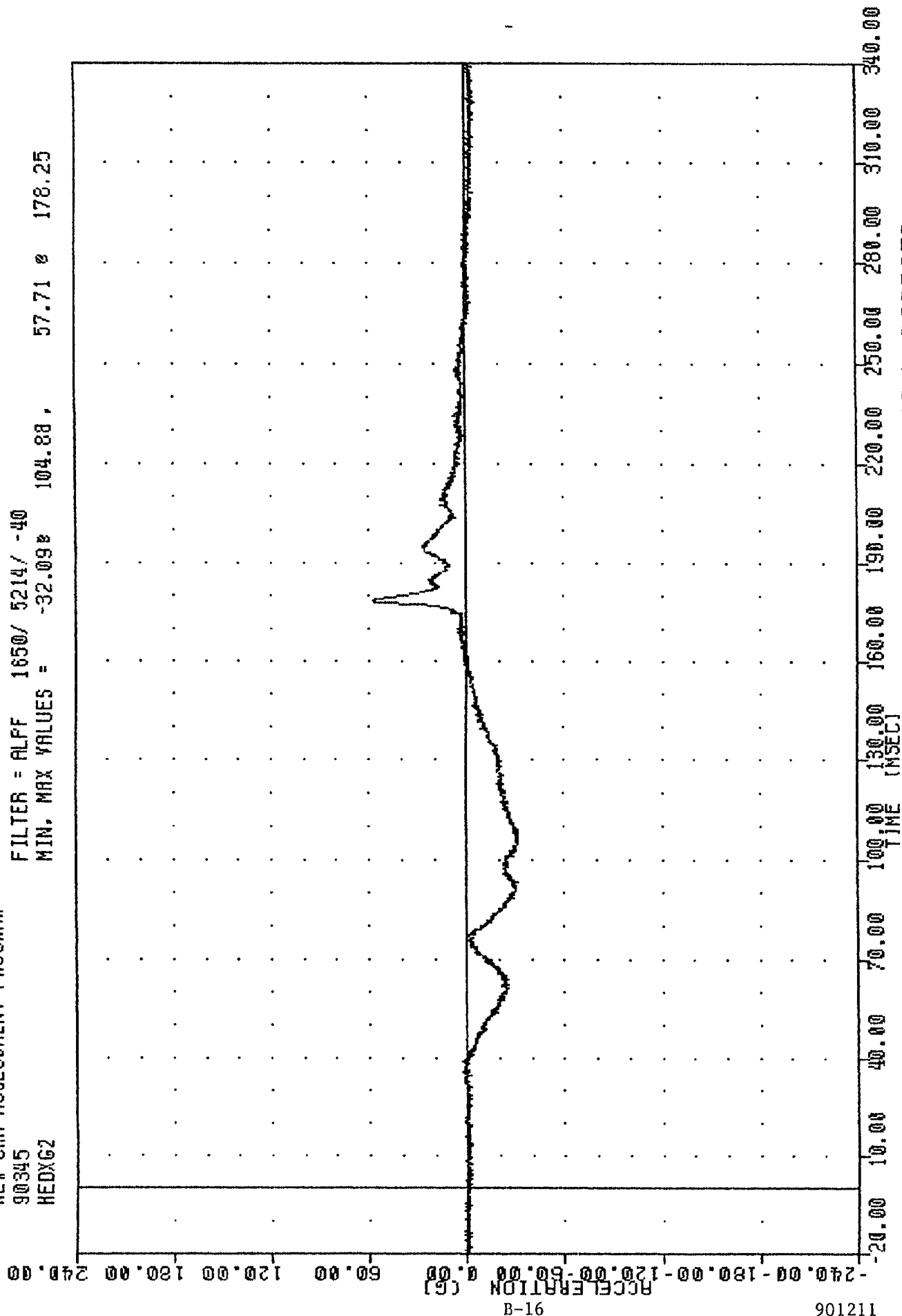


1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
DRIVER SEAT BELT EXTENSION

B-15

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 HEDXG2

FILTER = ALFF 1650/ 5214/ -40
 MIN. MAX VALUES = -32.098 104.88 , 57.71 @ 178.25



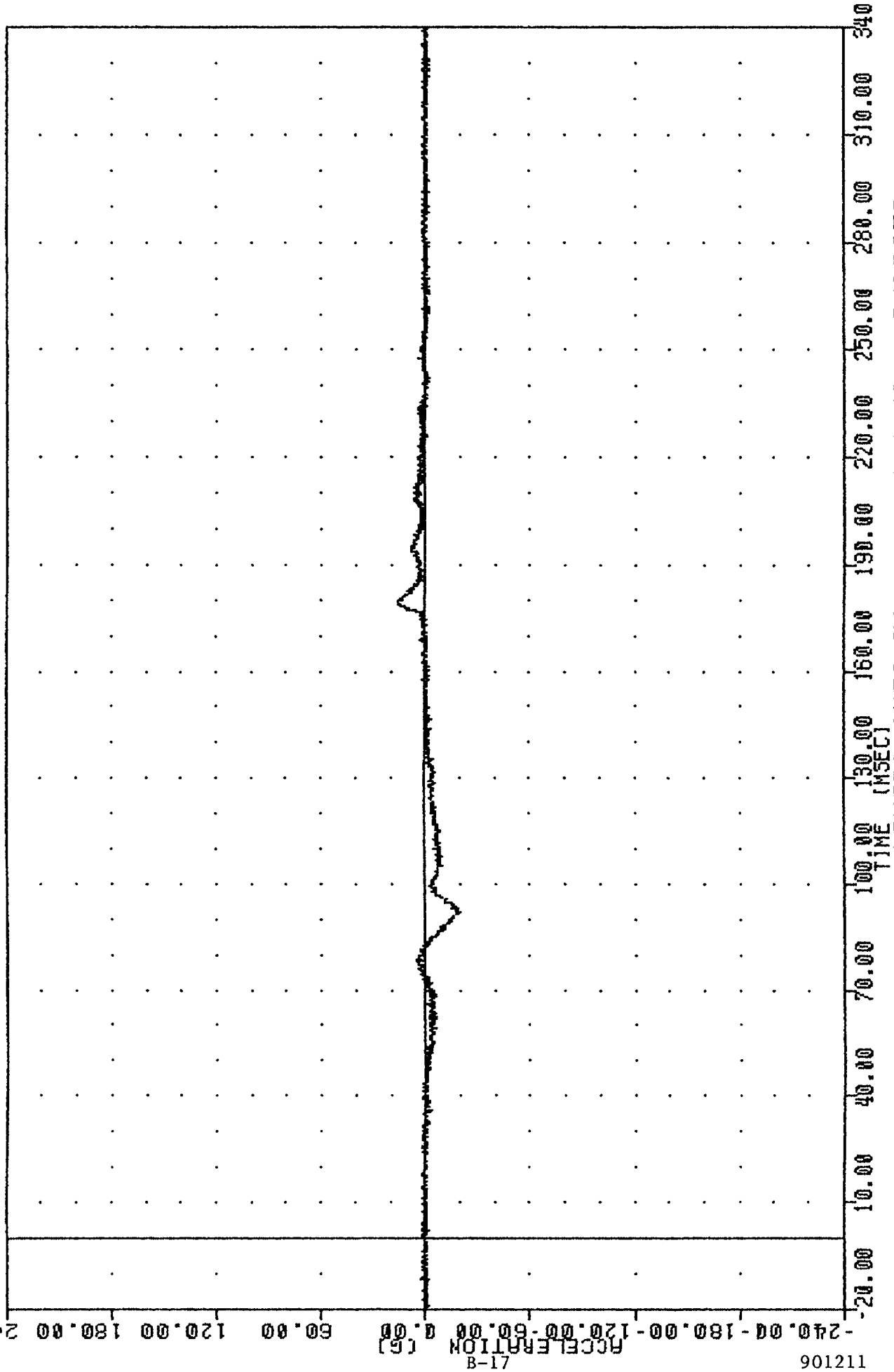
NEW CAR ASSESSMENT PROGRAM

90345

HEDYG2

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = -19.49e 92.13, 15.92 e 179.63

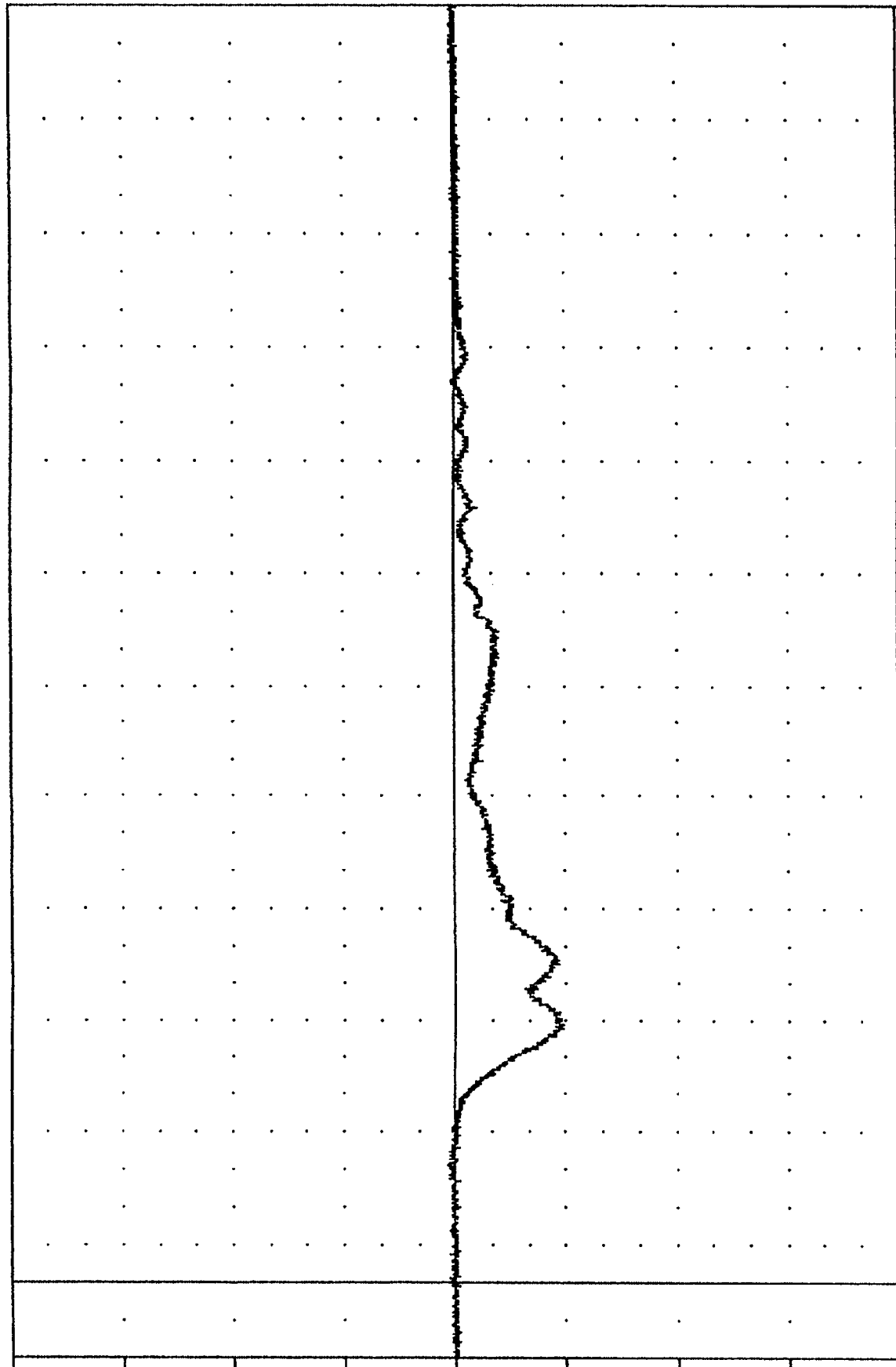


TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 HEDZG2

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -58.790 68.50 .

3.87 e 31.13

ACCELERATION (G)
 240.00
 180.00
 120.00
 60.00
 0.00
 -60.00
 -120.00
 -180.00
 -240.00



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

901211

B-18

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 PASSENGER HEAD Z-AXIS ACCELERATION

NEW CAR ASSESSMENT PROGRAM

90345

HEDRG2

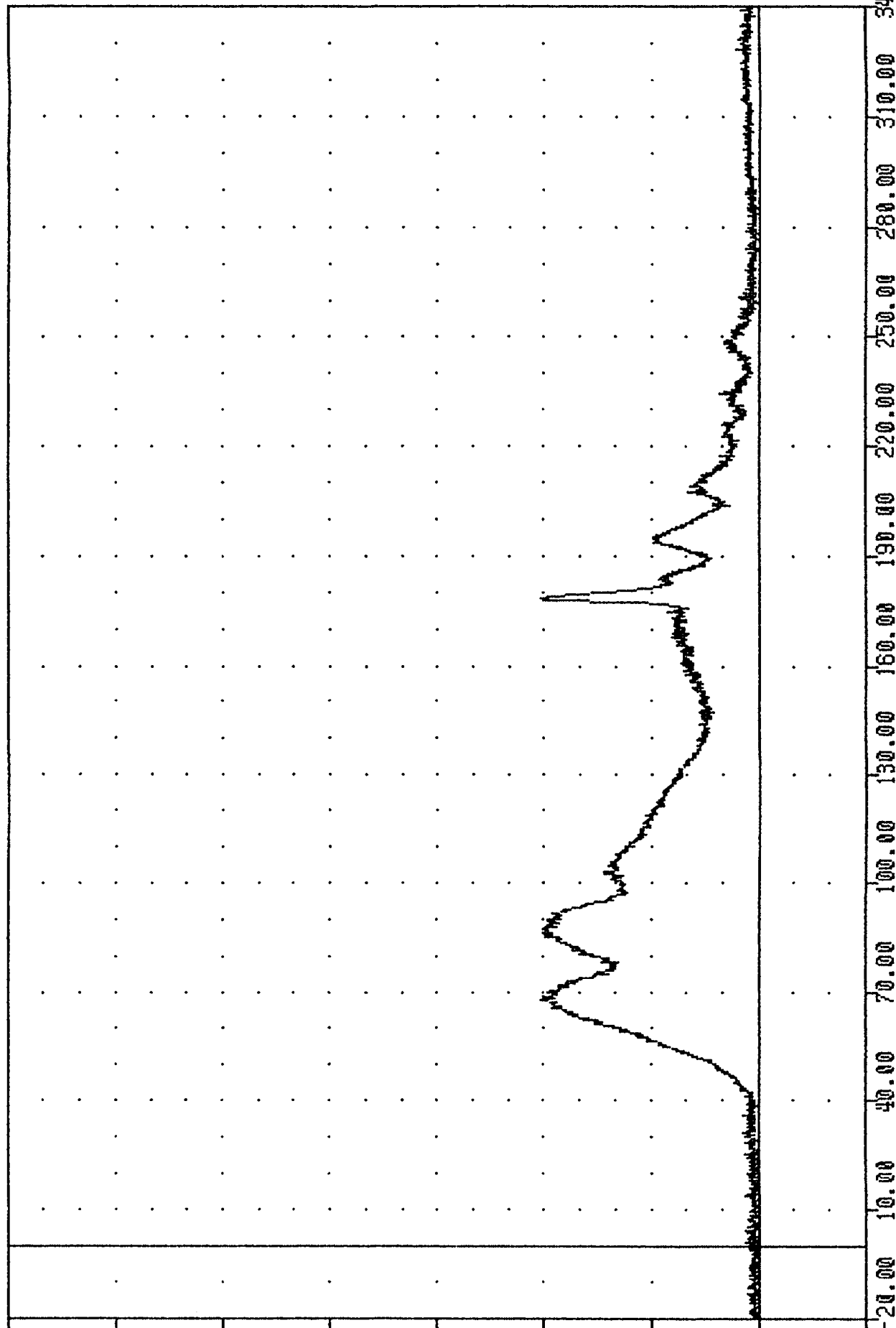
FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = 0.038 -1.88, 61.01 @ 67.75

ACCELERATION (G)

B-19

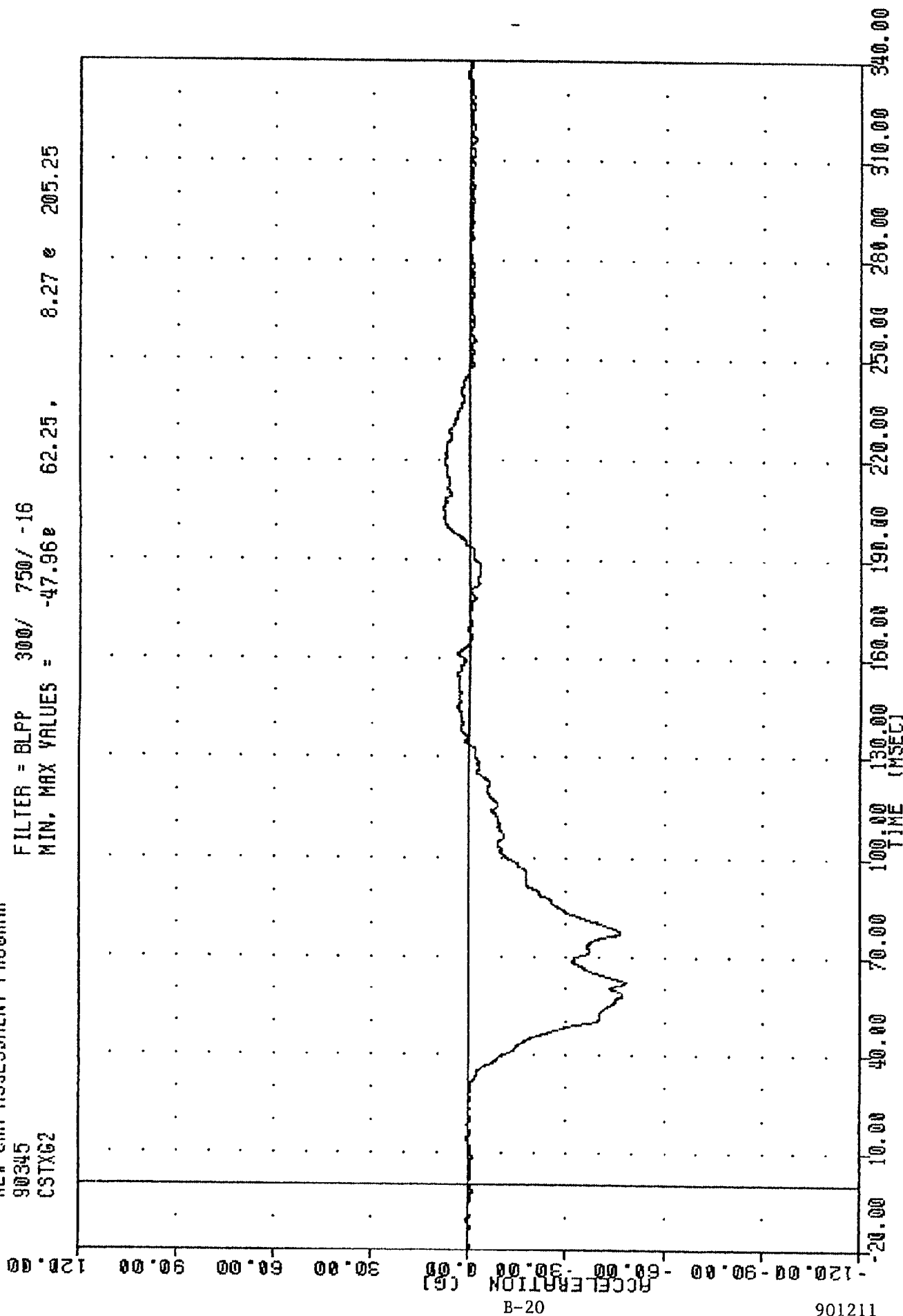
901211



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD RESULTANT ACCELERATION

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 CSTXG2

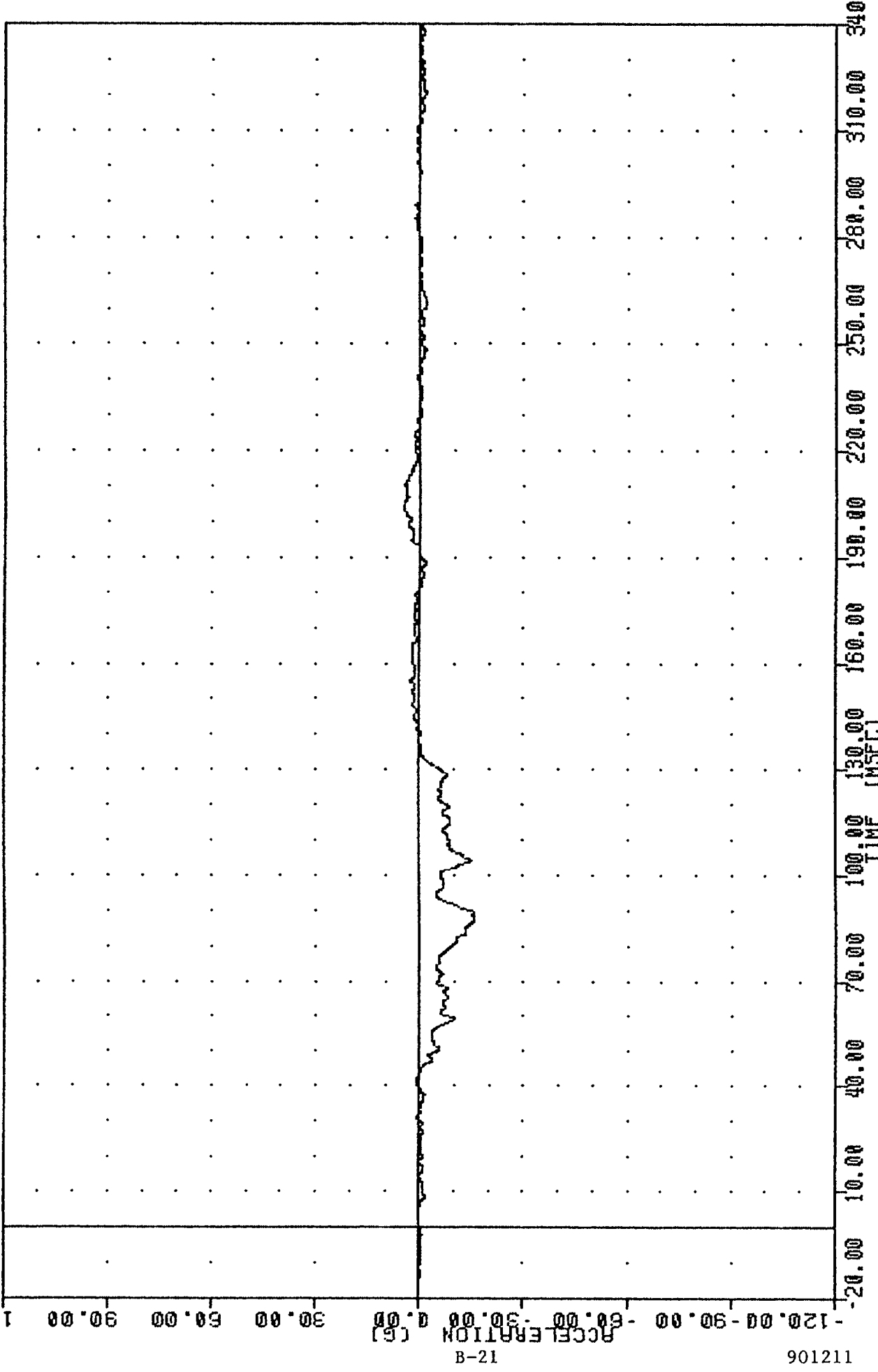
FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -47.96e 62.25, 8.27 e 205.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST Y-AXIS ACCELERATION

NEW CAR ASSESSMENT PROGRAM
 90345
 CSTYG2

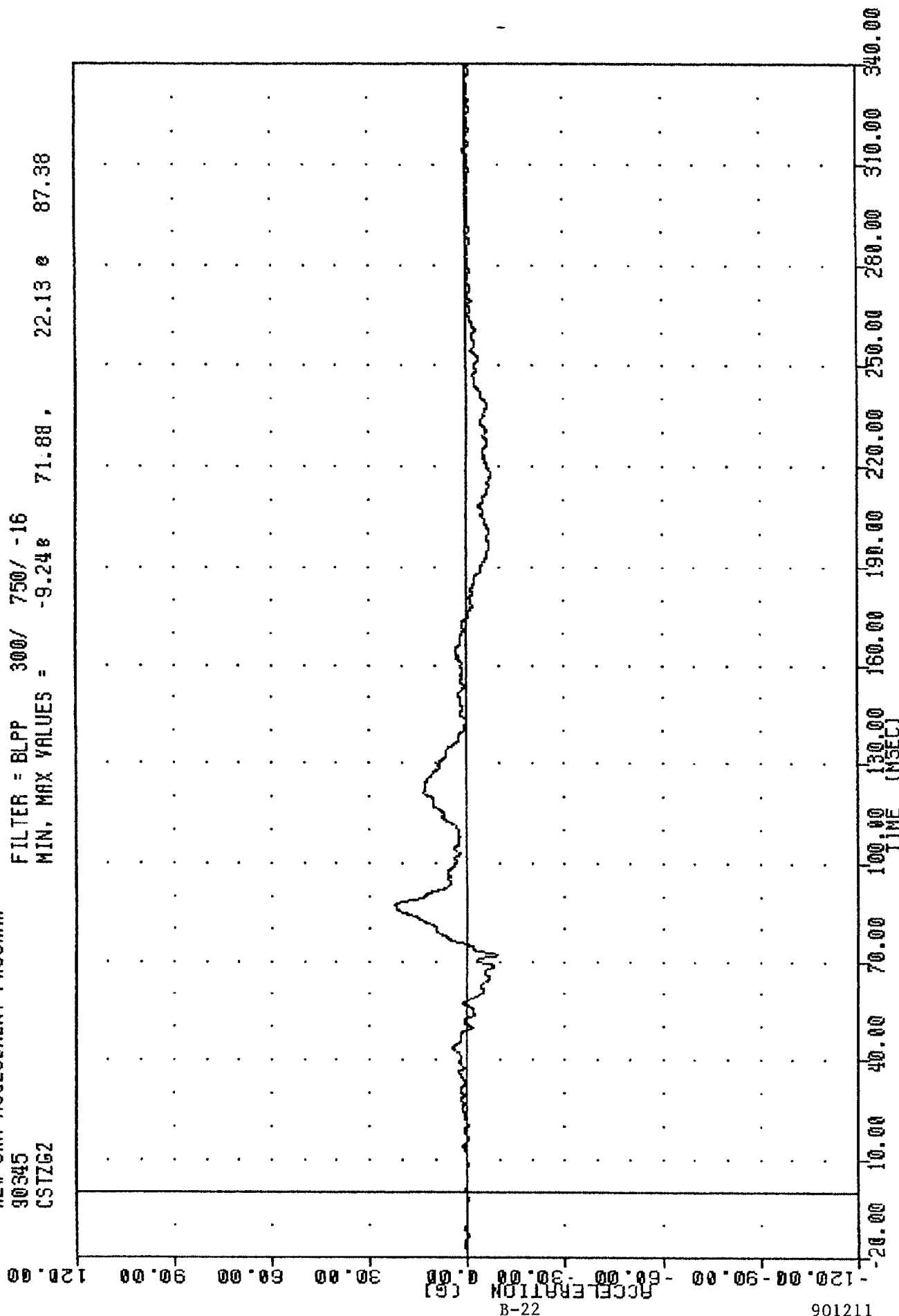
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -15.96e 89.38 4.86 e 205.00



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST Y-AXIS ACCELERATION

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 CSTZG2

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -9.24e 71.88, 22.13 e 87.38



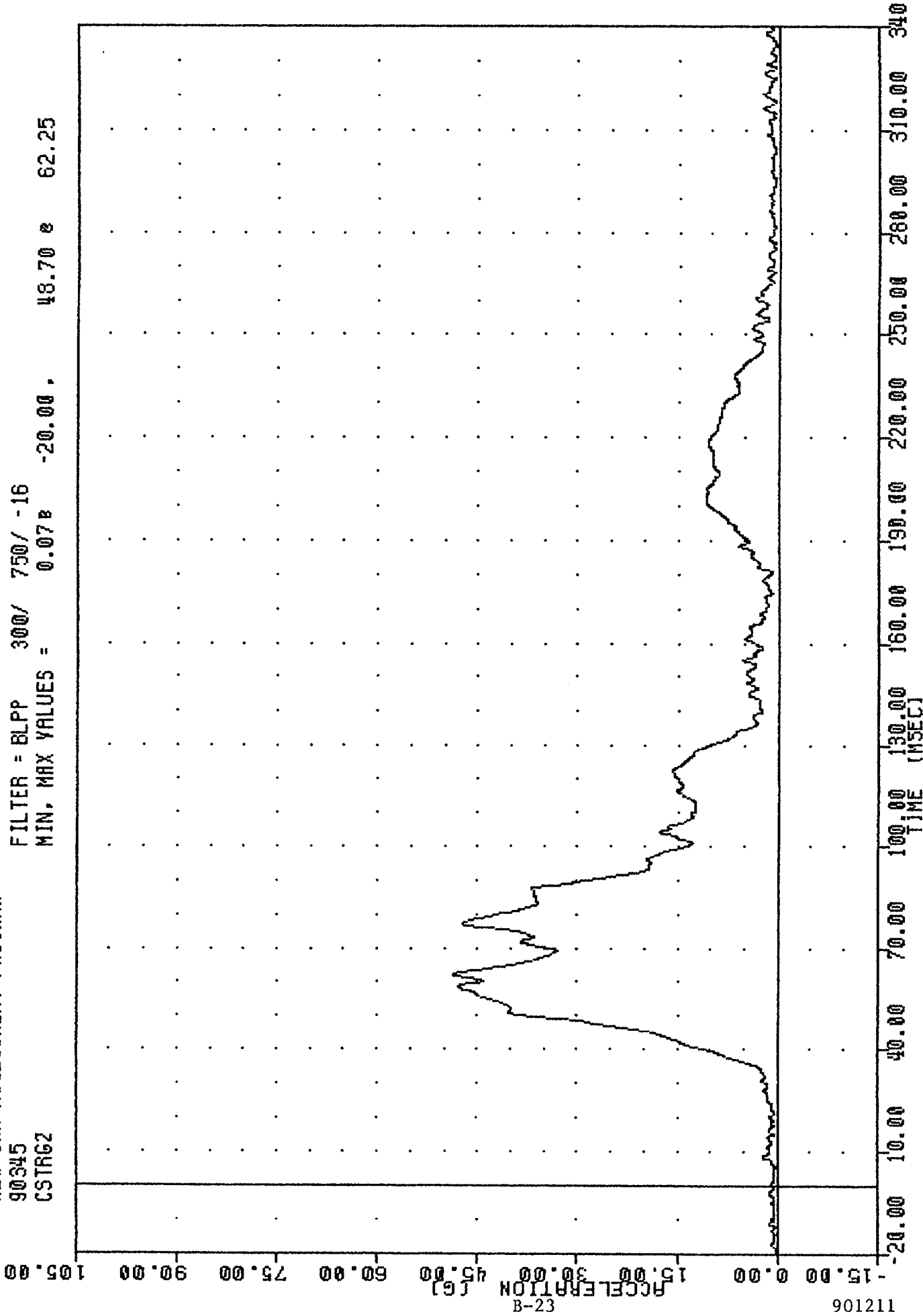
B-22

901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST 3-AXIS ACCELERATION

NEW CAR ASSESSMENT PROGRAM
 90345
 CSTRG2

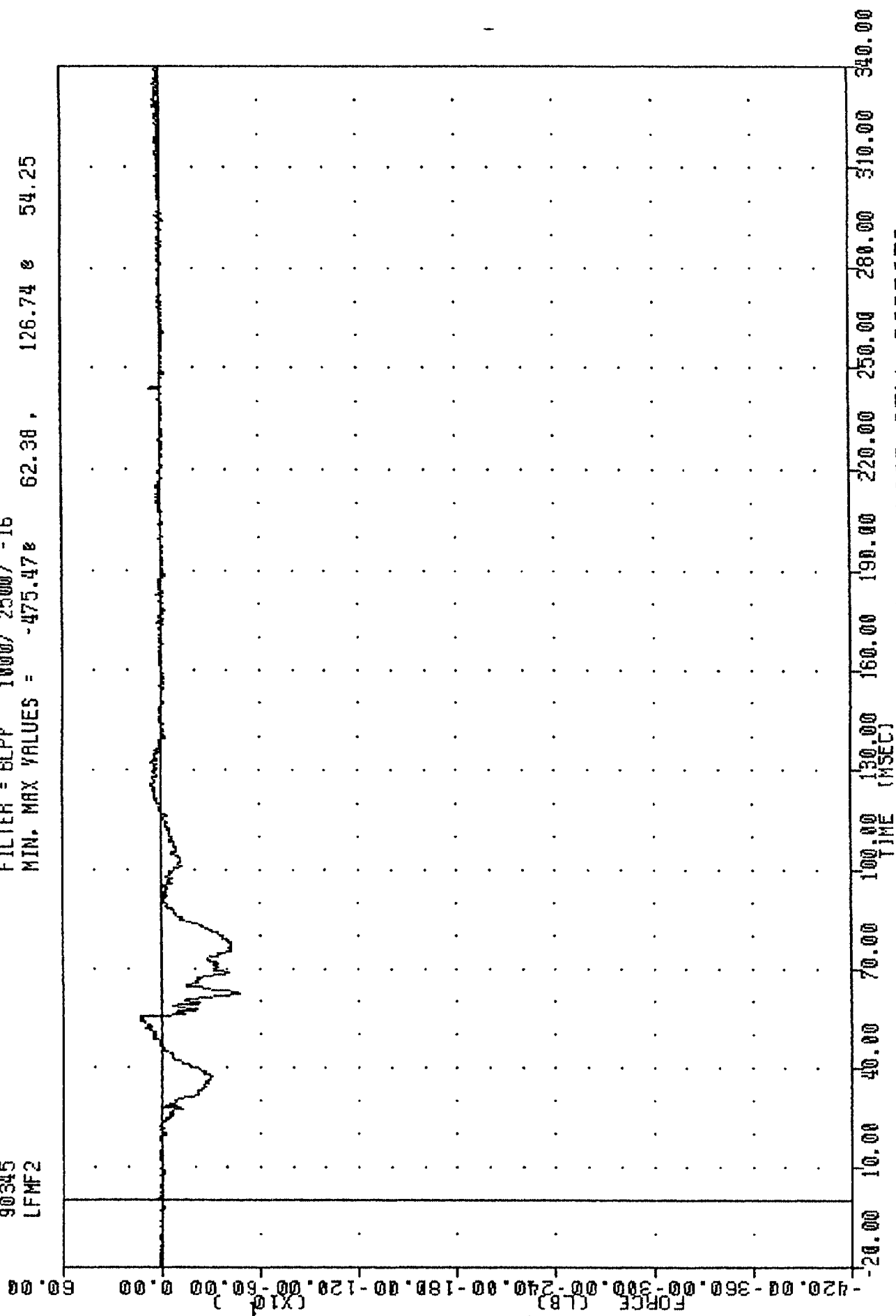
FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = 0.078 -20.00, 48.70 62.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST RESULTANT ACCELERATION

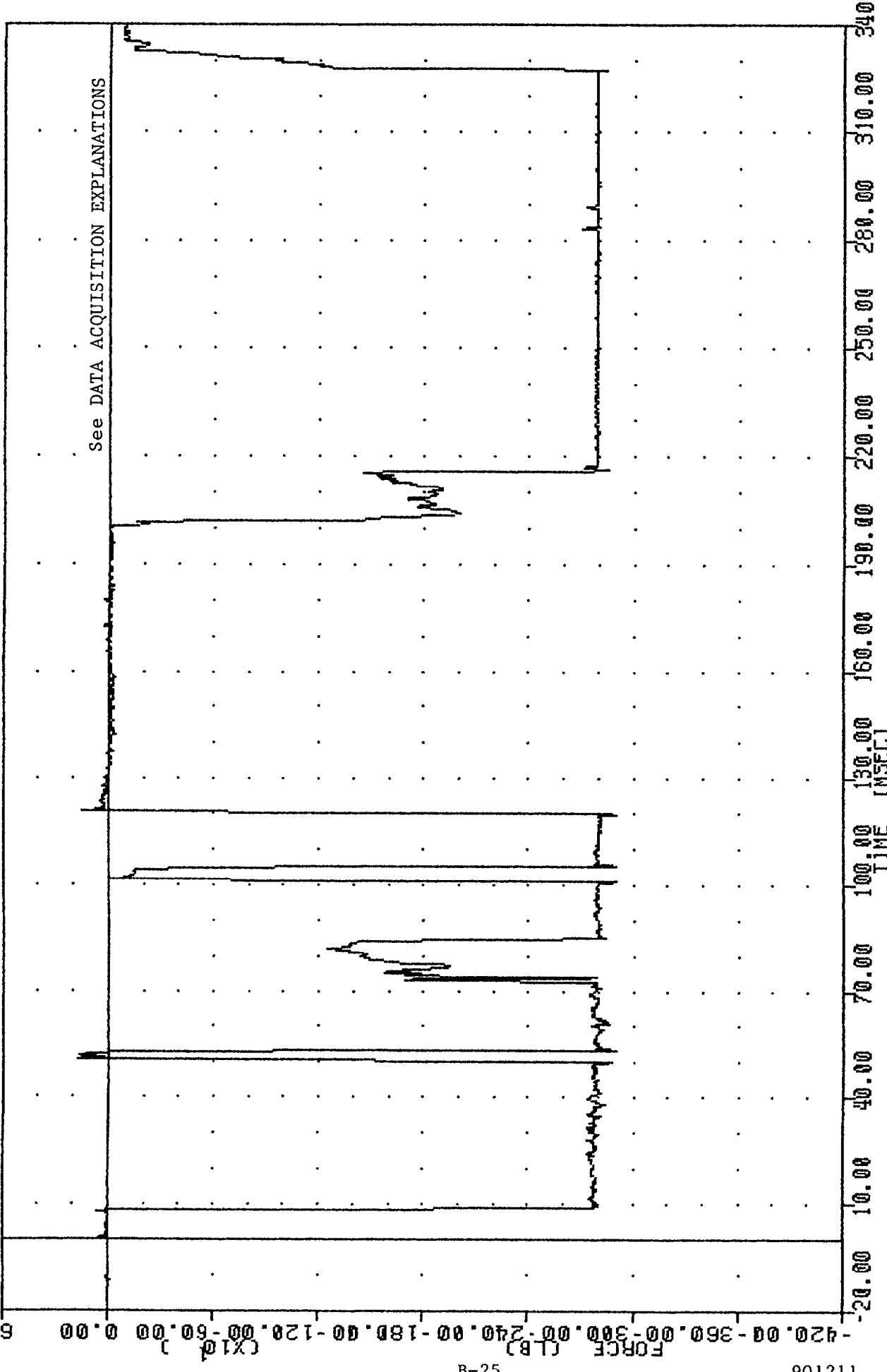
TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 LFMF2

FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -475.478 62.38 , 126.74 e 54.25



NEW CAR ASSESSMENT PROGRAM
 90345
 RFMF2

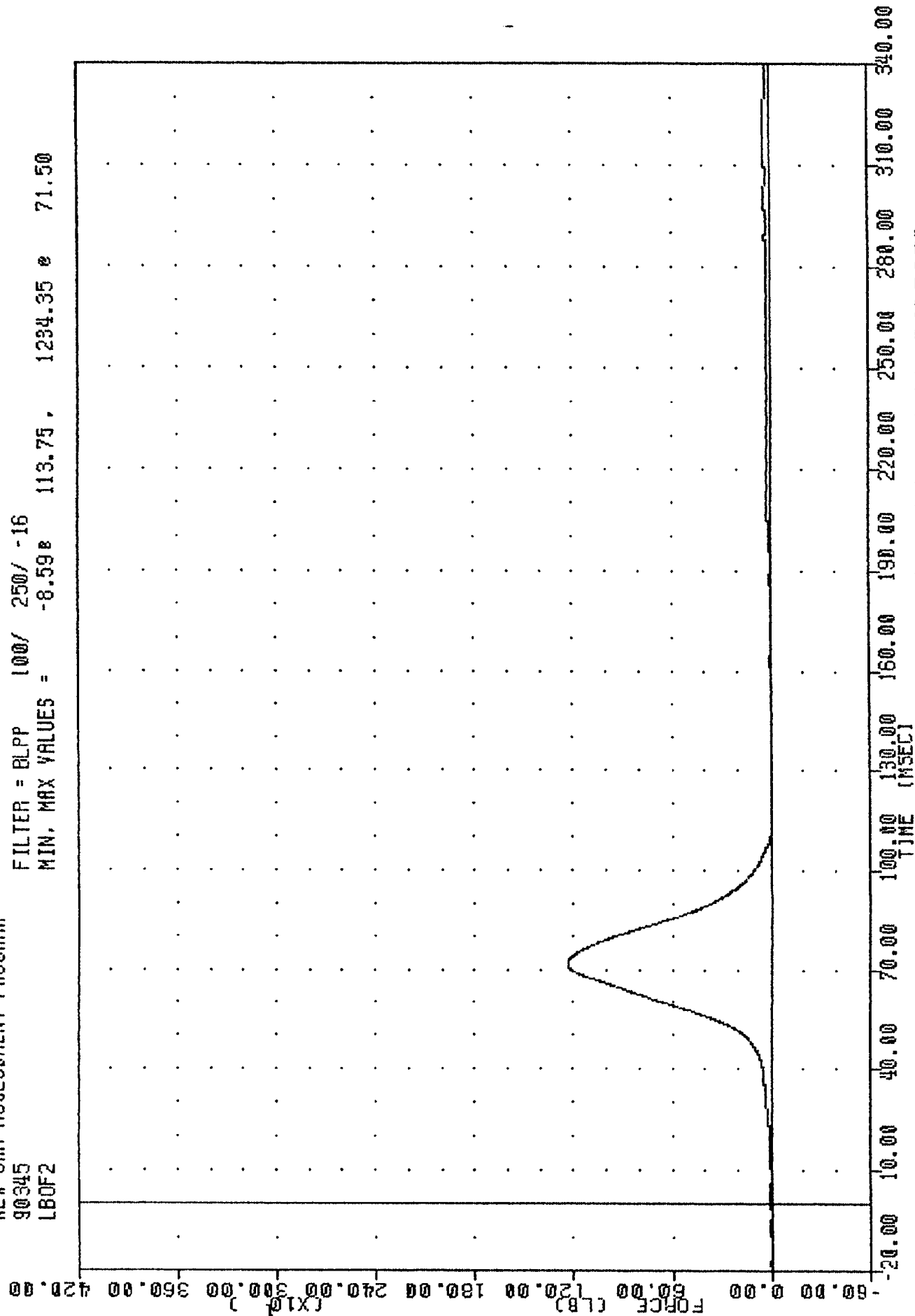
FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -2907.66e 119.75, 177.27 e 50.88



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 PASSENGER RIGHT FEMUR FORCE

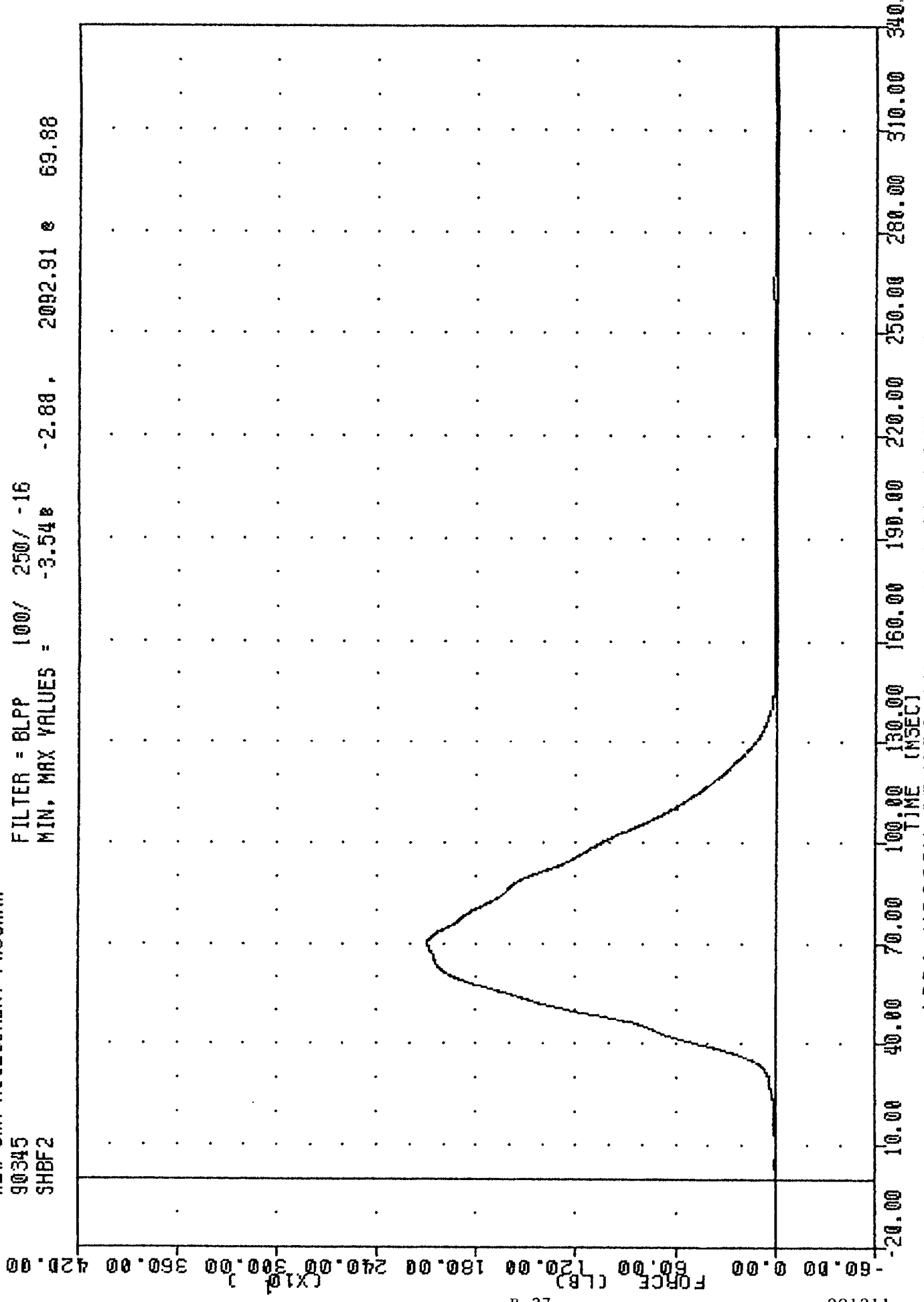
TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 LBOF2

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -8.59 113.75, 1234.35 71.50



NEW CAR ASSESSMENT PROGRAM
 90345
 SHBF2

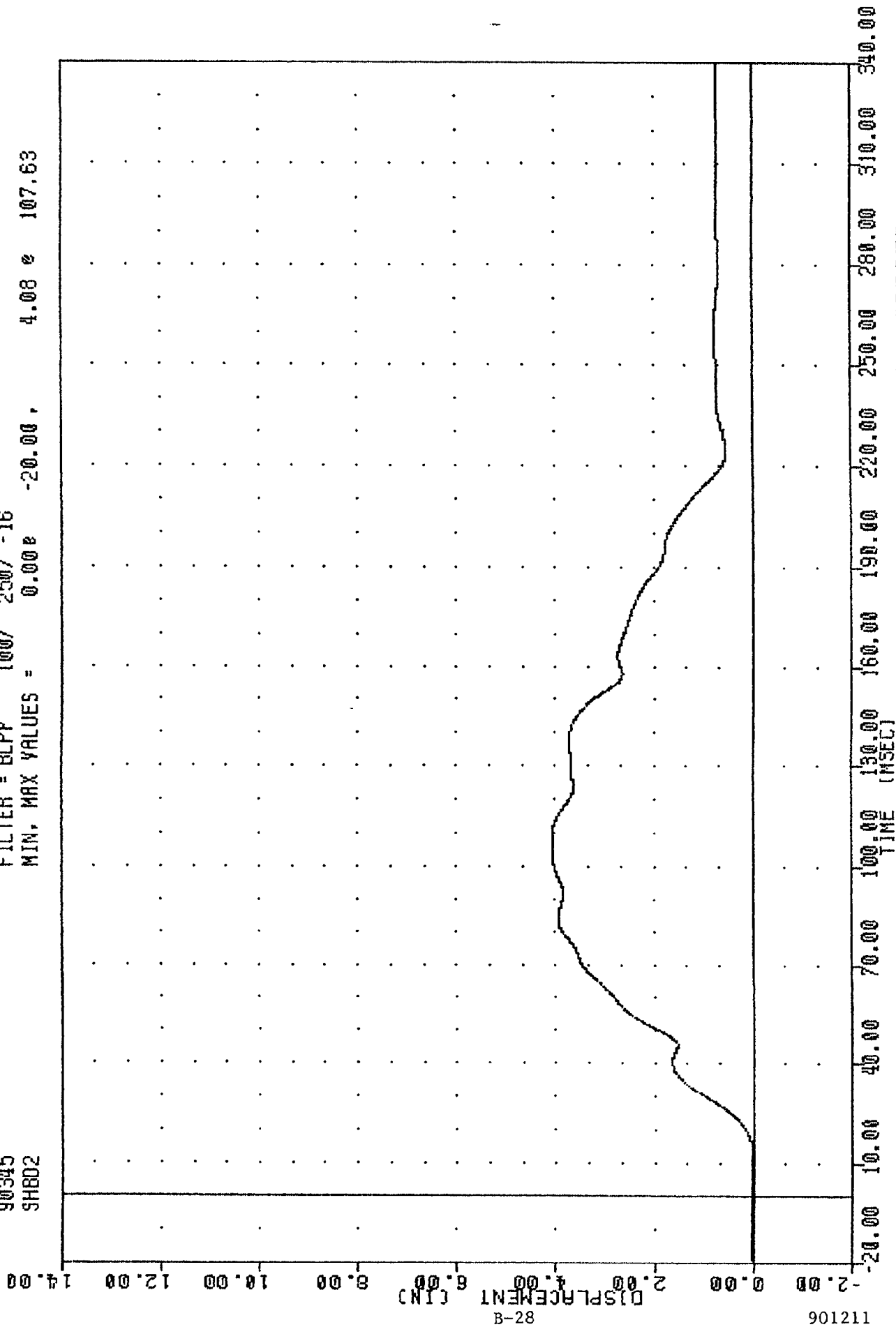
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -3.54 2092.91 69.88



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SHOULDER BELT FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 SHB02

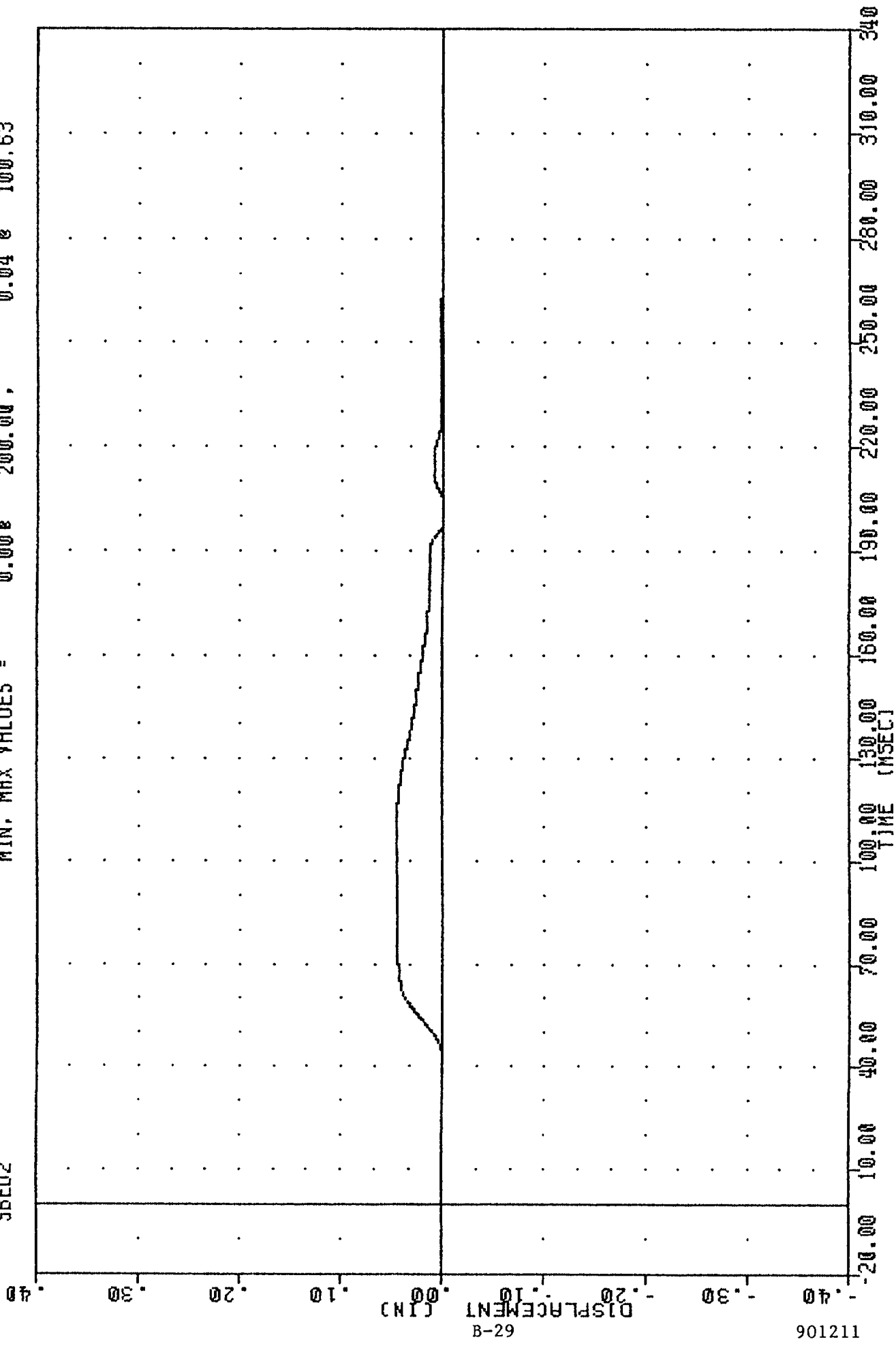
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = 0.00e -20.00 , 4.08 e 107.63



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SHOULDER BELT DISPLACEMENT

NEW CAR ASSESSMENT PROGRAM
 90345
 SBED2

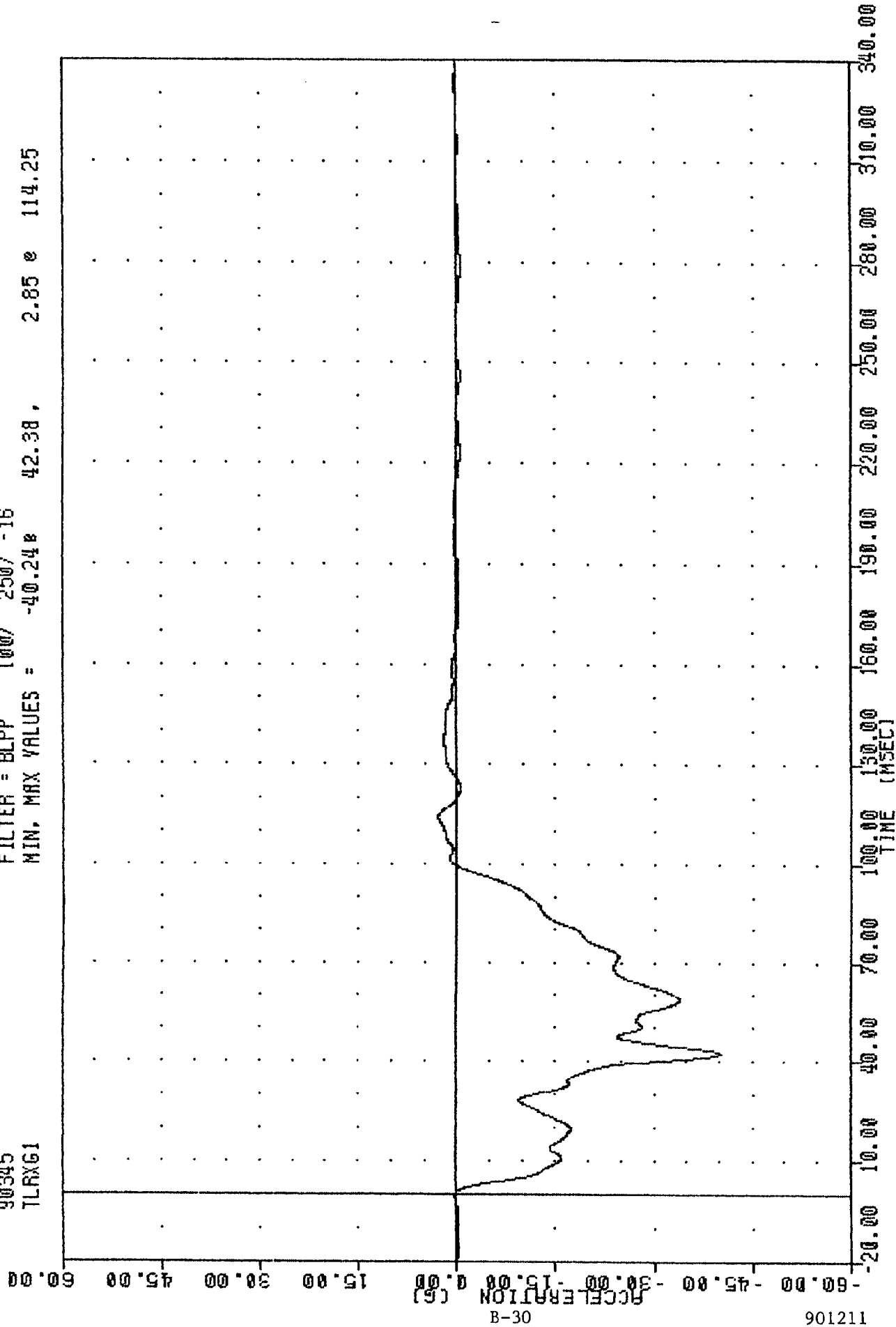
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = 0.00e 200.00, 0.04 e 100.63



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SEAT BELT EXTENSION

TRC , 901211
NEW CAR ASSESSMENT PROGRAM
90345
TLRX61

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -40.248 42.38 , 2.85 e 114.25

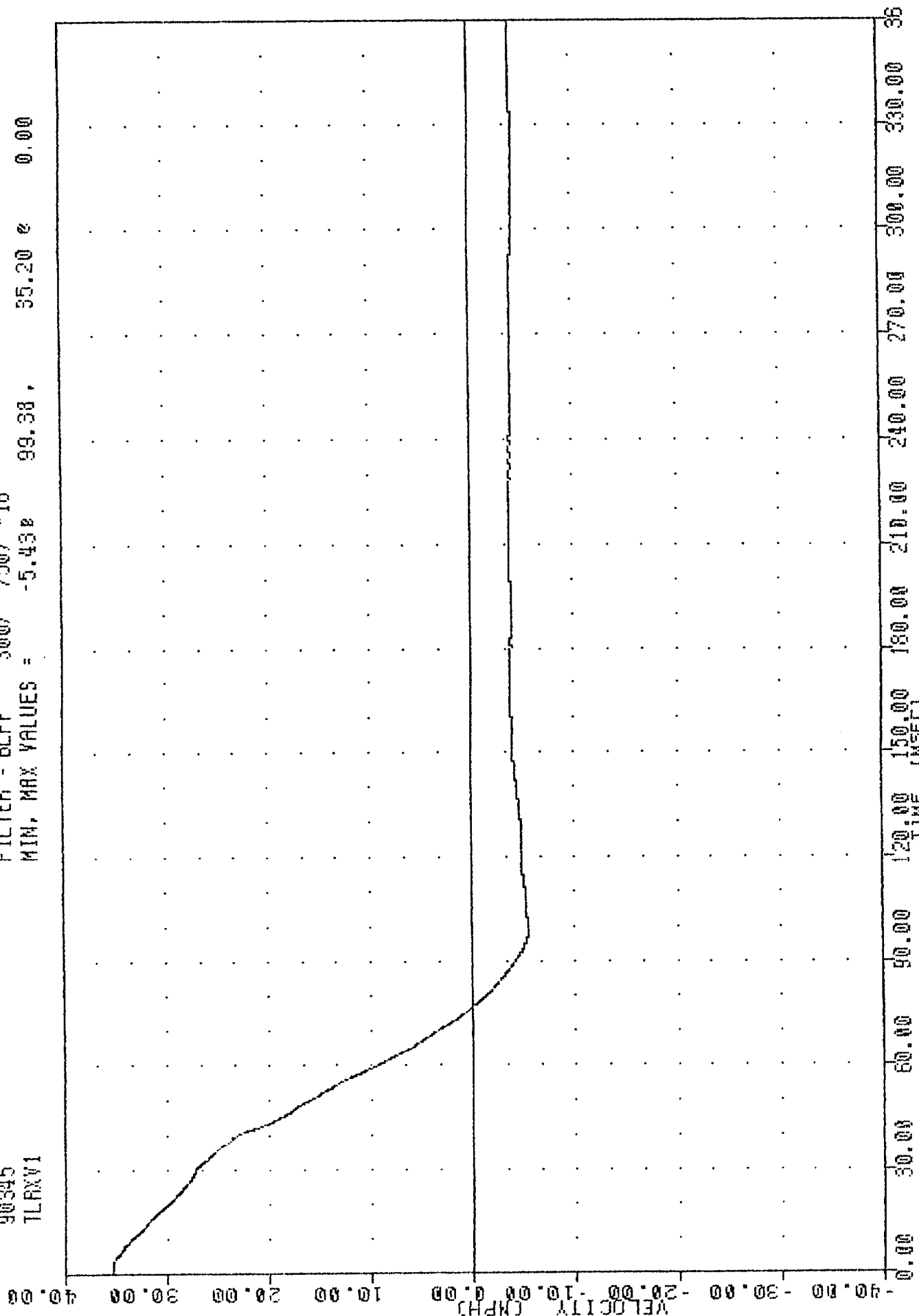


B-30

901211

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 TLXV1

FILTER = BLFP 300/ 750/ -16
 MIN, MAX VALUES = -5.43e 99.38, 35.20 e 0.00



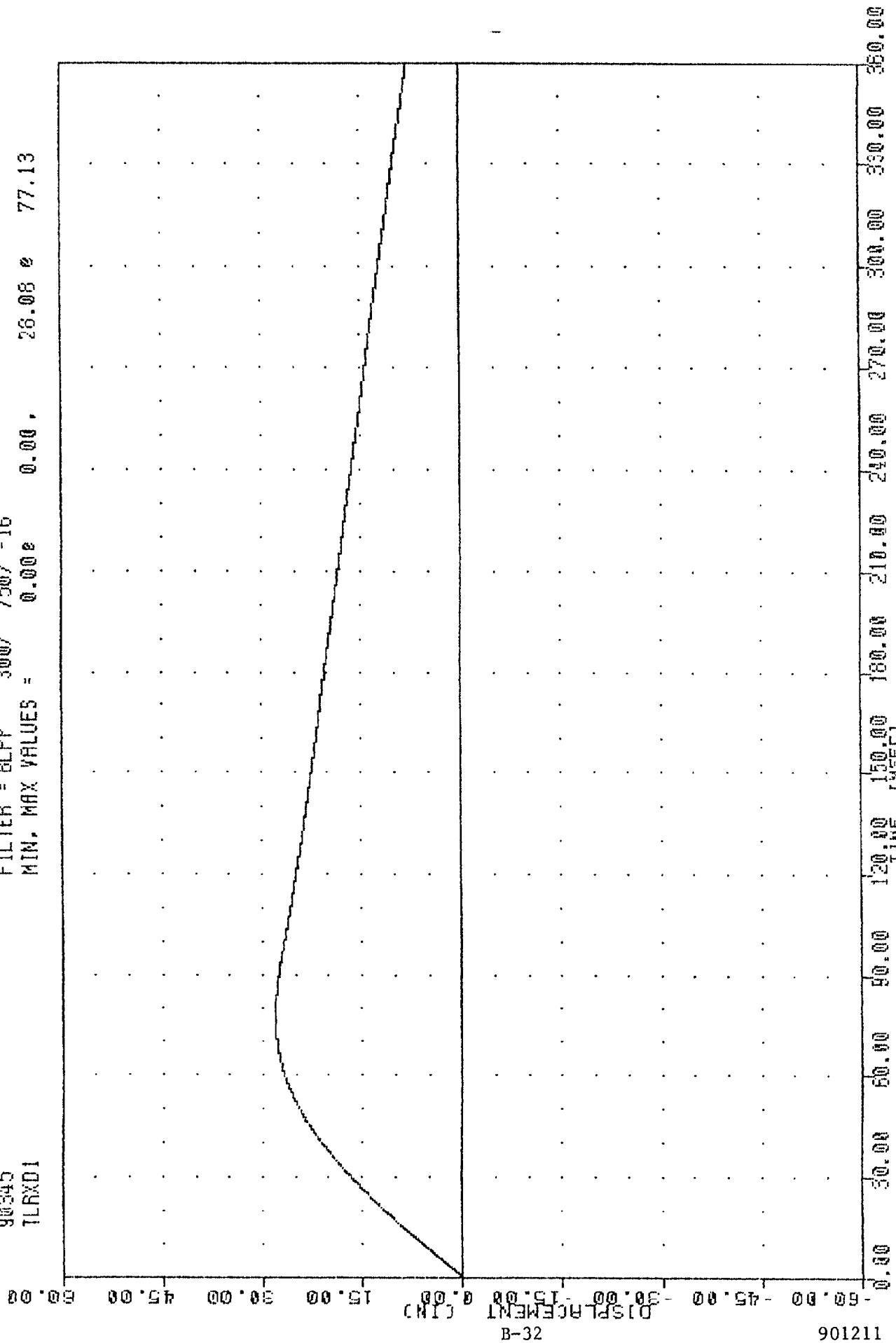
B-31

901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LEFT REAR SEAT X-AXIS VELOCITY

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 TLRXD1

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = 0.00e 0.00, 26.08 e 77.13



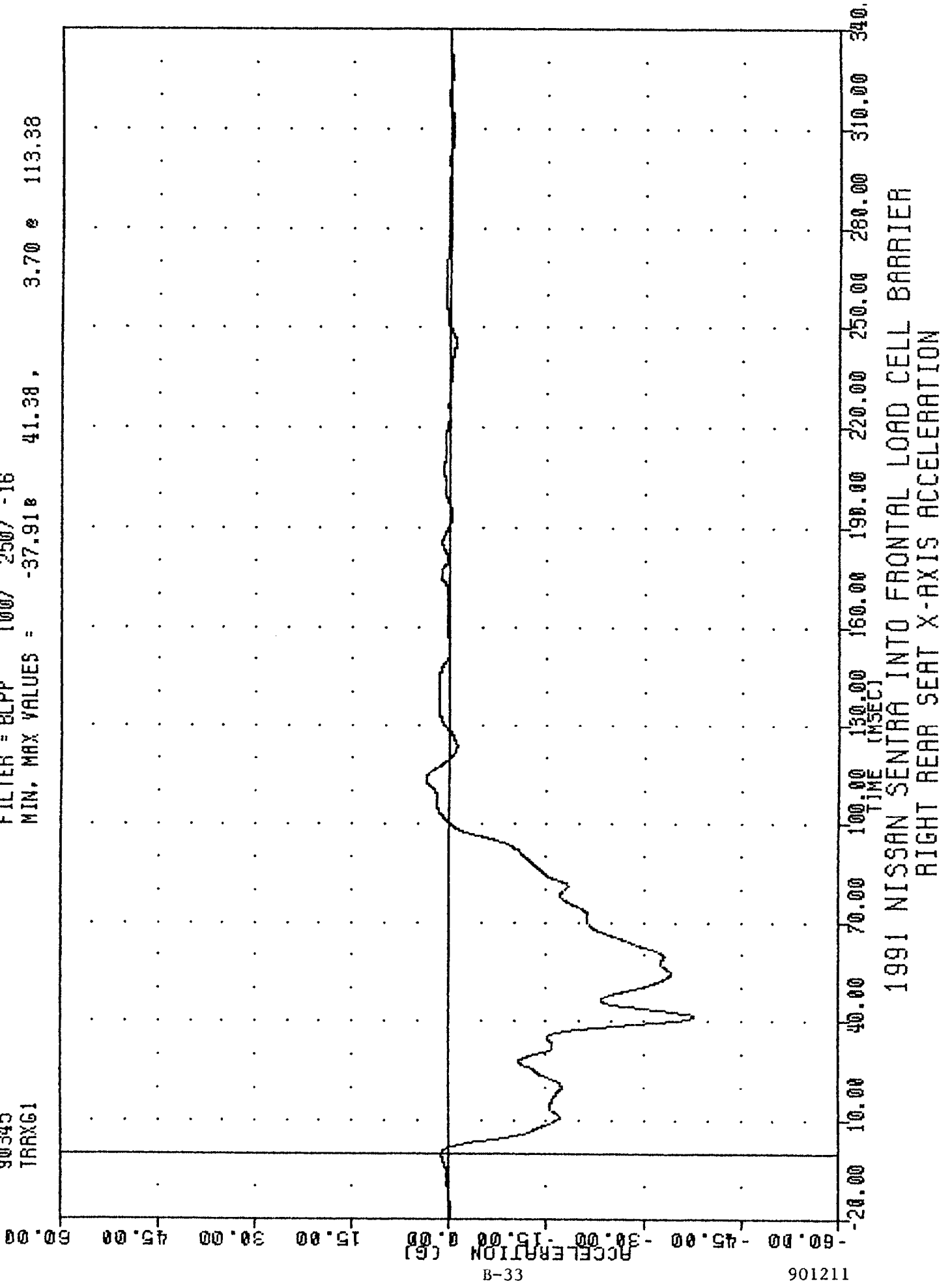
B-32

901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 15FT BARRIER - RWD DISPLACEMENT

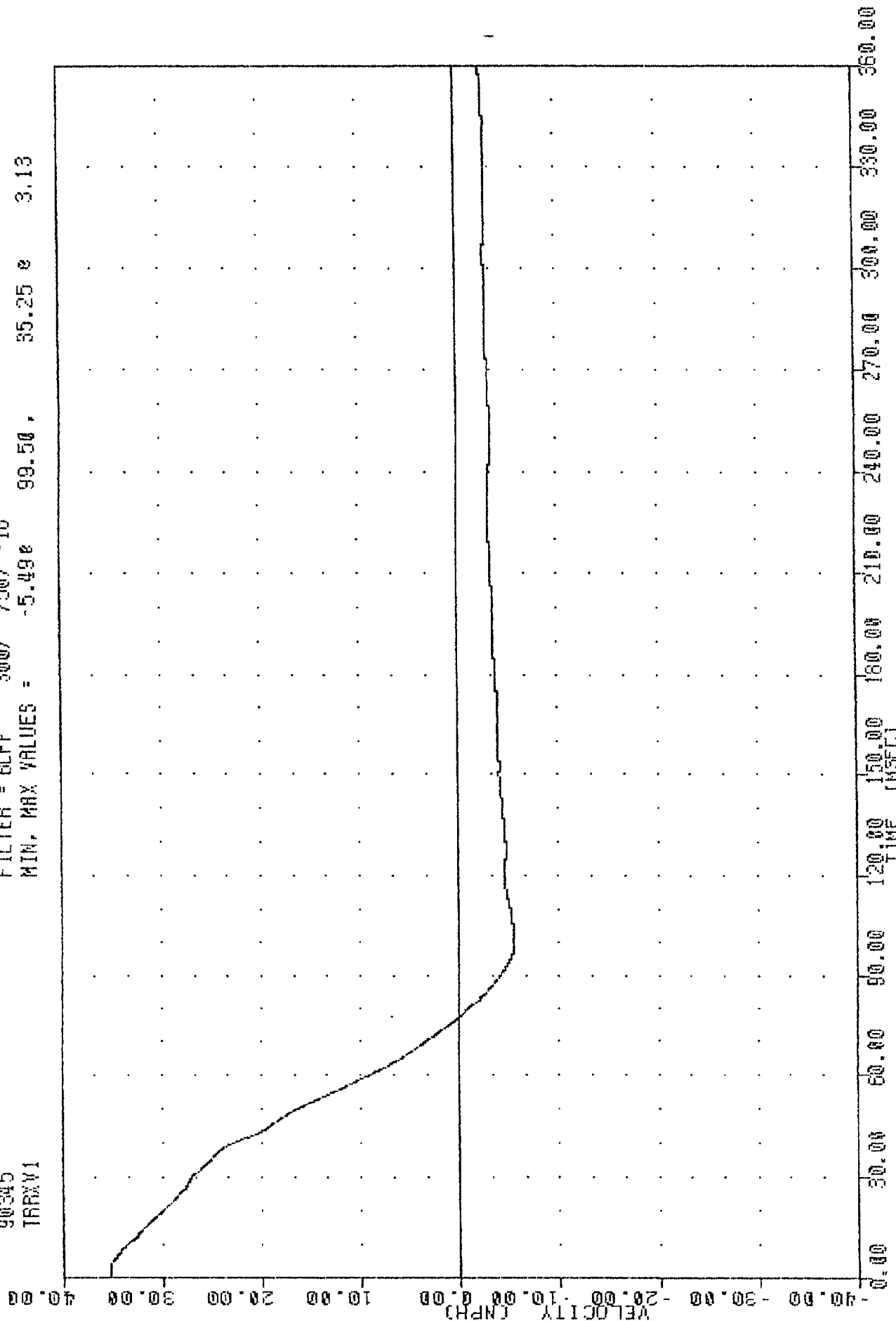
NEW CAR ASSESSMENT PROGRAM
90345
TRAXG1

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -37.91e 41.38, 3.70e 113.38



TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 TRXV1

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -5.49e 99.50 , 35.25 e 3.13



B-34

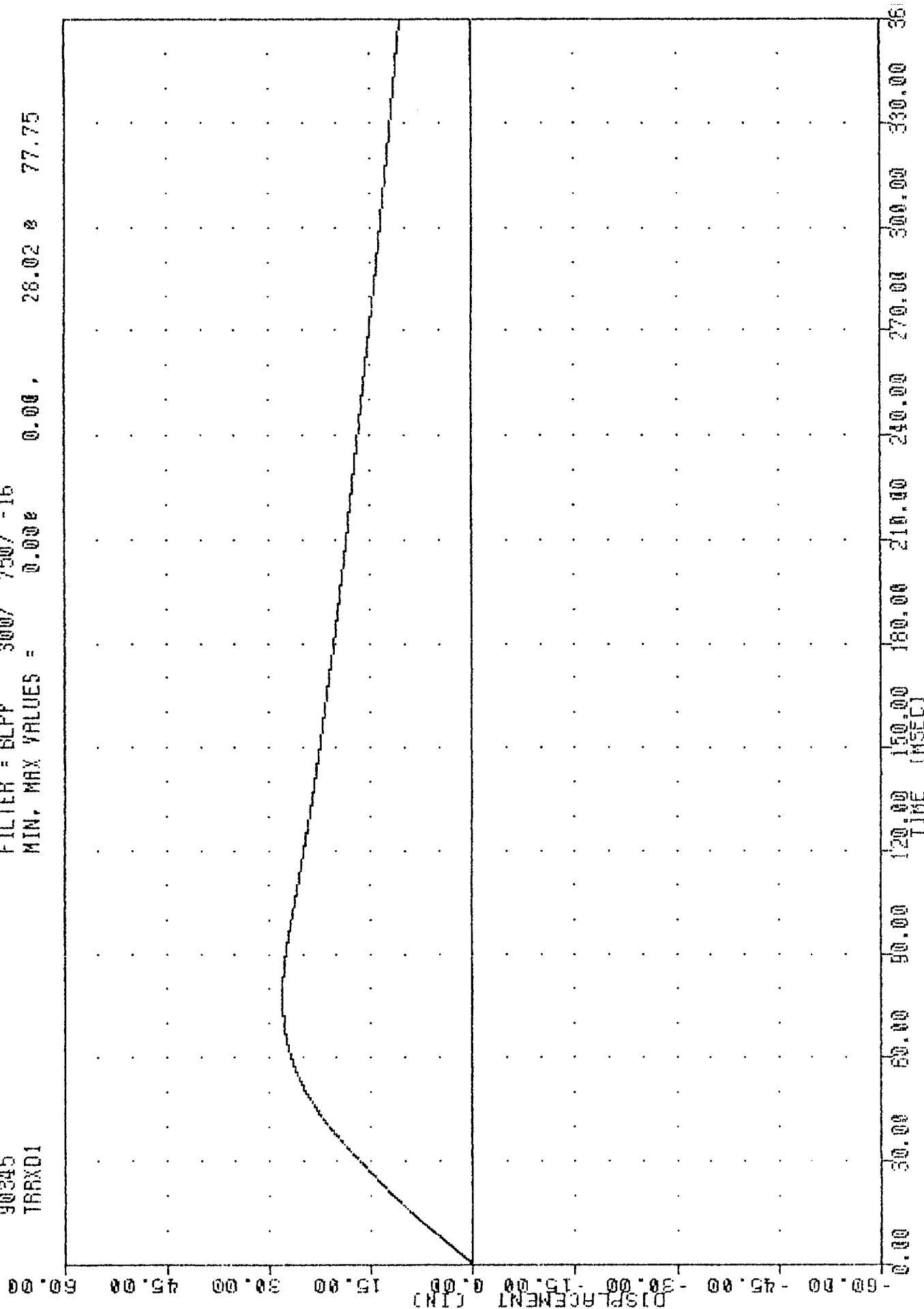
901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER

RIGHT REAR SEAT X-Axis Velocity

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 TRAXD1

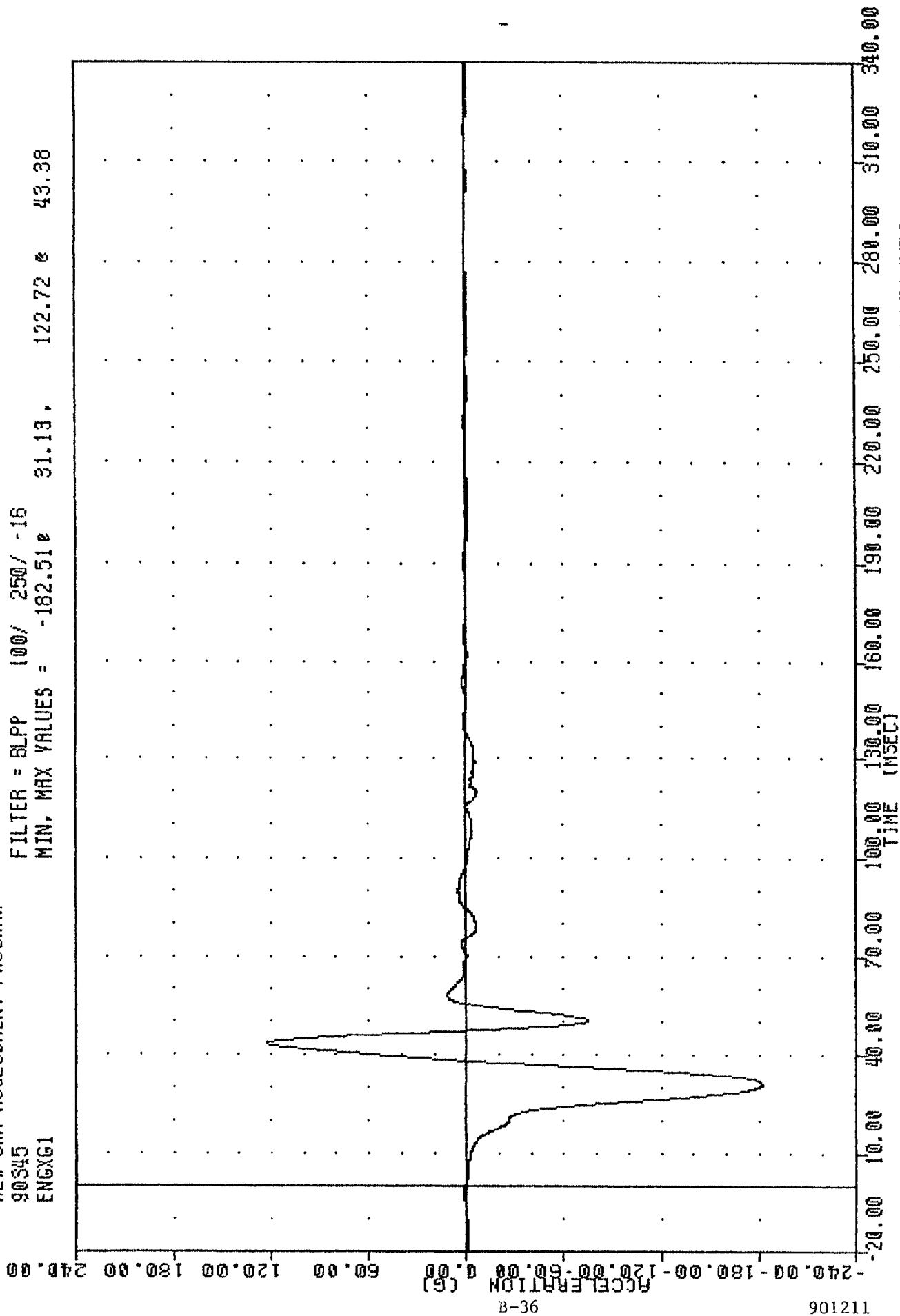
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = 0.000 0.00 , 28.02 8 77.75



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS DISPLACEMENT

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 ENGCG1

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -182.51e 31.13, 122.72 e 43.38

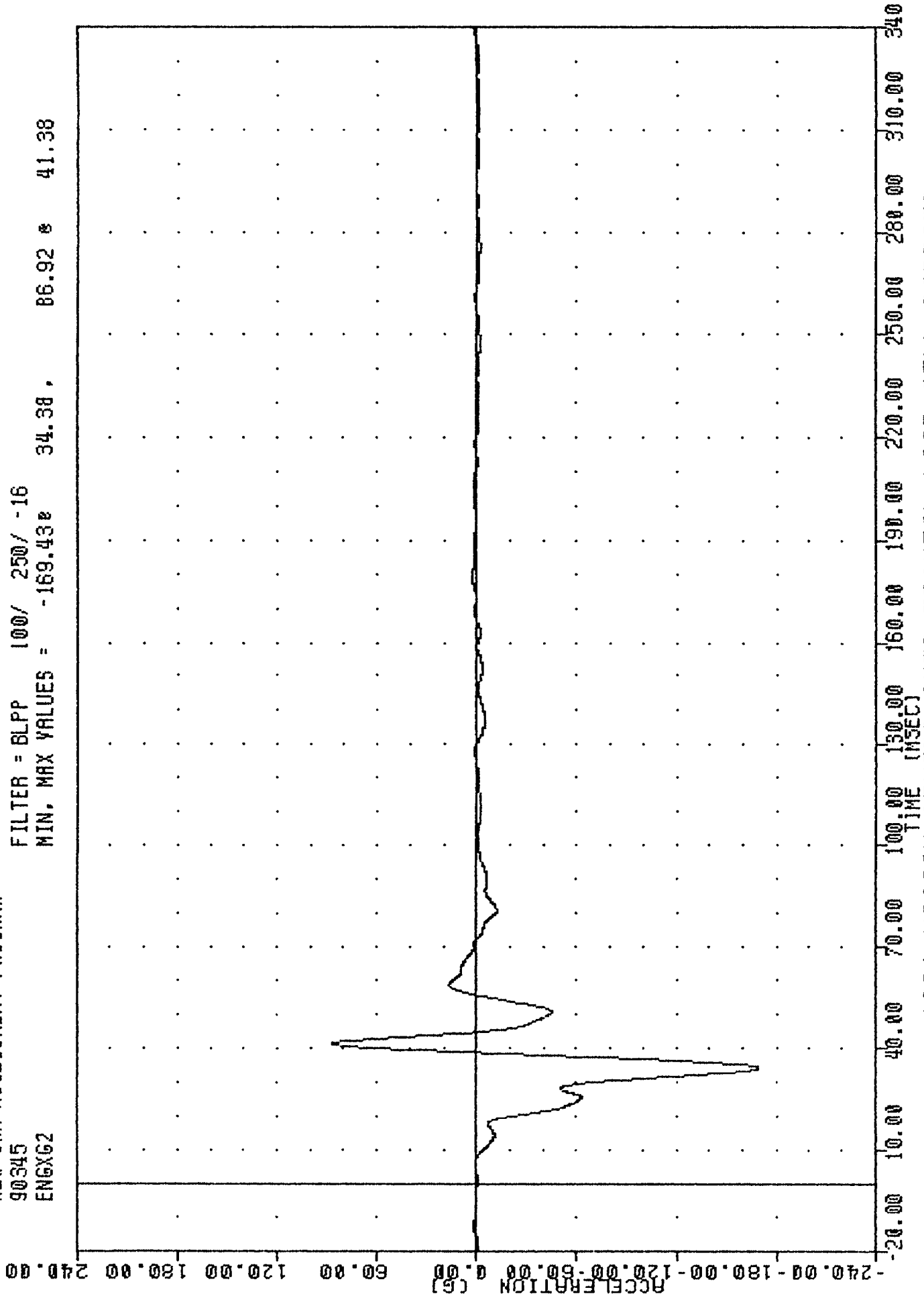


B-36

901211

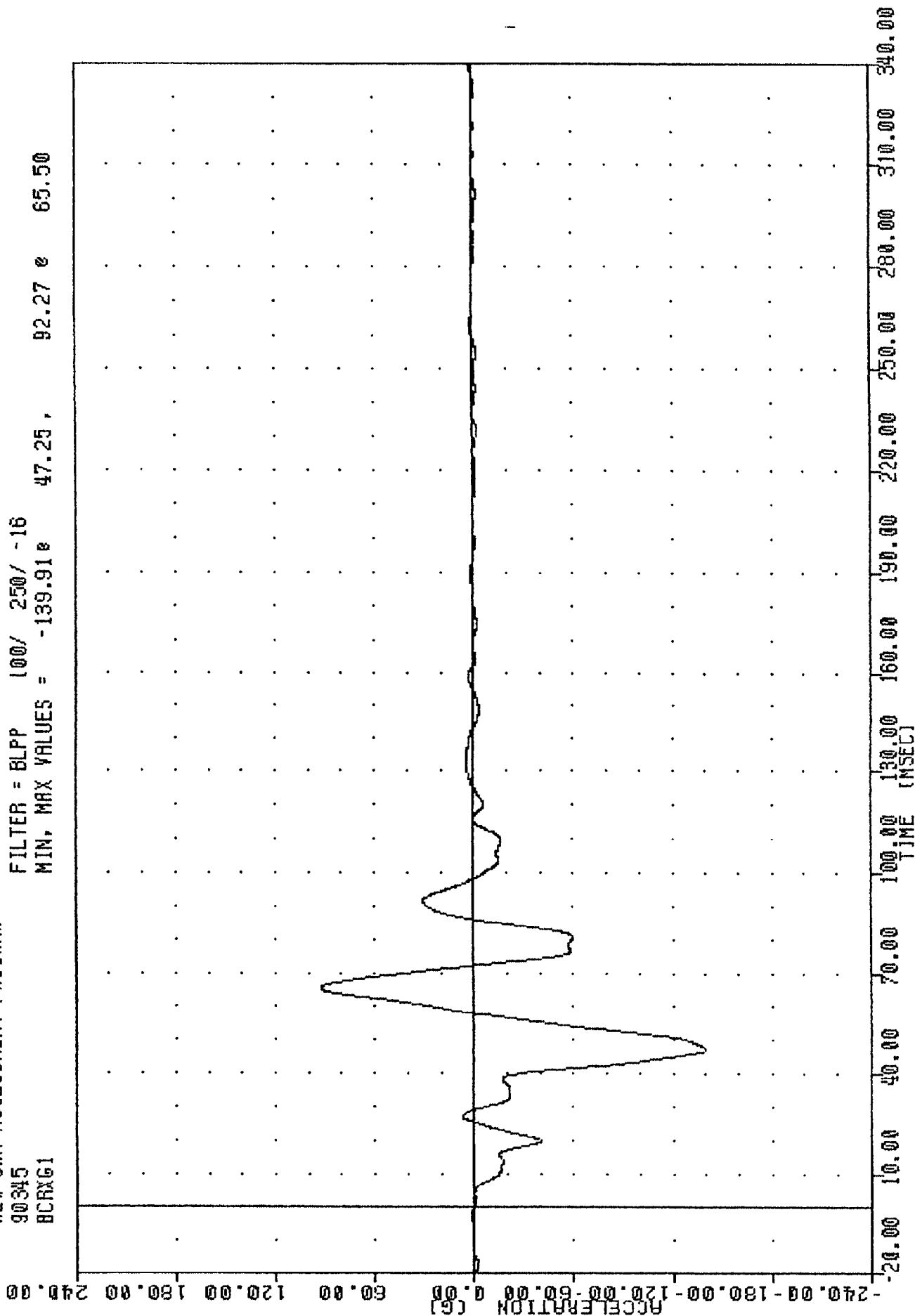
NEW CAR ASSESSMENT PROGRAM
 90345
 ENG62

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -169.43 34.38 , 86.92 41.38



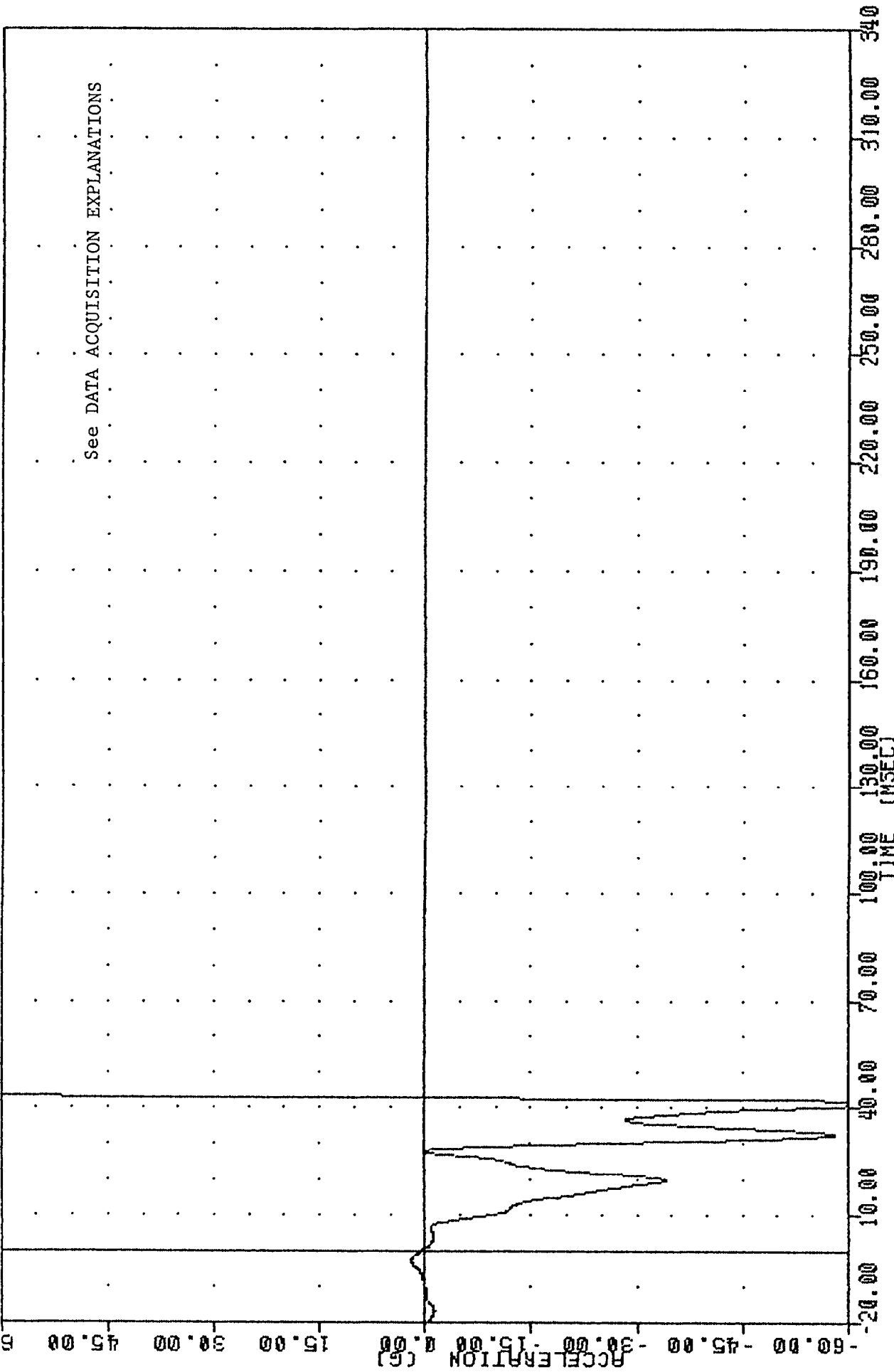
TRC , 901211
NEW CAR ASSESSMENT PROGRAM
90345
BCRXG1

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -139.91e 47.25, 92.27 e 65.50



1110
NEW CAR ASSESSMENT PROGRAM
90345
8CLXG1

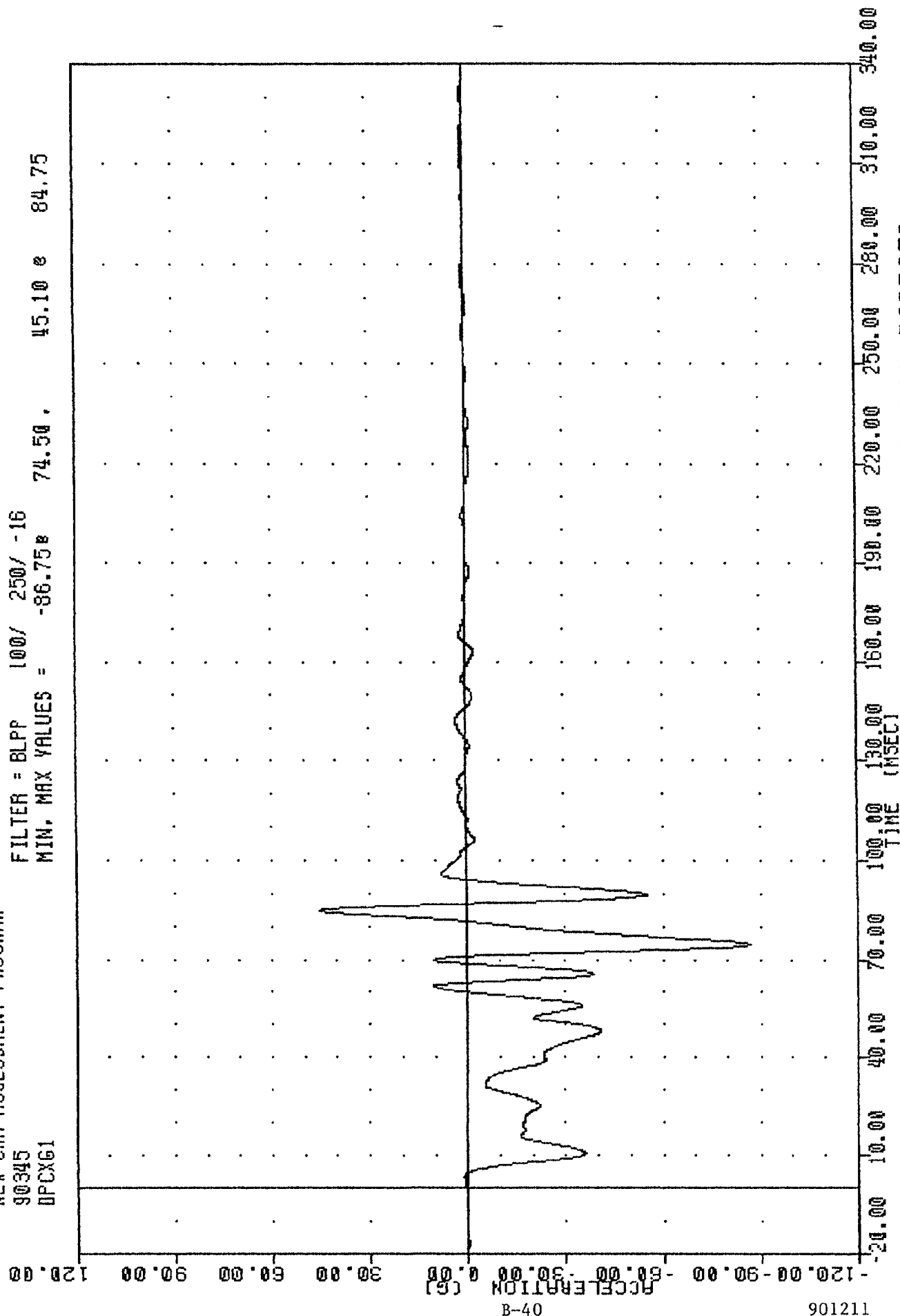
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -68.79 41.25, 1280.93 49.13



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

TRC .901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 DPCXG1

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -86.75 74.50 45.10 84.75



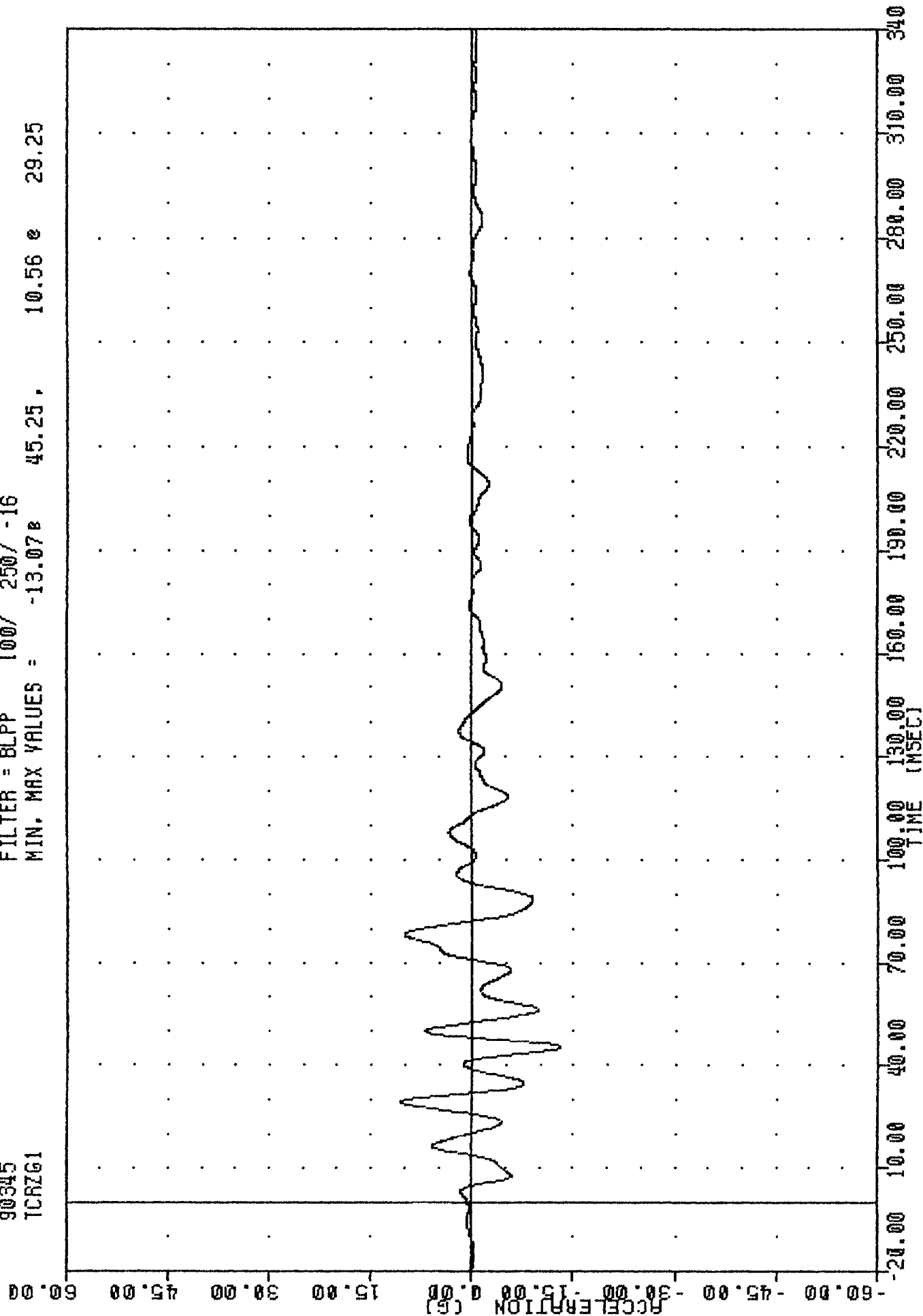
B-40

901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 INSTRUMENT PANEL CENTER - AVG ACCELERATION

NEW CAR ASSESSMENT PROGRAM
 90345
 TCRZG1

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -13.07% 45.25, 10.56 @ 29.25



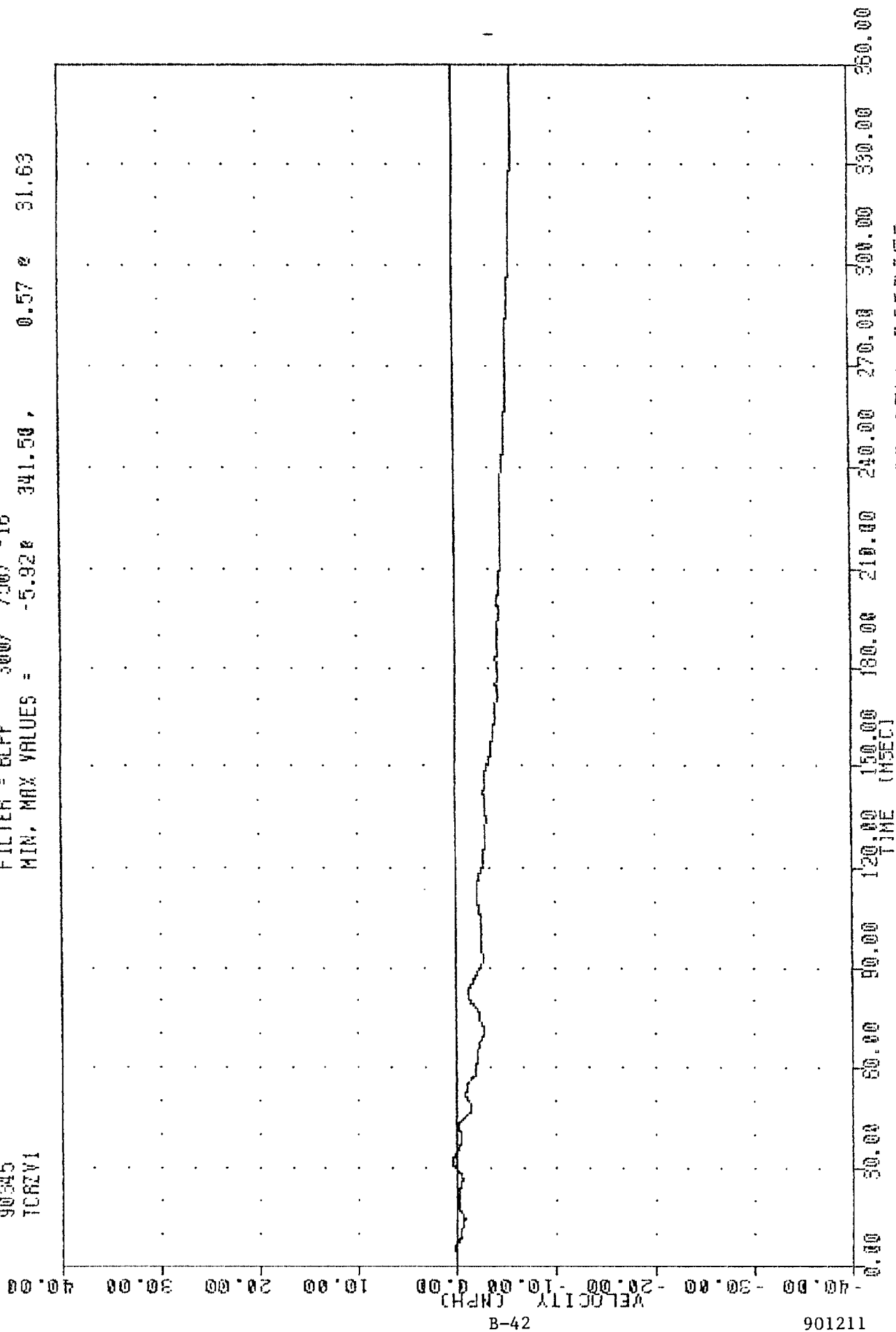
901211

B-41

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 REAR SEAT CROSSMEMBER Z-AXIS ACCELERATION

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 TCRZY1

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = 341.50, 0.57 e 31.63



901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 REAR SEAT PASSENGER Z-AXIS VELOCITY

INC 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 TCRZD1

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -22.67 360.00, 0.01 6.88

50.00

45.00

30.00

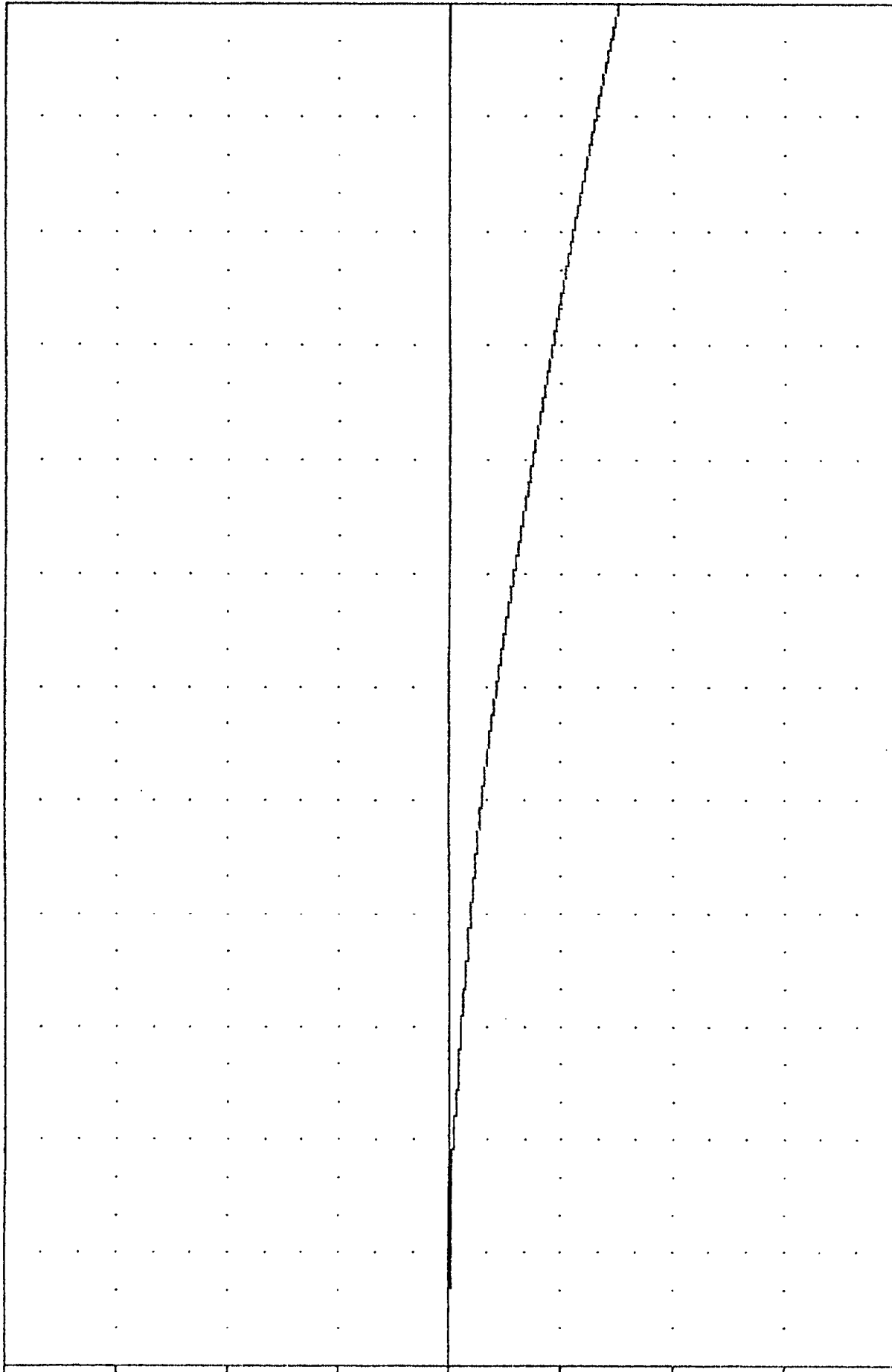
15.00

DISPLACEMENT (IN)

0.00

B-43

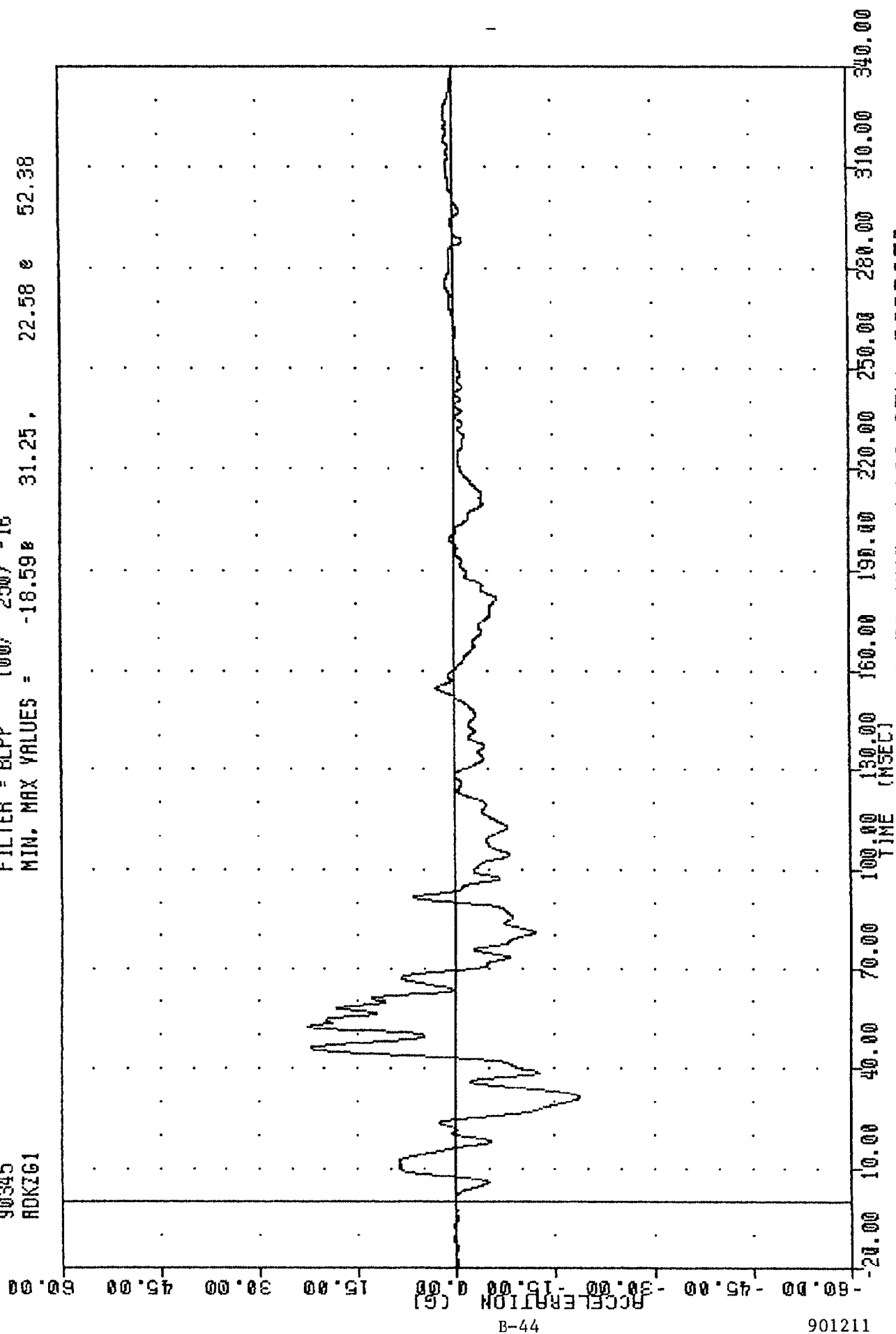
901211



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 REAR SEAT CROSSMEMBER Z-AXIS DISPLACEMENT

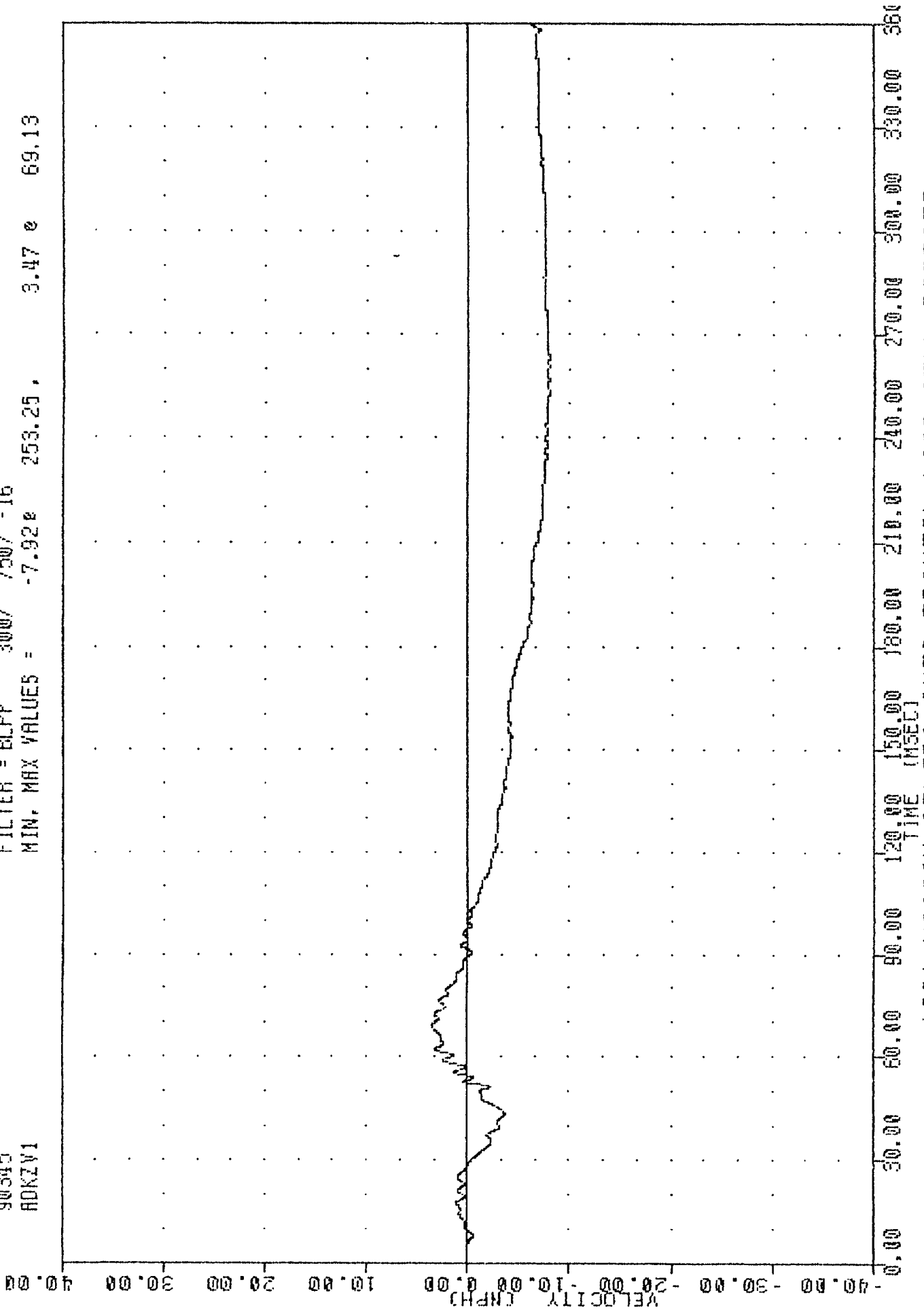
TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 ADKZG1

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -18.59 31.25 22.58 e 52.38



INC. 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 ADKZV1

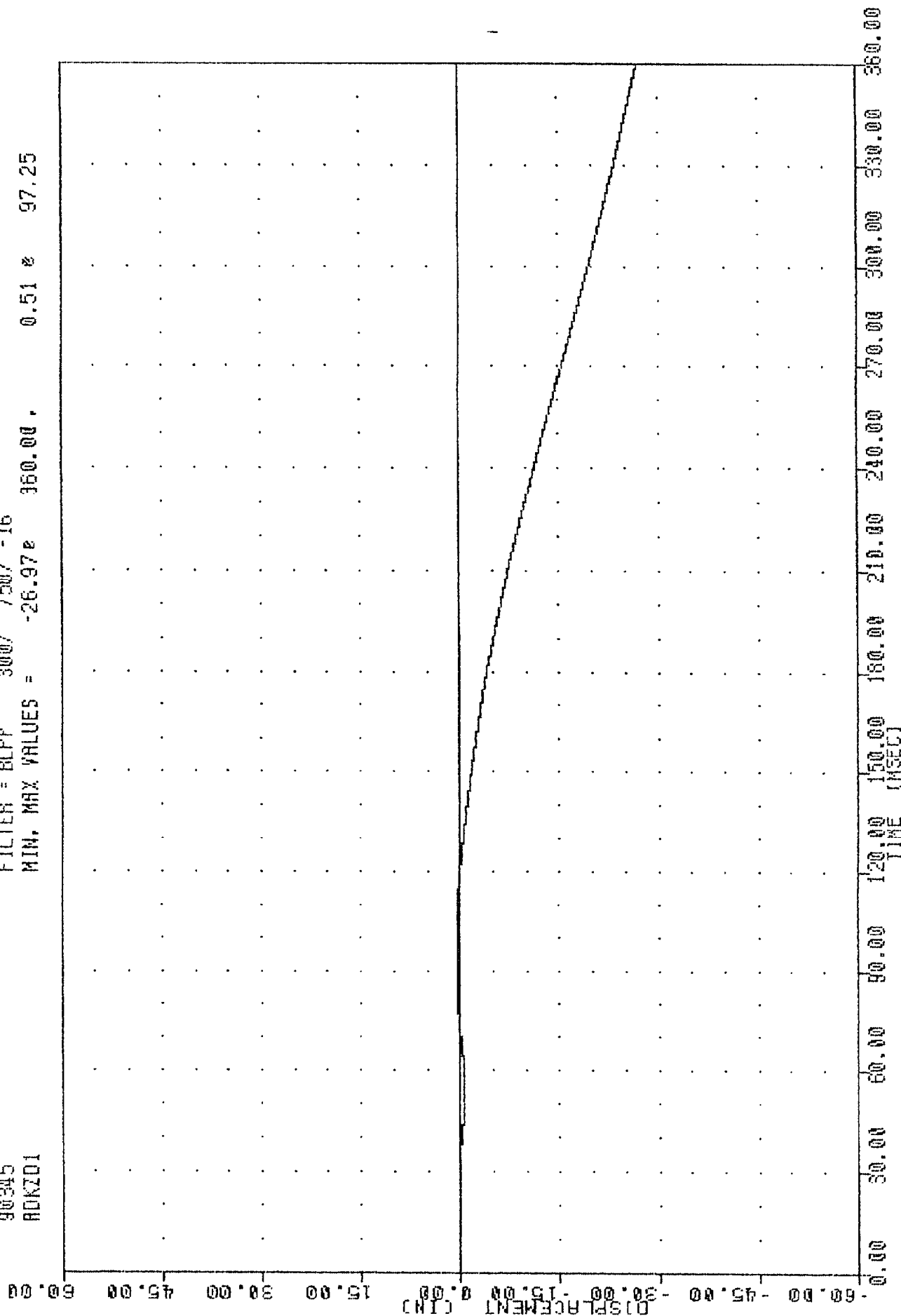
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -7.92e 253.25, 3.47 e 69.13



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 VEHICLE REAR CENTER Z-AXIS VELOCITY

TRC 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 ADKZD1

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -26.97 360.00 0.51 97.25



B-46

901211

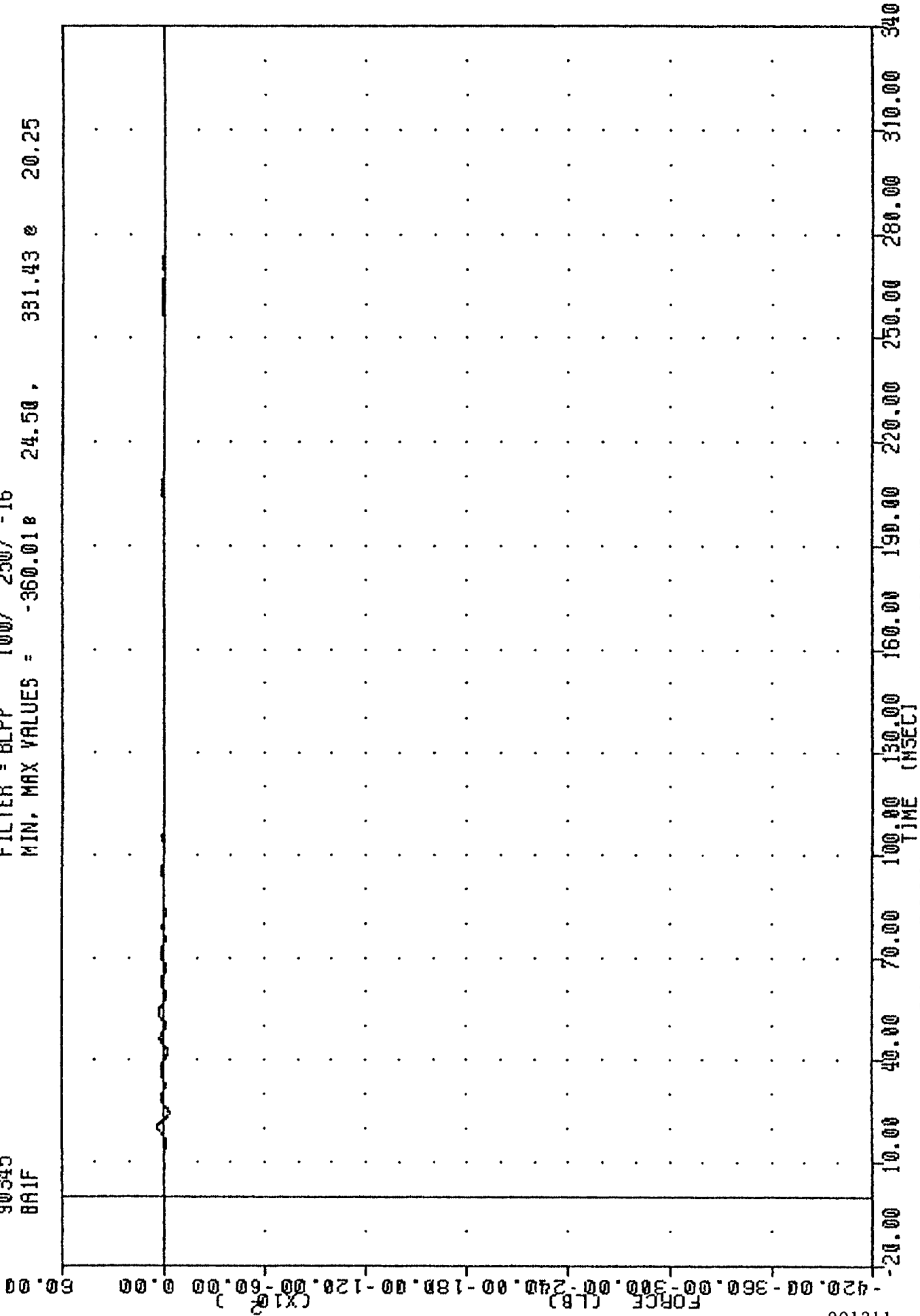
1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER

VEHICLE LEAVES BARRIER AT 120.00 MSEC

AXIS DISPLACEMENT

NEW CAR ASSESSMENT PROGRAM
 90345
 BA1F

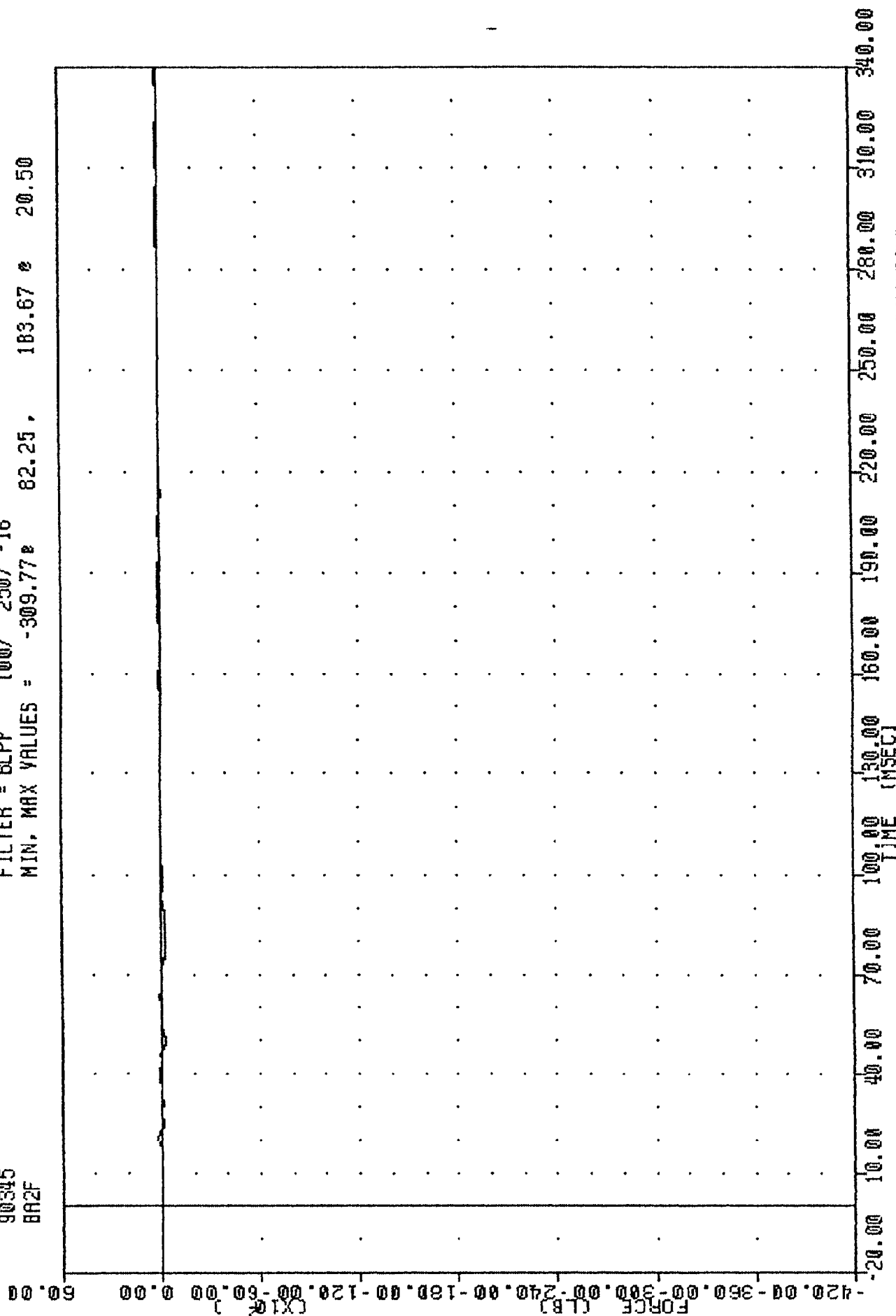
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -360.01 24.50, 331.43 20.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A1 FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 BR2F

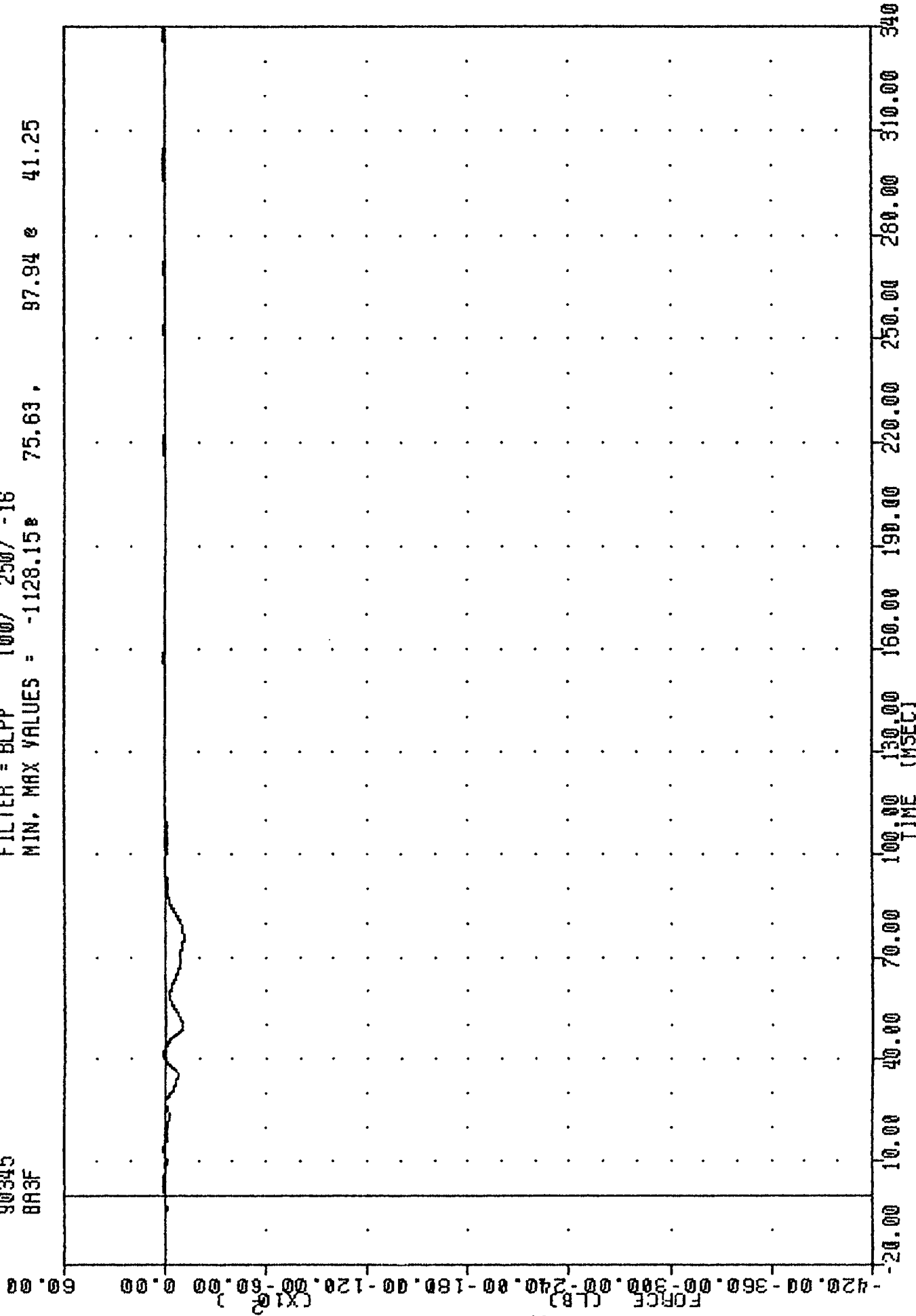
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -309.77 82.25, 183.67 20.50



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 82 FORCE

INC , SWIZIA
 NEW CAR ASSESSMENT PROGRAM
 90345
 BR3F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1128.15 75.63, 97.94 41.25



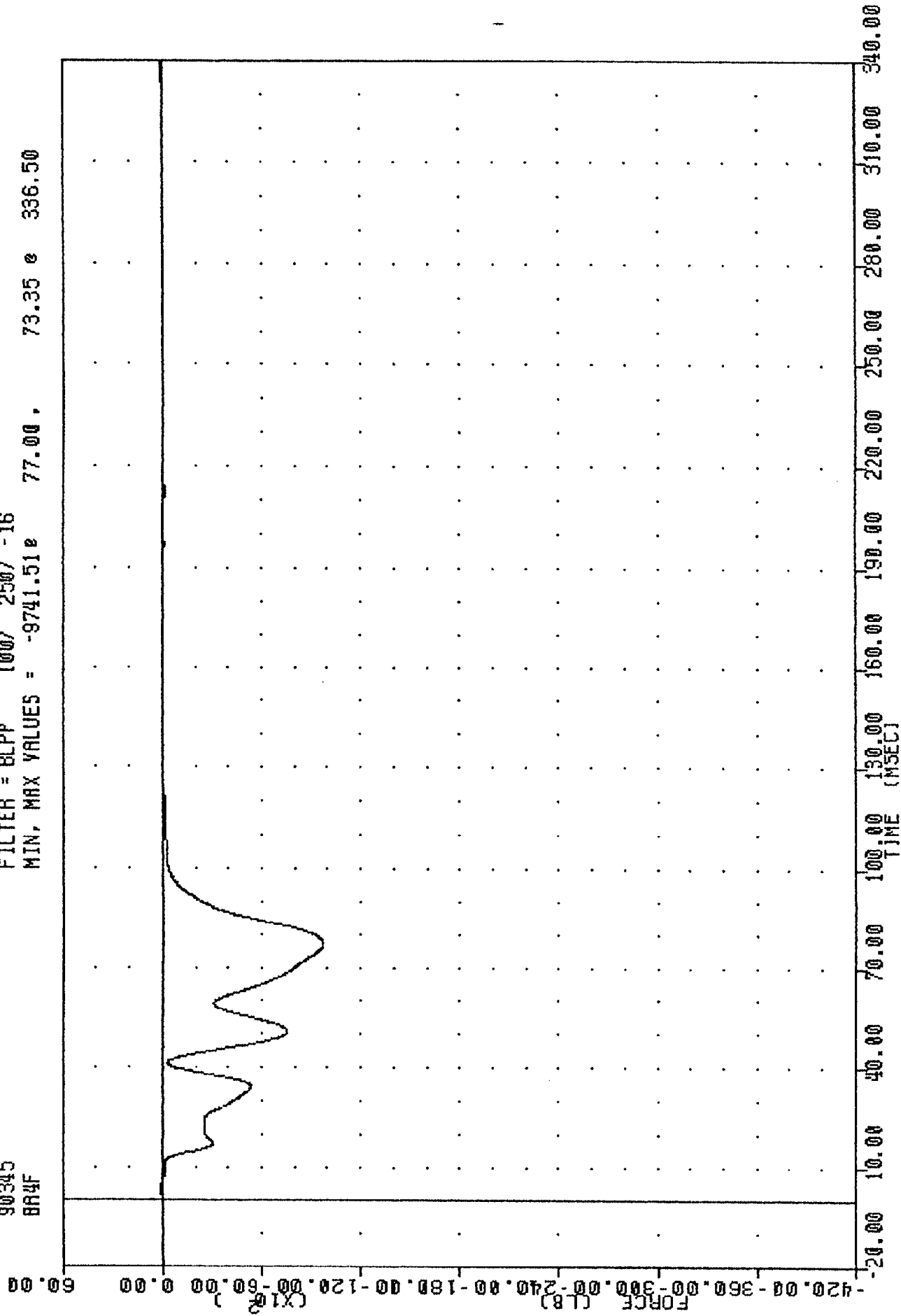
1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A3 FORCE

TRC
NEW CAR ASSESSMENT PROGRAM
90345
BR4F

901211

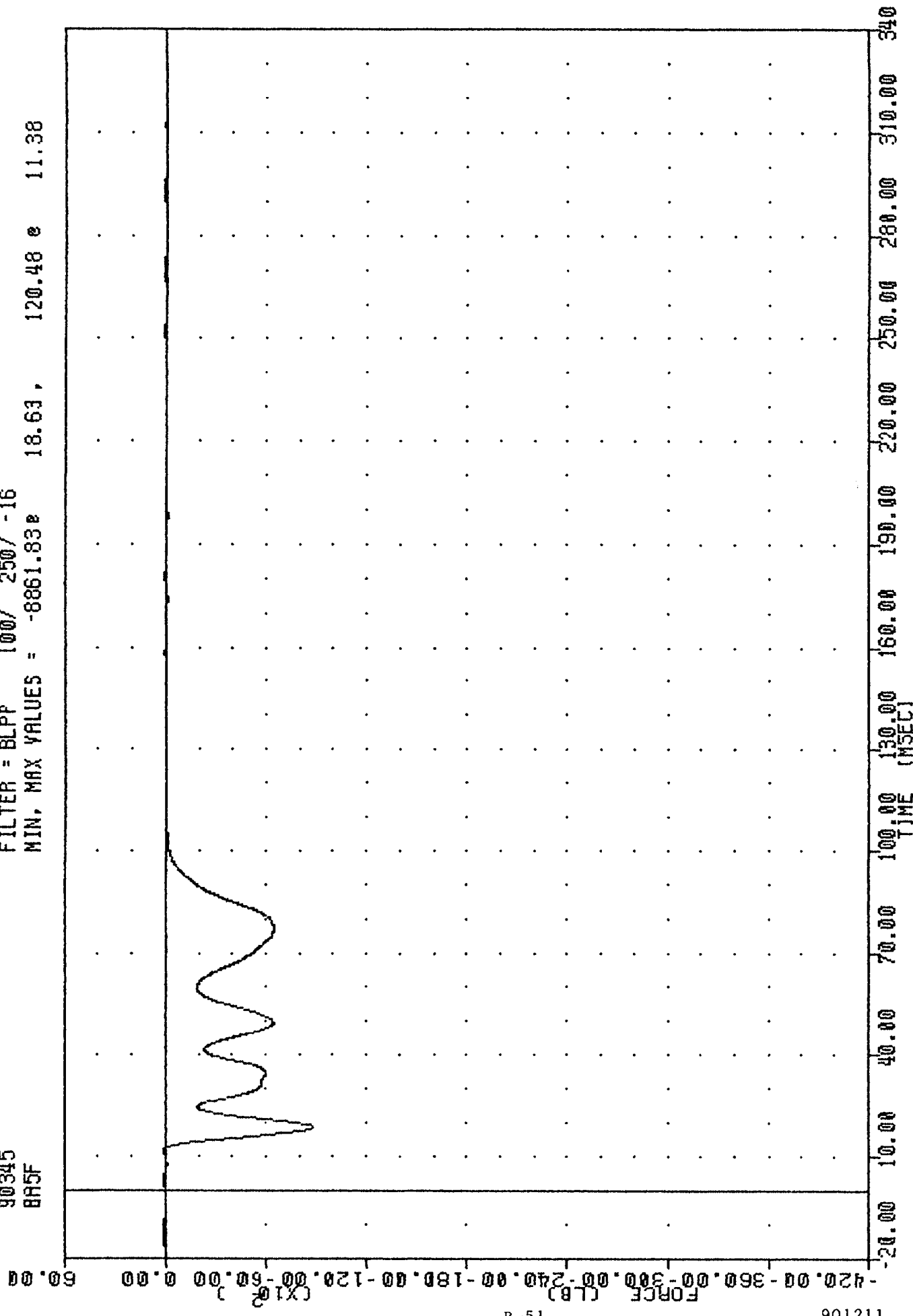
FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -9741.51e 77.00, 73.35 e 336.50



NEW CAR ASSESSMENT PROGRAM
 90345
 BR5F

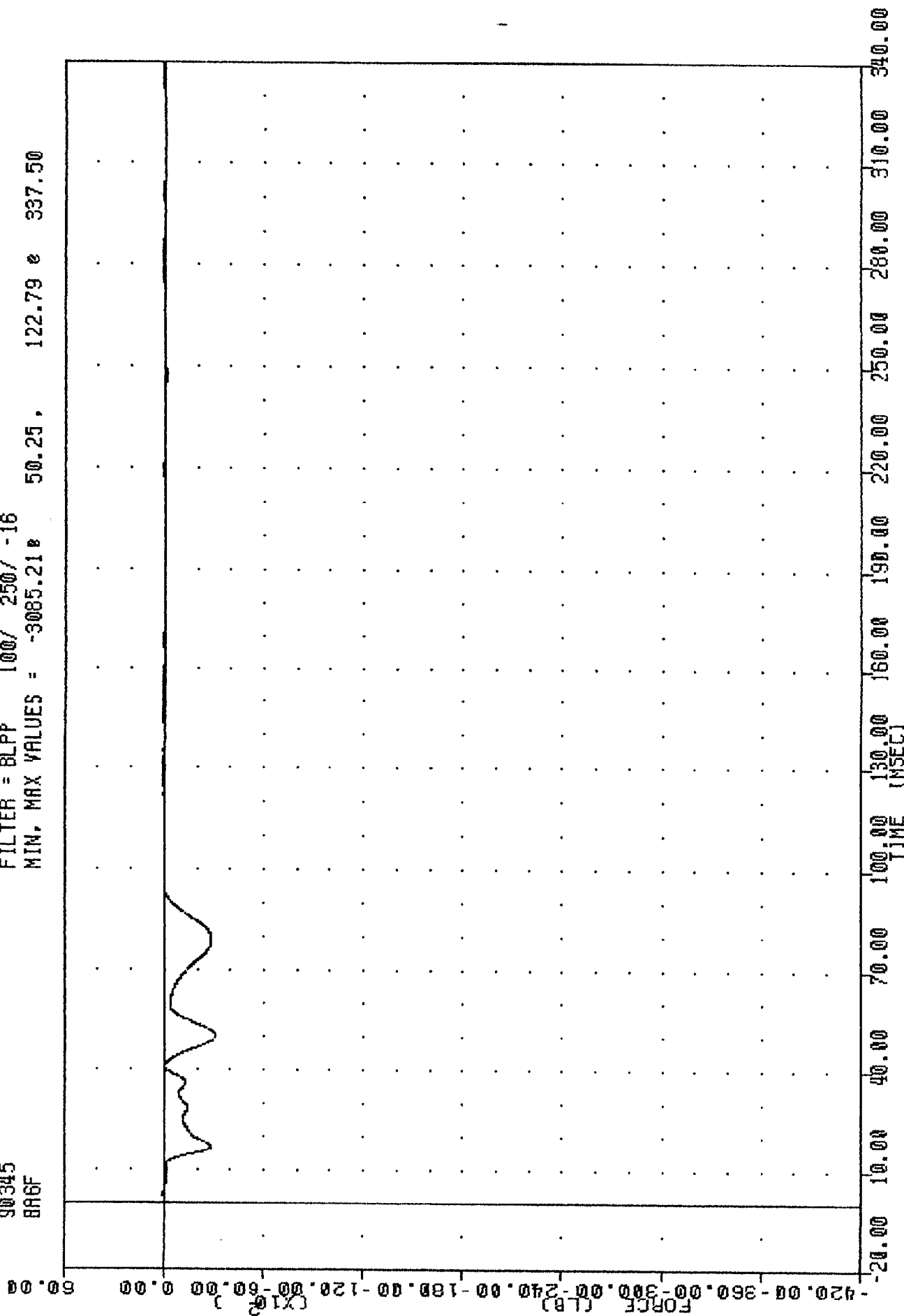
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -8861.83 18.63, 120.48 11.38



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A5 FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 BA6F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -3085.218 50.25, 122.79 e 337.50



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION AS FORCE

NEW CAR ASSESSMENT PROGRAM
90345
BR7F

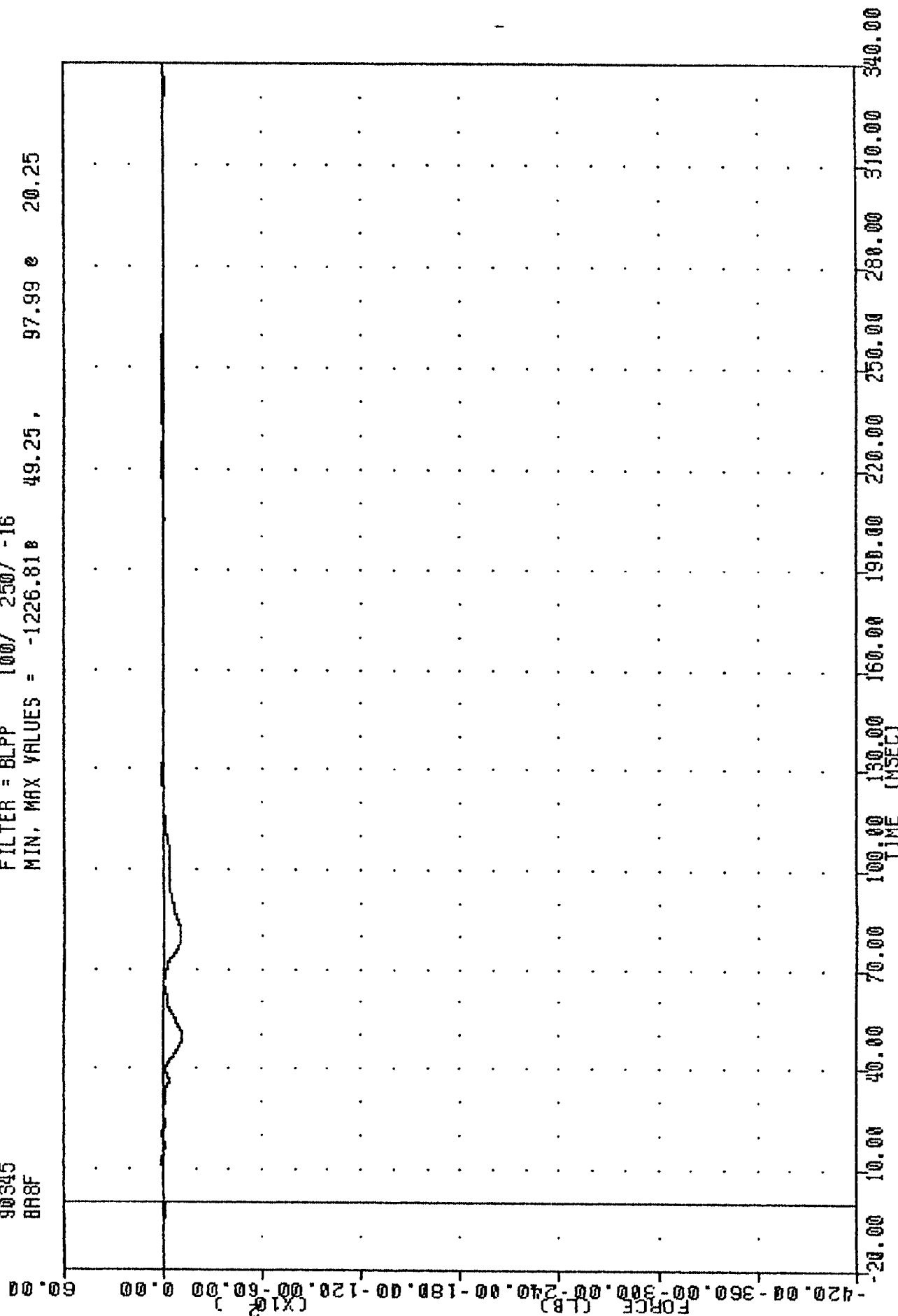
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -255.748 36.13, 120.17 0 13.38

90345	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00	150.00	160.00	170.00	180.00	190.00	200.00	210.00	220.00	230.00	240.00	250.00	260.00	270.00	280.00	290.00	300.00	310.00	320.00	330.00	340.00	
8A7F																																			
																											</								

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A7 FORCE

TRC , 901211
NEW CAR ASSESSMENT PROGRAM

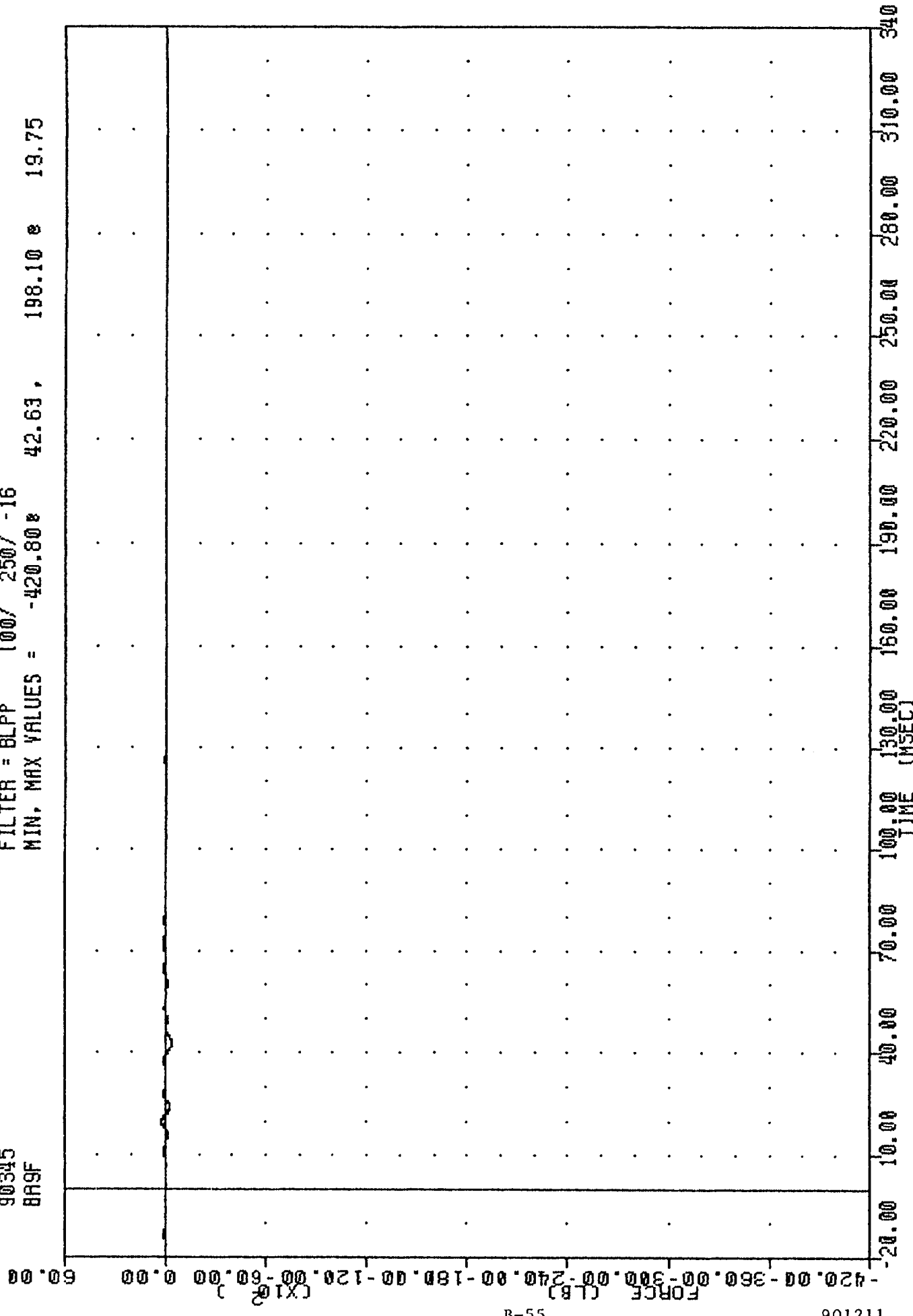
90345
B88F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -1226.81 49.25, 97.99 20.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION AS FORCE

NEW CAR ASSESSMENT PROGRAM
 90345
 BR9F

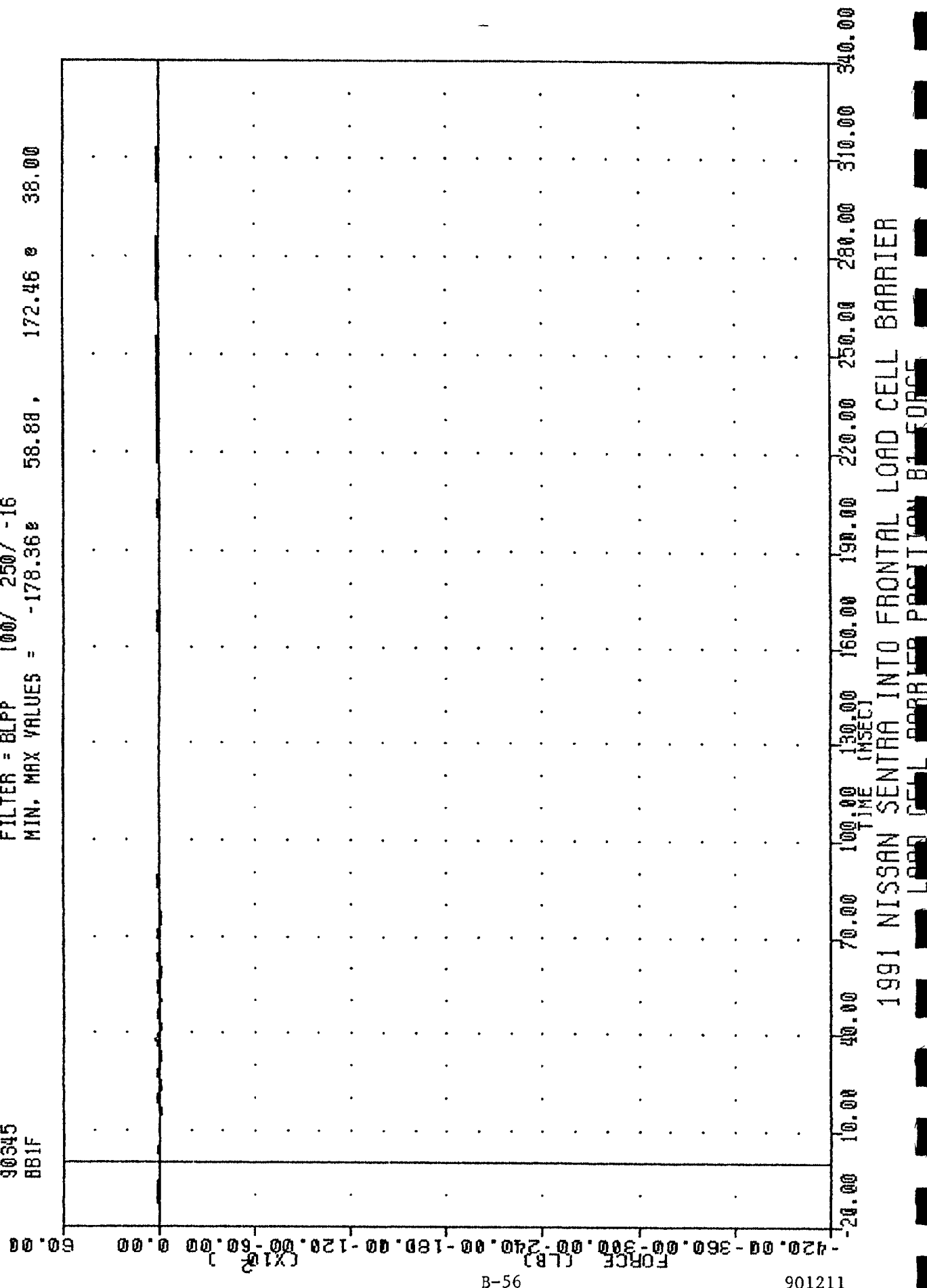
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -420.80 42.63, 198.10 19.75



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A9 FORCE

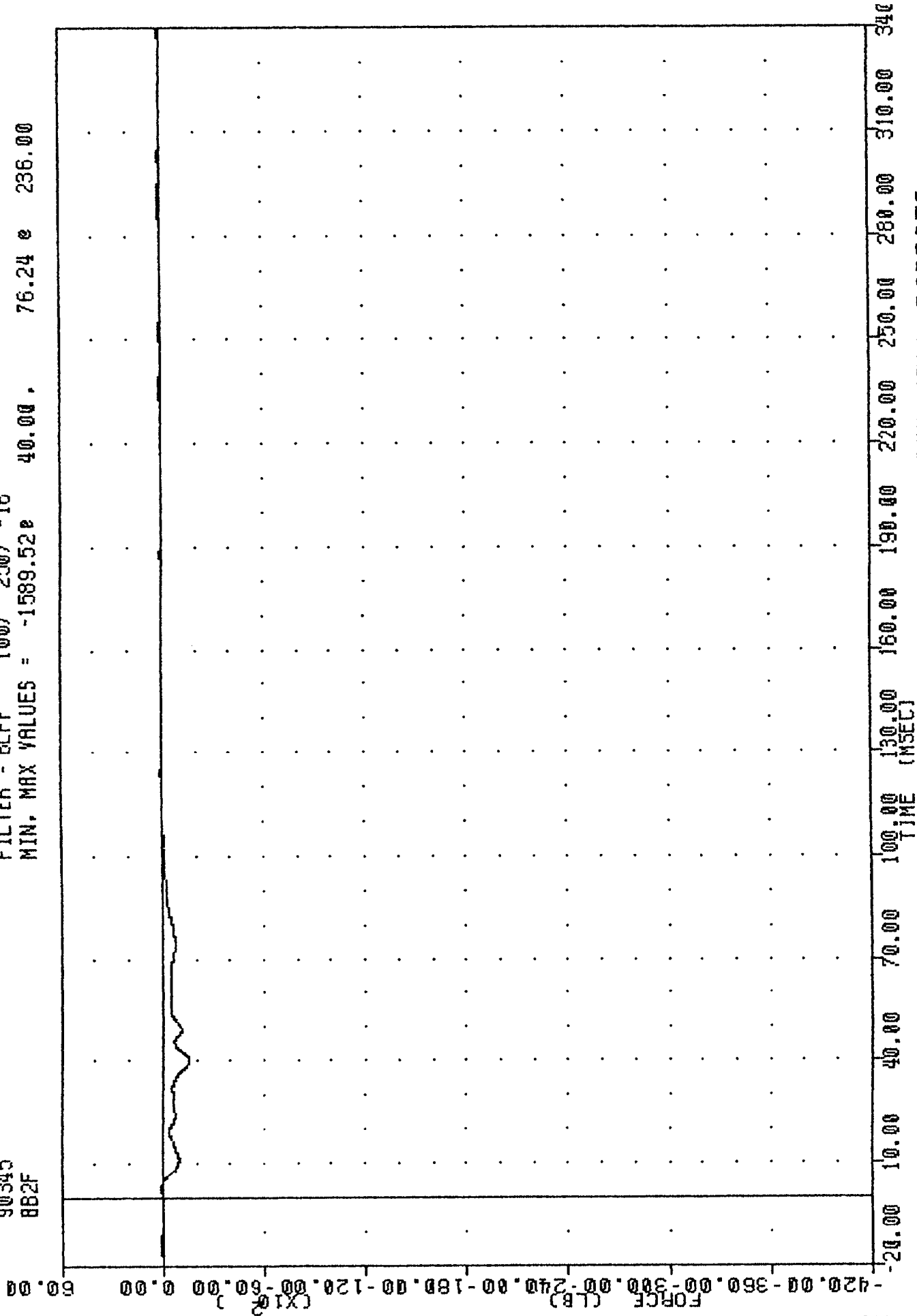
TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 BB1F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -178.36 58.88 172.46 38.00



INC
 NEW CAR ASSESSMENT PROGRAM
 90345
 882F

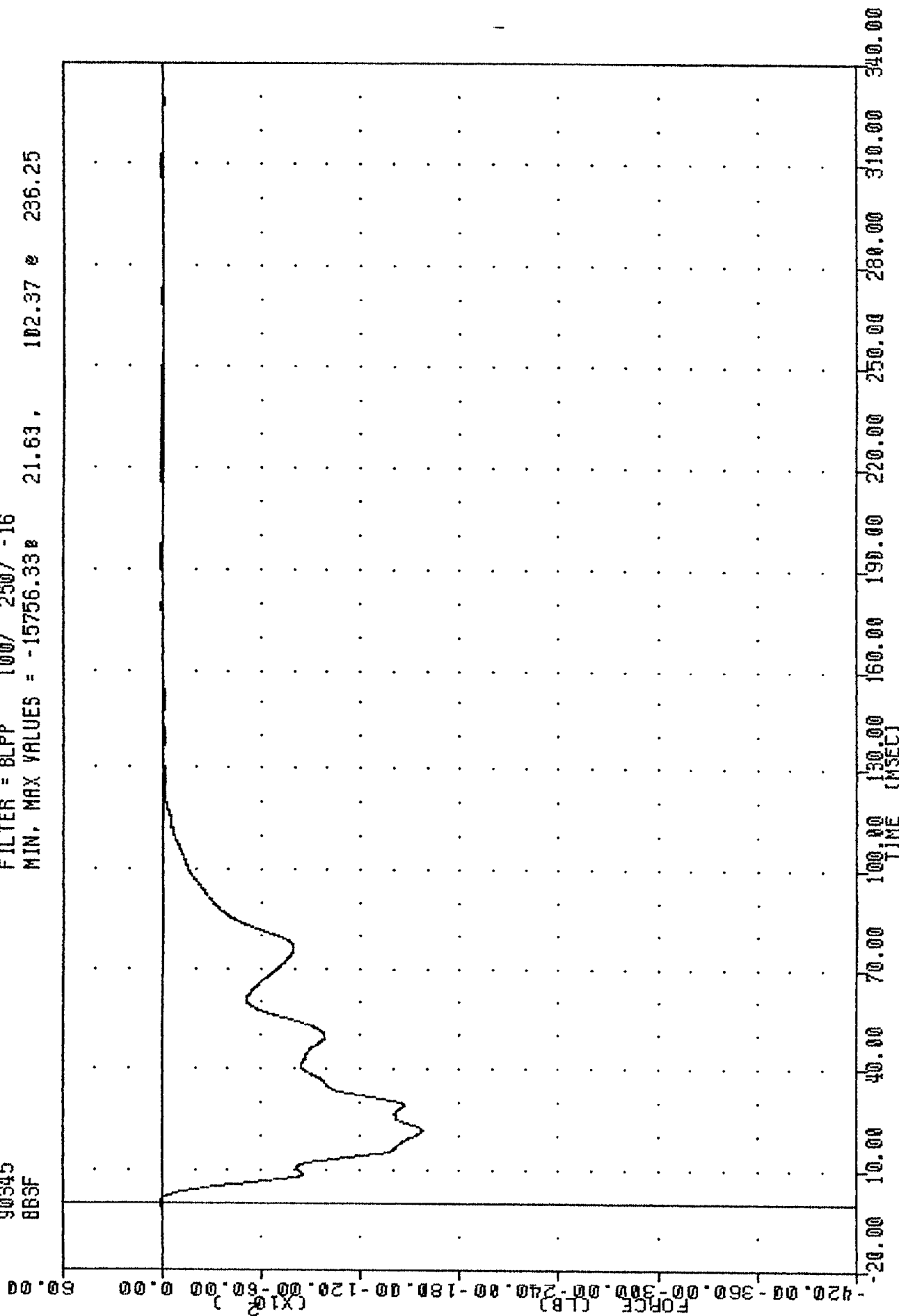
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1589.52 40.00 76.24 236.00



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B2 FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90545
 883F

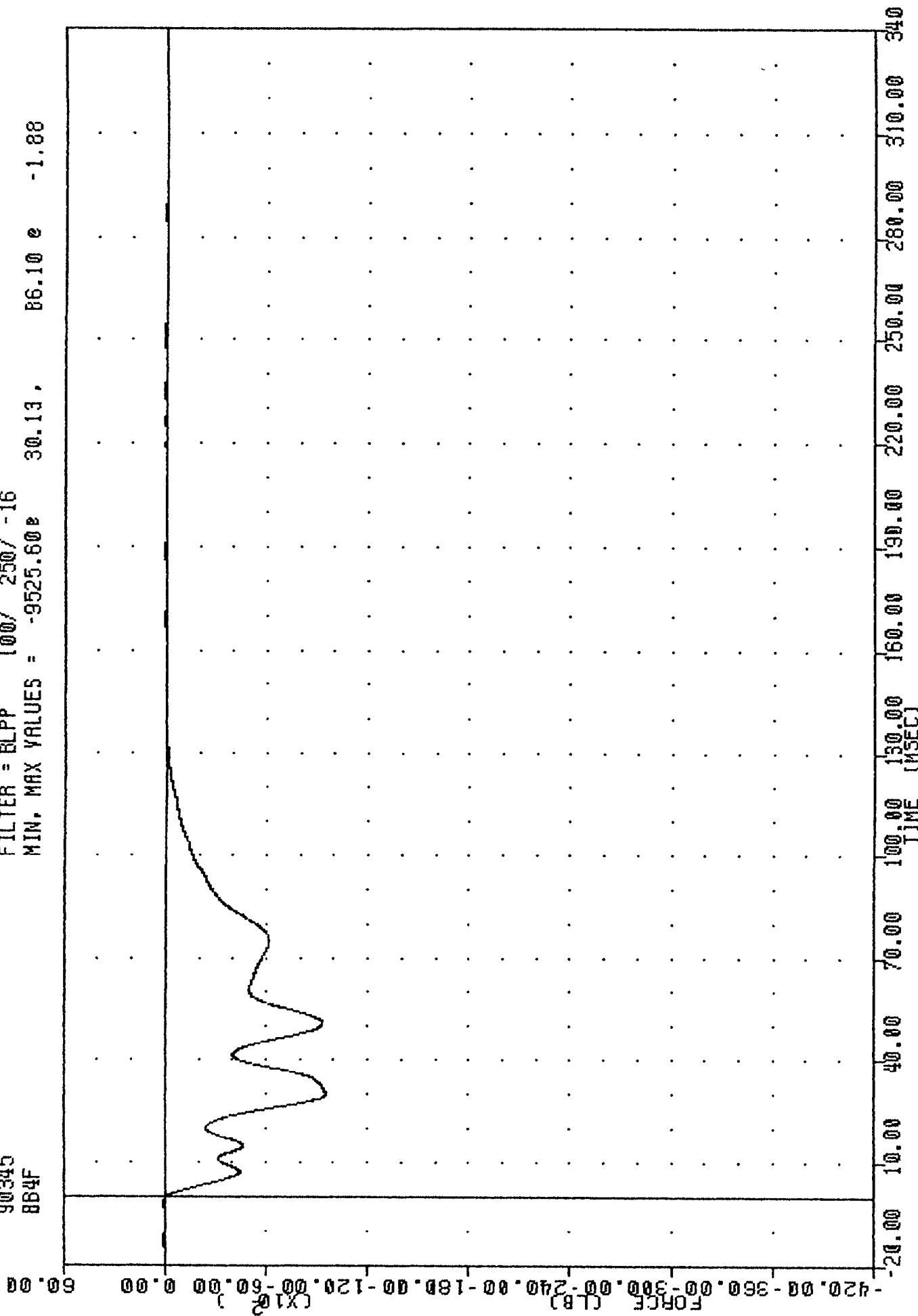
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -15756.33 21.63, 102.37 236.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B3 FORCE

111C
 NEW CAR ASSESSMENT PROGRAM
 90345
 884F

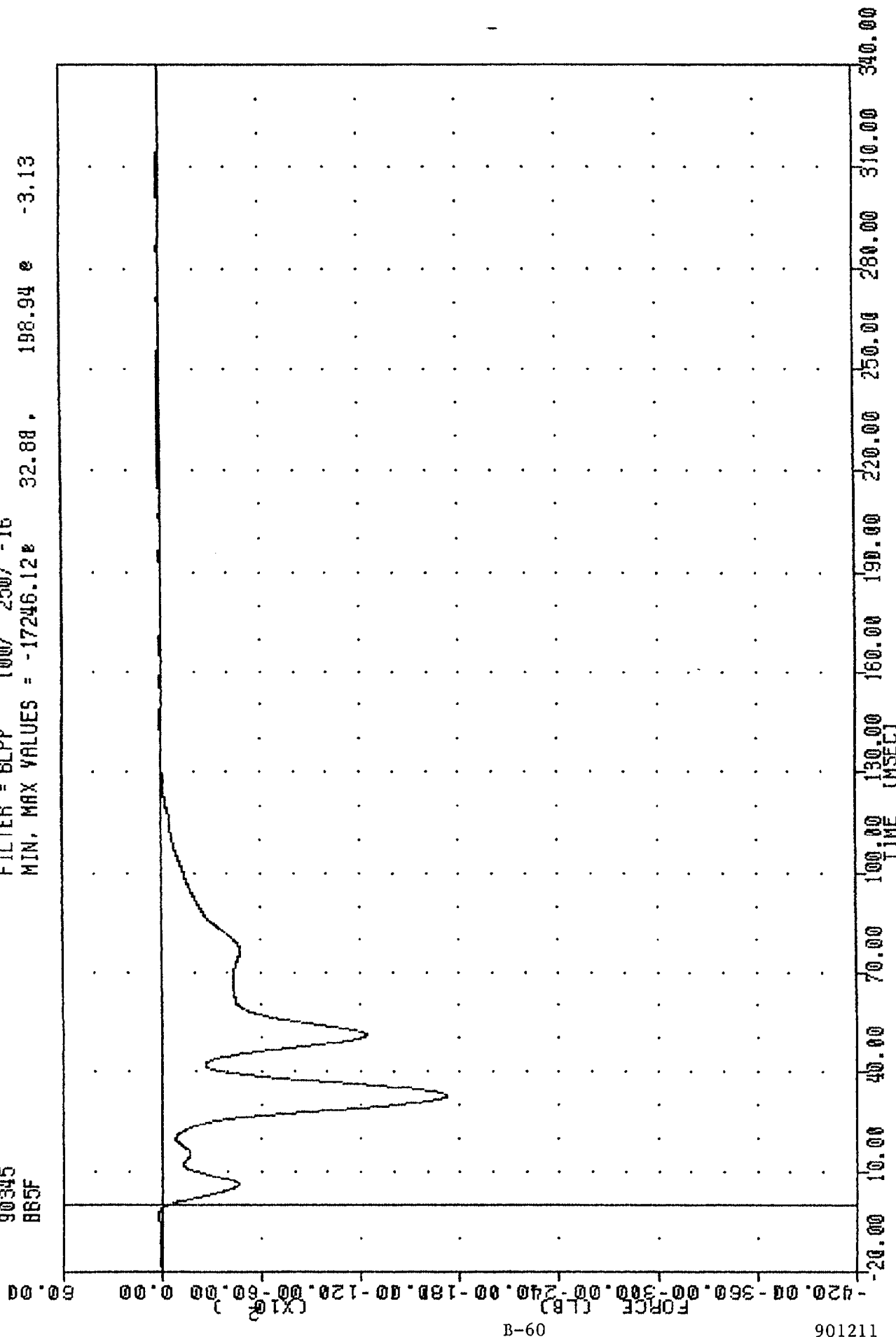
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -9525.60e 30.13, 86.10 e -1.88



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B4 FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 BB5F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -17246.12 32.88 198.94 e -3.13



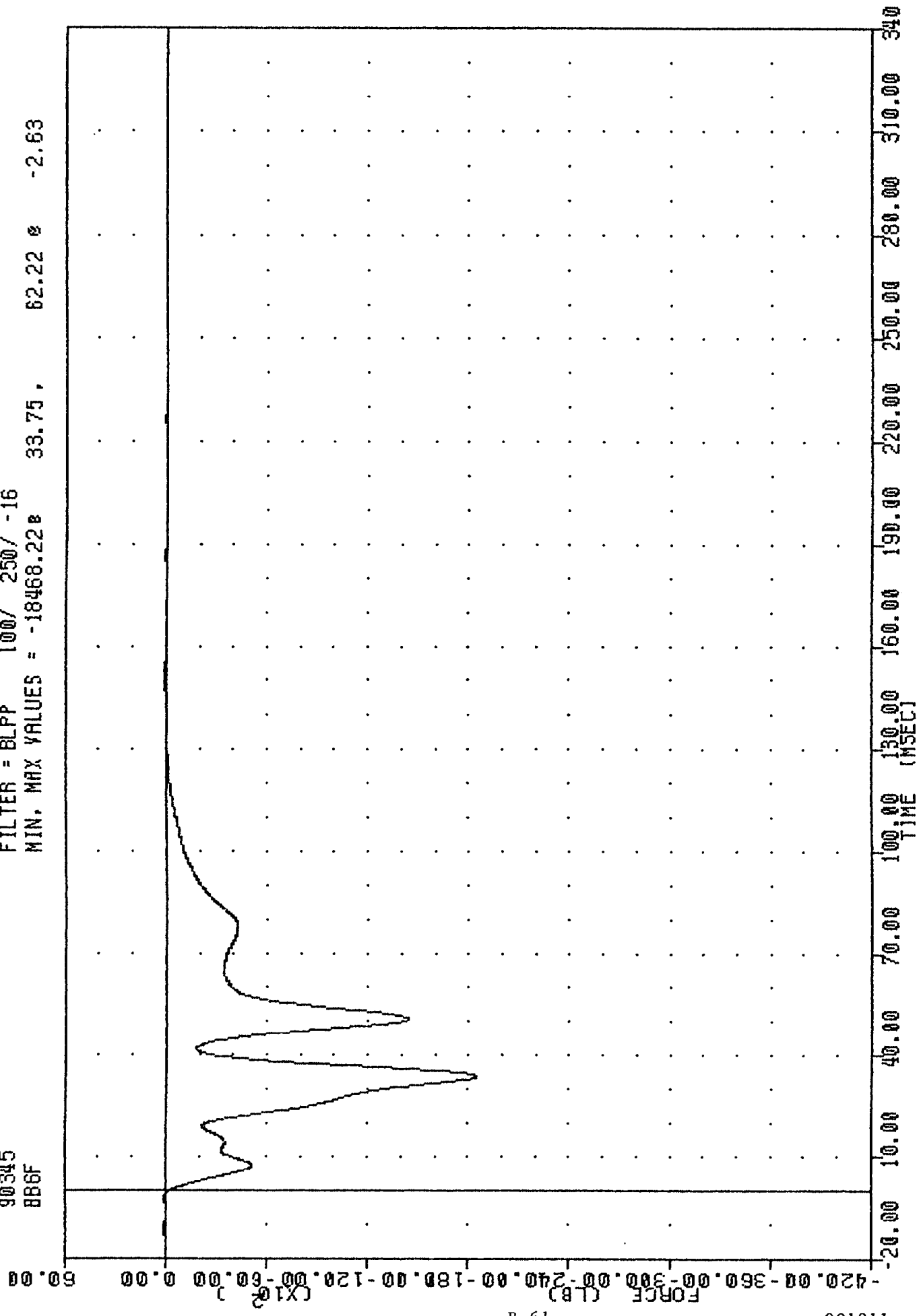
B-60

901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION BE FORCE

NEW CAR ASSESSMENT PROGRAM
 90345
 BB6F

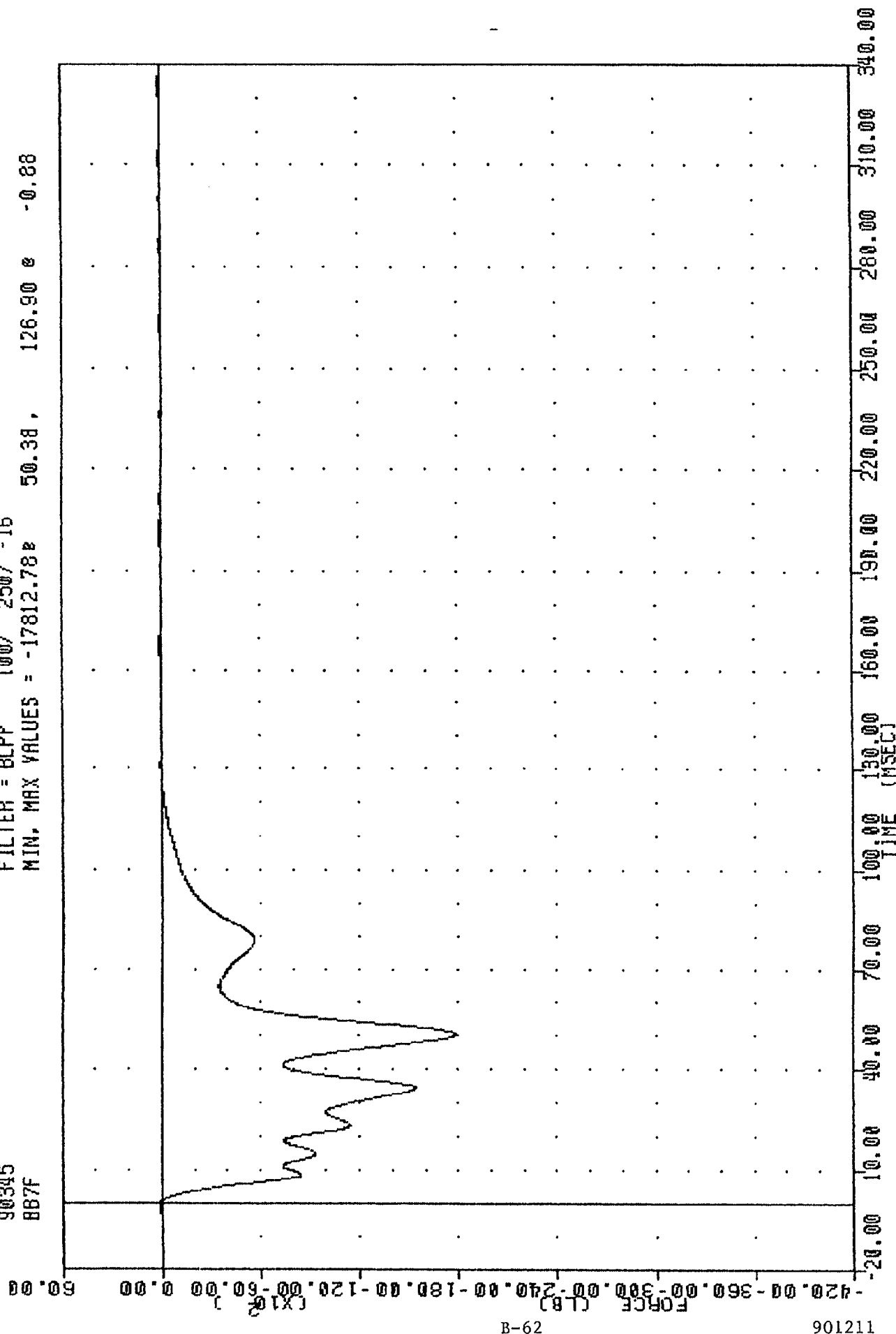
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -18468.228 33.75, 62.22 0 -2.63



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 86 FORCE

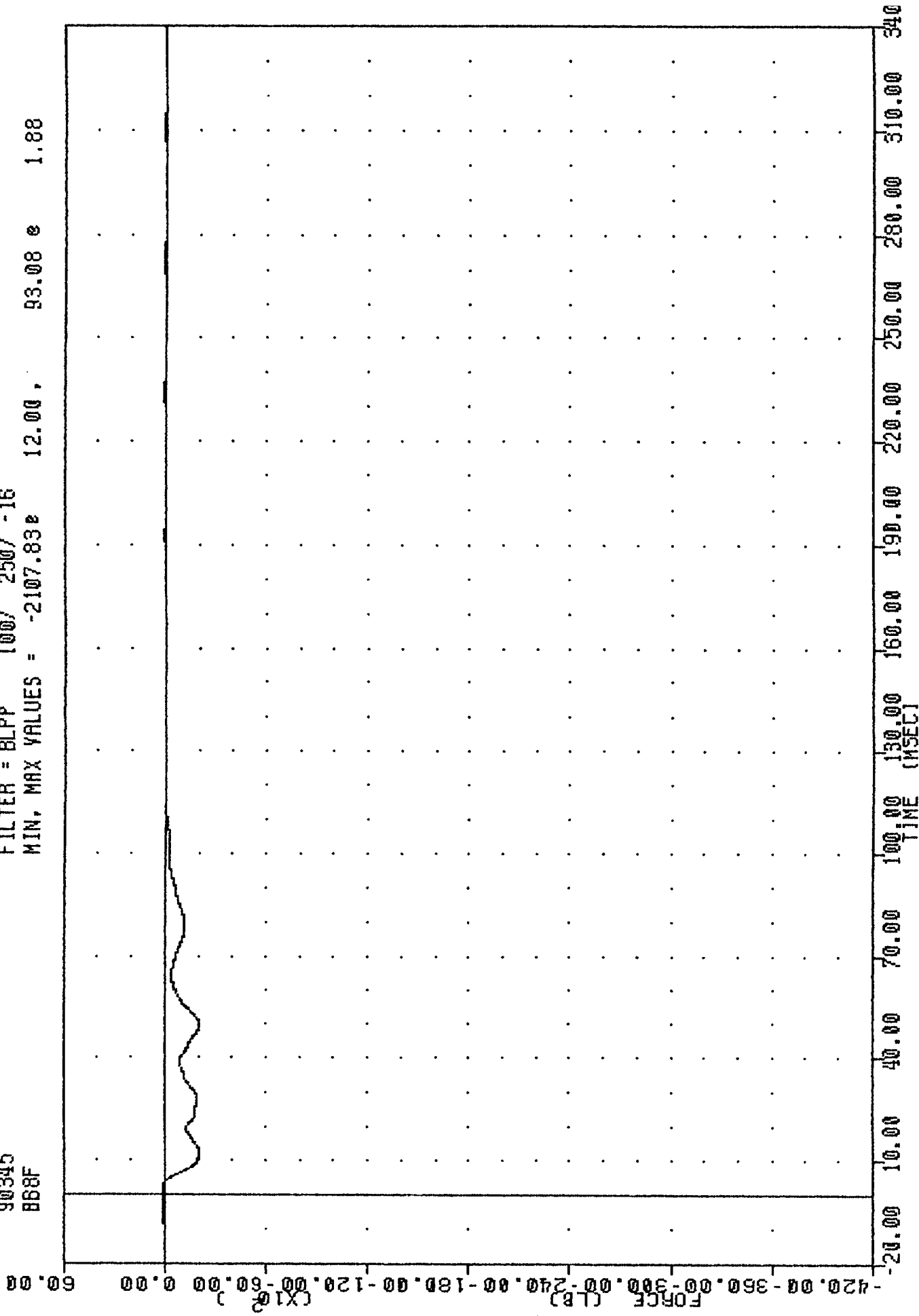
TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 887F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -17812.78 50.38 , 126.90 0 -0.88



NEW CAR ASSESSMENT PROGRAM
 90345
 888F

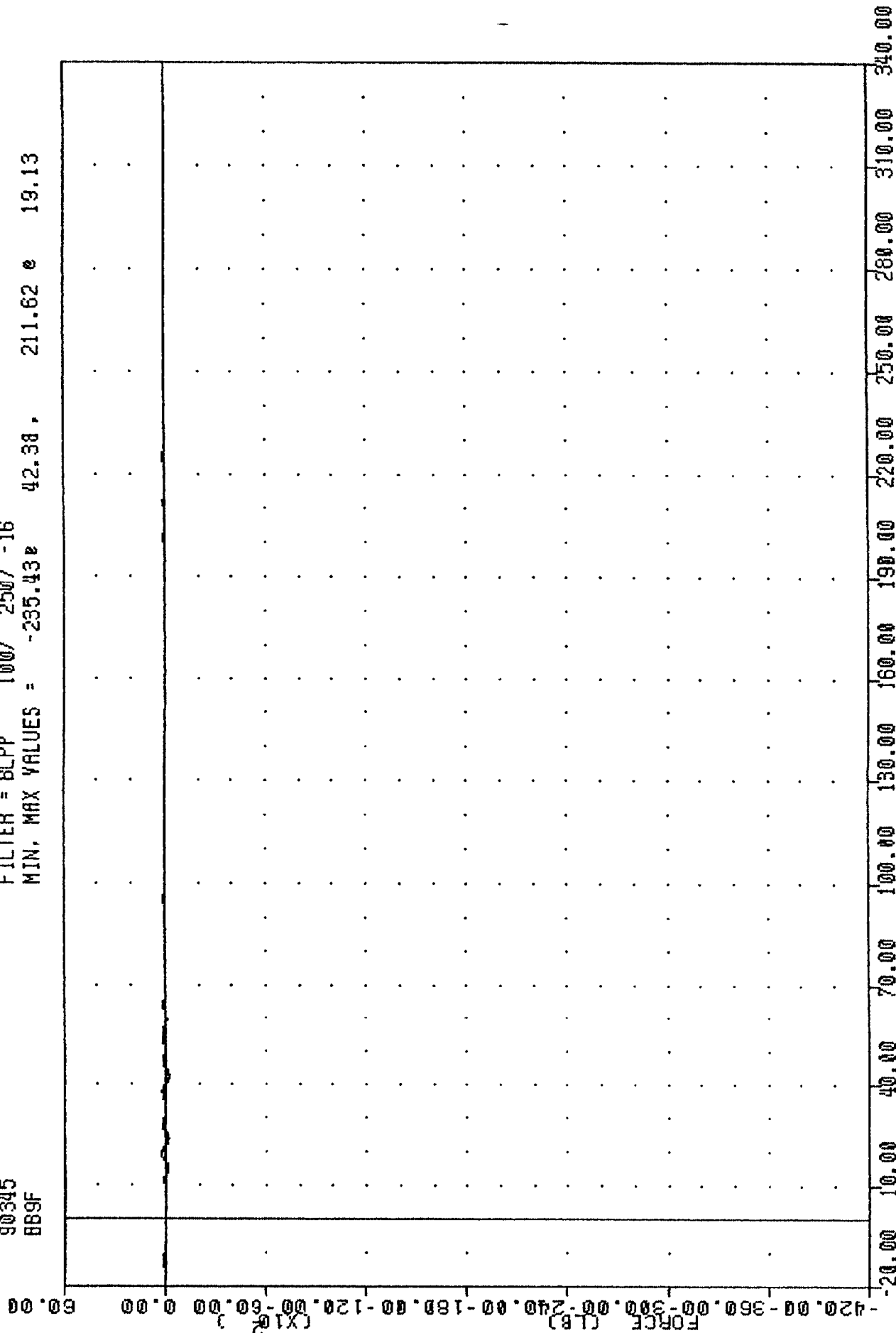
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -2107.83e 12.00, 93.08 e 1.88



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B8 FORCE

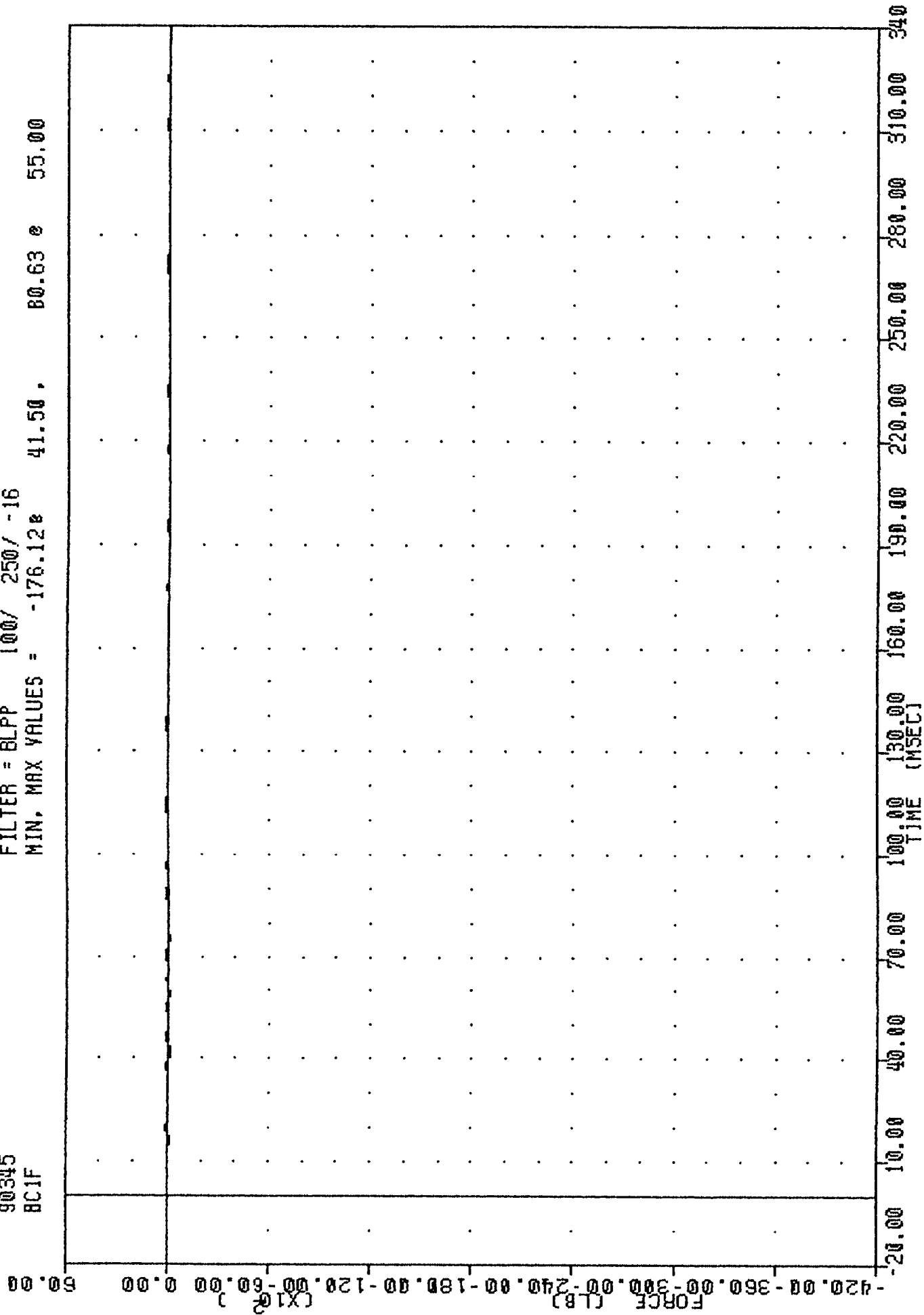
TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 BBSF

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -235.43e 42.38, 211.62 e 19.13



NEW CAR ASSESSMENT PROGRAM
 90345
 BC1F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -176.128 41.50, 80.63 55.00



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C1 FORCE

TRC
NEW CAR ASSESSMENT PROGRAM

901211

90345

BC2F

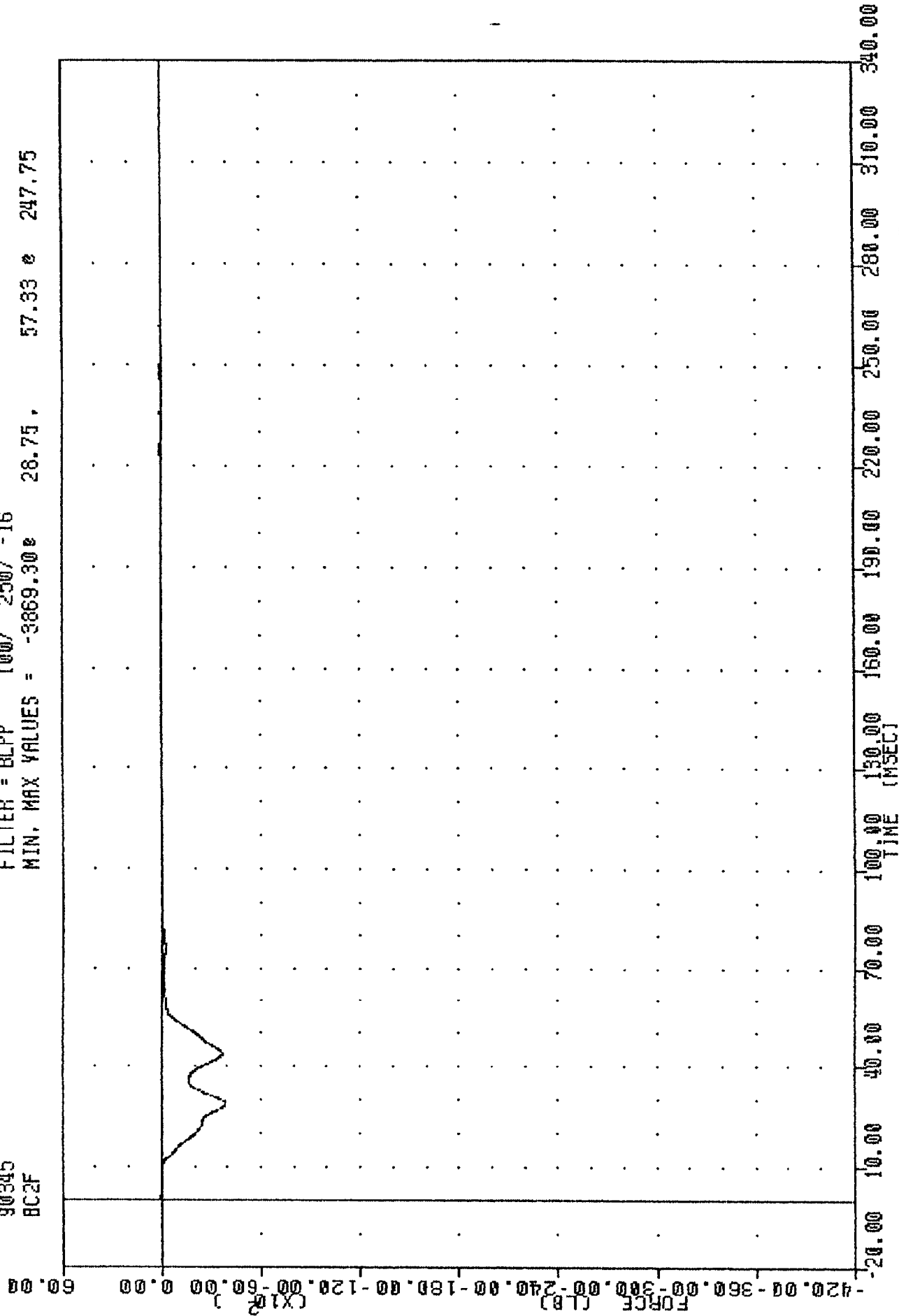
FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -3869.30e

28.75,

57.53 e

247.75

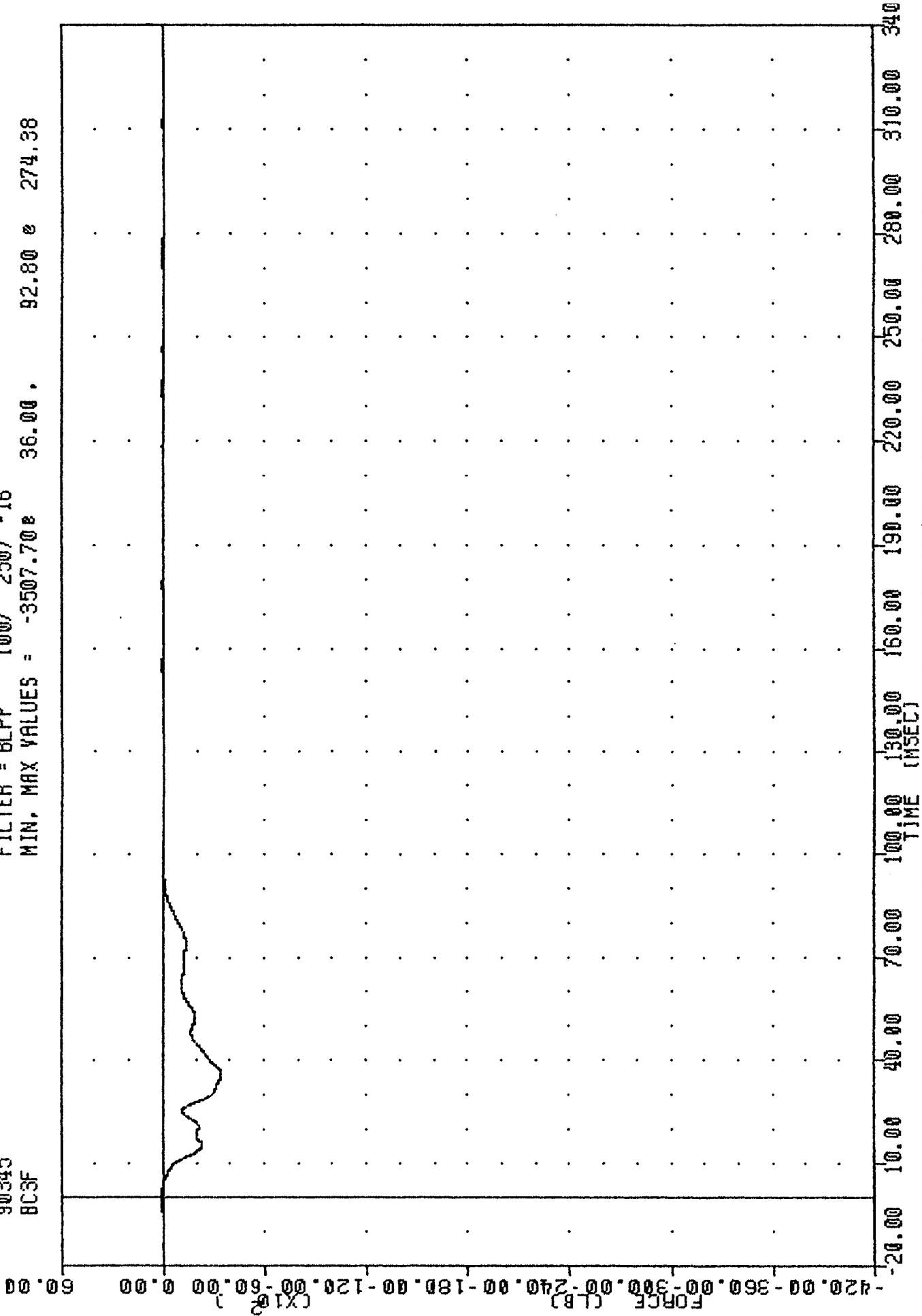


1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER

LOAD CELL BARRIER POSITION C7 FORCE

NEW CAR ASSESSMENT PROGRAM
 90345
 BC3F

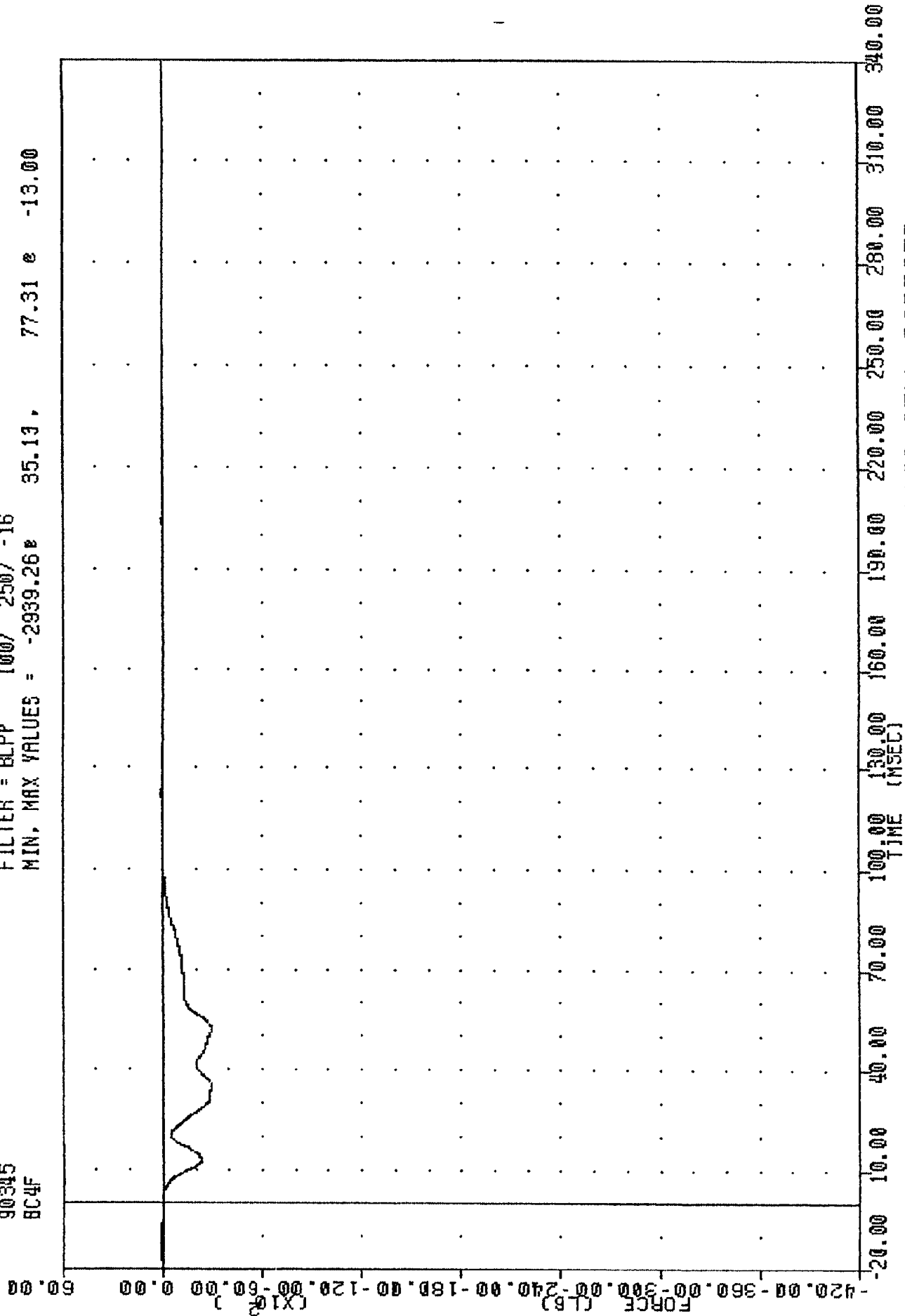
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -3507.70 36.00 92.80 274.38



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C3 FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 BC4F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -2939.26 35.13 , 77.31 e -13.00



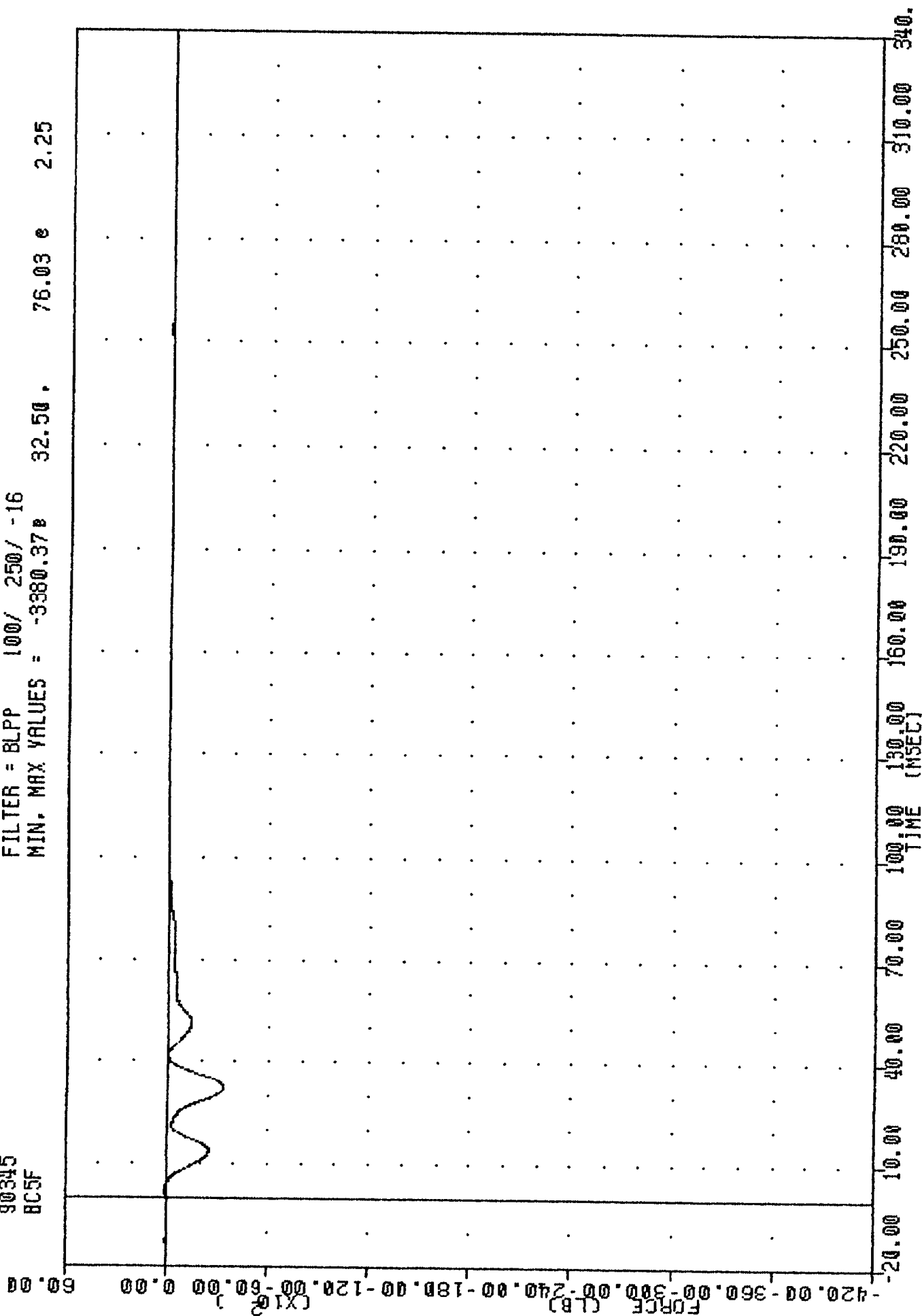
NEW CAR ASSESSMENT PROGRAM

90345

BC5F

FILTER = BLPP 100/ 250/ -16

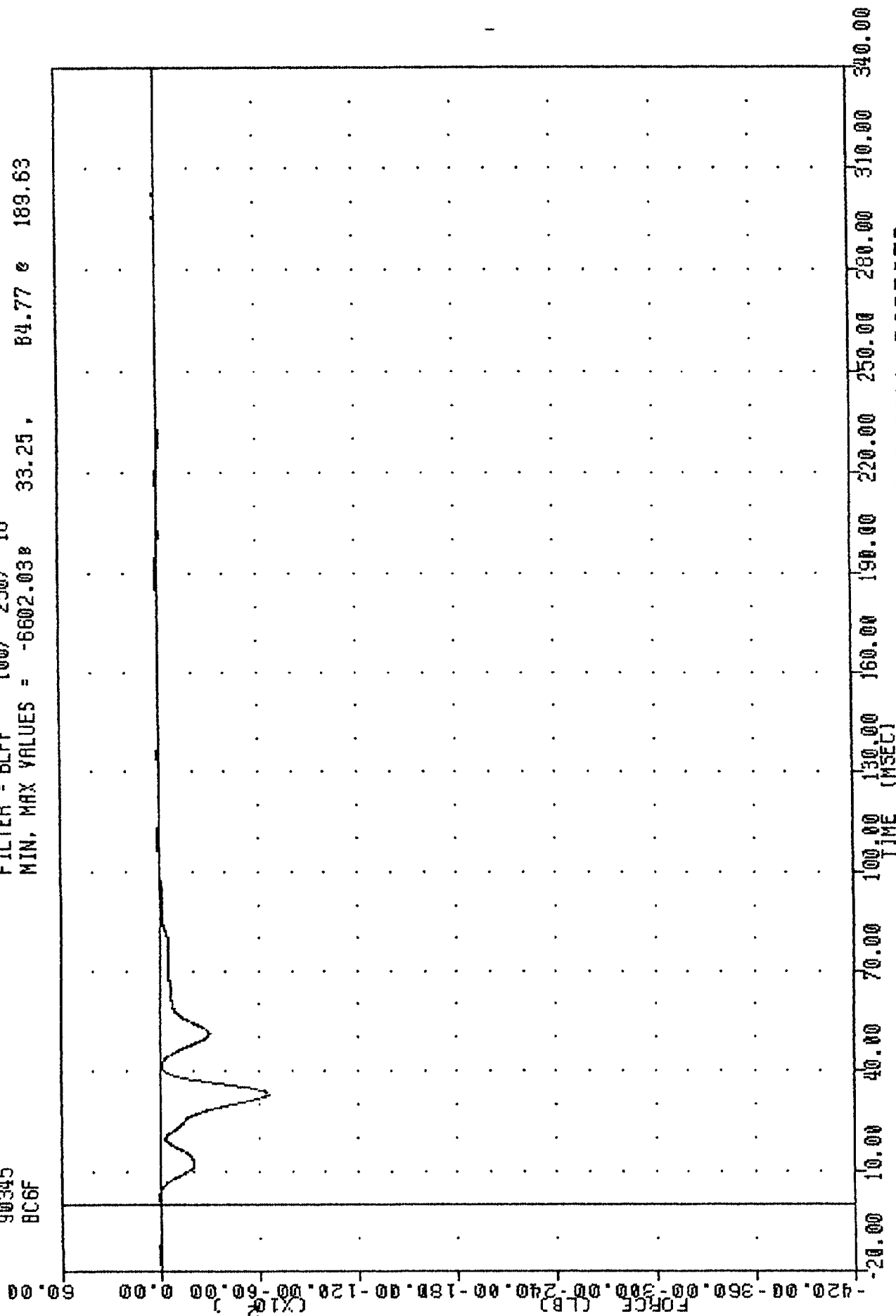
MIN. MAX VALUES = -3380.37 32.50 76.03 2.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C5 FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 BC6F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -6602.038 33.25 , 84.77 @ 189.63



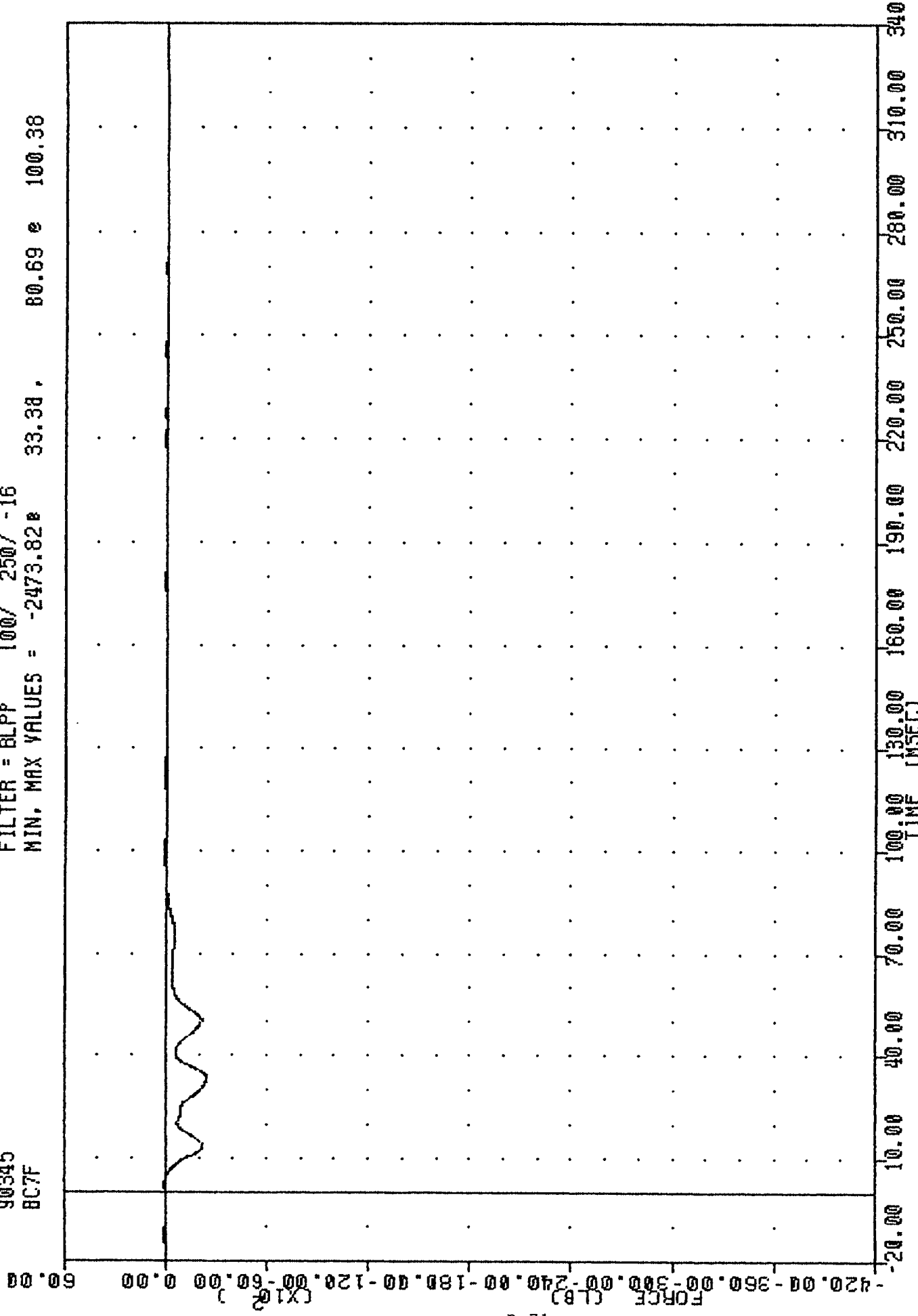
1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION CS FORCE

NEW CAR ASSESSMENT PROGRAM

90345
BC7F

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -2473.82 33.38 ,

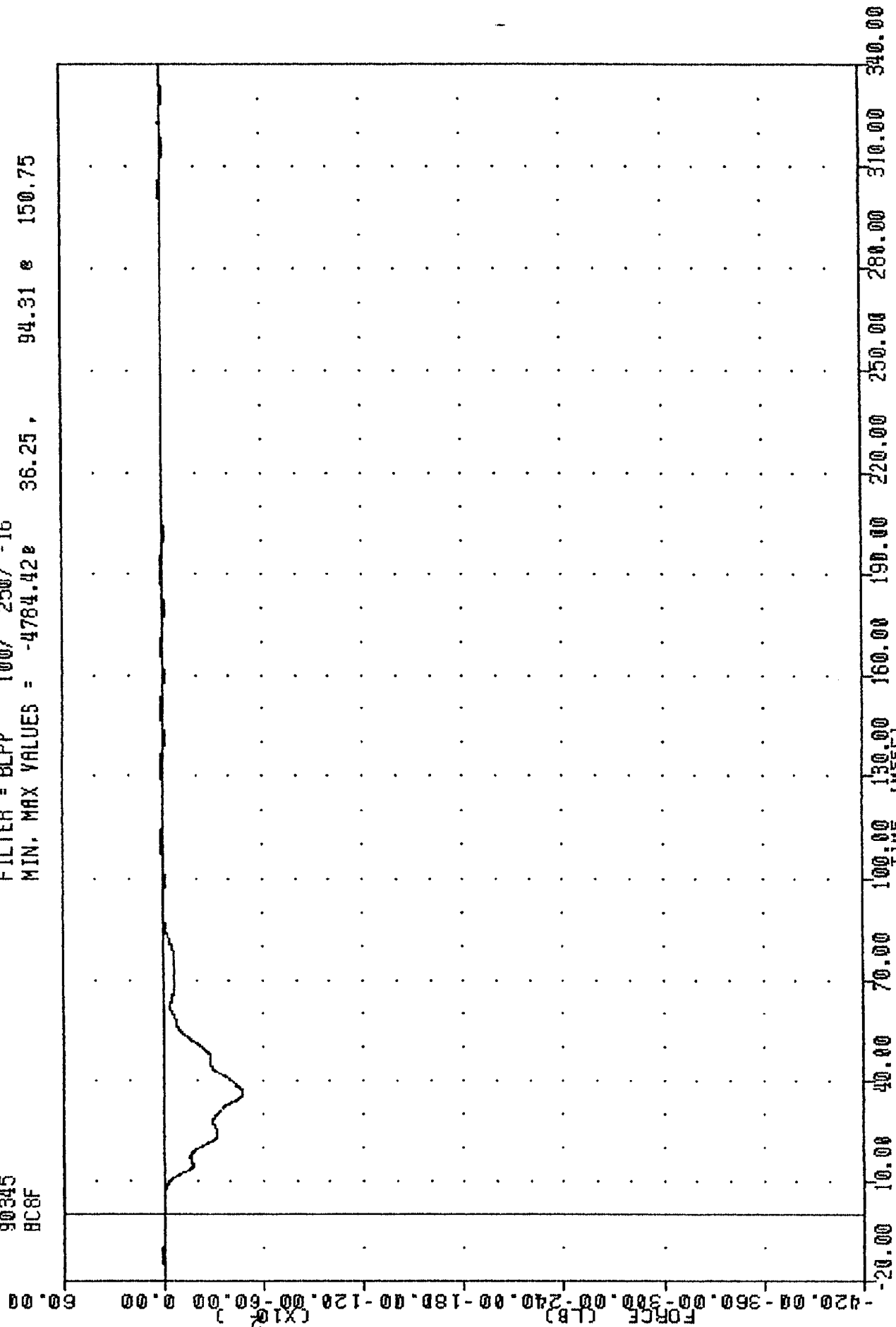
80.69 e 100.38



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C7 FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 BC8F

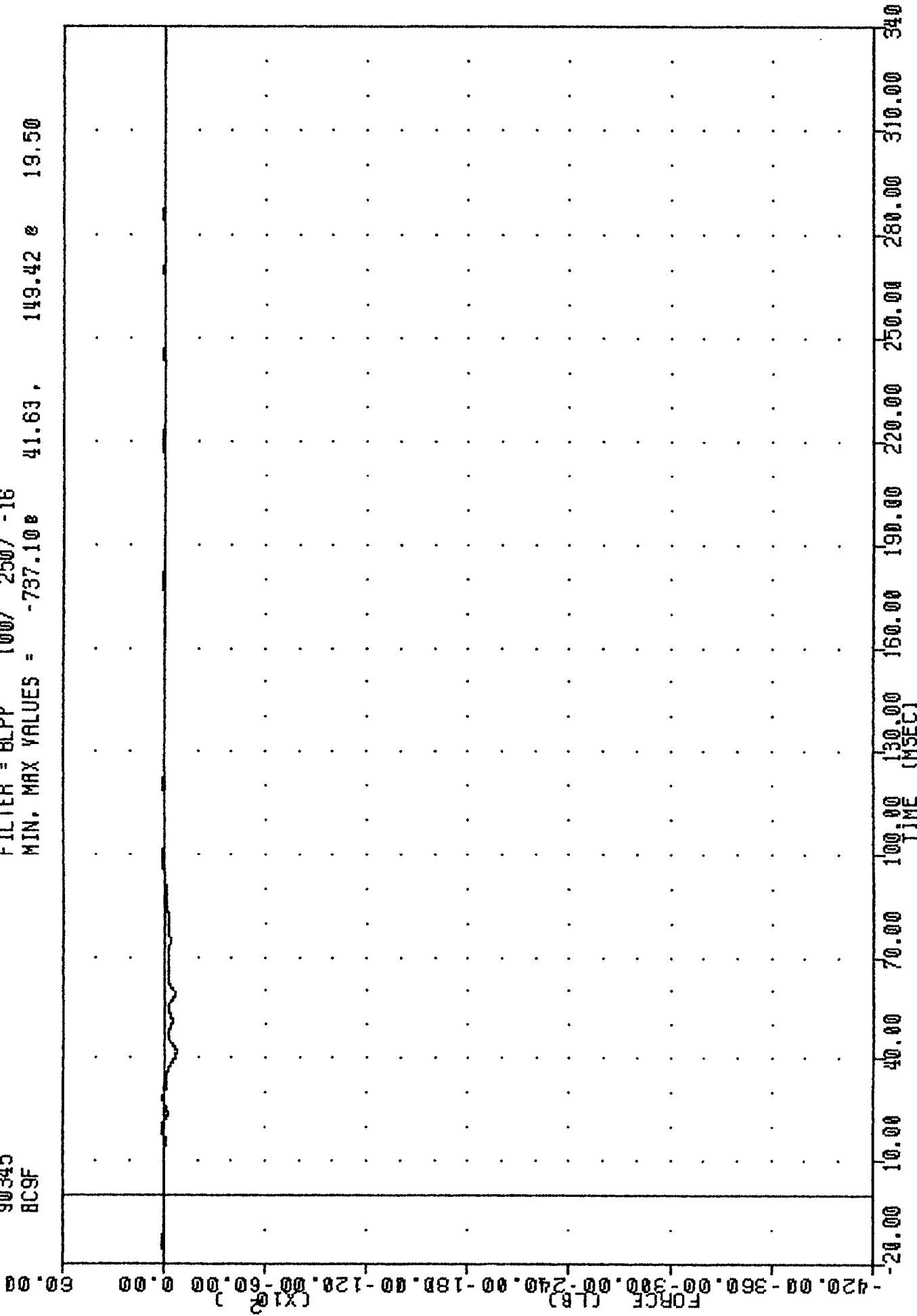
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -4784.42e 36.25 , 94.31 e 150.75



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION CAR FORCE

NEW CAR ASSESSMENT PROGRAM
 90345
 BC9F

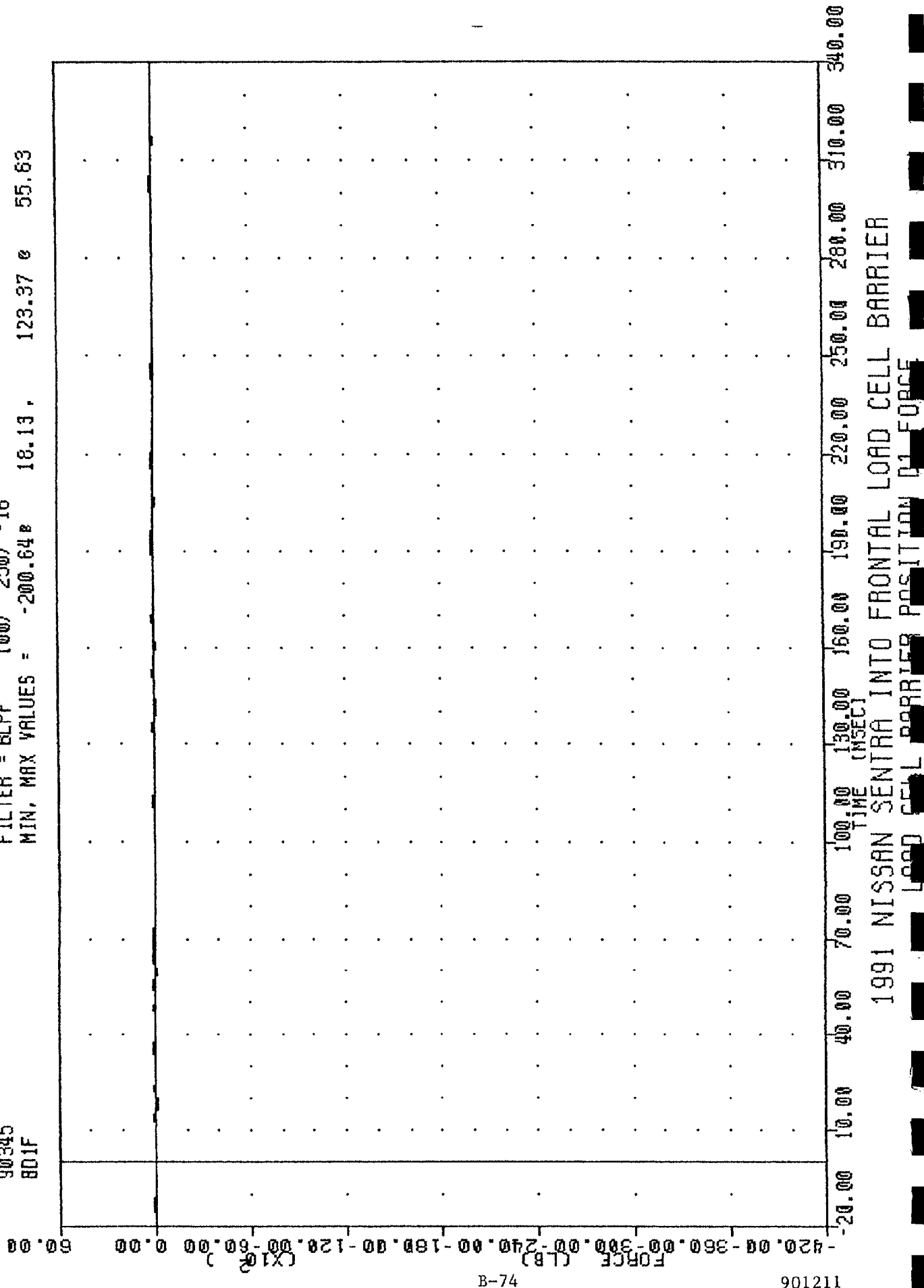
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -737.10 41.63, 149.42 19.50



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C9 FORCE

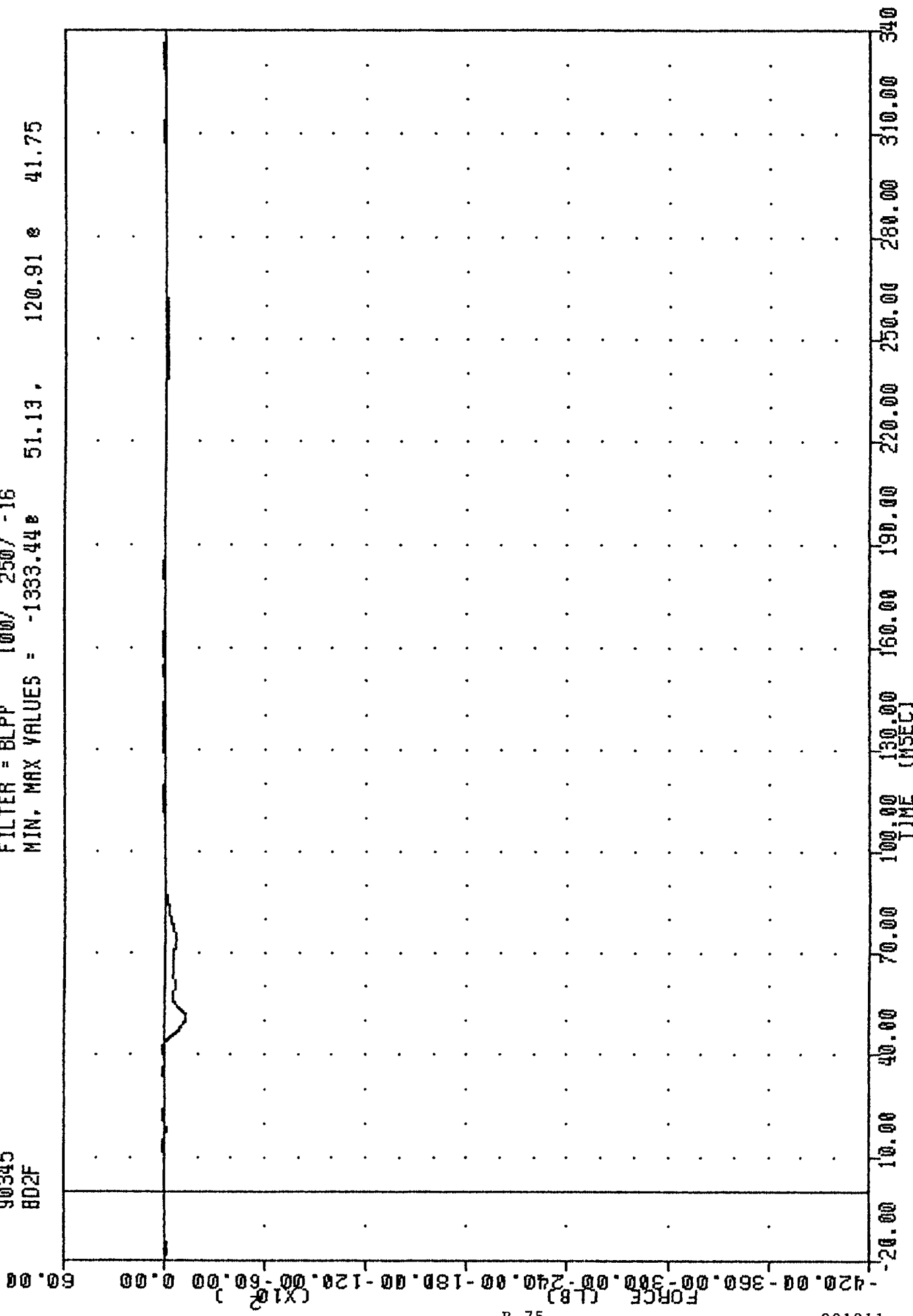
TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 BDI F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -200.64 18.13, 123.37 55.63



NEW CAR ASSESSMENT PROGRAM
 90345
 802F

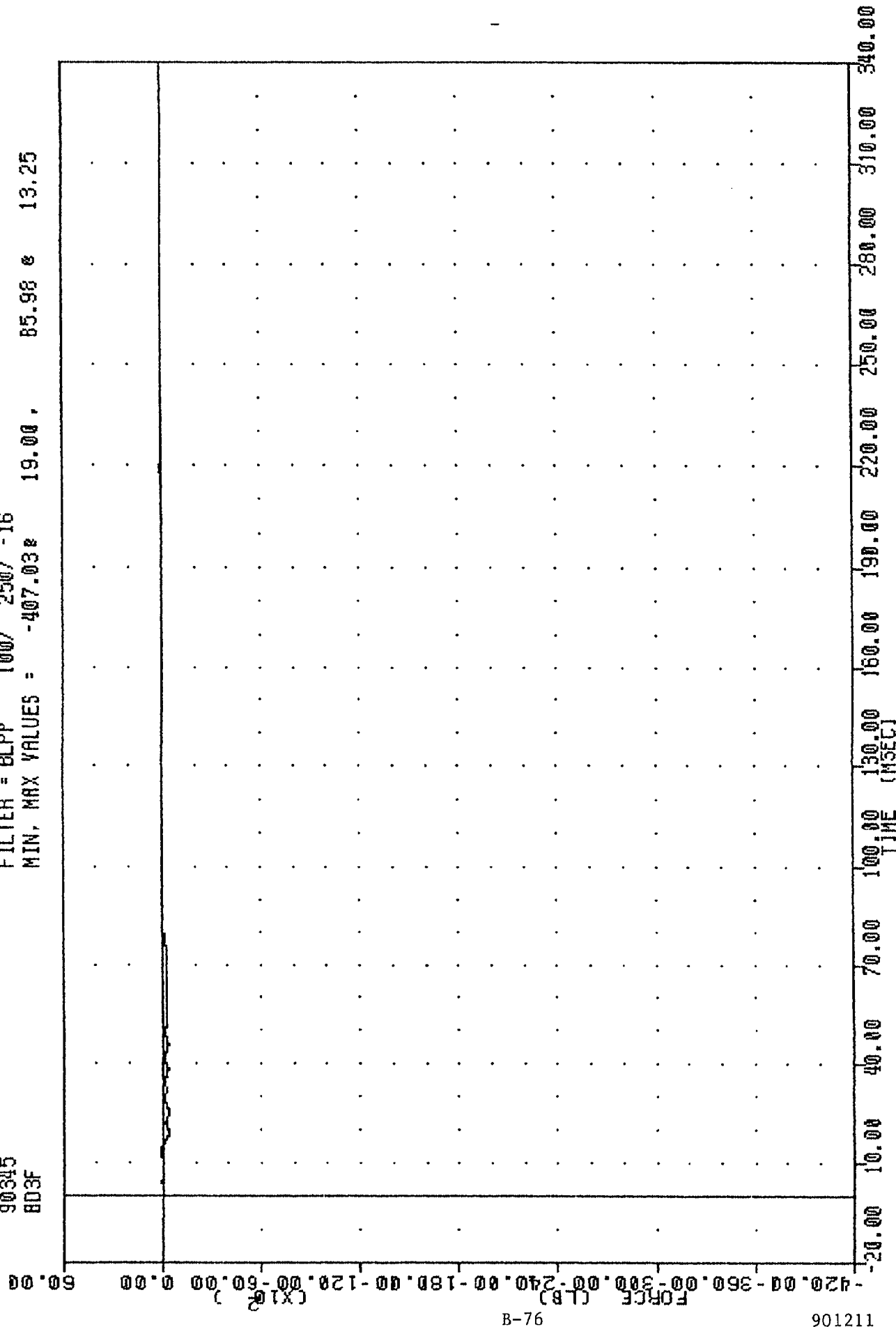
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1333.44 51.13, 120.91 41.75



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 02 FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 BD3F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -407.03 19.00 , 85.98 13.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D3 FORCE

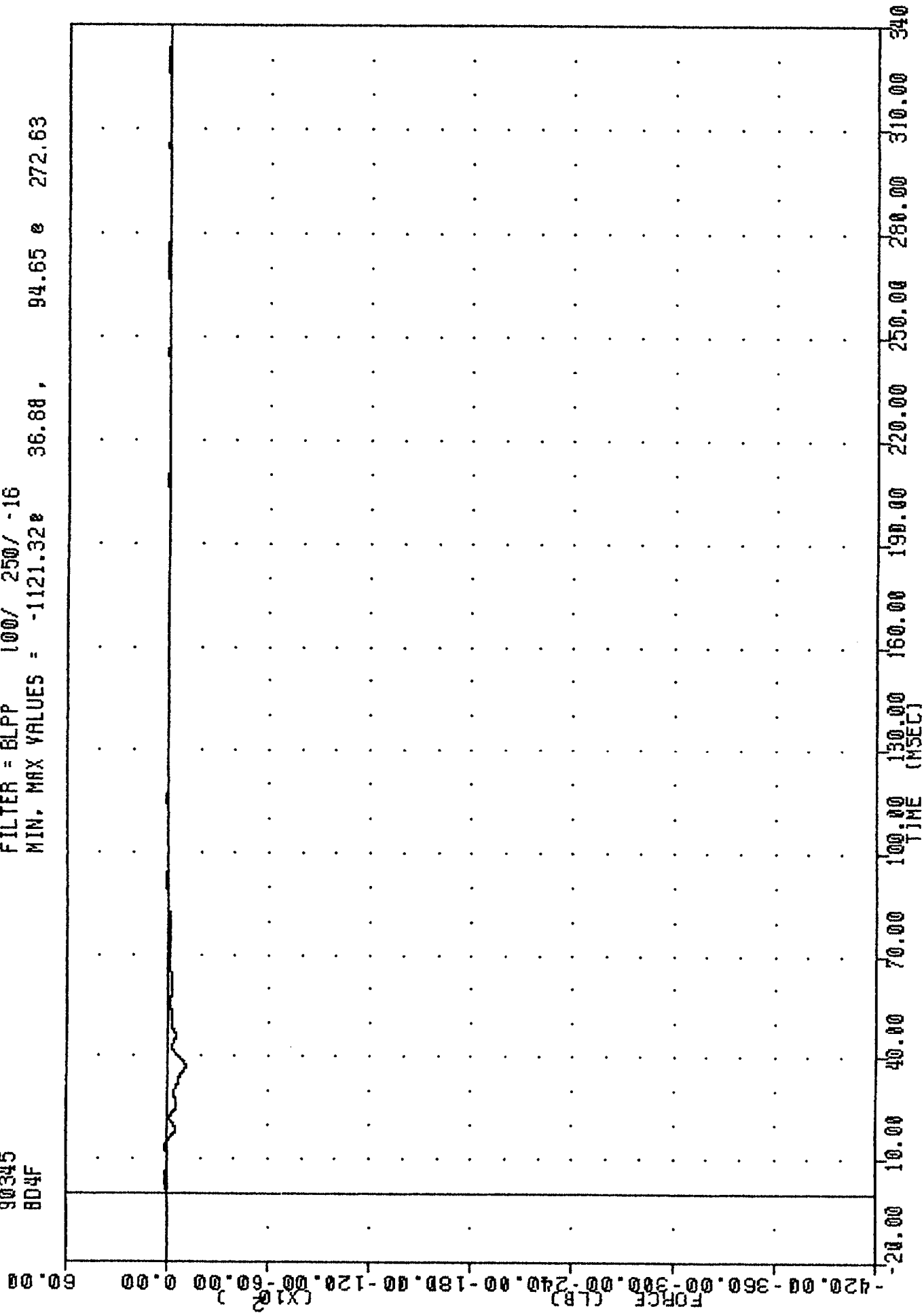
NEW CAR ASSESSMENT PROGRAM

90345

BD4F

FILTER = BLPP 100/ 250/ -16

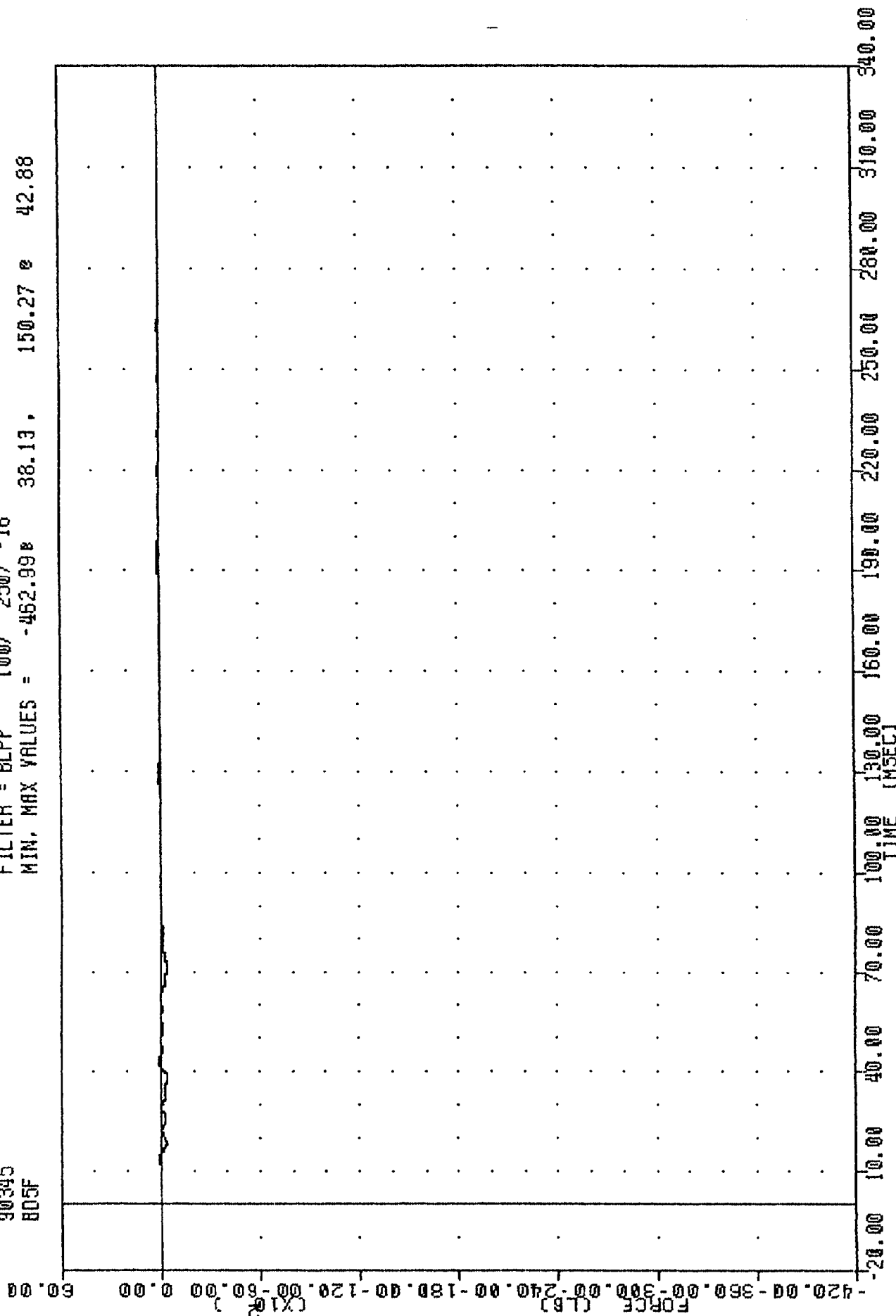
MIN. MAX VALUES = -1121.32 36.88 , 94.65 272.63



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D4 FORCE

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 805F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -462.998 38.13, 150.27 42.88



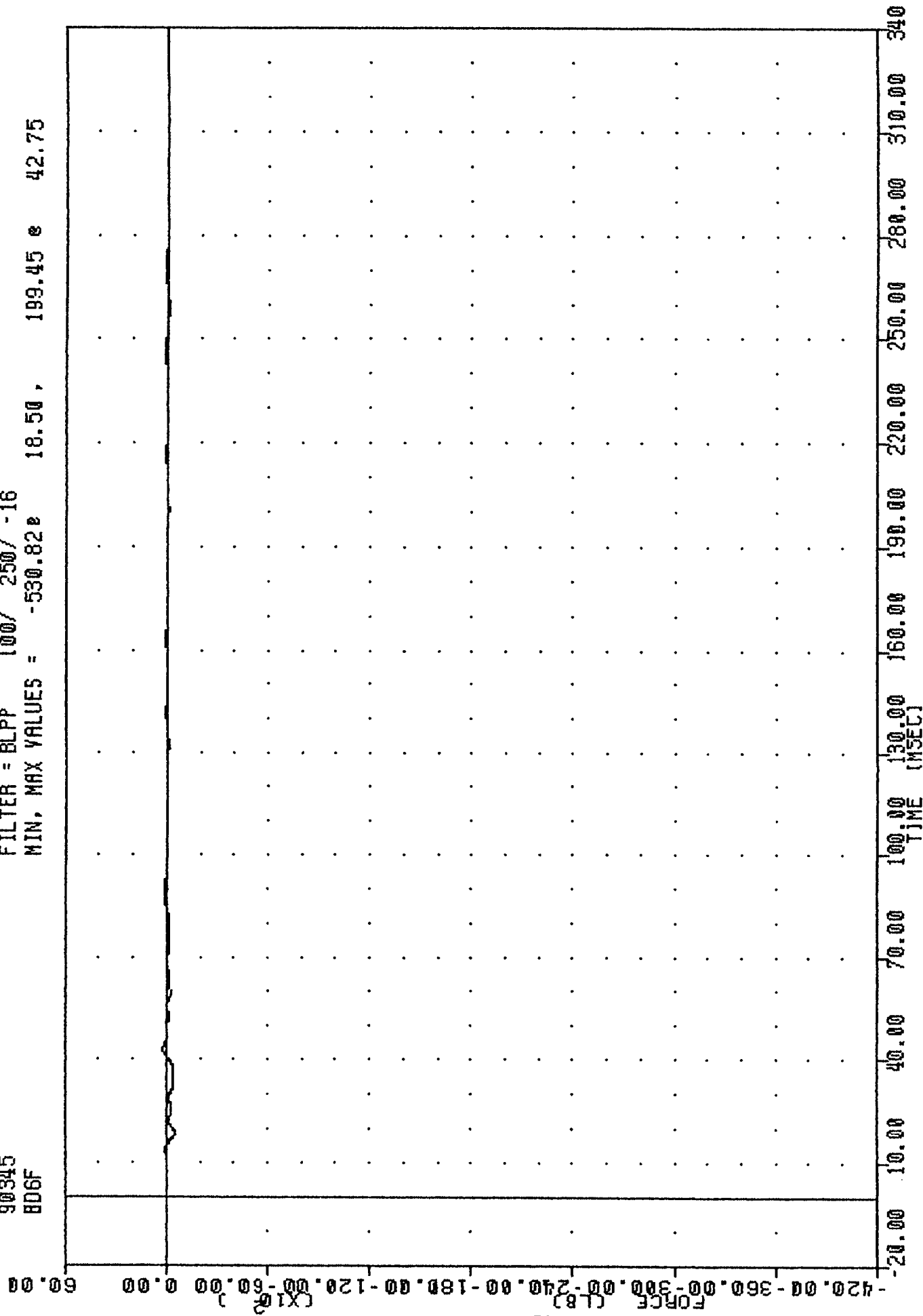
B-78

901211

1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL POSITION DE FORCE

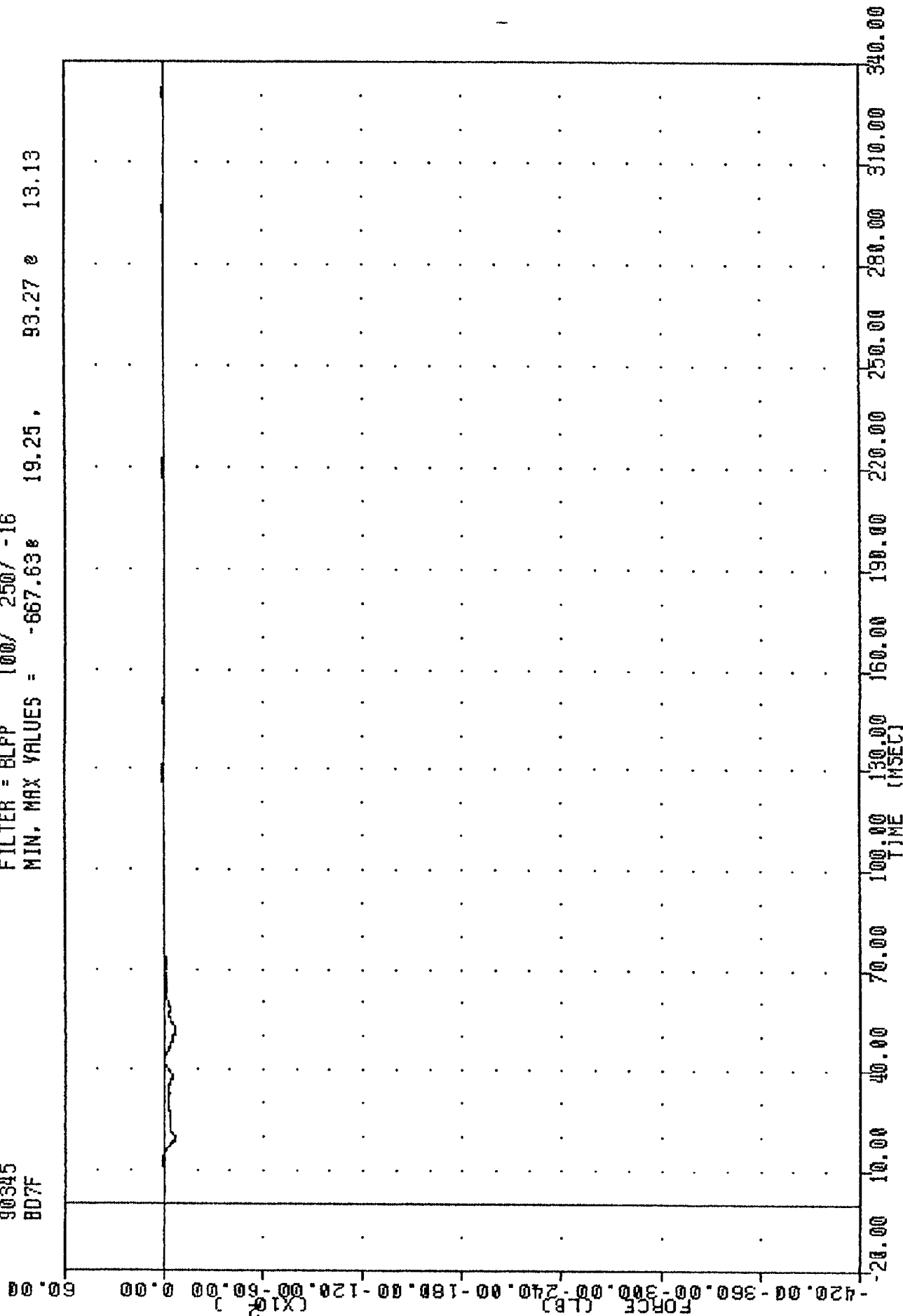
NEW CAR ASSESSMENT PROGRAM
 90345
 BD6F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -530.82 18.50 , 199.45 42.75



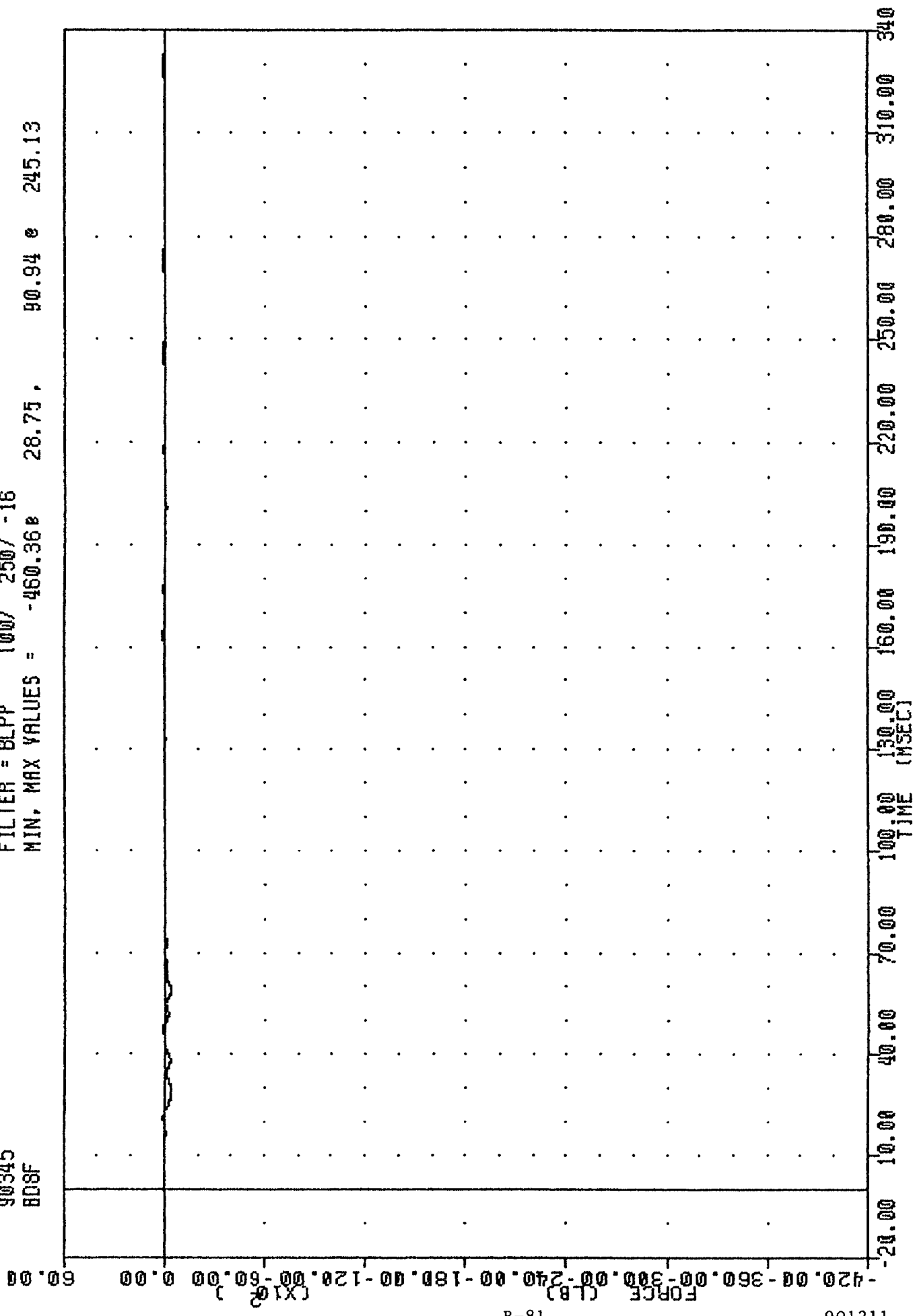
TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 807F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -867.63% 19.25, 93.27 @ 13.13



NEW CAR ASSESSMENT PROGRAM
 90345
 B08F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -460.36 28.75, 90.94 245.13

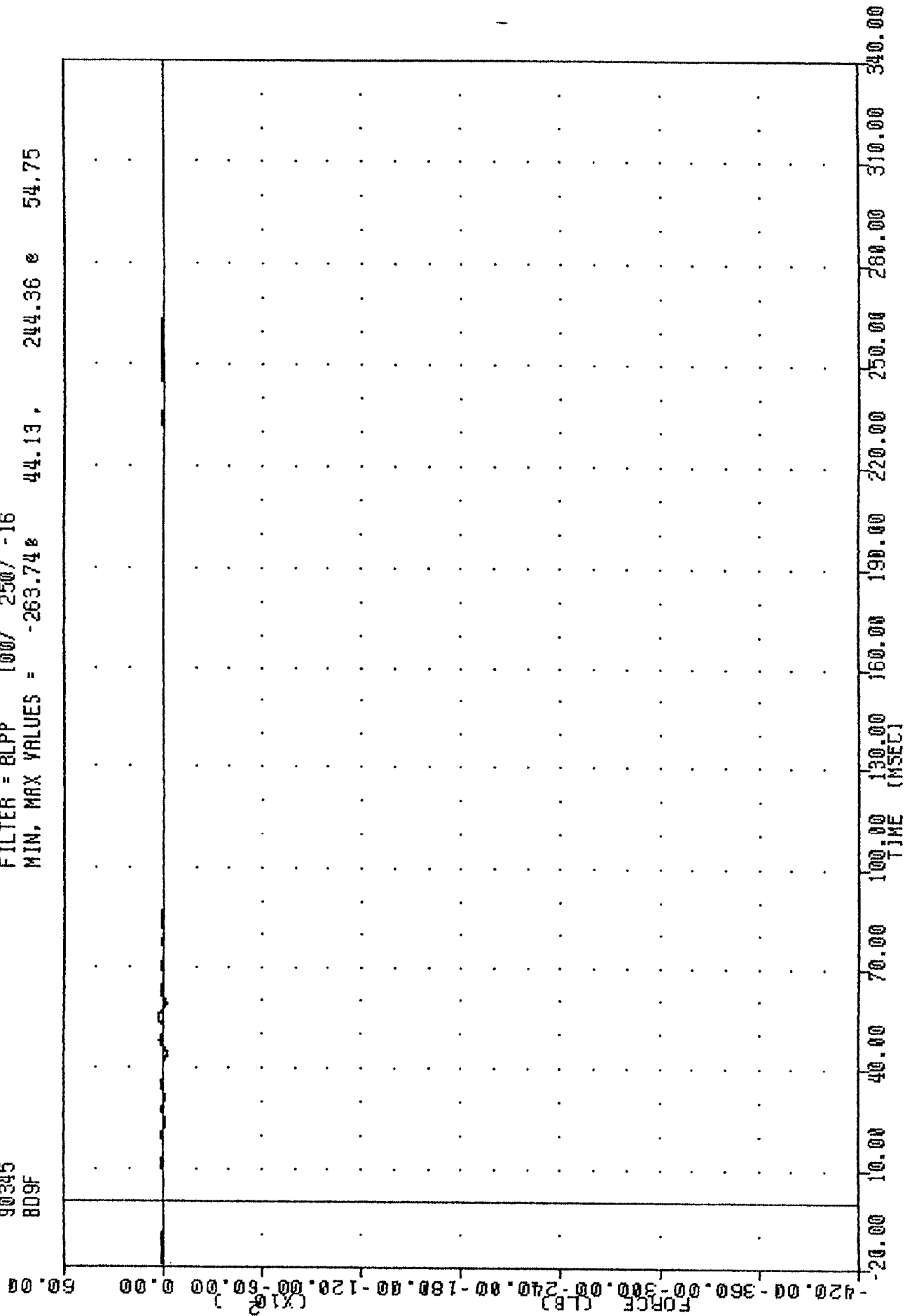


1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D8 FORCE

TRC
NEW CAR ASSESSMENT PROGRAM
90345
809F

, 901211

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -263.74% 44.13, 244.36 @ 54.75



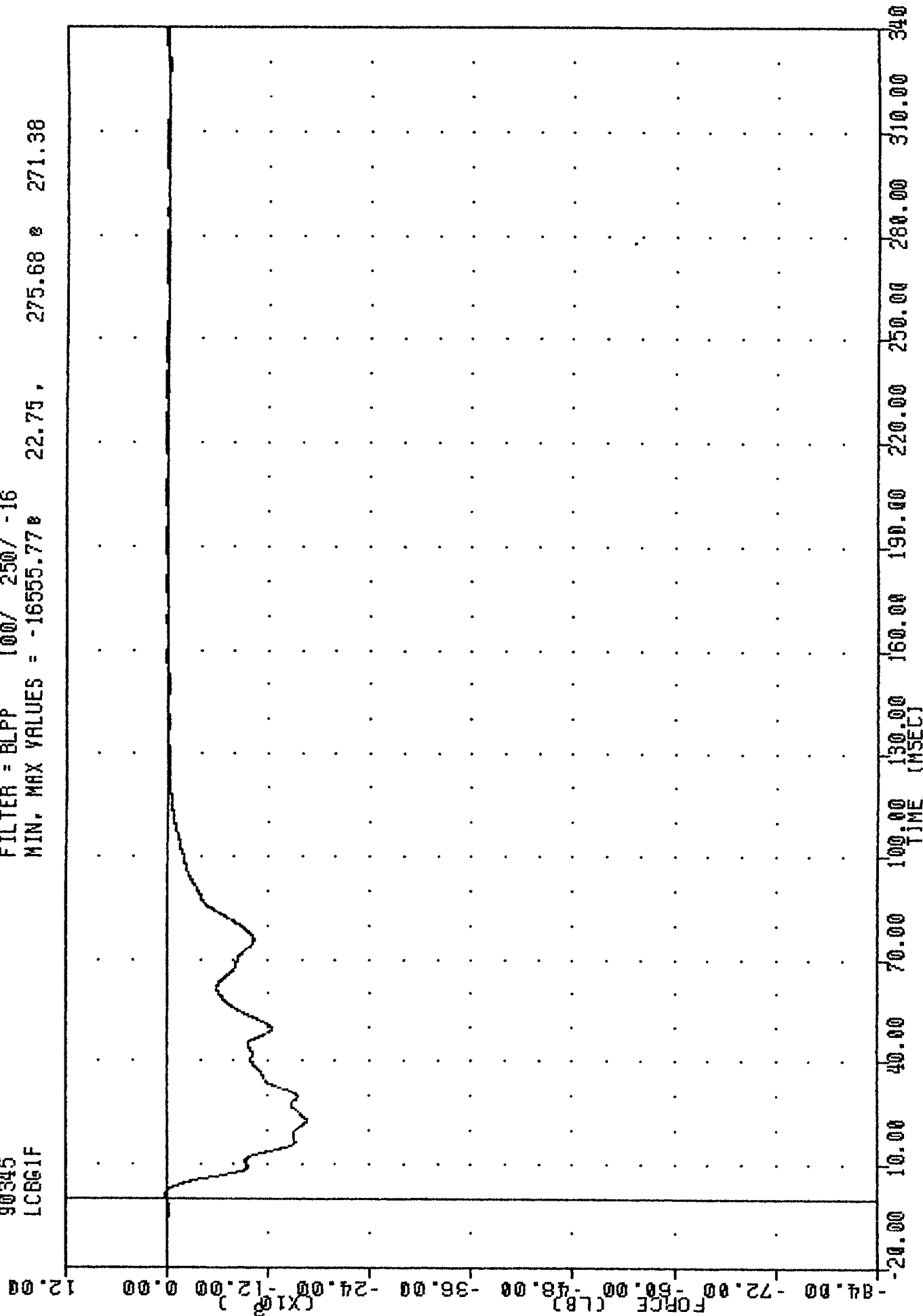
NEW CAR ASSESSMENT PROGRAM

90345

LCB61F

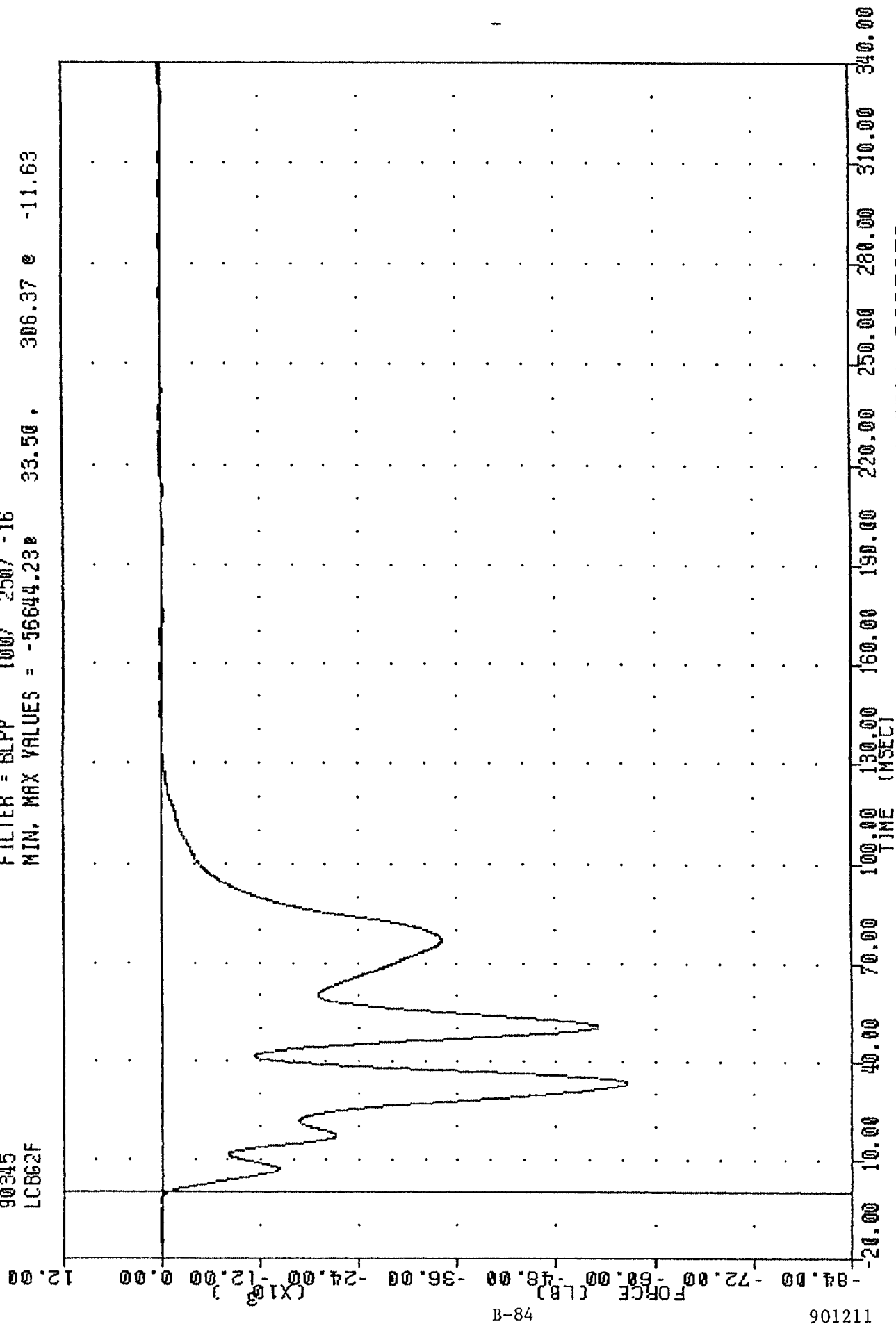
FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -16555.77e 22.75, 275.68 e 271.38



TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 LCBG2F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -56644.238 33.50 , 306.37 e -11.63



B-84

901211

LOAD CELL BARRIER GROUP 2 FORCE TOTAL

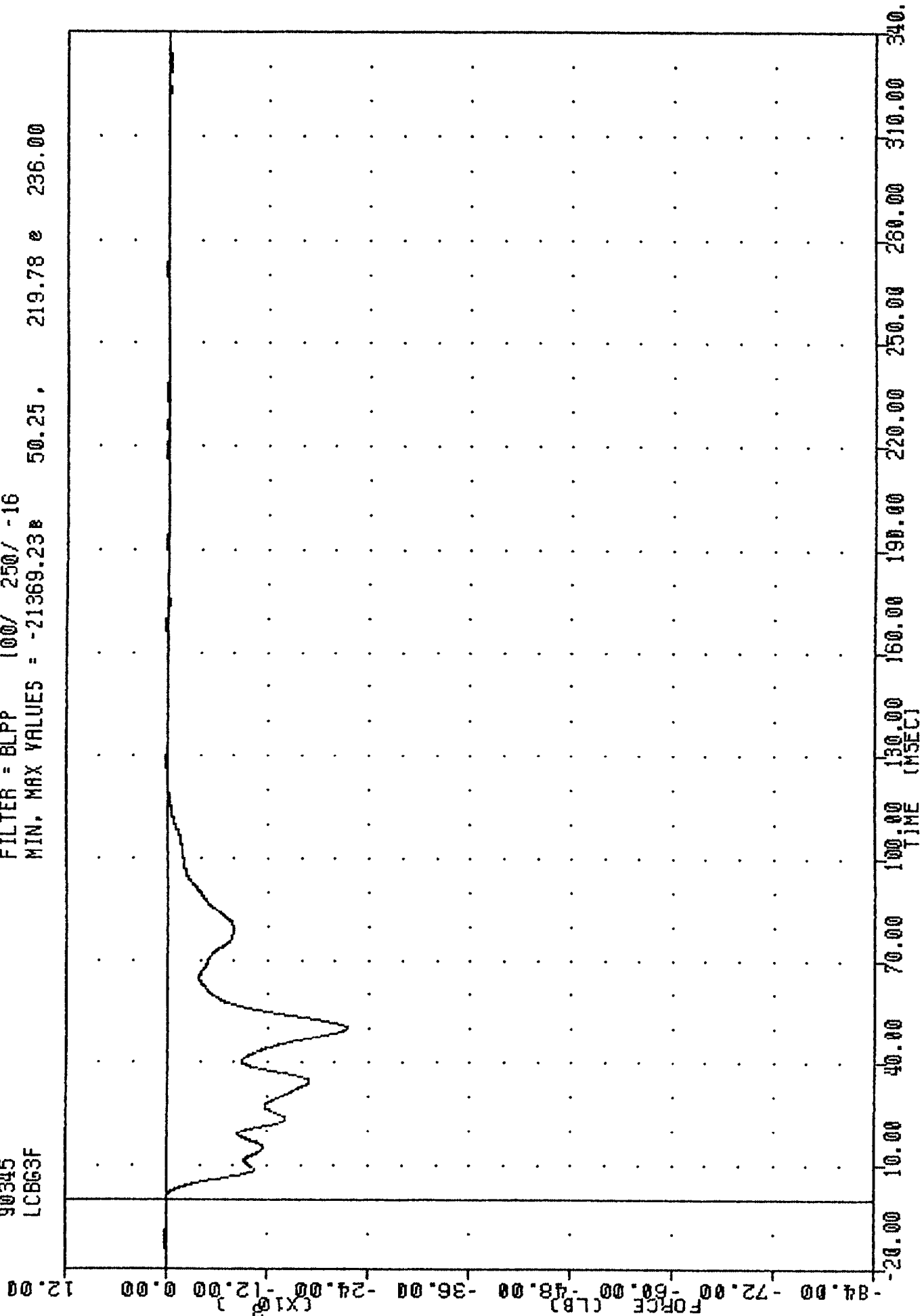
NEW CAR ASSESSMENT PROGRAM

90345

LCB63F

FILTER = BLPP 100/ 250/ -16

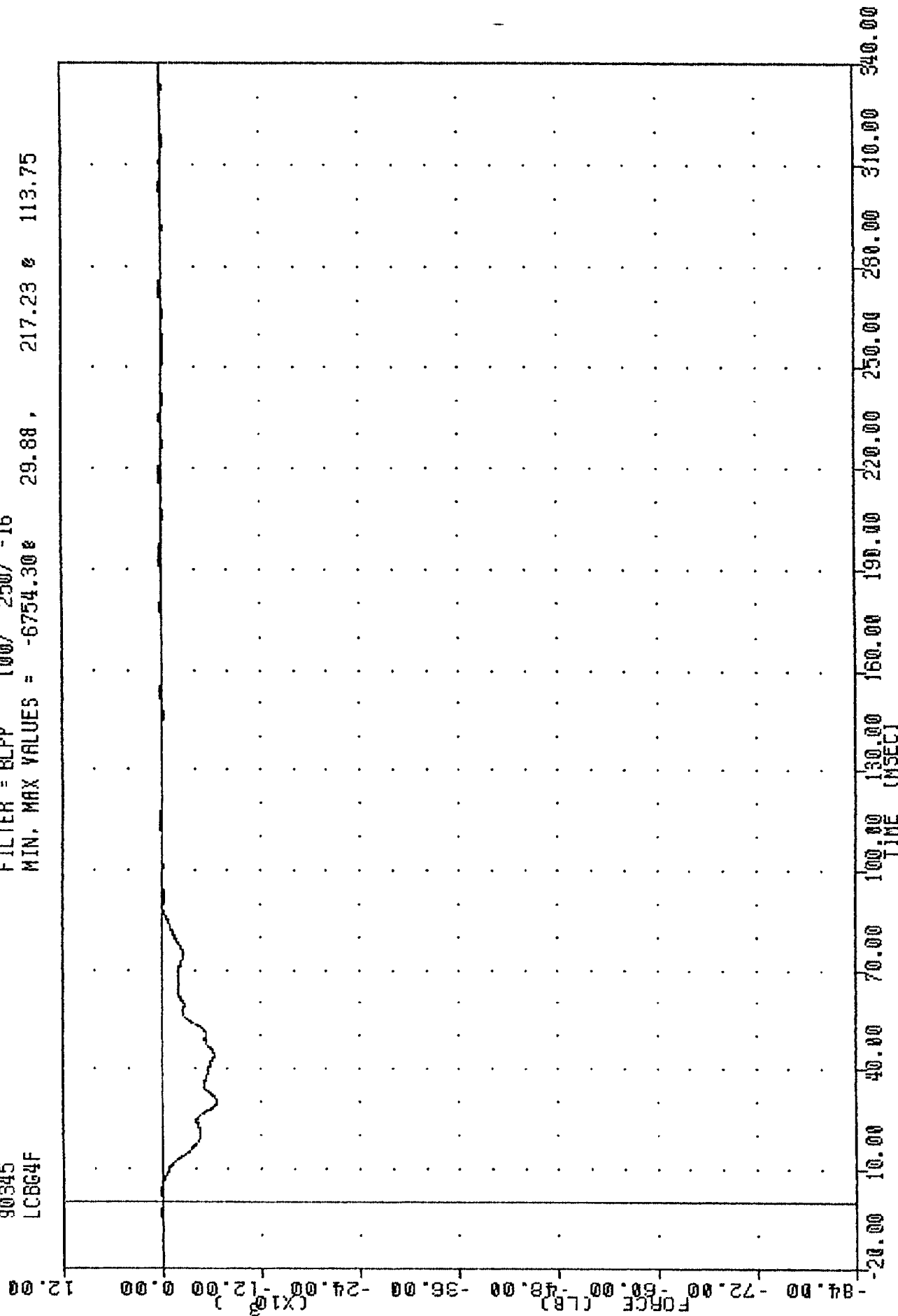
MIN. MAX VALUES = -21369.23 50.25, 219.78 236.00



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP - 3 FORCE TOTAL

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 LCBG4F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -6754.30 29.88 , 217.23 113.75



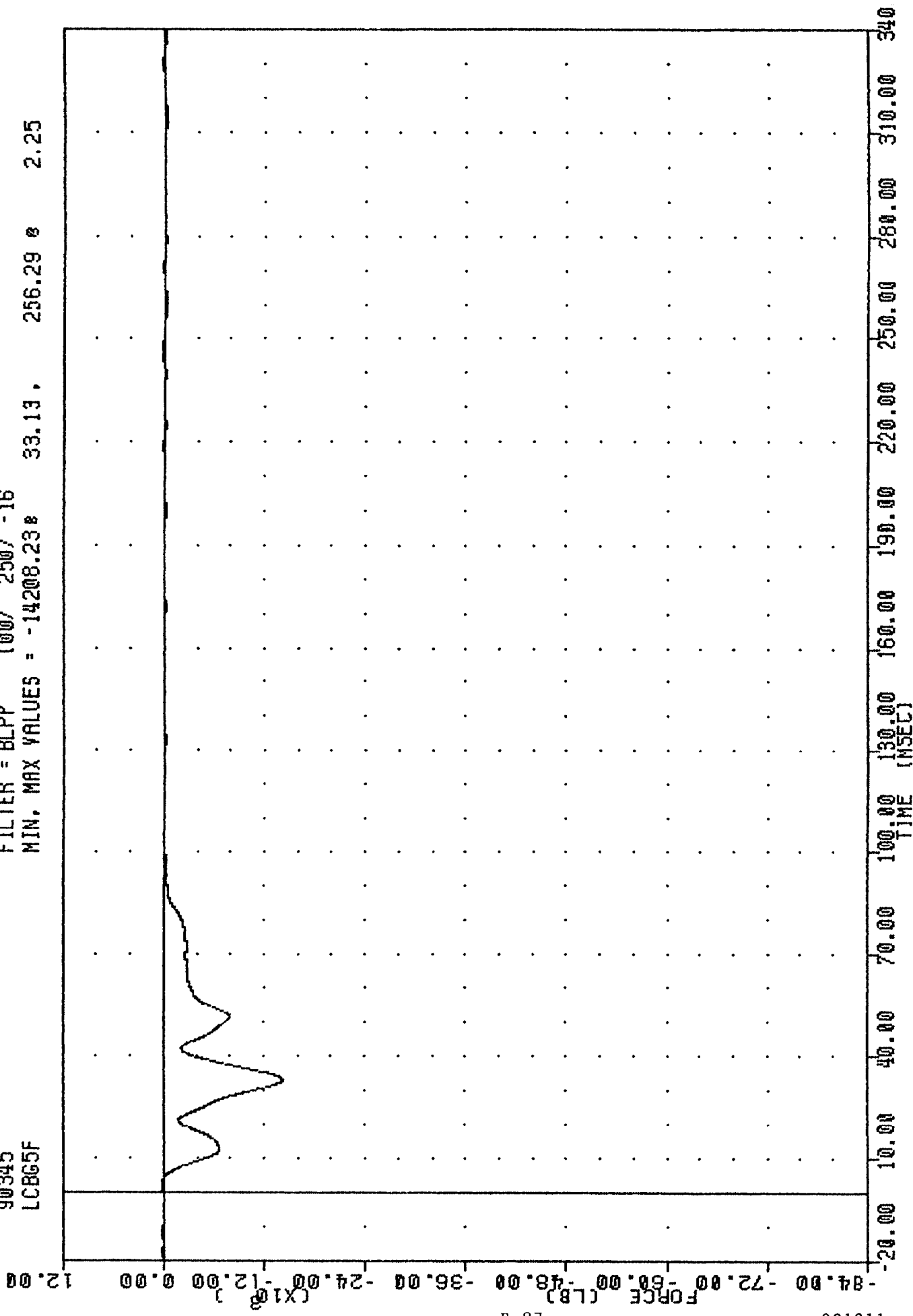
1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP 4 FORCE TOTAL

NEW CAR ASSESSMENT PROGRAM

90345
LCB65F

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -14208.23 33.13

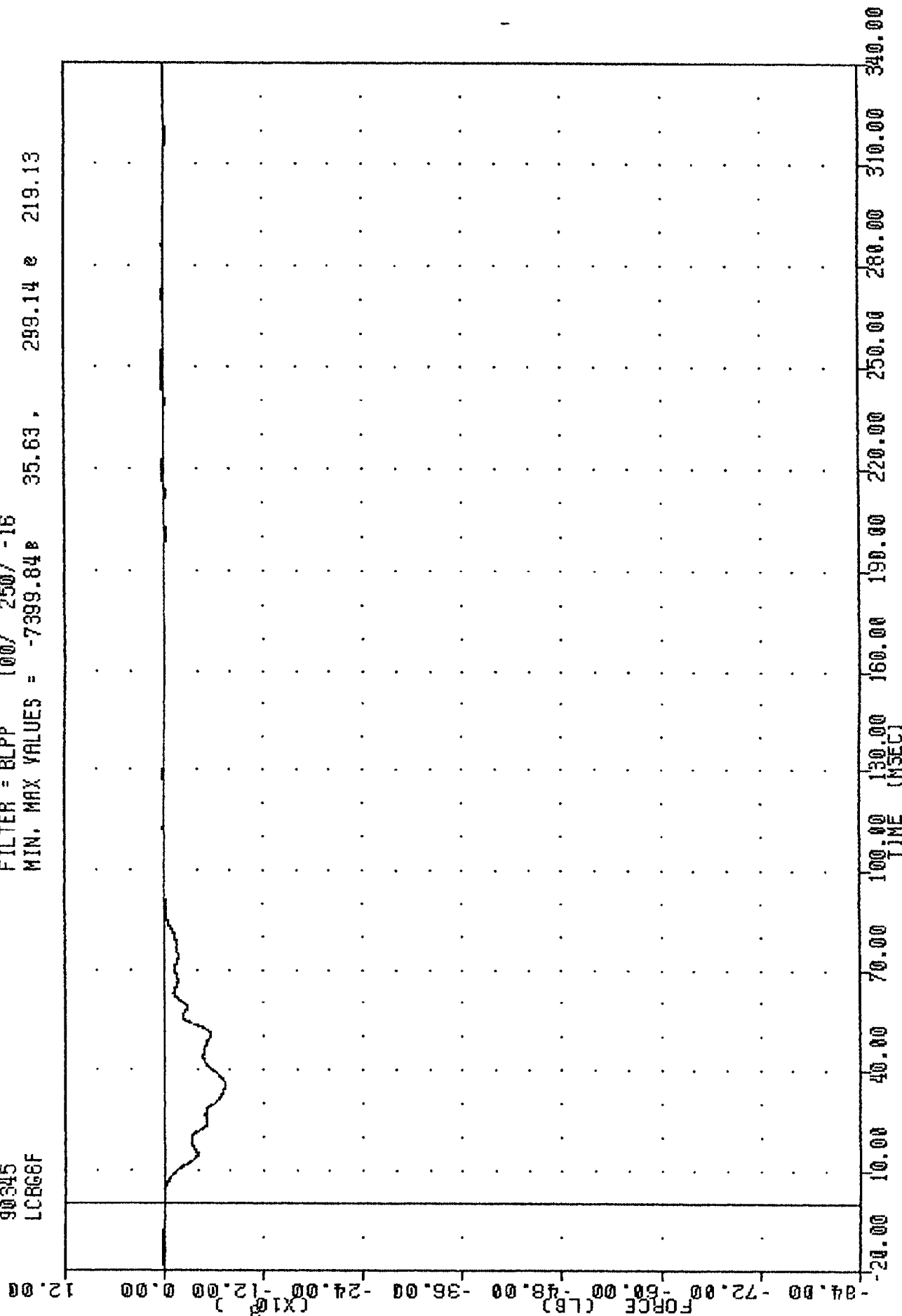
256.29 2.25



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP - 5 FORCE TOTAL

TRC , 901211
 NEW CAR ASSESSMENT PROGRAM
 90345
 LCBG6F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -7399.84 35.63 , 299.14 e 219.13



NEW CAR ASSESSMENT PROGRAM

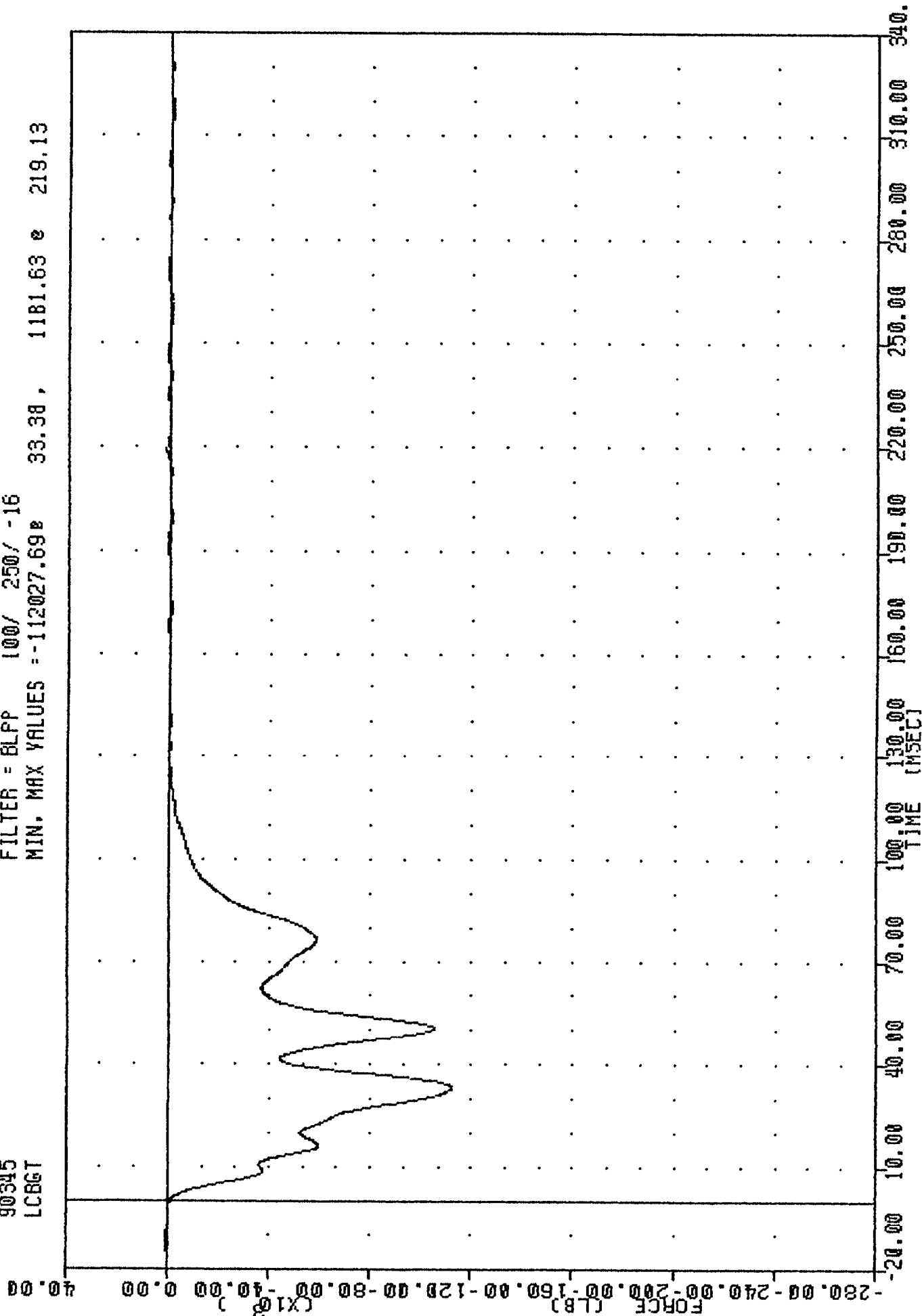
90345

LCBGT

FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -112027.69 33.38 , 1181.63 219.13

33.38 , 1181.63 219.13



1991 NISSAN SENTRA INTO FRONTAL LOAD CELL BARRIER
SUM OF LOAD CELL BARRIER FORCES

APPENDIX C

DUMMY CERTIFICATION DATA

PRE-TEST CERTIFICATION DATA

DRIVER DUMMY S/N: 826

TRANSPORTATION RESEARCH CENTER OF OHIO

EXTERNAL DIMENSIONS

PART 572

08-NOV-90

TEMPERATURE 74 F
NHTSA EDB2626

RELATIVE HUMIDITY 33 %
572B SN826 EXT. DIMENSION CAL26

DESCRIPTION	SPECIFICATION	TEST RESULTS
SN B26 HUMANOID		
Sitting Height	35.6 - 35.8 IN	35.7 IN
Shoulder Pivot Height	21.8 - 22.4 IN	22.3 IN
Hip Pivot Height	3.9 IN (ref)	3.9 IN
Hip Pivot From Backline	4.8 IN (ref)	4.8 IN
Knee Pivot From Backline	20.1 - 20.7 IN	20.4 IN
Rear of Head From Backline	1.7 IN (ref)	1.7 IN
Chest Depth	9.1 - 9.6 IN	9.4 IN
Shoulder Width	17.8 - 18.4 IN	18.1 IN
Chest Circumference Over Nipples	36.8 - 40.0 IN	37.7 IN
Waist Circumference at Min. Girth	31.4 - 32.6 IN	32.4 IN
Hip Width	14.0 - 15.4 IN	14.5 IN
Knee Pivot From Floor	19.3 - 19.9 IN	19.5 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas Middleton

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

PART 572

14-Nov-90

TEMPERATURE 73 F
NHTSA HD82626

RELATIVE HUMIDITY 32 %
572B SN 826 HEAD DROP CAL 26

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PEAK RESULTANT ACCELERATION	210 - 260 G	231.40 G
TIME ABOVE 100 G LEVEL	0.9 - 1.5 MSEC	1.25 MSEC
PEAK LATERAL ACCELERATION	10 G MAX	3.52 G
IS ACCELERATION CURVE UNIMODAL?		YES

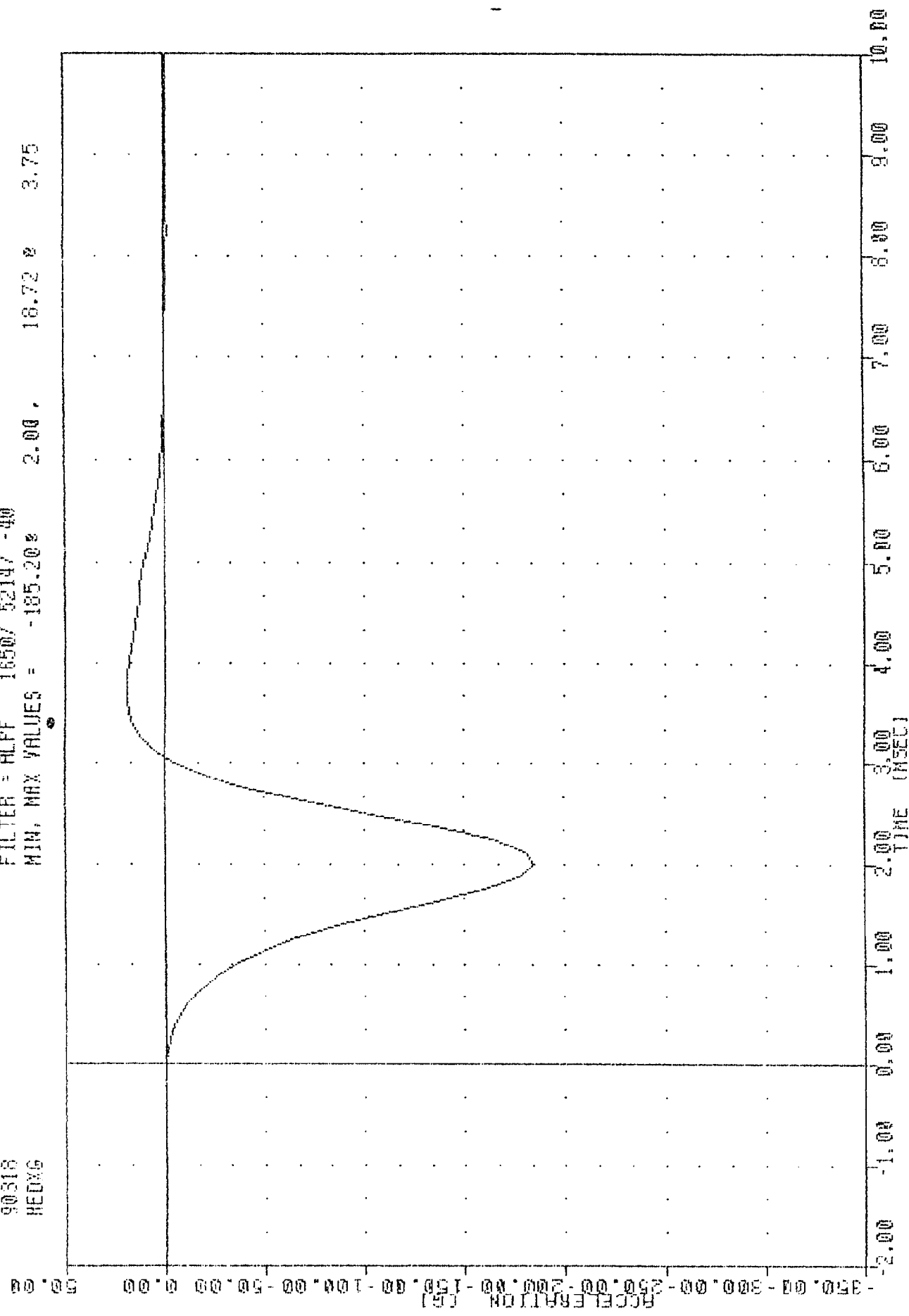
DUMMY MEETS SPECIFICATIONS

6

TECHNICIAN Char. Middleton

NHTSR , HD32626
 5720 SN 926 HEAD DROP CAL 26
 90318
 HEDX6

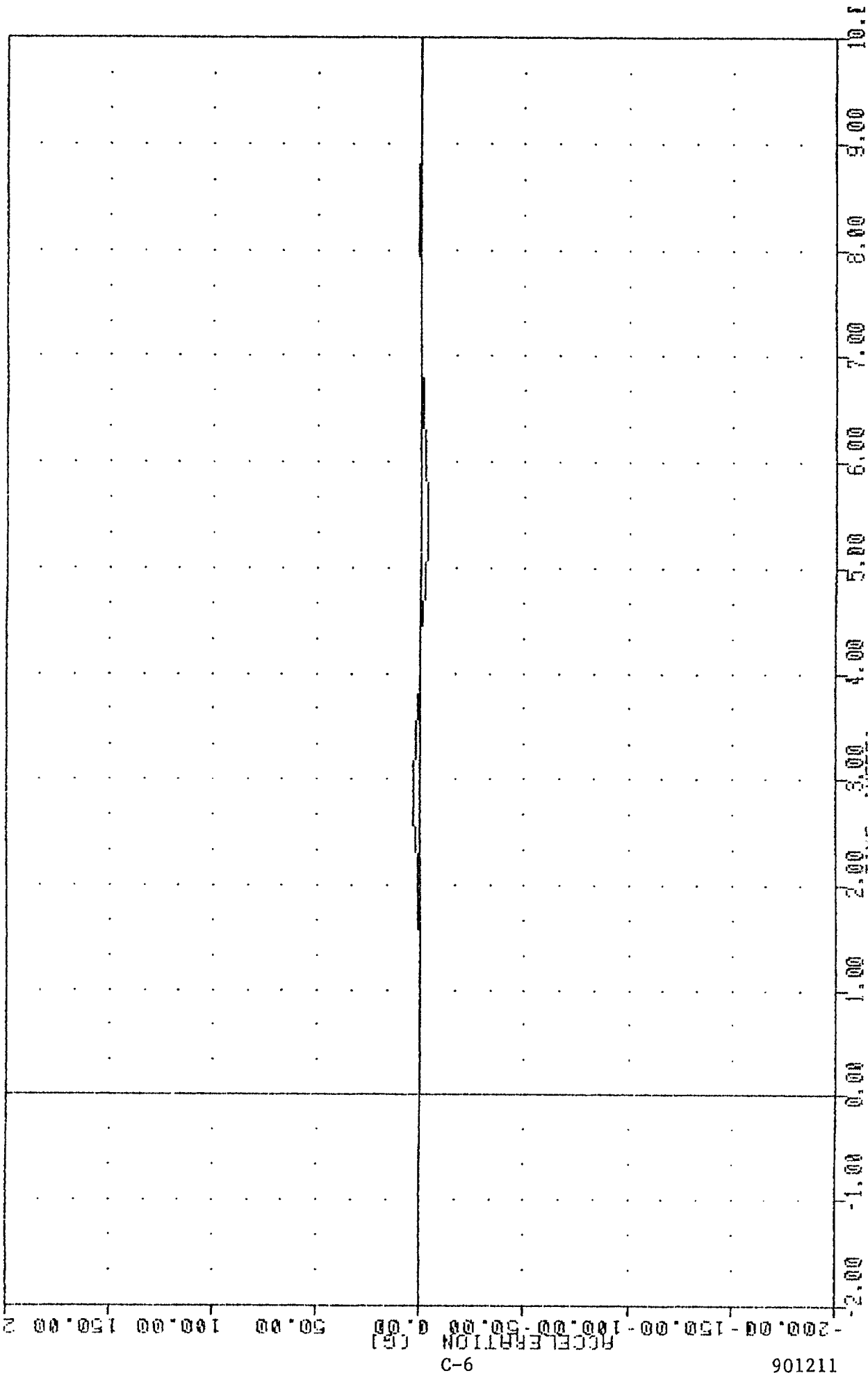
FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -185.20% 2.00 , 18.72 e 3.75



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

572B SN 026 HEAD DROP CAL 26
 90318
 HEDYG

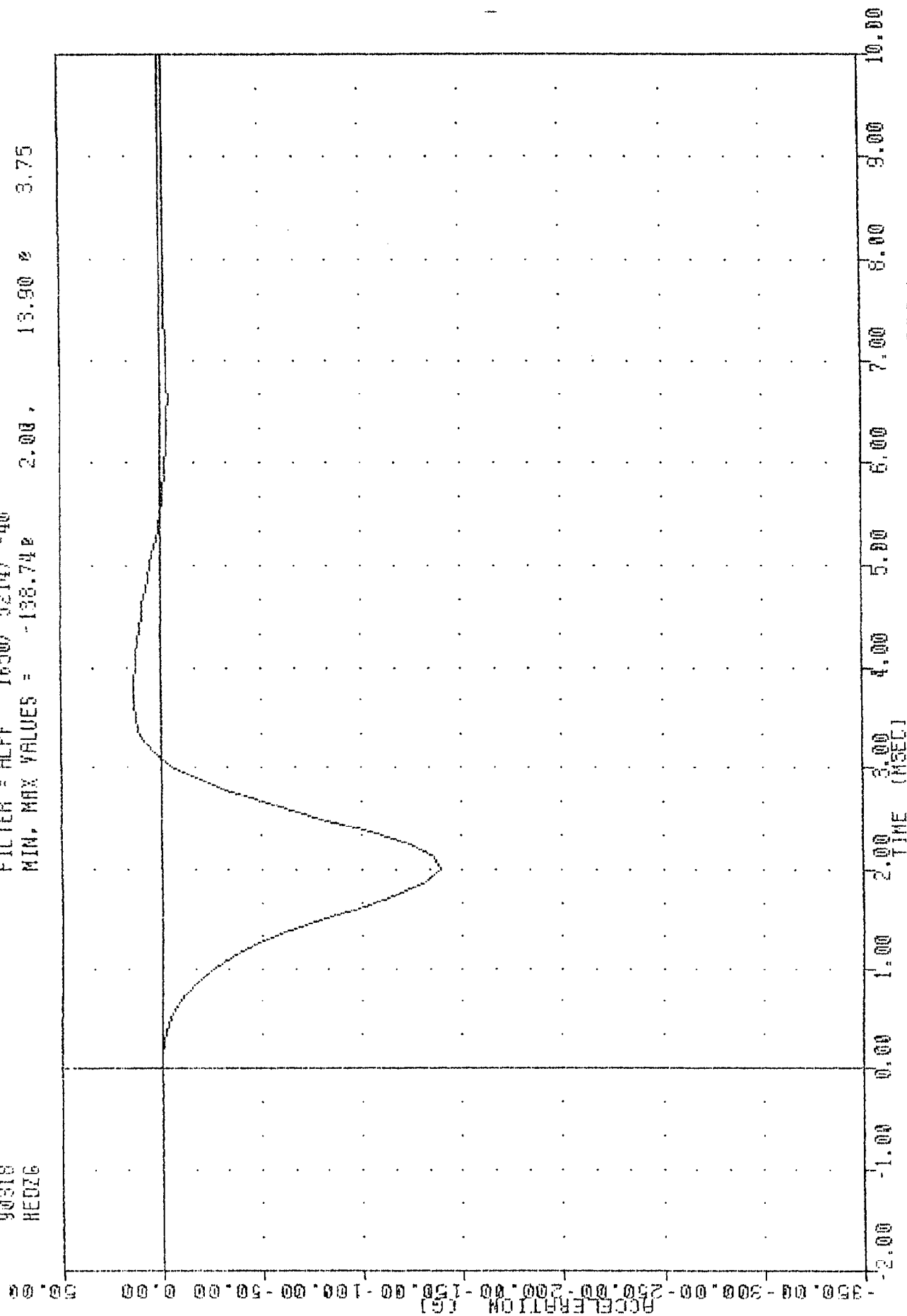
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -3.02 5.38 3.52 2.88



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

WHTSR , H083626
 572B SN 926 HEAD DROP CAL 26
 90318
 HEDZG

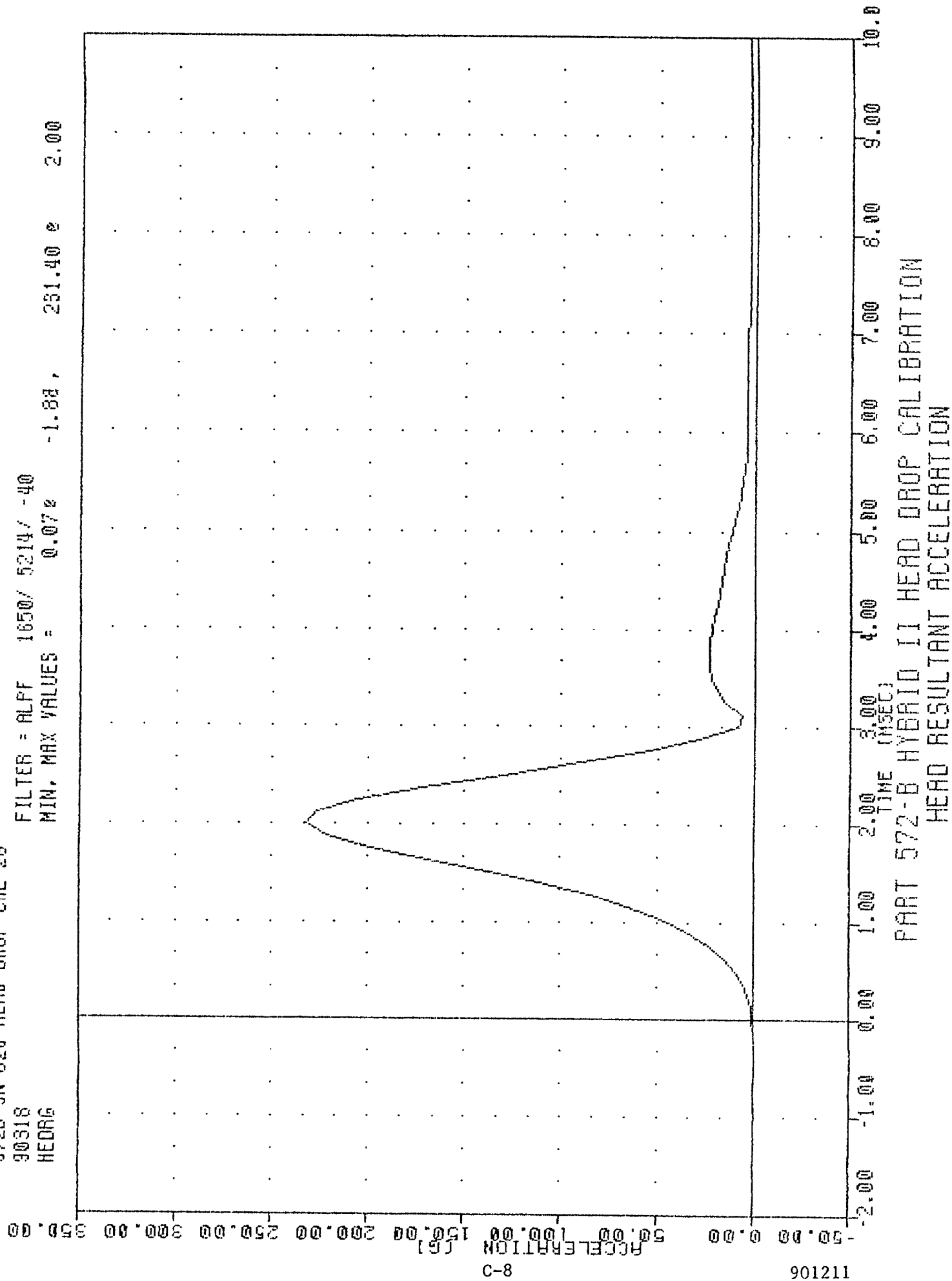
FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -138.74 2.00, 13.90 3.75



PART 572-B HYBRID II HEAD DROP CALIBRATION
 HEAD ACCELERATION T-20X1F

UNION
 572B SN 826 HEAD DROP CAL 26
 90318
 HEADRG

FILTER = ALFF 1650/ 5214/ -40
 MIN. MAX VALUES = 0.07% -1.88, 231.40 @ 2.00



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

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK PENDULUM TEST

PART 572

09-Nov-90

TEMPERATURE 71 F
NHTSA HN82626

RELATIVE HUMIDITY 36 %
572B SN 826 HEAD/NECK CAL 26

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	2.38 msec
T2 - T3: 20 - 20 G	25 - 30 msec	27.46 msec
T3 - T4: 20 - 5 G	10 msec max	4.11 msec
Avg. G level T2 - T3	20 - 24 G	23.73 G

Maximum Rotation Angle	63 - 73 deg	67.40 deg
------------------------	-------------	-----------

Peak Head Resultant Accel	26 G max	25.54 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

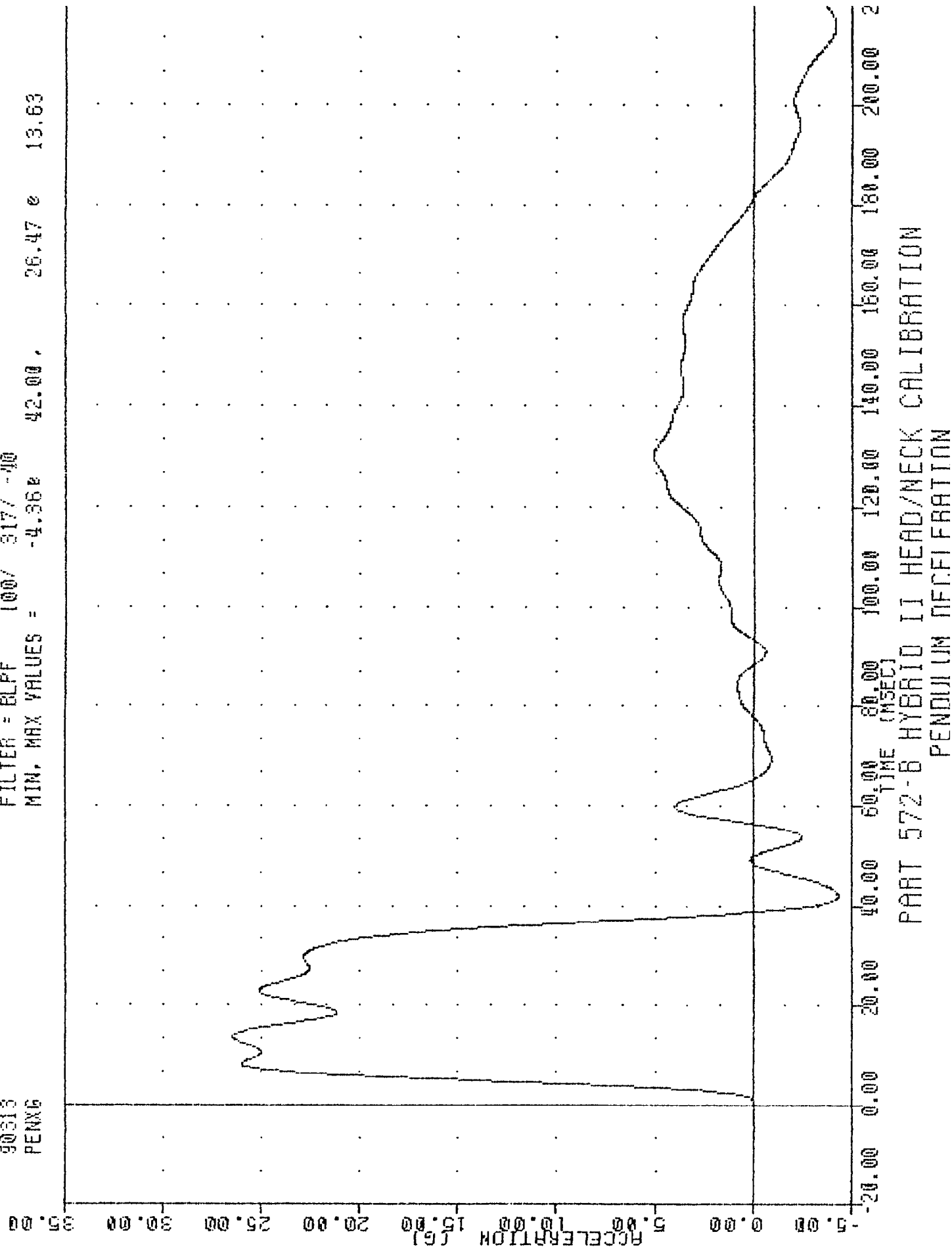
DUMMY MEETS SPECIFICATIONS

TECHNICIAN

Chas. Middleton

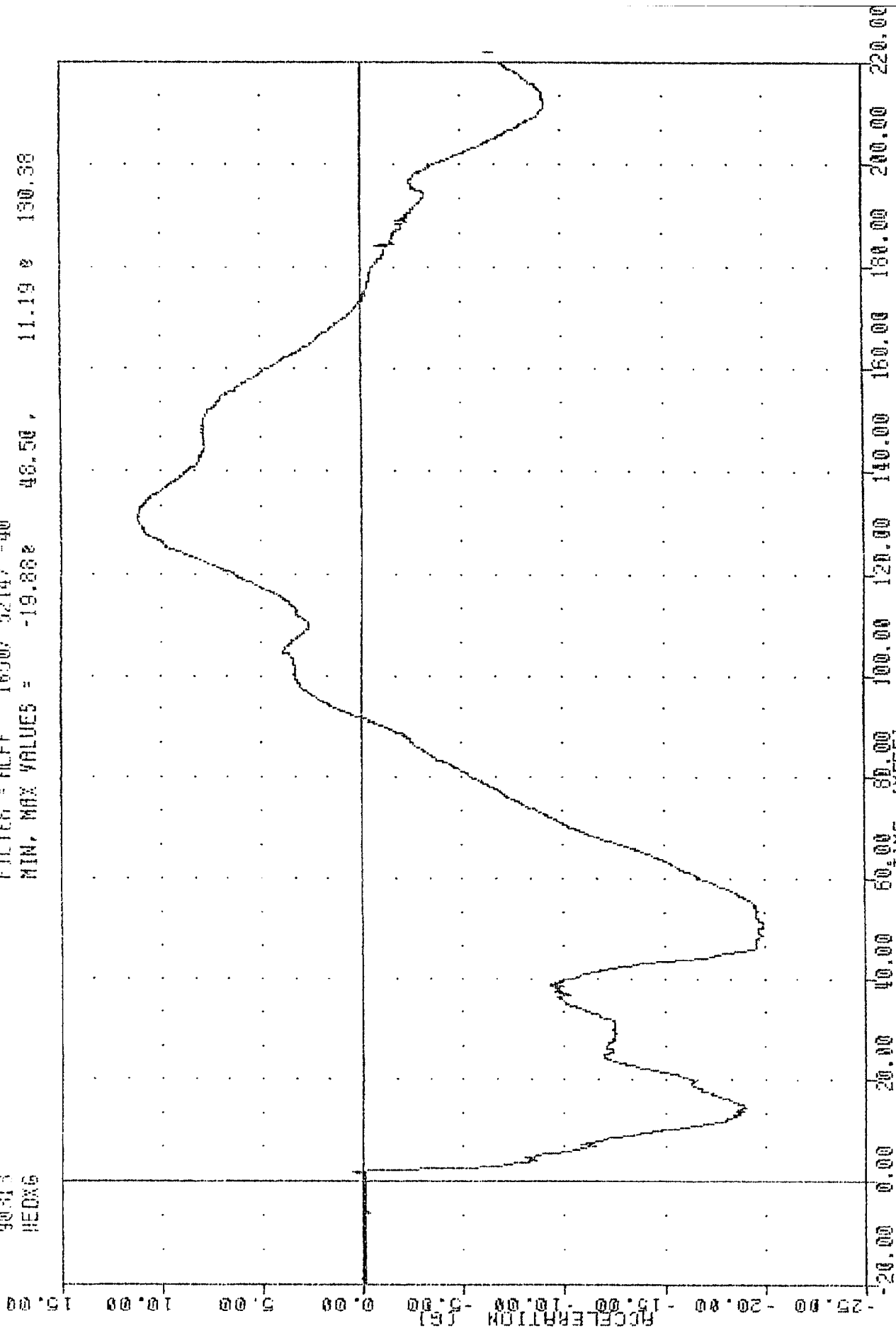
NHTSR , HN82626
 572B SN 026 HEAD/NECK CAL 26
 90313
 PENXG

FILTER = BLPF 100/ 317/ -40
 MIN, MAX VALUES = -4.36 42.00 , 26.47 13.63



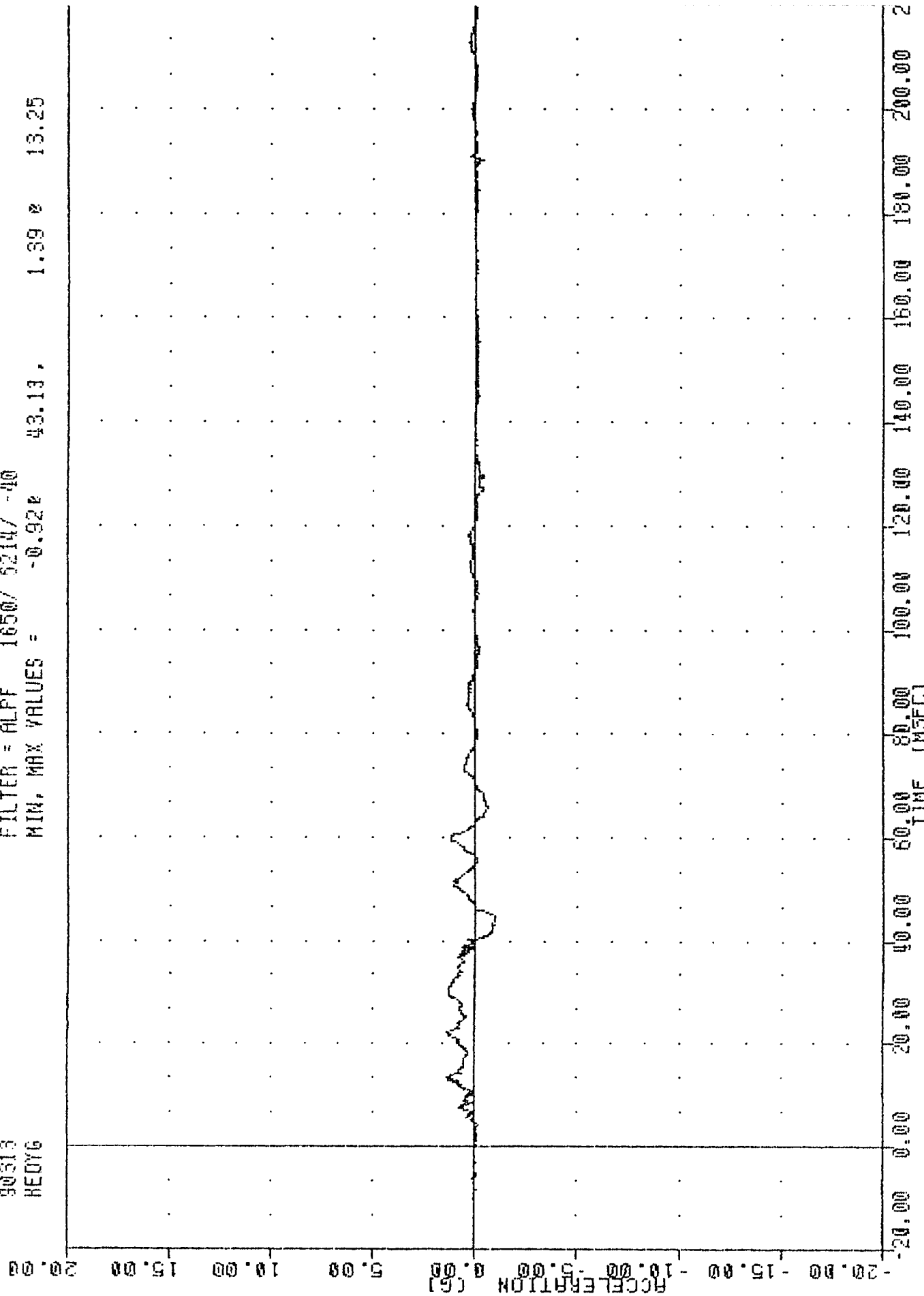
NHTSR , HK82626
 572B SN 826 HEAD/NECK CAL 26
 90313
 HEDX6

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -19.80e 48.50 , 11.19 e 130.38



NHTSA
 572B SN 626 HEAD/NECK CAL 26
 90313
 HEDYG

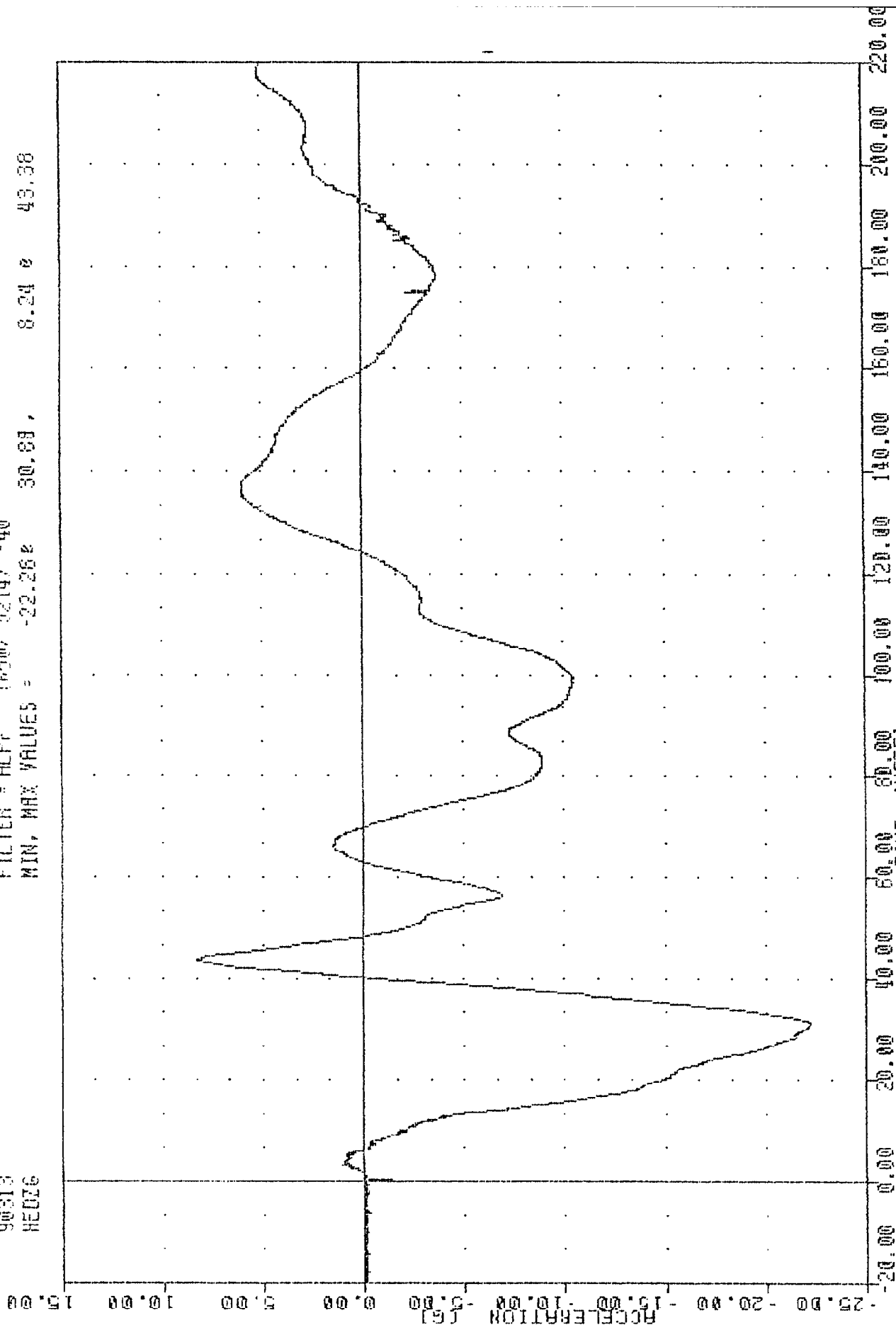
FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -0.920 43.13, 1.39 13.25



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

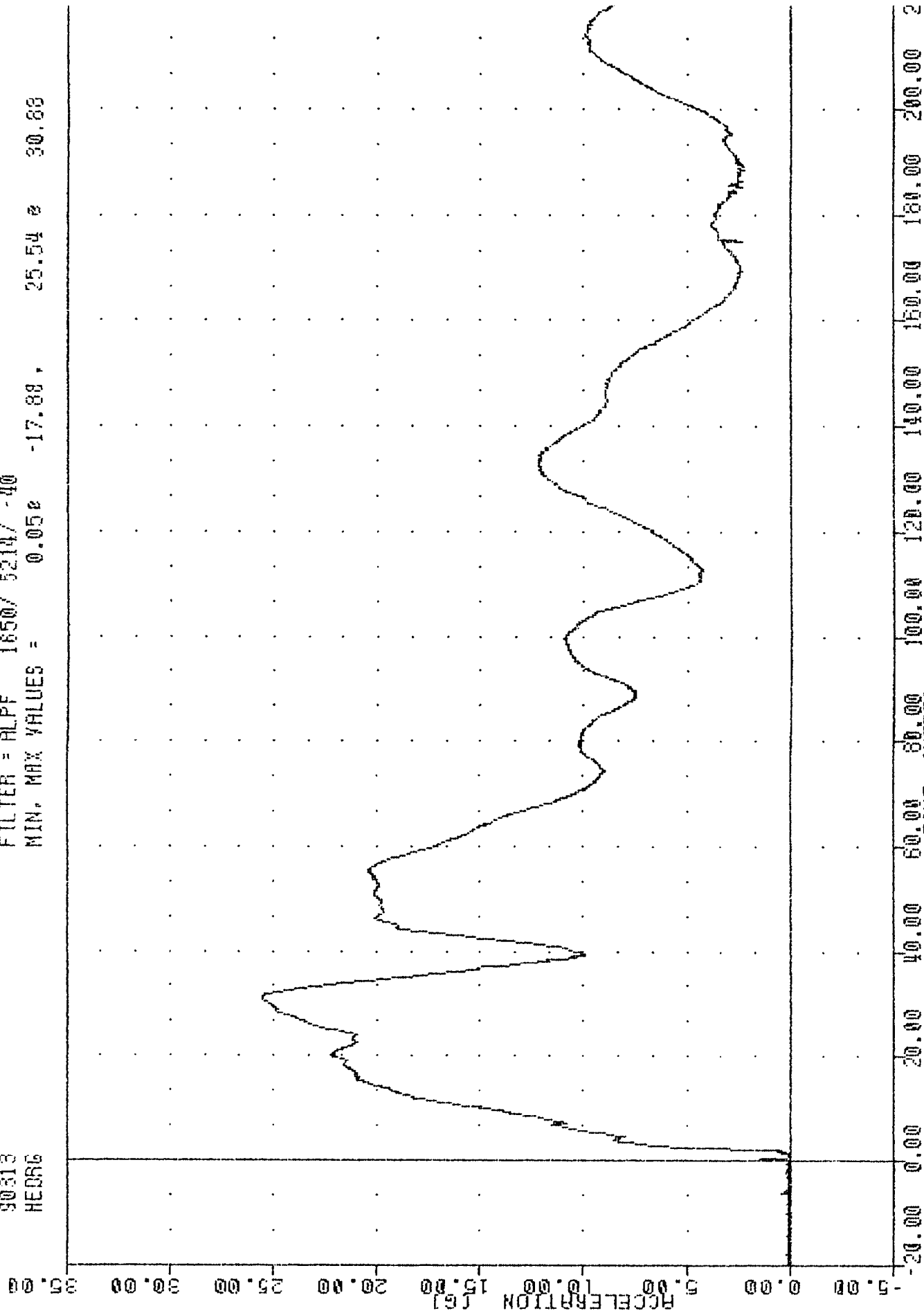
NUTSON
 5720 SN 926 HEAD/NECK CRL 26
 90313
 HEDTG

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -22.26% 30.89, 8.24 e 43.38



HHTSR , HNS2626
 572B SN 026 HEAD/NECK CAL 26
 90313
 HEADG

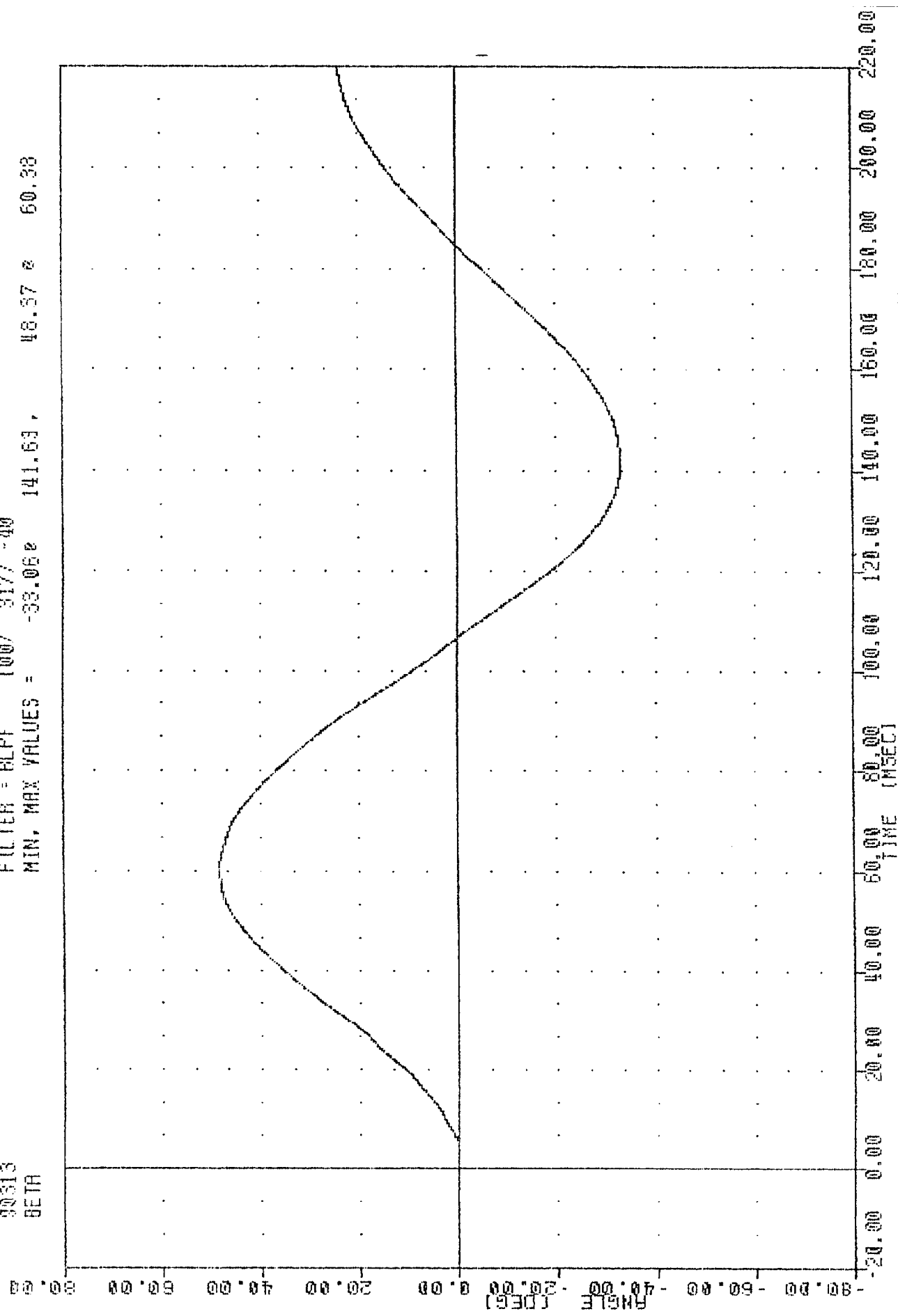
FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = 0.050 -17.88 , 25.54 @ 30.88



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

NHTSA , HH82626
 5720 SN 926 HEAD/NECK CAL 26
 90313
 BETA

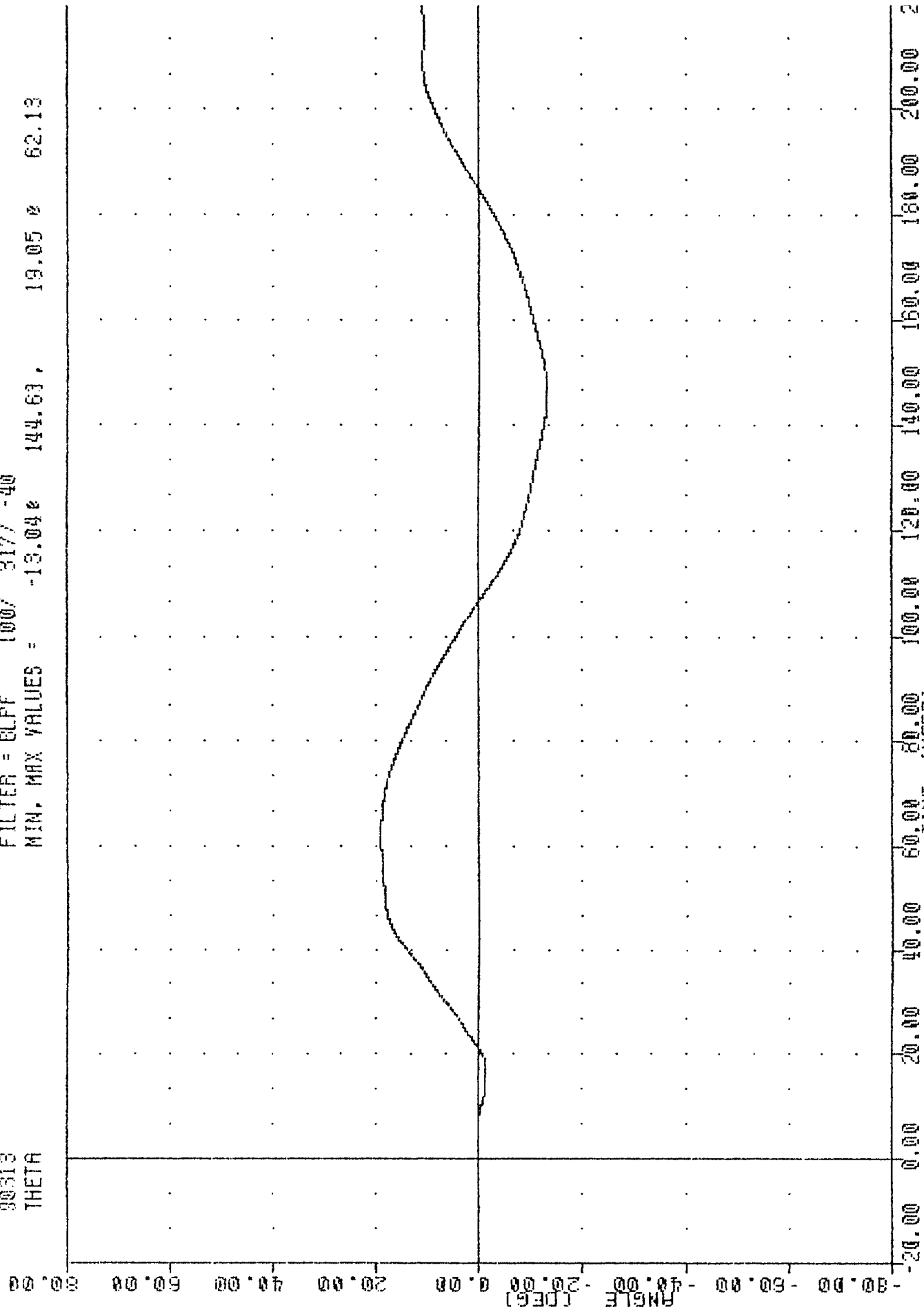
FILTER = BLPF 100/ 317/ -40
 MIN, MAX VALUES = -33.060 141.63 , 48.37 e 60.38



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

NHT38 , HN82626
 5728 3N 826 HEAD/NECK CAL 26
 90313
 THETA

FILTER = BLPF 100/ 317/ -40
 MIN. MAX VALUES = -13.04e 144.63, 19.05 e 62.13

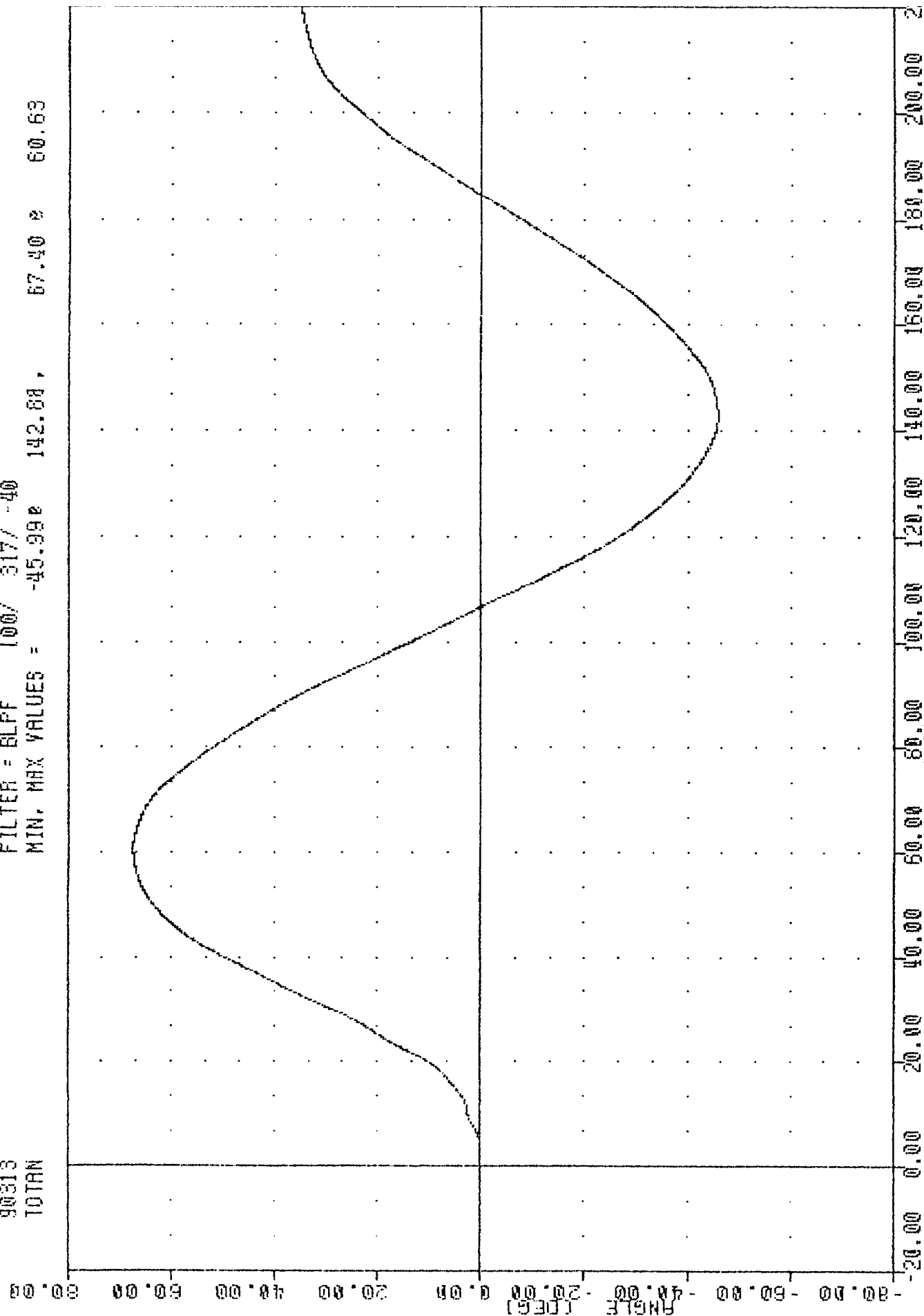


PART 572-B HYBRID II HEAD/NECK CALIBRATION
 ROTATION ABOUT THE HEAD C.G.



NHTR
 572B SN 826 HEAD/NECK CAL 26
 90313
 TOTR

FILTER = BLPF 100/ 317/ -40
 MIN, MAX VALUES = -45.99 142.88, 67.40 60.63

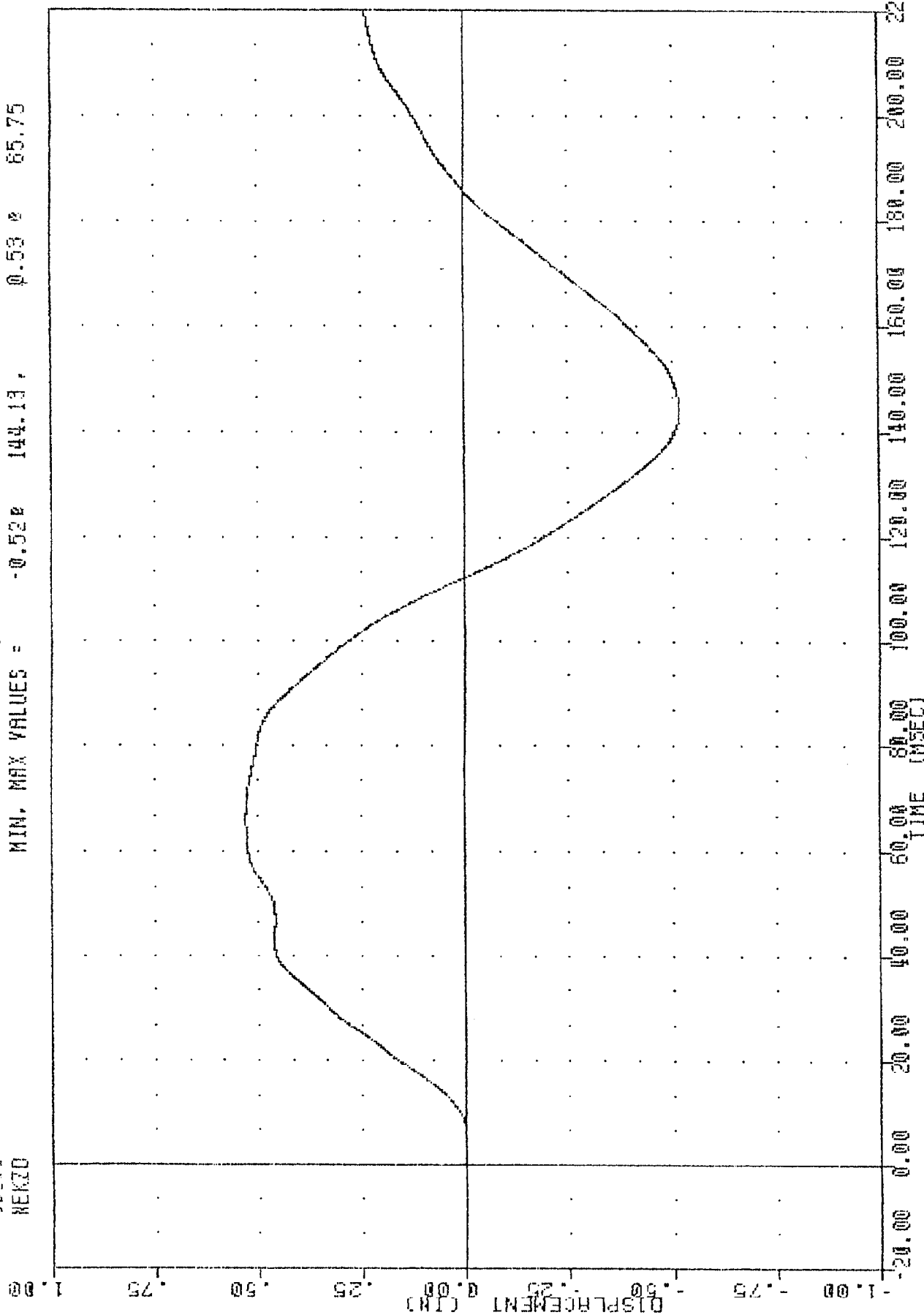


PART 572-B HYBRID II HEAD/NECK CALIBRATION
 TOTAL ROTATION

KHTSA
 572B 3N 026 HEAD/NECK CAL 26
 90313
 REKZO

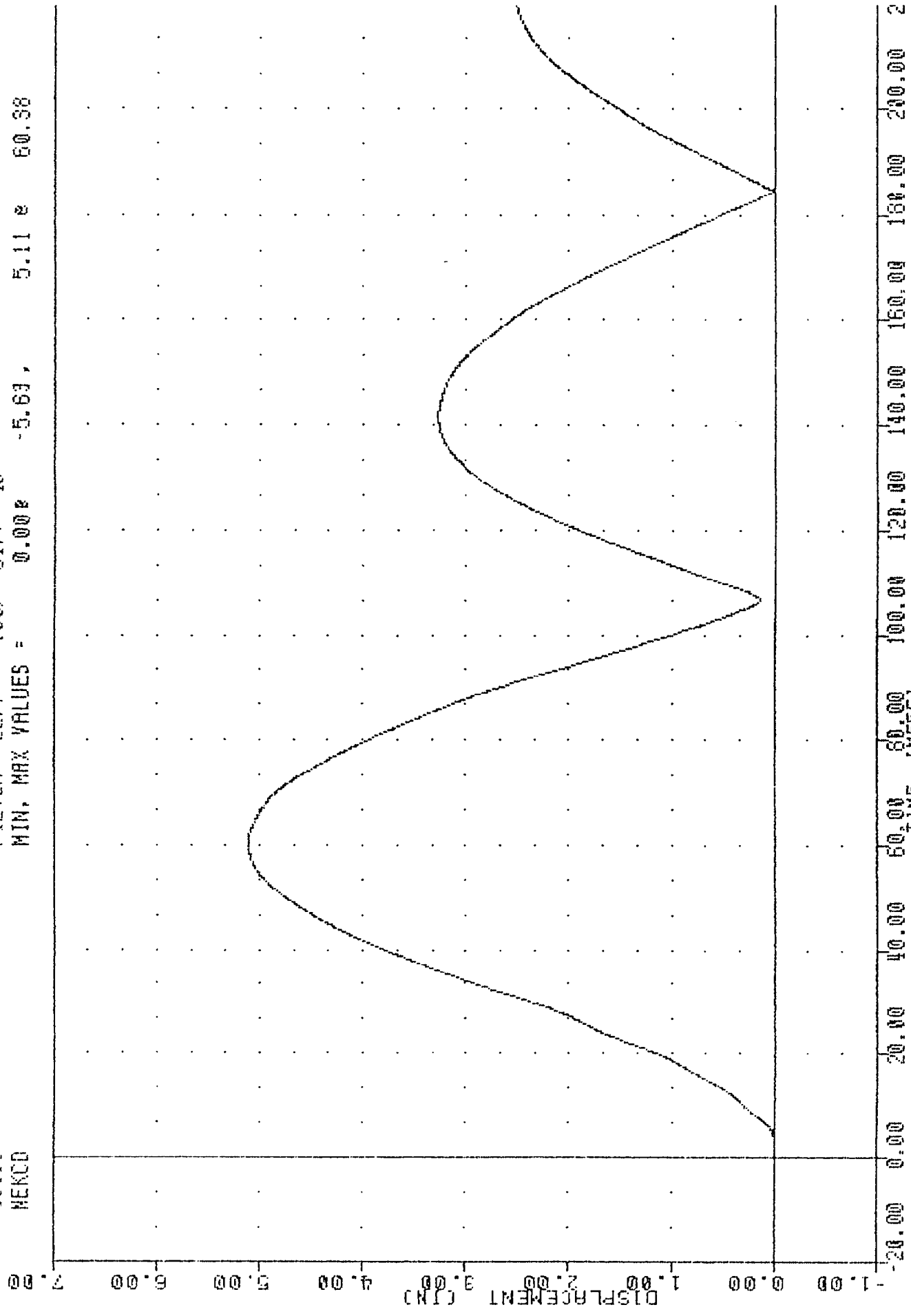
HM02626

FILTER = BLPF 100/ 317/ -40
 MIN. MAX VALUES = -0.520 144.13, 0.53 0 85.75



KHTSA , HNS2026
 572B SN 026 HEAD/NECK CAL 2B
 90313
 HEKCD

FILTER = BLPF 100/ 317/ -40
 MIN, MAX VALUES = 0.000 -5.63, 5.11 & 60.38



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

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572

13-Nov-90

TEMPERATURE 71 F
NHTSA TL02626

RELATIVE HUMIDITY 34 %
572B SN 026 L.S.THORAX CAL 26

LOW SPEED TEST		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
PENDULUM VELOCITY	13.86-14.14 FT/SEC	14.04 FT/SEC
PEAK DEFLECTION	1.1 IN max.	0.98 IN
PEAK RESISTIVE FORCE	1,450. LB max.	1401. LB
INTERNAL HYSTERESIS	50% - 70%	67.2%

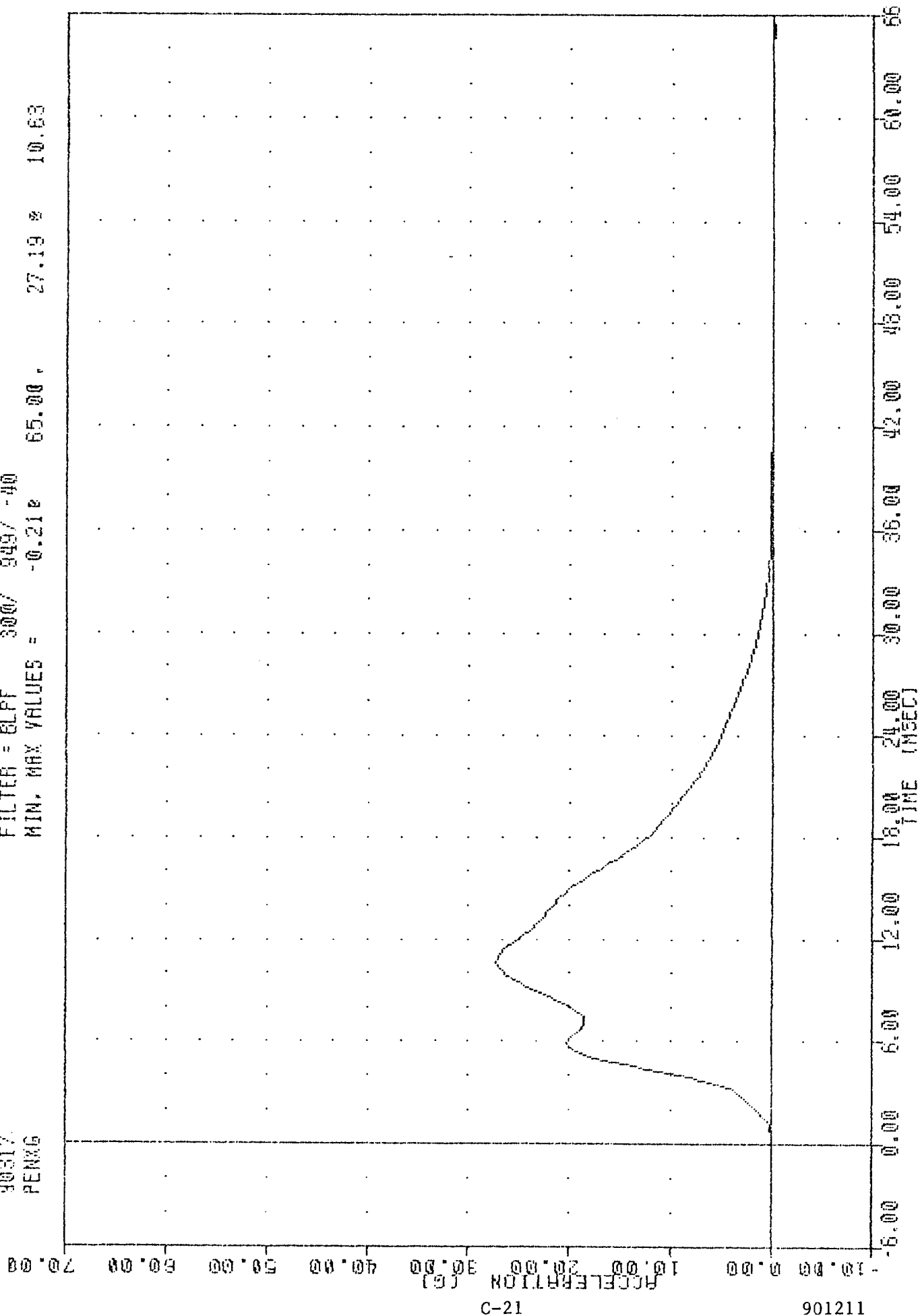
SCD: 2.20 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

AR10H
 572B 5N 026 L.S. THORAX CAL 26
 90317
 PENXG

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.21g 65.00g 27.19g 10.63



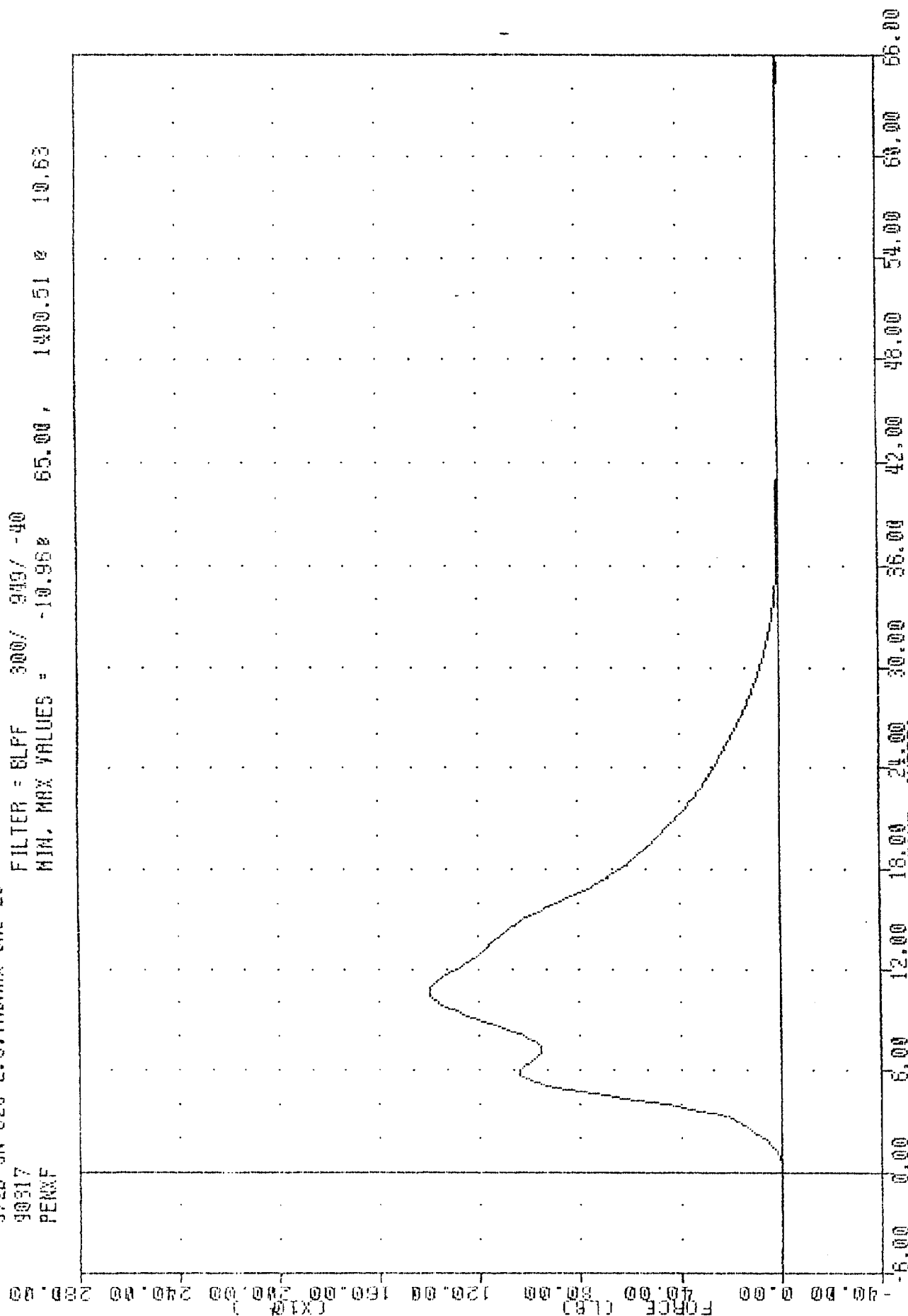
C-21

901211

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

WHITSA , TL82626
 572B SN 826 L.S.THORAX CAL 26
 90317
 PENKX

FILTER = 8LFF 300/ 949/ -40
 MIN. MAX VALUES = 65.00, 1400.51 0 10.63

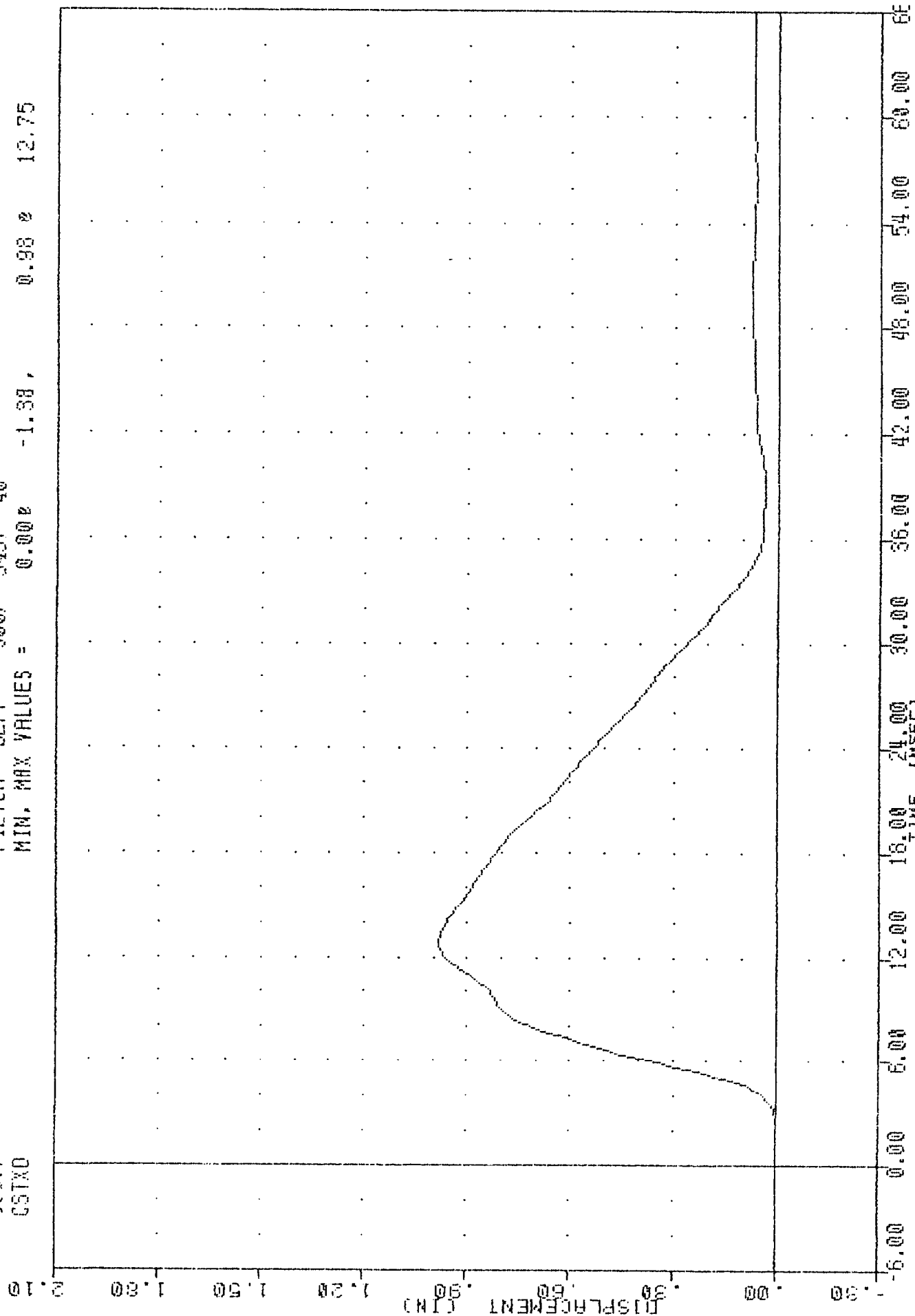


PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC

INDUSTRY

NH15H , IL82626
 5728 SN 026 L.S.THORAX CAL 26
 90317
 CSTXD

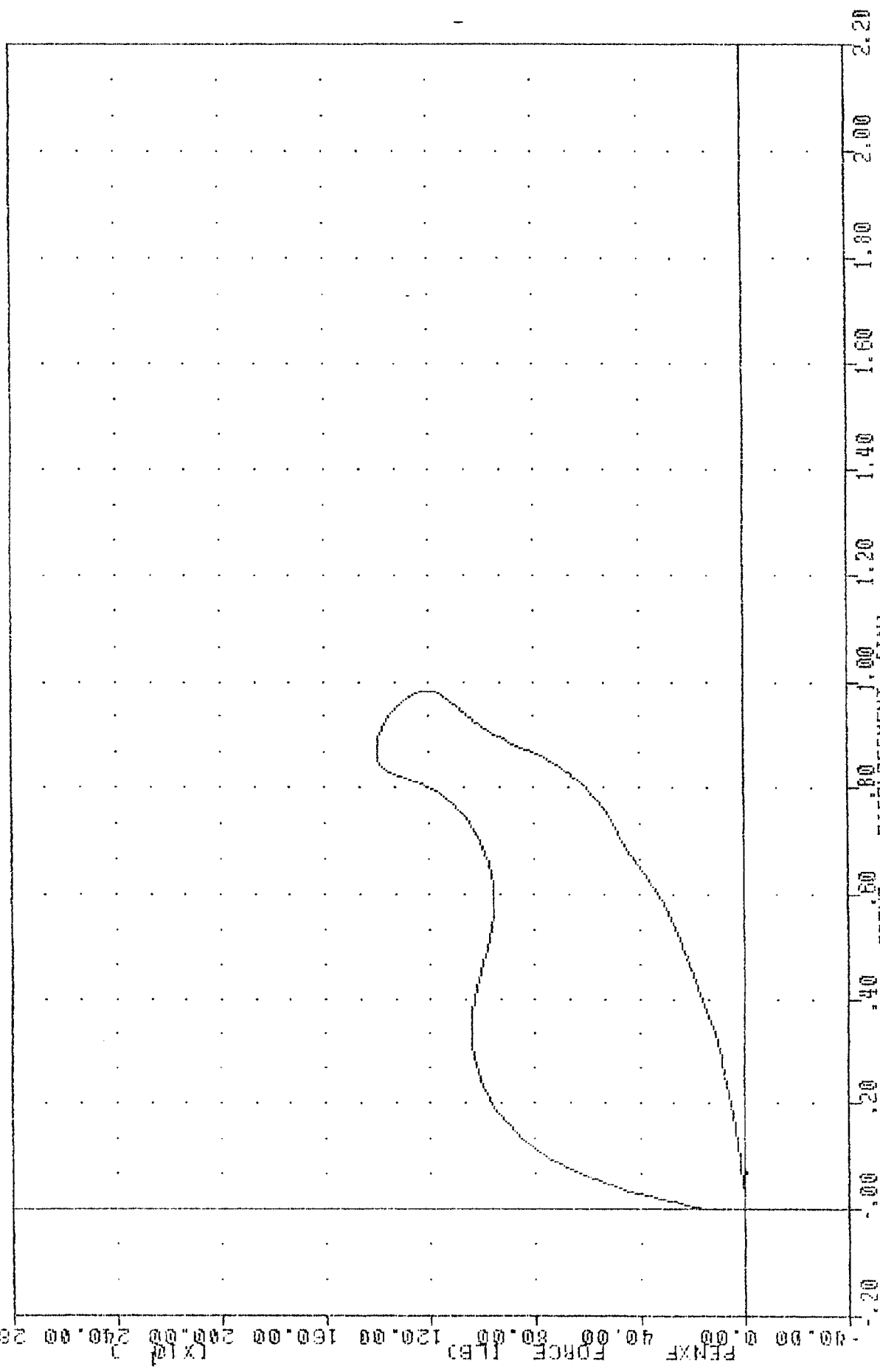
FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 0.00 0.98 12.75
 -1.38,



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

NHISA 572B SN 828 L.S. THORAX CAL 26 90317
 CSTXO 300/ 849/ -40 MIN. MAX = 0.00 e
 PENXF 300/ 849/ -40 MIN. MAX = -10.96 e
 FILTER = 8LFF 0.96 e
 FILTER = 8LFF 1400.51 e
 12.75
 10.63

42-3



901211

PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC
 TEST IS INCORRECT

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572

13-Nov-90

TEMPERATURE 71 F
NHTSA TH82626

RELATIVE HUMIDITY 33 %
572B SN 826 H.S.THORAX CAL 26

	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.	1.49 IN

PEAK RESISTIVE FORCE	2,250. LB max.	2155. LB

INTERNAL HYSTERESIS	50% - 70%	65.0%

SCD: 2.20 IN

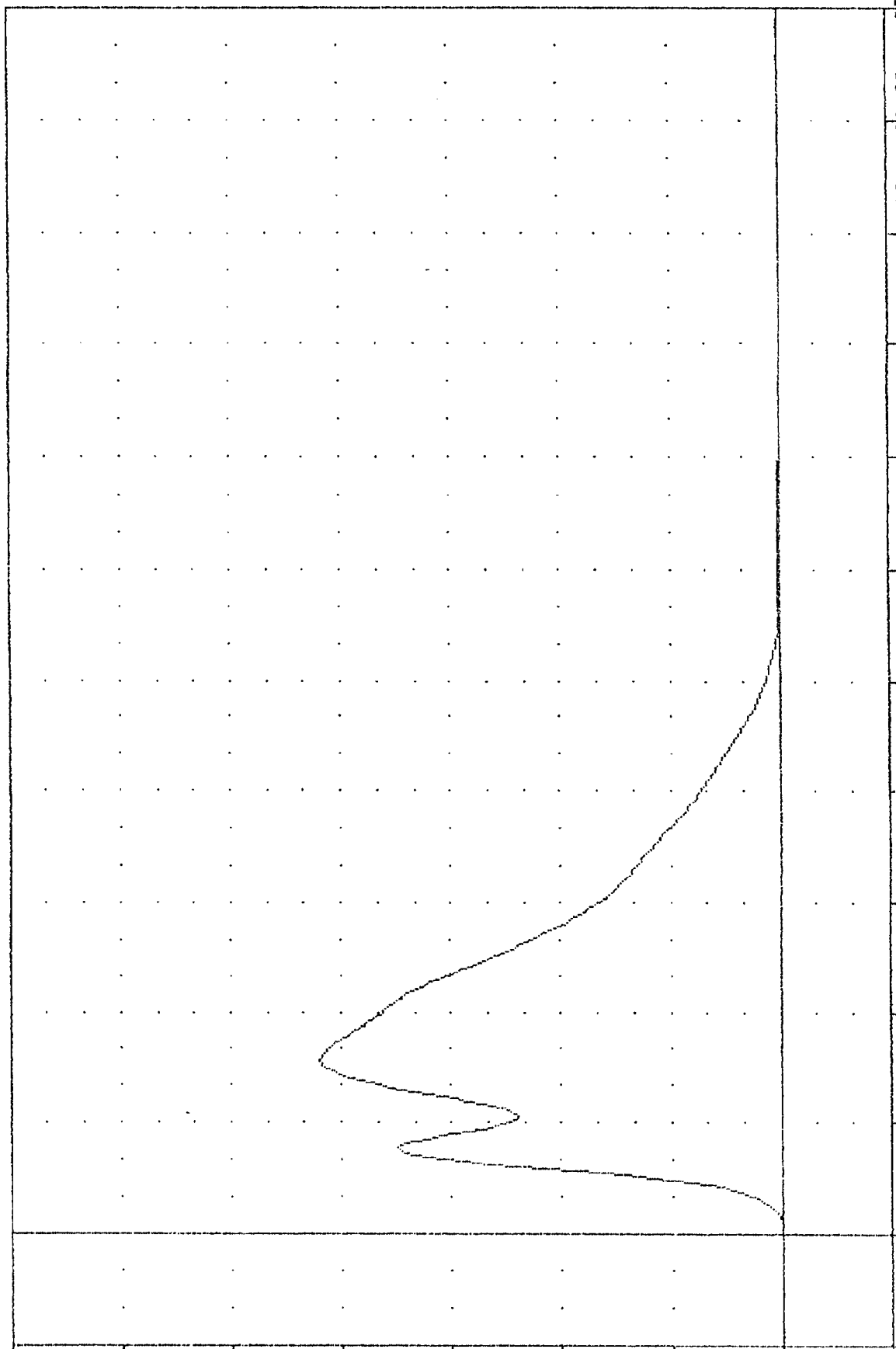
DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

HHT3R , TH82626
 5728 SN 828 H.S.THORAX CAL 26
 90317
 PENXG

FILTER = BLPF 3000/ 949/ -40
 MIN, MAX VALUES = -0.070 62.13, 41.85 0 9.38

ACCELERATION (G)
 70.00
 60.00
 50.00
 40.00
 30.00
 20.00
 10.00
 0.00
 -10.00



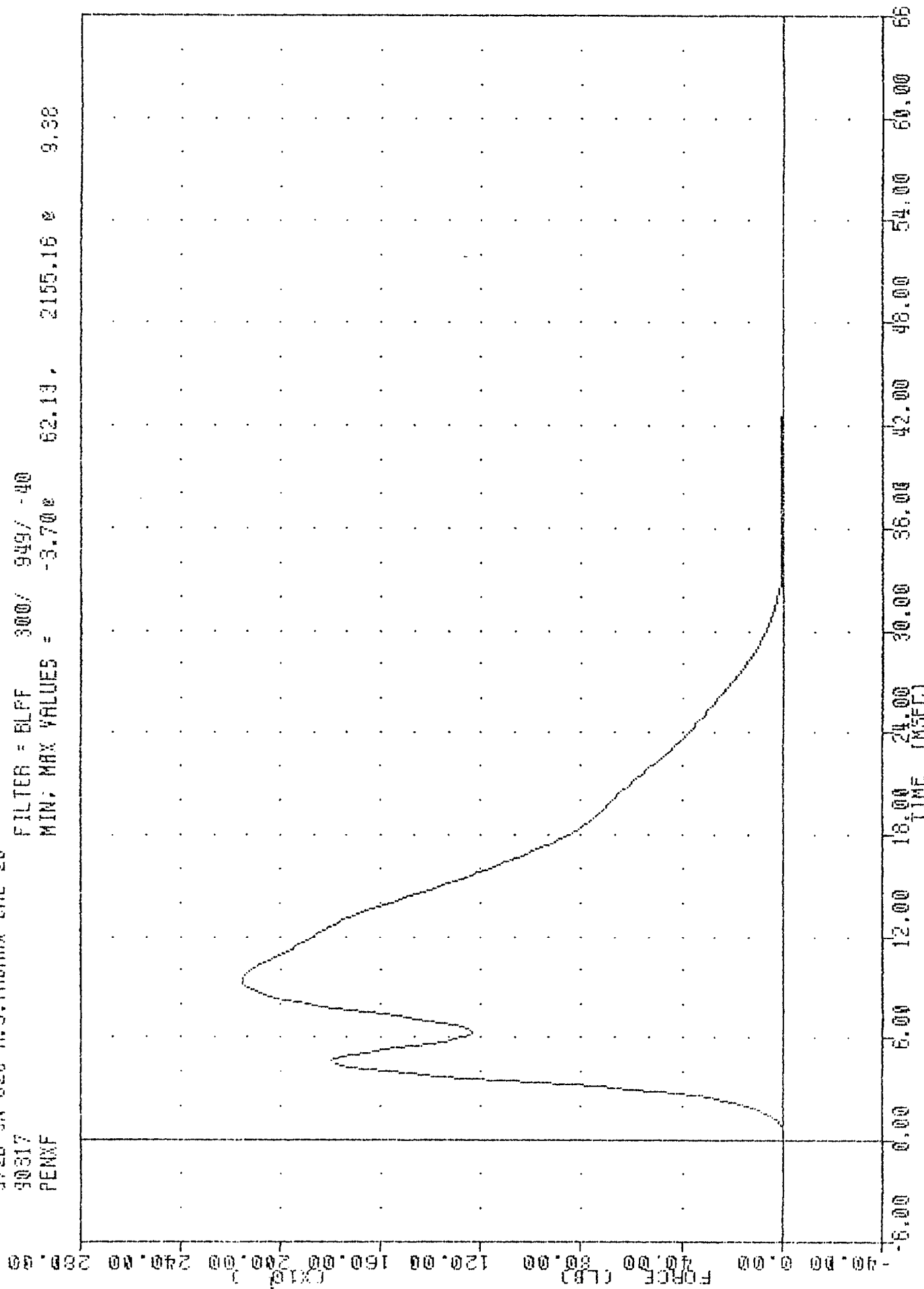
901211

C-26

-6.00 0.00 6.00 12.00 18.00 24.00 30.00 36.00 42.00 48.00 54.00 60.00 66.00
 TIME (msec)
 PART 572-B HYBRID II THORAX CALIBRATION 22 FT/SEC
 PENXG

RM10N
 5726 SN 026 H.S.THORAX CAL 26
 90317
 PENXF

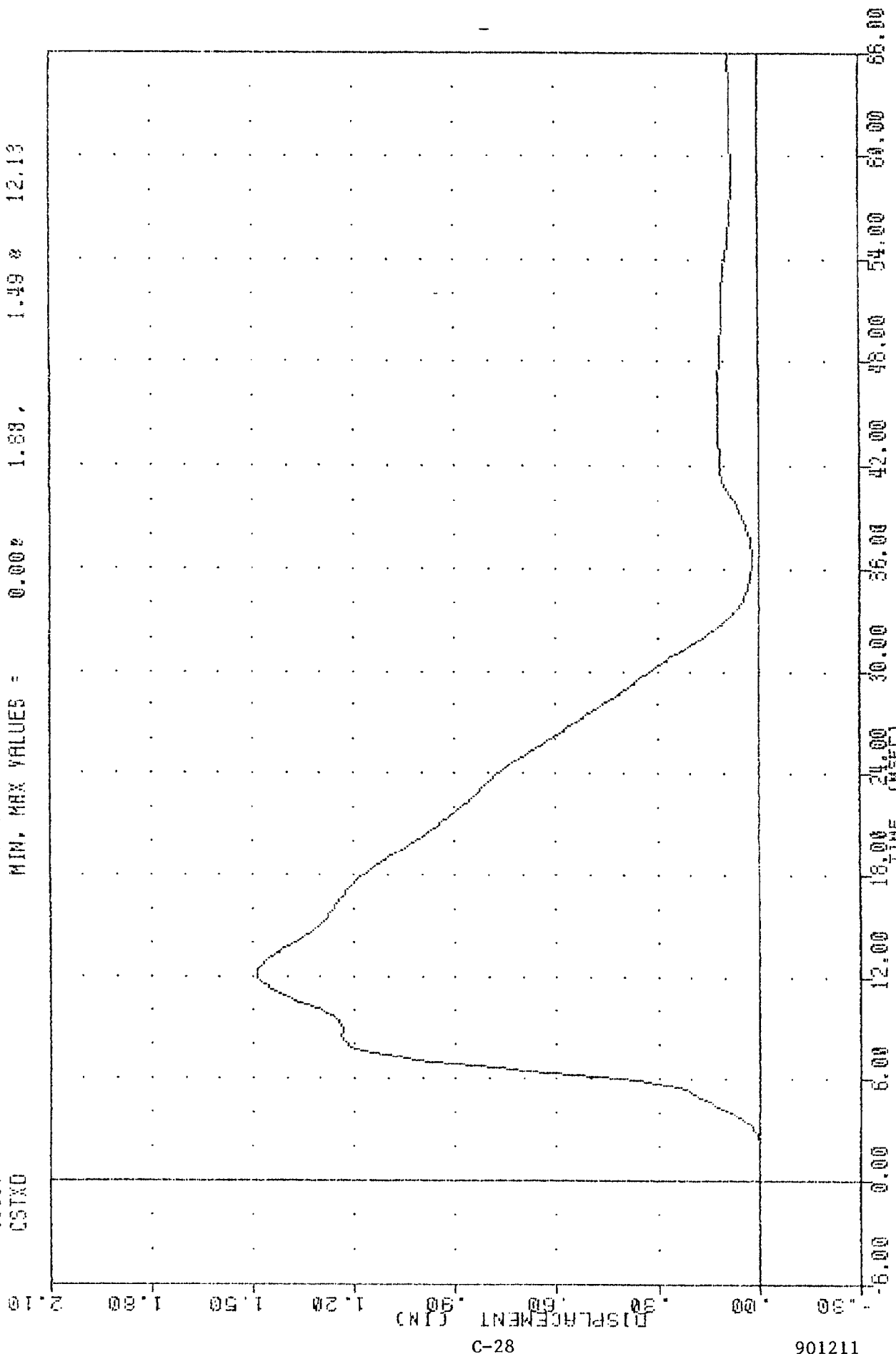
FILTER = BLFF 300/ 949/ -40
 MIN; MAX VALUES = -3.70e 62.13, 2155.16 e 9.38



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

WH12A * TH02626
 572B 5N 826 H.S. THORAX CAL 26
 90317
 CSTXD

FILTER = ELFF 300/ 949/ -40
 MIN. MAX VALUES = 0.00% 1.88, 1.49 * 12.13

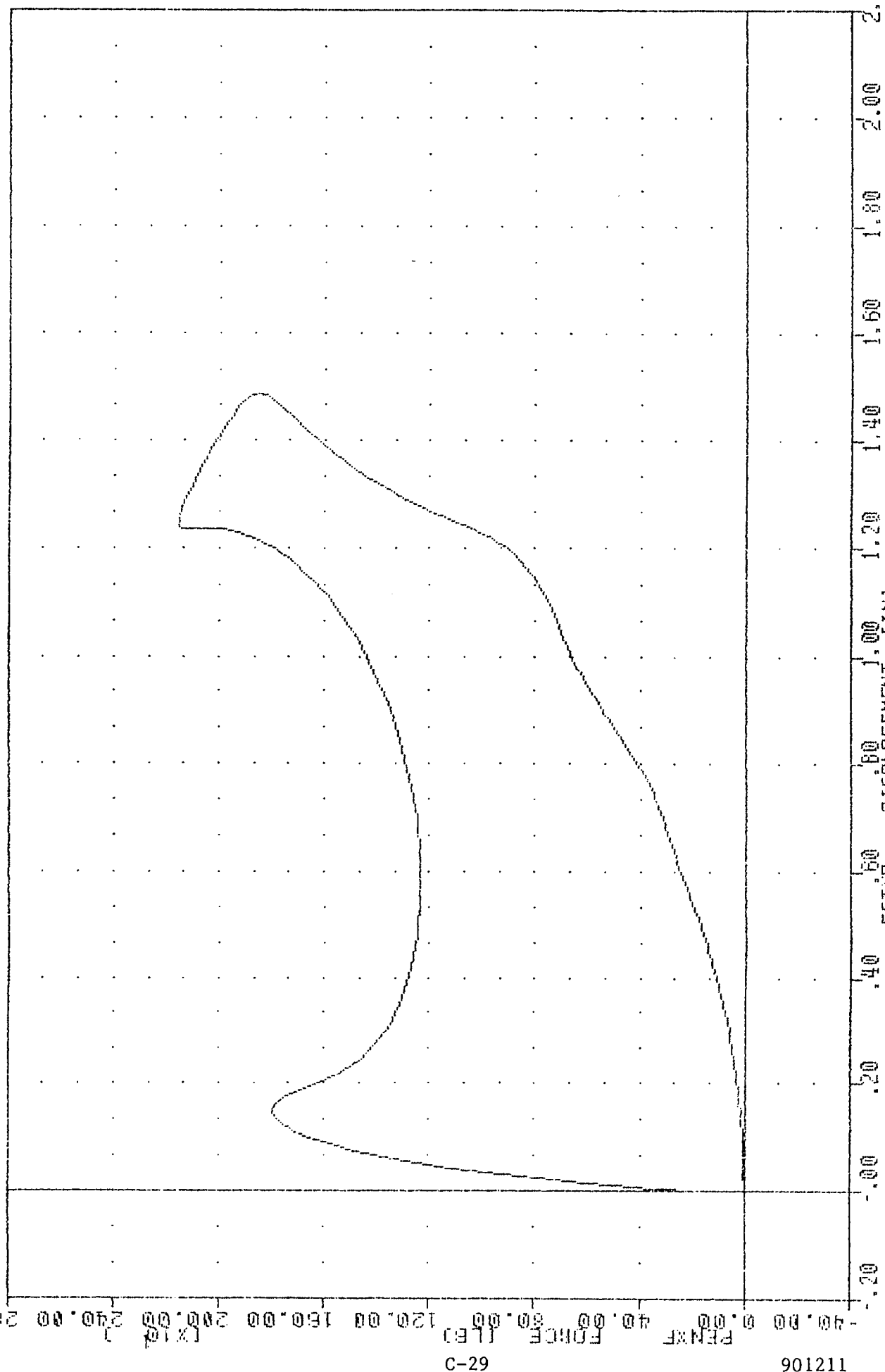


C-28

901211

PART 572-B HYBRID II THORAX CALIBRATION 22 FT/SEC
 6T STIMULUM DISPLACEMENT

01/28/82 08:25 H.S. THORAX CAL 26 30317
 FILTER = BLPF 300/ 949/ -40 MIN. MAX = 0.00 2
 FILTER = BLPF 300/ 949/ -40 MIN. MAX = -3.70 2
 1.89 1.49 12.13
 62.13 2155.16 9.38



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

TRANSPORTATION RESEARCH CENTER OF OHIO

ABDOMINAL COMPRESSION TEST

PART 572

09-Nov-90

TEMPERATURE 74 F
NHTSA ABB2626

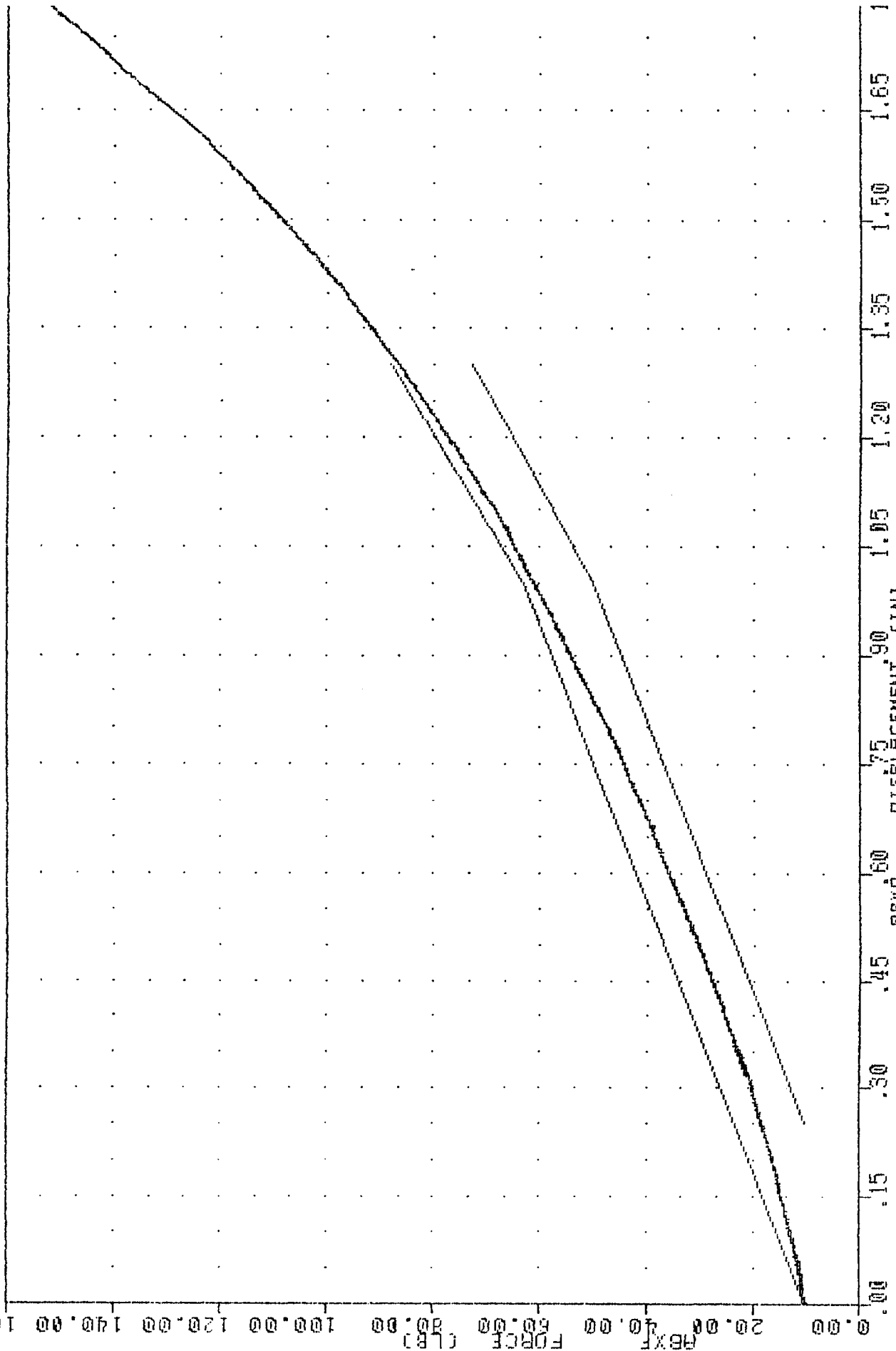
RELATIVE HUMIDITY 36 %
572B SN 826 ABDOM COMPR CAL 26

TEST CORRIDORS		
DISPLACEMENT	FORCE	TEST RESULTS
0.00 IN	10.00 LBS	10.00 LBS
0.50 IN	23.00 - 36.00 LBS	30.16 LBS
0.75 IN	36.00 - 50.00 LBS	44.13 LBS
1.00 IN	50.00 - 63.00 LBS	61.39 LBS
1.30 IN	73.00 - 88.00 LBS	86.77 LBS

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

NHISA
 HEAD
 HEXP
 5728 SN 826 ABDOM COMPB CAL 26 90313
 1650/ 5214/ -40 MIN. MAX = 0.00 153.67
 1650/ 5214/ -40 MIN. MAX = 0.00 153.67



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

TRANSPORTATION RESEARCH CENTER OF OHIO

LUMBAR FLEXION TEST

PART 572

09-NOV-90

TEMPERATURE 74 F
NHTSA LF82626

RELATIVE HUMIDITY 36 %
572B SN826 LUMBAR FLEX CAL26

DEFLECTION	SPECIFICATION	TEST RESULTS
0 DEG	0 LB	0.00 LB
20 DEG	22.00 - 34.00 LB	26.00 LB
30 DEG	34.00 - 46.00 LB	40.00 LB
40 DEG	46.00 - 58.00 LB	53.00 LB
NET RETURN ANGLE	< 12 DEG	3.50 DEG

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas Muddlet

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

PART 572

13-Nov-90

TEMPERATURE 72 F
LEFT KNEE
NHTSA LK82626

RELATIVE HUMIDITY 33 %
572B SN 826 L,KNEE IMP CAL 26

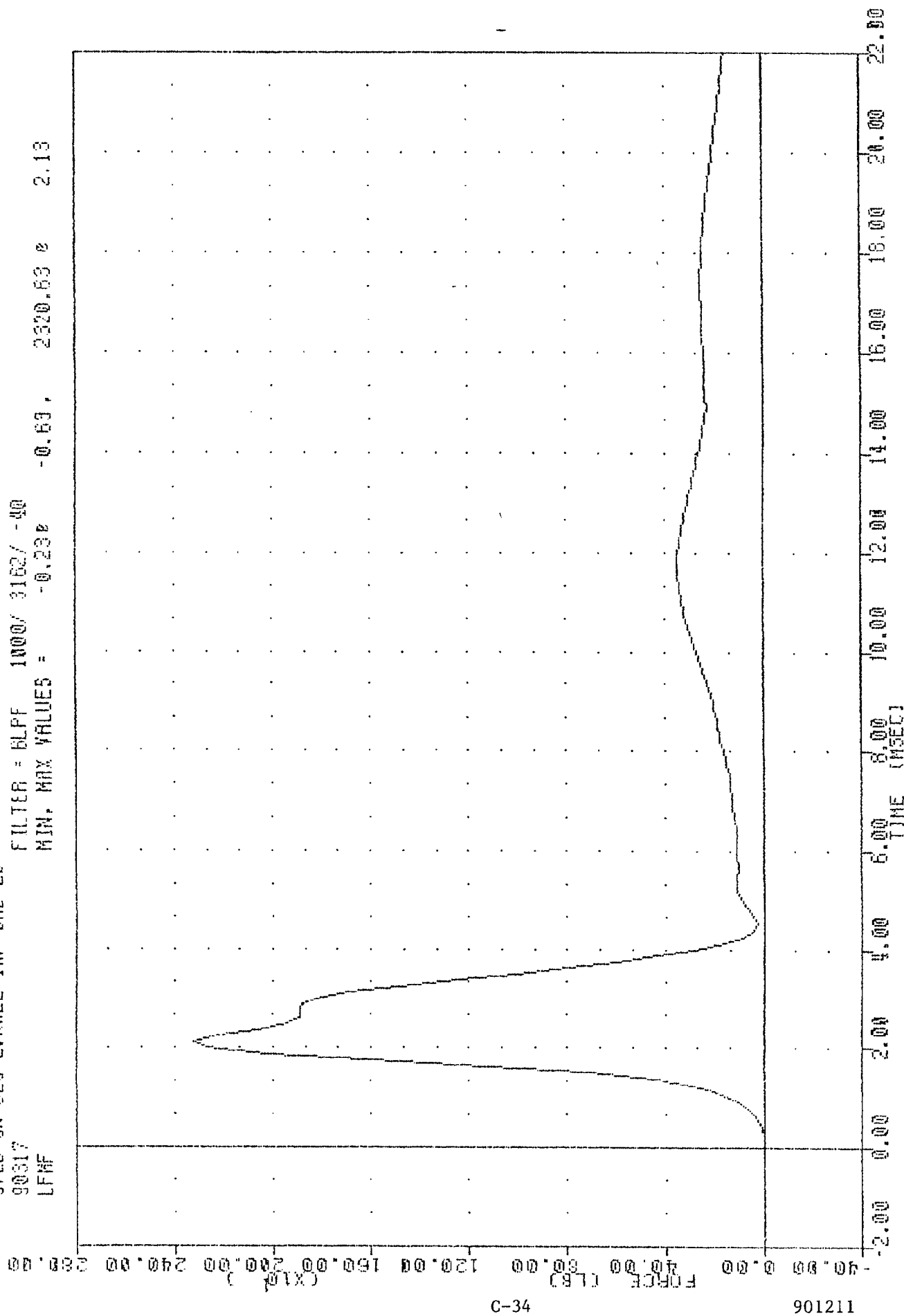
TEST PARAMETER	SPECIFICATION	TEST RESULTS
PROBE VELOCITY	6.76 - 7.04 FT/SEC	6.93 FT/SEC
PEAK KNEE IMPACT FORCE	1850 - 2500 LB	2320.63 LB
DURATION ABOVE 1000 LB	≥ 1.7 MSEC	1.92 MSEC

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas Middleton

RHTSH , LK82526
 5720 SN 026 L.KNEE INF CAL 26
 90317
 LFMF

FILTER = BLPF 1000/ 3162/ -40
 MIN. MAX VALUES = -0.230 -0.63, 2320.63 2 2.13



C-34

901211

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

KNEE IMPACT TEST

PART 572

13-Nov-90

TEMPERATURE 72 F

RELATIVE HUMIDITY 32 %

RIGHT KNEE

NHTSA RK92626

572B SN 826 R.KNEE IMP CAL 26

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PROBE VELOCITY	6.76 - 7.04 FT/SEC	6.91 FT/SEC
PEAK KNEE IMPACT FORCE	1850 - 2500 LB	1885.73 LB
DURATION ABOVE 1000 LB	≥ 1.7 MSEC	2.11 MSEC

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

WHT3A : RK32526

5726 9N 826 R.KNEE INP DAL 26

90317

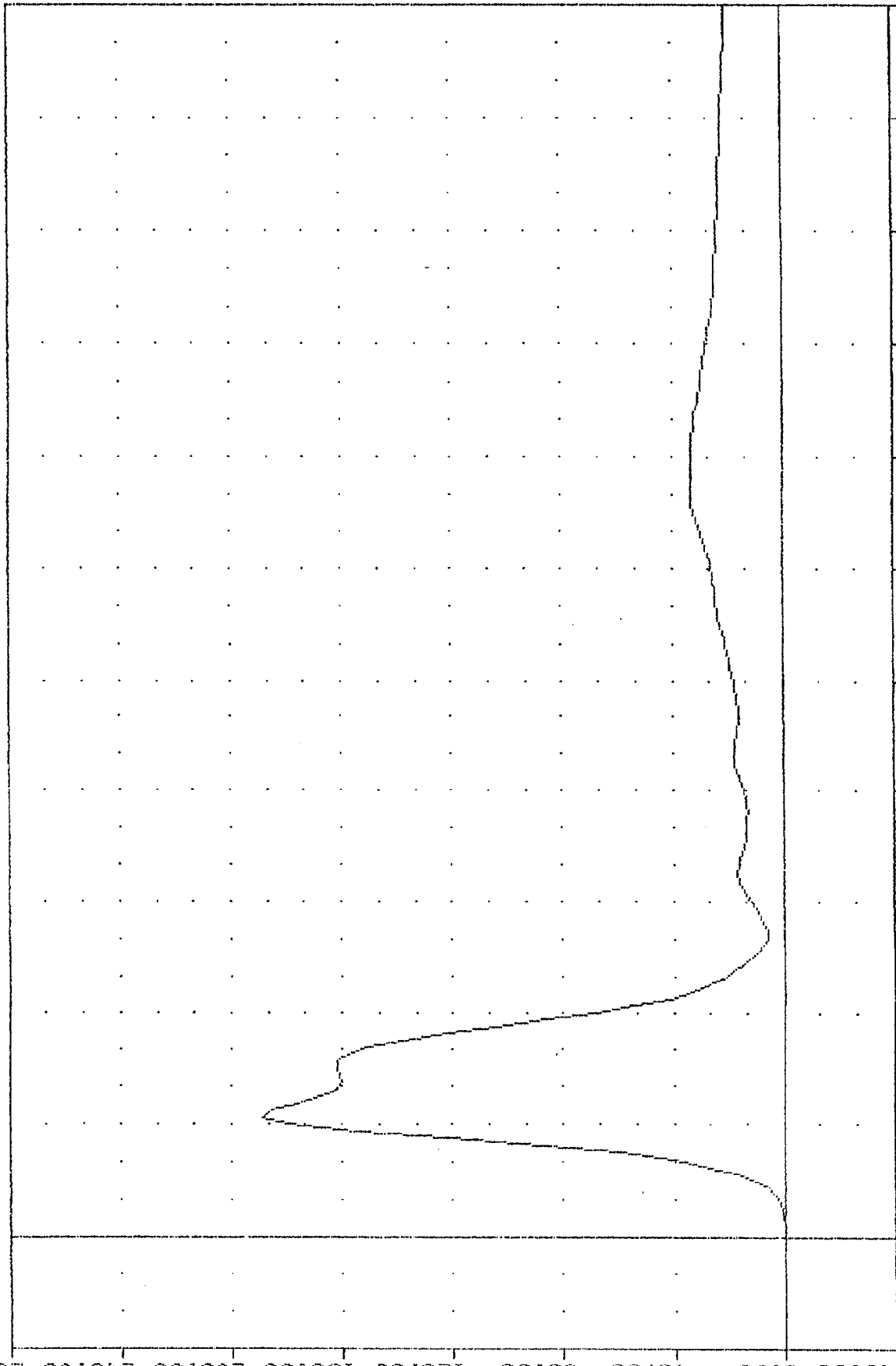
AFMF

FILTER = OLPF 1000/ 3162/ -40

MIN, MAX VALUES = 0.048

-1.50, 1885.73 2.13

FORCE (LB)
(X10³)



PRE-TEST CERTIFICATION DATA

PASSENGER DUMMY S/N: 713

TRANSPORTATION RESEARCH CENTER OF OHIO

EXTERNAL DIMENSIONS

PART 572

08-NOV-90

TEMPERATURE 74 F
NHTSA ED71301

RELATIVE HUMIDITY 33 %
572B SN713 EXT. DIMENSION CAL01

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	22.2 IN
Hip Pivot Height	3.9 IN (ref)	3.9 IN
Hip Pivot From Backline	4.8 IN (ref)	4.8 IN
Knee Pivot From Backline	20.1 - 20.7 IN	20.3 IN
Rear of Head From Backline	1.7 IN (ref)	1.7 IN
Chest Depth	9.1 - 9.6 IN	9.2 IN
Shoulder Width	17.8 - 18.4 IN	17.9 IN
Chest Circumference Over Nipples	36.8 - 40.0 IN	37.7 IN
Waist Circumference at Min. Girth	31.4 - 32.6 IN	32.3 IN
Hip Width	14.0 - 15.4 IN	14.9 IN
Knee Pivot From Floor	19.3 - 19.9 IN	19.5 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas Middleton

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

PART 572

26-Nov-90

TEMPERATURE 72 F
NHTSA HD71301RELATIVE HUMIDITY 43 %
572B SN 713 HEAD DROP CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PEAK RESULTANT ACCELERATION	210 - 260 G	248.06 G
TIME ABOVE 100 G LEVEL	0.9 - 1.5 MSEC	1.28 MSEC
PEAK LATERAL ACCELERATION	10 G MAX	-5.14 G
IS ACCELERATION CURVE UNIMODAL?		YES

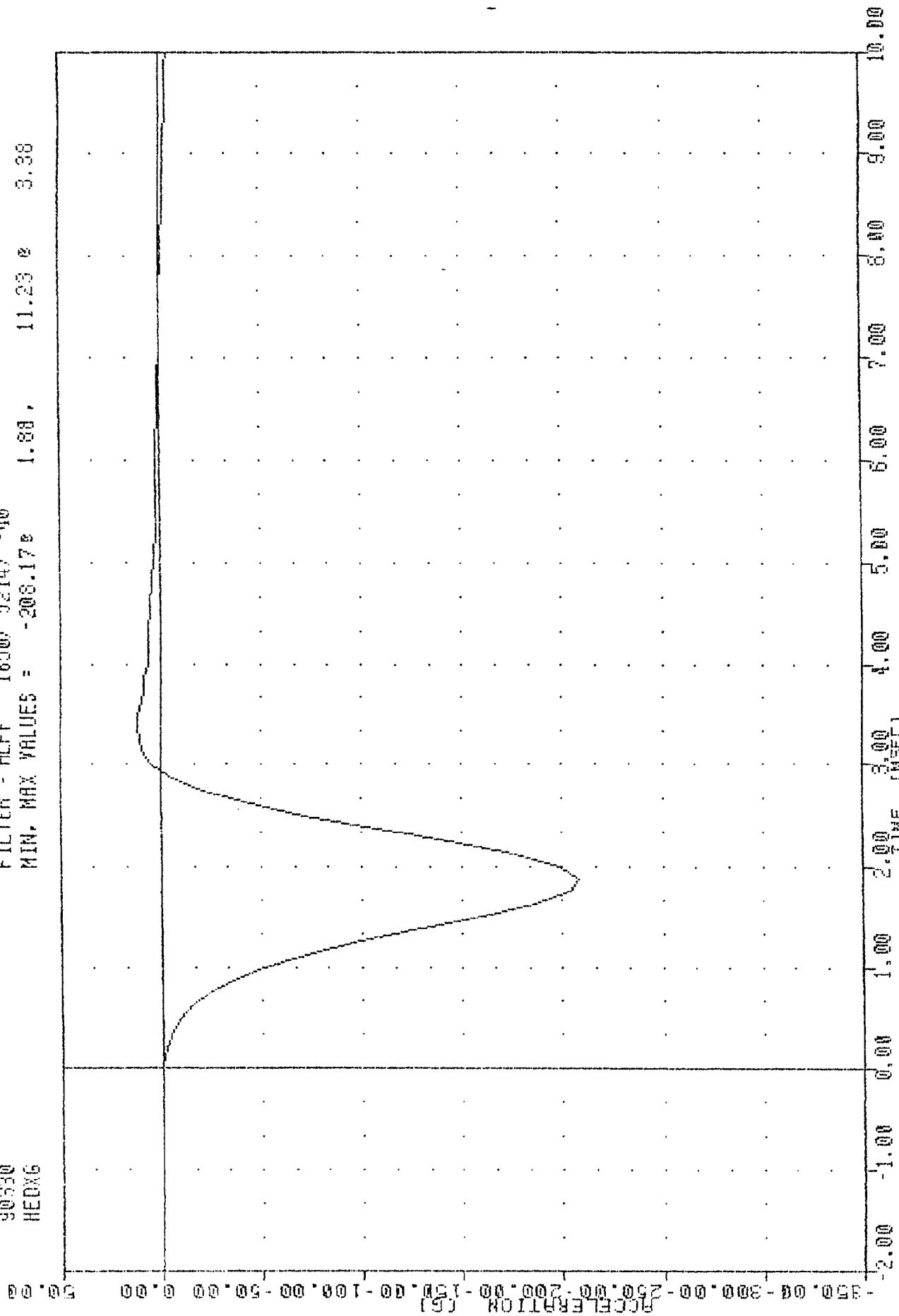
DUMMY MEETS SPECIFICATIONS

TECHNICIAN

Chas. Middleton

NH150
 5728 SN 713 HEAD DROP CAL 01
 90530
 HEDXG

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -208.17 1.88 11.23 3.38



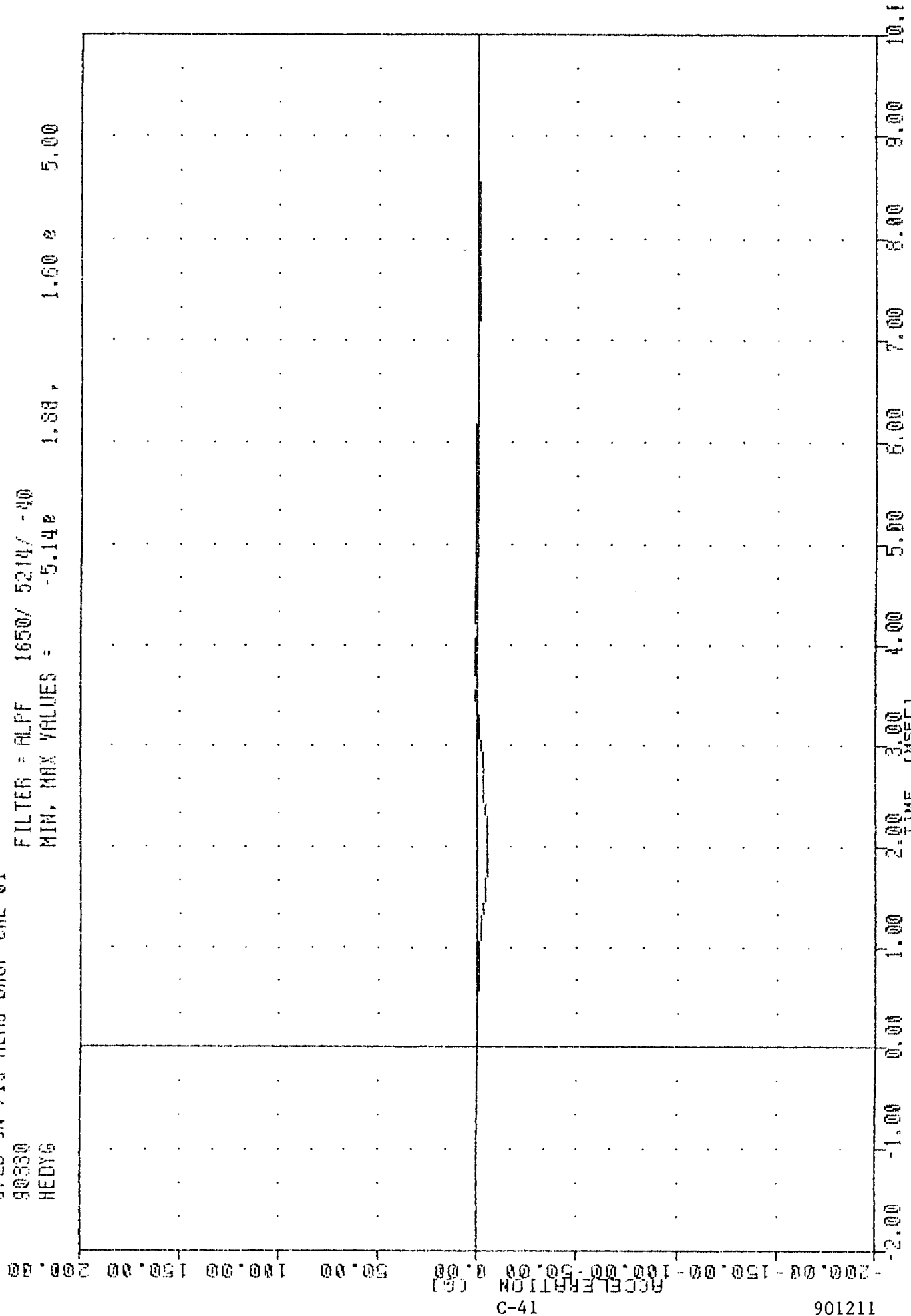
C-40

901211

PART 572-8 HYBRID II HEAD DROP CALIBRATION

572B SN 713 HEAD DROP CAL 01
 90330
 HEDYG

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -5.14e 1.88e 1.60e 5.00



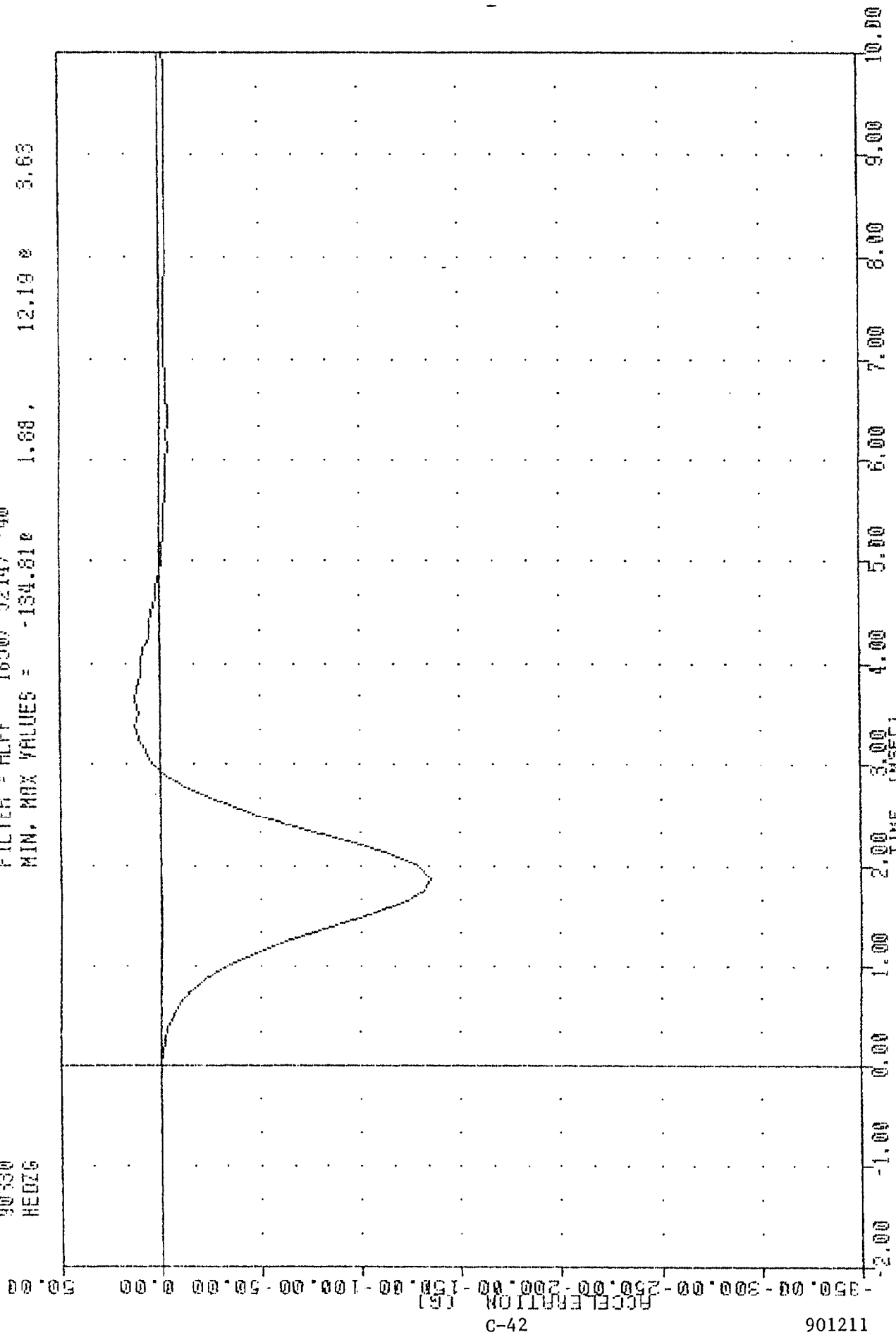
C-41

901211

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

WHTSA , H071301
 5728 SN 713 HEAD DROP CAL 01
 90330
 HED26

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -134.810 1.68 , 12.19 2 3.63



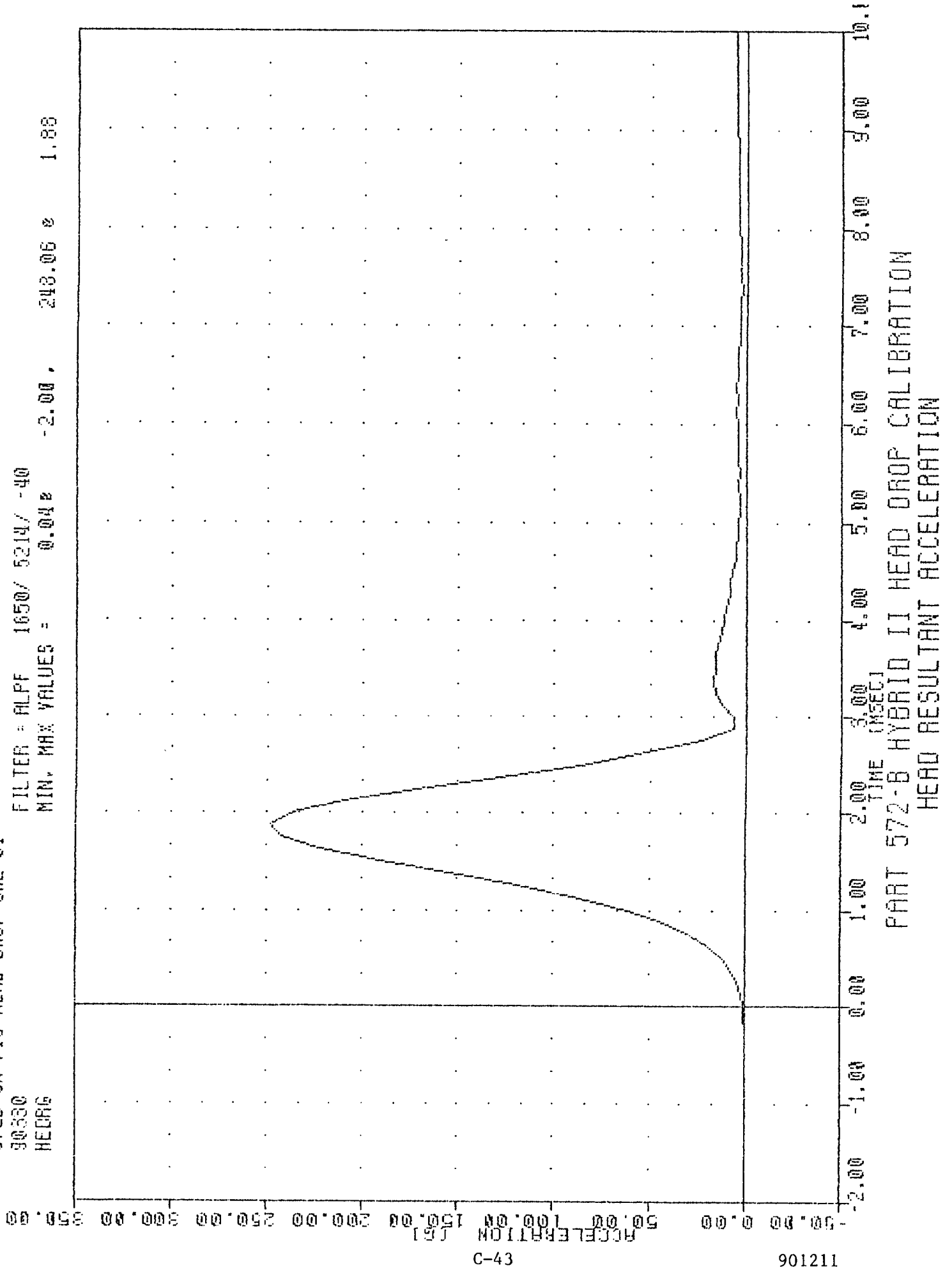
C-42

9012106

PART 572-B HYBRID II HEAD DROP CALIBRATION

M113H , RV130J
 572B SN 713 HEAD DROP CAL 01
 90530
 HEADG

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = 0.04% -2.00 , 243.06 % 1.88



TRANSPORTATION RESEARCH CENTER OF OHIO

NECK PENDULUM TEST

PART 572

28-Nov-90

TEMPERATURE 75 F
NHTSA HN71301

RELATIVE HUMIDITY 50 %
572B SN 713 HEAD/NECK CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Pendulum velocity	21.5 to 25.5 ft/sec	23.53 ft/sec
Pendulum Deceleration:		
T1 - T2: 5 - 20 G	3 msec max	2.19 msec
T2 - T3: 20 - 20 G	25 - 30 msec	28.12 msec
T3 - T4: 20 - 5 G	10 msec max	4.14 msec
Avg. G level T2 - T3	20 - 24 G	23.65 G
Maximum Rotation Angle	63 - 73 deg	71.96 deg
Peak Head Resultant Accel	24 G max	22.60 G

Test Parameter	Specification	Test Results
Rotation Angle	Time Chordal Disp.	Time Chordal Disp.
(degrees)	(msec) (in)	(msec) (in)
0	-2.0 - +2.0 -0.5 - +0.5	1.25 0.01
30	25.6 - 34.4 2.1 - 3.1	30.72 2.48
60	40.3 - 51.7 4.3 - 5.3	45.07 4.52
max	53.2 - 66.8 5.0 - 6.0	65.75 5.63
60	67.0 - 83.0 4.3 - 5.3	82.74 4.73
30	85.4 - 104.6 2.1 - 3.1	100.28 2.33
0	101.0 - 123.0 -0.5 - +0.5	114.25 0.18

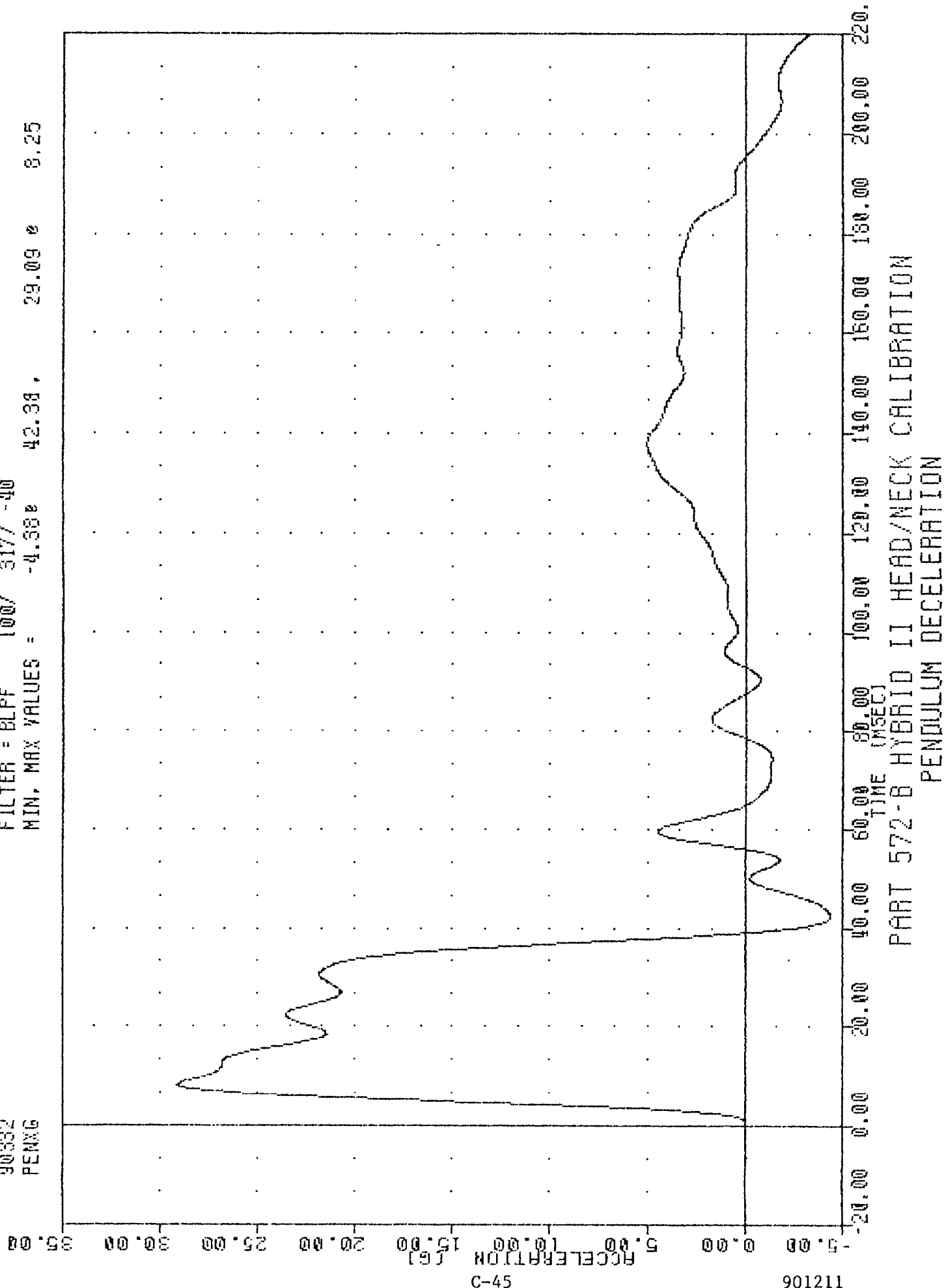
SND: 5.95 in

DUMMY MEETS SPECIFICATIONS

TECHNICIAN *Chas. Middleton*

NH13H , HH/1301
 572B SN 713 HEAD/NECK CAL 01
 90332
 PENXG

FILTER = BLPF 100/ 317/ -40
 MIN. MAX VALUES = -4.38 42.38 29.09 8 3.25



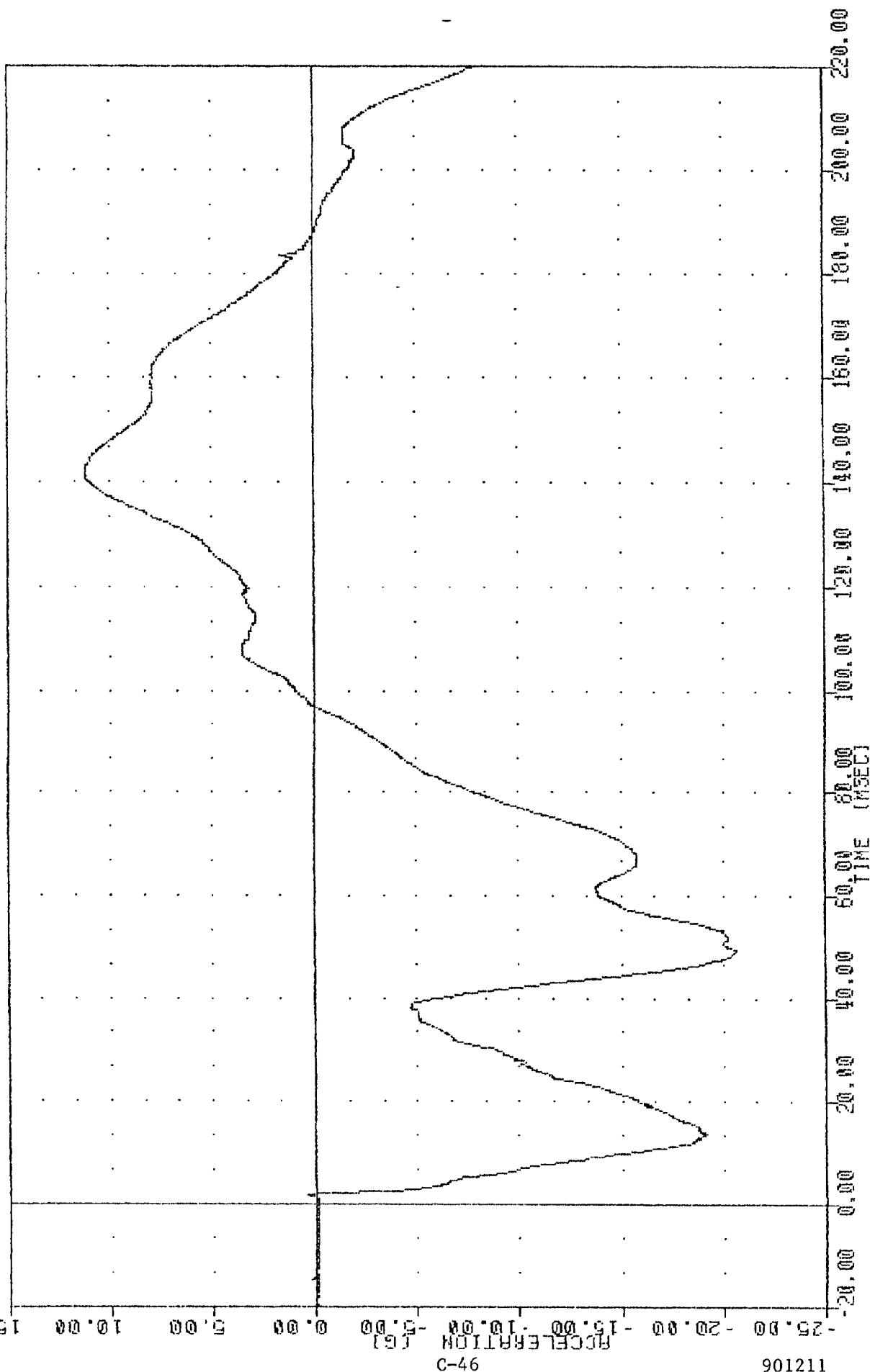
C-45

901211

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

WHTSA
 572B SN 713 HEAD/NECK CHL 01
 90332
 HEADG

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -20.672 48.88, 11.20 141.50



44-3

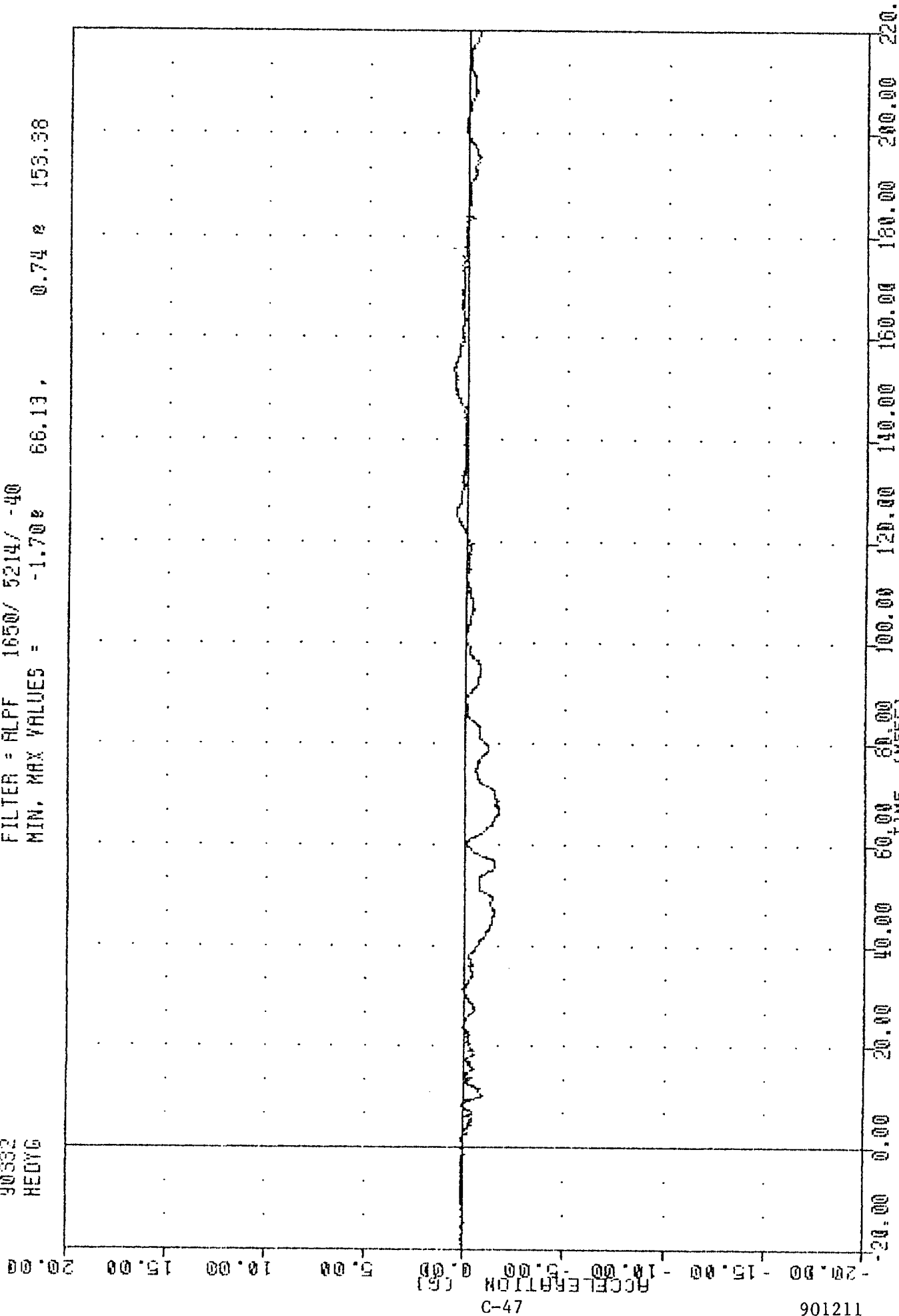
901211

PART 572-B HYBRID II HEAD/NECK CALIBRATION

HEAD ACCELERATION X AXIS

HH13H , HH71301
 572B SN 713 HEAD/NECK CAL 01
 90332
 HEDYG

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -1.70e 66.13, 0.74 e 153.38



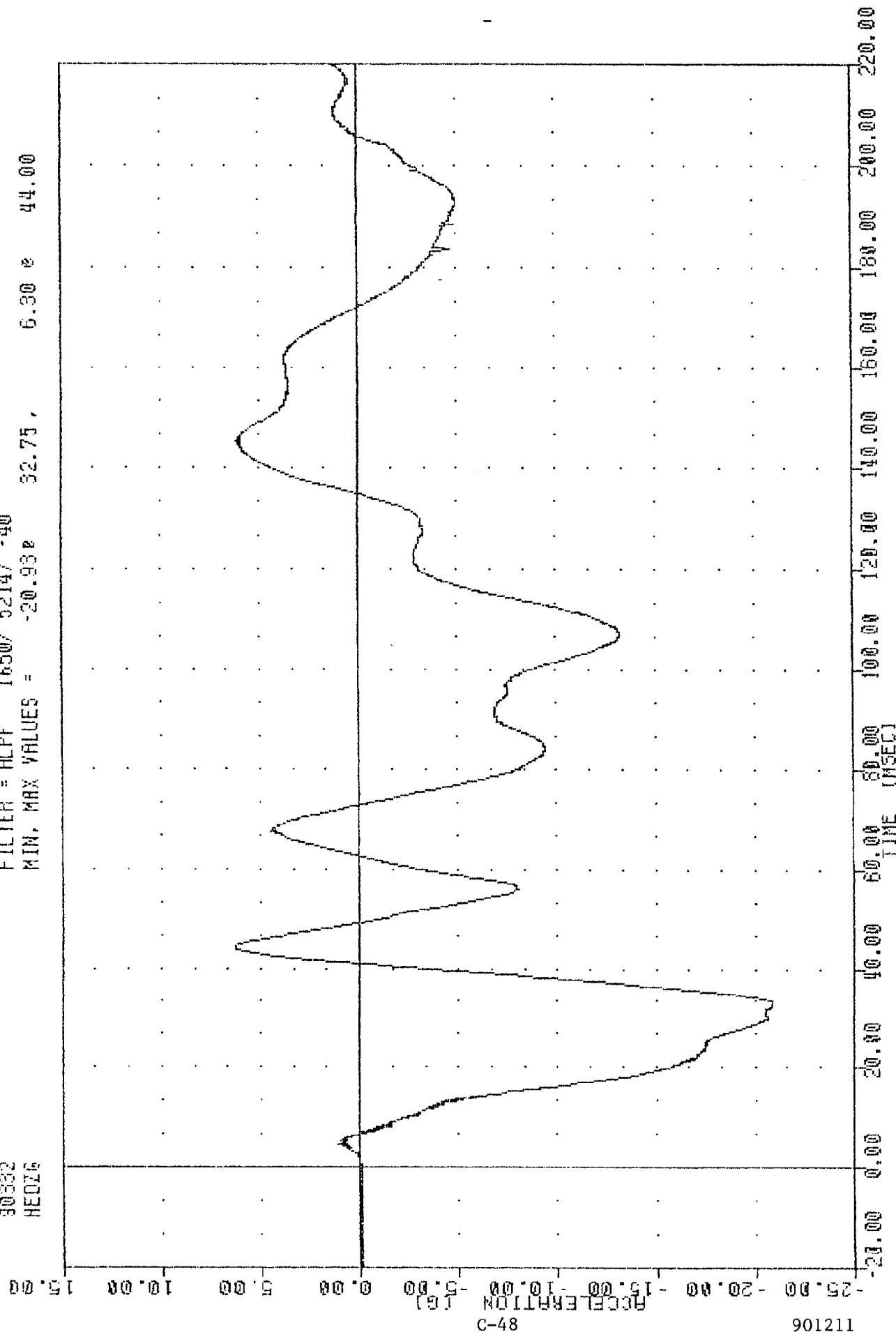
C-47

901211

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

NHISR , HN71301
 572B SN 713 HEAD/NECK CAL 01
 30332
 HEADZG

FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -20.93 32.75 , 6.30 44.00

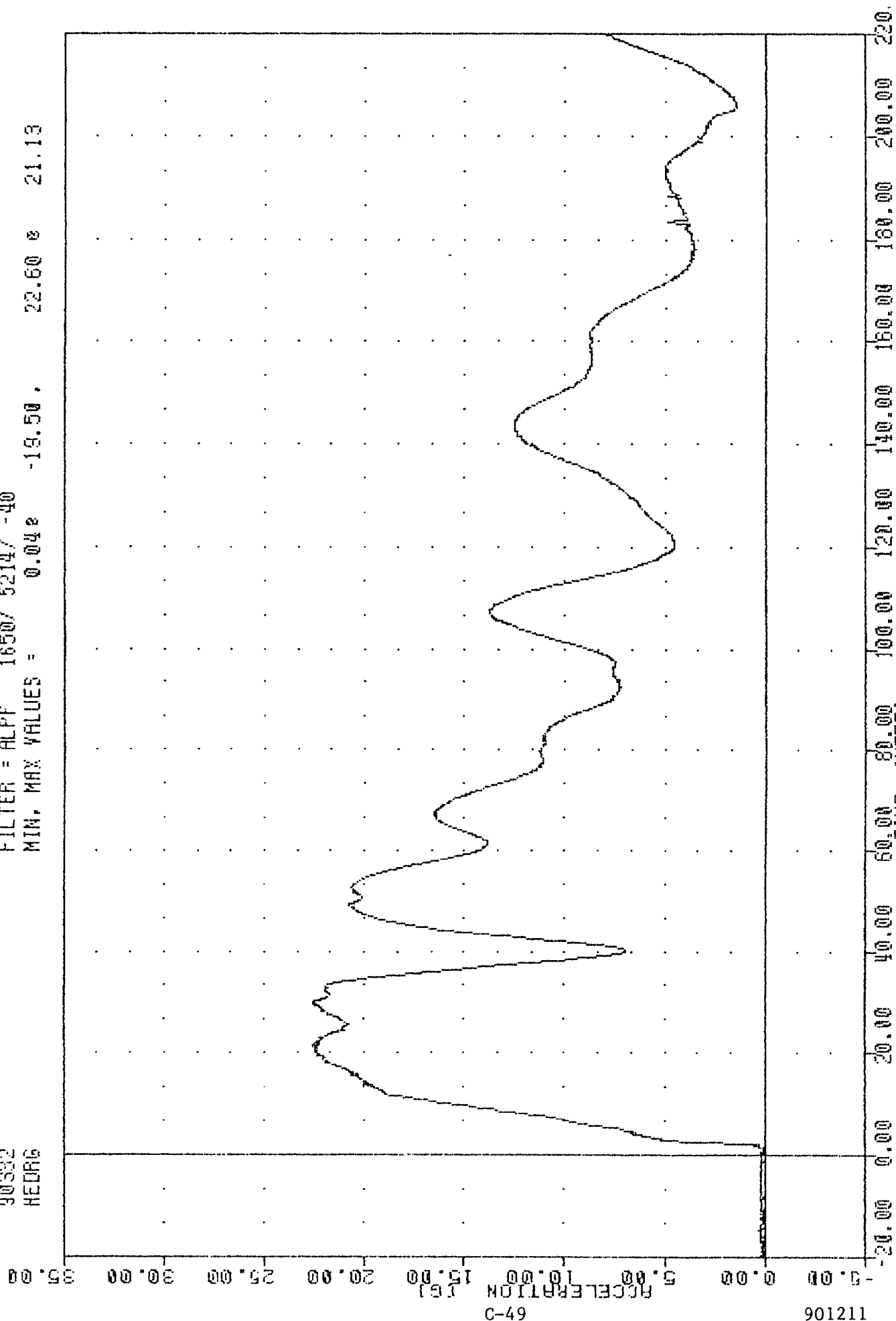


PART 572-B HYBRID II HEAD/NECK CALIBRATION

HEAD ACCELERATION Z AXIS

RHTSH , HW71301
 5720 SN 713 HEAD/NECK CAL 01
 90332
 HEADG

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = 0.040 -19.50 , 22.60 21.13

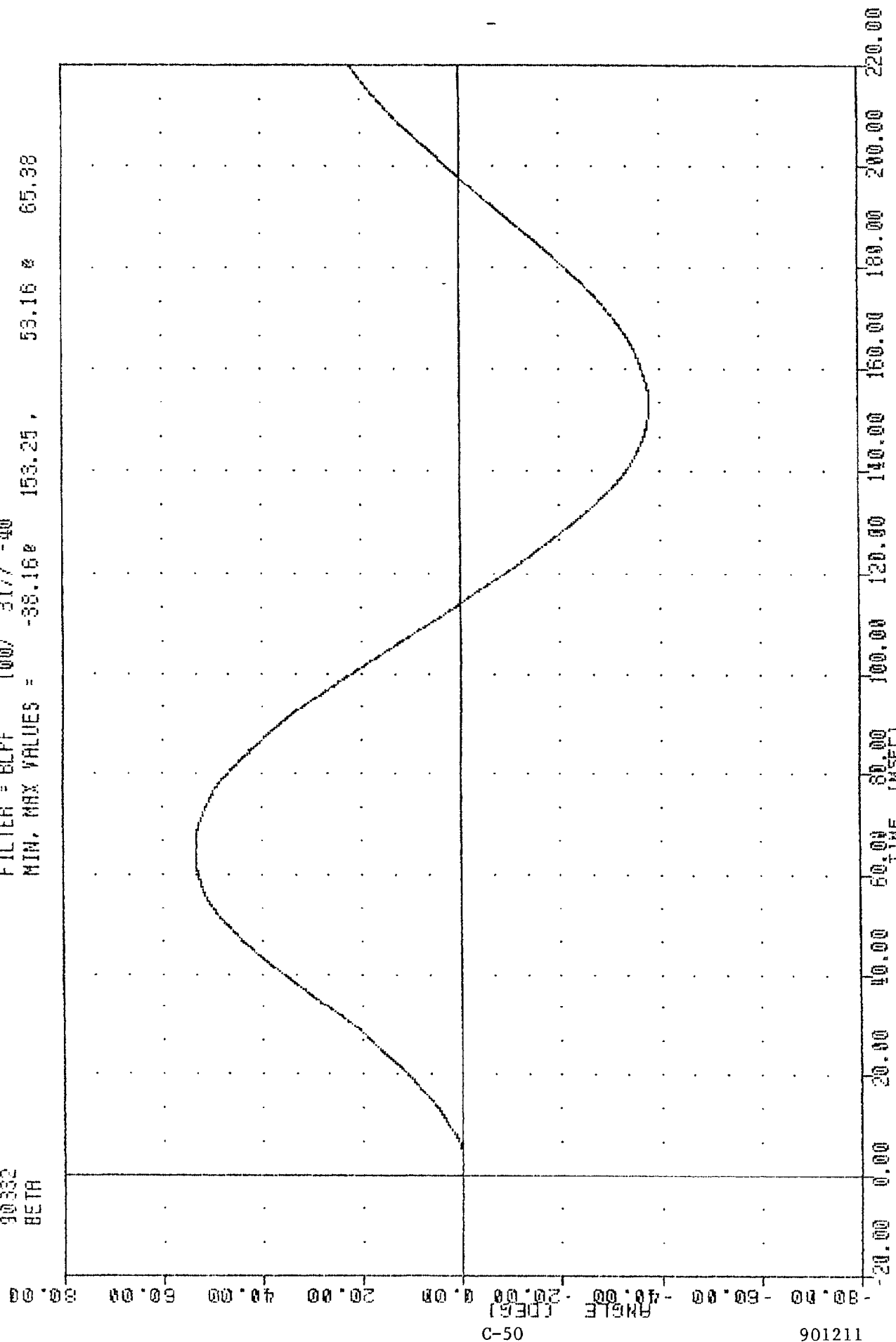


901211

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

HHTSR
 5720 SN 713 HEAD/NECK CAL 01
 90332
 BETA

FILTER = BLPF 100/ 317/ -40
 MIN, MAX VALUES = -38.16 153.25, 53.16 65.38



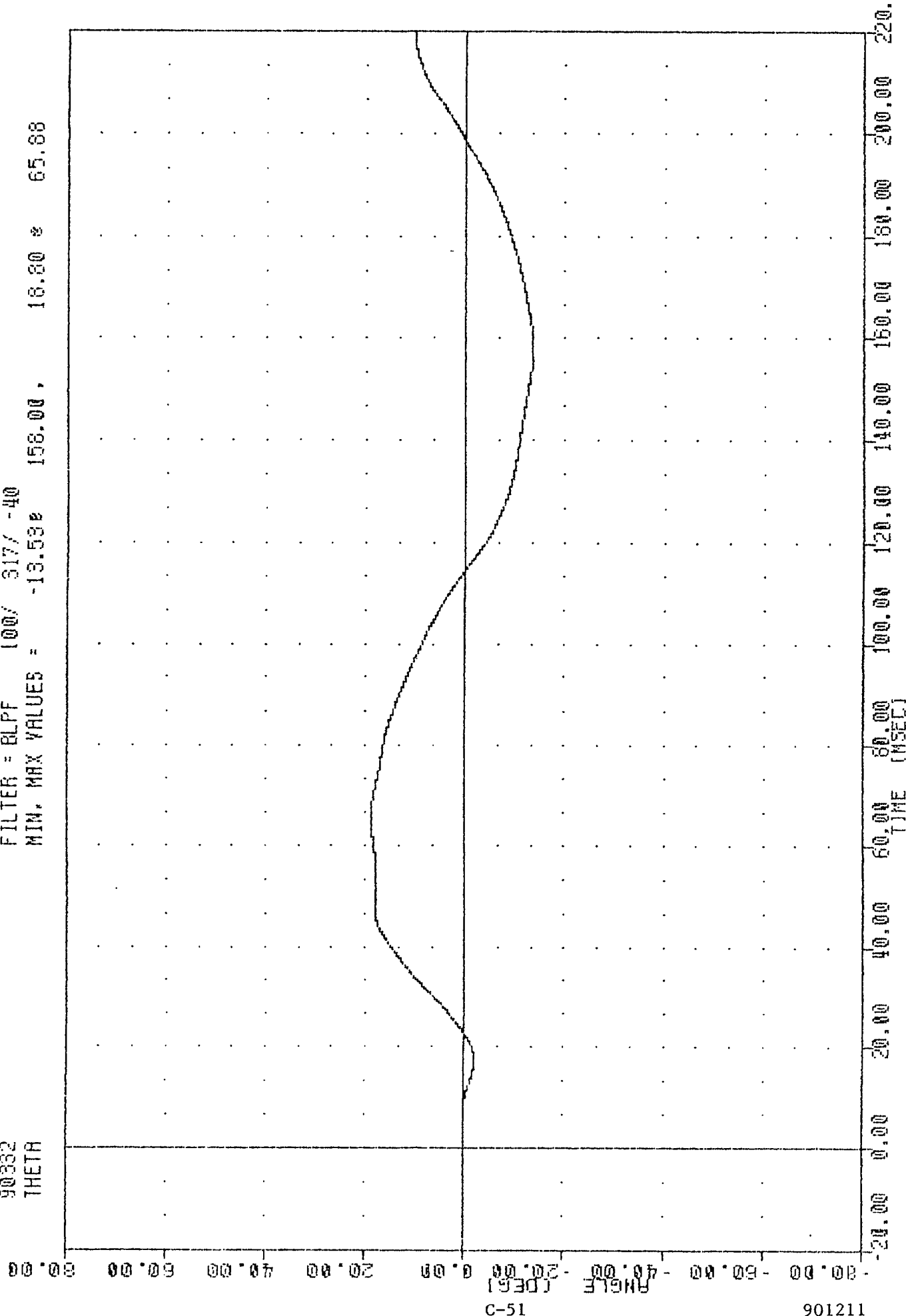
C-50

901211

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

ANION , HY/1301
 572B SN 713 HEAD/NECK CAL 01
 90332
 THETA

FILTER = BLPF 100/ 317/ -40
 MIN. MAX VALUES = -13.53 158.00 , 18.80 65.88



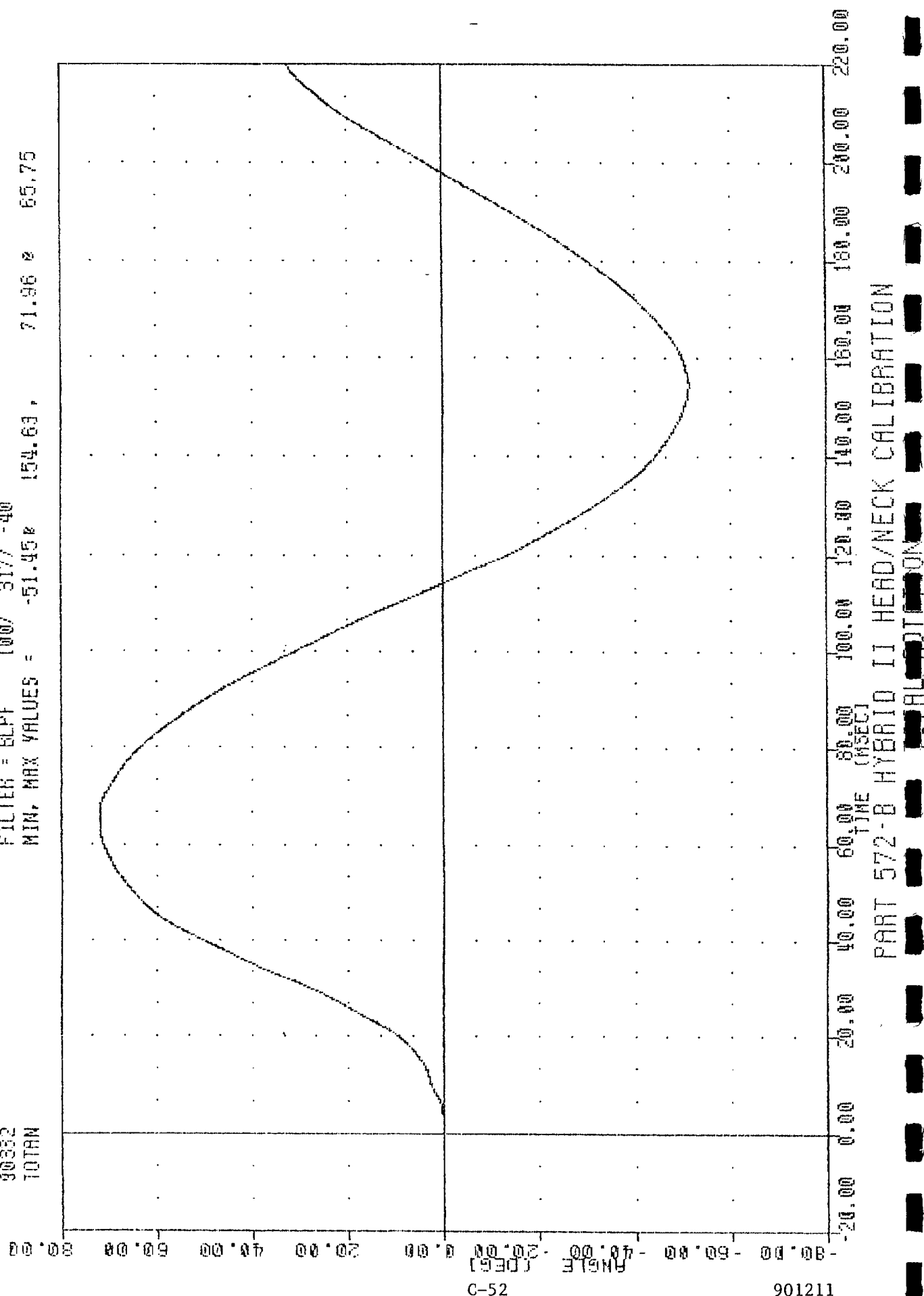
C-51

901211

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

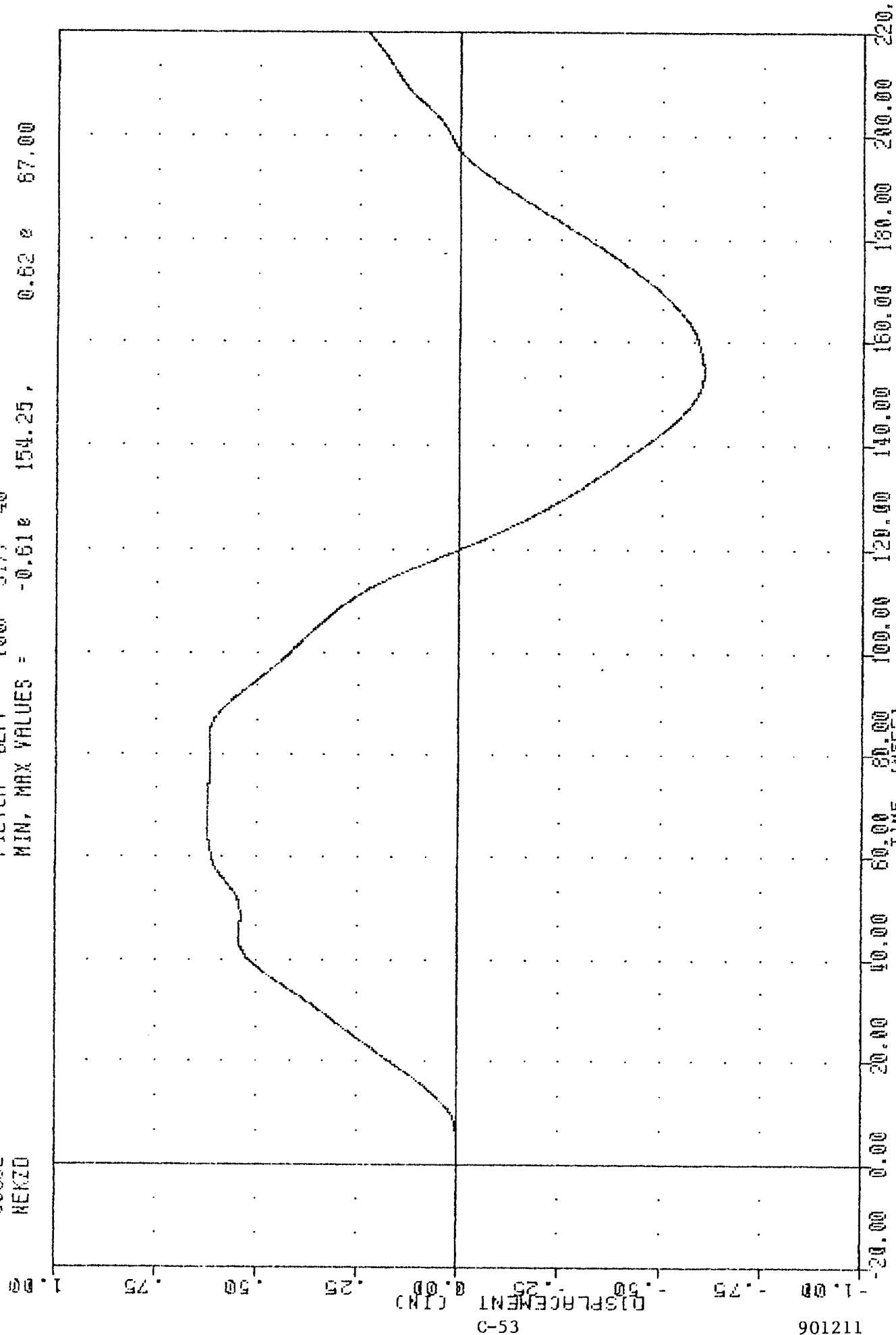
RHTSR , HW71301
 5726 SN 713 HEAD/NECK CAL 01
 90332
 TOTAN

FILTER = 6LPF 100/ 317/ -40
 MIN, MAX VALUES = -51.45 154.63 , 71.96 85.75



KHTSR , HN71301
 5728 SN 713 HEAD/NECK CAL 01
 90332
 HEKZO

FILTER = BLPF 100/ 317/ -40
 MIN, MAX VALUES = -0.61e 154.25, 0.62 e 87.00



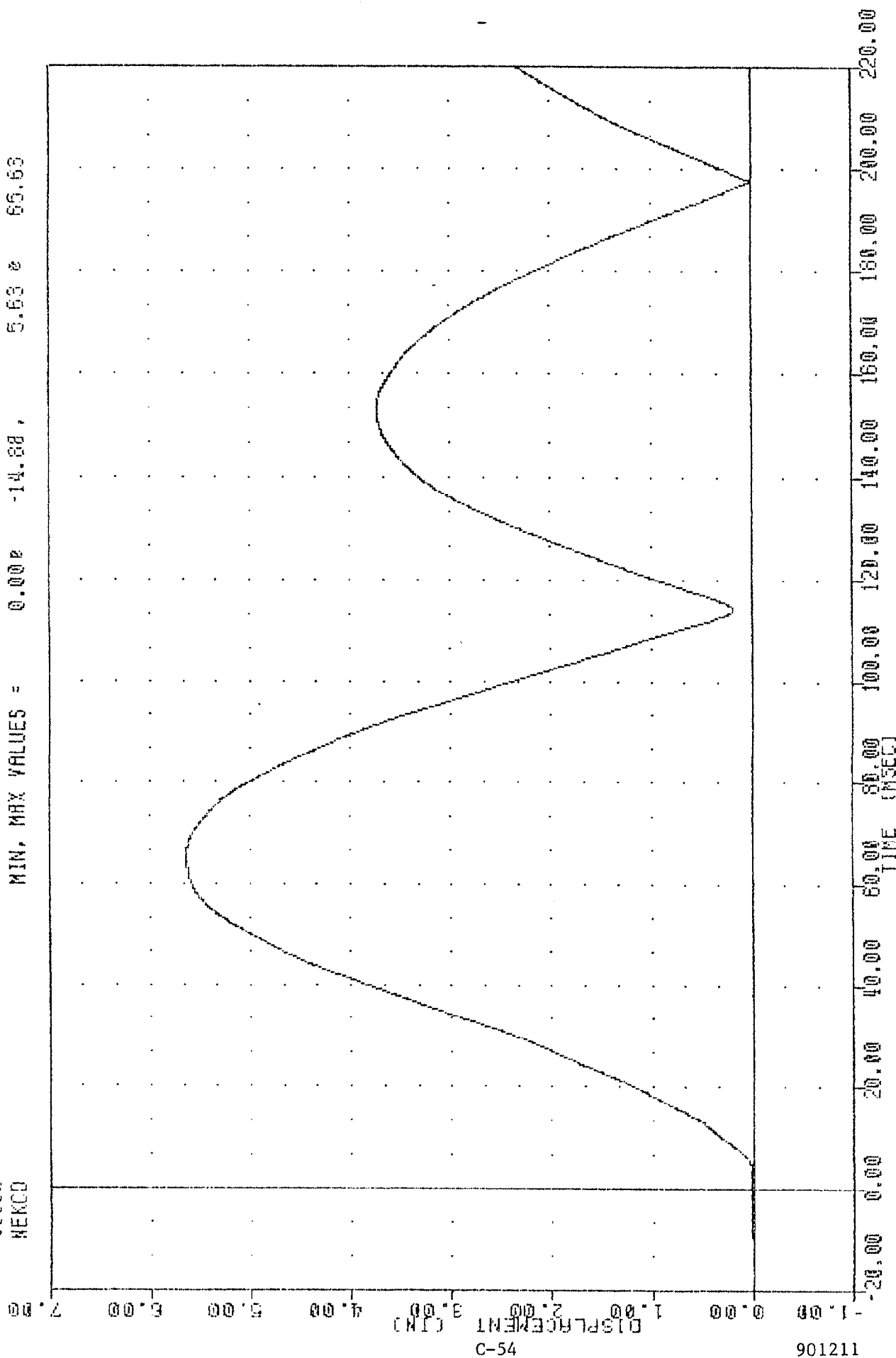
C-53

901211

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

RHTSR
 572B 3N 713 HEAD/NECK CRL 01
 90382
 NEKCD

FILTER = GLPF 100/ 317/ -40
 MIN, MAX VALUES = 0.000 -14.88, 5.63 & 66.63



C-54

901211

PART 572-B HYBRID II HEAD/NECK CALIBRATION

NECK GUARD DISPLACEMENT

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572

12-Nov-90

TEMPERATURE 73 F
NHTSA TL71301RELATIVE HUMIDITY 34 %
572B SN 713 L.S. THORAX CAL 01

	LOW SPEED TEST	

TEST PARAMETER	SPECIFICATION	TEST RESULTS
=====		
PENDULUM VELOCITY	13.86-14.14 FT/SEC	14.10 FT/SEC

PEAK DEFLECTION	1.1 IN max.	0.87 IN

PEAK RESISTIVE FORCE	1,450. LB max.	1340. LB

INTERNAL HYSTERESIS	50% - 70%	57.8%

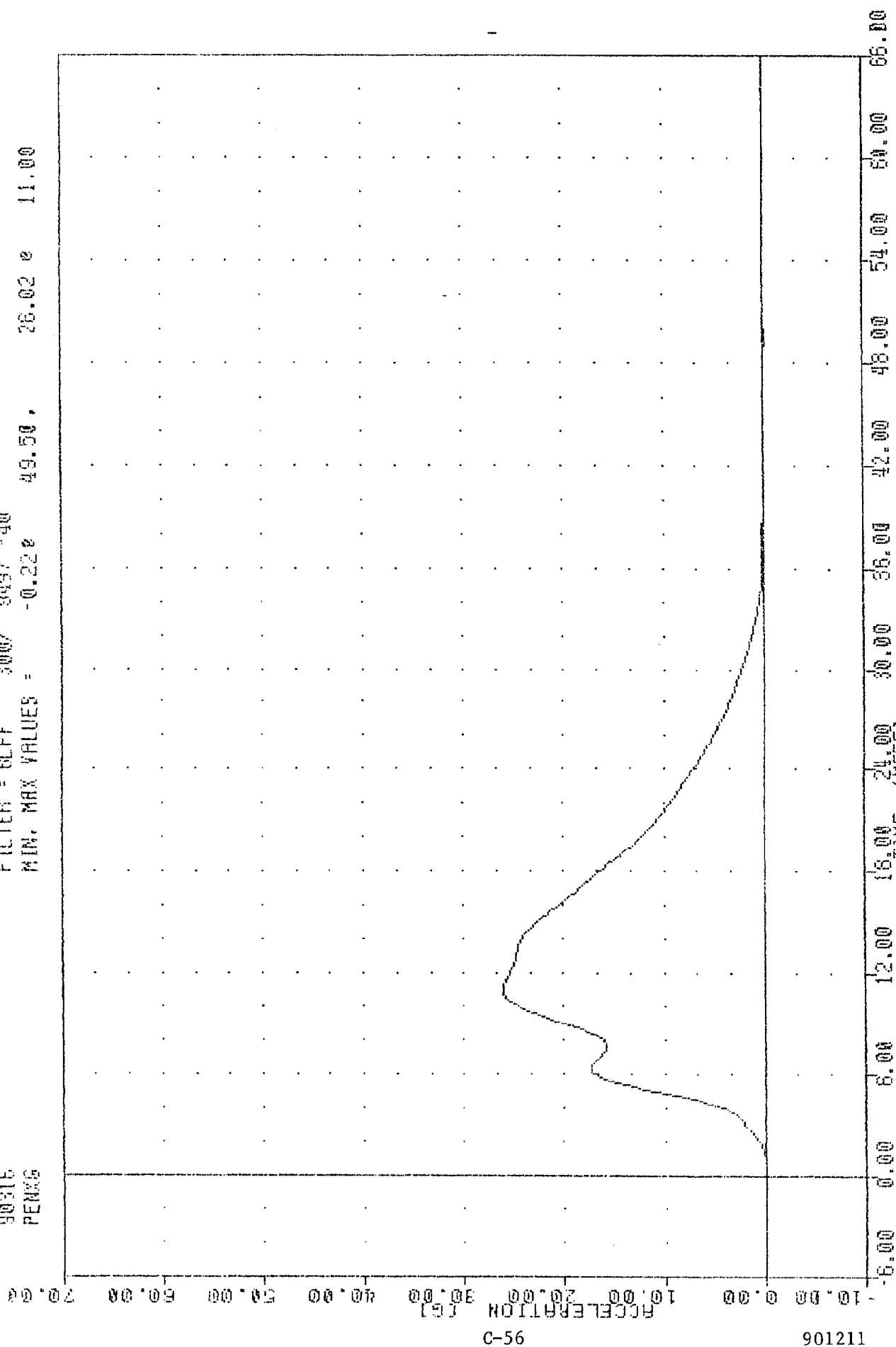
SCD: 2.25 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

WHTSR , TL71301
 572B SN 713 L.S.THORAX CAL 01
 90316
 PENXS

FILTER = BLFF 300/ 343/ -40
 MIN. MAX VALUES = -0.22e 49.50, 26.02 e 11.00



C-56

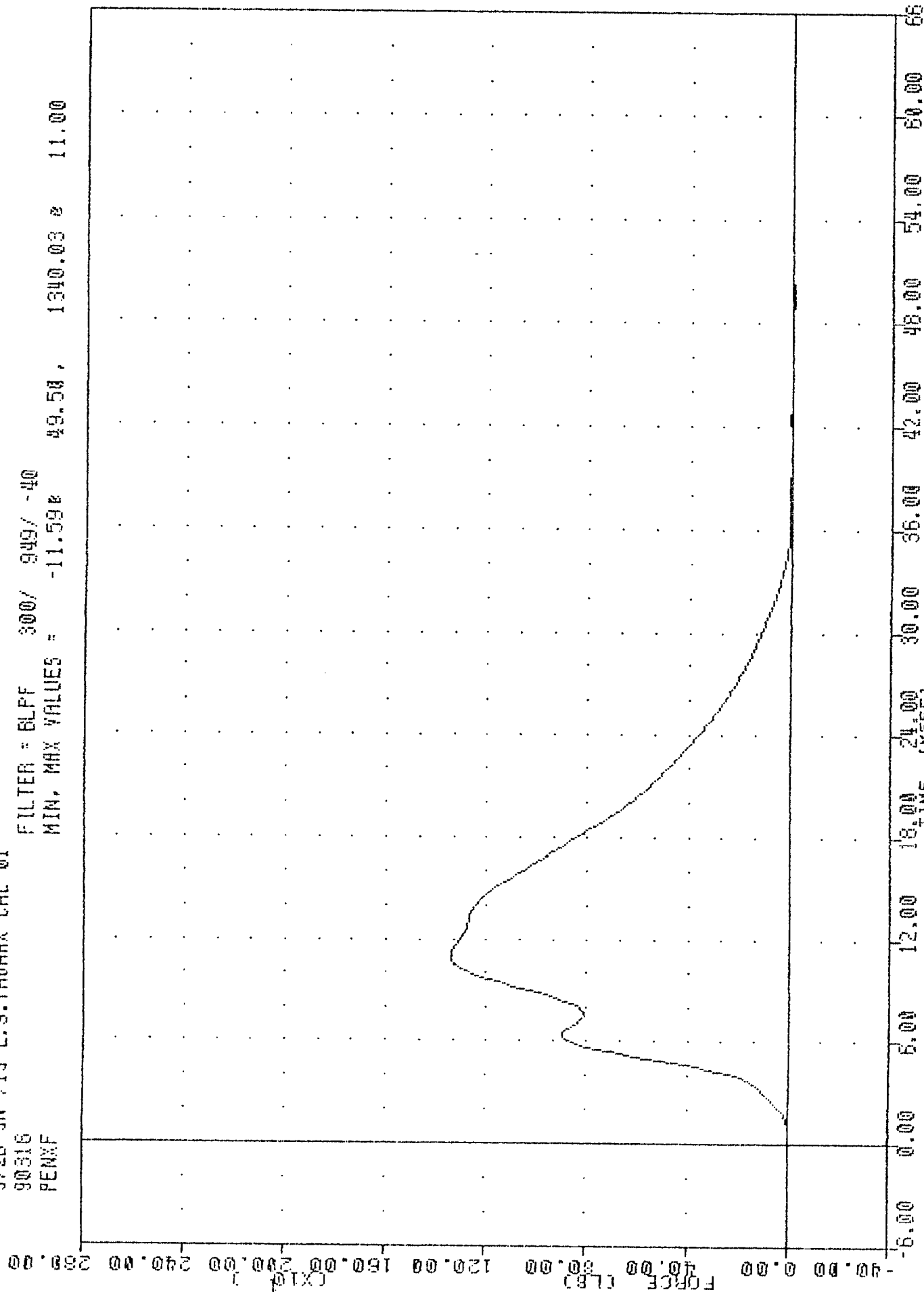
901211

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

TENSILE/COMPRESSION

NA12H
 572B SN 713 L.S.THORAX CAL 01
 90316
 PENXF

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -11.59e 49.50, 1340.03 e 11.00

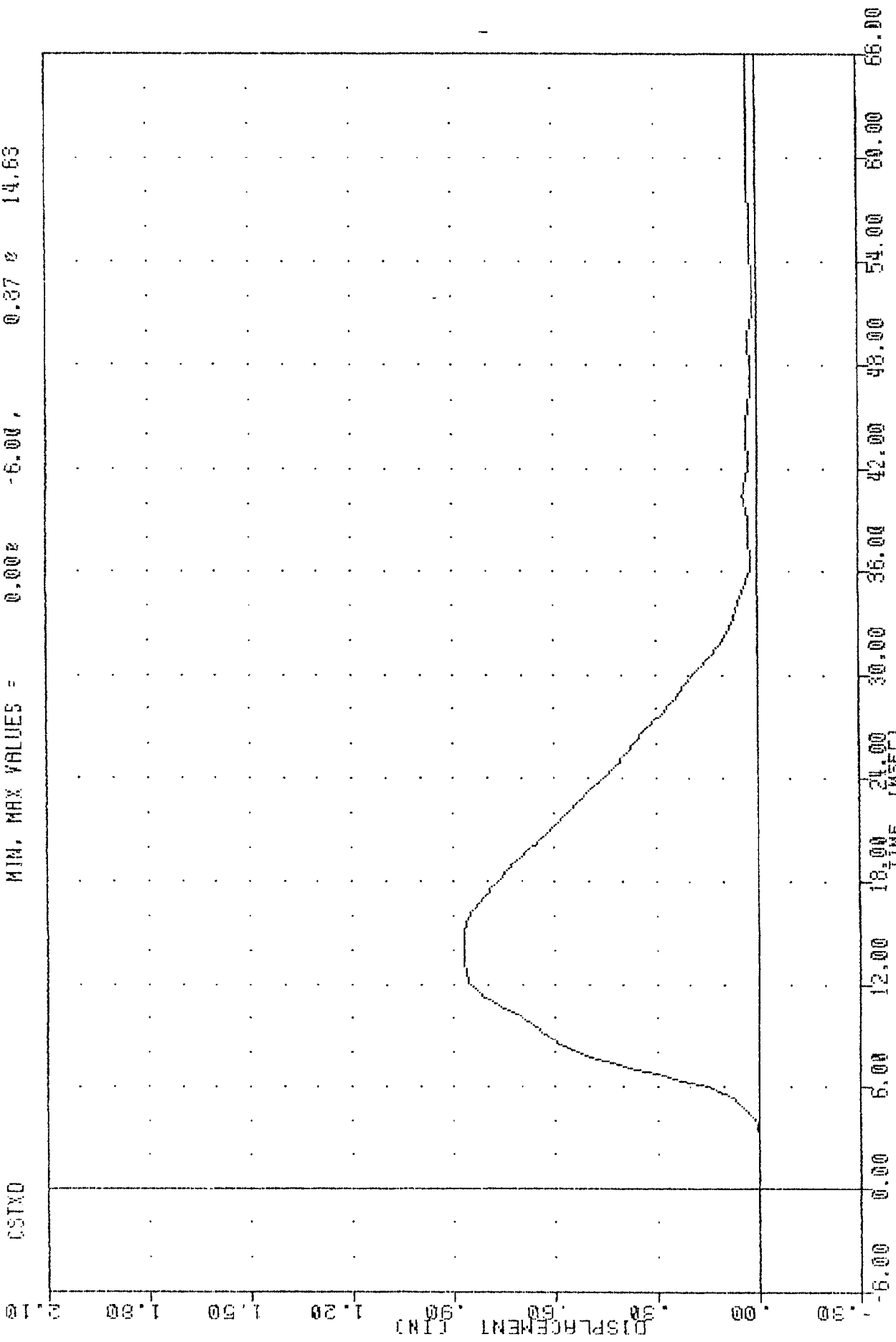


PART 572-B HYBRID II THORAX CALIBRATION 14 FT/SEC
 PENDULUM FORCE

UNIT 5A , TL71301
5728 SN 713 L.S. THORAX CAL 01

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = 0.002 -6.00, 0.37 2 14.63

90316
CSTD



C-58

901211

PART 572-8 HYBRID II THORAX CALIBRATION 14 FT/SEC
STANDARD IS CALIBRATED

工(司)員
 町長 佐々木 孝
 町副 佐々木 孝
 町議 佐々木 孝
 町議 佐々木 孝
 町議 佐々木 孝

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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[illegible]

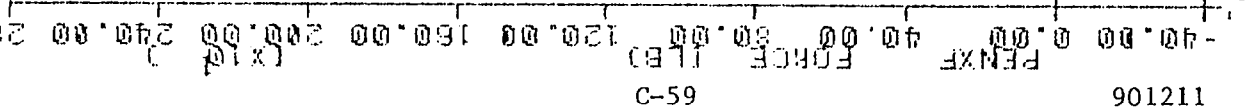
THE
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OF THE
MUSEUM OF
ART AND
ARCHITECTURE
OF THE
METROPOLITAN MUSEUM OF ART
1000 MUSEUM AVENUE
NEW YORK, N.Y. 10028

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PART 572-8 HYBRID II THORAX CALIBRATION 14 FT/SEC
C303AD DISPLACEMENT UNIT
CHEST DISPLACEMENT VS PENDULUM FORCE

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572

12-Nov-90

TEMPERATURE 73 F
NHTSA TH71301

RELATIVE HUMIDITY 34 %
572B SN 713 H.S. THORAX CAL 01

	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.	1.40 IN
PEAK RESISTIVE FORCE	2,250. LB max.	2044. LB
INTERNAL HYSTERESIS	50% - 70%	60.5%

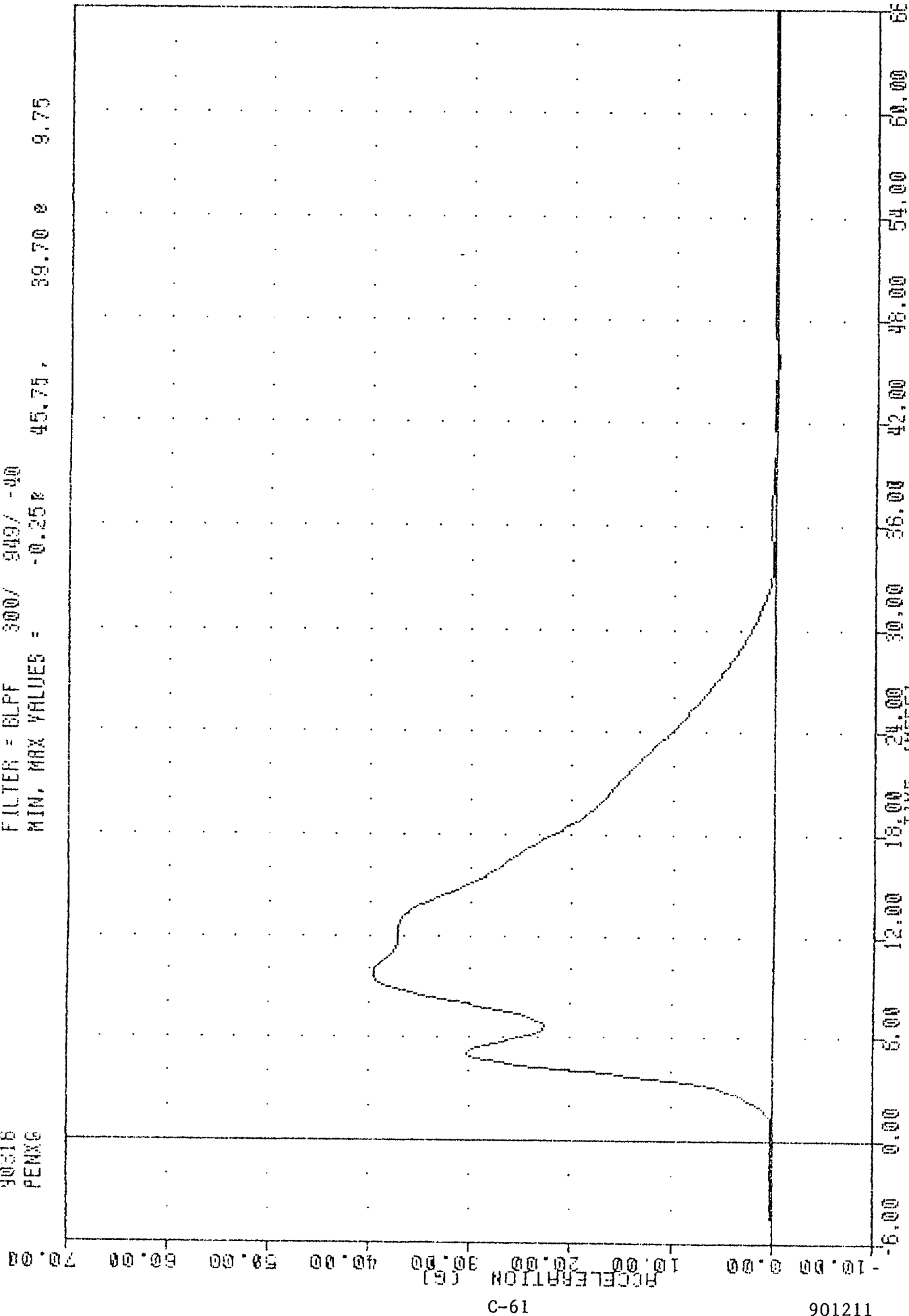
SCD: 2.25 IN

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

NHTSH : TH71301
 5728 SN 713 H.S.THORAX CAL 01
 30316
 PENXG

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -0.258 45.75 39.70 9.75



19-61

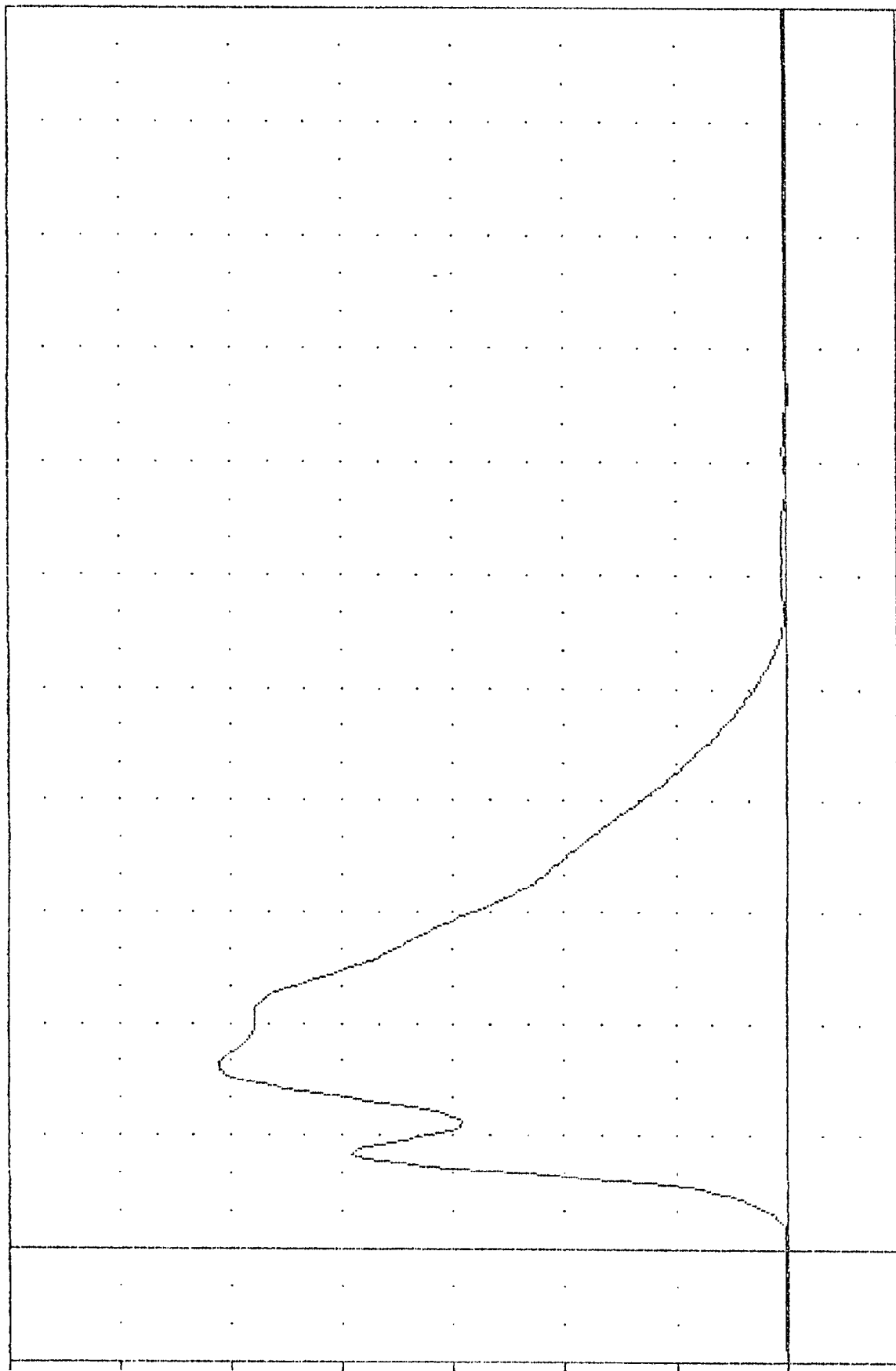
901211

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

HHTSA , TH71301
 572B SN 713 H.S.THORAX CAL 01
 90315
 PENXF

FILTER = BLFF 300/ 949/ -40
 MIN, MAX VALUES = -12.90% 45.75, 2044.30 @ 9.75

-40.00 0.00 40.00 80.00 120.00 160.00 200.00 240.00 280.00
 (X10³)



C-62

901211

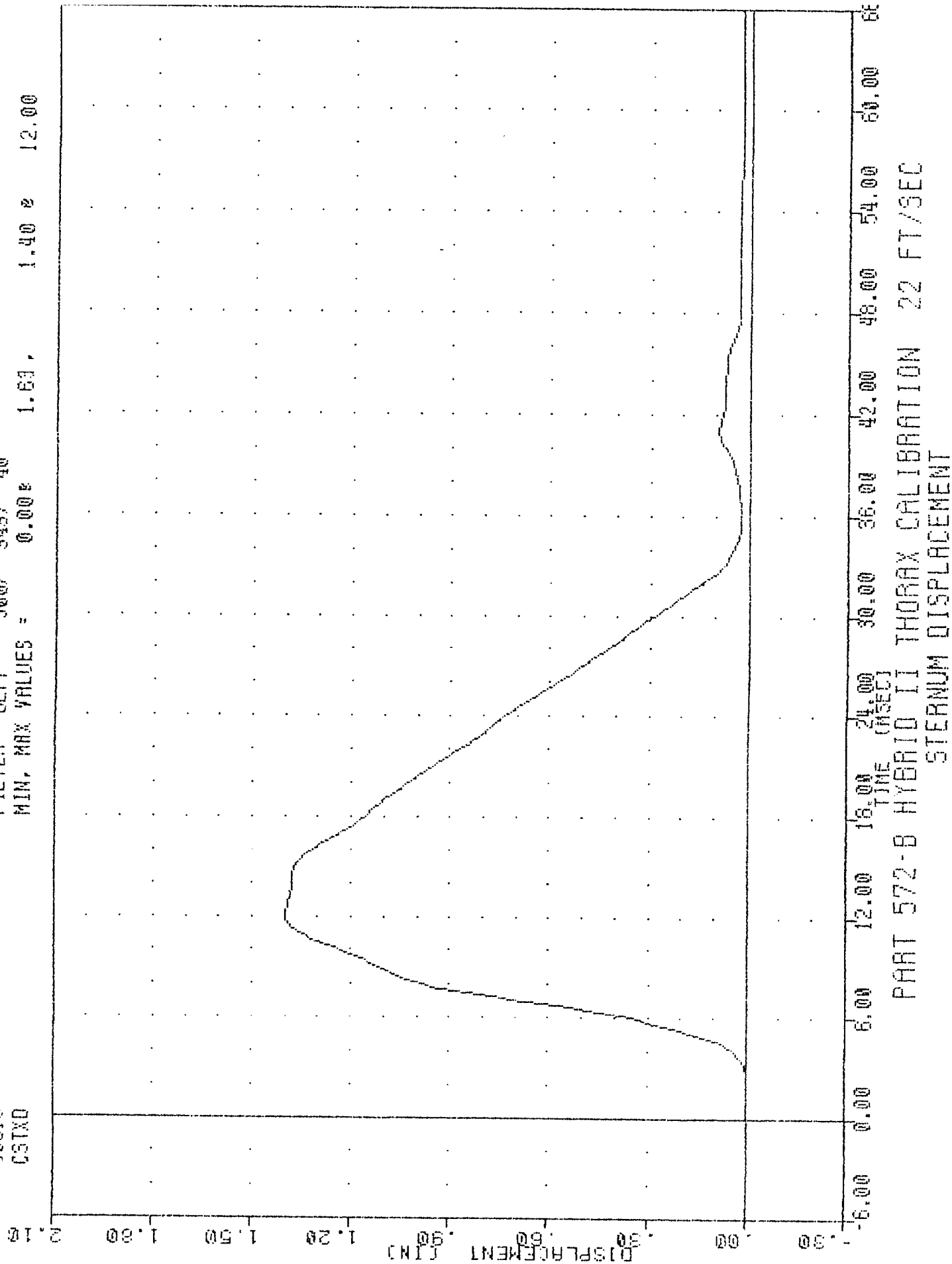
-6.00 0.00 6.00 12.00 18.00 24.00 30.00 36.00 42.00 48.00 54.00 60.00 66.00
 TIME (msec)

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

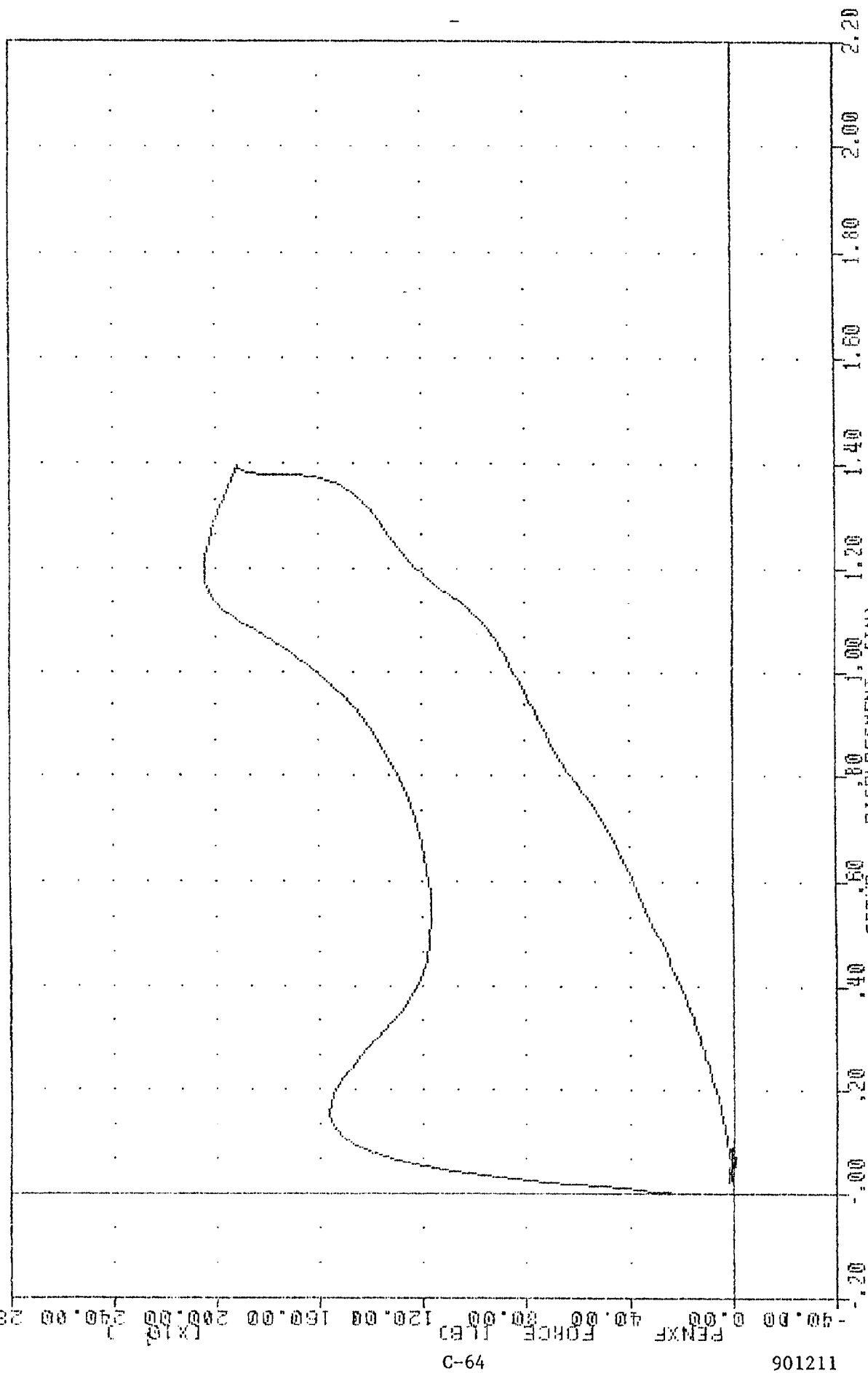
WINDSEUMCORP

KNIGHT
 5728 3N 713 H.S. THORAX CAL 01
 90316
 CSTXD

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 0.00e 1.61, 1.40 e 12.00



NHISA 5728 SN 713 H. S. THORAX CAL 01 98316
 CSIXD 300/ 949/ -40 MIN. MAX = 0.00
 PENXF 300/ 949/ -40 MIN. MAX = -12.90
 FILTER = BLPF 1.63 1.40 12.00
 FILTER = BLPF 2094.80 2.00 9.75



901211

C-64

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

ABDOMINAL COMPRESSION TEST

PART 572

08-Nov-90

TEMPERATURE 74 F
NHTSA AB71301

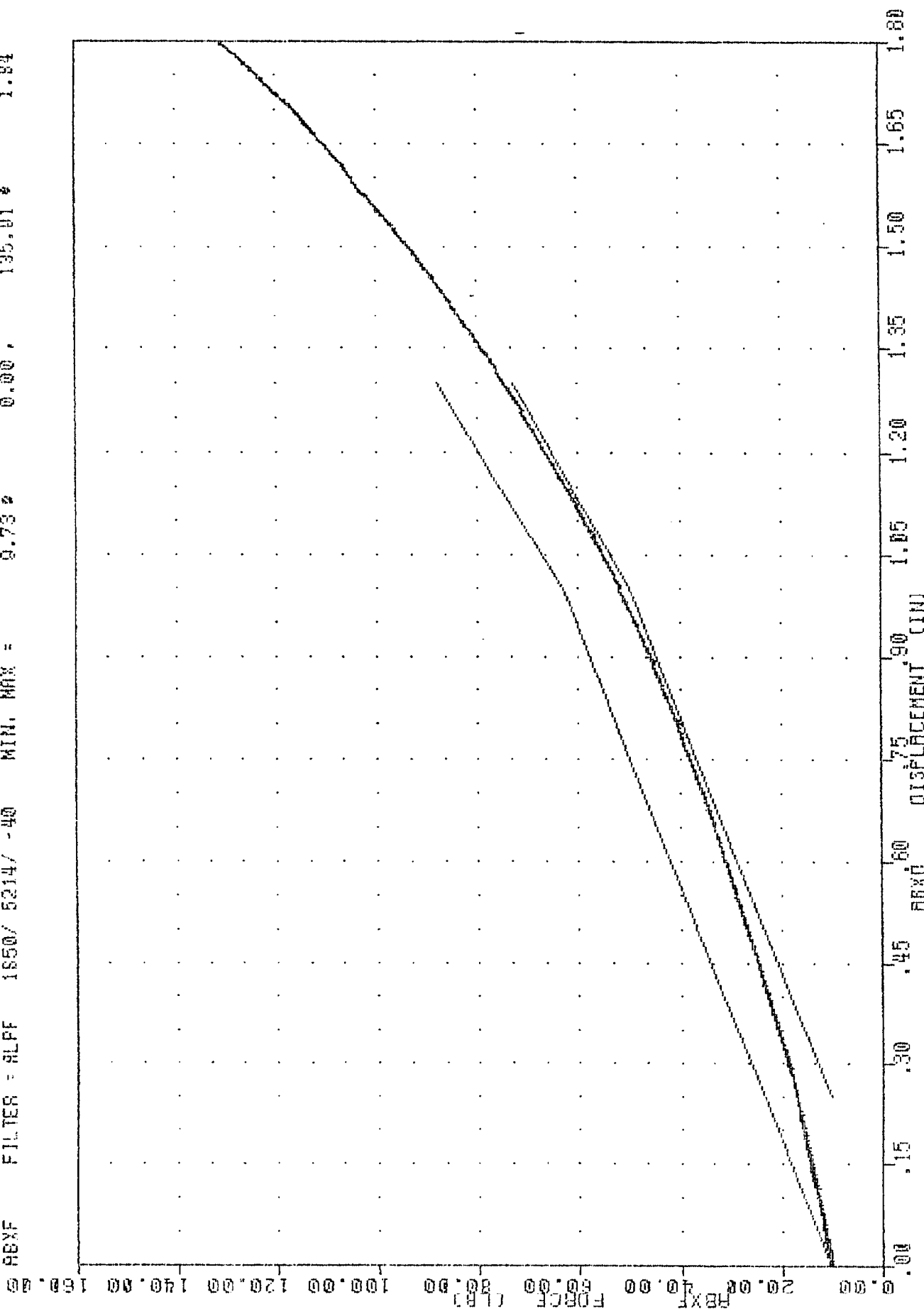
RELATIVE HUMIDITY 33 %
572B SN 713 ABDOM COMPR CAL 01

TEST CORRIDORS		
DISPLACEMENT	FORCE	TEST RESULTS
0.00 IN	10.00 LBS	10.00 LBS
0.50 IN	23.00 - 36.00 LBS	26.65 LBS
0.75 IN	36.00 - 50.00 LBS	37.88 LBS
1.00 IN	50.00 - 63.00 LBS	51.65 LBS
1.30 IN	73.00 - 88.00 LBS	74.79 LBS

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

RHTSA
 ABXD
 ABXF
 5728 SN 713 ABDOM COMPRESSOR 01 90312
 1650/ 5214/ -40 MIN. MAX = 0.00 %
 1650/ 5214/ -40 MIN. MAX = 9.73 %
 FILTER = ALPF
 FILTER = ALPF
 0.00
 0.00
 1.84 %
 135.91
 1.84



PART 572-B HYBRID II ABDOMEN CALIBRATION
 ABXD
 ABXF
 5728 SN 713 ABDOM COMPRESSOR 01 90312
 1650/ 5214/ -40 MIN. MAX = 0.00 %
 1650/ 5214/ -40 MIN. MAX = 9.73 %
 FILTER = ALPF
 FILTER = ALPF
 0.00
 0.00
 1.84 %
 135.91
 1.84

TRANSPORTATION RESEARCH CENTER OF OHIO

LUMBAR FLEXION TEST

PART 572

08-NOV-90

TEMPERATURE 74 F
NHTSA LF71301RELATIVE HUMIDITY 33 %
572B SN713 LUMBAR FLEX CAL01

DEFLECTION	SPECIFICATION	TEST RESULTS
0 DEG	0 LB	0.00 LB
20 DEG	22.00 - 34.00 LB	26.00 LB
30 DEG	34.00 - 46.00 LB	35.00 LB
40 DEG	46.00 - 58.00 LB	50.00 LB
NET RETURN ANGLE	< 12 DEG	0.60 DEG

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

PART 572

13-Nov-90

TEMPERATURE 73 F
LEFT KNEE
NHTSA LK71301

RELATIVE HUMIDITY 32 %
572B SN 713 L.KNEE IMP CAL 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PROBE VELOCITY	6.76 - 7.04 FT/SEC	6.94 FT/SEC
PEAK KNEE IMPACT FORCE	1850 - 2500 LB	1911.27 LB
DURATION ABOVE 1000 LB	≥ 1.7 MSEC	1.79 MSEC

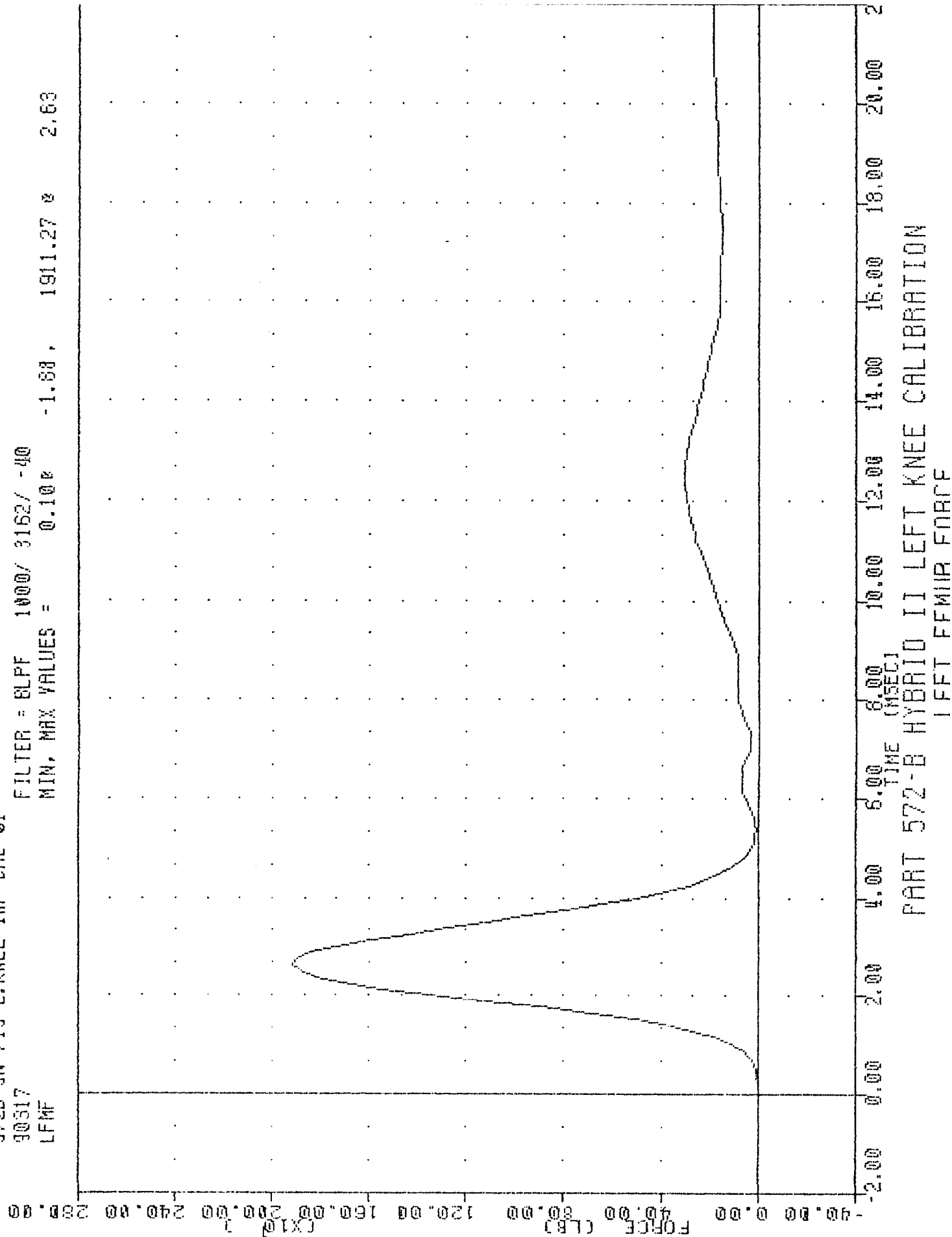
DUMMY MEETS SPECIFICATIONS

TECHNICIAN

Chas. Middleton

NHTSA , LK71301
 572B SN 713 L.KNEE IMP CAL 01
 90317
 LFMF

FILTER = 8LFF 1000/ 3162/ -40
 MIN, MAX VALUES = 0.10e -1.80 , 1911.27 e 2.63



TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

PART 572

13-Nov-90

TEMPERATURE 73 F
RIGHT KNEE
NHTSA RK71301

RELATIVE HUMIDITY 32 %
572B SN 713 R.KNEE IMP CAL 01

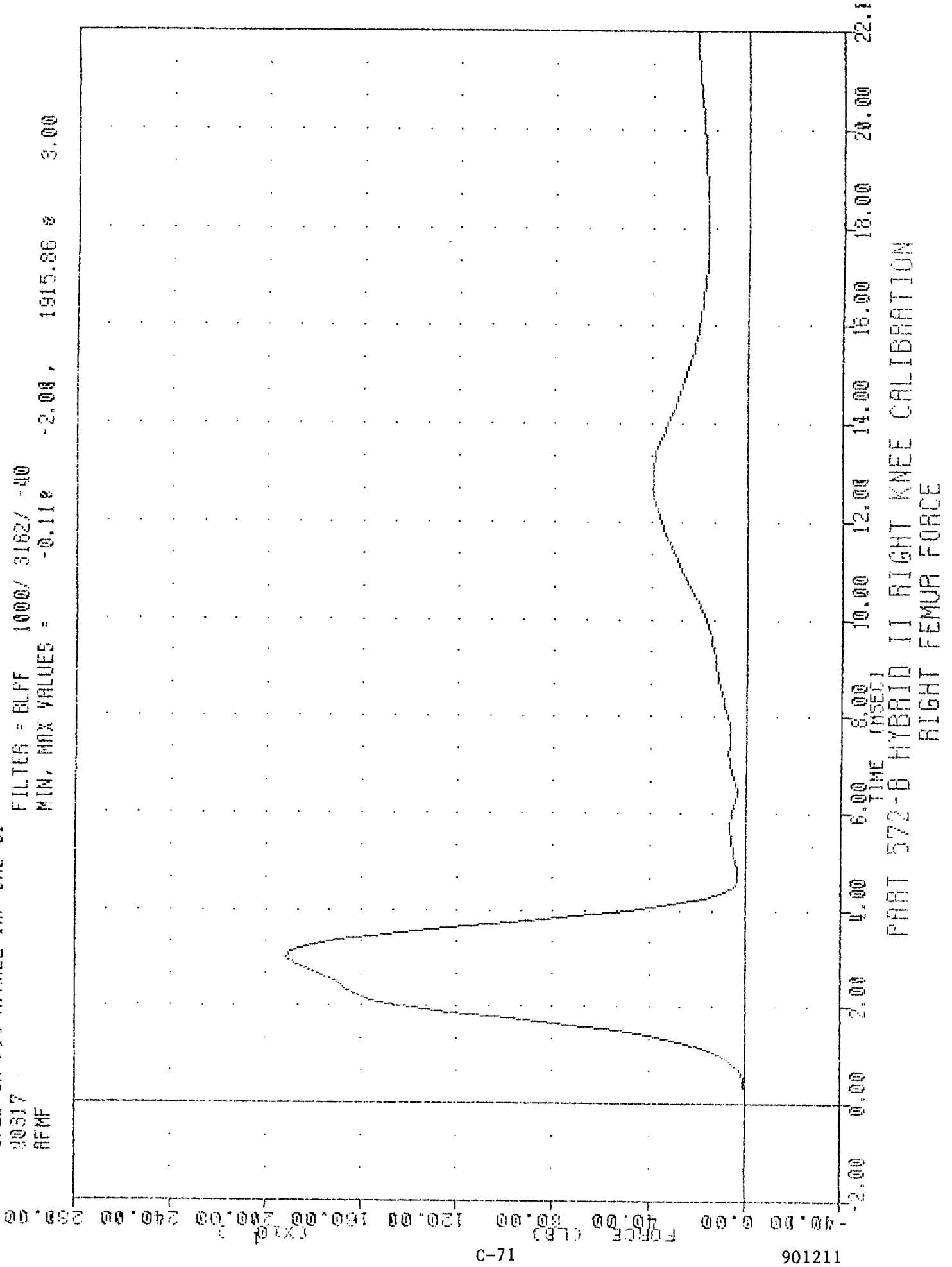
TEST PARAMETER	SPECIFICATION	TEST RESULTS
PROBE VELOCITY	6.76 - 7.04 FT/SEC	6.96 FT/SEC
PEAK KNEE IMPACT FORCE	1850 - 2500 LB	1915.86 LB
DURATION ABOVE 1000 LB	≥ 1.7 MSEC	1.98 MSEC

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middleton

572B SN 713 R.KNEE INF CAL 01
 90317
 RFMF

FILTER = BLPF 1000/ 3162/ -40
 MIN, MAX VALUES = -0.11% -2.00, 1915.86% 3.00



APPENDIX D

MISCELLANEOUS TEST INFORMATION

DUMMY INSTRUMENT CALIBRATIONS

DRIVER DUMMY #826

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCEL.	CY31H	7264	ENDEVCO	11/05/90	05/05/91
Y-AXIS ACCEL.	CC11H	7264	ENDEVCO	11/14/90	05/14/91
Z-AXIS ACCEL.	CL95H	7264	ENDEVCO	11/14/90	05/14/91
CHEST X-AXIS ACCEL.	DB74H	7264	ENDEVCO	11/05/90	05/05/91
Y-AXIS ACCEL.	DW12J	7264	ENDEVCO	11/05/90	05/05/91
Z-AXIS ACCEL.	CH67H	7264	ENDEVCO	11/05/90	05/08/91
LEFT FEMUR FORCE LOAD CELL	292	2430	GSE	11/08/90	05/08/91
RIGHT FEMUR FORCE LOAD CELL	880	2430	GSE	11/08/90	05/08/91
LAP BELT FORCE LOAD CELL	236	3419	LEBOW	07/09/90	01/09/91
SHOULDER BELT FORCE LOAD CELL	130	3419	LEBOW	11/29/90	05/29/91
SHOULDER BELT SPOOL-OUT POTENTIOMETER	A12899	PT-101-40A	CELESCO	12/10/90	06/10/91
SHOULDER BELT STRETCH POTENTIOMETER	2087	2051414101	BOURNES	12/10/90	06/10/91

DUMMY INSTRUMENT CALIBRATIONS

PASSENGER DUMMY #713

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCEL.	CA57H	7264	ENDEVCO	11/07/90	05/07/91
Y-AXIS ACCEL.	CT22H	7264	ENDEVCO	11/07/90	05/07/91
Z-AXIS ACCEL.	CY32H	7264	ENDEVCO	11/05/90	05/05/91
CHEST X-AXIS ACCEL.	CR78H	7264	ENDEVCO	11/07/90	05/07/91
Y-AXIS ACCEL.	CP34H	7264	ENDEVCO	11/05/90	05/05/91
Z-AXIS ACCEL.	CM46H	7264	ENDEVCO	11/07/90	05/07/91
LEFT FEMUR FORCE LOAD CELL	889	2430	GSE	11/08/90	05/08/91
RIGHT FEMUR FORCE LOAD CELL	901	2430	GSE	11/08/90	05/08/91
LAP BELT FORCE LOAD CELL	571	3419	LEBOW	07/09/90	01/09/91
SHOULDER BELT FORCE LOAD CELL	606	3419	LEBOW	11/28/90	05/28/91
SHOULDER BELT SPOOL-OUT POTENTIOMETER	0586135	PT-101-40A	CELESCO	12/10/90	06/10/91
SHOULDER BELT STRETCH POTENTIOMETER	5089	2051414101	BOURNES	12/10/90	06/10/91

VEHICLE AND CALIBRATION LABORATORY INSTRUMENT CALIBRATIONS

VEHICLE ACCELEROMETERS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
LEFT SEAT REAR CROSSMEMBER X-AXIS	CH46H	7264	ENDEVCO	11/13/90	05/13/91
RIGHT REAR SEAT CROSSMEMBER X-AXIS	CK81H	7264	ENDEVCO	11/13/90	05/13/91
ENGINE TOP X-AXIS	CH34H	7264	ENDEVCO	10/11/90	04/11/91
ENGINE BOTTOM X-AXIS	BW81J	7264	ENDEVCO	10/11/90	04/11/91
RIGHT BRAKE CALIPER X-AXIS	CJ04H	7264	ENDEVCO	08/23/90	02/23/91
LEFT BRAKE CALIPER X-AXIS	CB25H	7264	ENDEVCO	08/23/90	02/23/91
INSTRUMENT PANEL CENTER X-AXIS	CC72H	7264	ENDEVCO	11/13/90	05/13/91
REAR SEAT CROSSMEMBER CENTER Z-AXIS	CL84H	7264	ENDEVCO	11/13/90	05/13/91
VEHICLE REAR CENTER Z-AXIS	CR66H	7264	ENDEVCO	11/13/90	05/13/91

CALIBRATION LABORATORY INSTRUMENTS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
NECK BENDING PENDULUM ACCEL.	CC59	7232	ENDEVCO	10/09/90	04/09/91
NECK BENDING ROTARY POTENTIOMETER	NA	35435-1-102	BOURNES	MFR. SPECIFICATION	
NECK BENDING LINEAR POTENTIOMETER	NA	5184-2051846003	BOURNES	10/10/90	04/10/91
FEMUR/CHEST/THORAX PENDULUM ACCEL.	CC64	7232	ENDEVCO	10/16/90	04/16/91
LUMBAR FLEXION FORCE GAUGE	NA	DPPH-50	CHATILLON	05/03/89	REPAIRED
LUMBAR FLEXION ROTATION GAUGE	CP17-0601-1	7020	HUMPHREY	MFR. SPECIFICATION	
ABDOMEN COMPRESSION DISPL. GAUGE	4075-172	80294-2051941504	BOURNES	10/01/90	04/01/91
ABDOMEN COMPRESSION FORCE GAUGE	1261	3167	LEBOW	10/17/90	04/17/91

-

SIGN CONVENTION

ACCELEROMETERS:

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

POTENTIOMETERS:

+CHEST DISPLACEMENT: OUTWARD
+SEAT BELT DISPLACEMENT: OUTWARD
+SEAT BELT EXTENSION: ENLONGATION

LOAD CELLS:

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

NECK LOAD CELLS:

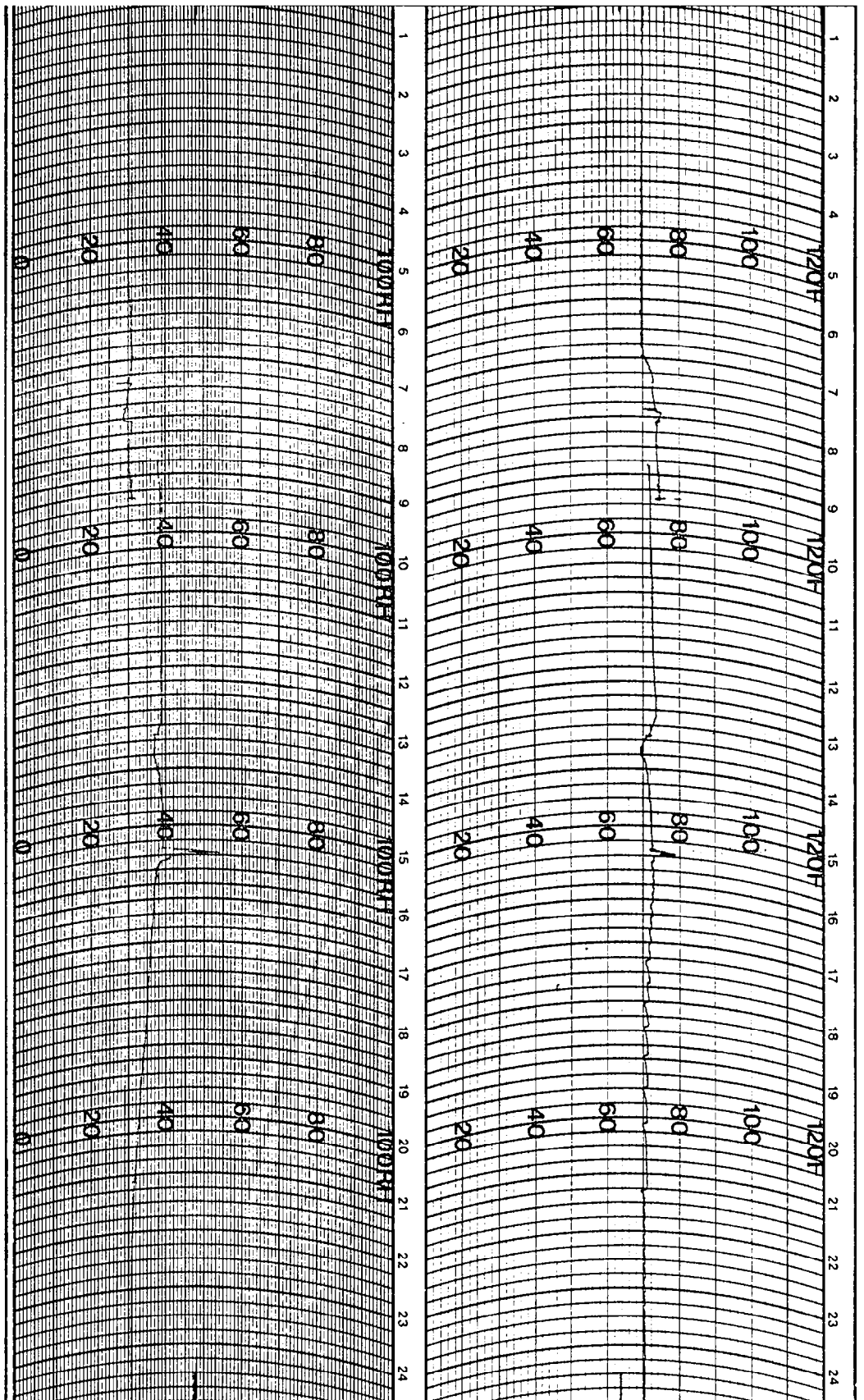
+X FORCE: HEAD FORWARD
+Y FORCE: HEAD RIGHTWARD
+Z FORCE: HEAD UPWARD (TENSION ON NECK)
+X MOMENT: RIGHT EAR TO RIGHT SHOULDER
+Y MOMENT: HEAD ROTATING FORWARD
+Z MOMENT: HEAD ROTATING LEFTWARD

FREQUENCY RESPONSE CLASSES

SAE J211 OCT88

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





WEATHER MEASURE

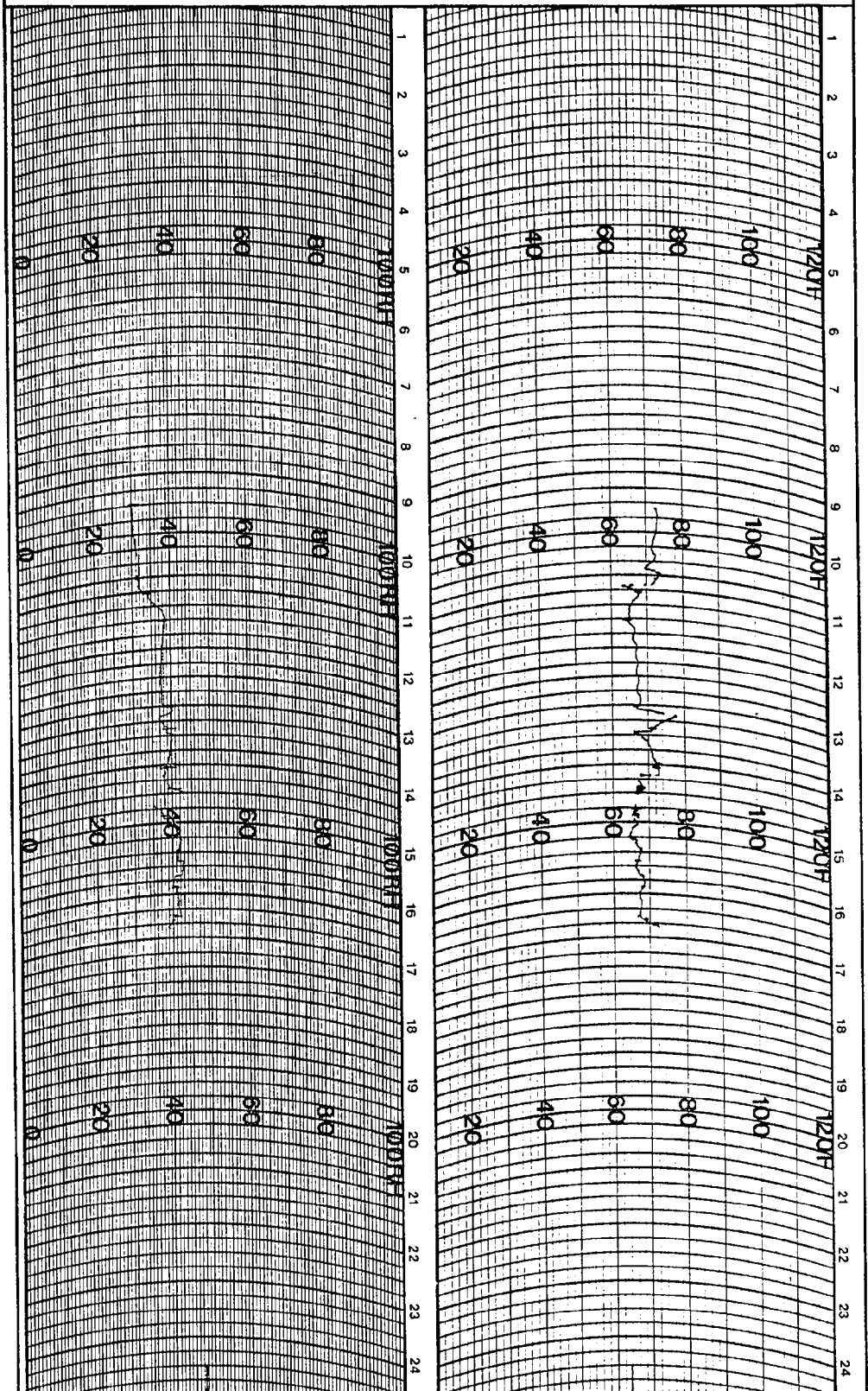
P.O. BOX 41257
SACRAMENTO, CA. 95841
PHONE (916) 481-7565

HYGROTHERMOGRAPH
1 DAY

CHART# C311 D HF

PART # 699123

STATION *SEATTLE DUMMIS* DATE ON *12/12/20* DATE OFF *12/11/20*



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

HYGROTHERMOGRAPH
1 DAY

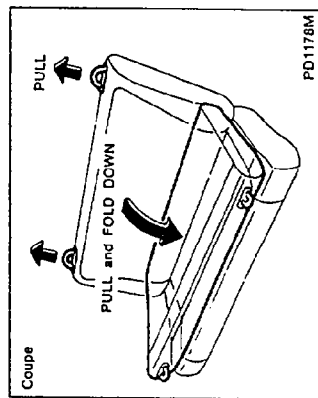
CHART # C311 D HF
PART # 699123

STATION Nissau, Serbia DATE ON 12/11/20 DATE OFF 12/11/20

APPENDIX E

RESTRAINT SYSTEM INSTRUCTIONS FROM THE OWNER'S MANUAL

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 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.
- 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 re-

strained 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.

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 problem. The booster seat should allow the child to sit high enough so that the shoulder belt is centered across the top, middle portion of the shoulder and the lap belt is positioned 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 Standard or Canadian Motor Vehicle Safety Standard. Once the child has grown enough so the shoulder belt is not longer on or near the face and neck, use the shoulder belt without the booster seat.

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.

2-POINT AUTOMATIC SEAT BELT SYSTEM (4-door sedan for U.S.A.)

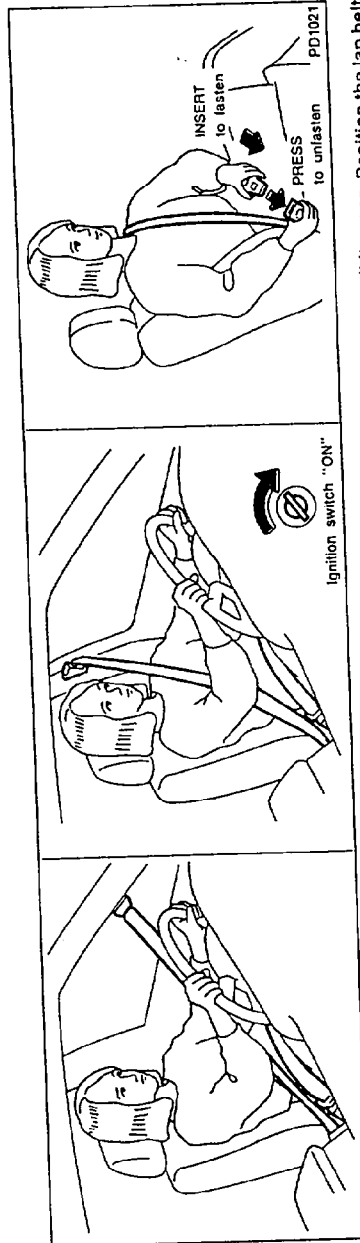
The Automatic Seat Belt system consists of an automatic shoulder belt and a manual lap belt for the driver and front passenger seat positions. The shoulder belts automatically adjust to the body and seating positions when the door is closed and the ignition key is turned "ON".

- 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 Precau-

tions on Seat Belt Usage earlier in this Section.

System malfunction

If, while the Ignition switch is turned "ON" with either front door open, the 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.



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.

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.

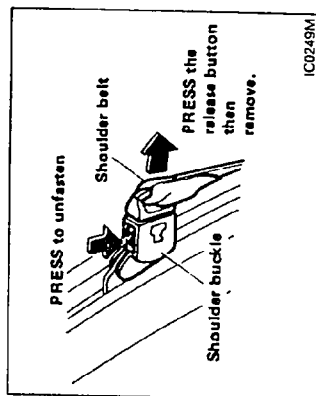
If the shoulder belt tongue is disconnected from the buckle:

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.

WARNING:

If the seat belt warning light glows continuously while the Ignition is turned "ON" with both doors closed and all seat belts fastened, it may indicate a malfunction in the system. Have the system check by your NISSAN dealer.



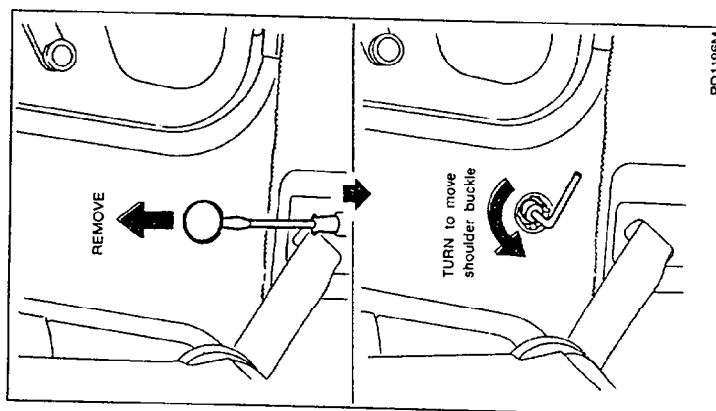
IC0249M

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.



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If either shoulder belt buckle does not operate

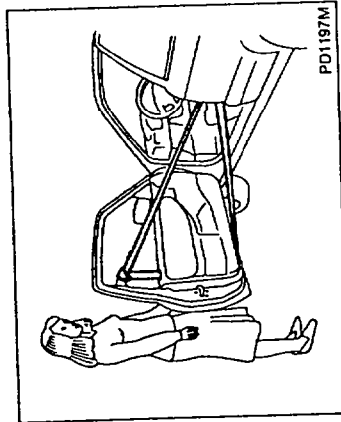
1. Slide the seat forward as far as possible.
2. Remove the blind cap in the lower portion of the center pillar with the screwdriver. The shaft end of the motor will be visible.
3. Using the wrench supplied in the tool bag, turn the shaft of the motor counterclockwise to move the shoulder buckle to the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

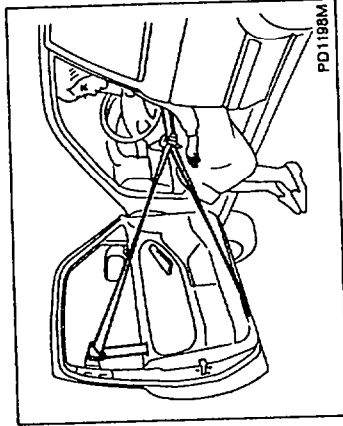
If you wish to have the locking operation of your seat belts checked for you, or if you have any question about belt operation, see your NISSAN dealer.



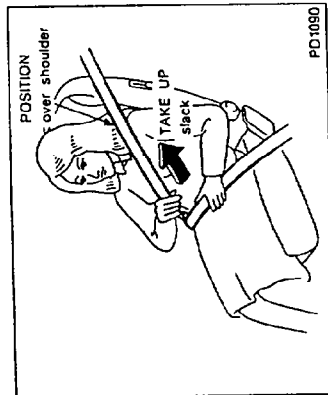
3-POINT AUTOMATIC SEAT BELT SYSTEM (2-door sedan for U.S.A.)

A 3-point Automatic Seat Belt system is provided for the driver and front passenger seat positions. When the door is opened, the automatic seat belt is designed to let you enter and exit without releasing the belt from the buckle. When the door is fully closed, the automatic seat belt will adjust to the body and seating positions.

- In order for the automatic seat belt system to operate properly, the belt tongue should always remain inserted in the buckle.

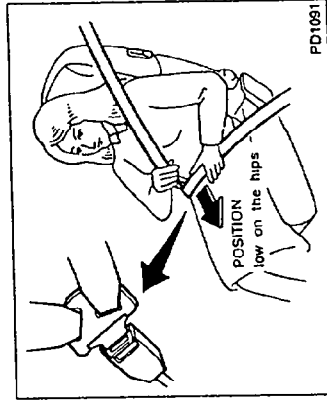


- Do not allow more than one person to use the same seat belt.
- If available, NISSAN recommends that children be seated in the rear seats. See "Precautions on Seat Belt Usage" earlier in this section.



Fastening the belts

1. Open the door. The lap and shoulder belts will move out of the way. Get into the seat and close the door. Make sure the door is fully closed.
2. Adjust the seat.
The seatback should not be reclined any more than needed for comfort. Seat belts are most effective when the passenger sits well back and straight up in the seat.
3. Be sure the belt is positioned properly as shown in the illustration above.



- The lap portion of the automatic seat belt should be positioned **LOW ON THE HIPS**, free of twists and slack. This reduces the risk of sliding under the lap belt during a collision. Reposition the belt if necessary.
- The shoulder portion of the automatic belt is designed to position itself to lie flat and be centered across the top, middle portion of the shoulder. The shoulder belt should be routed across the chest and over the top of the shoulder, free of twists and slack, for maximum comfort and protection. **DO NOT** wear the shoulder belt across the neck or under the arm. Movement of the occupant will normally position the shoulder belt correctly if articles of clothing or other factors prevent correct belt positioning. Reposition the belt if necessary.
- The retractors are designed to lock dur-

ing a sudden stop or on impact. A normal pulling motion will permit the belt to move, and allow you freedom of movement in the seat.

Unfastening the belts

1. Stop the vehicle.
2. When opening the door the seat belt warning light will come on. The automatic seat belts will move away from you so you can get out of the vehicle.
- If the automatic seat belt prevents the door from opening, the door may have been opened too quickly. When this occurs, close the door and open it slowly. If the door is prevented repeatedly from opening, the seat belt retractor is not working correctly. The 3-point automatic seat belt system must be immediately checked by your NISSAN dealer.
- Do not unfasten the seat belt tongue from the buckle except in an emergency. See "Operation in an Accident" later in this section.

Seat belt warning light "  " and warning chime
The seat belt warning light "  " and

warning chime remind you to wear the seat belt, and they warn that there may be a malfunction in the 3-point automatic seat belt system.

The door warning light will also flash continuously.

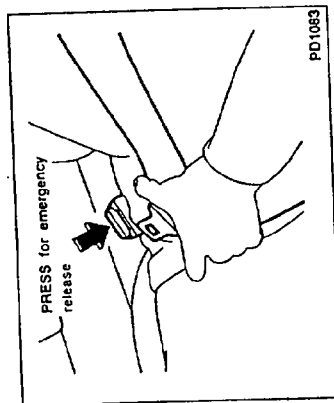
- If the seat belt warning light flashes or glows continuously with the ignition switch turned "ON", the door fully closed and all seat belts fastened, this may indicate a malfunction in the seat belt system.
- When the ignition switch is turned "ON", the warning light will flicker for about 6 seconds to remind you to wear the seat belt.

When the automatic seat belt tongue is disconnected from the buckle and the ignition switch is turned "ON", the seat belt warning light will come on for about 100 seconds. The seat belt warning chime will also sound for about 6 seconds.

WARNING:

There may be a malfunction in the 3-point automatic seat belt system if any of the following conditions occur with the ignition switch turned "ON":

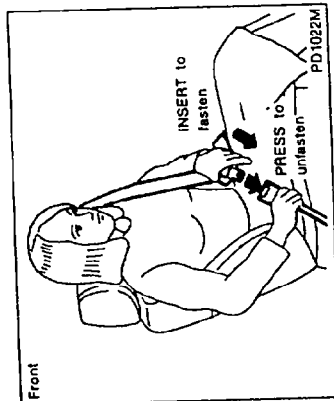
- The seat belt warning light does not operate as described above.
 - The seat belt warning light does not come on.
 - The seat belt warning light flashes continuously for over 100 seconds.
 - The seat belt warning light glows continuously.
- If any of the above conditions occurs, the seat belt system should be immediately checked by a NISSAN dealer to avoid risk of injury.



Operation in an accident

Emergency release

The 3-point automatic seat belt system is designed so that the driver and passenger can use the seat belt without releasing the belt from the buckle. The belt attached to the buckle will swing out of your way when the door is opened, allowing entry and exit. If you need to release the automatic seat belt from the buckle in an emergency, press the buckle marked "PRESS EMERGENCY". Use this feature only when the seat belt keeps you from leaving the vehicle in an accident.



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

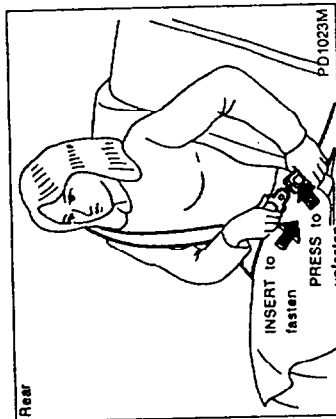
1. Adjust the seat.

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.

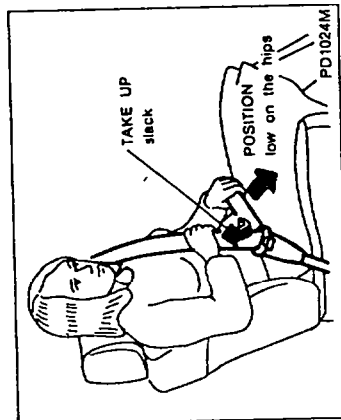
2. Slowly pull the seat belt out of the retractor and insert the tongue into the buckle until it snaps.

The emergency release can also be used when a child restraint is placed in the passenger seat. See "Child Restraint Systems" later in this section.

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



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:

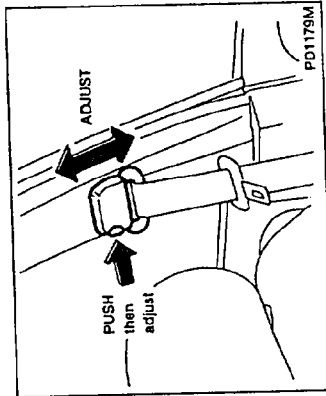
- 1) When the belt is pulled quickly from the retractor.

- 2) When the vehicle slows down rapidly.

To increase your confidence in the belts, check the operation as follows:

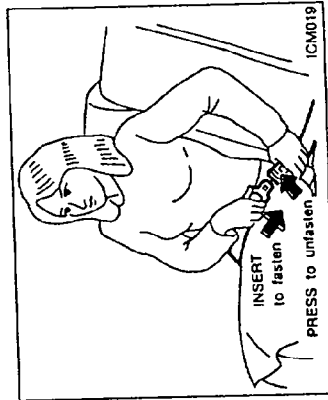
- Grasp the shoulder belt and pull quickly forward. The retractor should lock and restrict further belt movement.

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)

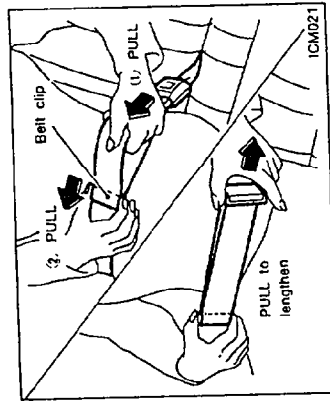
The shoulder belt anchor height should be adjusted to the position best for you. To adjust, push the release button, then move it to the desired position, so that the belt passes over the shoulder.



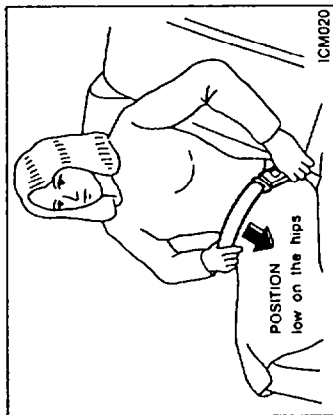
2-POINT TYPE WITHOUT RETRACTOR

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.

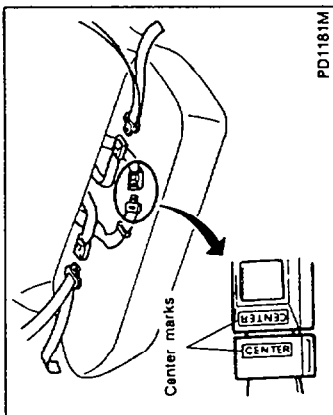


3. Position the lap belt low on the hips as illustrated.

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.



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 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.

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

It is very important that infants and small children riding in a vehicle be placed in a restraint system.

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.

According to traffic accident statistics, the rear seat is safer than the front seat for installation of a child restraint.

The safest place to install a child restraint system is in the middle of the rear seat. Any position in the rear seat is better than 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:

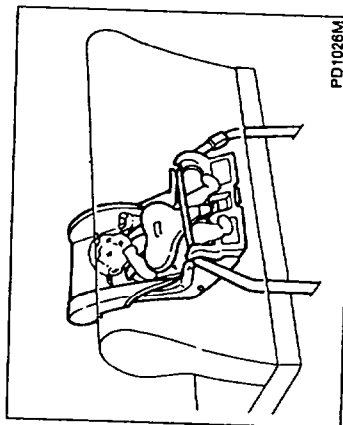
- 1) Choose only a system with a label certifying that it complies with Federal Motor Vehicle Safety Standard 213 or Canadian Motor Vehicle Safety Standard 213.
- 2) Place your child in the child restraint and check the various adjustments to be sure the child restraint is compatible with your child. 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 use all child restraint systems.

ble to properly install some types of child restraints in your vehicle.

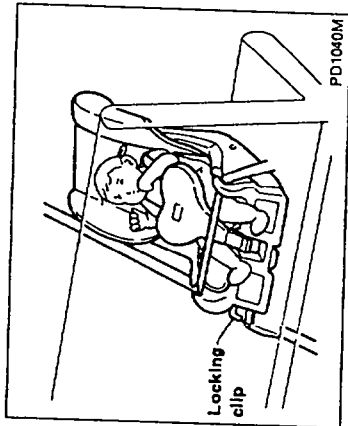
- When your child restraint system is not in use, store it in the luggage room or keep it secured with a seat belt to prevent it from being thrown forward in case of a sudden stop or accident.
- Remember that a child restraint left in a closed vehicle can become very hot. Check the seating surface and buckles before placing your child in the child restraint.
- All U.S. states and some provinces or territories require that infants and small children be restrained in approved child restraint systems at all times while the vehicle is being operated.



Installation on rear seat

Center lap belt

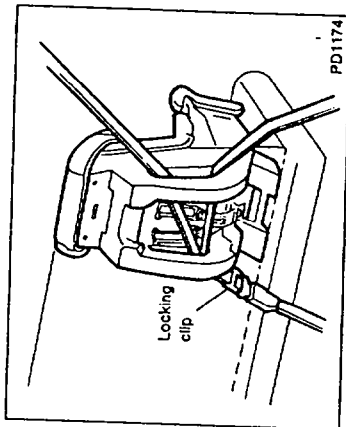
Secure the child restraint with the lap belt as illustrated. Adjust the belt for a snug fit over the child restraint.



Outboard shoulder/lap belt

Before using the locking clip, read the instructions attached to the clip.

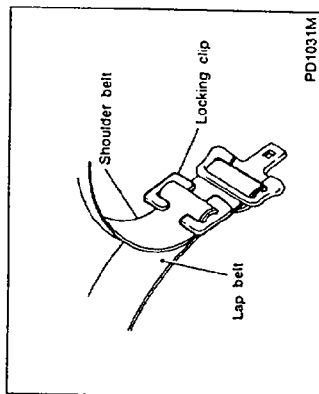
Secure the child restraint with the lap belt as illustrated. To prevent slack in the lap belt, it will be necessary to secure the lap/shoulder belt in place with a locking clip.



PD1174

PD1026M

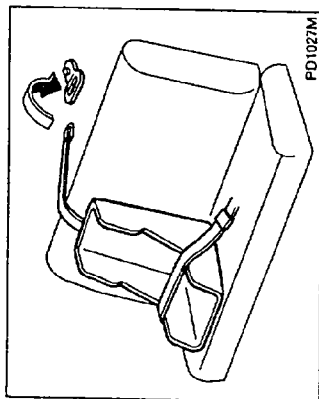
PD1040M



PD1031M

Use a NISSAN genuine locking clip (part number 999JW-A3000, available from your NISSAN dealer), or one which is equivalent in dimensions and strength.

When your child restraint system is not in use, keep the locking clip in the glove box to prevent it from being lost.



PD1027M

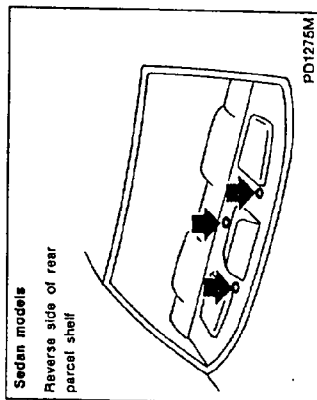
If your child restraint has a top strap, install the anchor bracket to the provided anchorage. Secure the child restraint with the outboard lap belt and latch the top strap hook onto the anchor bracket. To install the anchor bracket, a metric bolt of the dimensions listed below must be used.

Bolt diameter: 8.0 mm

Bolt length: more than 1.18 in (30 mm)

Thread pitch: 1.25 mm

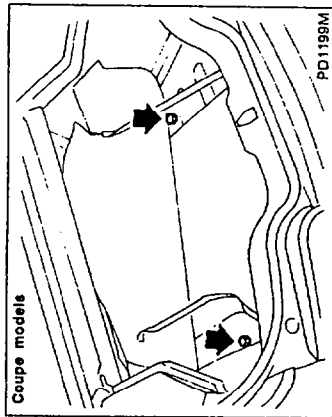
Child restraint anchorages are designed to withstand only those loads imposed by correctly fitted child restraints. Under no circumstances are they to be used for adult seat belts or harnesses.



PD1276M

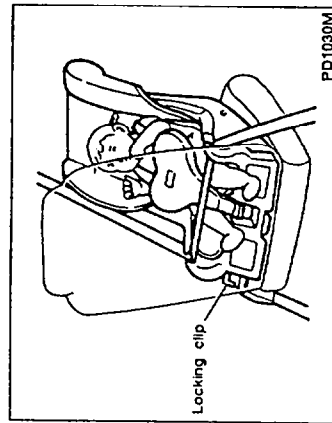
Anchorage location

Anchorages are located under the clips on the rear parcel shelf finisher.



Anchorage location

Anchorage are located under the carpet of the rear luggage area floor.



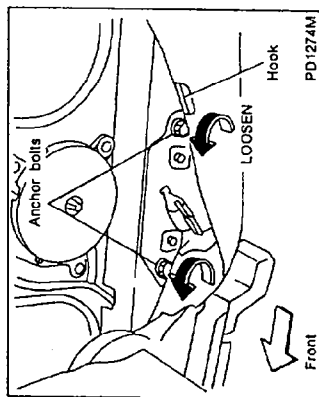
Installation on front passenger seat (For Canada and coupe models for U.S.A.)

Before using the locking clip, read the instructions attached to the clip.

Secure the child restraint with the lap belt as illustrated. To prevent slack in the lap belt, it will be necessary to secure the lap/shoulder belt in place with a locking clip.

Installation on front passenger seat (Sedan for U.S.A.)

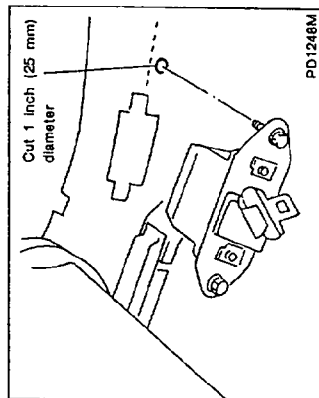
- Do not use the original lap belt installed on the front passenger seat. Use a NIS-SAN genuine lap belt assembly (part number 88890-65Y79 for 4-door sedans and 88894-64Y00 for 2-door sedans) for the child restraint, available from NIS-SAN dealers.
- Install the lap belt assembly properly by following the instructions attached to it as follows:
If in doubt about installation, have it done by your NISSAN dealer.



Installation of lap belt assembly (4-door sedan)

The anchorage to install the genuine lap belt assembly is located at the rear end of the original lap belt.)

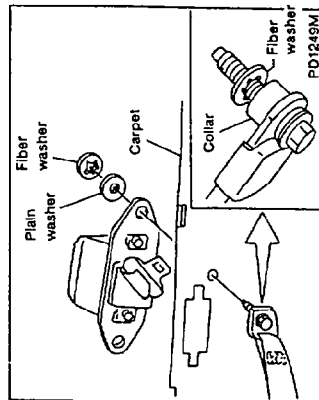
1. Remove the original lap belt from the guide attached to the side of the seat cushion.
2. Remove the front and rear kick plates, center pillar lower garnish, and lap belt retractor finisher from the body.



3. Unhook the carpet so that the two anchor bolts can be loosened, and turn over the carpet.

4. Loosen the two anchor bolts, and remove the original lap belt retractor from the body.

5. Using a knife, open a 1 inch diameter hole in the carpet at the position of the rear side anchor bolt.



6. Remove the rear side anchor bolt together with the fiber washer and plain washer.

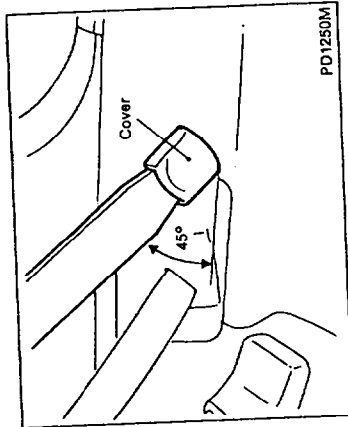
7. Temporarily set the genuine lap belt, carpet, and lap belt retractor, and also the plain washer and fiber washer removed in step 6 above to the anchor bolt which is found in the genuine lap belt assembly for the child restraint.

8. Install the lap belt retractor, together with the genuine lap belt on the body using the two anchor bolts.

Anchor bolt tightening torque:
32 to 41 ft-lb (43 to 55 N·m)

CAUTION:

Pay attention so as not to catch the carpet under the rear side anchor bolt.



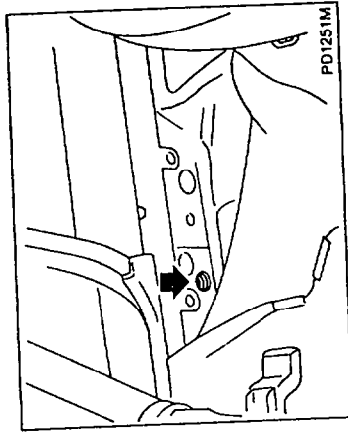
9. Install the lap belt retractor finisher before tightening the rear side anchor bolt to the specified torque.

10. Holding the genuine lap belt at 45° to the horizontal, and towards the front of the vehicle, tighten the rear side anchor bolt to the specified torque.

11. Move the cover attached to the genuine lap belt to cover up the anchor bolt.

12. Hook the carpet, and fit the center pillar lower garnish and kick plates to their original positions.

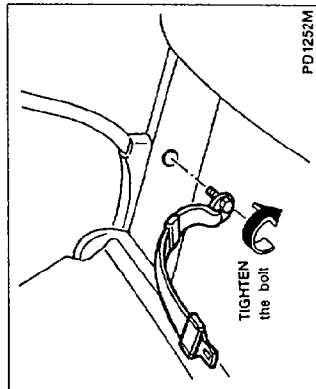
13. Put the lap belt in the guide.



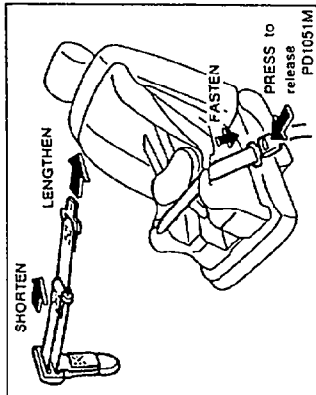
**Installation of lap belt assembly
(2-door sedan)**

The anchorage to install the genuine lap belt assembly is located on the center pillar beside the front passenger seat.

1. Slide the seat to its frontmost position.
2. Pull out the carpet as shown.
3. Using a knife, open a 1 inch diameter hole in the carpet at the position of the nut for the anchor bolt.
4. Put back the carpet, and install the lap belt assembly on the body using the anchor bolt.



Anchor bolt tightening torque:
32 to 41 ft-lb (43 to 55 N-m)



Installation of child restraint

1. Slide the seat to its rearward position.
2. Adjust the genuine lap belt as short as possible to fit the child restraint, as shown, and secure the child restraint.
3. Slide the seat forward so that the genuine lap belt may fully tighten the child restraint.

Never install the child restraint with an automatic shoulder belt or a lap belt with a retractor because they are not suitable to secure the child restraint.

Do not use this genuine lap belt for adults.

When the genuine lap belt is not in use, fold it neatly, and pay attention so as not to allow it to be caught in the door, or become stained.